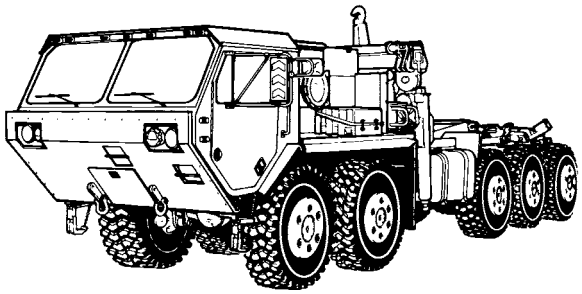
TM 9-2320-364-20-4

THIS MANUAL SUPERSEDES TM 9-2320-364-20-4 DATED 01 AUG 1999, INCLUDING ALL CHANGES.

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
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HEADQUARTERS, DEPARTMENT OF THE ARMY
30 NOVEMBER 2005

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 circuitc, 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 complay 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.

WARNING

Pull out ride control valve knob to release pressure in air-ride system. Failure to comply may result in injury to personnel.

LIST OF EFFECTIVE PAGES

Dates of issue for original and changed pages are:

Original..... 01 August 1999
Revision 0001..... 30 November 2005

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 1544 CONSISTING OF THE FOLLOWING:

Page No.	* Change No.
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A and B	0
i thru iii	0
iv Blank	0
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2-3018 Blank	0
2-3019 thru 2-3023	0
2-3024 Blank	0
2-3025 thru 2-3053	0
2-3054 Blank	0
2-3054.1 thru 2-3054.115	0
2-3054.116 Blank	0
2-3055 thru 2-3228	0
3-1 thru 3-32	0
4-1 thru 4-93	0
4-94 Blank	0
5-1 thru 5-13	0
5-14 Blank	0
6-1 thru 6-56	0
7-1 thru 7-160.1	0
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7-281 thru 7-380	0
8-1 thru 8-9	0
8-10 Blank	0
9-1 thru 9-22	0
10-1 thru 10-10	0
11-1 thru 11-26	0
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LIST OF EFFECTIVE PAGES

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D-1 thru D-16	0
E-1 thru E-7	0
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F-14 Blank	0
G-1 thru G-4	0
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INDEX-16 Blank	0
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SCHMTC-3	0
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* Zero In This Column Indicates An Original Page.

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY

No. 9-2320-364-20

Washington D.C.,30 November 2005

Unit Maintenance Manual

PALLETIZED LOAD SYSTEM

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

Current as of 31 October 2005

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 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM." The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the 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 direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-LC-CIP-WT, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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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

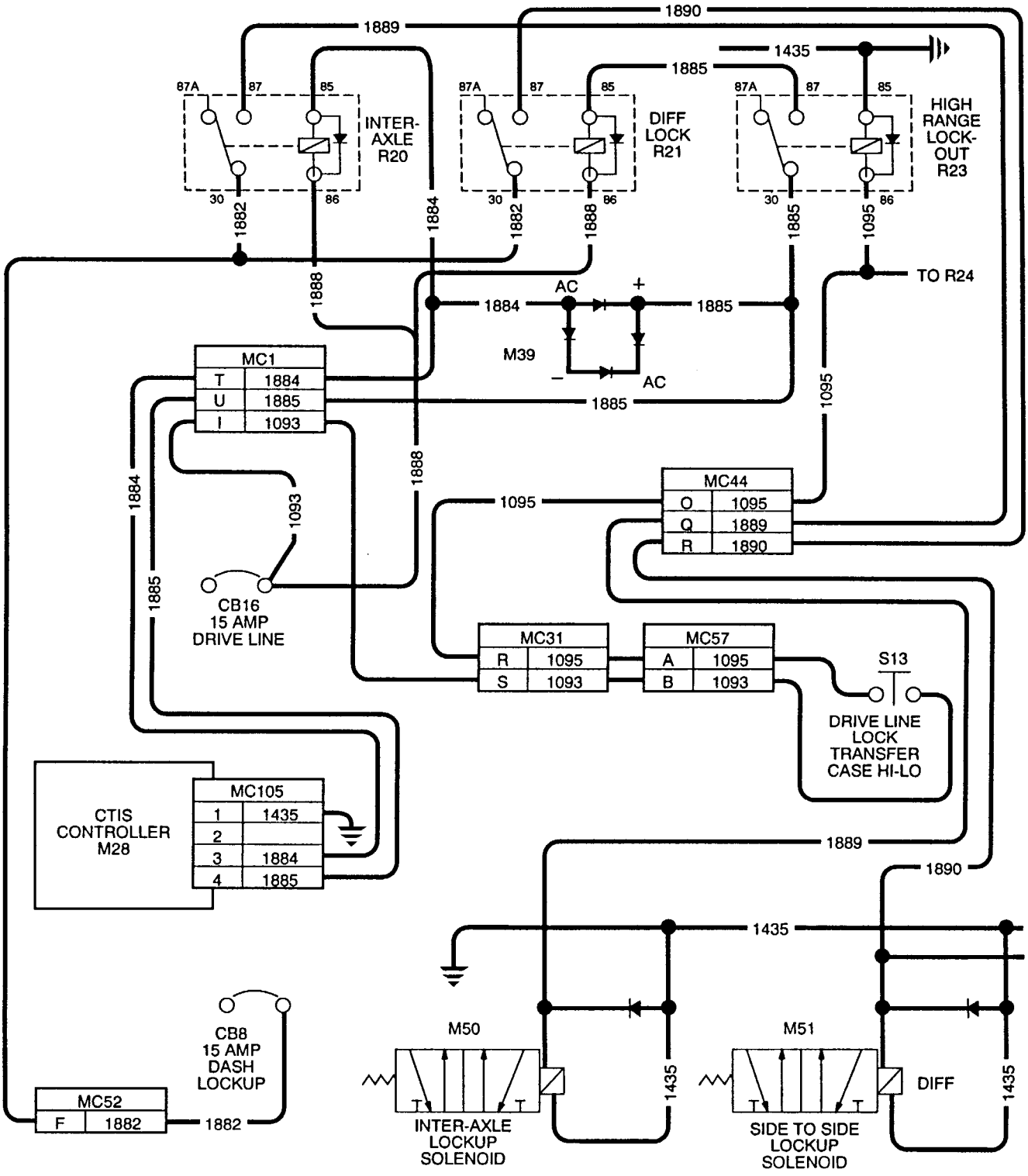


Figure 2-72. Interaxle/Differential Lockup Wiring Schematic

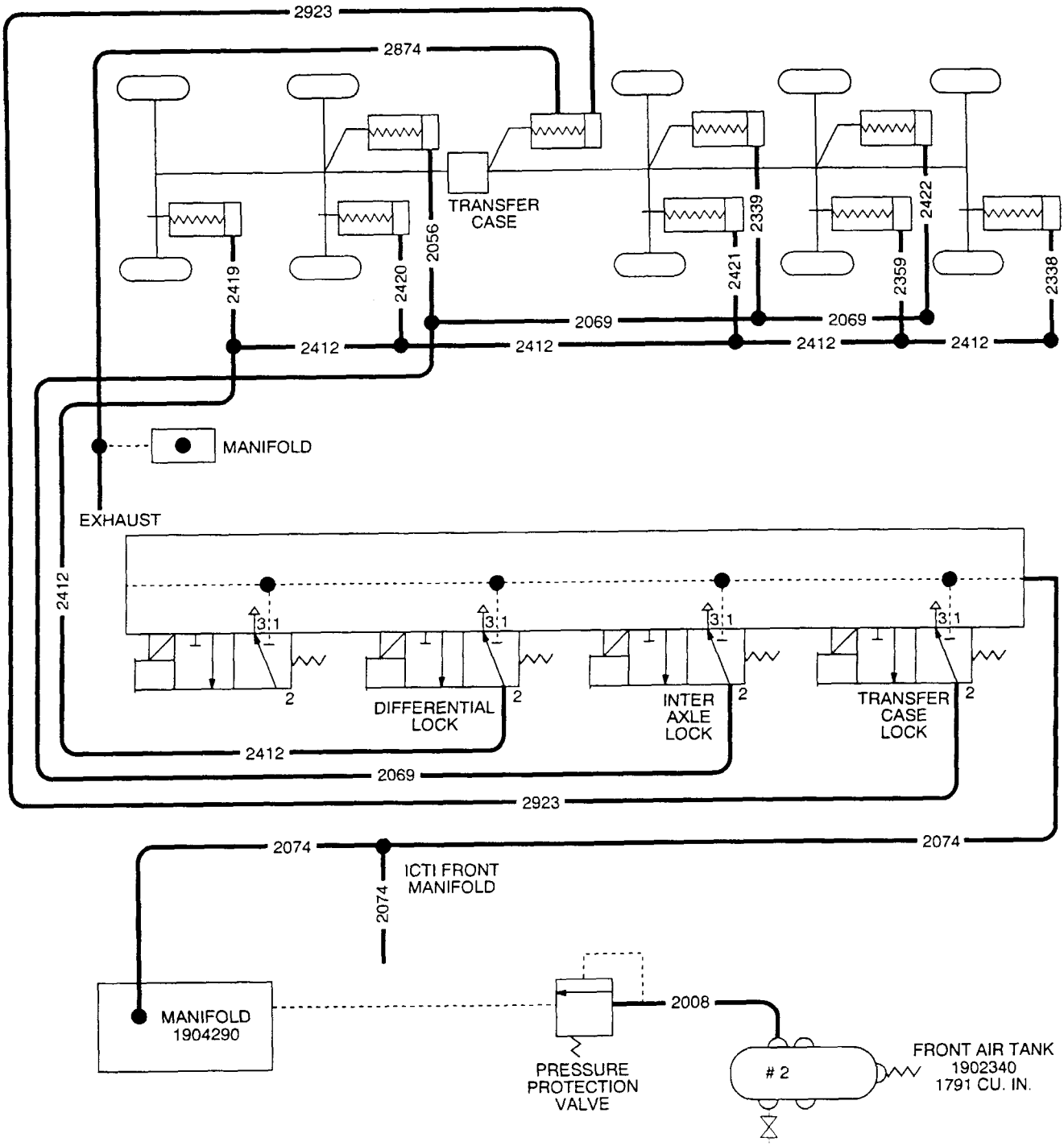


Figure 2-73. Interaxle/Differential Lockup Air Schematic

2-33. AXLES TROUBLESHOOTING (CONT).

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

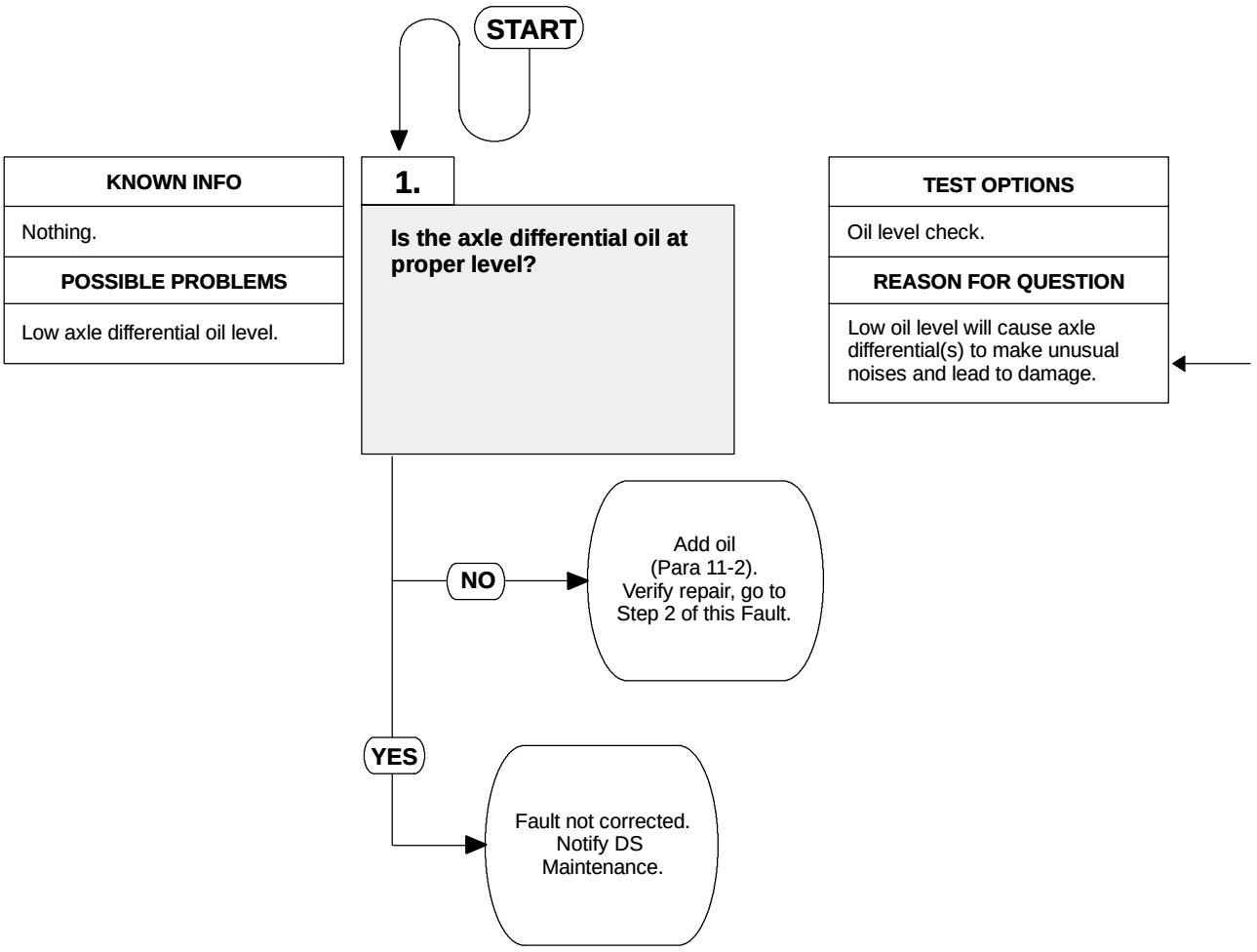
INITIAL SETUP

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

Materials/Parts
Packing, Preformed (Item 261, Appendix F)

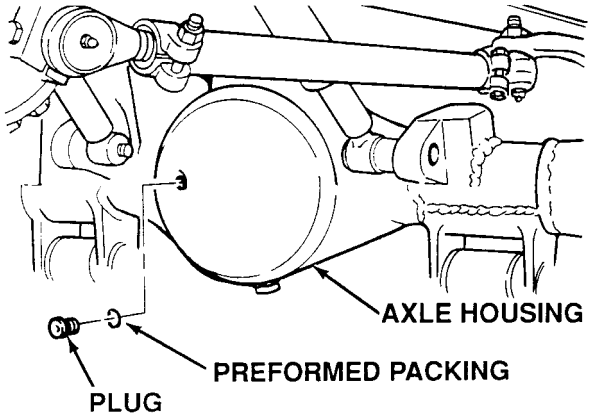
References
TM 9-2320-364-10

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

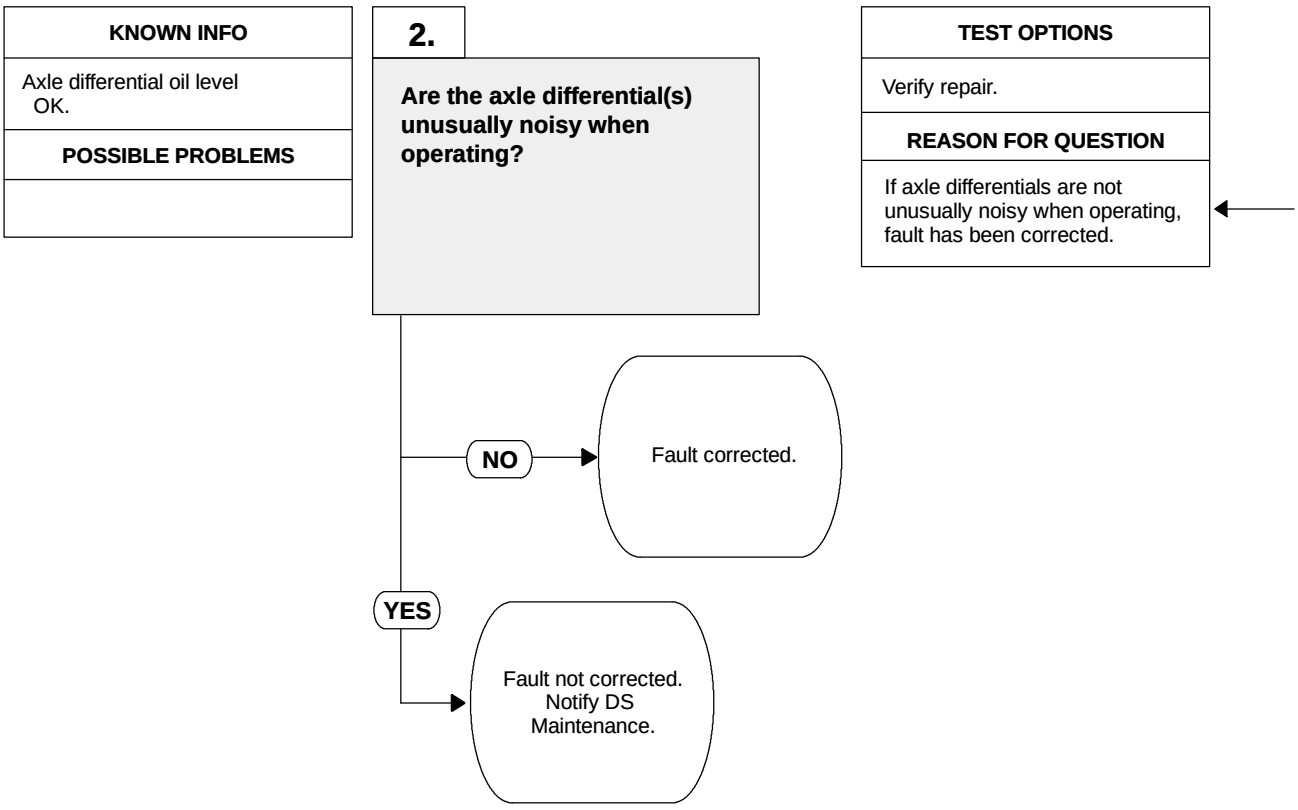


OIL LEVEL CHECK

(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.

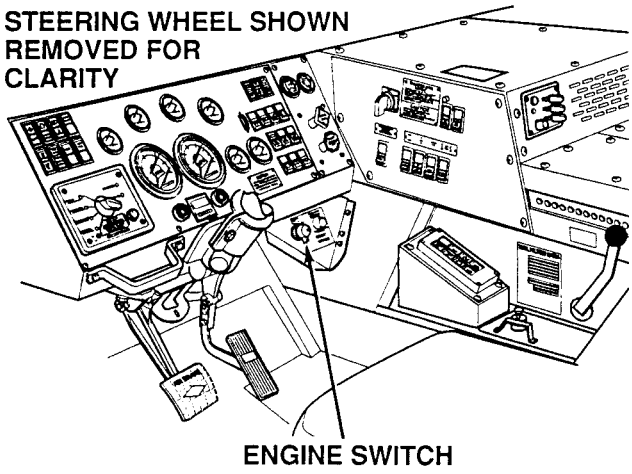


1. AXLE DIFFERENTIAL(S) UNUSUALLY NOISY WHEN OPERATING (CONT).



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.



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

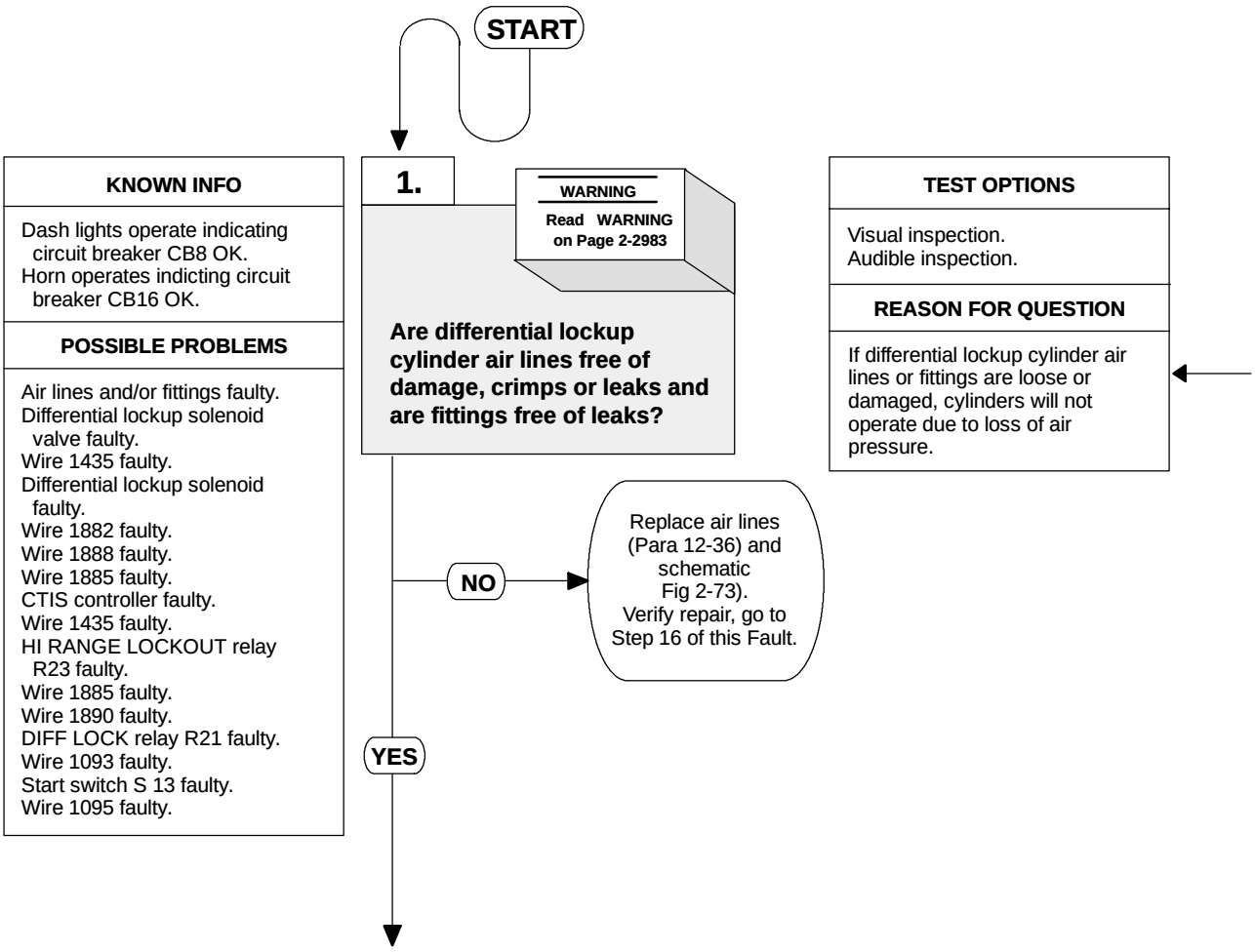
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (Optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)

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

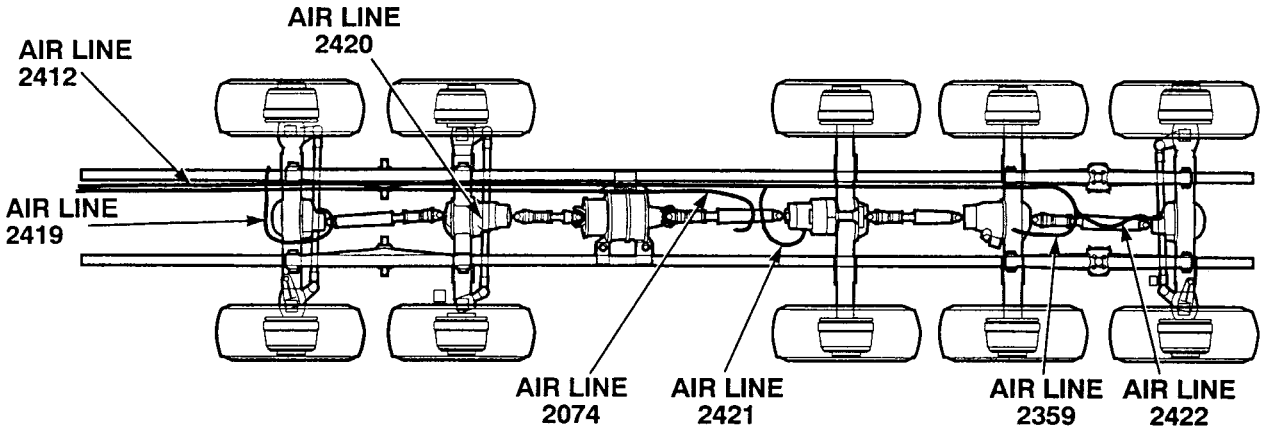
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

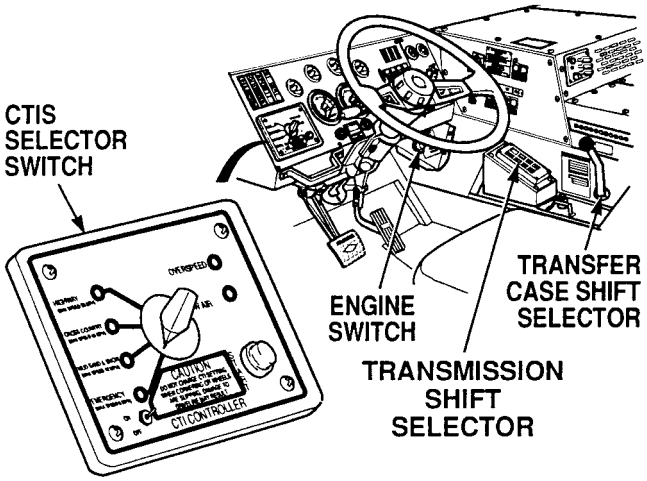
Note
Use soap solution to check for air leaks.



WARNING

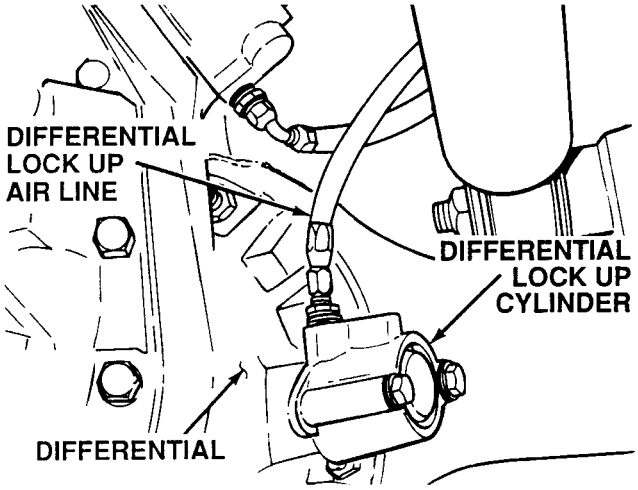
Do not stand between wheels when engine is operating. Movement of vehicle can cause injury or death to personnel.



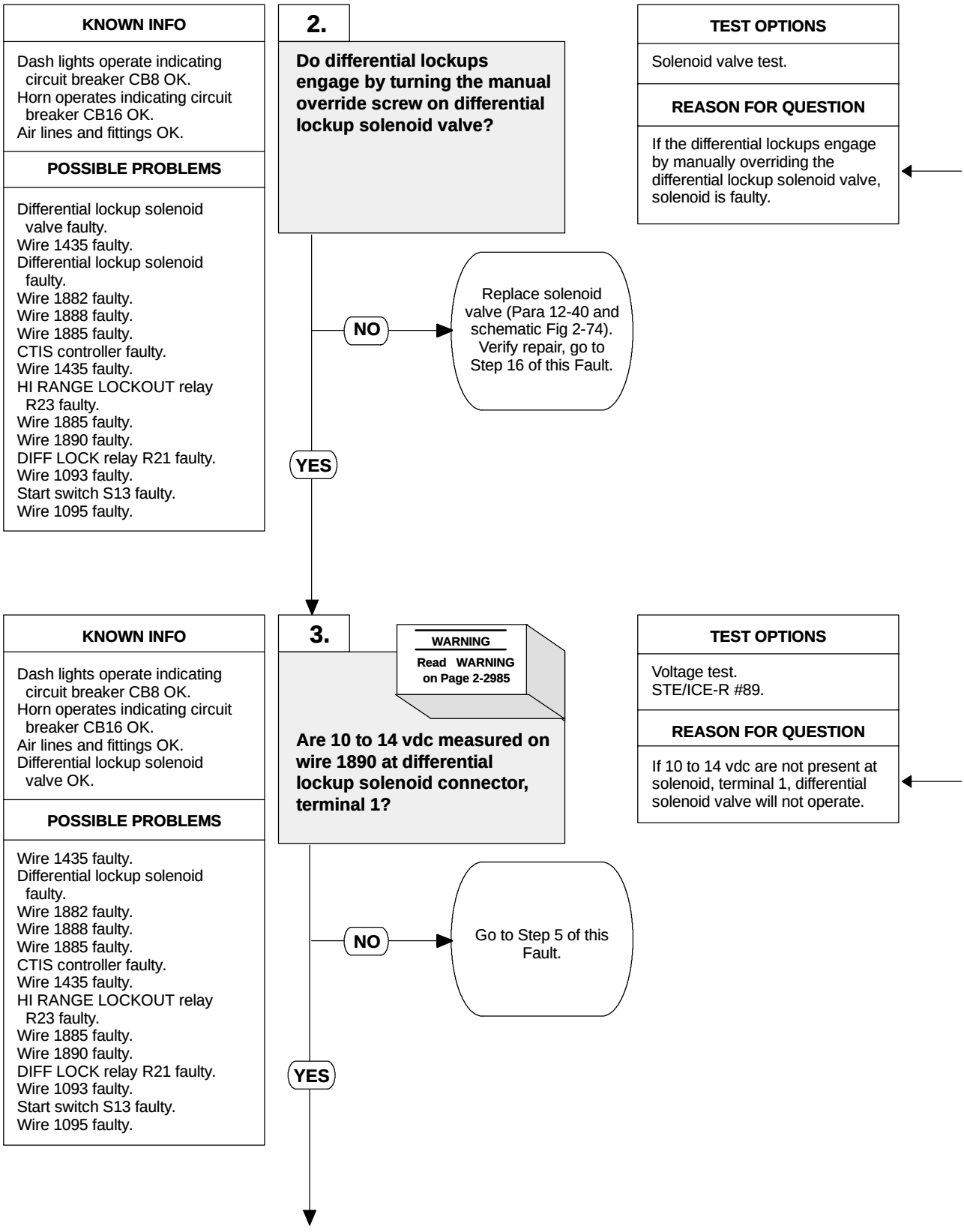


VISUAL INSPECTION

(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).
  (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).

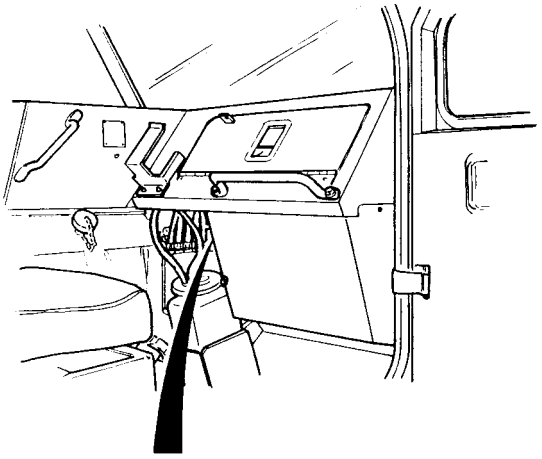


WARNING

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.

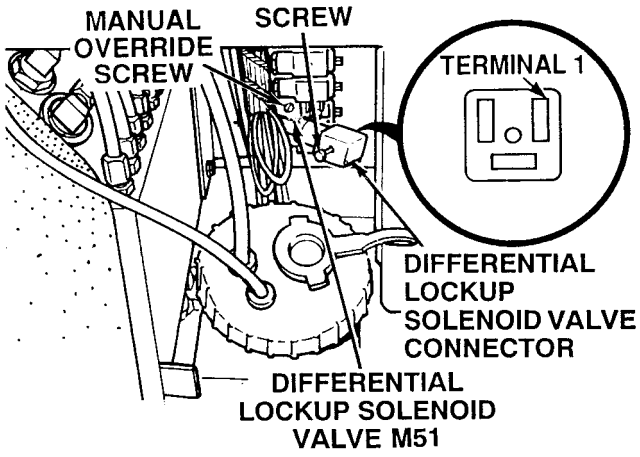
SOLENOID VALVE TEST

(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.

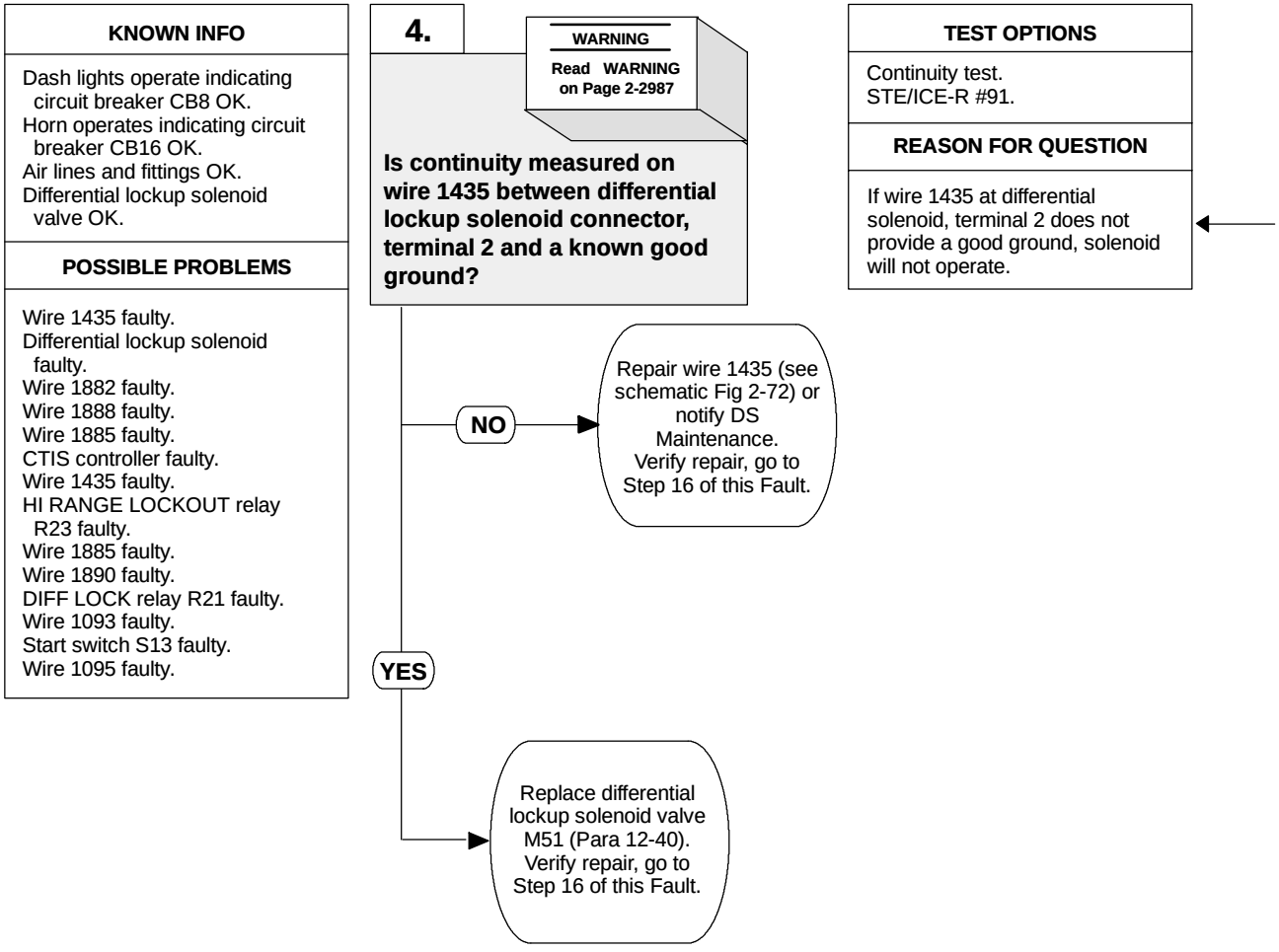


VOLTAGE TEST

(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).

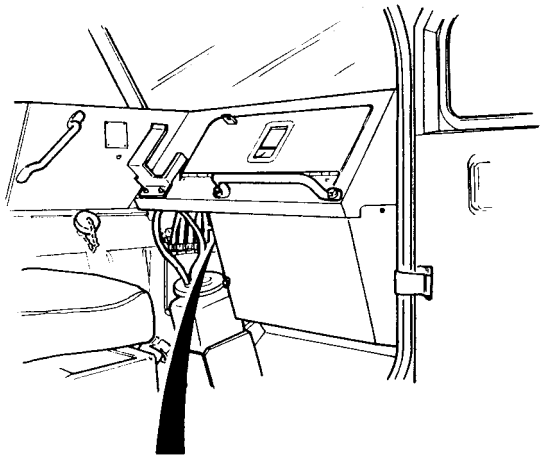


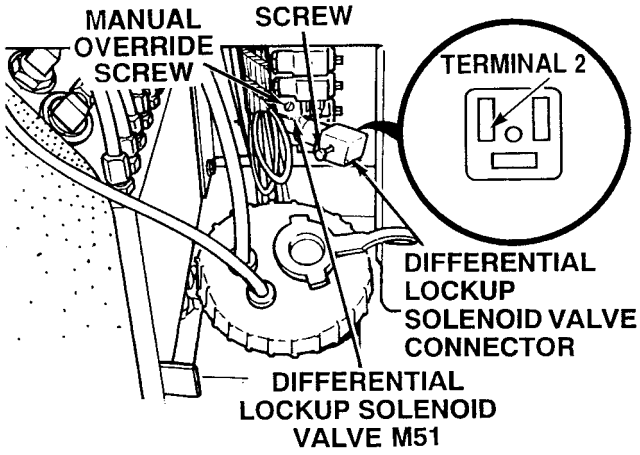
WARNING

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.

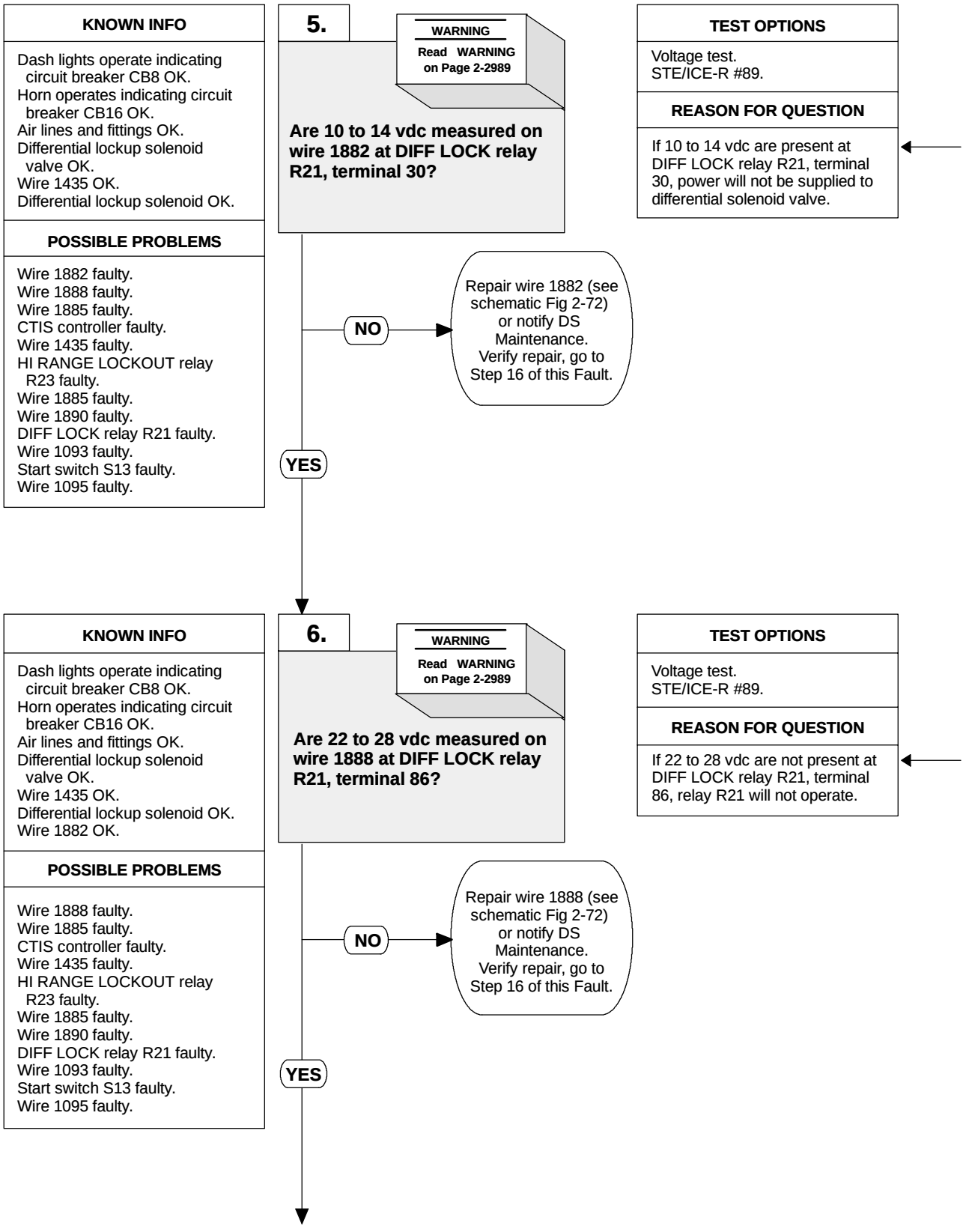
CONTINUITY TEST

(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

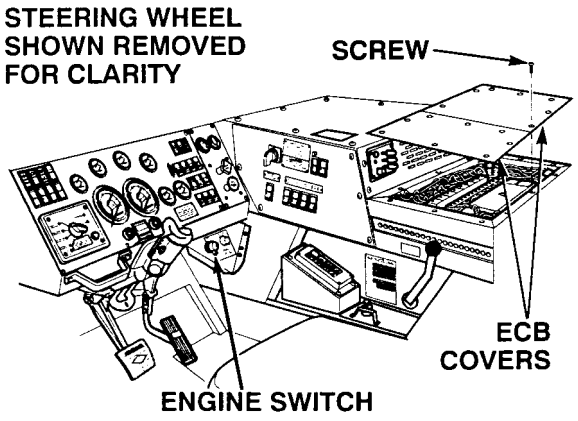
Relay test must be performed with relay partially removed.

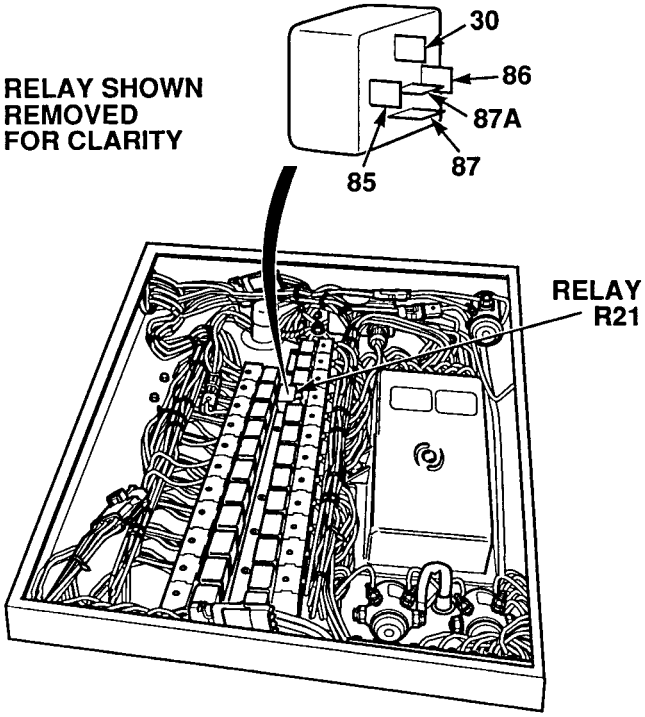
VOLTAGE TEST

(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.
  (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.

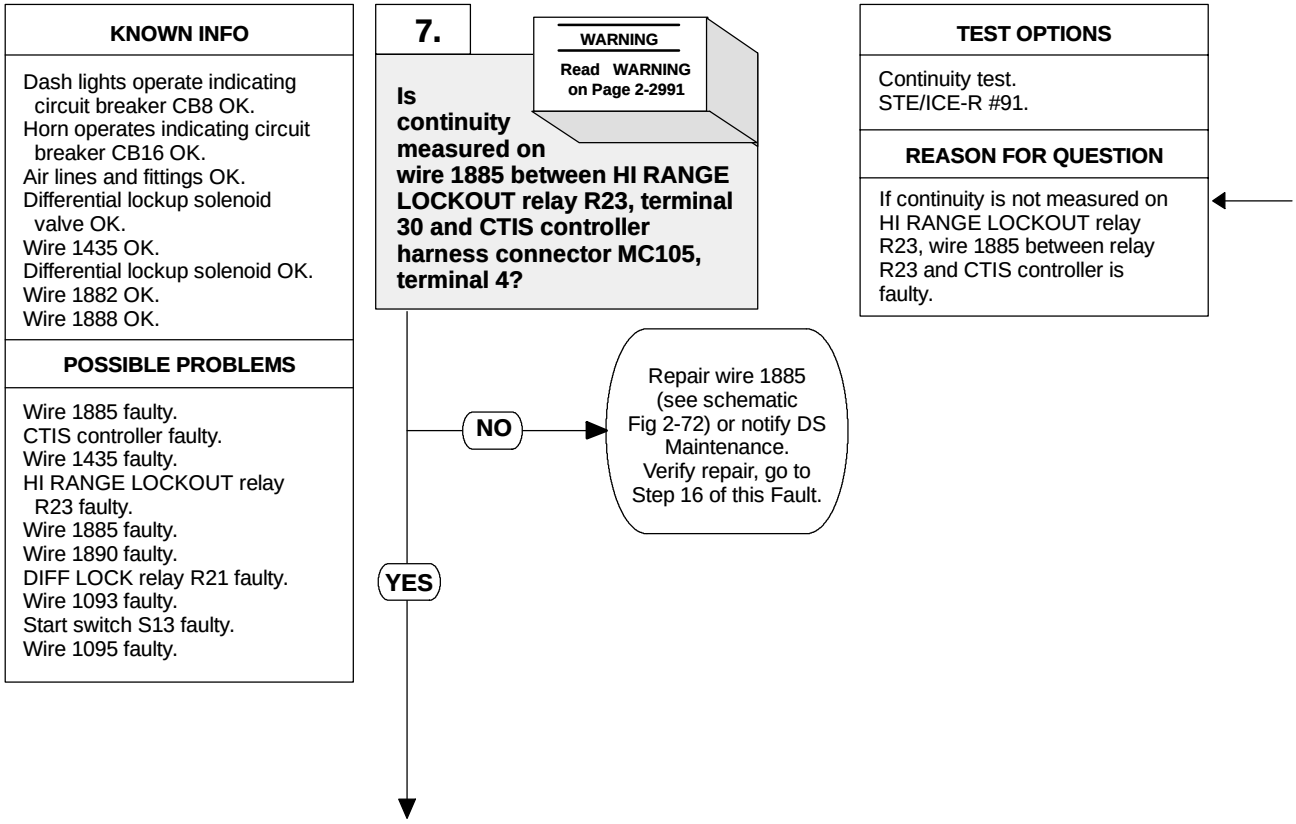
VOLTAGE TEST

(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).
  (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.





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



WARNING

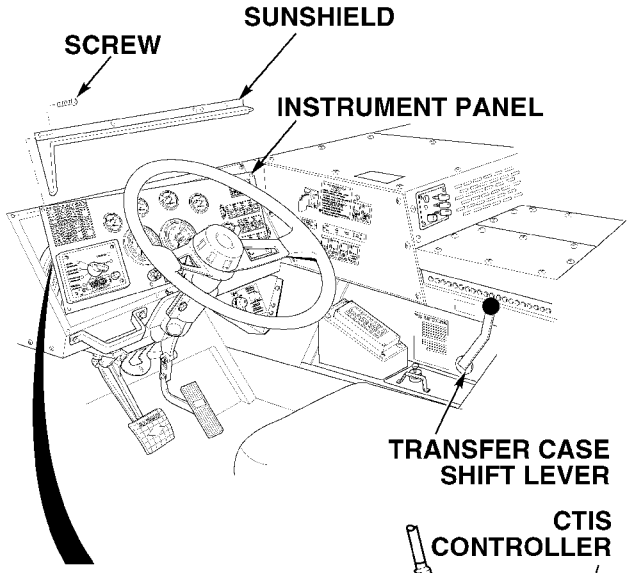
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and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

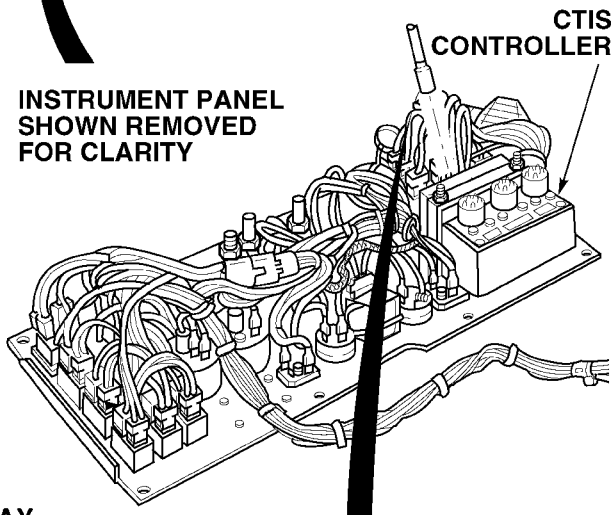
NOTE

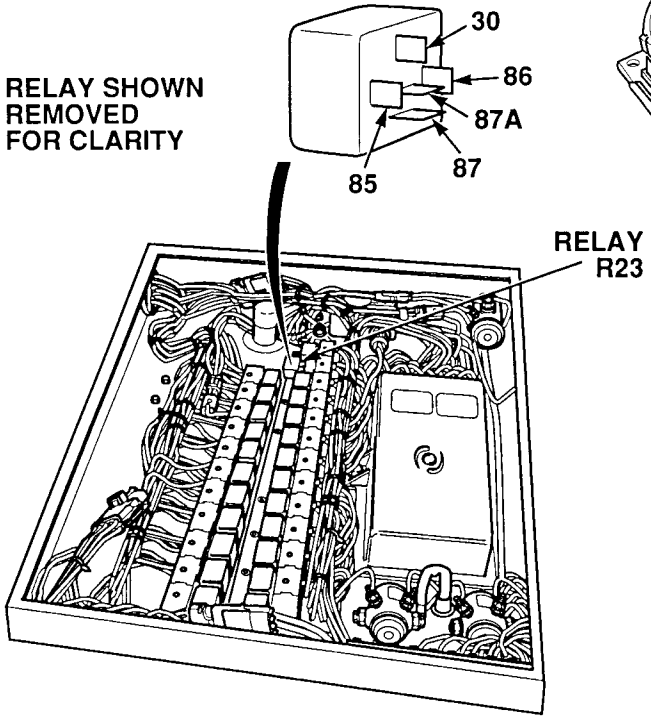
Relay test must be performed with relay partially removed.

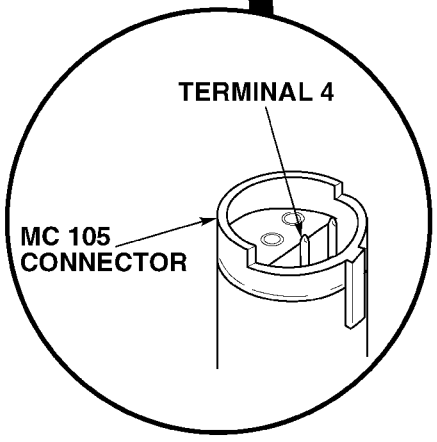
CONTINUITY TEST

(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.

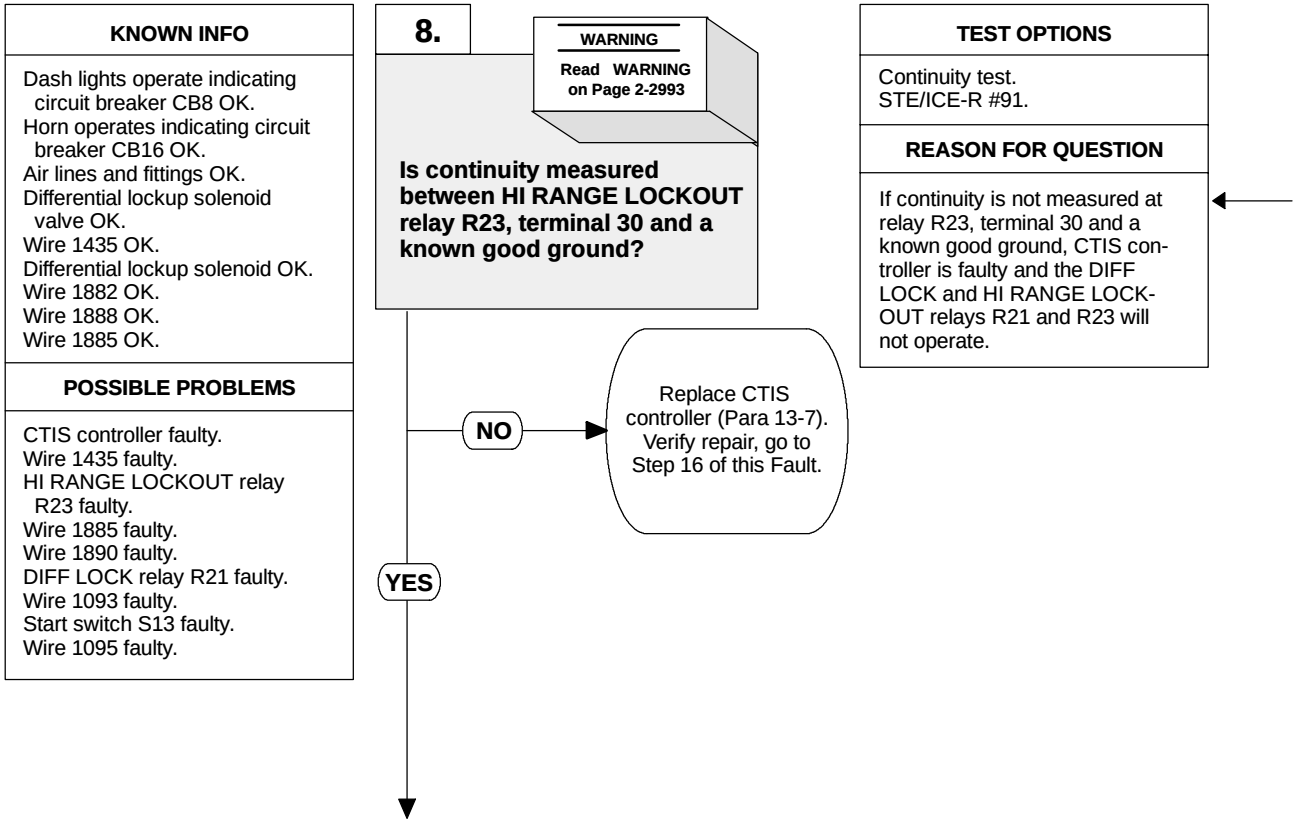








2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



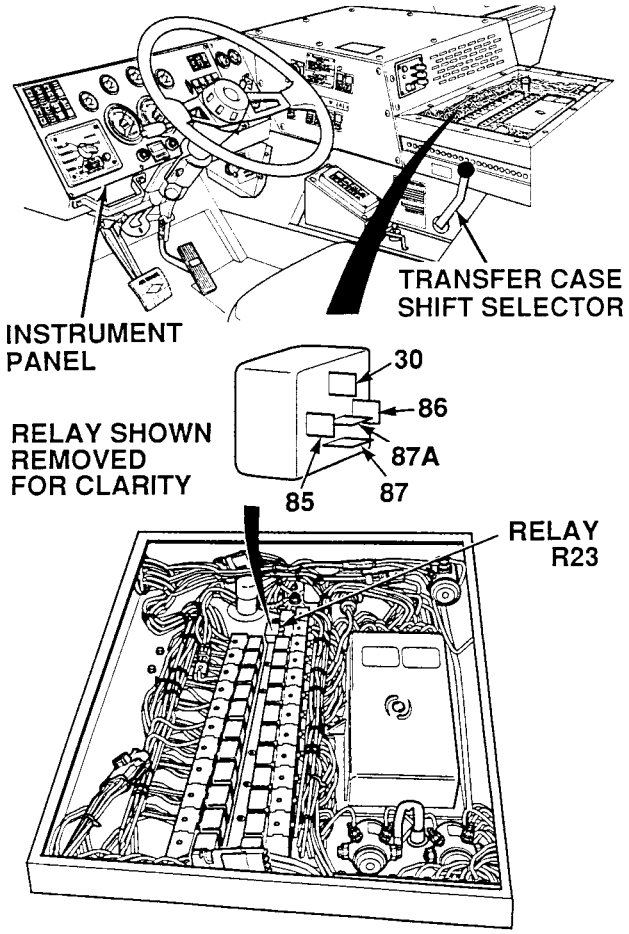
WARNING

- 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.

NO → Go to Step 14 of this Fault.

YES

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.

NO → Repair wire 1435 (see schematic Fig 2-72) or notify DS Maintenance. Verify repair, go to Step 16 of this Fault.

YES

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

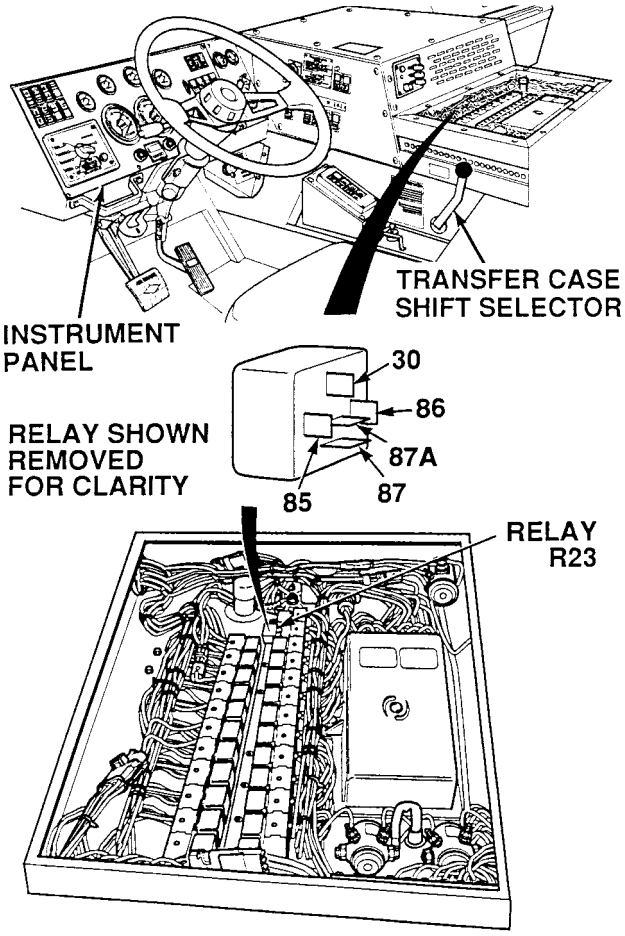
Relay test must be performed with relay partially installed.

VOLTAGE TEST

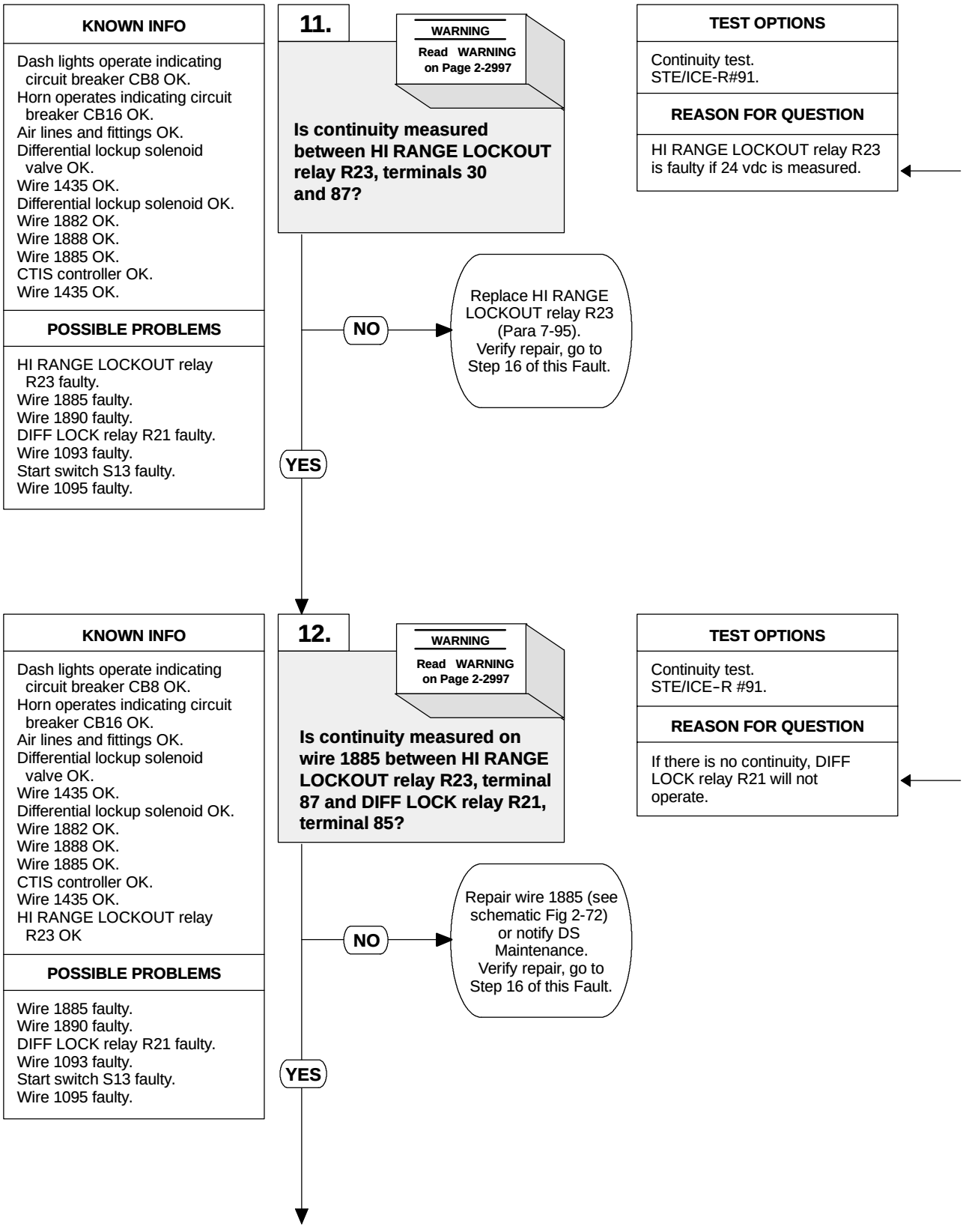
(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to HI RANGE LOCKOUT relay R23, terminal 86.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Step (5) below 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

(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?
  (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.

CONTINUITY TEST

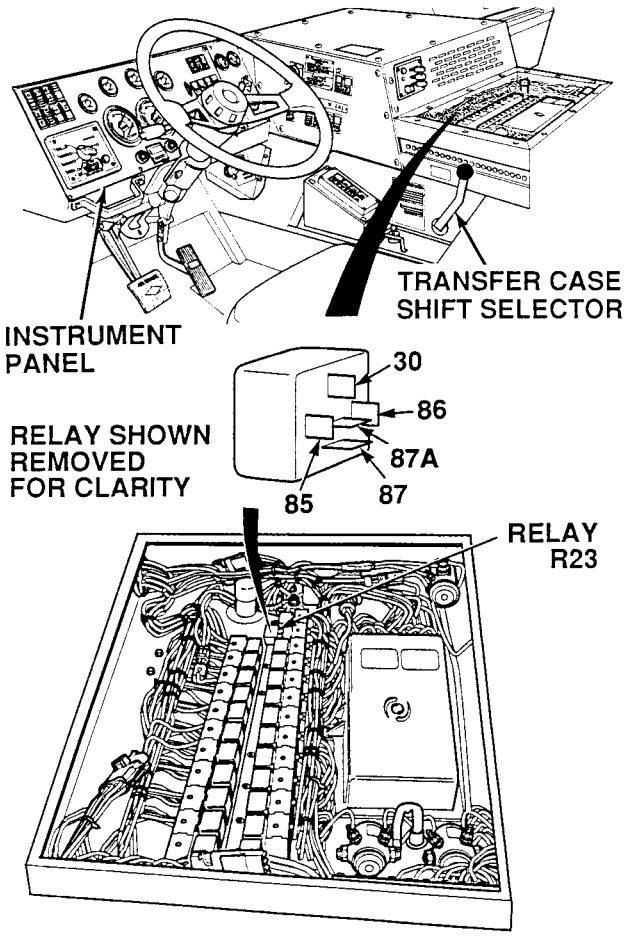
(1) Remove INTERAXLE relay R21.
(2) Turn ON ENGINE switch (TM 9-2320-364-10).
(3) Is there continuity between terminals 30 and 87 on HI RANGE LOCKOUT relay R23?
  (a) If there is no continuity, perform Steps (4) and (5) below and replace HI RANGE LOCKOUT relay R23 (Para 7-95).
  (b) If there is continuity,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

NOTE

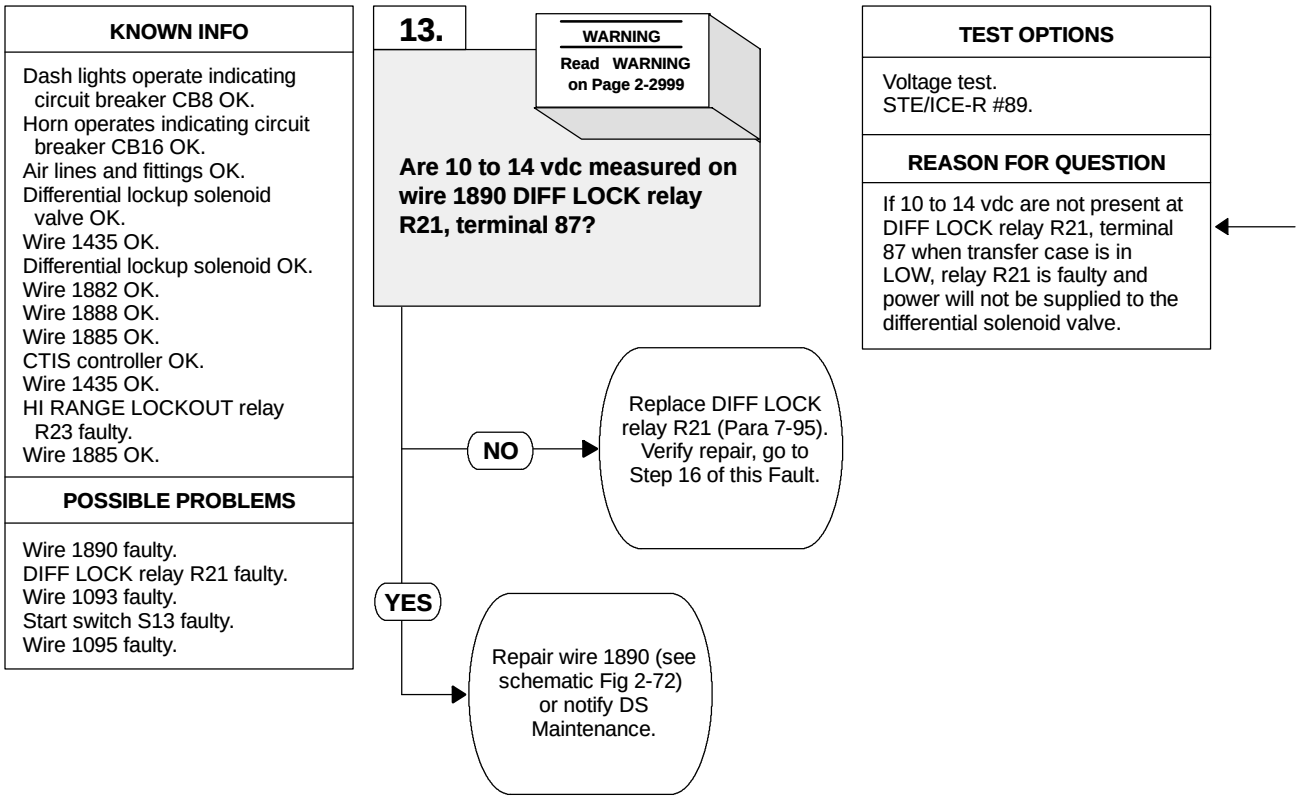
Relay test must be performed with relay partially removed.

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).

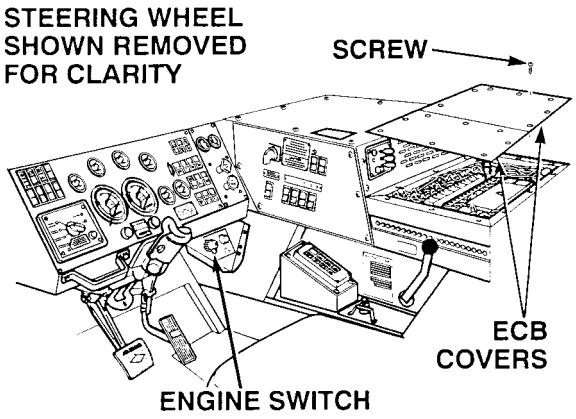


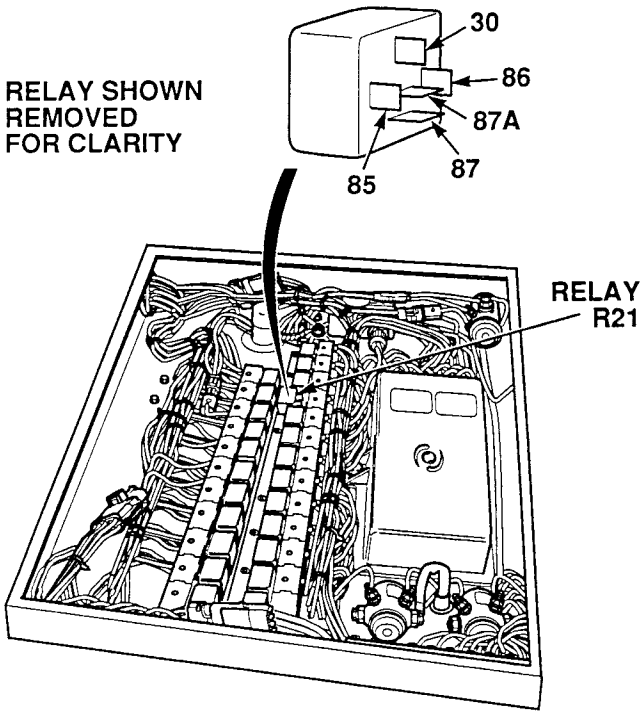
WARNING

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.

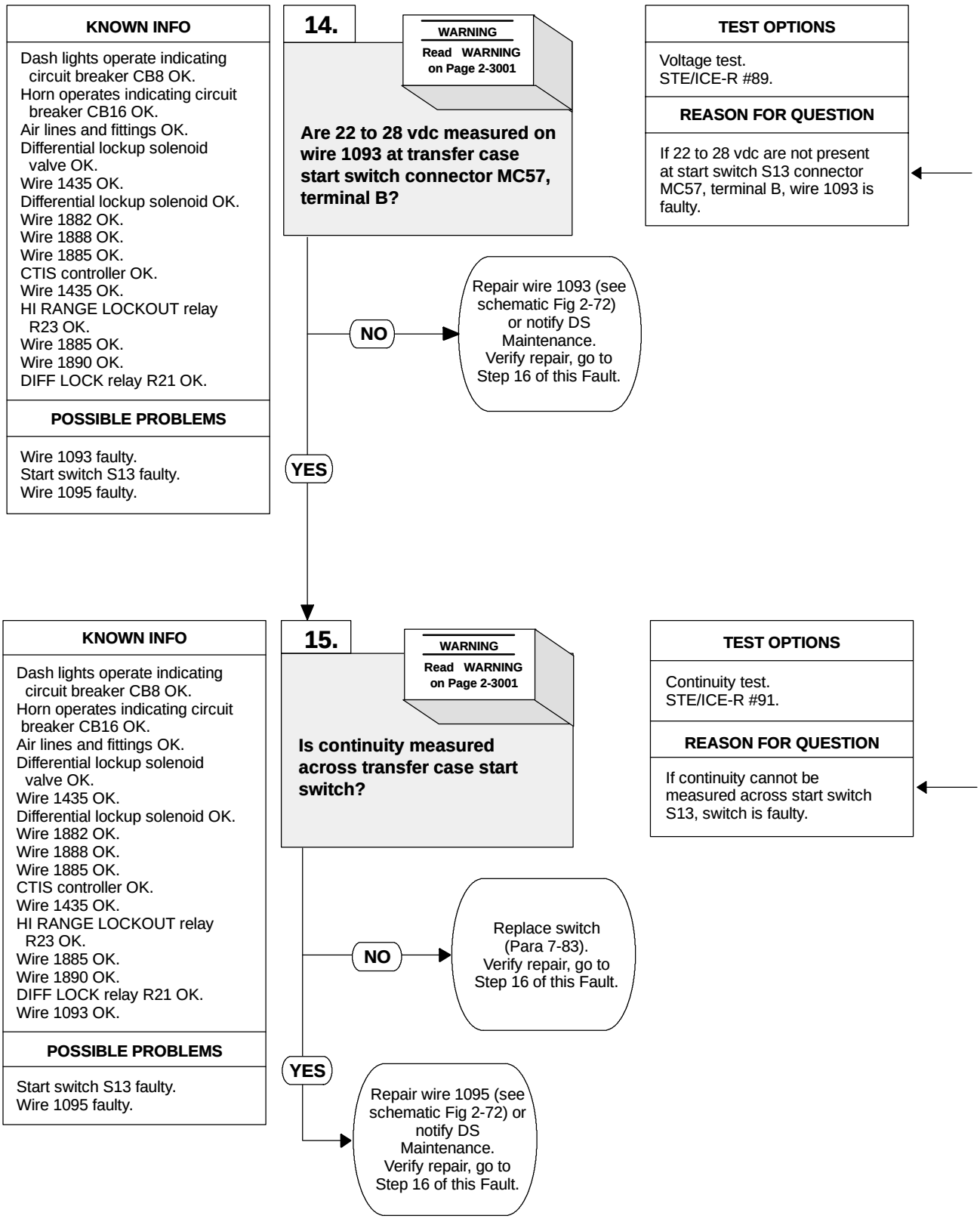
VOLTAGE TEST

(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.

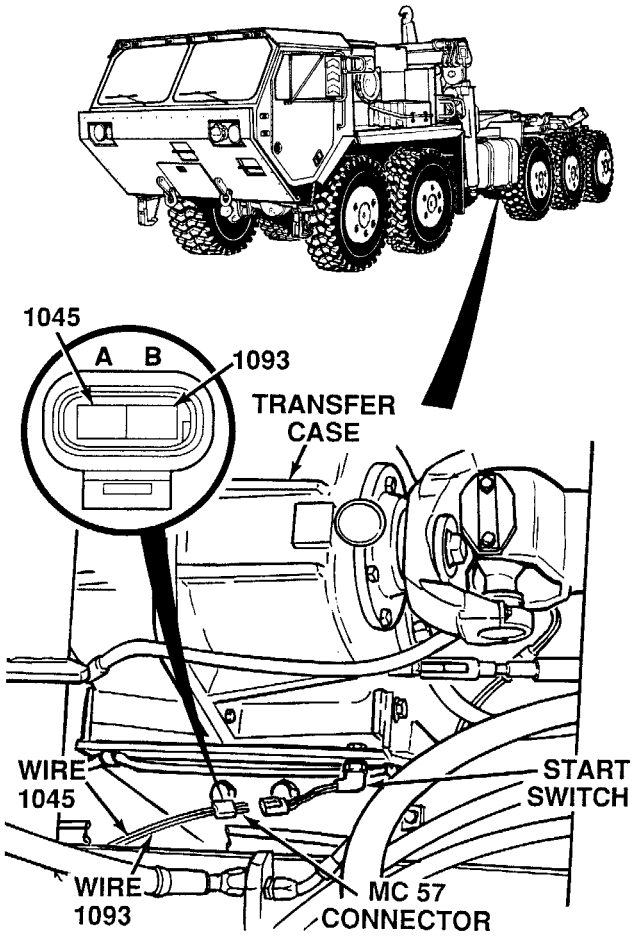
NOTE
Deleted.

VOLTAGE TEST

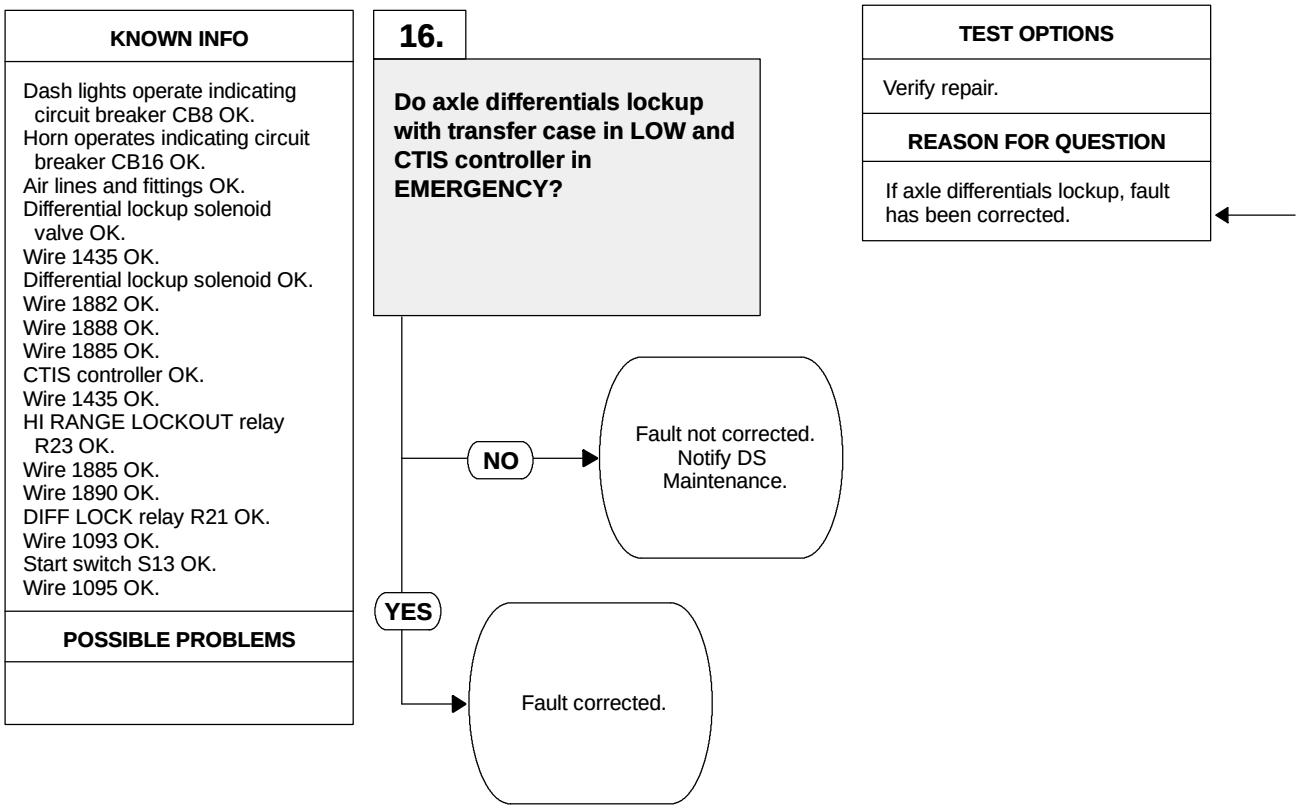
(1) Disconnect transfer case start switch.
(2) Connect positive (+) multimeter lead to transfer case start switch harness connector MC57, terminal B.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, turn 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

(1) Set multimeter select switch to ohms.
(2) Is there continuity between terminal A and terminal B on transfer case start switch connector.
  (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).

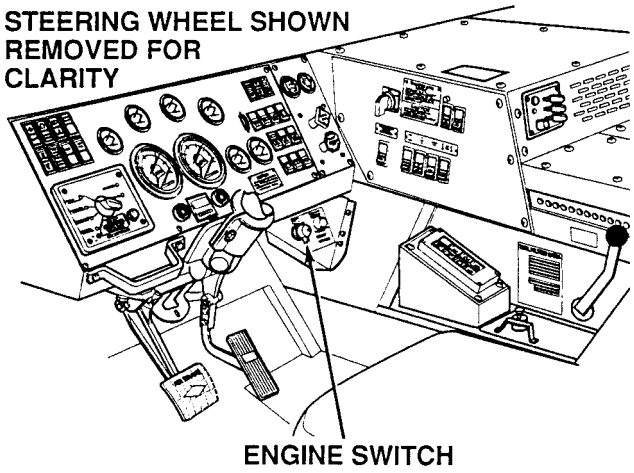


NOTE

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.



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)

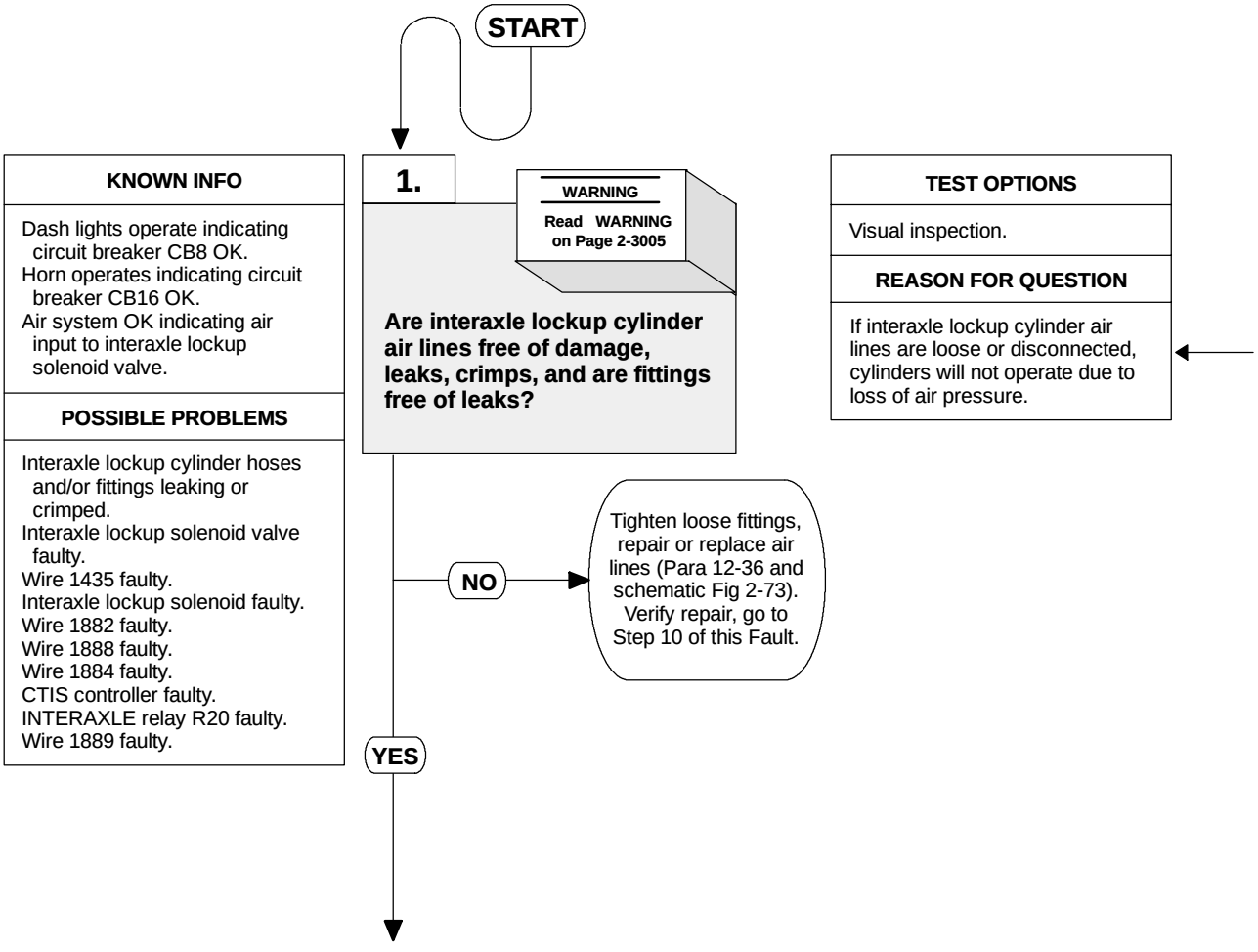
Materials/Parts
Adhesive (Item 9, Appendix C)
Solution, Soap (Item 86, Appendix C)

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)

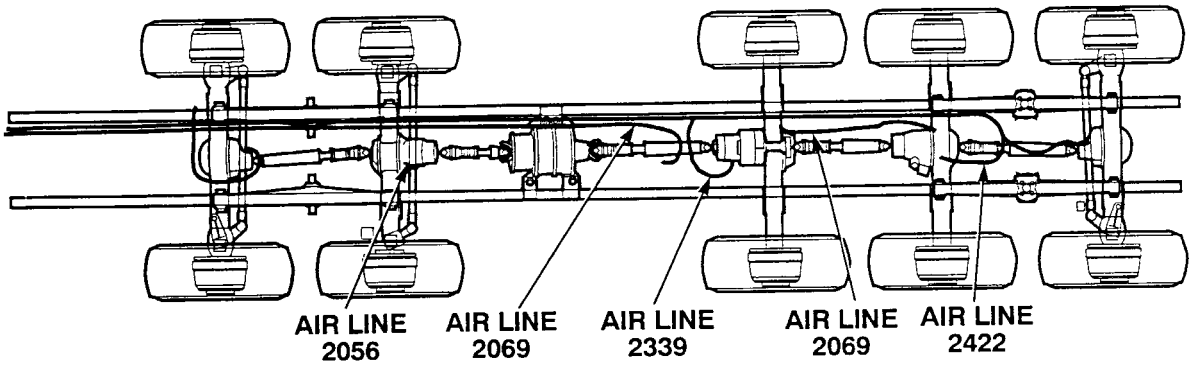
NOTE

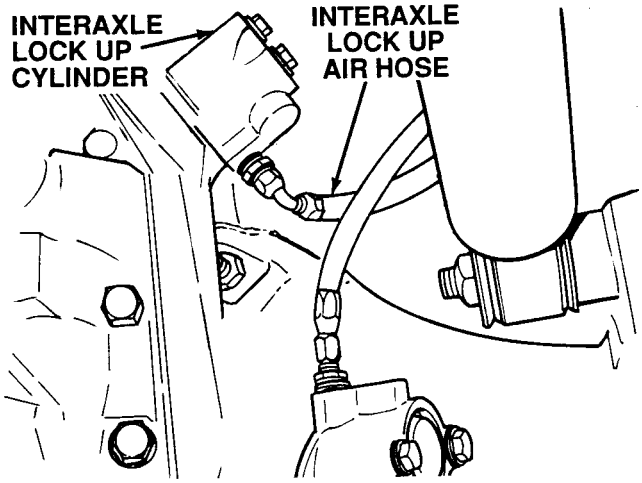
Soap and water solution will be used to visually check for leaks.



WARNING

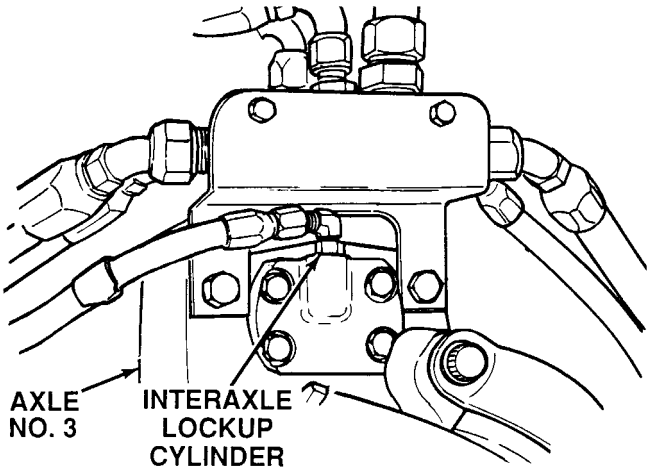
Do not stand between wheels when engine is operating. Movement of vehicle can cause injury or death to personnel.



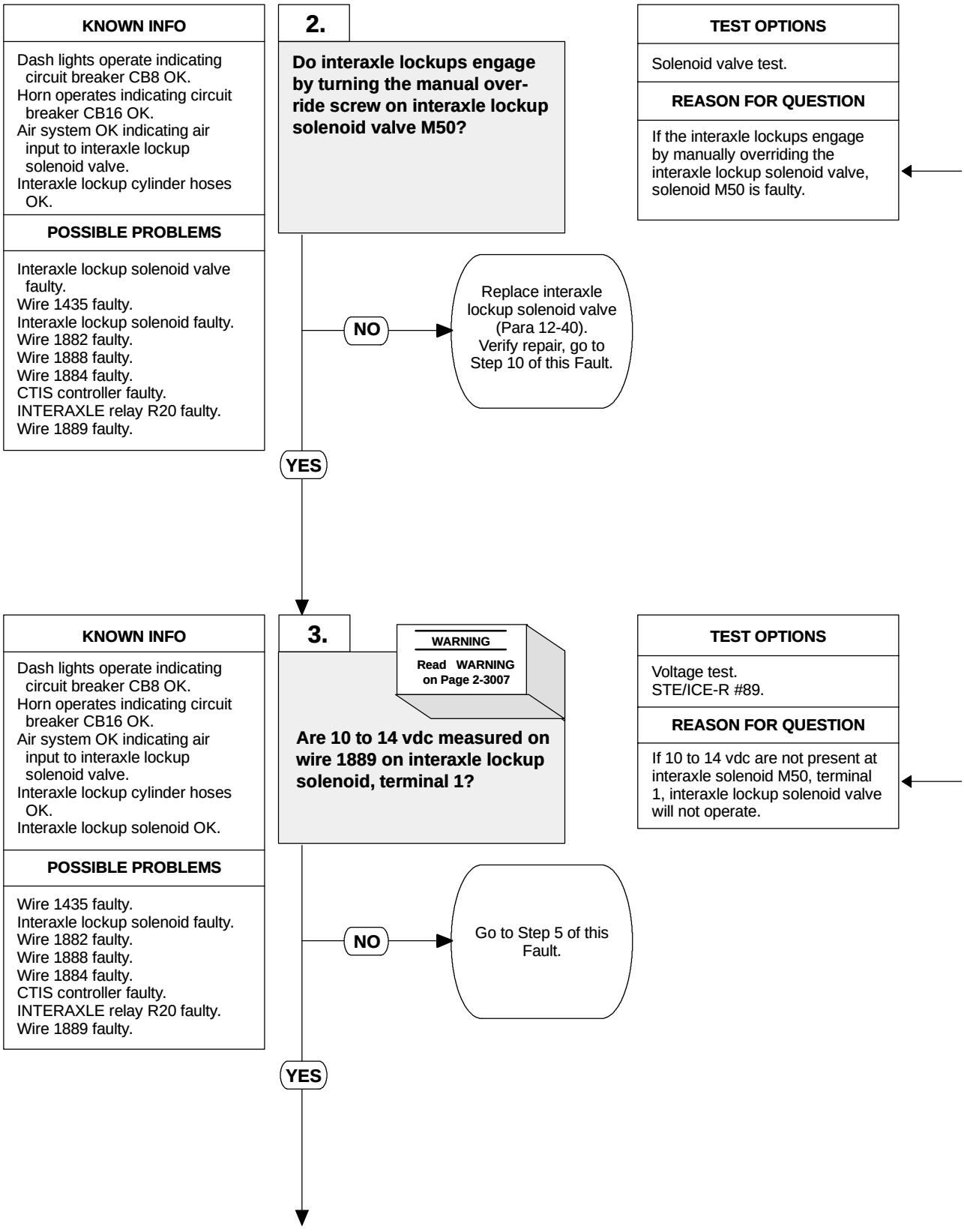


VISUAL INSPECTION

(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).

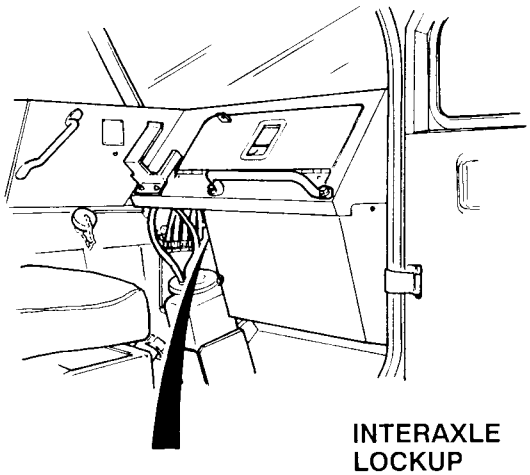


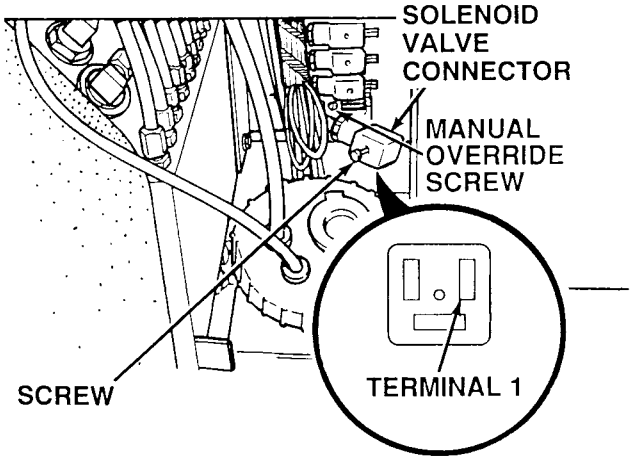
WARNING

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

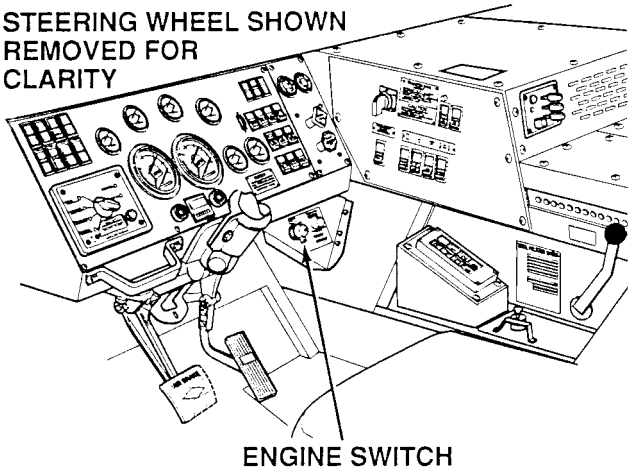
(1) Loosen screw and disconnect connector.
(2) Turn solenoid valve M50 manual override screw to the left and listen for air passing through valve.
  (a) If air does not pass through valve, replace interaxle lockup solenoid valve (Para 12-40).
  (b) If air passes through valve, valve is OK.
(3) Turn solenoid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



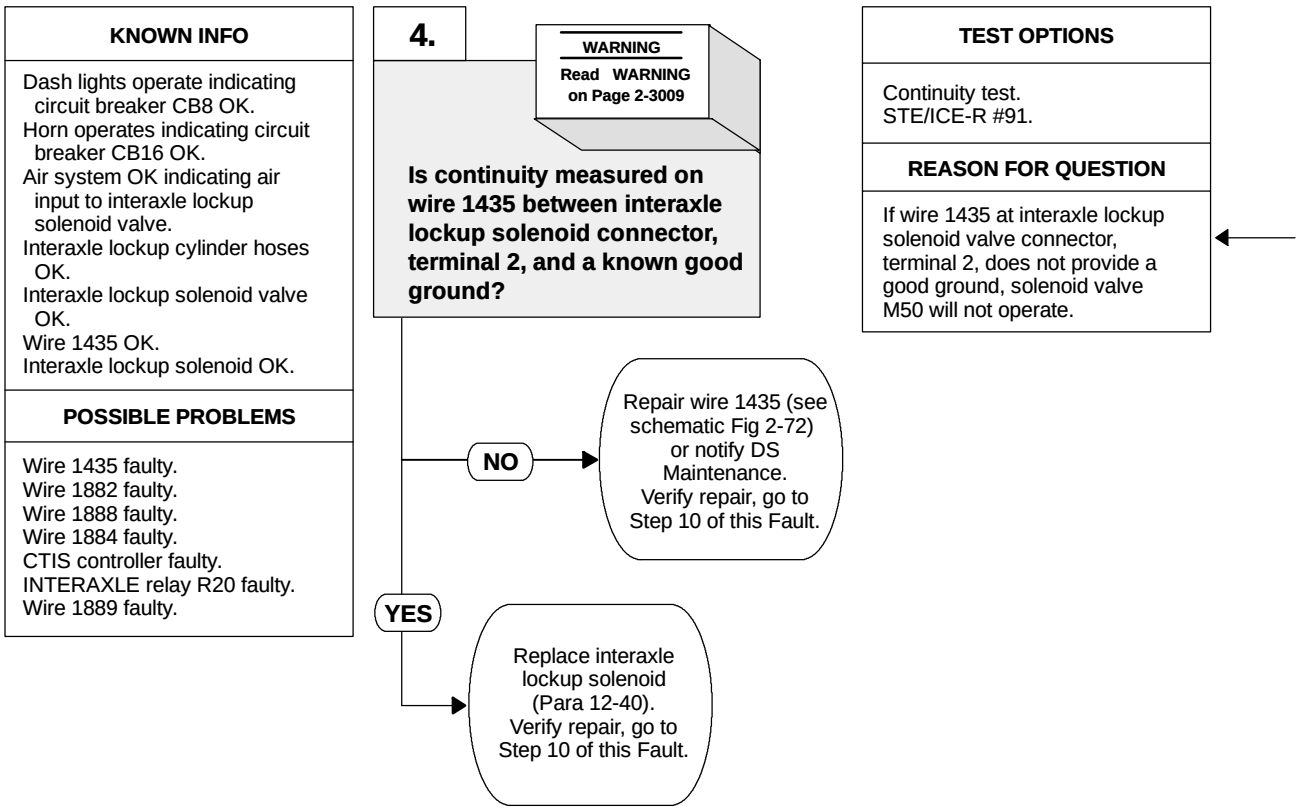


VOLTAGE TEST

(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.



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

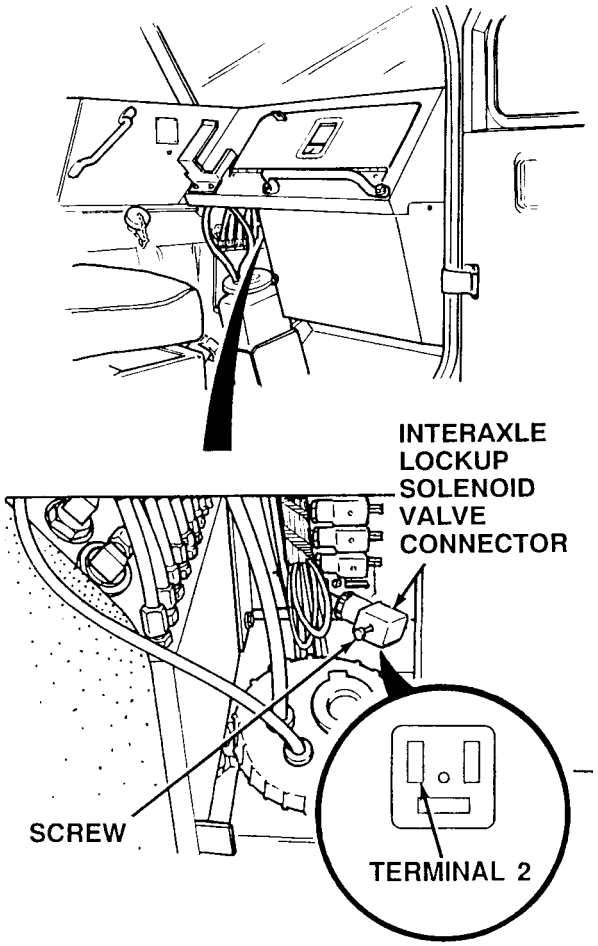


WARNING

- 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.



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

KNOWN INFO

Dash lights operate indicating circuit breaker CB8 OK.
Horn operates indicating circuit breaker CB16 OK.
Air system OK indicating air input to interaxle lockup solenoid valve.
Interaxle lockup cylinder hoses OK.
Interaxle lockup solenoid valve OK.
Wire 1435 OK.
Interaxle lockup solenoid OK.

POSSIBLE PROBLEMS

Wire 1882 faulty.
Wire 1888 faulty.
Wire 1884 faulty.
CTIS controller faulty.
INTERAXLE relay R20 faulty.
Wire 1889 faulty.

5.

WARNING
Read WARNING on Page 2-3011

Are 10 to 14 vdc measured on wire 1882 at INTERAXLE relay R20, terminal 30?

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If 10 to 14 vdc are not present at INTERAXLE relay R20, terminal 30, wire 1882 is faulty and power to open solenoid valve will not be available.

NO → Repair wire 1882 (see schematic Fig 2-72) or notify DS Maintenance. Verify repair, go to Step 10 of this Fault.

YES

KNOWN INFO

Dash lights operate indicating circuit breaker CB8 OK.
Horn operates indicating circuit breaker CB16 OK.
Air system OK indicating air input to interaxle lockup solenoid valve.
Interaxle lockup cylinder hoses OK.
Interaxle lockup solenoid valve OK.
Wire 1435 OK.
Interaxle lockup solenoid OK.
Wire 1882 OK.

POSSIBLE PROBLEMS

Wire 1888 faulty.
Wire 1884 faulty.
CTIS controller faulty.
INTERAXLE relay R20 faulty.
Wire 1889 faulty.

6.

Are 22 to 28 vdc measured on wire 1888 at INTERAXLE relay R20, terminal 86?

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If 22 to 28 vdc are not present at INTERAXLE relay R20, terminal 86, relay R20 will not operate.

NO → Repair wire 1888 (see schematic Fig 2-72) or notify DS Maintenance. Verify repair, go to Step 10 of this Fault.

YES

WARNING

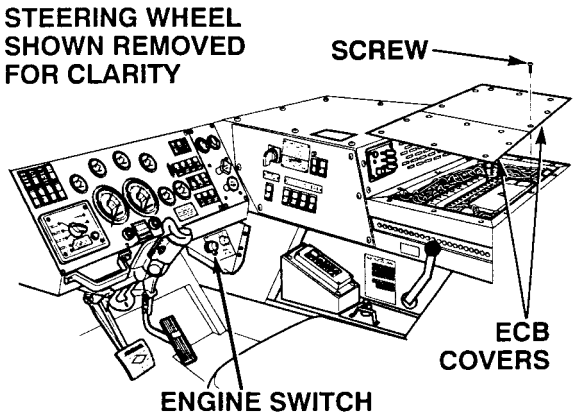
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and 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.

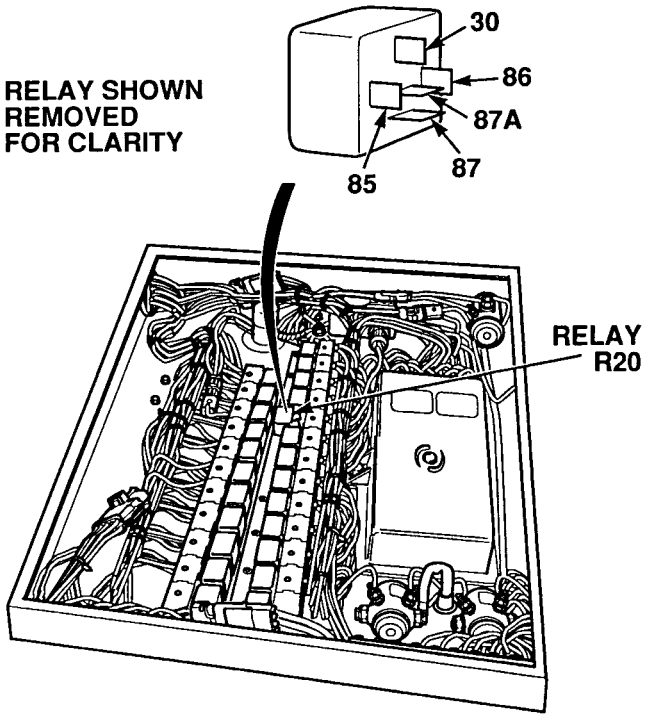
VOLTAGE TEST

(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.



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).

KNOWN INFO

Dash lights operate indicating circuit breaker CB8 OK.
Horn operates indicating circuit breaker CB16 OK.
Air system OK indicating air input to interaxle lockup solenoid valve.
Interaxle lockup cylinder hoses OK.
Interaxle lockup solenoid valve OK.
Wire 1435 OK.
Interaxle lockup solenoid OK.
Wire 1882 OK.
Wire 1888 OK.

POSSIBLE PROBLEMS

Wire 1884 faulty.
CTIS controller faulty.
INTERAXLE relay R20 faulty.
Wire 1889 faulty.

7.

WARNING

Read WARNING on Page 2-3013

Is continuity measured on wire 1884 between CTIS controller connector MC105, terminal 3 and INTERAXLE relay R20, terminal 85?

NO → Repair wire 1884 (see schematic Fig 2-72) or notify DS Maintenance. Verify repair, go to Step 10 of this Fault.

YES

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If there is no continuity, interaxle lockup will not operate.

WARNING

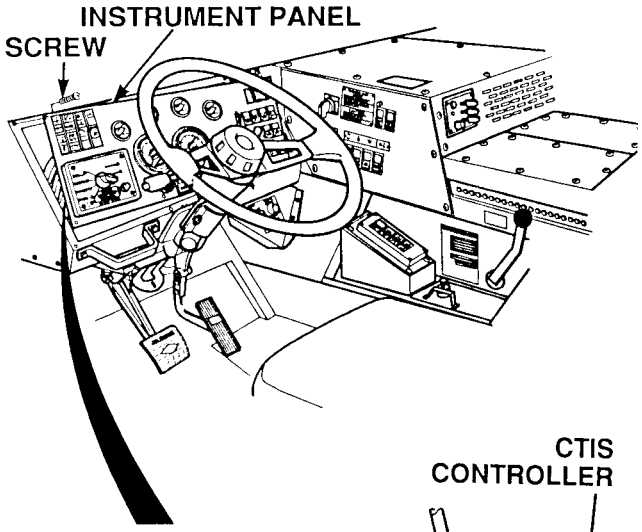
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and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

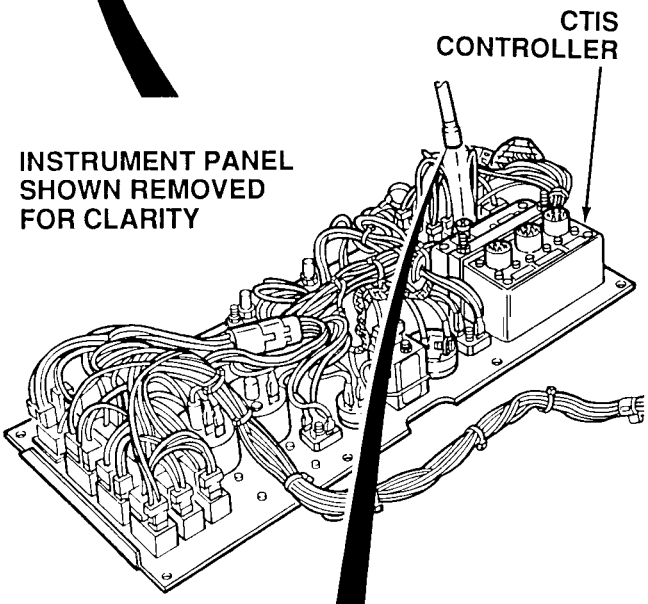
NOTE

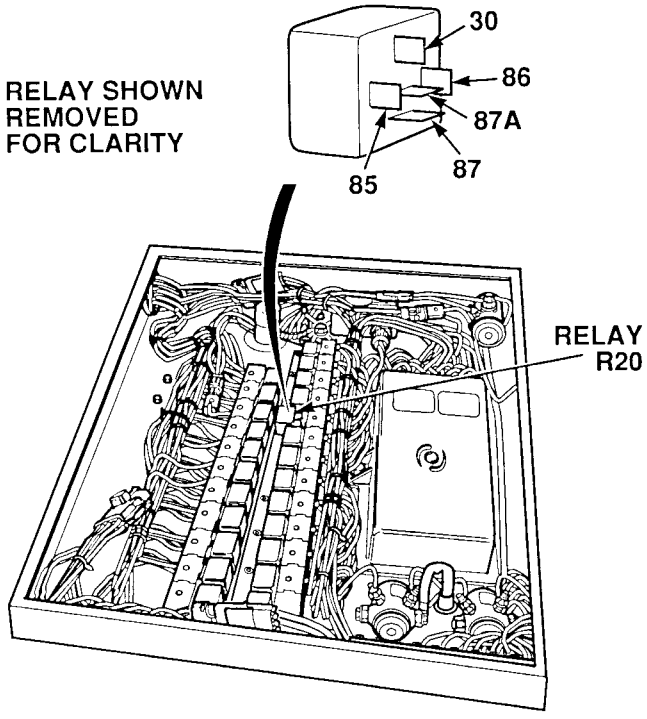
Relay test must be performed with relay partially removed.

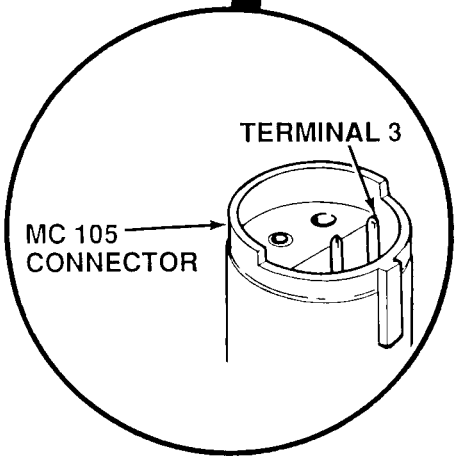
CONTINUITY TEST

(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.

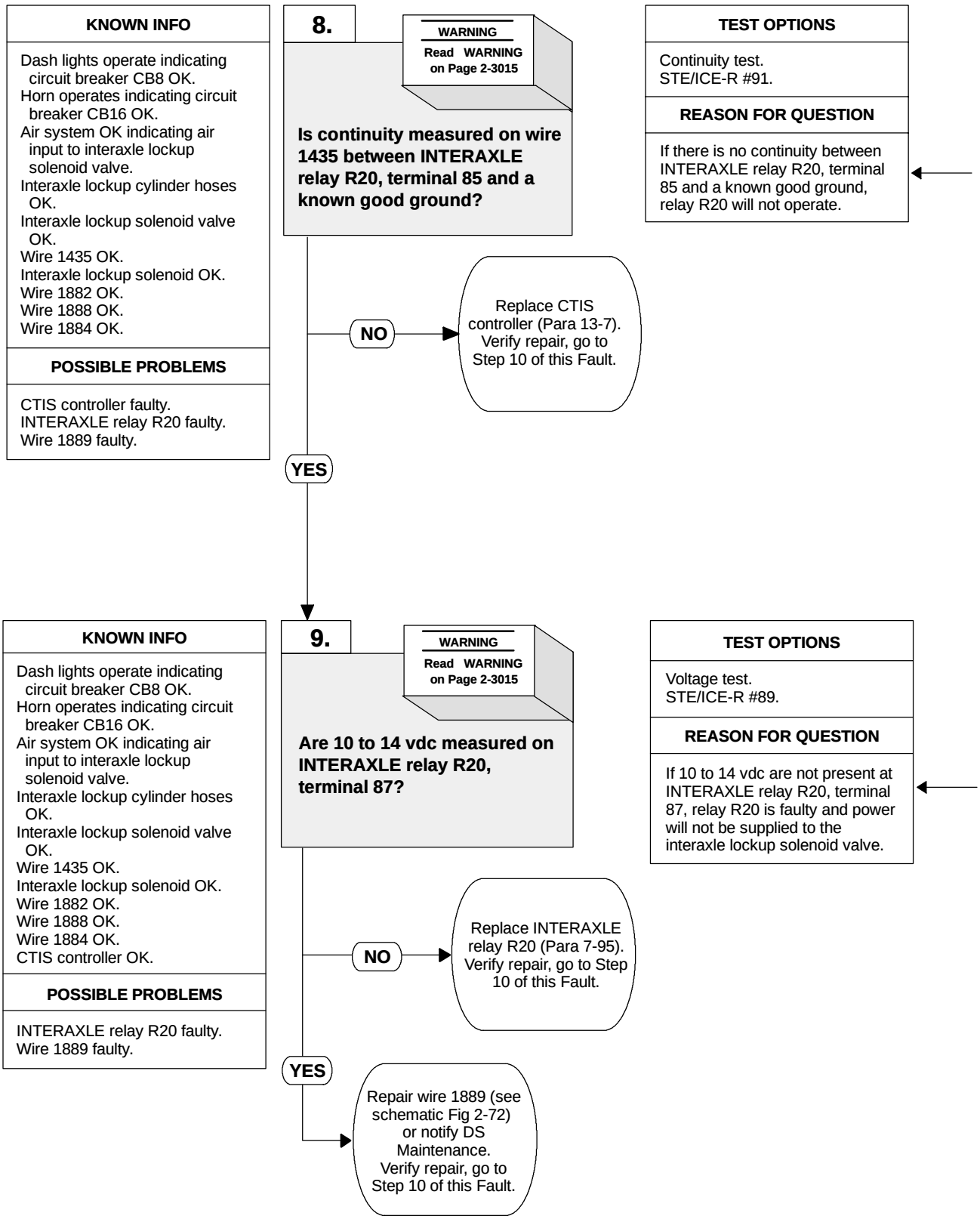








3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).



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.

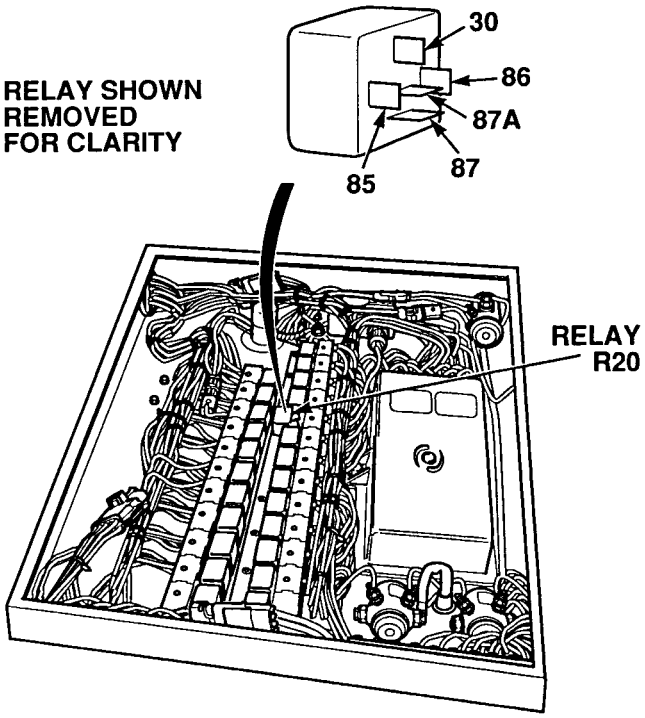
NOTE

Relay test must be performed with relay partially removed.

CONTINUITY TEST

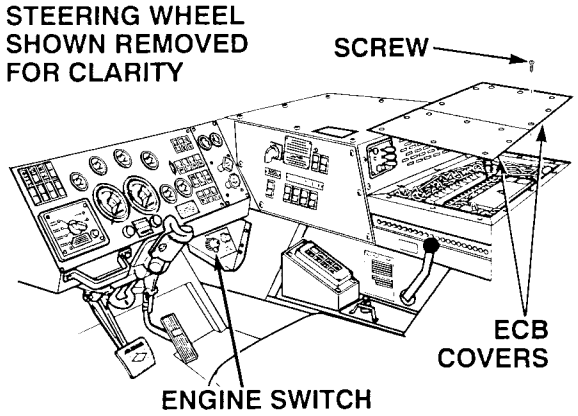
Is there continuity on wire 1435 between relay R20, terminal 85 and a known good ground?

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

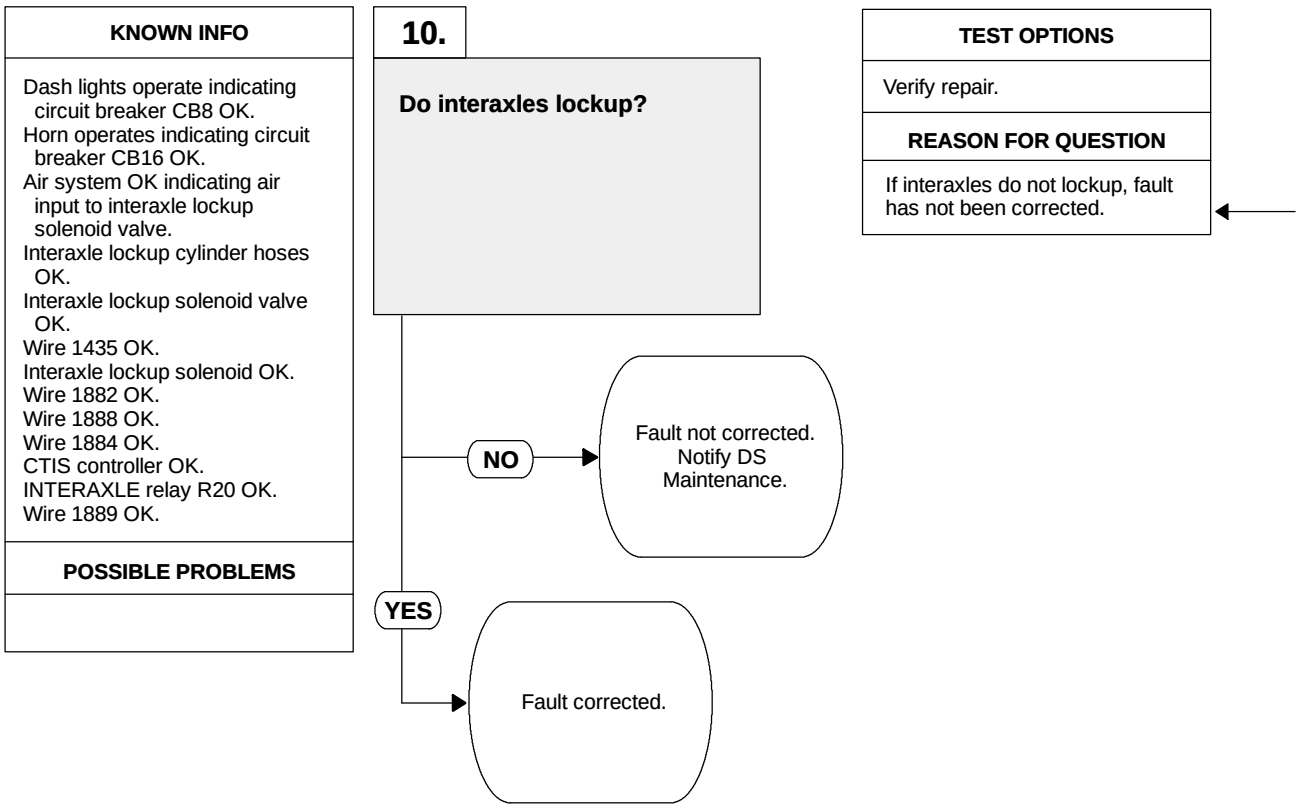


VOLTAGE TEST

(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.



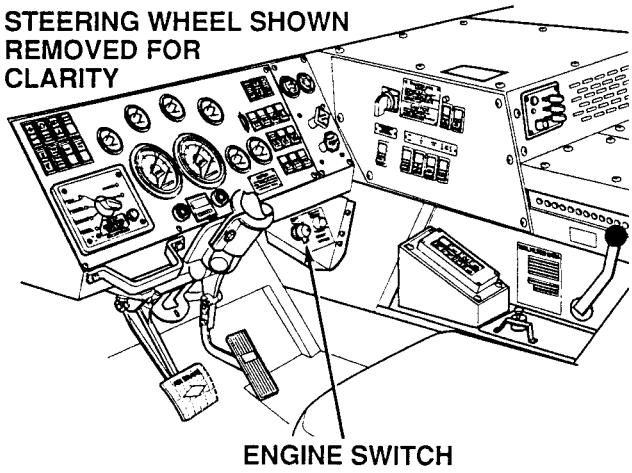
3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).



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).

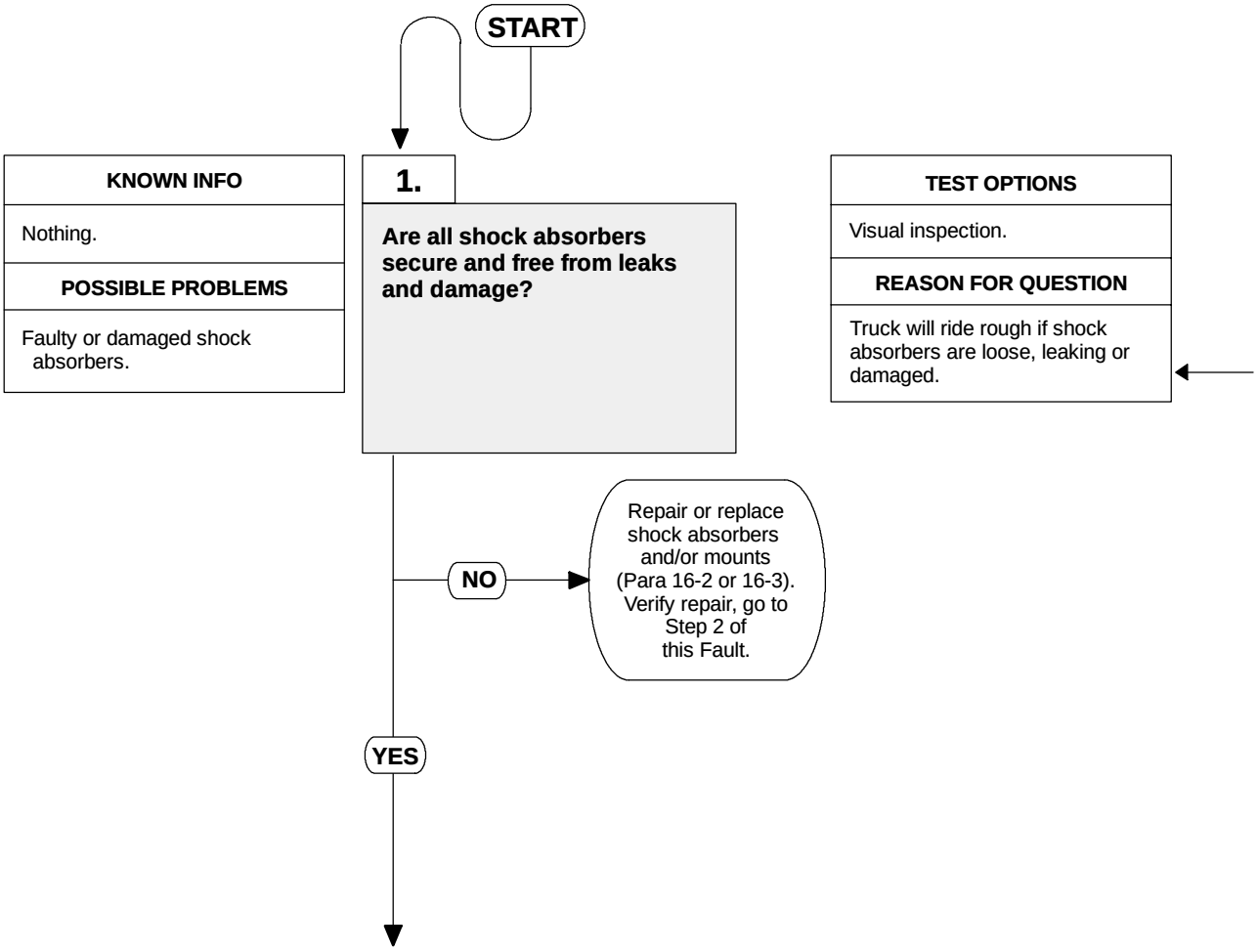
1. RIDE IS ROUGH.

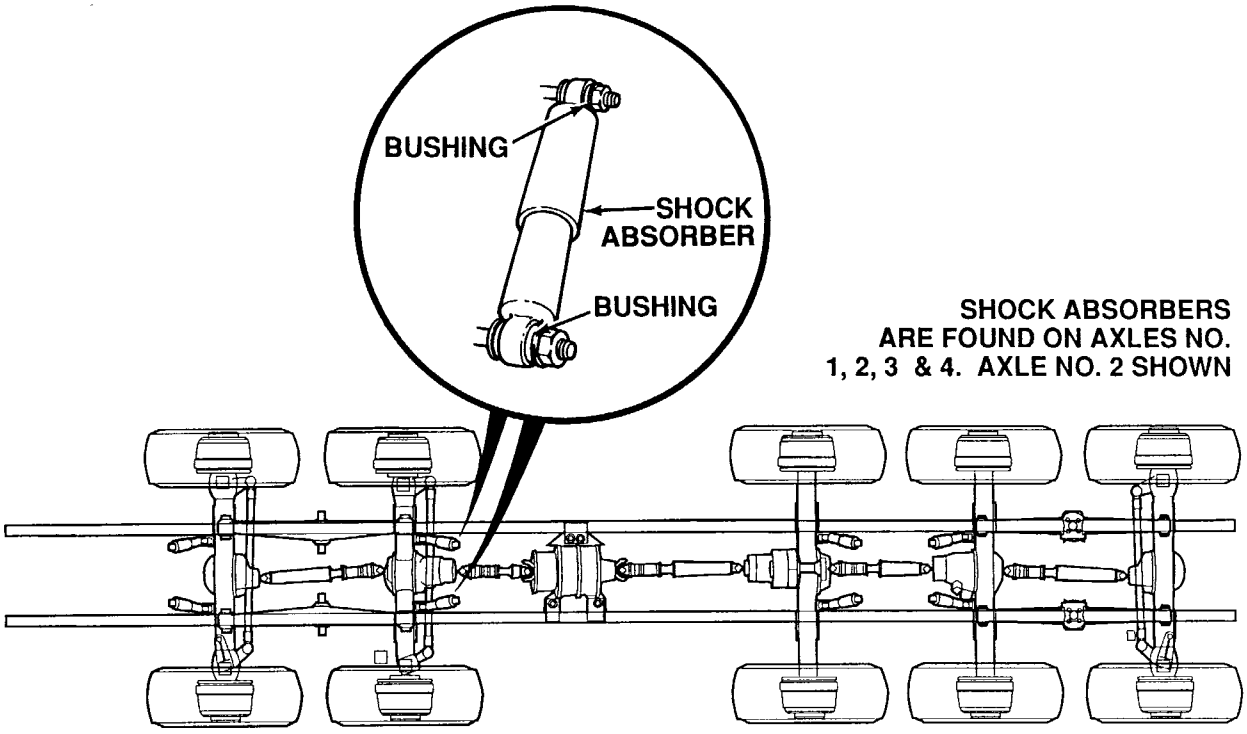
INITIAL SETUP

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)

References
TM 9-2320-364-10

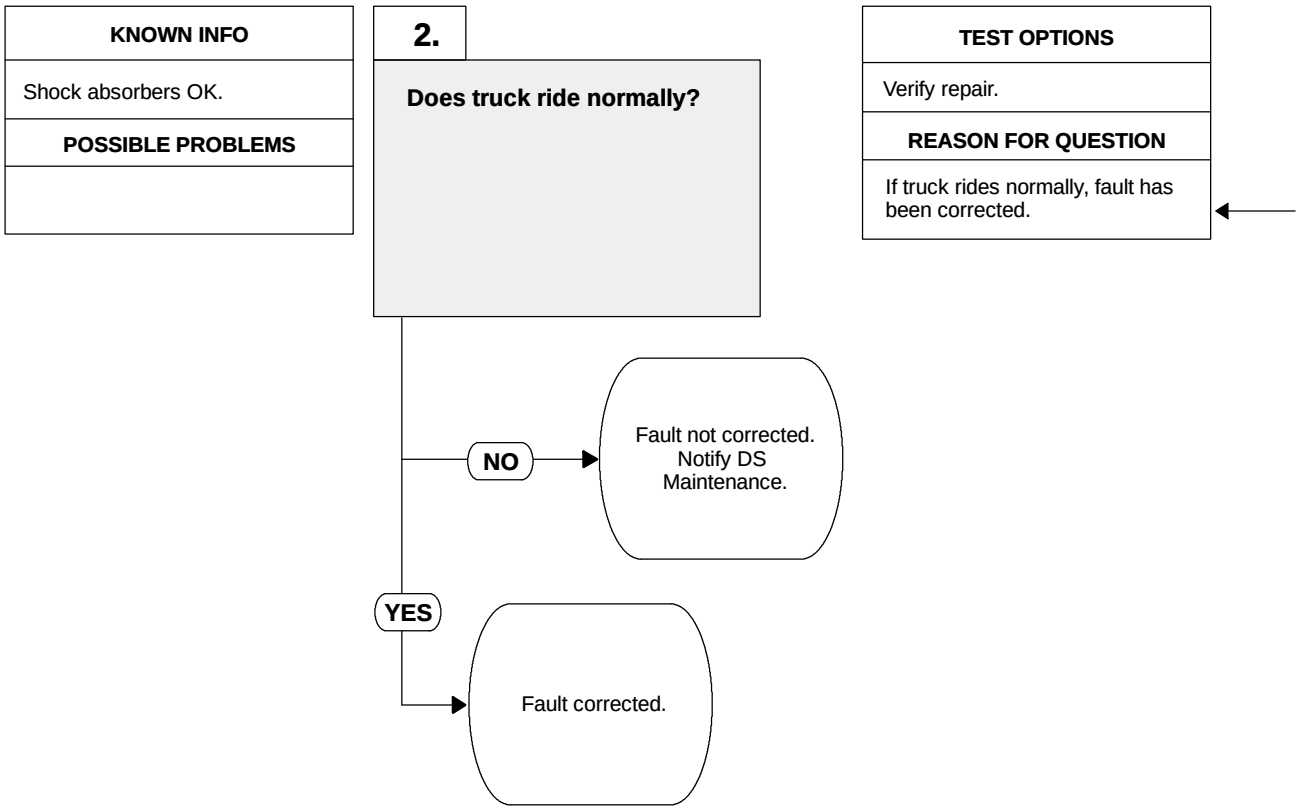
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)





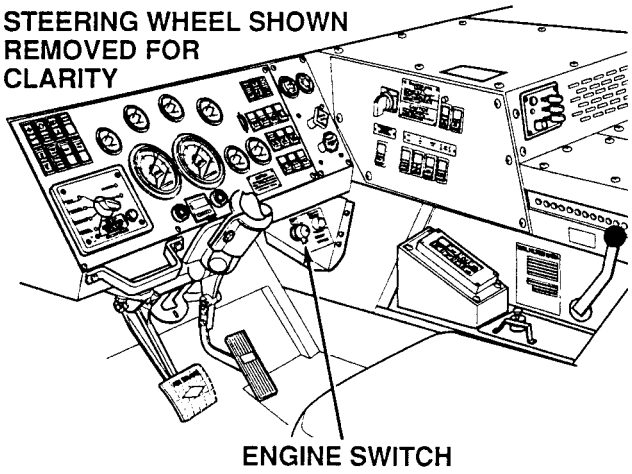
VISUAL INSPECTION
(1) Check shock absorbers for leaks or damage. (a) If shock absorbers are leaking or damaged, replace shock absorbers (Para 16-2 or 16-3). (b) If there are no leaks or damage, go to Step (2) below. (2) Check shock absorbers for proper mounting and excessive bushing wear. (a) If shock 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.



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

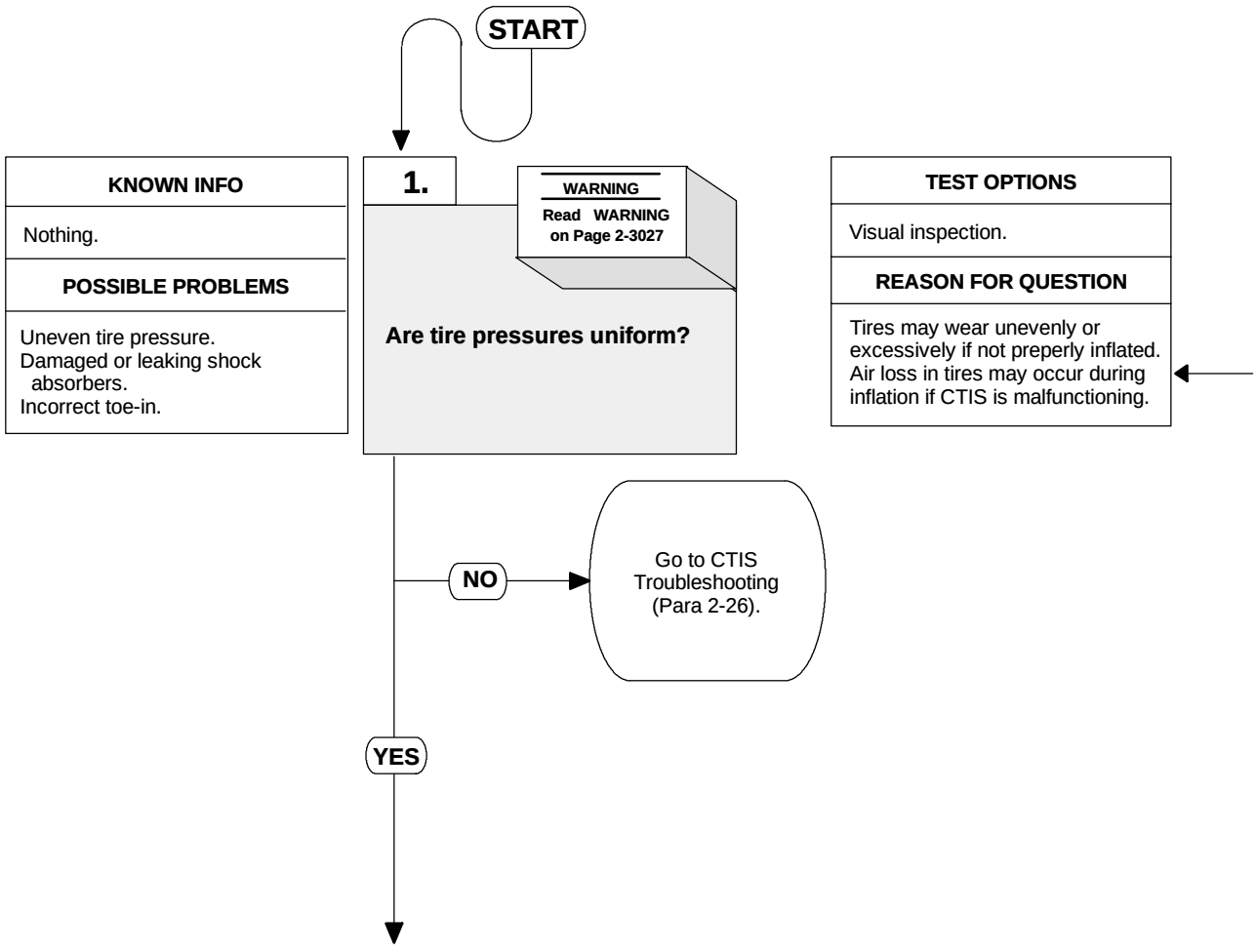
2-35. WHEELS AND TIRES TROUBLESHOOTING (CONT).

1. TIRES WEAR UNEVENLY OR EXCESSIVELY.

INITIAL SETUP

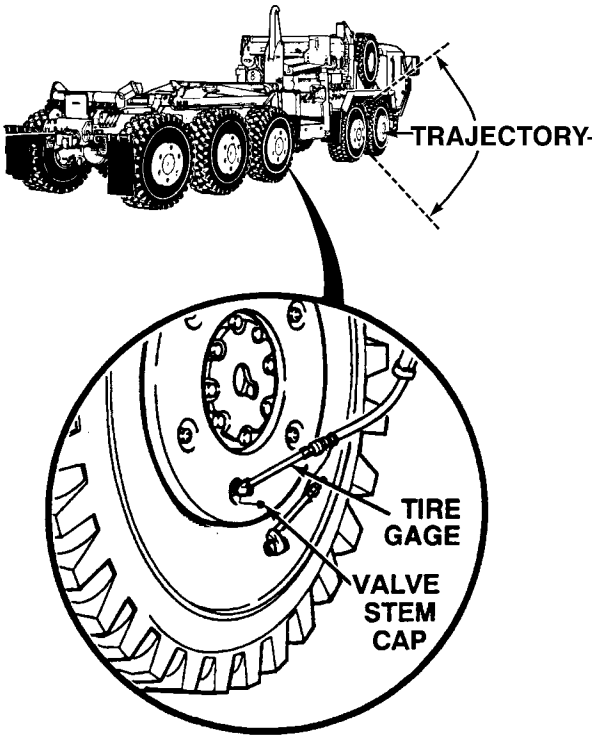
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

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

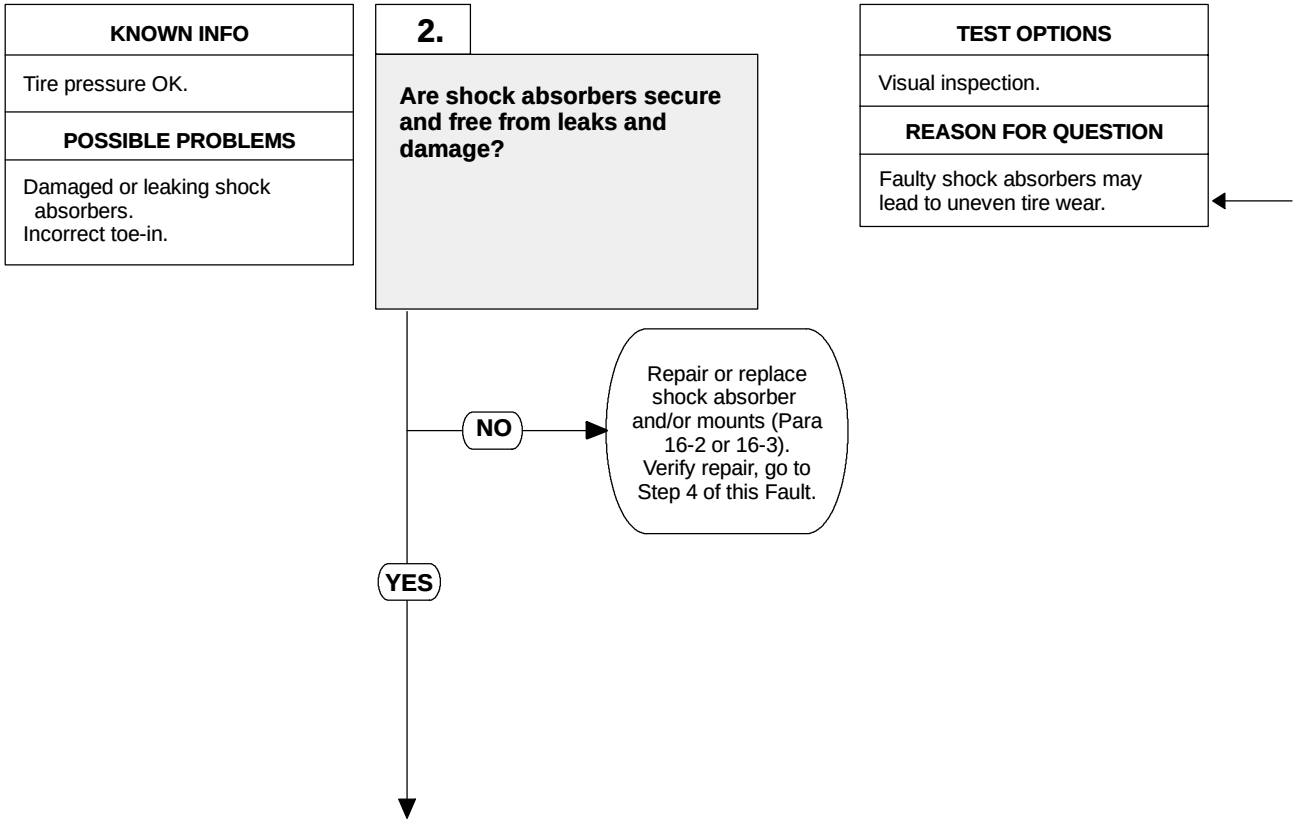
Before inflating or deflating, stand out of the trajectory area or personal injury or death may result.



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.

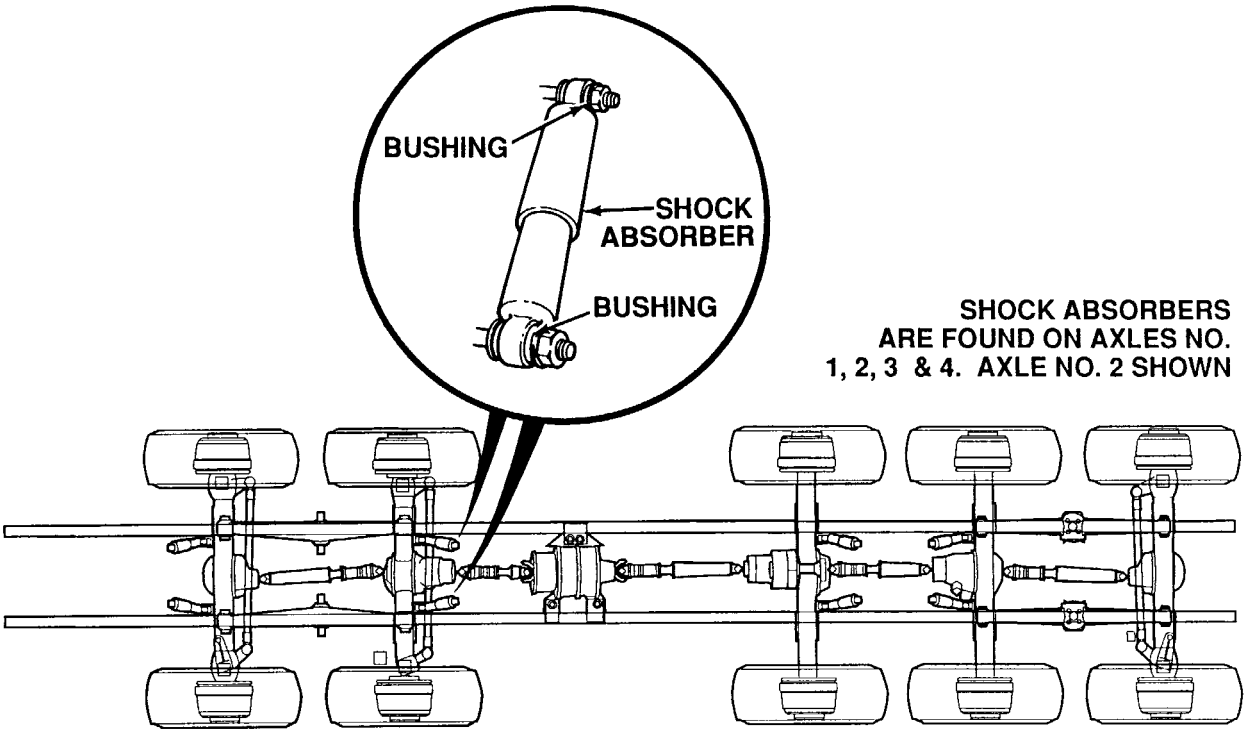
1. TIRES WEAR UNEVENLY OR EXCESSIVELY (CONT).



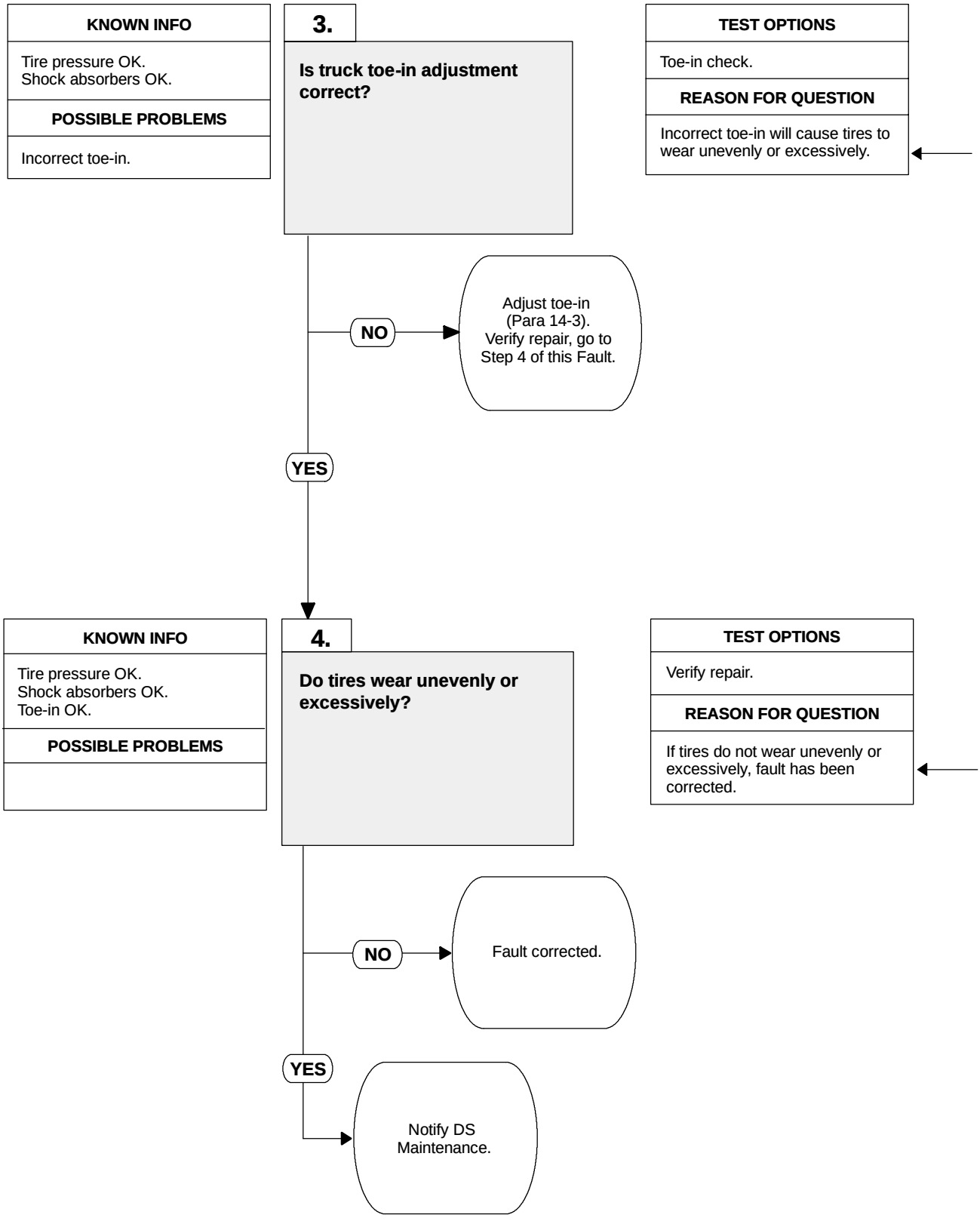
NOTE

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

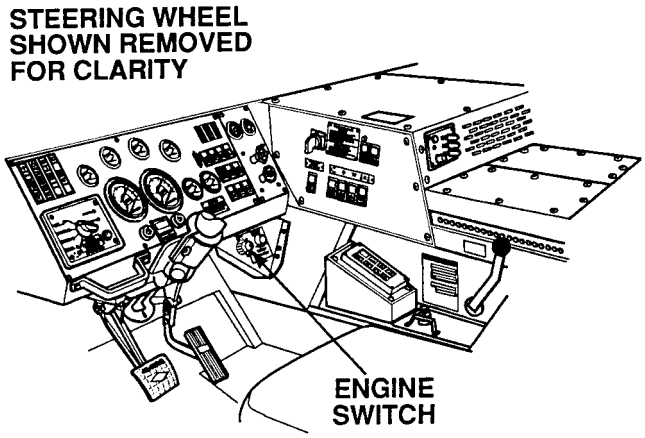
VISUAL INSPECTION
(1) Check shock absorbers for leaks or damage. (a) If shock absorbers are leaking or damaged, replace shock absorbers (Para 16-2 or 16-3). (b) If there are no leaks or damage, perform Step (2) below. (2) Check shock absorbers for proper mounting and excessive bushing wear. (a) If shock 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.



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.



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).

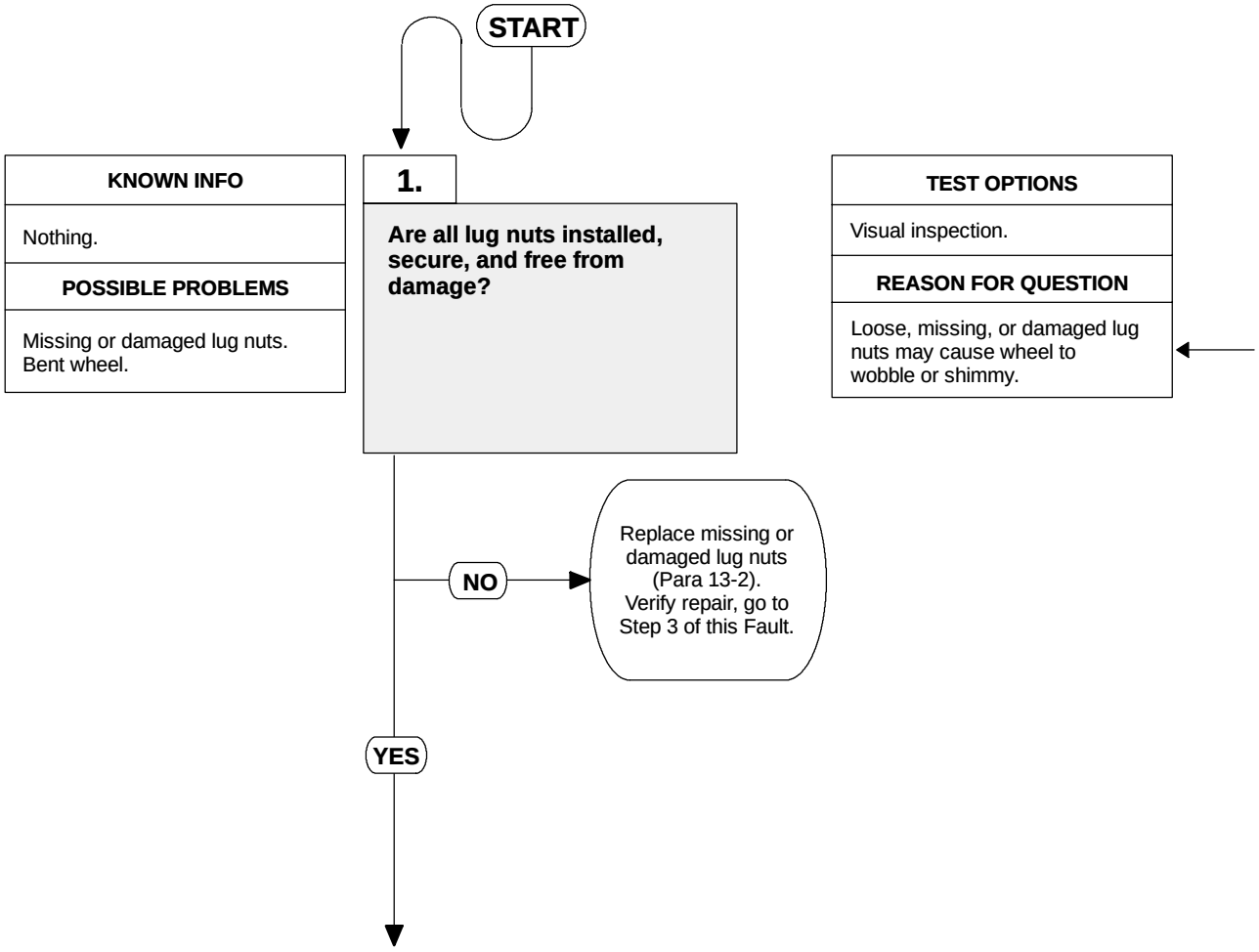
2. WHEEL WOBBLES OR SHIMMIES.

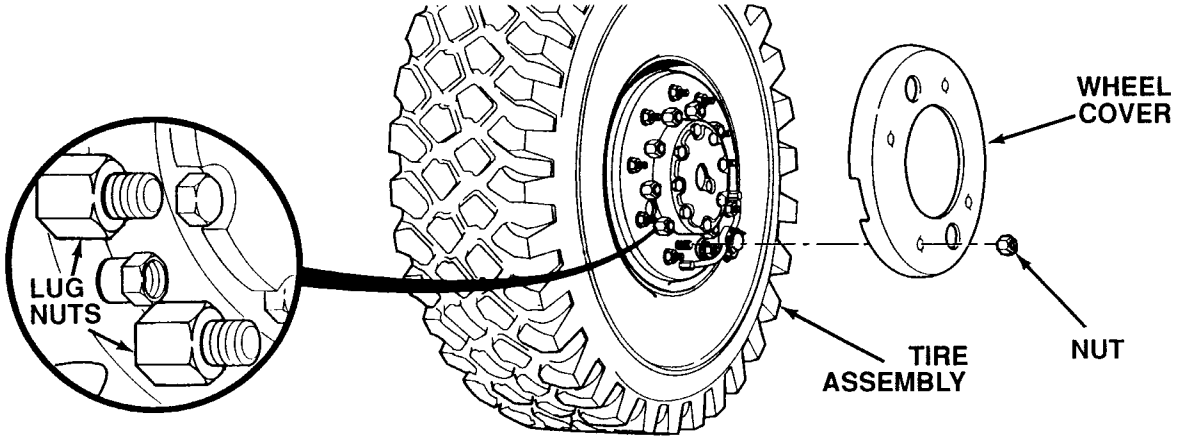
INITIAL SETUP

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

References
TM 9-2320-364-10

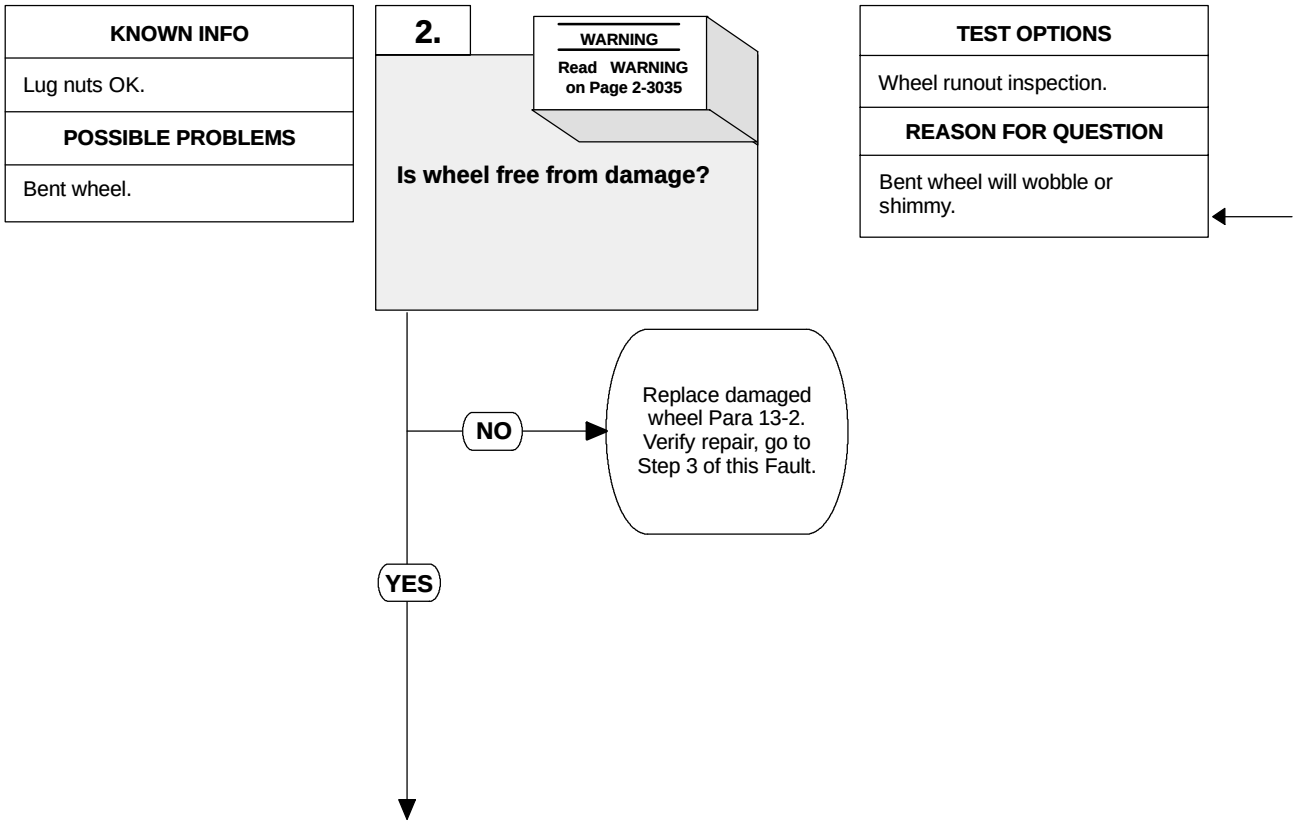
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)





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

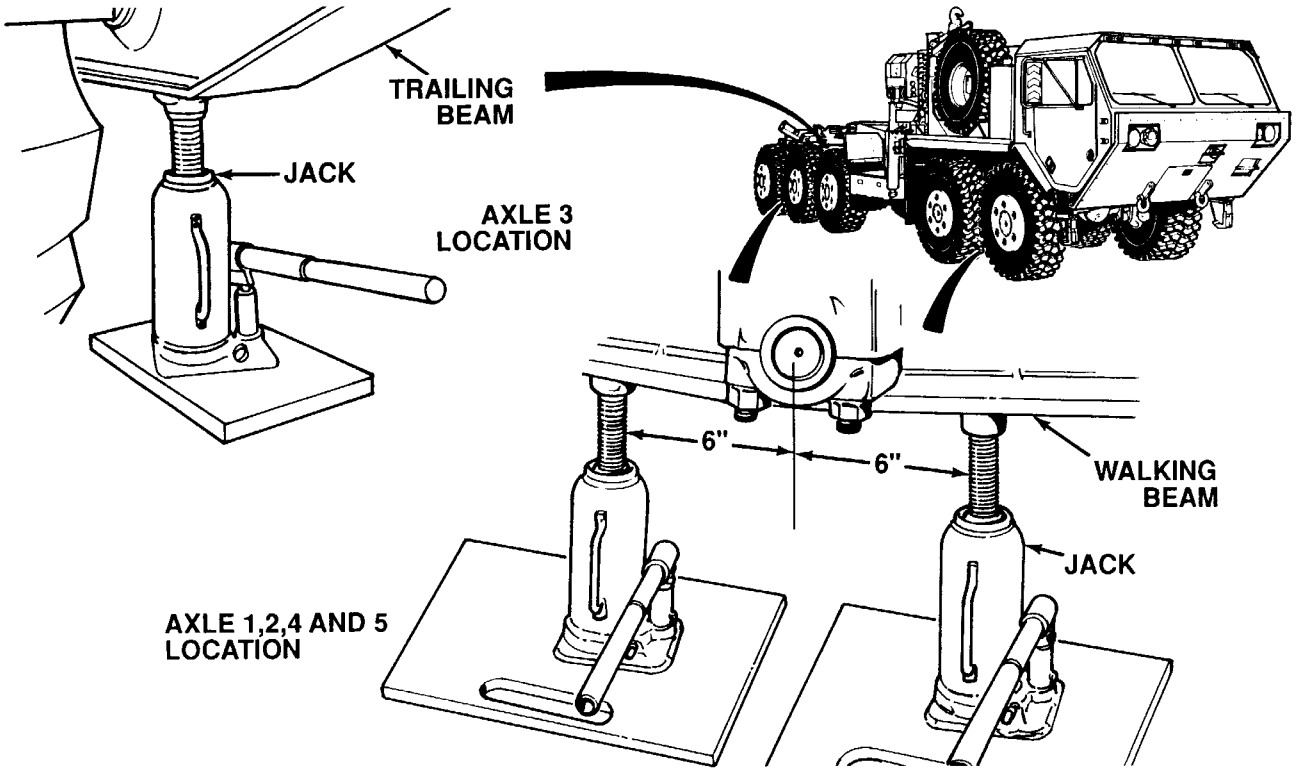
Truck must be on level ground and wheels must be chocked before parking brake is released. Otherwise, truck may roll and cause injury to personnel.

NOTE

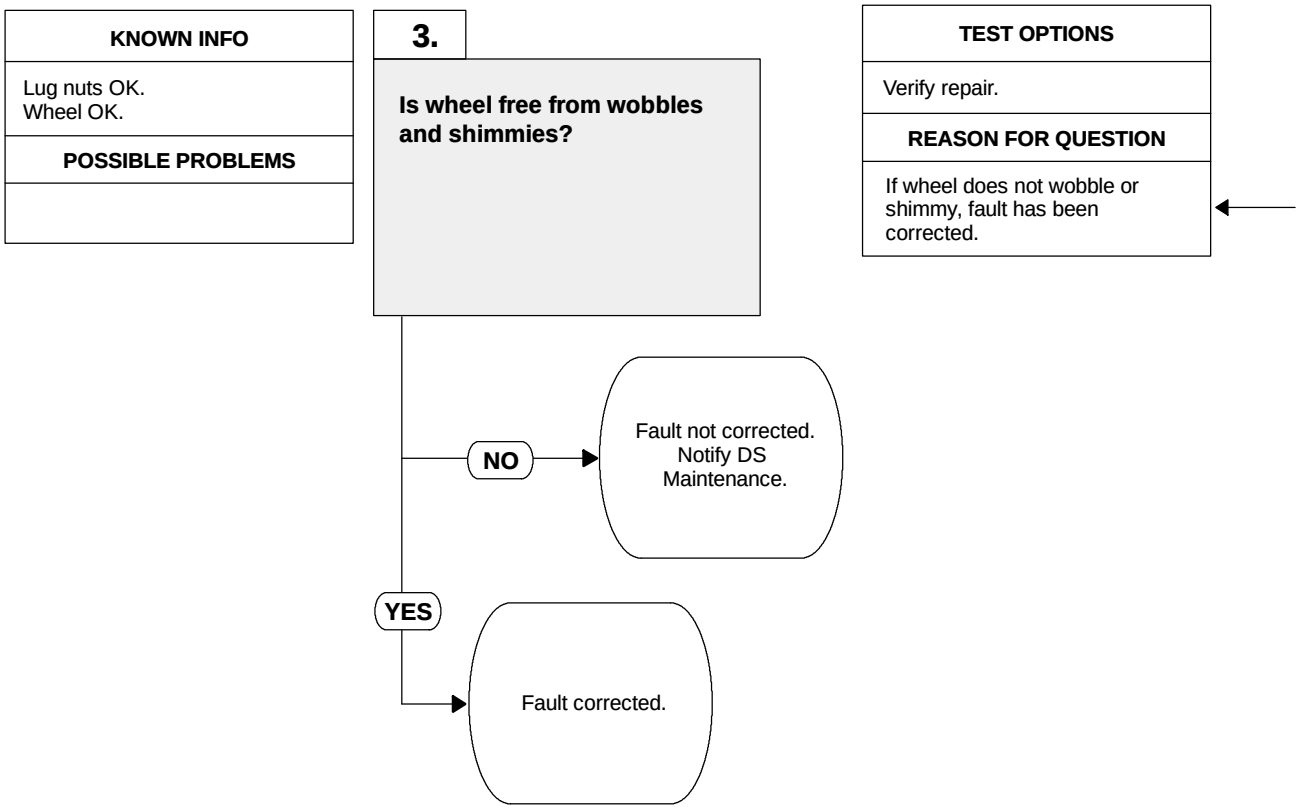
Steps (1) and (5) apply only to three rear axles.

WHEEL RUNOUT INSPECTION

(1) Release parking brakes (TM 9-2320-364-10).
(2) Jack up wheel.
(3) Rotate wheel and check for bent rim.
  (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.

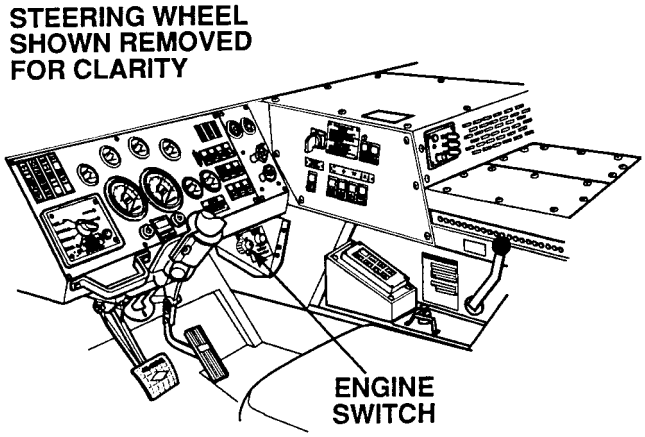


2. WHEEL WOBBLES OR SHIMMIES (CONT).



VERIFY REPAIR

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



2-36. ARCTIC KIT (MODEL A) WATER PUMP TROUBLESHOOTING.

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

Table 2-64. Arctic Kit (Model A) Water Pump System Fault Index

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

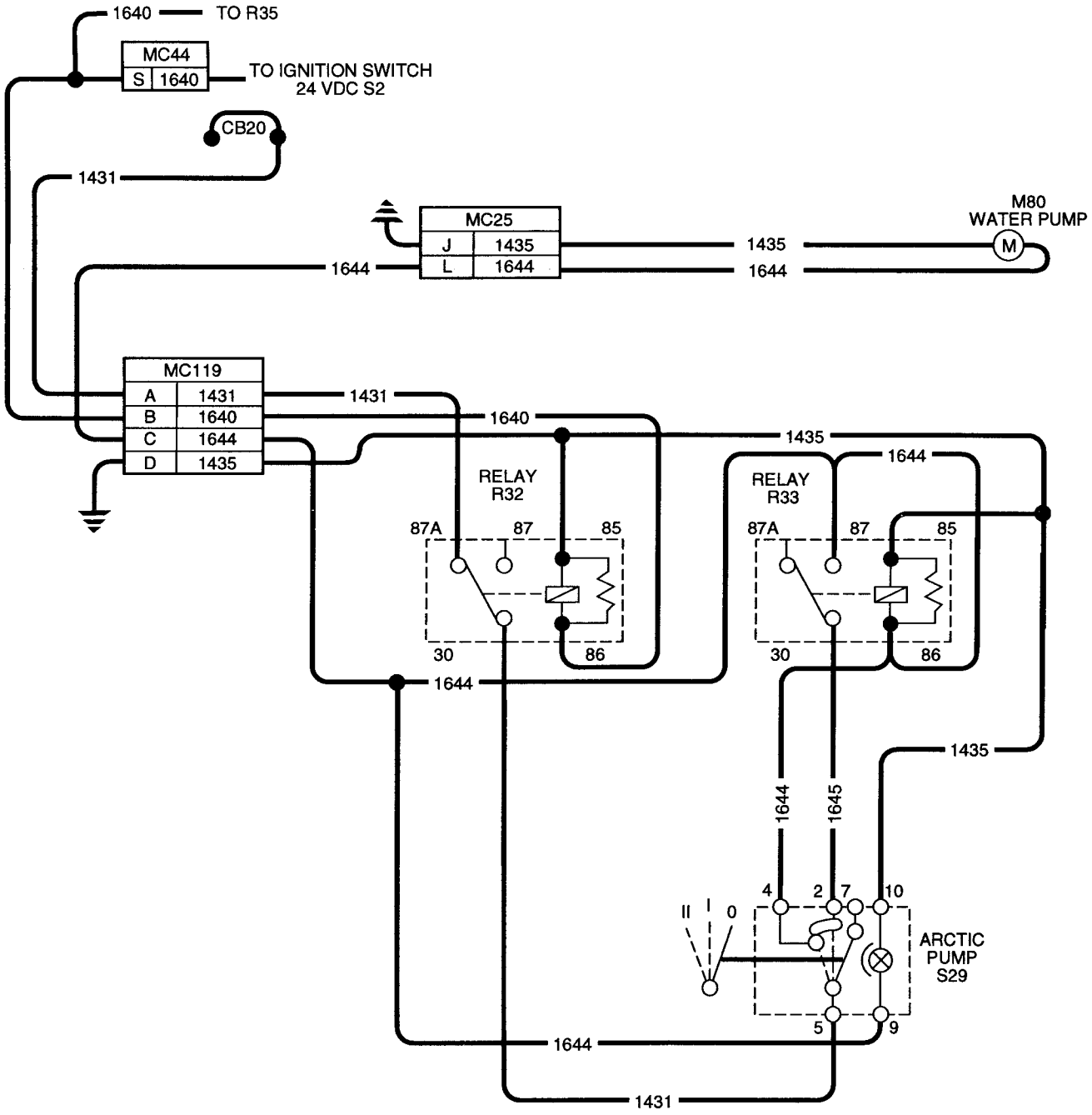


Figure 2-74. Arctic Kit (Model A) Water Pump Electrical Schematic

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

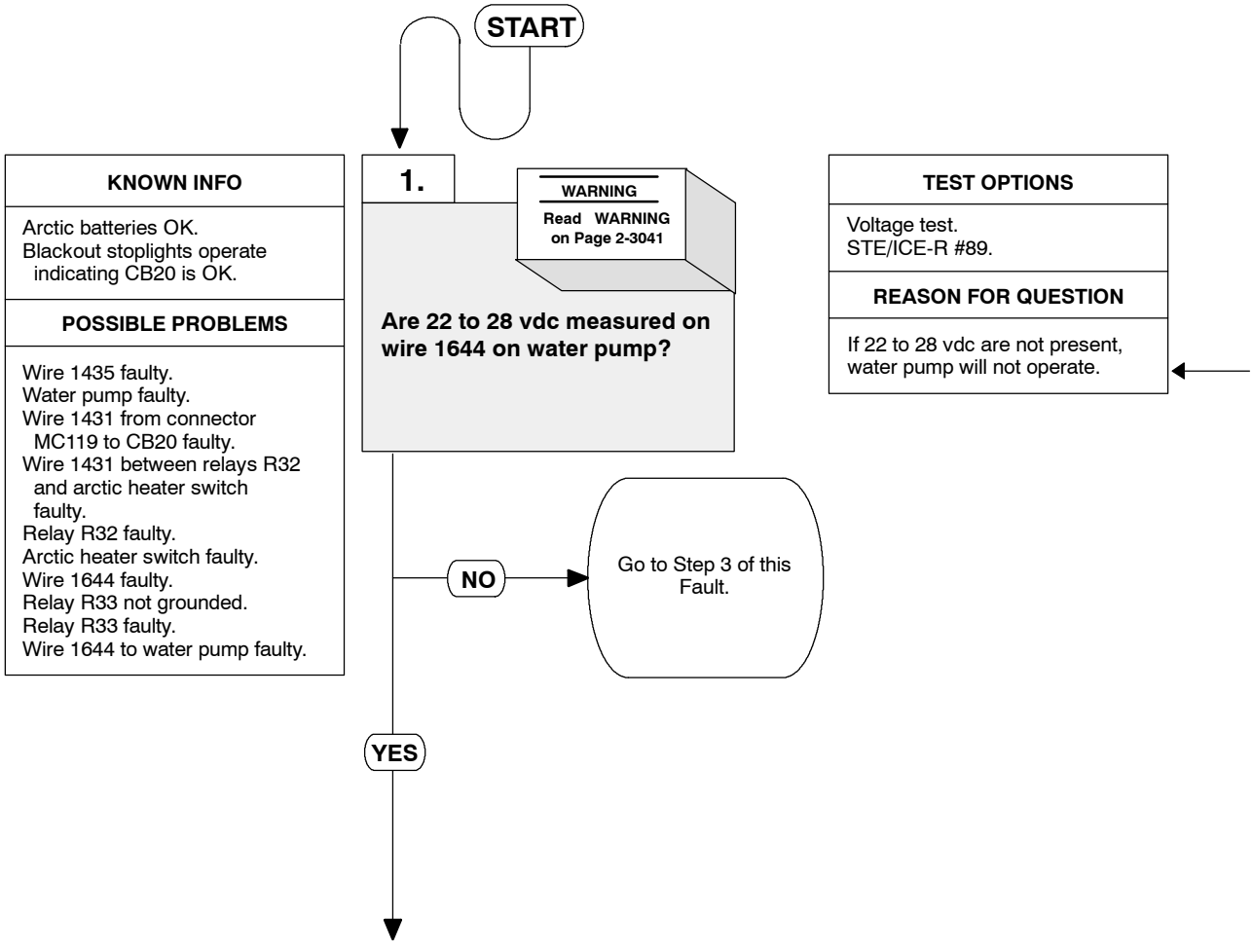
1. ARCTIC KIT (MODEL A) WATER PUMP DOES NOT OPERATE.

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)

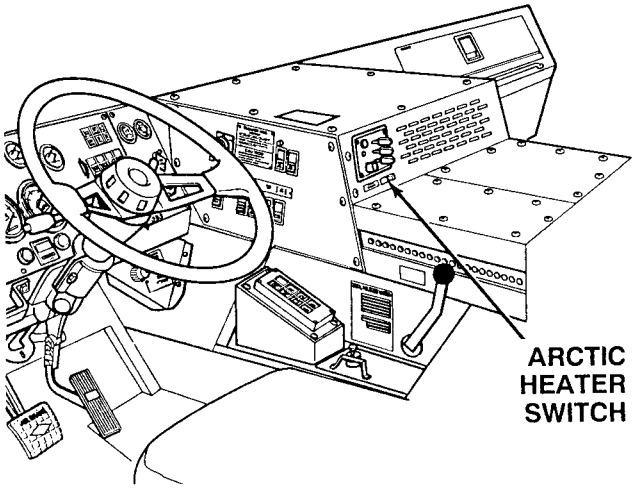
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



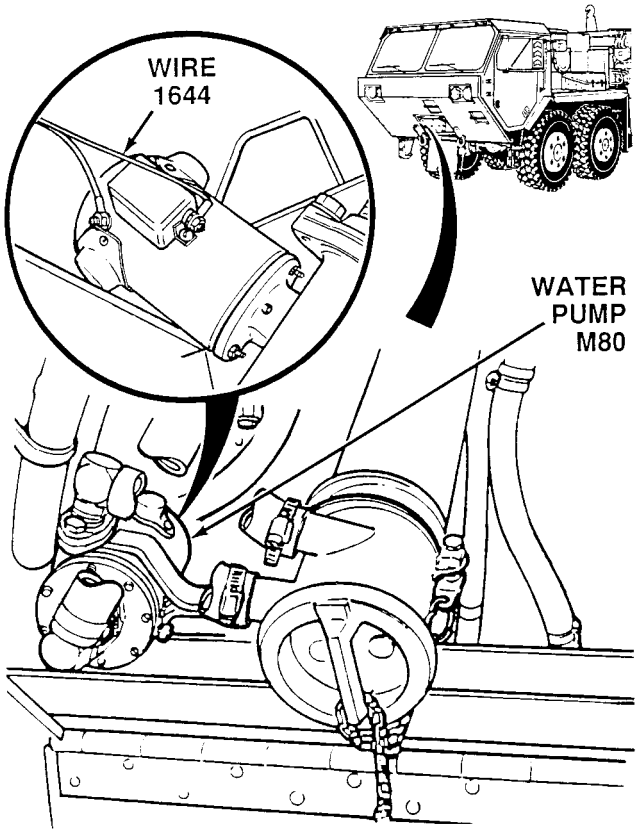
WARNING

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.

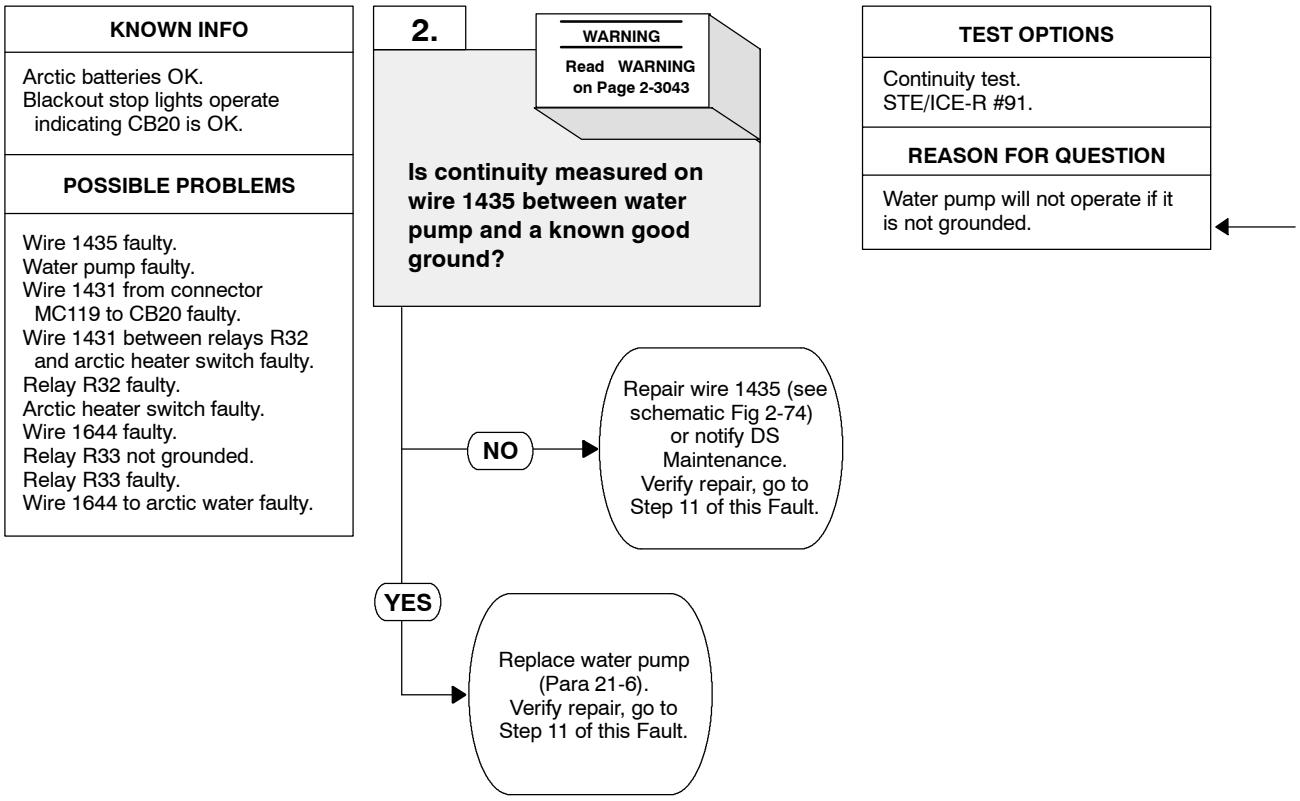


VOLTAGE TEST

(1) Open front access cover.
(2) Set multimeter select switch to volts dc.
(3) Connect positve (+) 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 (MODEL A) WATER PUMP DOES NOT OPERATE (CONT).

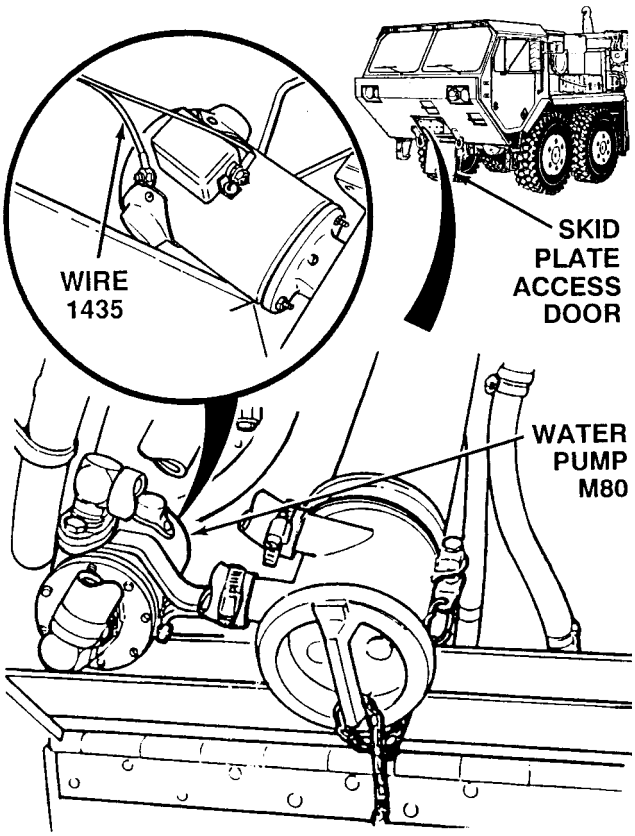


WARNING

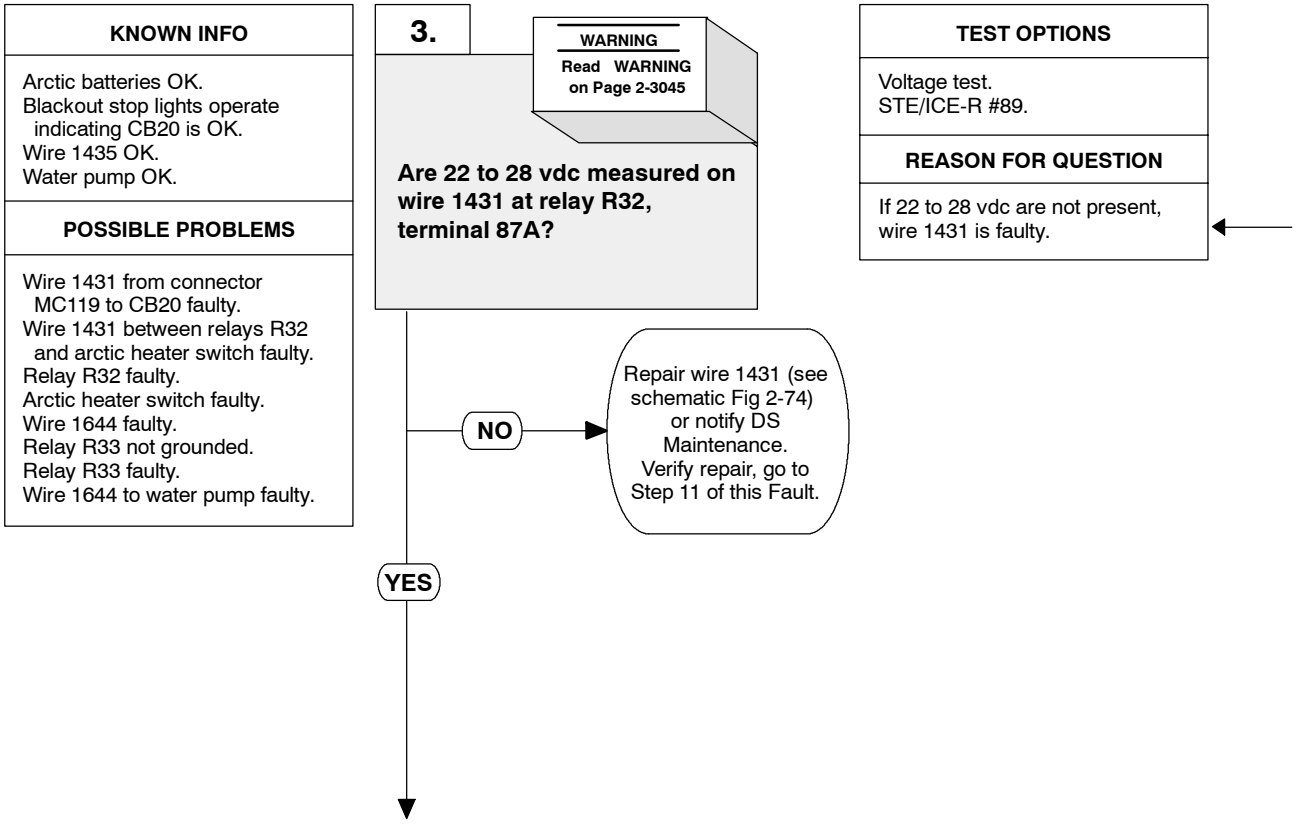
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

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 (MODEL A) WATER PUMP DOES NOT OPERATE (CONT).



WARNING

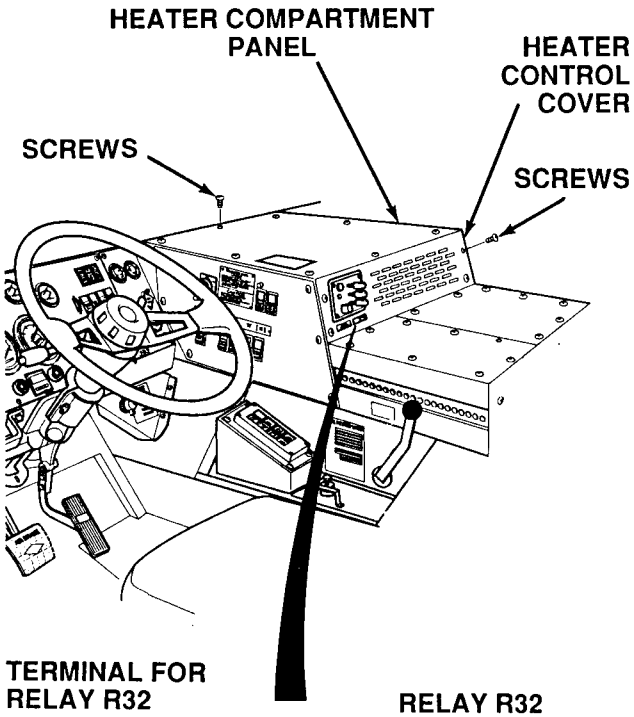
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

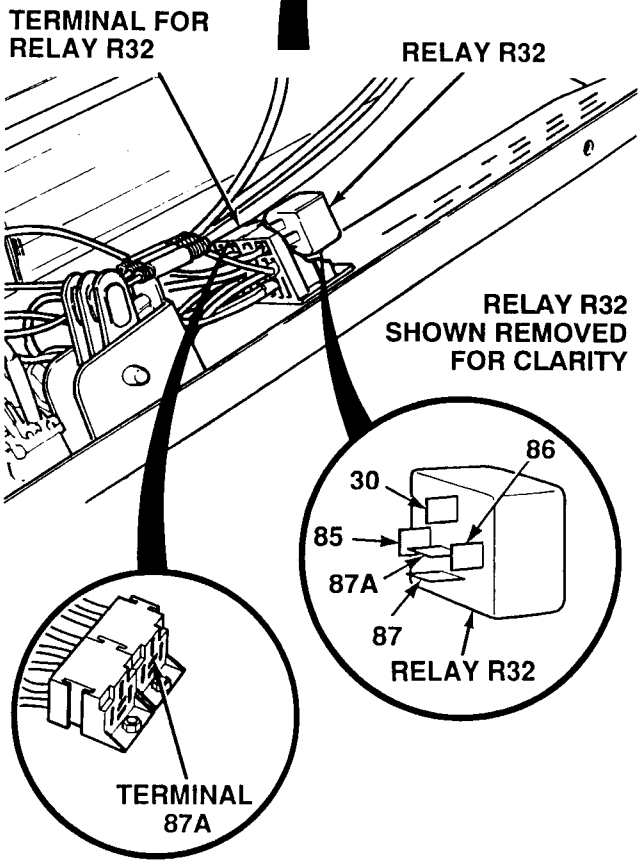
NOTE

Relay test must be performed with relay partially removed.

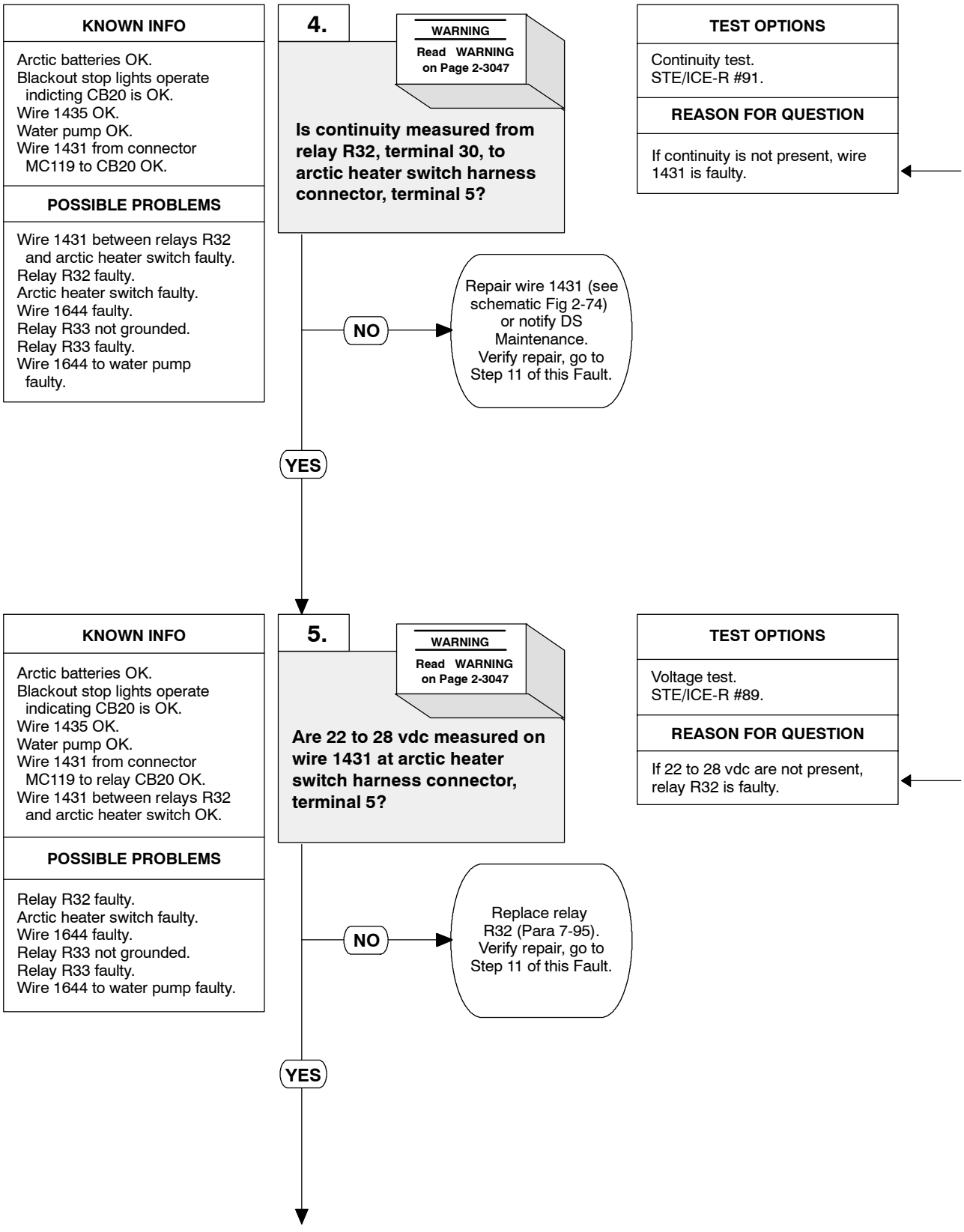
VOLTAGE TEST

(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 (MODEL A) 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

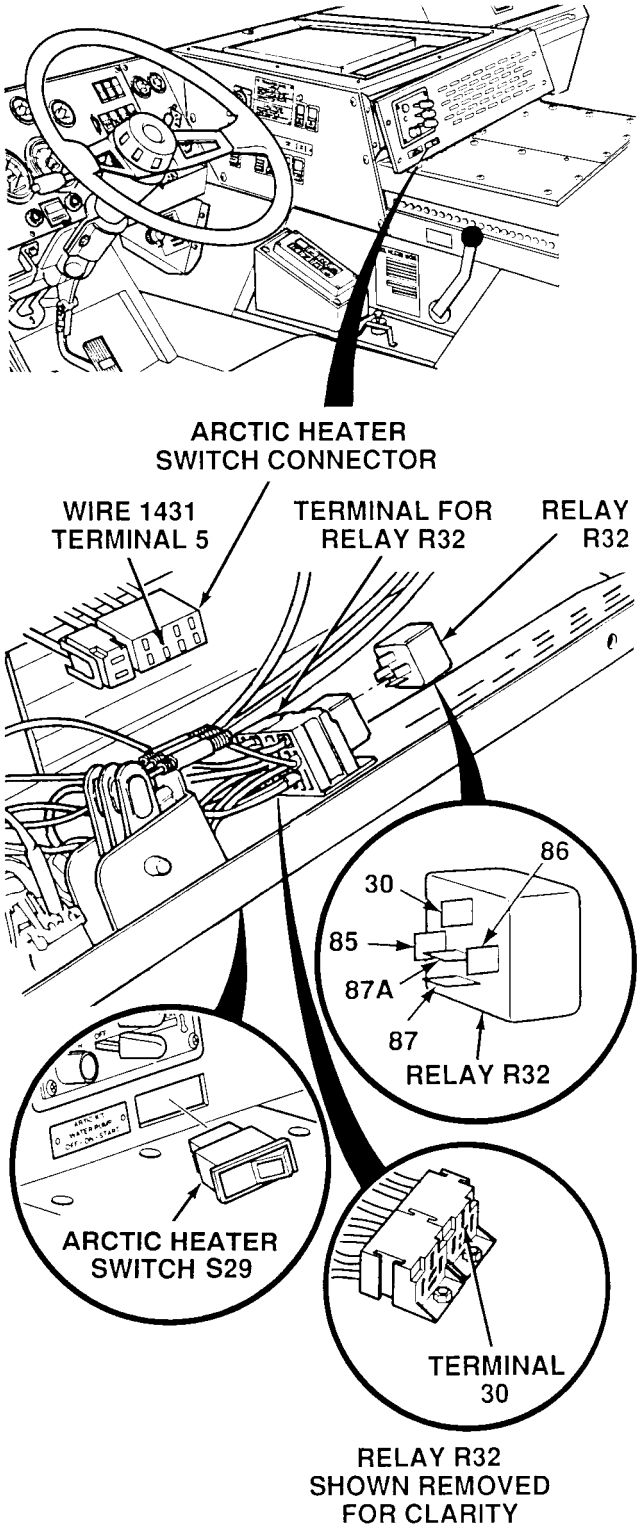
Relay test must be performed with relay partially removed.

CONTINUITY TEST

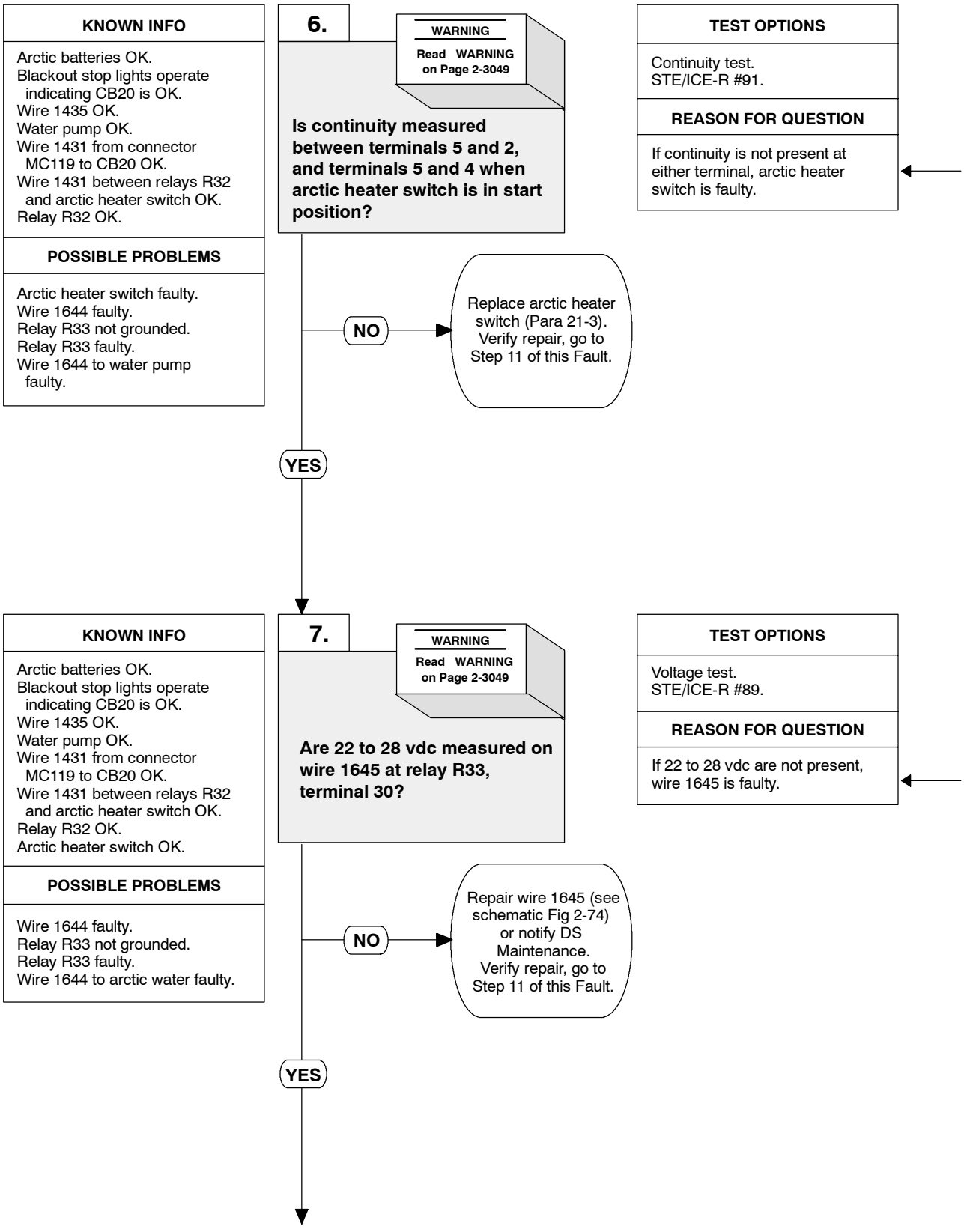
(1) Set multimeter select switch to ohms.
(2) Disconnect arctic heater switch.
(3) Is there continuity between relay R32, terminal 30 to arctic heater switch harness connector, terminal 5?
  (a) If there is no continuity, repair wire 1431 (see schematic Fig 2-74) or notify DS Maintenance.
  (b) If there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



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

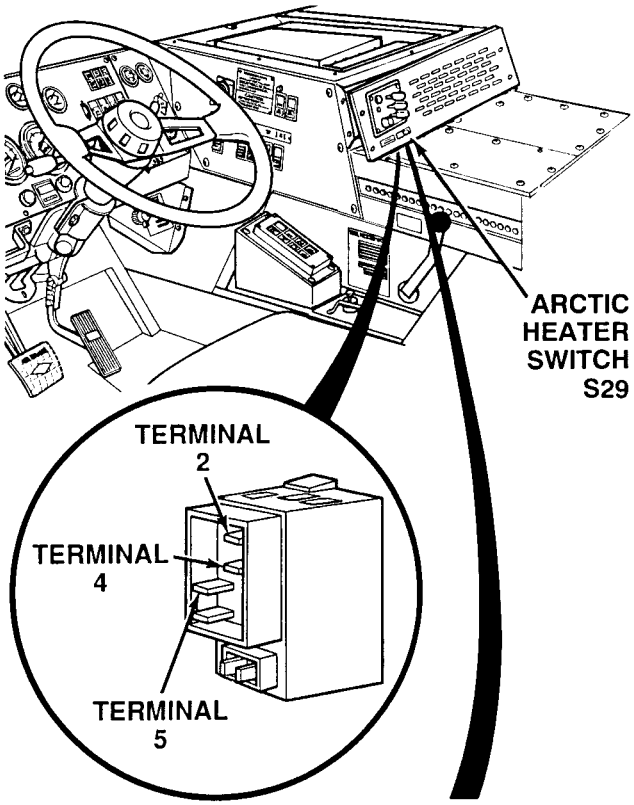


WARNING

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.

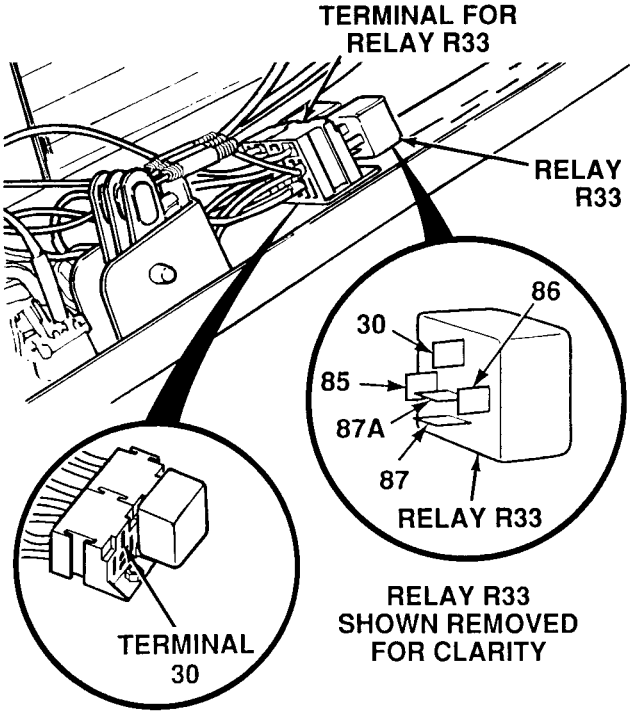


NOTE

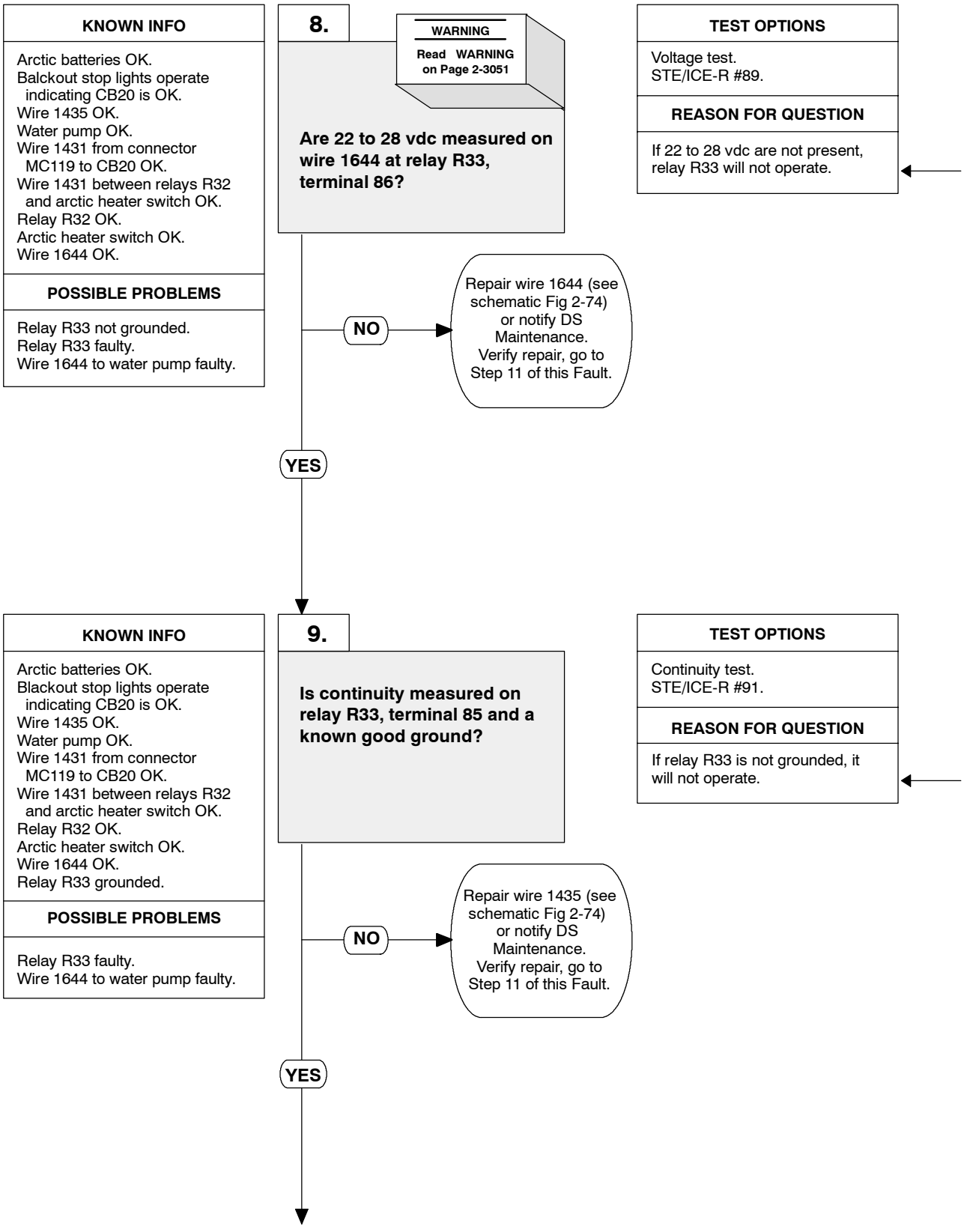
Relay test must be performed with relay partially removed.

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 (MODEL A) 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

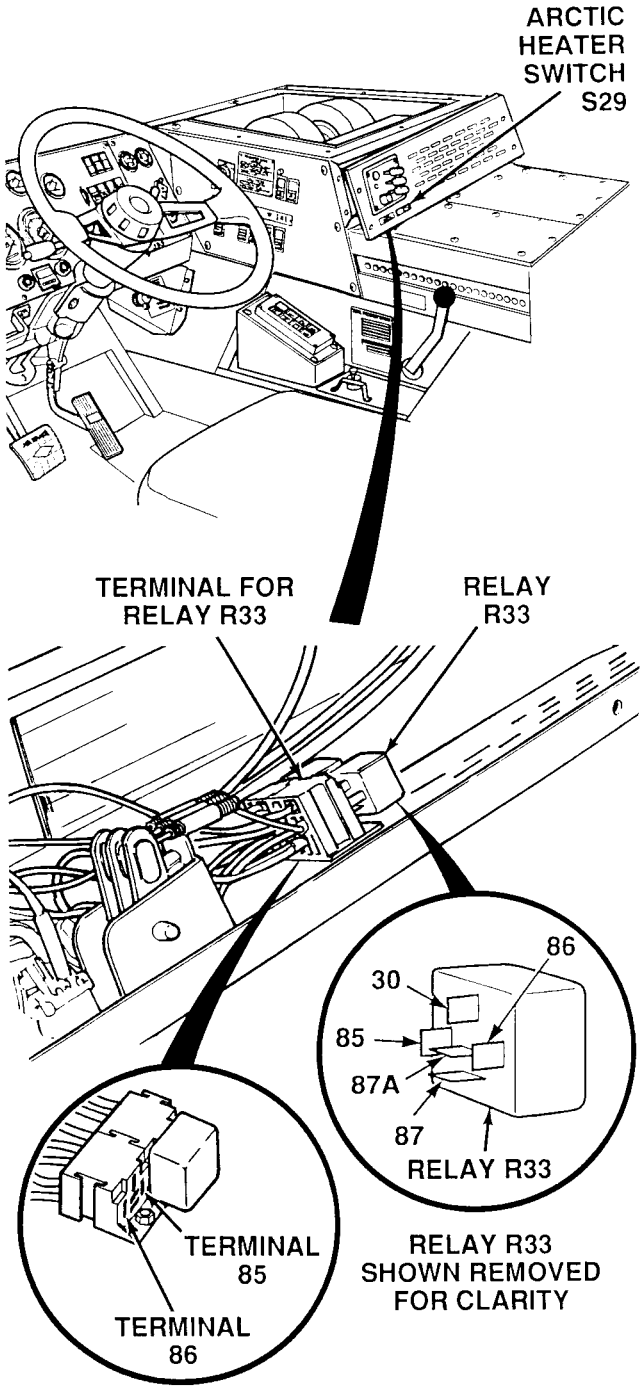
Relay test must be performed with relay partially removed.

VOLTAGE TEST

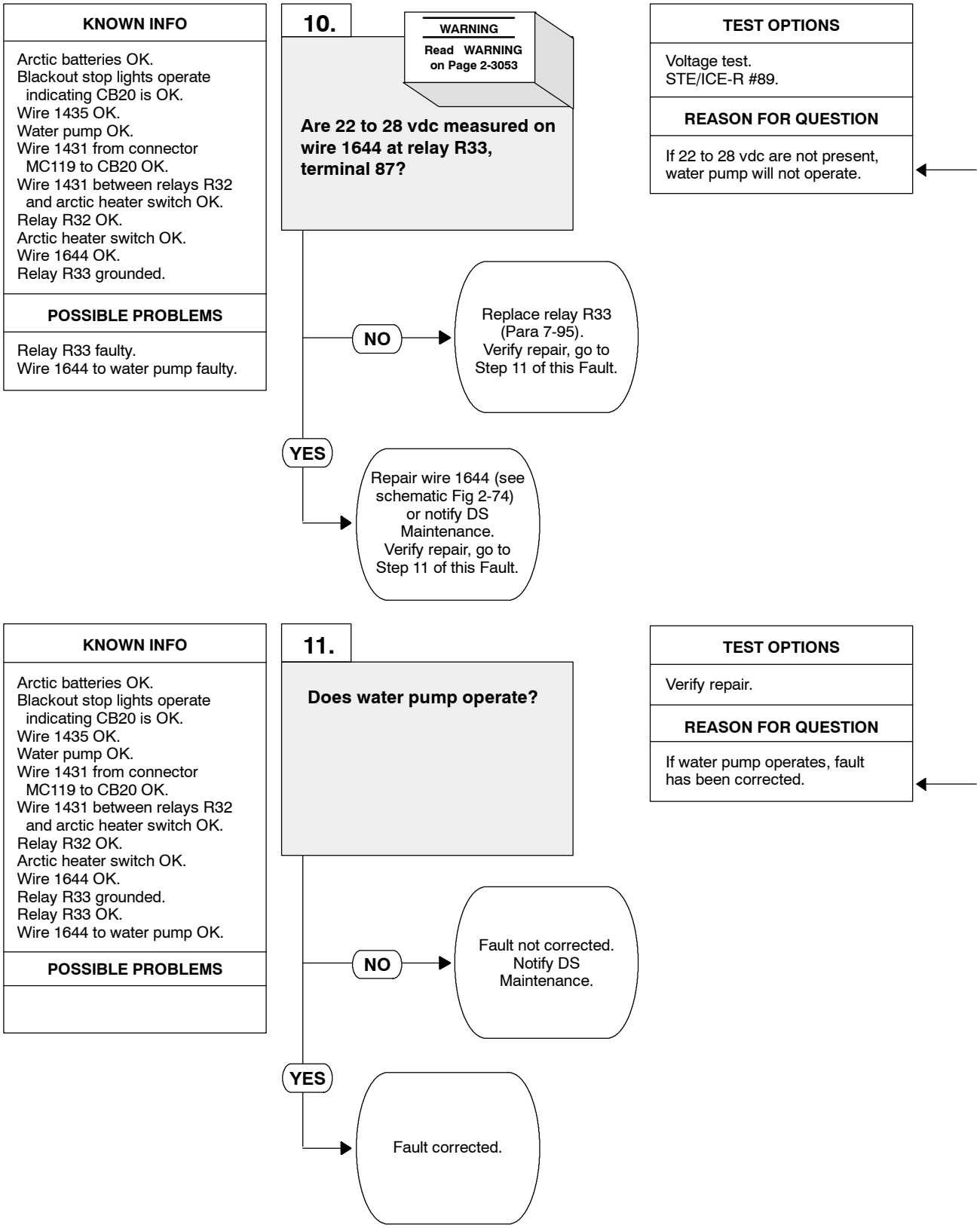
(1) Connect positive (+) multimeter lead to relay R33, terminal 86.
(2) Connect negative (-) multimeter lead to a known good ground.
(3) Set arctic heater switch to START and then to ON position (TM 9-2320-364-10).
   (a) If 22 to 28 vdc are not present, turn OFF arctic heater switch and replace wire 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

(1) Set multimeter select switch to ohms.
(2) Is there continuity between relay R33, terminal 85 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, wire 1435 is OK.



1. ARCTIC KIT (MODEL A) 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

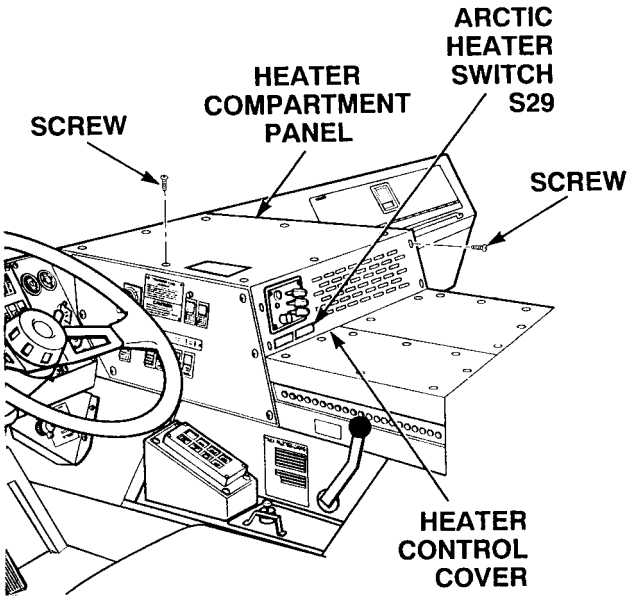
Relay test must be performed with relay partially removed.

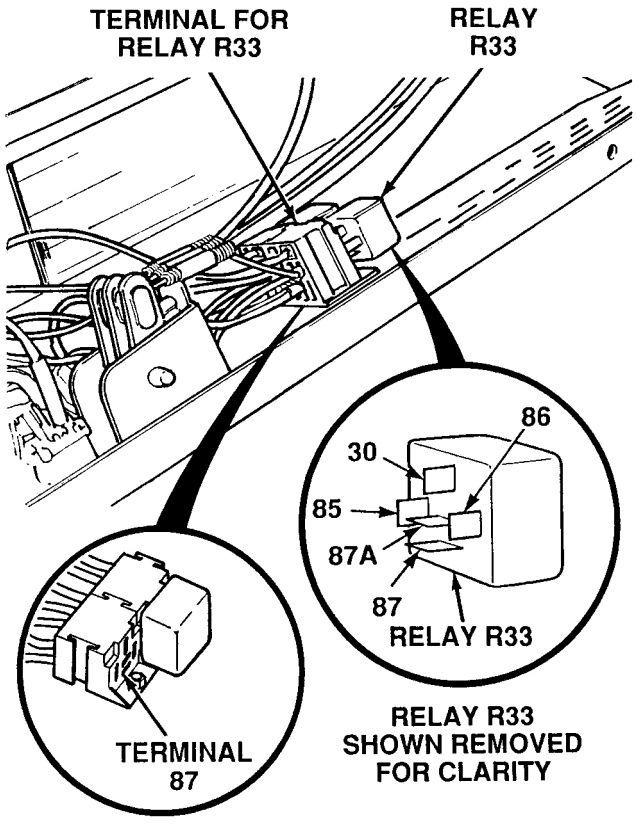
VOLTAGE TEST

(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.





2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING.

This paragraph covers Arctic Heater (Model B) Troubleshooting. The Arctic Heater (Model B) System Fault Index, Table 2-64.1, lists faults for the arctic heater (Model B) of the PLS truck. Refer to schematic Figure 2-74.1 when performing tests and corrective actions.

Table 2-64.1. Arctic Heater (Model B) System Fault Index

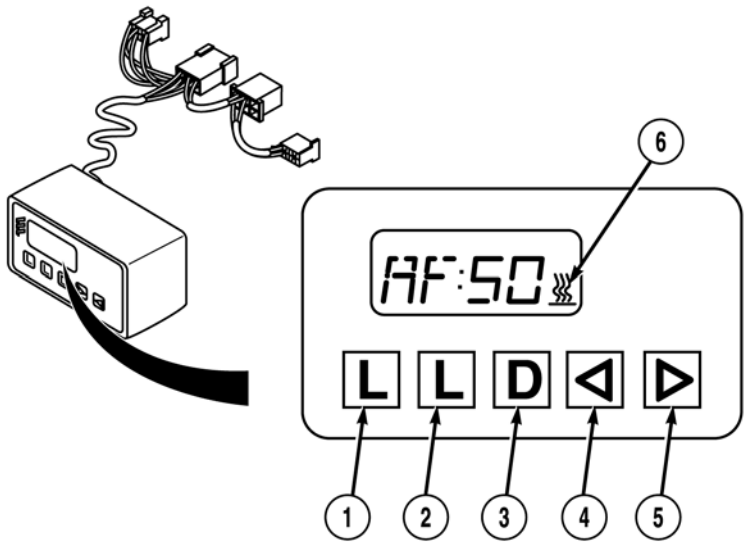
Fault No.	Description	Page
	Fault Code Retrieval Device (FCRD) Operation	2-3054.2
1	Arctic Heater Does Not Operate (Model B)	2-3054.8
2	Arctic Heater Indicator Does Not Illuminate (Model B)	2-3054.40
3	First Chart For Diagnostic of Arctic Heater Troubleshooting (Model B)	2-3054.50
4	Fault Code 001, 002, 010 or 011: Advance Warning-Overvoltage Shutdown, Advance Warning-Undervoltage Shutdown, Overvoltage Shutdown or Undervoltage Shutdown	2-3054.60
5	Fault Code 012, 013, 014, 015, 037, 042 or 059: Overheating, Excessive Temperature at Flame Sensor, Possible Overheating Detected, Too Many Overheats, Water Pump is Not Working, Water Pump Short Circuit or Water Temperature Rises Too Quickly	2-3054.74
6	Fault Code 043, 047 or 048: Short Circuit at External Component, Fuel Metering Pump Short Circuit or Fuel Metering Pump Open Circuit	2-3054.86
7	Fault Code 050, 052, 053, 054, 055 or 056: Too Many No Start Attempts, No Start Safety Time Exceeded, Flame Cutout in Boost Mode, Flame Cutout in High Mode, Flame Cutout in Medium Mode or Flame Cutout in Low Mode	2-3054.98

FAULT CODE RETRIEVAL DEVICE (FCRD) OPERATION.

a. Introduction.

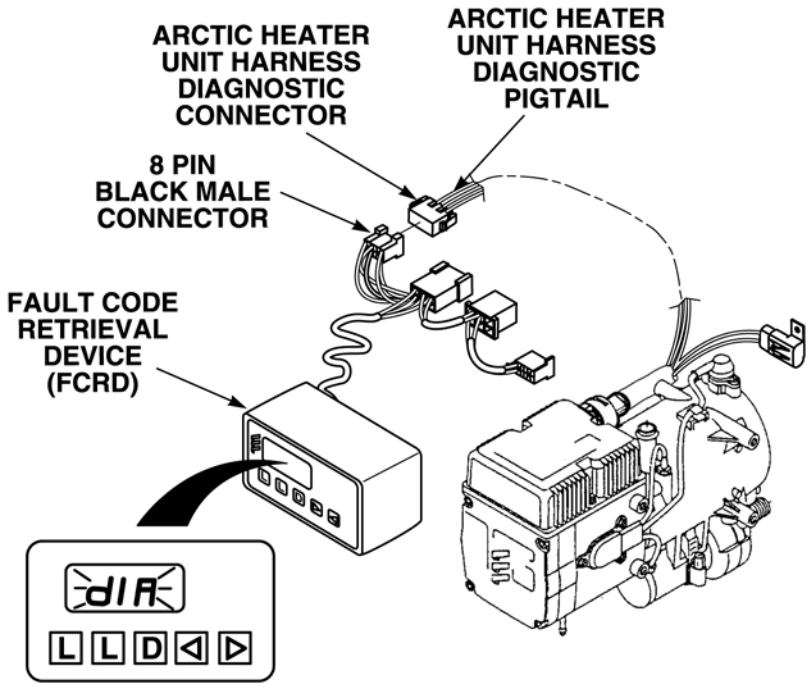
The Fault Code Retrieval Device (FCRD) reads, displays, and deletes fault codes stored in the arctic heater control unit. The FCRD saves up to 5 fault codes, stored in the arctic heater control unit memory, labeled F1 to F5. The latest fault code recorded is labeled F1.
The current or present fault code is labeled “AF” and is always stored in the F1 memory location. Previous fault codes are transferred to memory locations F2 to F5.

b. Controls.

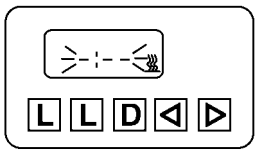
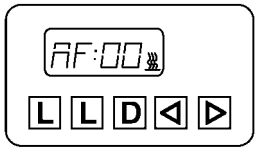


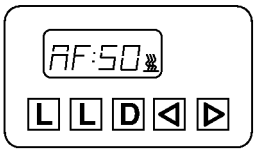
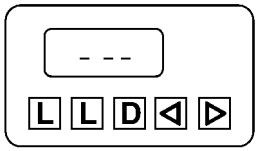
Key	Control or Indicator	Function
1	Button L	Delete fault memory.
2	Button L	Delete fault memory.
3	Button D	Starts and shuts down arctic heater and requests diagnostic fault codes from arctic heater control unit.
4	Button <	Fault codes displayed in descending order (F5 to F1, AF).
5	Button >	Fault codes displayed in ascending order (AF, F1 to F5).
6	Display	Displays operation and fault codes of arctic heater and arctic heater control unit.

c. Install Fault Code Retrieval Device (FCRD).

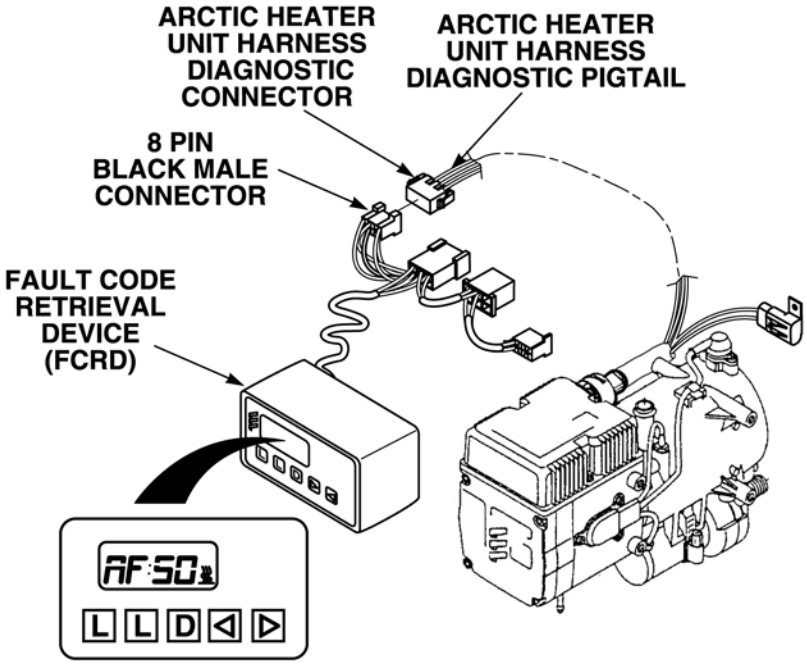


Connect Fault Code Retrieval Device (FCRD) 8 pin black male connector, to arctic heater unit harness diagnostic connector.
The Fault Code Retrieval Device (FCRD) displays “dIA”, if correctly connected.

Display	Notes
Start arctic heater by pressing D button on Fault Code Retrieval Device (FCRD).	
	After pressing the D button on the FCRD, the display shows (-:--).
After 8 seconds the Fault Code Retrieval Device (FCRD) will display one of the following fault CODES.	
	No error.

Display	Notes
	(AF:50) Current fault (fault code 50).
	Fault code diagnostics not possible. **NOTE** Possible causes for FCRD to display this code: • FCRD cable not properly connected. • Arctic heater control unit defective or incapable of diagnosis.

d. Review Past Fault Codes (F1 to F5) or (F5 to F1).



NOTE

Only the last 5 fault codes will be shown.

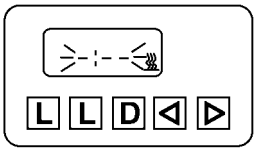
Press the (<) or (>) button on the Fault Code Retrieval Device (FCRD) to display previous fault codes.

e. Clear Fault Code Retrieval Device (FCRD) Memory.

NOTE

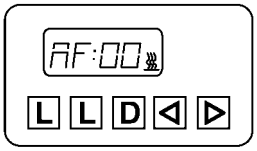
Ensure problem is corrected before deleting fault codes.

Press both L buttons on the Fault Code Retrieval Device (FCRD) at the same time and hold until "-:--" is displayed.

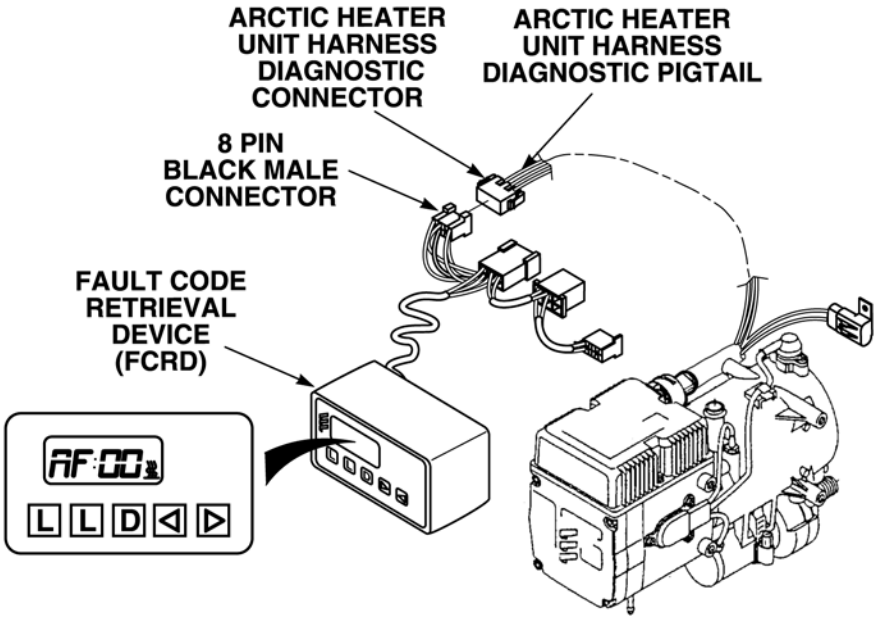


NOTE

After the fault codes are cleared, the latest fault code is displayed. The current fault code is not cleared until after the arctic heater has been restarted, providing no other current faults occur. The display will show "AF:00".



f. Remove Fault Code Retrieval Device (FCRD).



Press the D button on the Fault Code Retrieval Device (FCRD) to turn arctic heater off.

NOTE

Wait until arctic heater is cooled down, before removing Fault Code Retrieval Device (FCRD) from arctic heater unit harness diagnostic connector.

Disconnect Fault Code Retrieval Device (FCRD) 8 pin black male connector from arctic heater unit harness diagnostic connector.

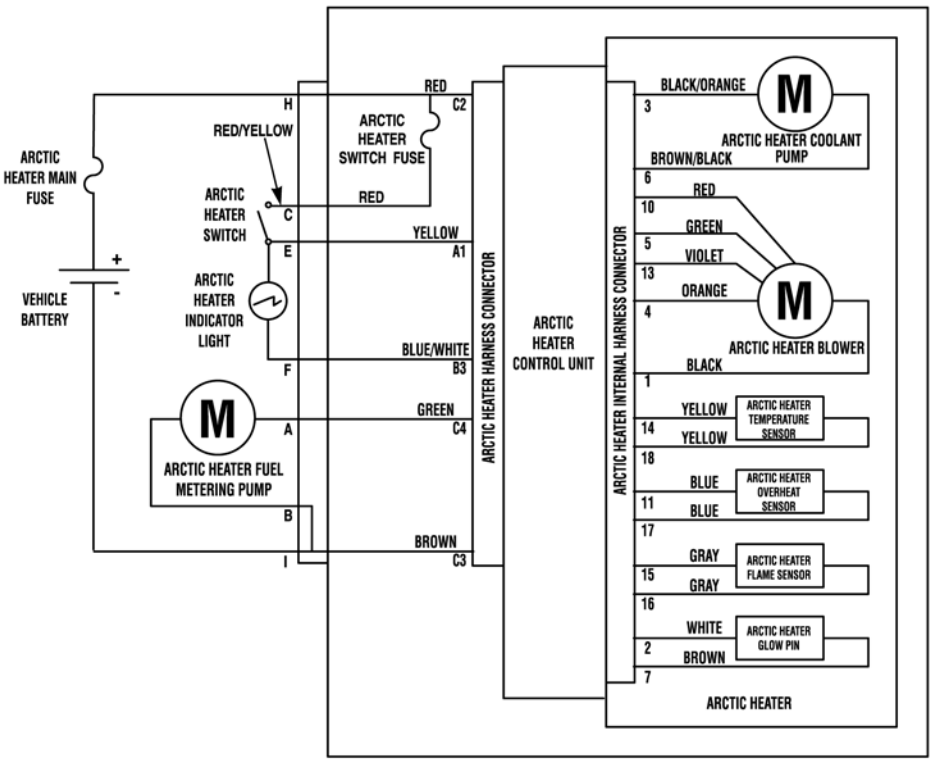


Figure 2-74.1. Arctic Heater (Model B) Electrical Schematic

2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING (CONT).

1. ARCTIC HEATER DOES NOT OPERATE (MODEL B).

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)

References
TM 9-2320-364-10
TM 9-6140-200-14

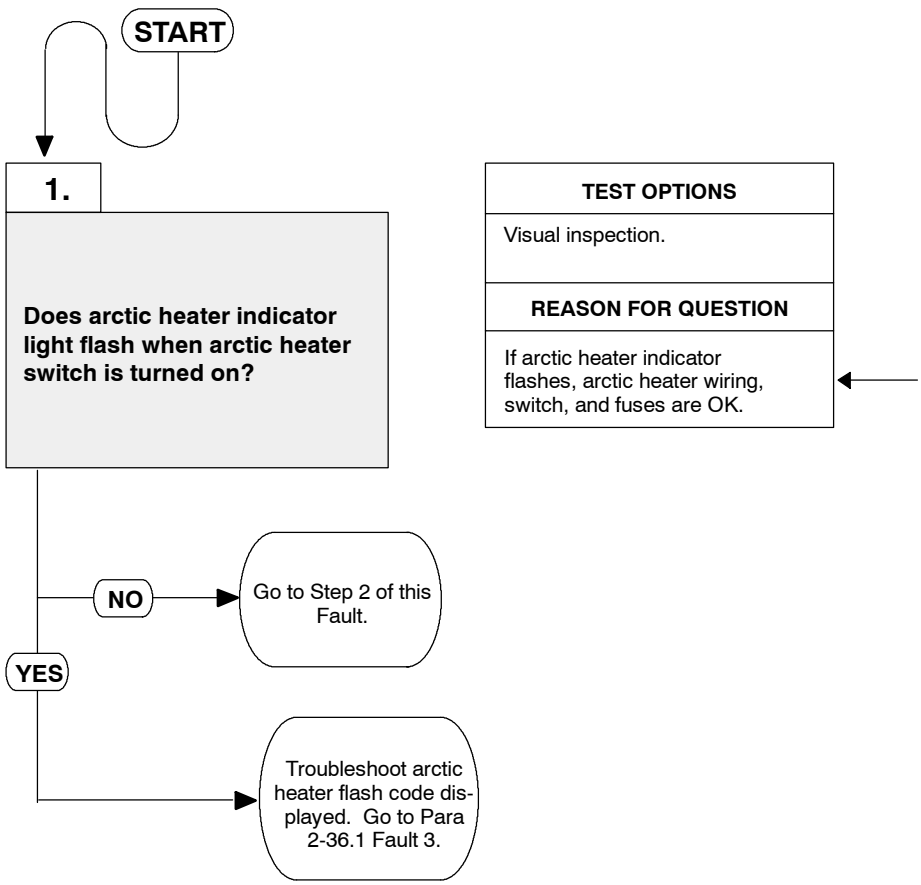
Equipment Condition
Engine OFF, (TM 9-2320-34-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

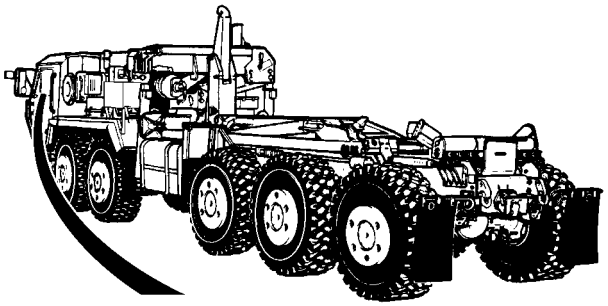
KNOWN INFO

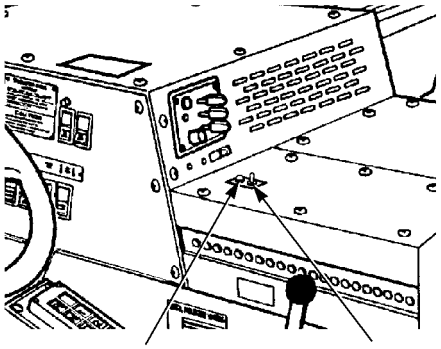
Nothing.

POSSIBLE PROBLEMS

Arctic heater indicator displays flash code.
Battery connections loose, corroded, or damaged.
Arctic heater unit harness brown wire faulty.
Arctic heater unit harness red wire faulty.
Battery voltage low.
Arctic heater main fuse faulty.
Arctic heater harness brown wire faulty.
Arctic heater harness red wire faulty.
Arctic heater switch fuse faulty.
Arctic heater harness red/yellow wire faulty.
Arctic heater unit harness red wire to arctic heater switch fuse faulty.
Arctic heater switch faulty.
Arctic heater control unit faulty.
Arctic heater unit harness yellow wire faulty.
Arctic heater harness yellow wire faulty.



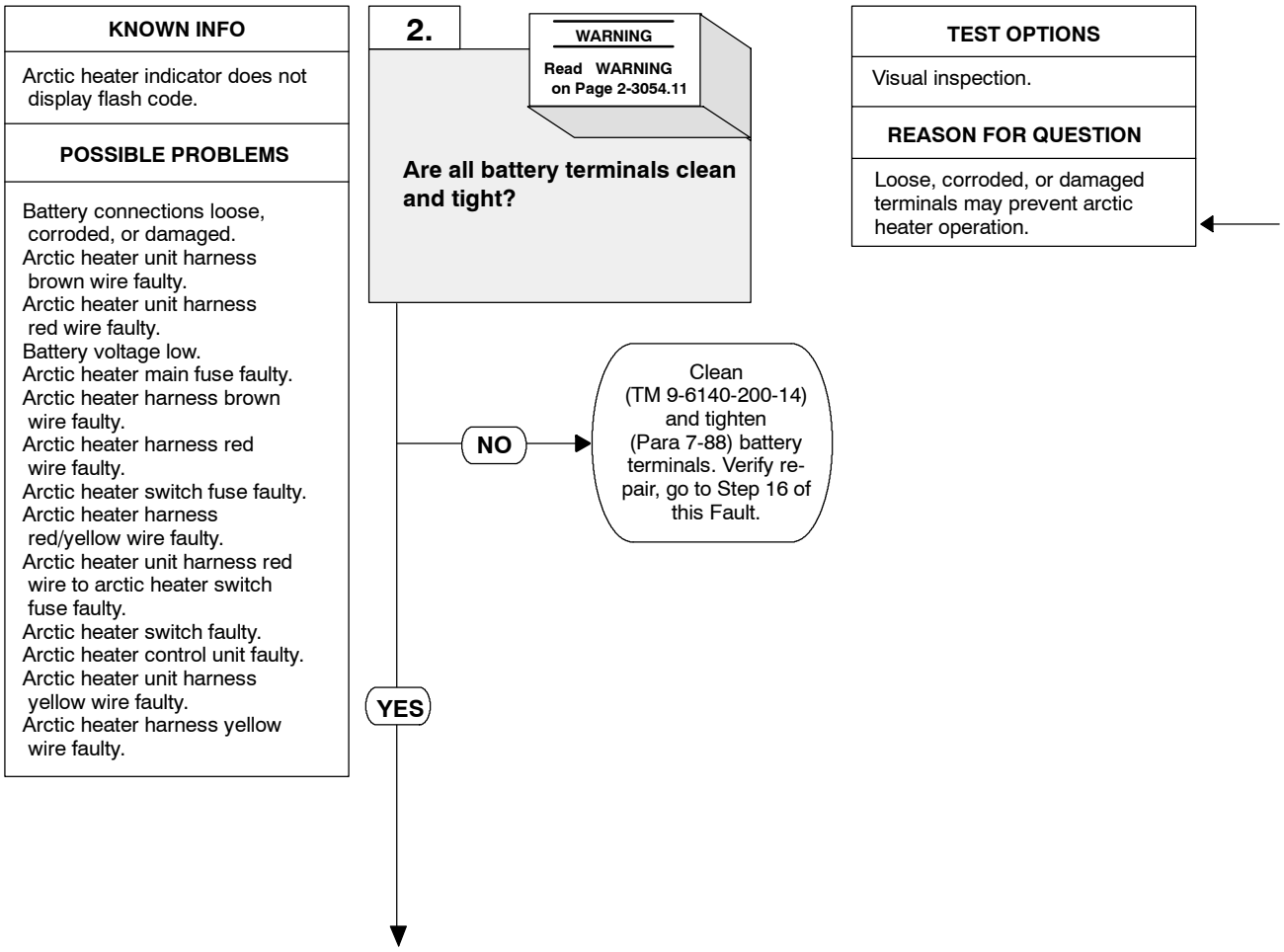




VISUAL INSPECTION

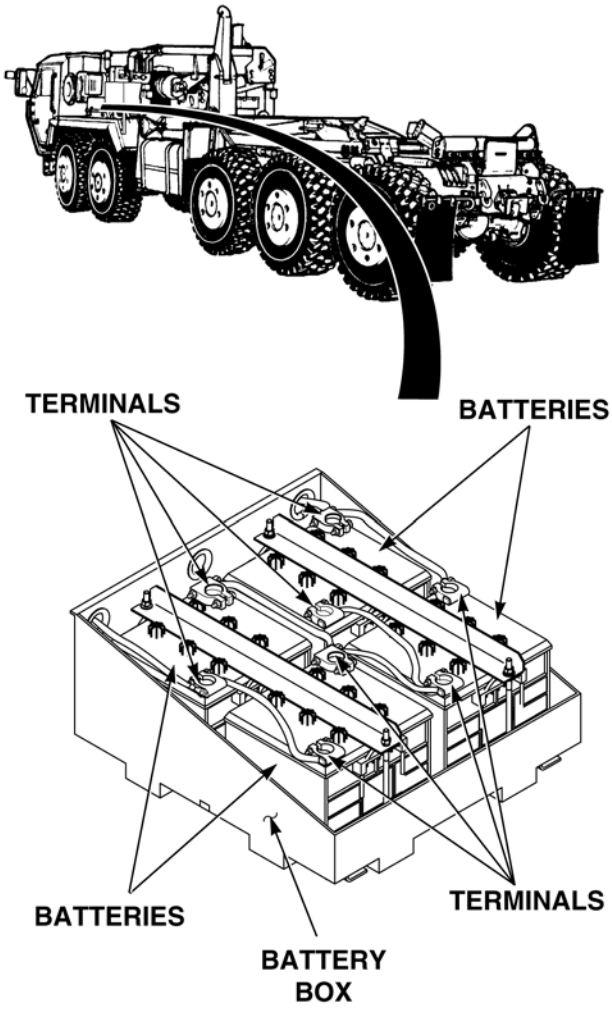
(1) Turn arctic heater switch ON (TM 9-2320-364-10).
(2) Observe arctic heater indicator light operation.
    (a) If arctic heater indicator light does not operate, go to Step 2 of this Fault.
    (b) If arctic indicator light flashes, troubleshoot arctic heater fault code displayed. Turn arctic heater switch OFF and go to Para 2-36.1 Fault 3.

1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).



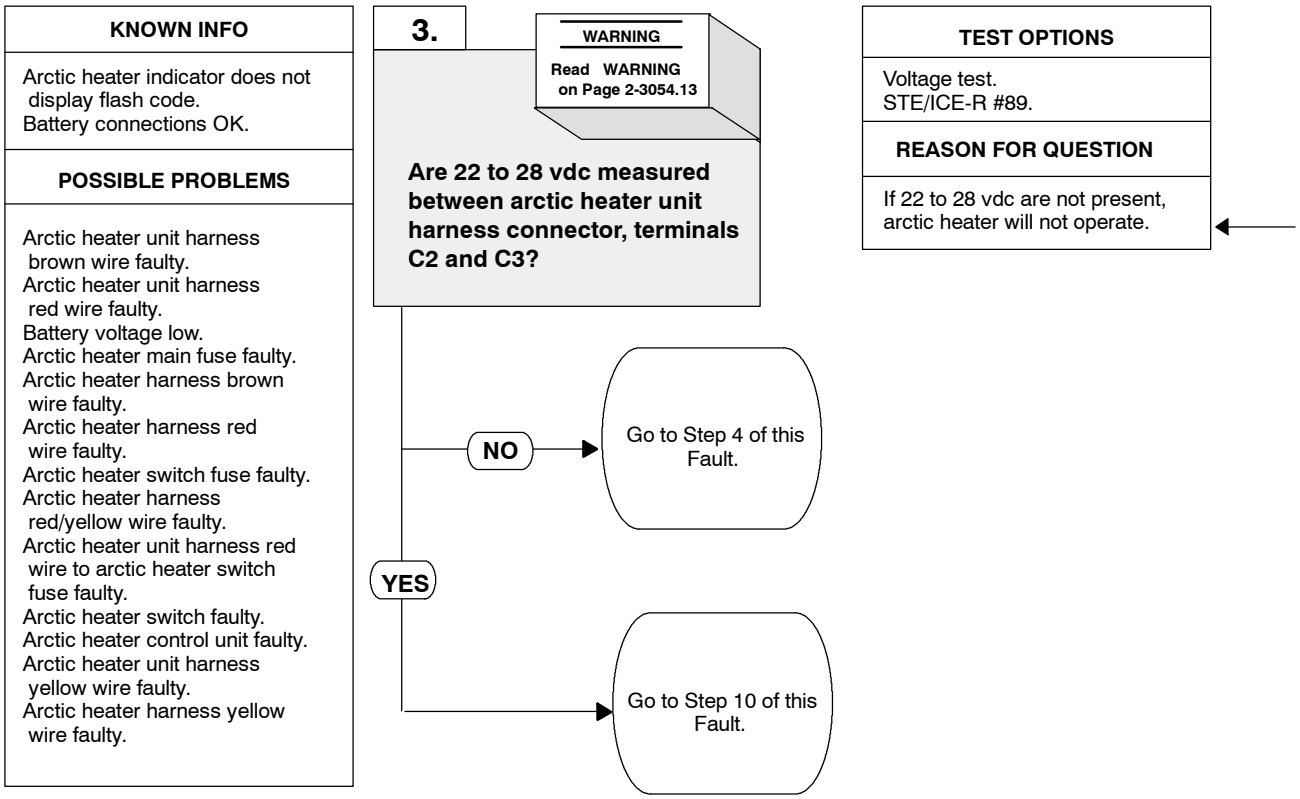
WARNING

- 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.
- Be careful not to short out battery terminals. Do no smoke or use open flame near batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes.



VISUAL INSPECTION
(1) Turn arctic heater switch OFF (TM 9-2320-364-10). (2) Open battery box (TM 9-2329-364-10). (3) Inspect all battery terminals for dirt, corrosion, and looseness. (a) If battery terminals are dirty or corroded, clean battery terminals (TM 9-6140-200-14). (b) If battery terminals are loose, tighten battery terminals (Para 7-88). (c) If terminals OK, go to Step 3 of this Fault.

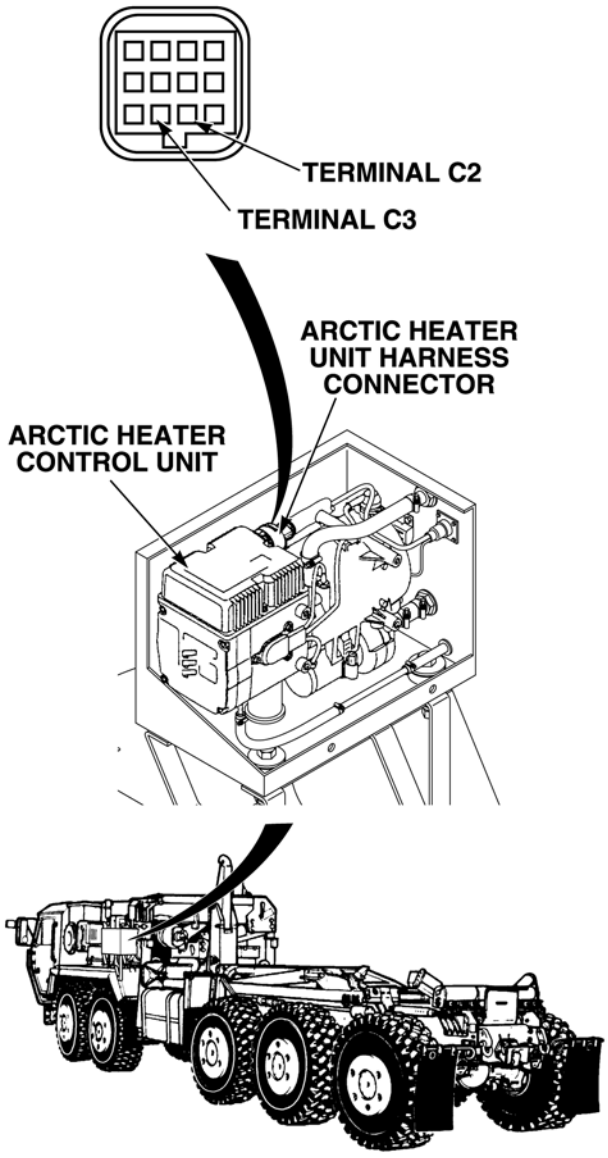
1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).



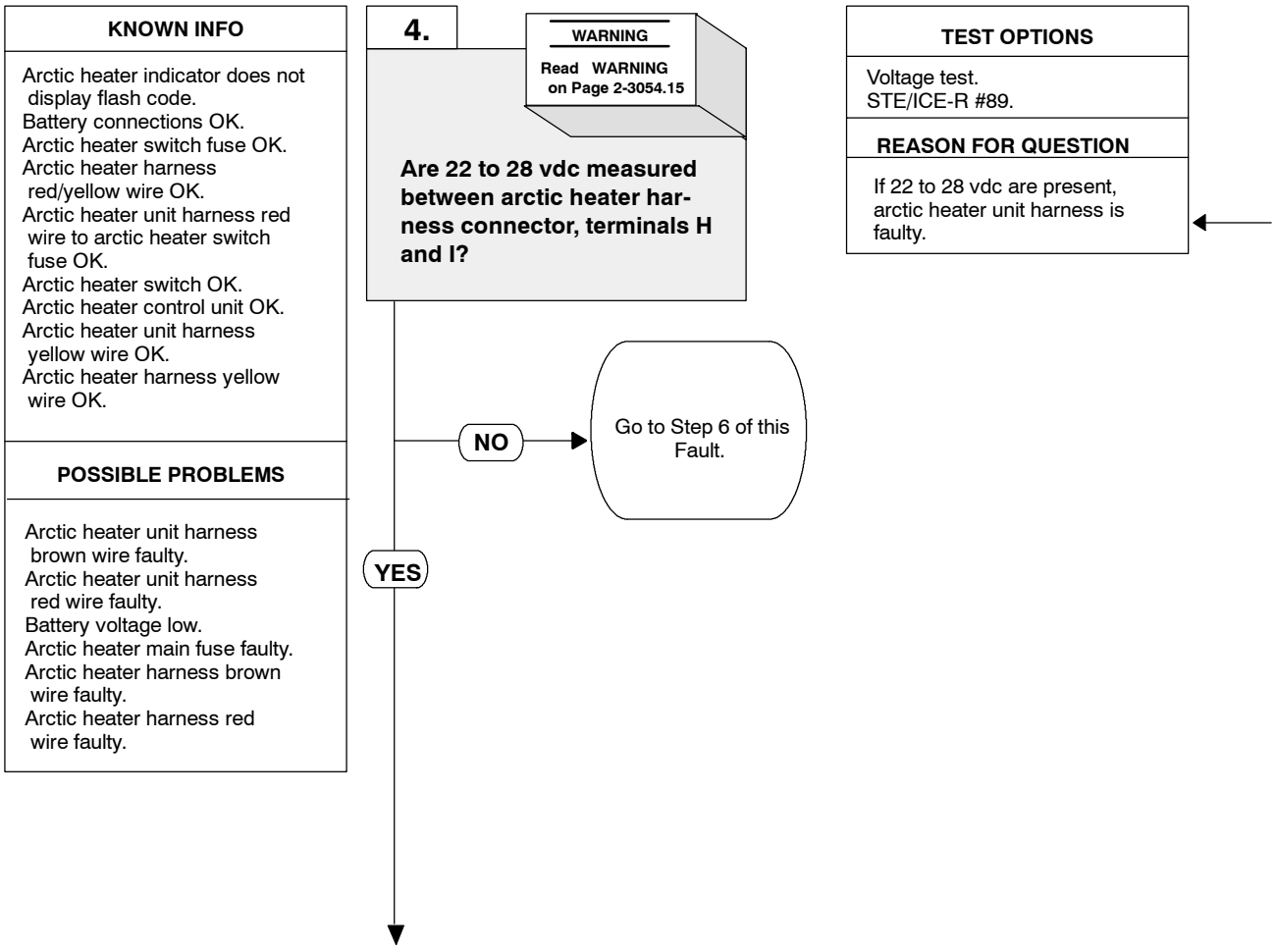
WARNING

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 cover from arctic heater (Para 21-6.1). (2) Disconnect arctic heater unit harness connector from arctic heater control unit (Para 21-6.1). (3) Connect positive (+) lead to arctic heater unit harness connector, terminal C2. (4) Connect negative (-) lead to arctic heater unit harness connector, terminal C3. (a) If 22 to 28 vdc are not present, go to Step 4 of this Fault. (b) If 22 to 28 vdc are present, go to Step 10 of this Fault.



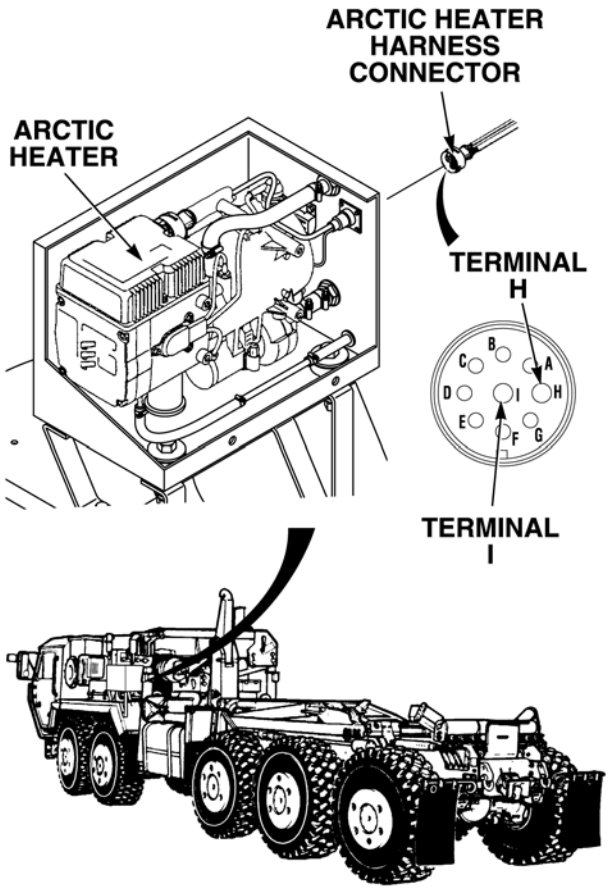
1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).



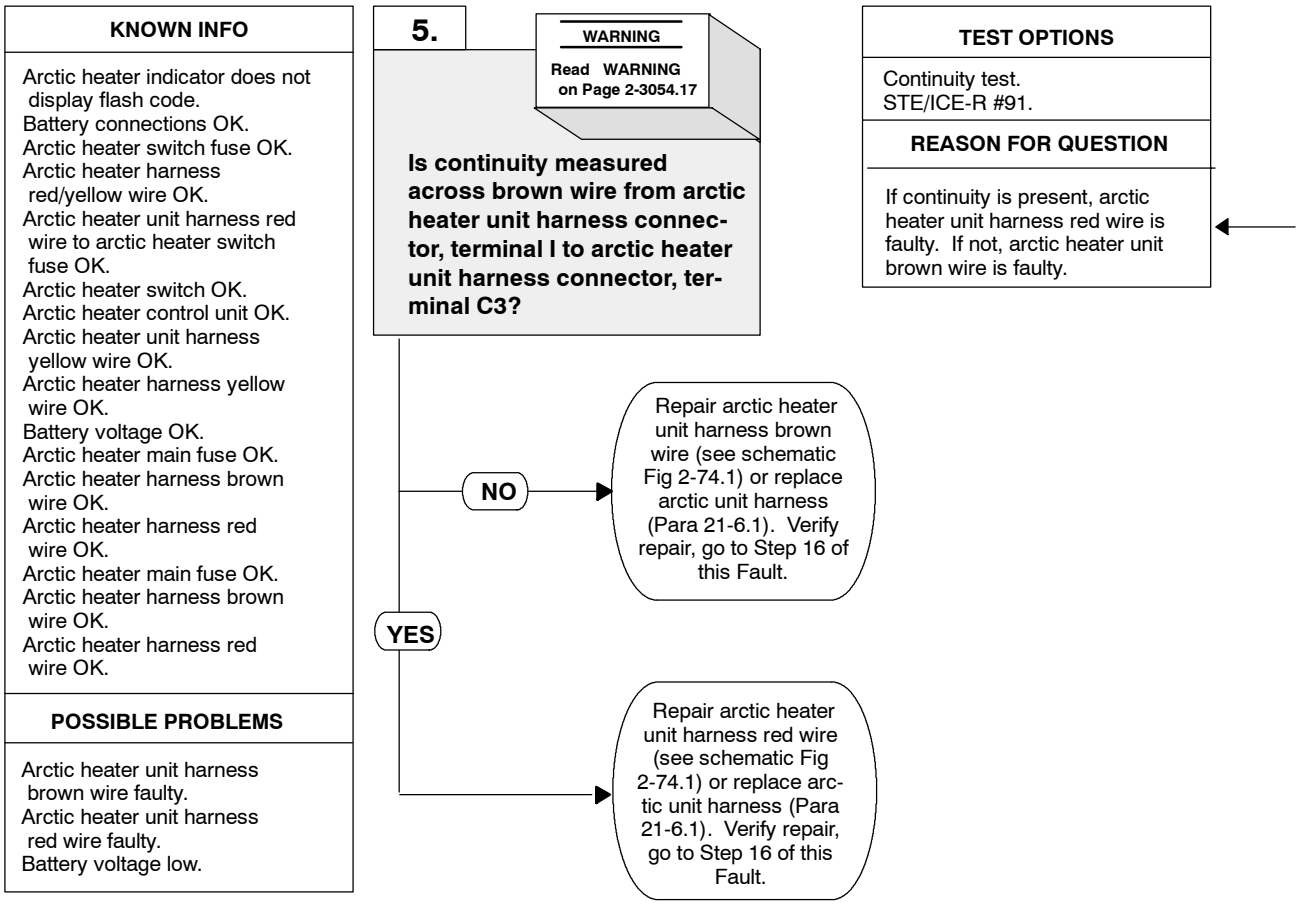
WARNING

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 arctic heater harness connector from arctic heater (Para 21-10.1). (2) Connect positive (+) lead to arctic heater harness connector, terminal H. (3) Connect negative (-) lead to arctic heater harness connector, terminal I. (a) If 22 to 28 vdc are not present, go to Step 6 of this Fault. (b) If 22 to 28 vdc are present, go to Step 5 of this Fault.



1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

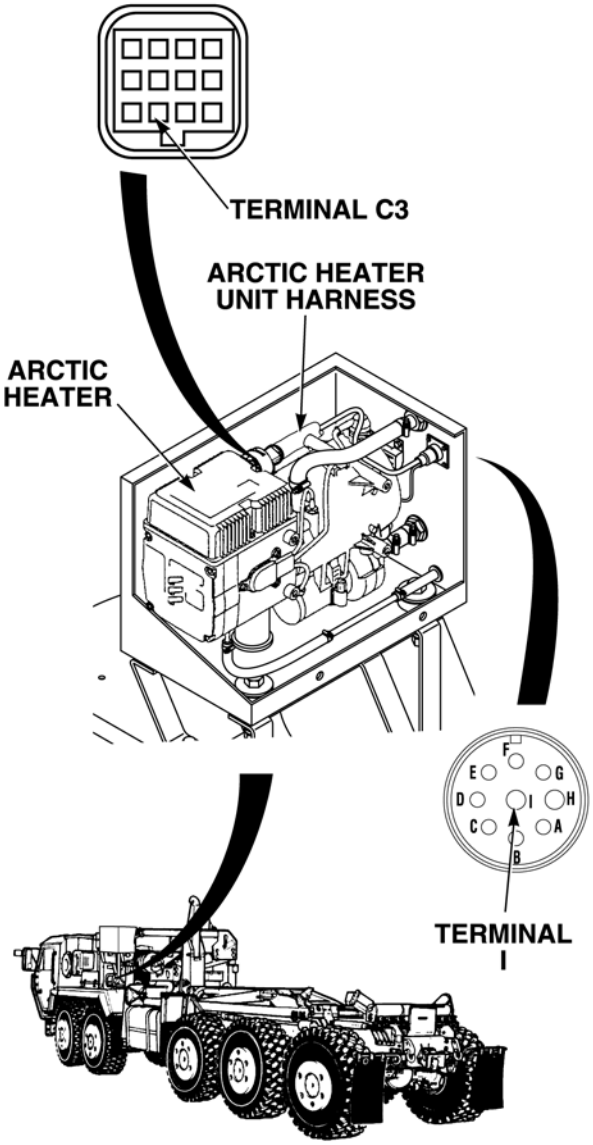


WARNING

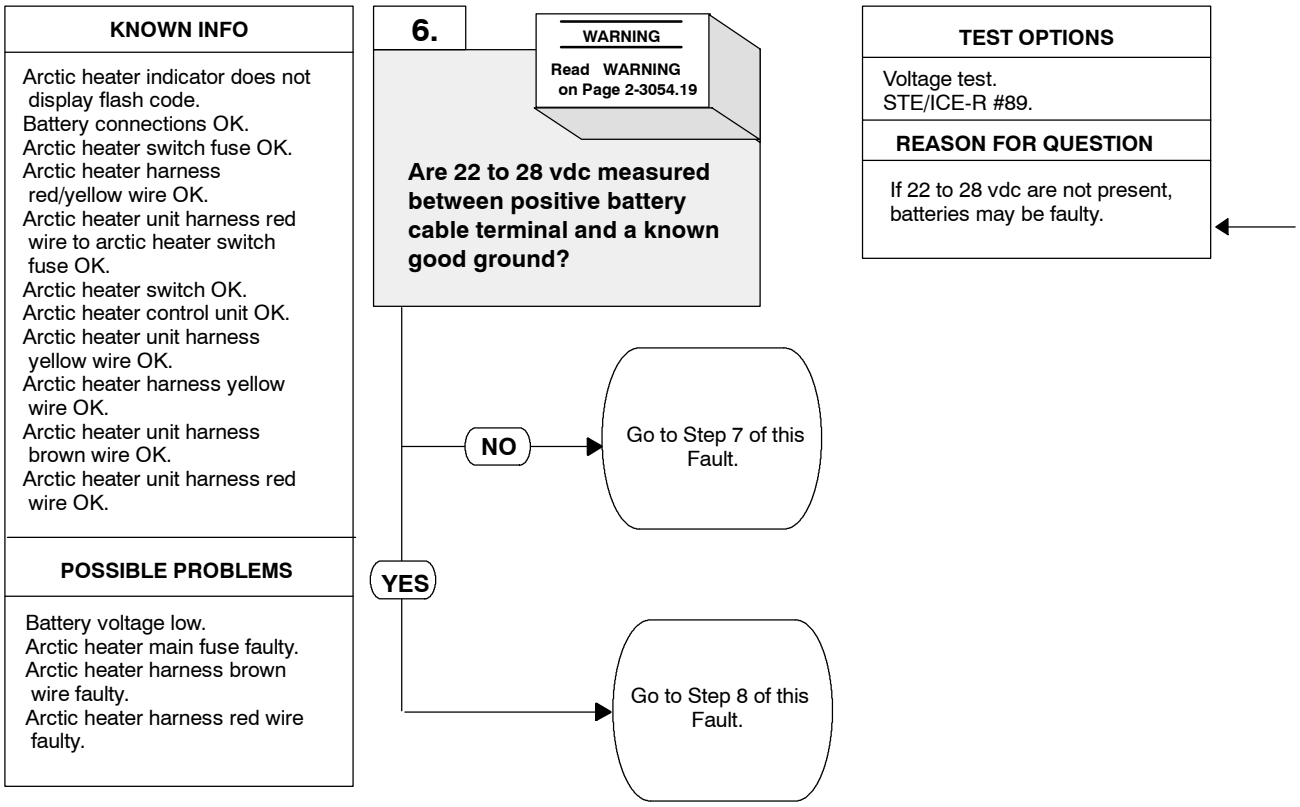
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

CONTINUITY TEST

(1) Connect positive (+) lead to brown wire at arctic heater unit harness connector, terminal I.
(2) Connect negative (-) lead to brown wire at arctic heater unit harness connector, terminal C3.
(3) Is continuity measured across brown wire from arctic heater unit harness connector, terminal I to arctic heater unit harness connector, terminal C3?
   (a) If there is no continuity, repair arctic heater unit harness brown wire (see schematic Fig 2-74.1) or replace arctic heater unit harness (Para 21-6.1).
   (b) If there is continuity, repair arctic heater unit harness red wire (see schematic Fig 2-74.1) or replace arctic heater unit harness (Para 21-6.1).

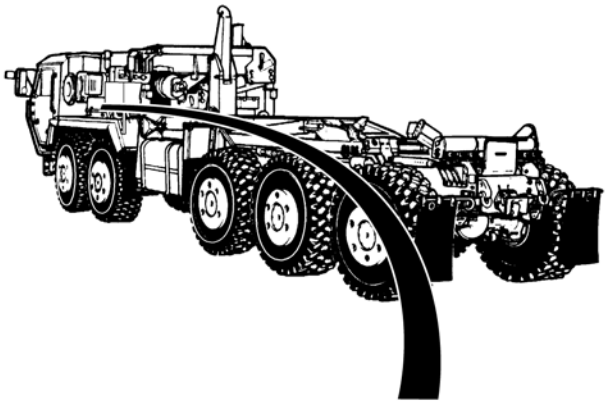


1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).



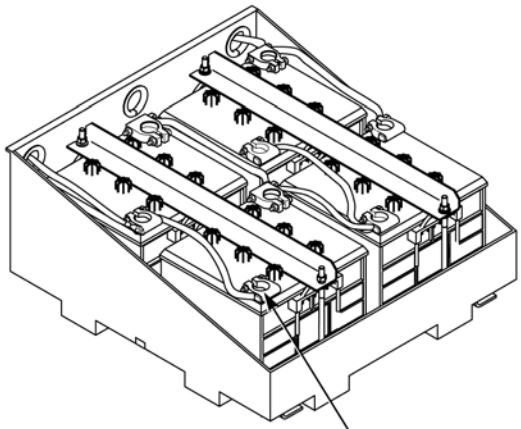
WARNING

- 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.
- 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.



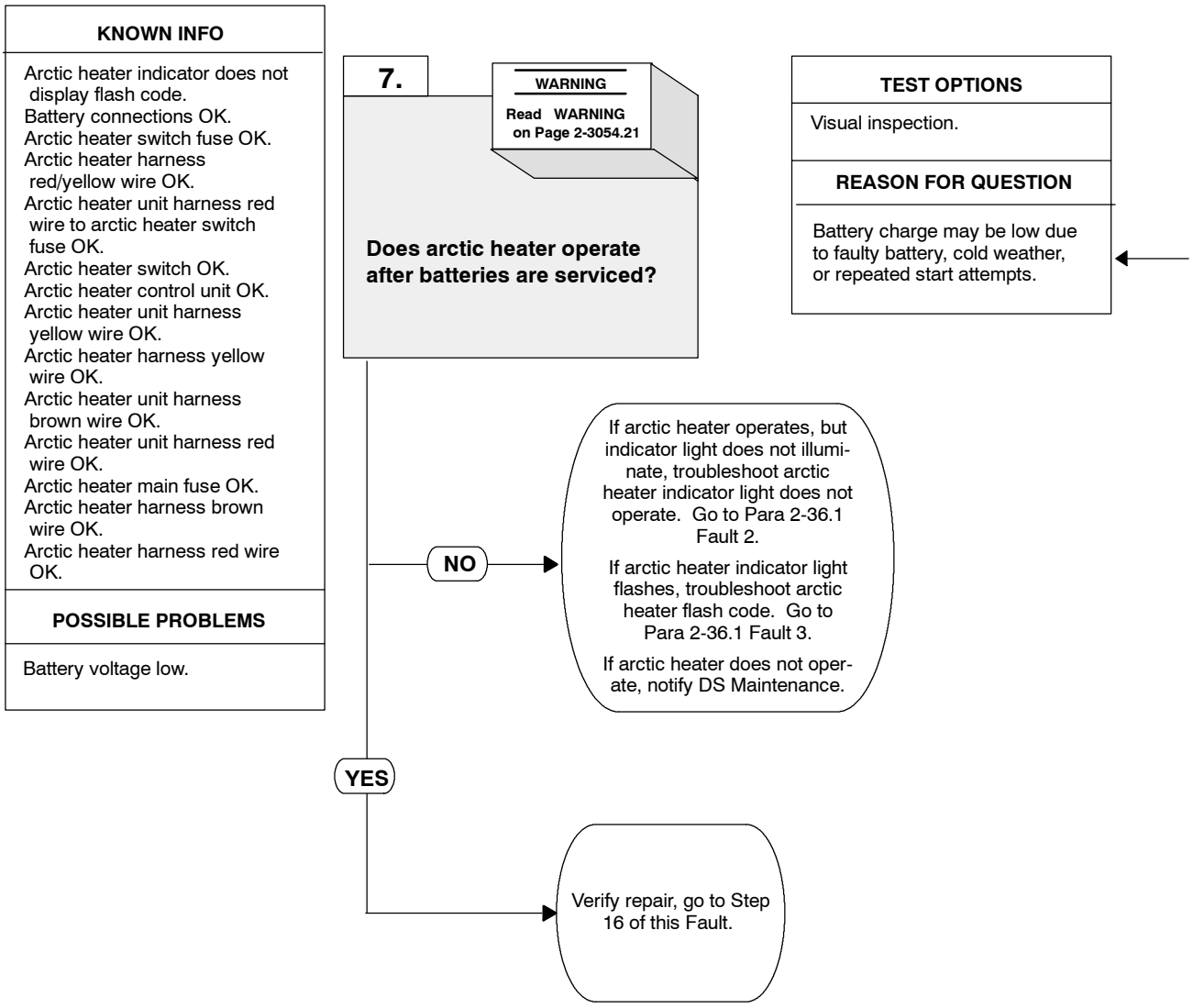
VOLTAGE TEST

(1) Connect positive (+) lead to positive battery cable terminal.
(2) Connect negative (-) lead to a known good ground.
  (a) If 22 to 28 vdc are not present, go to Step 7 of this Fault.
  (b) If 22 to 28 vdc are present, go to Step 8 of this Fault.



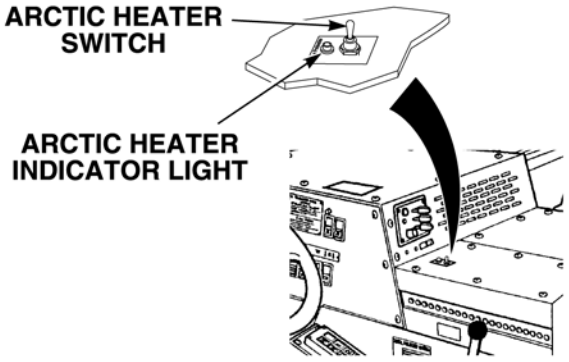
POSITIVE BATTERY CABLE TERMINAL

1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).



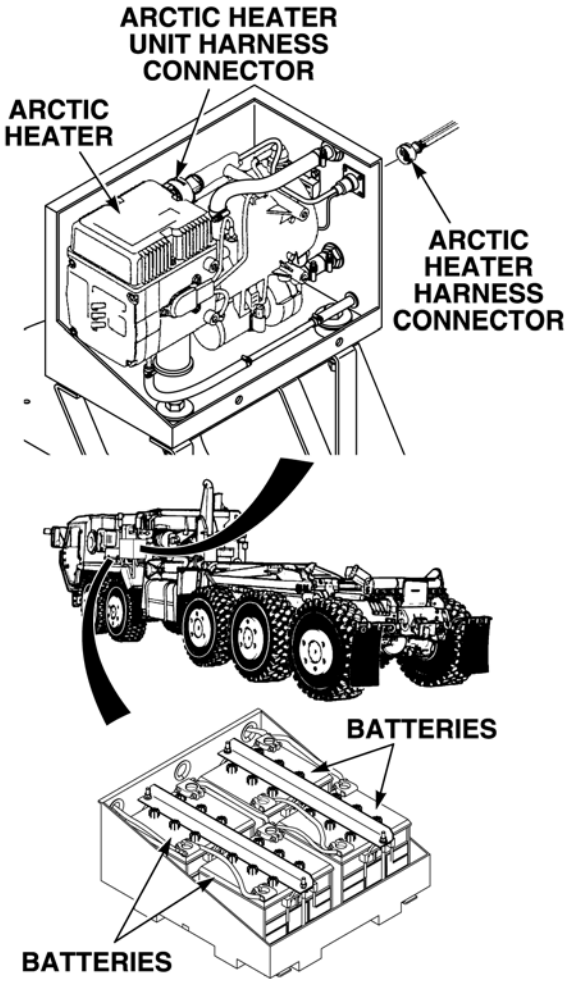
WARNING

- 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.
- 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.

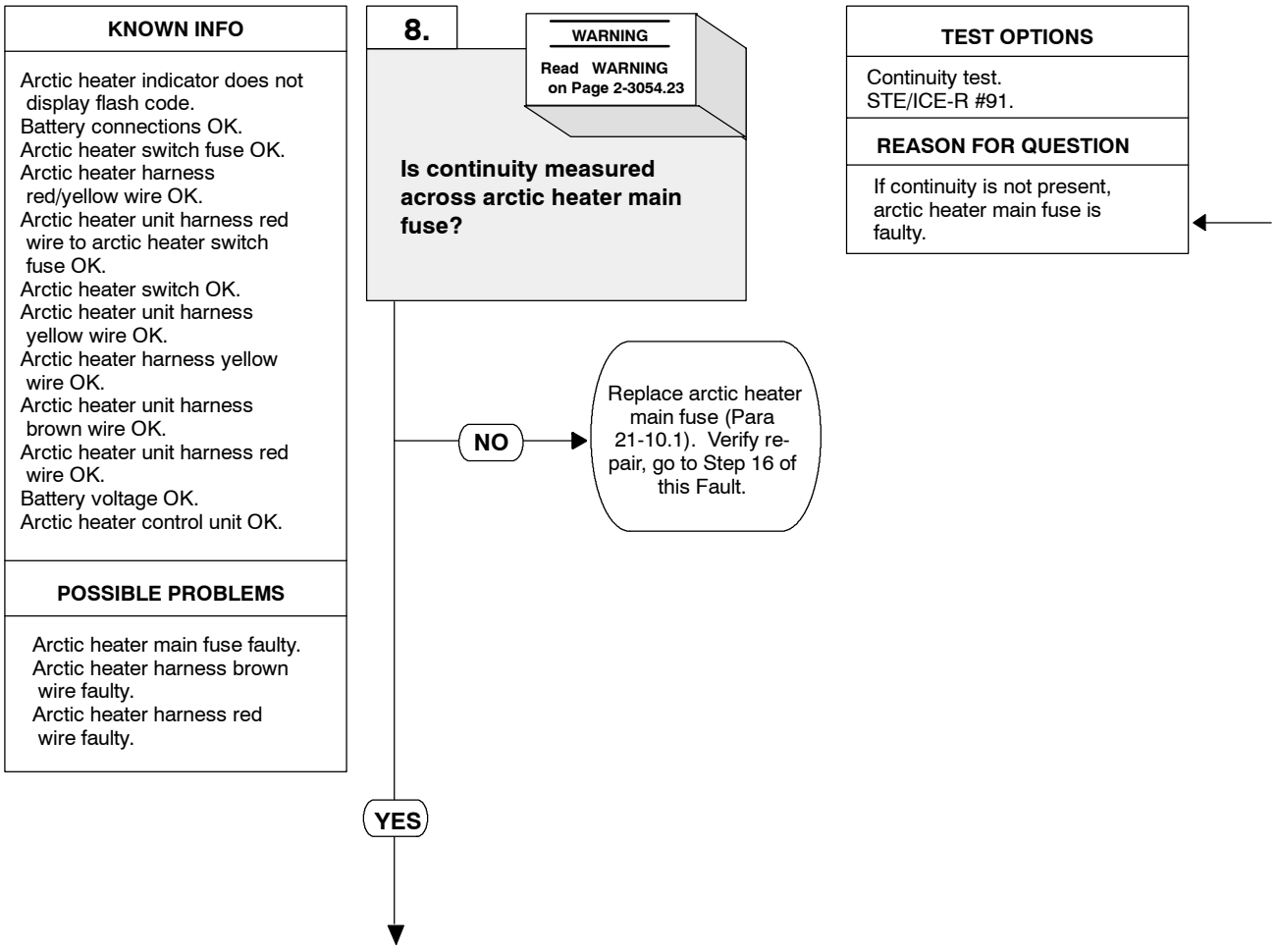


VISUAL INSPECTION

(1) Connect arctic heater unit harness connector to arctic heater control unit (Para 21-6.1).
(2) Connect arctic heater harness connector to arctic heater (Para 21-10.1).
(3) Install cover on arctic heater (Para 21-6.1).
(4) Service batteries (TM 9-6140-200-14).
(5) Turn arctic heater ON (TM 9-2320-364-10).
(6) Observe arctic heater indicator light operation.
(7) Observe arctic heater operation.
(8) Turn arctic heater OFF.
  (a) If arctic heater operated and indicator light illuminated, go to Step 16 of this Fault.
  (b) If arctic heater operated, but indicator light did not illuminate. Troubleshoot arctic heater indicator light does not operate. Go to Para 2-36.1 Fault 2.
  (c) If arctic heater indicator light flashed, troubleshoot arctic heater fault code. Go to Para 2- 36.1 Fault 3.
  (d) If arctic heater did not operate and indicator light did not illuminate, notify DS Maintenance.



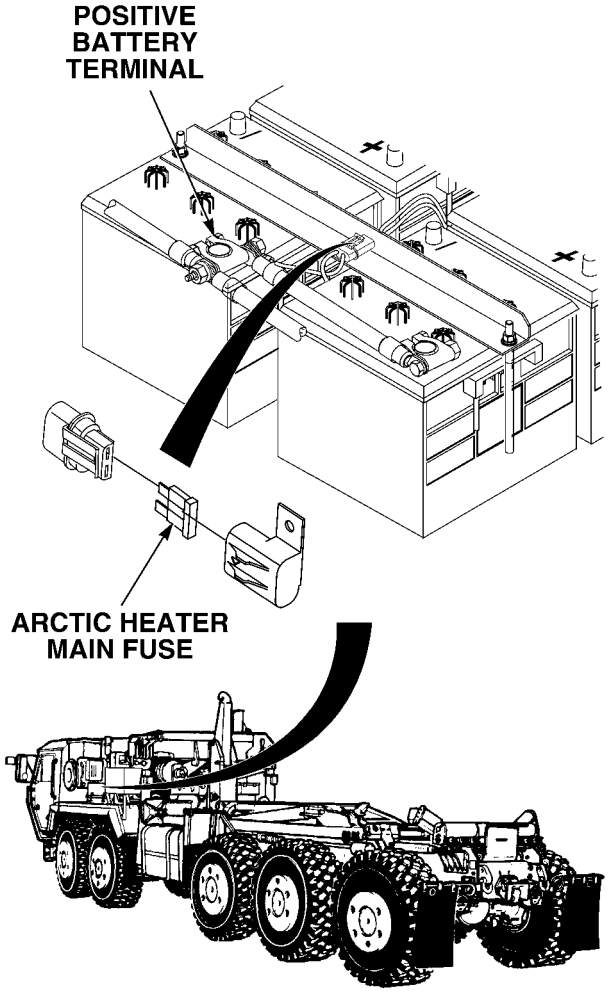
1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).



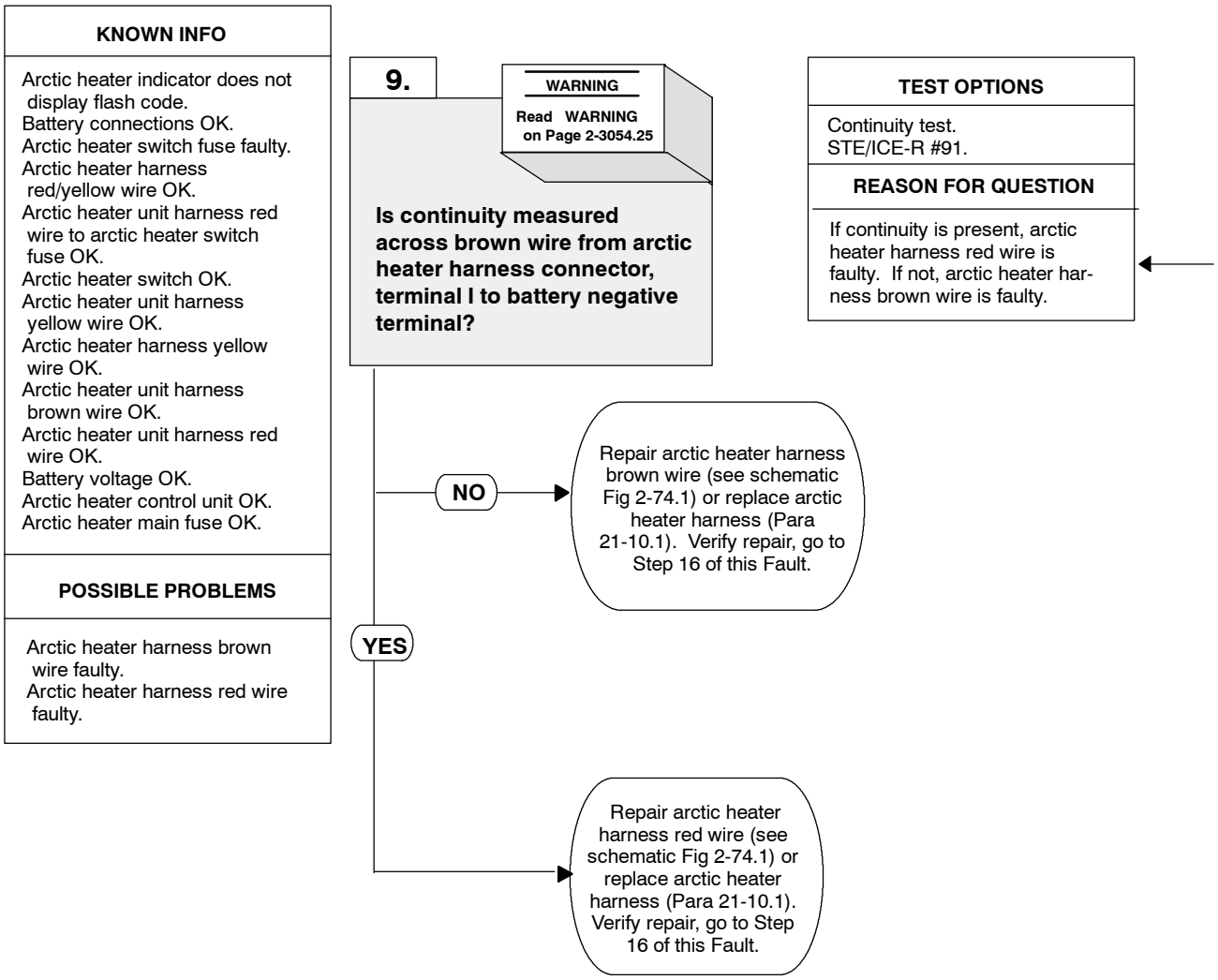
WARNING

- 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.
- 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.

CONTINUITY TEST
(1) Remove arctic heater main fuse from fuse holder (Para 21-10.1). (2) Connect positive (+) lead to a terminal on fuse. (3) Connect negative (-) lead to other terminal on fuse. (4) Is continuity measured across arctic heater main fuse? (a) If there is no continuity, replace arctic heater main fuse (Para 21-10.1). (b) If there is continuity, go to Step 9 of this Fault.



1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

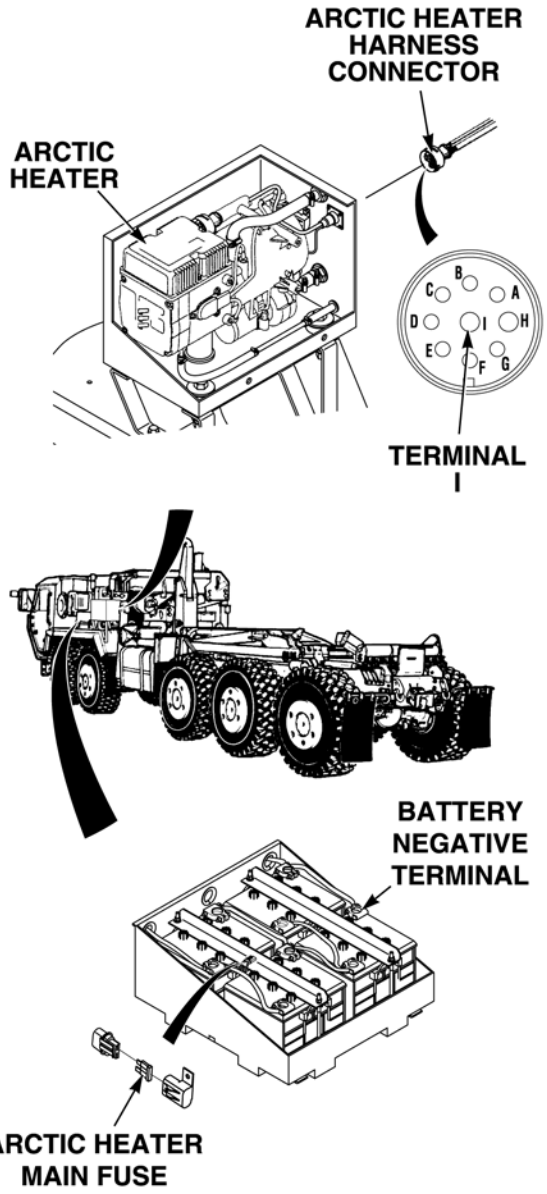


WARNING

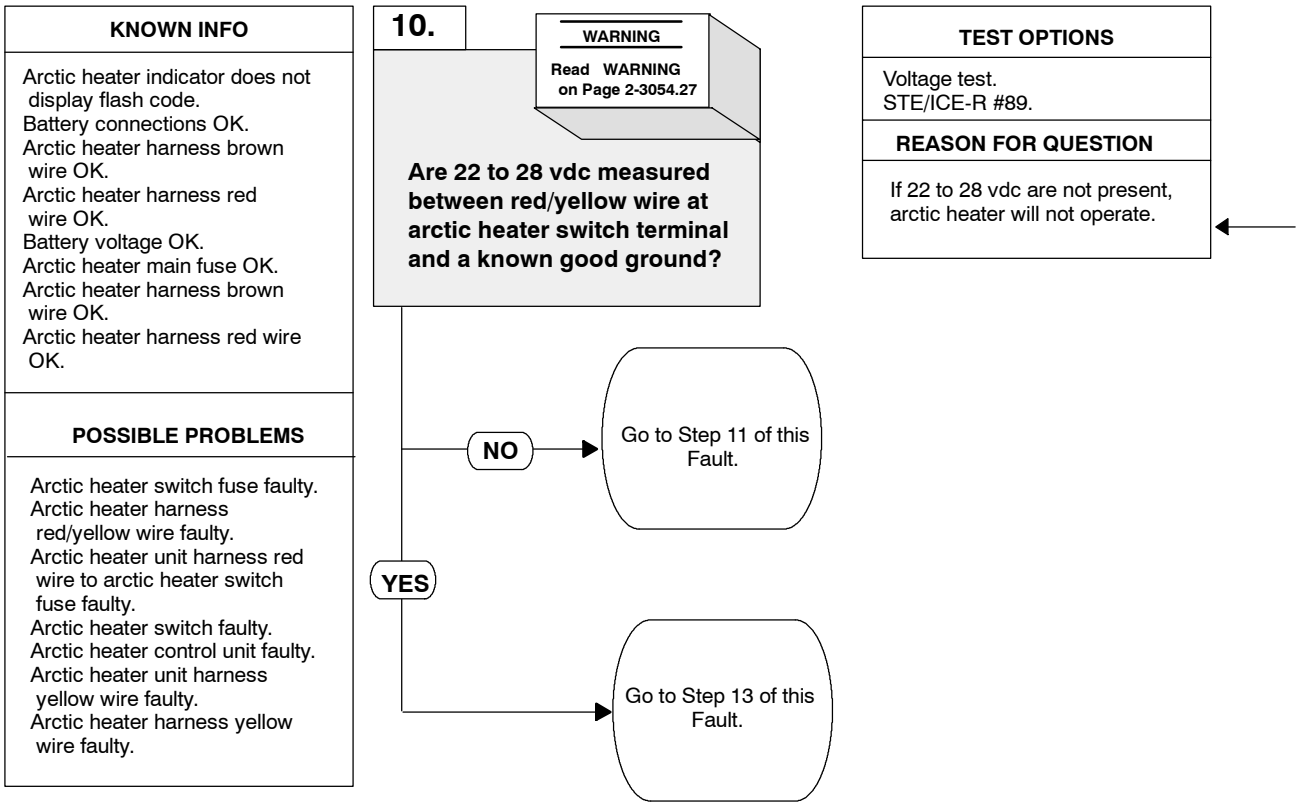
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Be careful not to short out battery terminals. Do not smoke or use open flame near batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes.

CONTINUITY TEST

(1) Install arctic heater main fuse (Para 21-10.1).
(2) Connect positive (+) lead to brown wire at arctic heater harness connector, terminal I.
(3) Connect negative (-) lead to brown wire at battery negative terminal.
(4) Is continuity measured across brown wire from arctic heater harness connector, terminal I to battery negative terminal?
   (a) If there is no continuity, repair arctic heater harness brown wire (see schematic Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).
   (b) If there is continuity, repair arctic heater harness red wire (see schematic Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).



1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

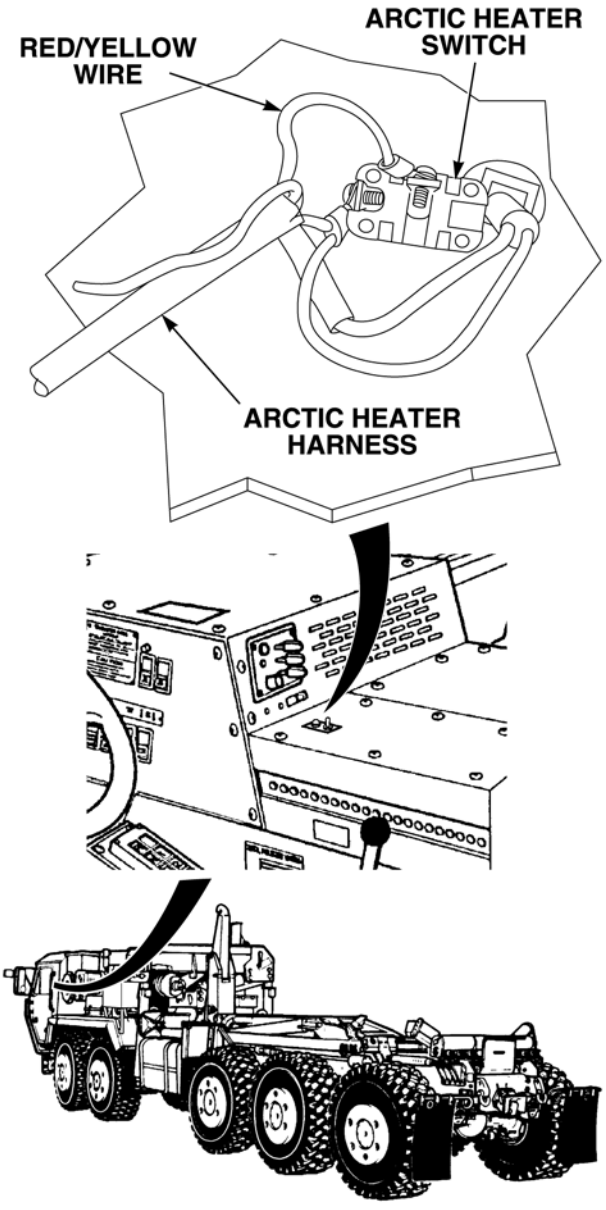


WARNING

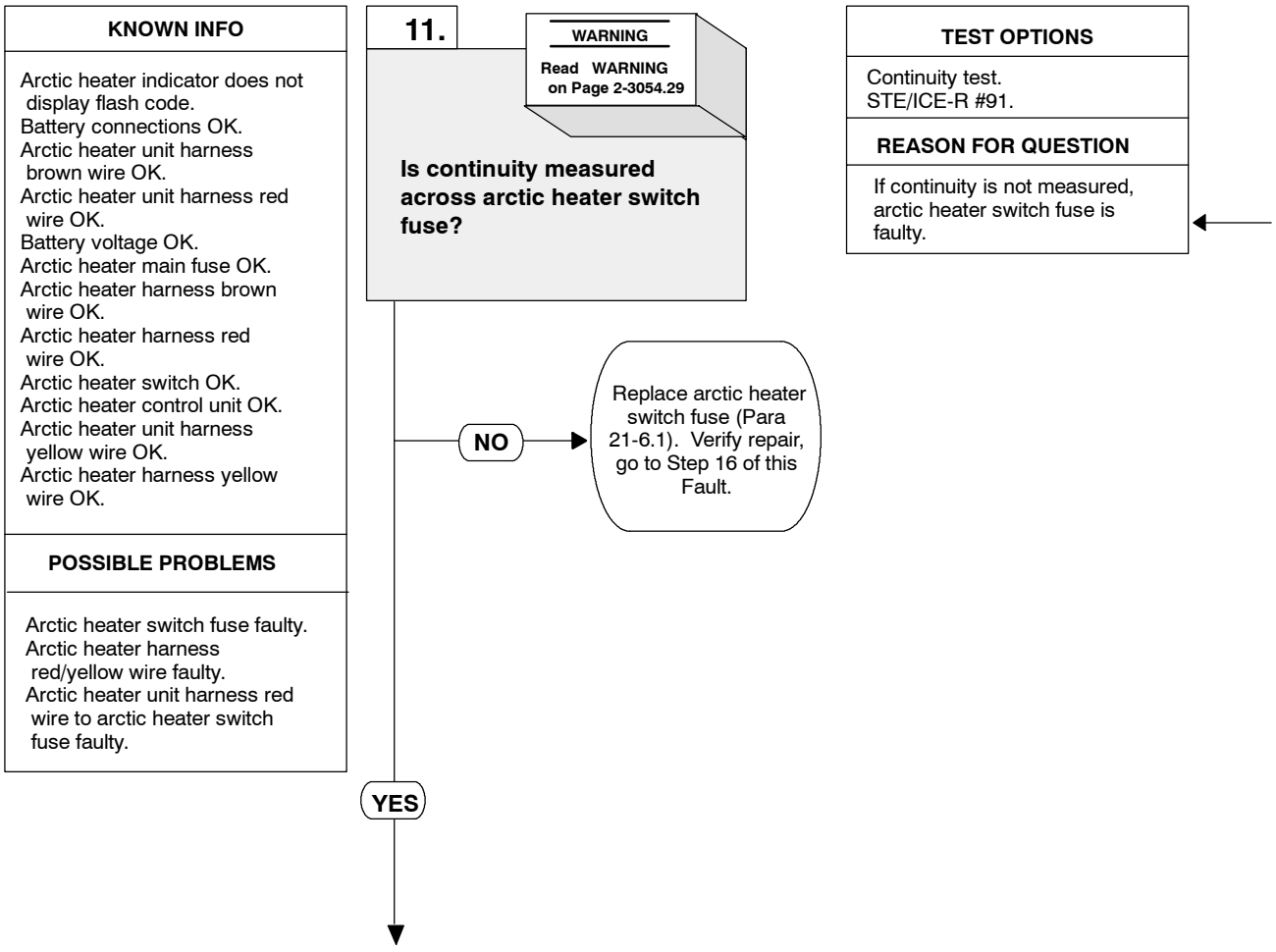
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32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

VOLTAGE TEST

(1) Remove eight screws and left ECB cover (Para 17-22).
(2) Connect positive (+) lead to red/yellow wire at arctic heater switch terminal.
(3) Connect negative (-) lead to a known good ground.
  (a) If 22 to 28 vdc are not present, go to Step 11 of this Fault.
  (b) If 22 to 28 vdc are present, go to Step 13 of this Fault.



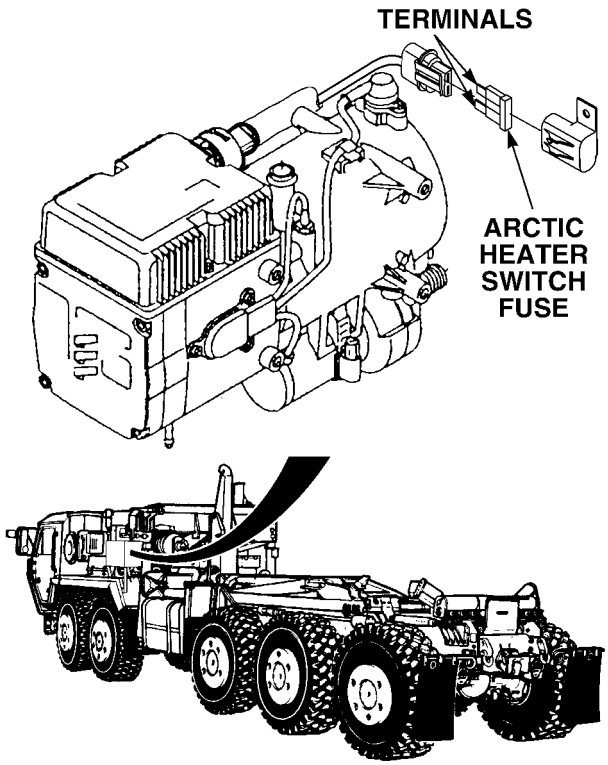
1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).



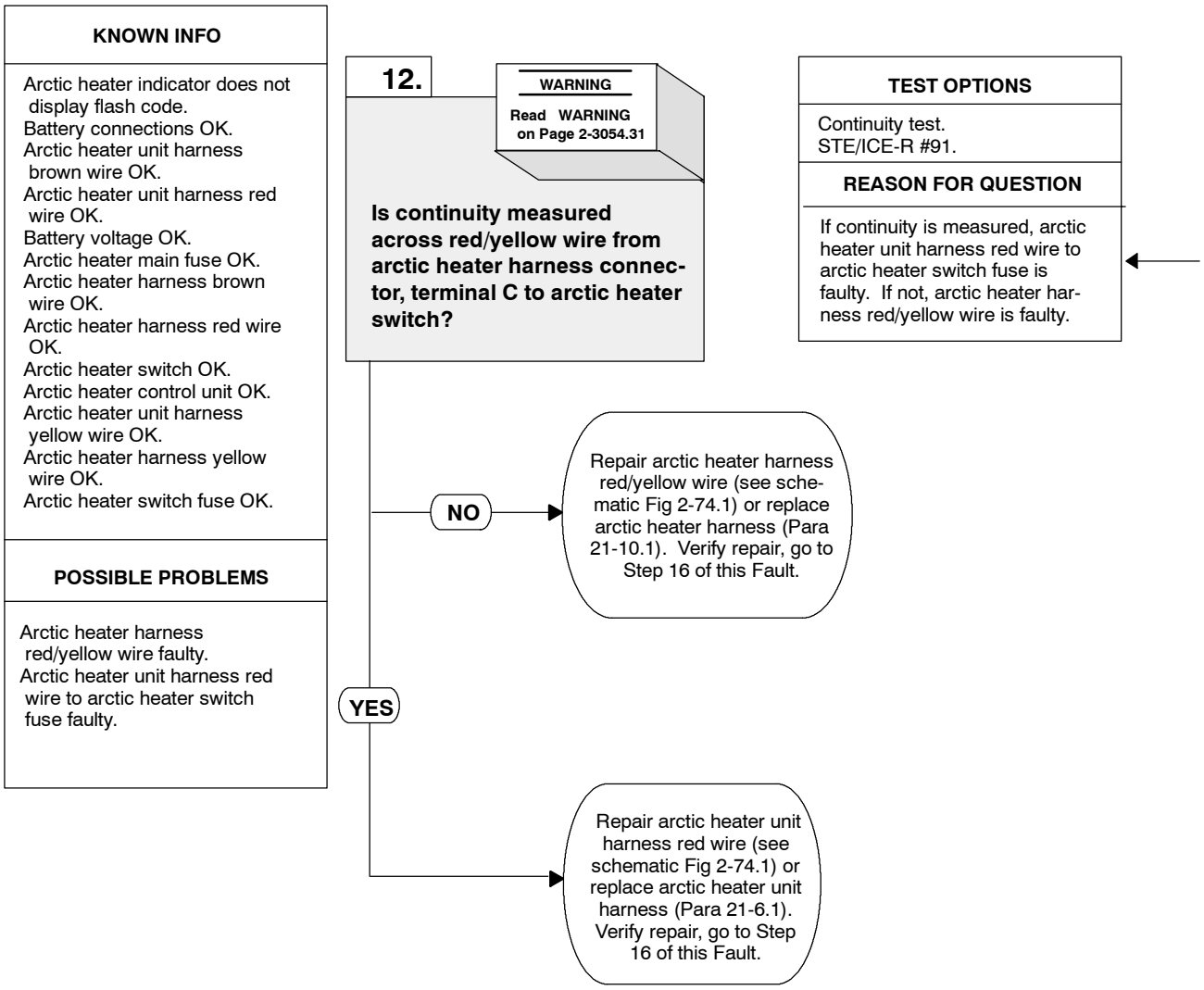
WARNING

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 arctic heater switch fuse from fuse holder (Para 21-6.1). (2) Connect positive (+) lead to one terminal on fuse. (3) Connect negative (-) lead to the other terminal on fuse. (4) Is continuity measured across arctic heater switch fuse? (a) If there is no continuity, replace arctic heater switch fuse (Para 21-6.1). (b) If there is continuity, go to Step 12 of this Fault.



1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

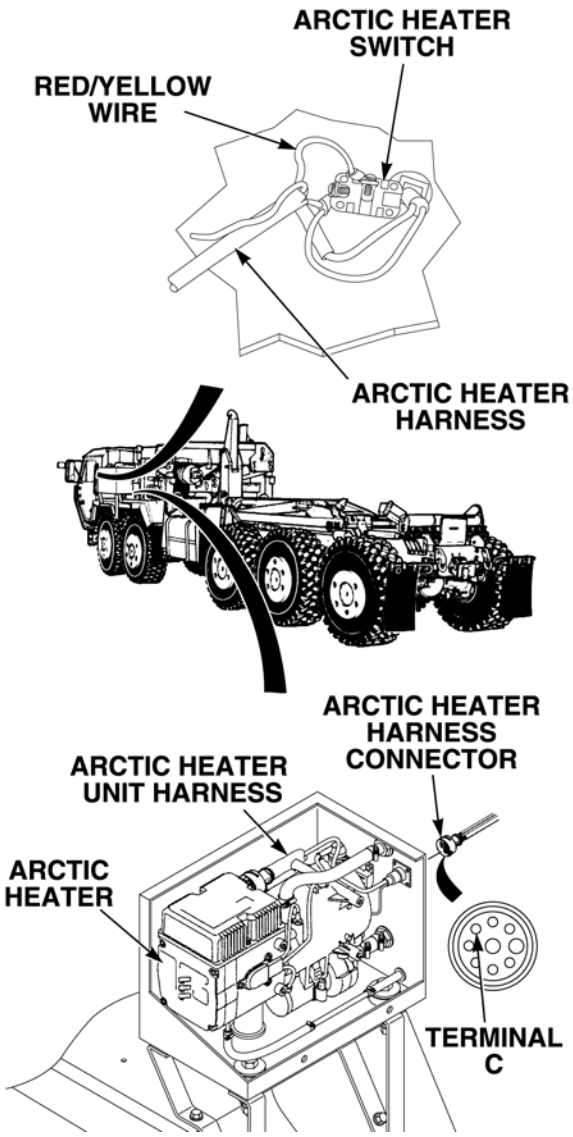


WARNING

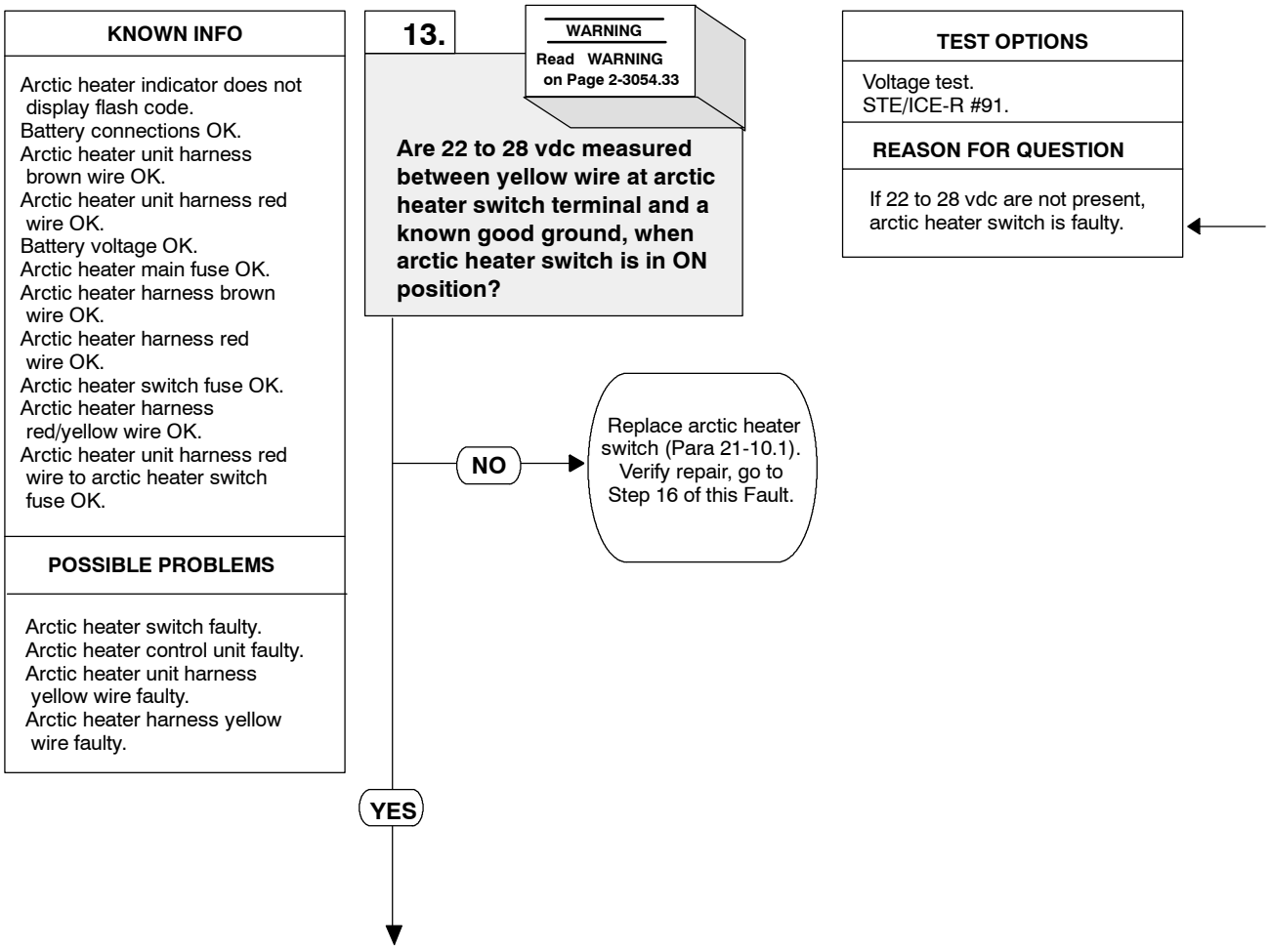
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32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

CONTINUITY TEST

(1) Install arctic heater switch fuse (Para 21-6.1).
(2) Disconnect arctic heater harness connector from arctic heater (Para 21-10.1).
(3) Connect positive (+) lead to red/yellow wire at arctic heater harness connector, terminal C.
(4) Connect negative (-) lead to red/yellow wire at arctic heater switch.
(5) Is continuity measured across red/yellow wire from arctic heater harness connector, terminal C to arctic heater switch?
    (a) If there is no continuity, repair arctic heater harness red/yellow wire (see schematic Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).
    (b) If there is continuity, repair arctic heater unit harness red wire to switch fuse (see schematic Fig 2-74.1) or replace arctic heater unit harness (Para 21-6.1).



1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

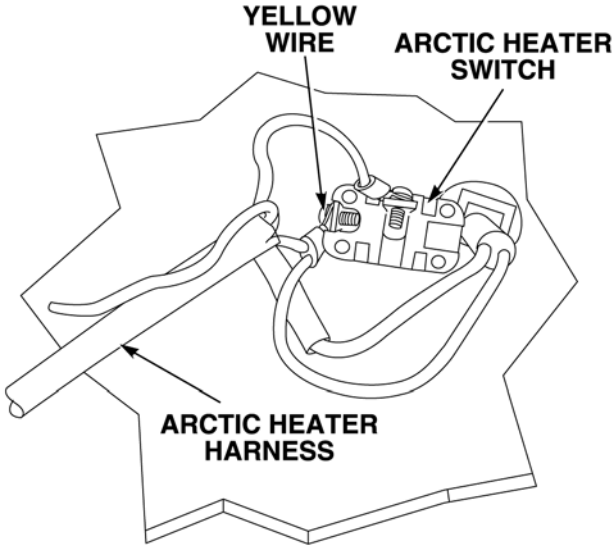


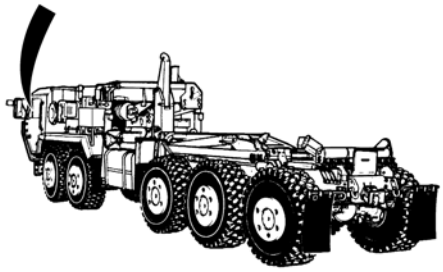
WARNING

- 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. Non-metallic tools shall be used when removing relays. Care must be exercised when working under the electrical circuit board cover.

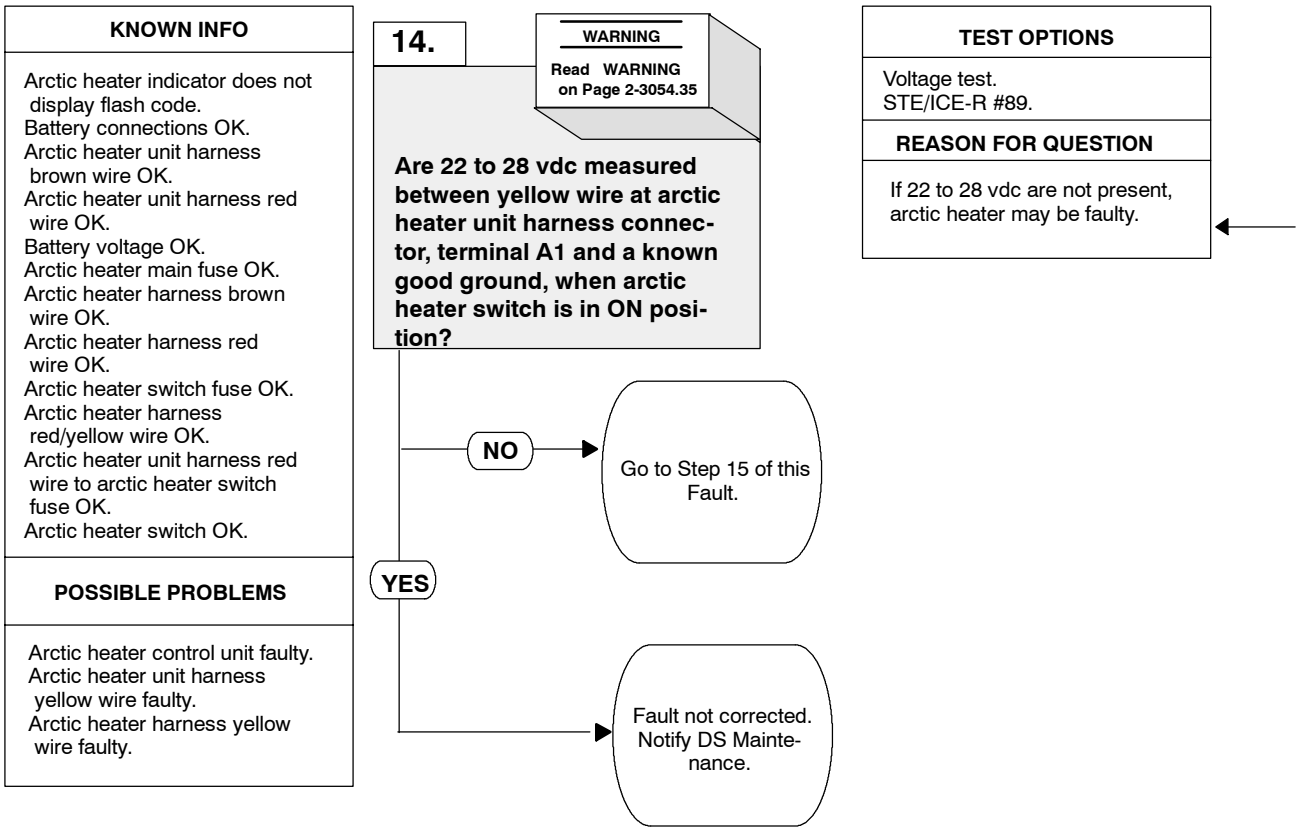
VOLTAGE TEST

(1) Connect positive (+) lead to yellow wire at arctic heater switch terminal.
(2) Connect negative (-) lead to a known good ground.
(3) Turn arctic heater switch ON (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, replace arctic heater switch (Para 21-10.1).
  (b) If 22 to 28 vdc are present, go to Step 14 of this Fault.





1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

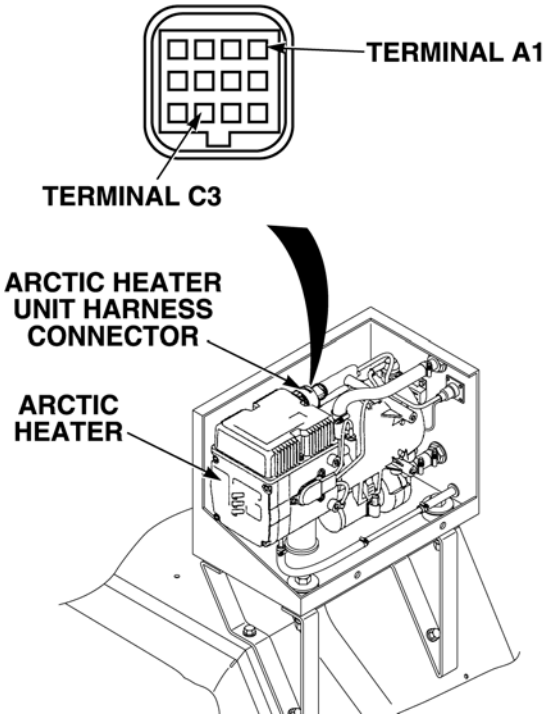


WARNING

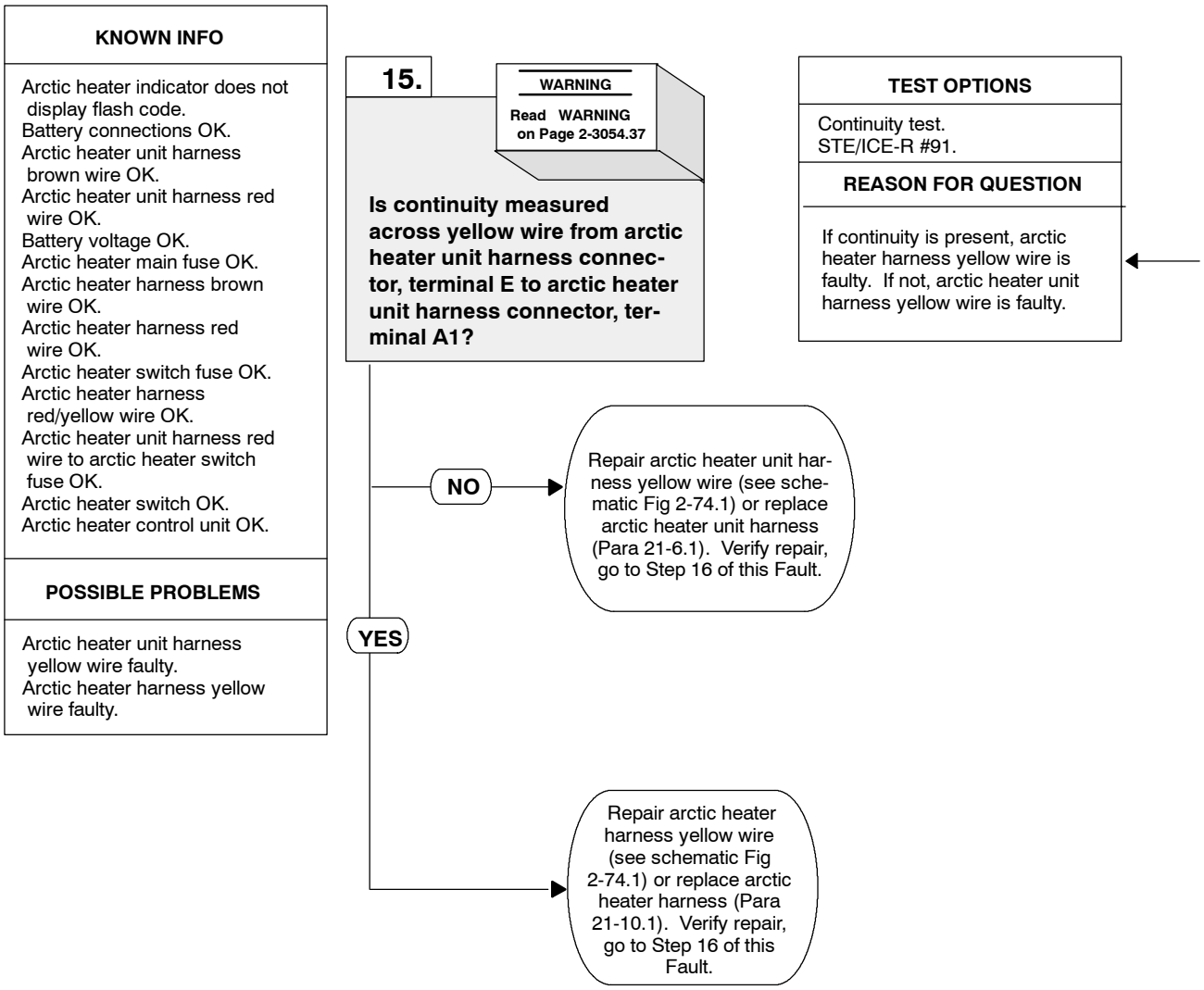
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

VOLTAGE TEST

(1) Connect positive (+) lead to yellow wire at arctic heater unit harness connector, terminal A1.
(2) Connect negative (-) lead to ground at arctic heater unit harness connector, terminal C3.
(3) Ensure arctic heater switch is ON (TM 9-2320-364-10).
   (a) If 22 to 28 vdc are not present, go to Step 15 of this Fault.
   (b) If 22 to 28 vdc are present, Direct Support troubleshooting is required. Notify DS Maintenance.



1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

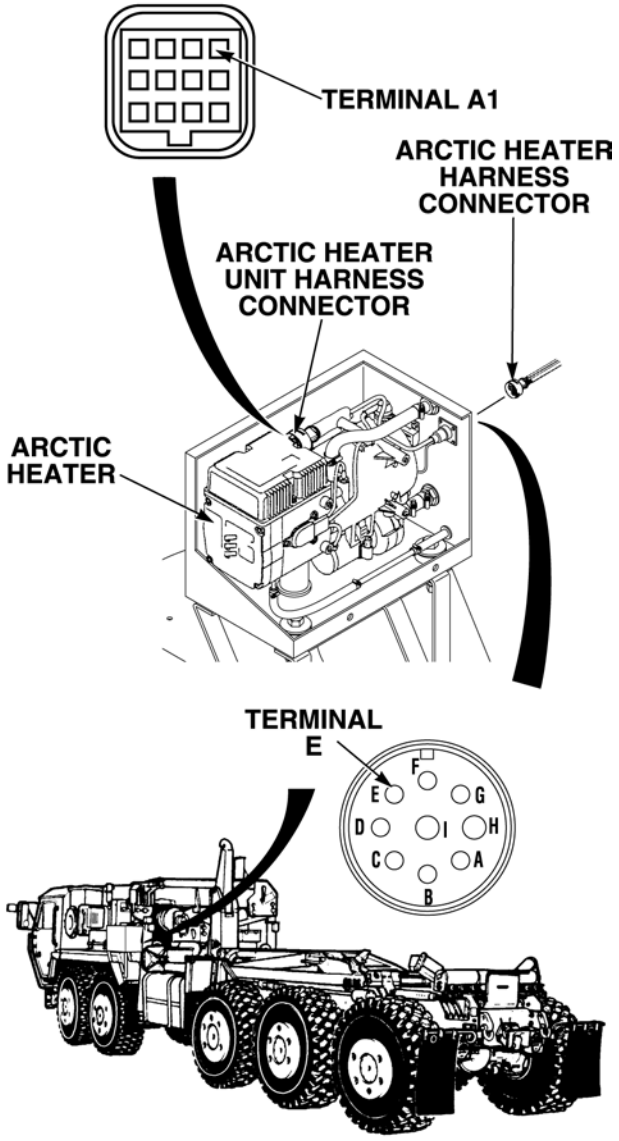


WARNING

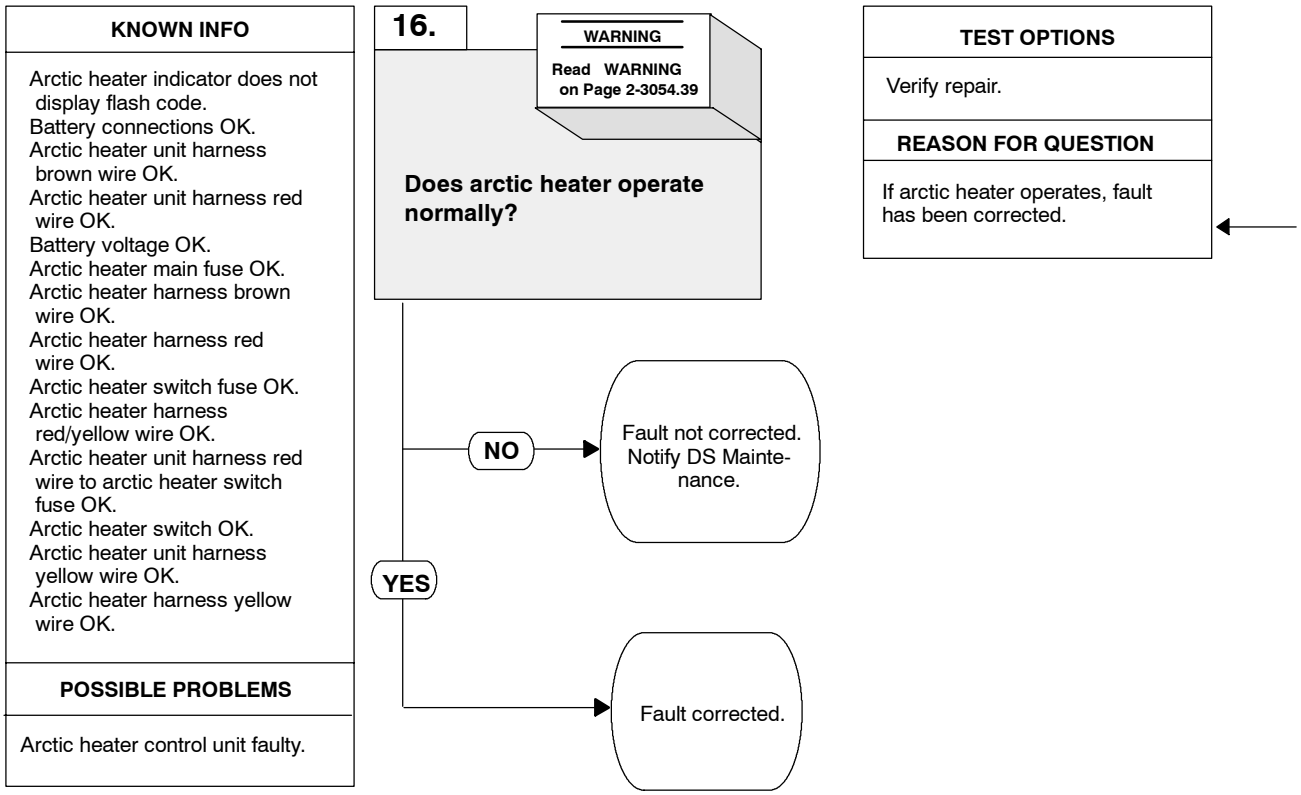
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect arctic heater harness connector from arctic heater (Para 21-10.1).
(2) Connect positive (+) lead to yellow wire at arctic heater unit harness connector, terminal E.
(3) Connect negative (-) lead to yellow wire at arctic heater unit harness connector, terminal A1.
(4) Is continuity measured across yellow wire from arctic heater unit harness connector, terminal E to arctic heater unit harness connector, terminal A1?
   (a) If there is no continuity, repair arctic heater unit harness yellow wire (see schematic Fig 2-74.1) or replace arctic heater unit harness (Para 21-6.1).
   (b) If there is continuity, repair arctic heater harness yellow wire (see schematic Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).



1. ARCTIC HEATER DOES NOT OPERATE (MODEL B) (CONT).

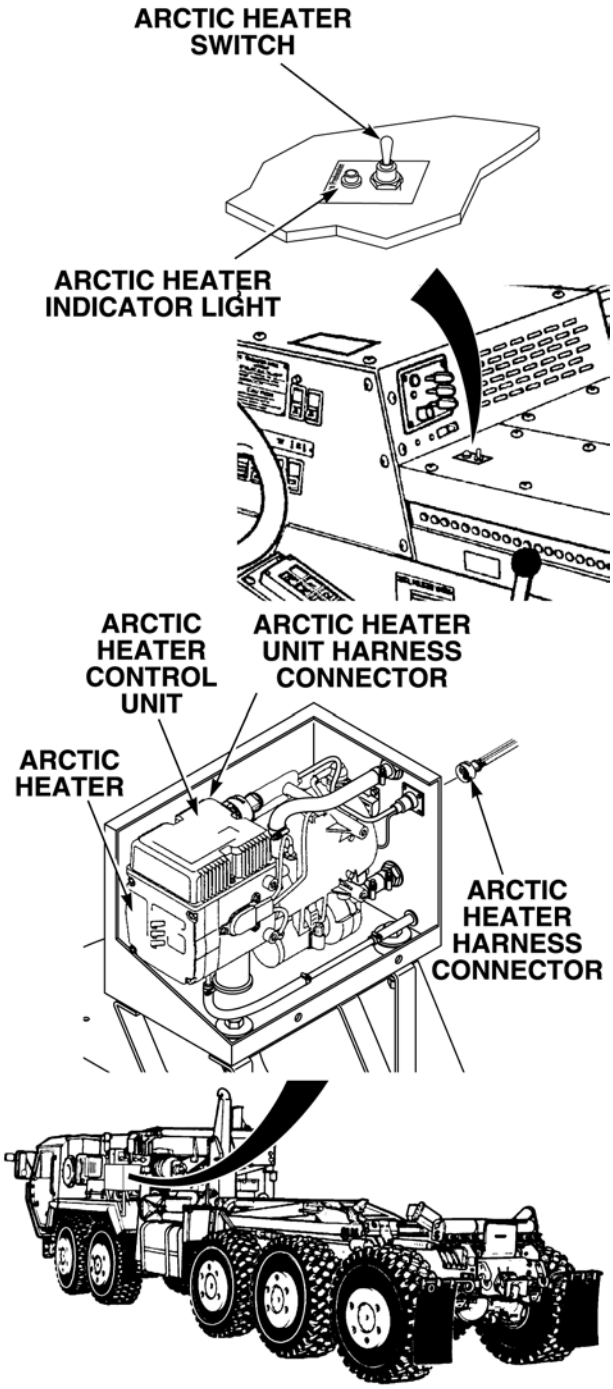


WARNING

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.

VERIFY REPAIR

(1) If disconnected, connect arctic heater unit harness connector to arctic heater control unit (Para 21-6.1).
(2) If disconnected, connect arctic heater harness connector to arctic heater (Para 21-10.1).
(3) If removed, install left ECB cover (Para 17-22).
(4) Install cover on arctic heater (Para 22-6.1).
(5) Close battery box (TM 9-2320-364-10).
(6) Ensure vehicle is returned to normal operating condition.
(7) Turn arctic heater ON (TM 9-2320-364-10).
(8) Observe arctic heater indicator light operation.
(9) Observe arctic heater for proper operation.
(10) Turn arctic heater switch OFF (TM 9-2320-364-10).
  (a) If arctic heater fails to operate or arctic heater indicator light is not illuminated, Notify DS Maintenance.
  (b) If arctic heater operates, fault has been corrected.



2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING (CONT).

2. ARCTIC HEATER INDICATOR LIGHT DOES NOT ILLUMINATE (MODEL B).

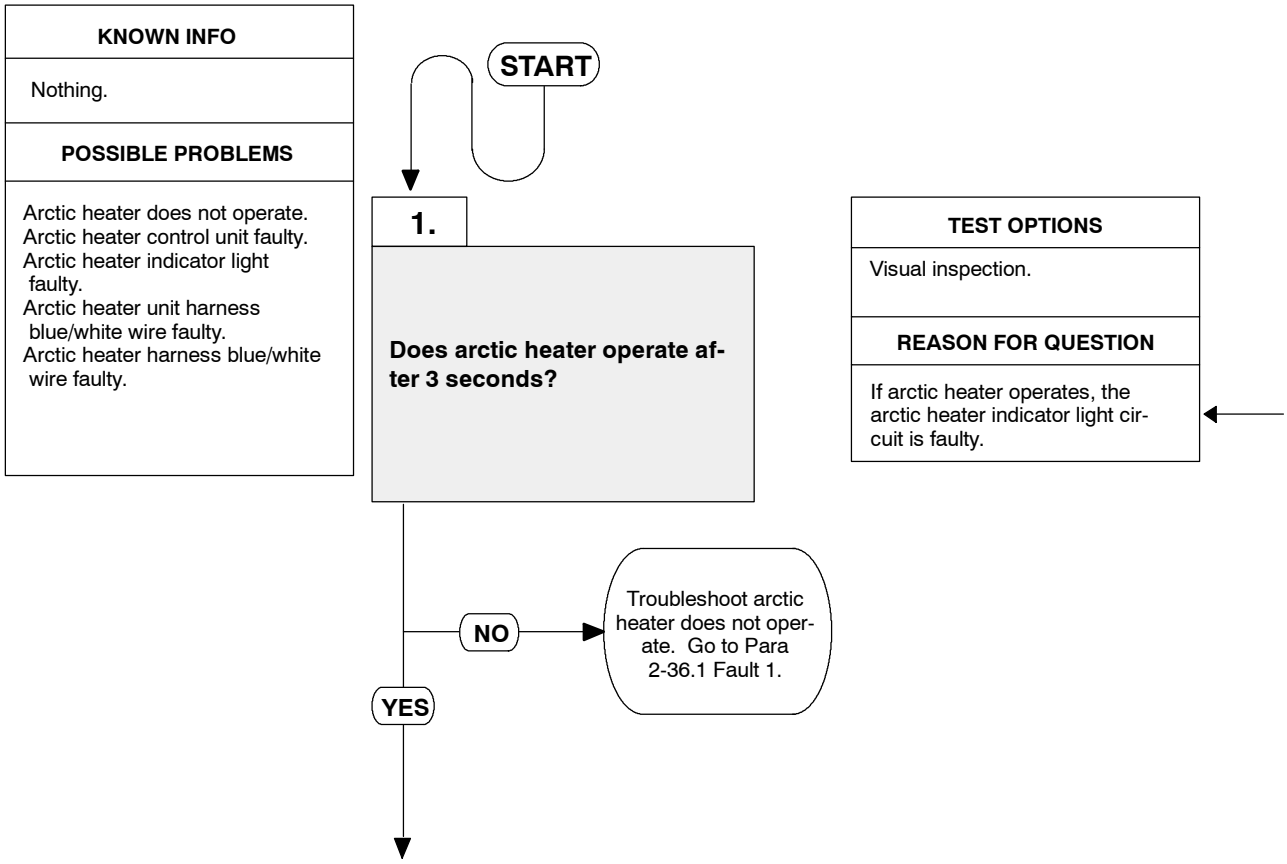
INITIAL SETUP

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)

References
TM 9-2320-364-10

Materials/Parts
Jumper wire, 1 ft. (305 mm)

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

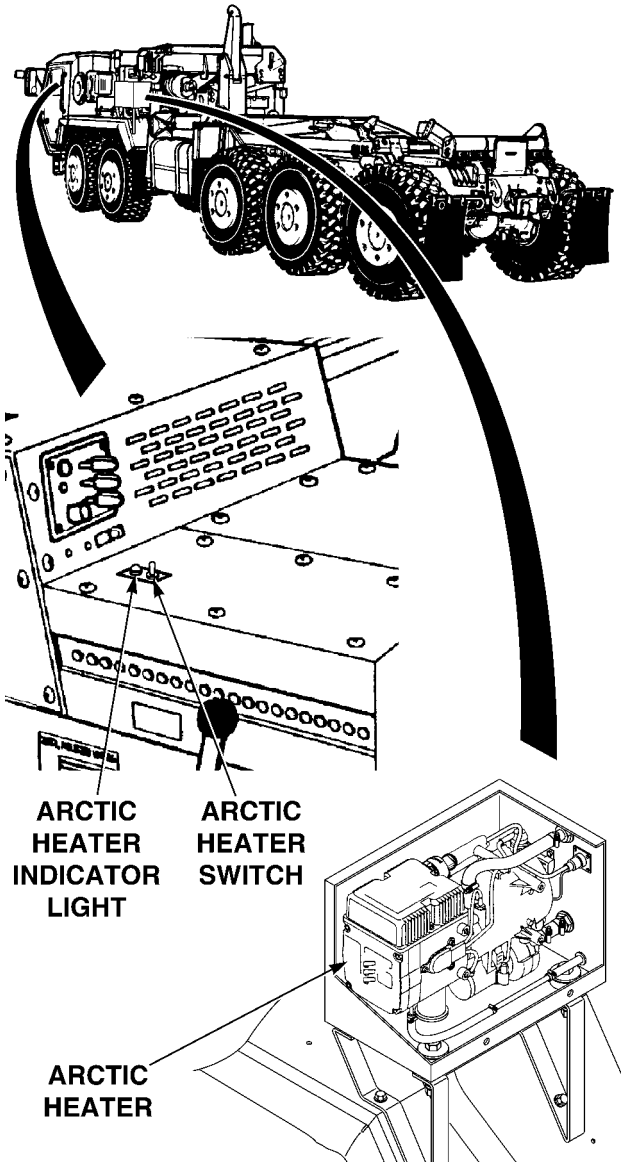


NOTE

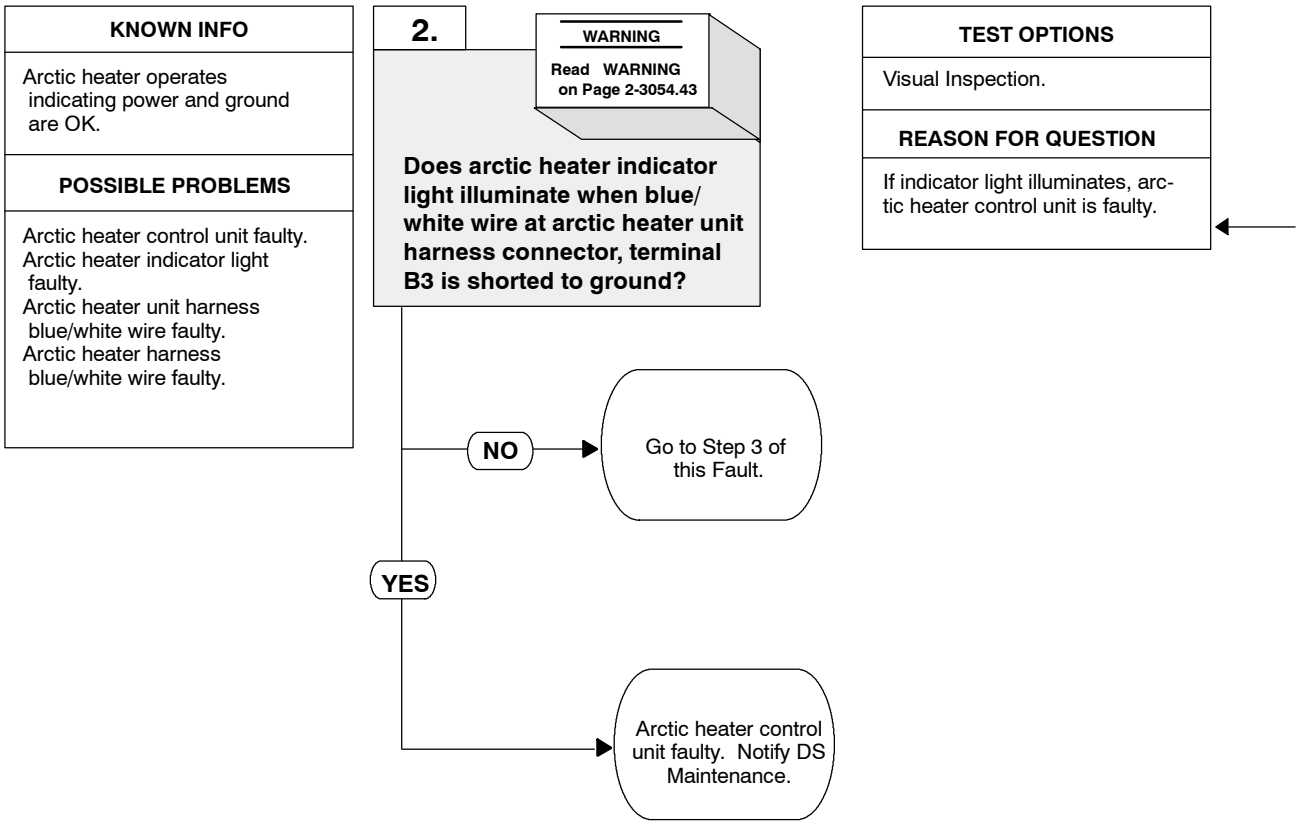
An audible whine will be heard after the system check is complete, indicating the blower motor has switched on and the system is operating. Audible clicking may also be heard from the fuel pump, if the arctic heater fuel system isn't primed.

VISUAL INPECTION

(1) Turn arctic heater switch ON (TM 9-2320-364-10).
(2) After 3 seconds, observe arctic heater operation.
(3) Turn arctic heater switch OFF.
    (a) If arctic heater does not operate, troubleshoot arctic heater does not operate. Go to Para 2-36.1 Fault 1.
    (b) If arctic heater operates, go Step 2 of this Fault.



2. ARCTIC HEATER INDICATOR LIGHT DOES NOT ILLUMINATE (MODEL B) (CONT).

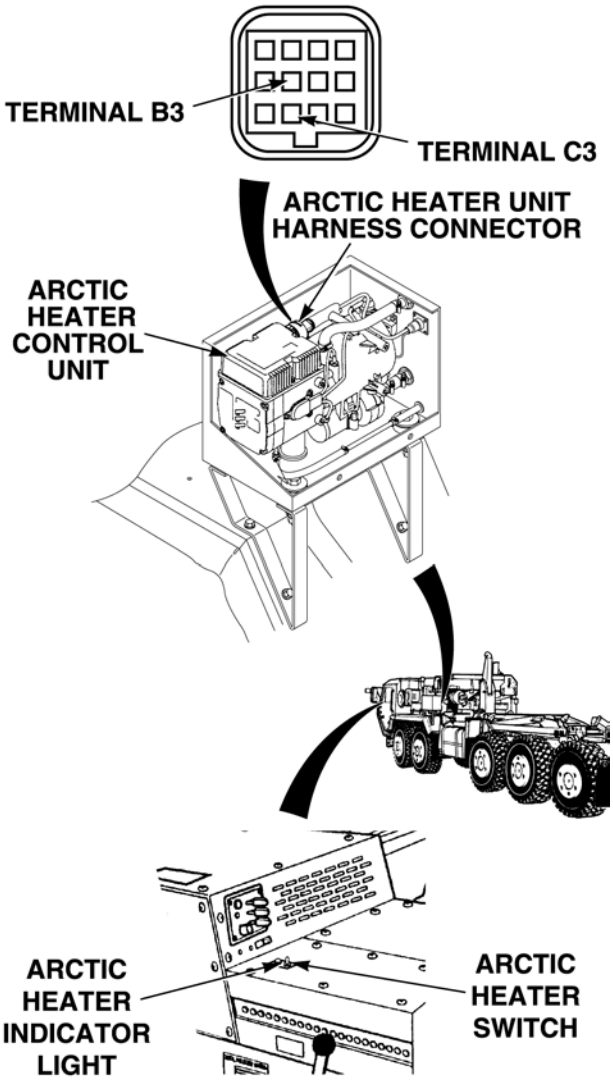


WARNING

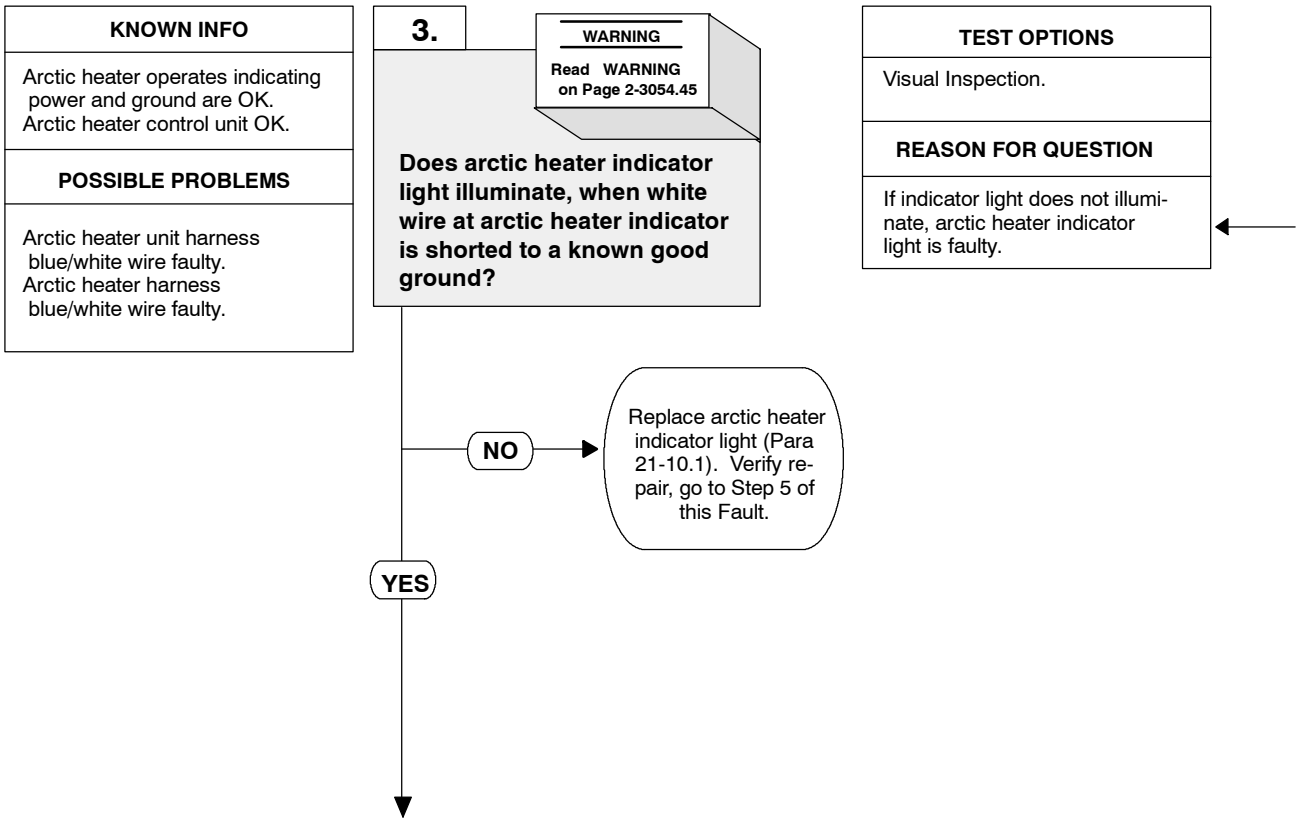
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VISUAL INSPECTION

(1) Remove cover from arctic heater (Para 21-6.1).
(2) Disconnect arctic heater unit harness connector from arctic heater control unit (Para 21-6.1).
(3) Connect jumper wire to blue/white wire at arctic heater unit harness connector, terminal B3.
(4) Connect other end of jumper wire to arctic heater unit harness connector, terminal C3.
(5) Turn arctic heater switch ON (TM 9-2329-364-10).
(6) Observe arctic heater indicator light operation.
(7) Turn arctic heater switch OFF.
    (a) If arctic heater light does not illuminate, go to Step 3 of Fault.
    (b) If arctic heater light illuminates, arctic heater control unit is faulty. Notify DS Maintenance.



2. ARCTIC HEATER INDICATOR LIGHT DOES NOT ILLUMINATE (MODEL B) (CONT).

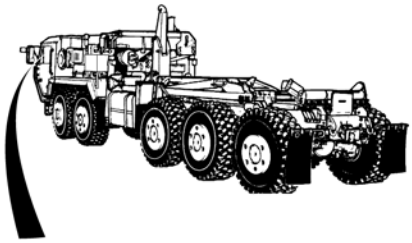


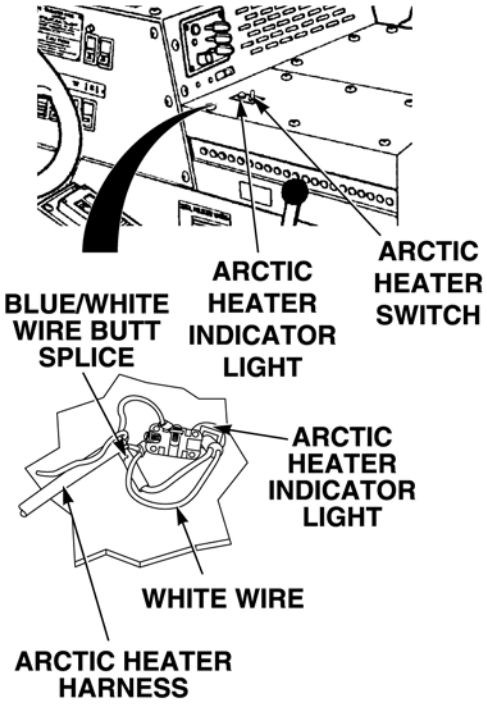
WARNING

- 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. Non-metallic tools shall be used when removing relays. Care must be exercised when working under the electrical circuit board cover.

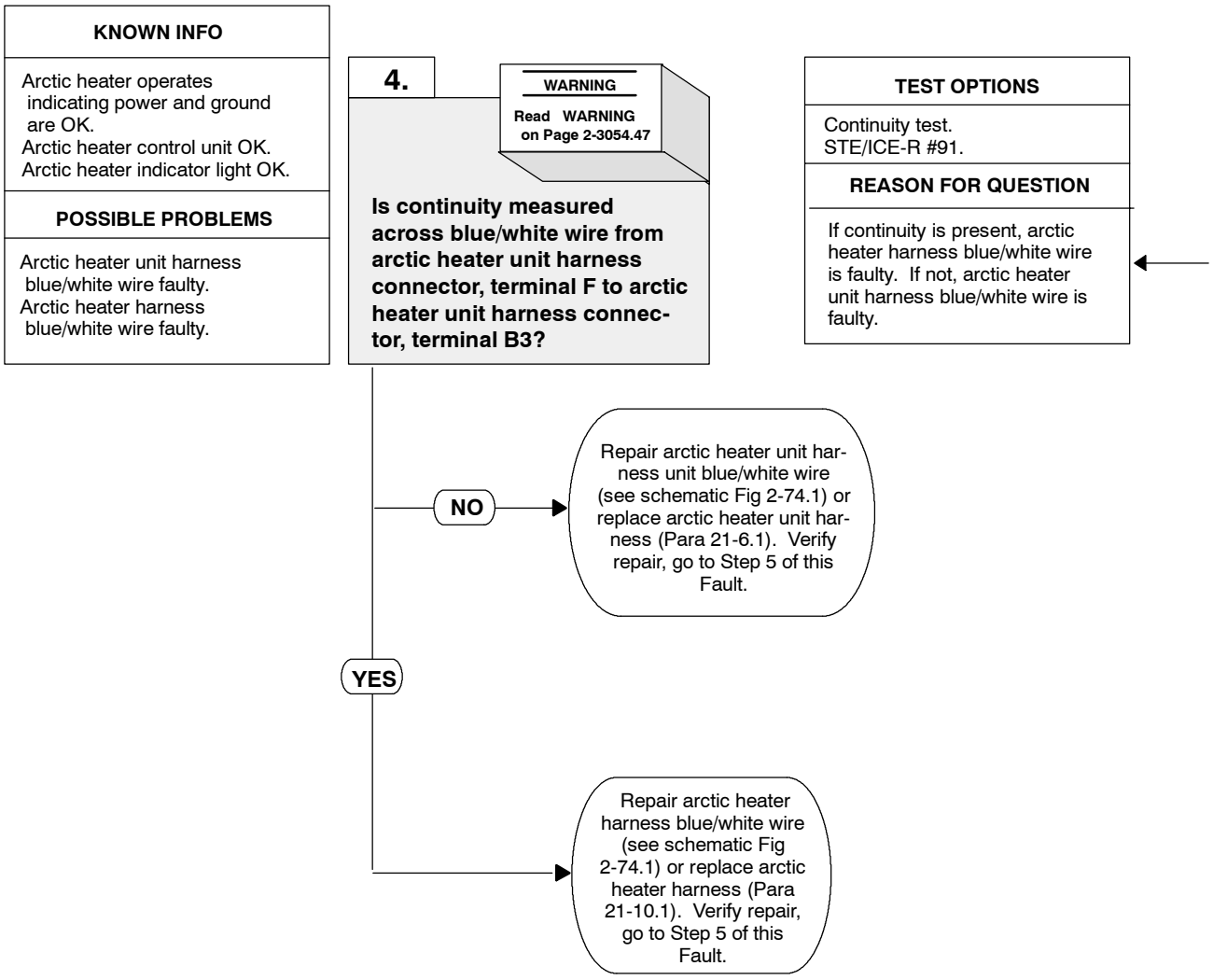
VISUAL INSPECTION

(1) Remove eight screws and left ECB cover (Para 17-22).
(2) Cut arctic heater harness blue/white wire at white wire butt connector.
(3) Connect jumper wire to arctic heater indicator light white wire at arctic heater harness butt connector.
(4) Connect other end of jumper wire to a known good ground.
(5) Turn arctic heater switch ON (TM 9-2320-364-10).
(6) Observe arctic heater indicator light operation.
(7) Turn arctic heater switch OFF.
    (a) If arctic heater light does not illuminate, replace arctic heater indicator light (Para 21-10.1).
    (b) If arctic heater light illuminates, go to Step 4 in Fault.





2. ARCTIC HEATER INDICATOR LIGHT DOES NOT ILLUMINATE (MODEL B) (CONT).

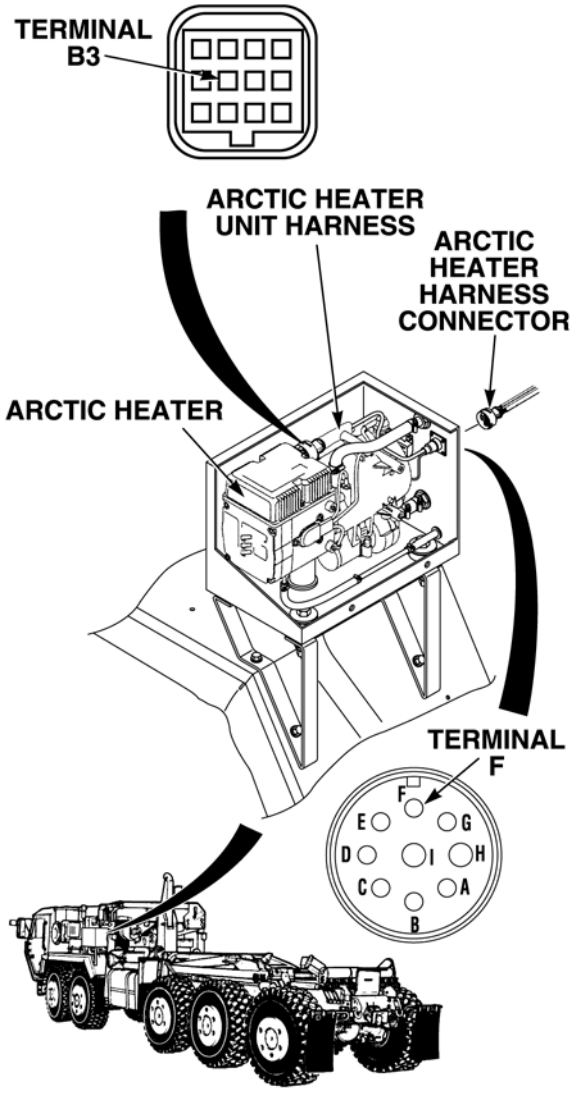


WARNING

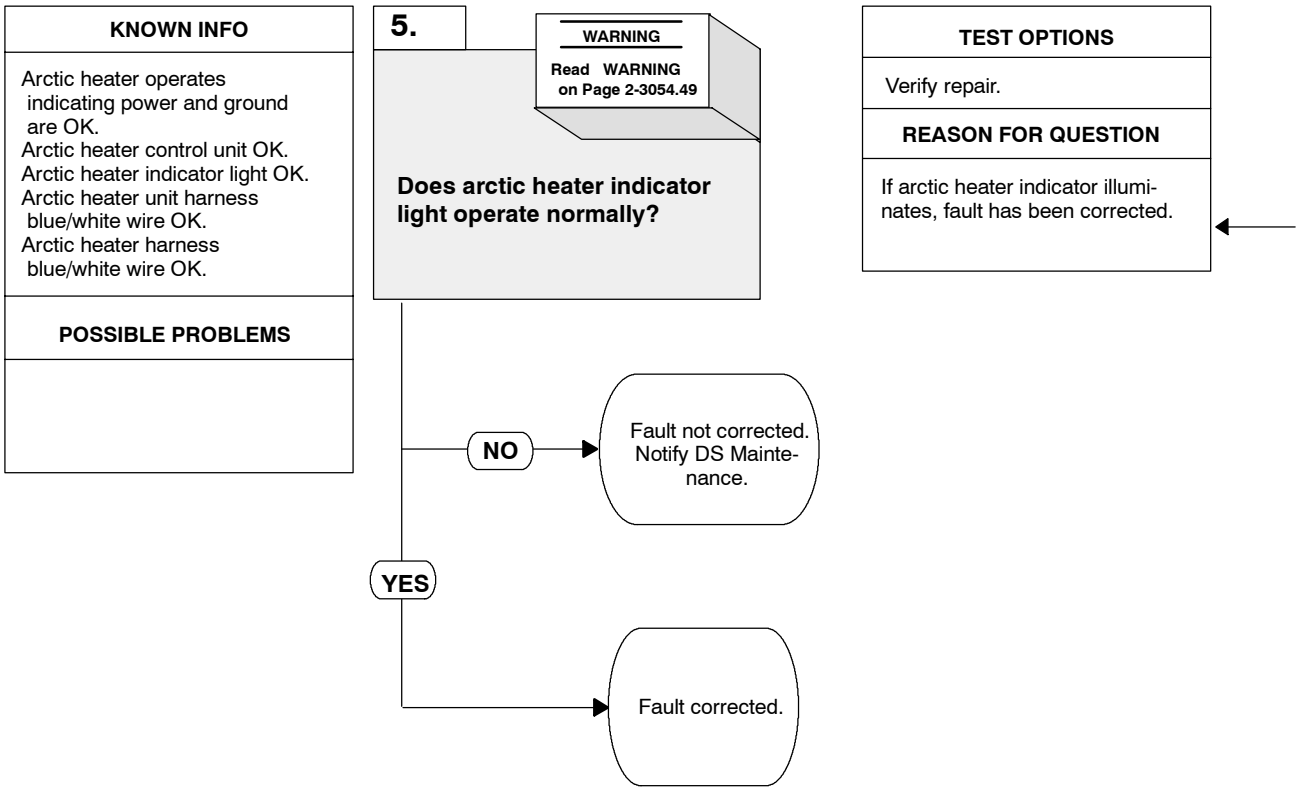
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect arctic heater harness connector from arctic heater (Para 21-10.1).
(2) Connect positive (+) lead to blue/white wire at arctic heater unit harness connector, terminal F.
(3) Connect negative (-) lead to blue/white wire at arctic heater unit harness connector, terminal B3.
(4) Is continuity measured across blue/white wire from arctic heater unit harness connector, terminal F to arctic heater unit harness connector, terminal B3?
   (a) If there is no continuity, repair arctic heater unit harness blue/white wire (see schematic Fig 2-74.1) or replace arctic heater unit harness (Para 21-6.1).
   (b) If there is continuity, repair arctic heater harness blue/white wire (see schematic Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).



2. ARCTIC HEATER INDICATOR LIGHT DOES NOT ILLUMINATE (MODEL B) (CONT).

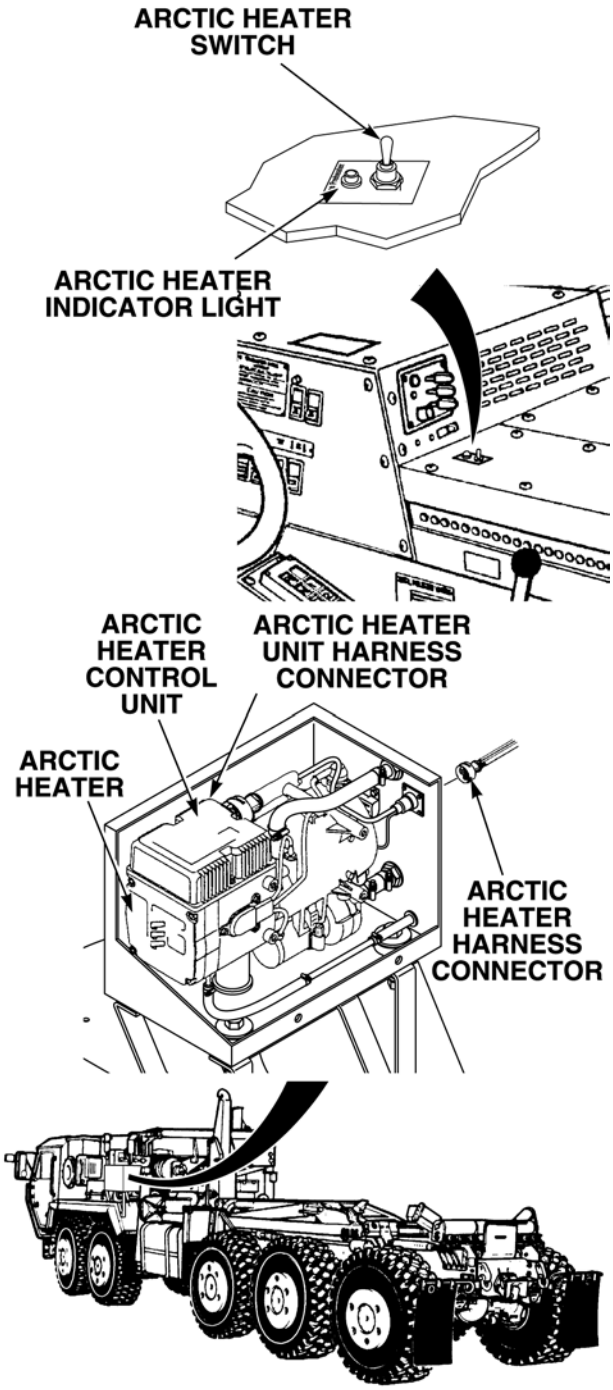


WARNING

- 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. Non-metallic tools shall be used when removing relays. Care must be exercised when working under the electrical circuit board cover.

VERIFY REPAIR

(1) If cut, repair arctic heater blue/white wire butt connector.
(2) If removed, install left ECB cover (Para 17-22).
(3) If disconnected, connect arctic heater harness connector to arctic heater (Para 21-10.1).
(4) Connect arctic heater unit harness connector to arctic heater control unit (Para 21-6.1).
(5) Install cover on arctic heater (Para 22-6.1).
(6) Ensure vehicle is returned to normal operating condition.
(7) Turn arctic heater ON (TM 9-2320-364-10).
(8) Observe arctic heater indicator light operation.
(9) Observe arctic heater for proper operation.
(10) Turn arctic heater switch OFF (TM 9-2320-364-10).
  (a) If arctic heater indicator light does not illuminate, Notify DS Maintenance.
  (b) If arctic heater indicator light illuminates fault has been corrected.



2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING (CONT).

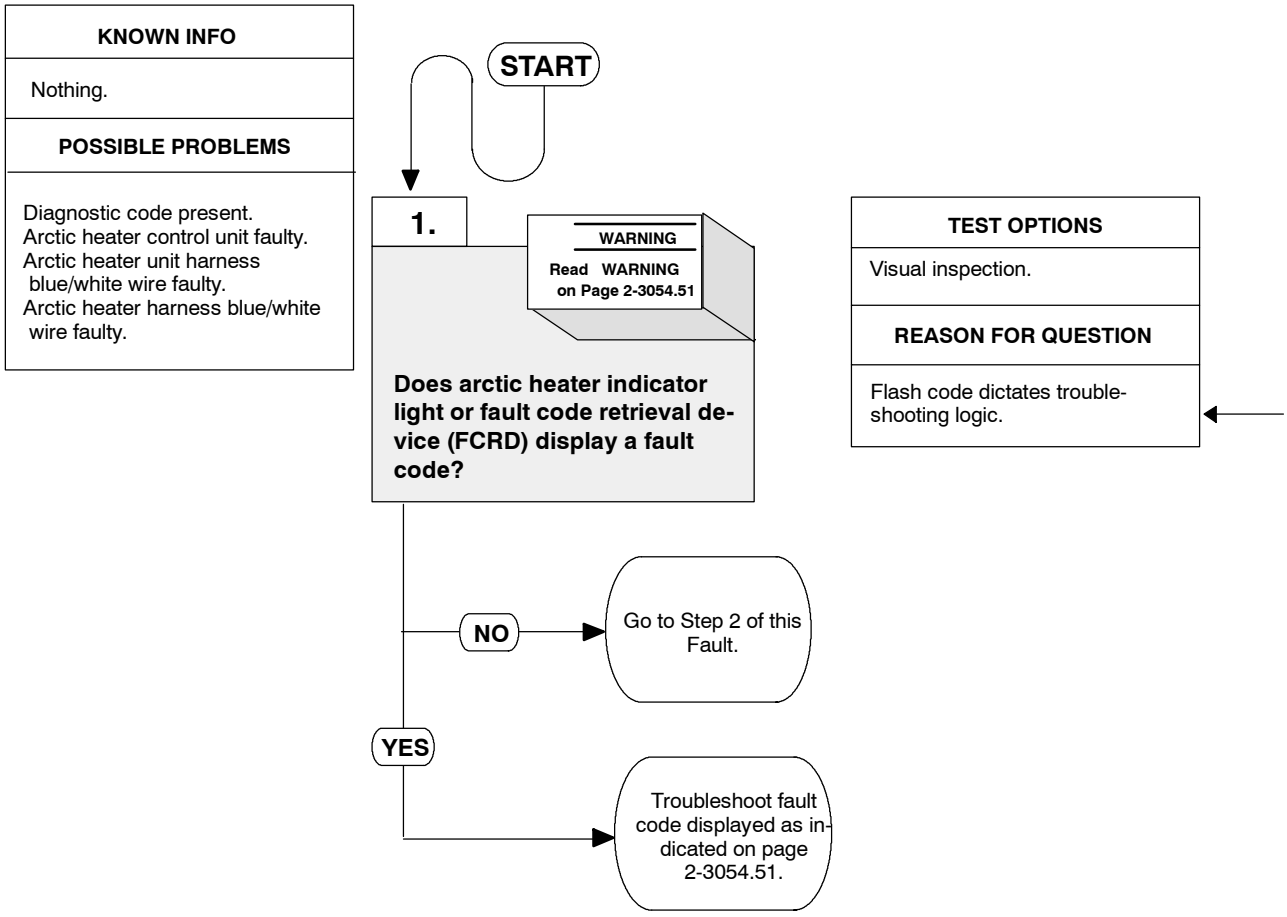
3. FAULT CHART FOR DIAGNOSTIC OF ARCTIC HEATER TROUBLESHOOTING (MODEL B).

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)
Fault Code Retrieval Device (FCRD) (Item 23.1, Appendix G)

References
TM 9-2320-364-10

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



WARNING

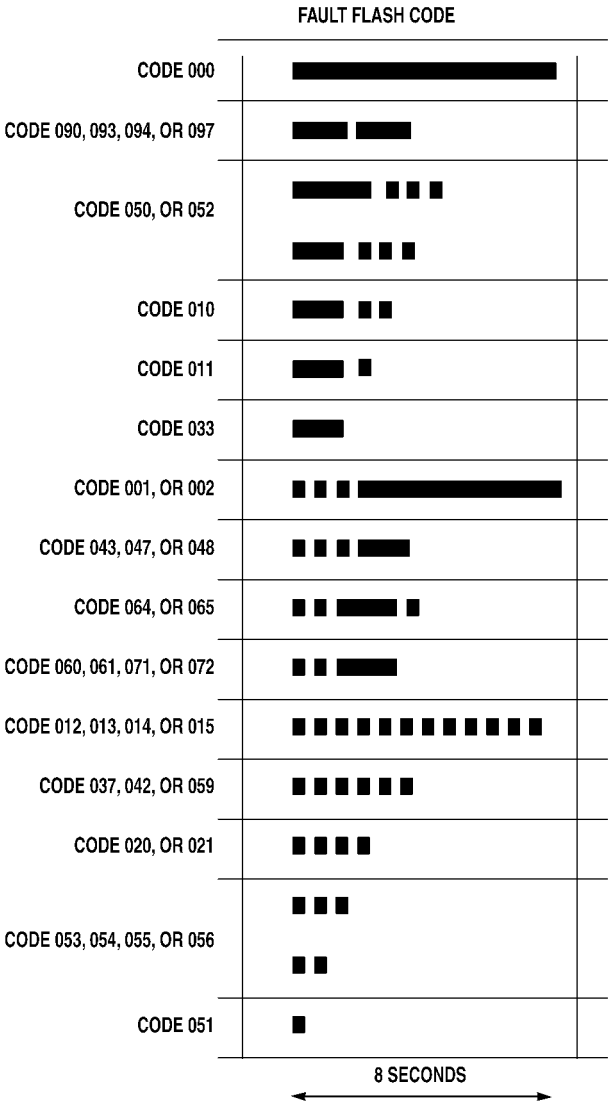
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

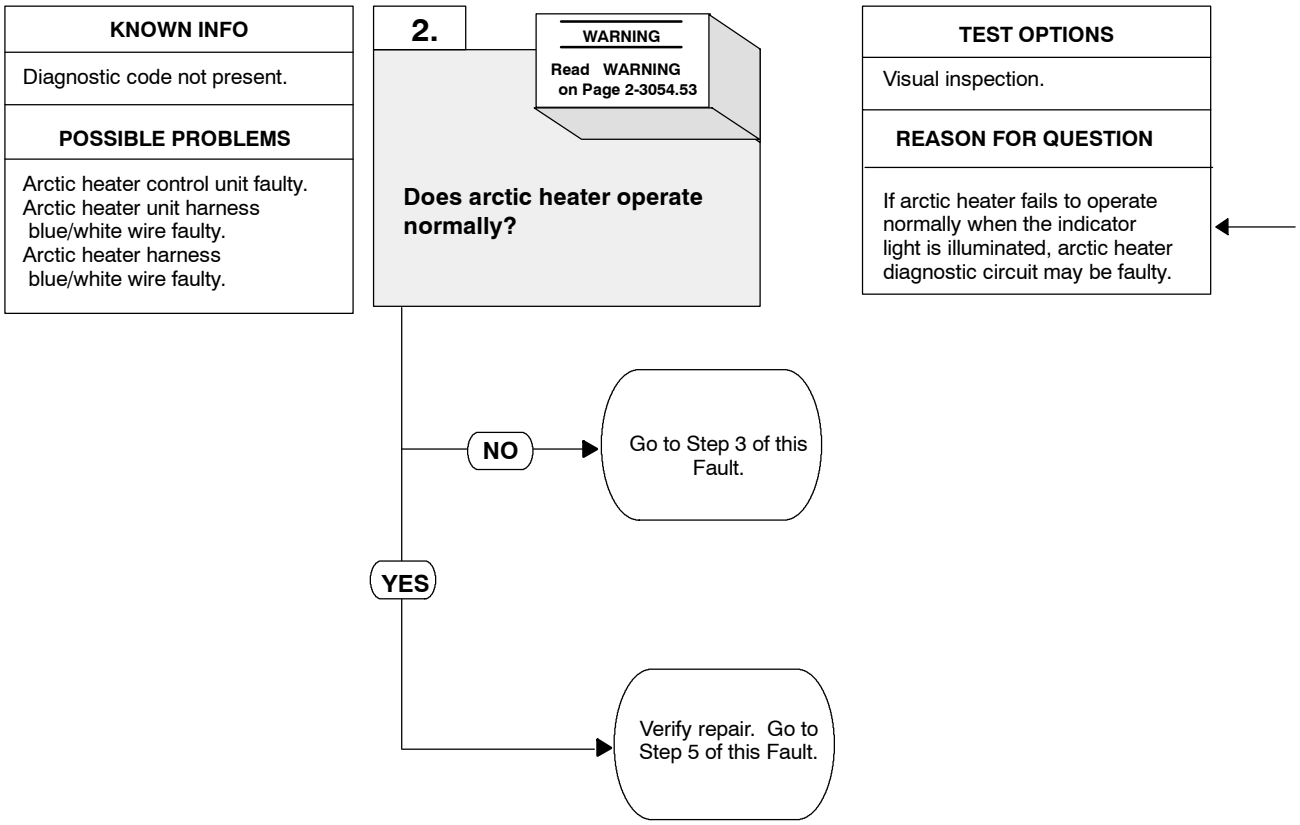
- If the fault code retrieval device (FCRD) is not installed, the arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- Perform Steps (1) through (3) only if fault code retrieval device (FCRD) is available.

VISUAL INSPECTION

(1) Remove cover from arctic heater (Para 21-6.1).
(2) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(3) Press D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(4) Turn arctic heater ON (TM 9-2320-364-10).
(5) Using the arctic heater indicator light and the chart to the right, or the fault code retrieval device (FCRD), note which fault code is displayed.
(6) Turn arctic heater switch to OFF (TM 9-2320-364-10), or press the D button on the fault code retrieval device (FCRD), if installed.
(7) If fault code 000 was displayed on fault code retrieval device (FCRD) or arctic heater indicator illuminates (it does not flash), go to Step 2 of this Fault.
(8) Troubleshoot fault code displayed as indicated.
  (a) Code 001 or 002: Go to Para 2-36.1 Fault 4.
  (b) Code 010: Go to Para 2-36.1 Fault 4.
  (c) Code 011: Go to Para 2-36.1 Fault 4.
  (d) Code 012, 013, 014 or 015: Go to Para 2-36.1 Fault 5.
  (e) Code 020 or 021: Direct Support troubleshooting required. Notify DS Maintenance.
  (f) Code 033: Direct Support troubleshooting required. Notify DS Maintenance.
  (g) Code 037, 042 or 059: Go to Para 2-36.1 Fault 5.
  (h) Code 043, 047 or 048: Go to Para 2-36.1 Fault 6.
  (i) Code 050 or 052: Go to Para 2-36.1 Fault 7.
  (j) Code 051: Direct Support troubleshooting required. Notify DS Maintenance.
  (k) Code 053, 054, 055 or 056: Go to Para 2-36.1 Fault 7.
  (l) Code 060, 061, 071 or 072: Direct Support troubleshooting required. Notify DS Maintenance.
  (m) Code 064 or 065: Direct Support troubleshooting required. Notify DS Maintenance.
  (n) Code 090, 093, 094 or 097: Direct Support troubleshooting required. Notify DS Maintenance.



3. FAULT CHART FOR DIAGNOSTIC ARCTIC HEATER TROUBLESHOOTING (MODEL B) (CONT).

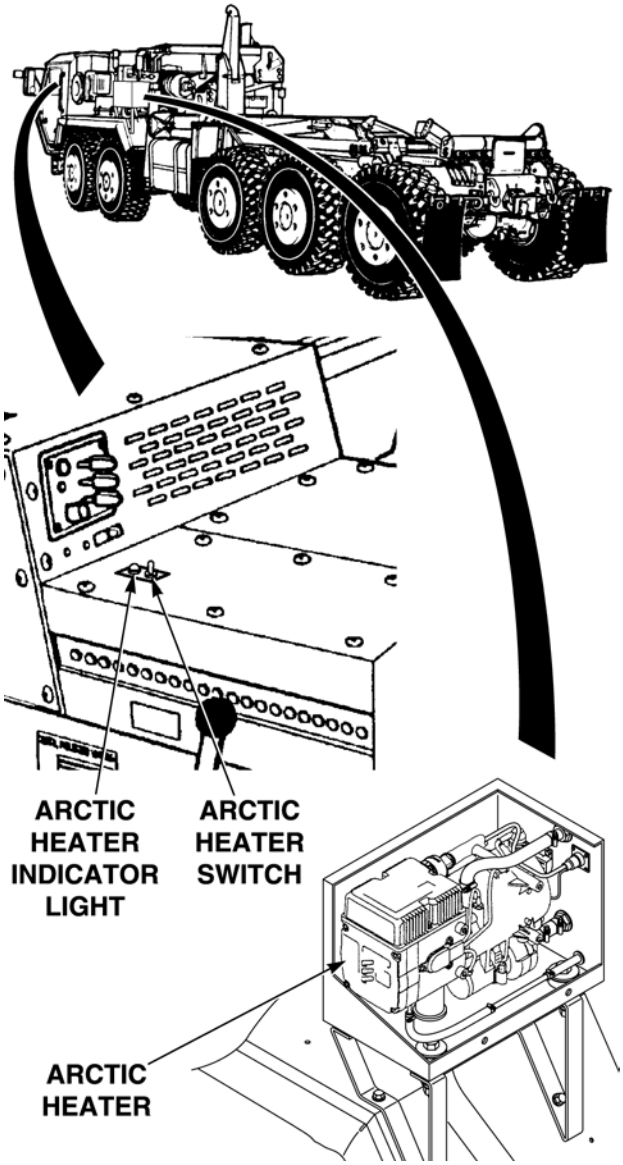


WARNING

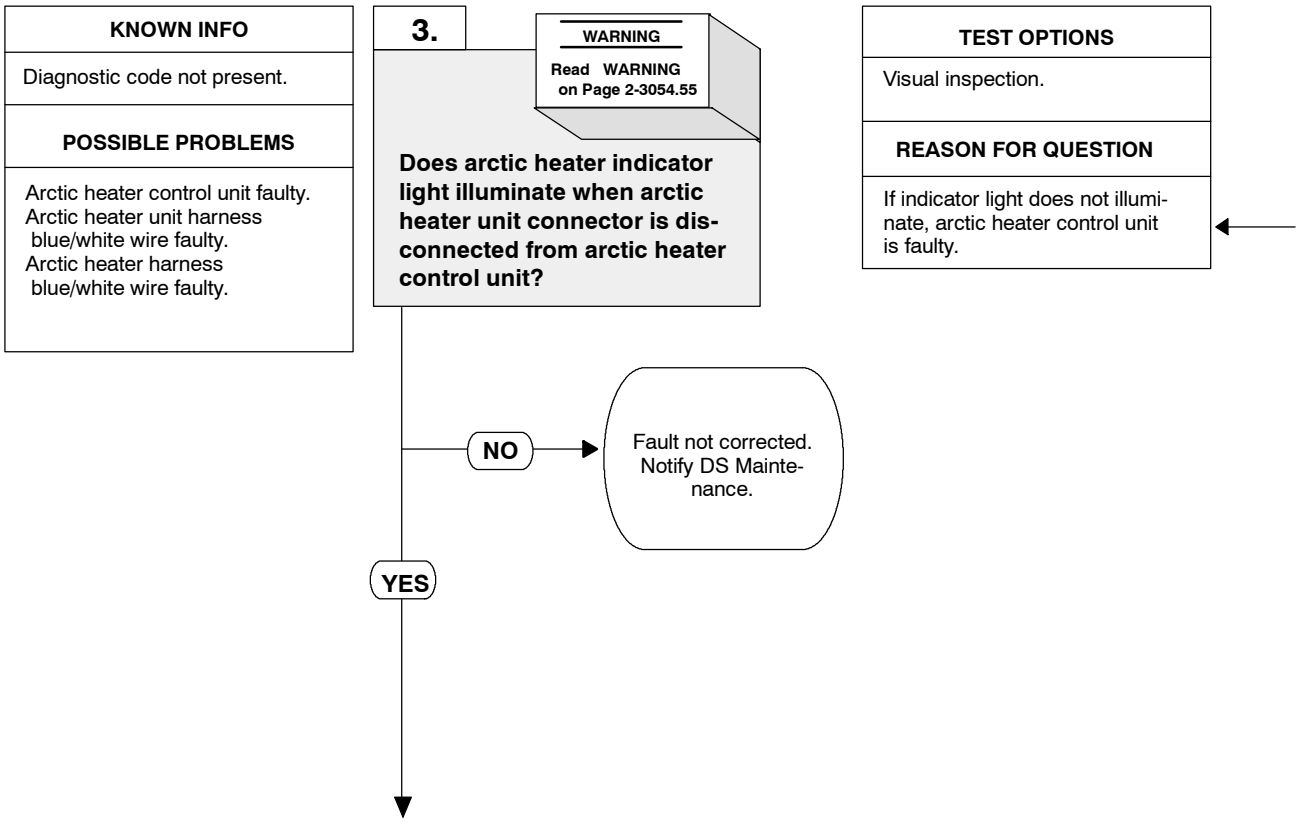
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VISUAL INSPECTION

(1) If installed, remove fault code retrieval device (FCRD) from arctic heater unit harness connector.
(2) Ensure vehicle is returned to normal operating condition.
(3) Turn arctic heater ON (TM 9-2320-2320-364-10).
(4) Observe arctic heater for proper operation.
(5) Turn arctic heater switch OFF (TM 9-2329-364-10).
   (a) If arctic heater fails to operate normally, go to Step 3 of this Fault.
   (b) If arctic heater operates normally, go to Step 5 of this Fault.



3. FAULT CHART FOR DIAGNOSTIC ARCTIC HEATER TROUBLESHOOTING (MODEL B) (CONT).

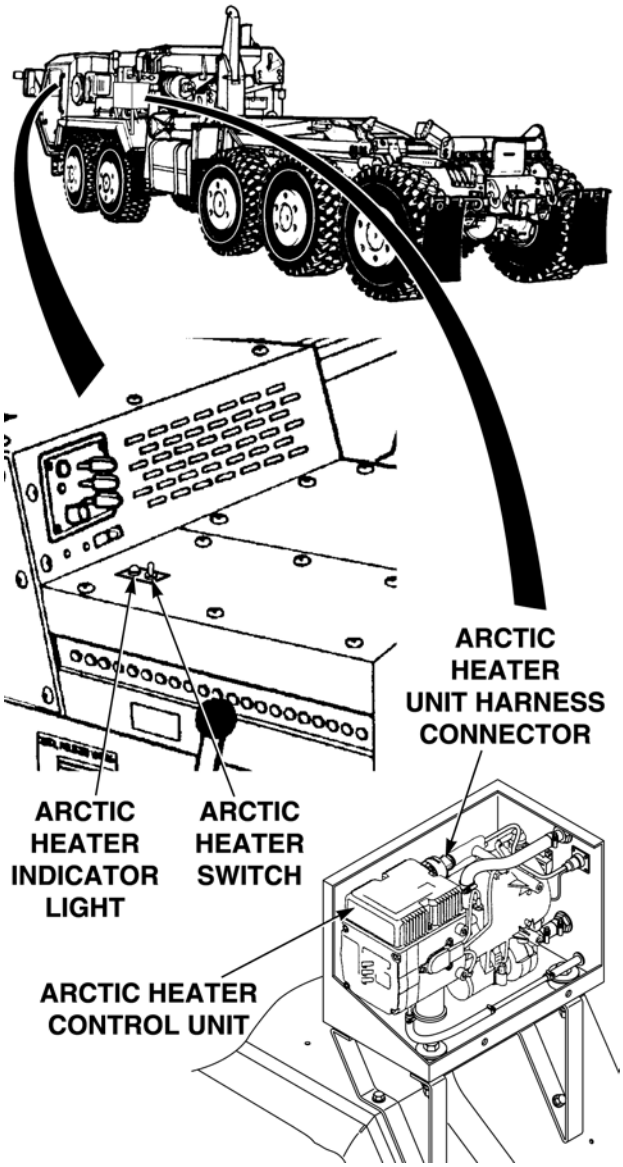


WARNING

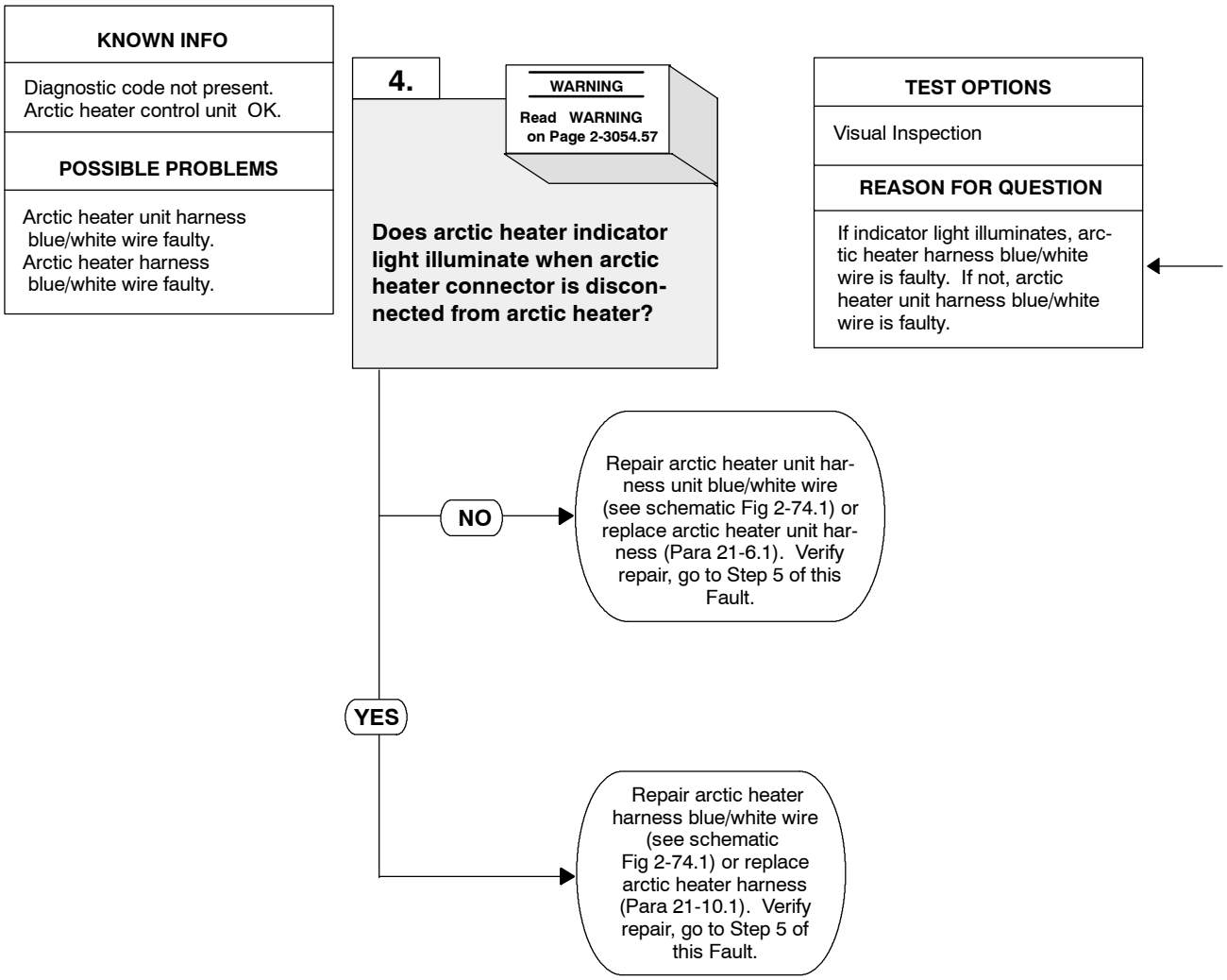
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

VISUAL INSPECTION

(1) If installed, remove cover from arctic heater (Para 21-6.1).
(2) Disconnect arctic heater unit harness connector from arctic heater control unit (Para 21-6.1).
(3) Turn arctic heater switch ON (TM 9-2320-364-10).
(4) Observe arctic heater indicator light operation.
(5) Turn arctic heater switch OFF.
  (a) If arctic heater indicator light did not illuminate, arctic heater control unit is faulty. Notify DS Maintenance.
  (b) If arctic heater indicator light illuminated, go to Step 4 in Fault.



3. FAULT CHART FOR DIAGNOSTIC ARCTIC HEATER TROUBLESHOOTING (MODEL B) (CONT).

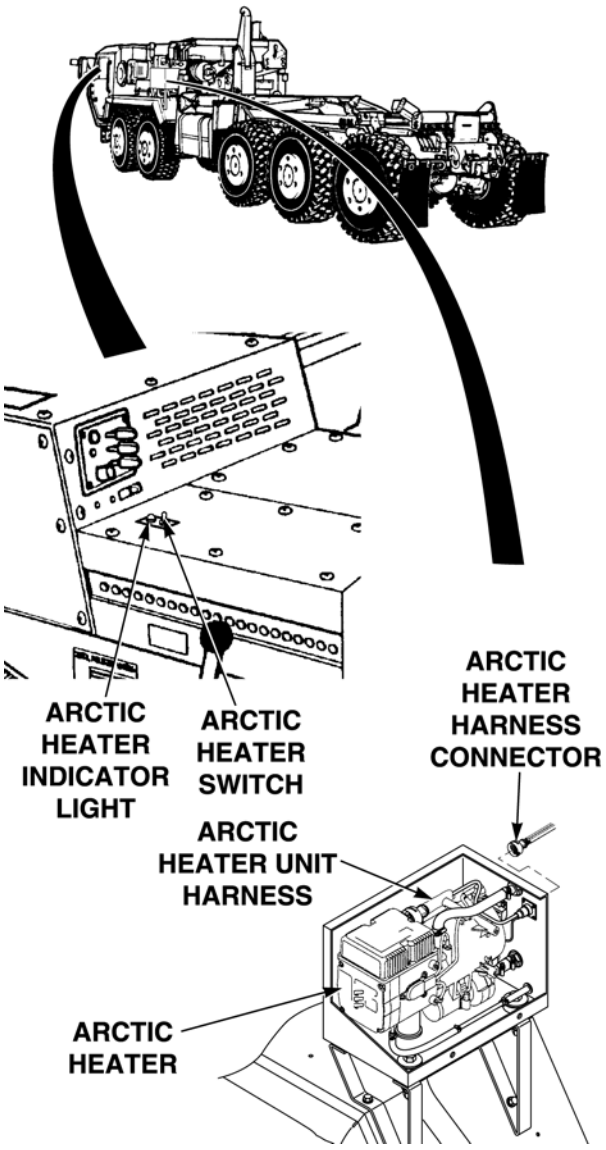


WARNING

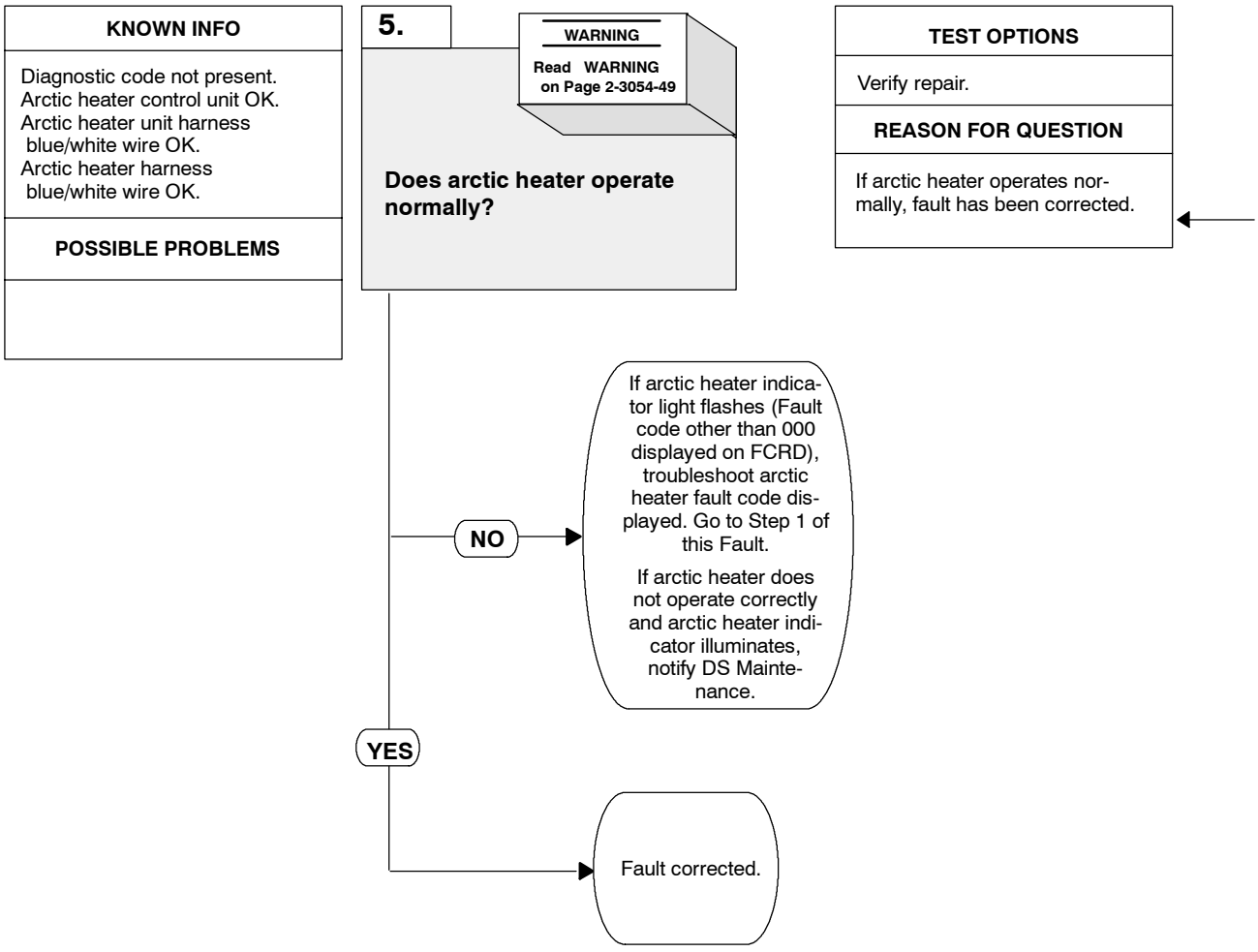
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

VISUAL INSPECTION

(1) Disconnect arctic heater harness connector from arctic heater (Para 21-10.1).
(2) Turn arctic heater switch ON (TM 9-2320-364-10).
(3) Observe arctic heater indicator light operation.
(4) Turn arctic heater switch OFF.
   (a) If arctic heater indicator light did not illuminate, arctic heater unit harness blue/white wire is shorted to ground. Repair arctic heater unit harness blue/white wire (see schematic Fig 2- 74.1) or replace arctic heater unit harness (Para 21-6.1).
   (b) If arctic heater indicator light illuminated, arctic heater harness blue/white wire is shorted to ground. Repair arctic heater harness blue/white wire (see schematic Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).



3. FAULT CHART FOR DIAGNOSTIC ARCTIC HEATER TROUBLESHOOTING (MODEL B) (CONT).



WARNING

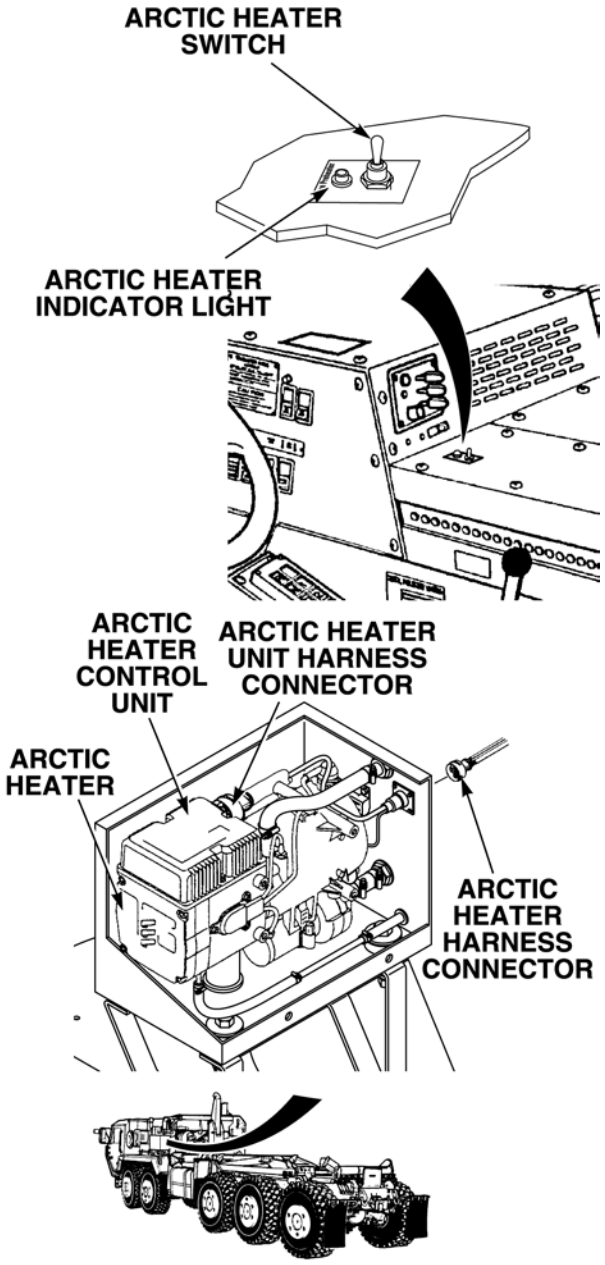
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

- If the fault code retrieval device (FCRD) is not installed, the arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- Perform Steps (4) and (5) only if digital fault code retrieval device (FCRD) is available.

VERIFY REPAIR

(1) If disconnected, connect arctic heater harness connector to arctic heater (Para 21-10.1).
(2) If disconnected, connect arctic heater unit harness connector to arctic heater control unit (Para 21-6.1).
(3) Ensure vehicle is returned to normal operating condition.
(4) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(5) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(6) Turn arctic heater ON (TM 9-2320-364-10).
(7) Observe indicator light operation or fault code retrieval device (FCRD) display, if installed.
(8) Observe arctic heater for proper operation.
(9) Turn arctic heater switch OFF (TM 9-2320-364-10) or press the D button on the (FCRD), if installed.
(10) If installed, remove fault code retrieval device.
(11) If removed, install cover on arctic heater (Para 21-6.1).
  (a) If arctic heater operates normally and arctic heater indicator light is illuminated (Fault code 000 displayed on FCRD), fault has been corrected.
  (b) If arctic heater indicator light flashes (Fault code other than 000 displayed on FCRD), troubleshoot arctic heater fault code displayed. Go to Step 1 of this fault.
  (c) If arctic heater does not operate correctly and arctic heater indicator is illuminated, notify DS Maintenance.



2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING (CONT).

4. FAULT CODE 001, 002, 010 OR 011: ADVANCED WARNING - OVERVOLTAGE SHUTDOWN, ADVANCED WARNING - UNDERVOLTAGE SHUTDOWN, OVERVOLTAGE SHUTDOWN OR UNDERVOLTAGE SHUTDOWN.

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)
Fault Code Retrieval Device (FCRD) (Item 23.1, Appendix G)

References
TM 9-2320-364-10
TM 9-6140-200-14

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

NOTE

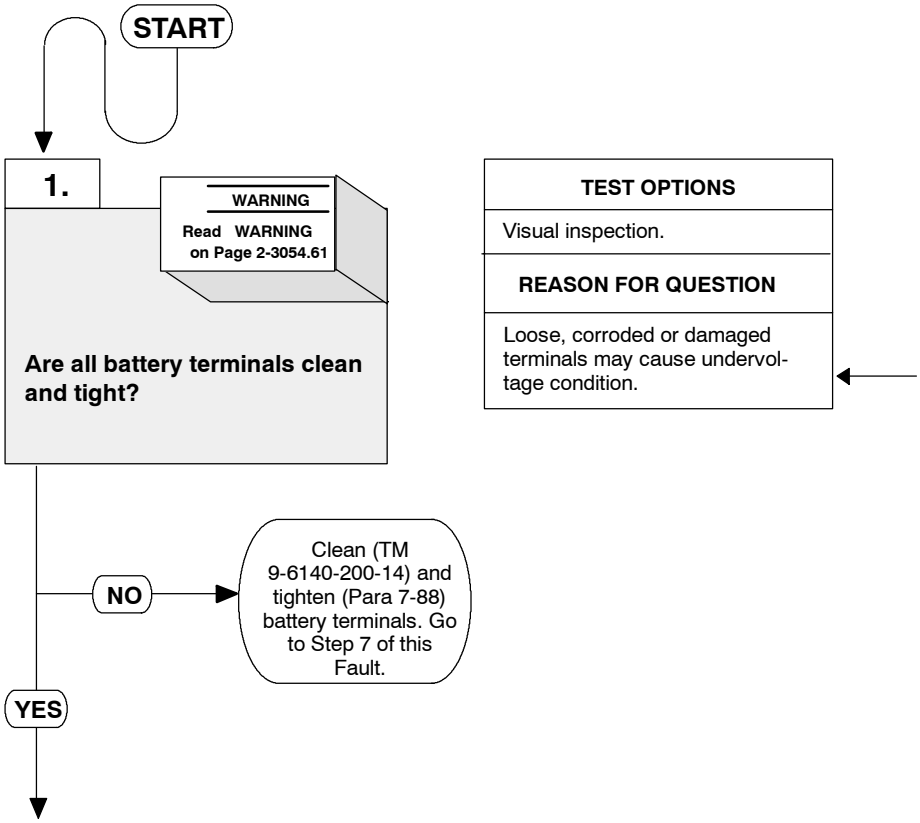
The following steps should only be used if troubleshooting was started at First Chart For Diagnosis of Arctic Heater Troubleshooting procedure (Para 2-36.1 Fault 3) (all conditions) and you were referred here.

KNOWN INFO

Flash code is displayed, indicating arctic heater red power wires and main fuse OK.

POSSIBLE PROBLEMS

Battery terminals loose, corroded, or damaged.
Batteries faulty.
Arctic heater unit harness brown wire faulty.
Arctic heater harness brown wire faulty.
Vehicle 24 volt charging system overcharging.
Arctic heater control unit faulty.



TEST OPTIONS

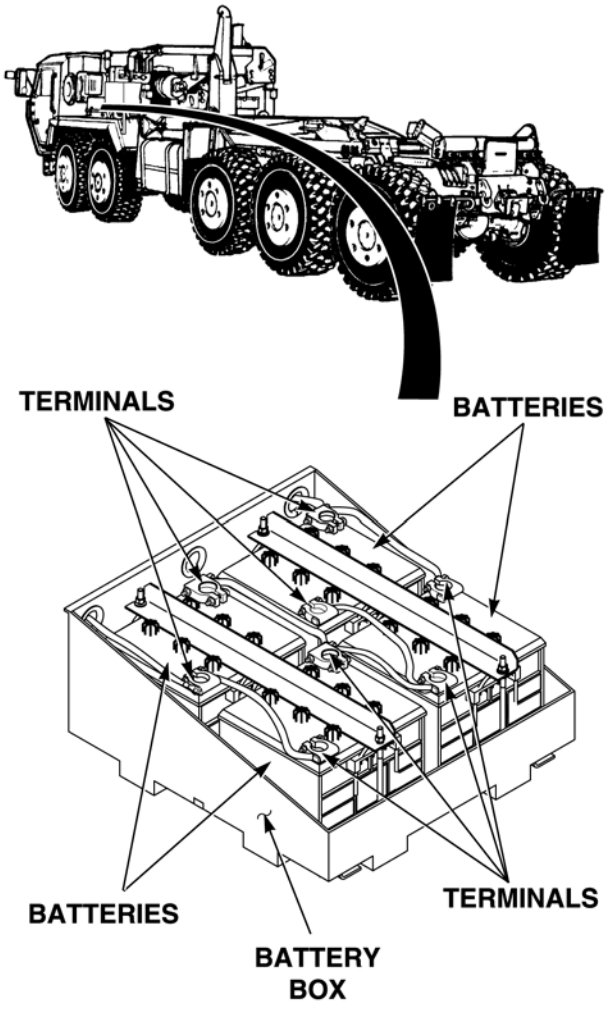
Visual inspection.

REASON FOR QUESTION

Loose, corroded or damaged terminals may cause undervoltage condition.

WARNING

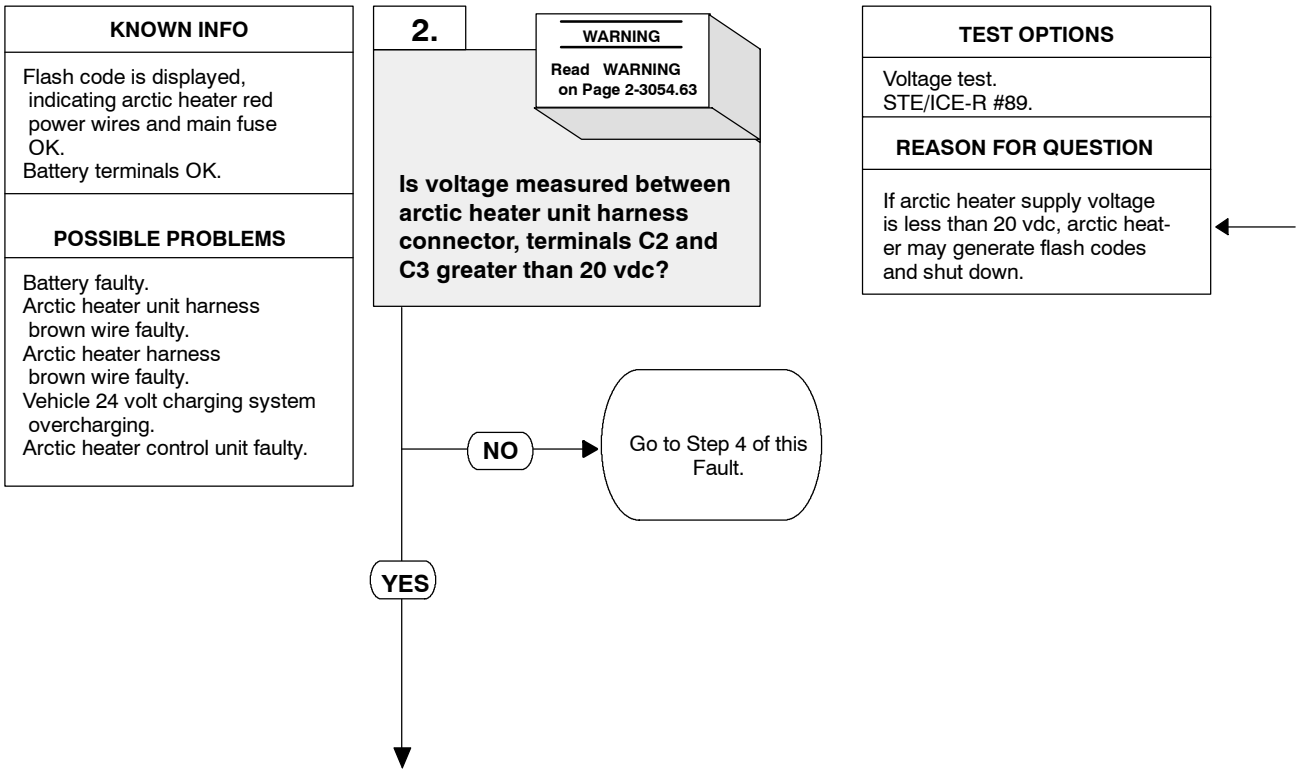
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Be careful not to short out battery terminals. Do not smoke or use open flame near batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes.



VISUAL INSPECTION

(1) Open battery box (TM 9-2320-364-10).
(2) Inspect all battery terminals for dirt, corrosion and looseness.
  (a) If battery terminals are dirty or corroded, clean battery terminals (TM 9-6140-200-14).
  (b) If battery terminals are loose, tighten terminals (Para 7-88).
  (c) If battery terminals are clean and tight, go to Step 2 of this Fault.

4. FAULT CODE 001, 002, 010 OR 011: ADVANCED WARNING - OVERVOLTAGE SHUTDOWN, ADVANCED WARNING - UNDERVOLTAGE SHUTDOWN, OVERVOLTAGE SHUTDOWN OR UNDERVOLTAGE SHUTDOWN (CONT).

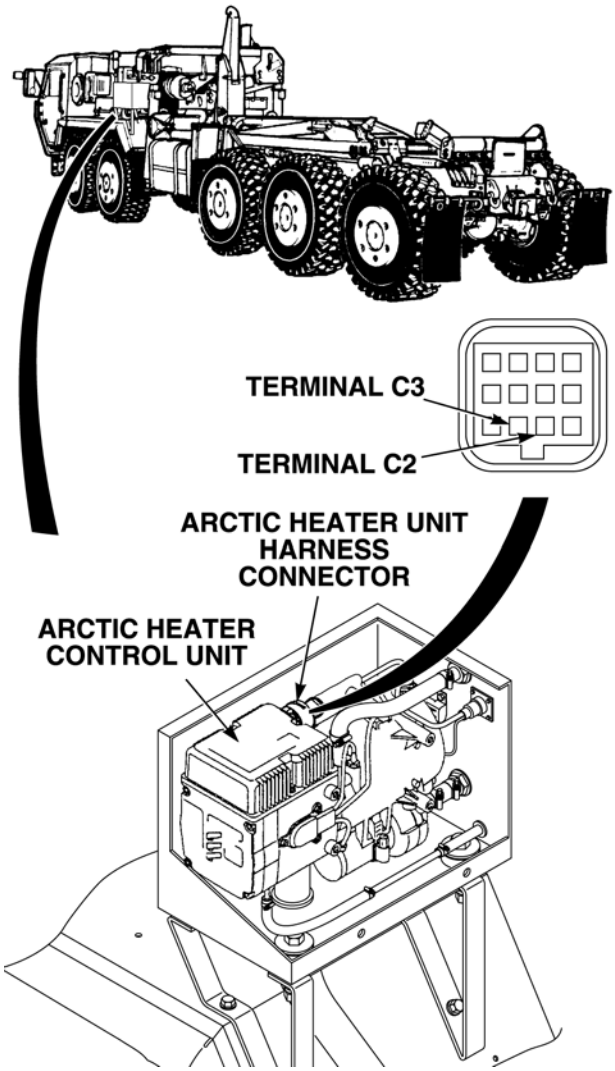


WARNING

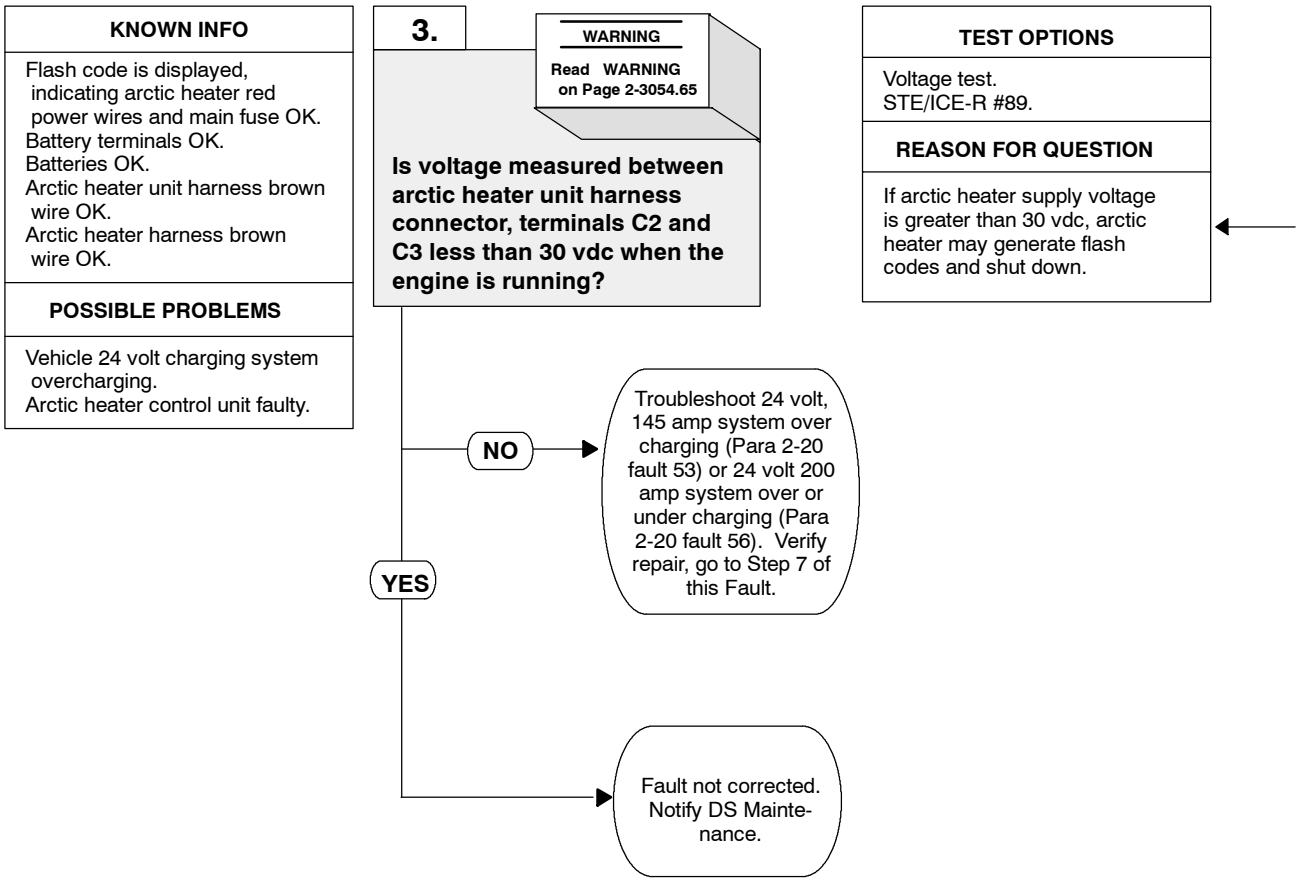
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Remove arctic heater cover (Para 21-6.1).
(2) Disconnect arctic heater unit harness connector from arctic heater control unit (Para 21-6.1).
(3) Connect positive (+) lead to red wire at arctic heater unit harness connector, terminal C2.
(4) Connect negative (-) lead to brown wire at arctic heater unit harness connector, terminal C3.
    (a) If voltage is less than 20 vdc, go to Step 4 of this Fault.
    (b) If voltage is greater than or equal to 20 vdc, go to Step 3 of this Fault.



4. FAULT CODE 001, 002, 010 OR 011: ADVANCED WARNING - OVERVOLTAGE SHUTDOWN, ADVANCED WARNING - UNDERVOLTAGE SHUTDOWN, OVERVOLTAGE SHUTDOWN OR UNDERVOLTAGE SHUTDOWN (CONT).

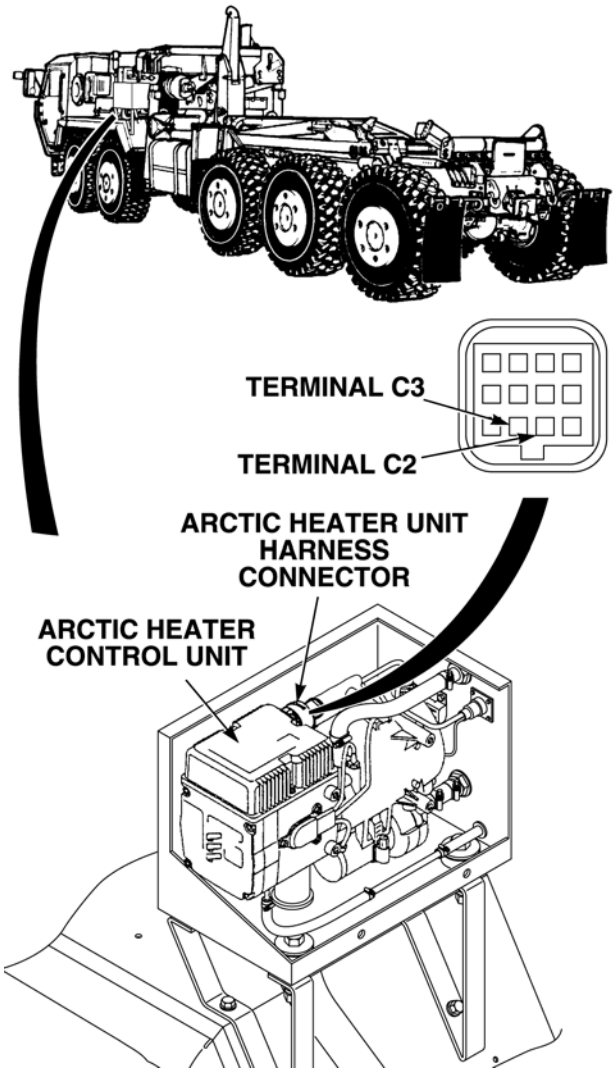


WARNING

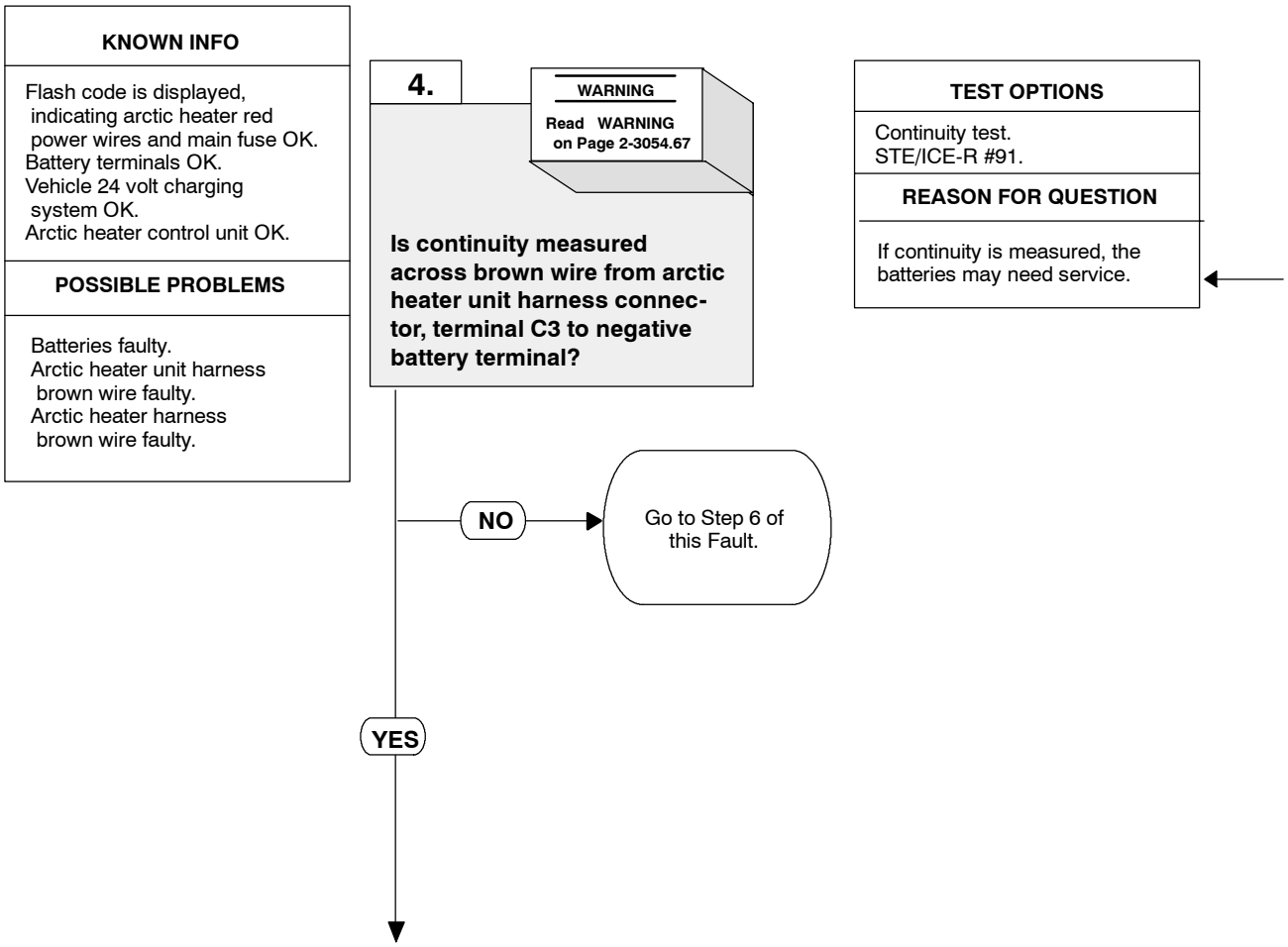
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

VOLTAGE TEST

(1) Connect positive (+) lead to red wire at arctic heater unit harness connector, terminal C2.
(2) Connect negative (-) lead to brown wire at arctic heater unit harness connector, terminal C3.
(3) Start engine (TM 9-2320-364-10).
(4) Note voltage reading.
(5) Turn engine OFF (TM 9-2320-364-10).
    (a) If voltage is more than 30 vdc when engine is running, troubleshoot 24 volt, 145 amp system overcharging (Para 2-20 Fault 53) or 24 volt, 200 amp system over or under charging (Para 2-20 Fault 56).
    (b) If voltage is equal to or less than 30 vdc, arctic heater control unit is faulty. Notify DS Maintenance.



4. FAULT CODE 001, 002, 010 OR 011: ADVANCED WARNING - OVERVOLTAGE SHUTDOWN, ADVANCED WARNING - UNDERVOLTAGE SHUTDOWN, OVERVOLTAGE SHUTDOWN OR UNDERVOLTAGE SHUTDOWN (CONT).

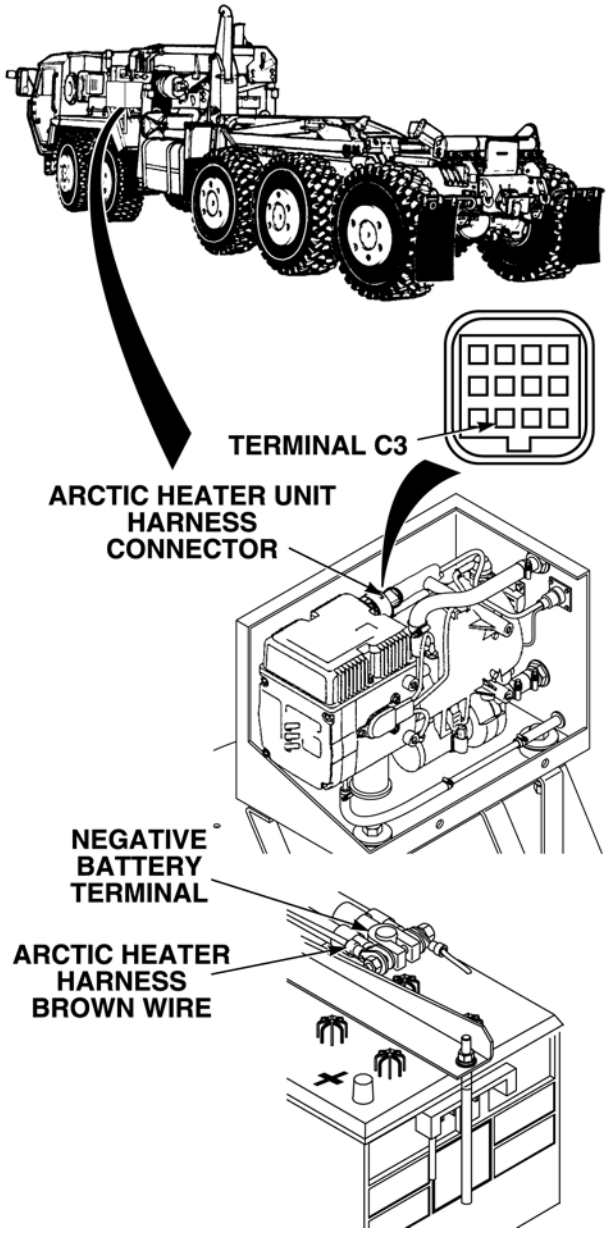


WARNING

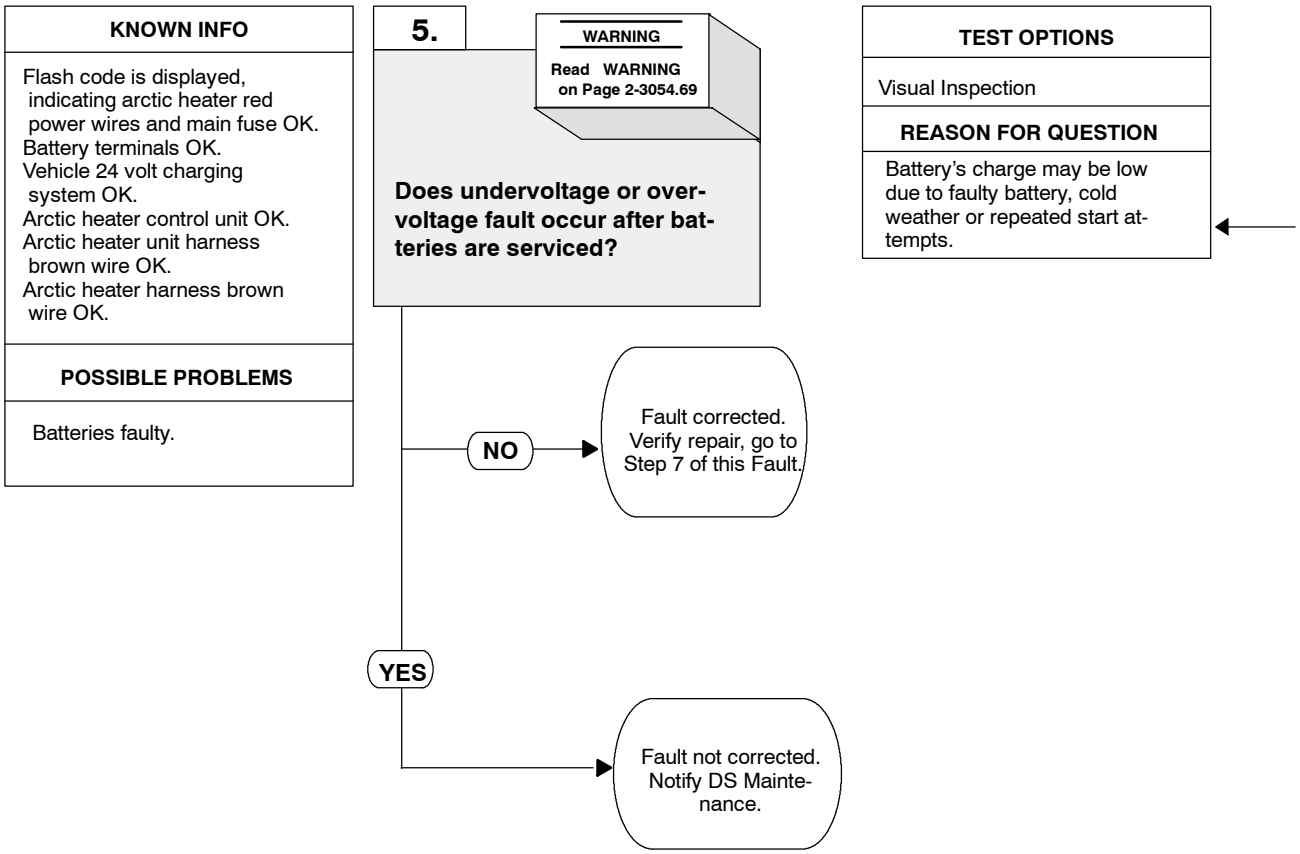
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Be careful not to short out battery terminals. Do not smoke or use open flame near batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes.

CONTINUITY TEST

(1) Disconnect negative battery terminal (Para 7-87).
(2) Connect positive (+) lead to brown wire at arctic heater harness, terminal C3.
(3) Connect negative (-) lead to brown wire at negative battery terminal.
(4) Is continuity measured across brown wire from arctic heater unit harness connector, terminal C3 to negative battery terminal?
   (a) If there is no continuity, go to Step 6 of this Fault.
   (b) If there is continuity, go to Step 5 of this Fault.



4. FAULT CODE 001, 002, 010 OR 011: ADVANCED WARNING - OVERVOLTAGE SHUTDOWN, ADVANCED WARNING - UNDERVOLTAGE SHUTDOWN, OVERVOLTAGE SHUTDOWN OR UNDERVOLTAGE SHUTDOWN (CONT).



WARNING

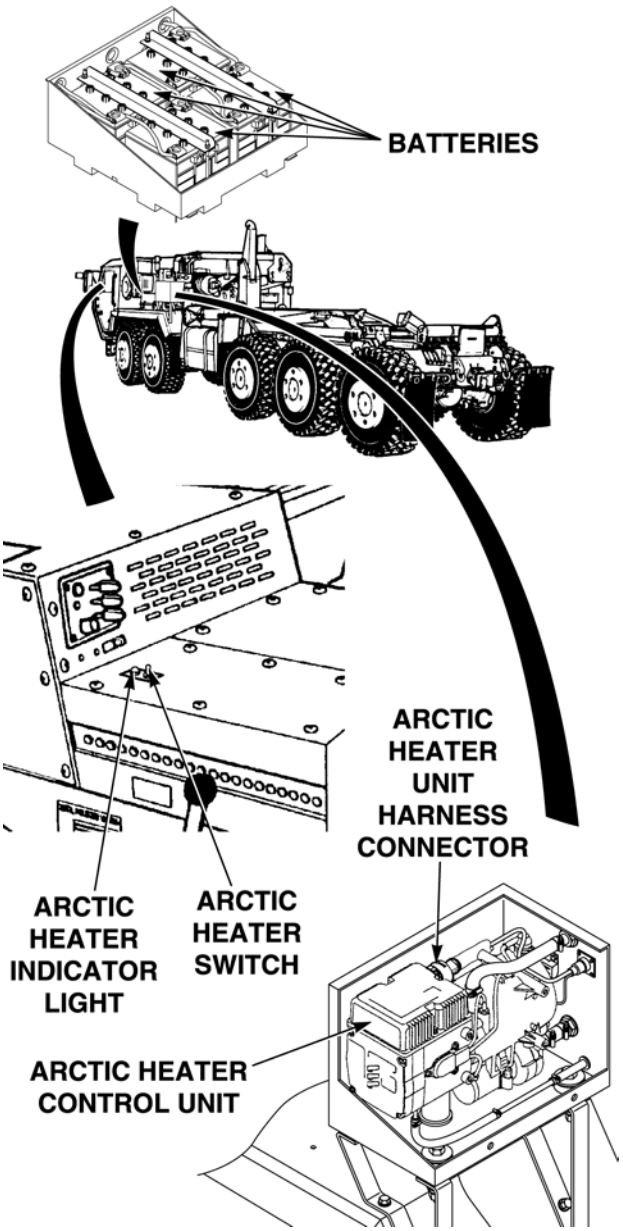
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Be careful not to short out battery terminals. Do not smoke or use open flame near batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes.

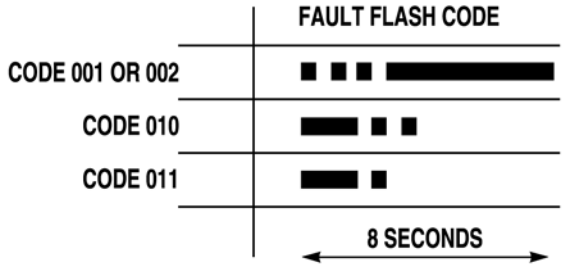
NOTE

Perform Steps (5) and (6) only if fault code retrieval device (FCRD) is available.

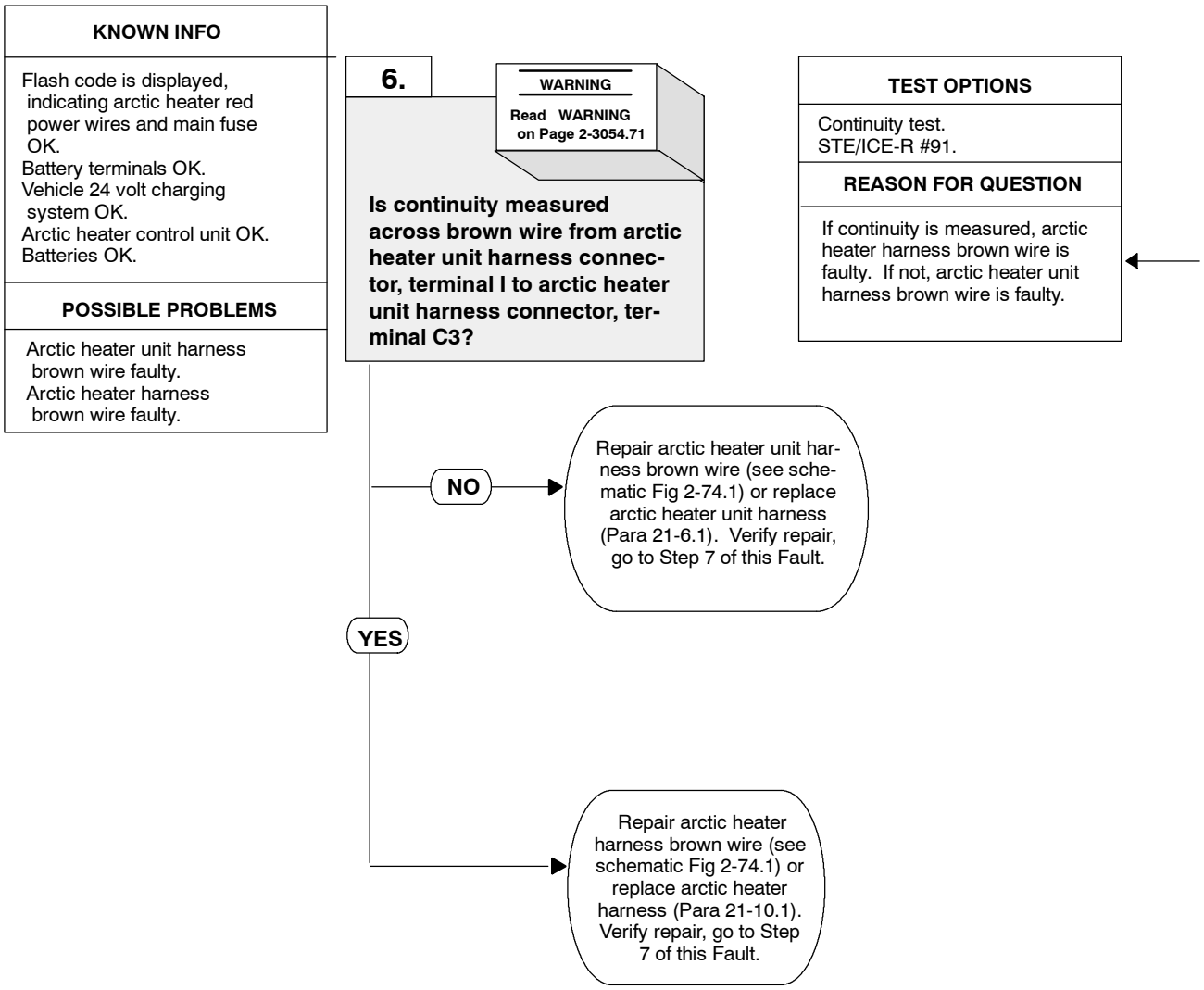
VISUAL INSPECTION

(1) Connect arctic heater unit harness connector to arctic heater control unit.
(2) Service batteries (TM 9-6140-200-14).
(3) If disconnected, connect battery (Para 7-87).
(4) Ensure vehicle is returned to normal operating conditions.
(5) If removed, install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(6) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(7) Turn arctic heater ON (TM 9-2320-364-10).
(8) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if fault code 001, 002, 010 or 011 is displayed.
(9) Turn arctic heater switch to OFF (TM 9-2320-364-10), or press the D button on the fault code retrieval device (FCRD) if installed, to turn arctic heater OFF.
  (a) If fault code 001, 002, 010 or 011 was displayed, fault not corrected. Notify DS Maintenance.
  (b) If fault code 001, 002, 010 or 011 was not displayed, go Step 7 of this Fault.





4. FAULT CODE 001, 002, 010 OR 011: ADVANCED WARNING - OVERVOLTAGE SHUTDOWN, ADVANCED WARNING - UNDERVOLTAGE SHUTDOWN, OVERVOLTAGE SHUTDOWN OR UNDERVOLTAGE SHUTDOWN (CONT).

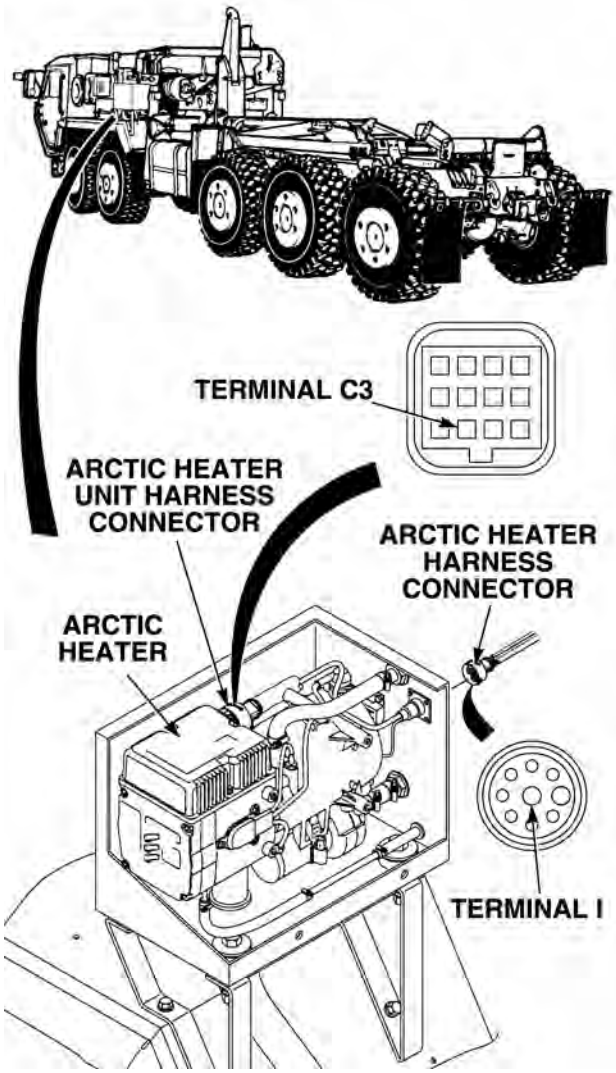


WARNING

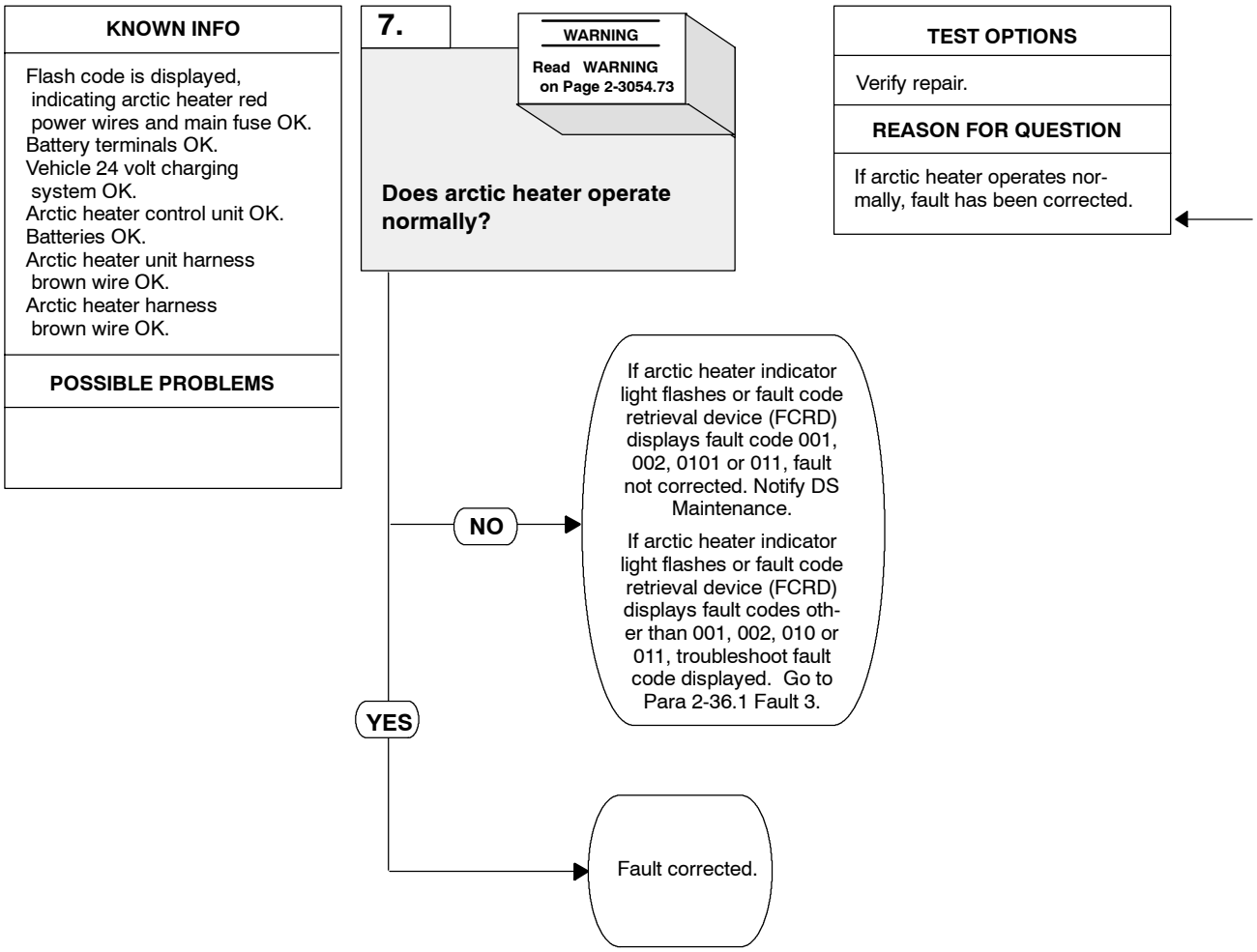
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Be careful not to short out battery terminals. Do not smoke or use open flame near batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes.

CONTINUITY TEST

(1) Disconnect arctic heater harness from arctic heater (Para 21-10.1).
(2) Connect positive (+) lead to brown wire at arctic heater unit harness, terminal I.
(3) Connect negative (-) lead to brown wire at arctic heater unit harness, terminal C3.
(4) Is continuity measured across brown wire from arctic heater unit harness connector, terminal I to arctic heater unit harness connector, terminal C3?
   (a) If there is no continuity, repair arctic heater unit harness brown wire (see schematic Fig 2-74.1) or replace arctic heater unit harness (Para 21-6.1).
   (b) If there is continuity, repair arctic heater harness brown wire (see schematic Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).



4. FAULT CODE 001, 002, 010 OR 011: ADVANCED WARNING - OVERVOLTAGE SHUTDOWN, ADVANCED WARNING - UNDERVOLTAGE SHUTDOWN, OVERVOLTAGE SHUTDOWN OR UNDERVOLTAGE SHUTDOWN (CONT).



WARNING

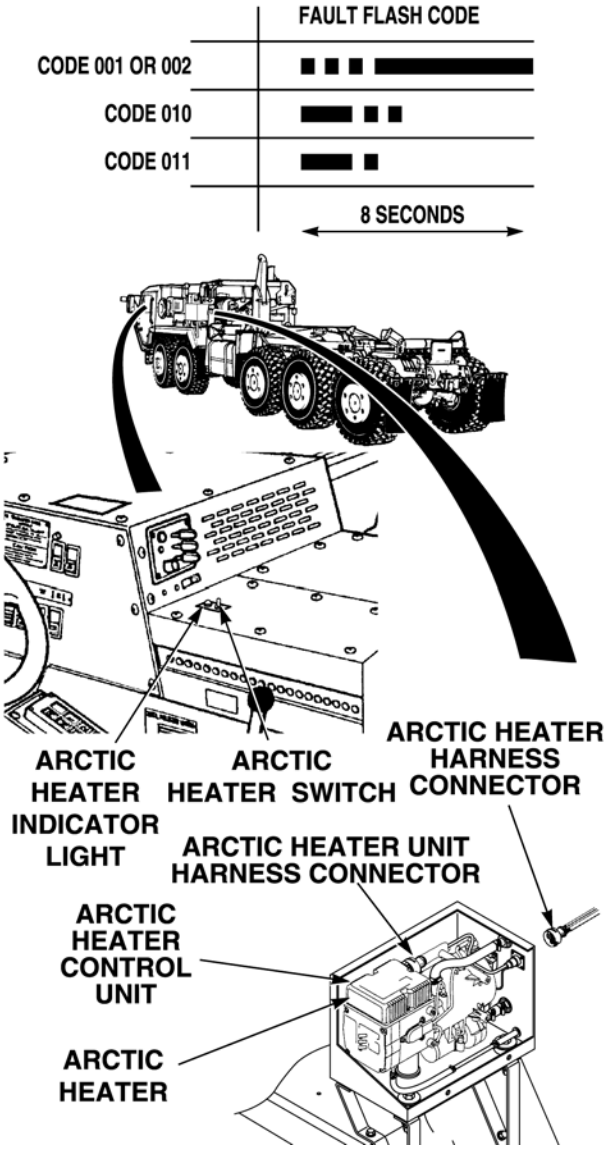
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

- If the fault code retrieval device (FCRD) is not installed. The arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- Perform Steps (6) and (7) only if digital fault code retrieval device (FCRD) is available.

VERIFY REPAIR

(1) If disconnected, connect arctic heater unit harness connector to arctic heater control unit (Para 21-6.1).
(2) If disconnected, connect arctic heater harness connector to arctic heater (Para 21-10.1).
(3) If disconnected, connect battery (Para 7-87).
(4) Ensure vehicle is returned to normal operating condition.
(5) Ensure all electrical powered components are switched OFF.
(6) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(7) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(8) Turn arctic heater ON (TM 9-2320-364-10).
(9) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if arctic heater indicator light flashes code shown.
(10) Observe arctic heater for proper operation.
(11) Start engine (TM 9-2320-364-10).
(12) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if arctic heater indicator light flashes code shown.
(13) Turn arctic heater switch OFF (TM 9-2320-364-10) or press the D button on the (FCRD), if installed.
(14) Turn engine OFF (TM 9-2320-364-10).
(15) If installed, remove fault code retrieval device (FCRD).
(16) If removed, install cover on arctic heater (Para 21-6.1).
  (a) If arctic heater operated normally and arctic heater indicator light illuminated (Fault code 000 displayed on FCRD), fault has been corrected.
  (b) If arctic heater indicator light flashed flash code shown (Fault code 001, 002, 010 or 011 displayed on FCRD), notify DS Maintenance.
  (c) If arctic heater indicator light flashed different flash code (Fault code other than 001, 002, 010 or 011 displayed on FCRD), troubleshoot arctic heater fault code displayed. Go to Para 2-36.1 Fault 3.



2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING (CONT).

5. FAULT CODE 012, 013, 014, 015, 037, 042 OR 059: OVERHEATING, EXCESSIVE TEMPERATURE AT FLAME SENSOR, POSSIBLE OVERHEATING DETECTED, TOO MANY OVERHEATS, WATER PUMP IS NOT WORKING, WATER PUMP SHORT CIRCUIT OR WATER TEMPERATURE RISES TOO QUICKLY.

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Fault Code Retrieval Device (FCRD) (Item 23.1, Appendix G)

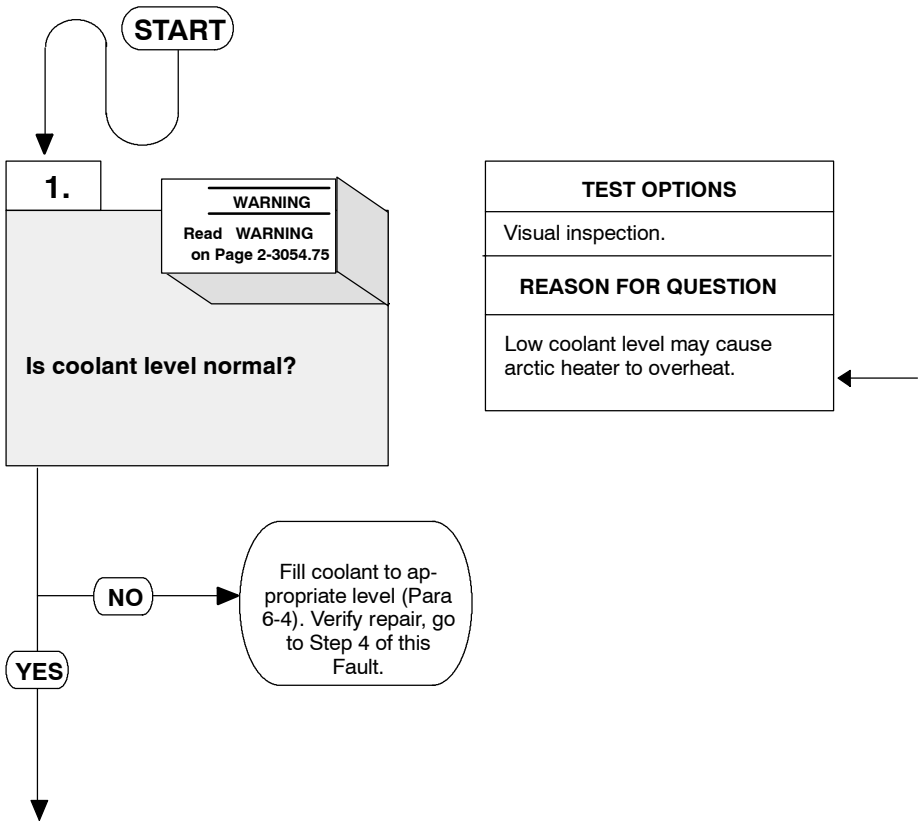
References
TM 9-2320-364-10

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

NOTE

The following steps should only be used if troubleshooting was started at First Chart For Diagnosis of Arctic Heater Troubleshooting procedure (Para 2-36.1 Fault 3) (all conditions) and you were referred here.

KNOWN INFO
Nothing.
POSSIBLE PROBLEMS
Coolant level low. Arctic heater coolant hose kinked or damaged, or hose clamps loose. Arctic heater coolant shutoff valves closed or damaged. Arctic heater in lockout mode, (Fault code 15 active). Arctic heater temperature sensor faulty. Arctic heater coolant pump faulty.



TEST OPTIONS
Visual inspection.
REASON FOR QUESTION
Low coolant level may cause arctic heater to overheat.

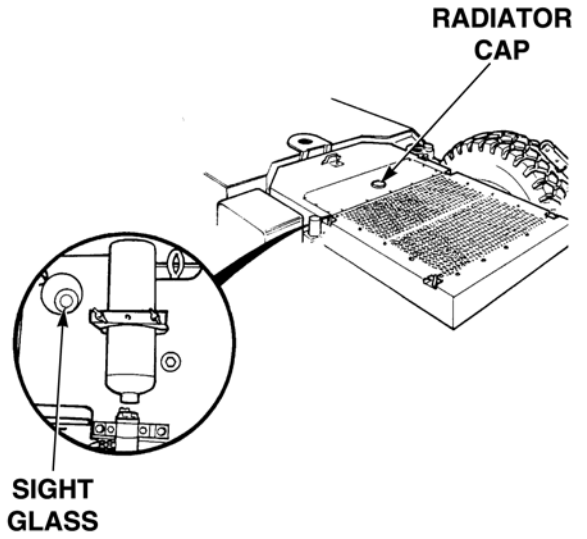
WARNING

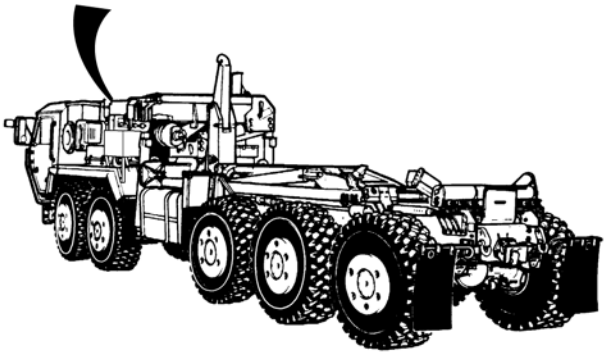
- Do not remove radiator cap when engine is hot. Steam and hot coolant can escape and burn personnel.
- Use extreme care when removing the radiator pressure cap. Sudden release of pressure can cause a steam flash which could seriously injure personnel. Slowly, loosen cap to the first stop to relieve pressure before removing cap completely. After opening, securely tighten cap.
- 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.

NOTE

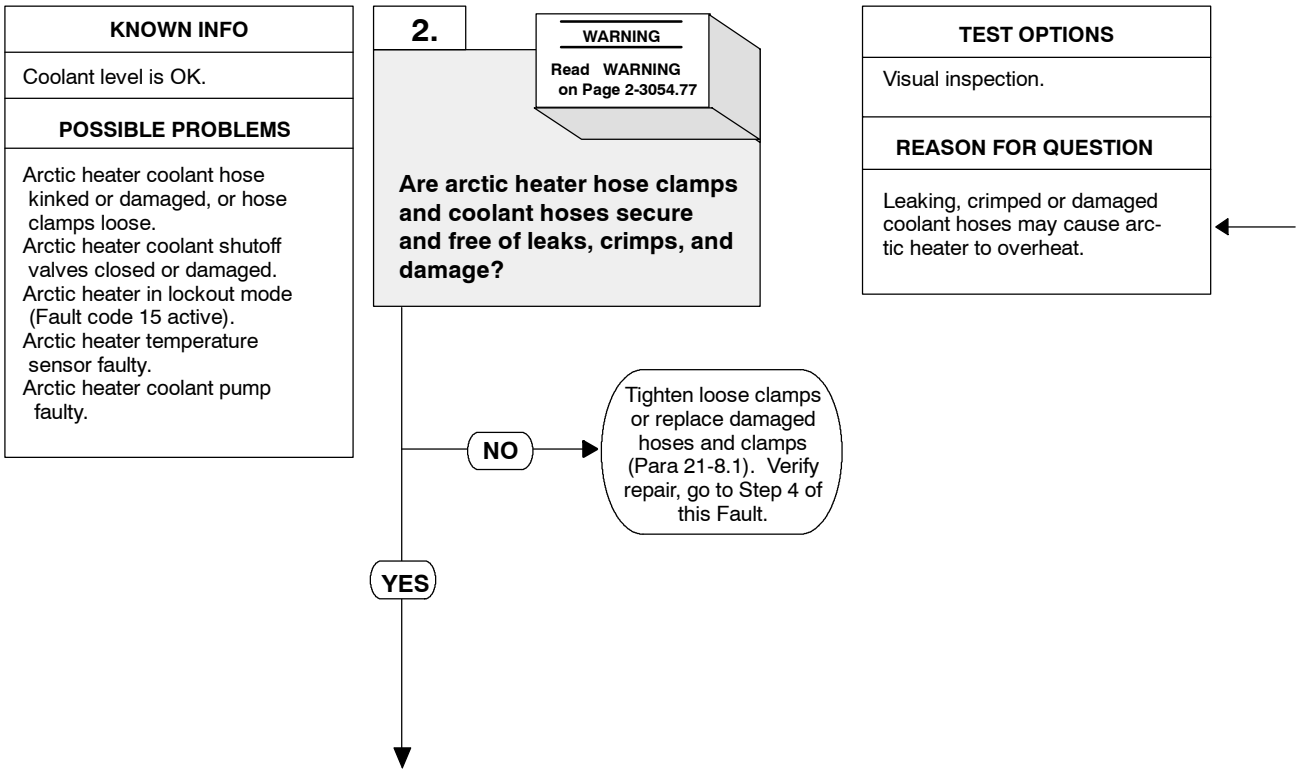
If coolant level is not visible on sight glass, remove radiator cap to check coolant level.

VISUAL INSPECTION
(1) Using sight glass, inspect coolant level for proper level (TM 9-2320-364-10). (a) If fluid level is low, fill to appropriate level (Para 6-4) and go to Step 4 of this Fault. (b) If fluid level is ok, go to Step 2 of this Fault.





5. FAULT CODE 012, 013, 014, 015, 037, 042 OR 059: OVERHEATING, EXCESSIVE TEMPERATURE AT FLAME SENSOR, POSSIBLE OVERHEATING DETECTED, TOO MANY OVERHEATS, WATER PUMP IS NOT WORKING, WATER PUMP SHORT CIRCUIT OR WATER TEMPERATURE RISES TOO QUICKLY (CONT).

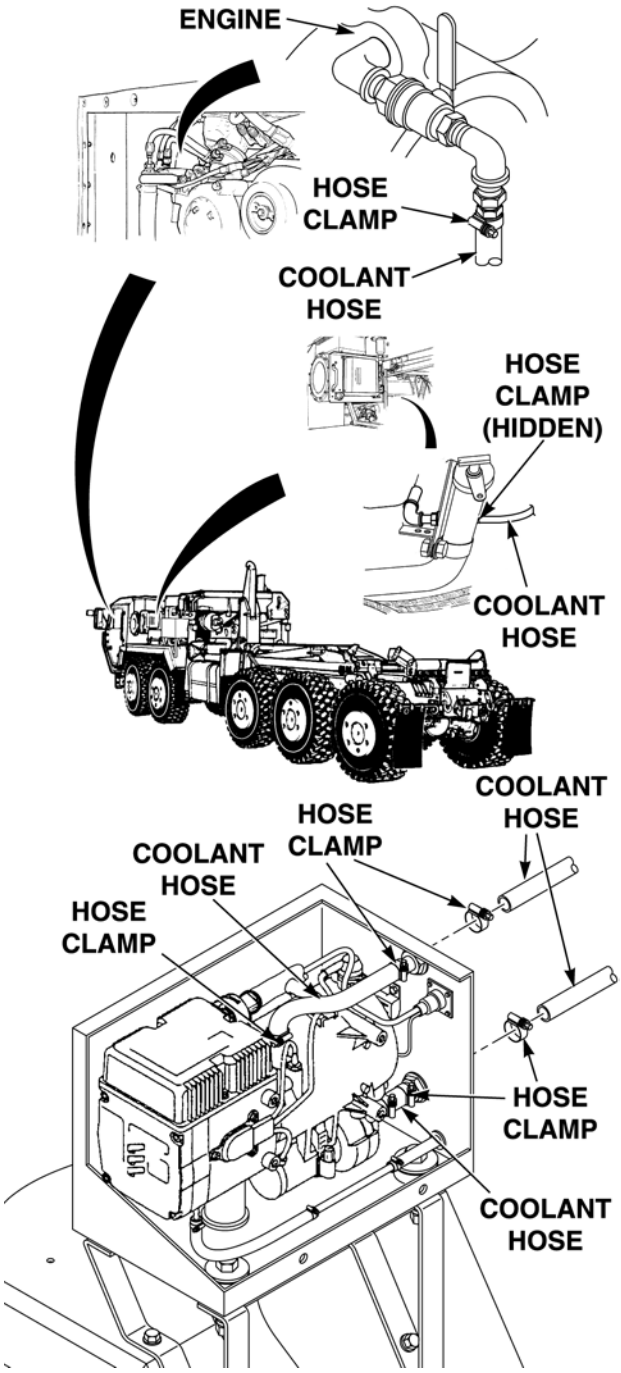


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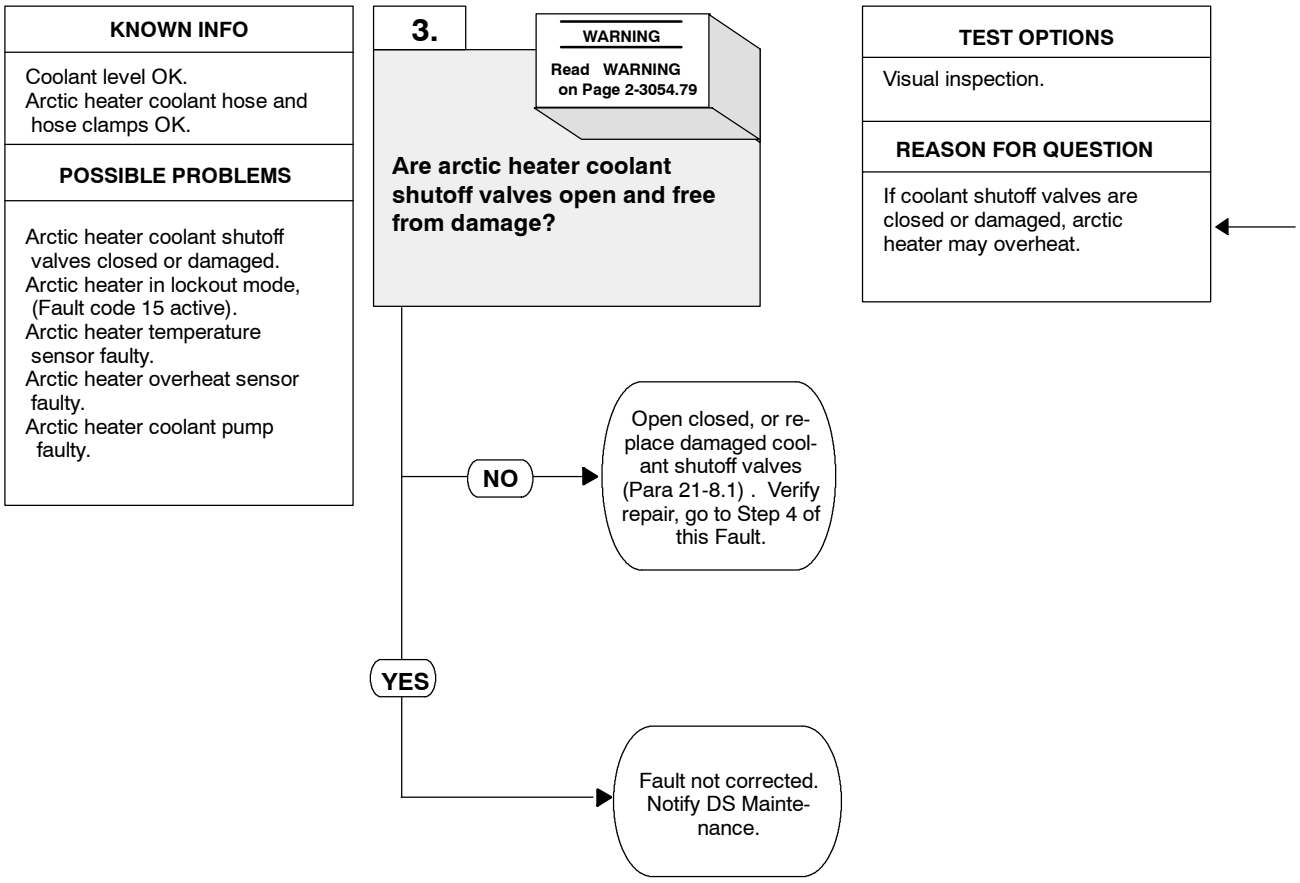
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Ensure engine is cool before performing this task or injury to personnel may result.

VISUAL INSPECTION

(1) If removed, install radiator cap (Para 6-4).
(2) Remove arctic heater cover (Para 21-6.1).
(3) Remove left side noise panel (Para 17-28).
(4) Remove cab engine access panel (Para 17-24).
(5) Inspect coolant hoses for leaks, crimps and damage.
(6) Ensure hose clamps are secure and free of damage.
  (a) If hose clamps and coolant hoses are loose, kinked or damaged, tighten loose clamps and repair or replace damaged hoses and clamps (Para 21-8.1).
  (b) If hose clamps and coolant hoses are OK, go Step 3 of this Fault.



5. FAULT CODE 012, 013, 014, 015, 037, 042 OR 059: OVERHEATING, EXCESSIVE TEMPERATURE AT FLAME SENSOR, POSSIBLE OVERHEATING DETECTED, TOO MANY OVERHEATS, WATER PUMP IS NOT WORKING, WATER PUMP SHORT CIRCUIT OR WATER TEMPERATURE RISES TOO QUICKLY (CONT).

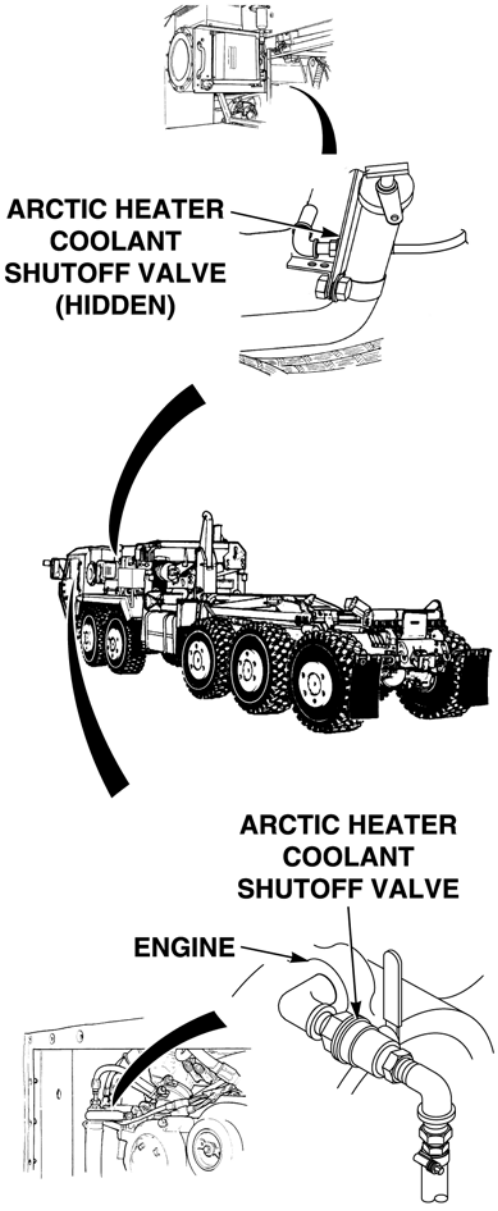


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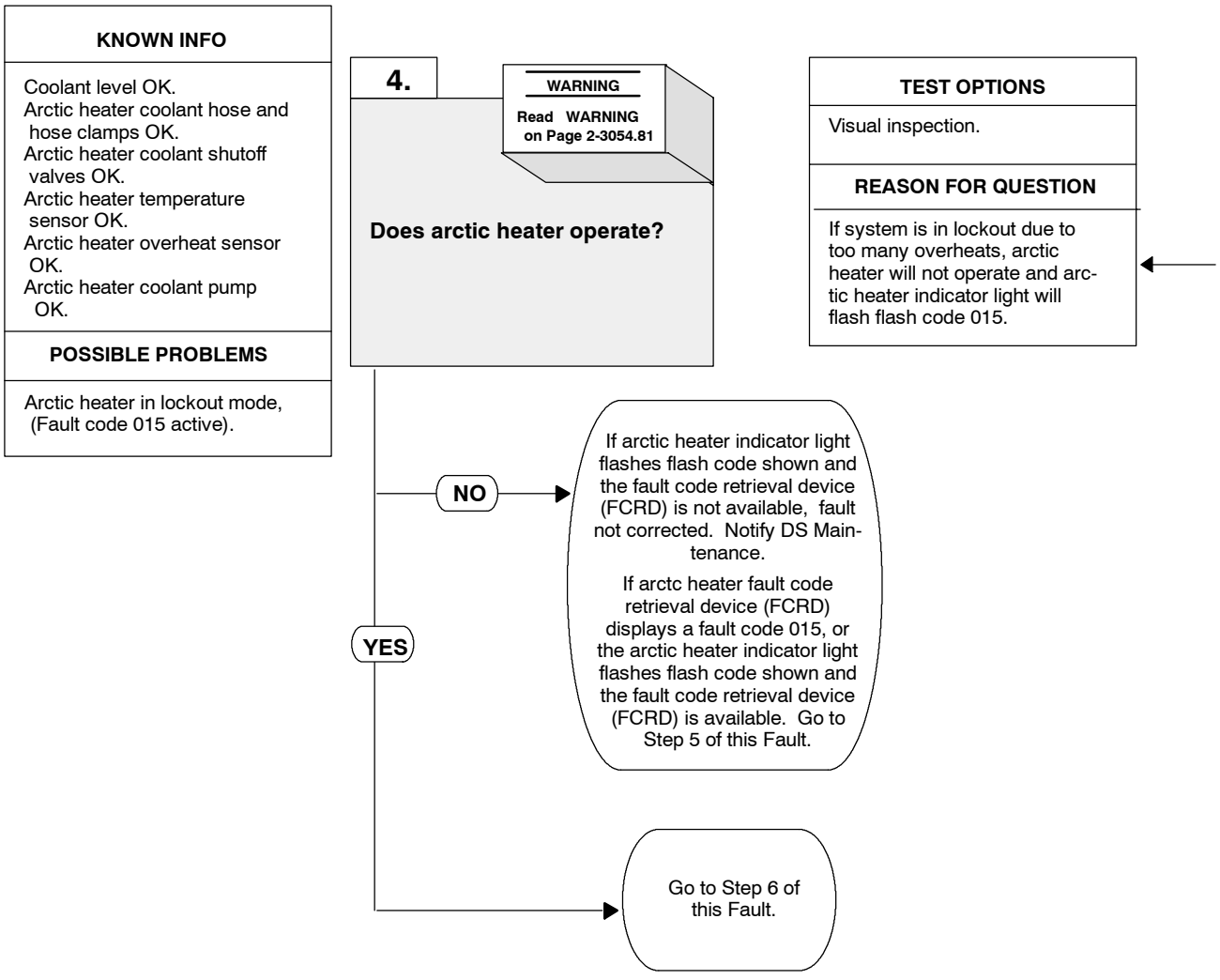
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Ensure engine is cool before performing this task or injury to personnel may result.

VISUAL INSPECTION

(1) Ensure arctic heater coolant shutoff valves are open.
(2) Inspect coolant shutoff valves for damage.
  (a) If coolant shutoff valves are closed or damaged, open closed, or replace damaged coolant shutoff valve (Para 21-8.1).
  (b) If coolant shutoff valves are open and free from damage, Direct Support troubleshooting is required. Notify DS Maintenance.



5. FAULT CODE 012, 013, 014, 015, 037, 042 OR 059: OVERHEATING, EXCESSIVE TEMPERATURE AT FLAME SENSOR, POSSIBLE OVERHEATING DETECTED, TOO MANY OVERHEATS, WATER PUMP IS NOT WORKING, WATER PUMP SHORT CIRCUIT OR WATER TEMPERATURE RISES TOO QUICKLY (CONT).



WARNING

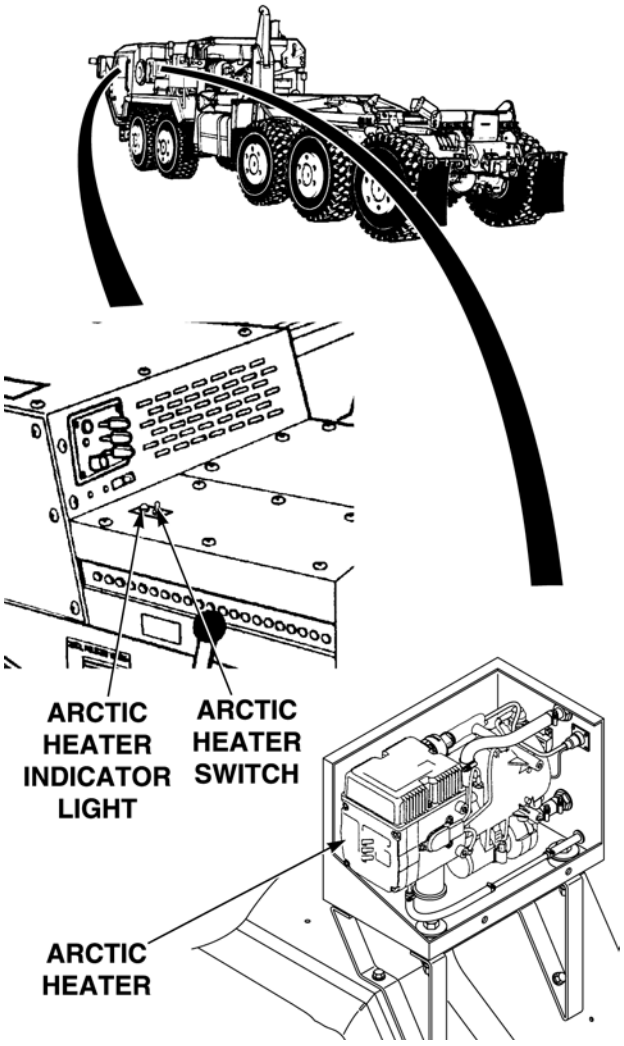
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

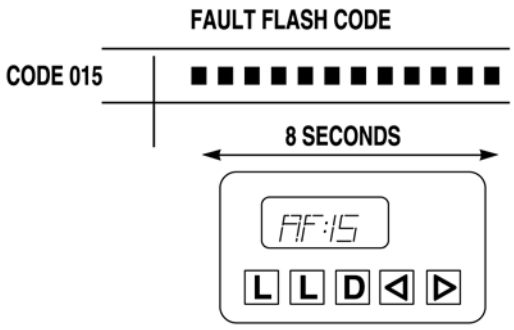
NOTE

- If arctic heater does not operate, arctic heater may be in lockout mode due to too many overheat occurrences (code 015).
- If the fault code retrieval device (FCRD) is not installed, the arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- Perform Steps (5) and (6) only if fault code retrieval device (FCRD) is available.

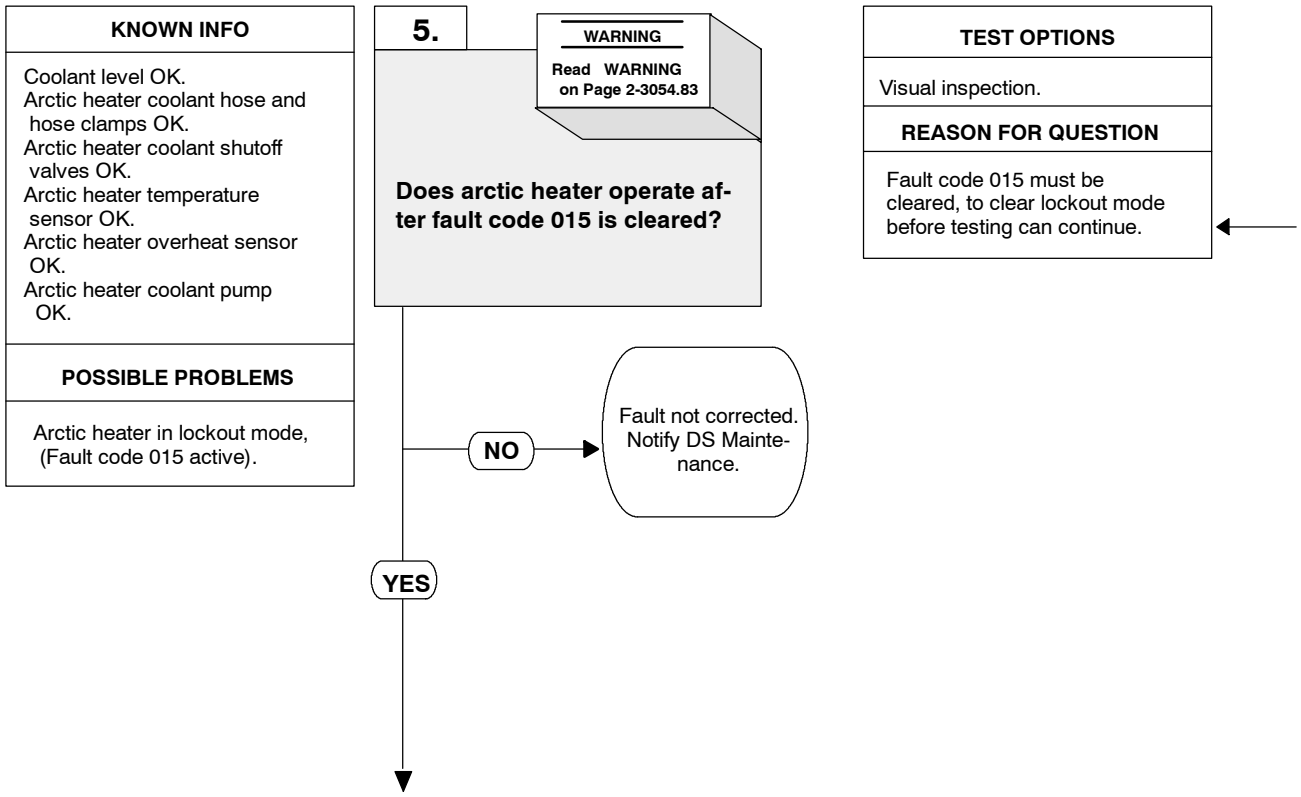
VISUAL INSPECTION

(1) If removed, install radiator cap (Para 6-4).
(2) If removed, install left side noise panel (Para 17-28).
(3) If removed, install cab engine access panel (Para 17-24).
(4) Ensure vehicle is returned to normal operating condition.
(5) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(6) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(7) Turn arctic heater ON (TM 9-2320-364-10).
(8) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if arctic heater indicator light flashes code shown.
(9) Observe arctic heater for proper operation.
(10) Turn arctic heater switch OFF (TM 9-2320-364-10) or press the D button on the (FCRD), if installed.
  (a) If arctic heater did not operate and arctic heater indicator light flashed flash code shown (FCRD is not available), arctic heater fault code 015 active. Notify DS Maintenance.
  (b) If arctic heater did not operate and arctic heater indicator light flashed flash code shown (Fault code 015 displayed on FCRD), go to Step 5 of this Fault.
  (c) If arctic heater attempts to start, go to Step 6 of this Fault.





5. FAULT CODE 012, 013, 014, 015, 037, 042 OR 059: OVERHEATING, EXCESSIVE TEMPERATURE AT FLAME SENSOR, POSSIBLE OVERHEATING DETECTED, TOO MANY OVERHEATS, WATER PUMP IS NOT WORKING, WATER PUMP SHORT CIRCUIT OR WATER TEMPERATURE RISES TOO QUICKLY (CONT).



WARNING

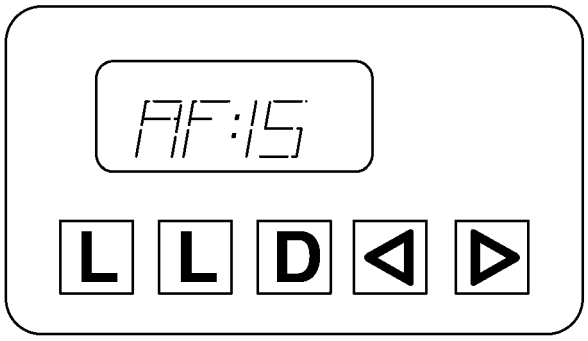
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

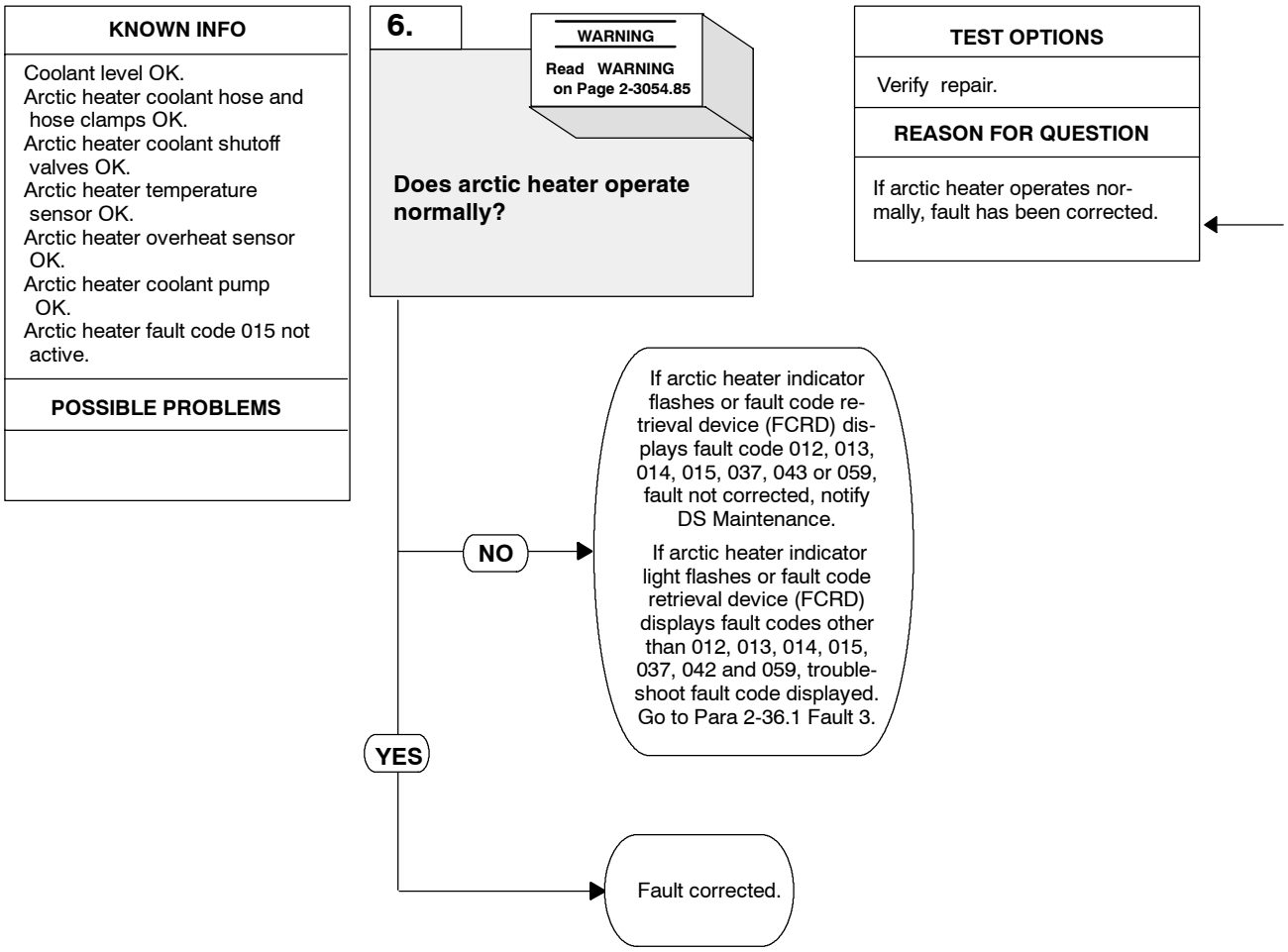
If arctic heater does not operate, arctic heater may be in lockout mode due to too many overheat occurrences (code 015).

VISUAL INSPECTION

(1) Ensure vehicle is returned to normal operating condition.
(2) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(3) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(4) Clear fault code 015.
(5) Press the D button on fault code retrieval device (FCRD) twice to turn arctic heater OFF and ON.
(6) Observe arctic heater for operation.
  (a) If arctic heater does not operate, fault is not corrected, perform Steps (7), (8) and (9) below and notify DS Maintenance.
  (b) If arctic heater operates, perform Step (7) below and go to Step 6 of this Fault.
(7) Press the D button on fault code retrieval device (FCRD) to turn arctic heater OFF.
(8) Remove fault code retrieval device (FCRD).
(9) Install cover on arctic heater (Para 21-6.1).



5. FAULT CODE 012, 013, 014, 015, 037, 042 OR 059: OVERHEATING, EXCESSIVE TEMPERATURE AT FLAME SENSOR, POSSIBLE OVERHEATING DETECTED, TOO MANY OVERHEATS, WATER PUMP IS NOT WORKING, WATER PUMP SHORT CIRCUIT OR WATER TEMPERATURE RISES TOO QUICKLY (CONT).



WARNING

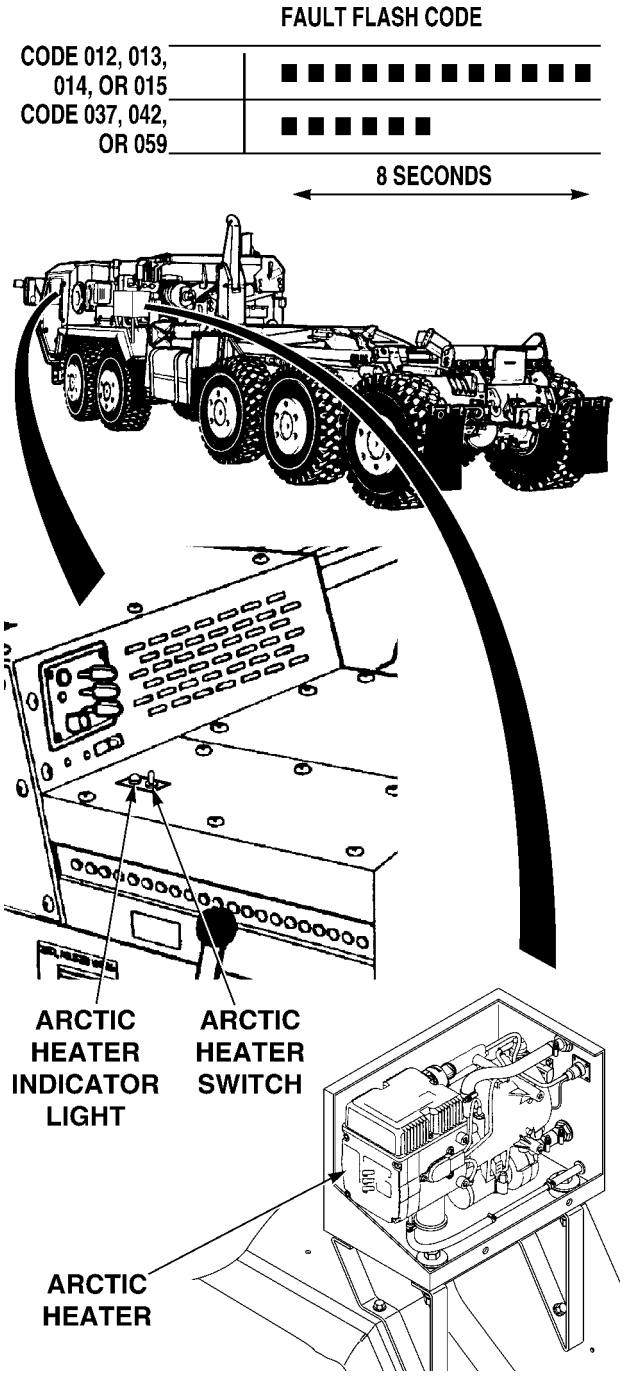
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

- If the fault code retrieval device (FCRD) is not installed, the arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- Perform Steps (2) and (3) only if fault code retrieval device (FCRD) is available.

VERIFY REPAIR

(1) Ensure vehicle is returned to normal operating condition.
(2) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(3) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(4) Turn arctic heater ON (TM 9-2320-364-10).
(5) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if arctic heater indicator light flashes code shown.
(6) Observe arctic heater for proper operation.
(7) Turn arctic heater switch OFF (TM 9-2320-364-10) or press the D button on the (FCRD), if installed.
(8) If installed, remove fault code retrieval device (FCRD).
(9) Install arctic heater cover (Para 21-6.1).
    (a) If arctic heater operates normally and arctic heater indicator light is illuminated (Fault code 000 displayed on FCRD), fault has been corrected.
    (b) If arctic heater indicator light flashed flash code shown (Fault code 012, 013, 014, 015, 037, 042 or 059 displayed on FCRD), notify DS Maintenance.
    (c) If arctic heater indicator light flashed different flash code (Fault code other than 012, 013, 014, 015, 037, 042 or 059 displayed on FCRD), troubleshoot arctic heater fault code displayed. Go to Para 2-36.1 Fault 3.



2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING (CONT).

6. FAULT CODE 043, 047 OR 048: SHORT CIRCUIT AT EXTERNAL COMPONENT, FUEL METERING PUMP SHORT CIRCUIT OR FUEL METERING PUMP OPEN CIRCUIT.

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)
Fault Code Retrieval Device (FCRD) (Item 23.1, Appendix G)

Materials/Parts
Jumperwire, 1 ft. (305 mm)

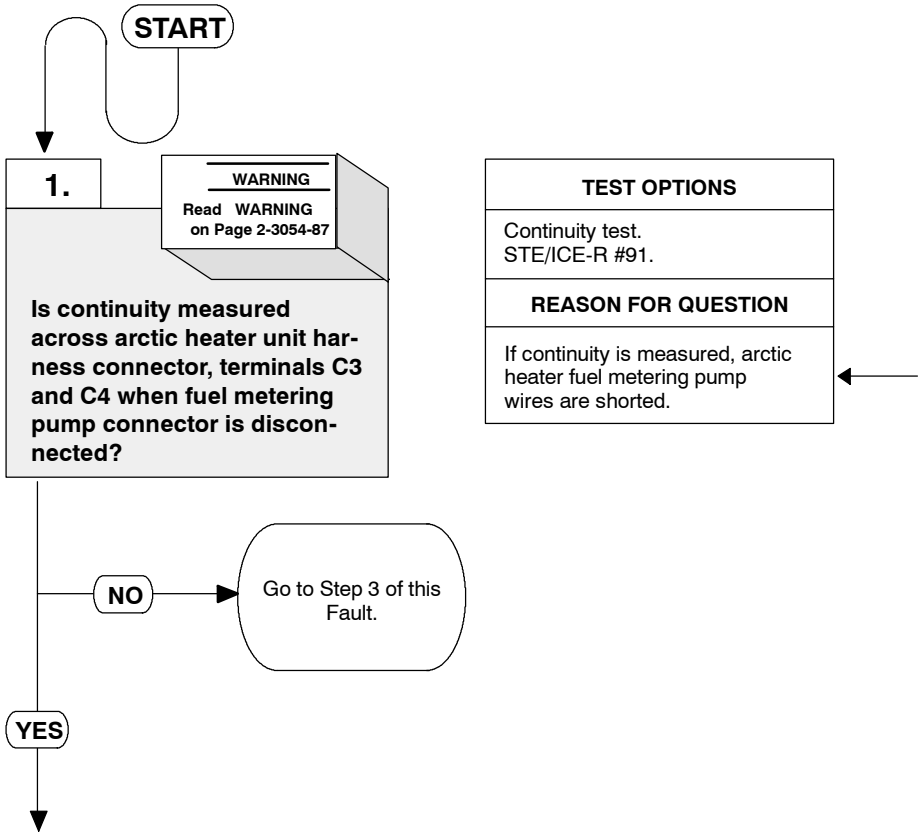
References
TM 9-2320-364-10

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

NOTE

The following steps should only be used if troubleshooting was started at First Chart For Diagnosis of Arctic Heater Troubleshooting procedure (Para 2-36.1 Fault 3) (all conditions) and you were referred here.

KNOWN INFO
Nothing.
POSSIBLE PROBLEMS
Arctic heater unit harness fuel metering pump wires shorted. Arctic heater harness fuel metering pump wires shorted. Arctic heater unit harness fuel metering pump wires open. Arctic heater harness fuel metering pump wires open. Arctic heater fuel metering pump faulty. Arctic heater control unit faulty.

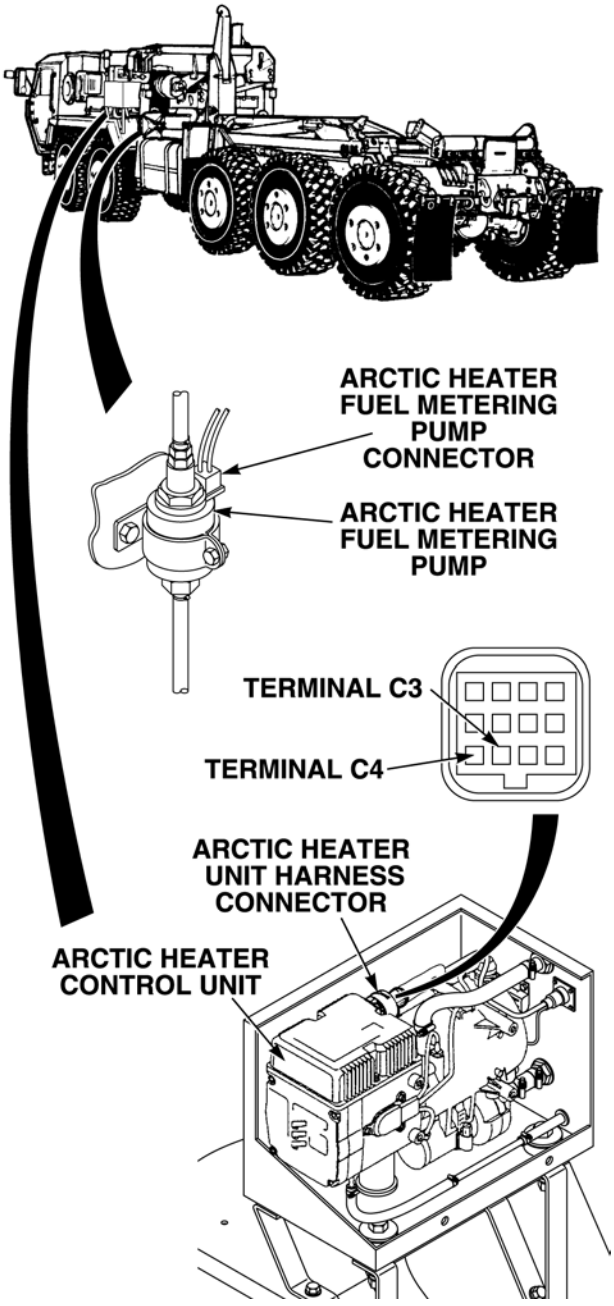


WARNING

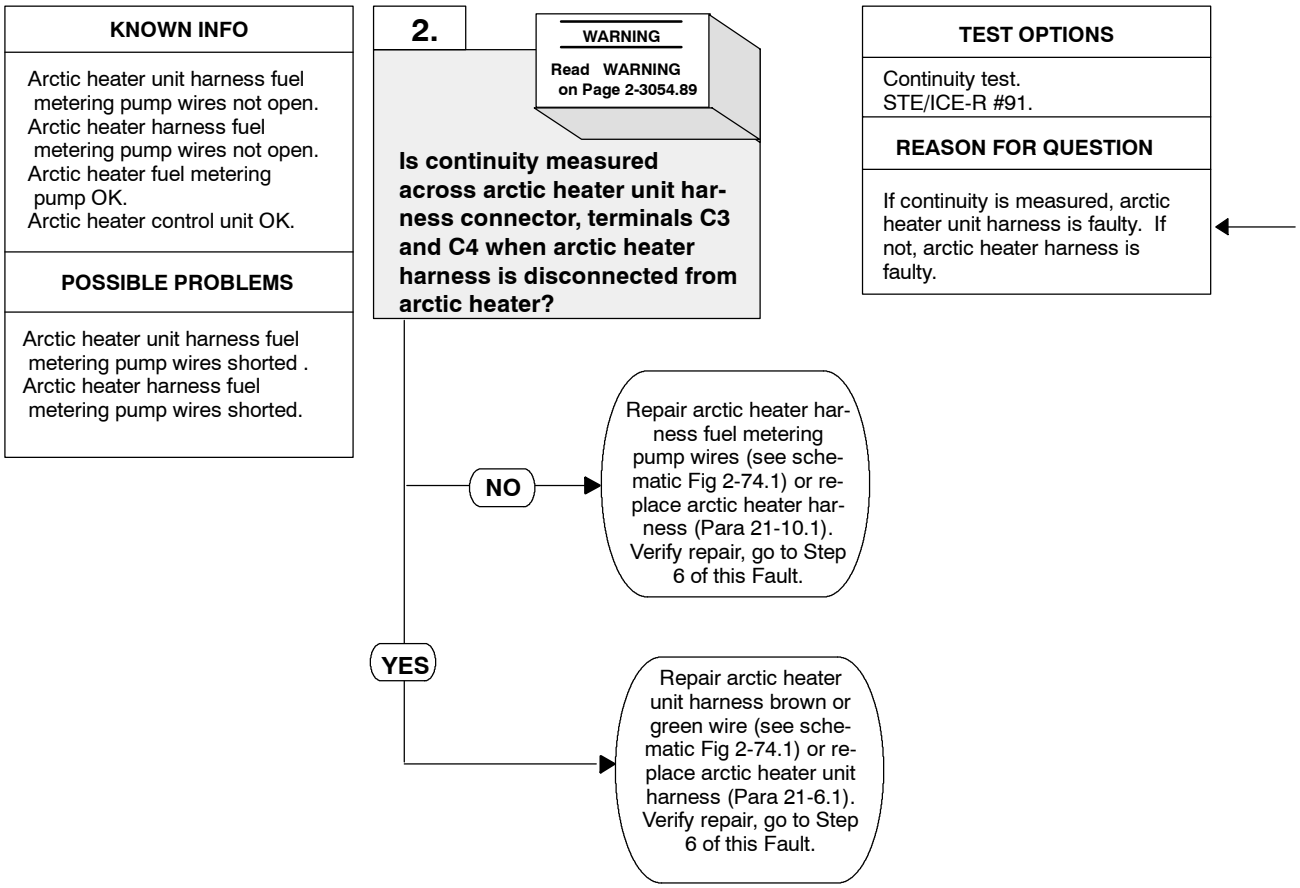
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

CONTINUITY TEST

(1) Remove arctic heater cover (Para 21-6.1).
(2) Disconnect arctic heater unit harness connector from arctic heater control unit (Para 21-6.1).
(3) Disconnect fuel metering pump harness connector from fuel metering pump (Para 21-7.1).
(4) Connect positive (+) lead to green (brown) wire at arctic heater unit harness connector, terminal C3.
(5) Connect negative (-) lead to green wire at arctic heater unit harness connector, terminal C4.
(6) Is continuity measured across arctic heater unit harness connector, terminals C3 and C4, when fuel metering pump connector is disconnected?
    (a) If there is no continuity, go to Step 3 of this Fault.
    (b) If there is continuity, go to Step 2 of this Fault.



6. FAULT CODE 043, 047 OR 048: SHORT CIRCUIT AT EXTERNAL COMPONENT, FUEL METERING PUMP SHORT CIRCUIT OR FUEL METERING PUMP OPEN CIRCUIT (CONT).

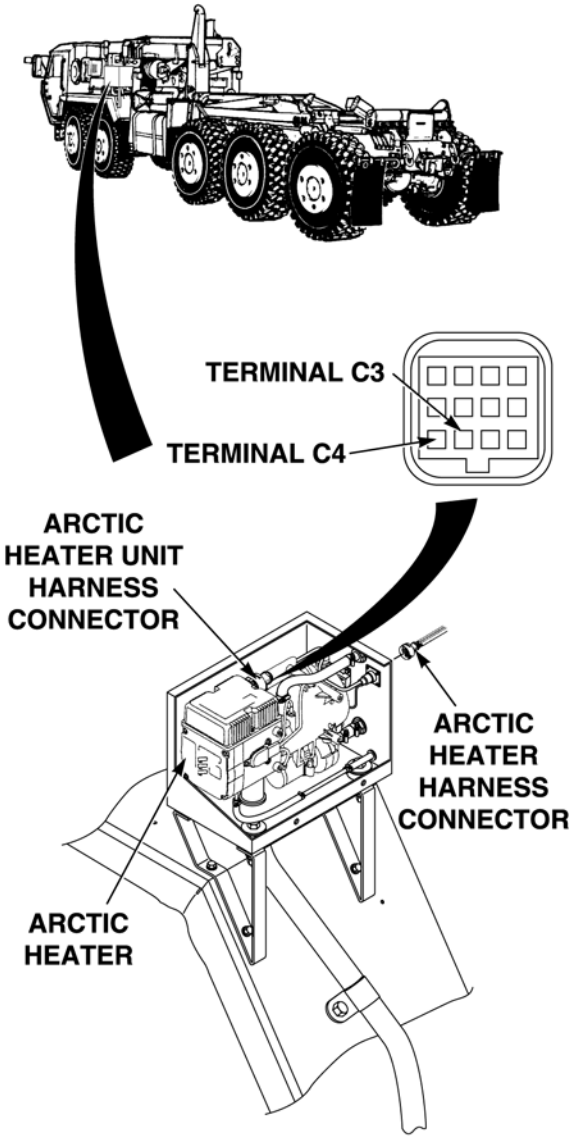


WARNING

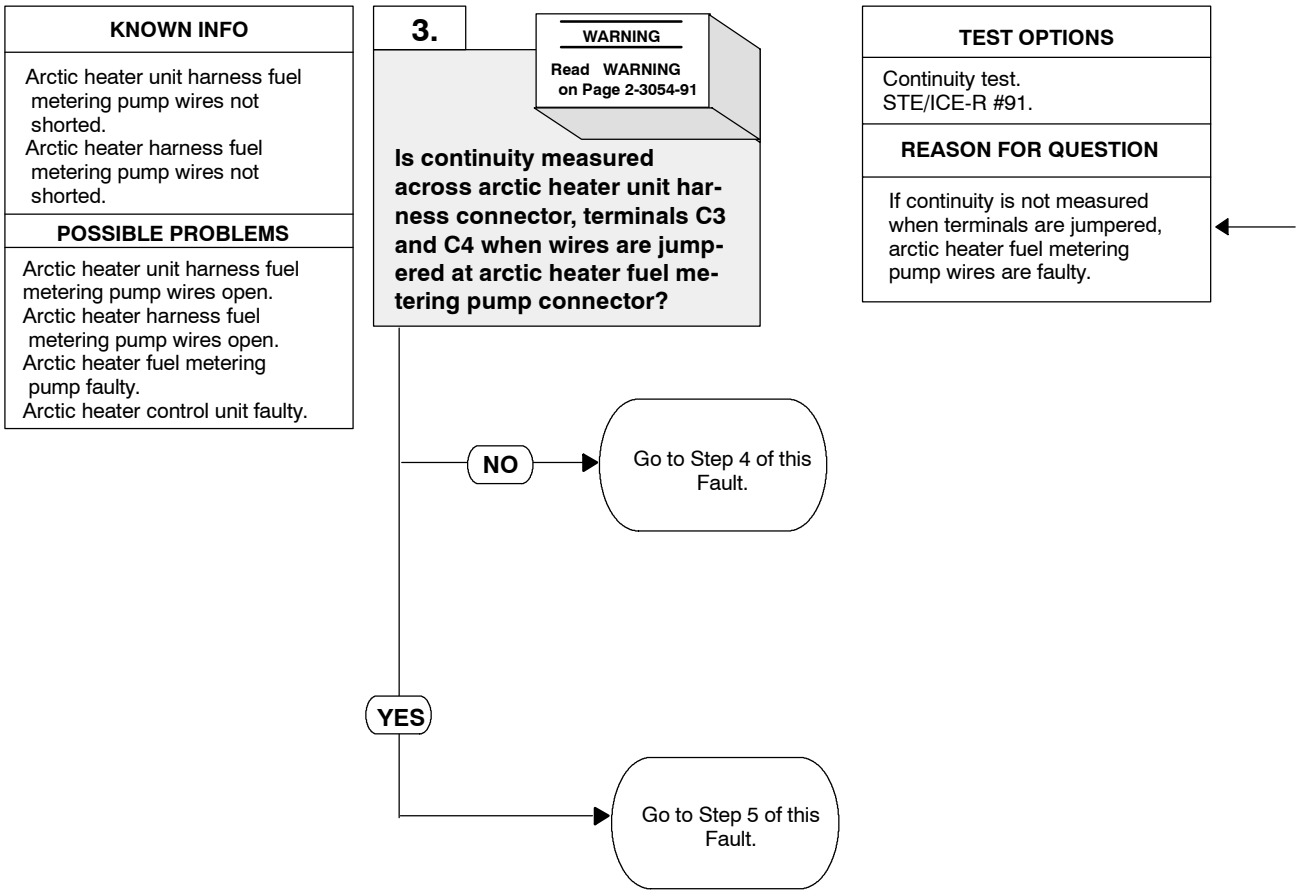
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect arctic heater harness connector from arctic heater (Para 21-10.1).
(2) Connect positive (+) lead to green (brown) wire at arctic heater unit harness connector, terminal C3.
(3) Connect negative (-) lead to green wire at arctic heater unit harness connector, terminal C4.
(4) Is continuity measured across arctic heater unit harness connector, terminals C3 and C4 when arctic heater harness connector is disconnected from arctic heater?
   (a) If there is no continuity repair short between arctic heater harness fuel metering pump wires (see schematics Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).
   (b) If there is continuity, repair short between arctic heater unit harness brown and green wires (see schematics Fig 2-74.1) or replace arctic heater unit harness (Para 21-6.1).



6. FAULT CODE 043, 047 OR 048: SHORT CIRCUIT AT EXTERNAL COMPONENT, FUEL METERING PUMP SHORT CIRCUIT OR FUEL METERING PUMP OPEN CIRCUIT (CONT).

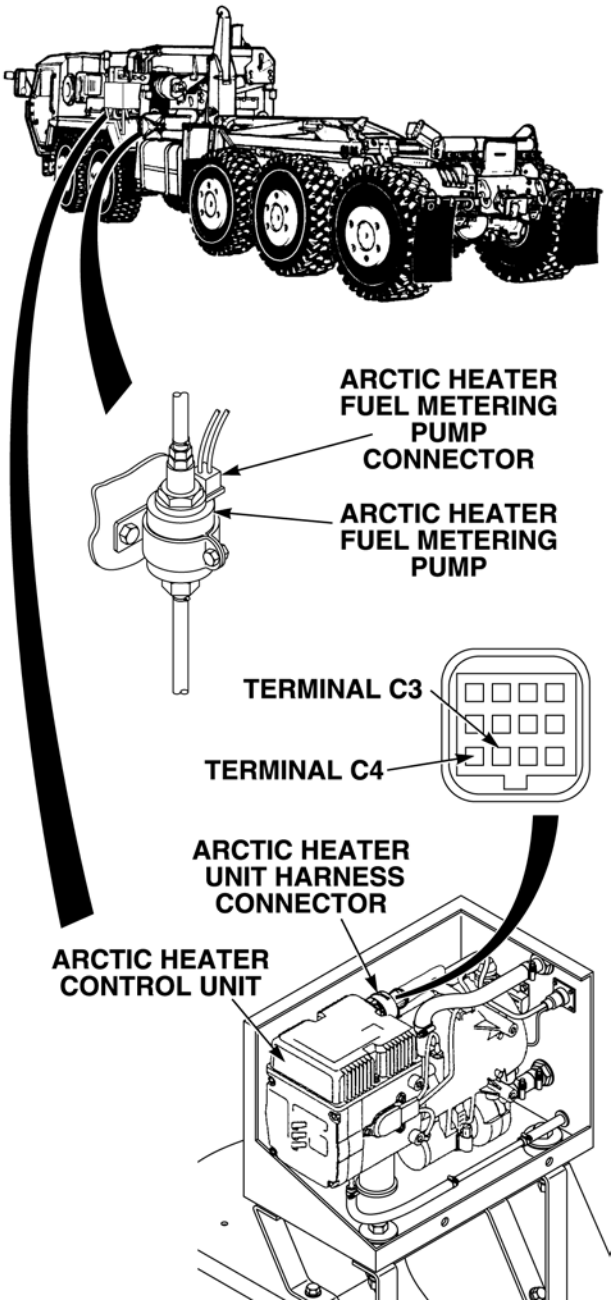


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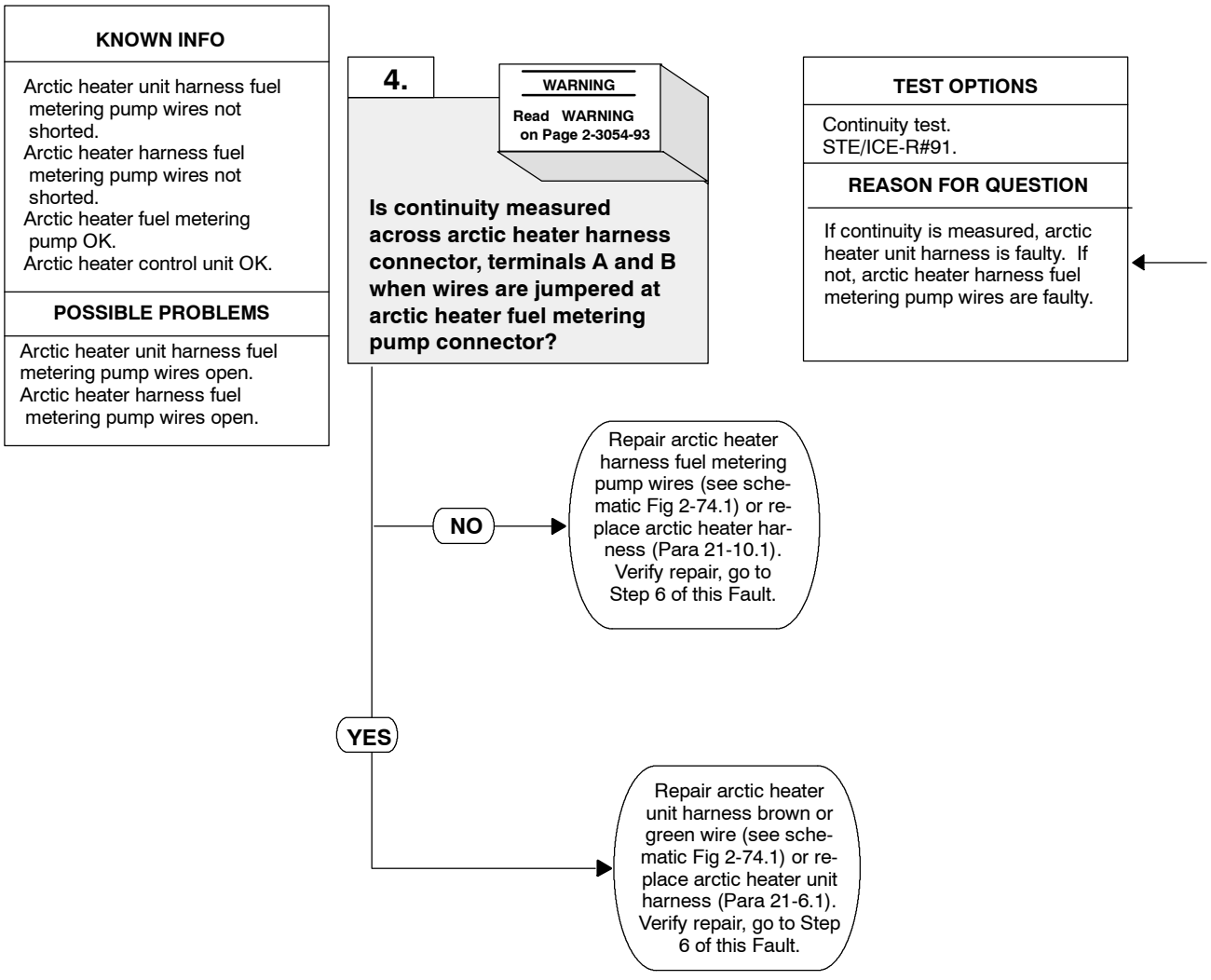
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

CONTINUITY TEST

(1) Connect jumperwire between arctic heater fuel metering pump harness connector terminals.
(2) Connect positive (+) lead to green (brown) wire at arctic heater unit harness connector, terminal C3.
(3) Connect negative (-) lead to green wire at arctic heater unit harness connector, terminal C4.
(4) Is continuity measured between arctic heater unit harness connector, terminals C3 and C4 when wires are jumpered at arctic heater fuel metering pump connector?
   (a) If there is no continuity, go to Step 4 of this Fault.
   (b) If there is continuity go to Step 5 of this Fault.



6. FAULT CODE 043, 047 OR 048: SHORT CIRCUIT AT EXTERNAL COMPONENT, FUEL METERING PUMP SHORT CIRCUIT OR FUEL METERING PUMP OPEN CIRCUIT (CONT).

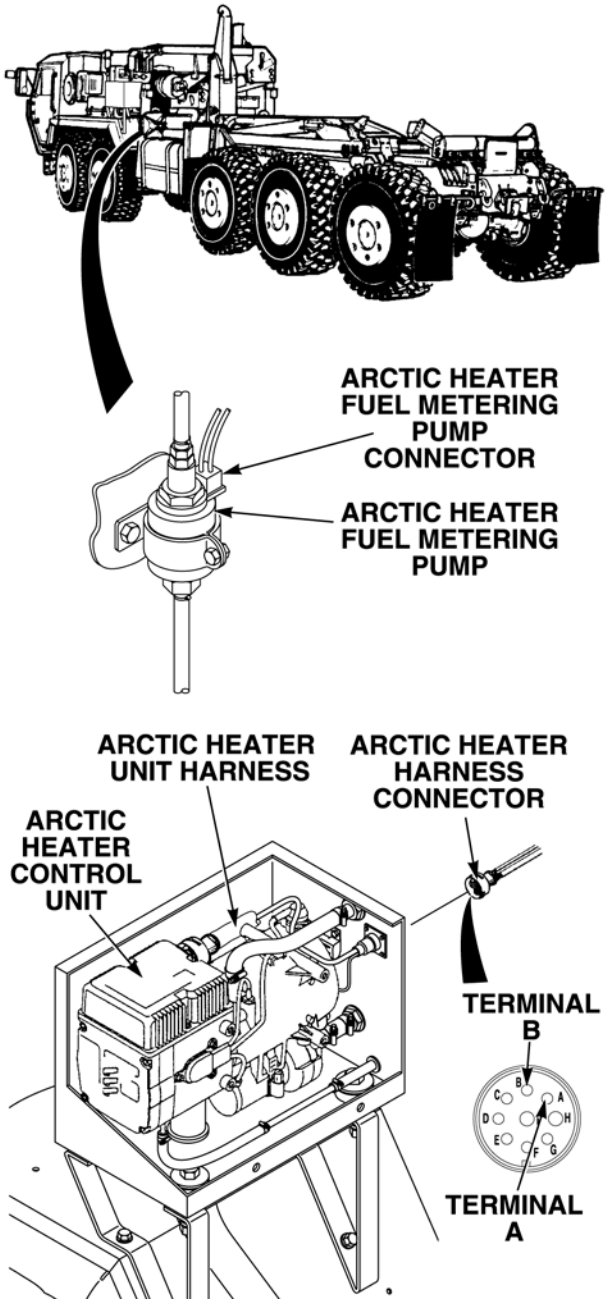


WARNING

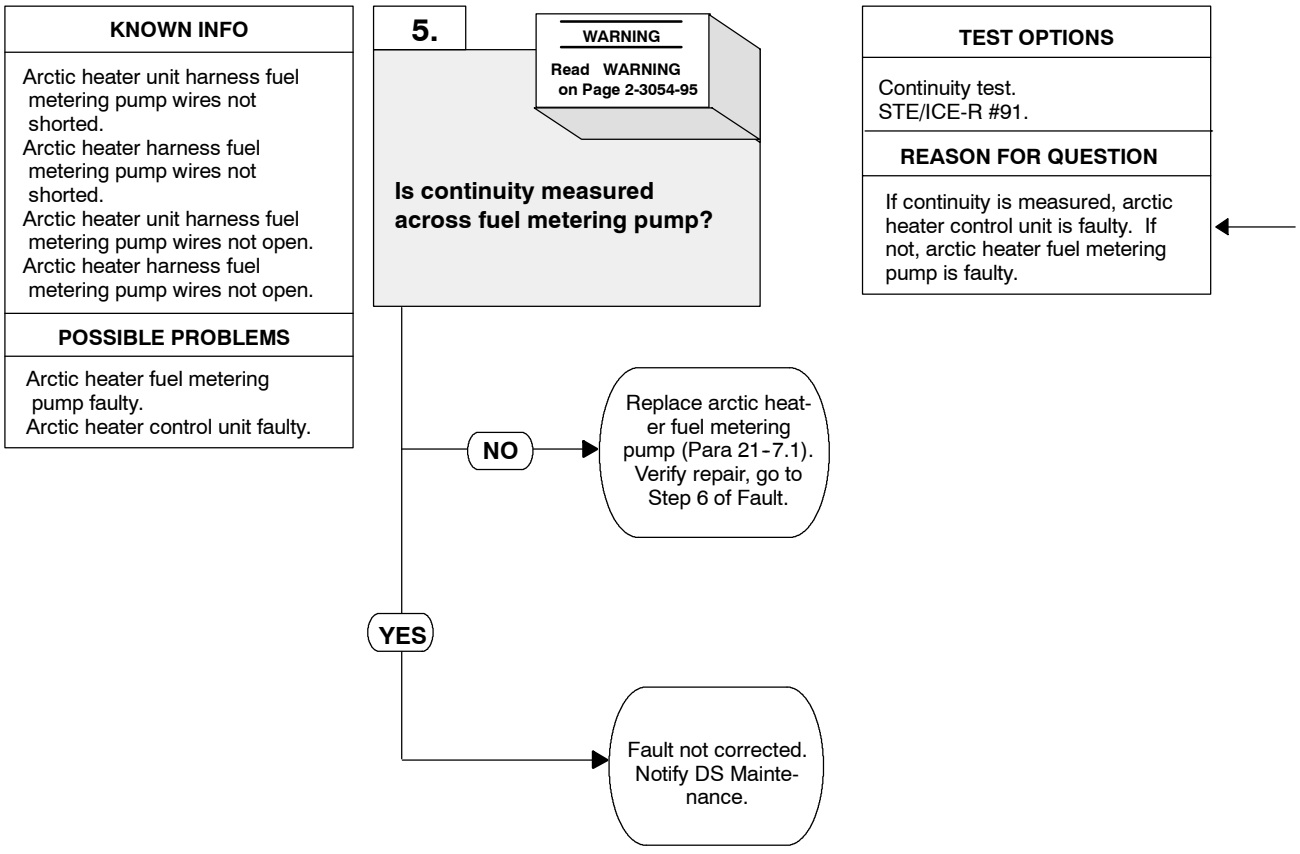
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect arctic heater harness connector from arctic heater (Para 21-10.1).
(2) Ensure jumperwire is connected between arctic heater fuel metering pump harness connector terminals.
(3) Connect positive (+) lead to green wire at arctic heater harness connector, terminal A.
(4) Connect negative (-) lead to green wire at arctic heater harness connector, terminal B.
(5) Is continuity measured between arctic heater harness connector, terminals A and B when wires are jumpered at arctic heater fuel metering pump connector?
   (a) If there is no continuity, repair arctic heater harness fuel metering pump wires (see schematics Fig 2-74.1) or replace arctic heater harness (Para 21-10.1).
   (b) If there is continuity, repair arctic heater unit harness brown or green wire (see schematics Fig 2-74.1) or replace arctic heater unit harness (Para 21-10.1).



6. FAULT CODE 043, 047 OR 048: SHORT CIRCUIT AT EXTERNAL COMPONENT, FUEL METERING PUMP SHORT CIRCUIT OR FUEL METERING PUMP OPEN CIRCUIT (CONT).



WARNING

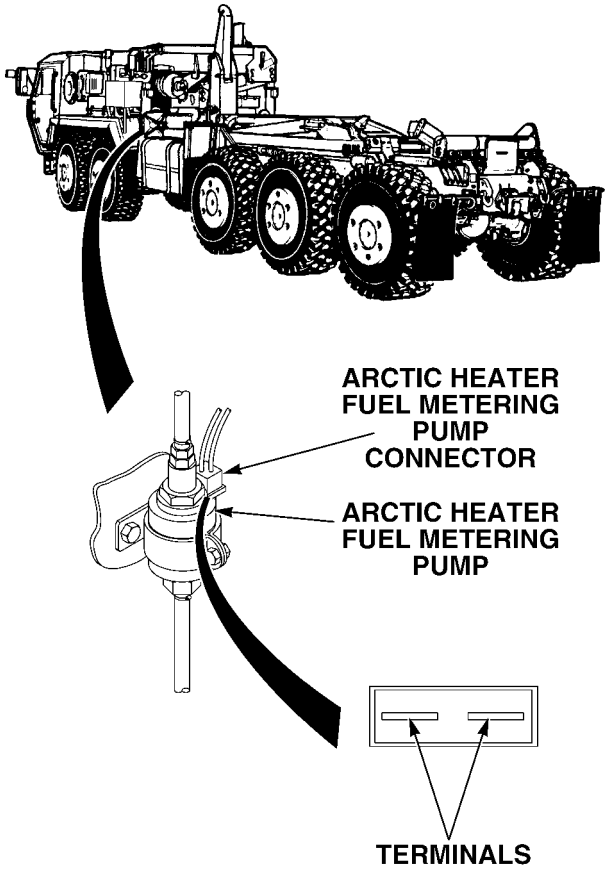
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

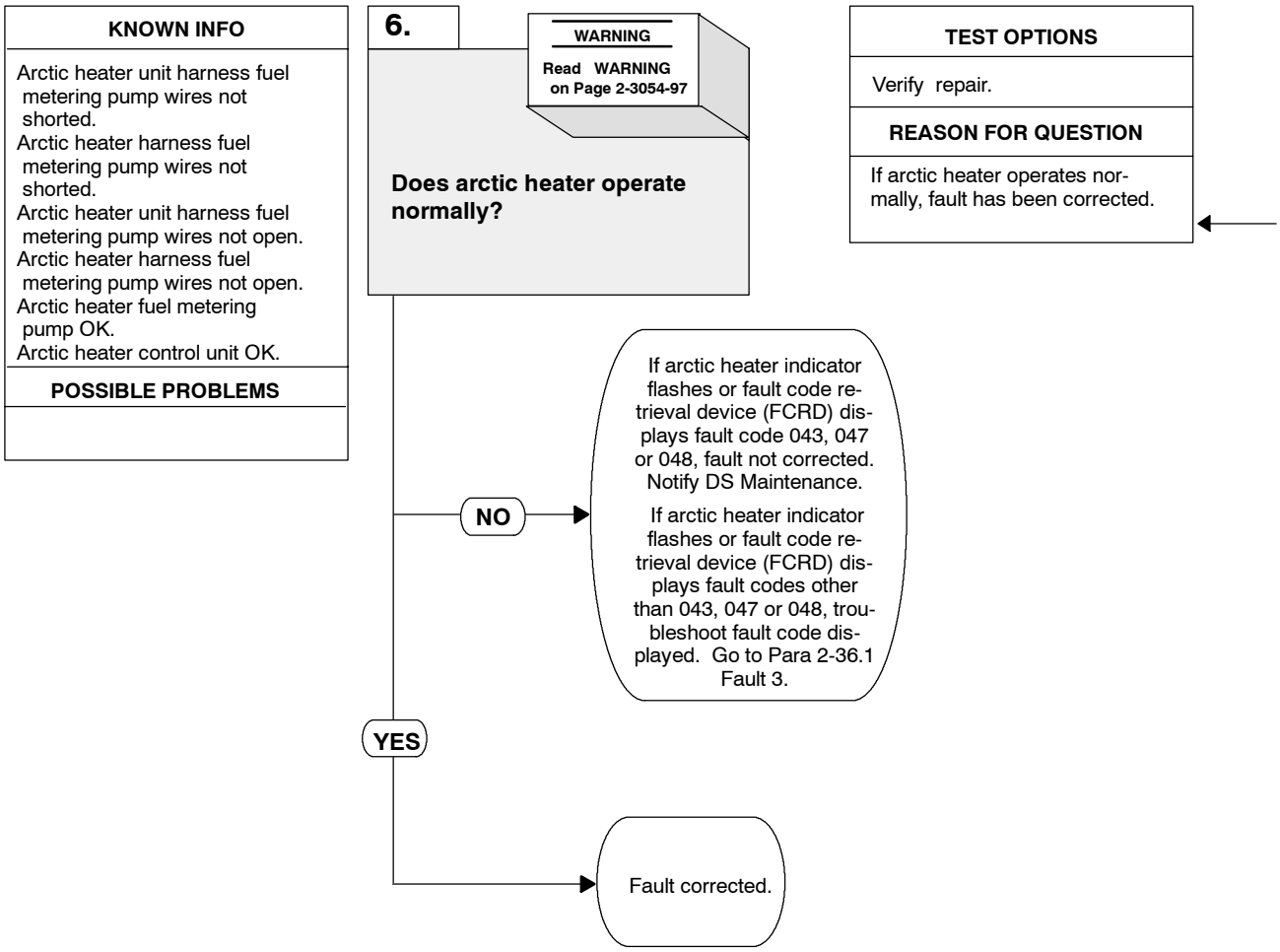
Fuel metering pump should have a nominal resistance of 20 ohms.

CONTINUITY TEST

(1) Connect positive (+) lead to fuel metering pump terminal.
(2) Connect negative (-) lead to other fuel metering pump terminal.
(3) Is continuity measured across fuel metering pump?
   (a) If there is no continuity, replace arctic heater fuel metering pump (Para 21-10.1).
   (b) If there is continuity, arctic heater control unit faulty. Notify DS Maintenance.



6. FAULT CODE 043, 047 OR 048: SHORT CIRCUIT AT EXTERNAL COMPONENT, FUEL METERING PUMP SHORT CIRCUIT OR FUEL METERING PUMP OPEN CIRCUIT (CONT).



WARNING

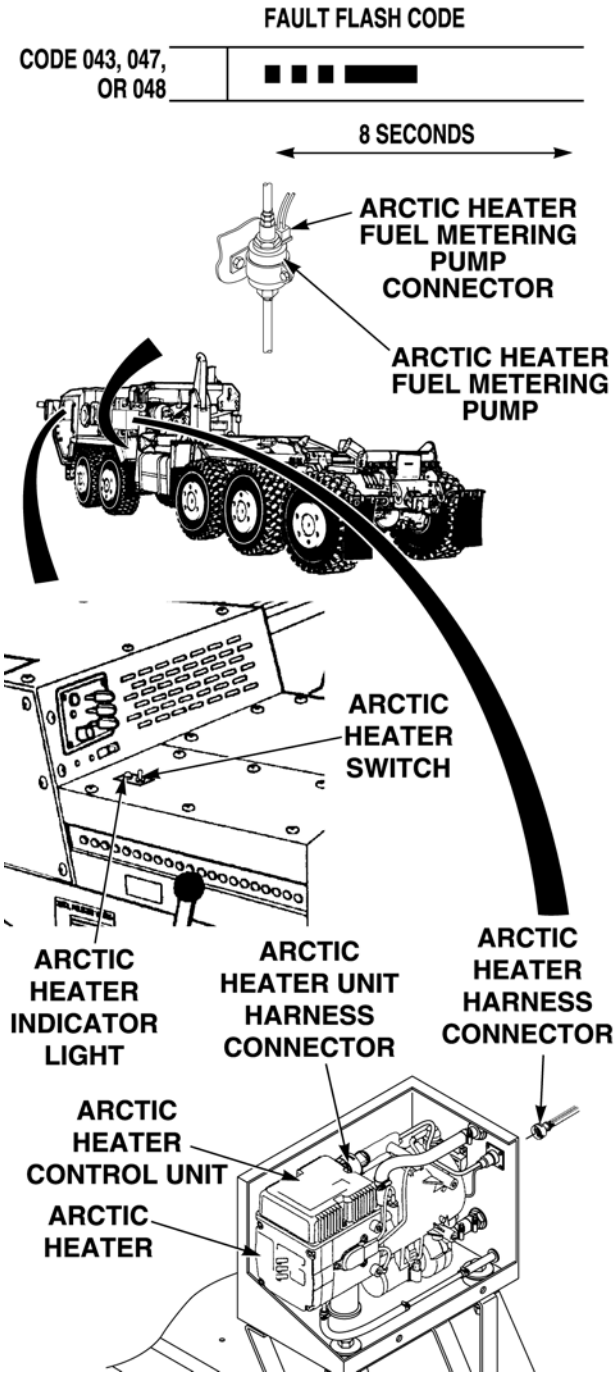
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

- If the fault code retrieval device (FCRD) is not installed. The arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- Perform Steps (5) and (6) only if fault code retrieval device (FCRD) is available.

VERIFY REPAIR

(1) Connect arctic heater unit harness connector to arctic heater control unit (Para 21-6.1).
(2) If disconnected, connect arctic heater harness connector to arctic heater (Para 21-10.1).
(3) Connect arctic heater fuel metering pump harness connector to arctic heater fuel metering pump (Para 21-7.1).
(4) Ensure vehicle is returned to normal operating condition.
(5) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(6) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(7) Turn arctic heater ON (TM 9-2320-364-10).
(8) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if arctic heater indicator light flashes code shown.
(9) Observe arctic heater for proper operation.
(10) Turn arctic heater switch OFF (TM 9-2320-364-10) or press the D button on the (FCRD), if installed.
(11) If installed, remove fault code retrieval device (FCRD).
(12) Install arctic heater cover (Para 21-6.1).
  (a) If arctic heater operates normally and arctic heater indicator light is illuminated (Fault code 000 displayed on FCRD), fault has been corrected.
  (b) If arctic heater indicator light flashed flash code shown (Fault code 043, 047 or 048 displayed on FCRD), notify DS Maintenance.
  (c) If arctic heater indicator light flashed different flash code (Fault code other than 043, 047 or 048 displayed on FCRD), troubleshoot arctic heater fault code displayed. Go to Para 2-36.1 Fault 3.



2-36.1. ARCTIC HEATER (MODEL B) TROUBLESHOOTING (CONT).

7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE.

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)
Fault Code Retrieval Device (FCRD) (Item 23.1, Appendix G)

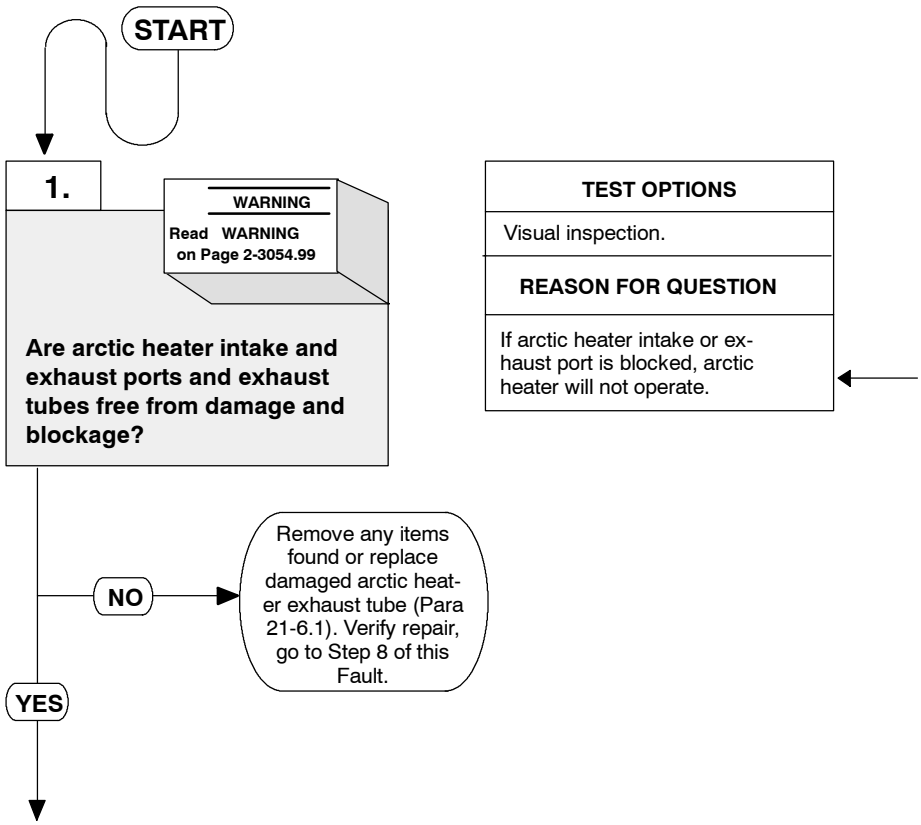
References
TM 9-2320-364-10

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

NOTE

The following steps should only be used if troubleshooting was started at First Chart For Diagnosis of Arctic Heater Troubleshooting procedure (Para 2-36.1 Fault 3) (all conditions) and you were referred here.

KNOWN INFO
Fuel level OK (checked at operational level).
POSSIBLE PROBLEMS
Arctic heater intake port obstructed. Arctic heater exhaust port obstructed or exhaust tube kinked or damaged. Arctic heater fuel lines faulty. Arctic heater fuel metering pump faulty. Arctic heater fuel system not primed. Arctic heater in lockout mode (fault code 050 active). Arctic heater flame sensor faulty. Arctic heater glow pin faulty. Arctic heater blower faulty.



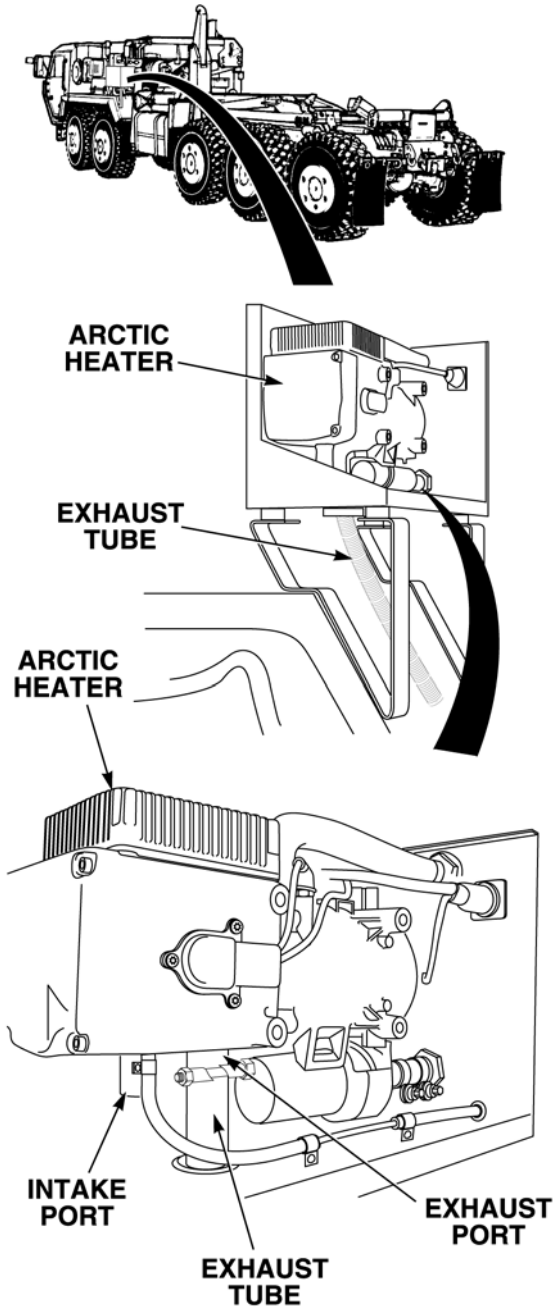
TEST OPTIONS
Visual inspection.
REASON FOR QUESTION
If arctic heater intake or exhaust port is blocked, arctic heater will not operate.

WARNING

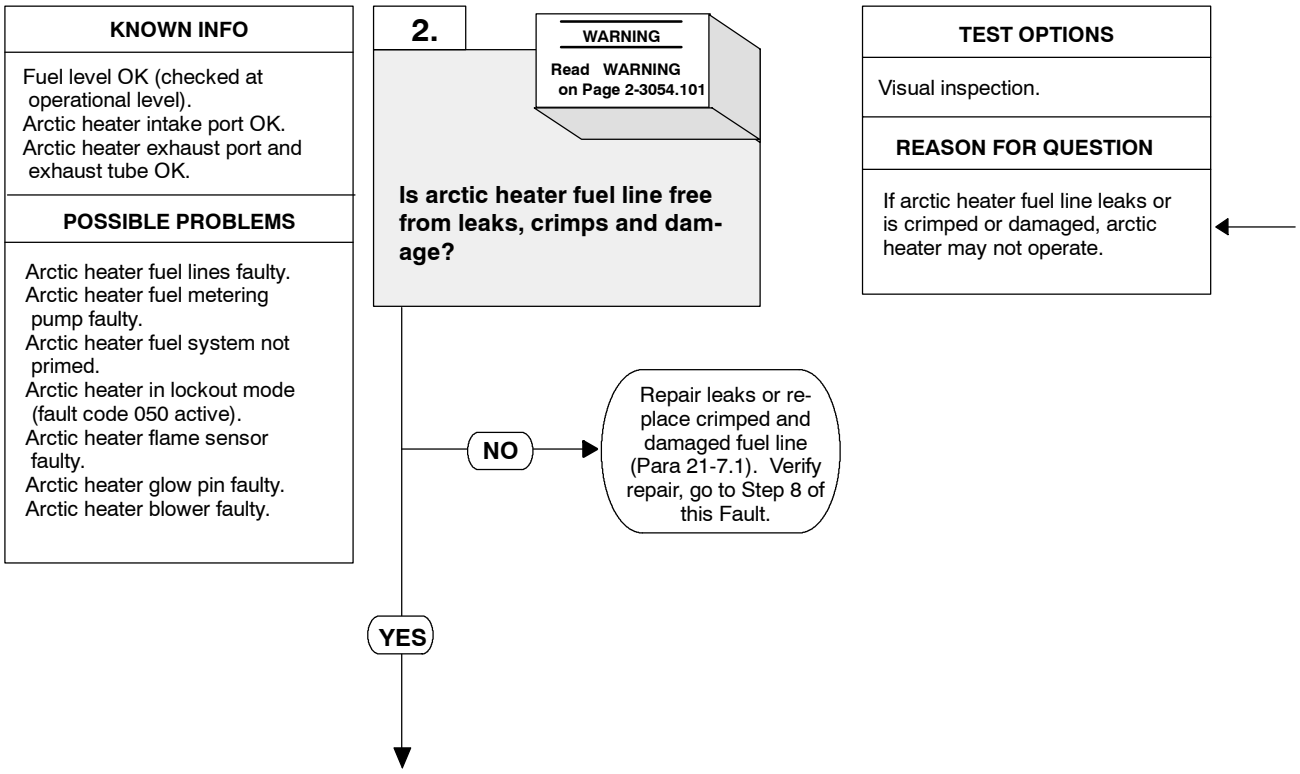
The exhaust system of arctic heater can become very hot during operation. Be careful not to touch exhaust system parts with bare hands or allow body to come into contact with exhaust system parts when hot. Exhaust system parts can become hot enough to cause serious burns.

VISUAL INSPECTION

(1) Remove arctic heater cover (Para 21-6.1).
(2) Inspect arctic heater inlet port for foreign objects and obstructions. Remove any items found.
(3) Remove arctic heater exhaust tube (Para 21-6.1).
(4) Inspect arctic heater exhaust port for foreign objects and obstruction. Remove any items found.
(5) Inspect arctic heater exhaust tube for blockage, kinks or damage.
    (a) If exhaust tube is kinked or damaged, replace arctic heater exhaust tube (Para 21-6.1).
    (b) If foreign objects or obstruction were removed from intake or exhaust ports, go to Step 8 of this Fault.
    (c) If no obstructions or damage is found, go to Step 2 of this Fault.



7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).

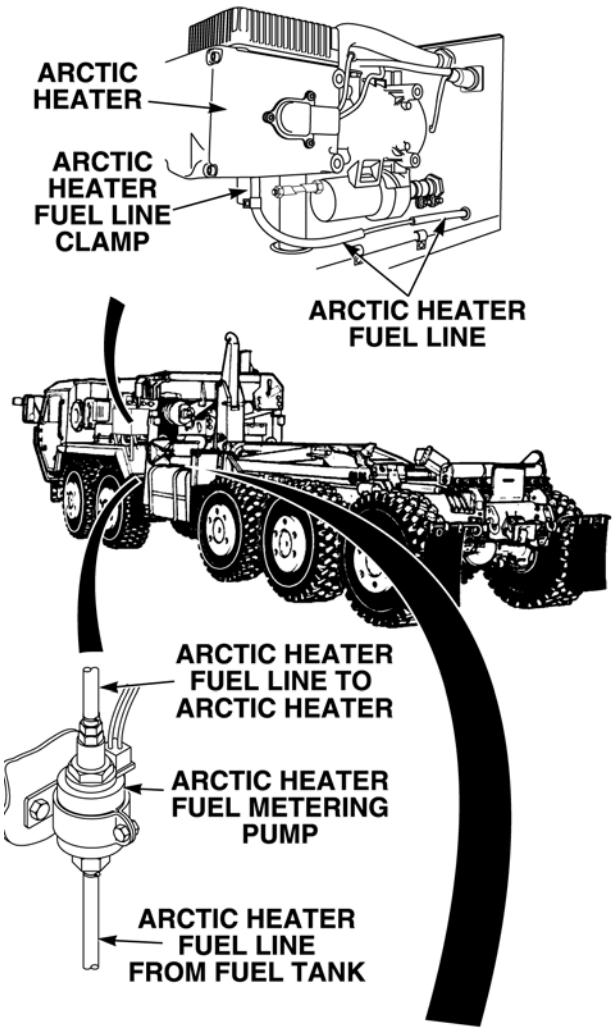


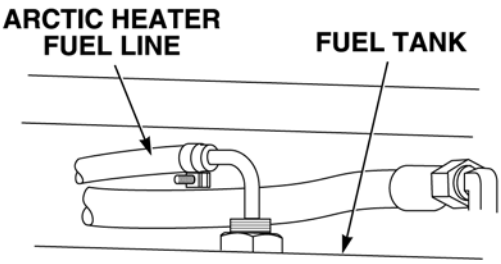
WARNING

The exhaust system of arctic heater can become very hot during operation. Be careful not to touch exhaust system parts with bare hands or allow body to come into contact with exhaust system parts when hot. Exhaust system parts can become hot enough to cause serious burns.

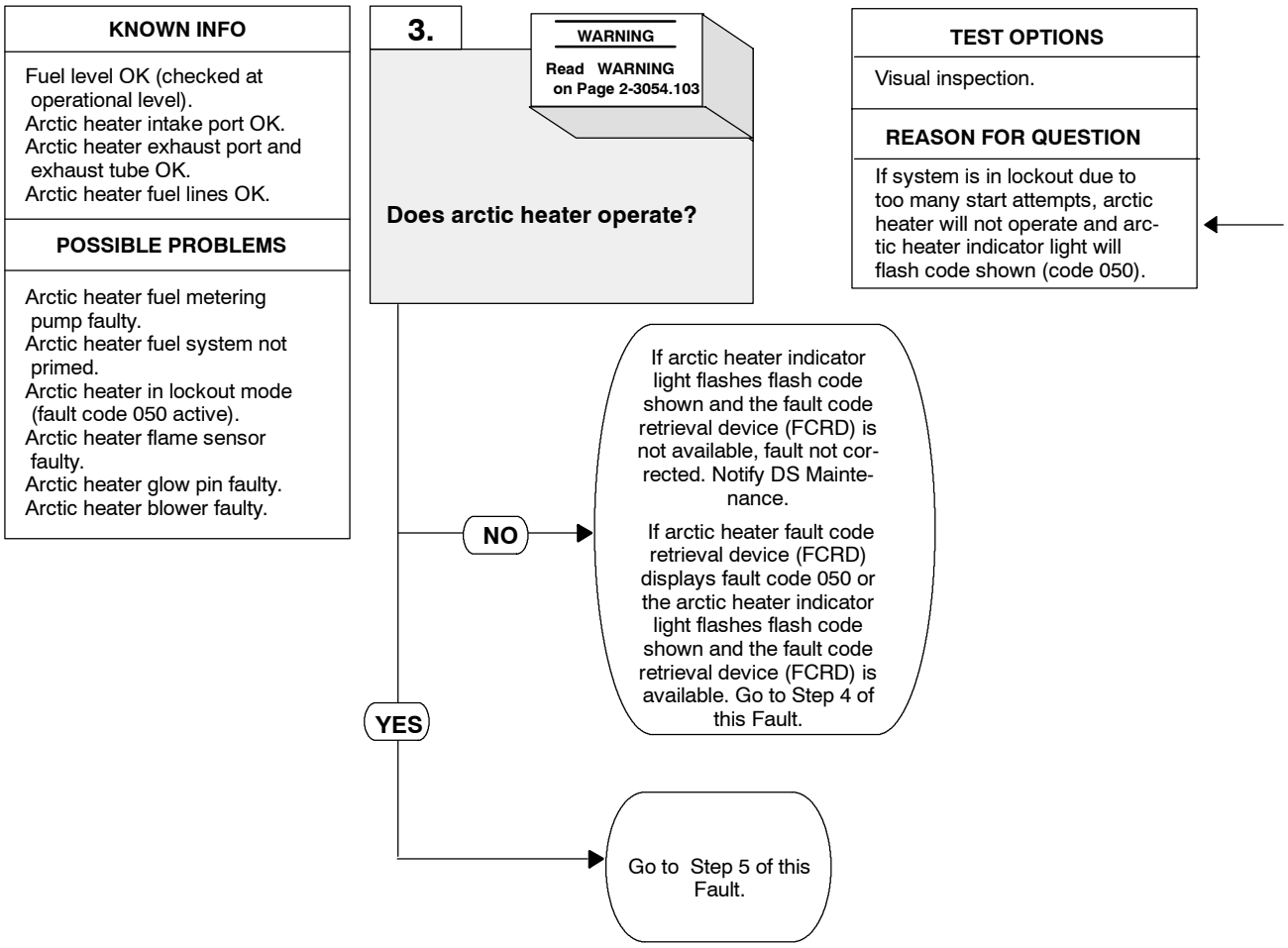
VISUAL INSPECTION

(1) Install arctic heater exhaust tube (Para 21-6.1).
(2) Inspect arctic heater fuel line from fuel tank to arctic heater for leaks, crimps and damage.
  (a) If arctic heater fuel line is leaking crimped or damaged, repair leaks or replace crimped and damaged fuel line (Para 21-7.1).
  (b) If arctic heater fuel line is free from leaks, crimps and damage, go Step 3 of this Fault.





7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).



WARNING

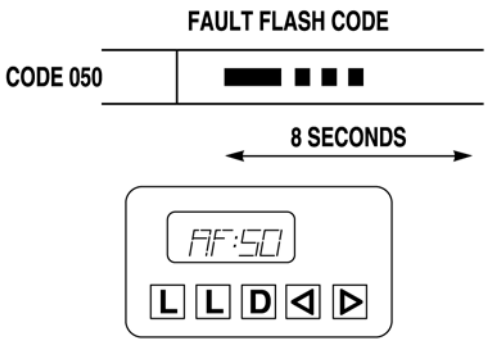
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

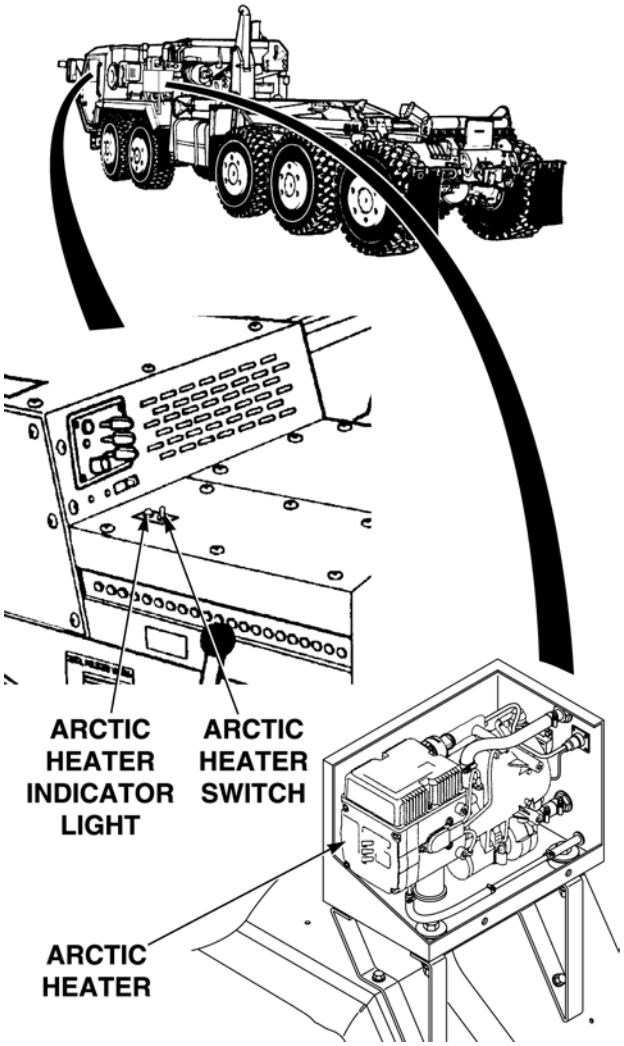
NOTE

- If arctic heater does not operate, arctic heater may be in lockout mode due to too many start attempts (code 050). Arctic heater lockout mode (code 050) is activated if arctic heater fails to start after 20 successive start attempts (10 successive start cycles).
- An audible whine will be heard after the system check is completed, indicating the blower motor has switched on and the system is operating. Audible clicking may also be heard from the fuel metering pump, if the arctic heater fuel system isn't primed.
- If the fault code retrieval device (FCRD) is not installed, the arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- Perform Steps (2) and (3) only if fault code retrieval device (FCRD) is available.

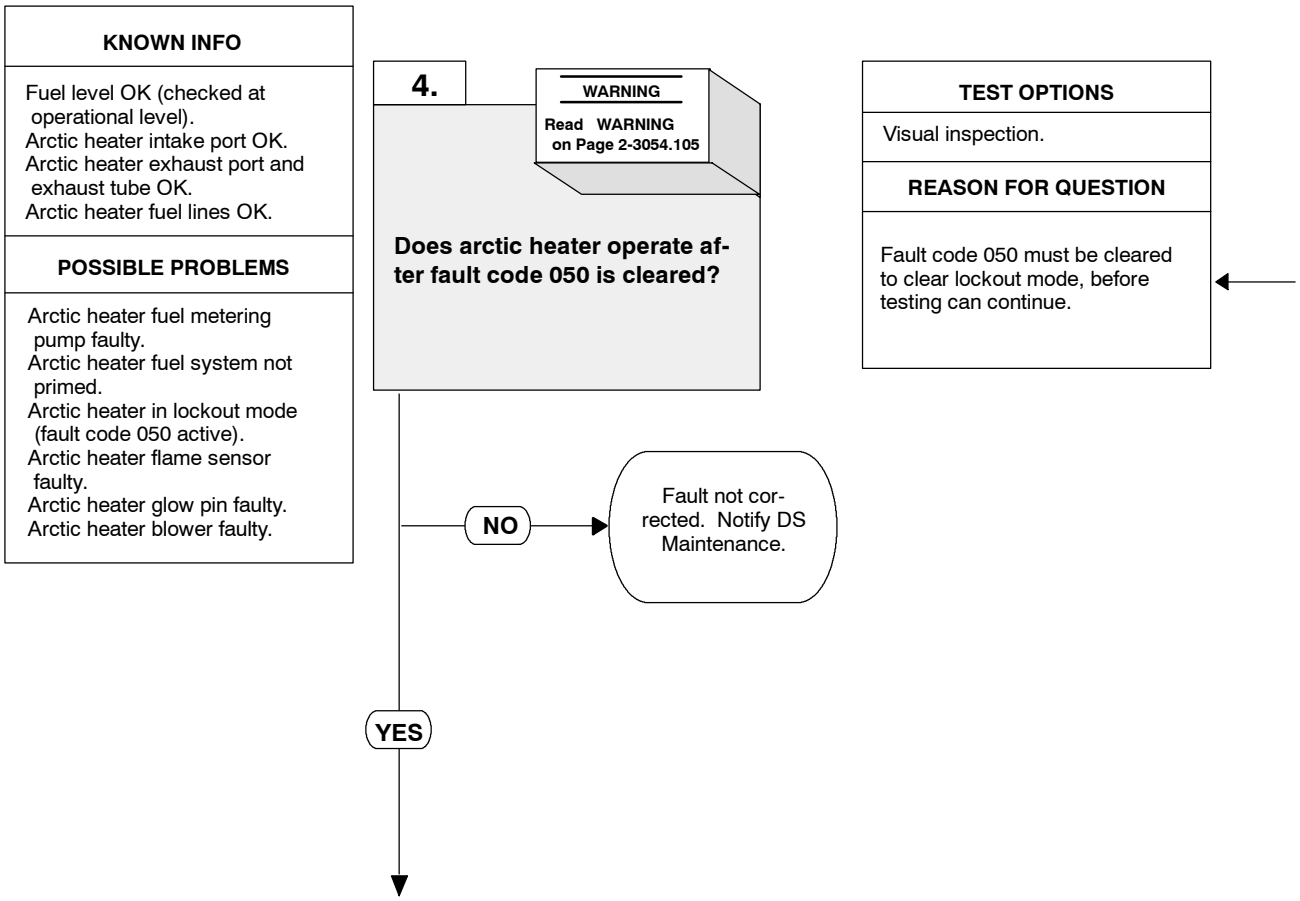
VISUAL INSPECTION

(1) Ensure vehicle is returned to normal operating condition.
(2) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(3) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(4) Turn arctic heater ON (TM 9-2320-364-10).
(5) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if arctic heater indicator light flashes code shown.
(6) Observe arctic heater for proper operation.
(7) Turn arctic heater switch OFF (TM 9-2320-364-10) or press the D button on the (FCRD), if installed.
  (a) If arctic heater does not operate and arctic heater indicator light flashed code shown (FCRD is not available), arctic heater fault code 050 active. Notify DS Maintenance.
  (b) If arctic heater does not operate and arctic heater indicator flashed code shown (Fault code 050 displayed on FCRD), go to Step 4 of this Fault.
  (c) If arctic heater attempts to start, go to Step 5 of this Fault.





7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).



WARNING

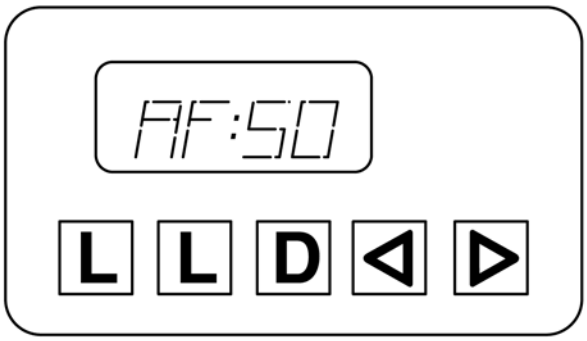
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

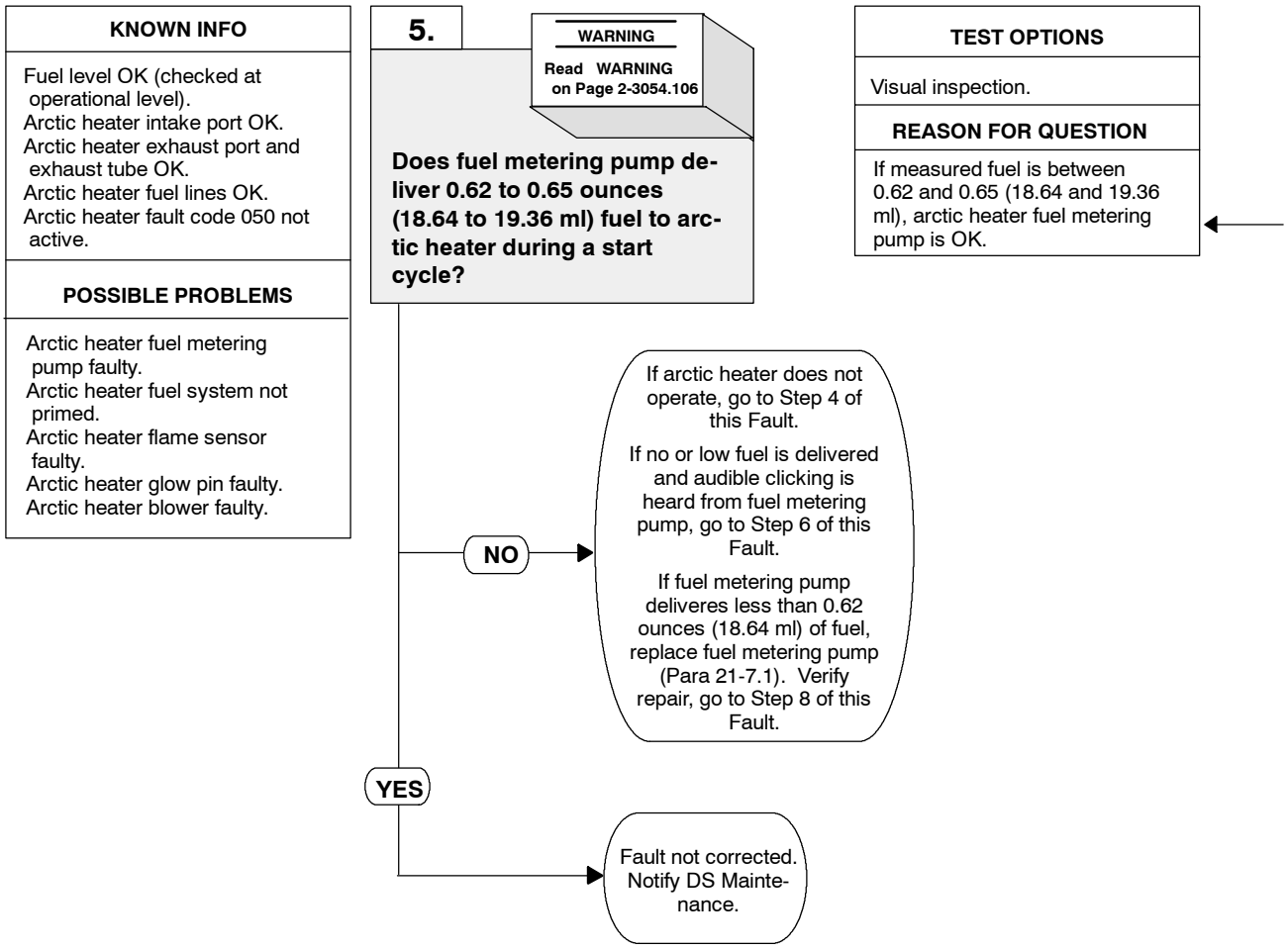
- If arctic heater does not operate, arctic heater may be in lockout mode due to too many start attempts (code 050). Arctic heater lockout mode (code 050) is activated if arctic heater fails to start after 20 successive start attempts (10 start cycles in succession).
- An audible whine will be heard after the system check is completed, indicating the blower motor has switched on and the system is operating. Audible clicking may also be heard from the fuel metering pump, if the arctic heater fuel system isn't primed.

VISUAL INSPECTION

(1) Ensure vehicle is returned to normal operating condition.
(2) If removed, install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(3) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(4) Clear fault code 050.
(5) Press the D button on fault code retrieval device (FCRD) twice to turn arctic heater OFF and ON.
(6) Observe arctic heater for proper operation.
  (a) If arctic heater attempts to start, perform Step (7) below and go to Step 5 of this Fault.
  (b) If arctic heater does not operate, fault not corrected. Perform Steps (7), (8) and (9) below. Notify DS Maintenance.
(7) Press the D button on fault code retrieval device (FCRD) to turn arctic heater OFF.
(8) Remove fault code retrieval device (FCRD).
(9) Install cover on arctic heater (Para 21-6.1).



7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).



WARNING

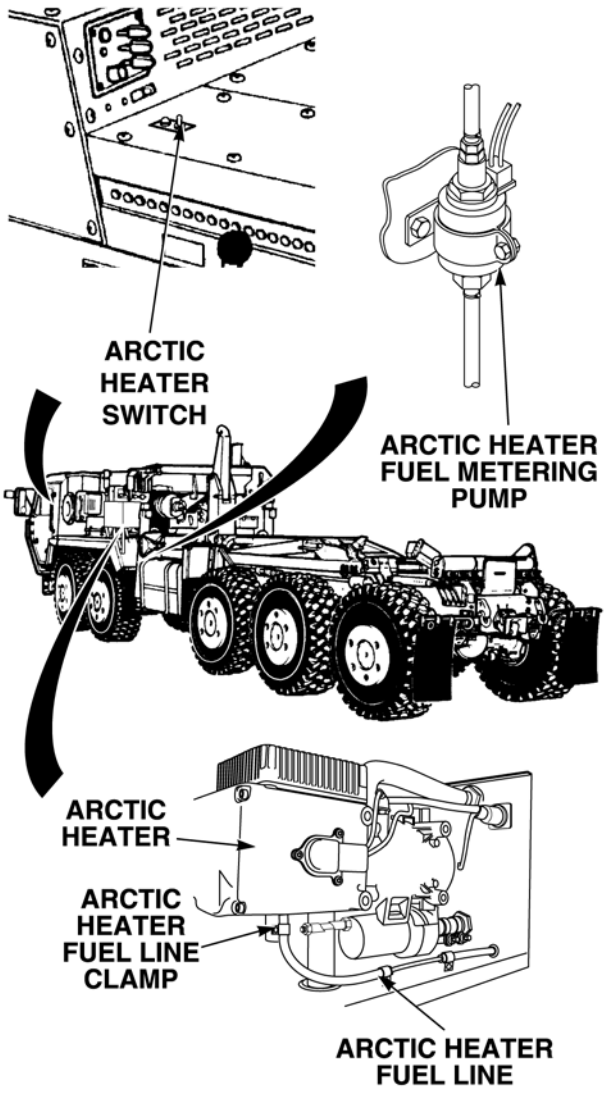
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel 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

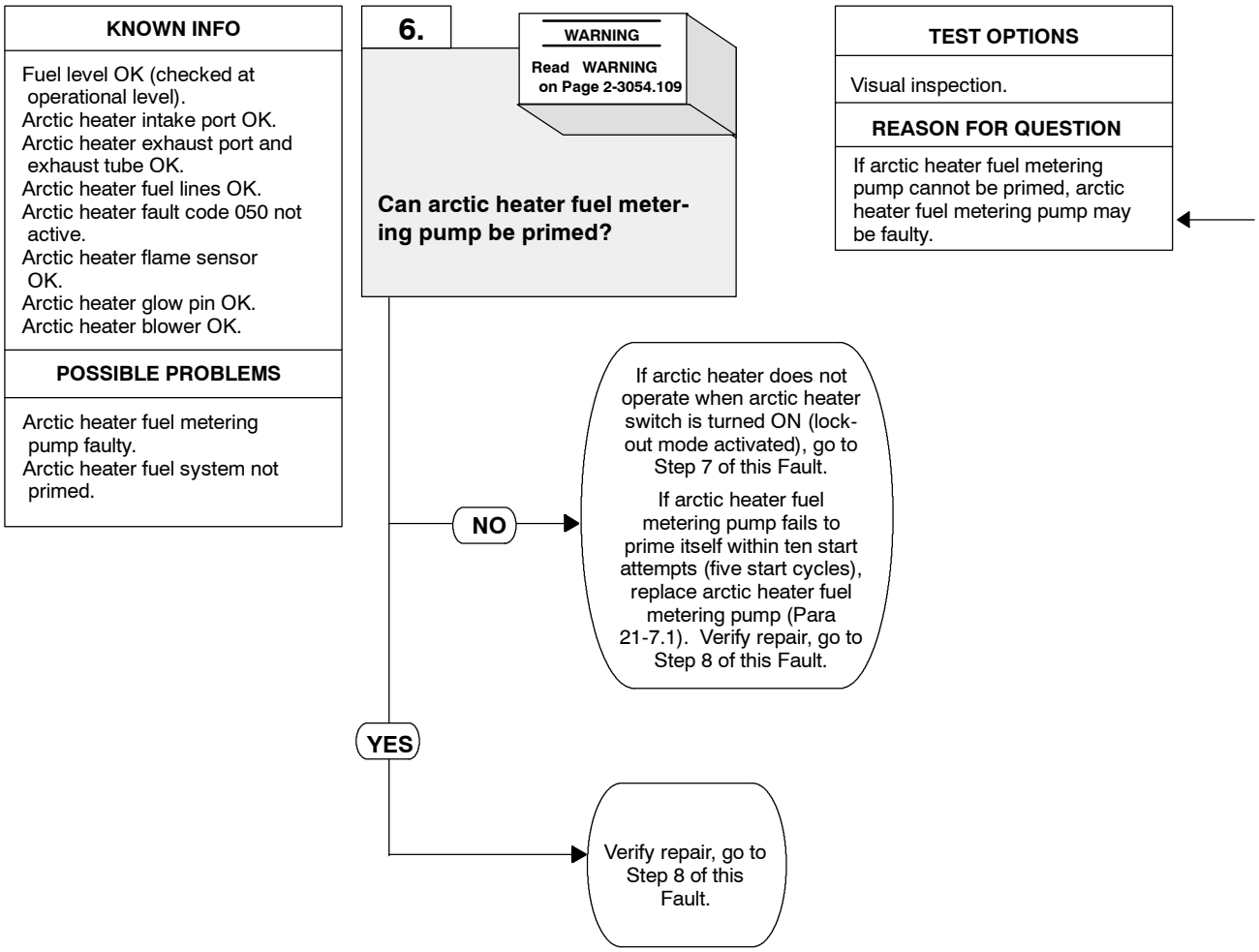
- If arctic heater does not operate, arctic heater may be in lockout mode due to too many start attempts (code 050). Arctic heater lockout mode (code 050) is activated if arctic heater fails to start after 20 successive start attempts (10 start cycles). If arctic heater is in lockout mode, go to Step 4 of this Fault.
- Audible clicking and low fuel flow from the fuel metering pump may indicate that the arctic heater fuel system isn't primed.
- Fuel should flow from fuel line into container 63 seconds after arctic heater starts. Fuel will shut off automatically after 105 seconds. Fuel will begin flow again after 50 to 60 second preheat, and will turn off after 75 seconds. (this indicates two start attempts). The arctic heater will shut down after the second start attempt (one start cycle).
- Total fuel quantity delivered should be between 0.62 to 0.65 ounces (18.64 and 19.36 ml) in Steps (5) and (6).

VISUAL INSPECTION

(1) If installed, remove fault code retrieval device.
(2) Loosen clamp and disconnect arctic heater fuel line from arctic heater (Para 21-7.1).
(3) Place arctic heater fuel line into graduated 1 quart (950 ml) measuring container.
(4) Turn arctic heater switch ON (TM 9-2320-364-10).
(5) Observe fuel flowing into measuring container.
(6) Turn arctic heater switch to OFF when fuel stops flowing after second start attempt.
(7) Inspect measuring container for 0.62 to 0.65 ounces (18.64 to 19.36 ml) of fuel.
  (a) If arctic heater does operate (lockout mode activated) connect arctic heater fuel line to arctic heater (Para 21-7.1) and go to Step 4 of this Fault.
  (b) If no or low fuel is delivered and audible clicking is heard from fuel metering pump, go to Step 6 of this Fault.
  (c) If fuel metering pump delivers less than 0.62 ounces (18.64 ml) of fuel, replace arctic heater fuel metering pump (Para 21-7.1).
  (d) If fuel metering pump delivers between 0.62 and 0.65 ounces (18.64 and 19.36) of fuel, Direct Support troubleshooting is required. Notify DS Maintenance.



7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).



WARNING

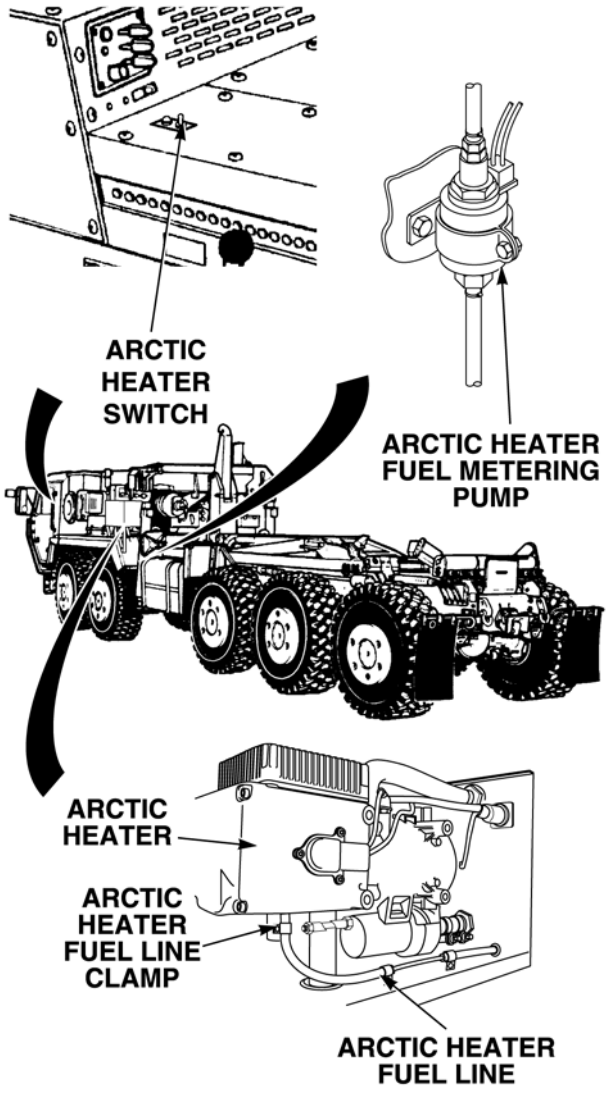
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel 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

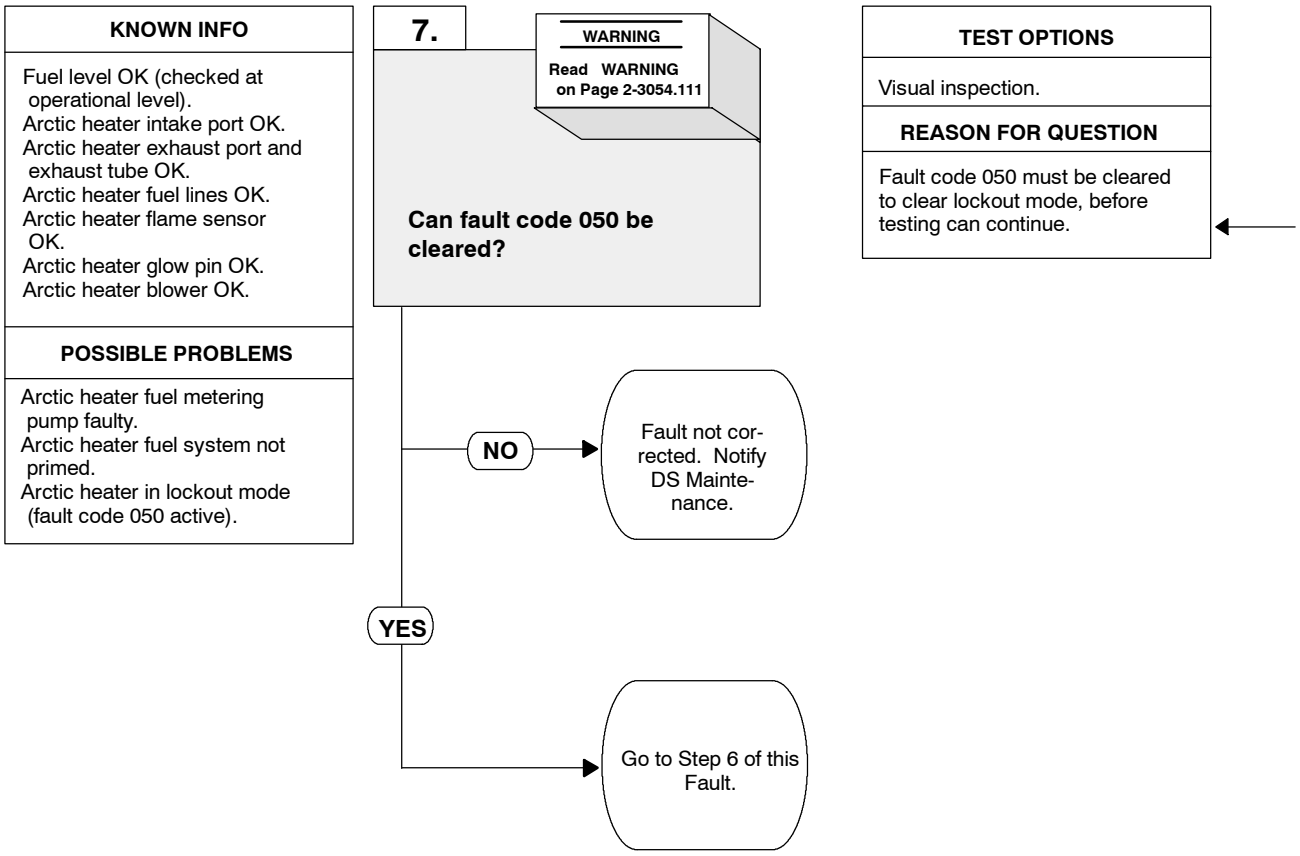
- Audible clicking and low fuel flow from the fuel metering pump may indicate that the arctic heater fuel system isn't primed. The arctic heater should self prime itself within ten start attempts (five start cycles).
- If arctic heater does not operate, arctic heater may be in lockout mode due to too many start attempts (code 050). Arctic heater lockout mode (code 050) is activated if arctic heater fails to start after 20 successive start attempts (10 start cycles).

VISUAL INSPECTION

(1) Connect arctic heater fuel line to arctic heater and tighten clamp (Para 21-7.1).
(2) Check fuel in fuel tank. Add fuel if required, to ensure fuel is supplied to arctic heater.
(3) Turn arctic heater switch ON (TM 9-2320-364-10).
(4) Observe arctic heater for proper operation. Note if audible clicking is heard from arctic heater fuel metering pump.
(5) When arctic heater shuts down after two start attempts, turn arctic heater switch OFF.
(6) Repeat Steps (3) through (5) four times or until arctic heater operates normally.
    (a) If arctic heater does not operate when arctic heater switch is turned ON (lockout mode activated), go to Step 7 of this Fault.
    (b) If arctic heater fuel metering pump fails to prime itself within ten start attempts (five start cycles). Replace arctic heater fuel metering pump (Para 21-7.1).
    (c) If arctic heater fuel metering pump primes itself within ten start attempts (five start cycles), go to Step 8 of this Fault.



7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).



WARNING

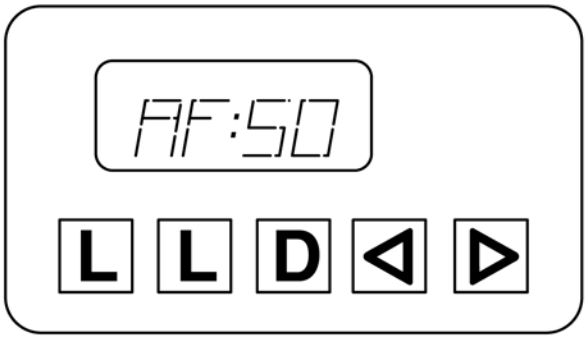
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

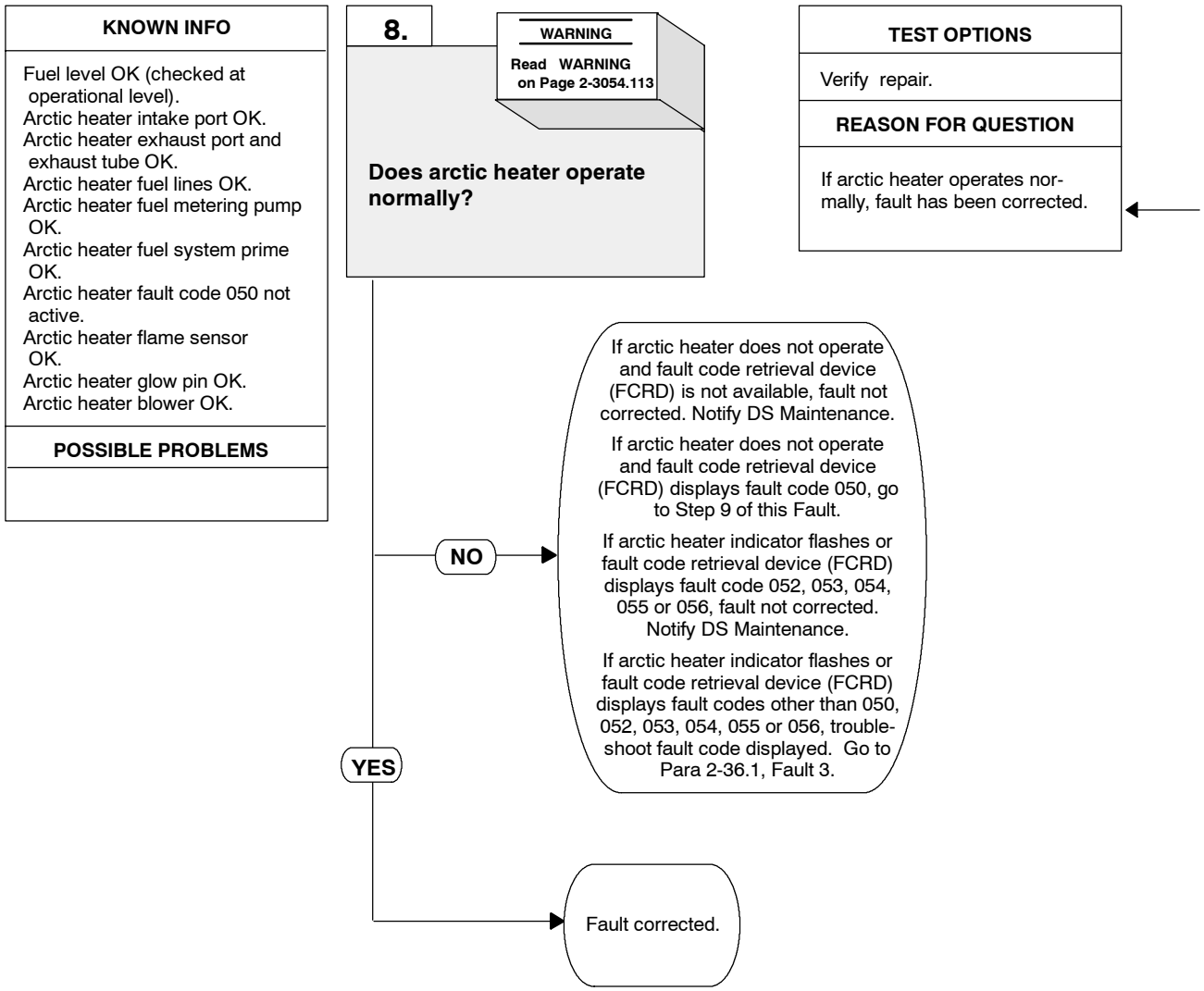
- If arctic heater does not operate, arctic heater may be in lockout mode due to too many start attempts (code 050). Arctic heater lockout mode (code 050) is activated if arctic heater fails to start after 20 successive start attempts (10 start cycles in succession).
- An audible whine will be heard after the system check is completed, indicating the blower motor has switched on and the system is operating. Audible clicking may also be heard from the fuel metering pump, if the arctic heater fuel system isn't primed.
- Perform Steps (2) through (5) only if fault code retrieval device (FCRD) is available.

VISUAL INSPECTION

(1) Ensure vehicle is returned to normal operating condition.
(2) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(3) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(4) Clear fault code 050.
(5) Press the D button on fault code retrieval device (FCRD) twice to turn arctic heater OFF and ON.
(6) Observe arctic heater for proper operation.
    (a) If fault code 050 is cleared, perform Step (7) and (8) below and go to Step 6 of this Fault.
    (b) If fault code 050 is not cleared or fault code retrieval device is not available, fault not corrected. Perform Steps (7), (8) and (9) below and notify DS Maintenance.
(7) Press the D button on fault code retrieval device (FCRD) to turn arctic heater OFF.
(8) Remove fault code retrieval device (FCRD).
(9) Install cover on arctic heater (Para 21-6.1).



7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).



WARNING

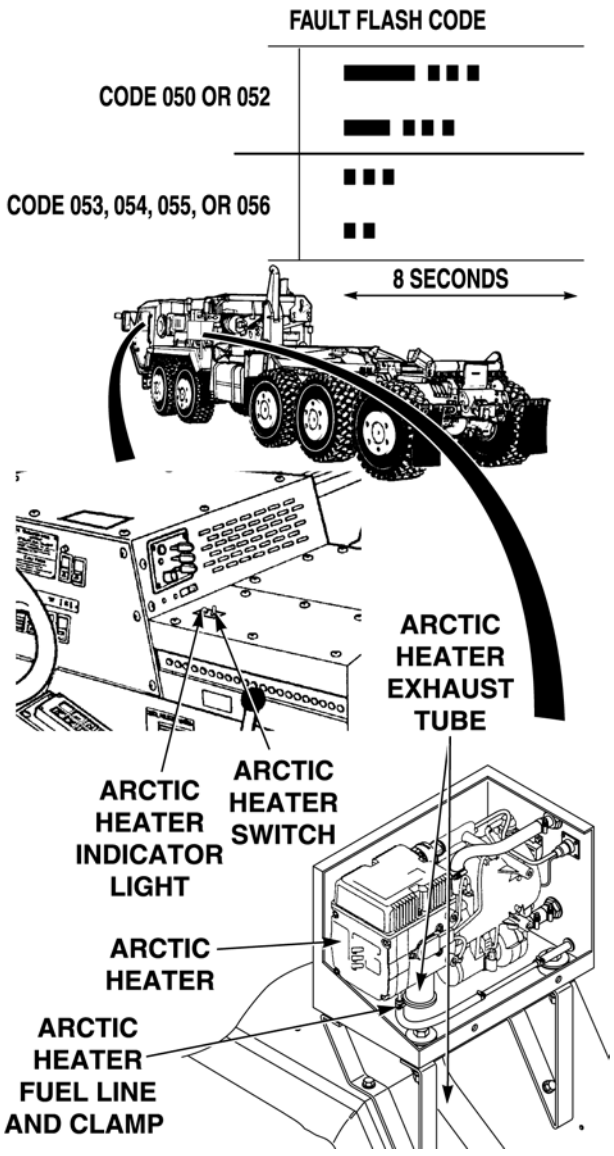
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel 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

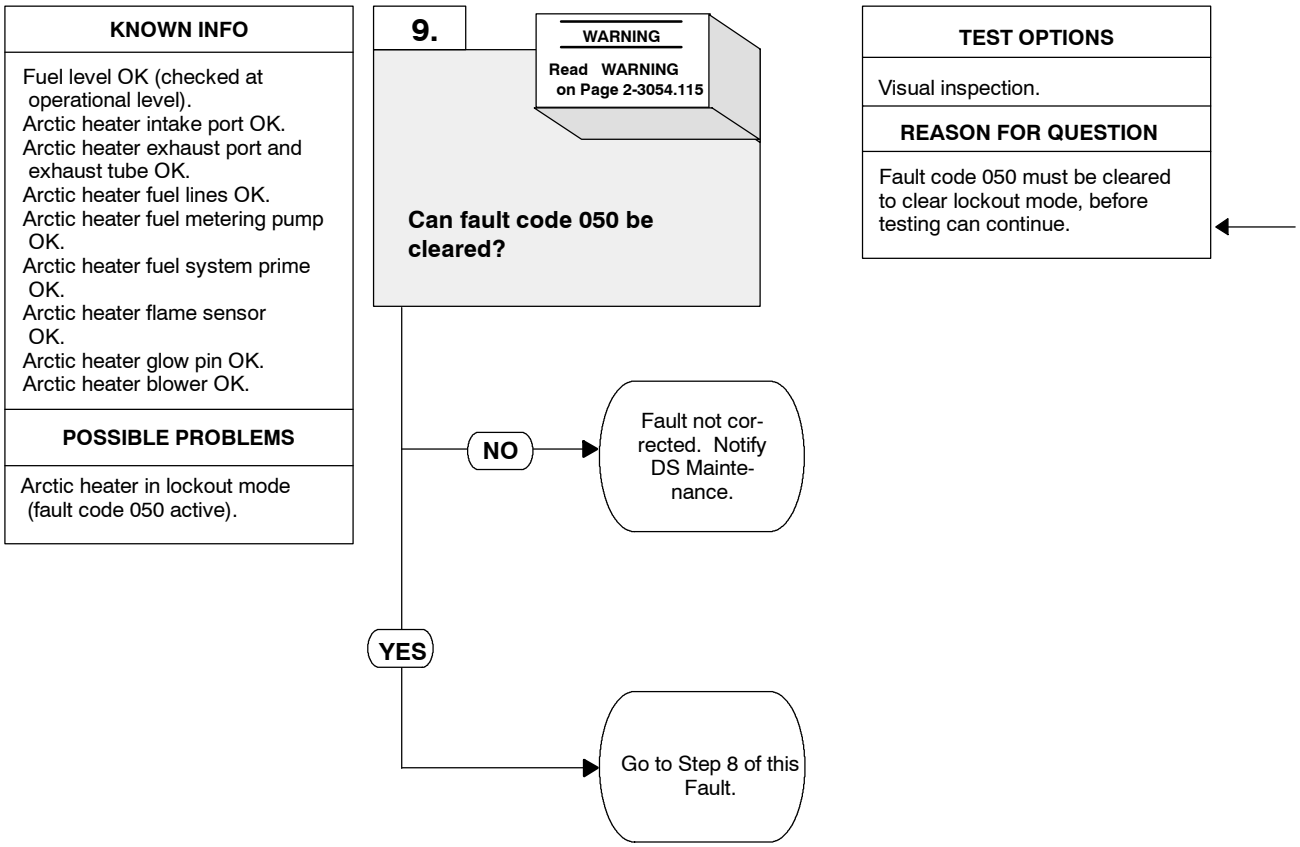
- If the fault code retrieval device (FCRD) is not installed, the arctic heater indicator light displays the diagnostic flash codes for the arctic heater. These flash codes are 8 seconds long and repeat after 8 seconds.
- The fault code retrieval device (FCRD) displays the last 5 faults that occur. The latest fault displayed is either AF or F1. If more than one fault code is displayed, troubleshoot the latest fault code first.
- If arctic heater does not operate, arctic heater may be in lockout mode due to too many start attempts (code 050). Arctic heater lockout mode (code 050) is activated if arctic heater fails to start after 20 successive start attempts (10 start cycles in succession).
- Perform Steps (4) and (5) only if fault code retrieval device (FCRD) is available.

VERIFY REPAIR

(1) If removed, install arctic heater exhaust tube (Para 21-6.1).
(2) If disconnected, connect arctic heater fuel line to arctic heater and tighten clamp (Para 21-7.1).
(3) Ensure vehicle is returned to normal operating condition.
(4) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(5) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(6) Turn arctic heater ON (TM 9-2320-364-10).
(7) Observe arctic heater indicator light or fault code retrieval device (FCRD) display, if installed. Note if arctic heater indicator light flashes code shown.
(8) Observe arctic heater for proper operation.
(9) Turn arctic heater switch OFF (TM 9-2320-364-10) or press the D button on the (FCRD), if installed.
(10) If installed, remove fault code retrieval device (FCRD).
(11) Install arctic heater cover (Para 21-6.1).
  (a) If arctic heater operates normally and arctic heater indicator light is illuminated (Fault code 000 displayed on FCRD), fault has been corrected.
  (b) If arctic heater does not operate and fault code retrieval device is not available, fault not corrected. Notify DS Maintenance.
  (c) If arctic heater does not operate and arctic heater indicator light flashed flash code shown (Fault code 050 displayed on FCRD), go to Step 9 of this Fault.
  (d) If arctic heater tries to start and arctic heater indicator light flashed flash code shown (Fault code 053, 054, 055 or 056 displayed on FCRD), notify DS Maintenance.
  (e) If arctic heater indicator light flashed different flash code (Fault code other than 050, 052, 053, 054, 055 or 056 displayed on FCRD), troubleshoot arctic heater fault code displayed. Go to Para 2-36.1, Fault 3.



7. FAULT CODE 050, 052, 053, 054, 055 OR 056: TOO MANY NO START ATTEMPTS, NO START SAFETY TIME EXCEEDED, FLAME CUTOUT IN BOOST MODE, FLAME CUTOUT IN HIGH MODE, FLAME CUTOUT IN MEDIUM MODE OR FLAME CUTOUT IN LOW MODE (CONT).



WARNING

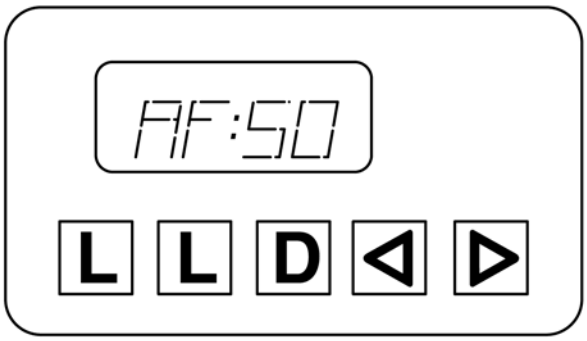
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

NOTE

If arctic heater does not operate, arctic heater may be in lockout mode due to too many start attempts (code 050). Arctic heater lockout mode (code 050) is activated if arctic heater fails to start after 20 successive start attempts (10 start cycles in succession).

VISUAL INSPECTOIN

(1) If installed, remove cover from arctic heater (Para 21-6.1).
(2) Install fault code retrieval device (FCRD) on arctic heater unit harness diagnostic connector.
(3) Press the D button on fault code retrieval device (FCRD) to turn arctic heater ON.
(4) Clear fault code 050.
(5) Press the D button on fault code retrieval device (FCRD) twice to turn arctic heater OFF and ON.
(6) Observe arctic heater for proper operation.
    (a) If fault code 050 is cleared, perform Step (7) below and go to Step 8 of this Fault.
    (b) If fault code 050 is not cleared, fault not corrected. Perform Steps (7), (8) and (9) below. Notify DS Maintenance.
(7) Press the D button on fault code retrieval device (FCRD) to turn arctic heater OFF.
(8) Remove fault code retrieval device (FCRD).
(9) Install cover on arctic heater (Para 21-6.1).



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

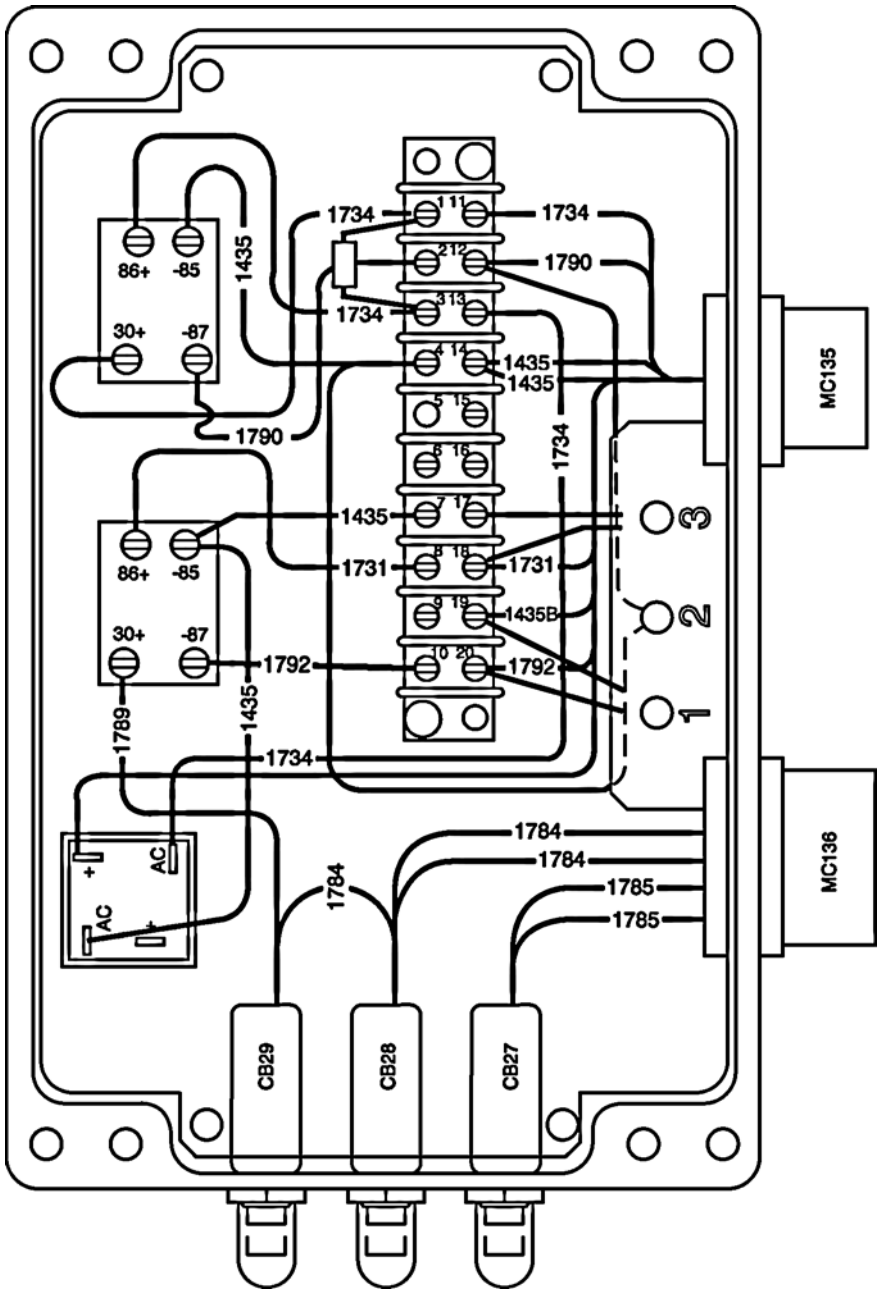


Figure 2-75. Interface Power Box Wiring Diagram

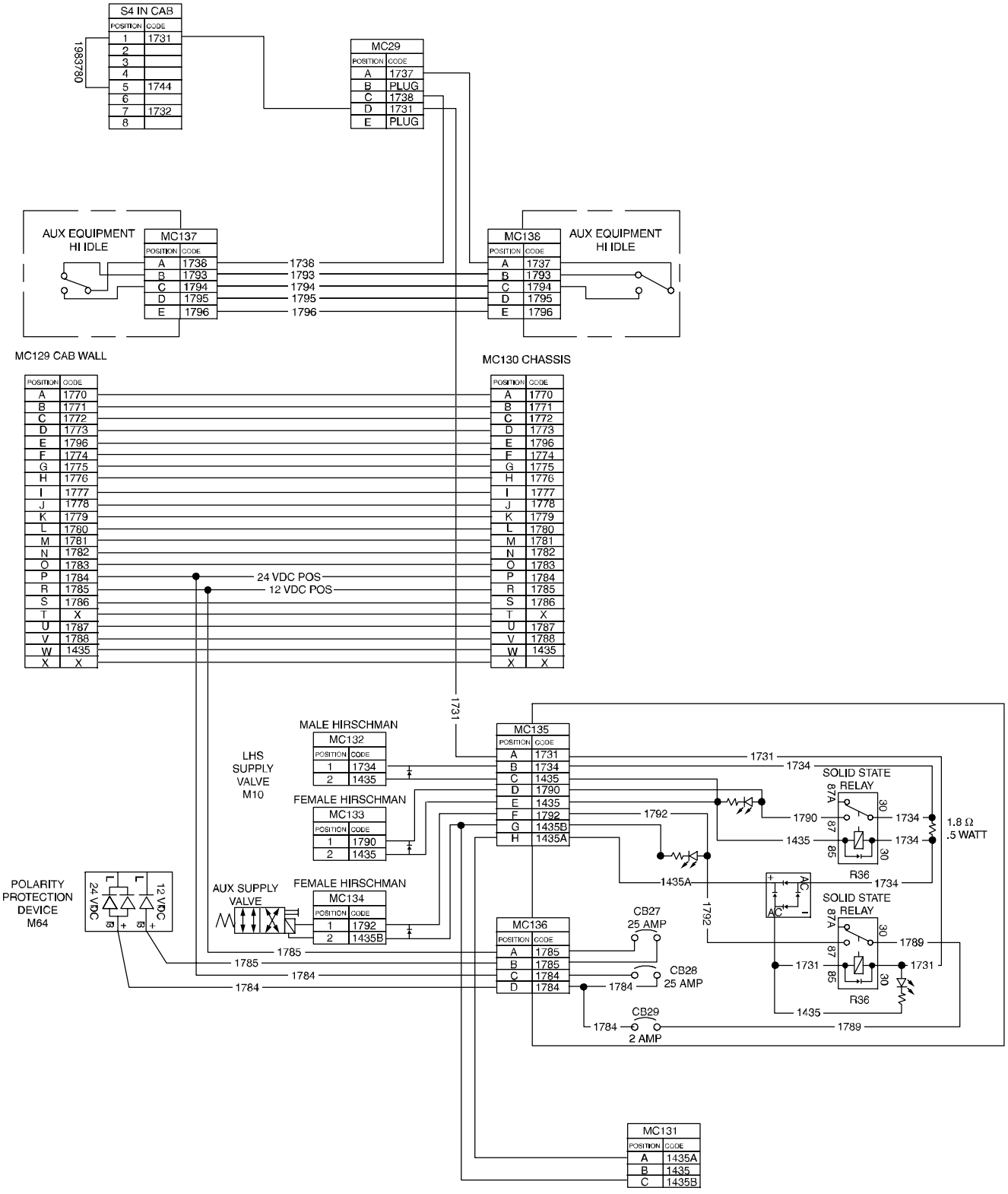


Figure 2-76. Interface Wiring Diagram

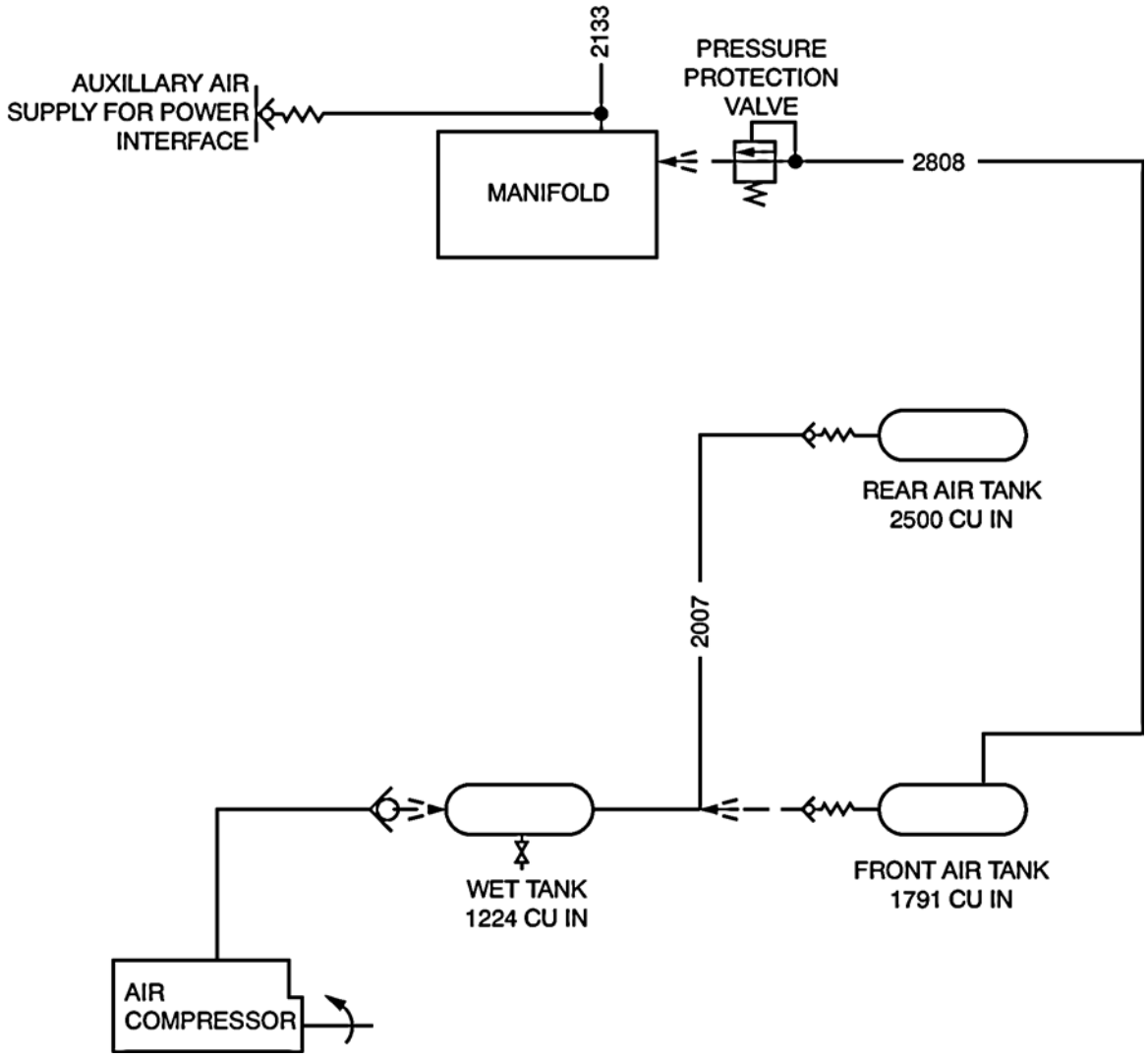


Figure 2-77. Interface Air Hose Lines Diagram

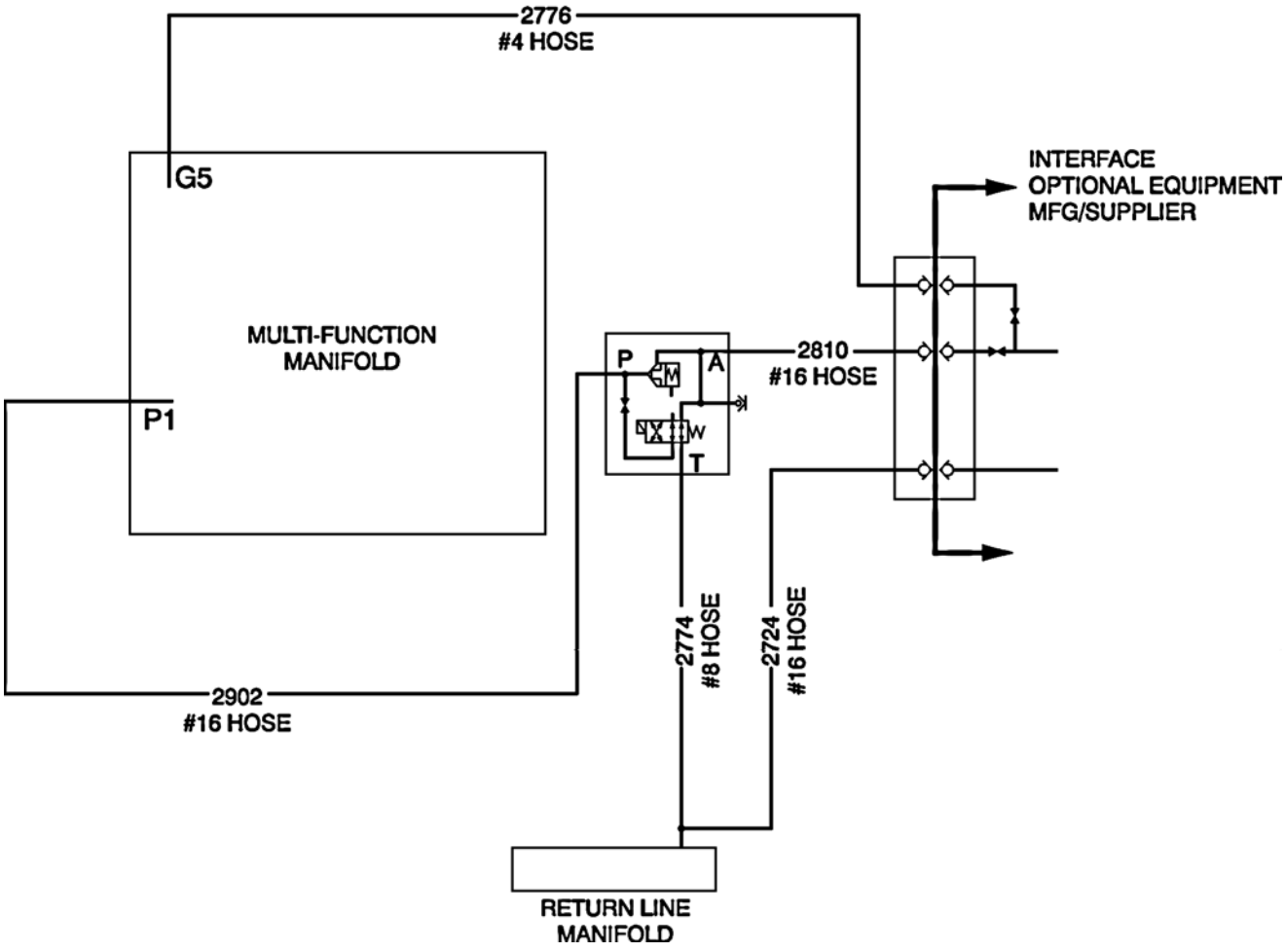


Figure 2-78. Interface Hydraulic Lines Diagram

2-37. INTERFACE TROUBLESHOOTING (CONT)

1. LOSS OF INTERFACE AIR SUPPLY.

INITIAL SETUP

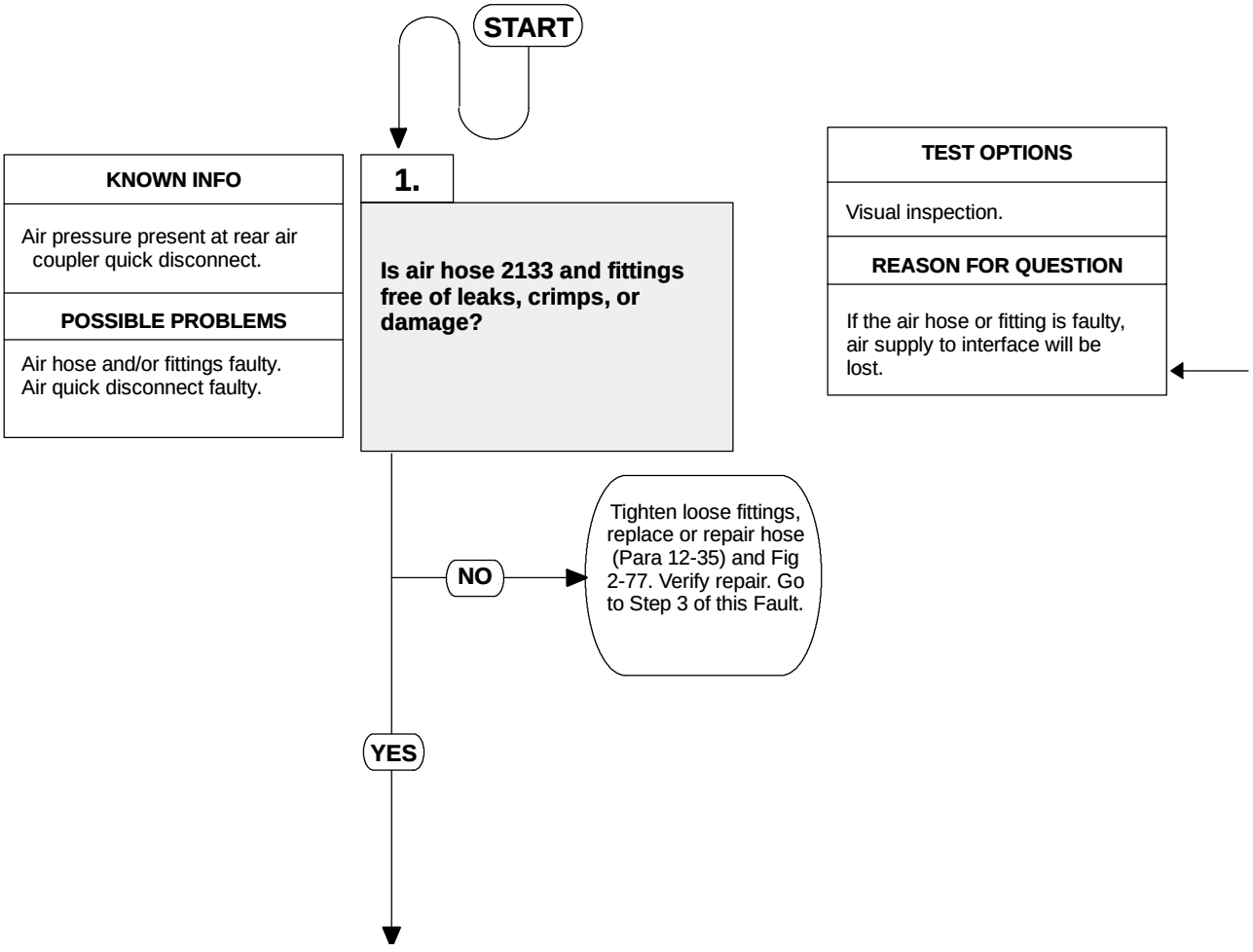
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Solution, Soap (Item 86, Appendix C)

References
TM 9-2320-364-10

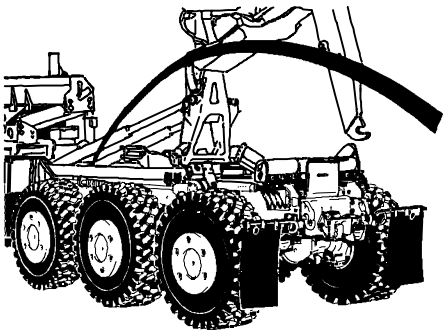
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake ON, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system charged, (TM 9-2320-364-10)
Load handling system (LHS) fully extended, (TM 9-2320-364-10)

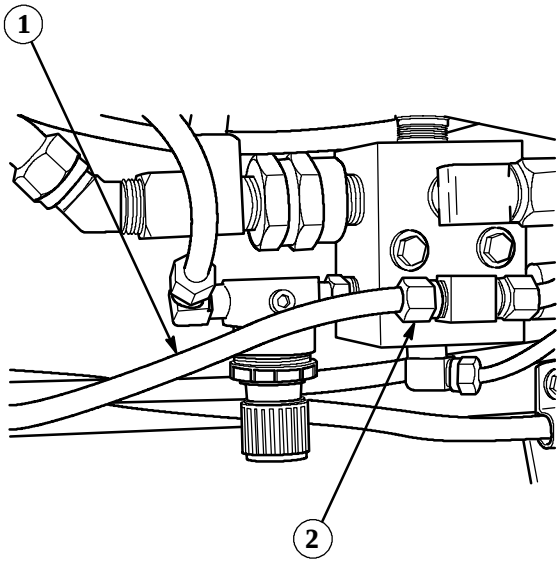
NOTE
Use soap solution to inspect for air leaks.

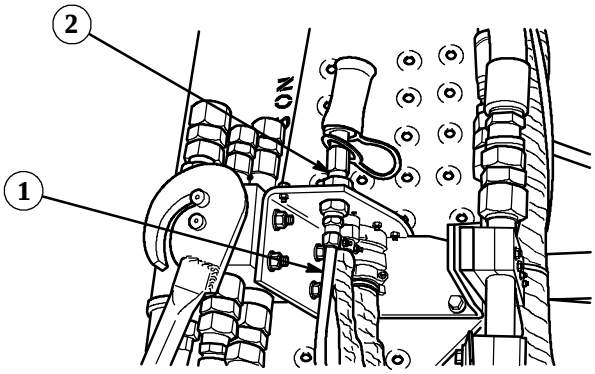


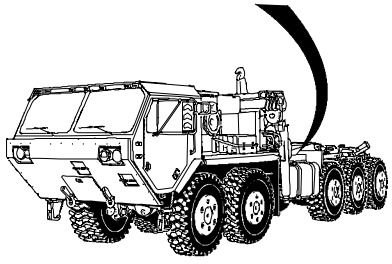
WARNING

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



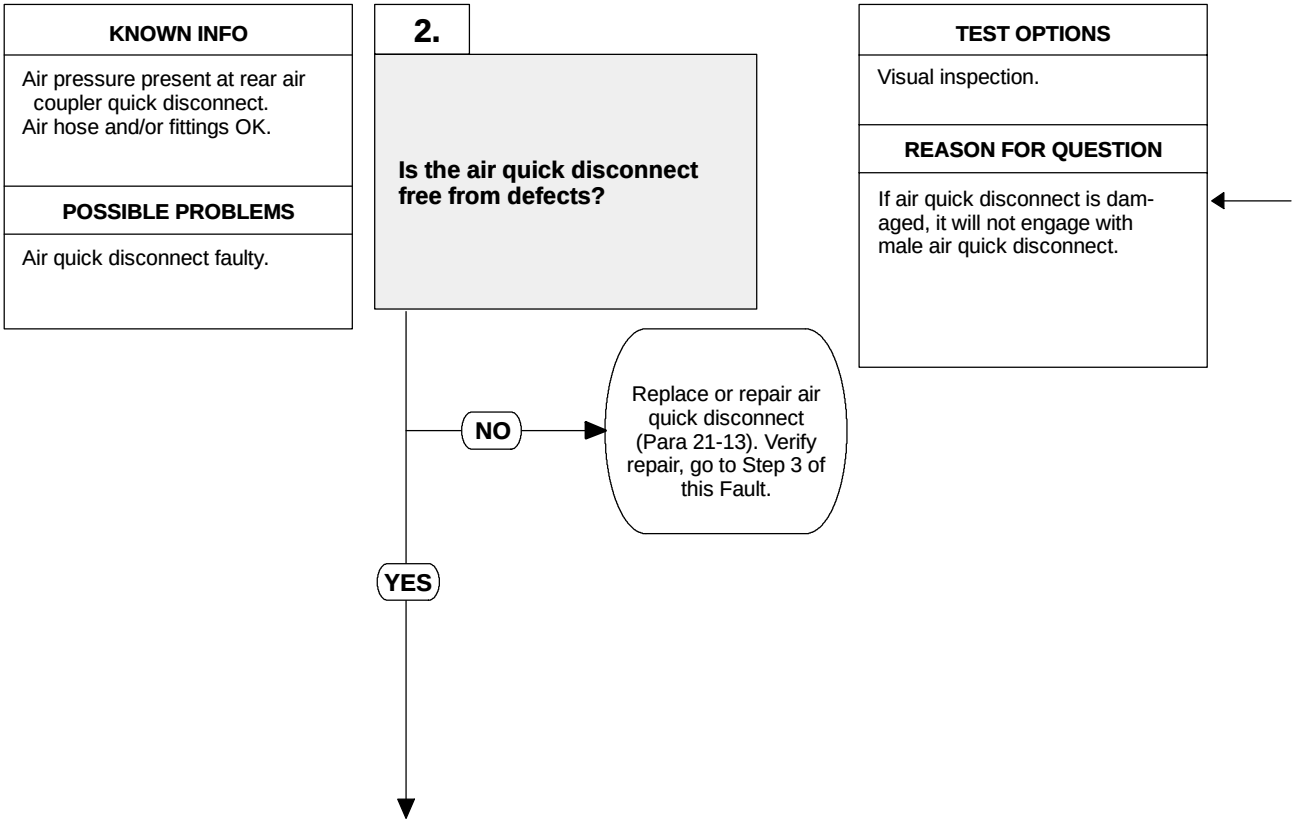






VISUAL INSPECTION
Check air hose 2133 (1) for damage and loose or damaged fittings (2). If hose is leaking or damaged, tighten fittings, repair or replace hose (Para 12-35).

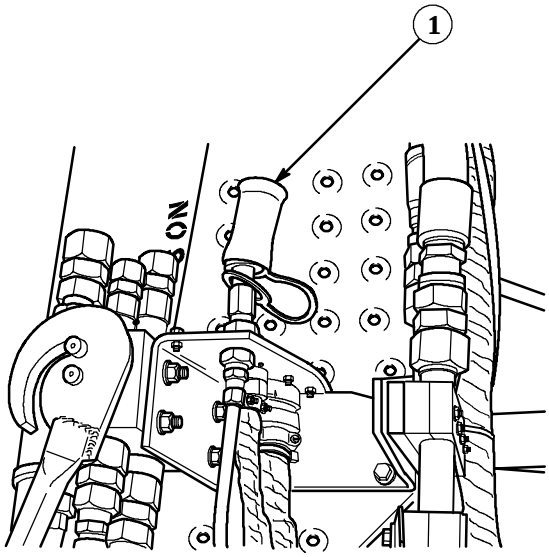
1. LOSS OF INTERFACE AIR SUPPLY (CONT).

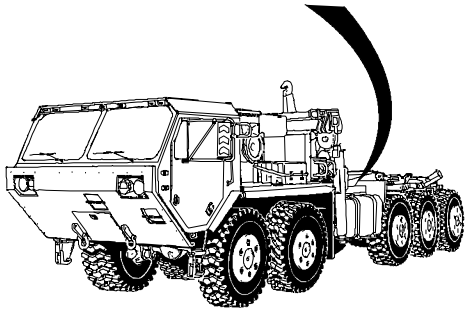


WARNING

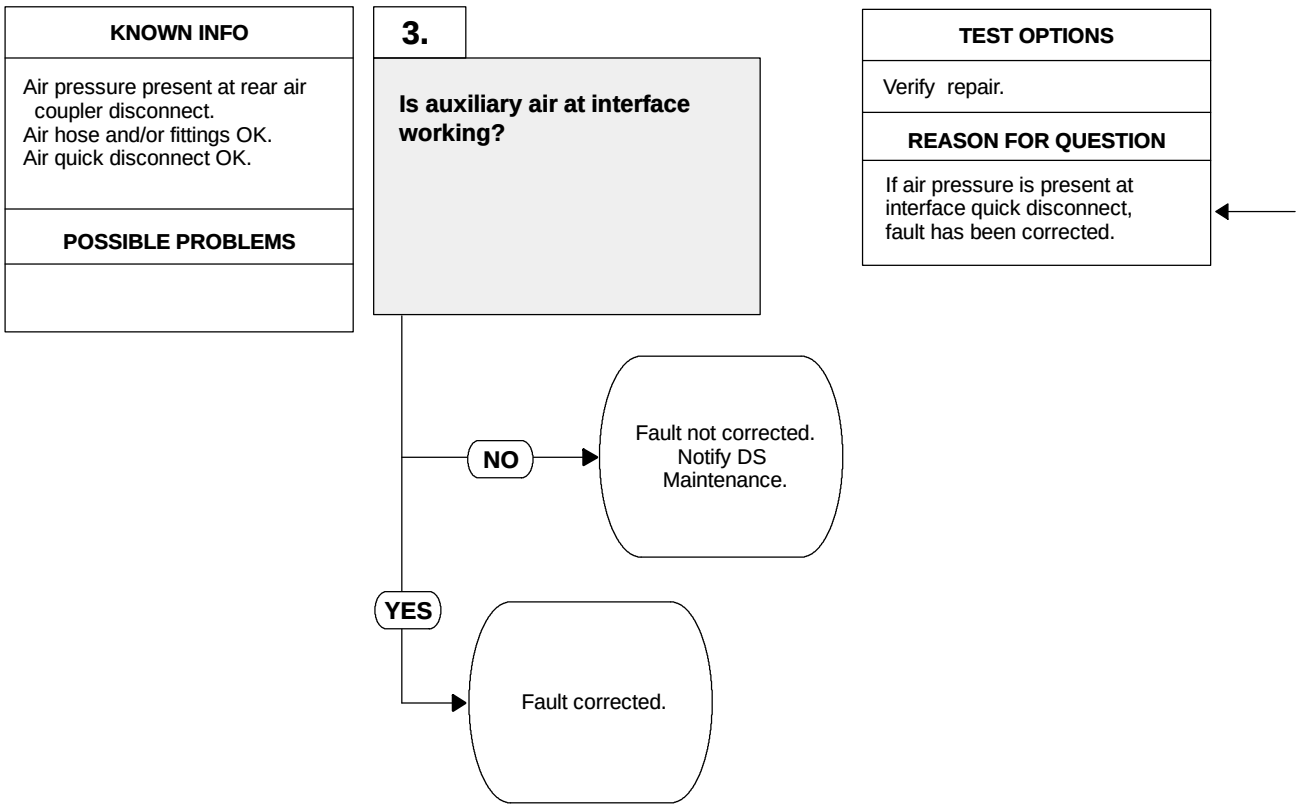
Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

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).



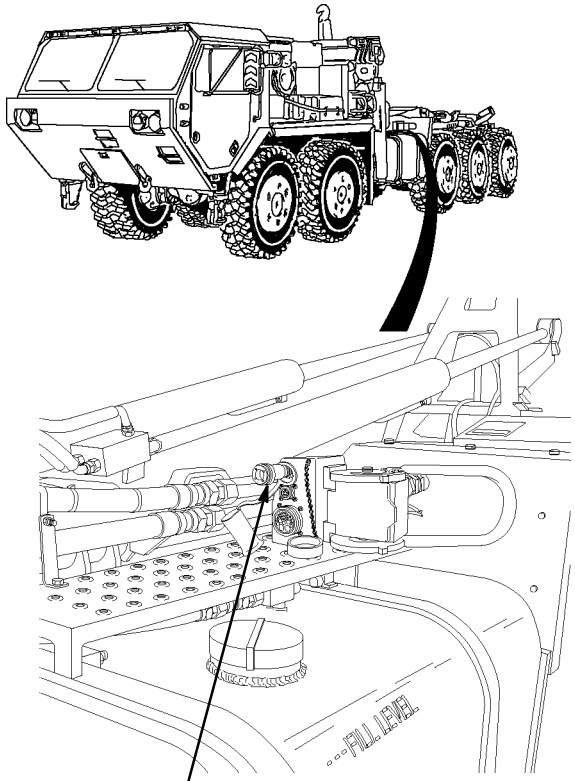


1. LOSS OF INTERFACE AIR SUPPLY (CONT).



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)

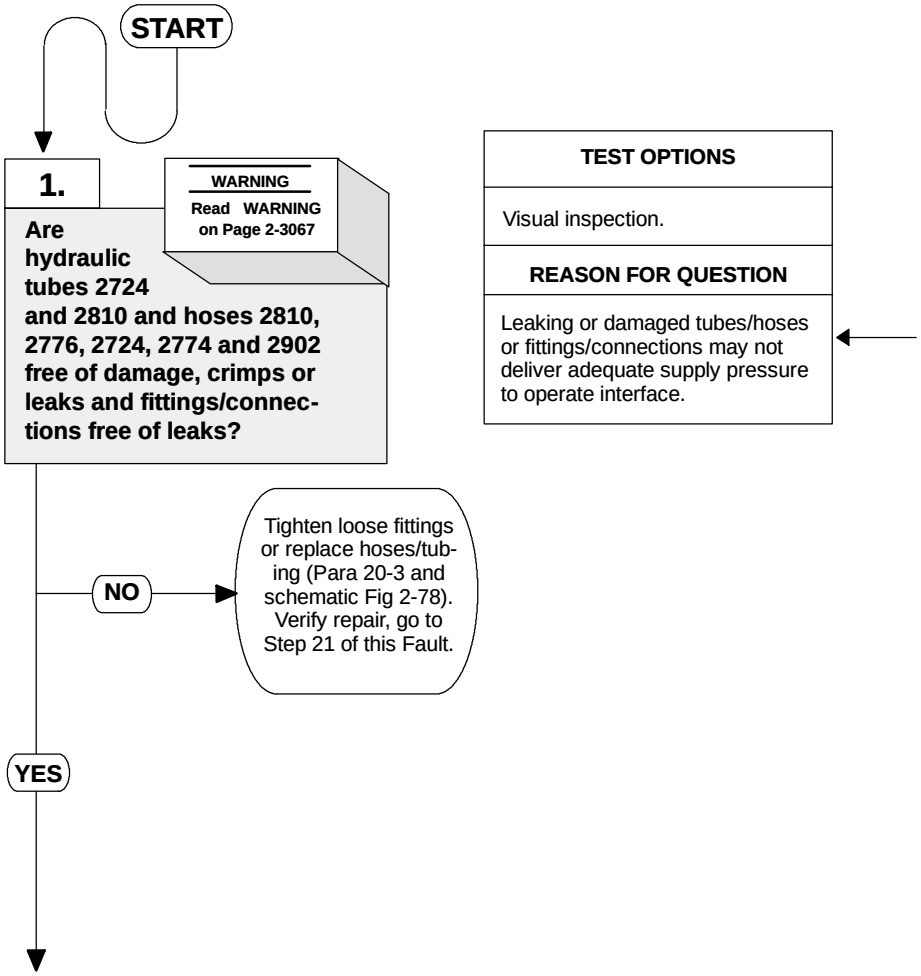
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

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.

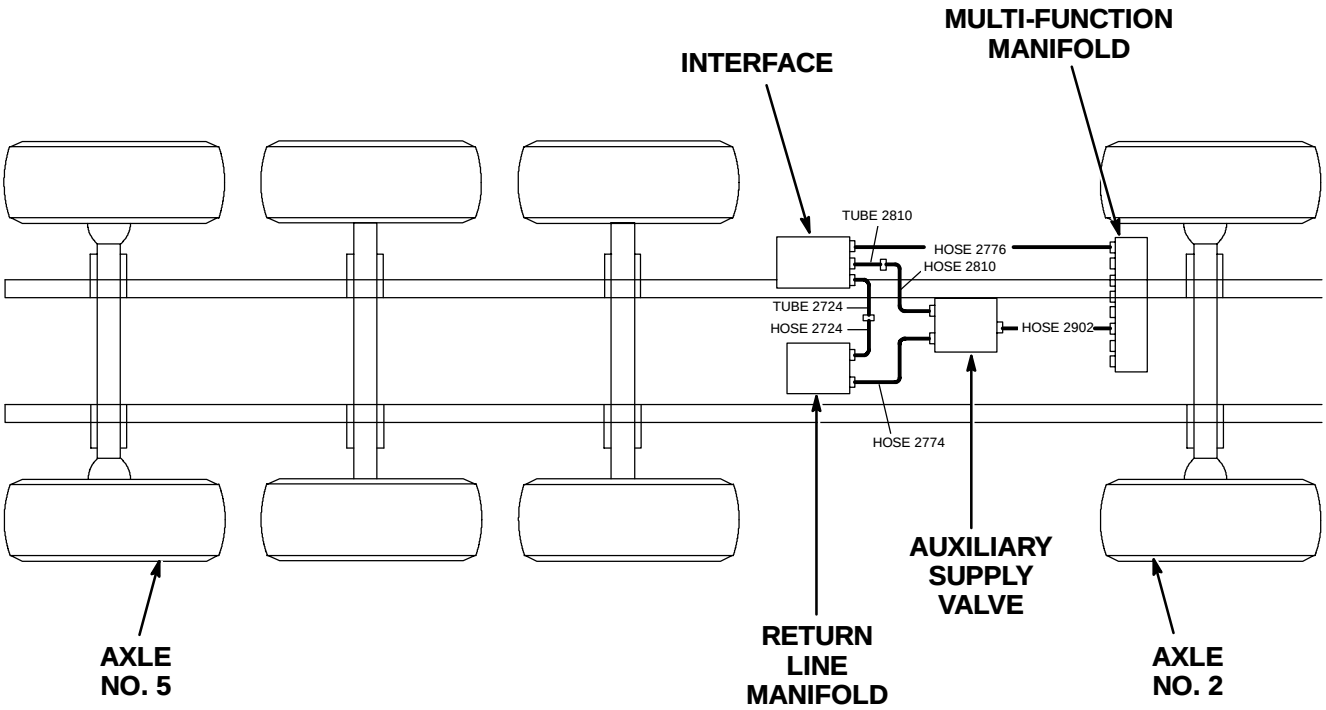


WARNING

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).

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.
Hoses and tubes OK.

POSSIBLE PROBLEMS

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.

2.

WARNING
Read WARNING on Page 2-3069

Is the quick disconnect operating properly?

NO → Replace or repair quick disconnect (Para 21-12). Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Visual inspection.

REASON FOR QUESTION

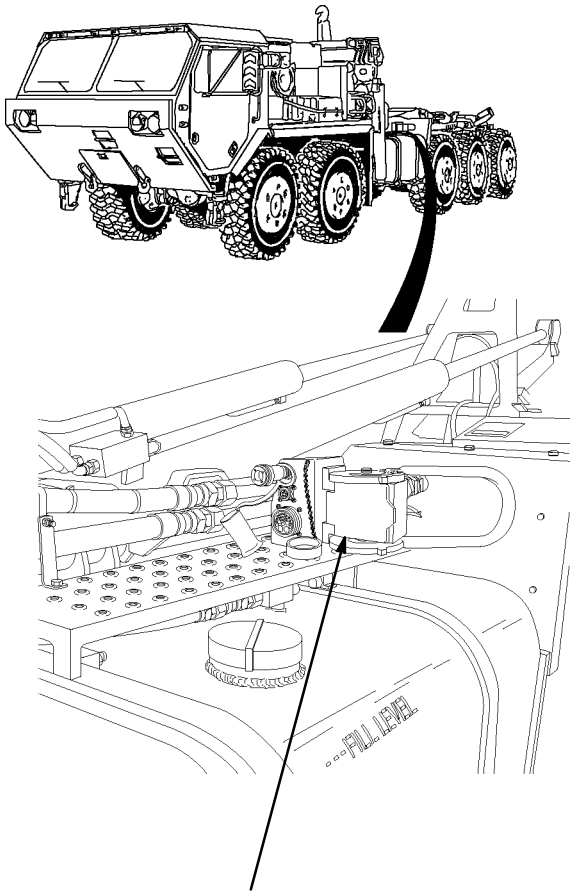
Female quick disconnect is damaged and will not engage with male quick disconnect.

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).

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.
Hoses and tubes OK.
Quick disconnect OK.

POSSIBLE PROBLEMS

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.

3.

WARNING
Read WARNING on Page 2-3071

Is LED #3 lamp illuminated?

NO → Go to Step 6 of this Fault.

YES

TEST OPTIONS

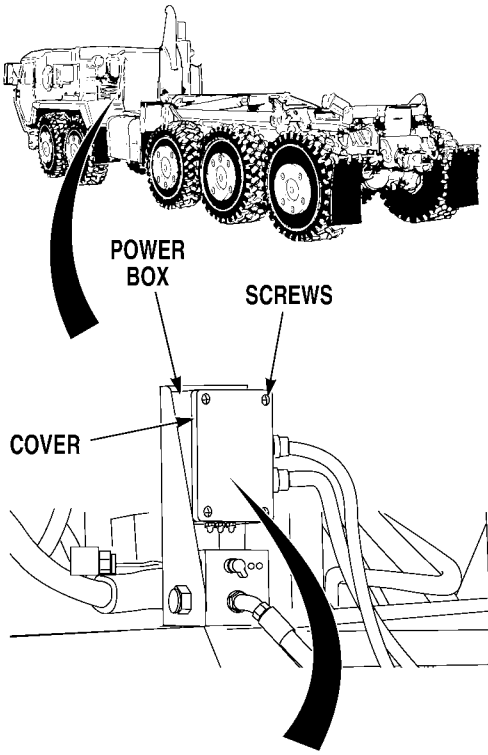
Visual inspection.

REASON FOR QUESTION

If LED #3 lamp is not illuminated, 22 to 28 vdc may not be present.

WARNING

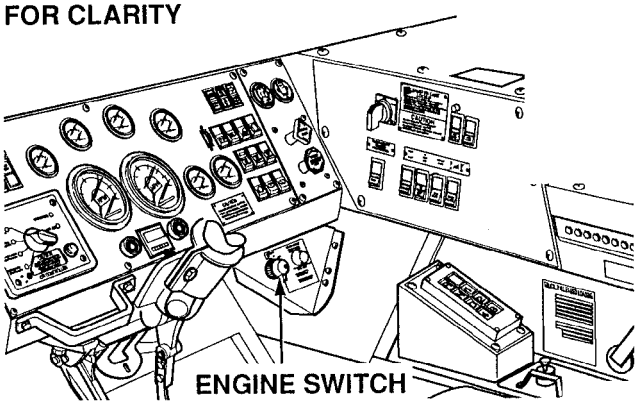
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

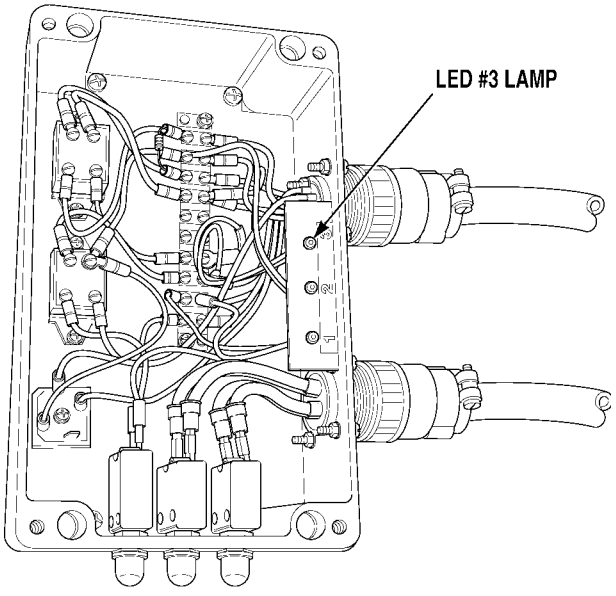


VISUAL INSPECTION

(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).

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.
Hoses and tubes OK.
Quick disconnect OK.
LED #3 lamp illuminated.

POSSIBLE PROBLEMS

LED #1 lamp not illuminated.
Auxiliary supply valve 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.

4.

WARNING
Read WARNING on Page 2-3073

Is LED #1 lamp illuminated?

NO → Go to Step 14 of this Fault.

YES

TEST OPTIONS

Visual inspection.

REASON FOR QUESTION

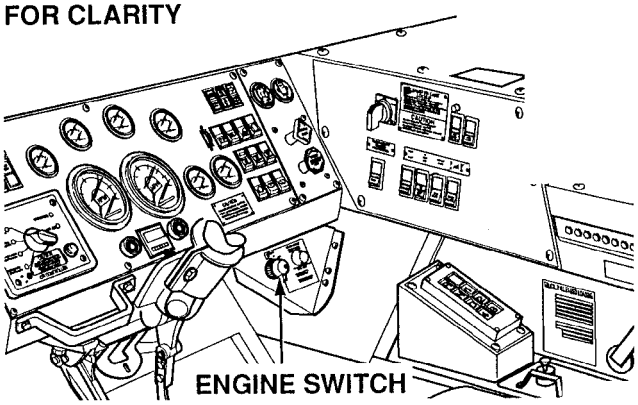
If LED #1 lamp is not illuminated, 22 to 28 vdc may not be present.

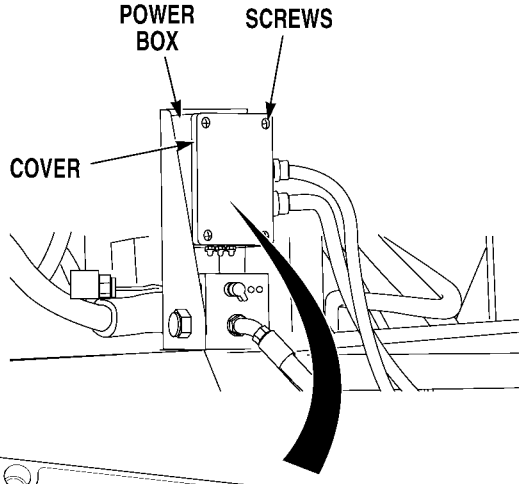
WARNING

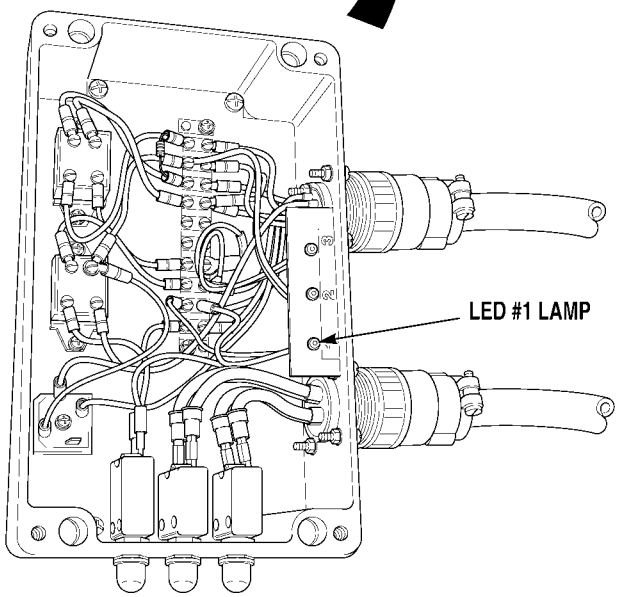
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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.

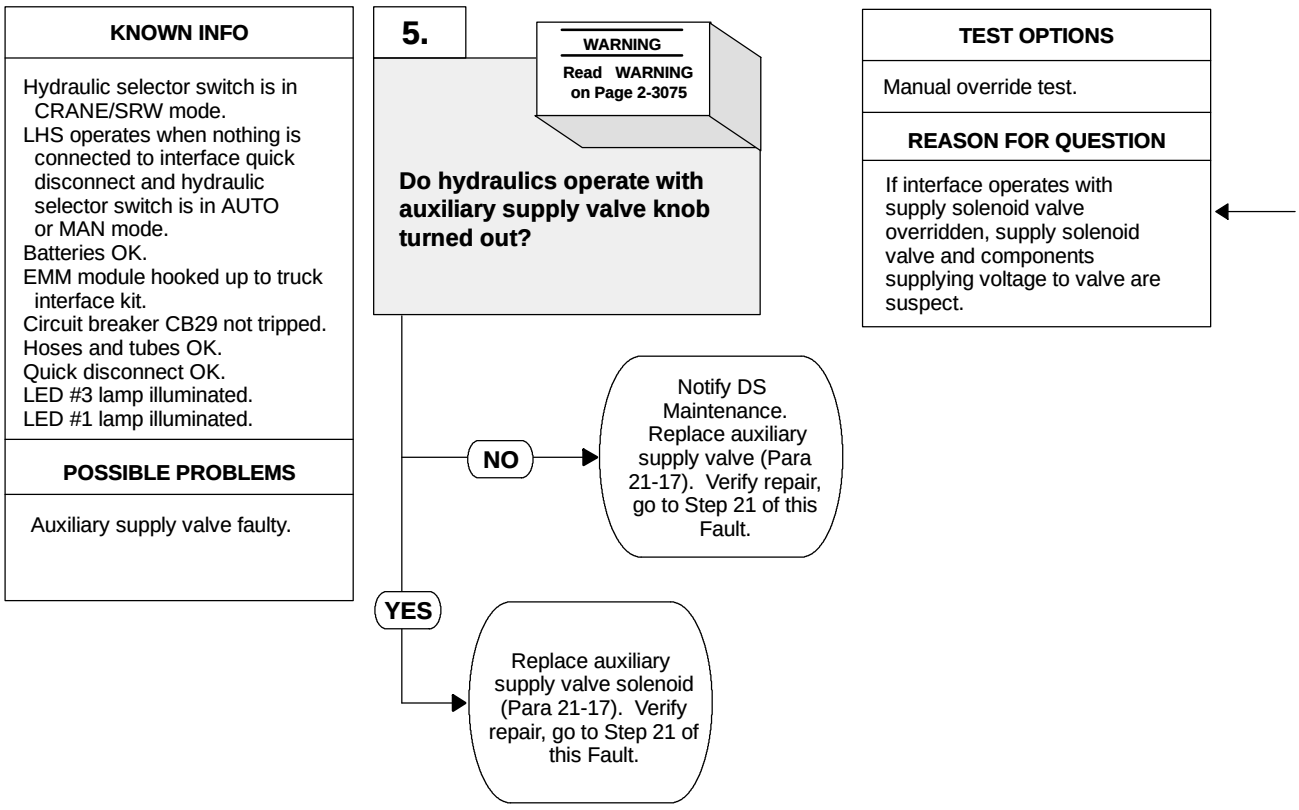
STEERING WHEEL SHOWN REMOVED FOR CLARITY





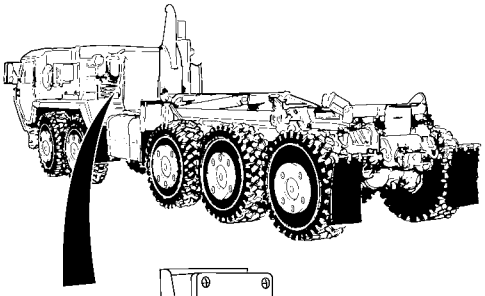


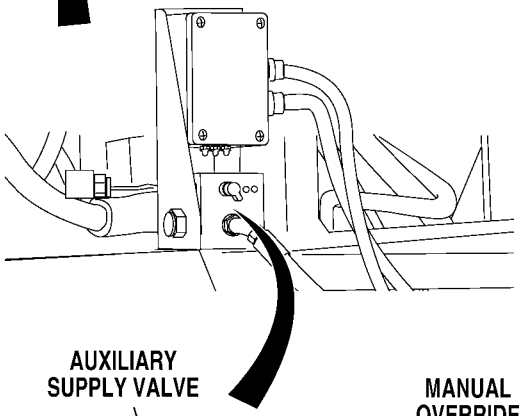
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



WARNING

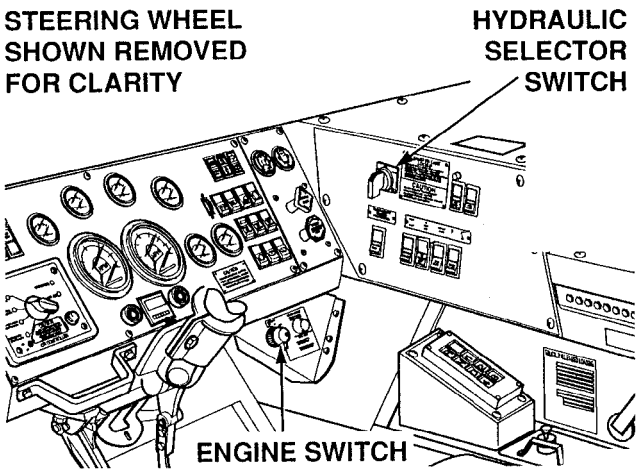
High pressure hydraulics [oil under 3700 psi (25,512 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body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



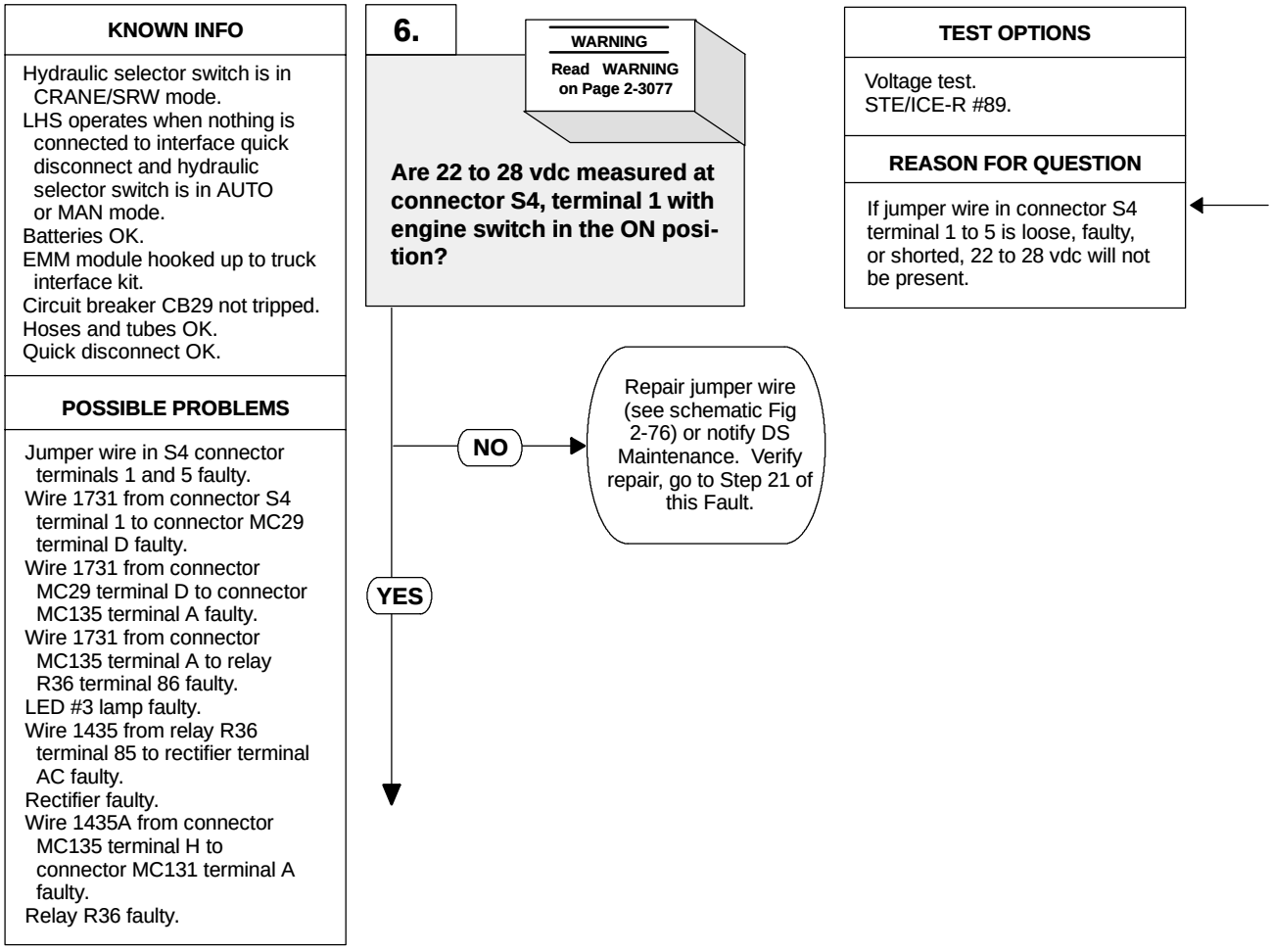


MANUAL OVERRIDE TEST

(1) Start engine (TM 9-2320-364-10).
(2) Open manual override button on auxillary 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.



2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

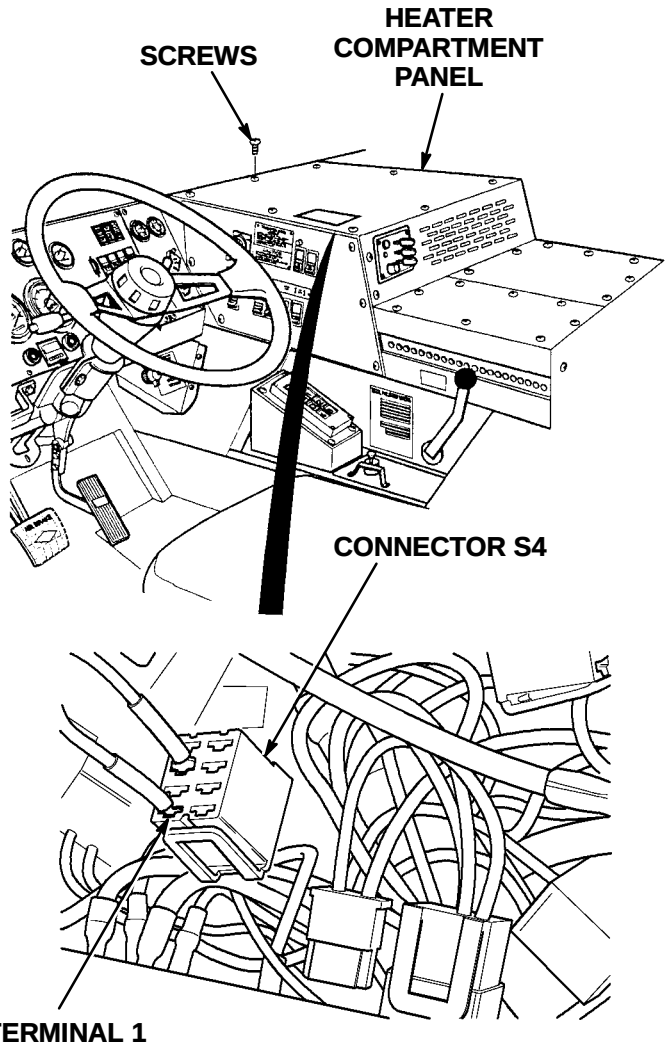


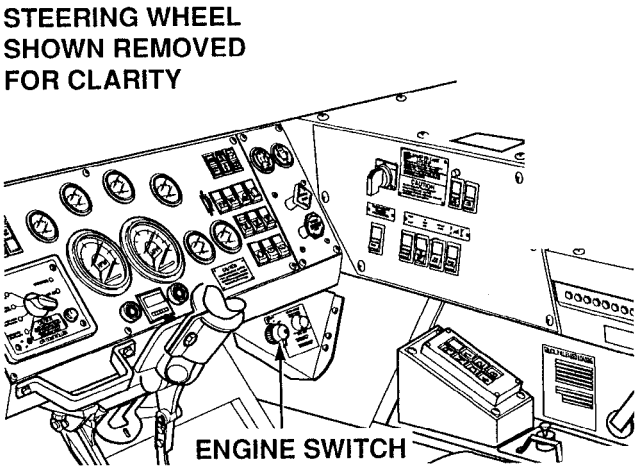
WARNING

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.





2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

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.
Hoses and tubes OK.
Quick disconnect OK.
Jumper wire in S4 connector terminals 1 and 5 OK.

POSSIBLE PROBLEMS

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.
Relay R36 faulty.

7.

WARNING
Read WARNING on Page 2-3079

Are 22 to 28 vdc measured at connector MC29 wire 1731 terminal D with the engine switch in the ON position?

NO → Repair wire 1731 (see schematic Fig 2-76) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

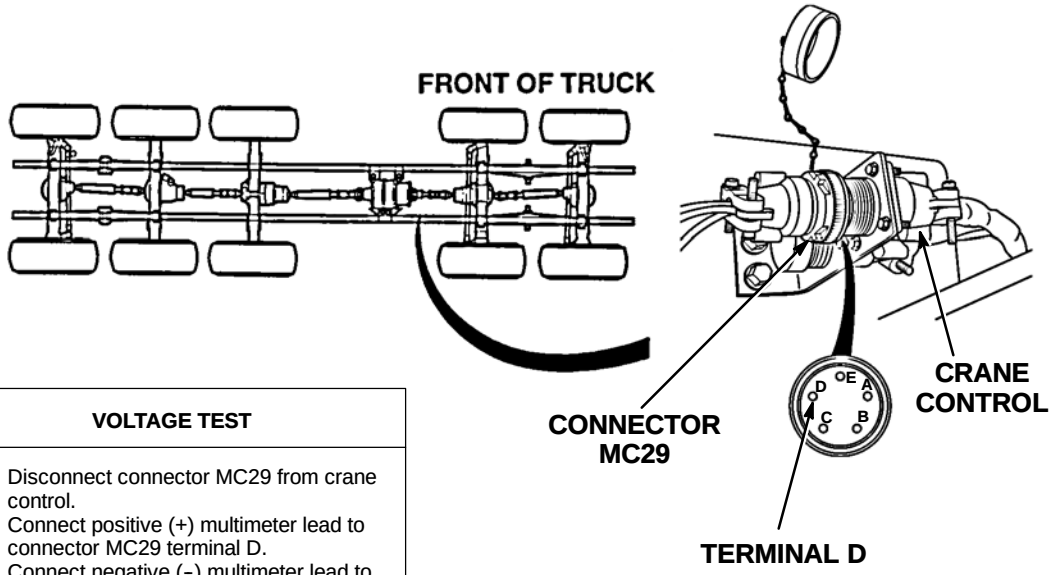
Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If wire 1731 from connector MC135 terminal A to connector MC29 terminal D is loose, faulty, or shorted, 22 to 28 vdc will not be present.

WARNING

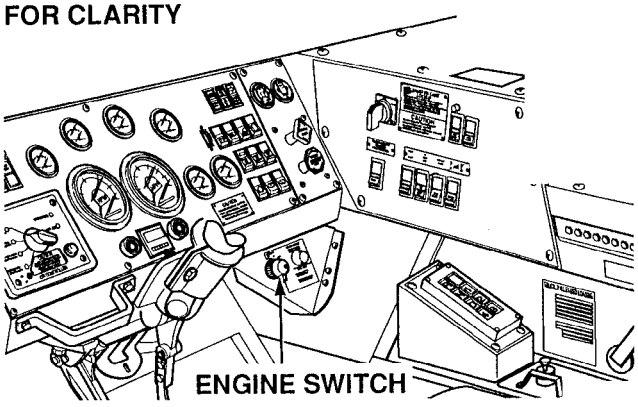
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



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).

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.
Hoses and tubes OK.
Quick disconnect OK.
Jumper wire in S4 connector terminals 1 and 5 OK.
Wire 1731 from connector S4 terminal 1 to connector MC29 terminal D OK.

POSSIBLE PROBLEMS

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.
Relay R36 faulty.

8.

WARNING
Read WARNING on Page 2-3081

Are 22 to 28 vdc measured at connector MC135 terminal A with engine in the ON position?

NO → Repair wire 1731 (see schematic Fig 2-76) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

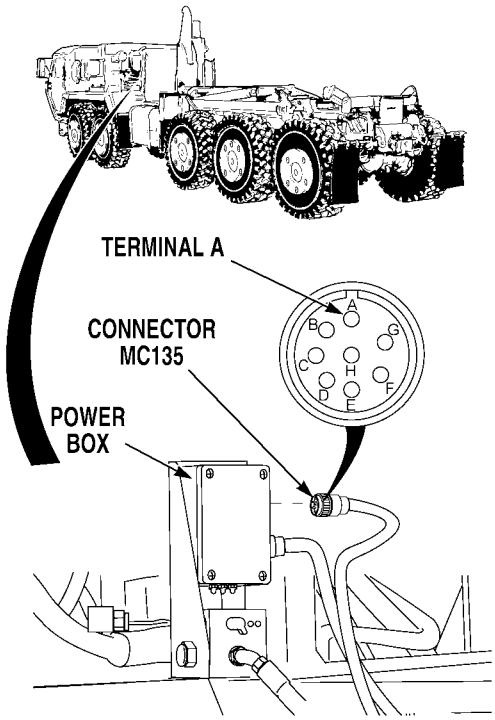
If wire 1731 from connector MC29 terminal D to connector MC135 terminal A is loose, faulty, or shorted, 22 to 28 vdc will not be present.

WARNING

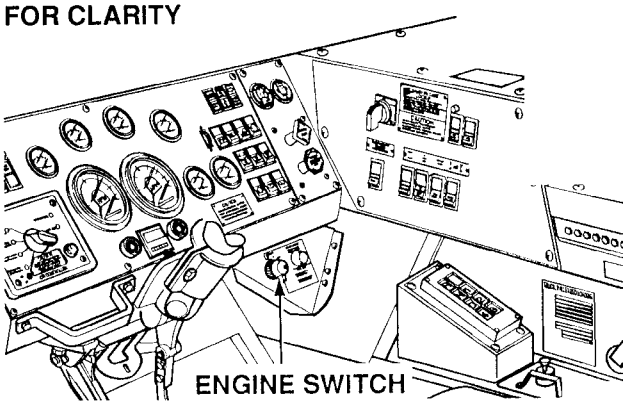
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

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.
Hoses and tubes OK.
Quick disconnect OK.
Jumper wire in S4 connector terminals 1 and 5 OK.
Wire 1731 from connector S4 terminal 1 to connector MC29 terminal D OK.
Wire 1731 from connector MC29 terminal D to connector MC135 terminal A OK.

POSSIBLE PROBLEMS

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.
Relay R36 faulty.

9.

WARNING
Read WARNING on Page 2-3083

Are 22 to 28 vdc measured at relay R36 terminal 86 with engine switch in the ON position?

NO → Repair wire 1731 (see schematic Fig 2-76) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

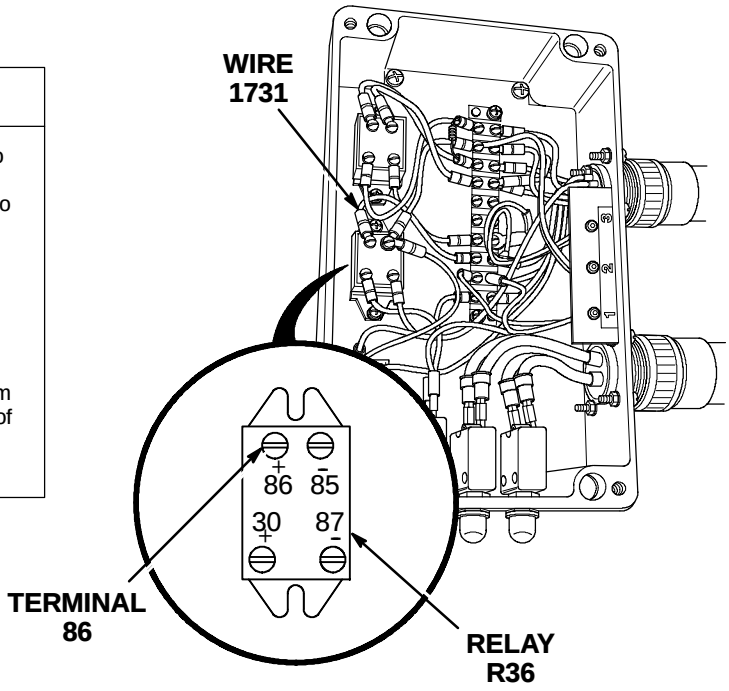
If wire 1731 from connector MC29 terminal D to connector MC135 terminal A is loose, faulty, or shorted, 22 to 28 vdc will not be present.

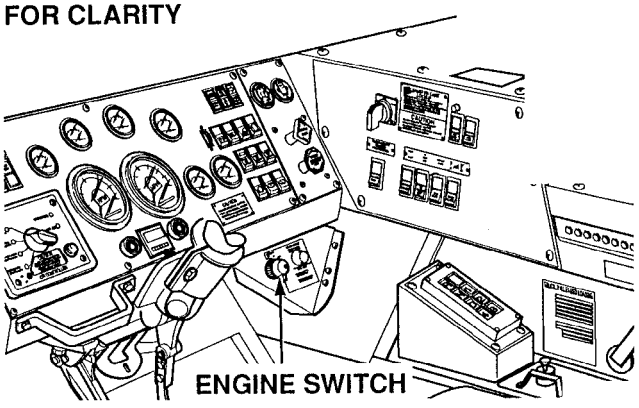
WARNING

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.

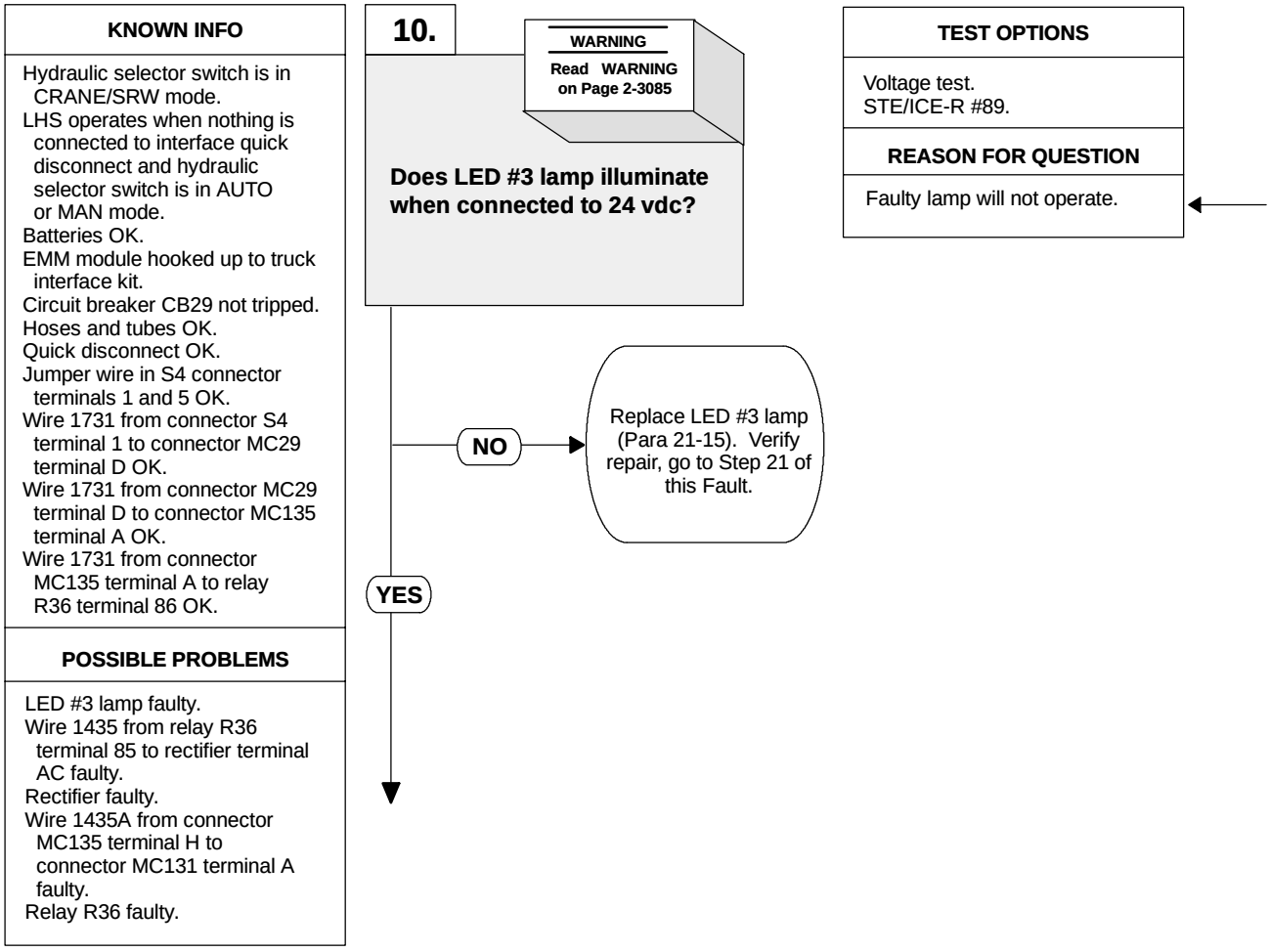
VOLTAGE TEST

(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.





2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



WARNING

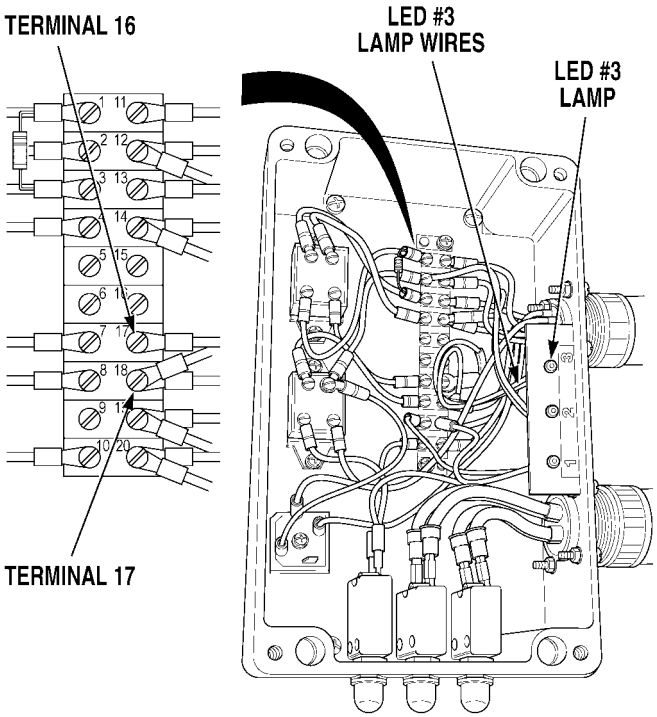
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

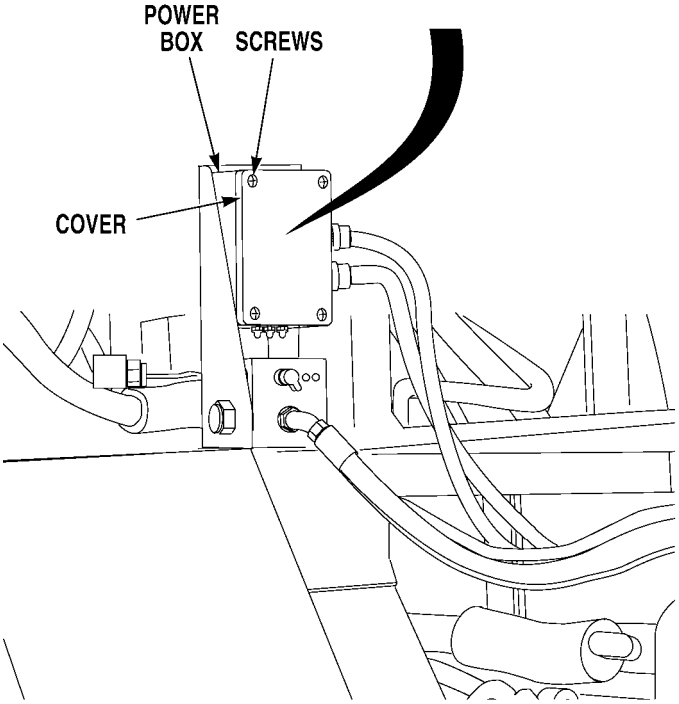
NOTE

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).

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.
Hoses and tubes OK.
Quick disconnect OK.
Jumper wire in S4 connector terminals 1 and 5 OK.
Wire 1731 from connector S4 terminal 1 to connector MC29 terminal D OK.
Wire 1731 from connector MC29 terminal D to connector MC135 terminal A OK.
Wire 1731 from connector MC135 terminal A to relay R36 terminal 86 OK.
LED #3 lamp OK.

POSSIBLE PROBLEMS

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.
Relay R36 faulty.

11.

WARNING
Read WARNING on Page 2-3087

Is continuity measured at rectifier terminal AC and relay R36 terminal 85?

NO → Repair wire 1435 (see schematic Fig 2-75) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

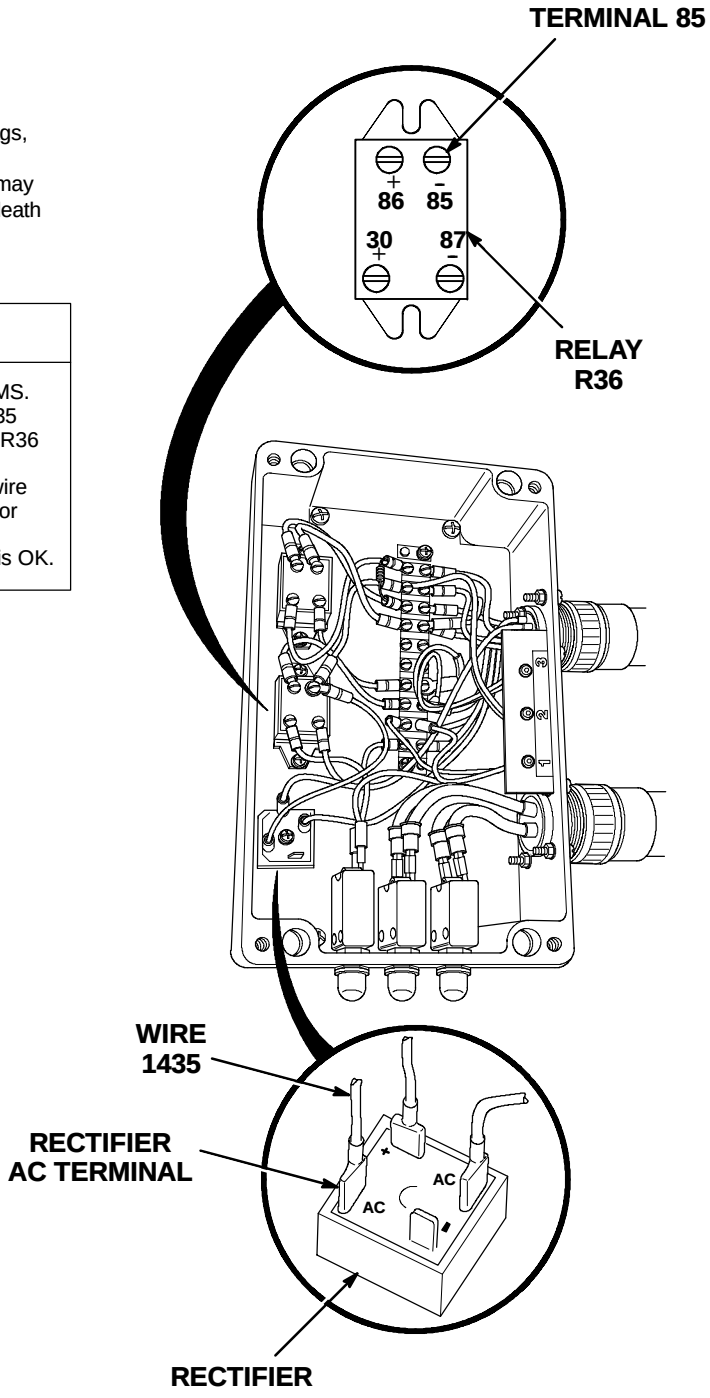
If wire 1435 from relay R36 terminal 85 to rectifier terminal AC is loose, faulty, or shorted to ground, interface will not be grounded.

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).

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.
Hoses and tubes OK.
Quick disconnect OK.
Jumper wire in S4 connector terminals 1 and 5 OK.
Wire 1731 from connector S4 terminal 1 to connector MC29 terminal D OK.
Wire 1731 from connector MC29 terminal D to connector MC135 terminal A OK.
Wire 1731 from connector MC135 terminal A to relay R36 terminal 86 OK.
LED #3 lamp OK.
Wire 1435 from relay R36 terminal 85 to rectifier terminal AC OK.

POSSIBLE PROBLEMS

Rectifier faulty.
Wire 1435A from connector MC135 terminal H to connector MC131 terminal A faulty.
Relay R36 faulty.

12.

WARNING
Read WARNING on Page 2-3089

Can rectifier pass a rectifier test?

NO → Replace rectifier (Para 21-15). Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Rectifier test.

REASON FOR QUESTION

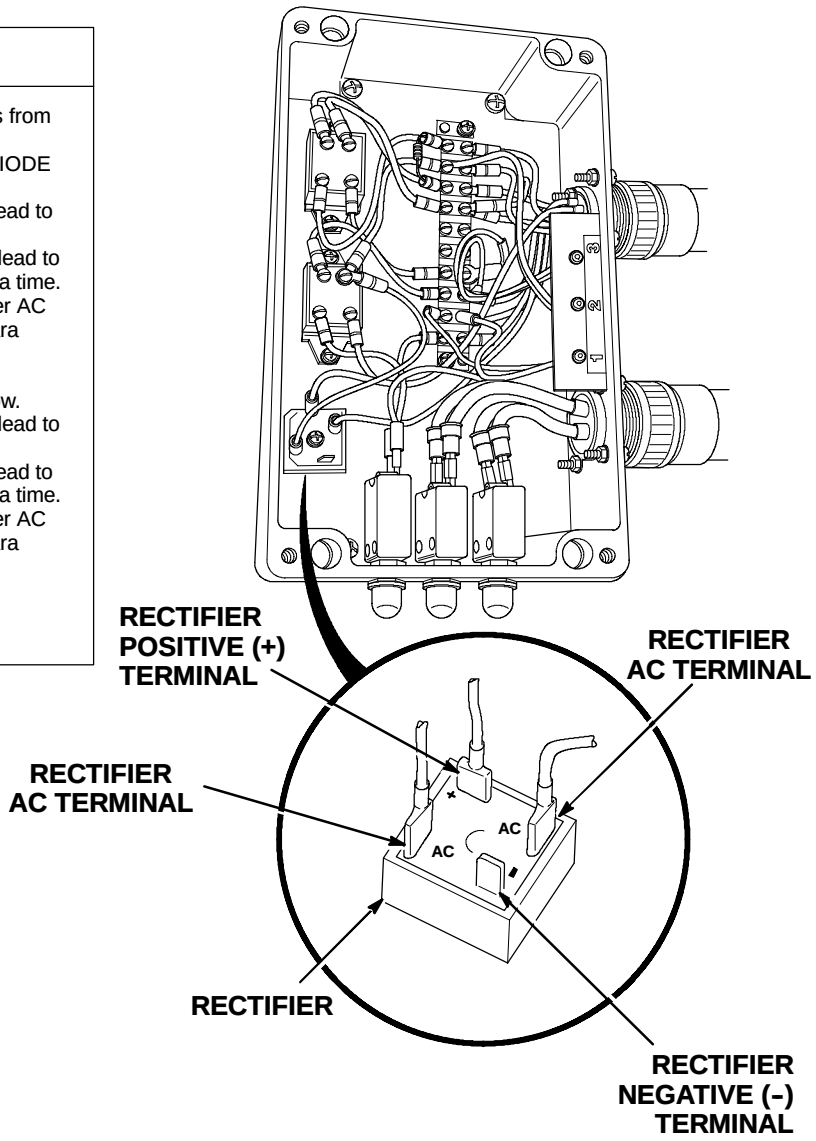
If rectifier is faulty, ground circuit will be open and relay R36 will not operate. ←

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.

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).

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.
Hoses and tubes OK.
Quick disconnect OK.
Jumper wire in S4 connector terminals 1 and 5 OK.
Wire 1731 from connector S4 terminal 1 to connector MC29 terminal D OK.
Wire 1731 from connector MC29 terminal D to connector MC135 terminal A OK.
Wire 1731 from connector MC135 terminal A to relay R36 terminal 86 OK.
LED #3 lamp OK.
Wire 1435 from relay R36 terminal 85 to rectifier terminal AC OK.
Rectifier OK.

POSSIBLE PROBLEMS

Wire 1435A from connector MC135 terminal H to connector MC131 terminal A faulty.
Relay R36 faulty.

13.

WARNING
Read WARNING on Page 2-3091

Is continuity measured on wire 1435A at connector MC131 terminal A and rectifier positive (+) terminal?

NO → Repair wire 1435A (see schematic Fig 2-75) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES → Replace relay R36 (Para 21-15). Verify repair, go to Step 21 of this Fault.

TEST OPTIONS

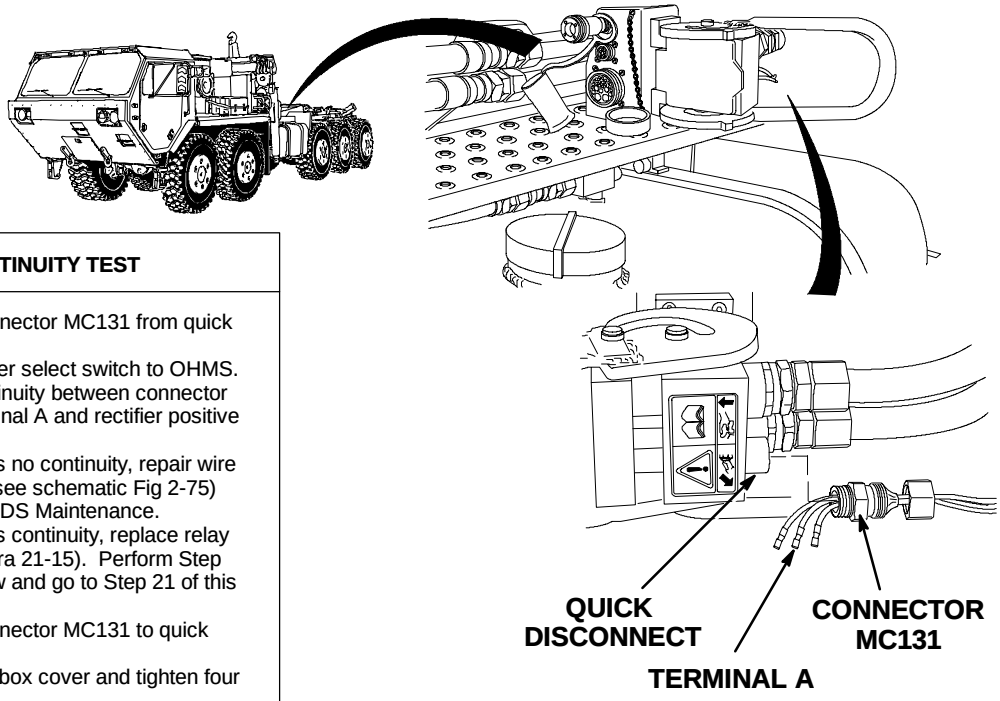
Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If wire 1435A is loose, faulty, or shorted to ground, interface will not be grounded.

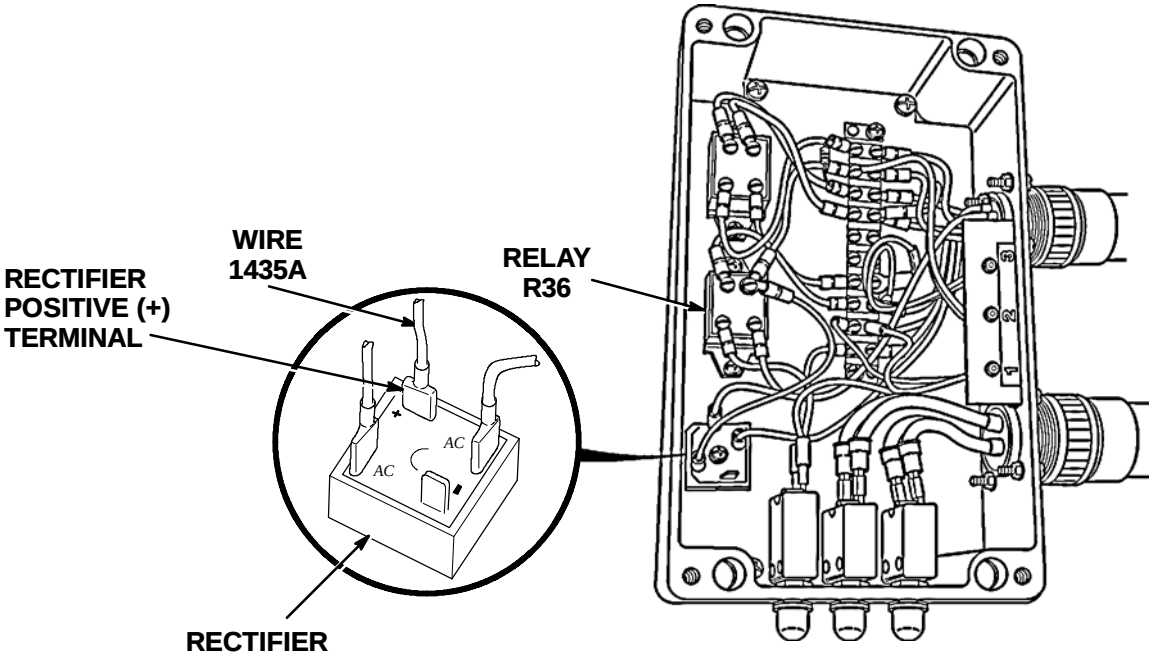
WARNING

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).

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.
Hoses and tubes OK.
Quick disconnect OK.
LED #3 lamp illuminated.

POSSIBLE PROBLEMS

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.

14.

WARNING
Read WARNING on Page 2-3093

Are 22 to 28 vdc measured on wire 1784 at circuit breaker CB29?

NO → Replace circuit breaker CB29 (Para 21-15). Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

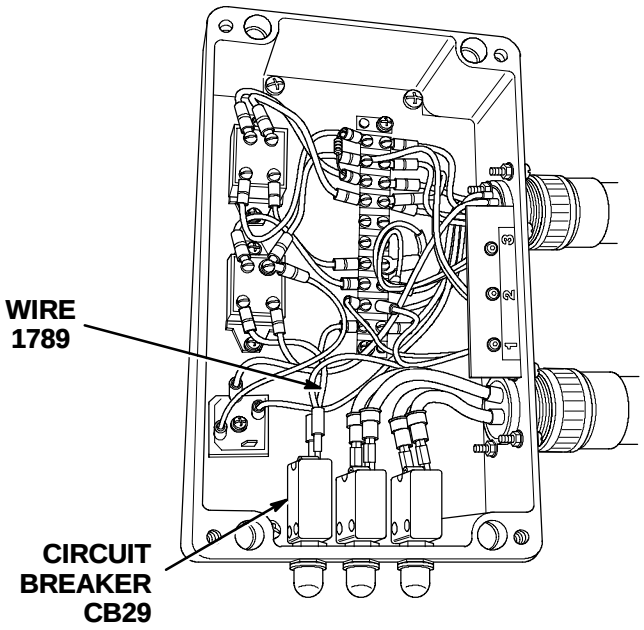
If circuit breaker CB29 is faulty, 22 to 28 vdc are not present.

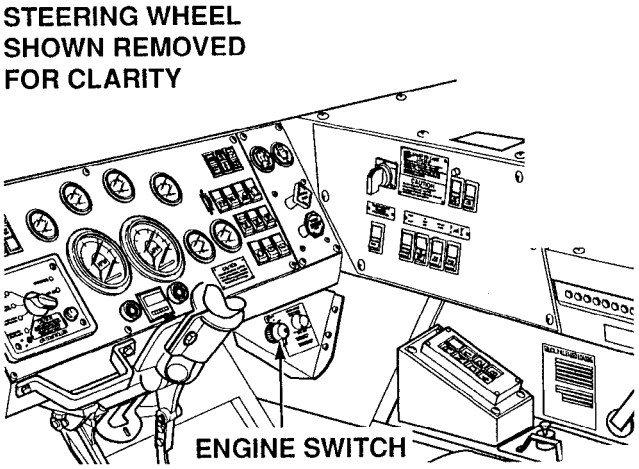
WARNING

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.





2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

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.
Hoses and tubes OK.
Quick disconnect OK.
LED #3 lamp illuminated.
Circuit breaker CB29 OK.

POSSIBLE PROBLEMS

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.

15.

WARNING
Read WARNING on Page 2-3095

Are 22 to 28 vdc measured at relay R36 terminal 30?

NO → Repair wire 1789 (see schematic Fig 2-75) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

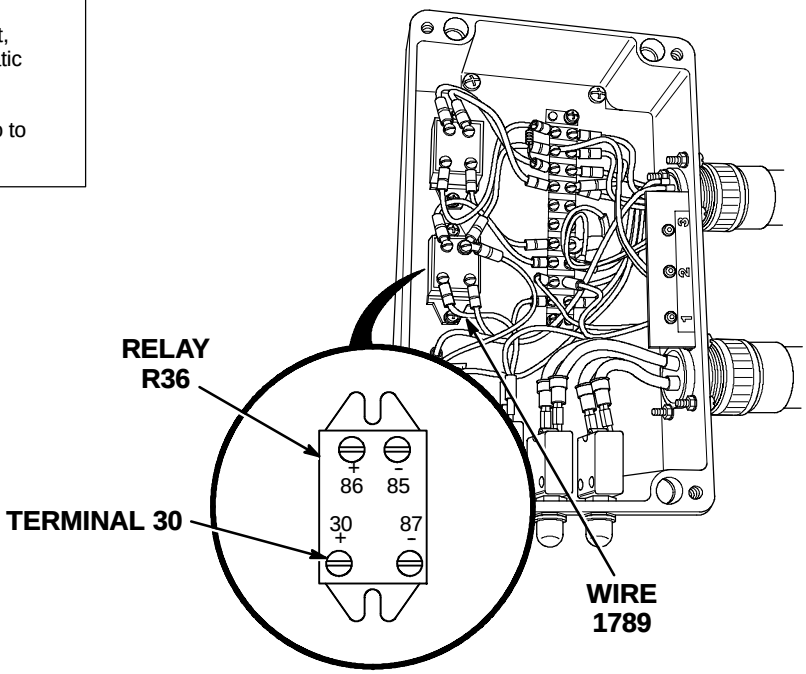
If wire 1789 from circuit breaker CB29 to relay R36 terminal 30 is loose, faulty, or shorted, 22 to 28 vdc will not be present.

WARNING

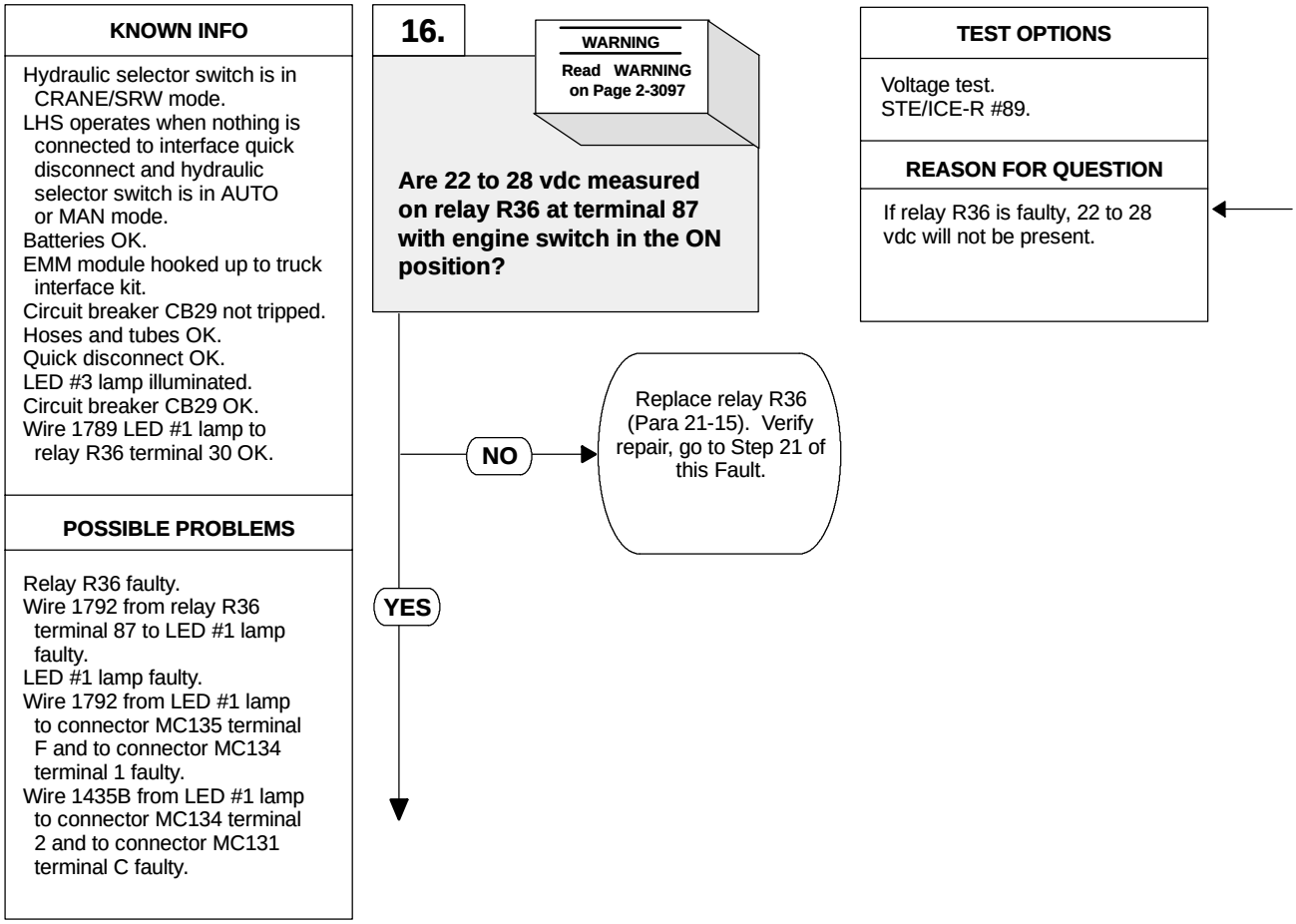
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

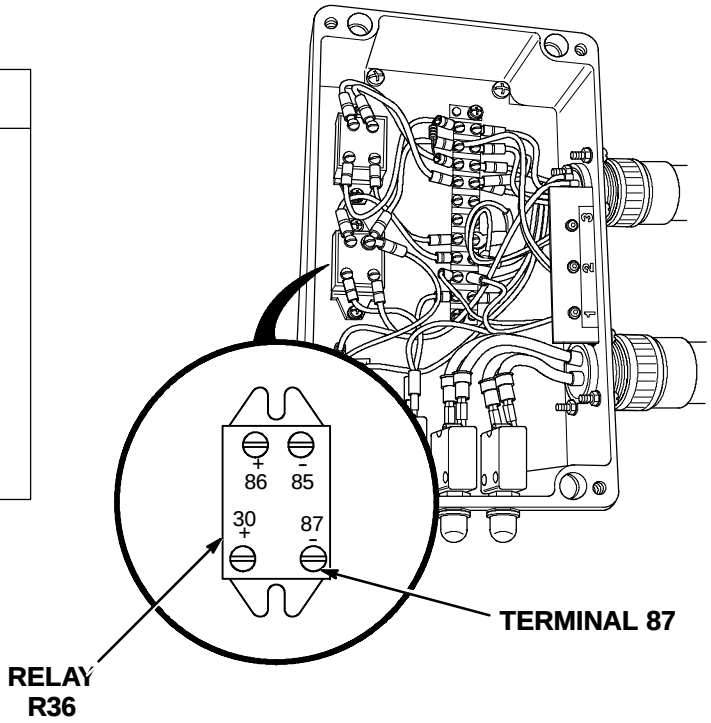


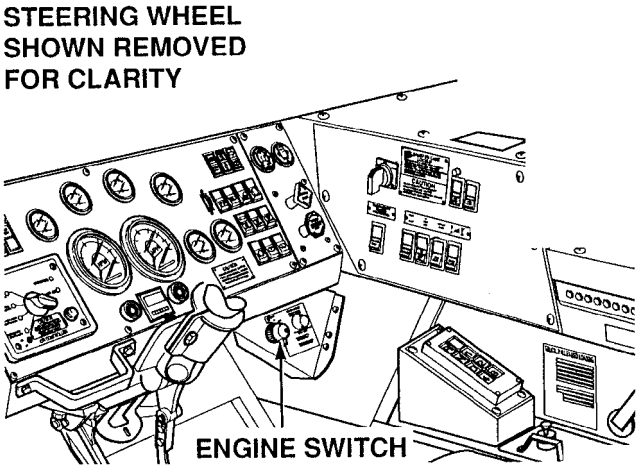
WARNING

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.





2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

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.
Hoses and tubes OK.
Quick disconnect OK.
LED #3 lamp illuminated.
Circuit breaker CB29 OK.
Wire 1789 LED #1 lamp to relay R36 terminal 30 OK.
Relay R36 OK.

POSSIBLE PROBLEMS

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.

17.

WARNING
Read WARNING on Page 2-3099

Are 22 to 28 vdc measured at LED #1 lamp with engine switch in the ON position?

NO → Repair wire 1792 (see schematic Fig 2-75) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

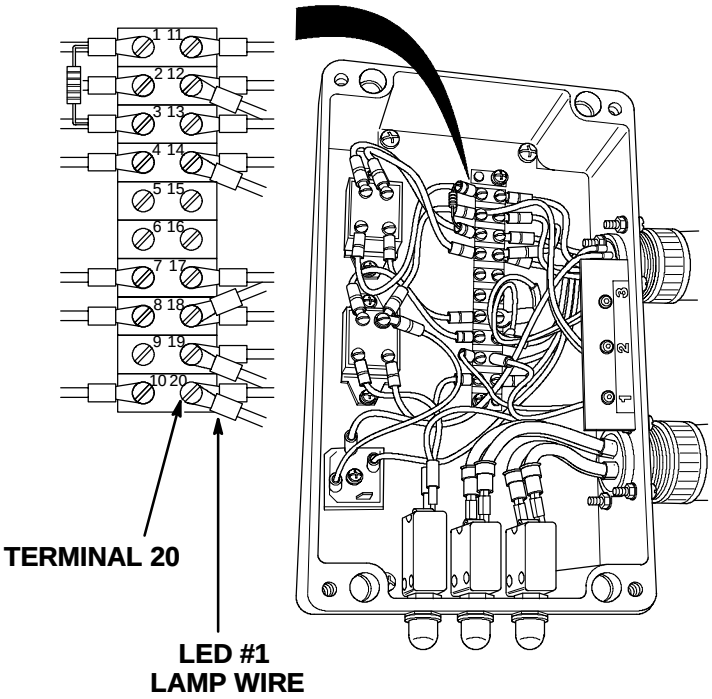
If wire 1792 from relay R36 terminal 87 to LED #1 is loose, faulty, or shorted, 22 to 28 vdc will not be present.

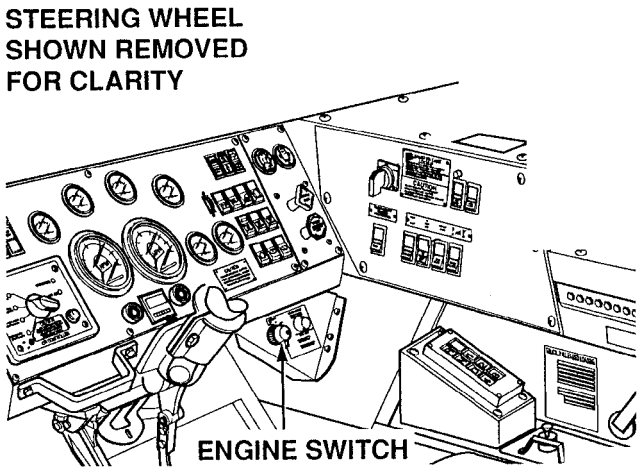
WARNING

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.

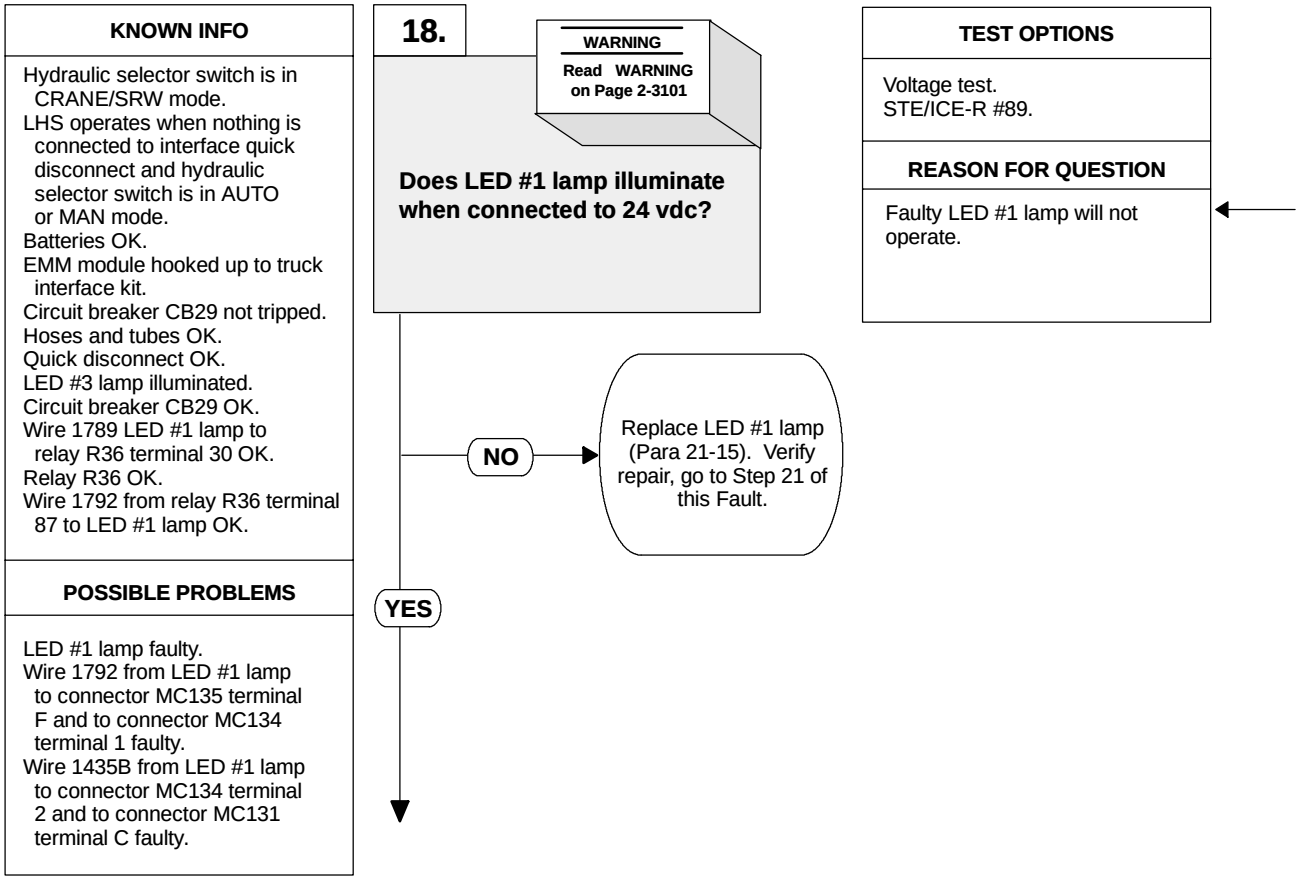
VOLTAGE TEST

(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.





2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



WARNING

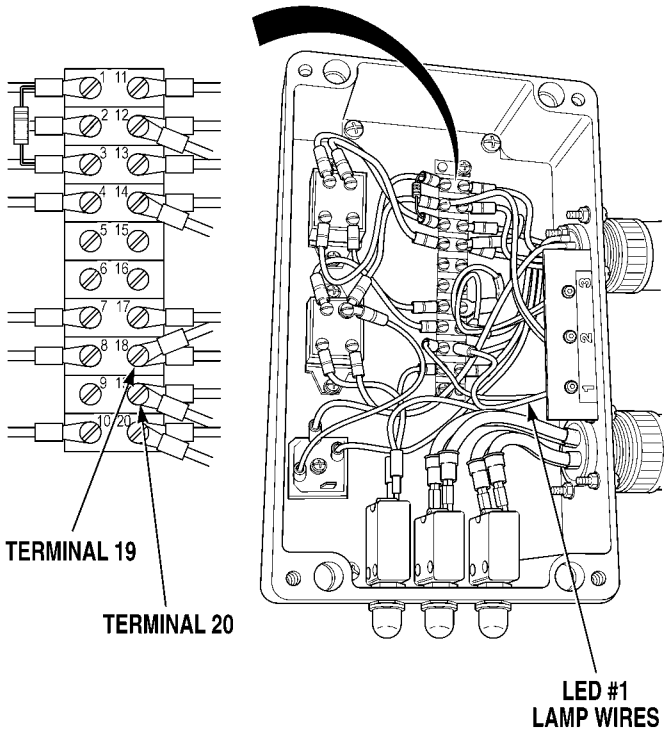
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

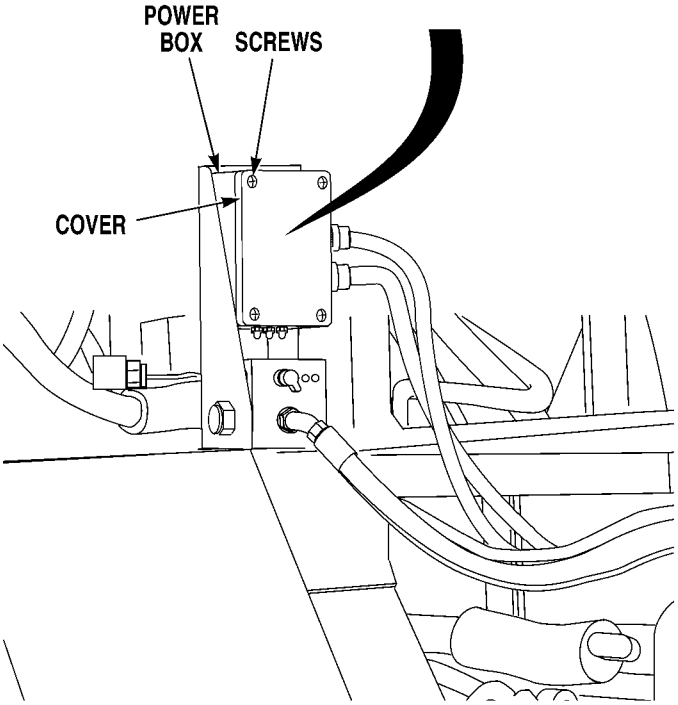
NOTE

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).

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.
Hoses and tubes OK.
Quick disconnect OK.
LED #3 lamp illuminated.
Circuit breaker CB29 OK.
Wire 1789 LED #1 lamp to relay R36 terminal 30 OK.
Relay R36 OK.
Wire 1792 from relay R36 terminal 87 to LED #1 lamp OK.
LED #1 lamp OK.

POSSIBLE PROBLEMS

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.

19.

WARNING
Read WARNING on Page 2-3103

Are 22 to 28 vdc measured at connector MC134 terminal 1 with engine switch in the ON position?

NO → Repair wire 1792 (see schematic Fig 2-76) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

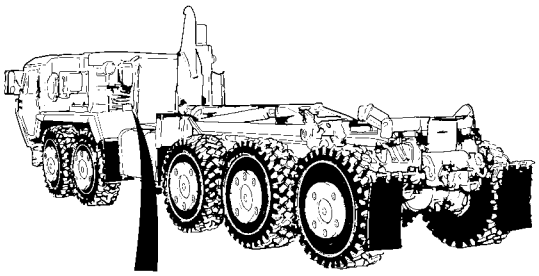
Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If wire 1792 from LED #1 connector MC134 terminal 1 is loose, faulty, or shorted, 22 to 28 vdc will not be present.

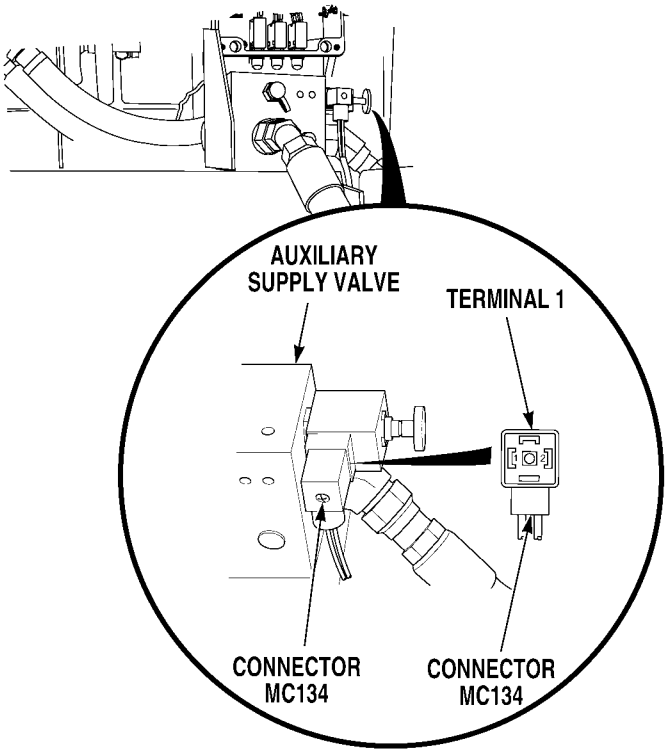
WARNING

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.

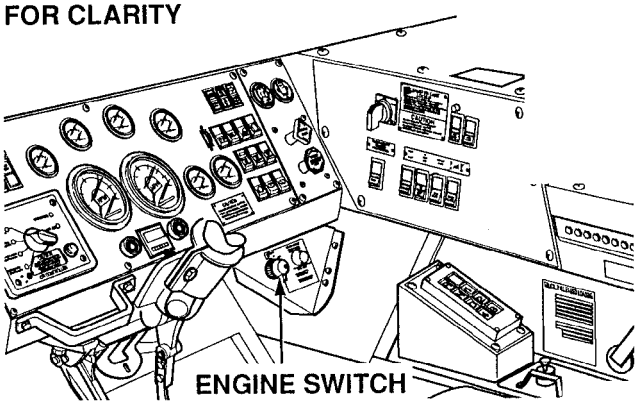


VOLTAGE TEST

(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).

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.
Hoses and tubes OK.
Quick disconnect OK.
LED #3 lamp illuminated.
Circuit breaker CB29 OK.
Wire 1792 LED #1 lamp to relay R36 terminal 30 OK.
Relay R36 OK.
Wire 1789 from relay R36 terminal 87 to LED #1 lamp OK.
LED #1 lamp OK.
Wire 1792 from LED #1 lamp to connector MC135 terminal F and to connector MC134 terminal 1 OK.

POSSIBLE PROBLEMS

Wire 1435B from LED #1 lamp to connector MC134 terminal 2 and to connector MC131 terminal C faulty.

20.

WARNING
Read WARNING on Page 2-3105

Is continuity measured on wire 1435B at connector MC131 terminal C and connector MC134 terminal 2?

NO → Repair wire 1435B (see schematic Fig 2-76) or notify DS Maintenance. Verify repair, go to Step 21 of this Fault.

YES

TEST OPTIONS

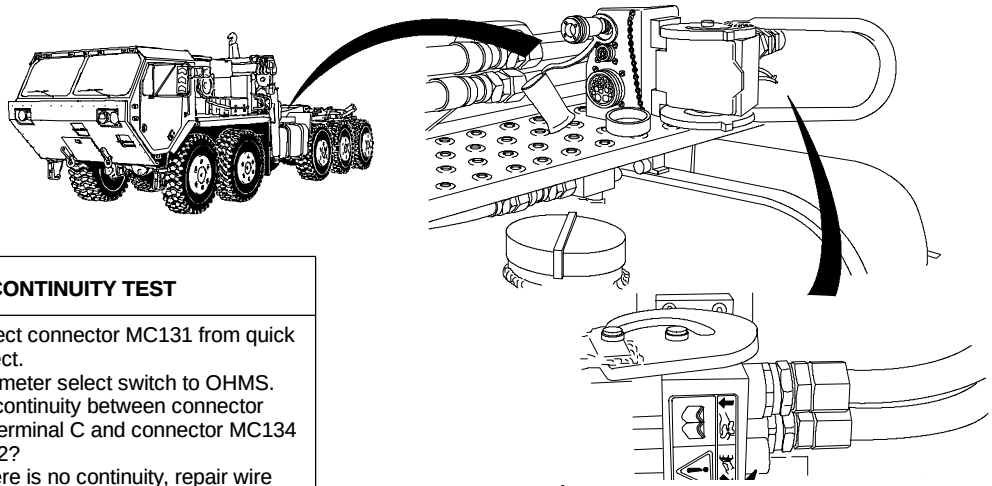
Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If wire 1435B is loose, faulty, or shorted to ground, interface will not be grounded.

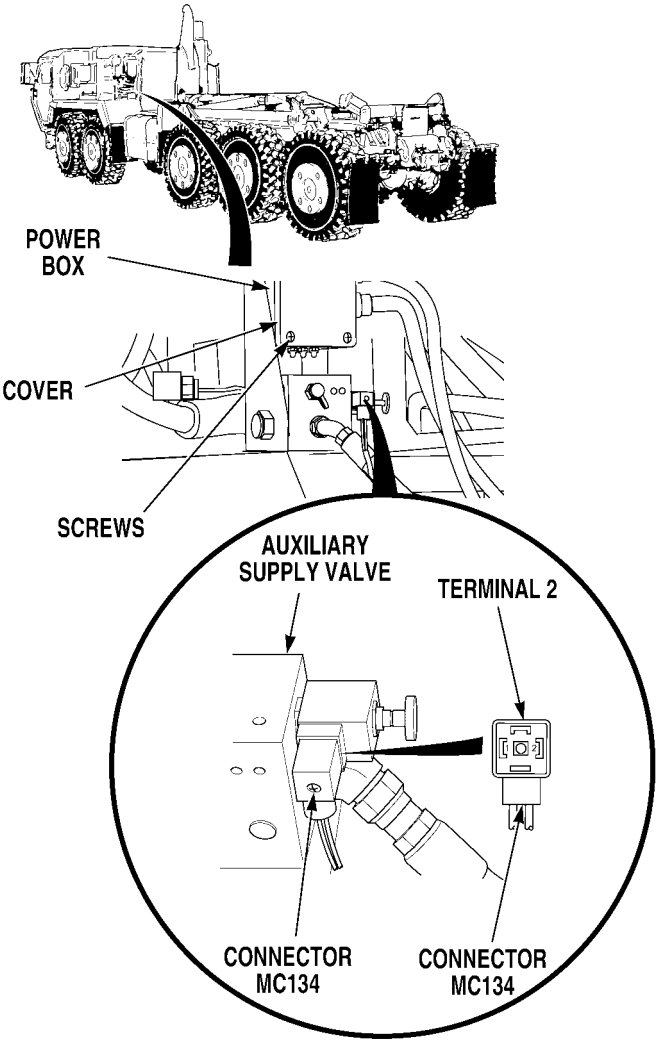
WARNING

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).

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.
Hoses and tubes OK.
Quick disconnect OK.
LED #3 lamp illuminated.
LED #1 lamp illuminated.
Auxiliary supply valve OK.
Jumper wire in S4 connector terminals 1 and 5 OK.
Wire 1731 from connector S4 terminal 1 to connector MC29 terminal D OK.
Wire 1731 from connector MC29 terminal D to connector MC135 terminal A OK.
Wire 1731 from connector MC135 terminal A to relay R36 terminal 86 OK.
LED #3 lamp OK.
Wire 1435 from relay R36 terminal 85 to rectifier terminal AC OK.
Rectifier OK.
Wire 1435A from connector MC135 terminal H to connector MC131 terminal A OK.
Circuit breaker CB29 OK.
Wire 1789 from circuit breaker CB29 to relay R36 terminal 30 OK.
Relay R36 OK.
Wire 1792 from relay R36 terminal 87 to LED #1 lamp OK.
LED #1 lamp OK.
Wire 1792 from LED #1 lamp to connector MC135 terminal F and to connector MC134 terminal 1 OK.
Wire 1435B from LED #1 lamp to connector MC134 terminal 2 and to connector MC131 terminal C OK.

POSSIBLE PROBLEMS

21.

Does interface operate?

NO → Faulty not corrected. Notify DS Maintenance.

YES → Fault corrected.

TEST OPTIONS

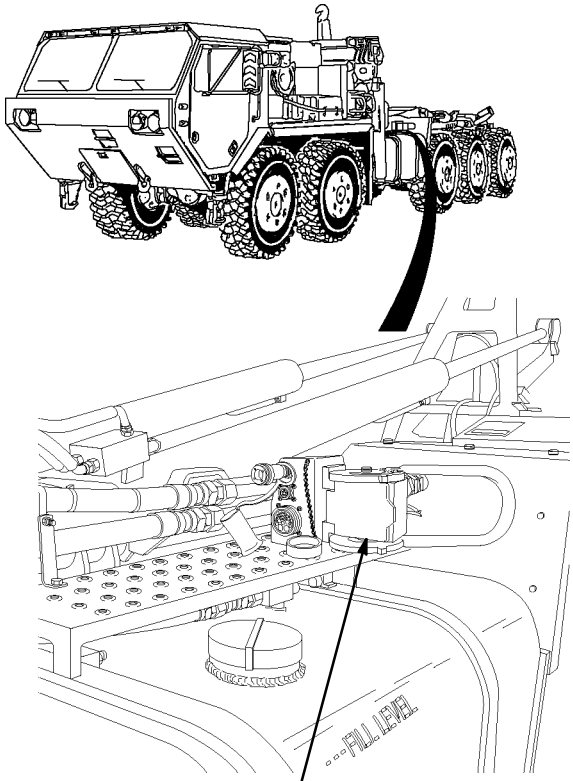
Verify repair.

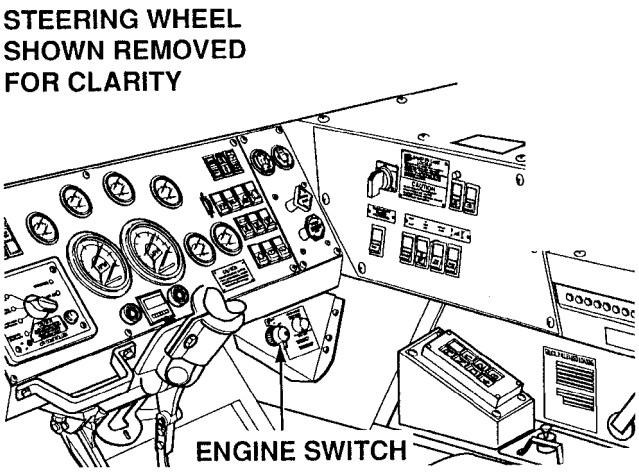
REASON FOR QUESTION

If interface operates, fault has been corrected. ←

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.





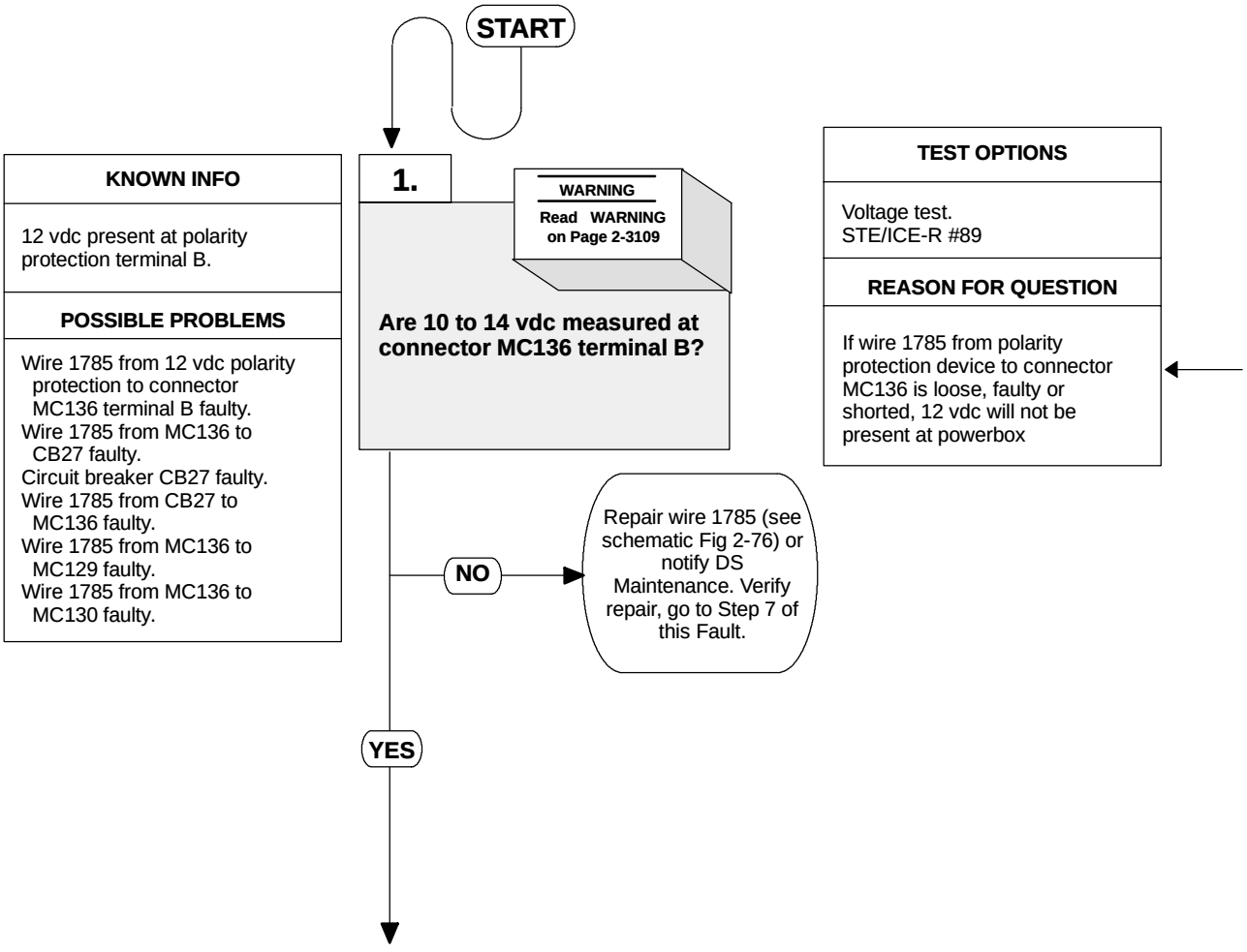
2-37. INTERFACE TROUBLESHOOTING (CONT)

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)

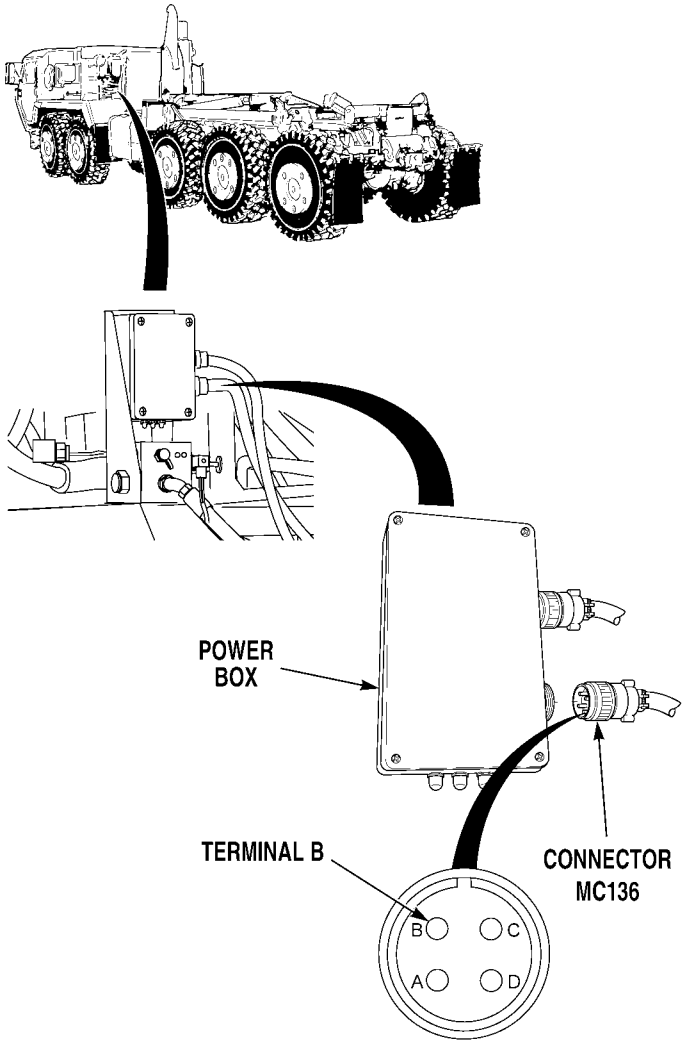


WARNING

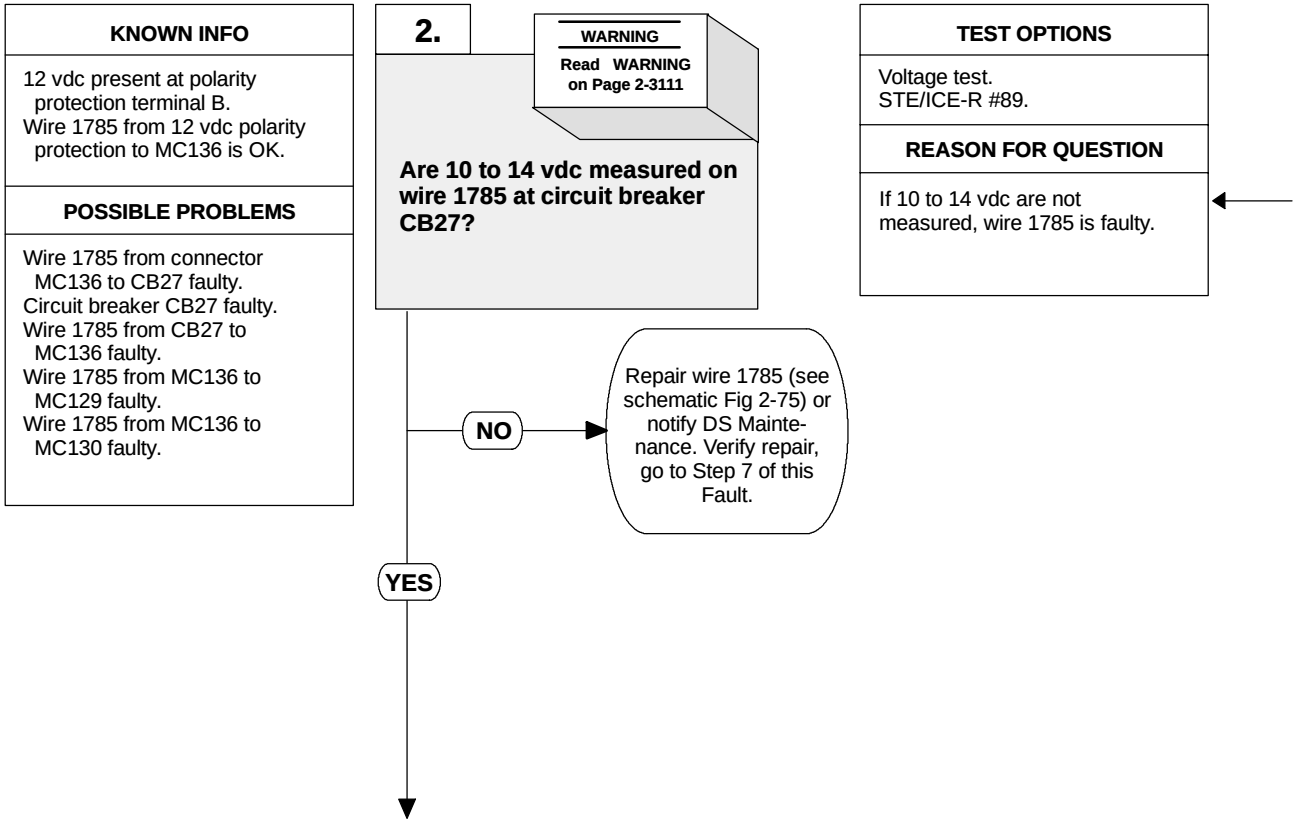
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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.



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

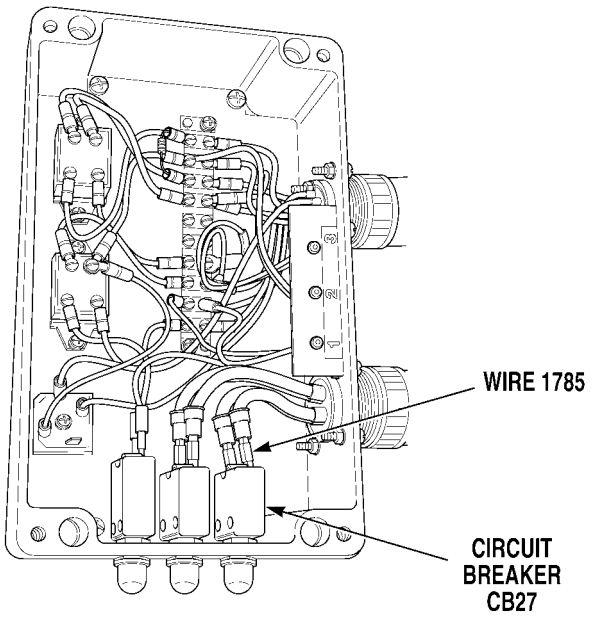


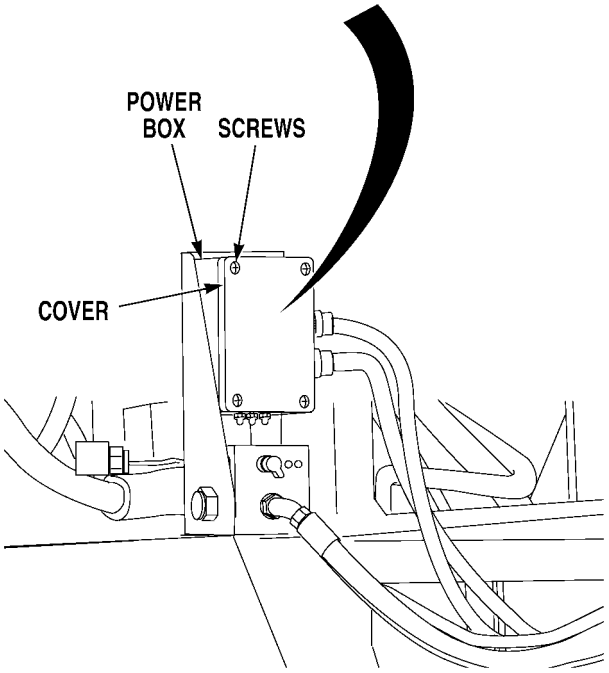
WARNING

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.

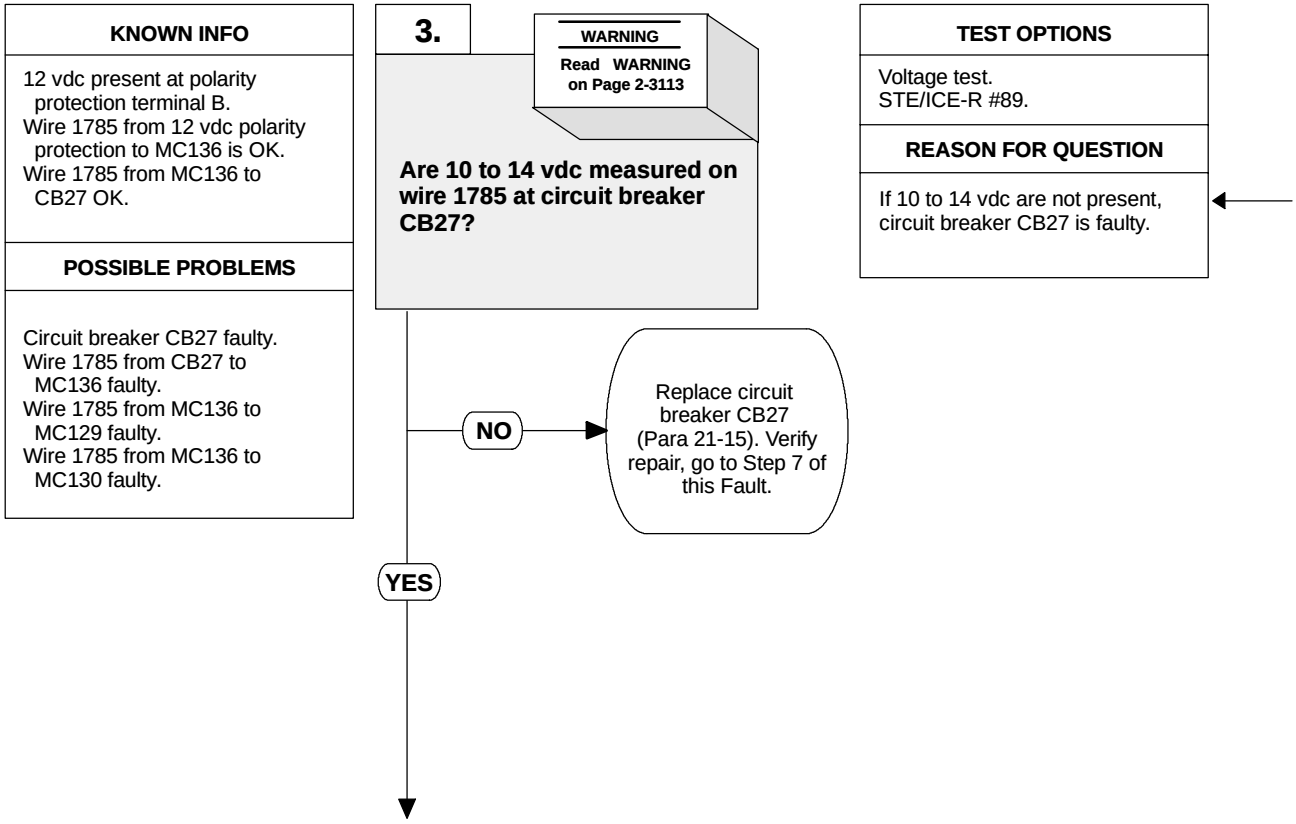
VOLTAGE TEST

(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).

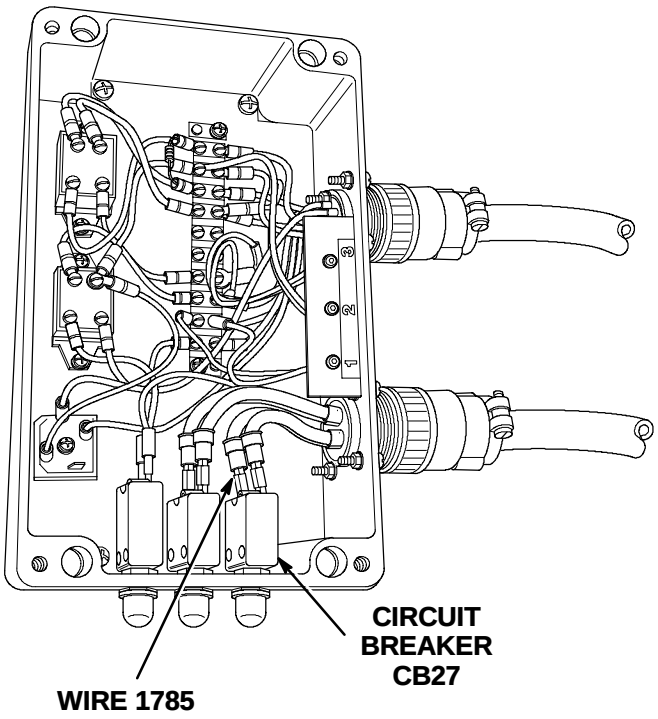


WARNING

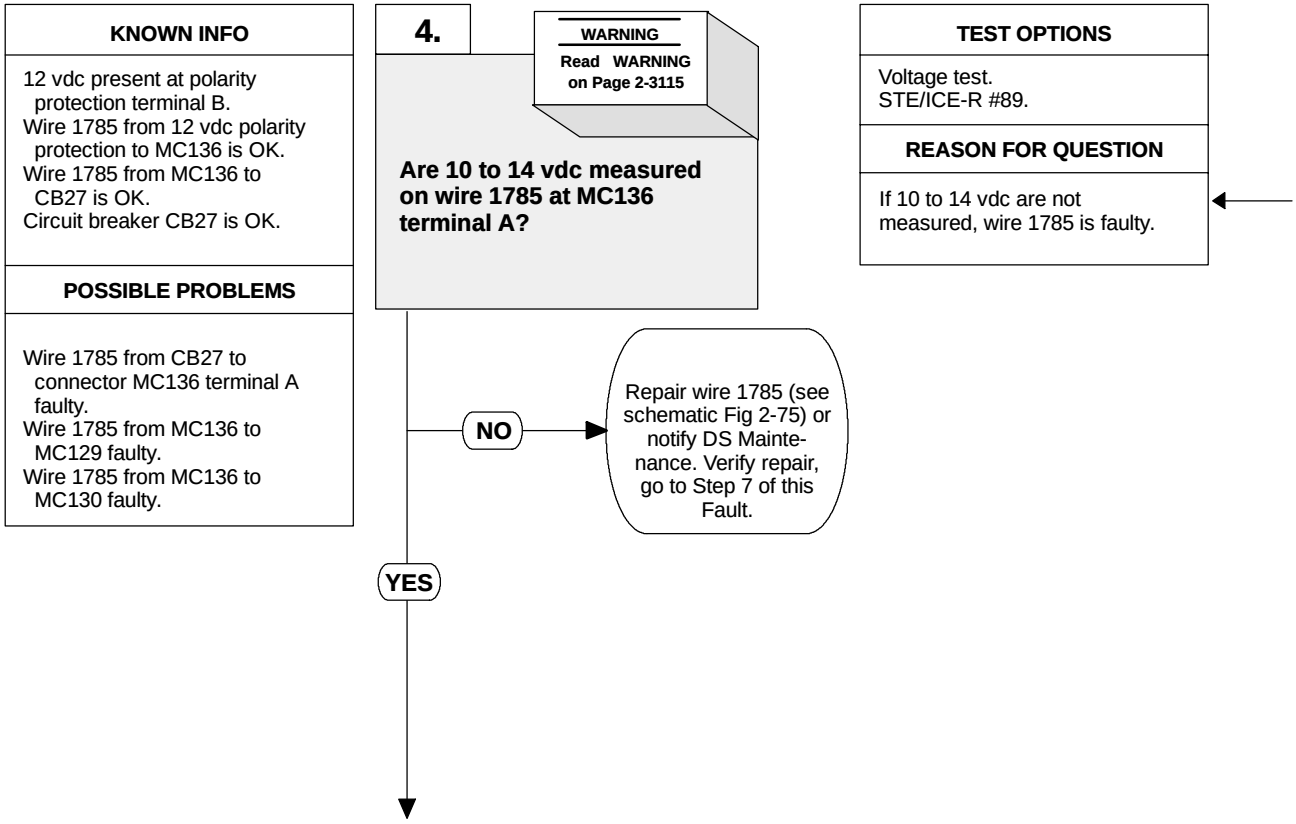
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

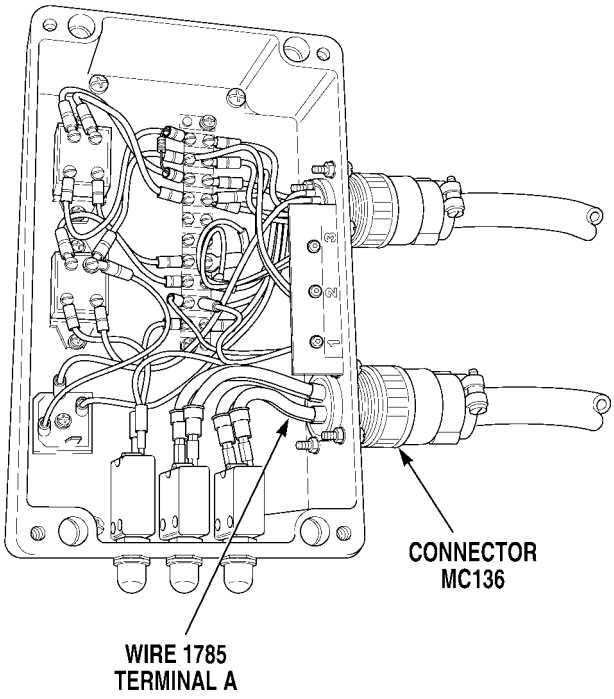


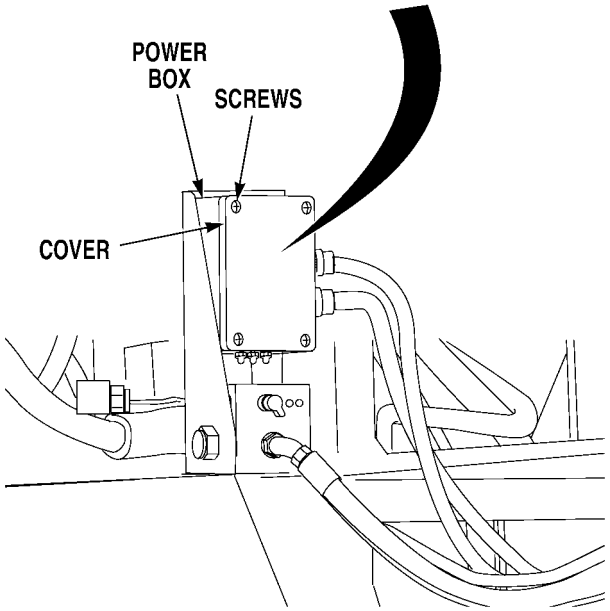
WARNING

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.

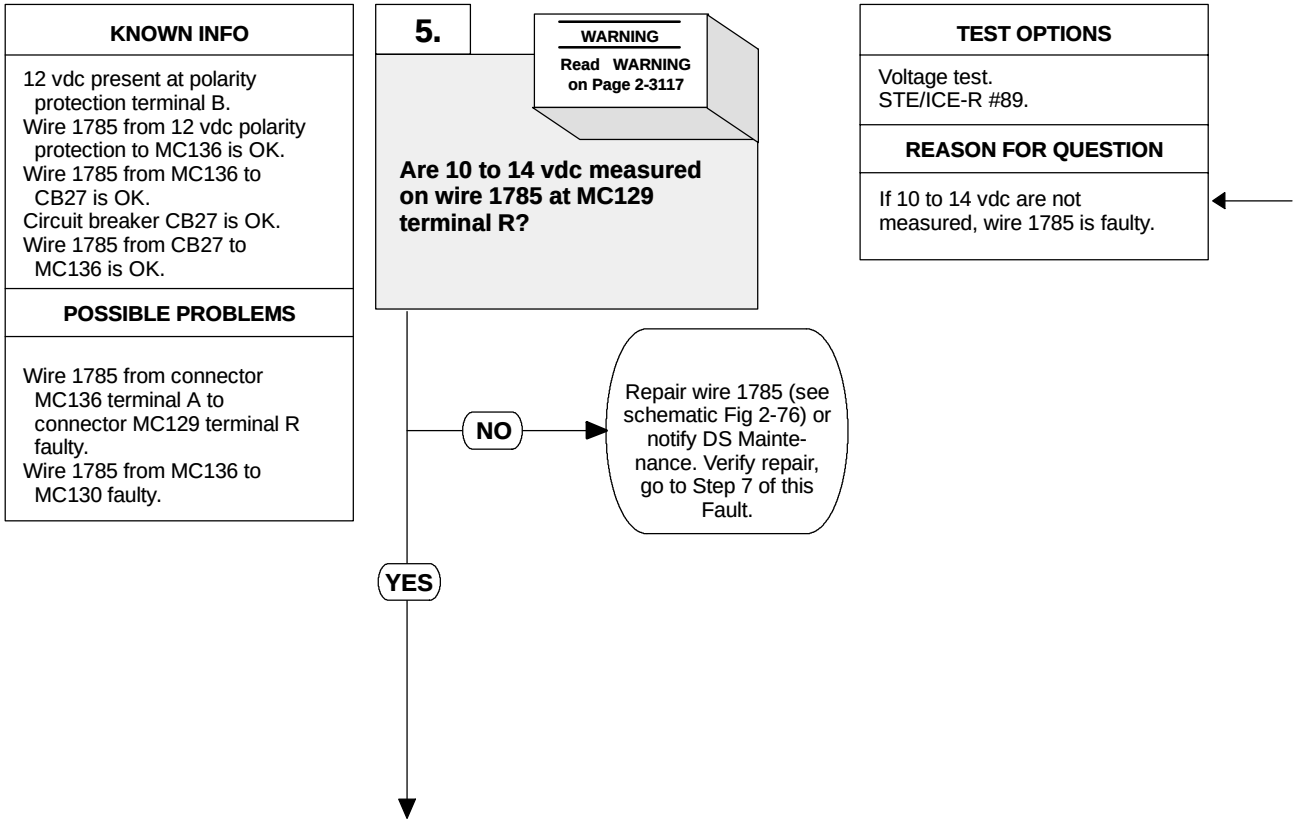
VOLTAGE TEST

(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).

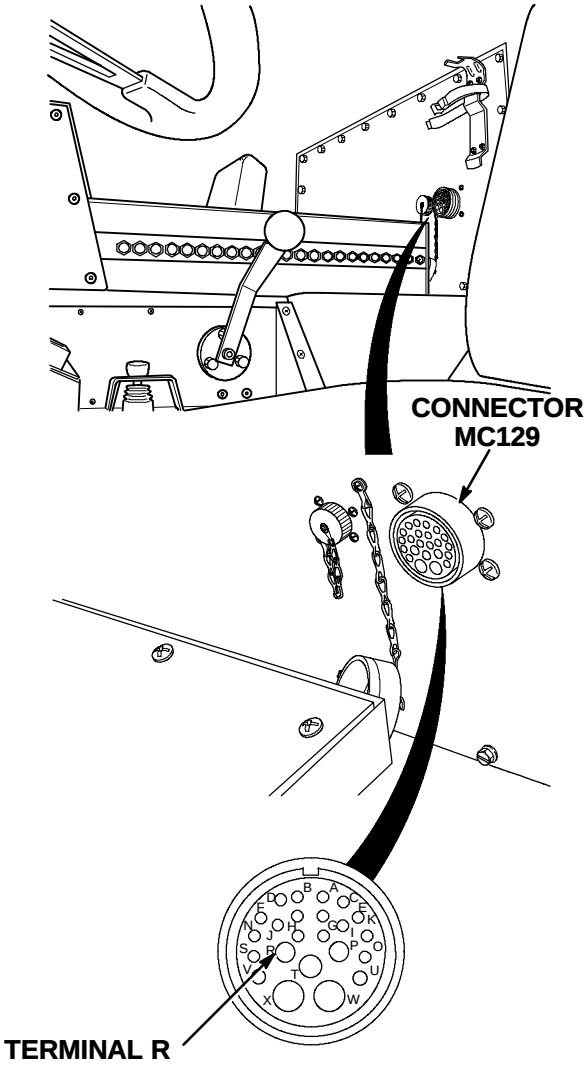


WARNING

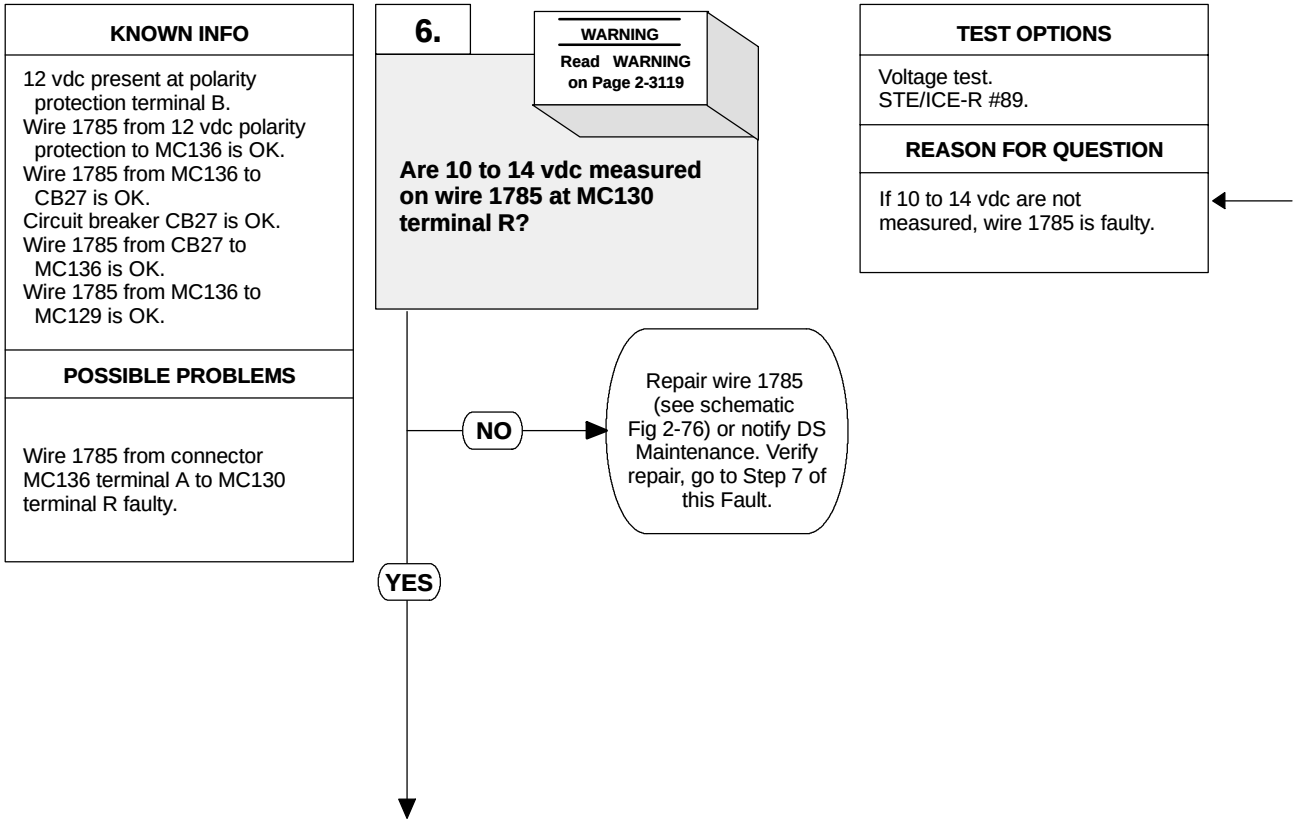
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

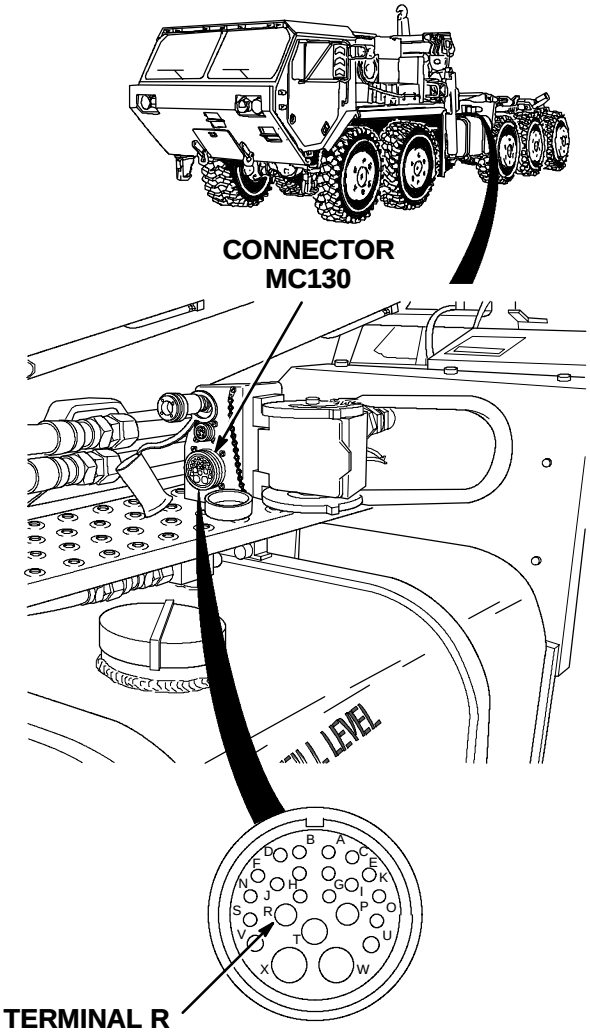


WARNING

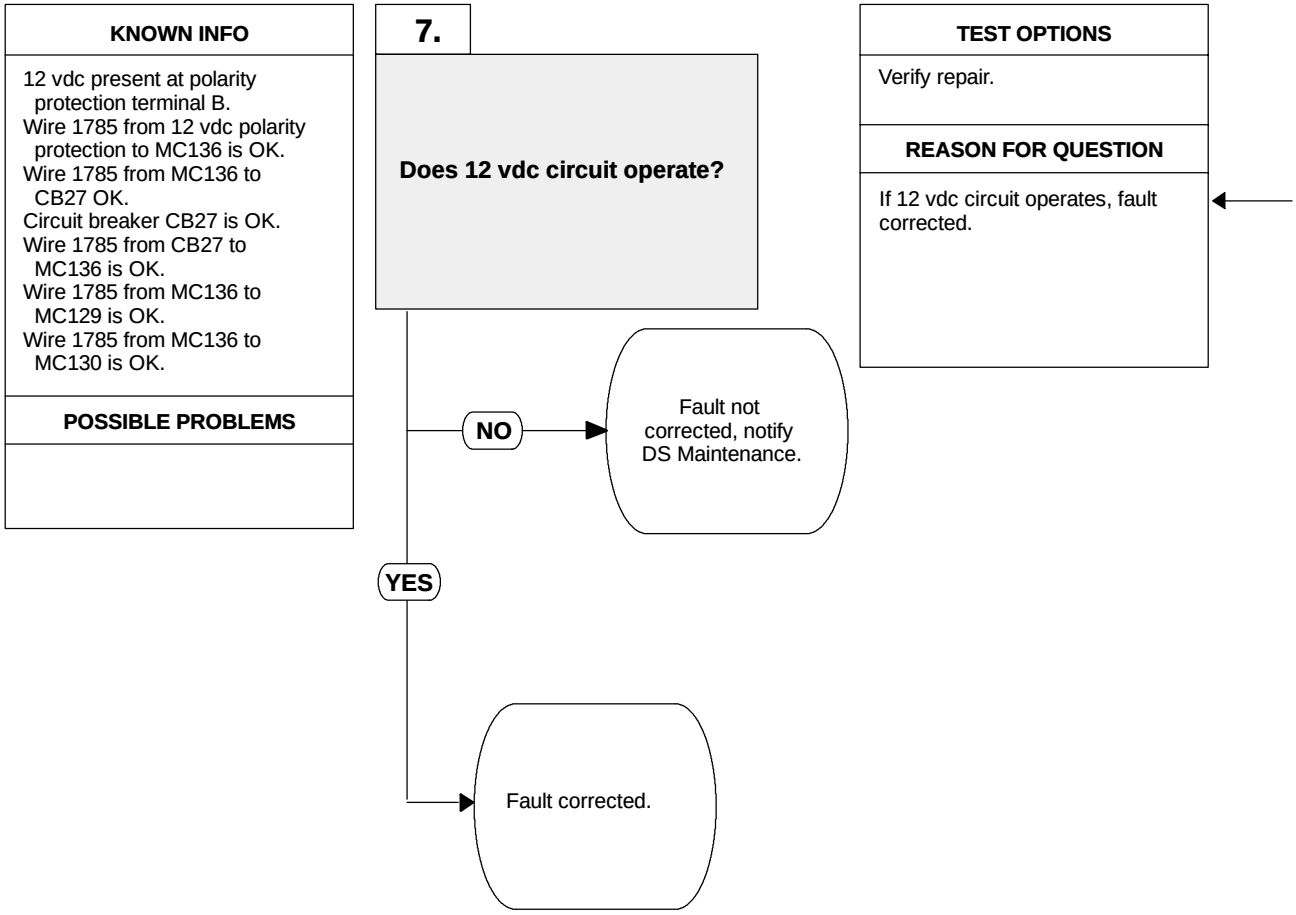
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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.



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.

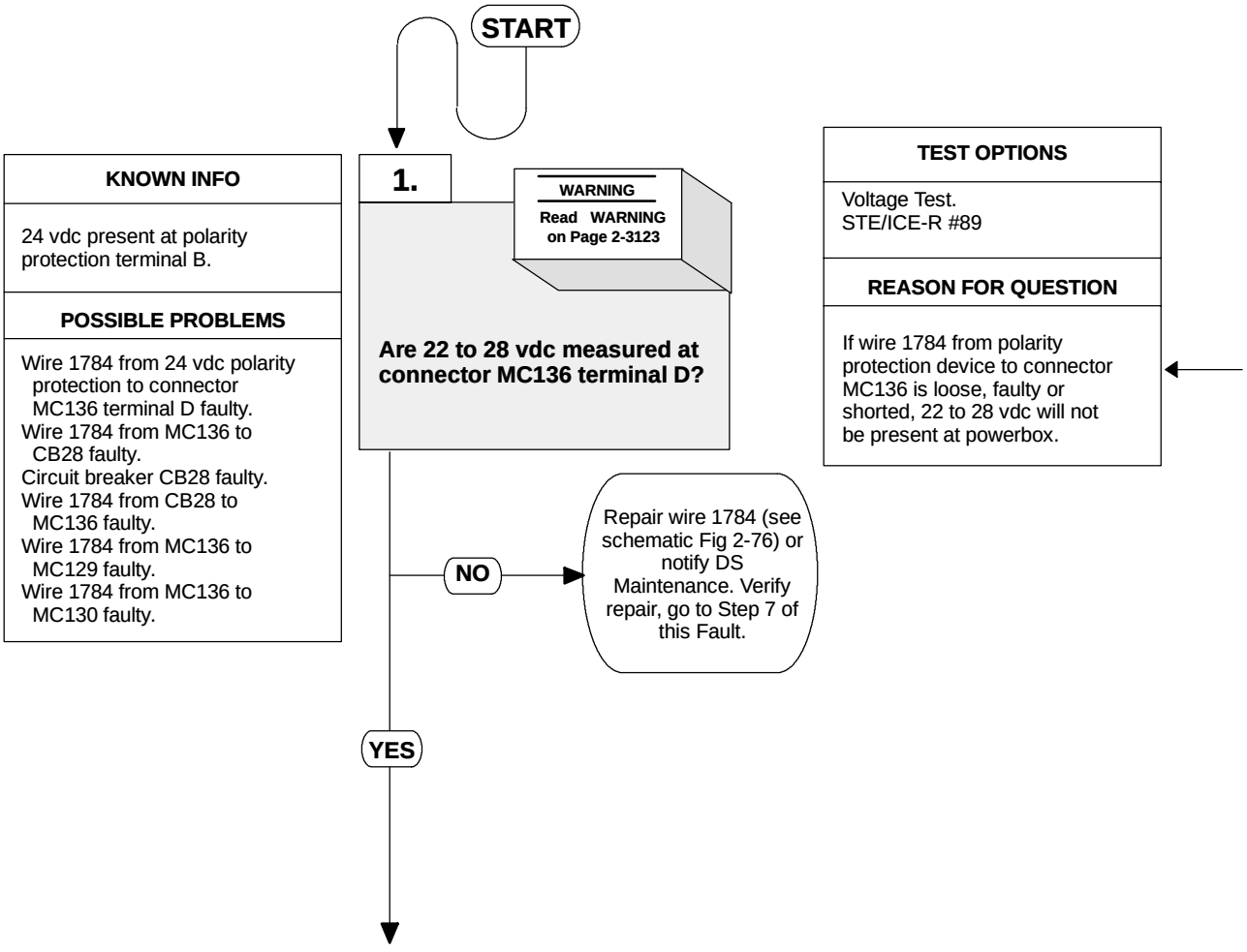
2-37. INTERFACE TROUBLESHOOTING (CONT)

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)

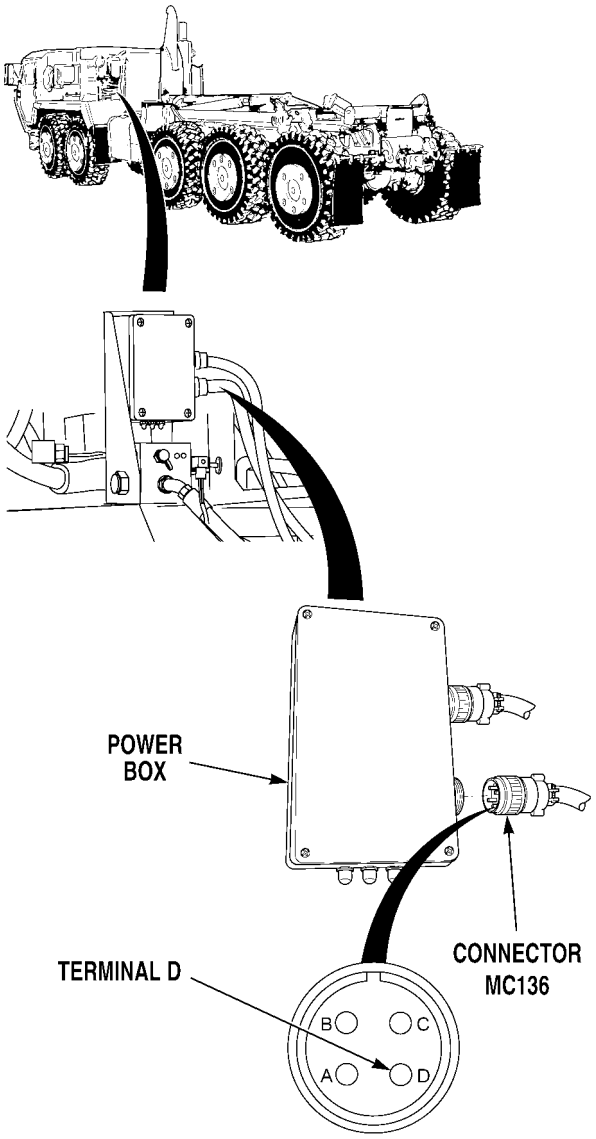


WARNING

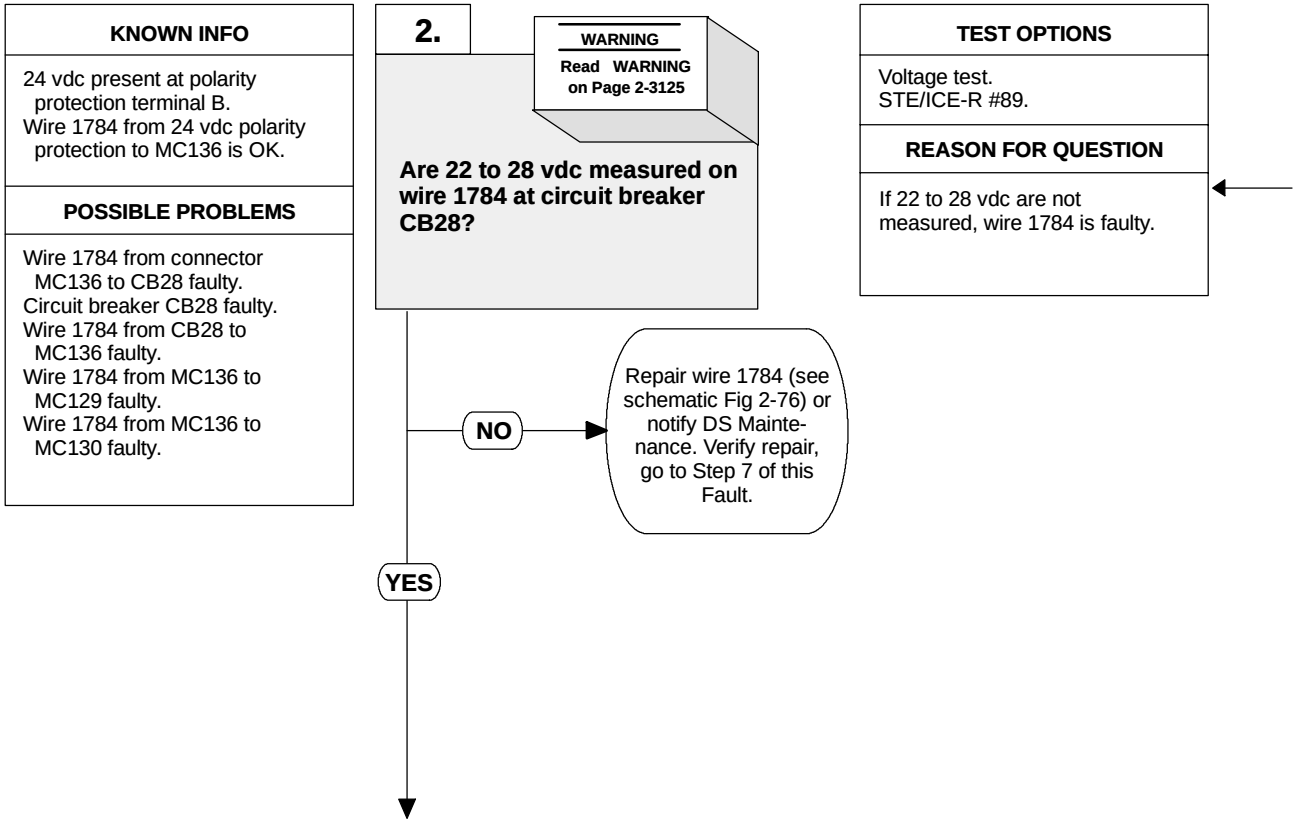
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

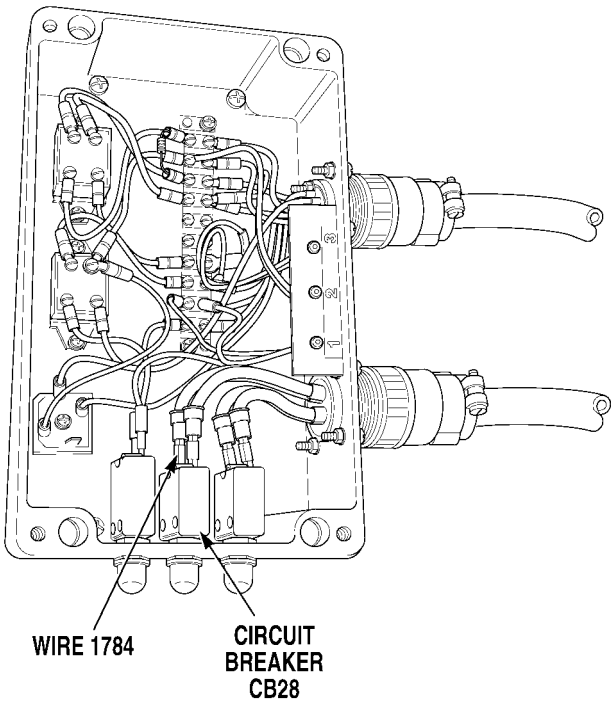


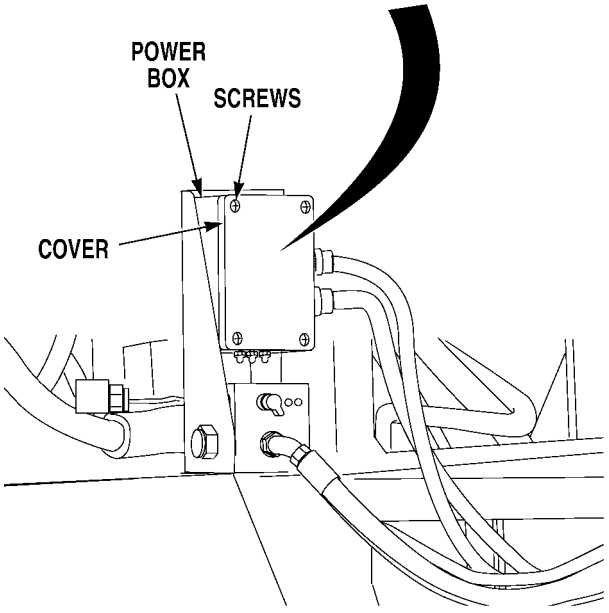
WARNING

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.

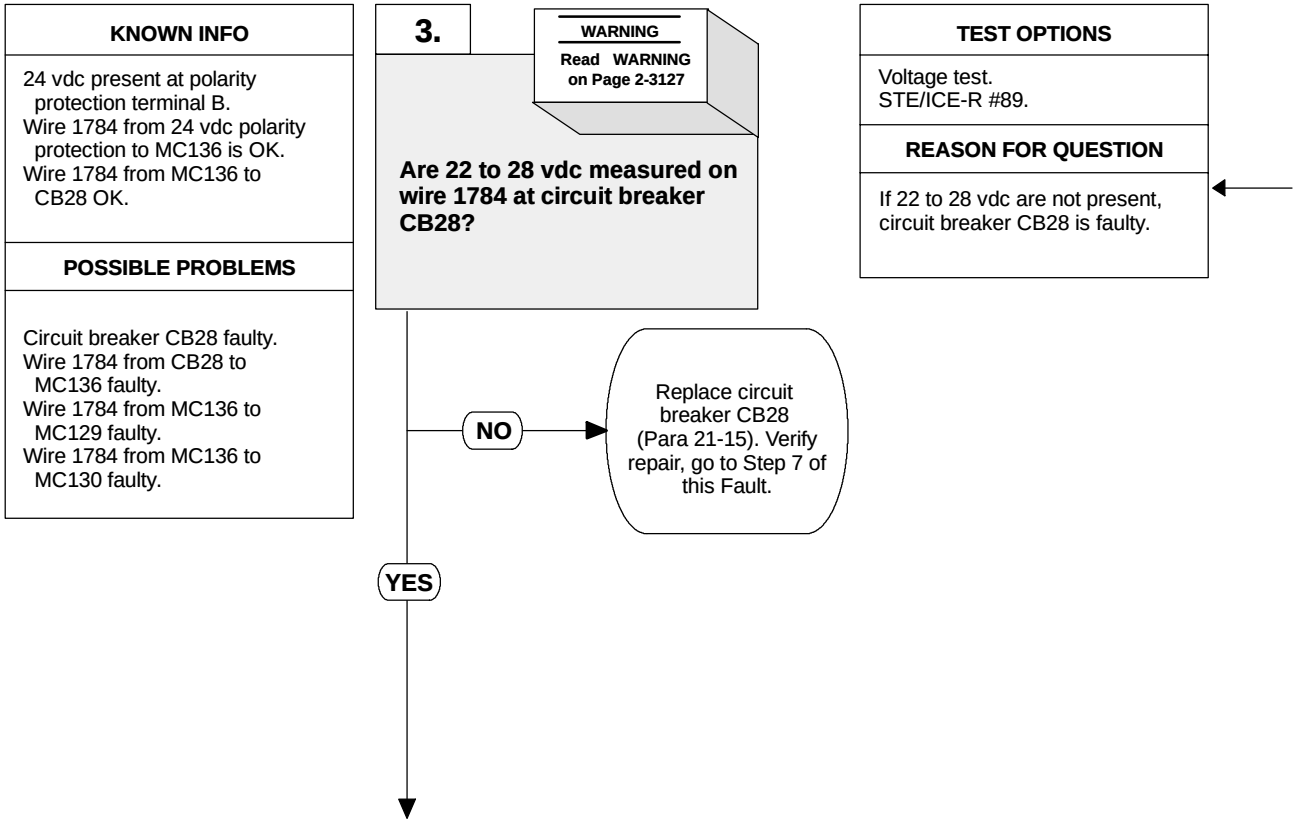
VOLTAGE TEST

(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).

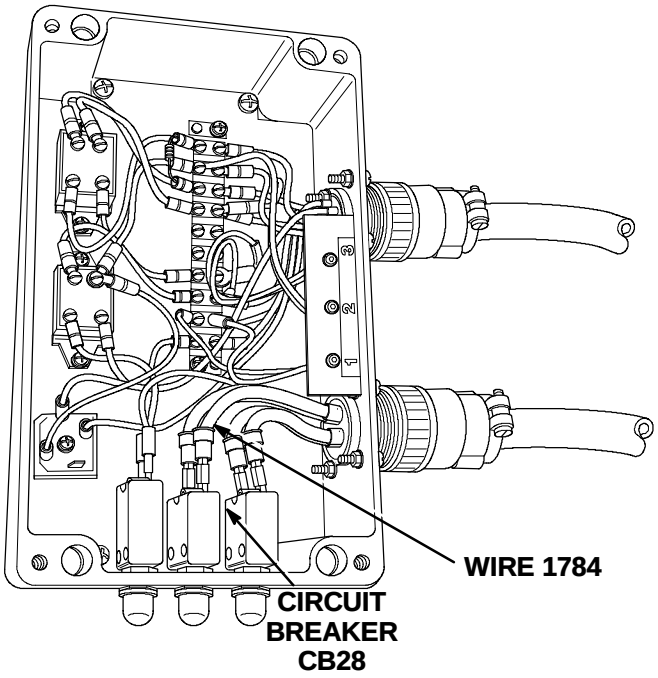


WARNING

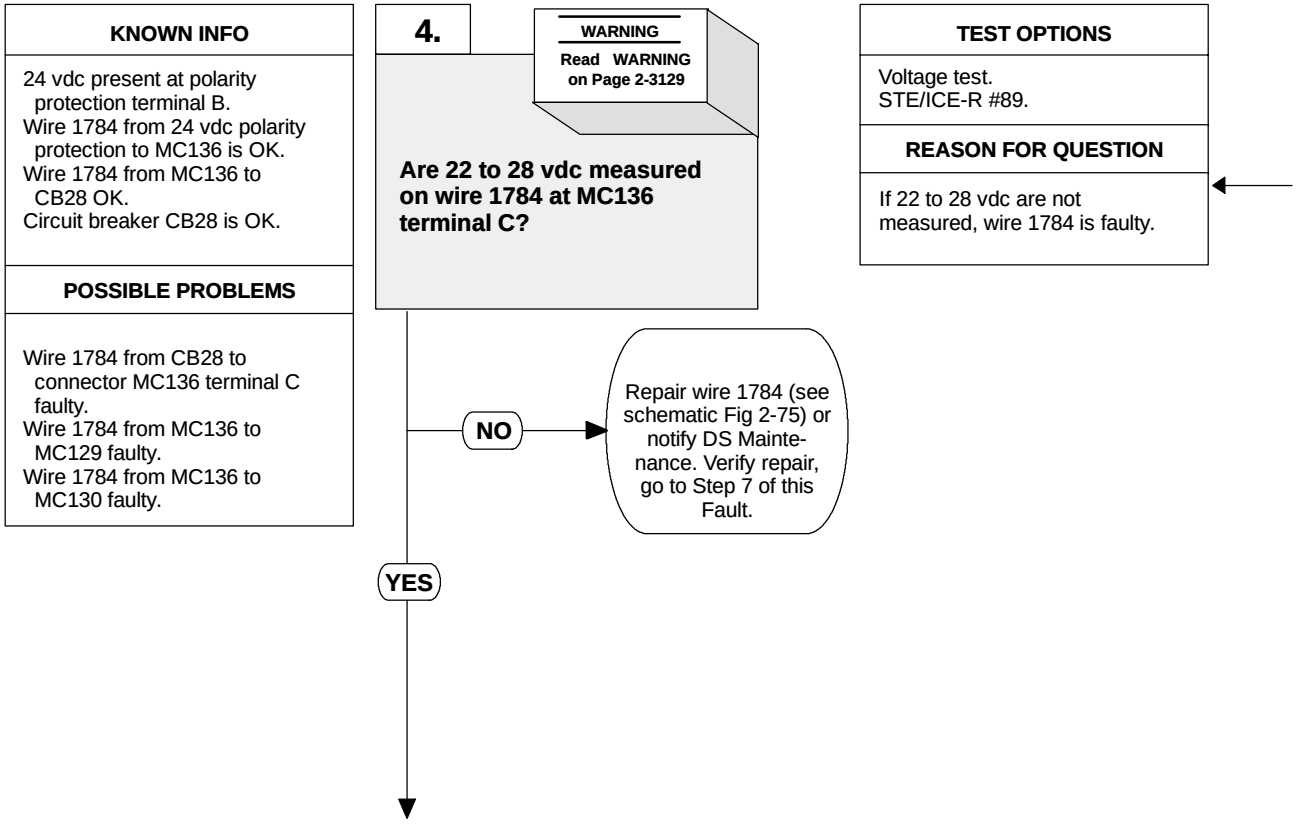
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

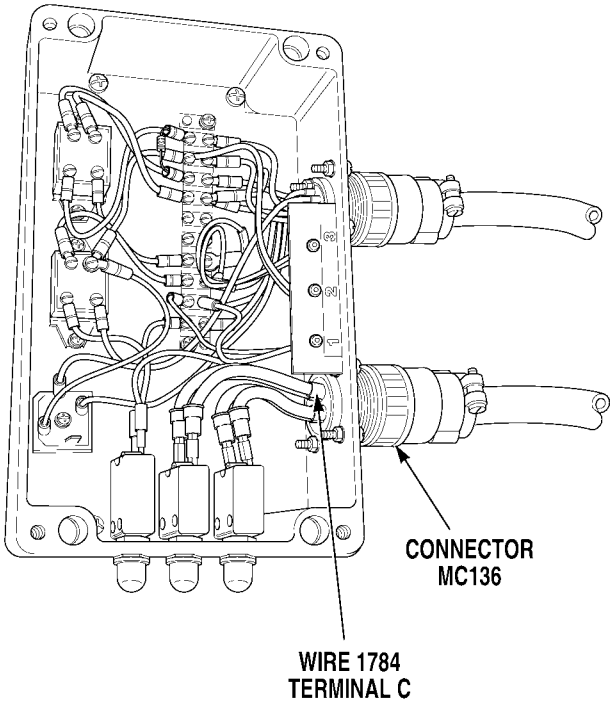


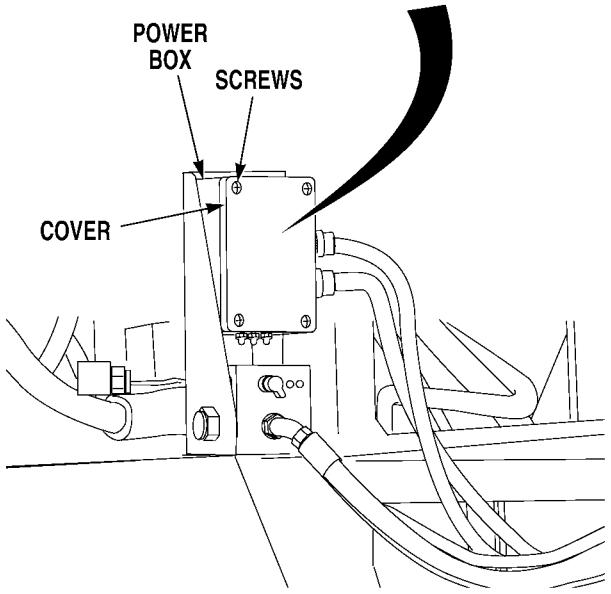
WARNING

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.

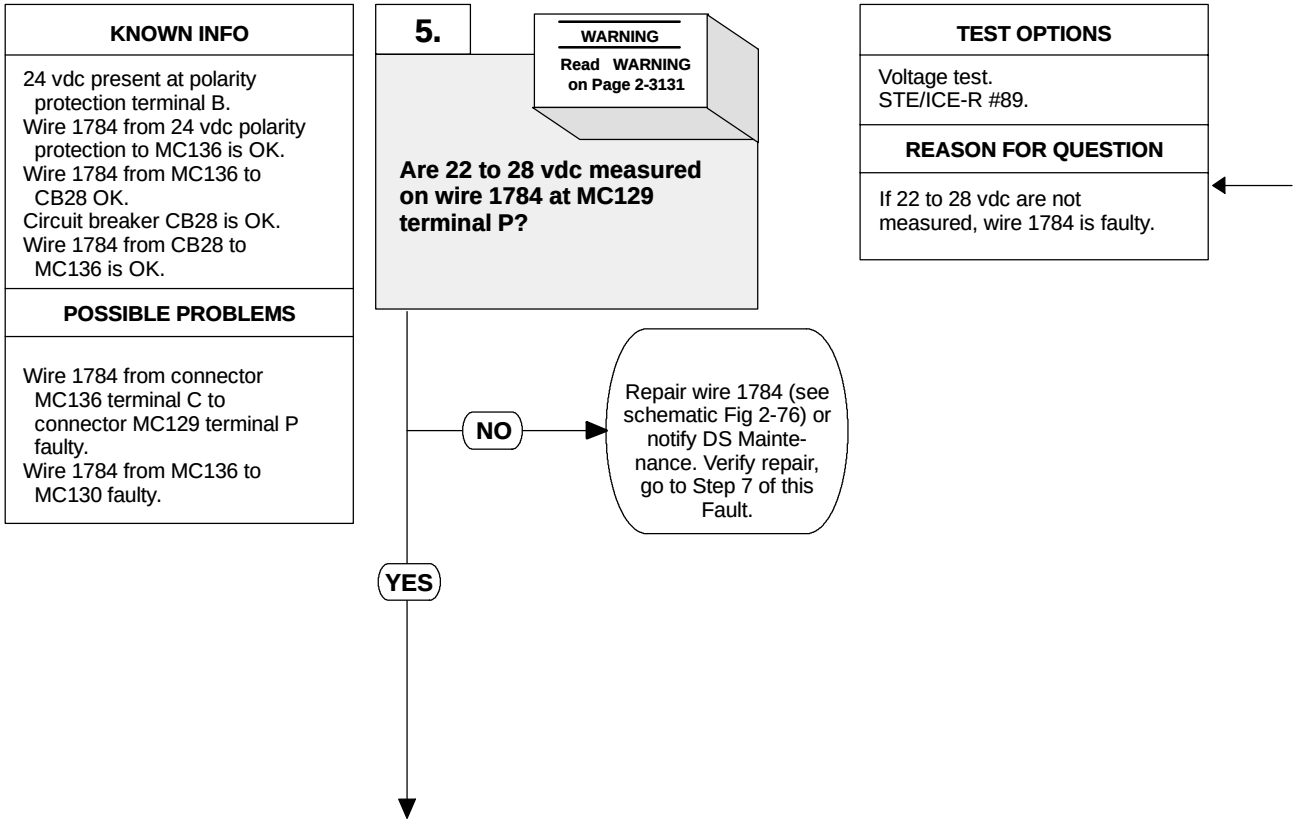
VOLTAGE TEST

(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).

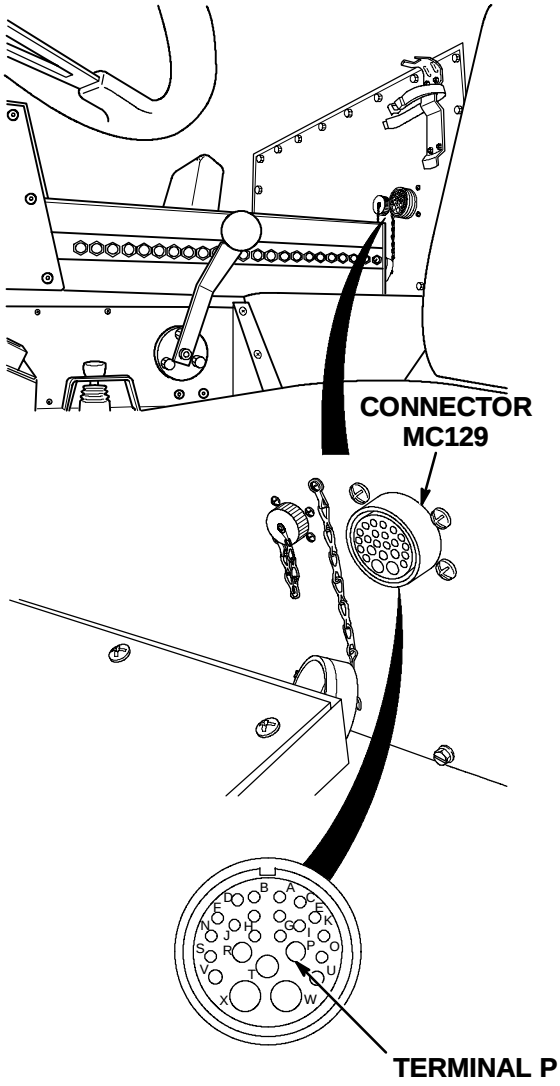


WARNING

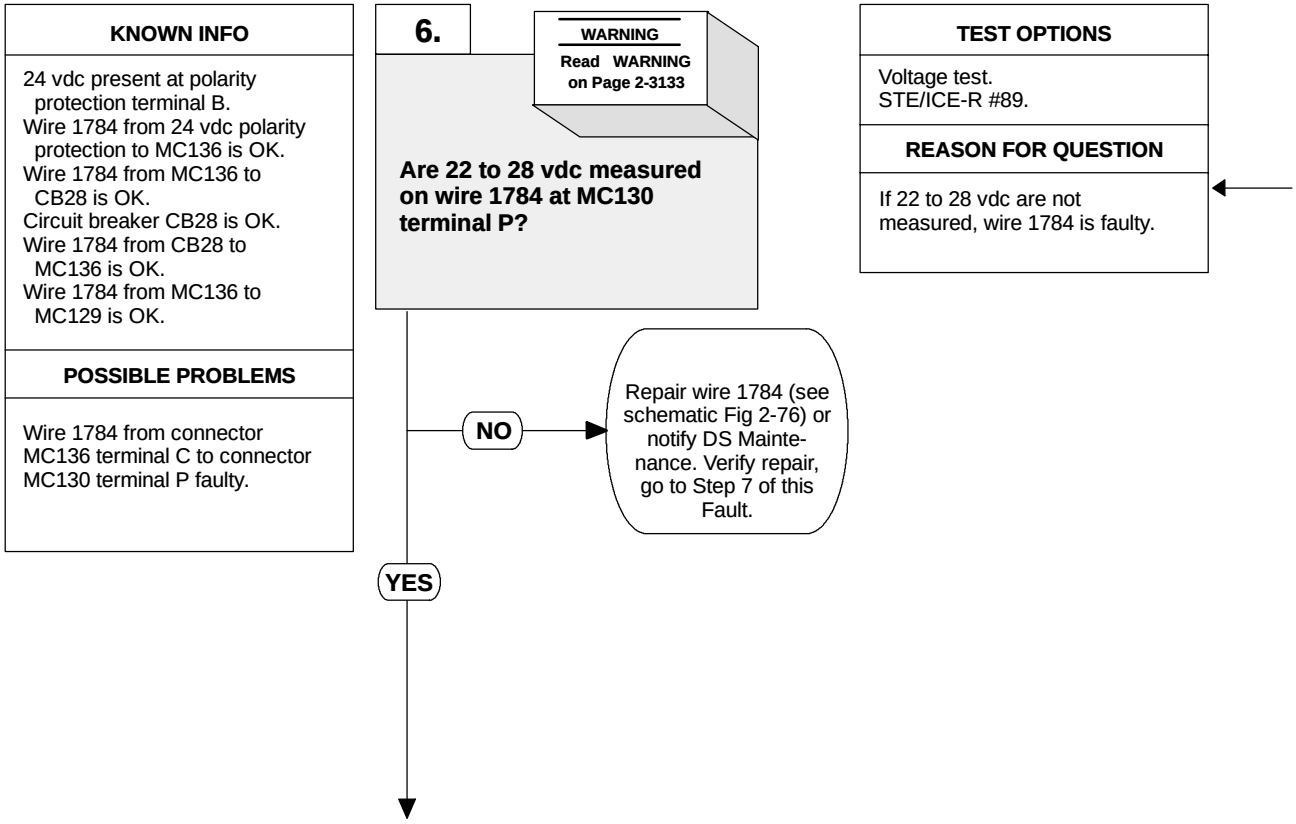
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

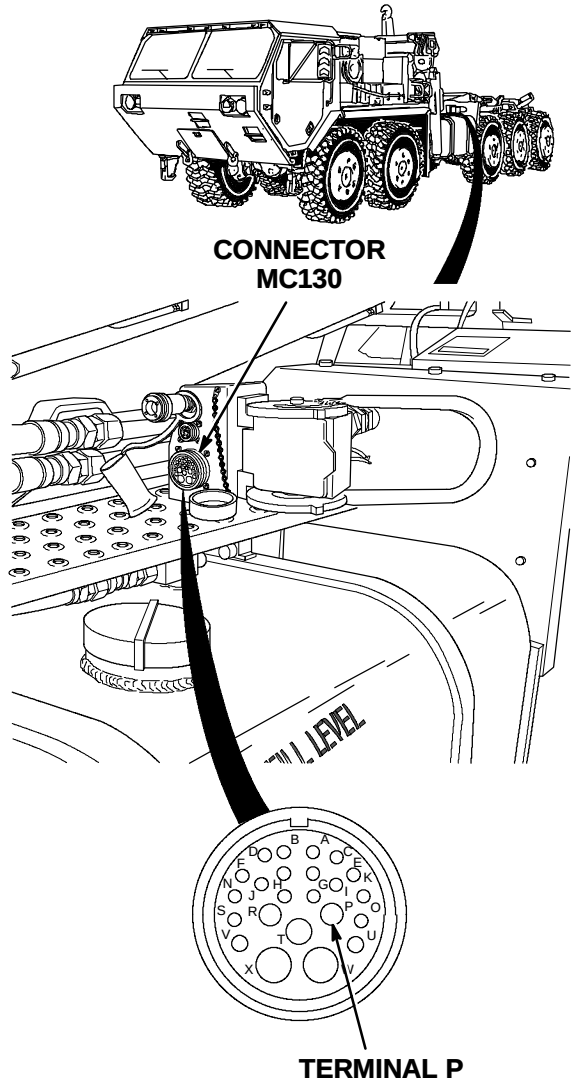


WARNING

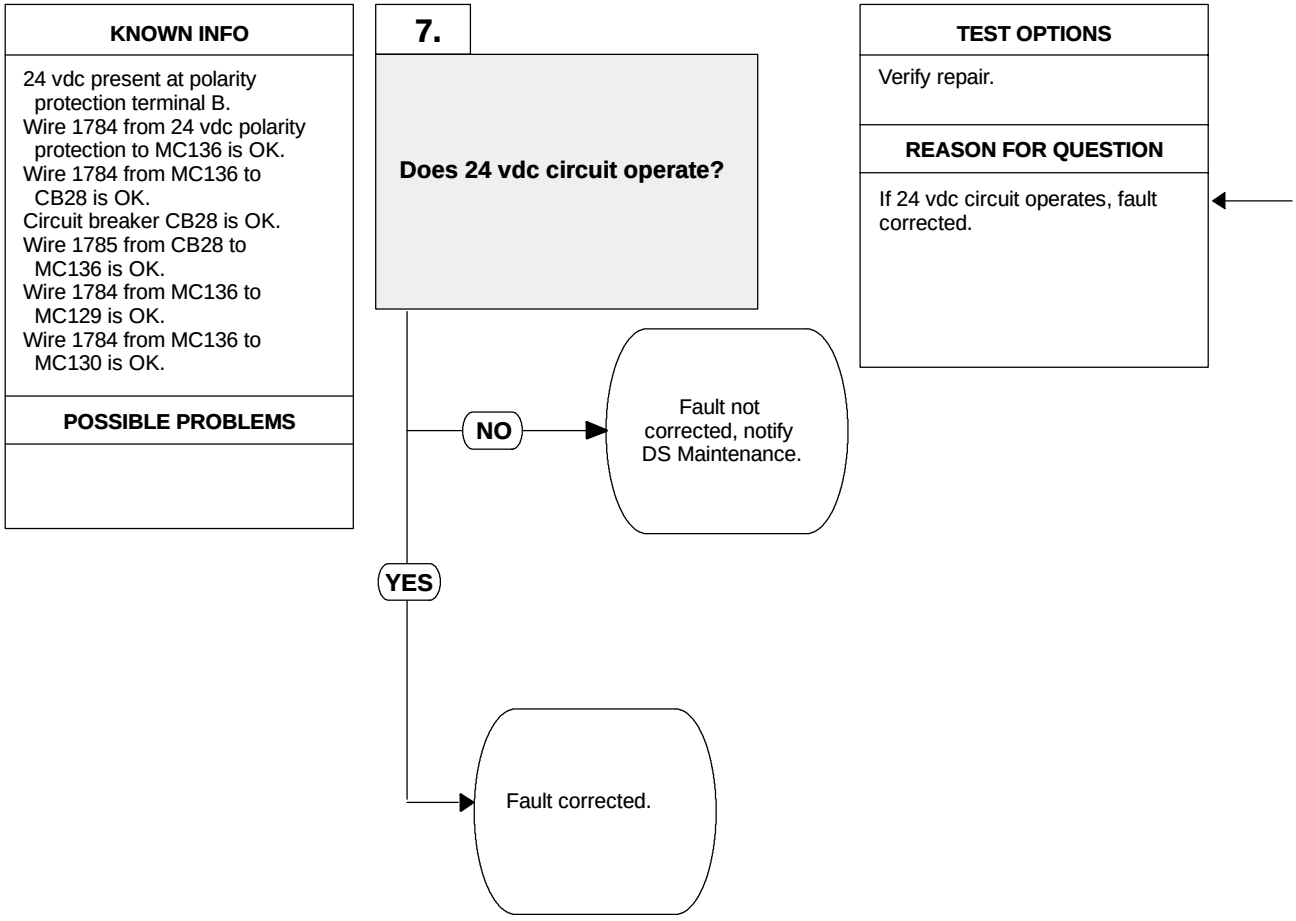
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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.



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

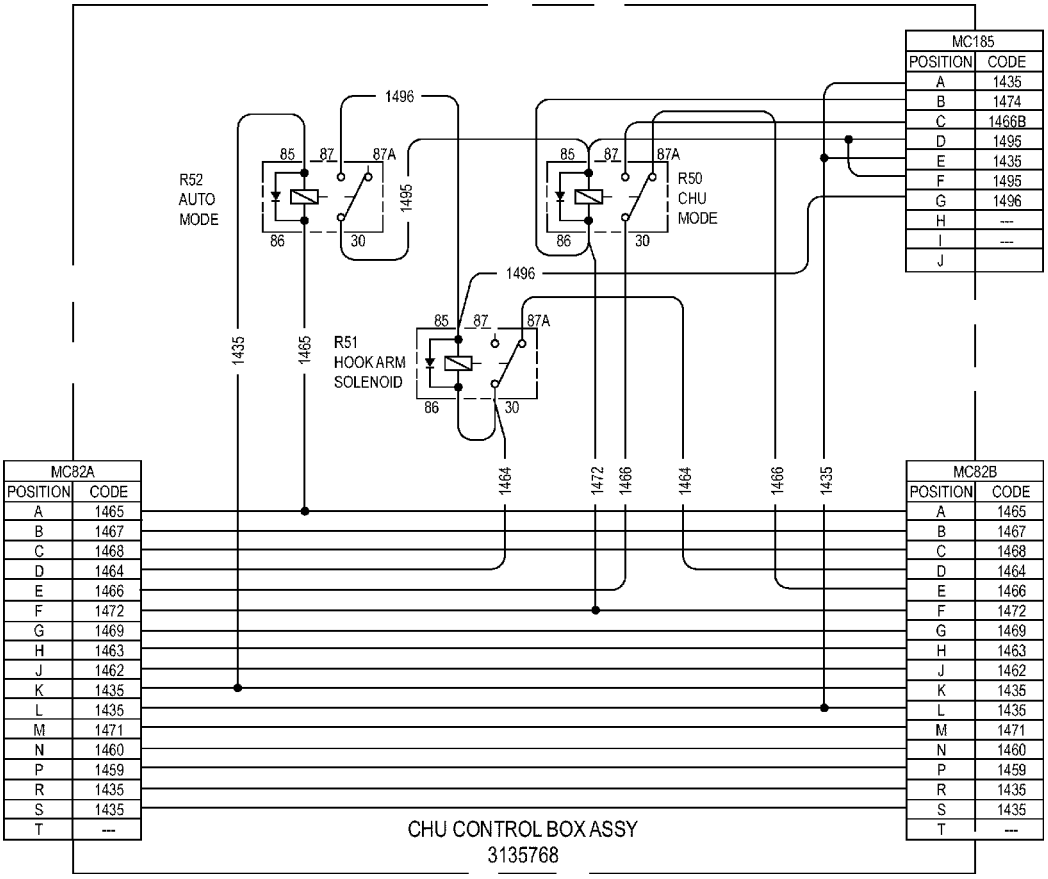


Figure 2-79. CHU Power Box Wiring Diagram

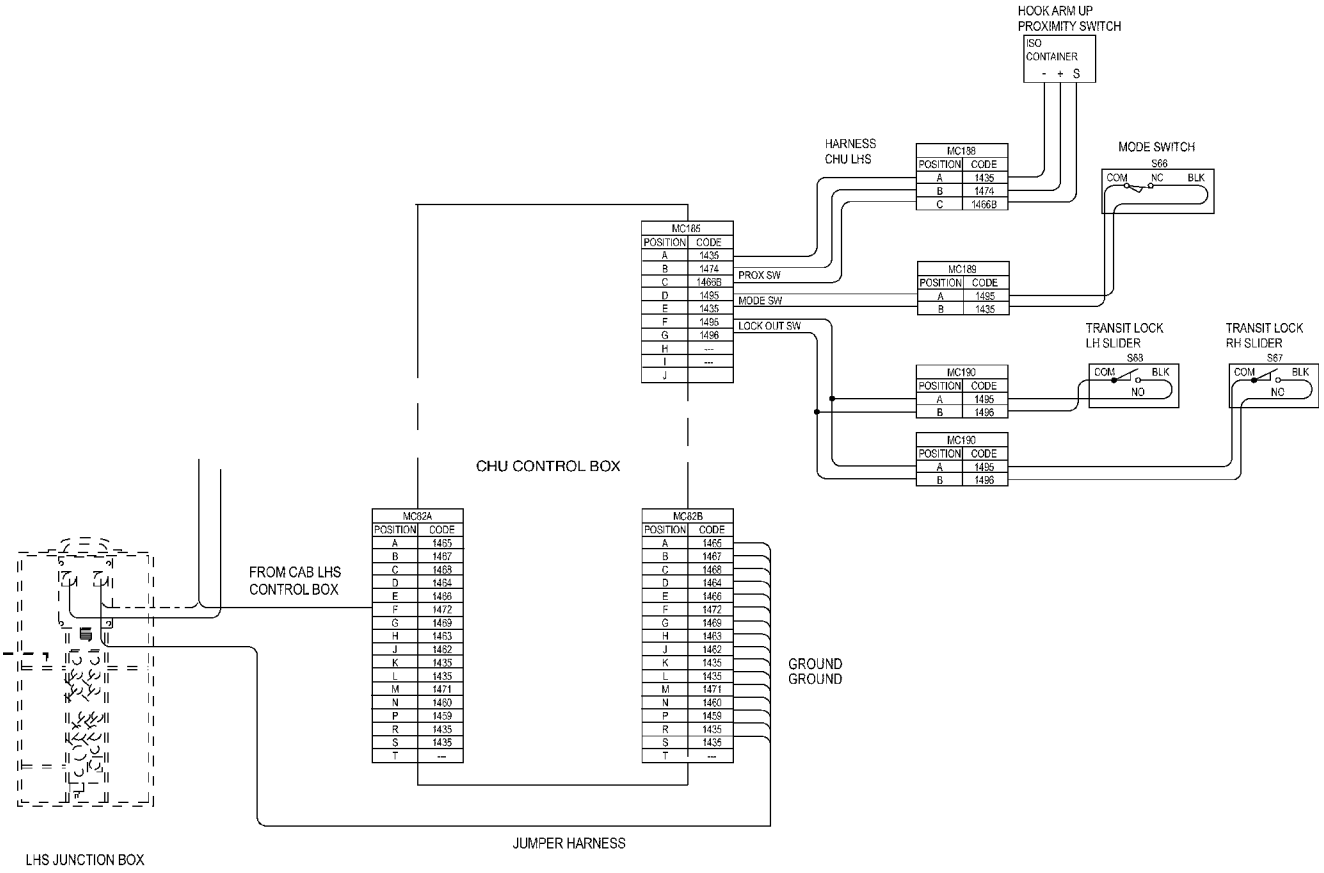


Figure 2-80. CHU Wiring Diagram

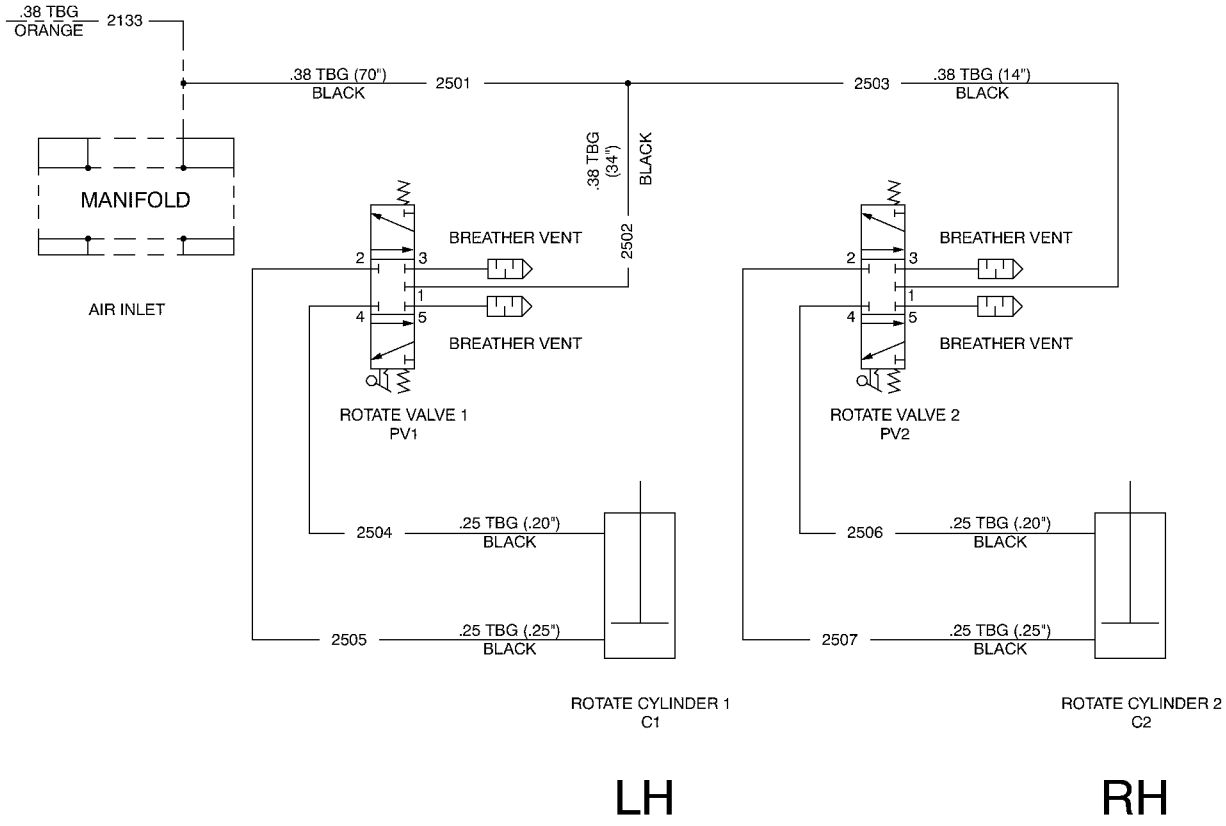


Figure 2-81. CHU Air Hose Lines Diagram

2-38. CHU TROUBLESHOOTING (CONT)

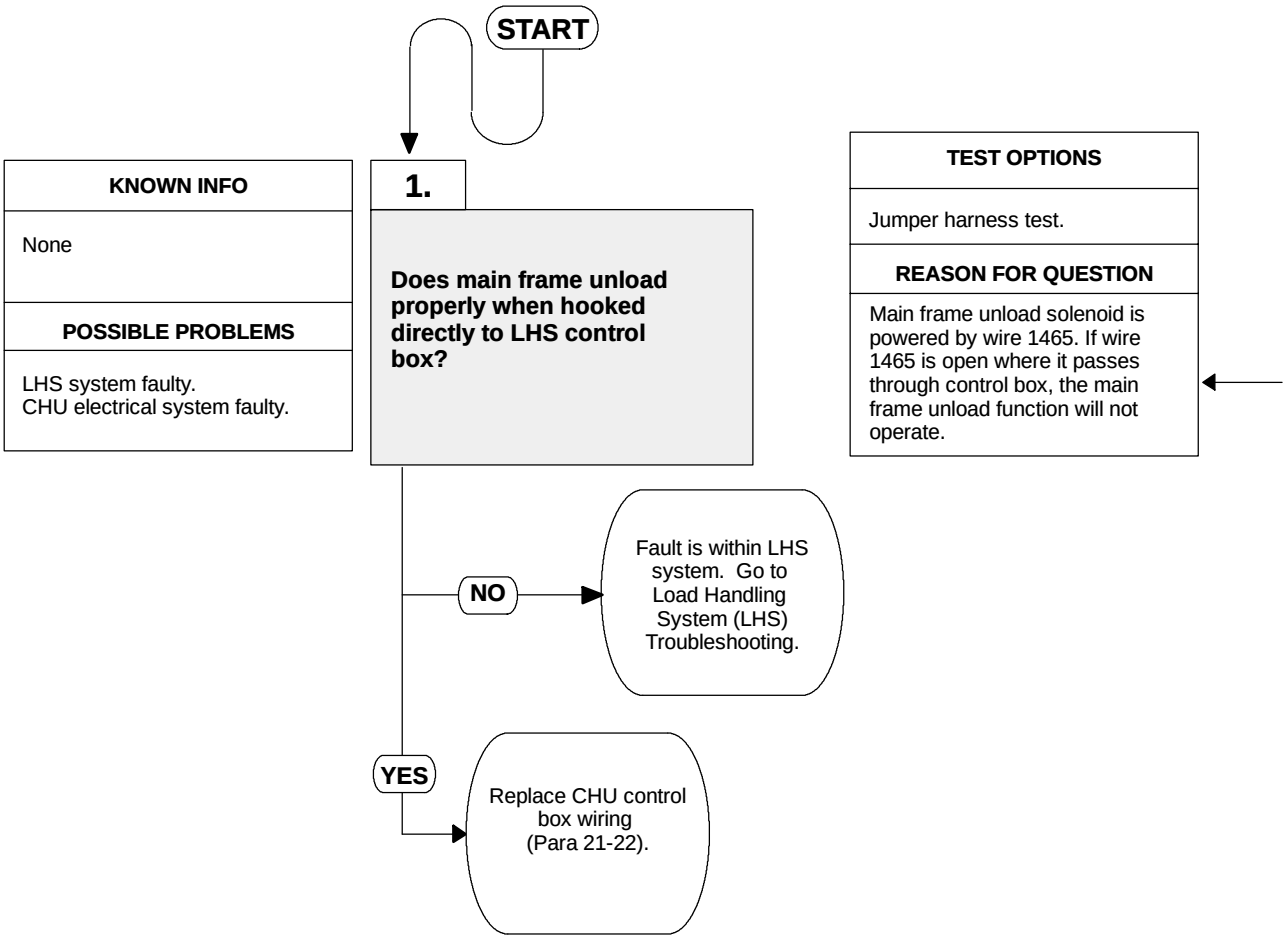
1. MAIN FRAME DOES NOT UNLOAD.

INITIAL SETUP

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

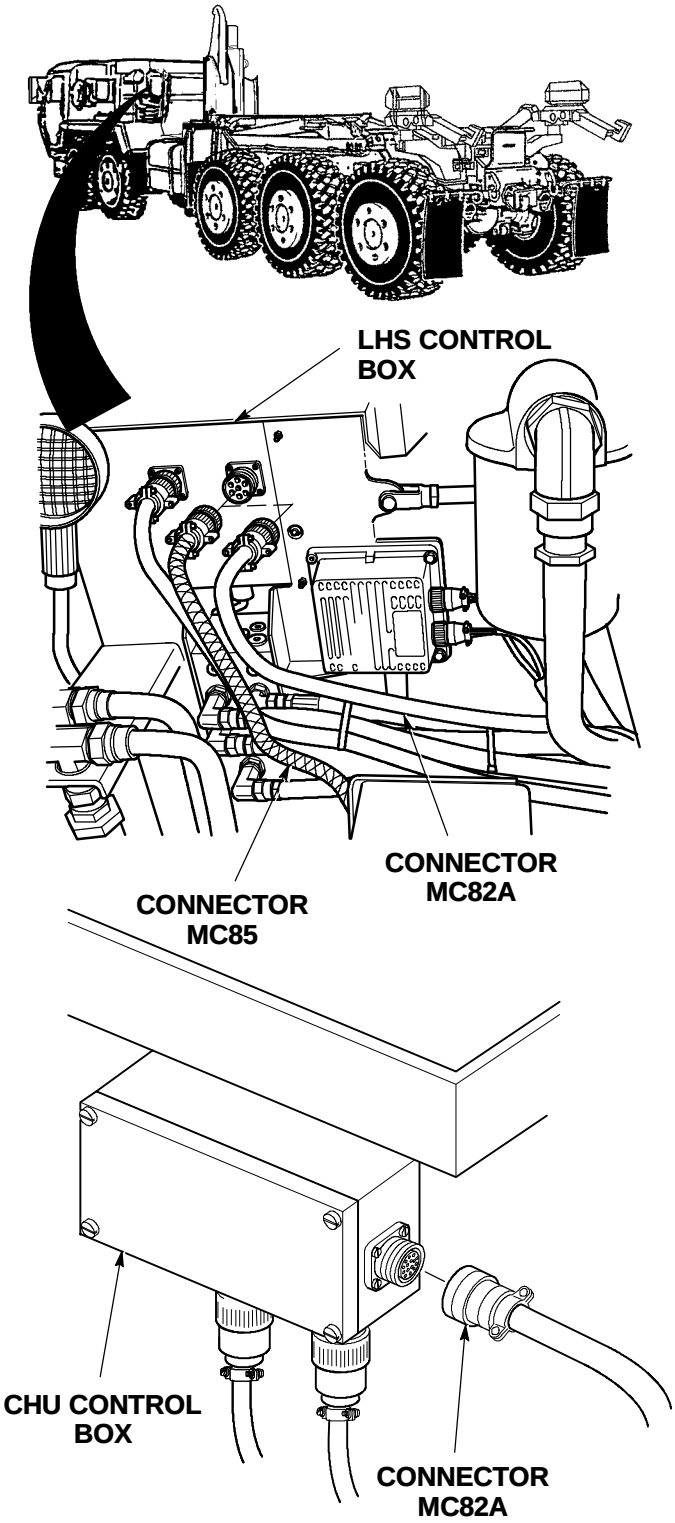
References
TM 9-2320-364-10

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.

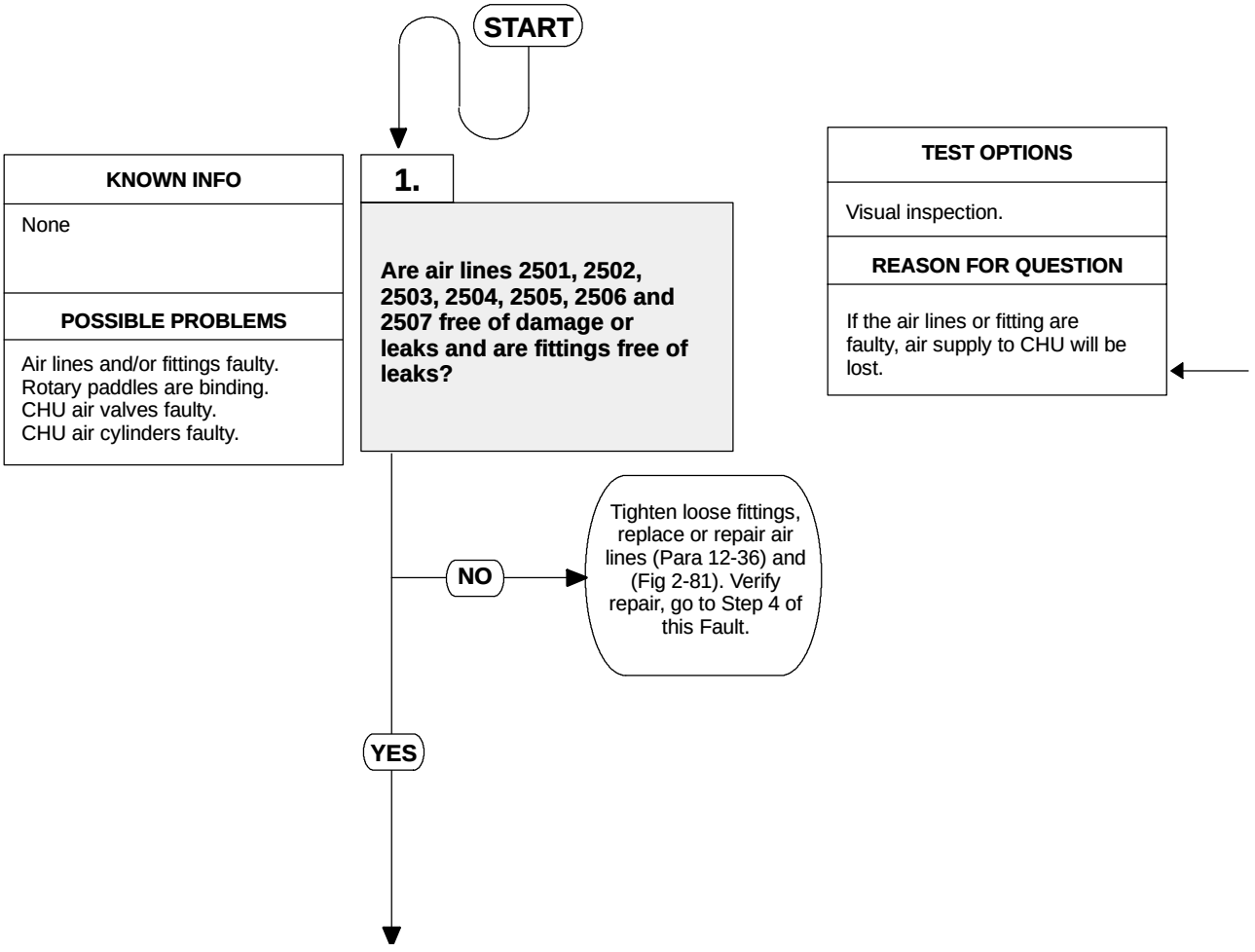
INITIAL SETUP

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

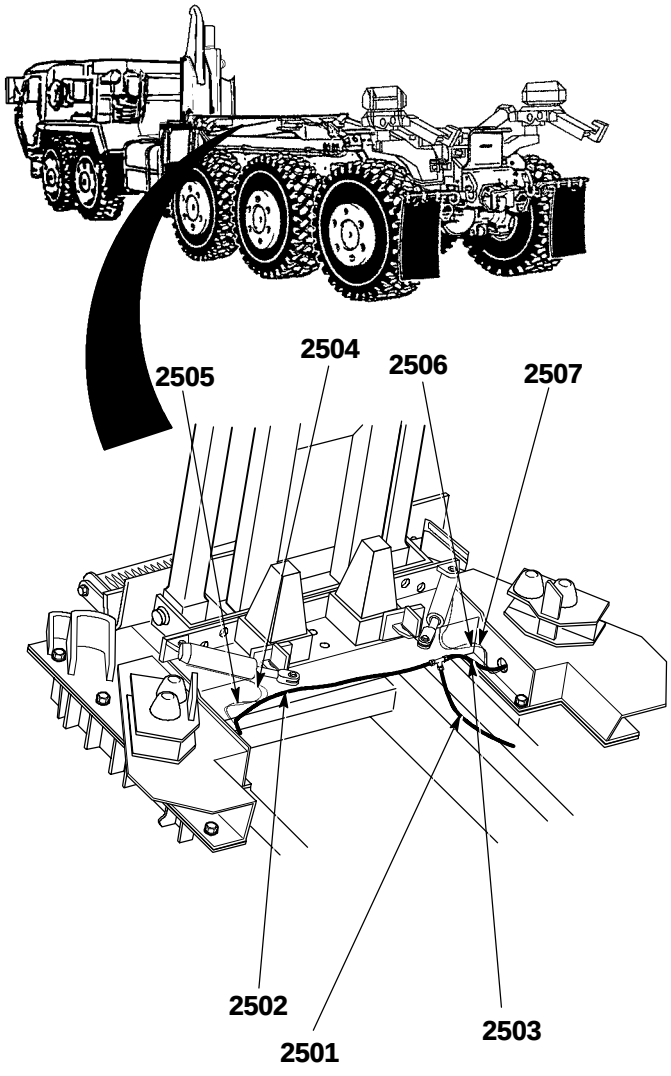
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake ON, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system charged, (TM 9-2320-364-10)
Lifting frame in container mode (TM 9-2320-364-10)
Load handling system (LHS) fully extended, (TM 9-2320-364-10)



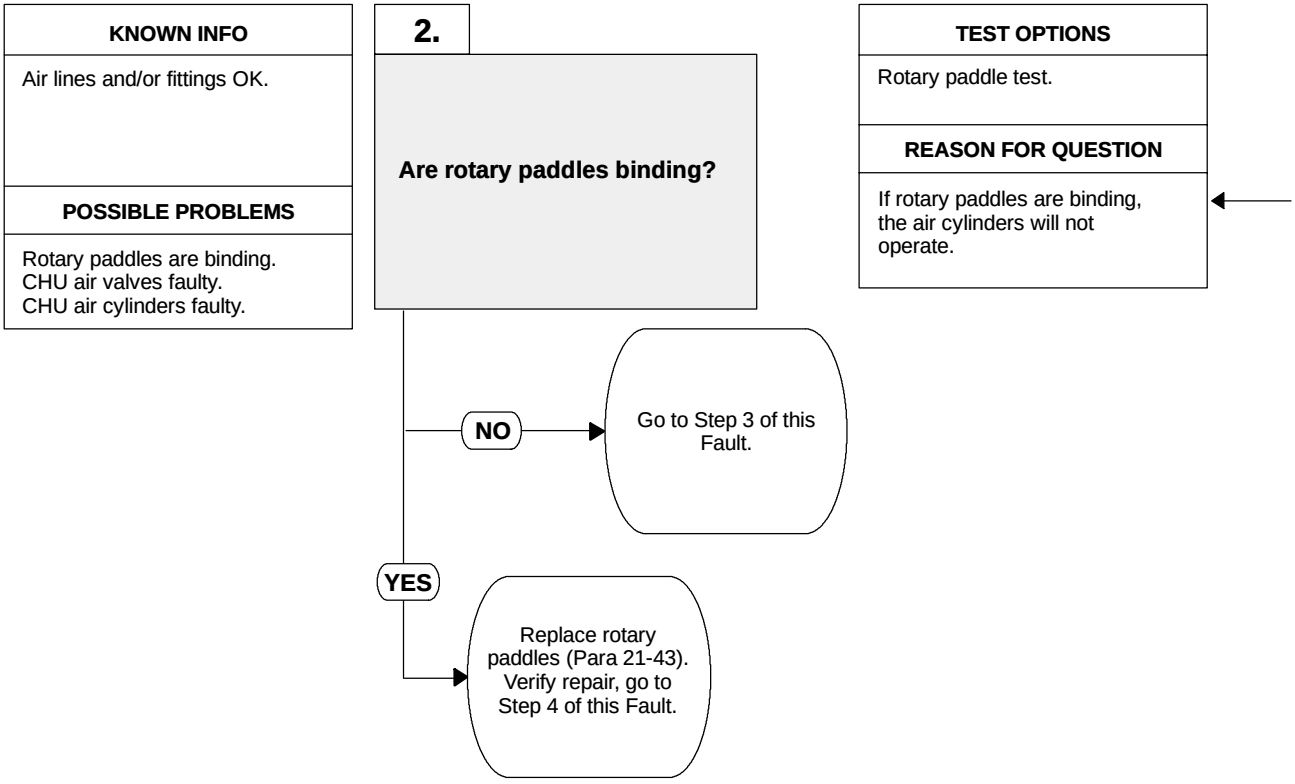
NOTE

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).

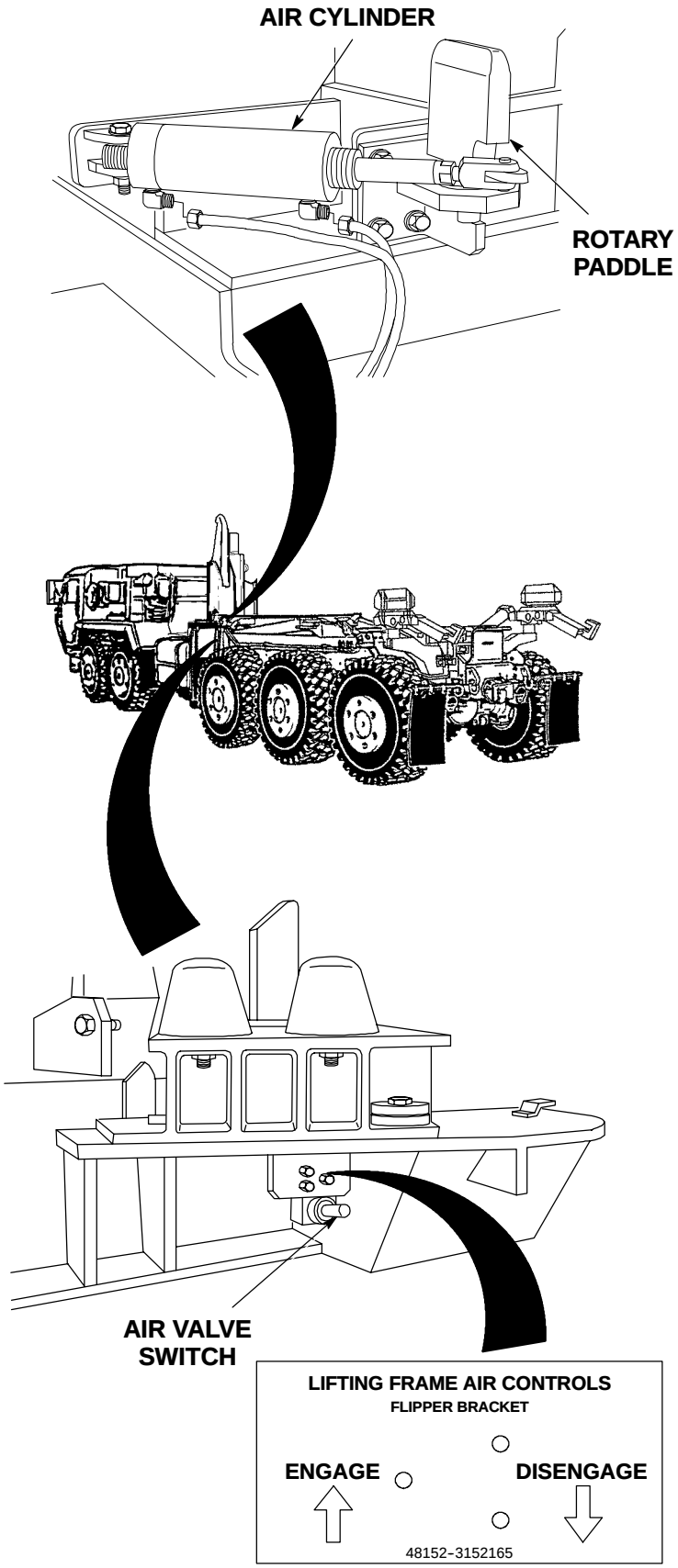


NOTE

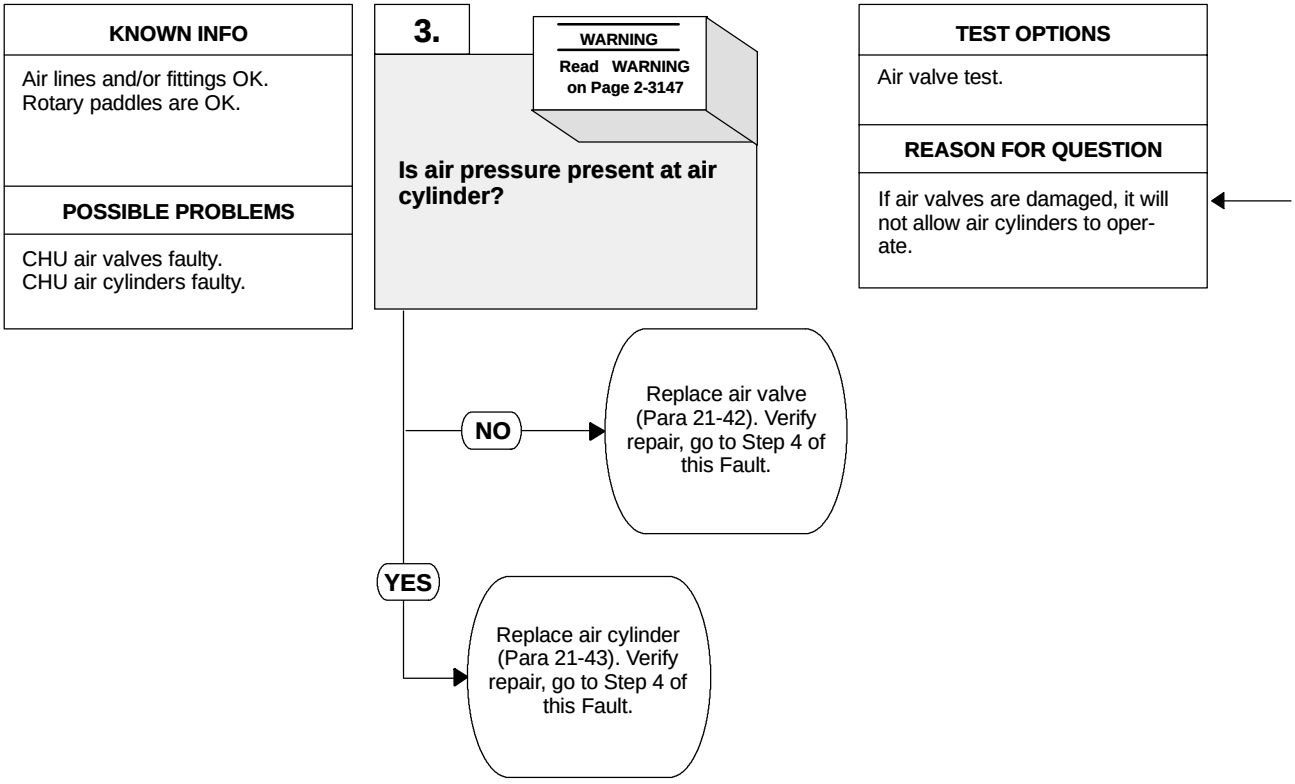
Left and right air cylinders and paddles are identical. Left side is shown.

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).



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



WARNING

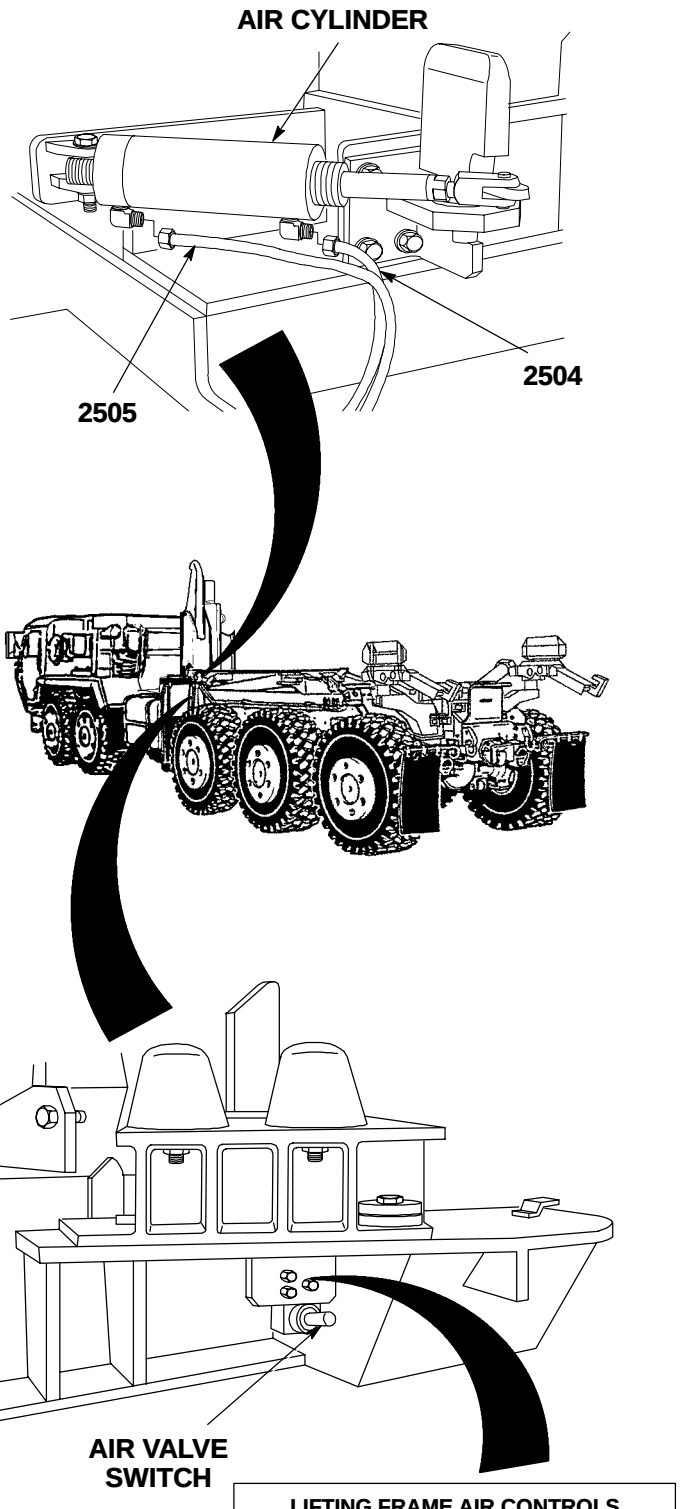
Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

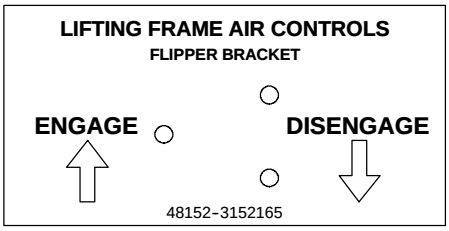
NOTE

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

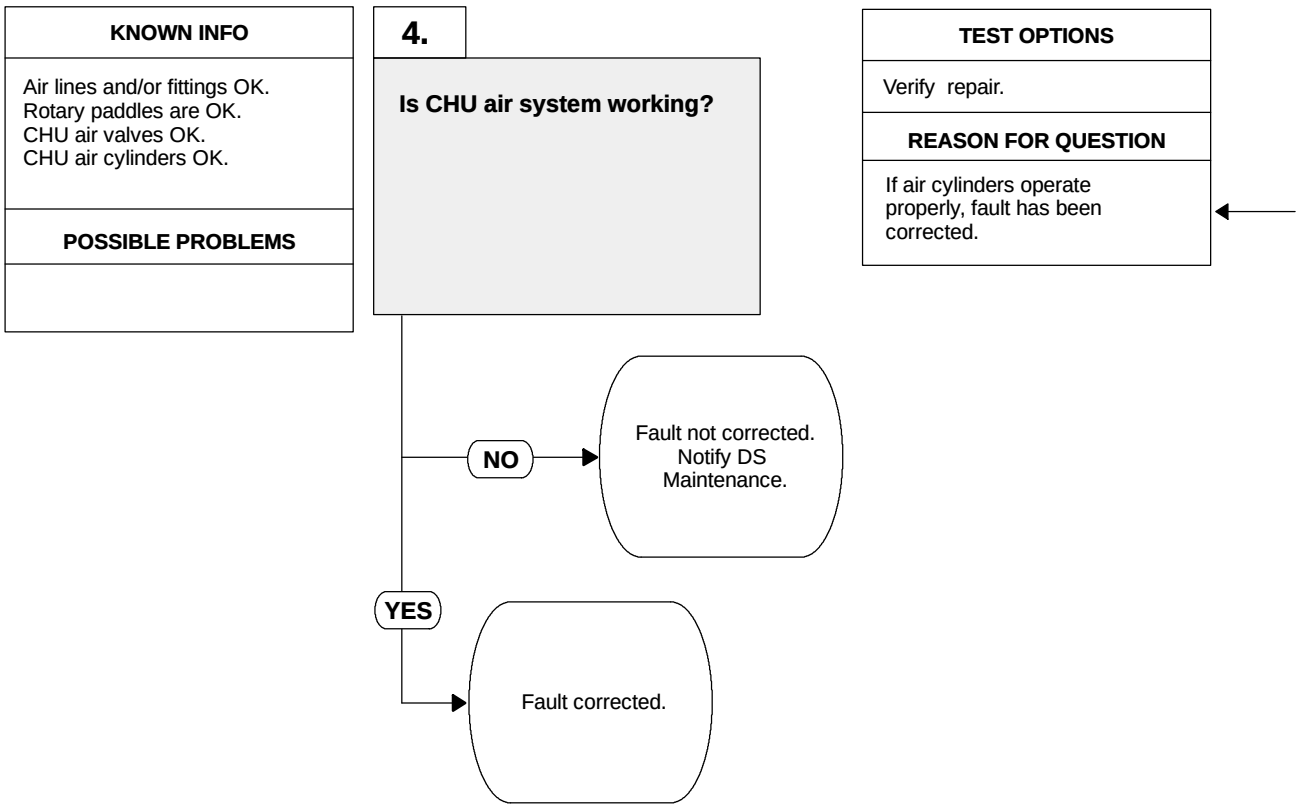
AIR VALVE TEST

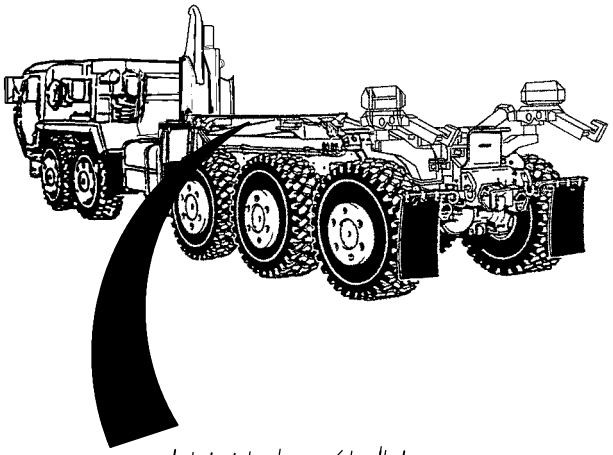
(1) Disconnect air lines 2504 and 2505 from air cylinder (Para 12-35).
(2) Move flipper bracket switch to engage position and check for air pressure at air line 2504.
(3) Move flipper bracket switch to disengage position and check for air pressure at air line 2505.
(4) Is there air pressure at both air 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).





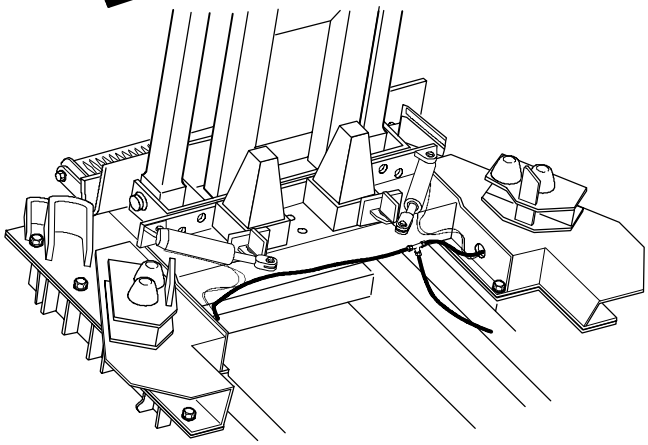
2. ROTARY PADDLE CYLINDERS DO NOT OPERATE (CONT).





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.



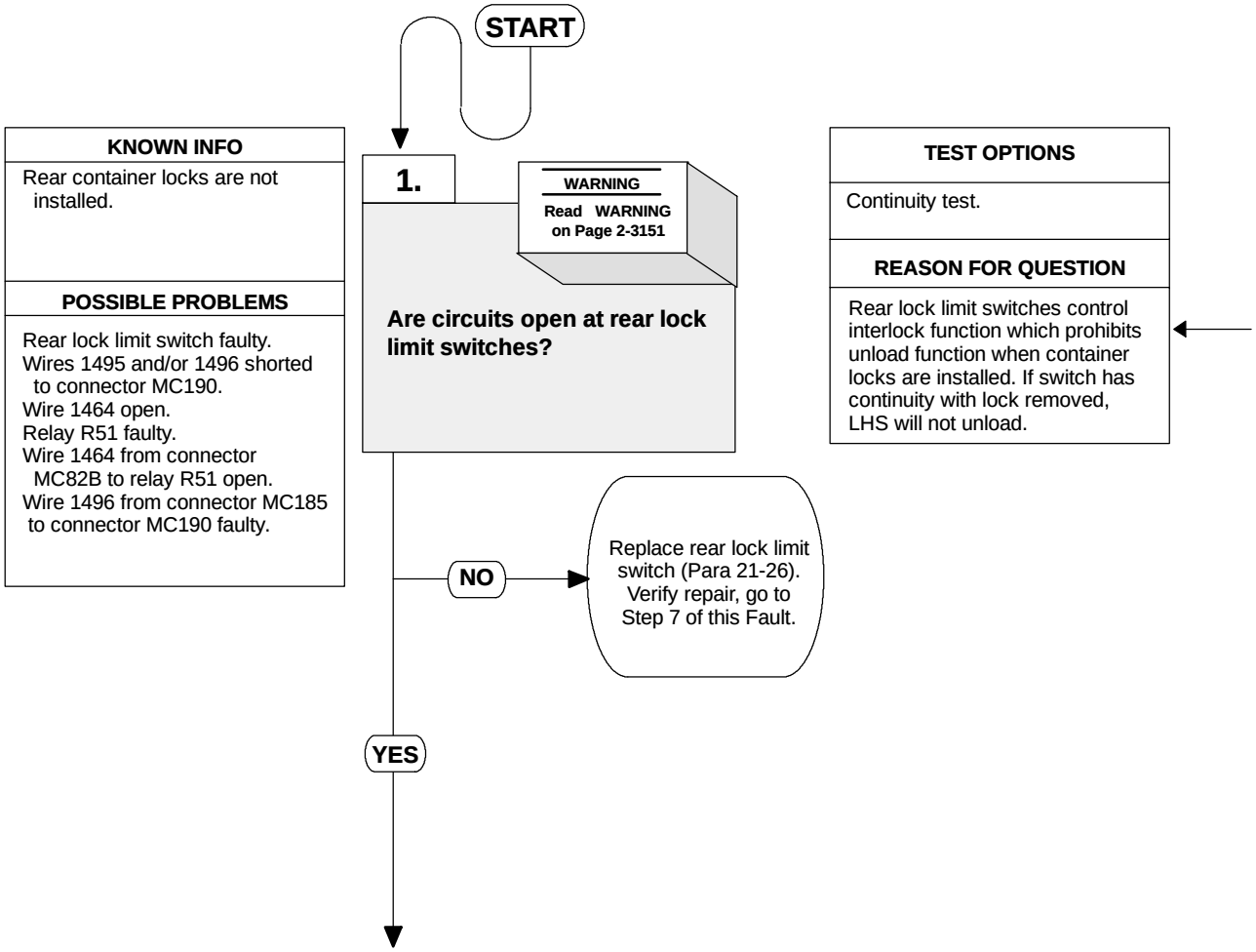
2-38. CHU TROUBLESHOOTING (CONT)

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)

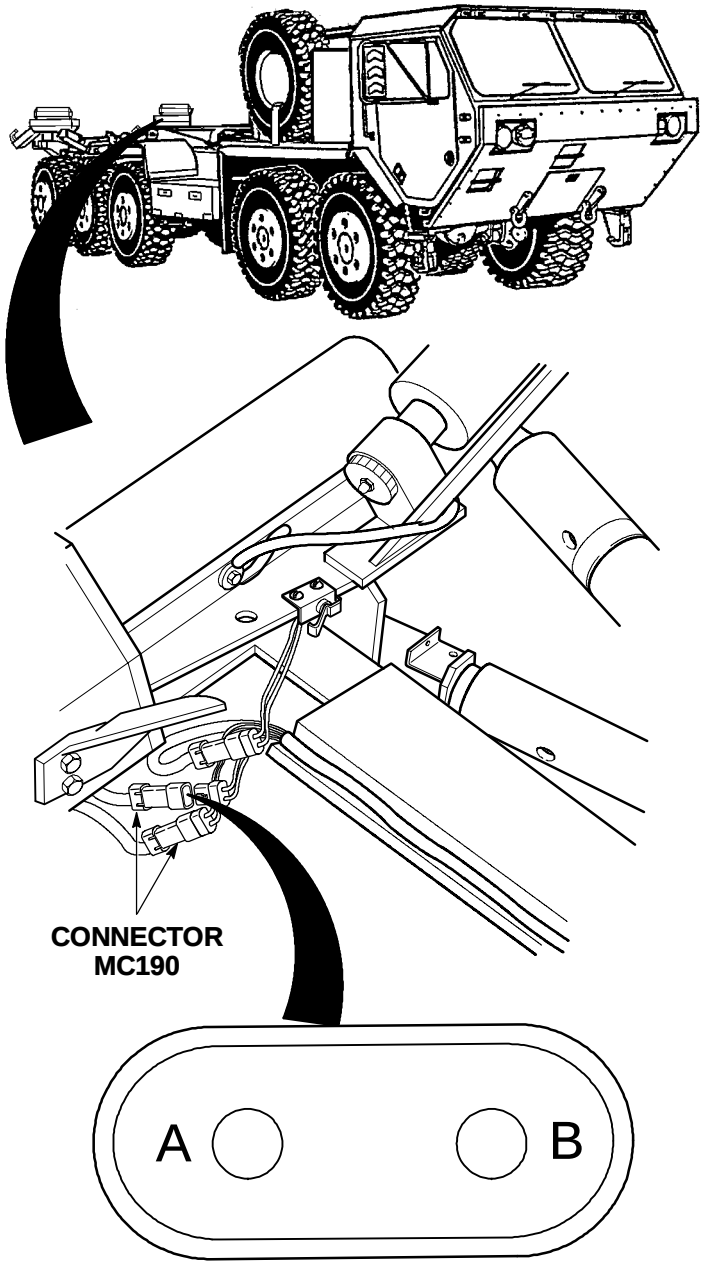


WARNING

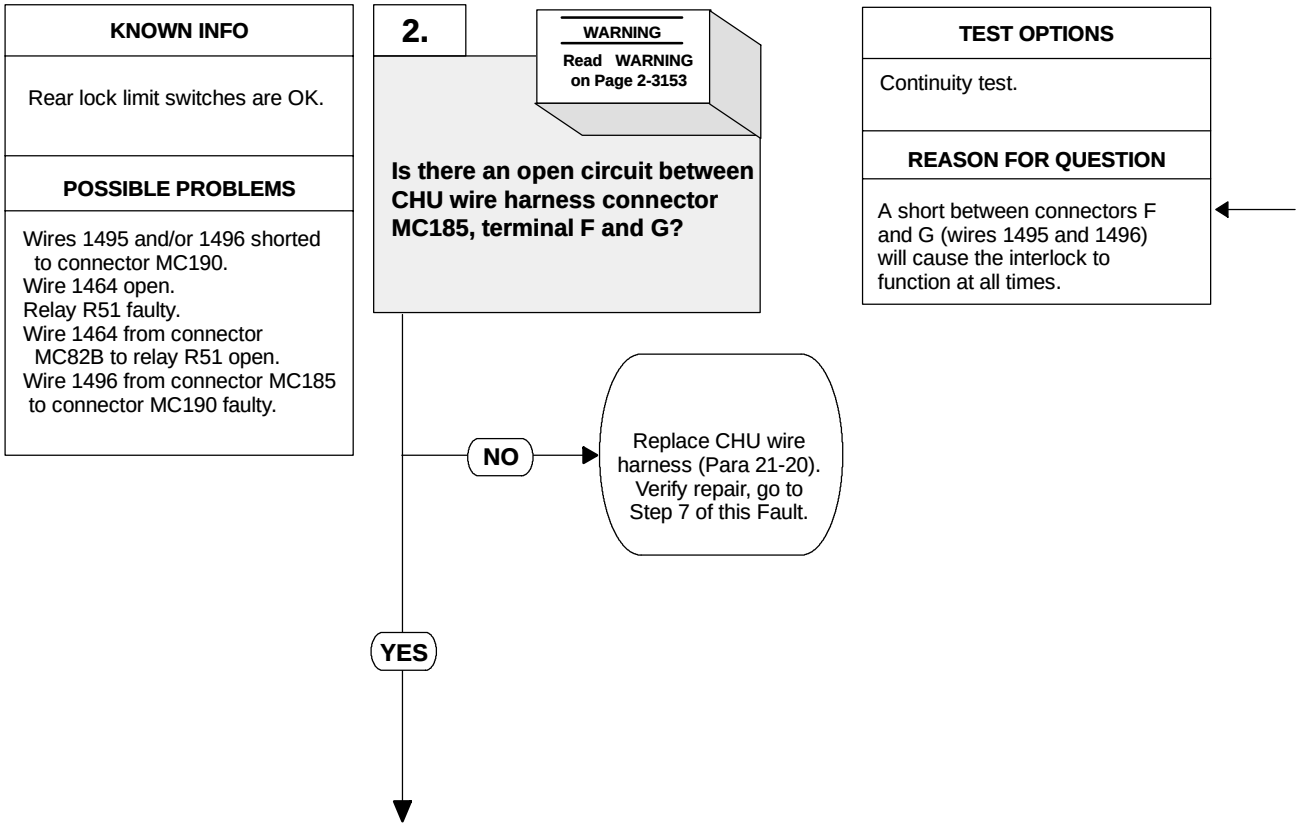
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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.



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

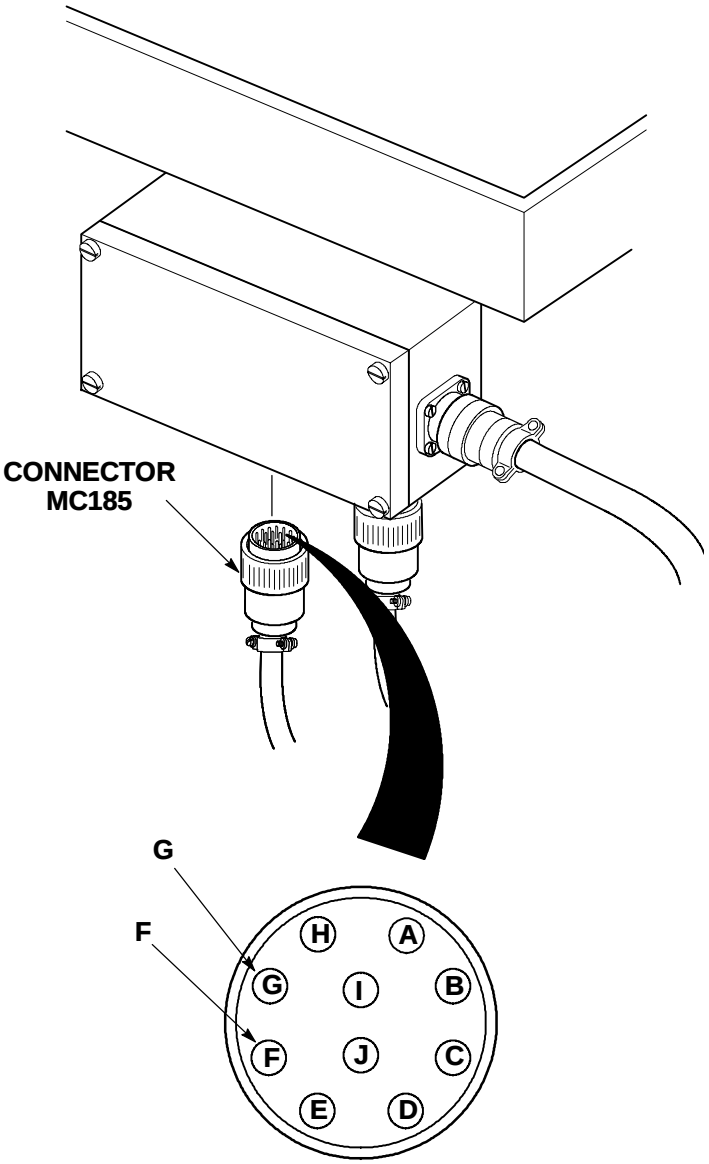


WARNING

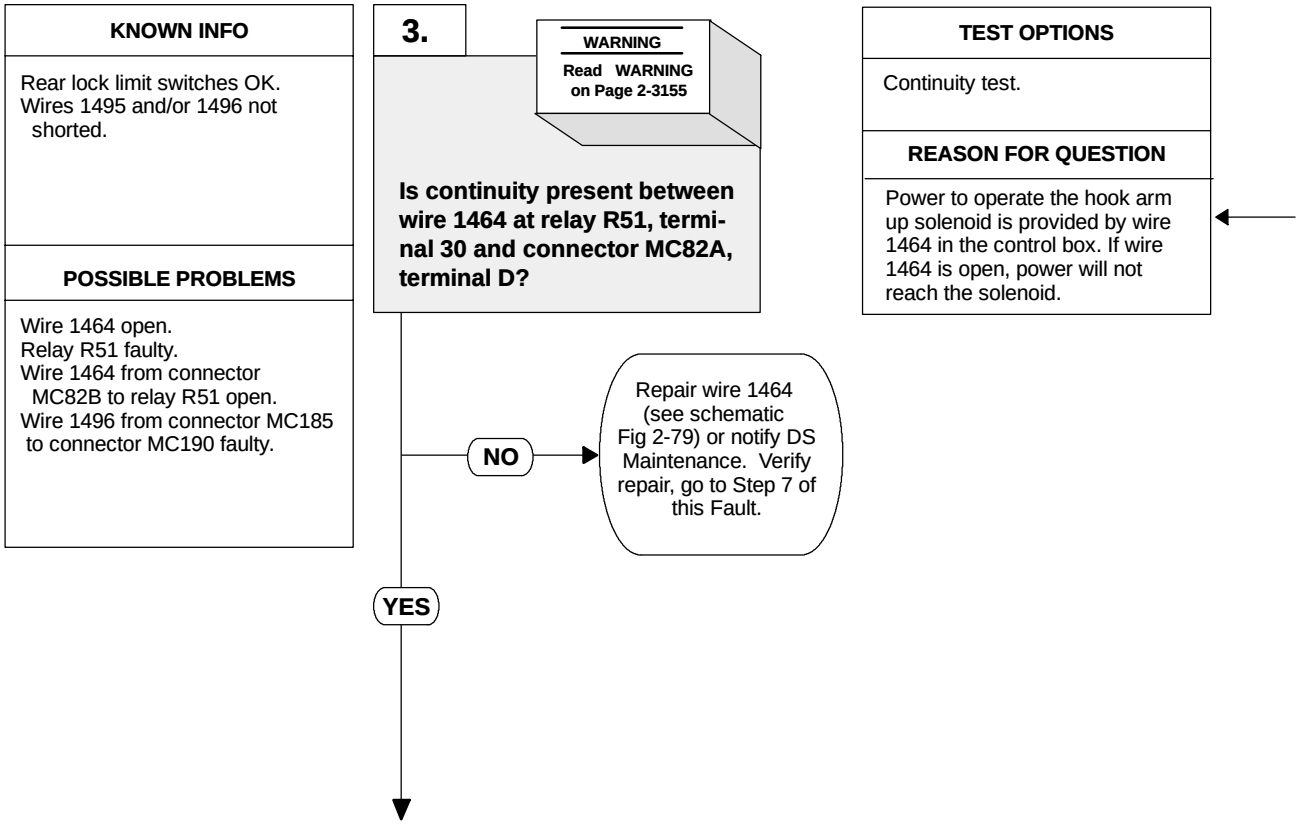
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

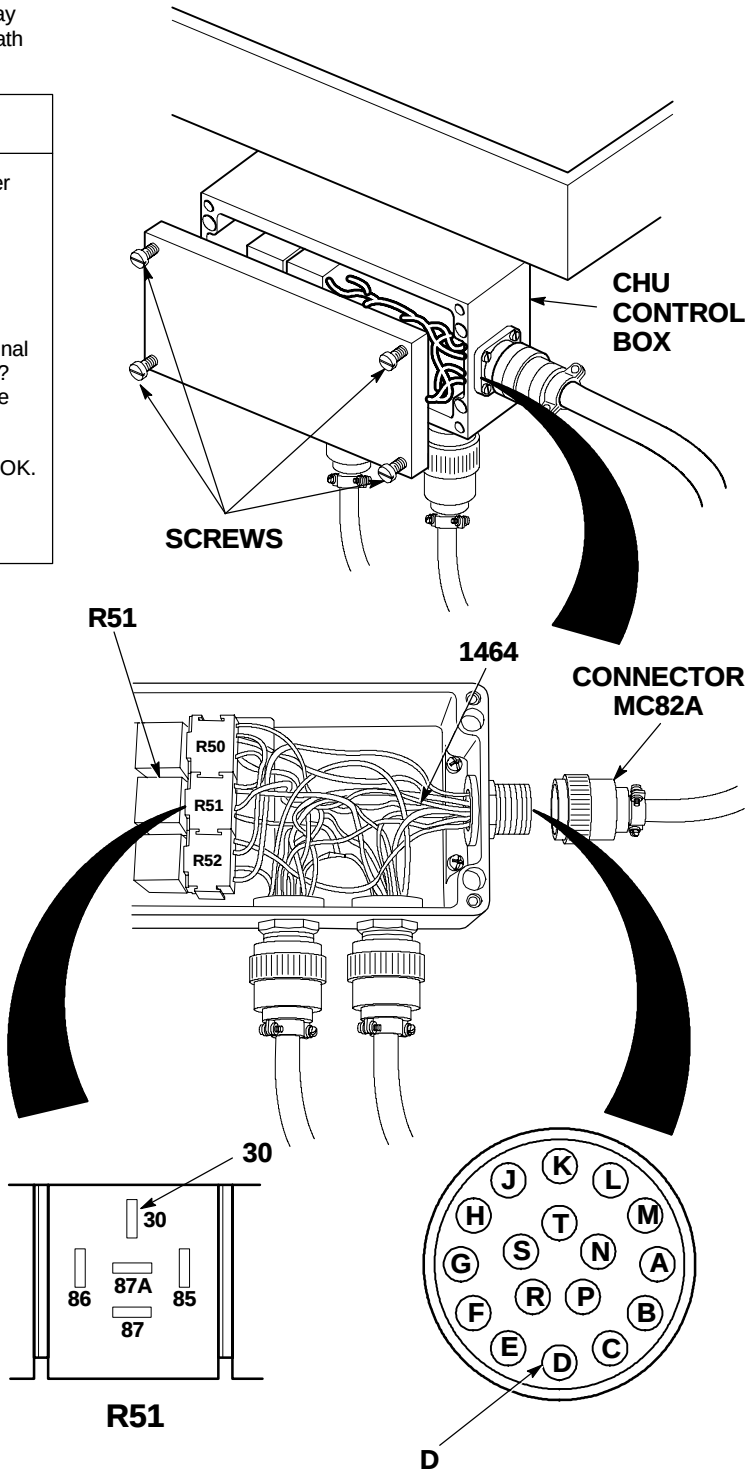


WARNING

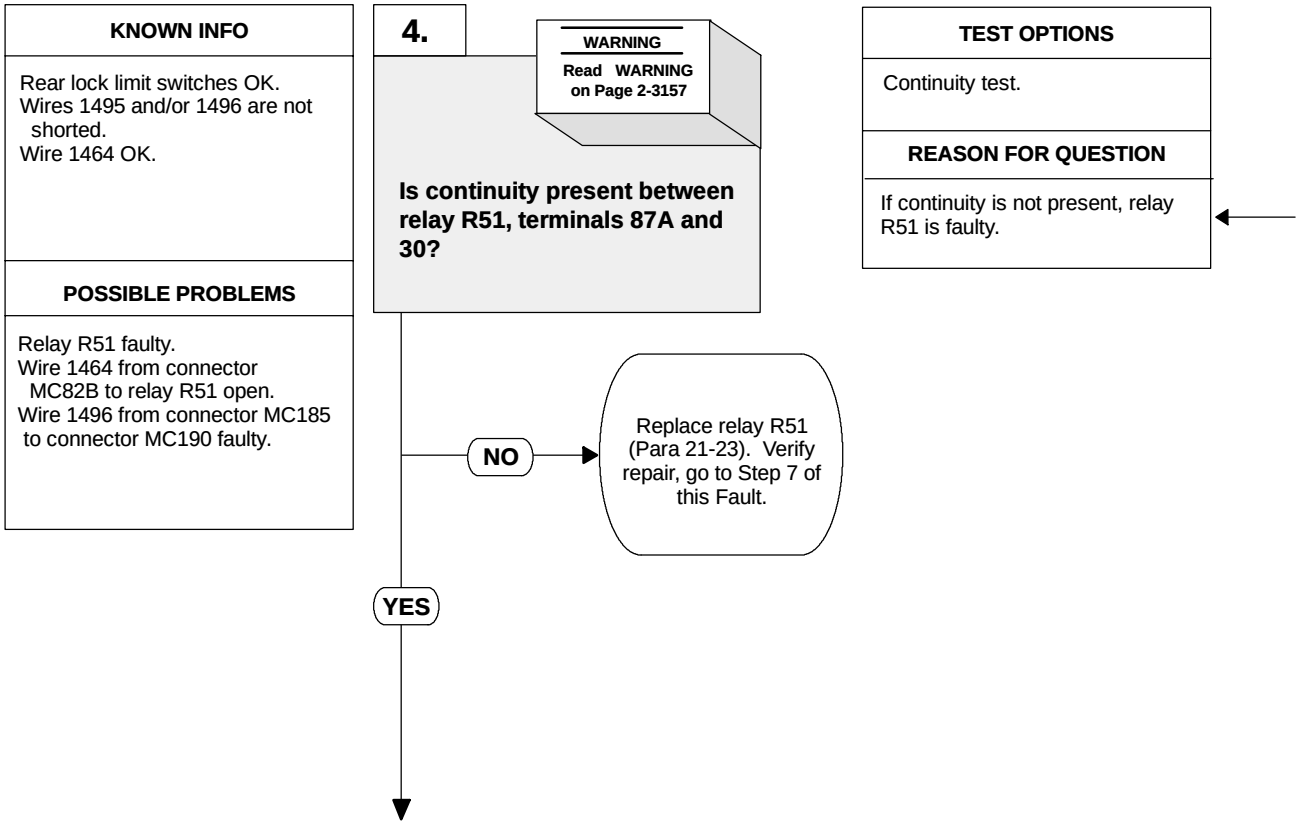
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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.



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

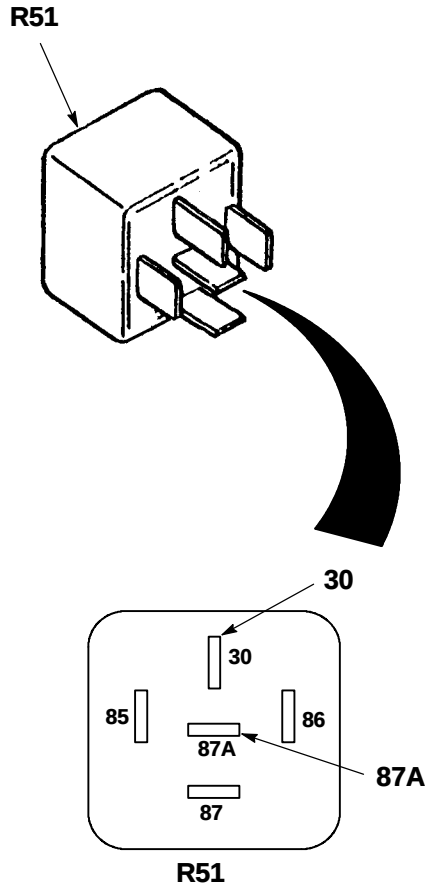


WARNING

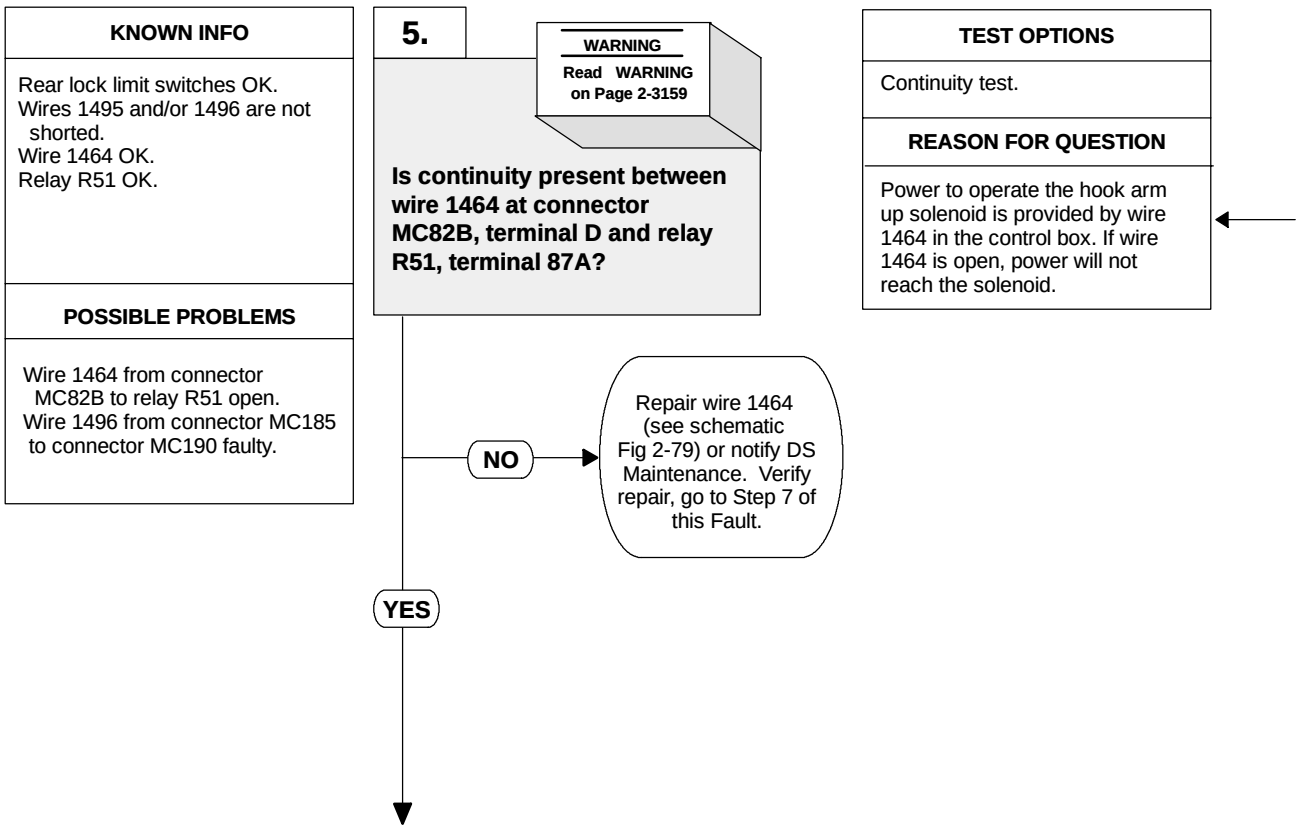
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

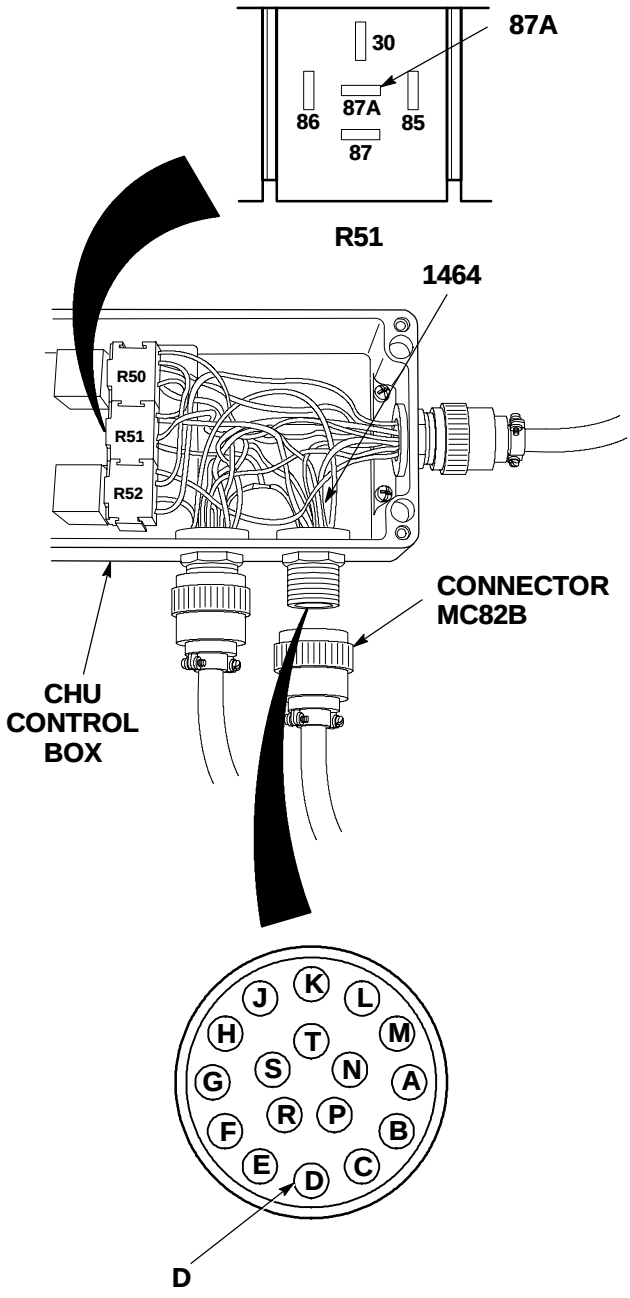


WARNING

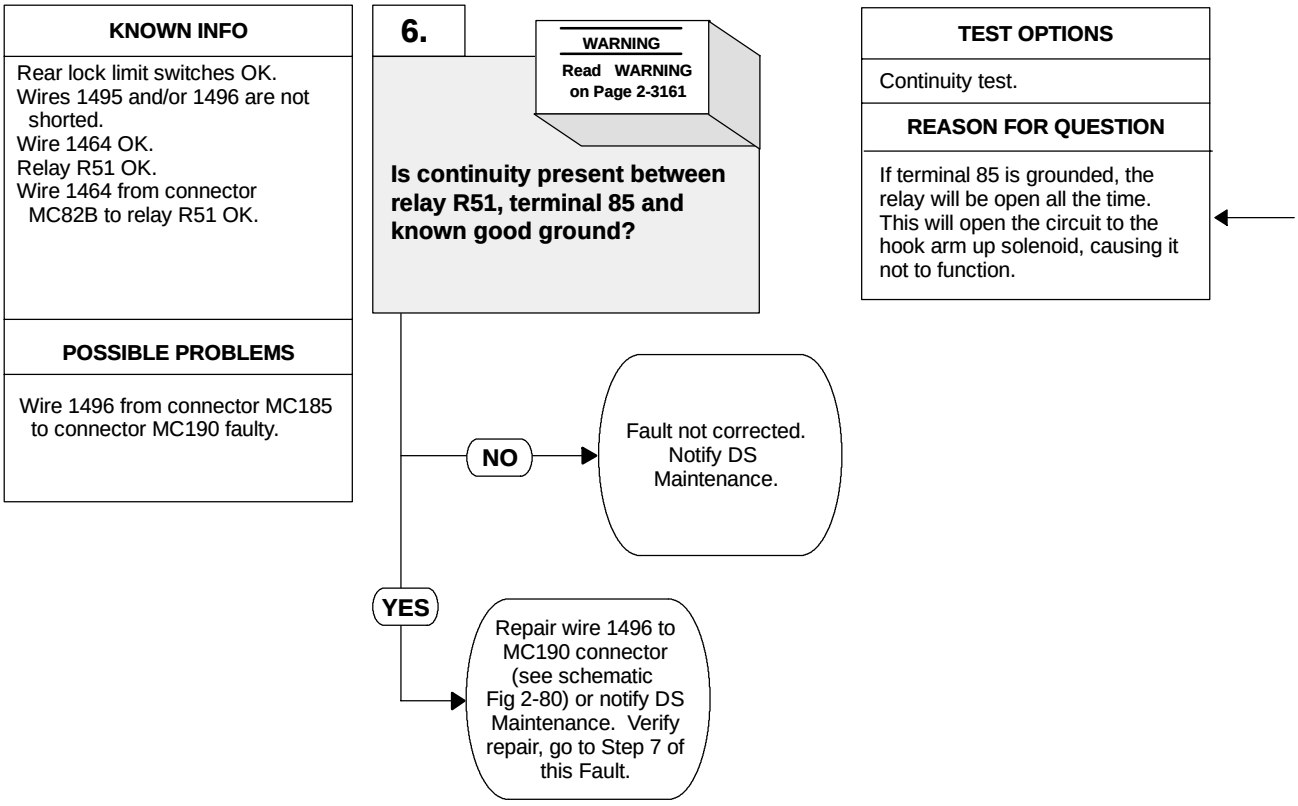
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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.

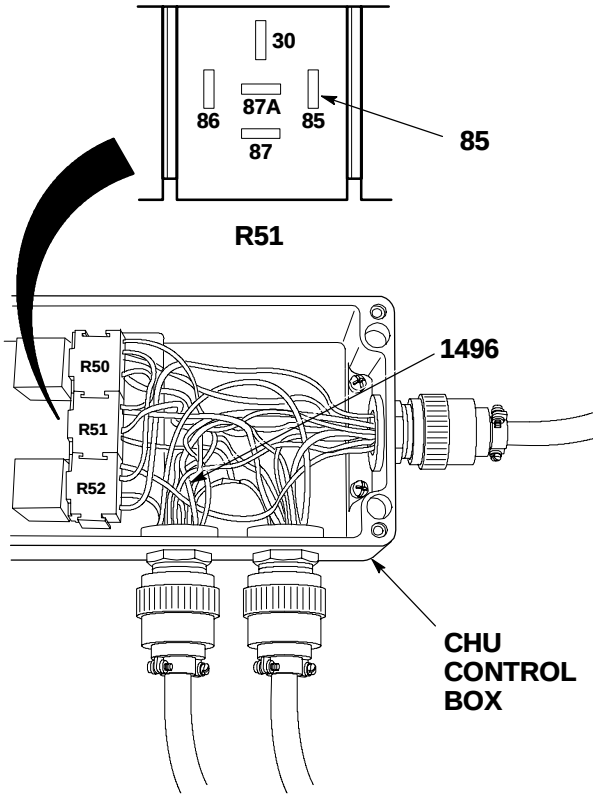


3. LHS DOES NOT UNLOAD IN CHU MODE (CONT).



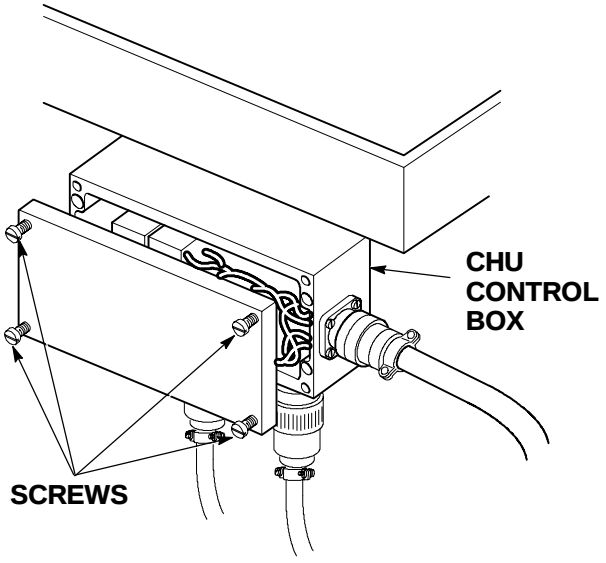
WARNING

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.

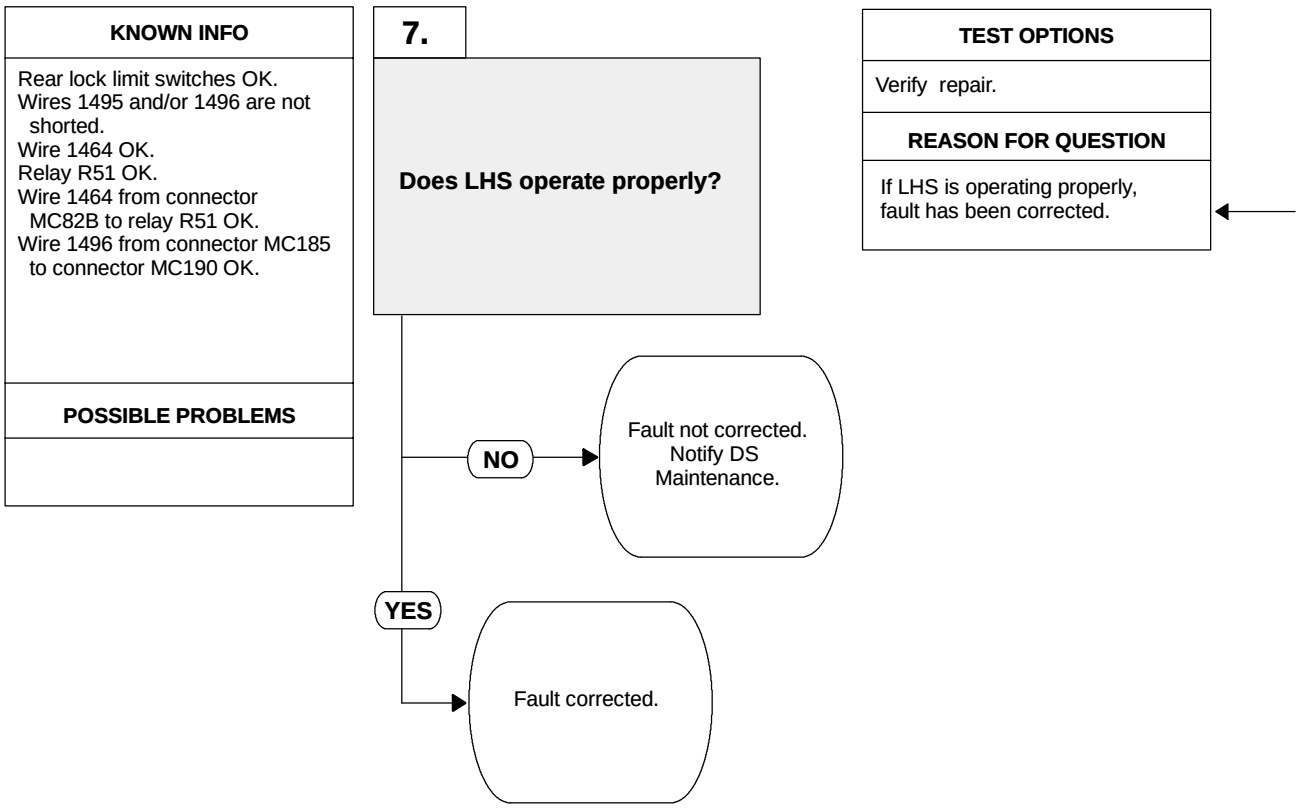


CONTINUITY TEST

(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).

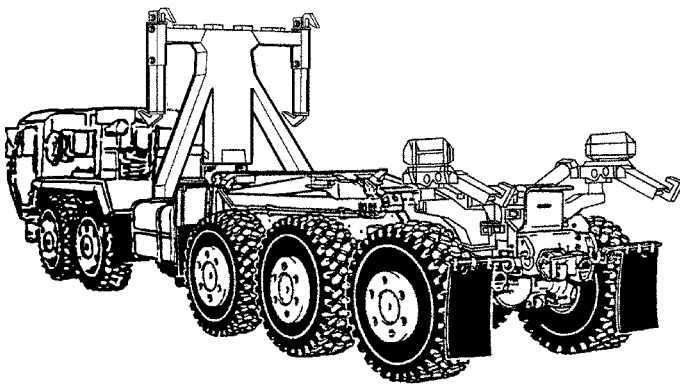


VERIFY REPAIR

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.



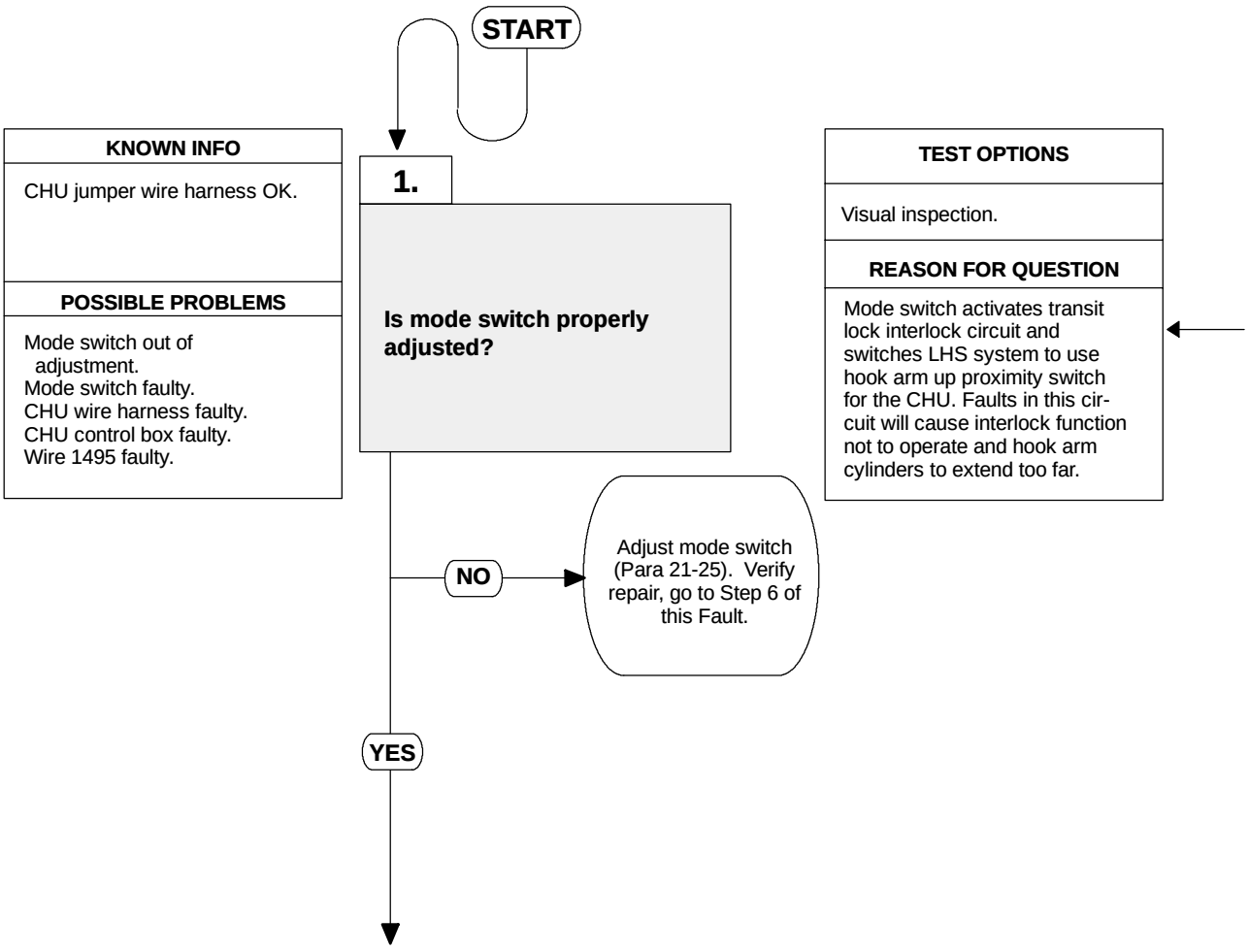
2-38. CHU TROUBLESHOOTING (CONT)

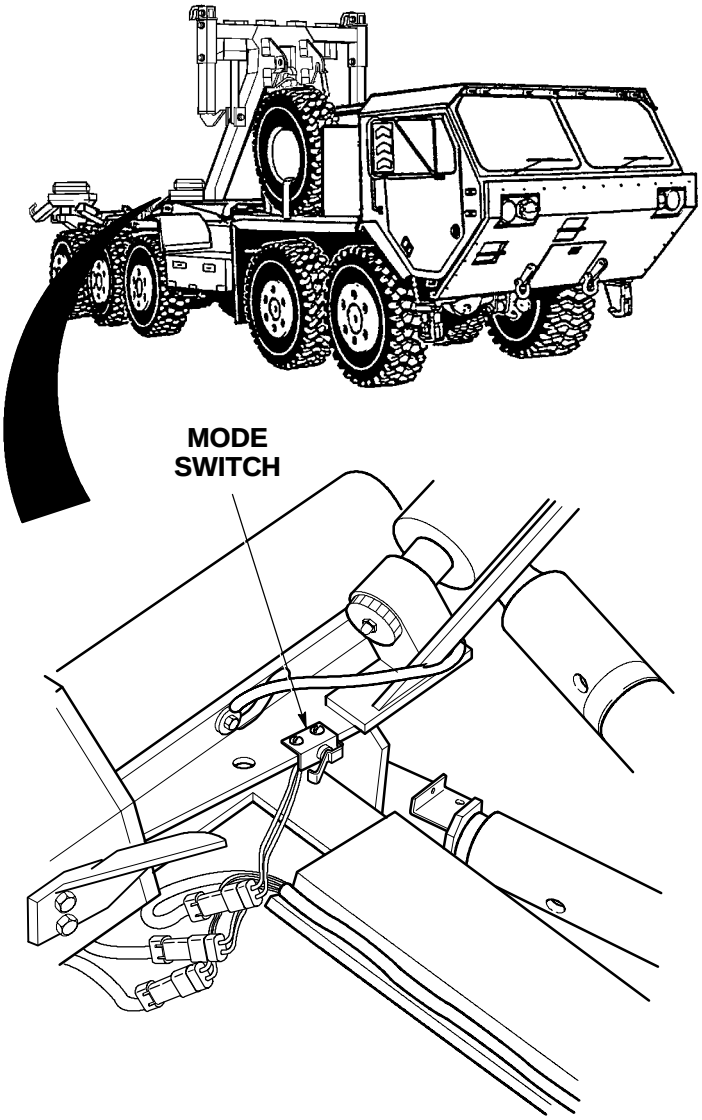
4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS).

INITIAL SETUP

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

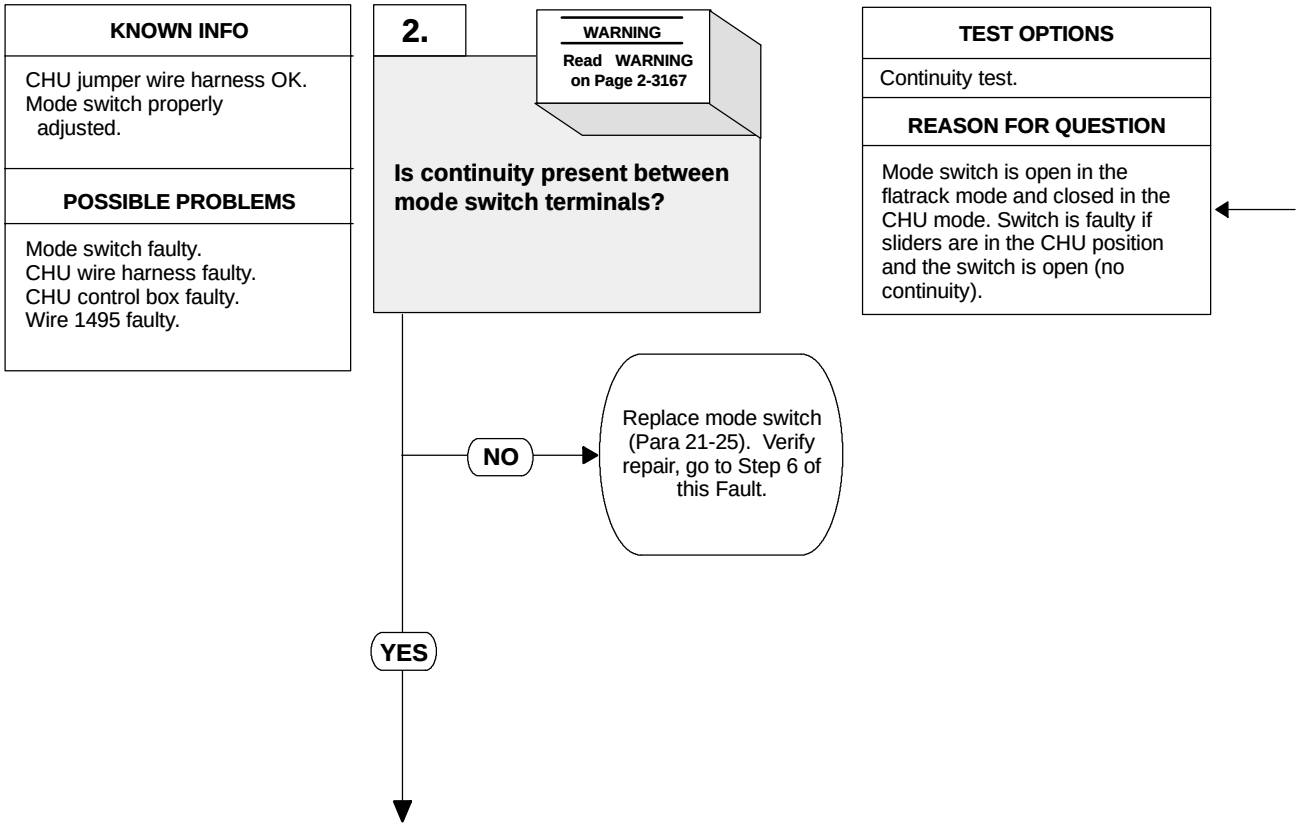
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)





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

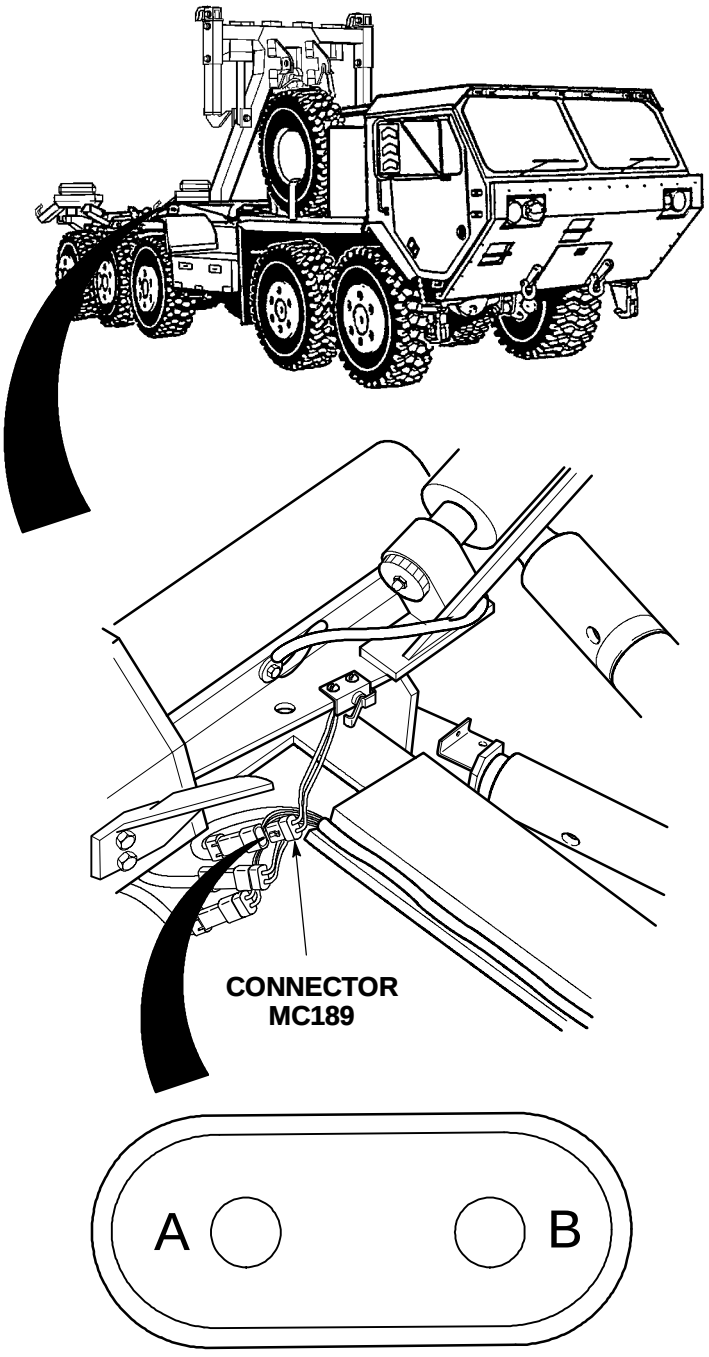
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

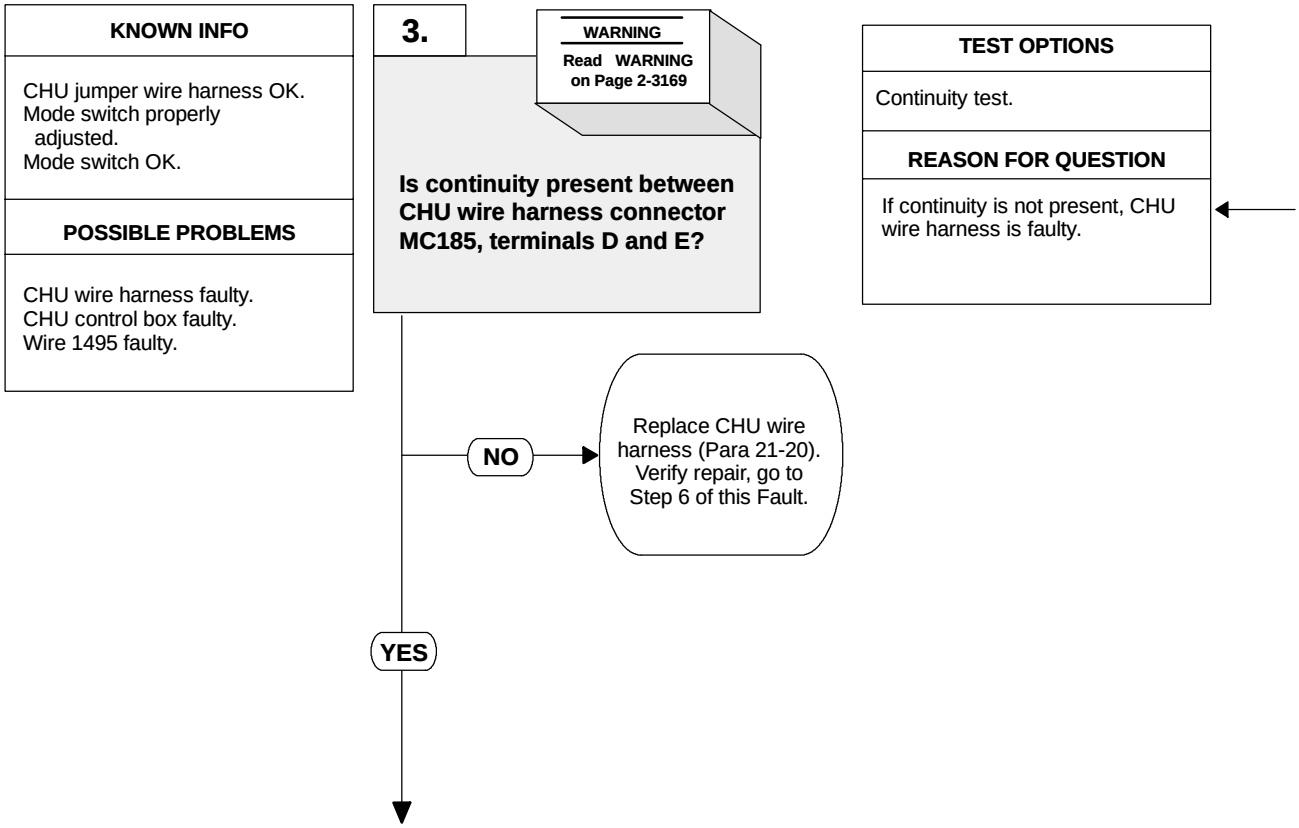
Sliders must be in the CHU position to perform this test.

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.



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

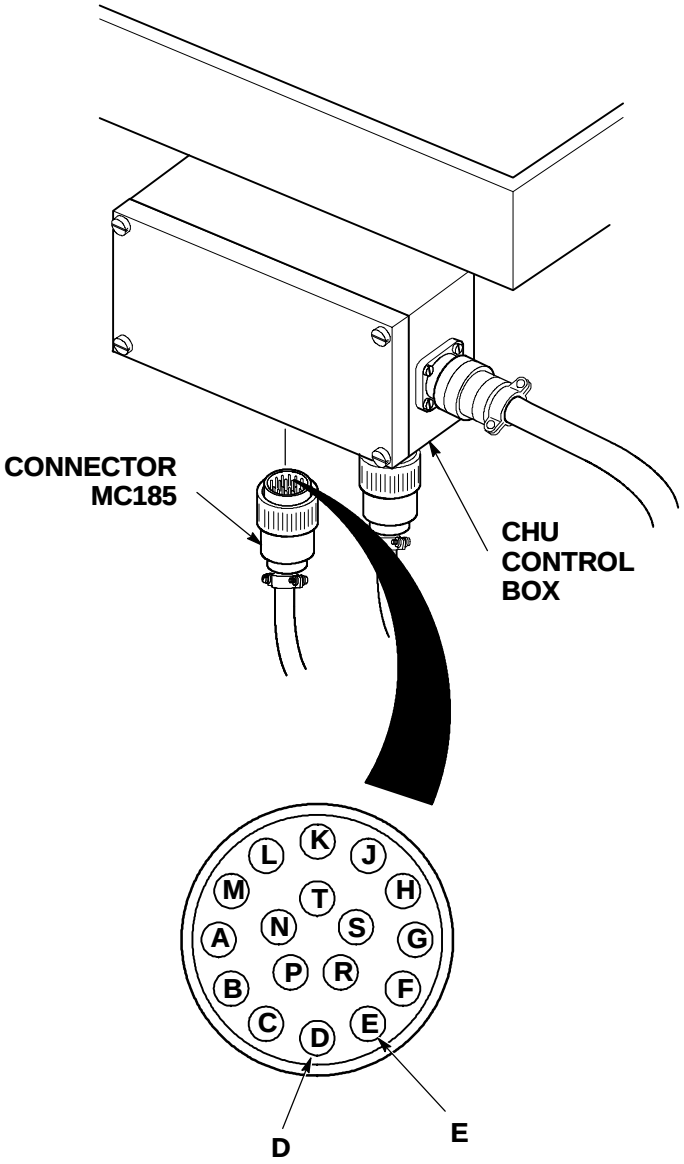


WARNING

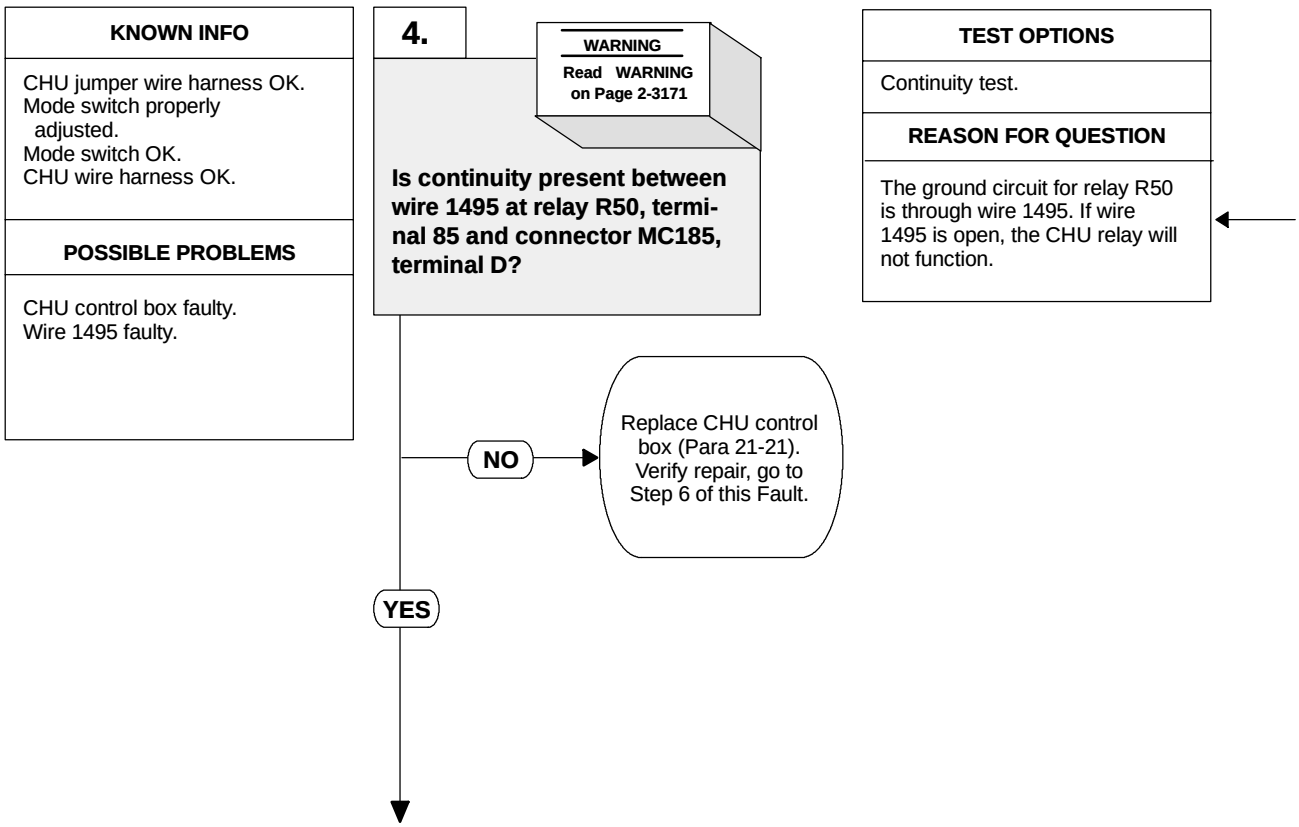
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

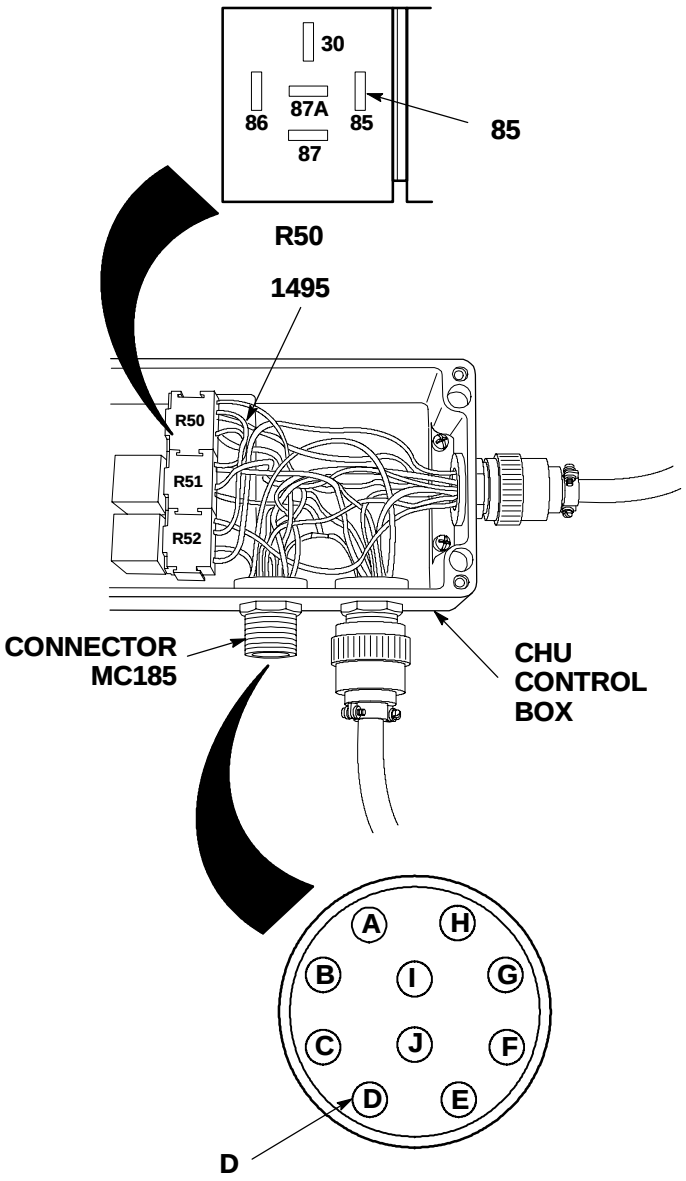


WARNING

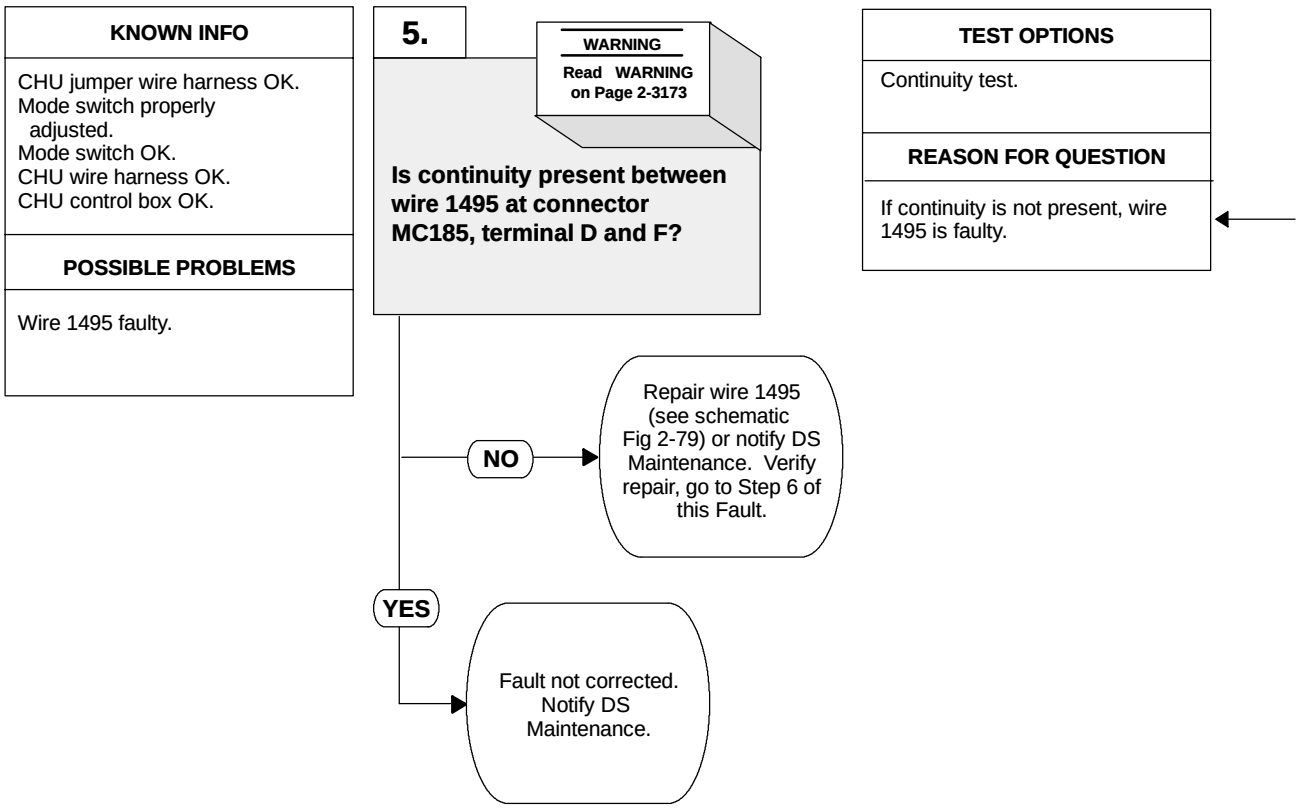
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

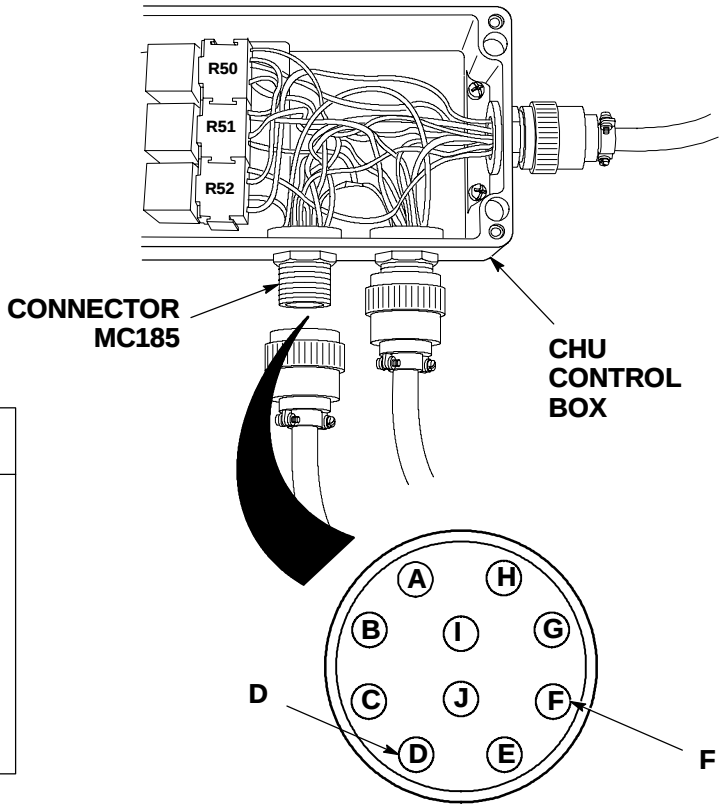


4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS) (CONT).



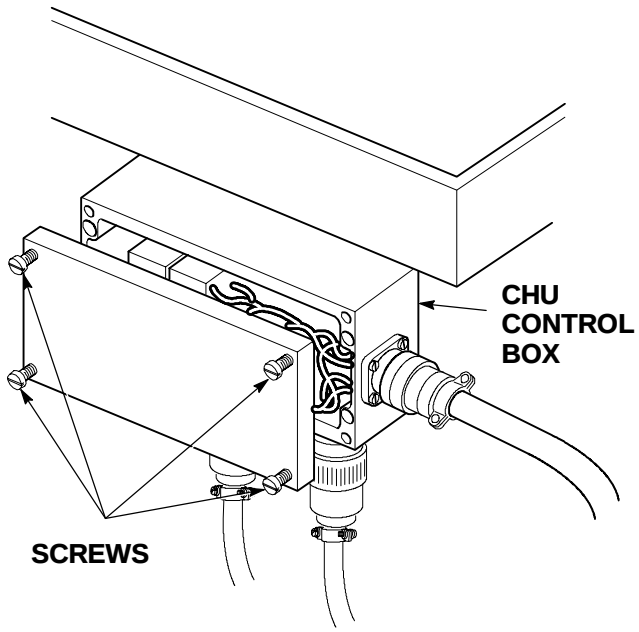
WARNING

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.

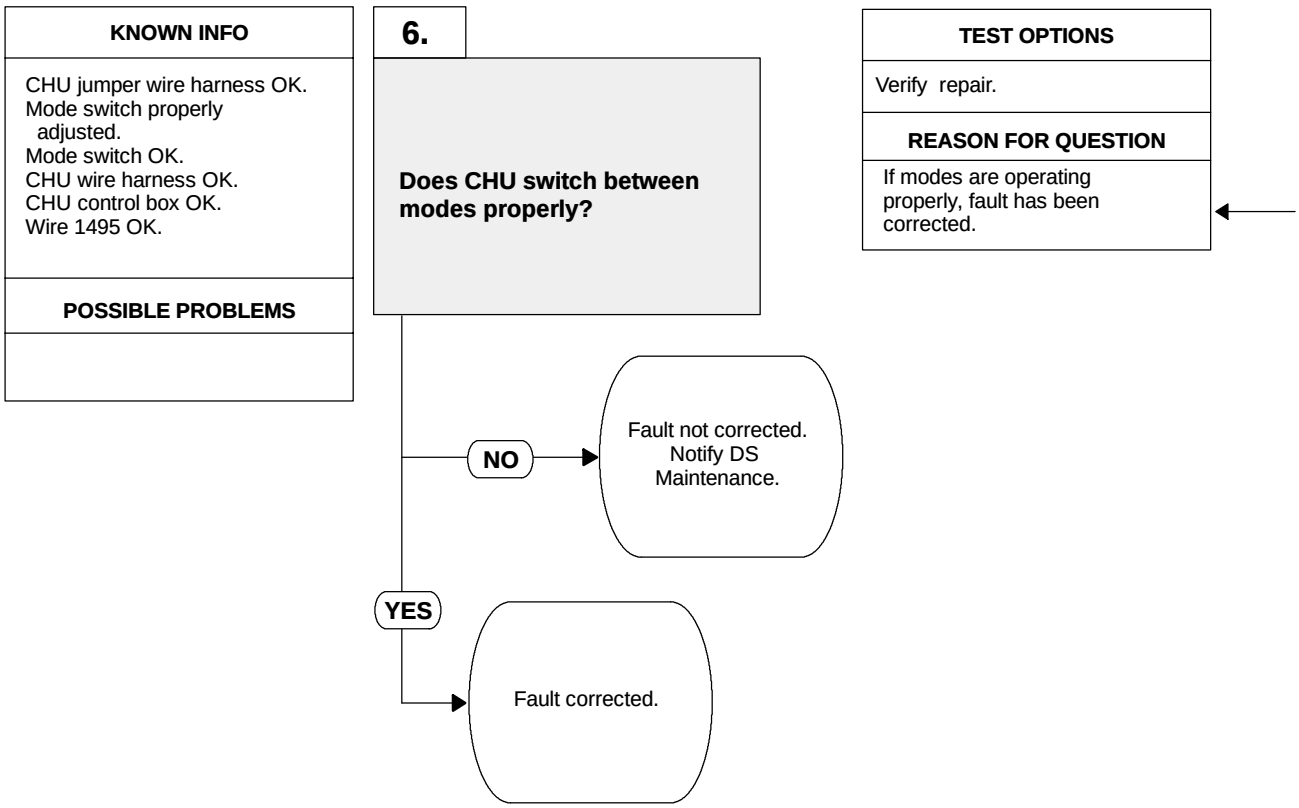


CONTINUITY TEST

(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.



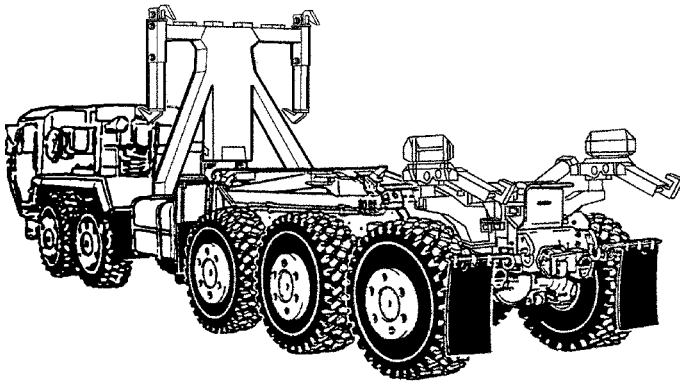
4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS) (CONT).



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.



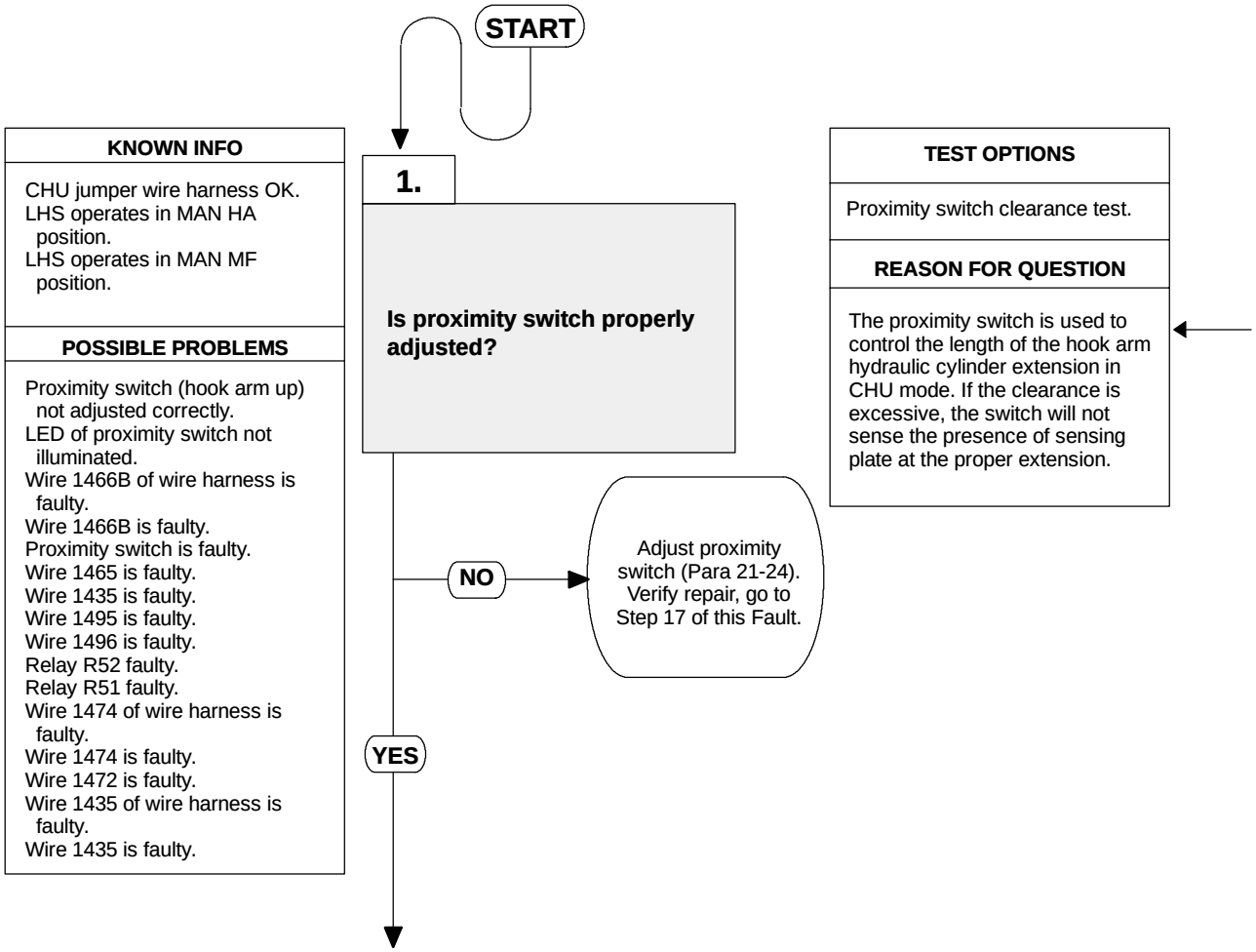
2-38. CHU TROUBLESHOOTING (CONT)

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

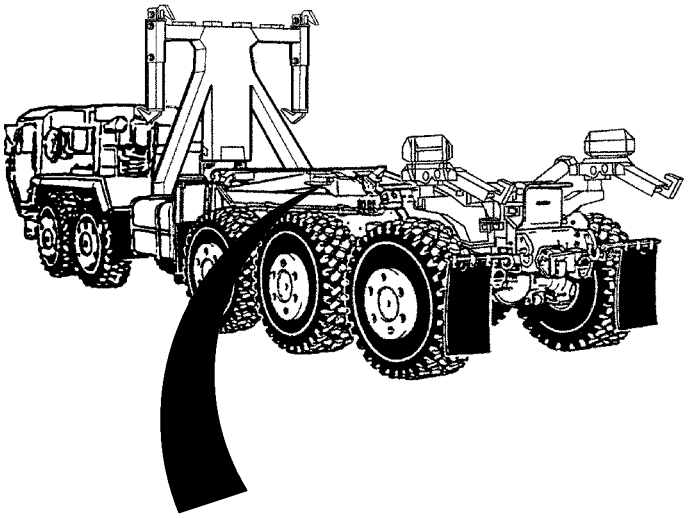
INITIAL SETUP

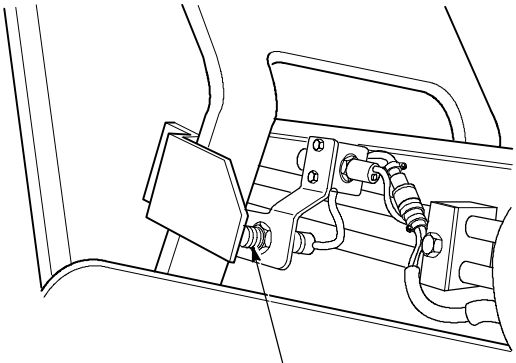
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Multimeter (Item 44, Appendix G)

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)



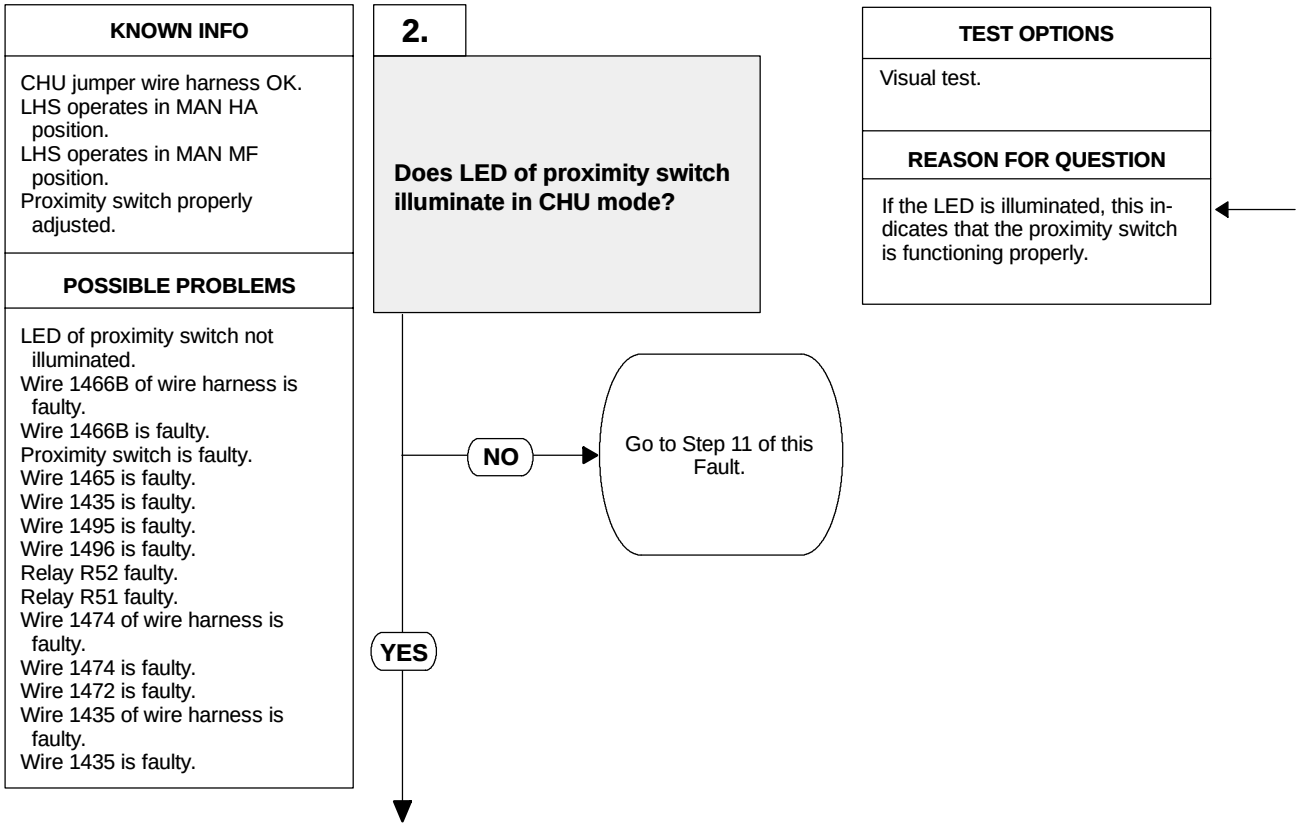
PROXIMITY SWITCH CLEARANCE TEST
Check adjustment of proximity switch and adjust if not correct (Para 21-24).





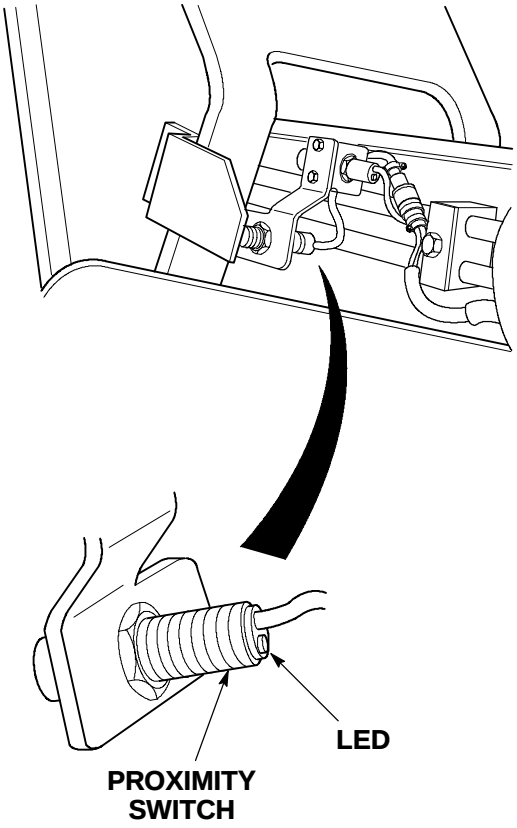
PROXIMITY SWITCH

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

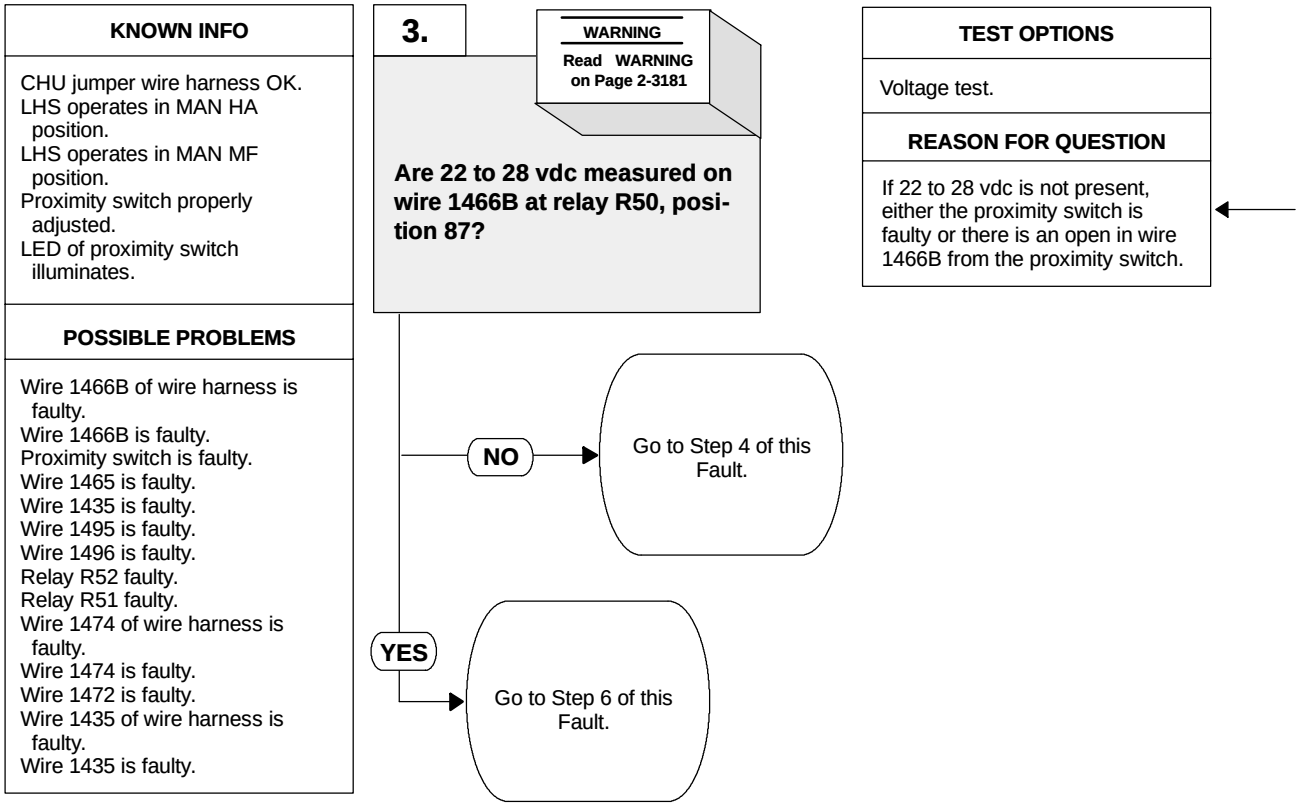


VISUAL TEST

(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).

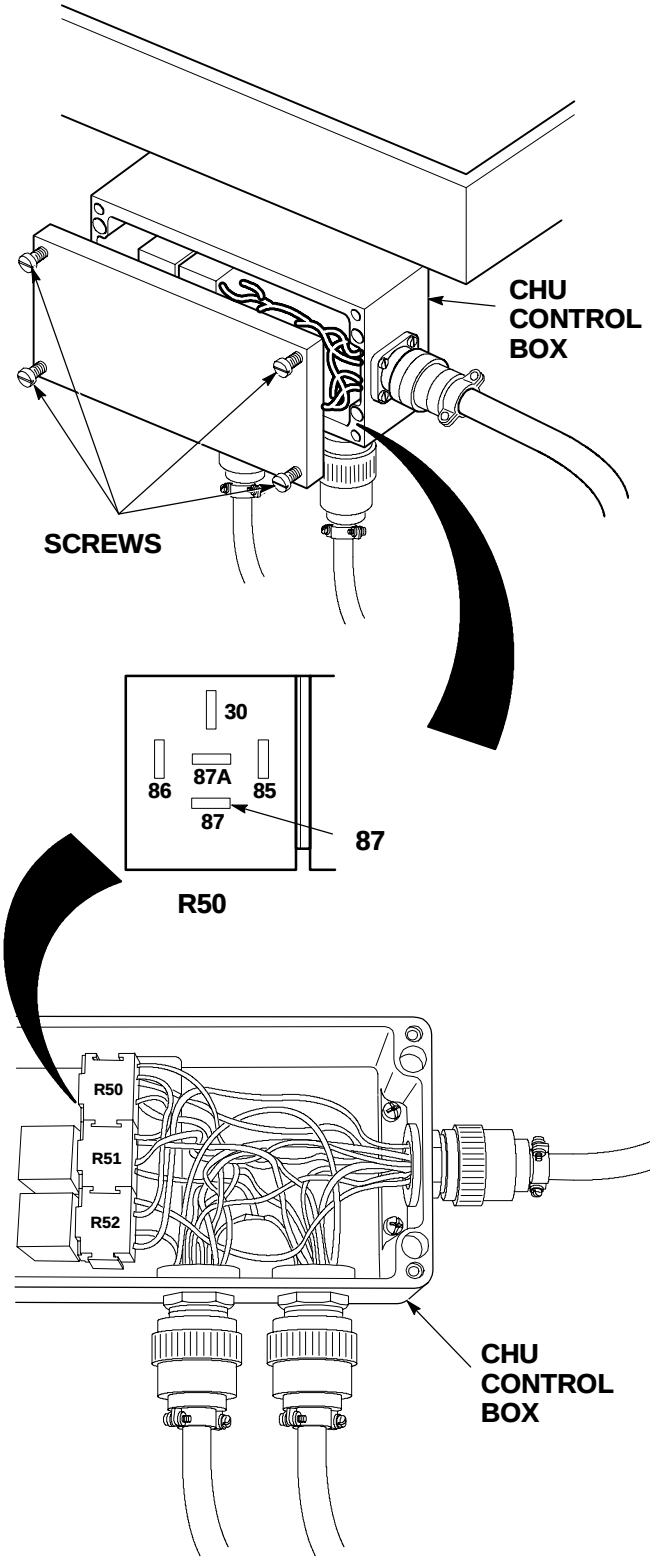


WARNING

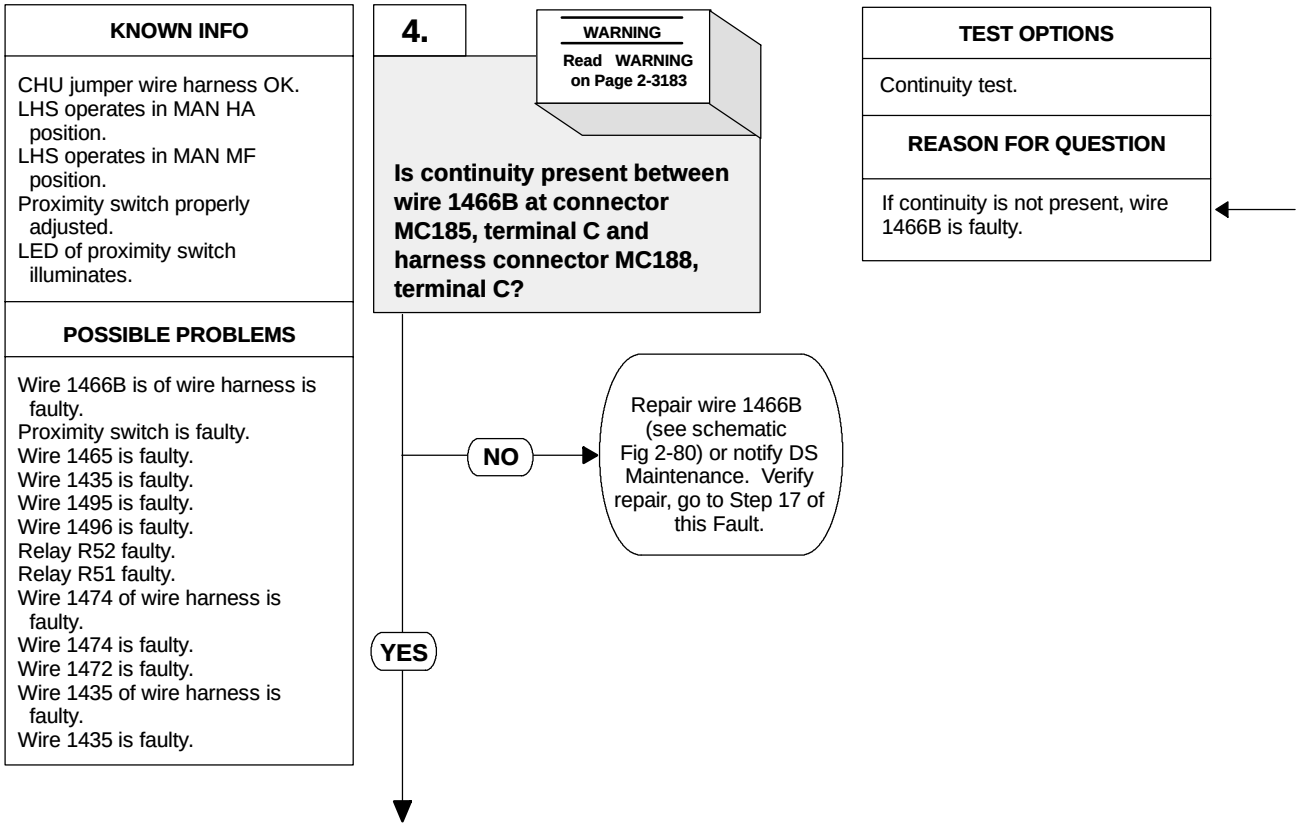
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

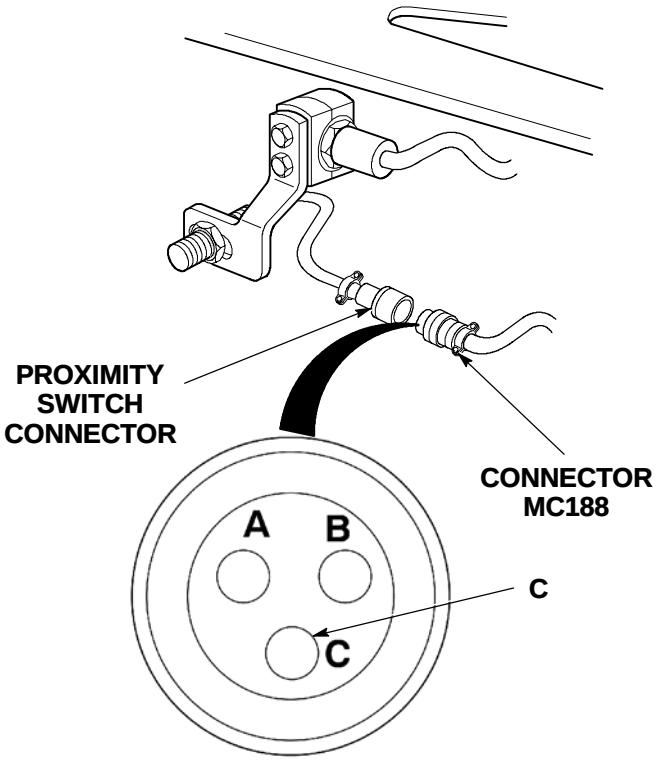


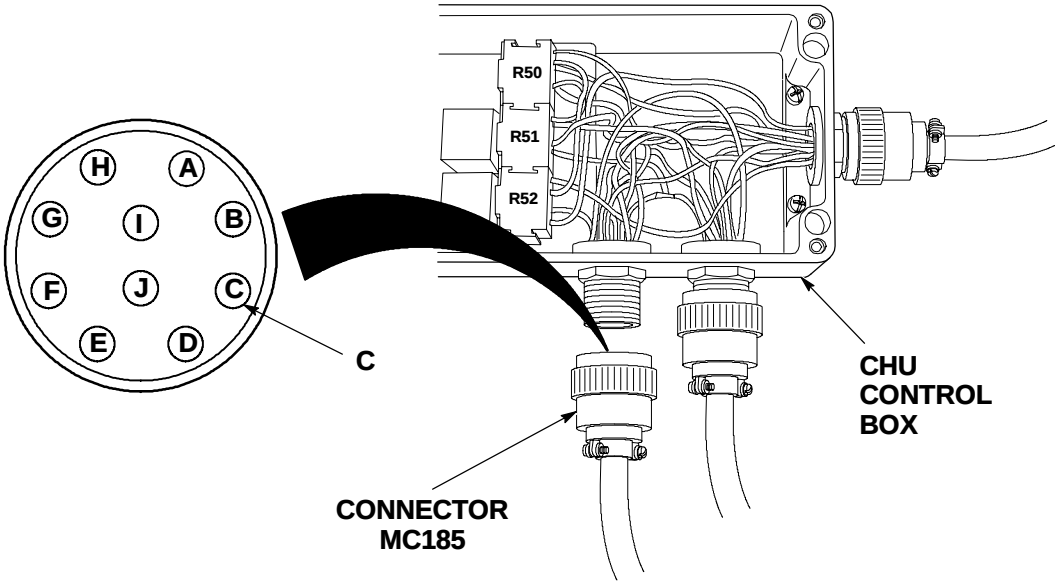
WARNING

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.

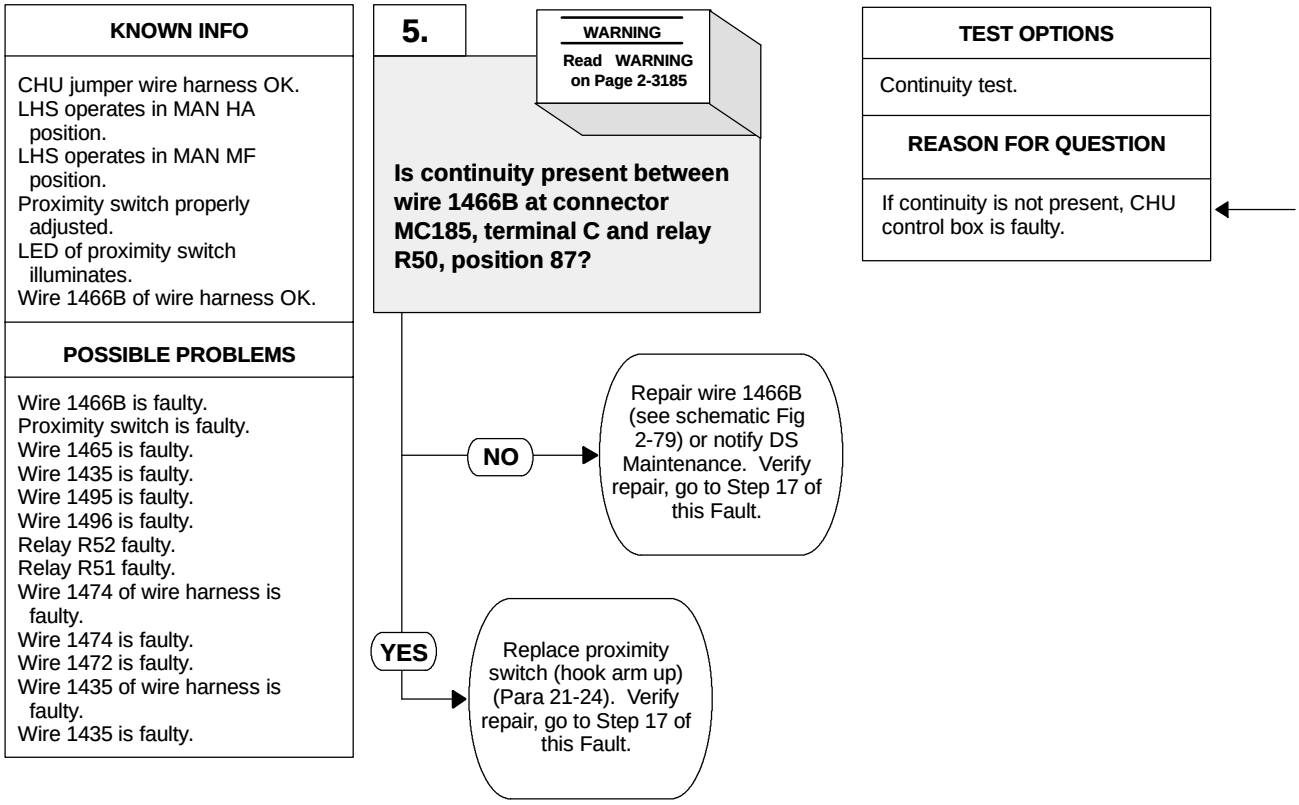
CONTINUITY TEST

(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).

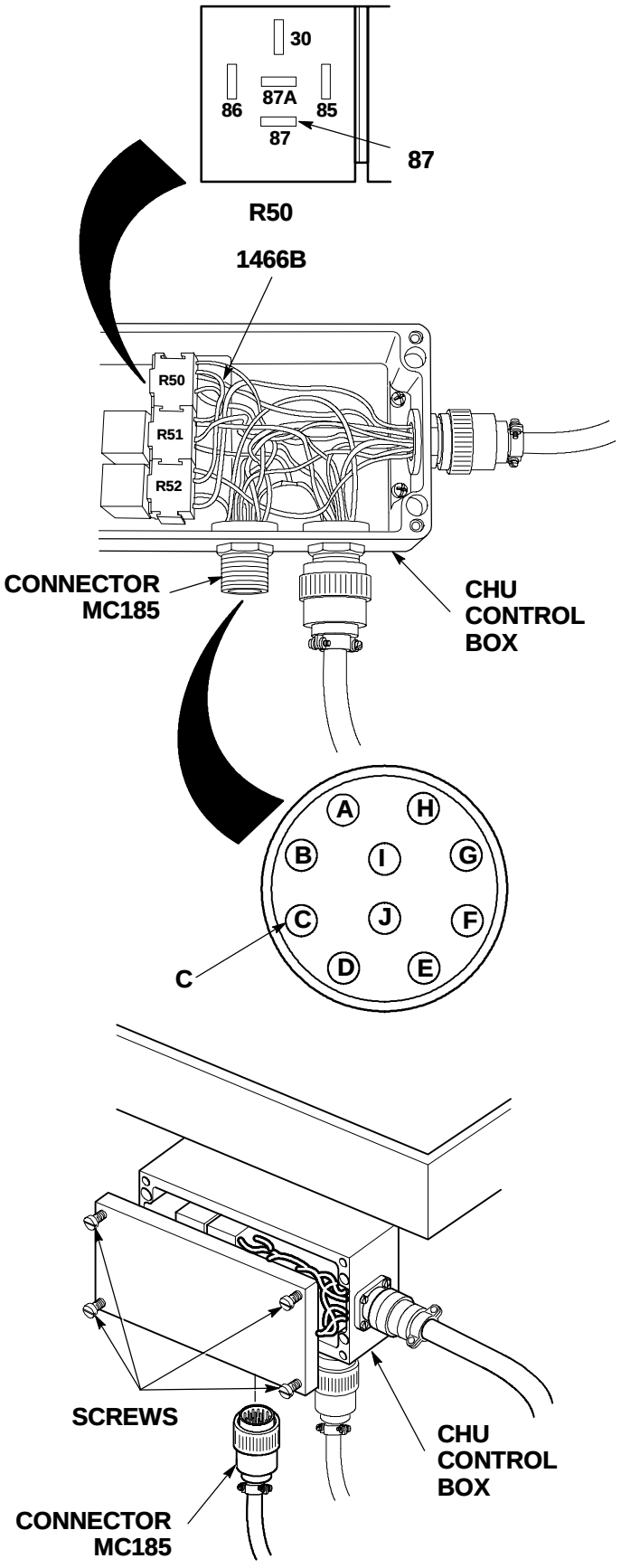


WARNING

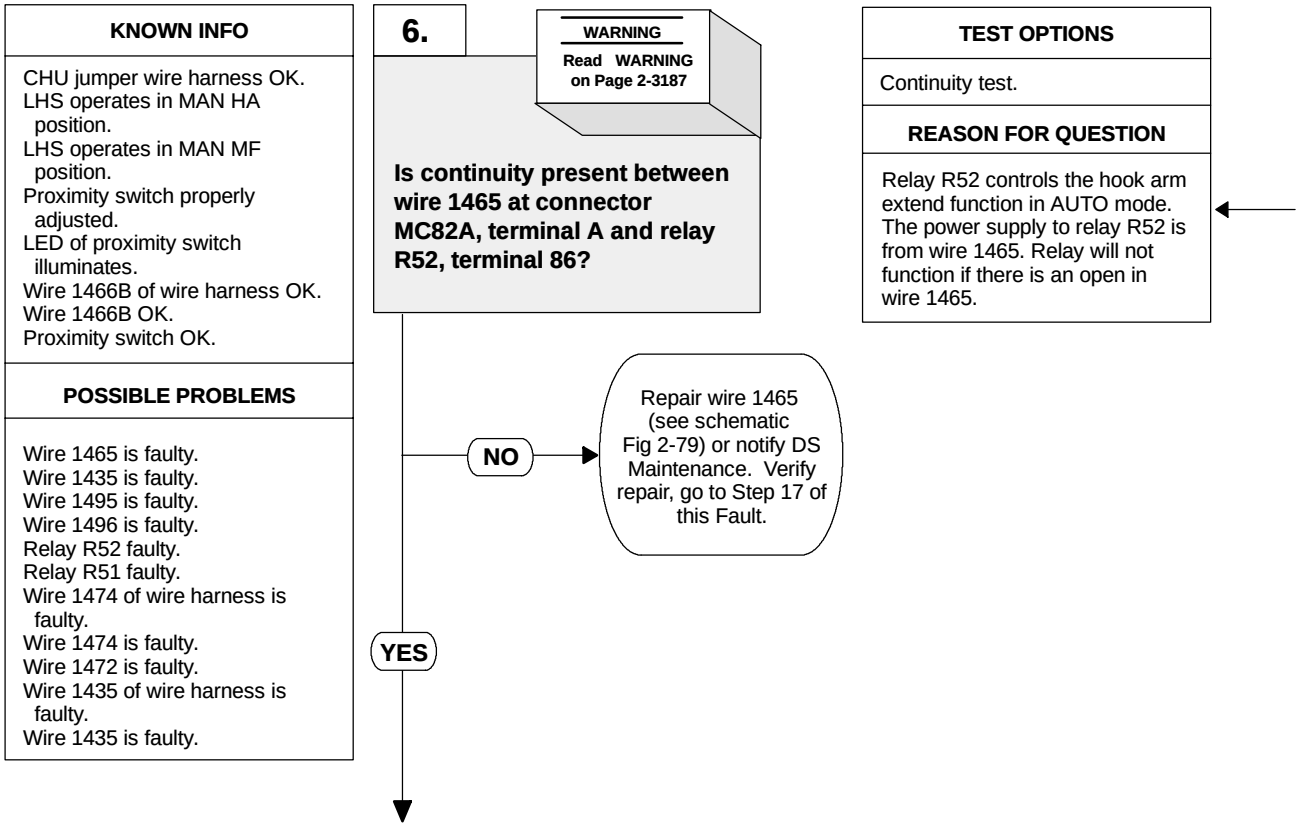
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

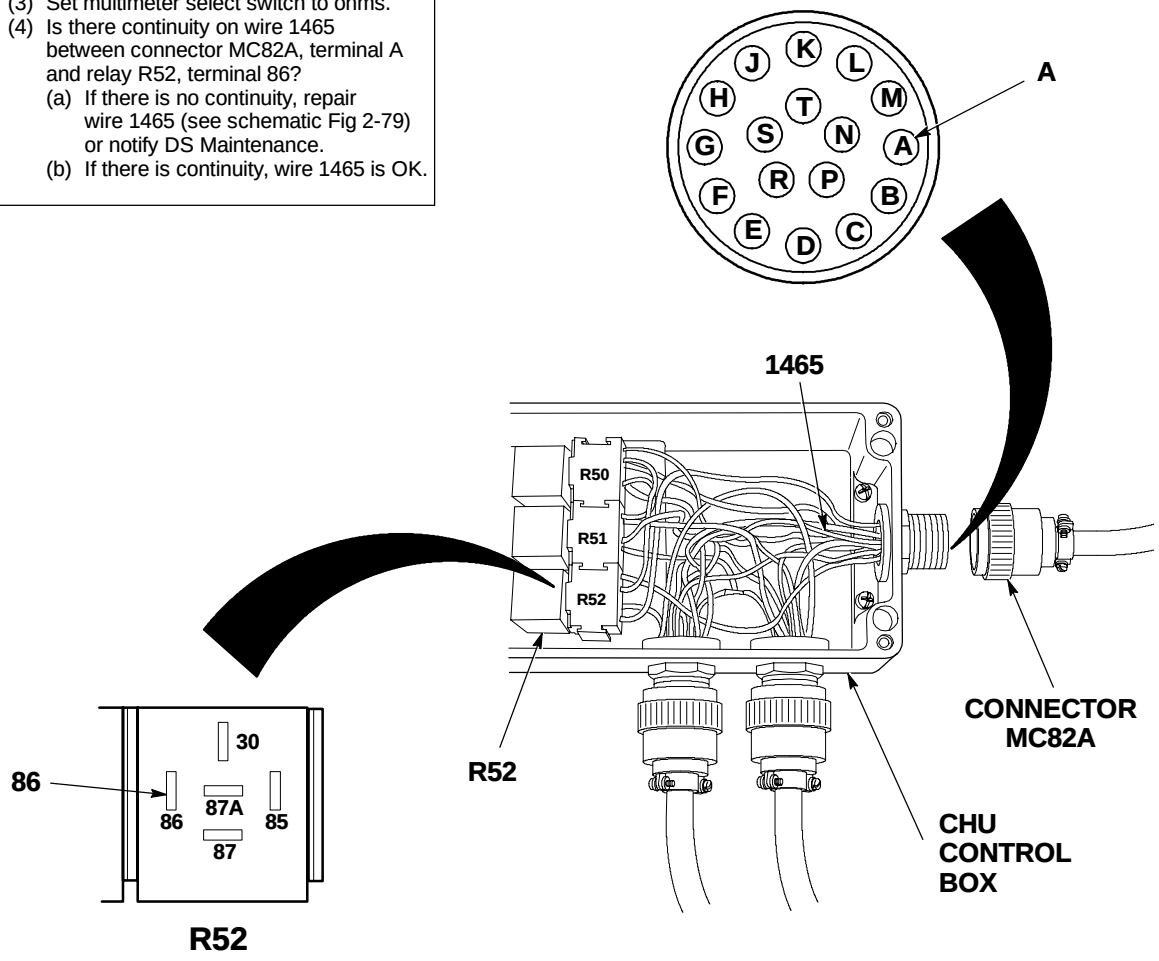


WARNING

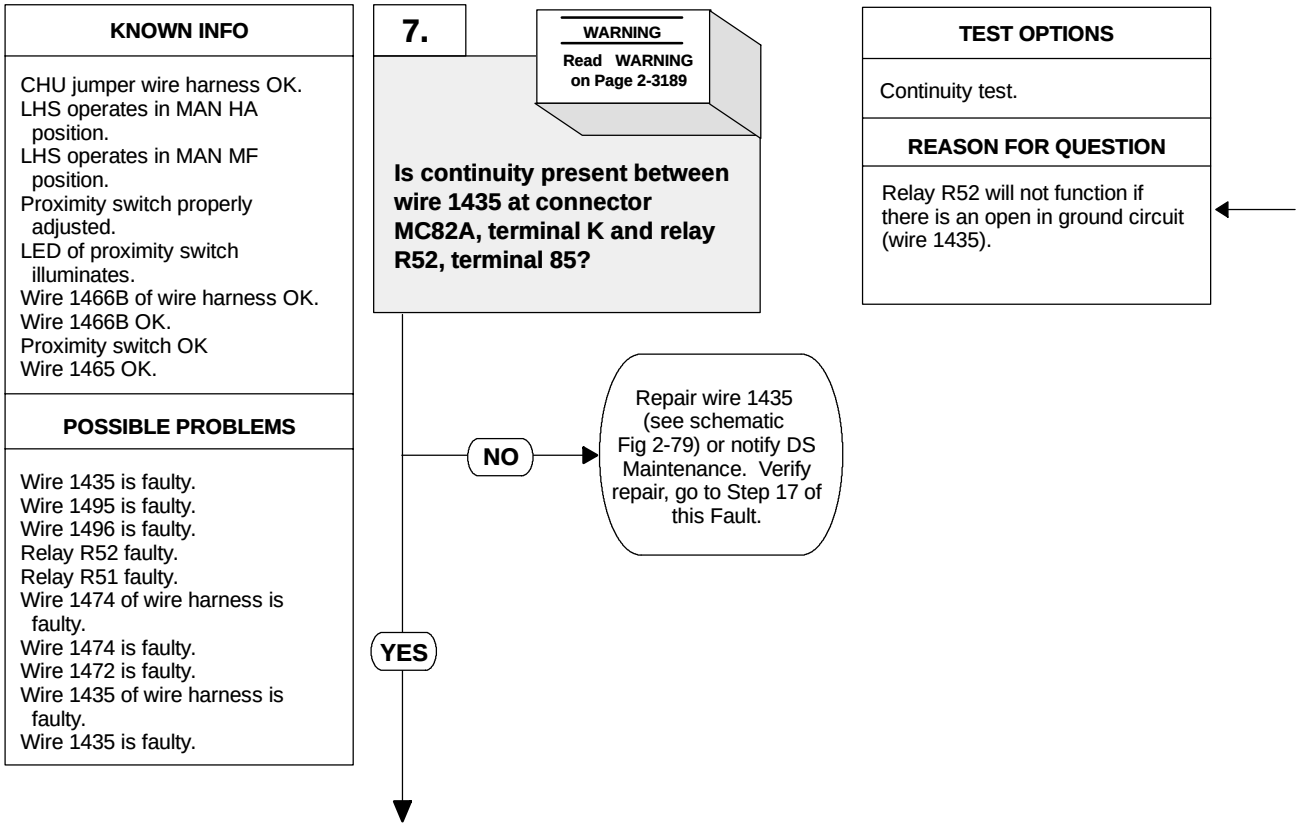
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

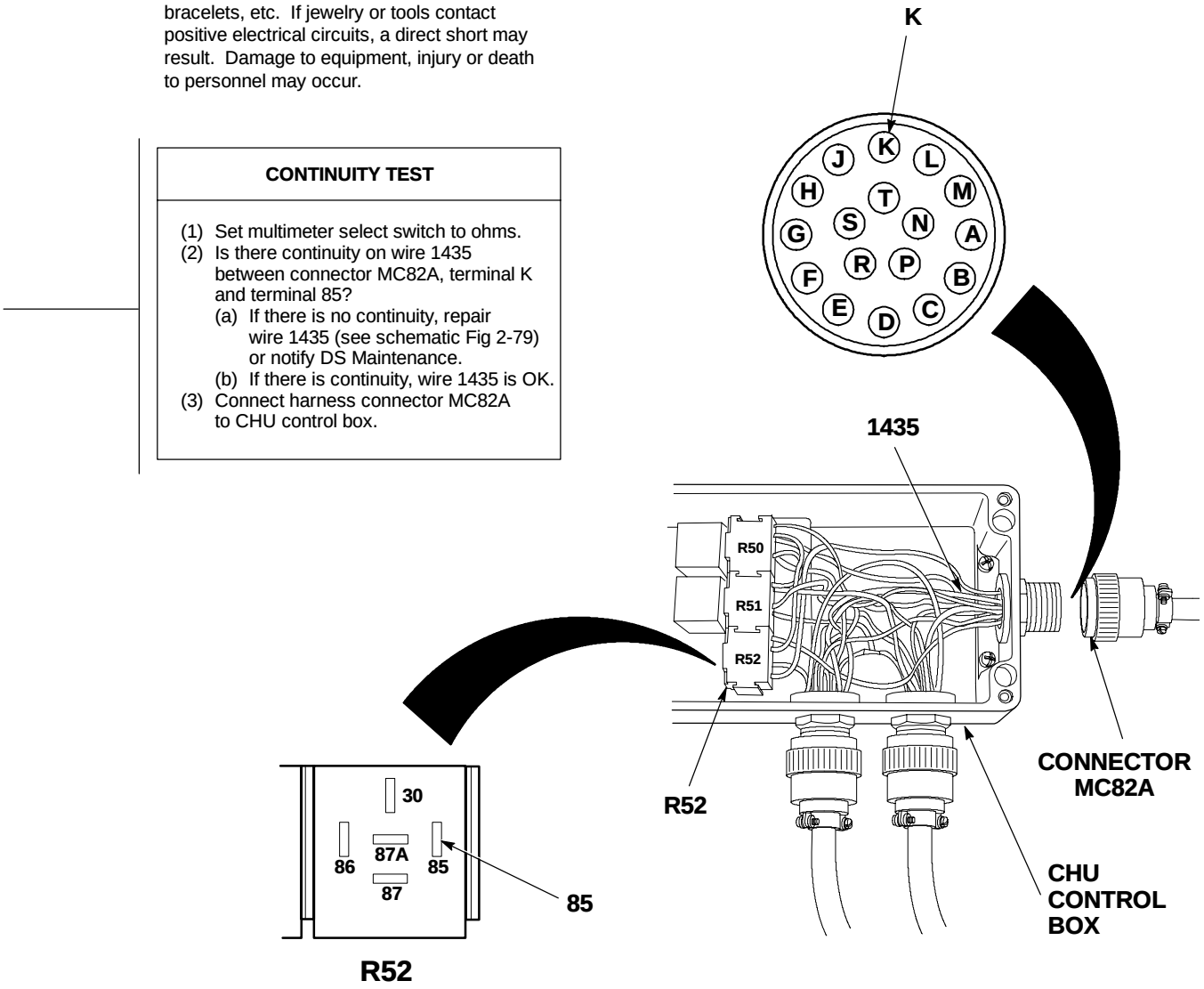


WARNING

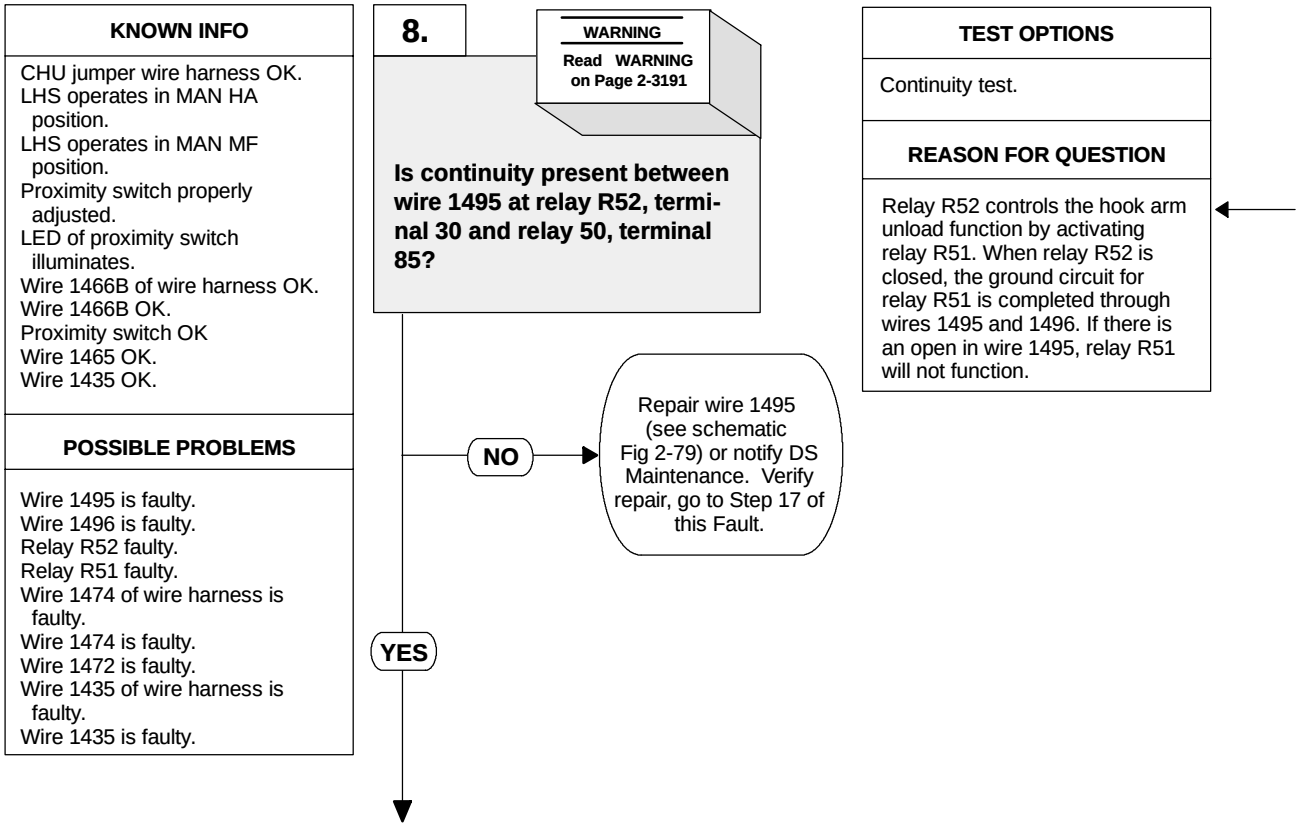
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

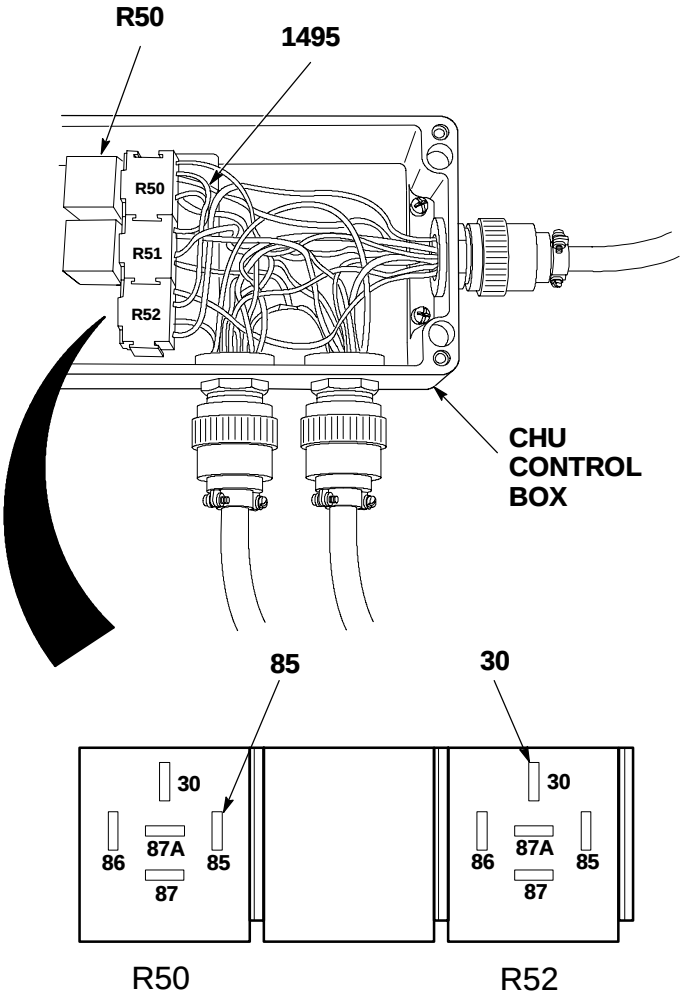


WARNING

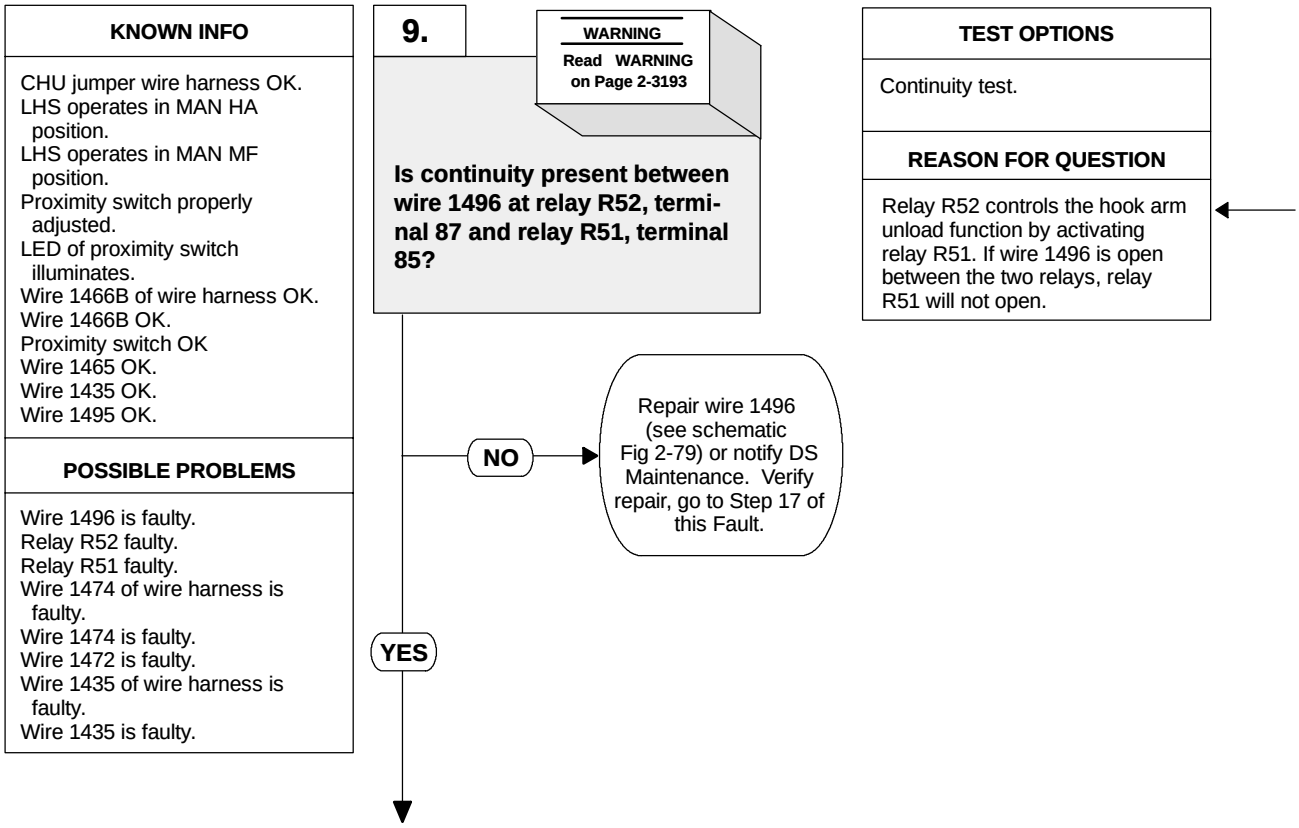
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

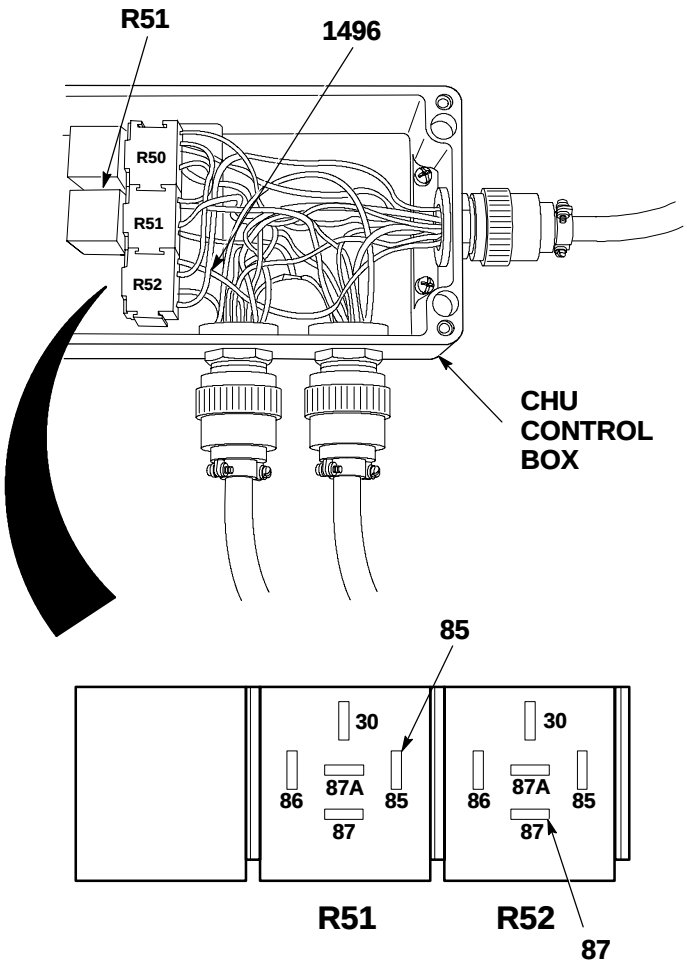


WARNING

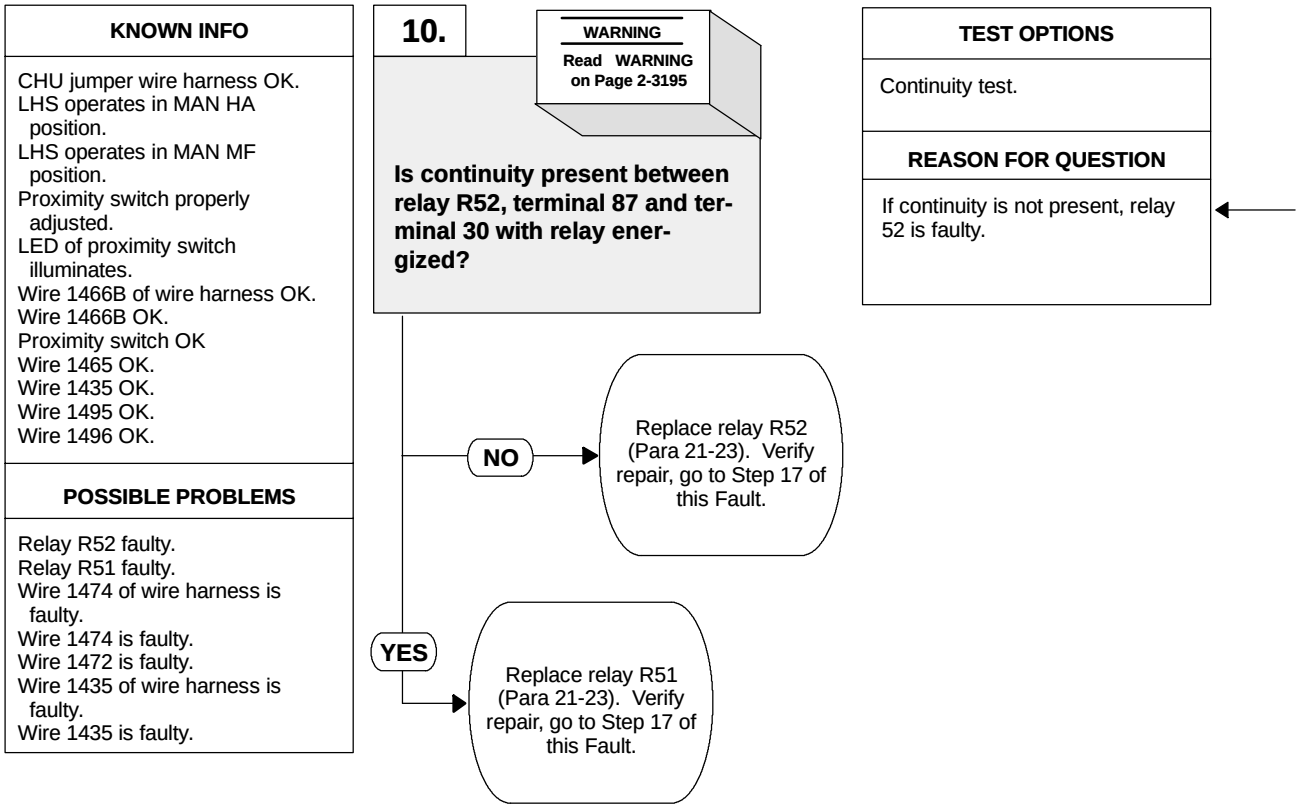
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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

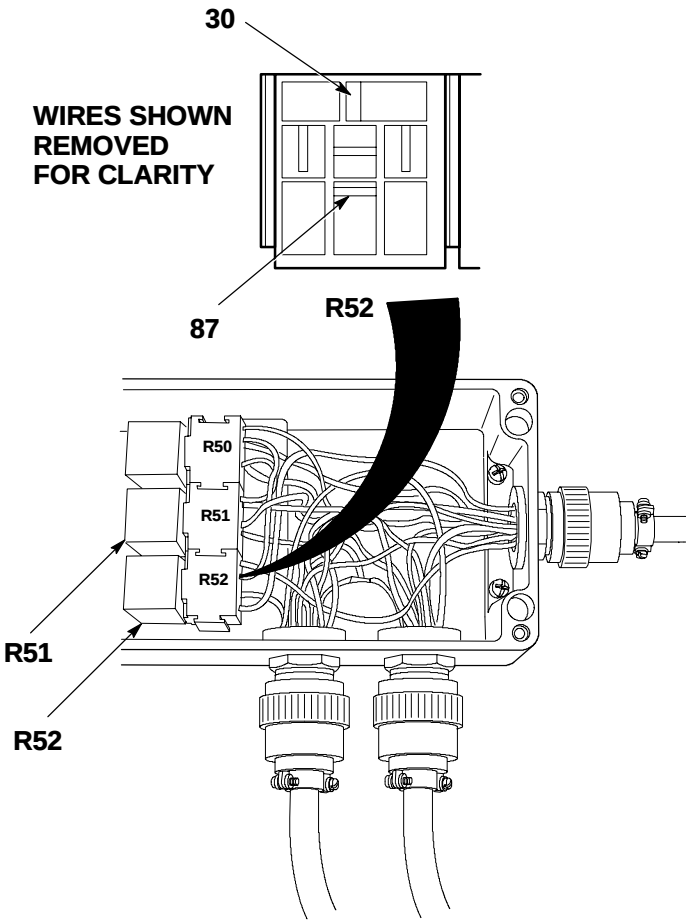
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

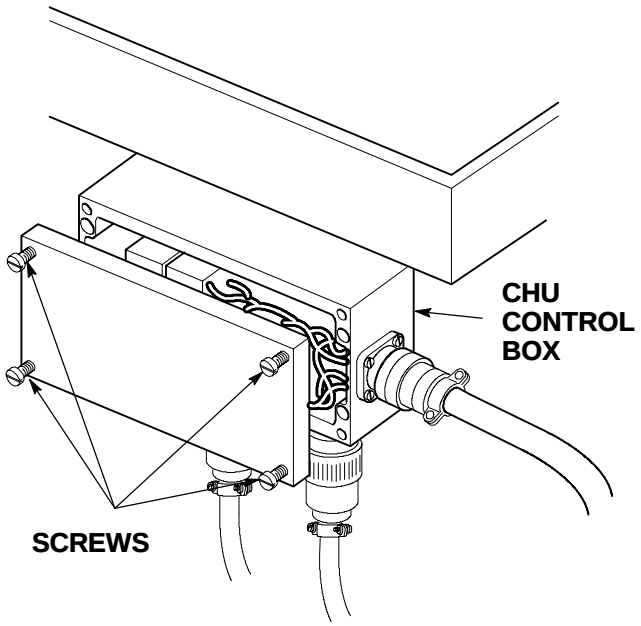
CAUTION

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

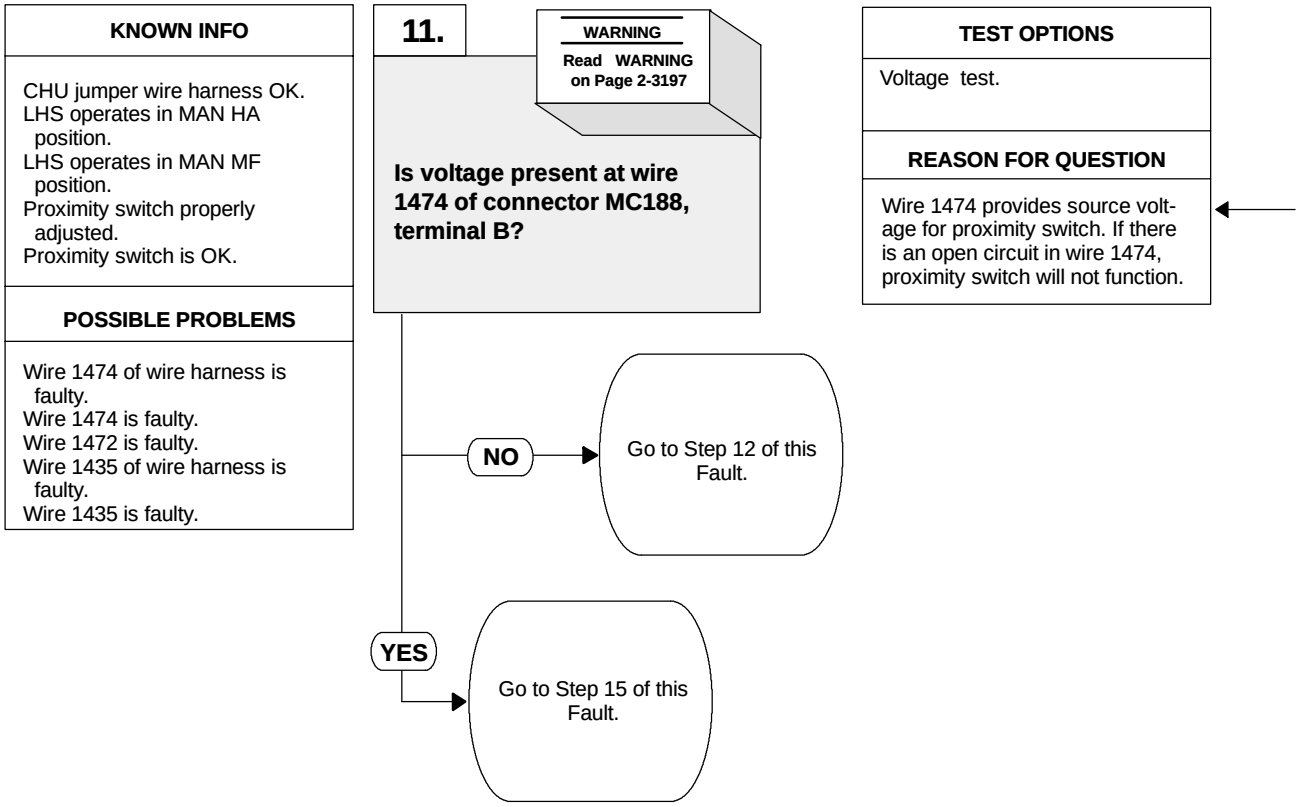
CONTINUITY TEST

(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).

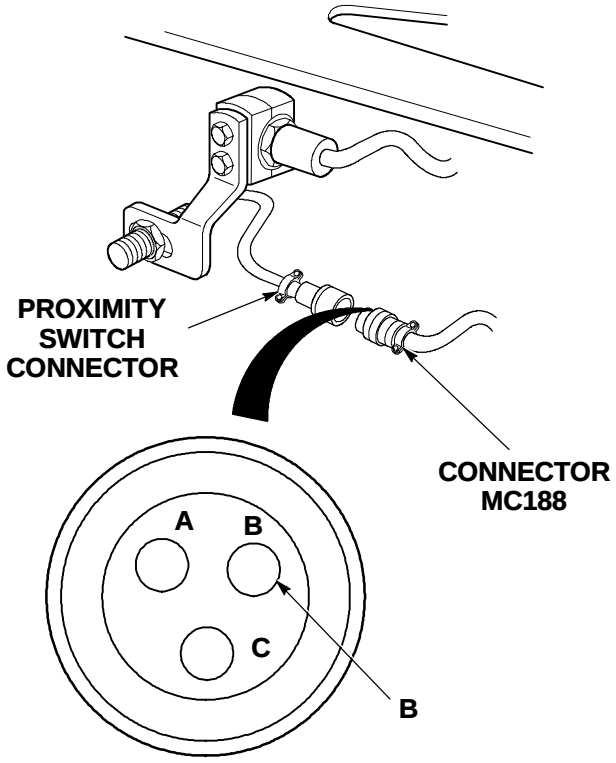


WARNING

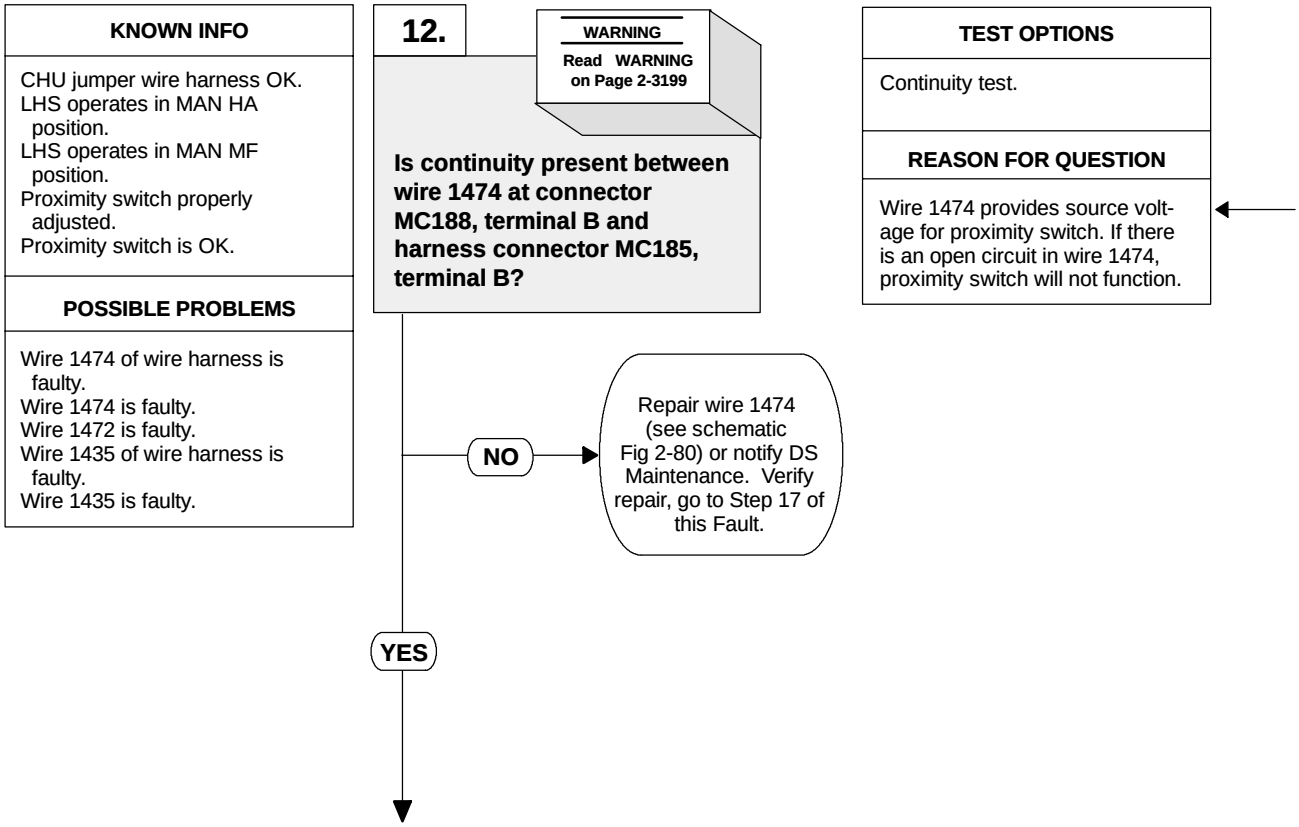
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

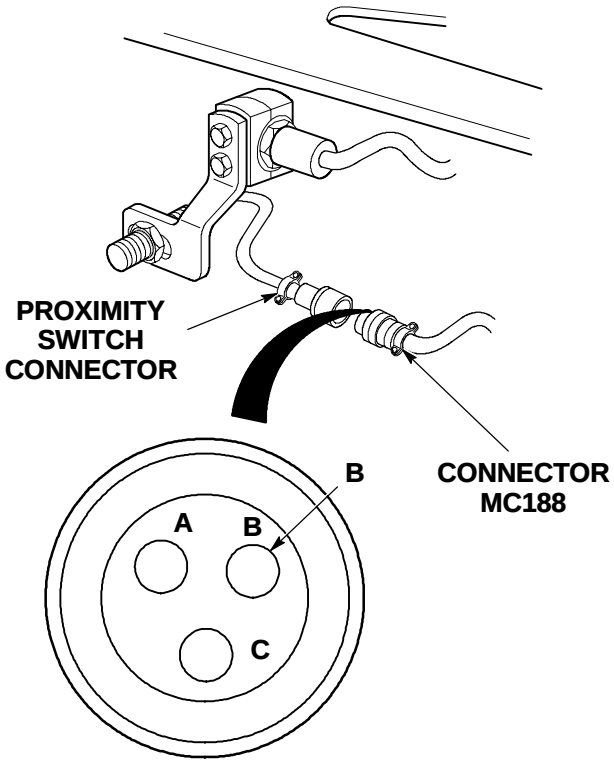


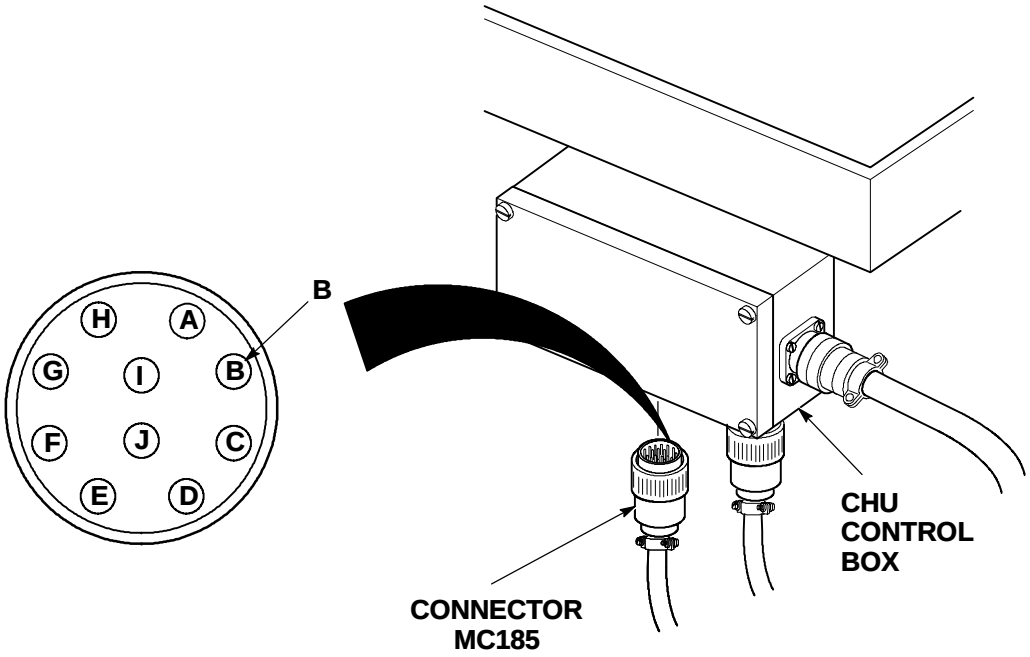
WARNING

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.

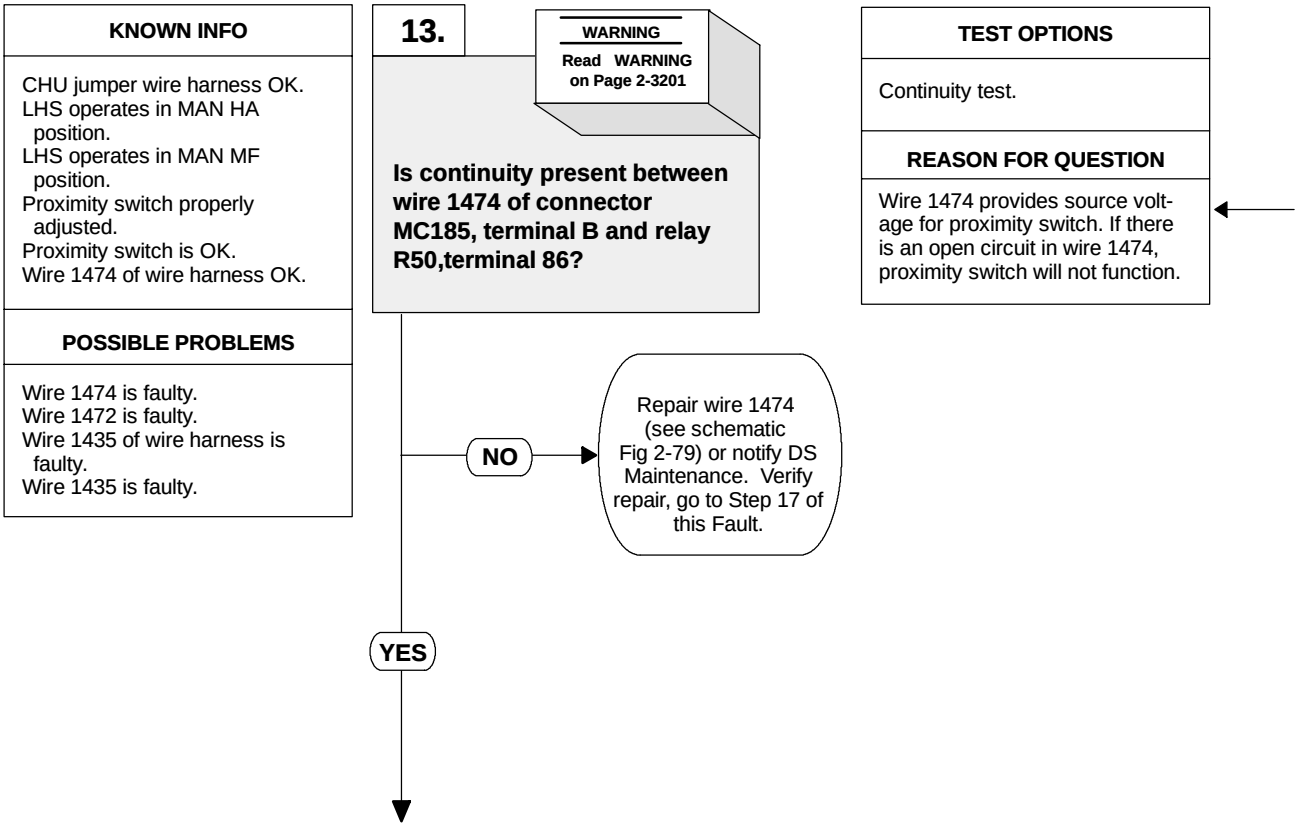
CONTINUITY TEST

(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).

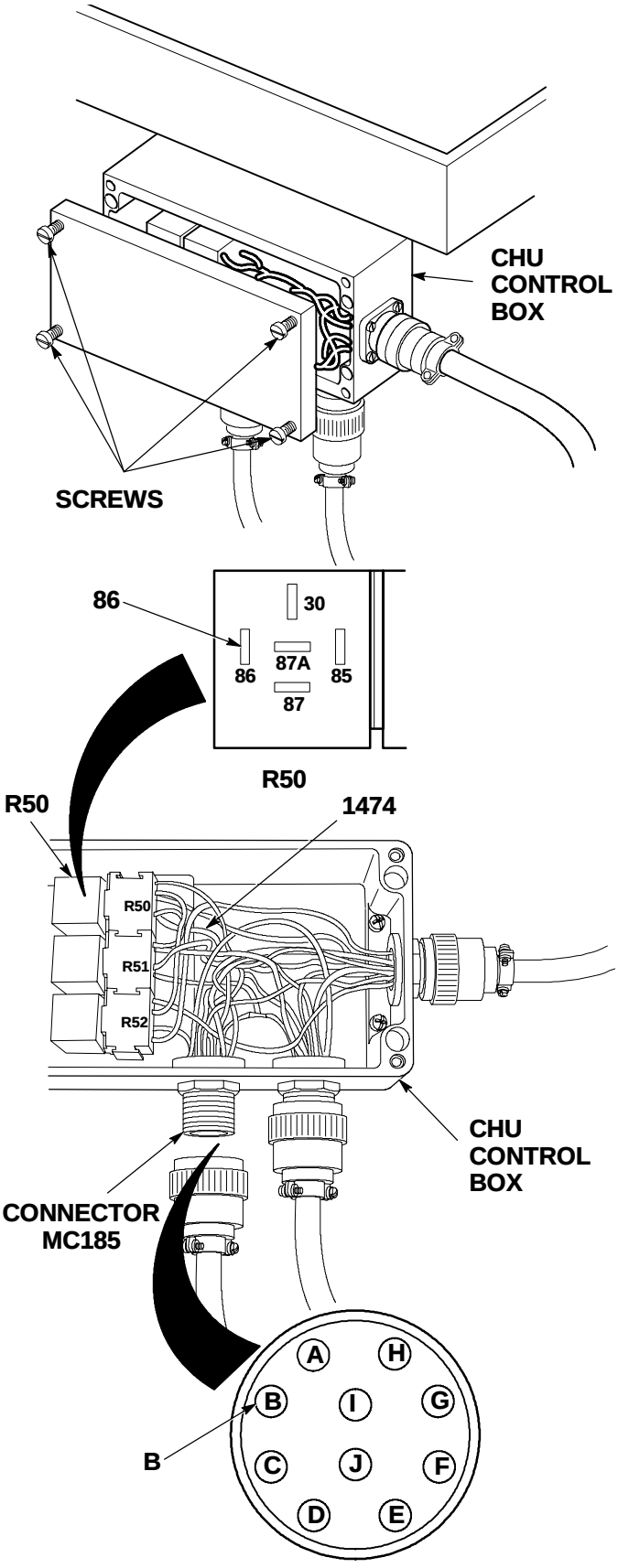


WARNING

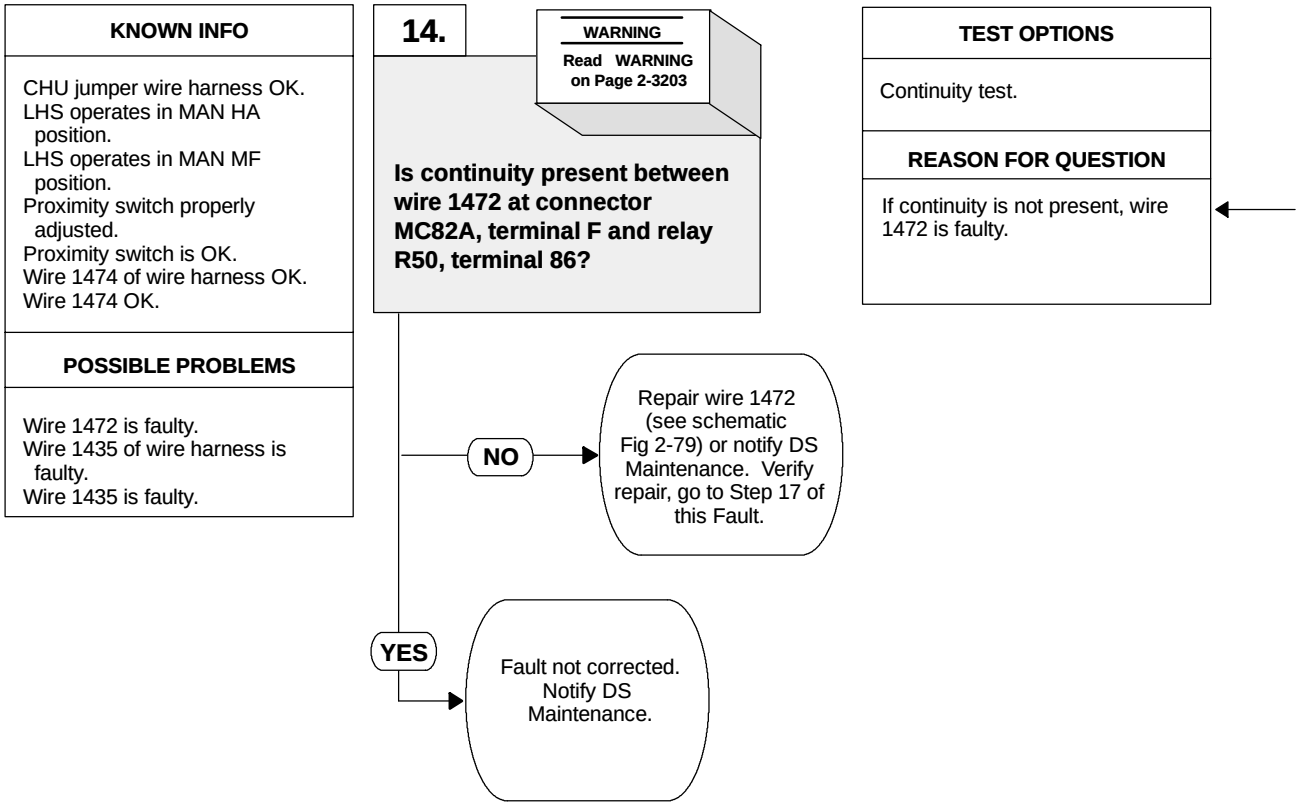
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

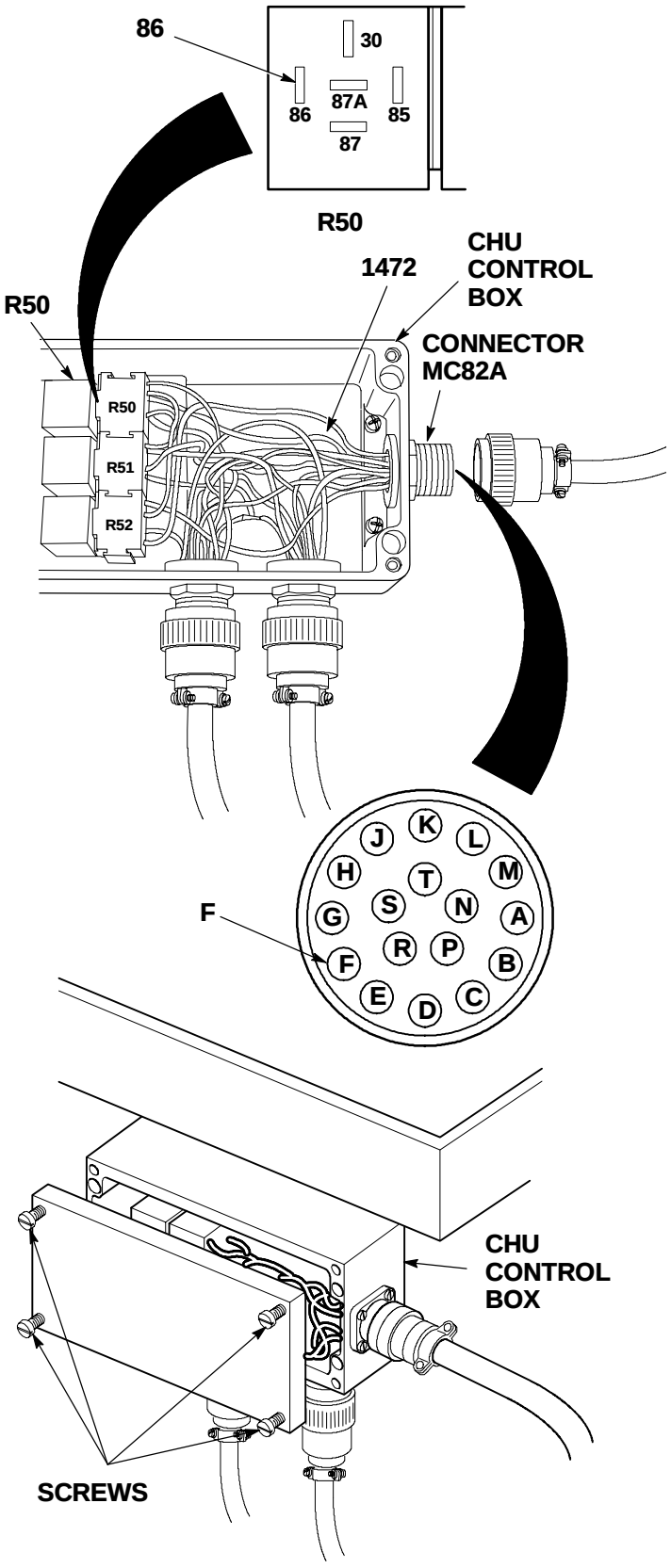


WARNING

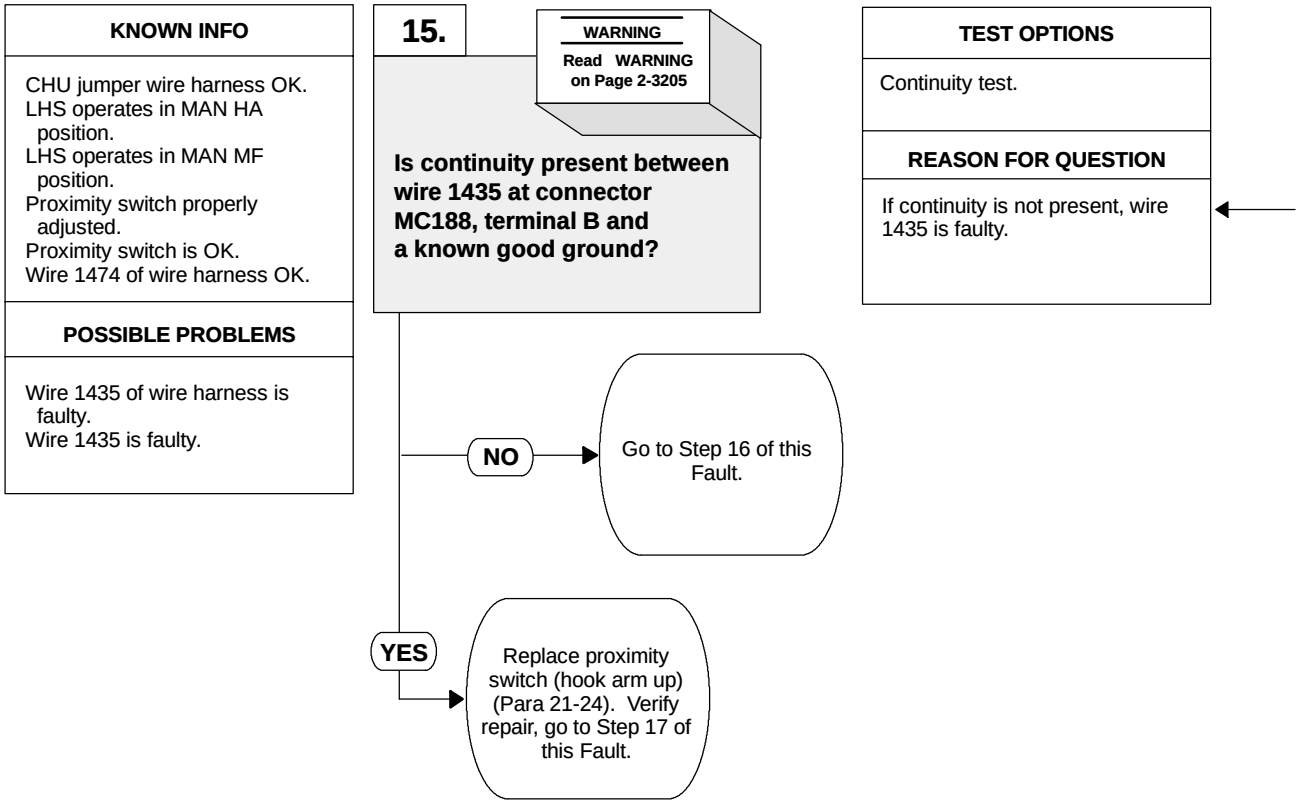
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

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).

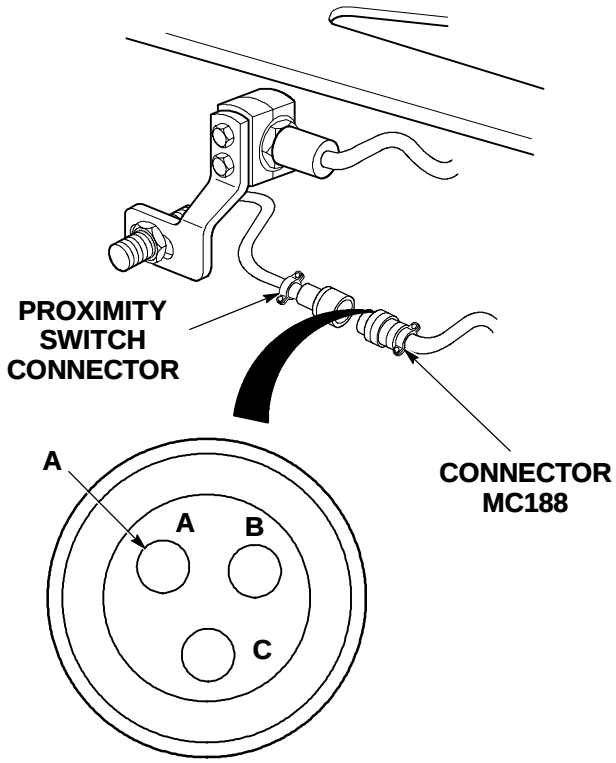


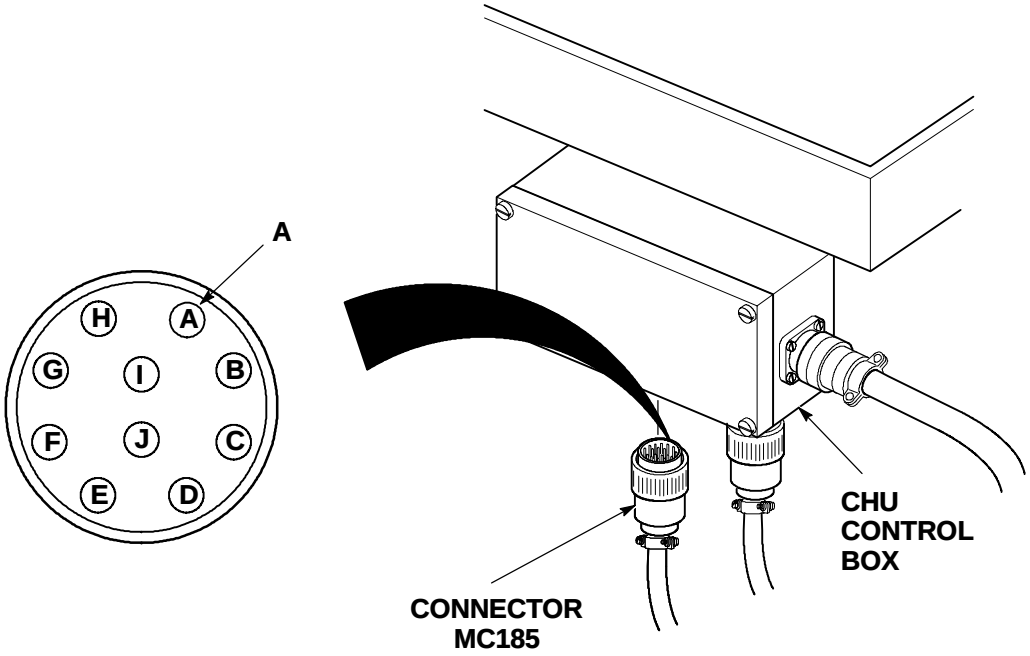
WARNING

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.

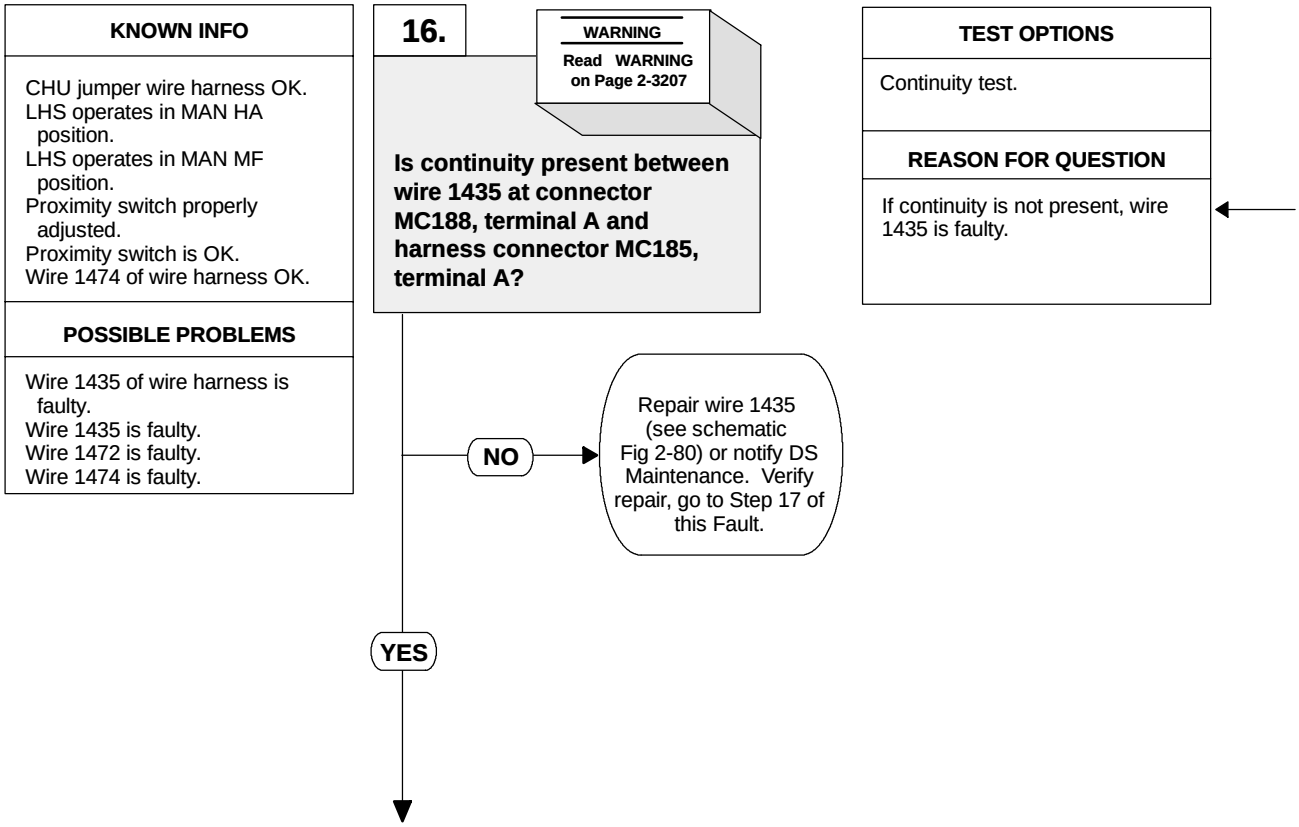
CONTINUITY TEST

(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).

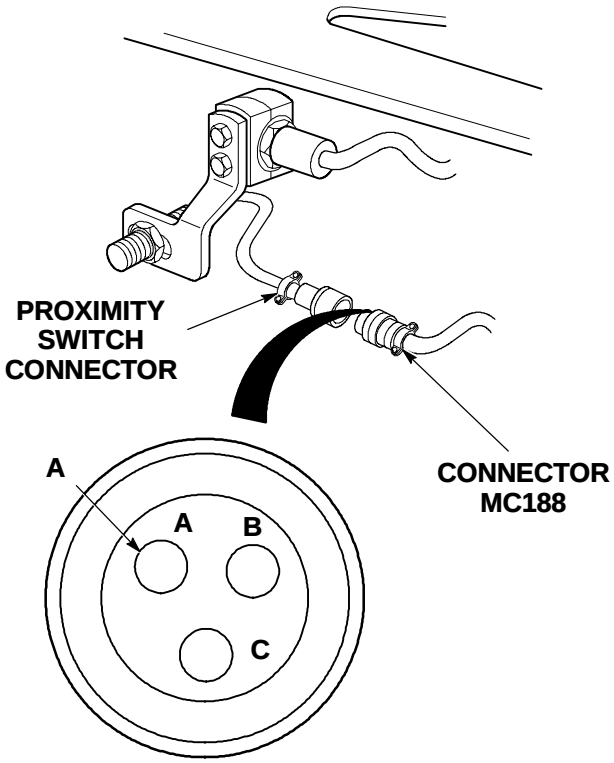


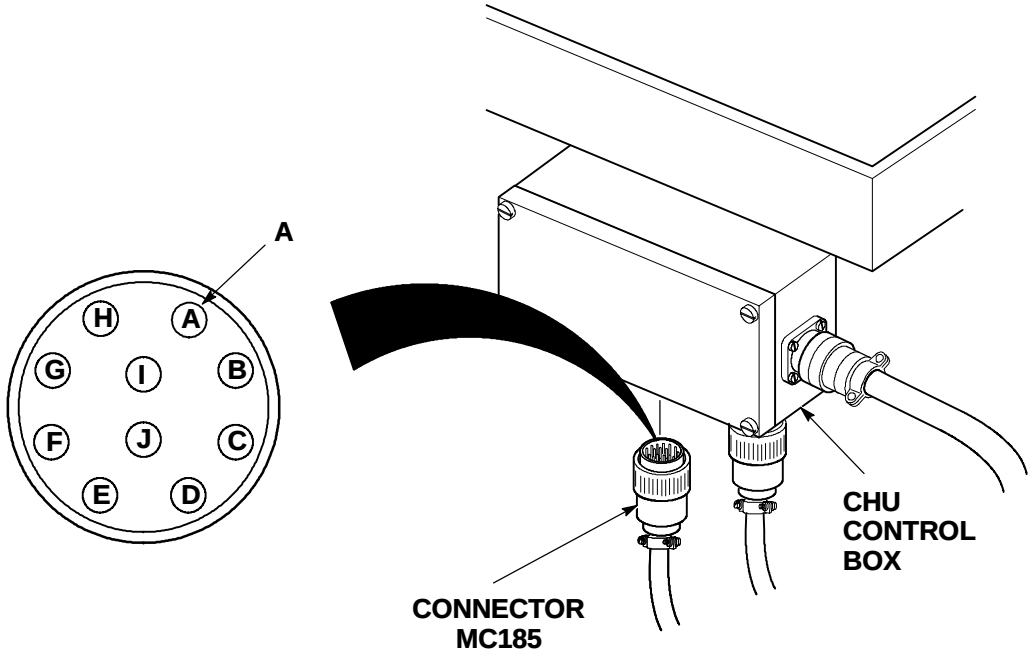
WARNING

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.

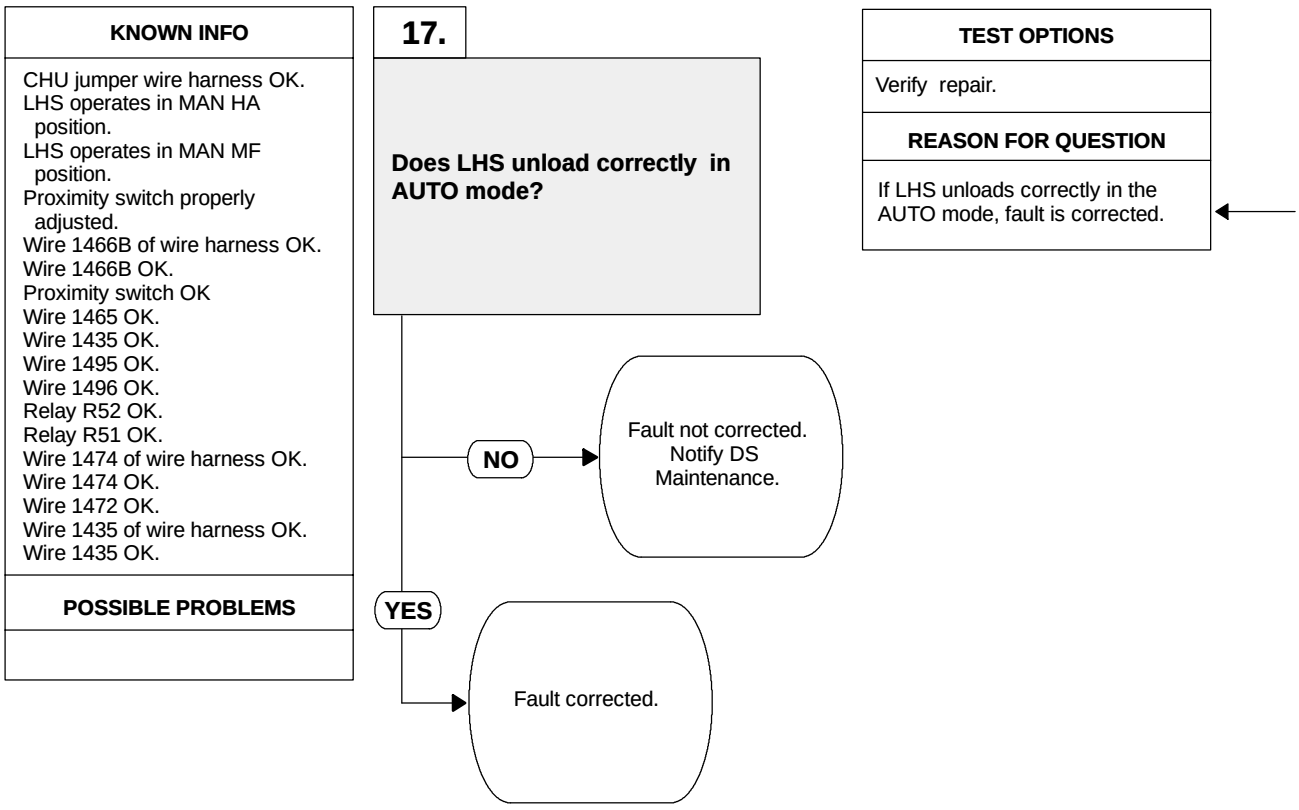
CONTINUITY TEST

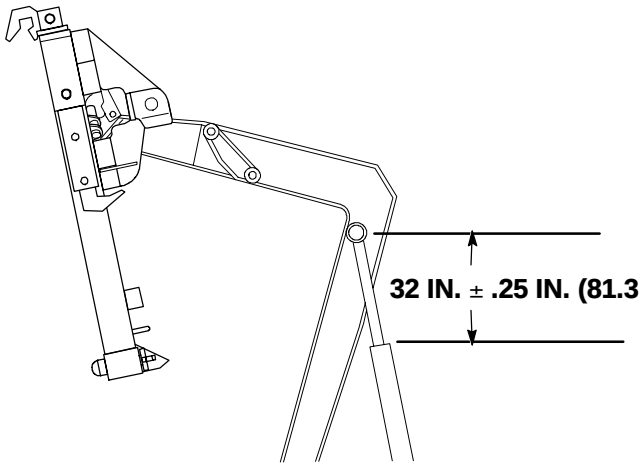
(1) Disconnect wire harness connector MC185 from CHU control box.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between connector MC188, terminal A and connector MC185, terminal A?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-80) or notify DS Maintenance.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





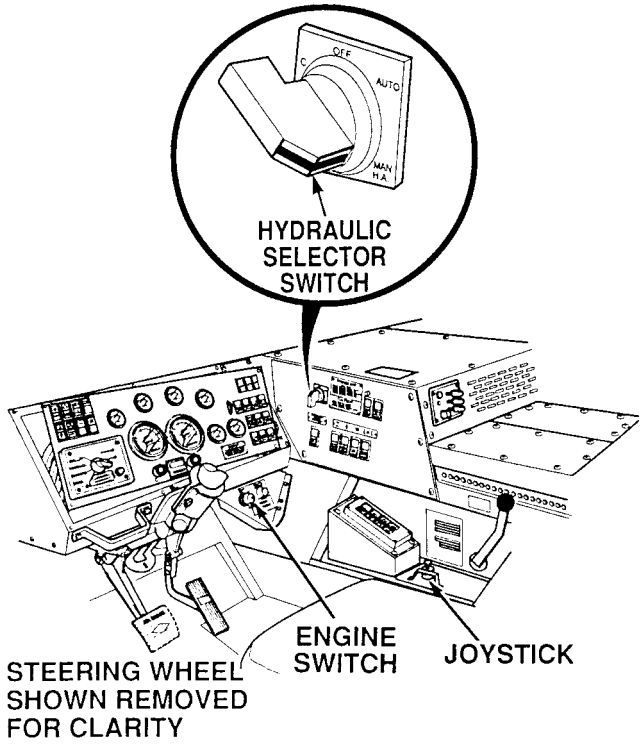
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).





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 assembles 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.

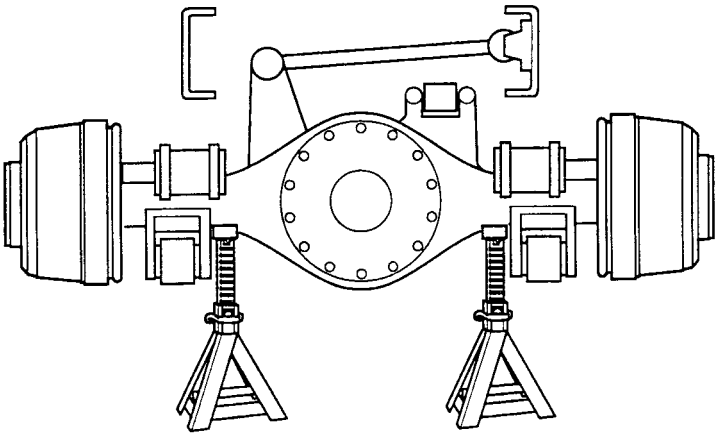


Figure 2-82. Axle No. 1 through 5 Jackstand Placement

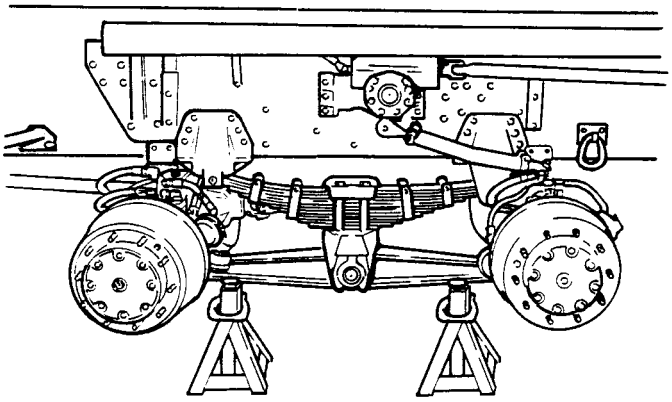


Figure 2-83. Axle No. 1 & 2 or 4 & 5 Walking Beam Jackstand Placement

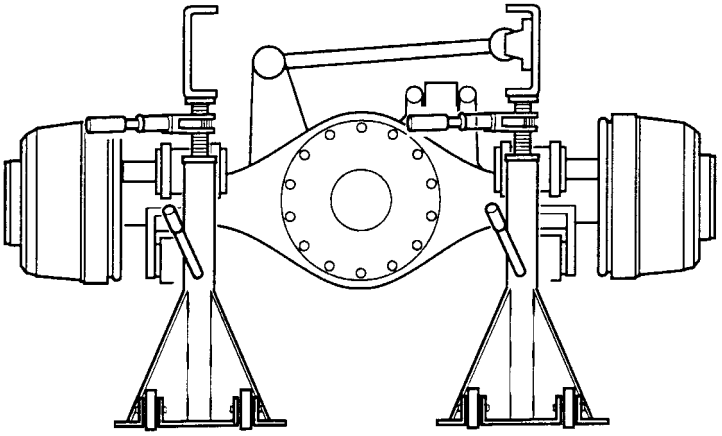


Figure 2-84. Frame Jackstand Placement

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 alkalies 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. Ensusre 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 Apendix 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).

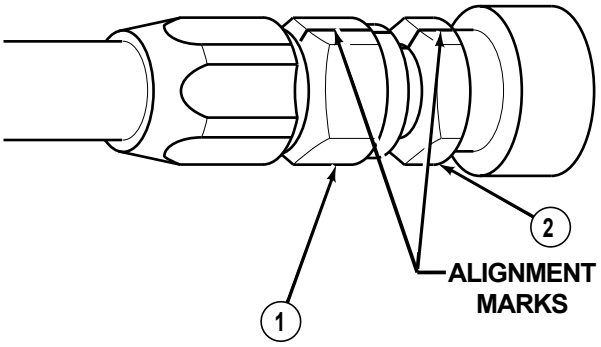
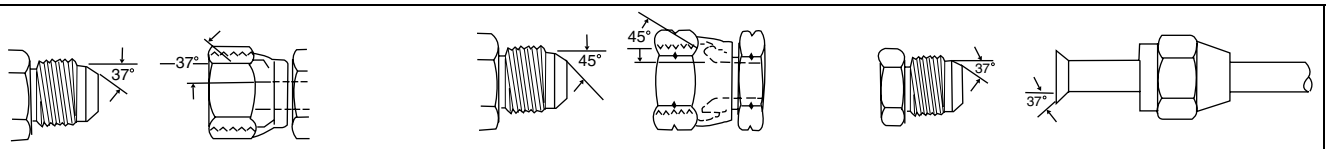


Table 2-67. Recommended Flats Rotation



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.

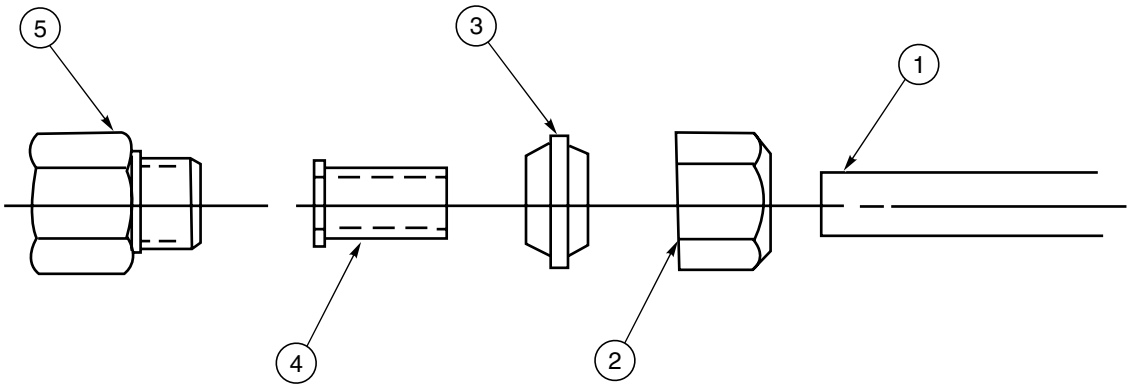
(2) Remove nut (2), ferrule (3) and tube support (4) from fitting (5).

(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.



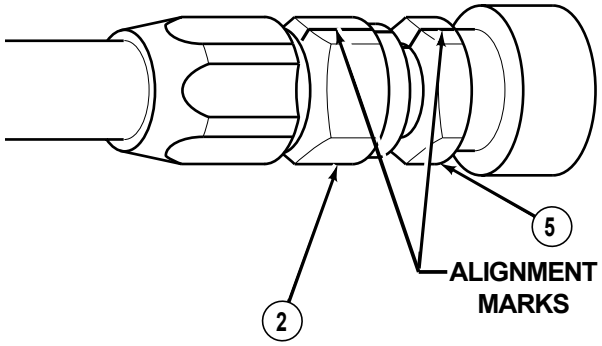
NOTE

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.

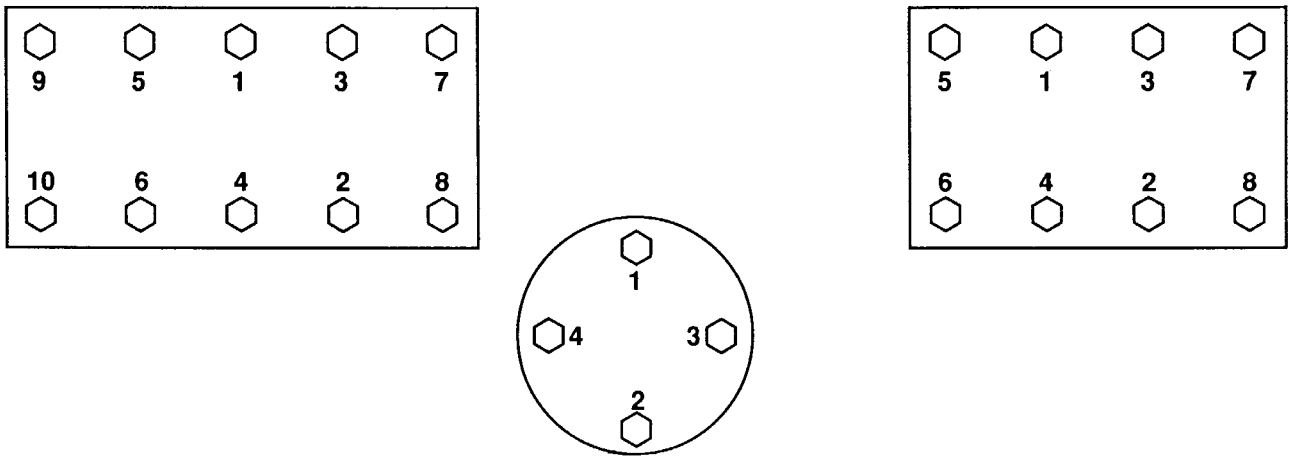


Figure 2-85. General Tightening Sequences.

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, deep 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 one 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 38-470) for storage and maintenance of Army prepositioned stock material configures to unit sets instructions.

e. Refer to (TM 38-450) for storage and maintenance of land-based Army war reserve.

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 isoproply 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) 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 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

Deleted

(f) Deleted

(g) Deleted

(h) Deleted

(5) Axle extended storage.

None required.

(6) Winch extended storage.

None required.

(7) Transfer Case extended storage.

CAUTION

Deleted

(a) Deleted

(b) Deleted

(c) Deleted

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) Deleted

(8) Main hydraulic system extended storage.

None Required.

(9) Steering hydraulic system extended storage.

None Required.

(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

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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

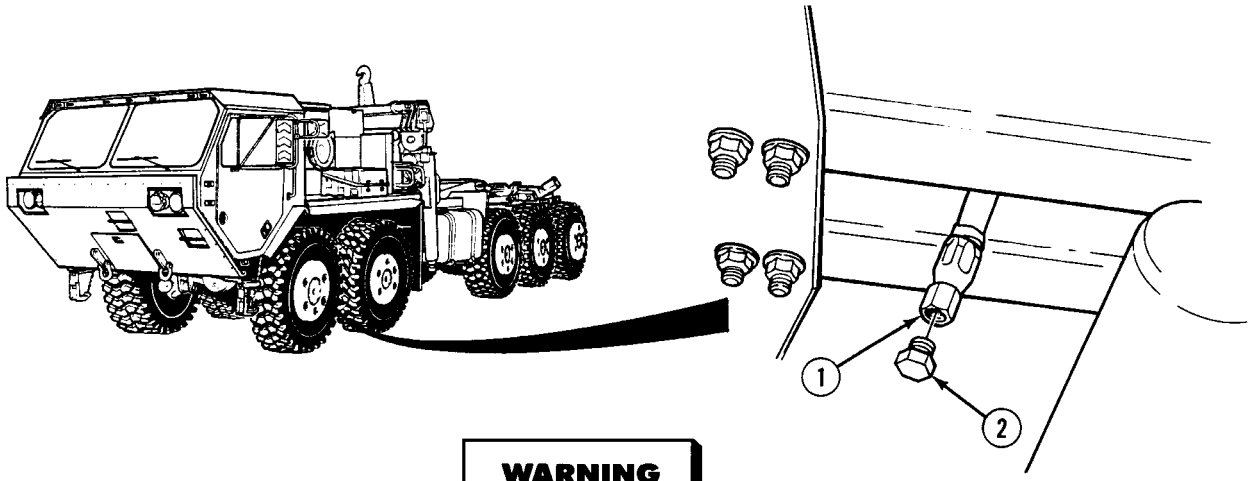
INITIAL SETUP

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.



WARNING

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).

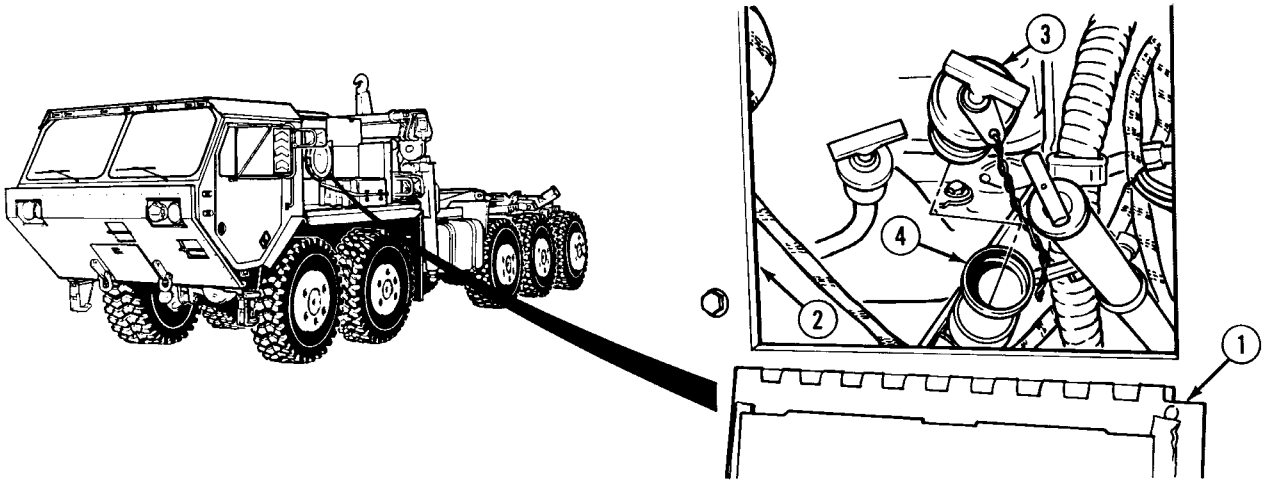
NOTE

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

3-3. POWER TAKE-OFF (PTO) ADAPTER REPLACEMENT.

This task covers:

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

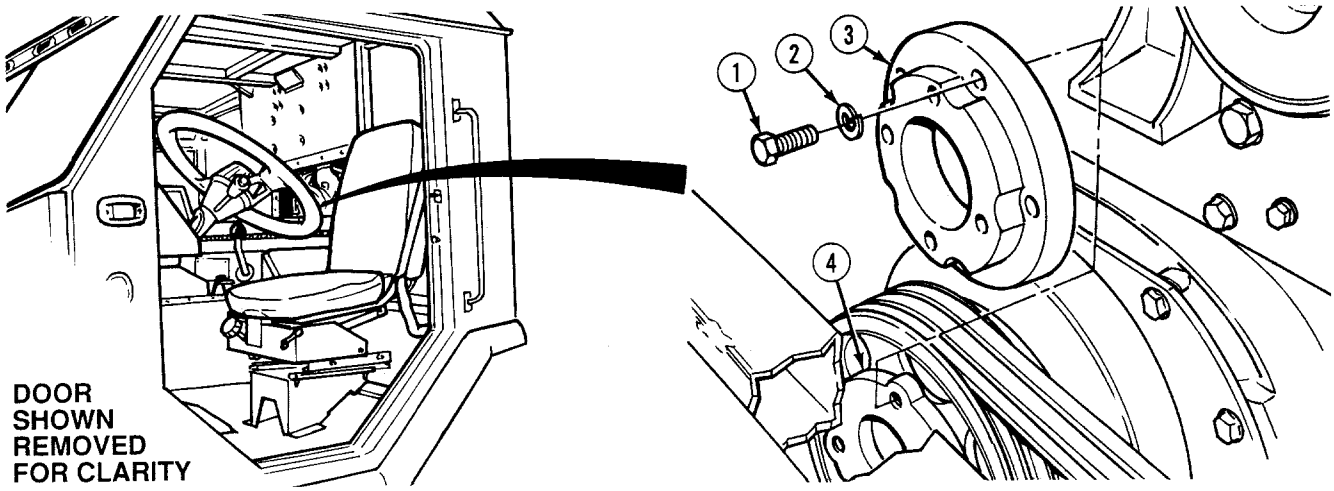
INITIAL SETUP

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)

Materials/Parts
Lockwasher (5) Engine (Item 168, 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)
Main hydraulic driveshaft disconnected, (Para 20-2)

a. Removal.



(1) Remove five screws (1) and lockwashers (2) from PTO adapter (3). Discard lockwashers.

(2) Remove PTO adapter (3) from crankshaft pulley (4).

b. Installation. Install PTO adapter (3) on crankshaft pulley (4) with five lockwashers (2) and screws (1). Tighten screws to 35 lb-ft (47 N·m).

c. Follow-On Maintenance:

- Connect main hydraulic driveshaft, (Para 20-2).
- Install cab engine access panel, (Para 17-24).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

3-4. LEFT ROCKER COVER AND GASKET 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)
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.

CAUTION

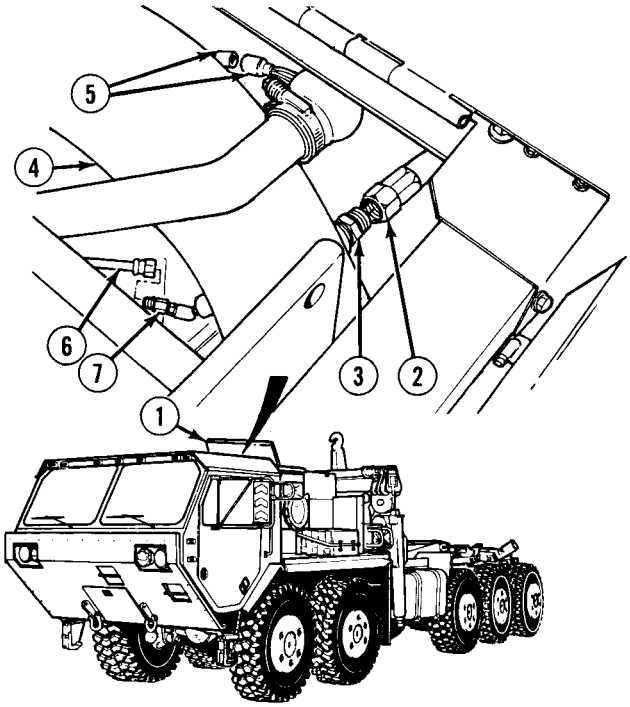
Clean around rocker cover prior to removal from engine to keep dust or dirt from entering engine. Failure to comply may result in damage to equipment.

(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).

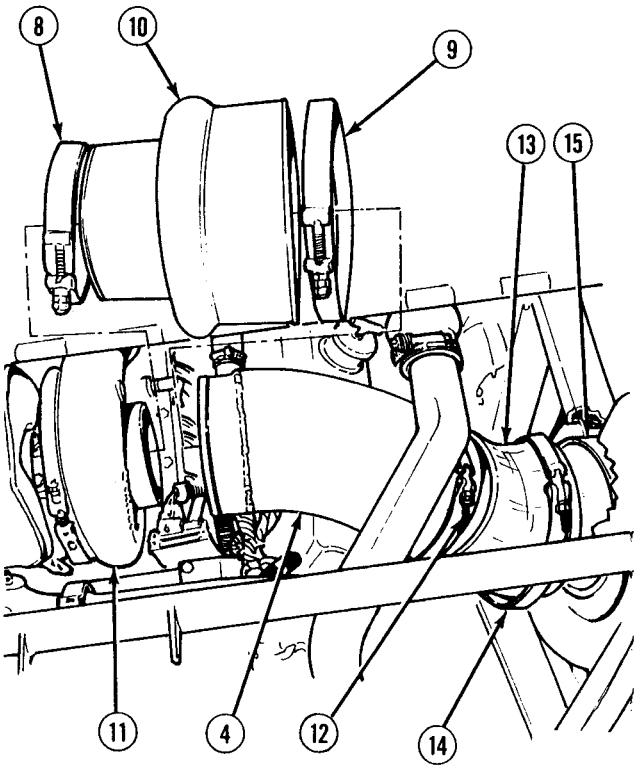
(9) Remove air intake pipe assembly (4) and hose clamp (12) from air cleaner elbow (13). Discard hose clamp.

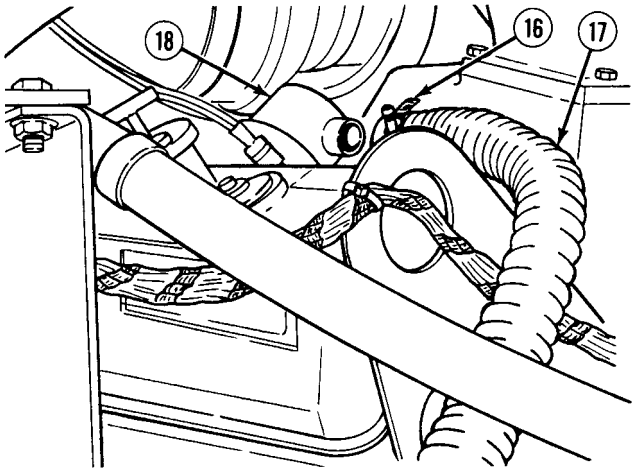
(10) Loosen hose clamp (14) on air cleaner elbow (13).

(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.





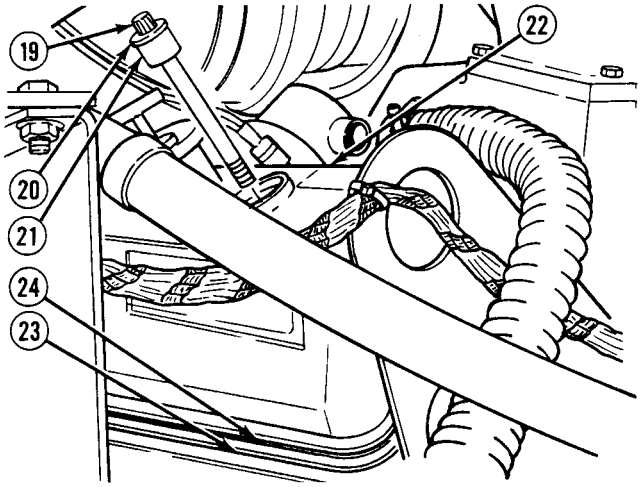
CAUTION

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.

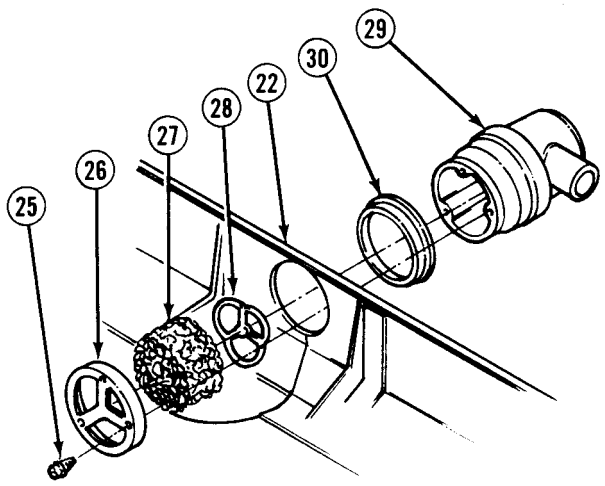
(15) Remove rocker cover (22) from cylinder head (23).

(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.

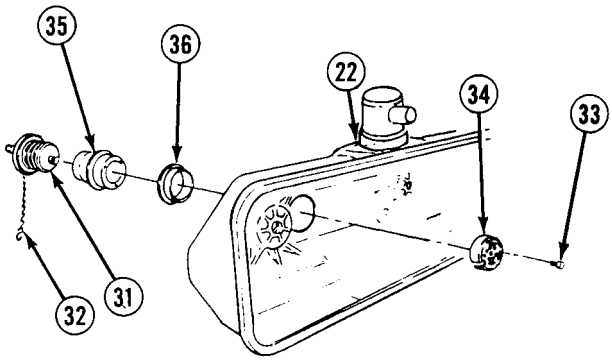
(19) Remove shell (29) and seal (30) from rocker cover (22). Discard seal.



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.

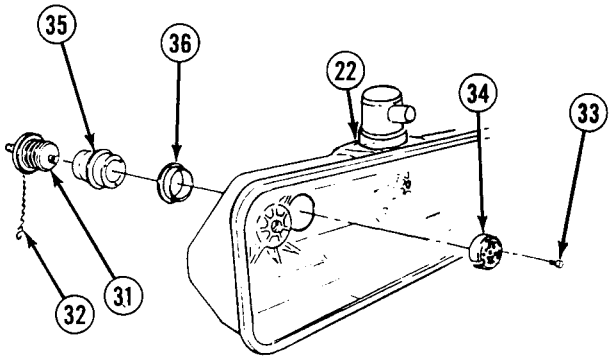
(3) Blow out groove in rocker cover with compressed air.

(4) Inspect all parts for holes, cracks, chips or stripped threads. Replace damaged parts.

c. Installation.

NOTE

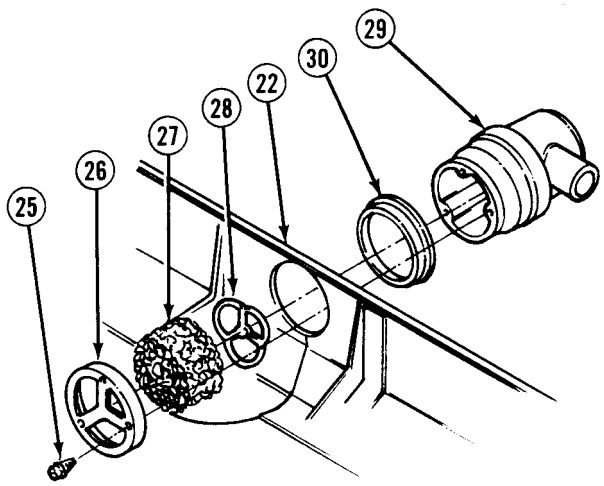
- Fill plug located on left rocker cover only.
- Ensure chain hook slides through rocker cover to outside of cover before installing screws.



(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).

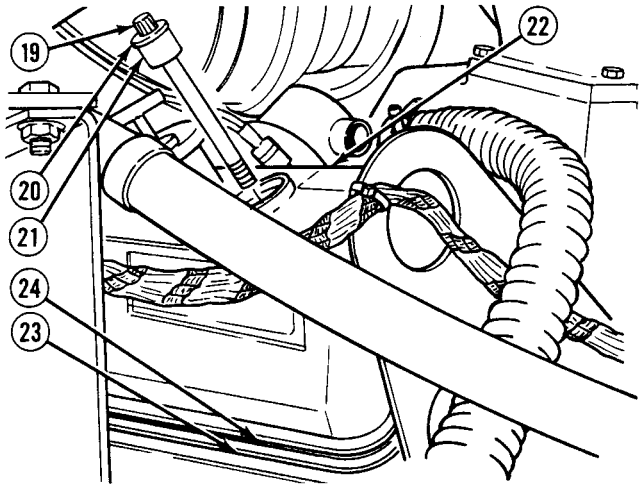
NOTE

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).

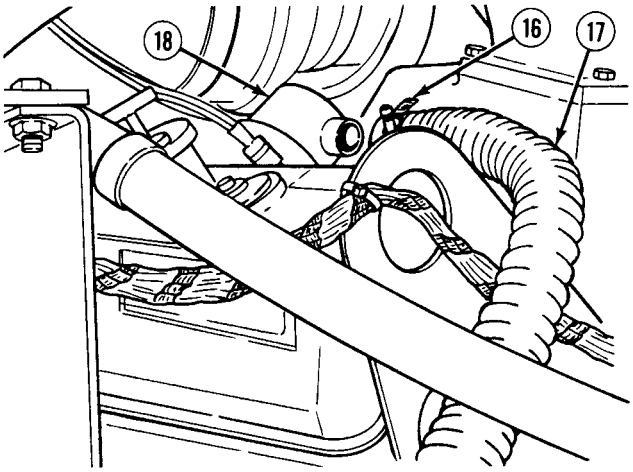


NOTE

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).

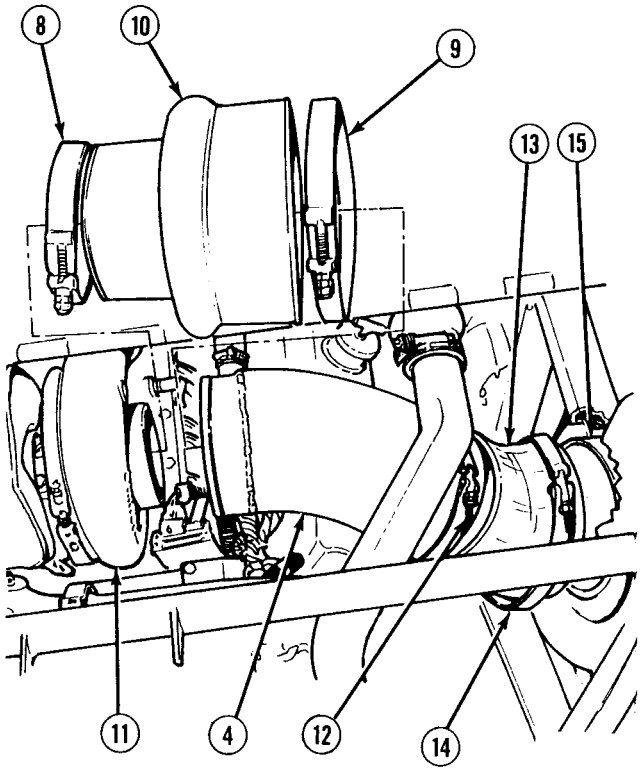
(13) Install hose clamp (16) and breather hose (17) on breather (18).



(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).

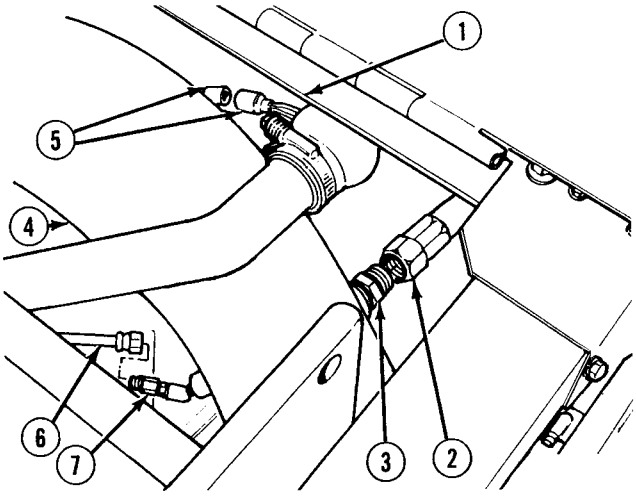


(17) Install hose 2381 (6) on fitting (7) on air intake pipe assembly (4).

(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
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

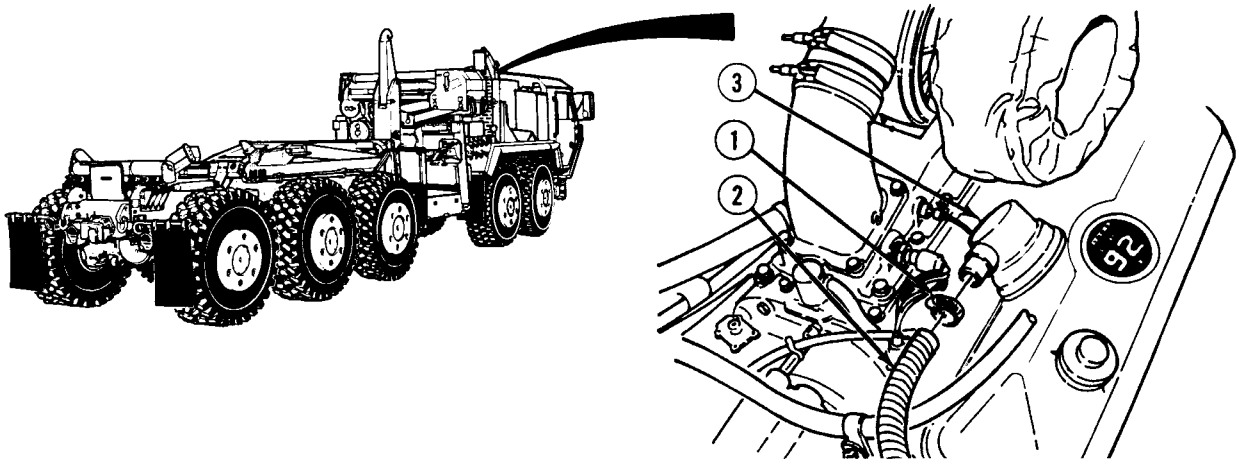
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Compressor Unit, Air (Item 11, Appendix G)
Gloves, Chemical Oil Protective (Item 28, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Gun, Air Blow (Item 31, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix 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.



CAUTION

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.

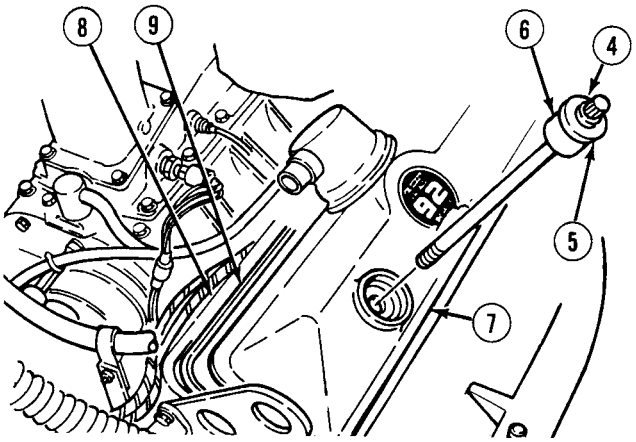
(3) Remove rocker cover (7) from cylinder head (8).

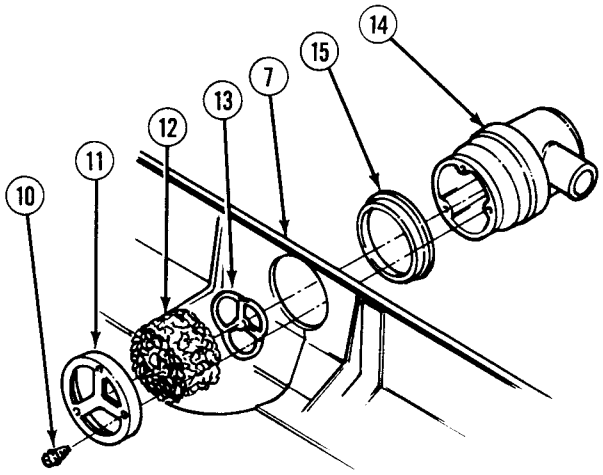
(4) Remove and discard gasket (9) from rocker cover (7).

(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.

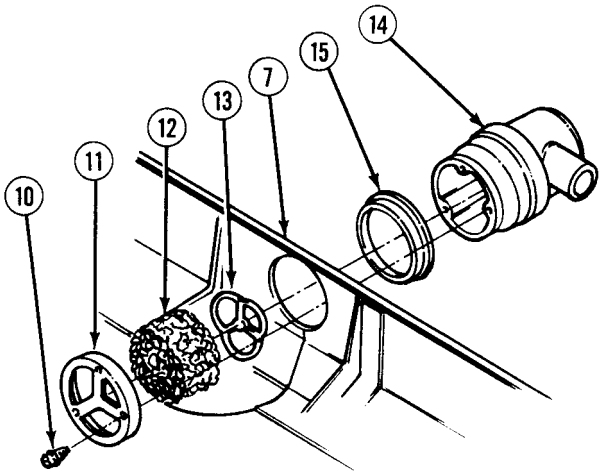
c. Installation.

(1) Install seal (15) in rocker cover (7).

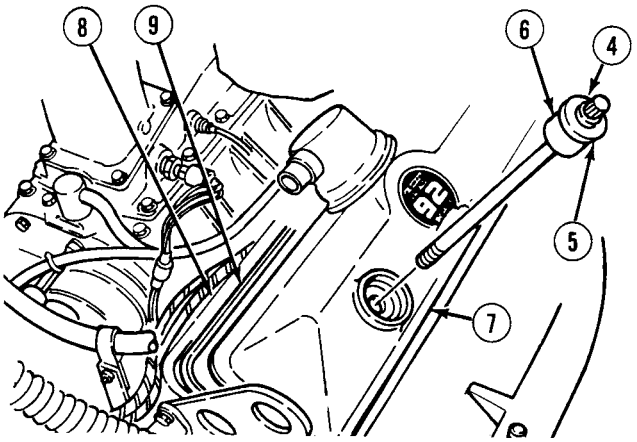
(2) Install shell (14) in seal (15) with breather tube stub toward rear of engine.

(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.

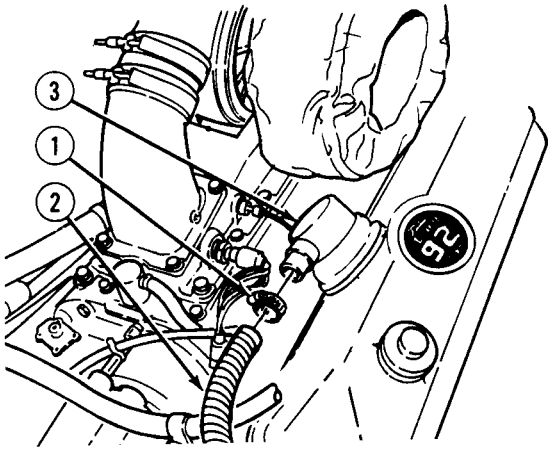
(7) Lubricate flat surface of gasket (9) and cylinder head (8) with light coating of clean engine oil.

(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

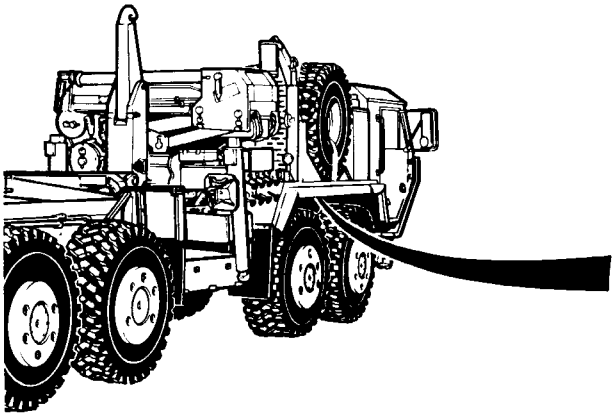
INITIAL SETUP

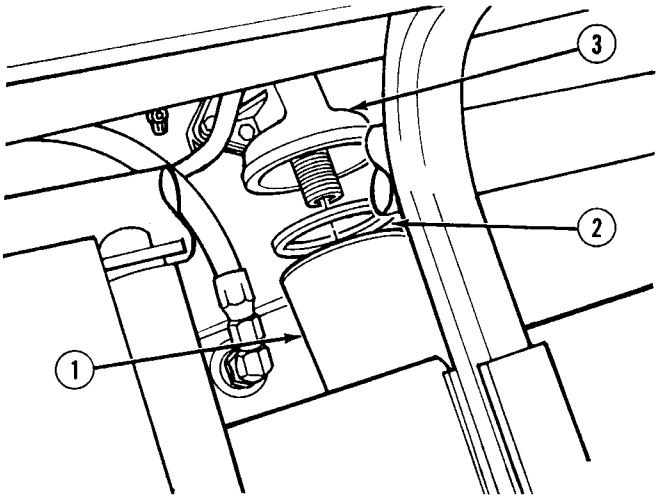
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Pan, Drain (Item 46, Appendix G)
Removal Tool, Oil Filter (Item 54, Appendix G)

Materials/Parts
Lubricating Oil, Engine (Item 56, Appendix C)

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

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.

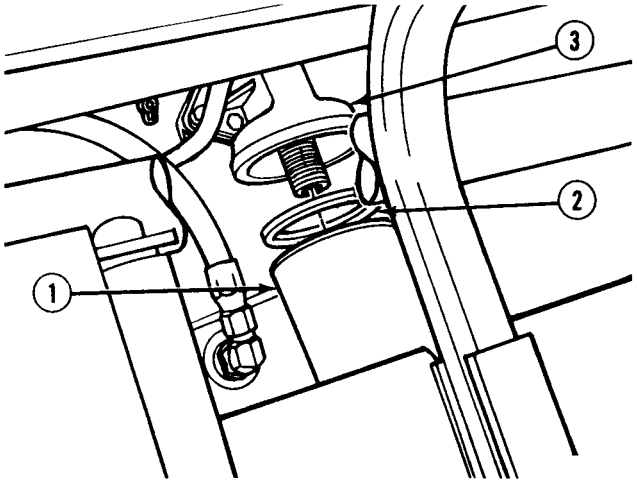
(2) Using oil filter removal tool, loosen engine oil filter (1) by turning counterclockwise.

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).

CAUTION

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

3-7. REMOTE ENGINE OIL FILTER REPLACEMENT.

This task covers:

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

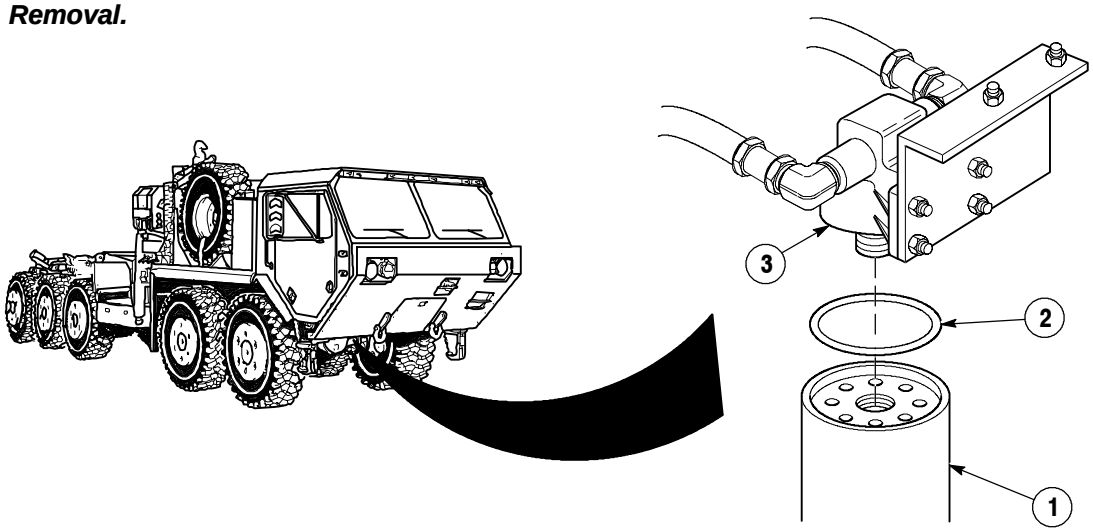
INITIAL SETUP

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)

Materials/Parts
Lubricating Oil, Engine (Item 56, Appendix C)

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

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.

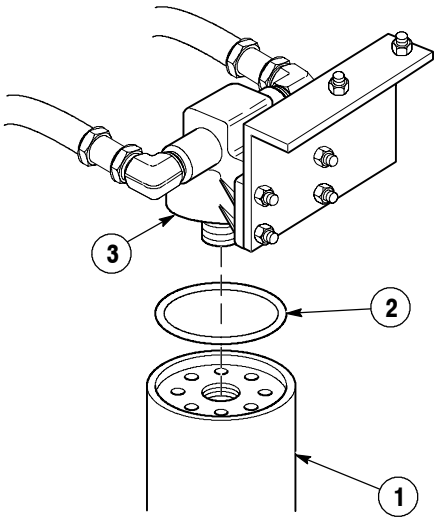
(3) Remove and discard engine oil filter (1) and preformed packing (2) from filter head (3).

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).



CAUTION

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

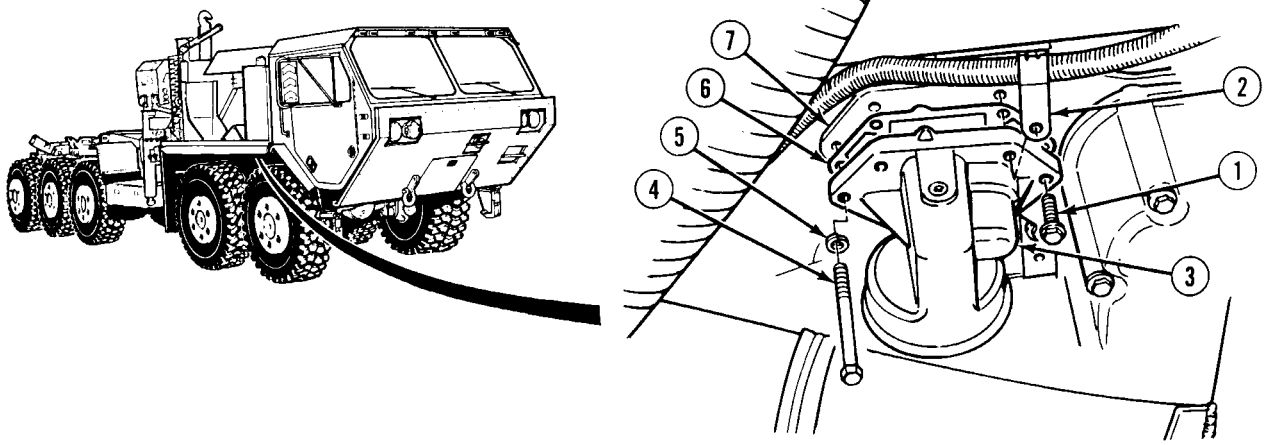
INITIAL SETUP

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.

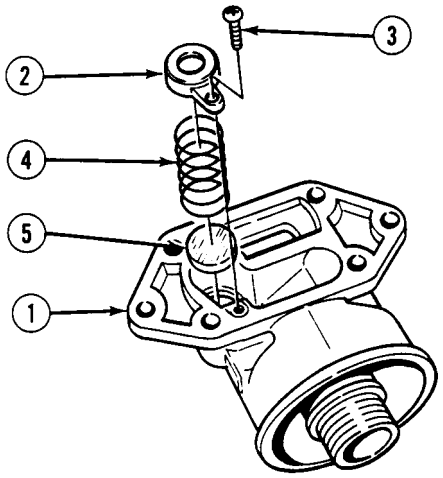
(1) Remove four screws (1) and cushion clip (2) from engine oil filter adapter (3).

(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.

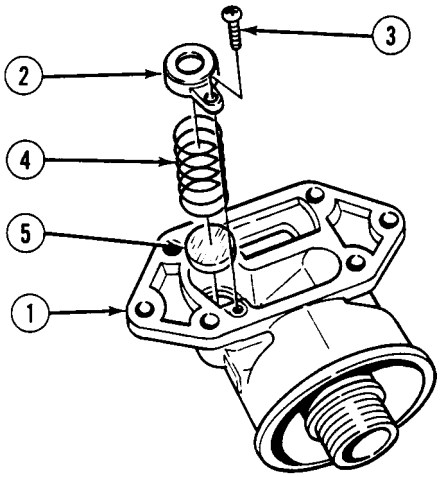
(4) Replace all damaged parts.

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.

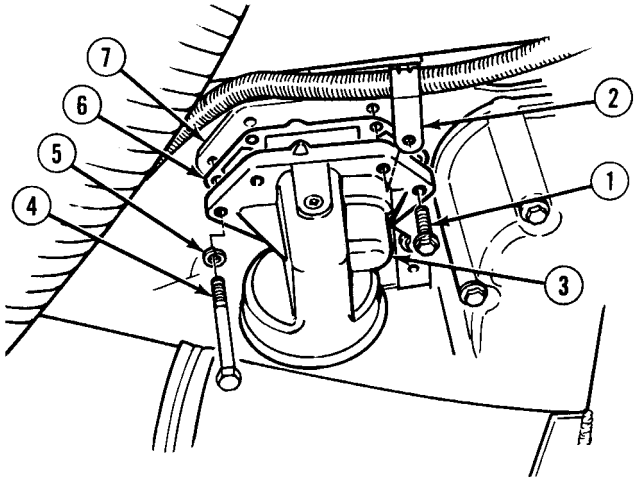
(2) Install valve disk (5), spring (4), retainer (2) and screw (3) in adapter (1).

(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
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
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

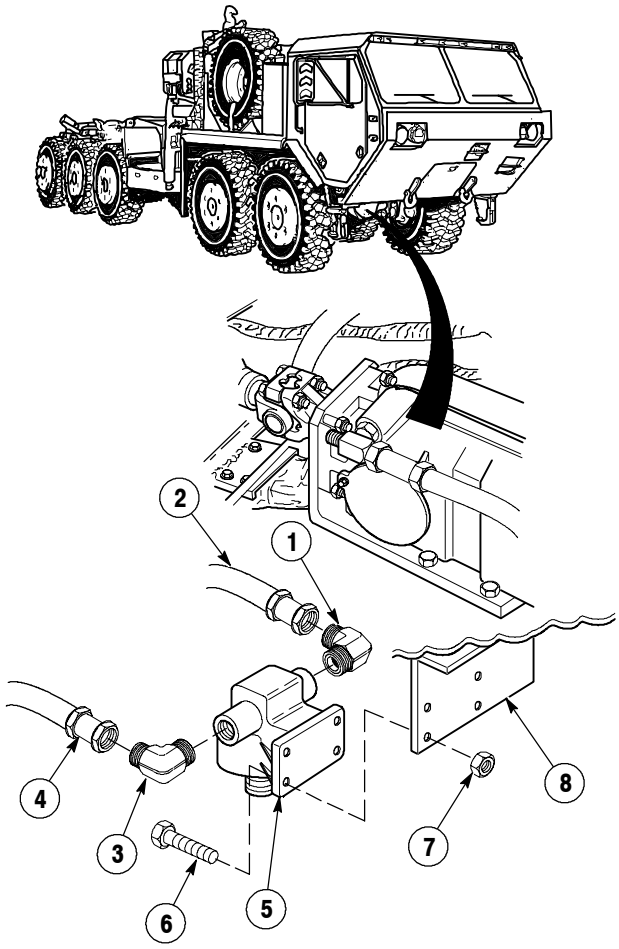
Ensure engine is cool before performing this task or injury to personnel may result.

NOTE

Note positions of adapters and hoses prior to removal.

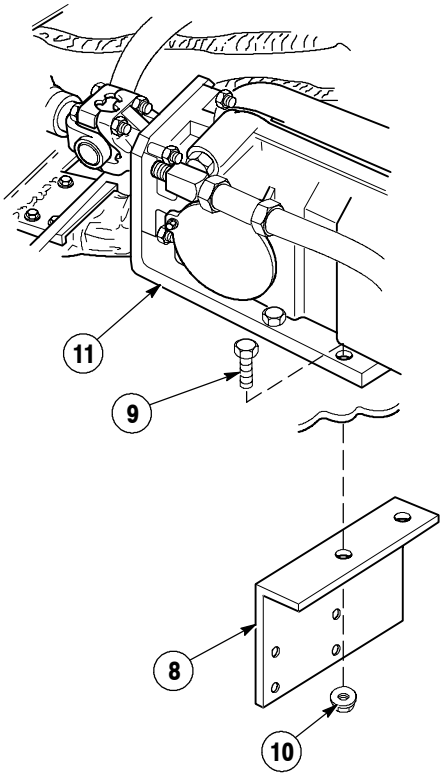
(1) Remove adapter (1), hose 2830 (2), adapter (3) and hose 2831 (4) from filter head (5).

(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.

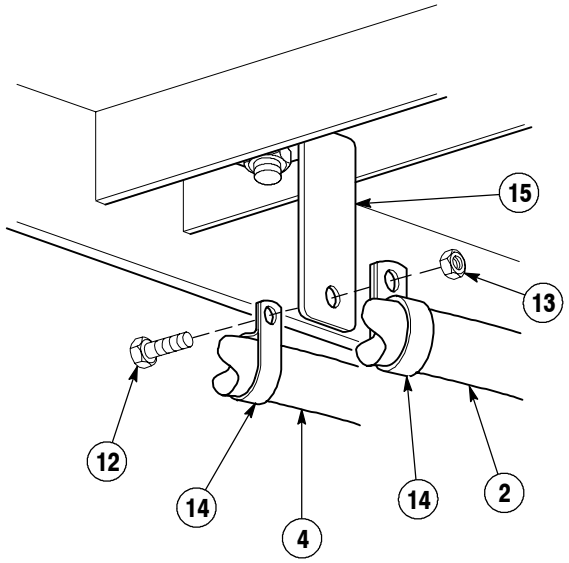


NOTE

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).

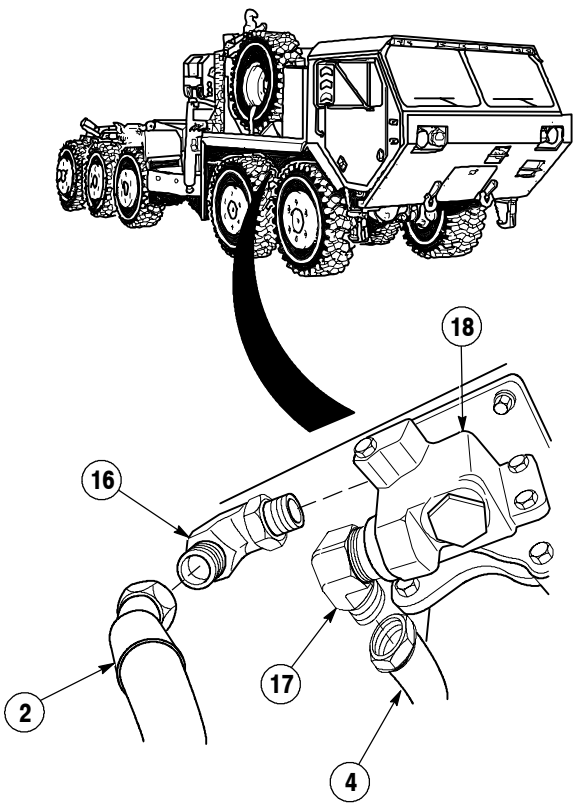


NOTE

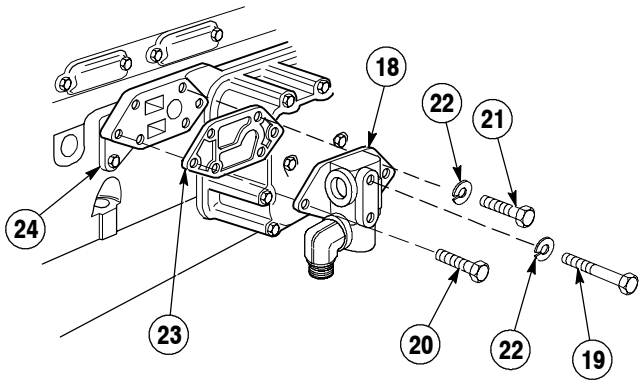
Note position of adapters and hoses prior to removal.

(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).

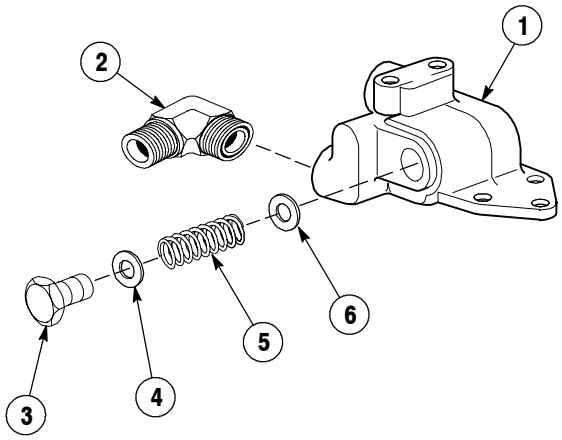
b. Disassembly.

(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.

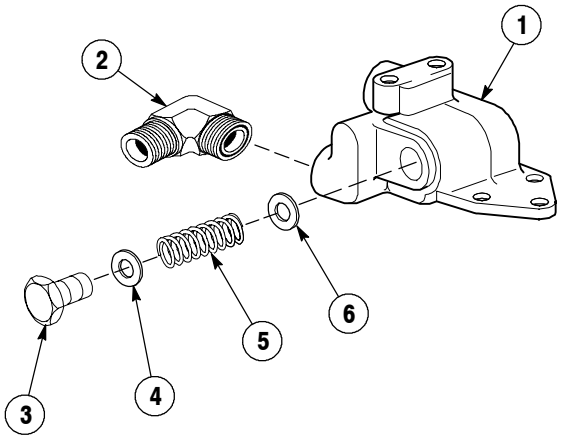
WARNING

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).

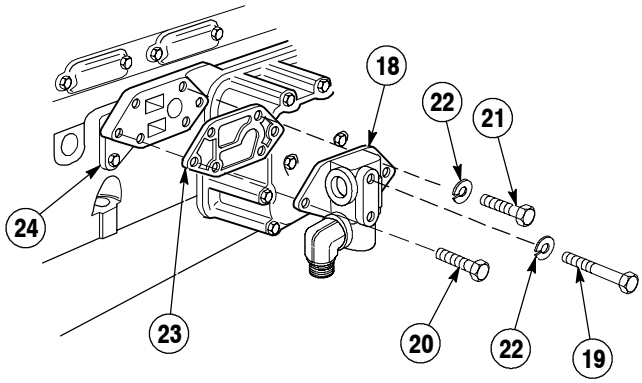
(5) Remove remote engine oil filter manifold (1) from vise.

3-9. REMOTE ENGINE OIL FILTER MANIFOLD REPAIR (CONT).

e. Installation.

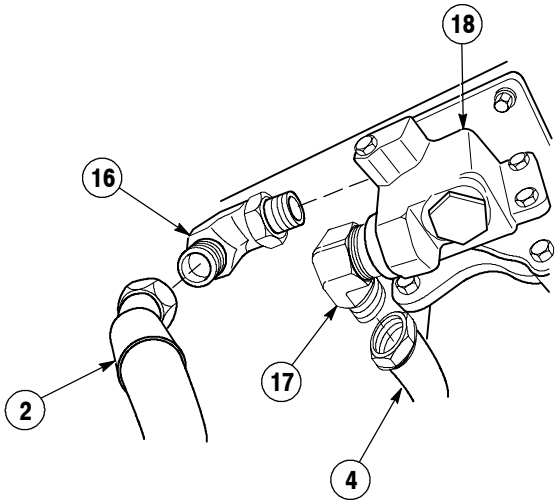
WARNING

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).

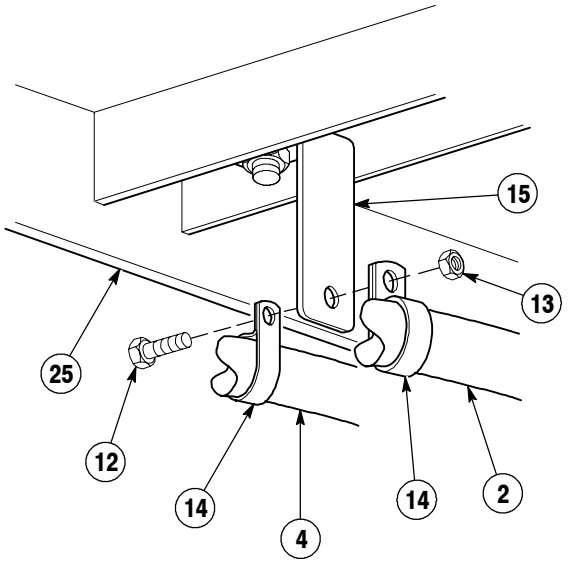
(5) Position hose 2830 (2) and hose 2831 (4) under front crossmember (25).

CAUTION

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).



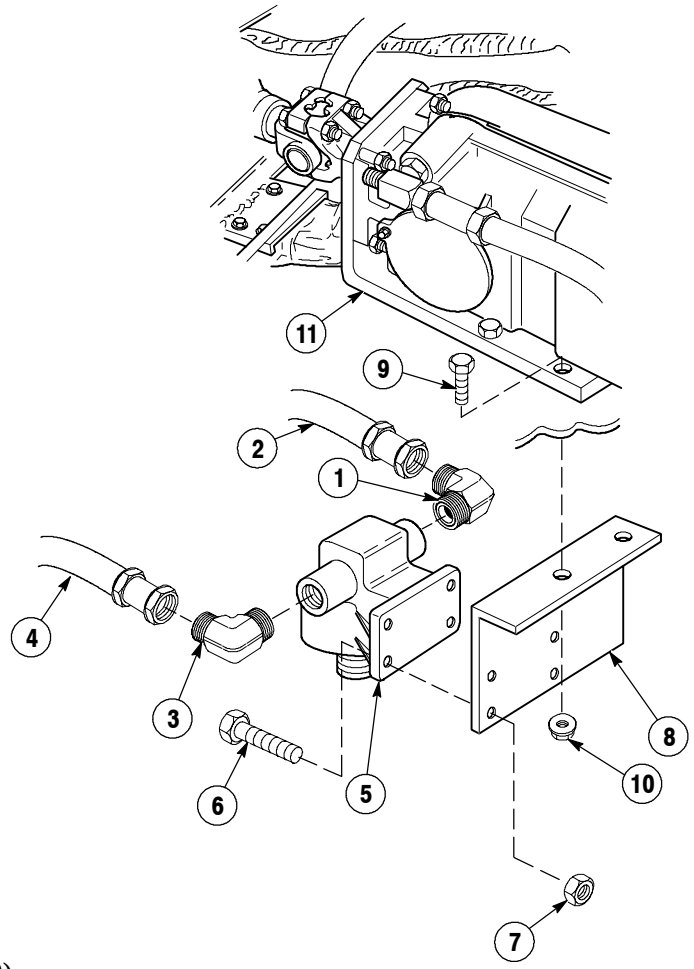
(8) Attach filter head bracket (8) using two screws (9) and two locknuts (10) to hydraulic pump support (11).

(9) Attach filter head (5) to filter head bracket (8) with four screws (6) and locknuts (7).

CAUTION

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)

Materials/Parts
Cable Ties (Item 26, Appendix C)
Petrolatum, Technical (Item 63, Appendix C)
Tags, Identification (Item 88, Appendix C)

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

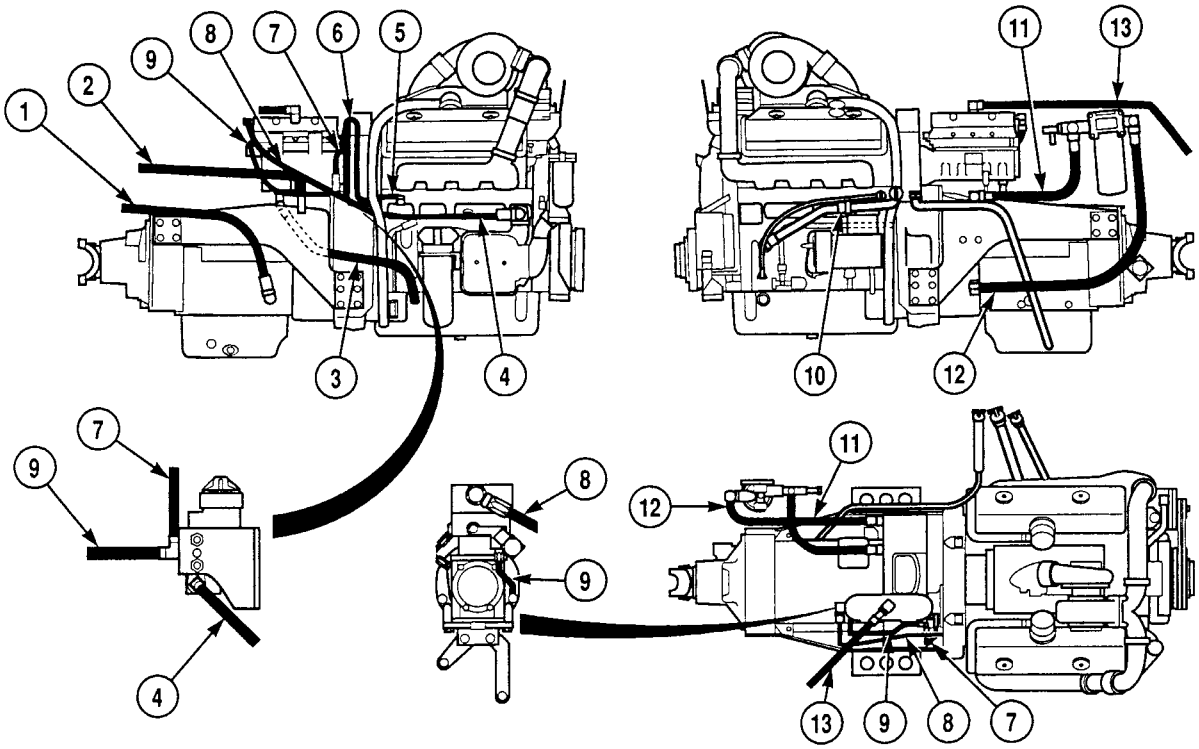
a. Hose Replacement.

CAUTION

Equipment may be damaged by foreign matter if hoses, tubes, and connectors are not plugged and capped when removed.

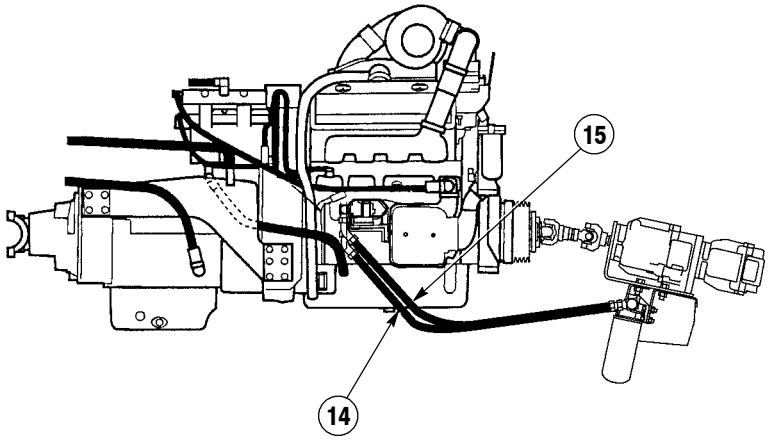
NOTE

- 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

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4-3	Fuel Priming Pump Filter Replacement	4-6
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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
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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 H)
Cap and Plug Set (Item 8, Appendix H)
Pan, Drain (Item 47, Appendix H)

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)

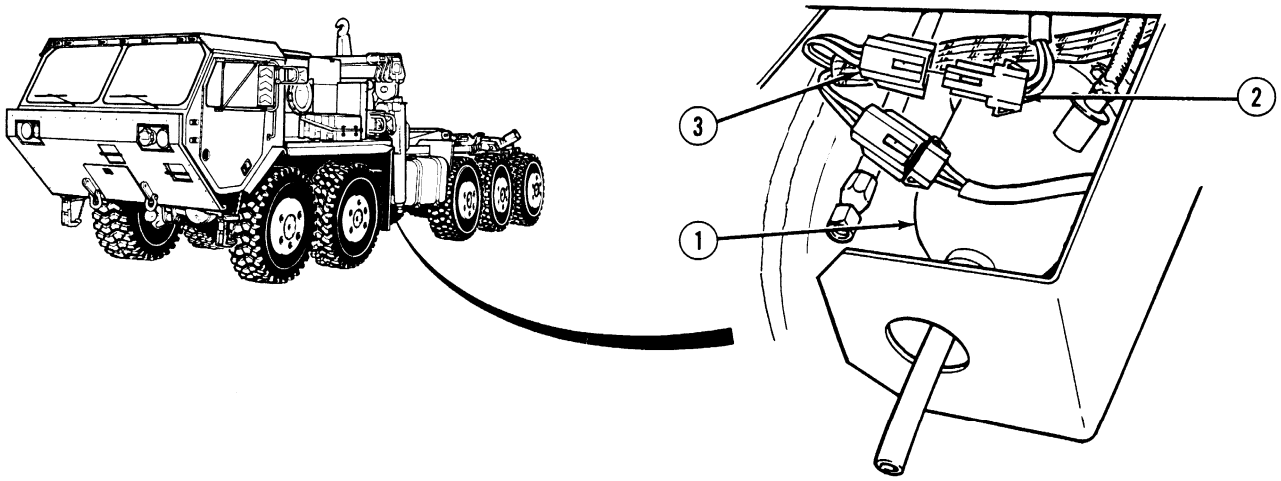
a. Removal.

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.

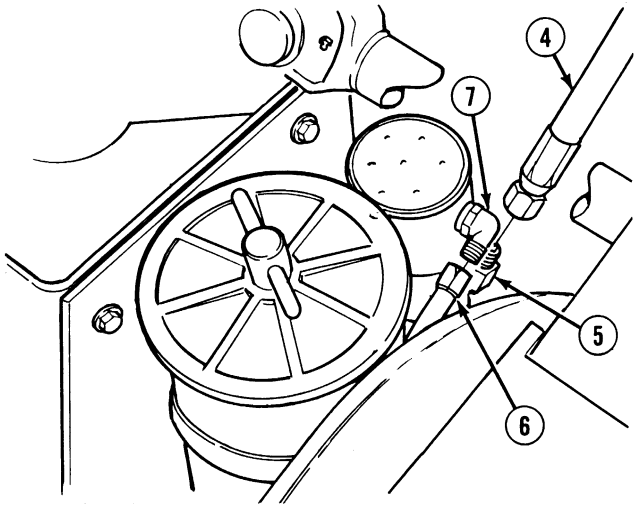


(1) Position drain pan under fuel/water separator (1) to catch excess fuel.

(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.

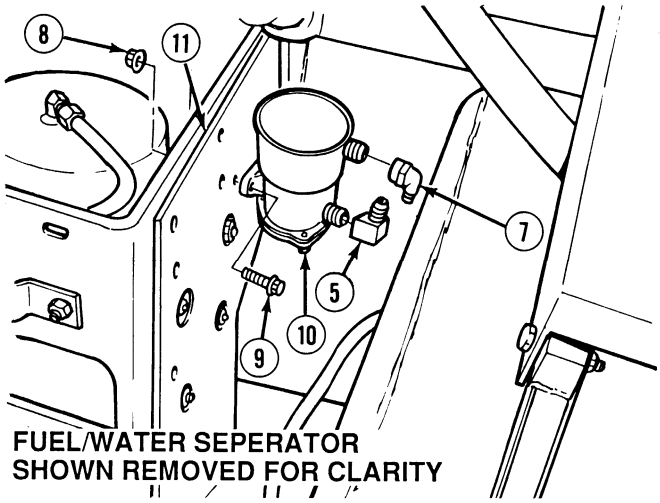
NOTE

Ensure tees and elbow are installed as noted prior to removal.

(1) Apply sealing compound to threads of elbows (5) and (7).

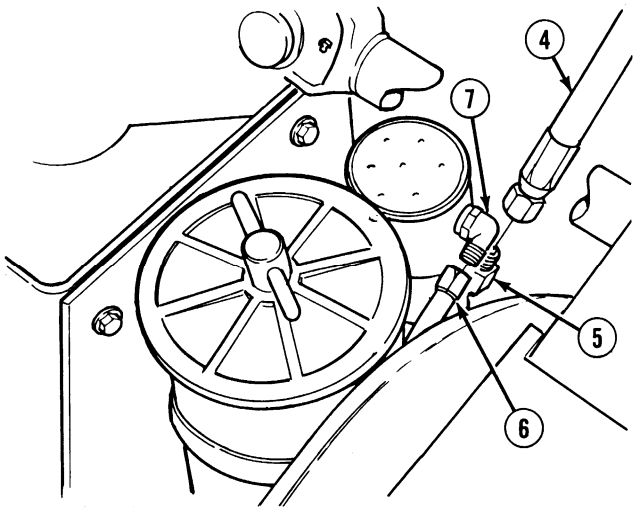
(2) Install elbows (5) and (7) in priming pump (10).

(3) Install priming pump (10) on bracket (11) with two screws (9) and locknuts (8).

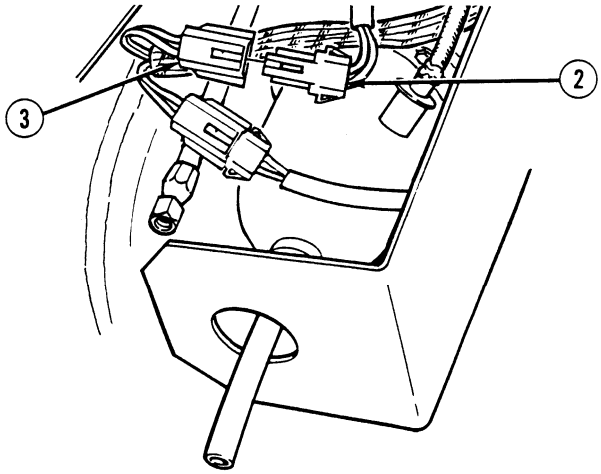


(4) Install hose 2920 (6) on elbow (7).

(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
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Pan, Drain (Item 47, Appendix H)

Materials/Parts
Gasket (Item 63, Appendix F)
Screws (3) (Item 312, 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.

(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.

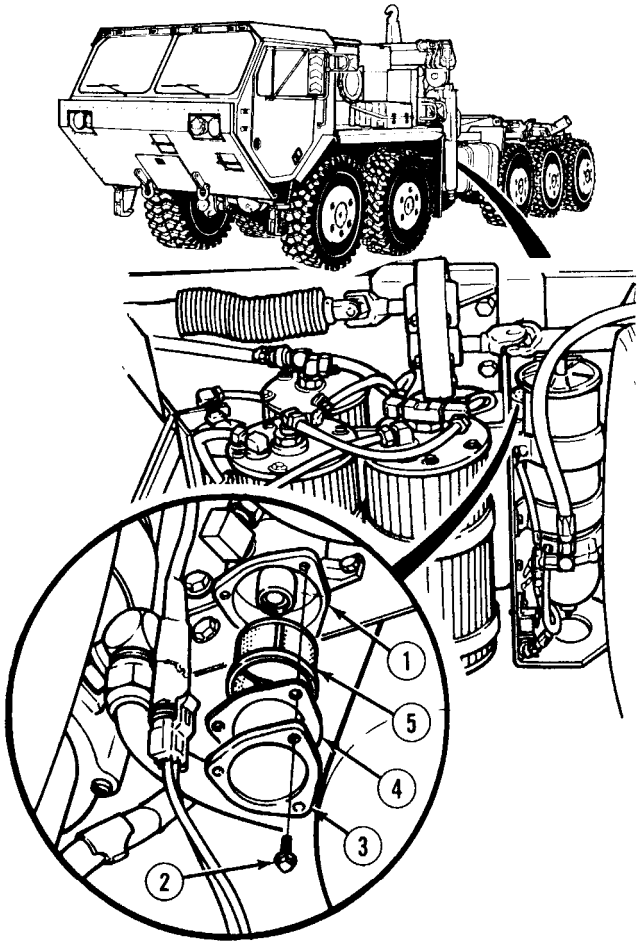
b. Cleaning/Inspection.

(1) Clean particles from magnetic cover.

(2) Clean filter, nylon mesh screen can be rinsed out or blown out with air pressure.

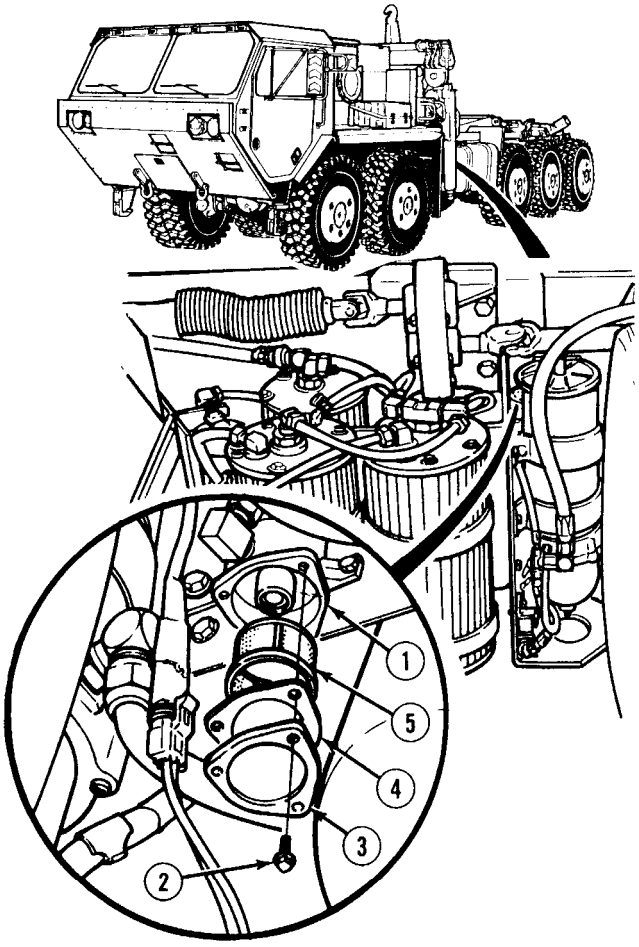
(3) Inspect all parts for cracks and other signs of wear.

(4) Replace all damaged parts.



AIR DRYER GUARD SHOWN REMOVED FOR CLARITY (IF EQUIPPED)

c. Installation. Install filter (5), gasket (4) and cover (3) on fuel priming pump (1) using three screws (2).



AIR DRYER GUARD SHOWN REMOVED FOR CLARITY (IF EQUIPPED)

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
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
f. Follow-On Maintnenance

INITIAL SETUP

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

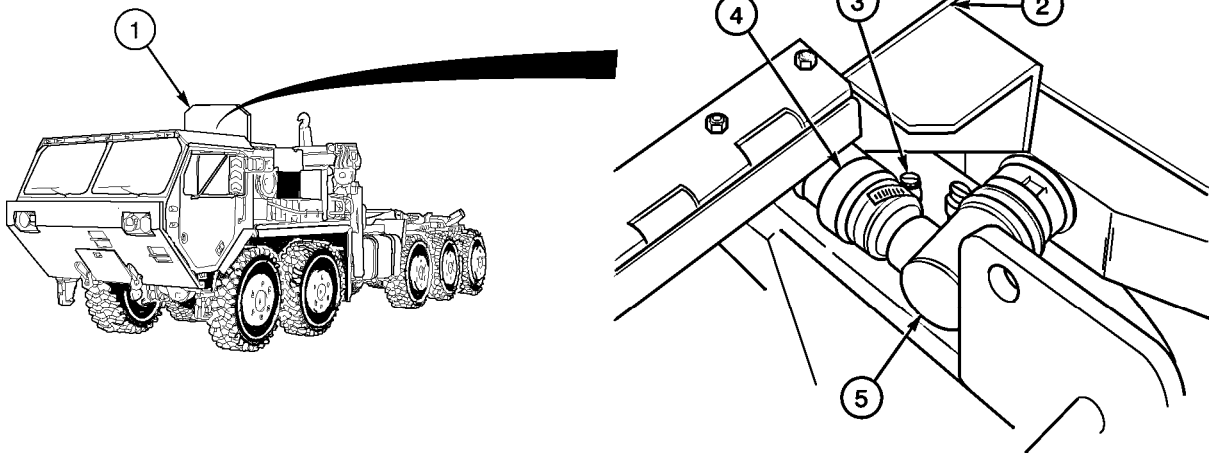
Materials/Parts
Compound, Corrosion Preventative (Item 34, Appendix C)
Rags, Wiping (Item 67, Appendix C)
Solvent, Drycleaning (Item 87, Appendix C)
Gasket (Item 44, Appendix F)
Locknut (4) (Item 89, Appendix F)

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.

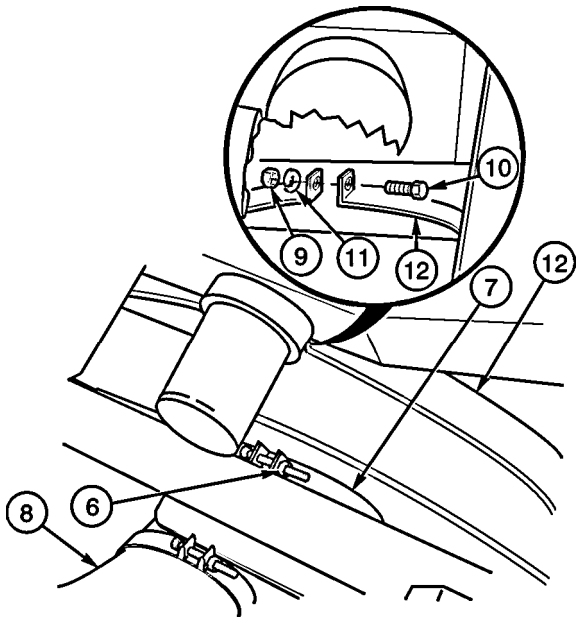


(1) Open engine cover (1) on radiator shroud (2).

(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

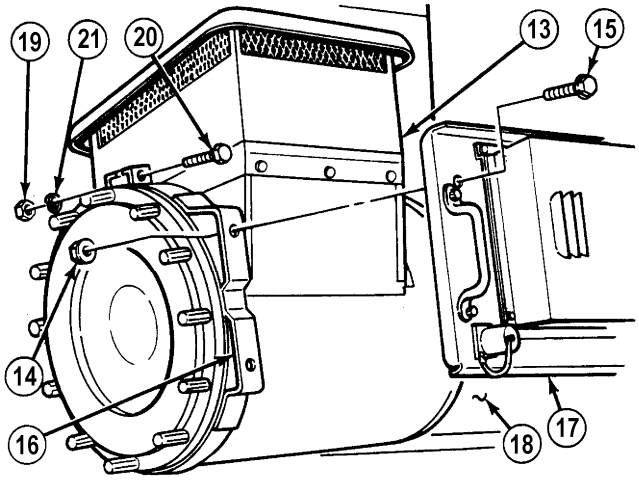
Air cleaner assembly can weigh up to 100 lbs (45 kg). Ensure air cleaner assembly is properly supported during removal. Failure to comply may result in injury to personnel.

(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.

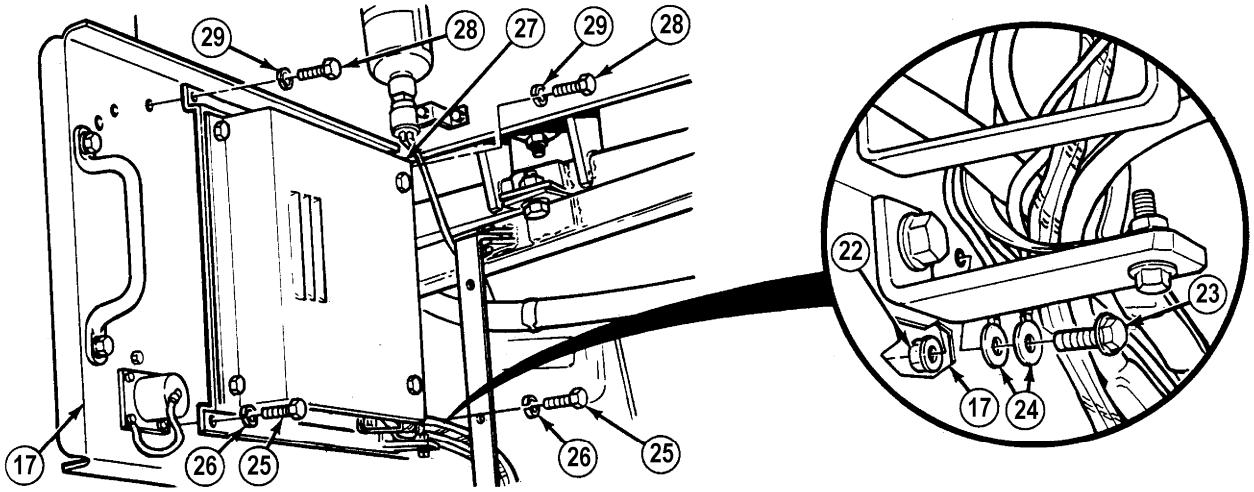
(6) With the aid of an assistant, remove air cleaner assembly (13) from truck (18).

(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.

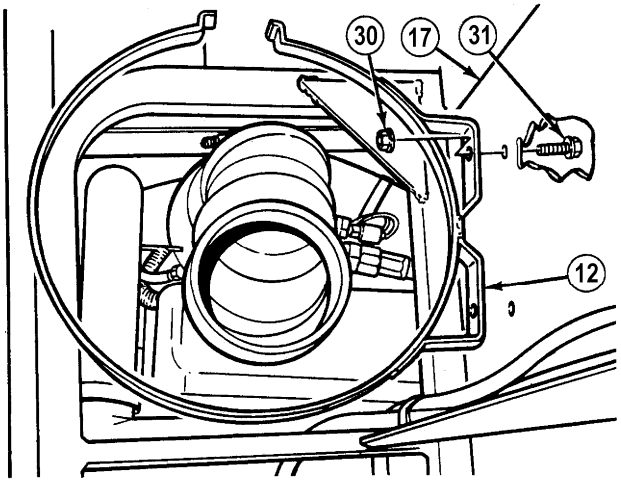
(10) Remove two screws (25) and lockwashers (26) from air cleaner mounting panel (17) and electric bracket (27). Discard lockwashers.

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.

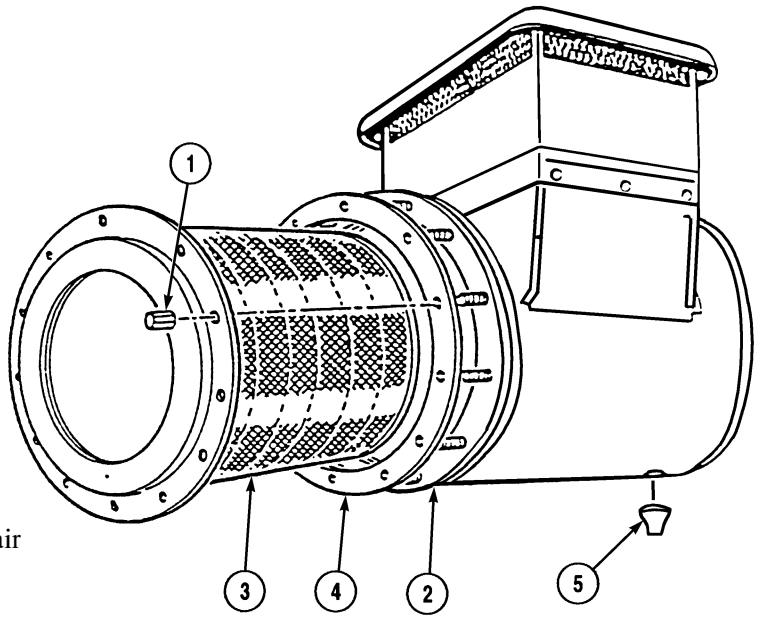
WARNING

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.



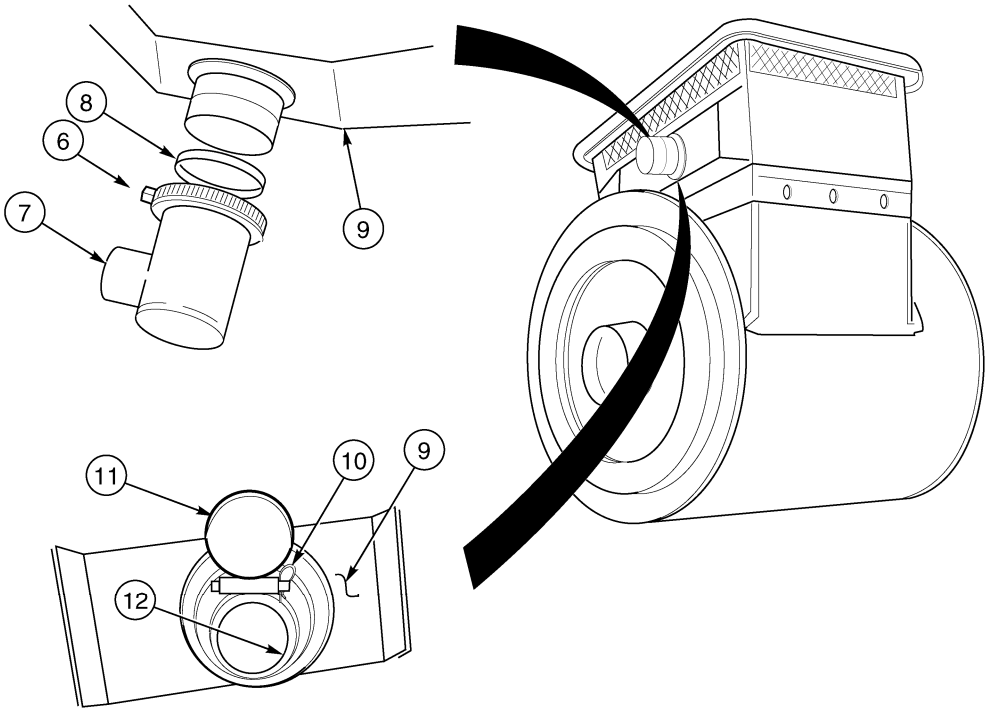
(2) Remove air filter (3) from air cleaner housing (2).

(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).

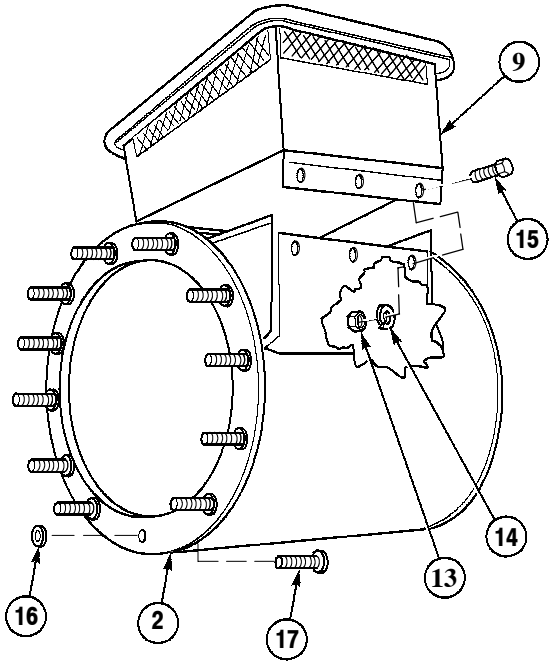


NOTE

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

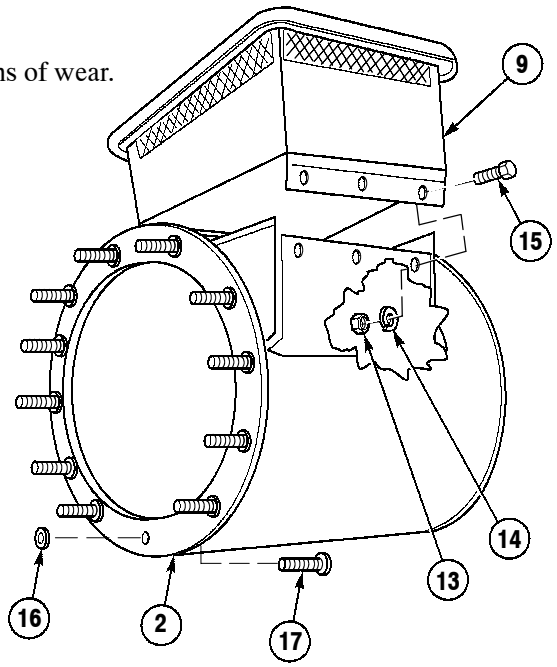
Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc). Failure to comply may result in injury or death to personnel.

(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).

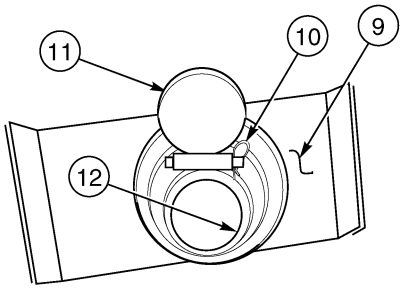
(2) Install weather cap assembly (9) on air cleaner housing (2) with six screws (15), lockwashers (14) and nuts (13).

4-4. AIR CLEANER ASSEMBLY REPAIR (CONT).

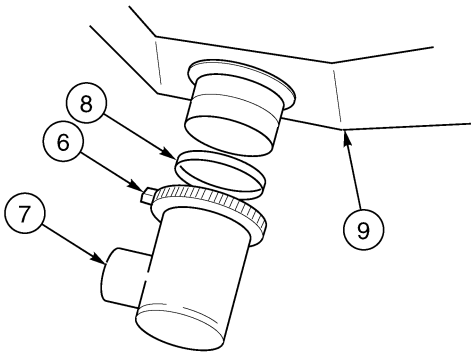
NOTE

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).

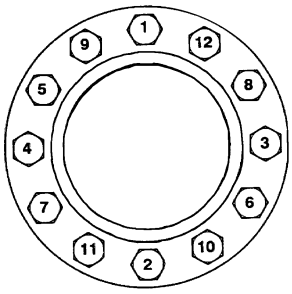


(5) Install bleeder valve (5) on air cleaner housing (2).

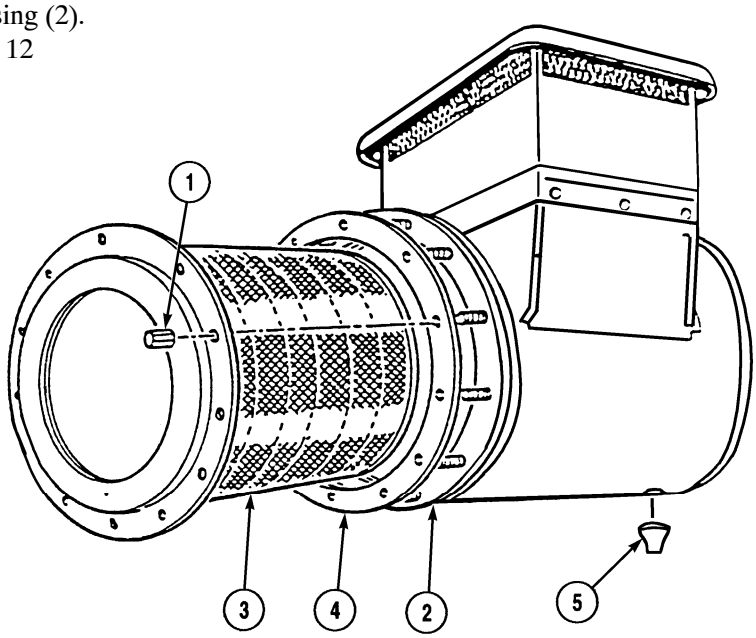
(6) Install gasket (4) on air cleaner housing (2).

(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).

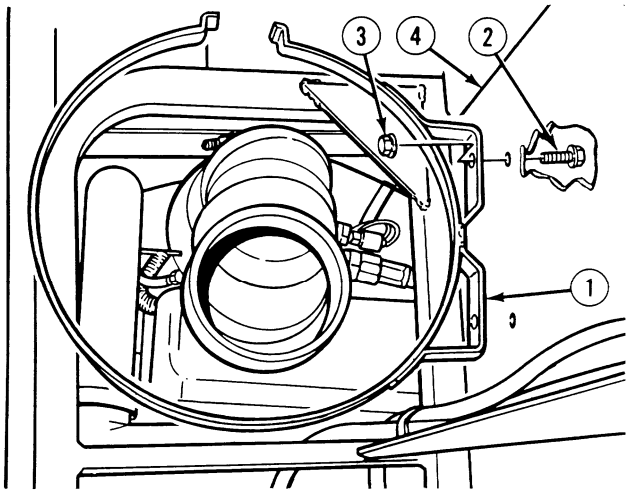


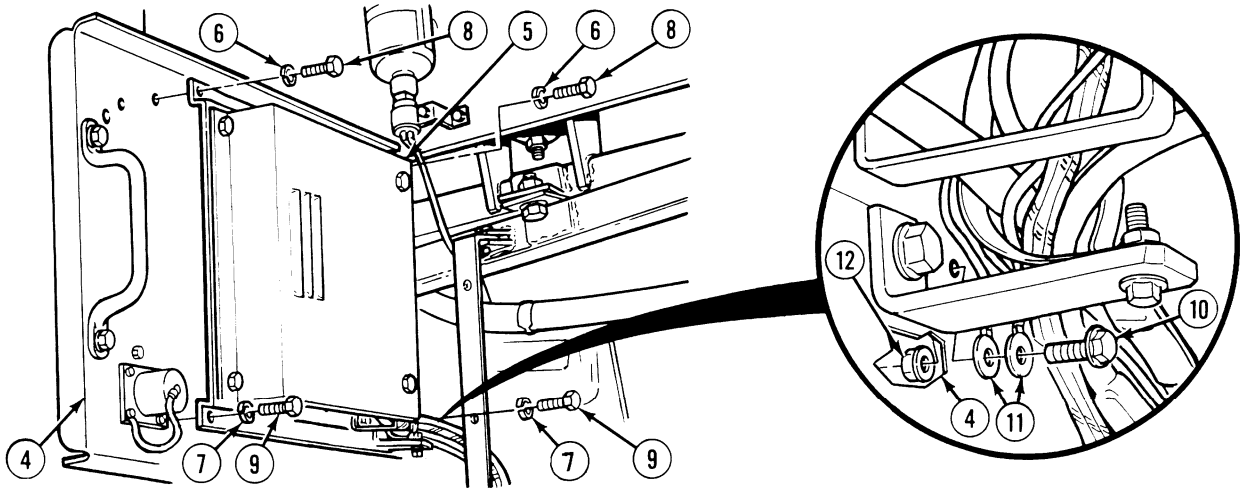
TIGHTENING SEQUENCE



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

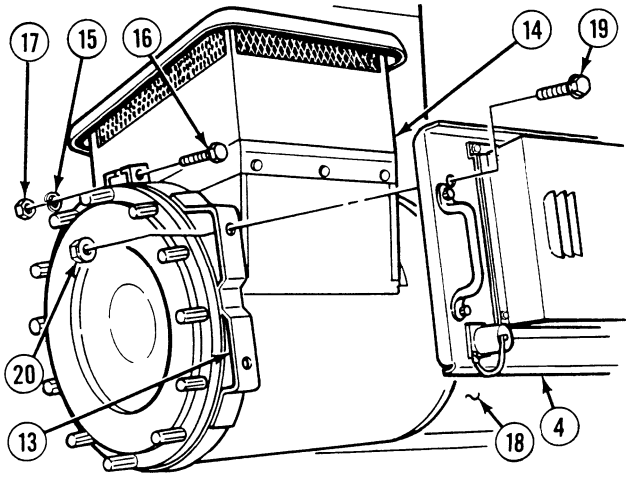
When installing air cleaner assembly, ensure rear bracket does not wedge under air cleaner assembly or damage to parts may occur.

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).

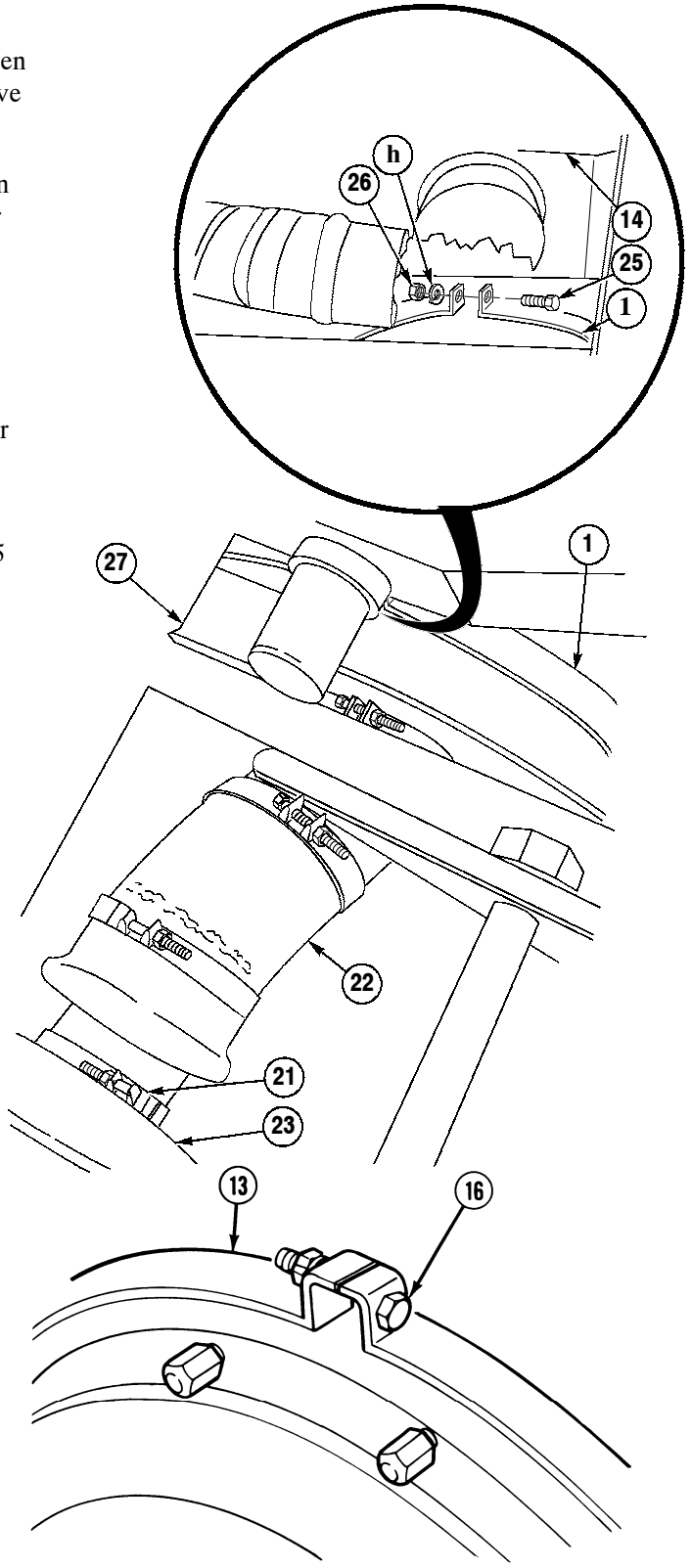
(9) Support air cleaner assembly (14) and align and install air inlet hose (22) on air cleaner assembly (14). Tighten clamp (27).

(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).

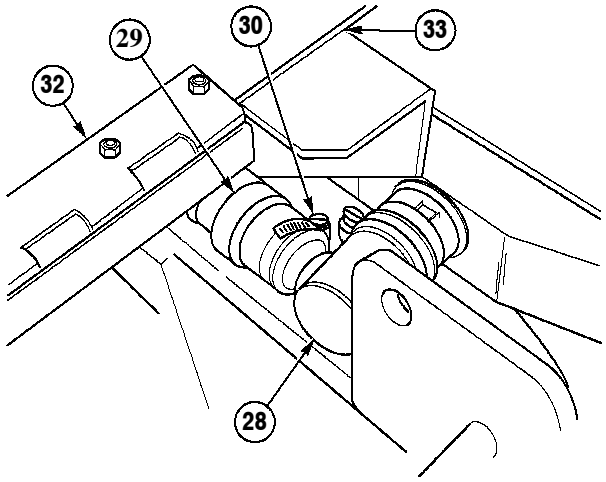
(13) Tighten screw (16) in front bracket (13) to 85 to 100 lb-in (10 to 11 N·m).



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:

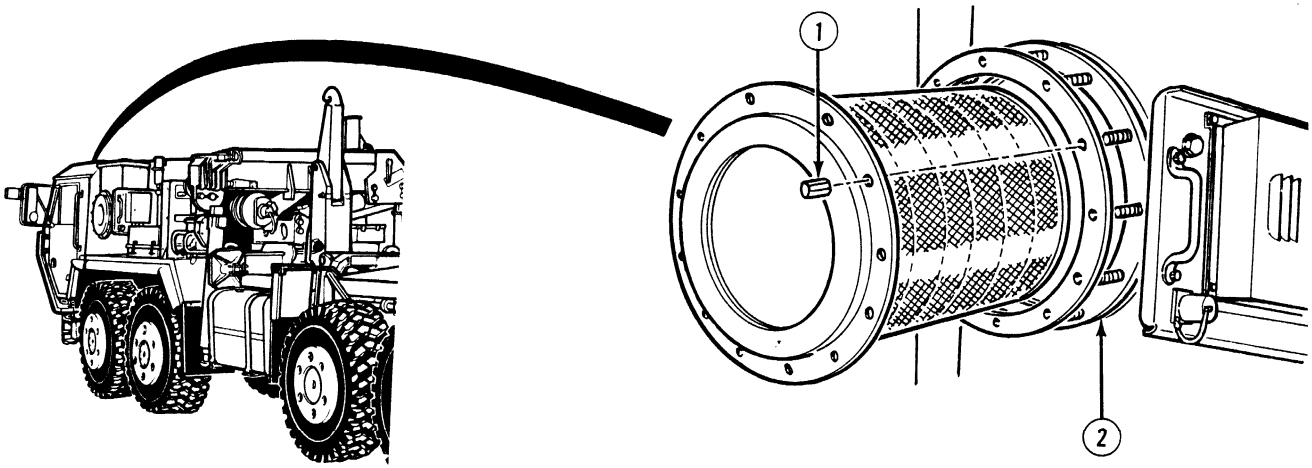
a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Socket Set, 3/8 in. (Item 62, Appendix H)
Wrench, Torque (0 to 210 lb-in [0 to 24 N·m]) (Item 98, Appendix H)

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

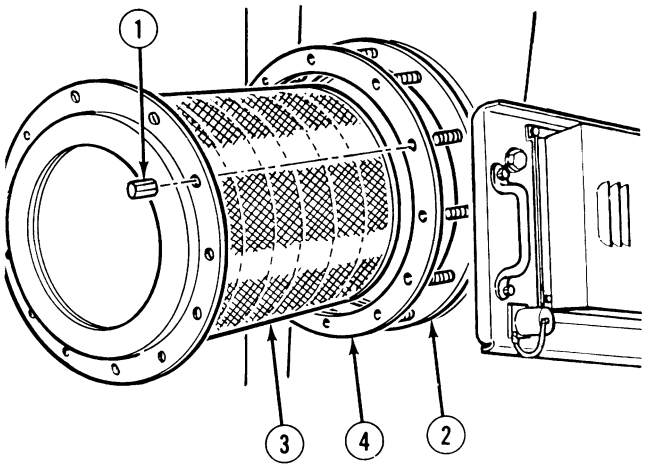
After Nuclear, Biological, or Chemical (NBC) exposure of truck, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If truck is exposed to chemical or biological agents, servicing personnel 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 contamined air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contamined 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.

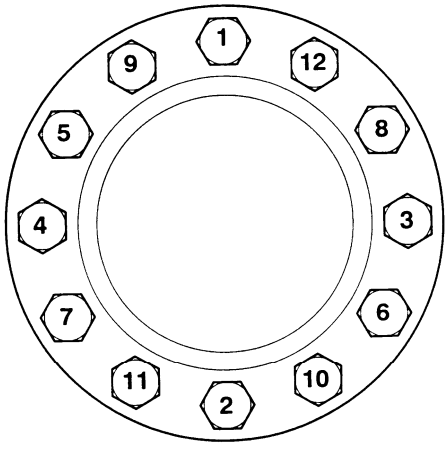
NOTE

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).



TIGHTENING SEQUENCE

c. Follow-On Maintenance:

- Reset air cleaner restriction indicator, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-6. AIR CLEANER MOUNTING BRACKET GRAB HANDLE REPLACEMENT.

This task covers:

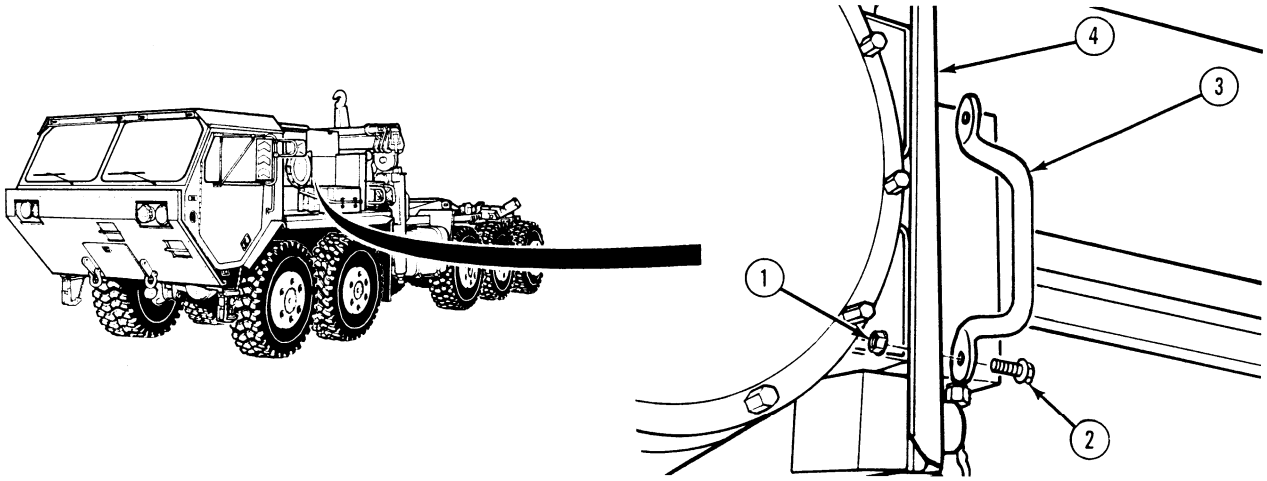
a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)

Materials/Parts
Locknut (2) (Item 140, Appendix F)

Equipment Condition
Engine shut off, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)



a. Removal. Remove two locknuts (1), screws (2) and grab handle (3) from air cleaner mounting bracket (4). Discard locknuts.

b. Installation. Install grab handle (3), two screws (2) and locknuts (1) on air cleaner mounting bracket (4).

c. Follow-On Maintenance:

- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-7. AIR INTAKE DUCTING REPLACEMENT.

This task covers:

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

INITIAL SETUP

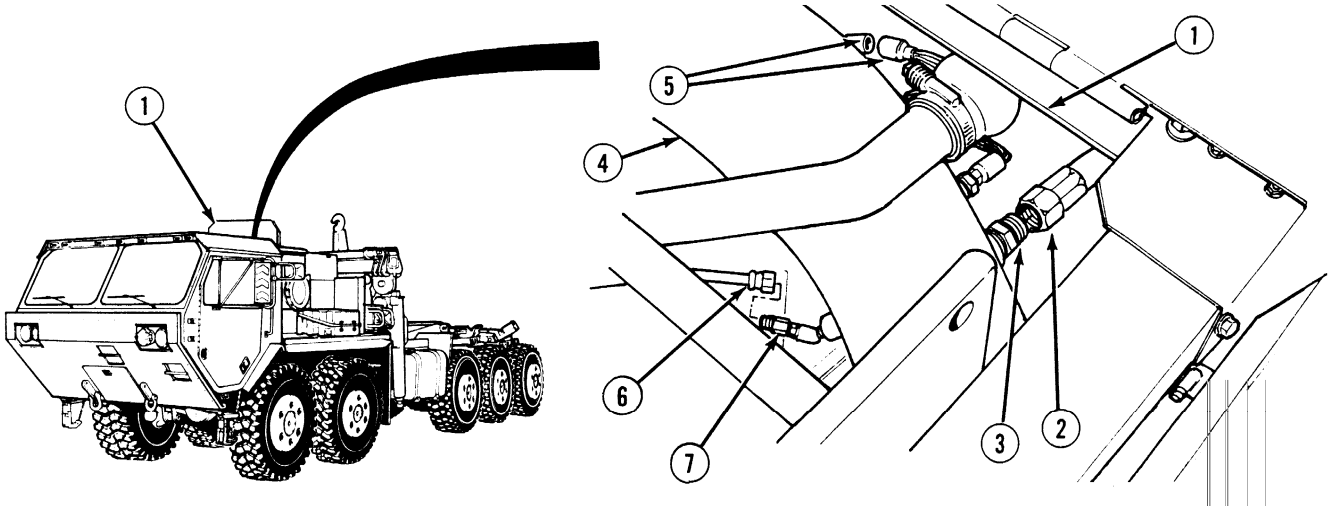
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Wrench, Combination 1-1/2 in. (Item 83, Appendix H)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix H)

Material/Parts
Sealing Compound (Item 72, Appendix C)
Clamp (Item 13, Appendix F)
Clamp (Item 15, Appendix F)
Clamp (Item 16, Appendix F)

Material/Parts - Continued
Clamp (2) (Item 17, Appendix F)
Locknut (4) (Item 106, Appendix F)
Lockwasher (2) (Item 180, 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)
Left grille skin removed, (Para 17-15)

a. Removal.



(1) Open engine cover (1).

(2) Remove hose assembly 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).

(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 (90 from turbocharger (11). Discard clamps.

(8) Remove hose clamp (12) from air intake pipe assembly (4). Discard clamp.

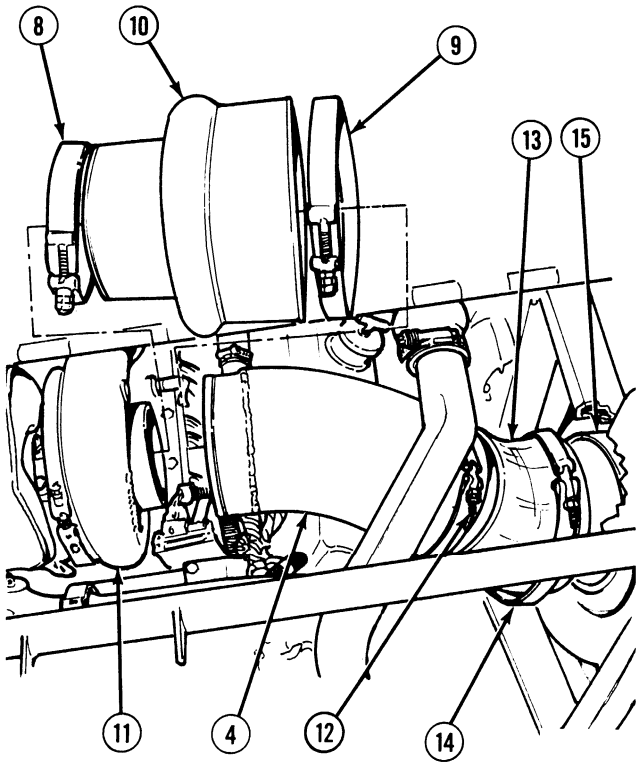
(9) Remove air intake pipe assembly (4) from air cleaner elbow (13).

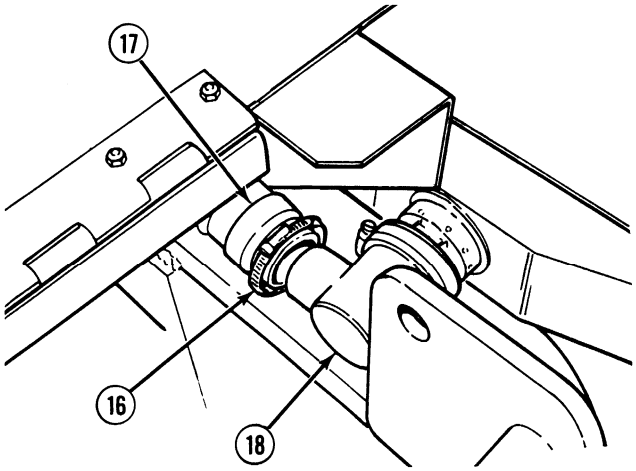
(10) Remove hose clamp (14) on air cleaner elbow (13). Discard hose clamp.

(11) Remove air cleaner elbow (13) from air cleaner (15).

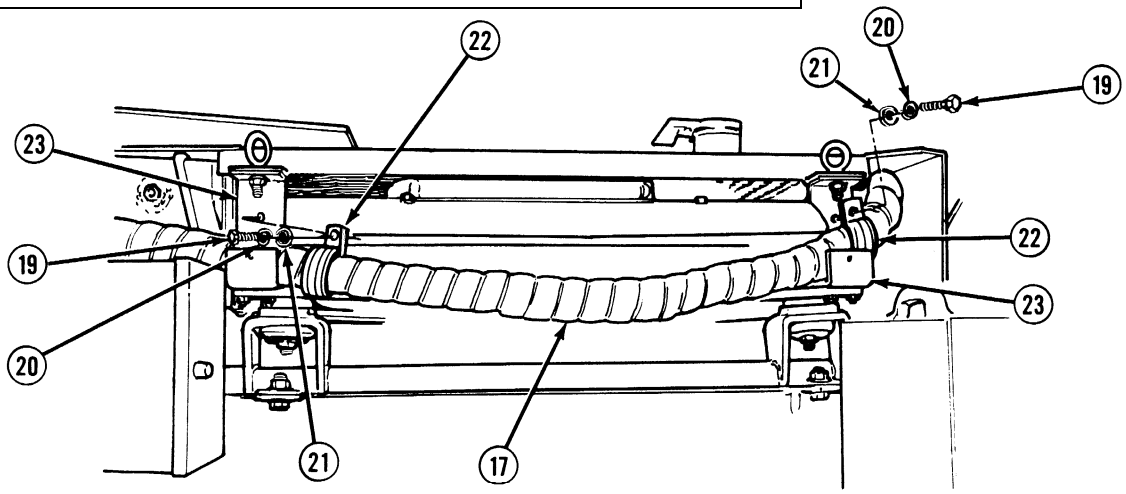
(12) Remove clamp (16) from aspirator hose (17). Discard clamp.

(13) Remove aspirator hose (17) from dust cup (18).



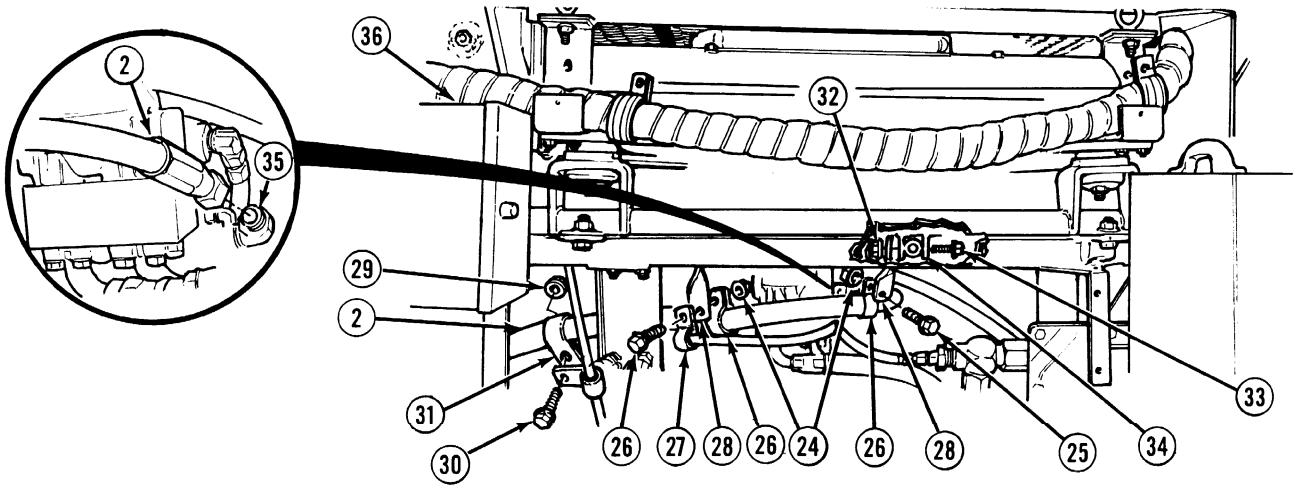


4-7. AIR INTAKE DUCTING REPLACEMENT (CONT).



(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).

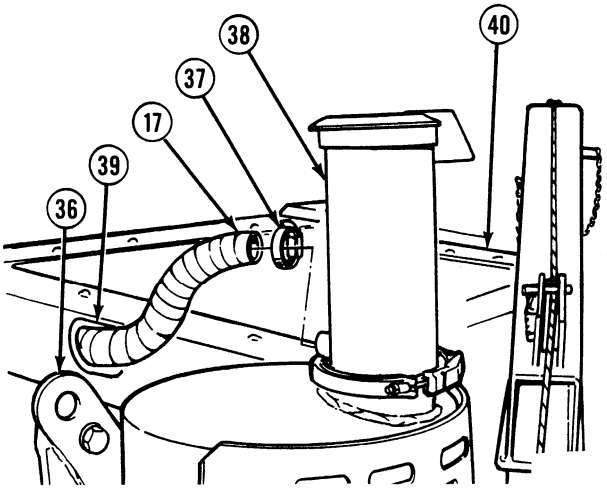
(21) Remove hose assembly (2) from truck (36).

(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

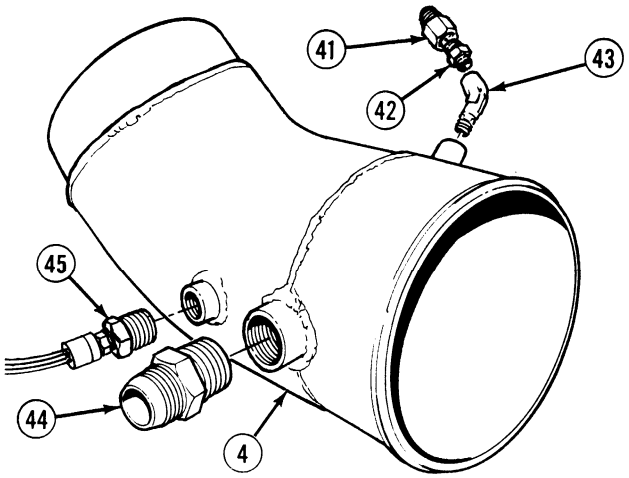
Note position of elbow and pipe nipple prior to removal.

(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).

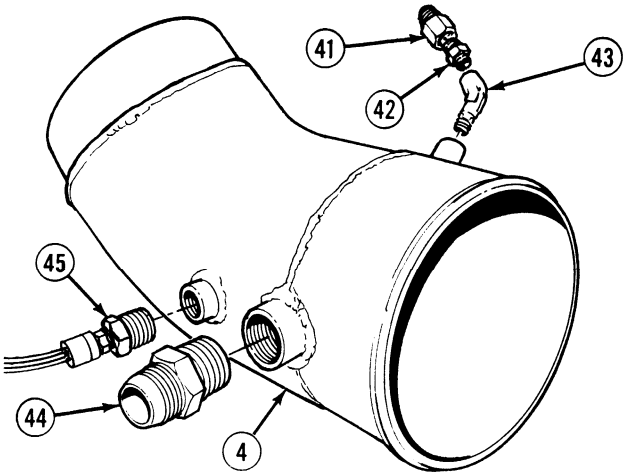
(9) Apply sealing compound to straight adapter (41).

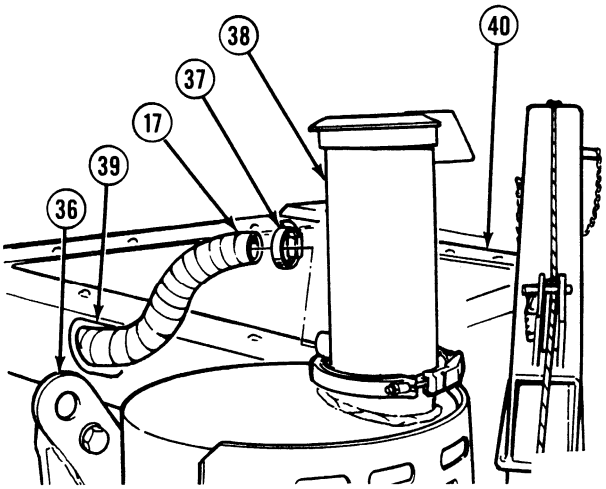
(10) Install straight adapter (41) in pipe nipple (42).

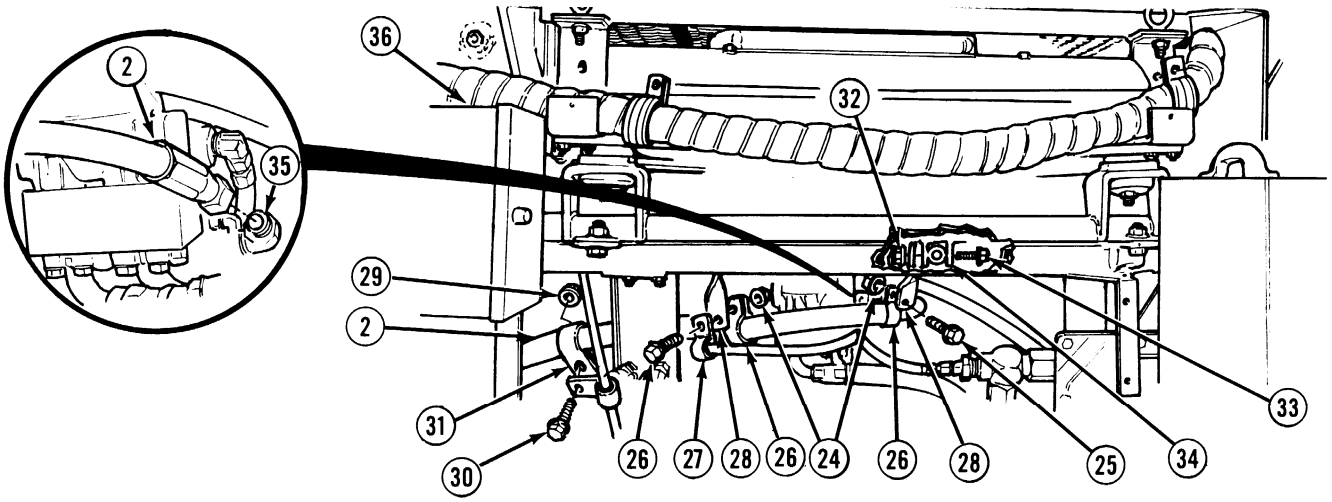
(11) Install quick edge molding (39) on rear skin (40).

(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).

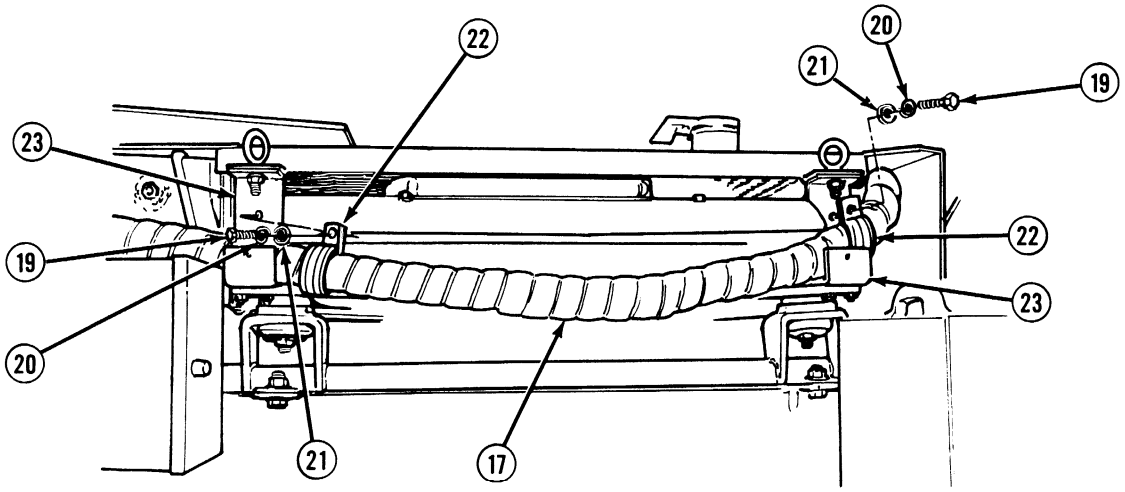
(15) Install hose assembly (2) on air compressor fitting (35).

(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).

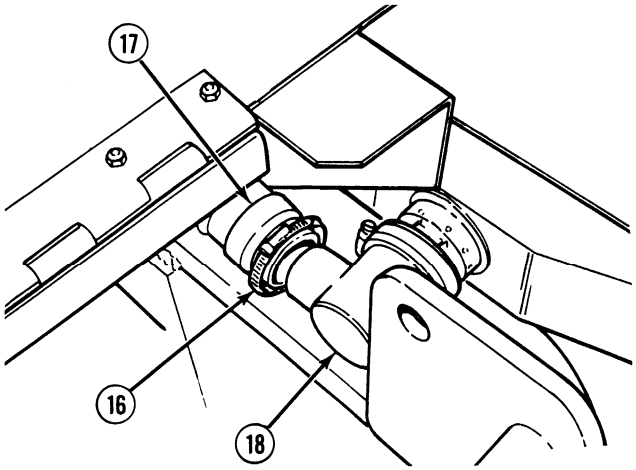
NOTE

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).

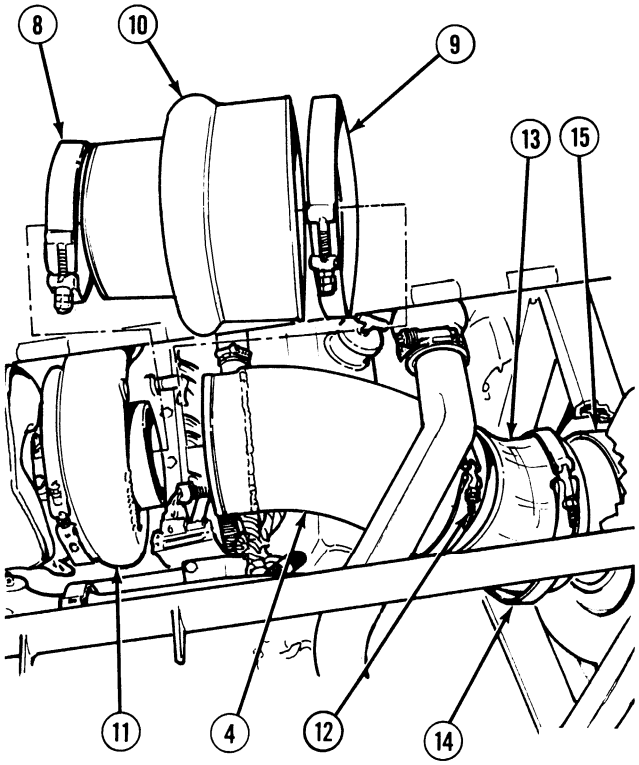
NOTE

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).

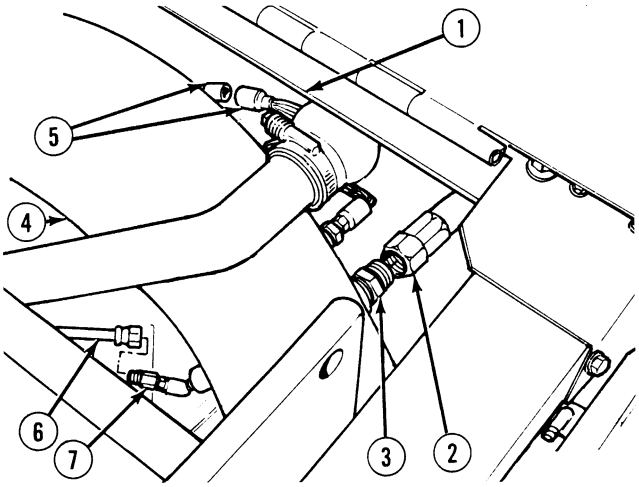


(27) Install hose 2381 (6) on fitting (7) on air intake pipe assembly (4).

(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
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Dispensing Pump (Item 16, Appendix H)
Drum, Storage 57 gal (2) (Item 21, Appendix H)
Gloves, Chemical Oil Protective (Item 28, Appendix H)
Goggles, Industrial (Item 30, Appendix H)
Hammer, Soft Faced (Item 33, Appendix H)
Pan, drain (6 gal) (Item 46, Appendix H)
Socket Set, Deep Well, 1/2 in. (Item 60, Appendix H)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix H)

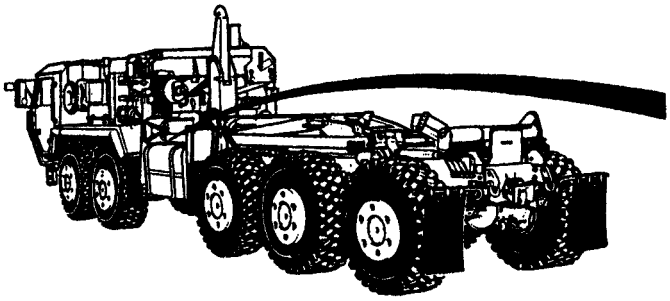
Materials/Parts
Adhesive, Spray (Item 16, Appendix C)
Lubricant, Tire (Item 53, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tag, Identification (Item 88, Appendix C)
Locknut (12) (Item 92, Appendix F)
Locknut (8) (Item 106, Appendix F)
Locknut (2) (Item 141, Appendix F)
Lockwasher (4) (Item 172, Appendix F)
Nut, Stop (Item 218, Appendix F)
Tape, Rubber Adhesive (Item 340, Appendix F)

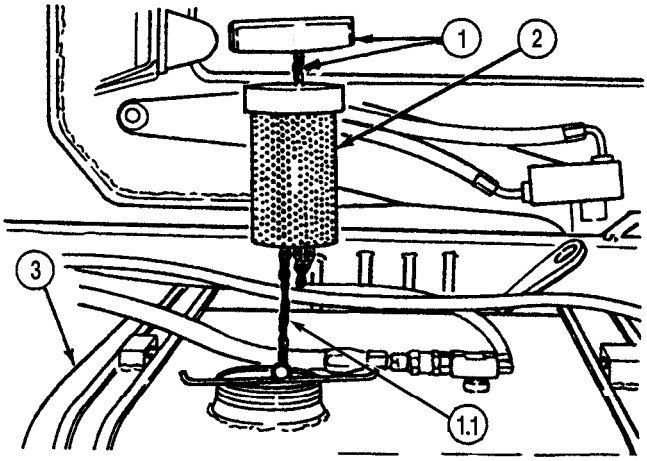
References
TB 43-0212, Purging, Cleaning and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks

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.

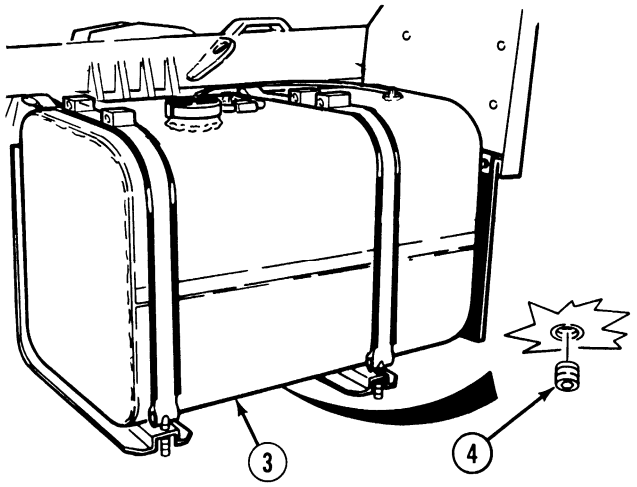
(1) Remove cap and chain (1), chain (1.1) and strainer (2) from main fuel tank (3).

(2) Position dispensing pump in main fuel tank (3).

(3) Pump fuel into storage drum.

NOTE

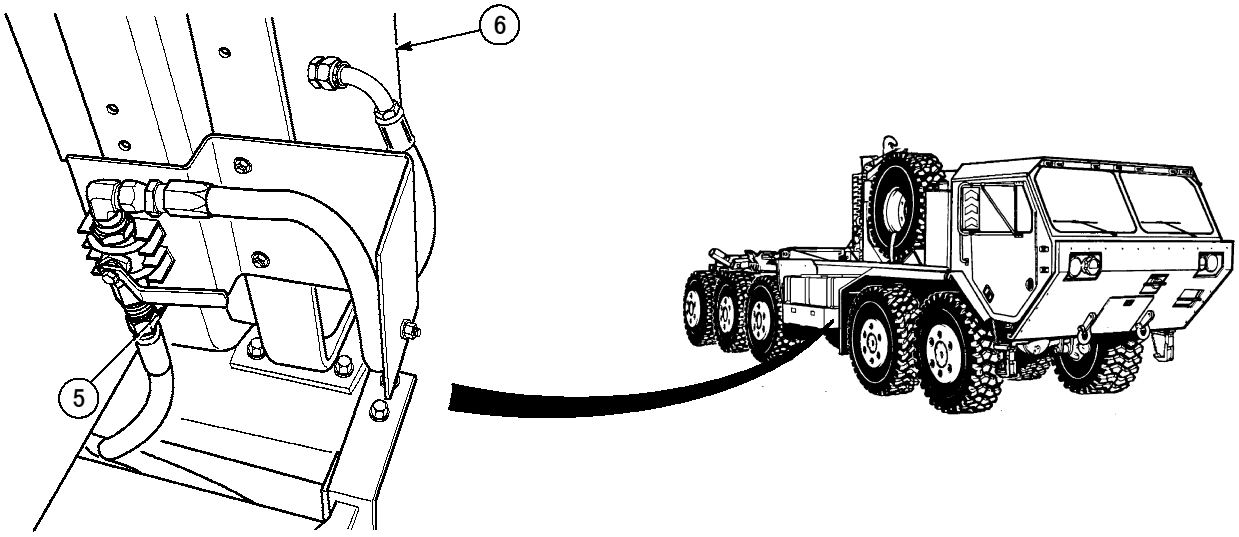
- Perform Steps (4) and (5) if truck is not equipped with auxiliary fuel tank.
- Perform Steps (6) through (12) if truck is equipped with auxiliary fuel tank.



(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).



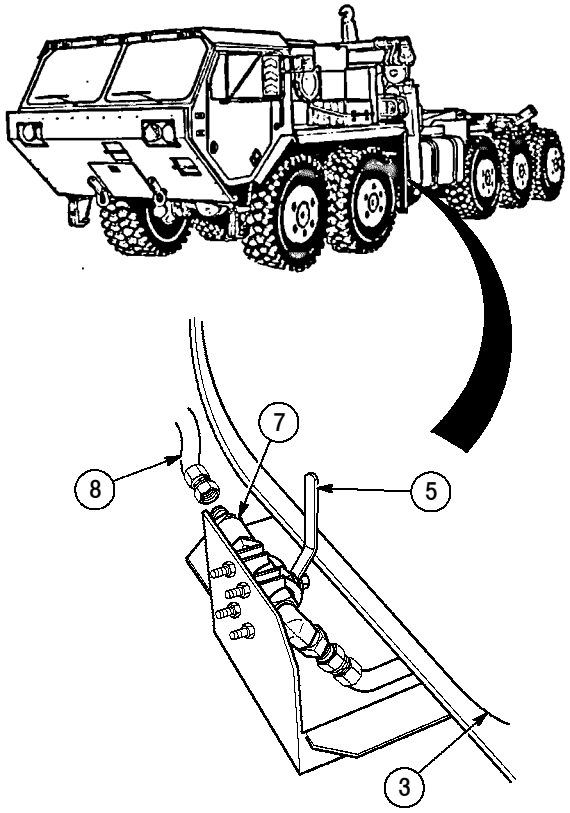
(6) Close fuel shutoff valve (5) on auxiliary fuel tank (6) and main fuel tank (3).

(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.

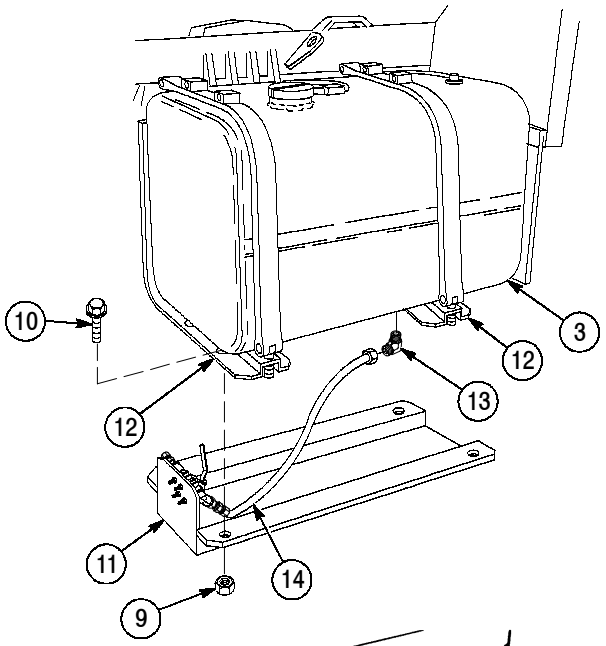
(12) Remove reducer (13) from main fuel tank (3).

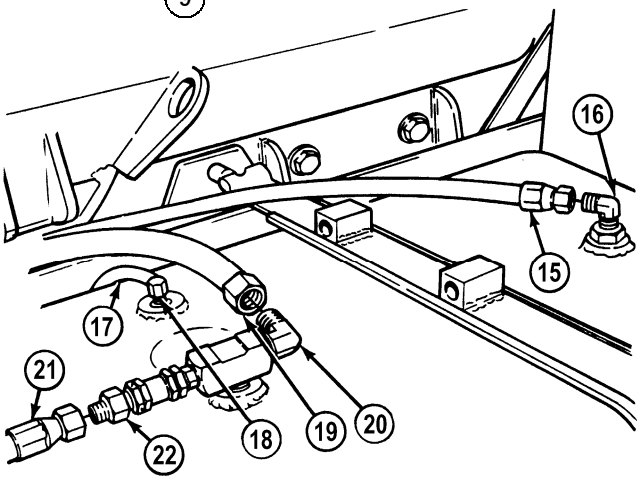
(13) Disconnect hose 2260 (15) from elbow (16).

(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).





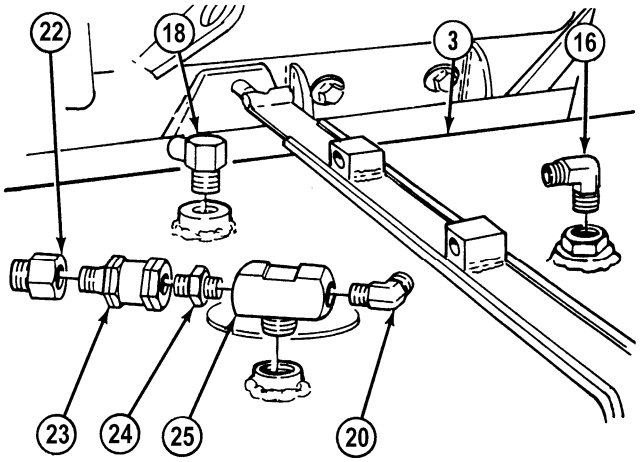
NOTE

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).

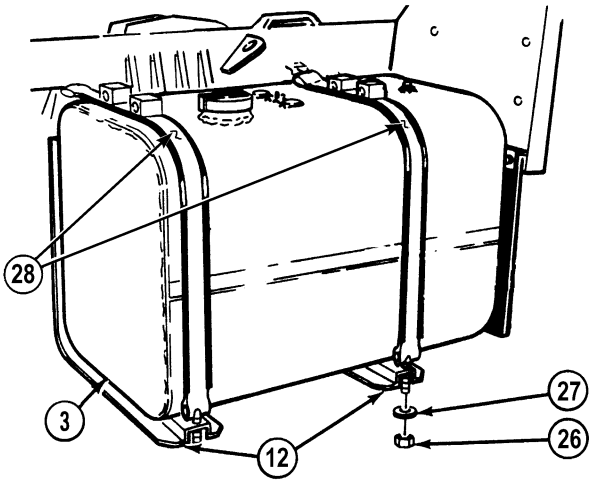
(19) Remove elbow (20), reducer (22), check valve (23), reducer (24) and tee (25) from main fuel tank (3).



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).

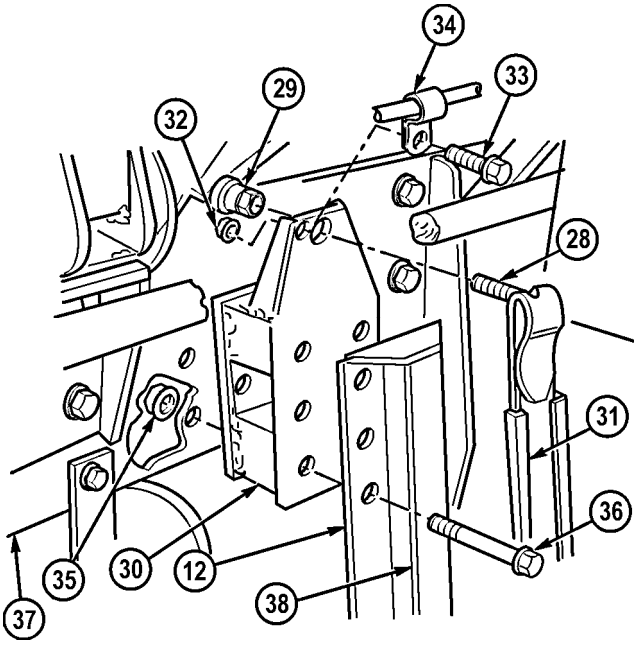
NOTE

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.



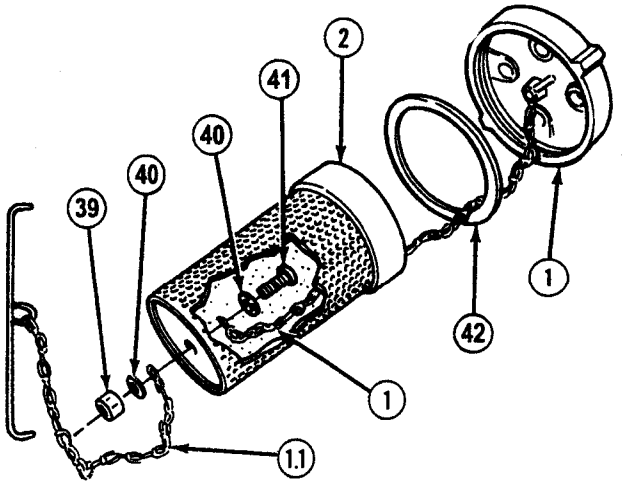
NOTE

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), chain (1.1) 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.

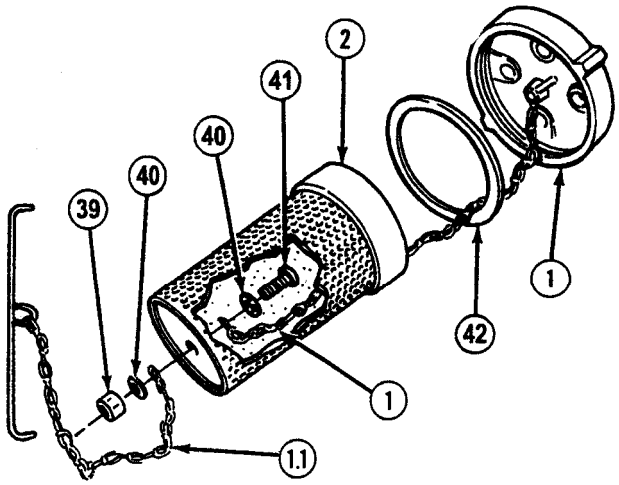
(6) Inspect fuel tank for cracks or broken welds.

(7) Replace all damaged parts.

c. Installation.

(1) Install gasket (42) on cap and chain (1).

(2) Install chain (1.1), 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

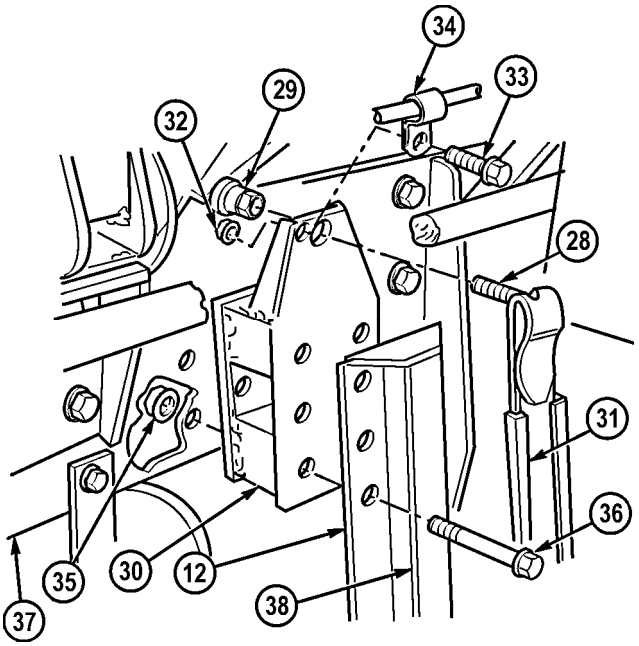
Perform Step (7) if strap liners were removed.

(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).

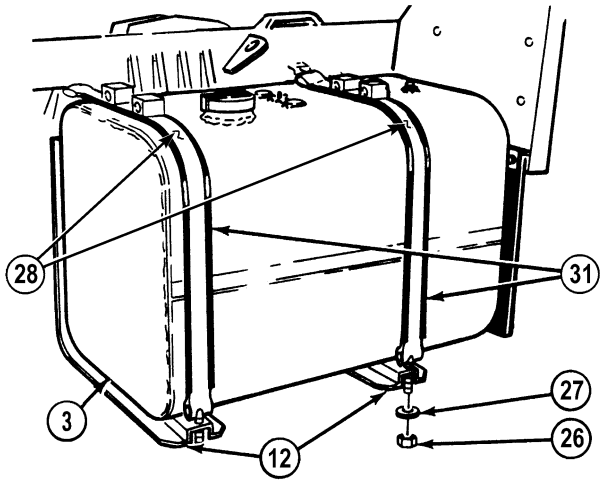
(10) Coat both strap liners (31) and main fuel tank (3) contact area with tire lubricant.

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.

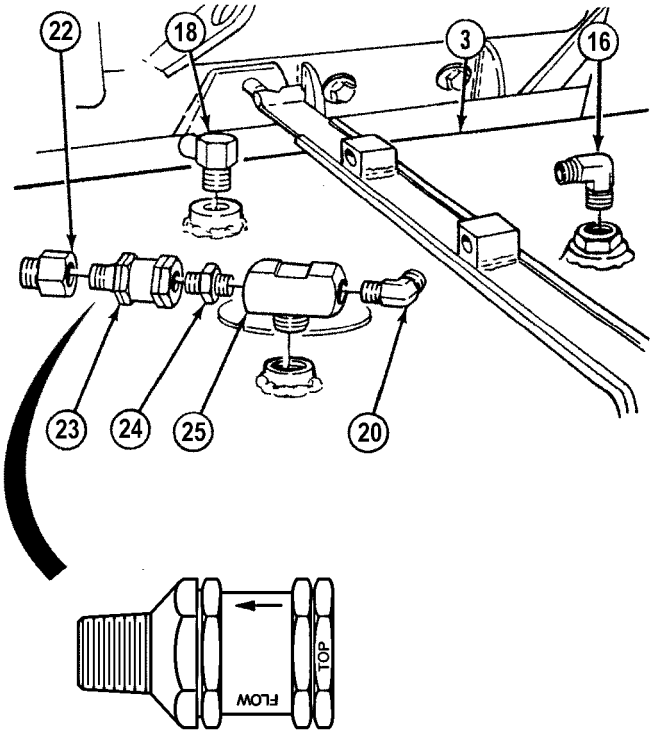
CAUTION

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.

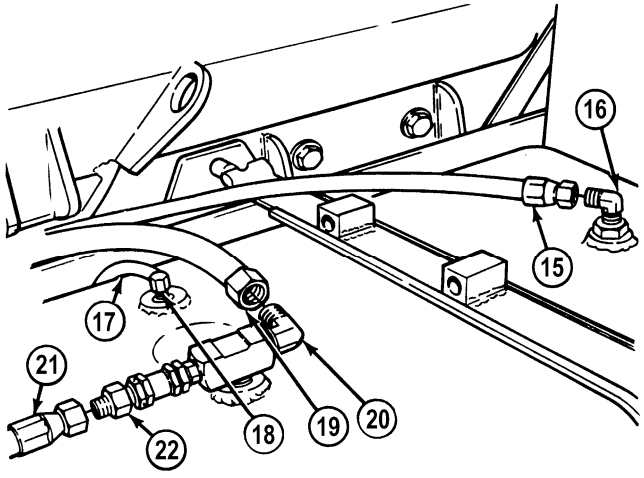
(16) Install elbow (16) and tank vent valve (18) on main fuel tank (3).

(17) Connect hose 2259 (21) to reducer (22).

(18) Connect hose 2919 (19) to elbow (20).

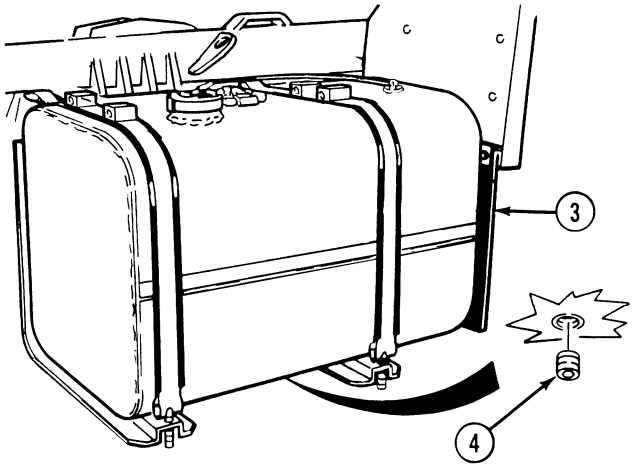
(19) Connect overflow hose (17) to tank vent valve (18).

(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).

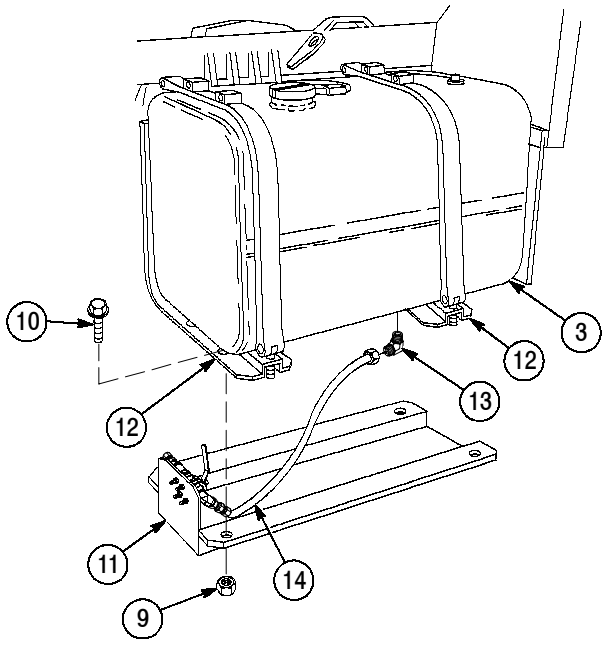
(22) Install drain plug (4) in main fuel tank (3).

(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.

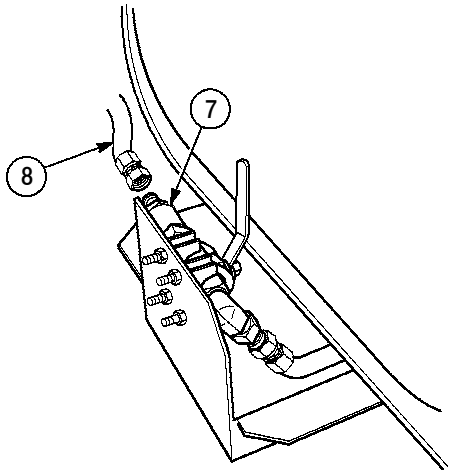


(25) Attach hose 2320 (14) to reducer (13).

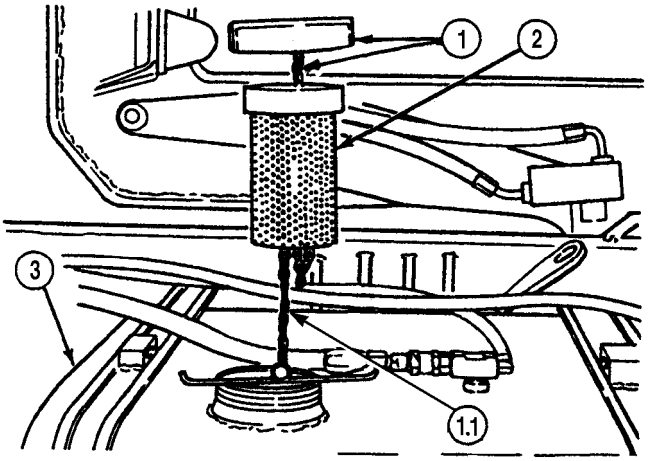
(26) Install fuel tank guard (11), six screws (10) and locknuts (9) to fuel tank brackets (12).

4-8. MAIN FUEL TANK AND BRACKETS REPLACEMENT (CONT).

(27) Connect hose 2320 (8) to safety valve (7).



(28) Install strainer (2), chain (1.1) 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
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Dispensing Pump (Item 16, Appendix H)
Drum, Storage 57 gal (Item 21, Appendix H)
Gloves, Chemical Oil Protective (Item 28, Appendix H)
Goggles, Industrial (Item 30, Appendix H)
Hammer, Soft Faced (Item 33, Appendix H)
Pan, drain (6 gal) (Item 46, Appendix H)
Socket Set, Deep Well, 1/2 in. (Item 60, Appendix H)
Socket Set, 3/4 in. (Item 61, Appendix H)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix H)

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

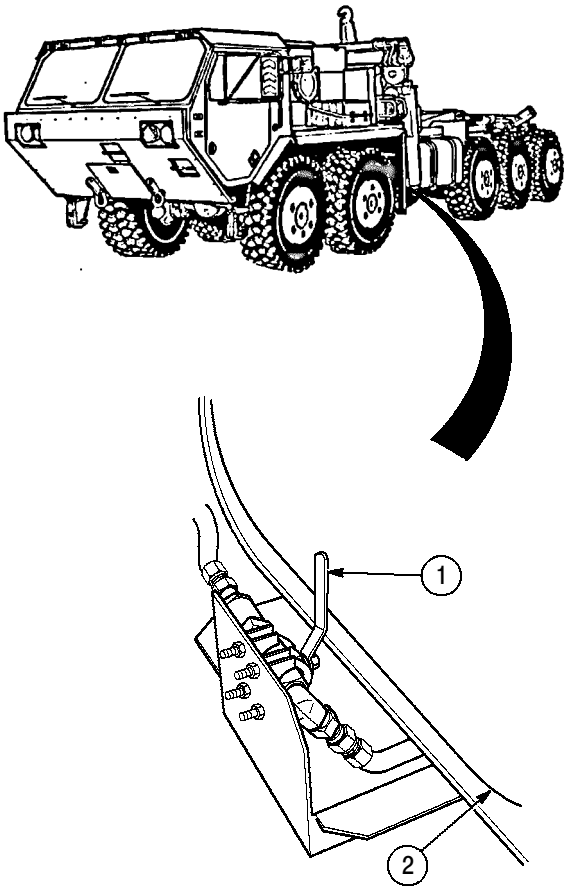
Personnel Required
Two

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

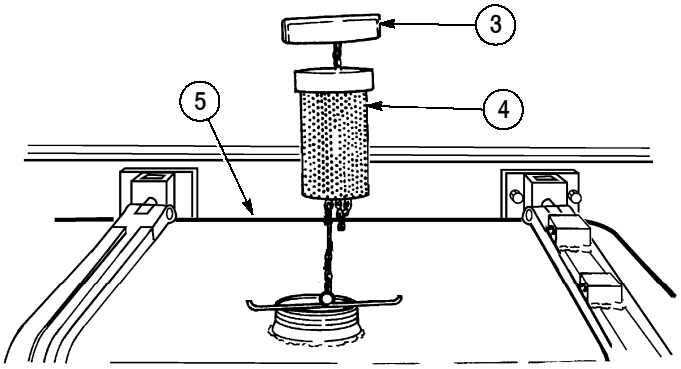
Fuel is very flammable and can explode easily. To avoid serious injury or death:

- 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).

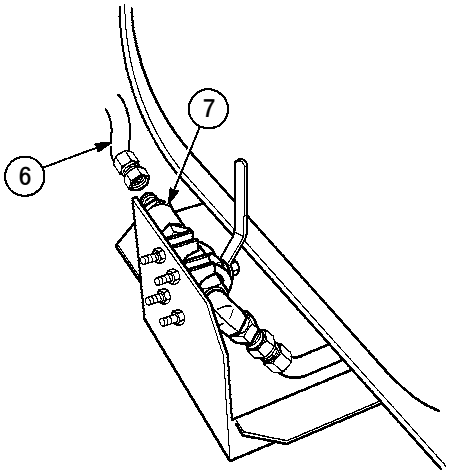
(4) Pump fuel into storage drums.



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).



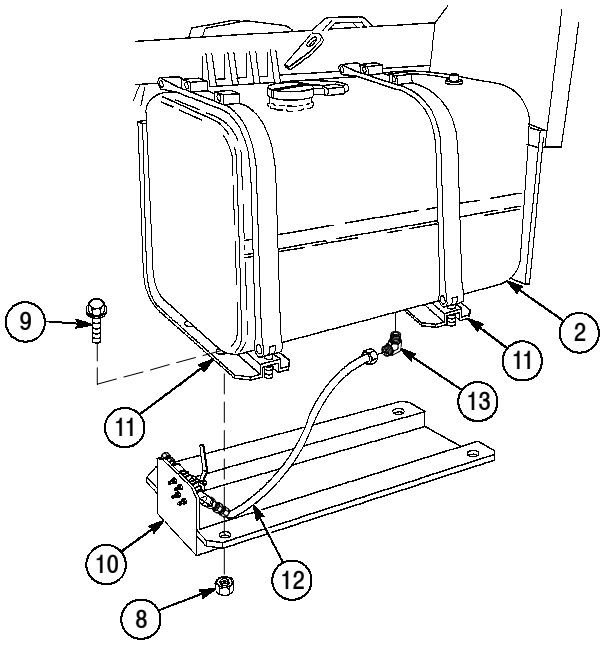
(6) Remove six locknuts (8), screws (9) and fuel tank guard (10) from fuel tank brackets (11). Discard locknuts.

(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).

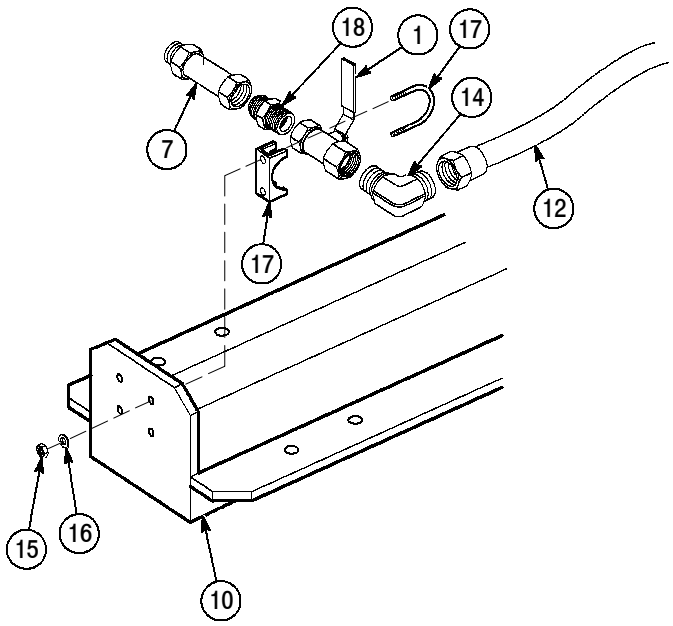
(9) Disconnect hose 2320 (12) from elbow (14).

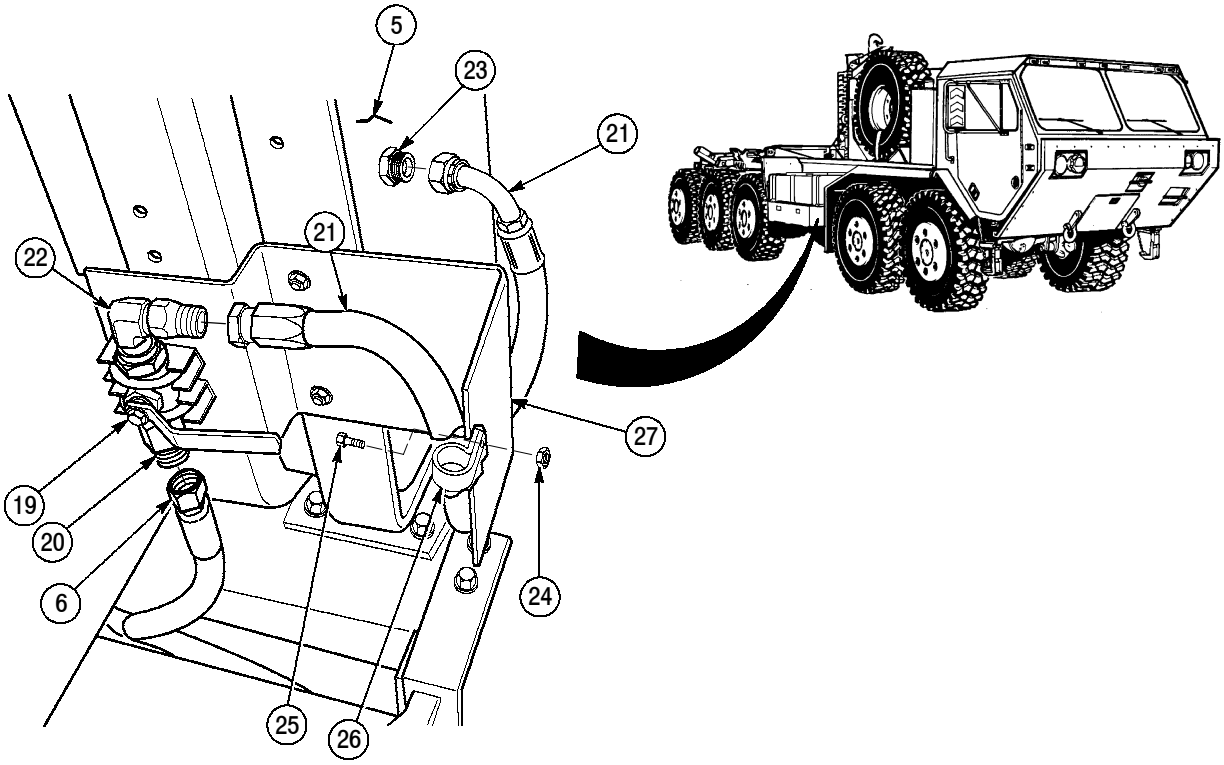
(10) Remove four nuts (15), lockwashers (16), two clamps (17) and fuel shutoff valve (1) from fuel tank guard (10). Discard lockwashers.

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.

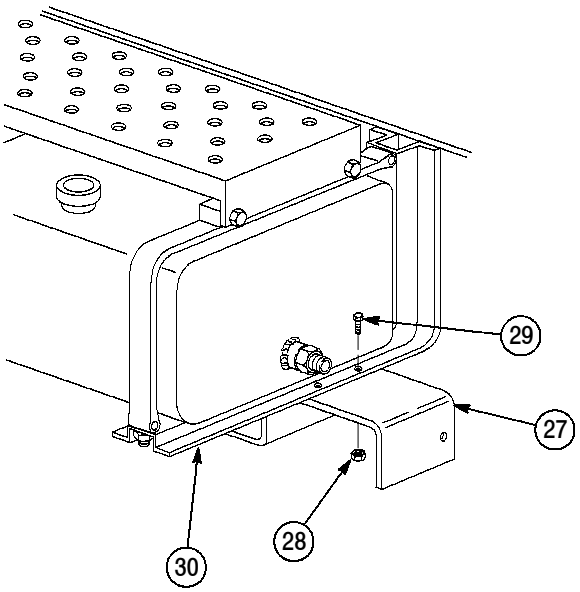
(15) Disconnect hose 2320 (21) from elbow (22).

(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).



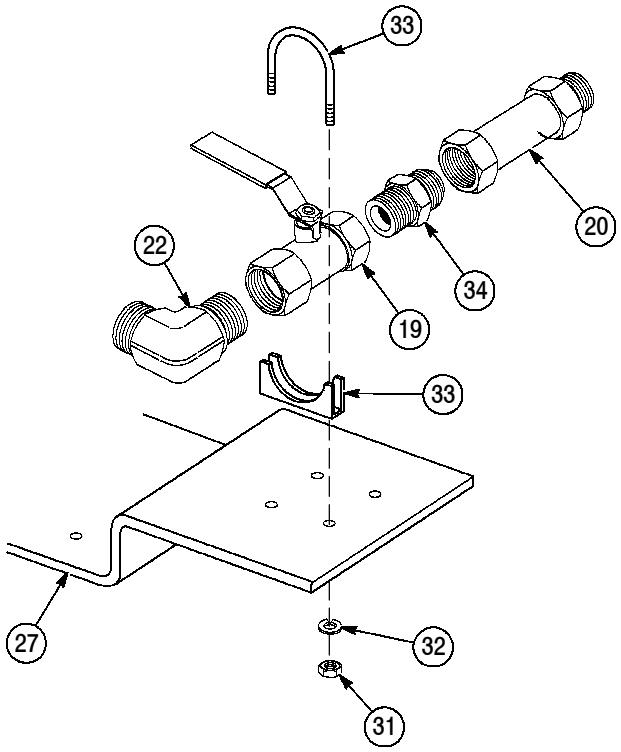
4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

(20) Remove four nuts (31), lockwashers (32), two clamps (33) and fuel shutoff valve (19) from fuel tank guard (27). Discard lockwashers.

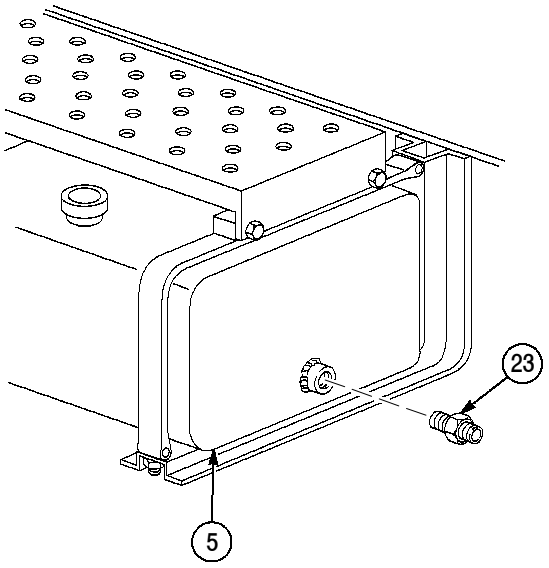
NOTE

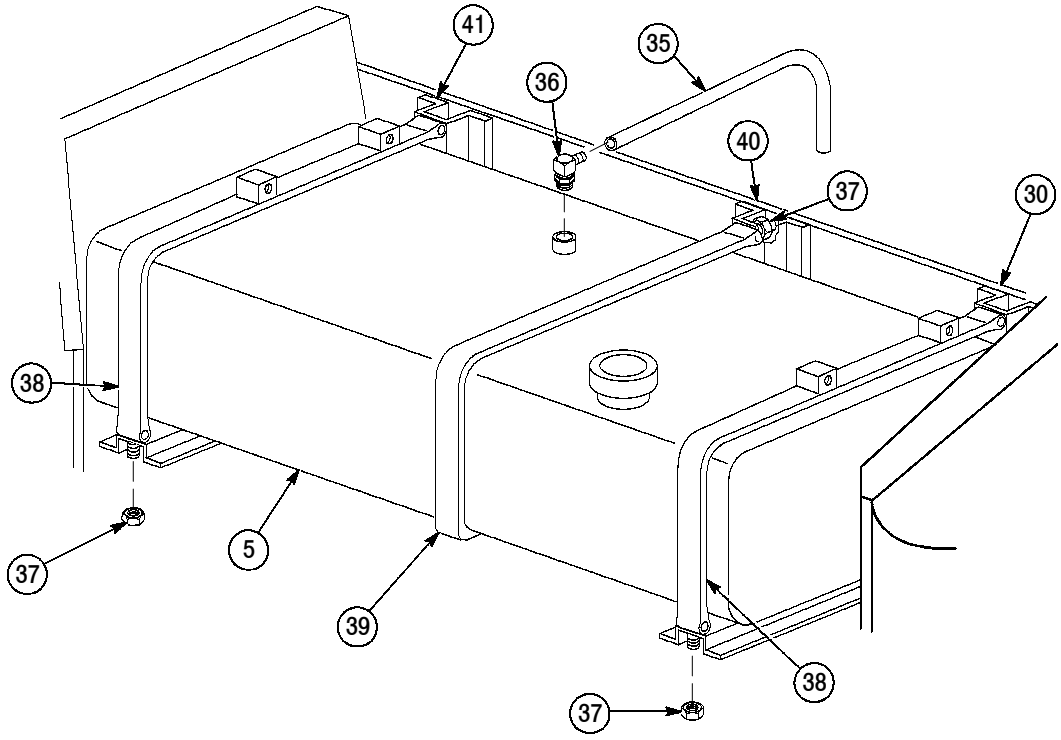
Note position of reducers, elbows, safety valve, fuel shutoff valves and adapters prior to removal.

(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).

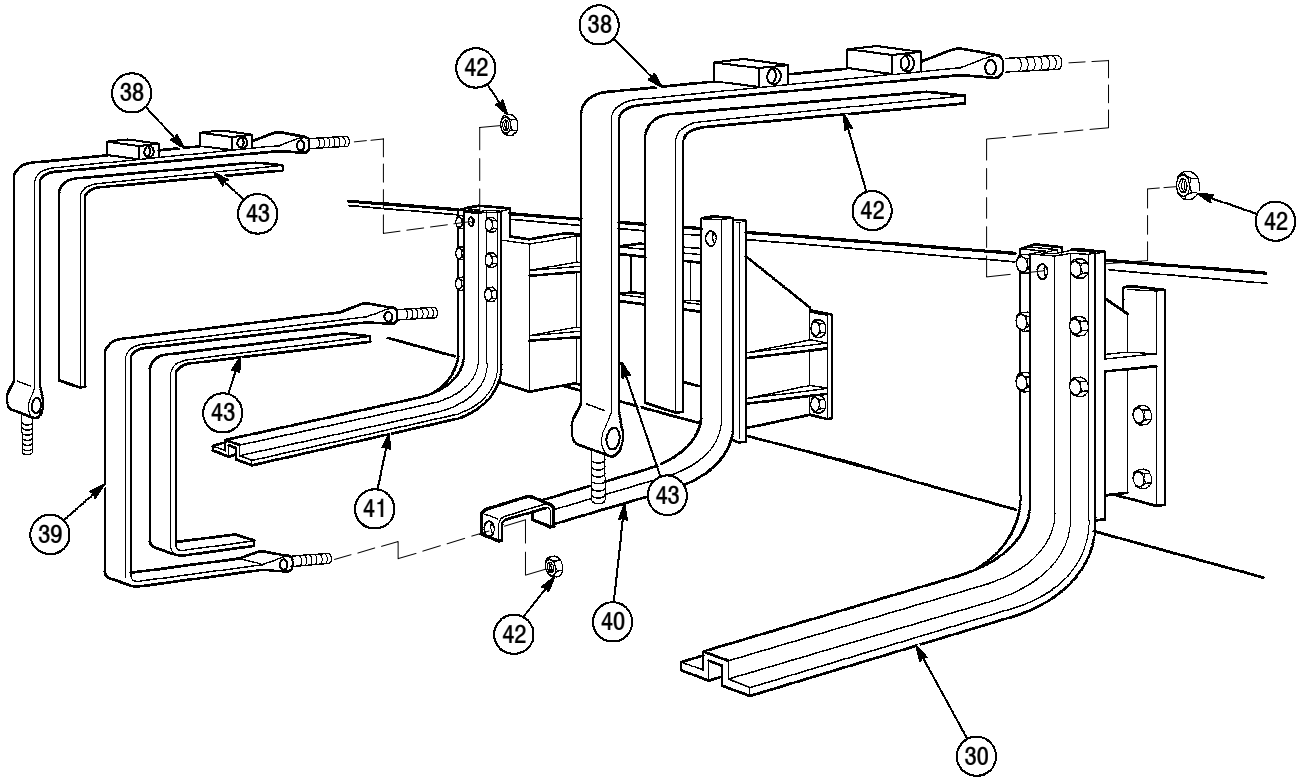
(25) Remove three locknuts (37) from two fuel tank straps (38) and fuel tank strap (39). Discard locknuts.

(26) Position two fuel tank straps (38) up and out of way.

(27) Position fuel tank strap (39) down and out of way.

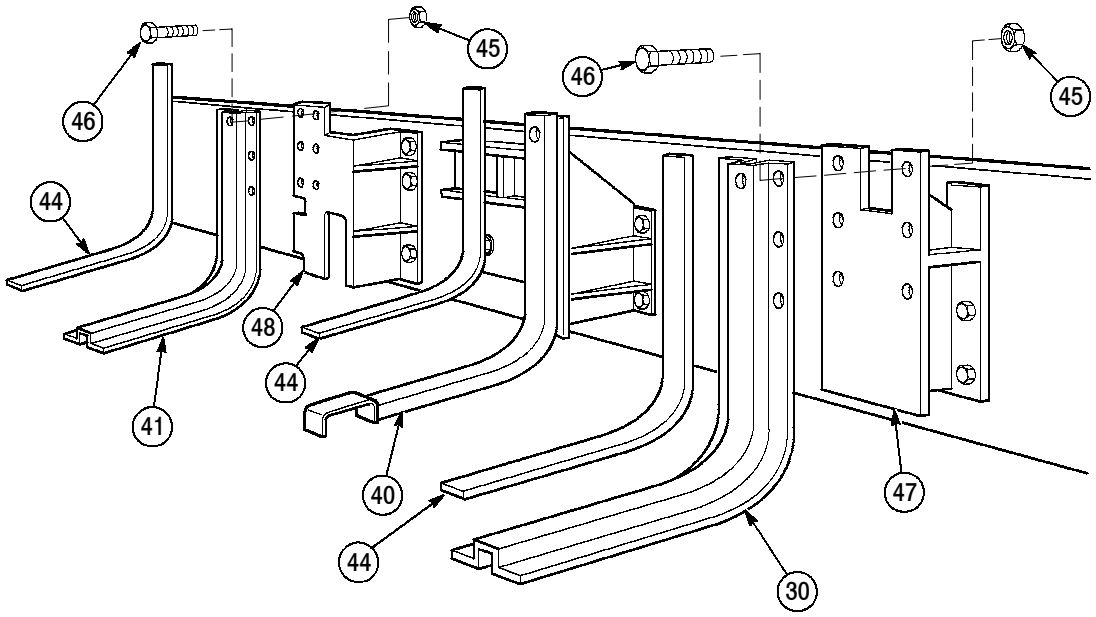
(28) With the aid of an assistant, remove auxiliary fuel tank (5) from fuel tank brackets (30), (40) and (41). Lower auxiliary fuel tank to ground.

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).



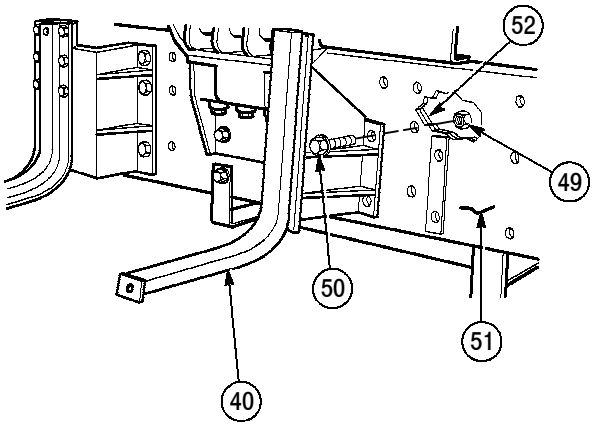
NOTE

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.

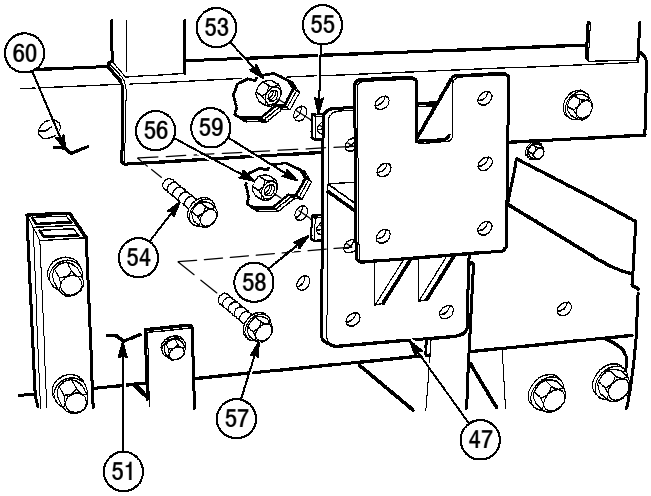


4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

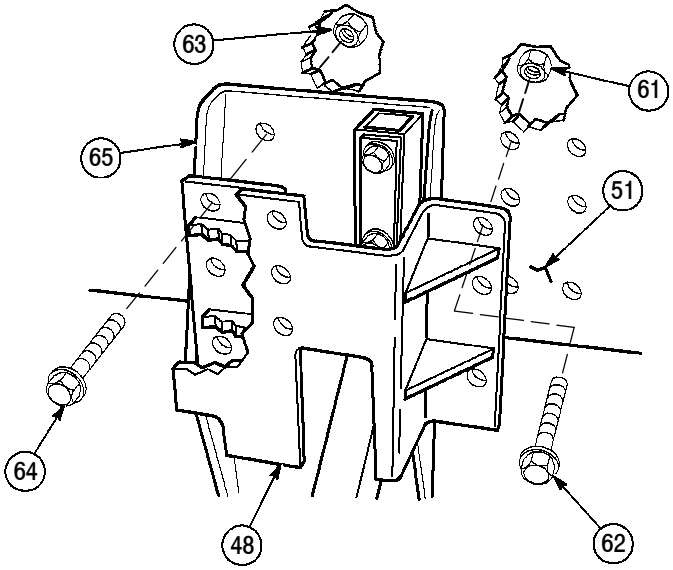
NOTE

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).

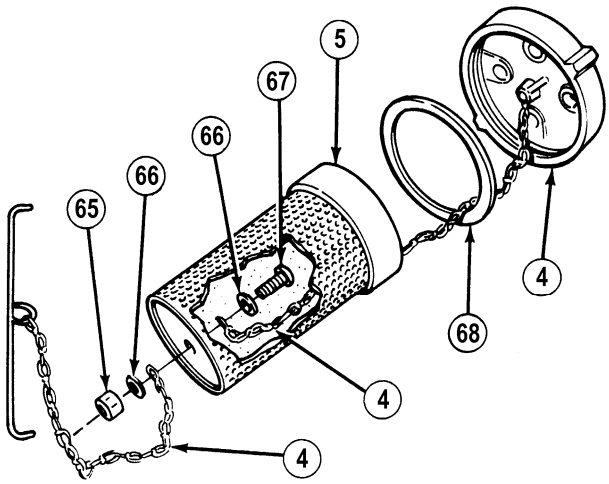


(35) Remove three locknuts (61), screws (62), locknuts (63), screws (64) and rear mounting bracket (48) from frame (51) and crossmember bracket (65). Discard locknuts.



(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.

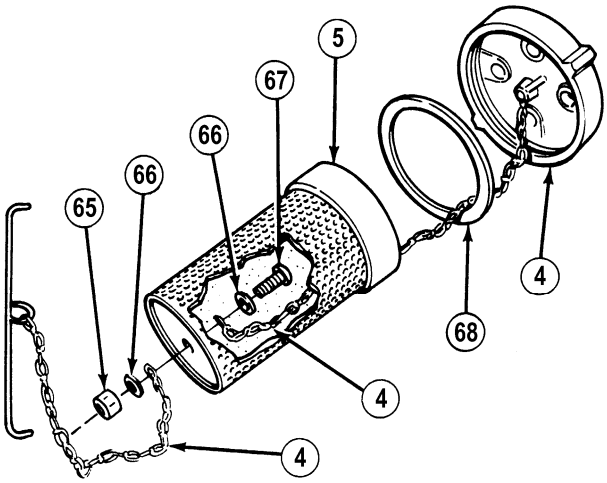
(7) Replace all damaged parts.

4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

c. Installation

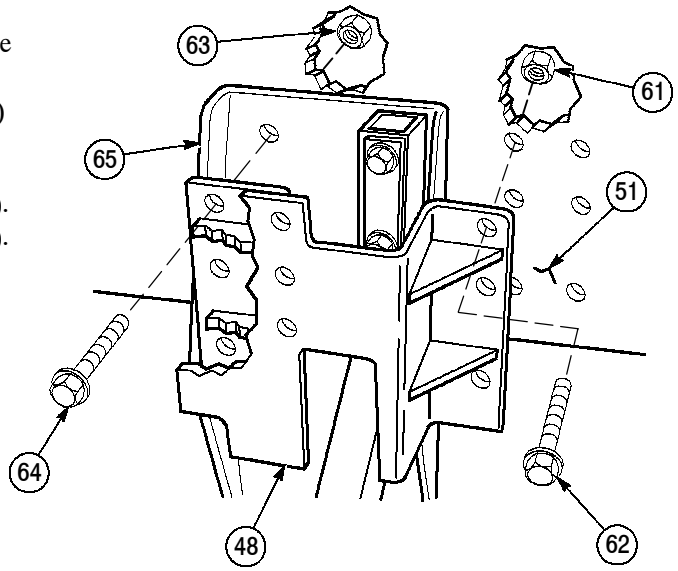
(1) Install gasket (69) on cap and chain (3).

(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).

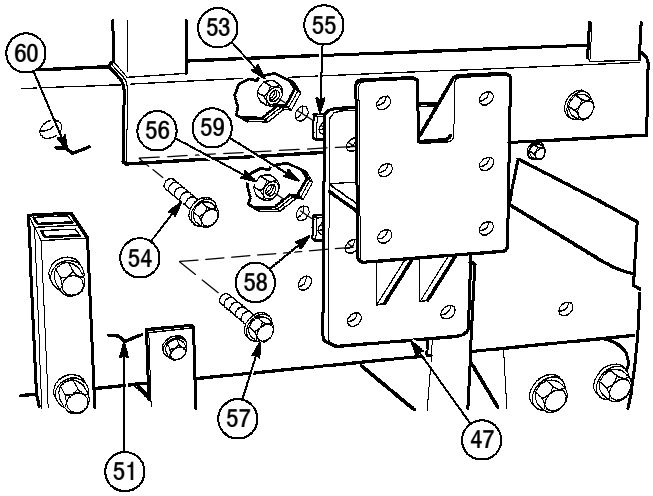


NOTE

If truck is equipped with CHU kit, spacers will not be present in Step (5).

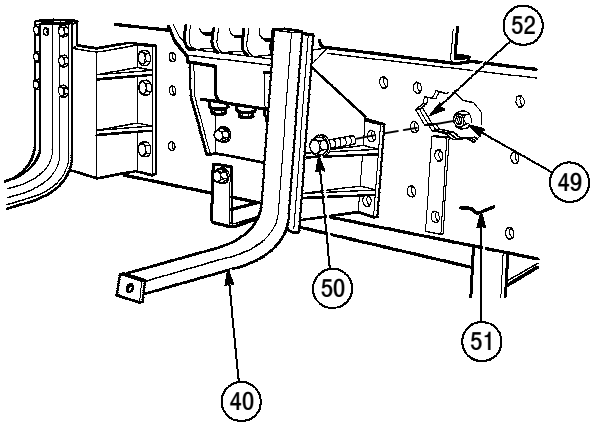
(5) Position spacer (55), two spacers (58) and mounting bracket (47) on frame (51), crossmember bracket (59) and deck weldment (60) with four screws (57), locknuts (56), screw (54) and locknut (53).

(6) Tighten four locknuts (56) to 210 lb-ft (285 N·m). Tighten locknut (53) to 375 lb-ft (508 N·m).

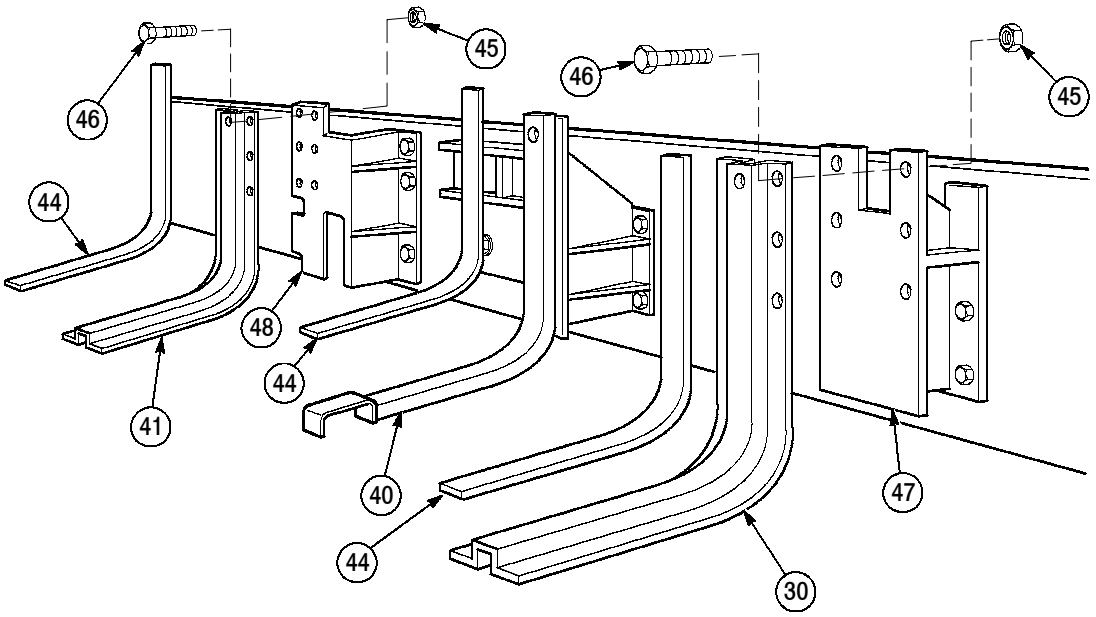


(7) Position middle fuel tank bracket (40) on frame (51) and transfer case bracket (52) and with six screws (50) and locknuts (49).

(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

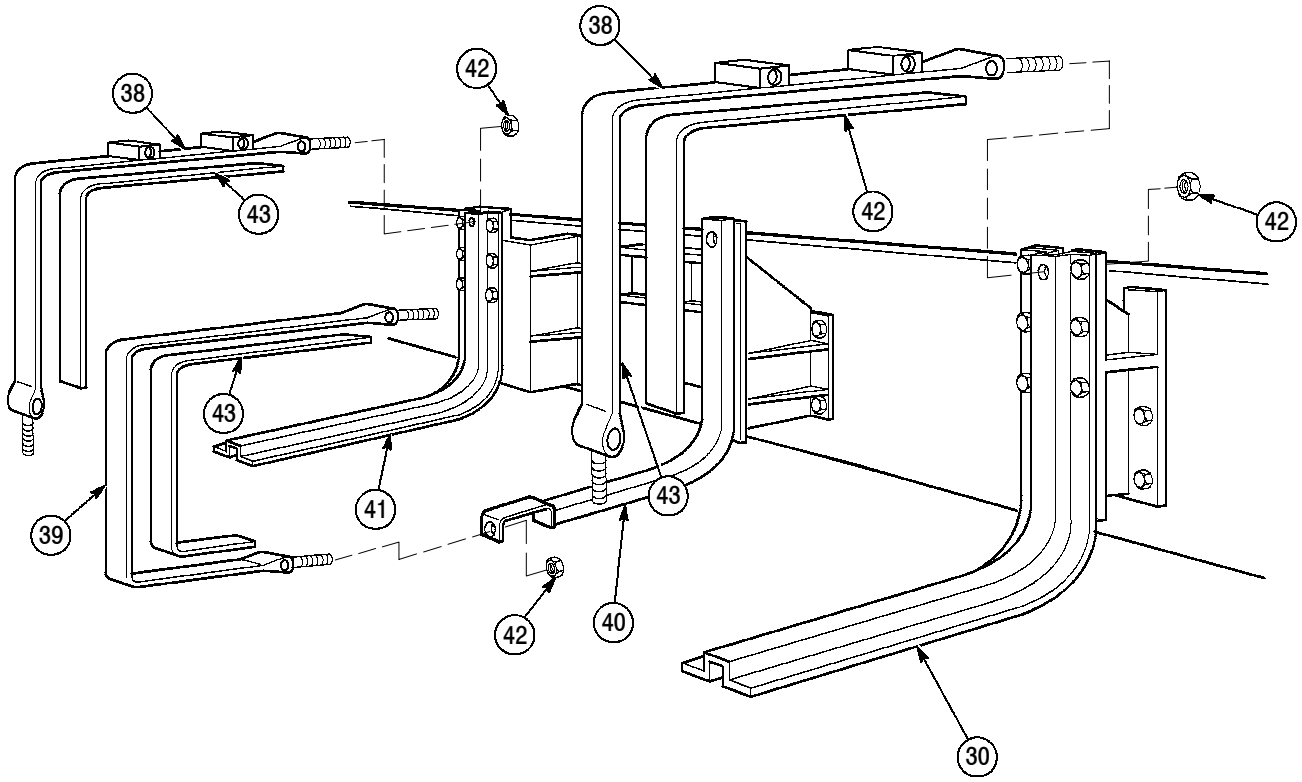
Perform Steps (9) and (10) if rubber liners were removed.

(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

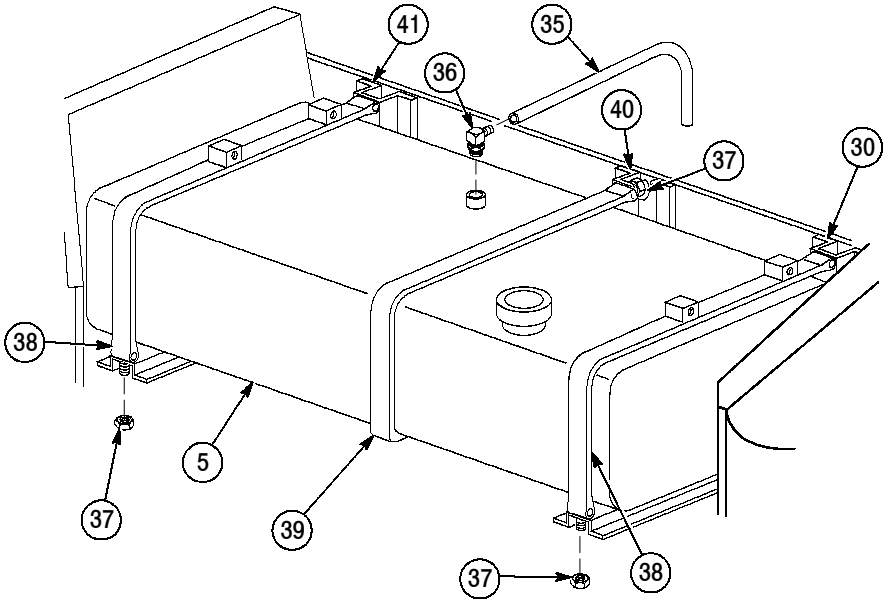
Fuel tank straps are properly installed when three threads are showing through end of nut.

(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.

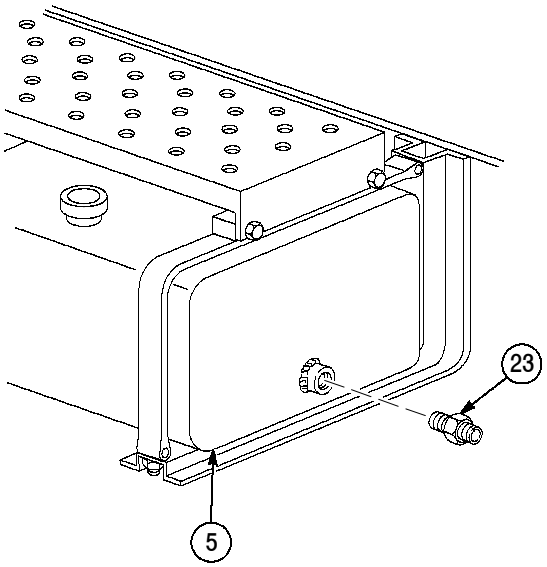
(20) Apply sealing compound to threads of tank vent valve (36).

(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.

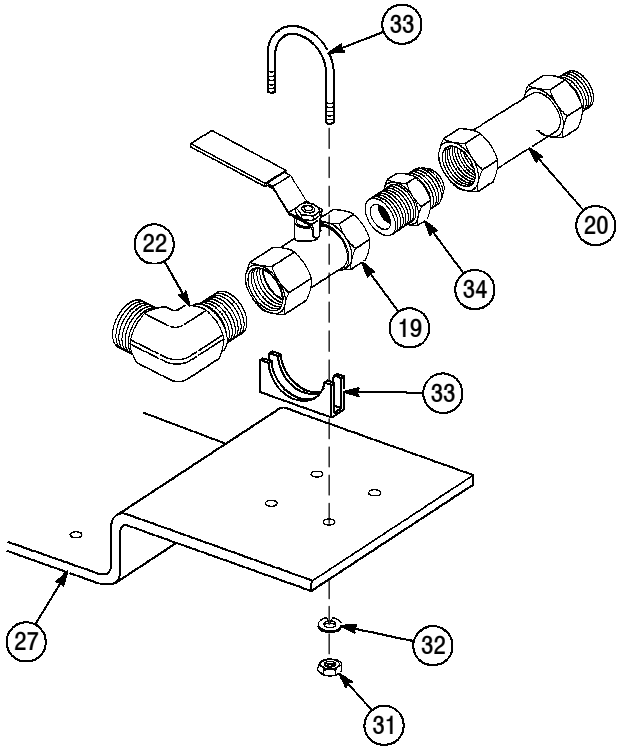
(23) Coat threads of reducer (23) with sealing compound.

(24) Install reducer (23) on auxiliary fuel tank (5).

(25) Coat threads of elbow (22), adapter (34), and safety valve (20) with sealing compound.

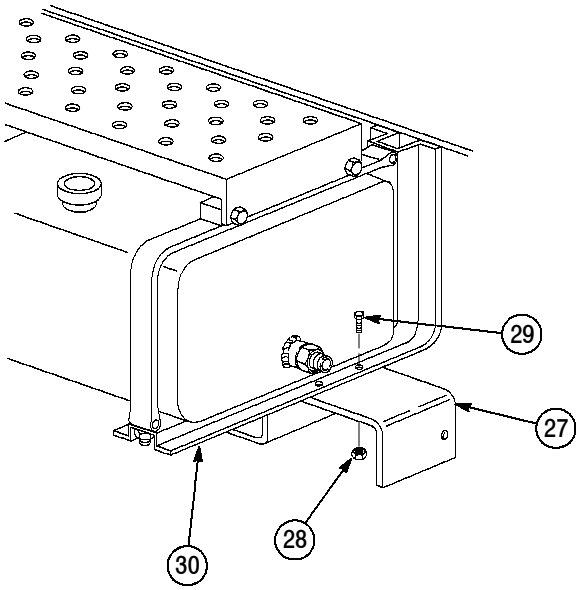
(26) Assemble elbow (22), fuel shutoff valve (19), adapter (34) and safety valve (20).

(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).



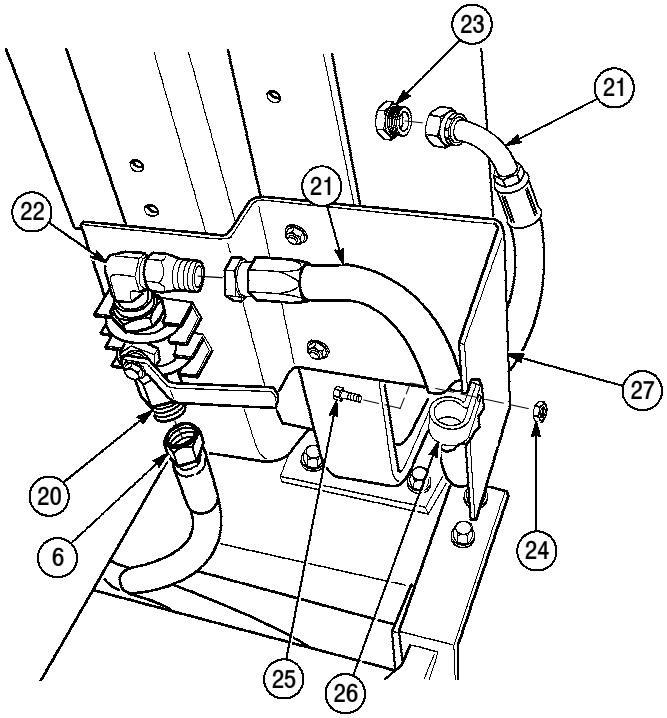
(29) Connect hose 2320 (21) to reducer (23).

(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).

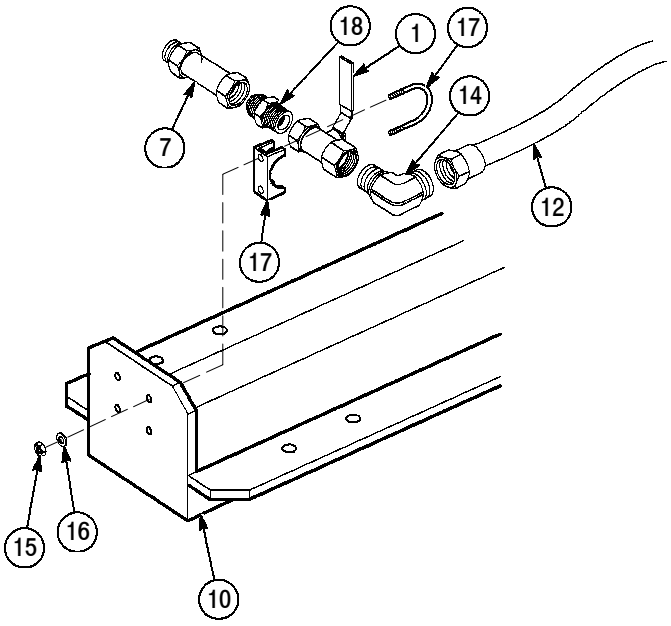


WARNING

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).

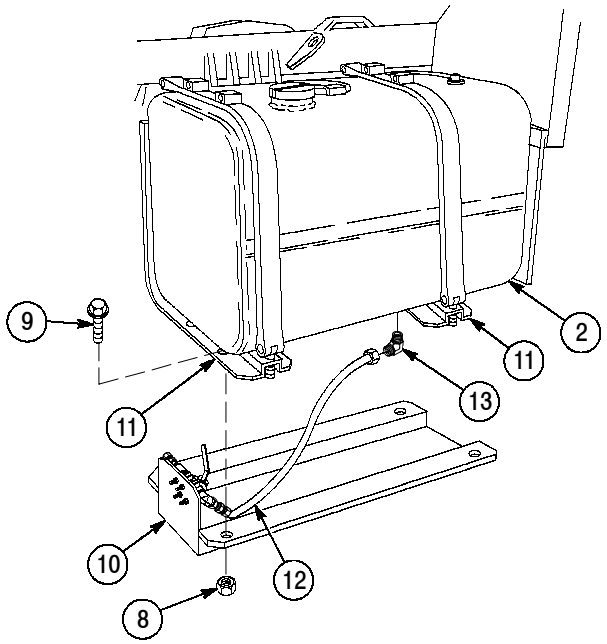
NOTE

Install reducer as noted prior to removal.

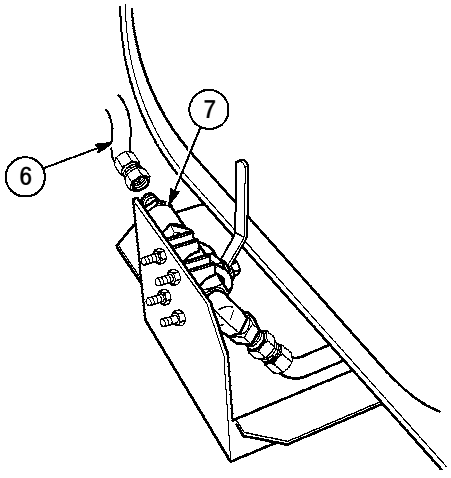
(39) Install reducer (13) in fuel tank (2).

(40) Attach hose 2320 (12) to reducer (13).

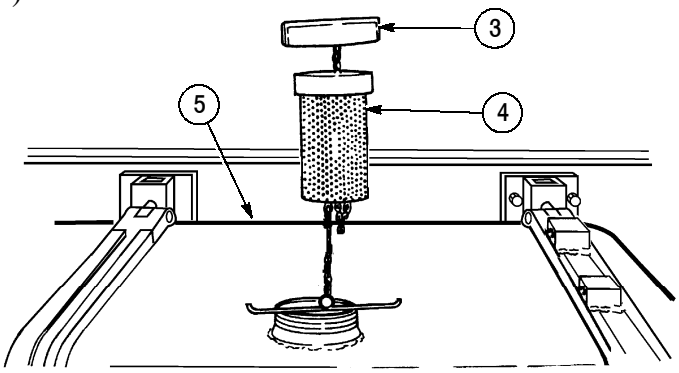
(41) Install fuel tank guard (10), six screws (9) and locknuts (8) to fuel tank brackets (11).



(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 Maintenenace

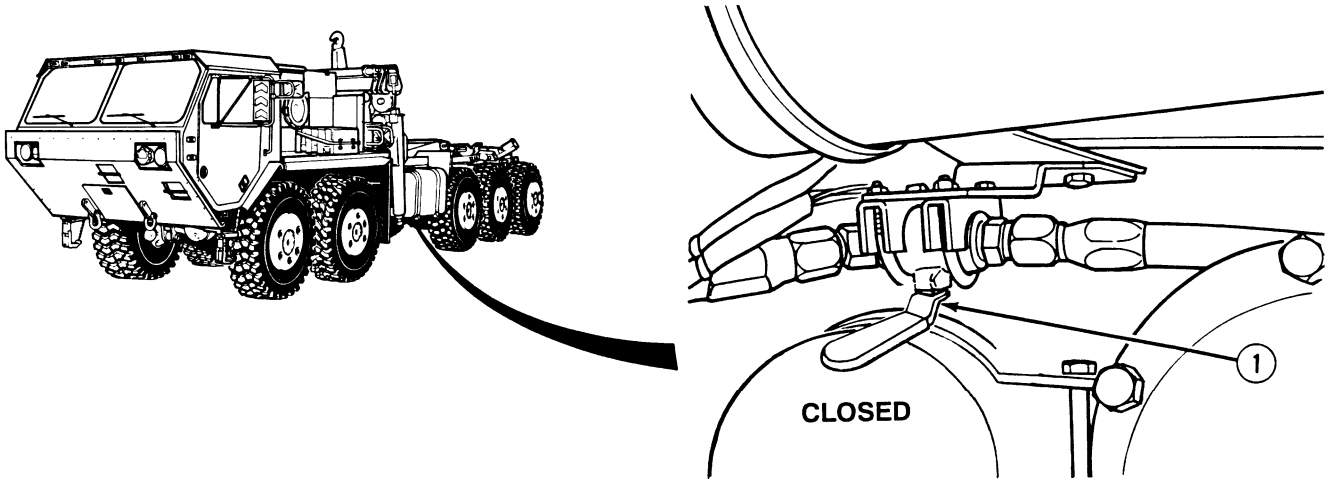
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Cap and Plug Set (Item 8, Appendix H)
Caps, Vise Jaw (Item 9, Appendix H)
Pan, Drain (Item 47, Appendix H)
Vise, Machinist's (Item 75, Appendix H)

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

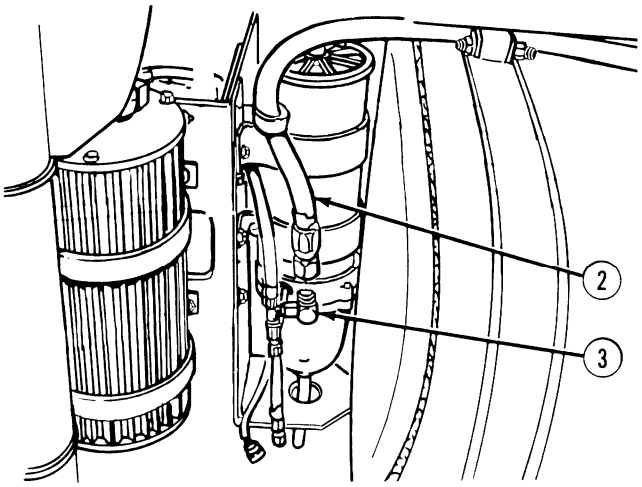
Cap and plug hoses and fittings upon removal.

(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.

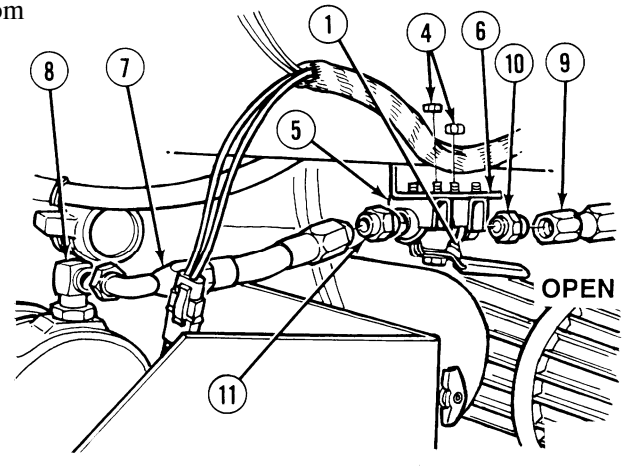
(5) Remove hose 2261 (7) from elbow (8).

(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

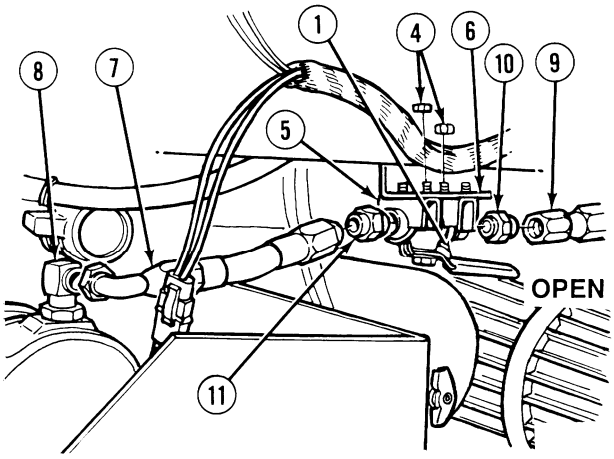
Note position of elbow prior to removal.

(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.



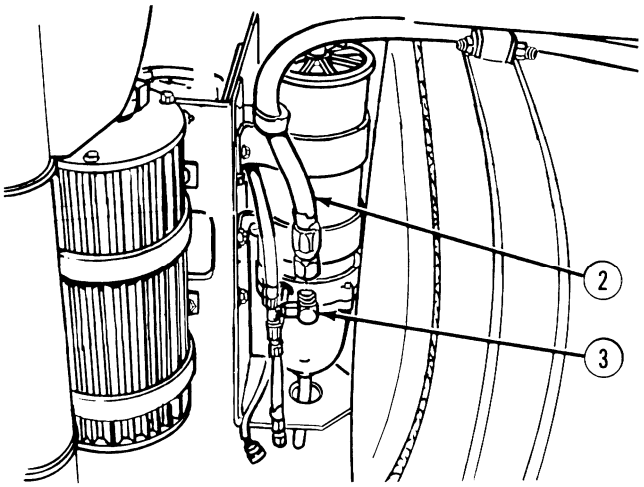
WARNING

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

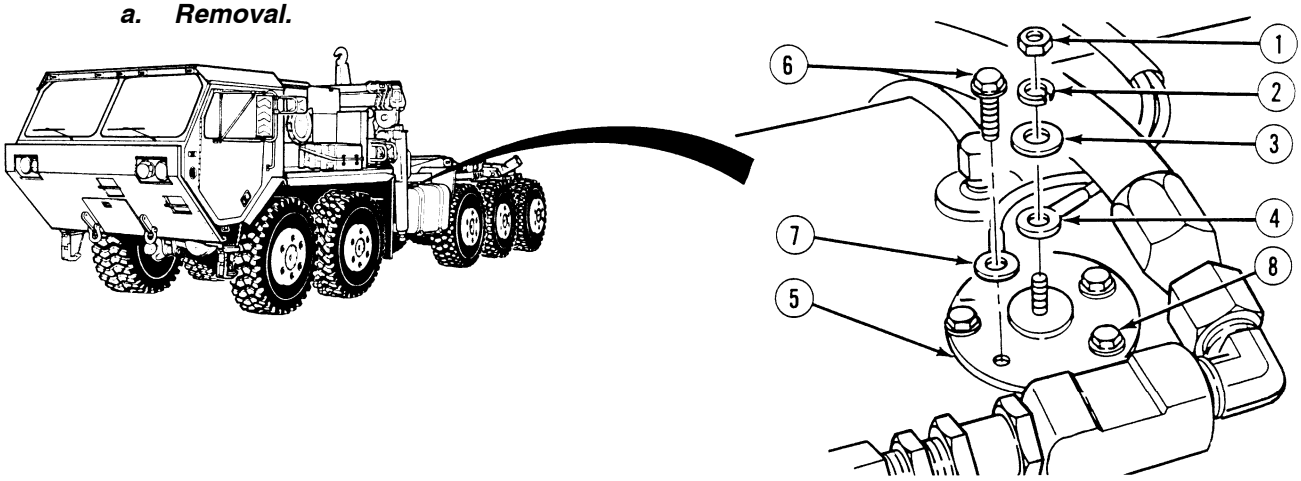
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Socket Set, 3/8 in. (Item 62, Appendix H)
Wrench, Torque, 3/8 in Drive (0 to 60 N·m) (Item 98, Appendix H)

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).

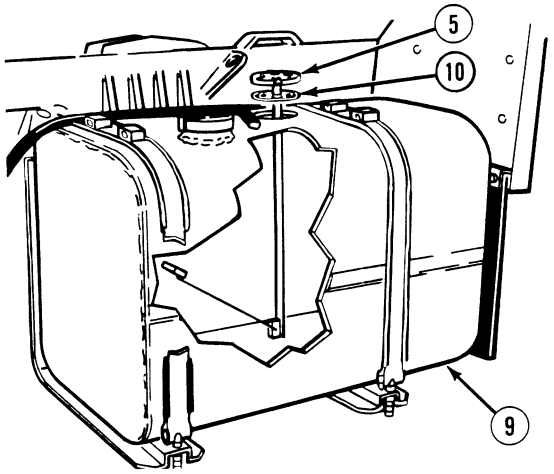
4-11. FUEL LEVEL SENDING UNIT REPLACEMENT (CONT).

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

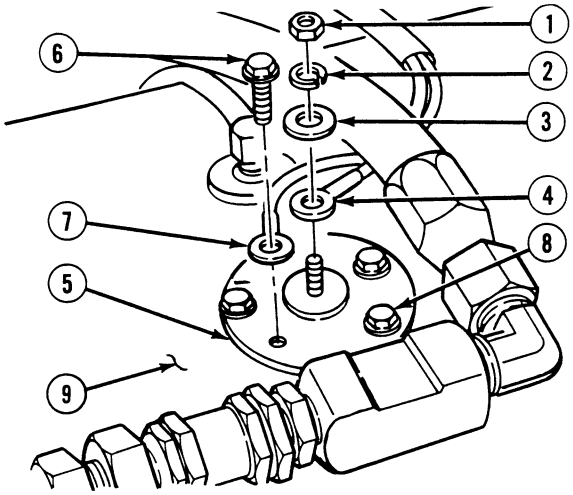
Install fuel sending unit as noted in removal.

(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 20 to 25 lb-in (2 to 3 N·m).

(4) Install wire 1435 (7) and screw (6) on fuel level sending unit (5) and fuel tank (9). Tighten screw to 20 to 25 lb-in (2 to 3 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 H)
Cap and Plug Set (Item 8, Appendix H)

Materials/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)

CAUTION

Equipment may be damaged by foreign matter if hoses, tubes and connectors are not plugged and capped when removed.

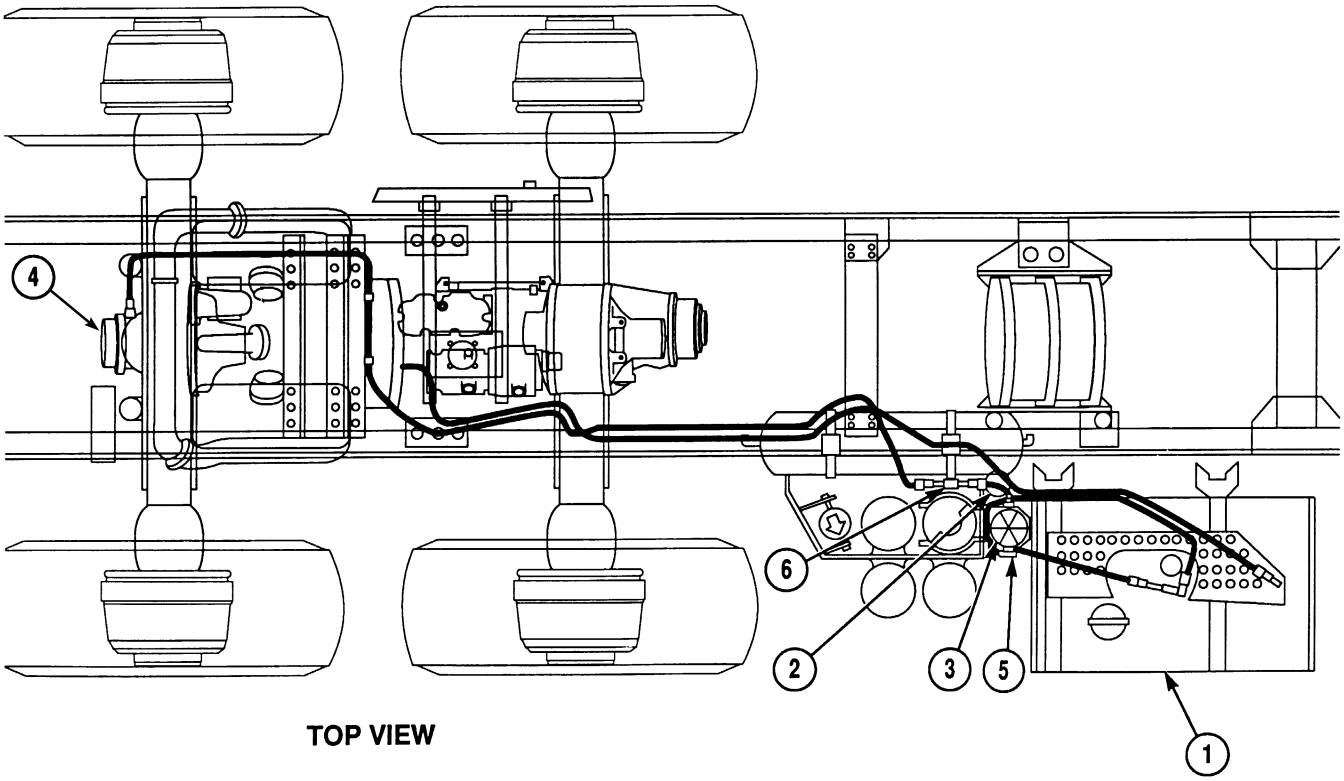
NOTE

- 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.

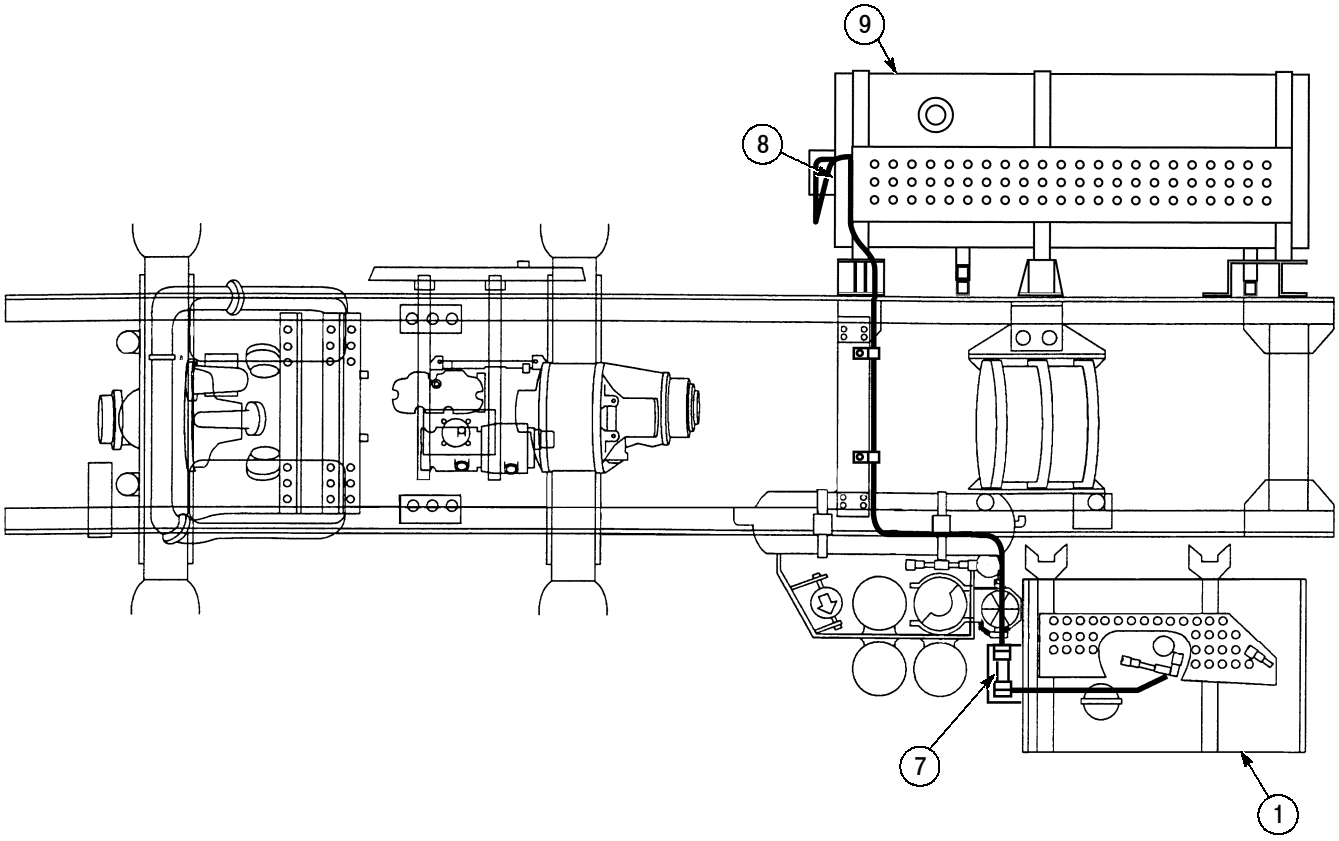
Table 4-1. Fuel Hoses/Tubes Replacement



TOP VIEW

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:

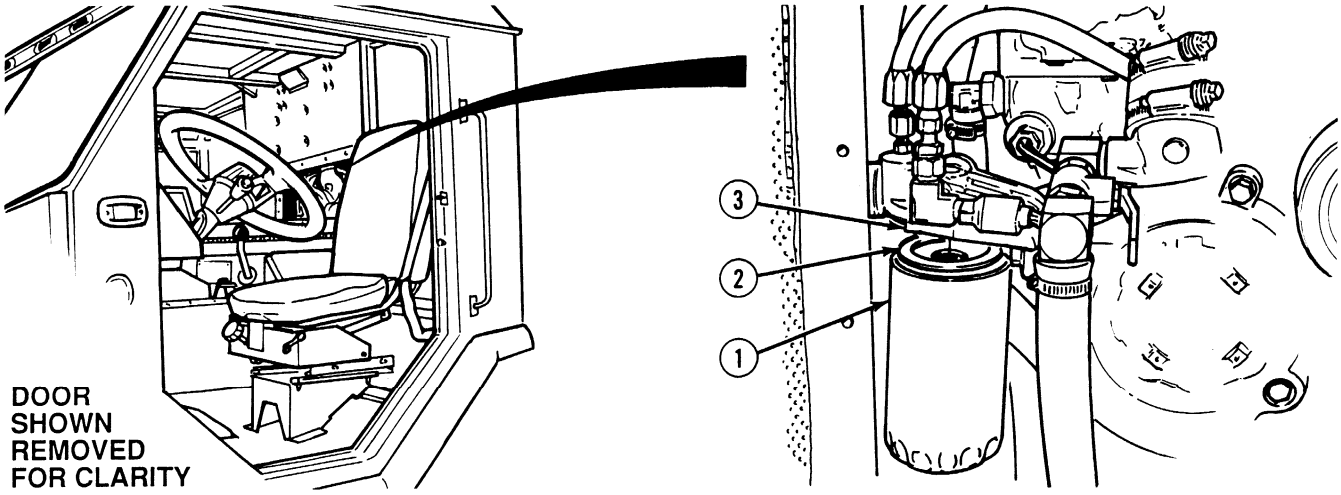
a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Remover Tool, Oil Filter (Item 54, Appendix H)

Material/Parts
Oil, Fuel, Diesel Regular (Item 62, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cab engine access panel removed, (Para 17-24)



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.

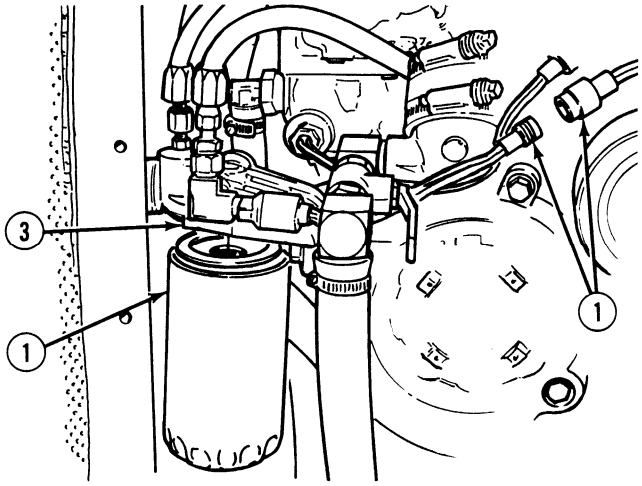
(1) Remove and discard fuel filter (1) and preformed packing (2) from fuel filter head (3).

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

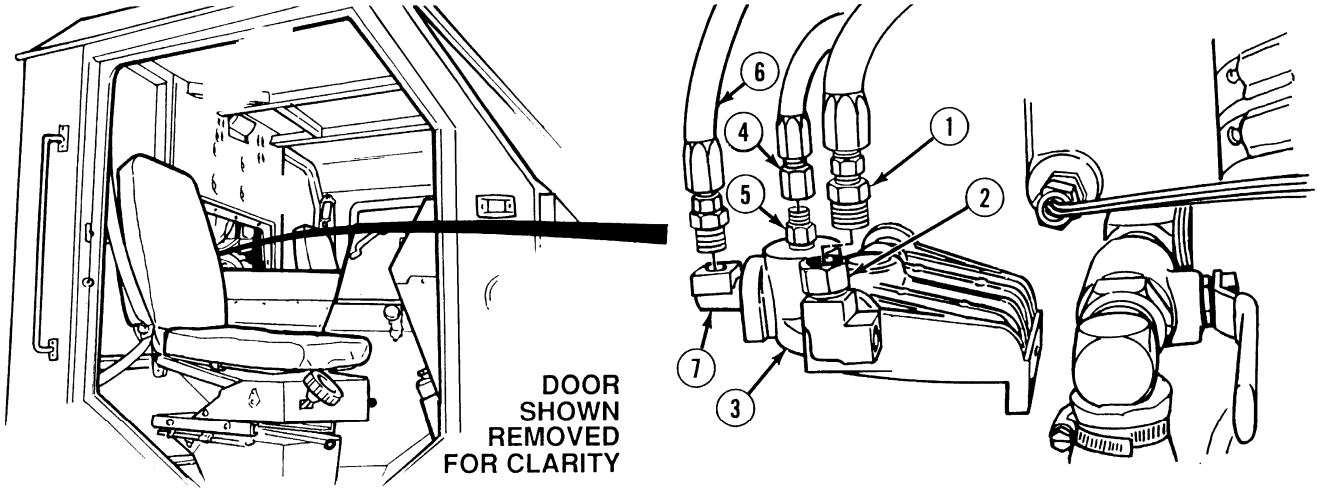
INITIAL SETUP

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

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)
Secondary fuel filter removed, (Para 4-13)
Fuel pressure transducer removed, (Para 7-74)

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).

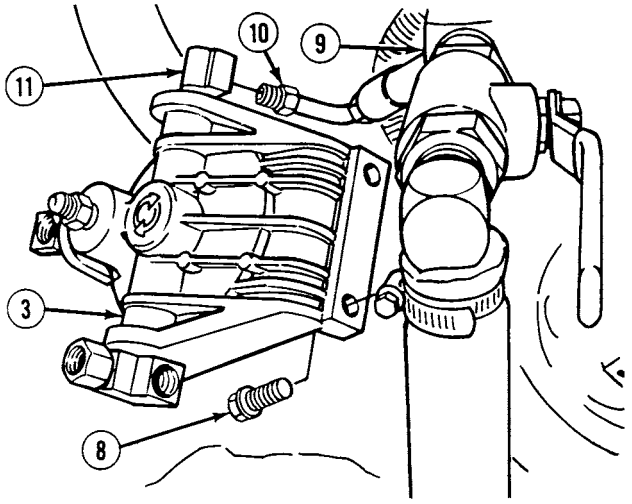
CAUTION

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).

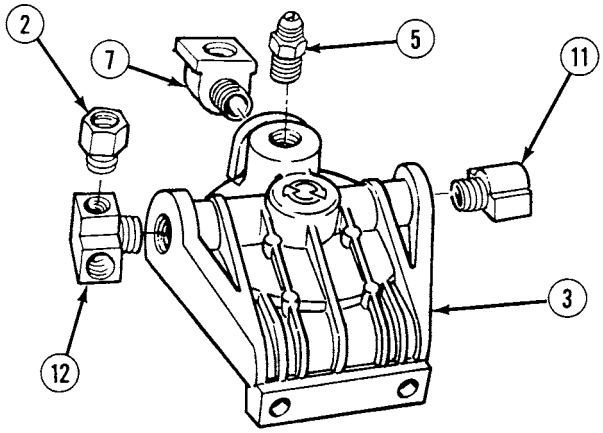


NOTE

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).

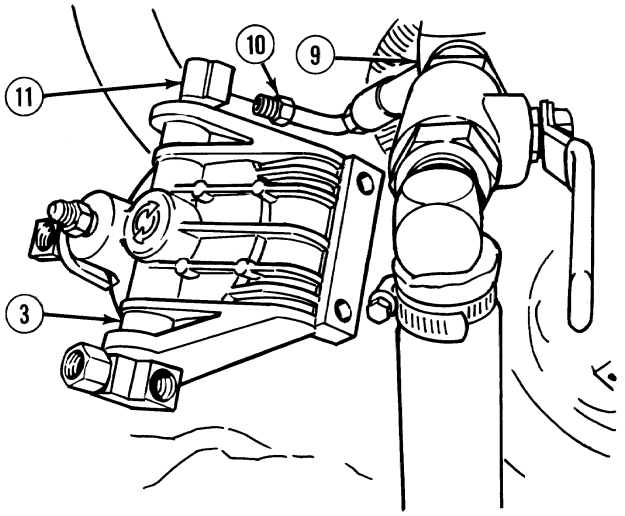
4-14. SECONDARY FUEL FILTER HEAD REPLACEMENT (CONT).

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.

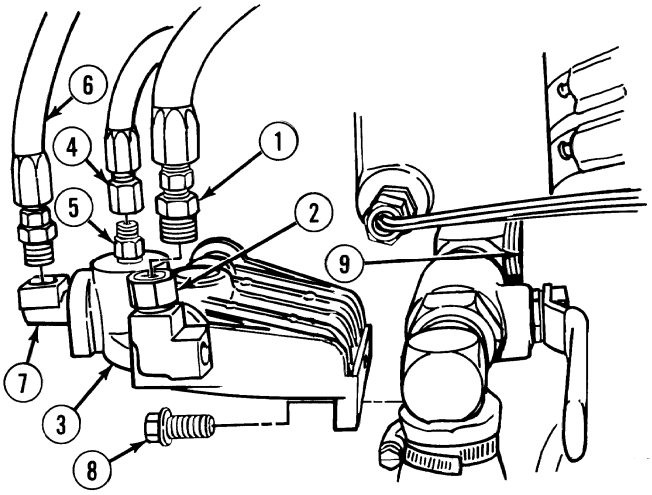
(7) Coat threads of two screws (8) with sealing compounds.

(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:

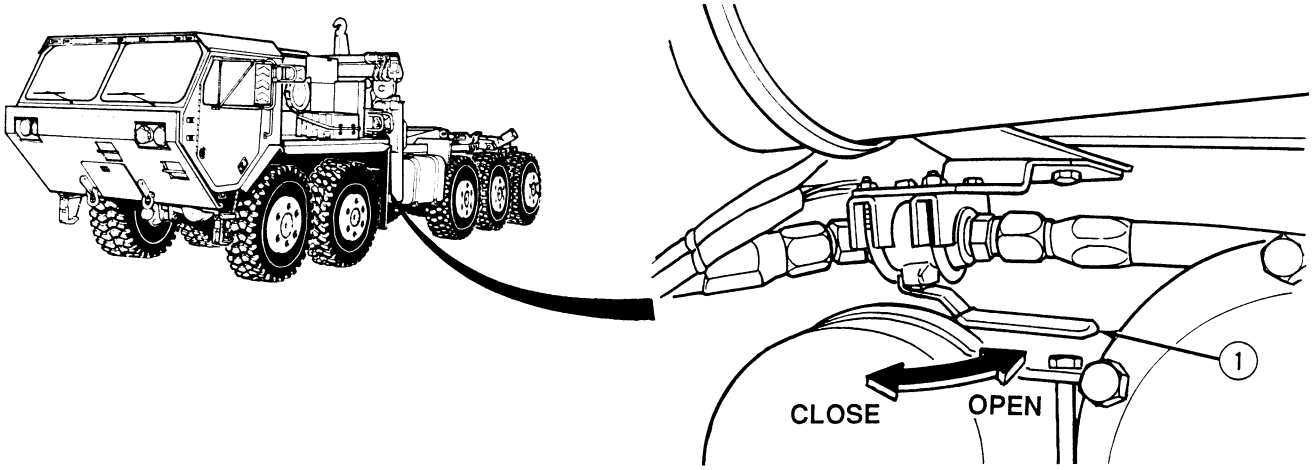
a. Drain b. Fill c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Cap and Plug Set (Item 8, Appendix H)
Pan, Drain (Item 47, Appendix H)

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

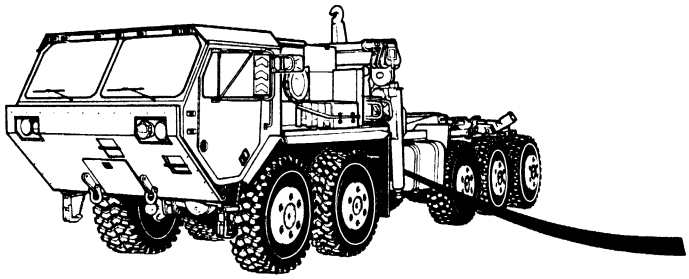
a. Drain.

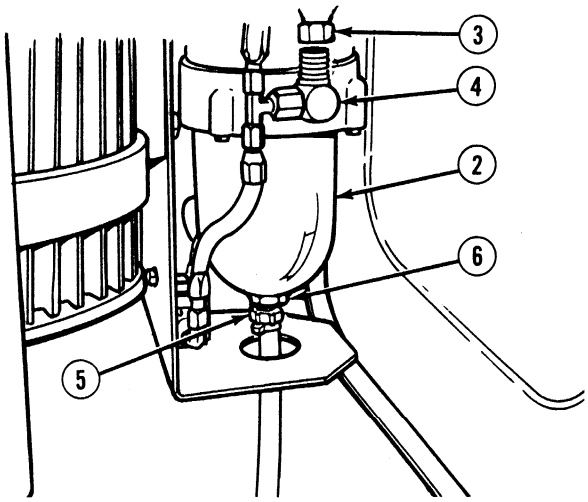


NOTE

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

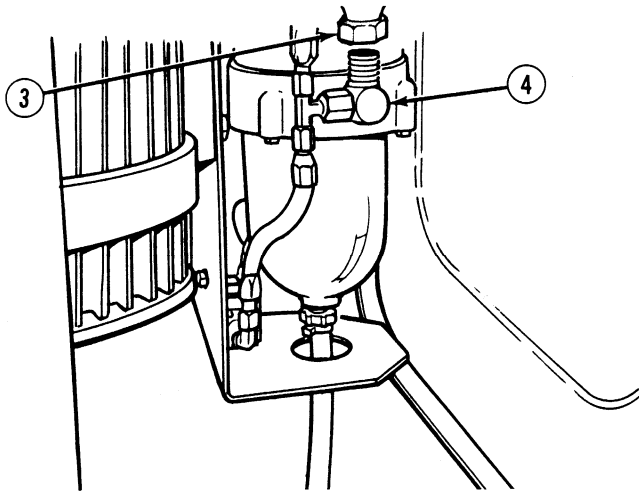
Perform Step (6) if drain valve assembly becomes loose or leaks.

(6) Tighten nut (6) on drain valve (5) to 26 to 30 lb-in (3 to 4 N·m).

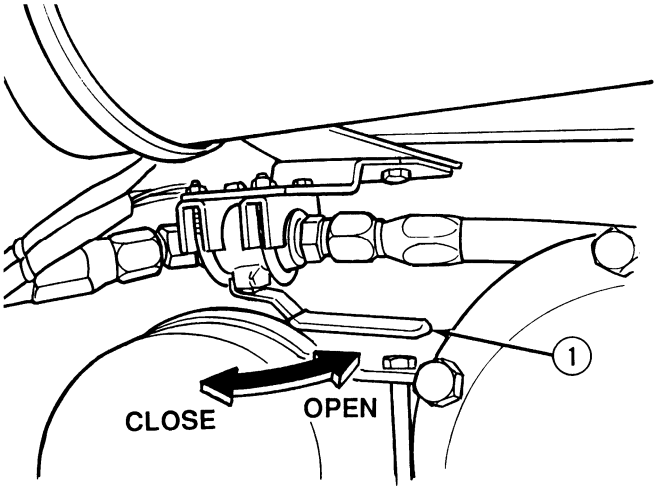
4-15. FUEL/WATER SEPARATOR SERVICE (CONT).

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.

This task covers:

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

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanics: Automotive (Item 74, Appendix H)
Cap and Plug Set (Item 8, Appendix H)
Pan, Drain (Item 47, Appendix H)

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)
Locknut (8) (Item 140, Appendix F)
Packing, Preformed (2) (Item 231, 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)

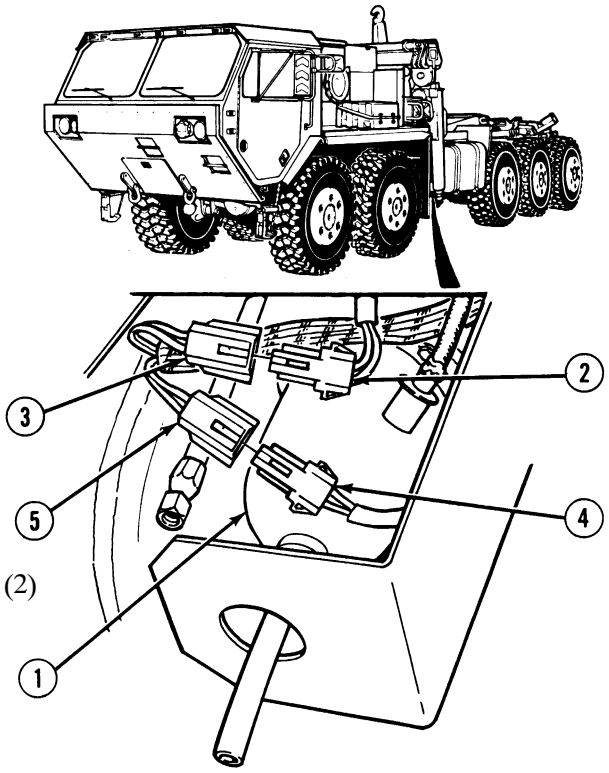
a. Removal.

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).

(2) Disconnect fuel pump MC108 connector (2) from wire harness connector (3).

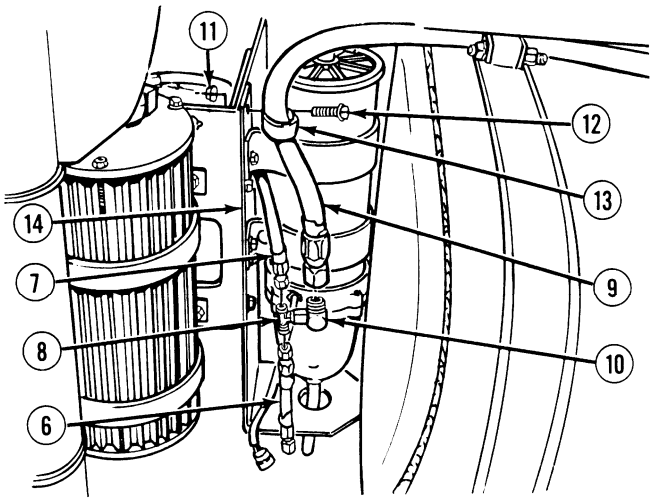
(3) Disconnect heater MC107 connector (4) from wire harness connector (5).

4-16. FUEL/WATER SEPARATOR AND BRACKET REPLACEMENT (CONT).

(4) Remove hose 2922 (6) and hose 2920 (7) from tee (8).

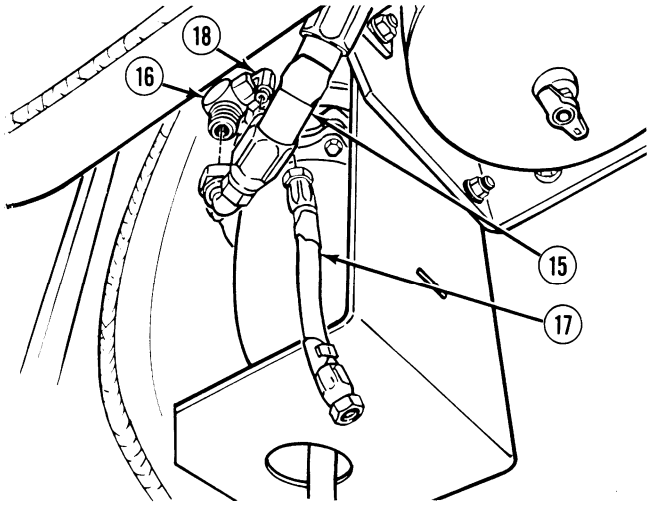
(5) Disconnect hose 2259 (9) from elbow (10).

(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).

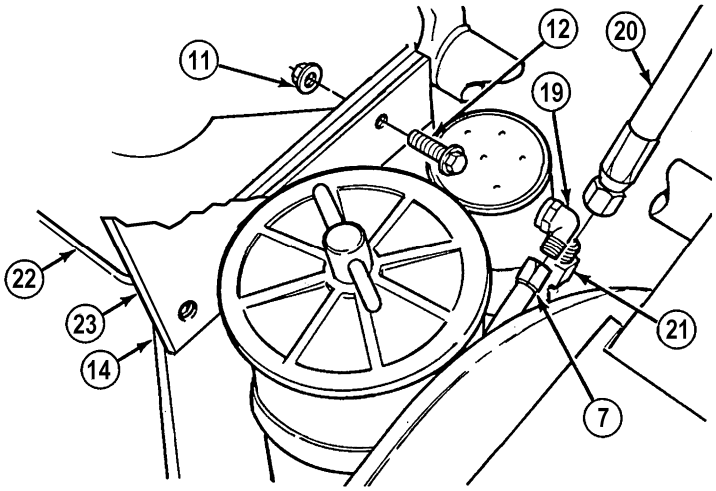
(10) Remove hose 2919 (20) from elbow (21).

NOTE

Perform Step (11) if truck is equipped with air dryer guard.

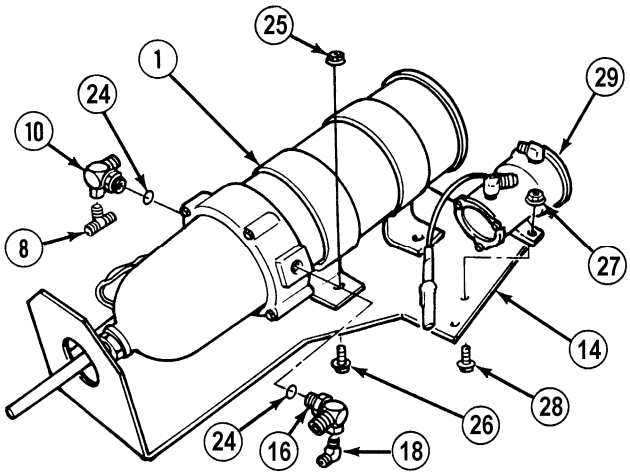
(11) Support air dryer guard, remove remaining three locknuts (11), screws (12) and slide bracket (14) from between bracket (22) and air dryer guard bracket (23). Discard locknuts.

(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

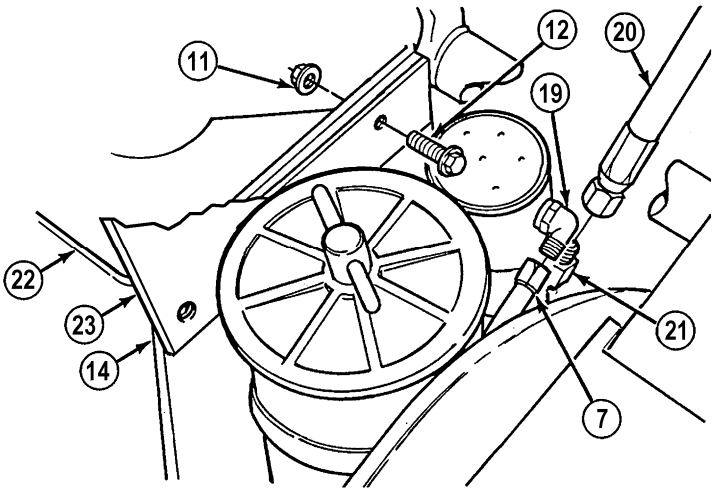
- Do not install upper outside locknut and screw. It will be installed in Step (13).
- Perform Step (6) if air dryer guard is on truck.

(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).

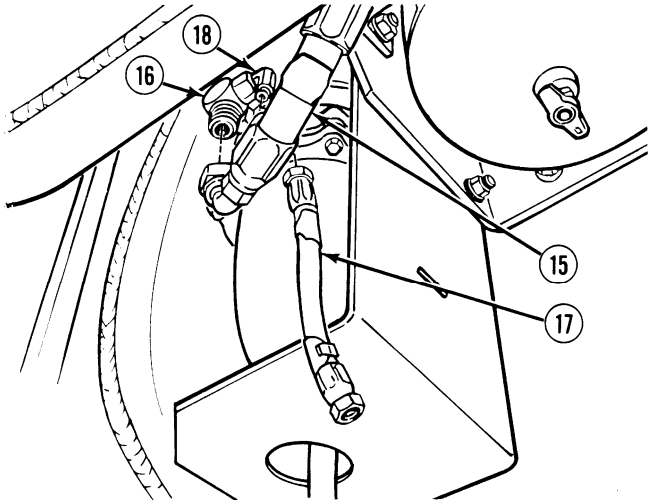
(8) Install hose 2919 (20) on elbow (21).

(9) Install hose 2920 (7) on elbow (19).



(10) Install hose 2921 (17) on elbow (18).

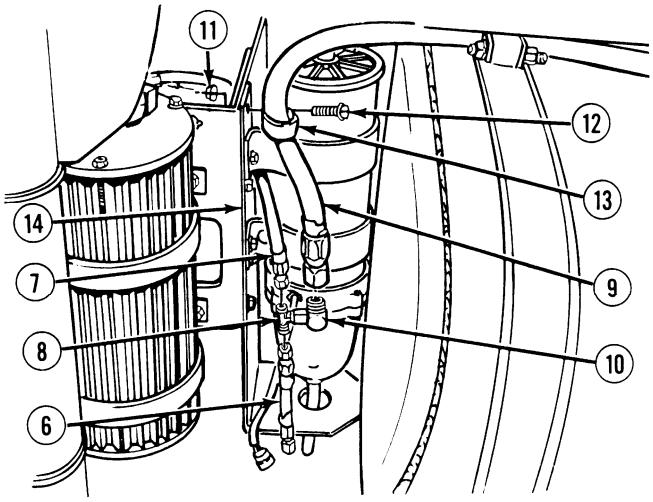
(11) Install hose 2261 (15) on elbow (16).



(12) Install hose 2559 (9) on elbow (10).

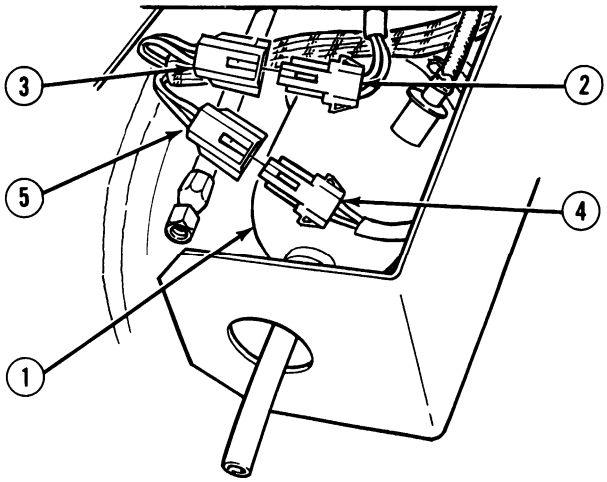
(13) Install hose 2259 (9) on bracket (14) with cushion clip (13), screw (12) and locknut (11).

(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

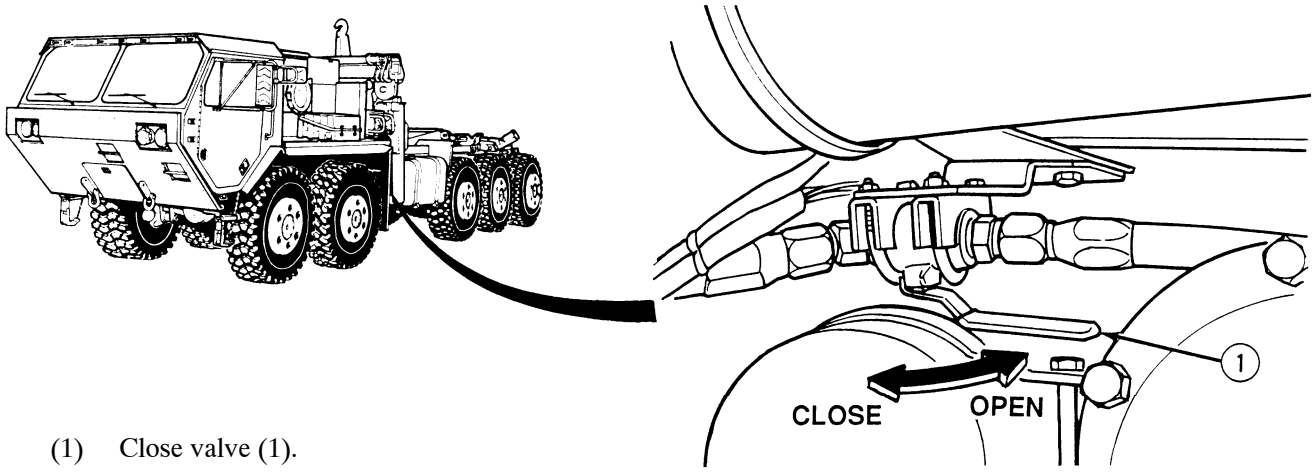
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Pan, Drain (Item 47, Appendix H)

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.



(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) 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).

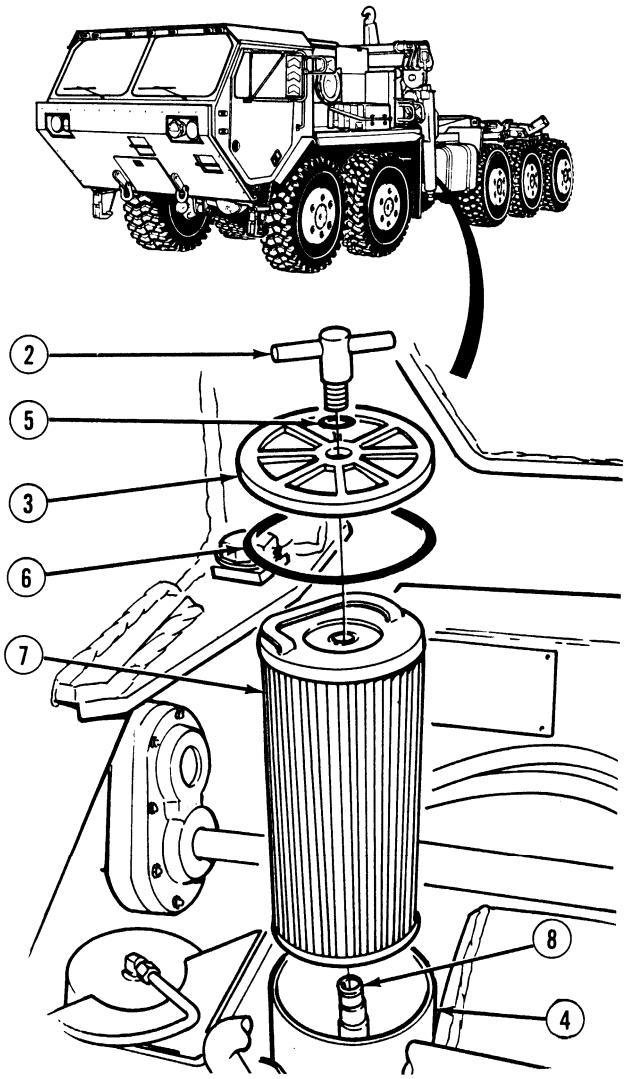
(3) Pour clean diesel fuel into fuel/water separator (4) until full.

(4) Lubricate gasket (6) with diesel fuel and install gasket in lid (3).

(5) Install lid (3) on fuel/water separator (4).

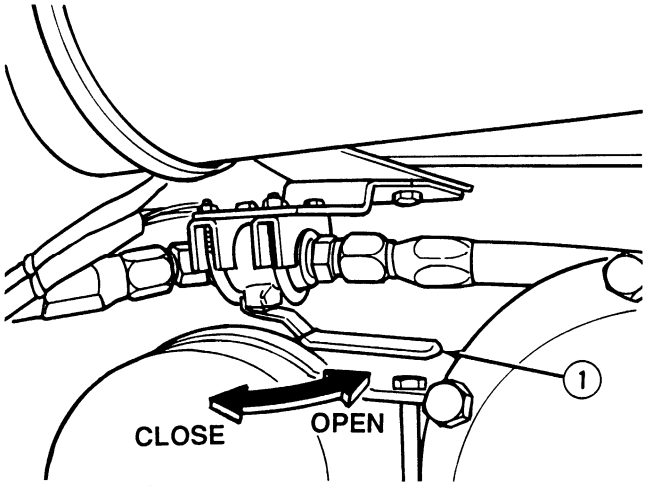
(6) Lubricate preformed packing (5) with diesel fuel and install preformed packing on T-handle (2).

(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 H)

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.

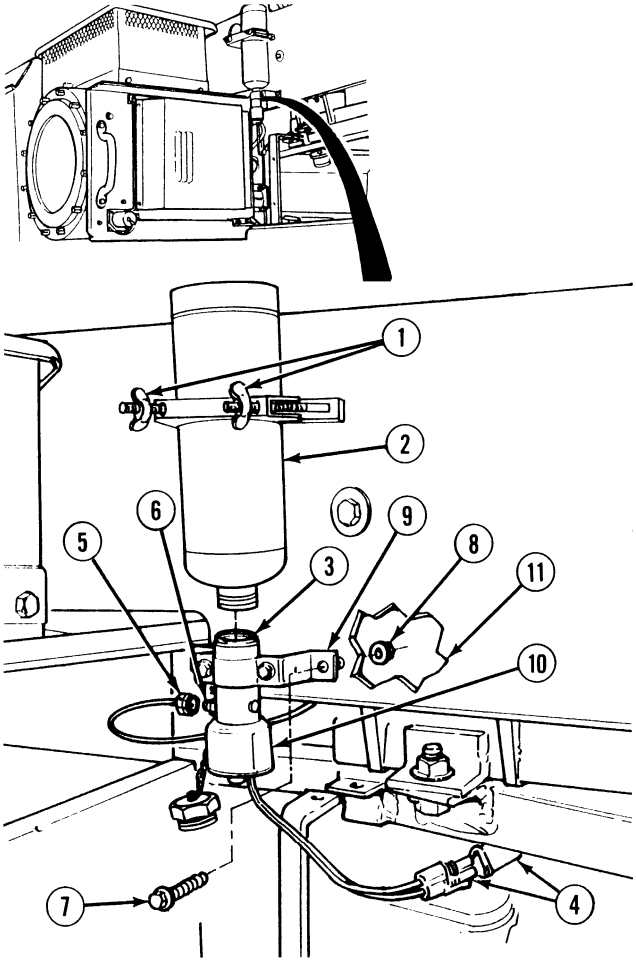
(1) Loosen two wingnuts (1) and remove ether supply cylinder (2) by turning counterclockwise from solenoid valve (3).

(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).

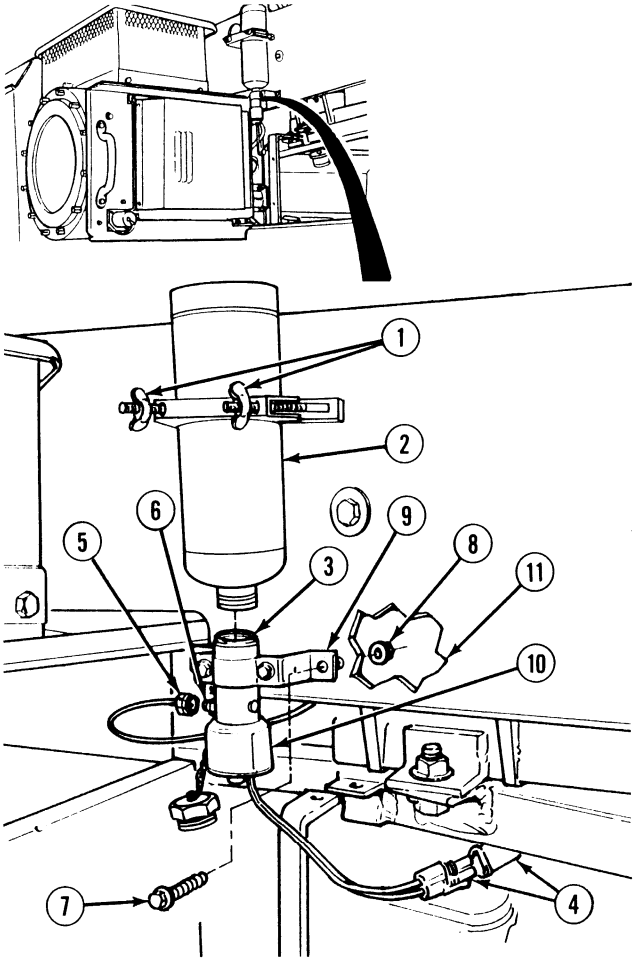
b. Installation.

(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

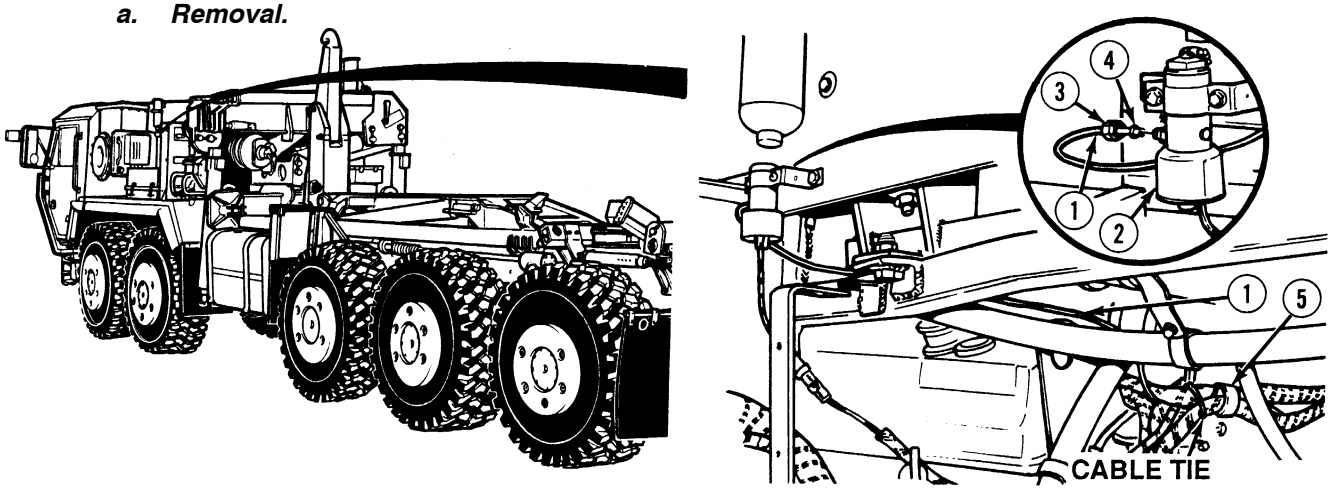
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)

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

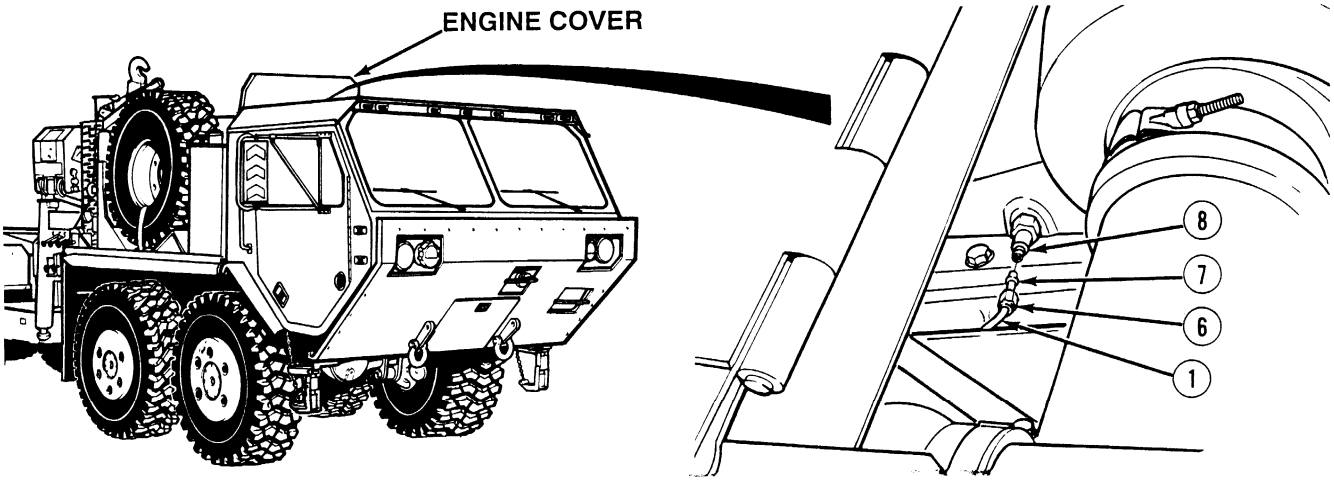
Starting fluid is toxic and highly flammable. Container is pressurized. NEVER heat container and NEVER discharge starting fluid in confined areas or near open flame. Severe injury to personnel may result.

(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).

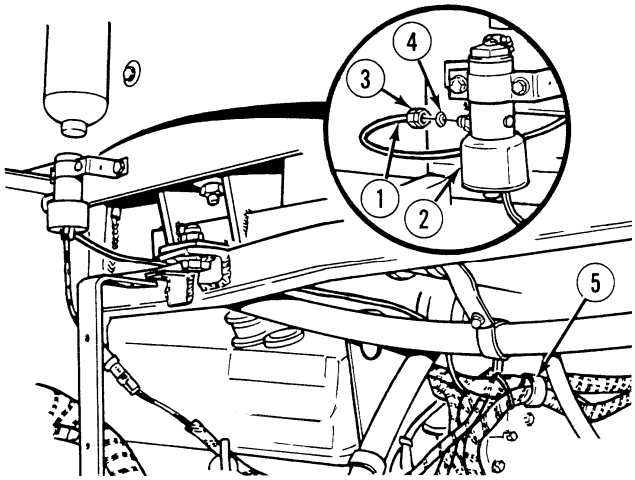
NOTE

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

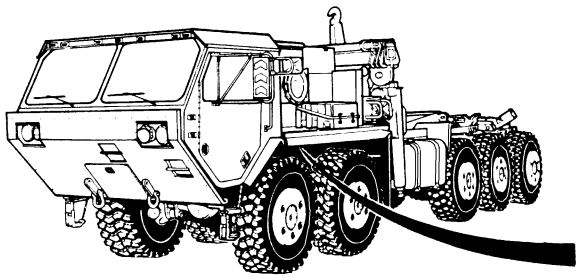
INITIAL SETUP

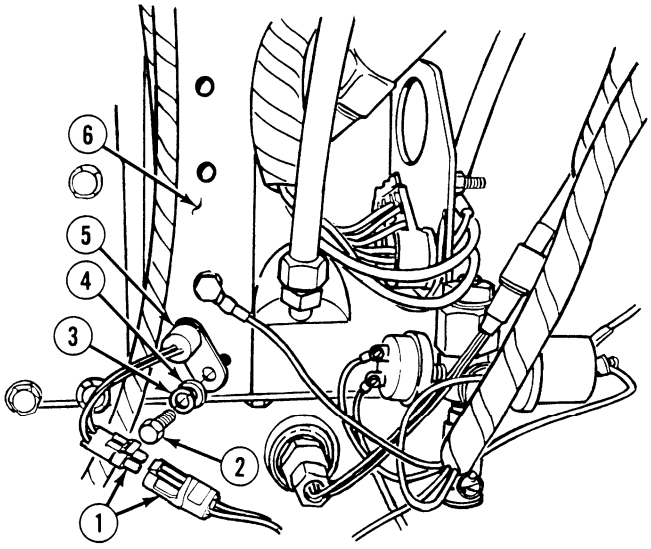
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Goggles, Industrial (Item 30, Appendix H)

Materials/Parts
Corrosion Preventive Compound (Item 34, Appendix C)
Lockwasher (Item 174, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left front fender skirt removed, (Para 17-34)

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.

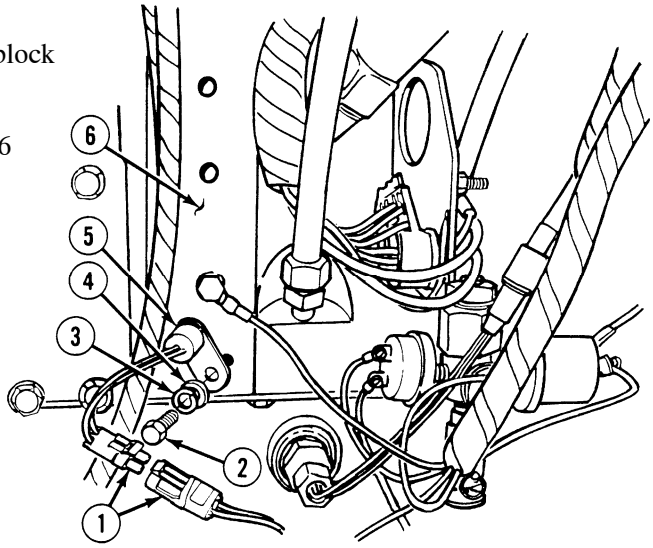
(1) Disconnect ether start aid thermostat MC56 connector (1).

(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, Apendix 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)

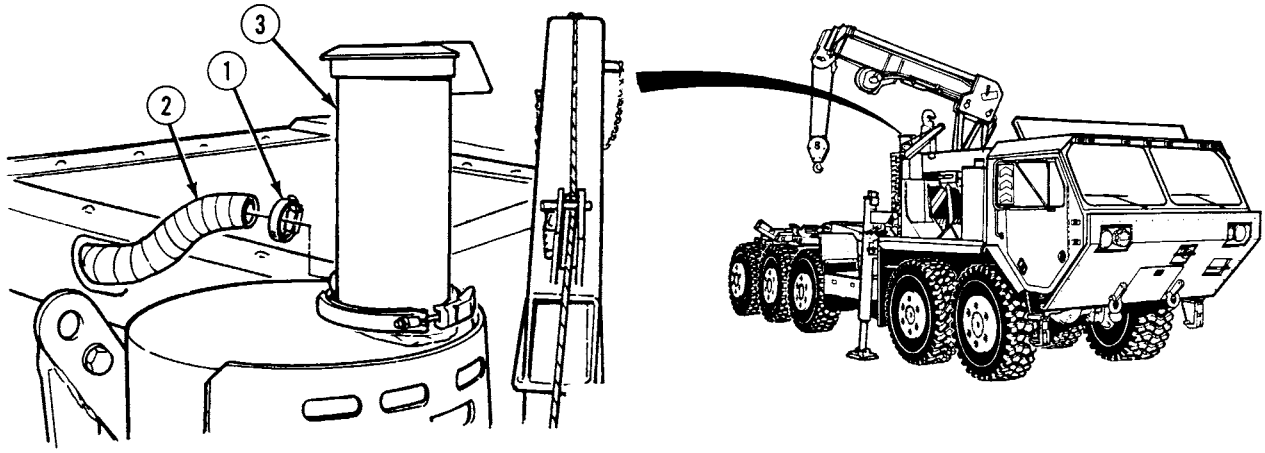
Materials/Parts
Clamp (Item 18, Appendix F)
Clamp (Item 12, Appendix F)

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 insultated pads and gloves.

NOTE

Note position of clamps to aid in installation.

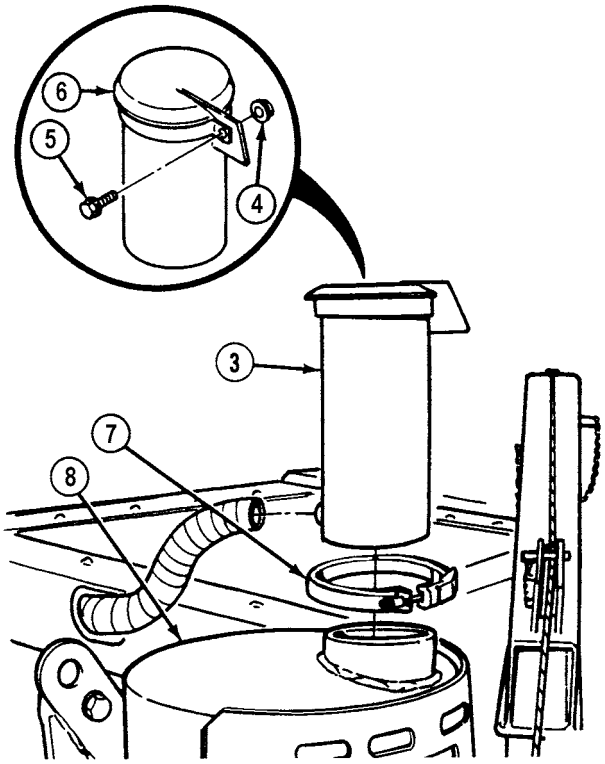
(1) Loosen clamp (1) and remove aspirator hose (2) from exhaust stack (3).

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).

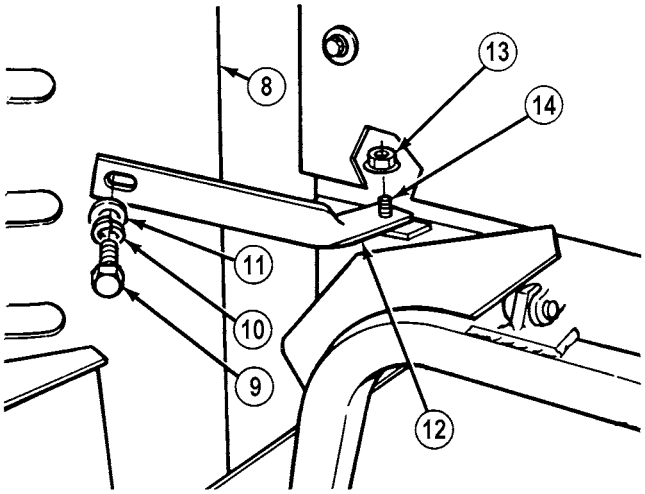
(3) Unlatch clamp (7) and remove exhaust stack (3) and clamp from muffler (8).



(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).



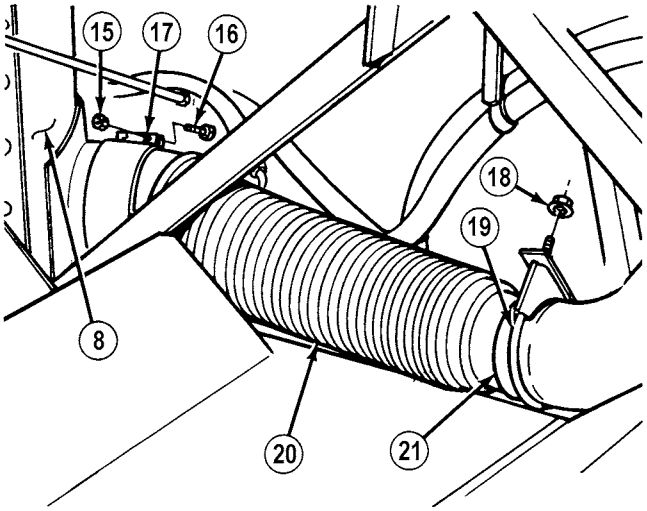
5-2. MUFFLER REPLACEMENT (CONT).

(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).

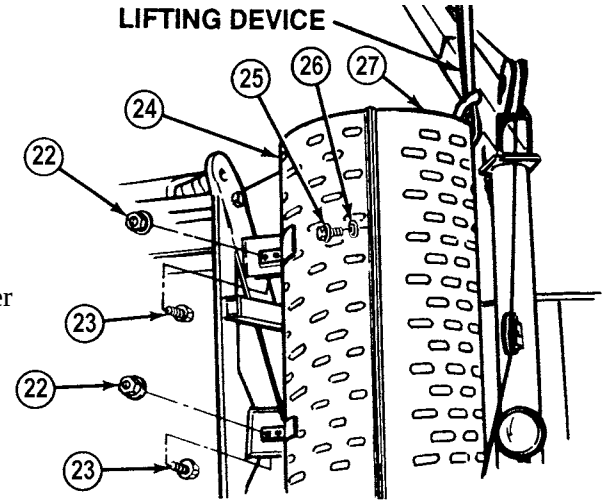


NOTE

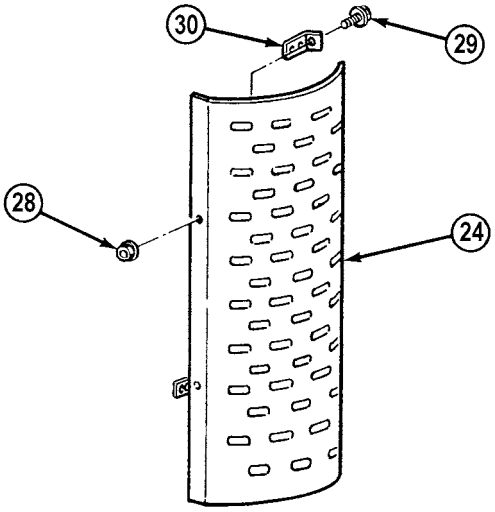
If truck is not equipped with a crane, perform Steps (10) through (13).

(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 guard (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).

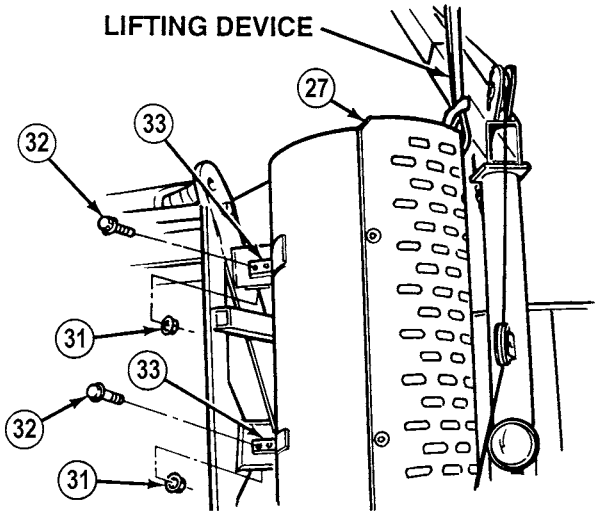
CAUTION

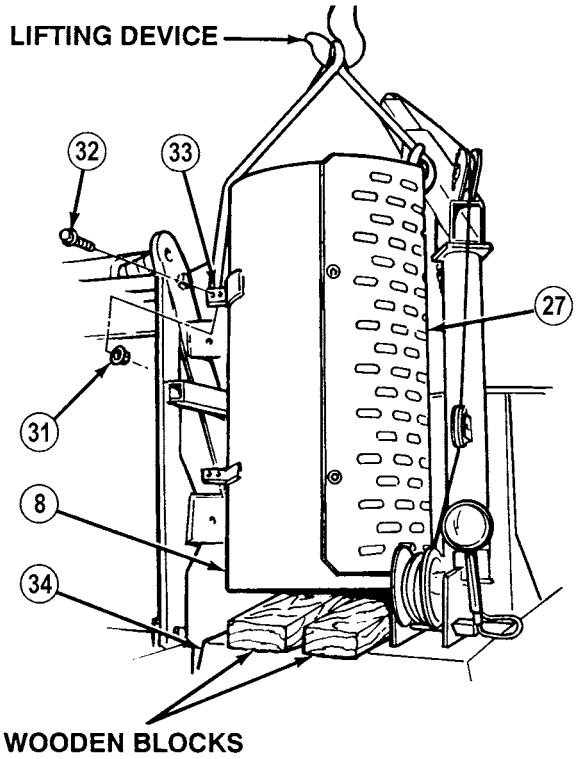
Use extreme caution when removing muffler from truck. Muffler may swing into truck and damage may occur to parts.

(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).



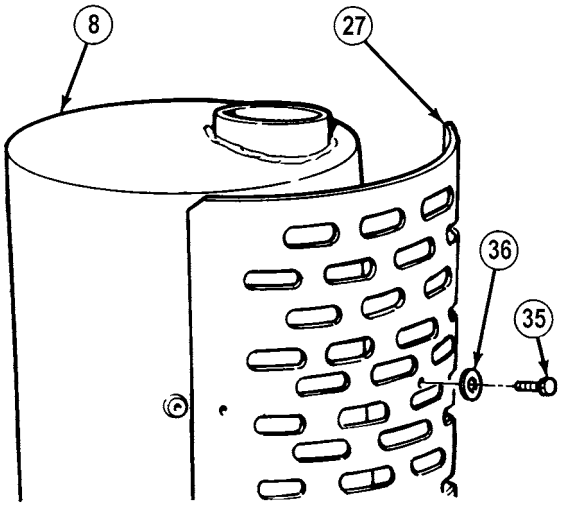


5-2. MUFFLER REPLACEMENT (CONT).

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

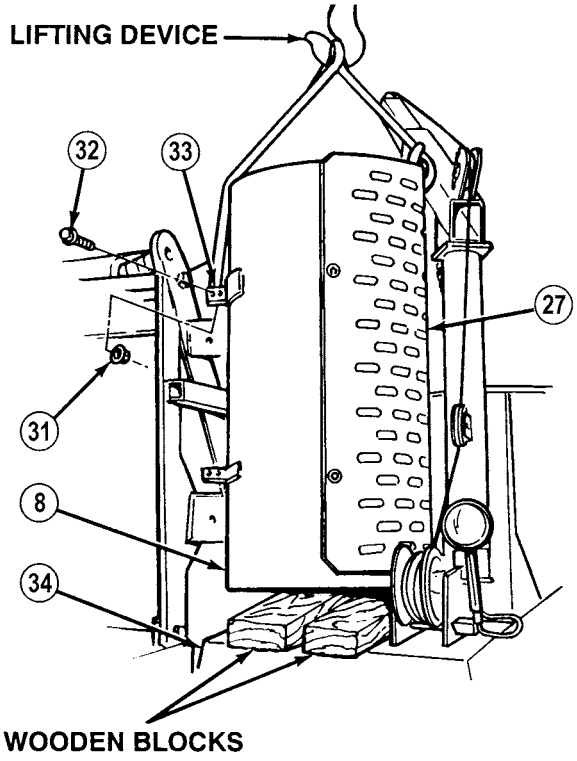
Muffler weighs 152 lbs (69 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

(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

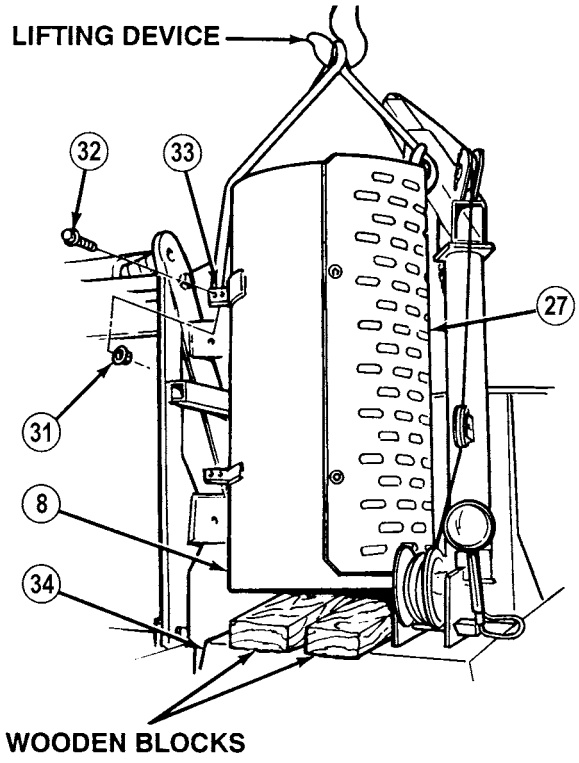
Use extreme caution when installing muffler on truck. Muffler may swing into truck and damage may occur to parts.

(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.

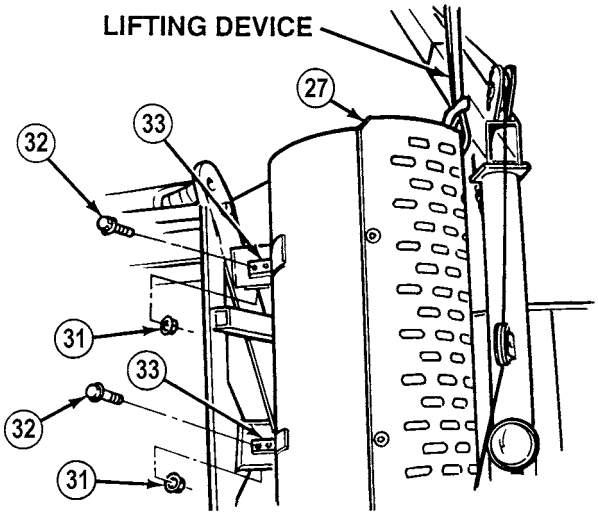


NOTE

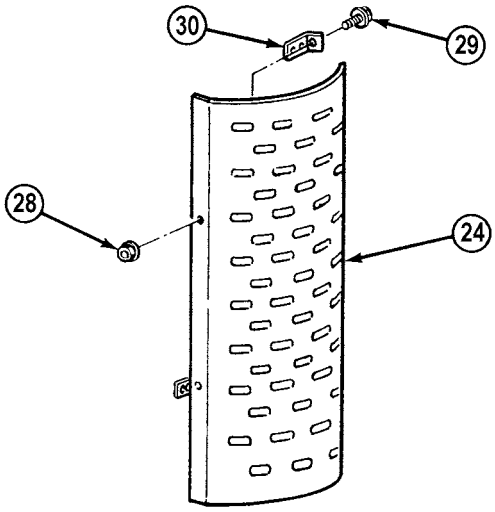
Do not install the two outboard screws and locknuts if truck is not equipped with a crane.

(10) Install four screws (32) and locknuts (31) in two brackets (33).

(11) Remove lifting device from muffler guard (27).



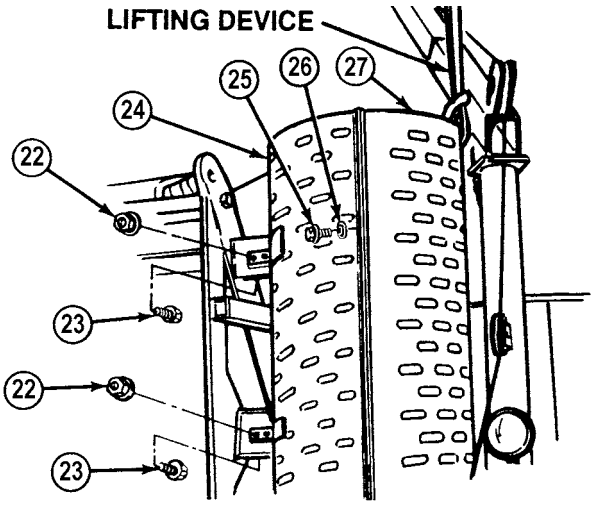
5-2. MUFFLER REPLACEMENT (CONT).



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).

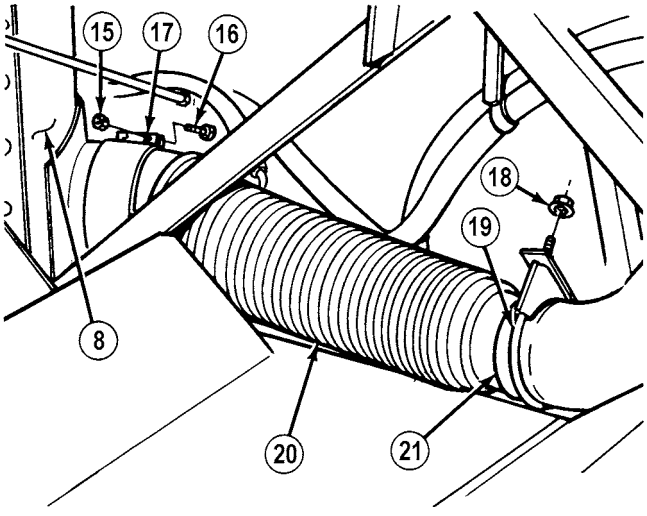


(13) Install muffler guard (24) on muffler guard (27) with two washers (26) and self-locking screws (25). Tighten screws to 22 to 28 lb-ft (30 to 38 N·m).

(14) Install two screws (23) and locknuts (22) on muffler guard (27).

(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).

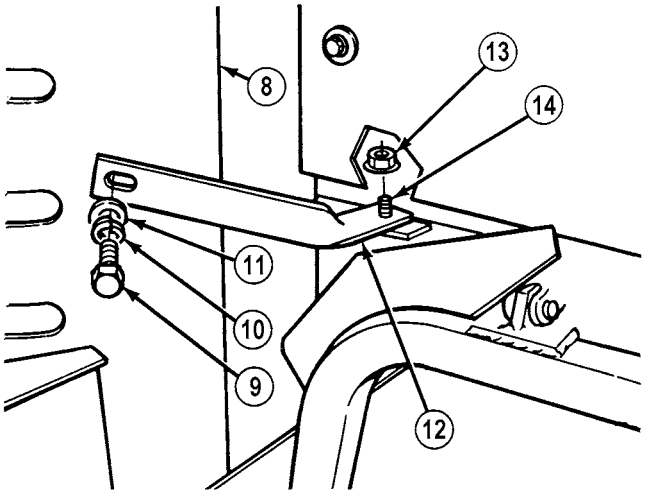
(19) Install muffler support bracket (12) on radiator mounting screw (14).

(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).

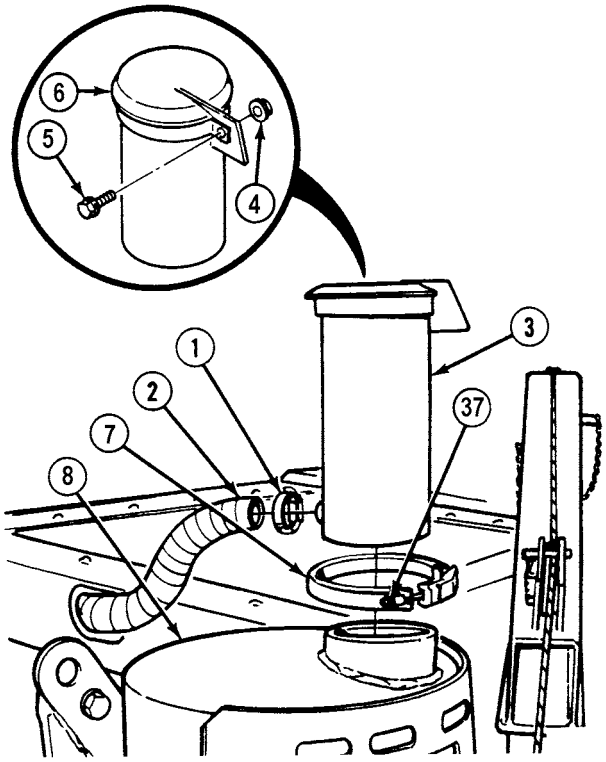
(26) Tighten locknut (37) on clamp (7) to 50 lb-in (6 N·m).

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

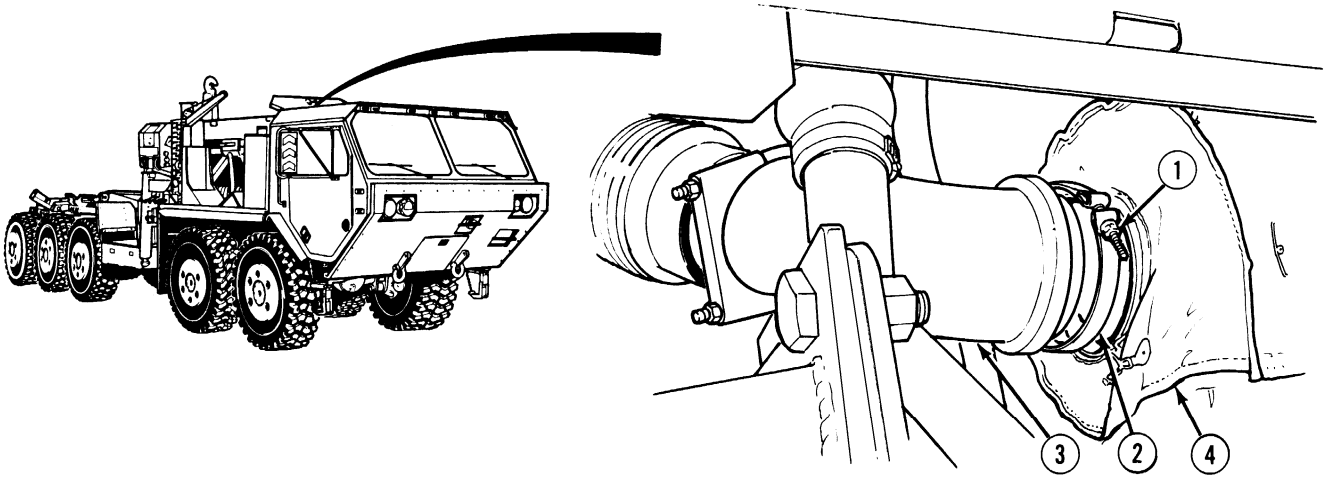
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix H)

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.

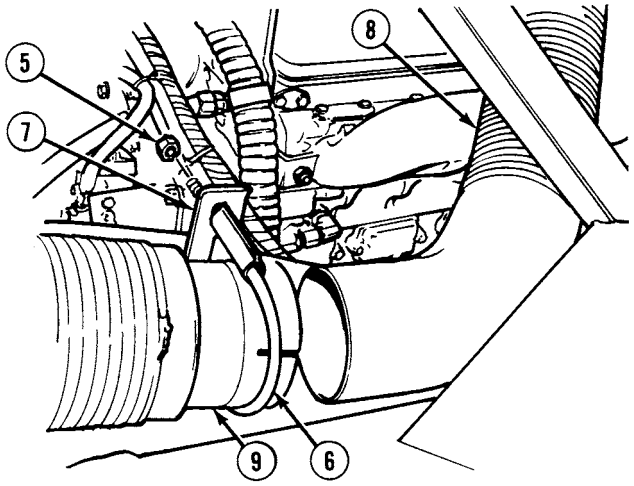


WARNING

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).

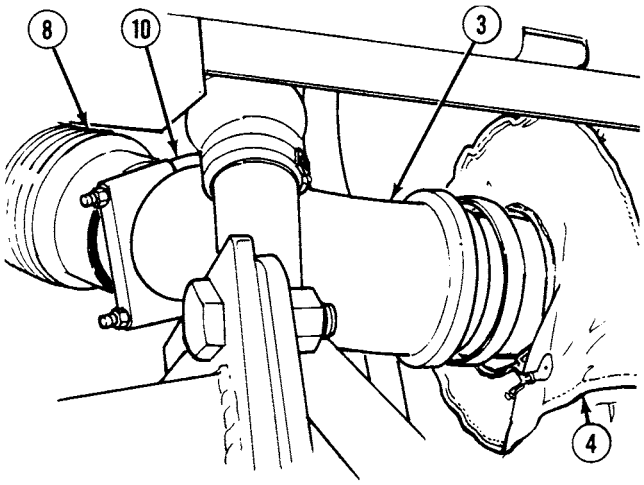


(3) Rotate exhaust pipe (3) and remove from turbocharger (4).

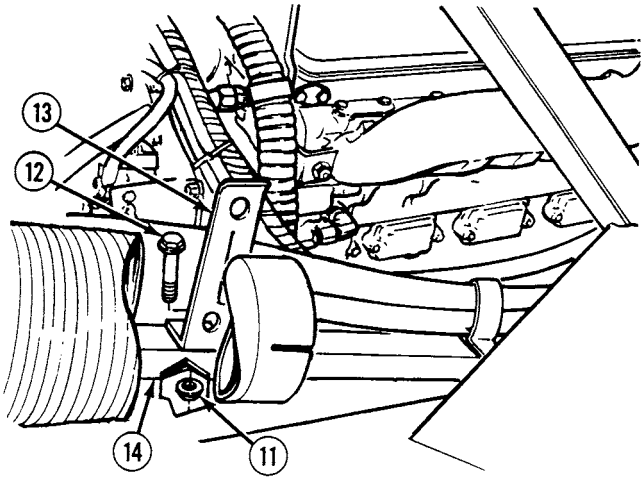
(4) Remove exhaust pipe (8) from exhaust pipe (9).

(5) Loosen clamp (10) and slide up on exhaust pipe (3).

(6) Remove exhaust pipe (3) from exhaust pipe (8).



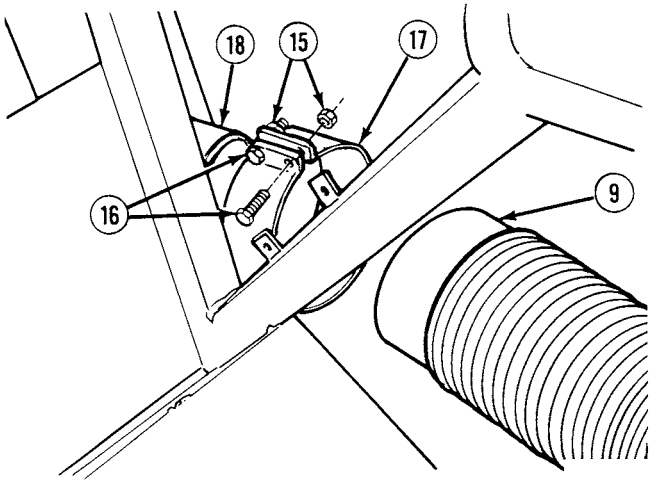
(7) Remove locknut (11), screw (12) and support bracket (13) from power frame module (14). Discard locknut.



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).

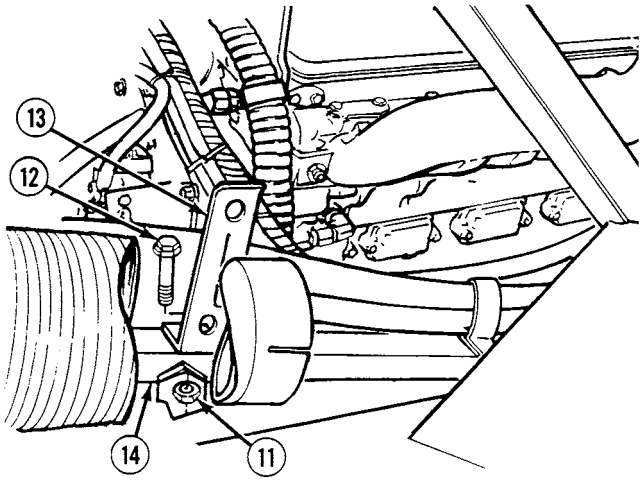


b. Installation.

(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).

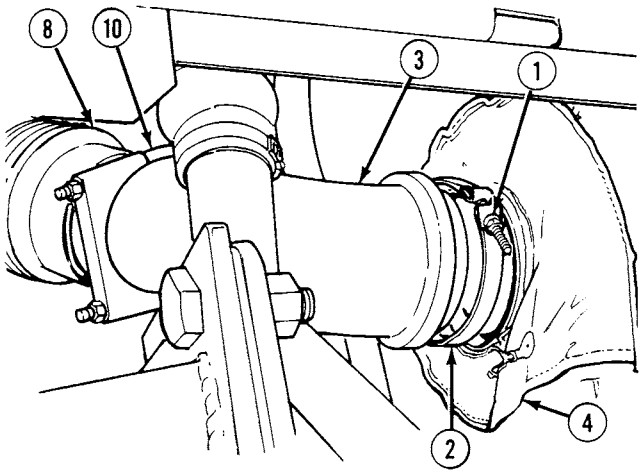
(5) Position clamp (10) on exhaust pipe (3).

(6) Position exhaust pipe (3) on turbocharger (4).

WARNING

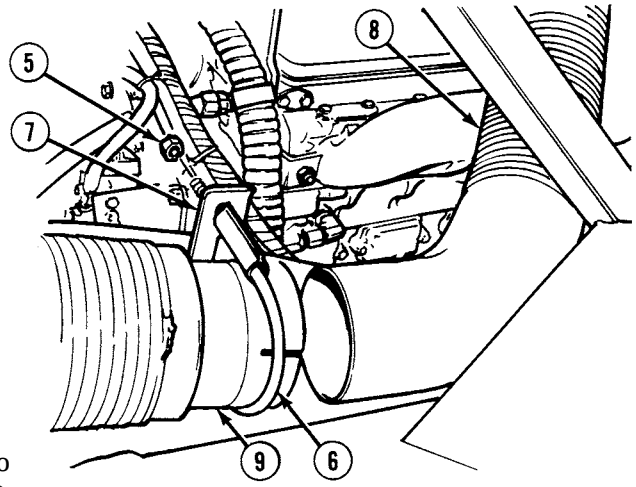
Ensure that exhaust pipe and turbo charger pipe connections are free from soot or debris. Failure to comply may result in exhaust leak and injury or death to personnel.

(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).

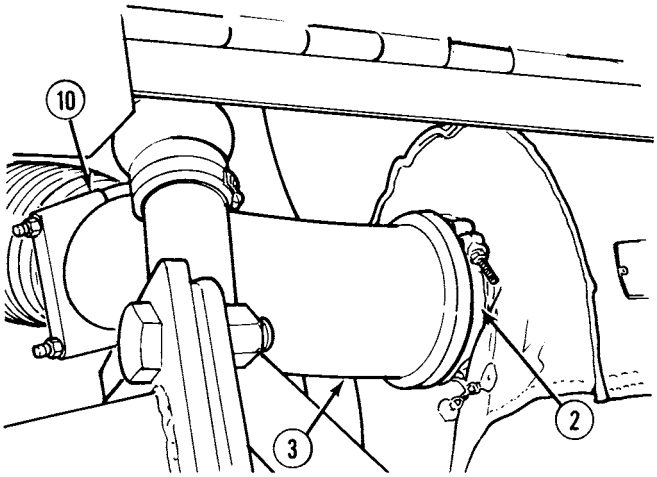
(9) Position clamp (6) on exhaust pipe (9).

(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

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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
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6-7	Thermostat Replacement	6-40
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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

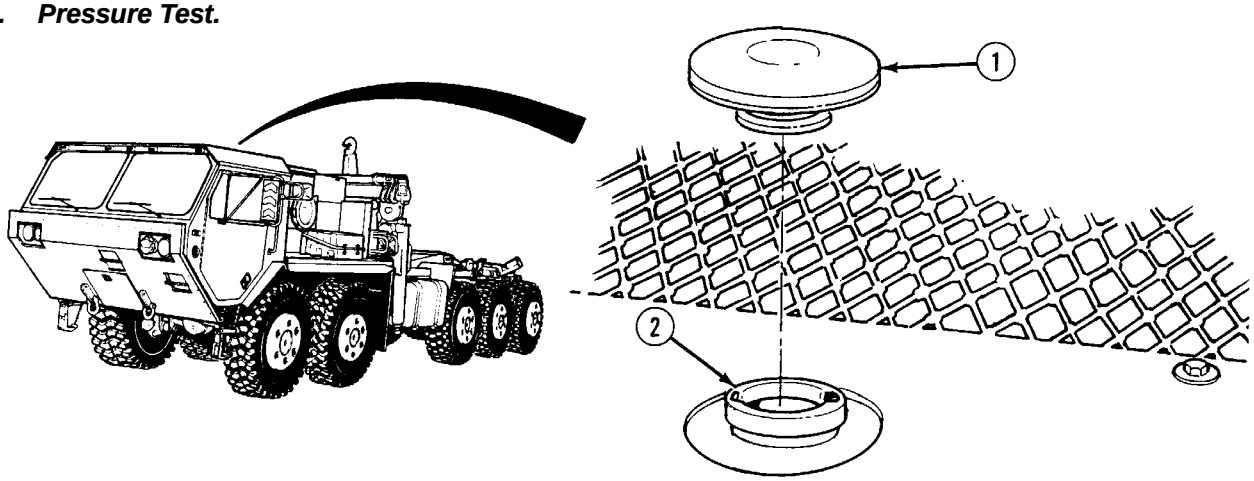
b. Follow-On Maintenance

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).

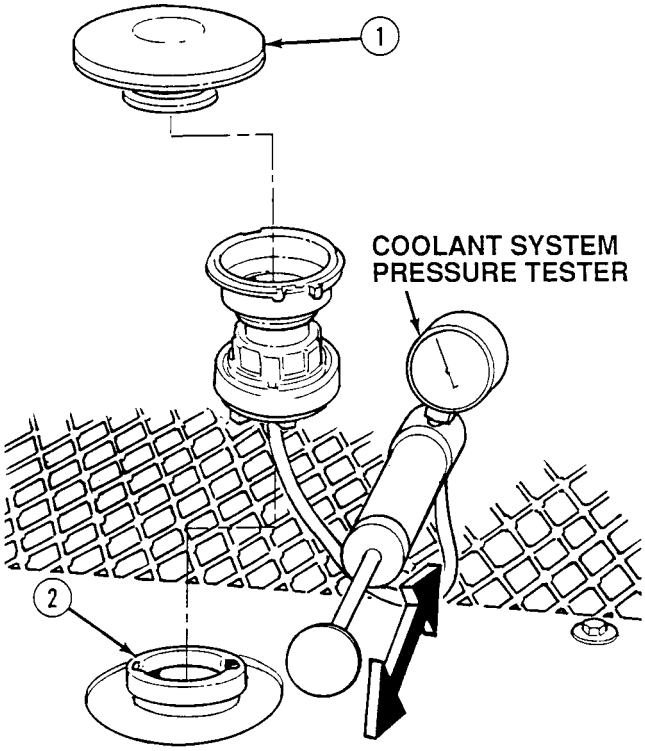
(2) Turn radiator cap (1) additional 1/2 turn counterclockwise and remove radiator cap from radiator (2).

(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.

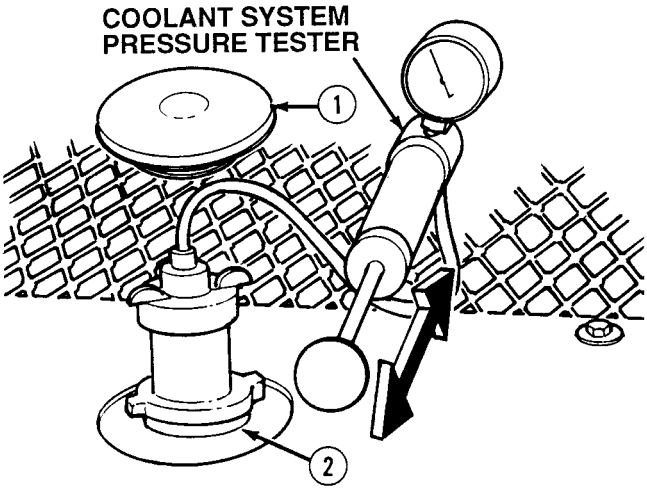
(4) Remove radiator cap (1) from coolant system pressure tester.



(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)

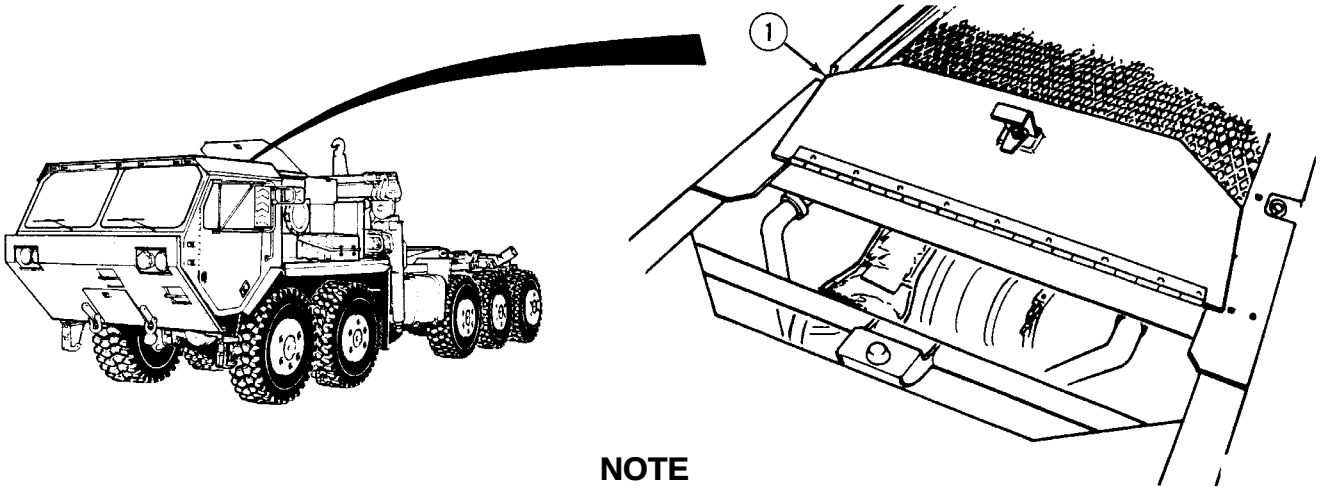
Materials/Parts
Cable Ties (Item 25, Appendix C)
Oil, Lubricating (Item 54, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 91, Appendix F)
Locknut (2) (Item 106, Appendix F)
Locknut (4) (Item 133, Appendix F)

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)

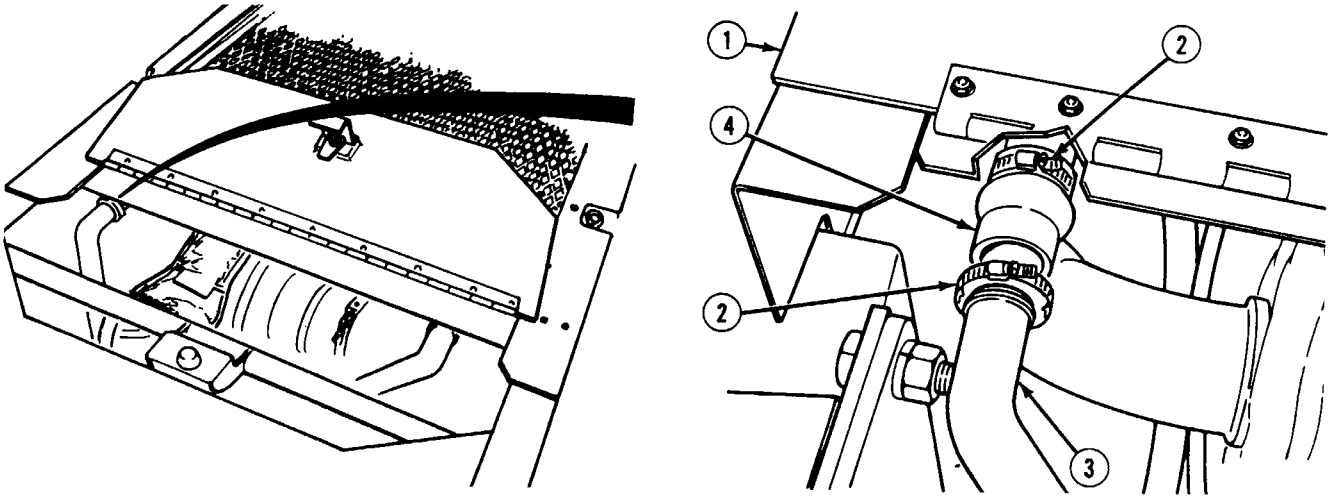
a. Removal.



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).

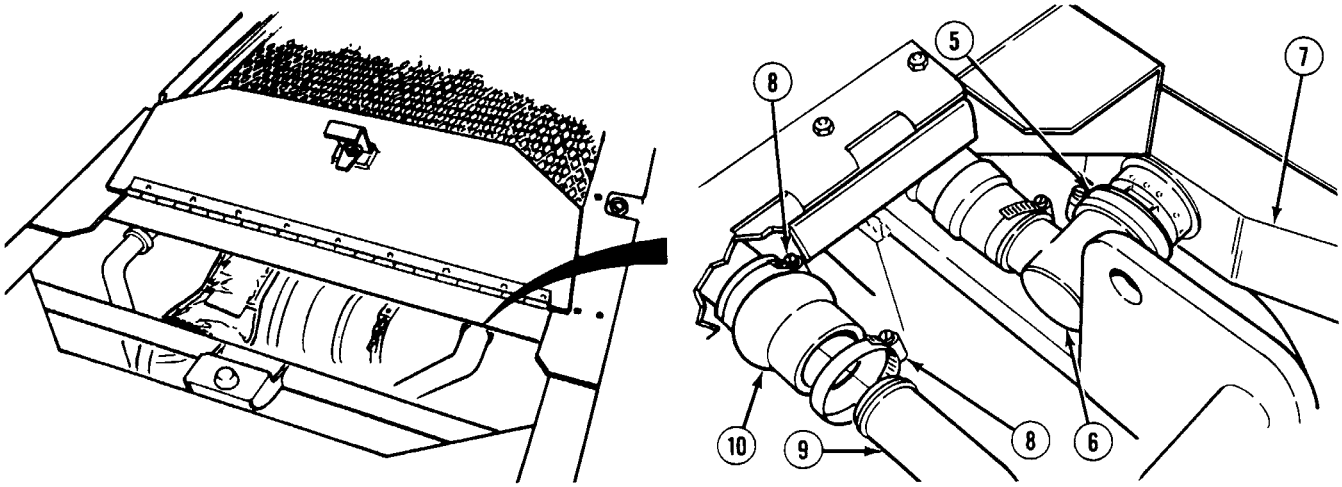


WARNING

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

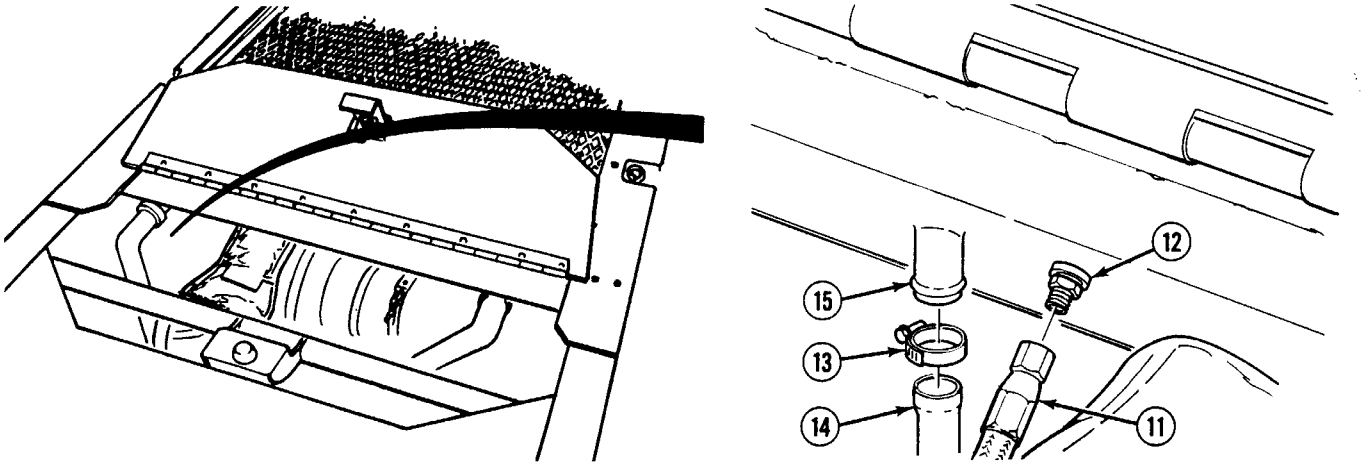
(2) Loosen two clamps (2) and remove tube (3) and one clamp (2) from hump hose (4).

6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



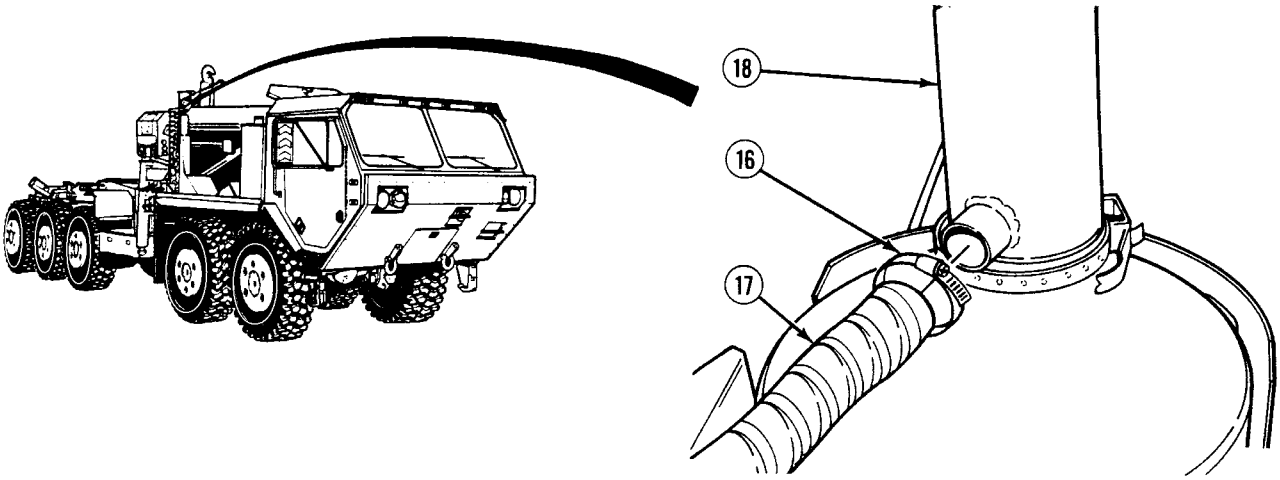
(3) Loosen clamp (5) on dust cup (6) and remove dust cup (6) and clamp (5) from air cleaner assembly (7).

(4) Loosen two clamps (8) and remove tube (9) and one clamp (8) from hump hose (10).

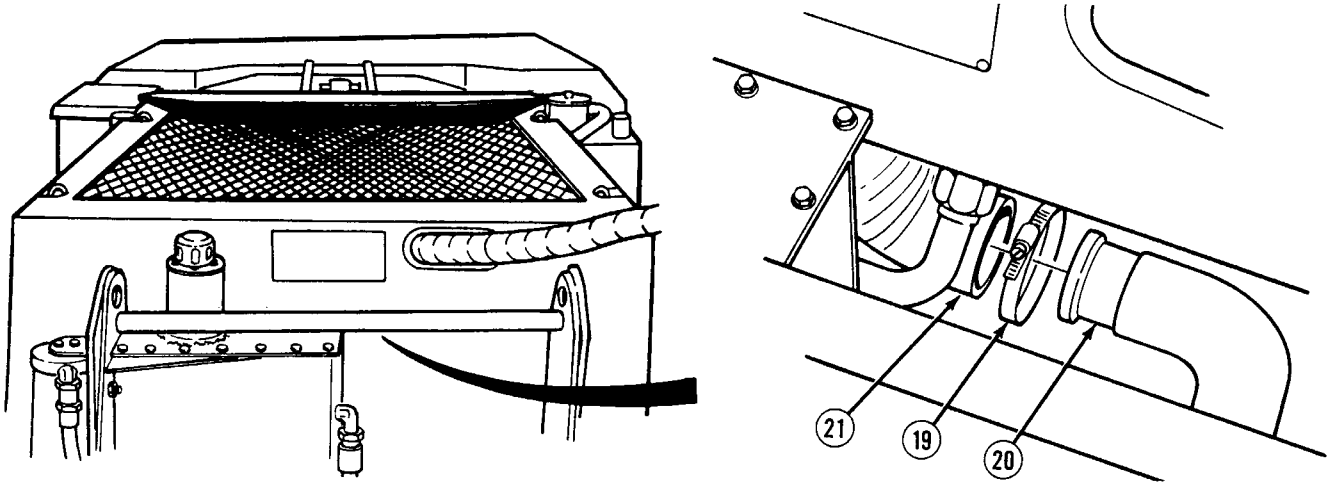


(5) Remove deairation hose 2300 (11) from adapter (12).

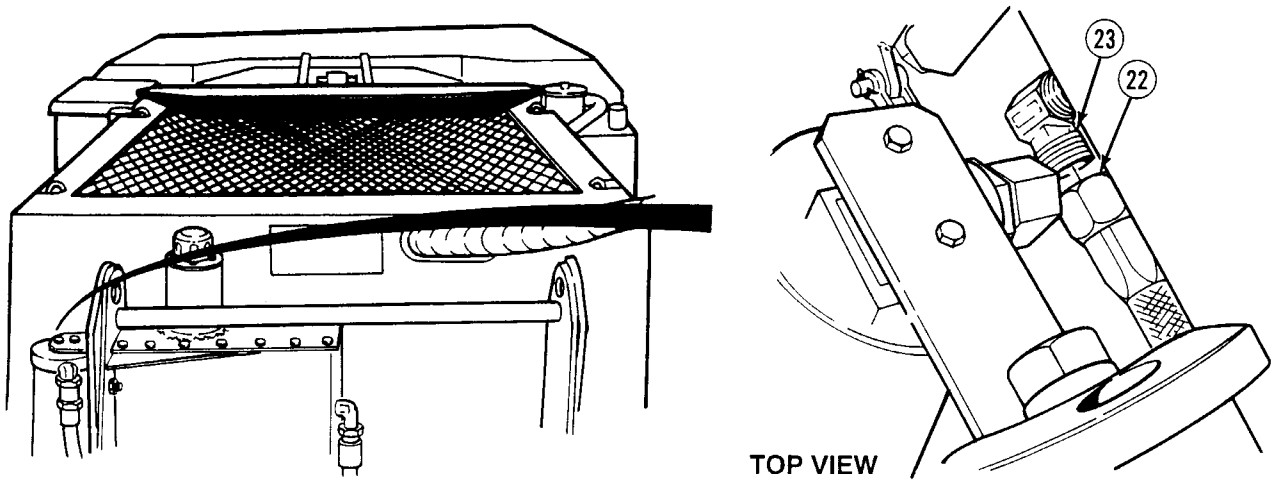
(6) Loosen clamp (13) and remove hose 2561 (14) and clamp (13) from radiator tube (15).



(7) Loosen clamp (16) and remove aspirator hose (17) and clamp (16) from muffler (18).

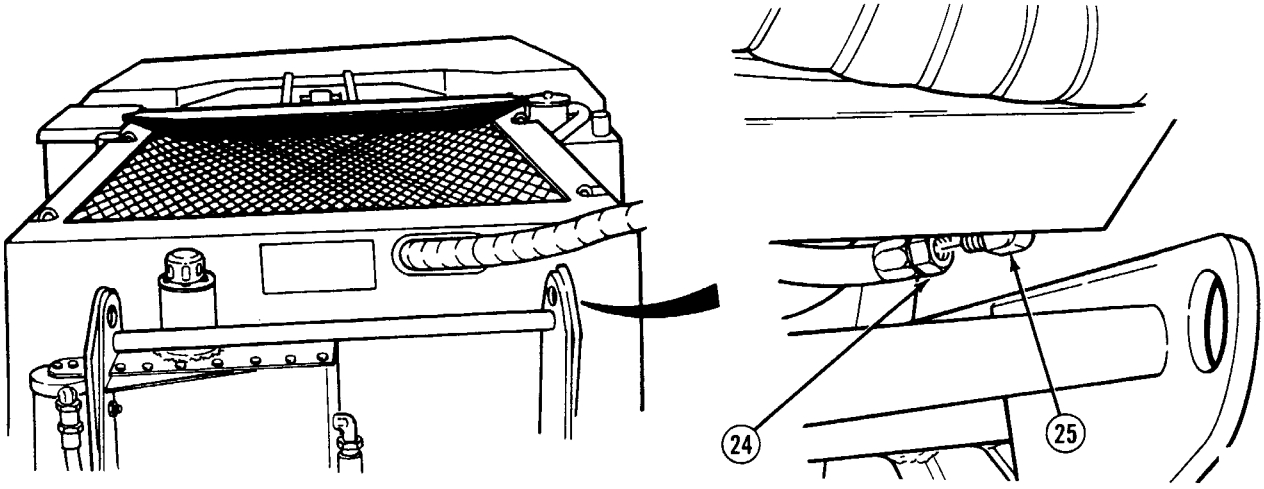


(8) Loosen clamp (19) and remove tube (20) and clamp (19) from elbow (21).

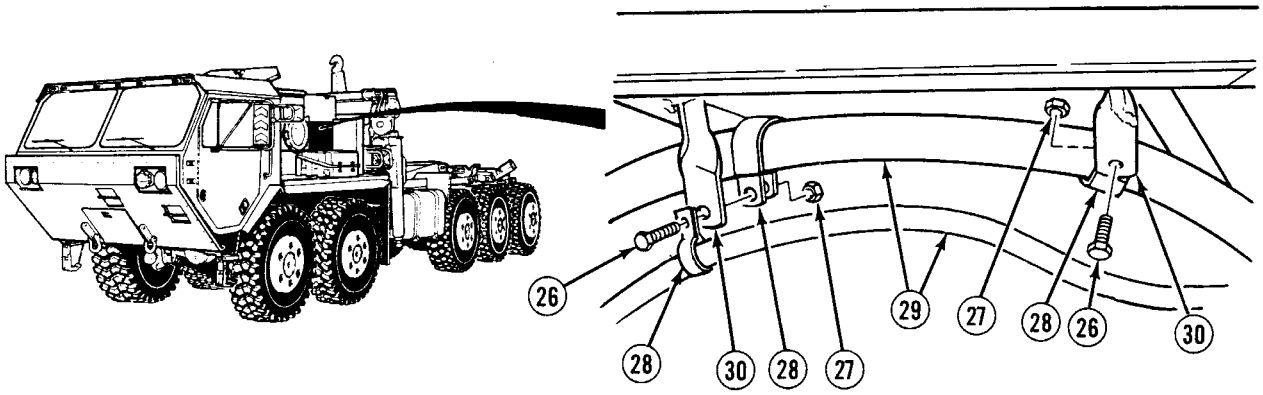


(9) Remove hose 2382 (22) from fitting (23).

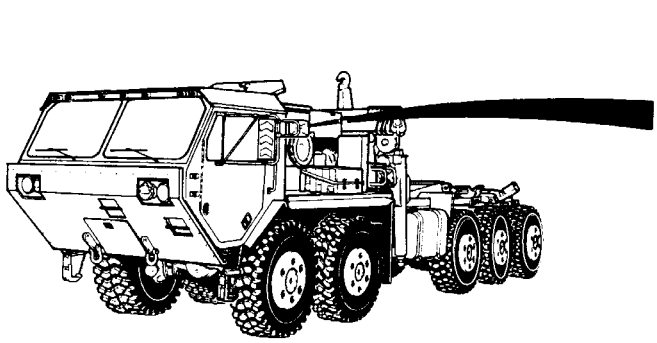
6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).

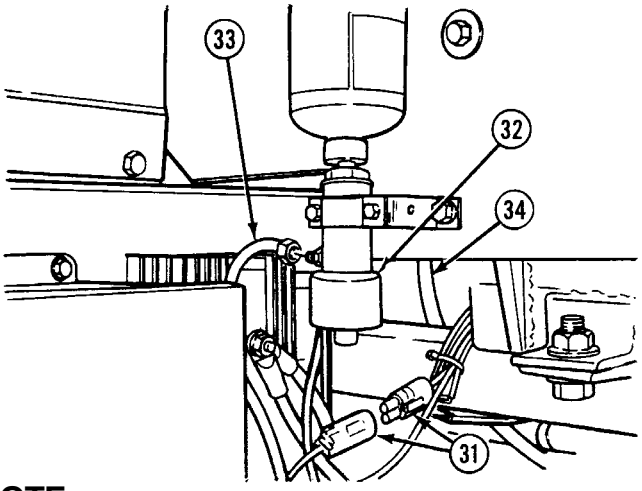


(10) Remove hose 2279 (24) from fitting (25).



(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.

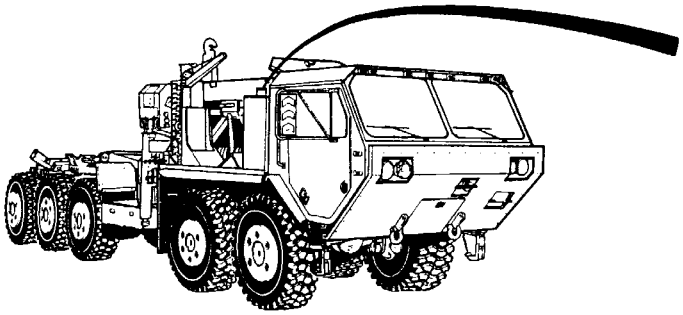
(12) Disconnect MC23 connector (31) from ether start valve (32).

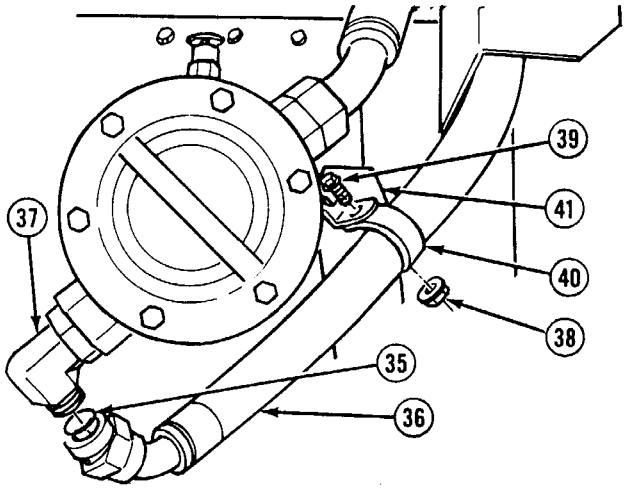
(13) Remove ether injection tube (33) from ether start valve (32).

NOTE

Note routing of overflow tube prior to removal.

(14) Pull radiator overflow tube (34) up and out of way.

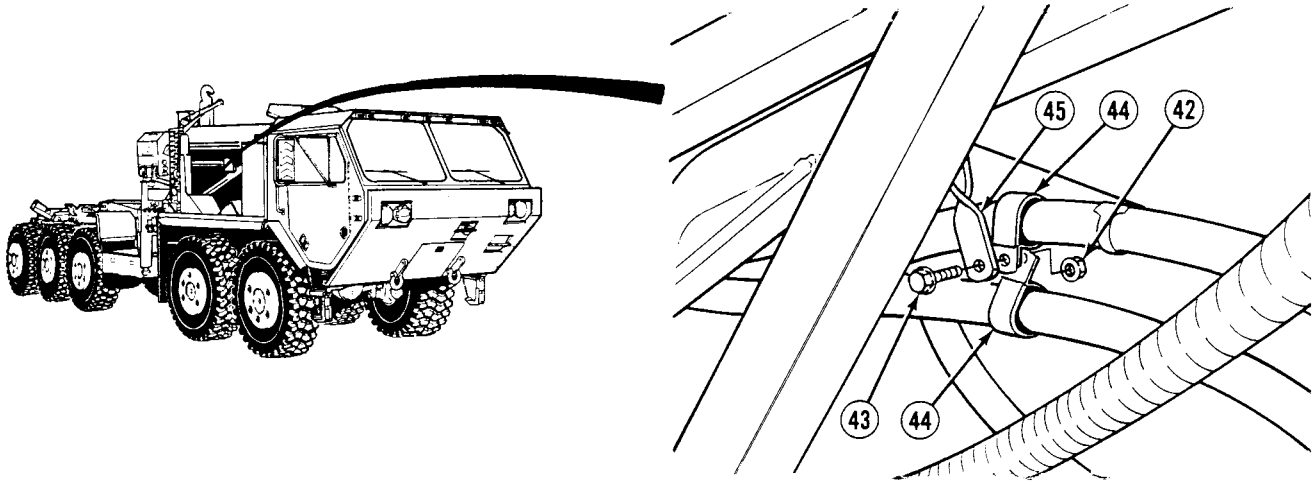




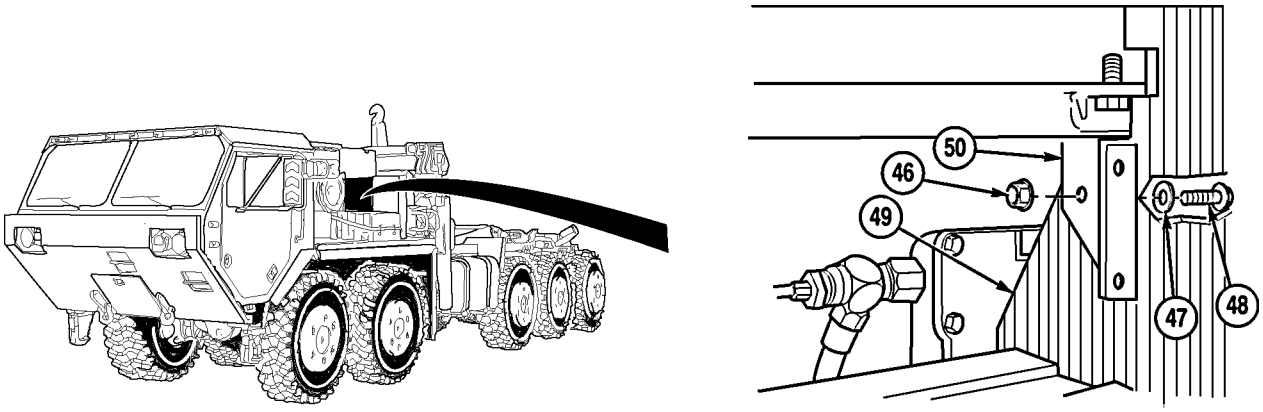
(15) Remove preformed packing (35) and hose 2773 (36) from elbow (37). Discard preformed packing.

(16) Remove locknut (38), screw (39) and clip (40) from bracket (41). Discard locknut.

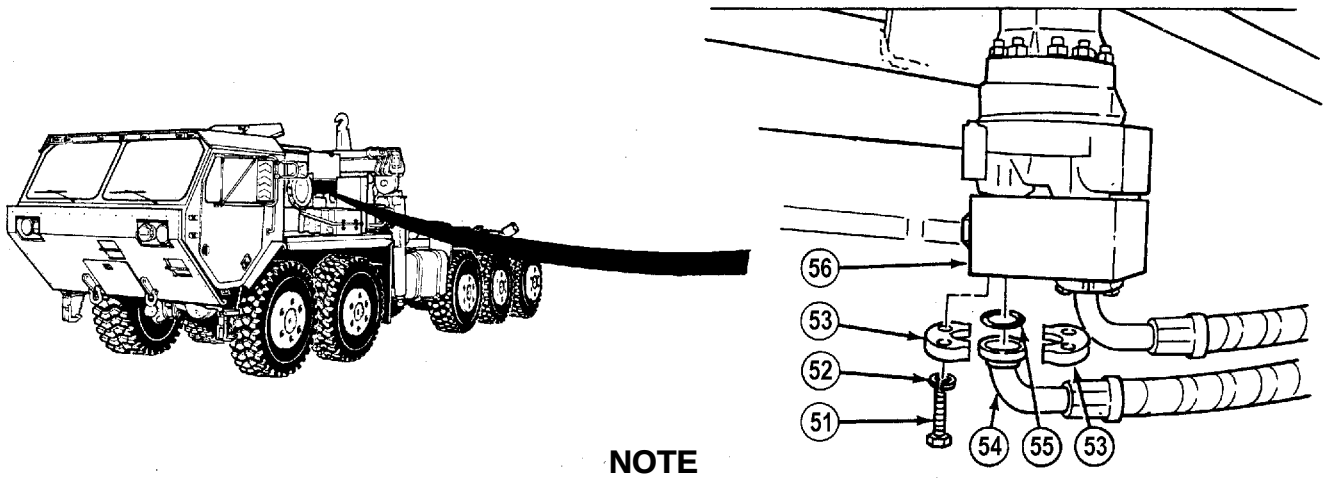
6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



(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.



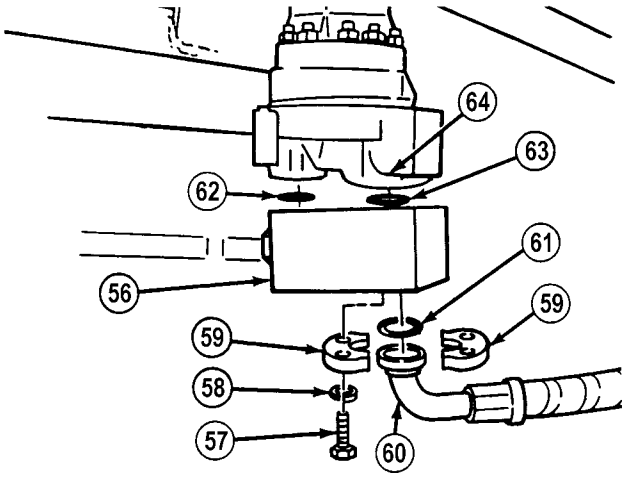
NOTE

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.

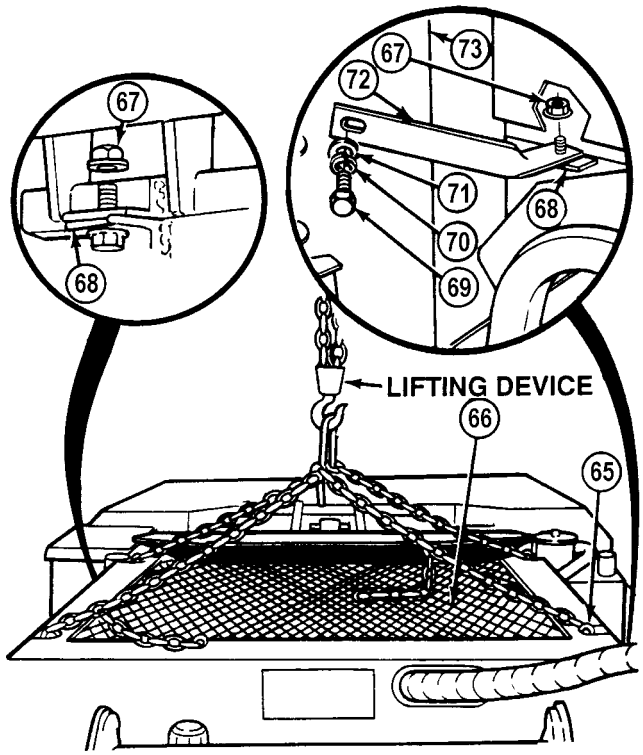


(20) Remove four screws (57) and lockwashers (58), two adapters (59), hose 2771 (60) and preformed packing (61) from outlet side of check manifold (56). Discard lockwashers and preformed packing.

(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).

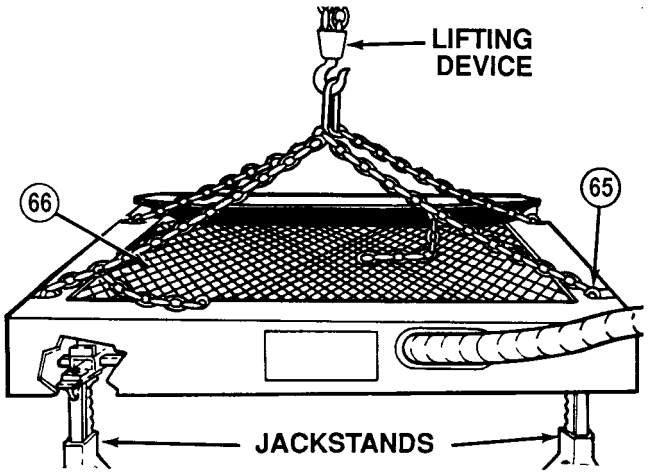
(24) Remove screw (69), lockwasher (70), washer (71) and muffler support bracket (72) from muffler (73) and radiator support bracket (68). Discard lockwasher.

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.

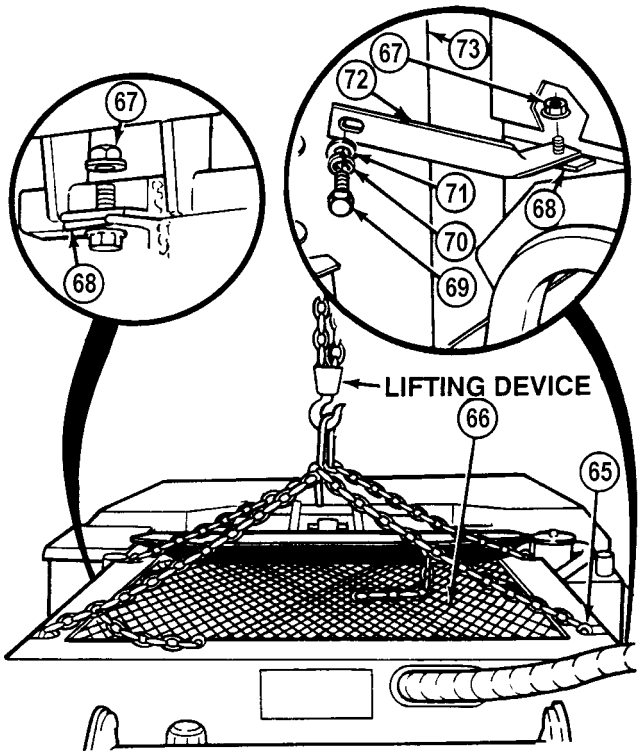
(1) Attach lifting device to four lifting eyes (65) on cooling assembly (66).

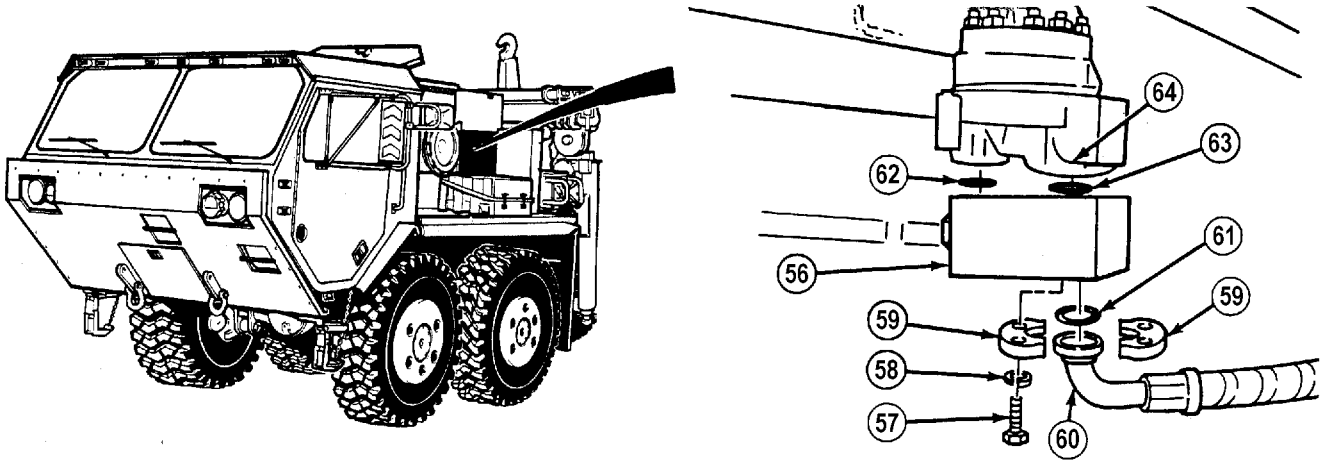
(2) With the aid of an assistant, position cooling assembly (66) on radiator support brackets (68).

(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).





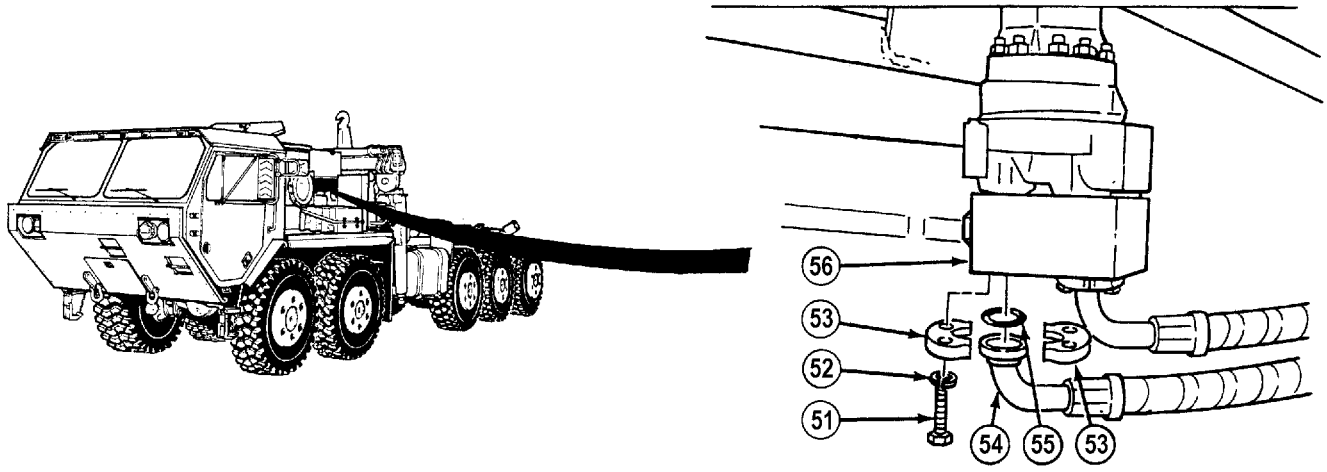
(6) Coat two preformed packings (62) and (63) with lubricating oil.

(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).

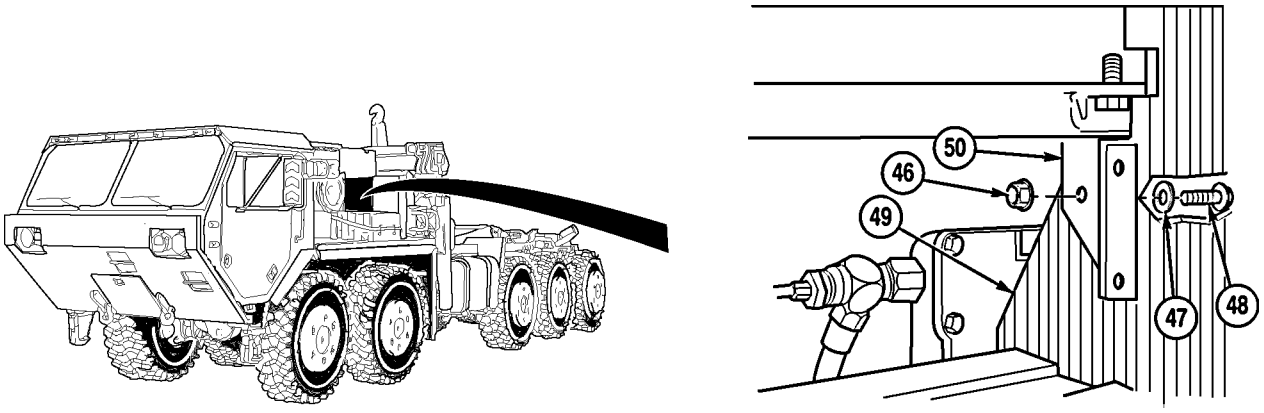
(10) Install preformed packing (61), hose 2771 (60), two adapters (59), four lockwashers (58) and screws (57) in outlet side of check manifold (56).



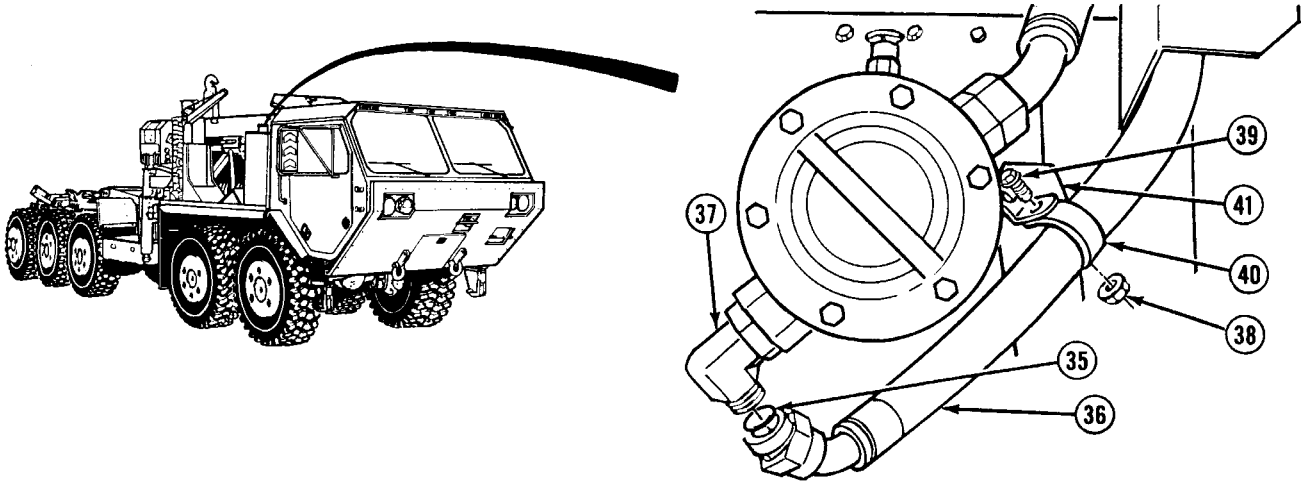
(11) Apply lubricating oil to preformed packing (55).

(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).

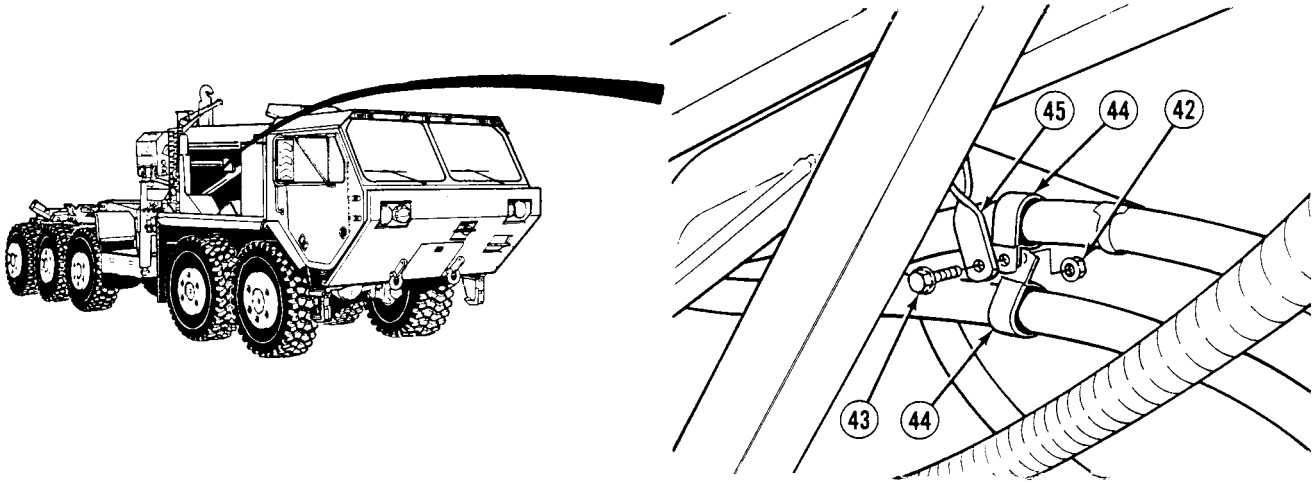


(13) Install cooling skirt (49), with two screws (48), washers (47), and locknuts (46) on bracket (50).

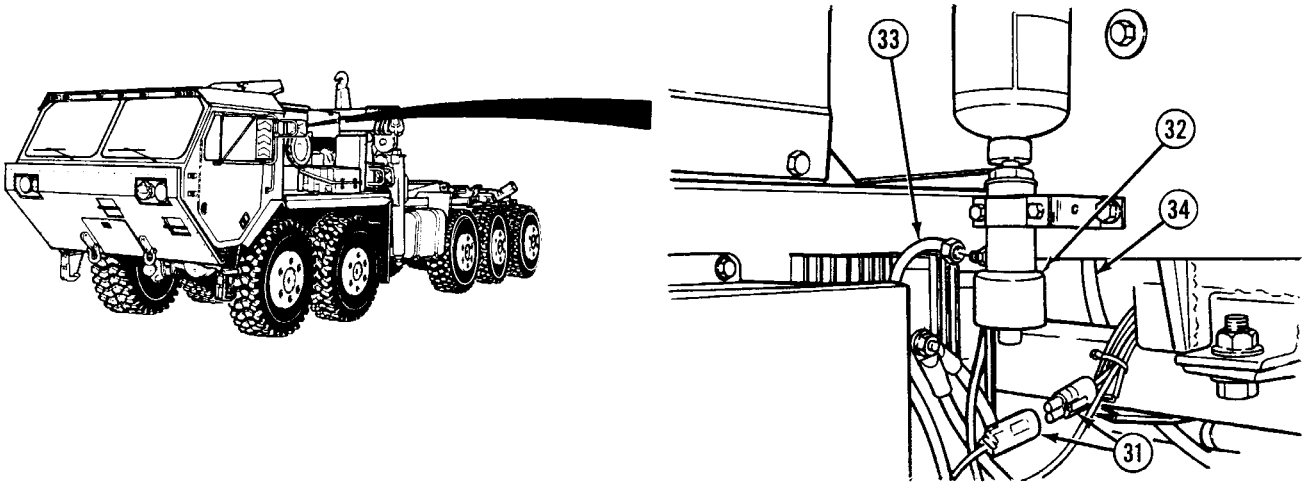


(14) Install preformed packing (35) and hose 2773 (36) on elbow (37).

(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).



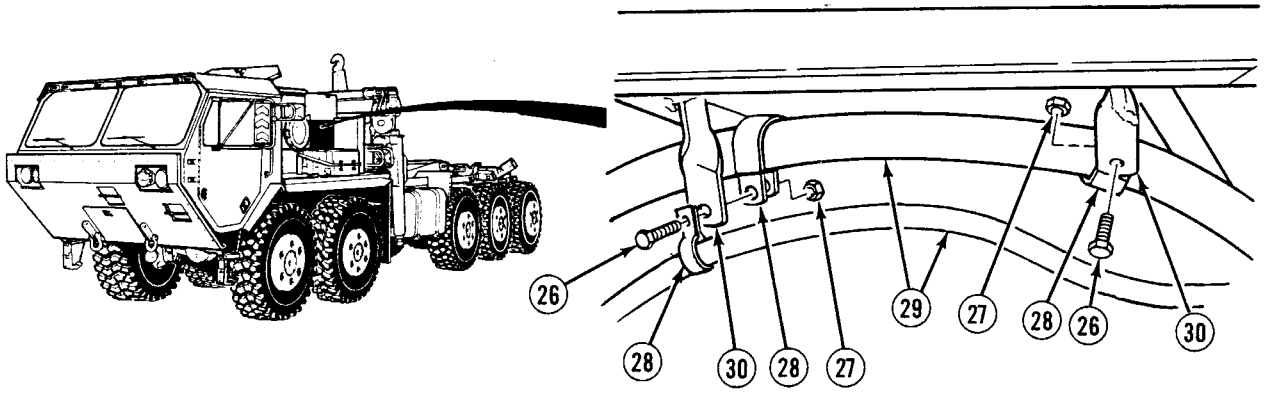
(17) Install ether injection tube (33) on ether start valve (32).

NOTE

Ensure overflow tube is routed as noted prior to removal.

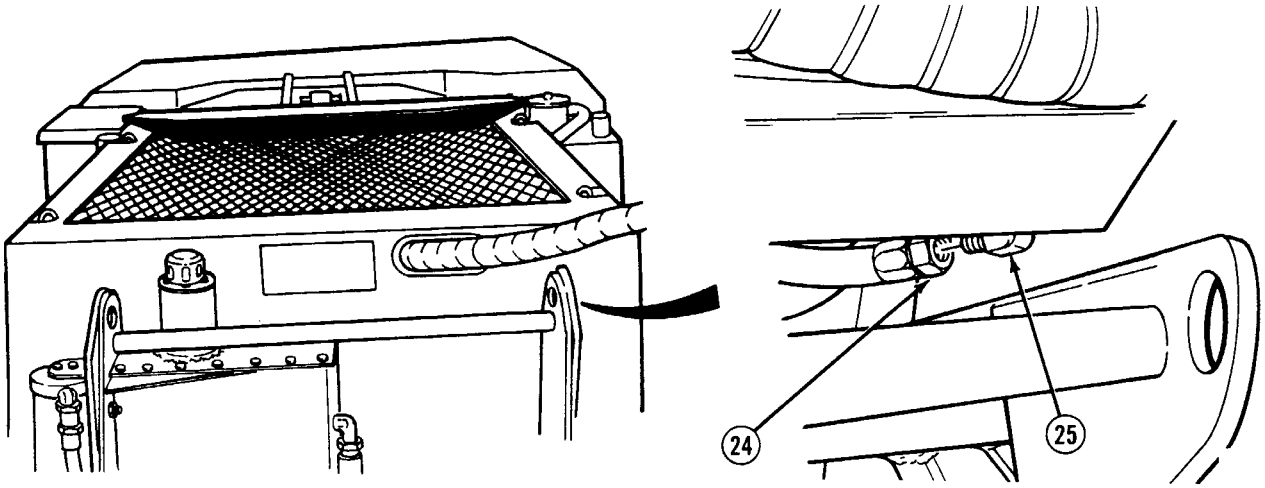
(18) Route radiator overflow tube (34) back into position.

(19) Connect connector MC23 (31) to ether start valve (32).

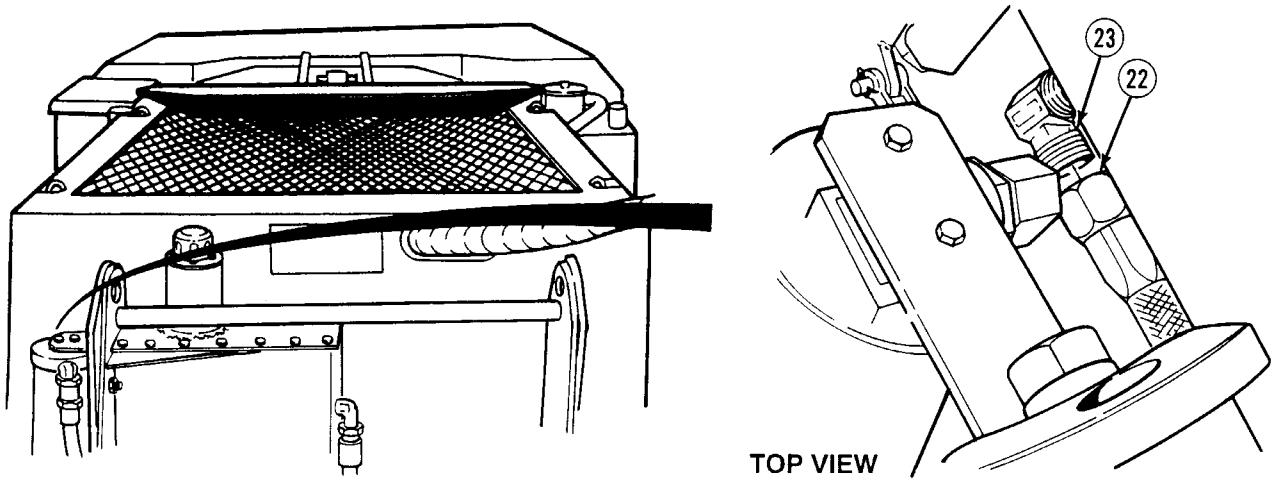


(20) Install two hoses (29), three clips (28), two screws (26), and locknuts (27) on two clip brackets (30).

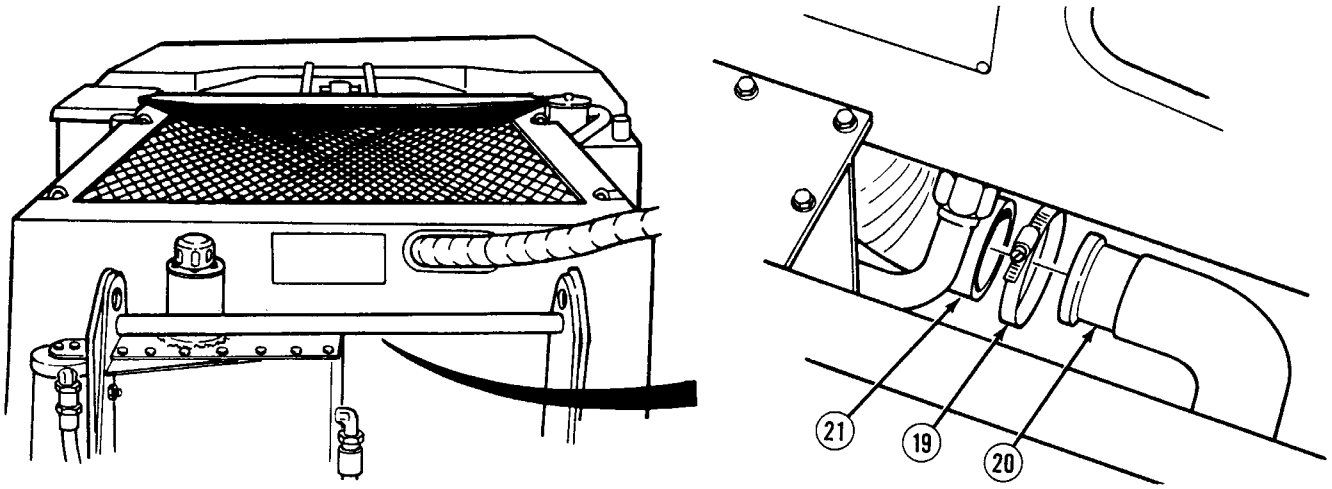
6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



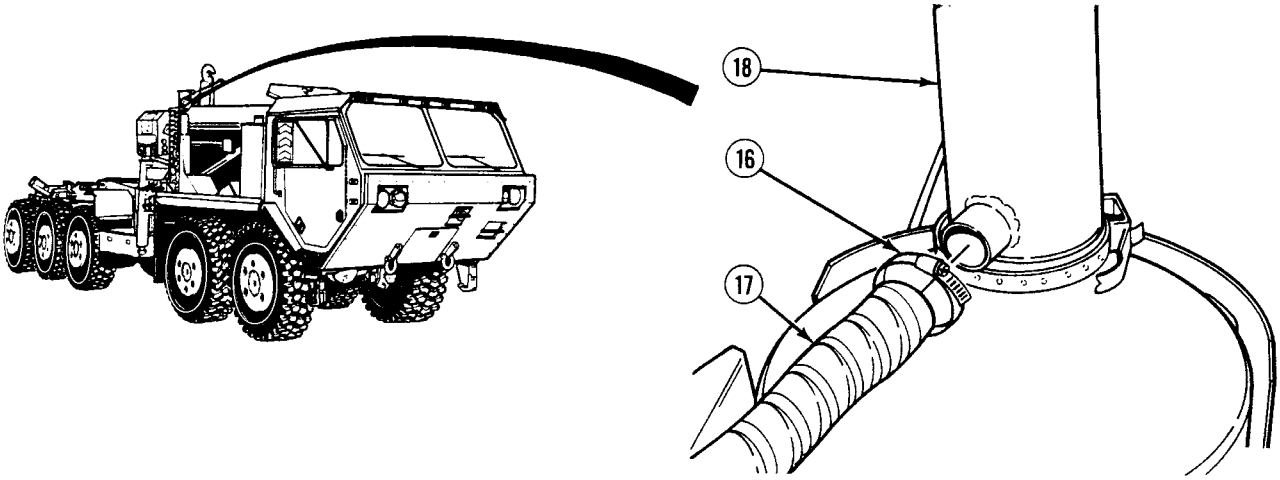
(21) Install hose 2279 (24) on fitting (25).



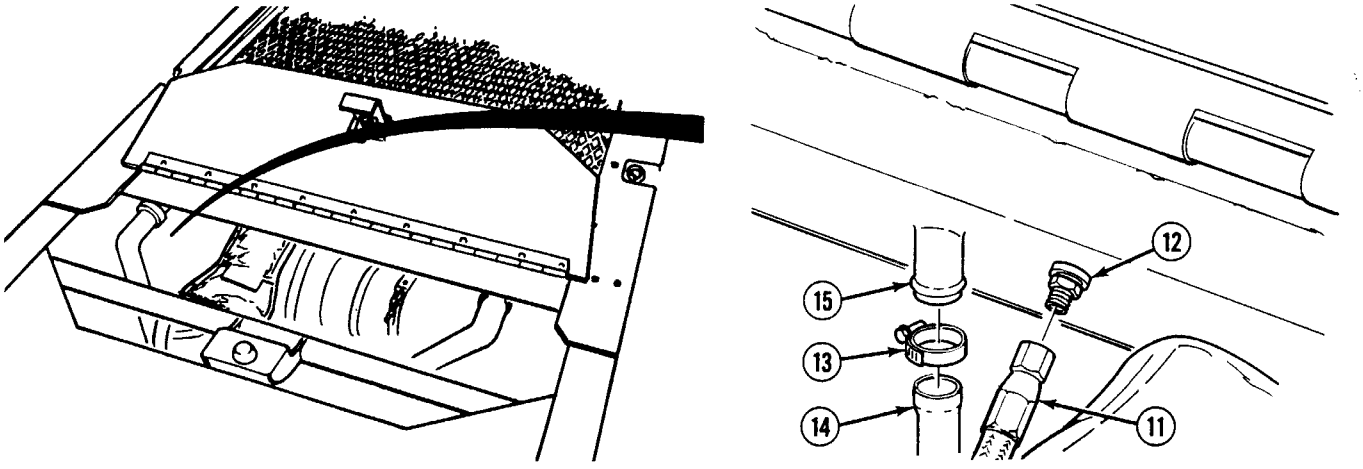
(22) Install hose 2382 (22) on fitting (23).



(23) Install clamp (19) and tube (20) on elbow (21).



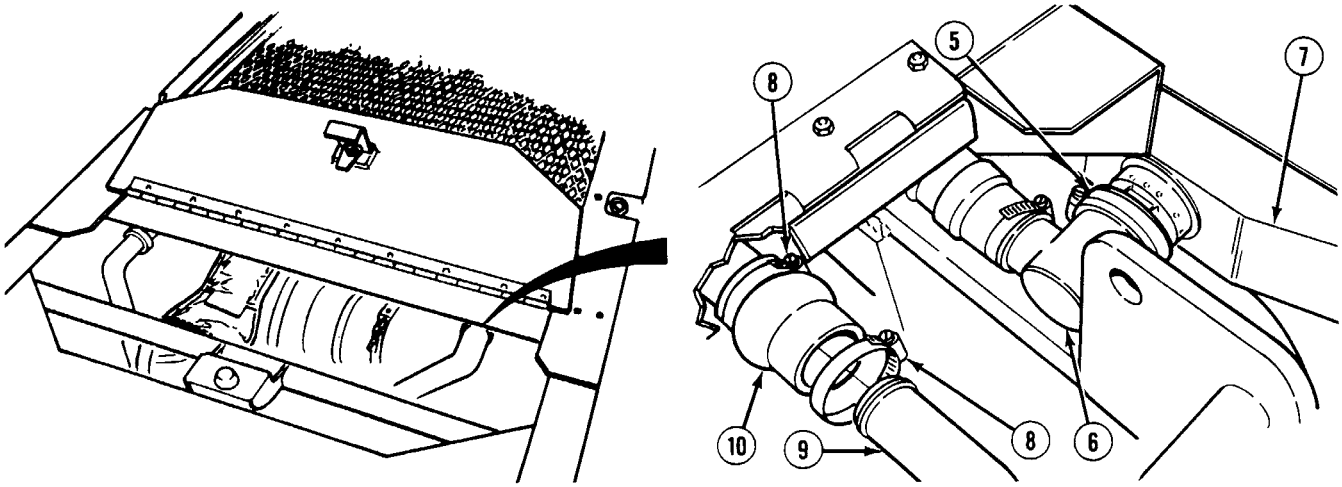
(24) Install clamp (16) and aspirator hose (17) on muffler (18).



(25) Install clamp (13) and hose 2561 (14) on radiator tube (15). Tighten clamp to 40 lb-in (5 N·m).

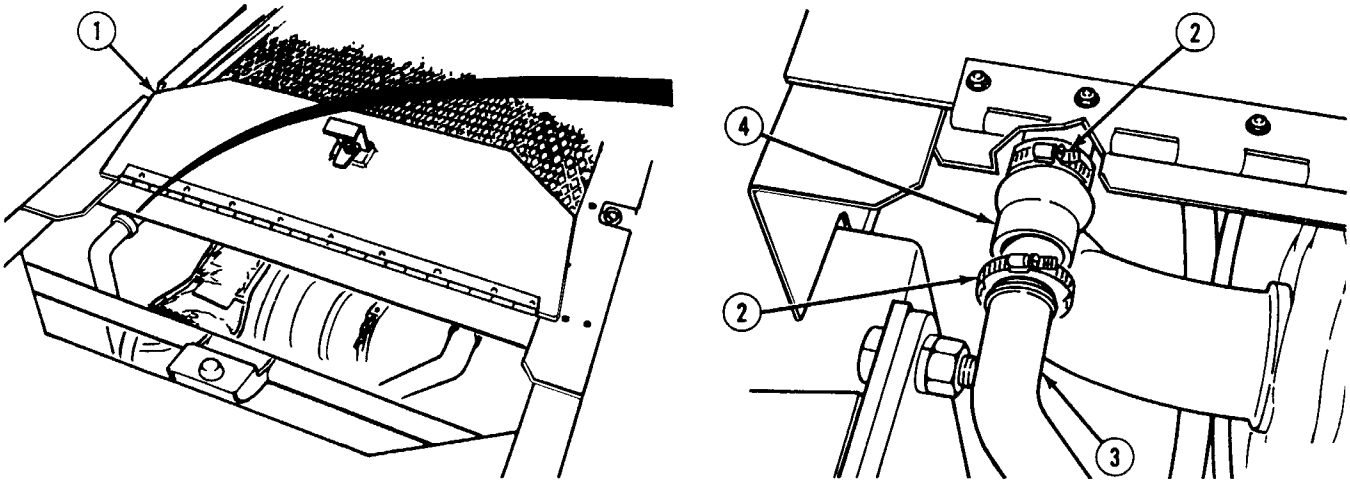
(26) Install deairation hose 2300 (11) on adapter (12).

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)

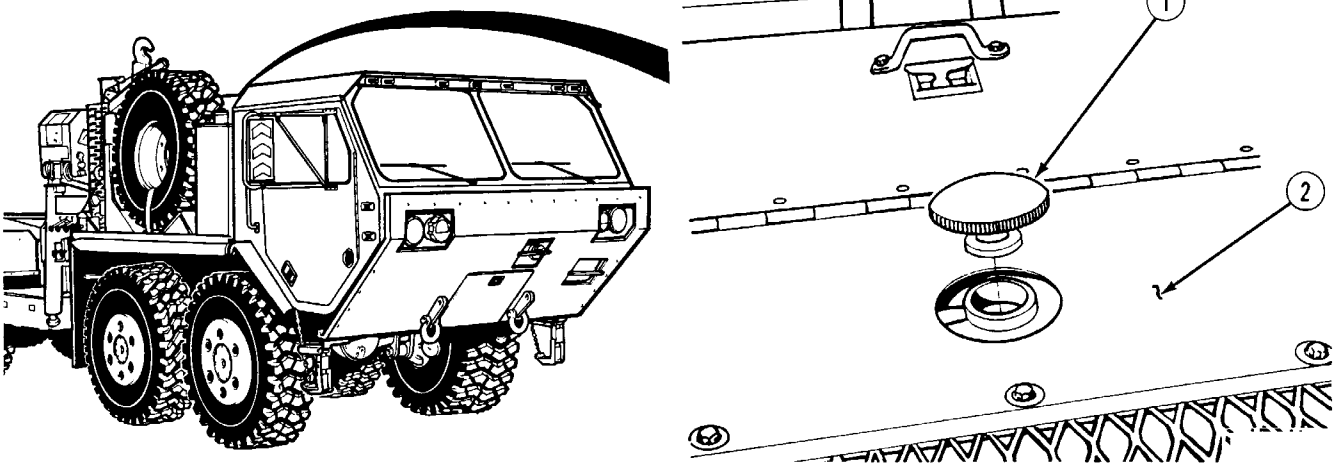
Material/Parts
Antifreeze (Item 19, Appendix C)
Rags, Wiping (Item 67, Appendix C)

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

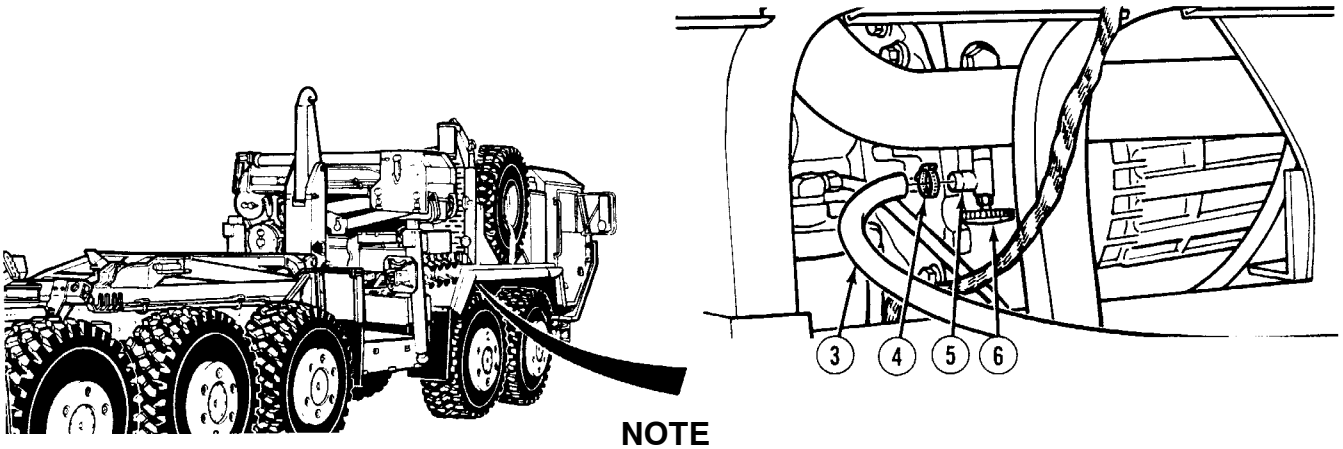
- Radiator, radiator cap, coolant, and hoses are very hot and pressurized during truck operation. Let radiator cool before checking hoses. Failure to do so may result in serious burns to personnel.
- Use extreme care when removing radiator pressure cap. Sudden release of pressure can cause steam flash 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.

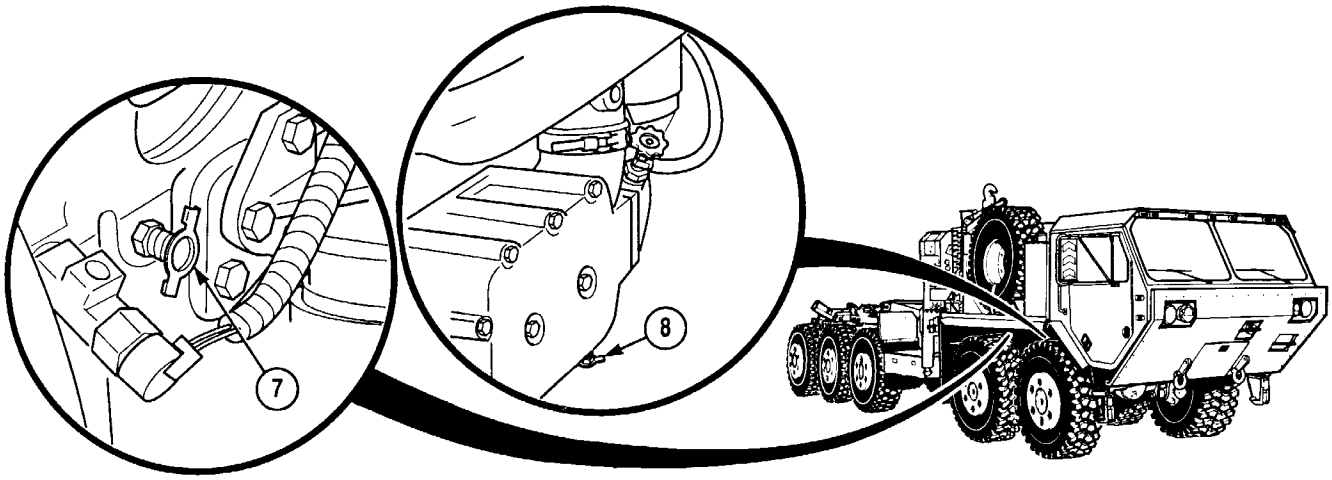
NOTE

- Cooling system capacity is 100 qts (95 liters).
- Cooling system capacity with arctic kit (Model A) 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.

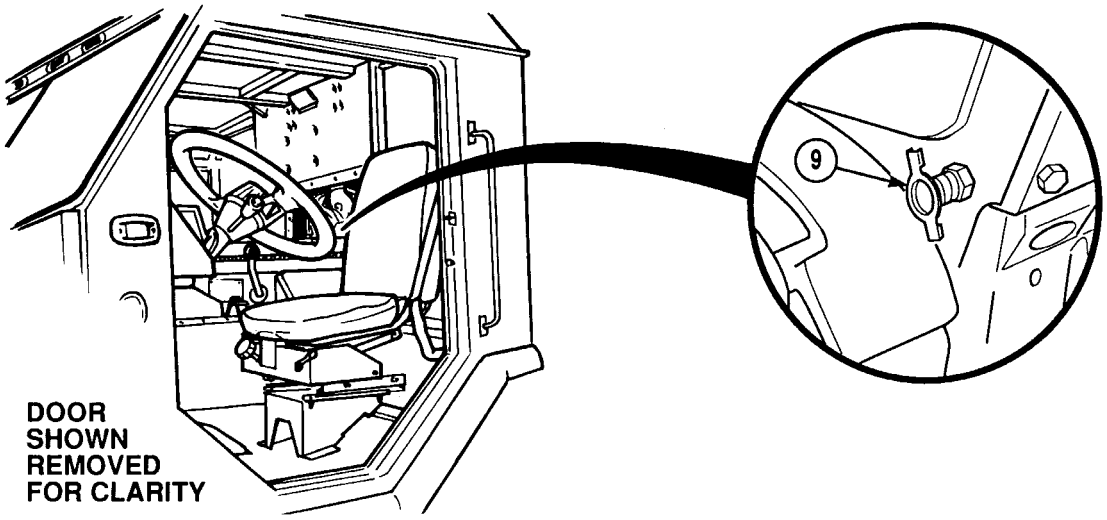
(10) Close drain cock (7).

(11) Position drain pan under drain cock (8).

(12) Open drain cock (8) and allow coolant to drain.

(13) Close drain cock (8).

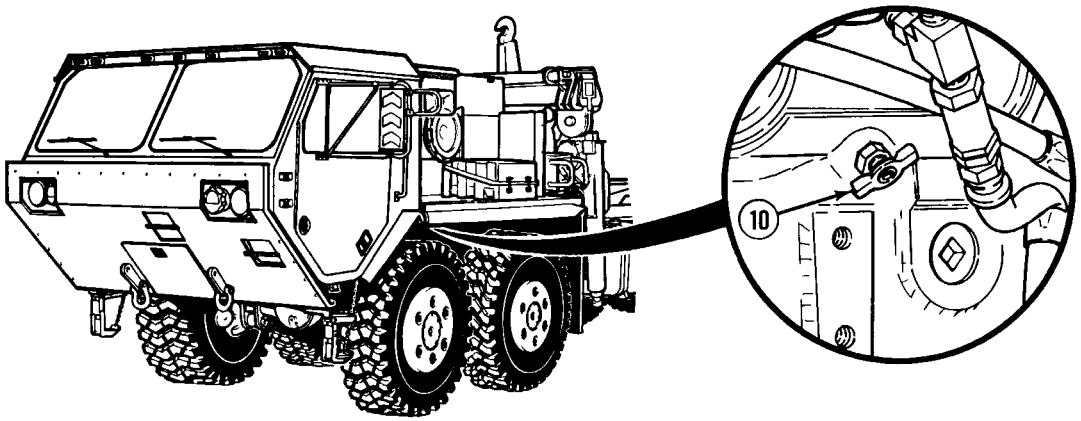
6-4. COOLING SYSTEM SERVICE (CONT).



(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.

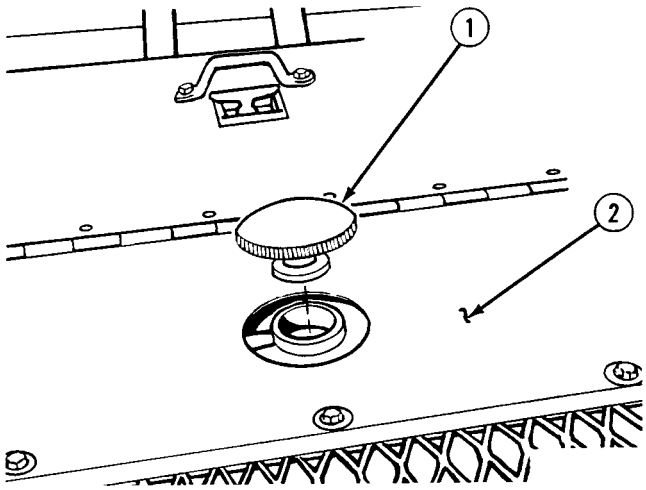
(19) Close drain cock (10).

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

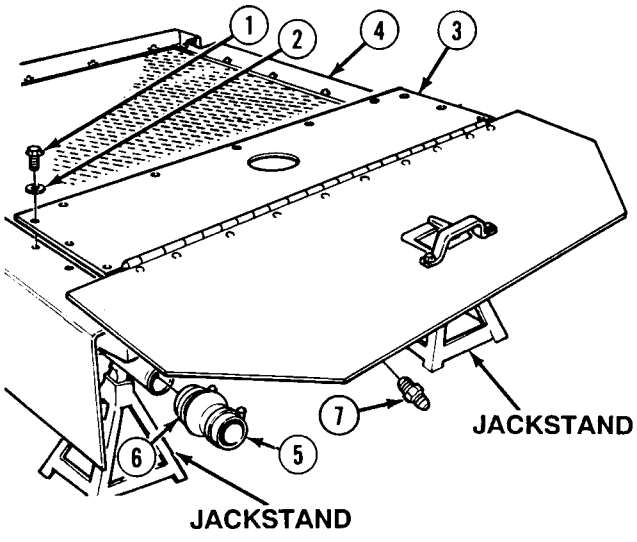
Engine cover assembly weighs 55 lbs (25 kg). Use an assistant to help remove engine cover assembly or injury to personnel may result.

(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).

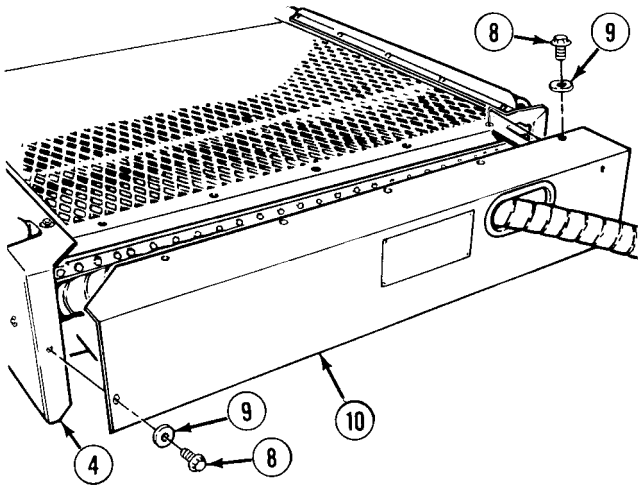
(3) Remove two hump hoses (5) and clamps (6) from cooling assembly (4).

(4) Remove fitting (7) from cooling assembly (4).



(5) Remove seven screws (8) and washers (9) from back panel (10). Discard screws.

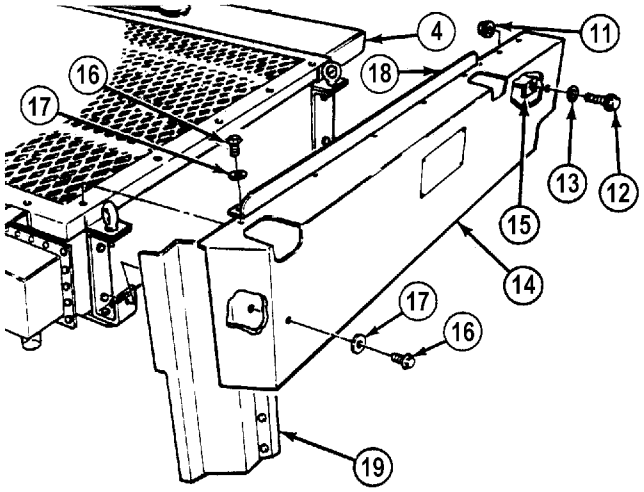
(6) Remove back panel (10) from cooling assembly (4).



(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.

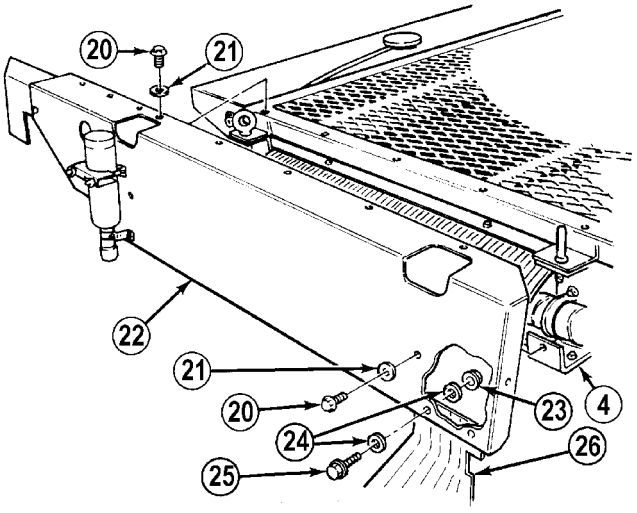
(9) Remove angle (18) and right side skin (14) from cooling assembly (4).



(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

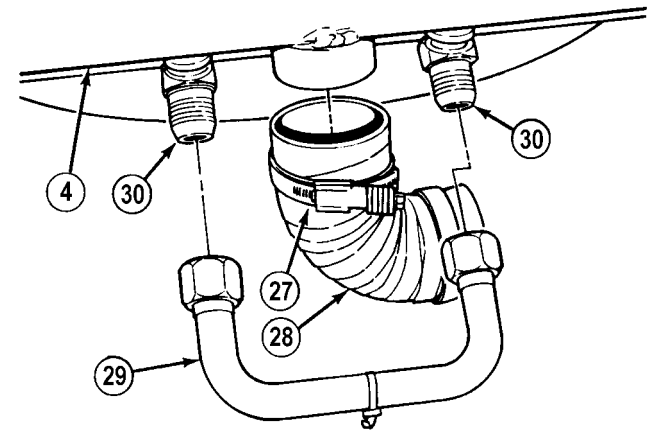
Note and record position of hose in Step (13) prior to removal.

(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.

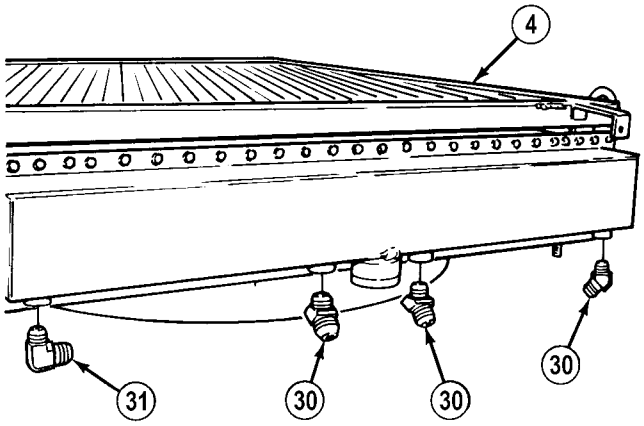
(14) Remove tube assembly (29) from fittings (30).



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

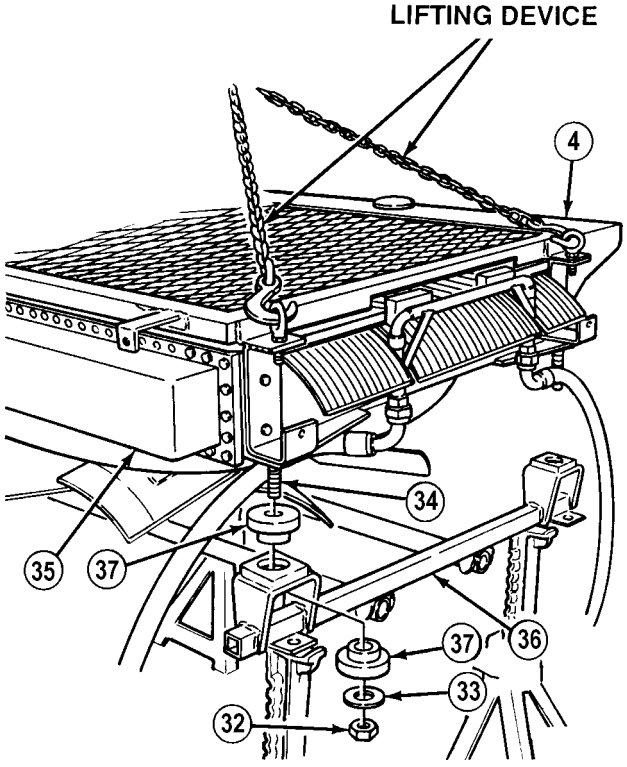
Radiator assembly weighs 575 lbs (261 kg). Do not stand directly under radiator assembly or injury to personnel may result.

(16) Attach lifting device to cooling assembly (4).

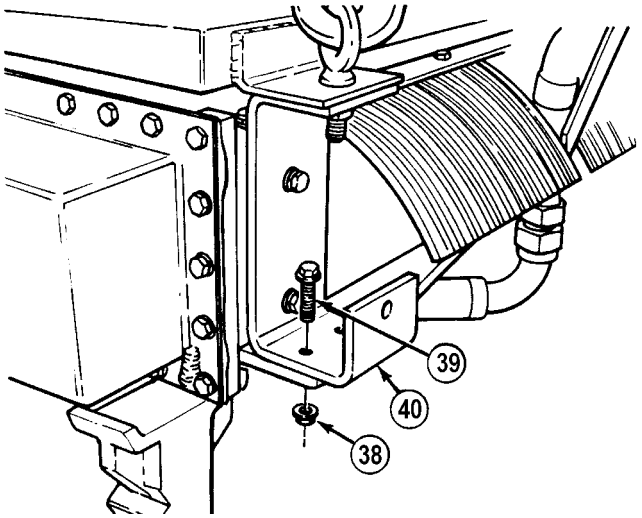
(17) Remove four locknuts (32) and washers (33) from mounting studs (34). Discard locknuts.

(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).



(20) Remove eight locknuts (38) and screws (39) from four side brackets (40). Discard locknuts.

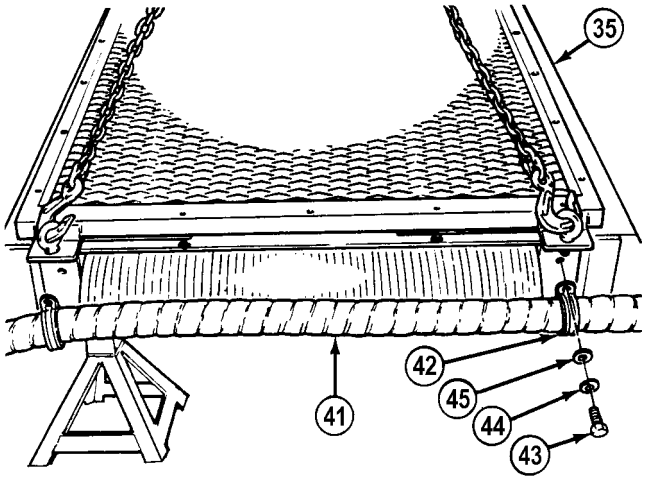


NOTE

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.

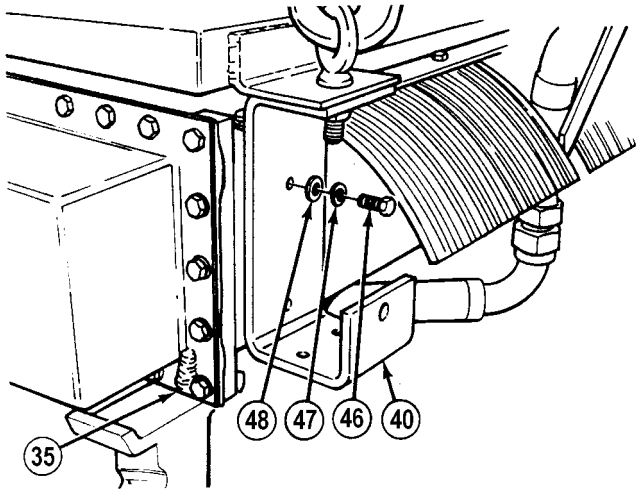


WARNING

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.

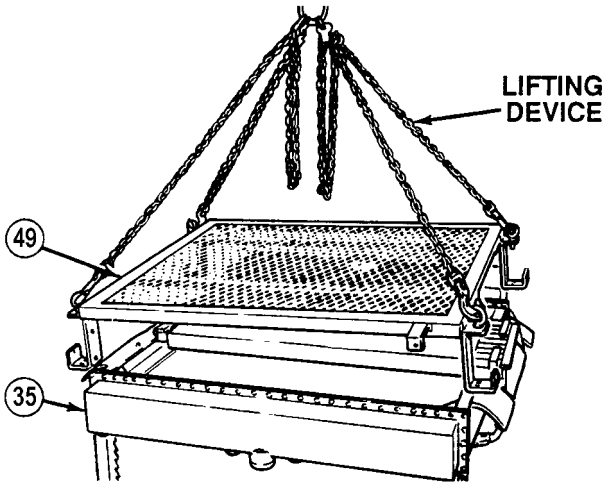
(24) Remove four screws (46), lockwashers (47) and washers (48) from two side brackets (40) on right side of radiator assembly (35). Discard lockwashers.



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).

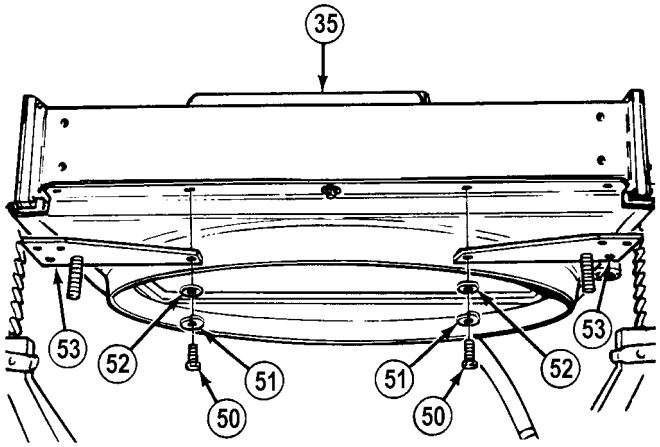
(26) Remove lifting device from grille assembly (49).



NOTE

Tag and mark location of radiator bracket assemblies prior to removal.

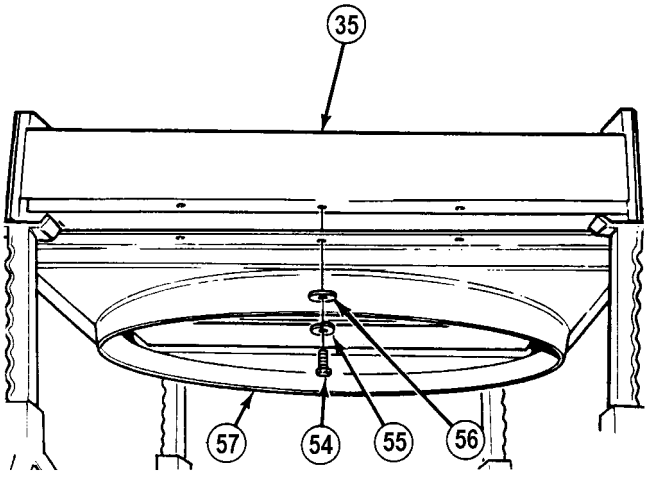
(27) Remove eight screws (50), lockwashers (51), washers (52) and four radiator bracket assemblies (53) from radiator assembly (35). Discard lockwashers.



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.

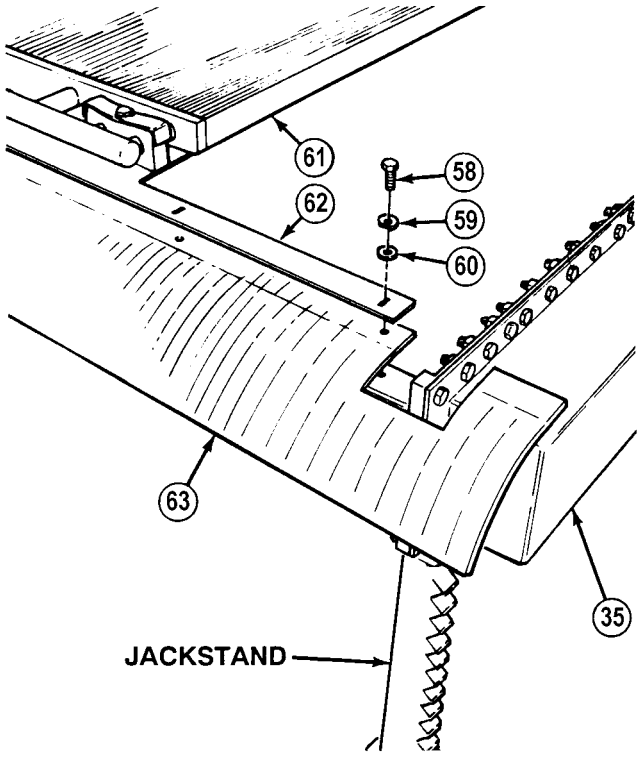
(30) Remove four screws (58), lockwashers (59) and washers (60) from right side of radiator assembly (35). Discard lockwashers.

(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).

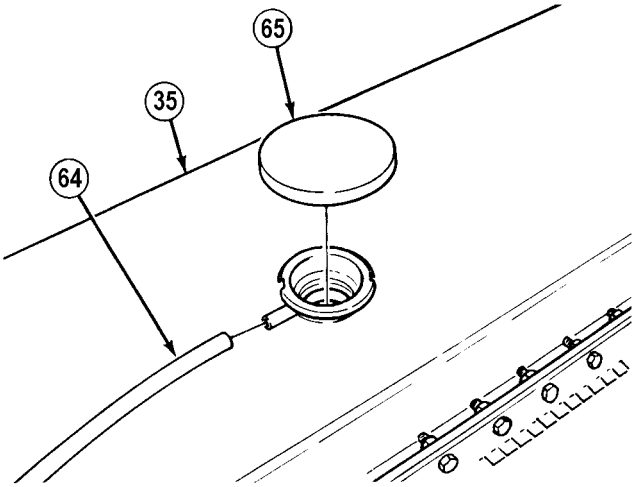
(35) Remove radiator assembly (35) from jackstands.

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).

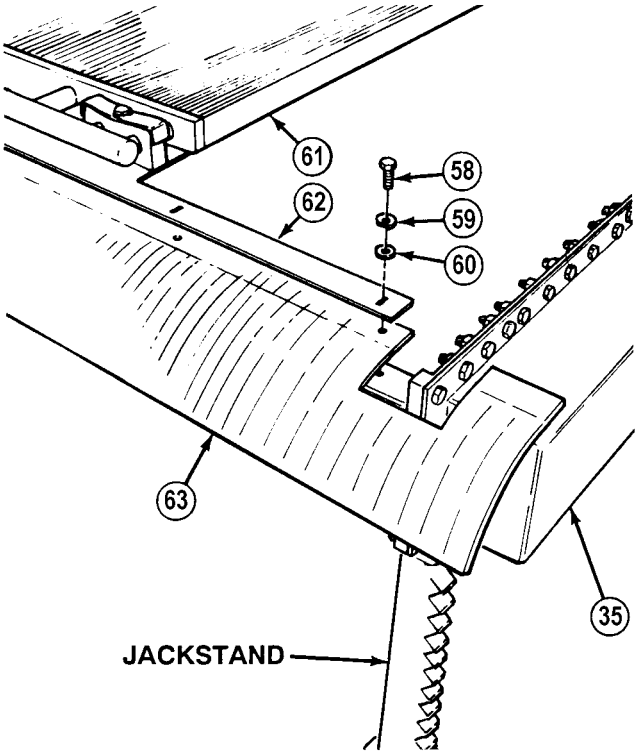
(4) Position two baffles (63) on radiator assembly (35).

(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).

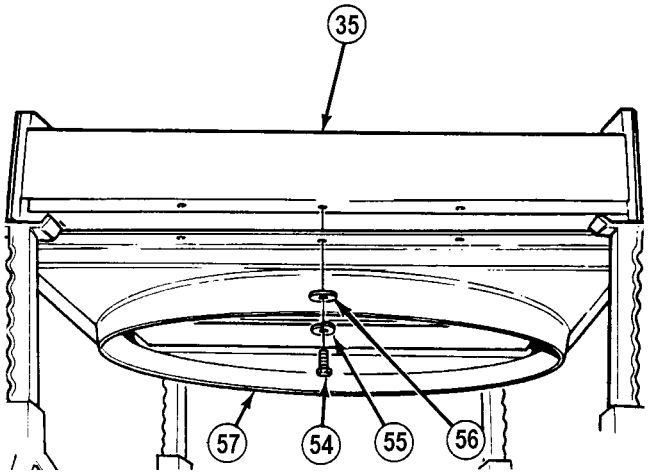
(8) Tighten eight screws (58) on radiator assembly (35).



NOTE

Screws in Step (9) are installed on each side of radiator assembly.

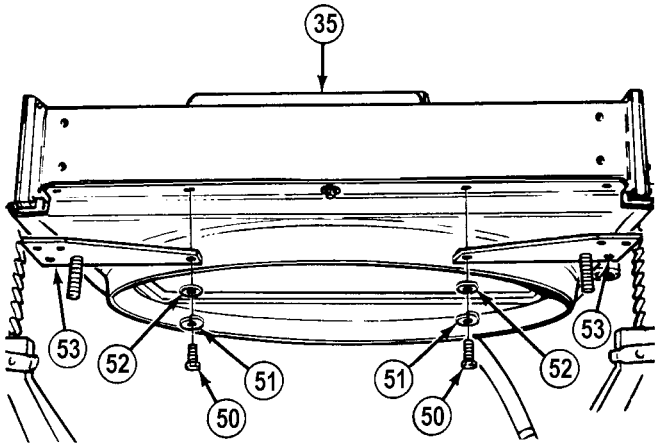
(9) With the aid of an assistant, position fan shroud (57) on radiator assembly (35) with two washers (56), lockwashers (55) and screws (54).



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).

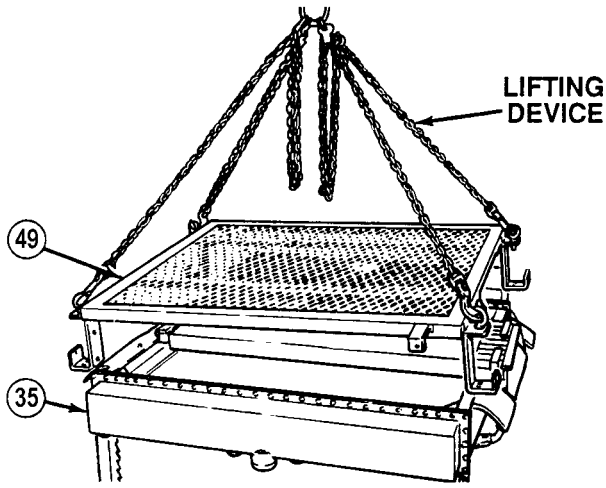


WARNING

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).

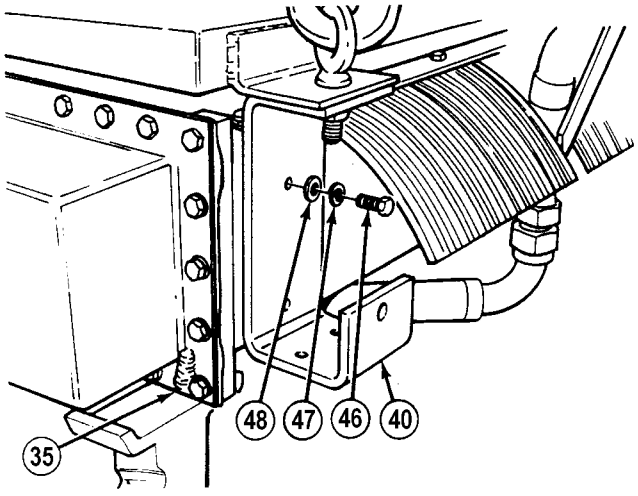


WARNING

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).



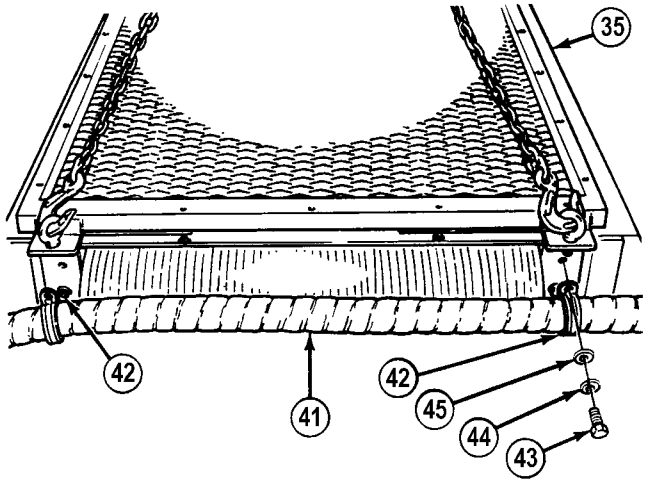
6-5. RADIATOR REPLACEMENT (CONT).

NOTE

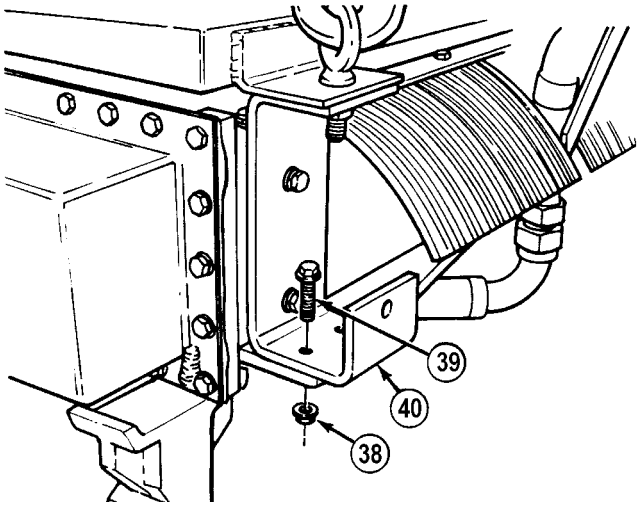
Ensure matchmarks are aligned on aspirator hose and clips as noted prior to removal.

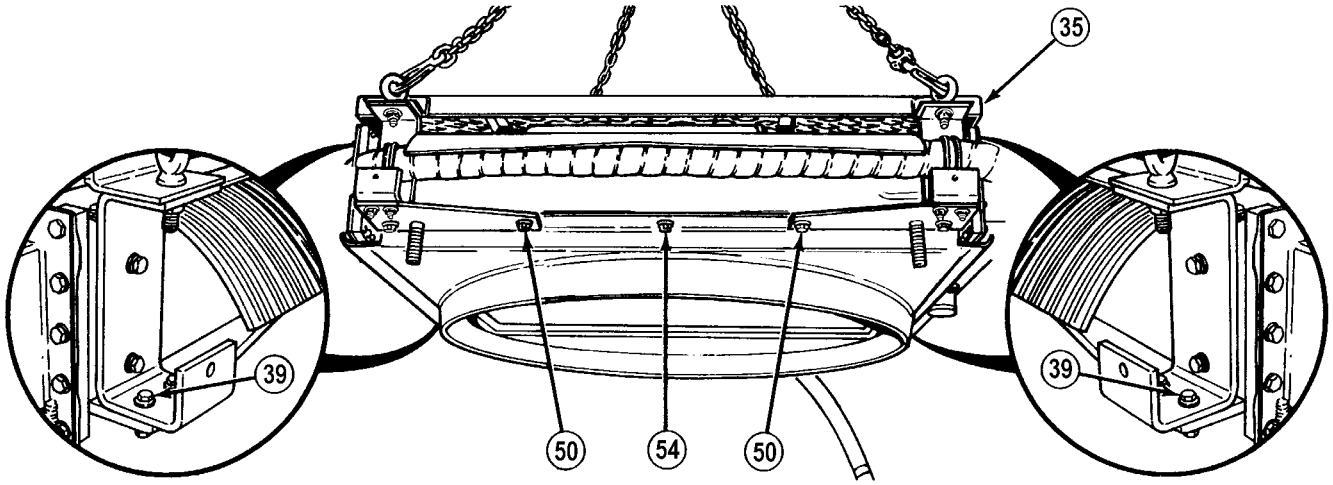
(15) Position aspirator hose (41) on left side of radiator assembly (35) with two clips (42), washers (45), lockwashers (44) and screws (43).

(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).

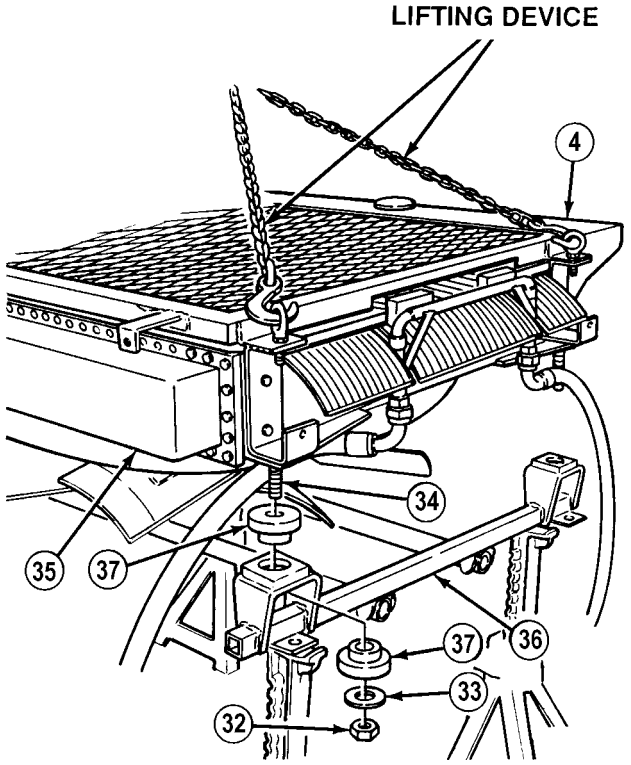
WARNING

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).

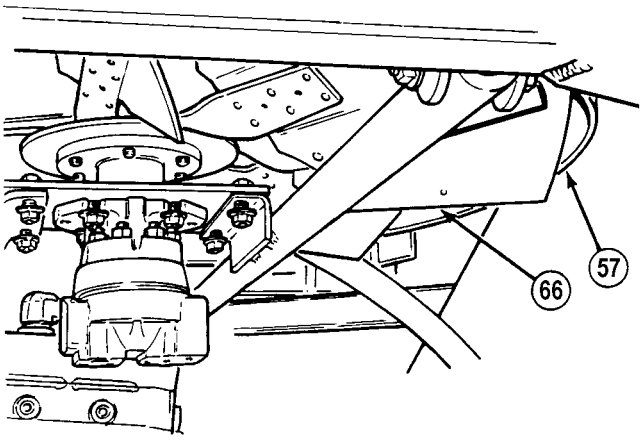
(22) Remove lifting device from cooling assembly (4).



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.

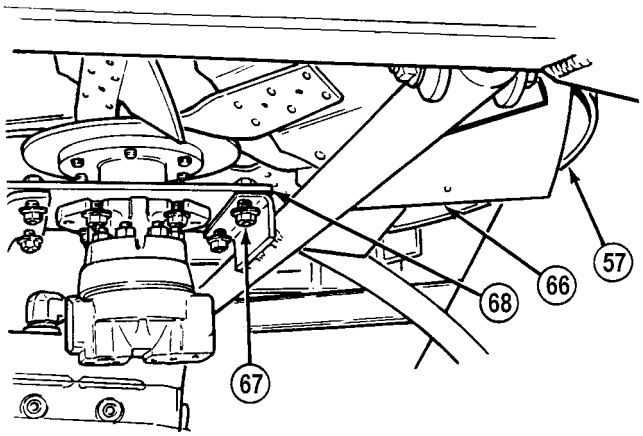
(24) Remove and discard four locknuts (67) from fan mounting plate (68).

(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).

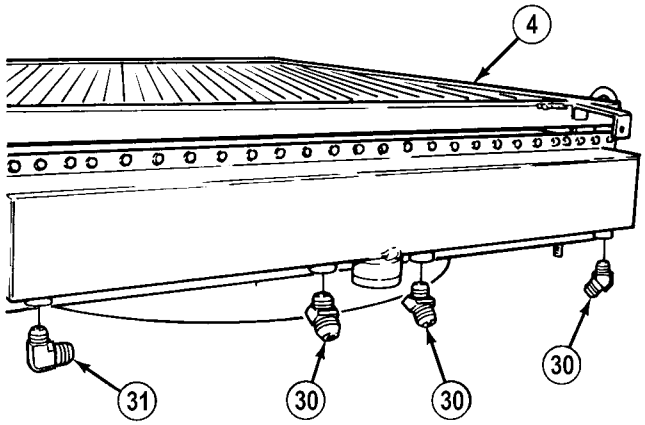
(27) Check for even distance of blades of fan (66) to fan shroud (57).

(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).

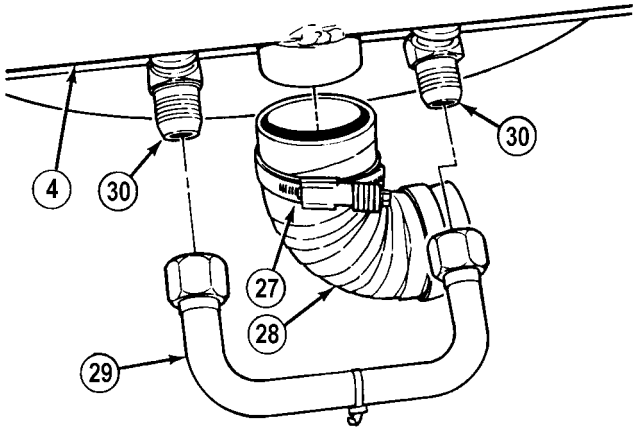
NOTE

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).

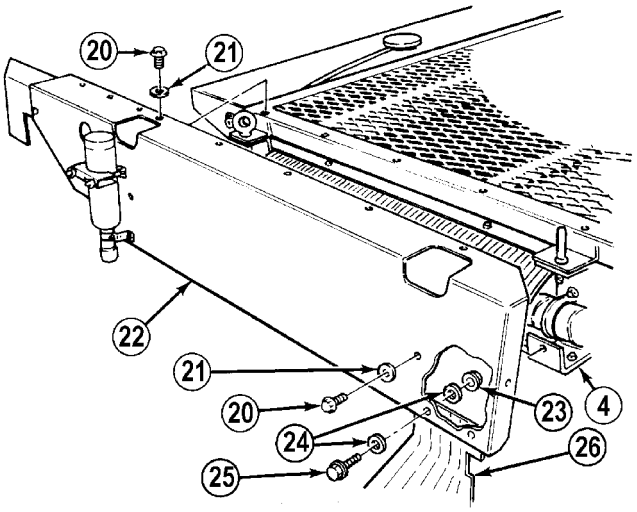
(31) Install tube assembly (29) on two fittings (30).

(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).

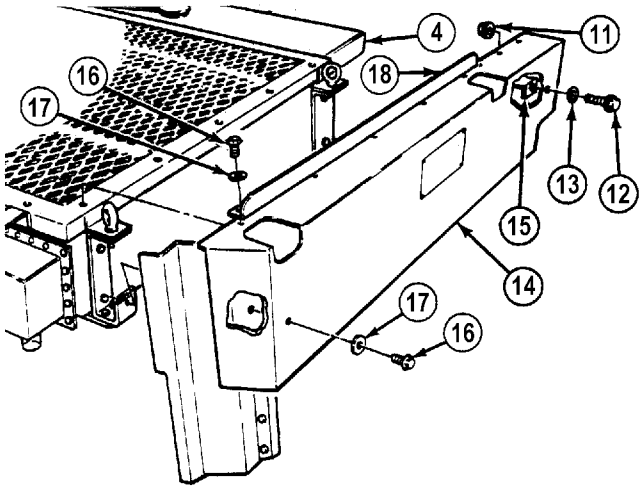
(34) Install two screws (25), four washers (24) and two locknuts (23) on left side skin (22) and cooling skirt (26).



(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).

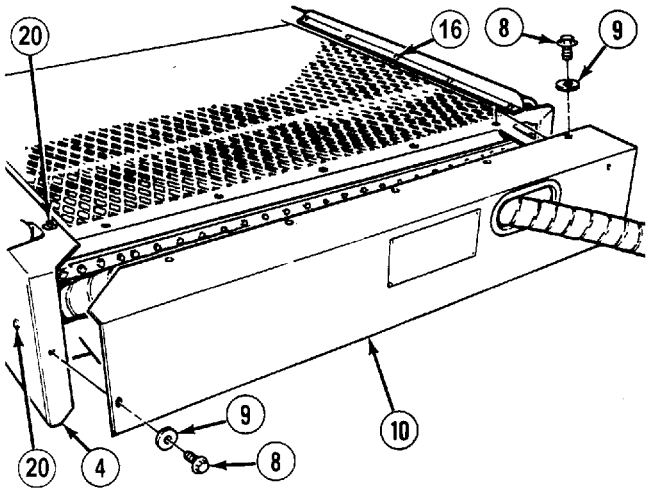
(37) Position angle (18) on right side skin (14) with five washers (17) and screws (16).



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).



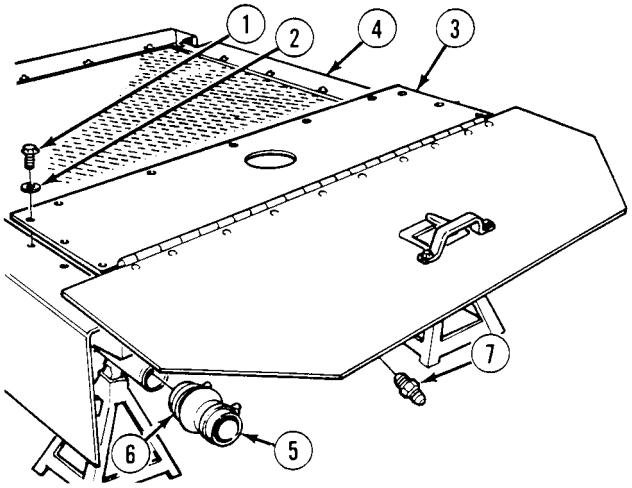
WARNING

Adhesives, solvents, and sealing compunds 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)

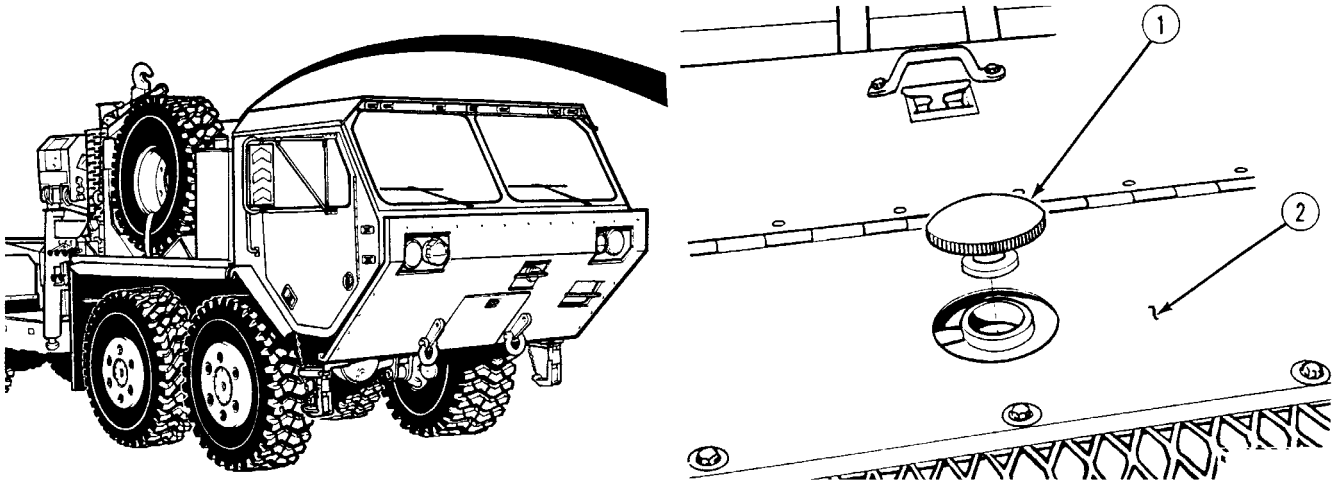
Materials/Parts
Antifreeze (Item 19, Appendix C)
Rag, Wiping (Item 67, Appendix C)
Sealing Compound (Item 72, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right fender rear skirt removed, (Para 17-33)

a. Removal.

WARNING

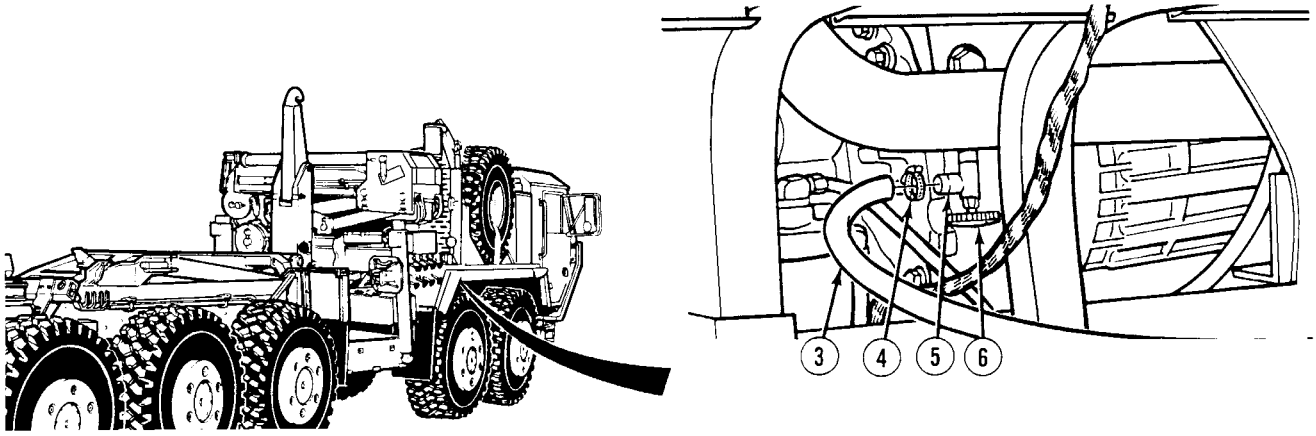
- Use extreme care when removing radiator pressure cap. Sudden release of pressure can cause steam flash which could seriously injure personnel. Slowly loosen cap to the first stop to relieve pressure before removing cap complete. After opening, securely tighten cap.
- Use clean, thick waste cloth or 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.

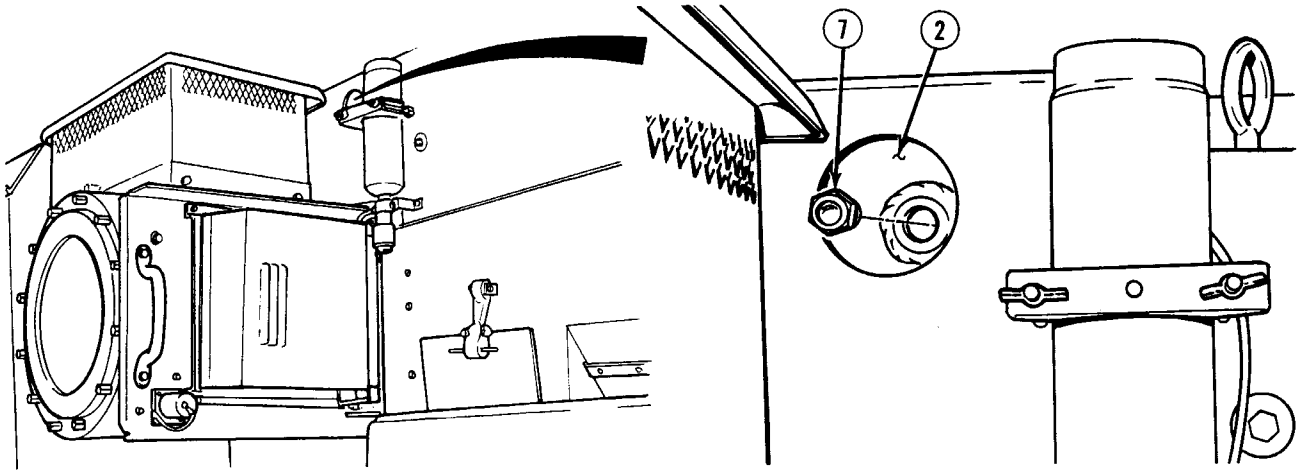
(4) Position end of drain hose (3) in drain pan.

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).

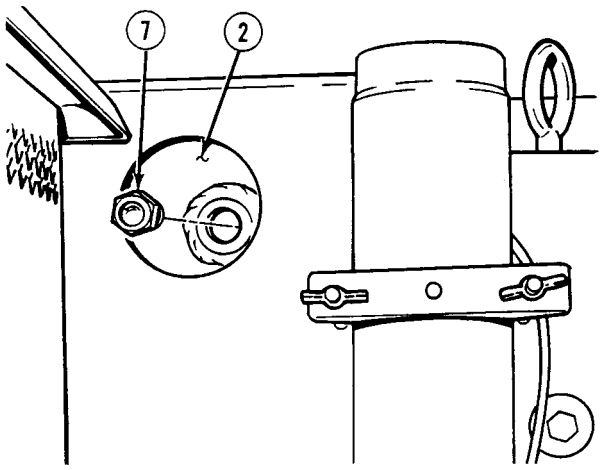


(7) Remove coolant level sight glass (7) from radiator (2).

b. Installation.

WARNING

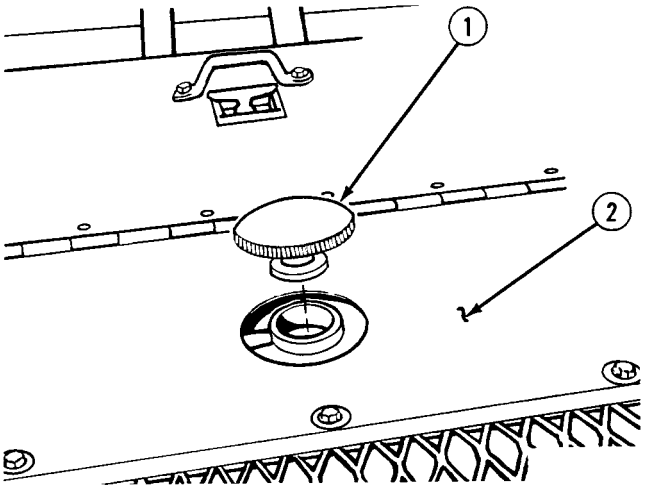
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and cothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap 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
b. Cleaning/Inspection
c. Installation
d. Follow-On Maintenance

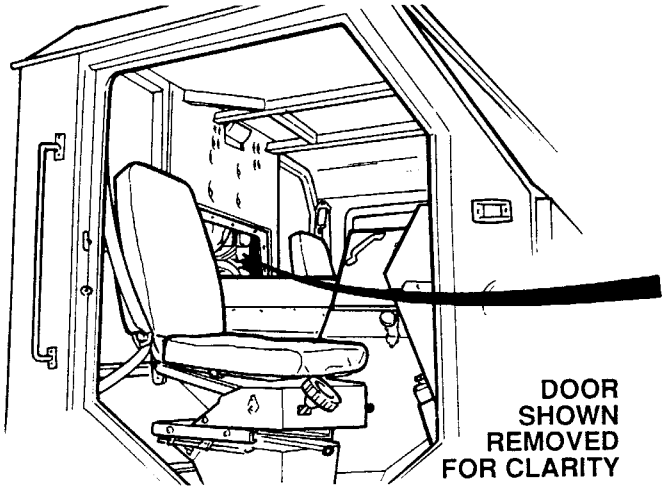
INITIAL SETUP

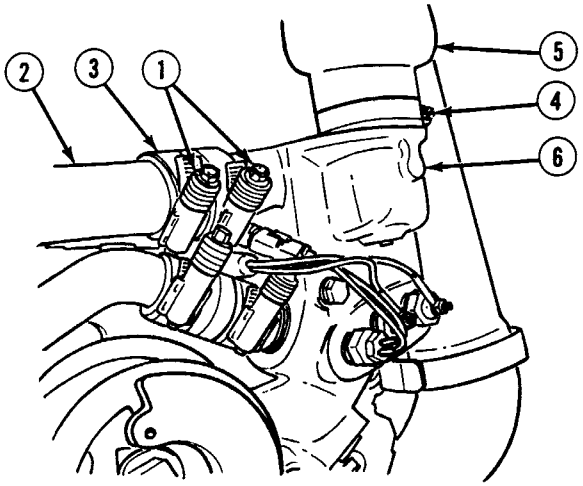
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Compressor unit, Air (Item 11, Appendix G)
Gloves, Chemical Oil Protective (Item 28, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Gun, Air Blow (Item 31, Appendix G)
Installer, Seal (Item 39, Appendix G)
Pan, 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/IV, 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.

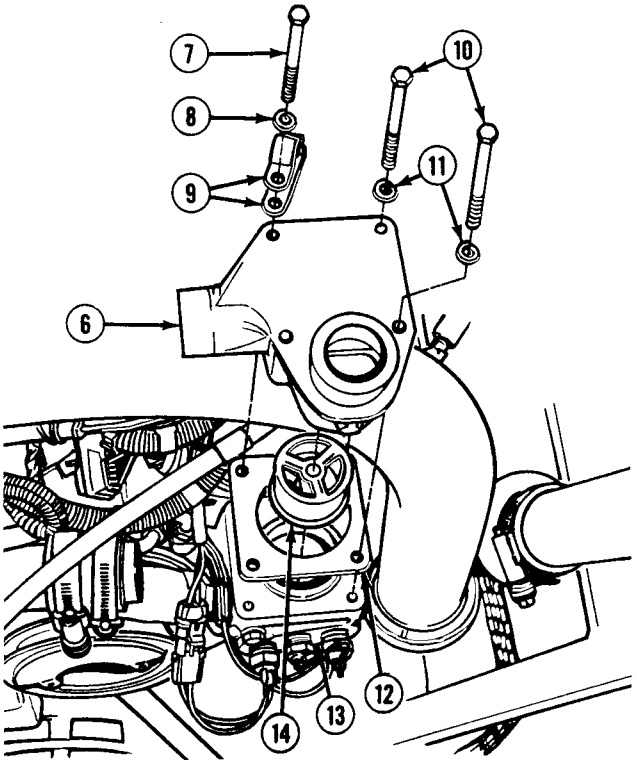
(4) Remove two screws (10) and lockwashers (11) from left thermostat housing (6). Discard lockwashers.

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.

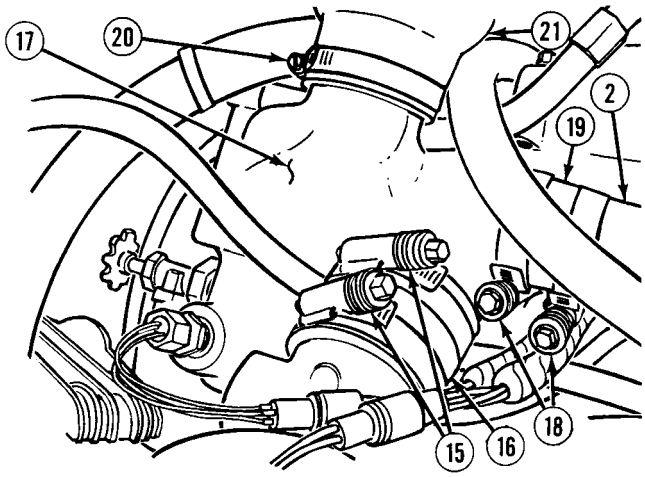
(6) Remove and discard thermostat (14) from left thermostat housing (6).

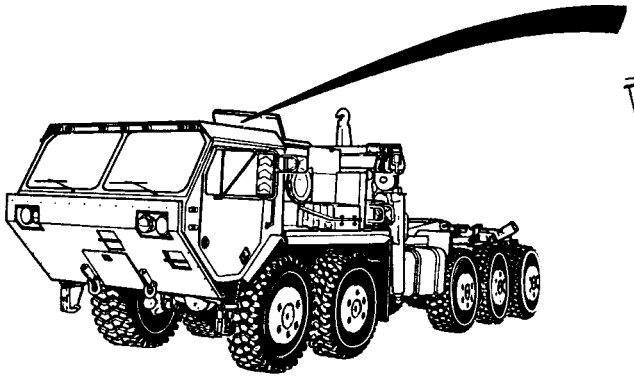


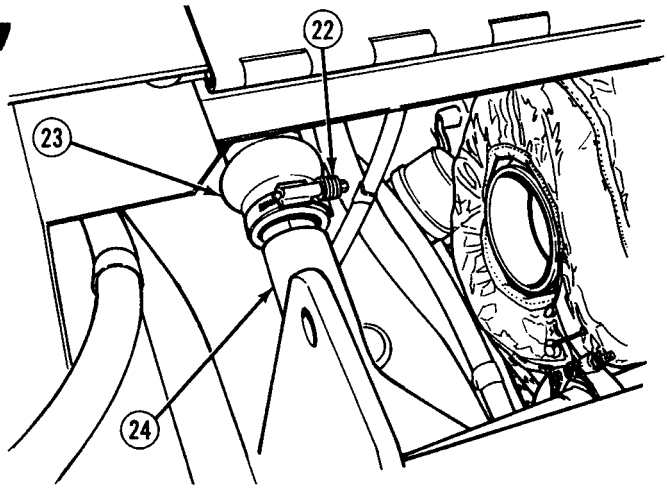
(7) Loosen two clamps (15) and move hose (16) toward right thermostat housing (17) until free.

(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).

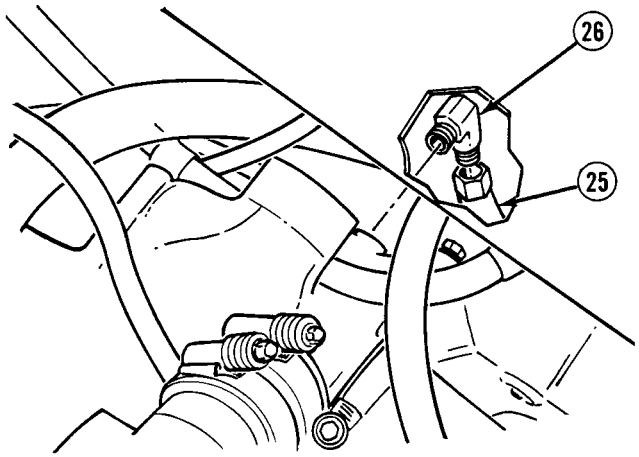




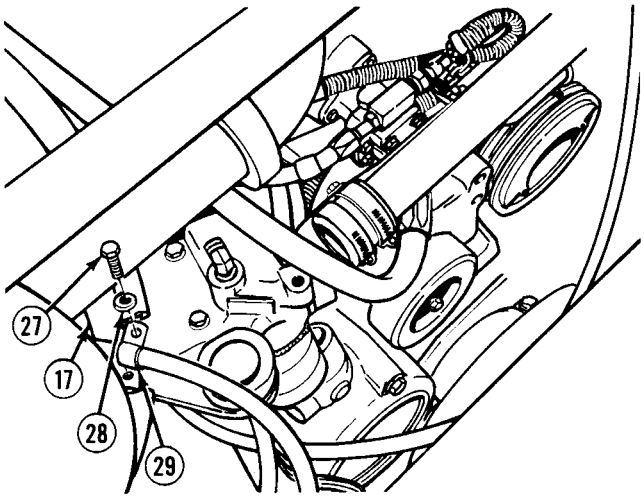


(10) Loosen clamp (22) on hump hose (23) and remove radiator tube (24) from hump hose.

(11) Remove hose 2300 (25) from elbow (26).



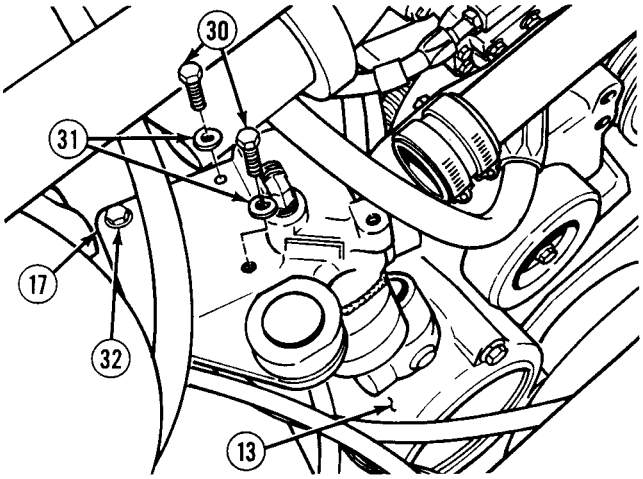
(12) Remove screw (27), lockwasher (28) and clip (29) from right thermostat housing (17). Discard lockwasher.



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.

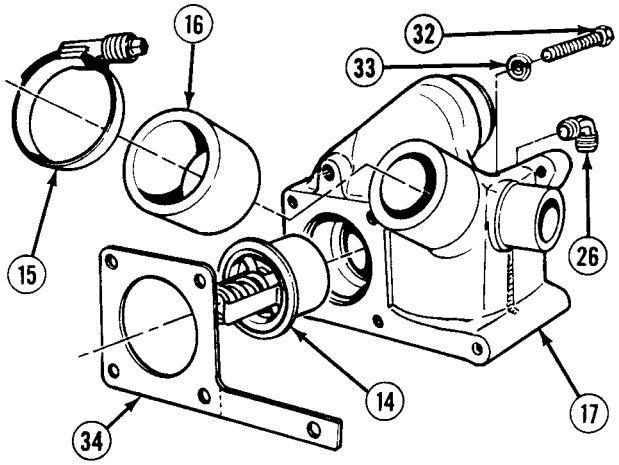
(15) Remove screw (32), lockwasher (33), right thermostat housing (17) and gasket (34) from engine block (13). Discard gasket.

(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).



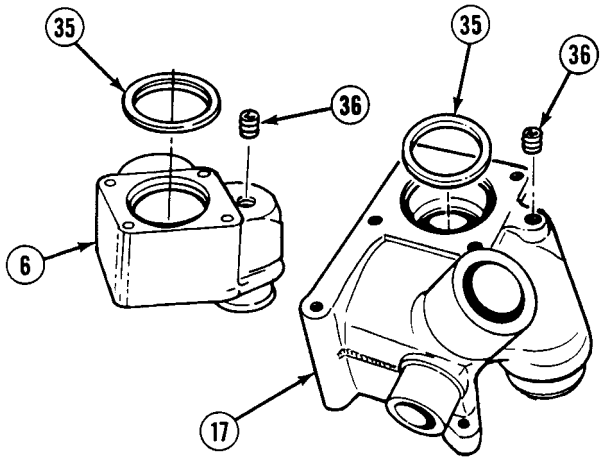
NOTE

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.

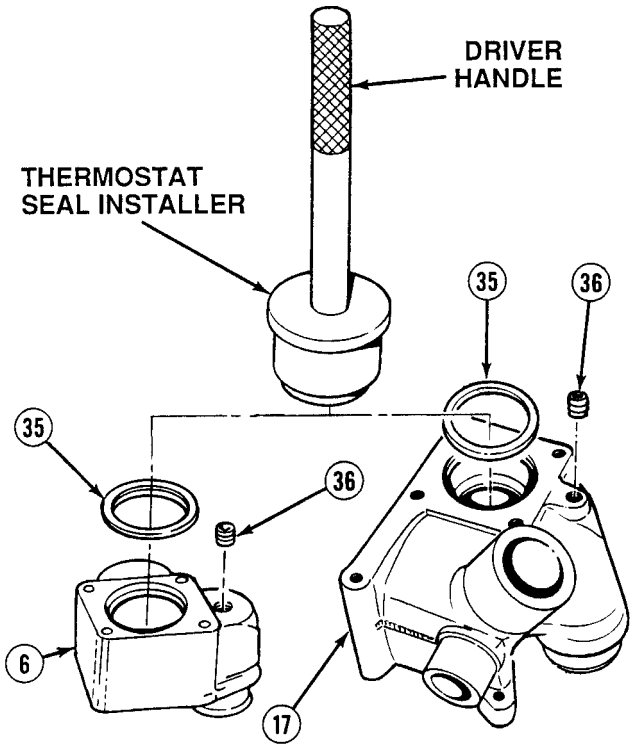
(1) Coat threads of two plugs (36) with sealing compound.

(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).

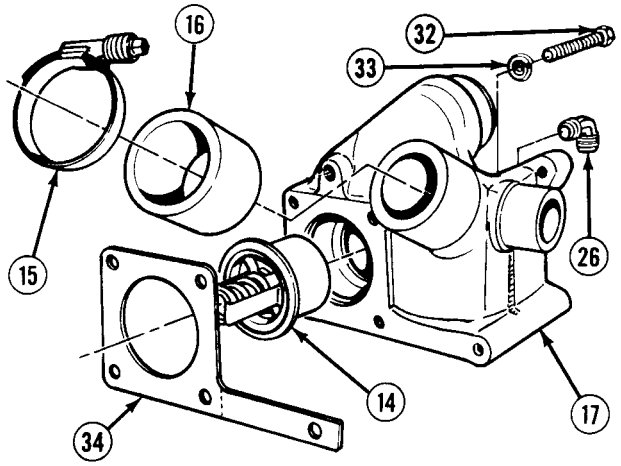
WARNING

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).

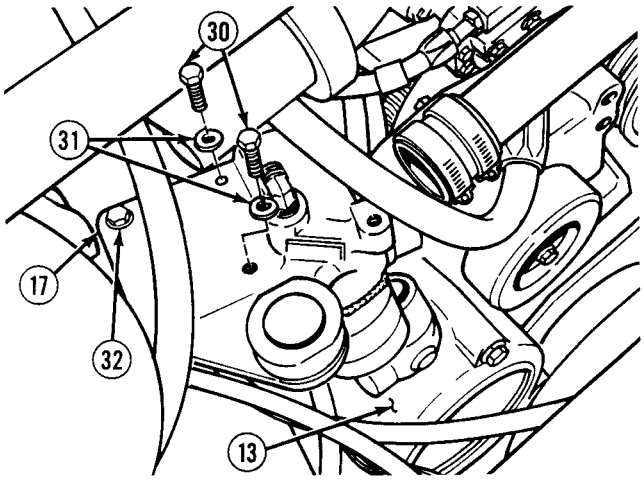
(9) Position gasket (34) on right thermostat housing (17).

(10) Position lockwasher (33) and screw (32) in right thermostat housing (17).

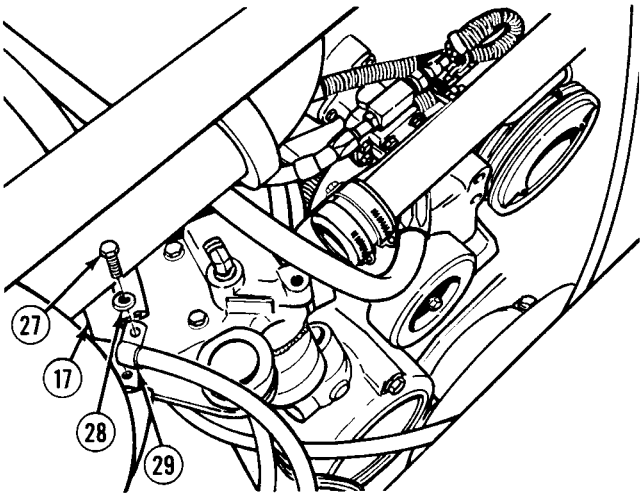


6-7. THERMOSTAT REPLACEMENT (CONT).

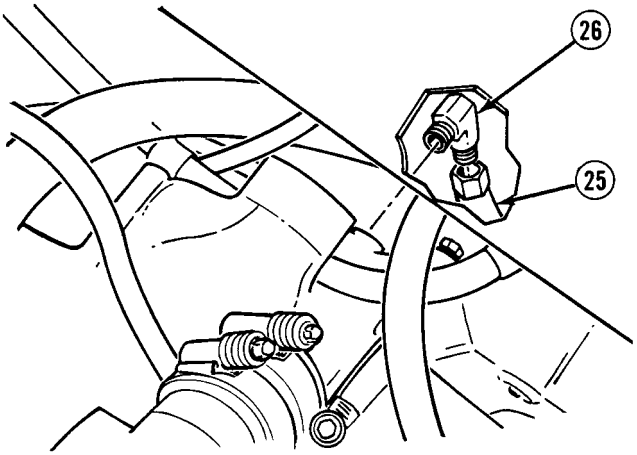
(11) Install right thermostat housing (17) on engine block (13) with two lockwashers (31) and screws (30). Tighten two screws (30) and screw (32) 23 to 26 lb-ft (31 to 35 N·m).



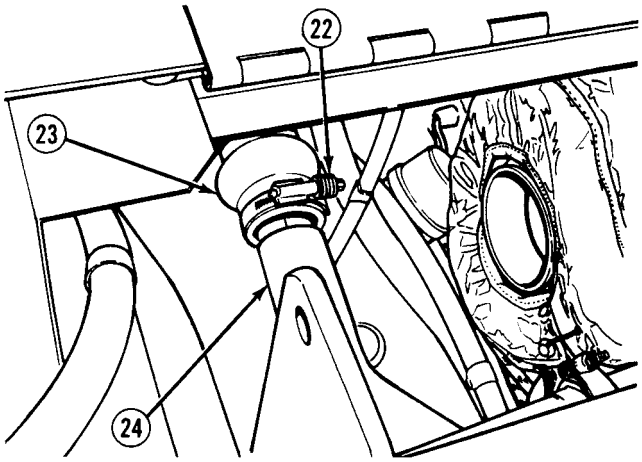
(12) Install clip (29), lockwasher (28) and screw (27) on right thermostat housing (17). Tighten screw 23 to 26 lb-ft (31 to 35 N·m).



(13) Install hose 2300 (25) on elbow (26).



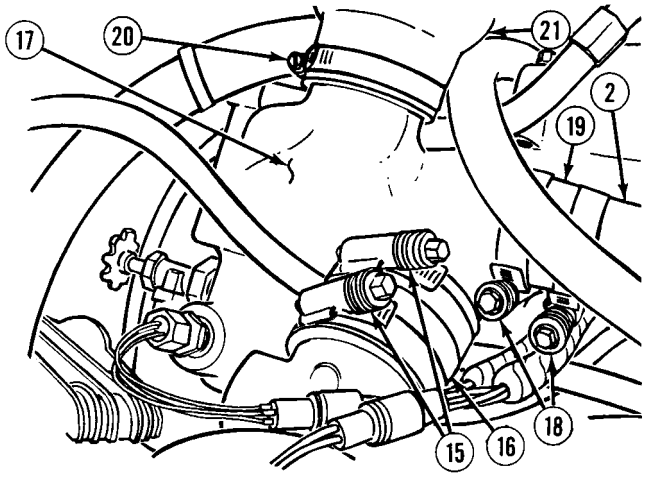
(14) Install radiator tube (24) in hump hose (23) and tighten clamp (22) to 100 lb-in (11 N·m).



(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).

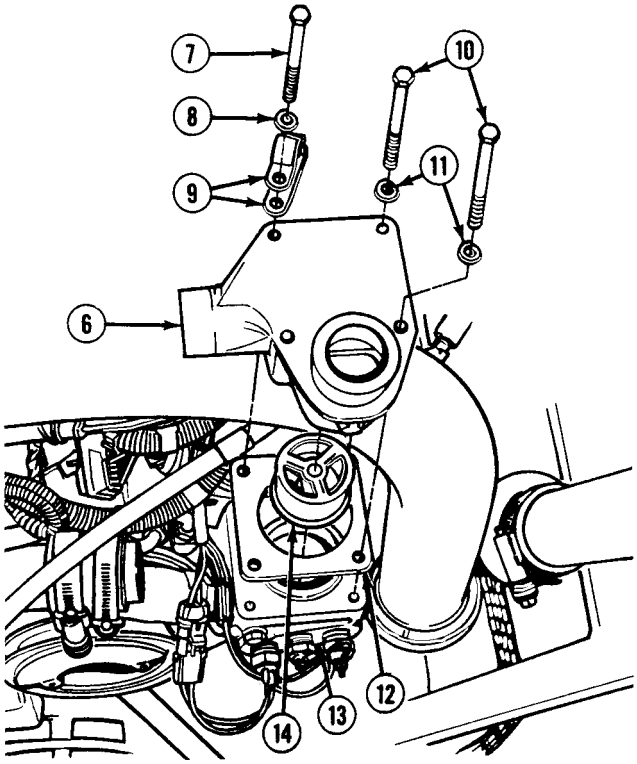
(21) Install left thermostat housing (6) on engine block (13) with two lockwashers (11) and screws (10). Tighten screws finger tight.

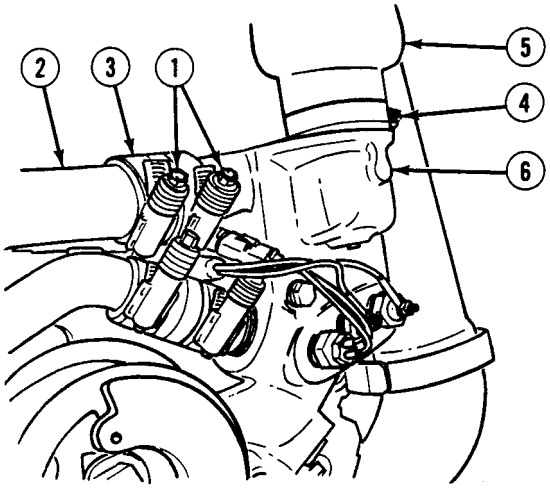
(22) Install clip (9), lockwasher (8) and screw (7) in left thermostat housing (6). Tighten screw finger tight.

(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/IV, 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.

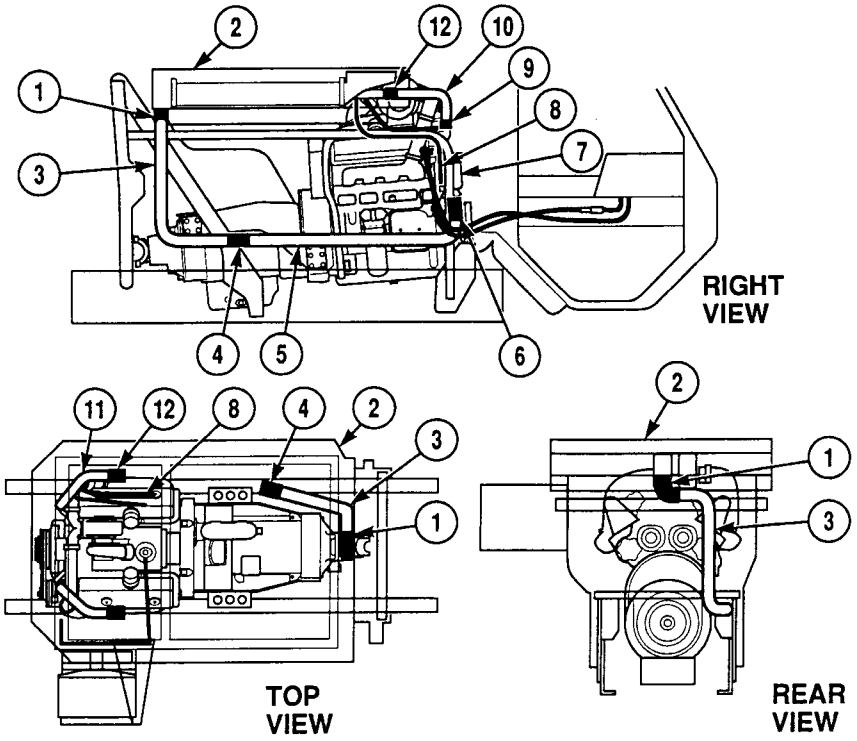
CAUTION

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

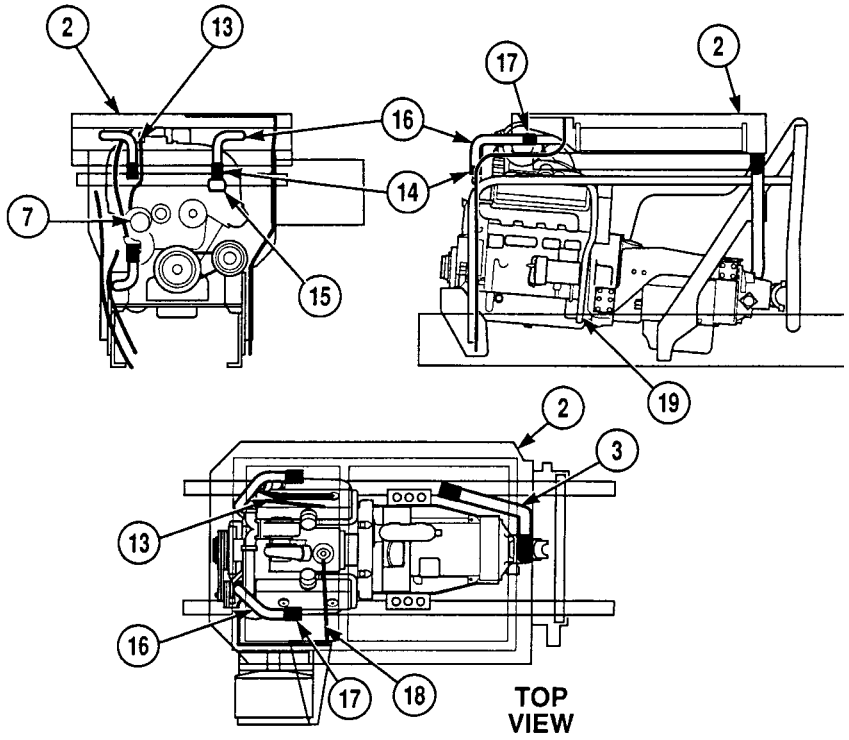


Hose	Type	From	To
(1)*	Rubber elbow	Rear radiator (2)	Tube (3)
(3)	Water pipe	Rubber elbow (1) at rear radiator	Hump hose (4) by transmission
(4)	Hump hose	Water pipe (3) right of transmission	Water pipe (5) right of transmission
(5)	Water pipe	Hump hose (4) right of transmission	Hump hose (6) under 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).

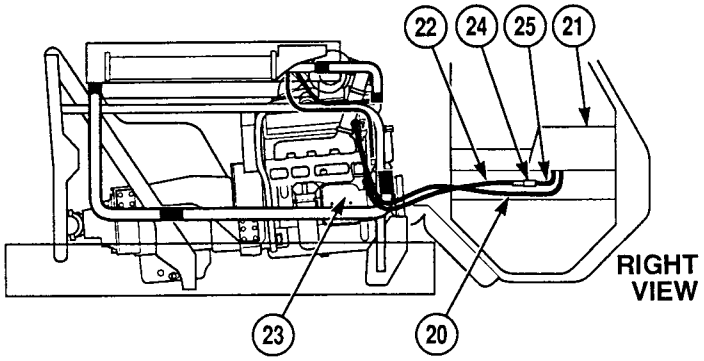
Table 6-1. Cooling System Hose Locations - CONT.

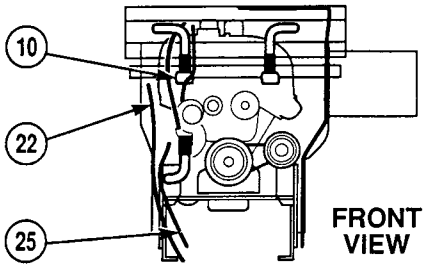


Hose	Type	From	To
(13)	JIC hose	Right front radiator (2)	Top rear water pump (7)
(14)* (16) (17)	Hump hose Water pipe Hump hose	Left thermostat (15) Hump hose (14) at left thermostat Water pipe (18)	Water pipe (16) Hump hose (17) at left front radiator Left front radiator (2)
(19)	Hose	Overflow tube 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)
(22)	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

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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

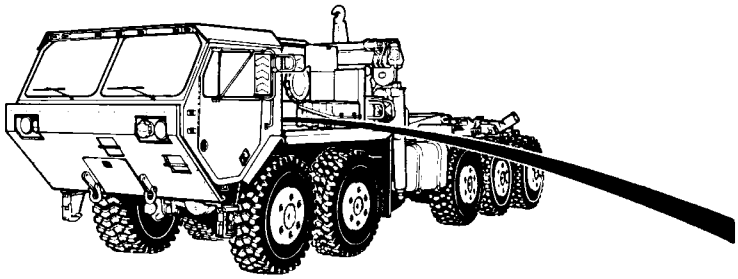
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Caps, Vise Jaw (Item 9, Appendix G)
Gage, Belt Tensioning (Item 26, Appendix G)
Puller Kit, Universal (Item 51, Appendix G)
Vise (Item 75, Appendix G)
Wrench, Combination, 1-1/16 Wrench (Item 78, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

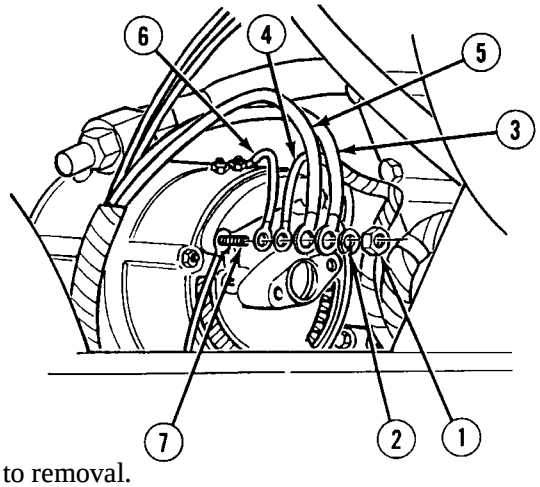
Materials/Parts
Alcohol, Isopropyl (Item 17, Appendix C)
Cloth, Cleaning (Item 31, Appendix C)
Sealant, Electrical (Item 68, Appendix C)
Tags, Identification (Item 88, Appendix C)
Tape, Pressure Sensitive (Item 94, Appendix C)

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.





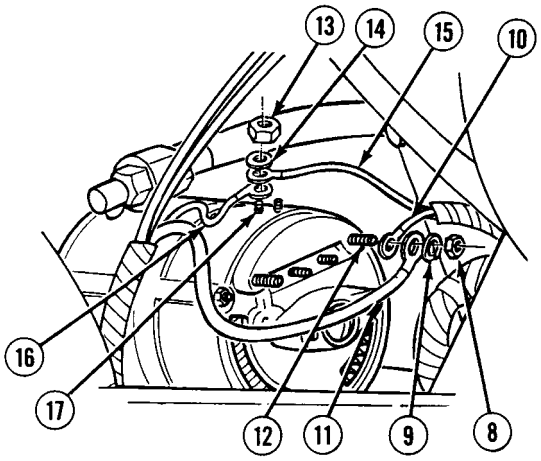
NOTE

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).

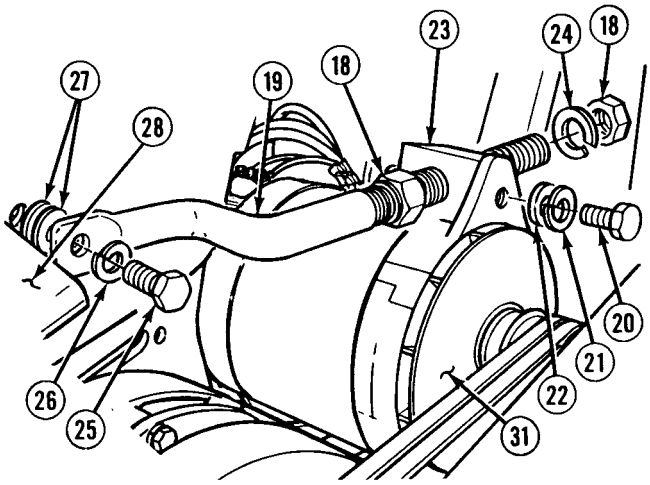
(5) Remove screw (20), lockwasher (21) and washer (22) from eye rod end (23) on alternator support arm (19). Discard lockwasher.

(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.



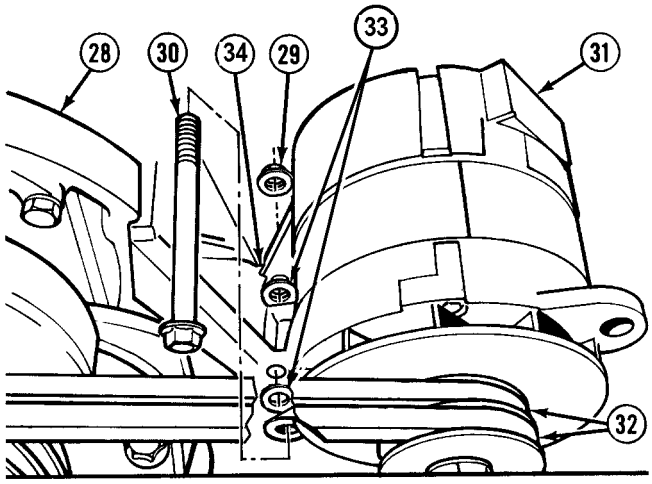
(8) Remove and discard locknut (29) from screw (30).

(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).

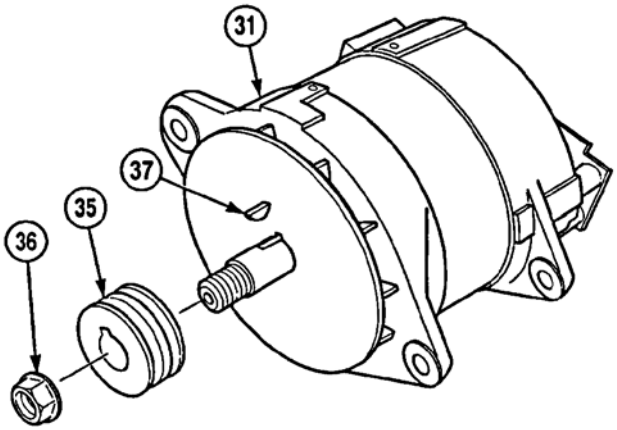
(11) Position pulley (35) in soft-jawed vise.

(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.

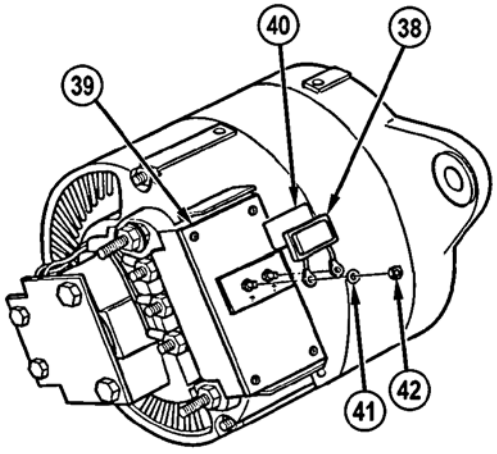
(1) Clean the bottom surface of capacitor (38) and cover (39) with an equal mixture of isopropyl alcohol and water, and let air dry.

(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).

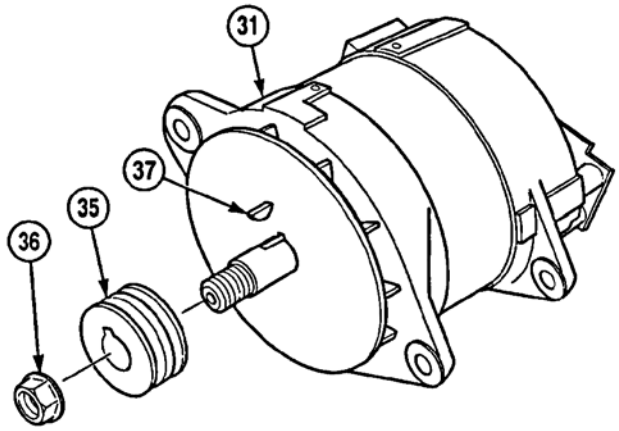


(6) Position key (37), pulley (35) and locknut (36) on alternator (31). Do not tighten.

(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.



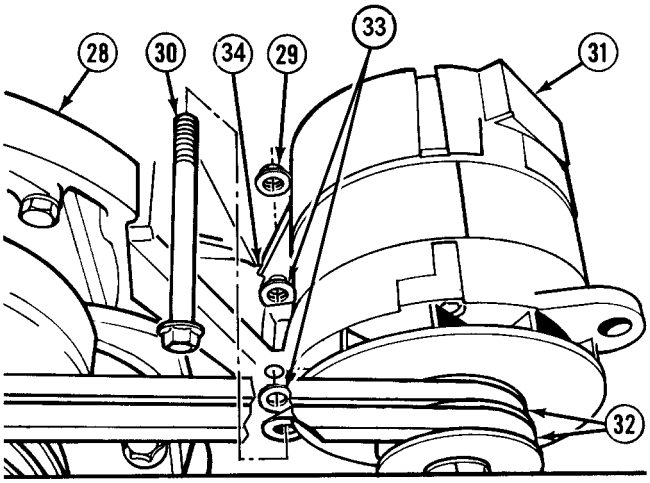
NOTE

- 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.

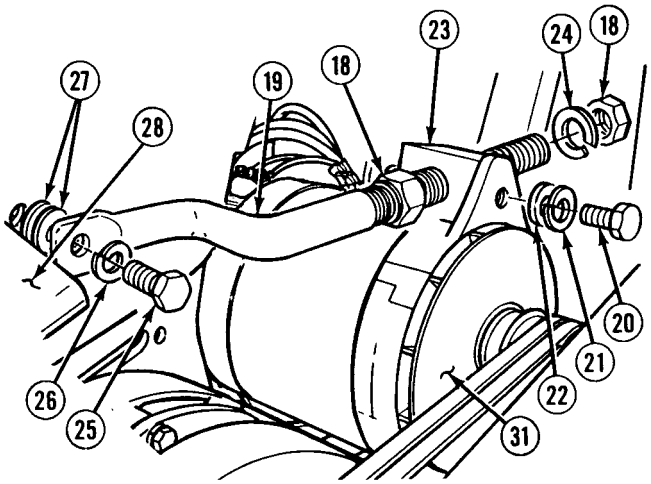
(13) Position washers (27) and alternator support arm (19) on engine (28) with lockwasher (26) and screw (25).

(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).



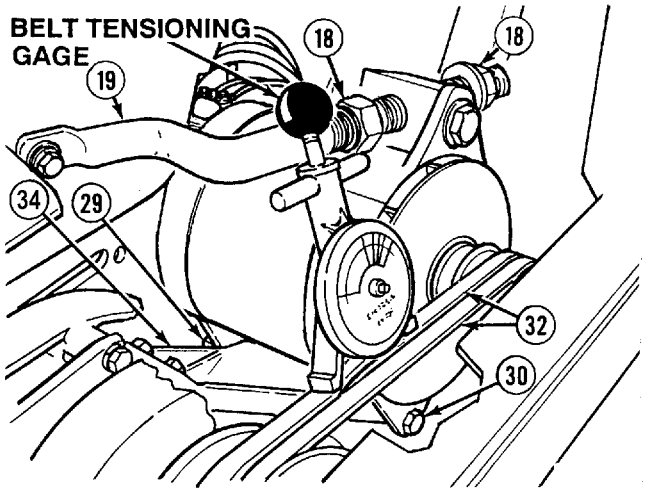
(18) Position belt tensioning gage on belts (32).

(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).

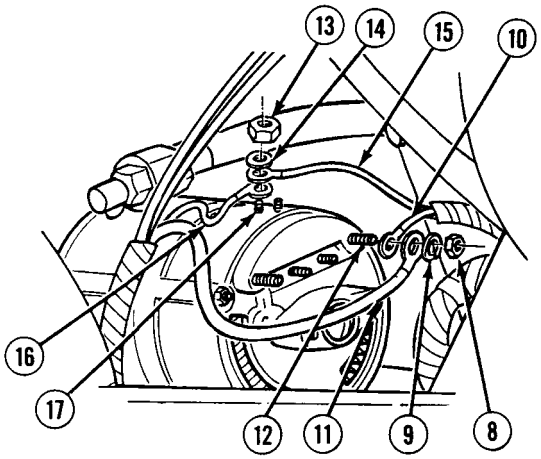
(22) Tighten locknut (29) on screw (30) and alternator mounting bracket (34) 95 to 105 lb-ft (129 to 142 N·m).



(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).

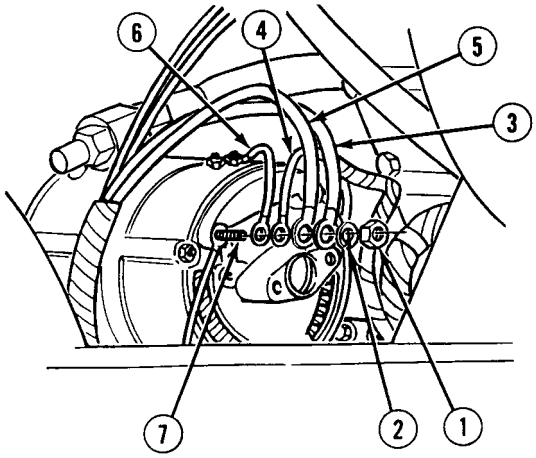
(25) Install wires 1275 (3), 1815 (4), 1435 (5) and 1057 (6), lockwasher (2) and nut (1) on negative terminal (7).



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

7-3. ALTERNATOR 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)
Caps, Vise Jaw (Item 9, Appendix G)
Gage, Belt Tensioning (Item 26, Appendix G)
Socket Set, 3/8 in. (Item 62, 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)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

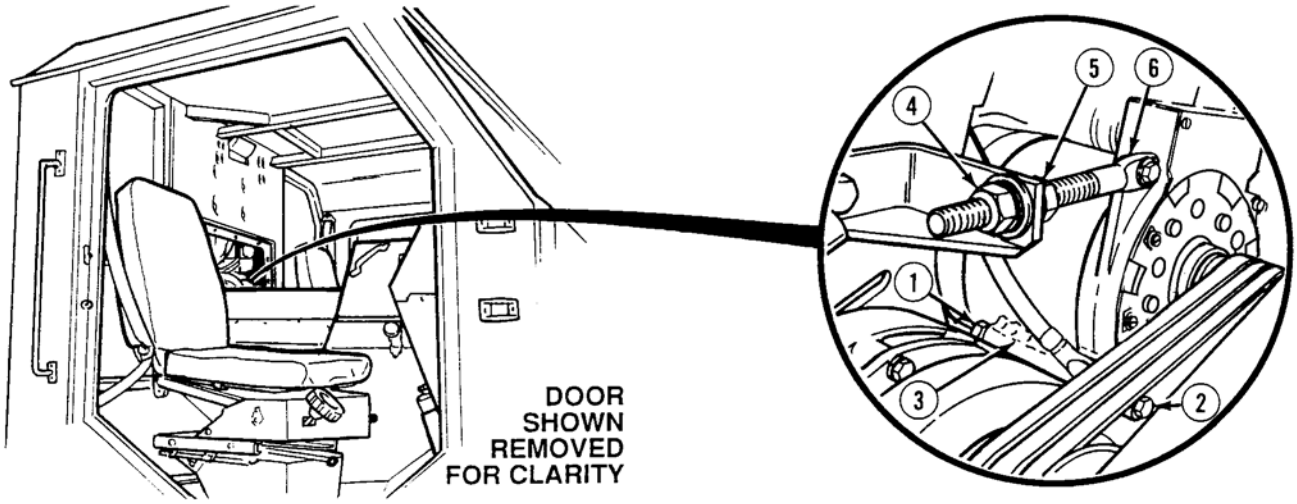
Materials/Parts
Sealant, Electrical (Item 68, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (Item 96, Appendix F)
Locknut (Item 137, Appendix F)

Materials/Parts - Continued
Lockwasher (Item 165, Appendix F)
Lockwasher (4) (Item 169, Appendix F)
Lockwasher (Item 173, Appendix F)
Lockwasher (2) (Item 177, Appendix F)
Lockwasher (Item 208, Appendix F)
Lockwasher (2) (Item 210, 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)
Cab engine access panel removed, (Para 17-24)
Left front noise panel removed, (Para 17-27)

a. Removal.



NOTE

Remove cable ties as required.

(1) Loosen nut (1) and screw (2) on bottom of alternator mounting bracket (3).

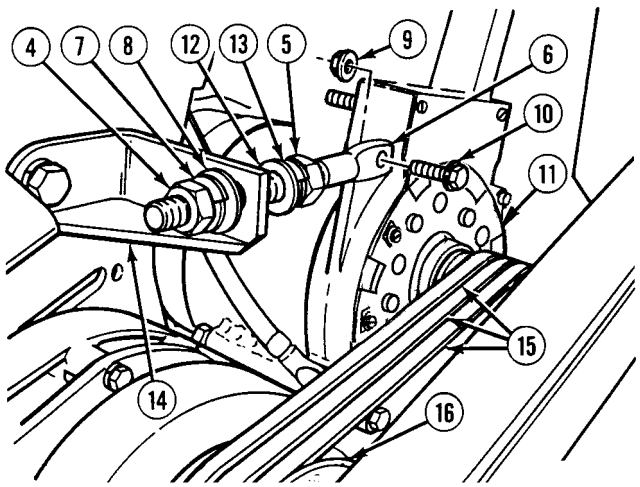
(2) Loosen nuts (4) and (5) on alternator support arm (6).

(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.

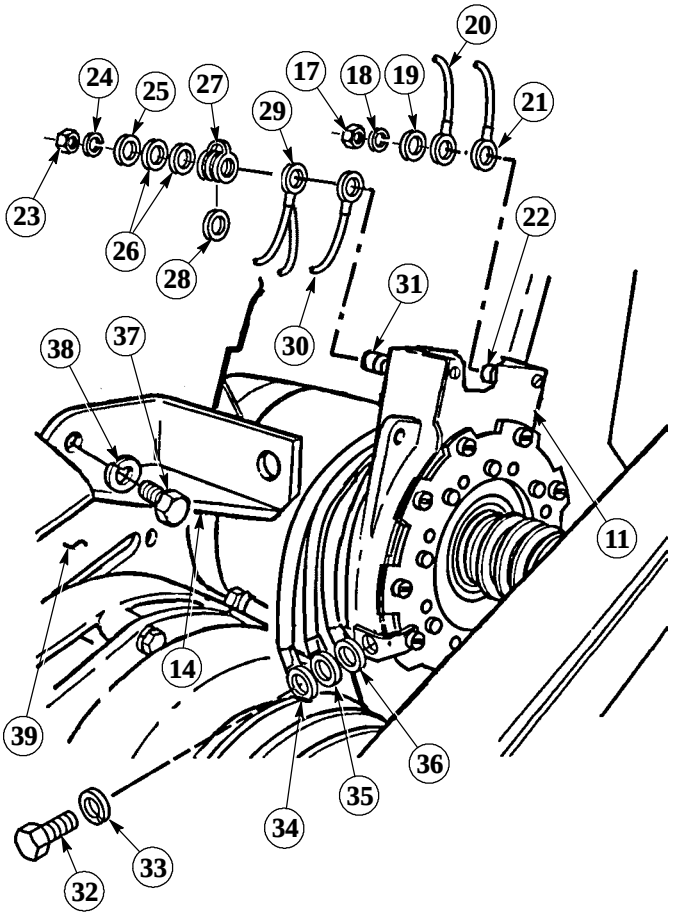
(8) Position washer (19) and nut (17) on 12 volt terminal (22).

(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.

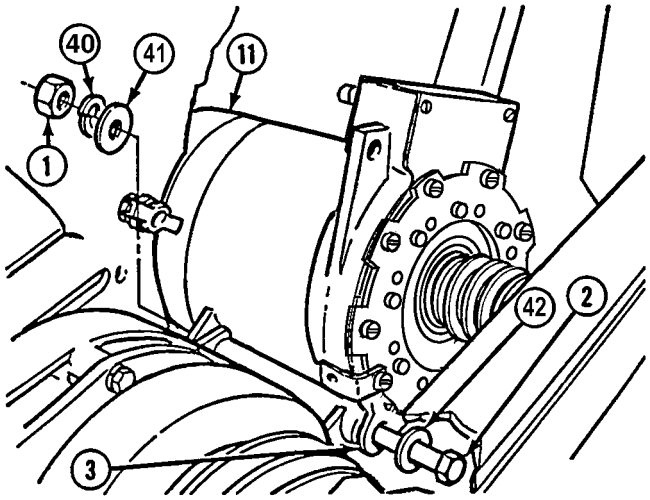


7-3. ALTERNATOR REPLACEMENT (200 AMP) (CONT).

NOTE

Note number and locations of washers prior to removal.

(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).

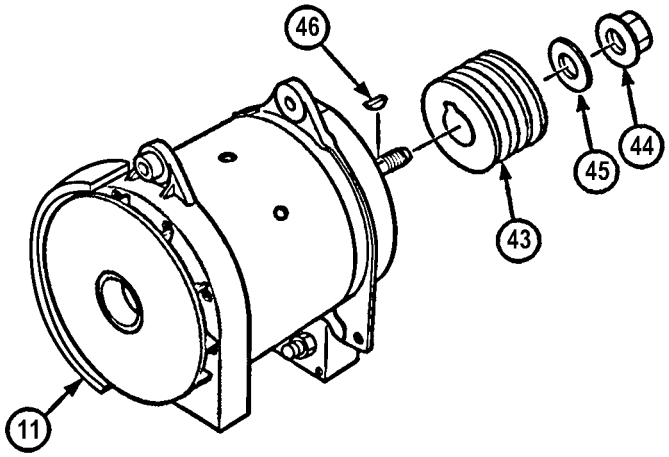
(15) Position pulley (43) in soft-jawed vise.

(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).

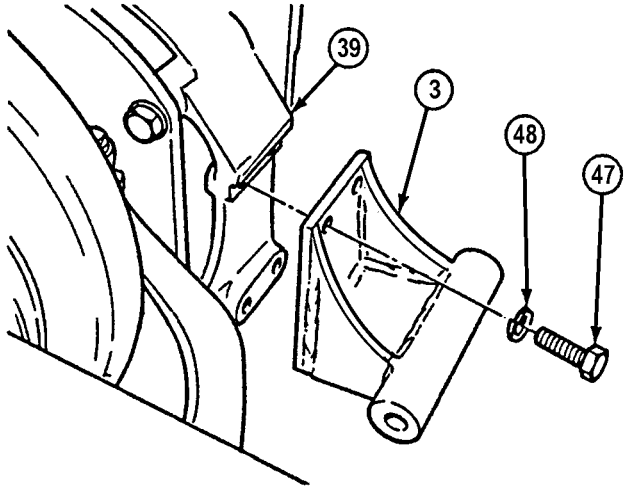
(19) Remove key (46) from alternator (11).



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.

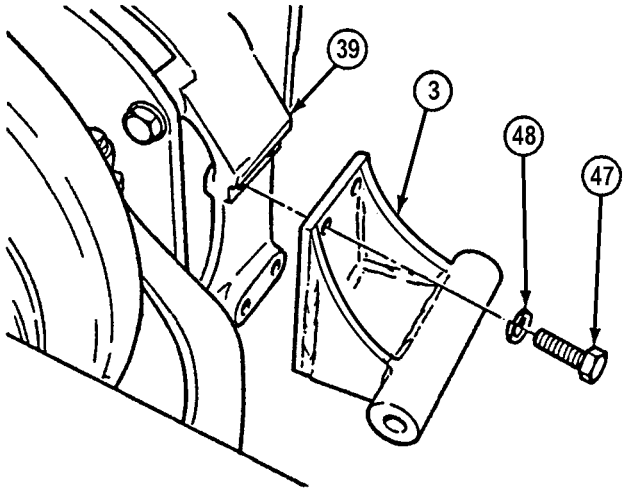


b. Installation

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.

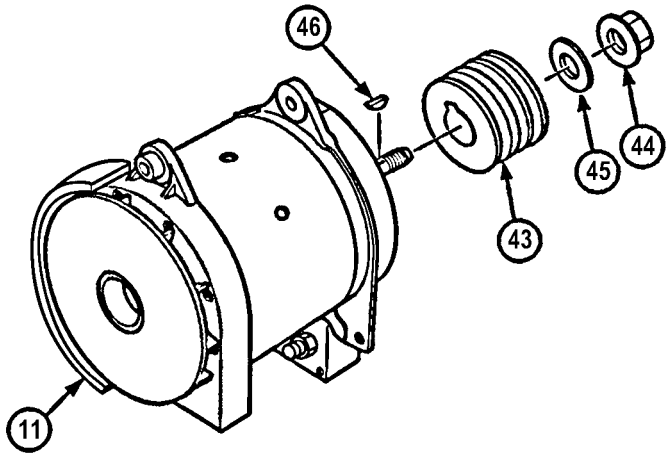


(2) Position key (46), pulley (43), washer (45) and locknut (44) on alternator (11).

(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

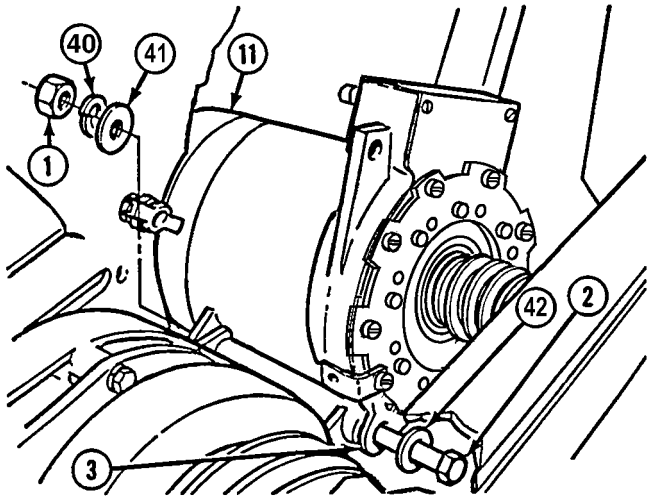
Alternator weighs 75 lbs (34 kg). Use the aid of an assistant to prevent possible injury to personnel.

NOTE

Ensure correct number of washers are installed at locations noted prior to removal.

(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).

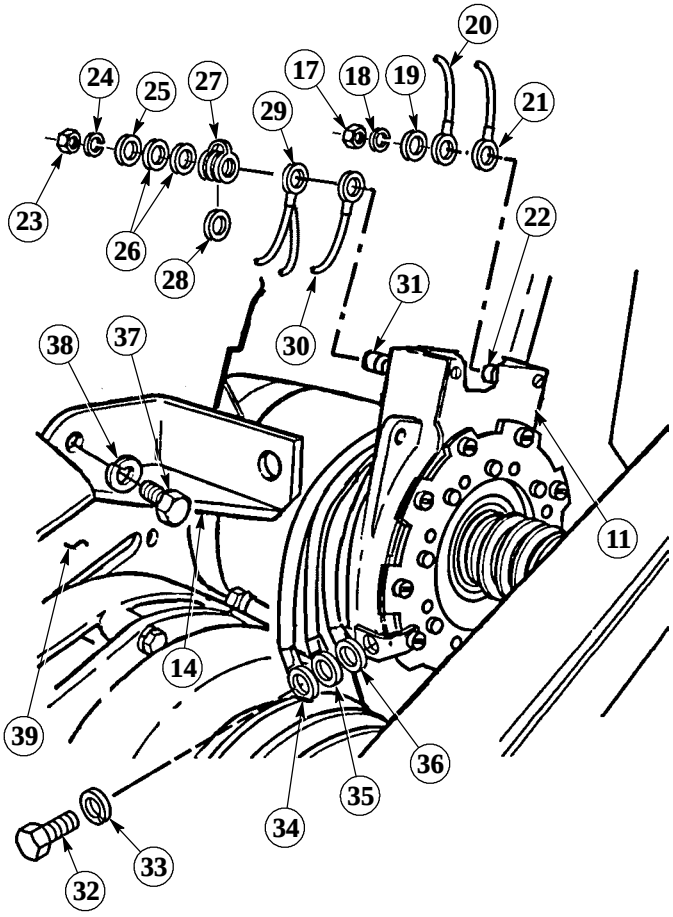
(12) Install wire 1281A (30), wire 1820/1953 (29), fuse link (27) with insulator washer (28), washer(s) (if removed) (26), washer (25), lockwasher (24) and nut (23) on 24 volt terminal (31).

(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).

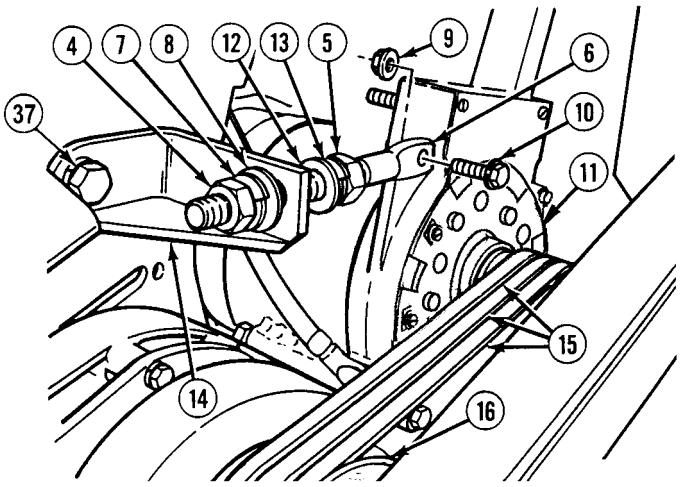
(19) Install nut (5), lockwasher (13) and washer (12) on alternator arm (6).

(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).

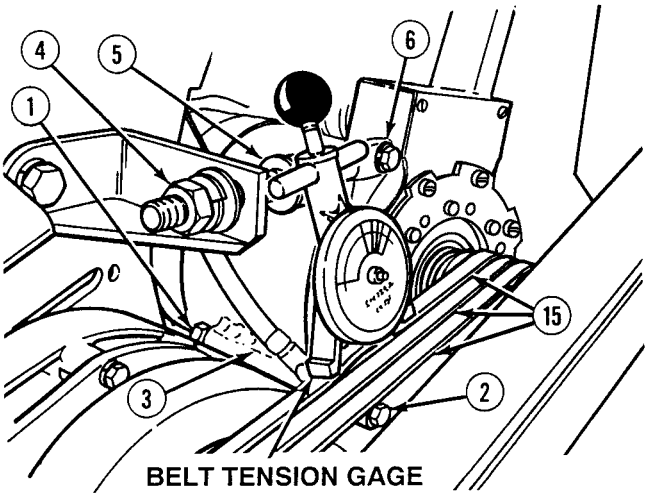
(25) Tighten nut (5) on alternator support arm (6) until alternator belts tension reaches 60 to 65 lbs (260 to 289 N).

(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).



BELT TENSION GAGE

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
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

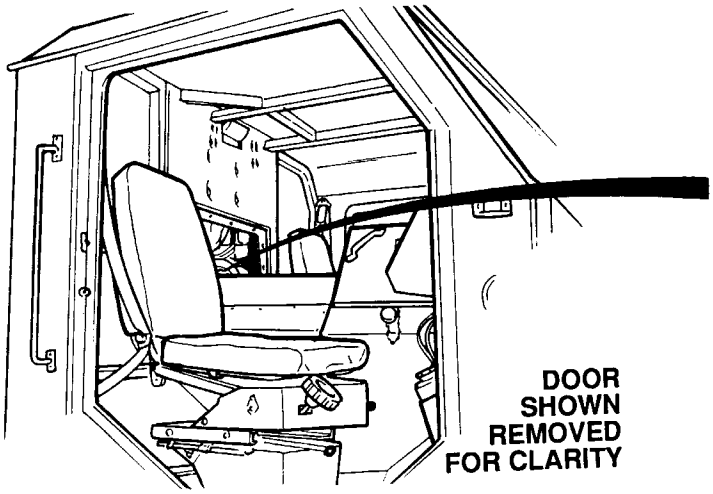
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Gage, Belt Tensioning (Item 26, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

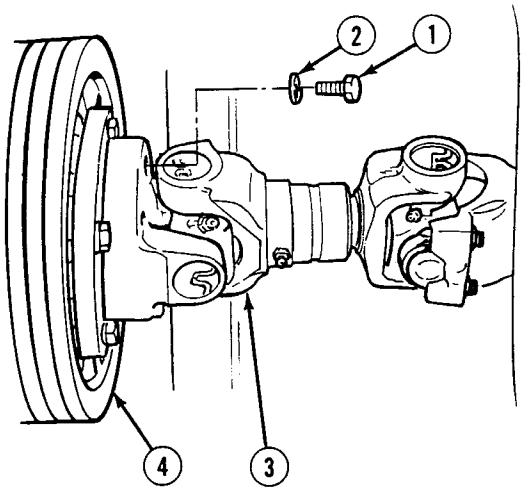
Materials/Parts
Sealing Compound (Item 73, Appendix C)
Locknut (Item 91, Appendix F)

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.

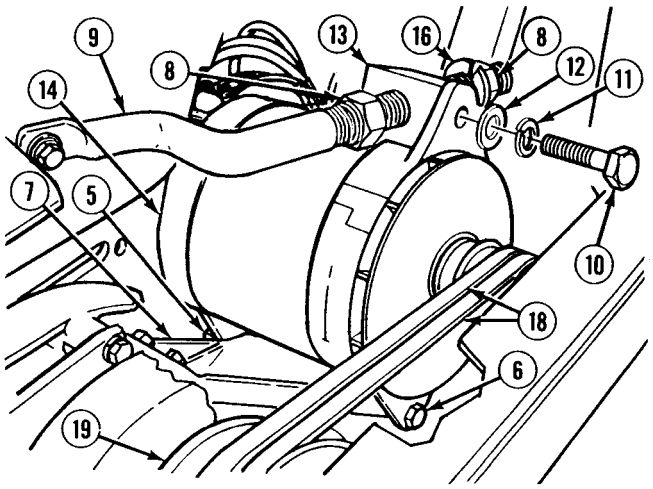
(3) Position locknut (5) on screw (6).

(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).

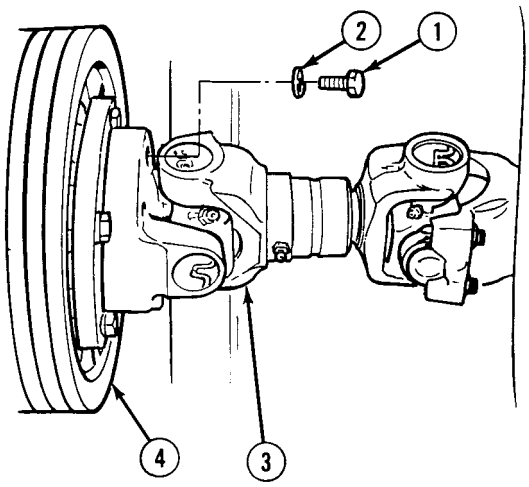
(3) Install washer (12), lockwasher (11) and screw (10) on alternator (14) and eye rod end (13). Tighten screw (10) to 50 to 55 lb-ft (68 to 75 N·m).

(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.

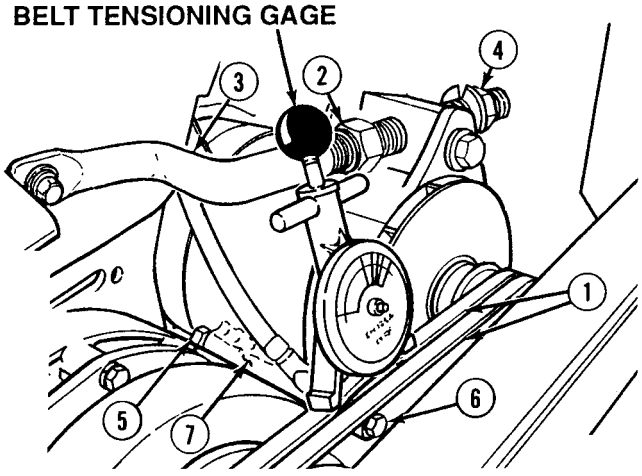
(6) Install pump drive shaft (3) on engine (4) with four lockwashers (2) and screws (1). Tighten screws 60 lb-ft (81 N·m).

c. Adjustment.

NOTE

If belts have been replaced, begin with Step (3).

BELT TENSIONING GAGE



(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
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

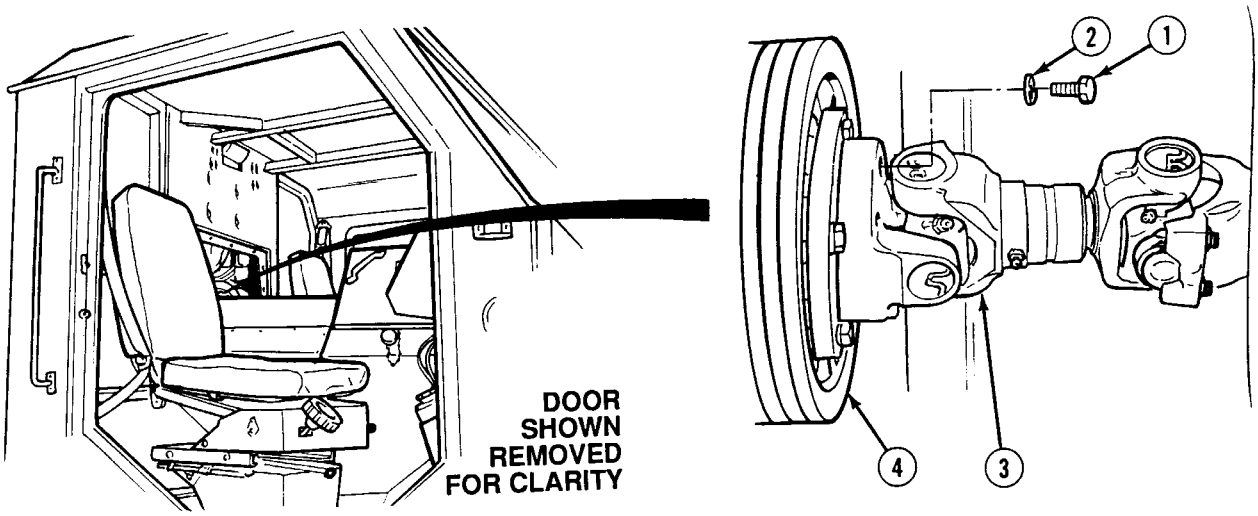
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Gage, Belt Tensioning (Item 26, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

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)

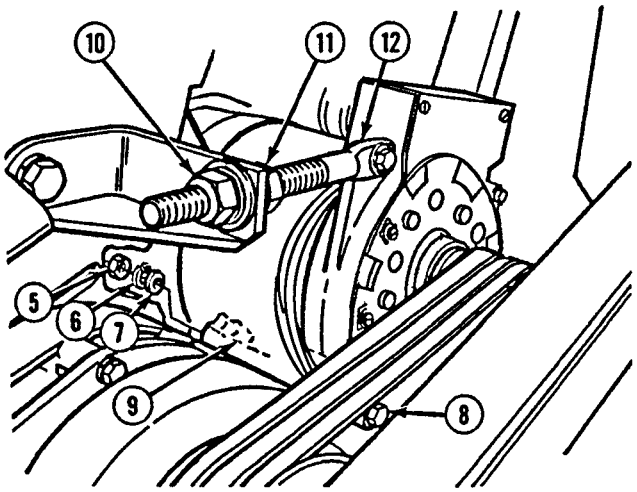
a. Removal.



(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).

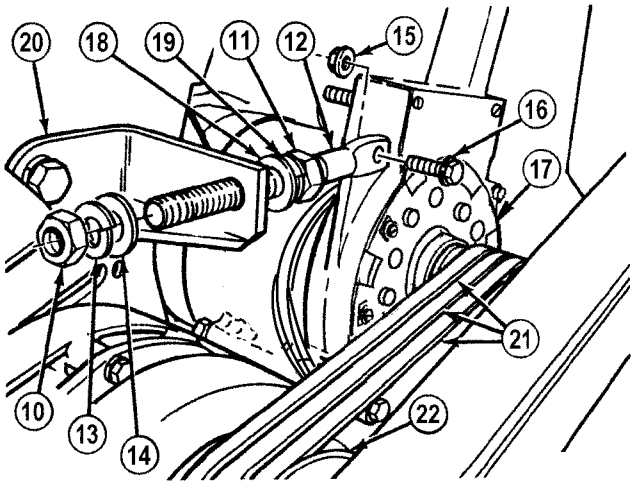


(4) Remove nut (10), lockwasher (13) and washer (14) from alternator support arm (12). Discard lockwasher.

(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).

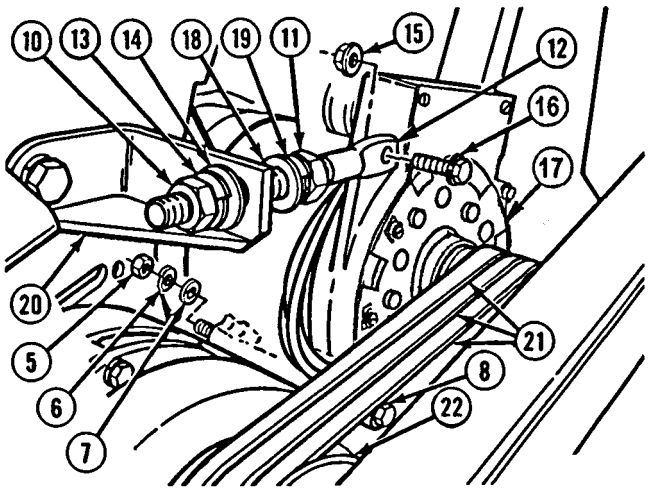
(2) Install nut (11), lockwasher (19) and washer (18) on alternator support arm (12).

(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).

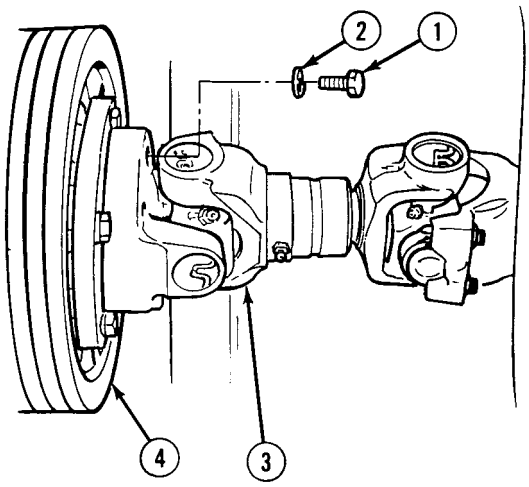
(6) Position washer (7), lockwasher (6) and nut (5) on screw (8).



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.



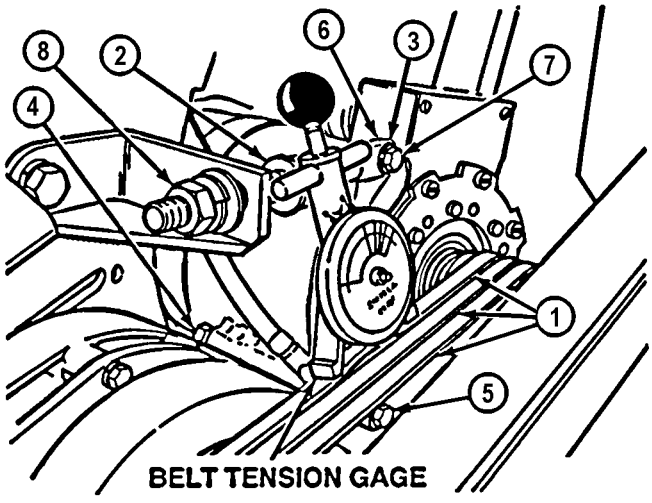
(7) Coat threads of four screws (1) with sealing compound.

(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).

(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

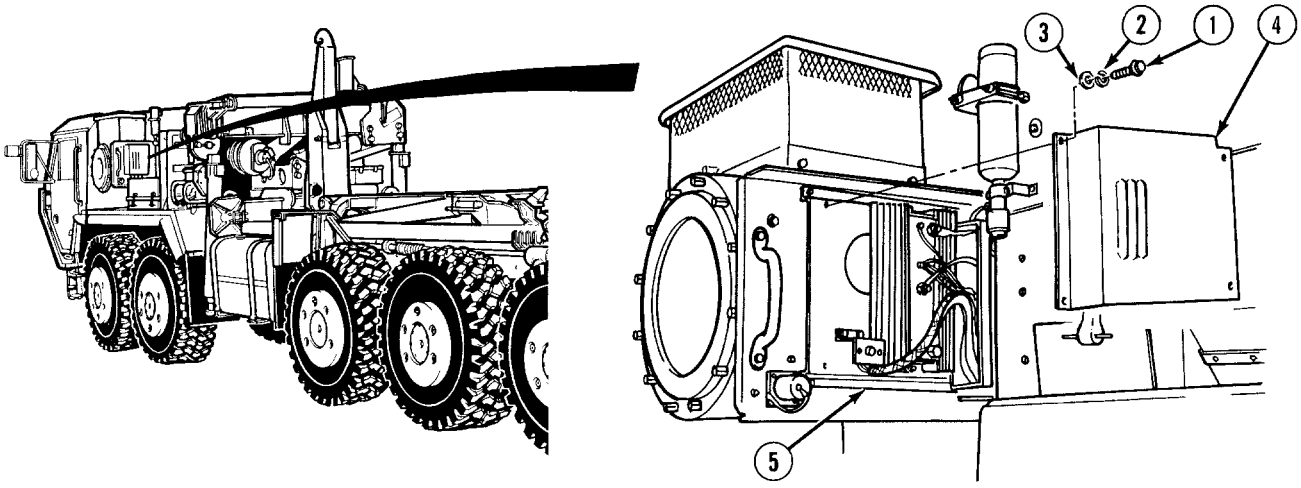
INITIAL SETUP

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.

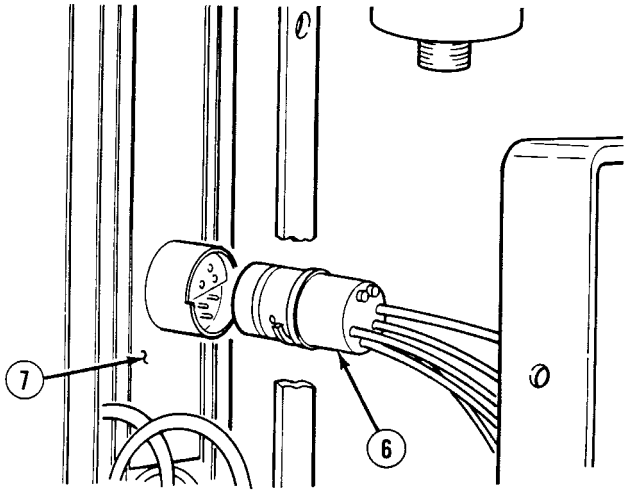


NOTE

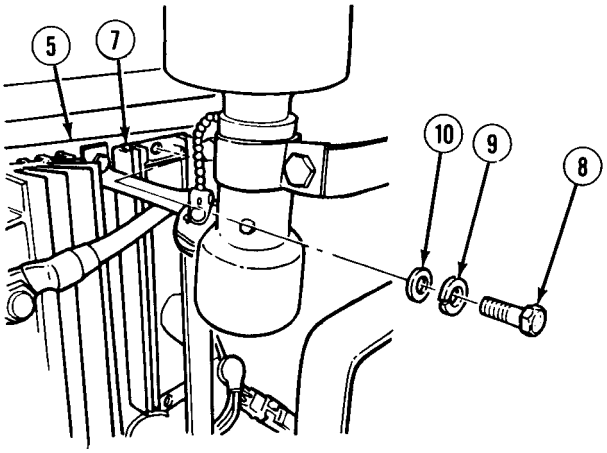
Remove cable ties as needed.

(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.

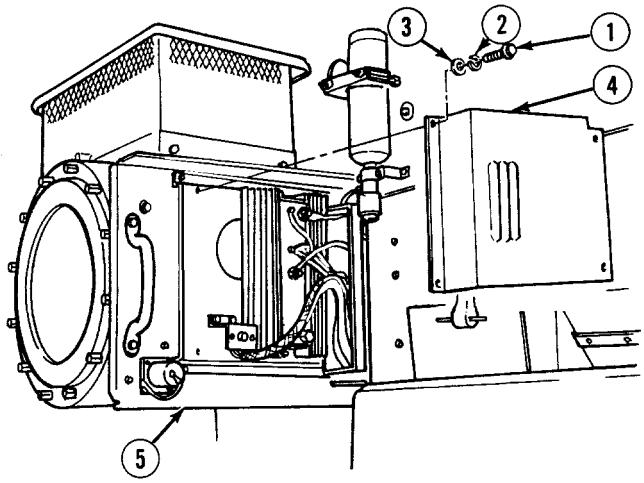
NOTE

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

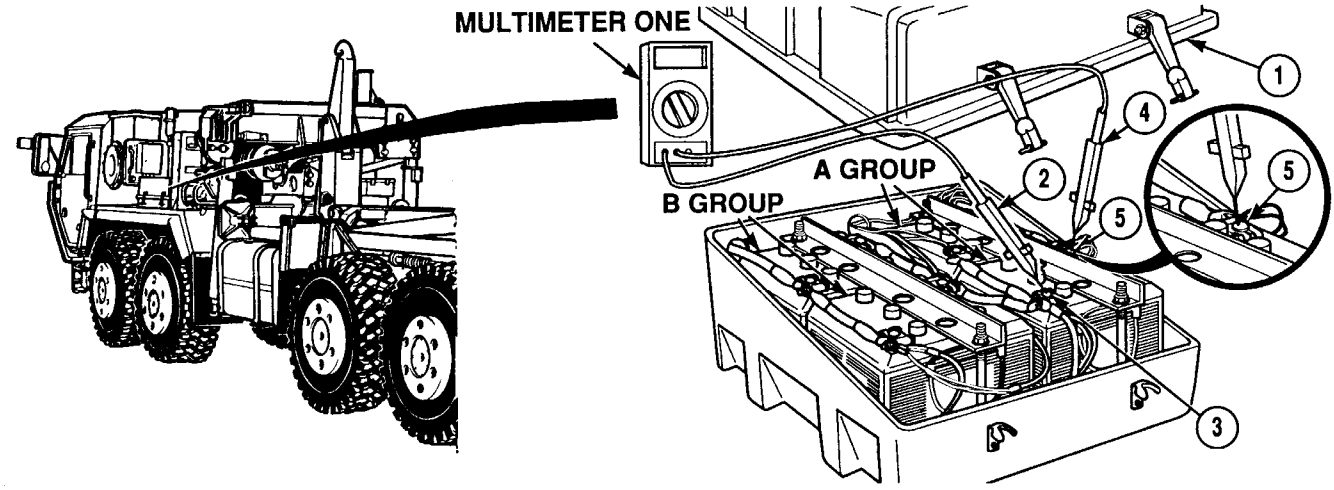
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Multimeter (2) (Item 44, Appendix G)

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.



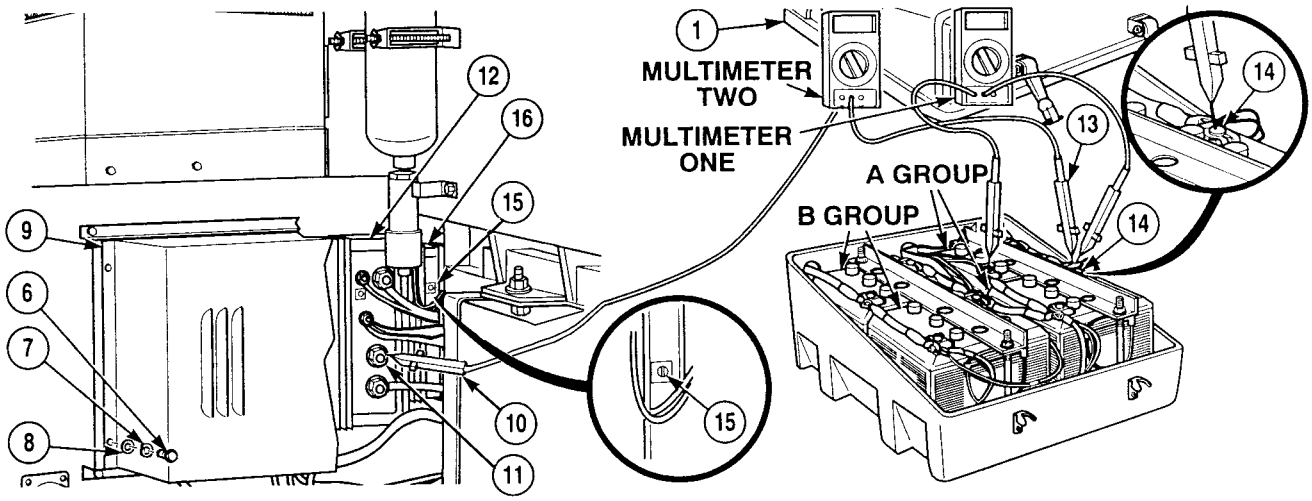
WARNING

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

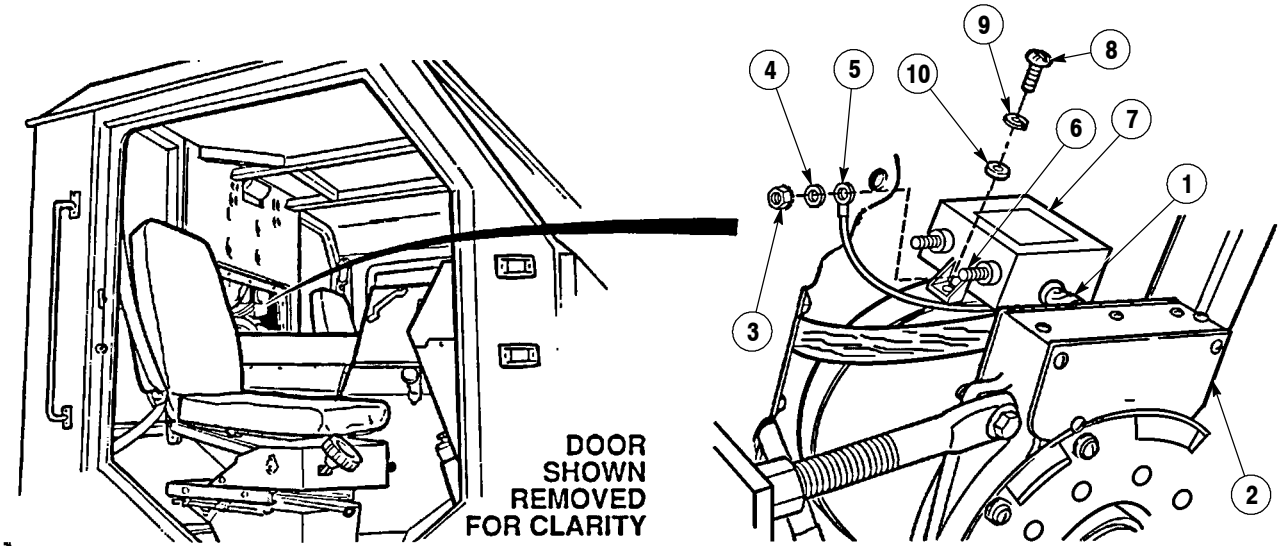
INITIAL SETUP

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).

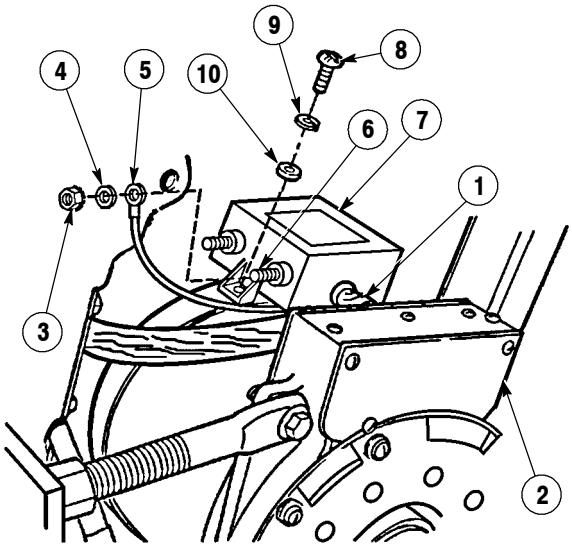
(2) Remove locknut (3), washer (4) and wire 1020B (5) from terminal (6) of regulator (7). Discard locknut.

(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

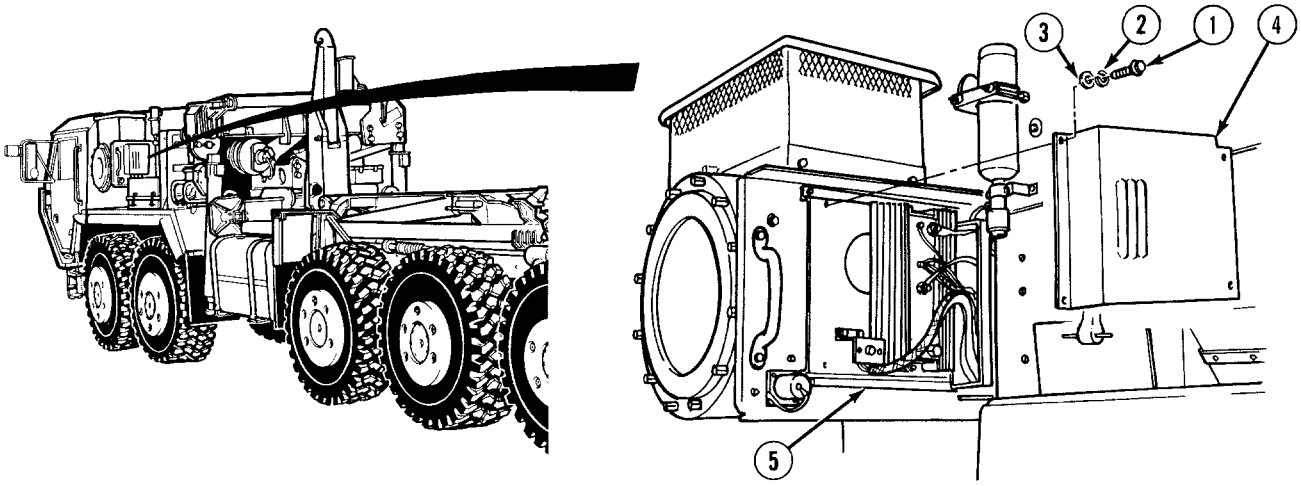
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

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

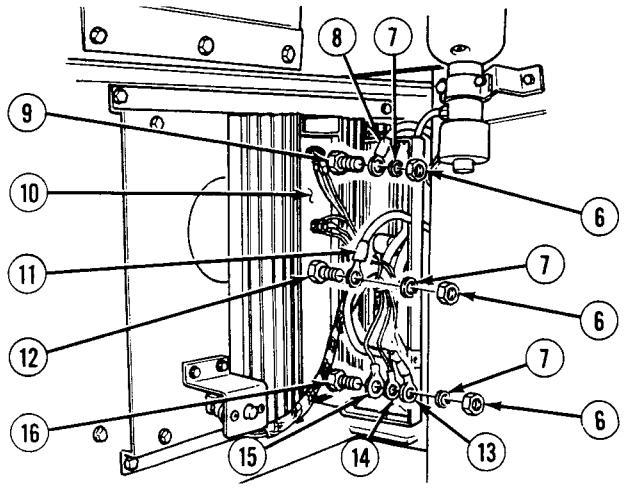
- Tag and mark all wires as needed
- Remove cable ties as needed.

(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.

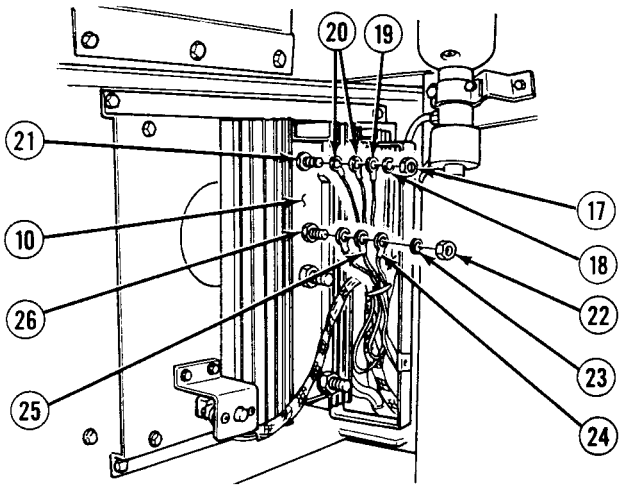
(3) Remove nut (6), lockwasher (7), wire 1278 (11) from 24 volt alternator stud (12) of DUVAC controller (10). Discard lockwasher.

(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.

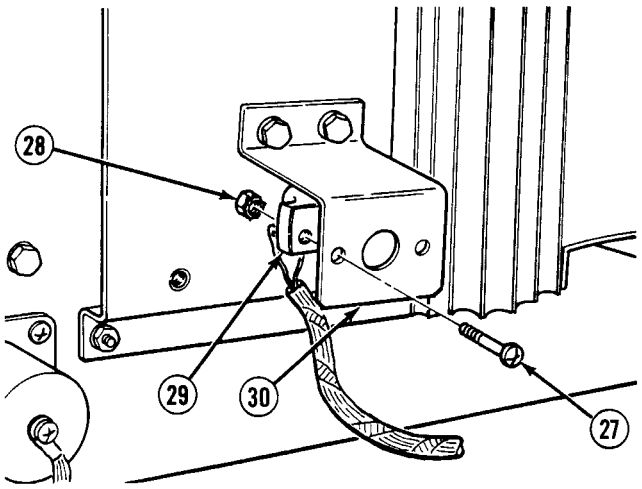


(5) Remove nut (17), lockwasher (18), brown wire (19), two wires 1020 (20) from IGN stud (21) of DUVAC controller (10). Discard lockwasher.

(6) Remove nut (22), lockwasher (23), black wire (24), two wires 1435 (25) from ground stud (26) of DUVAC controller (10). Discard lockwasher.

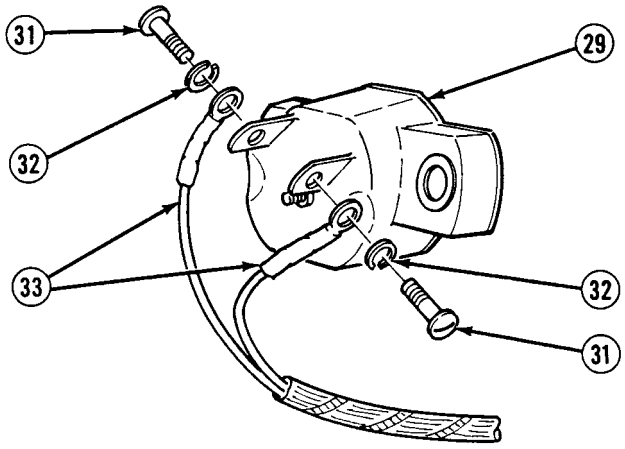


(7) Remove two screws (27), locknuts (28) and circuit breaker (29) from stand off bracket (30). Discard locknuts.

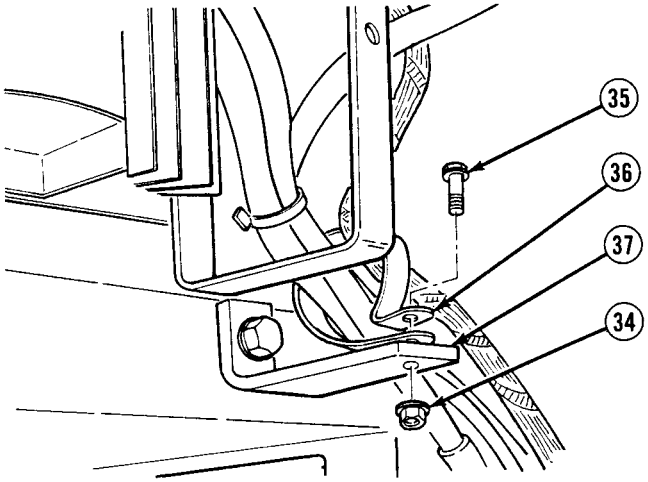


7-9. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) REPLACEMENT (145 AMP) (CONT).

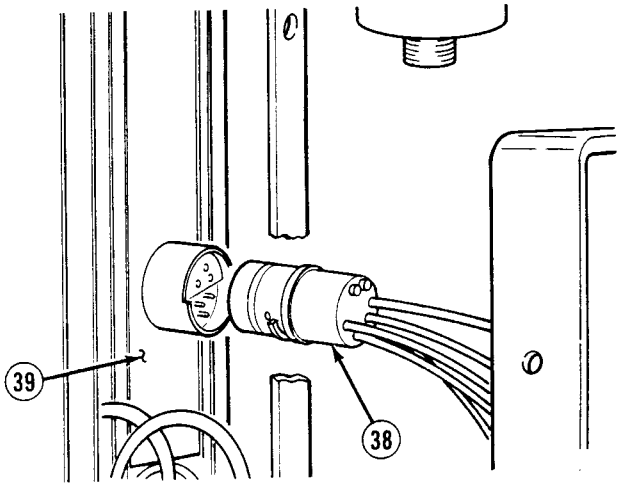
(8) Remove two screws (31), lockwashers (32), two wires 1020 (33) from circuit breaker (29). Discard lockwashers.



(9) Remove locknut (34), screw (35), cushion clip (36) from bracket (37). Discard locknut.

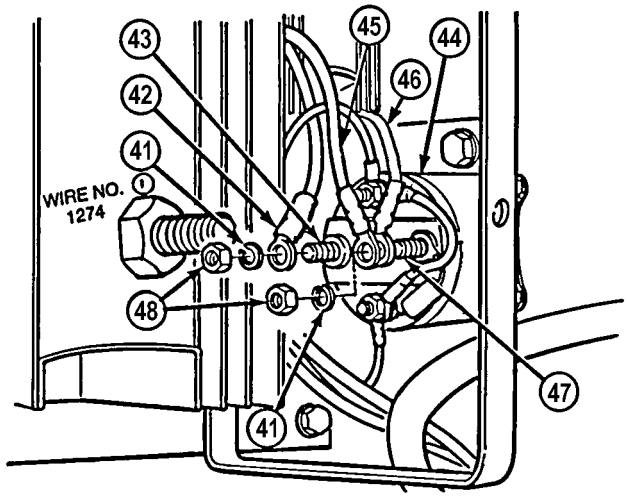


(10) Disconnect voltage regulator harness (38) from voltage regulator (39).



(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.

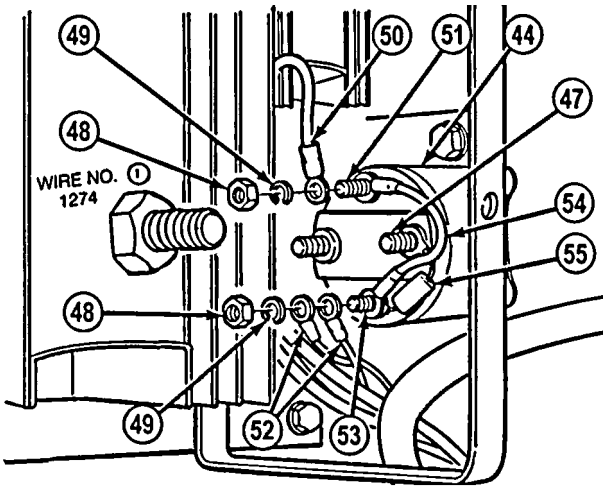


(13) Remove nut (48), lockwasher (49) and wire 1021A (50) from stud (51) of 24 volt solenoid switch (44). Discard lockwasher.

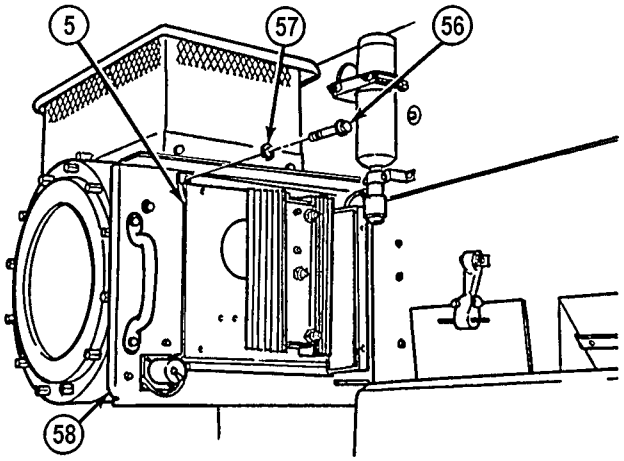
(14) Remove nut (48), lockwasher (49) and two wires 1435 (52) from stud (53) of 24 volt solenoid switch (44). Discard lockwasher.

(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).

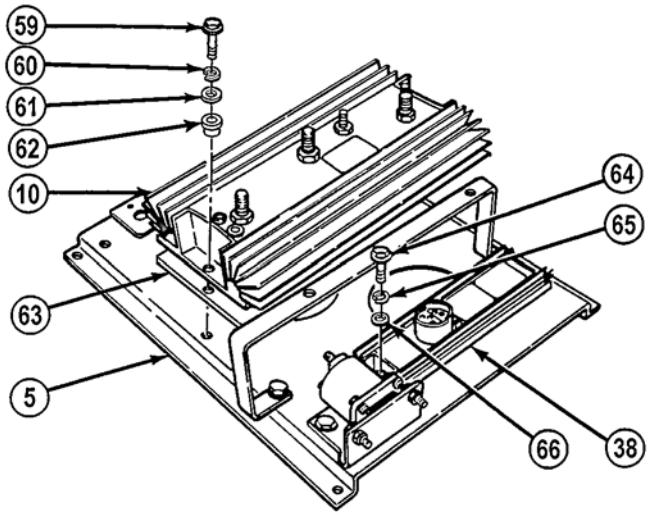
(18) Position electric bracket (5) on clean work bench.

NOTE

Nylon shoulder washers and insulator plate may not be present in Step (19).

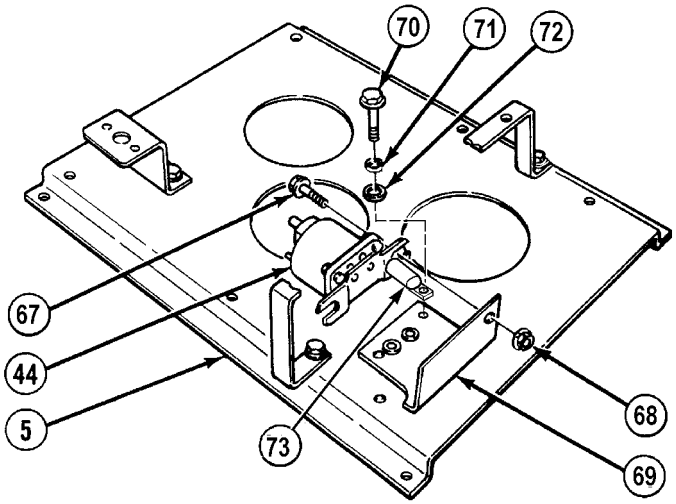
(19) Remove two screws (59), lockwashers (60), washers (61), nylon shoulder washer (62), DUVAC controller (10) and insulator plate (63) from electric bracket (5). Discard lockwashers.

(20) Remove two screws (64), lockwashers (65), washers (66) and voltage regulator (38) from electric bracket (5). Discard lockwashers.



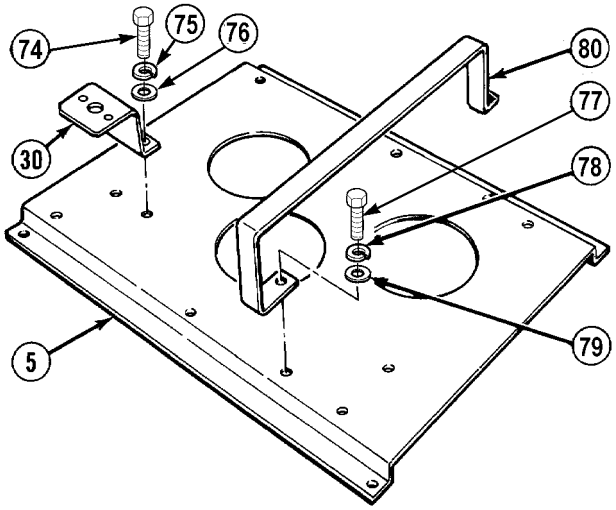
(21) Remove two screws (67), locknuts (68) and solenoid switch (44) from solenoid switch bracket (69). Discard locknuts.

(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.



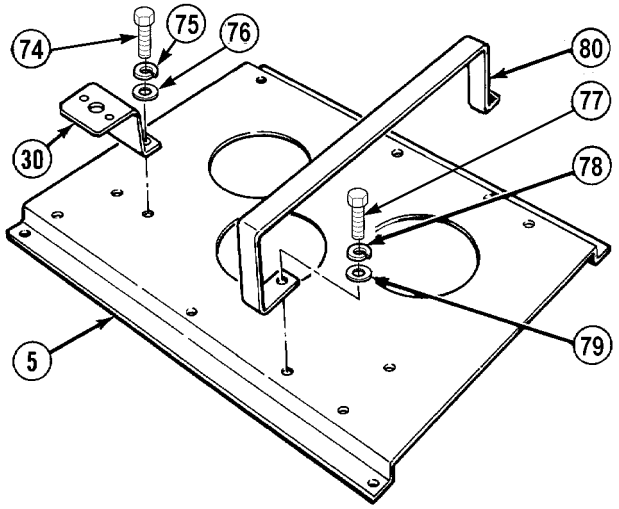
b. Installation.

NOTE

Install cable ties as needed.

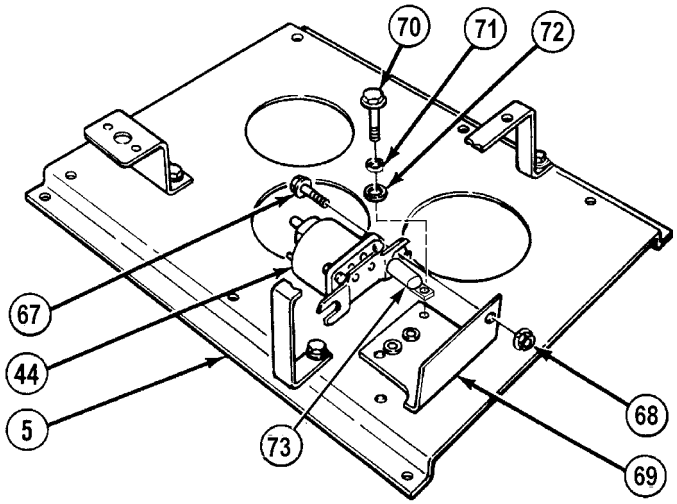
(1) Install mounting bracket (80), two washers (79), lockwashers (78) and screws (77) on electric bracket (5).

(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).

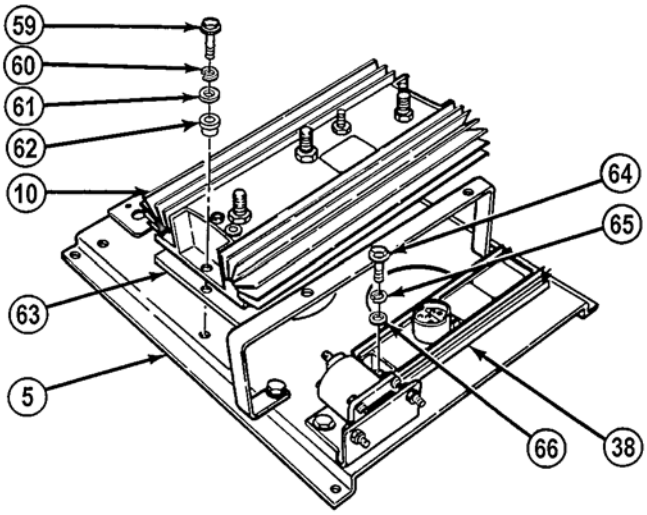


(5) Install voltage regulator (38), two washers (66), lockwashers (65) and screws (64) on electric bracket (5).

CAUTION

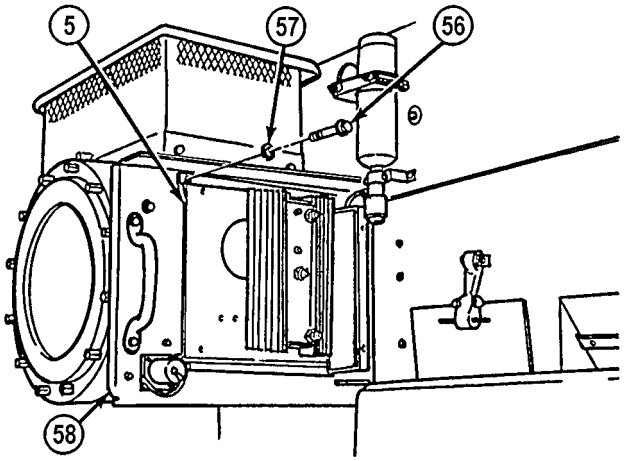
Ensure an insulator plate and two nylon shoulder washers are installed in Step (6). If these items were not present during removal, they must be ordered and installed. Failure to comply may result in damage to equipment.

(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).

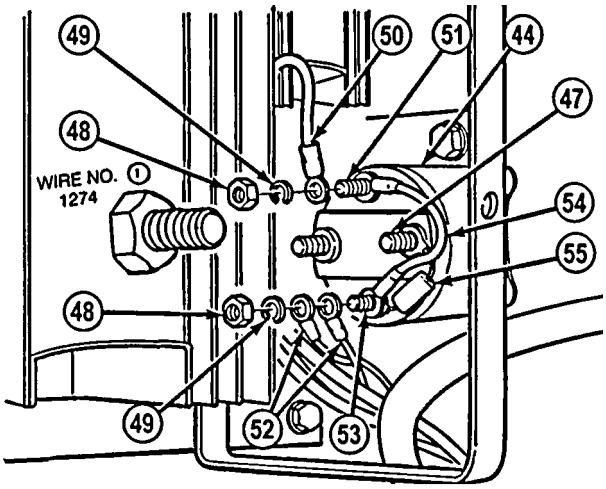


(8) Install capacitor (55) on studs (53) and (47).

(9) Install jumper diode wire (54) with negative terminal on stud (51) and positive terminal on stud (53).

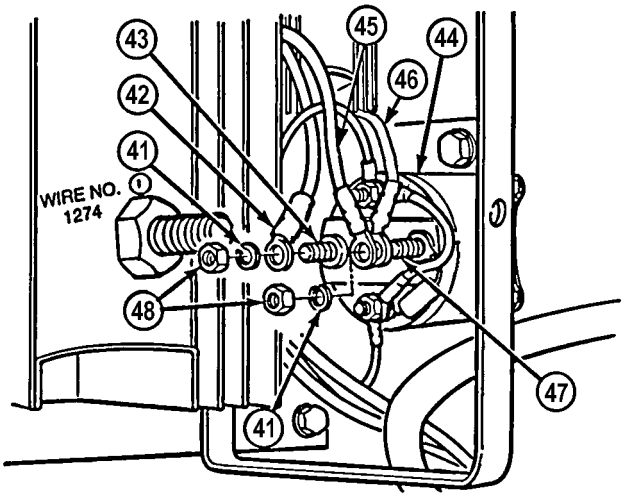
(10) Install two wires 1435 (52), lockwasher (49) and nut (48) on stud (53) of 24 volt solenoid switch (44).

(11) Install wire 1021A (50), lockwasher (49) and nut (48) on stud (51) of 24 volt solenoid switch (44).

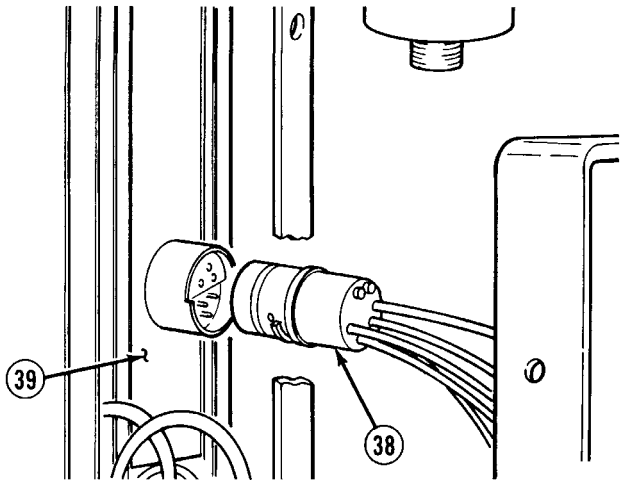


(12) Install wire 1045 (45), capacitor wire (46), lockwasher (41) and nut (40) on stud (47) of 24 volt solenoid switch (44).

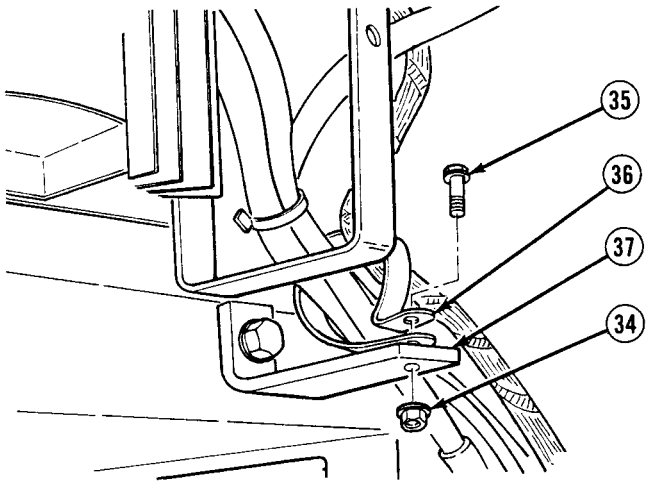
(13) Install wire 1281 (42), lockwasher (41) and nut (40) on stud (43) of 24 volt solenoid switch (44).



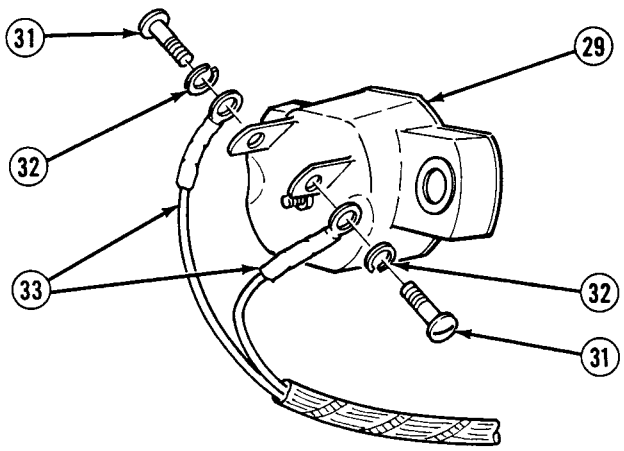
(14) Connect voltage regulator harness (38) on voltage regulator (39).



(15) Install cushion clip (36), screw (35) and locknut (34) on bracket (37).

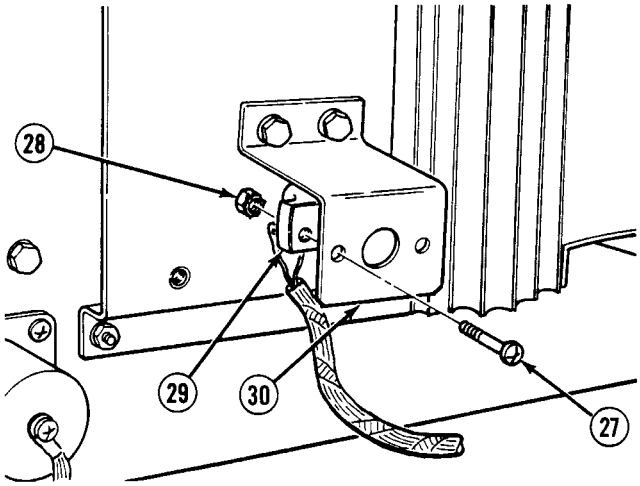


(16) Install two wires 1020 (33), lockwashers (32) and screws (31) on circuit breaker (29).



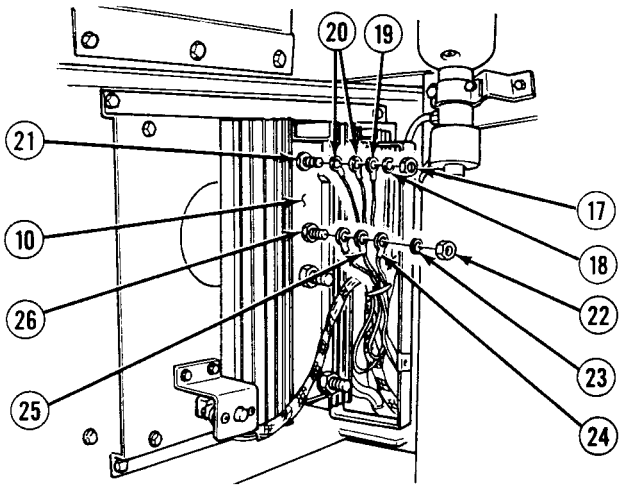
7-9. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) REPLACEMENT (145 AMP) (CONT).

(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).

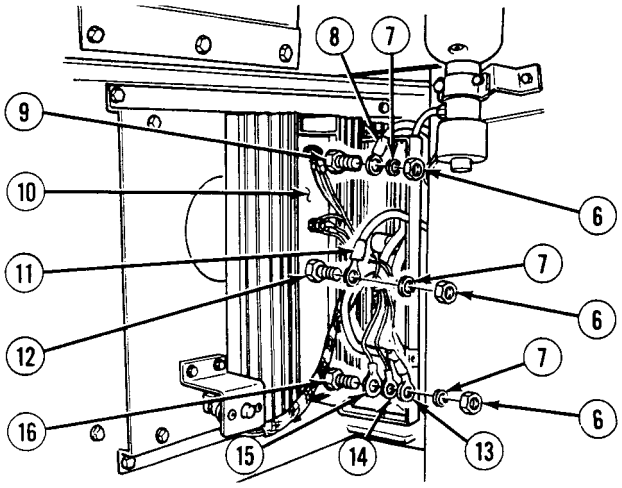
(19) Install two wires 1020 (20), brown wire (19), lockwasher (18) and nut (17) on IGN stud (21) of DUVAC controller (10).



(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).

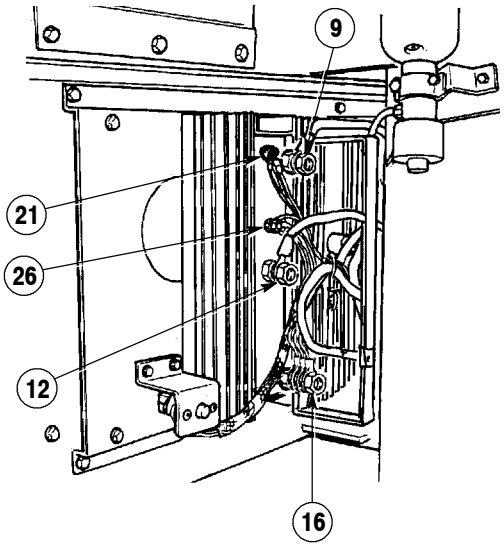
(22) Install wire 1277 (8), lockwasher (7) and nut (6) on 24 volt battery stud (9) of DUVAC controller (10).

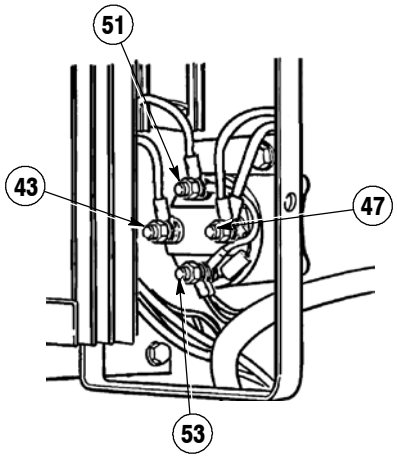


WARNING

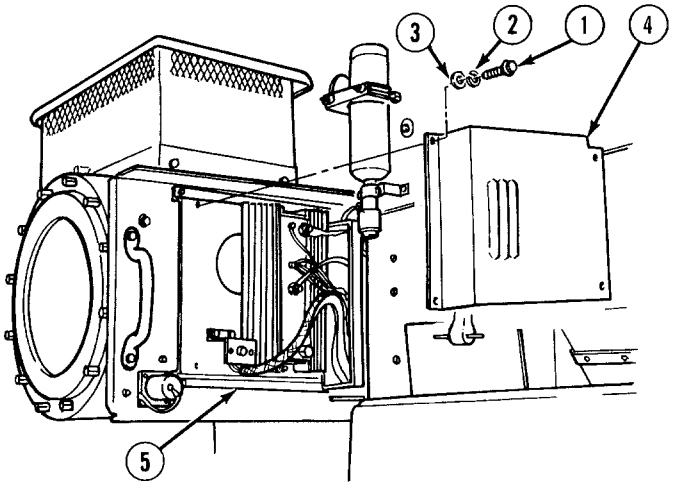
Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.

(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

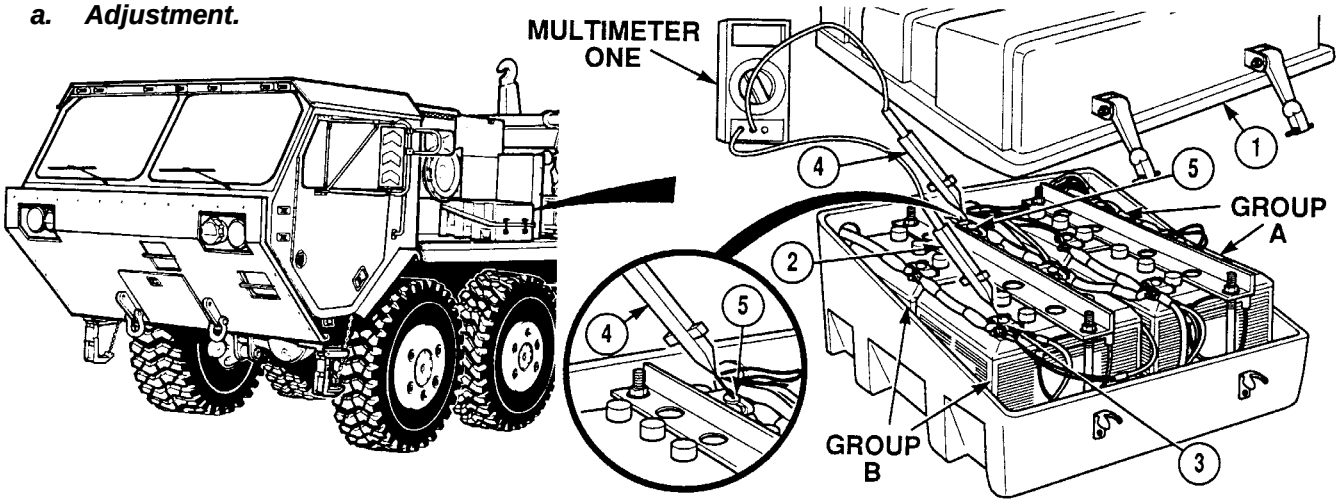
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Multimeter (2) (Item 44, Appendix G)

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.



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 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.

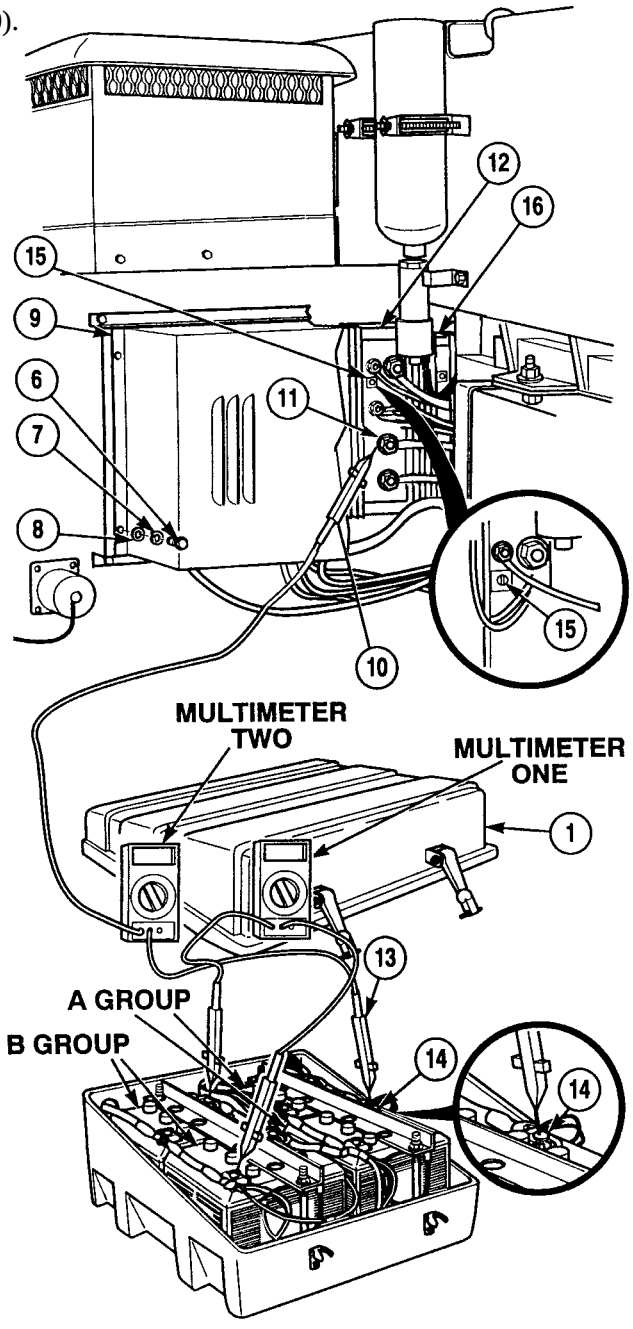
NOTE

- 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

7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP).

This task covers:

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

INITIAL SETUP

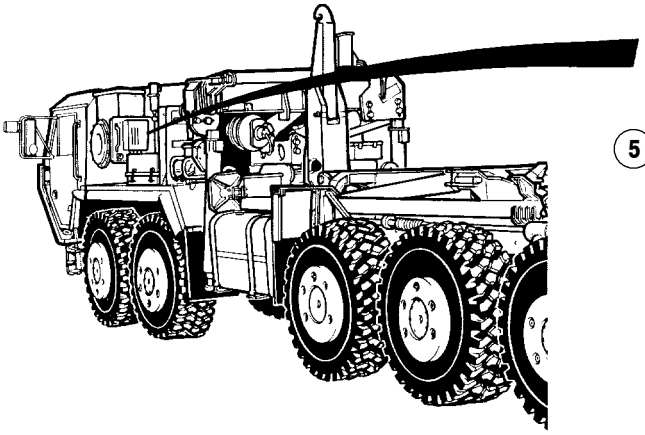
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

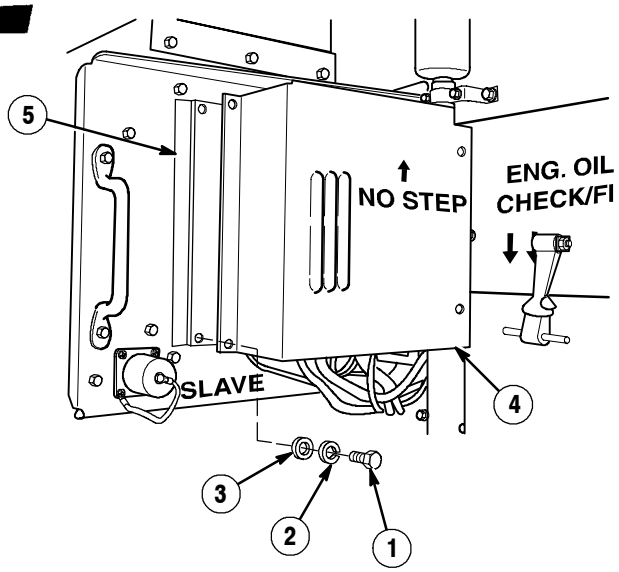
Materials/Parts
Cable Tie (Item 26, Appendix C)
Sealant, Electrical (Item 68, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 103, Appendix F)
Locknut (3) (Item 106, Appendix F)
Lockwasher (2) (Item 193, Appendix F)

Materials/Parts - Continued
Lockwasher (2) (Item 194, Appendix F)
Lockwasher (16) (Item 195, Appendix F)
Lockwasher (4) (Item 196, Appendix F)
Lockwasher (2) (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)
Left side noise panel removed, (Para 17-28)

a. Removal.





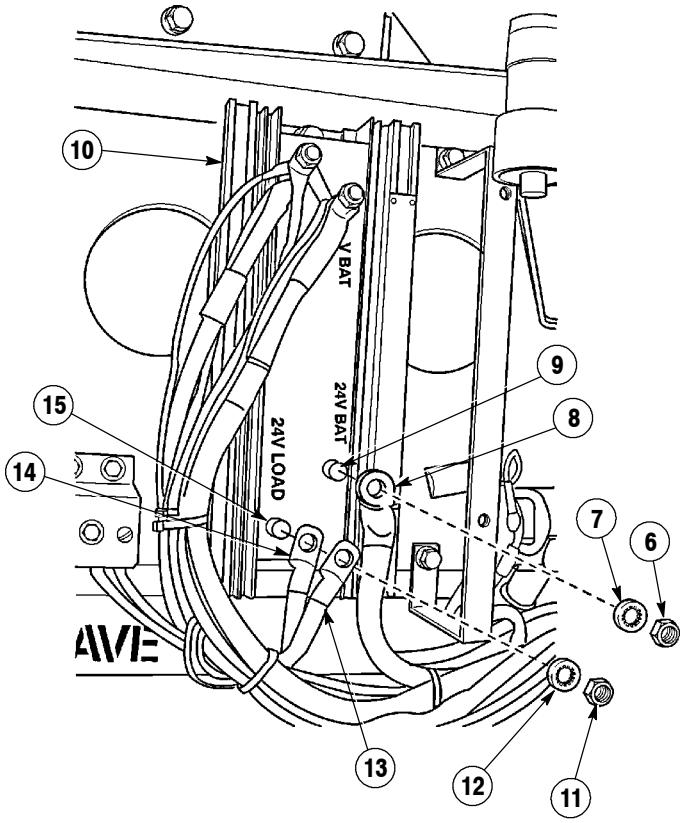
NOTE

- 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.

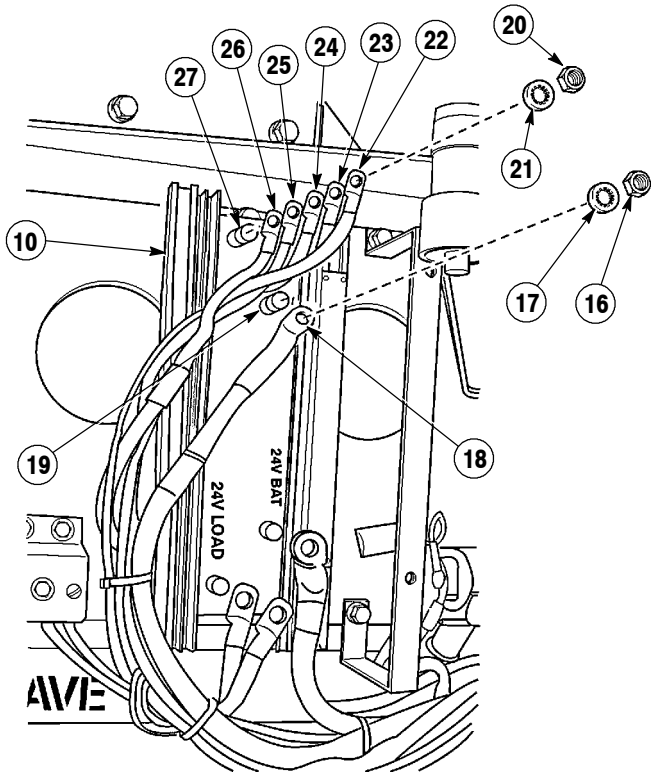
(2) Remove nut (6), lockwasher (7) and wire 1281A (8) from 24 volt battery terminal (9) of polarity protection controller (10). Discard lockwasher.

(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.



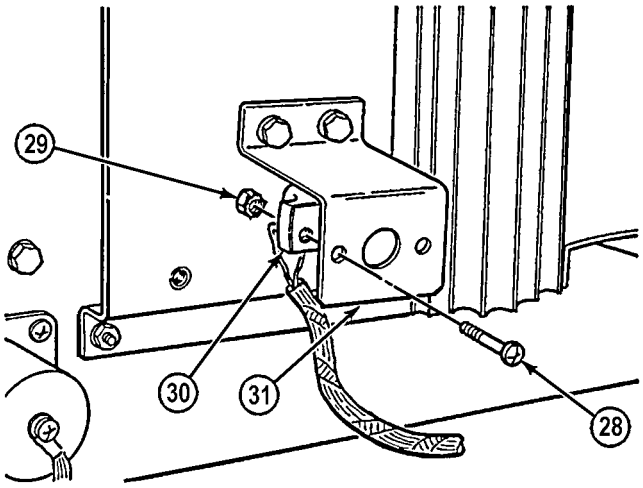
(4) Remove nut (16), lockwasher (17), and wire 1566 (18) from 12 volt battery terminal (19) of polarity protection controller (10). Discard lockwasher.

(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.

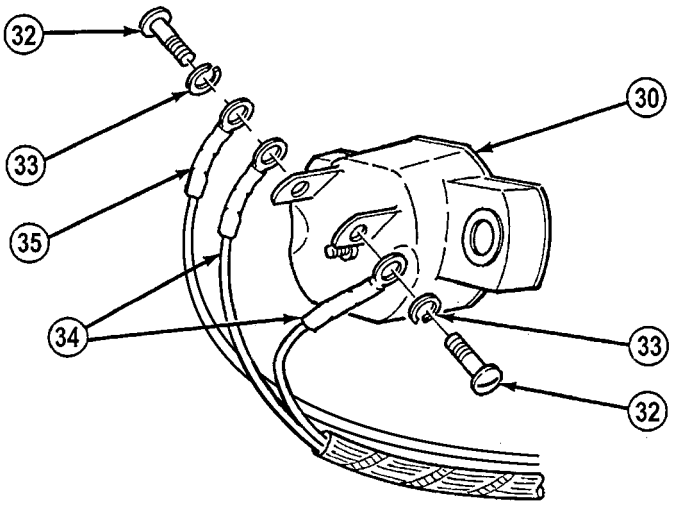


7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

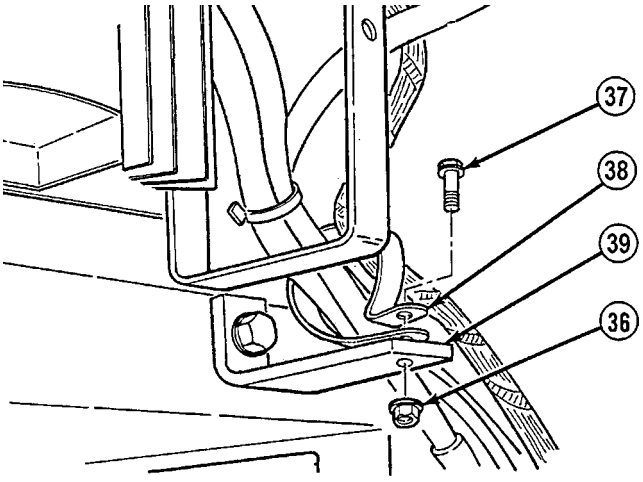
(6) Remove two screws (28), locknuts (29) and circuit breaker (30) from stand off bracket (31). Discard locknuts.



(7) Remove two screws (32), lockwashers (33), two wires 1020 (34), and wire 1020A (35) from circuit breaker (30). Discard lockwashers.

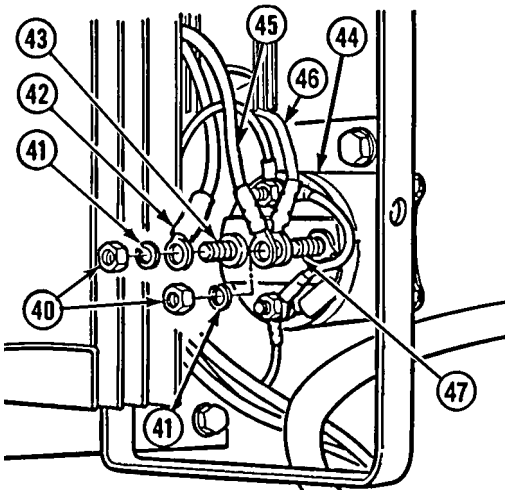


(8) Remove locknut (36), screw (37), cushion clip (38) from bracket (39). Discard locknut.



(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.

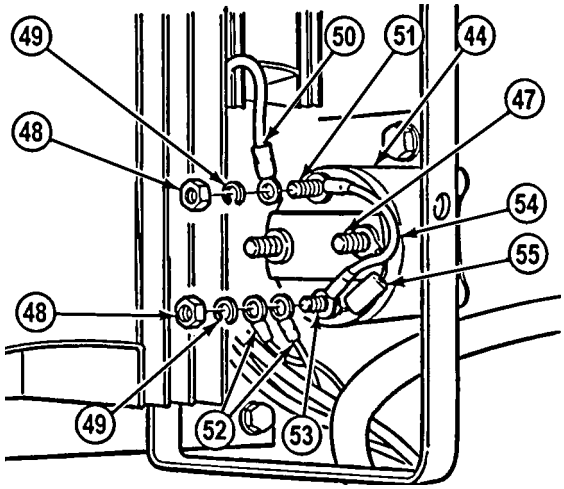


(11) Remove nut (48), lockwasher (49) and wire 1021A (50) from stud (51) of 24 volt solenoid switch (44). Discard lockwasher.

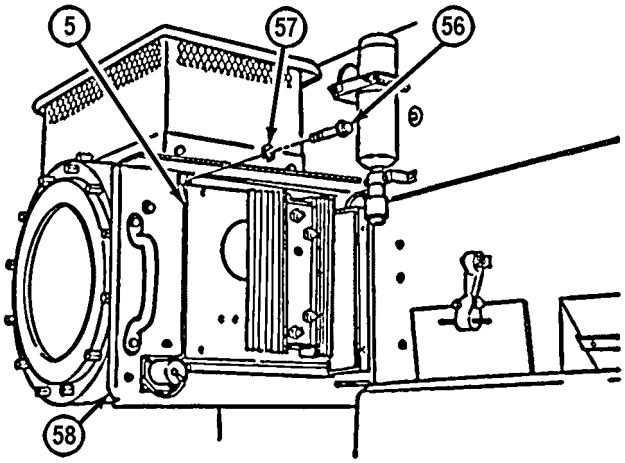
(12) Remove nut (48), lockwasher (49) and two wires 1435 (52) from stud (53) of 24 volt solenoid switch (44). Discard lockwasher.

(13) Remove jumper diode wire (54) from stud (51) and stud (53).

(14) Remove capacitor (55) from stud (47) and stud (53).



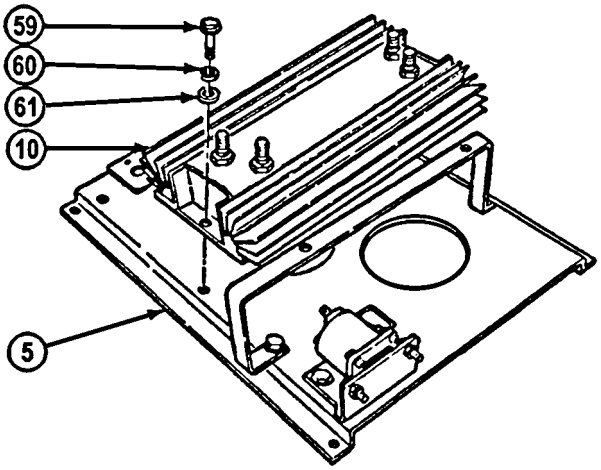
(15) Remove four screws (56), lockwashers (57) and electric bracket (5) from air cleaner bracket (58). Discard lockwashers.



7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

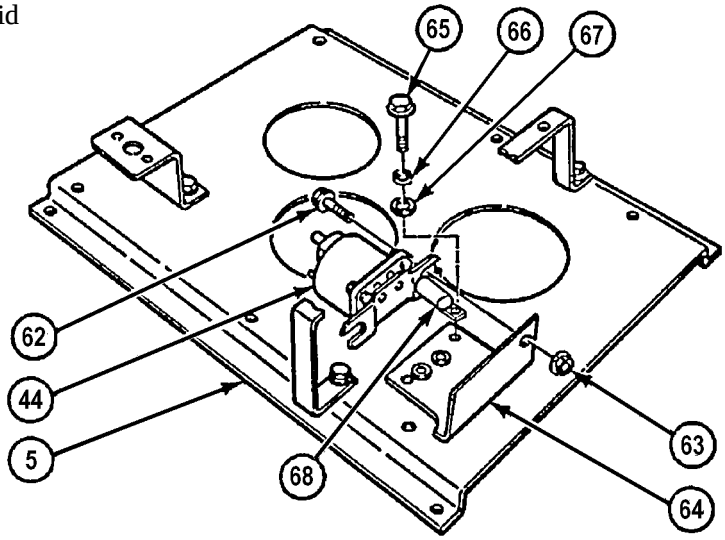
(16) Position electric bracket (5) on clean work bench.

(17) Remove two screws (59), lockwashers (60), washers (61), and polarity protection controller (10) from electric bracket (5). Discard lockwashers.



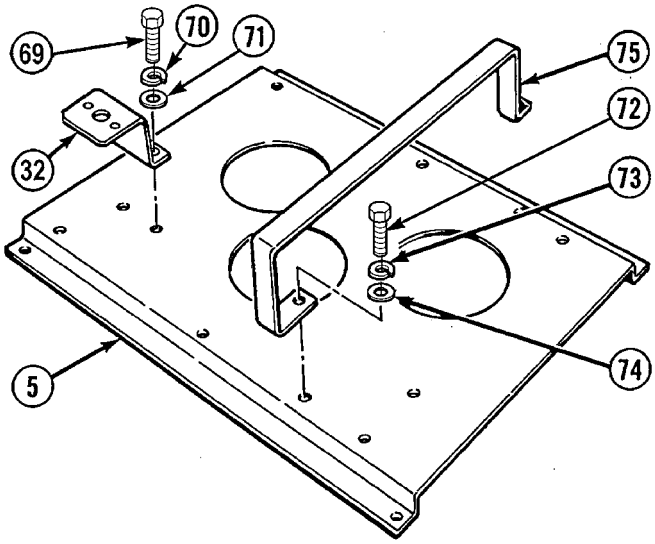
(18) Remove two screws (62), locknuts (63) and 24 volt solenoid switch (44) from solenoid switch bracket (64). Discard locknuts.

(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

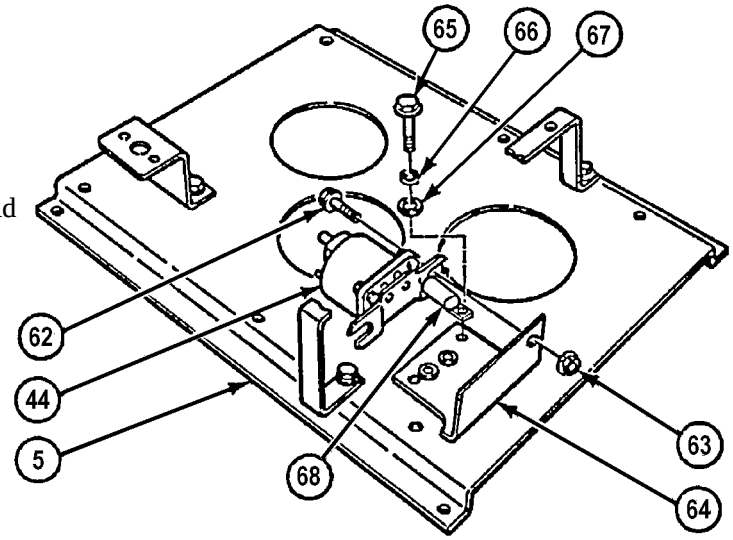
Install cable ties as required.

(1) Install mounting bracket (75), two washers (74), lockwashers (73) and screws (72) on electric bracket (5).

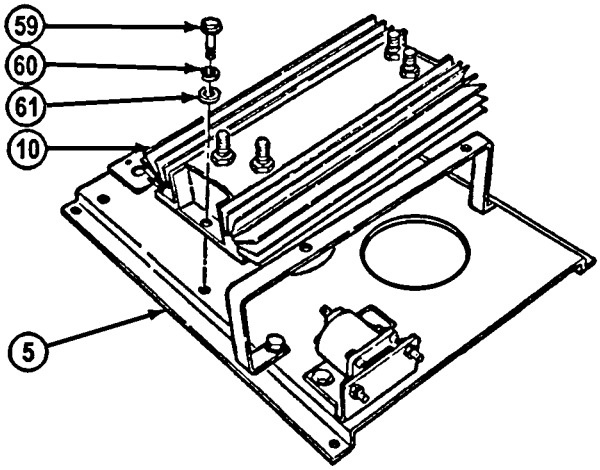
(2) Install standoff bracket (31), two washers (71), lockwashers (70) and screws (69) on electric bracket (5).

(3) Install solenoid switch bracket (64), capacitor (68), two washers (67), lockwashers (66) and screws (65) on electric bracket (5).

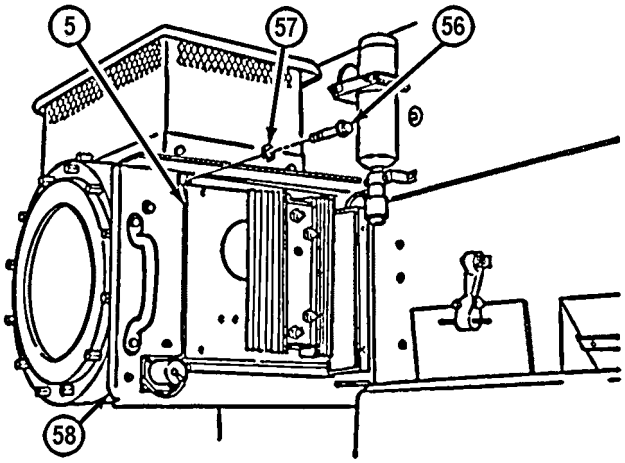
(4) Install 24 volt solenoid switch (44), two screws (62) and locknuts (63) on solenoid switch bracket (64).



(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).



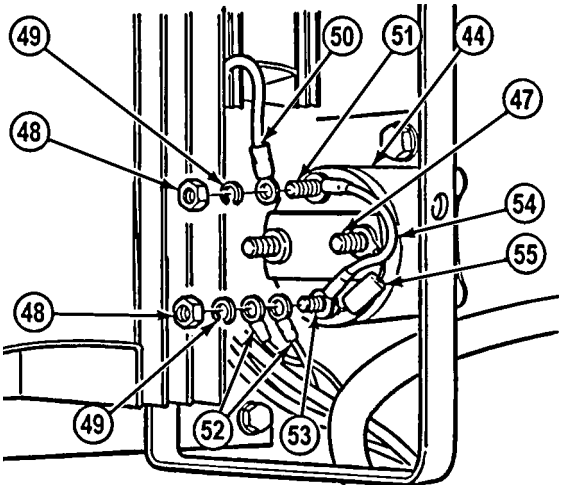
7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

(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).

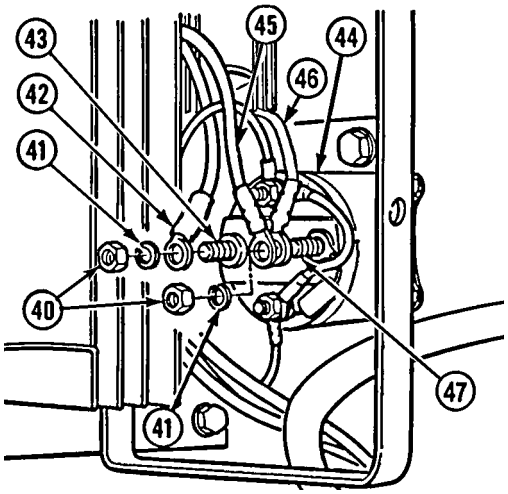
(9) Install two wires 1435 (52), lockwasher (49) and nut (48) on stud (53) of 24 volt solenoid switch (44).

(10) Install wire 1021A (50), lockwasher (49) and nut (48) on stud (51) of 24 volt solenoid switch (44).

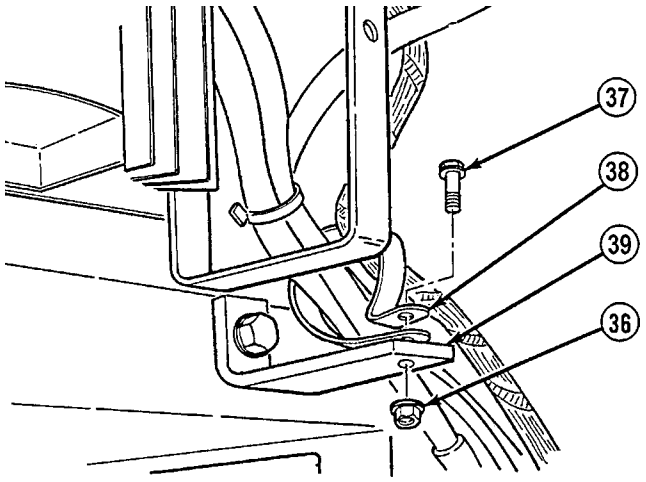


(11) Install wire 1045 (45), capacitor wire (46), lockwasher (41) and nut (40) on stud (47) of 24 volt solenoid switch (44).

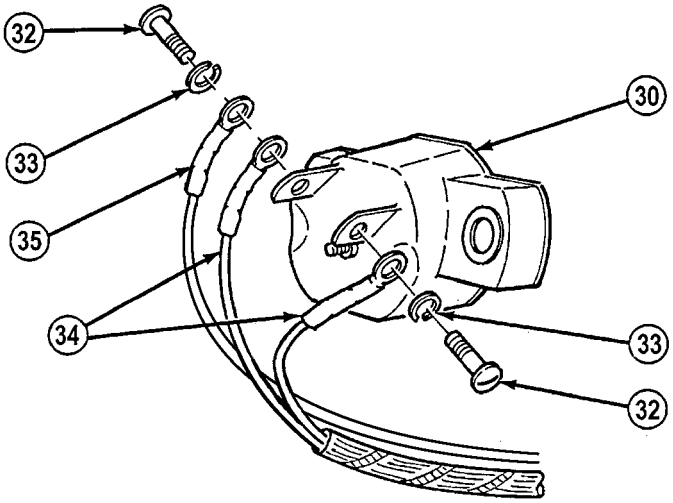
(12) Install wire 1055 (42), lockwasher (41) and nut (40) on stud (43) of 24 volt solenoid switch (44).



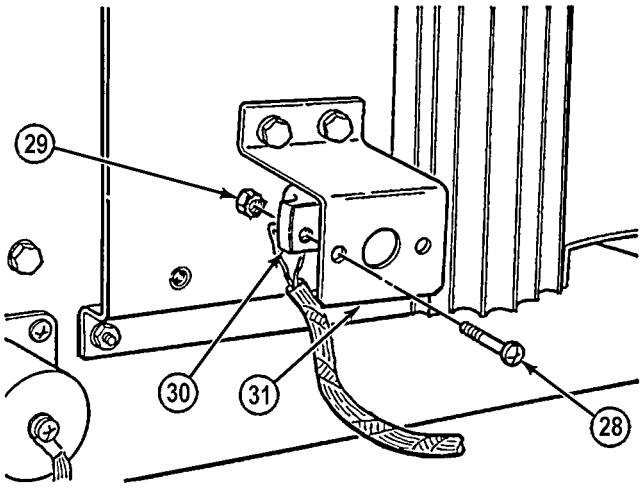
(13) Install cushion clip (38), screw (37) and locknut (36) on bracket (39).



(14) Install wire 1020A (35), two wires 1020 (34), lockwashers (33) and screws (32) on circuit breaker (30).



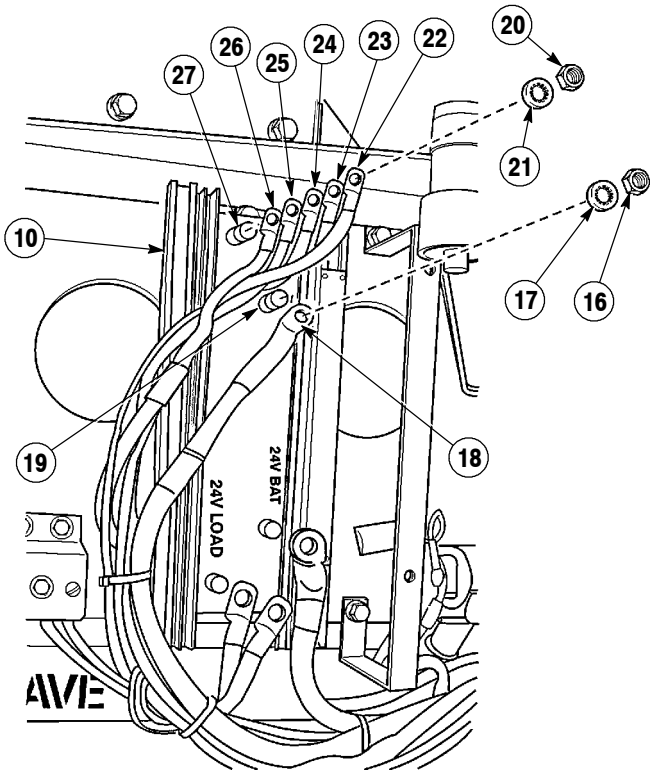
(15) Install circuit breaker (30), two screws (28) and locknuts (29) on stand off bracket (31).



7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

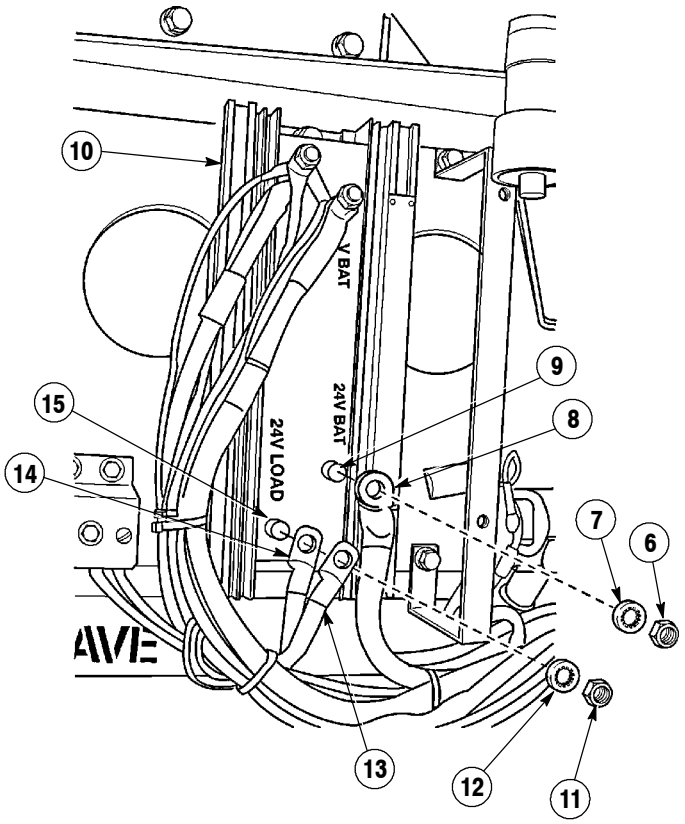
(16) Install wire 1430 (26), wire 1079 (25), wire 1075 (24), wire 1866 (23), wire 240 and 241 (22), lockwasher (21) and nut (20) on 12 volt load terminal (27) of polarity protection controller (10).

(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).

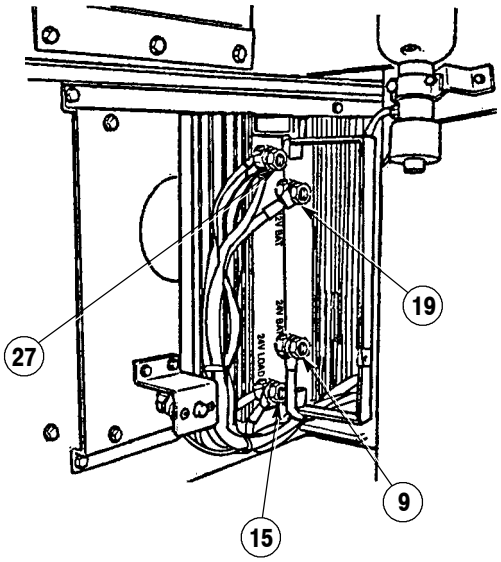
(19) Install wire 1281A (8), lockwasher (7) and nut (6) on 24 volt battery terminal (9) of polarity protection controller (10).

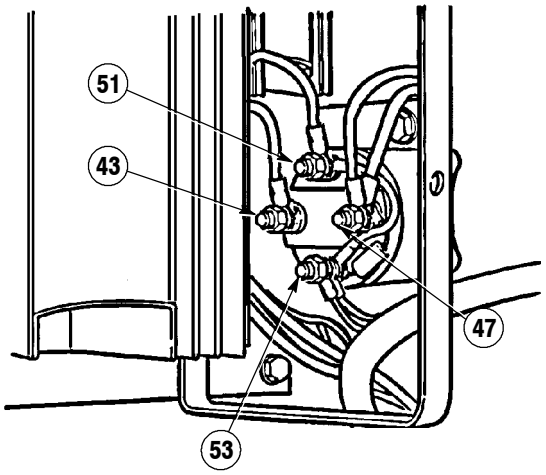


WARNING

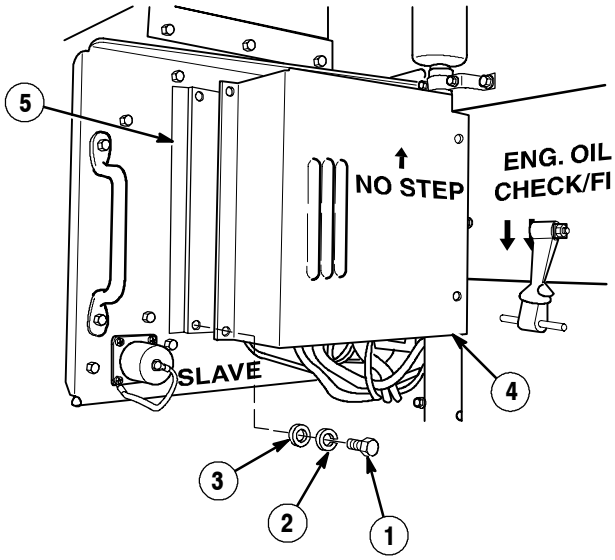
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

7-12. STARTER MOTOR 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 (95 lb [165 kg] capacity)

Materials/Parts
Cable Tie (Item 26, Appendix C)
Grease, GAA (Item 42, Appendix C)
Sealant, Electrical (Item 68, Appendix C)
Tags, Identification (Item 88, Appendix C)
Gasket (Item 56, Appendix F)

Materials/Parts - Continued
Locknut (Item 140, Appendix F)
Lockwasher (Item 164, Appendix F)
Lockwasher (Item 169, Appendix F)
Lockwasher (Item 198, Appendix F)
Lockwasher (Item 199, Appendix F)

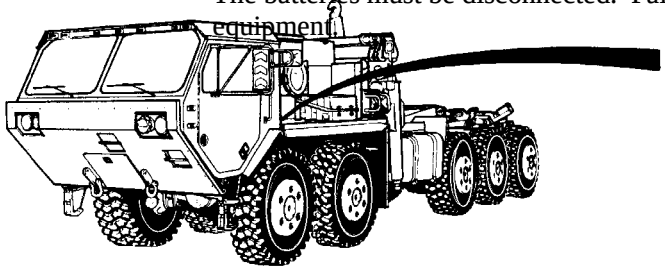
Personnel Required
Two

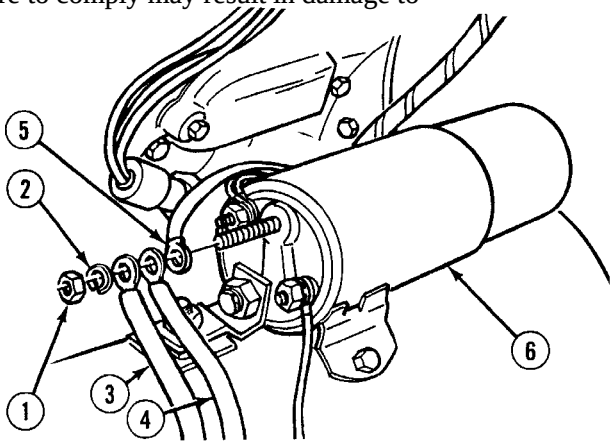
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Left front skirt removed, (Para 17-34)
Left side noise panel removed, (Para 17-28)
Left front noise panel removed, (Para 17-27)

a. Removal.

CAUTION

The battery disconnect switch (if equipped) does not shut off power to the starter motor. The batteries must be disconnected. Failure to comply may result in damage to equipment.



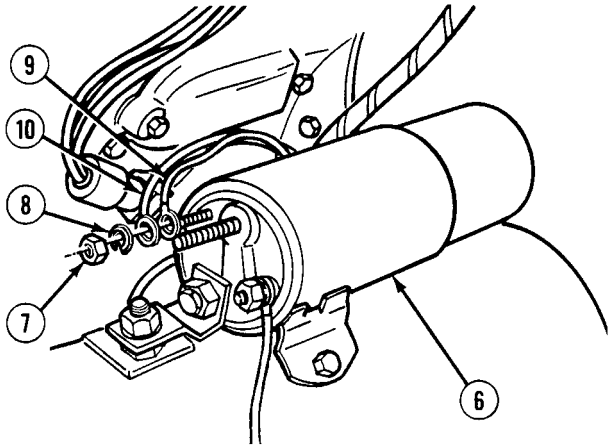


NOTE

- Tag and mark all wires before removal.
- Remove cable ties as required.

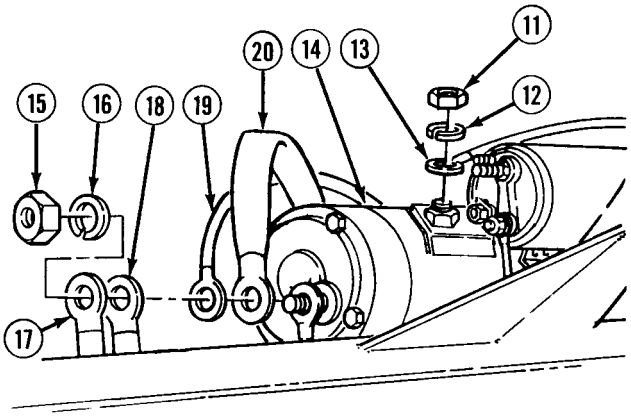
(1) Remove nut (1), lockwasher (2) and wires 1139 (3), 1055 (4) and 1139 (5) from starter solenoid (6). Discard lockwasher.

(2) Remove nut (7), lockwasher (8) wire 1045 (9) and wire 1816 (10) from starter solenoid (6). Discard lockwashers.

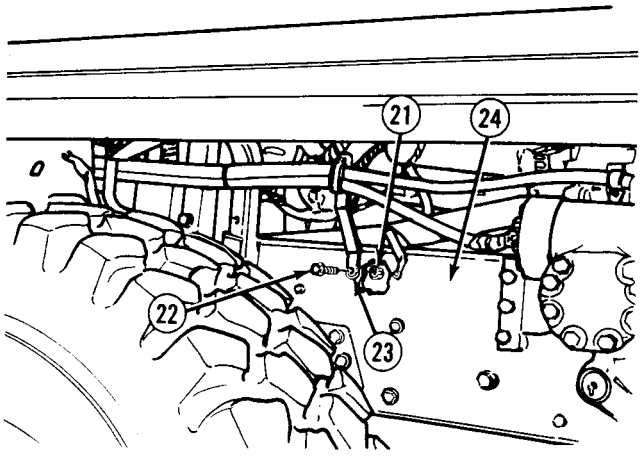


(3) Remove nut (11), lockwasher (12) and wire 1818 (13) from starter (14). Discard lockwasher.

(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).

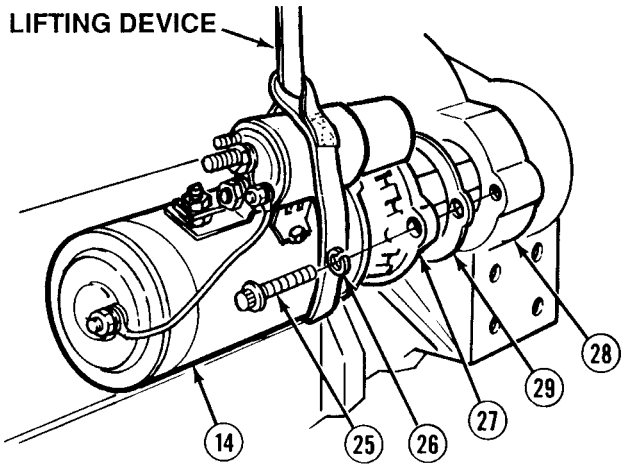
(6) Remove two of three screws (25) and lockwashers (26) from starter mounting bracket (27). Discard lockwashers.

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.

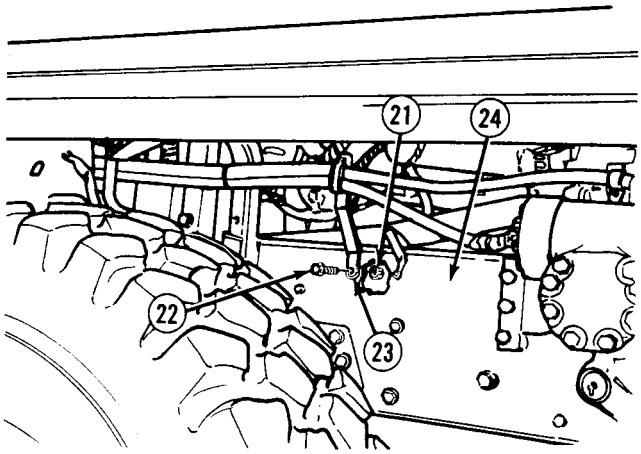
(3) With the aid of an assistant, position starter (14) in flywheel housing (28).

(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).

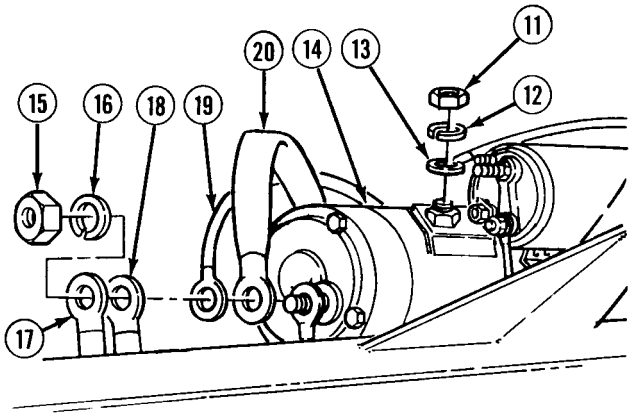
(7) Install bracket (23) on frame (24) with screw (22) and locknut (21).



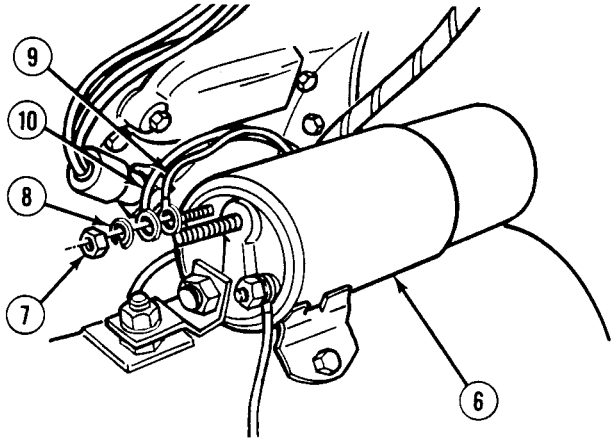
(8) Remove nut (15) and lockwasher (16) from starter (14). Discard lockwasher.

(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).

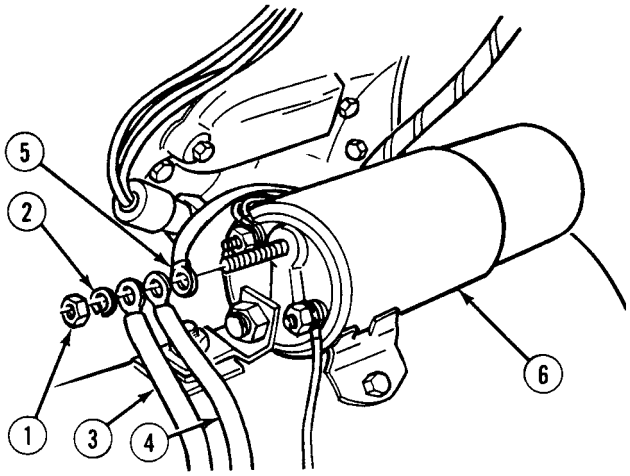


(11) Install wires 1045 (9), 1816 (10), lockwasher (8) and nut (7) on starter solenoid (6). Tighten nuts to 31 lb-in (4 N·m).



7-12. STARTER MOTOR REPLACEMENT (CONT).

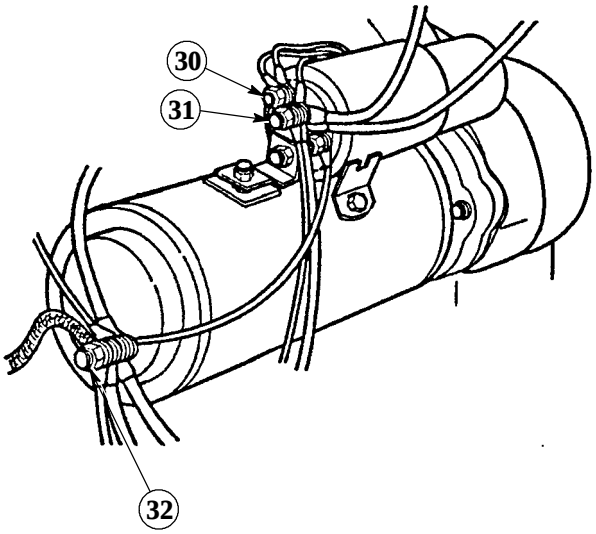
(12) Install wires 1139 (5), 1055 (4) and 1139 (3), lockwasher (2) and nut (1) on starter solenoid (6). Tighten nut to 30 lb-ft (41 N·m).



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

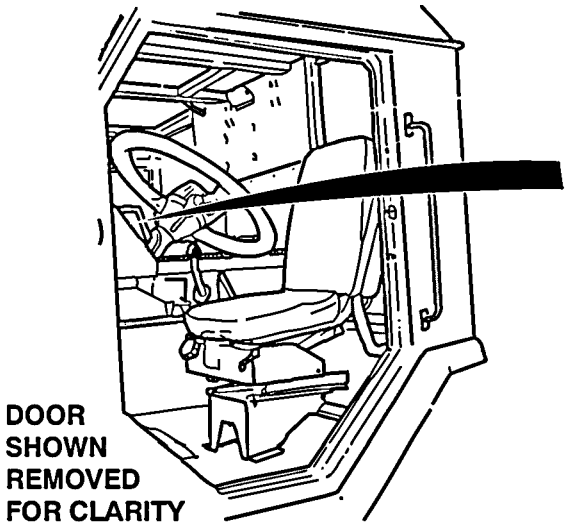
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

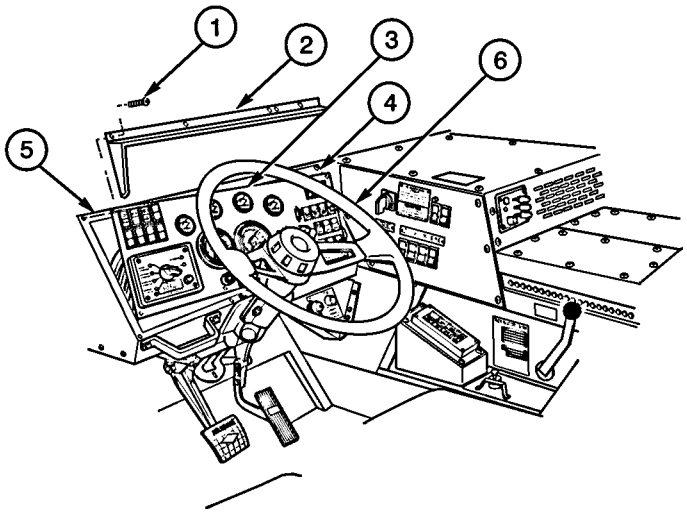
Materials/Parts
Cable Ties (Item 26, Appendix C)
Compound, Corrosion Preventive (Item 34, Appendix C)

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.





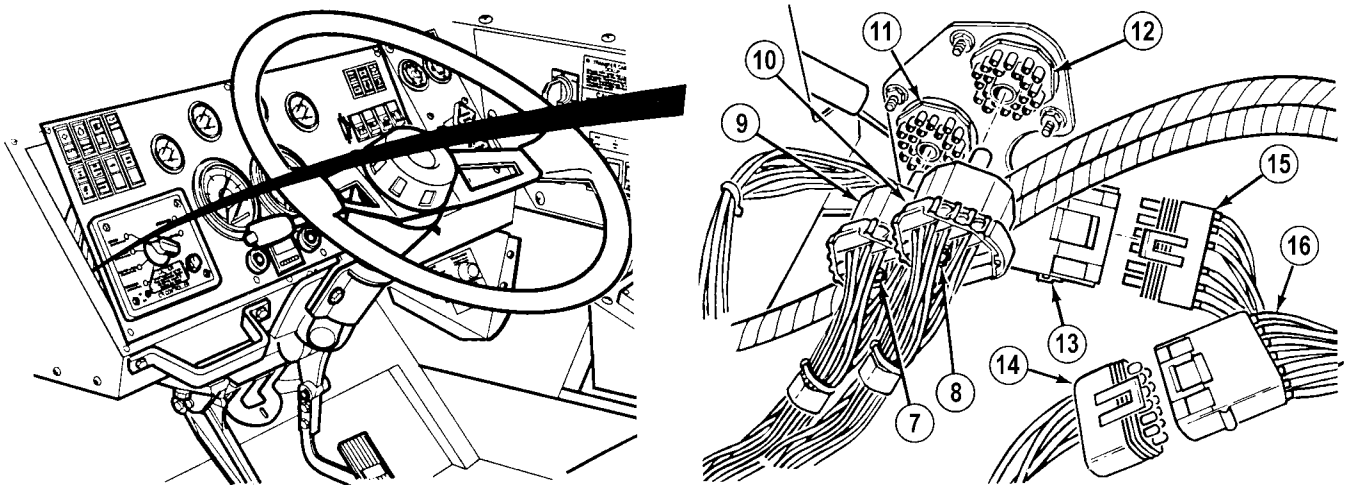
NOTE

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

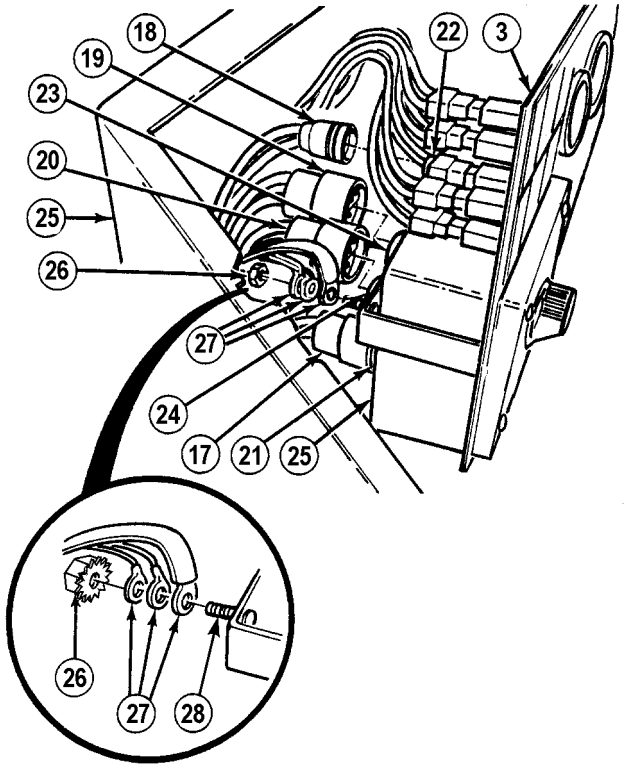
Connectors are disconnected by gently prying up on lock tabs and pulling connector apart.

(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

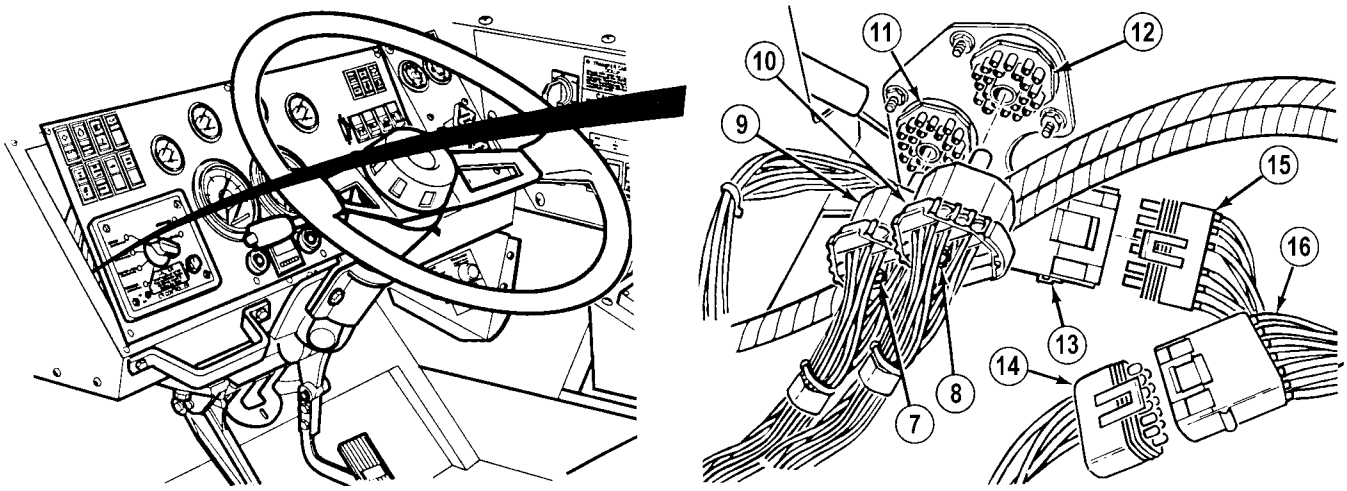
Install cable ties as required.

(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).

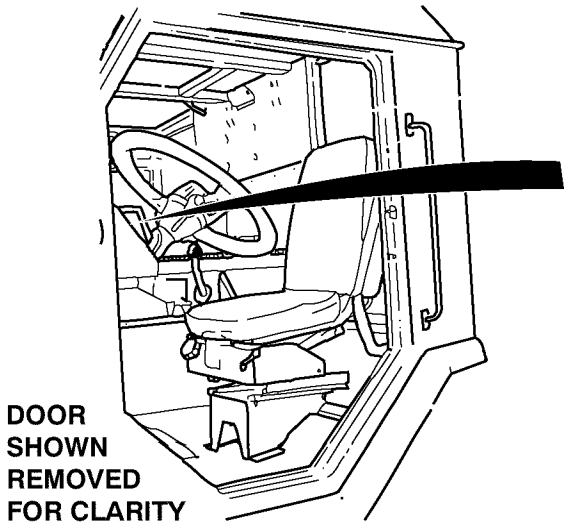


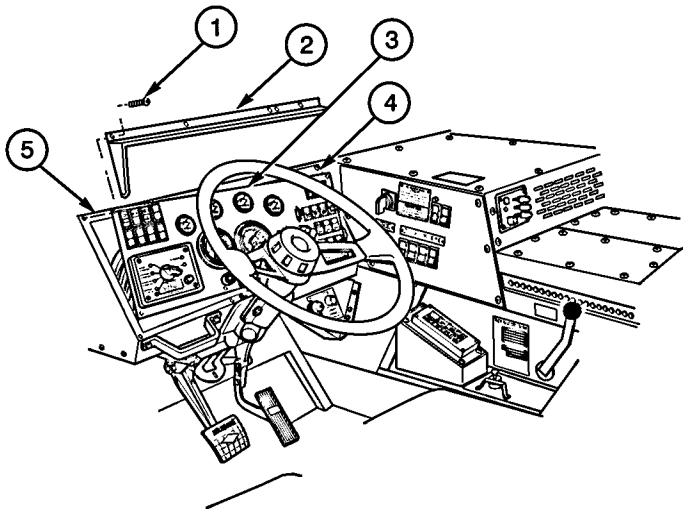
NOTE

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

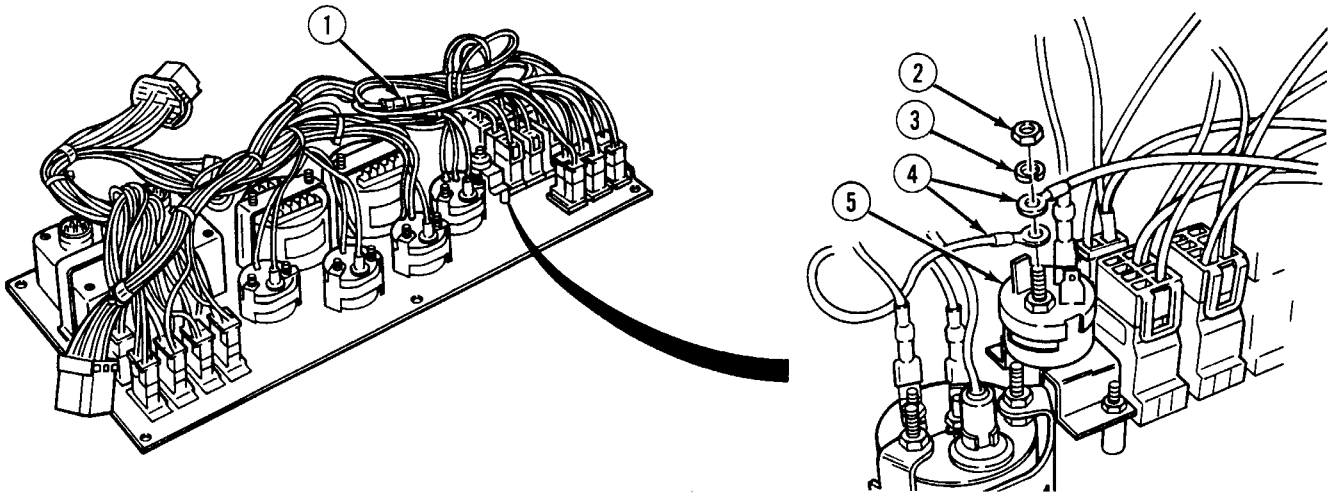
INITIAL SETUP

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.

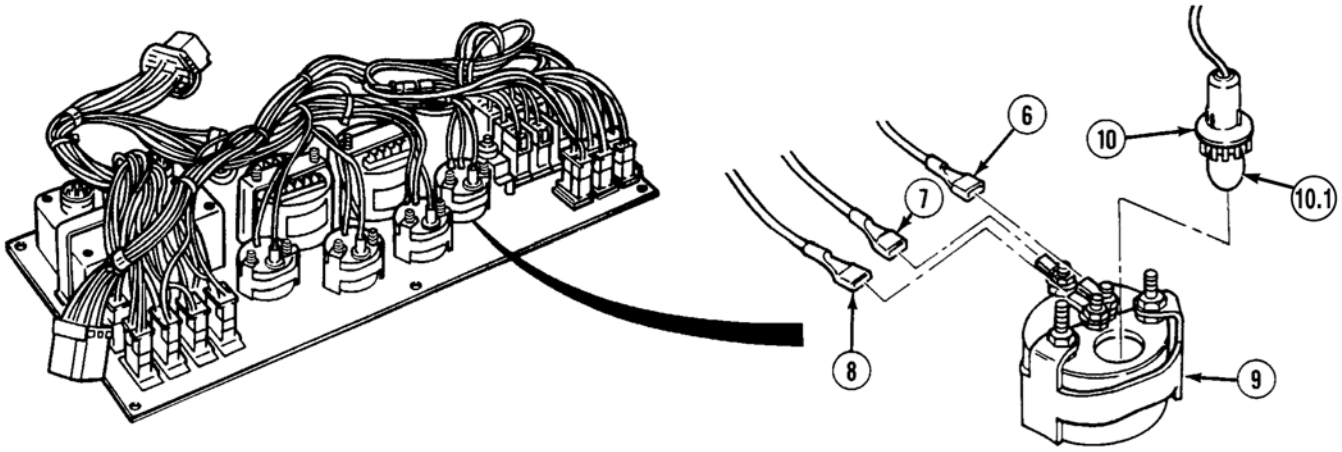


NOTE

- Tag and mark all terminals and wires prior to removal.
- Remove cable ties as required.

(1) Disconnect MC53 connector (1).

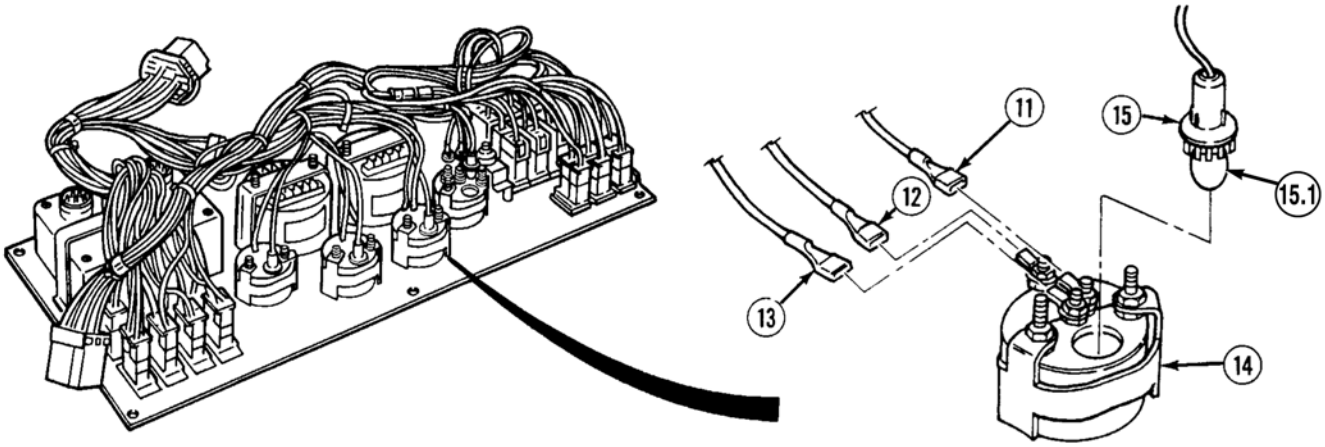
(2) Remove nut (2), lockwasher (3) and two wires 1052 (4) from rear of thumbwheel rheostat switch (5).



(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).

(4.1) Remove light bulb (10.1) from gage light connector 1052 (10).

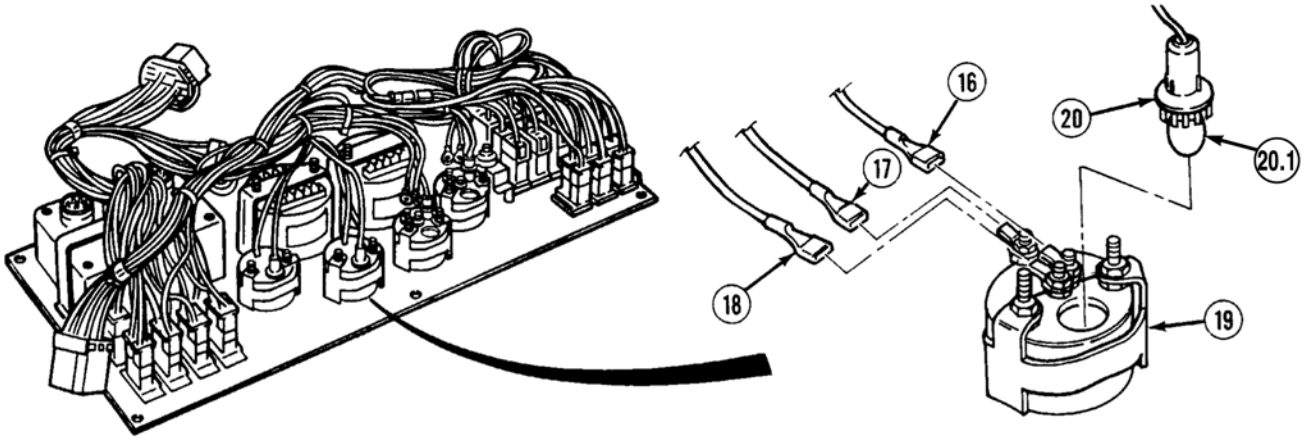


(5) Remove wires 1449 (11), 1435 (12) and 1276 (13) from rear of transmission temperature gage (14).

(6) Disconnect gage light connector 1052 (15) from rear of transmission temperature gage (14).

(6.1) Remove light bulb (15.1) from gage light connector 1052 (15).

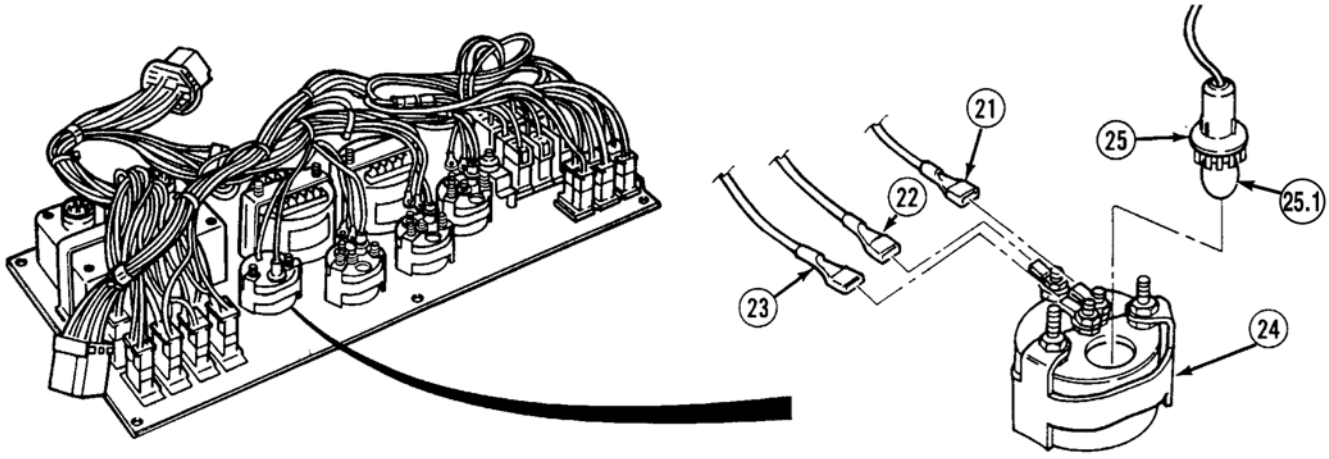
7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT).



(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).

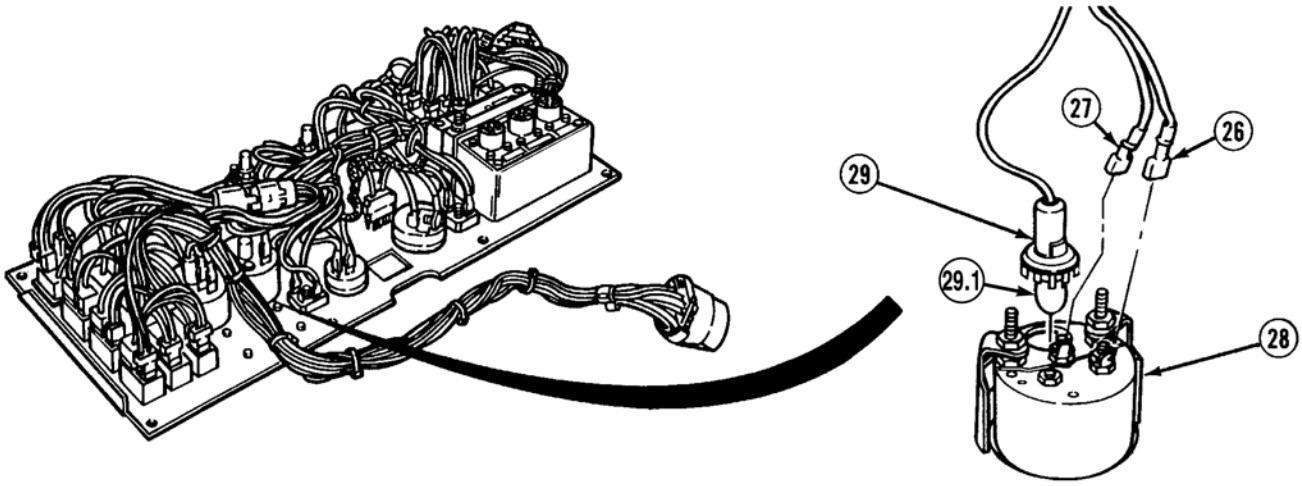
(8.1) Remove light bulb (20.1) from gage light connector 1052 (20).



(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).

(10.1) Remove light bulb (25.1) from gage light connector 1052 (25).



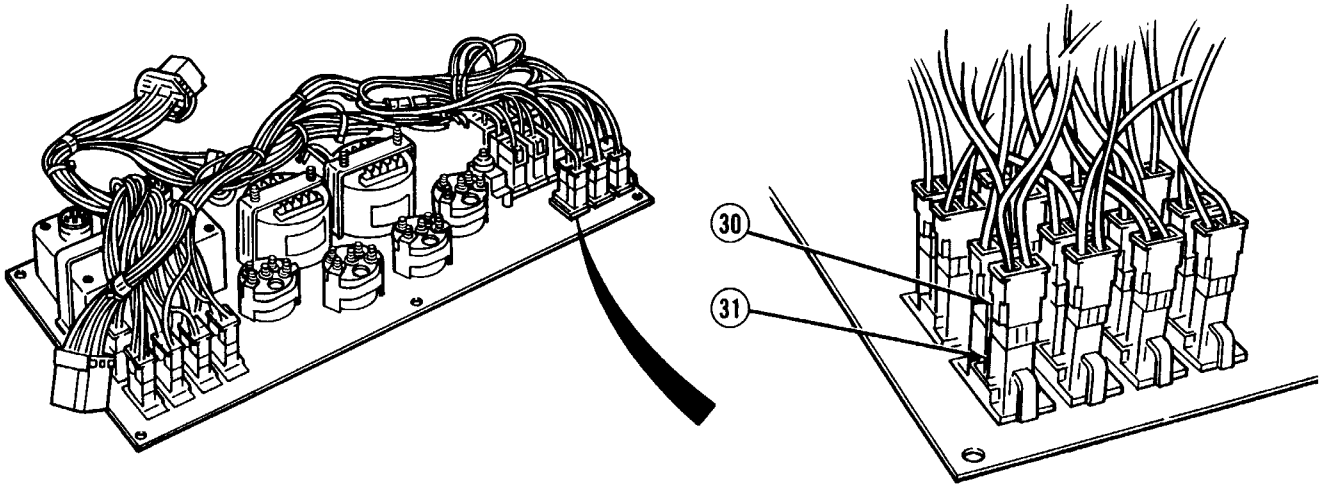
NOTE

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).

(12.1) Remove light bulb (29.1) from gage light connector 1052 (29).

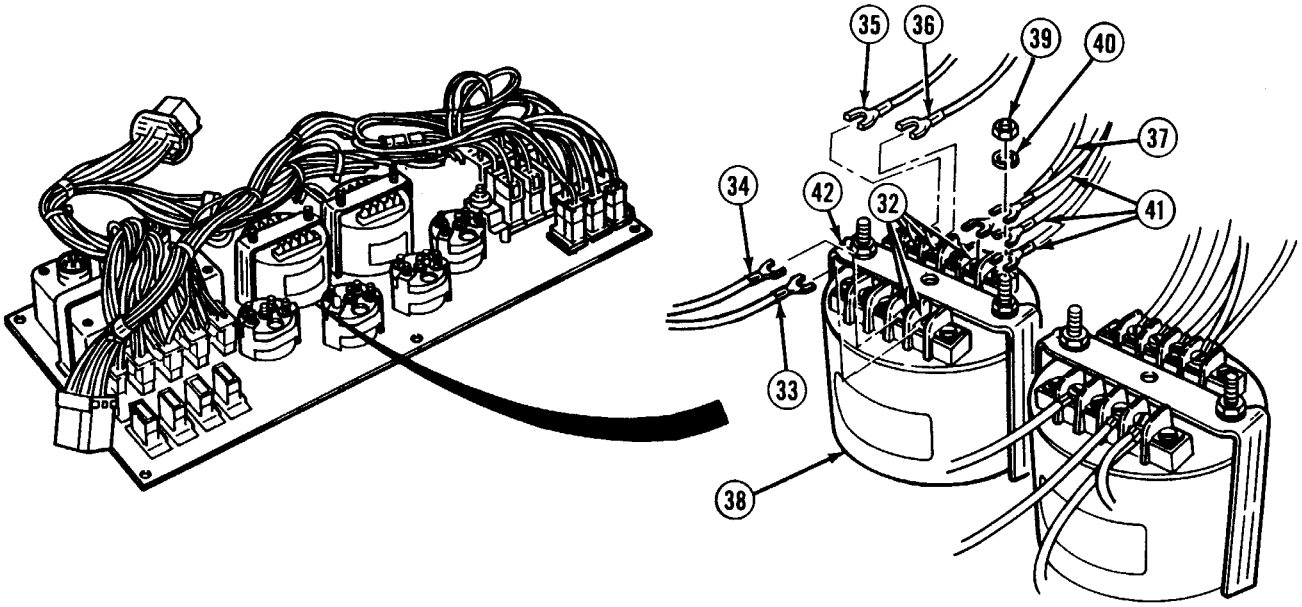


NOTE

- All light connectors are removed the same way.
- Make sure light bulbs and light bulb sockets stay with warning light housings.

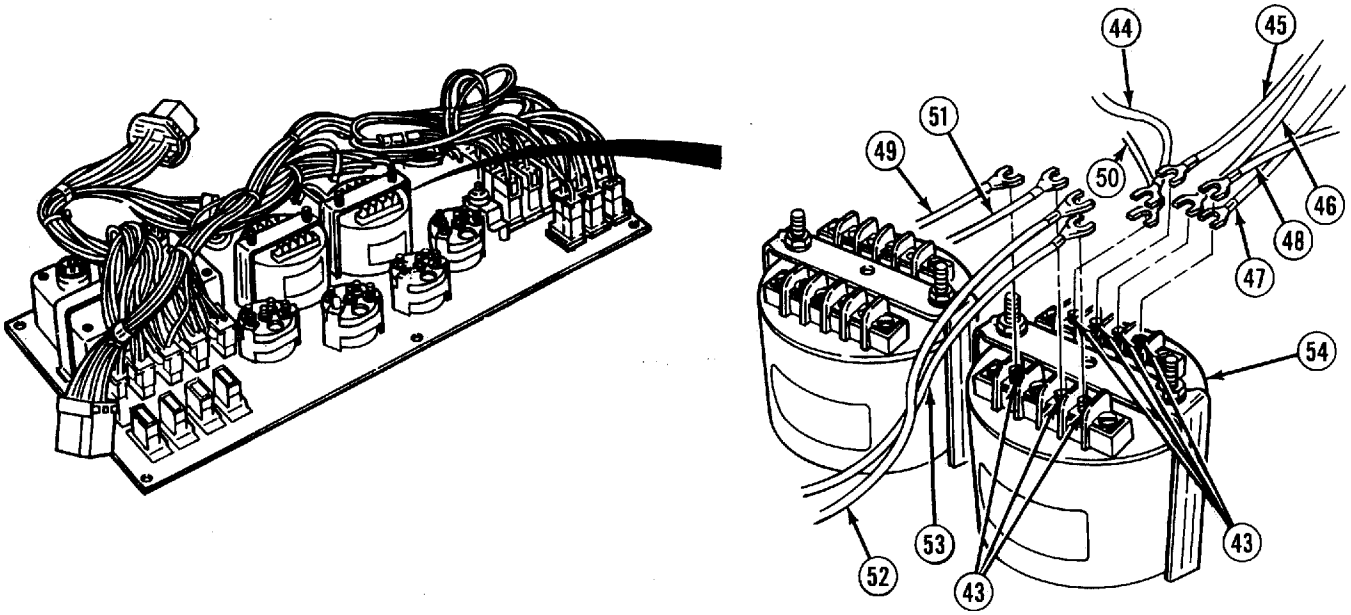
(13) Disconnect 19 light connectors (30) from rear of 19 warning light housings (31).

7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT).

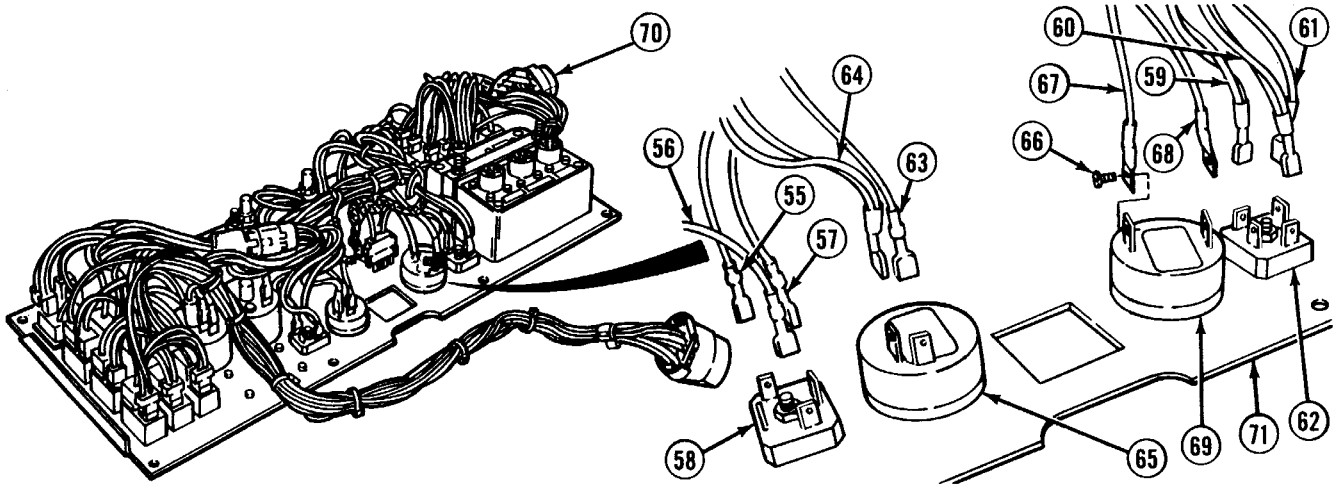


(14) Loosen five screws (32) and remove wires 1052 (33), 1435 (34), 1435 (35), 1108 (36) and 1276 (37) from rear of tachometer (38).

(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.

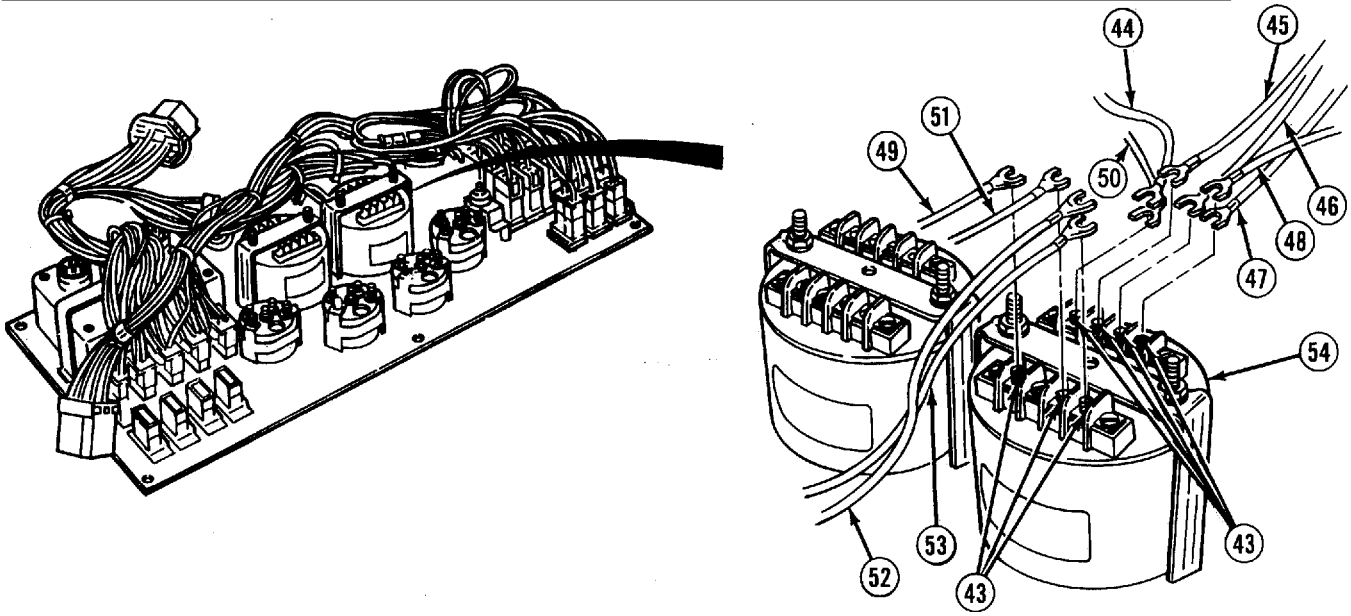
(1) Position gage wiring harness (70) on rear of instrument panel (71).

(2) Install wires 1276 (67), 1033 (68) and screws (66) at rear of warning buzzer (69).

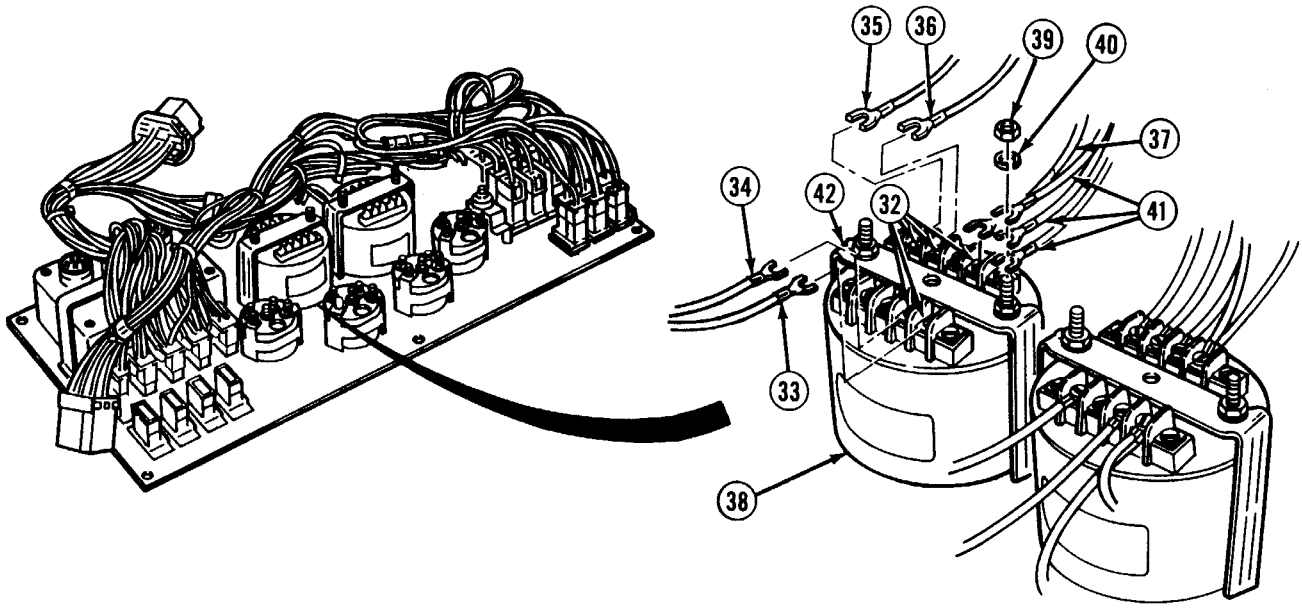
(3) Connect wires 1276 (63) and 1120 (64) at rear of warning buzzer (65).

(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).

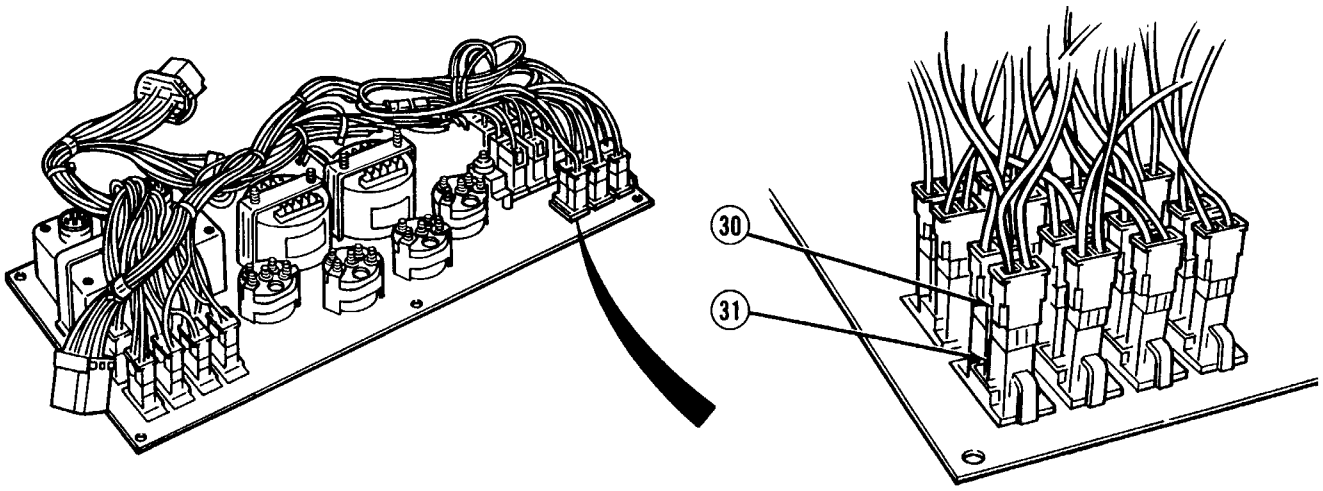


NOTE

Ground straps do not have numbers.

(6) Install three ground straps (41), lockwasher (40) and nut (39) on rear of tachometer mounting bracket (42).

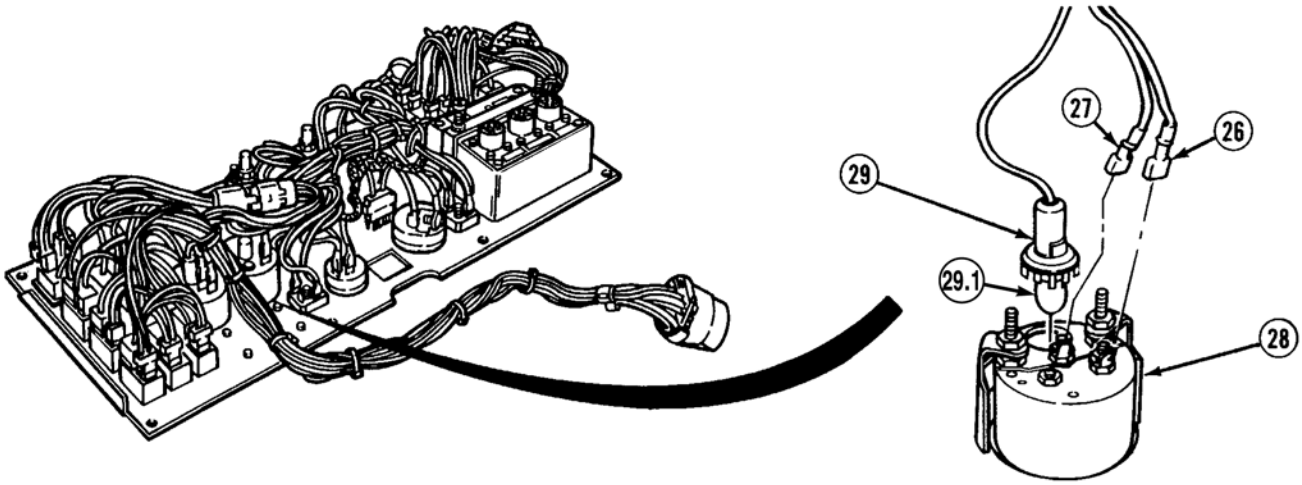
(7) Install wires 1052 (33), 1435 (34), 1435 (35), 1108 (36), 1276 (37) and tighten five screws (32) on rear of tachometer (38).



NOTE

All light connectors are installed the same way.

(8) Connect 19 light connectors (30) on rear of 19 warning light housings (31).



NOTE

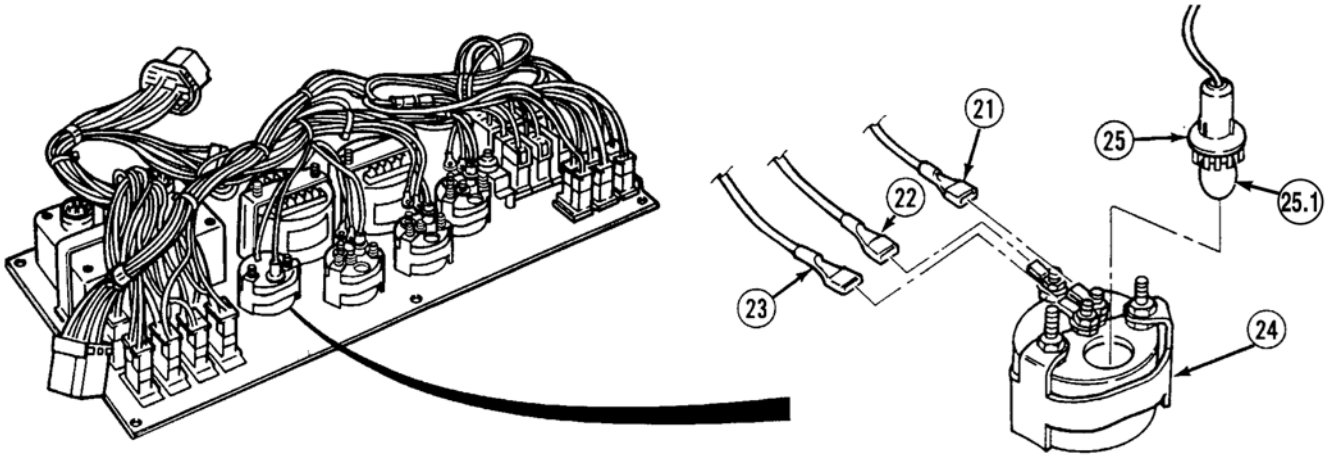
Both battery gages are installed the same way.

(8.1) Install light bulb (29.1) in gage light connector 1052 (29).

(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).

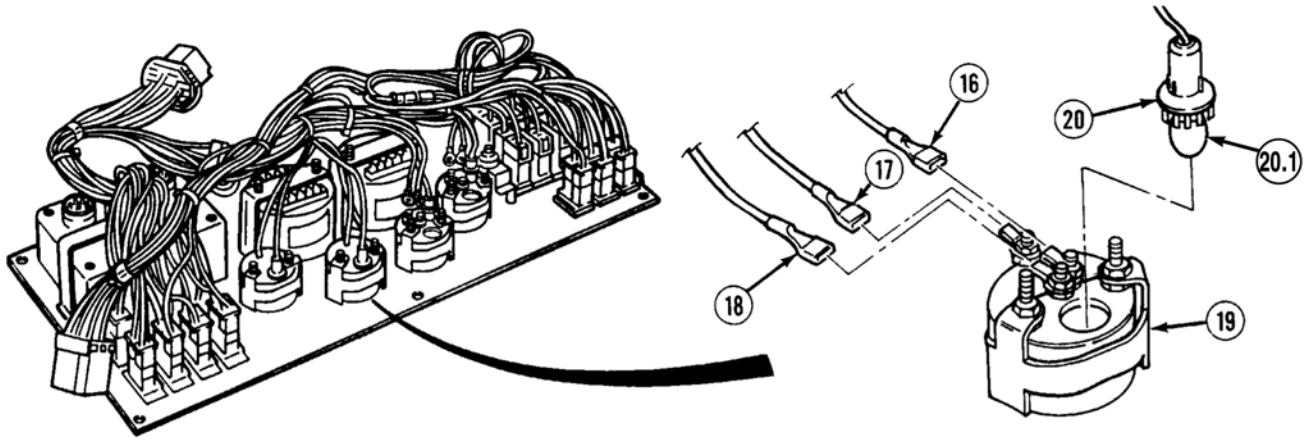
7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT).



(10.1) Install light bulb (25.1) in gage light connector 1052 (25).

(11) Connect gage light connector 1052 (25) on rear of oil pressure gage (24).

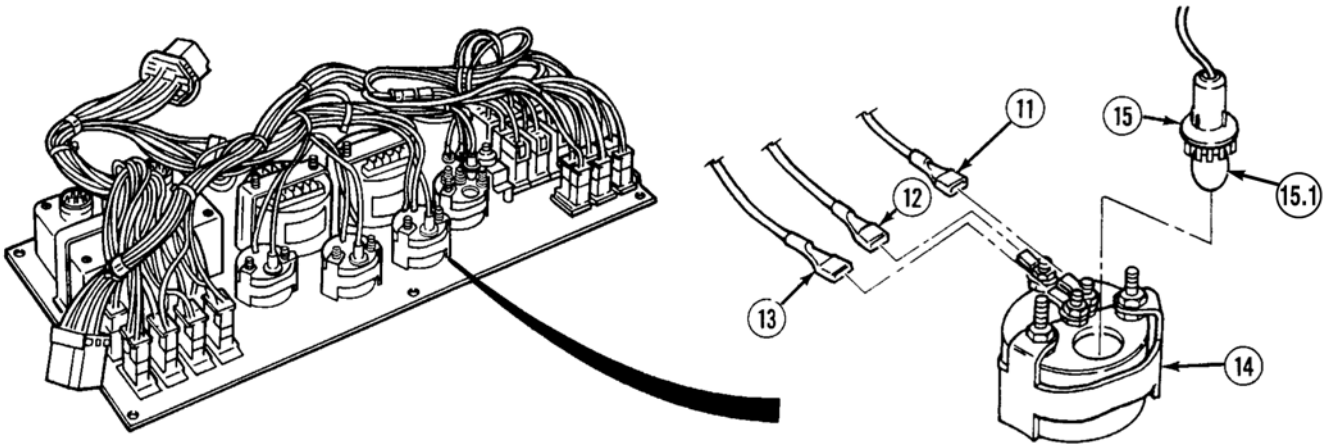
(12) Install wires 1113 (21), 1435 (22) and 1276 (23) on rear of oil pressure gage (24).



(12.1) Install light bulb (20.1) in gage light connector 1052 (20).

(13) Connect gage light connector 1052 (20) on rear of water temperature gage (19).

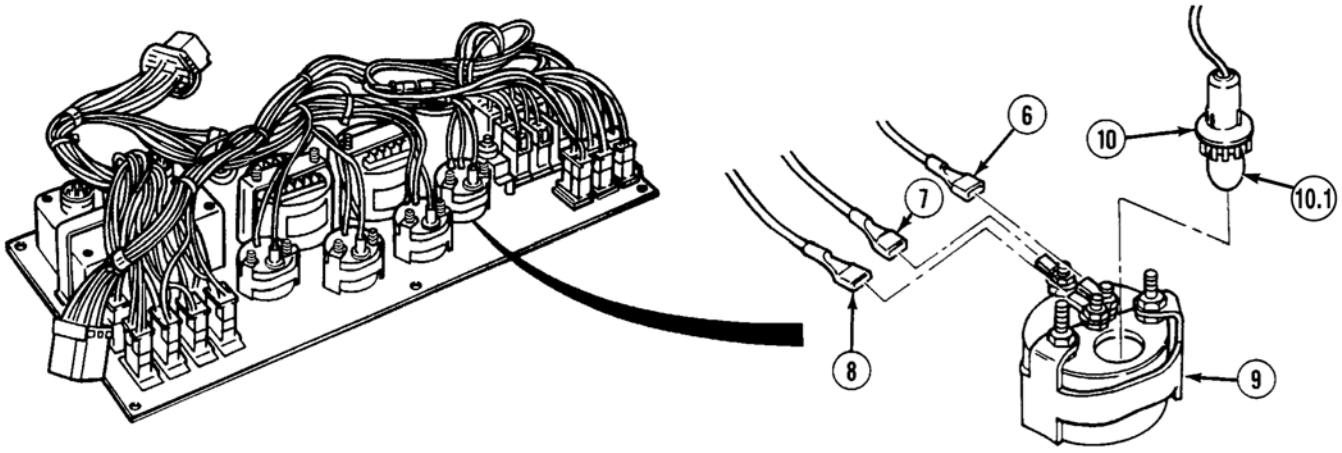
(14) Install wires 1320 (16), 1435 (17) and 1276 (18) on rear of water temperature gage (19).



(14.1) Install light bulb (15.1) in gage light connector 1052 (15).

(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).

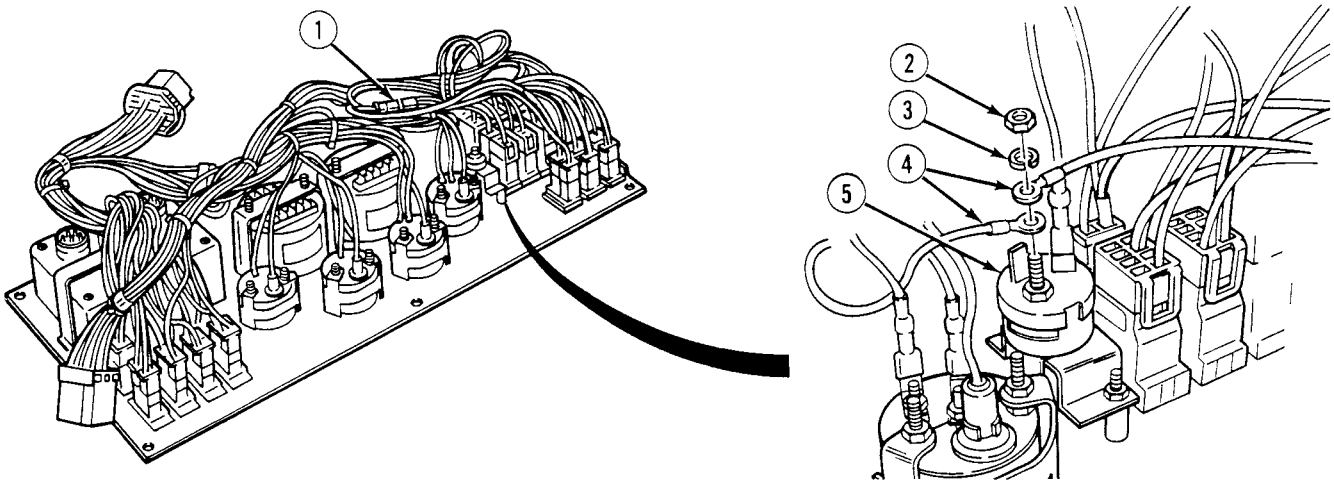


(16.1) Install light bulb (10.1) in gage light connector 1052 (10).

(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

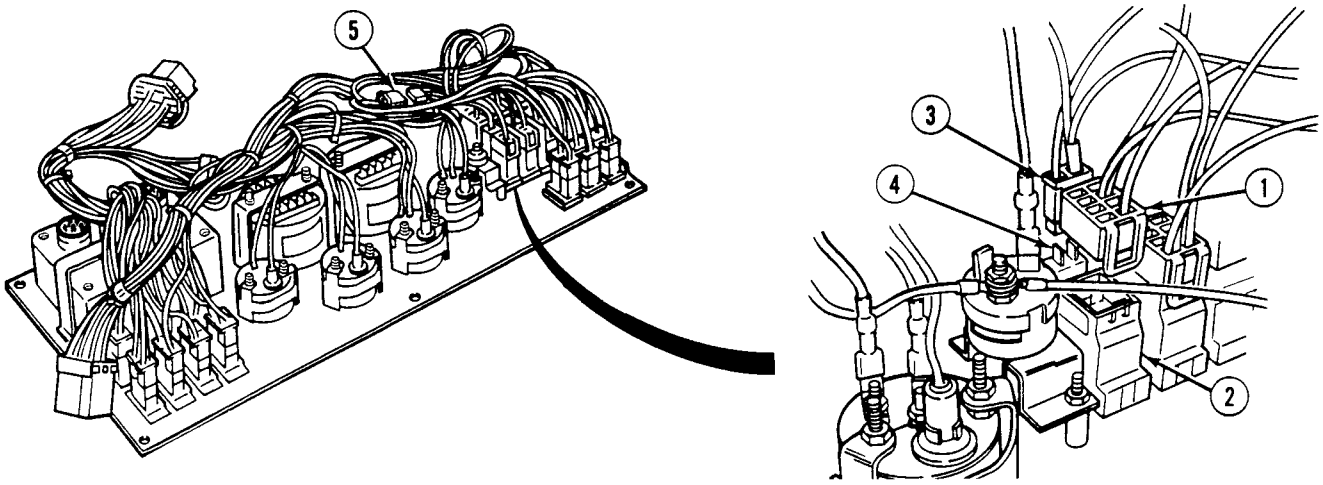
INITIAL SETUP

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

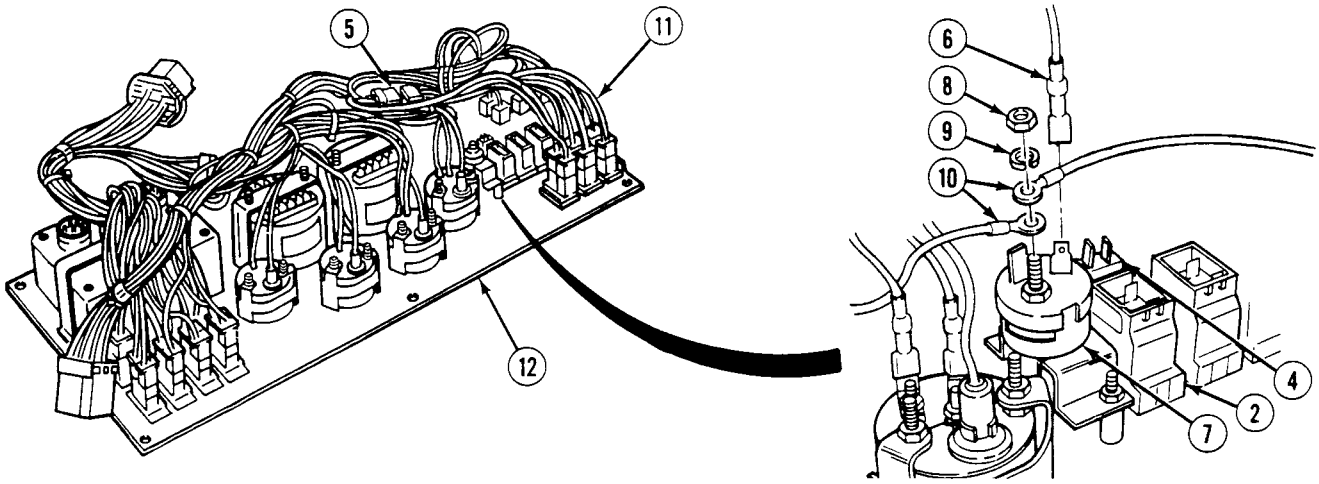
- Tag and mark all terminals and connectors prior to removal.
- Remove cable ties as required.
- Connectors are removed by gently prying on lock tab.
- All 10 rocker switch electrical connectors are removed in the same way.
- All 10 light bulb socket electrical connectors are removed in the same way.
- 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).

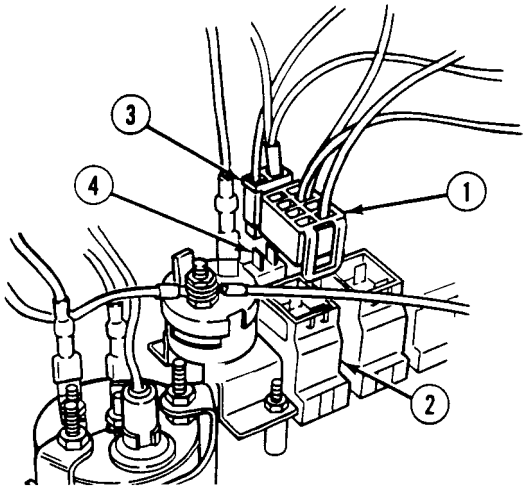
(2) Install two wires 1052 (10) on thumbwheel rheostat (7) with lockwasher (9) and nut (8).

(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

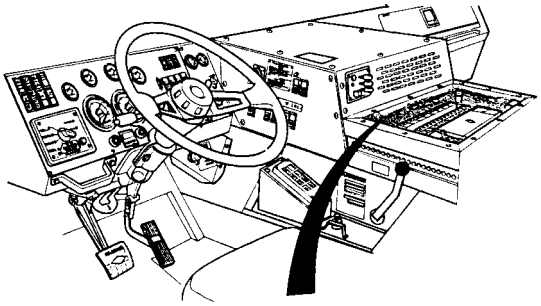
Tools and Special Tools
Tool Kit, Electrical (Item 73, Appendix G)
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Torque Wrench (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts
Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued
Lockwasher (Item 188, Appendix F)

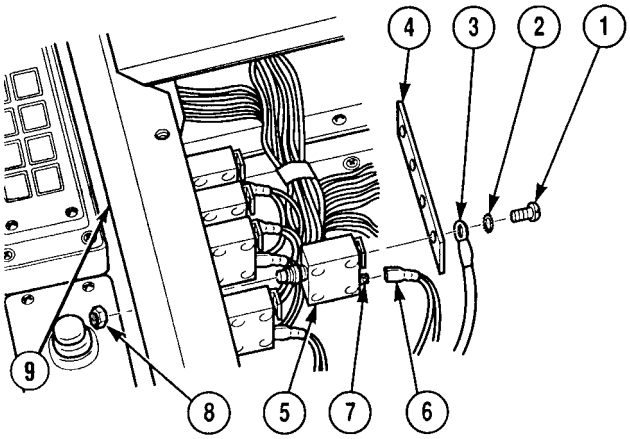
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Electronic Control Box (ECB) covers removed, (Para 17-22)

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.



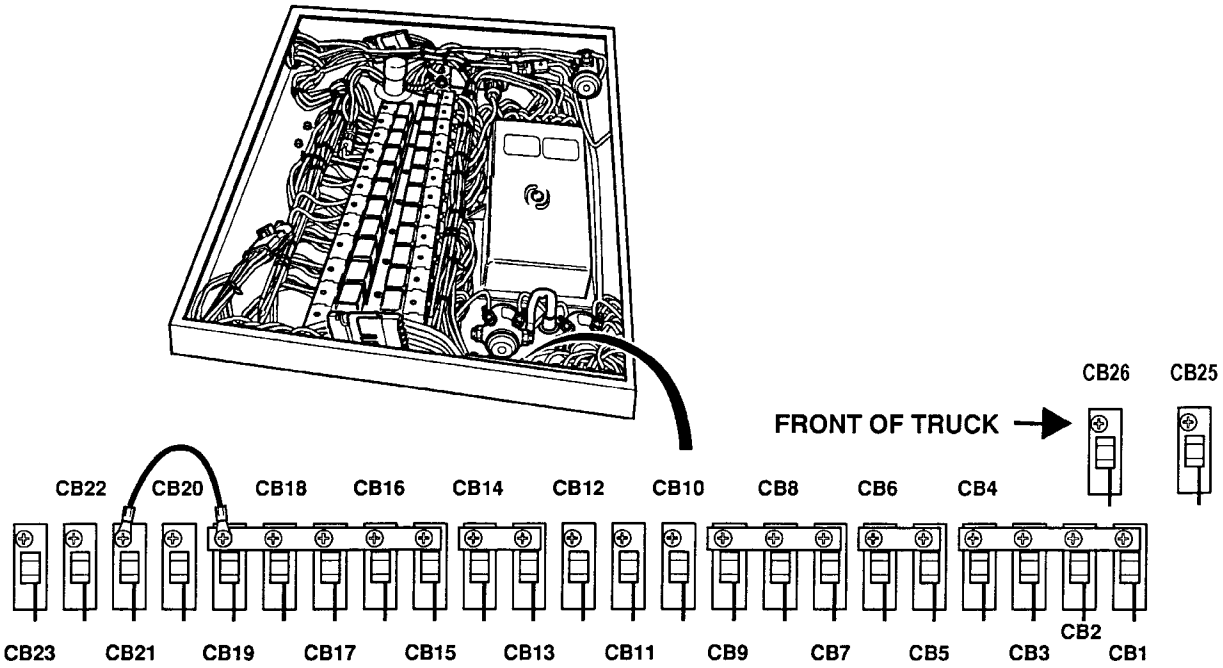
(1) Remove screw (1), lockwasher (2), wire 1176 (3), and bus bar (4) from rear of circuit breaker CB4 (5). Discard lockwasher.

(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

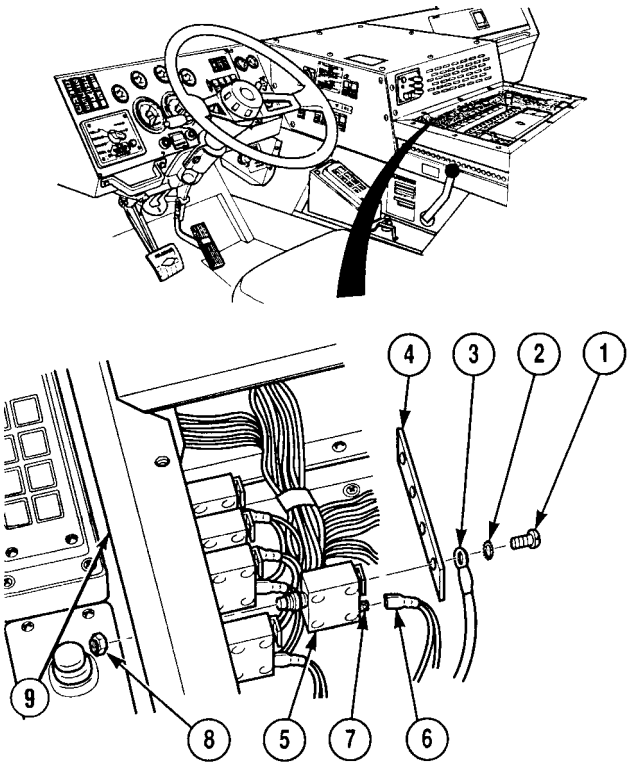
Where bus bar is used, bus bar must be installed on rear of all circuit breakers that are to be attached to bus bar.

(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

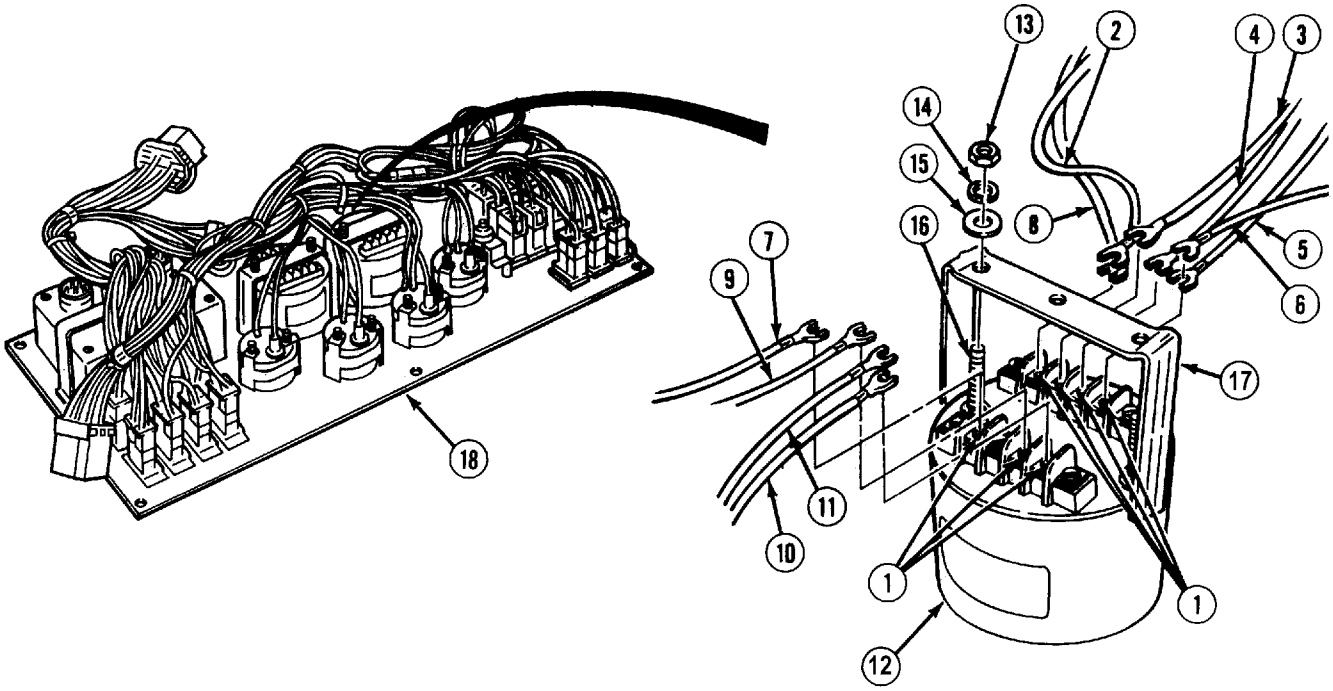
INITIAL SETUP

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).

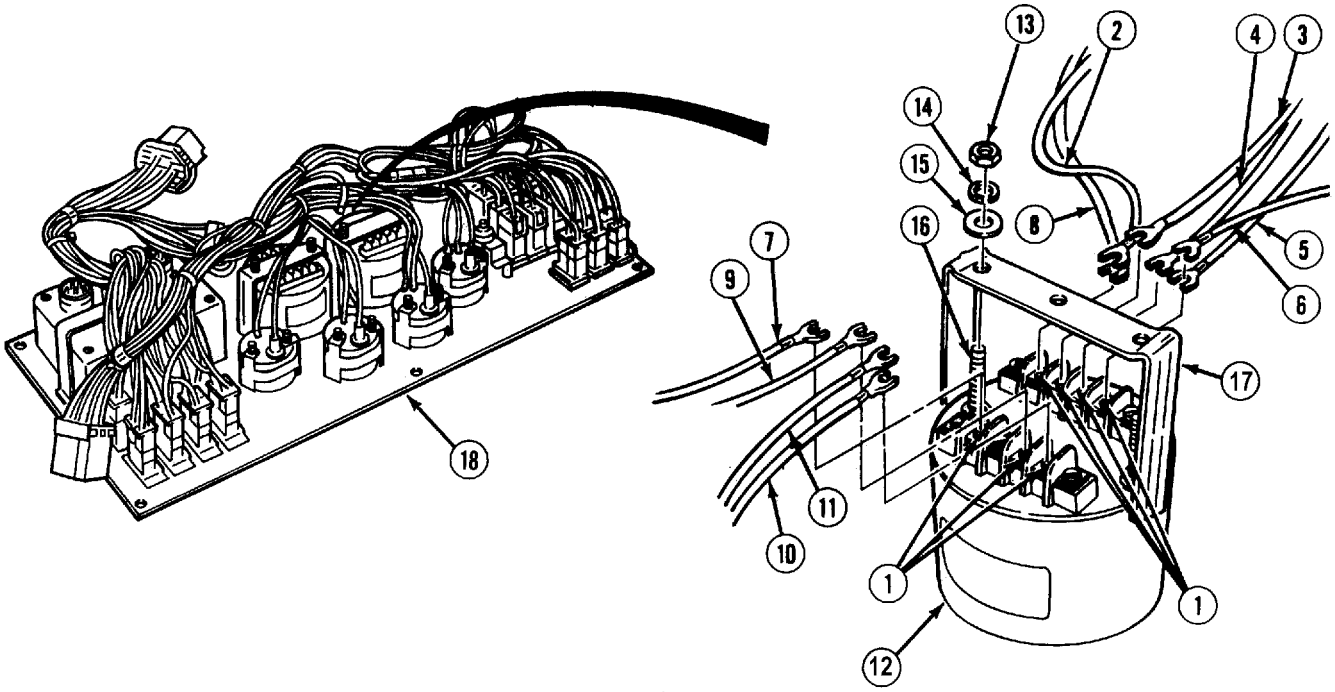
(2) Remove two nuts (13), lockwashers (14) and washers (15) from two speedometer mounting bracket screws (16).

(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.

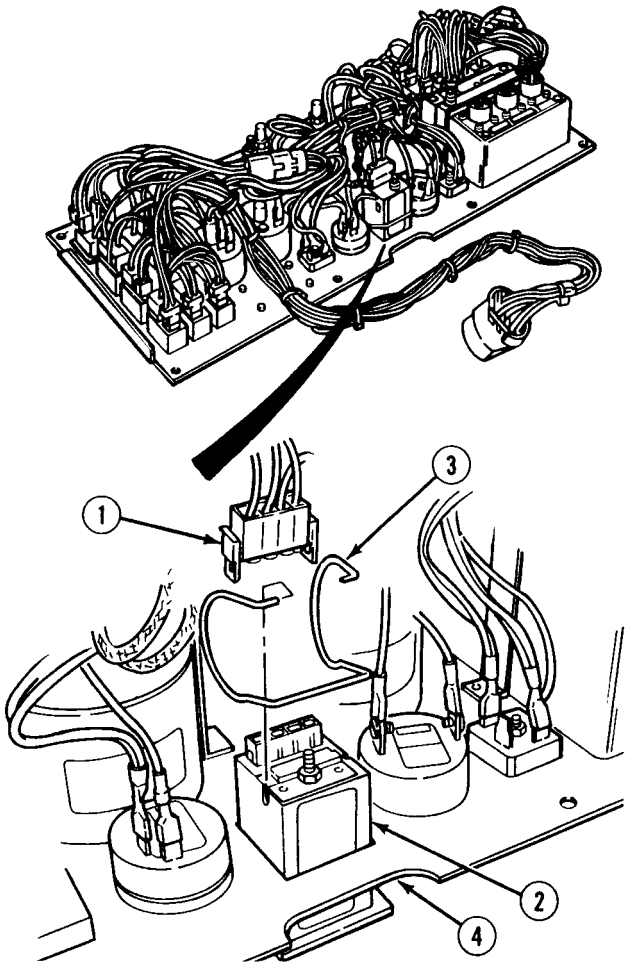
(1) Install odometer (KM) (2) into instrument panel (4).

(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).

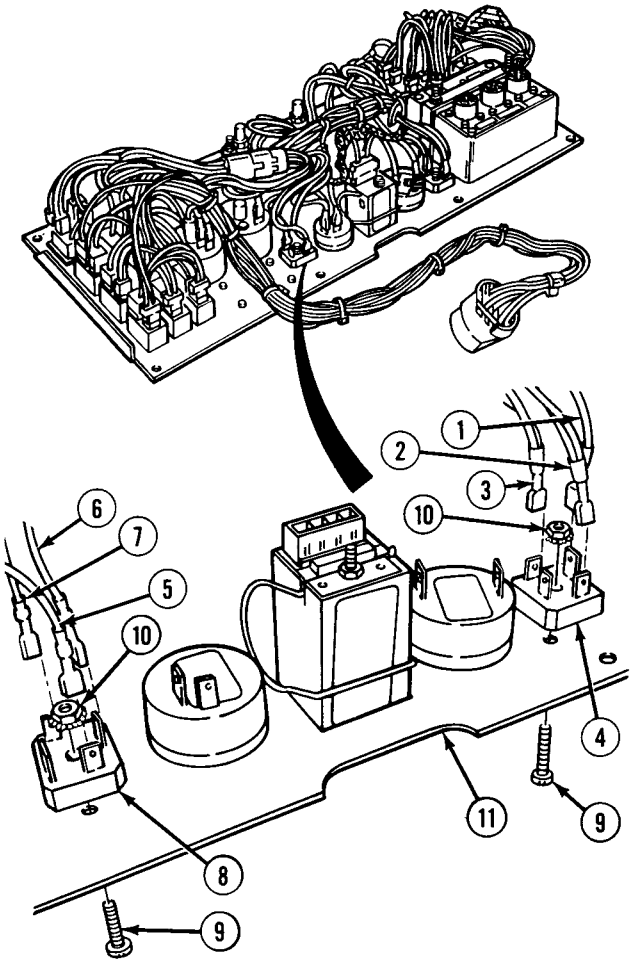
(c) Remove two screws (9), locknuts (10) and rectifiers (4) and (8) from instrument panel (11). Discard locknuts.

(2) *Installation.*

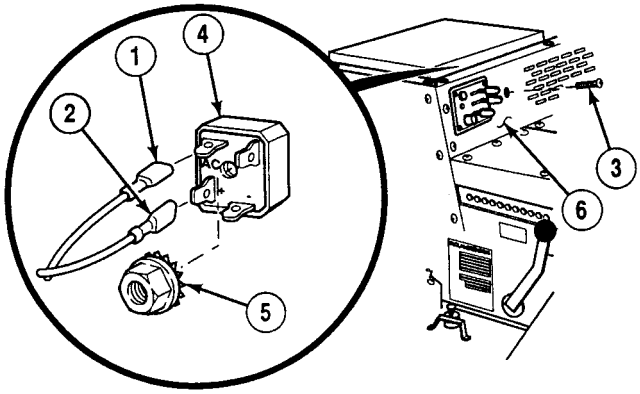
(a) Install rectifiers (4) and (8) on instrument panel (11) with two screws (9) and locknuts (10).

(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.

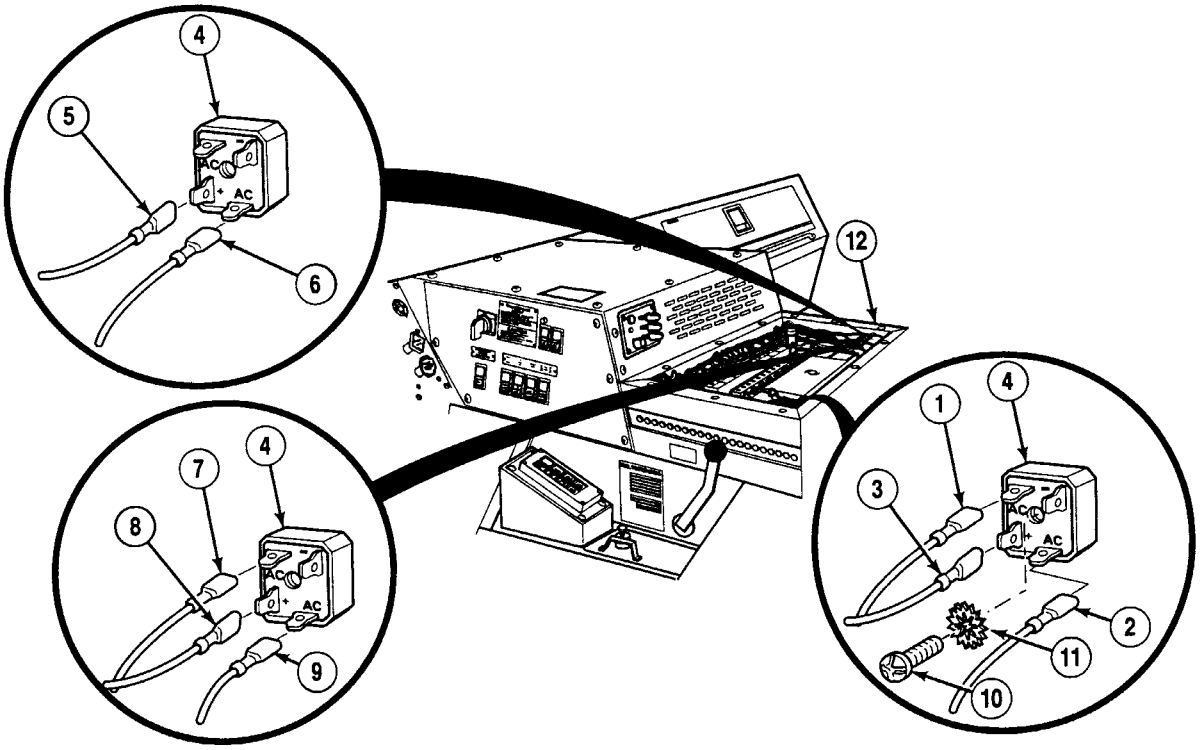
(2) *Installation.*

(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.*

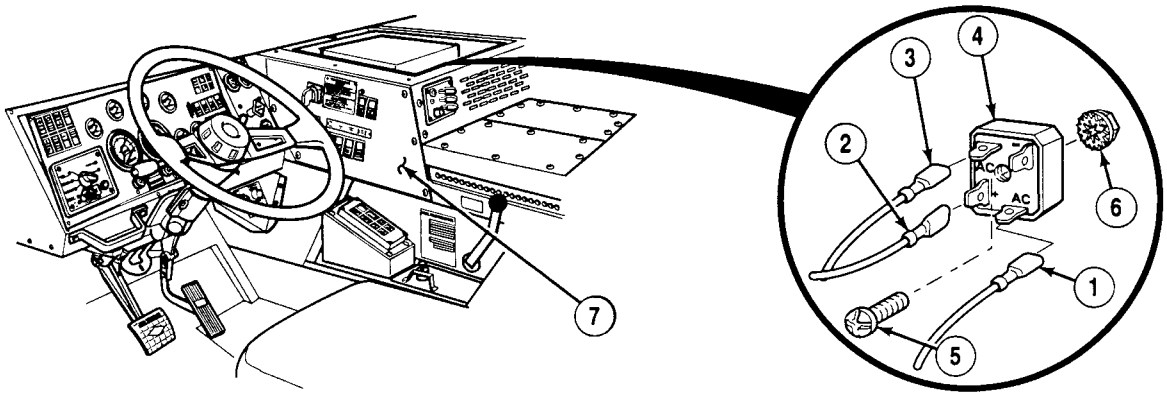
(a) Install three rectifiers (4) on ECB box (12) with screws (10) and lockwashers (11).

(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

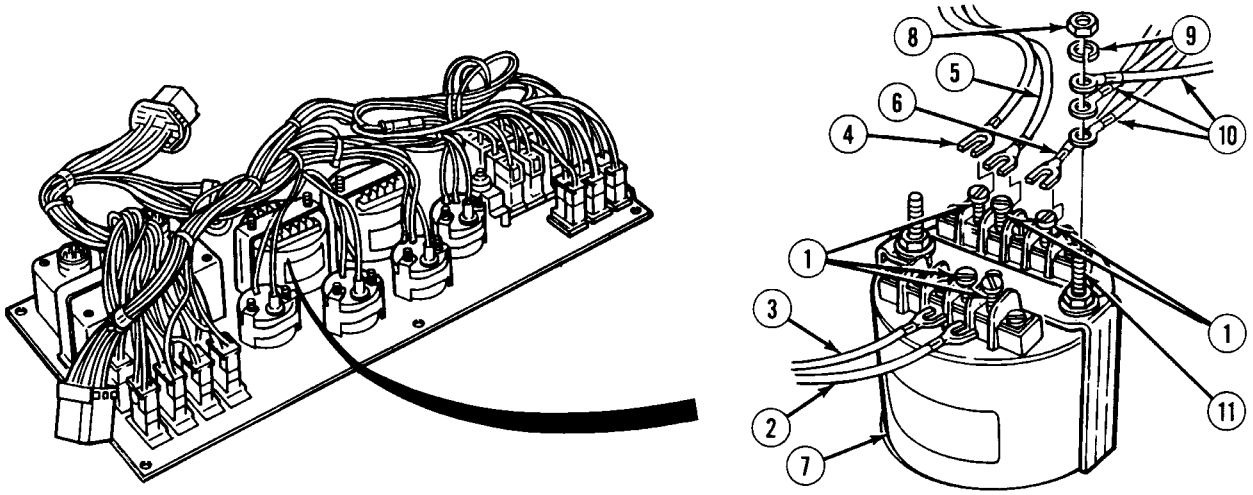
INITIAL SETUP

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.

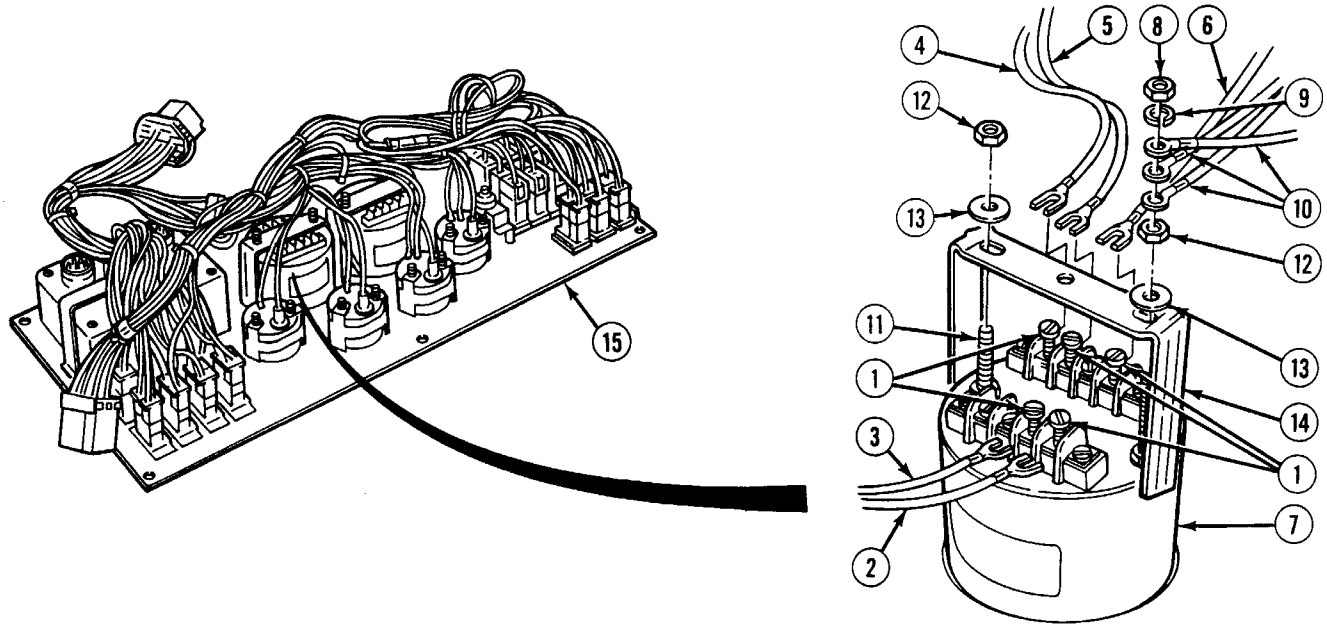


NOTE

- 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

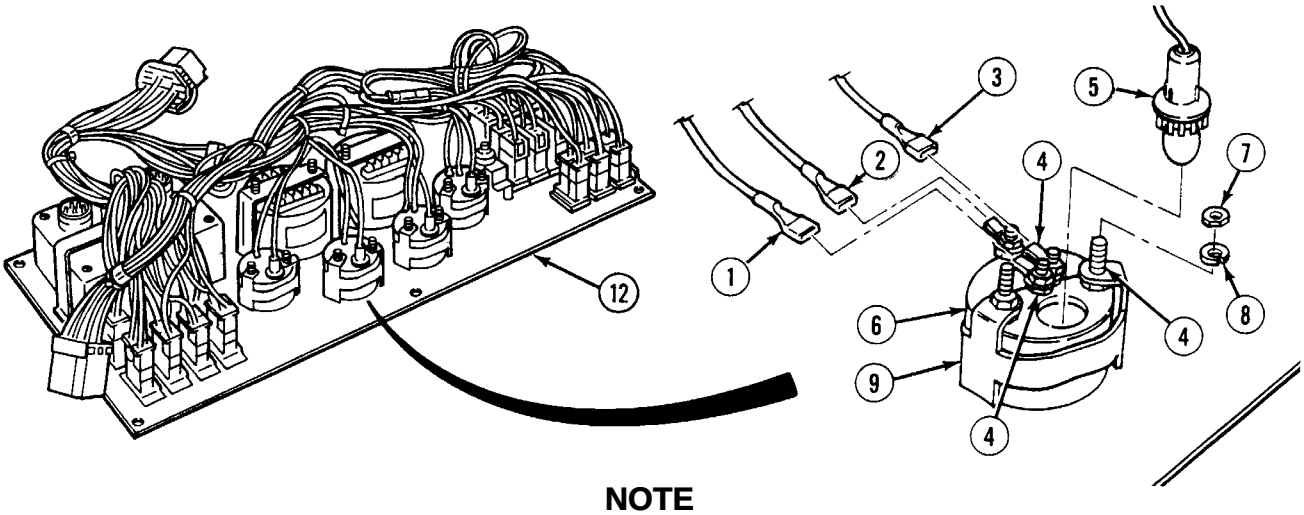
INITIAL SETUP

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).

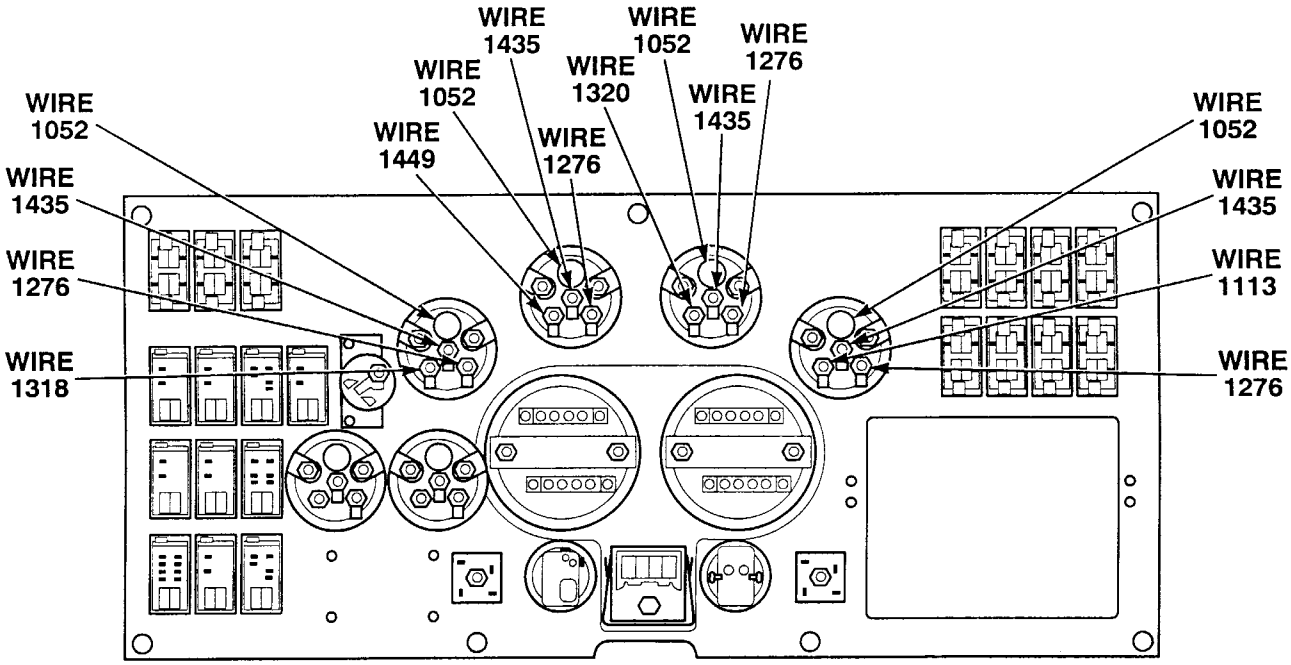
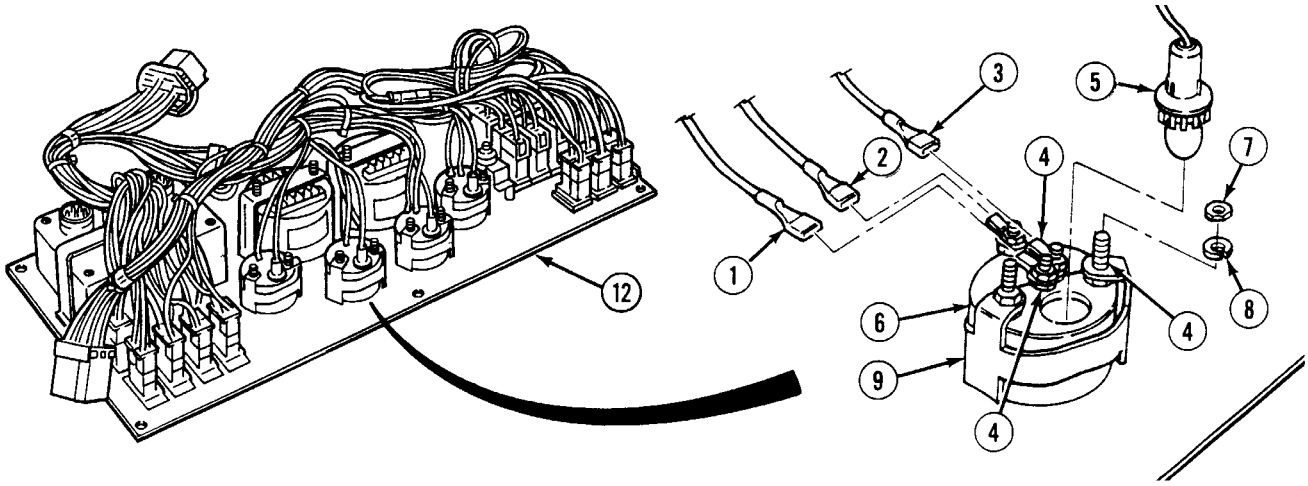


Figure 7-1. Electric Gage Wire Chart

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

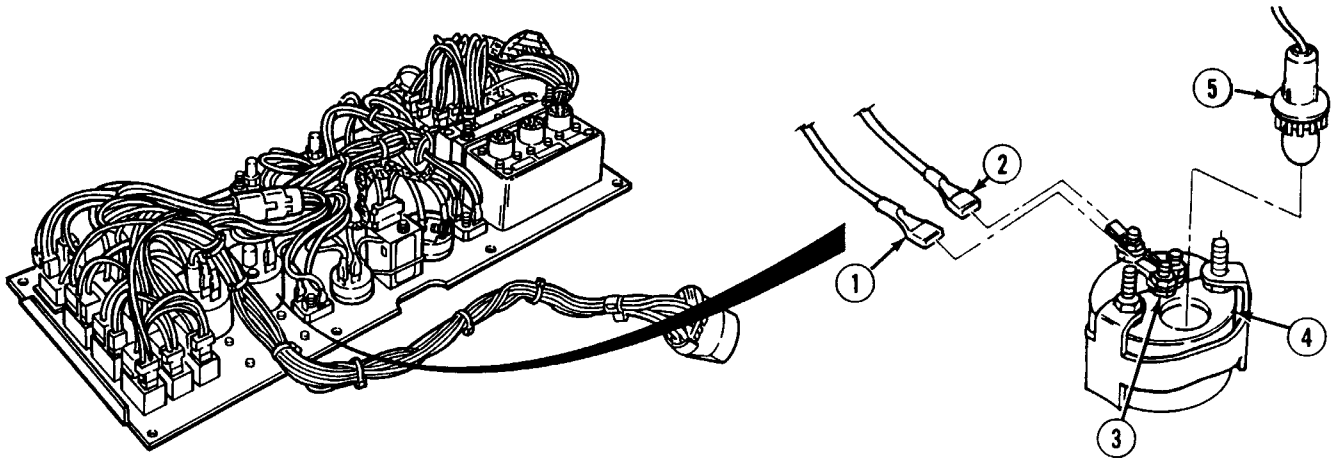
INITIAL SETUP

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.



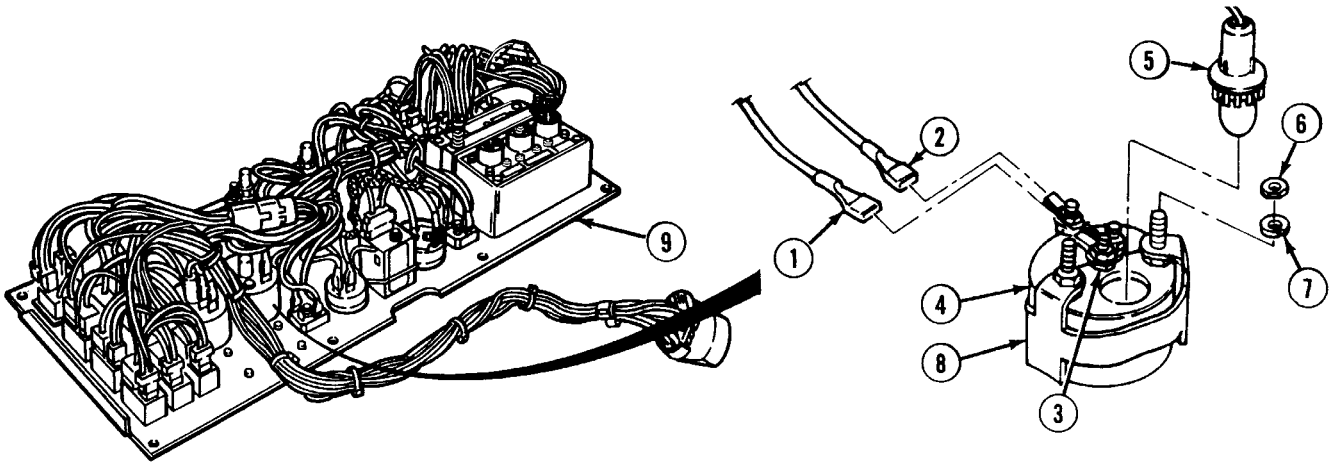
NOTE

- 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.

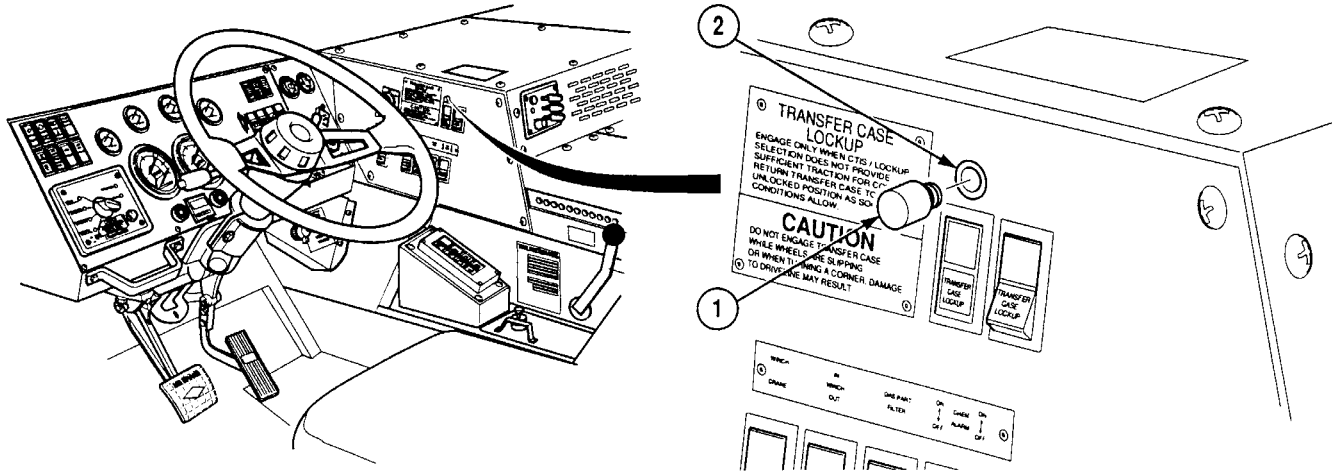
This task covers:

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

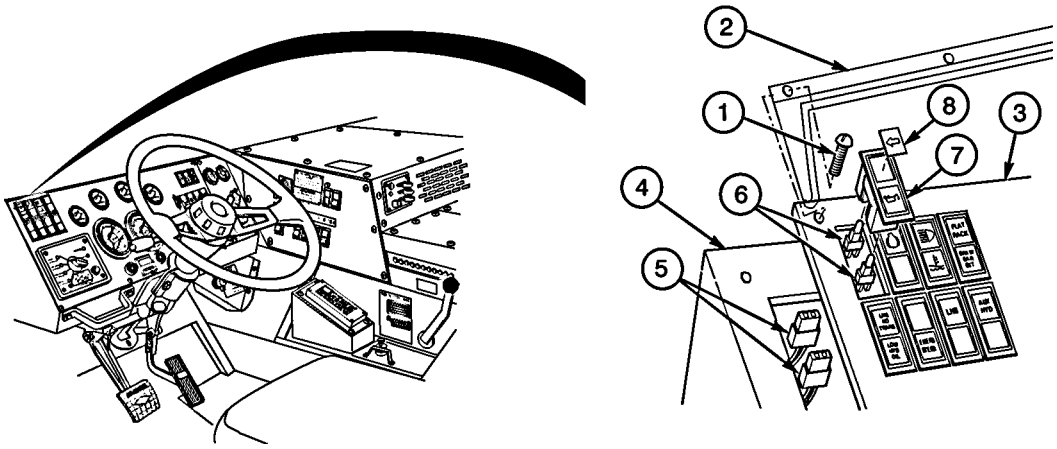
INITIAL SETUP

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.

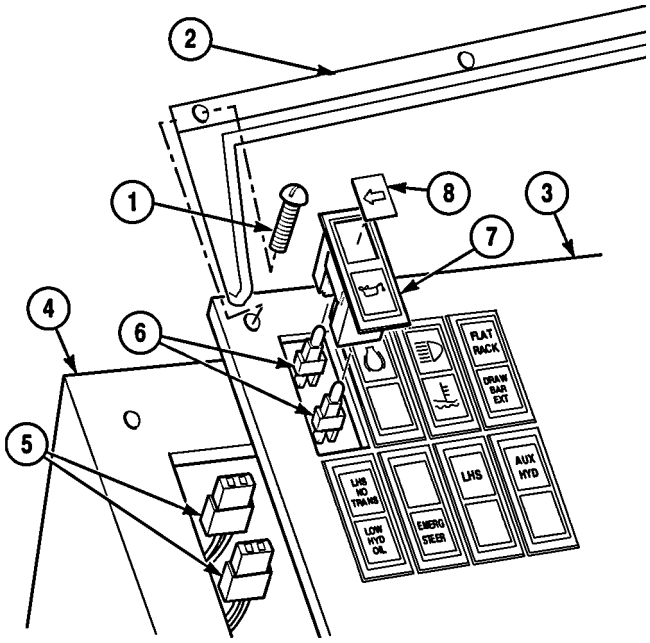
(5) Remove warning lamp (7) from instrument panel (3).

(6) Remove applique (8) from warning lamp (7).

b. Installation.

CAUTION

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

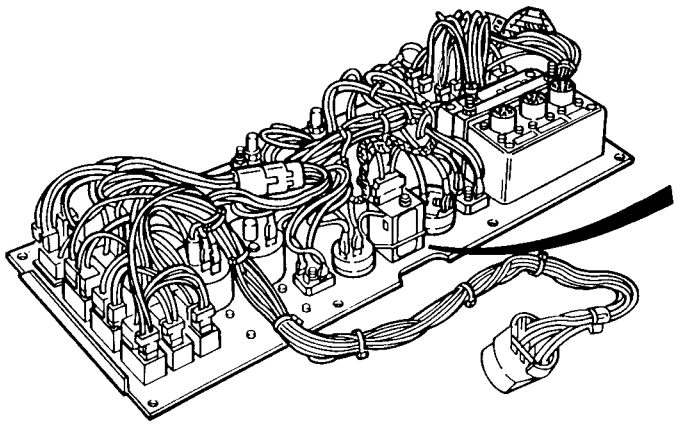
INITIAL SETUP

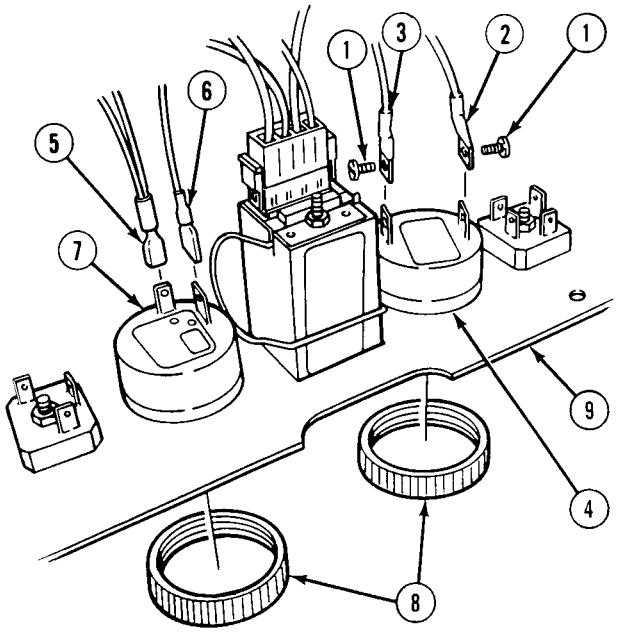
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

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.

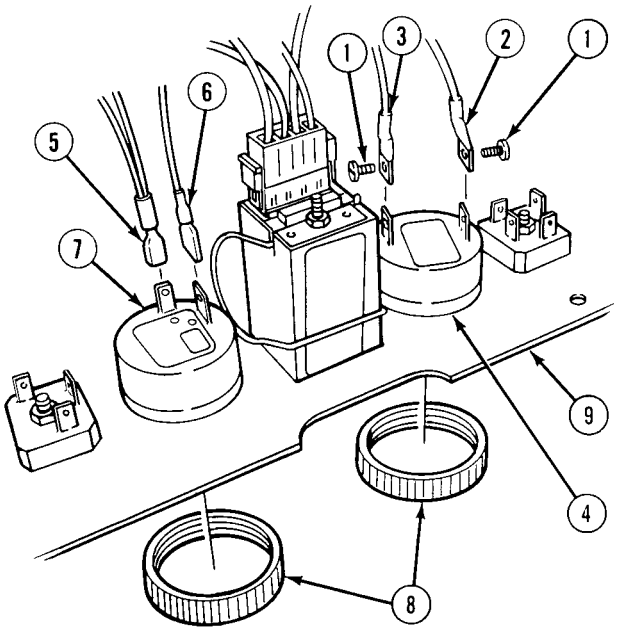
NOTE

- 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

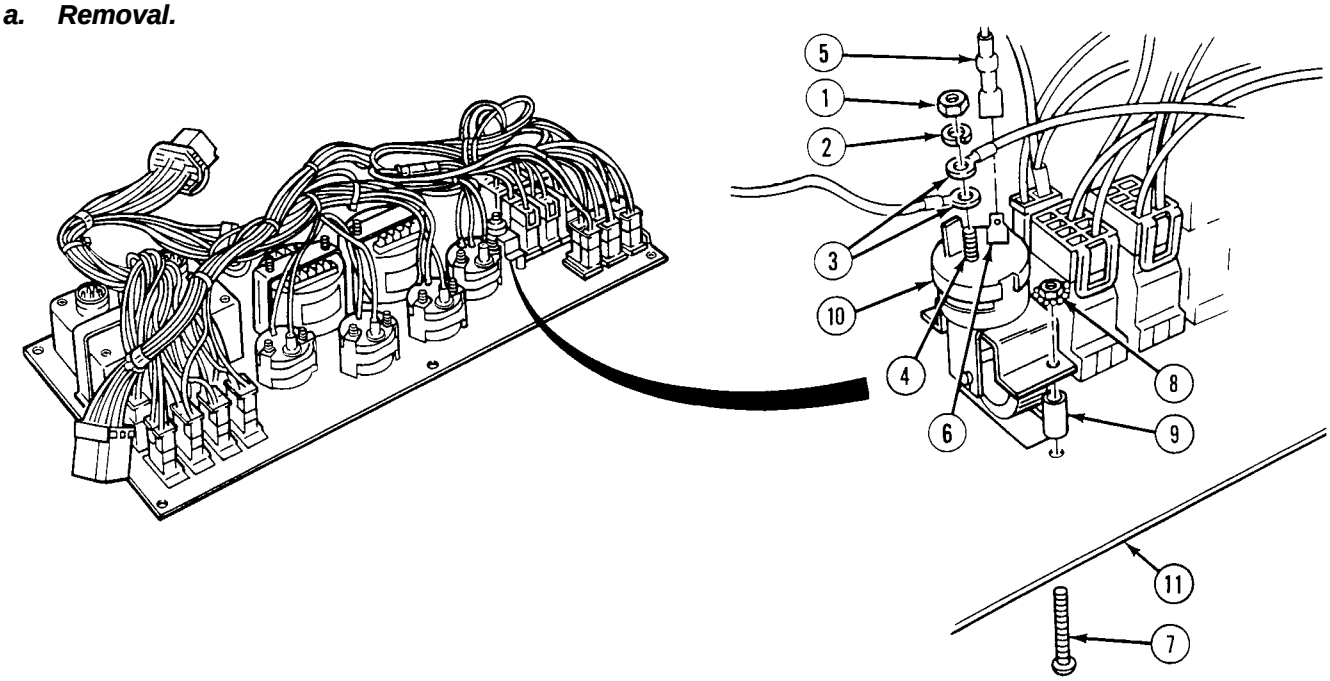
INITIAL SETUP

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).

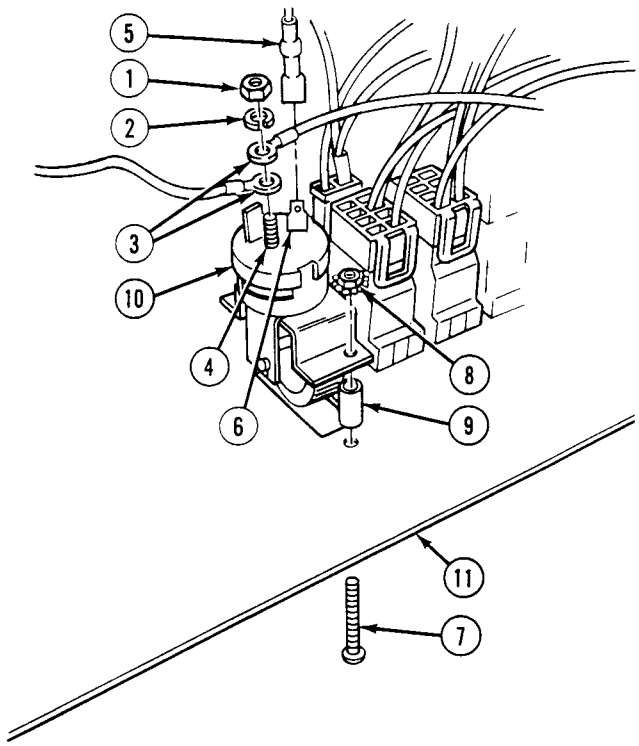
(3) Remove two screws (7), locknuts (8), spacers (9) and thumbwheel rheostat switch (10) from instrument panel (11). Discard locknuts.

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

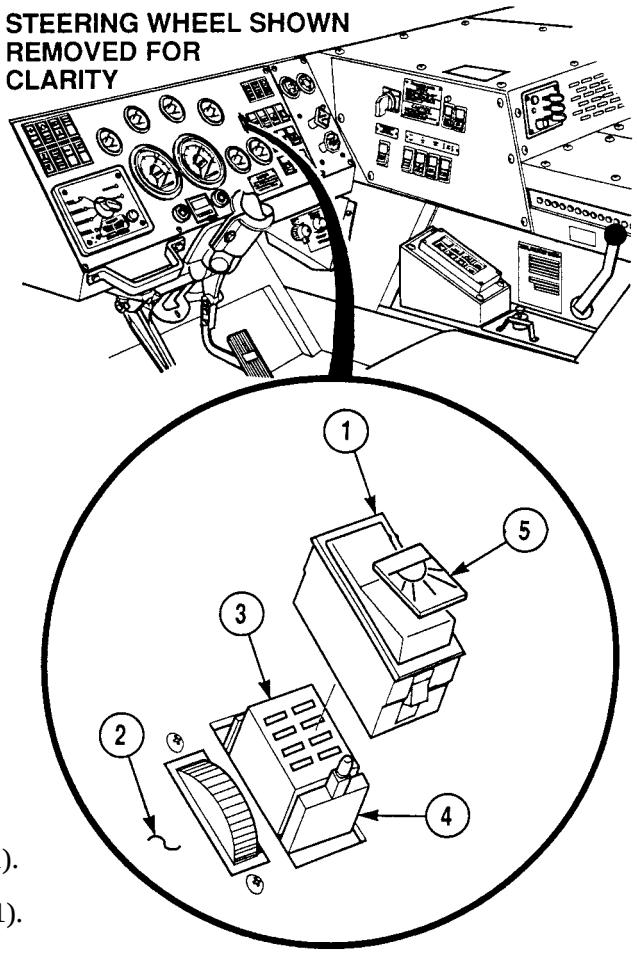
- All 12 rocker switches are removed the same way.
- Tag and mark wires prior to removal.
- Rocker switch is removed by compressing retaining tabs.

(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).



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/IV 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)

Materials/Parts
Locknut (2) (Item 97, 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) Remove two locknuts (1), screws (2), MC 13 diagnostic connector (3) and bracket (4). Discard locknuts.

(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).

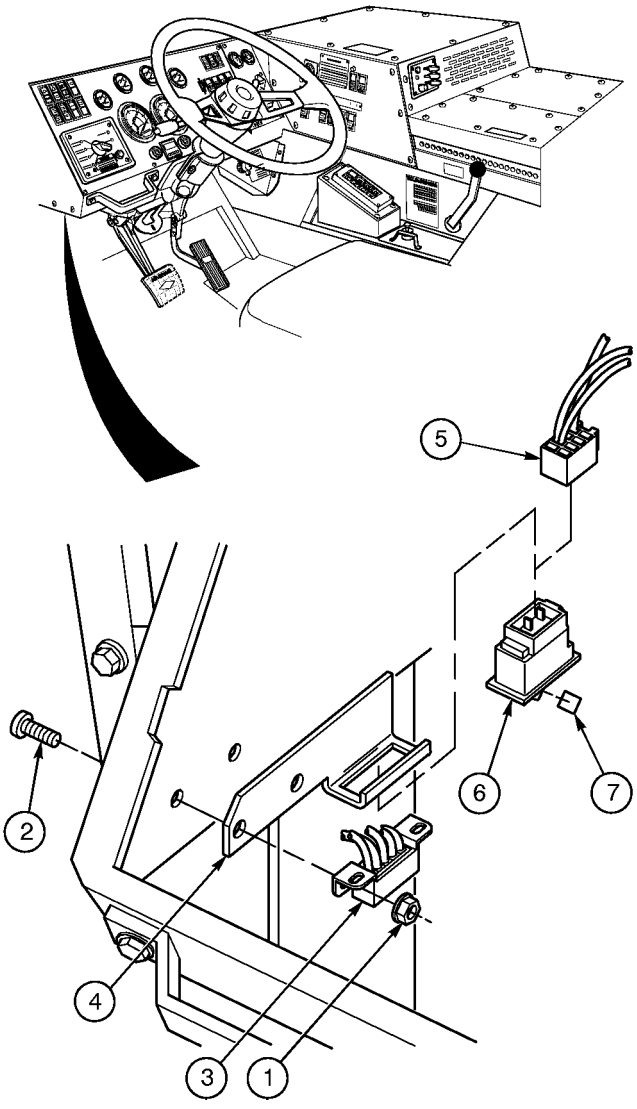
(2) Install switch (6) on bracket (4).

(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

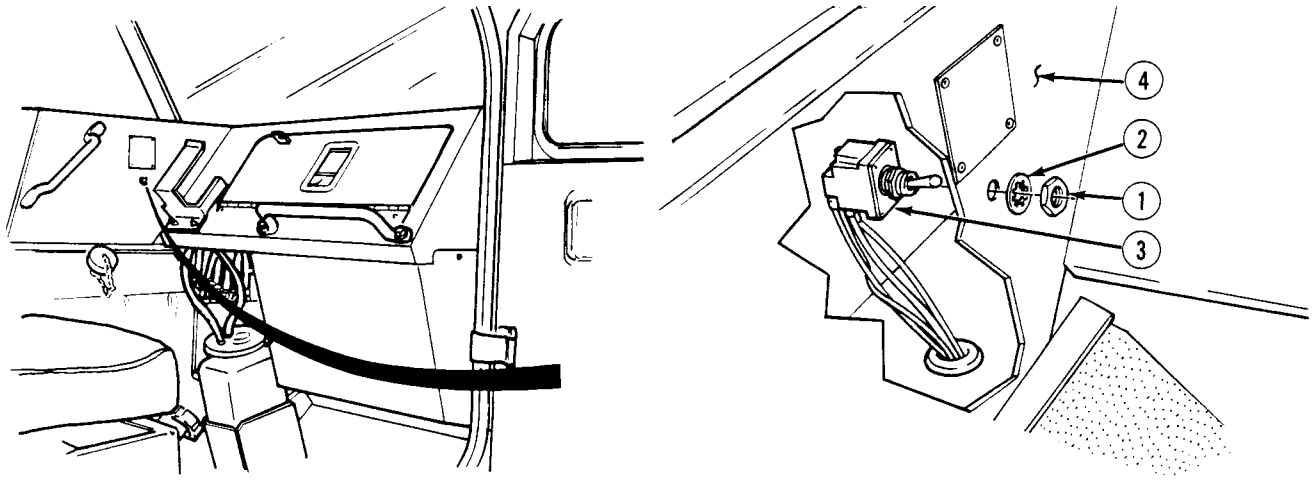
INITIAL SETUP

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.

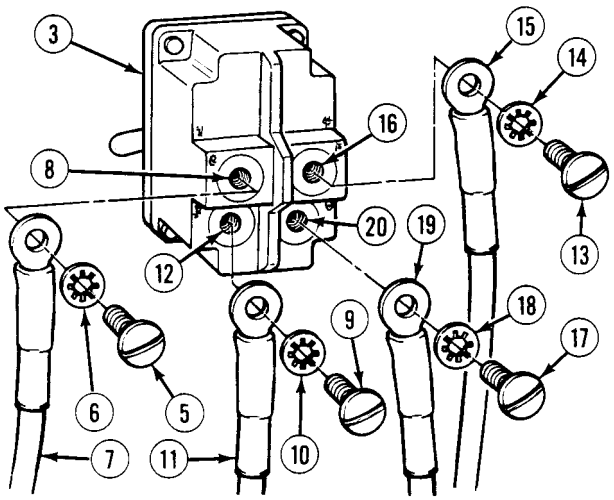
(1) Remove nut (1), lockwasher (2) and toggle switch (3) from heater control panel (4).

(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.

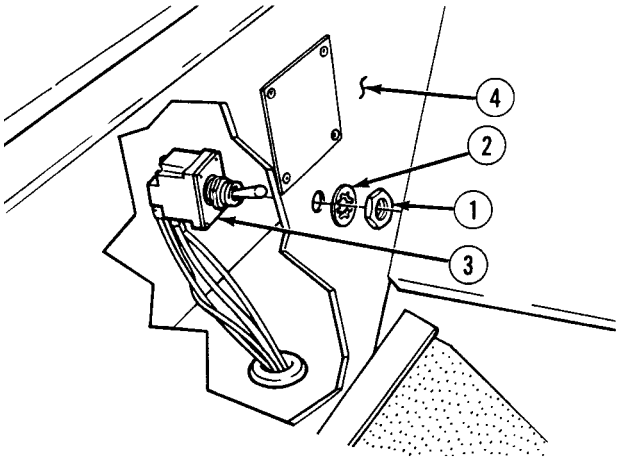
(1) Intall wire 1952B (19), lockwasher (18) and screw (17) on terminal 6 (20) of toggle switch (3).

(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:

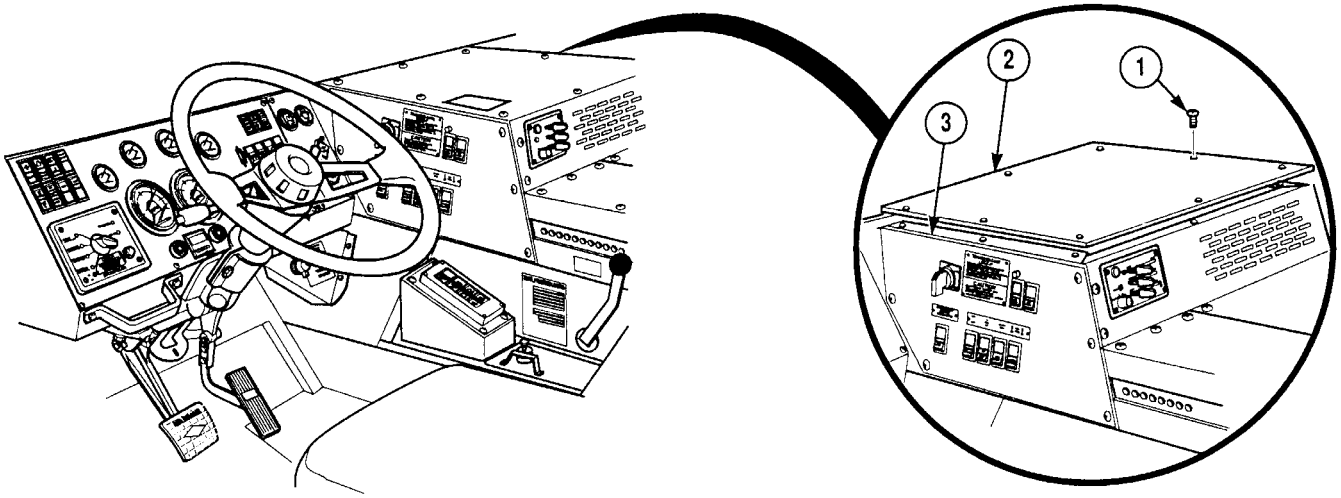
a. Removal b. Installation c. Follow-On Maintenance

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).

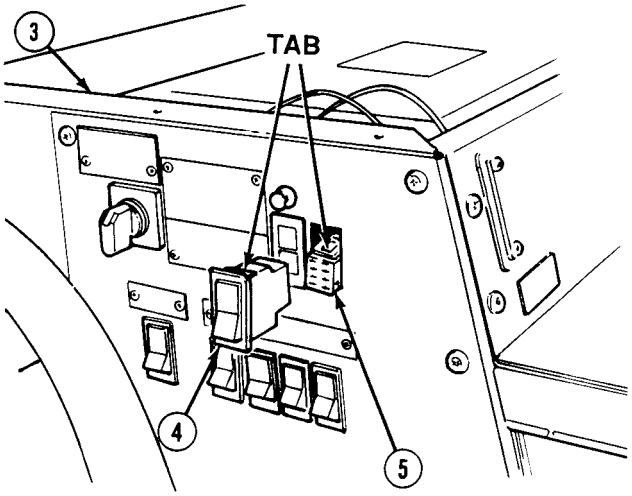
CAUTION

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.

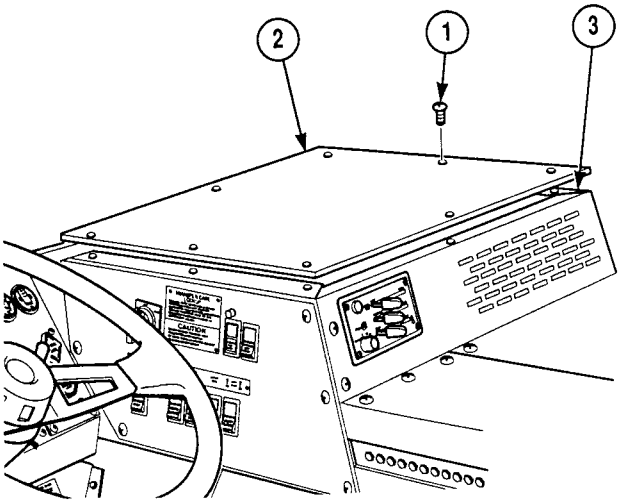
NOTE

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

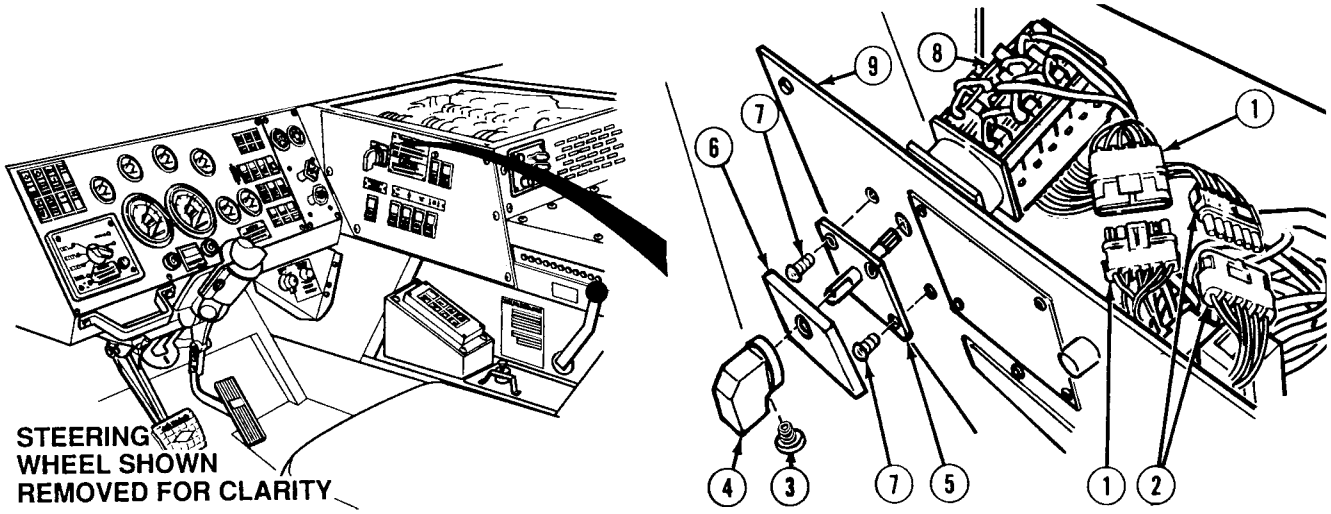
INITIAL SETUP

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).

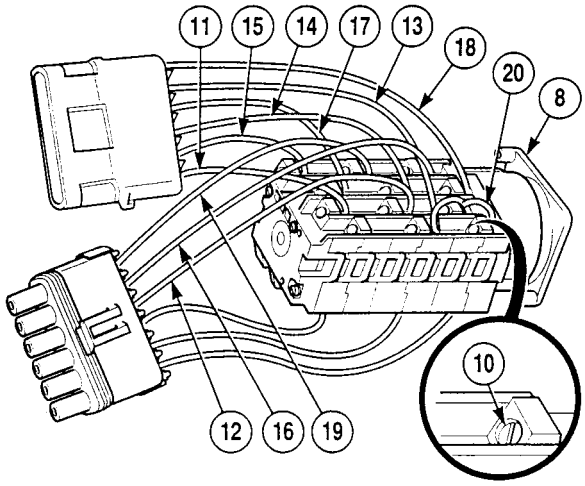
(5) Remove four screws (7), hydraulic selector switch front mounting plate (5) and hydraulic selector switch (8) from heater control left side panel (9).

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 jumperwire s (20) from hydraulic selector switch (8).



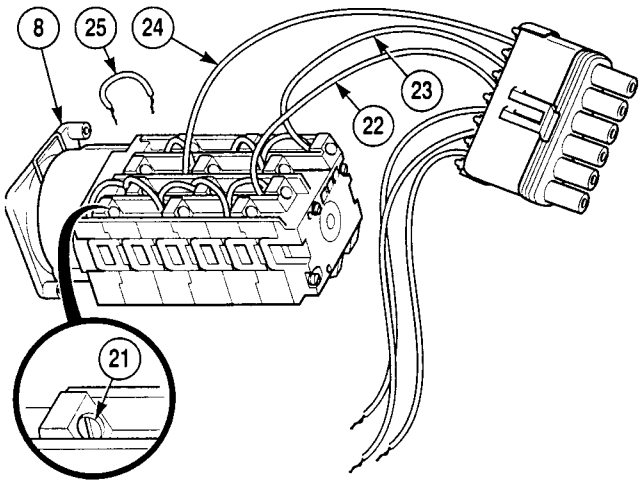
(8) Loosen twelve captive screws (21) and remove wires 1488 (22), 1489 (23) and 1490 (24).

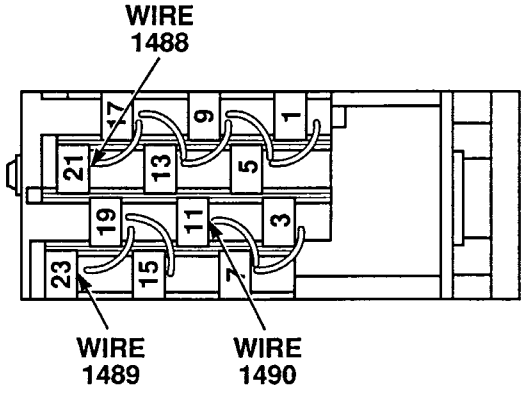
(9) Remove nine jumperwires (25) from hydraulic selector switch (8).

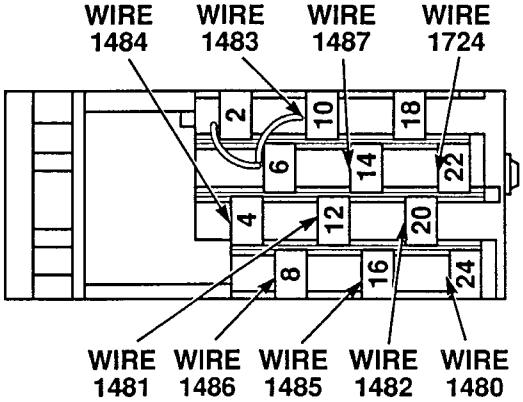
b. Installation.

(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).



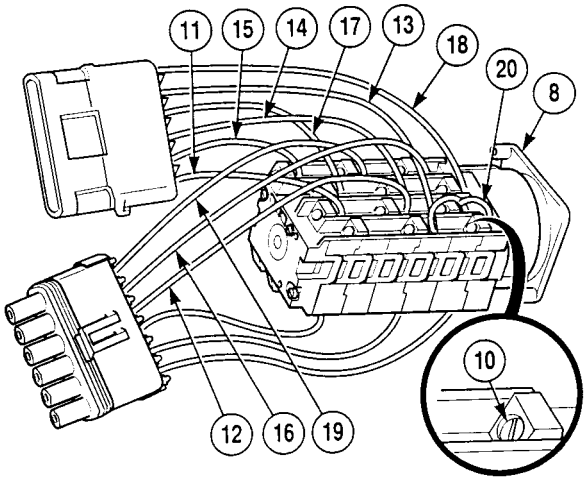




7-31. HYDRAULIC SELECTOR SWITCH REPLACEMENT (CONT).

(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

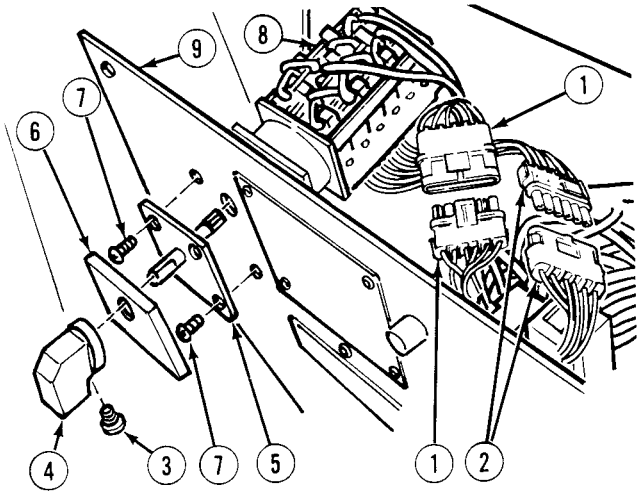
Hydraulic selector switch face plate snaps in place.

(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

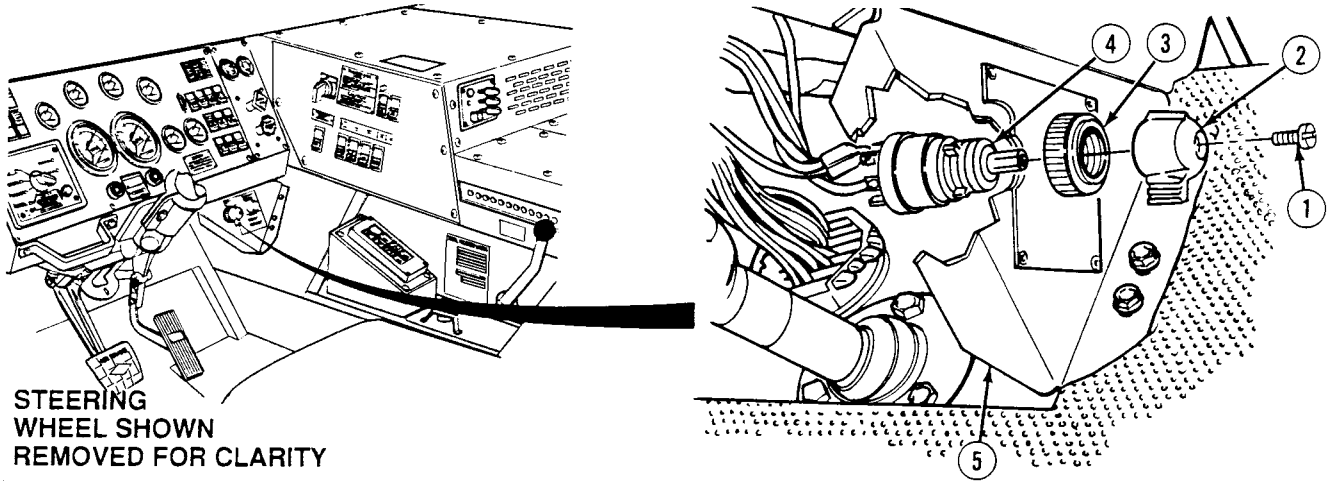
INITIAL SETUP

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.



(1) Remove screw (1), lever (2) and nut (3) from engine switch (4).

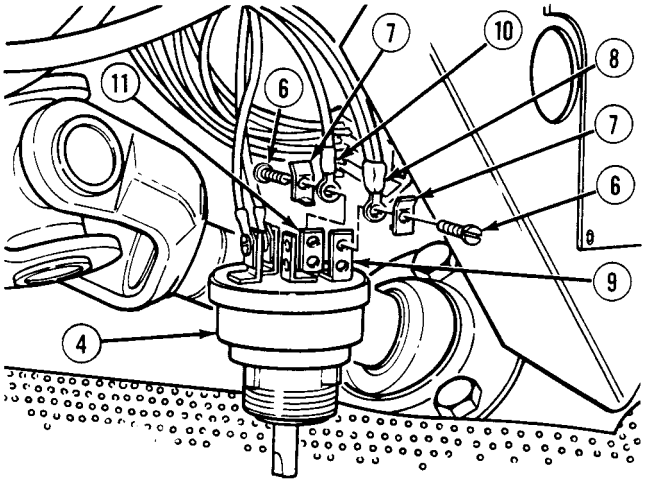
(2) Remove engine switch (4) from instrument panel (5).

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).

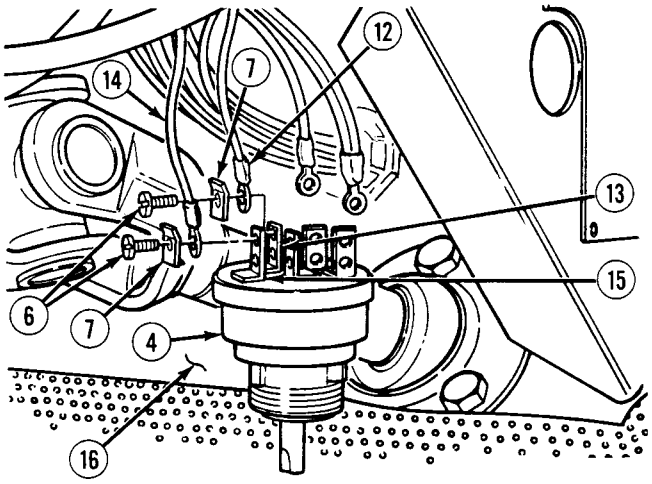


7-32. ENGINE SWITCH REPLACEMENT (CONT).

(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).

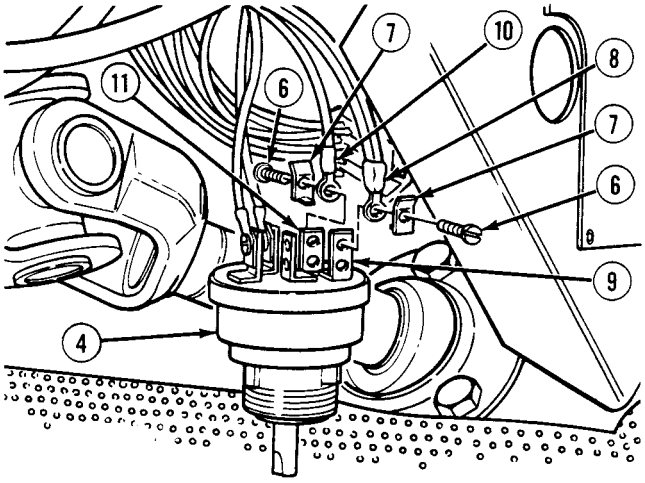
(3) Install wire 1021 (12), washer (7) and screw (6) on starter post (13) on engine switch (4).

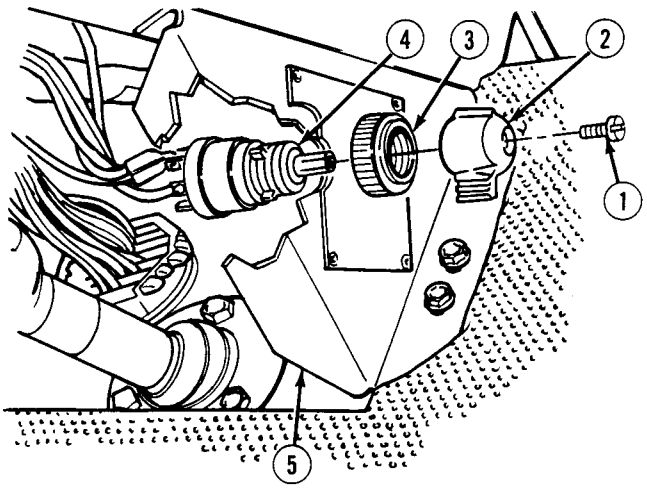
(4) Install wire 1640 (10), washer (7) and screw (6) on ACC post (11) on engine switch (4).

(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

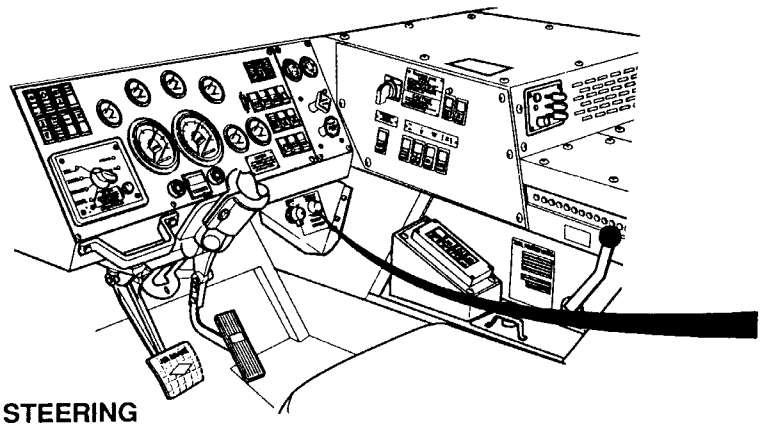
INITIAL SETUP

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

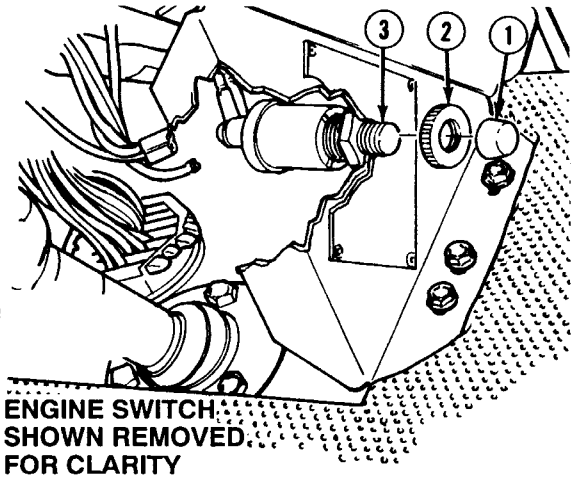
Materials/Parts
Tags, Identification (Item 88, Appendix C)

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.

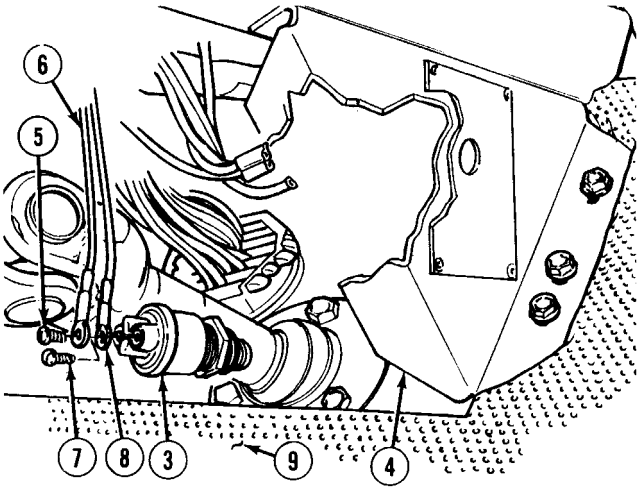
(1) Remove rubber cap (1) and nut (2) from ether start aid switch (3).

(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).



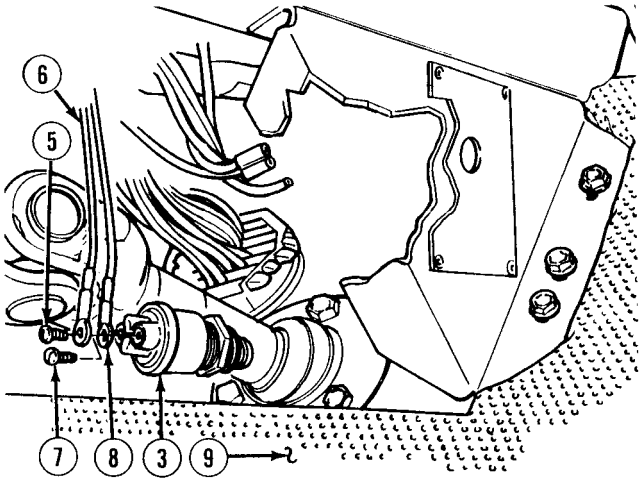
7-33. ETHER START AID SWITCH REPLACEMENT (CONT).

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).

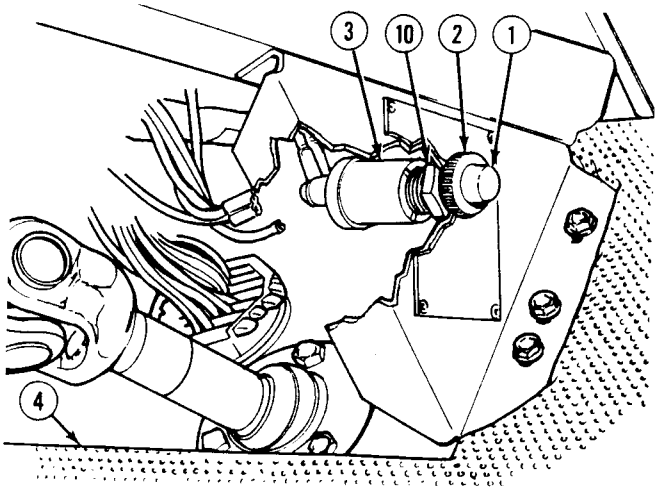


(4) Bottom out nut (10) against ether start aid switch (3).

(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.

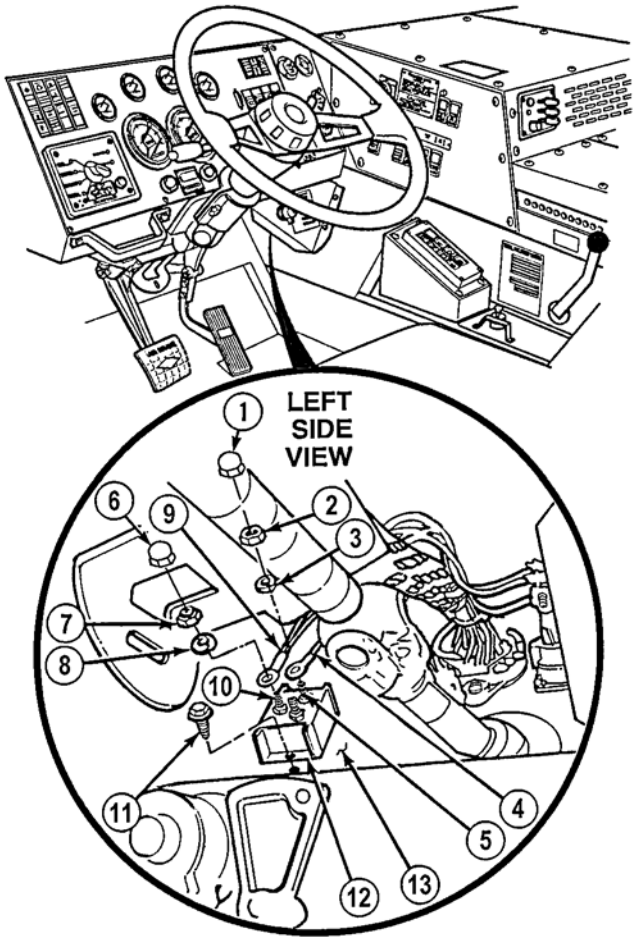
NOTE

- 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

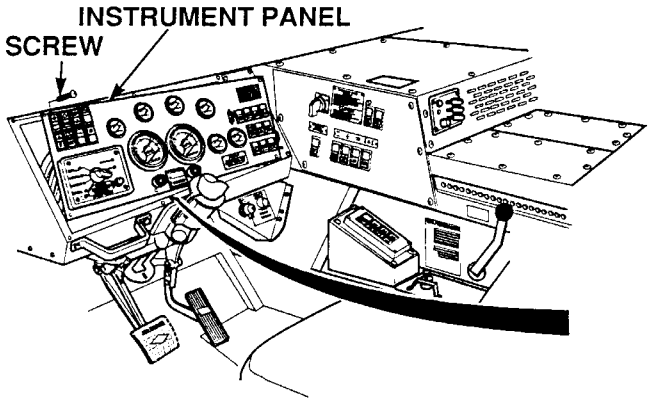
Tools and Special Tools
Tool Kit, Electrical (Item 73, Appendix G)
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Puller Kit (Item 51, Appendix G)

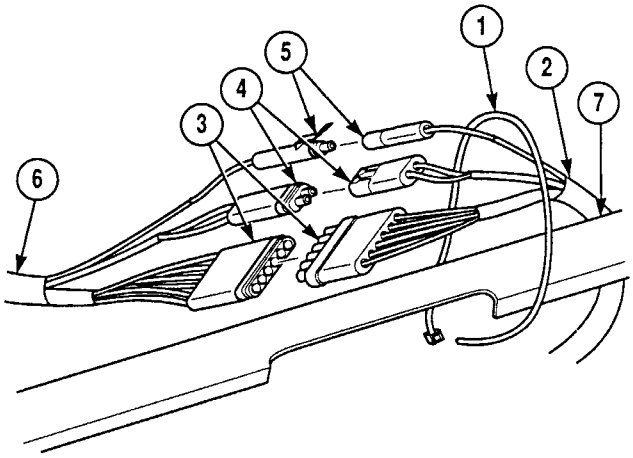
Materials/Parts
Cable Ties (Item 26, Appendix C)
Tape, Insulating (Item 88, Appendix C)
Electrical Contacts (5) (Item 25, Appendix F)
Electrical Contacts (Item 26, Appendix F)

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.

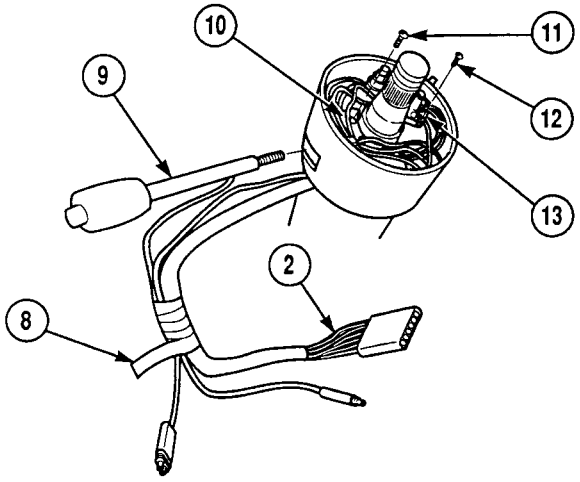
(2) Disconnect connectors MC7 (3), MC91 (4) and MC92 (5) from dash wiring harness (6).

(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

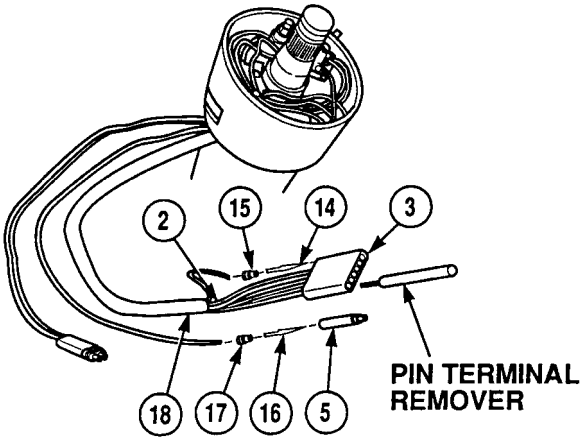
Tag and mark electrical pins before removing from electrical connector.

(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).

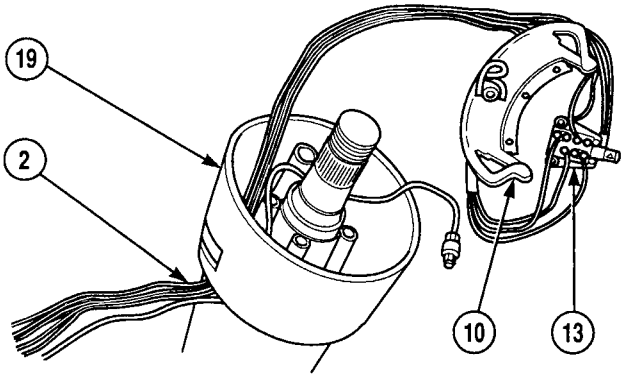
(10) Remove turn signal wiring harness sleeve (18) from turn signal wiring harness (2).



(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).



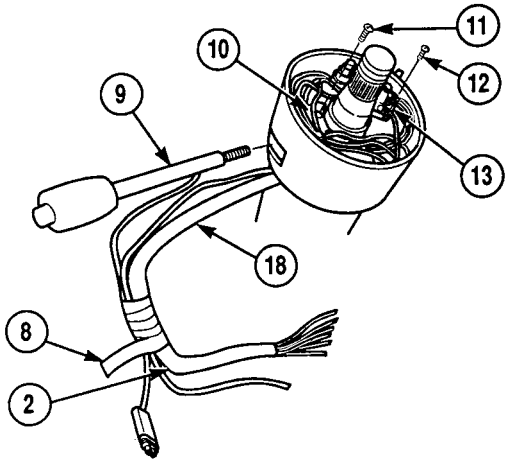
7-35. TURN SIGNAL SWITCH/HAZARD SWITCH REPLACEMENT (CONT).

(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

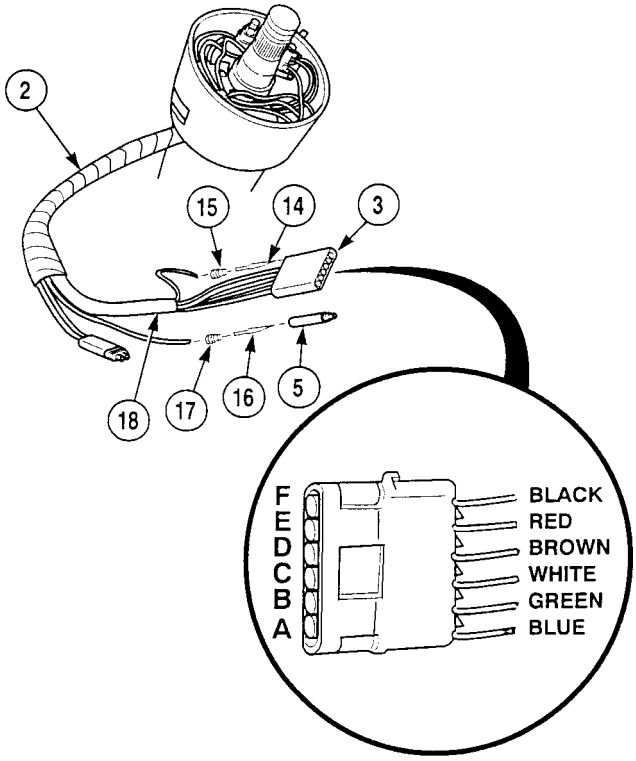
Strip wire insulation to allow 1/4 in. of wire to be exposed.

(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).

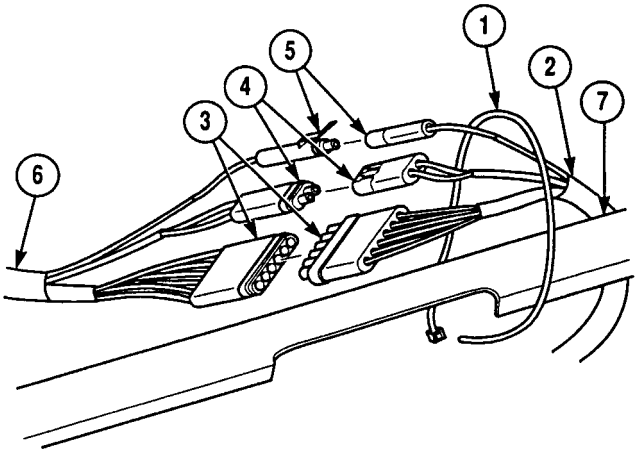
(9) Install six dust boots (15) and contact (14) in turn signal connector MC7 (3).



(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

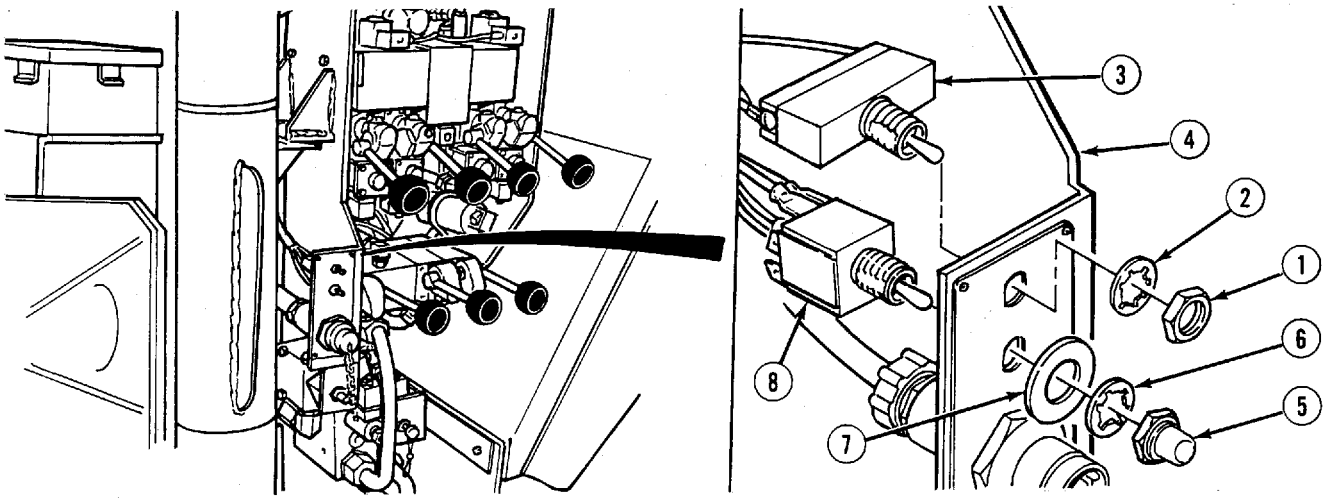
INITIAL SETUP

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).

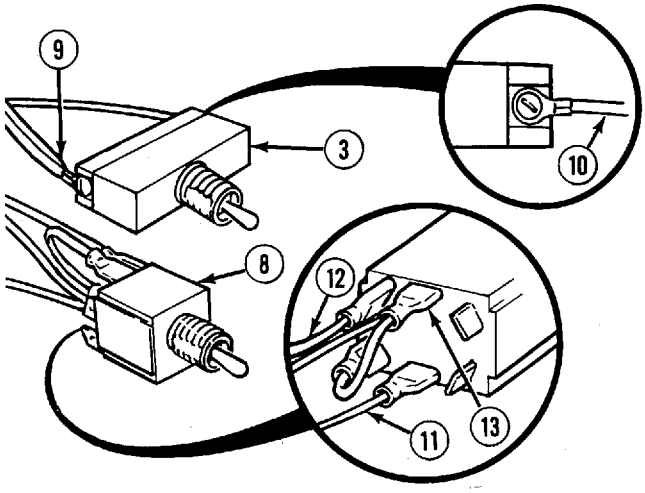
(2) Remove nut boot (5), lockwasher (6), washer (7) and HIGH IDLE switch (8) from bracket (4).

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).



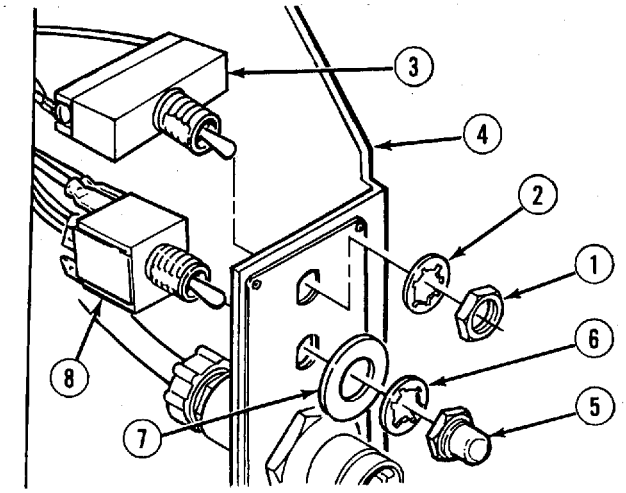
b. Installation.

(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
b. Installation
c. Adjustment
d. Follow-On Maintenance

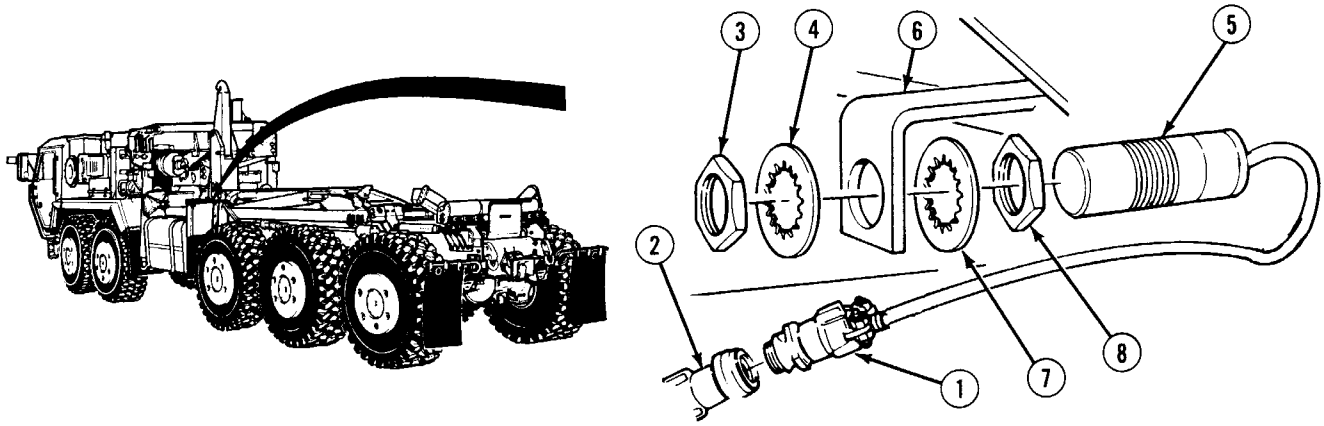
INITIAL SETUP

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).

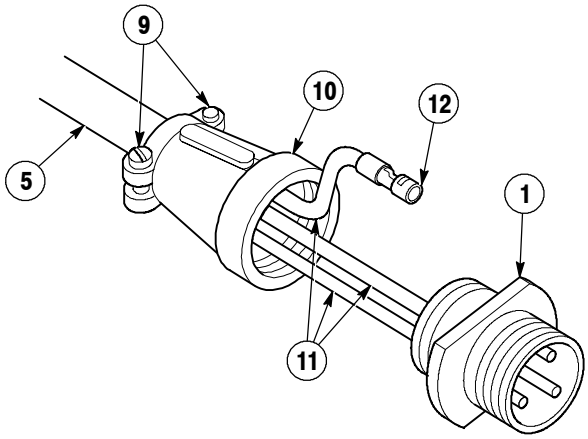
NOTE

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.

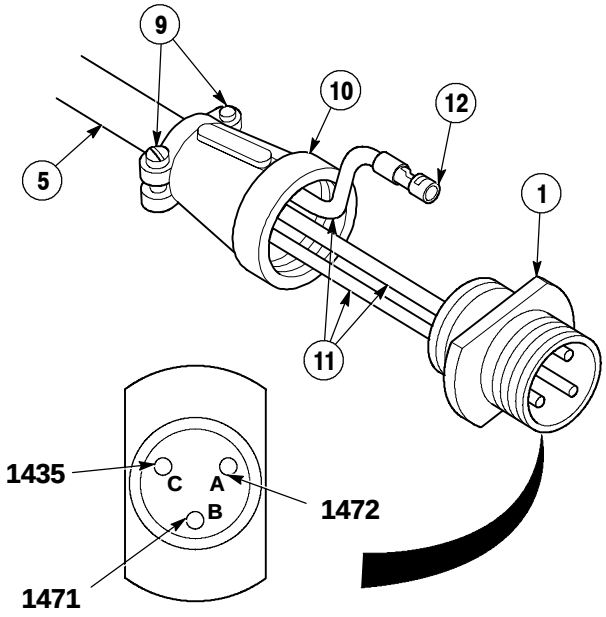
(1) Position nut (10) and MC88 connector (1) on proximity switch (5).

(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).



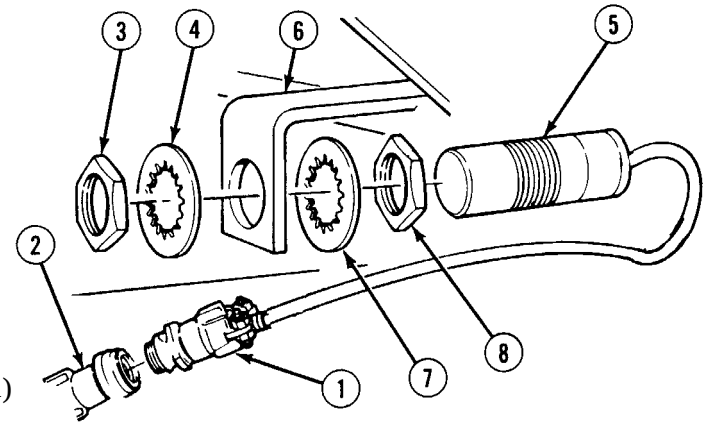
NOTE

If lockwashers are not used in Steps (4) and (5), serrated side of nuts face bracket.

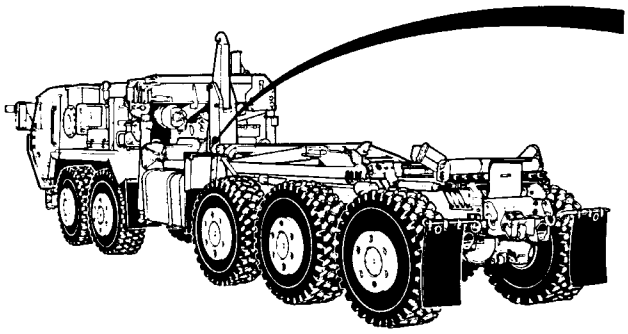
(4) Install nut (8) and lockwasher (7) on proximity switch (5).

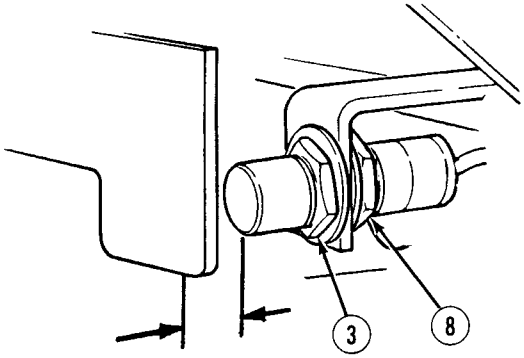
(5) Install proximity switch (5), lockwasher (4) and nut (3) on compression frame (6).

(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
b. Installation
c. Adjustment
d. Follow-On Maintenance

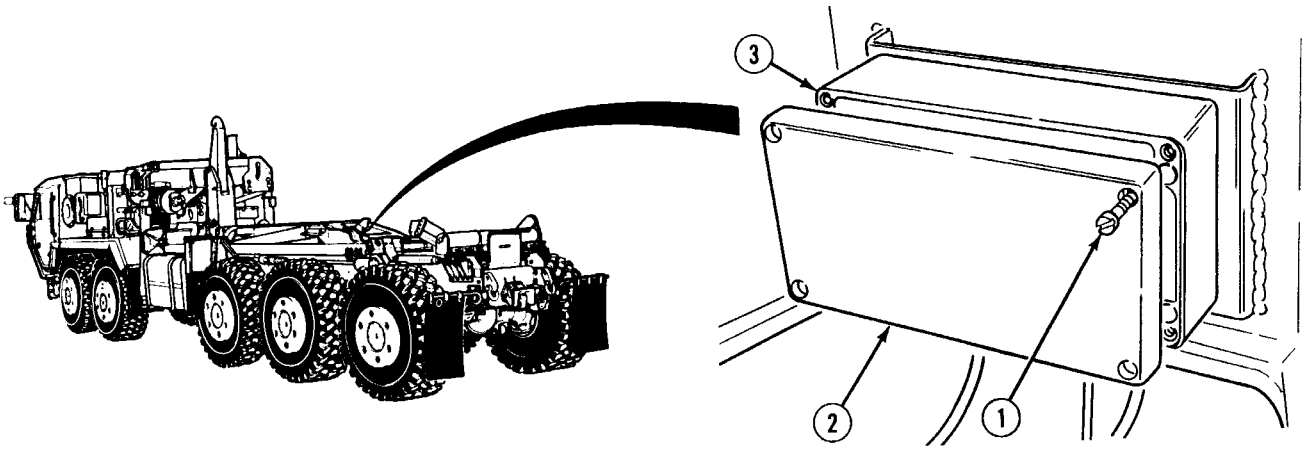
INITIAL SETUP

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

Materials/Parts
Cable Ties (Item 25, Appendix C)
Tags, Identification (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).

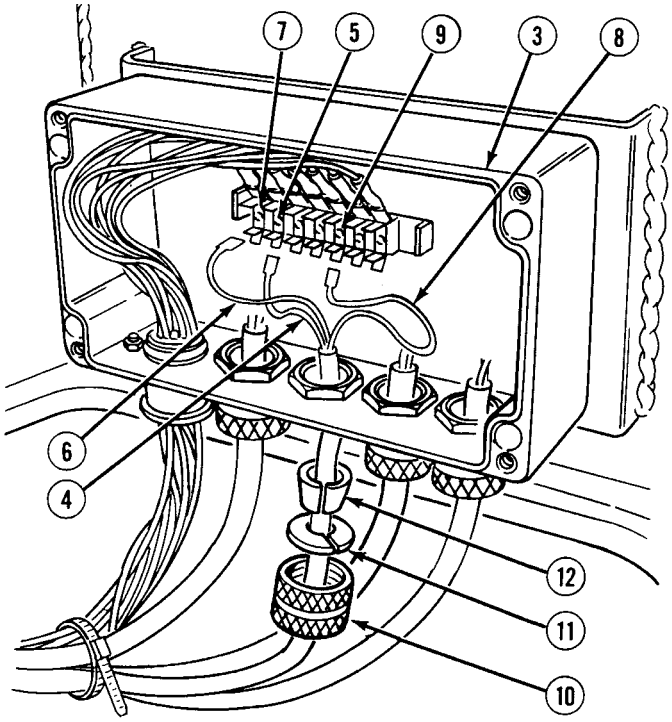
7-38. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (HOOK ARM UP) (CONT).

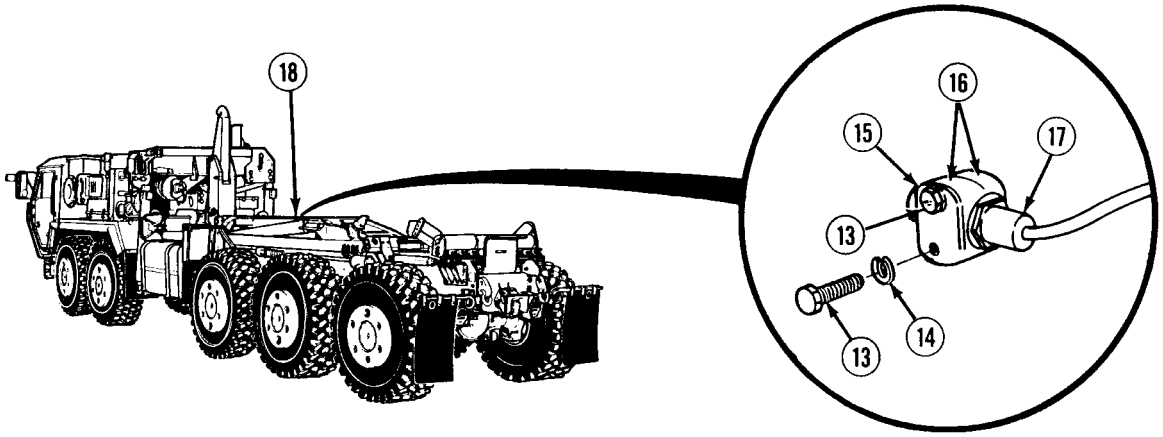
NOTE

- 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).

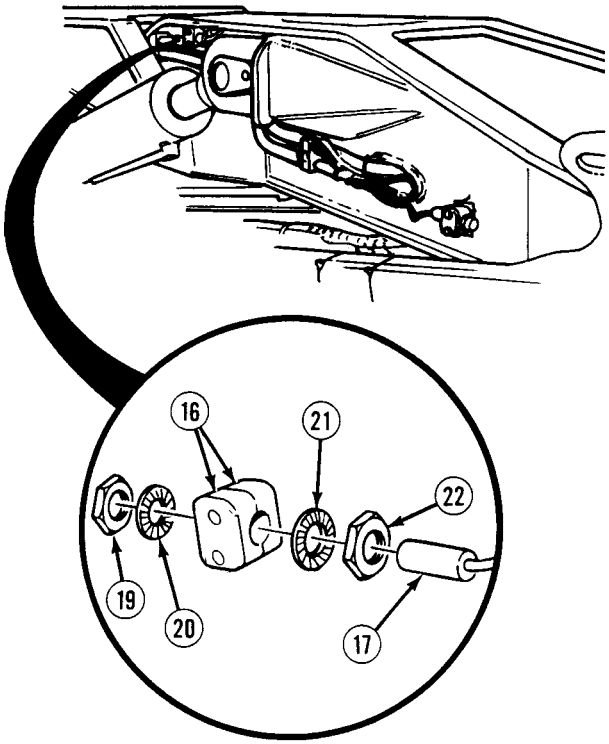
(6) Remove nut (19), lockwasher (20), two clamp halves (16), lockwasher (21) and nut (22) from proximity switch (17).

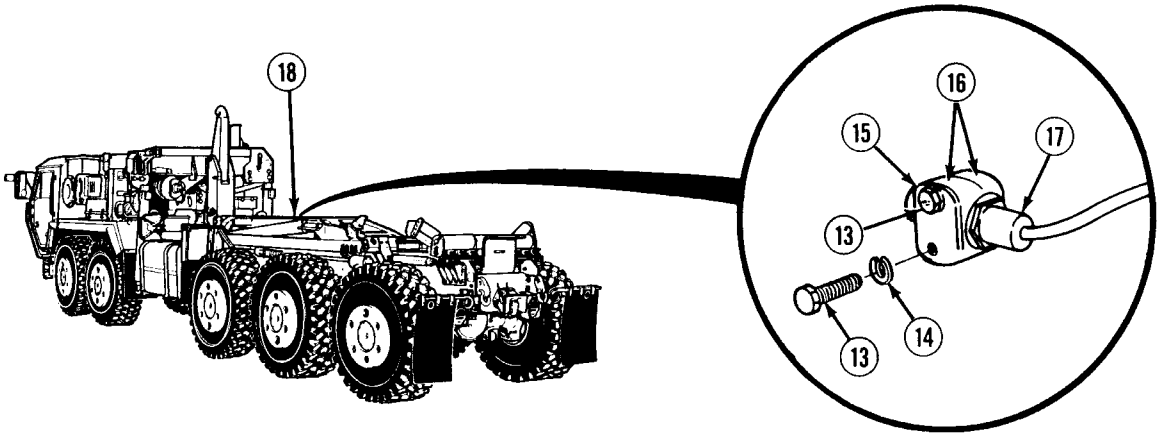
b. Installation.

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).

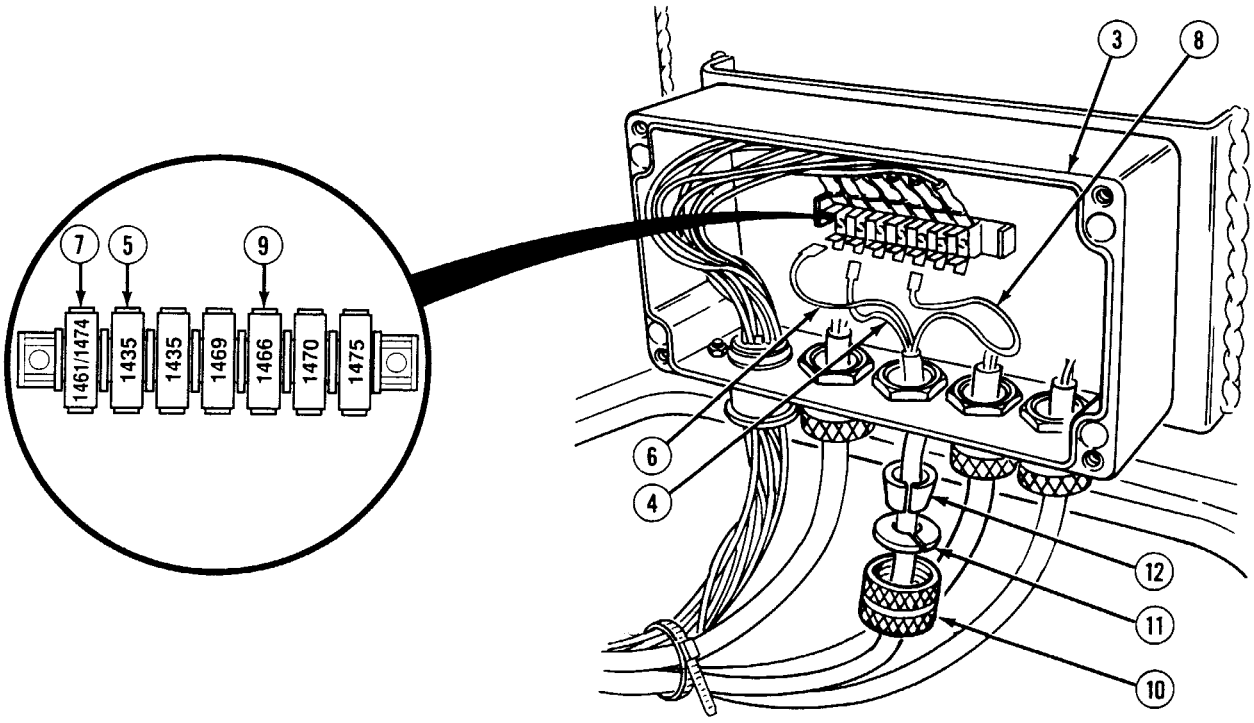
(1) Install nut (22), lockwasher (21), two clamp halves (16), lockwasher (20) and nut (19) on proximity switch (17).





(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).



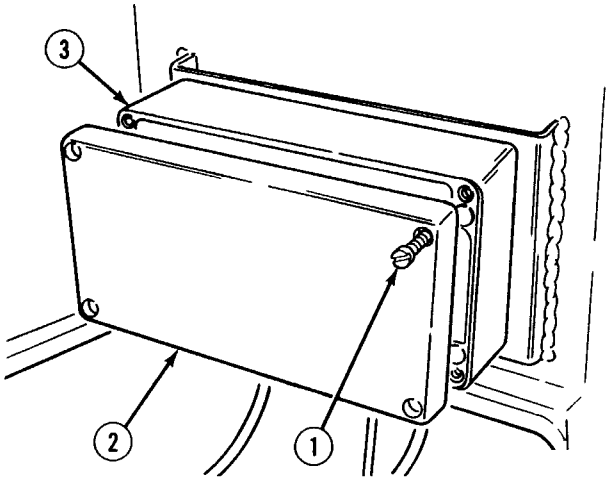
NOTE

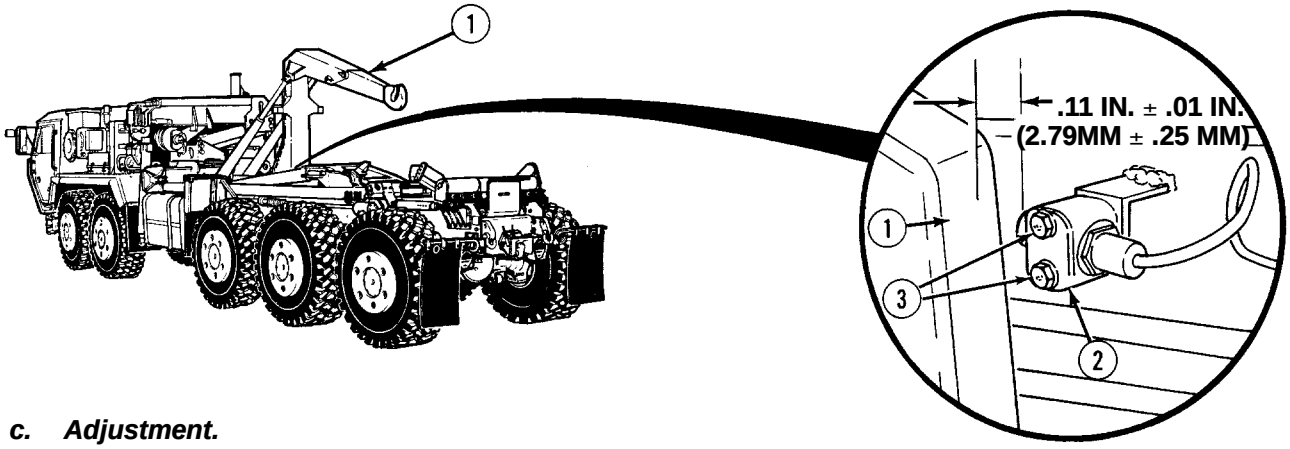
Wire numbers on harnesses are positioned on terminal strip as indicated in chart.

(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 in. ± 0.01 in. (2.79 mm ± 0.25 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

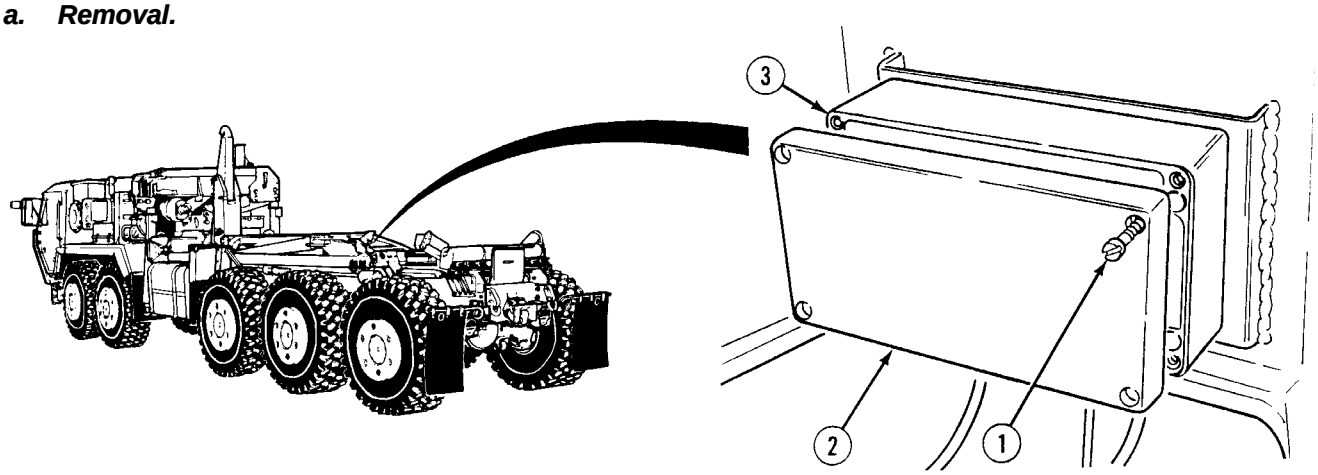
INITIAL SETUP

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.



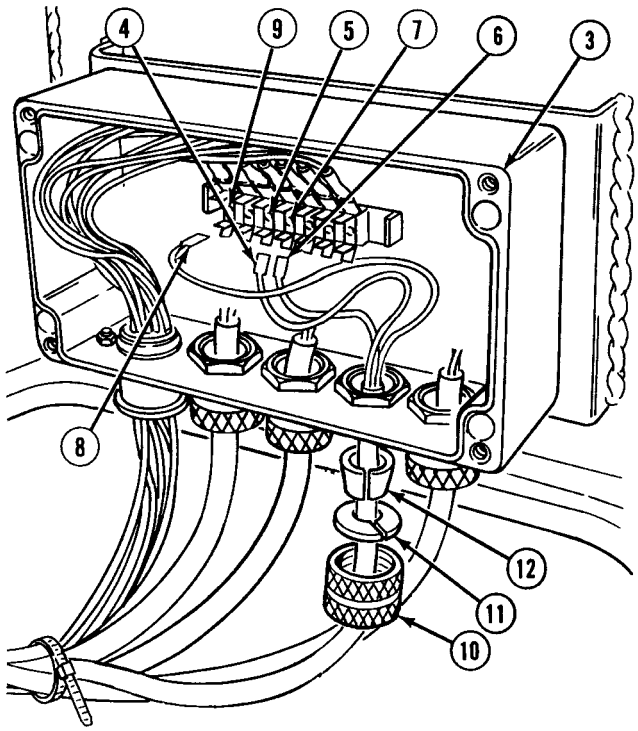
(1) Loosen four captive screws (1) and junction box cover (2) from junction box (3).

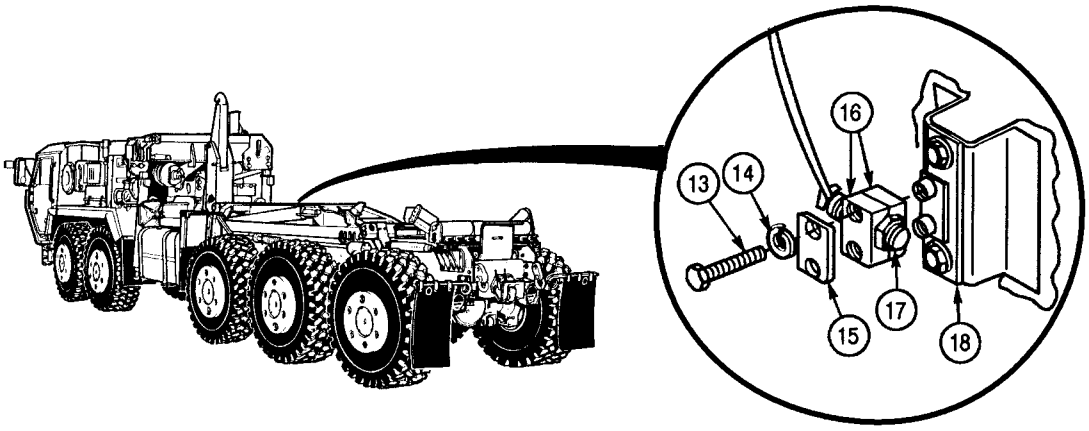
NOTE

- 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.

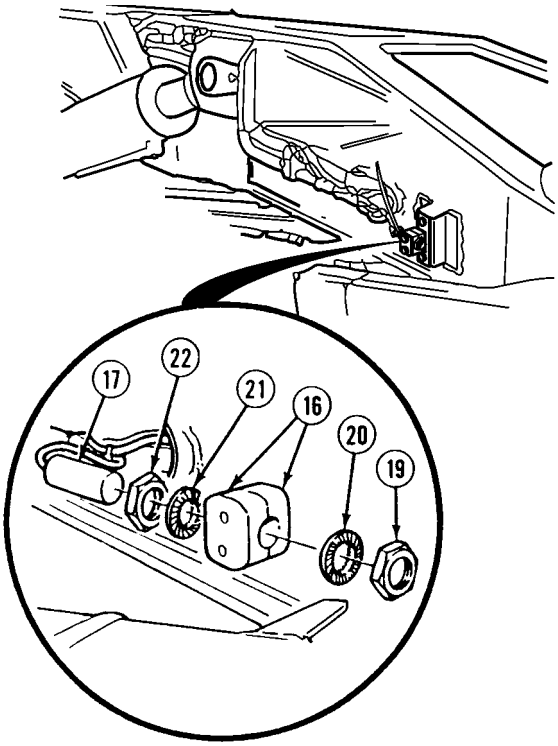
(5) Remove two clamp halves (16) with proximity switch (17) as an assembly from proximity switch mounting plate (18).

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.



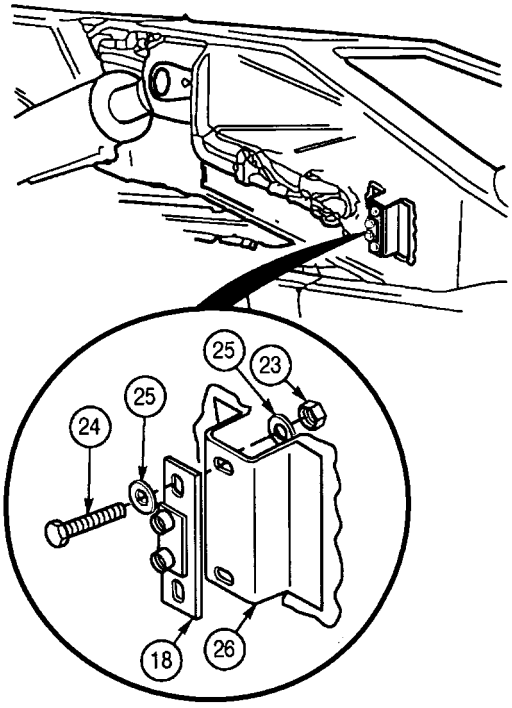
(7) Remove two locknuts (23), screws (24), four washers (25) and proximity switch mounting plate (18) from middle frame (26).

b. Installation.

NOTE

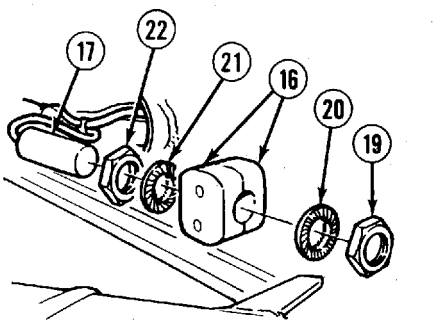
Install cable ties as required.

(1) Position proximity switch mounting plate (18), four washers (25), two screws (24) and locknuts (23) on middle frame (26).

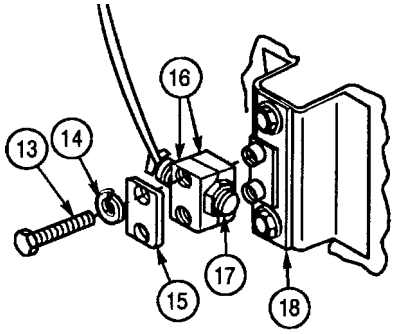


NOTE

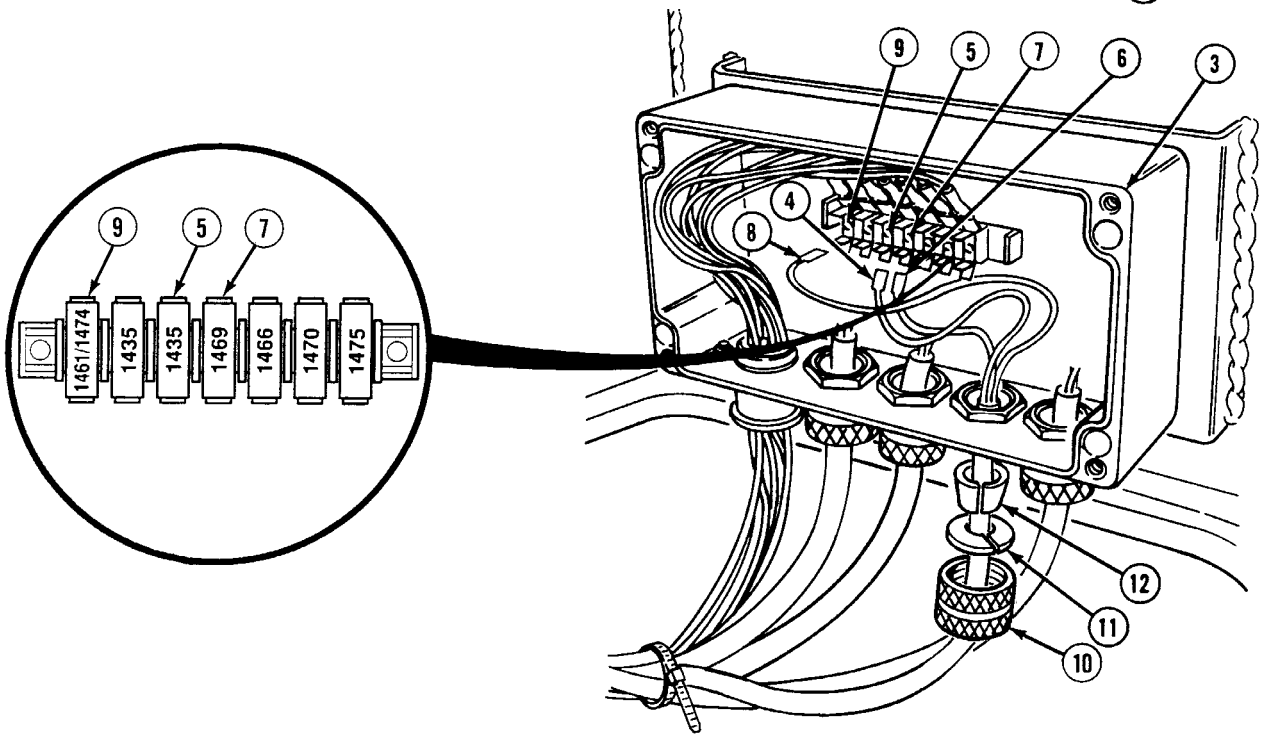
- If lockwashers are not used in Step (2), serrated side of nuts face clamp.
- There may only be one nut used in Step (2).



(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

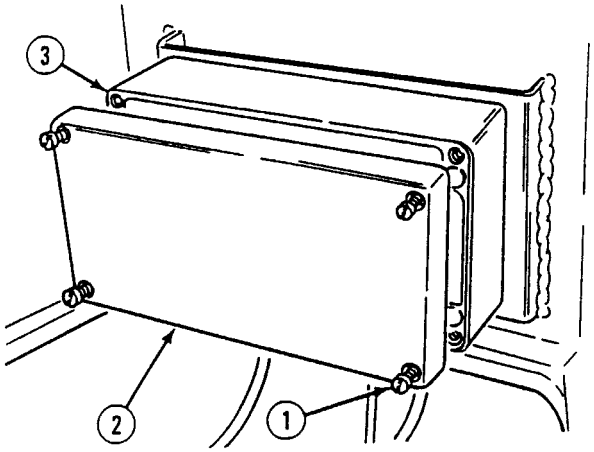
Wire numbers on harnesses are positioned on terminal strip as indicated in chart.

(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

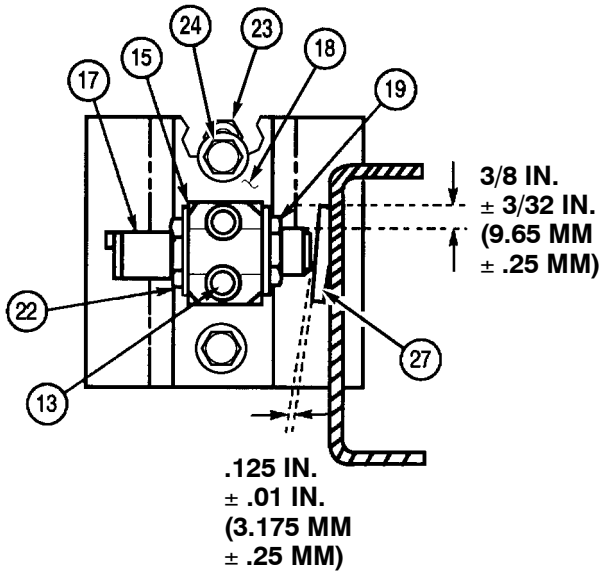
Proximity switch mounting plate and middle frame have slotted holes to aid in adjustment.

(1) Adjust height between top of proximity switch (17) and top of target plate (27). Height should be 3/8 in. ± 3/32 in. (9.65 mm ± .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. ± .01 in. (3.175 mm ± .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:

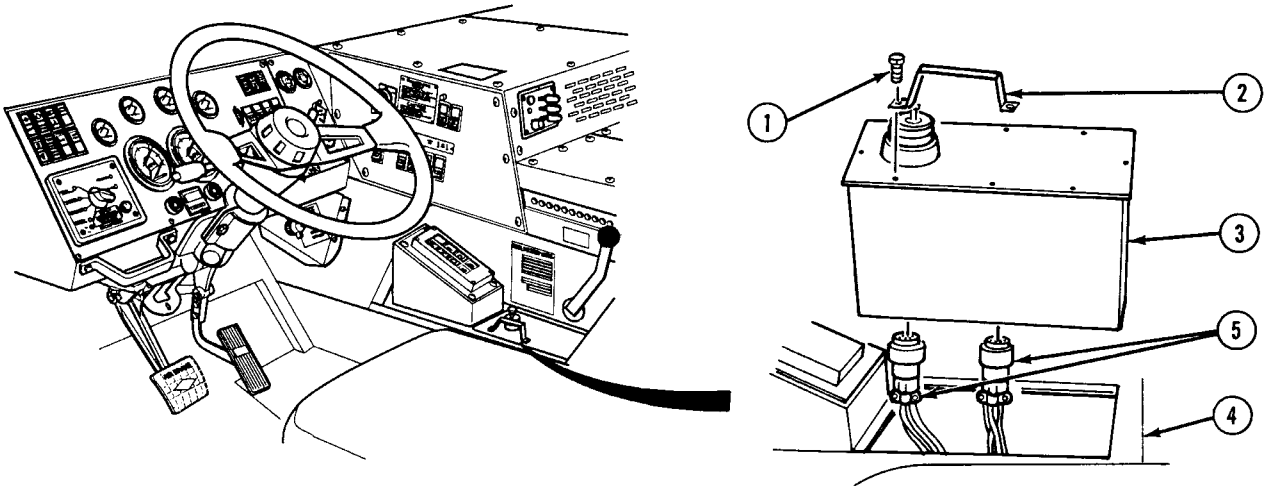
a. Removal b. Installation c. Follow-On Maintenance

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

7-41. SAFE LOWERING BUTTON REPLACEMENT.

This task covers:

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

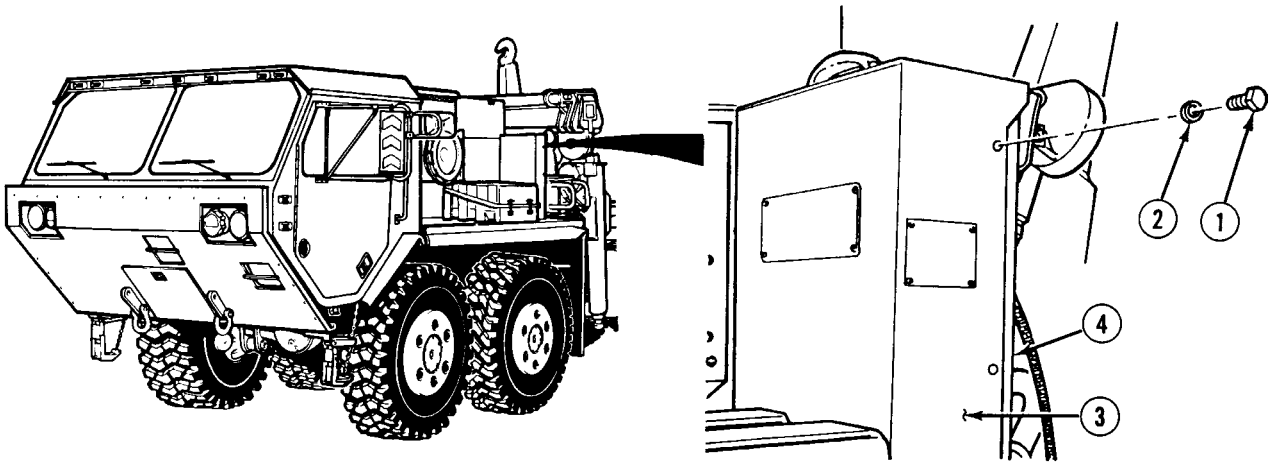
INITIAL SETUP

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

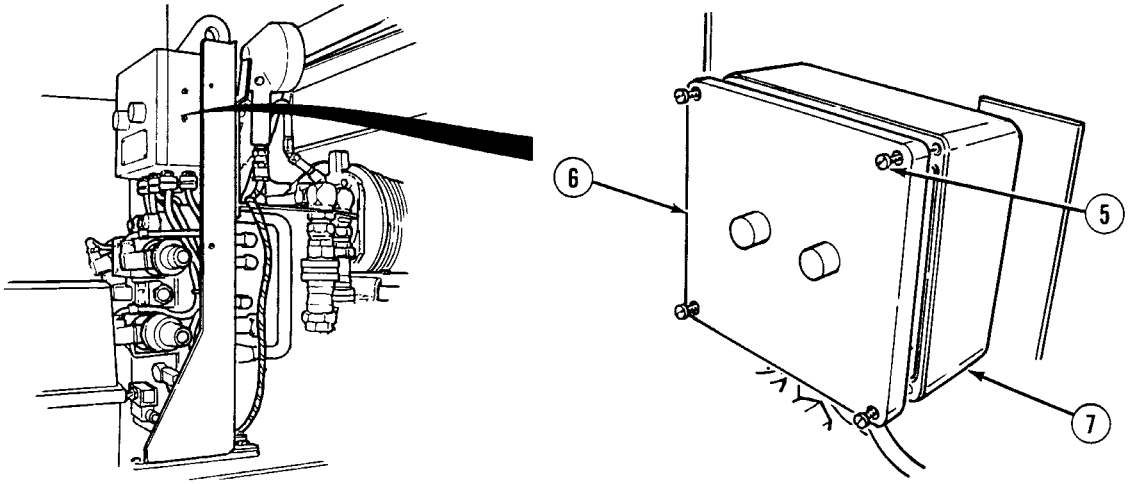
Materials/Parts
Adhesive (Item 8, Appendix C)
Tags, Identification (Item 88, Appendix C)
Lockwasher (6) (Item 180, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Battery disconnected, (Para 7-87)

a. Removal.



(1) Remove six screws (1), lockwashers (2) and cover (3) from mount (4). Discard lockwashers.



CAUTION

Carefully remove box cover to avoid pulling out wires or damage to wires may result.

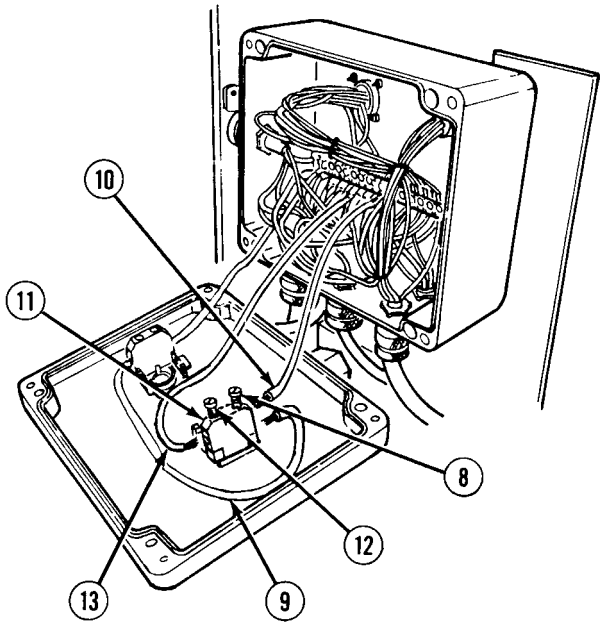
(2) Loosen four captive screws (5) and box cover (6) from box (7).

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).

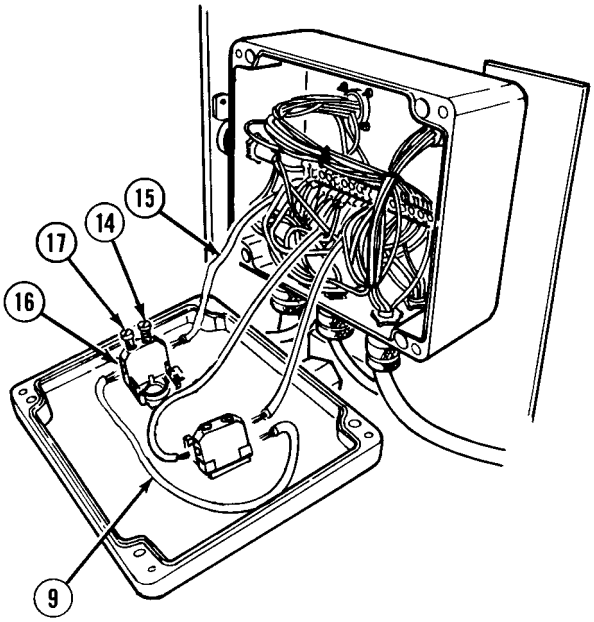
(4) Loosen screw (12) and remove wire 1478 (13) from switch (11).



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).

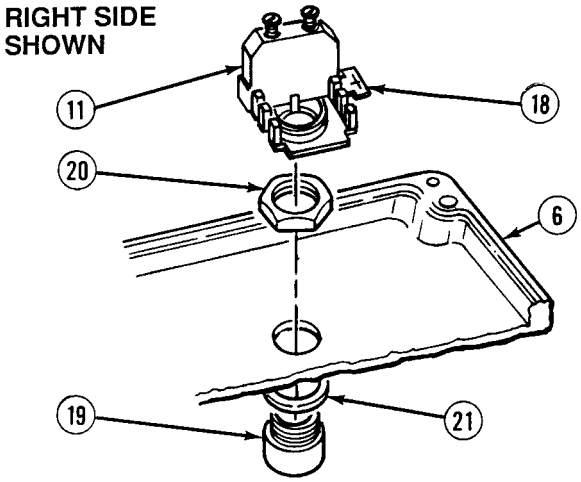


CAUTION

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).

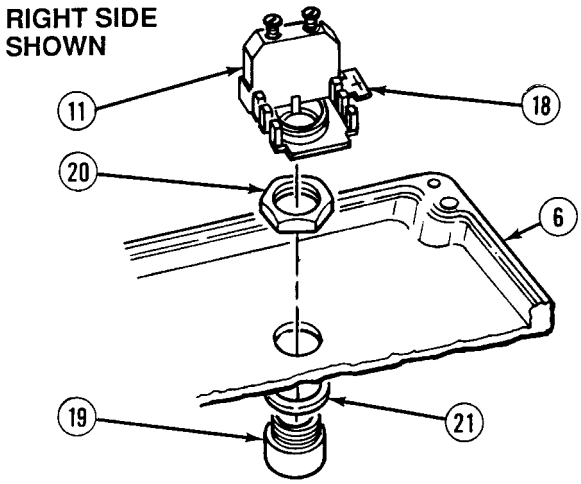
(8) Lift off switch (11) from button (19).

(9) Remove nut (20), seal (21) and button (19) from cover (6).

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).

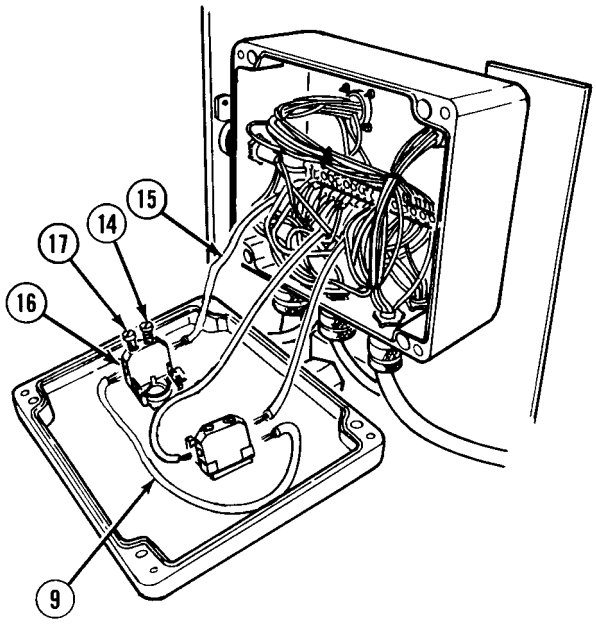
7-41. SAFE LOWERING BUTTON REPLACEMENT (CONT).

NOTE

- Steps (5) and (6) are for right safe lowering button only.
- Steps (7) and (8) are for left safe lowering button.

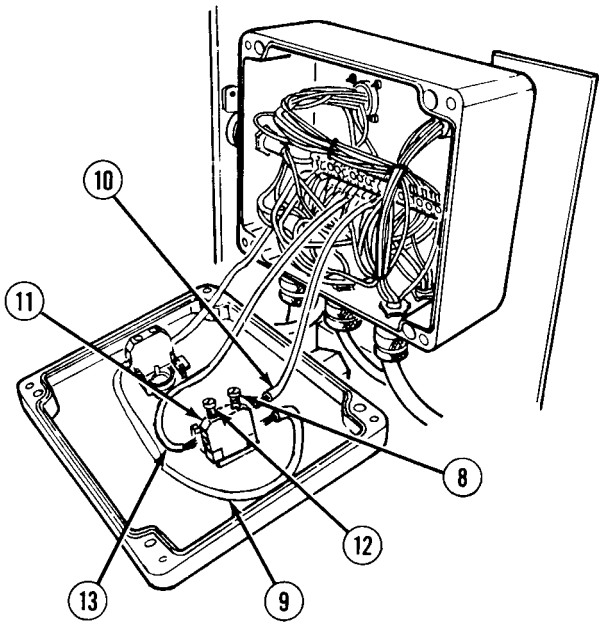
(5) Install wire 1479 (9) on switch (16) and tighten screw (17).

(6) Install wire 1477 (15) on switch (16) and tighten screw (14).

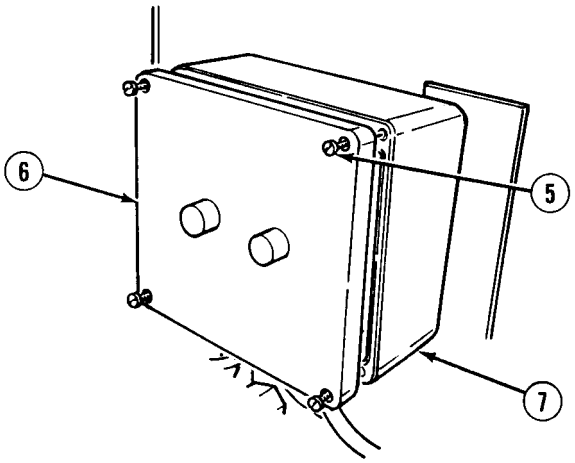


(7) Install wire 1478 (13) on switch (11) and tighten screw (12).

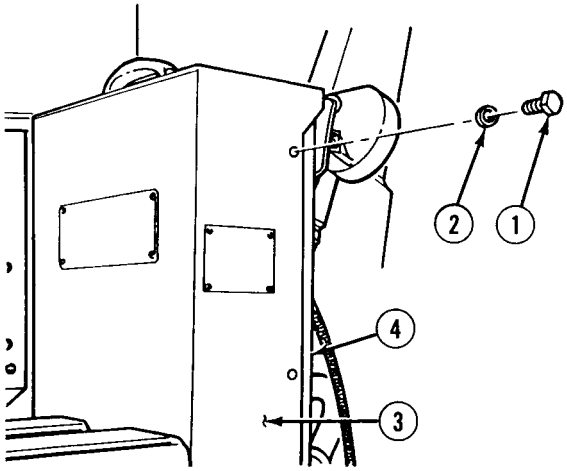
(8) Install wire 1479 (9) and wire 1479 (10) on switch (11) and tighten screw (8).



(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

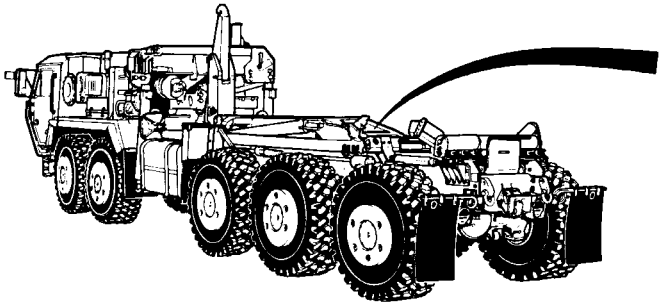
INITIAL SETUP

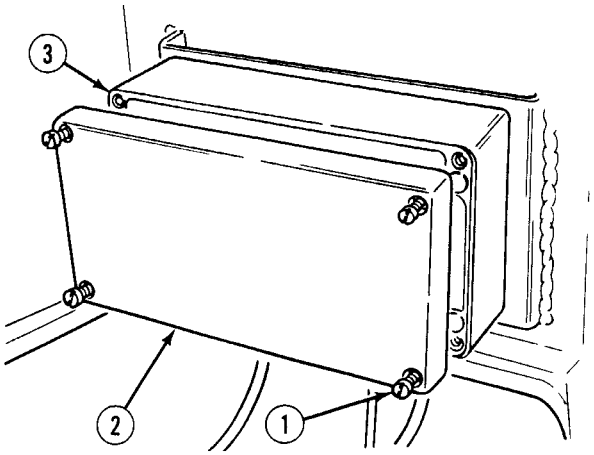
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

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.





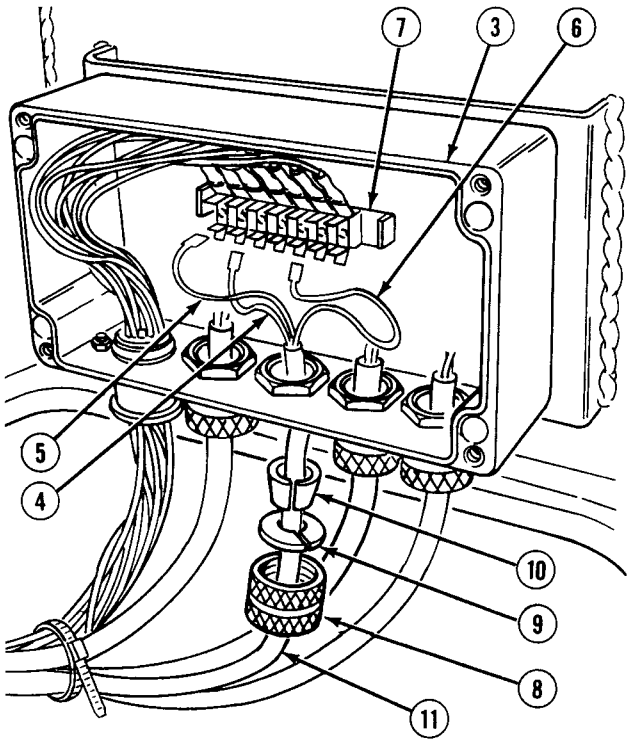
(1) Loosen four captive screws (1) and remove junction box cover (2) from junction box (3).

NOTE

- Tag and mark wires prior to removal.
- Remove cable ties as required.

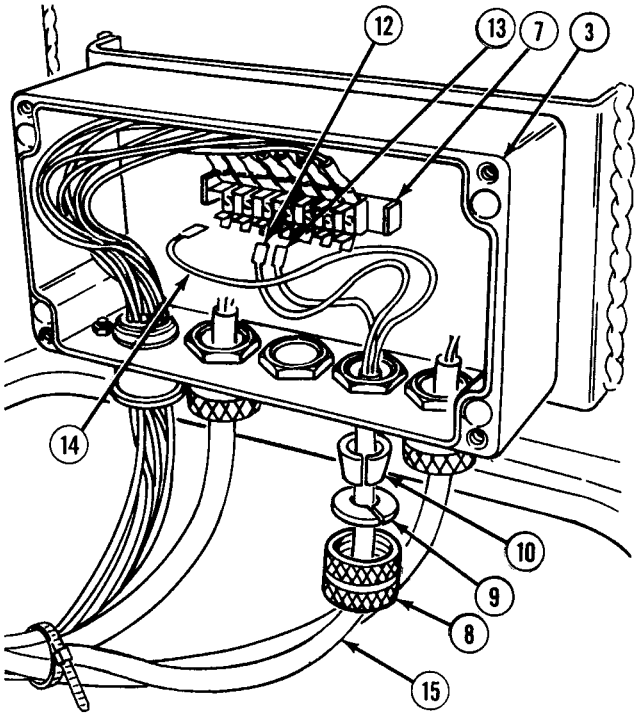
(2) Remove wire 1435 (4), wire 1474 (5) and wire 1466 (6) from terminal strip (7).

(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).



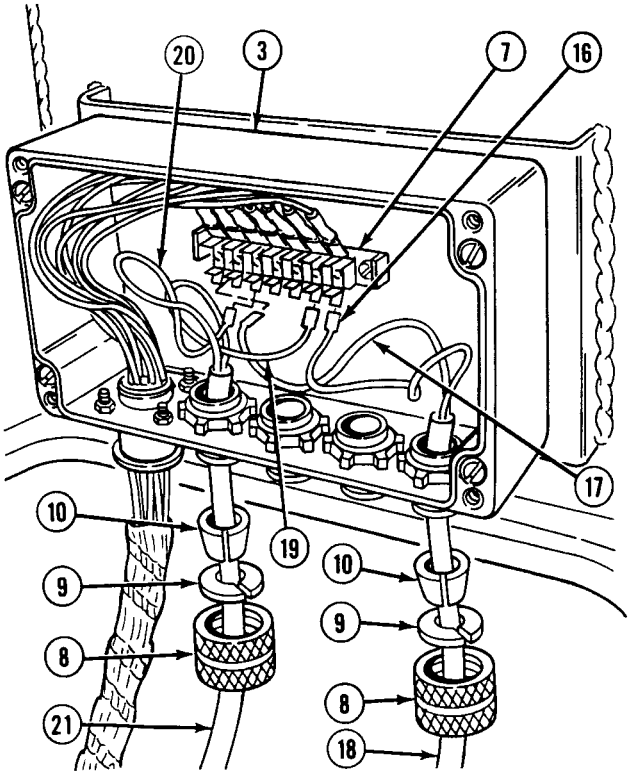
7-42. LHS JUNCTION BOX REPLACEMENT (CONT).

(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).

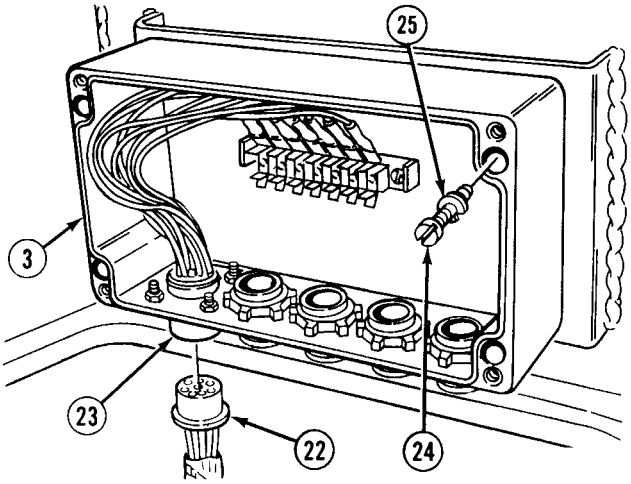
(8) Remove wire 1470 (19) and wire 1435 (20) from terminal strip (7).

(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.

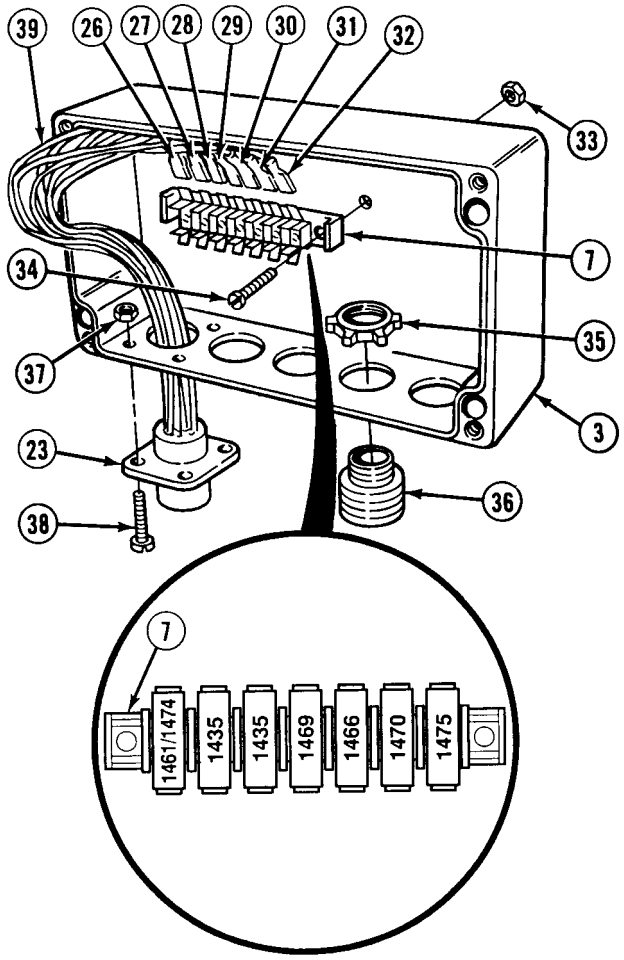


(12) Remove harness wires 1461 (26), 1435 (27), 1469 (28), 1469 (29), 1466 (30), 1470 (31) and 1475 (32) from terminal strip (7).

(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).

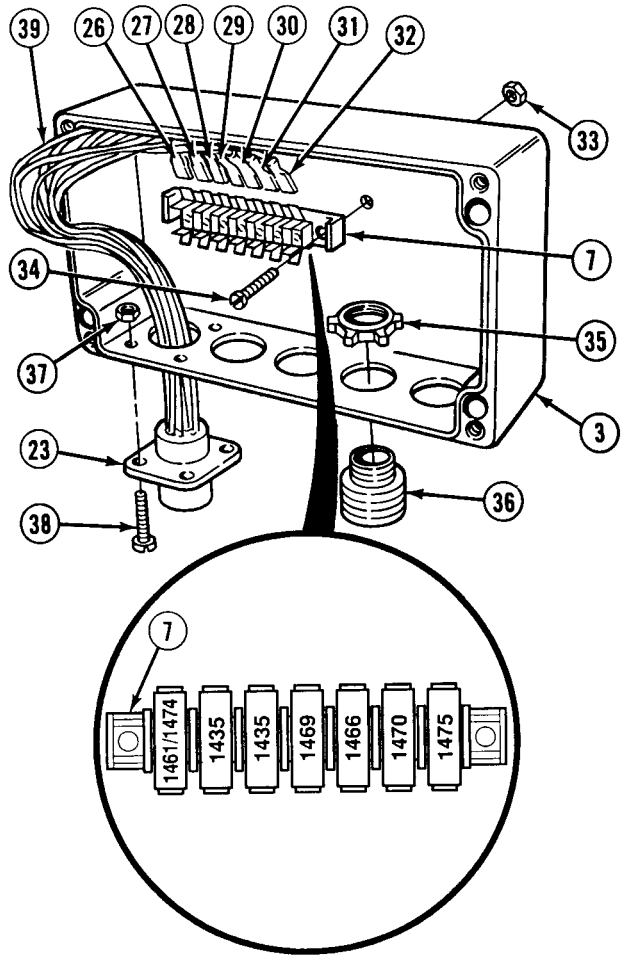
(2) Install harness (39) and connector (23) in junction box (3) with four screws (38) and locknuts (37).

(3) Install four bulkheads (36) on junction box (3) with locknuts (35).

(4) Apply adhesive to back plate of terminal strip (7).

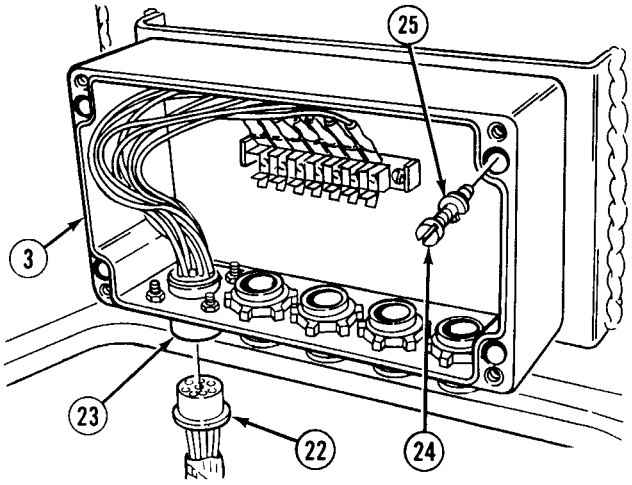
(5) Install terminal strip (7) with two screws (34) and locknuts (33).

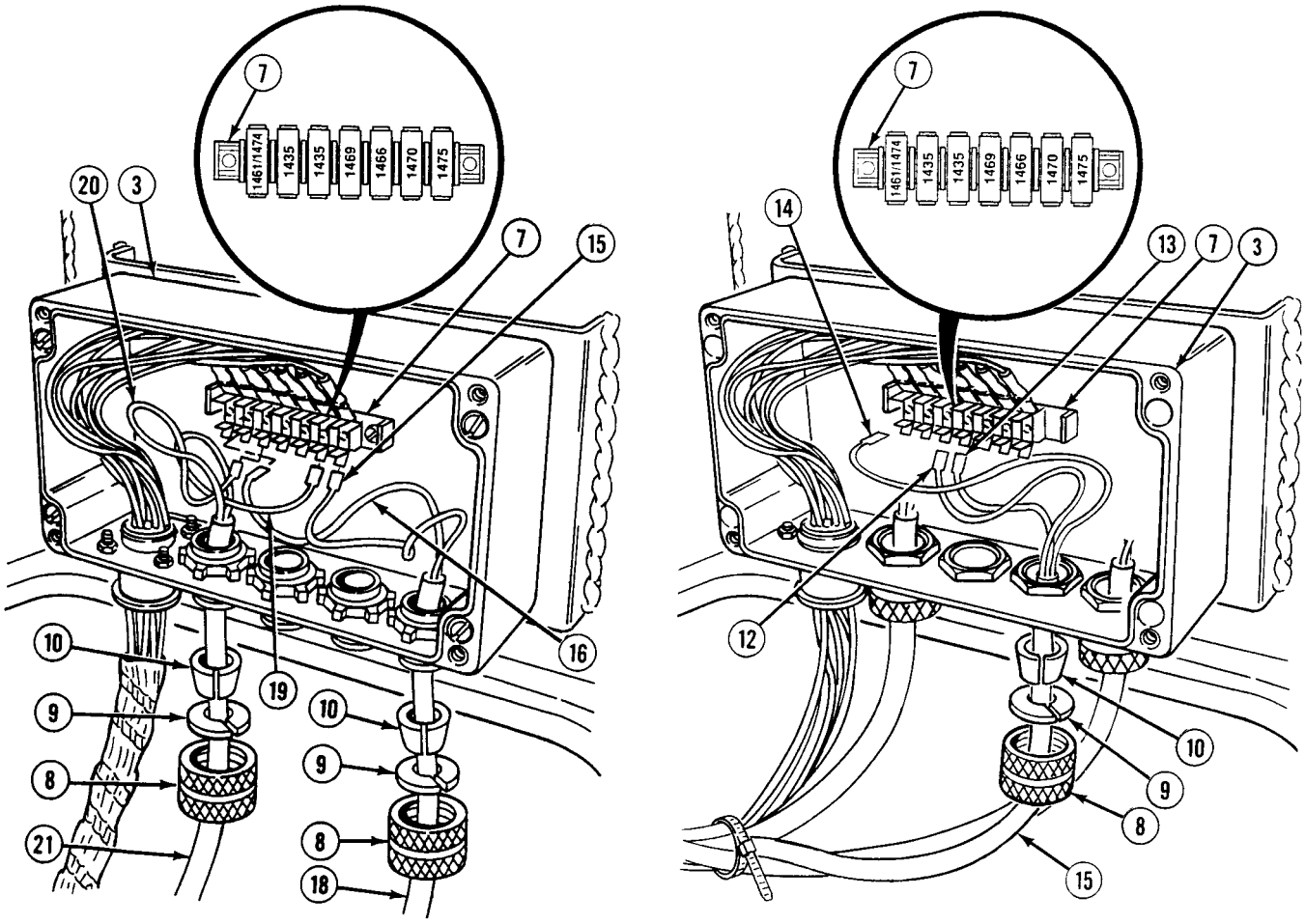
(6) Install wires 1461 (26), 1435 (27), 1435 (28), 1469 (29), 1466 (30), 1470 (31) and 1475 (32) on terminal strip (7).



(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).

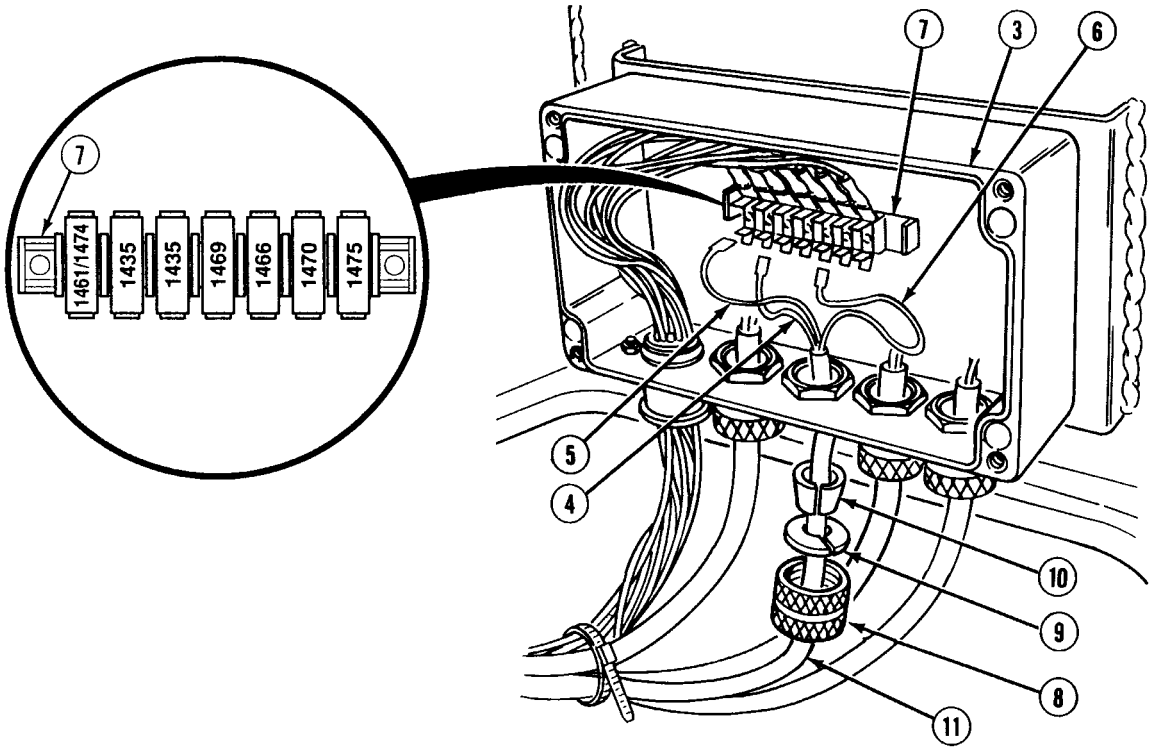
(11) Install sealing ring (10), washer (9), collar (8) and cable (18) as an assembly on junction box (3).

(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).

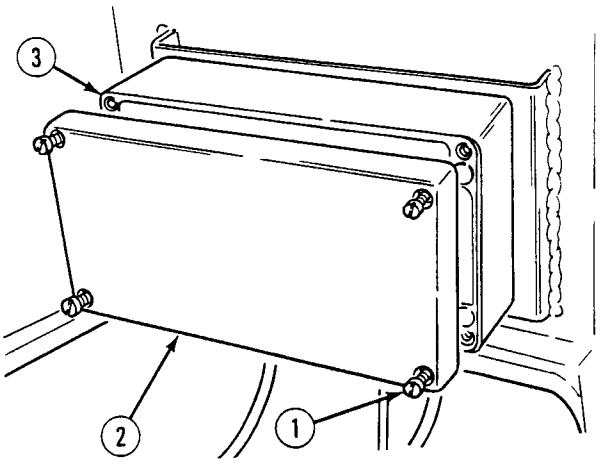
7-42. LHS JUNCTION BOX REPLACEMENT (CONT).



(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
b. Installation
c. Adjustment
d. Follow-On Maintenance

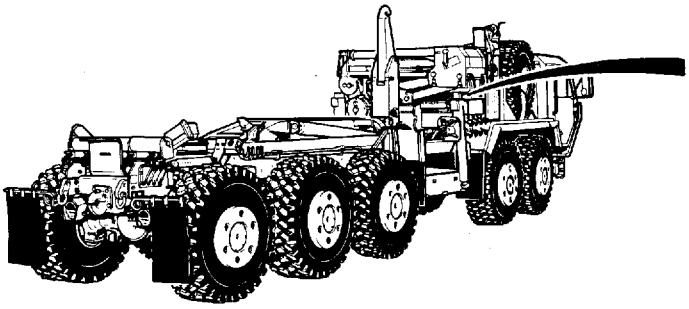
INITIAL SETUP

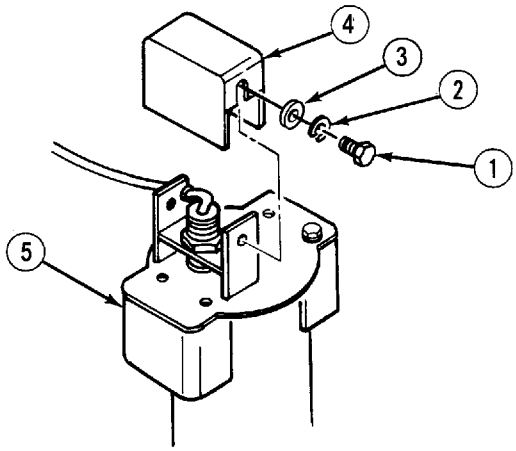
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination 1-1/2 in. (Item 83, Appendix G)

Materials/Parts
Cable Ties (Item 25, Appendix C)
Lockwasher (2) (Item 172, 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 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).

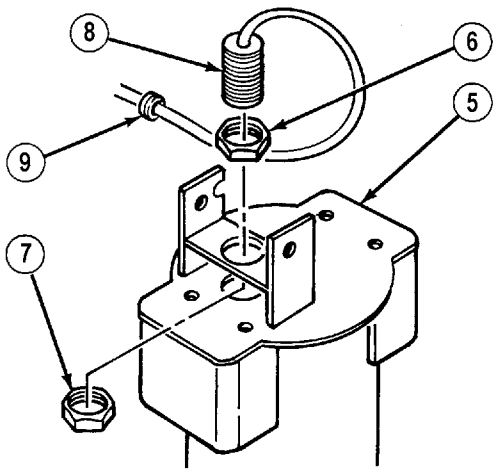
(2) Loosen top jam nut (6) from cover (5).

(3) Remove bottom jam nut (7) from proximity switch (8).

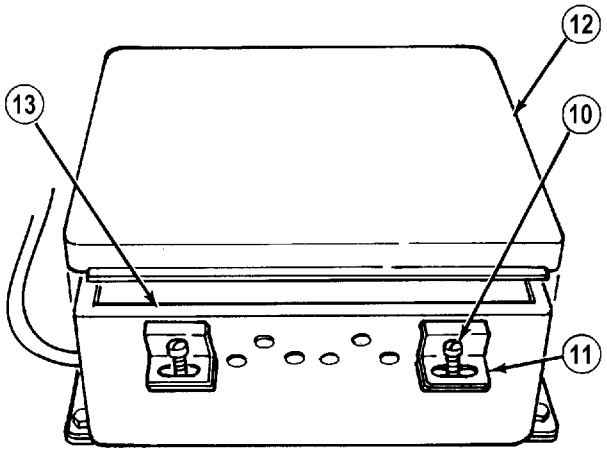
(4) Remove proximity switch (8) and grommet (9) from cover (5).

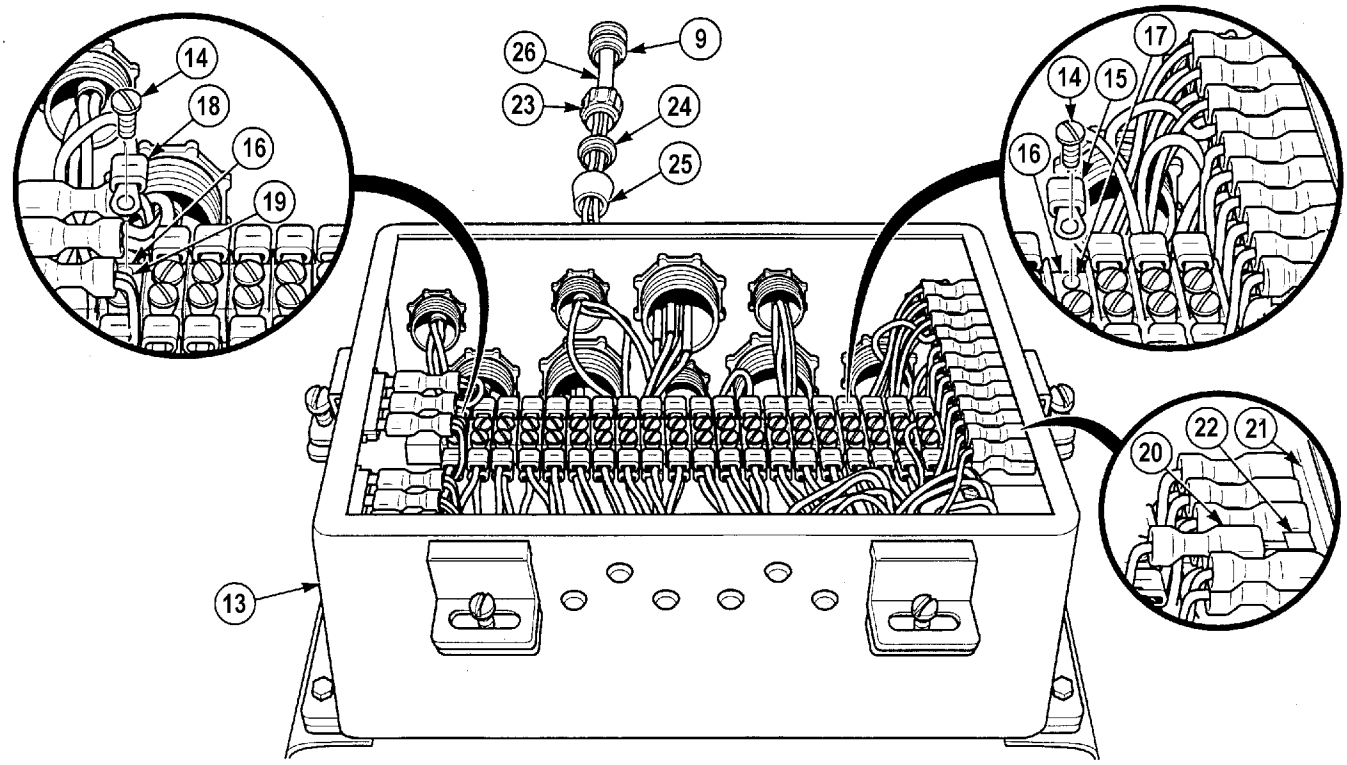
(5) Remove top jamnut (6) from switch (8).

(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).

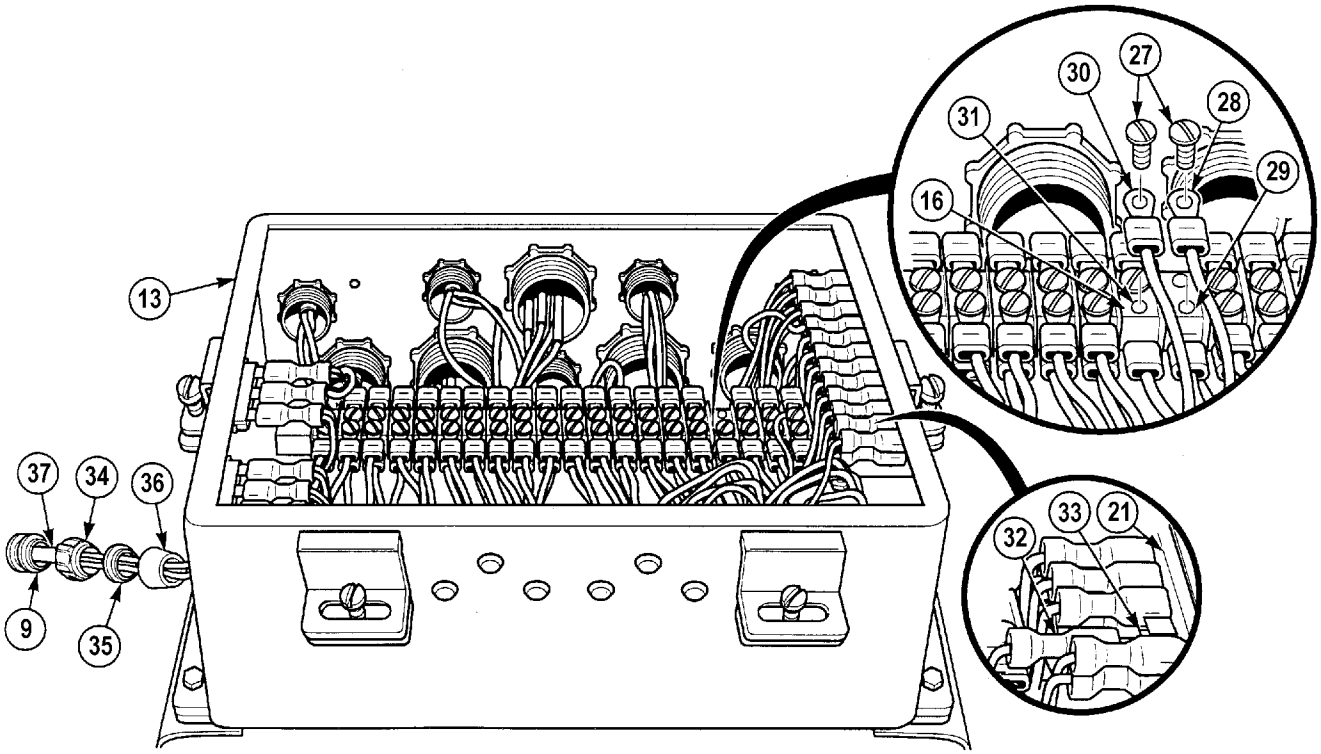
(9) Remove screw (14) and brown wire (18) from bus bar (16) at terminal 20 (19).

(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).

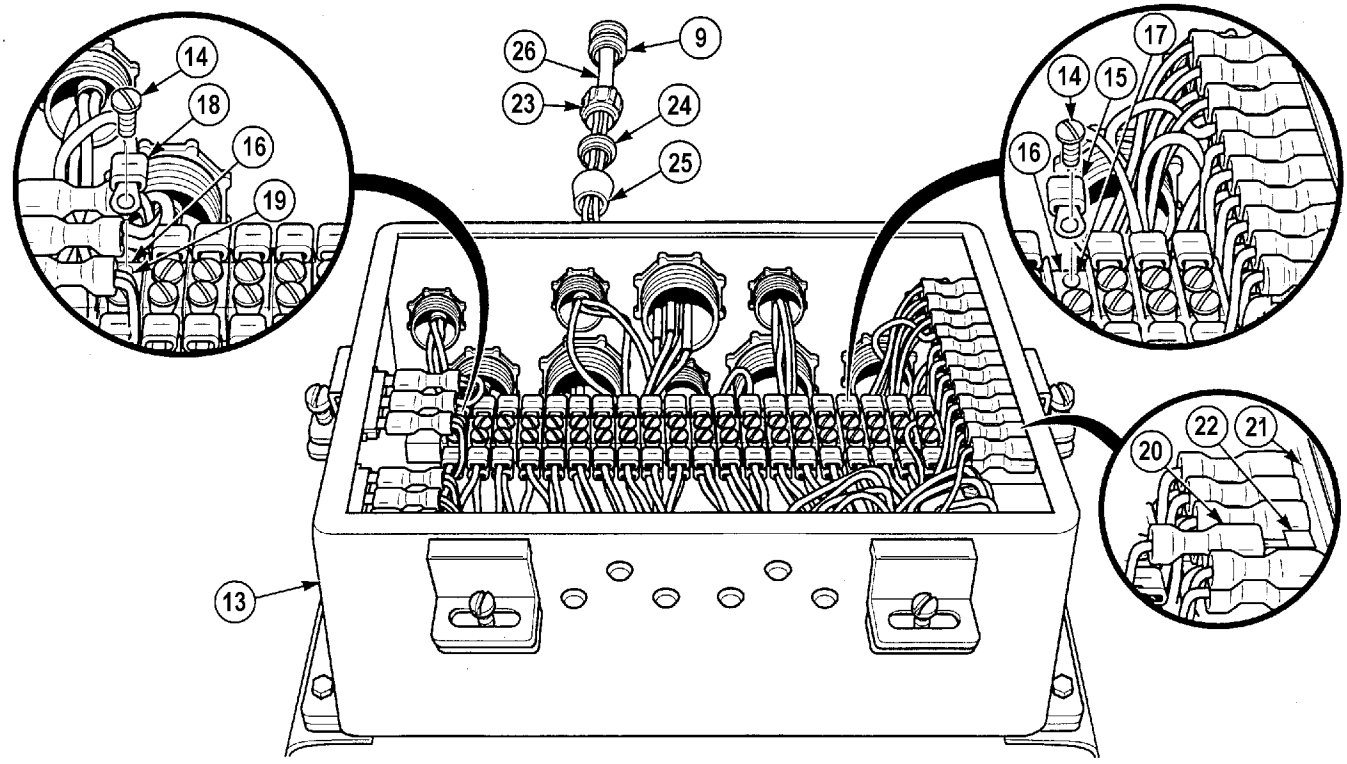
NOTE

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.

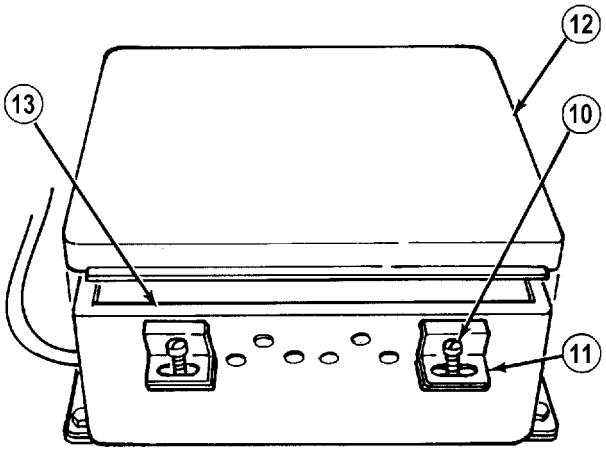
(8) Install black wire (15) on bus bar (16) at terminal 4 (17) with screw (14).

(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).

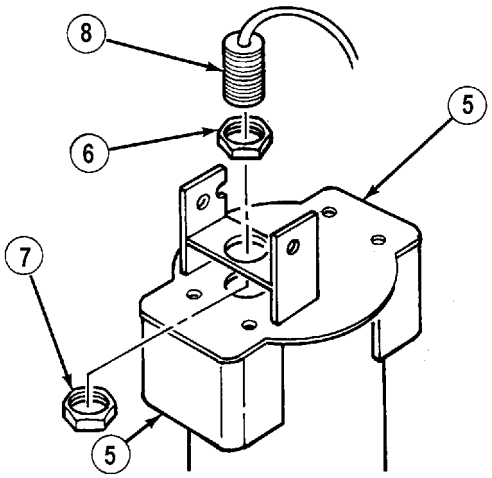


(12) Position top jam nut (6) on proximity switch (8).

(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.



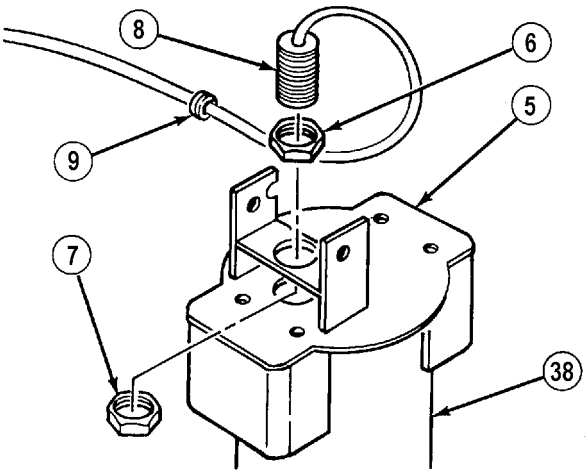
c. Adjustment.

(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

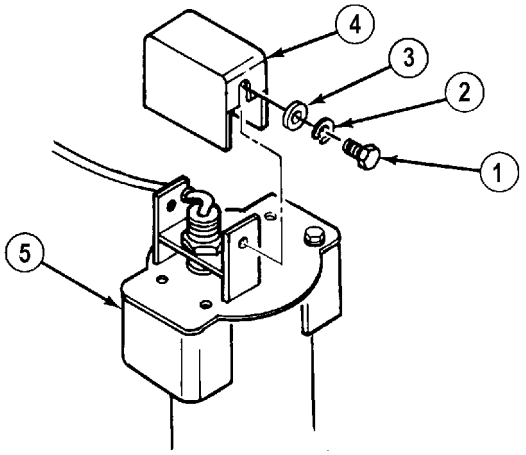
- Proper adjustment for proximity switch is with switch backed out two complete turns from cylinder contact point.
- Adjusting jam nuts will result in movement of switch.

(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

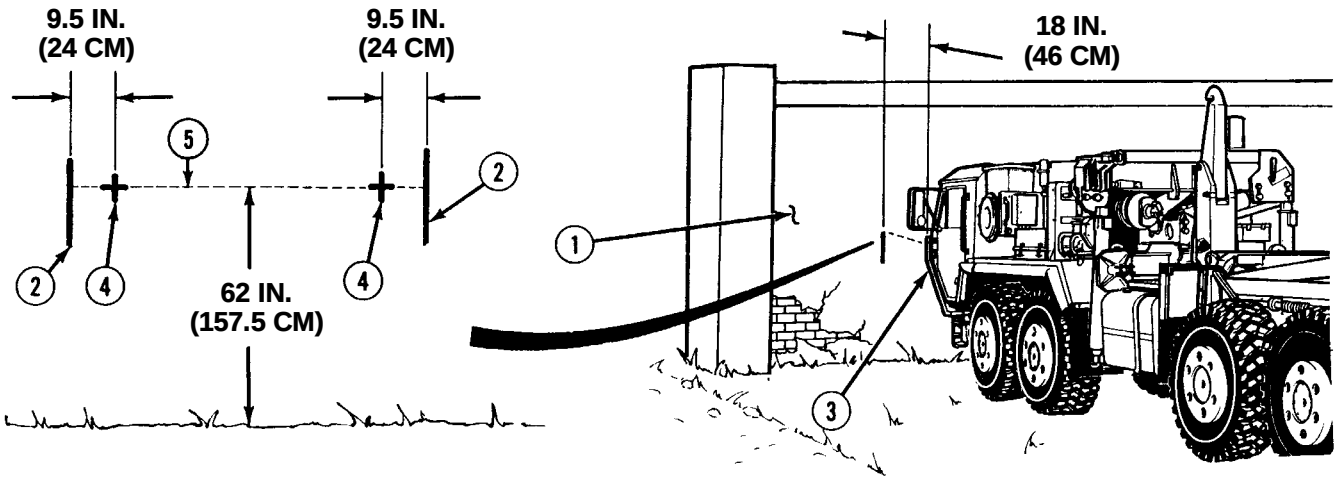
INITIAL SETUP

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.

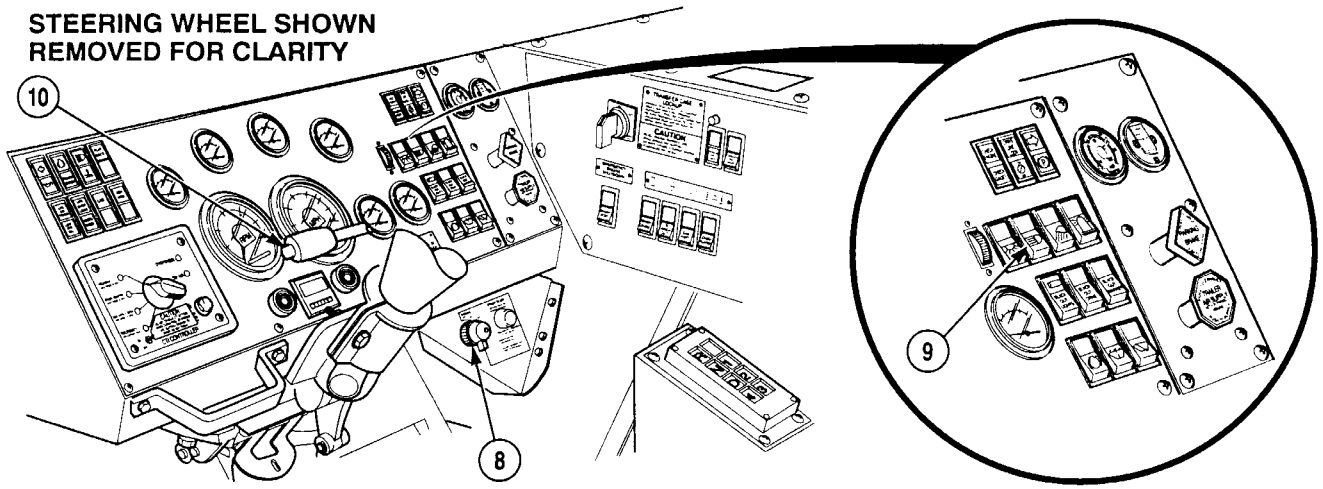
(2) Using chalk, draw vertical line (2) on flat surface from each end of skid plate (3).

(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).



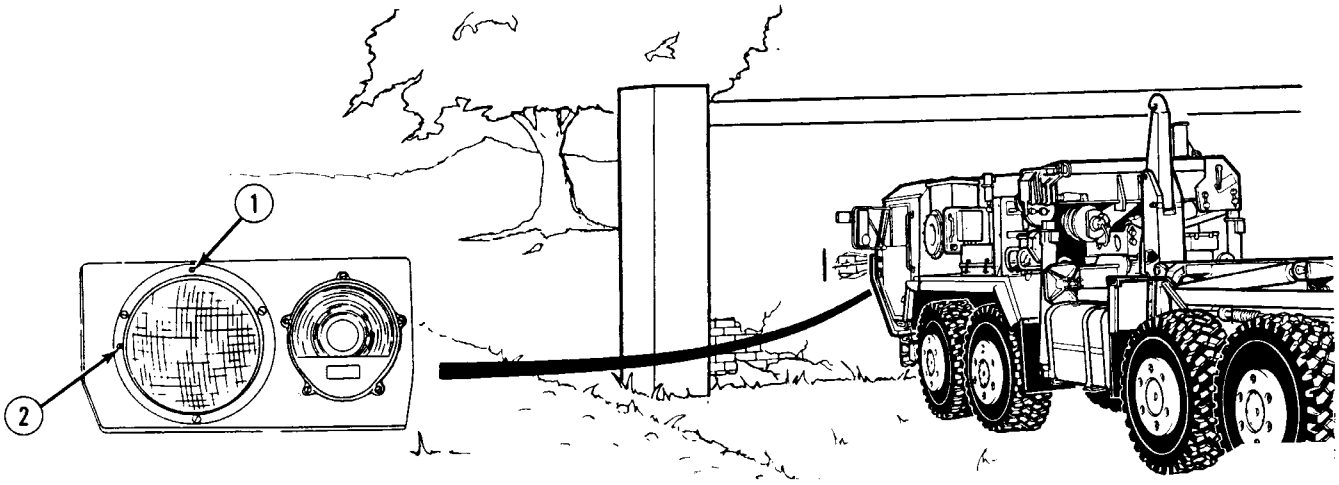
(6) Turn engine switch (8) to ON position.

(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.

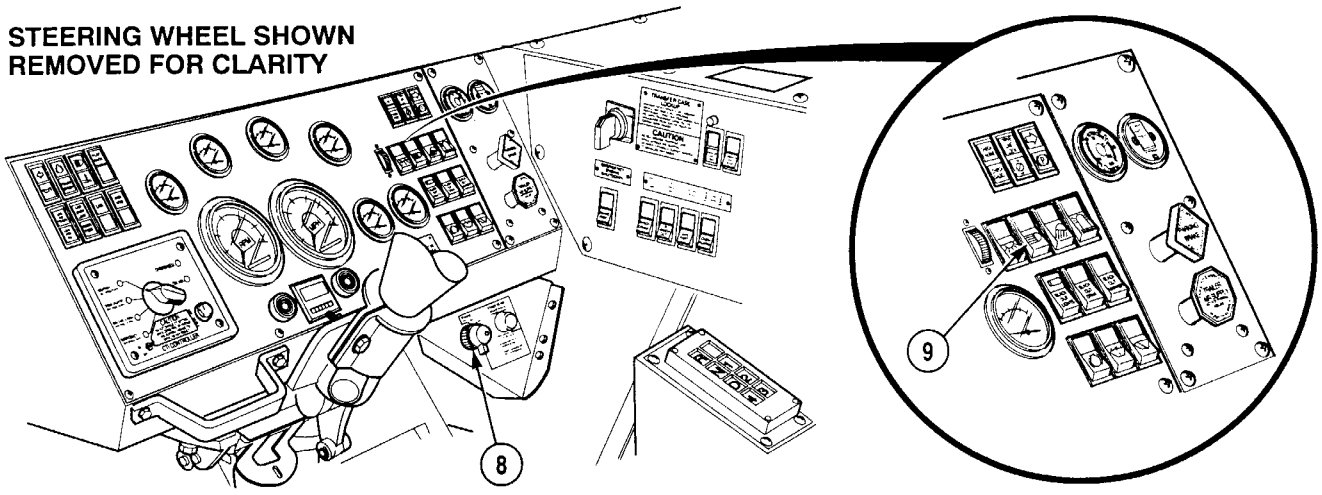


NOTE

- 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.



(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)

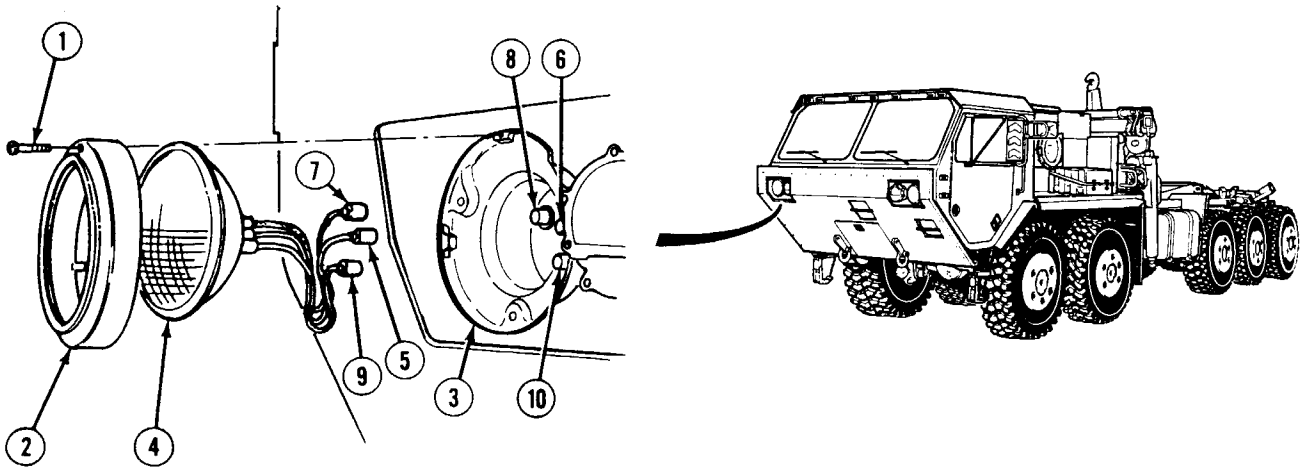
Materials/Parts
Compound, Corrosion Preventive (Item 34, Appendix C)
Tag, Identification (Item 88, Appendix C)
Gasket, Headlight (Item 71, Appendix F)

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).

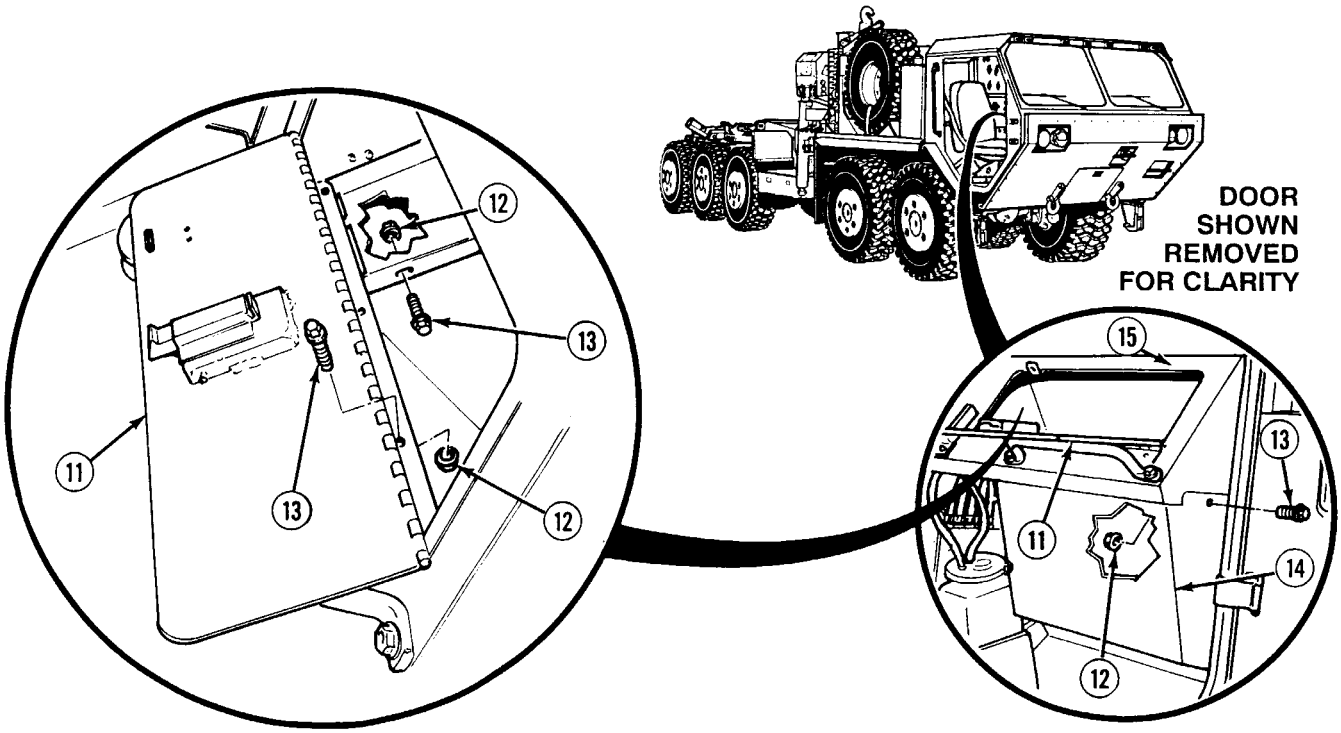
(2) Remove head lamp (4) from head light assembly (3).

(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

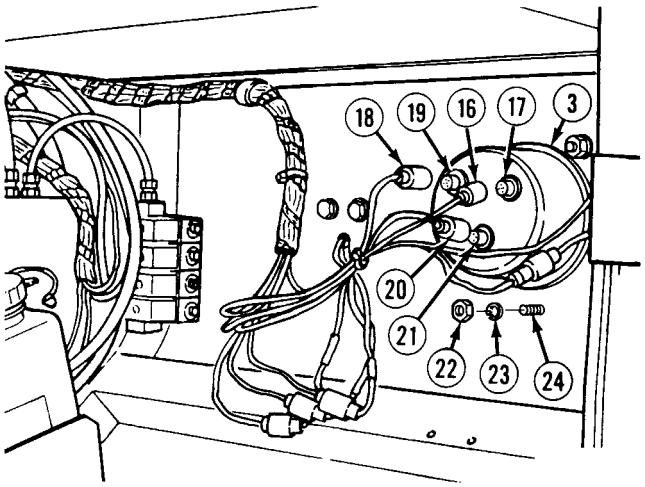
Right side and left side headlight assemblies are removed the same way. Right side is shown.

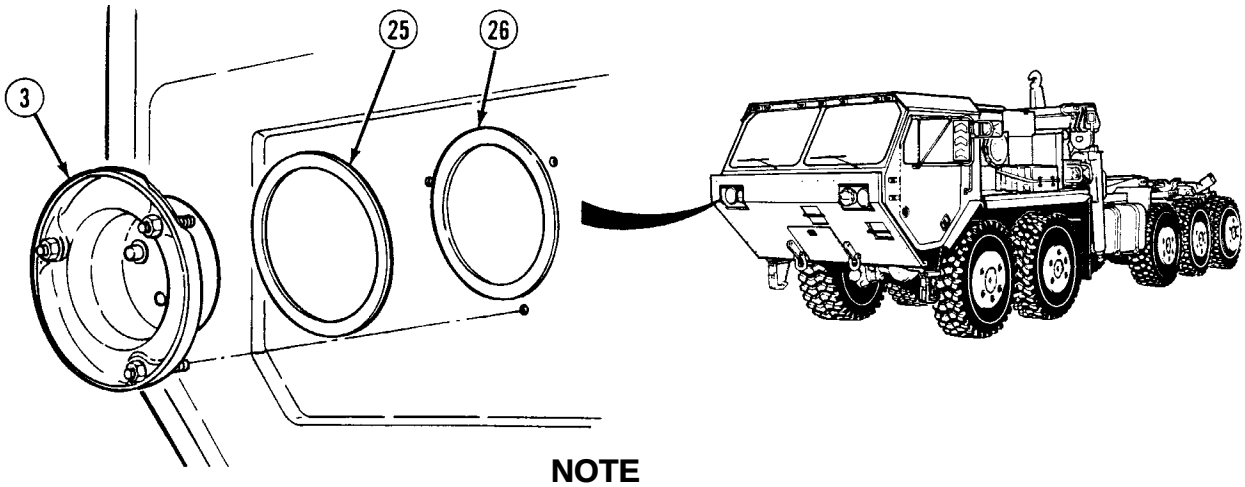
(7) Disconnect wire 1007 (16) from connector (17) on head light assembly (3).

(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.

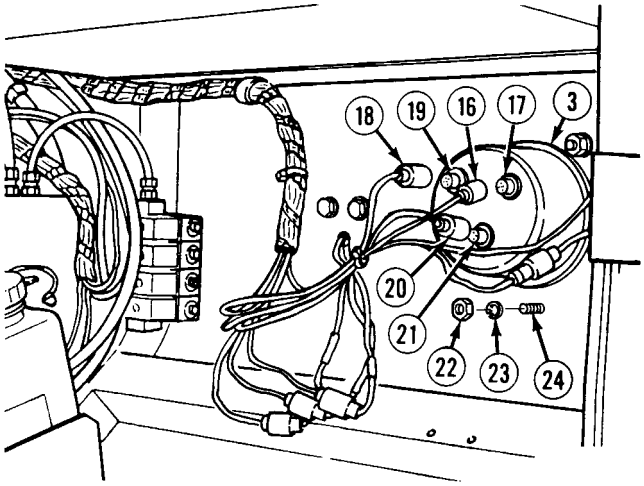
b. Installation.

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.

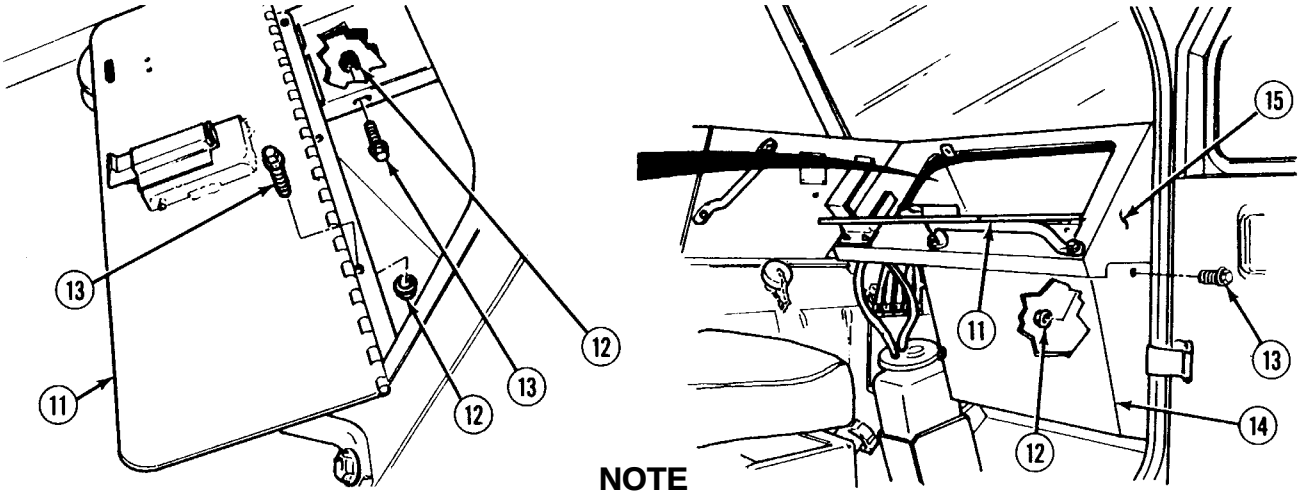
(3) Apply corrosion preventive compound to connectors on wires 1007 (16), 1006 (18) and 1435 (20).

(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).



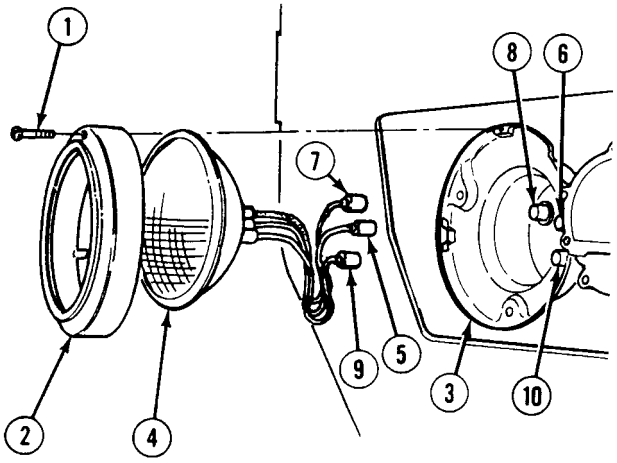
NOTE

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/LED COMPOSITE LIGHT REPAIR.

This task covers:

a. Removal
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
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)

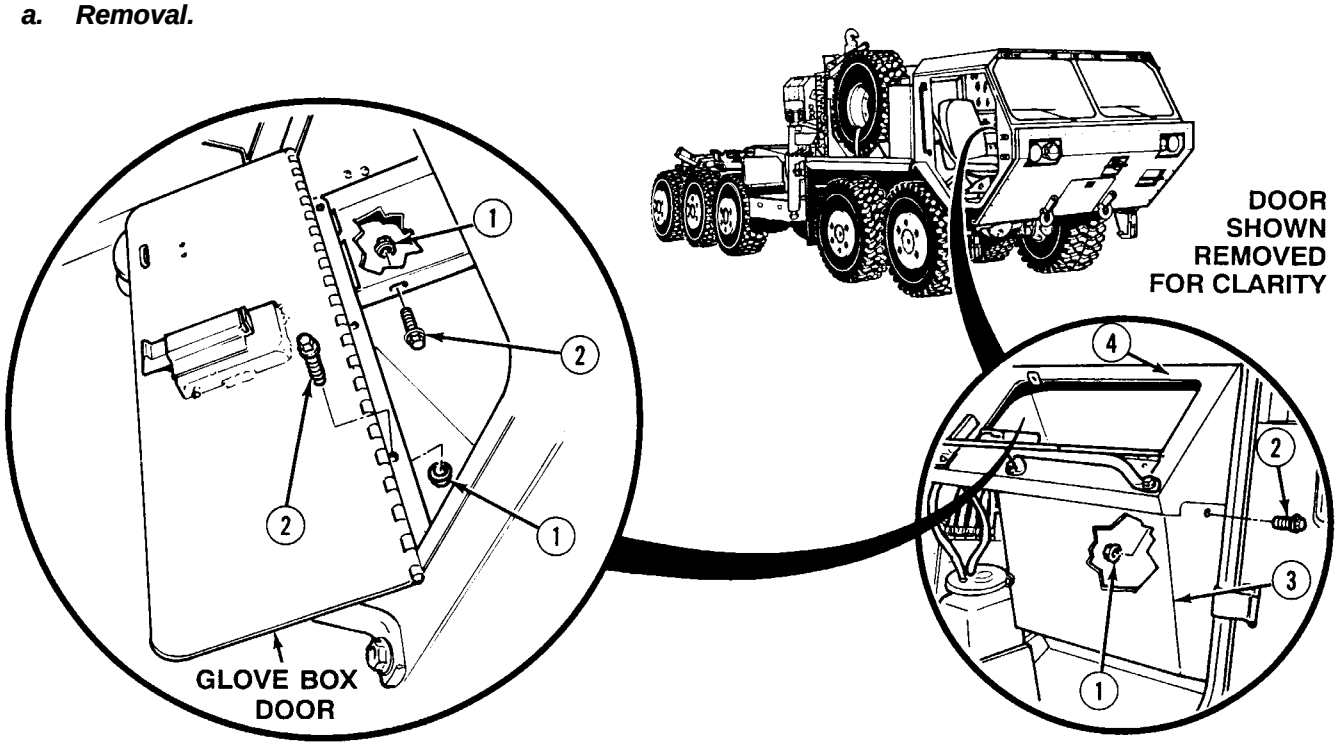
Materials/Parts
Adhesive, Sealant (Item 14, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)
Tag, Identification (Item 88, Appendix C)
Gasket (Item 60, Appendix F)

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

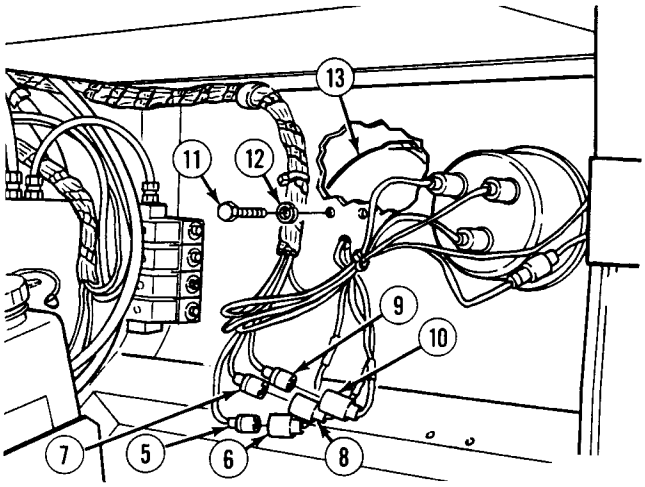
- Right side and left side are removed the same way. Right side is shown.
- Tag and mark wires prior to removal.
- Refer to Table 7-3 for wire numbers of right and left lights.
- Steps (2) through (6) are for composite light only.
- Steps (7) through (11) are for LED composite light only.

(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).

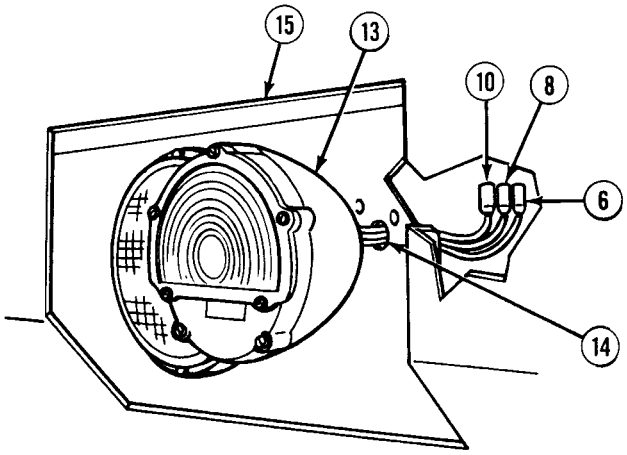
(5) Remove two screws (11) and lockwashers (12) from rear of composite light (13). Discard lockwashers.



NOTE

It may be necessary to pry composite light from cab.

(6) With the aid of an assistant, remove wire 483 (6), wire 491 (8) and wire 460 (10) through composite light wiring harness access hole (14) and remove composite light (13) from cab wall (15).

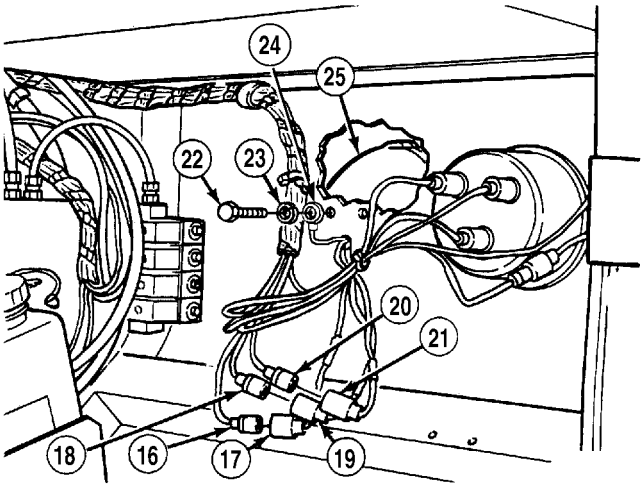


(7) Disconnect wire 1680 (16) from wire 483 (17).

(8) Disconnect wire 1008 (18) from wire 491 (19).

(9) Disconnect wire 1001 (20) from wire 460 (21).

(10) Remove two screws (22), lockwashers (23) and ground wire pigtail (24) from rear of LED composite light (25). Discard lockwashers.



NOTE

It may be necessary to pry composite light from cab.

(11) With the aid of an assistant, remove wire 483 (17), wire 491 (19), wire 460 (21) and ground wire pigtail (24) through composite light wiring harness access hole (14) and remove composite light (25) from cab wall (15).

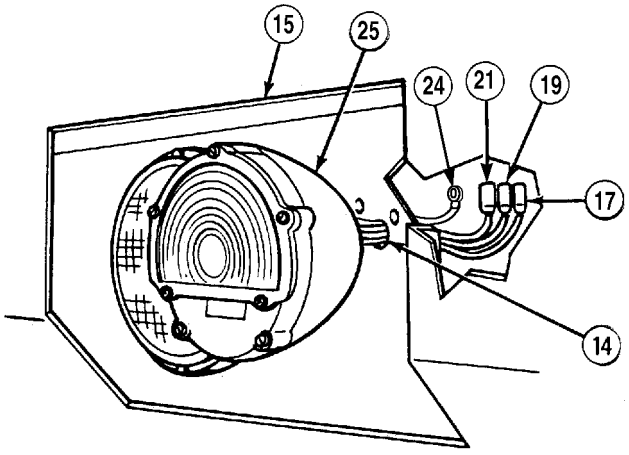


Table 7-3. Front Composite Light/Bracket Wires.

Left Light	Right Light
1002/460 1008/491 1680/483	1001/460 1008/491 1680/483

7-46. FRONT COMPOSITE LIGHT/LED COMPOSITE LIGHT REPAIR (CONT).

b. Disassembly.

NOTE

- Steps (1) through (4) are for composite light only.
- Step (5) is for LED composite light only.

(1) Loosen five captive screws (1), and remove cover (2) and gasket (3) from composite light housing (4). Discard gasket.

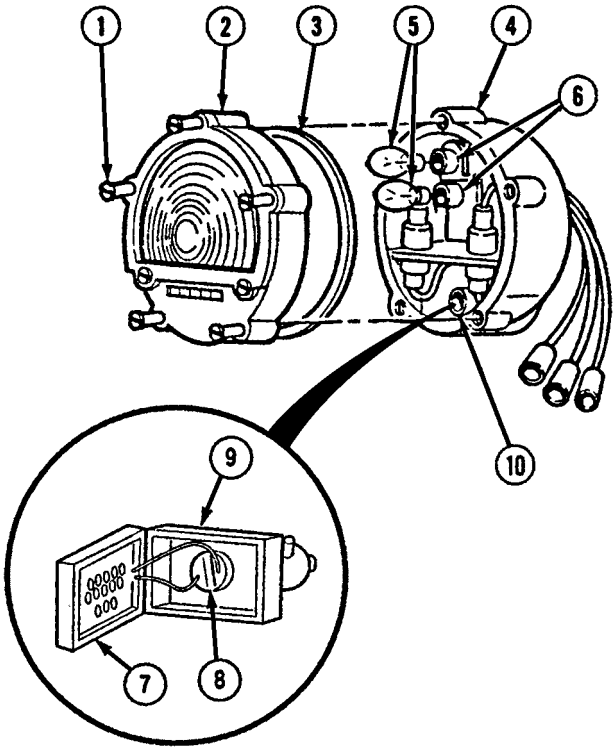
(2) Push in and remove two lamps (5) and (6) from lamp sockets (7) and (8).

(3) Open blackout marker lamp door (9).

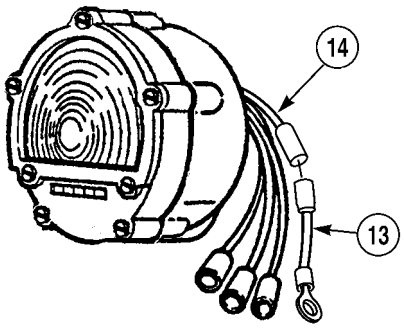
CAUTION

- 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).



(5) Remove LED composite light ground wire pigtail (13) from LED composite light ground wire (14).



c. Cleaning/Inspection.

(1) Inspect lamp sockets for corrosion.

(2) Inspect lenses for cracks.

(3) Inspect light housing for cracks.

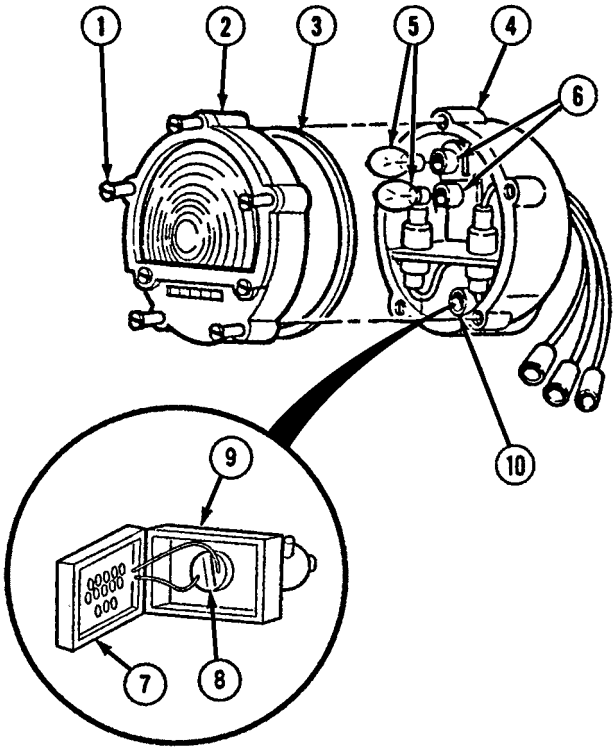
d. Assembly.

NOTE

- Steps (1) through (6) are for composite light only.
- Step (7) is for LED composite light only.

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).

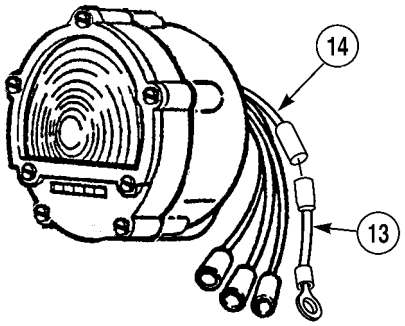
(2) Open blackout marker lamp door (9).

(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).



(7) Install LED composite light ground wire pigtail (13) on LED composite light ground wire (14).

7-46. FRONT COMPOSITE LIGHT/LED COMPOSITE LIGHT REPAIR (CONT).

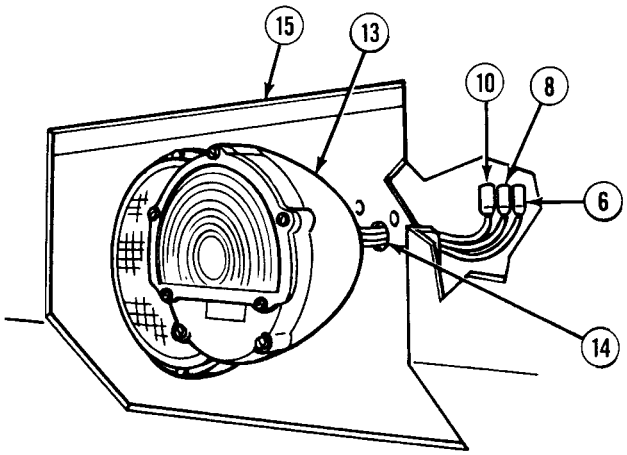
e. Installation.

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.

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.
- Steps (1) through (6) are for composite light only.
- Steps (6.1) through (6.6) are for LED composite light only.



(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).

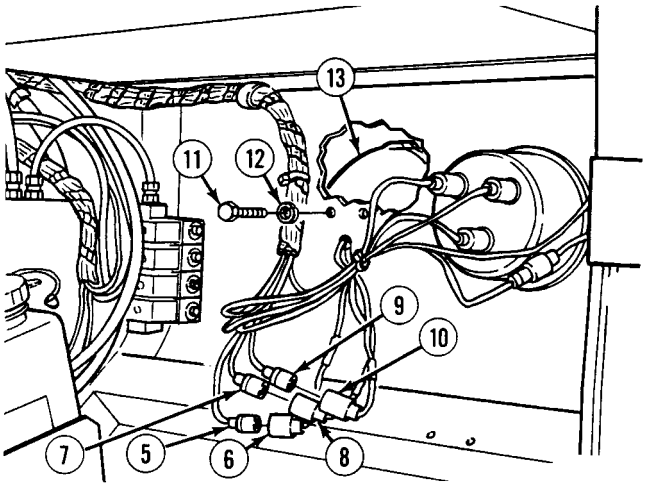
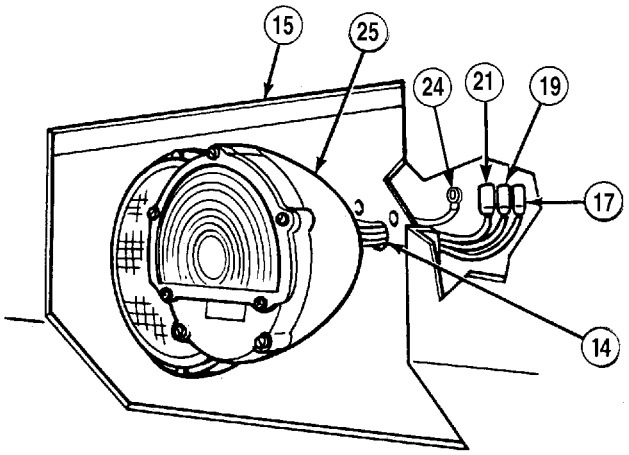


Table 7-4. Front Composite Light/Bracket Wires.

Left Light	Right Light
1002/460 1008/491 1680/483	1001/460 1008/491 1680/483

(6.1) Apply adhesive sealant on rear of LED composite light.

(6.2) With the aid of an assistant, install wire 483 (17), wire 491 (19), wire 460 (21) and ground wire pigtail (24) through composite light wiring harness access hole (14).

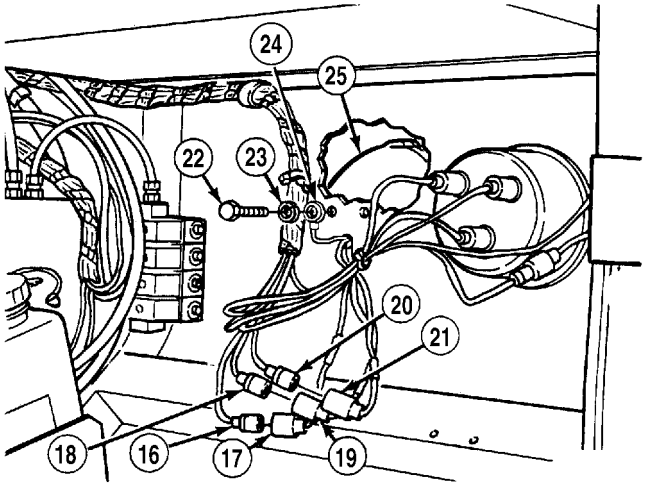


(6.3) Install ground wire pigtail (24), lockwashers (23), and screws (22) in rear of LED composite light (25) through cab wall (15).

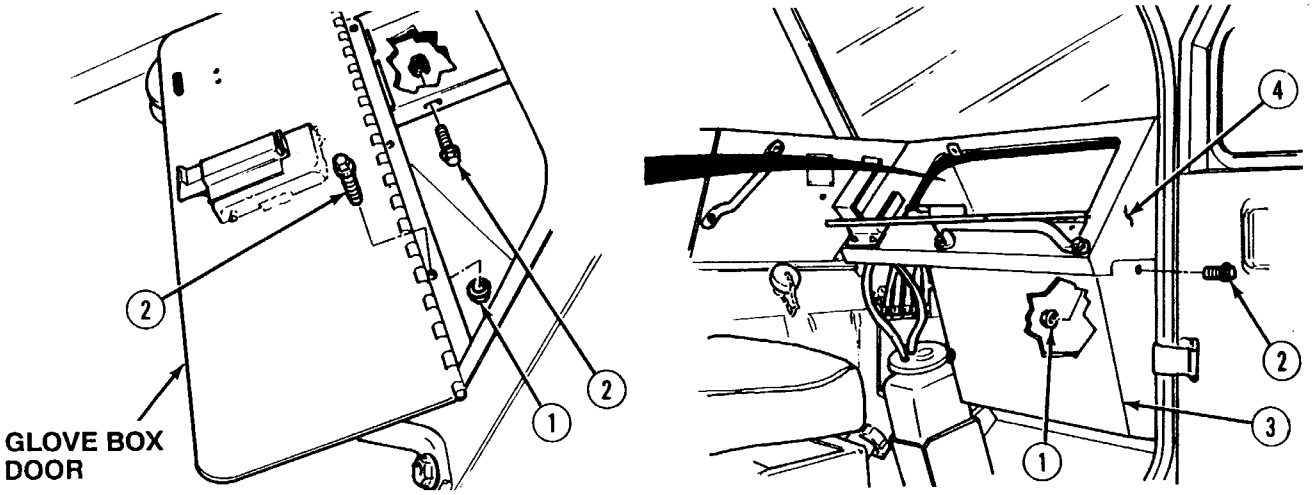
(6.4) Connect wire 1001 (20) to wire 460 (21).

(6.5) Connect wire 1008 (18) to wire 491 (19).

(6.6) Connect wire 1680 (16) to wire 483 (17).



7-46. FRONT COMPOSITE LIGHT/LED 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/LED COMPOSITE LIGHT AND BRACKET REPAIR.

This task covers:

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

INITIAL SETUP

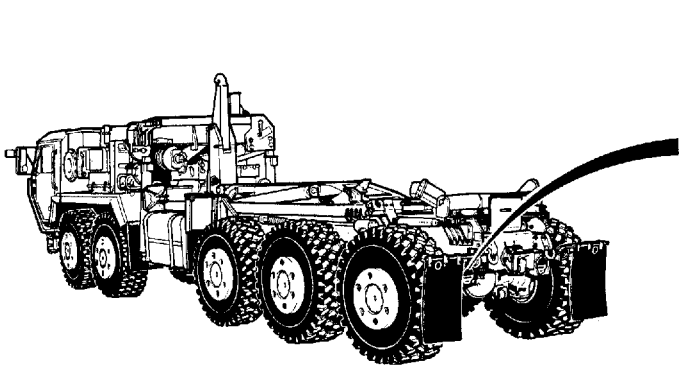
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

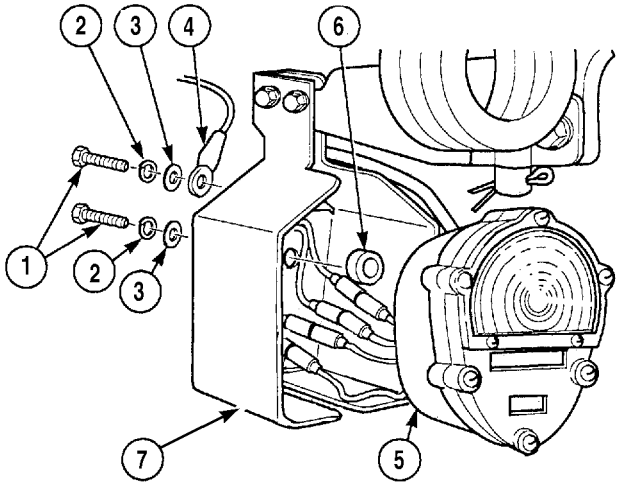
Materials/Parts
Compound, Corrosion Preventive (Item 23, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)
Tags, Identification (Item 88, Appendix C)

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.





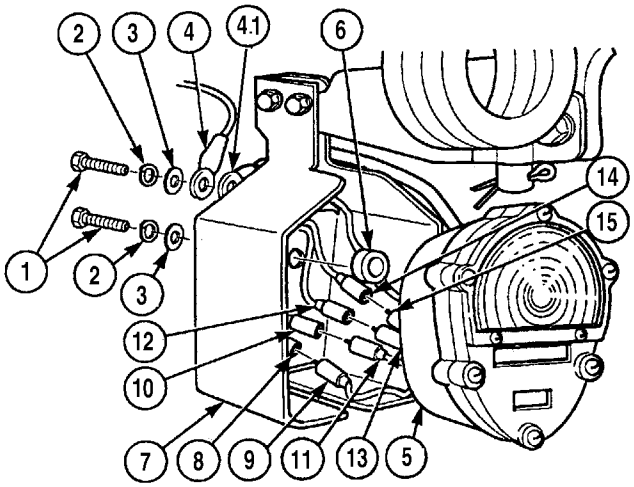
NOTE

- 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.
- Perform Step (1) for composite light only.
- Perform Step (1.1) for LED composite light only.

(1) Remove two screws (1), lockwashers (2), washers (3), ground wire (4), composite light (5) and spacers (6) from rear of composite light mounting bracket (7). Discard lockwashers.

7-47. REAR COMPOSITE LIGHT/LED COMPOSITE LIGHT AND BRACKET REPAIR (CONT).

(1.1) Remove two screws (1), lockwashers (2), washers (3), ground wire (4), LED composite light ground wire pigtail (4.1), LED composite light (5) and spacers (6) from rear of composite light mounting bracket (7). Discard lockwashers.



(2) Disconnect wire 1678 (8) from wire 23 (9).

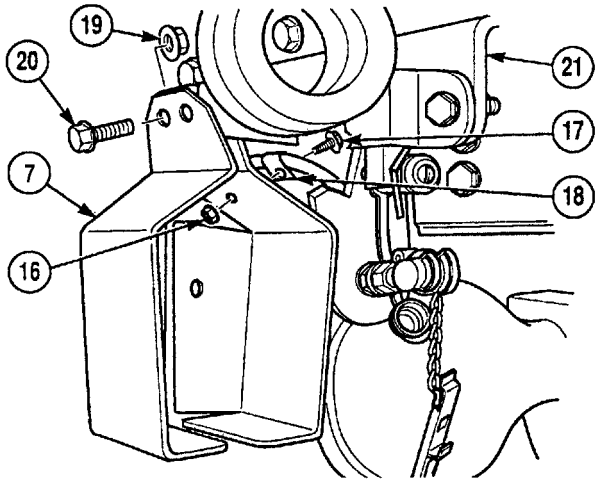
(3) Disconnect wire 1680 (10) from wire 24 (11).

(4) Disconnect wire 1003 (12) from wire 22 (13).

(5) Disconnect wire 1008 (14) from wire 21 (15).

(6) Remove locknut (16), screw (17) and cushion clip (18) from composite light mounting bracket (7). Discard locknut.

(7) Remove two locknuts (19), screws (20) and composite light mounting bracket (7) from frame (21). Discard locknuts.

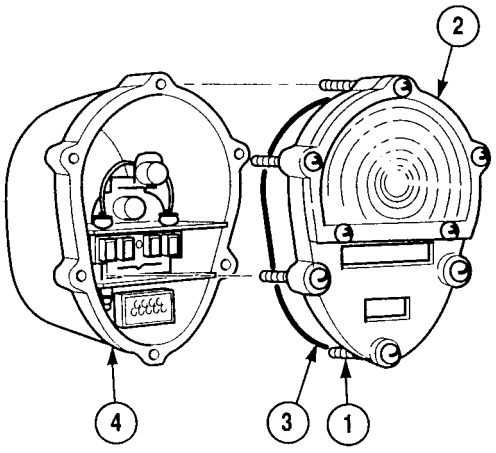


b. Disassembly.

NOTE

- Perform Steps (1) through (5) for composite light only.
- Perform Step (6) for LED composite light only.

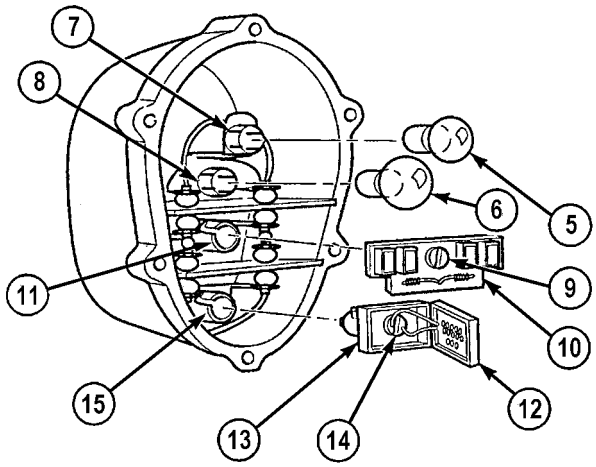
(1) Loosen six screws (1), composite light cover (2) and preformed packing (3) from composite light housing (4). Discard preformed packing.



(2) Push in and remove two lamps (5) and (6) from lamp sockets (7) and (8).

CAUTION

Turning base screw more than necessary to remove lamp assembly could damage wires and/or blackout light assembly.



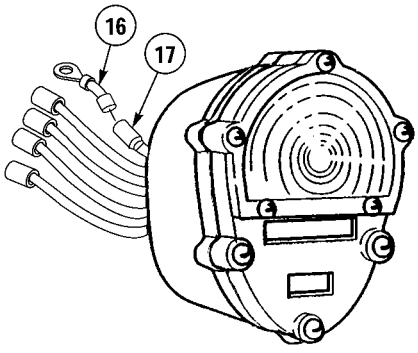
(3) Push in and rotate blackout tail light base screw (9) counterclockwise and remove blackout tail lamp (10) from blackout tail lamp socket (11).

(4) Open blackout brake lamp door (12) on blackout brake lamp (13).

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 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).



(6) Remove LED composite light pigtail ground wire (16) from LED composite light ground wire (17).

c. Cleaning and Inspection.

NOTE

Perform Step (1) for composite light only.

(1) Inspect lamp sockets for corrosion.

(2) Inspect lenses for cracks.

(3) Inspect light housing for cracks.

7-47. REAR COMPOSITE LIGHT/LED COMPOSITE LIGHT AND BRACKET REPAIR (CONT).

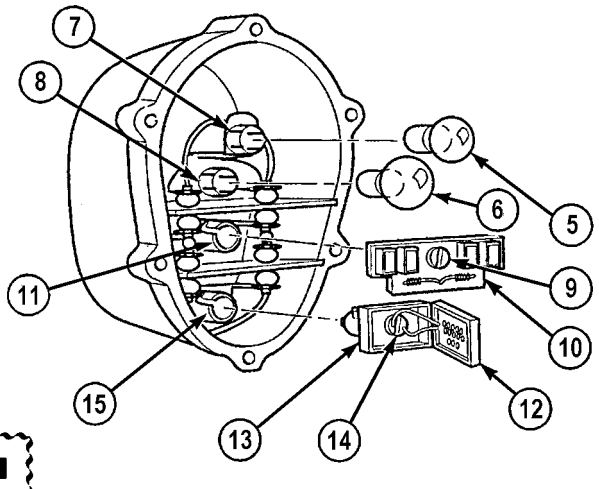
d. Assembly.

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.

NOTE

- Perform Steps (1) through (8) for composite light only.
- Perform Step (9) for LED composite light only.



(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.

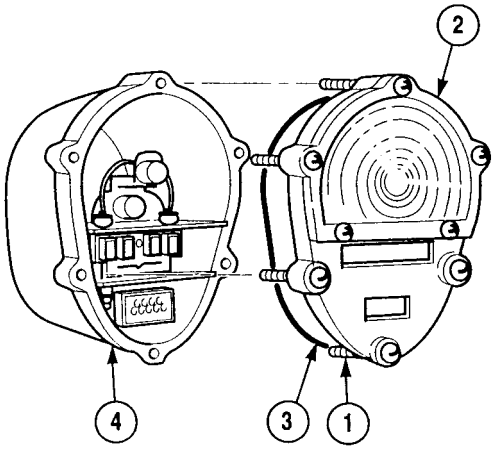
(3) Push in and rotate blackout brake lamp base screw (14) clockwise to secure lamp in blackout brake lamp socket (15).

(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.

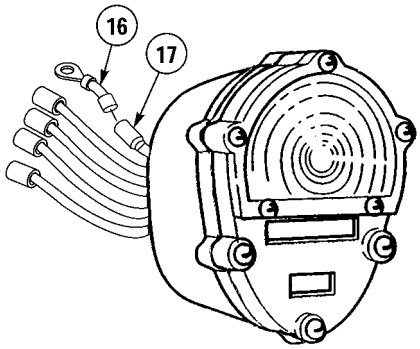


(6) Push in and rotate blackout tail lamp base screw (9) clockwise to secure lamp in blackout tail lamp socket (11).

(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).

(9) Install LED composite light pigtail ground wire (16) on LED composite light ground wire (17).



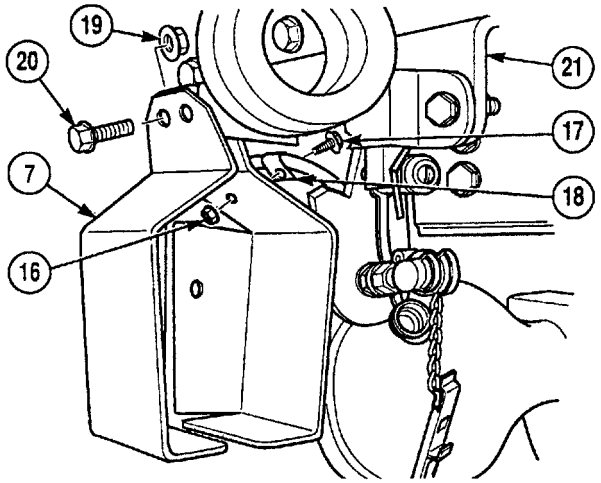
e. Installation.

(1) Install composite light mounting bracket (7), two screws (20) and locknuts (19) on frame (21).

(2) Install cushion clip (18), screw (17) and locknut (16) on composite light mounting bracket (7).

NOTE

- Refer to Table 7-5 for wire numbers of right and left lights.
- Feed wires through rear of bracket during installation.



(3) Connect wire 1008 (14) to wire 21 (15).

(4) Connect wire 1003 (12) to wire 22 (13).

(5) Connect wire 1680 (10) to wire 24 (11).

(6) Connect wire 1678 (8) to wire 23 (9).

NOTE

- Perform Step (7) for composite light only.
- Perform Step (7.1) for LED composite light only.

(7) Position ground wire (12), two washers (11), lockwashers (10), screws (9) and spacers (14) on composite light mounting bracket (15).

(7.1) Position two ground wire (4), LED composite light ground wire pigtail (4.1), washers (3), lockwashers (2), screws (1) and spacers (6) on composite light mounting bracket (7).

(8) Position composite light (5) in composite light mounting bracket (7) and tighten two screws (1).

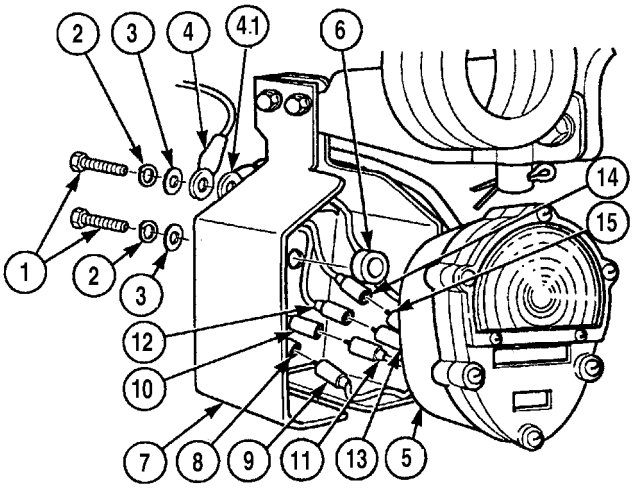


Table 7-5. Front Composite Light/Bracket Wires.

Left Light	Right Light
1678/23	1678/23
1680/24	1680/24
1003/22	1004/22
1008/21	1008/21

7-47. REAR COMPOSITE LIGHT/LED COMPOSITE LIGHT AND BRACKET REPAIR (CONT).

WARNING

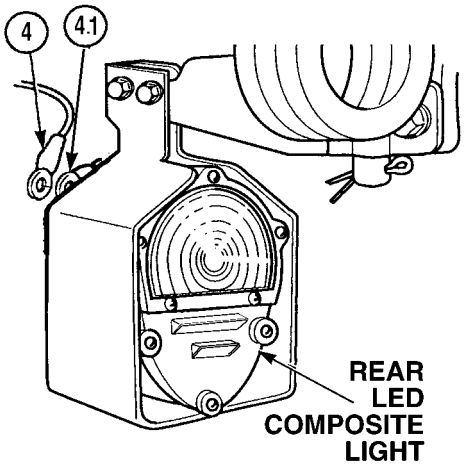
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

NOTE

- Perform Step (9) for composite light only.
- Perform Step (9.1) for LED composite light only.

(9) Apply corrosion preventive compound to ground wire (4).

(9.1) Apply corrosion preventive compound to two ground wires (4) and (4.1).



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.

This task covers:

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

INITIAL SETUP

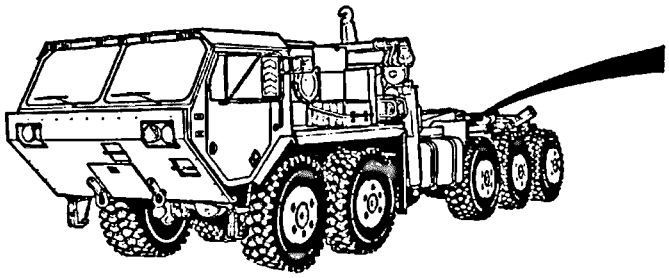
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

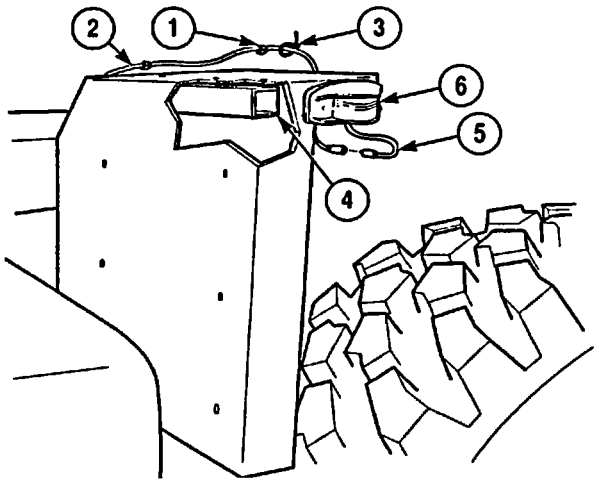
Materials/Parts
Cable Tie (Item 26, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)

Materials/Parts - Continued
Clamp, Loop (Item 22, Appendix F)
Screw, Self-Tapping (2) (Item 299, 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 removed the same way. Left side shown.

(1) Remove and discard cable tie (1) from side marker light wiring harness (2).

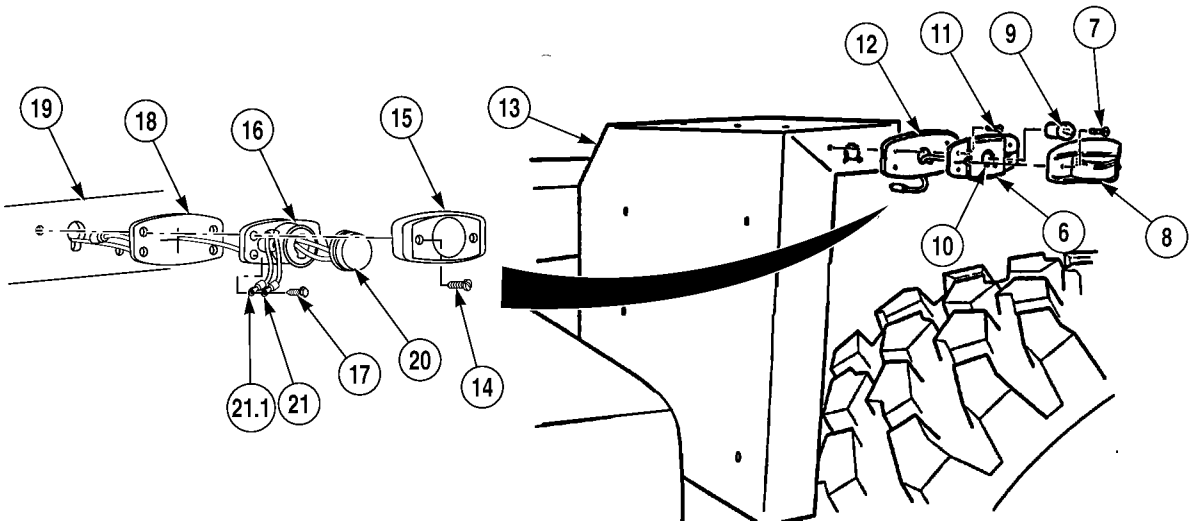
NOTE

Loop clamp is removed by first pulling out lock button and then removing loop clamp.

(2) Remove loop clamp (3) and side marker light wiring harness (2) from rear fender support arm (4). Discard loop clamp.

(3) Disconnect connector (5) from side marker light wiring harness (2) at side marker light (6).

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).

NOTE

Wire 1435 may or may not be present in Step (6).

(6) Remove two self-tapping screws (11), ground wire (21), wire 1435 (21.1), 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).

NOTE

Perform Step (5.1) if wire 1435 is present.

(5.1) Position wire 1435 (21.1) through center of gasket (10).

NOTE

Wire 1435 may or may not be present in Step (6).

(6) Position ground wire (21) and wire 1435 (21.1) 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).

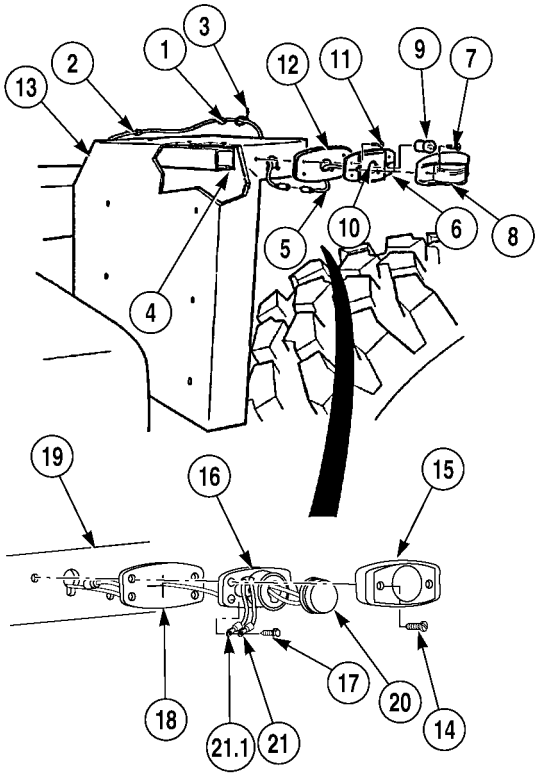
(9) Install two self-tapping screws (17), ground wire (21) and side marker light (16) on fender (19).

(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

7-49. CAB DOME LIGHT ASSEMBLY REPLACEMENT.

This task covers:

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

INITIAL SETUP

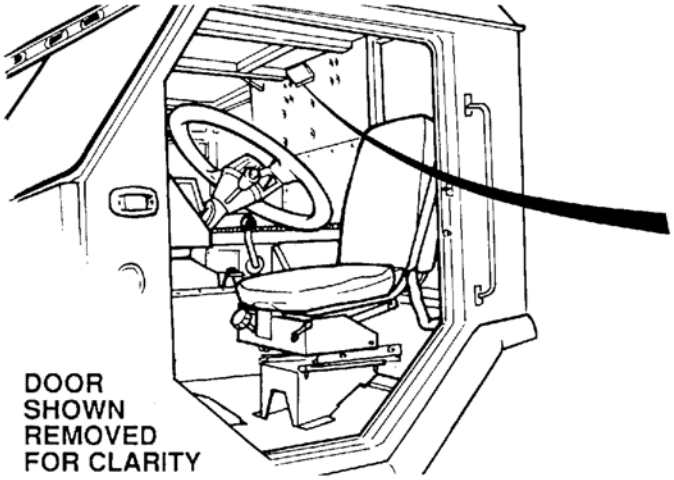
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

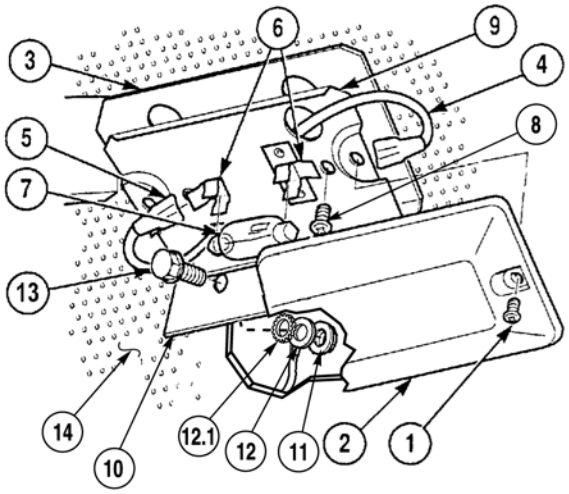
Materials/Parts
Compound, Corrosion Preventive (Item 35, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 106, Appendix F)
Lockwasher (Item 163, Appendix F)

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 wires prior to removal.

(1) Remove two screws (1) and lens cover (2) from cab dome light assembly (3).
(2) Disconnect wire 1153 (4) and wire 1435 (5) from terminals (6) on cab dome light assembly (3).
(3) Remove lamp (7) from cab dome light assembly (3).
(4) Remove two screws (8) and cab dome light (9) from bracket (10).

NOTE

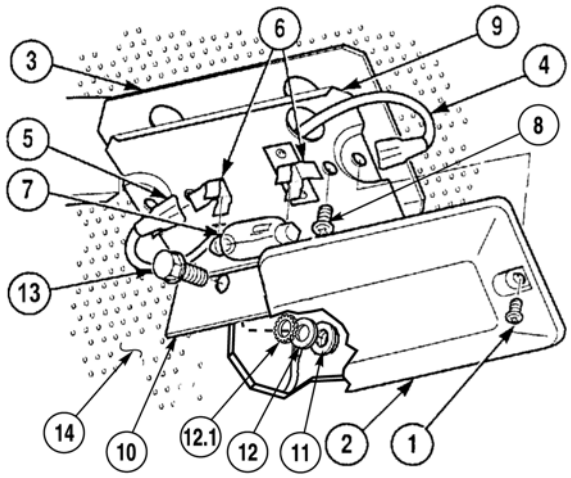
Ground wire and lockwasher may or may not be present in Step (5).

(5) With the aid of an assistant, remove two locknuts (11), ground wire (12), lockwasher (12.1), two screws (13) and bracket (10) from cab (14). Discard lockwasher and locknuts.

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 and lockwasher 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), lockwasher (12.1) and two locknuts (11).

(3) Apply corrosion preventive compound to terminal end of ground wire (12).

(4) Install cab dome 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
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

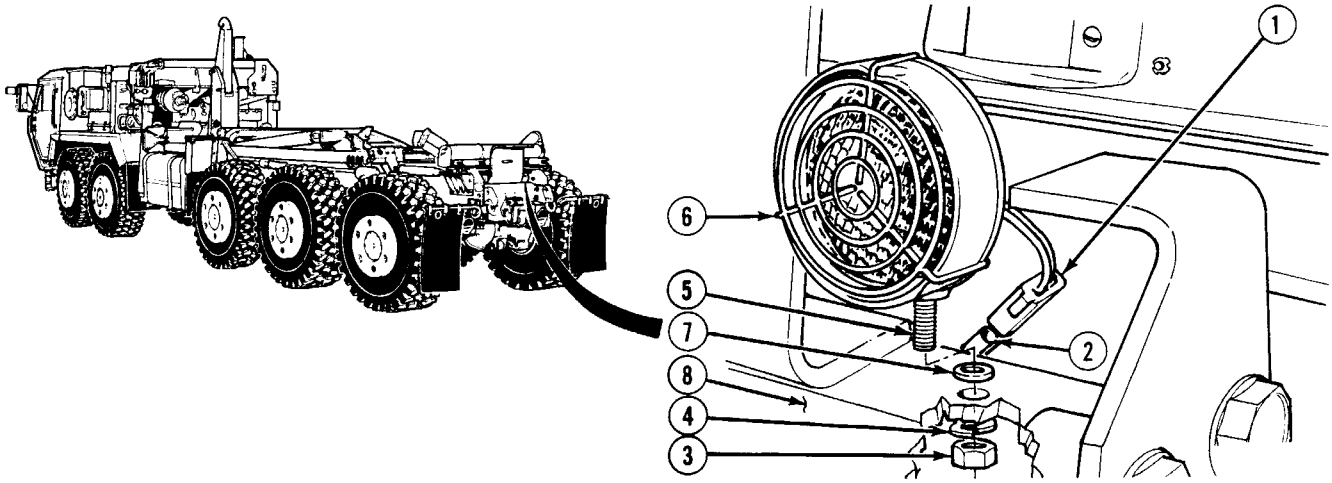
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. Drive (Item 62, Appendix G)
Wrench, Torque, 3/8 in. Drive (0-60 N·m) (Item 98, Appendix G)

Materials/Parts
Compound, Corrosion Preventive (Item 34, Appendix C)
Solution, Soap (Item 86, Appendix C)

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)

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.

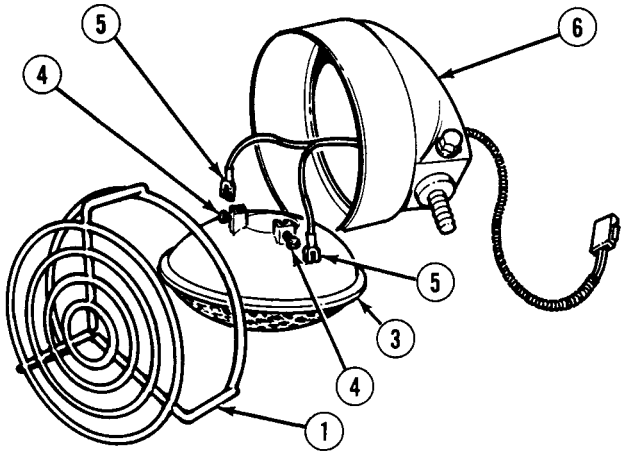
(3) Remove reverse light (6) and washer (7) from rear crossmember (8).

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

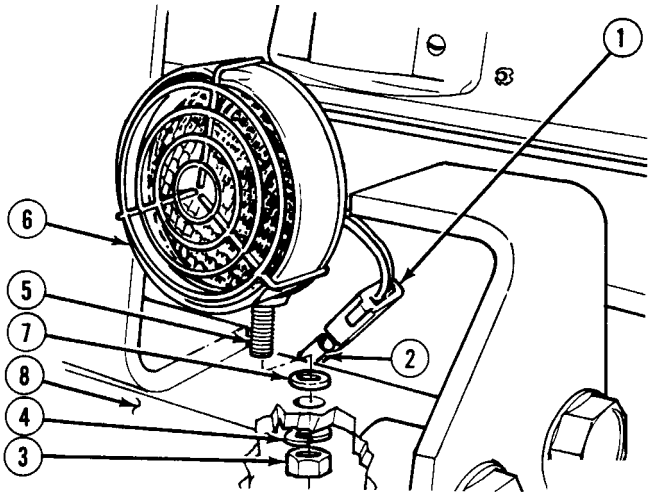
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing,wash immediately with soap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

INITIAL SETUP

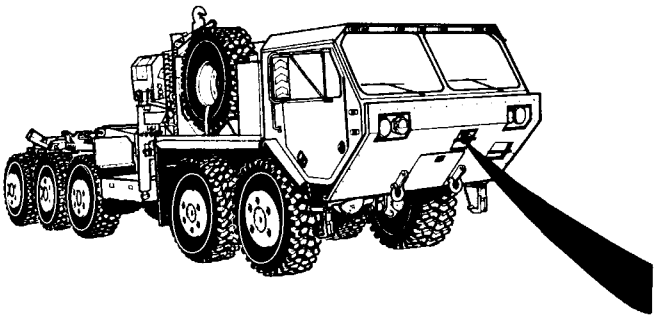
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

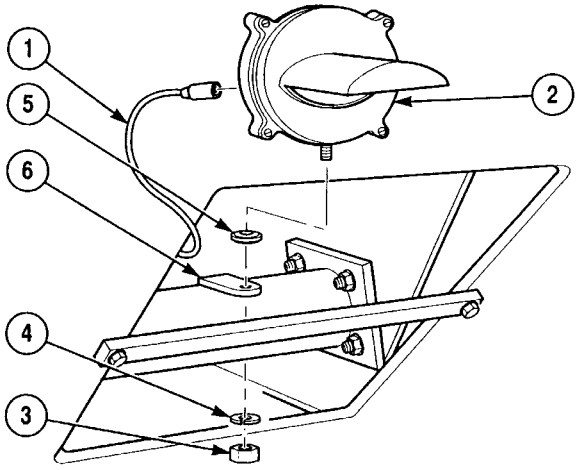
Materials/Parts
Cloth, Cleaning (Item 31, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)

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.





NOTE

- Model A, bulb type, or Model B, LED type, blackout drive light may be installed on vehicle.
- Removal/installation is the same for both models.
- Model B, LED type, is not repairable.

(1) Disconnect wire 1679 (1) from rear of blackout light (2).

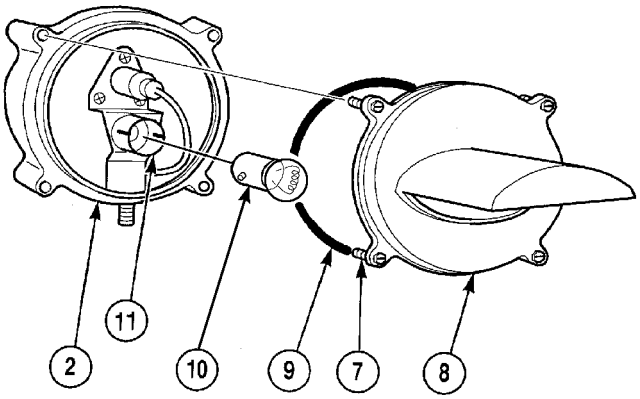
(2) Remove nut (3), lockwasher (4) and spacer (5) from blackout light (2). Discard lockwasher.

(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.

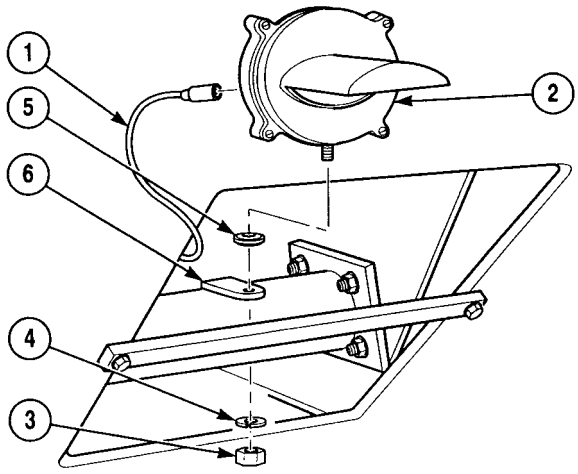
(1) Connect wire 1679 (1) on blackout light (2).

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
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
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)

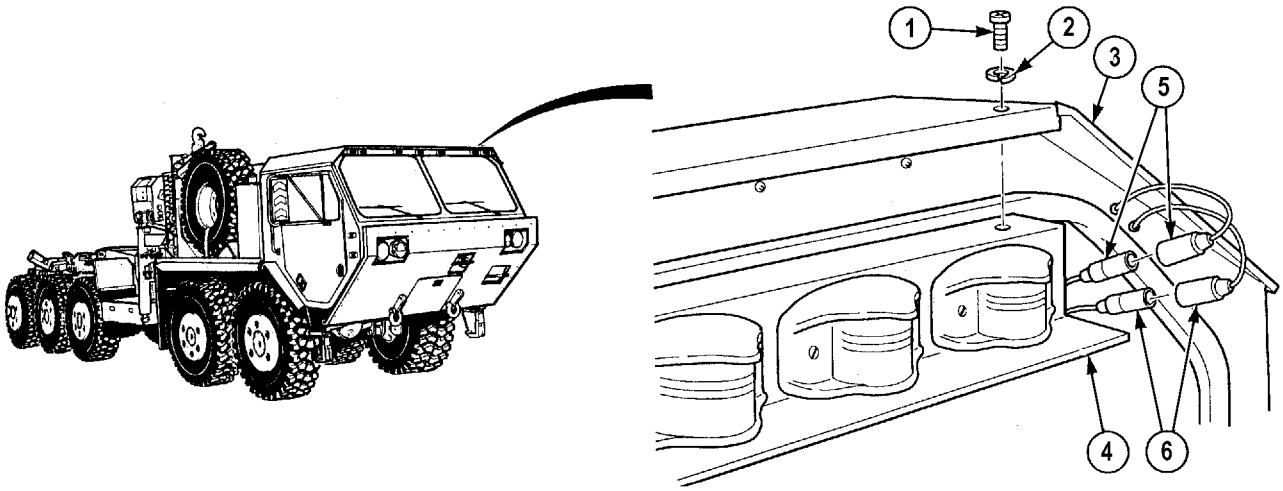
Materials/Parts
Cable Ties (Item 25, Appendix C)
Compound, Corrosive Preventive (Item 34, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)
Tags, Identification (Item 88, Appendix C)

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).

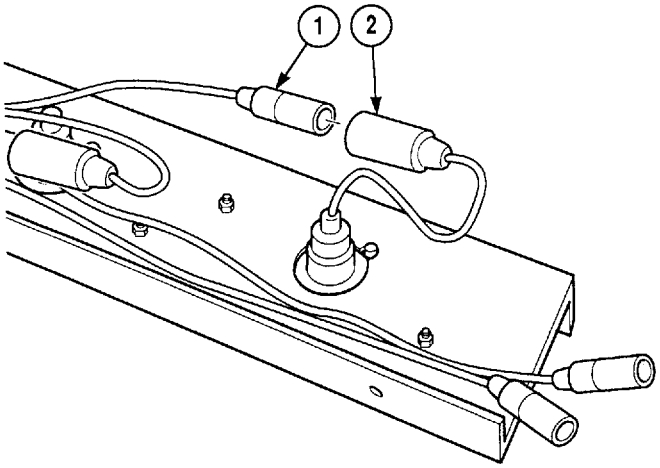
7-52. FRONT MARKER LIGHT ASSEMBLY REPAIR (CONT).

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).



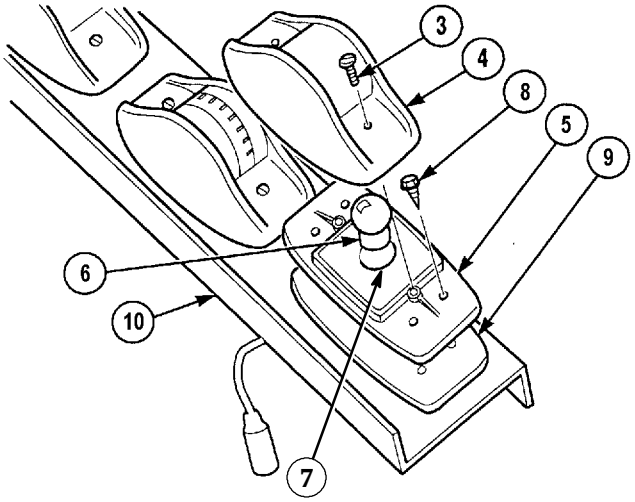
NOTE

- 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).

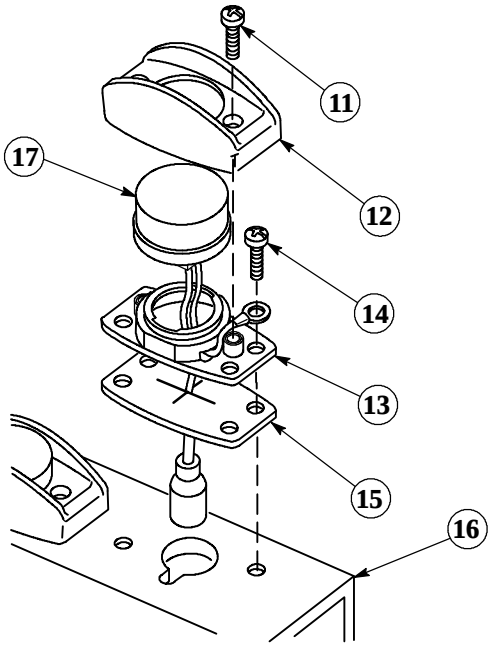
(4) Remove two self-tapping screws (8), marker light assembly (5) and gasket (9) from marker light bracket (10). Discard self-tapping screws.



(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.



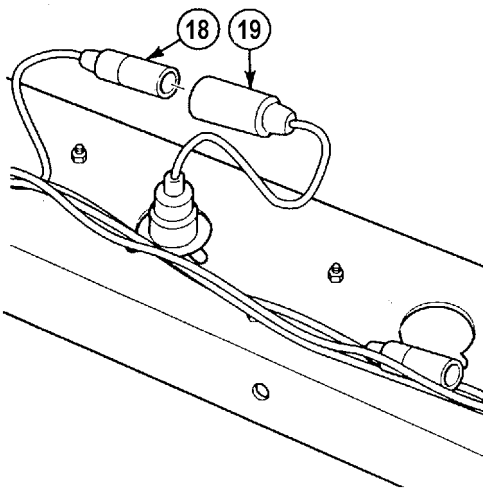
CAUTION

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

- Truck may or may not be equipped with blackout marker lights
- Perform Steps (8) through (11) if truck is equipped with blackout marker lights.
- There are two blackout lights. Both blackout lights are disassembled the same way.

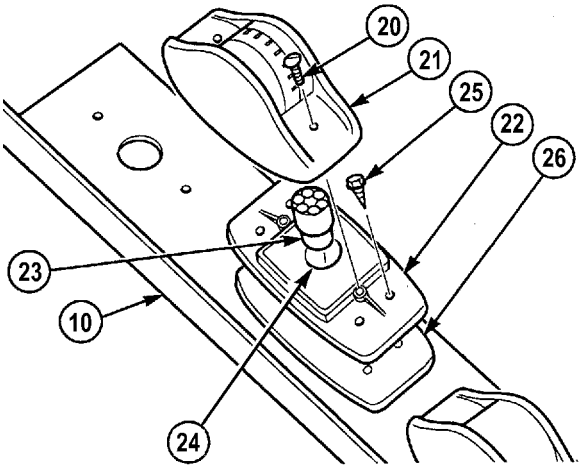
(8) Disconnect wire 1680 (18) from wire 490 (19).



(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).

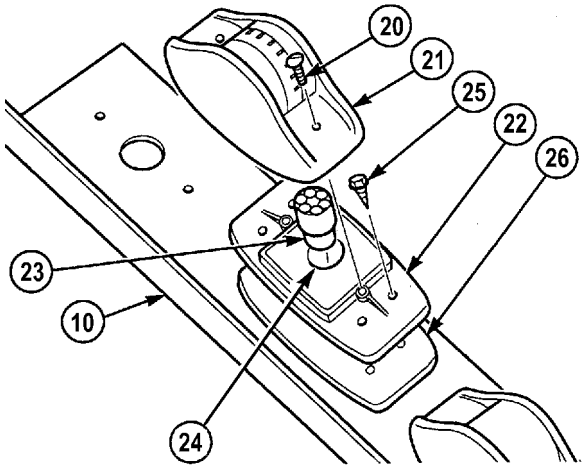
d. Assembly.

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

- Truck may or may not be equipped with blackout marker lights
- Perform Steps (1) through (5) if truck is equipped with blackout marker lights.
- 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

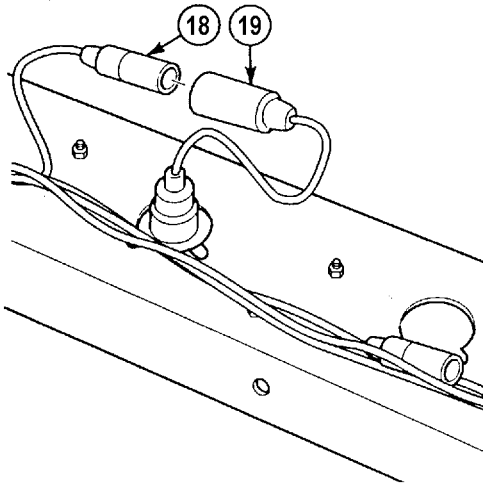
Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

(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).

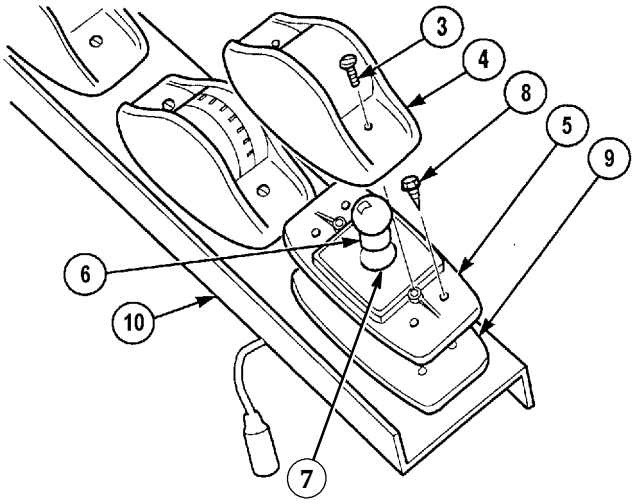
(5) Connect wire 1680 (18) to wire 490 (19).



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).

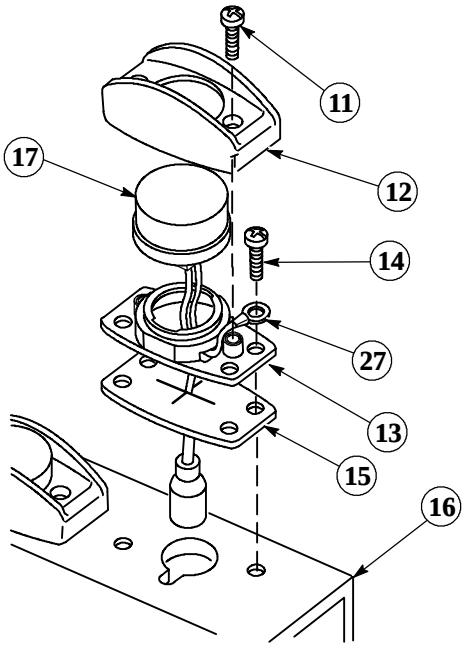
(9) Install two screws (3) in lens cover (4).

(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.

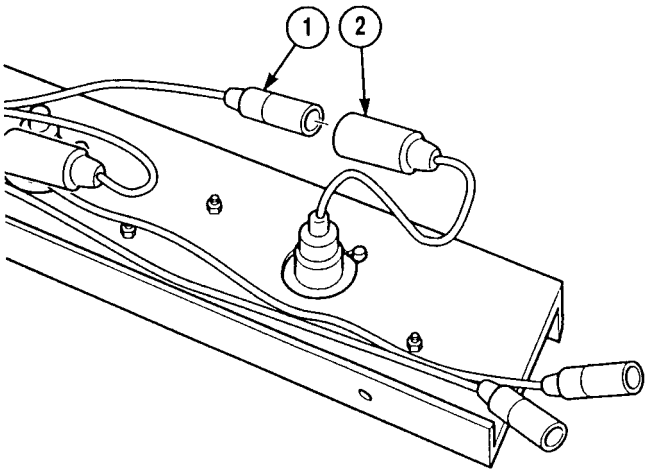
(12) Install gasket (15), marker light assembly (13), ground wire (27) and two self-tapping screws (14) on marker light bracket (16).

(13) Install two screws (11) in lens cover (12).



7-52. FRONT MARKER LIGHT ASSEMBLY REPAIR (CONT).

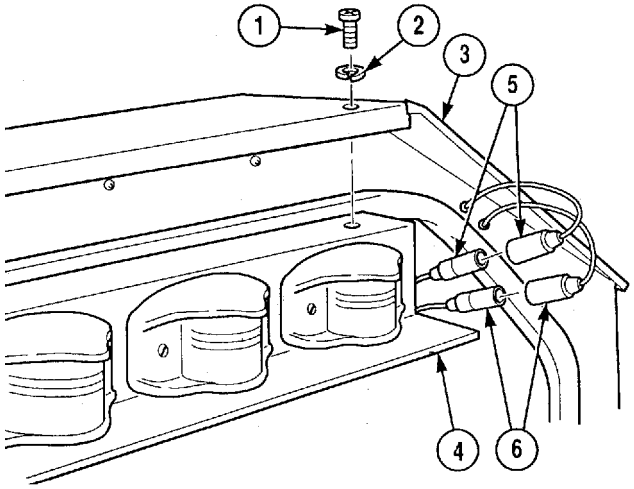
(14) Connect wire 1012 (1) to wire 489 (2).



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

INITIAL SETUP

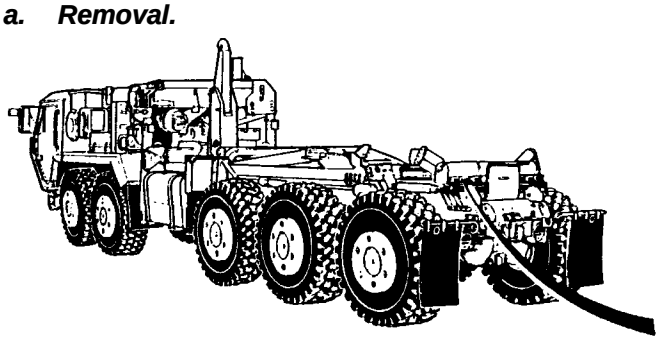
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)

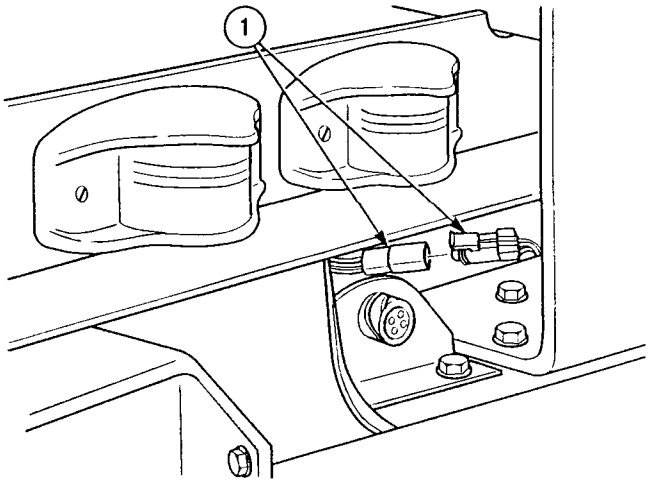
Materials/Parts
Cable Ties (Item 25, Appendix C)
Compound, Corrosive Preventive (Item 34, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)

Materials/Parts - Continued
Locknut (18) (Item 103, Appendix F)
Locknut (4) (Item 106, Appendix F)
Lockwasher (4) (Item 168, Appendix F)
Deleted

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-23220-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.





NOTE

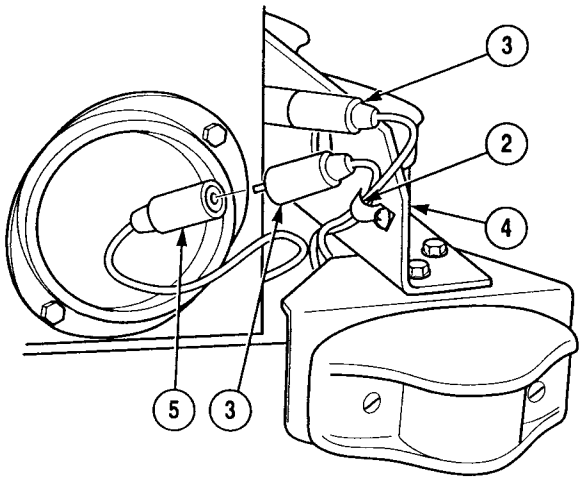
Connectors are removed by gently prying on tab and pulling connector apart.

(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.

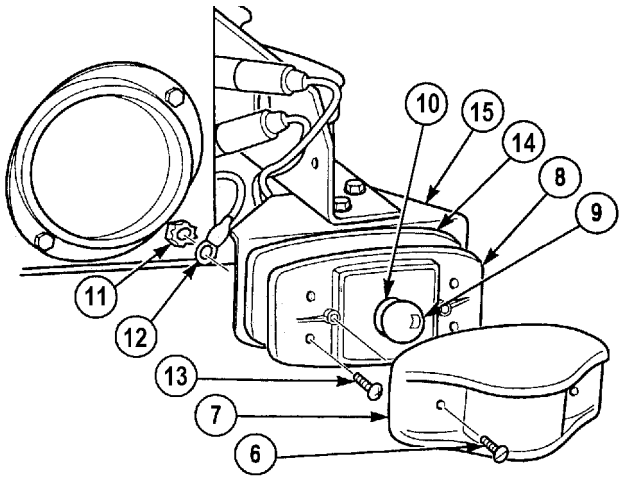


(2) Remove loop clamp (2) and two wires 489 (3) from rear light bar assembly (4).

(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).

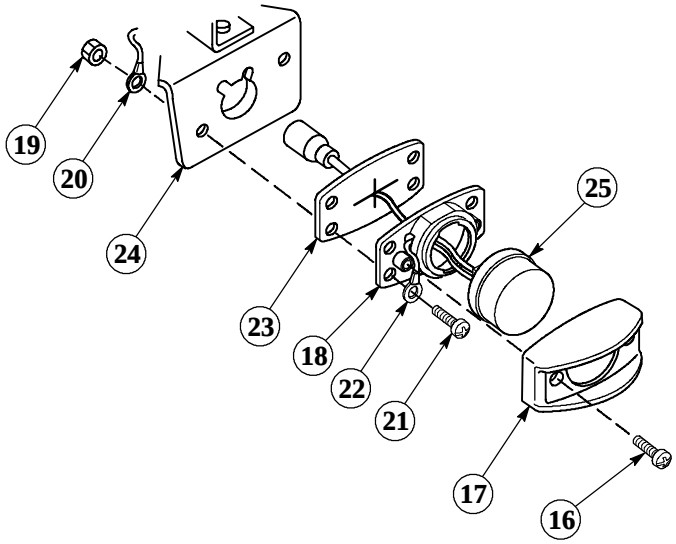
(5) Remove rear marker lamp (9) from rear marker lamp socket (10).

(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.

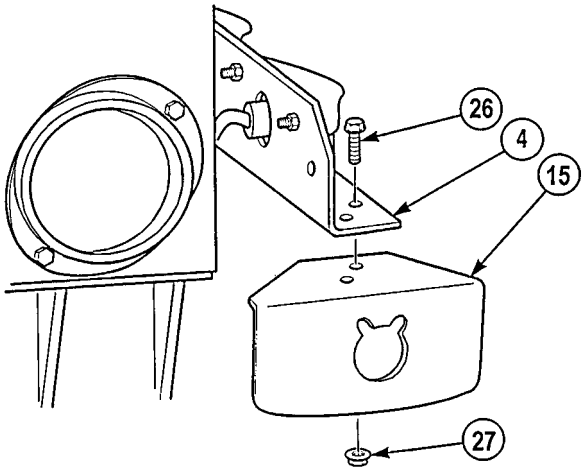
(7) Remove two screws (16) and lens cover (17) from rear marker light assembly (18).

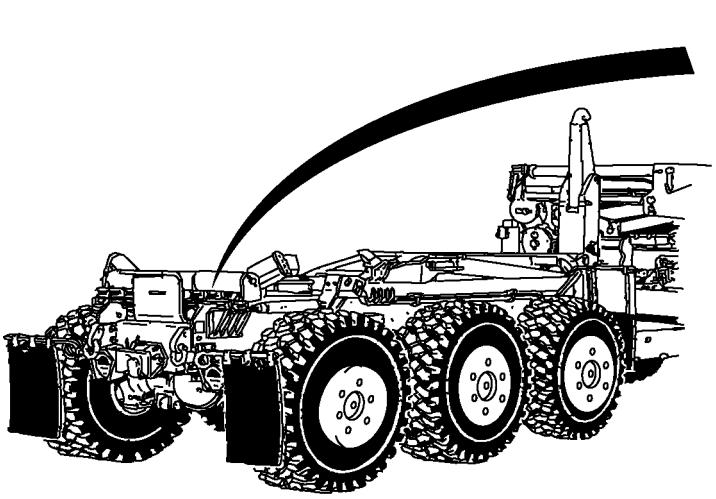
(8) Remove two locknuts (19), wire 1435 (20), two screws (21), ground wire (22) rear marker light assembly (18) and gasket (23) from rear bracket (24). Discard locknuts.

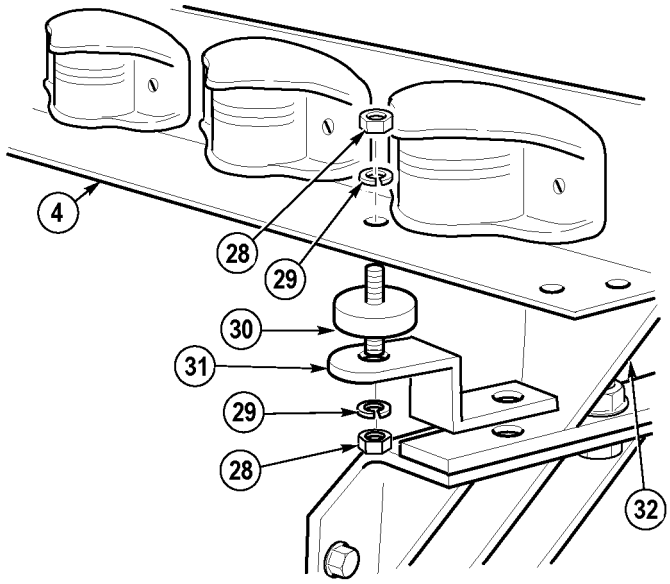
(9) Turn LED (25) counterclockwise 1/4 turn and remove from rear marker light assembly (18).



(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).

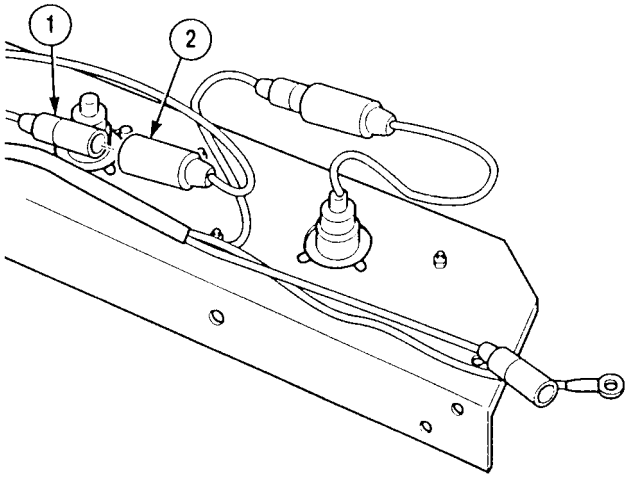
b. Disassembly.

CAUTION

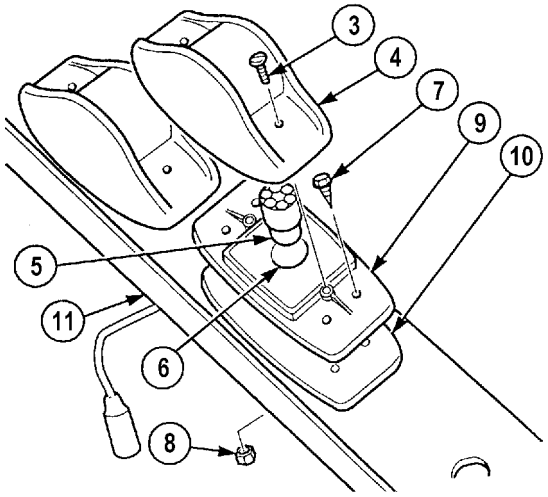
Keep all moisture and oils off lamp. Do not touch lamp with bare hands. Use a clean dry, oil free cloth to hold lamp while installing lamp in blackout light.

NOTE

- Truck may or may not be equipped with blackout marker lights
- Perform Steps (1) through (4) if truck is equipped with blackout marker lights.
- There are two blackout lights. Both blackout lights are assembled 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 screws (7), locknuts (8), blackout light assembly (9) and gasket (10) from rear light bar assembly (11). Discard locknuts.

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.

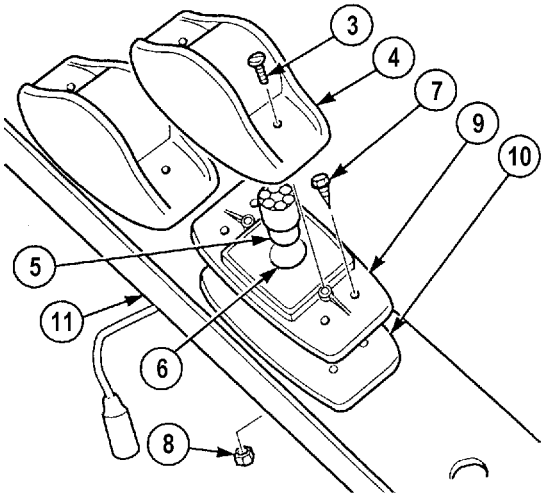
CAUTION

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

- Truck may or may not be equipped with blackout marker lights
- Perform Steps (1) through (5) if truck is equipped with blackout marker lights.
- 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 screws (7) and locknuts (8) on rear light bar assembly (11).



WARNING

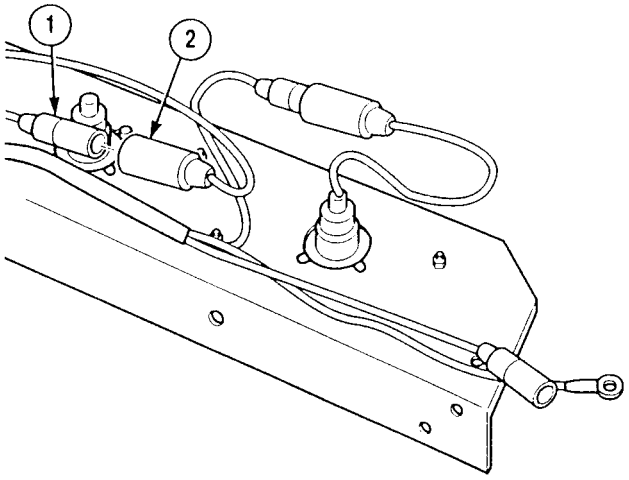
Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

(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).

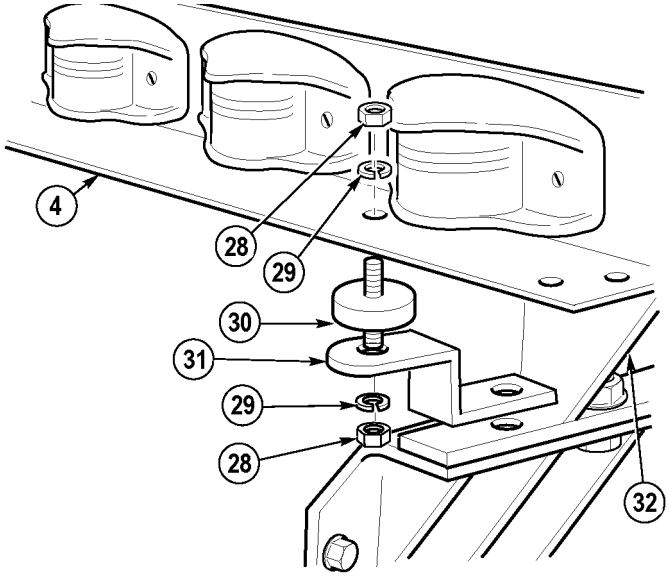
e. Installation.

(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).

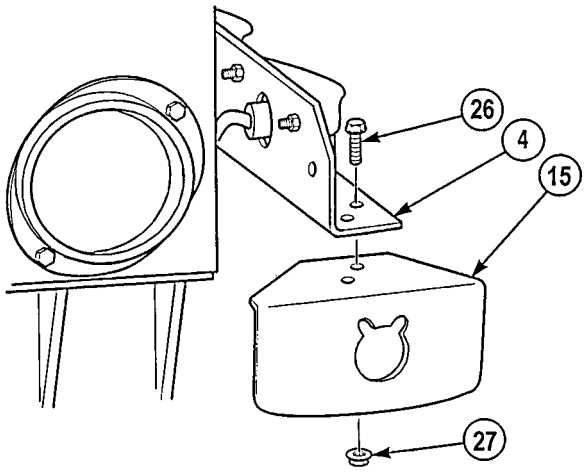


(3) Install rear bracket (15) with two screws (26) and nuts (27) on rear marker light assembly (4).

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).



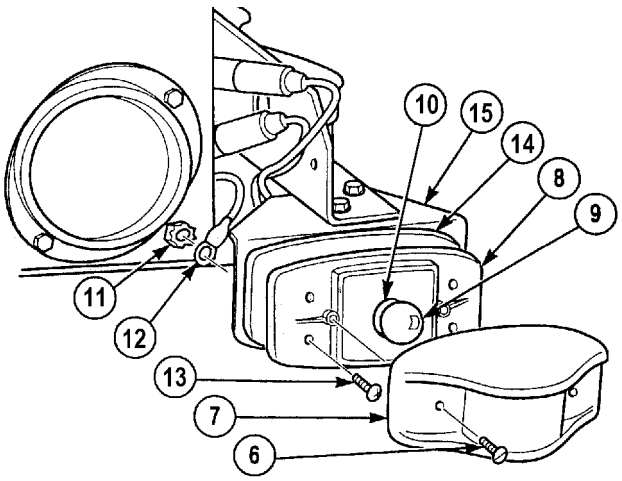
WARNING

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.

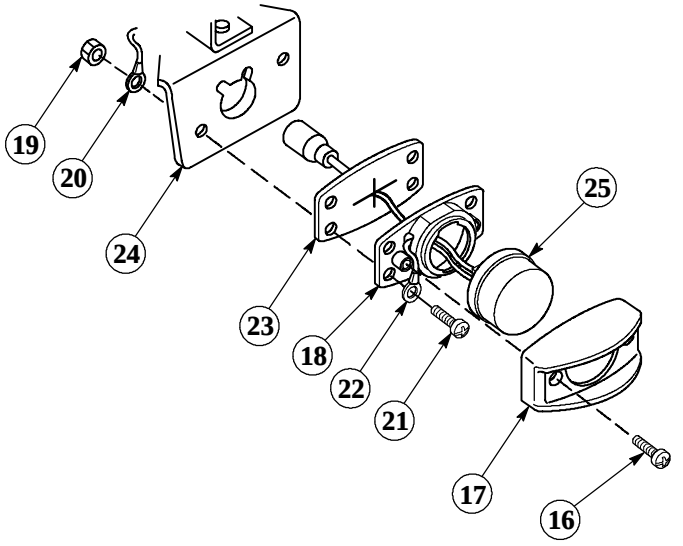
(8) Apply corrosive preventive compound to wire 1435 (12).

(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).

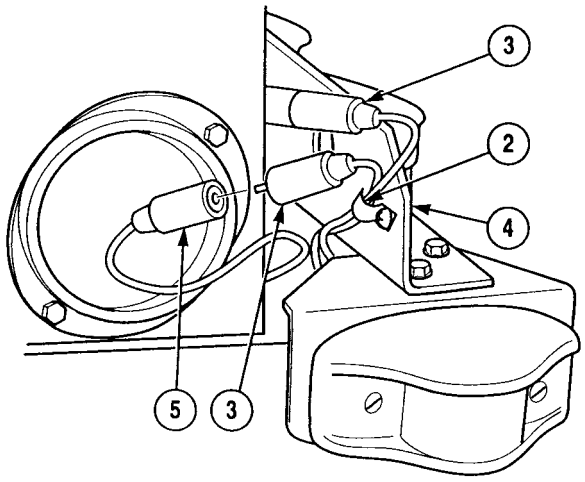
(12) Install lens cover (17) with two screws (16) in rear marker light assembly (18).



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.

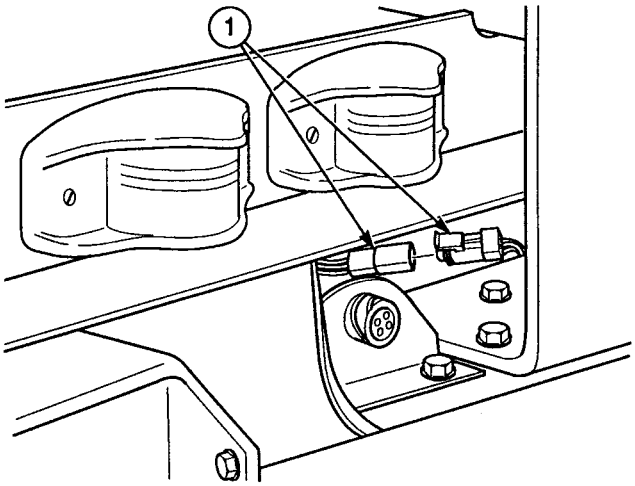


(13) Apply corrosive preventive compound to wire 1435 (20).

(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

7-53.1. BLACKOUT MARKER LIGHT REMOVAL KIT INSTALLATION.

This task covers:

a. Removal

b. Follow-On Maintenance

INITIAL SETUP

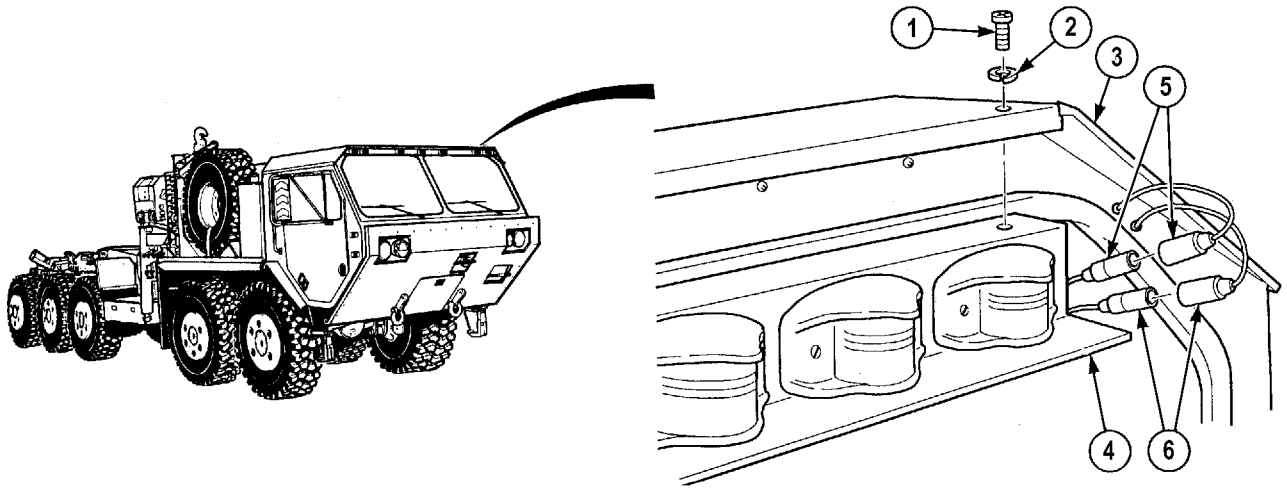
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Personnel Required
Two

Materials/Parts
Lockwasher (6) (Item 164, 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

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.

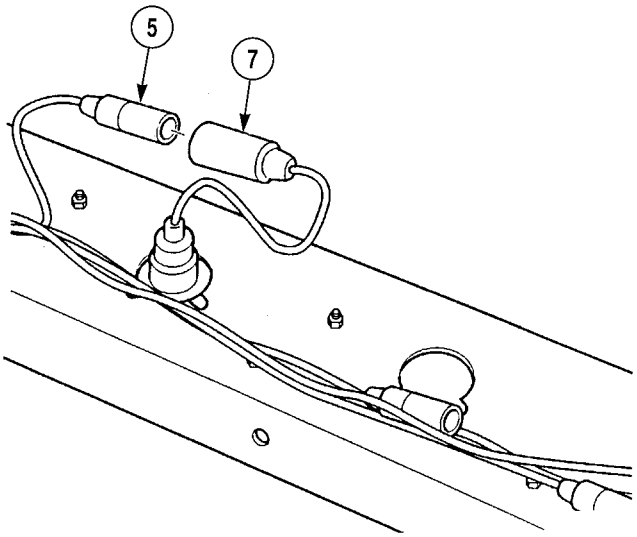
(2) Disconnect wire 1680 (5) and wire 1012 (6).

7-53..1 BLACKOUT MARKER LIGHT REMOVAL KIT INSTALLATION (CONT).

NOTE

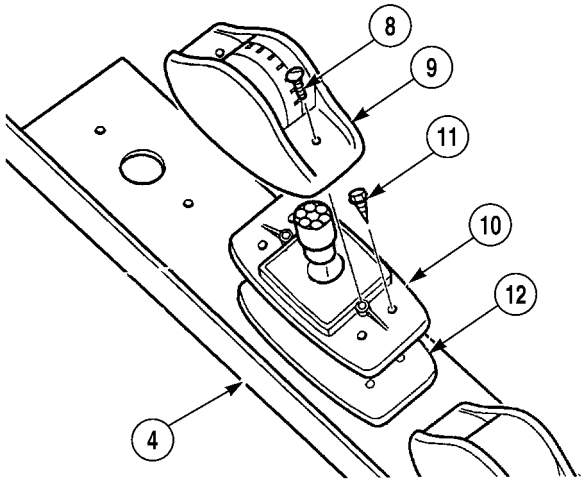
There are two front blackout lights. Both blackout lights are removed the same way.

(3) Disconnect wire 1680 (5) from wire 490 (7).



(4) Remove two screws (8) and blackout lens cover (9) from blackout marker light assembly (10).

(5) Remove two self-tapping screws (11), blackout marker light assembly (10) and gasket (12) from marker light bracket (4). Discard self-tapping screws.

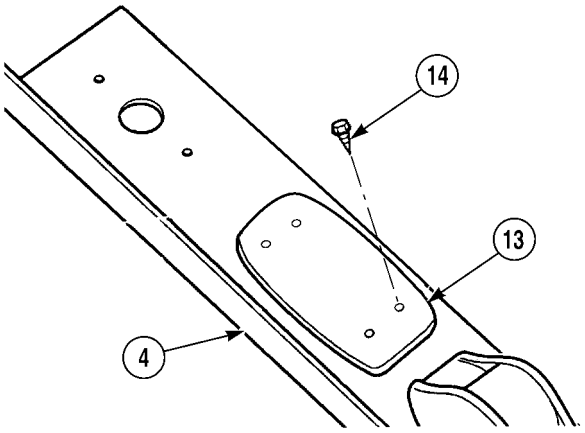


NOTE

Ensure self-tapping screws installed in Step (6) are in a criss-cross pattern.

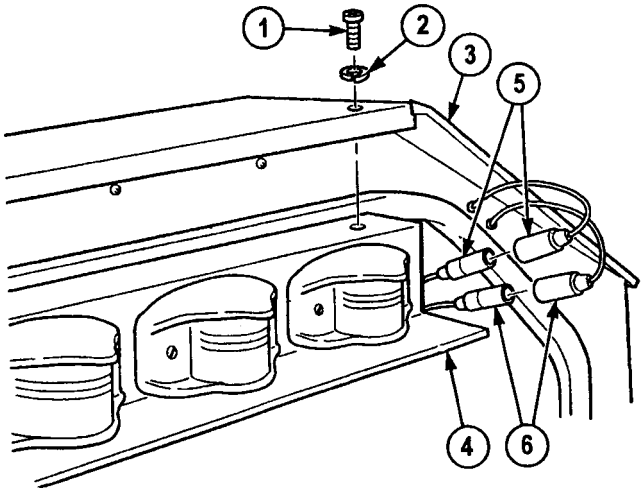
(6) Install cover plate (13) on marker light bracket (4) with two self-tapping screws (14).

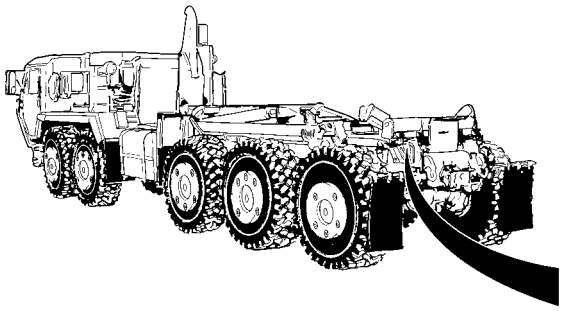
(7) Perform Steps (3) through (5) for remaining front blackout marker light

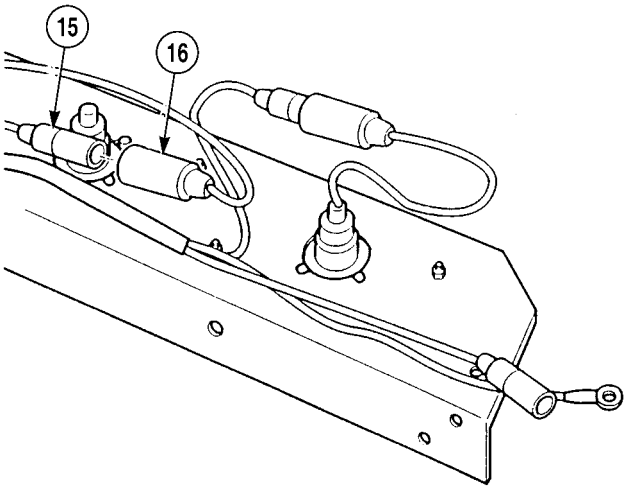


(8) With the aid of an assistant, support marker light bracket (4) and connect wire 1012 (6) and wire 1680 (5).

(9) With the aid of an assistant, install marker light bracket (4) with six lockwashers (2) and screws (1) on cab roof (3).







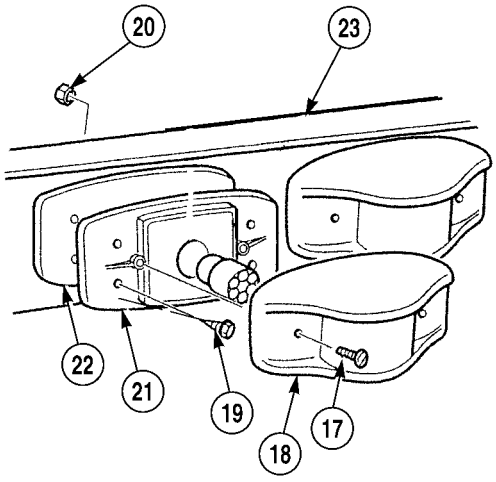
NOTE

There are two rear blackout lights. Both blackout lights are removed the same way.

(10) Disconnect wire 1680 (15) from wire 490 (16).

(11) Remove two screws (17) from blackout lens lens cover (18).

(12) Remove two screws (19), locknuts (20), blackkout light assembly (21) and gasket (22) from rear light bar assembly (23). Discard screws and locknuts.



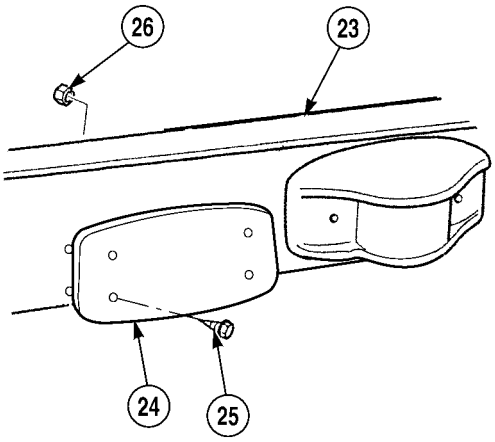
7-53..1 BLACKOUT MARKER LIGHT REMOVAL KIT INSTALLATION (CONT).

NOTE

Ensure screws installed in Step (13) are in a criss-cross pattern.

(13) Install cover plate (24) on rear light bar assembly (23) with two screws (25) and locknuts (26).

(14) Perform Steps (10) through (12) for remaining rear blackout marker lights.



b. Follow-On Maintenance:

- Connect batteries, (Para 7-87)
- Check operation of front and rear marker lights (TM 9-2320-364-10)
- Remove wheel chocks (TM 9-2320-364-10)

END OF TASK

7-54. AMBER MARKER LIGHT REPLACEMENT.

This task covers:

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

INITIAL SETUP

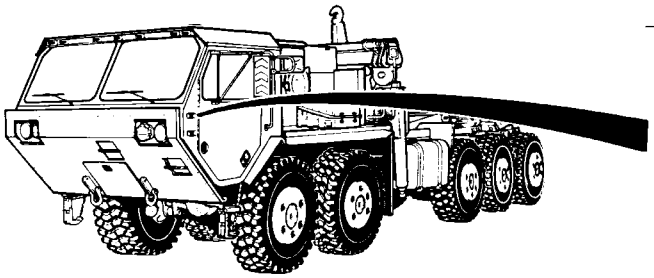
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

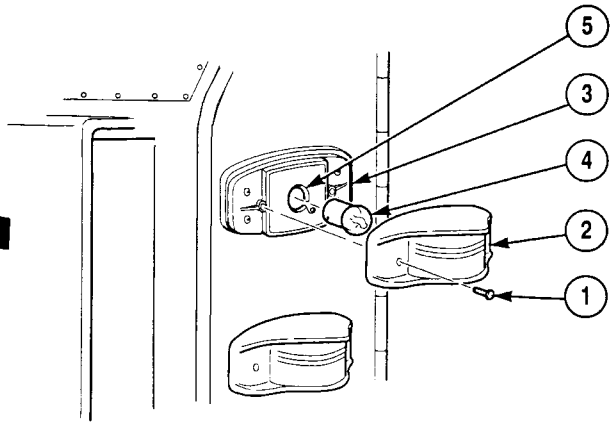
Materials/Parts
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)

Materials/Parts - Continued
Screw, Self-Tapping (4) (Item 299, 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

- There are two marker lights on each side of cab. Left side marker lights are shown.
- Upper lamp is a turn signal, lower lamp is a marker light.
- Perform Steps (1) through (5) for amber marker light with lamp
- Perform Steps (6) through (9) for amber marker light with LED.

(1) Remove two screws (1) and lens cover (2) from amber marker light assembly (3).

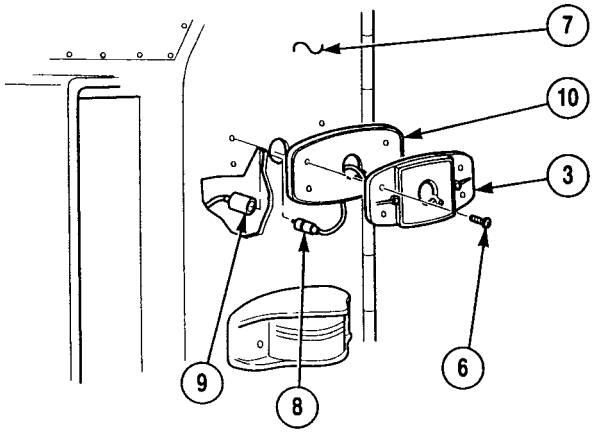
(2) Remove lamp (4) from socket (5).

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).

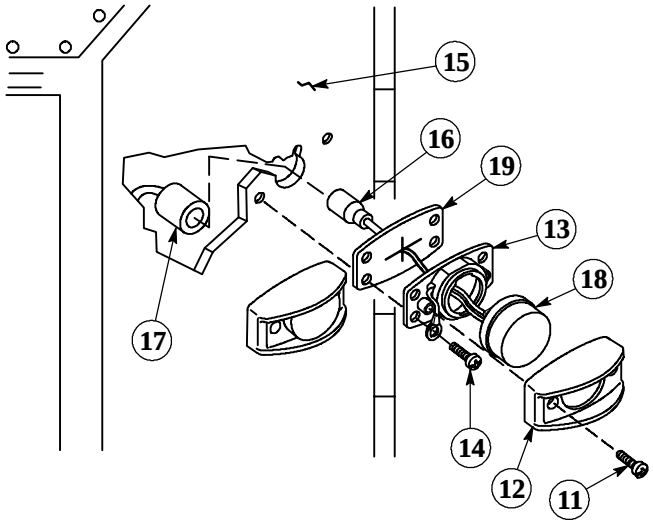


(6) Remove two screws (11) and lens cover (12) from amber marker light assembly (13).

(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.

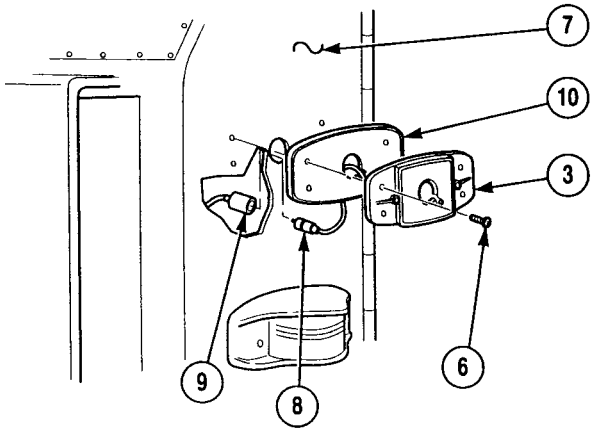
NOTE

- 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).

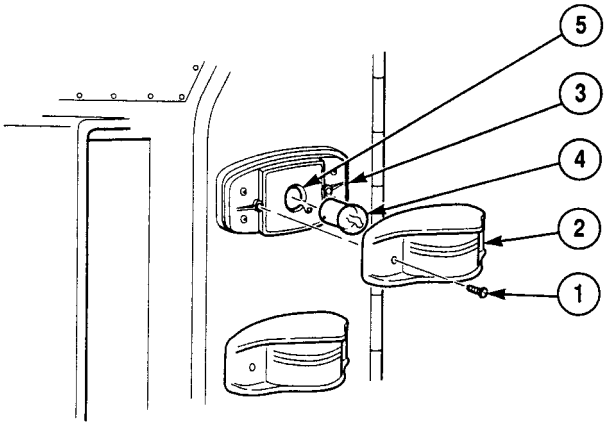
(2) Connect wire 489 (8) to wire 1012 (9).

(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).

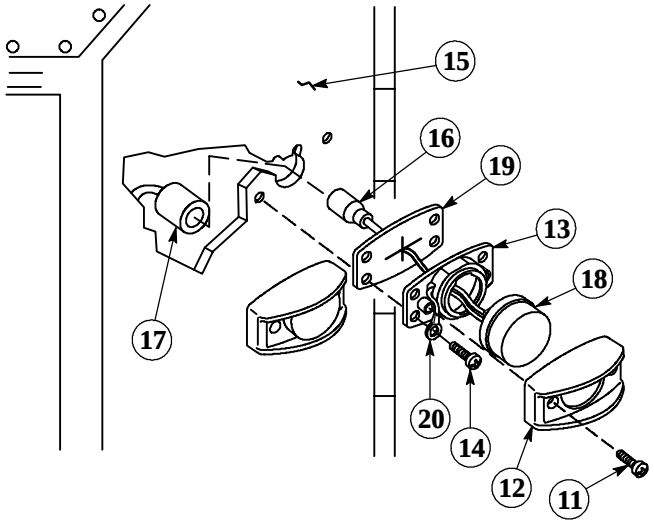
(7) Position ground wire (20) through hole in amber marker light assembly (13).

(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
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

INITIAL SETUP

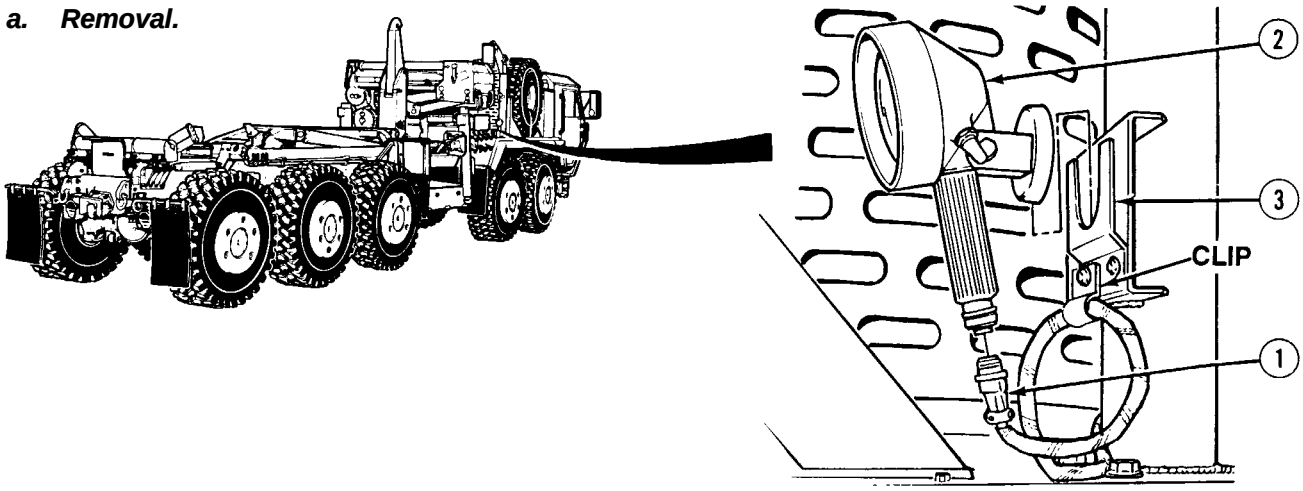
Tools and Special Tools
Tool Kit , General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque, (0-60 N·m) (Item 98, Appendix G)

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).

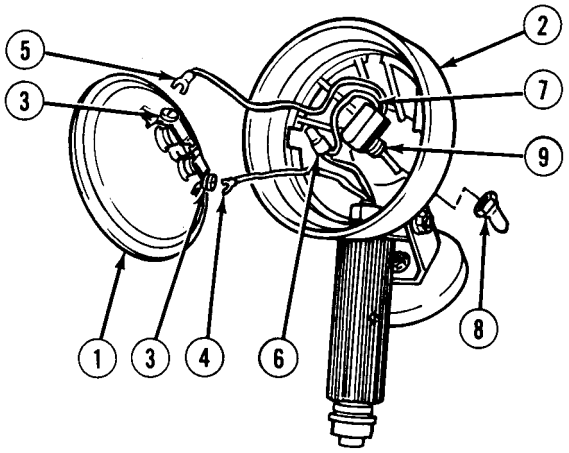
WARNING

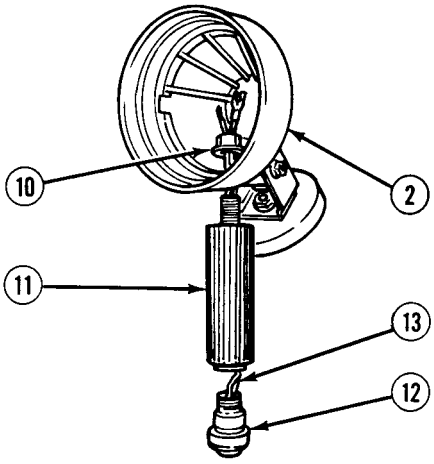
Use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

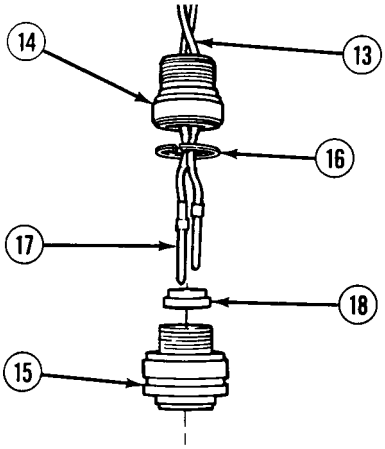
(10) Remove retaining ring (16) from electrical connector housing (15).

(11) Remove two wire pins (17) and wire pin guide (18) from connector housing (15).

(12) Remove connector adapter (14) from wire harness (13).



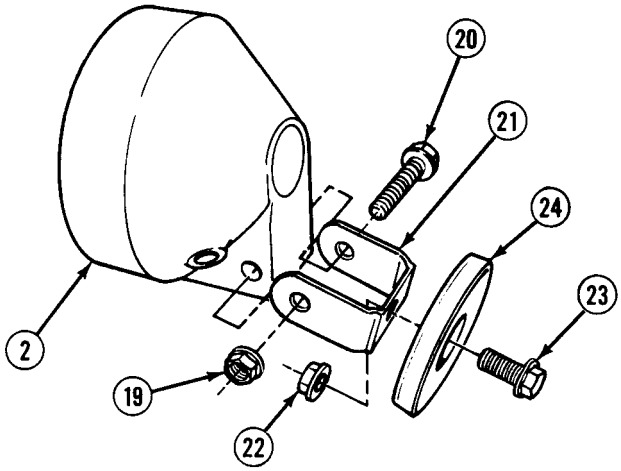




7-55. HAND HELD WORK LAMP ASSEMBLY REPAIR (CONT).

(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.

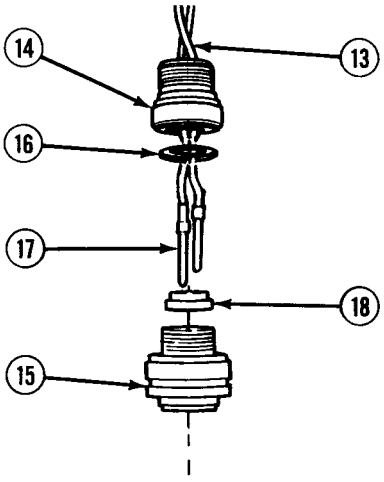
(2) Install hand held work lamp assembly bracket (21), screw (20) and locknut (19) on hand held work lamp assembly (2).

(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.

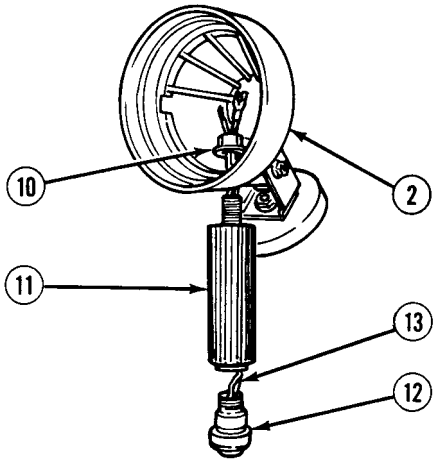
(5) Install retaining ring (16) in connector housing (15).

(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).



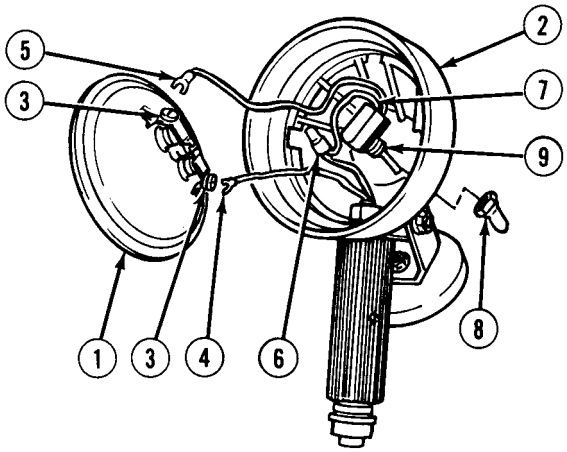
(10) Install switch (9) on hand held work lamp assembly housing (2).

(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).

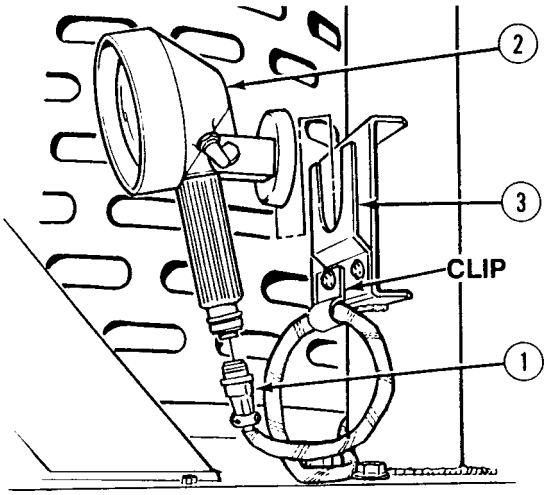
(14) Install sealed beam (1) in hand held work lamp assembly (2).



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.

This task covers:

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

INITIAL SETUP

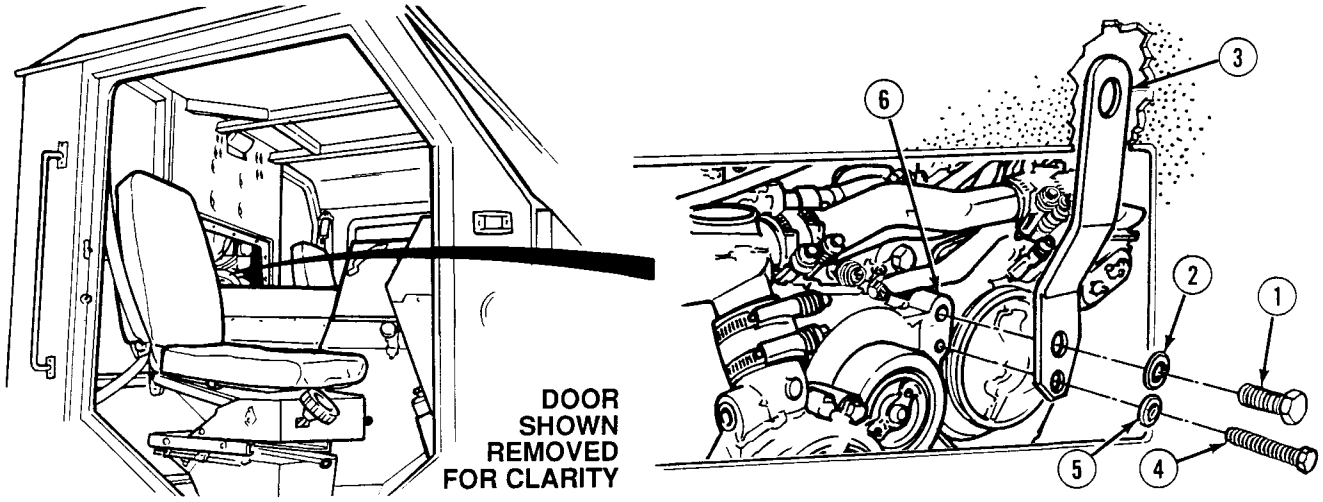
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Remover, Connector (Item 55, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench Crowfoot, 1/2 in., 3/8 in. Drive (Item 90, Appendix G)
Wrench, Torque, 3/8 in. Drive (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts
Tags, Identification (Item 88, Appendix C)
Lockscrew (8) (Item 147, Appendix F)
Lockwasher (2) (Item 196, Appendix F)

Materials/Parts - Continued
Lockwasher (Item 198, Appendix F)
Lockwasher (3) (Item 199, Appendix F)
Lockwasher (Item 202, Appendix F)
Packing, Preformed (2) (Item 241, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Engine cover opened, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Cab engine access panel removed, (Para 17-24)

a. Removal.



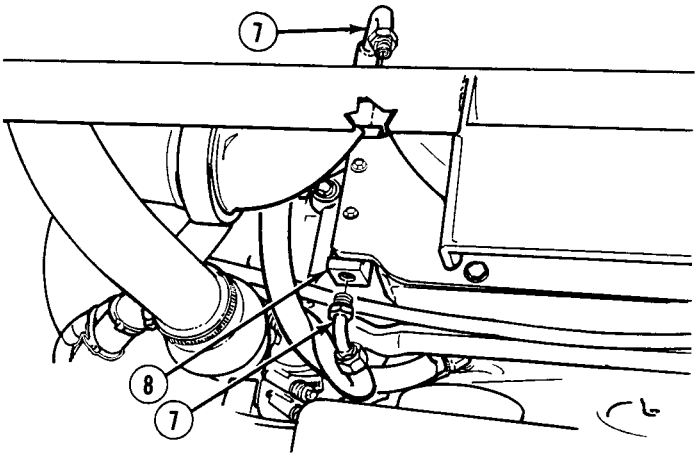
(1) Remove screw (1) and lockwasher (2) from engine lifting bracket (3). Discard lockwasher.

(2) Remove screw (4), lockwasher (5) and engine lifting bracket (3) from front balance cover (6). Discard lockwasher.

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.



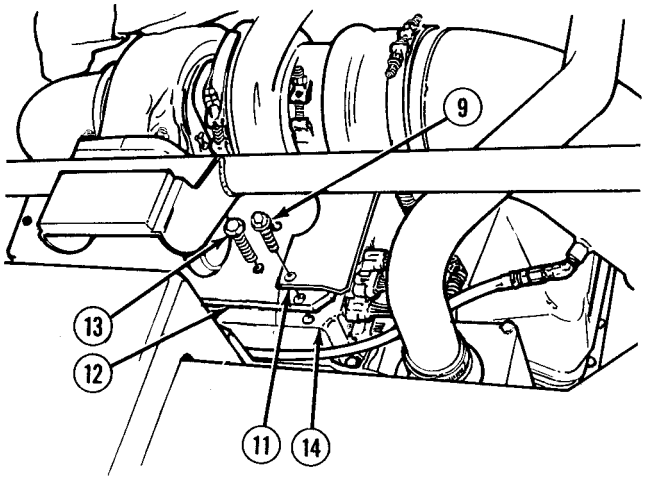
NOTE

Tag and mark all hoses prior to removal.

(3) Remove two fuel lines (7) from plastic fitting block (8).

(4) Remove two lockscrews (9) and shield (11) from engine cold plate (12). Discard screws.

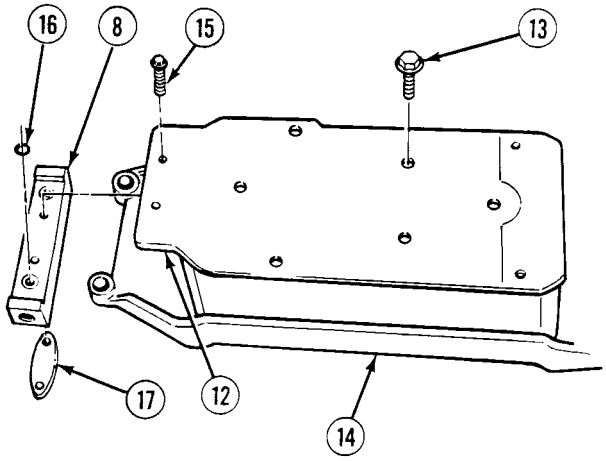
(5) Remove six lockscrews (13) and engine cold plate (12) from electronic control module (14). Discard screws.



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

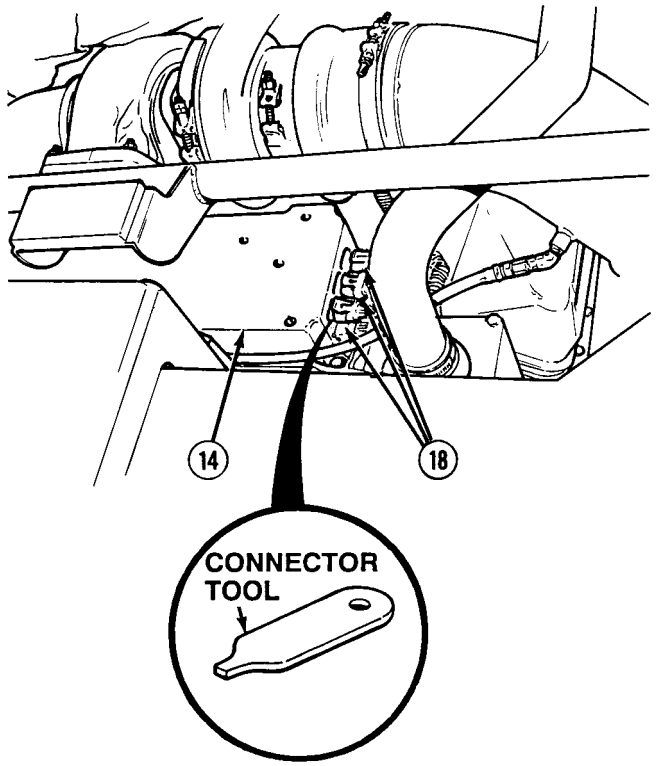
Use caution while removing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly removed.

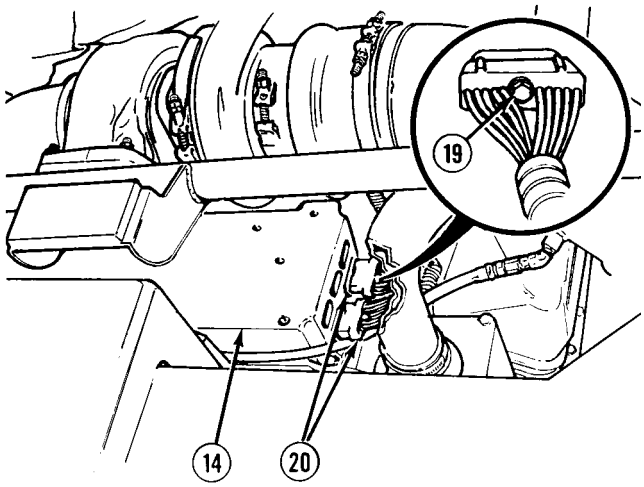
NOTE

- 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).



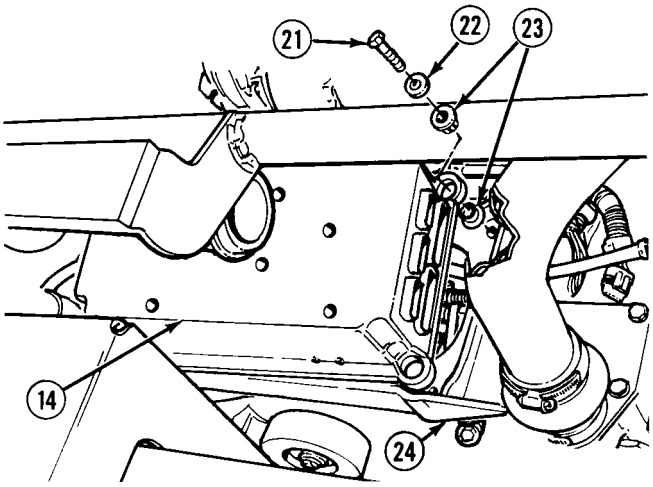


7-56. DDEC II ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

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).



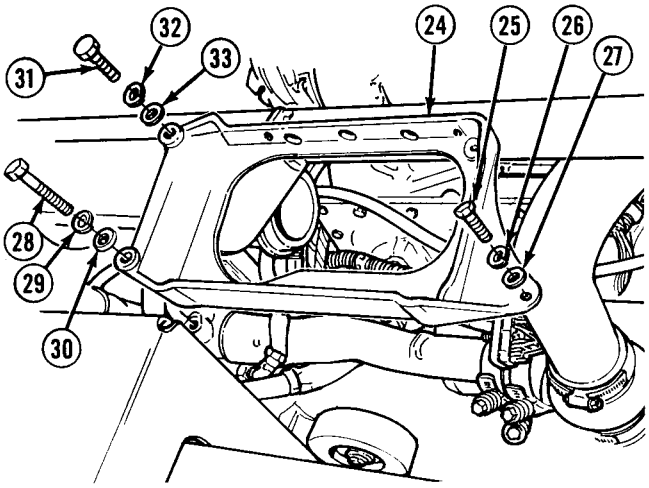
NOTE

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.

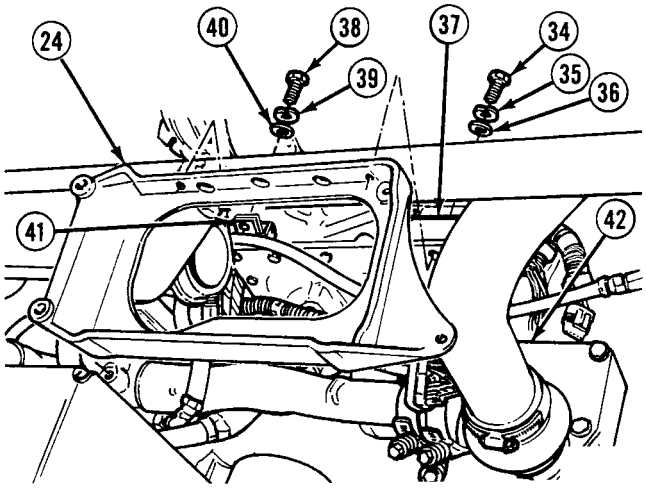
(12) Remove screw (31), lockwasher (32) and washer (33) from ECM mounting bracket (24). Discard lockwasher.



(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).

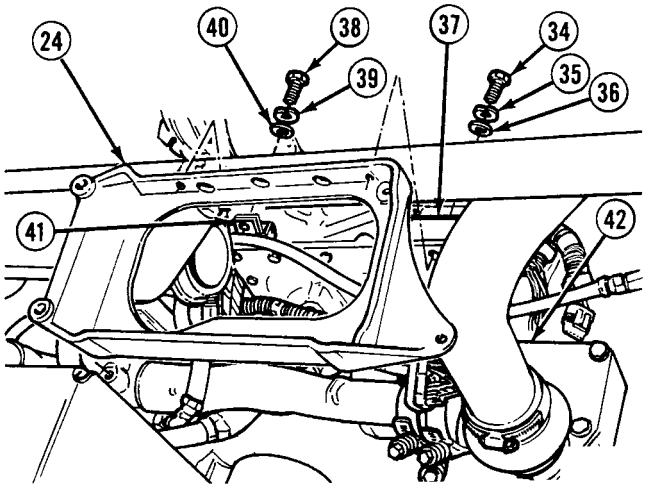
(3) Install turbo boost sensor bracket (37), washer (36), lockwasher (35) and screw (34) on ECM mounting bracket (24). Tighten screw 120 to 156 lb-in (13 to 17 N·m).

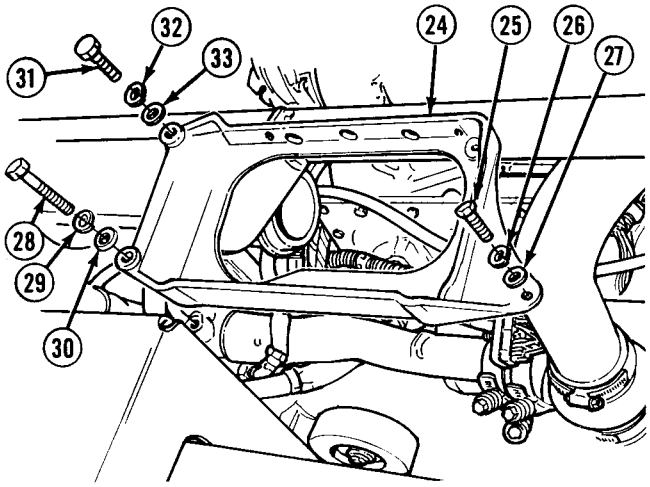
(4) Position washer (33), lockwasher (32) and screw (31) in ECM mounting bracket (24).

(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).

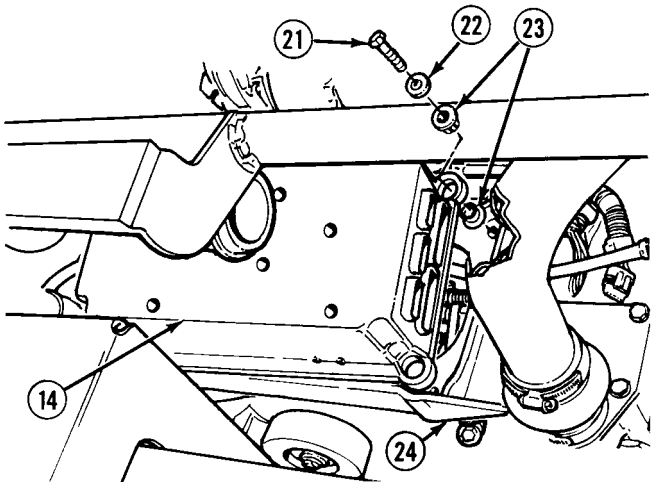




NOTE

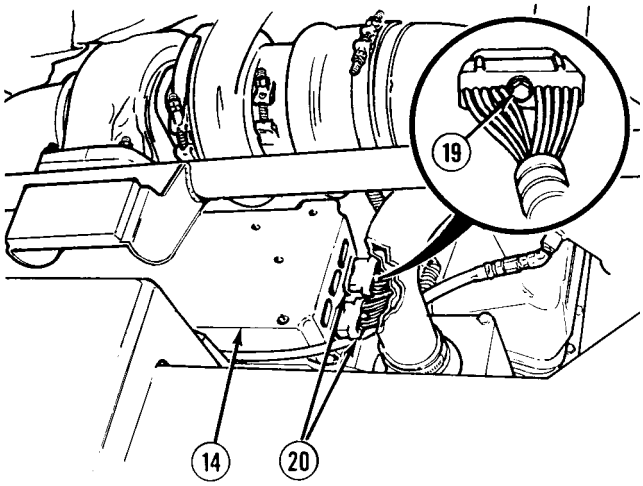
- Perform Steps (8) through (10) if ECM was removed.
- Washers may or may not be present in Step (8).

(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).



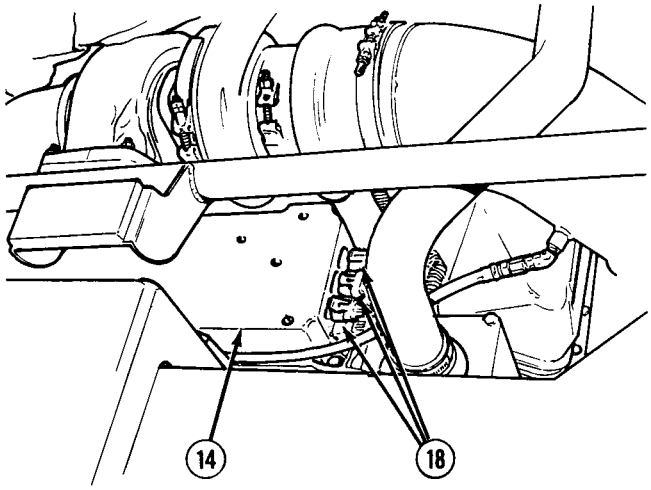
CAUTION

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).

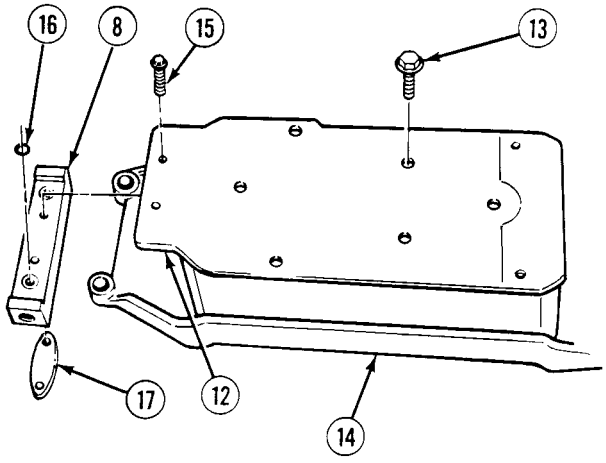


NOTE

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).

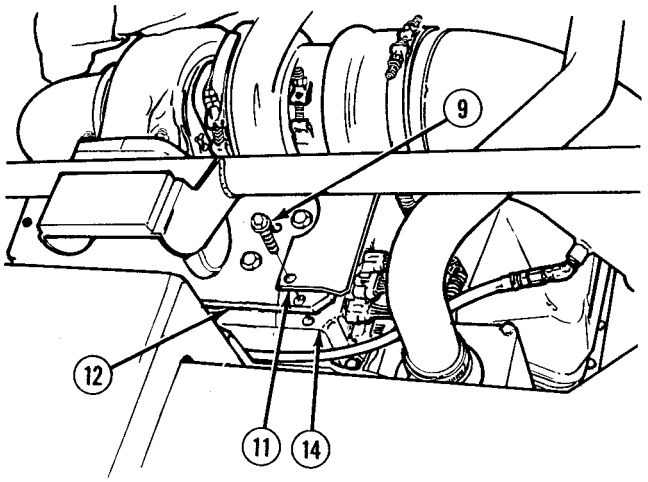
(12) Install engine cold plate (12) and six screws (13) on electronic control module (14). Tighten screws 156 to 204 lb-in (17 to 23 N·m).



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).

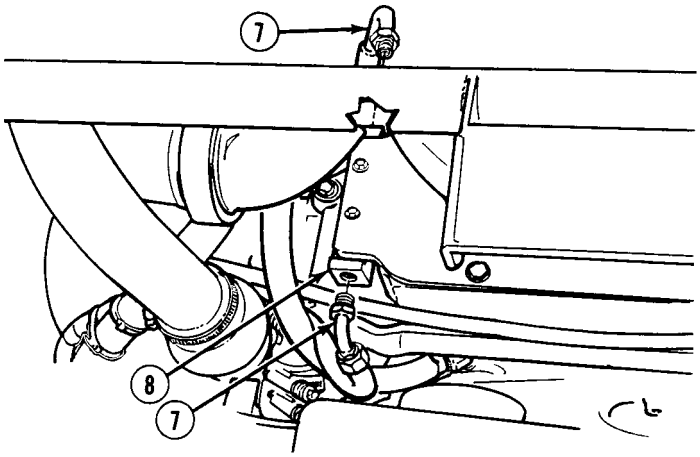
(15) Position engine lifting bracket (3) on front balance cover (6) with lockwasher (5) and (2) and screws (4) and (1).

(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).

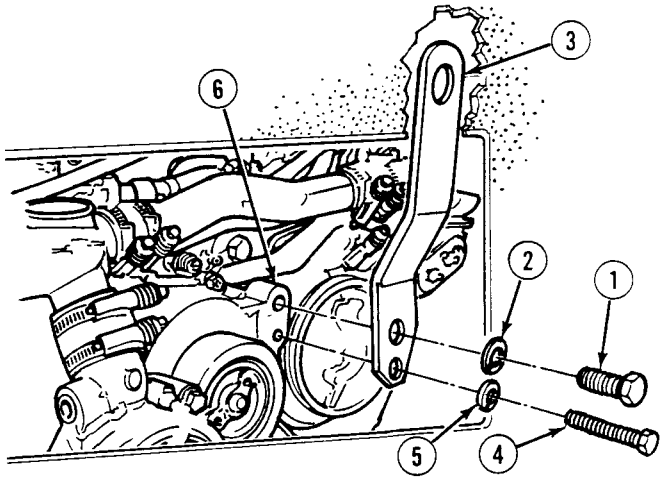
(18) Tighten screw (1) on engine lifting bracket (3) to 103 to 110 lb-ft (140-149 N·m).

(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

7-57. DDEC III/IV ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT.

This task covers:

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

INITIAL SETUP

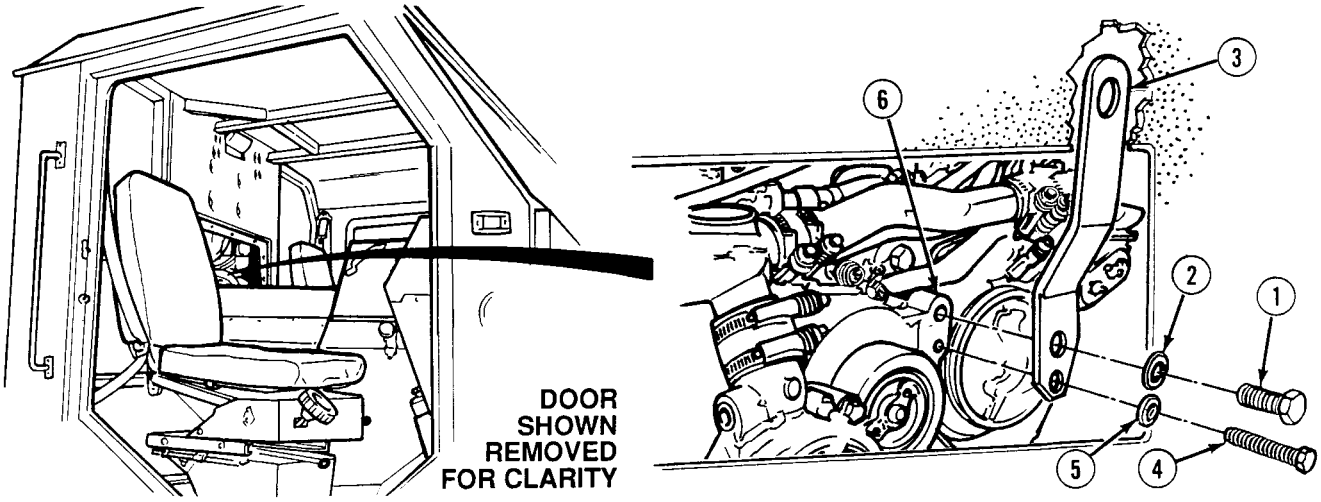
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench Set, Combination (Item 92, Appendix G)
Wrench, Torque, (0-175 lb-ft [0-237 N·m]) (Item 95, Appendix G)
Wrench, Torque, 3/8 in. Drive (0-60 N·m) (Item 98, Appendix G)

Materials/Parts
Compound, Antiseize (Item 22, Appendix C)
Isolators (8) (Item 81, Appendix F)
Lockwashers (2) (Item 192, Appendix F)
Lockwashers (3) (Item 197, Appendix F)

Materials/Parts - Continued
Lockwasher (Item 198, Appendix F)
Lockwasher (Item 199, Appendix F)
Packing, Preformed (2) (Item 237, Appendix F)
Screws (4) (Item 296, Appendix F)
Seals (2) (Item 324, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Engine cover opened, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Cab engine access panel removed, (Para 17-24)

a. Removal.



(1) Remove screw (1) and lockwasher (2) from engine lifting bracket (3). Discard lockwasher.

(2) Remove screw (4), lockwasher (5) and engine lifting bracket (3) from front balance cover (6). Discard lockwasher.

CAUTION

Use caution while removing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly removed.

NOTE

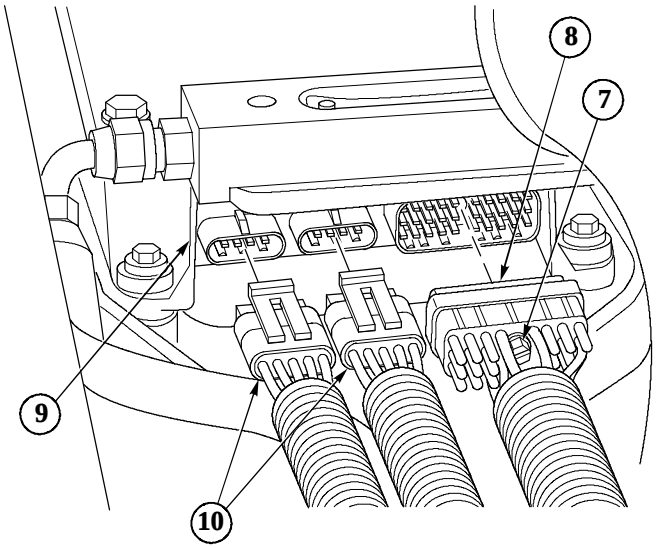
- Connector is removed by gently prying on clip and pulling on connector.
- Tag and mark wiring harness connectors before removal.

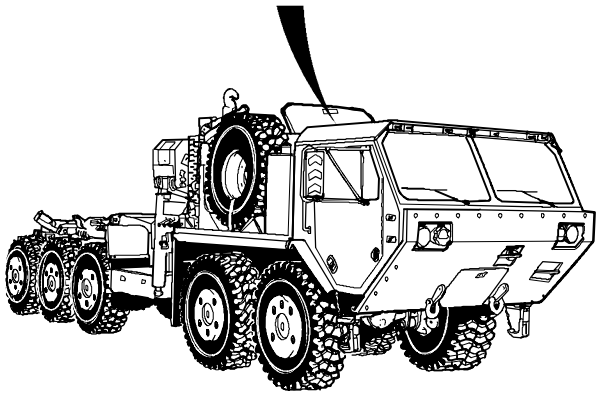
(3) Loosen screw (7) and remove engine wiring harness connector (8) from right side of ECM (9).

NOTE

Connector screws are designed to remain with connector.

(4) Disconnect two injector wiring harness connectors (10) from right side of ECM (9).





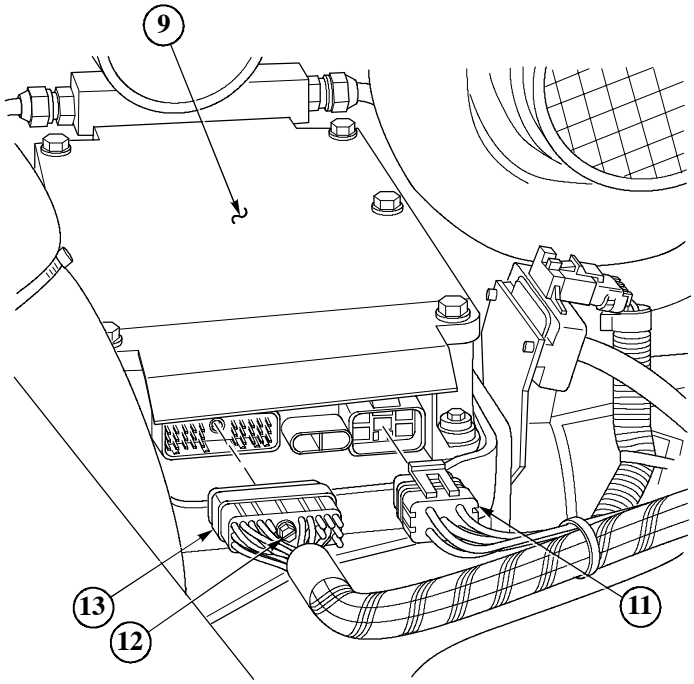
7-57. DDEC III/IV ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

CAUTION

Use caution while removing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly removed.

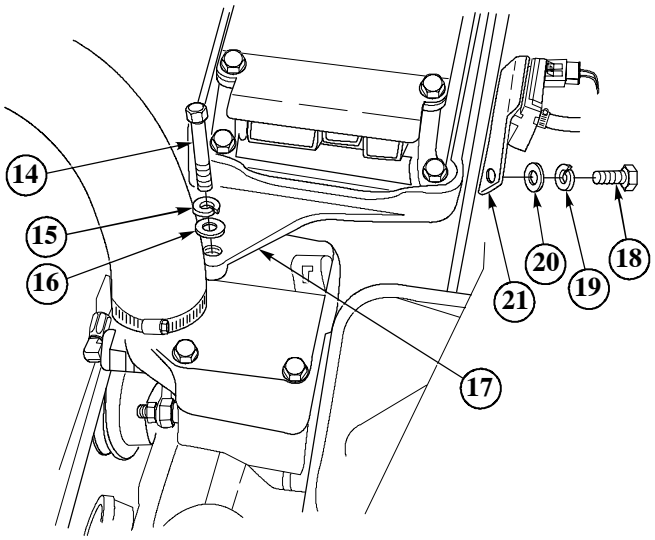
NOTE

- 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.

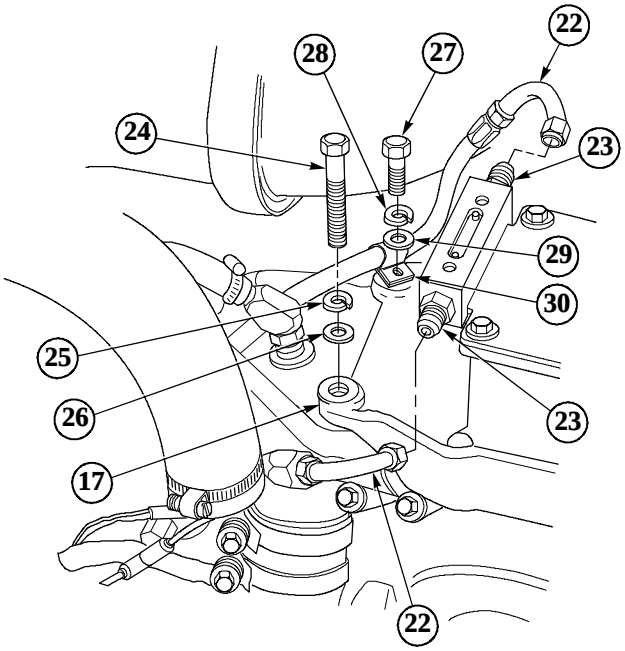
(9) Remove two fuel lines (22) from fittings (23).

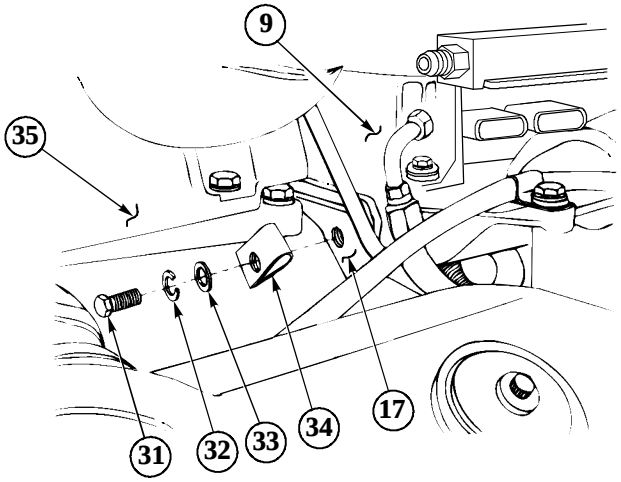
(10) Remove screw (24), lockwasher (25) and washer (26) from ECM bracket (17). Discard lockwasher.

(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/IV ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

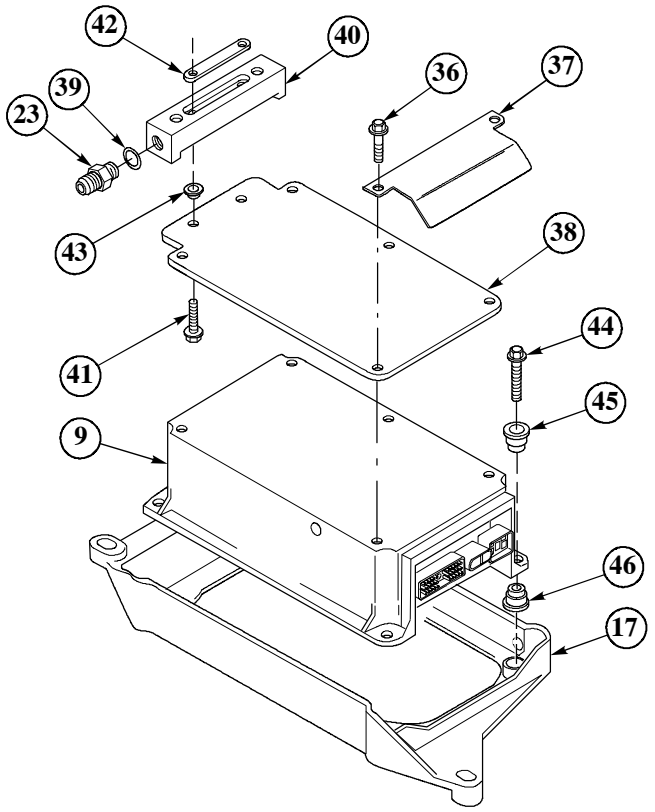
(14) Remove five screws (36), heat shield (37) and engine cold plate (38) from ECM (9).

(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.

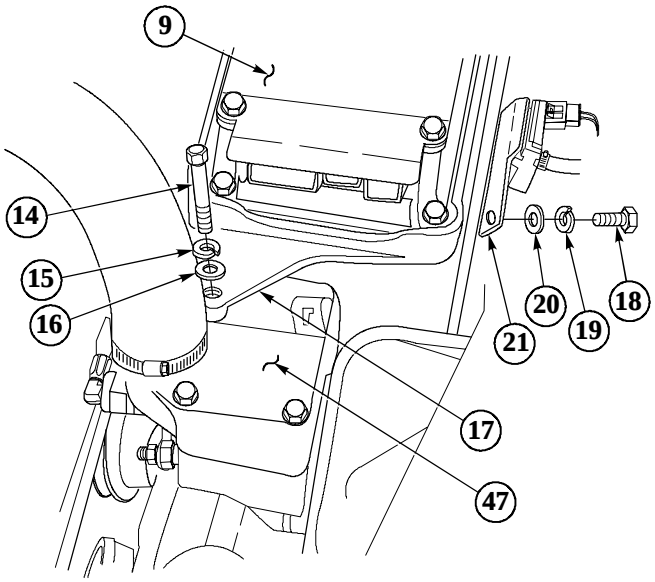
CAUTION

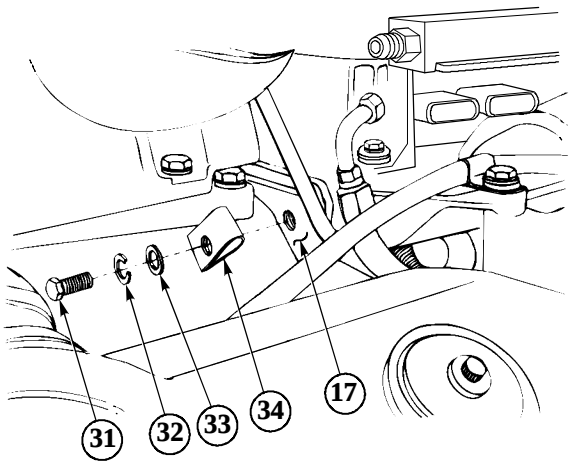
Screws connecting bracket to blower must be tightened first to prevent damage to housing.

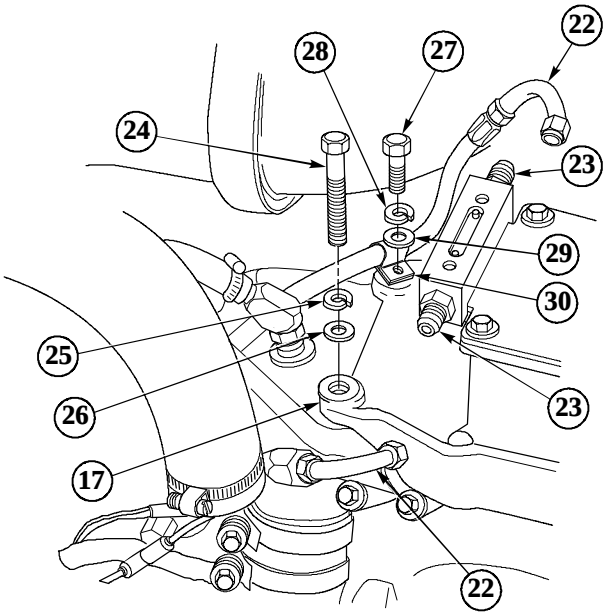
(13) Tighten two screws (18) and (31) to 120-156 lb-in (14-18 N·m).

(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/IV 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

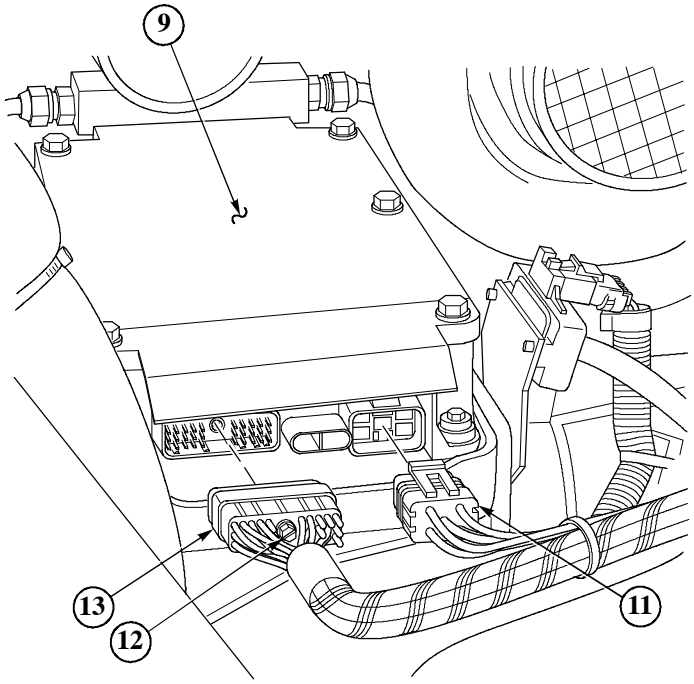
- Ensure locking tangs are locked in place when installing wiring harness connectors.
- ECM wiring harnesses are designed to be installed in only one location.

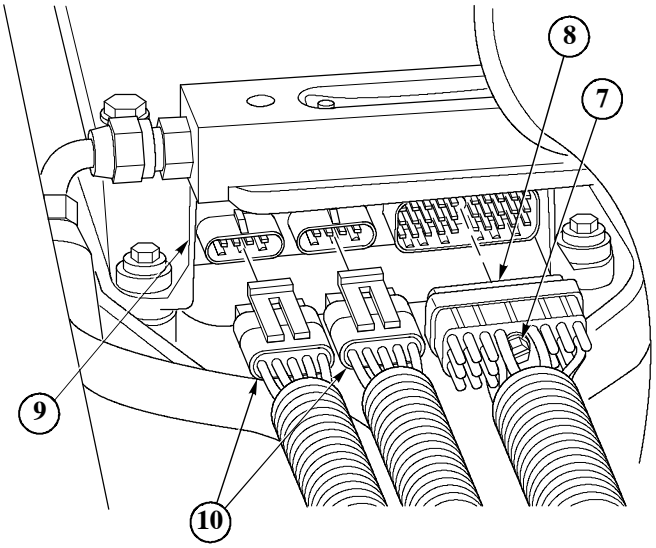
(16) Connect chassis wire harness connector (13) to left side of ECM (9) and tighten screw (12).

(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).





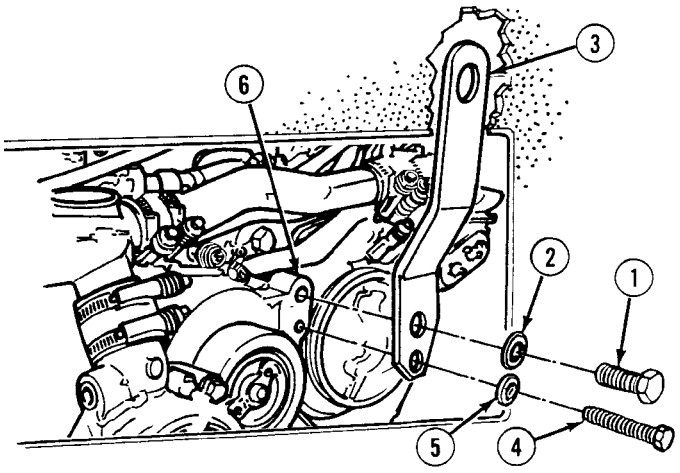
(20) Position engine lifting bracket (3) on front balance cover (6) with lockwasher (5) and (2) and screws (4) and (1).

(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

7-58. THROTTLE 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
Locknut (2) (Item 110, Appendix F)
Locknut (2) (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.

(1) Disconnect MC6 connector (1) from throttle sensor (2).

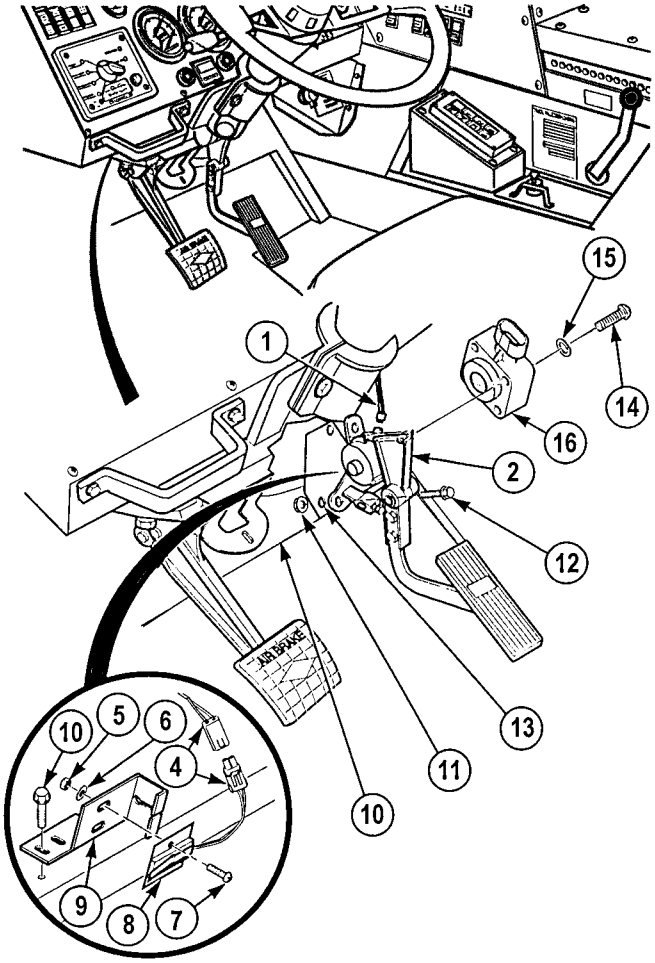
(2) Disconnect MC127 connector (3).

(3) Remove two locknuts (4) washers (5), screws (6) and throttle position switch (7) from bracket (8). Discard locknuts.

(4) Remove two screws (9) and bracket (8) from cab (10).

(5) Remove two locknuts (11), screws (12) and throttle sensor (2) from throttle sensor mounting bracket (13). Discard locknuts.

(6) Remove two screws (14), washers (15) and potentiometer (16) from throttle sensor (2).



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).

CAUTION

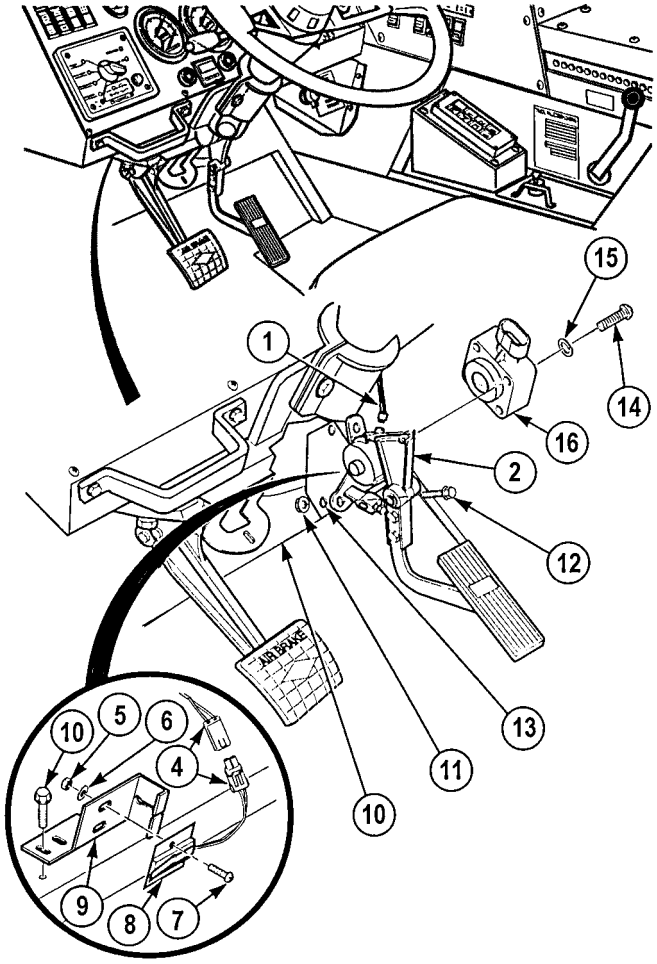
Throttle position switch must be installed so it is activated 0.12 in. to 0.19 in. (3 mm to 5 mm) before full throttle position. Failure to comply may result in engine overheating.

(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
b. Installation
c. Adjustment
d. Follow-On Maintenance

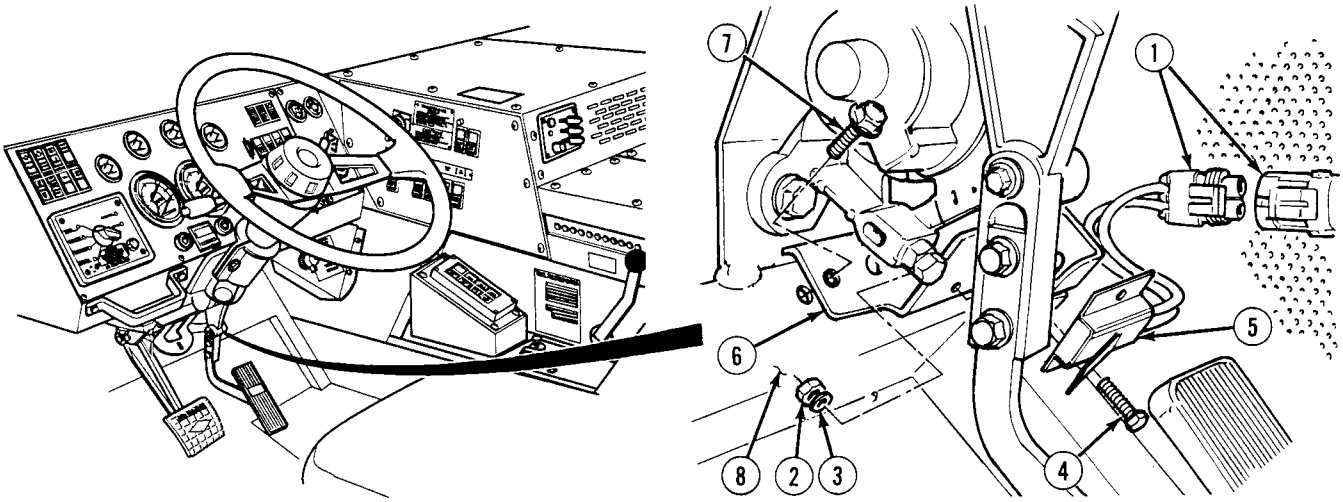
INITIAL SETUP

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

Materials/Parts
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).

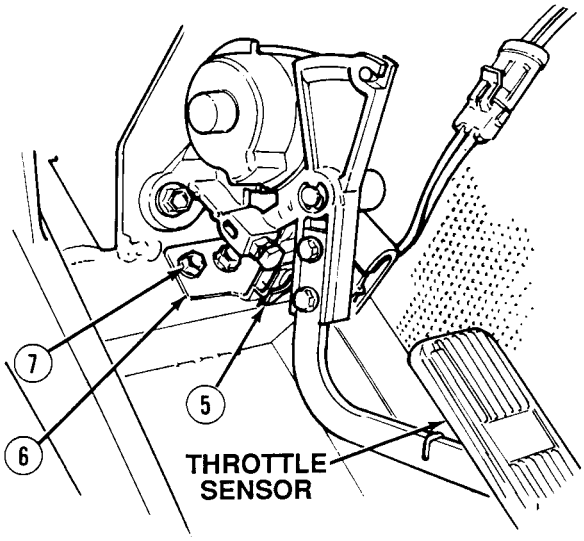
(2) Install switch assembly (5) on throttle switch bracket (6) with two screws (4), washers (3) and locknuts (2).

(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

7-60. ENGINE OIL PRESSURE SWITCHES 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
Sealant, Electrical (Item 68, Appendix C)
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)
Batteries disconnected, (Para 7-87)
Left front fender skirt removed, (Para 17-34)

a. Removal.

NOTE

Tag and mark wires prior to removal.

(1) Remove wire 1032 (1) from oil pressure switch (2).

(2) Remove oil pressure switch (2) from manifold (3).

(3) Remove two screws (4) and wire 1517 (5) and wire 1871 (6) from oil pressure switch (7).

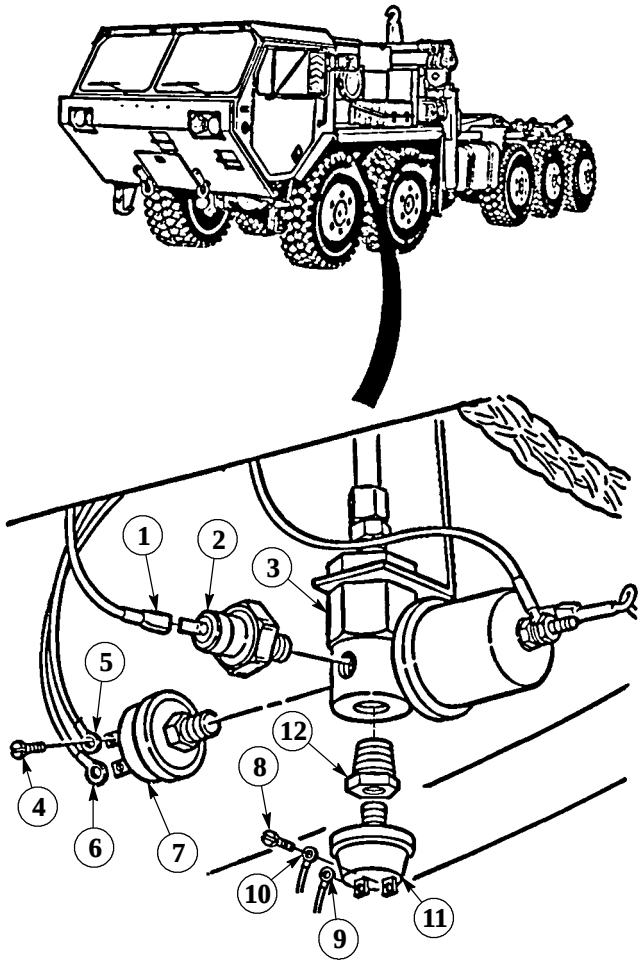
(4) Remove oil pressure switch (7) from manifold (3).

NOTE

Perform Steps (5) and (6) if truck is equipped with 200 AMP alternator.

(5) Remove two screws (8) and wire 1020A (9) and 1020B (10) from oil pressure switch (11).

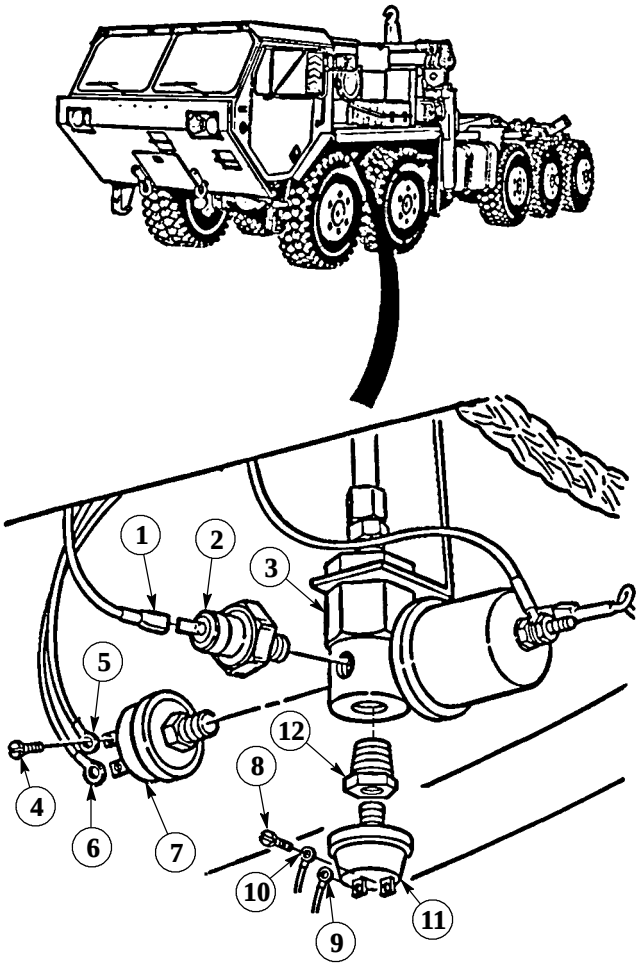
(6) Remove oil pressure switch (11) and reducer (12) from manifold (3).



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) 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

7-61. TURBO BOOST PRESSURE SWITCH REPLACEMENT.

This task covers:

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

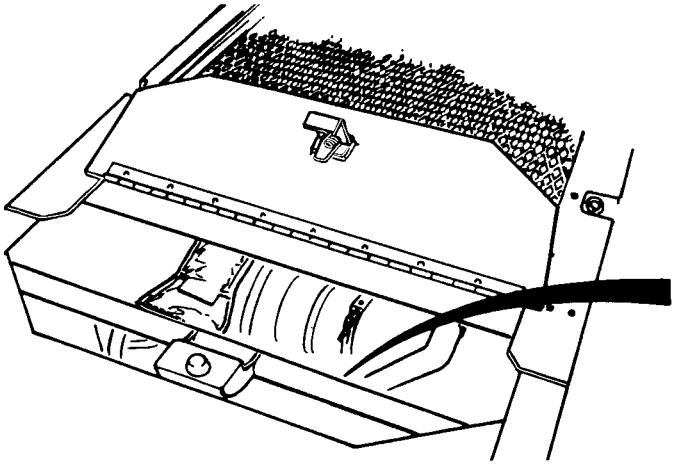
INITIAL SETUP

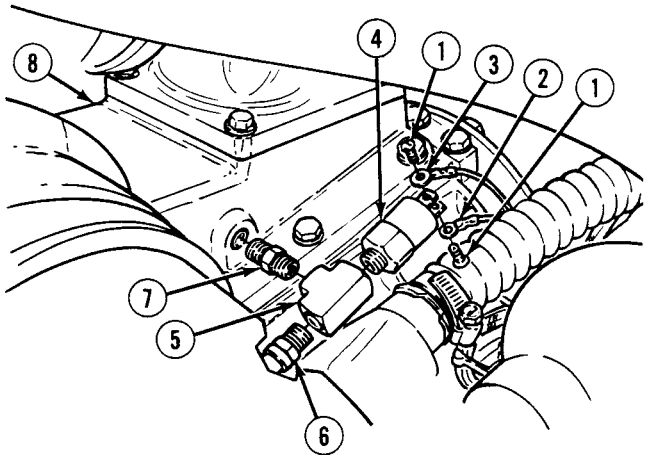
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Sealing Compound (Item 72, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Engine cover opened, (TM 9-2320-364-10)

a. Removal.





(1) Remove two screws (1), wire 1955 (2) and wire 1957 (3) from turbo boost pressure switch (4).

(2) Remove turbo boost pressure switch (4) from tee (5).

(3) Remove hose (6) from tee (5).

NOTE

Note position of fitting prior to removal.

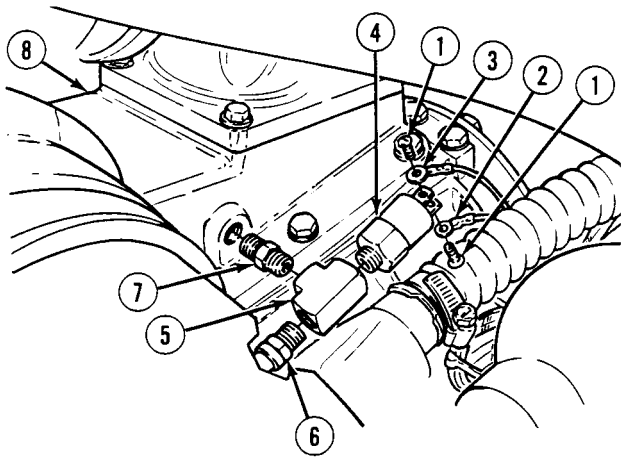
(4) Remove tee (5) from fitting (7).

(5) Remove fitting (7) from air inlet housing (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 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

7-62. FUEL TEMPERATURE SENSOR REPLACEMENT.

This task covers:

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

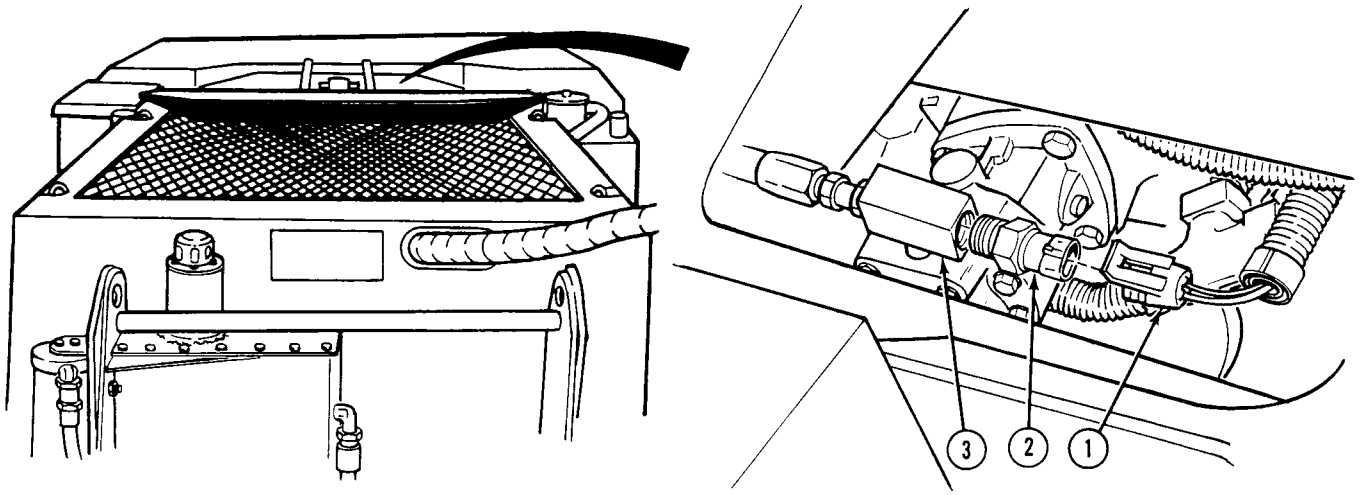
INITIAL SETUP

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

Materials/Parts
Sealing Compound (Item 72, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Electronic Control Module (ECM) removed, (DDEC II, Para 7-56 or DDEC III/IV, Para 7-57)

a. Removal.



WARNING

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

NOTE

Connector is removed by gently prying up on tab and pulling connector out.

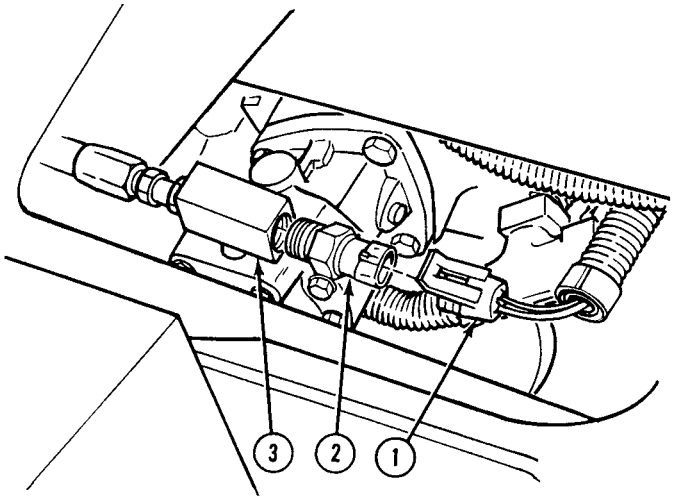
(1) Disconnect connector (1) from fuel temperature sensor (2).

(2) Remove fuel temperature 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 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/IV, Para 7-57).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-63. DDEC TURBO BOOST SENSOR REPLACEMENT.

This task covers:

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

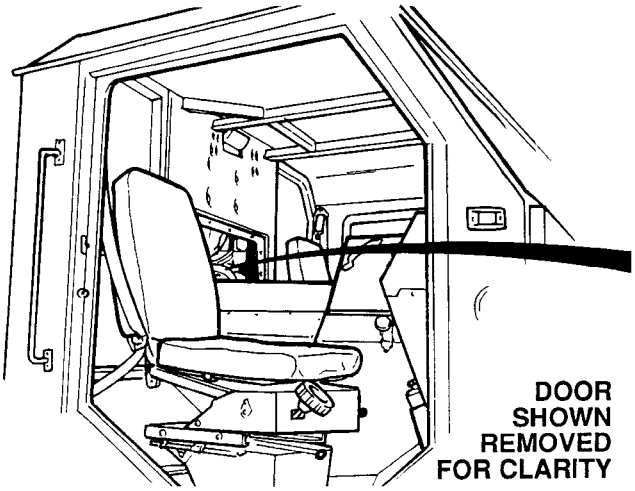
INITIAL SETUP

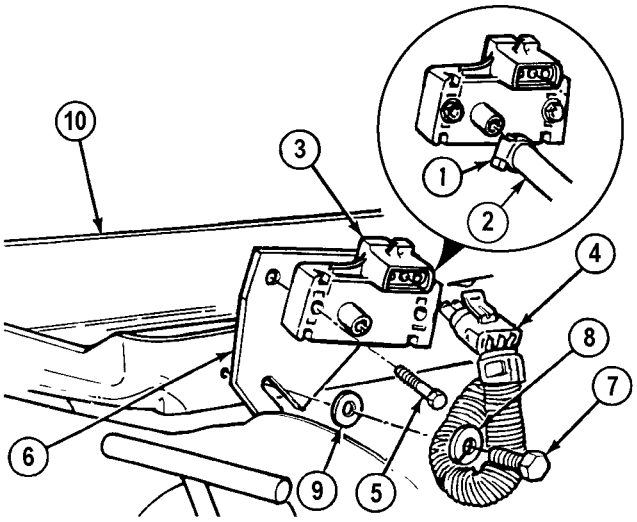
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0-237 N·m]) (Item 95, Appendix G)

Materials/Parts
Lockwasher (Item 325, Appendix F)

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

a. Removal.





(1) Loosen clamp (1) and disconnect hose (2) from turbo boost sensor (3).

NOTE

Connector is removed by gently prying up on tab and pulling connector out.

(2) Disconnect connector (4) from turbo boost sensor (3).

(3) Remove two screws (5) and turbo boost sensor (3) from turbo boost sensor bracket (6).

(4) Remove screw (7), lockwasher (8), washer (9) and turbo boost sensor bracket (6) from ECM bracket (10). Discard lockwasher.

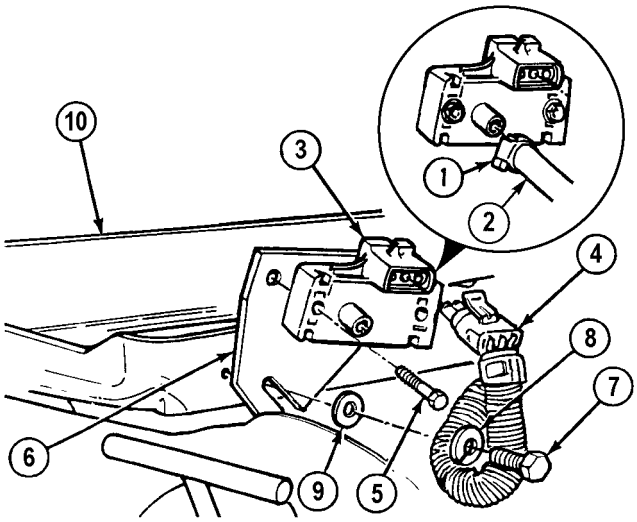
b. Installation.

(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:

- Deleted.
- 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

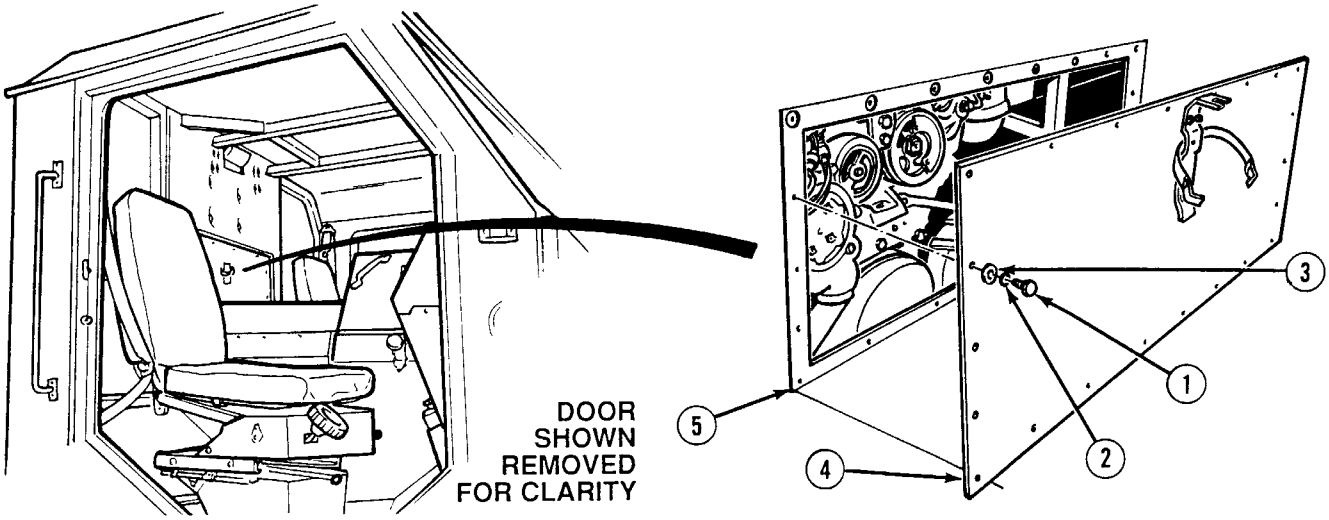
INITIAL SETUP

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/IV engines only) (Para 4-13).

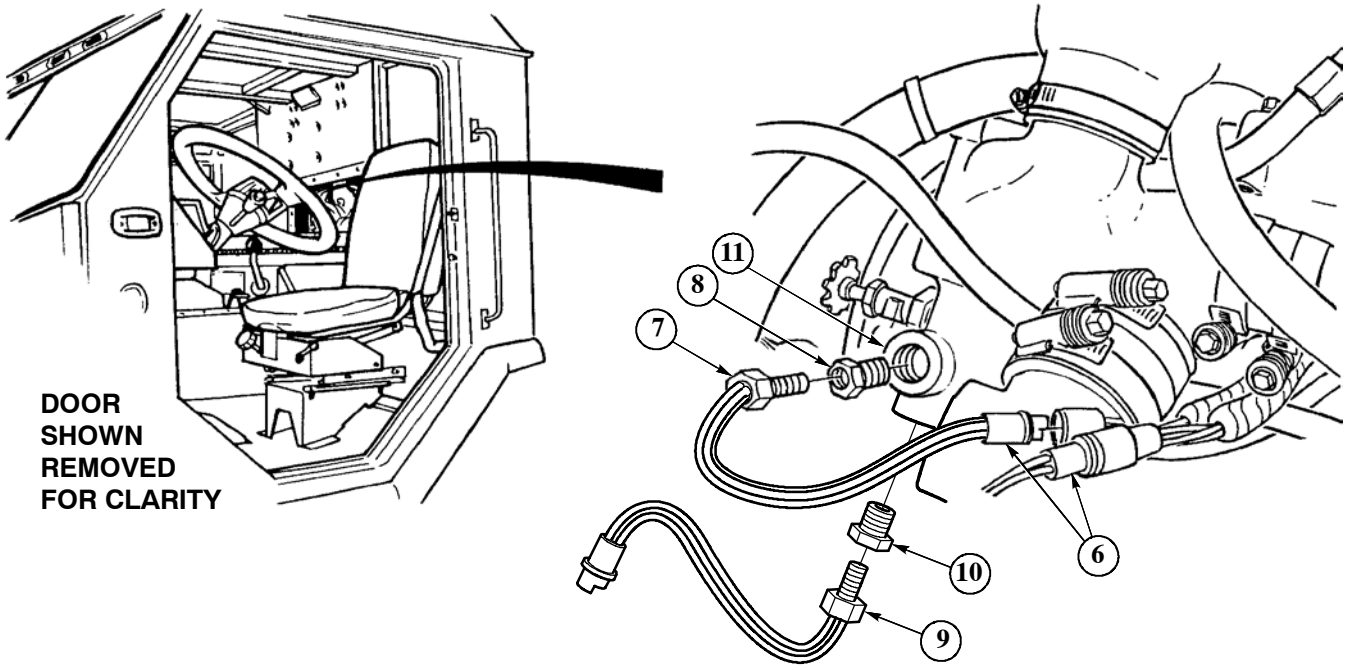
a. Removal.



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/IV engines.

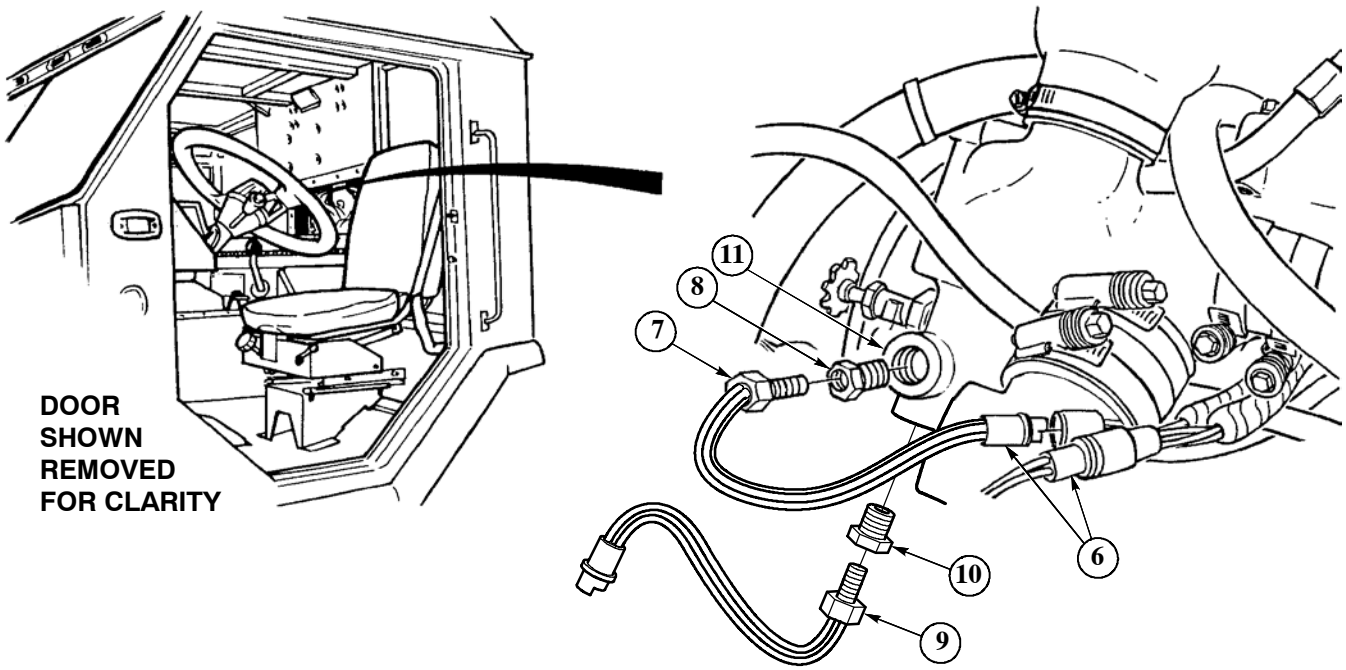
(3) Remove STE/ICE sensor (7) from bushing reducer (8).

(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.



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/IV engines.

(4) Install STE/ICE sensor (7) in bushing reducer (8).

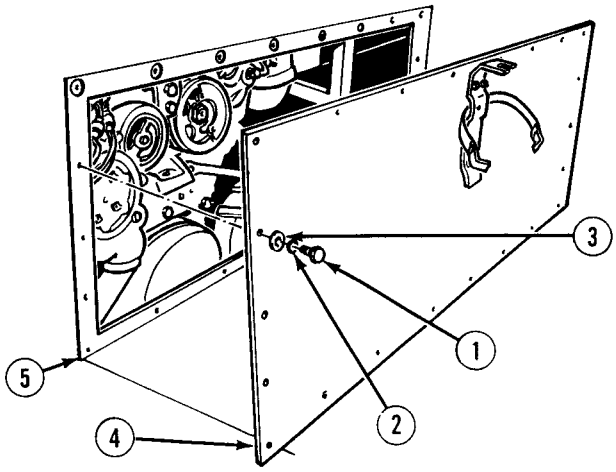
(5) Install STE/ICE sensor (9) in bushing reducer (10).

(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/IV 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

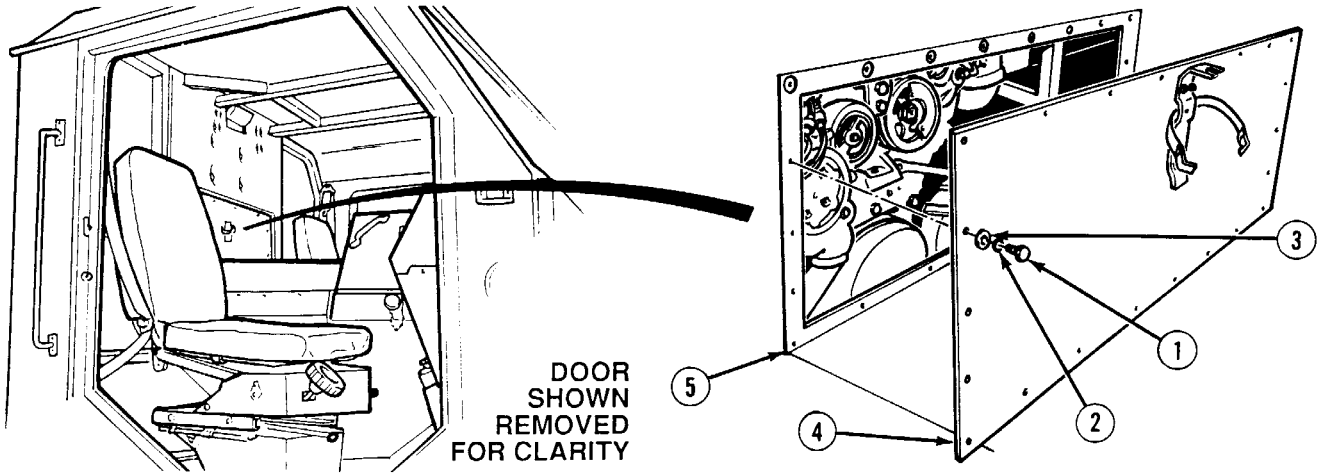
INITIAL SETUP

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)

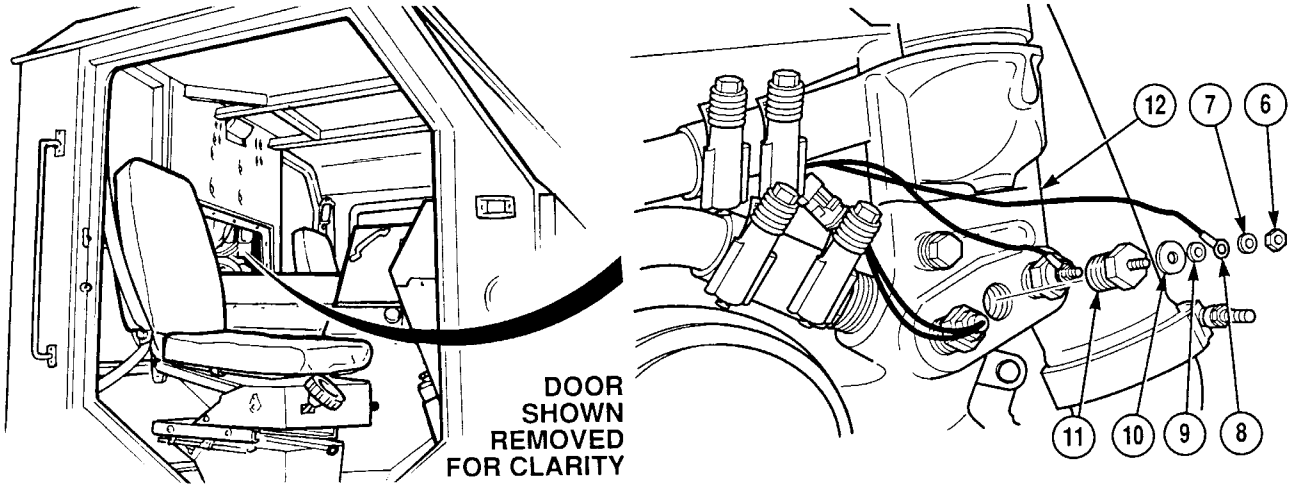
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cooling system drained, (Para 6-4)
Fire extinguisher removed, (TM 9-2320-364-10)

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.



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).

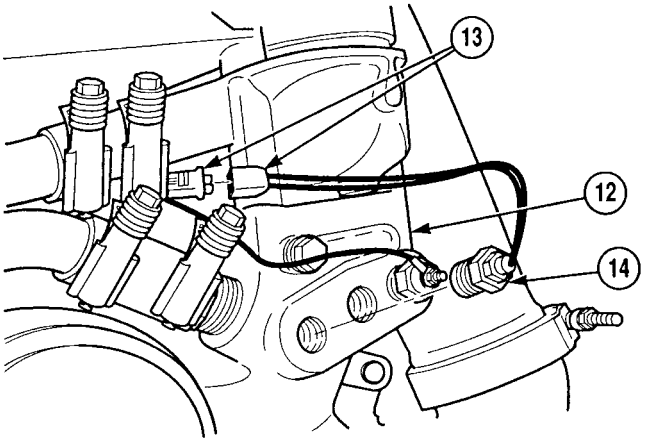
(5) Remove fan control sensor (14) from left thermostat housing (12).

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).

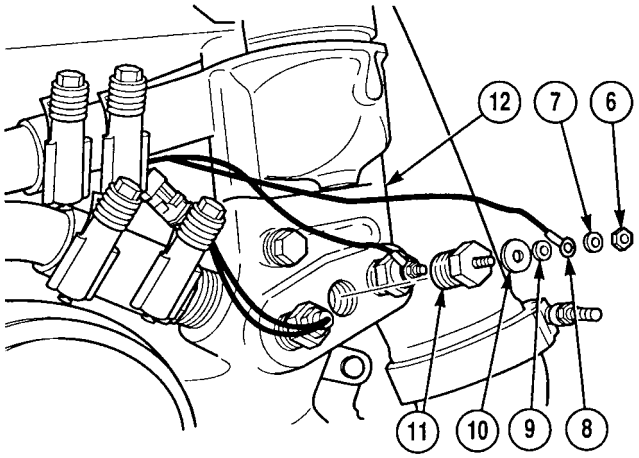
(3) Connect MC61 connector (13).

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).

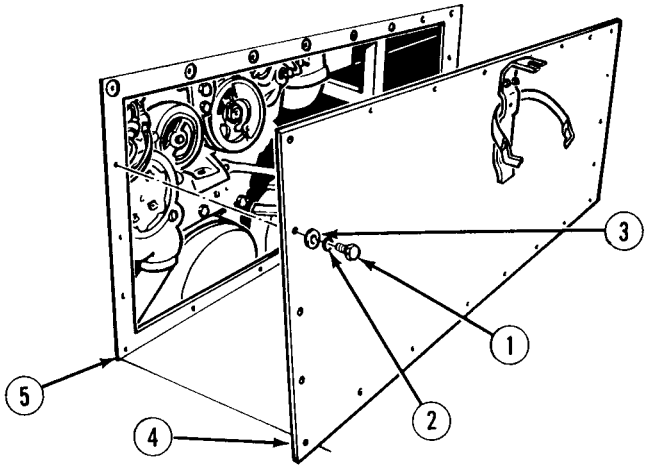


WARNING

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

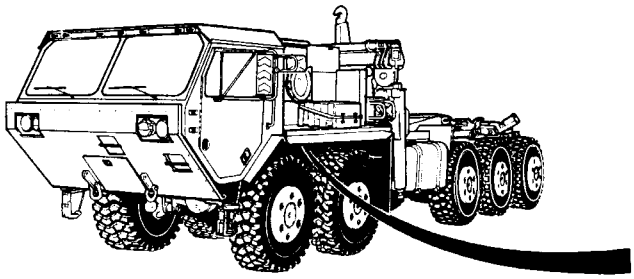
INITIAL SETUP

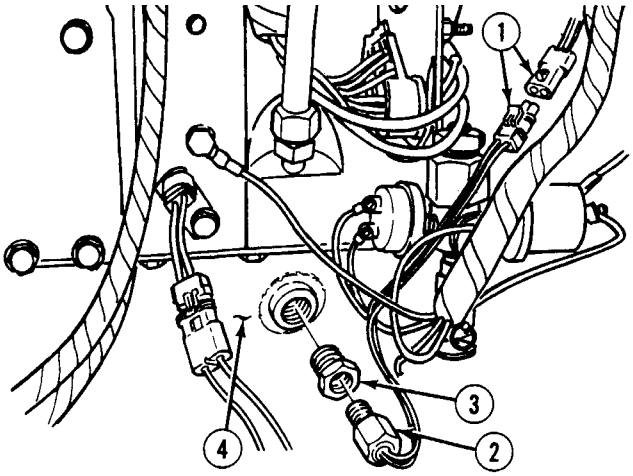
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination, 1 1/8 in. (Item 79, Appendix G)

Material/Parts
Sealing Compound (Item 72, Appendix C)

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)

a. Removal.





NOTE

Connectors are removed by gently prying on tab and pulling apart connectors.

(1) Disconnect MC70 connector (1).

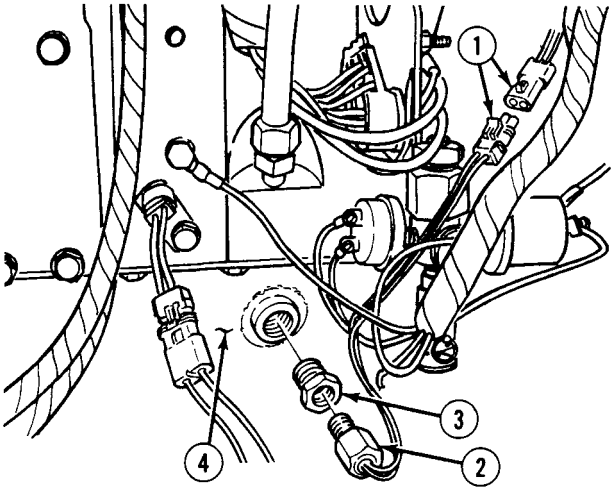
(2) Remove engine oil temperature sensor (2) from reducer bushing (3).

(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

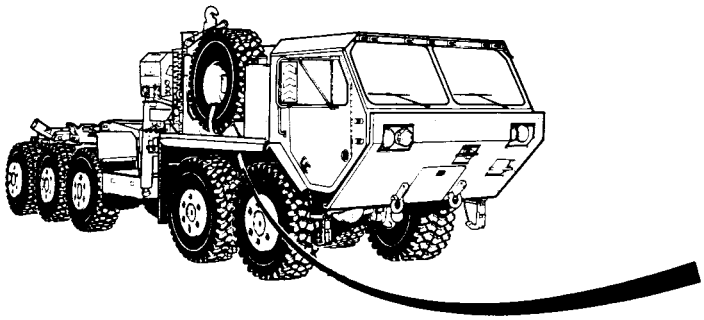
INITIAL SETUP

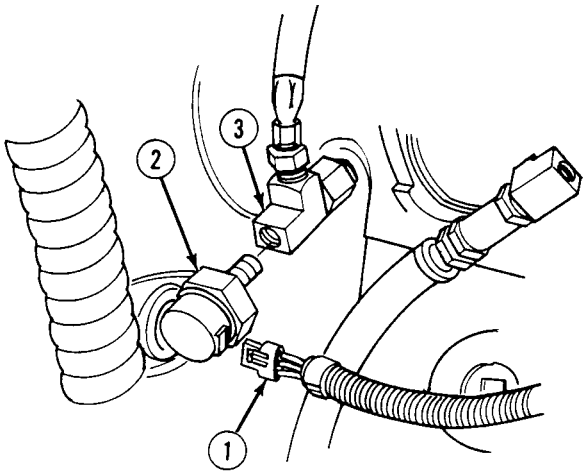
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination, 1 1/4 in. (Item 80, Appendix G)

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.

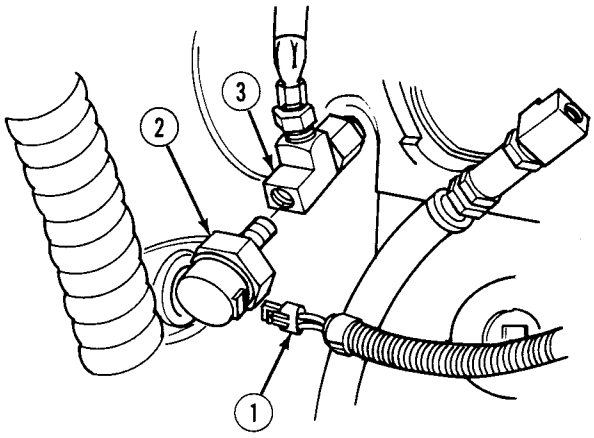
(1) Disconnect connector (1).

(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

7-68. DDEC III/IV ENGINE OIL PRESSURE SENSOR REPLACEMENT.

This task covers:

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

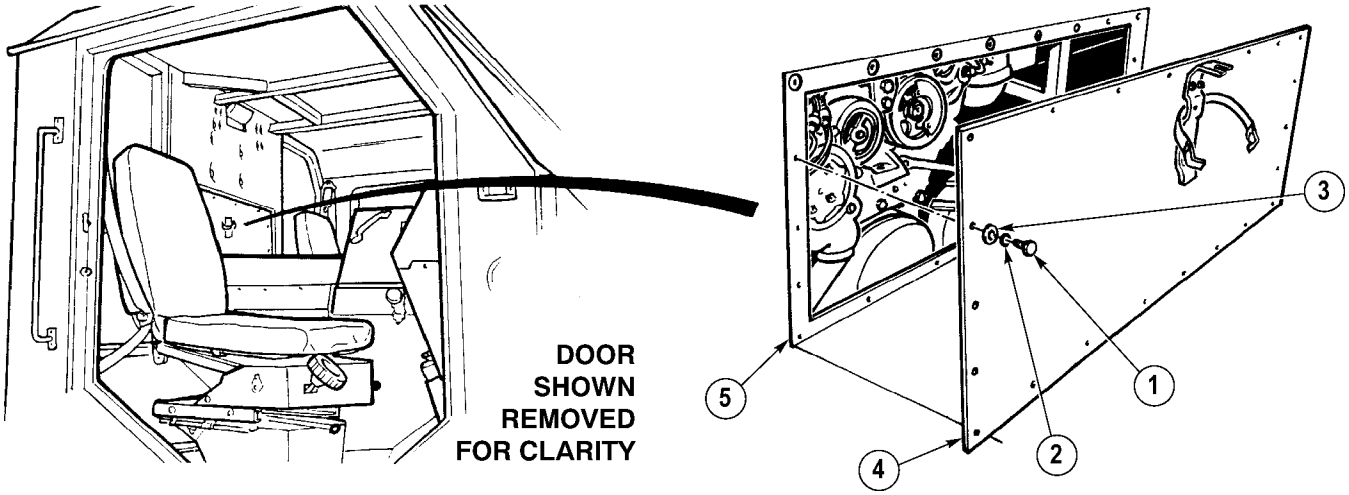
INITIAL SETUP

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)
Lockwashers (22) (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)
Fire extinguisher removed, (TM 9-2320-364-10)

a. Removal.



(1) Remove 22 screws (1), lockwashers (2), washers (3) and cab access panel (4) from cab (5). Discard lockwashers.

WARNING

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

NOTE

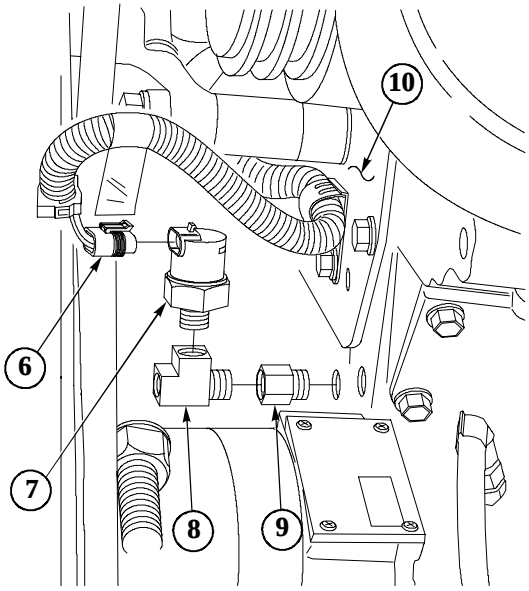
Connectors are removed by gently prying on tab and pulling apart connectors.

(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).

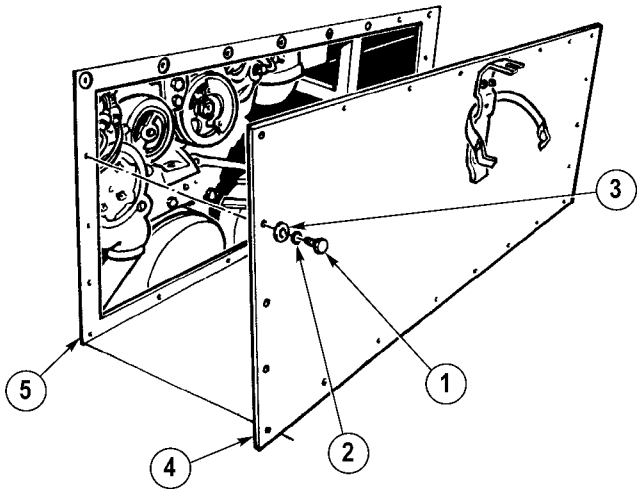
(2) Install reducer (9) in engine (10).

(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

7-69. DDEC III/IV COOLANT TEMPERATURE SENSOR REPLACEMENT.

This task covers:

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

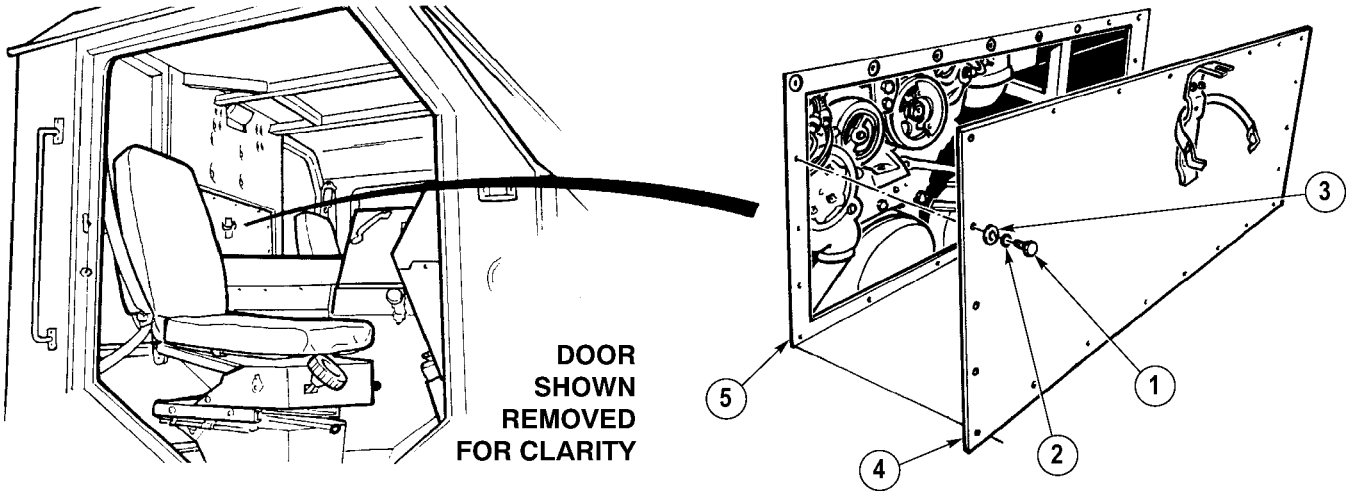
INITIAL SETUP

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

Materials/Parts
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Lockwashers (22) (Item 195, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Fire extinguisher removed, (TM 9-2320-364-10)
Cooling system drained, (Para 6-4)
Batteries disconnected, (Para 7-87)

a. Removal.

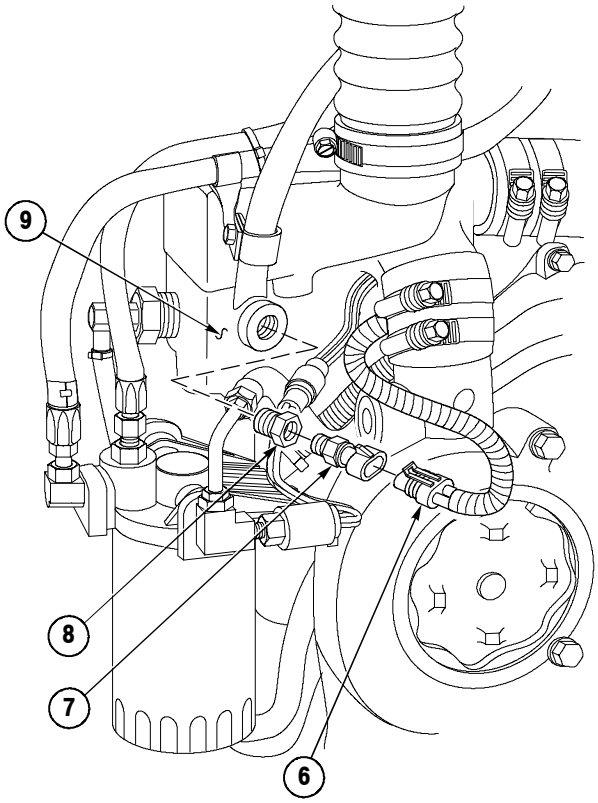


(1) Remove 22 screws (1), lockwashers (2), washers (3) and cab access panel (4) from cab (5). Discard lockwashers.

(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.

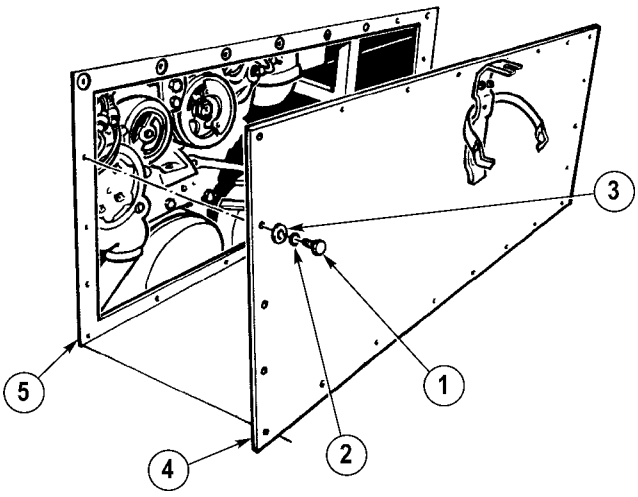
(1) Apply sealing compound to threads of fitting (8) and coolant temperature sensor (7).

(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

7-70. DDEC OIL TEMPERATURE SENSOR REPLACEMENT.

This task covers:

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

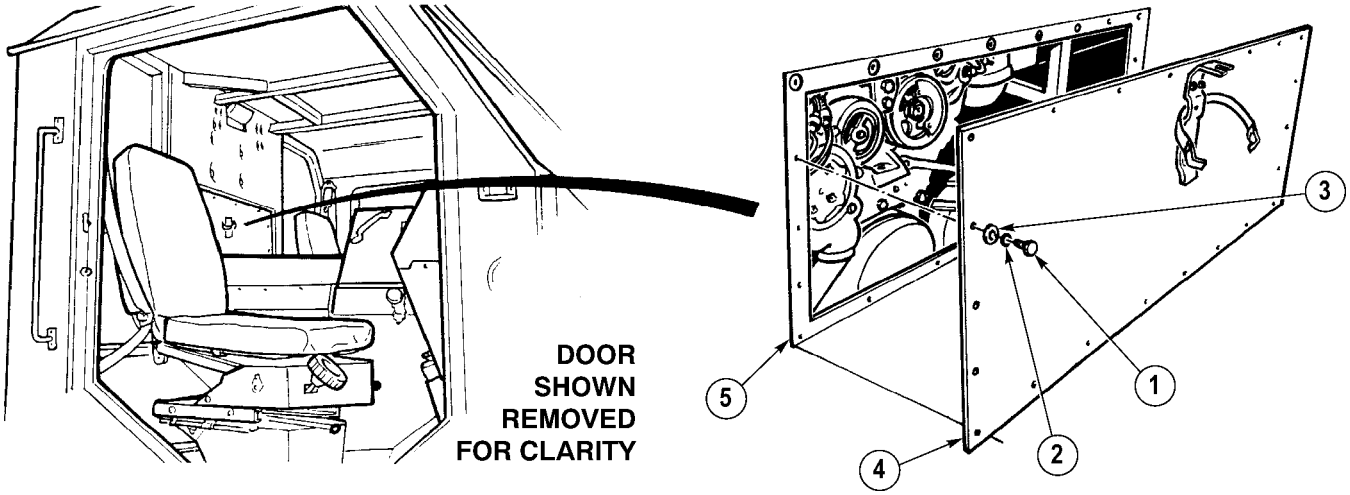
INITIAL SETUP

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

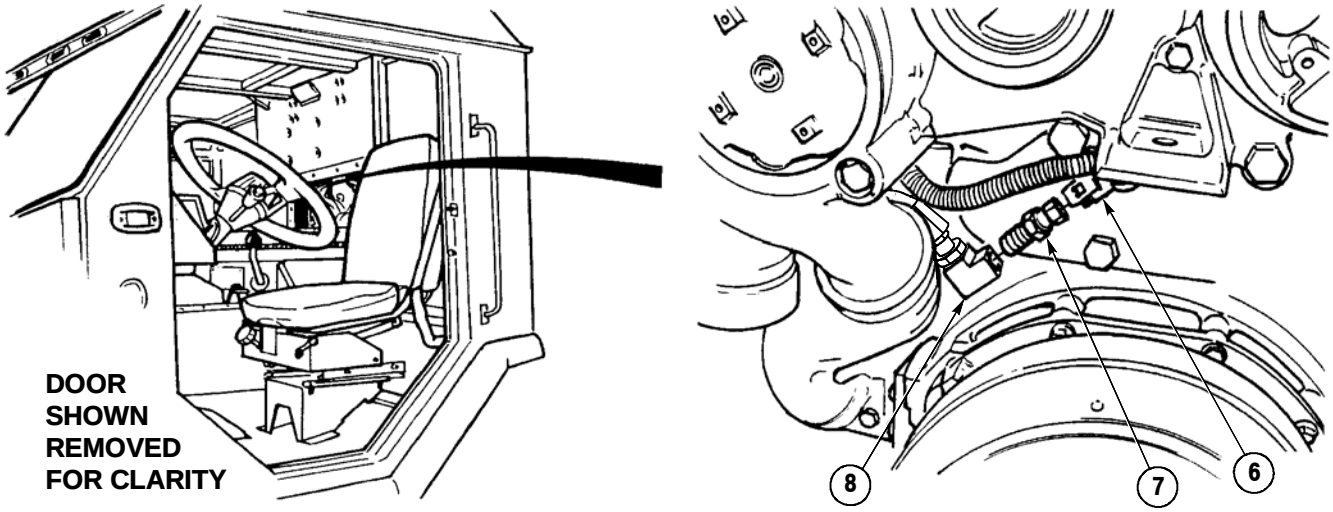
Materials/Parts
Sealing Compound (Item 72, Appendix C)
Lockwashers (22) (Item 195, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Fire extinguisher removed, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



(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 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.

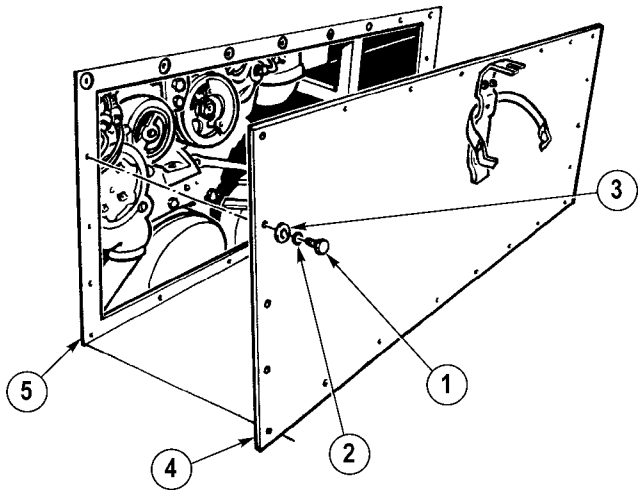
(1) Apply sealing compound to threads of DDEC oil pressure sensor (7).

(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

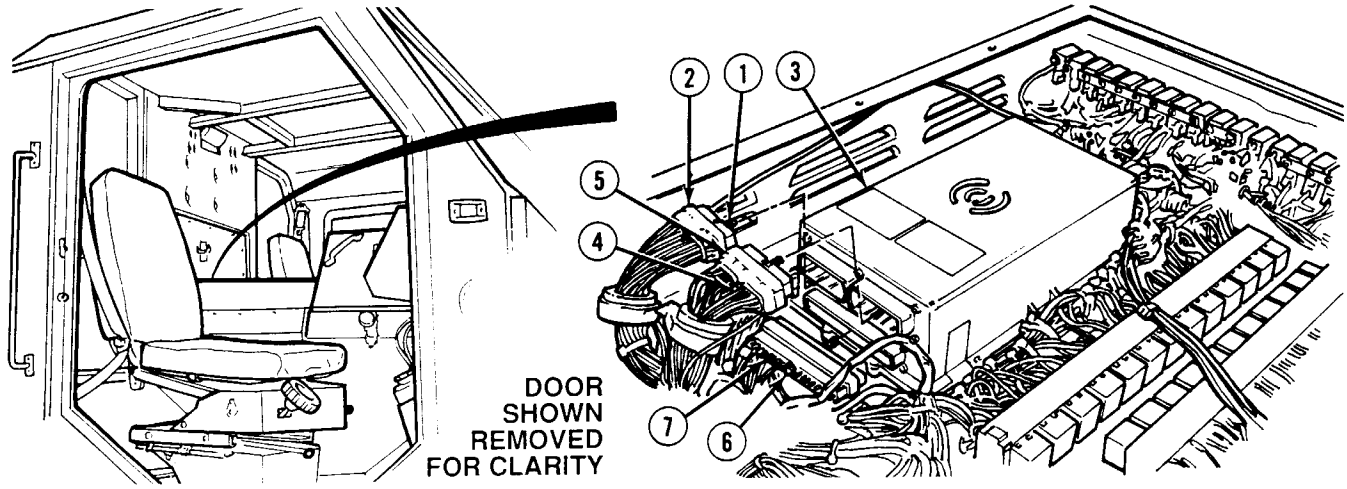
INITIAL SETUP

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).

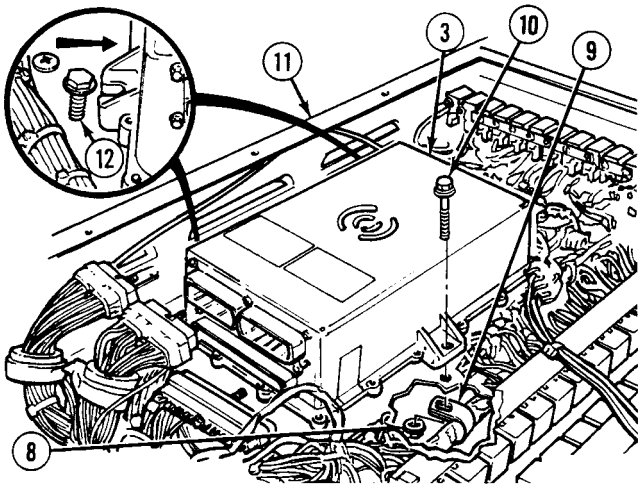
(4) Remove locknut (8) and cushion clip (9) from screw (10) under electronic control box (11). Discard locknut.

(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).

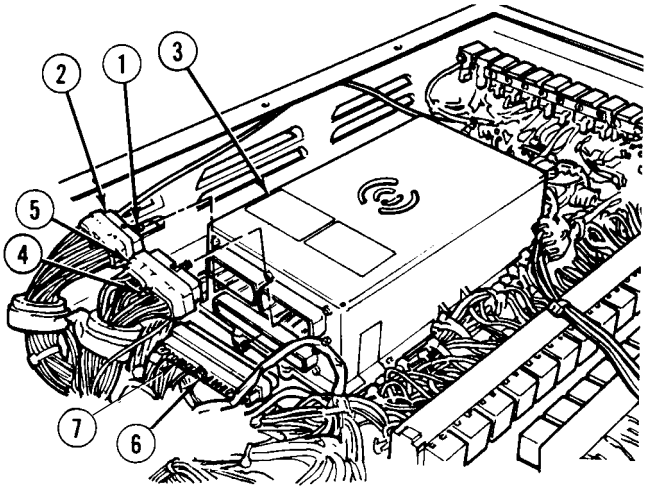
(3) Install screw (10) on transmission ECU (3).

(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.

This task covers:

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

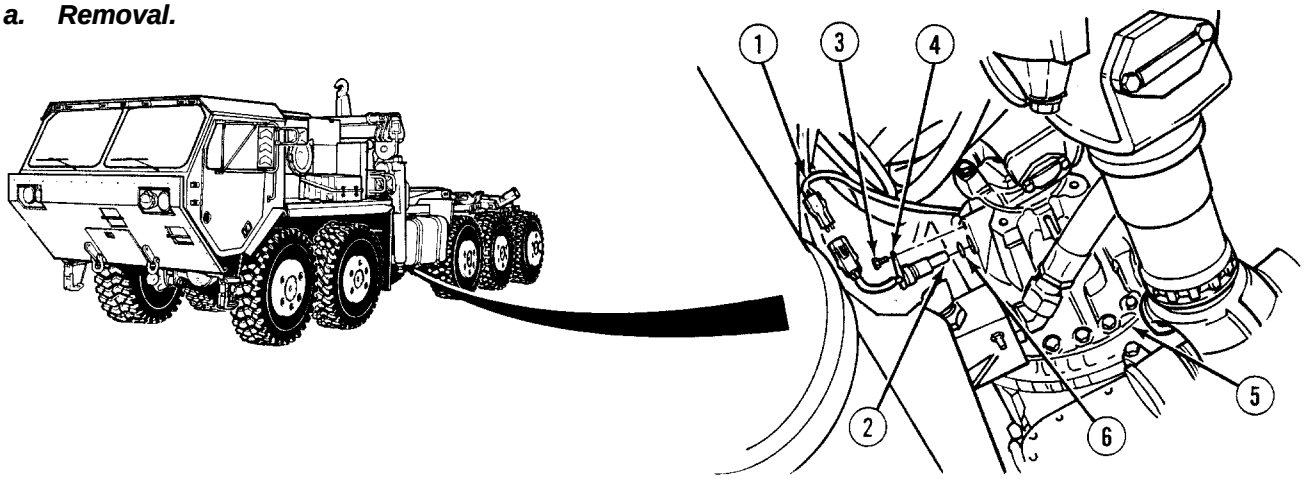
INITIAL SETUP

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 60 N·m) (Item 98, Appendix G)

Materials/Parts
Oil, Lubricating (Item 56, Appendix, C)
Packing, Preformed (Item 240, Appendix F)
Screw, Self-Locking (Item 311, 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

Disconnect connector by prying up on tab while gently pulling connector apart.

(1) Disconnect connector (1) from magnetic speed sensor (2).

(2) Remove self-locking screw (3) and bracket (4) from transmission (5). Discard self-locking screw.

(3) Remove magnetic speed sensor (2) and preformed packing (6) from transmission (5). Discard preformed packing.

7-72. MAGNETIC SPEED SENSOR REPLACEMENT (CONT).

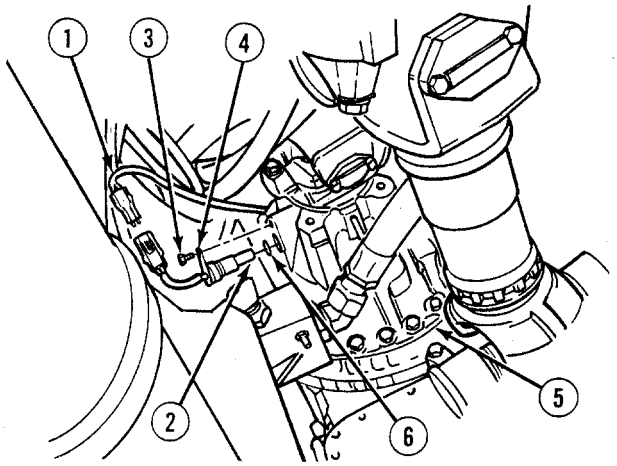
b. Installation.

(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.

This task covers:

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

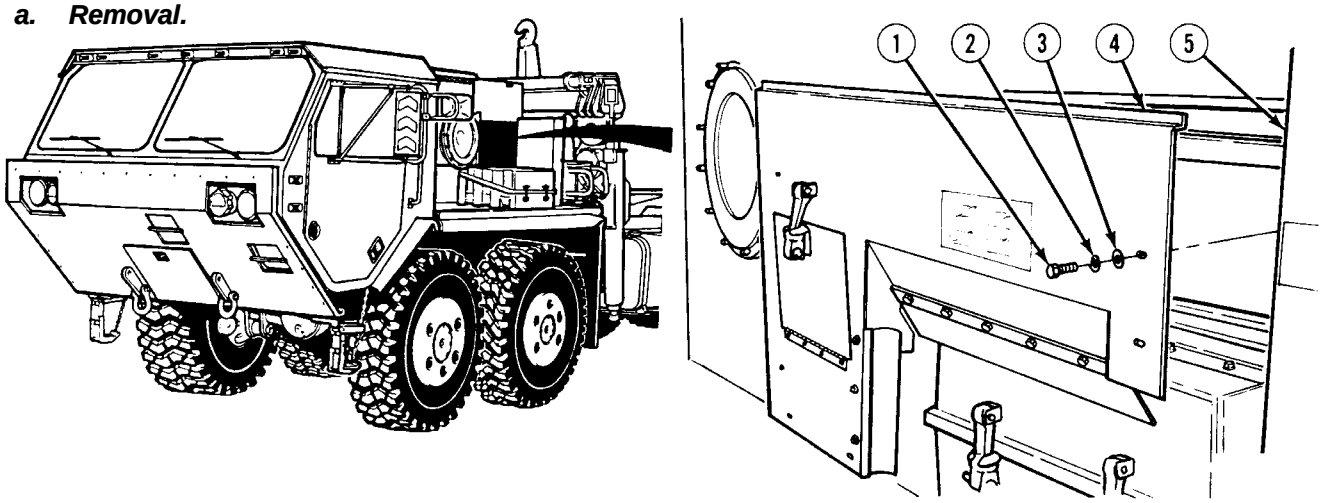
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 56, Appendix G)

Material/Parts
Adhesive, Insulation (Item 12, Appendix C)
Gasket (Item 57, Appendix F)
Insulation (Item 78, Appendix F)
Locknut (2) (Item 91, Appendix F)
Locknut (2) (Item 140, Appendix F)
Lockwashers (8) (Item 195, Appendix F)

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

a. Removal.

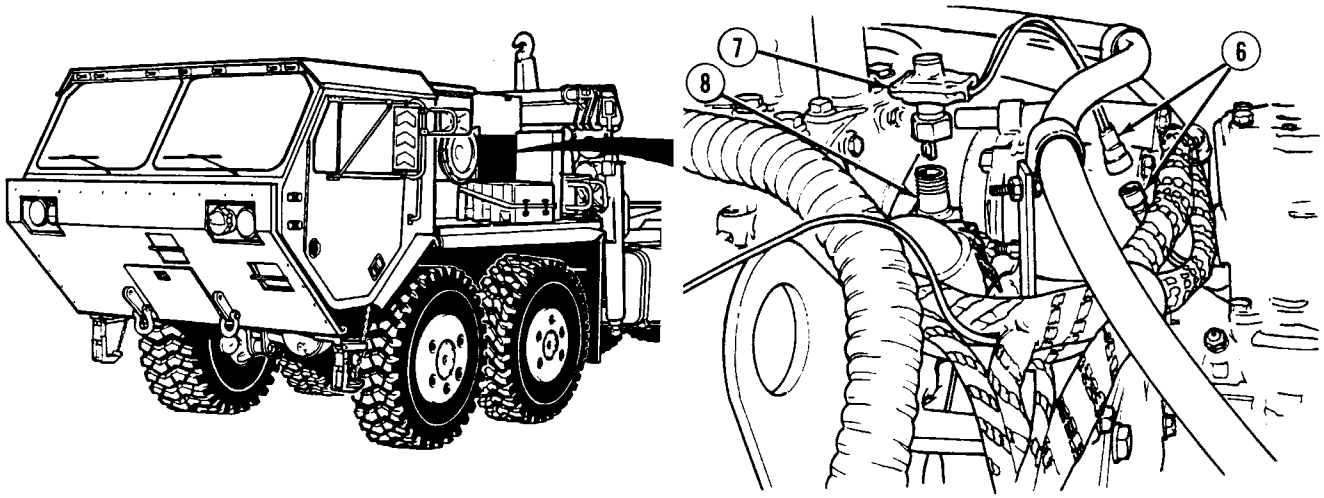


CAUTION

Ensure left side noise panel does not contact either the start aid assembly or electrical cables upon removal or damage to equipment may result.

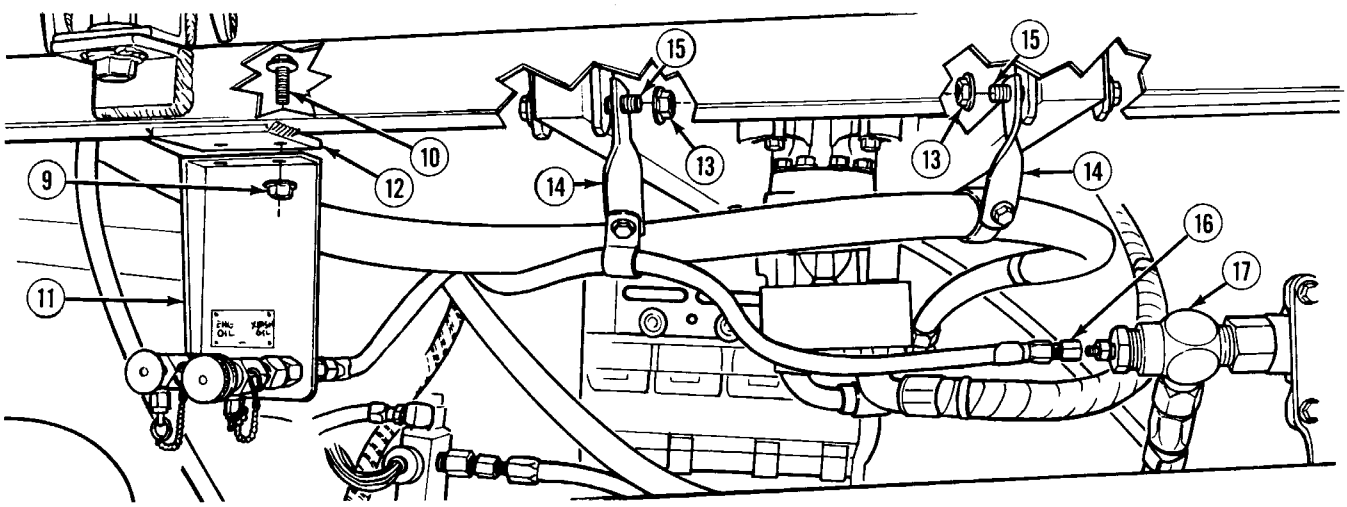
(1) Remove eight screws (1), lockwashers (2), washers (3) and left side noise panel (4) from truck (5). Discard lockwashers.

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).

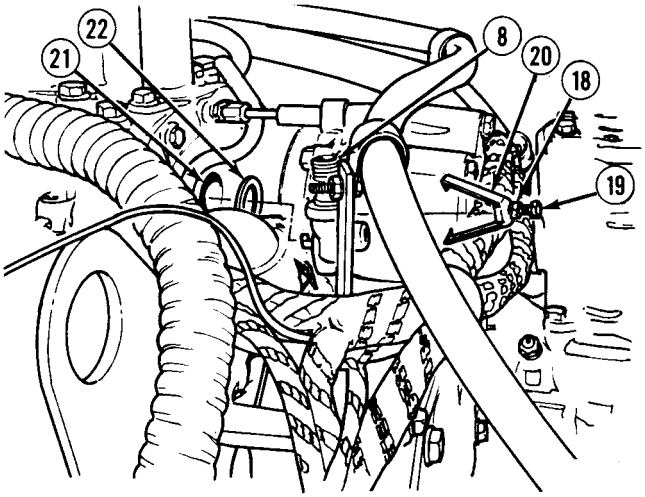
(6) Position two locknuts (13) on screws (15).

(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).



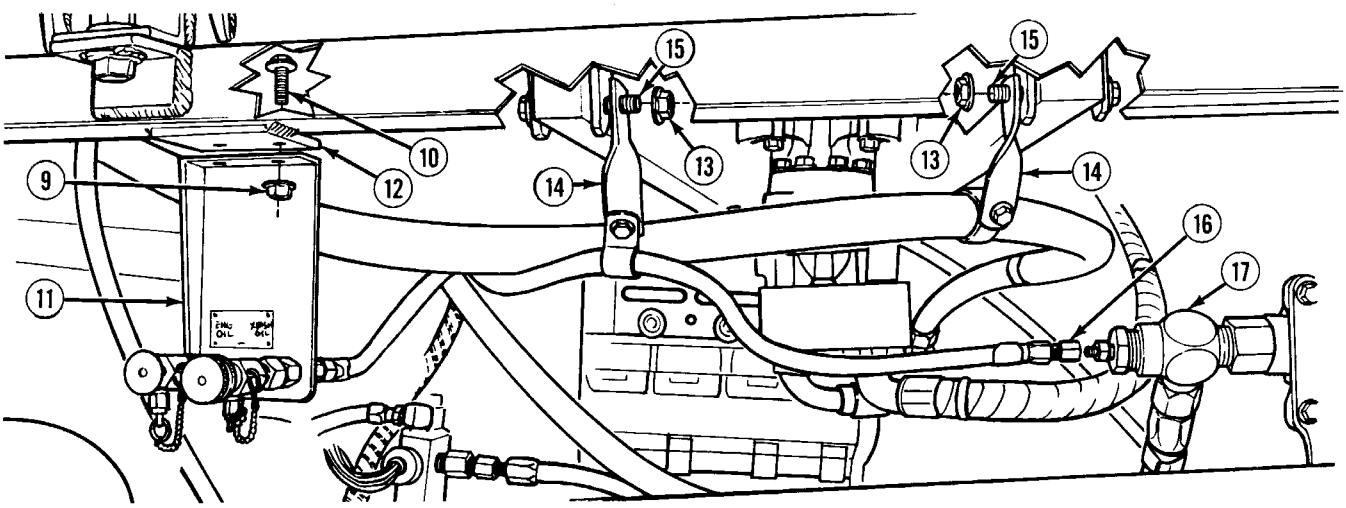
b. Installation.

(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.

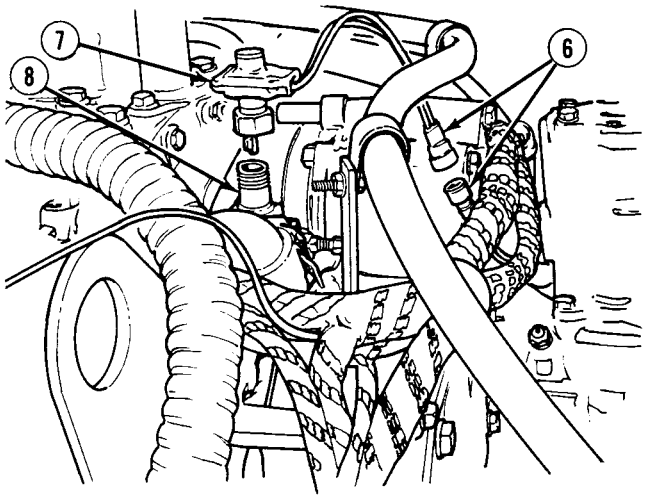
(7) Install two brackets (14) and locknuts (13) on screws (15).

(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).

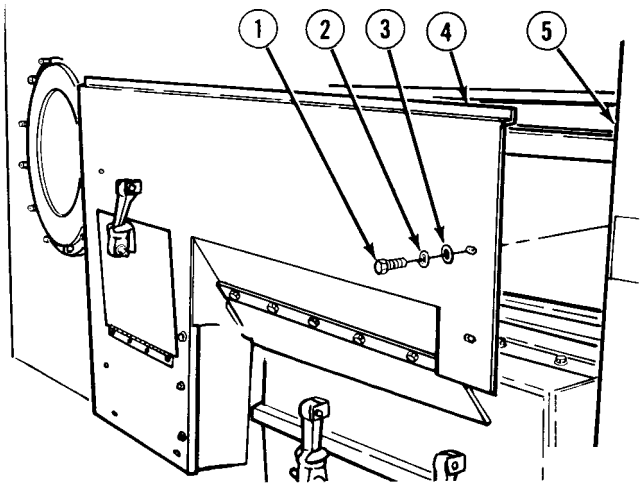
(10) Connect MC41 connector (6).



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.

This task covers:

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

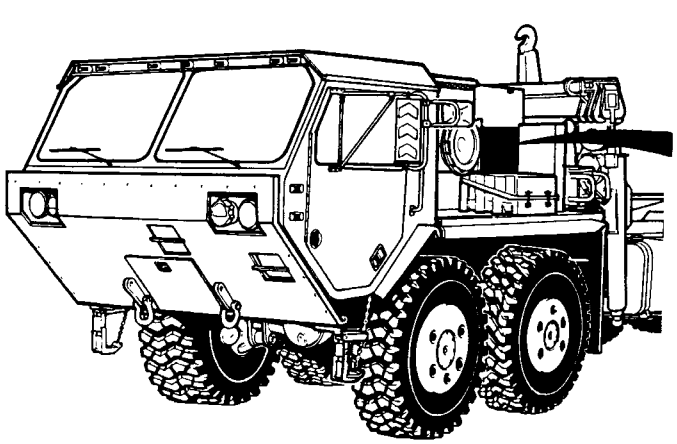
INITIAL SETUP

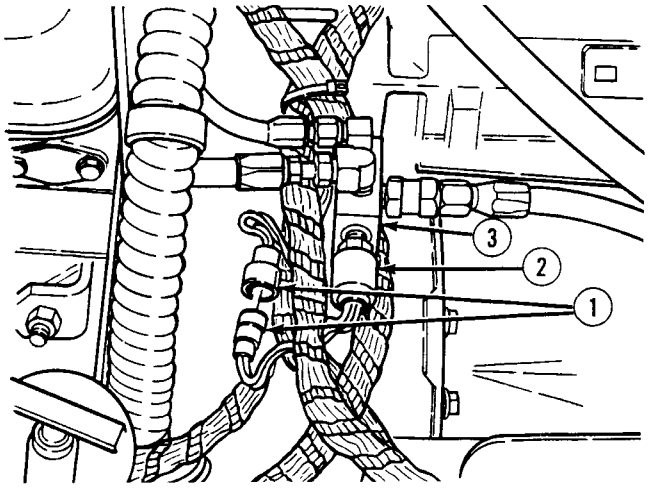
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Pan, Drain (Item 47, Appendix G)

Material/Parts
Cable Ties (Item 25, Appendix C)
Sealing Compound (Item 75, Appendix C)

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

a. Removal.





WARNING

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

NOTE

Remove cable ties as needed.

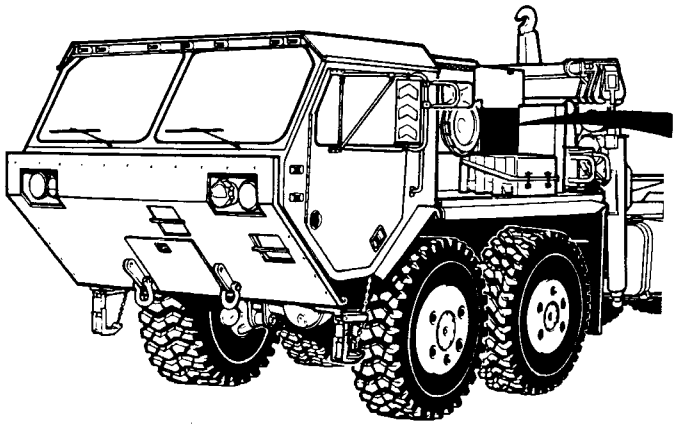
(1) Disconnect MC69 connector (1).

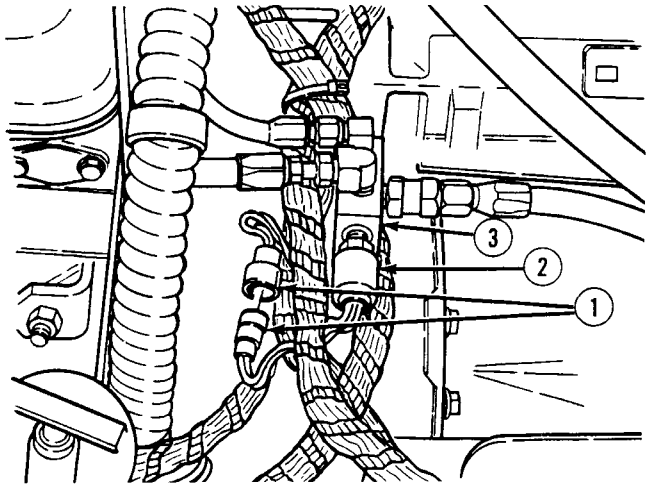
(2) Position drain pan under transducer (2).

(3) Remove transducer (2) from manifold (3).

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

7-75. AIR CLEANER PRESSURE TRANSDUCER 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
Sealing Compound (Item 72, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Engine cover opened, (TM 9-2320-364-10)

a. Removal.

NOTE

Transducer is located on air inlet tube.

(1) Disconnect MC67 connector (1).

(2) Remove pressure transducer (2) from reducer bushing (3).

b. Installation.

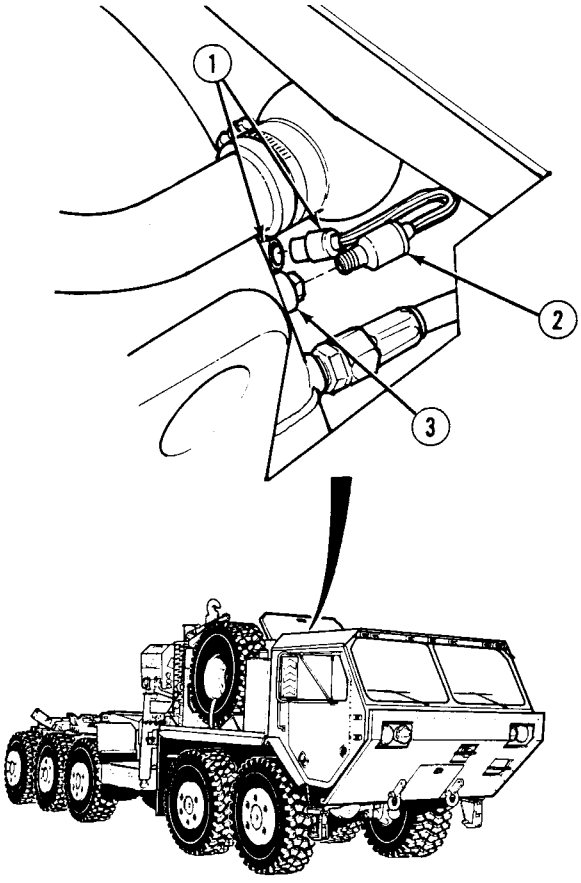
WARNING

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 transducer (2).

(2) Install pressure transducer (2) in reducer bushing (3).

(3) Connect MC67 connector (1).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Close engine cover, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-76. TURBOCHARGER OUTLET PRESSURE TRANSDUCER REPLACEMENT.

This task covers:

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

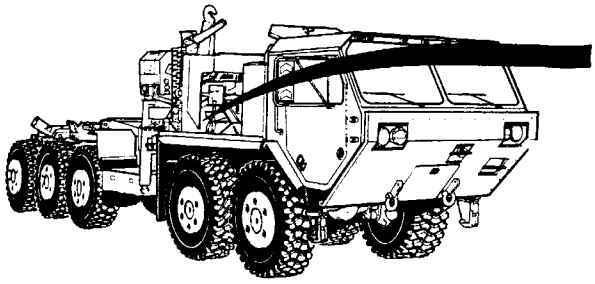
INITIAL SETUP

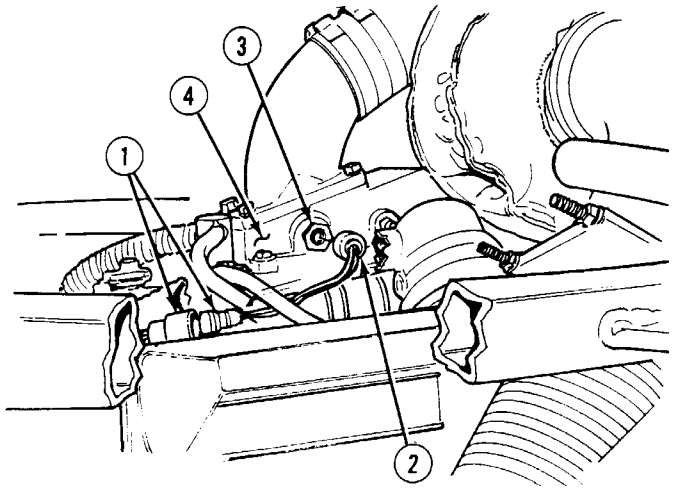
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination, 1-1/8 in. (Item 79, Appendix G)

Material/Parts
Sealing Compound (Item 72, 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)
Right side noise panel removed, (Para 17-26)
Engine cover opened, (TM 9-2320-364-10)

a. Removal.





(1) Disconnect MC66 connector (1).

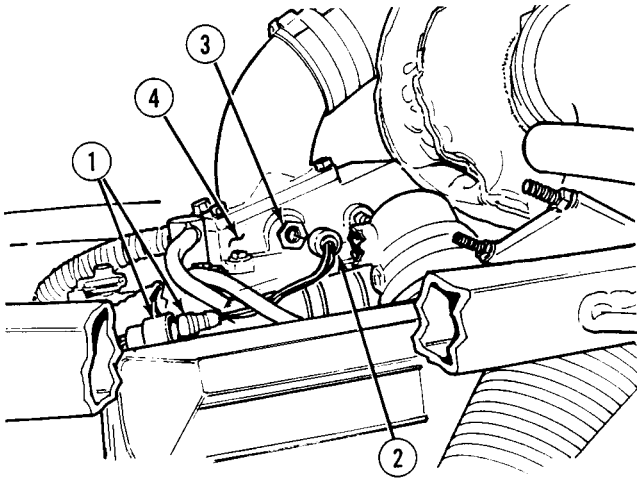
(2) Remove turbocharger outlet pressure transducer (2) from reducer bushing (3).

(3) Remove reducer bushing (3) from turbocharger housing (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 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

7-77. AIR BOX PRESSURE TRANSDUCER REPLACEMENT.

This task covers:

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

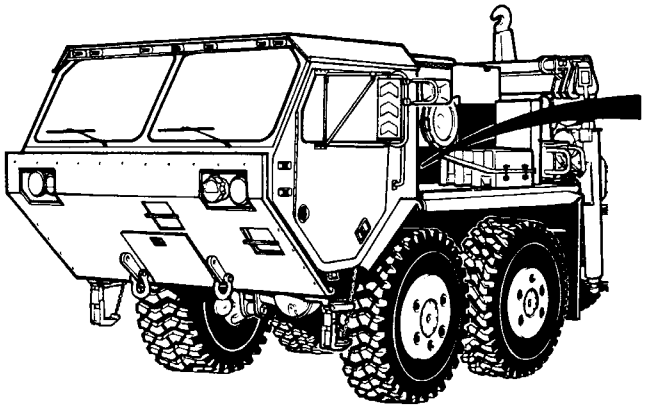
INITIAL SETUP

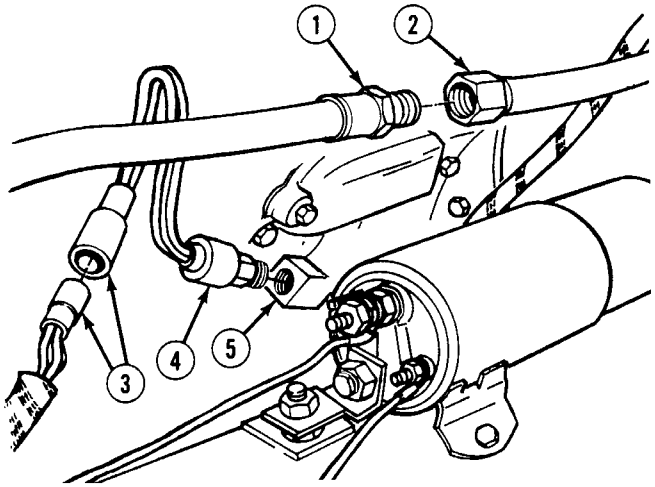
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination 1-1/2 in. (Item 83, Appendix G)
Wrench, Combination 1-3/4 in. (Item 86, Appendix G)

Material/Parts
Cable Ties (Item 25, Appendix C)
Sealing Compound (Item 72, Appendix C)

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

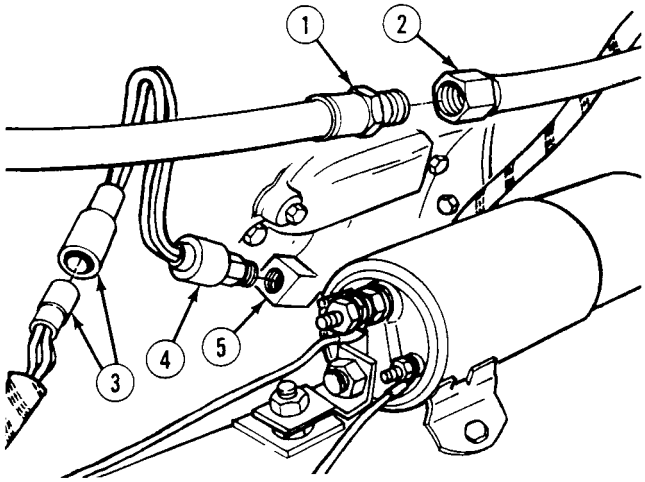
Remove cable ties as required.

(1) Disconnect hose 2988 (1) from engine oil fill tube (2) and position fill tube (2) out of the way.

(2) Disconnect MC68 connector (3).

(3) Remove air box pressure transducer (4) from tee (5).

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

7-78. FUEL FILTER PRESSURE TRANSDUCER REPLACEMENT.

This task covers:

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

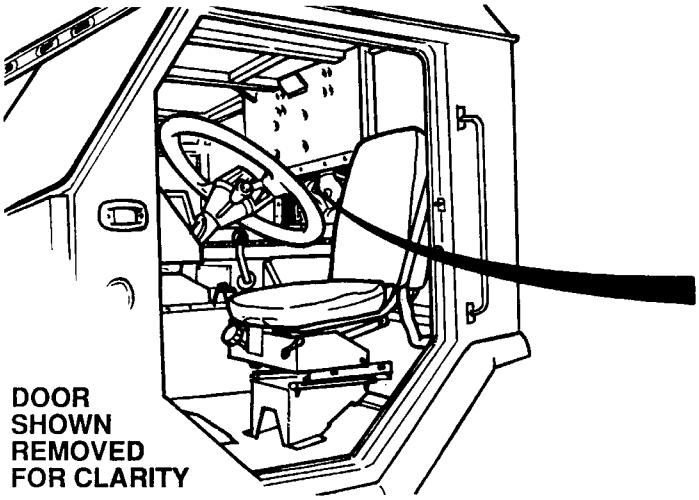
INITIAL SETUP

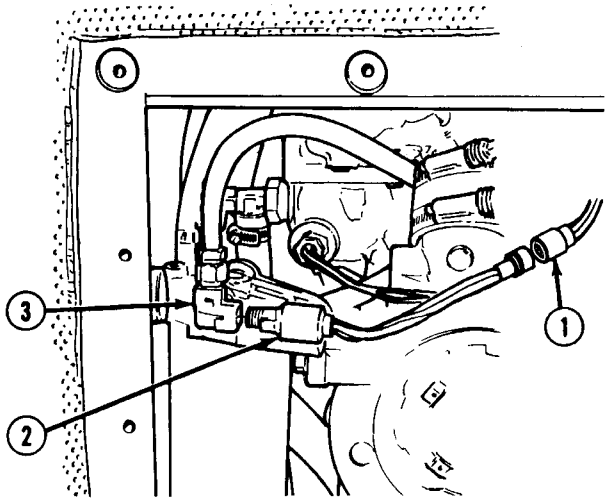
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Material/Parts
Sealing Compound (Item 72, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cab engine access panel removed, (Para 17-24)

a. Removal.





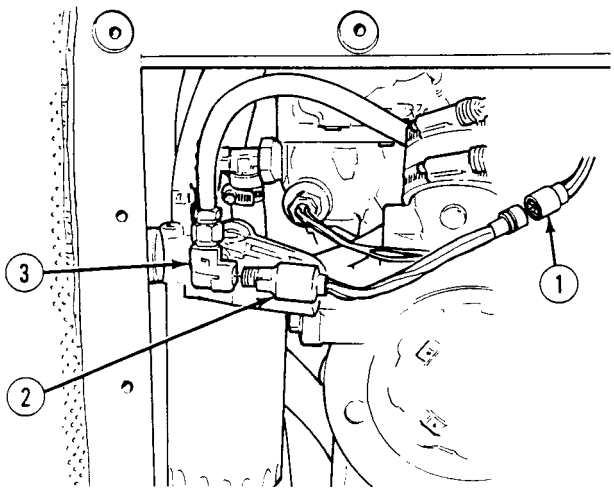
WARNING

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) Disconnect MC43 connector (1).

(2) Remove fuel filter pressure transducer (2) from elbow (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 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

7-79. ENGINE OIL PRESSURE SENDING UNIT REPLACEMENT.

This task covers:

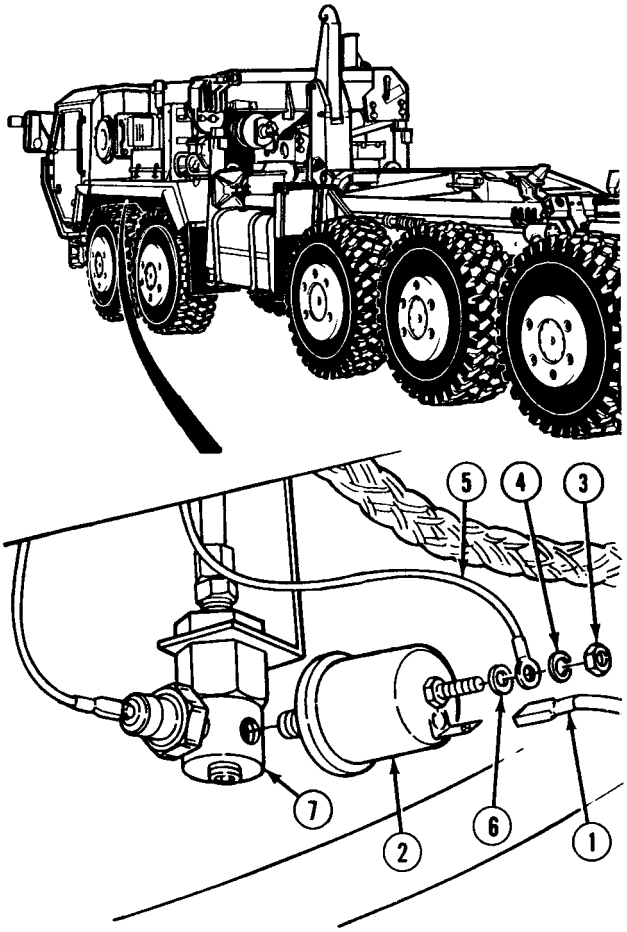
a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

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

Material/Parts
Sealant, Electrical (Item 68, Appendix C)
Sealing Compound (Item 72, Appendix C)
Lockwasher (Item 194, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Left front fender skirt removed, (Para 17-34)



a. Removal.

(1) Remove wire 1435 (1) from oil pressure sending unit (2).

(2) Remove nut (3), lockwasher (4), wire 1113 (5) and washer (6) from oil pressure sending unit (2). Discard lockwasher.

(3) Remove oil pressure sending unit (2) from manifold (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 oil pressure sending unit (2) with sealing compound and install in manifold (7).

(2) Install washer (6) and wire 1113 (5) on oil pressure sending unit (2) with lockwasher (4) and nut (3).

(3) Apply electrical sealant to terminal on oil pressure sending unit (2).

(4) Install wire 1435 (1) on oil pressure sending unit (2).

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

7-80. WATER TEMPERATURE SENDING UNIT/TEMPERATURE SWITCH REPLACEMENT.

This task covers:

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

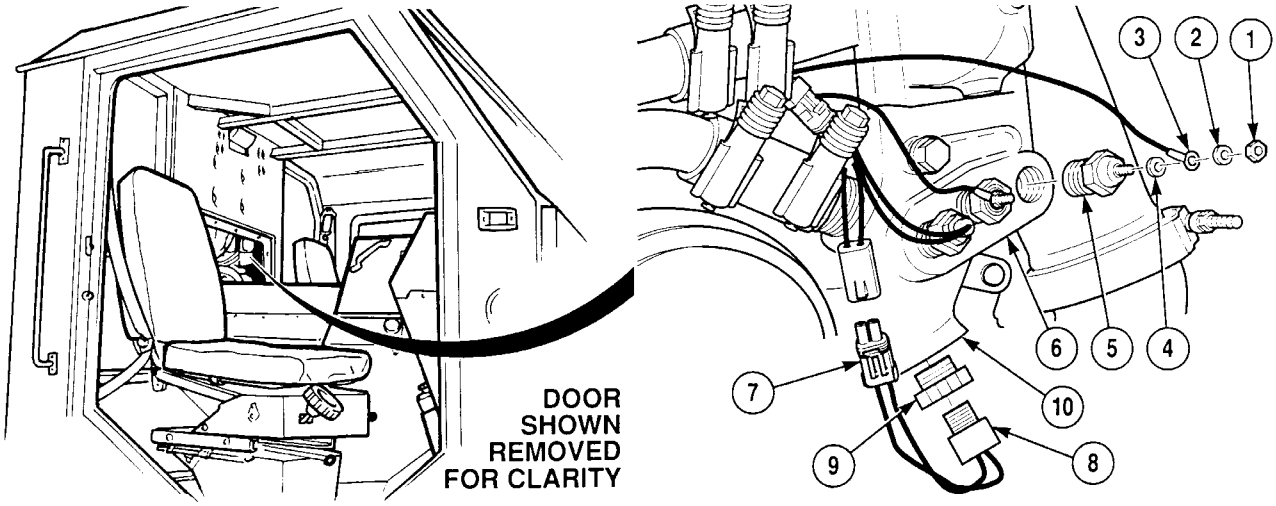
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanics: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Material/Parts
Sealant, Electrical (Item 68, Appendix C)
Sealing Compound (Item 72, Appendix C)
Sealing Compound (Item 77, Appendix C)
Lockwasher (Item 194, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cooling system drained, (Para 6-4)
Batteries disconnected, (Para 7-87)
Cab engine access panel removed, (Para 17-24)

a. Removal.



(1) Remove nut (1), lockwasher (2), wire 1147 (3) and washer (4) from water temperature sending unit (5). Discard lockwasher.

(2) Remove water temperature sending unit (5) from engine block (6).

(3) Disconnect MC128 connector (7).

(4) Remove temperature switch (8) from reducer bushing (9).

(5) Remove reducer bushing (9) from thermostat housing (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 reducer bushing (9).

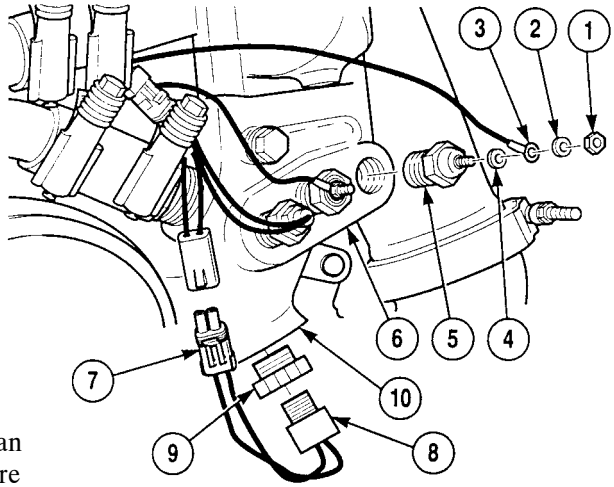
(2) Install reducer bushing (9) in thermostat housing (10).

(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).



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

Sealing compound is applied to threads of stud on water temperature sending unit.

(6.1) Apply sealing compound to threads of water temperature sending unit (5).

(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

7-81. TRANSMISSION OIL TEMPERATURE SENDING UNIT REPLACEMENT.

This task covers:

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

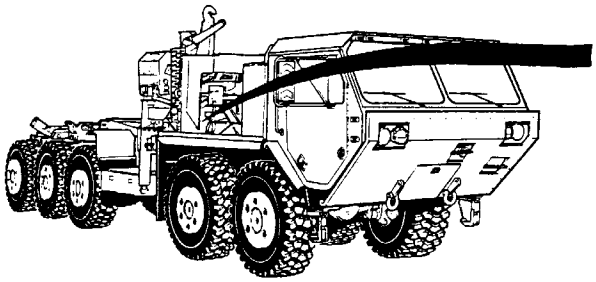
INITIAL SETUP

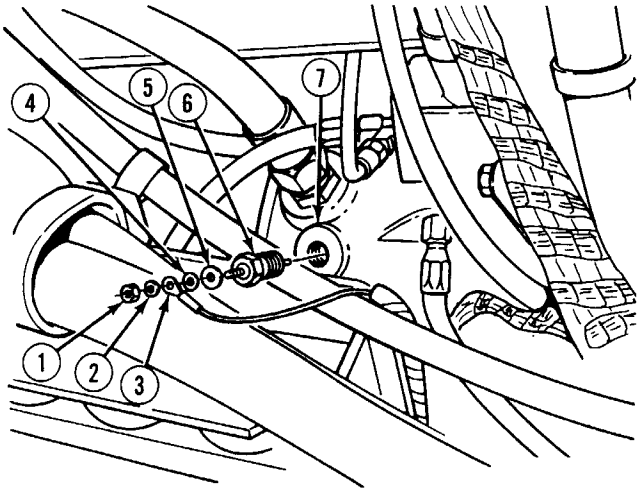
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Material/Parts
Sealant, Electrical (Item 68, Appendix C)
Lockwasher (Item 175, 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)
Batteries disconnected, (Para 7-87)
Right side noise panel removed, (Para 17-26)

a. Removal.





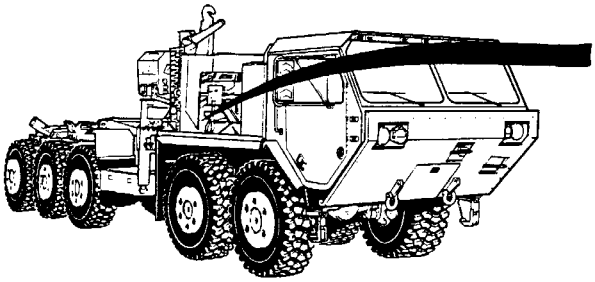
WARNING

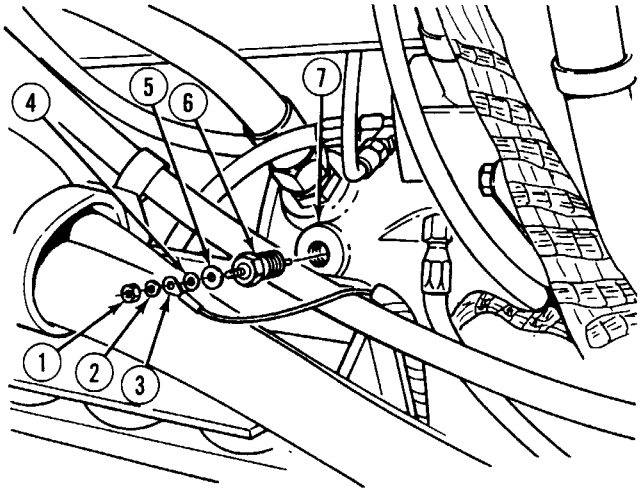
Ensure engine is cool before performing this task or injury to personnel may result.

(1) Remove nut (1), lockwasher (2), wire 1449 (3), washer (4) and washer (5) from transmission oil temperature sending unit (6). Discard lockwasher.

(2) Remove transmission oil temperature sending unit (6) from transmission (7).

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

7-82. TRANSFER CASE SENDING UNIT REPLACEMENT.

This task covers:

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

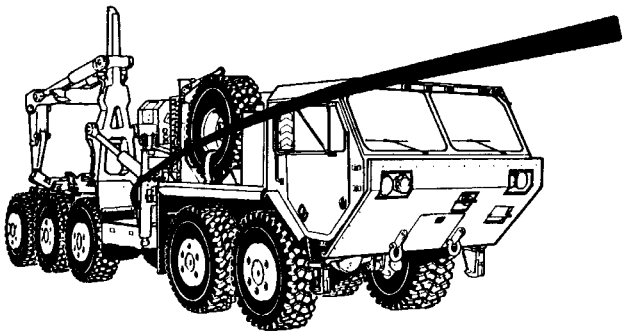
INITIAL SETUP

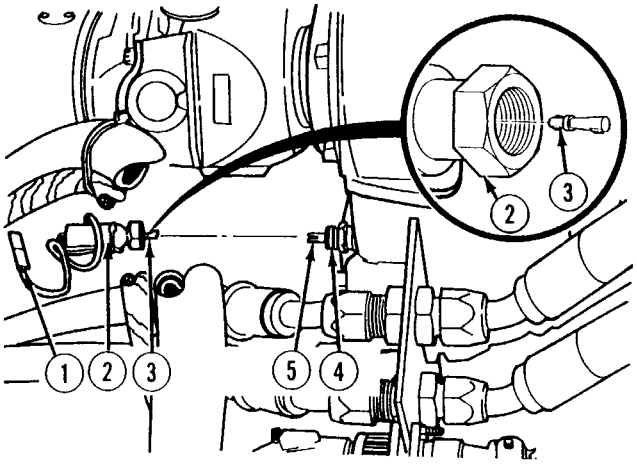
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Material/Parts
Cable Ties (Item 25, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
LHS fully extended, (TM 9-2320-364-10)

a. Removal.





NOTE

Remove cable ties as required.

(1) Disconnect connector (1).

CAUTION

Do not remove speedometer drive shaft from transfer case or parts may fall inside transfer case and cause damage to equipment.

(2) Remove sending unit (2) and tang (3) from sleeve (4) and speedometer drive shaft (5).

(3) Remove tang (3) from sending unit (2).

b. Installation.

NOTE

Install cable ties as required.

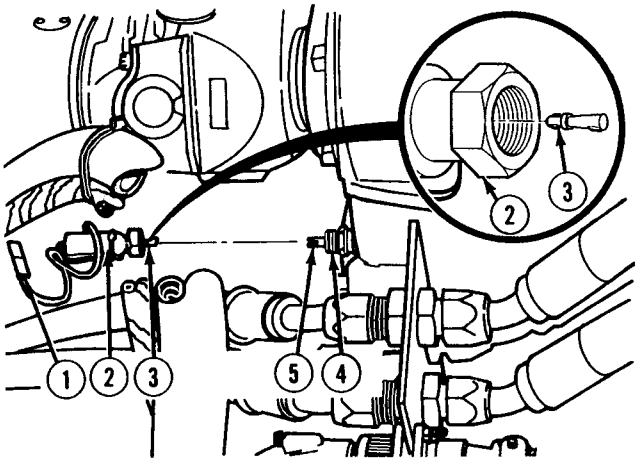
(1) Install tang (3) in sending unit (2).

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

7-83. TRANSFER CASE NEUTRAL START SWITCH REPLACEMENT AND ADJUSTMENT.

This task covers:

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

INITIAL SETUP

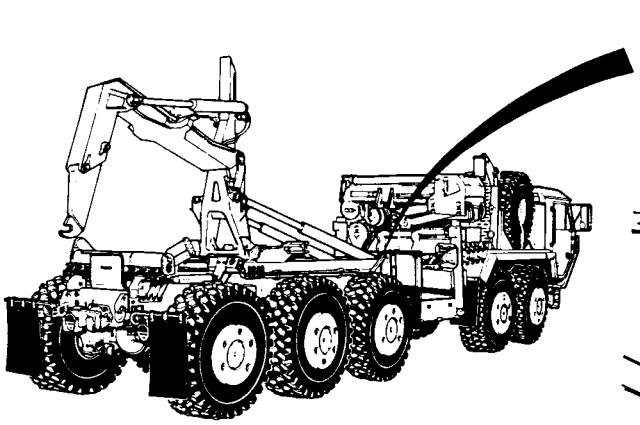
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 56, Appendix G)
Multimeter (Item 34, Appendix G)

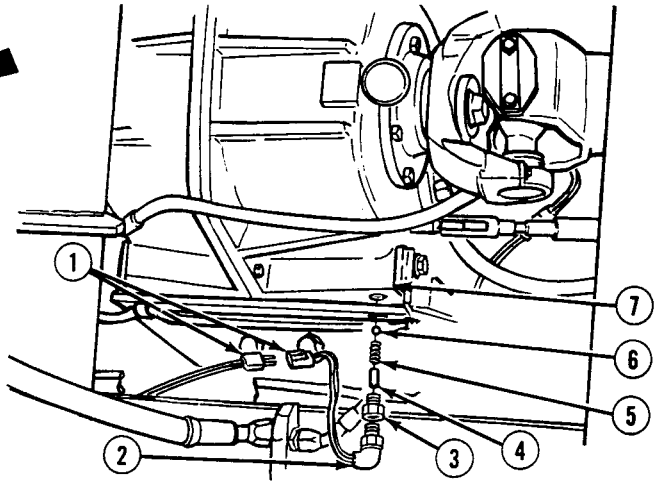
Materials/Parts
Cable Ties (Item 26, Appendix C)
Sealing Compound (Item 72, Appendix C)

Personnel Required
Two

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
LHS fully extended, (TM 9-2320-364-10)

a. Removal.





NOTE

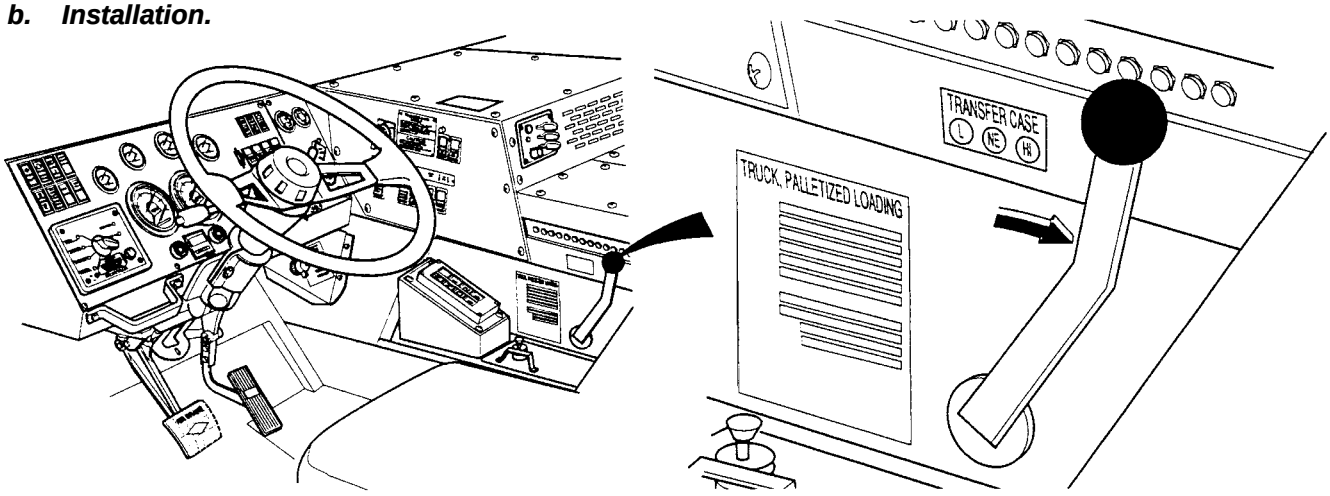
- Connectors are removed by gently prying up on tab and pulling connectors apart.
- Remove cable ties as required.

a Disconnect MC57 connector (1).

(1) Remove neutral start switch (2) from fitting (3).

(2) Remove fitting (3), rod (4), detent spring (5) and ball (6) from transfer case housing (7).

b. Installation.

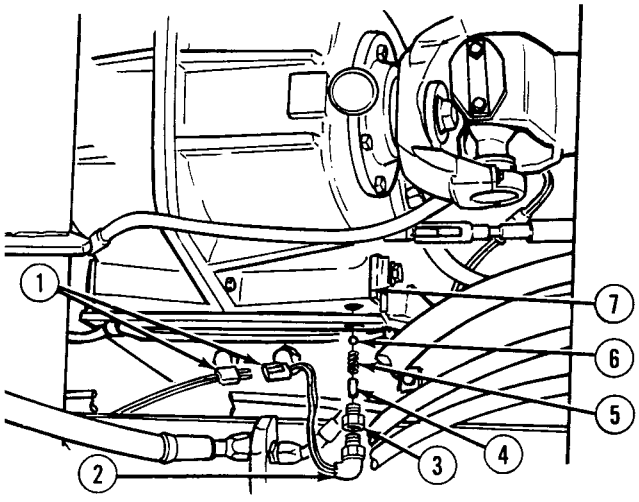


NOTE

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 AND ADJUSTMENT (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:

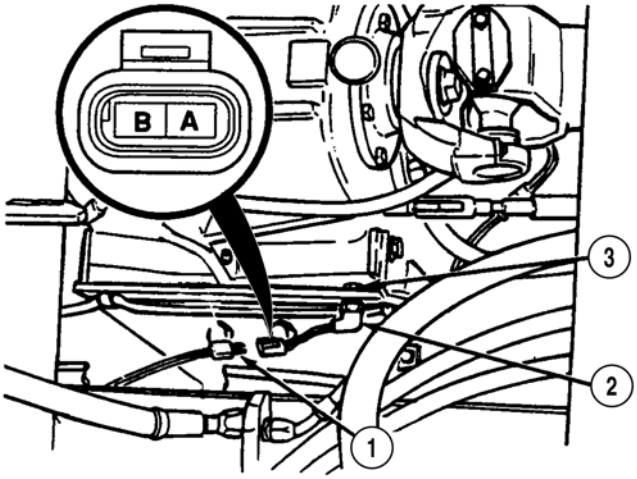
(a) If continuity is measured, proceed with Step (9).

(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. Adjustment

NOTE

- Connectors are removed by gently prying up on tab and pulling connectors apart.
- Remove cable ties as required.

(1) Disconnect MC57 connector (1).

(2) Shift transfer case into High (HI) range.

(3) Connect a multimeter on MC57 connector (1). Multimeter should indicate no continuity:

(a) If no continuity is measured, proceed with Step (4).

(b) If continuity is measured, turn out neutral start switch (2) 3/4 turn beyond the point where multimeter measures continuity.

(4) With the aid of an assistant, shift transfer case out of High (HI) range. Multimeter should measure continuity:

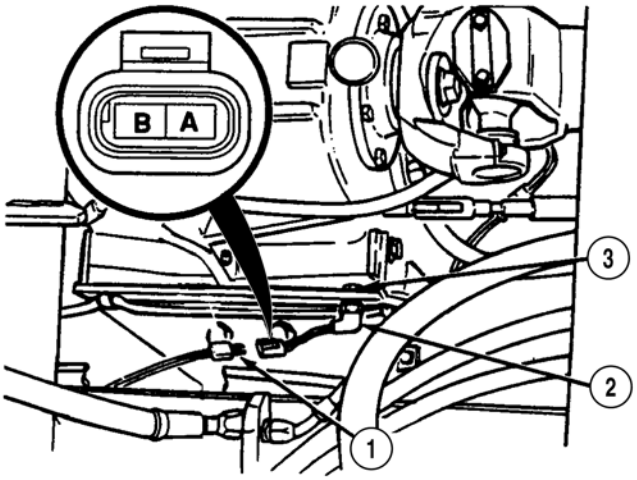
(a) If continuity is measured, proceed with Step (5).

(b) If no continuity is measured, tighten neutral start switch (2) and adapter (3) 3/4 turn beyond the point where multimeter measures continuity.

(5) Shift transfer case in High (HI) range. Multimter should measure no continuity.

(6) Remove multimter from MC57 connector (1).

(7) Connect MC57 connector (1).



d. 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.

This task covers:

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

INITIAL SETUP

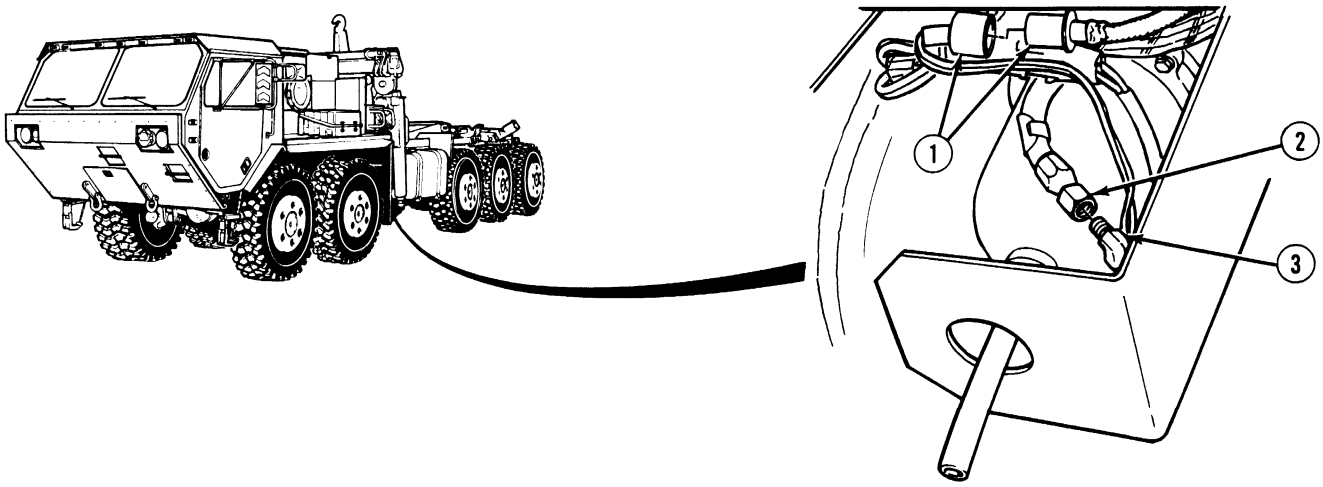
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)
Pan, Drain (Item 47, Appendix G)

Material/Parts
Cable Ties (Item 25, Appendix C)

Material/Parts - Continued
Sealing Compound (Item 75, Appendix C)
Locknut (Item 106, Appendix F)

Equipment Condition
Wheels chocked, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

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.

(1) Disconnect MC42 connector (1).

(2) Position drain pan under hose 2921 (2).

(3) Remove hose 2921 (2) from elbow (3).

7-84. DIFFERENTIAL PRESSURE SWITCH REPLACEMENT (CONT).

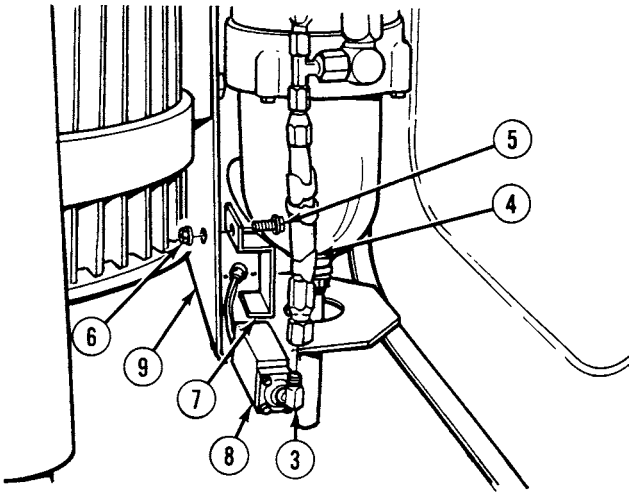
(4) Remove hose 2922 (4) from elbow (3).

(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).

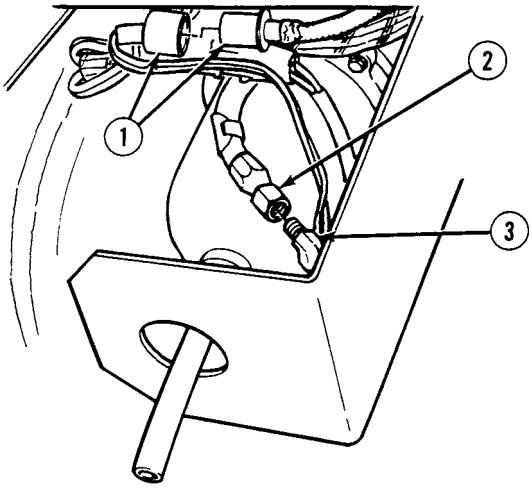
(2) Install two elbows (3) on differential pressure switch (8).

(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

7-85. ELECTRIC HORN 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
Compound, Corrosion Preventive (Item 34, Appendix C)
Lockwasher (Item 185, Appendix F)

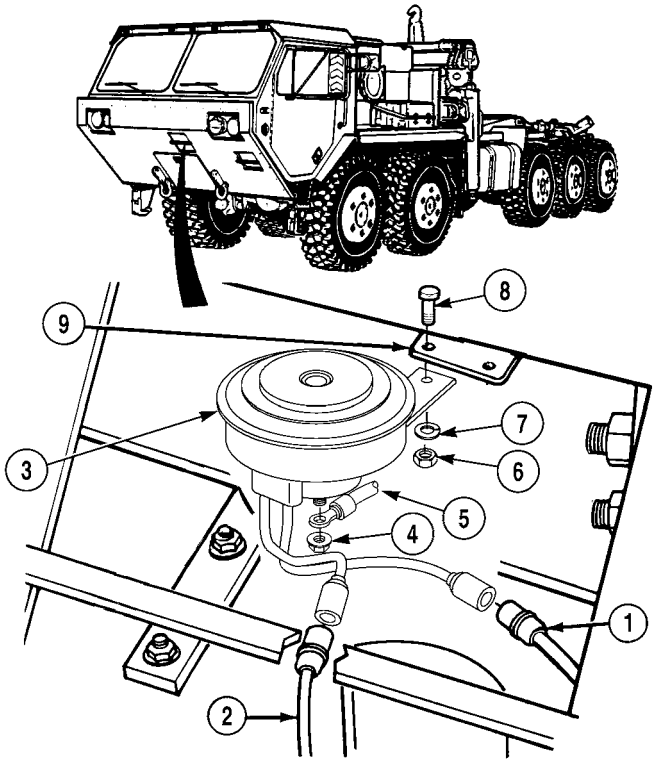
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.

(1) Disconnect wire 1168 (1) and wire 1435 (2) from electric horn (3).

(2) Remove nut (4) and ground wire (5) from electric horn (3).

(3) Remove nut (6), lockwasher (7), screw (8), and electric horn (3) from horn mount (9). Discard lockwasher.



b. Installation.

(1) Install electric horn (3) on horn mount (9) using screw (8), lockwasher (7), and nut (6).

(2) Install ground wire (5) on electric horn (3) using nut (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 a 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 on wire 1168 (1) and wire 1435 (2).

(4) Install wire 1168 (1) and wire 1435 (2) on electric horn (3).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-86. REVERSE ALARM REPLACEMENT.

This task covers:

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

INITIAL SETUP

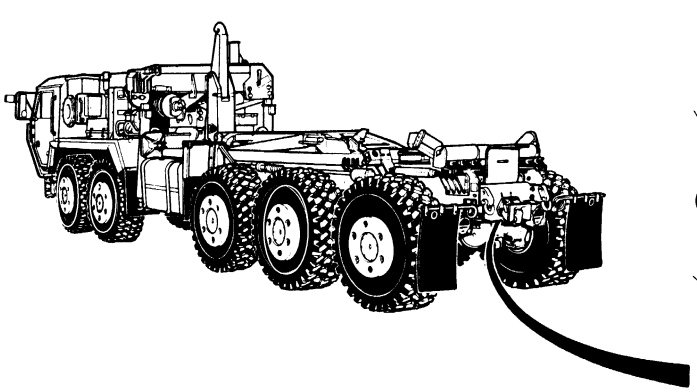
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

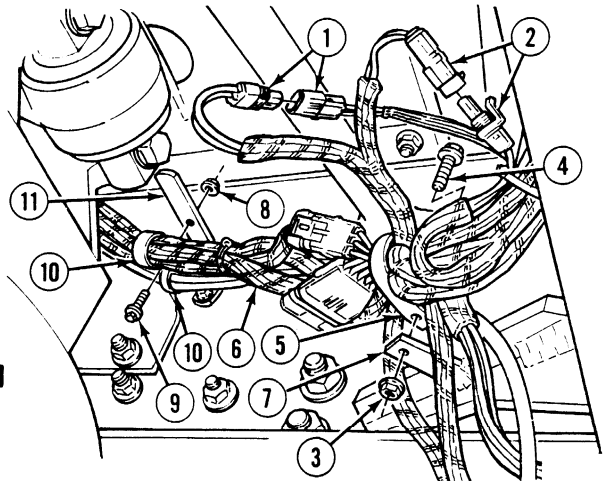
Material/Parts
Cable Ties (Item 25, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 106, Appendix F)
Locknut (2) (Item 133, Appendix F)

Personnel Required
Two

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Rear hard lift assembly removed, (Para 16-8)

a. Removal.





NOTE

- Tag and mark wires prior to removal.
- Connectors are removed by gently pulling up on tab on connector.
- Remove cable ties as required.

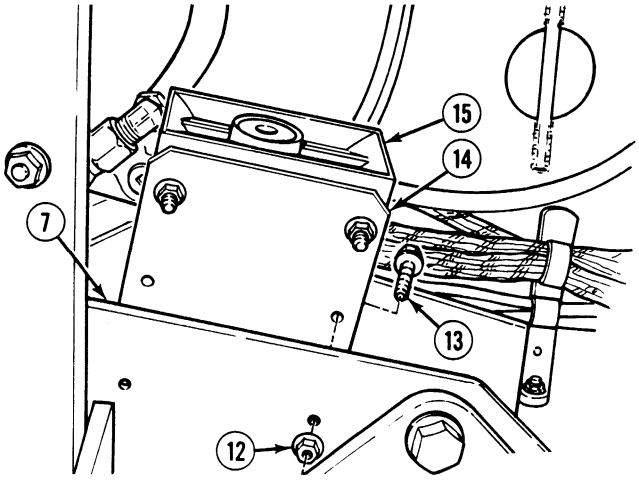
(1) Disconnect MC77 connector (1) and MC124 connector (2).

(2) Remove locknut (3), screw (4), cushion clip (5) and reverse alarm wire harness (6) from truck frame (7). Discard locknut.

(3) With the aid of an assistant, remove locknut (8), screw (9), two cushion clips (10) and reverse alarm wire harness (6) from bracket (11). Discard locknut.

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.

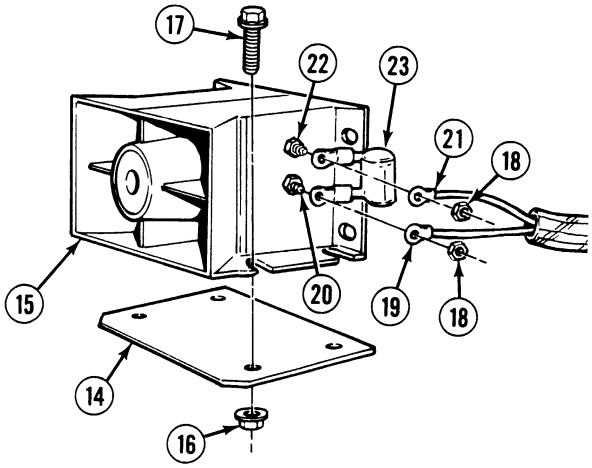


(5) Remove two locknuts (16), screws (17) and mounting plate (14) from reverse alarm (15). Discard locknuts.

(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.

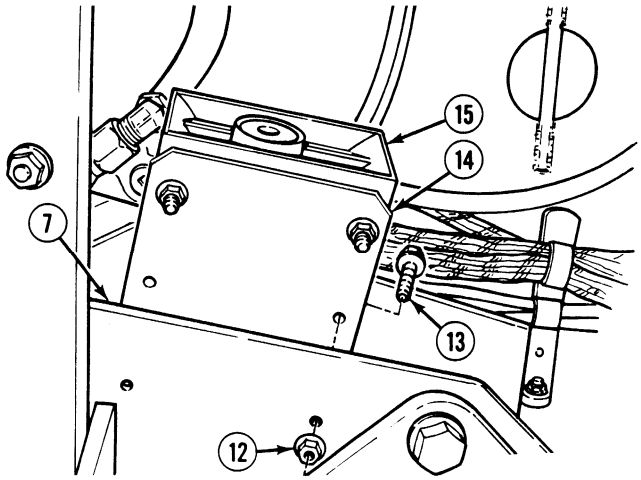
(1) Install reverse alarm capacitor (23) on positive stud (20) and negative stud (22) of reverse alarm (15).

(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).

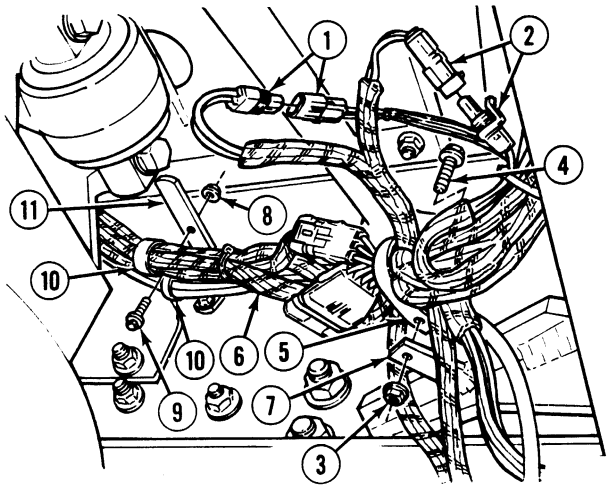
(5) With the aid of an assistant, install mounting plate (14) and reverse alarm (15) on truck frame (7) using two screws (13) and locknuts (12).



(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 16-8).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-87. BATTERY DISCONNECTION/CONNECTION.

This task covers:

a. Disconnection b. Connection c. Follow-On Maintenance

INITIAL SETUP

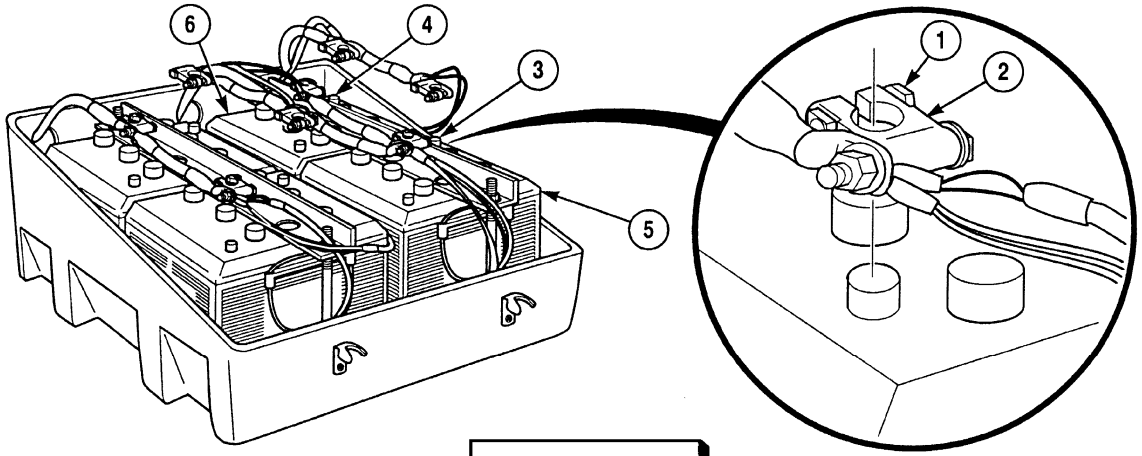
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. Drive (Item 62, Appendix G)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Material/Parts
Cable Ties (Item 25, Appendix C)
Compound, Corrosion Preventive (Item 34, Appendix C)

Material/Parts - Continued
Tags, Identification (Item 88, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Battery box cover removed, (TM 9-2320-364-10)
Arctic kit batteries disconnected (if equipped), (Para 21-11)

a. Disconnection.



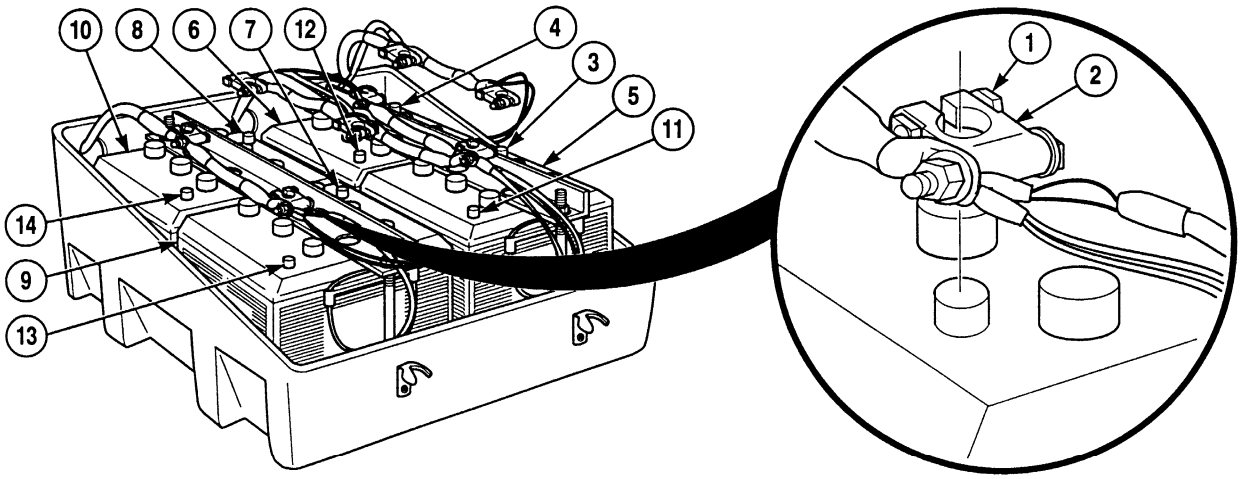
WARNING

- 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.
- 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.
- 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 terminals prior to removal.
- Remove cable ties as required.

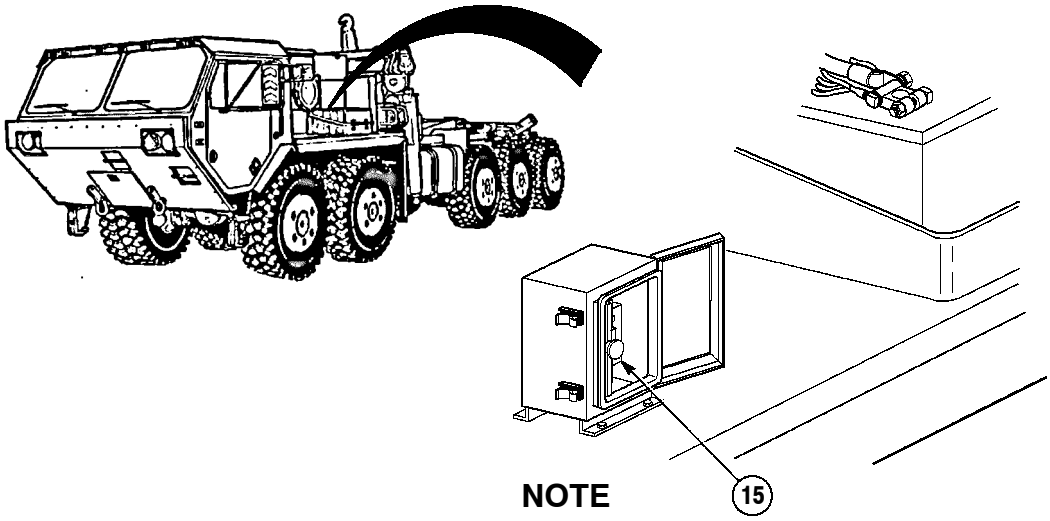
(1) Loosen two nuts (1) and remove two terminals (2) from negative posts (3) and (4) on battery three (5) and battery four (6).



(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 for more than 7 days and truck is equipped with battery disconnect switch.

(5) Pull out battery disconnect switch (15).

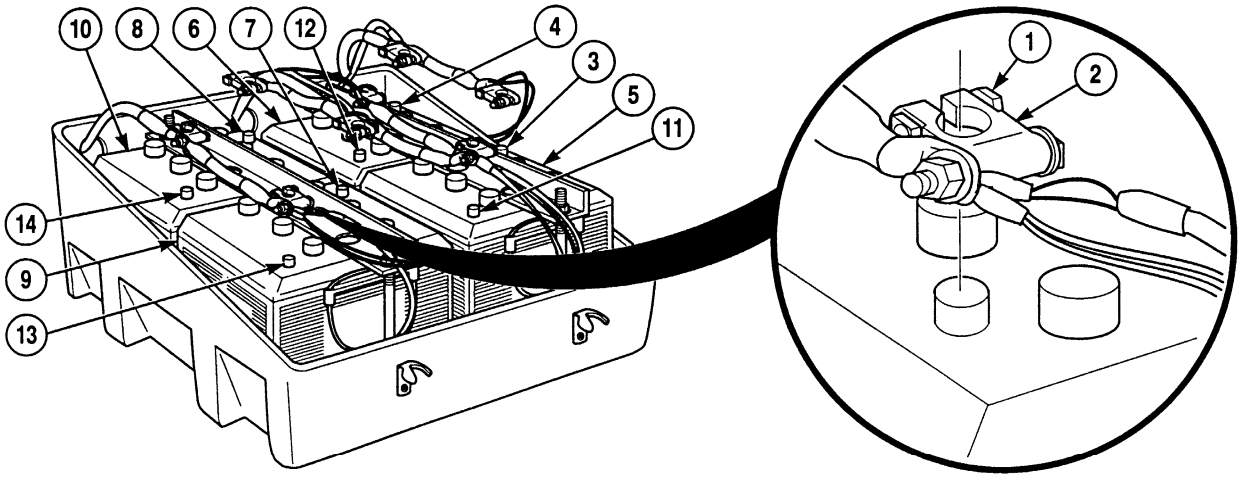
b. Connection.

NOTE

Perform Step (1) if truck has been in storage and is equpped 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.

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)
Gloves, Chemical and Oil Protective (Item 28, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

Materials/Parts
Coating Compound, Bituminous Solvent Type (Item 32, Appendix C)
Lockwasher (4) (Item 169, Appendix F)

Personnel Required
Two

References
TM 9-6140-200-14

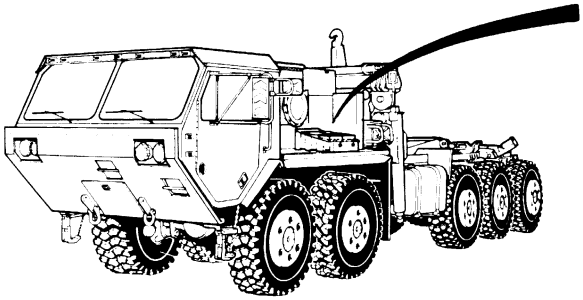
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Battery box wiring removed, (Para 7-90)

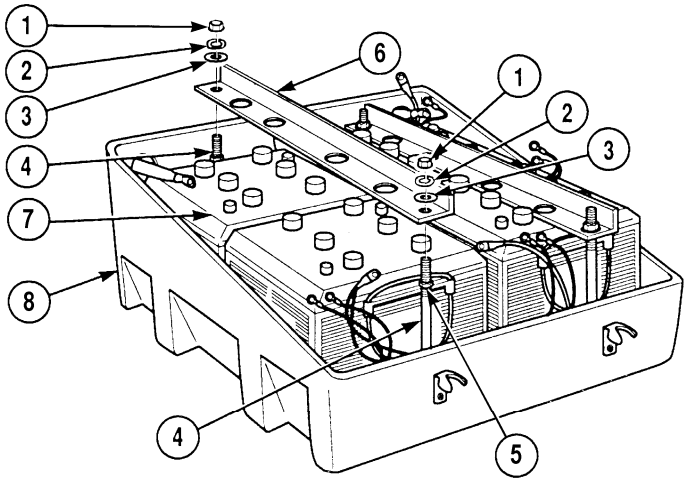
WARNING

- 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.
- Wear safety goggles and acid-proof gloves when battery cover must be removed or when adding electrolyte.
- 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.
- Injury will result if acid contacts skin or eyes. Wear rubber apron to prevent clothing being damaged.
- 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.

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

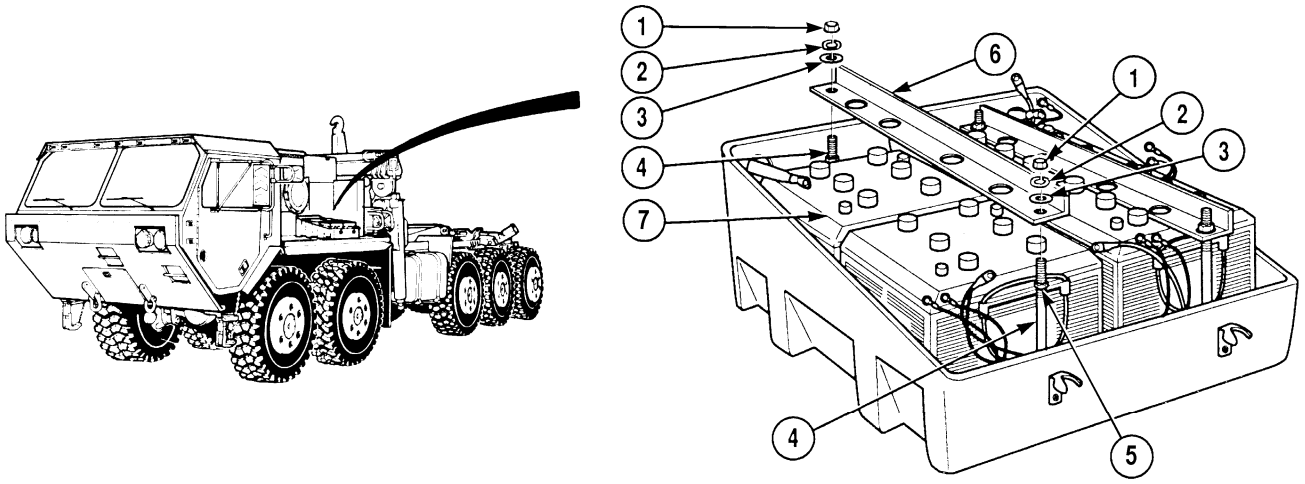
Battery weighs 75 lbs (34 kg). Install battery only with the aid of an assistant to prevent possible injury to personnel.

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

INITIAL SETUP

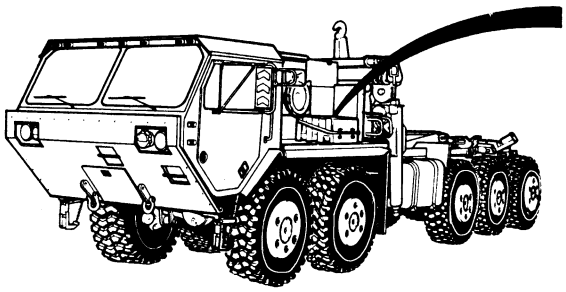
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Gloves, Chemical Oil Protective (Item 28, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

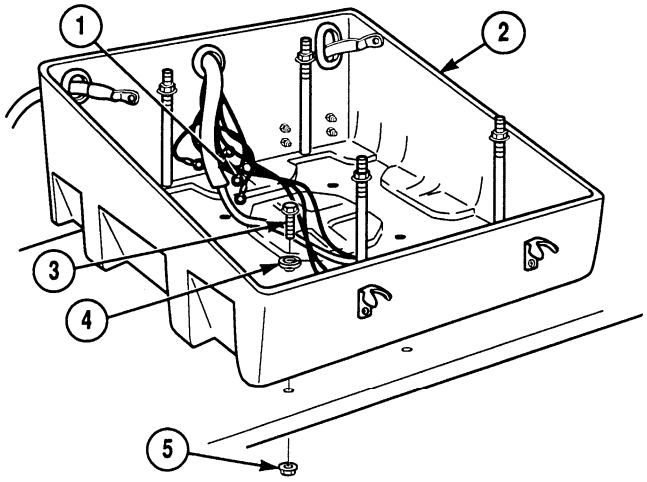
Materials/Parts
Cloth, Cleaning (Item 31, Appendix C)
Coating Compound, Bituminous, Solvent Type (Item 32, Appendix C)
Solution, Soap (Item 86, Appendix C)
Solvent, Drycleaning (Item 87, Appendix C)
Tags, Identification (Item 88, Appendix C)

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 191, Appendix F)
Lockwasher (2) (Item 192, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries removed, (Para 7-88)

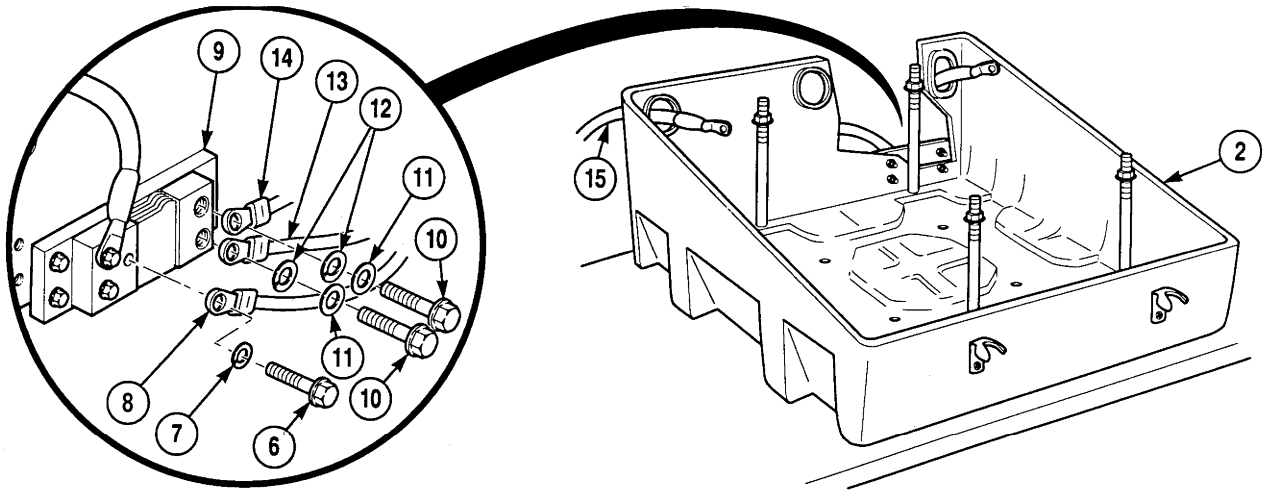
a. Removal.





(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).

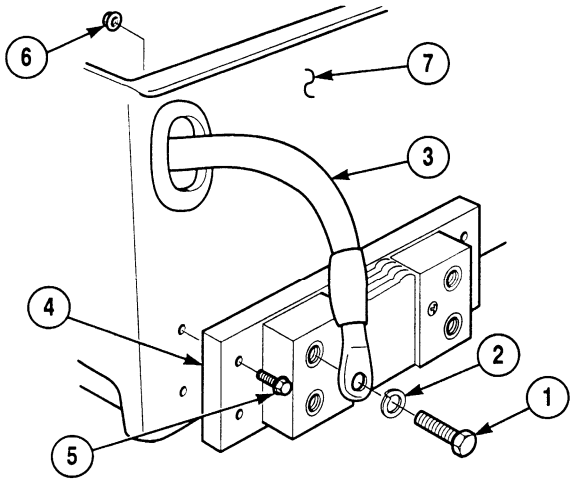
(5) Remove wire 1139 (15) from battery box (2).

(6) Remove battery box (2) from truck.

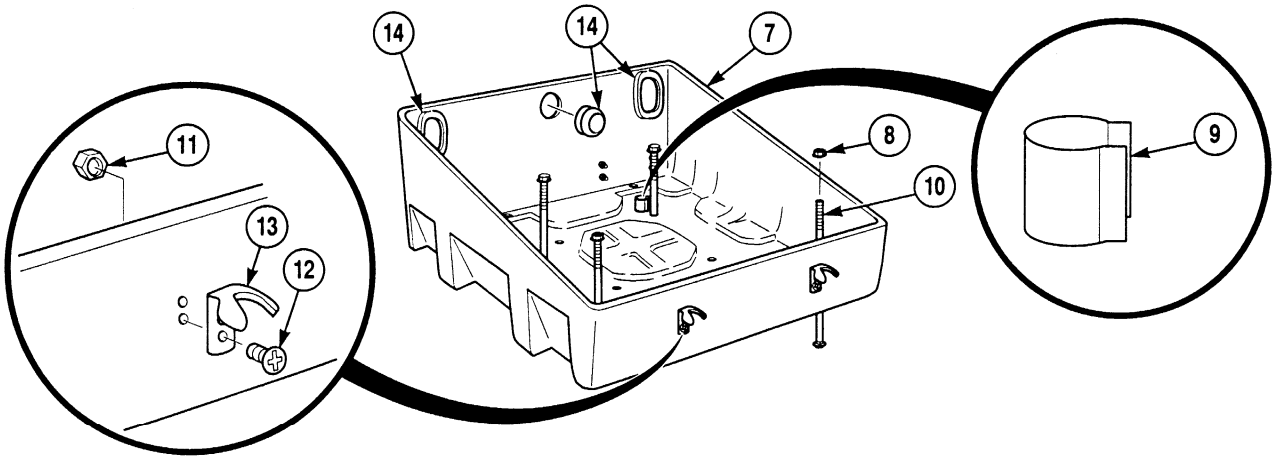
b. Disassembly.

(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.



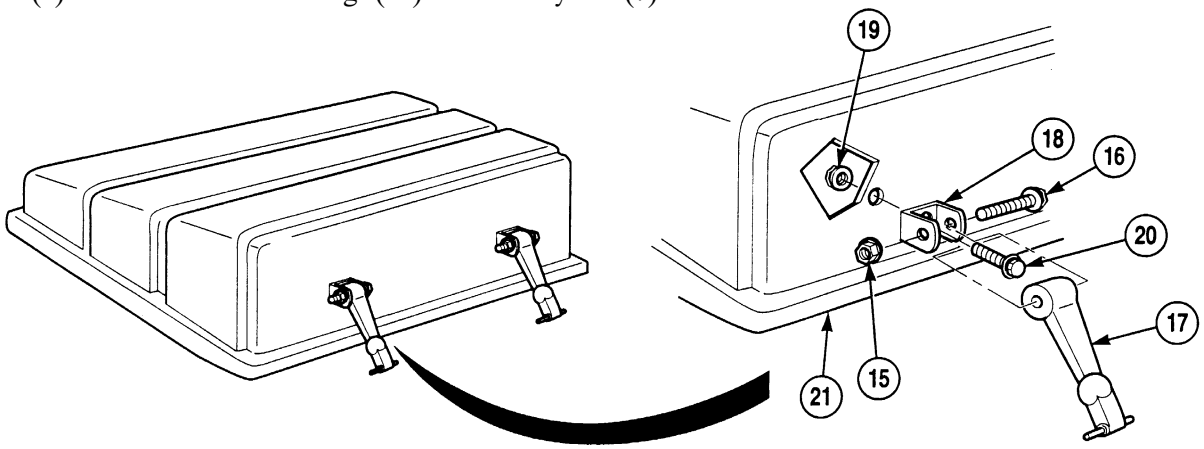
7-89. BATTERY BOX AND SHUNT REPAIR (CONT).



(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.

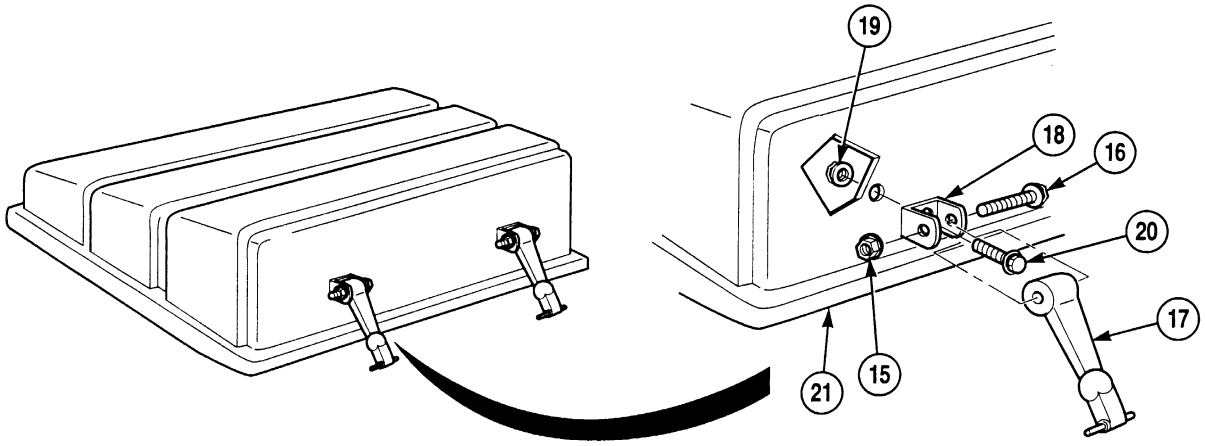
(2) Inspect hook for cracks or deterioration.

(3) Clean battery box with clean cloths and detergent.

(4) Inspect for cracks or breaks.

(5) Replace all damaged parts.

d. Assembly.



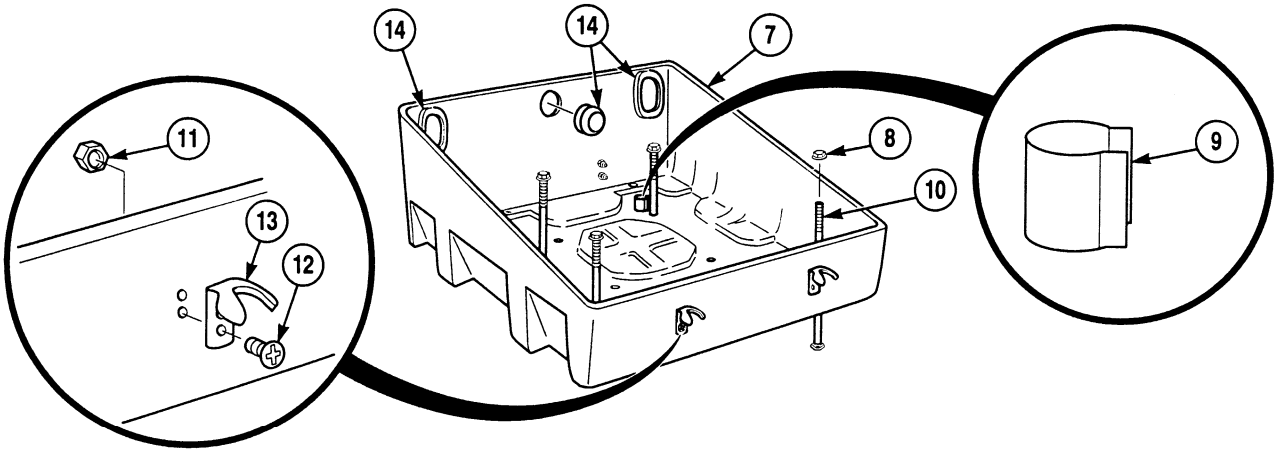
(1) Install hook anchor brackets (18), screws (20) and two locknuts (19) on battery box cover (21).

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.

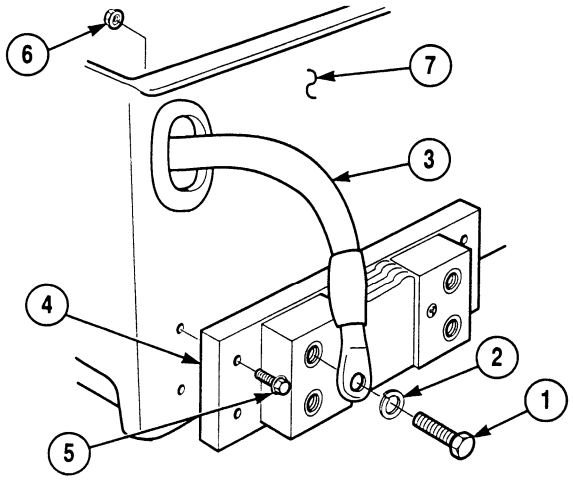
(5) Coat four battery holddown screws (10) excluding the threads with bituminous coating compound.

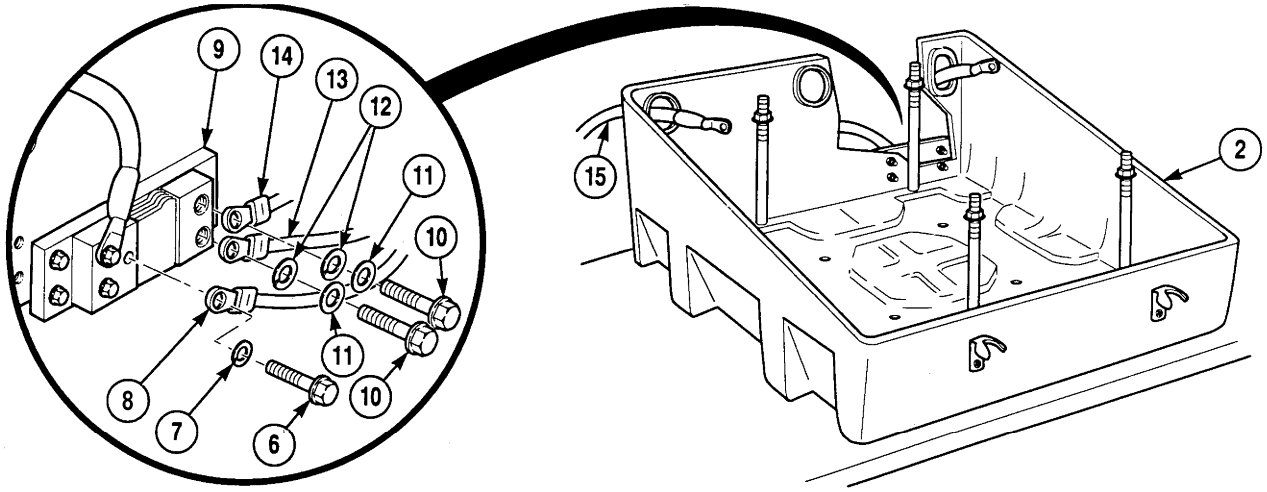
(6) Install four battery holddown screws (10) up through bottom of battery box (7) and four nuts (two on front, two on rear) (8) on screws.

(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.

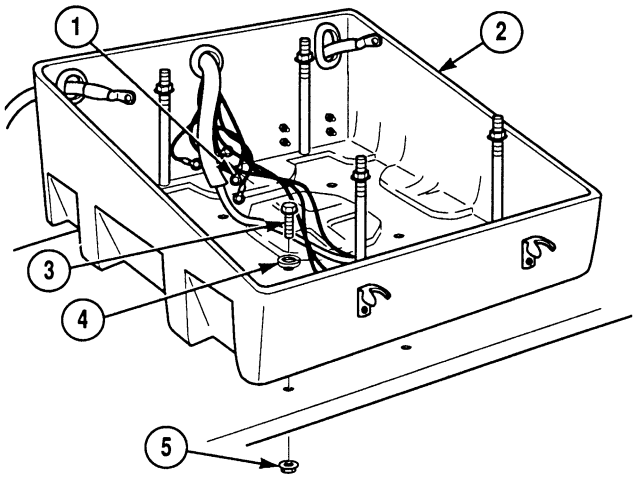
(2) Position wire 1139 (15) in battery box (2).

(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

7-90. BATTERY BOX WIRING 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)
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)

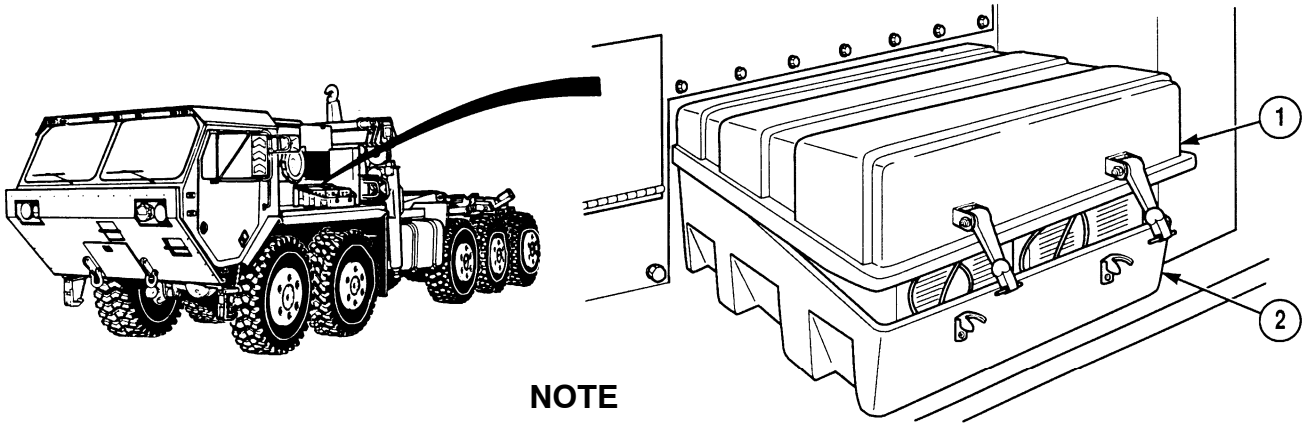
Materials/Parts
Compound, Corrosion Preventive (Item 34, Appendix C)
Rags, Wiping (Item 67, Appendix C)
Sealant, Electrical (Item 68, Appendix C)
Tags, Identification (Item 88, Appendix C)
Lockwasher (8) (Item 169, Appendix F)

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

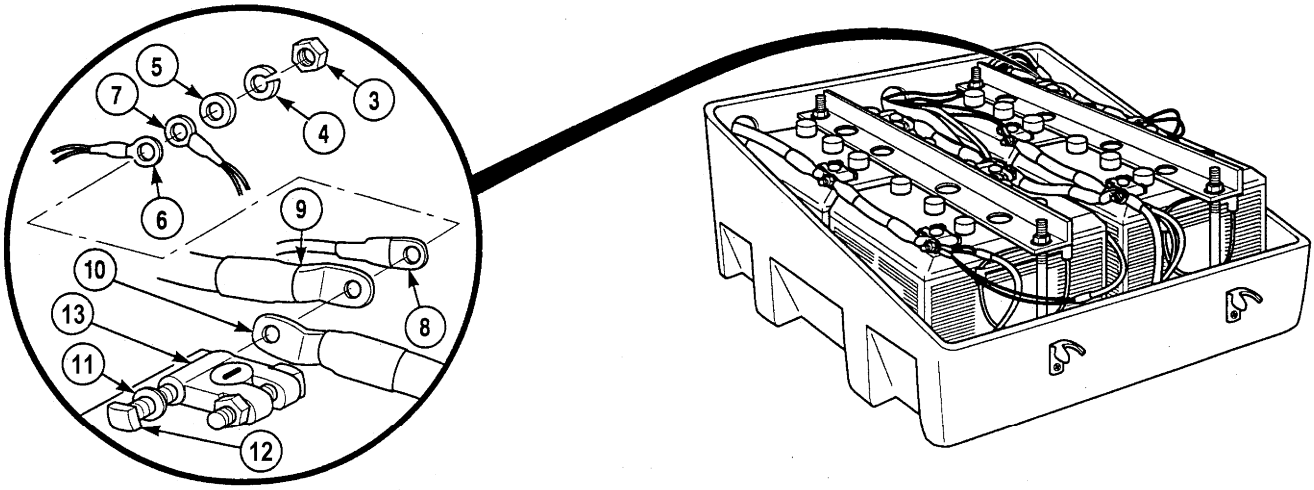
- Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves, and do not smoke when performing maintenance on batteries. Injury will result if acid contacts skin or eyes. Wear rubber apron to prevent clothing being damaged.
- Remove all jewelry such as rings, dog tags,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



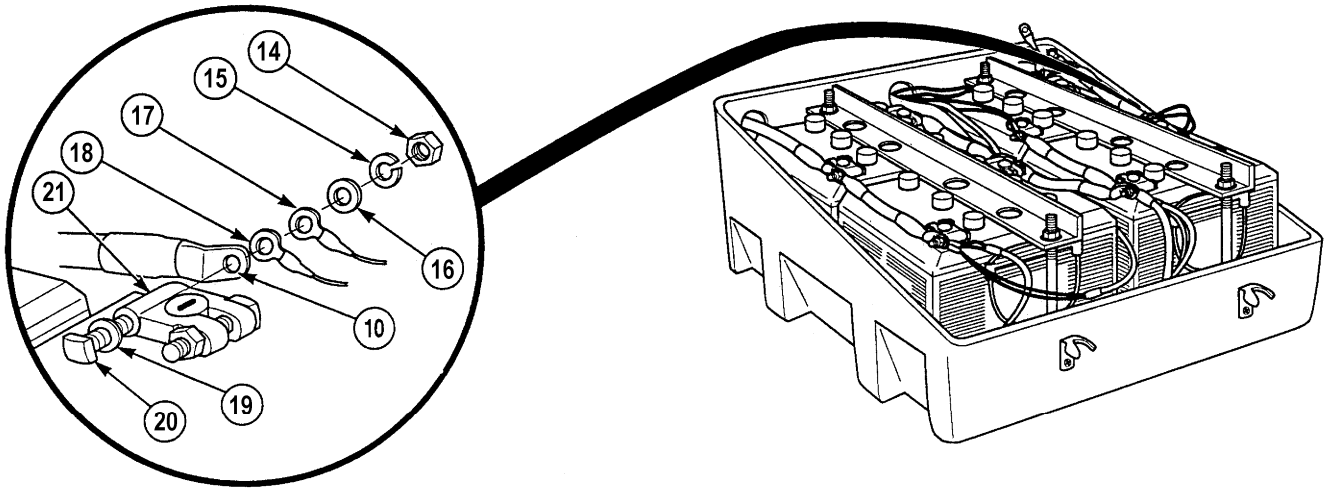
NOTE

Tag and mark wires prior to removal.

(1) Remove battery box cover (1) from battery box (2).

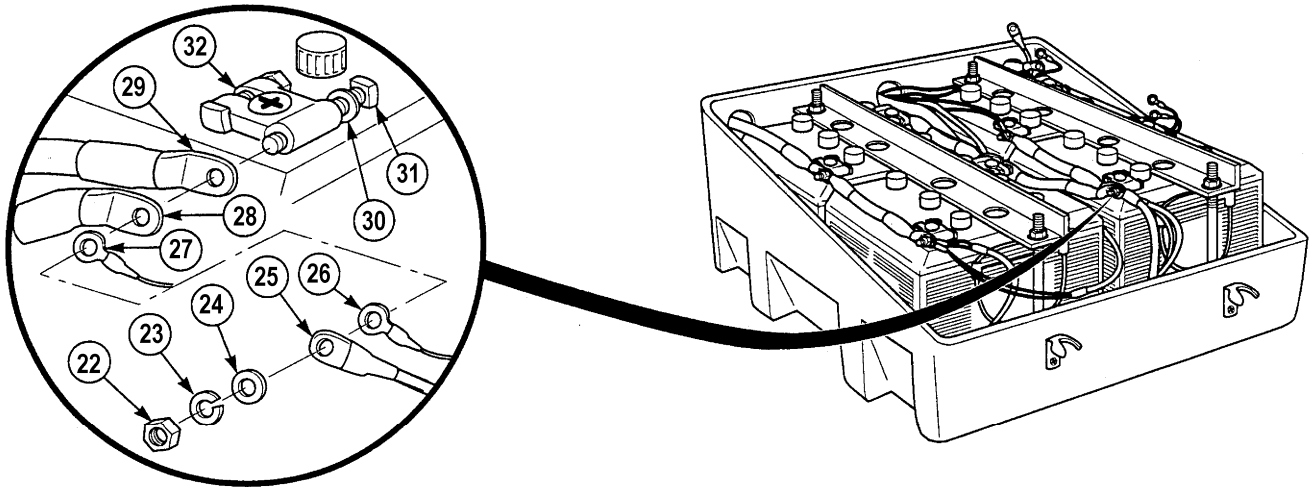


(2) Remove nut (3), lockwasher (4), washer (5), wires 150/150 (6), wires 208/209 (7), wire 1275 (8), cable 1138 (9), cable 1137 (10), washer (11) and screw (12) from negative terminal (13). Discard lockwasher.

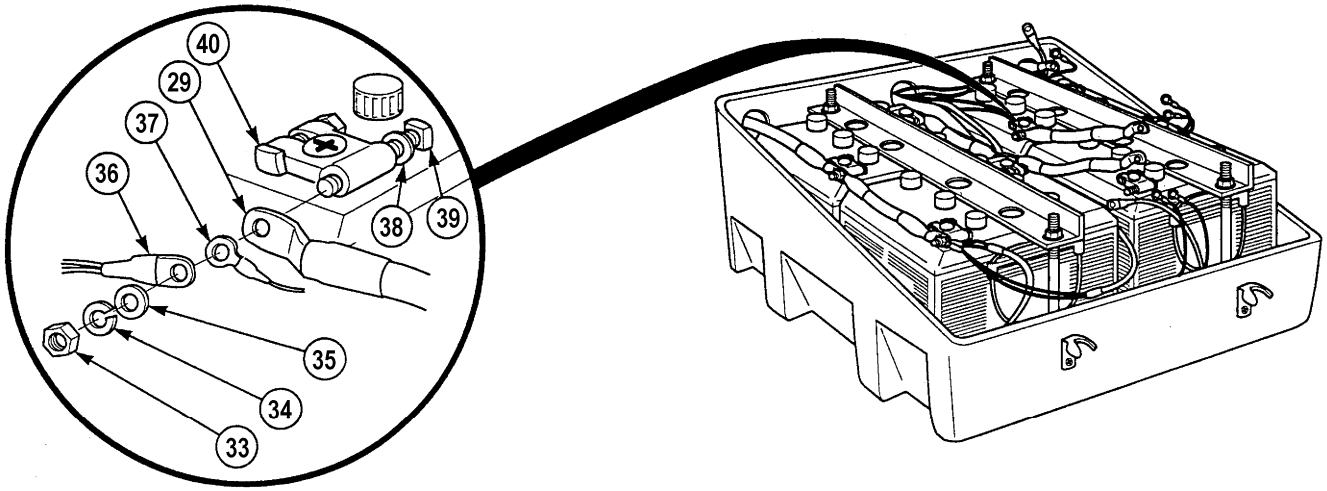


(3) Remove nut (14), lockwasher (15), washer (16), wire 1813 (17), wire 1821 (18), cable 1137 (10), washer (19) and screw (20) from negative terminal (21). Discard lockwasher.

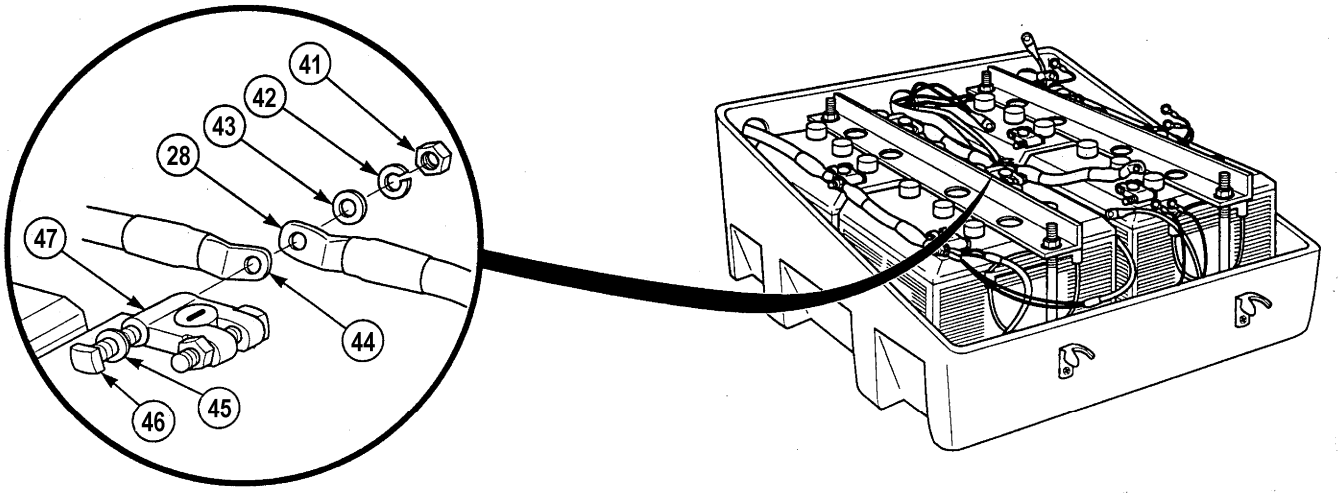
7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).



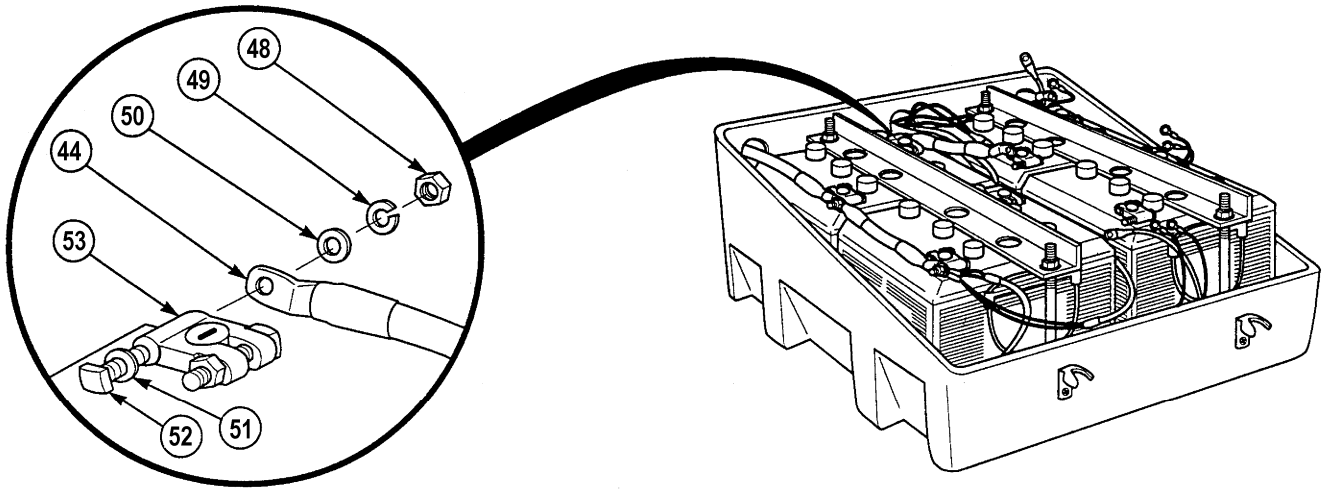
(4) Remove nut (22), lockwasher (23), washer (24), wire 1566 (25), wire 1866 (26), wire 1075 (27), cable 1137 (28), cable 1137 (29), washer (30) and screw (31) from positive terminal (32). Discard lockwasher.



(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.

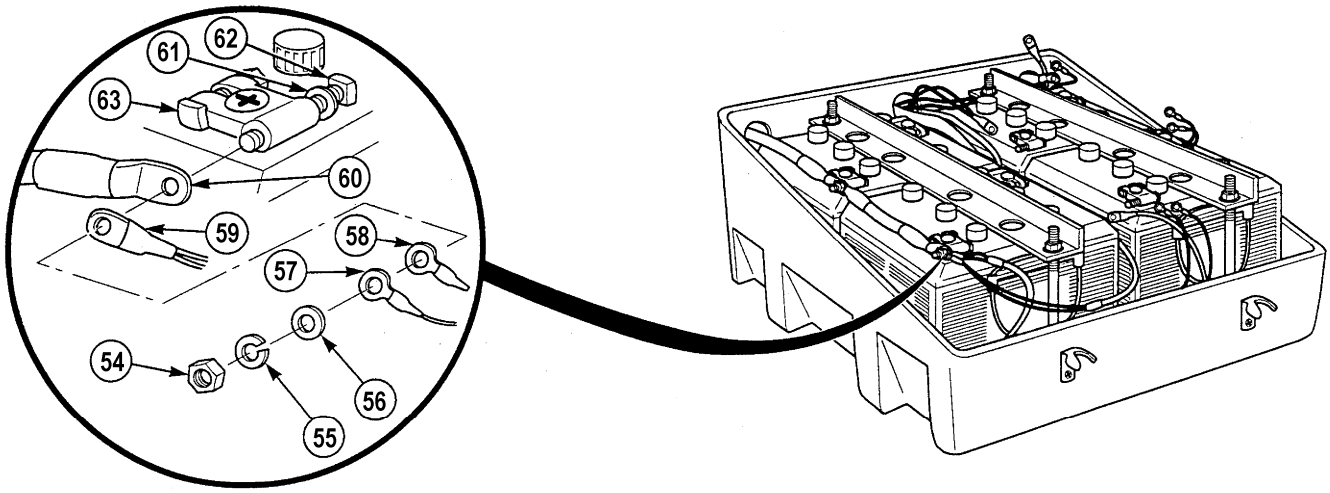


(6) Remove nut (41), lockwasher (42), washer (43), cable 1137 (28), cable 1137 (44), washer (45) and screw (46) from negative terminal (47). Discard lockwasher.

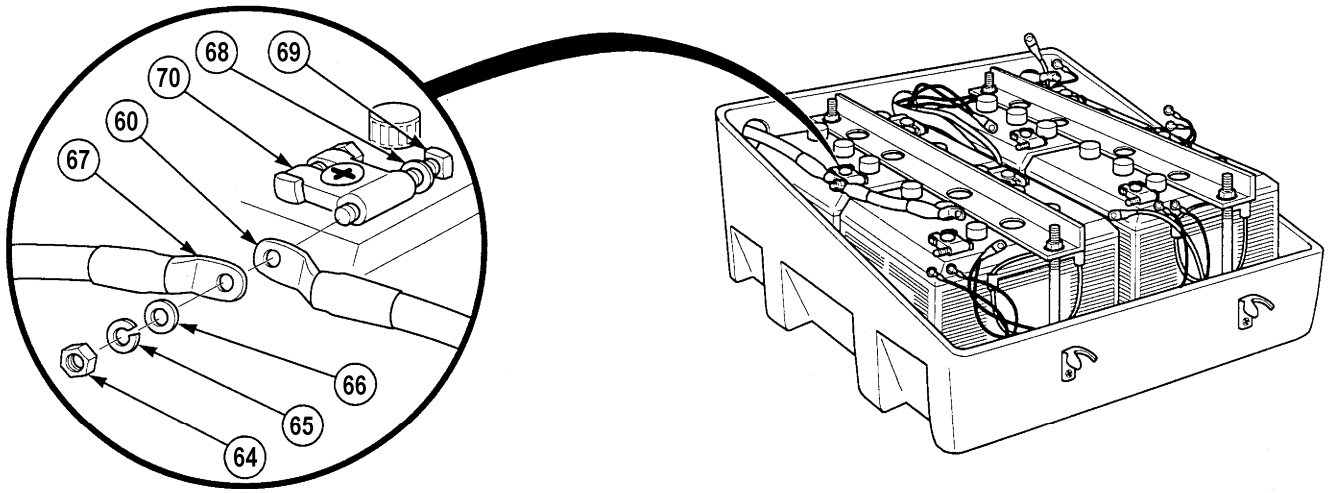


(7) Remove nut (48), lockwasher (49), washer (50), cable 1137 (44), washer (51) and screw (52) from negative terminal (53). Discard lockwasher.

7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).



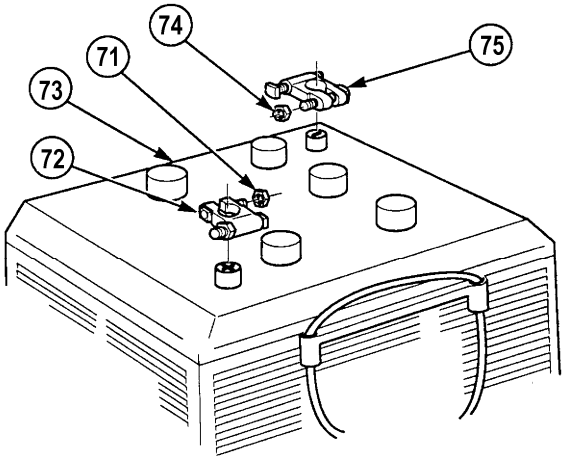
(8) Remove nut (54), lockwasher (55), washer (56), wire 1814 (57), wire 1822 (58), wires 1431/1431 (59), cable 1137 (60), washer (61) and screw (62) from positive terminal (63). Discard lockwasher.

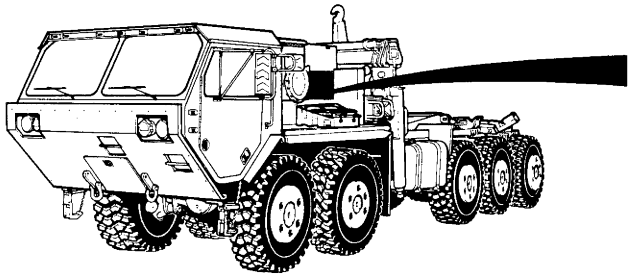


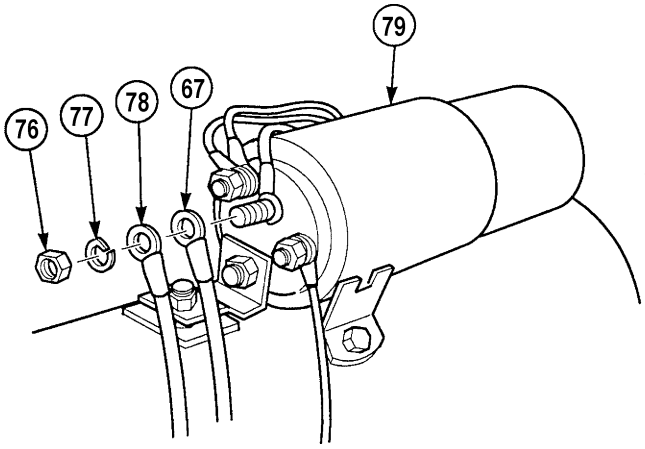
(9) Remove nut (64), lockwasher (65), washer (66), cable 1139 (67), cable 1137 (60), washer (68) and screw (69) from positive terminal (70). Discard lockwasher.

(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).

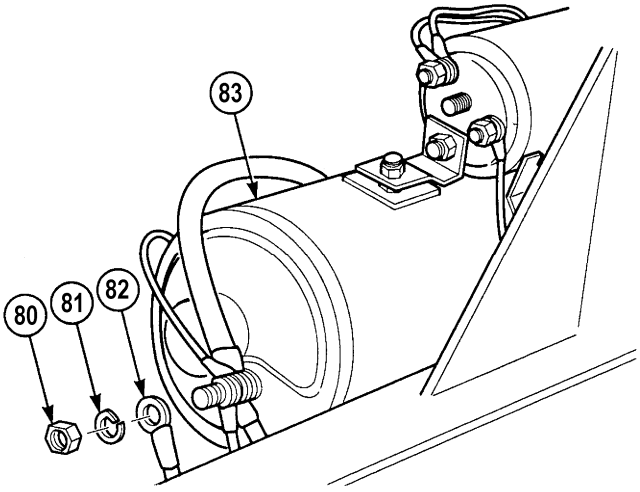




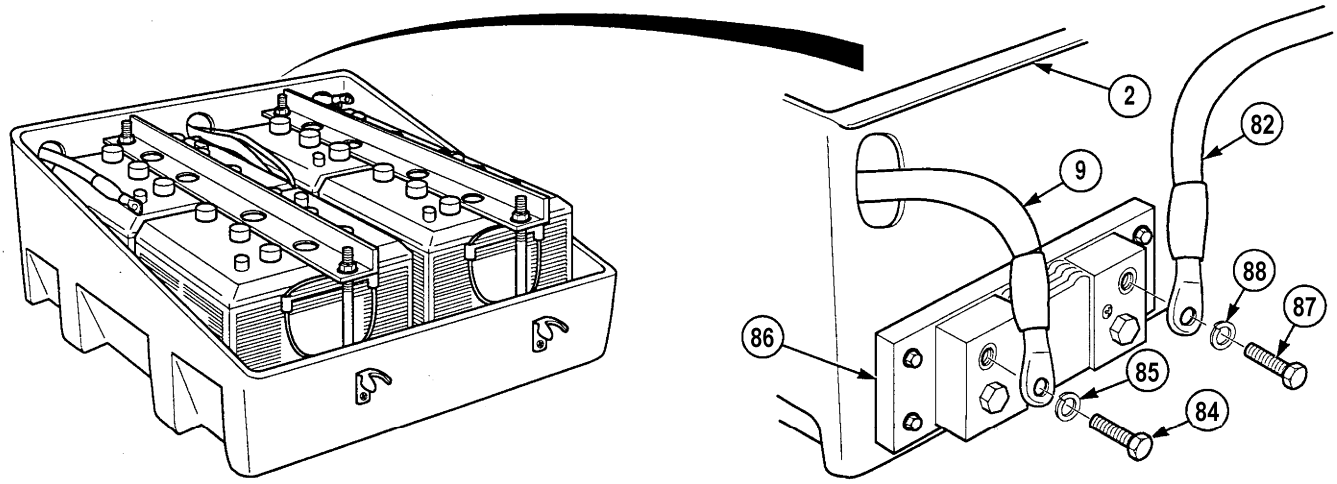


(12) Remove nut (76), lockwasher (77), cable 1155 (78) and cable 1139 (67) from starter solenoid (79).

(13) Remove nut (80), lockwasher (81) and cable 1138 (82) from starter (83).

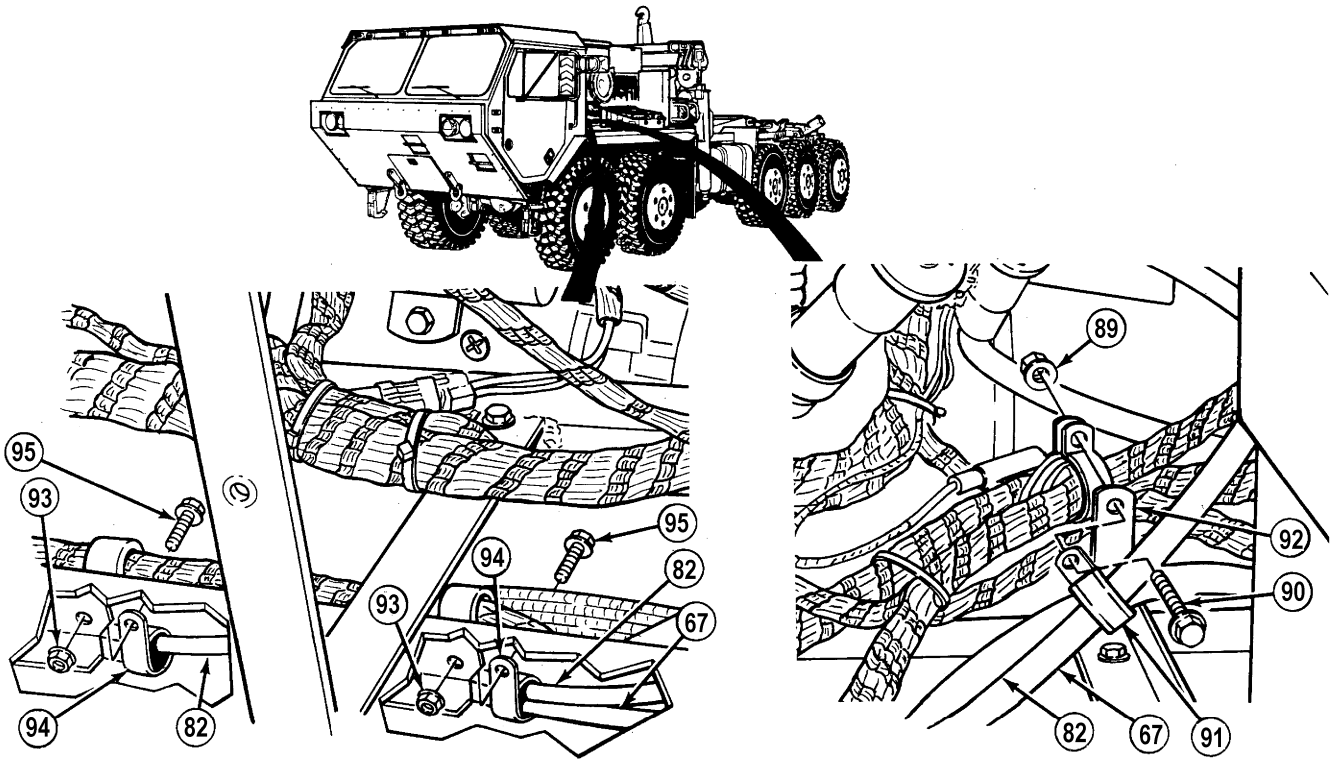


7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).



(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).

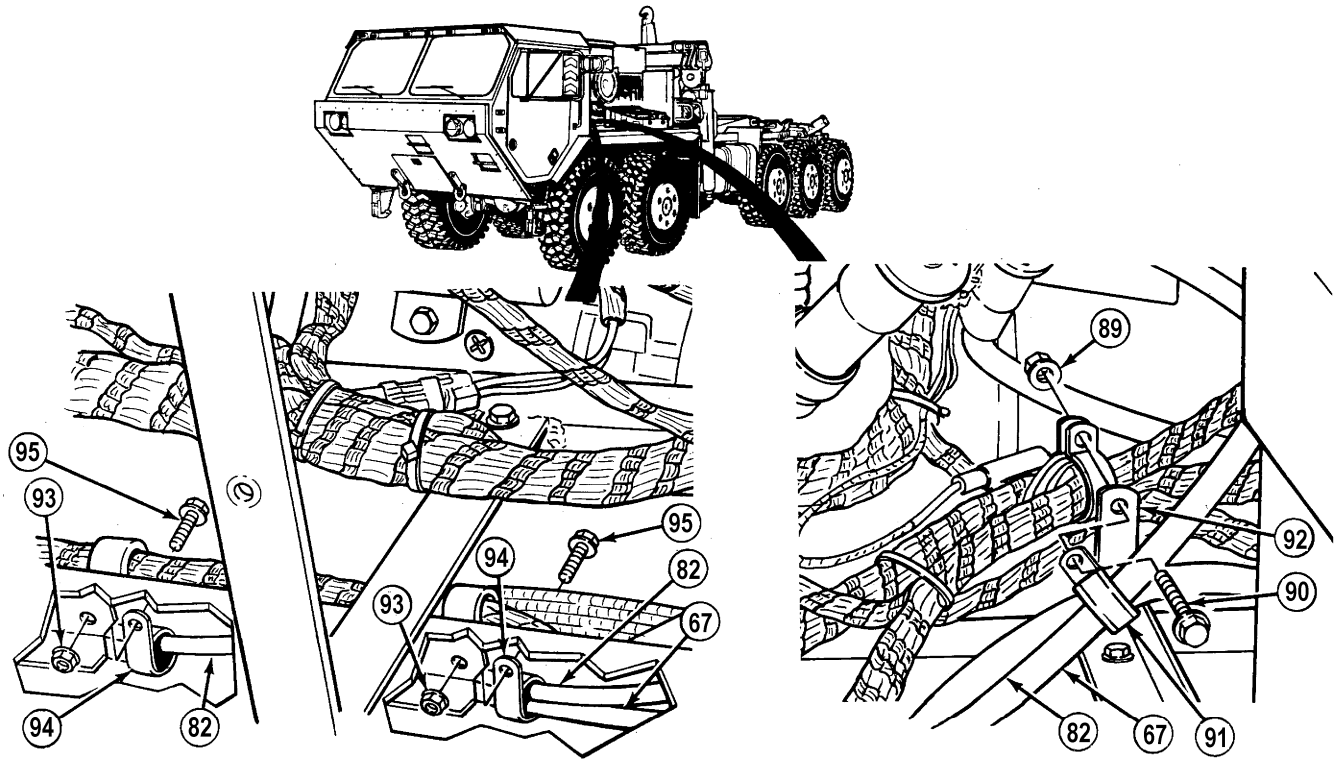


(16) Remove locknut (89), screw (90) and cushion clip (91) from bracket (92).

(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.

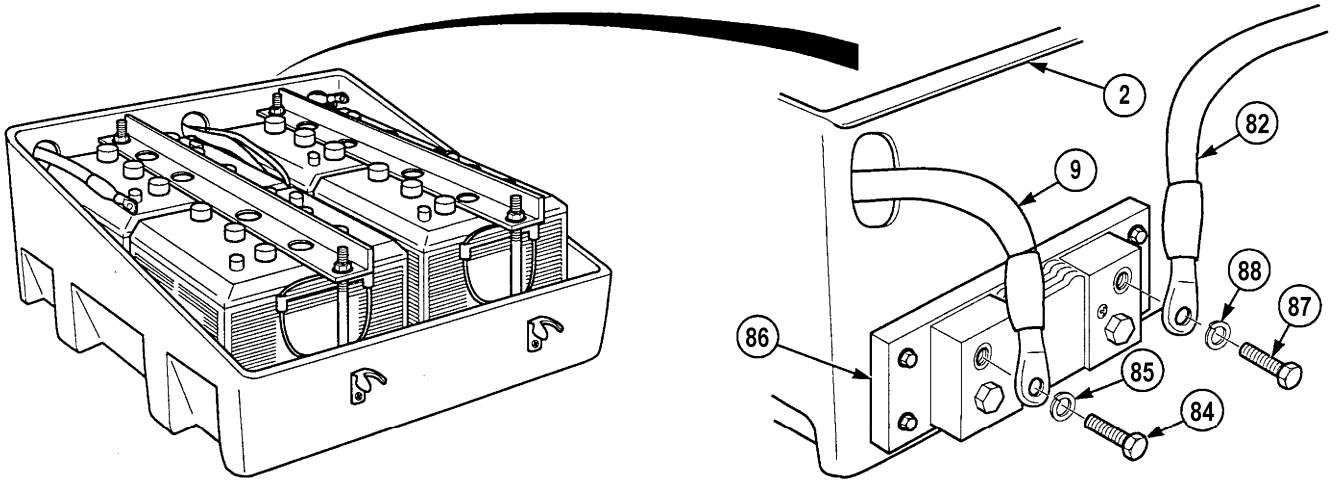


NOTE

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).

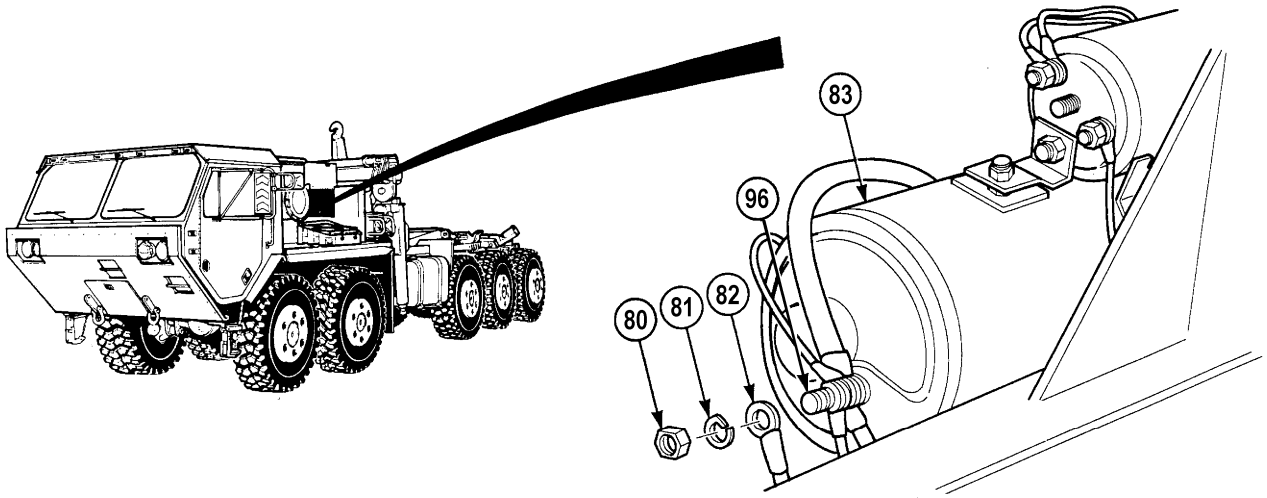
(2) Install two cables 1139 (67) and 1138 (82) to bracket (92) with cushion clip (91), screw (90) and locknut (89).



(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).

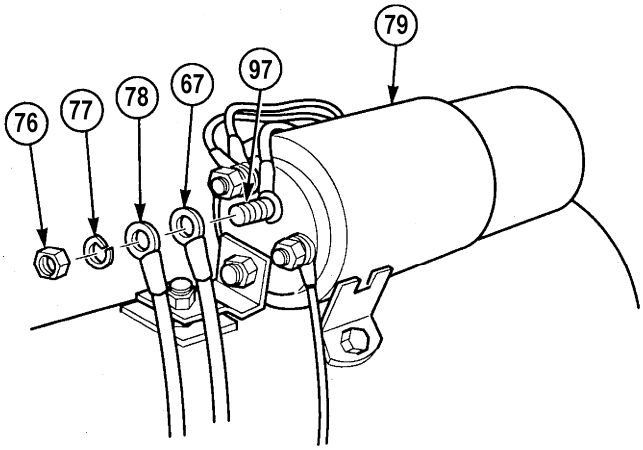


(5) Install cable 1138 (82) to starter (83) with lockwasher (81) and nut (80).

(6) Install cable 1139 (67) and cable 1055 (78) to starter solenoid (79) with lockwasher (77) and nut (76).

WARNING

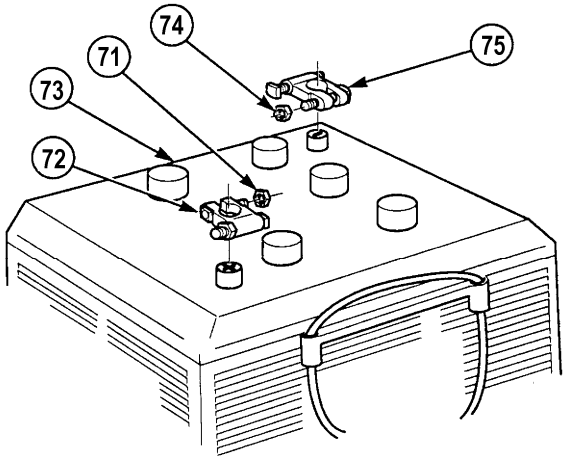
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

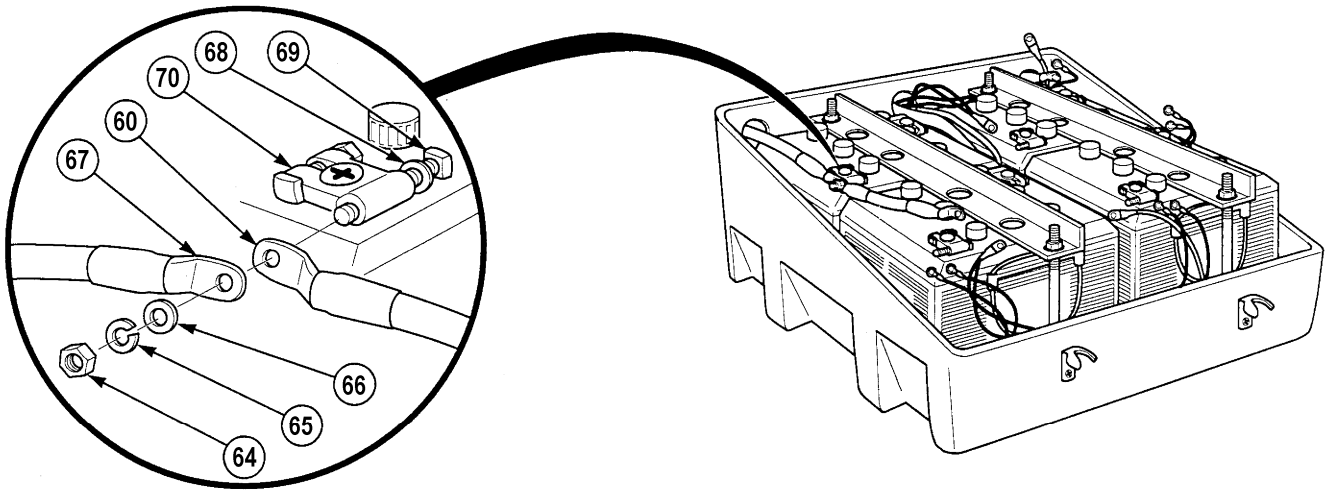


(7) Apply electrical sealant to terminals (96) and (97) of starter (83) and starter solenoid (79).

(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).



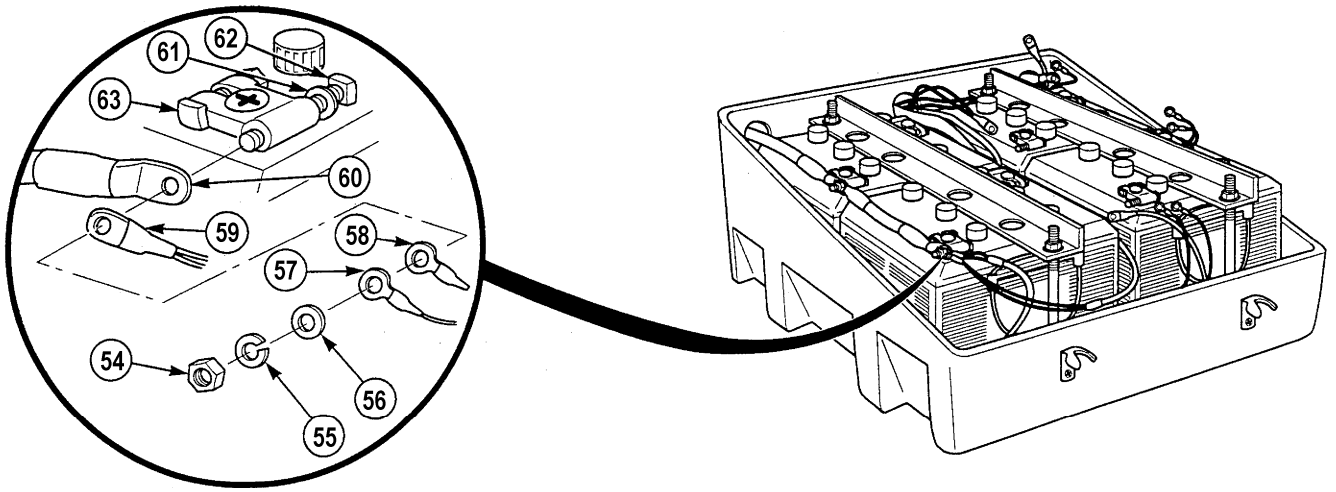


(10) Position screw (69), washer (68), cable 1137 (60), cable 1139 (67), washer (66), lockwasher (65) and nut (64) on positive terminal (70).

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).



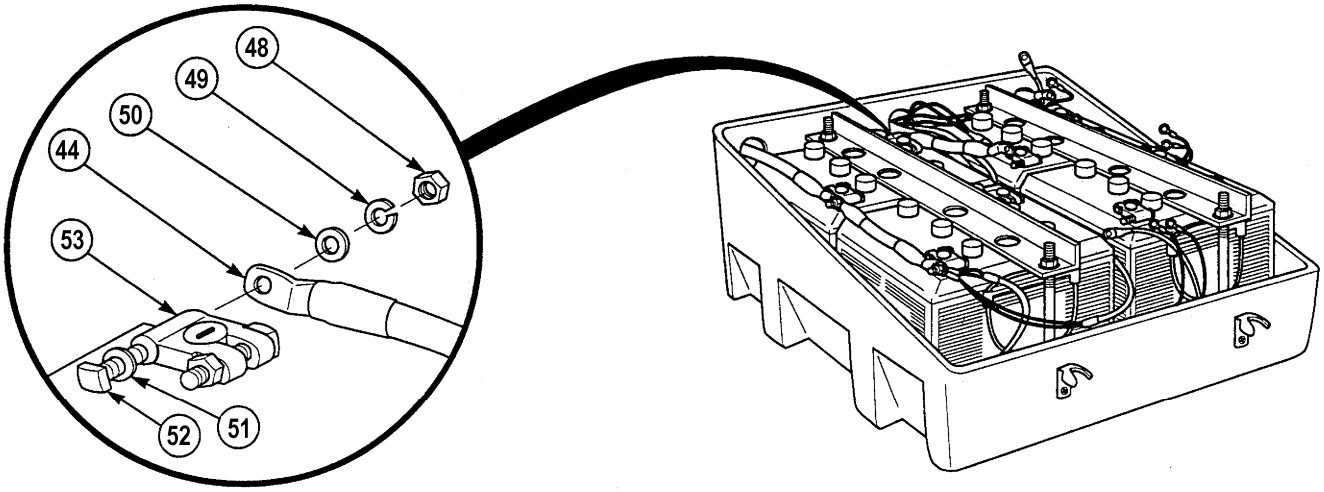
(12) Position screw (62), washer (61), cable 1137 (60), wires 1431/1431 (59), wire 1822 (58), wire 1814 (57), washer (56), lockwasher (55) and nut (54) on positive terminal (63).

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).

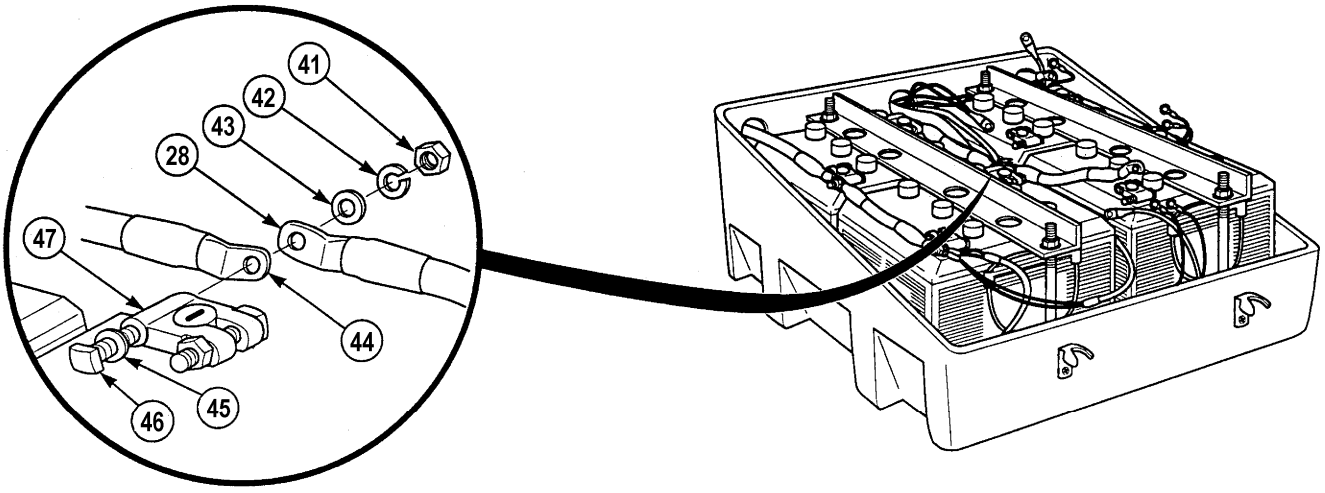


(14) Position screw (52), washer (51), cable 1137 (44), washer (50), lockwasher (49) and nut (48) on negative terminal (53).

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).

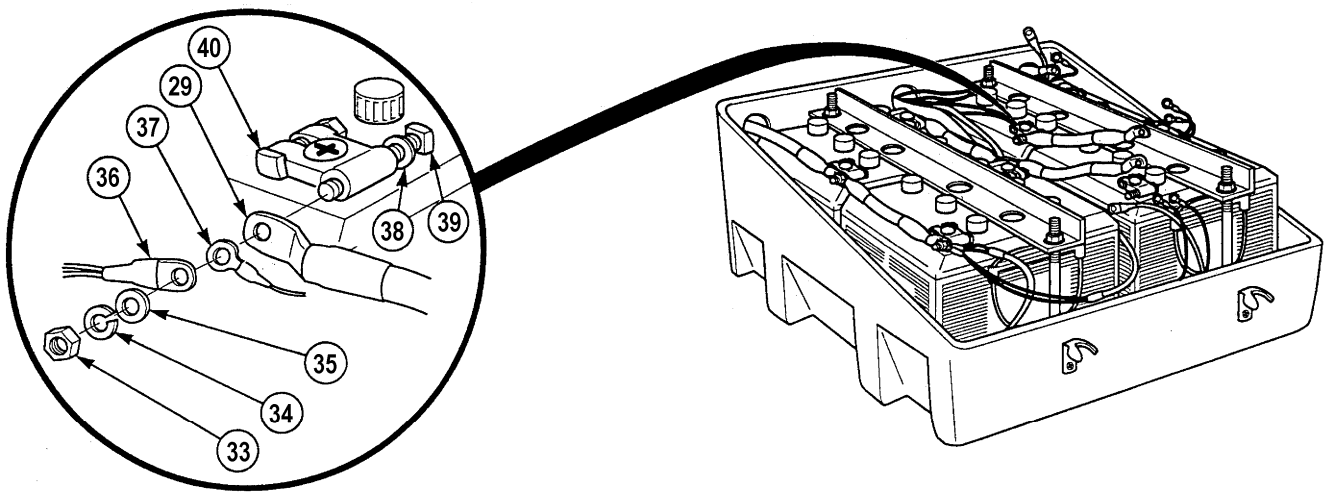


(16) Position screw (46), washer (45), cable 1137 (44), cable 1137 (28), washer (43), lockwasher (42) and nut (41) on negative terminal (47).

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).

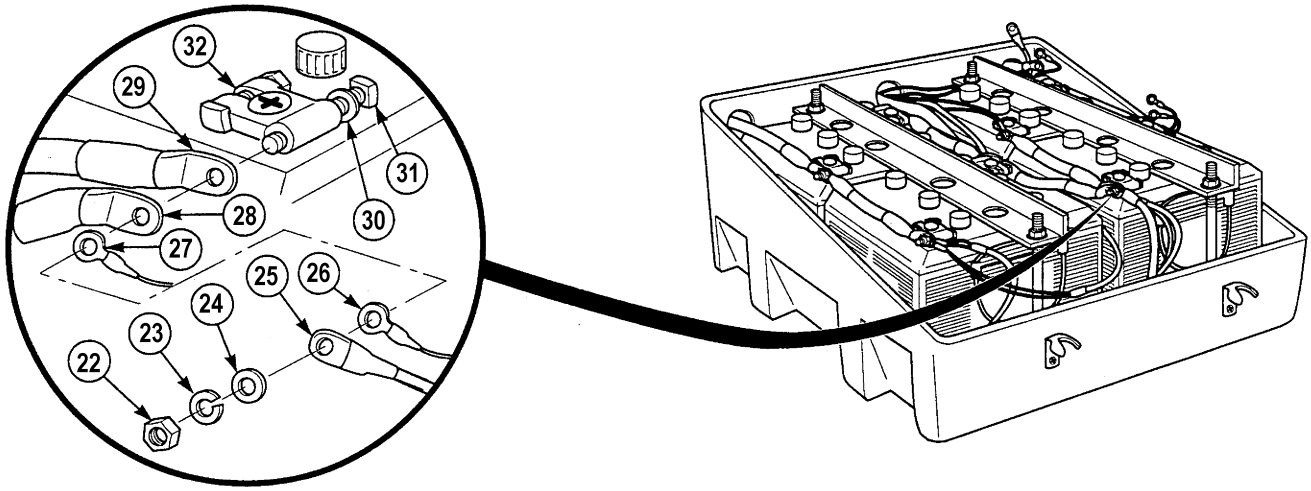


(18) Position screw (39), washer (38), cable 1137 (29), wire 1079 (37), wires 240/241 (36), washer (35), lockwasher (34) and nut (33) on positive terminal (40).

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).



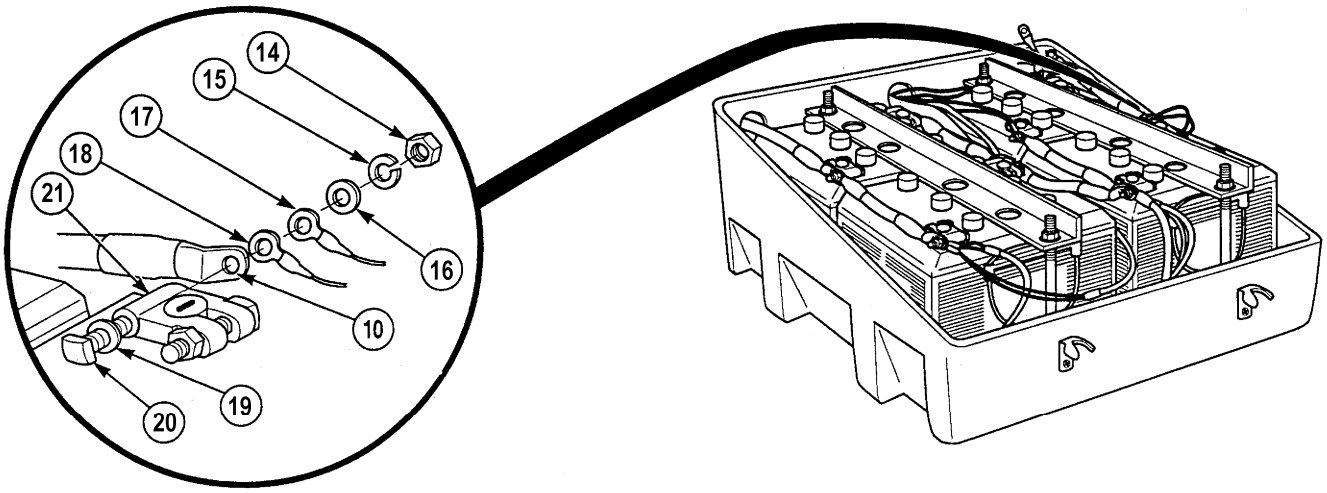
(20) Position screw (31), washer (30), cable 1137 (29), cable 1137 (28), wire 1075 (27), wire 1866 (2622), wire 1566 (25), washer (24), lockwasher (23) and nut (22) on positive terminal (32).

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).

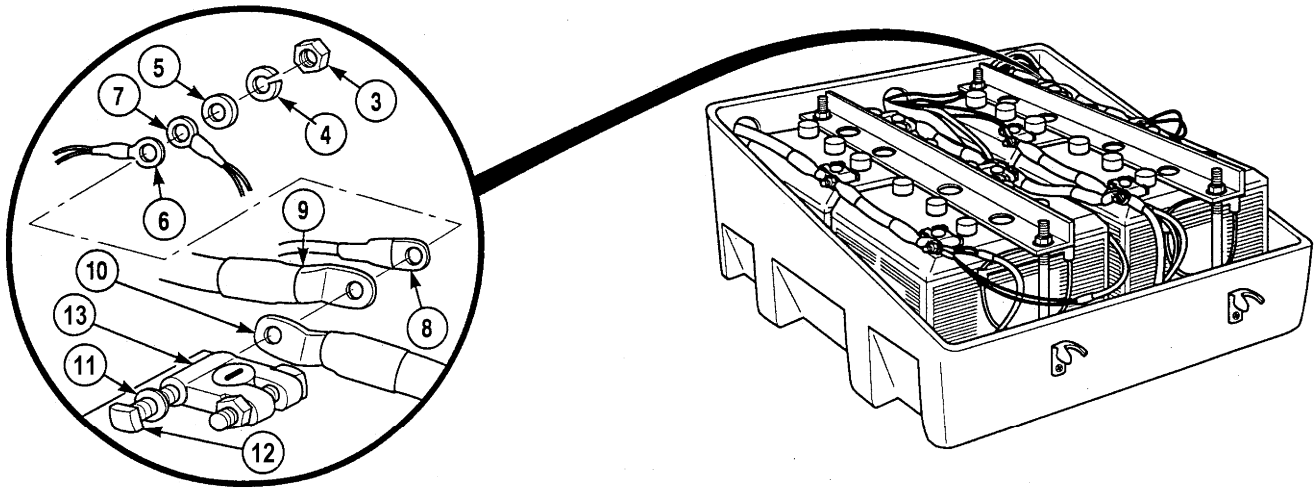


(22) Position screw (20), washer (19), cable 1137 (10), wire 1821 (18), wire 1813 (17), washer (16), lockwasher (15) and nut (14) on negative terminal (21).

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).

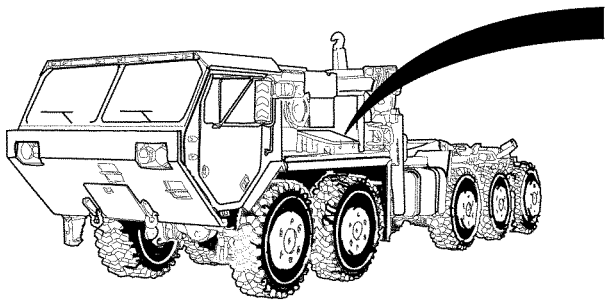


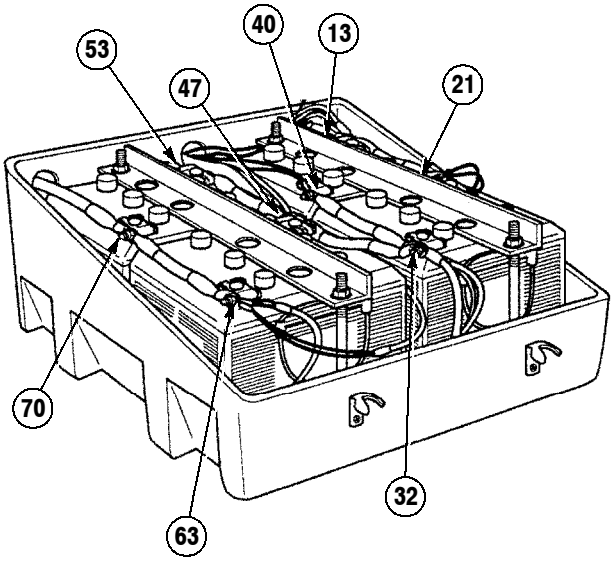
(24) Position screw (12), washer (11), cable 1138 (10), cable 1137 (9), wire 1275 (8), wires 150/150 (6), wires 208/209 (6), washer (5), lockwasher (4) and nut (3) on negative terminal (13).

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).



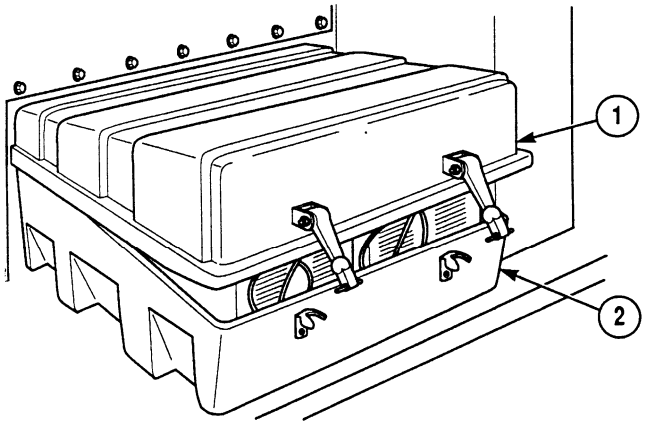


WARNING

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

7-91. BATTERY BOX WIRING 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)
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
Compound, Corrosion Preventive (Item 34, Appendix C)
Rags, Wiping (Item 67, Appendix C)

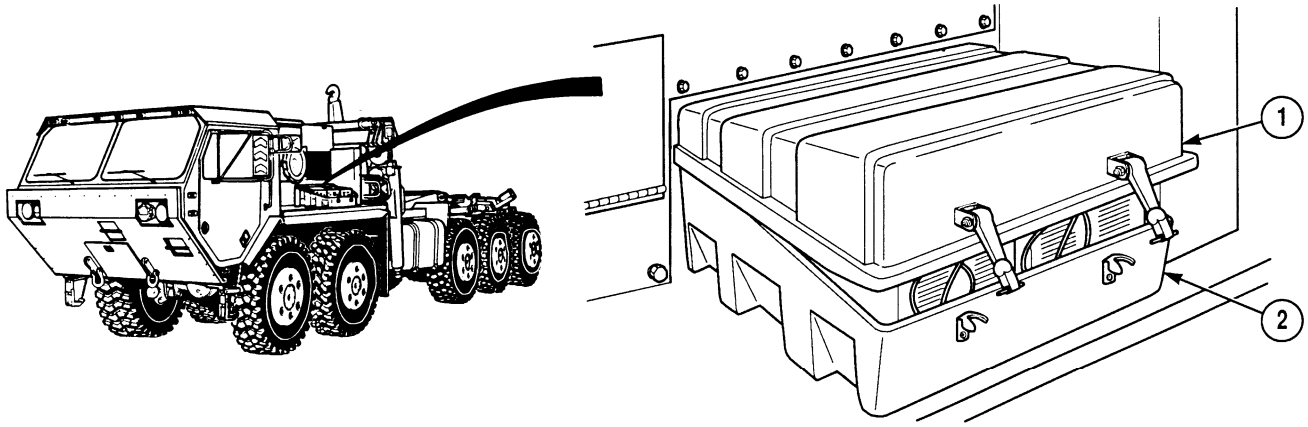
Materials/Parts - Continued
Sealant, Electrical (Item 68, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (3) (Item 106, Appendix F)
Lockwasher (8) (Item 169, Appendix F)
Lockwasher (2) (Item 192, Appendix F)
Lockwasher (2) (Item 199, Appendix F)

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

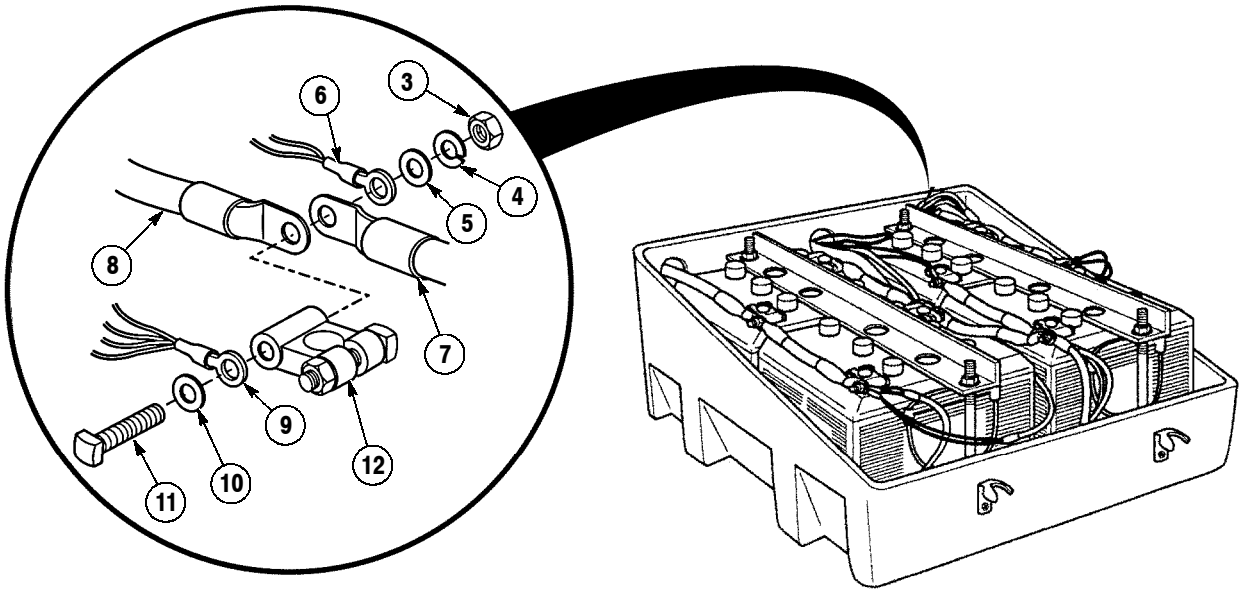
- Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves, and do not smoke when performing maintenance on batteries. Injury will result if acid contacts skin or eyes. Wear rubber apron to prevent clothing being damaged.
- Remove all jewelry such as rings, dog tags,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



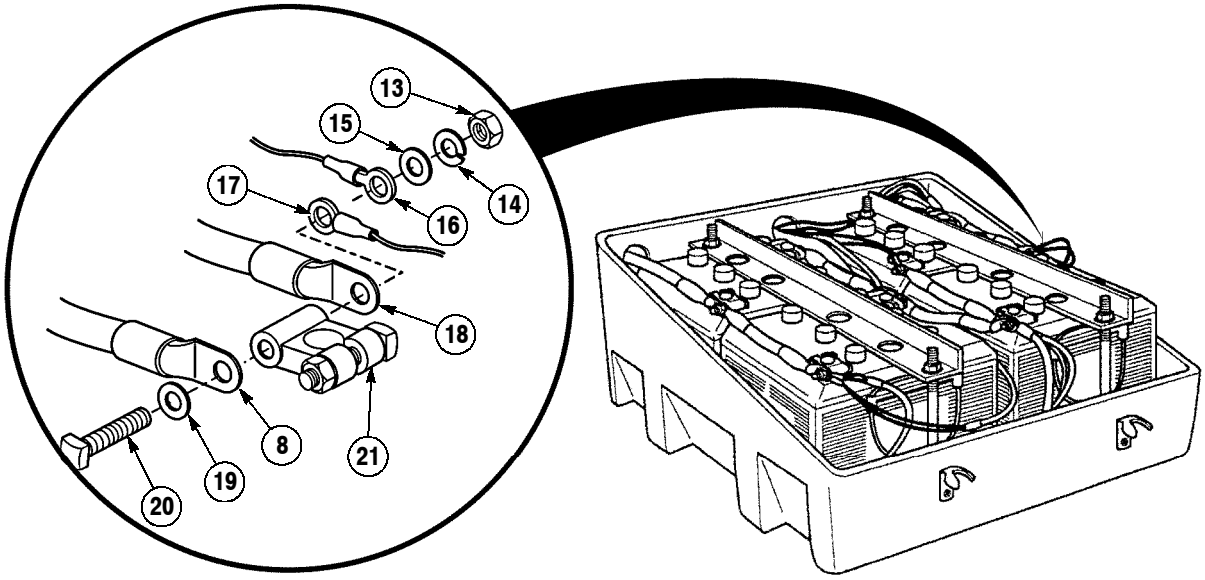
NOTE

Tag and mark wires prior to removal.

(1) Remove battery box cover (1) from battery box (2).



(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.

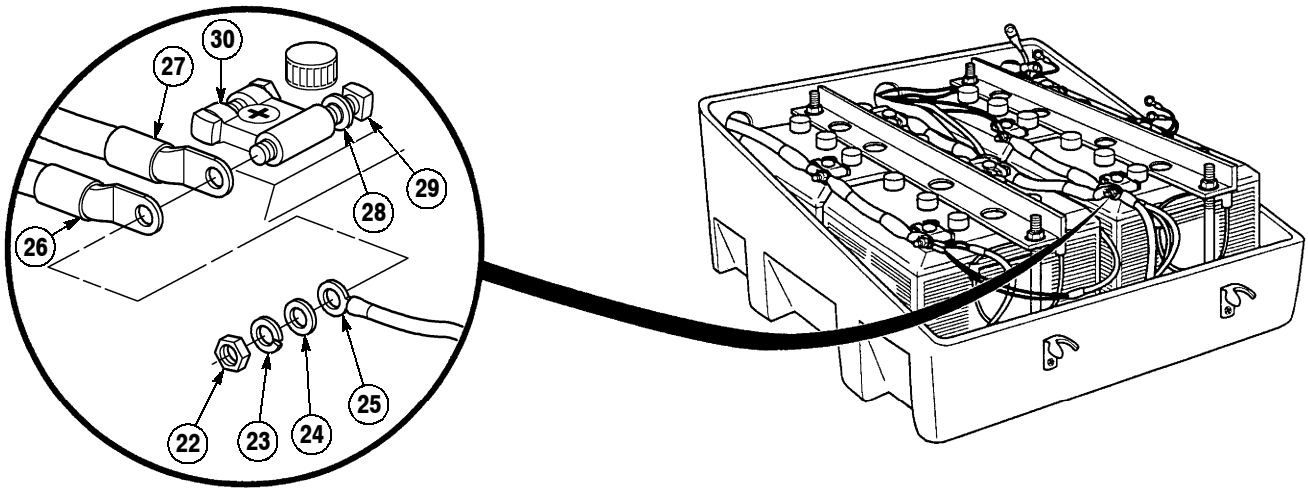


NOTE

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.

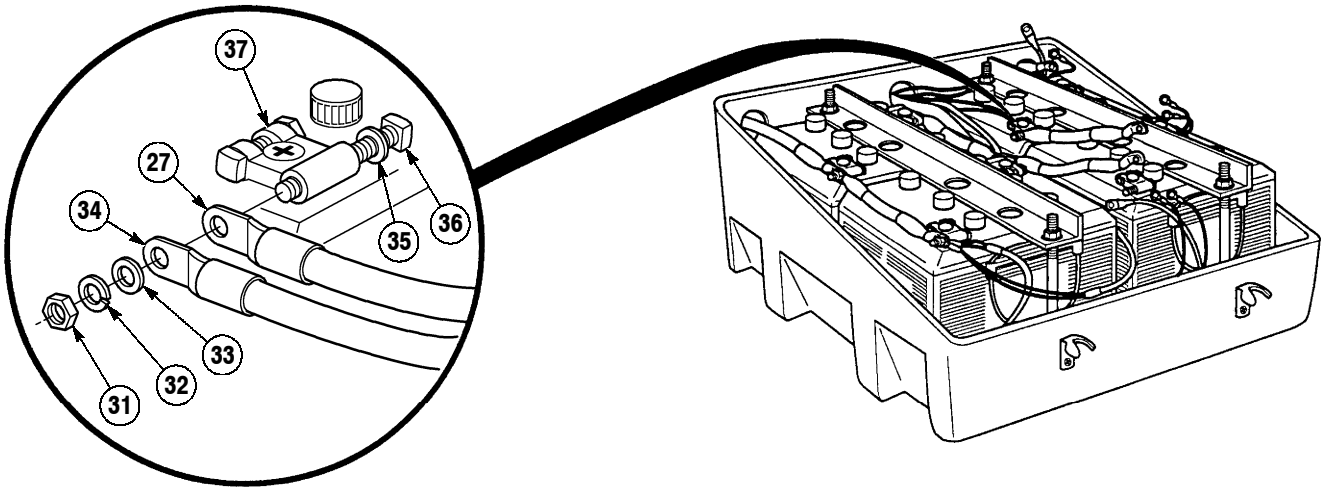
7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).



NOTE

On trucks equipped with battery disconnect switch, cable 1566 is removed in Step (5).

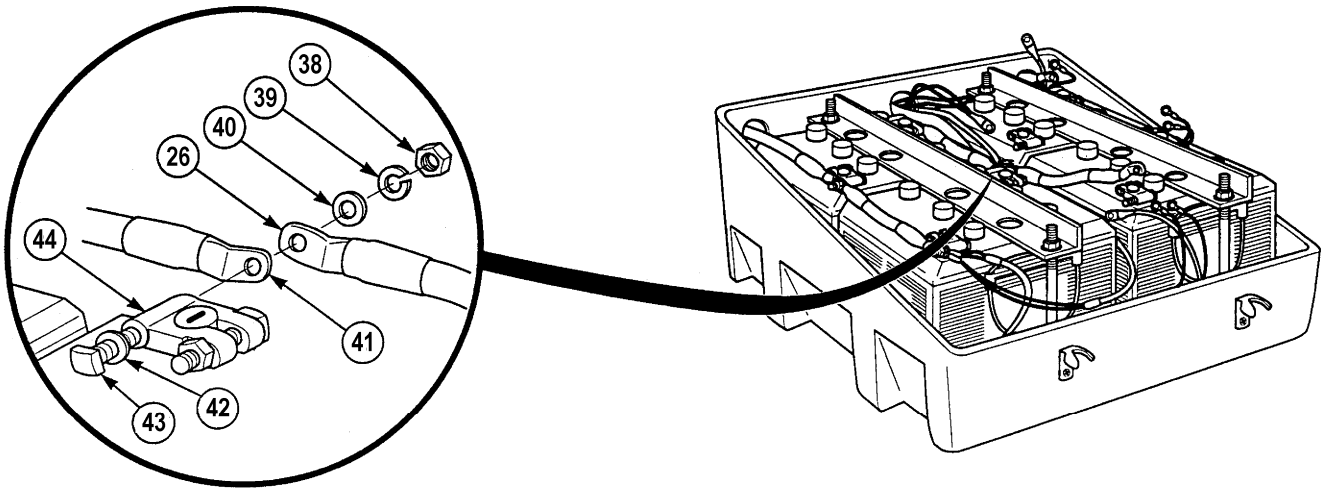
(4) Remove nut (22), lockwasher (23), washer (24), cable 1566 (25), cable 1137 (26), cable 1137 (27), washer (28) and screw (29) from positive terminal (30). Discard lockwasher.



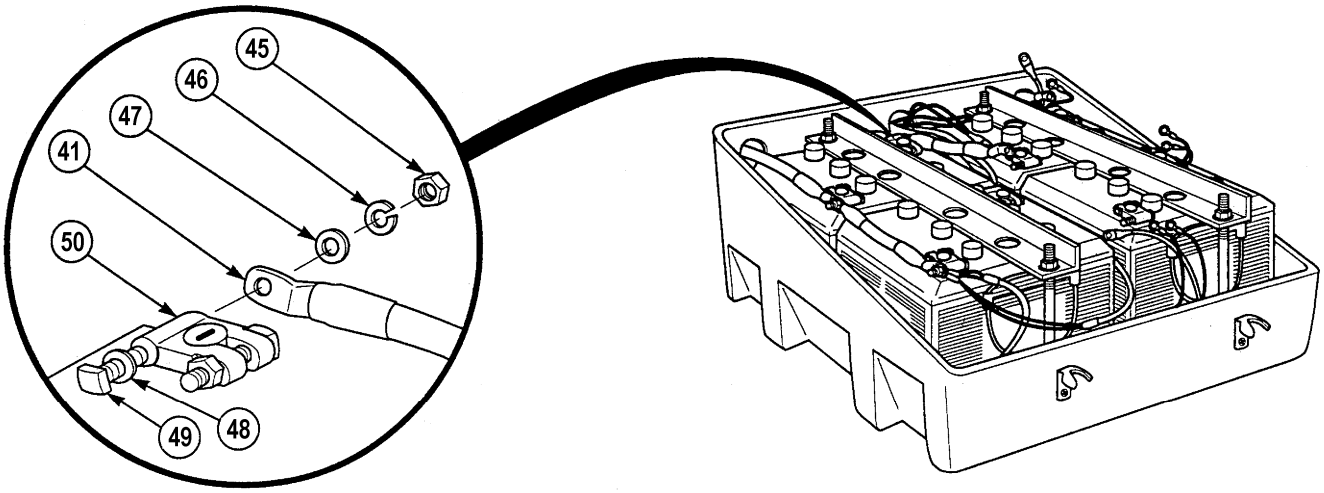
NOTE

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.

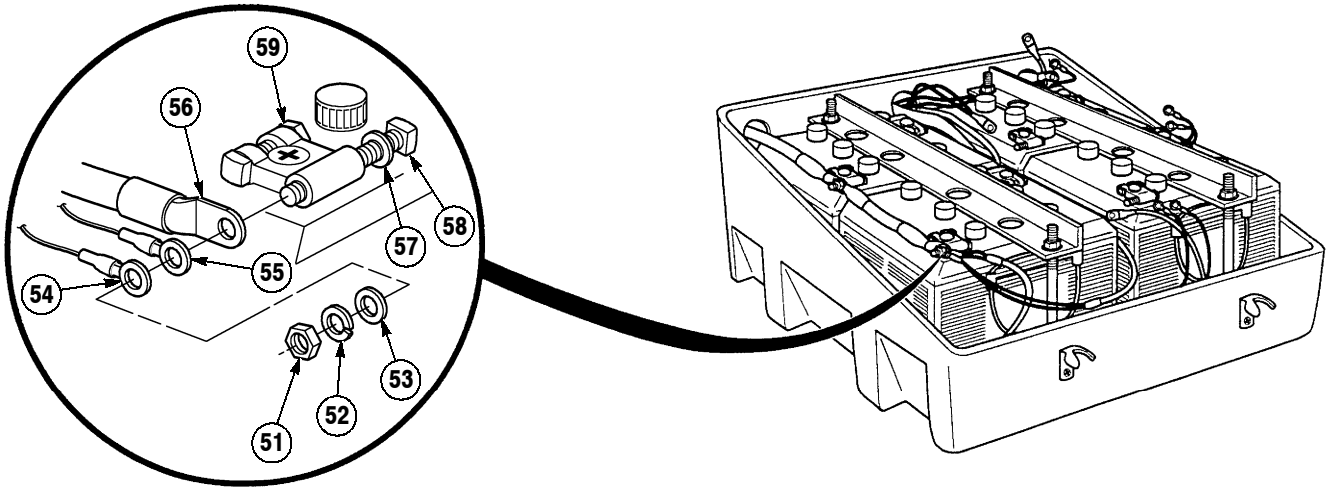


(6) Remove nut (38), lockwasher (39), washer (40), cable 1137 (26), cable 1137 (41), washer (42) and screw (43) from negative terminal (44). Discard lockwasher.

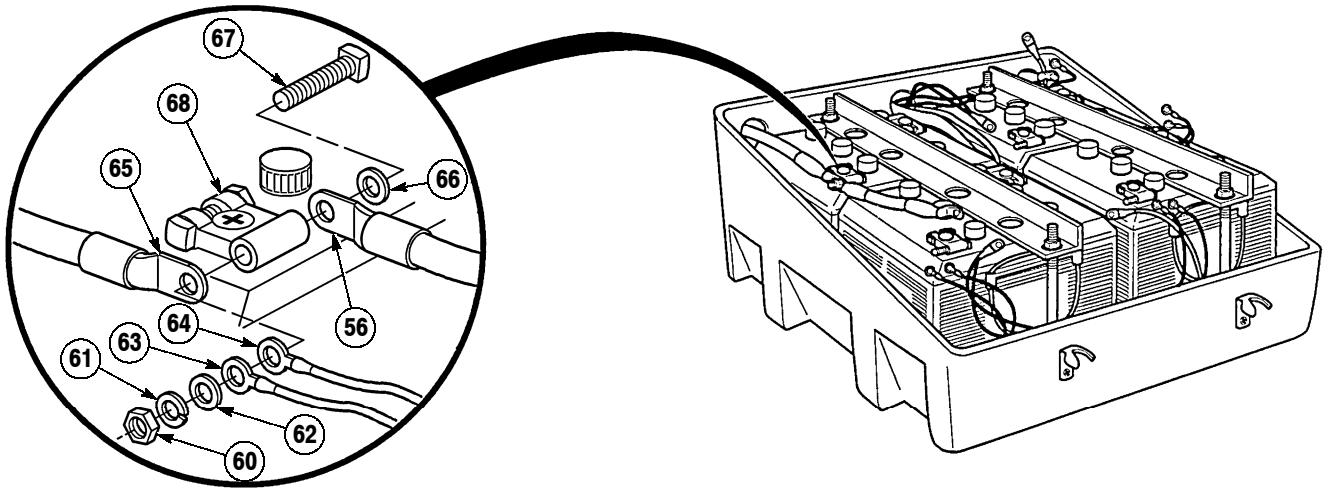


(7) Remove nut (45), lockwasher (46), washer (47), cable 1137 (41), washer (48) and screw (49) from negative terminal (50). Discard lockwasher.

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.



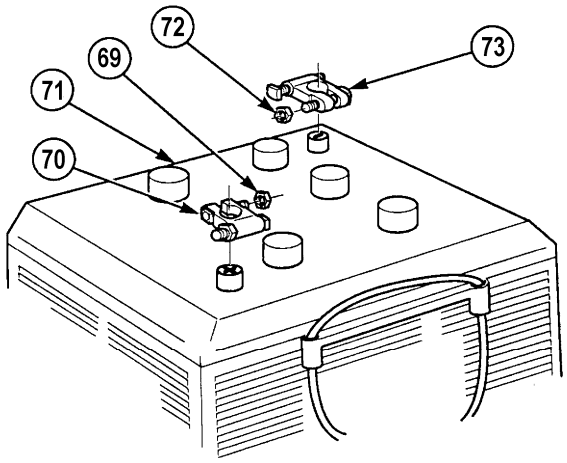
NOTE

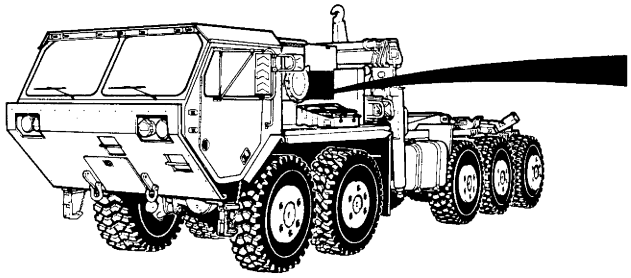
If truck is equipped with battery disconnect switch, there will only be one cable 1281A to remove.

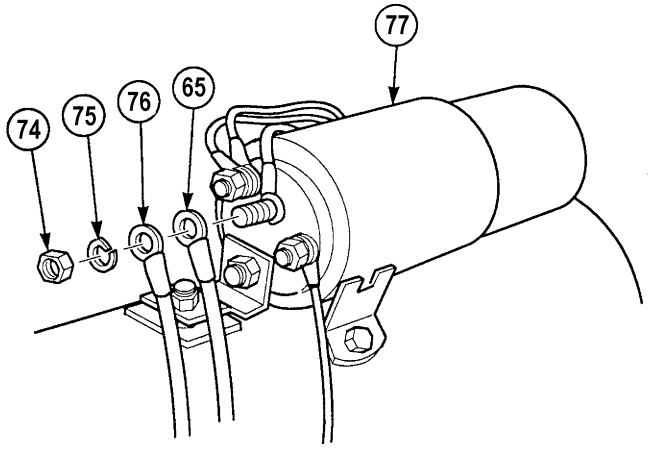
(9) Remove nut (60), lockwasher (61), washer (62), cable 1281A (63), cable 1281A (64), cable 1139 (65), cable 1137 (56), washer (66) and screw (67) from positive terminal (68). Discard lockwasher.

(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).

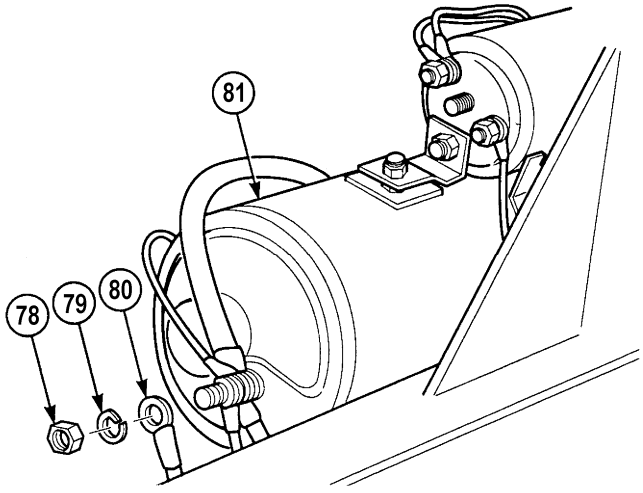




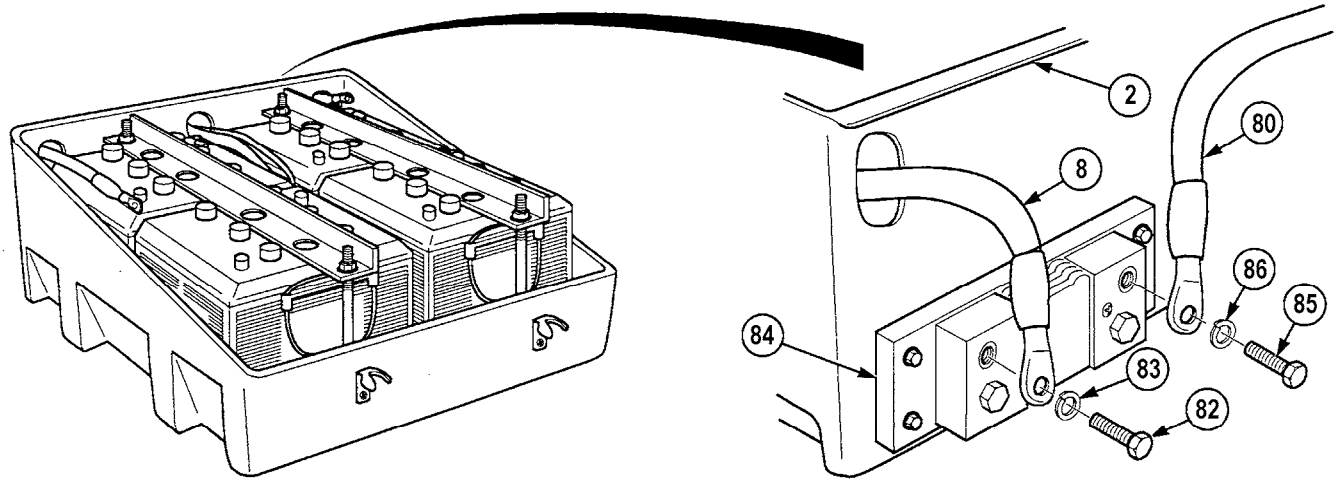


(12) Remove nut (74), lockwasher (75), cable 1155 (76) and cable 1139 (65) from starter solenoid (77). Discard lockwasher.

(13) Remove nut (78), lockwasher (79) and cable 1138 (80) from starter (81). Discard lockwasher.

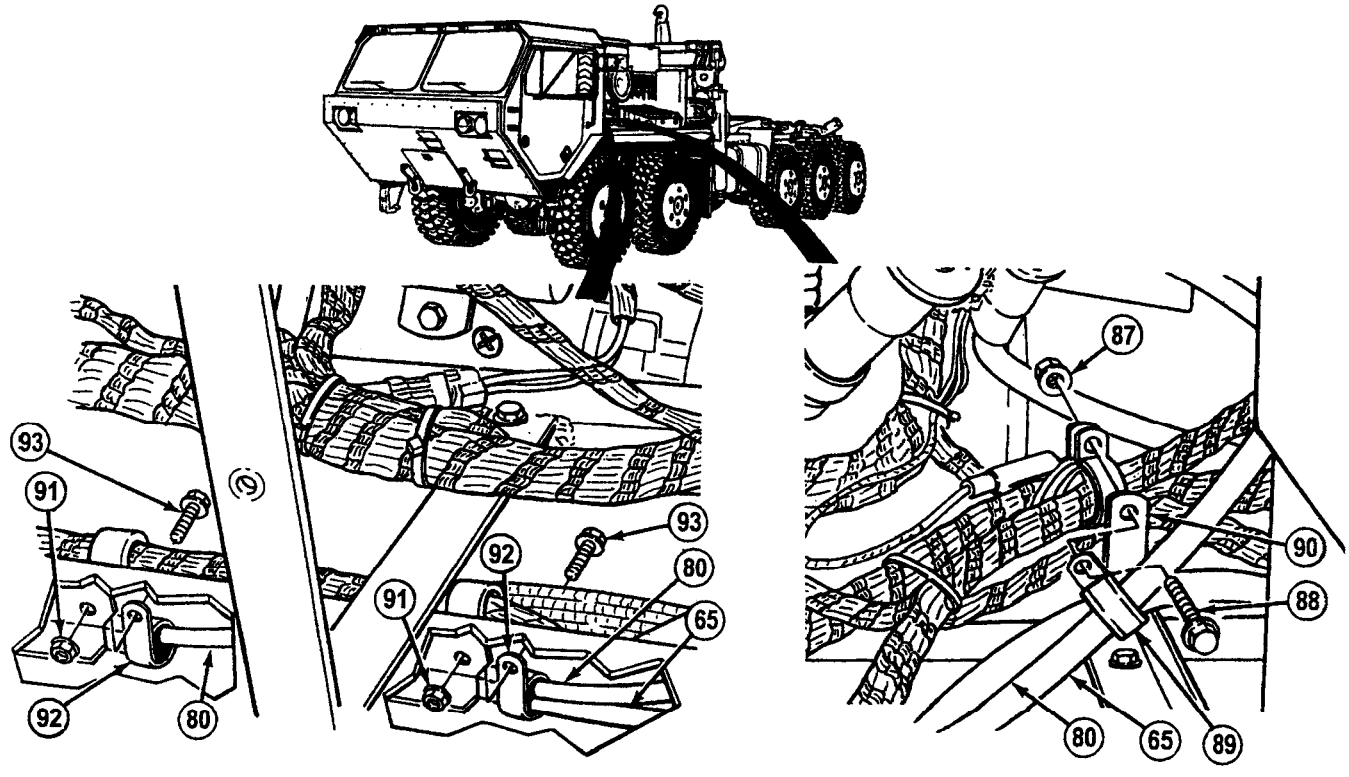


7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).



(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.

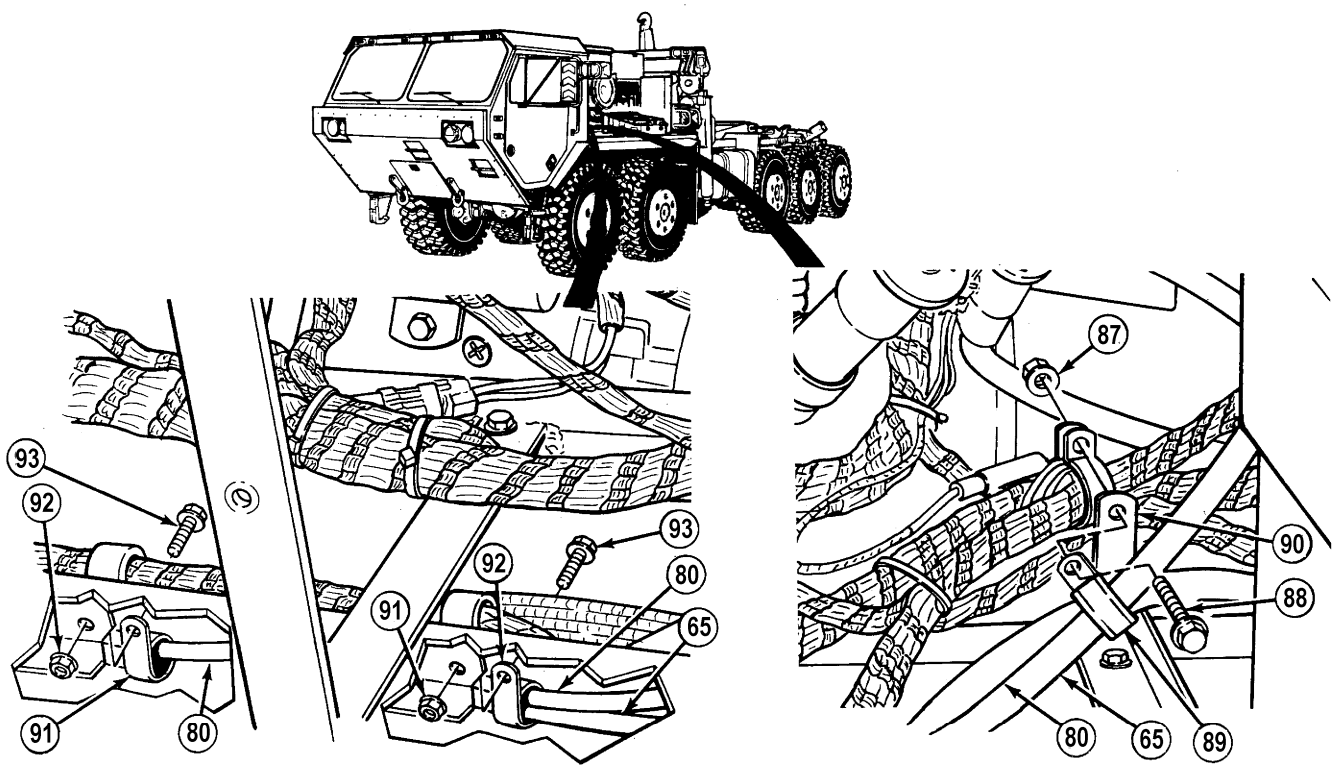


(16) Remove locknut (87), screw (88) and cushion clip (89) from bracket (90). Discard locknut.

(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.

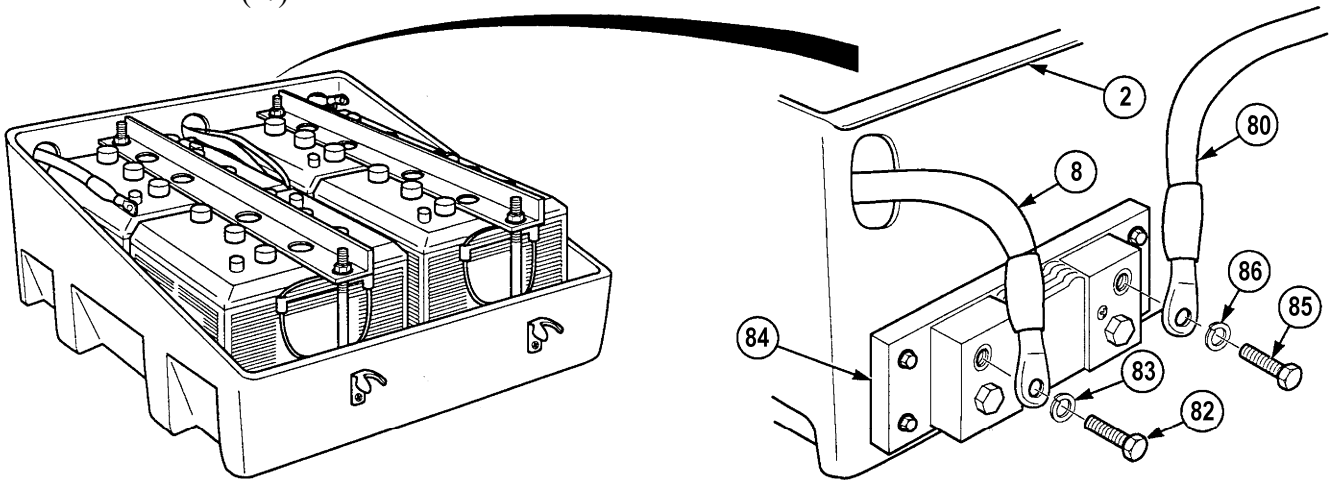


NOTE

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).

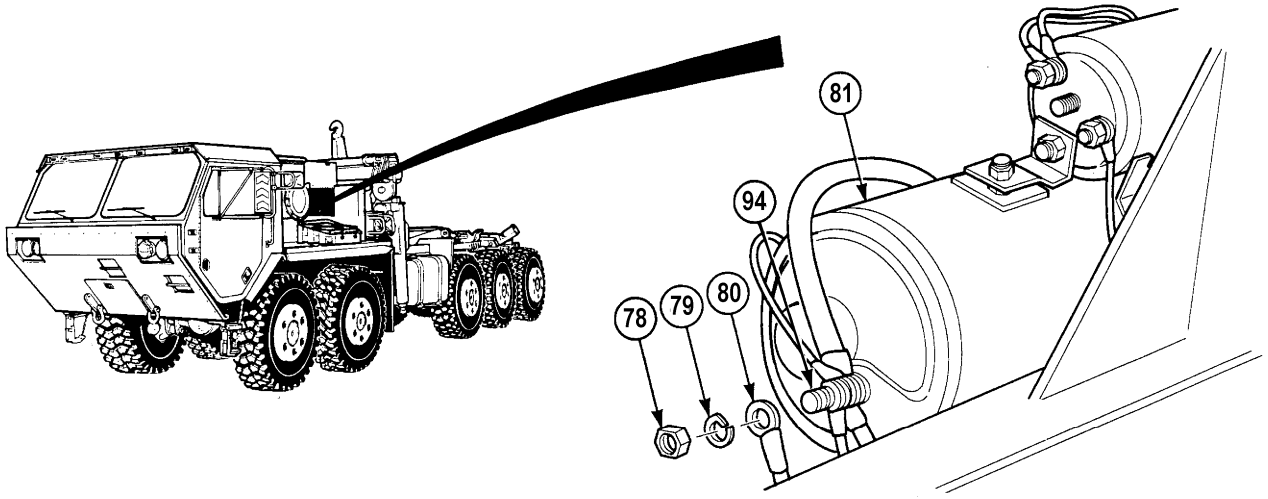
(2) Install two cables 1139 (65) and 1138 (80) to bracket (90) with cushion clip (89), screw (88) and locknut (87).



(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).

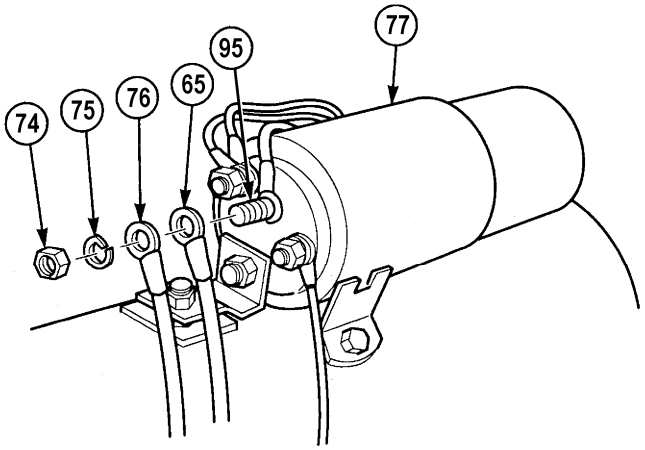


(5) Install cable 1138 (80) to starter (81) with lockwasher (79) and nut (78).

(6) Install cable 1139 (65) and cable 1055 (76) to starter solenoid (77) with lockwasher (75) and nut (74).

WARNING

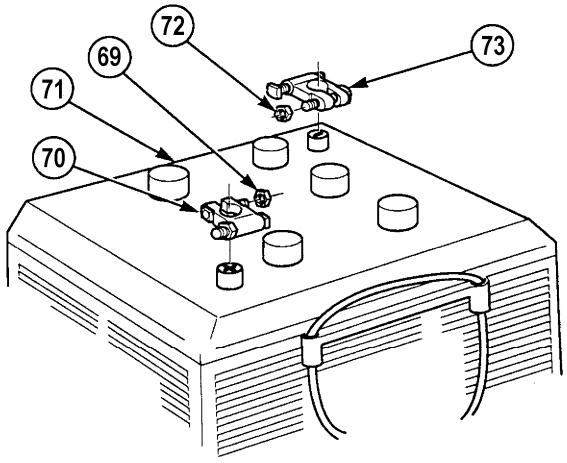
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

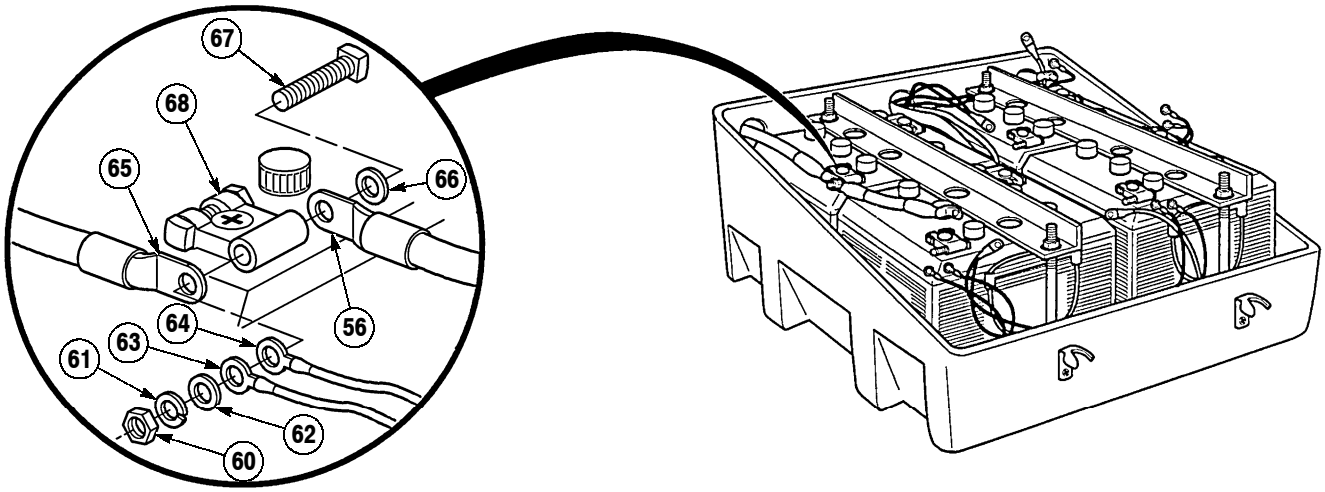


(7) Apply electrical sealant to terminals (94) and (95) on starter (81) and starter solenoid (77).

(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

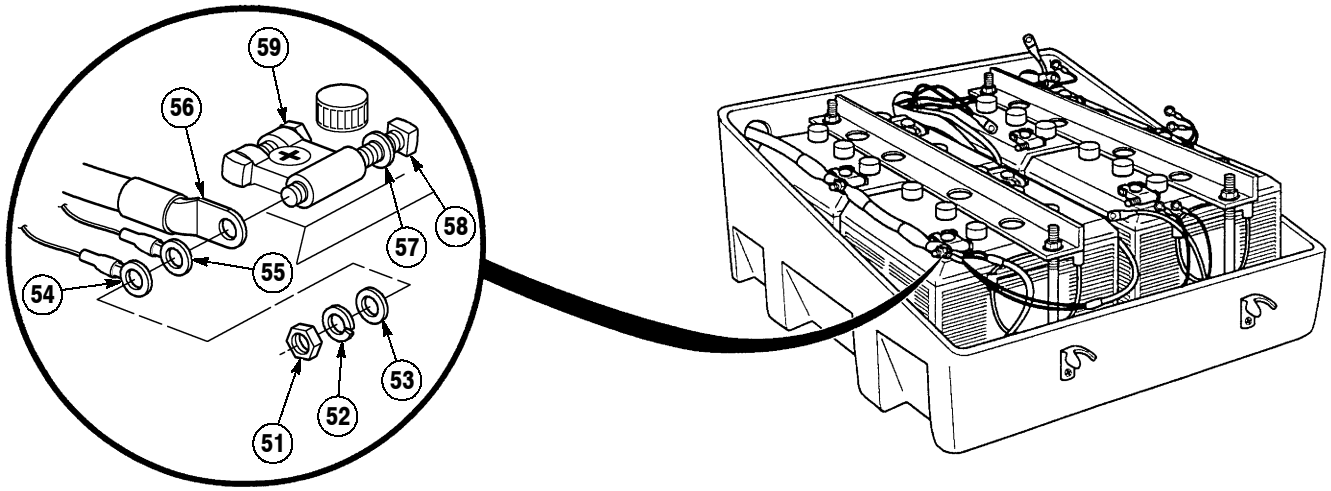
If truck is equipped with a battery disconnect switch, there will only be one cable 1281A to install.

(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).



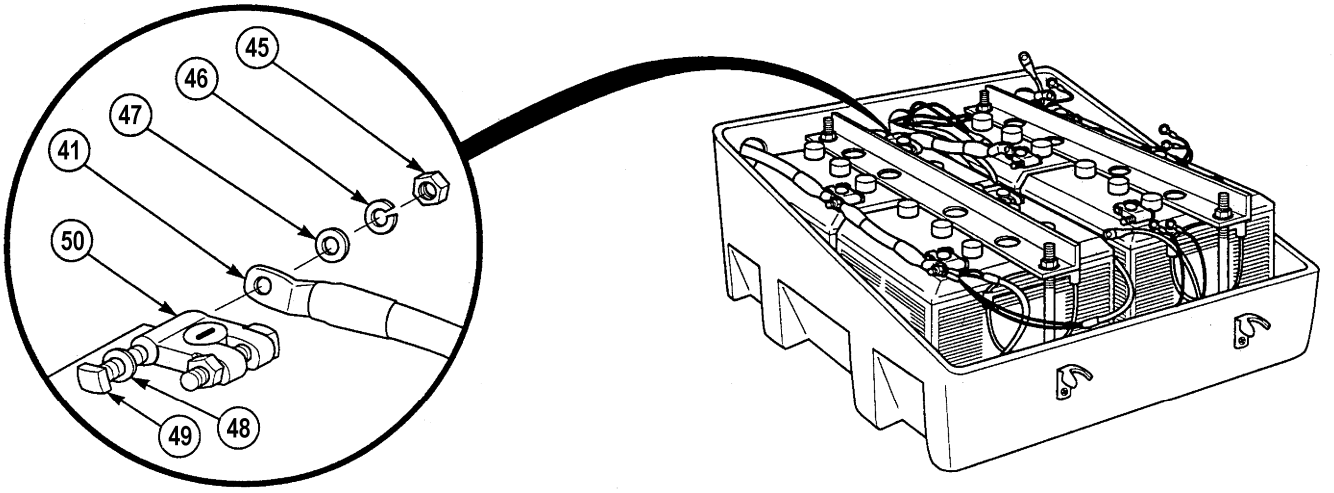
(12) Position screw (58), washer (57), cable 1137 (56), wire 1822 (55), wire 1814 (54), washer (53), lockwasher (52) and nut (51) on positive terminal (59).

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).

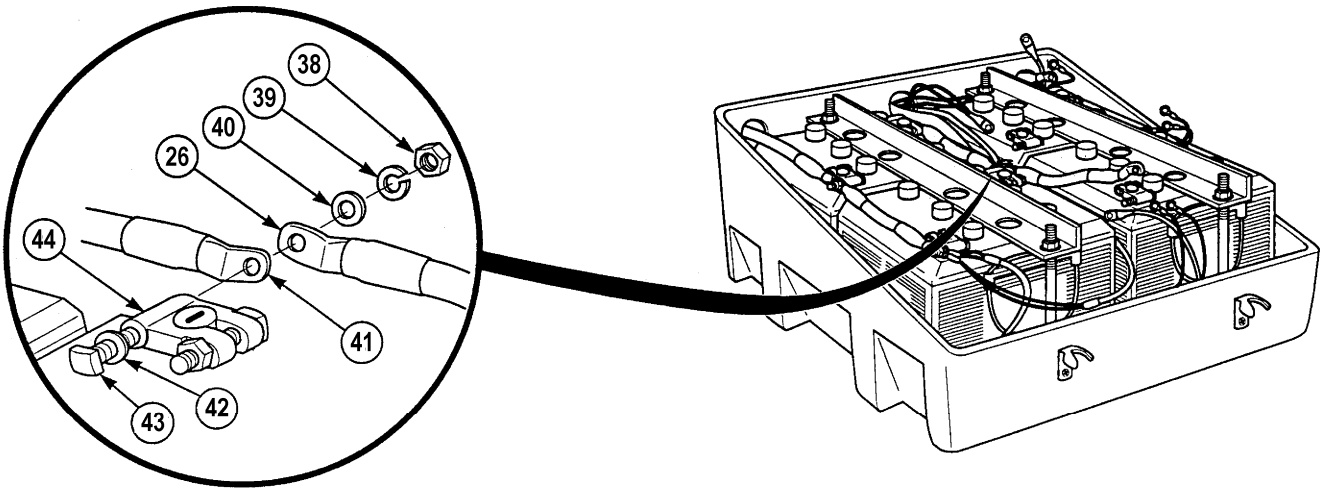


(14) Position screw (49), washer (48), cable 1137 (41), washer (47), lockwasher (46) and nut (45) on negative terminal (50).

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).

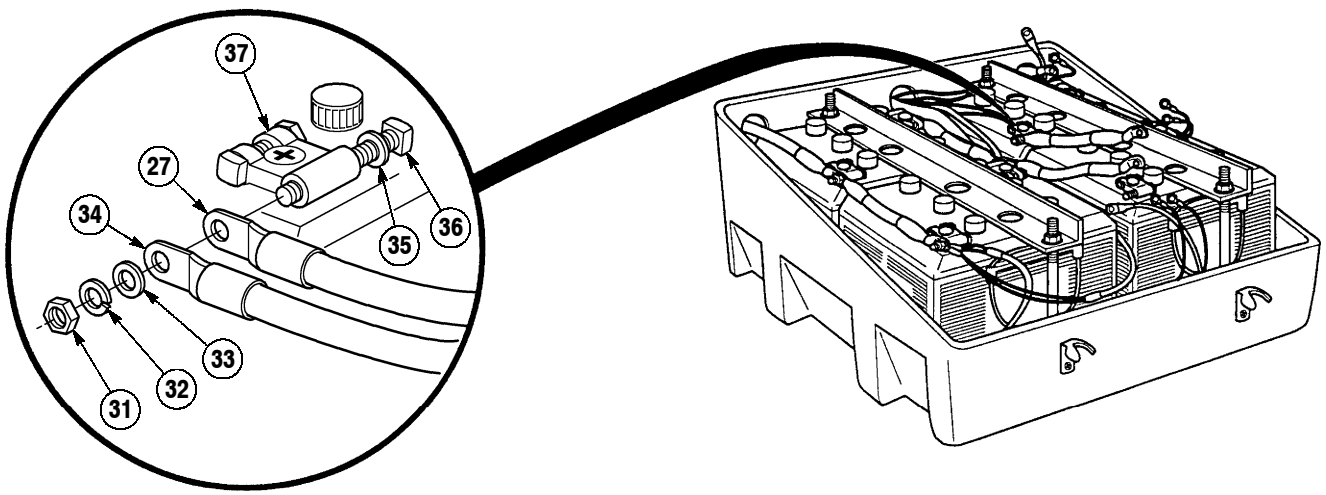


(16) Position screw (43), washer (42), cable 1137 (41), cable 1137 (26), washer (40), lockwasher (39) and nut (38) on negative terminal (44).

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.

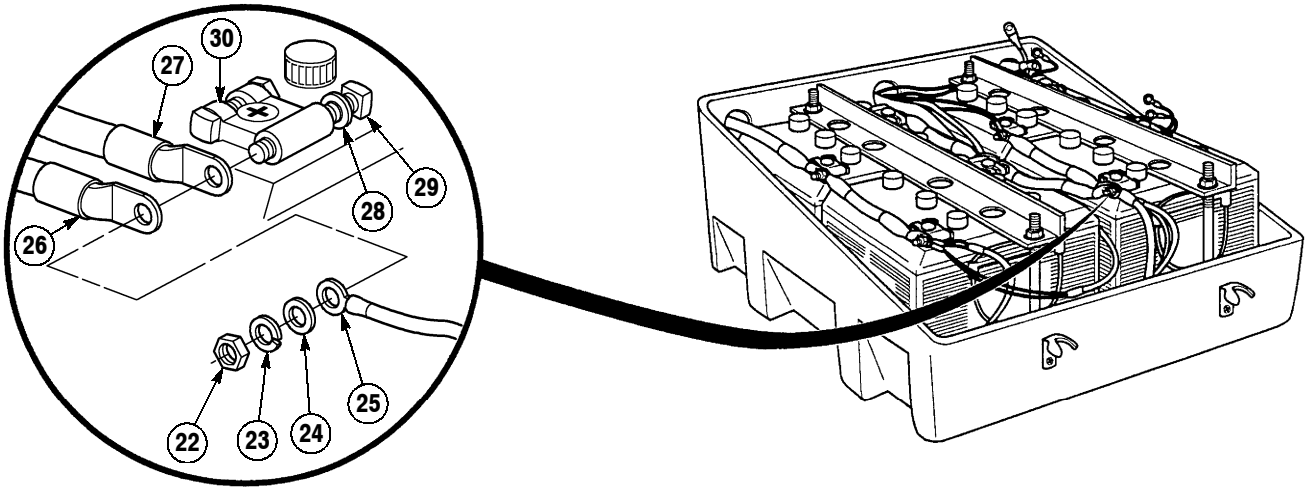
(18) Position screw (36), washer (35), cable 1137 (27), cable 1274 or 1566 (34), washer (33), lockwasher (32) and nut (31) on positive terminal (37).

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

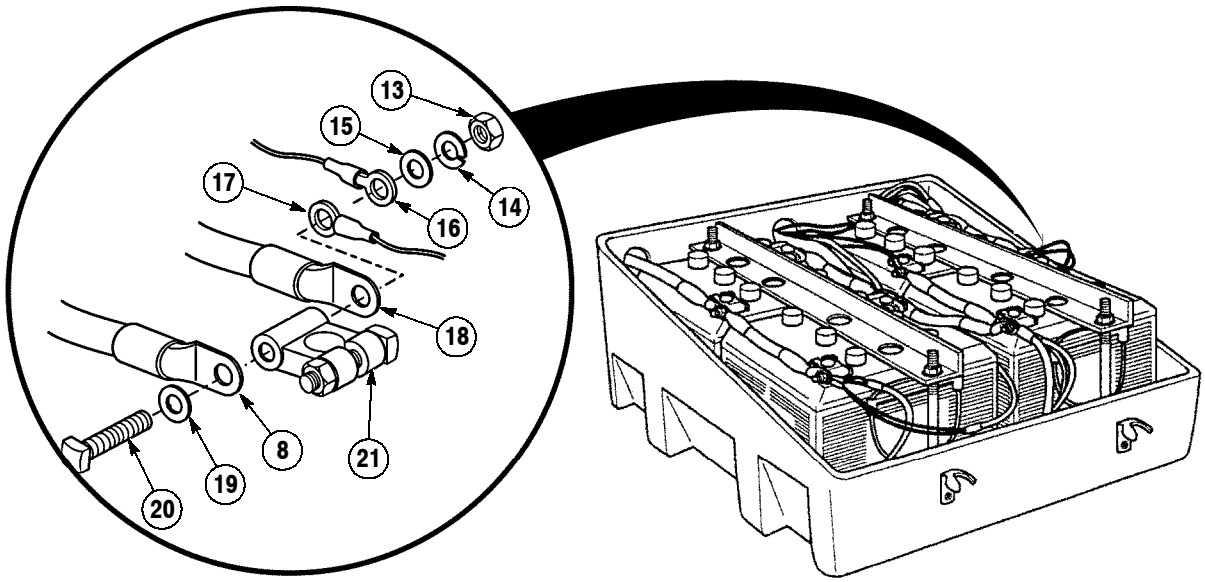
On trucks equipped with battery disconnect switch, cable 1566 has already been installed in Step (18).

(20) Position screw (29), washer (28), cable 1137 (27), cable 1137 (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).

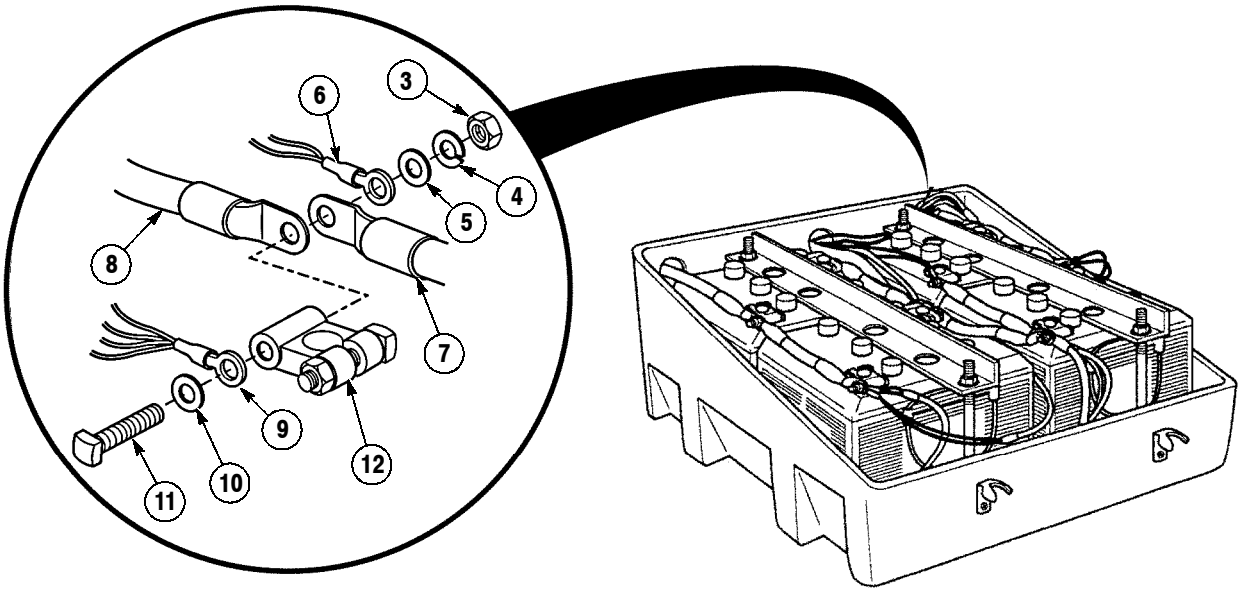
(22) Position screw (20), washer (19), cable 1137 (8), cable 1275 (18), wire 1821 (17), wire 1813 (16), washer (15), lockwasher (14) and nut (13) on negative terminal (21).

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).

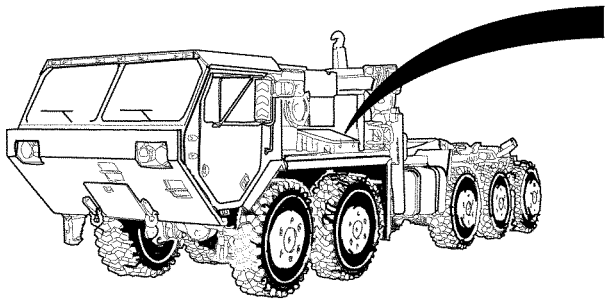


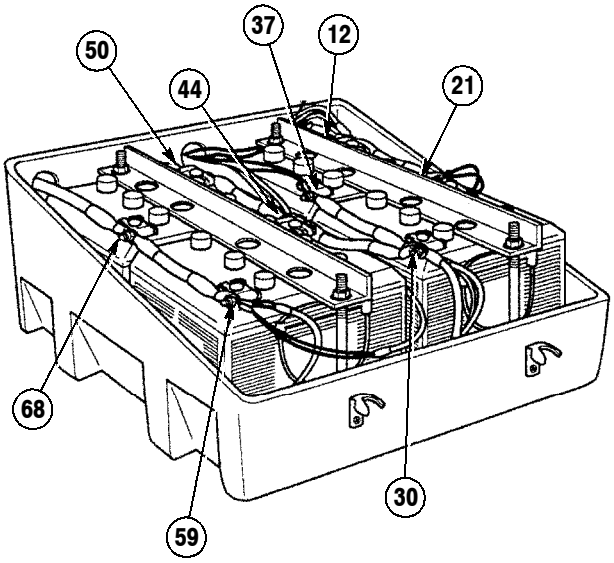
(24) Position screw (11), washer (10), wires 150/150/151/953 (9), cable 1137 (8), cable 1138 (7), wires 208/209 (6), washer (5), lockwasher (4) and nut (3) on negative terminal (12).

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).



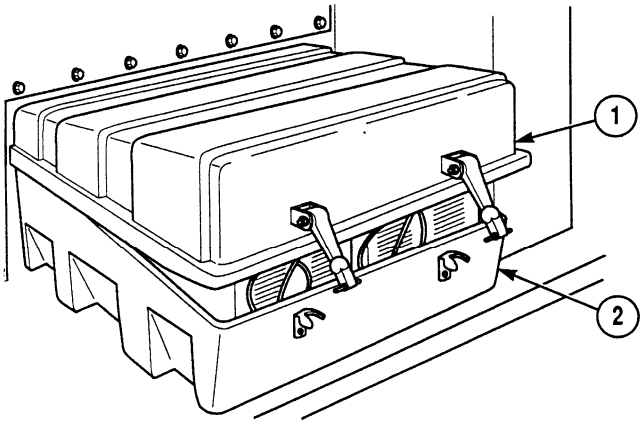


WARNING

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

7-92. 12V MAGNETIC SWITCH REPLACEMENT.

This task covers:

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

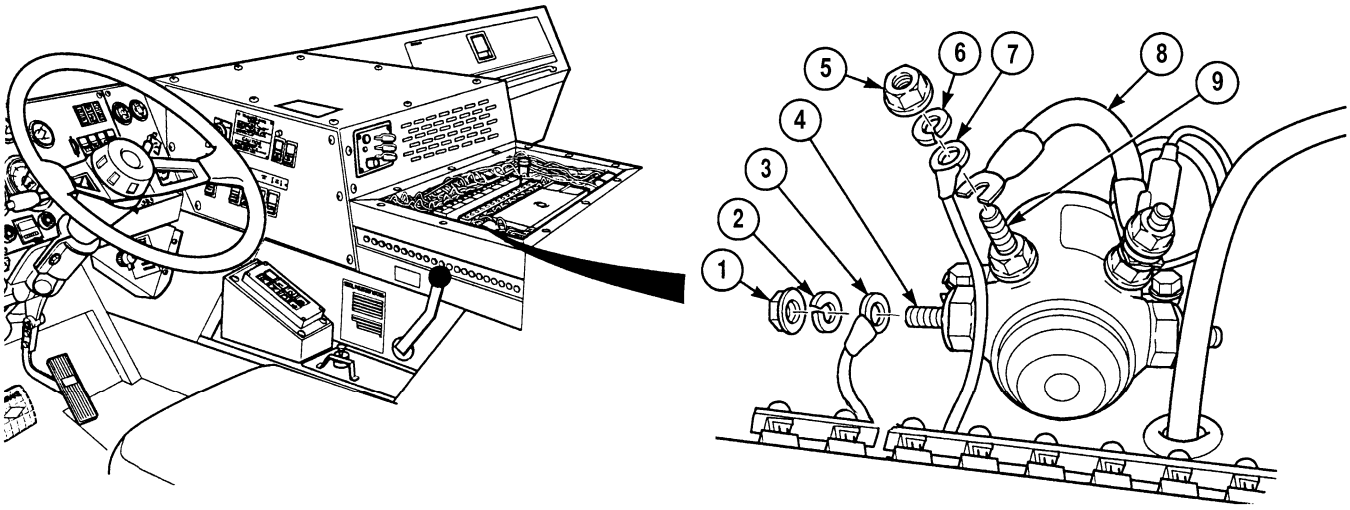
INITIAL SETUP

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)

Materials/Parts
Tags, Identification (Item 88, Appendix C)
Lockwasher (2) (Item 195, Appendix F)
Lockwasher (2) (Item 197, Appendix F)
Screw, Self-Locking (2) (Item 310, 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) cover removed, (Para 17-22)

a. Removal.



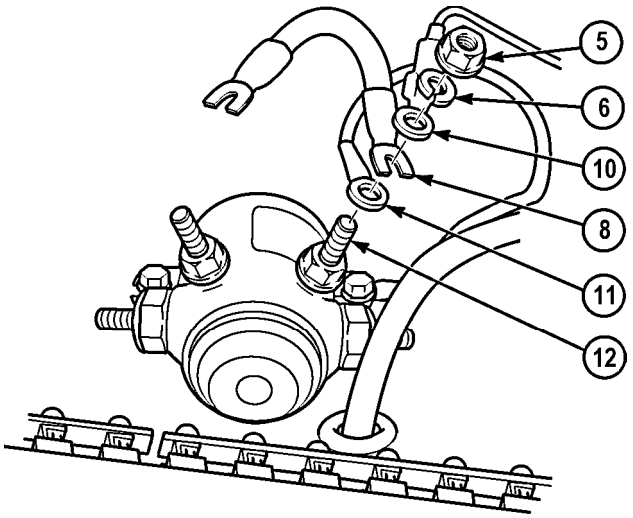
NOTE

Tag and mark wires prior to removal.

(1) Remove nut (1), lockwasher (2) and wire 1175 (3) from magnetic switch terminal (4). Discard lockwasher.

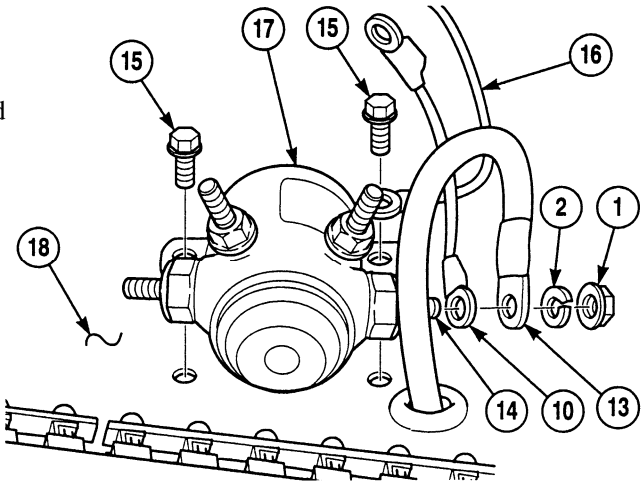
(2) Remove nut (5), lockwasher (6), wire 1189 (7) and diode wire (8) from magnetic switch terminal (9). Discard lockwasher.

(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).

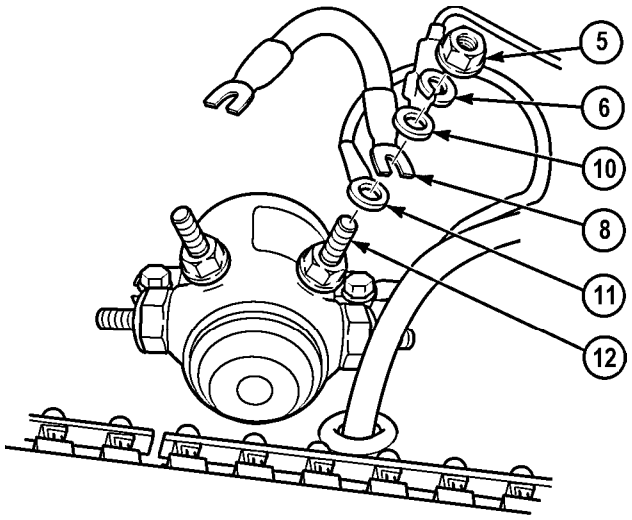
(2) Position capacitor (10), wire 1430 (13), lockwasher (2) and nut (1) on magnetic switch terminal (14).

(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).

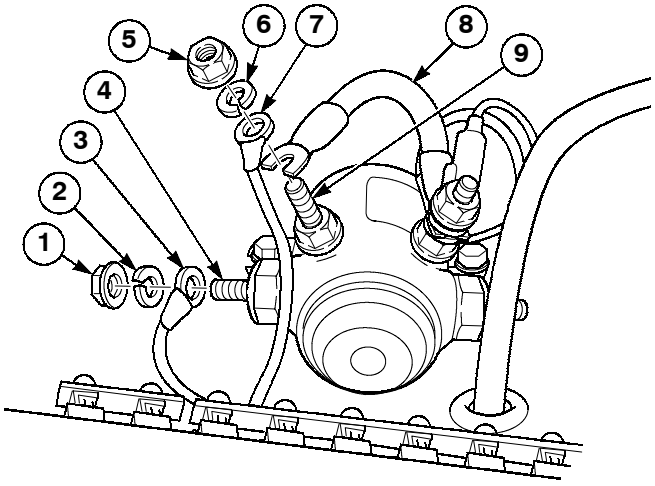


(6) Position diode (8), wire 1189 (7), lockwasher (6) and nut (5) on magnetic switch terminal (9).

(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

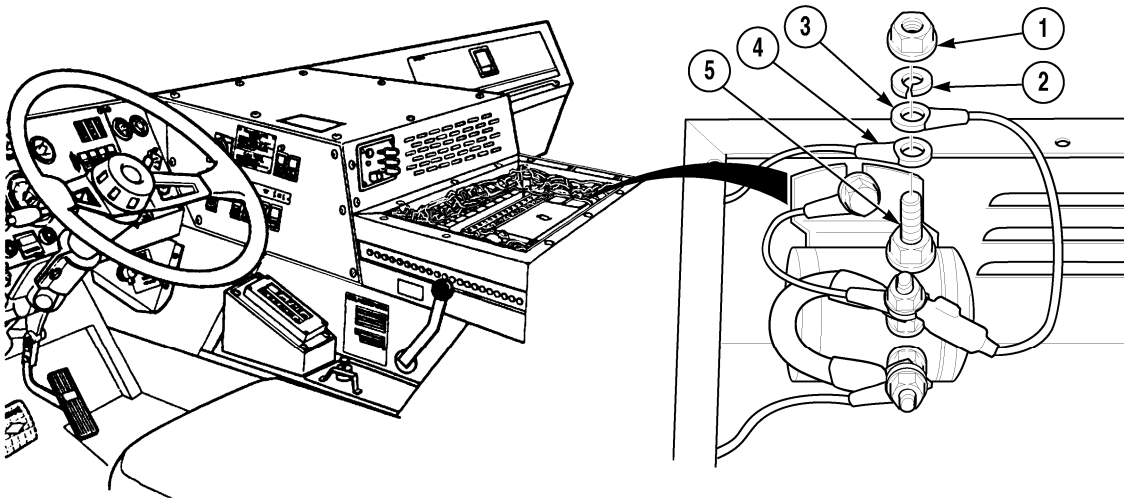
INITIAL SETUP

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 195, Appendix F)
Lockwasher (2) (Item 197, Appendix F)
Screw, Self-Locking (2) (Item 310, Appendix F)

a. Removal.



NOTE

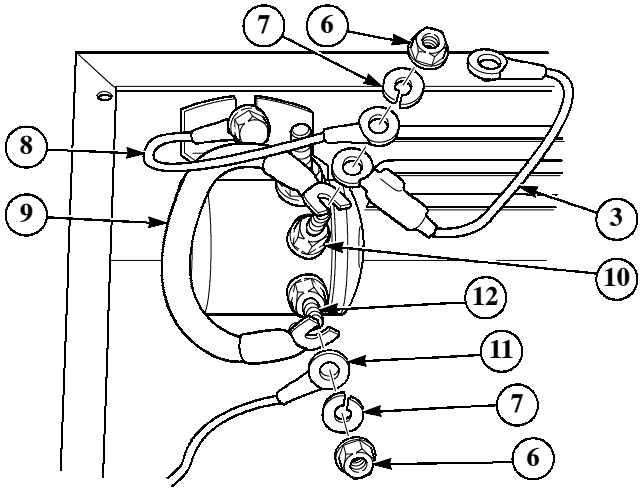
Tag and mark wires prior to removal.

(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.

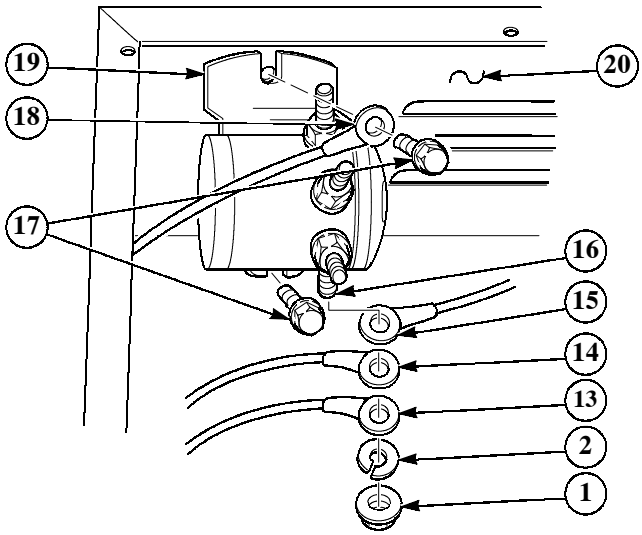
(3) Remove nut (6), lockwasher (7), wire 1072 (11) and diode (9) from magnetic switch terminal (12). Discard lockwasher.



(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).

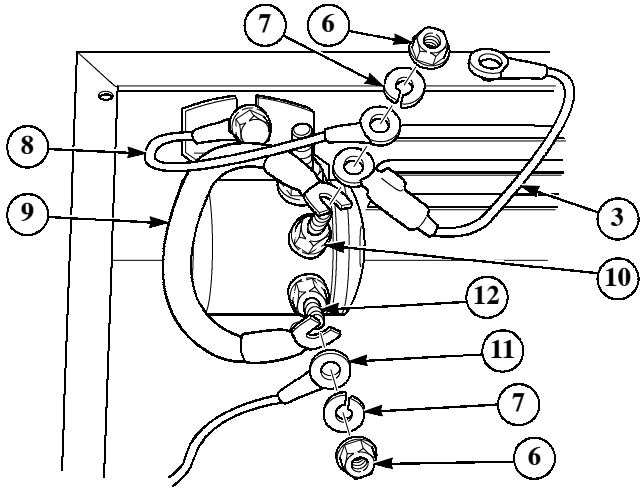
(2) Position wire 1075B (15), wire 1075 (14), wire 1958 (13), lockwasher (2) and nut (1) on magnetic switch terminal (16).

(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).

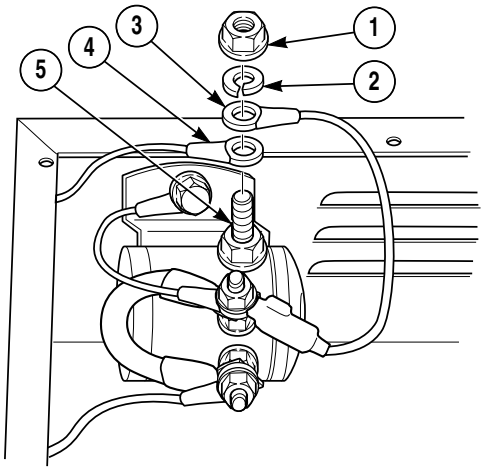
(5) Position wire 1435 (8), capacitor (3), diode (9), lockwasher (7) and nut (6) on magnetic switch terminal (10).

(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

7-94. 24V MAGNETIC SWITCH REPLACEMENT.

This task covers:

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

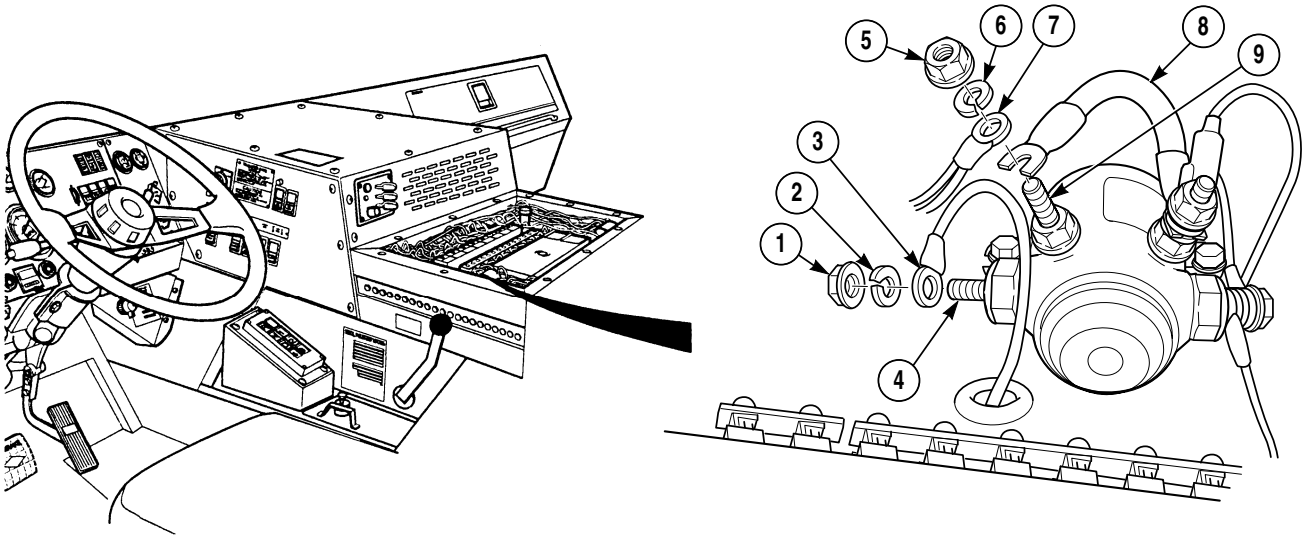
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 56, Appendix G)
Socket Set, 3/8 in. (Item 50, Appendix G)
Wrench, Torque, 3/8 in. Drive (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts
Tags, Identification (Item 88, Appendix C)
Lockwasher (2) (Item 195, Appendix F)
Lockwasher (2) (Item 197, Appendix F)
Screw, Self-Locking (2) (Item 310, 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) cover removed, (Para 17-22)

a. Removal.



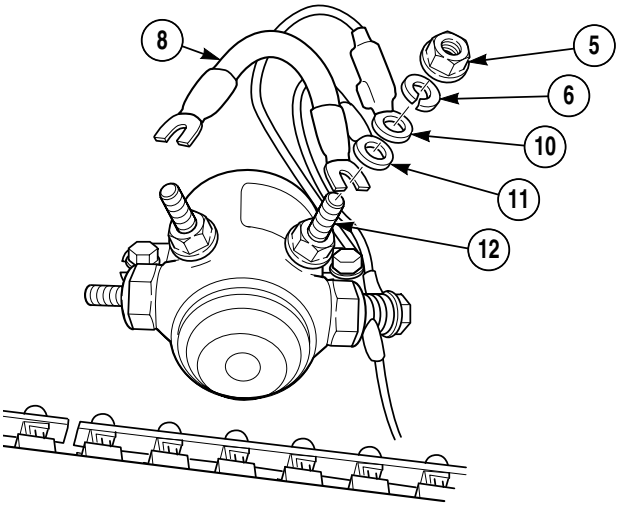
NOTE

Tag and mark wires prior to removal.

(1) Remove nut (1), lockwasher (2) and wire 1281 (3) from magnetic switch terminal (4). Discard lockwasher.

(2) Remove nut (5), lockwasher (6), wire 1640 (7) and diode (8) from magnetic switch terminal (9). Discard lockwasher.

(3) Remove nut (5), lockwasher (6), diode (8), capacitor (10) and wire 1435 (11) from magnetic switch (12). Discard lockwasher.



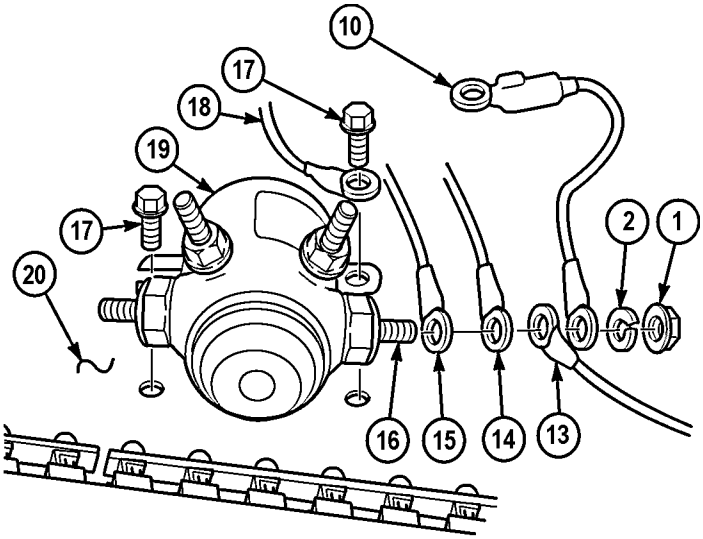
NOTE

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).

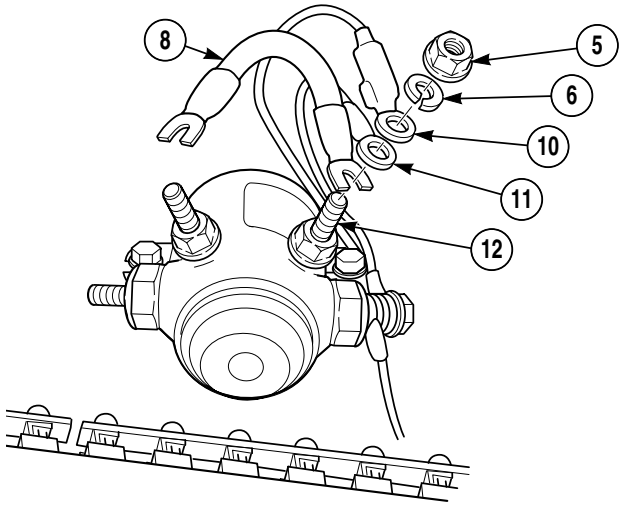
(2) Positiom wire 1959 (15), wire 1072 (13), wire 1280 (14), capacitor (10), lockwasher (2) and nut (1) in magnetic switch terminal (16).

(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).

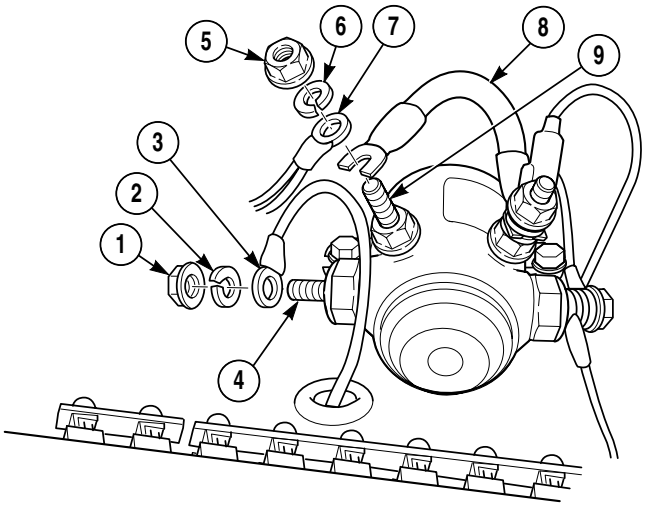


(6) Position wire 1640 (7), diode (8), lockwasher (6) and nut (5) on magnetic switch terminal (9).

(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

7-95. RELAY 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)

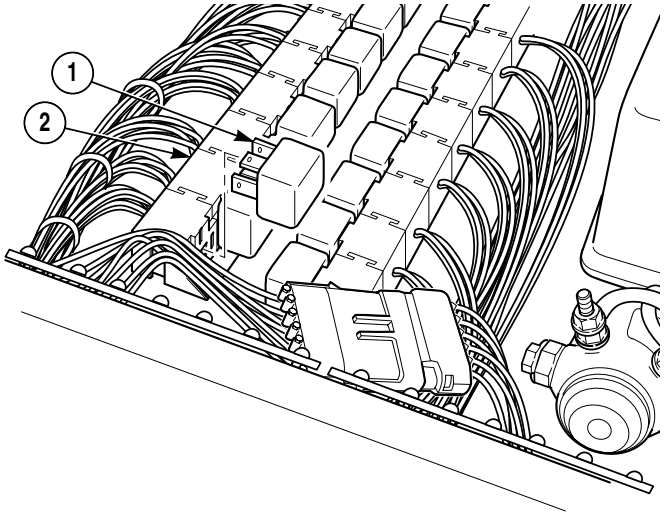
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Electronic Control Box (ECB) cover removed, (Para 17-22)

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.

NOTE

There are 12V relays and 24V relays. Both kinds of relays are removed and installed the same way. Refer to electrical schematic for identification of relays.



a. Removal. Remove relay (1) from relay socket (2).

b. Installation. Install relay (1) on relay socket (2).

c. Follow-On Maintenance:

- 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 9-2320-364-10).

END OF TASK

7-96. ELECTRIC RESISTOR REPLACEMENT.

This task covers:

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

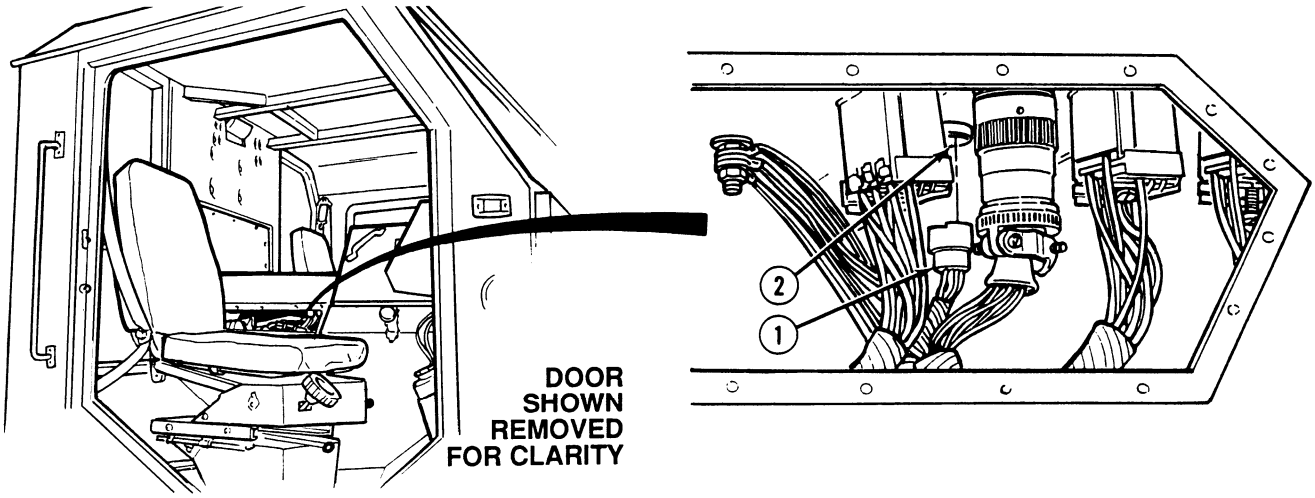
INITIAL SETUP

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

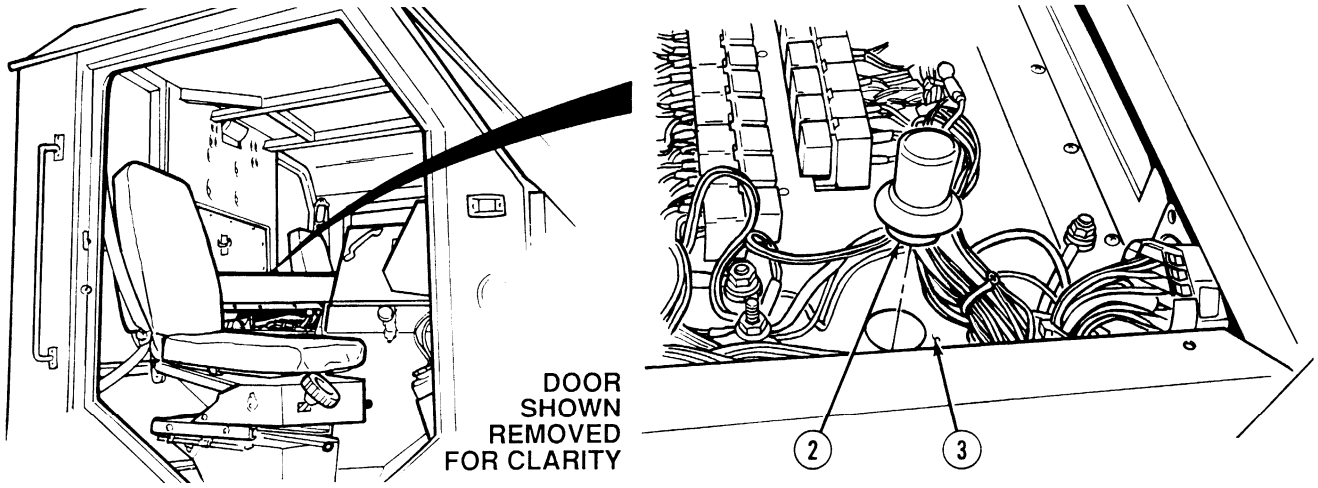
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

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.



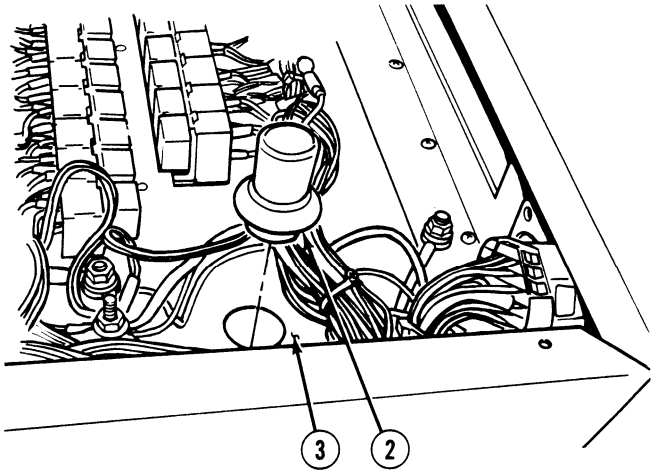
(1) Disconnect MC40 connector (1) from resistor assembly (2).



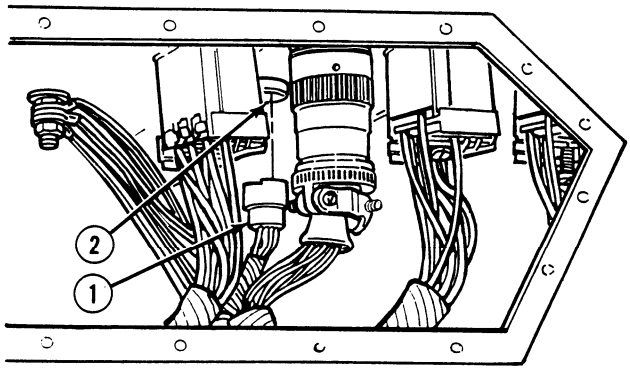
(2) Remove resistor assembly (2) from ECB (3).

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

7-97. FLASHER 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)

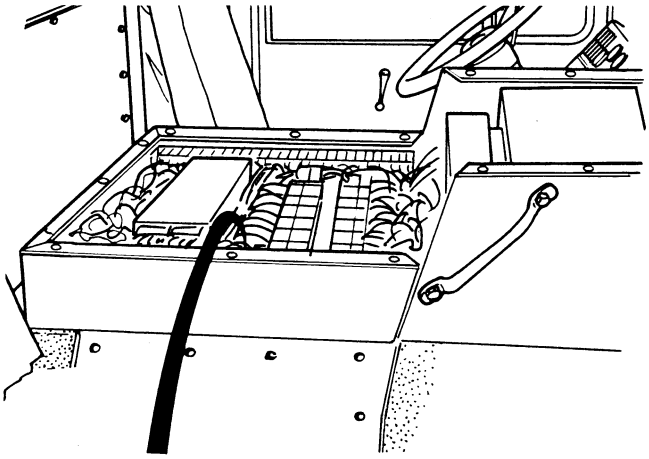
Materials/Parts
Lockscrew (2) (Item 148, Appendix F)

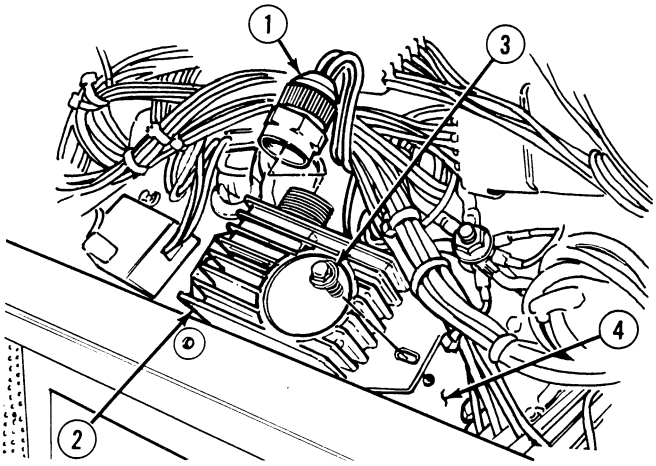
Equipment Condition
Engine OFF, (TM 9-2320-364-10))
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Electronic Control Box (ECB) cover removed, (Para 17-22)

a. Removal.

(1) Remove connector (1) from flasher unit (2).

(2) Remove two lockscrews (3) and flasher unit (2) from electronic control box (4). Discard lockscrews.





b. Installation.

(1) Install flasher unit (2) in electronic control box (4) with two lockscrews (3).

(2) Install connector (1) on flasher unit (2).

c. Follow-On Maintenance:

- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Check operation of flasher unit, (TM 9-2320-364-10).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-98. THROTTLE POSITION CONTROL REPLACEMENT.

This task covers:

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

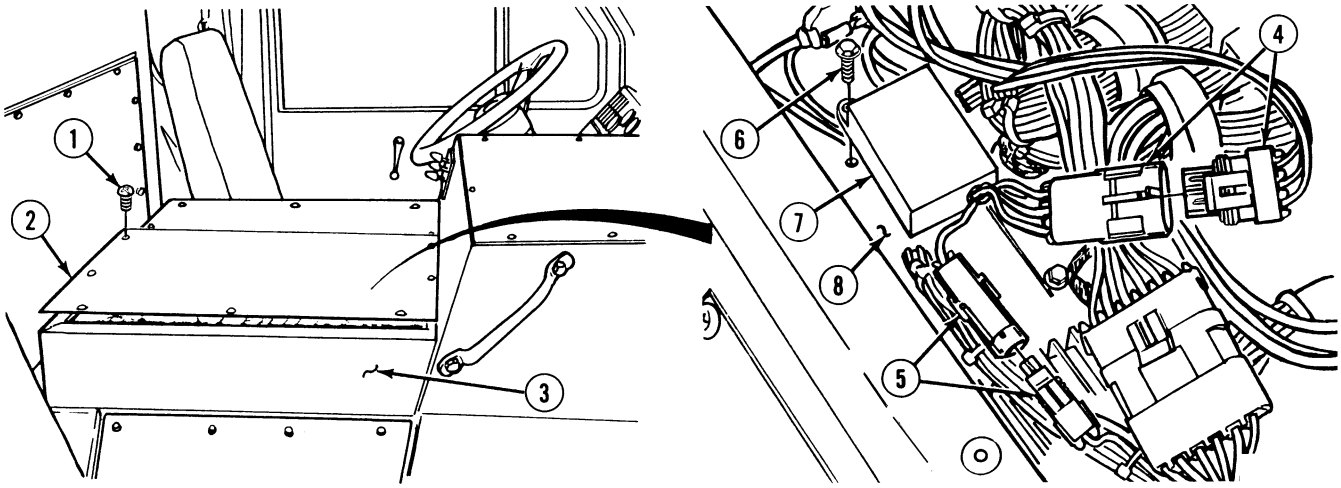
INITIAL SETUP

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).

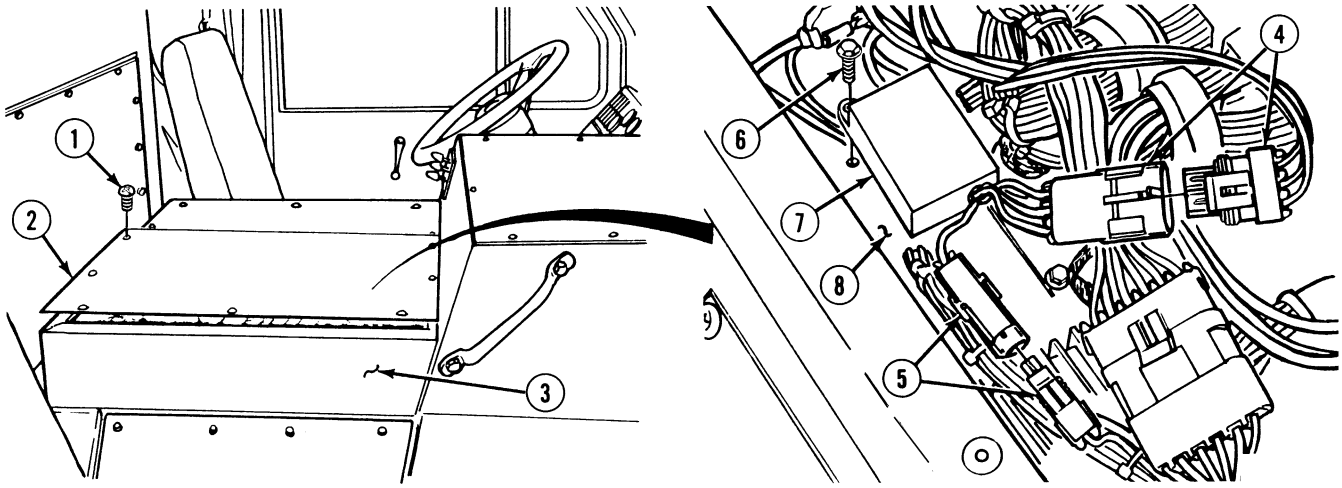
(3) Disconnect wire 908 (5).

(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

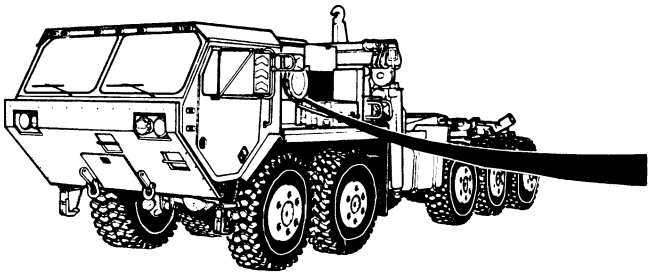
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0-237 N·m]) (Item 95, Appendix G)
Wrench, Torque, (0-60 N·m) (Item 98, Appendix G)

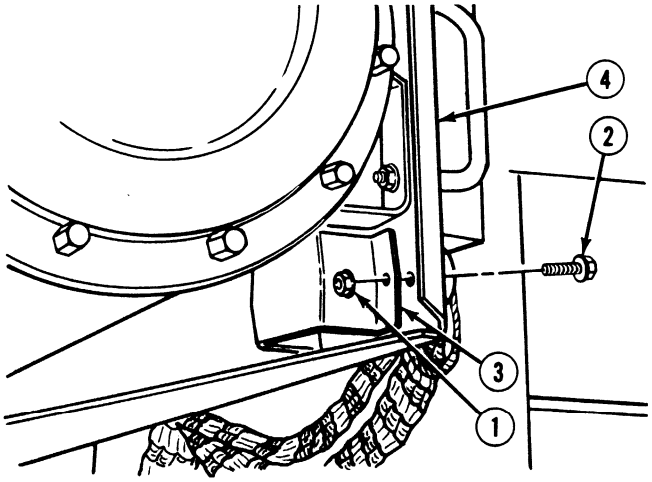
Materials/Parts
Adhesive (Item 6, Appendix C)
Sealant, Electrical (Item 68, Appendix C)
Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued
Locknut (3) (Item 103, Appendix F)
Locknut (4) (Item 106, Appendix F)
Lockwasher (2) (Item 169, Appendix F)
Lockwasher (2) (Item 170, 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.

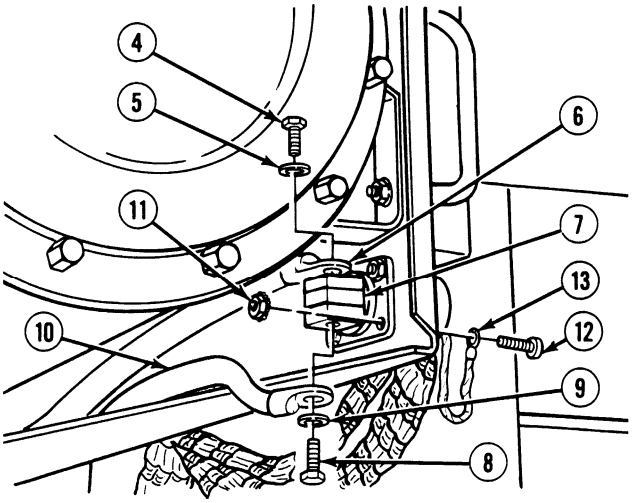
(1) Remove two locknuts (1), screws (2) and slave cover (3) from air cleaner bracket (4). Discard locknuts.

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.

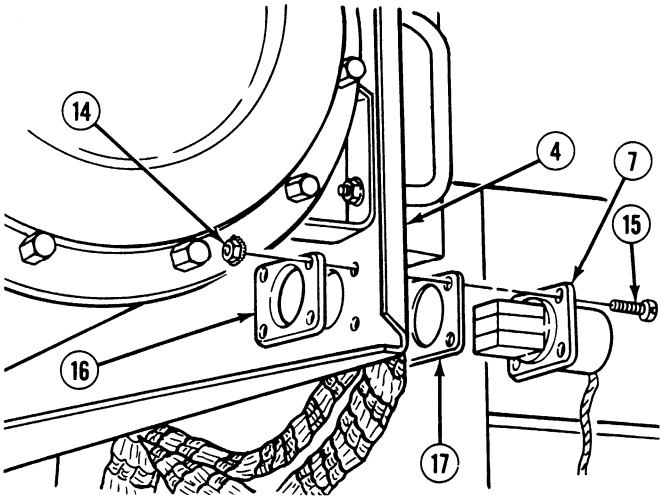
(4) Remove locknut (11), screw (12) and eyelet (13) from receptacle (7). Discard locknut.



CAUTION

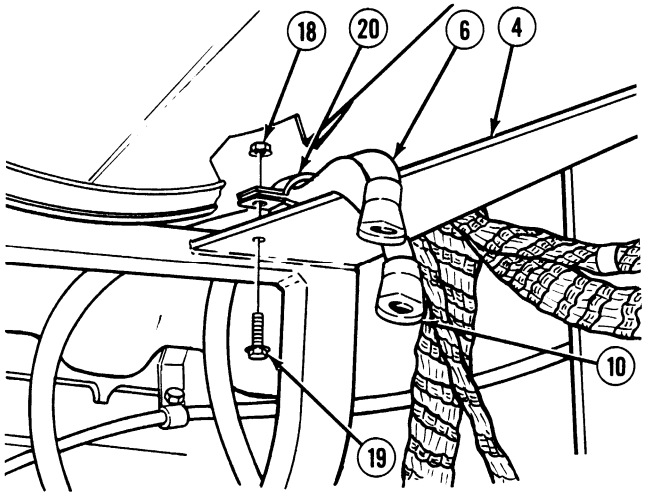
Note position of receptacle prior to removal. Receptacle has positive and negative side. Failure to comply may result in receptacle installed in incorrect position and damage to equipment may occur.

(5) Remove three locknuts (14), screws (15), insulator (16), gasket (17) and receptacle (7) from air cleaner bracket (4). Discard locknuts and gasket.



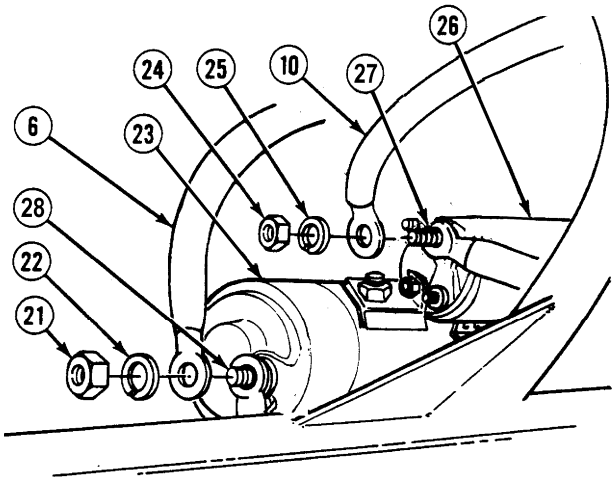
(6) Remove locknut (18), screw (19) and cushion clip (20) from air cleaner bracket (4). Discard locknut.

(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).

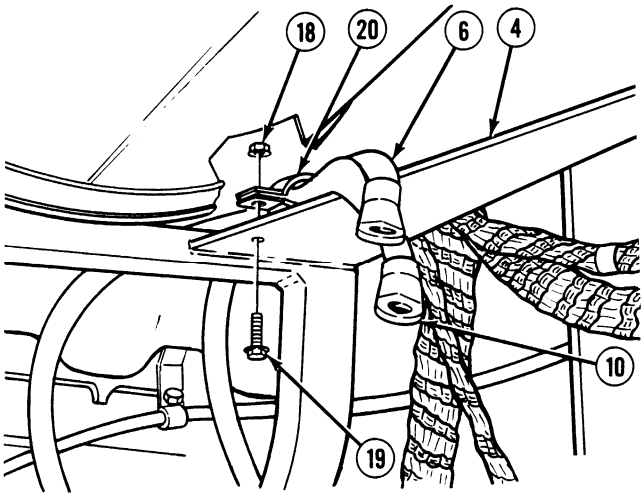
(2) Install wire 1138 (6), lockwasher (22) and nut (21) on starter (23). Tighten nut to 30 lb-ft (41 N·m).

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

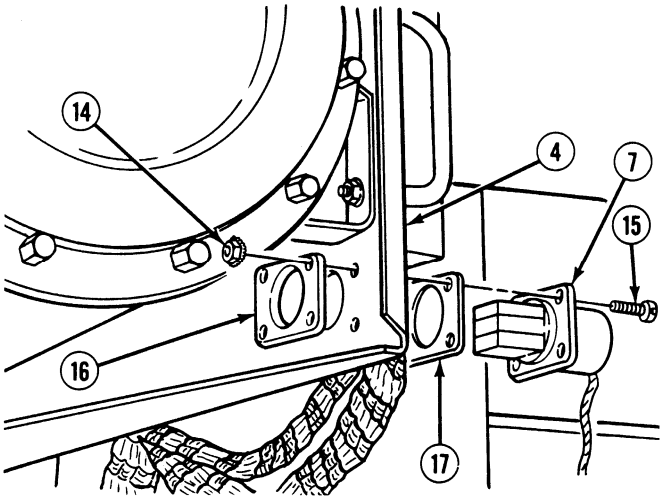
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

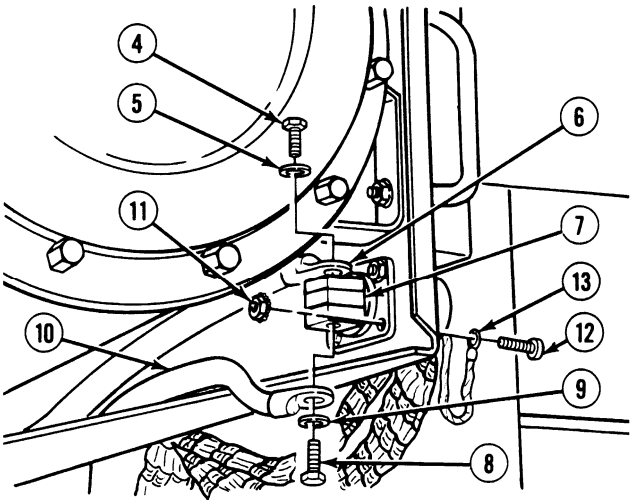


(7) Install eyelet (13) on receptacle (7) with screw (12) and nut (11). Tighten screw to 32 lb-in (4 N·m).

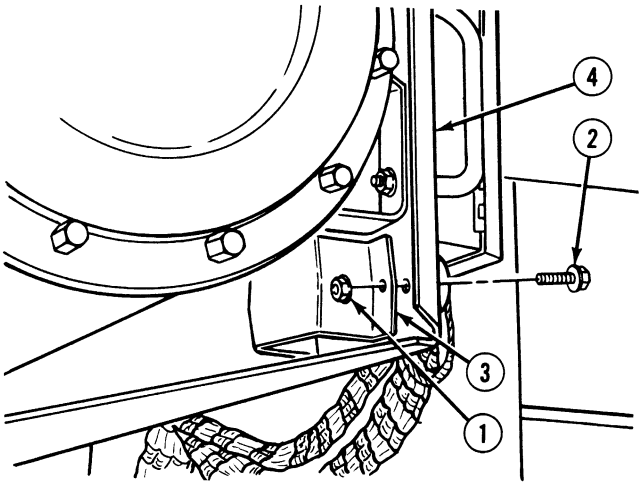
(8) Install negative wire 1139 (10) on receptacle (7) with lockwasher (9) and screw (8).

(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:

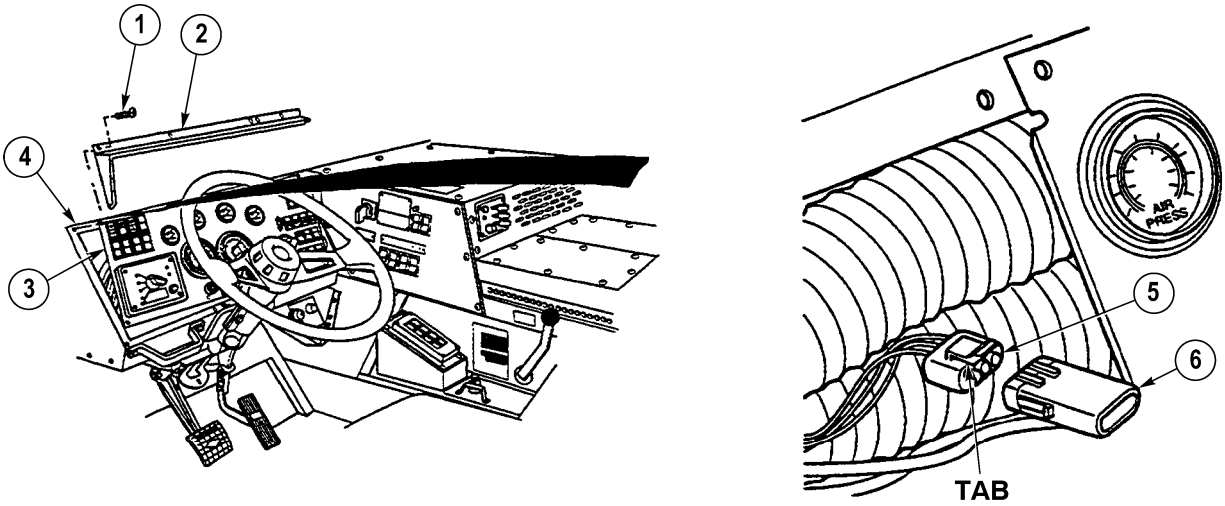
a. Removal b. Installation c. Follow-On Maintenance

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).

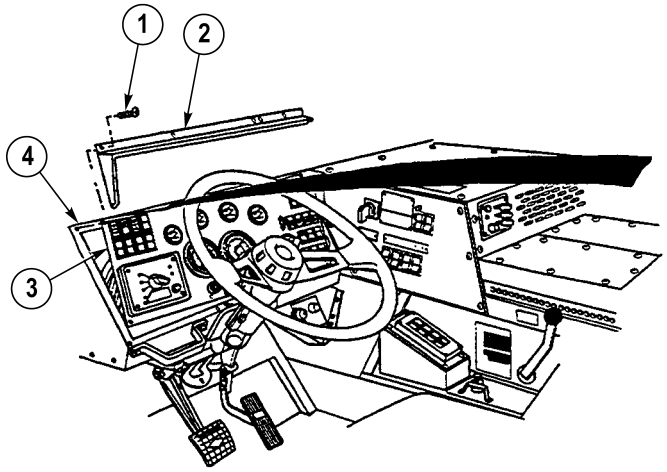
(2) Pull instrument panel (3) away from dash (4).

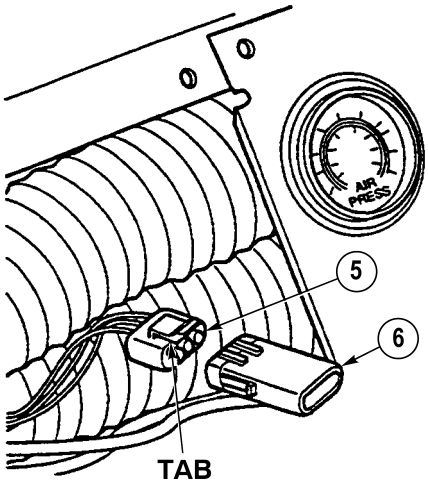
NOTE

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/IV 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
b. Type 2 Connector Repair
c. Type 3 Connector Repair
d. Type 4 Connector Repair
e. Group I Terminal Repair
f. Group II Terminal Repair
g. Group III Terminal Repair
h. 22 - Pin Connector Repair
i. Follow-On Maintenance

INITIAL SETUP

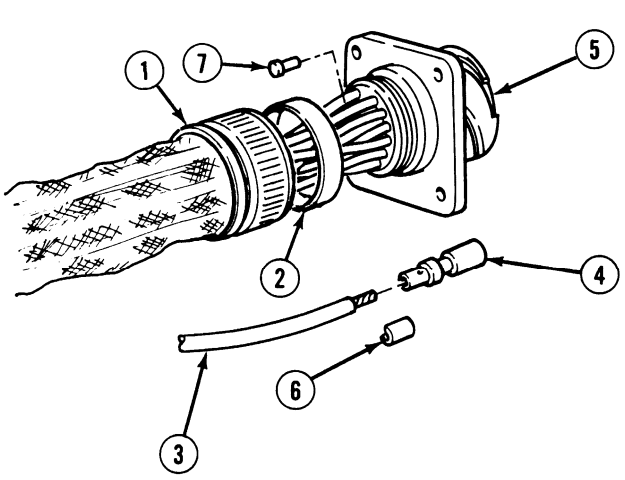
Tools and Special Tools
Tool Kit, Electric (Item 73, Appendix G)
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Connector Remover (DUETCH) (Item 12, Appendix G)
Crimping Tool (Item 13, Appendix G)
Extractor Tool Electrical (Item 22, Appendix G)
Extractor Tool Electrical (Item 23, Appendix 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.



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) 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) ¼ 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).

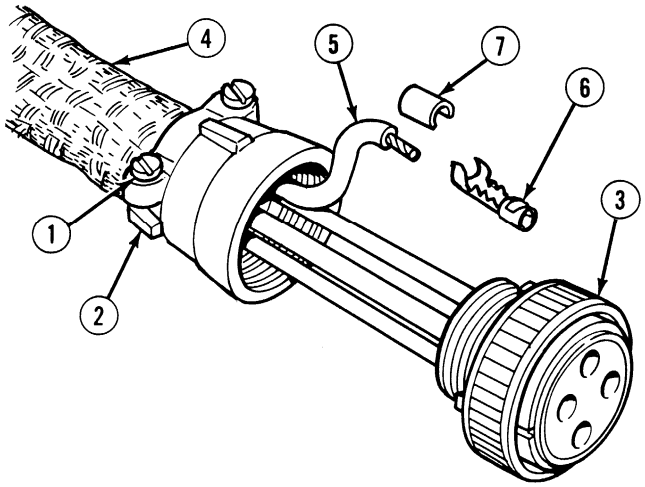
(e) Install cover (1) on connector (5).

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.

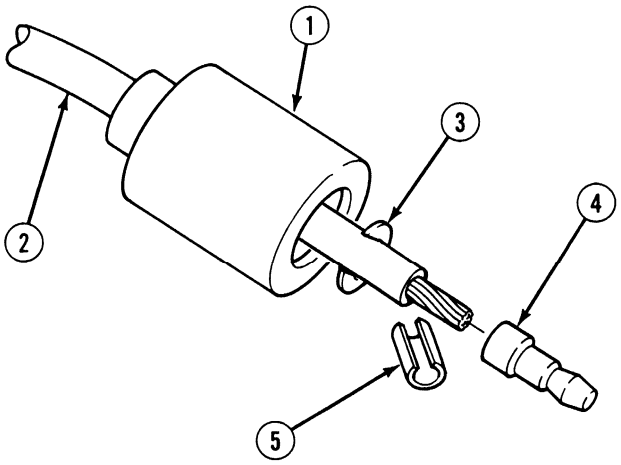
(2) *Assembly.*

(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).

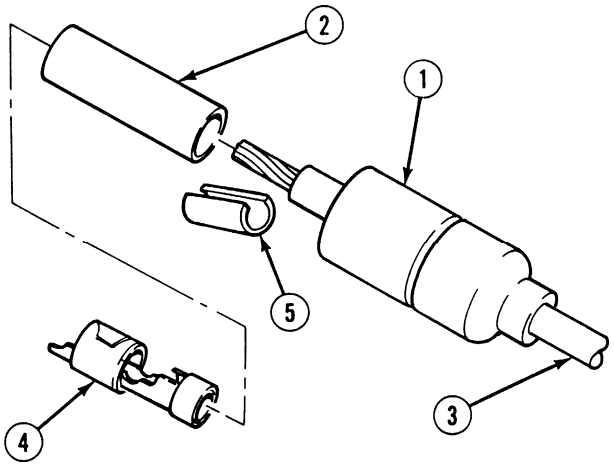
(b) Install C-washer (3) on wire (2) just below terminal (4).

(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.

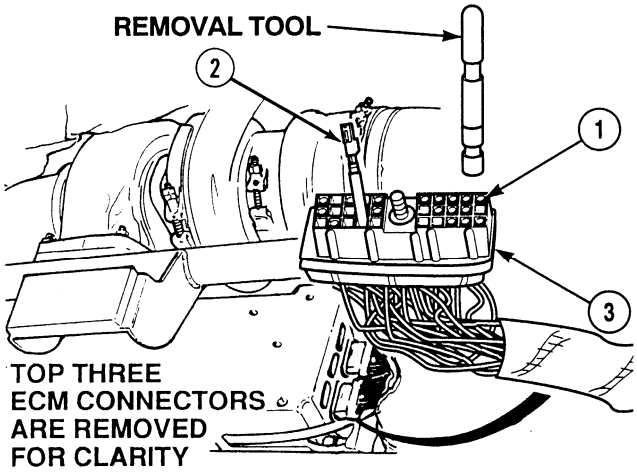
NOTE

- 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).

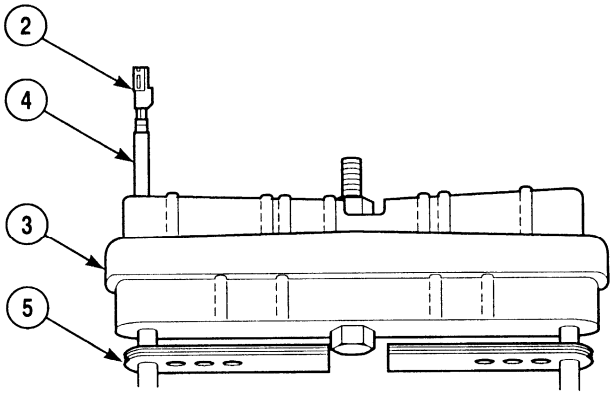


NOTE

- 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

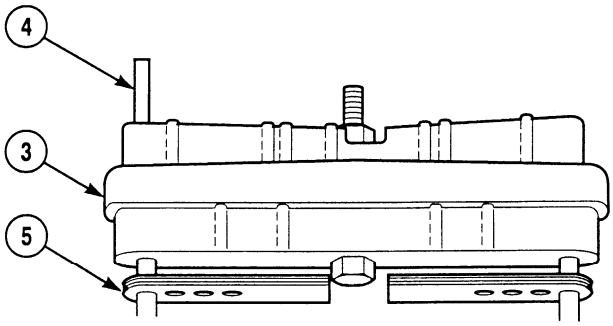
Strip wire after placing it through seal and connector body to prevent damage to individual strands.

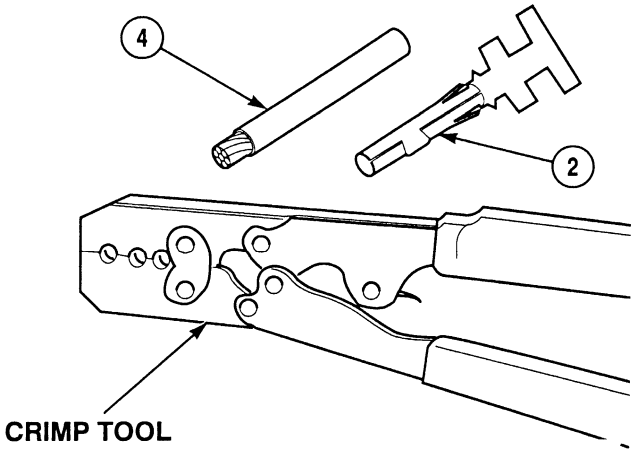
(b) Strip end of wire (4) using crimp tool leaving 1/4 in. (0.64 cm) of bare wire.

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.



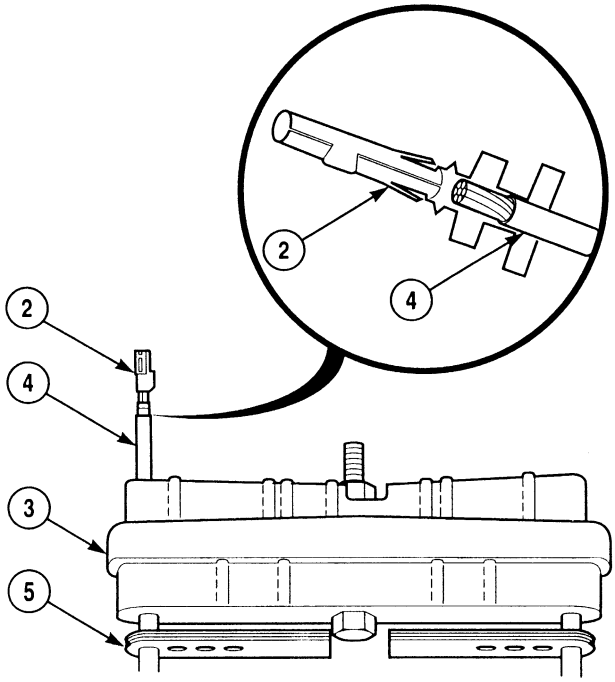


NOTE

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.

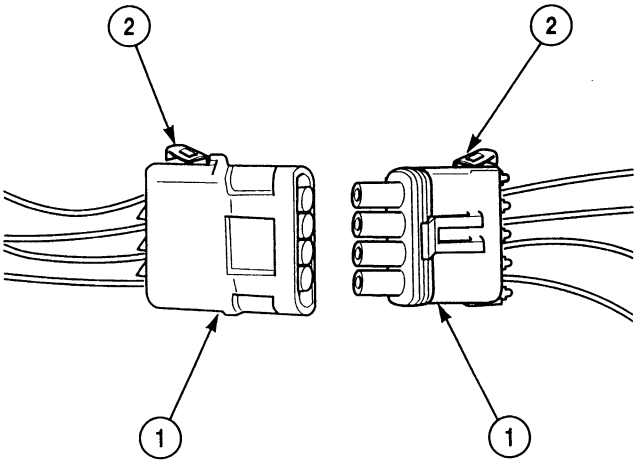
(g) Seat seal (5) into connector (3).

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.



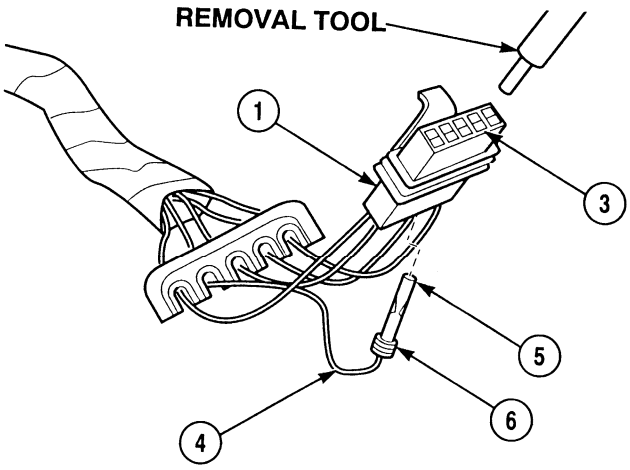
(a) Disconnect connector (1).

(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.

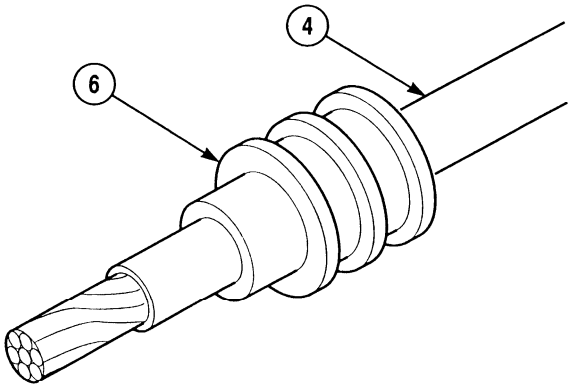
NOTE

- 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).



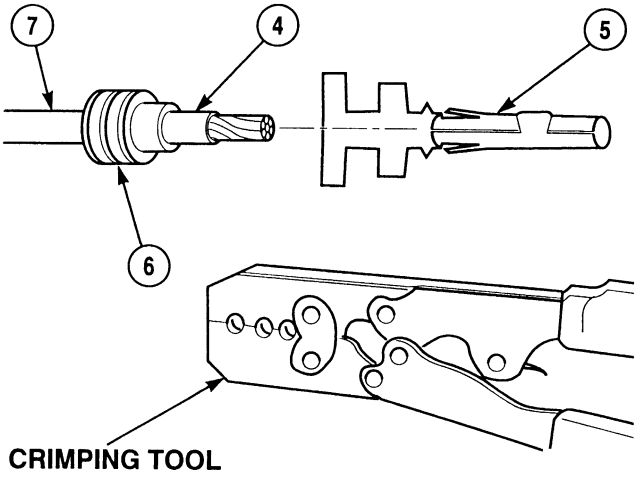
CAUTION

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.

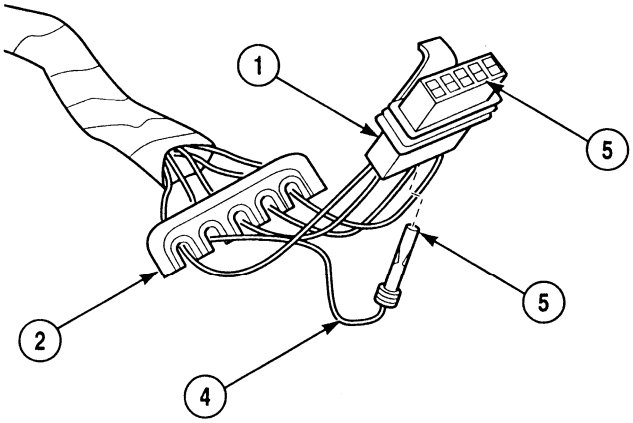
(e) Position wire (4) on terminal (5).

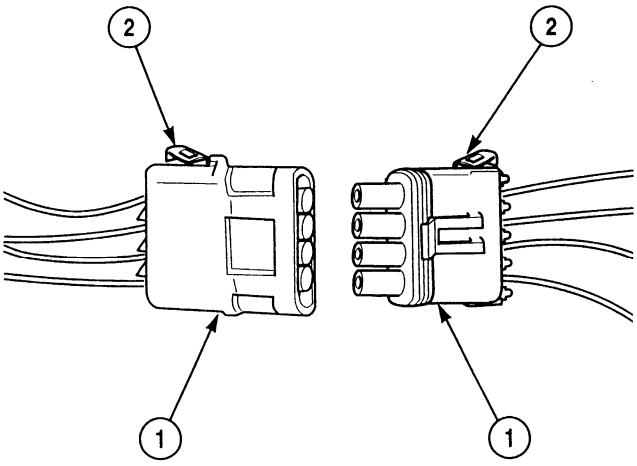
(f) Press handles of crimp tool together until ratchet releases and crimp is complete.

(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).





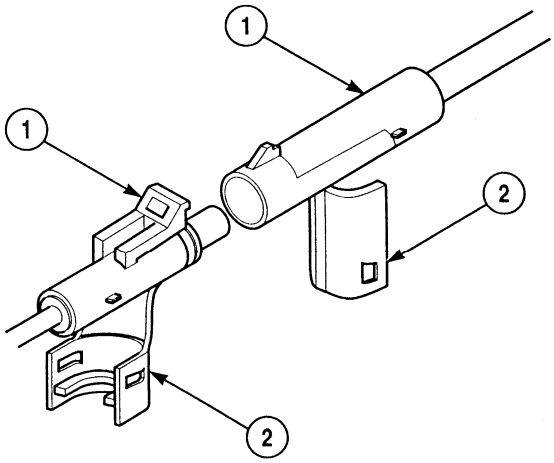
7-101. GENERAL WIRE HARNESS REPAIR (CONT).

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.

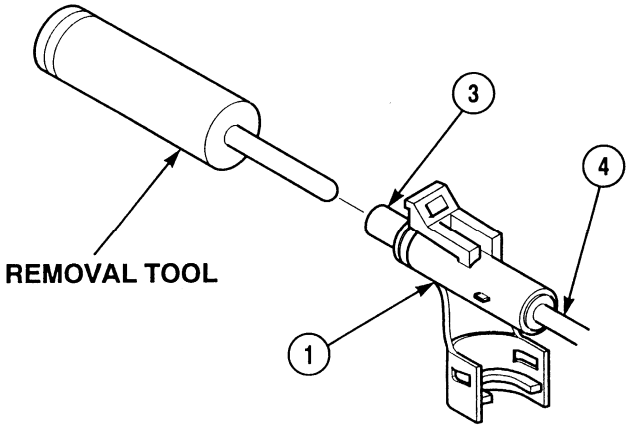


(a) Disconnect connector (1).

(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.



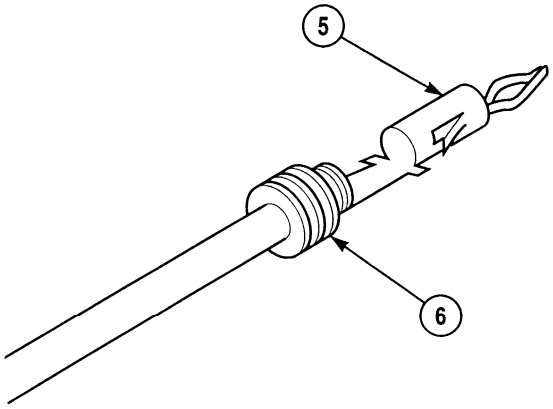
(c) Insert removal tool into terminal connector cavity (3) until seated.

(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.

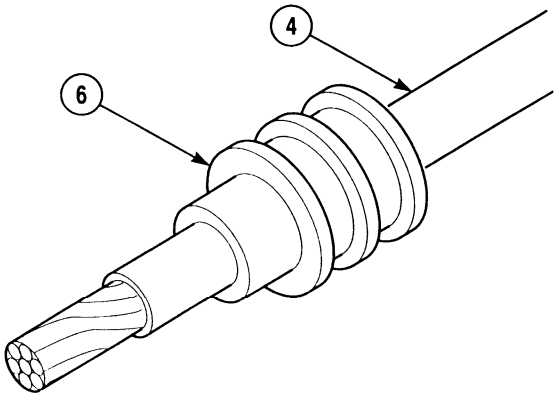


(2) *Assembly.*

(a) Insert 1 in. (2.5 cm) of wire (4) through new wire seal (6).

CAUTION

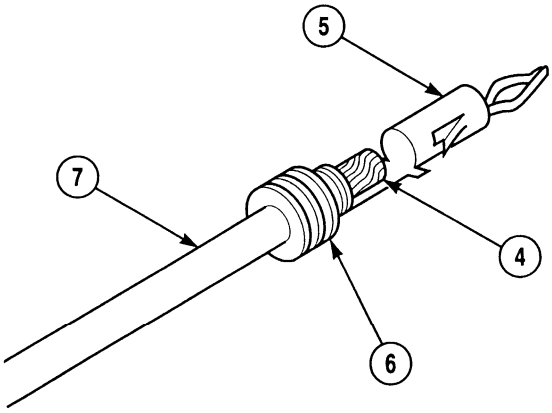
Strip wire after placing it through seal to prevent damage to individual wire strands.



(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.

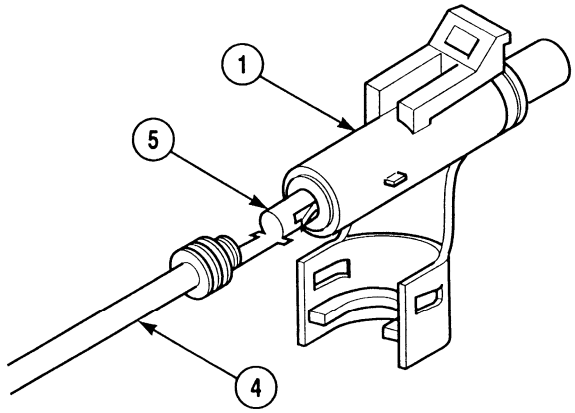
(e) Position wire (4) on terminal (5).

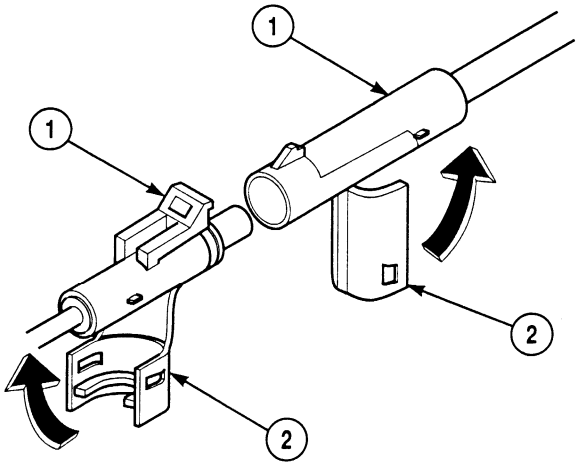
(f) Press handles of crimp tool together until ratchet releases and crimp is complete.

(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).

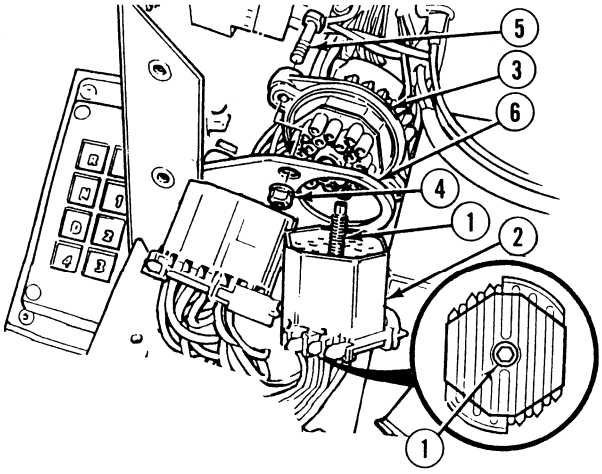




h. 22-Pin Connector Repair.

(1) *Disassembly.*

(a) Loosen center screw (1) and remove harness connector (2) from cab connector (3).



NOTE

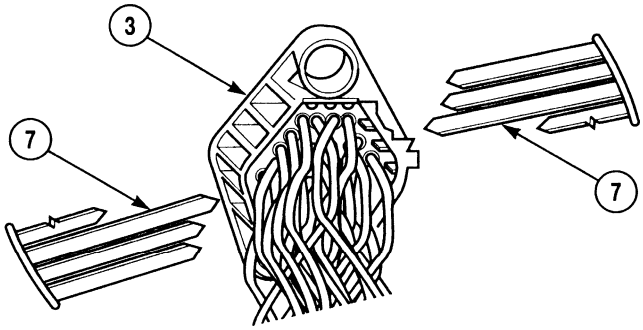
For access to wires on cab connector it may be necessary to perform Step (b) to remove connector from dash.

(b) Remove two locknuts (4), screws (5) and cab connector (3) from connector bracket (6).

NOTE

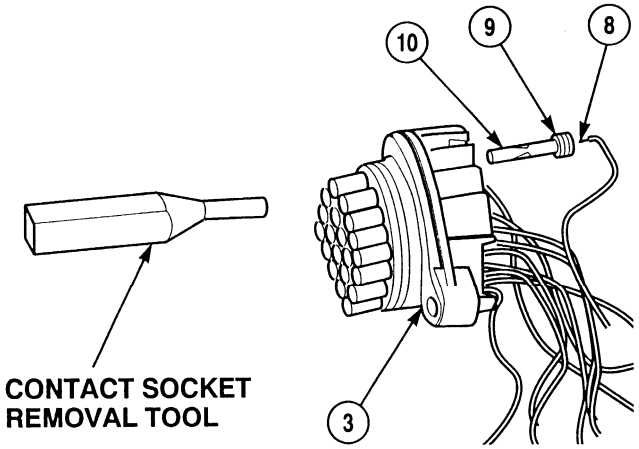
Cab connectors and harness connectors are repaired the same way. Harness connector is shown.

(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).

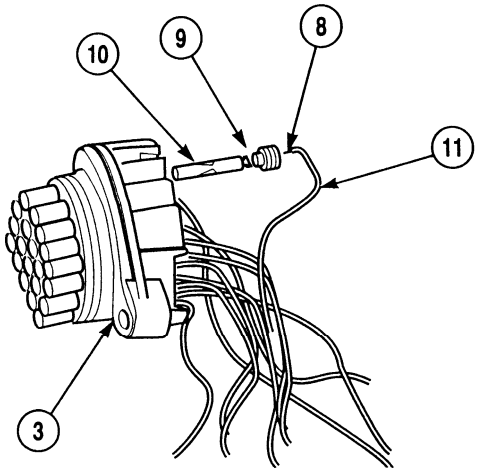
(2) *Assembly.*

(a) Strip approximately 5/16 in (7.87 mm) of insulation (11) from end of wire (8).

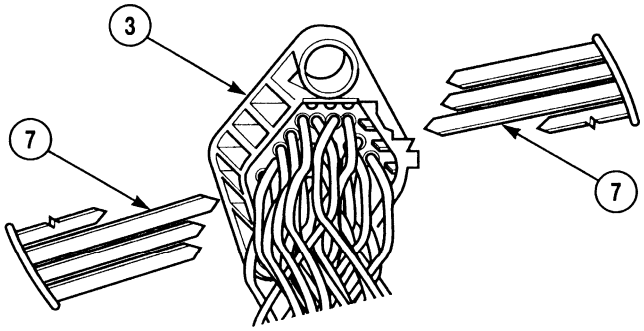
(b) Install new cable seal (9) on wire (8).

(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).

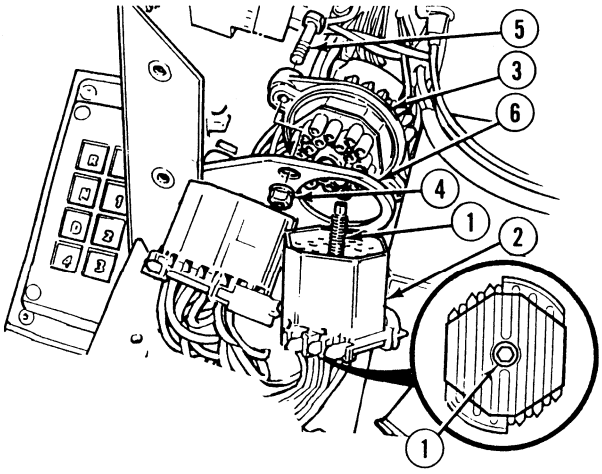


NOTE

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.

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
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)
Left or right rocker cover removed, (Para 3-4 or Para 3-5)
Batteries disconnected, (Para 7-87)

a. Removal.

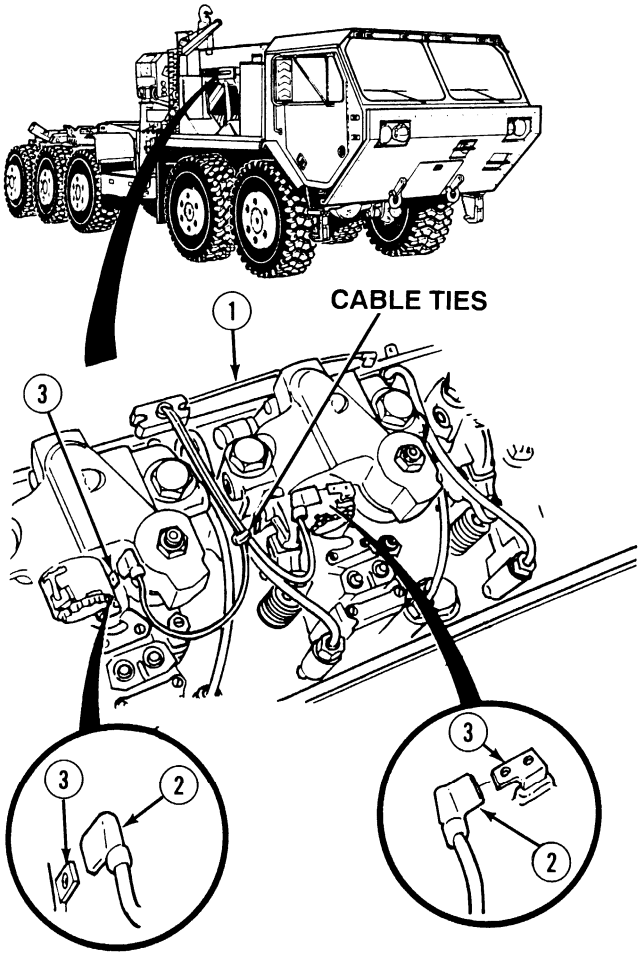
CAUTION

Pull back protective sleeve on positive lock connectors prior to removing positive lock connectors. Do not pull on wires of harness to remove positive lock connectors. Failure to comply may result in damage to solenoid and/or harness.

NOTE

- Tag and mark harness prior to removal.
- Note location of and remove cable ties as required.
- There is one brake wiring harness on each cylinder head. Both brake wiring harnesses are removed the same way. Right side shown.

(1) Disconnect positive lock connectors (2) from engine brake solenoids (3).



7-102. ENGINE BRAKE WIRE HARNESS REPLACEMENT (CONT).

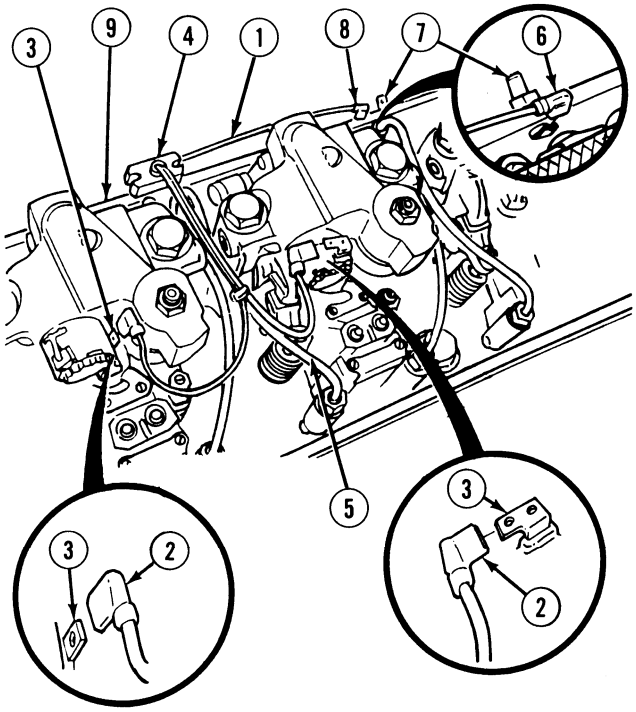
(2) Remove rubber harness support (4) from injector lines (5).

(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

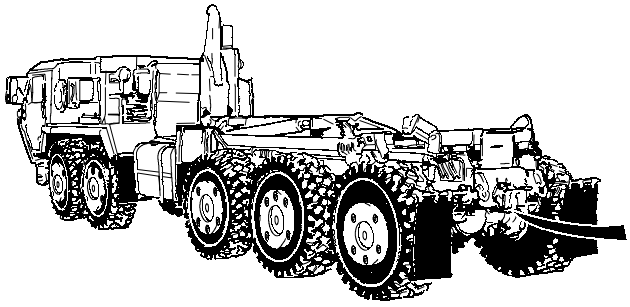
Tools and Special Tools
Tool Kit, Electric (Item 73, Appendix G)
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Weatherpak Crimper (Item 76, Appendix G)

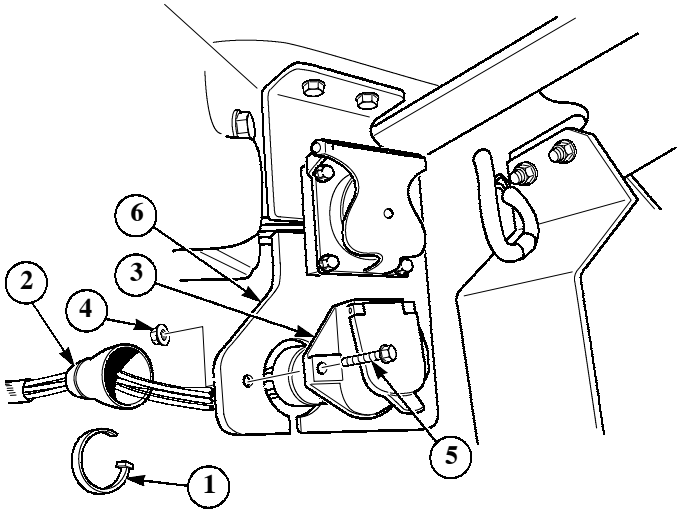
Materials/Parts
Adhesive (Item 8, Appendix C) (Model A connector only)
Cable Ties (Item 25, Appendix C)
Compound, Corrosion Preventive (Item 35, Appendix C)

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.

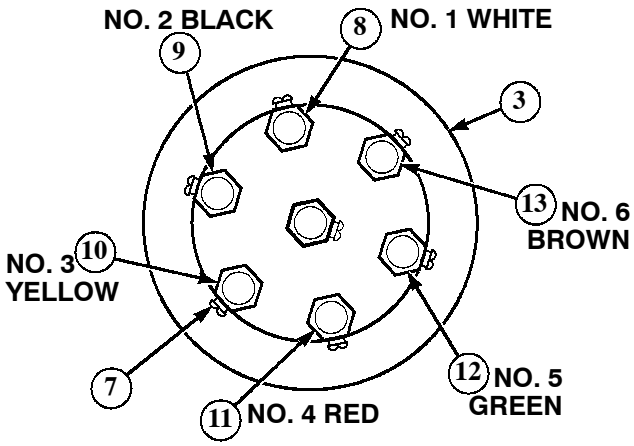
(1) Remove cable tie (1) and rubber boot (2) from connector MC16 (3).

(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).

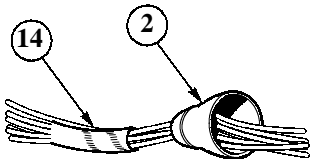
(3) Loosen six screws (7) and remove wires 1435 (8), 1012 (9), 1003 (110), 1005 (11), 1004 (12) and 1008 (13) from connector MC16 (3).

(4) Remove rubber boot (2) from wire harness (14).

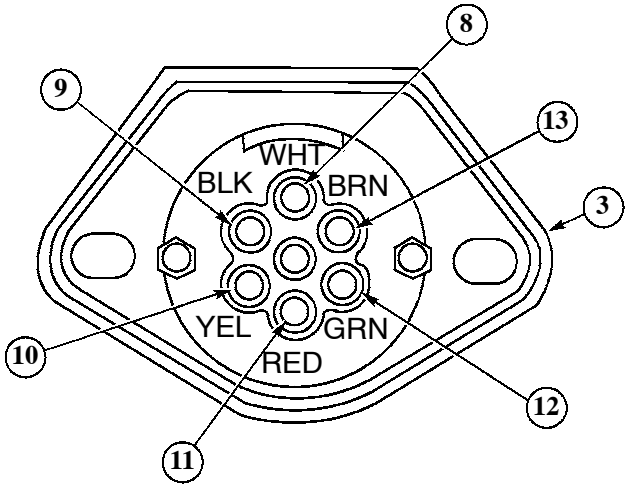


NOTE

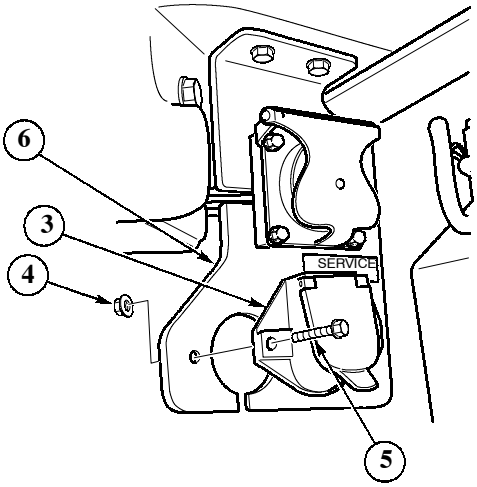
- Perform steps (5) and (6) for model B connector.
- Wire is removed by pulling seal boot out of MC16 connector.



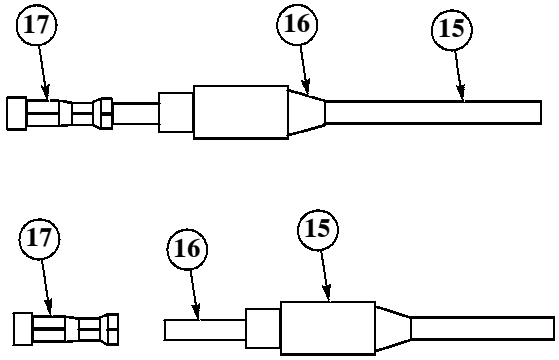
(5) Remove wires 1435 (8), 1012 (9), 1003 (10), 1005 (11), 1004 (12) and 1008 (13) from connector MC16 (3).



(6) Remove two locknuts (4), screws (5) and connector MC16 (3) from mounting bracket (6). Discard locknuts.



b. Installation.

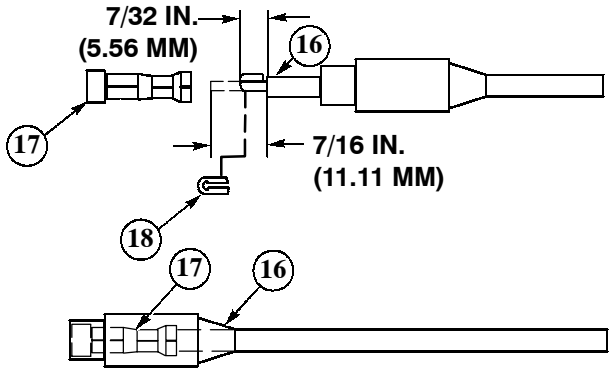


NOTE

- 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).

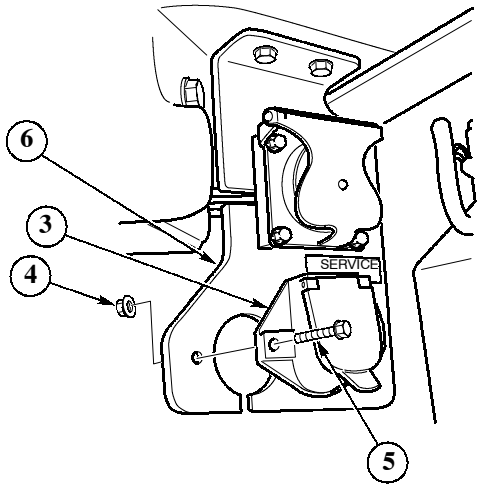
NOTE

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 preventitive 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).

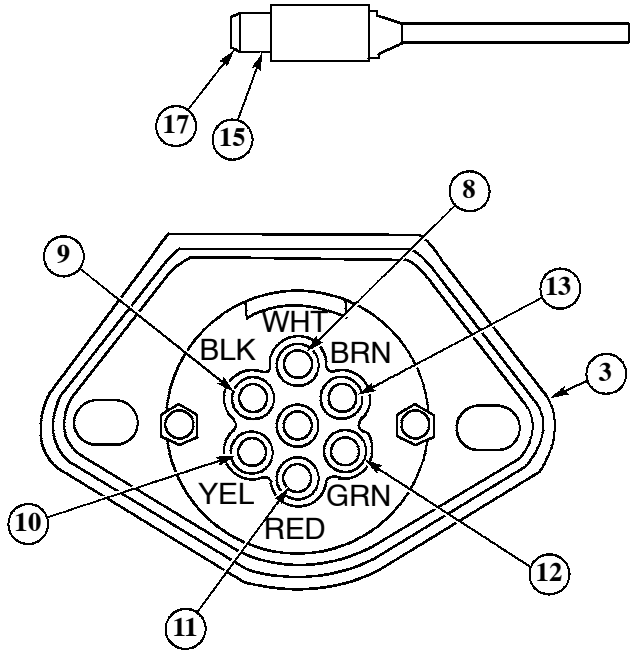
(14) Install connector MC16 (3) on mounting bracket (6) with two screws (5) and locknuts (4).

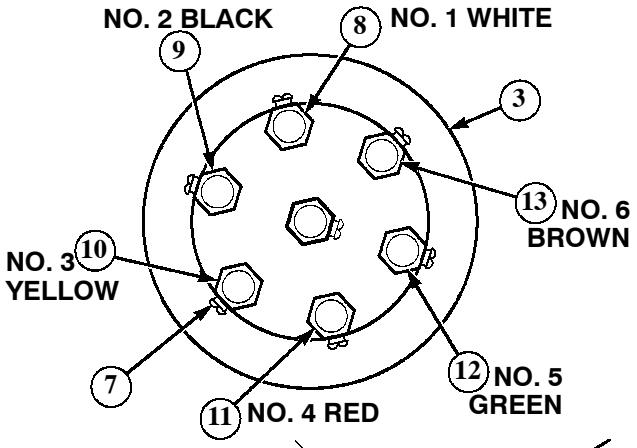
(15) Apply corrosion preventative compound to front and rear terminals in connector MC16 (3).

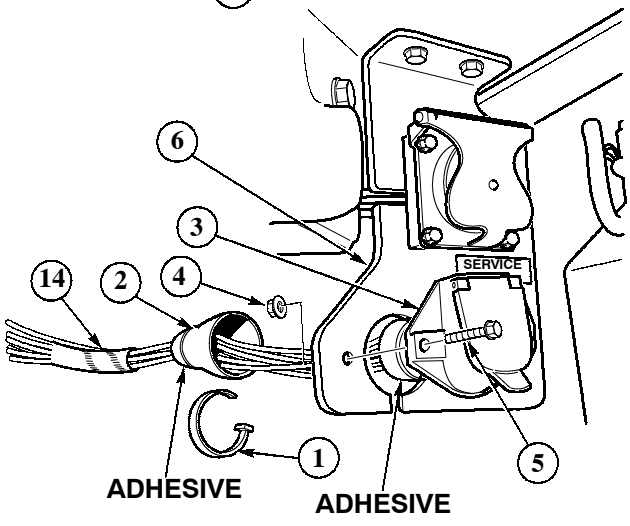
(16) Apply corrosion preventative compound to front and rear terminals in connector MC16 (3).

(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

7-104. 12-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)

Material/Parts
Cable Ties (Item 25, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (4) (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.

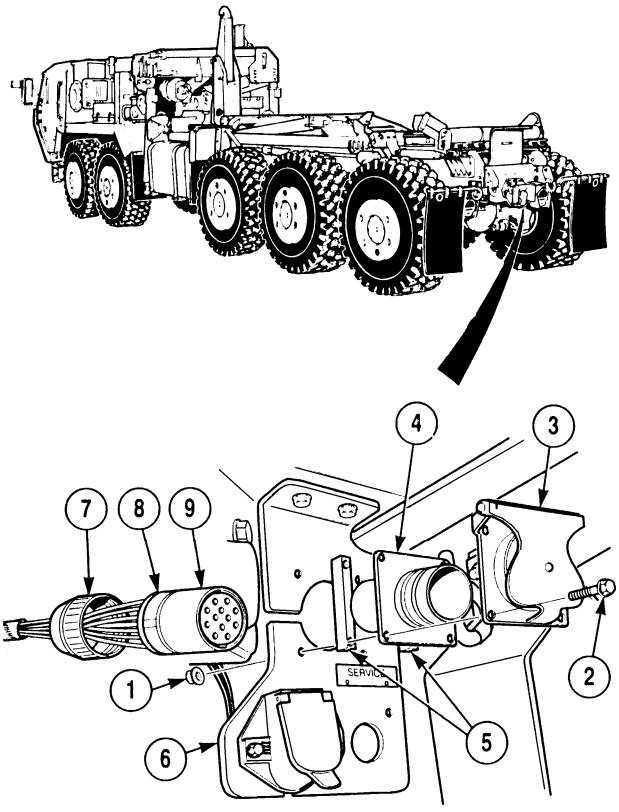
NOTE

- Tag and mark wires prior to removal.
- Remove cable ties and loosen cushion clips as required.

(1) Remove four locknuts (1), screws (2), spring cover (3), electrical connector housing (4) and two spacers (5) from mounting bracket (6). Discard locknuts.

(2) Remove collar (7) and collar boot (8) from electrical connector housing (4).

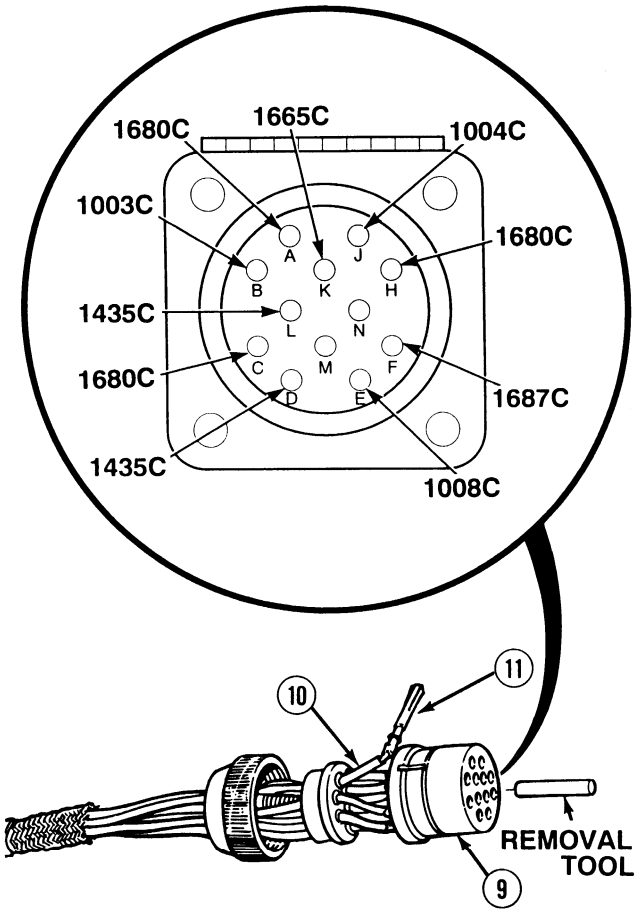
(3) Remove electrical connector MC15 (9) from electrical connector housing (4).



(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).

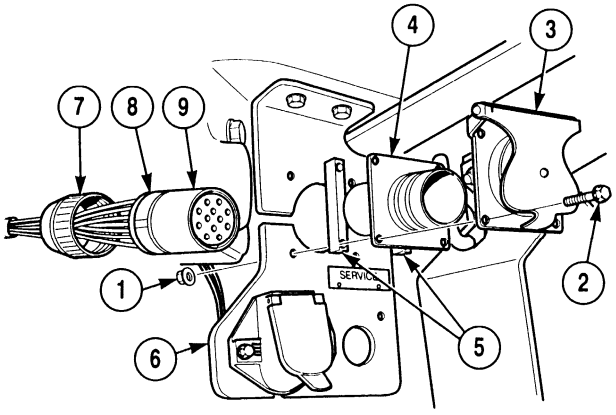
(3) Install collar boot (8) and collar (7) through bracket (6) on electrical connector housing (4).

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

7-105. EMERGENCY STEERING SWITCH REPLACEMENT.

This task covers:

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

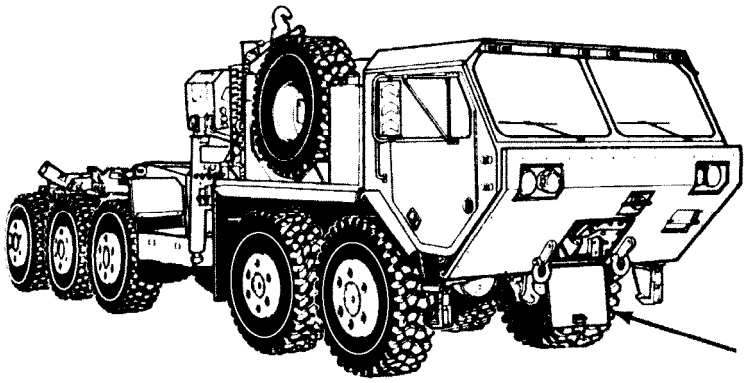
INITIAL SETUP

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)

Material/Parts
Oil, Hydraulic (Item 50, Appendix C)
Packing, Preformed (Item 259, Appendix F)

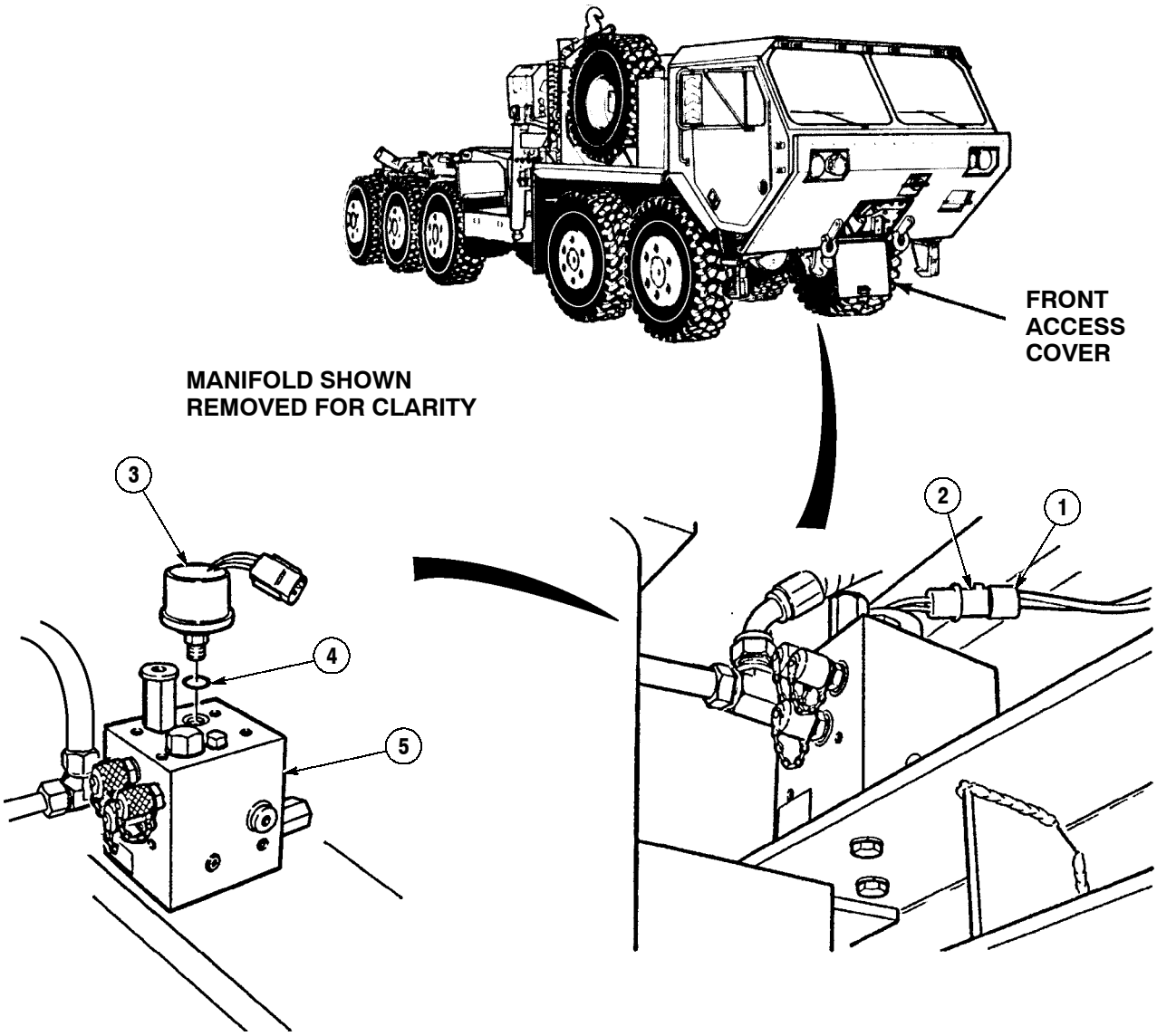
a. Removal.



WARNING

- The truck steering operates with 3000 psi (20,685 kPa) hydraulic pressure. A high pressure hydraulic oil stream can pierce a body and cause severe injury to personnel. Never disconnect any high pressure hydraulic oil line or fitting without first dropping pressure to zero.
- 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.

(1) Open front access cover.

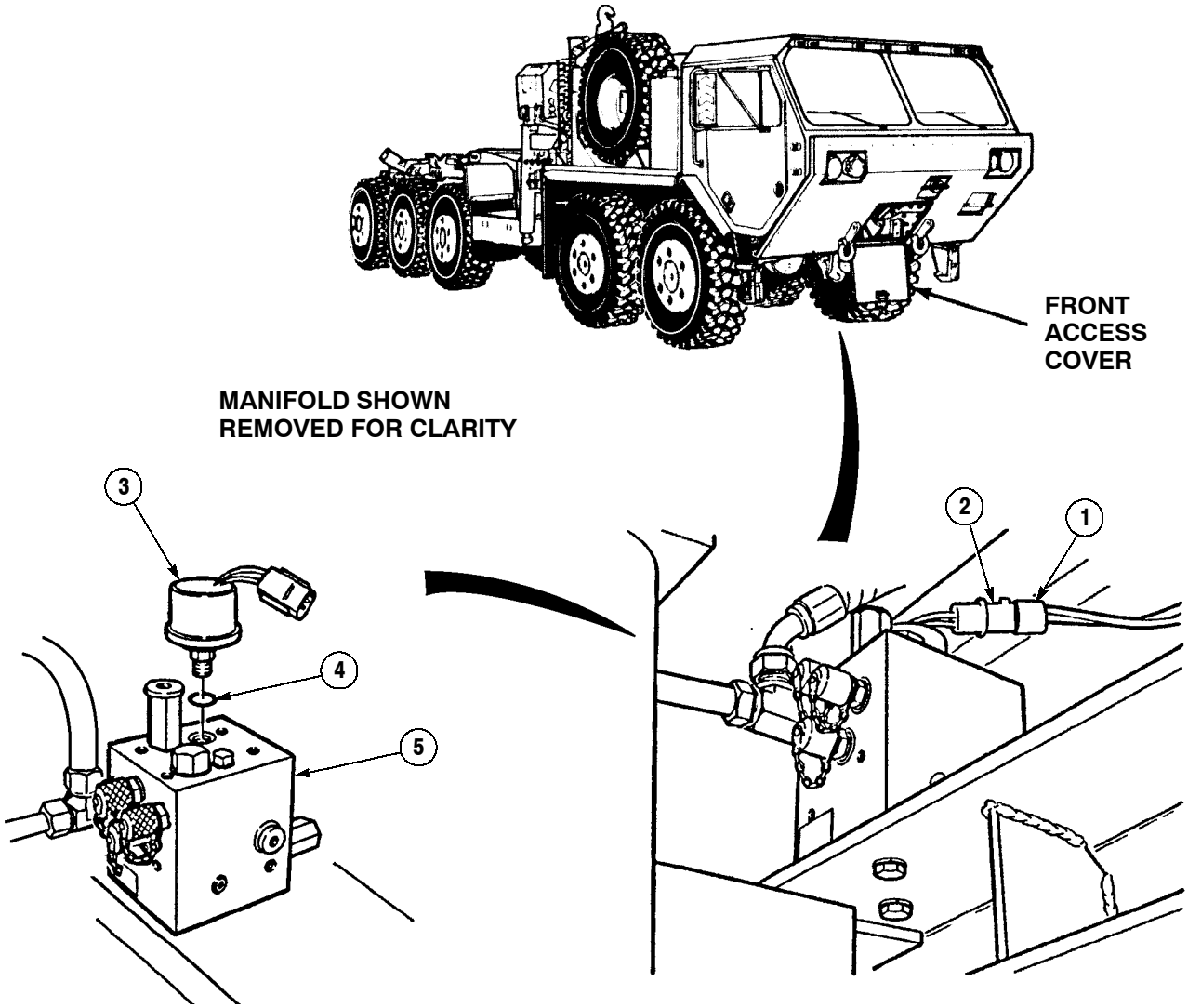


(2) Disconnect MC113 connector (1) from pressure switch connector (2).

(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

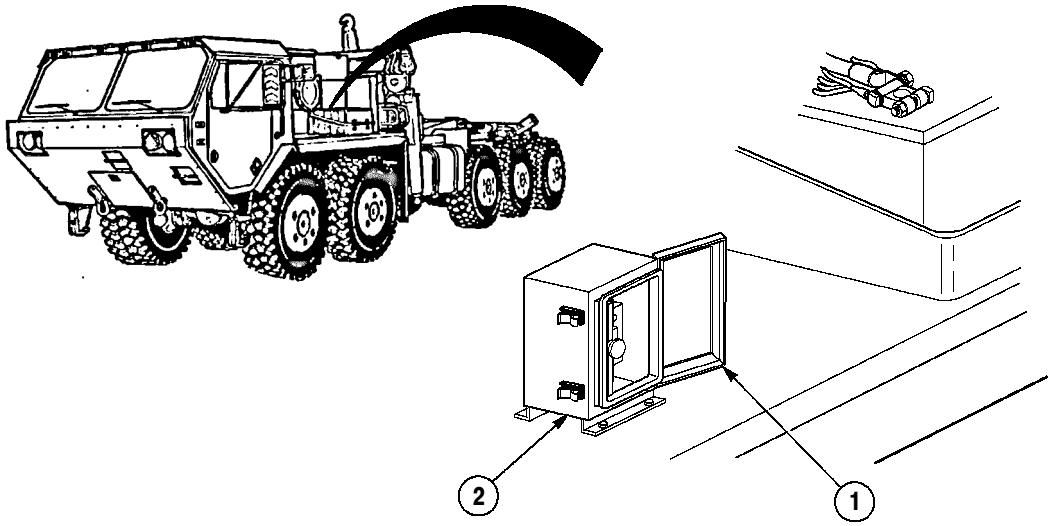
INITIAL SETUP

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)

Material/Parts
Sealant, Electrical (Item 68, Appendix C)
Locknut (4) (Item 98, Appendix F)
Lockwasher (8) (Item 163, Appendix F)
Lockwasher (4) (Item 172, Appendix F)

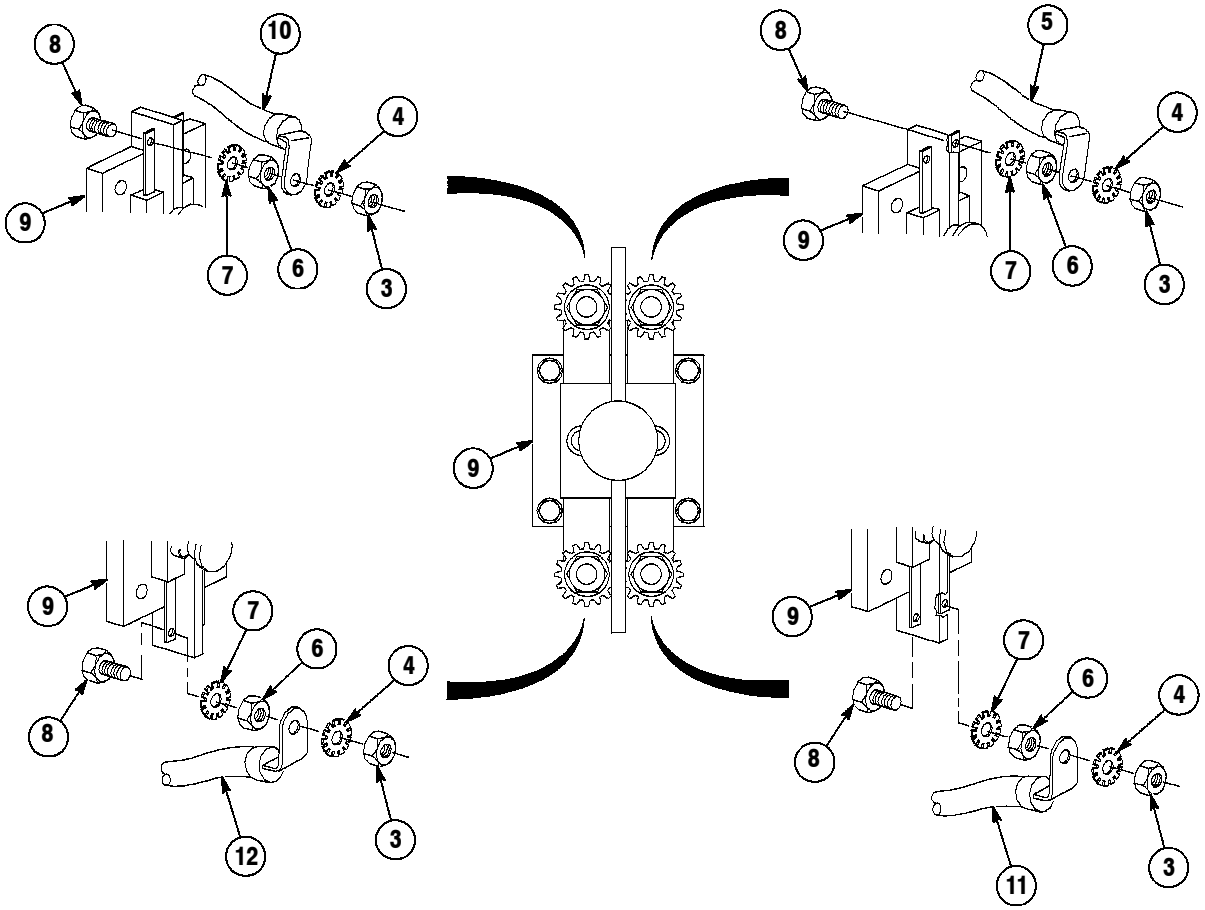
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



(1) Open door (1) on battery disconnect switch box (2).

7-106. BATTERY DISCONNECT SWITCH BOX REPAIR (CONT).



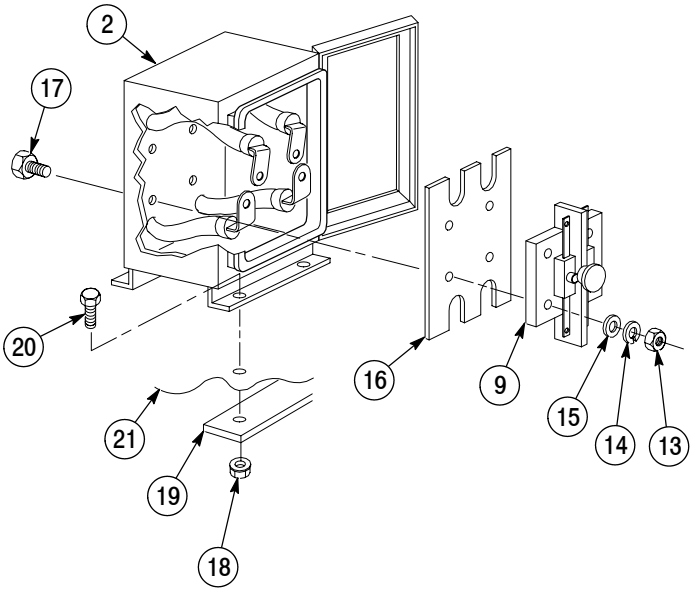
(2) Remove nut (3), lockwasher (4), wire 1281A (5), nut (6), lockwasher (7) and screw (8) from upper right section of battery disconnect switch (9). Discard lockwashers.

(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.



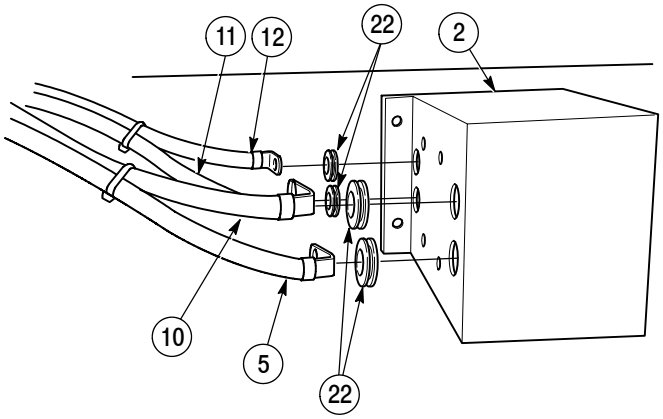
NOTE

- Model A battery disconnect switch box does not have tapered grommets. Model B battery disconnect switch box does have tapered grommets. If vehicle is equipped with Model A battery disconnect switch box and is damaged, Model A battery disconnect switch box will need to be replaced with Model B battery disconnect switch box.
- Perform Step 7 if battery disconnect switch box is damaged.

(7) Remove four locknuts (18), two mounting brackets (19), four screws (20) and battery disconnect switch box (2) from left fender (21). Discard locknuts.

NOTE

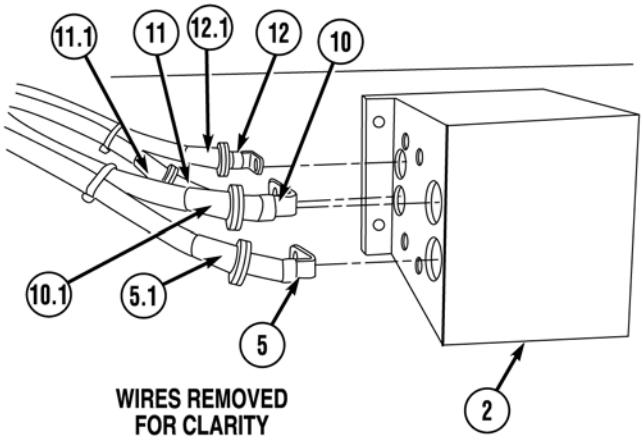
Model A battery disconnect switch box is not equipped with tapered grommets. Model B battery disconnect switch box is equipped with tapered grommets. Perform Steps (8 and 9) for Model A. Perform Step (10) for Model B.



(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).

(10) Pull wire 1281A (5), grommet (5.1), wire 1566 (10), grommet (10.1), wire 1281A (11), grommet (11.1), wire 1274 (12) and grommet (12.1) through battery disconnect switch box (2).



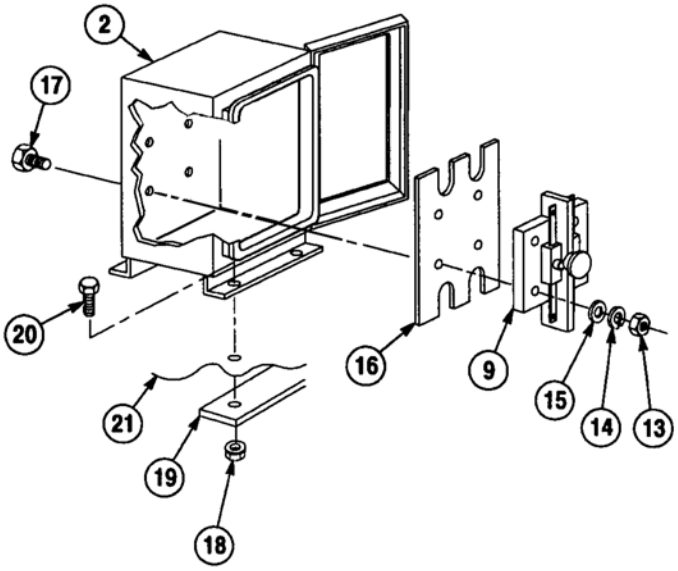
7-106. BATTERY DISCONNECT SWITCH BOX REPAIR (CONT).

b. Installation.

NOTE

Perform Step 1 if battery disconnect switch box was replaced.

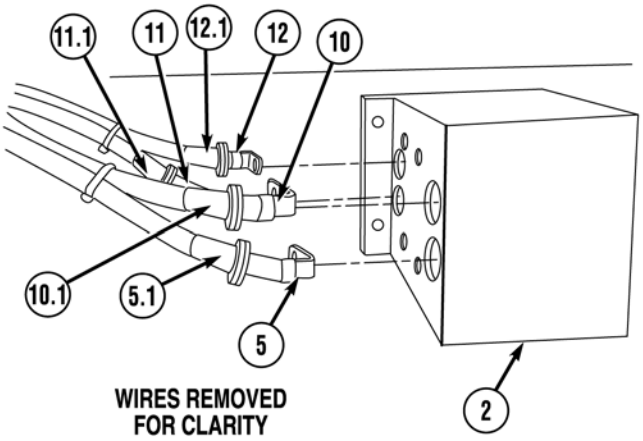
(1) Install battery disconnect switch box (2) on left fender (21) with four screws (20), two mounting brackets (19) and four locknuts (18).



(2) Pull wires 1281A (5), 1566 (10), 1281A (11) and 1274 (12) through battery disconnect switch box (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 adhesives, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

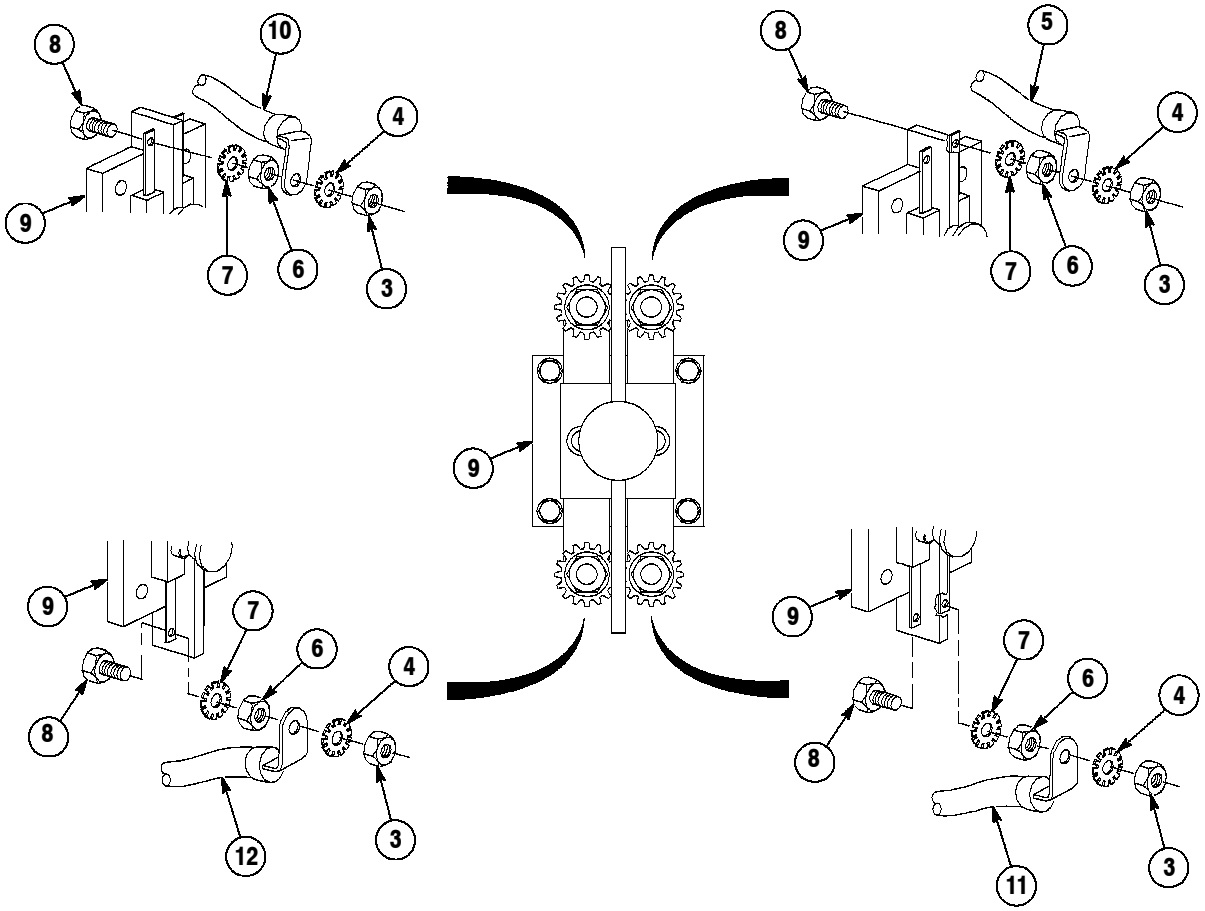


(3) Apply electrical sealant to four grommets (5.1), (10.1), (11.1) and (12.1).

(4) Install four grommets (5.1), (10.1), (11.1) and (12.1) in battery disconnect switch box (2).

(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).

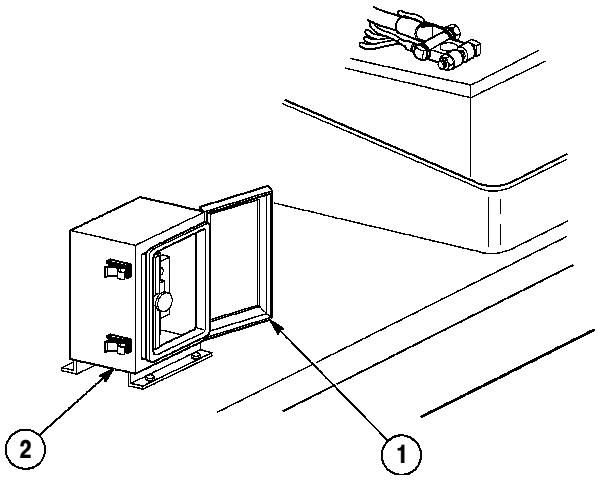
WARNING

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
b. Disassembly
c. Assembly
d. Installation
e. Follow-On Maintenance

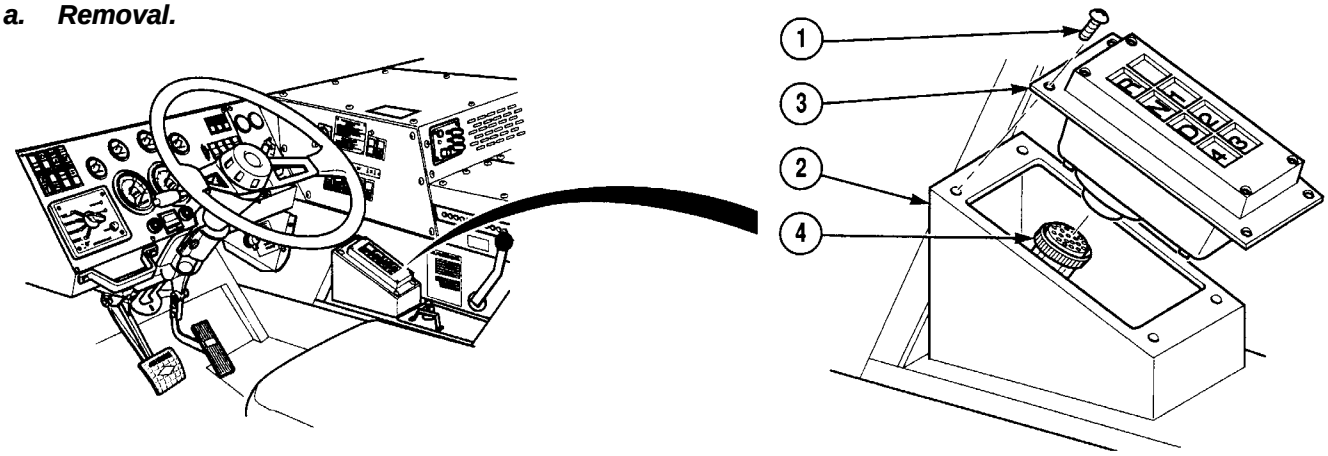
INITIAL SETUP

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

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)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

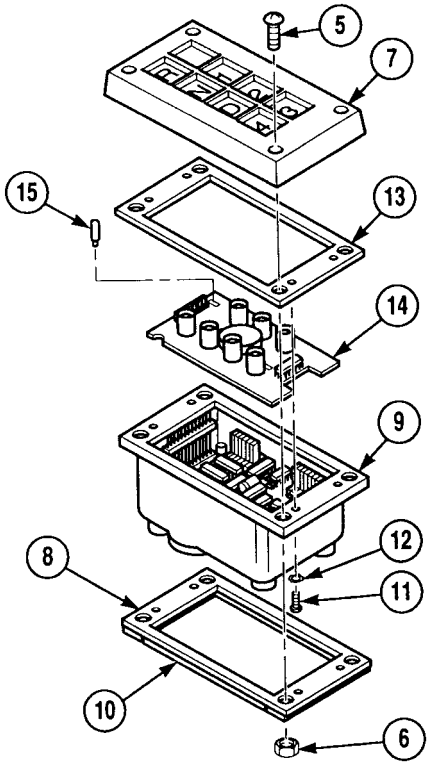
a. Removal.



(1) Remove 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.

CAUTION

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).

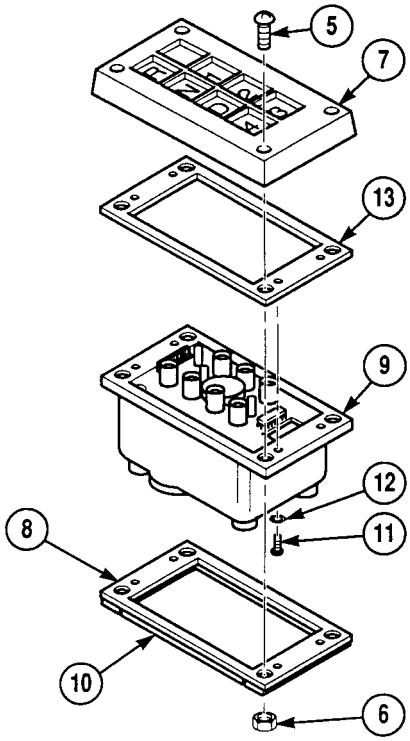
NOTE

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).

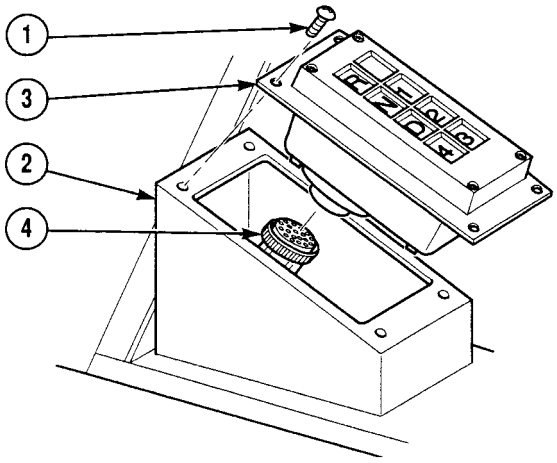
(7) Install four screws (5) and locknuts (6) in shift selector cover assembly (7).



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.

This task covers:

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

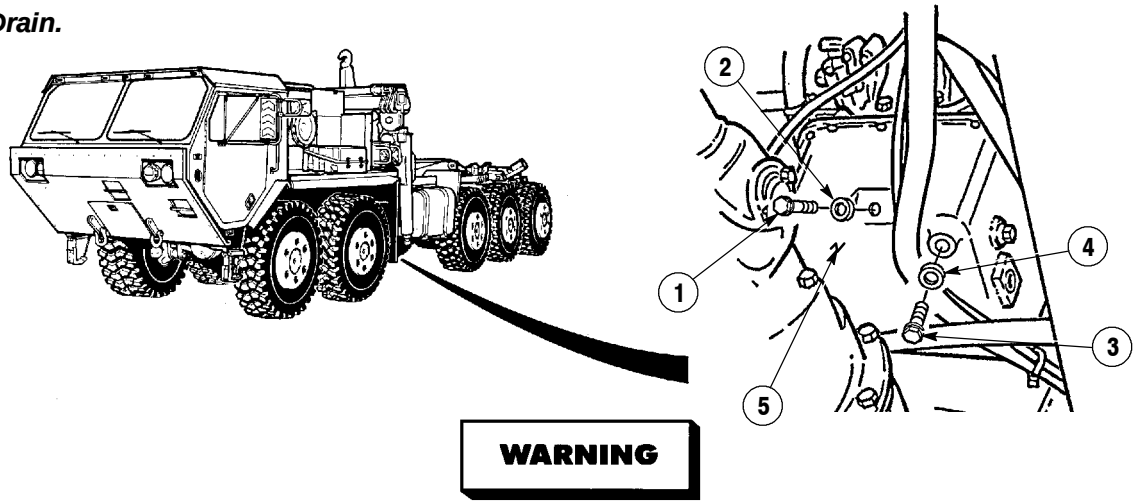
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Pan, Drain (Item 46, Appendix G)
Wrench Set, Socket 3/8 in. Drive (Item 93, Appendix G)
Wrench Torque (0-60 N·m) (Item 98, Appendix G)

Materials/Parts
Lubricating Oil (Item 50, Appendix C)
Gasket (Item 49, Appendix F)

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

a. Drain.



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.

NOTE

- Transmission should be between 160 to 200 degrees F (71 to 93 degrees C) at time when oil is drained. Transmission will not drain completely if not at proper temperature. Read transmission temperature gage in cab to check temperature.
- Truck should be serviced on level surface to ensure oil level can be checked correctly and that all oil possible is drained.
- Transmission capacity is 39.5 qts (37.4 l).
- Center drain plug and gasket should not be removed if oil pan is equipped with a corner drain plug and gasket.

(1) Position drain pan under work area.

(2) Remove drain plug (1) and gasket (2) or drain plug (3) and gasket (4) from oil pan (5). Discard gasket.

b. Fill.

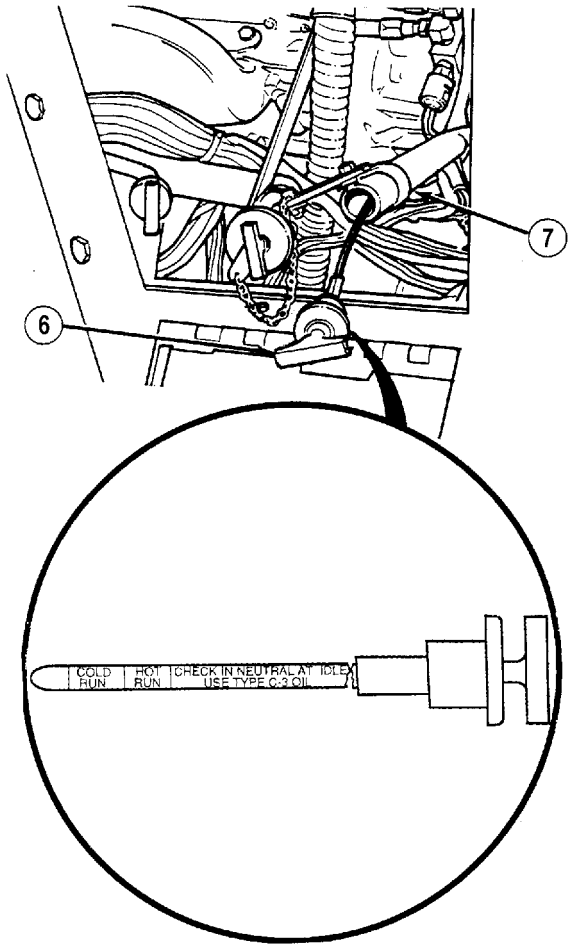
(1) Install drain plug (3) and gasket (4) or drain plug (1) with gasket (2) in oil pan (5). Tighten plug to 180 to 240 lb-in (20 to 27 N·m).

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

8-4. TRANSMISSION OIL FILTER (EXTERNAL) 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)
Removal Tool, Oil Filter (Item 54, Appendix G)

Materials/Parts
Cloth, Cleaning (Item 31, Appendix C)
Lubricating Oil (Item 50, 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)

a. Removal.

WARNING

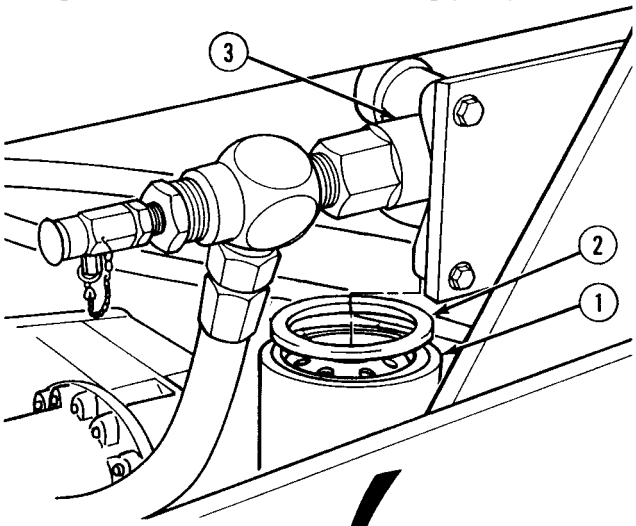
Ensure transmission oil and filter are cool prior to removal. Failure to comply may result in injury to personnel.

NOTE

Gasket may stay with filter or adapter housing.

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

(2) Remove and discard oil filter (1) and gasket (2) from adapter (3) by turning counterclockwise.



b. Installation.

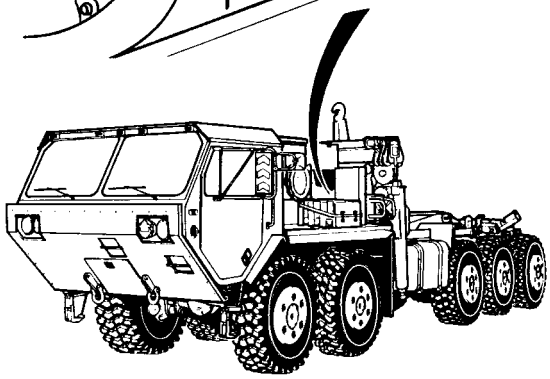
(1) Clean adapter (3) sealing surface with cleaning cloth.

(2) Fill oil filter (1) with oil and lightly coat gasket (2) with oil.

(3) Install filter (1) on adapter (3). Tighten filter two-thirds turn after filter seal contacts adapter.

c. Follow-On Maintenance:

- Check transmission oil level, (Para 2-9, Lubrication Table 2-3).
- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

8-5. TRANSMISSION BREATHER REPLACEMENT/SERVICE.

This task covers:

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

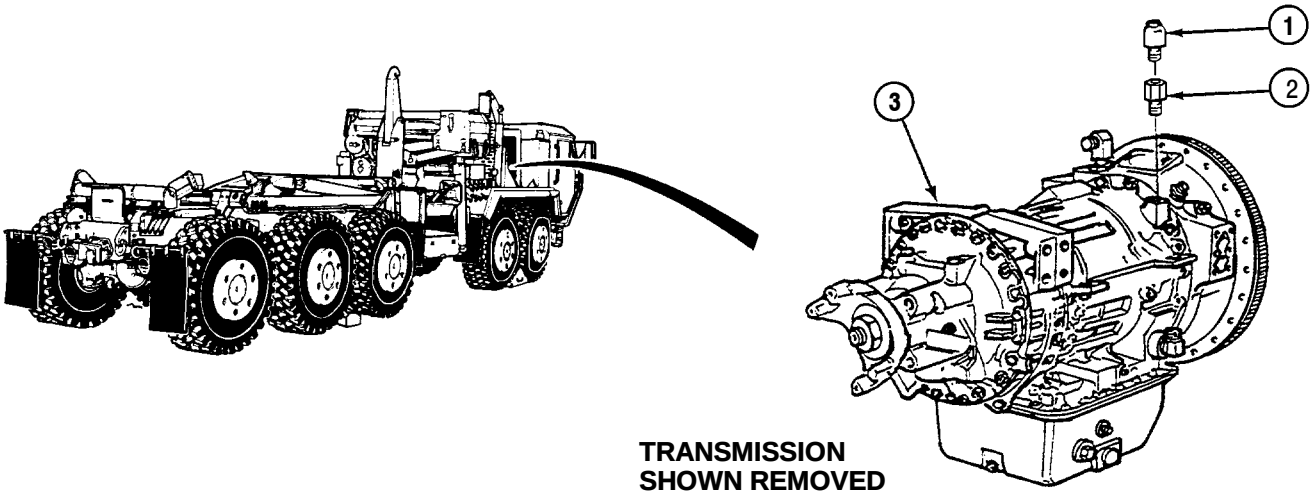
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
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.



TRANSMISSION SHOWN REMOVED FOR CLARITY

(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

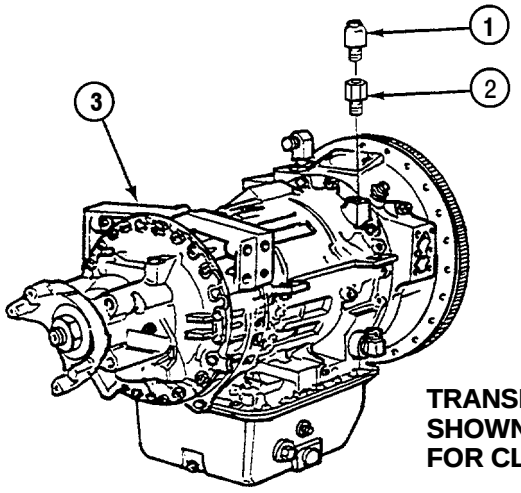
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with 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 transmisison breather (1) in transmission (3).



TRANSMISSION SHOWN REMOVED FOR CLARITY

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
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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.

9-2. TRANSFER CASE SERVICE.

This task covers:

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

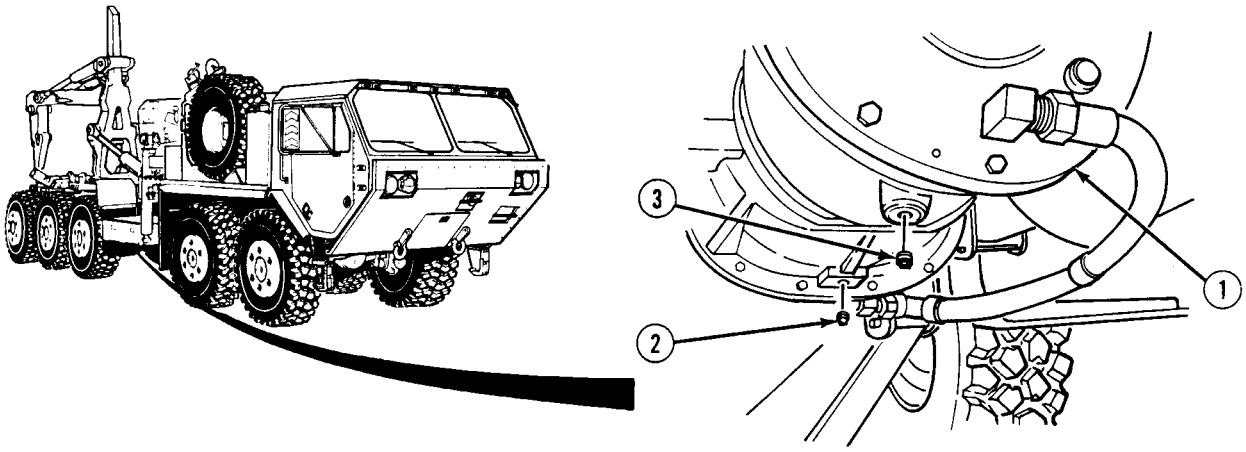
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Funnel (Item 24, Appendix G)
Pan, Drain (Item 46, Appendix G)

Materials/Parts
Lubricating Oil (Item 55, Appendix C)
Sealing Compound (Item 72, Appendix C)

Equipment Condition
LHS fully extended, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

a. Drain.



NOTE

Transfer case capacity is 10.5 qts (9.9 l).

(1) Position drain pan under transfer case (1) and drain plug (2).

(2) Remove drain plug (2) from transfer case (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 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.

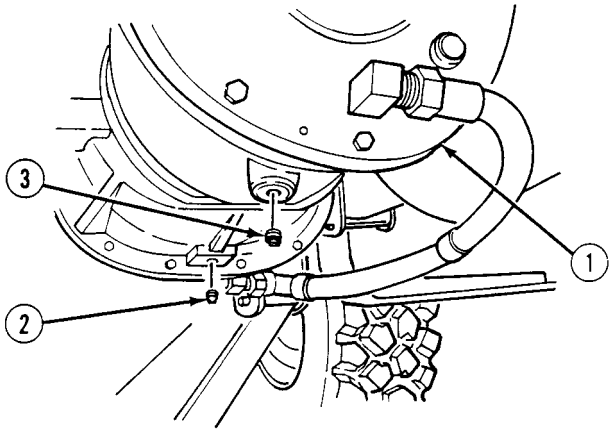
(4) Install drain plug (2) on transfer case (1).

(5) Position drain pan under drain plug (3).

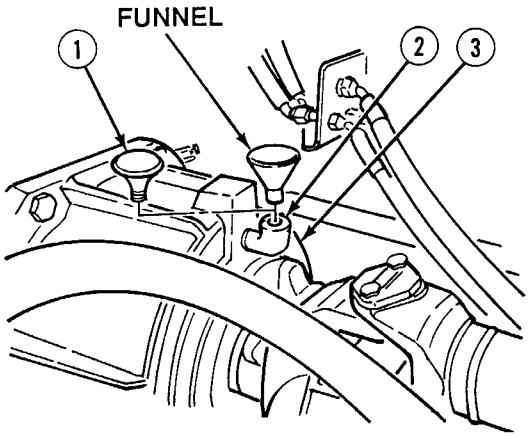
(6) Remove drain plug (3) from transfer case (1).

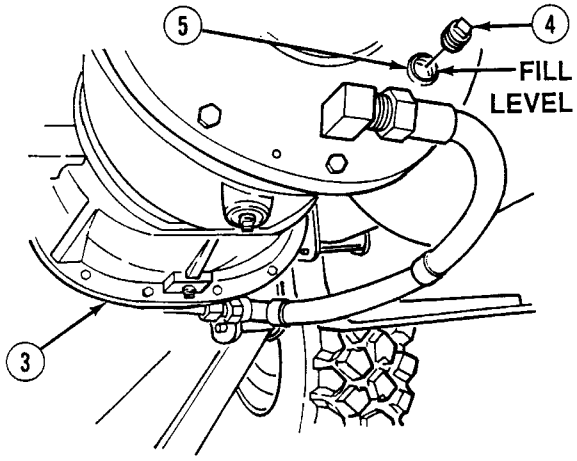
(7) Coat threads of drain plug (3) with sealing compound.

(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).

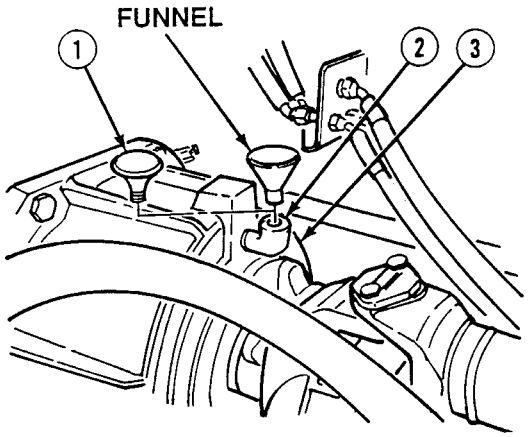
(3) Position drain pan under hole (5).

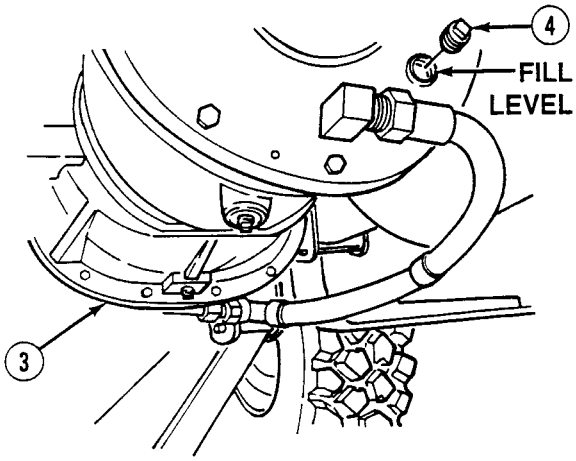
NOTE

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

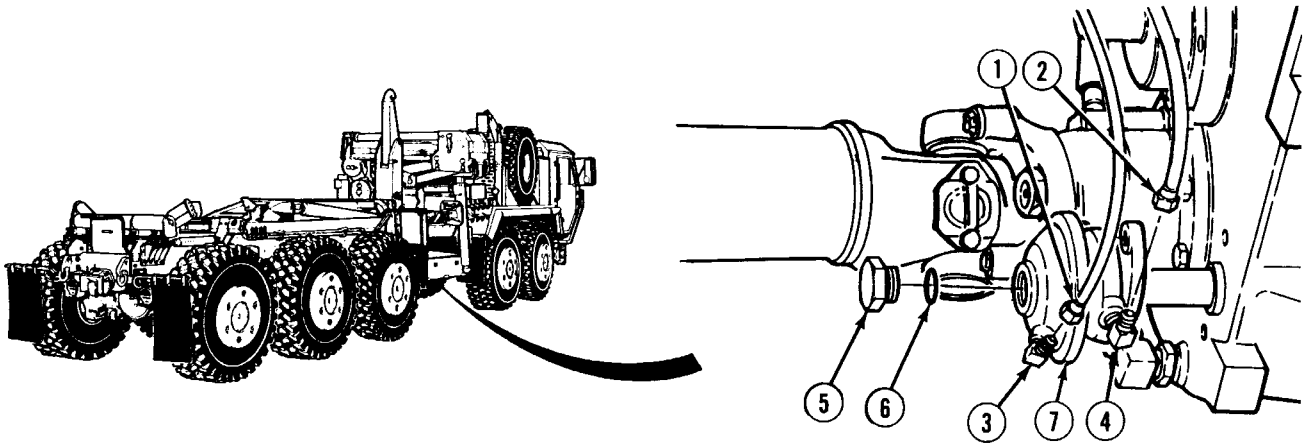
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

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 169, Appendix F)
Packing, Preformed (Item 243, Appendix F)
Washer, Copper (2) (Item 350, 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 remoal.

(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.

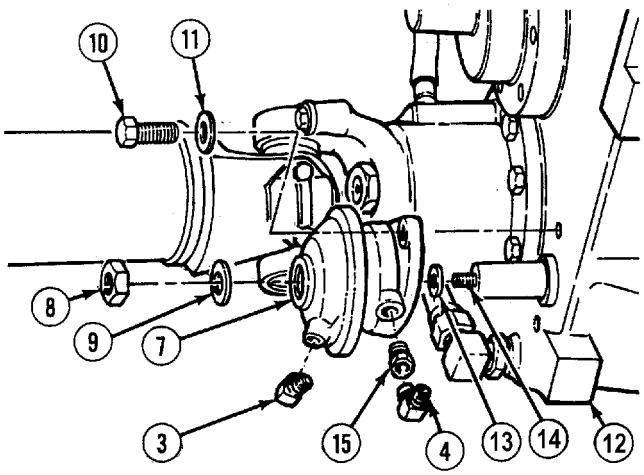
9-3. TRANSFER CASE DIFFERENTIAL AIR CHAMBER REPLACEMENT (CONT).

(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

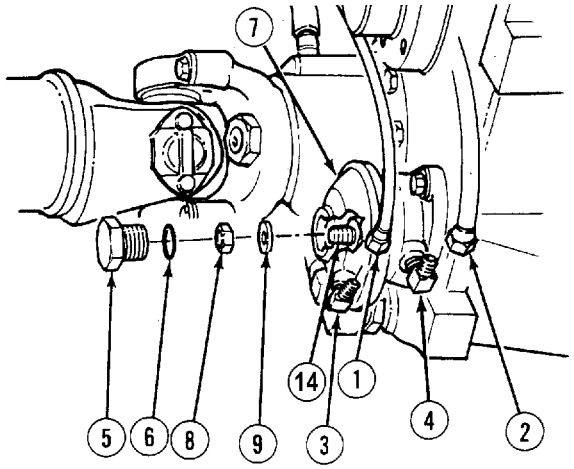
If shift rod is not fully extended, locknut cannot be installed.

(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

9-4. TRANSFER CASE SHIFT ASSEMBLY REPLACEMENT.

This task covers:

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

INITIAL SETUP

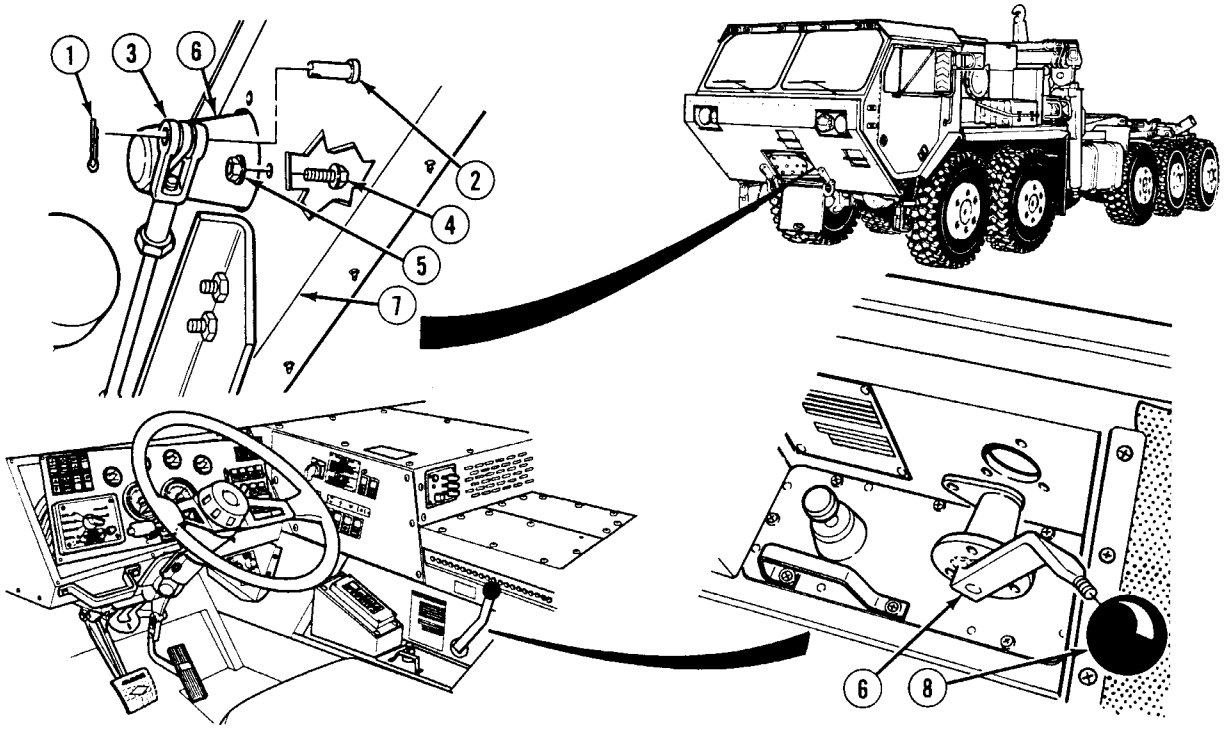
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)

Materials/Parts
Adhesive (Item 9, Appendix C)
Locknut (3) (Item 106, Appendix F)
Locknut (2) (Item 133, Appendix F)
Pin, Cotter (Item 271, Appendix F)

Personnel Required
Two

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cab engine access panel removed, (Para 17-24)

a. Removal.

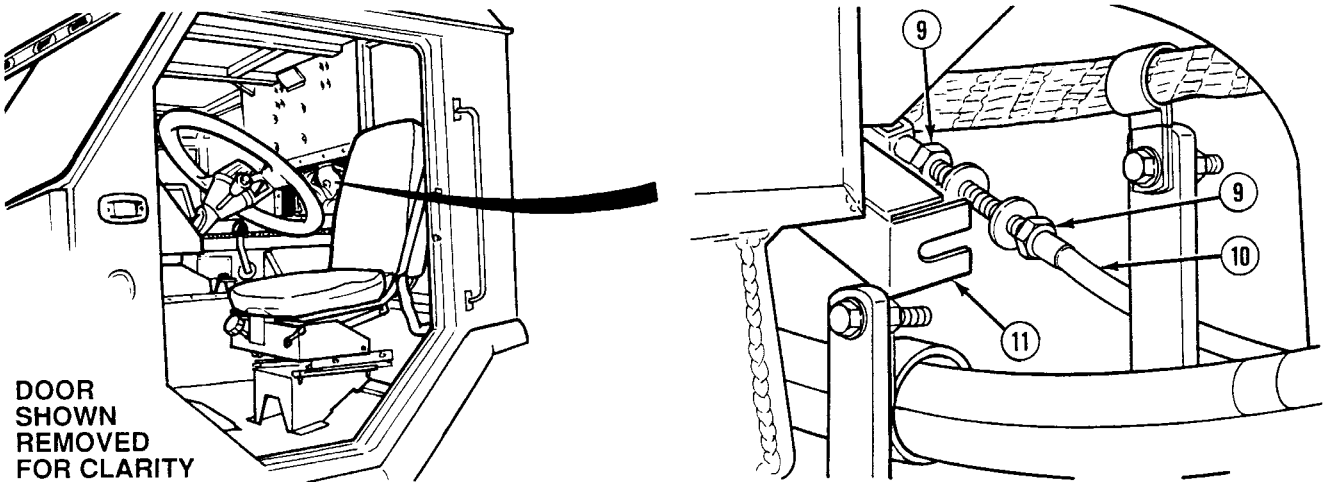


(1) Remove cotter pin (1) and yoke pin (2) from adjustable clevis (3). Discard cotter pin.

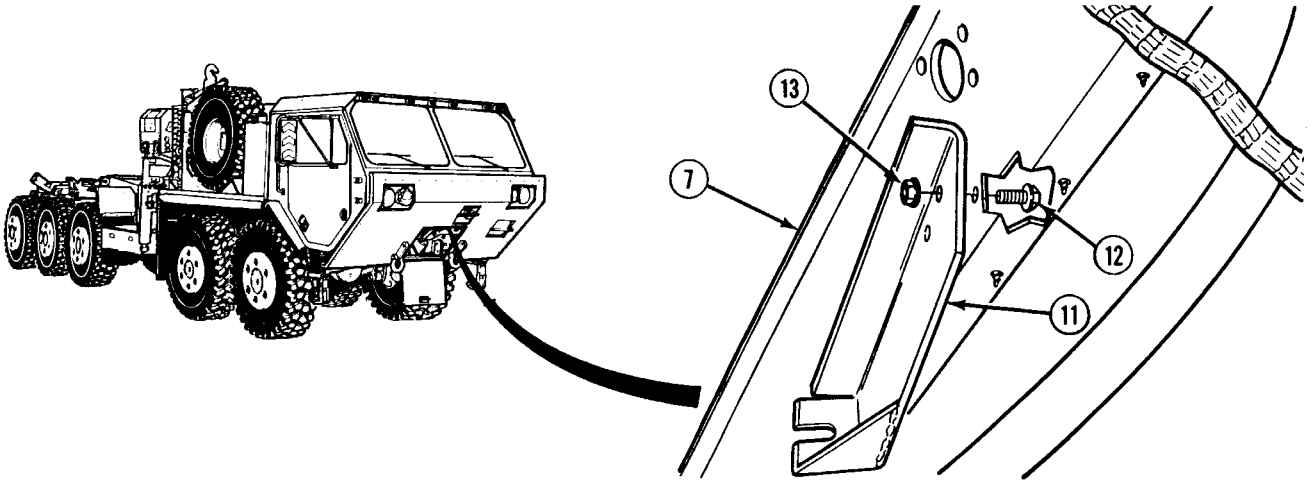
(2) With the aid of an assistant, remove three screws (4) and locknuts (5) from transfer case shift assembly (6). Discard locknuts.

(3) Remove transfer case shift assembly (6) from cab structure (7).

(4) Remove knob (8) from transfer case shift assembly (6).



(5) Loosen jam nuts (9) and remove transfer case shift cable (10) from front transfer case shift cable bracket (11).



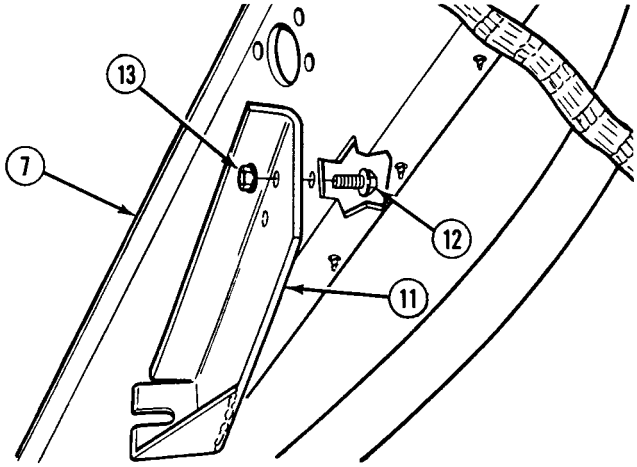
(6) With the aid of an assistant, remove two screws (12), locknuts (13), and front transfer case shift cable bracket (11) from cab structure (7). Discard locknuts.

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.



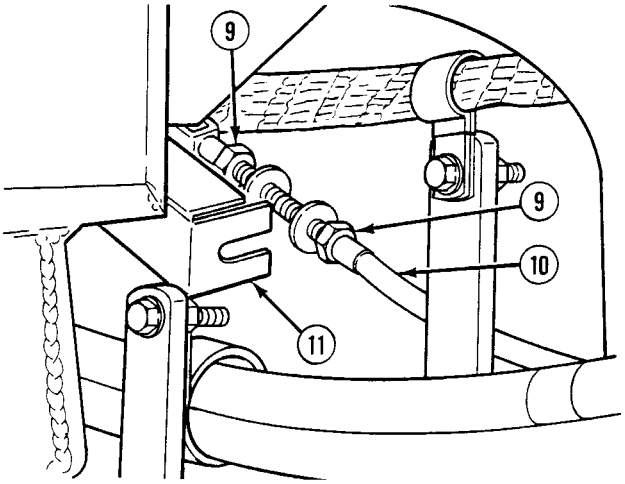
(1) Apply adhesive to rear of transfer case shift cable bracket (11).

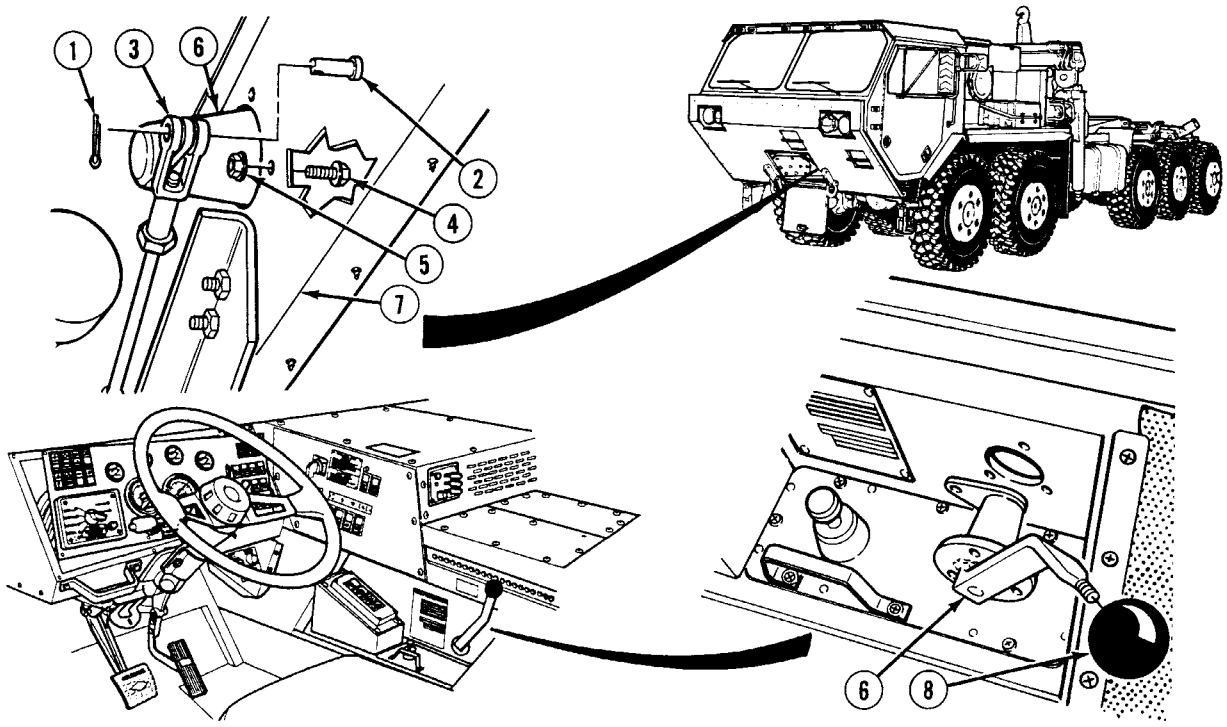
(2) With the aid of an assistant, install front transfer case shift cable bracket (11) on cab structure with two screws (12) and locknuts (13).

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

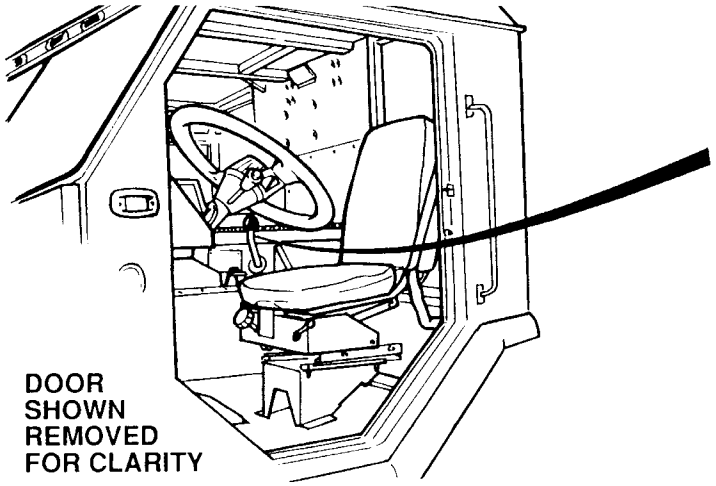
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

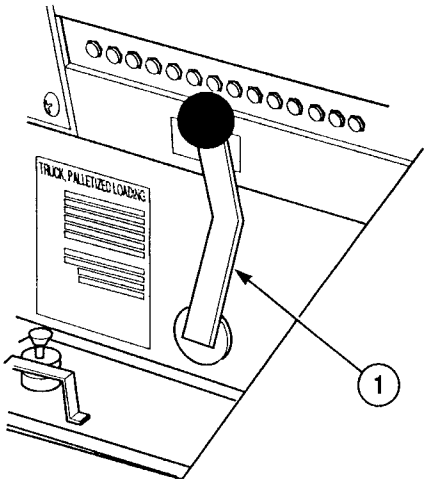
Materials/Parts
Pin, Cotter (Item 270, Appendix F)

Personnel Required
Two

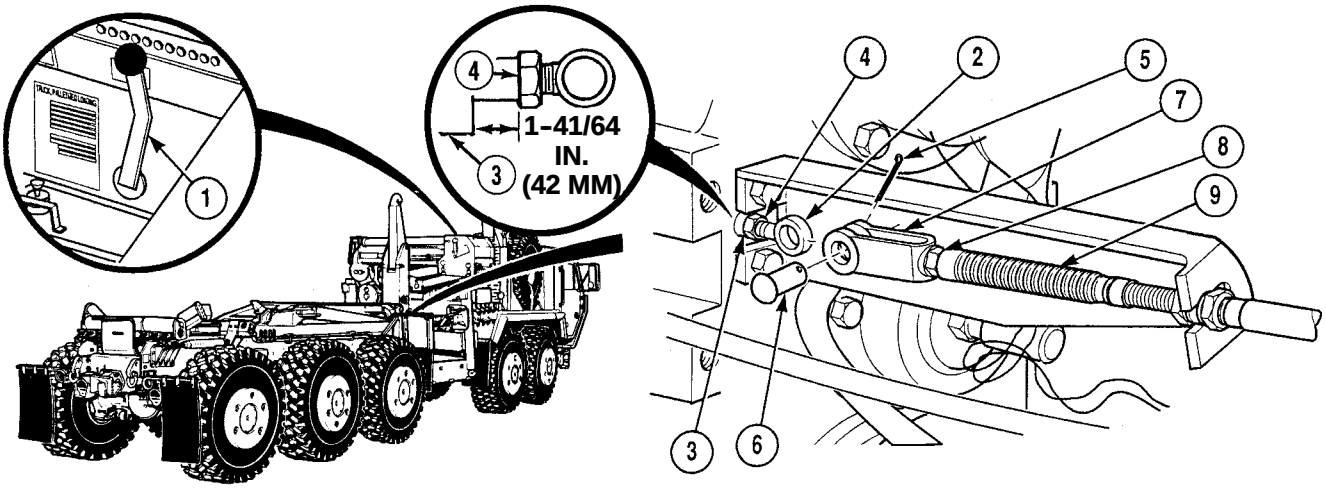
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

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

9-6. TRANSFER CASE SHIFT CABLE REPLACEMENT.

This task covers:

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

INITIAL SETUP

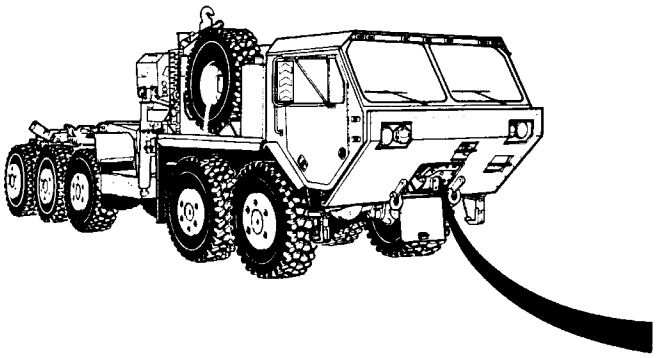
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

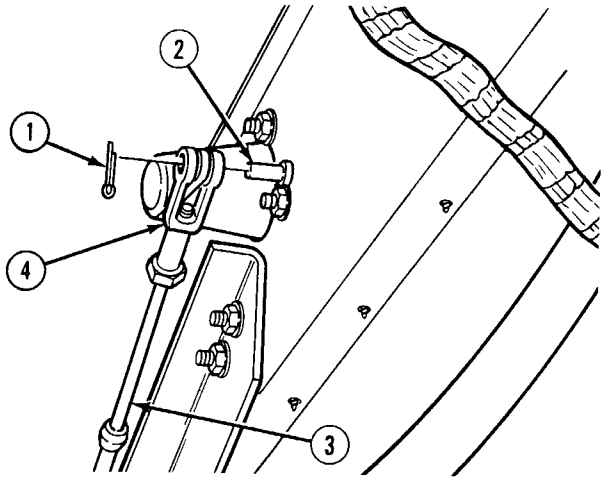
Materials/Parts
Cable Ties (Item 25, Appendix C)
Locknut (Item 140, Appendix F)
Pin, Cotter (2) (Item 270, Appendix F)

Personnel Required
Two

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cab engine access panel removed, (Para 17-24)
Right fender front skirts removed, (Para 17-33)

a. Removal.

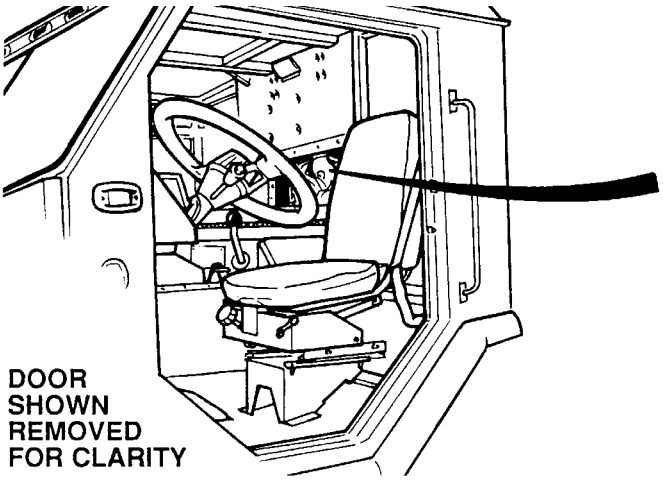


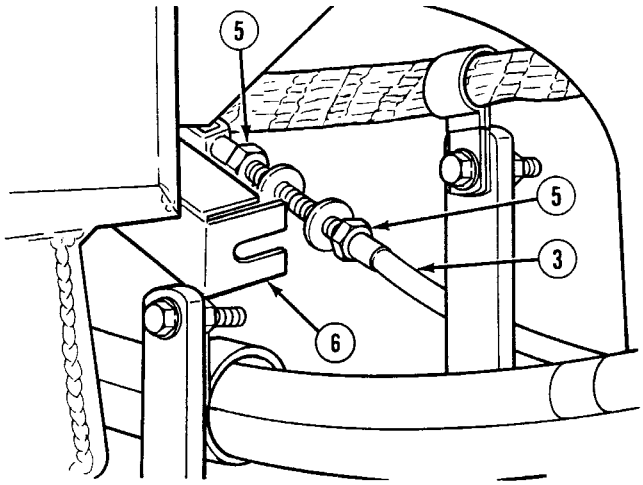


NOTE

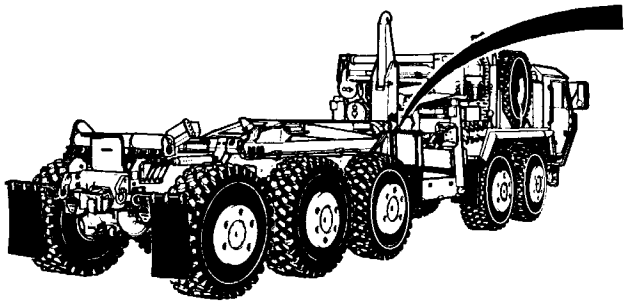
Remove cable ties as required.

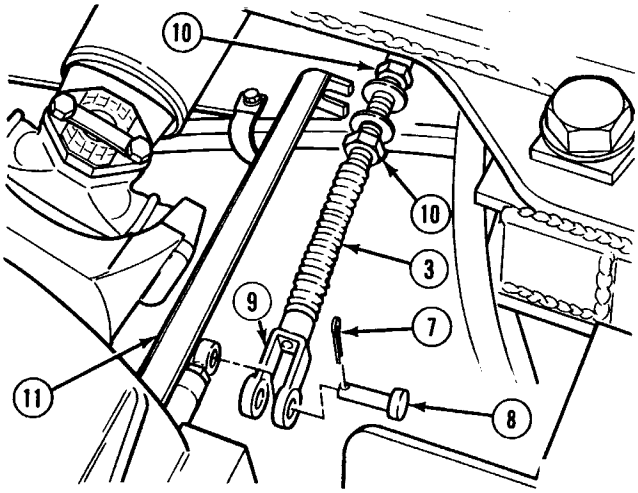
(1) Remove cotter pin (1) and yoke pin (2) from transfer case shift cable (3) and adjusting clevis (4). Discard cotter pin.





(2) Loosen jam nuts (5) and remove transfer case shift cable (3) from bracket assembly (6).

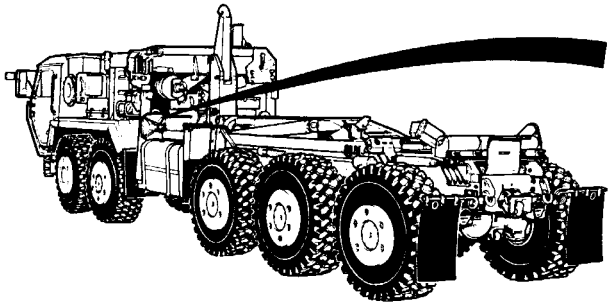


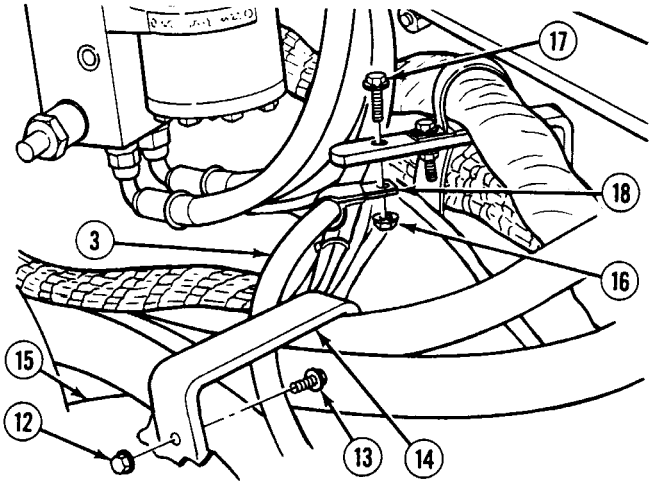


(3) Remove cotter pin (7) and yoke pin (8) from transfer case shift cable (3) and adjusting clevis (9). Discard cotter pin.

(4) Loosen jam nuts (10) and remove transfer case shift cable (3) from bracket (11).

9-6. TRANSFER CASE SHIFT CABLE REPLACEMENT (CONT).



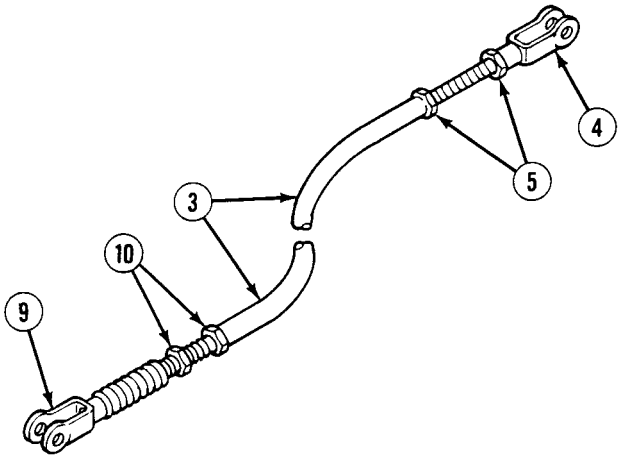


(5) Remove locknut (12), screw (13) and bracket (14) from crossmember (15).

(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).

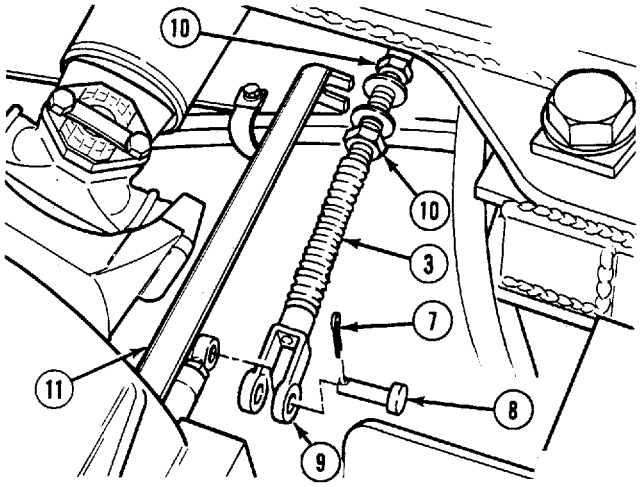
(2) With the aid of an assistant, position transfer case shift cable (3) in truck and install cushion clip (18) with screw (17) and locknut (16). Tighten locknut to 23 lb-ft (31 N·m).

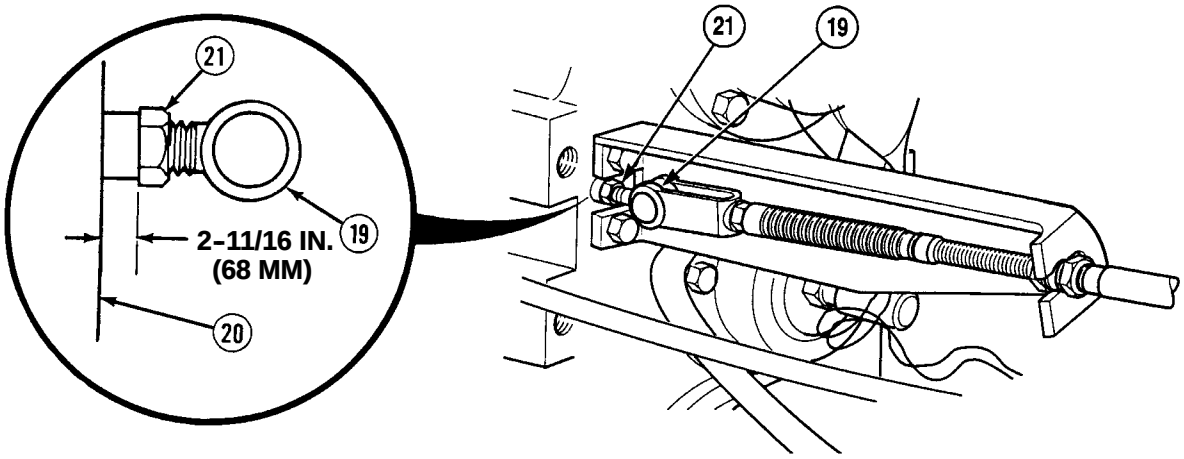
(3) Install bracket (14) on crossmember (15) with screw (13) and locknut (12).

(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).





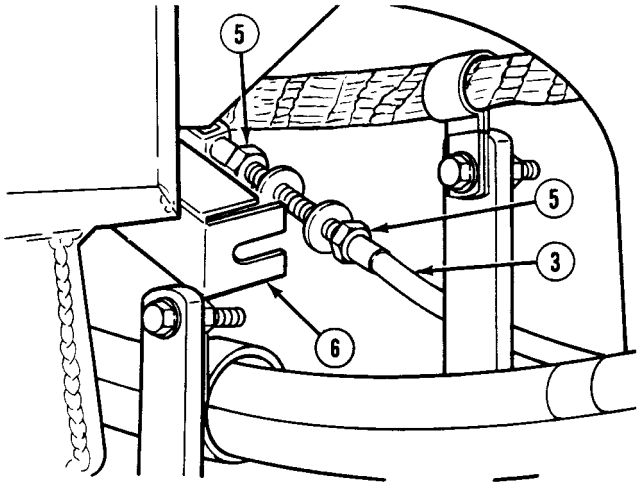
NOTE

Measurement in Step (7) should be 2-11/16 in. (68 mm) when transfer case is in neutral.

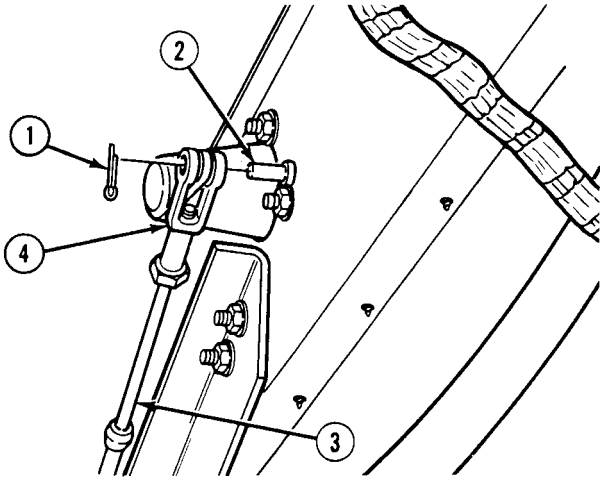
(7) Measure shift rod (19) extension from transfer case housing (20) to rear of shift rod jam nut (21).

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.

This task covers:

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

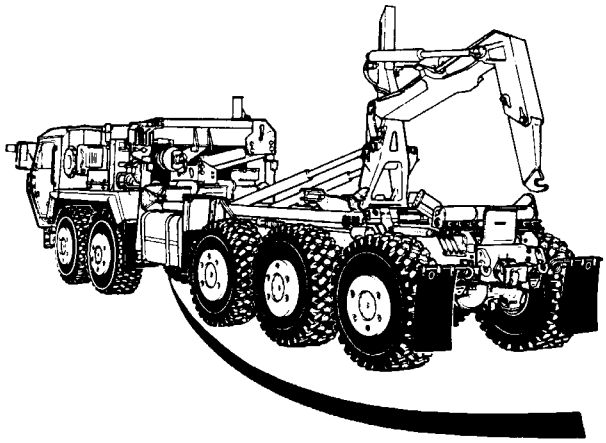
INITIAL SETUP

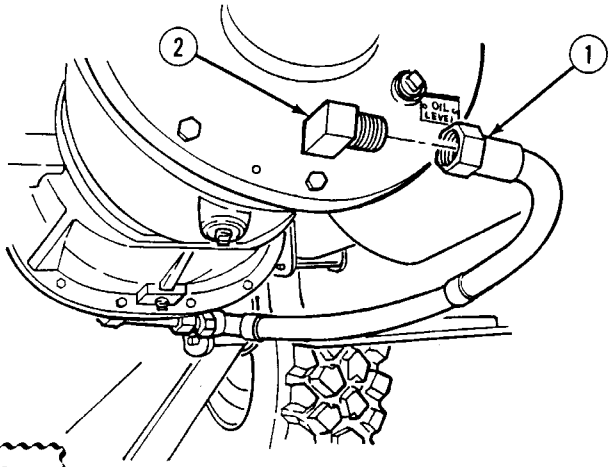
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)
Pan, Drain (4 gal) (Item 47, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Combination 1 3/8 in. (Item 82, Appendix G)
Wrench, Combination 1 1/2 in. (Item 83, Appendix G)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts
Cable Ties (Item 26, Appendix C)
Tags, Identification (Item 88, Appendix C)
Lockwasher (2) (Item 201, Appendix F)

Equipment Condition
LHS fully extended, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Transfer case drained, (Para 9-2)

a. Removal.





CAUTION

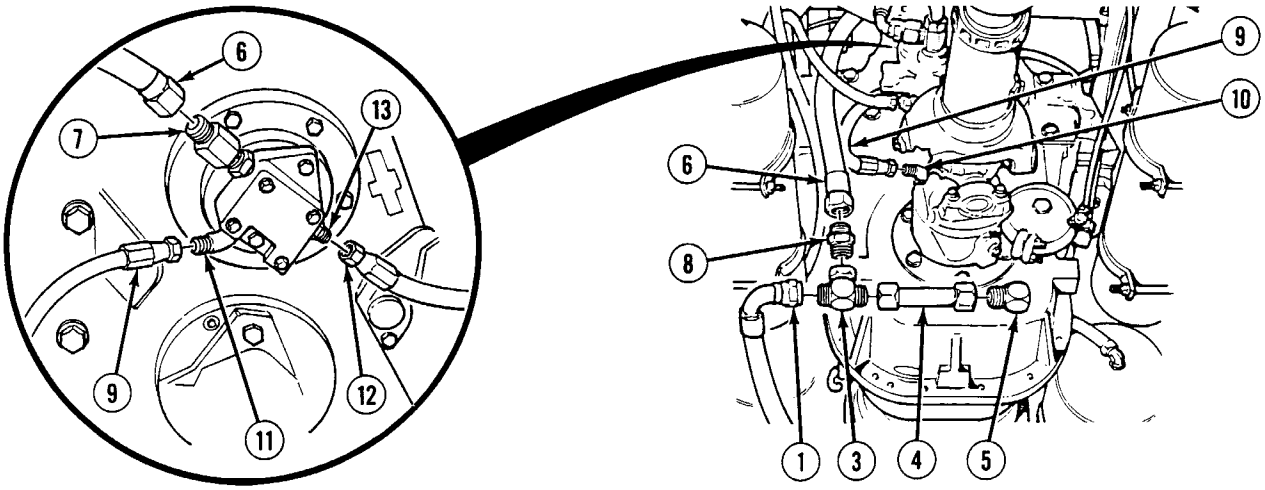
As hoses are removed, cap and plug all hoses, tubes and adapters. Equipment may be damaged by foreign matter if hoses, tubes and connectors are not plugged and capped when removed.

NOTE

- Tag and mark each hose and adapter before removal. Mark locations of hose ends and angles of adapters.
- Remove cable ties as required.

(1) Remove hose 2815 (1) from elbow (2).

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).

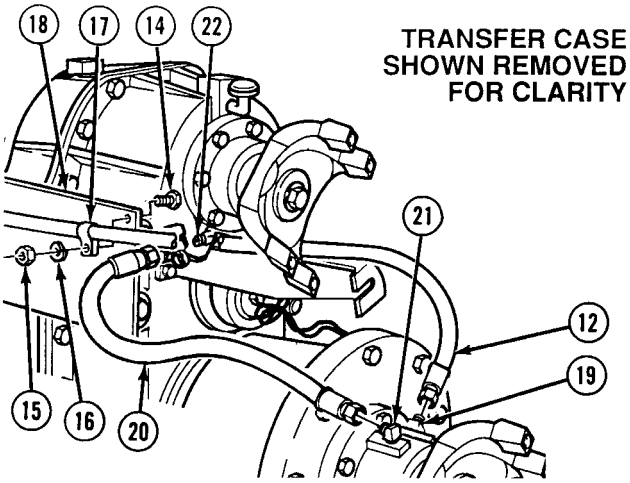
(8) Remove hose 2831 (12) from adapter (13).

(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.

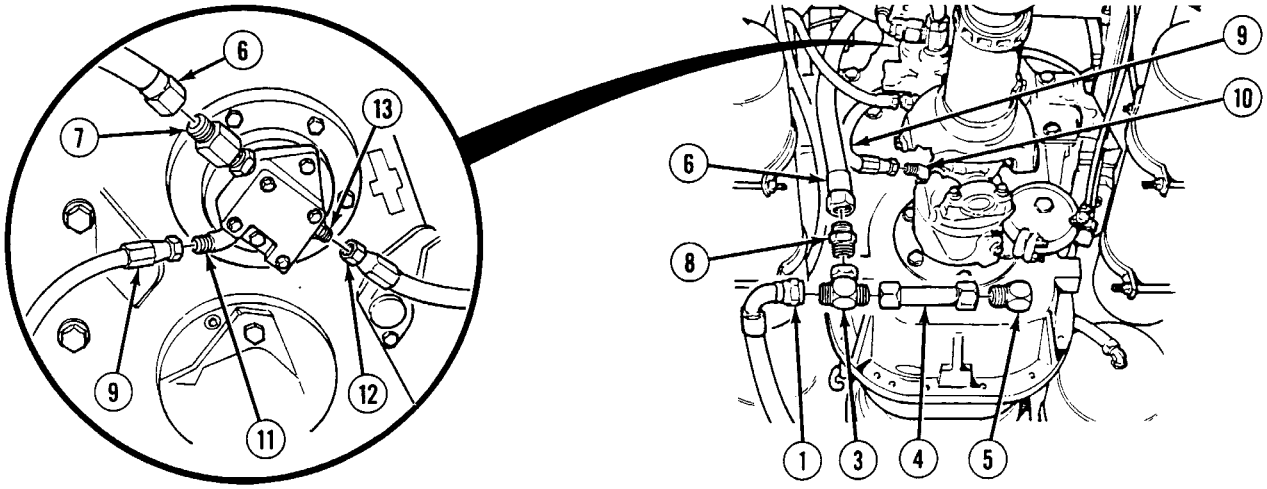
NOTE

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).

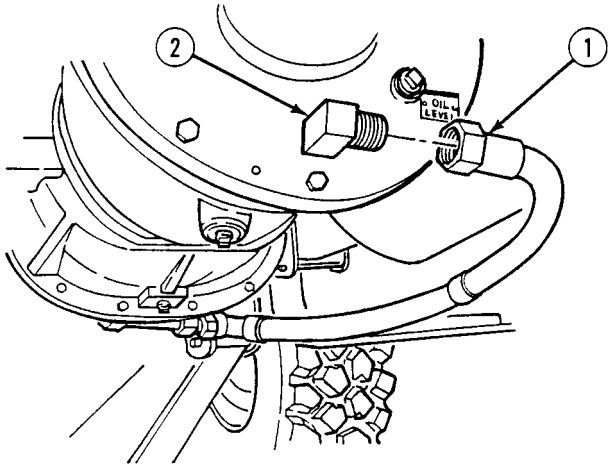
(6) Install adapter (8) on tee (3).

(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

9-8. TRANSFER CASE BREATHER REPLACEMENT.

This task covers:

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

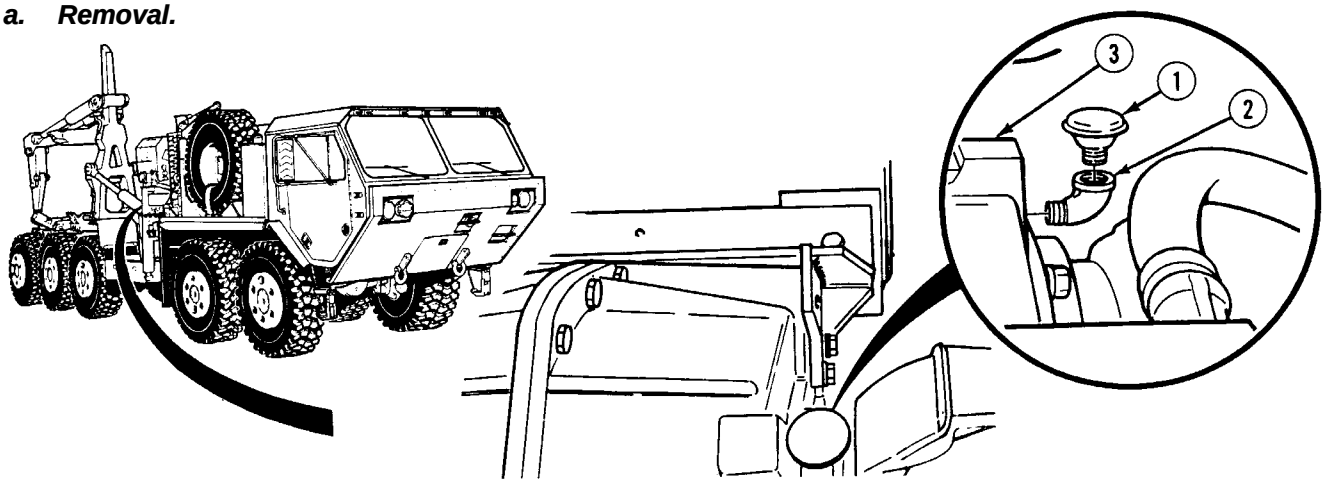
INITIAL SETUP

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

Materials/Parts
Sealing Compound (Item 72, Appendix C)

Equipment Condition
LHS fully extended, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

a. Removal.



(1) Remove breather (1) from street elbow (2).

(2) Remove elbow (2) from front housing (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) Coat threads of elbow (2) with sealing compound and install elbow (2) into rear housing (3).

(2) Coat threads of breather (1) with sealing compound and install into elbow (2).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Return load handling system to transit position, (TM 9-2320-364-10).
- Shut OFF engine, (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
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
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.

WARNING

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.

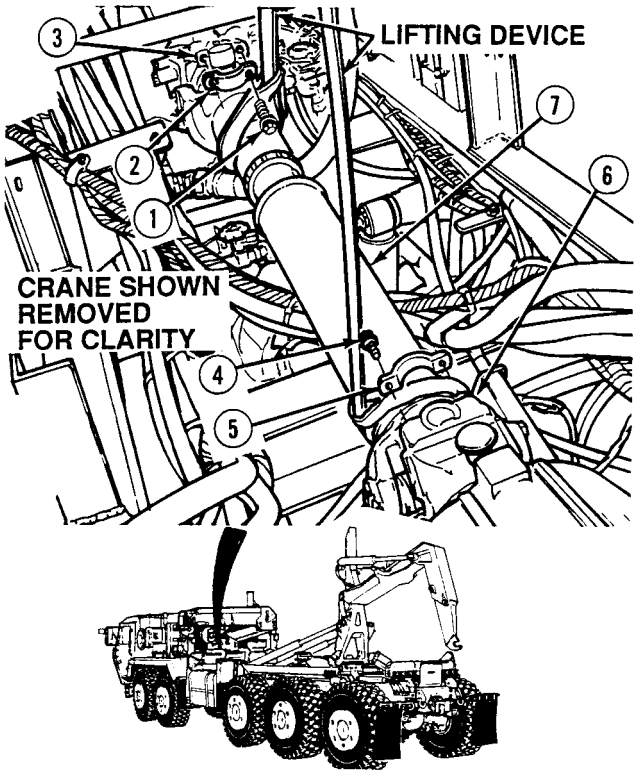
(1) With the aid of an assistant, remove four screws (1) and two bearing straps (2) from yoke (3).

(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.

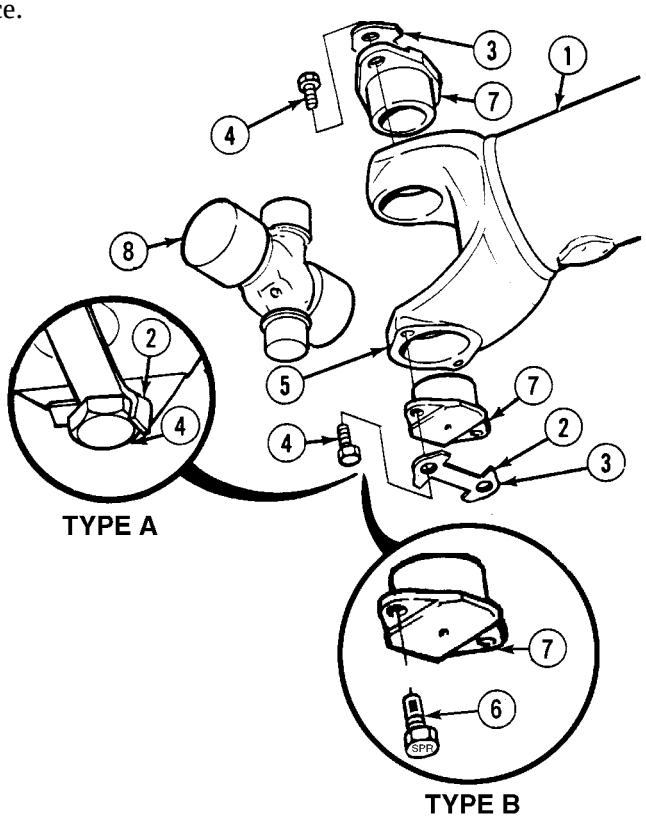
(4) Remove four screws (6) from slip yoke (5). Discard screws.

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.

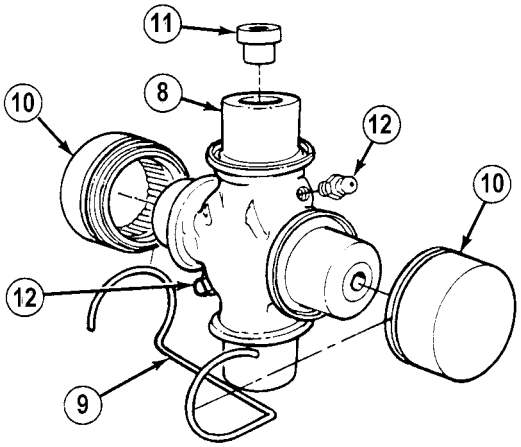
(8) Remove four check valves (11) from universal joint (8).

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).

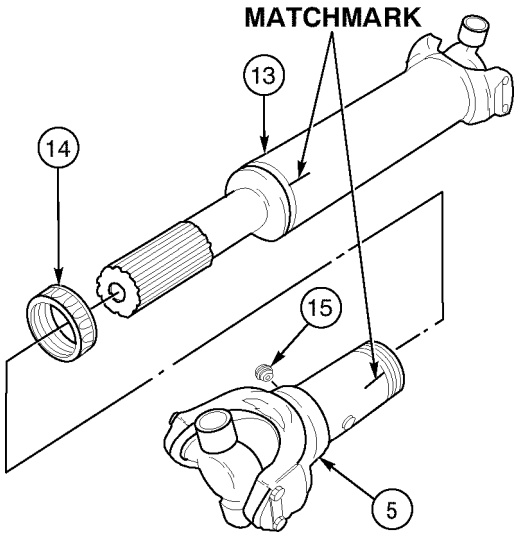


(11) Matchmark slip yoke (5) and splined shaft (13).

(12) Remove slip yoke (5) and dust cap (14) from splined shift (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.

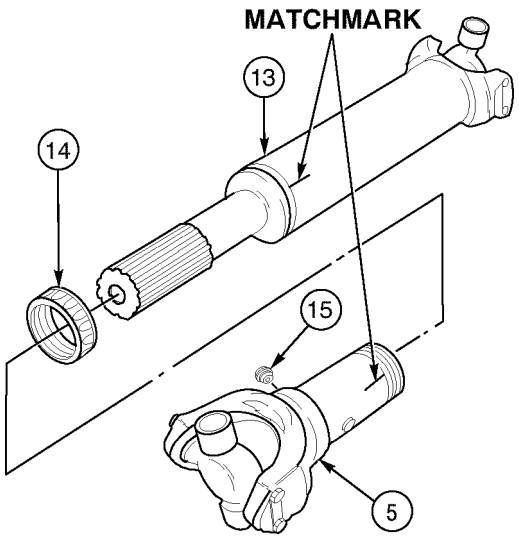
(3) Position dust cap (14) on spline shaft (13).

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).

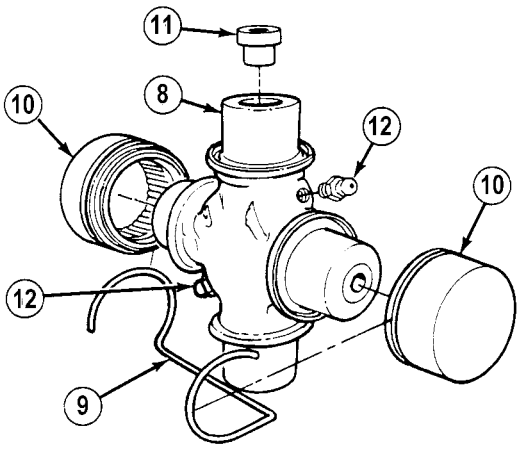
CAUTION

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).

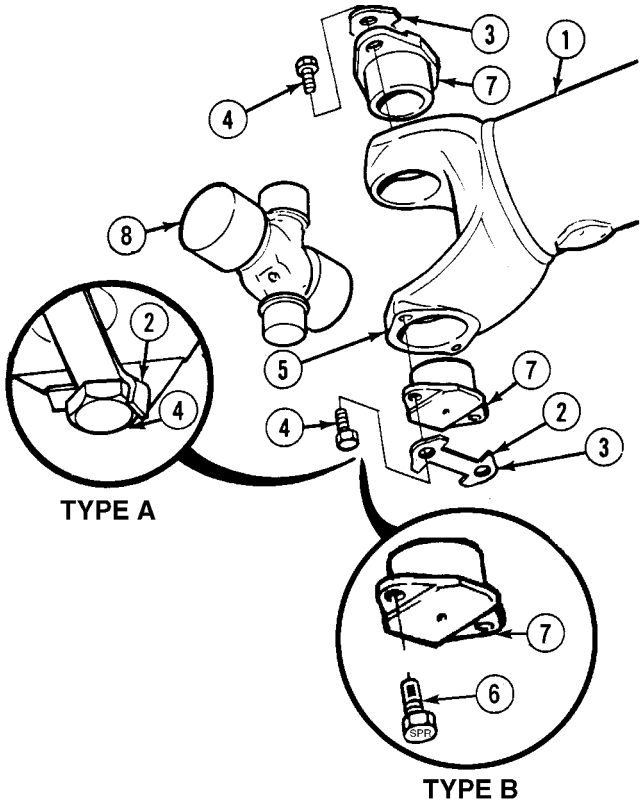


Table 10-1. Lock Strap Screw Torque Requirements (Type A)

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.

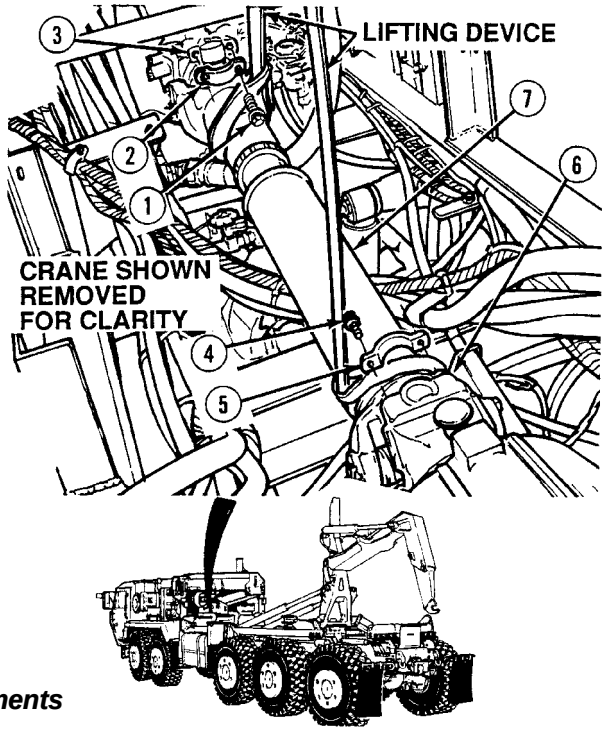


Table 10-3. Bearing Strap Screw Torque Requirements

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.

11-2. AXLE 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 47, Appendix G)

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

Materials/Parts
Lubricating Oil, Gear (Item 59, Appendix C)
Packing, Preformed (6) (Item 261, Appendix F)
Washer (2) (Item 348, Appendix F)

a. Drain.

NOTE

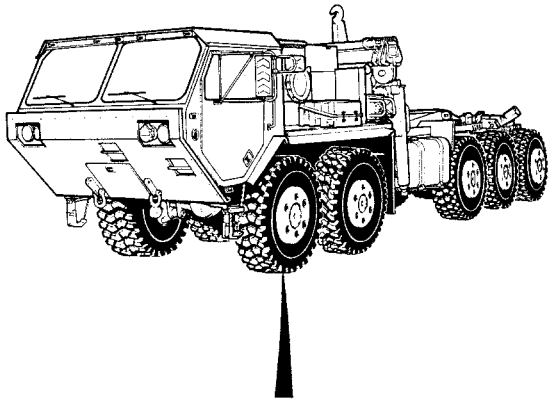
All axles are drained the same way. Axle No. 1 is shown.

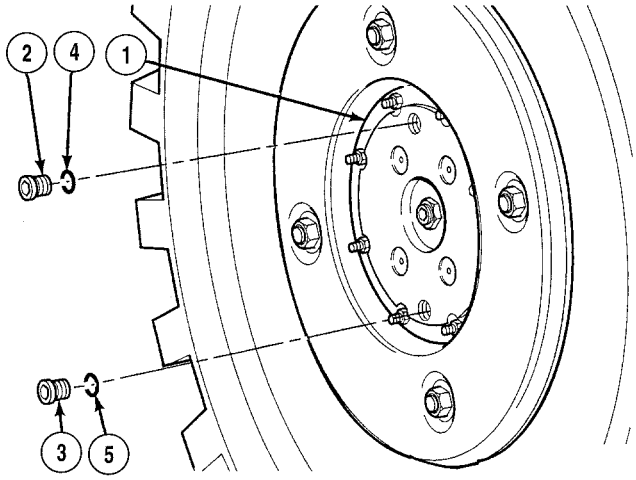
(1) Drive truck forward or backward to rotate planetary gear (1) so that drain plug (2) and drain plug (3) are at top and bottom of planetary gear.

(2) Position drain pan under planetary gear (1).

(3) Remove upper drain plug (2) and preformed packing (4) from planetary gear (1). Discard preformed packing.

(4) Remove lower drain plug (3) and preformed packing (5) from planetary gear (1). Discard preformed packing.

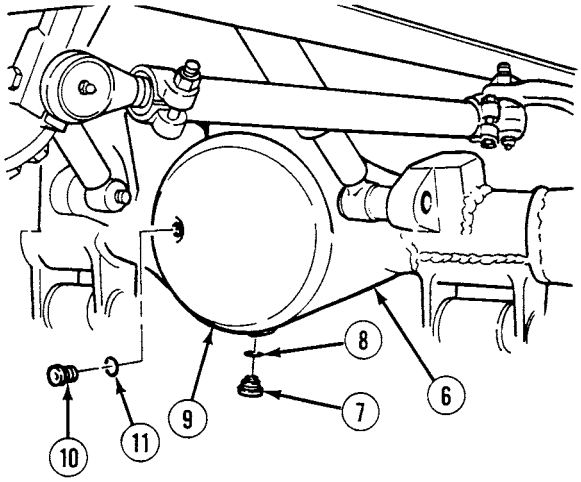




(5) Position a drain pan under differential carrier (6).

(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.

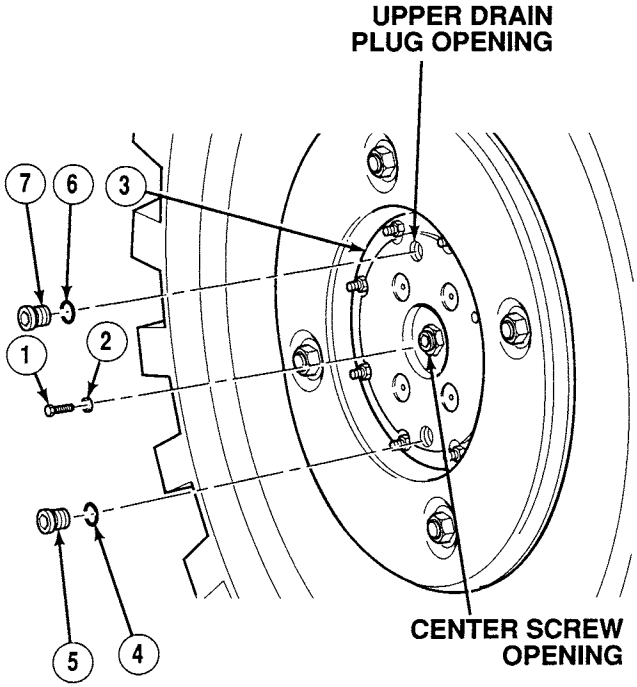
(1) Remove screw (1) and washer (2) from planetary gear (3). Discard washer.

(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).

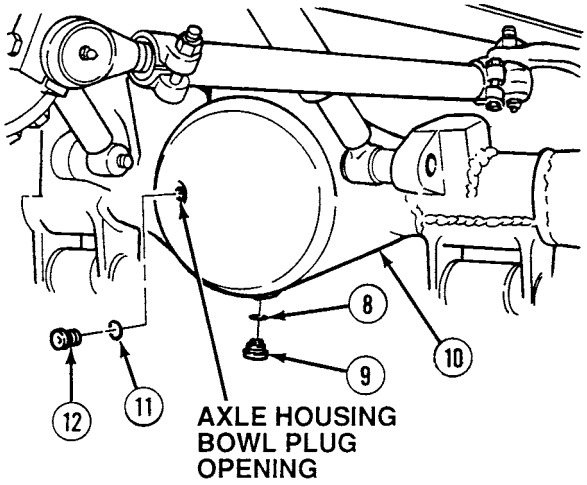


11-2. AXLE OIL SERVICE (CONT).

(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.

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
Sealing Compound (Item 72, Appendix C)

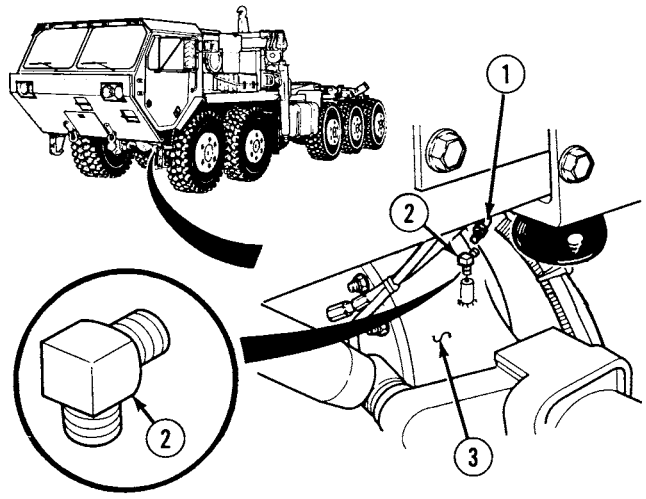
a. Removal.

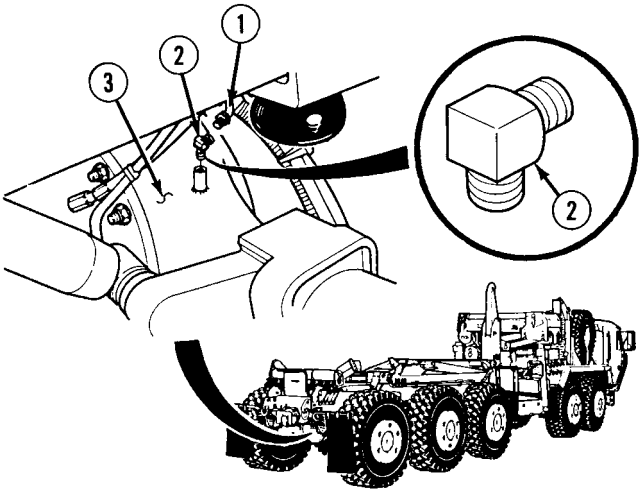
NOTE

- Axle breather elbow is located on left side of Axles No. 1 through Axle No. 4.
- Axle breather elbow is located on right side of Axle No. 5.
- Axle breather elbow is installed in a sleeve welded to the axle housing on Axles No. 1, 2 and 5.
- Axles No.1 and 5 are shown.

(1) Remove air line 2893 (1) from axle breather elbow (2).

(2) Remove axle breather elbow (2) from axle (3).



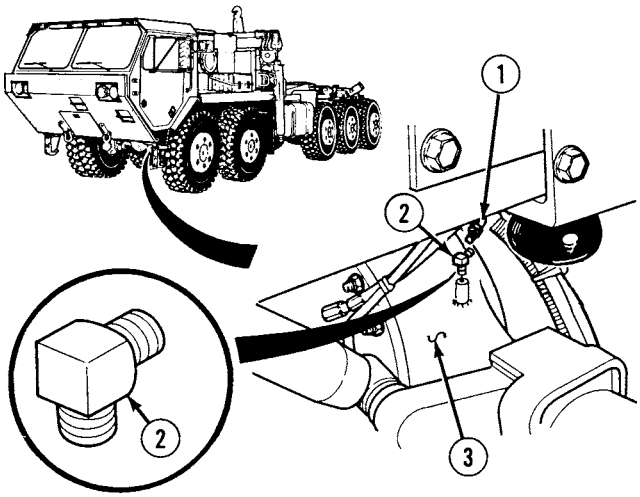


11-3. AXLE BREATHER ELBOW REPLACEMENT (CONT).

b. Installation.

WARNING

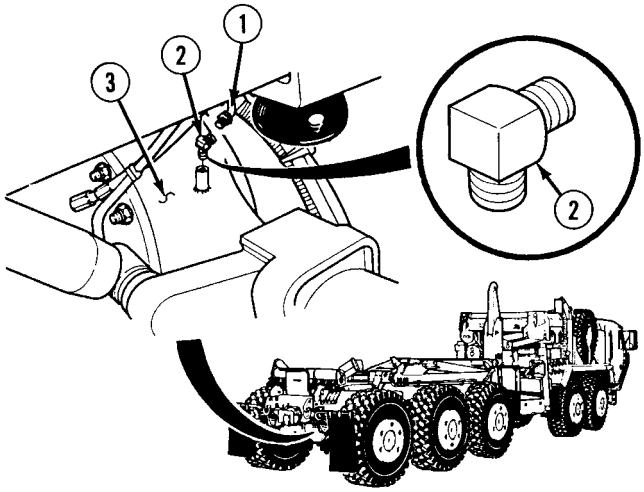
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

Personnel Required
Two

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

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

11-5. AXLE NO. 1 LOCKING CYLINDER LINES AND FITTINGS REPLACEMENT.

This task covers:

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

INITIAL SETUP

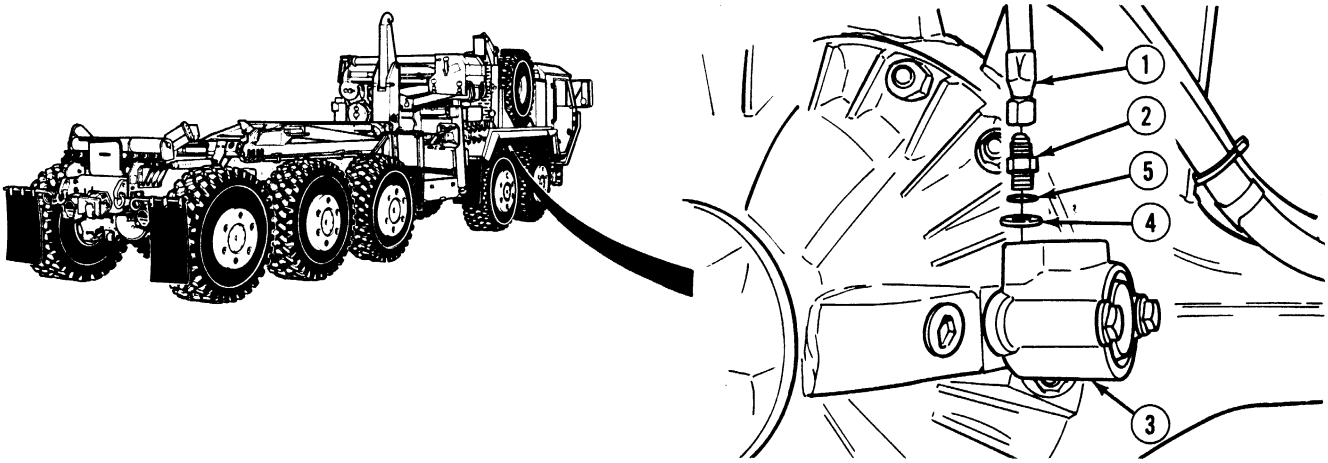
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)

Materials/Parts
Cable Ties (Item 26, Appendix C)
Sealing Compound (Item 72, Appendix C)

Materials/Parts - Continued
Tags, Identification (Item 88, Appendix C)
Packing, Preformed (Item 258, 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 prior to removal.
- Cap or plug all hoses, tubes, fittings and openings as each item is removed.
- Remove cable ties as required.

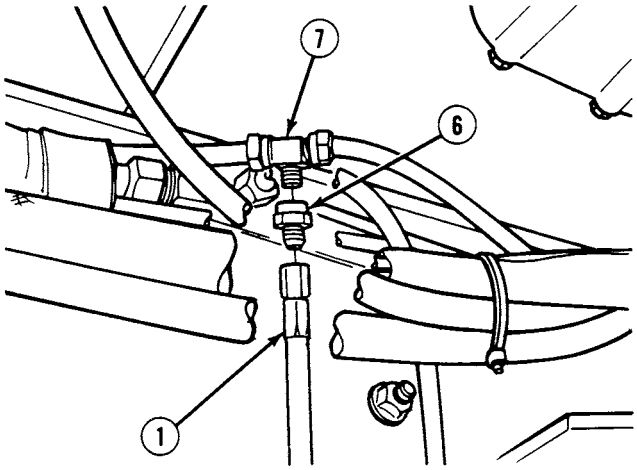
(1) Disconnect air line 2419 (1) from fitting (2).

(2) Remove fitting (2) from locking cylinder (3).

(3) Remove washer (4) and preformed packing (5) from fitting (2). Discard preformed packing.

(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).

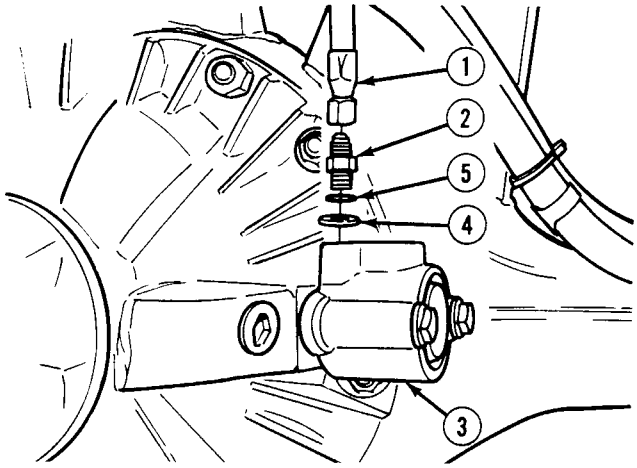
(2) Install fitting (6) on tee (7).

(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

11-6. AXLE NO. 2 LOCKING CYLINDER LINES 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)
Cap and Plug Set (Item 8, Appendix G)

Materials/Parts
Cable Ties (Item 25, Appendix C)
Cable Ties (Item 26, Appendix C)
Sealing Compound (Item 72, Appendix C)

Materials/Parts - Continued
Tags, Identification (Item 88, Appendix C)
Packing, Preformed (2) (Item 257, 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 prior to removal.
- Cap or plug all hoses, tubes, fittings and openings as each item is removed.
- Note location and remove cable ties as required.

(1) Disconnect air line 2420 (1) from fitting (2).

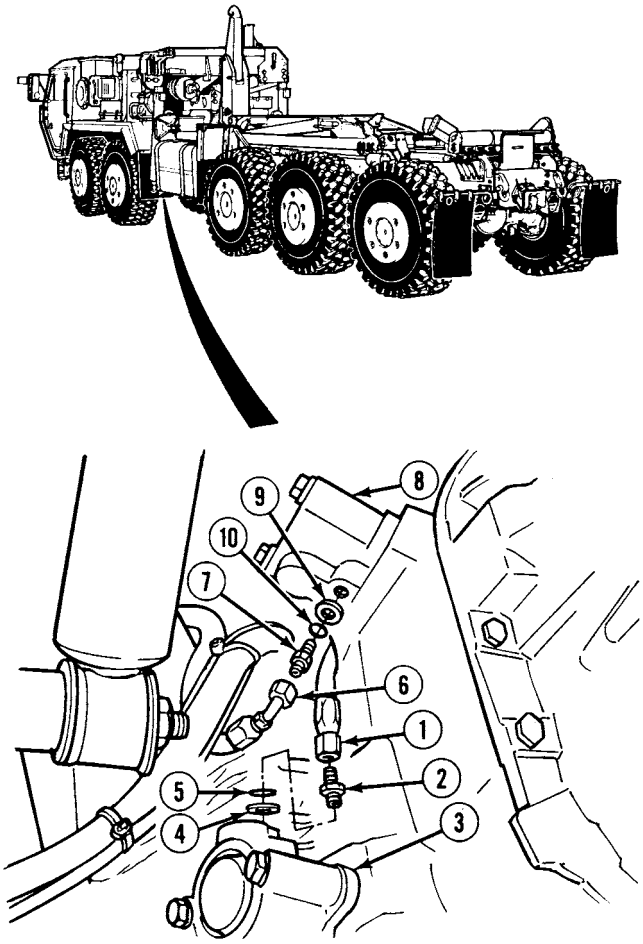
(2) Remove fitting (2) from locking cylinder (3).

(3) Remove washer (4) and preformed packing (5) from fitting (2). Discard preformed packing.

(4) Disconnect air line 2056 (6) from fitting (7).

(5) Remove fitting (7) from locking cylinder (8).

(6) Remove washer (9) and preformed packing (10) from fitting (7). Discard preformed packing.



(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.

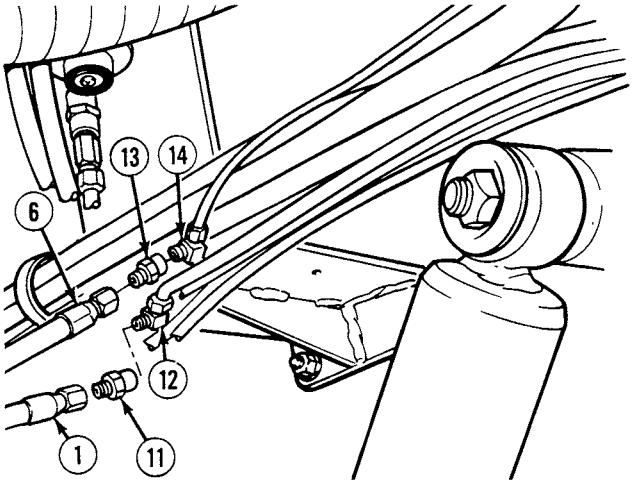
(1) Apply sealing compound to threads of tees (14) and (12).

(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).

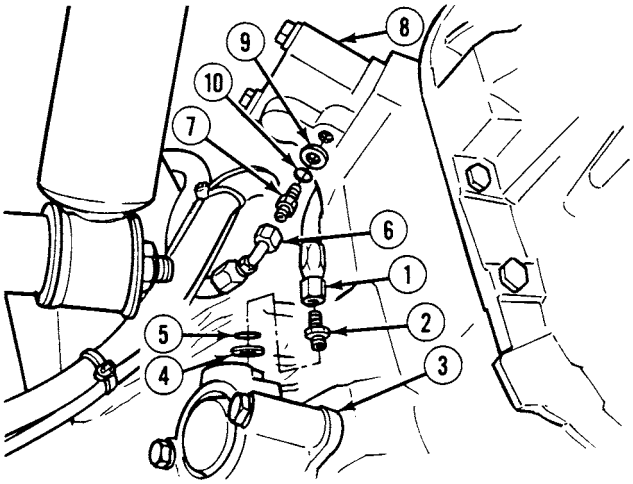
(7) Install preformed packing (5) and washer (4) on fitting (2).

(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.

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)

Materials/Parts
Cable Ties (Item 25, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued
Locknut (Item 140, Appendix F)
Lockwasher (Item 201, Appendix F)
Packing, Preformed (2) (Item 257, 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.

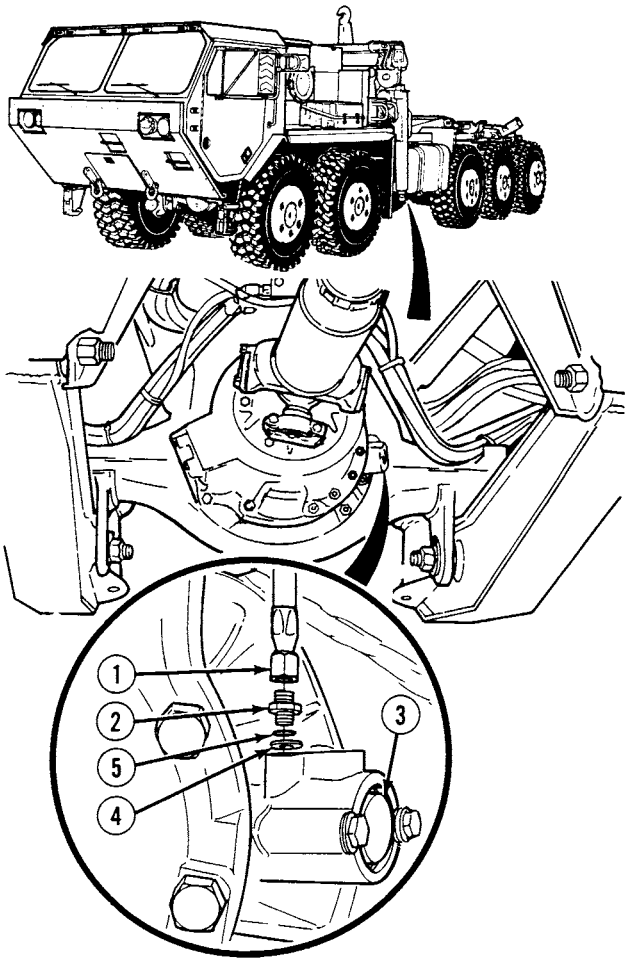
NOTE

- Tag and mark air lines prior to removal.
- Cap or plug all hoses, tubes, fittings and openings as each item is removed.
- Remove cable ties as required.

(1) Disconnect air line 2421 (1) from fitting (2).

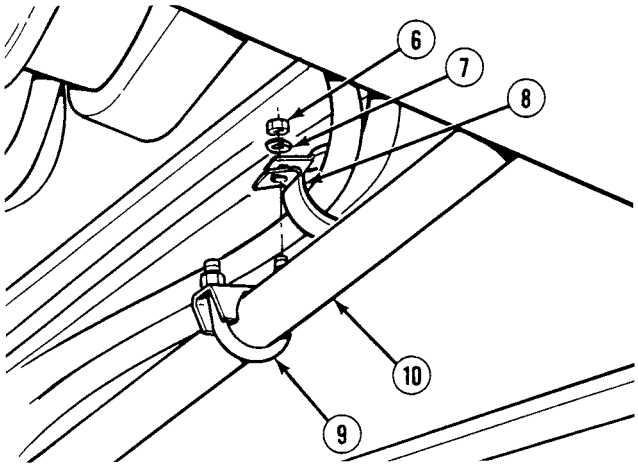
(2) Remove fitting (2) from locking cylinder (3).

(3) Remove washer (4) and preformed packing (5) from fitting (2). Discard preformed packing.



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.

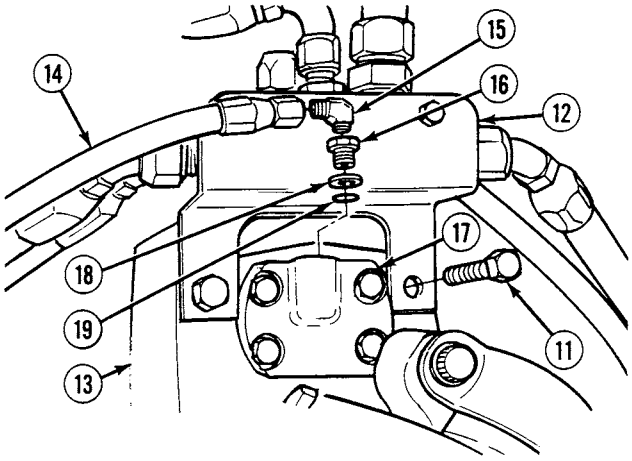


(5) Remove two screws (11) and bracket (12) from axle (13).

(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.



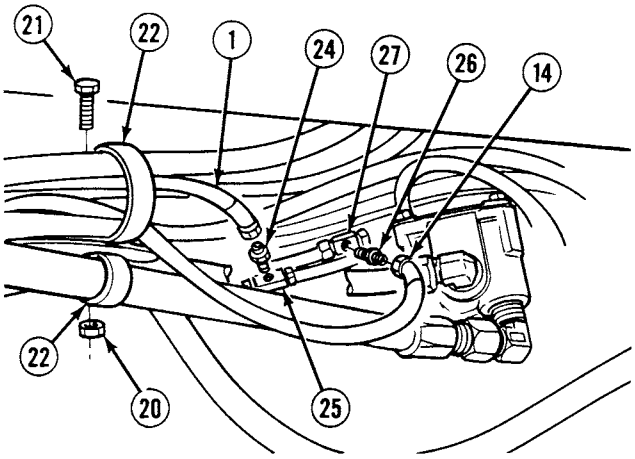
(9) Remove locknut (20), screw (21) and two cushion clips (22) from crossmember (23). Discard locknut.

(10) Disconnect air line 2421 (1) from fitting (24).

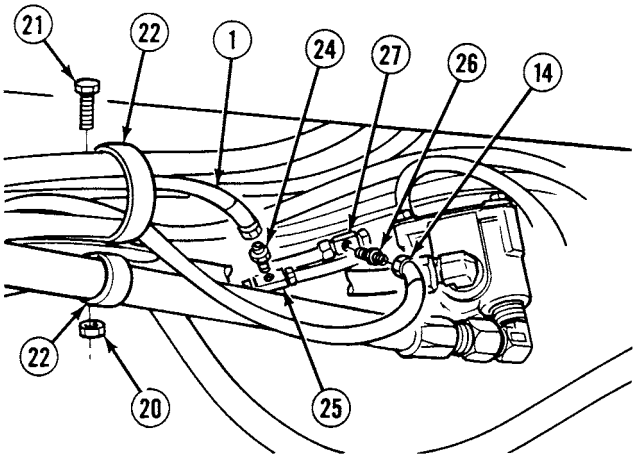
(11) Remove fitting (24) from tee (25).

(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).

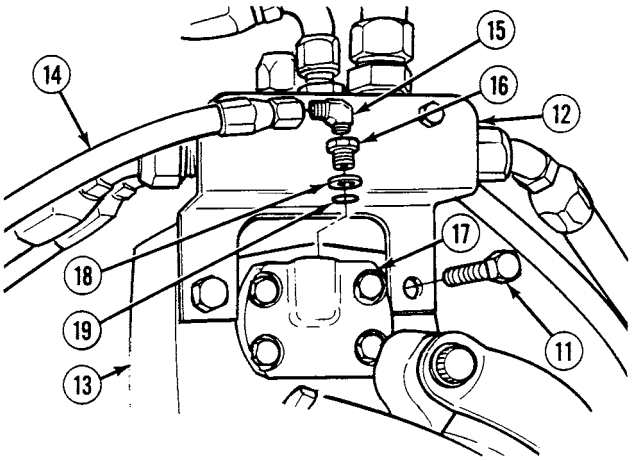
(6) Install preformed packing (19) and washer (18) on fitting (16).

(7) Install fitting (16) in locking cylinder (17).

(8) Install elbow (15) in fitting (16).

(9) Install air line 2339 (14) on elbow (15).

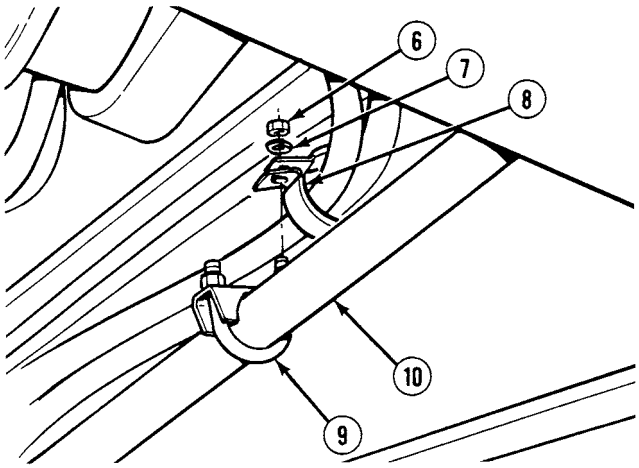
(10) Install bracket (12) on axle (13) with two screws (11).



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).

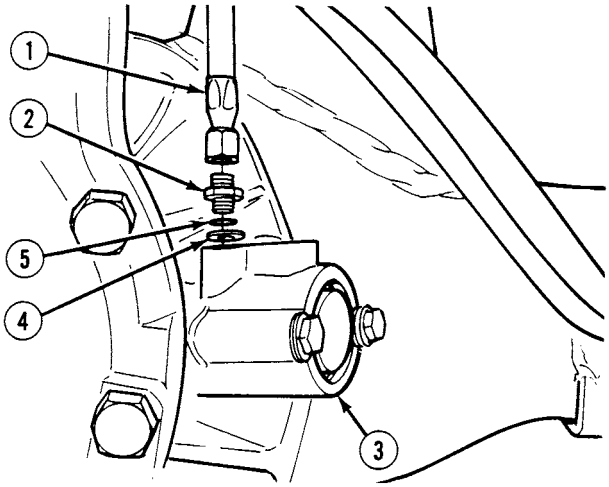
(12) Tighten nut (6) until lockwasher (7) is compressed.



(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.

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)

Materials/Parts
Cable Ties (Item 26, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

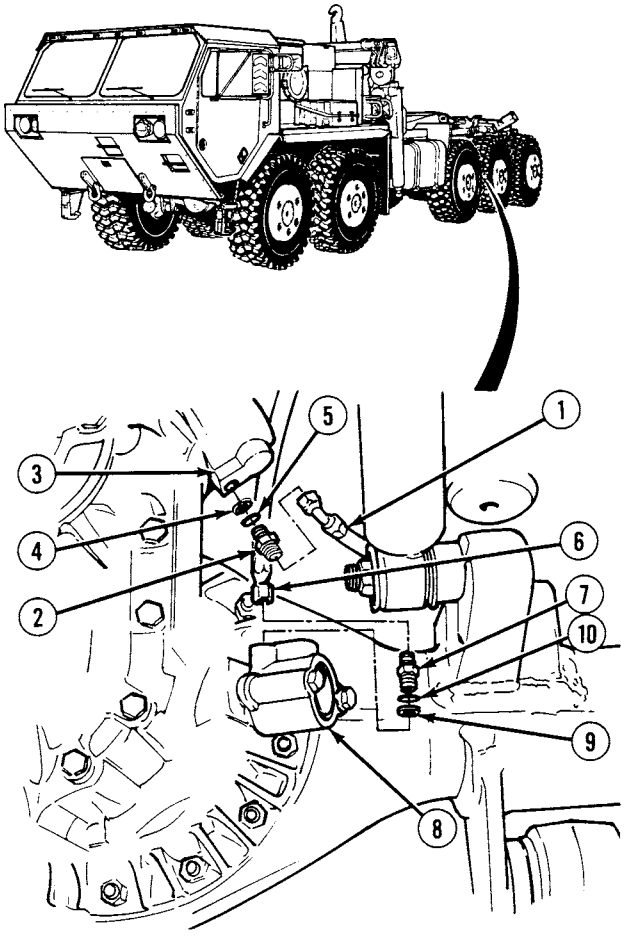
Materials/Parts - Continued
Locknut (2) (Item 140, Appendix F)
Packing, Preformed (2) (Item 257, Appendix F)

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 prior to removal.
- Cap or plug all hoses, tubes, fittings and openings as each item is removed.
- Remove cable ties as required.



(1) Disconnect air line 2422 (1) from fitting (2).

(2) Remove fitting (2) from locking cylinder (3).

(3) Remove washer (4) and preformed packing (5) from fitting (2). Discard preformed packing.

(4) Disconnect air line 2359 (6) from fitting (7).

(5) Remove fitting (7) from locking cylinder (8).

(6) Remove washer (9) and preformed packing (10) from fitting (7). Discard preformed packing.

11-8. AXLE NO. 4 LOCKING CYLINDER LINES AND FITTINGS REPLACEMENT (CONT).

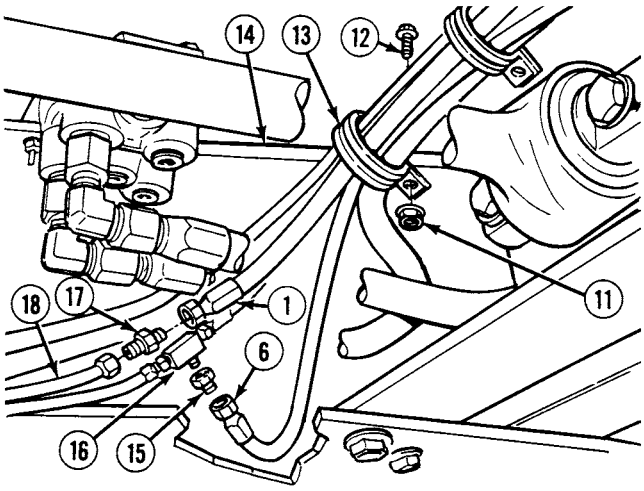
(7) Remove two locknuts (11), screws (12) and cushion clips (13) from crossmember (14). Discard locknuts.

(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).

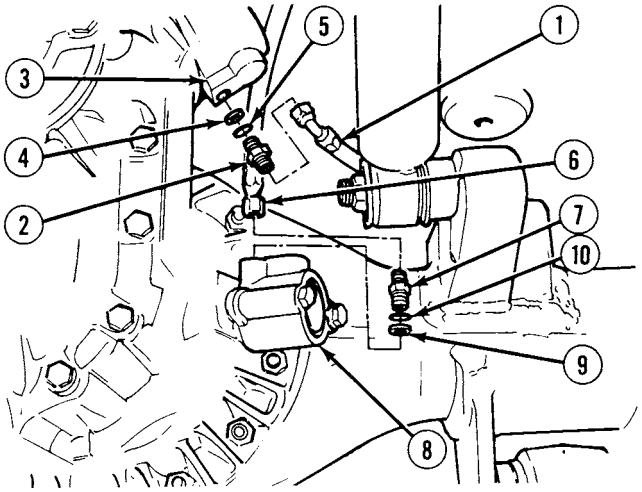
(8) Install preformed packing (5) and washer (4) on fitting (2).

(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

11-9. AXLE NO. 5 LOCKING CYLINDER LINES 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)
Cap and Plug Set (Item 8, Appendix G)

Materials/Parts
Cable Ties (Item 26, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (Item 140, Appendix F)

Materials/Parts - Continued
Locknut (Item 141, Appendix F)
Packing, Preformed (Item 257, Appendix F)

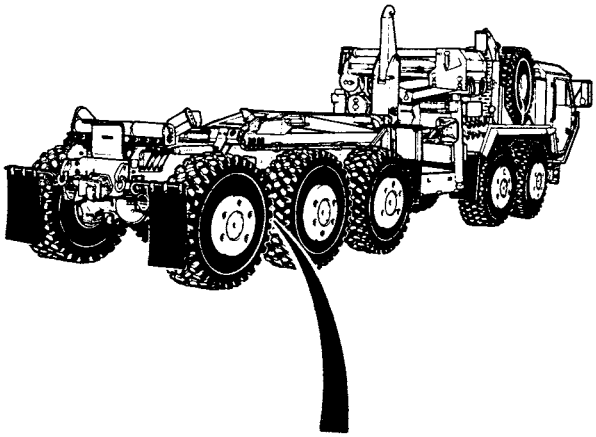
Personnel Required
Two

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

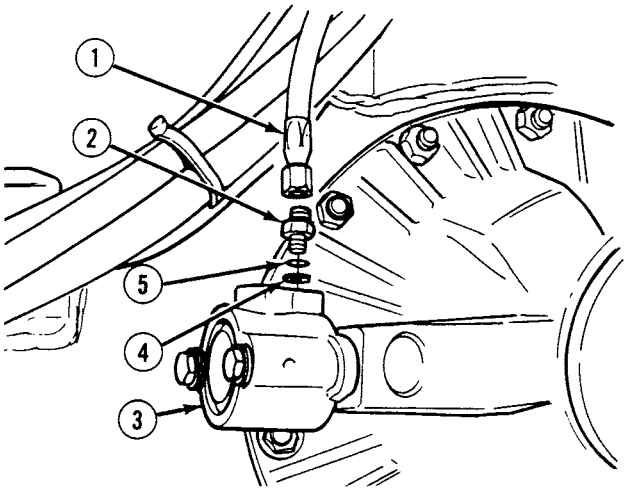
- Tag and mark air lines prior to removal.
- Cap or plug all hoses, tubes, fittings and openings as each item is removed.
- Remove cable ties as required.



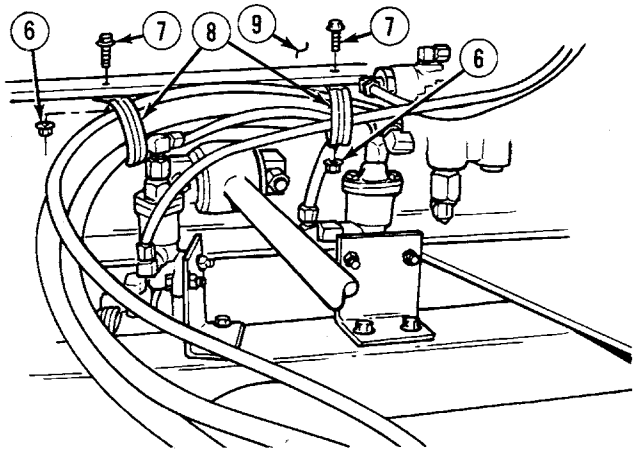
(1) Disconnect air line 2338 (1) from fitting (2).

(2) Remove fitting (2) from locking cylinder (3).

(3) Remove washer (4) and preformed packing (5) from fitting (2). Discard preformed packing.

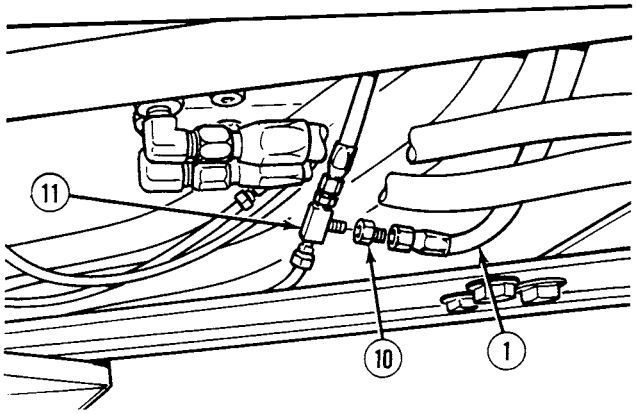


(4) With the aid of an assistant, remove two locknuts (6), screws (7) and cushion clips (8) from crossmember (9). Discard locknuts.



(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.

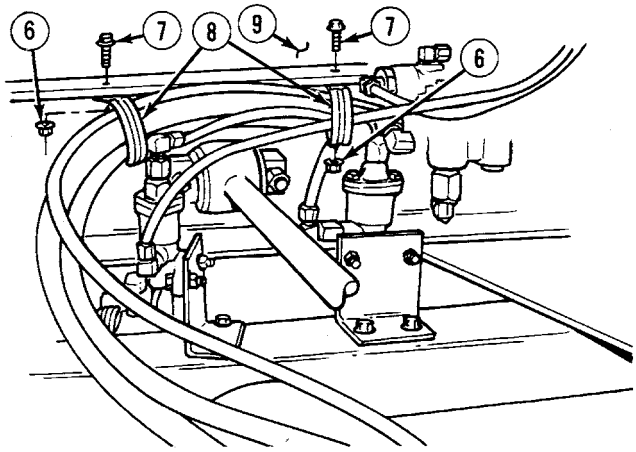
(1) Apply sealing compound on threads of tee (11).

(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).

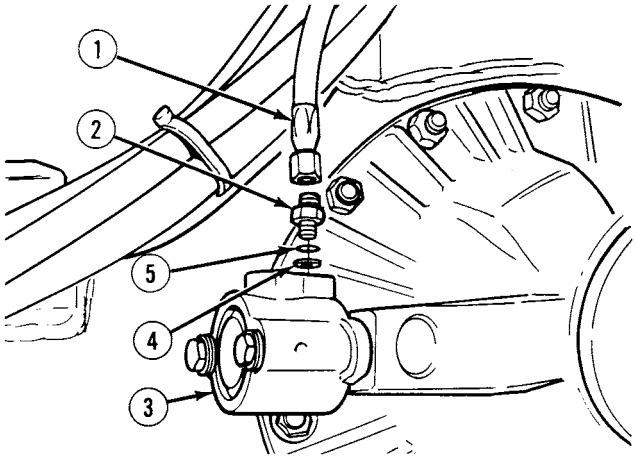
(4) With the aid of an assistant, install two cushion clips (8) on crossmember (9) with two screws (7) and locknuts (6).



(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:

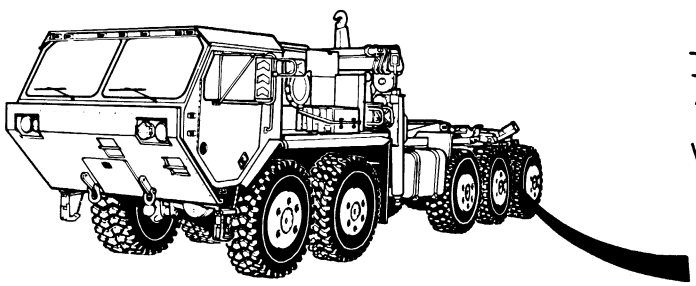
a. Removal
b. Installation
c. Adjustment
d. Follow-On Maintenance

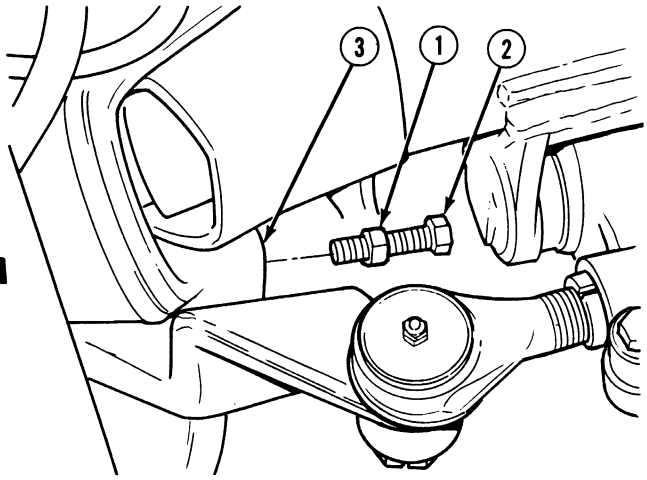
INITIAL SETUP

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.

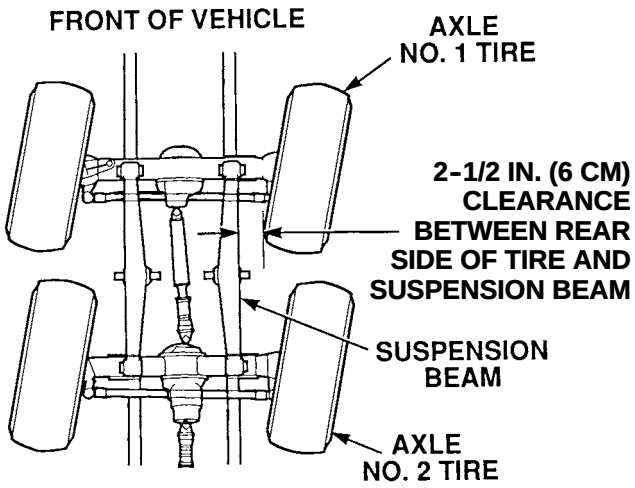
(1) With the aid of an assistant, start truck and turn steering wheel to the right until the rear side of the right front tire is 2-1/2 in. (6 cm) away from the suspension beam.

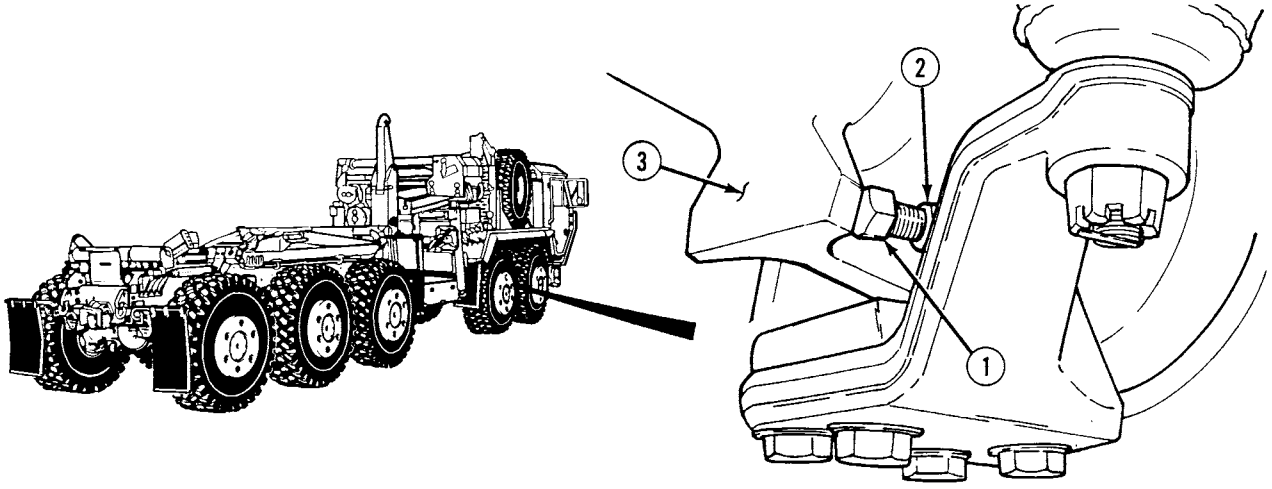
NOTE

Axle steering stop arrangement for Axles No. 1, 2 and 5 are similar.

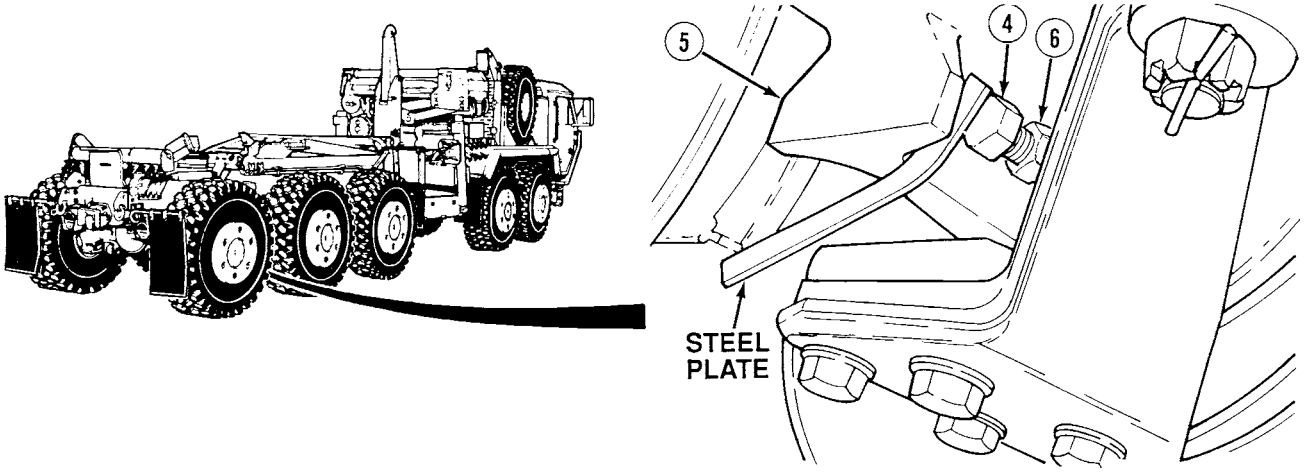
(a) If 2-1/2 in. (6 cm) cannot be attained notify Direct Support Maintenance.

(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

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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
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
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)
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)

Materials/Parts
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)

Materials/Parts - Continued
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)

Personnel Required
Two

Equipment Condition
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.

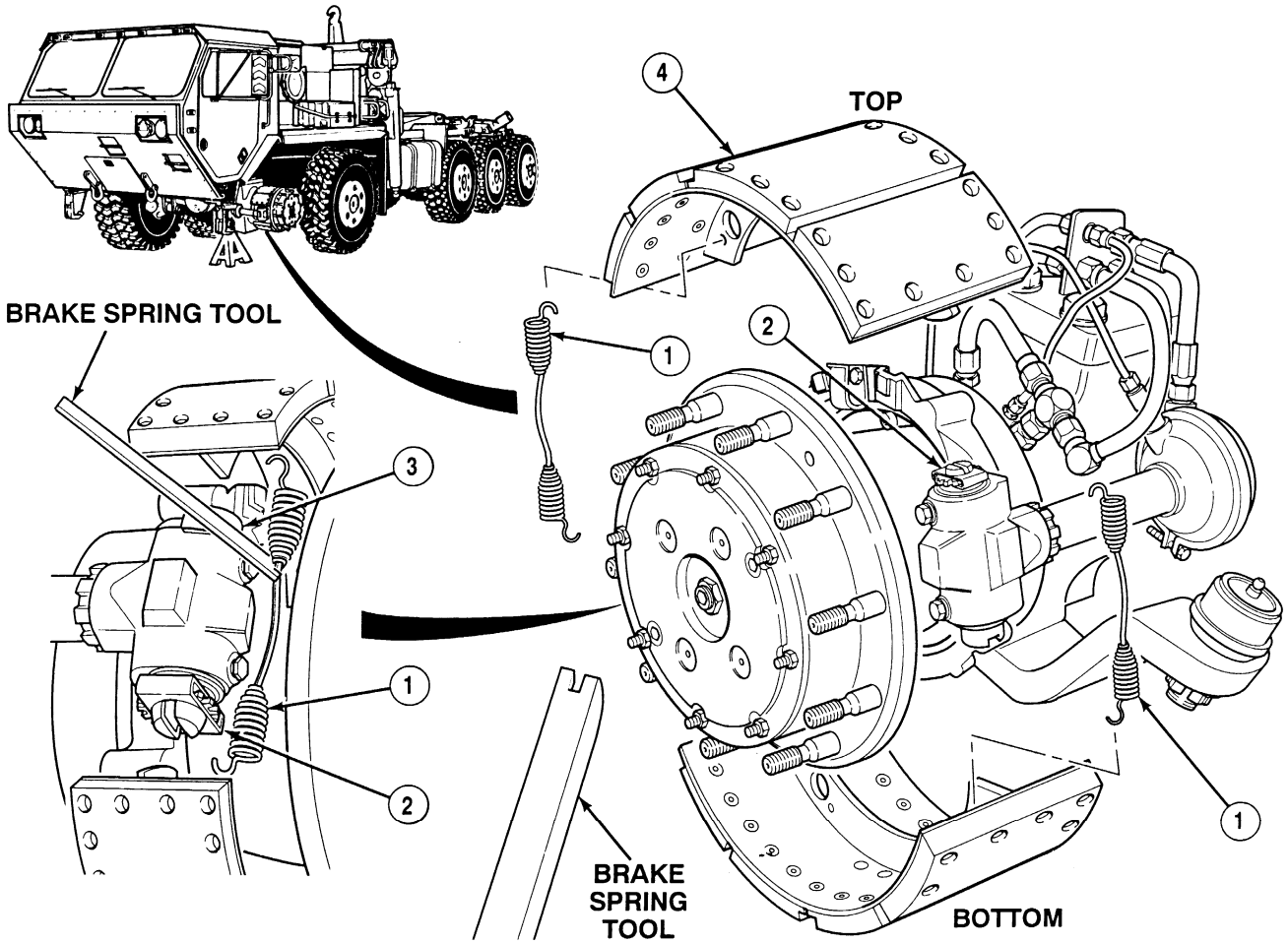
WARNING

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

CAUTION

When one brake shoe needs to be replaced, all brake shoes for that axle must be replaced. Damage to equipment could result.

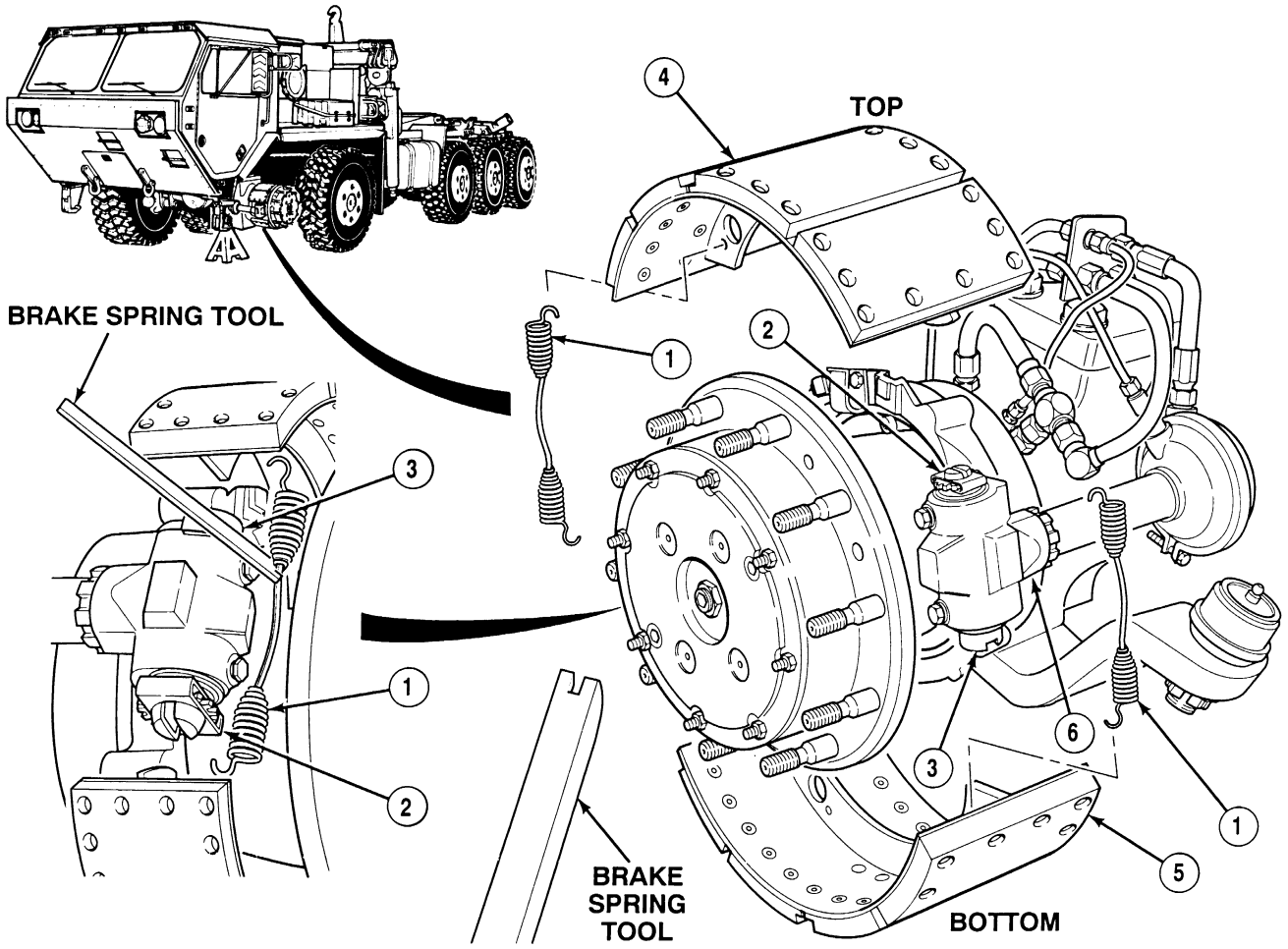
12-2. BRAKE SHOE/SELF ADJUSTER REPAIR (CONT).



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).

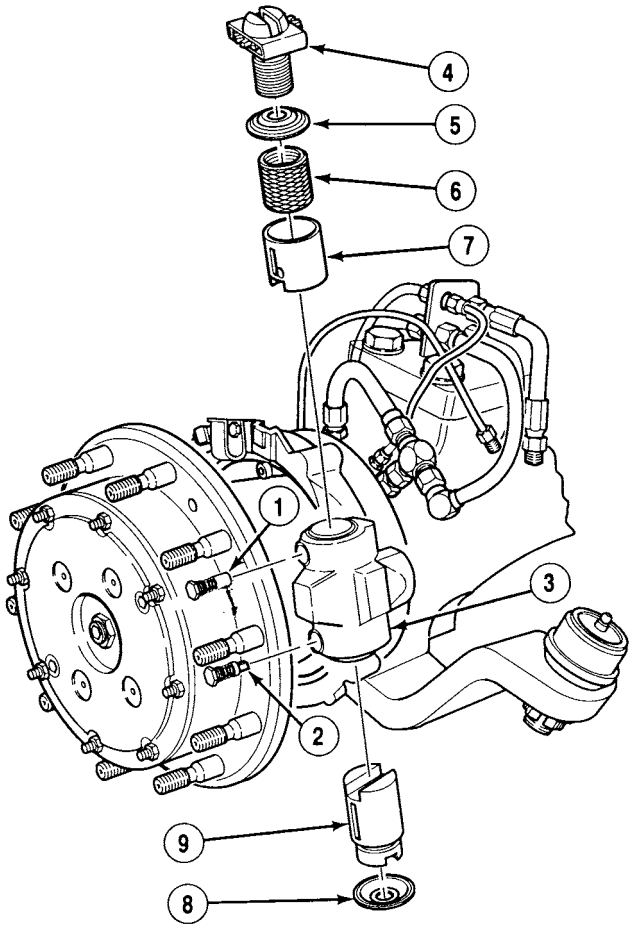
(3) Remove actuator (6) and ring seal (5) from adjusting bolt (7).

(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

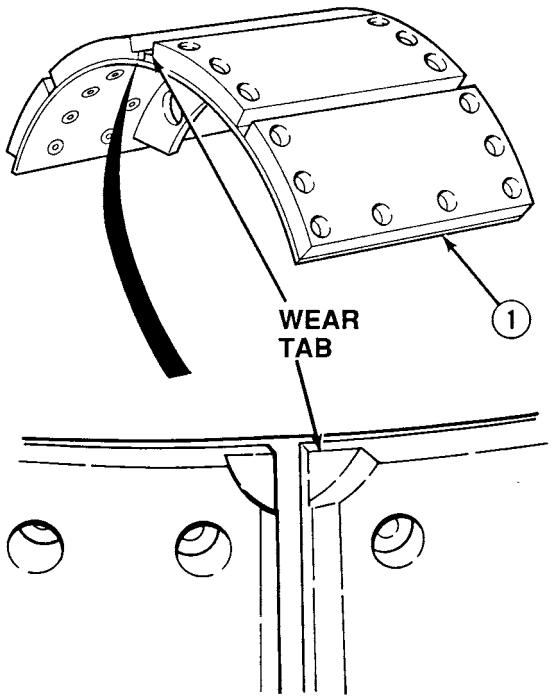
- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II 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.

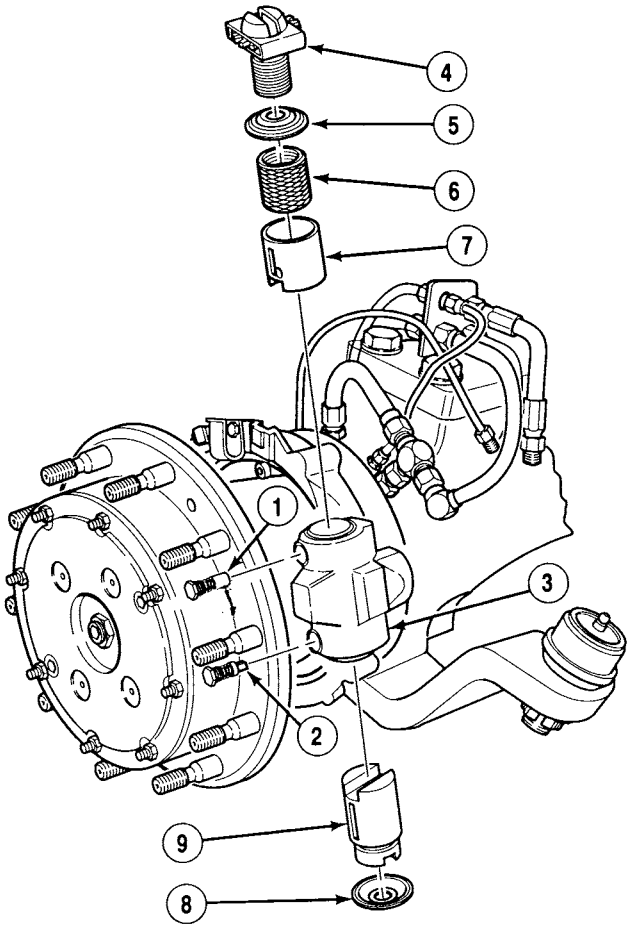
(5) Position adjusting bolt (4) in lower right side of brake spider (3).

NOTE

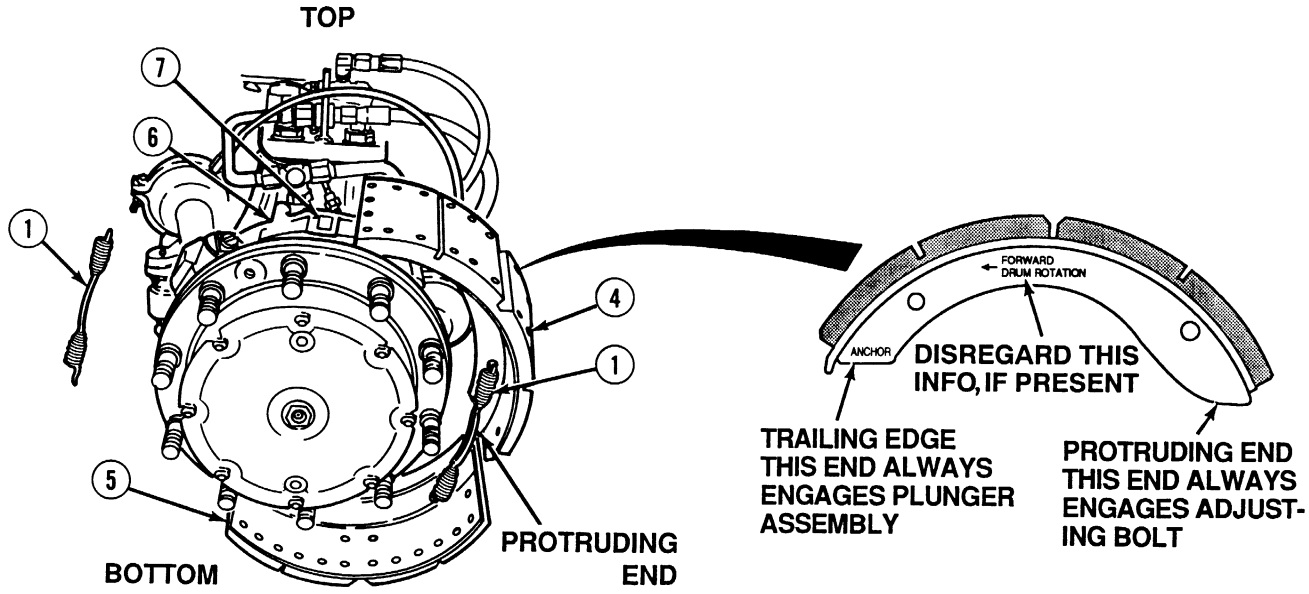
Install guide assembly pawls in location noted prior to removal.

(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.



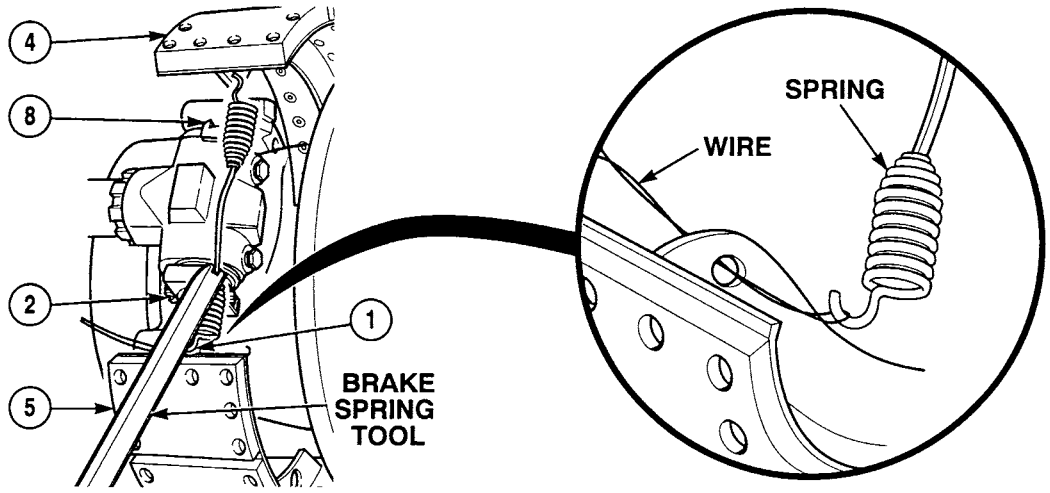
NOTE

- 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.

This task covers:

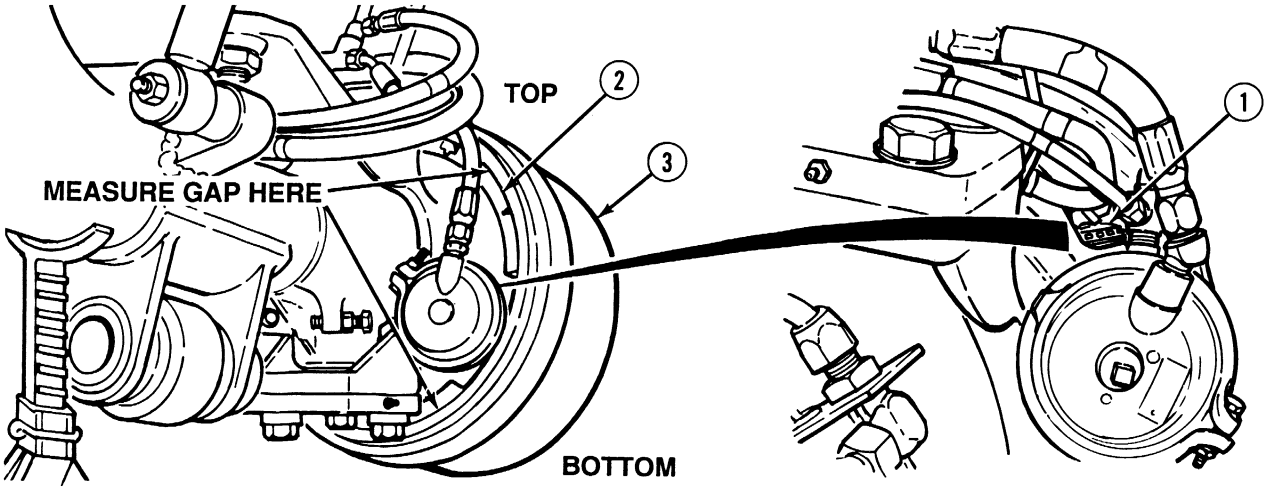
a. Adjustment b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Gage, Feeler (Item 27, Appendix G)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Wheel and tire removed, (TM 9-2320-364-10)
Brakes caged (No. 3, 4 and 5 axles only), (TM 9-2320-364-10)

a. Adjustment.

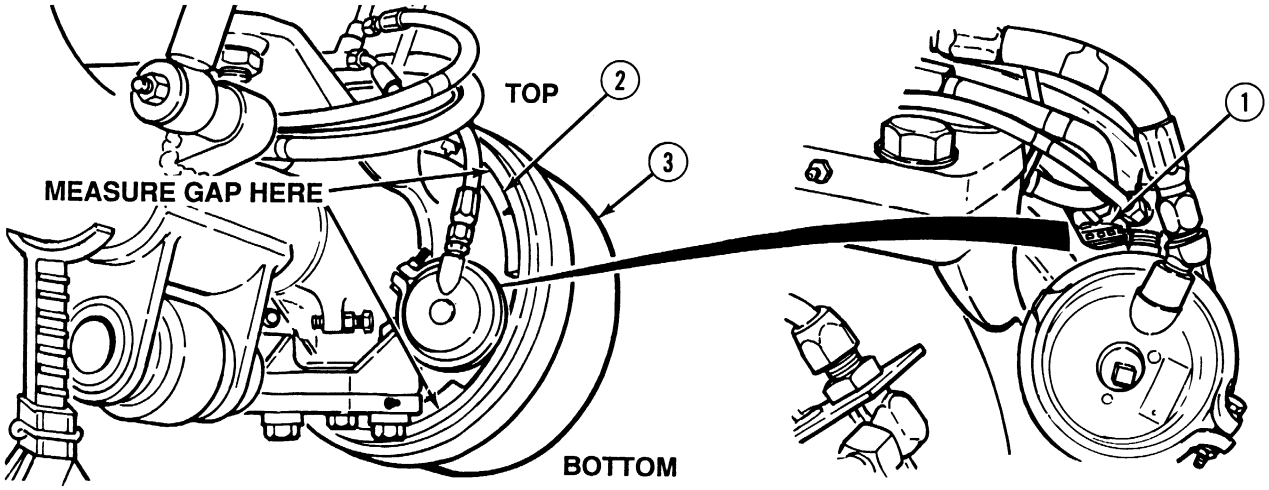


NOTE

- Turn both adjusting bolts the same amount of clicks to center brake shoes evenly.
- Turn top adjusting bolt in counterclockwise direction to adjust top brake shoe. Turn bottom adjusting bolt in clockwise direction to adjust bottom brake shoe.
- It is normal to experience initial high breakaway torques on some adjusting bolts. After initial adjustment subsequent torques will be normal.

(1) Tighten adjusting bolts (1) one click at a time until both brake shoes (2) are fully seated against brake drum (3).

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.

This task covers:

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

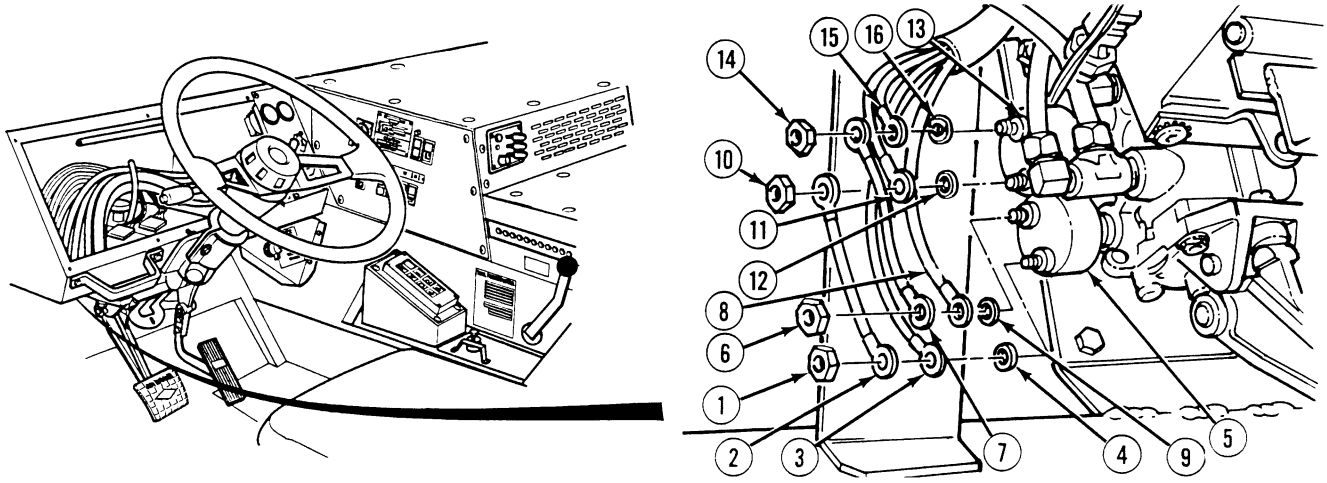
INITIAL SETUP

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)
Lockwasher (3) (Item 169, Appenedix 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)
Instruction panel removed, (Para 7-13)

a. Removal.



NOTE

- Tag and mark wires, elbows, tees and air lines before removal.
- Press in tab on wire clips to remove.

(1) Remove nut (1), jumperwire 1005 (2), wire 1005 (3) and washer (4) from bottom terminal of lower brake switch (5).

(2) Remove nut (6), jumperwire 1009 (7), wire 1009 (8) and washer (9) from top terminal of lower brake switch (5).

(3) Remove nut (10), jumperwire 1005 (2), wire 1005 (11) and washer (12) from bottom terminal of upper brake switch (13).

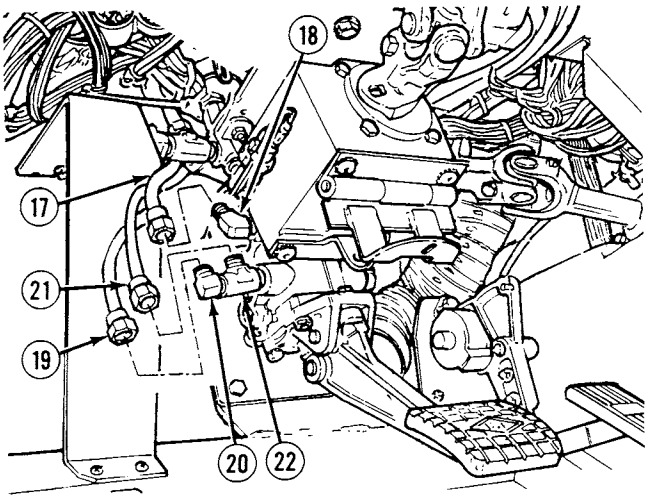
(4) Remove nut (14), jumperwire 1009 (7), wire 1009 (15) and washer (16) from top terminal of upper brake switch (13).

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).

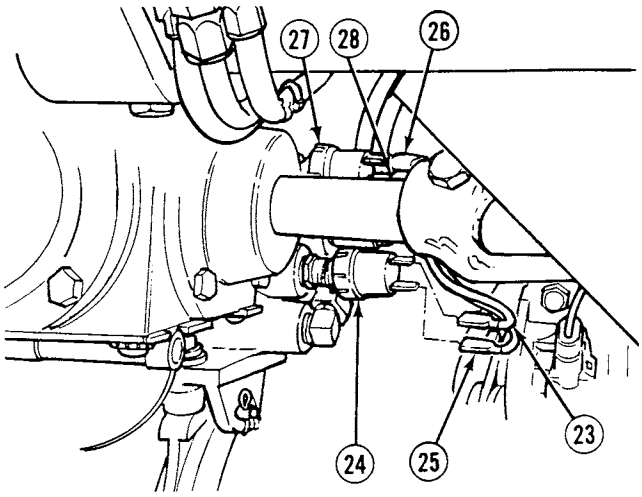


(8) Remove wire 1435 (23) from lower low air switch (24).

(9) Remove wire 1120 (25) from upper low air switch (24).

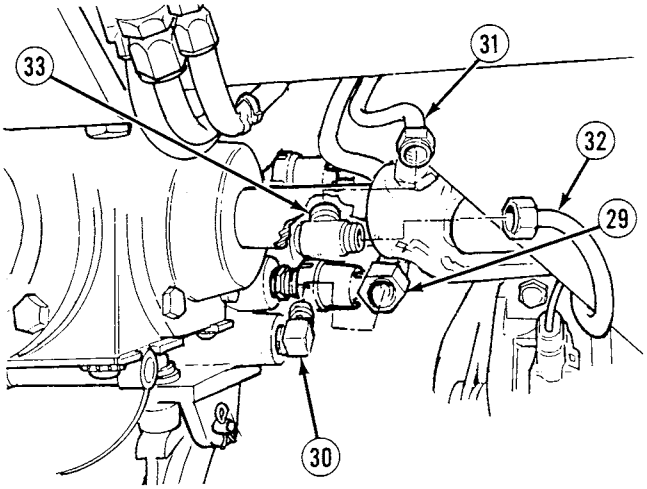
(10) Remove wire 1120 (26) from lower low air switch (27).

(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).

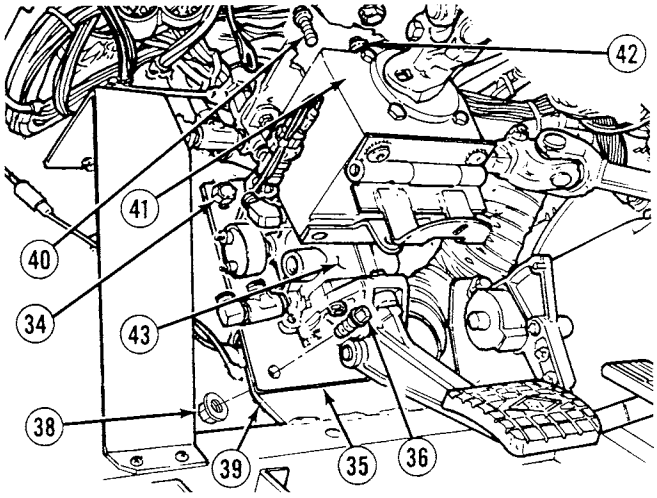


(14) Loosen two screws (34) on valve plate (35).

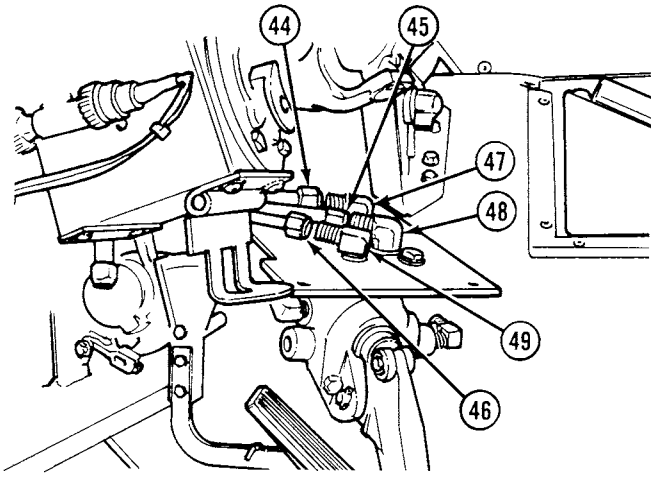
(15) Remove two lower screws (36), locknuts (38) and valve plate (35) from bracket (39). Discard locknuts.

(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).

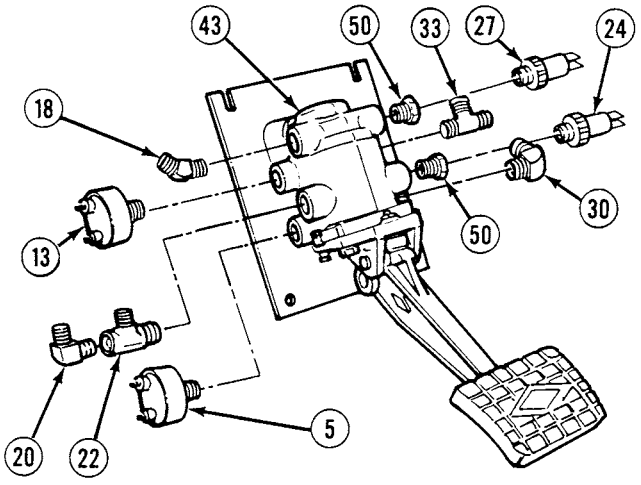
(20) Remove lower low air switch (24) and reducer (50) from treadle valve (43).

(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).

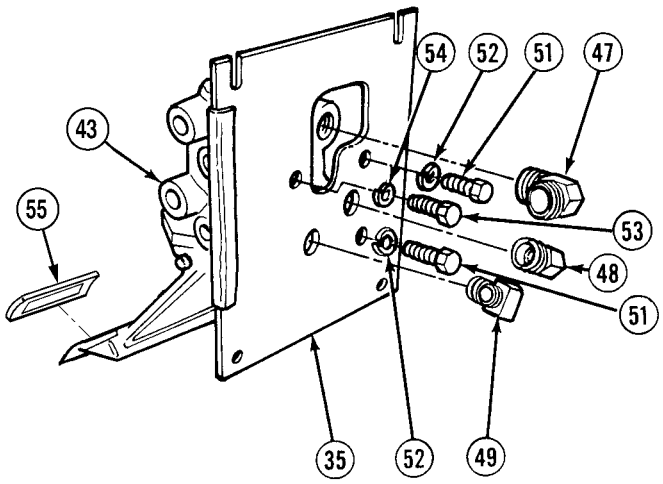
(25) Remove two screws (51), lockwashers (52), elbow (47) and elbow (49) from back of treadle valve (43). Discard lockwashers.

(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.

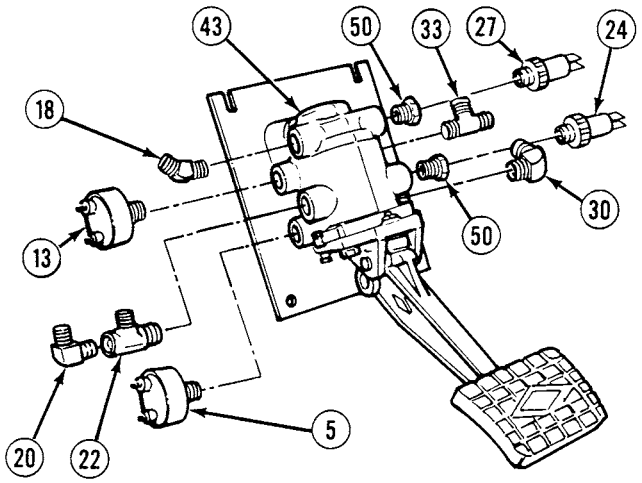
(4) Install elbow (48) on treadle valve (43).

(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.

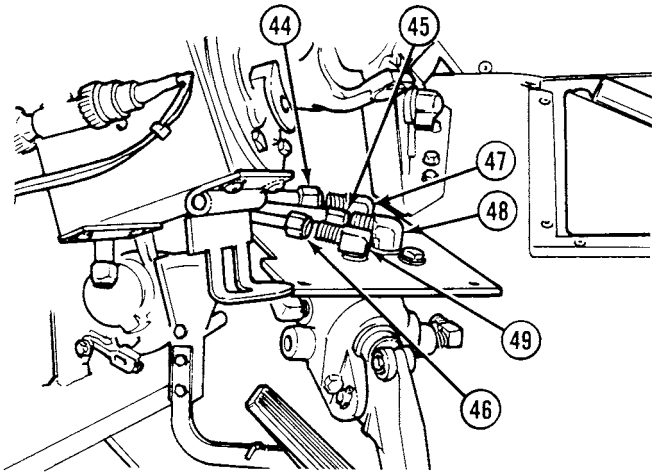
(17) Install upper brake switch (13) on treadle valve (43).

(18) Coat threads of elbow (18) with sealing compound.

(19) Install elbow (18) on treadle valve (43).

12-4. BRAKE TREADLE VALVE REPLACEMENT (CONT).

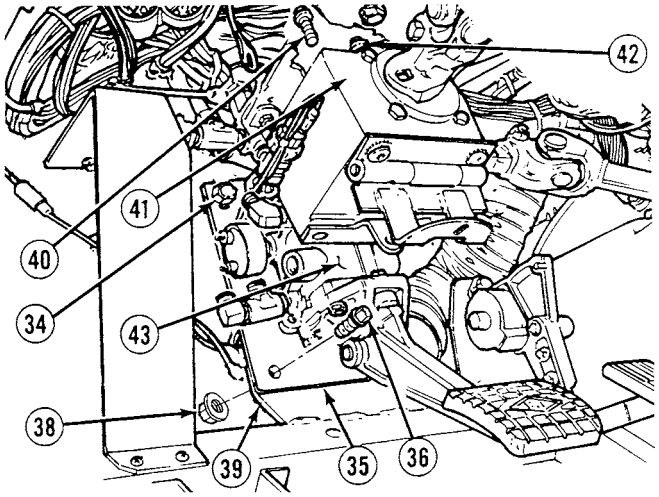
(20) Install air lines 2488 (46), 2619 (45) and 2005 (44) on elbows (49), (48) and (47).



(21) Install treadle valve (43) and valve plate (35) as an assembly with two lower screws (36) and locknuts (38) on bracket (39).

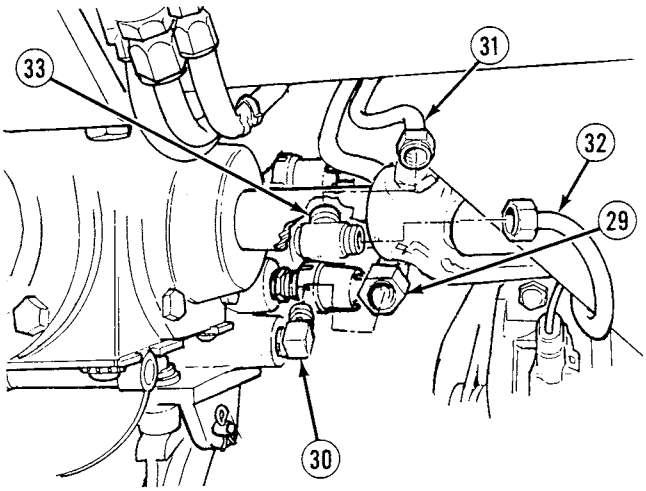
(22) Tighten two upper screws (34) on valve plate (35).

(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).

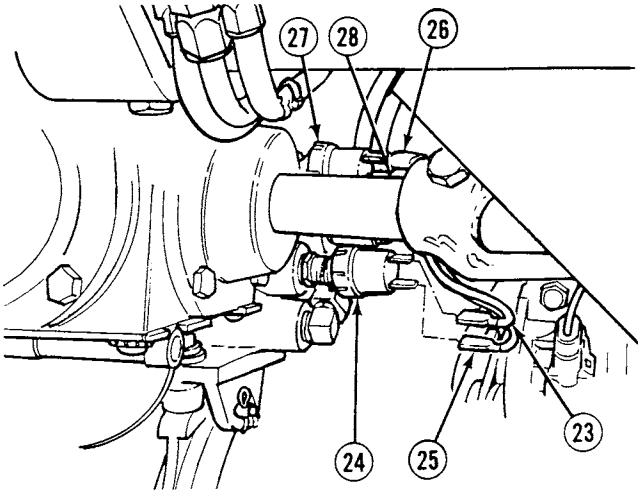


(26) Install wire 1435 (28) on upper low air switch (27).

(27) Install wire 1120 (26) on lower low air switch (27).

(28) Install wire 1120 (25) on upper low air switch (24).

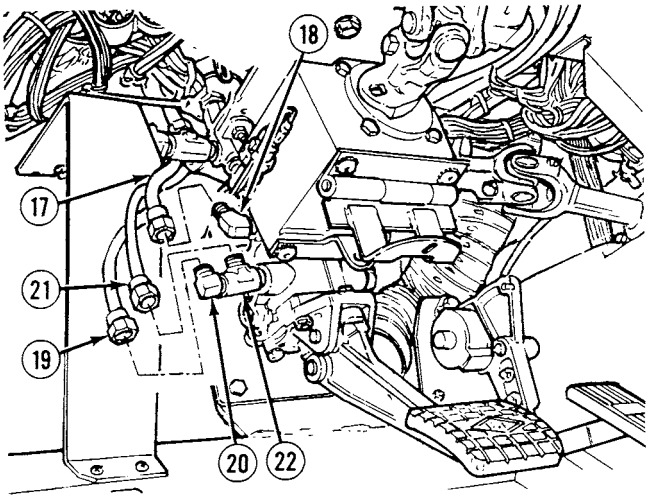
(29) Install wire 1435 (23) on lower low air switch (24).



(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).



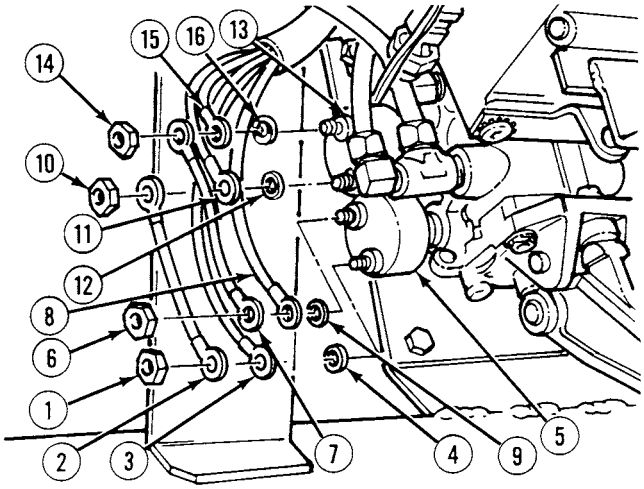
12-4. BRAKE TREADLE VALVE REPLACEMENT (CONT).

(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

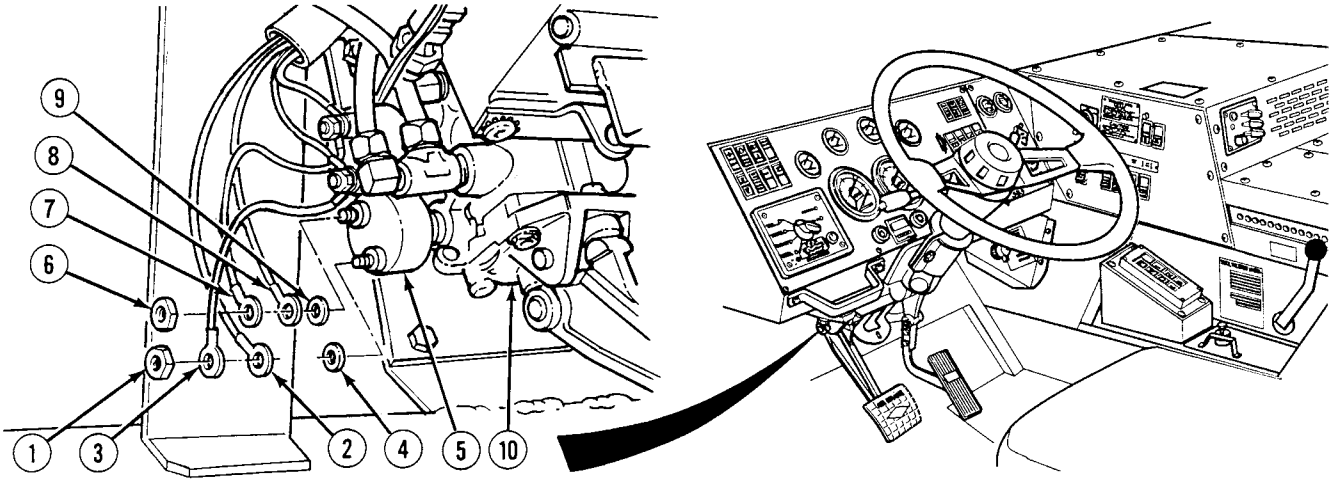
INITIAL SETUP

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).

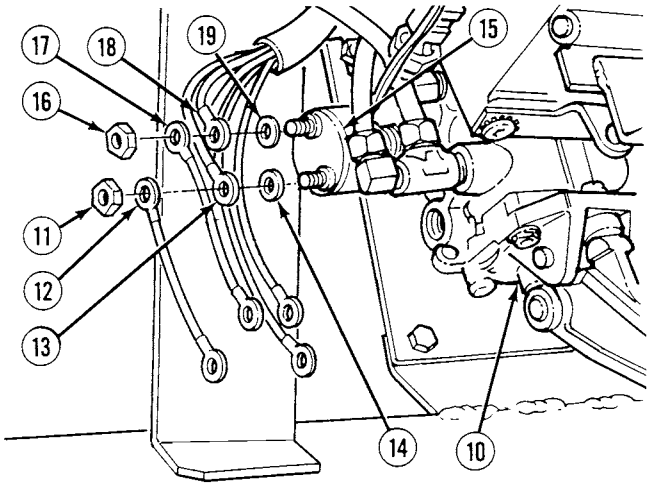
12-5. BRAKE PRESSURE SWITCH REPLACEMENT (CONT).

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).

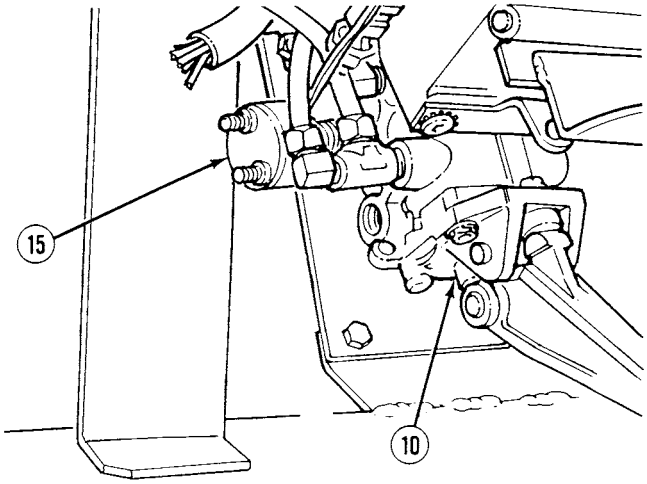


(6) Remove upper brake switch (15) from pedal valve (10).

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.

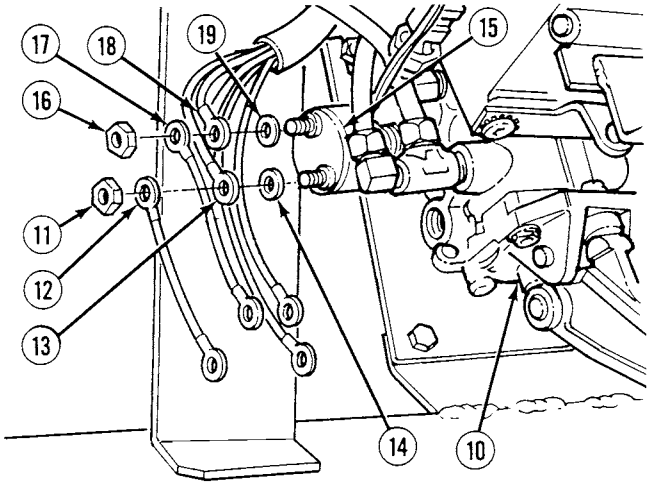
NOTE

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).

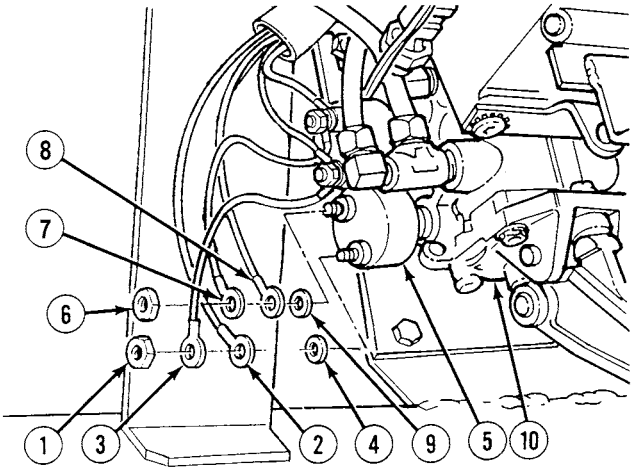
(4) Install washer (14), wire 1005 (13), wire 1005 (12) and nut (11) on terminal of upper brake switch (15).



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) 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

12-6. LOW AIR SWITCH REPLACEMENT.

This task covers:

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

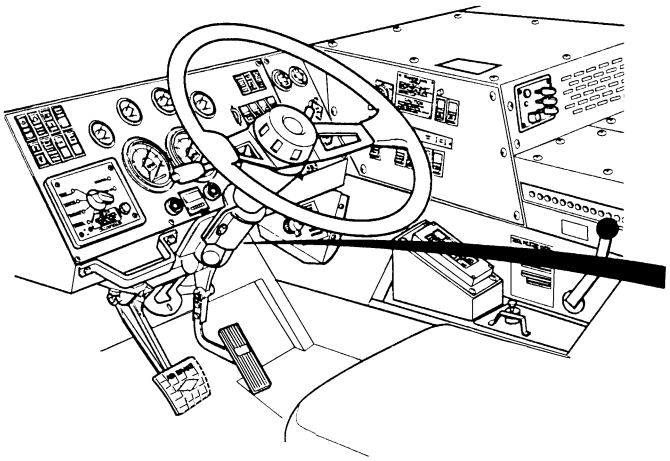
INITIAL SETUP

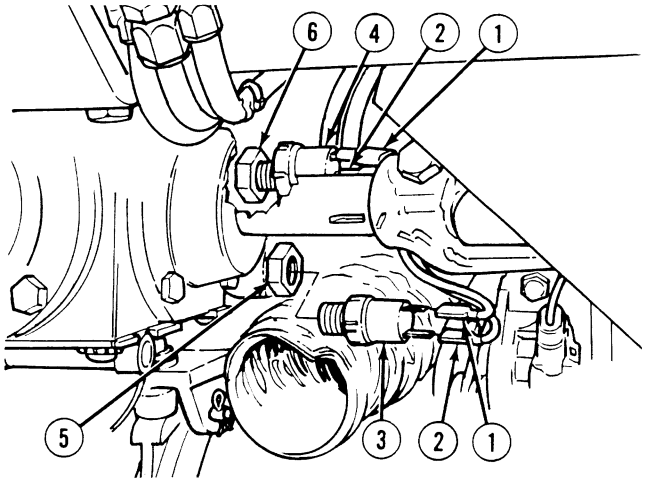
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

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 wires prior to removal.

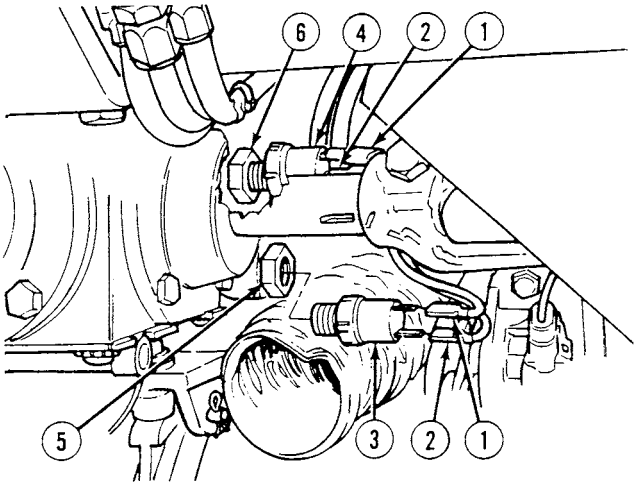
(1) Remove wire 1120 (1) and wire 1435 (2) from lower low air switch (3).

(2) Remove wire 1120 (1) and wire 1435 (2) from upper low air switch (4).

(3) Hold reducer (5) stationary and remove lower low air switch (3).

(4) Hold reducer (6) stationary and remove upper low air switch (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) (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

12-7. PARKING BRAKE SWITCH REPLACEMENT.

This task covers:

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

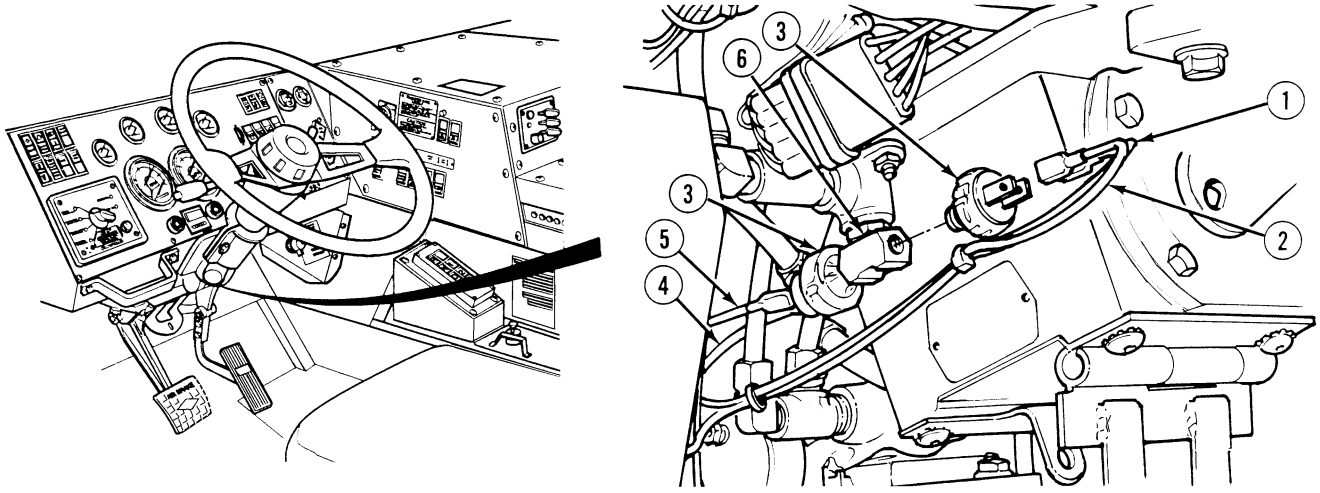
INITIAL SETUP

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)
Battery disconnected, (Para 7-87)

a. Removal.



NOTE

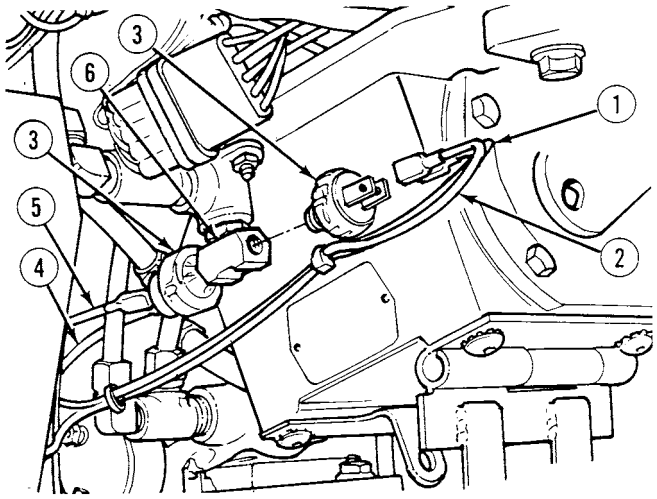
- Procedure is the same for both parking brake switches.
- Tag and mark wires prior to removal.

(1) Remove wire 1510 (1) and wire 1525 (2) from switch (3).

(2) Remove wire 1435 (4) and wire 1371 (5) from switch (3).

(3) Remove two switches (3) from tee (6).

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

12-8. HAND BRAKE 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)

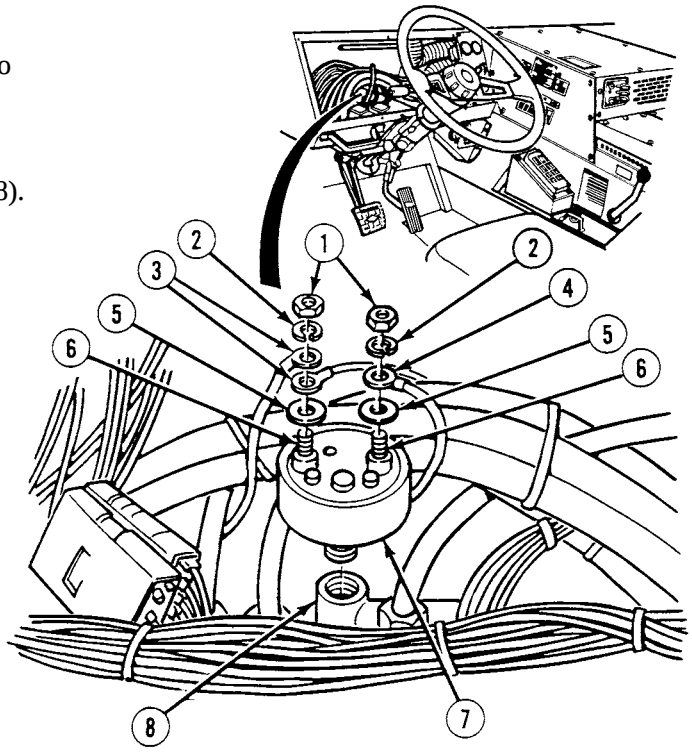
Materials/Parts
Sealing Compound (Item 72, Appendix C)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

a. Removal.

(1) Remove two nuts (1), lockwashers (2), two wires 1005 (3), wire 1009 (4) and two washers (5) from terminals (6).

(2) Remove switch (7) from pressure fitting (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.

(1) Coat threads of switch (7) with sealing compound.

(2) Install switch (7) in pressure fitting (8).

(3) Install two washers (5), wires 1005 (3), wire 1009 (4), two lockwashers (2) and nuts (1) on terminals (6).

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)

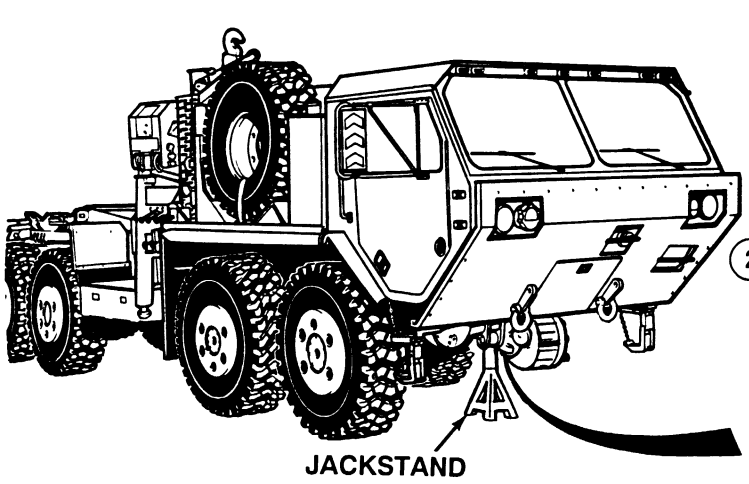
Materials/Parts
Grease (Item 44, Appendix C)
Sealing Compound (Item 72, Appendix C)

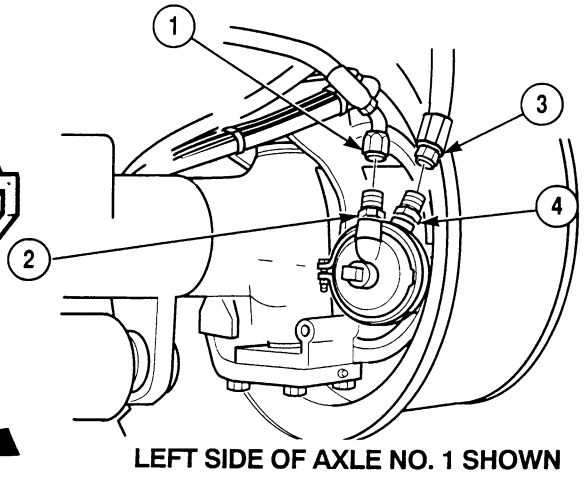
Materials/Parts - Continued
Sealing Compound (Item 81, Appendix C)
Tags, Identification (Item 87, Appendix C)

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.





LEFT SIDE OF AXLE NO. 1 SHOWN

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.*

(a) Remove air line (1) from fitting (2).

(b) Remove air line (3) from fitting (4).

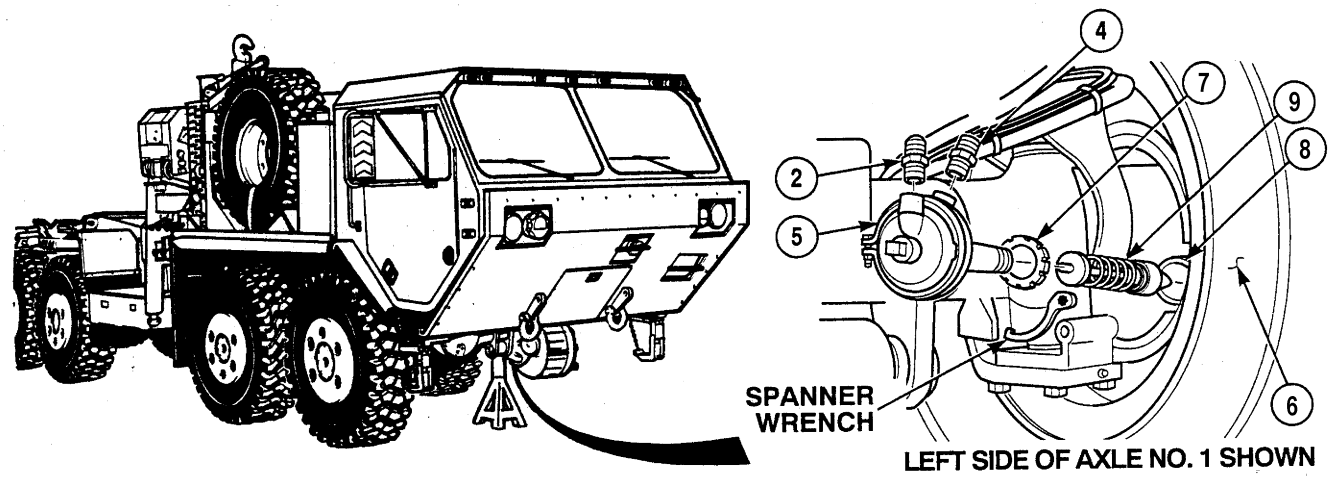


Table 12-1. Air Line Numbers

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.

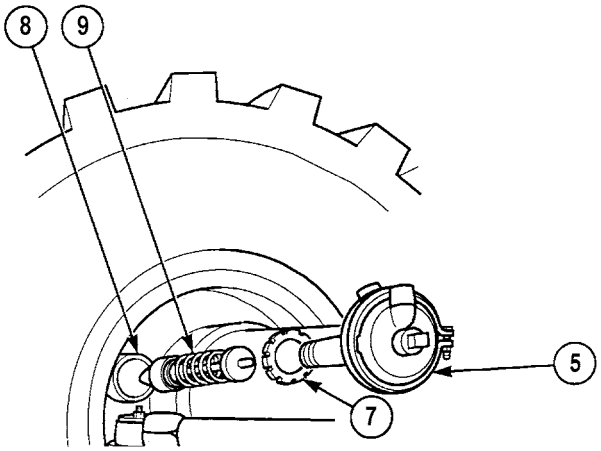
(c) Install collet nut (7) completely onto air chamber (5).

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.

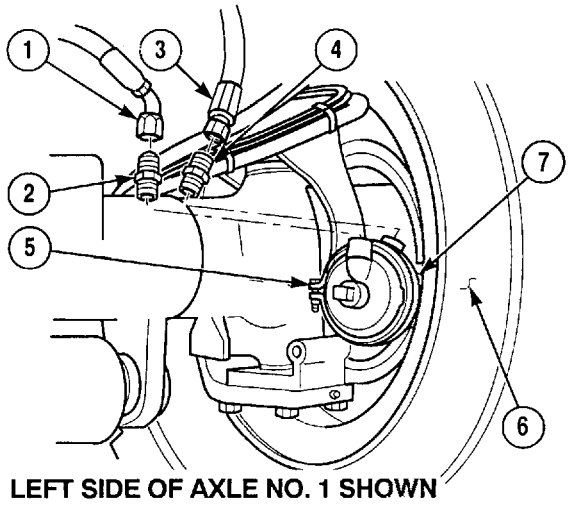


LEFT SIDE OF AXLE NO. 1 SHOWN

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.



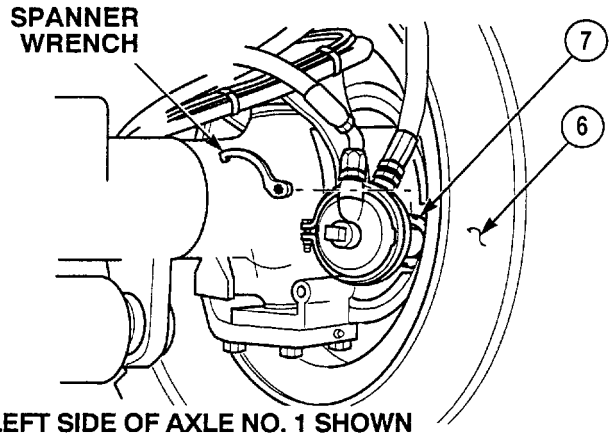
LEFT SIDE OF AXLE NO. 1 SHOWN

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.

(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

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.

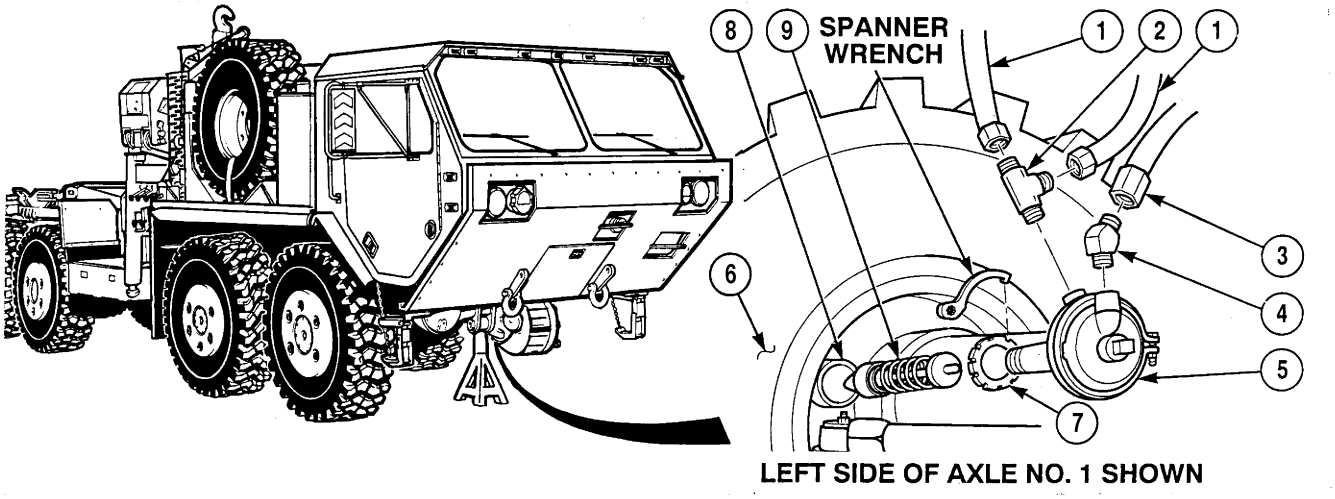
(n) With the aid of an assistant, apply service brake pedal and using spanner wrench tighten collet nut (7) to 250 to 280 lb-ft (339 to 380 N·m).

(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.



LEFT SIDE OF AXLE NO. 1 SHOWN

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.*

(a) Remove two air lines (1) from tee fitting (2).

(b) 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.

(c) Remove tee (2) and elbow (4) from air chamber (5).

WARNING

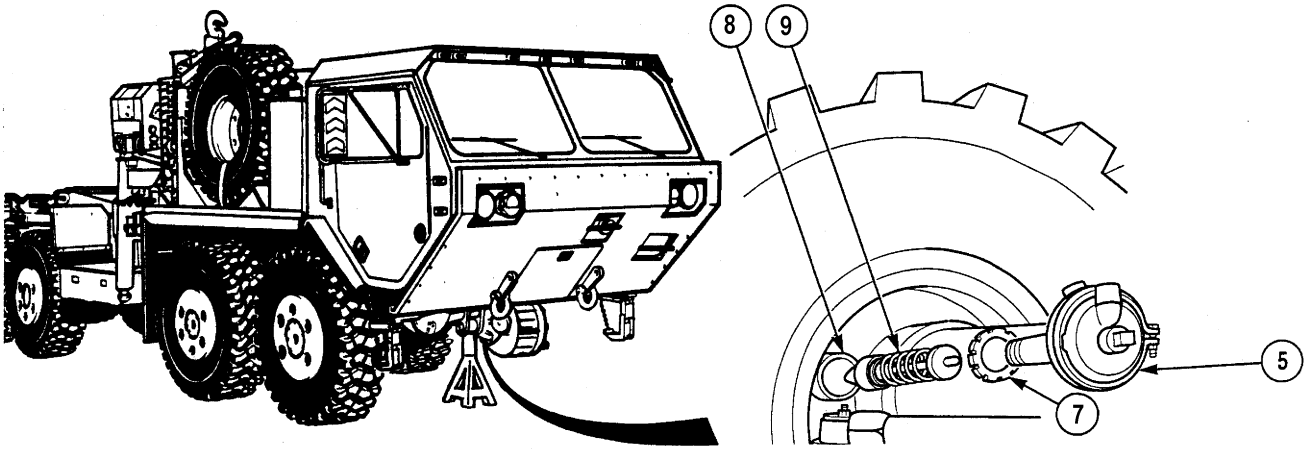
Ensure brake drum is not pulled back more than approximately two inches (5 cm). Failure to comply may result in injury or death to personnel.

(d) Pull brake drum (6) back approximately two inches (5 cm).

(e) Using spanner wrench, loosen collet nut (7).

(f) Remove air chamber (5) from brake assembly (8).

(g) Remove wedge assembly (9) from brake assembly (8).



LEFT SIDE OF AXLE NO. 1 SHOWN

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

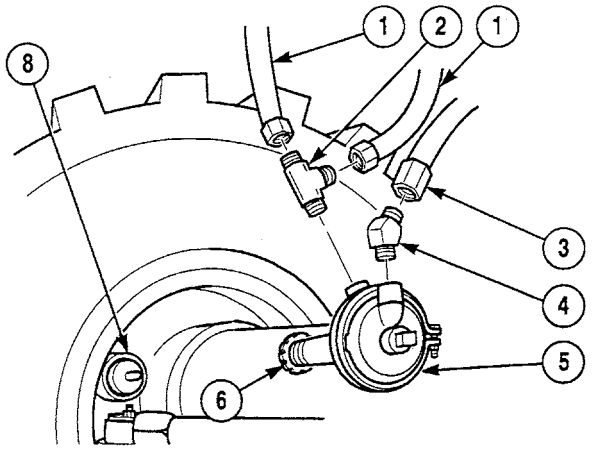
- Perform Step (c) if collet nut was removed.
- Install collet nut flat end first on air chamber.

(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.



LEFT SIDE OF AXLE NO. 1 SHOWN

(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.

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.

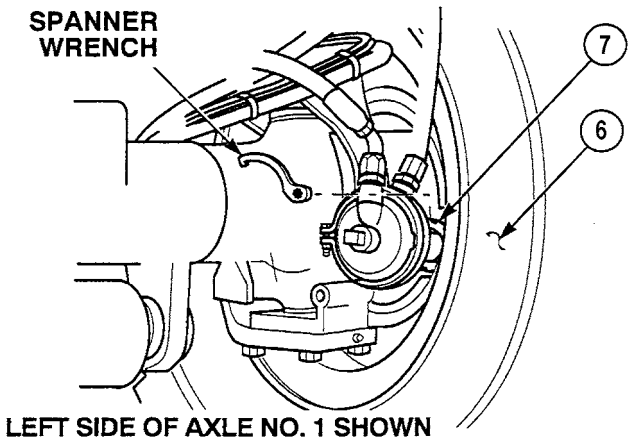
(m) Release parking brake.

(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

12-10. AXLES NO. 3, 4 AND 5 AIR CHAMBER REPLACEMENT.

This task covers:

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

INITIAL SETUP

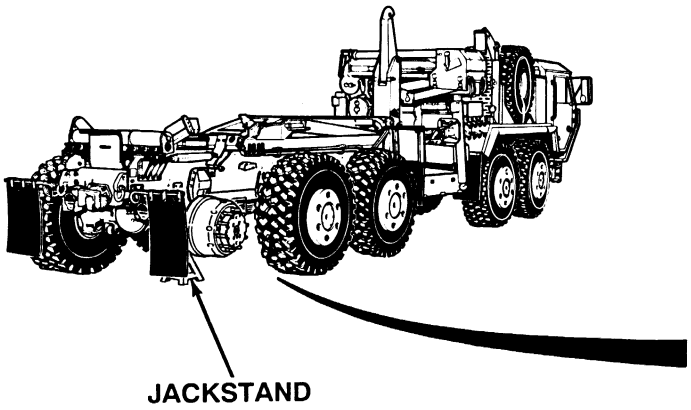
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/4 in. (Item 61, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Open End 1 1/16 in. (Item 78, Appendix G)
Wrench, Spanner (Item 94, Appendix G)
Wrench, Torque (0 to 300 lb-ft [0 to 407 N·m]) (Item 96, Appendix G)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

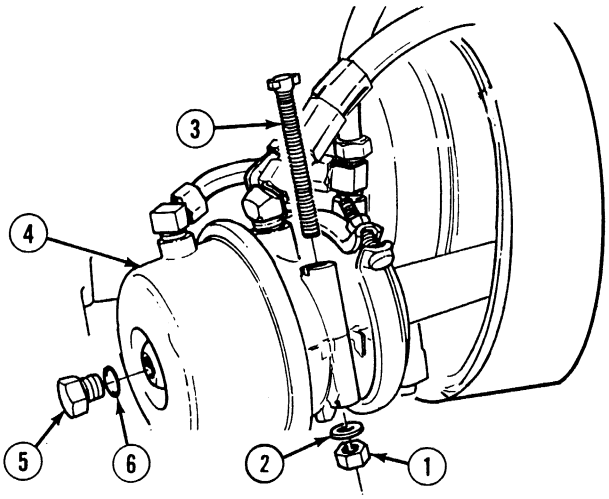
Materials/Parts
Grease (Item 44, Appendix C)
Sealing Compound (Item 72, Appendix C)
Sealing Compound (Item 81, Appendix C)
Tags, Identification (Item 88, Appendix C)
Packing, Preformed (Item 261, Appendix F)

Personnel Required
Two

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Wheel and tire removed, (TM 9-2320-364-10)

a. Removal.





NOTE

Axle No. 3, 4 and 5 air chambers are removed the same way. Axle No. 5 is shown.

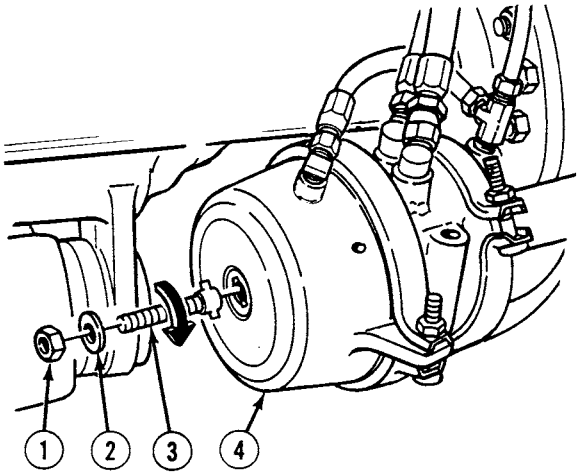
(1) Remove nut (1), washer (2) and caging bolt (3) from storage slot in air chamber (4).

(2) Remove plug (5) from air chamber (4).

(3) Remove preformed packing (6) from plug (5). Discard preformed packing.

(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.

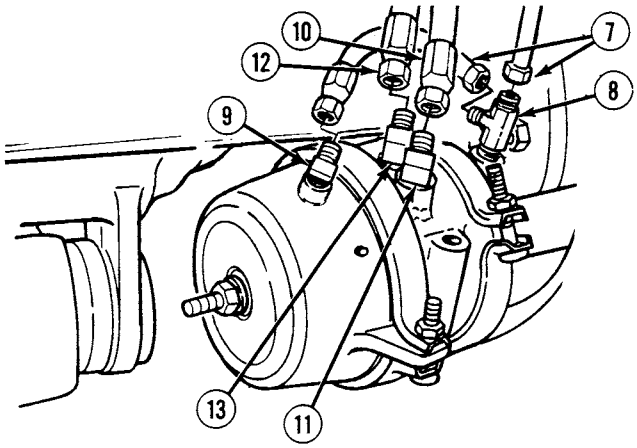


WARNING

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

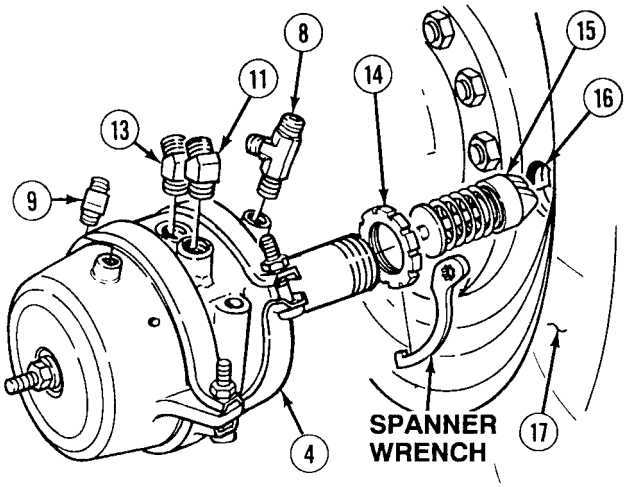
Item No.	Axle No. 3		Axle No. 4		Axle No. 5	
	Right Side	Left Side	Right Side	Left Side	Right Side	Left Side
7	2874	2874	2874	2874	2874	2874
10	2022	2023	2138	2139	2140	2141
12	2546	2547	2017	2015	2018	2016

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.

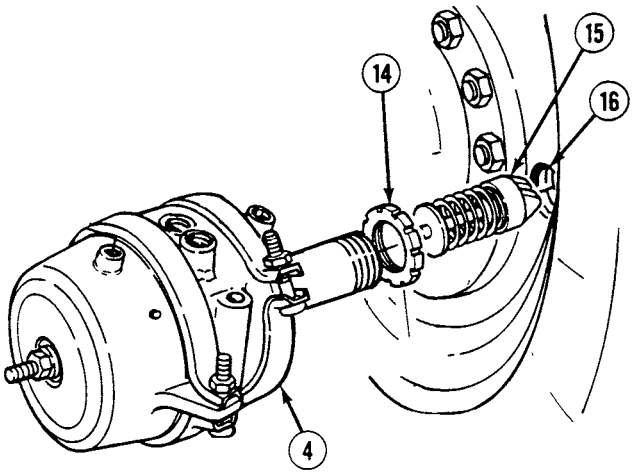
(1) Coat wedge assembly (15) with grease.

(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

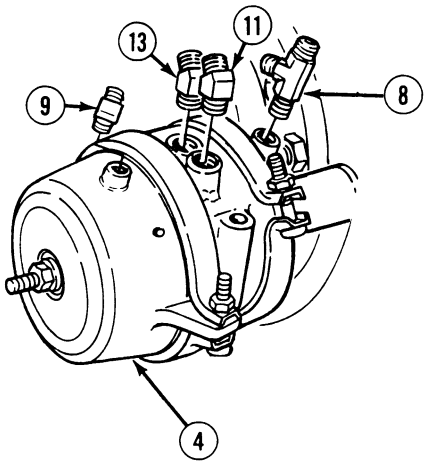
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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



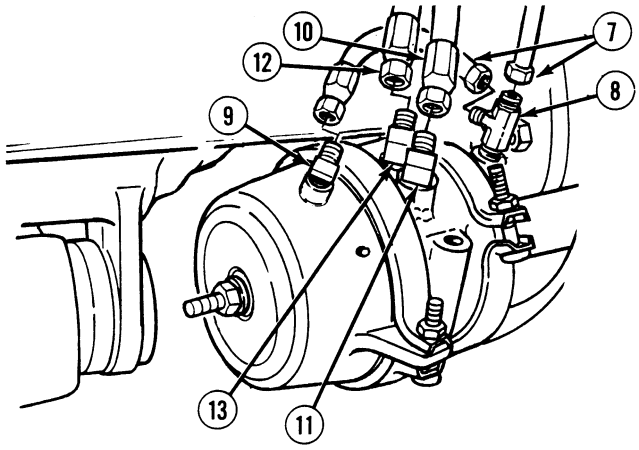
NOTE

Refer to Table 12-2 for air line numbers.

(10) Install air line (12) on elbow (13).

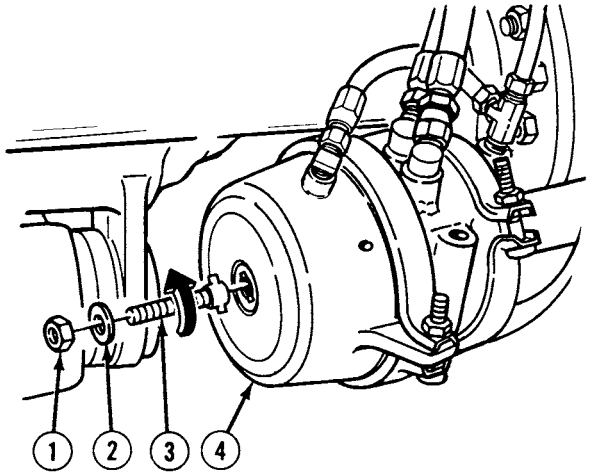
(11) Install air line (10) on elbow (11).

(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.

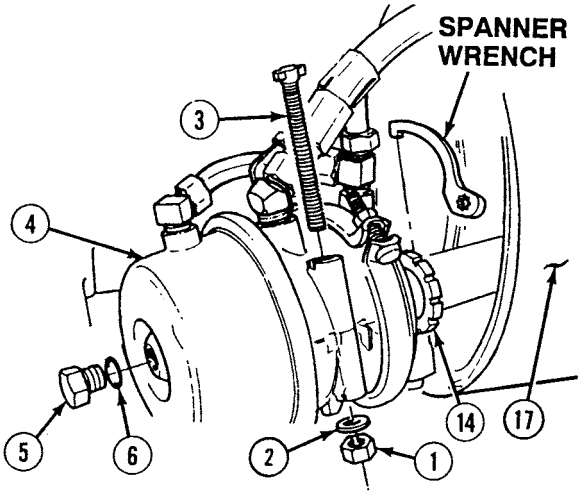
(21) Release parking brake.

(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.

This task covers:

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

INITIAL SETUP

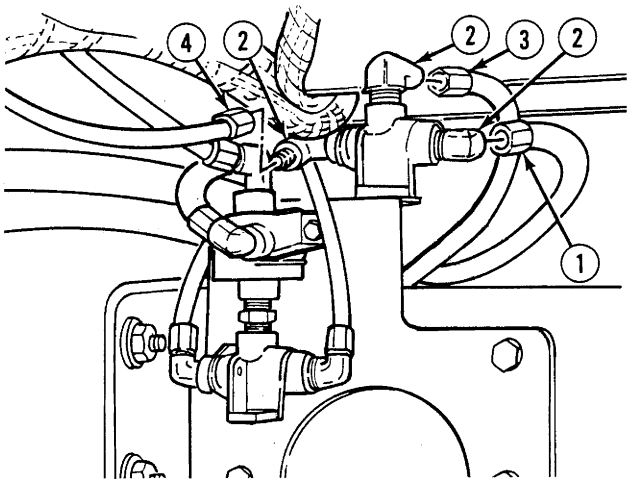
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Caps, Vise Jaw (Item 9, Appendix G)
Vise, Machinists (Item 58, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)

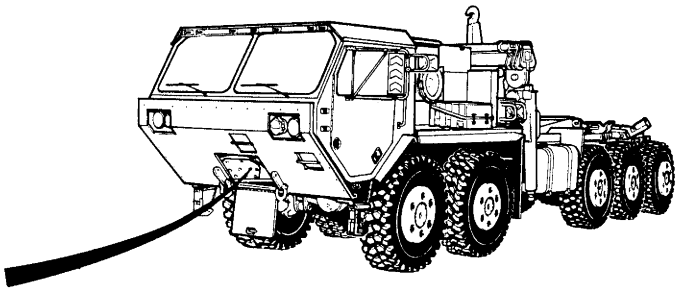
Materials/Parts
Sealing Compound (Item 72, Appendix C)

Materials/Parts - Continued
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 106, 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

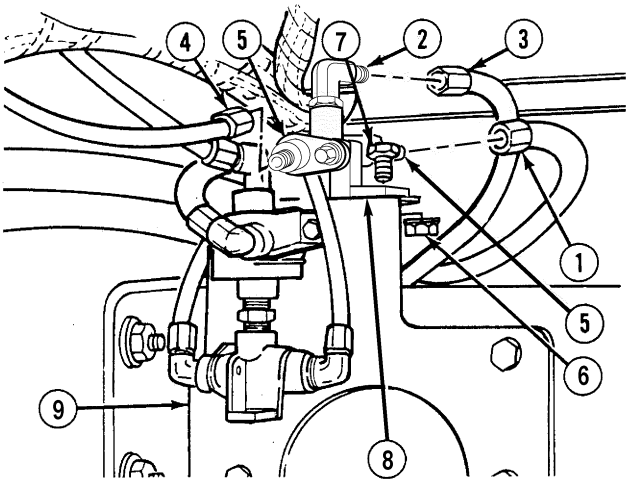
- Tag and mark air lines prior to removal.
- If truck is not equipped with remote oil filter, perform Steps (1) through (3).
- If truck is equipped with remote oil filter, perform Steps (4) through (6) .

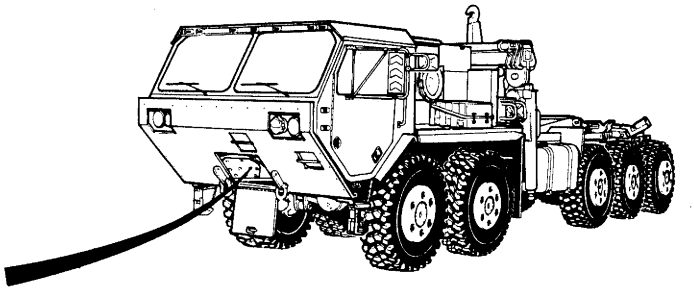
(1) Remove air line 2686 (1) from elbow (2).

(2) Remove air line 2684 (3) from elbow (2).

(3) Remove air line 2689 (4) from elbow (2).

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 (Model A), 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).

NOTE

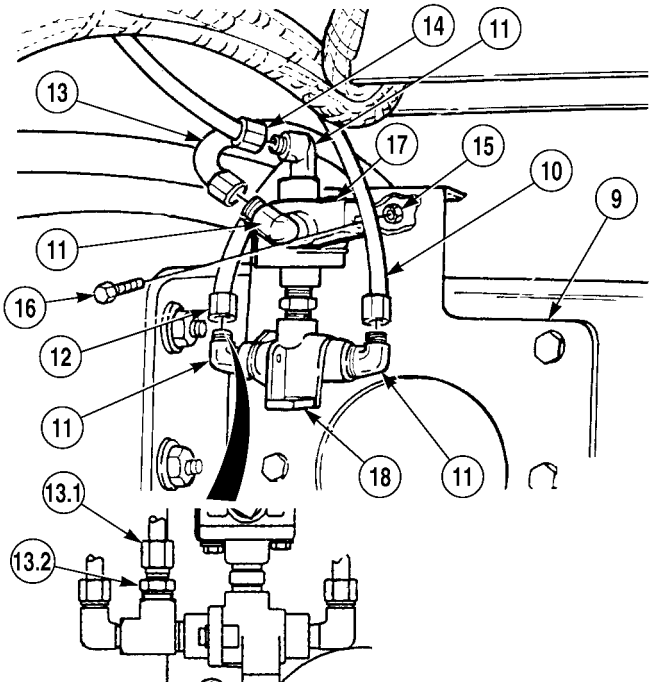
Perform Step (10.1) if truck has double check service relay valve.

(10.1) Remove air line 2623 (13.1) from adapter (13.2).

(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.

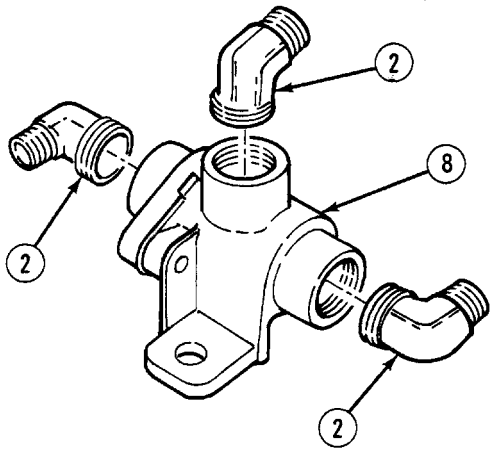
(13) Secure top double check valve (8) in a soft-jaw vise.



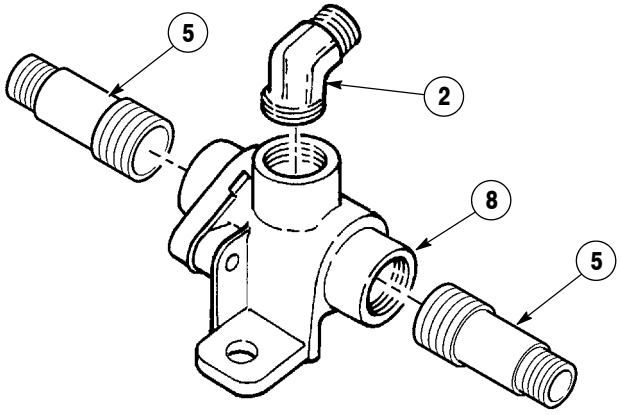
NOTE

- Mark positions of adapters, tees, 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).

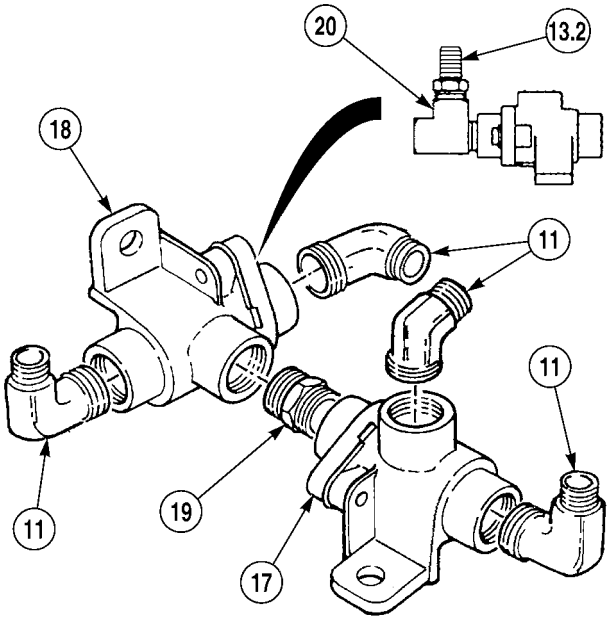
(18) Remove front double check valve (18) from nipple (19).

(19) Remove nipple (19) from front double check valve (17).

NOTE

Perform Step (20) if truck has double check service relay valve.

(20) Remove adapter (13.2) and tee (20) from front double check valve (18).



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.

NOTE

Ensure adapters, tees, elbows and valves installed as noted prior to removal.

(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).

NOTE

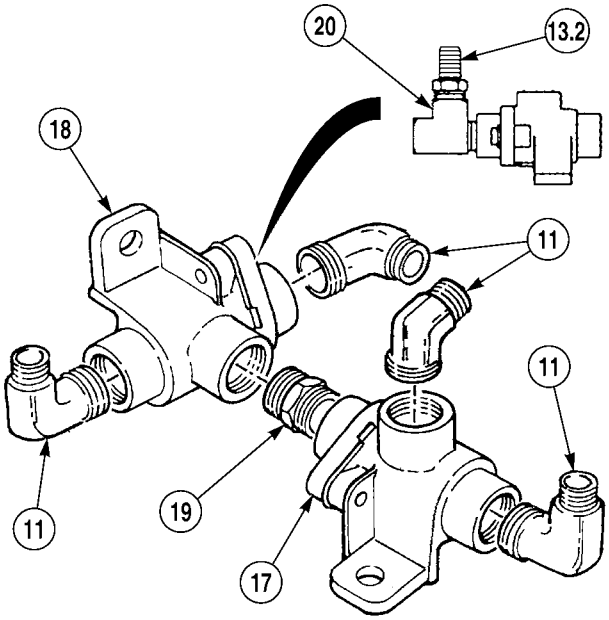
Perform Steps (3.1) and (3.2) if truck has double check service relay valve.

(3.1) Apply sealing compund to threads of tee (20) and adapter (13.2).

(3.2) Install tee (20) and adapter (13.2) in front double check valve (18).

(4) Apply sealing compound on threads of four elbows (11).

(5) Install four elbows (11) in front double check valves (17) and (18).

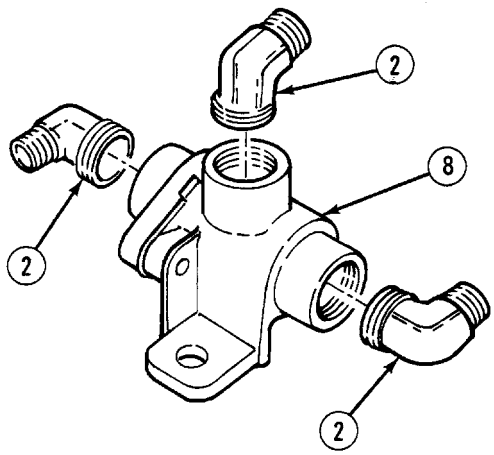


NOTE

- 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).

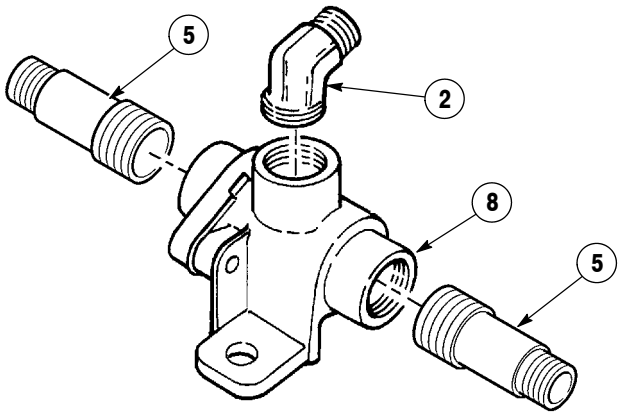


WARNING

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).

NOTE

Perform Step (10.1) if truck has double check service relay valve.

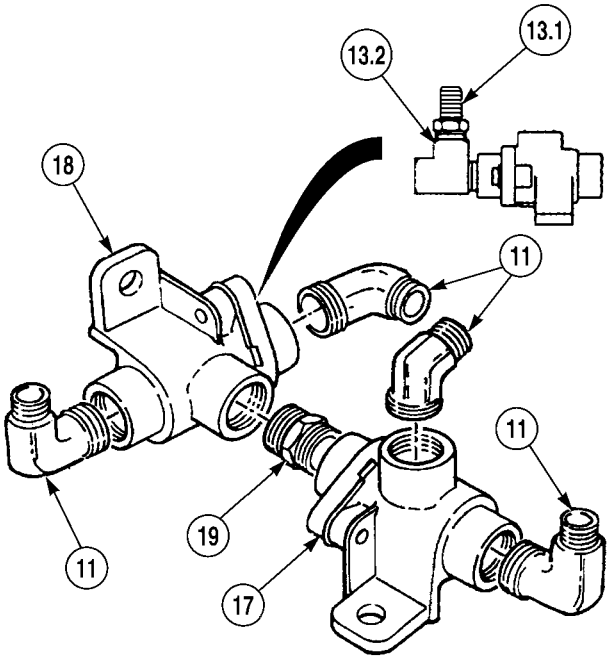
(10.1) Install air line 2623 (13.1) on adapter (13.2).

(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).

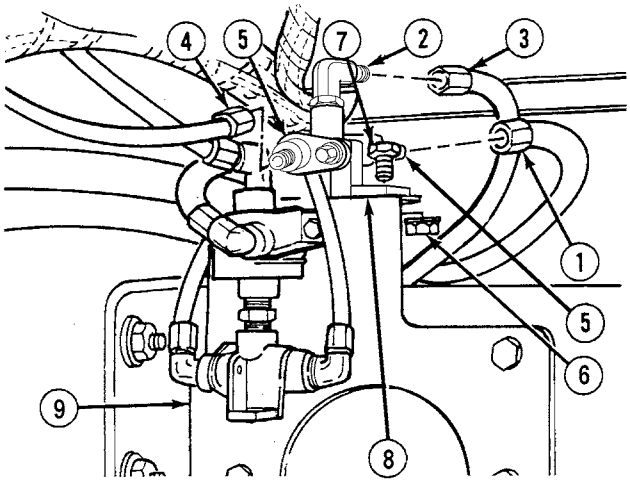
(17) Install air line 2684 (3) on elbow (2).

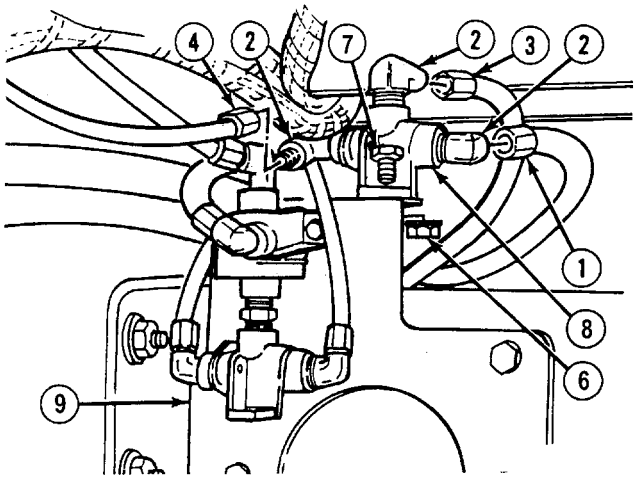
(18) Install air line 2686 (1) on adapter (5).

(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

12-17. RELAY SPRING VALVE NO. 2 REPLACEMENT.

This task covers:

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

INITIAL SETUP

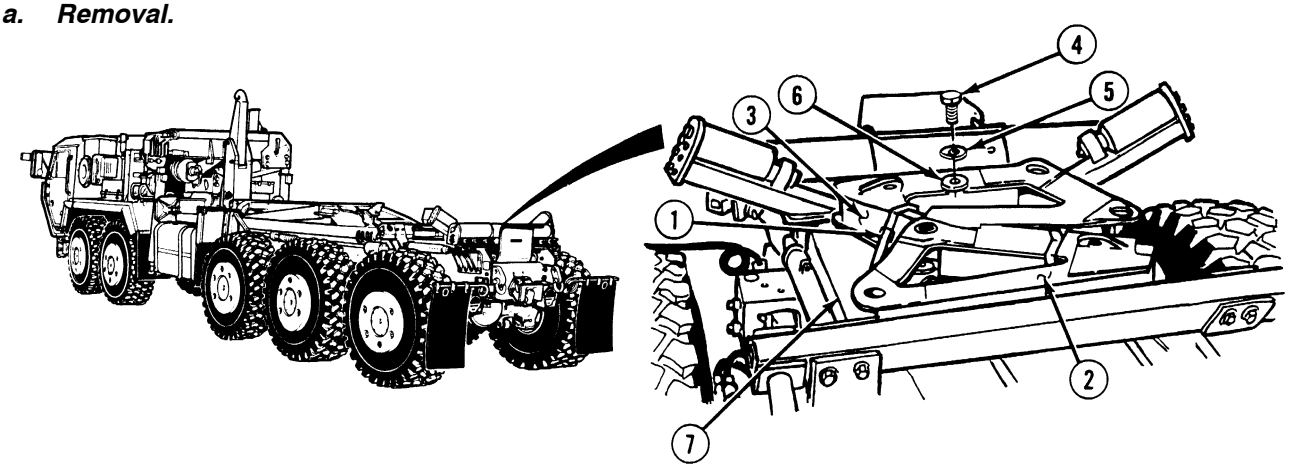
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)
Locknut (6) (Item 140, Appendix F)
Lockwasher (6) (Item 181, 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) Remove two tie down straps (1) from left hand extension assembly (2) and right hand extension assembly (3).

(2) Remove four screws (4), lockwashers (5) and washers (6) from extension assemblies (2) and (3). Discard lockwashers.

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.

(3) With the aid of an assistant, remove left hand extension assembly (2) and right hand extension assembly (3) from deck assembly (7).

12-12. BALL VALVE REPLACEMENT (CONT).

(4) Position bracket (7) in soft-jaw vise.

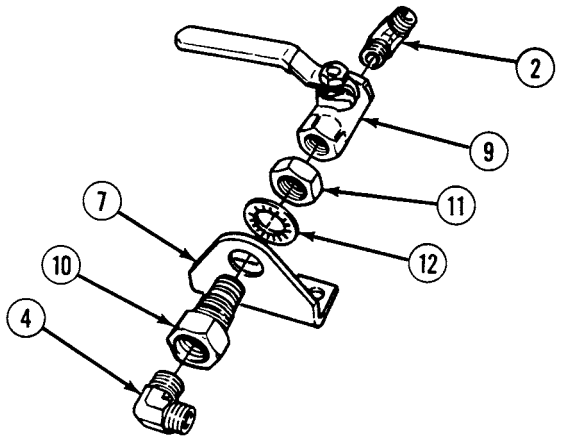
(5) Remove elbow (2) from ball valve (9).

(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).

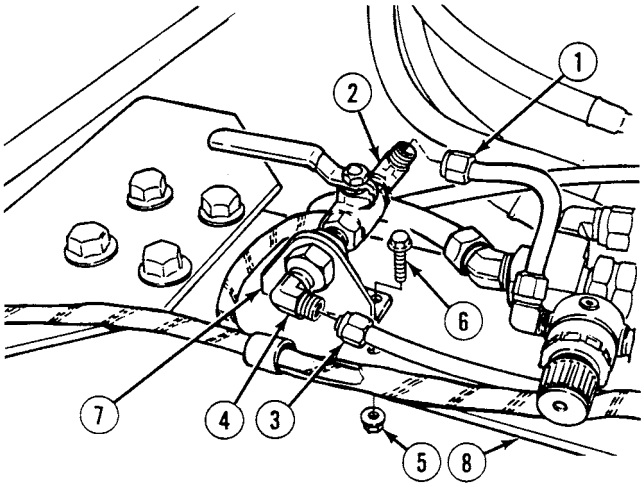
(7) Install elbow (4) on reducer (10).

(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

12-13. SERVICE RELAY VALVE NO. 1 REPLACEMENT.

This task covers:

a. Removal b. Installation c Follow-On Maintenance

INITIAL SETUP

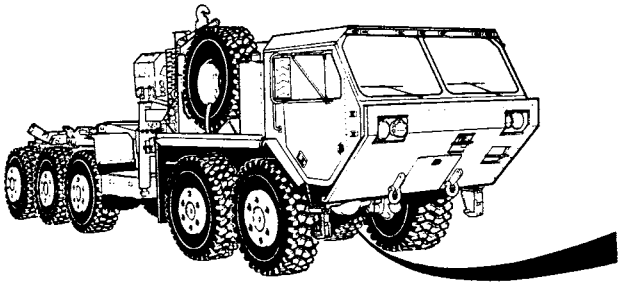
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination 1-1/16 in. (Item 78, Appendix G)
Wrench, Combination 1-1/8 in. (Item 79, Appendix G)

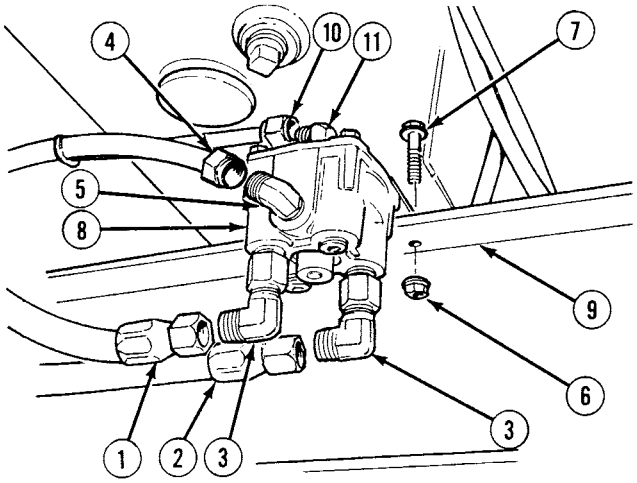
Materials/Parts
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued
Locknut (2) (Item 133, Appendix F)
Lockwasher (2) (Item 180, 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 prior to removal.

(1) Remove air line 2544 (1) and air line 2543 (2) from two elbows (3).

(2) Remove air line 2536 (4) from elbow (5).

(3) Remove two locknuts (6), screws (7) and service relay valve (8) from frame (9). Discard locknuts.

(4) Remove air line 2488 (10) from elbow (11) and remove service relay valve (8).

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).

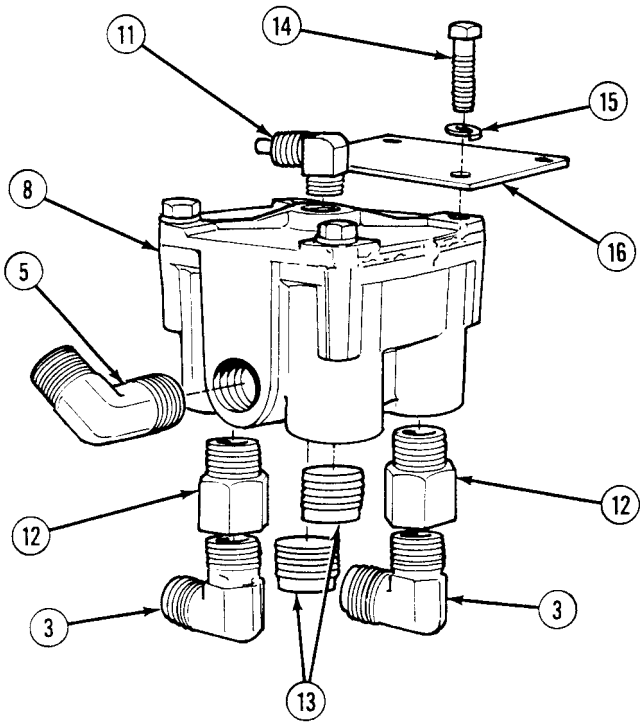
(8) Remove elbow (5) from service relay valve (8).

(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).

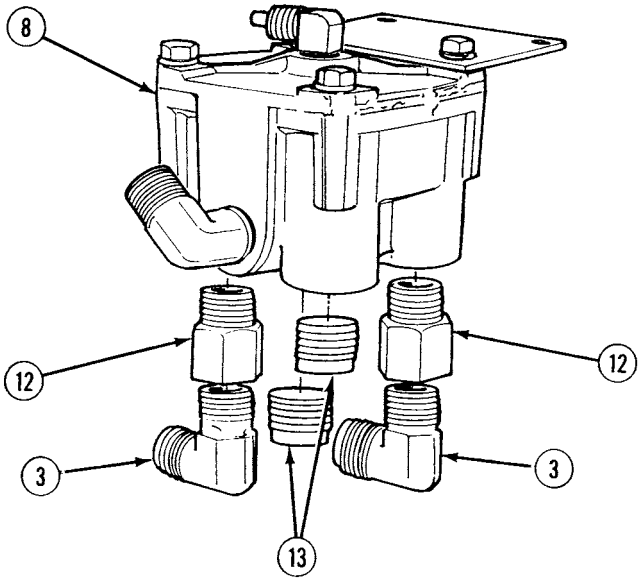
(8) Install two plugs (13) in service relay valve (8).

(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).

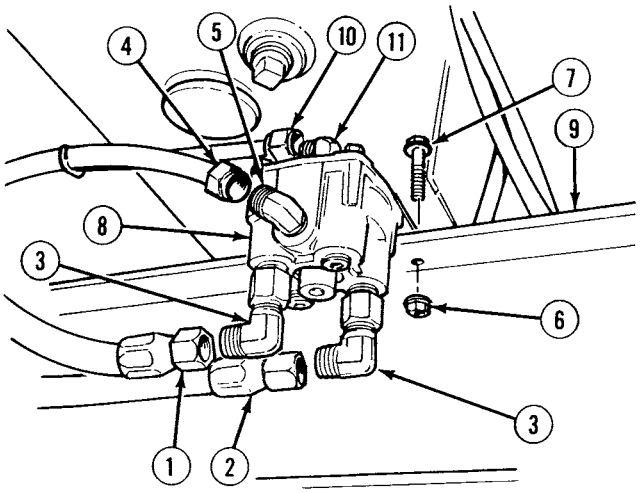


(13) Install air line 2488 (10) on elbow (11).

(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.

This task covers:

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

INITIAL SETUP

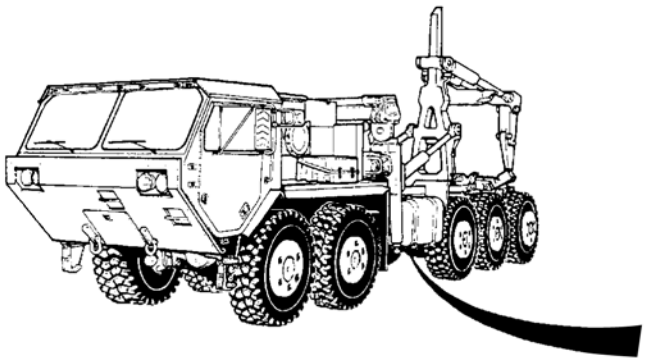
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination 1-1/16 in. (Item 78, Appendix G)

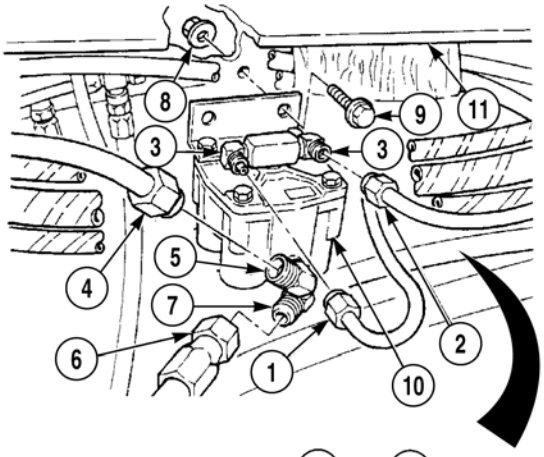
Materials/Parts
Cable Ties (Item 14, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

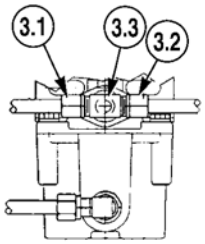
Materials/Parts - Continued
Locknut (2) (Item 133, Appendix F)
Lockwasher (2) (Item 180, Appendix F)

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

- Mark and tag air lines prior to removal.
- Remove cable ties as required.

(1) Remove air line 2668 (1) and air line 2639 (2) from elbows (3).

NOTE

Perform Step (1.1) if truck has double check service relay valve.

(1.1) Remove air line 2624 (3.1) and air line 2637 (3.2) from tee (3.3).

(2) Remove air line 2011 (4) from elbow (5).

(3) Remove air line 2545 (6) from elbow (7).

(4) Remove two locknuts (8), screws (9) and service relay valve (10) from frame (11). Discard locknuts.

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).

NOTE

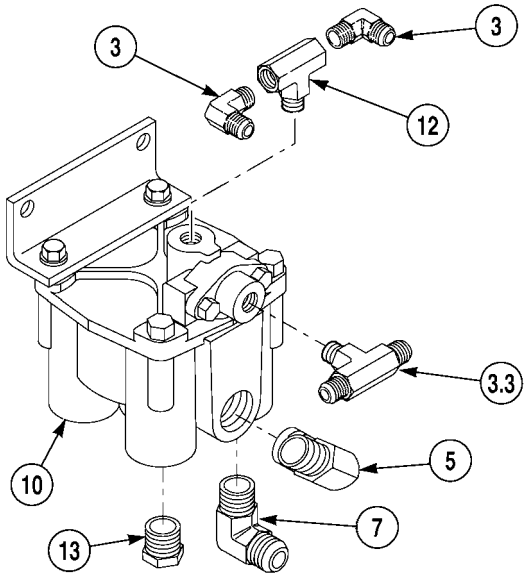
Perform Step (6.1) if truck has double check service relay valve.

(6.1) Remove tee (3.3) from front service relay valve (10).

(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

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 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).

NOTE

Perform Steps (6.1) and (6.2) if truck has double check service relay valve.

(6.1) Apply sealing compound to threads of tee (3.3).

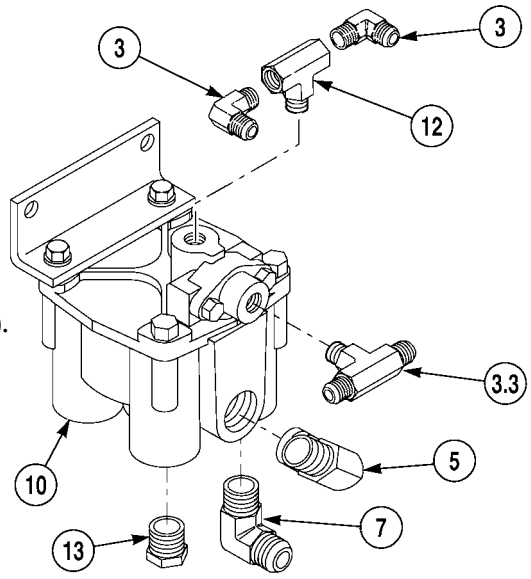
(6.2) Install tee (3.3) in front service relay valve (10).

(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).

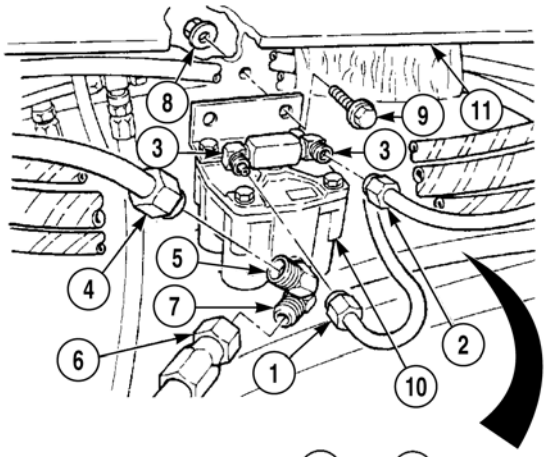
(10) Install tee (12) in service relay valve (10).



(11) Install service relay valve (10), two screws (9) and locknuts (8) on frame (11).

(12) Install air line 2545 (6) on elbow (7).

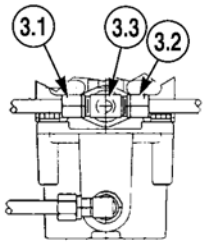
(13) Install air line 2011 (4) on elbow (5).



NOTE

Perform Step (13.1) if truck has double check service relay valve.

(13.1) Install airline 2624 (3.1) and airline 2637 (3.2) on tee (3.3).



(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

12-15. SERVICE RELAY VALVE NO. 3 REPLACEMENT.

This task covers:

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

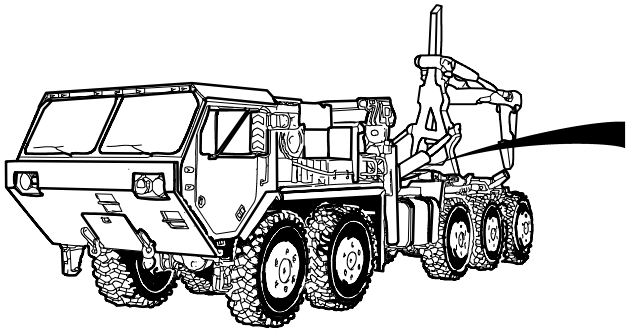
INITIAL SETUP

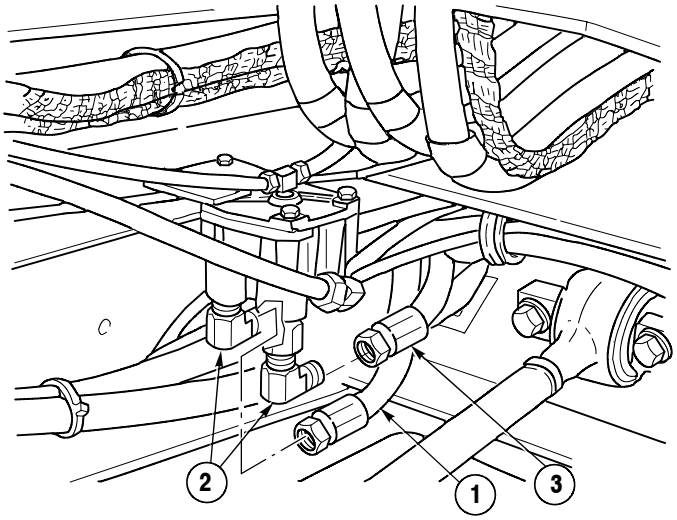
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Cable Ties (Item 25, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)
Lockwasher (2) (Item 180, 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.
- Remove cable ties as required.

(1) Remove air line 2143 (1) and air line 2144 (3) from two elbows (2).

(2) Remove air line 2014 (4) from elbow (5).

NOTE

Perform Step (2.1) if truck has double check service relay valve.

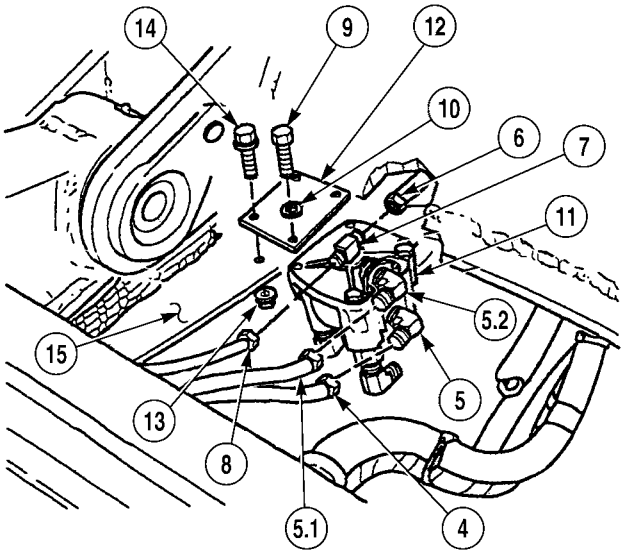
(2.1) Remove airline 2637 (5.1) from elbow (5.2).

(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).

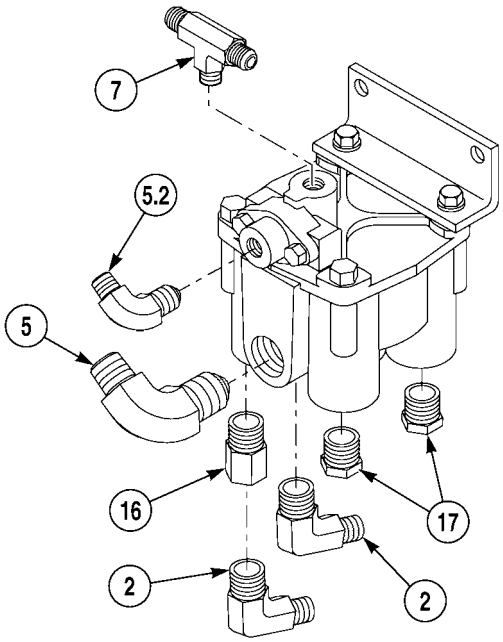
NOTE

Perform Step (9.1) if truck has double check service relay valve.

(9.1) Remove elbow (5.2) from front 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).

NOTE

Perform Steps (2.1) and (2.2) if truck has double check service relay valve.

(2.1) Apply sealing compound to threads of elbow (5.2).

(2.2) Install elbow (5.2) in front service relay valve (11).

(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).

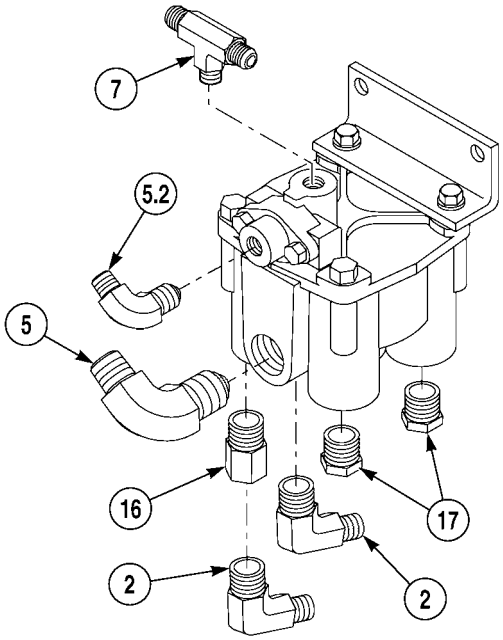
(6) Install two plugs (17) on service relay valve (11).

(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.

NOTE

Perform Step (12.1) only if truck has double check service relay valve.

(12.1) Install airline 2637 (5.1) on elbow (5.2).

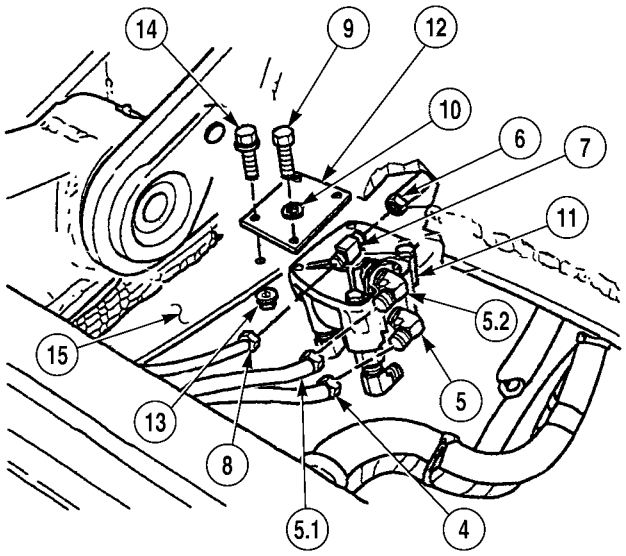
(13) Install service relay valve (11) on bracket (12) with two screws (9) and lockwashers (10).

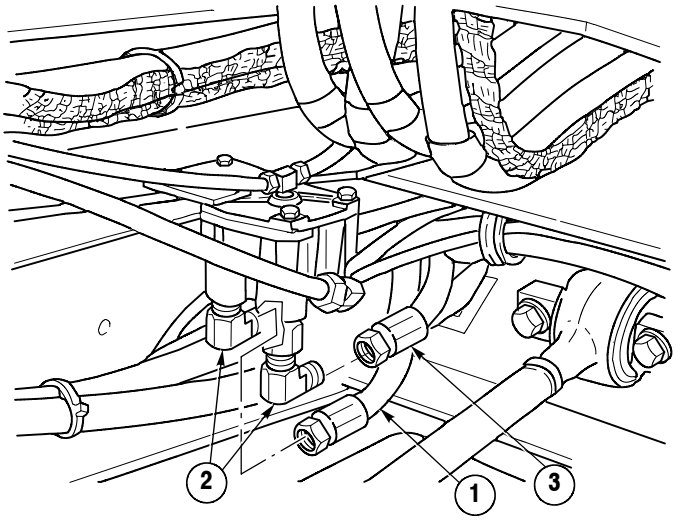
(14) Install air line 2669 (8) and air line 2660 (6) on tee (7).

(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

12-16. RELAY SPRING VALVE NO. 1 REPLACEMENT.

This task covers:

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

INITIAL SETUP

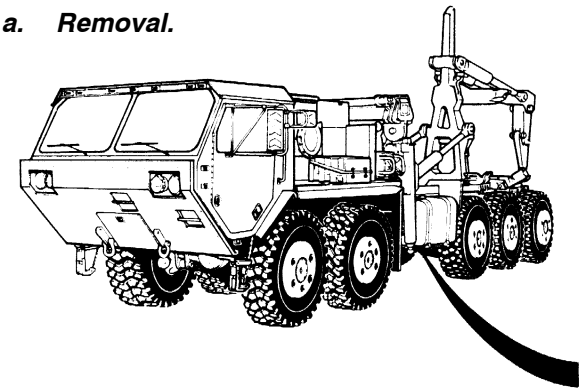
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination 1-1/16 in. (Item 78, Appendix G)

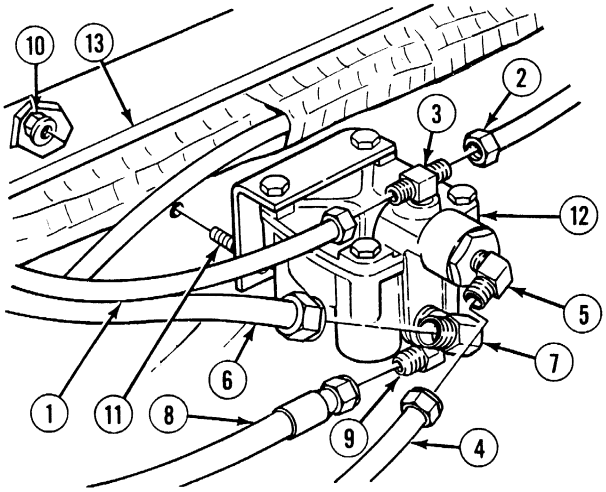
Materials/Parts
Cable Ties (Item 11, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued
Locknut (2) (Item 133, Appendix F)
Lockwasher (2) (Item 181, 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 and fitting prior to removal.
- Remove cable ties as required.

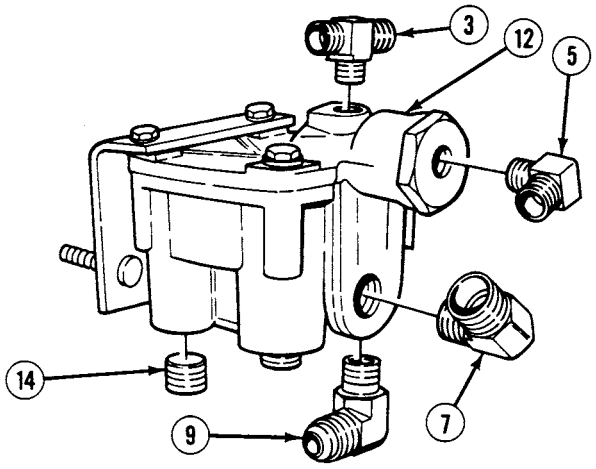
(1) Remove air line 2622 (1) and air line 2638 (2) from tee (3).

(2) Remove air line 2639 (4) from elbow (5).

(3) Remove air line 2620 (6) from elbow (7).

(4) Remove air line 2075 (8) from elbow (9).

(5) Remove two locknuts (10), screws (11) and relay spring valve (12) from frame (13). Discard locknuts.



(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

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 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

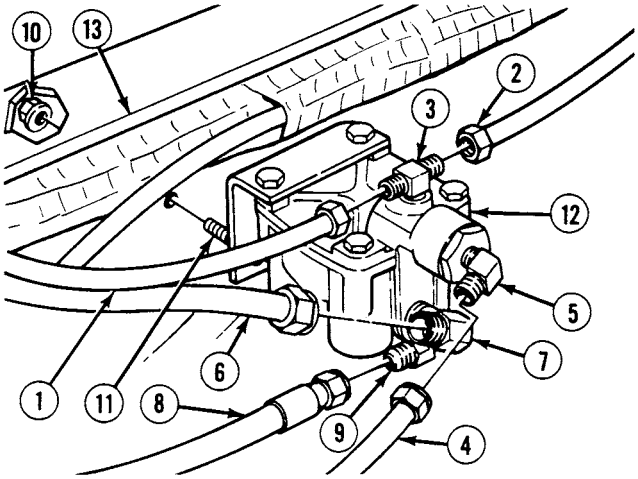
Install cable ties as required.

(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.

This task covers:

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

INITIAL SETUP

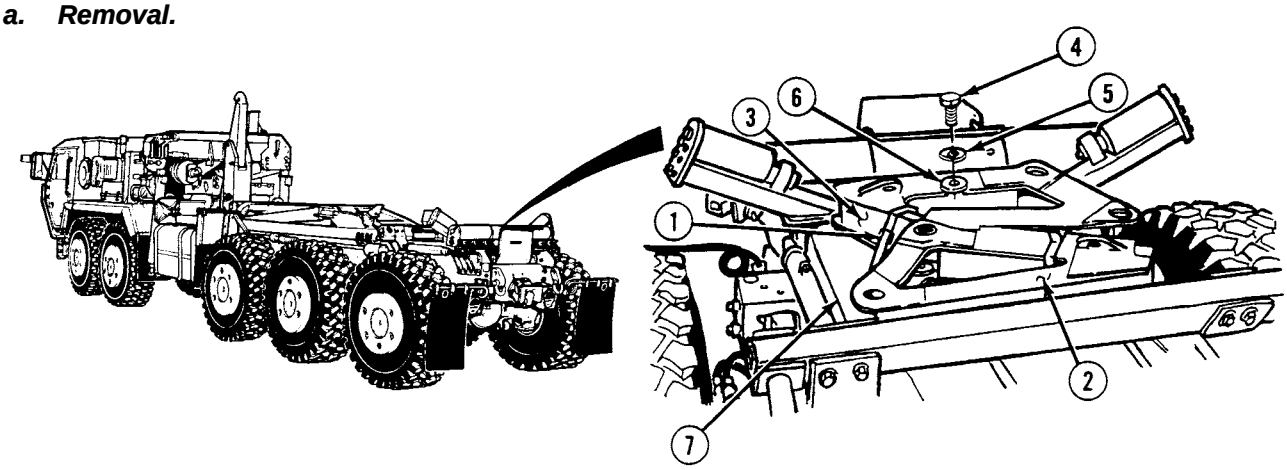
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)
Locknut (6) (Item 140, Appendix F)
Lockwasher (4) (Item 180, 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) Remove two tie down straps (1) from left hand extension assembly (2) and right hand extension assembly (3).

(2) Remove four screws (4), lockwashers (5) and washers (6) from extension assemblies (2) and (3). Discard lockwashers.

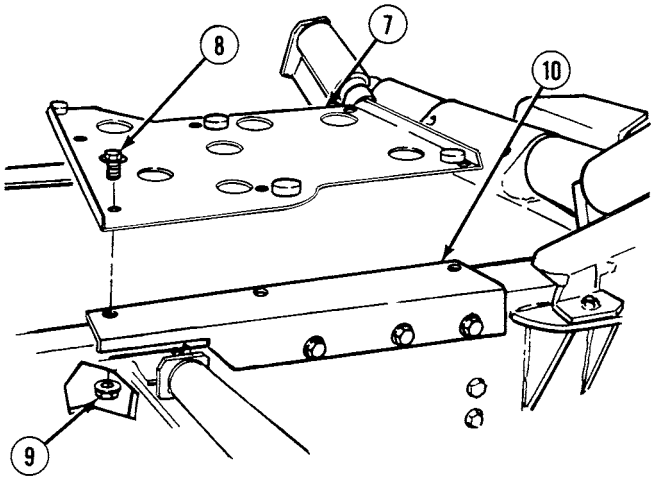
WARNING

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.

(3) With the aid of an assistant, remove left hand extension assembly (2) and right hand extension assembly (3) from deck assembly (7).

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 tee (16).

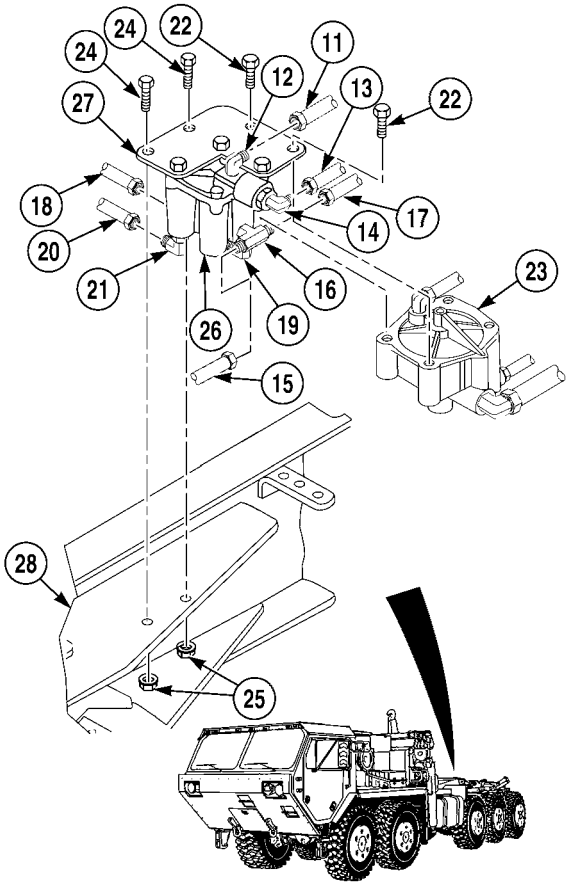
(8) Remove air line 2616 (17) from tee (16).

(9) Remove air line 2369 (18) from elbow (19).

(10) Remove air line 2368 (20) from elbow (21).

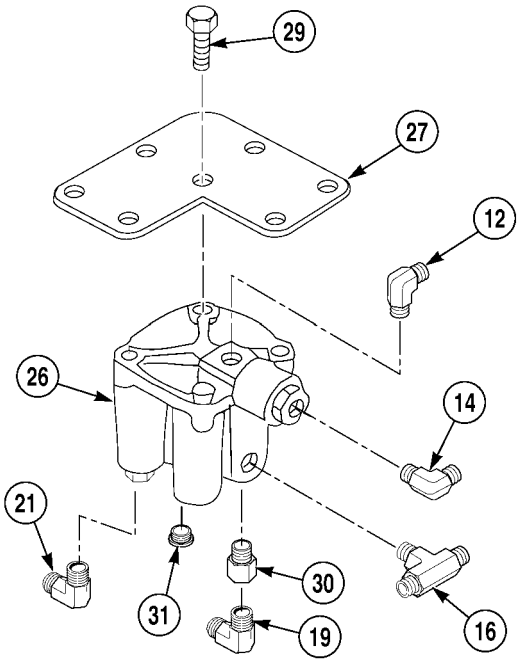
(11) Remove two screws (22) from R12P relay valve (23).

(12) Remove two screws (24), locknuts (25), relay spring valve (26), and bracket (27) from frame (28). Discard locknuts.



NOTE

- Use existing screws to mount service relay mounting bracket.
- Perform Step (13) only if installing new service relay valve.



(13) Remove three screws (29) and relay spring valve mounting bracket (27) from relay spring valve (26). Discard lockwashers.

NOTE

Note location and position of fittings, elbows, and plugs prior to removal.

(14) Remove elbows (12) and (14) from relay spring valve (26).

(15) Remove tee (16) from relay spring valve (26).

(16) Remove elbows (19) and (21) and adapter fitting (30) from relay spring valve (26).

(17) Remove two pipe plugs (31) from relay spring valve (26).

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 elbow, fittings and plugs as noted prior to removal.

(1) Apply sealing compound to threads of two pipe plugs (31).

(2) Install two pipe plugs (31) in relay spring valve (26).

(3) Apply sealing compound to threads of adapter fitting (30).

(4) Install adapter fitting (30) in relay spring valve (26).

(5) Apply sealing compound to threads of elbow (21).

(6) Install elbow (21) in relay spring valve (26).

(7) Apply sealing compound to threads of elbow (19).

(8) Install elbow (19) on adapter fitting (30).

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 tee (16).

(10) Install tee (16) in relay spring valve (26).

(11) Apply sealing compound to threads of elbow (12).

(12) Install elbow (12) in relay spring valve (26).

(13) Apply sealing compound to threads of elbow (14).

(14) Install elbow (14) in relay spring valve (26).

NOTE

- Use existing screws to mount service relay mounting bracket.
- Perform Steps (15) and (16) only if installing new service relay valve.

(15) Remove three screws (29) from relay spring valve (26).

(16) Install relay spring valve (26) on bracket (27) with three screws (29).

(17) Install spring relay valve (26) and bracket (27) on frame (28) with two screws (24) and locknuts (25).

(18) Install R12P relay valve (23) on bracket (27) with two screws (22).

(19) Install air line 2368 (20) on elbow (21).

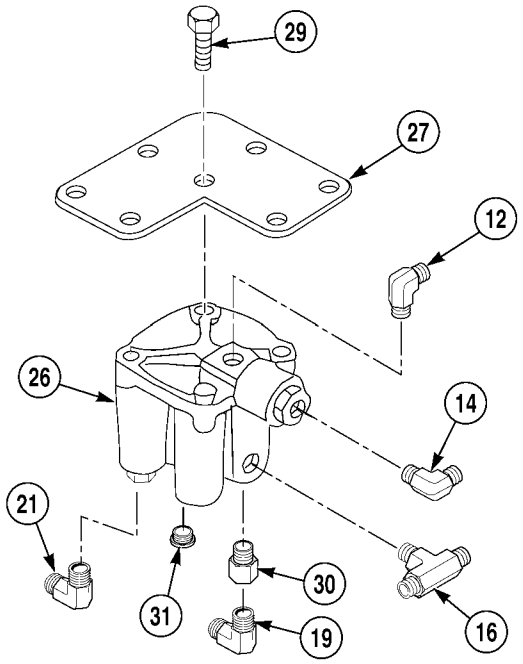
(20) Install air line 2369 (18) on elbow (19).

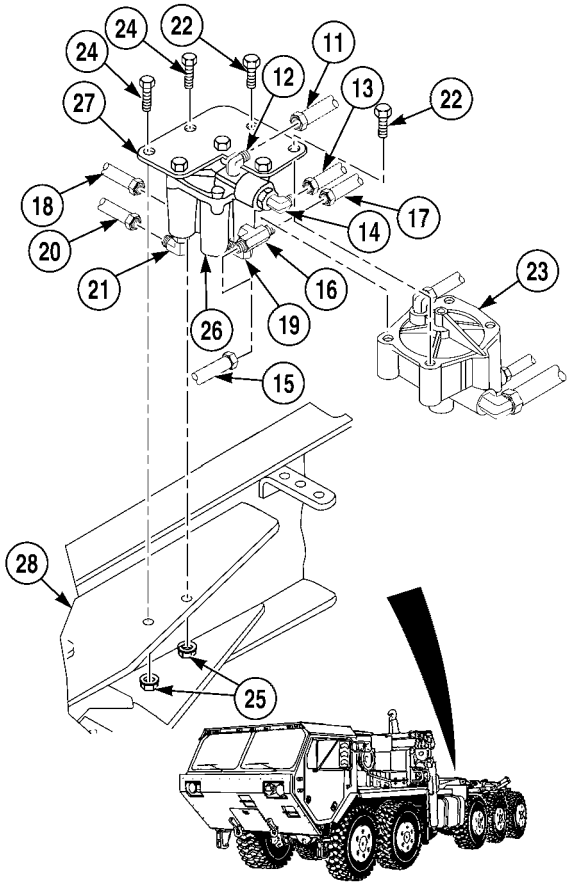
(21) Install air line 2616 (17) on tee (16).

(22) Install air line 2614 (15) on tee (16).

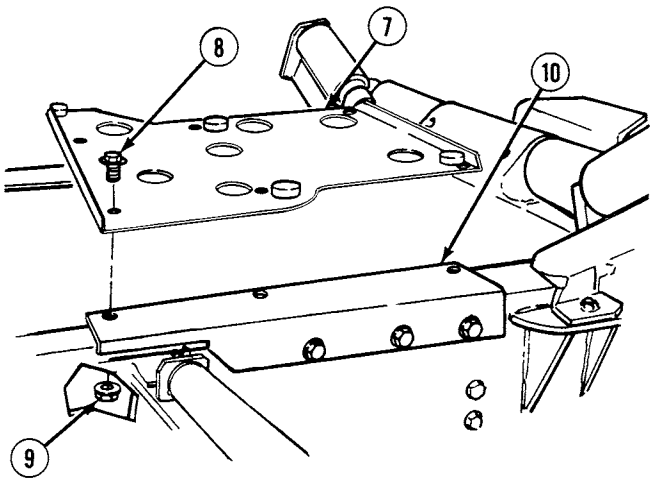
(23) Install air line 2660 (13) on elbow (14).

(24) Install air line 2638 (11) on elbow (12).





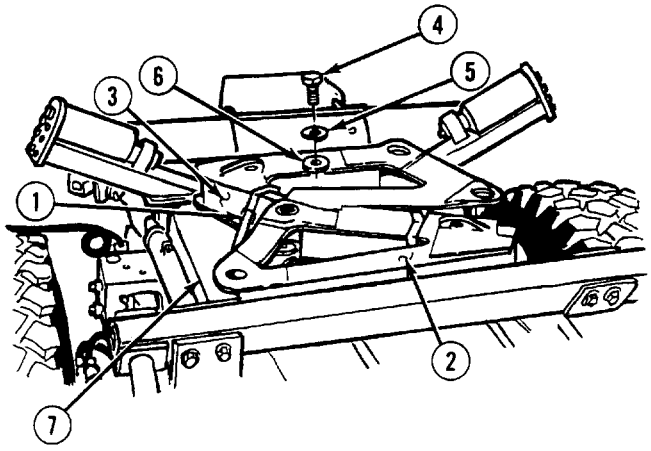
(25) With the aid of an assistant, install deck (7) on mounting brackets (10) with six screws (8) and locknuts (9).



(26) Position two extension assemblies (2) and (3) on deck (7).

(27) Install two extension assemblies (2) and (3) with four washers (6) lockwashers (5) and screws (4).

(28) 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

12-17.1. R12P PILOT RELAY VALVE REPLACEMENT.

This task covers:

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

INITIAL SETUP

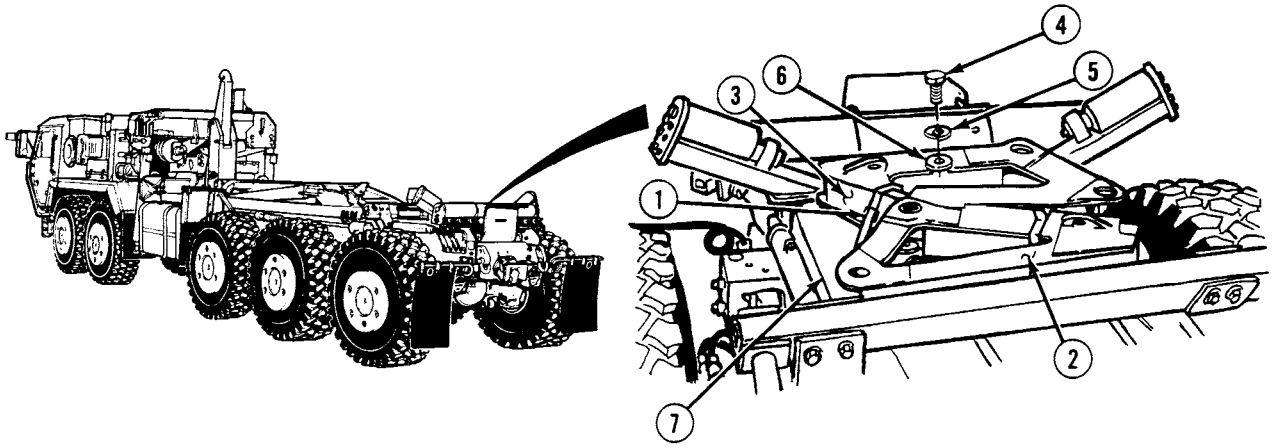
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)
Locknut (6) (Item 140, Appendix F)
Lockwasher (4) (Item 180, 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) Remove two tie down straps (1) from left hand extension assembly (2) and right hand extension assembly (3).

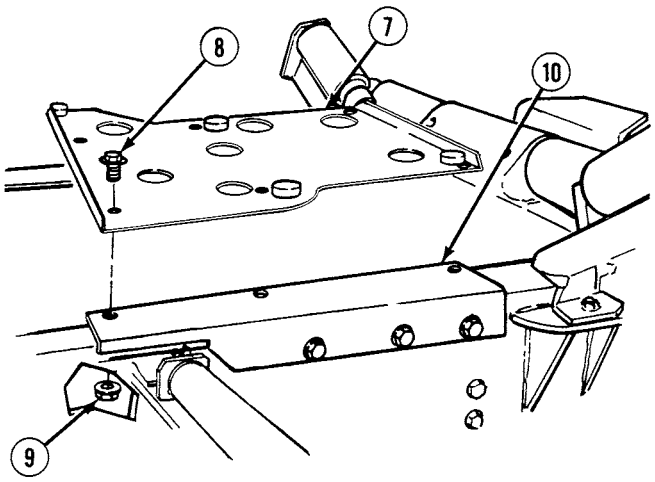
(2) Remove four screws (4), lockwashers (5) and washers (6) from extension assemblies (2) and (3). Discard lockwashers.

WARNING

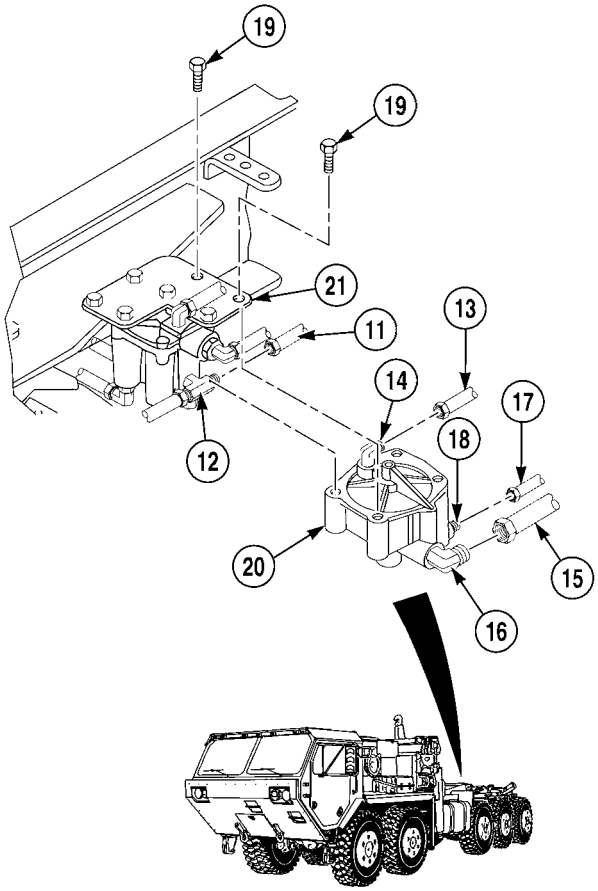
Right hand and left hand extension assemblies weigh 110 lb (50 kg) each. Use the aid of an assistant when lifting to prevent injury to personnel.

(3) With the aid of an assistant, remove left hand extension assembly (2) and right hand extension assembly (3) from deck assembly (7).

12-17.1. R12P PILOT REALY VALVE 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 2616 (11) from tee (12).

(6) Remove air line 2064 (13) from elbow (14).

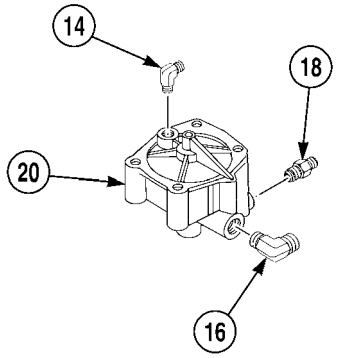
(7) Remove air line 2616 (15) from elbow (16).

(8) Remove air line 2653 (17) from adapter (18).

(9) Remove two screws (19) and R12P pilot relay valve (20) from bracket (21).

NOTE

Note location and position of fittings, elbows and plugs prior to removal.



(10) Remove two elbows (14) and (16) from R12P pilot relay valve (20).

(11) Remove adapter (18) from R12P pilot relay valve (20).

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 elbow, fittings and plugs as noted prior to removal.

(1) Apply sealing compound to threads of adapter (18).

(2) Install adapter fitting (18) in R12P pilot relay valve (20).

(3) Apply sealing compound to threads of elbow (16).

(4) Install elbow (16) in R12P pilot relay valve (20).

(5) Apply sealing compound to threads of elbow (14).

(6) Install elbow (14) on R12P pilot relay valve (20).

12-17. RELAY SPRING VALVE NO. 2 REPLACEMENT (CONT).

NOTE

Use existing screws to mount service relay mounting bracket.

(7) Remove two screws (19) from R12P pilot relay valve (20).

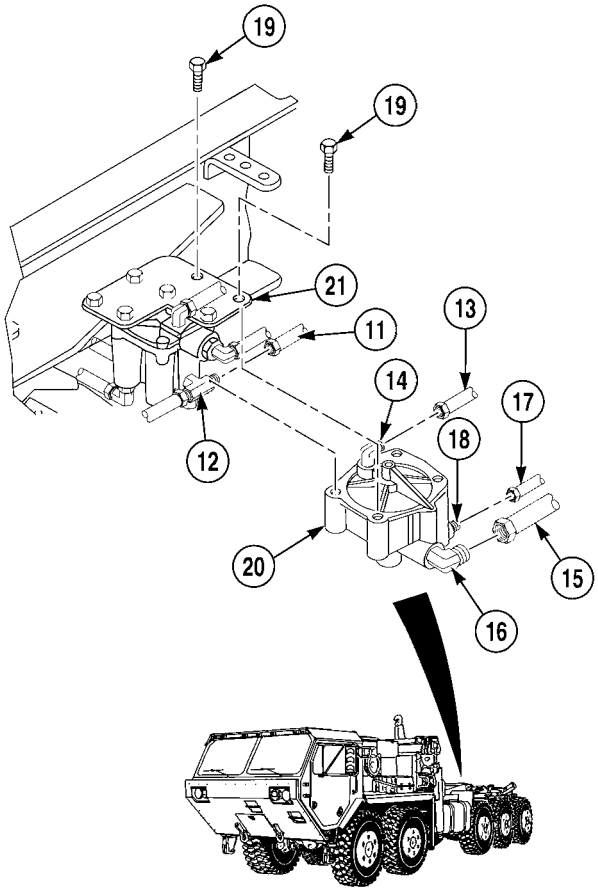
(8) Install R12P pilot relay valve (20) on bracket (21) with two screws (19).

(9) Install air line 2653 (17) on adapter (18).

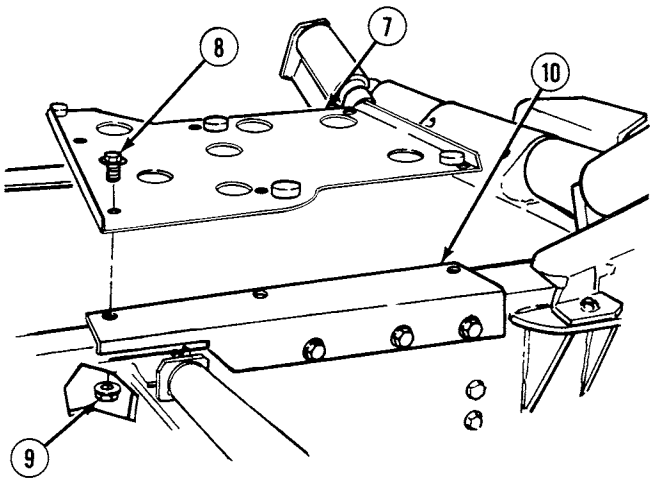
(10) Install air line 2616 (15) on elbow (16).

(11) Install air line 2064 (13) on elbow (14).

(12) Install air line 2616 (11) on tee (12).



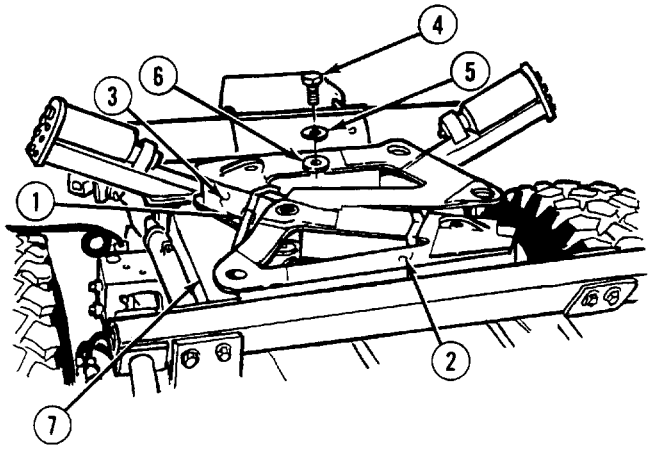
(13) With the aid of an assistant, install deck (7) on mounting brackets (10) with six screws (8) and locknuts (9).



(14) Position two extension assemblies (2) and (3) on deck (7).

(15) Install two extension assemblies (2) and (3) with four washers (6) lockwashers (5) and screws (4).

(16) 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

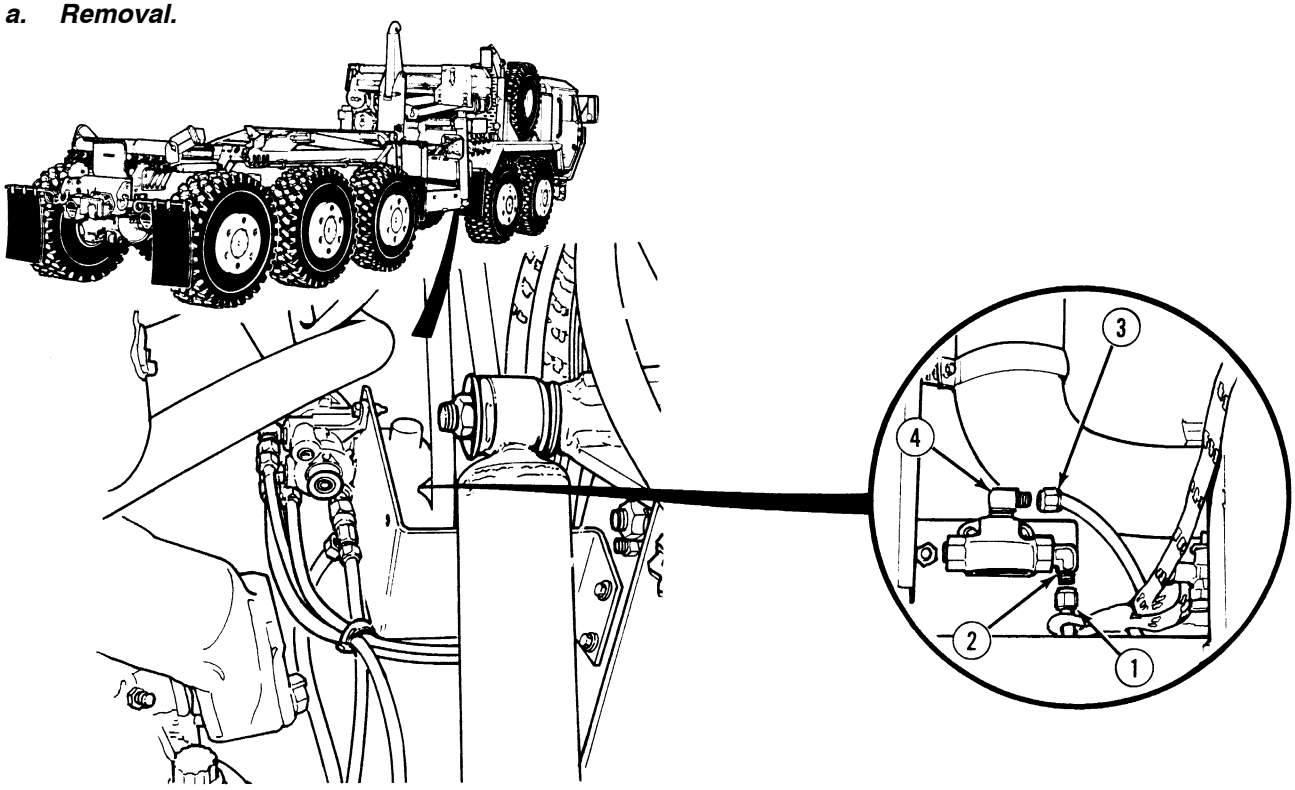
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

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).

NOTE

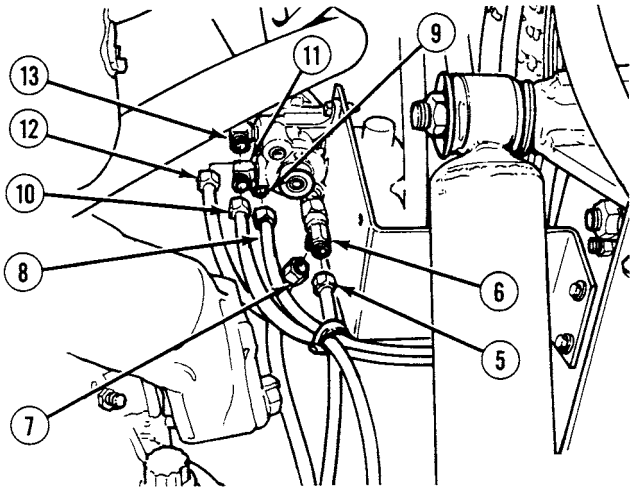
- If truck has standard service relay valve, air line 2623 will be removed in Step (4).
- If truck has double check service relay valve, air line 2624 will be removed in Step (4).

(4) Remove air line 2623 or air line 2624 (7) from tee (6).

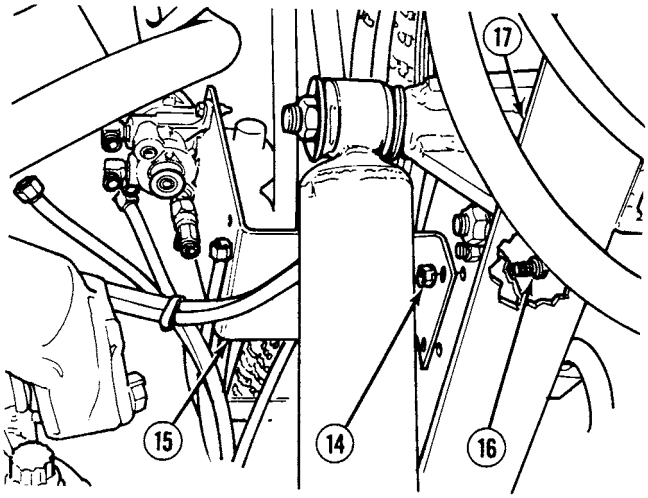
(5) Remove air line 2621 (8) from elbow (9).

(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.

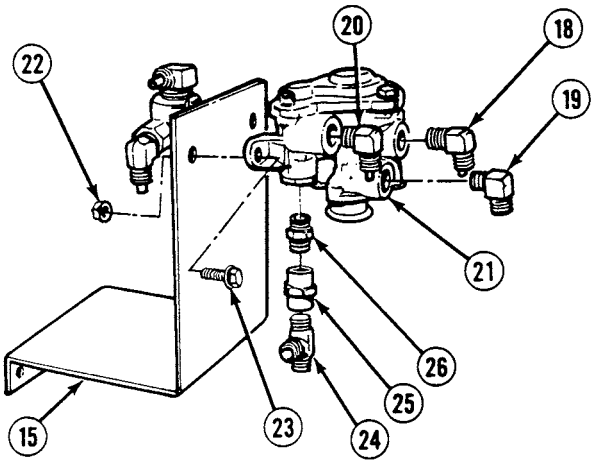


12-18. SPRING BRAKE VALVE REPLACEMENT (CONT).

(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

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 air lines and fittings as noted during removal.

(1) Apply sealing compound on threads of nipple (26), coupling (25) and tee (24).

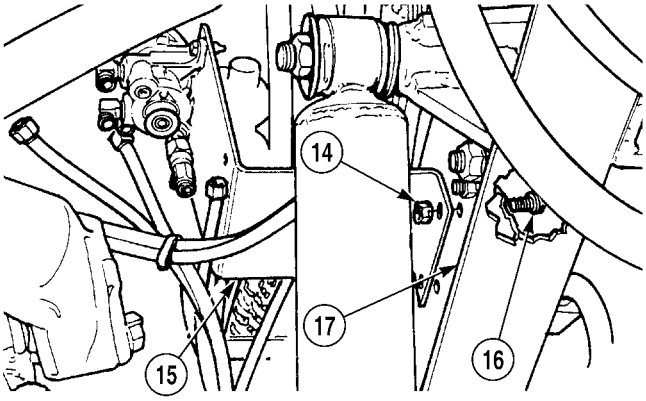
(2) Install nipple (26), coupling (25) and tee (24) on spring brake valve (21).

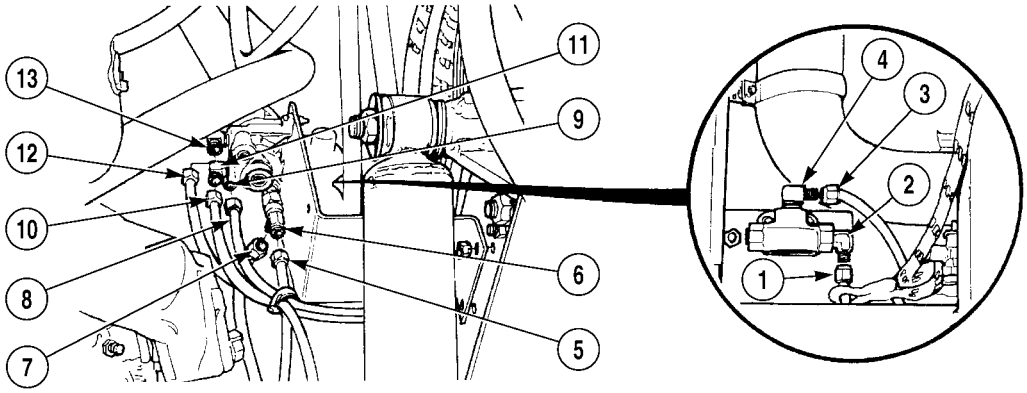
(3) Install two screws (23), spring brake valve (21) and locknuts (22) on bracket (15).

(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).

NOTE

- If truck has standard service relay valve, air line 2623 will be installed in Step (10).
- If truck has double check service relay valve, air line 2624 will be installed in Step (10).

(10) Install air line 2623 or air line 2624 (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

12-19. AIR DRYER GUARD REPLACEMENT.

This task covers:

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

INITIAL SETUP

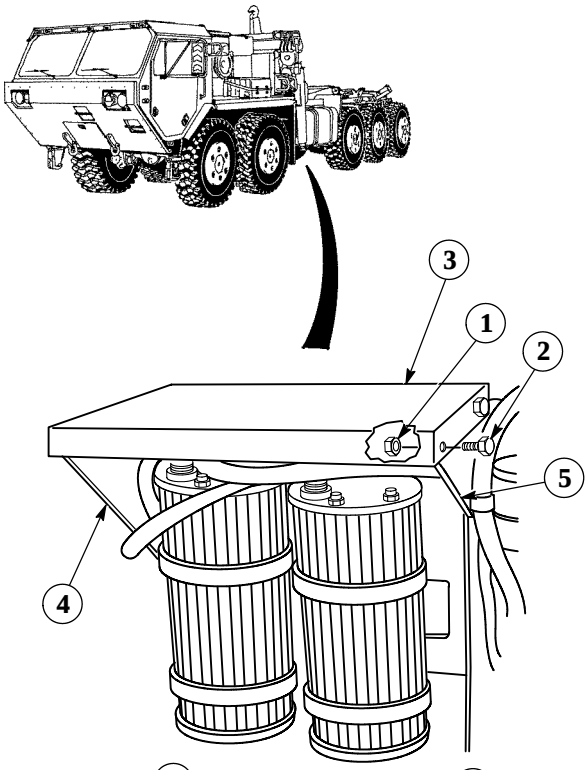
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Material/Parts
Locknut (4) (Item 106, Appendix F)
Locknut (6) (item 140, Appendix F)

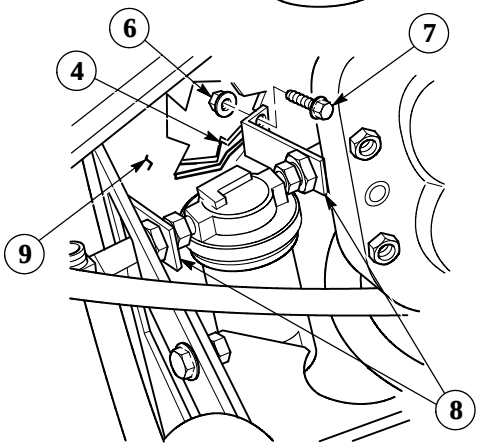
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left front mud flap removed, (Para 17-36)

a. Removal.

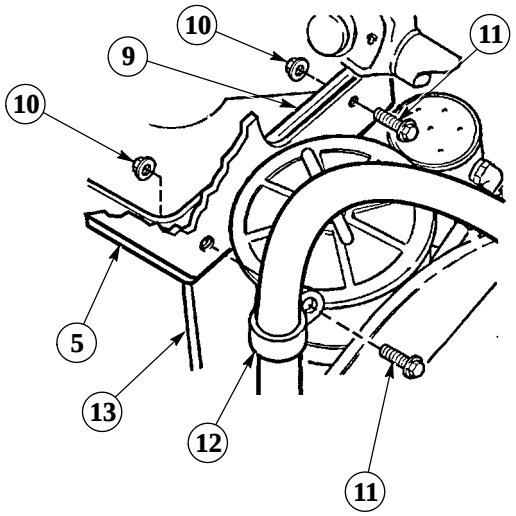
(1) Remove four locknuts (1), screws (2) and air dryer guard (3) from front air dryer guard bracket (4) and rear air dryer guard bracket (5). Discard locknuts.



(2) Remove four locknuts (6), screws (7), front air dryer guard bracket (4) and two coalescing filter mounting brackets (8) from air dryer bracket (9). Discard locknuts.



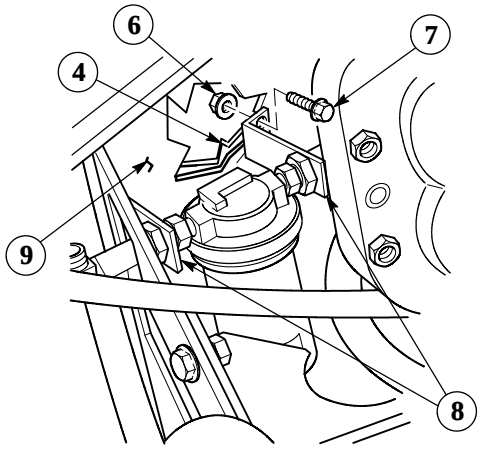
(3) Remove two locknuts (10), two screws (11), rear air dryer guard bracket (5) and hose 2259 cushion clip (12) from fuel/water separator bracket (13) and air dryer bracket (9). Discard locknuts.



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).

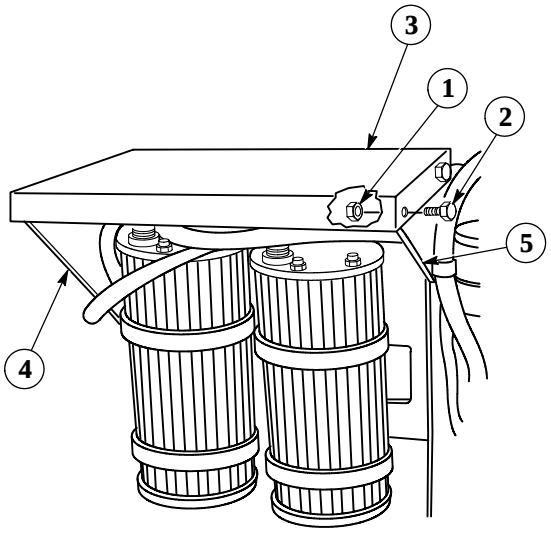


NOTE

Position air dryer guard screw holes to aline 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

12-20. AIR DRYER/AFTER COOLER REPLACEMENT.

This task covers:

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

INITIAL SETUP

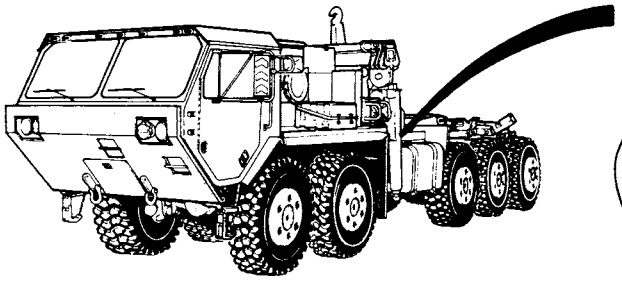
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Vise (Item 75, Appendix G)
Wrench, Combination 1-1/16 in. (Item 78, Appendix G)
Wrench, Combination 1-1/8 in. (Item 79, Appendix G)
Wrench, Combination 1-1/2 in. (Item 83, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

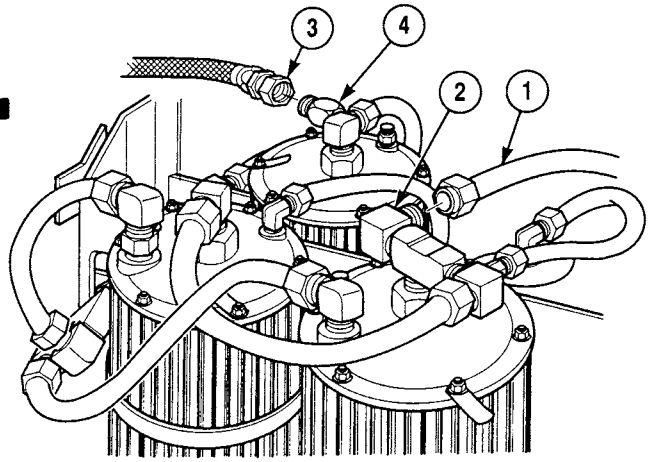
Materials/Parts
Cloth, Cleaning (Item 31, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 140, Appendix F)

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)
Air dryer guard removed (if equipped), (Para 12-19)

a. Removal.





NOTE

- Note location and position of elbows, tees and adapters prior to removal.
- Tag and mark air lines and wires prior to removal.

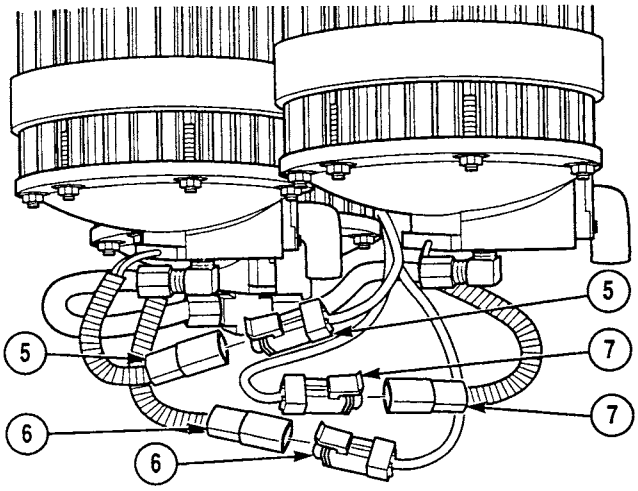
(1) Remove air line 2002 (1) from elbow (2).

(2) Remove air line 2001 (3) from elbow (4).

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).

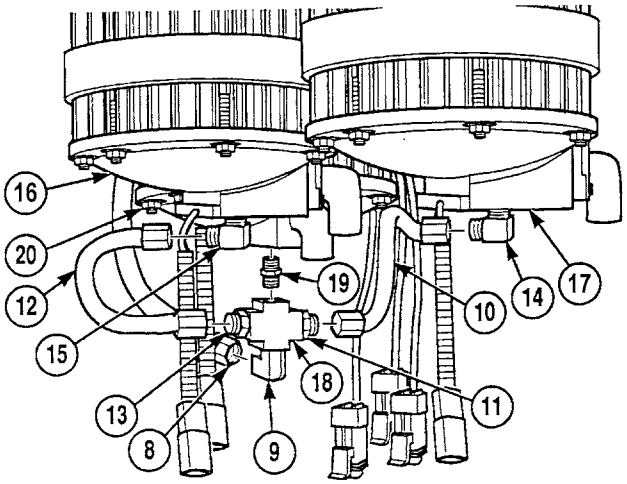
(6) Remove air line 2033 (12) from adapter (13).

(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).

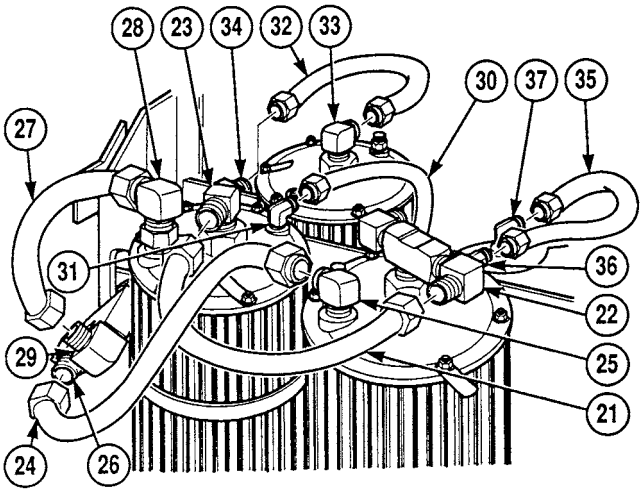
(14) Remove air line 2036 (24) from elbow (25) and elbow (26).

(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).

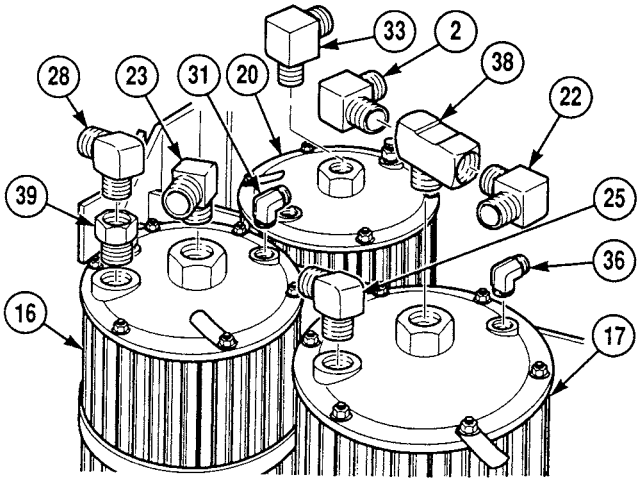
(21) Place tee (38) in vise and remove elbow (2) and elbow (22).

(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).

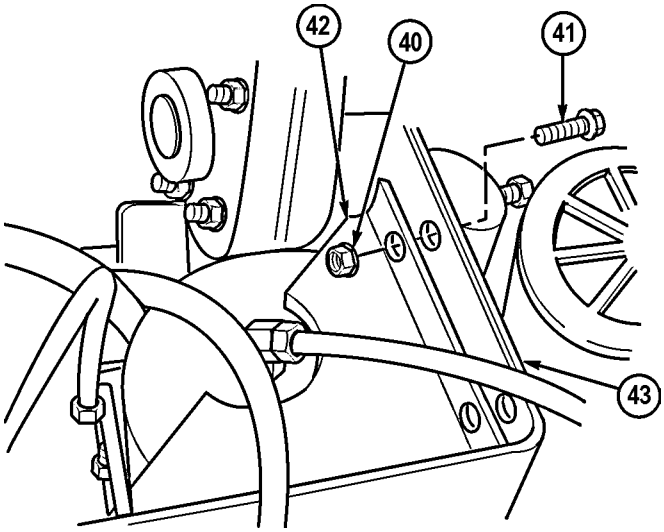
(25) Remove elbow (33) from after cooler (20).



NOTE

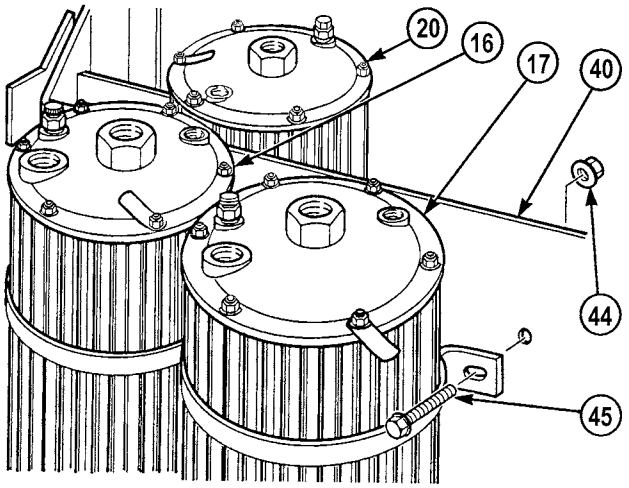
If air dryer guard was removed, there will only be two locknuts and screws removed in Step (26).

(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

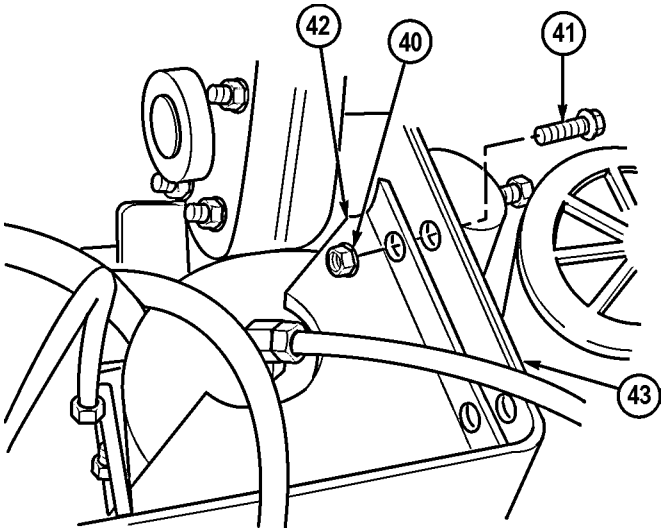
Install air lines, tubes and fittings as noted prior to removal.

(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).

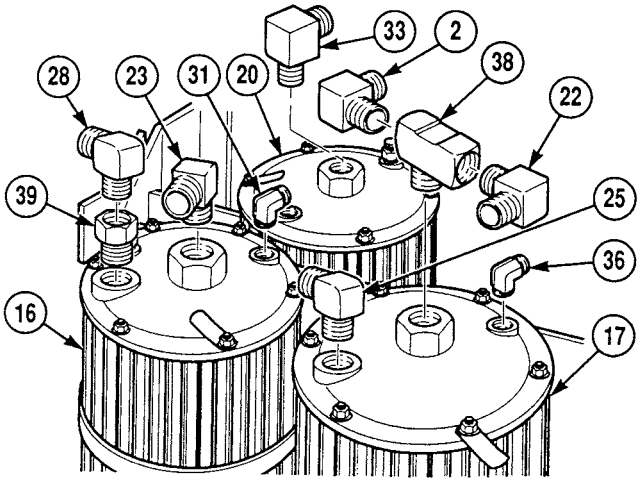
(6) Install elbow (28) on adapter (39).

(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).

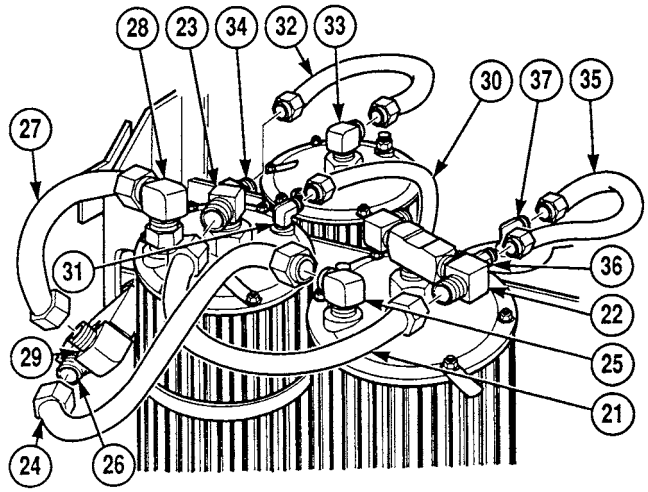
(16) Install air line 2034 (32) on elbow (33) and elbow (34).

(17) Install air line 2030 (30) on elbow (31).

(18) Install air line 2035 (27) on elbow (29) and elbow (28).

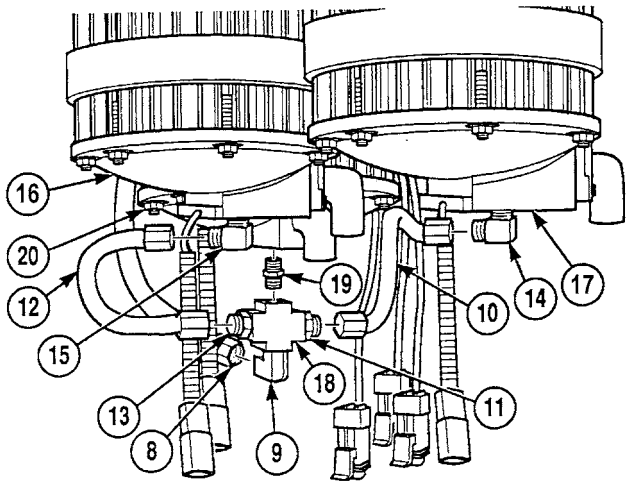
(19) Install air line 2036 (24) on elbow (26) and elbow (25).

(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).

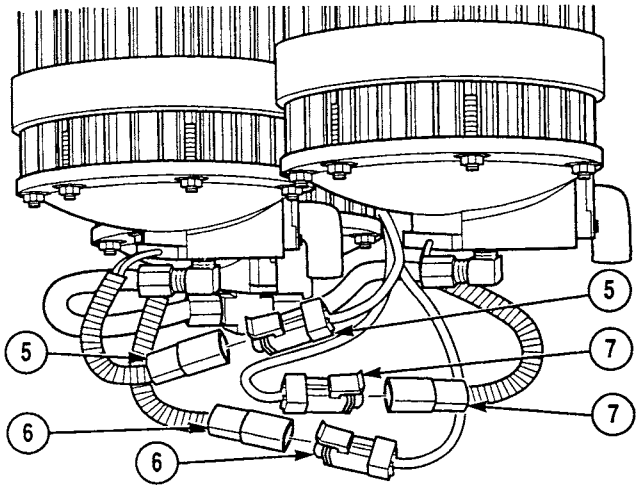
(32) Install air line 2040 (8) on elbow (9).

(33) Install air line 2032 (10) on elbow (14) and adapter (11).

(34) Install air line 2033 (12) on elbow (15) and adapter (13).

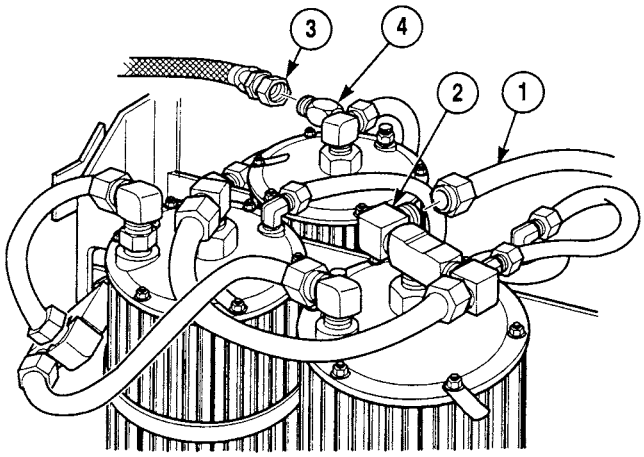
12-20. AIR DRYER/AFTER COOLER REPLACEMENT (CONT).

(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.

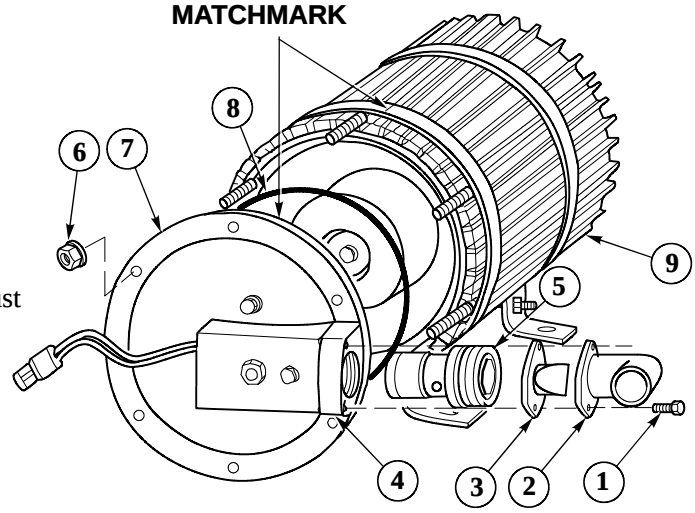
(1) Remove three screws (1) elbow (2) and dust boot (3) from heater housing (4).

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).

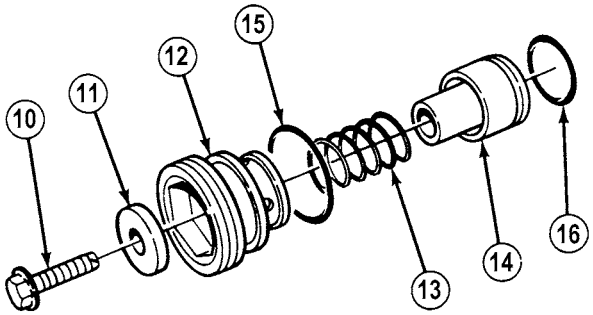
WARNING

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

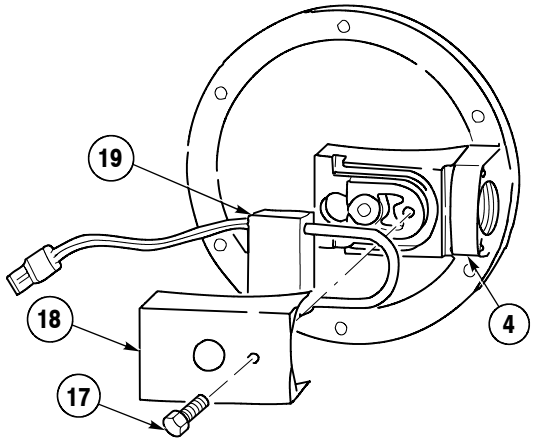
(4) Remove screw (10), seal (11), seat (12) and spring (13) from poppet (14).

(5) Remove preformed packing (15) from seat (12). Discard preformed packing.

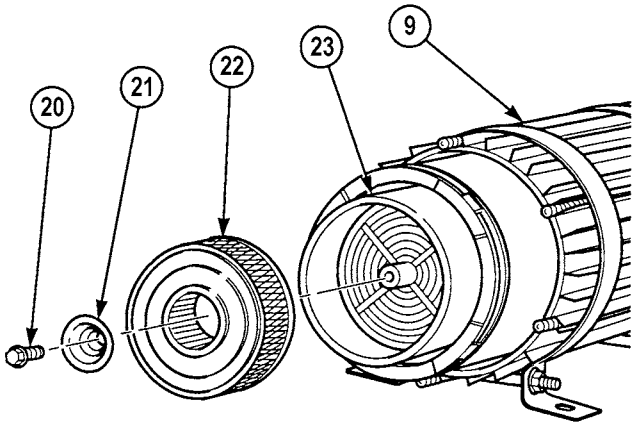
(6) Remove preformed packing (16) from poppet (14). Discard preformed packing.



(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.

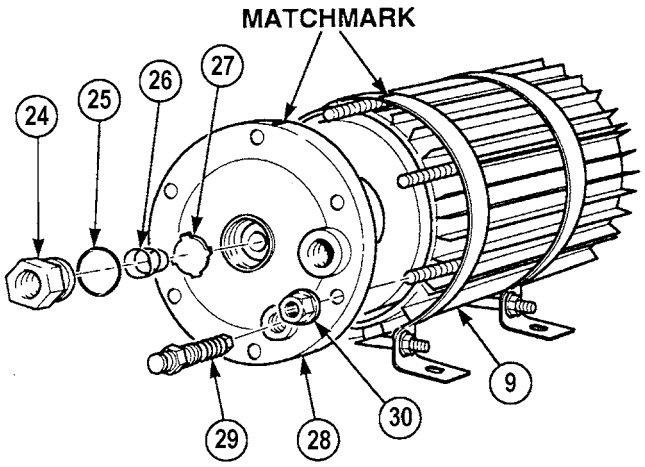
(10) Remove purge valve (29) from upper cover (28).

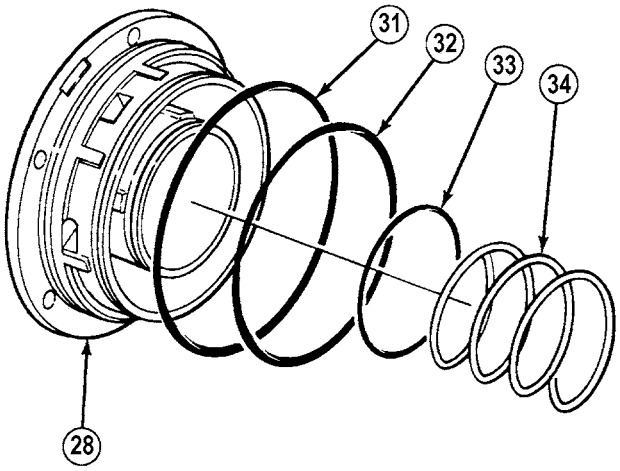
NOTE

Matchmark upper cover and housing.

(11) Remove six locknuts (30) and upper cover (28) from housing (9). Discard locknuts.

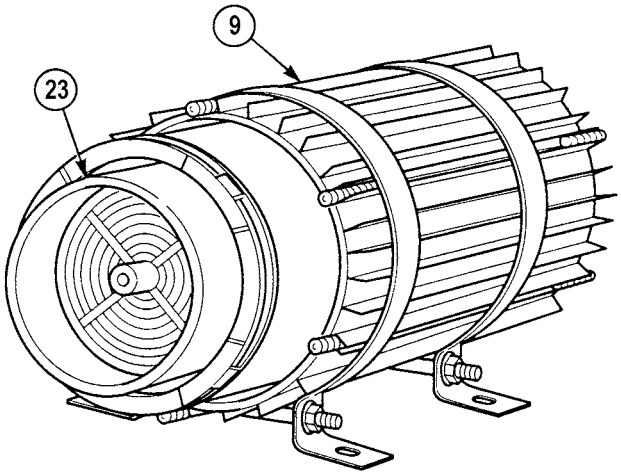
(12) Remove preformed packings (31), (32), (33) and spring (34) from upper cover (28). Discard preformed packings.



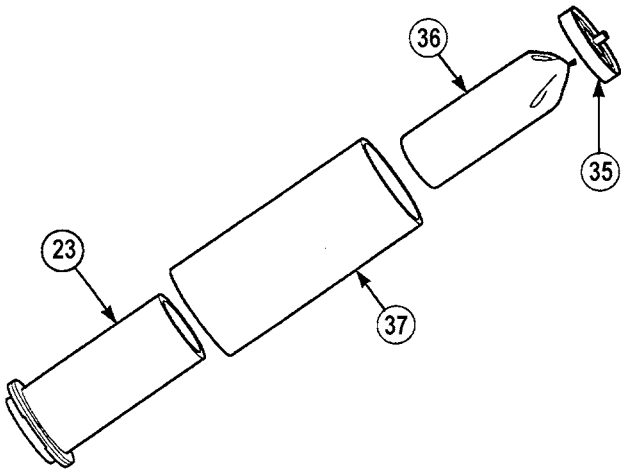


12-21. AIR DRYER REPAIR (CONT).

(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.

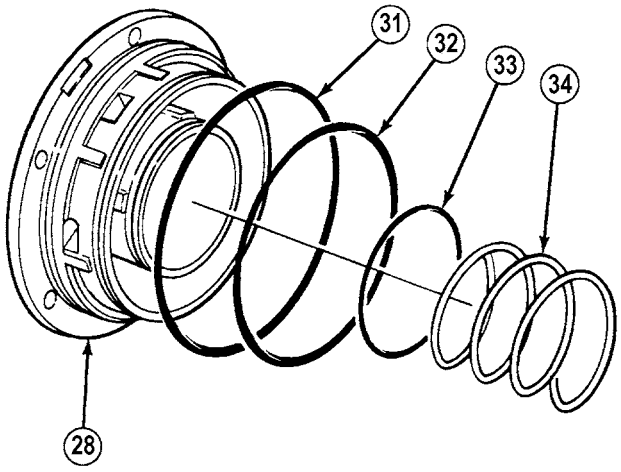
(3) Replace all damaged parts.

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.

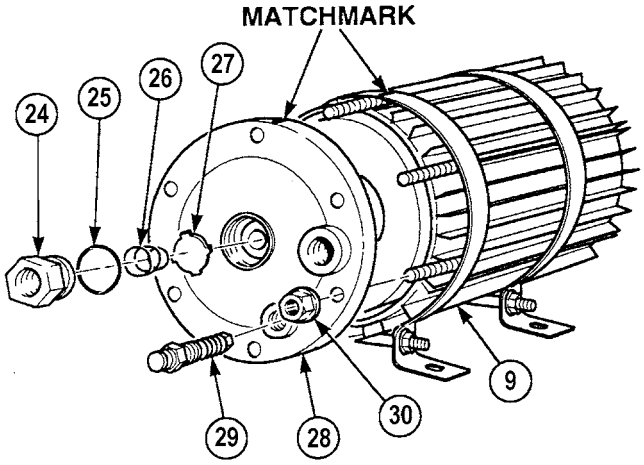
(1) Install spring (34), preformed packings (31), (32) and (33) on upper cover (28).



(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).

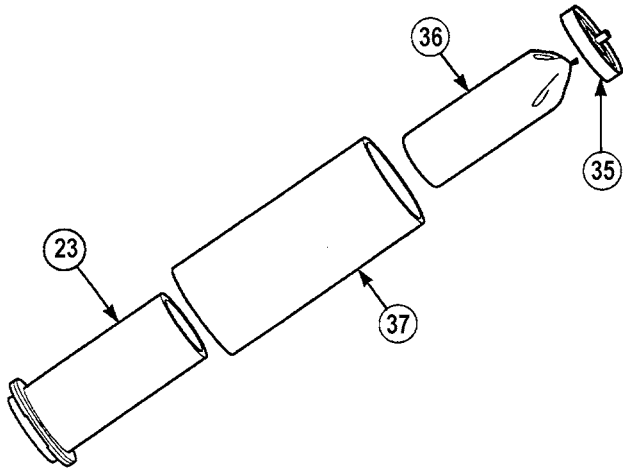
(3) Install plate (27), spring (26), preformed packing (25) and valve (24) on upper cover (28).

(4) Install purge valve (29) to upper cover (28).



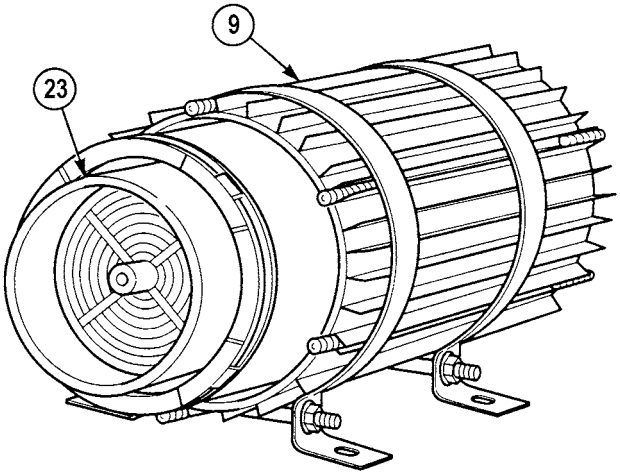
(5) Install cannister assembly (23) in cylinder (37).

(6) Install desiccant cartridge (36) and follower (35) in cannister assembly (23).



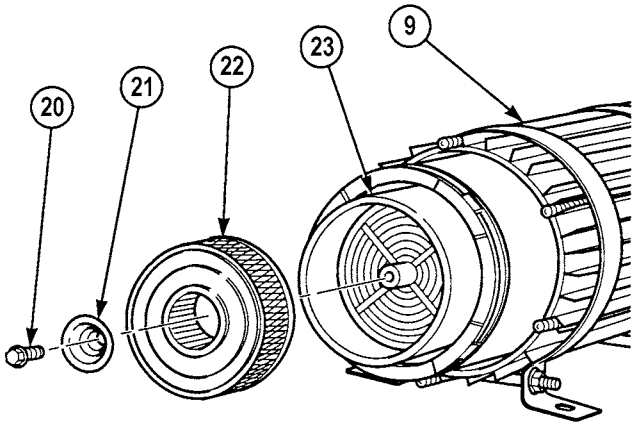
12-21. AIR DRYER REPAIR (CONT).

(7) Install cannister assembly (23) in housing (9).

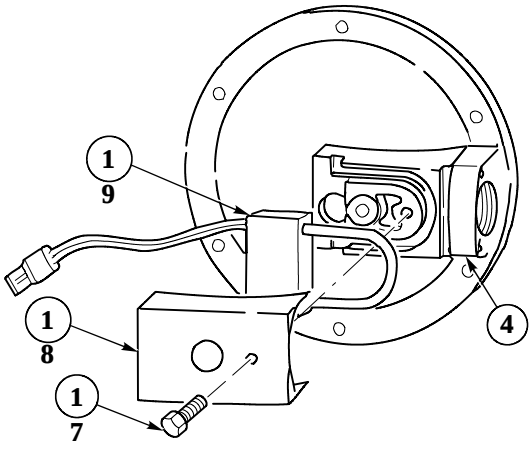


(8) Install filter (22) in cannister assembly (23).

(9) Install retainer (21) in filter (22) with screw (20).



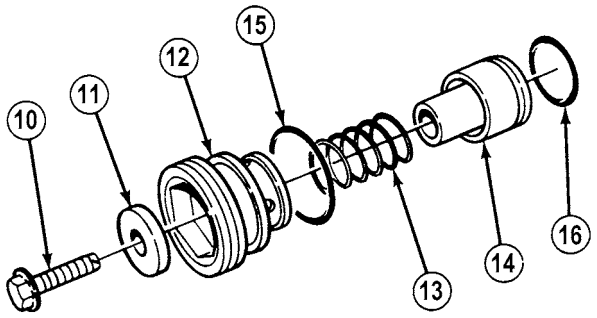
(10) Install heater element (19) and heater housing cover (18) with screw (17) on heater housing (4).



(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).

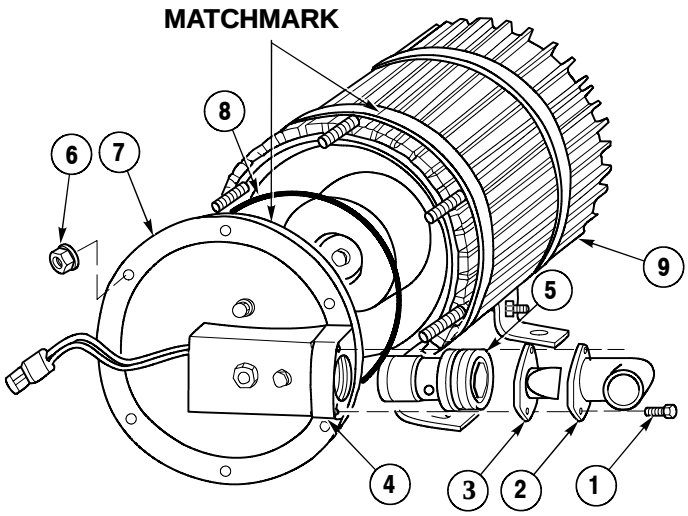
(15) Install lower cover (7) on housing (9) with six locknuts (6). Tighten locknuts 150 to 200 lb-in (16 to 23 N·m).

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
b. Cleaning/Inspection
c. Assembly
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).

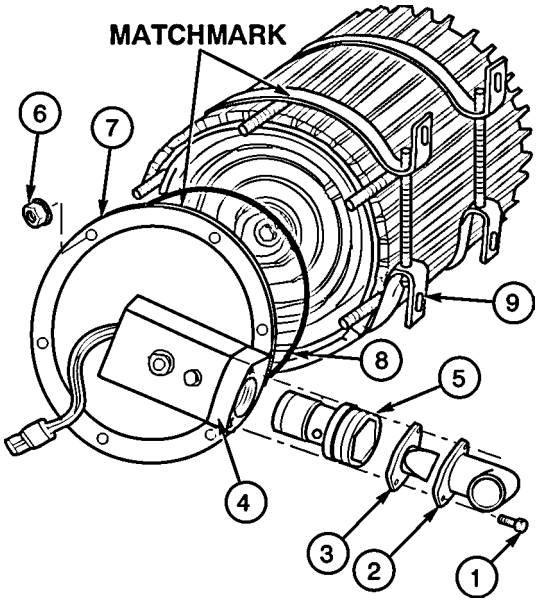
NOTE

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.

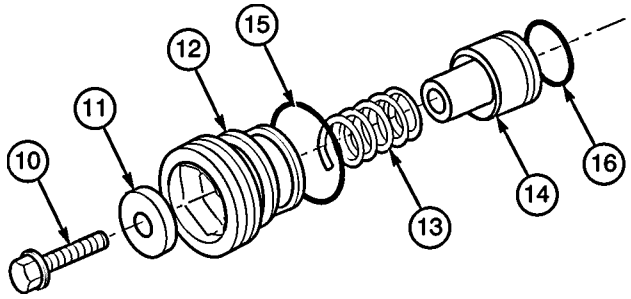
(4) Remove lower cover (7) and preformed packing (8) from housing (9). Discard preformed packing.



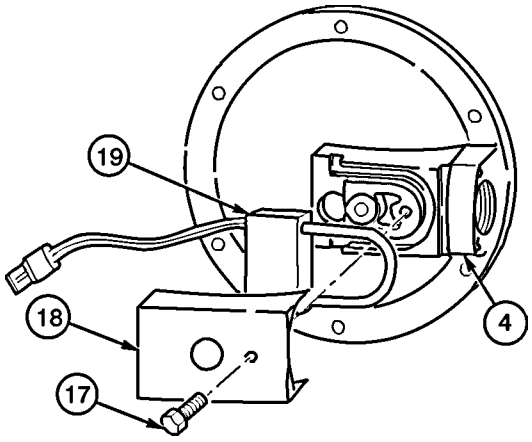
(5) Remove screw (10), seal (11), seat (12) and spring (13) from poppet (14). Discard seal.

(6) Remove preformed packing (15) from seat (12). Discard preformed packing.

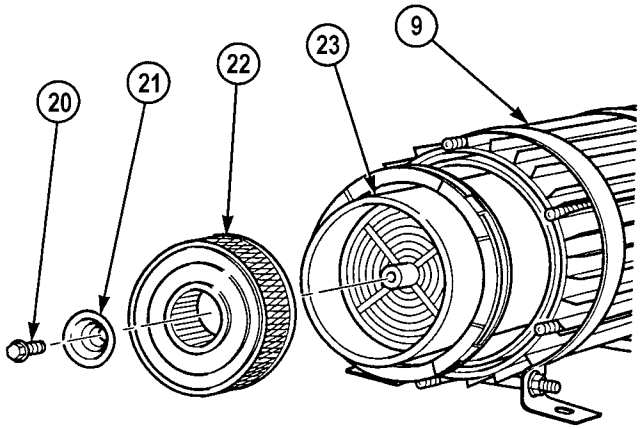
(7) Remove preformed packing (16) from poppet (14). Discard preformed packing.



(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.

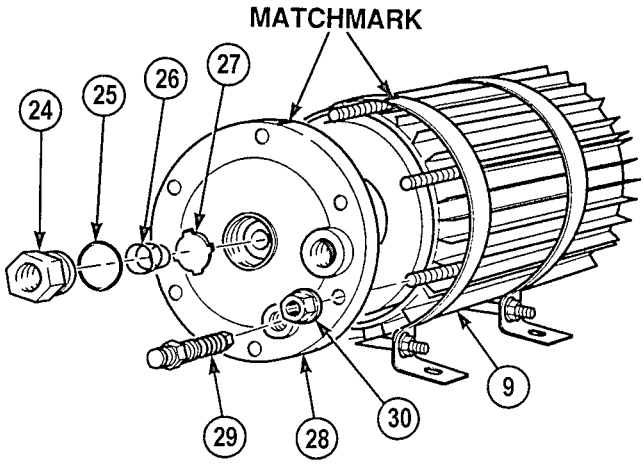
(10) Remove valve (24), preformed packing (25), spring (26) and plate (27) from upper cover (28). Discard preformed packing.

(11) Remove purge valve (29) from upper cover (28).

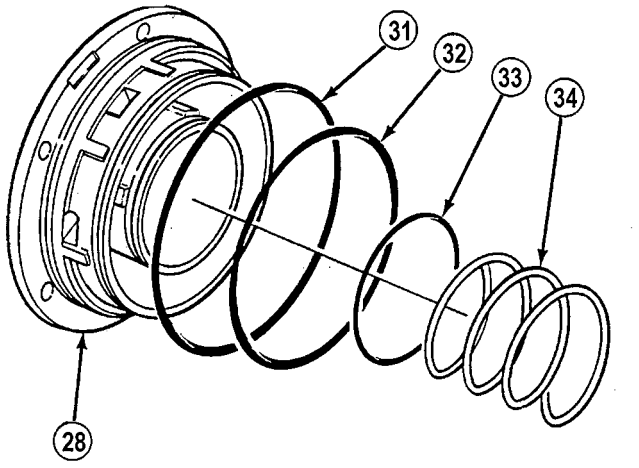
NOTE

Match mark upper cover and housing.

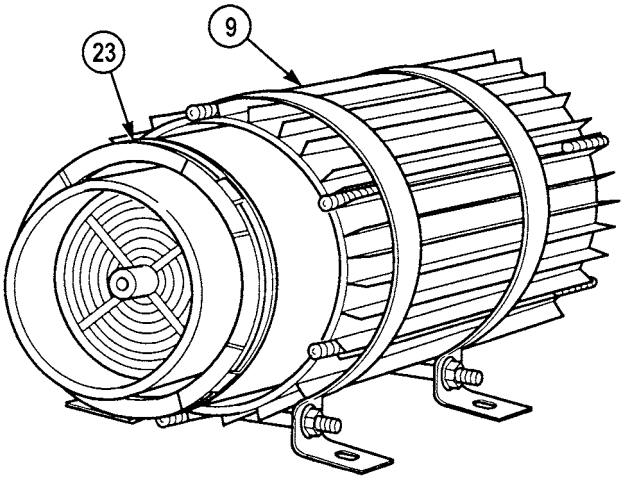
(12) Remove six locknuts (30) and upper cover (16) from housing (9). Discard locknuts.



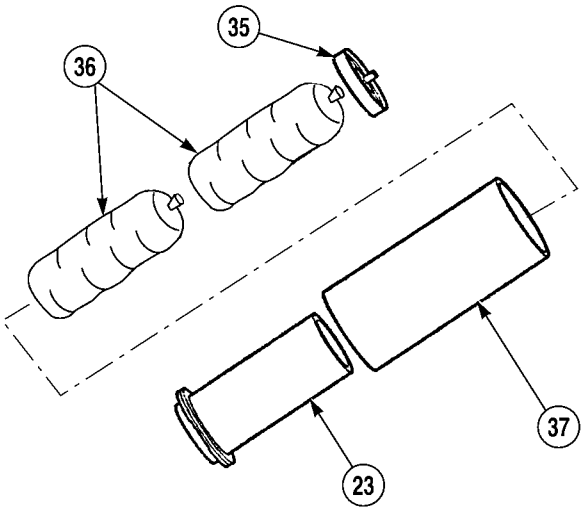
(13) Remove preformed packings (31), (32), (33) and spring (34) from upper cover (28). Discard preformed packings.



(14) Remove cannister assembly (23) from housing (9).



(15) Remove follower (35), two foil filters (36) and cannister assembly (23) from cylinder (37). Discard foil filters.



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.

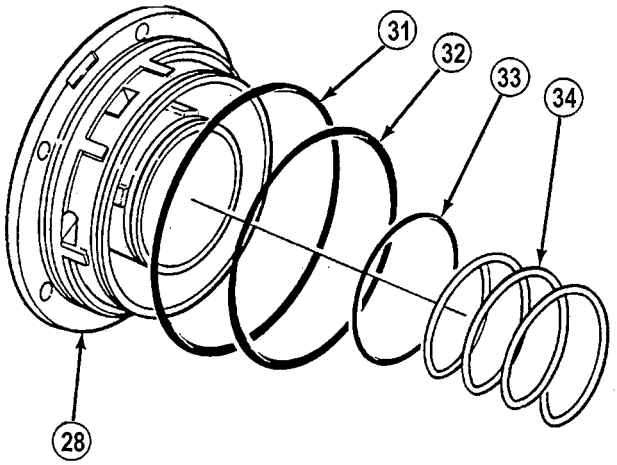
12-22. AFTER COOLER REPAIR (CONT).

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.

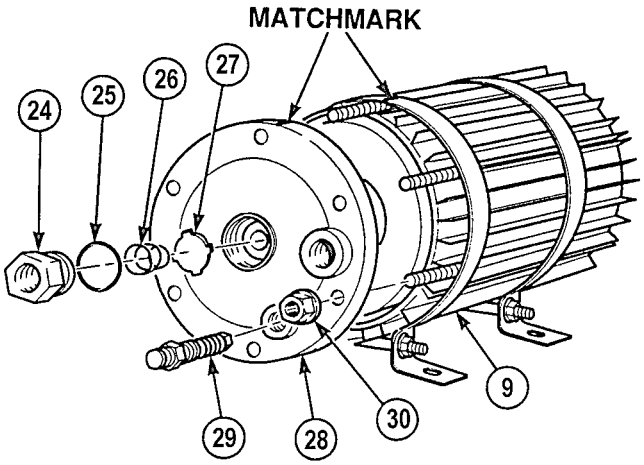
(1) Install spring (34), preformed packings (31), (32) and (33) on upper cover (28).



(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).

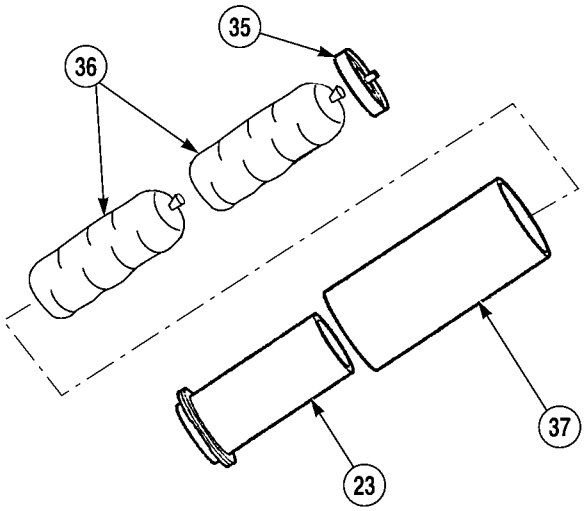
(3) Install plate (27), spring (26), preformed packing (25) and valve (24) on upper cover (28).

(4) Install purge valve (29) to upper cover (28).

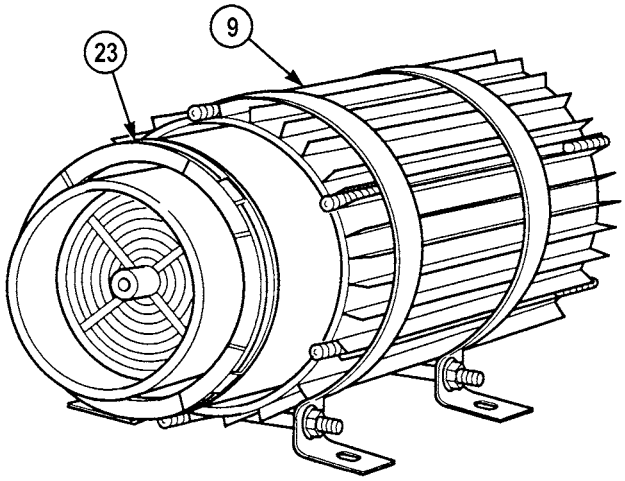


(5) Install cannister assembly (23) in cylinder (37).

(6) Install two foil filters (36) and follower (35) in cannister assembly (23).

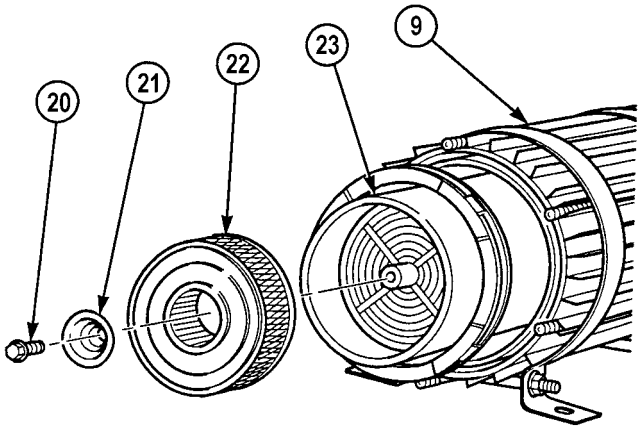


(7) Install cannister assembly (23) in housing (9).

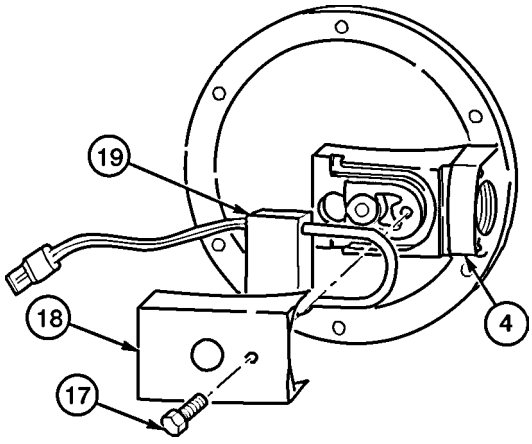


(8) Install filter (22) in cannister assembly (23).

(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).

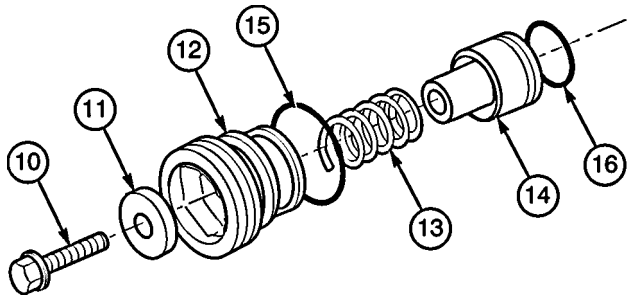
(11) Install preformed packing (16) on poppet (14).

(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).

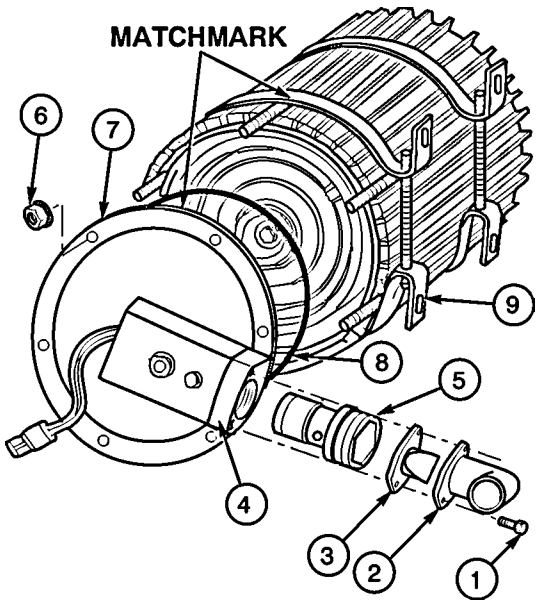


NOTE

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

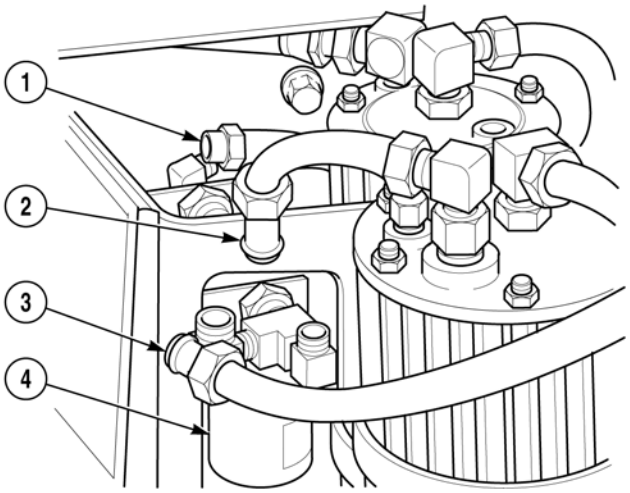
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

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.





AIR DRYER GUARD SHOWN REMOVED FOR CLARITY (IF EQUIPPED)

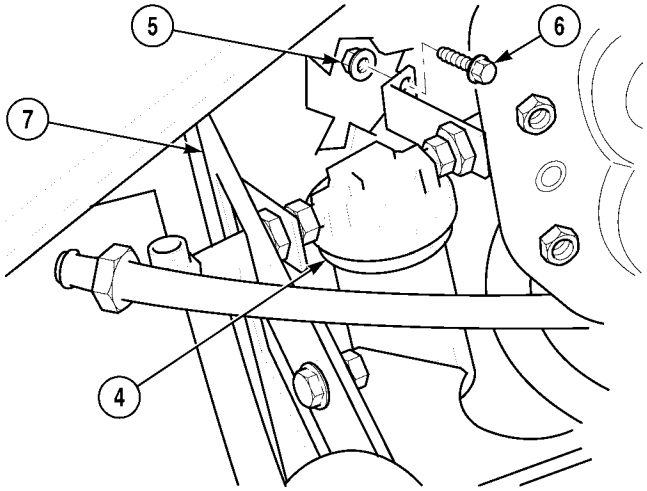
NOTE

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).

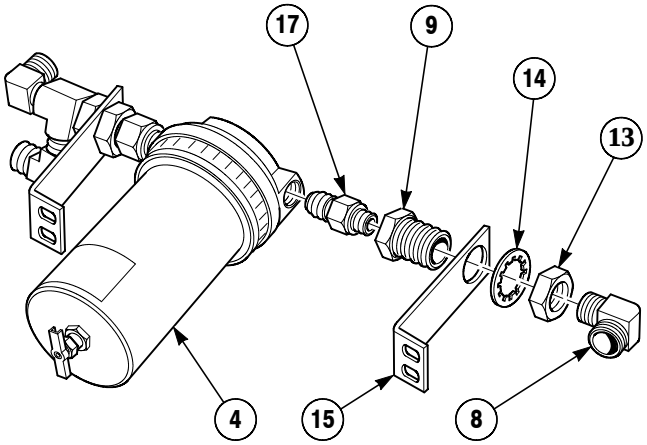
(4) Remove two elbows (10) from tee fitting (11).

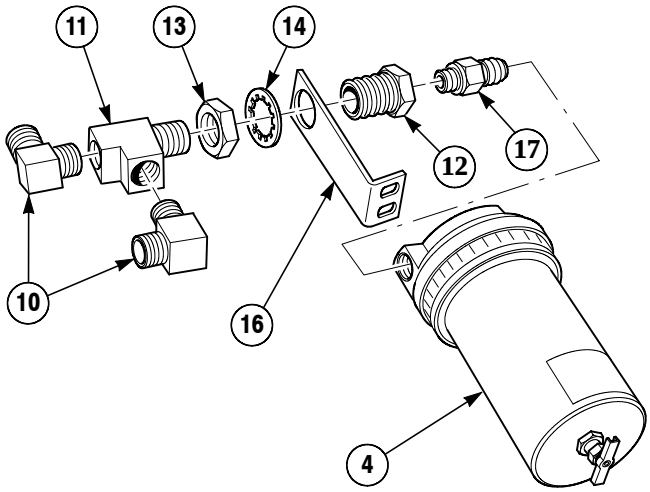
(5) Remove tee fitting (11) from adapter (12).

(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.

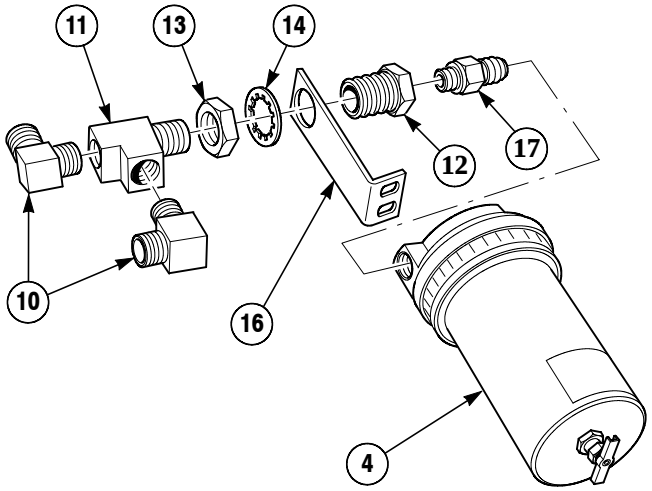
(9) Install two elbows (10) on tee fitting (11).

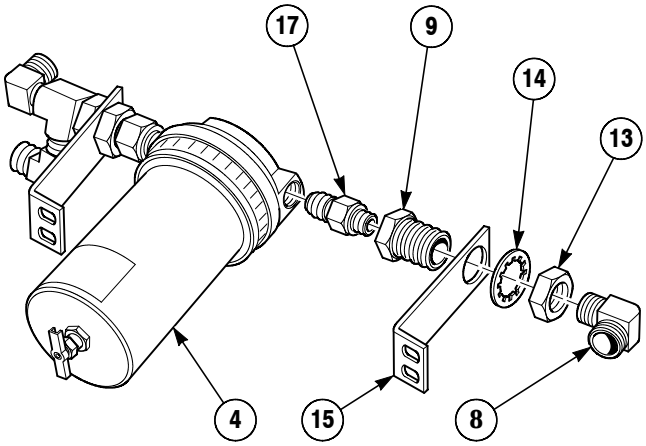
(10) Coat threads of elbow (8) with sealing compound.

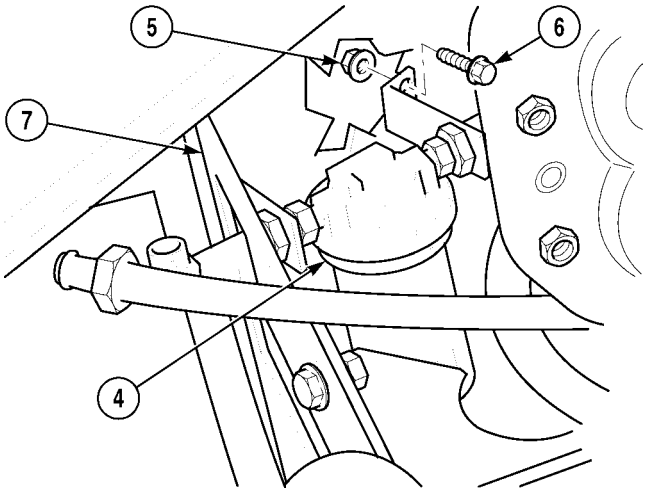
(11) Install elbow (8) on adapter (9).

(12) Install coalescing filter assembly (4) on air dryer mounting bracket (7), with four screws (6) and locknuts (5).

(13) Tighten two nuts (13).

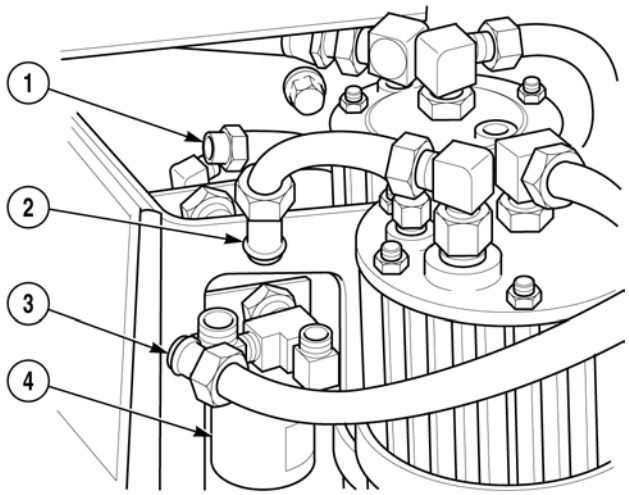






12-23. COALESCING FILTER ASSEMBLY REPLACEMENT (CONT).

(14) Connect air lines 2034 (1), 2035 (2), and 2036 (3) to coalescing filter assembly (4).



AIR DRYER GUARD SHOWN REMOVED FOR CLARITY (IF EQUIPPED)

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:

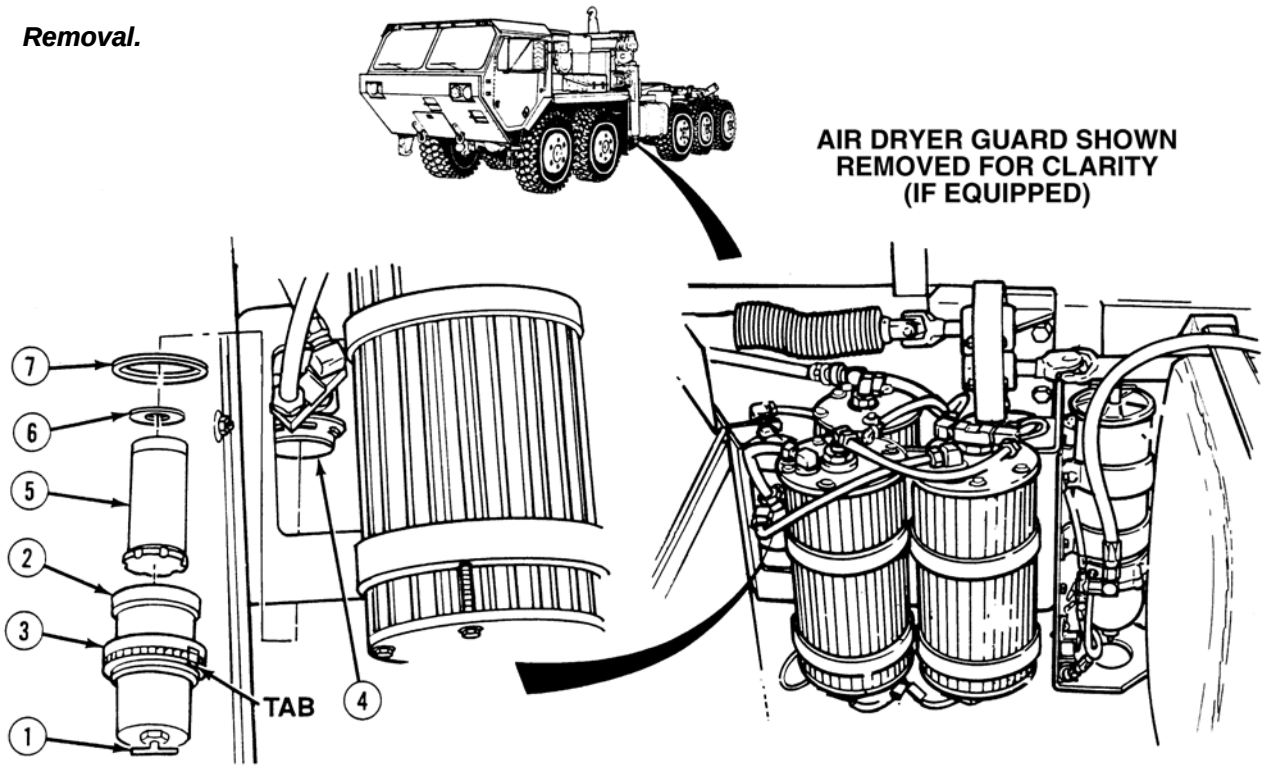
a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Materials/Parts
Filter Element Kit (Item 39, Appendix F)

Equipment Condition
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

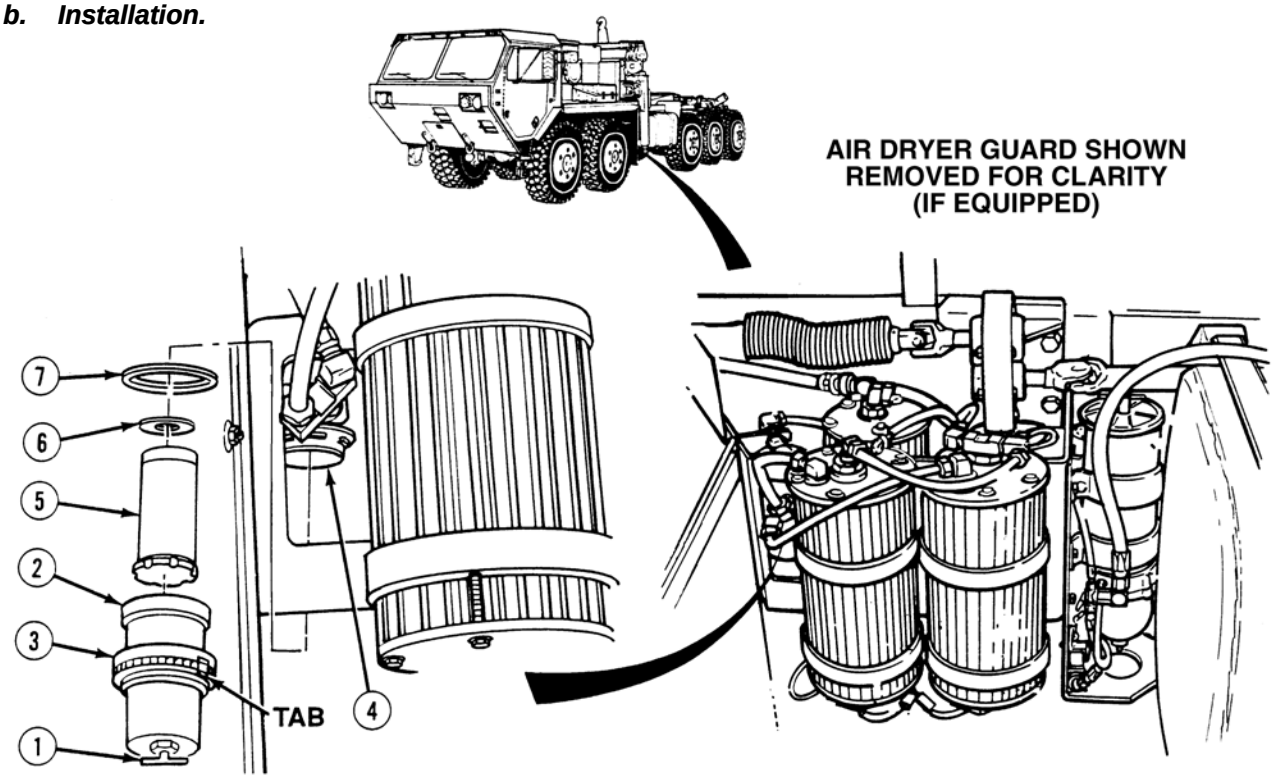
Filter is threaded into place.

(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

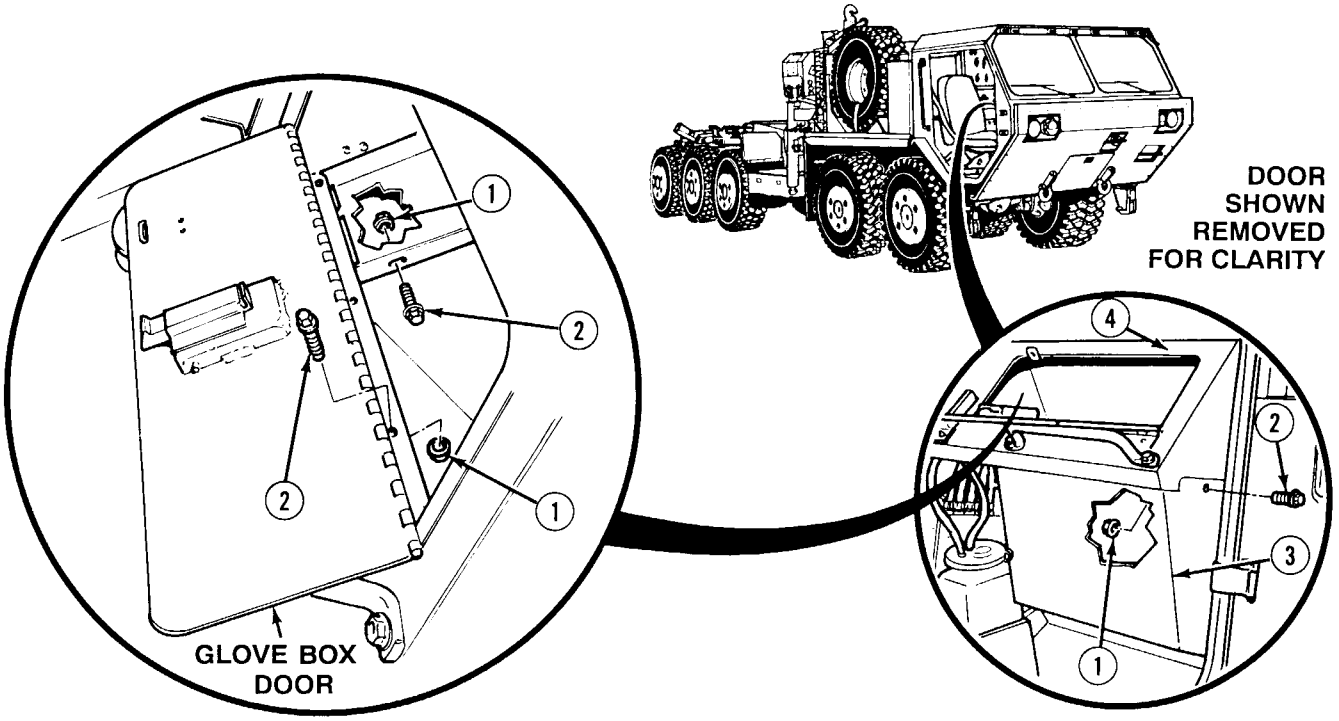
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix H)

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).

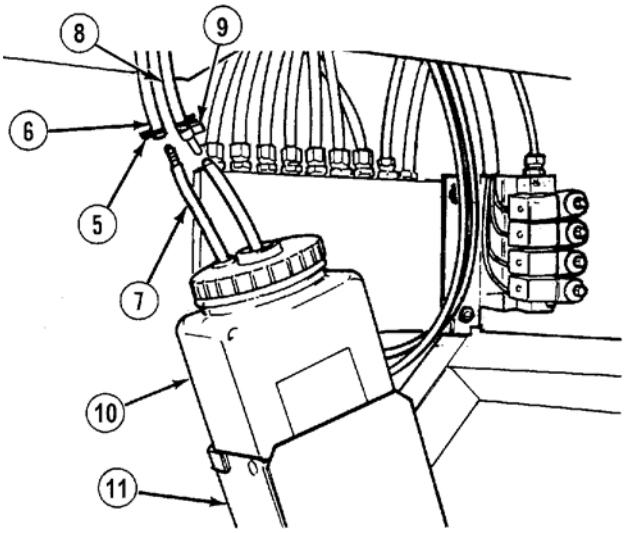
(2) Compress clamp (5) and remove line (6) from solvent tank line (7).

NOTE

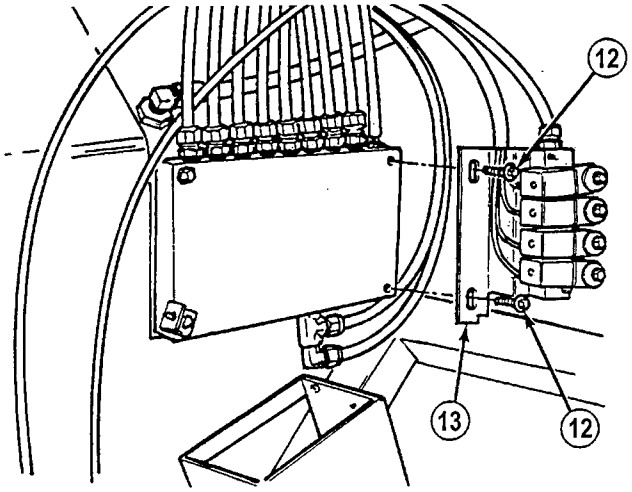
Perform Step (3) if relief valve is present.

(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).



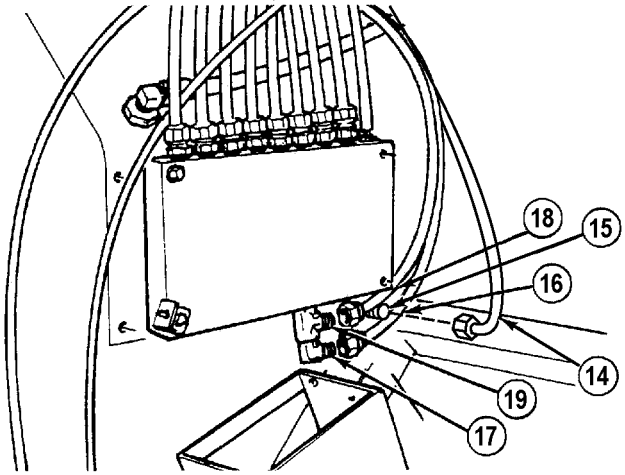
NOTE

- 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).



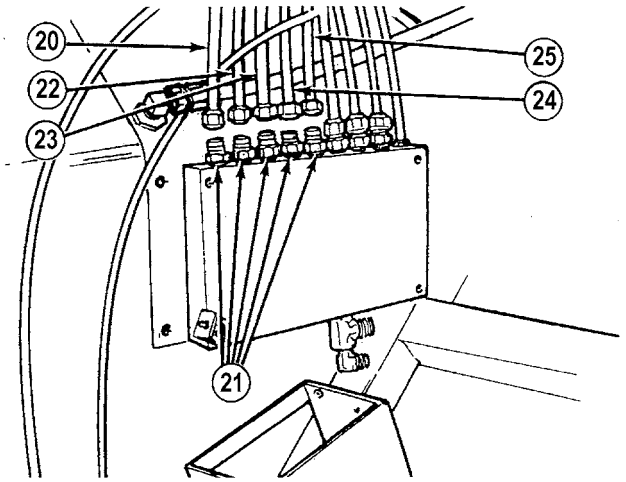
(9) Remove air line 2663 (20) from fitting (21).

(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).

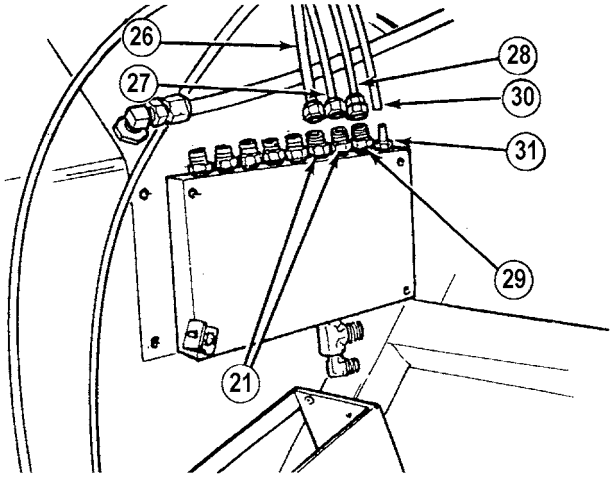


(14) Remove air line 2612 (26) from fitting (21).

(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).

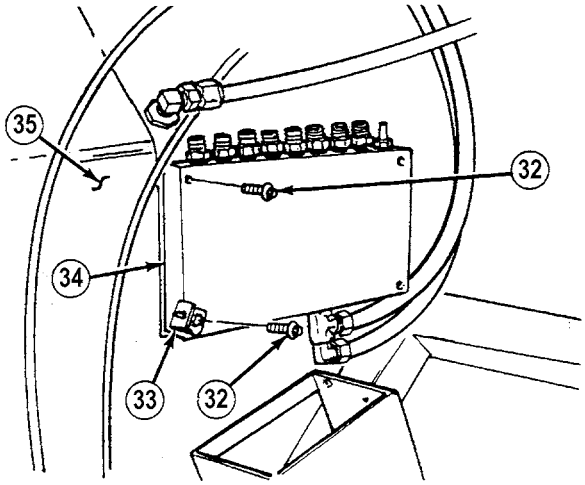


12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).

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).



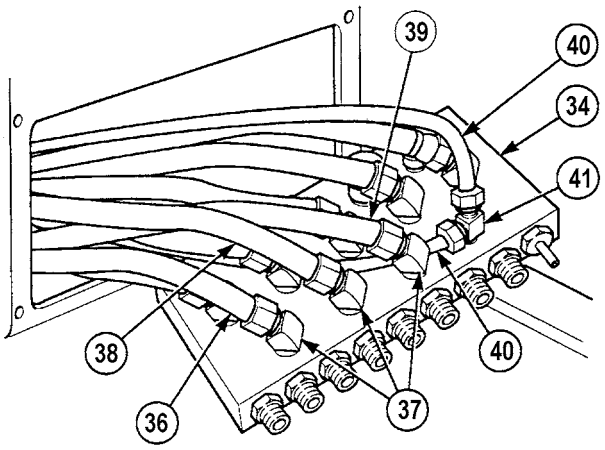
(19) Position air manifold (34) to access rear line connections.

(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).

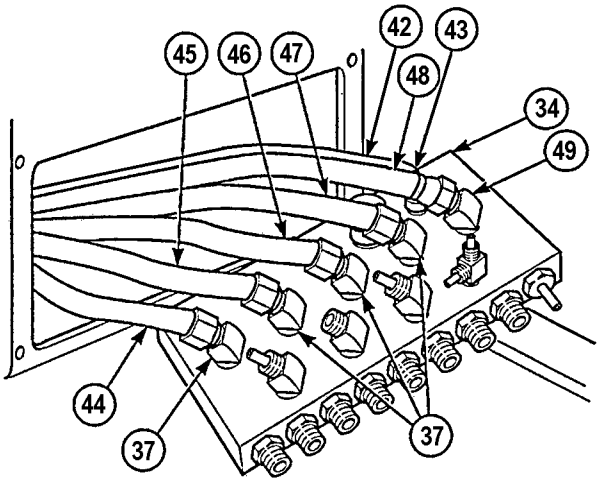
(25) Remove air line 2663 (44) from elbow (37).

(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).

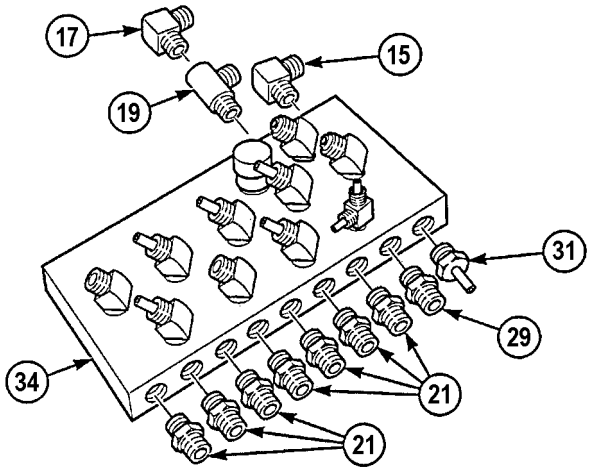
(31) Remove elbow (17) from tee (19).

(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).

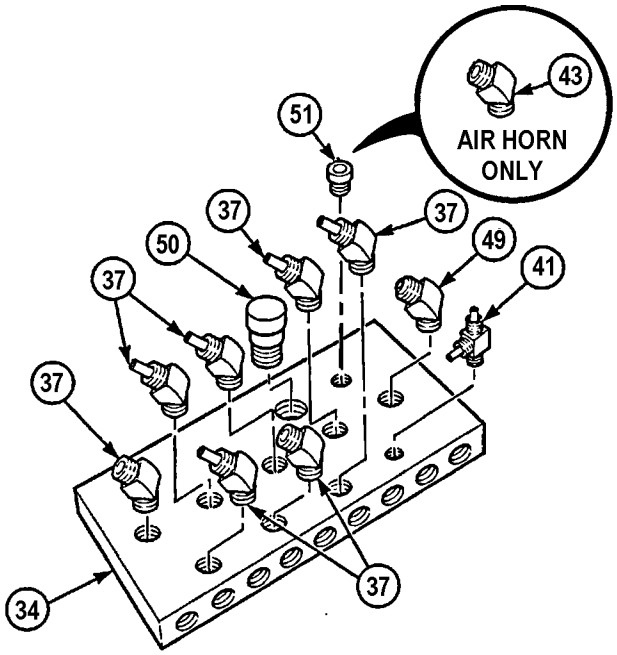
(38) Remove elbow (49) from air manifold (34).

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.

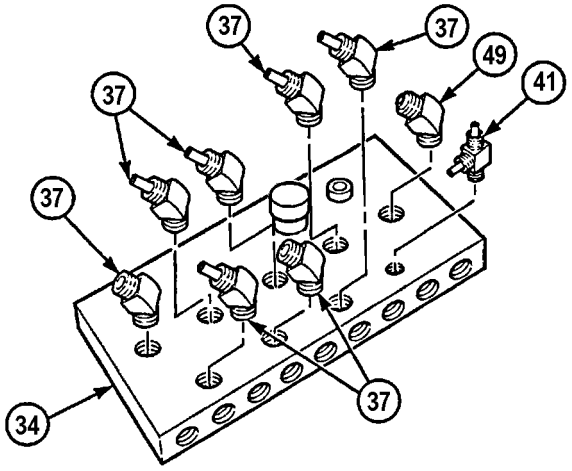
(4) Install vent (50) and plug (51) in air manifold (34).

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.

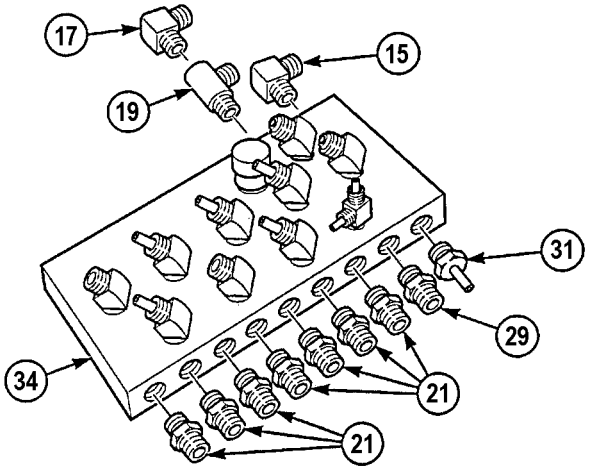
(6) Install elbow (49) in air manifold (34).

(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).

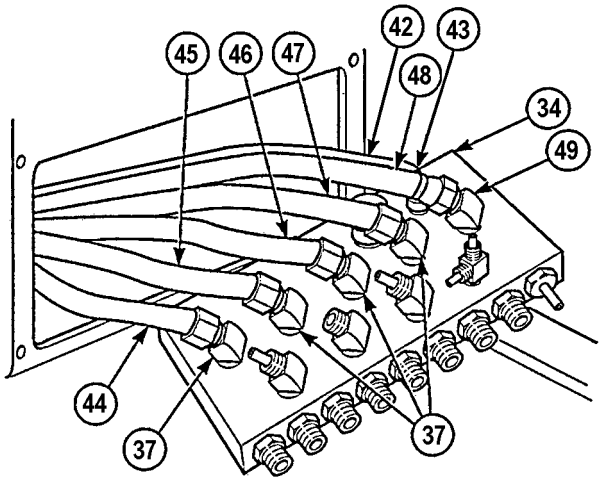
(20) Install air line 2381 (48) on elbow (49).

(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.

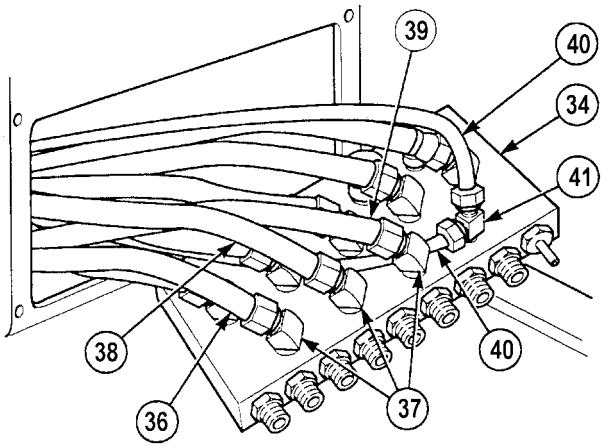
(25) Install air line 2039 (42) on elbow (43).

(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).



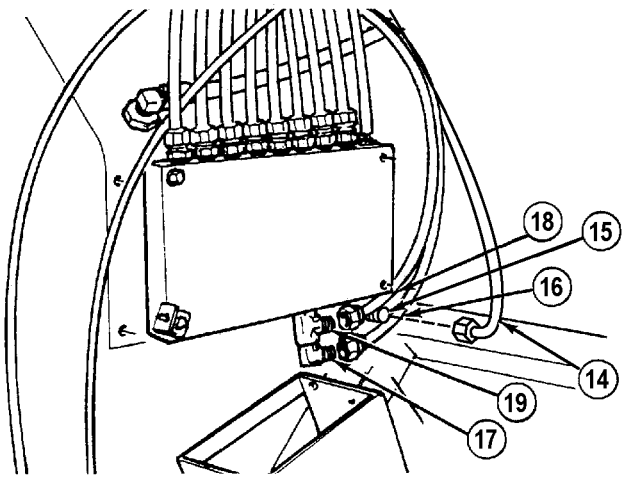
NOTE

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).

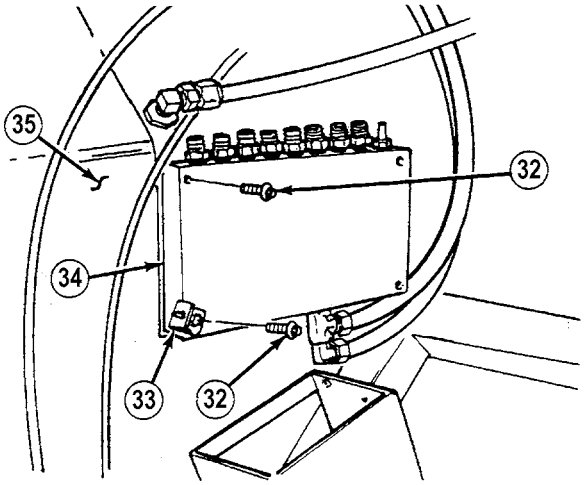


WARNING

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).



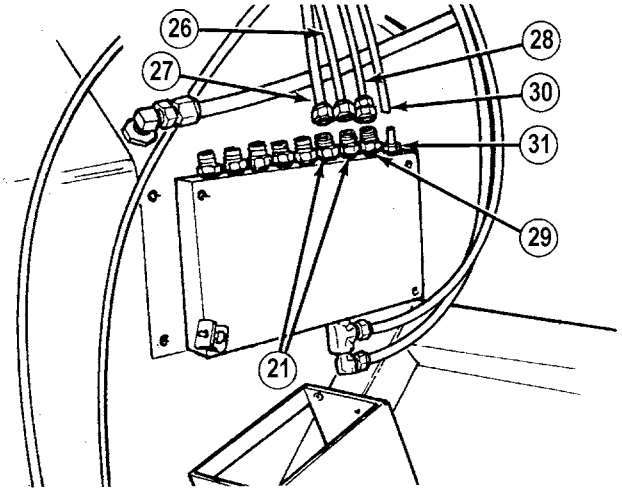
12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).

(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).



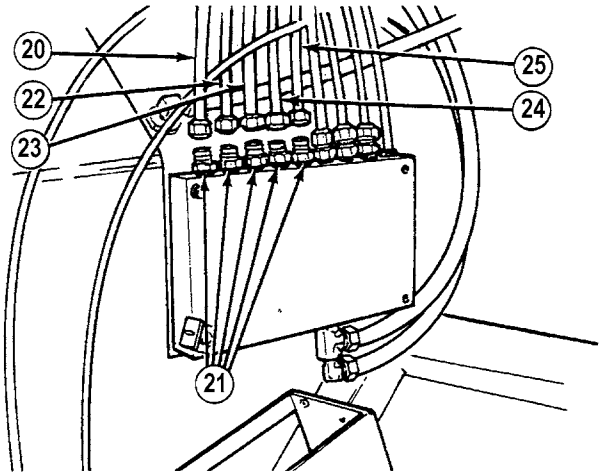
(39) Install air line 2665 (25) on fitting (21).

(40) Install air line 2488 (24) on fitting (21).

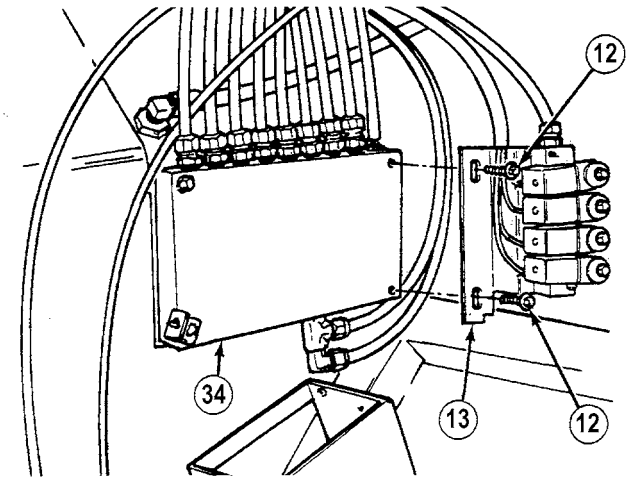
(41) Install air line 2489 (23) on fitting (21).

(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).



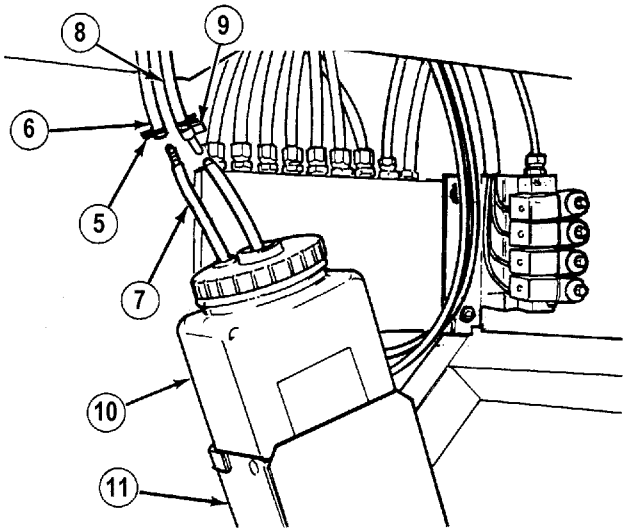
(45) Install reservoir (10) in mounting bracket (11).

NOTE

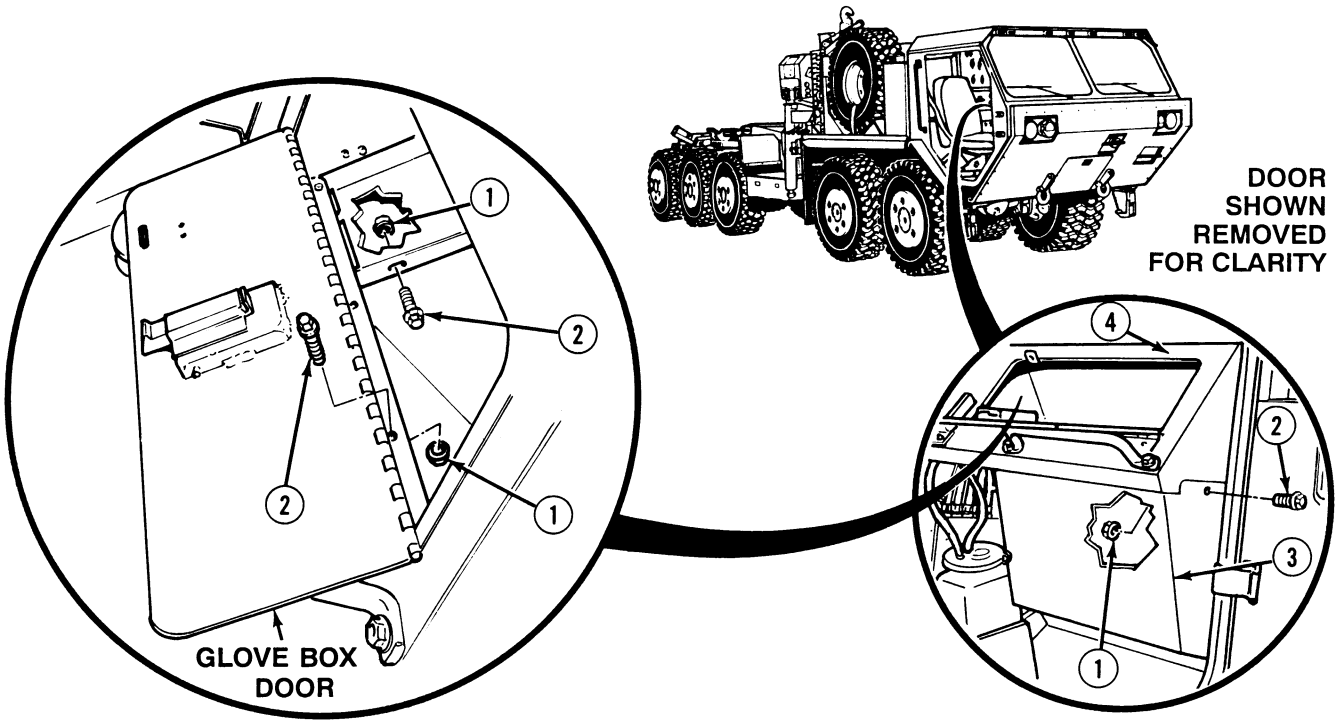
Perform Step (46) if relief valve is present.

(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

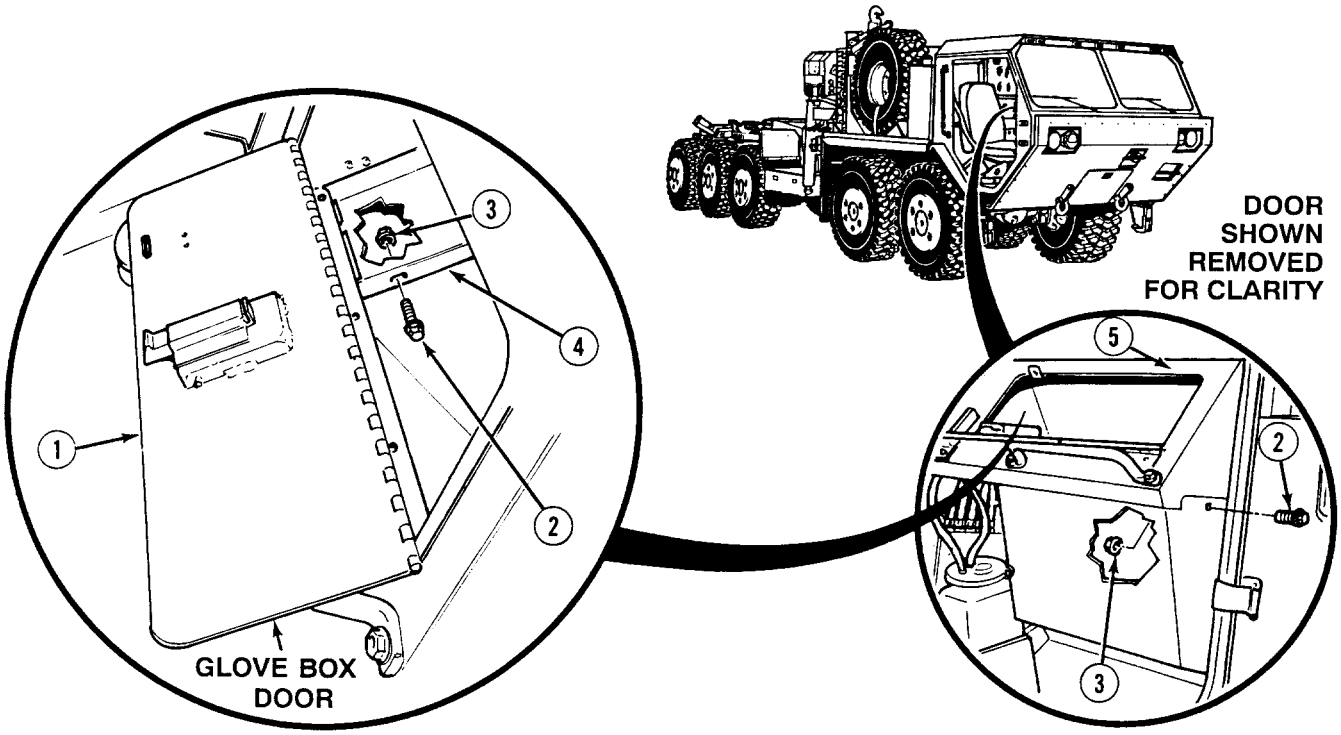
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (3) (Item 110, Appendix F)

Materials/Parts - Continued
Locknut (Item 140, Appendix F)
Lockwasher (Item 169, Appendix F)

Equipment Condition
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).

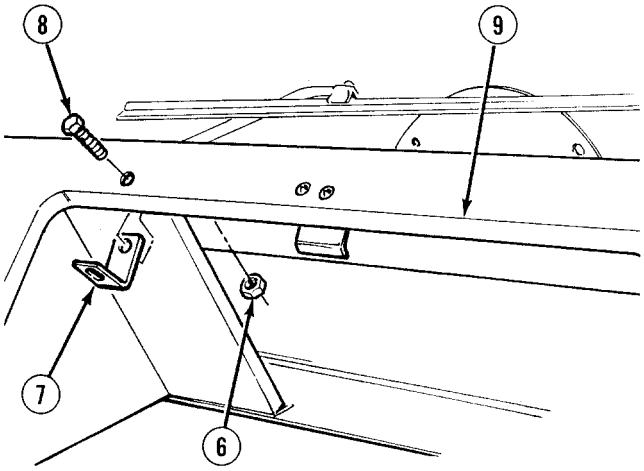
CAUTION

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). Discard locknut.



CAUTION

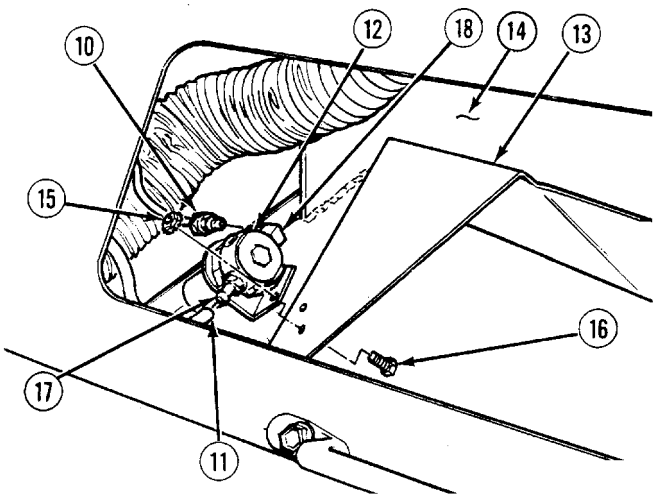
Use caution while removing air regulator mounting plate, or damage to equipment may result.

(4) Remove air line 2071 (10) and hose (11) from air regulator (12).

(4.1) Remove mounting plate (13) from glove box (14).

(5) Remove two locknuts (15), screws (16) and air regulator (12) from mounting plate (13). Discard locknuts.

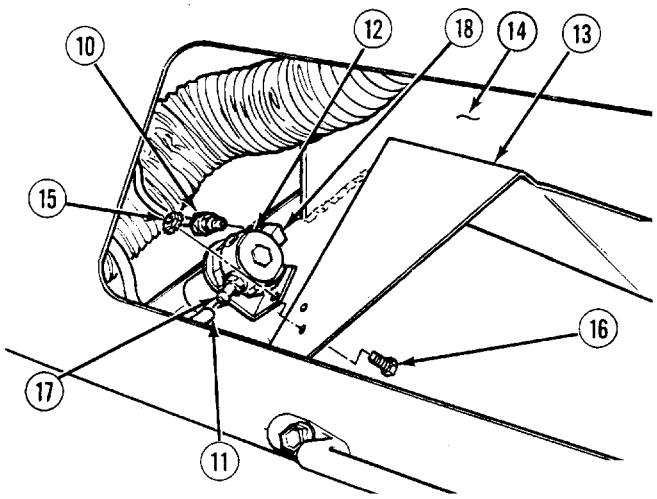
(6) Remove fitting (17) and elbow (18) from air regulator (12).



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 (17) and elbow (18) with sealing compound.

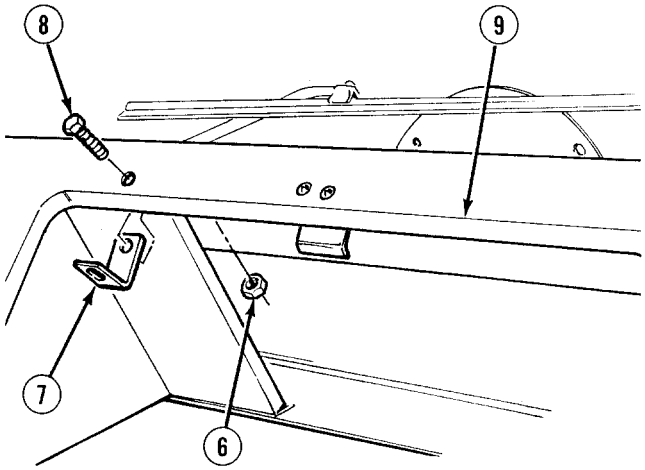
(2) Install elbow (18) and fitting (17) on air regulator (12).

(3) Install hose (11) and air line 2071 (10) on air regulator (12).

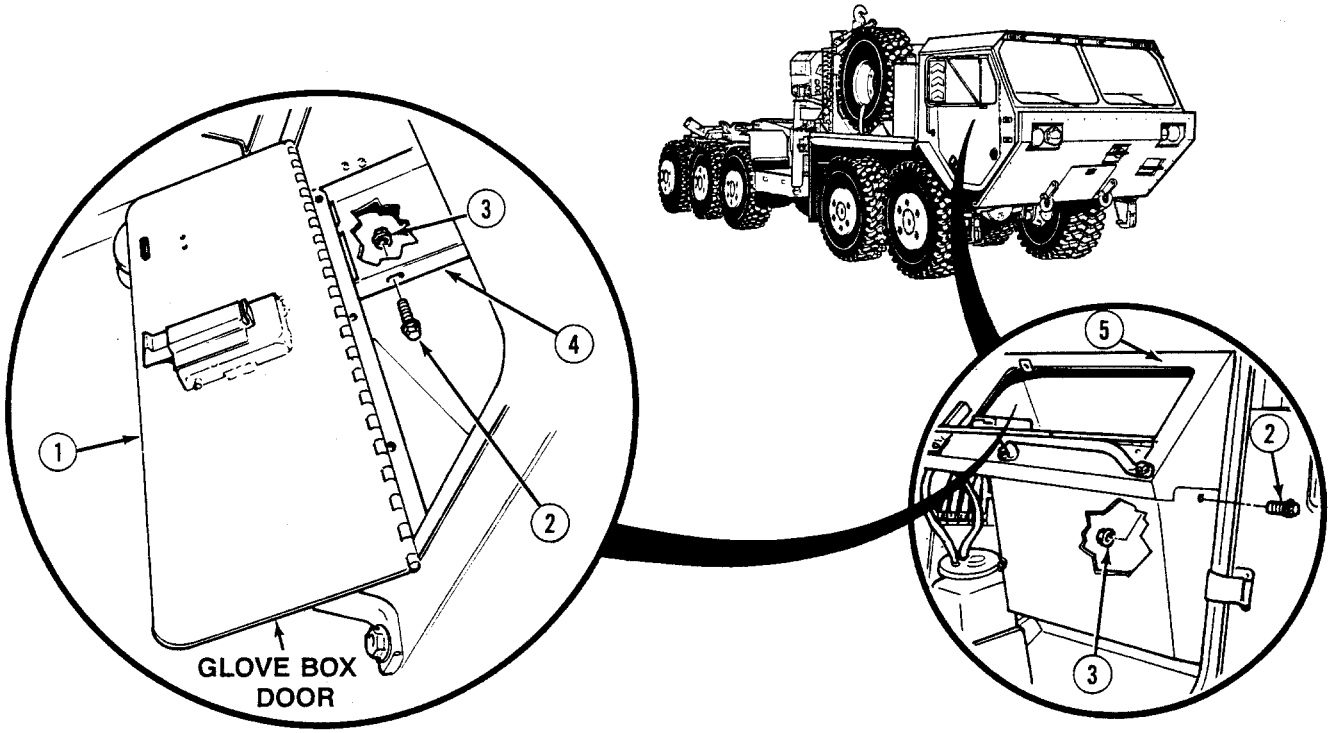
(4) Install air regulator (12) on mounting plate (13) with two screws (16) and locknuts (15).

(5) Position air regulator (12) and mounting plate (13) 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

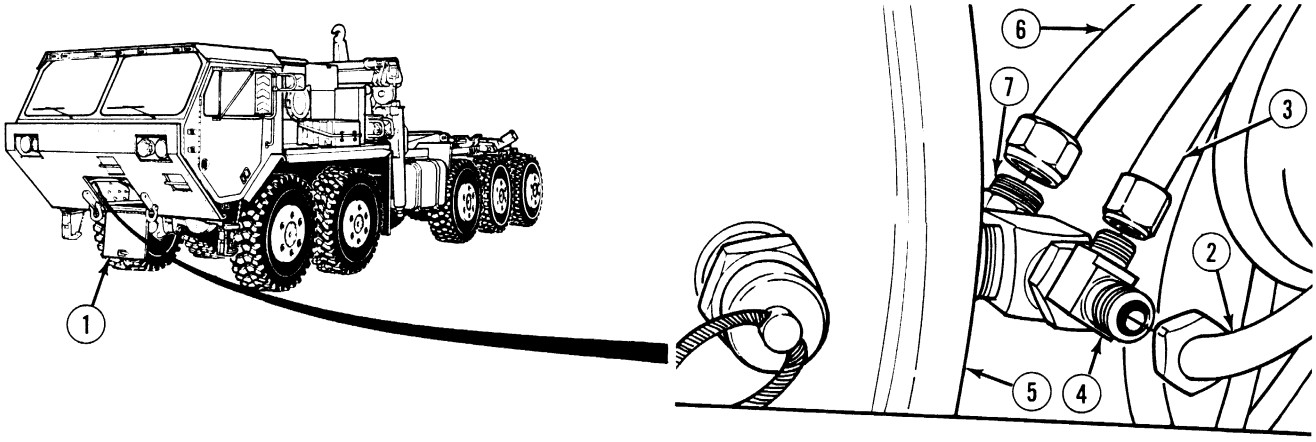
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Caps, Vise Jaw (Item 9, Appendix G)
Socket Set, 1/2 in. Deep Well (Item 60, Appendix G)
Vise, Machinist's (Item 75, Appendix G)
Wrench, Combination 1-1/16 in. (Item 78, Appendix G)
Wrench, Combination 1-1/8 in. (Item 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 207, 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.



VIEW LOOKING UP

(1) Open front access cover (1).

NOTE

Tag and mark air lines before removing.

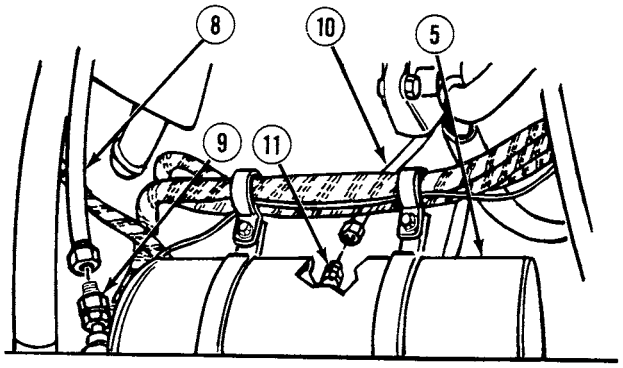
(2) Remove air lines 2994 (2) and 2993 (3) from tee (4) on right side of air reservoir (5).

(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).

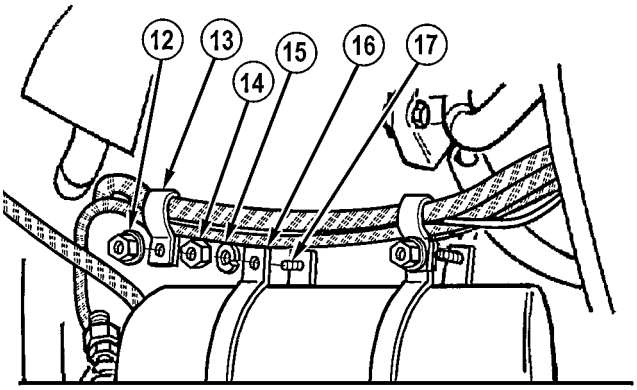


VIEW LOOKING UP

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.



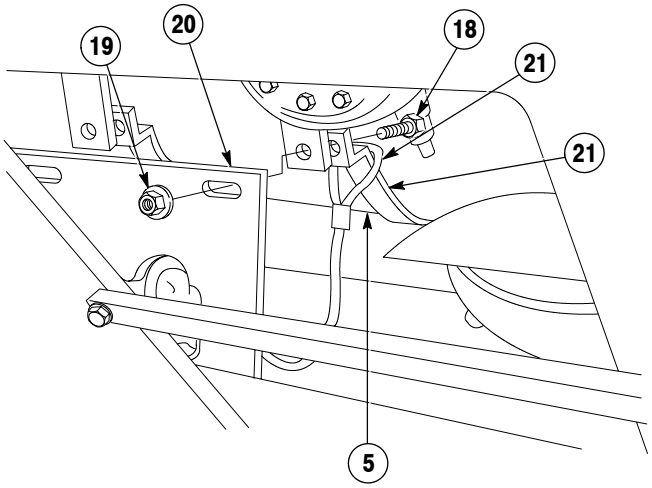
WARNING

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

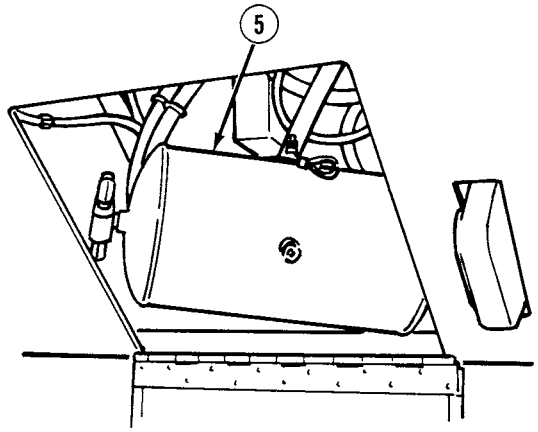
NOTE

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.



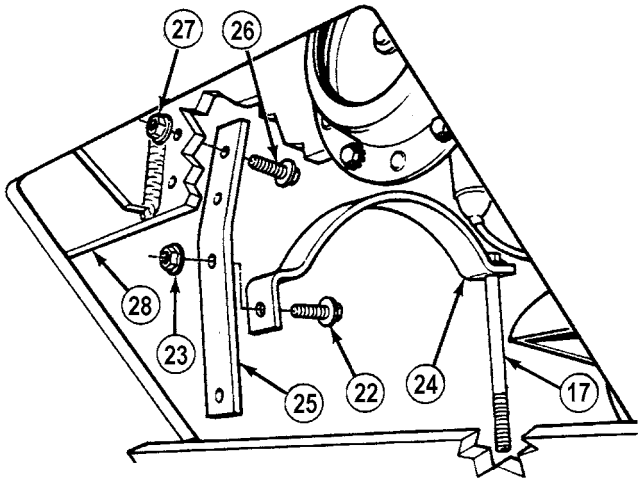
(8) With the aid of an assistant, remove air reservoir (5).



(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.

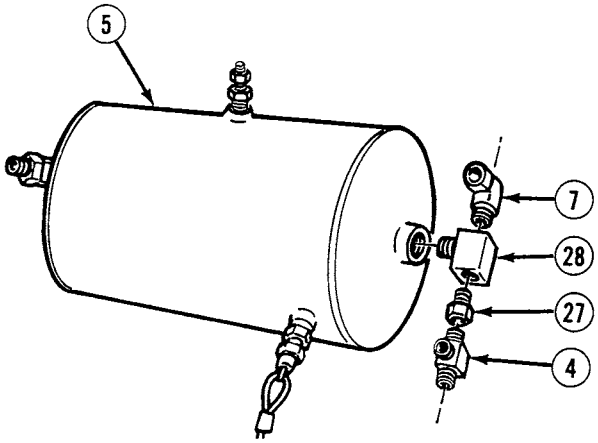


(12) Position air reservoir (5) in soft jawed vise.

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).

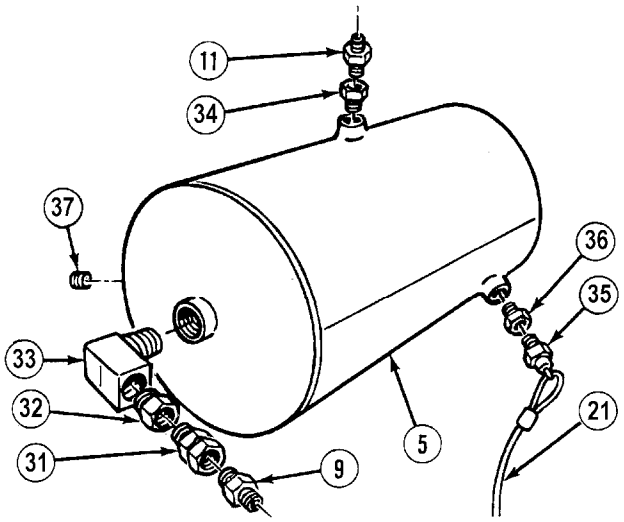
NOTE

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.

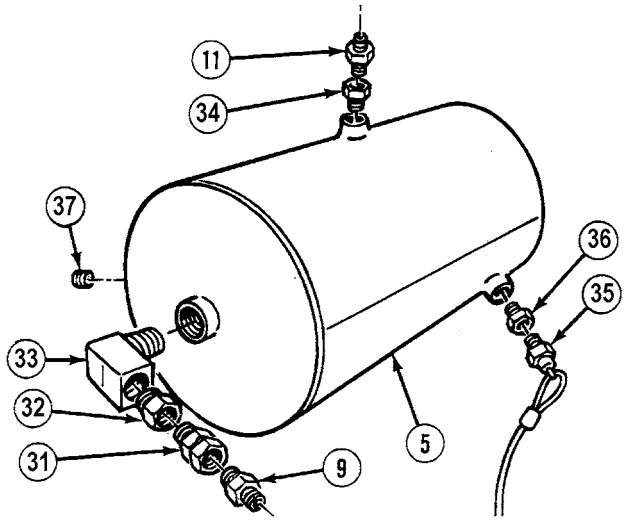
(2) Coat threads of reducer (36) and drain valve (35) with sealing compound.

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.

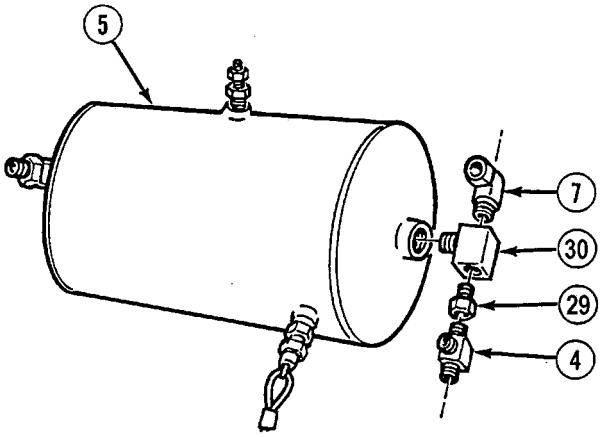
(15) Install tee (30) and reducer (29) on air reservoir (5).

(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).

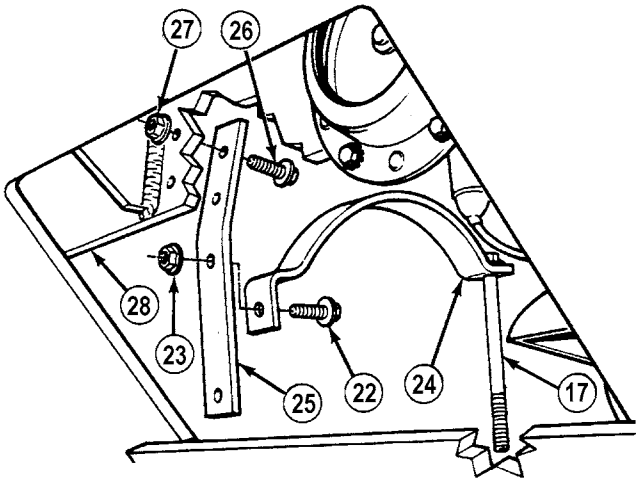
(19) Remove air reservoir (5) from vise.



(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).



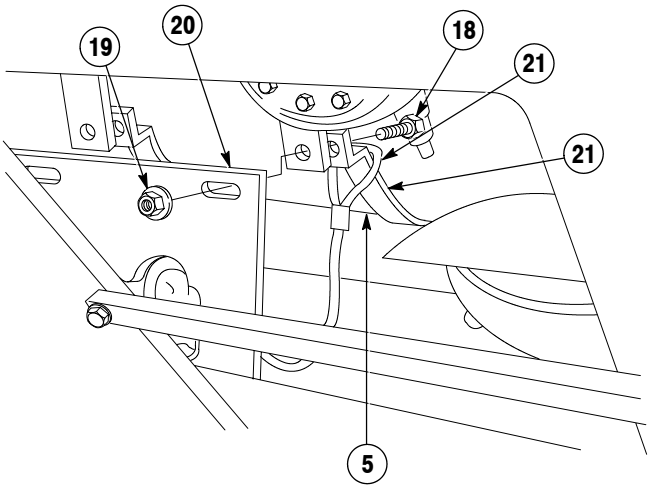
(23) With the aid of an assistant, position air reservoir (5) in truck.

(24) Install drain valve cable (21) on left bracket (16).

NOTE

Air horn bracket may or may not be present in Step (25).

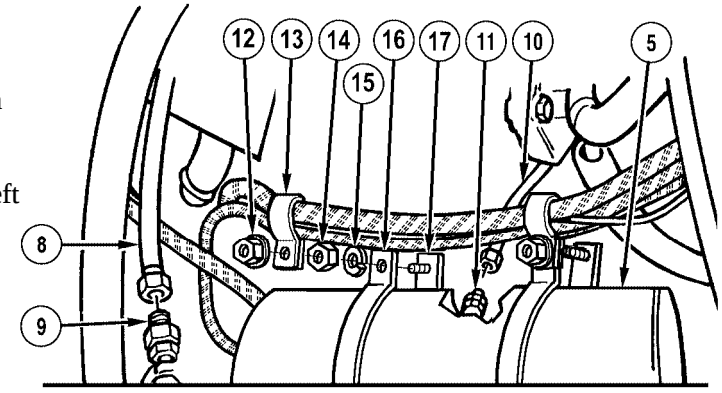
(25) With the aid of an assistant, install two brackets (16), screws (18), air horn bracket (20) and locknuts (19).

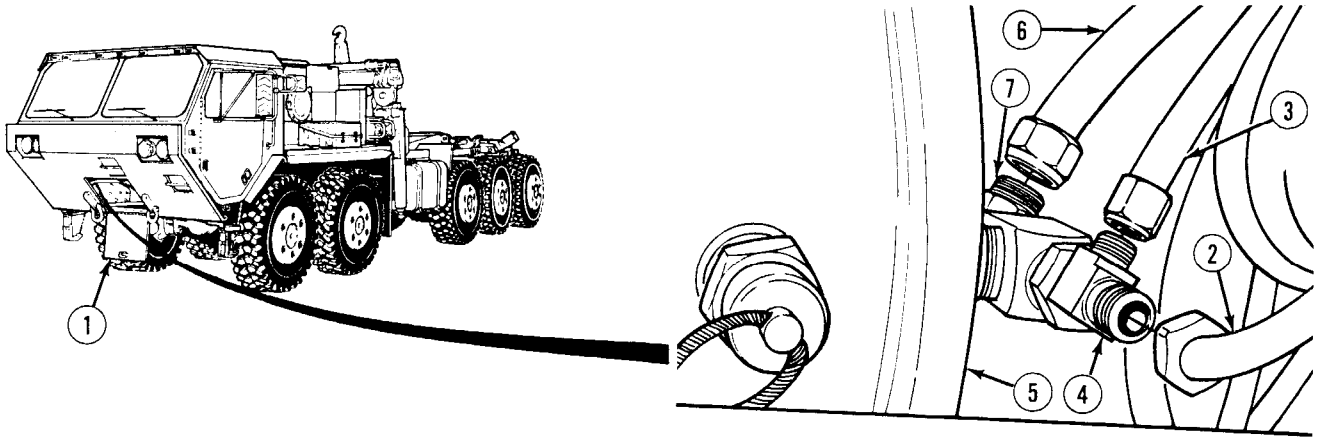


(26) Install two brackets (16) lockwashers (15), nuts (14), cushion clips (13) and locknuts (12) on bracket screws (17).

(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
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)
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)

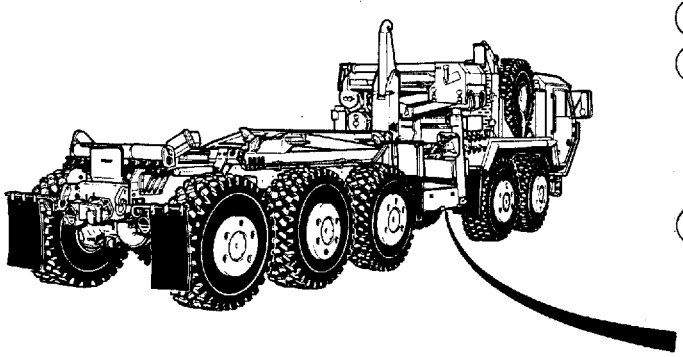
Materials/Parts
Sealing Compound (Item 77, Appendix C)

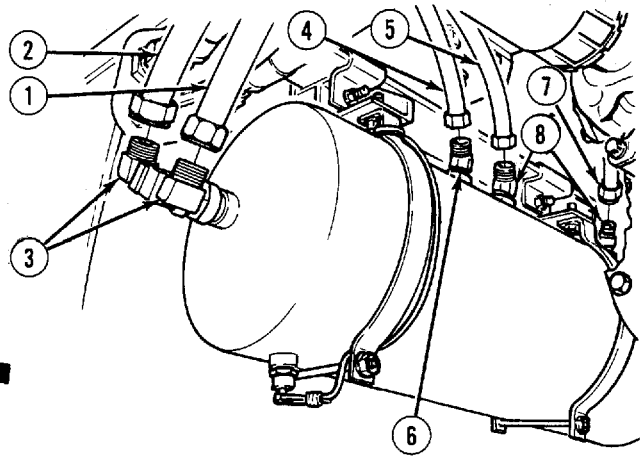
Materials/Parts - Continued
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 91, Appendix F)
Locknut (2) (Item 140, Appendix F)
Lockwasher (4) (Item 168, Appendix F)

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

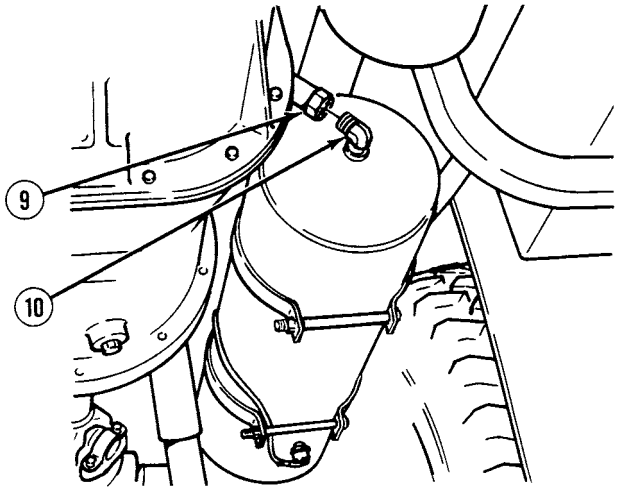
Tag and mark air lines prior to removal.

(1) Remove air lines 2007 (1) and 2184 (2) from two elbows (3).

(2) Remove air line 2536 (4) from elbow (6).

(3) Remove air lines 2008 (7) and 2619 (5) from two elbows (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

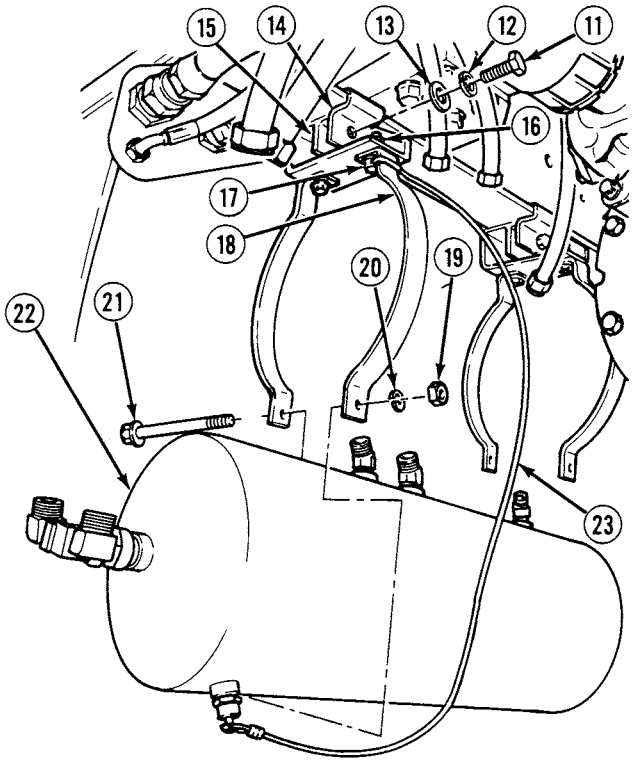
Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

(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.

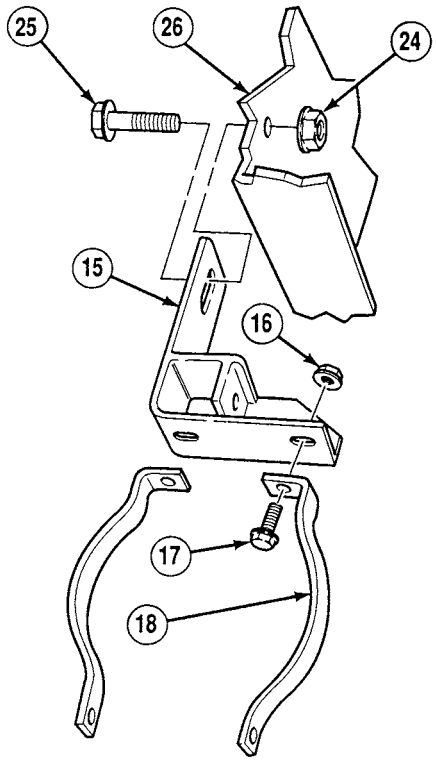
(8) Remove air reservoir (22) and drain valve cable (23) from two reservoir mounting brackets (18).



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).

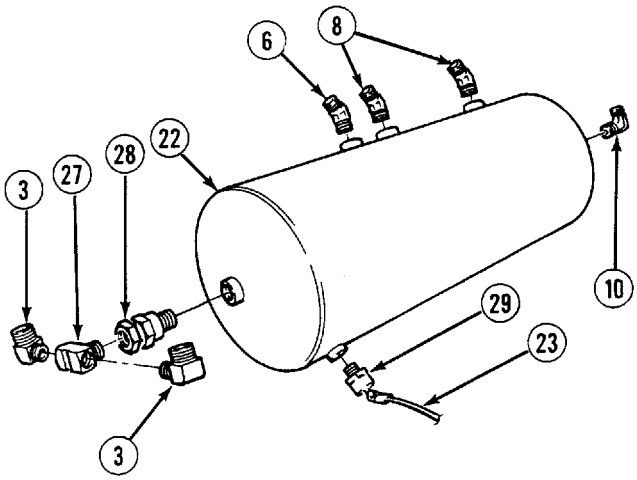
(14) Remove check valve (28) from air reservoir (22).

(15) Remove two elbows (8) from air reservoir (22).

(16) Remove elbow (6) 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.

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) Apply sealing compound to threads of drain valve (29).

NOTE

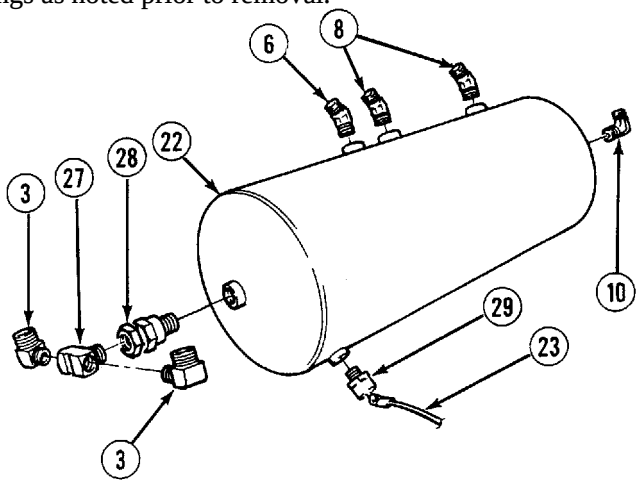
Perform Step (3) if drain valve cable was removed.

(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 (6).

(8) Install elbow (6) in air reservoir (22).

(9) Apply sealing compound to threads of two elbows (8).

(10) Install two elbows (8) 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).

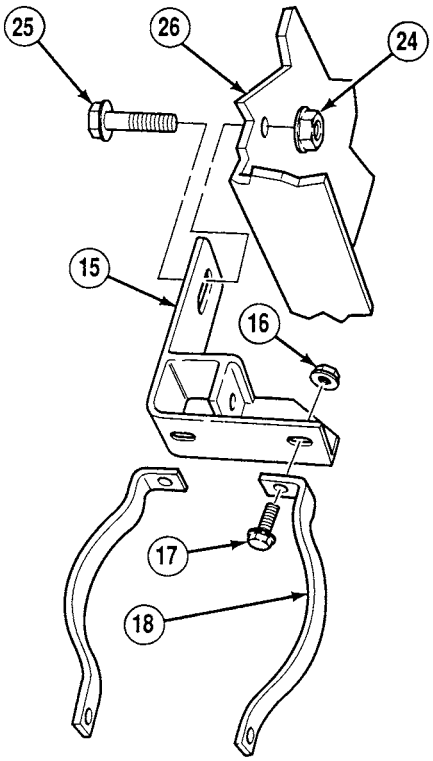
(16) Install two elbows (3) in tee (27).

(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).

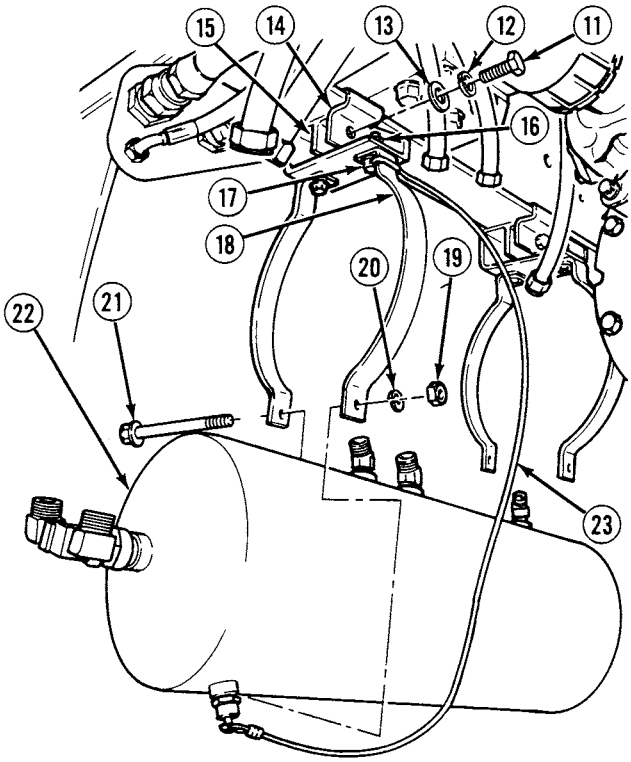
NOTE

When assembling air reservoirs and mounting brackets, do not over tighten nut and lockwasher. Tighten nut until lockwasher is fully compressed.

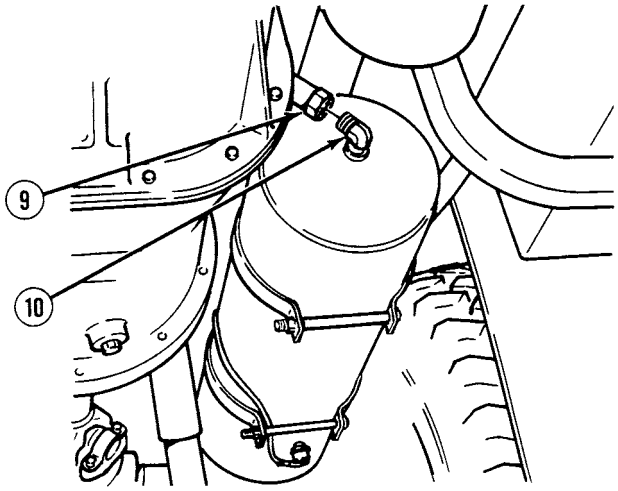
(21) With the aid of an assistant, install two screws (21), lockwashers (20) and nuts (19) in reservoir mounting brackets (18).

(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).



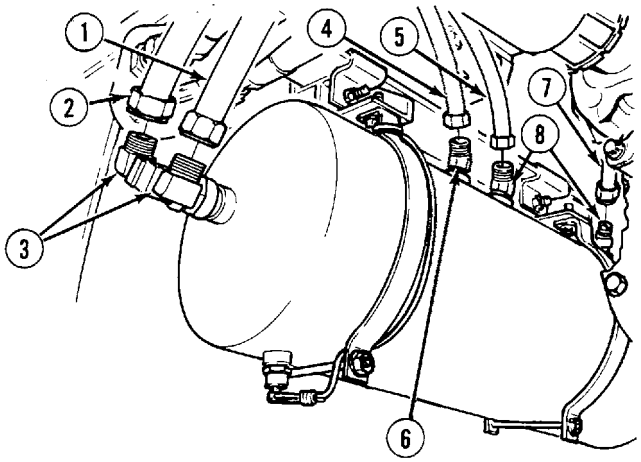
(24) Install air line 2613 (9) on elbow (10).



(25) Install air lines 2008 (7) and 2619 (5) on two elbows (8).

(26) Install air line 2536 (4) on elbow (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
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 1-1/16 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)

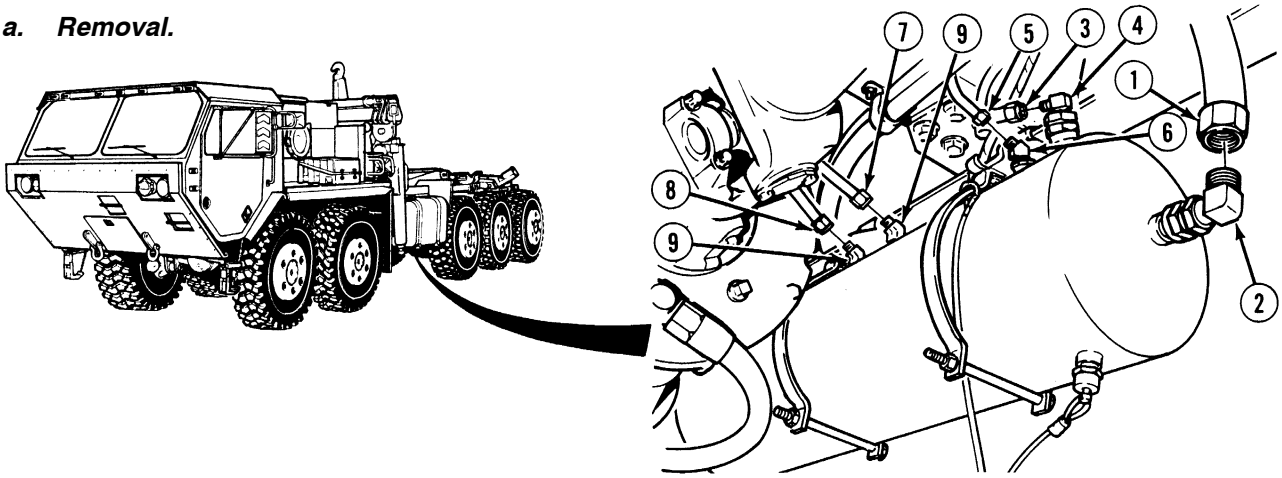
Materials/Parts
Sealing Compound (Item 77, Appendix C)

Materials/Parts - Continued
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 91, Appendix F)
Locknut (2) (Item 140, Appendix F)
Lockwasher (4) (Item 169, 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.

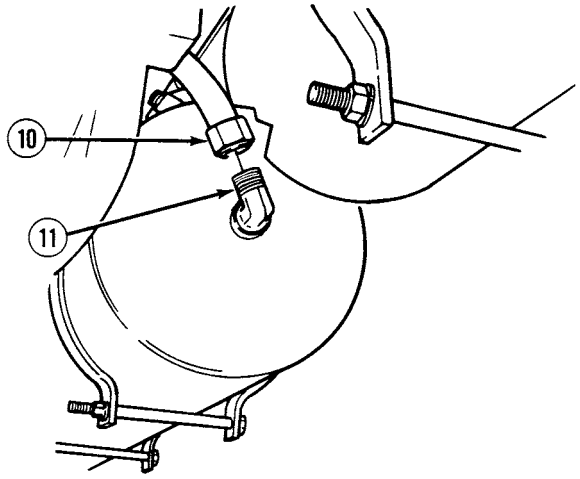
(1) Remove air line 2007 (1) from elbow (2).

(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.

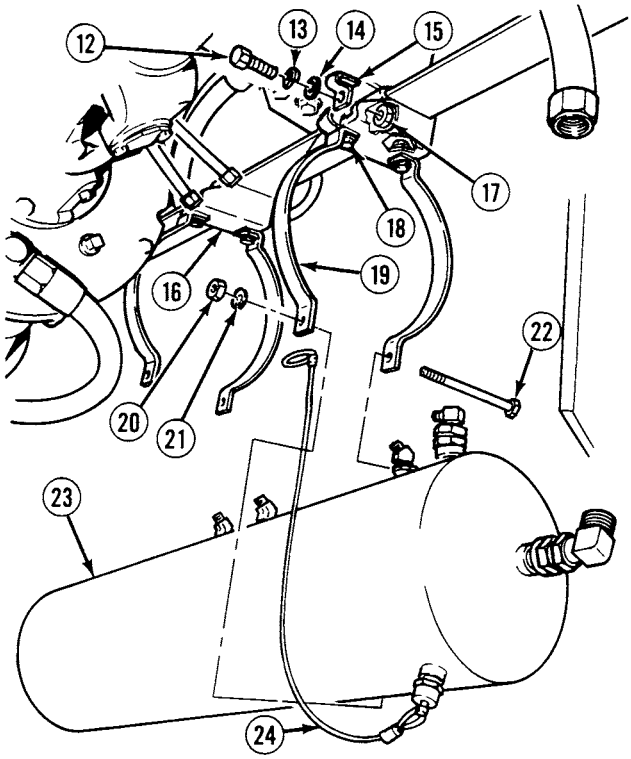
(8) With the aid of an assistant, remove two nuts (20), lockwashers (21) and screws (22) from reservoir mounting brackets (19). Discard lockwashers.

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).

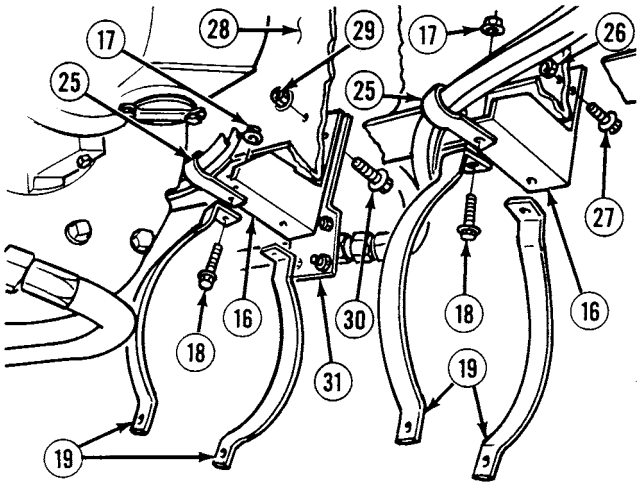


12-29. AIR RESERVOIR NO. 3 REPLACEMENT (CONT).

(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).

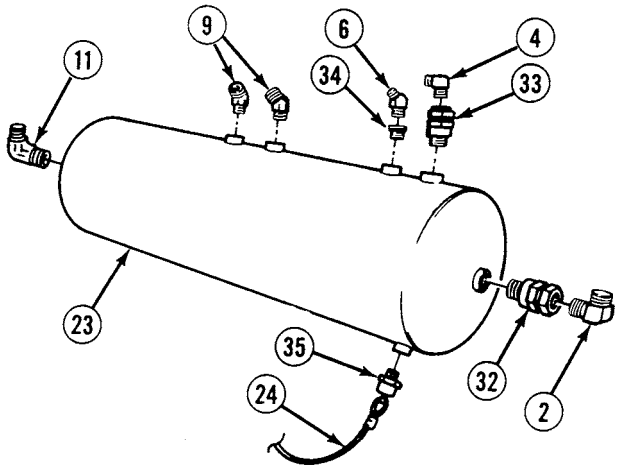
(16) Remove elbow (4) and check valve (33) from air reservoir (23).

(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.

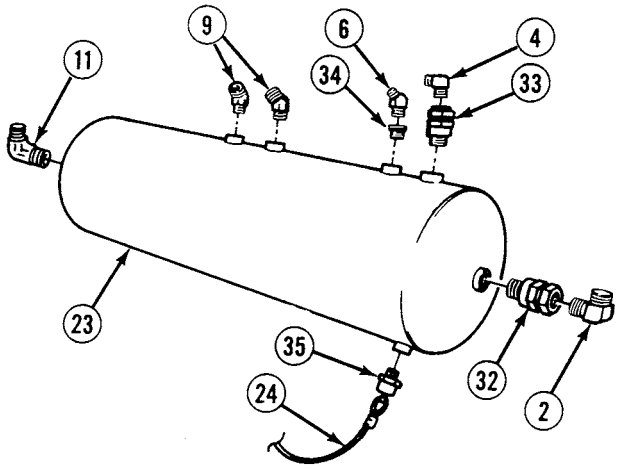
(1) Clean sealant from pipe threads.

(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).

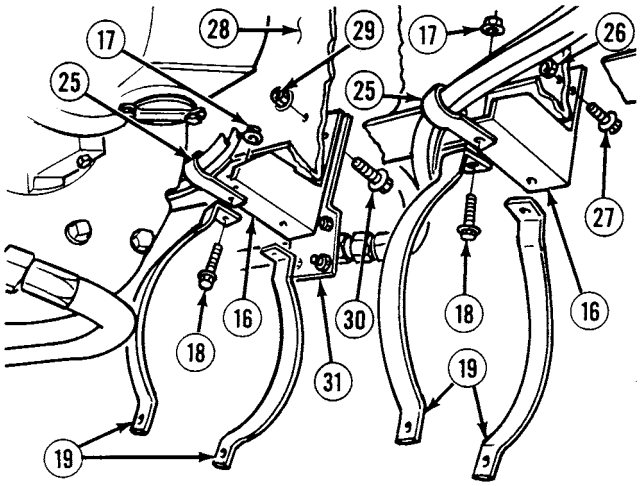
(15) Remove air reservoir (23) from vise.

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).

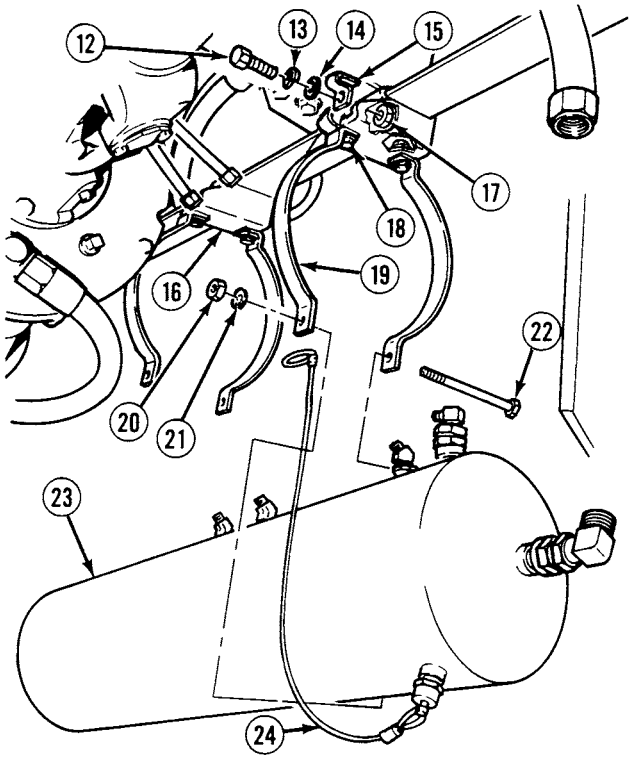
NOTE

When assembling air reservoirs and mounting brackets, do not over tighten nut and lockwasher. Tighten nut until lockwasher is fully compressed.

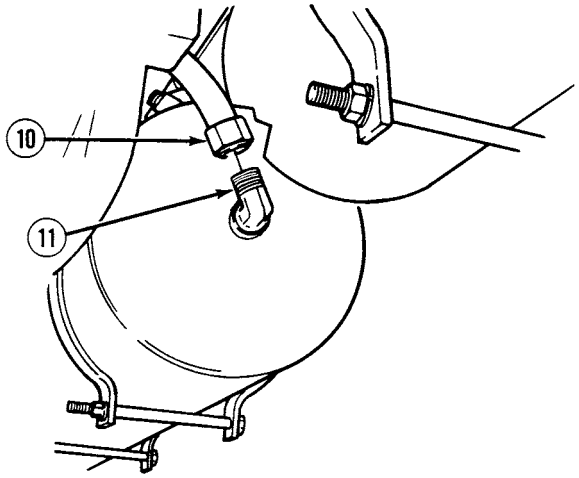
(20) With the aid of an assistant, install two screws (22), lockwashers (21) and nuts (20) in reservoir mounting bracket (19). Tighten nuts until lockwasher is fully compressed.

(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).

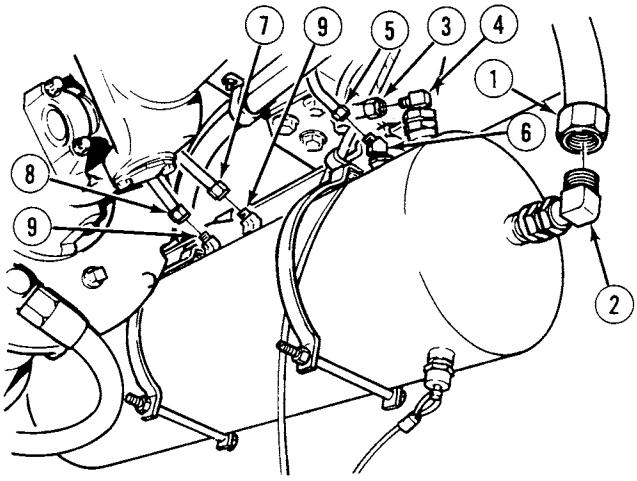


(24) Install air lines 2011 (7) and 2014 (8) on two elbows (9).

(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

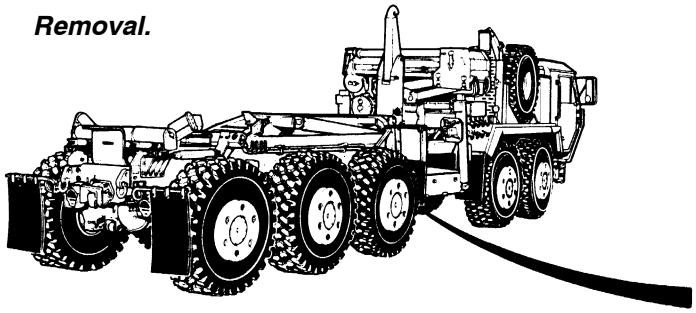
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Cap, Vise Jaw (Item 9, Appendix G)
Vise, Machinist's (Item 75, Appendix G)
Wrench, Combination 1-1/8 in. (Item 79, Appendix G)

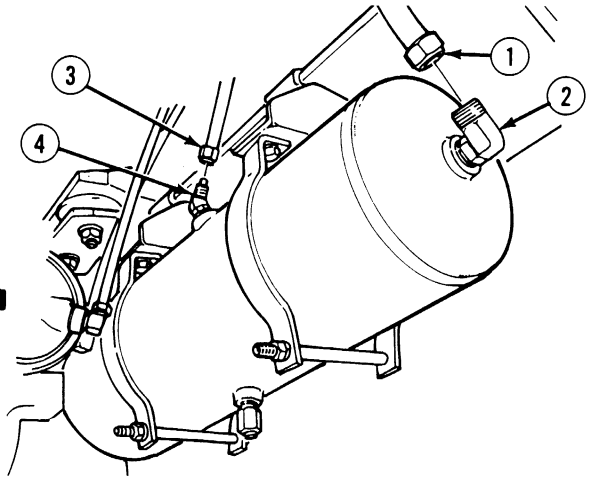
Materials/Parts
Sealing Compound (Item 77, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 91, Appendix F)
Locknut (2) (Item 140, Appendix F)
Lockwasher (4) (Item 169, Appendix F)

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)

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.

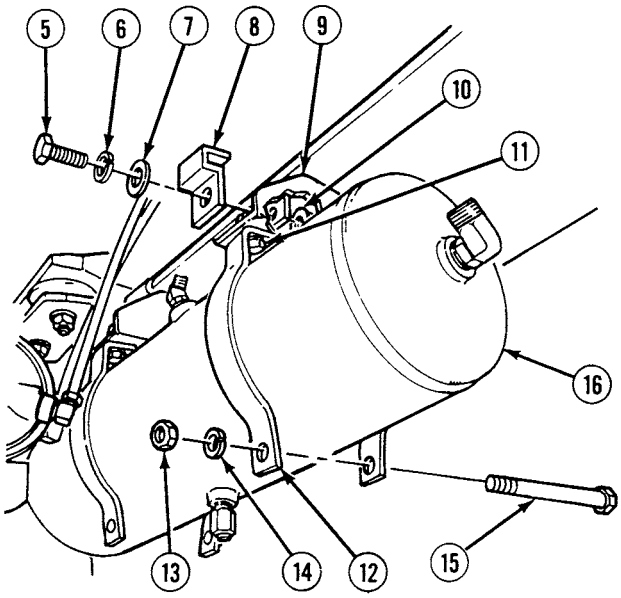
NOTE

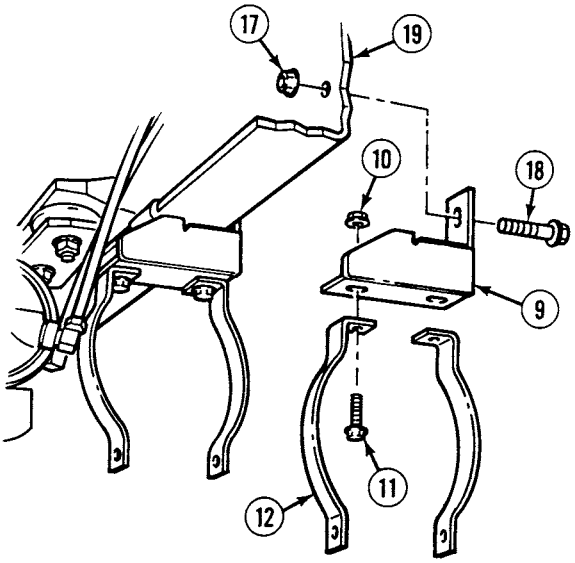
Note position of air reservoir prior to removal.

(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.

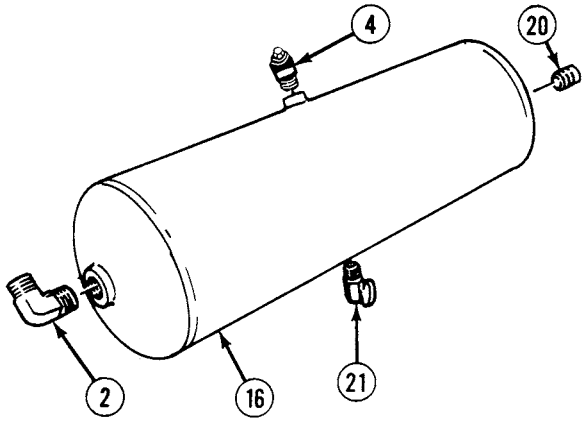




12-30. AIR RESERVOIR NO. 4 REPLACEMENT (CONT).

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).

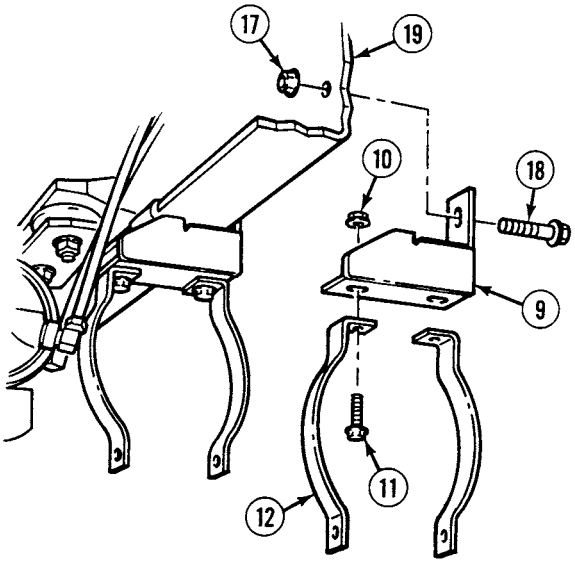
(8) Apply sealing compound to threads of pipe plug (20).

(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).

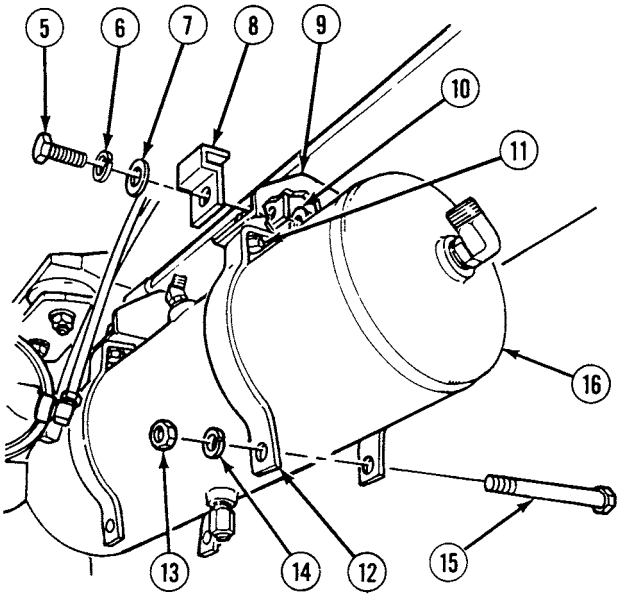
NOTE

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).

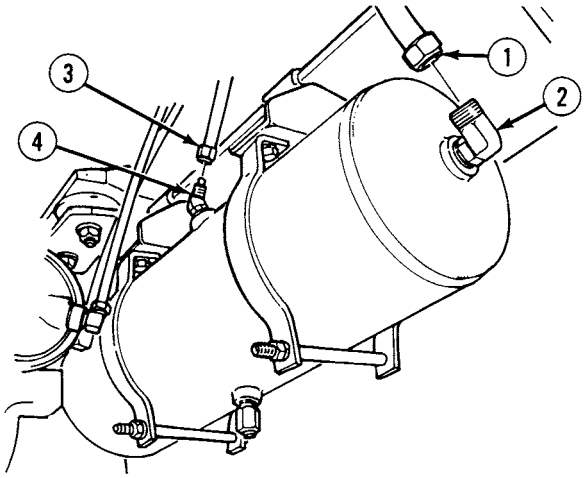
(16) Install two mounting clips (8), washers (7), lockwashers (6) and screws (5) on air reservoir brackets (9).



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)

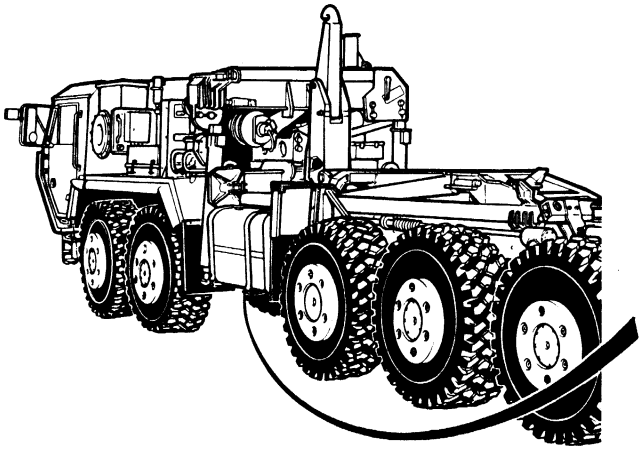
Materials/Parts
Sealing Compound (Item 77, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 91, Appendix F)

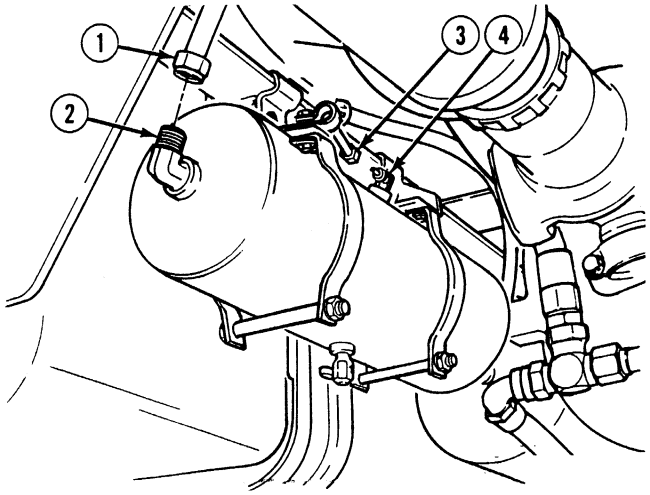
Materials/Parts - Continued
Locknut (2) (Item 133, Appendix F)
Locknut (Item 140, Appendix F)
Lockwasher (4) (Item 169, Appendix F)

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.

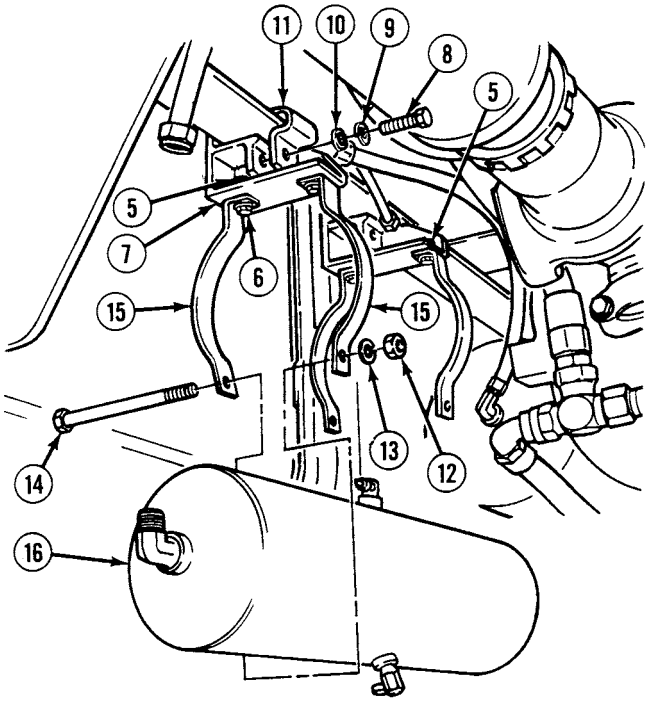
(1) Remove air line 2794 (1) from elbow (2).

(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

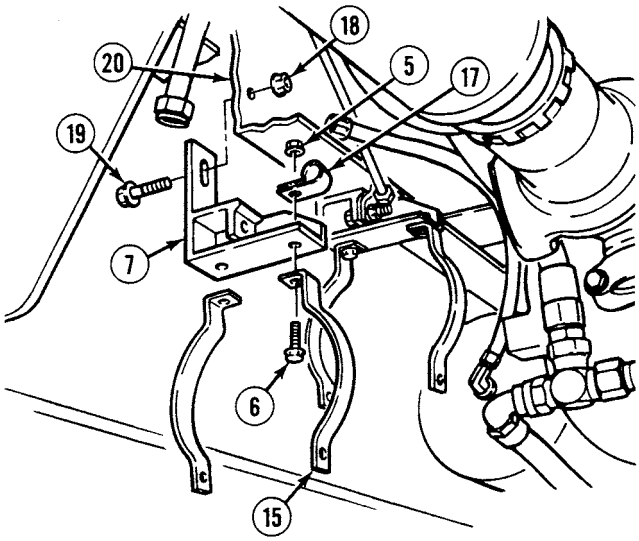
Note position of air reservoir prior to removal.

(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).

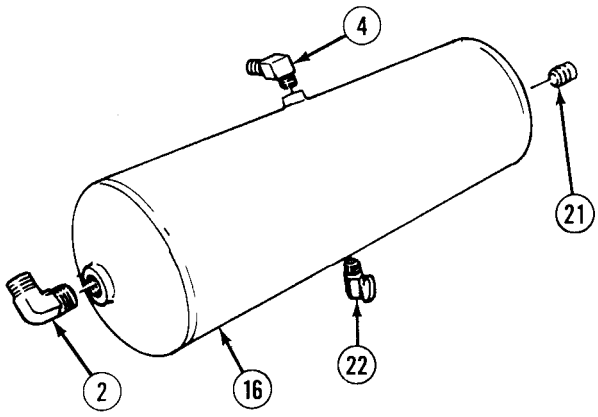
(7) Remove four locknuts (5), screws (6), cushion clamp (17) and four air reservoir mounting brackets (15) from two air reservoir brackets (7). Discard locknuts.

(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.

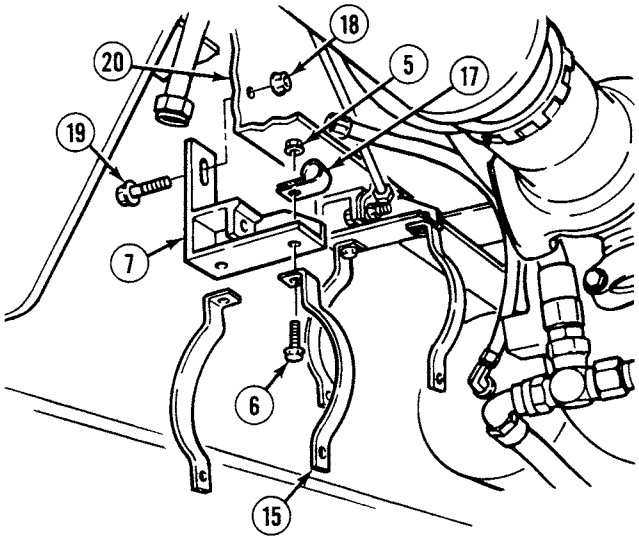
12-31. AIR RESERVOIR NO. 5 REPLACEMENT (CONT).

(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).

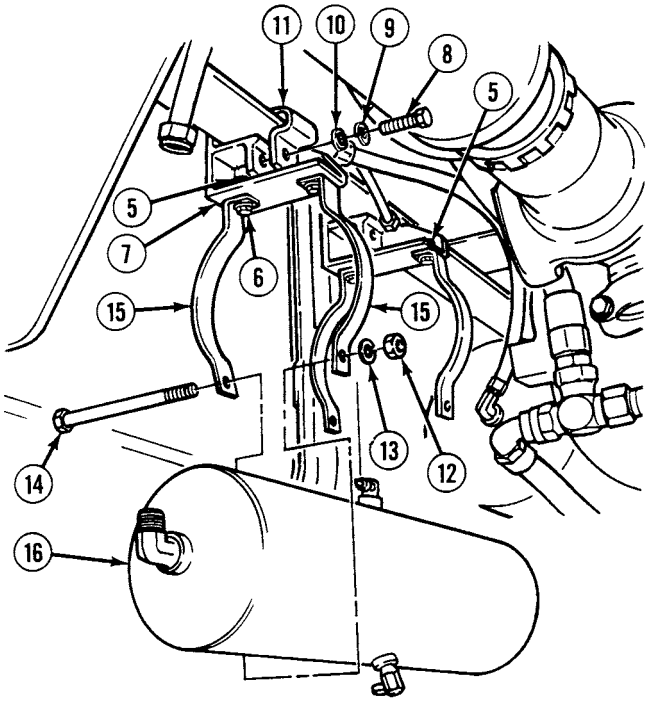
NOTE

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.

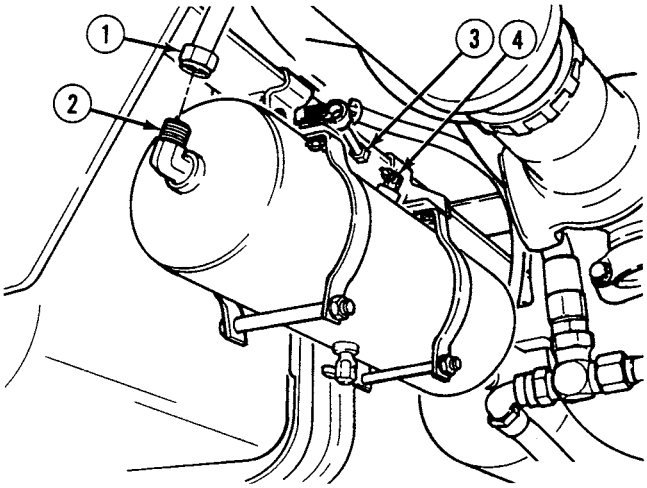
(15) Tighten two nuts (12) and screws (14) on brackets (15).

(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

12-32. FRONT GLADHAND BRACKET REPLACEMENT.

This task covers:

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

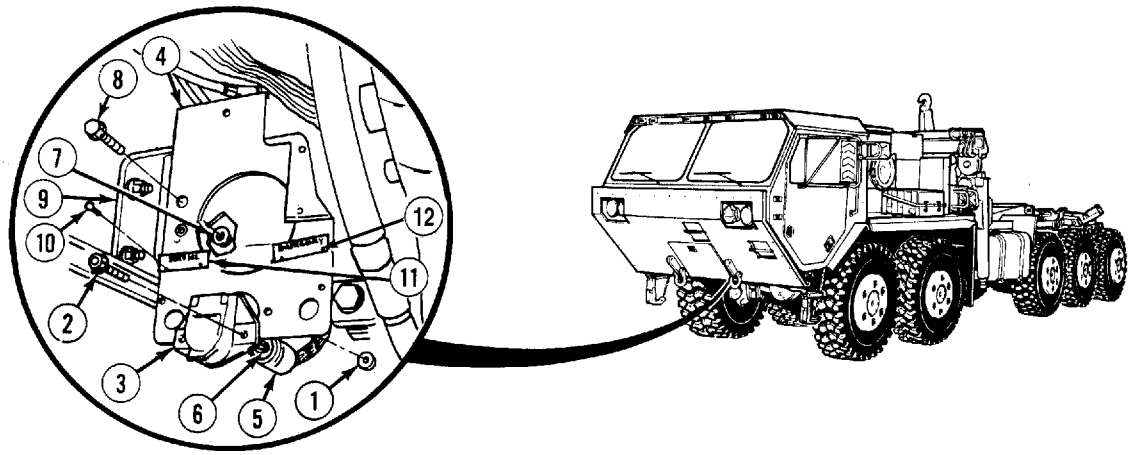
INITIAL SETUP

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

Materials/Parts
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 107, Appendix F)
Locknut (2) (Item 133, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Gladhands removed, (Para 12-43)
Front double check valves removed, (Para 12-11)

a. Removal.



(1) Remove two locknuts (1) and screws (2) from connector (3) and front gladhand bracket (4). Discard locknuts.

(2) Slide back rubber boot (5) and remove connector wires (6) from slot in front gladhand bracket (4).

NOTE

If truck is equipped with an arctic kit (Model A), mark installed position of arctic pump bracket before performing Step (3).

(3) Remove four locknuts (7), screws (8) and front gladhand bracket (4) from front crossmember (9). Discard locknuts.

NOTE

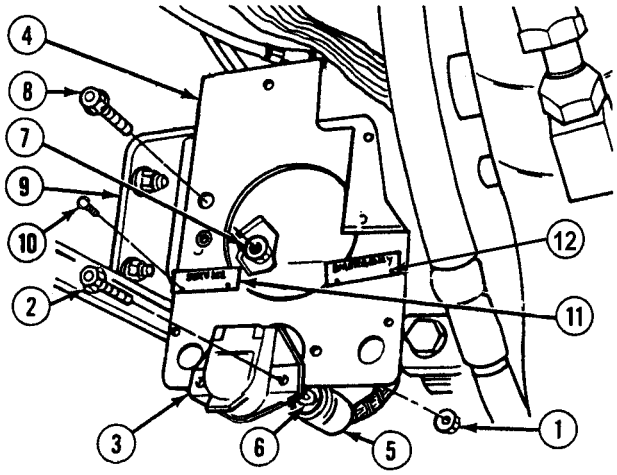
Perform Step (4) if name plates are damaged.

(4) Remove four drive screws (10) and nameplates (11) and (12) from front gladhand bracket (4). Discard drive screws.

b. Installation.

NOTE

If truck is equipped with an arctic kit (Model A), 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 nameplates (12) and (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

12-33. LOAD SENSING VALVE REPLACEMENT.

This task covers:

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

INITIAL SETUP

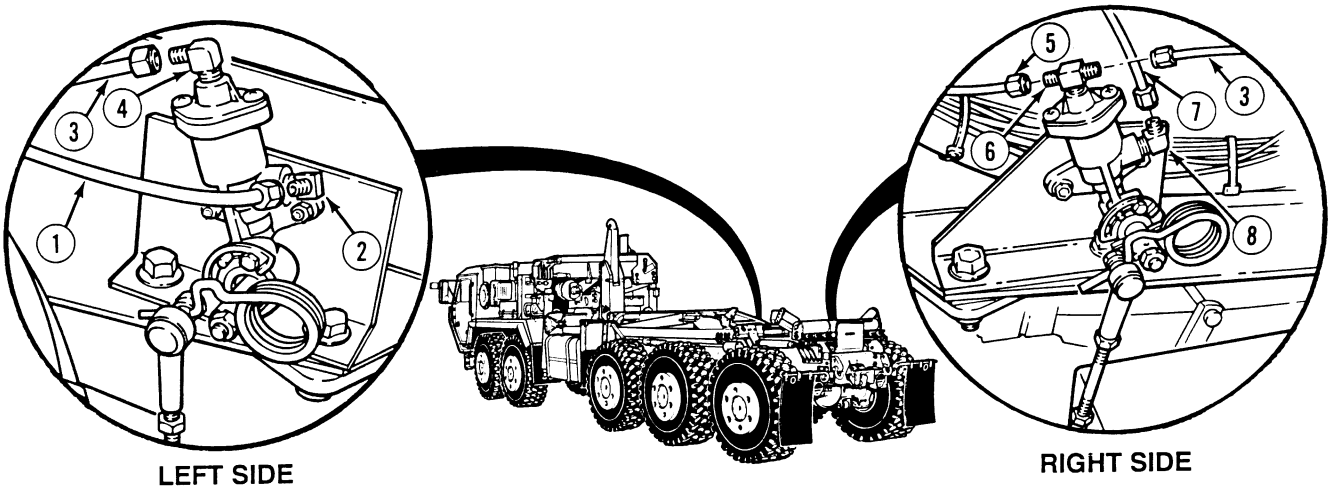
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 60 N•m) (Item 98, Appendix G)

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)
Lockwasher (2) (Item 180, 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 hoses prior to removal.
- Perform Steps (1) and (2) if removing left side load sensing valve.
- Perform Steps (3) and (4) if removing right side load sensing valve.

(1) Disconnect air line 2375 (1) from elbow (2).

(2) Disconnect air line 2374 (3) from elbow (4).

(3) Disconnect air line 2374 (3) and air line 2044 (5) from tee (6).

(4) Disconnect air line 2376 (7) from elbow (8).

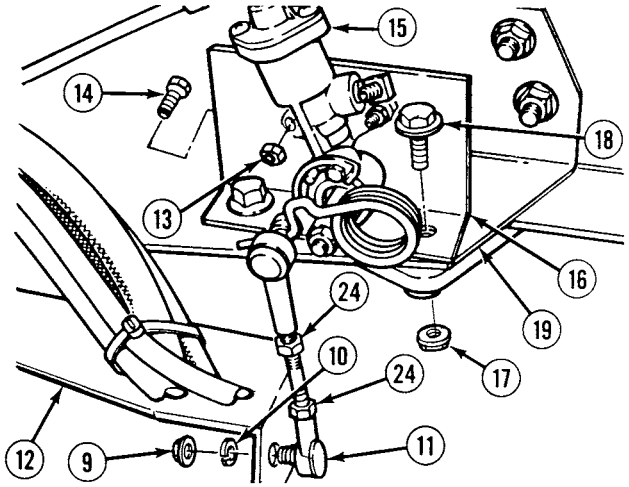
NOTE

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).

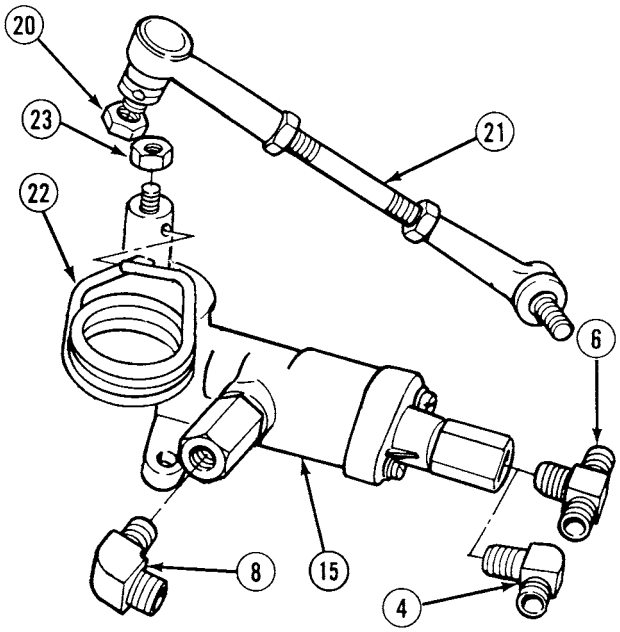
(9) Loosen jam nut (23) and remove control spring (22) from load sensing valve (15).

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).

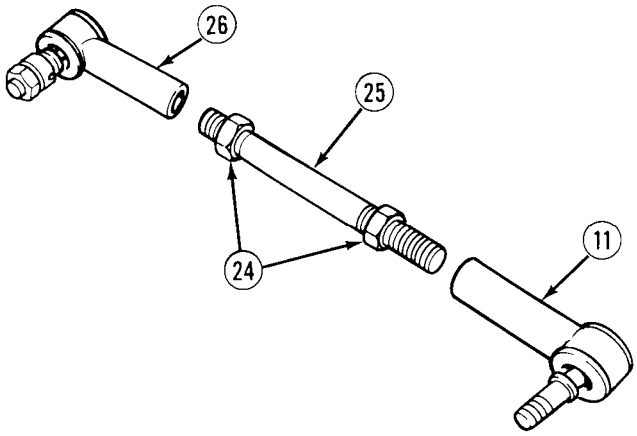
(11) Remove elbow (8) and tee (6) from load sensing valve (15).



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

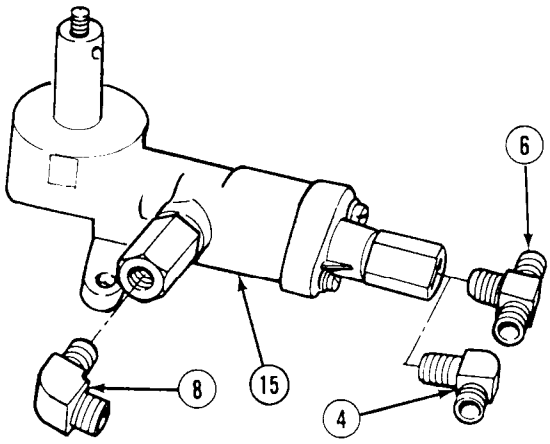
- Perform Steps (2) and (3) if left side load sensing valve was removed.
- Perform Steps (4) and (5) if right side load sensing valve was removed.
- Install elbows and tees in positions noted prior to removal.

(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).

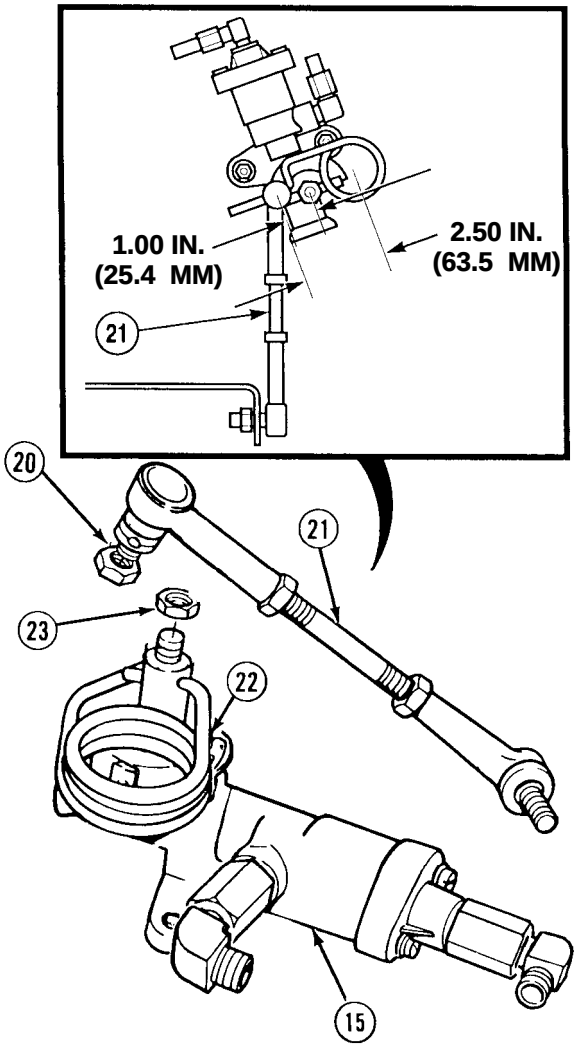


NOTE

- 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).

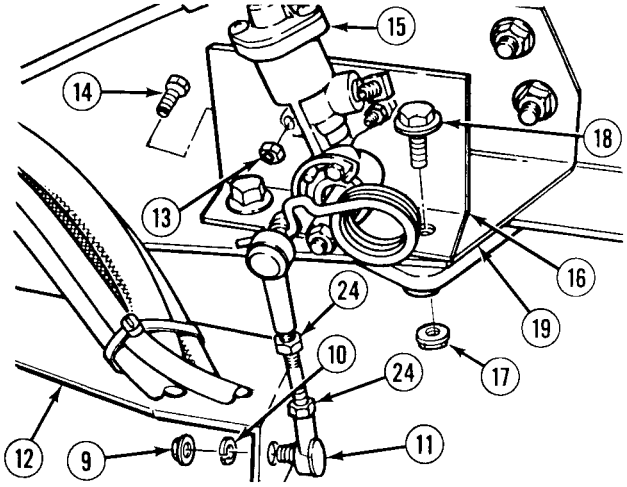
(7) Install load sensing valve bracket (16) on frame (19) with two screws (18) and locknuts (17).



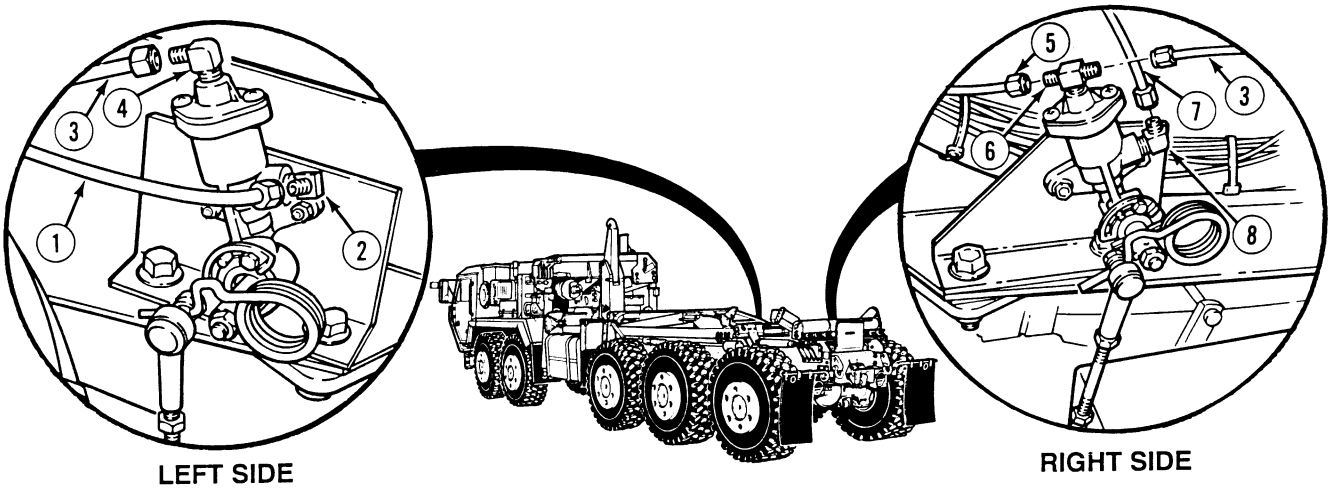
(8) Install load sensing valve (15) on load sensing valve bracket (16) with two screws (14) and locknuts (13).

(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
b. Height Control Adjustment (Right Side)
c. Height Control Adjustment (Left Side)
d. Follow-On Maintenance

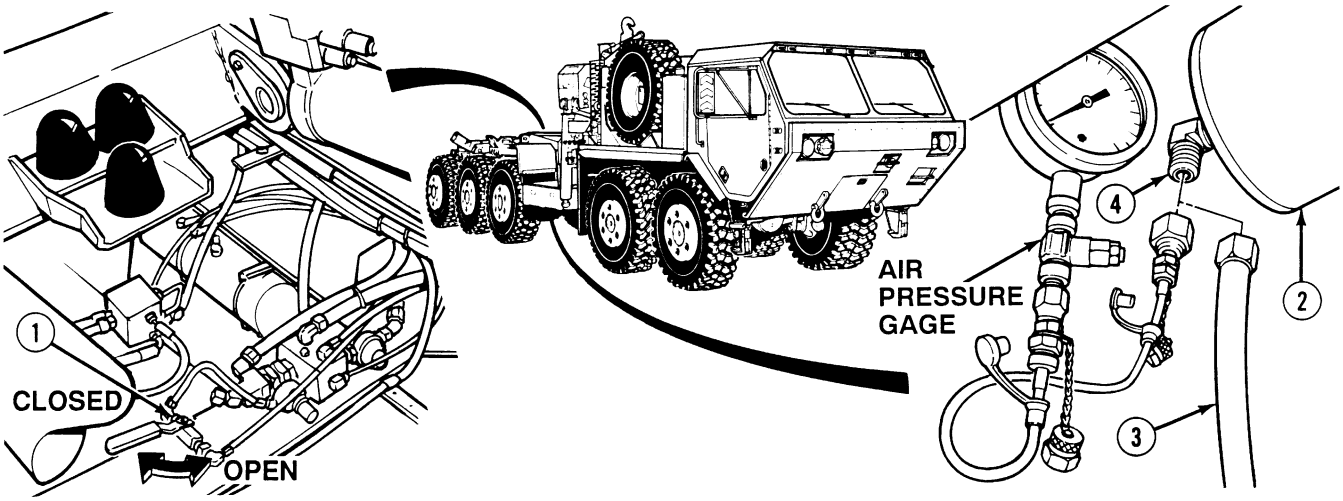
INITIAL SETUP

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 180, 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.



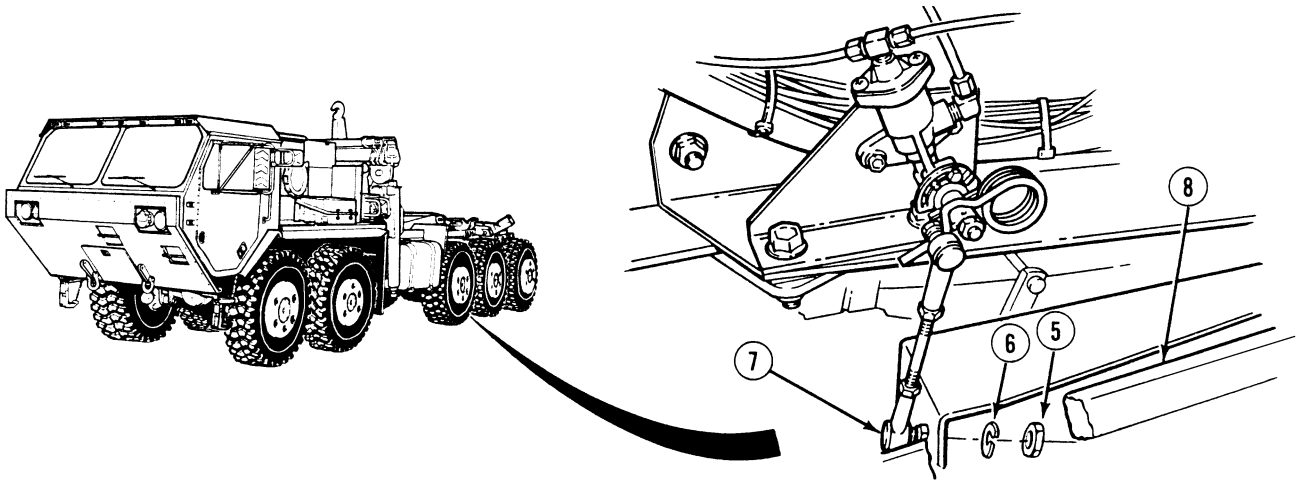
(1) Close ball valve (1).

(2) Drain air from air tank No. 4 (2).

(3) Disconnect air line 2793 (3) from elbow (4).

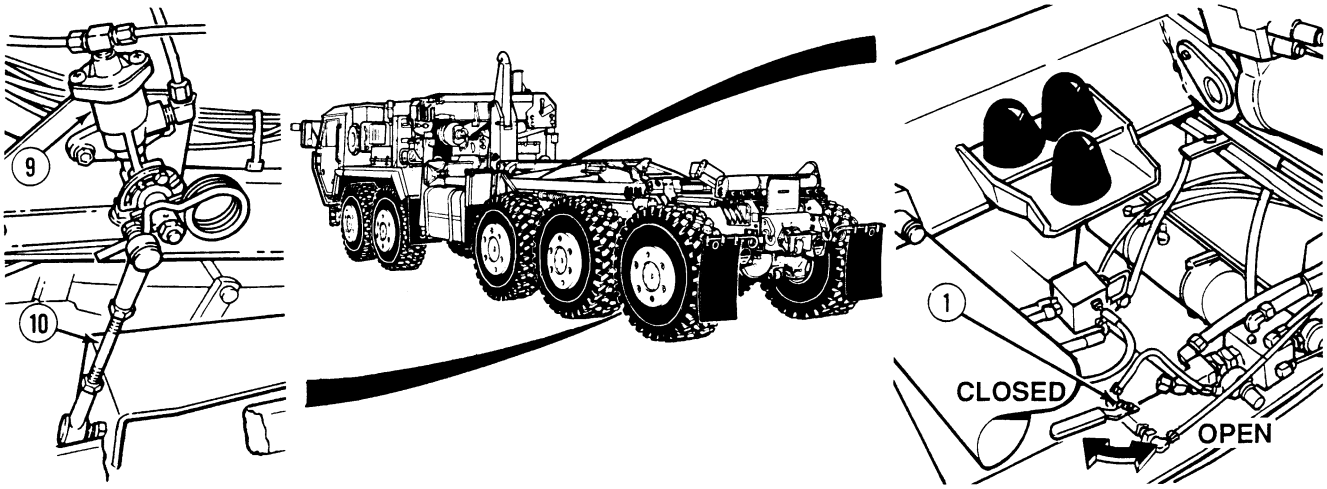
(4) Install air pressure gage on elbow (4).

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.

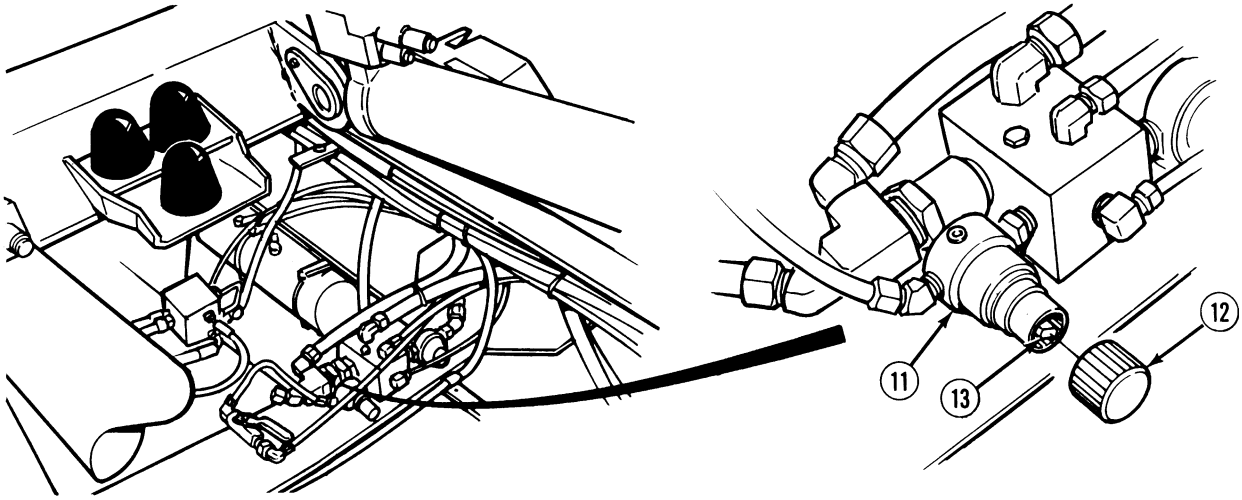
(6) Start engine, build air pressure to 110 psi (758 kPa).



(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.

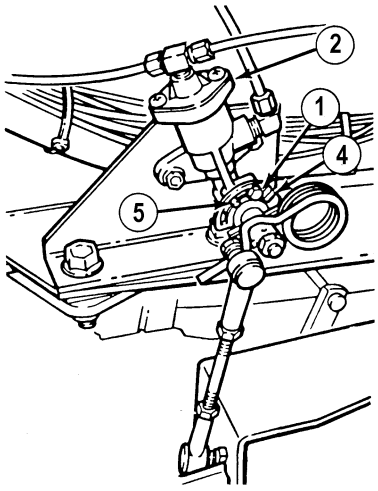


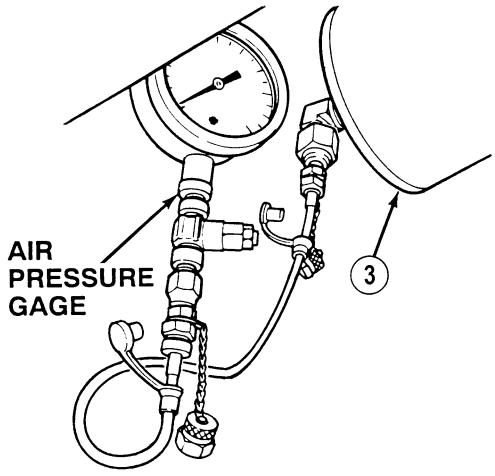
NOTE

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).



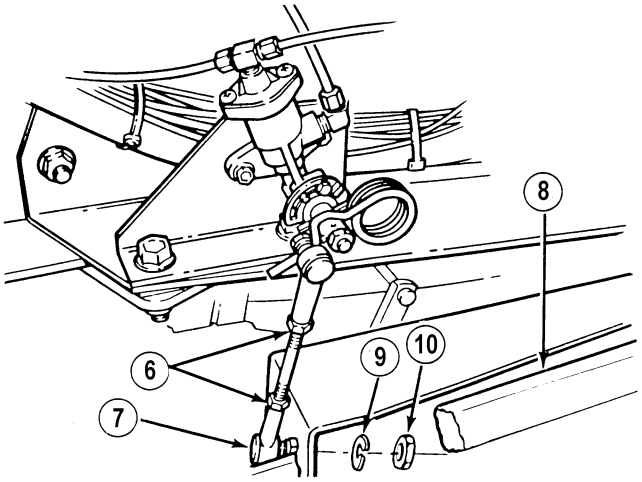


(1) Start engine and build air pressure to 110 psi (758 kPa).

(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) ± 2 psi (± 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).

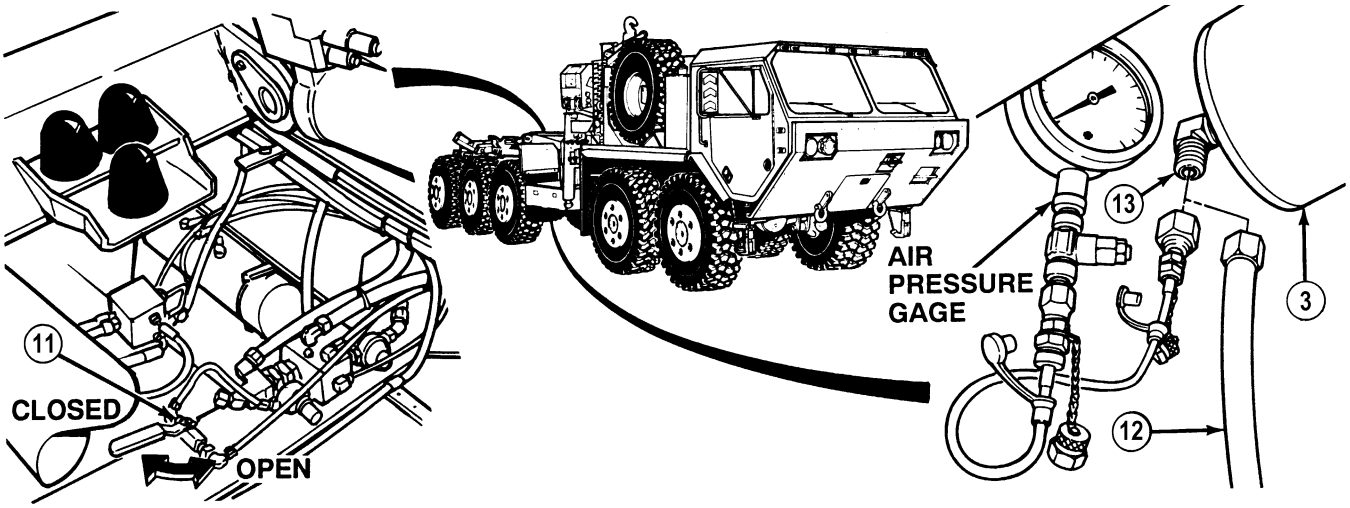
12-34. LOAD SENSING VALVE ADJUSTMENTS (CONT).



(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).

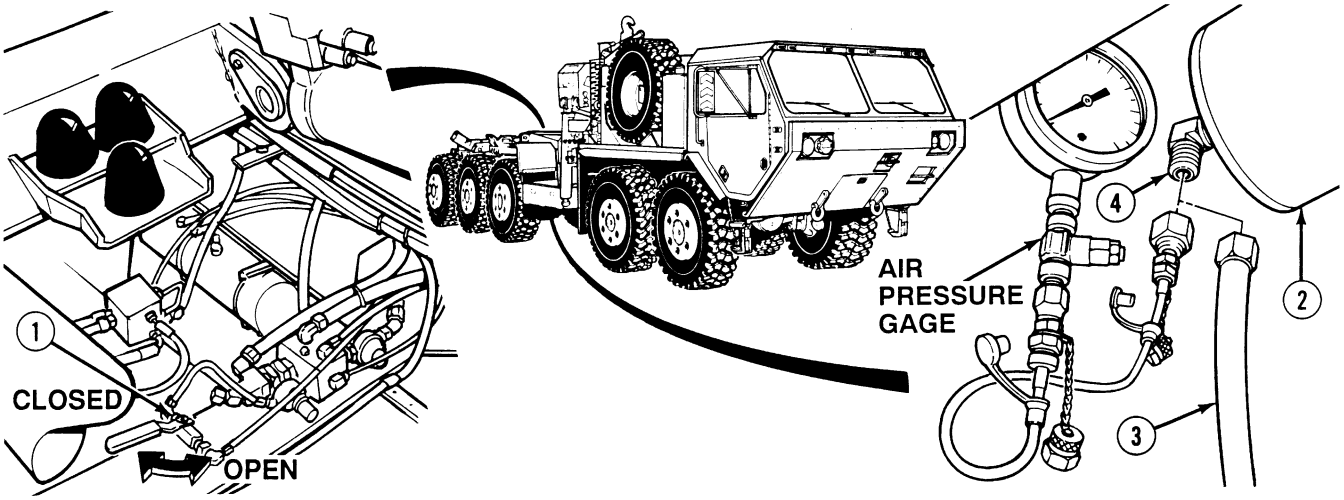
(11) Connect air line 2793 (12) to elbow (13).

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).

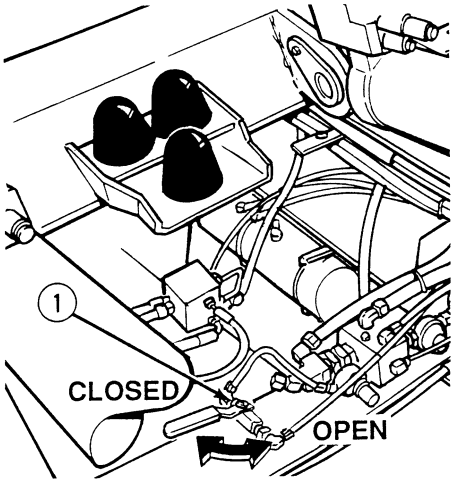
(3) Disconnect air line 2794 (3) from elbow (4).

(4) Install air pressure gage on elbow (4).

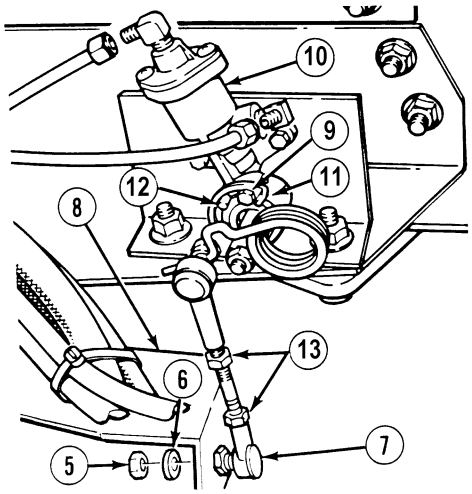
(5) Start engine and build air pressure to 110 psi (758 kPa).

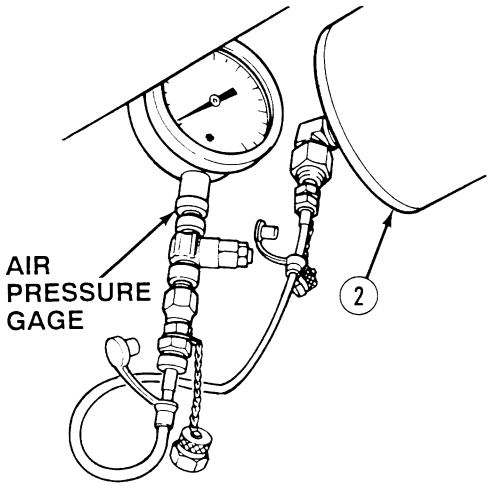
(6) Move ball valve (1) to open position.

(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.

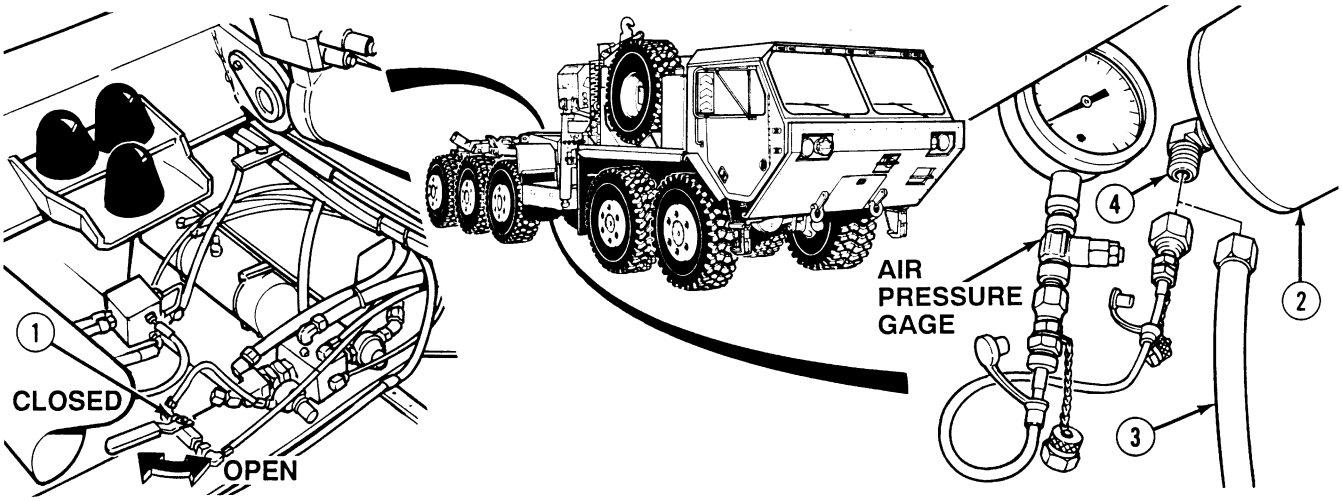
(9) Loosen low pressure limit capscrew (9) and adjust the load sensing valve (10) until the pressure gage assembly connected to air tank No. 5 (2) reads 31 psi (214 kPa) ± 2 psi (14 ± kPa).

(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

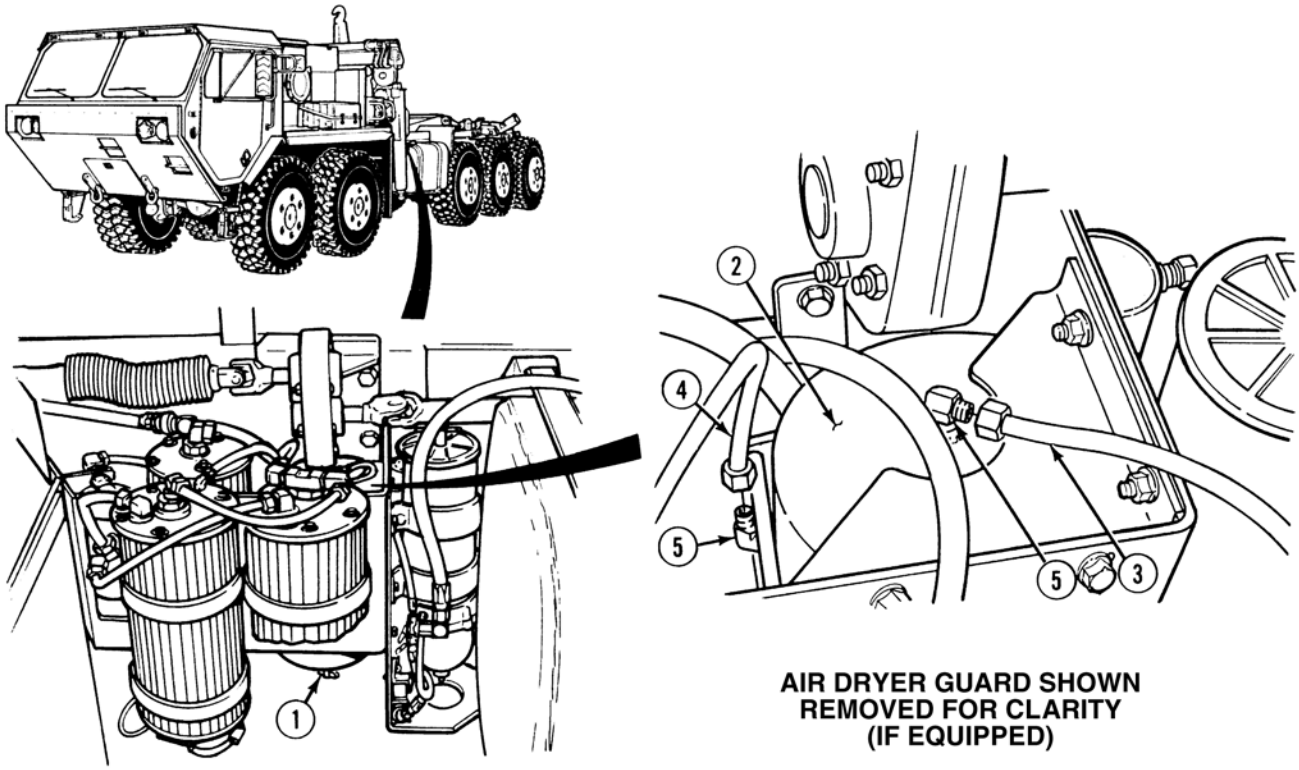
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

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.



AIR DRYER GUARD SHOWN REMOVED FOR CLARITY (IF EQUIPPED)

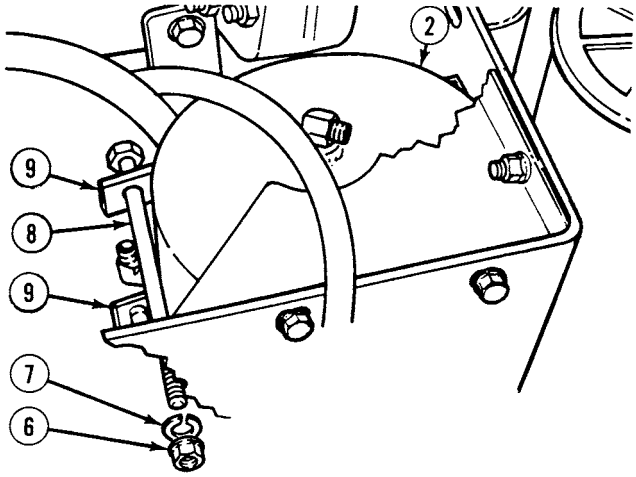
(1) Open drain valve (1) and drain air from air reservoir (2).

(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.

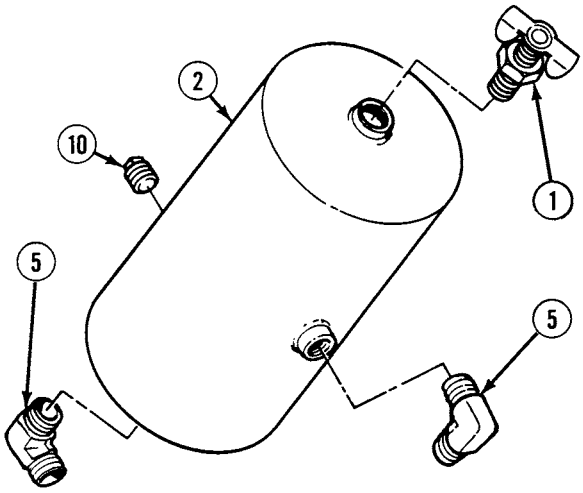
(3) With the aid of an assistant, remove two nuts (6), lockwashers (7), screws (8) and air reservoir (2) from two brackets (9). Discard lockwashers.



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

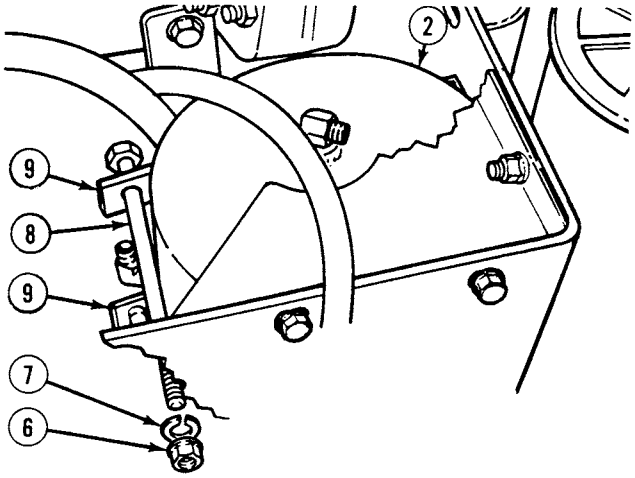
Install elbows, plug and drain valve as noted prior to removal.

(1) Apply sealing compound on threads of two elbows (5), drain valve (1) and plug (10).

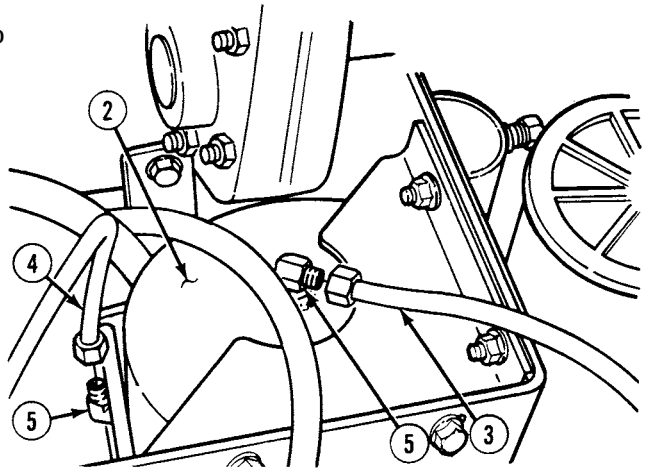
(2) Install two elbows (5), drain valve (1) and plug (10) on air reservoir (2).

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

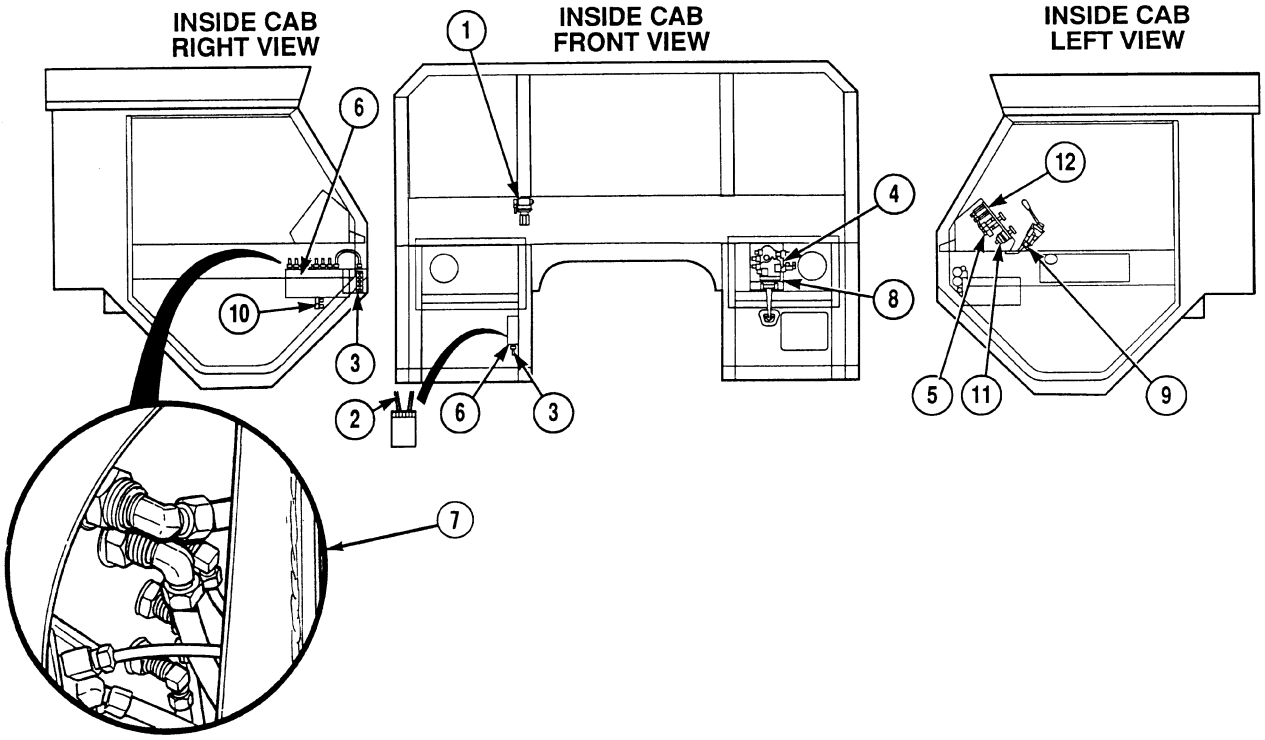
Equipment may be damaged by foreign matter if hoses, air lines, tubes, and connectors are not plugged and capped when removed.

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.

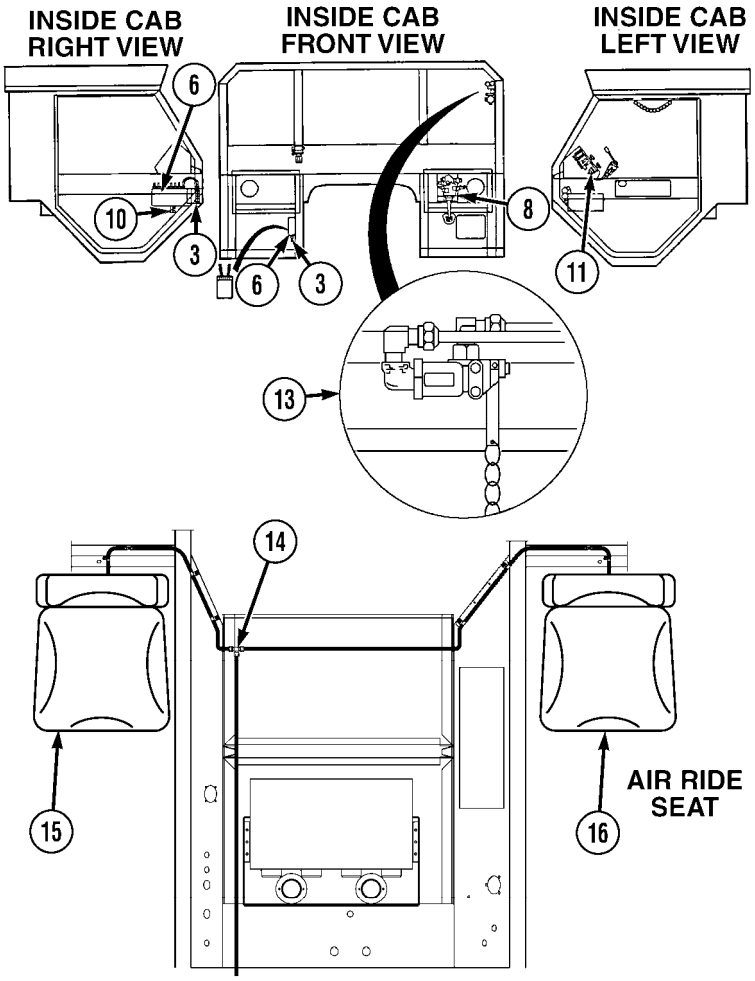
12-36. AIR LINE REPLACEMENT (CONT).

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.

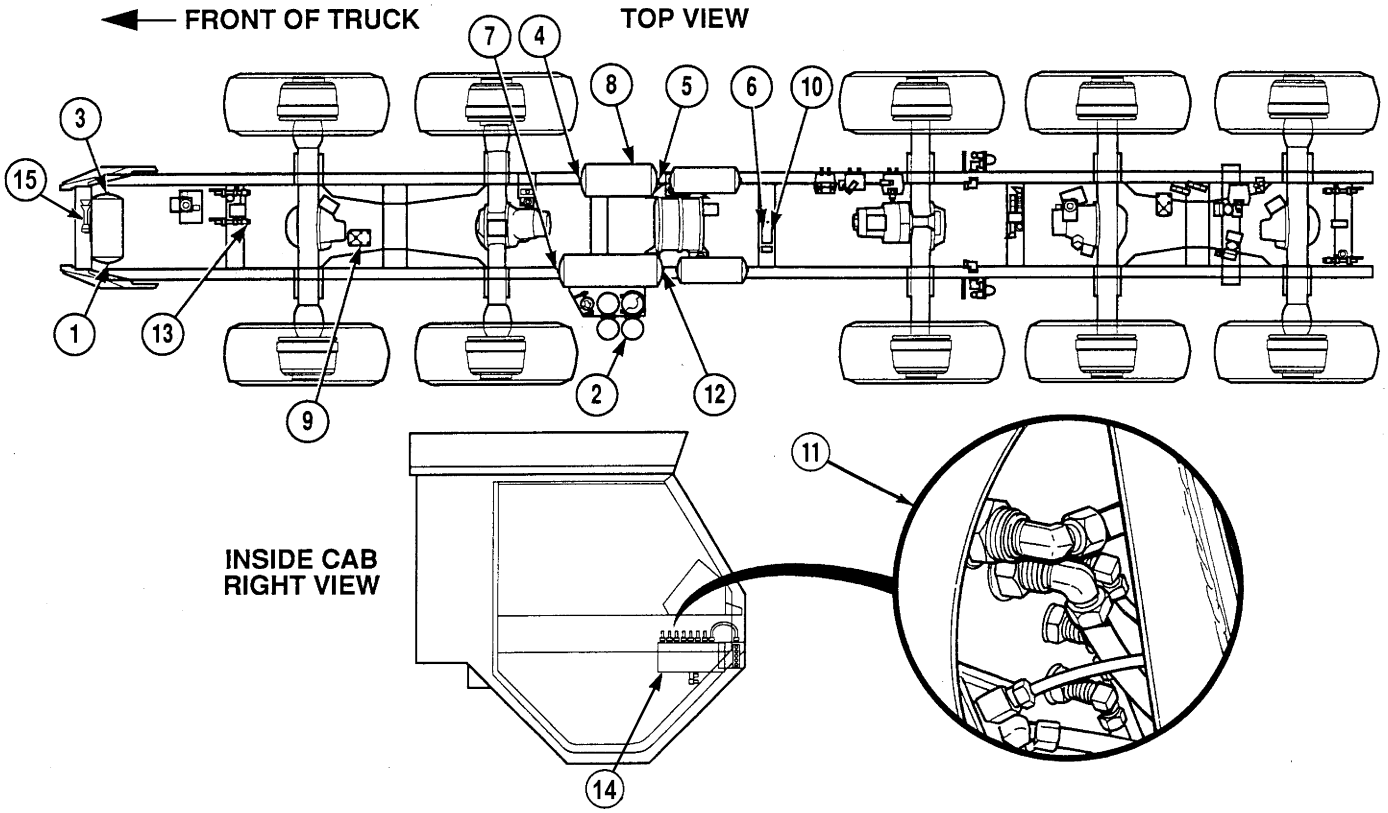


Hose No.	From	To
2619	Brake Treadle Valve - Back Center (8)	Bulkhead Fitting - 4th From Rear (7)
2005	Brake Treadle Valve - Back Top (8)	Bulkhead Fitting - Front (7)
2665	Air Manifold - 5th From Rear (6)	Brake Treadle Valve - Right Top (8)
2623	Air Manifold - 7th From Rear (6)	Brake Treadle Valve - Right 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)
*2039	Solenoid Valve - Bottom (3)	Air Horn Valve - Rear (13)
*2039	Air Horn Valve - Top (13)	Air Manifold - Bottom front (6)
2041	Solenoid Valve - Bottom (3)	Tee Rear (14)
2041A	Tee Rear (14)	Passenger Seat (15)
2041B	Tee Rear (14)	Driver Seat (16)

*If Equipped With Air Horn

12-36. AIR LINE REPLACEMENT (CONT).

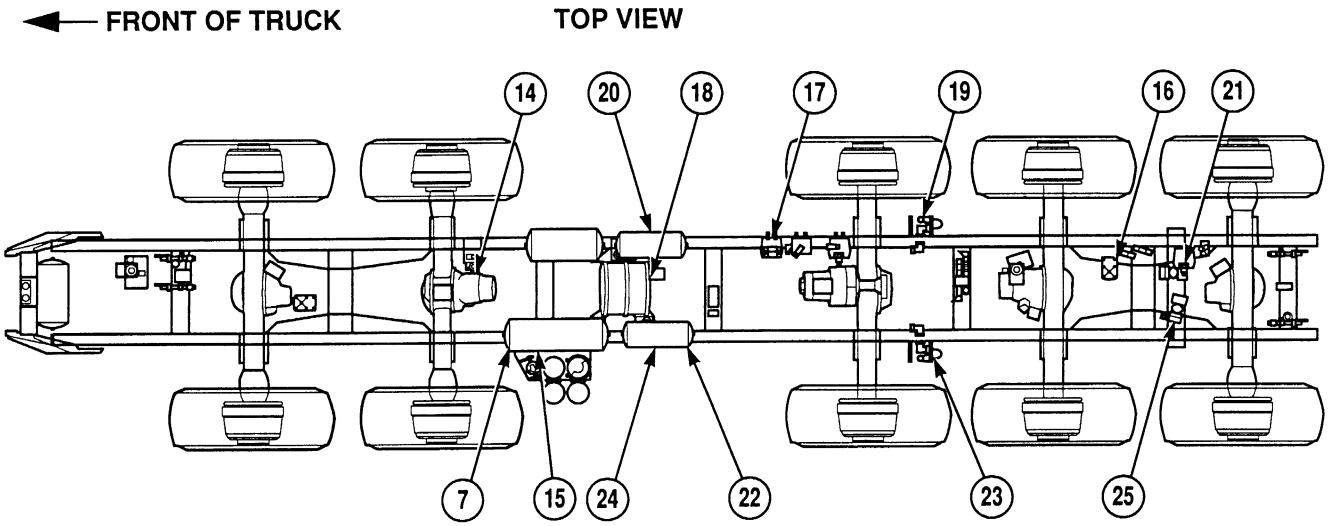
Table 12-4. Chassis Air Lines Replacement



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.

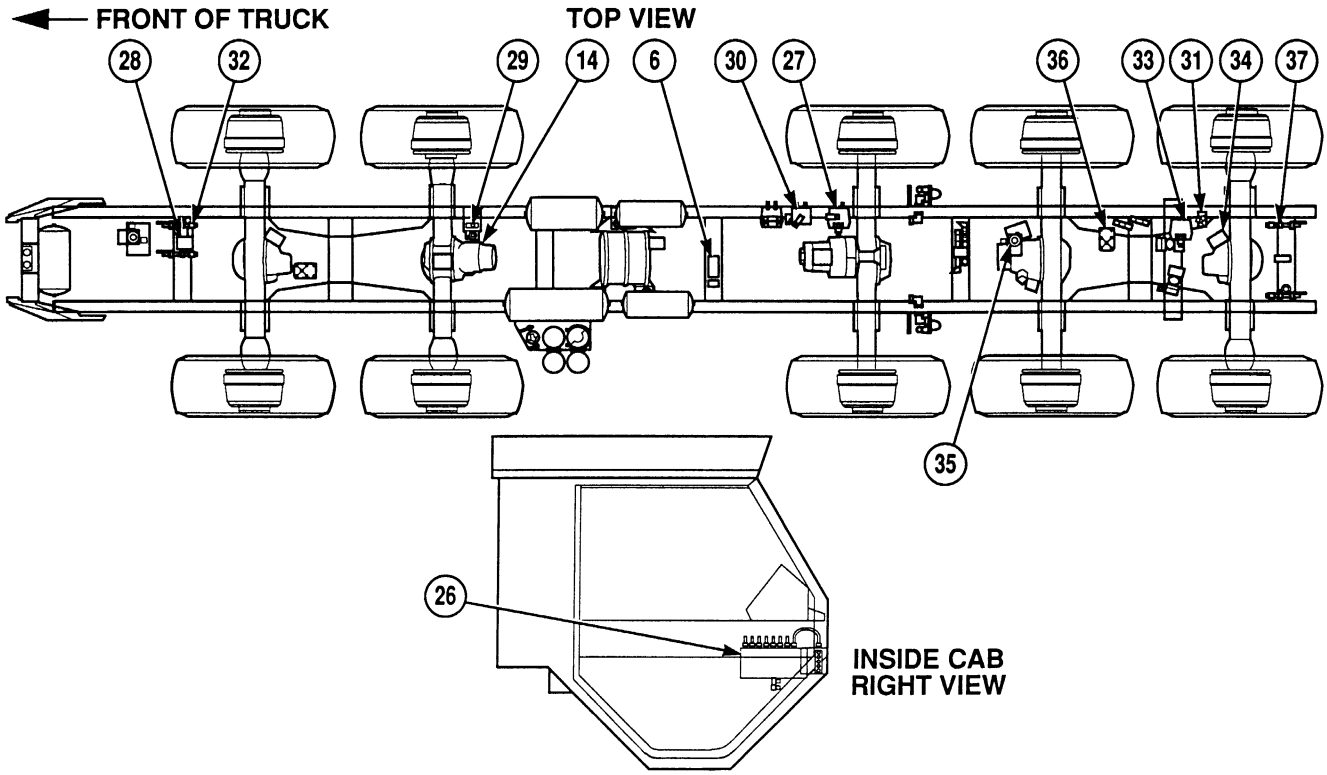


Hose No.	From	To
2621	Air Reservoir No. 3 - 2nd From Front (7)	Spring Brake Valve - Left Front (14)
***2624	Spring Brake Valve Tee – Upper Bottom Right (14)	Service Relay Valve No. 2 Tee - Left Front (17)
2014	Air Reservoir No. 3 - Top Back (15)	Service Relay Valve No. 3 - Left (16)
***2637	Service Relay Valve No. 3 - Left (16)	Service Relay Valve No. 2 Tee - Left Rear (17)
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)

*** If Equipped with Double Check Service Relay Valve

12-36. AIR LINE REPLACEMENT (CONT).

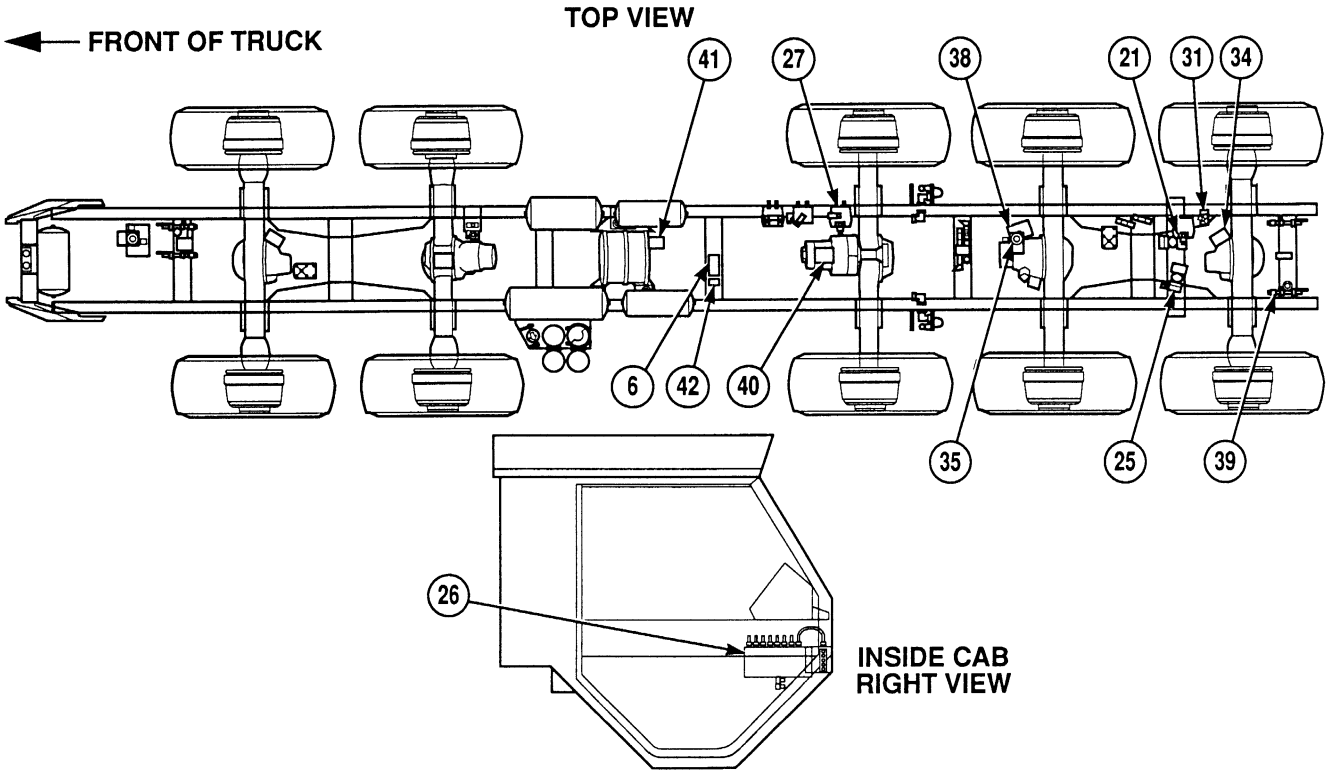
Table 12-4. Chassis Air Lines Replacement - CONT.



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)
***2623	Cab Air Manifold - 2nd From Front, Middle (26)	Double Check Valve - Right Front (28)
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)

*** If Equipped with Double Check Service Relay Valve

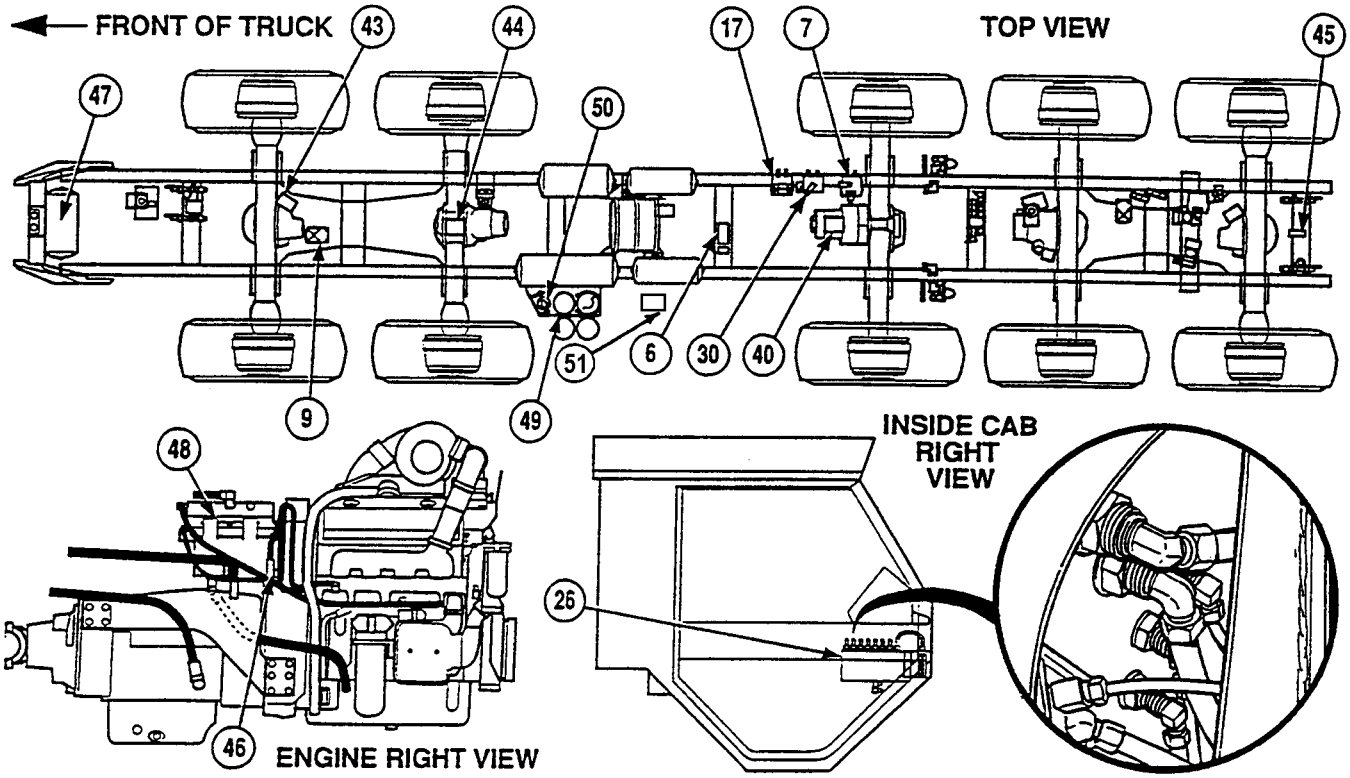
Table 12-4. Chassis Air Lines Replacement - CONT.



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).

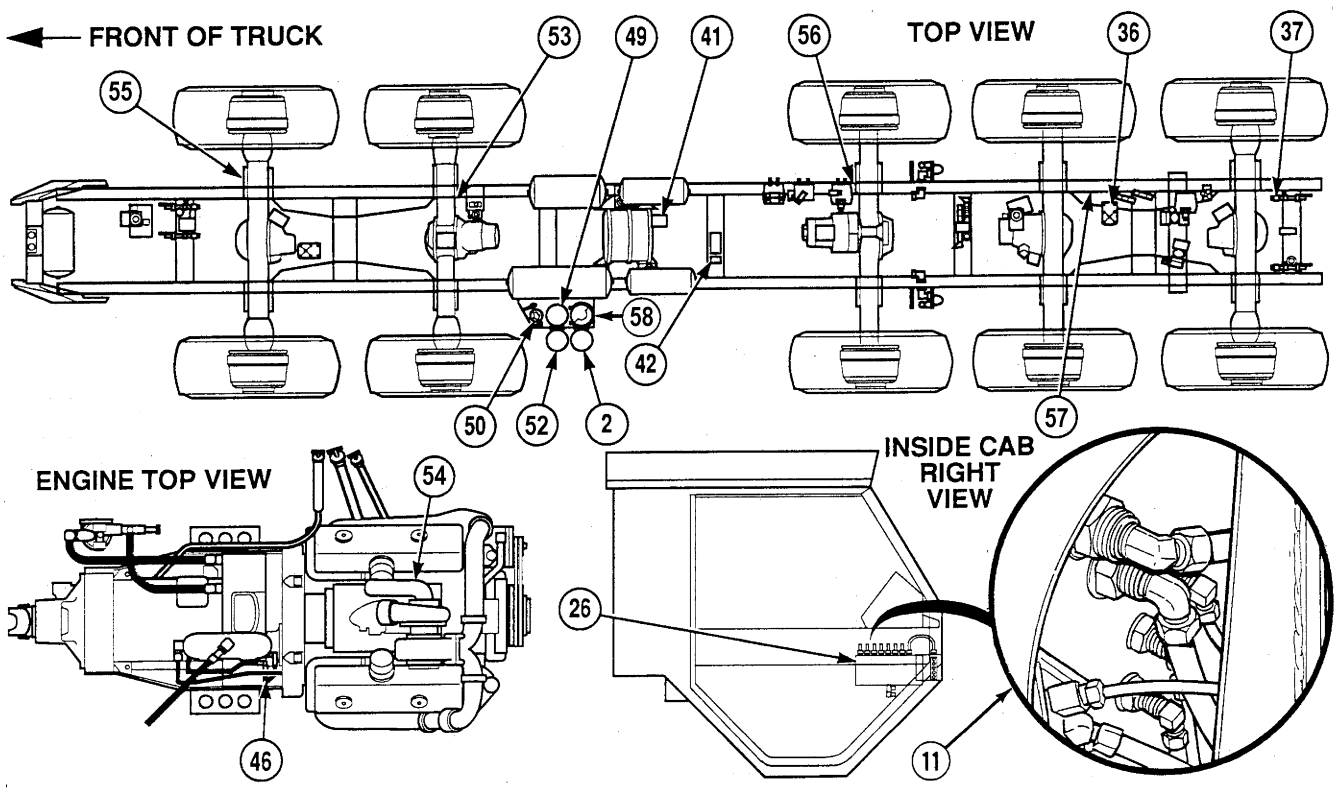
Table 12-4. Chassis Air Lines Replacement - CONT.



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

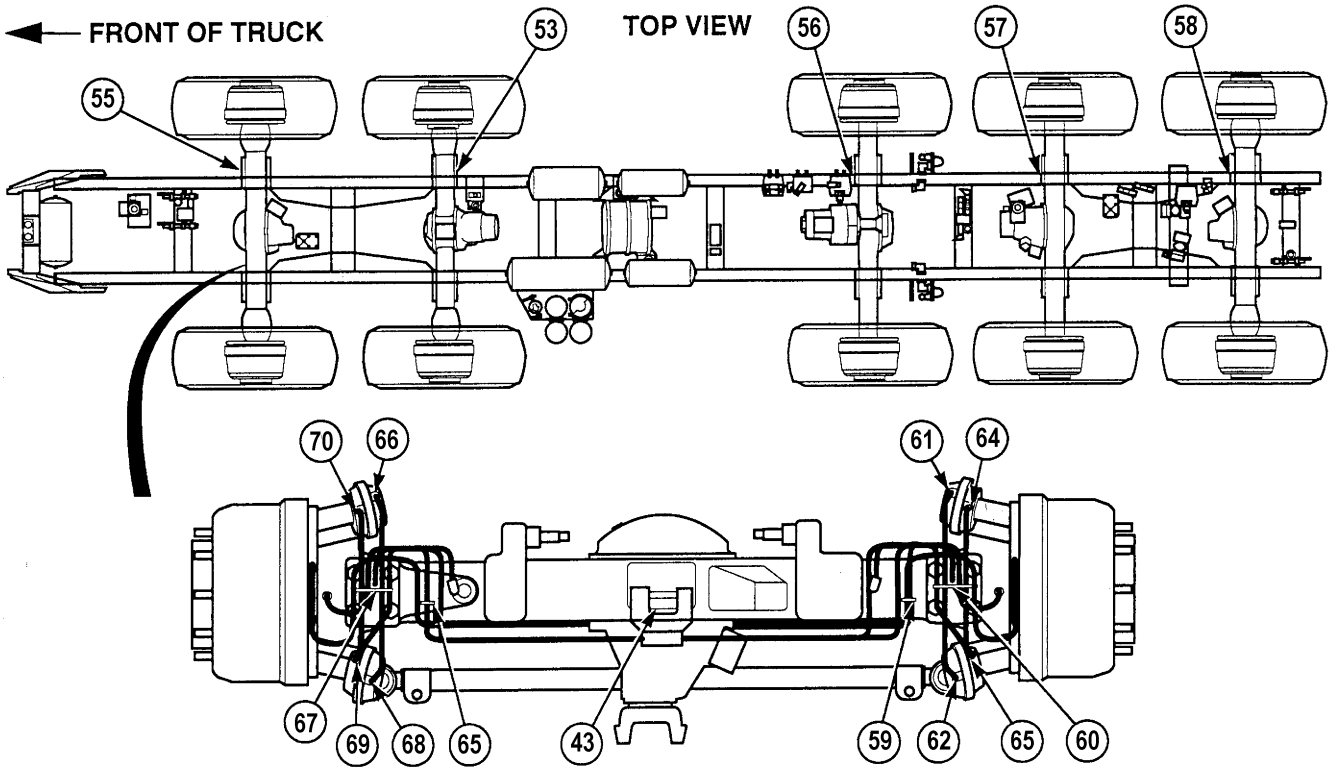
Table 12-4. Chassis Air Lines Replacement - CONT.



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)

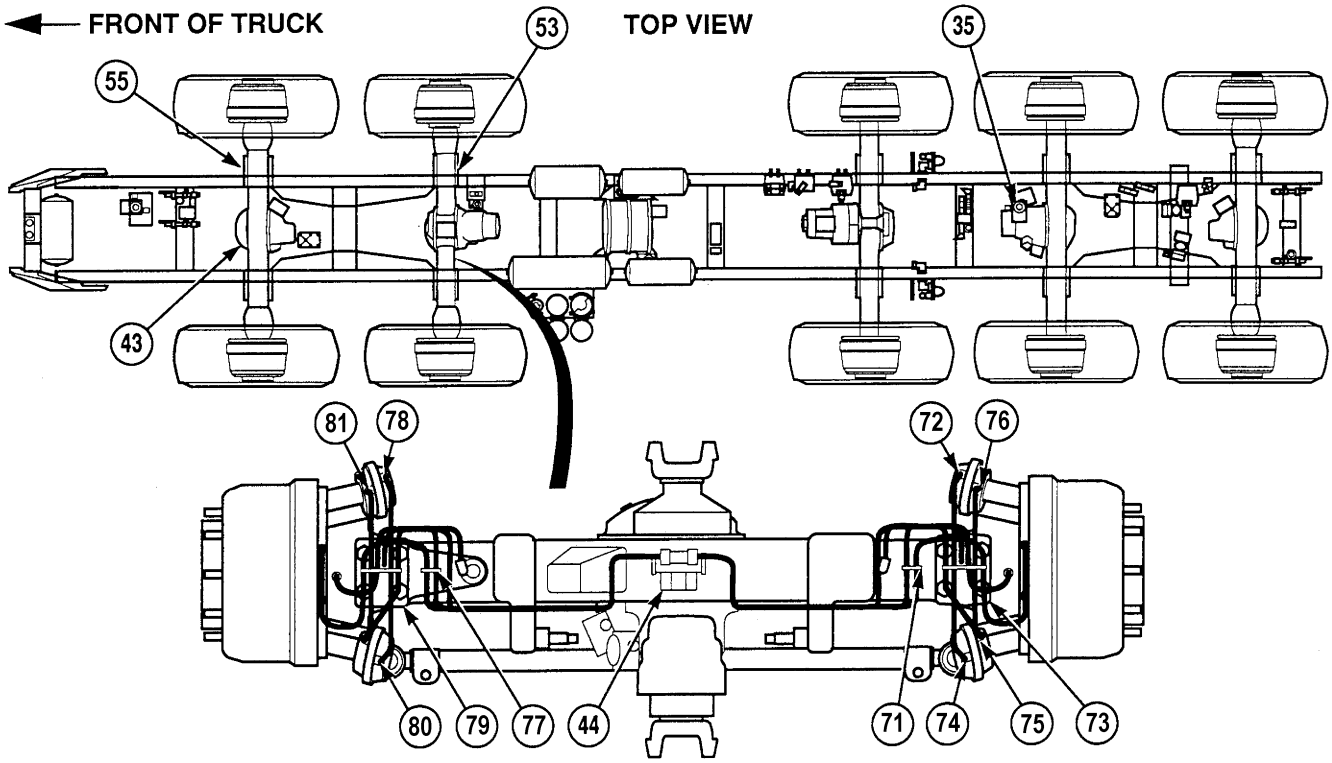
12-36. AIR LINE REPLACEMENT (CONT).

Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2412	Tee - Front, Right Frame Above Axle No. 1 (55)	Tee - Front, Left Frame Above Axle No. 2 (53)
2412	Tee - Rear, Left Frame Above Axle No. 2 (53)	Tee - Rear, Left Frame Above Axle No. 3 (56)
2412	Tee - Rear, Left Frame Above Axle No. 3 (56)	Tee - Rear, Left Frame Above Axle No. 4 (57)
2412	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)

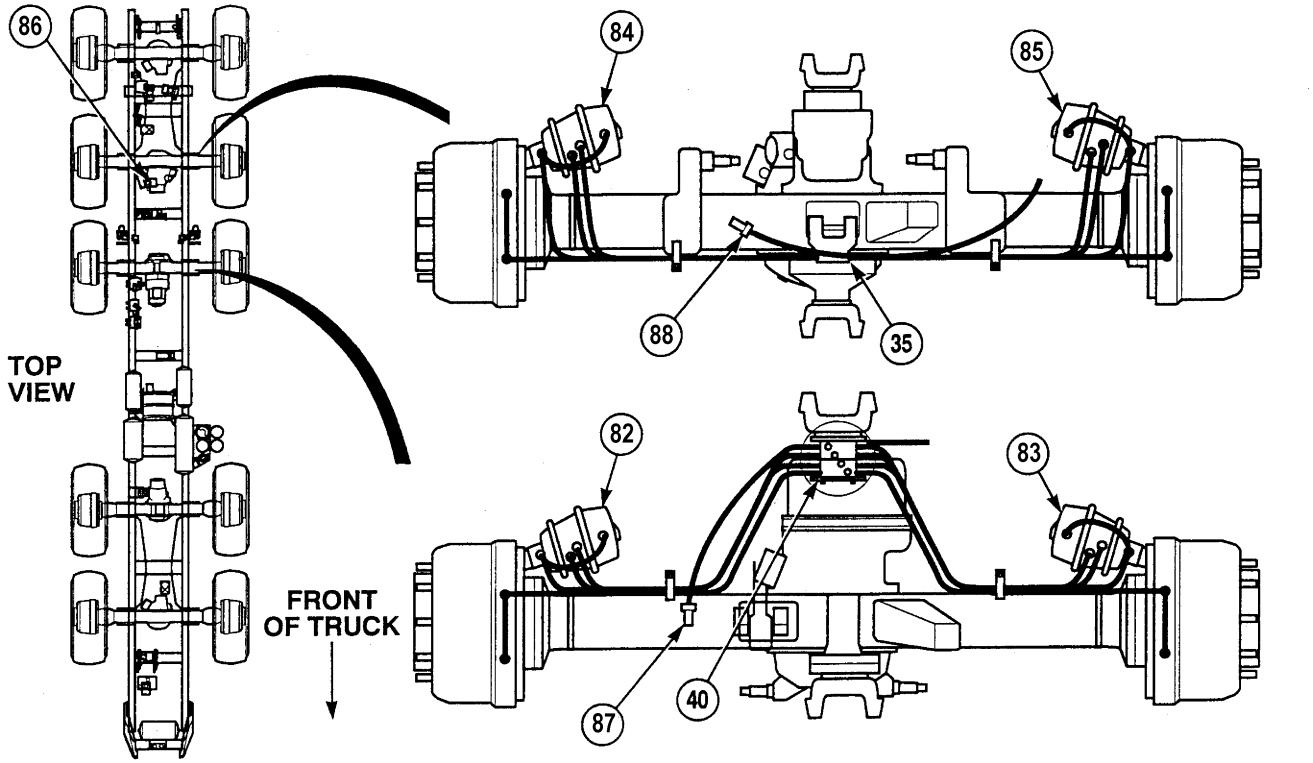
Table 12-4. Chassis Air Lines Replacement - CONT.



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)

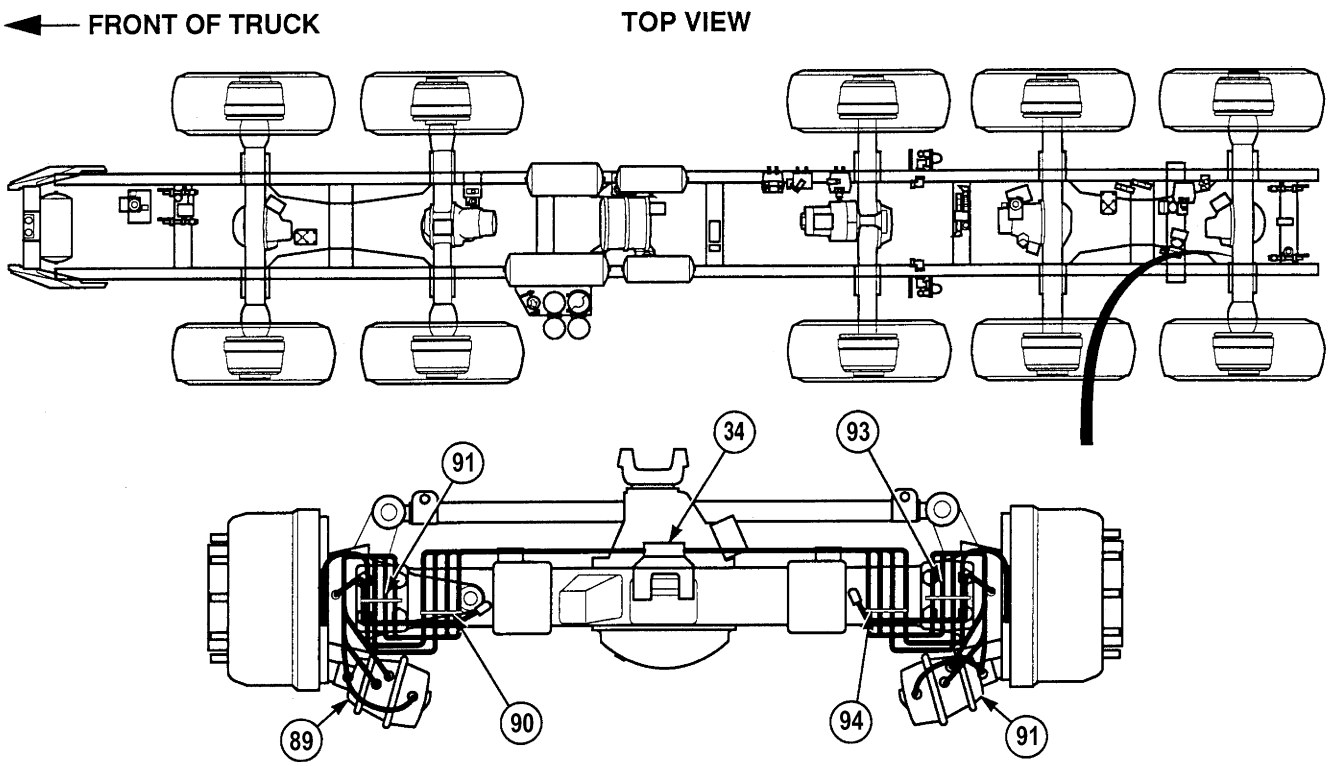
12-36. AIR LINE REPLACEMENT (CONT).

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)

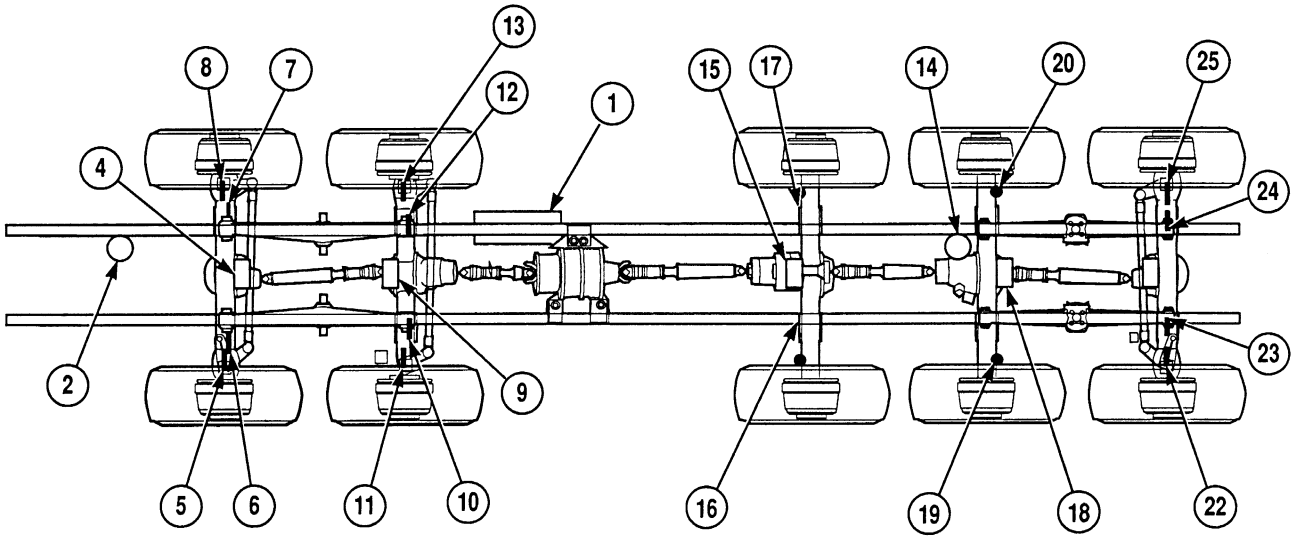
Table 12-4. Chassis Air Lines Replacement - CONT.



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).

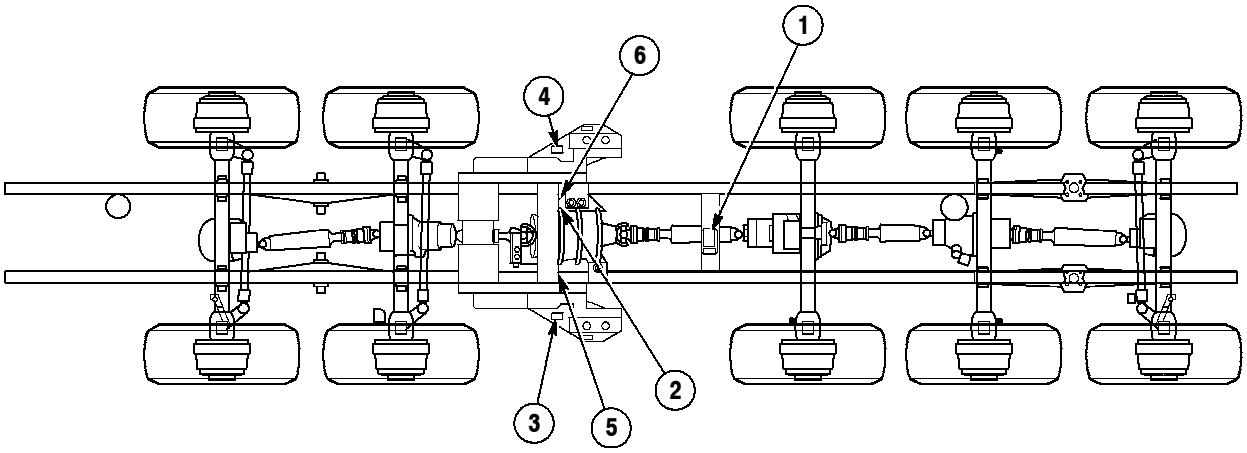
Table 12-5. CTIS Air Lines Replacement



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

12-37. DASH MANIFOLD VALVE REPLACEMENT.

This task covers:

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

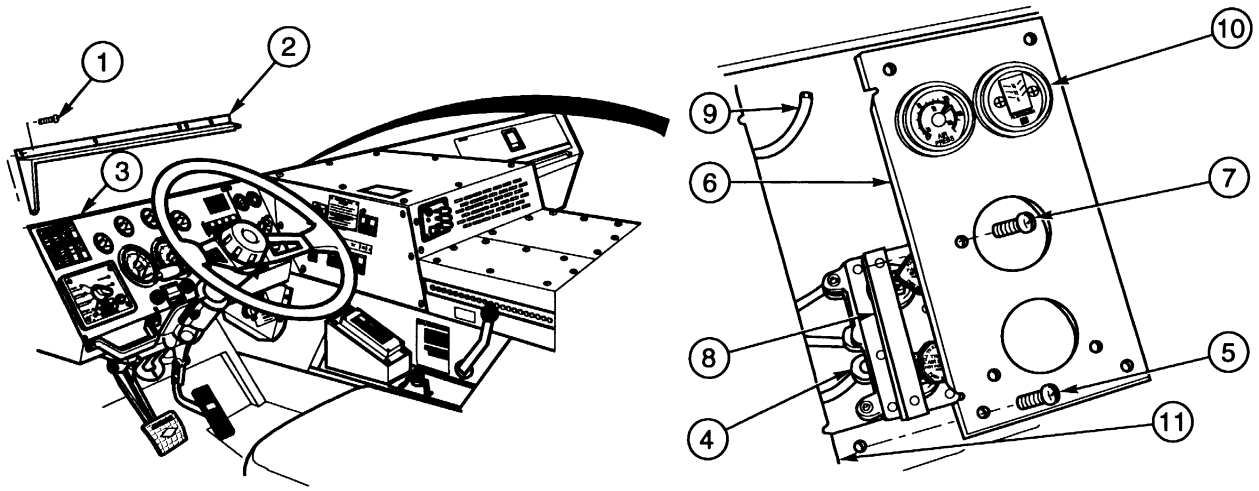
INITIAL SETUP

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)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



(1) Remove six screws (1) and sunshield (2) from dash (3) and dash air panel (6).

(2) Remove two screws (5) from dash air panel (6).

(3) Remove four screws (7) and two spacers (8) from dash manifold valve (4).

(4) Disconnect vacuum line (9) from gage (10).

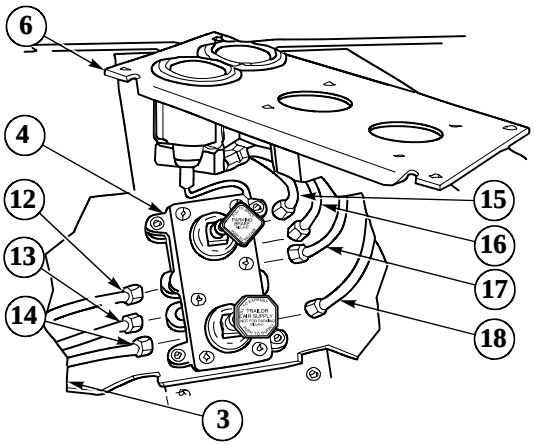
(5) Position dash air panel (6) away from dash (3).

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.

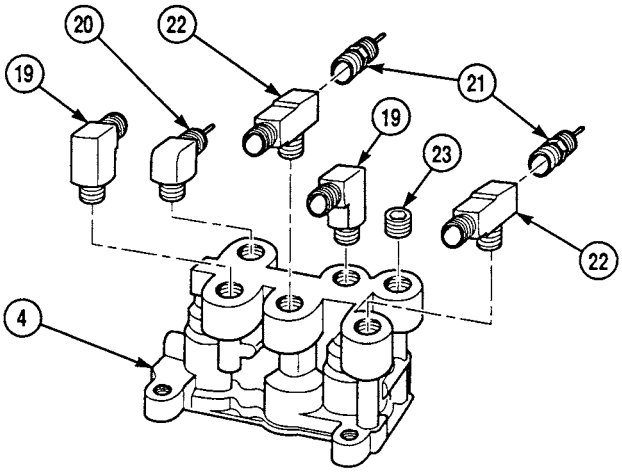
(8) Remove two elbows (19) from dash manifold valve (4).

(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).

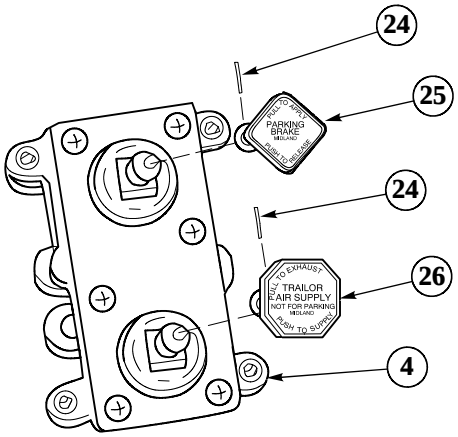
(12) Remove plug (23) from dash manifold (4).



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).

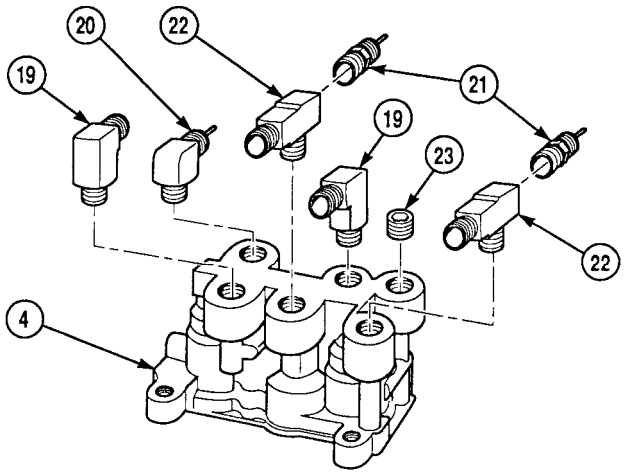
(7) Install elbow (20) on dash manifold valve (4).

(8) Apply sealing compound on threads of two elbows (19).

(9) Install two elbows (19) in rear of dash manifold valve (4).

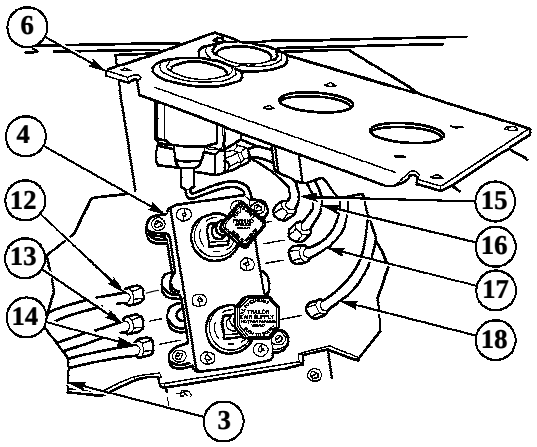
(10) Apply sealing compound on threads of plug (23).

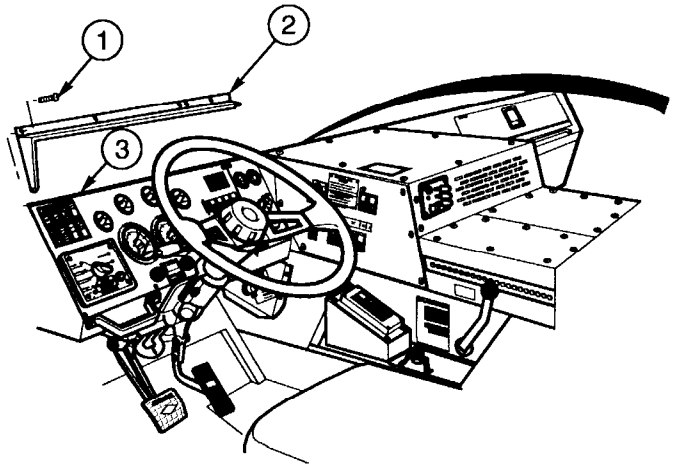
(11) Install plug (23) on dash manifold valve (4).

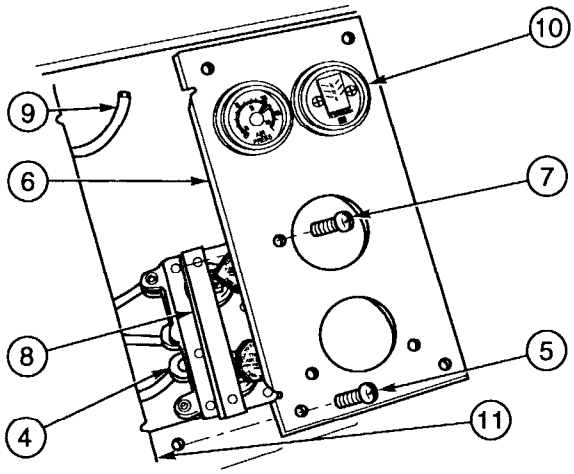


(12) Position dash manifold valve (4) in dash (11).

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

INITIAL SETUP

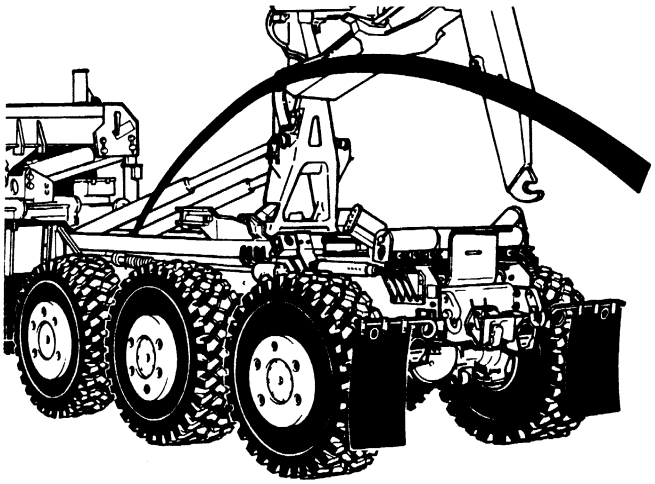
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Gloves, Chemical Oil Protective (Item 28, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Vise, Machinist's (Item 75, Appendix G)

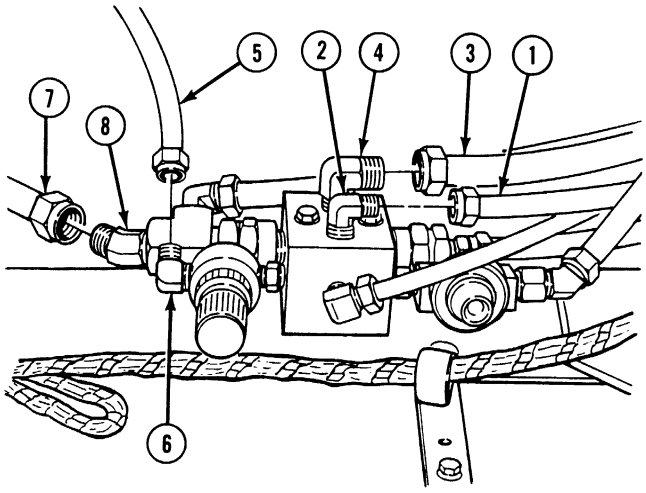
Materials/Parts
Cable Tie (Item 26, Appendix C)
Sealing Compound (Item 72, Appendix C)

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).

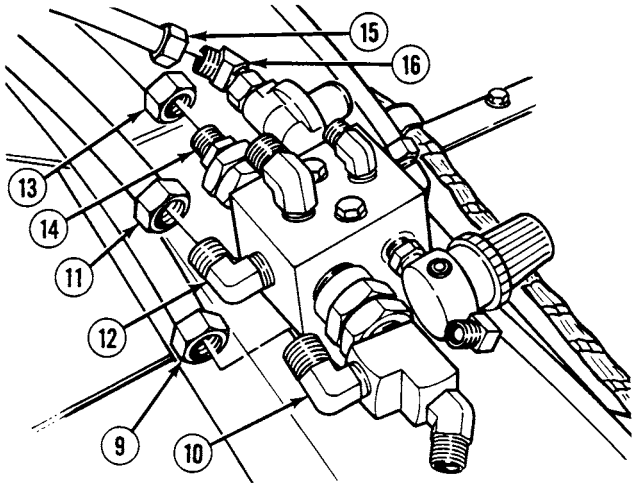
(4) Remove air line 2003 (7) from elbow (8).

(5) Remove air line 2005 (9) from elbow (10).

(6) Remove air line 2620 (11) from elbow (12).

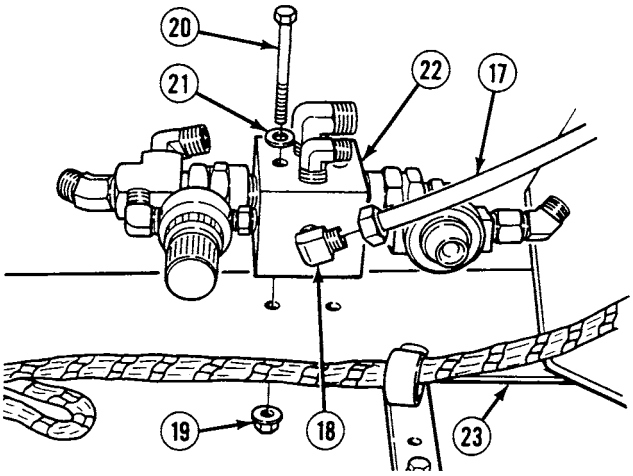
(7) Remove air line 2613 (13) from adapter (14).

(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.

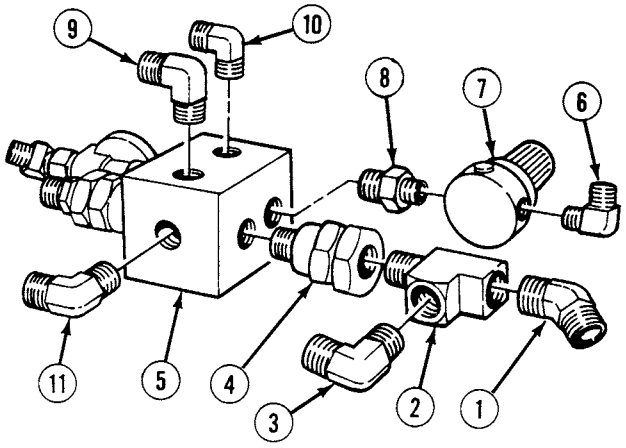


12-38. AIR MANIFOLD/AIR REGULATOR/PRESSURE PROTECTION VALVE ASSEMBLY REPAIR (CONT).

b. Disassembly.

NOTE

Note location of elbows, fittings and adapters prior to removal.



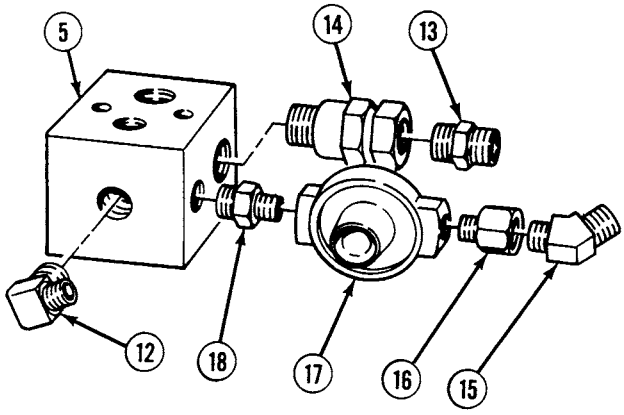
(1) Remove elbow (1) from tee (2).

(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.

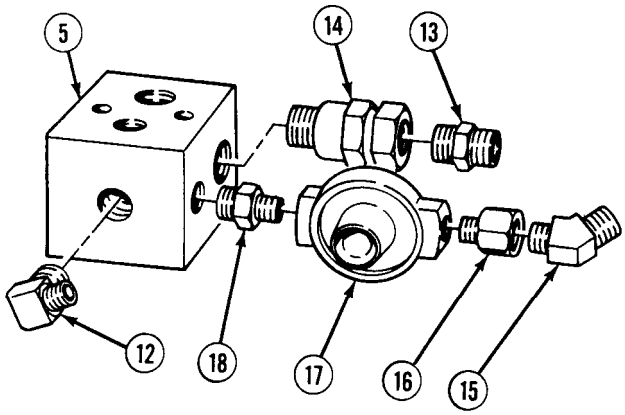
d. Assembly.

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).

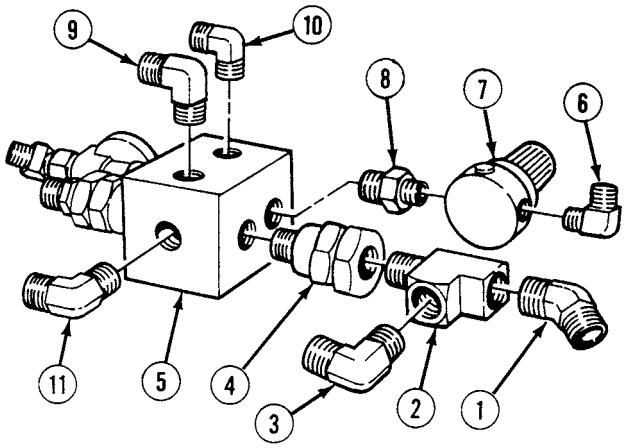
(15) Install elbow (6) in air regulator (7).

(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).



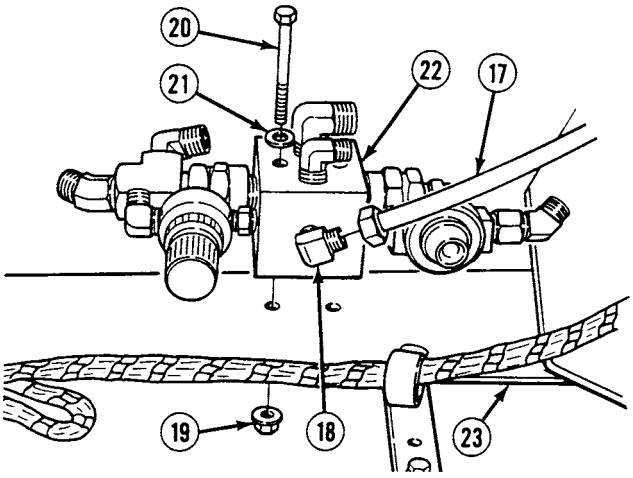
e. Installation.

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).

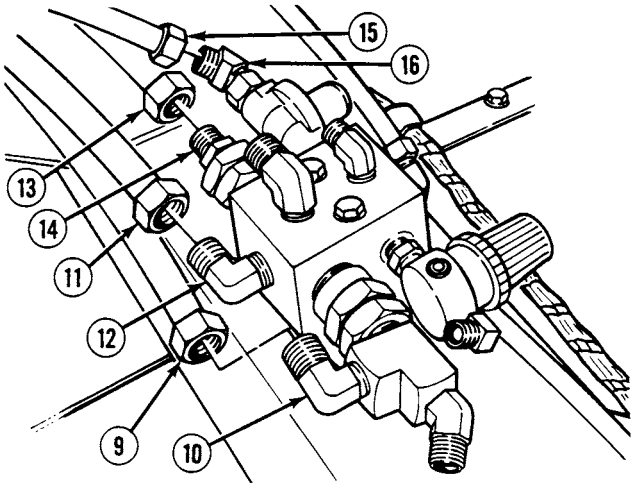


(3) Install air line 2008 (15) on elbow (16).

(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).

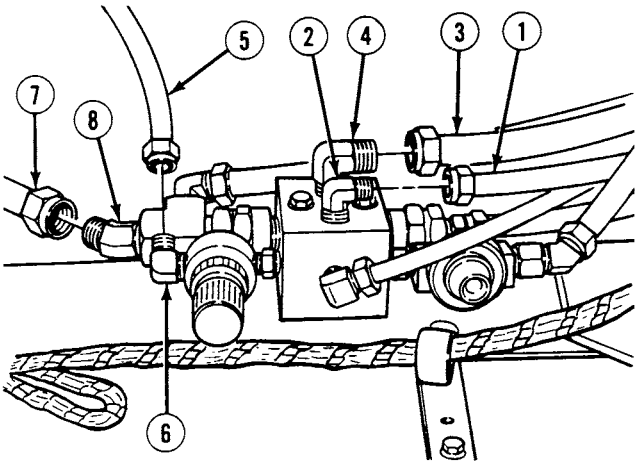


(7) Install air line 2003 (7) on elbow (8).

(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

12-38.1 CHASSIS AIR MANIFOLD REPLACEMENT.

This task covers:

a. Removal
b. Disassembly
c. Cleaning/Inspection
d. Assembly
e. Installation
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)

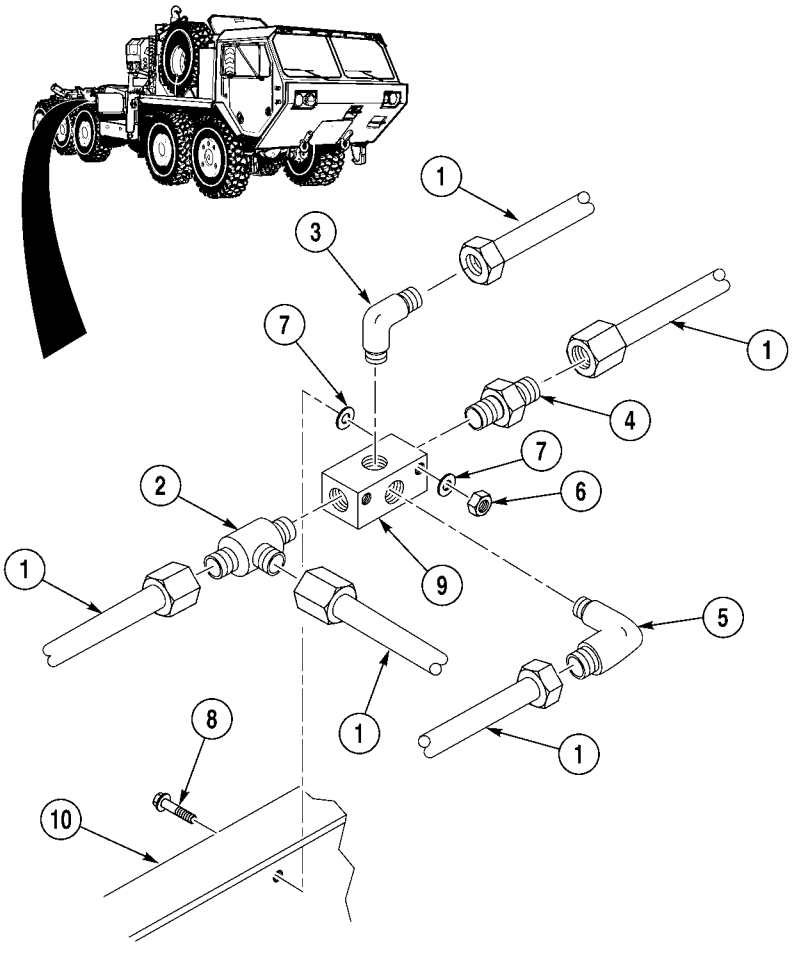
Materials/Parts - Continued
Solvent, Drycleaning (Item 87, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)

a. Removal.

NOTE

- Tag and mark air lines, elbows, fittings and adapters prior to removal.
- Remove cable ties as required.



(1) Remove five air lines 2874 (1) from tee (2), elbow (3), adapter (4), and elbow (5).

(2) Remove two locknuts (6), four washers (7), screw (8), and manifold (9) from frame (10). Discard locknuts.

12-38.1. CHASSIS AIR MANIFOLD REPLACEMENT (CONT).

b. Disassembly.

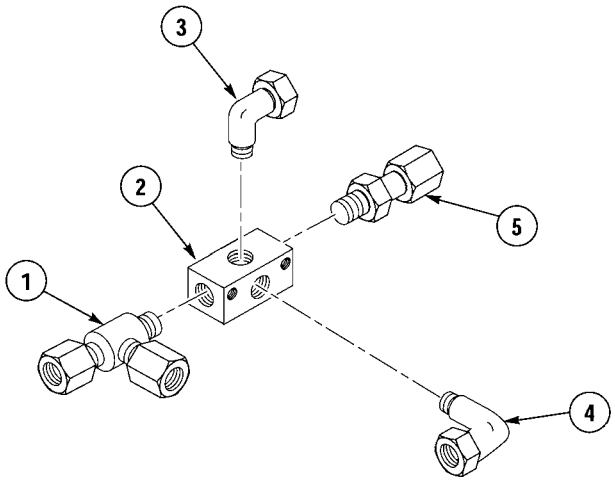
NOTE

Note location of elbows, fittings and adapters prior to removal.

(1) Remove tee (1) from chassis air manifold (2).

(2) Remove two elbows (3) and (4) from chassis air manifold (2).

(3) Remove adapter (5) from chassis air manifold (2).



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.

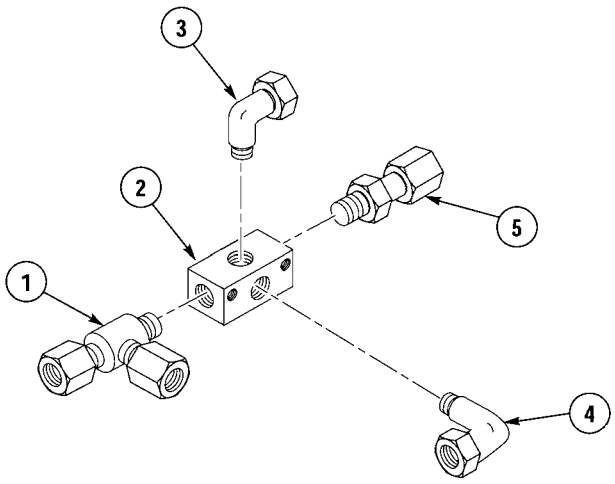
(1) Apply sealing compound to threads of tee (1), elbow (2), adapter (5), and elbow (4).

(2) Install tee (1) in chassis air manifold (2).

(3) Install elbow (3) in chassis air manifold (2).

(4) Install adapter (5) in chassis air manifold (2).

(5) Install elbow (4) in chassis air manifold (2).

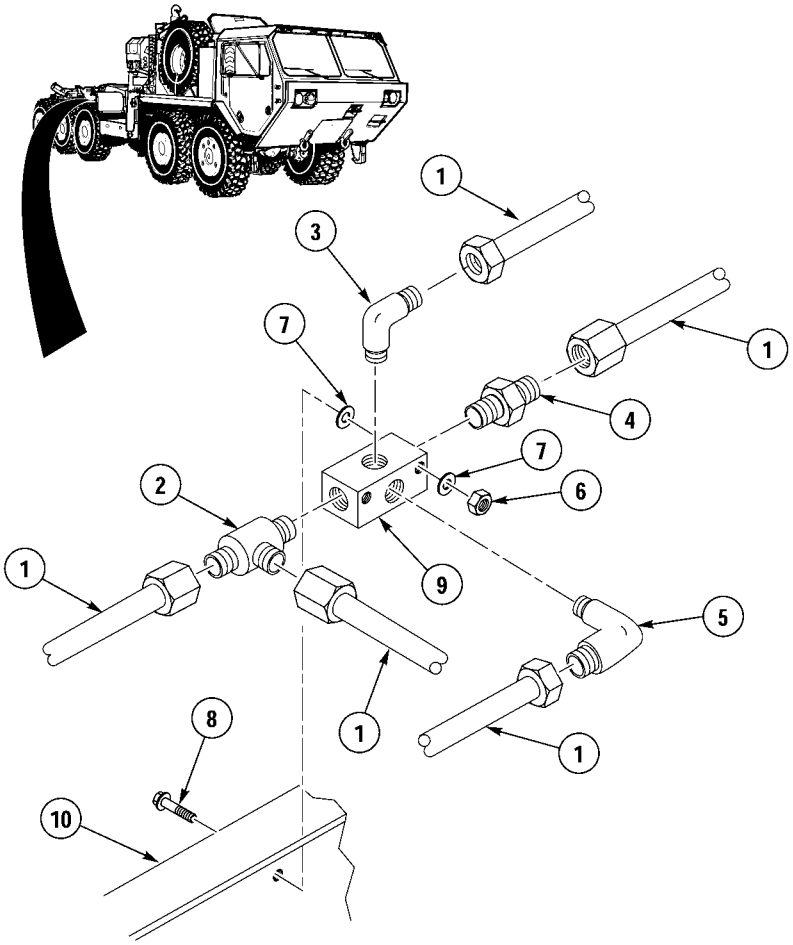


12-38.1. CHASSIS AIR MANIFOLD REPLACEMENT (CONT).

e. Installation.

NOTE

Install air lines, elbow, fittings and adapters as noted prior to removal.



(1) Install chassis air manifold (9), four washers (7), screws (8) and locknuts (6) on frame (10).

(2) Install five air lines 2874 (1) on tee (2), elbow (3), adapter (4) and elbow (5).

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).
- Install wheel and tire, (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

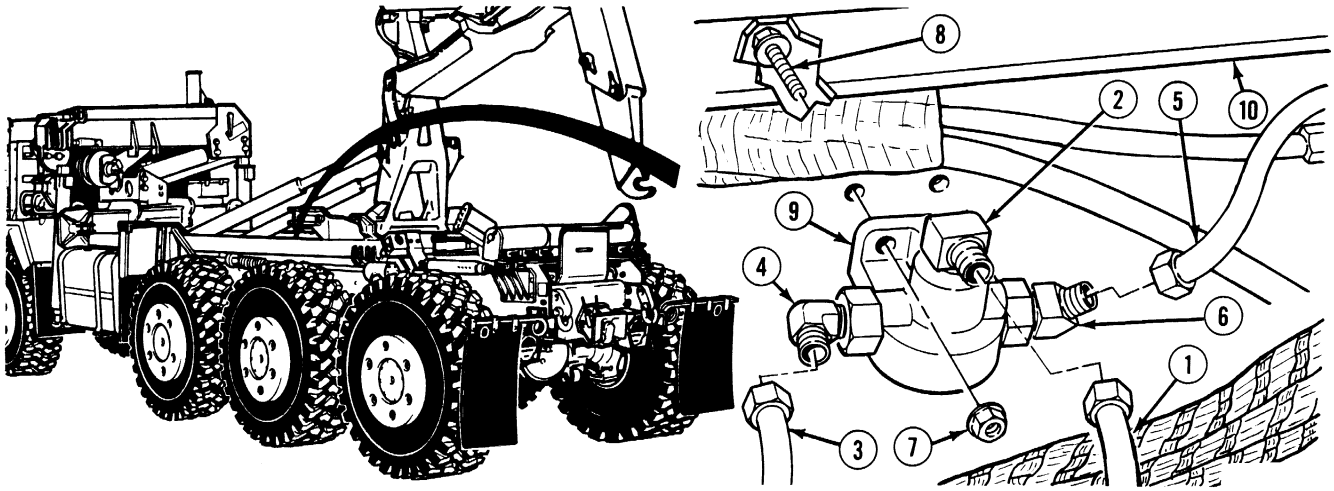
INITIAL SETUP

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.

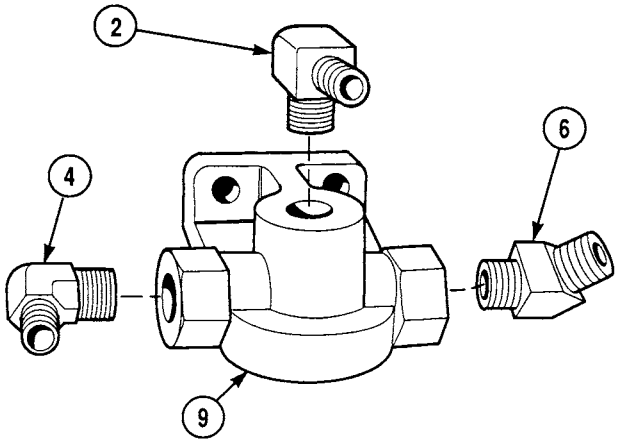
NOTE

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).

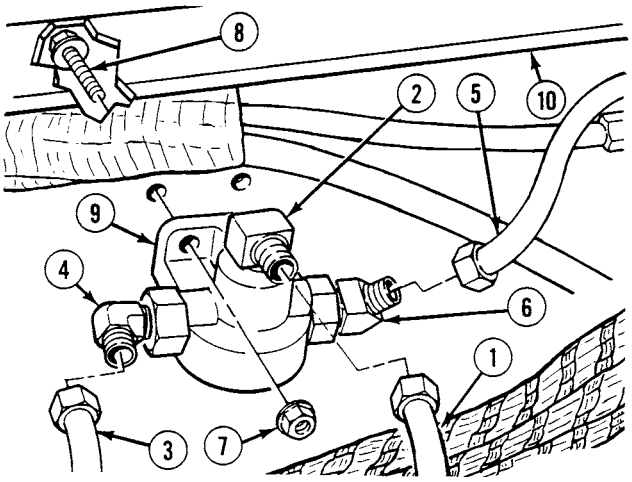
12-39. QUICK RELEASE VALVE REPLACEMENT (CONT).

(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

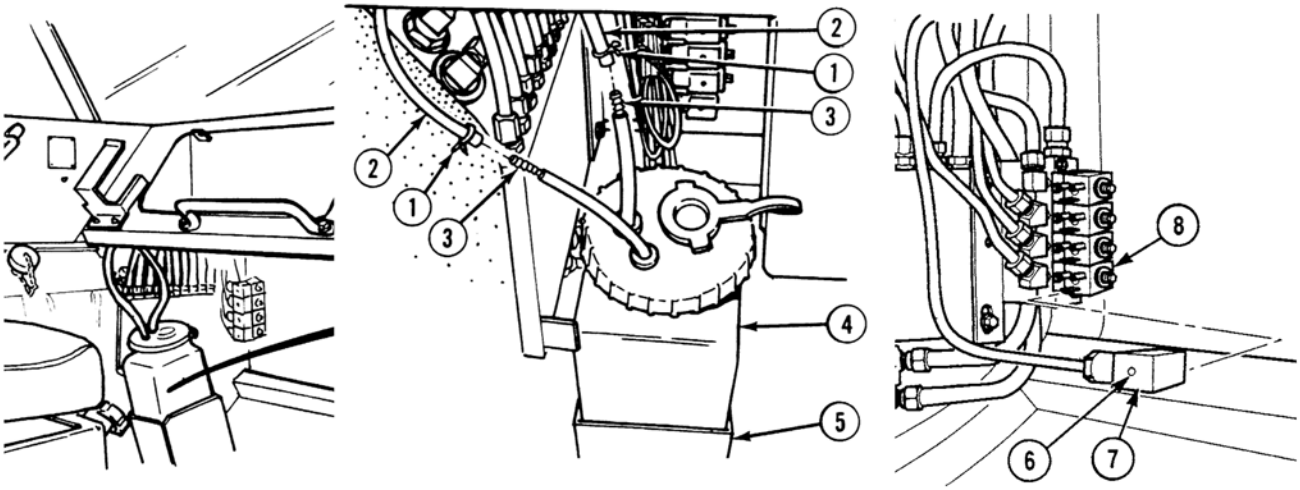
INITIAL SETUP

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

Materials/Parts
Cable Ties (Item 25, Appendix C)
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

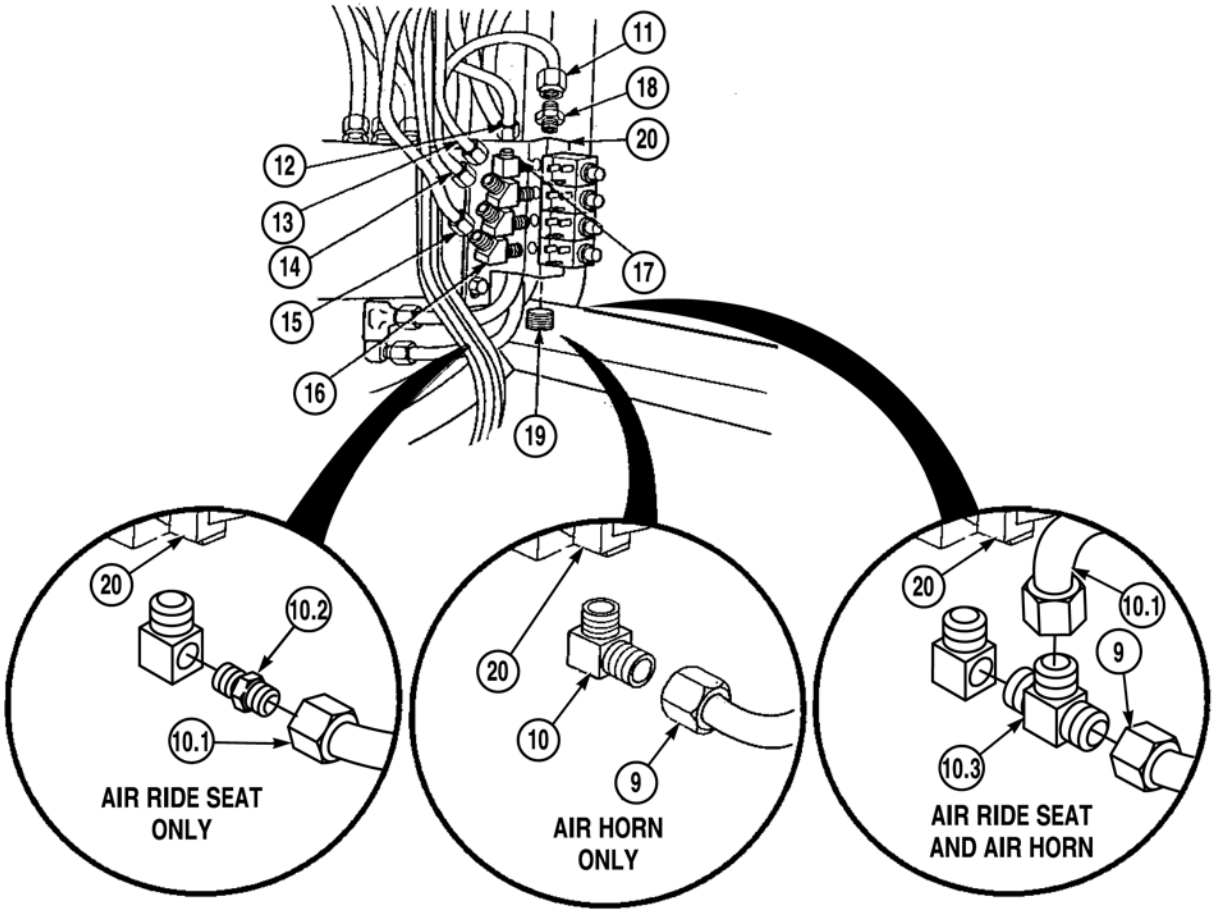
- Tag and mark all hoses, air lines and fittings before removal.
- Remove cable ties as necessary.

(1) Compress two clamps (1) and remove hoses (2) from solvent tank hoses (3).

(2) Remove solvent tank (4) from mounting bracket (5).

(3) Loosen four screws (6) and remove connectors (7) from solenoids (8).

12-40. SOLENOID FOUR POSITION VALVE REPLACEMENT (CONT).



NOTE

- Tag and mark all air lines before removal.
- Perform Step (4) if truck is equipped with air horn only.

(4) Remove air line 2037 (9) from 90 degree elbow (10).

NOTE

Perform Step (4.1) if truck is equipped with air-ride seat only.

(4.1) Remove air line 2041 (10.1) from fitting (10.2).

NOTE

Perform Step (4.2) if truck is equipped with air-ride seat and air horn.

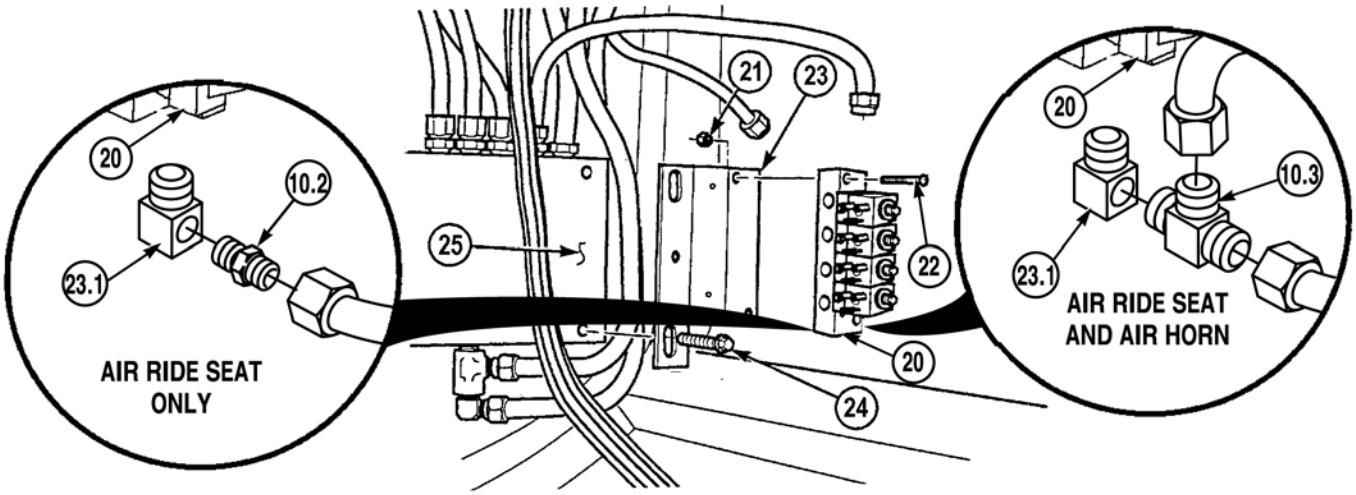
(4.2) Remove air line 2041 (10.1) and air line 2037 (9) from tee (10.3).

(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).

NOTE

Perform Steps (7.1) and (7.2) if truck is equipped with air-ride seat only or air-ride seat and air horn.

(7.1) Remove fitting (10.2) or tee (10.3) from elbow (23.1).

(7.2) Remove elbow (23.1) from manifold (20).

(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).

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.

(1.1) Apply sealing compound on threads of elbow (23.1) and either fitting (10.2) or tee (10.3).

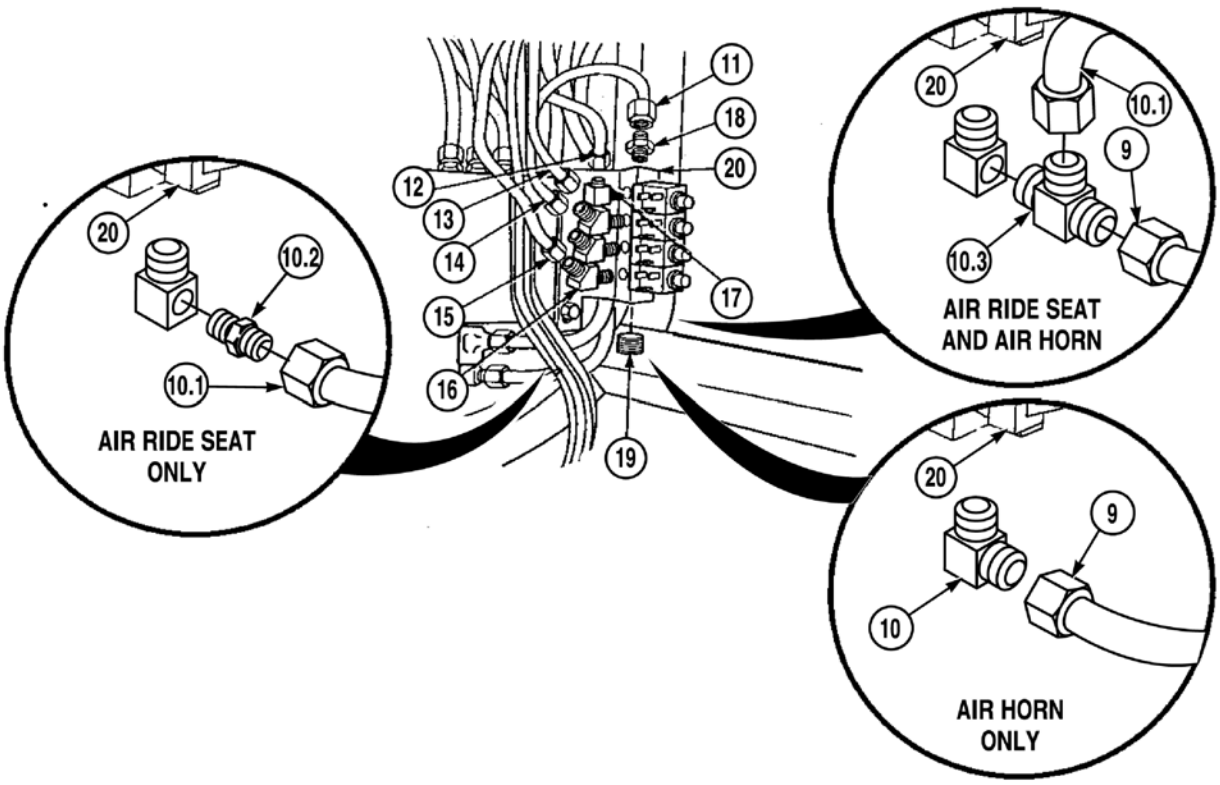
NOTE

Perform Steps (1.2) and (1.3) if truck is equipped with air-ride seat only or air-ride seat and air horn.

(1.2) Install elbow (23.1) on manifold (20).

(1.3) Install fitting (10.2) or tee (10.3) on elbow (23.1).

(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 vehicle is equipped with air horn only.

(6) Install air line 2037 (9) on 90 degree elbow (10).

NOTE

Perform Step (6.1) if truck is equipped with air-ride seat and air horn.

(6.1) Install air line 2041 (10.1) and air line 2037 (9) on tee (10.3).

NOTE

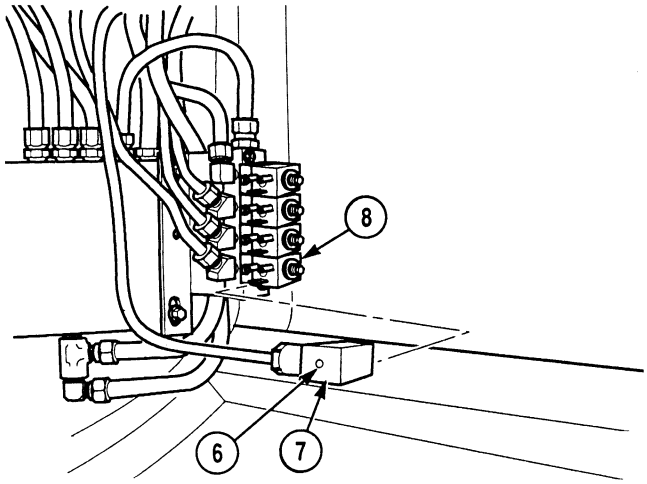
Perform Step (6.2) if truck is equipped with air-ride seat only.

(6.2) Install air line 2041 (10.1) on fitting (10.2).

12-40. SOLENOID FOUR POSITION VALVE REPLACEMENT (CONT).

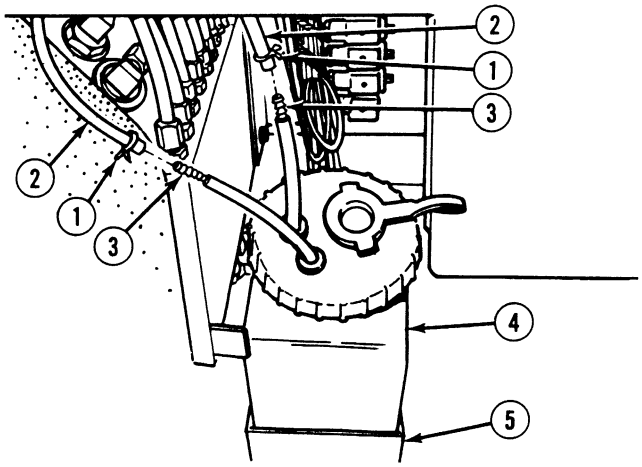
(7) Install four connectors (7) on solenoids (8).

(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
b. Installation
c. Adjustment
d. Follow-On Maintenance

INITIAL SETUP

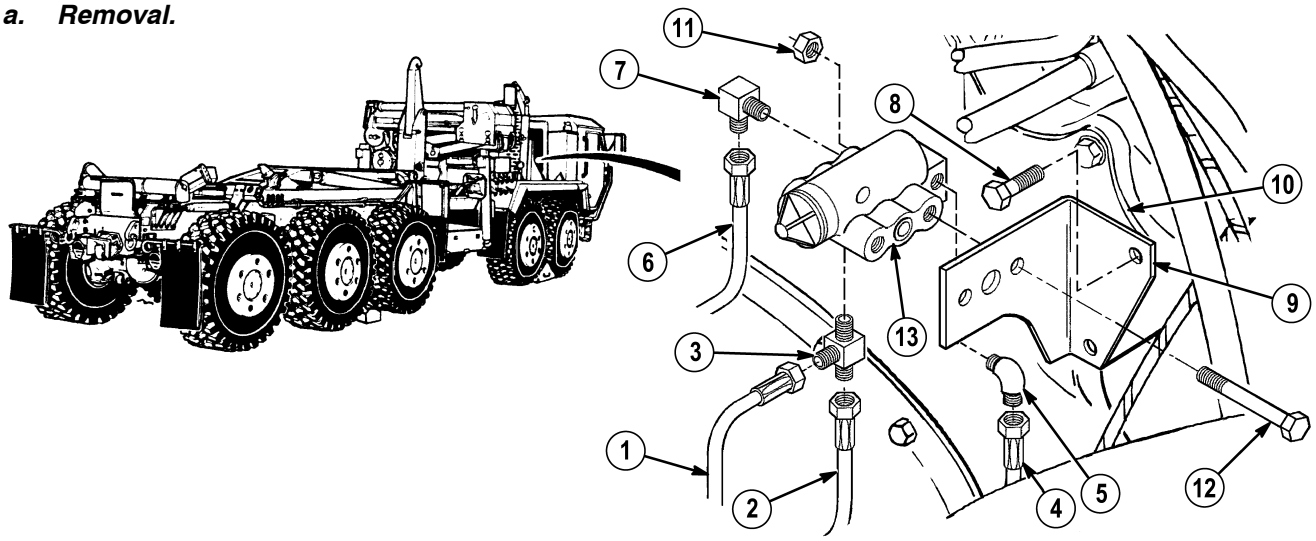
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)
Pressure Test Kit (Item 50, Appendix G)

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).

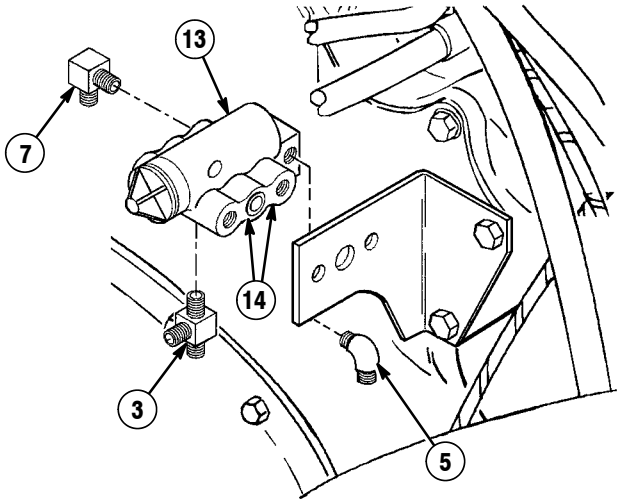
(3) Remove air line 2114 (6) from elbow (7).

(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).

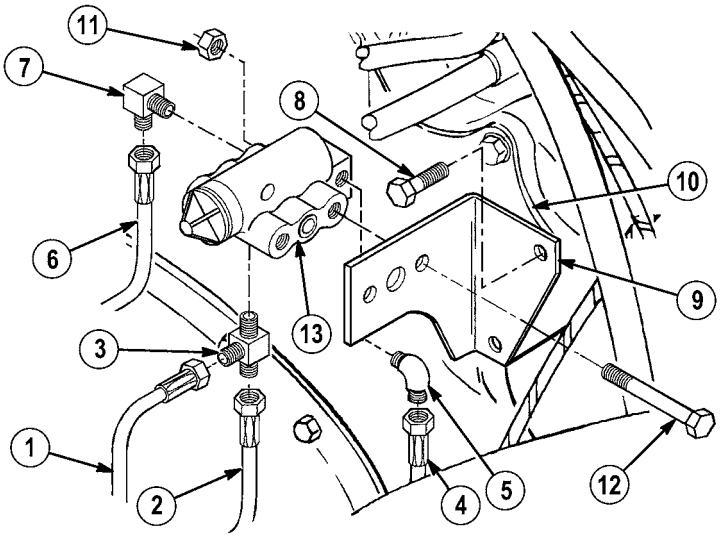
(3) Install governor (13) on bracket (9) with two screws (12) and locknuts (11).

(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).

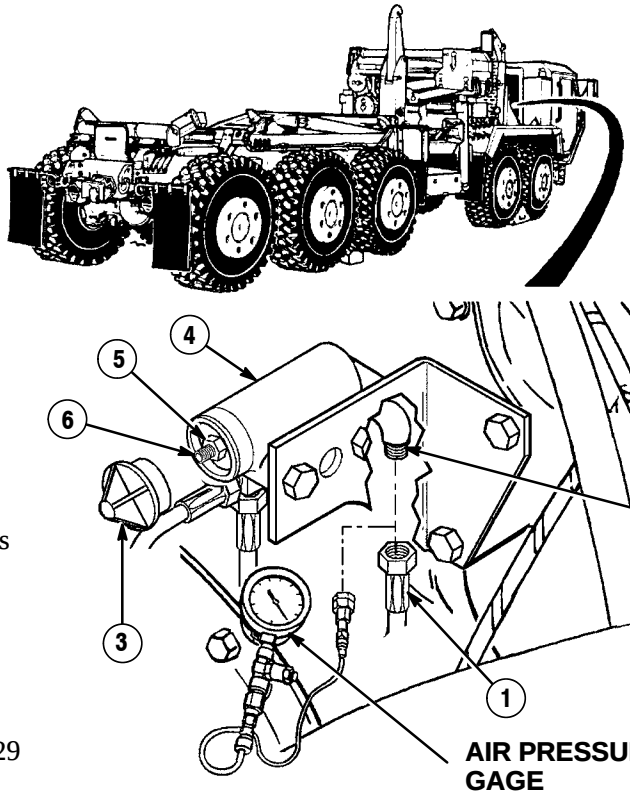
(7) Install air line 2114 (1) and air line 2040 (2) on tee (3).



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.

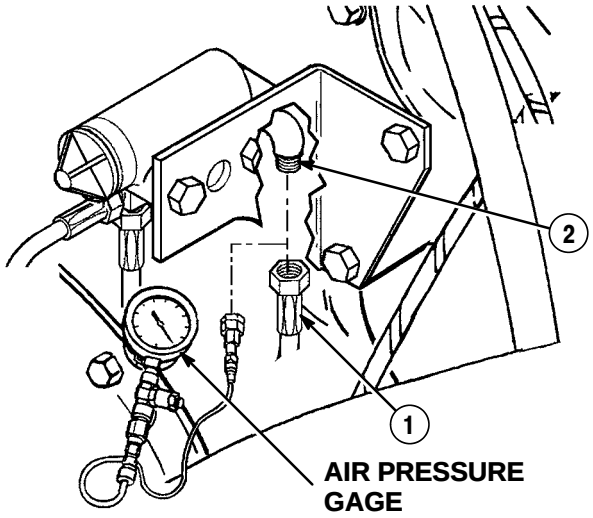
(14) If cut-out air pressure does not cut out at 121 to 129 psi (834 to 889 kPa), shut off engine and repeat Steps (8) through (13). If cut-out pressure is between 121 to 129 psi (834 to 889 kPa), go to Step (15).

(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

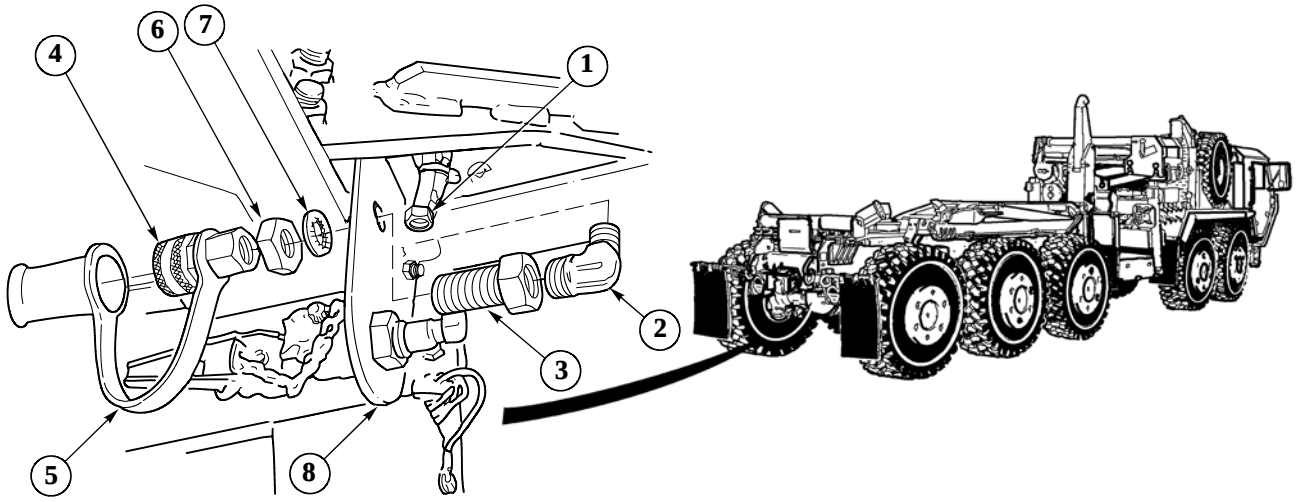
INITIAL SETUP

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).

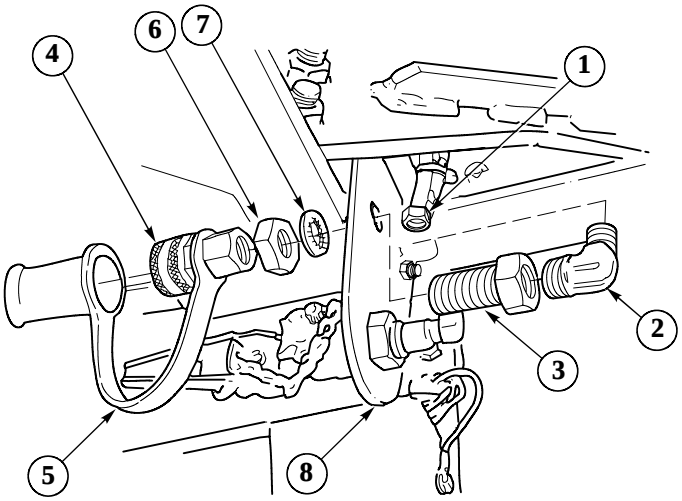
(4) Remove quick disconnect (4) from fitting (3).

(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

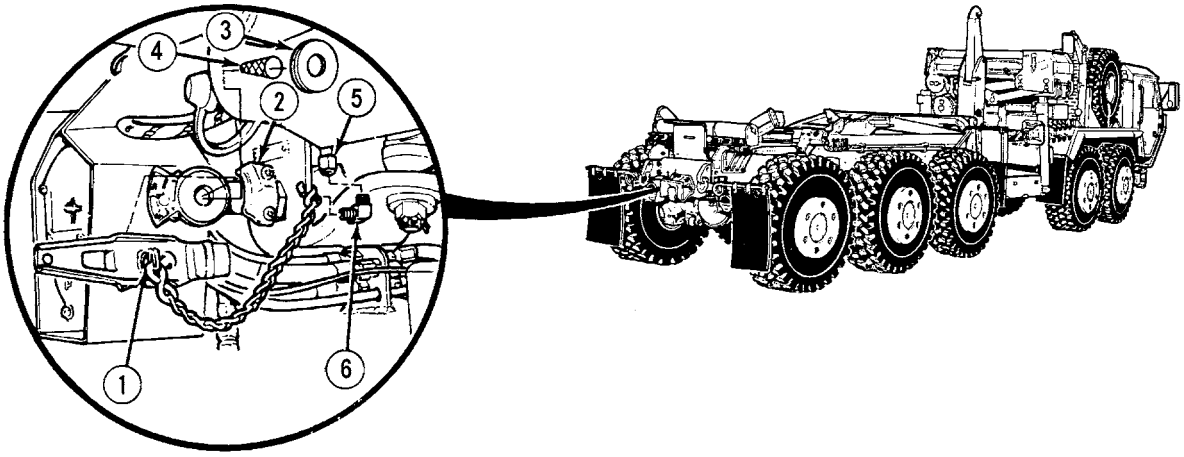
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Wrench, Combination 1-1/2 in. (Item 83, Appendix G)

Materials/Parts
Sealing Compound (Item 72, Appendix C)
Lockwasher (Item 158, 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

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.

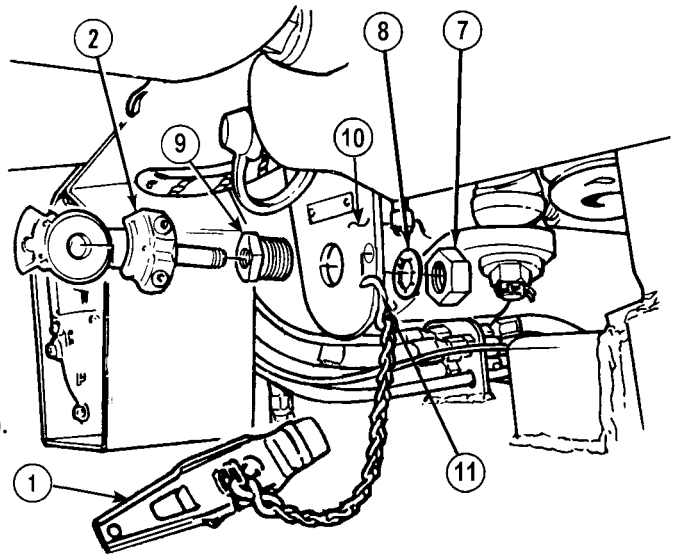
(6) Remove gladhand (2) and reducer (9) from bracket (10).

(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.

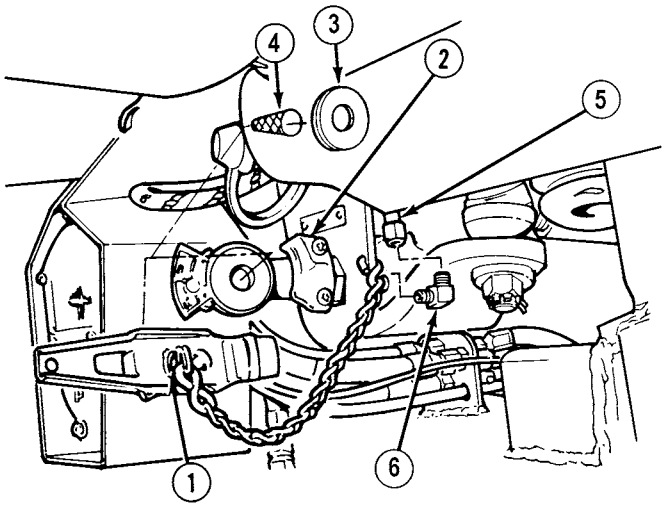
(2) Apply sealing compound on threads of reducer (9).

(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

12-44. EMERGENCY GLADHAND BRACKET REPLACEMENT.

This task covers:

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

INITIAL SETUP

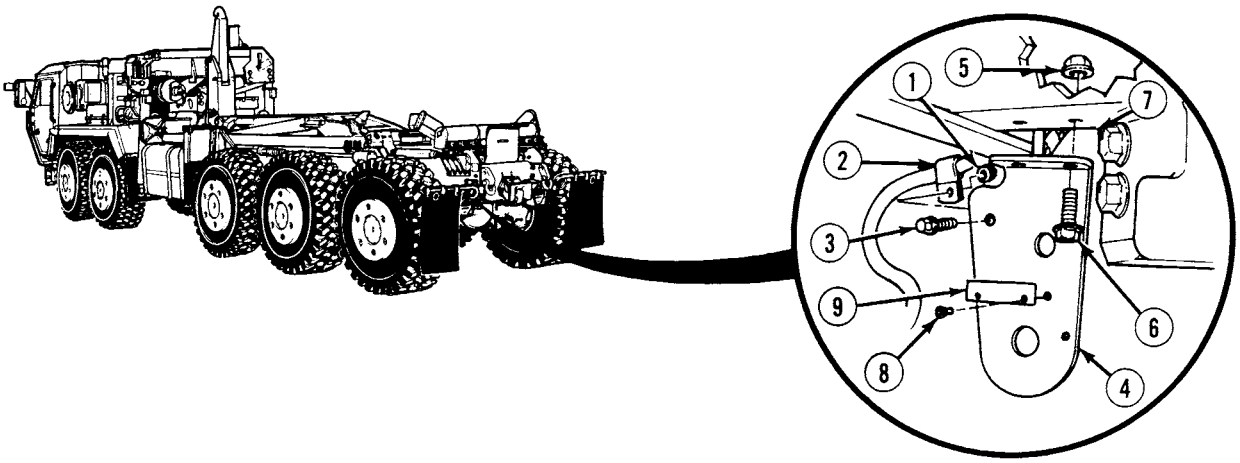
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts
Locknut (Item 91, Appendix F)
Locknut (2) (Item 107, Appendix F)

Personnel Required
Two

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Gladhand removed, (Para 12-43)
Emergency air quick disconnect removed, (Para 12-42)

a. Removal.



(1) Remove locknut (1), cushion clip (2) and screw (3) from bracket (4). Discard locknut.

(2) With the aid of an assistant, remove two locknuts (5), screws (6) and bracket (4) from rear crossmember (7). Discard locknuts.

NOTE

Perform Step (3) if nameplate is damaged.

(3) Remove two drive screws (8) and nameplate (9) from bracket (4). Discard drive screws.

b. Installation.

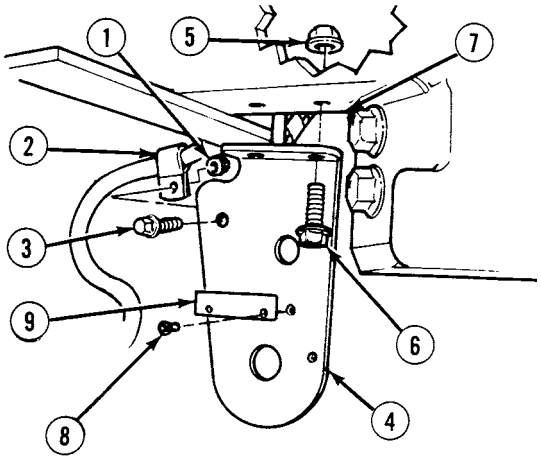
(1) With the aid of an assistant, install bracket (4) on rear crossmember (7) with two screws (6) and locknuts (5).

(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

12-45. TRACTOR PROTECTION VALVE REPLACEMENT.

This task covers:

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

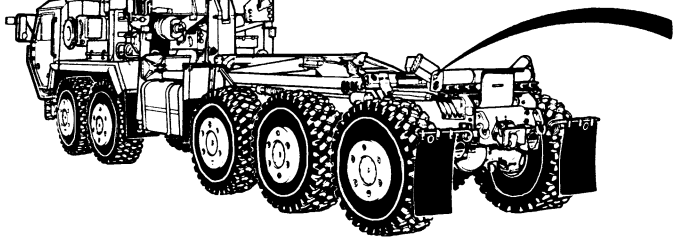
INITIAL SETUP

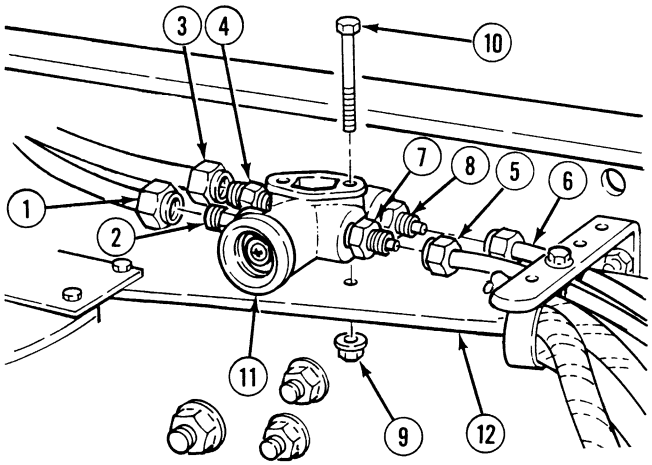
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Caps, Vise Jaw (Item 9, Appendix G)
Vise, Machinist's (Item 75, Appendix G)

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)
Rear hard lift assembly removed, (Para 15-8)
Tread platform assembly removed, (Para 15-9)

a. Removal.





NOTE

Tag and mark all hoses before removal.

(1) Remove air line 2661 (1) from adapter (2).

(2) Remove air line 2662 (3) from adapter (4).

(3) Remove air line 2653 (5) and air line 2654 (6) from adapters (7) and (8).

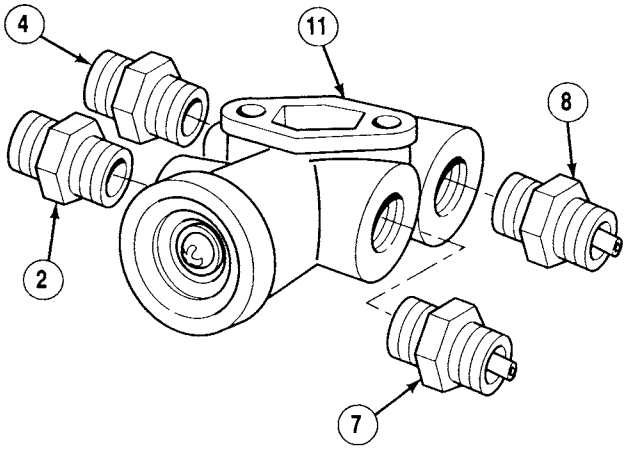
(4) Remove two locknuts (9), screws (10) and tractor protection valve (11) from frame (12). Discard locknuts.

(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).

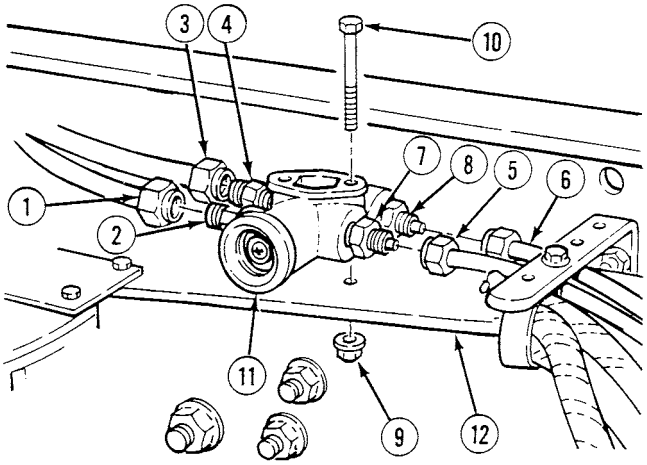
(7) Install tractor protection valve (11) on frame (12) with two screws (10) and locknuts (9).

(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

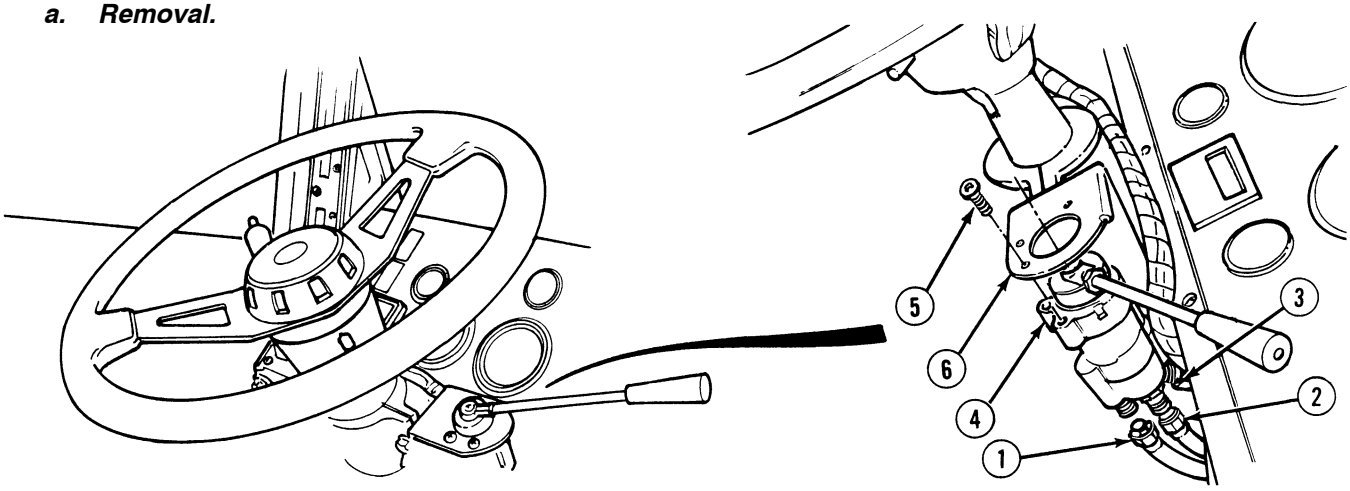
INITIAL SETUP

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.

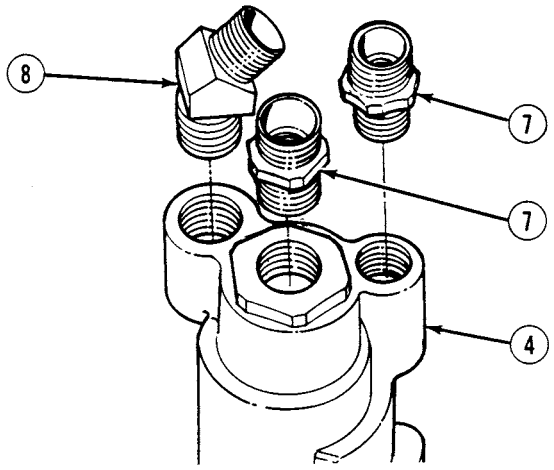
(2) Remove three screws (5) and hand brake valve (4) from mounting bracket (6).

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

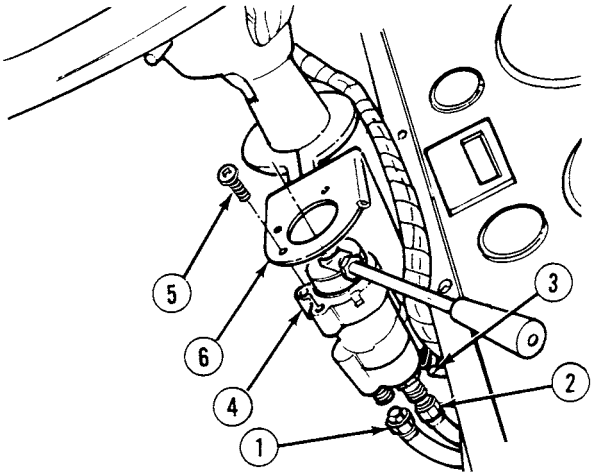
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

APPENDIX A

REFERENCES

A-1. SCOPE.

Indexes should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to material covered in this publication.

Military Publication Indexes.

Consolidated Index of Army Publications and Forms ..... DA PAM 310-1

A-2. FORMS.

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

A-3. FIELD MANUALS.

The following publications contain information pertinent to the vehicle material.

Camouflage ..... FM 20-3

Manual for Wheel Vehicle Driver ..... FM 21-305

Nuclear, Biological, and Chemical Defense ..... FM 21-40

Basic Cold Weather Manual ..... FM 31-70

Northern Operations ..... FM 31-71

Chemical, Biological, and Radiological (CBR) Decontamination ..... FM 3-5

Nuclear, Biological, and Chemical (NBC) Reconnaissance and Decontamination Operations (How to Fight) ..... FM 3-87 (HTF)

Army Motor Transport Units and Operations ..... FM 55-30

Operation and Maintenance of Ordnance Materiel in Cold Weather 0°F to -65°F ..... FM 9-207

A-4. TECHNICAL MANUALS.

Painting Instructions ..... TM 43-0139

General Shop Practice Requirements for Repair, Maintenance, and Test of Electronic Equipment ..... TM 43-0158

A-4. TECHNICAL MANUALS (CONT).

Procedures for Destruction of Tank Automotive Equipment to Prevent
Enemy Use (U.S. Army Tank-Automotive Command) ..... TM 750-244-6

Inspection, Care, and Maintenance of Antifriction Bearings ..... TM 9-214

Materials Used for Cleaning, Preserving, Abrading, and Cementing
Ordinance Material and Related Materials Including Chemicals ..... TM 9-247

Operator/Unit/Direct Support/General Support Maintenance Manual
for Care, Maintenance, Repair, and Inspection of Pneumatic
Tires and Inner Tubes ..... TM 9-2610-200-14

Operator's and Organizational Maintenance Manual Including Repair Parts and
Special Tools List for Simplified Test Equipment for Internal
Combustion Engines ..... TM 9-4910-571-12&P

Maintenance and Repair for Lead-Acid Storage Batteries ..... TM 9-6140-200-14

Cooling System: Tactical Vehicles ..... TM 750-254

A-5. MISCELLANEOUS PUBLICATIONS.

Description, Use, Bonding Techniques, and Properties of Adhesives ..... TB ORD1032

Safety Inspection and Testing of Lifting Devices ..... TB 43-0142

Operator's Circular for Welding Theory and Application ..... TC 9-237

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

THE ARMY MAINTENANCE SYSTEM (AMS)

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

The MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column 4 as:

Field - includes two subcolumns, Unit C (operator/crew) and O (unit/organizational maintenance) and Direct Support (F) maintenance

Sustainment - includes two subcolumns, general support (H) and depot (D).

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. Service. Operations required periodically to keep an item in proper operating condition: e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

MAINTENANCE FUNCTIONS - Continued

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

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

8. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

NOTE

The following definitions are applicable to the "repair" maintenance function:

Services. Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting. The process of investigating and detecting the cause of equipment malfunctioning: the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly. The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

9. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

10. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

11. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

EXPLANATION OF COLUMNS IN THE MAC

Column 1, Group Number. Column 1 lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column 2, Component/Assembly. Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

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

EXPLANATION OF COLUMNS IN THE MAC - Continued

Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

Field:
C Operator or crew maintenance
O Unit maintenace
F Direct support maintenance

Sustainment:
H General support maintenance
D Depot maintenance

NOTE

The “L” maintenance level is not included in Column 4 of the MAC. Functions to this level of maintenance are identified by a work time figure in the “H” column of Column 4, and an associated reference code is used in the REMARKS Column 6. This code is keyed to the remarks and the SRA complete repair application is explained there.

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

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

EXPLANATION OF COLUMNS IN THE TOOLS AND TEST EQUIPMENT REQUIPMENTS

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

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

Column 3, Nomenclature. Name or identification of the tool or test equipment.

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

Column 5, Tool Number. The manufacturer's part number, model number, or type number.

Explanation of Columns in the Remarks

Column 1, Remarks Code. The code recorded in Column 6 of the MAC.

Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
01	ENGINE								
0100	Engine Assembly:								
	Engine Assembly	Inspect	0.4						
		Test		1.0				23, 31, 148	A
		Service		1.0				1, 126	
		Adjust			2.0			5, 6, 79	
		Replace			21.5			5, 6, 7, 205	B
		Repair				44.4		5, 14, 86, 179	D
		Overhaul					*		
0101	Crankcase, Block, Cylinder Head:								
	Cylinder Block Assembly	Replace				4.0			
		Repair				3.0		5, 6, 10, 12, 67, 81, 97 117, 133, 166, 187	
	Cylinder Head Assembly (One)	Replace			17.7			5, 6, 41, 62, 100, 128	
		Repair				3.0		5, 6, 10, 29, 64	
	Cylinder Liner	Replace				1.0		5, 155	C
		Repair				2.0		5, 6, 10, 28, 67, 68, 87	C
0102	Crankshaft:								
	Crankshaft and Main Bearing	Replace				6.8		5, 6, 144	
		Repair				*		5, 6, 24, 26	C
	Crankcase Front Cover And Oil Seal	Inspect	0.2					5, 6, 107	
		Replace			6.5				
0103	Flywheel Assembly:								
	Flexplate Assembly	Replace			25.9			5, 6	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0103	Flywheel Assembly - CONT:								
	Rear Oil Seal	Inspect Replace	0.2		 26.2			 5, 6, 53, 81, 102, 163	
0104	Pistons, Connecting Rods:								
	Piston and Connecting Rods	Replace Repair				4.4 *		5, 6, 155 5, 6, 10, 22, 46, 73, 115	 C
0105	Valves, Camshafts and Timing System								
	Rocker Covers	Replace Repair		3.2		 *		1, 2, 4 5, 6, 10	 C
	Exhaust Valve Bridge	Replace Repair			7.1	 *		5, 6 5, 6, 10	 C
	Exhaust Bridge Guide	Repair				*		5, 6, 113, 151, 156	C
	Exhaust Valve	Replace Repair				25.6 *		5, 6, 10, 100 5, 6, 42, 95, 106, 179	 C
	Exhaust Valve Guide	Repair				*		5, 100, 157	C
	Valve Seat Insert	Repair				*		5, 116, 153	C
	Camshaft Assembly	Replace Repair				1.5 *		5, 6 5, 6, 10	 C
	Cam Follower/ Push Rod	Replace Repair			23.5	 *		5, 6 5, 6, 10	 C
	Rocker Arm	Replace Repair			5.4	 0.5		5 5, 6, 10	
	Idler Gear Assembly	Replace Repair				0.5 0.3		5, 6 5, 6, 10, 130	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0106	Engine Lubrication System:								
	Adapter Assembly	Replace		1.1				1, 2	
	Oil Filter	Repair		*				2, 4	C
	Oil Cooler Assembly	Replace			4.9			5, 6	
	Engine	Test				*		5, 6, 10	A
0108	Manifolds:								
	Exhaust Manifold	Inspect		0.3					
		Replace			4.6			5, 6	
0112	Engine Brake:								
	Engine Brake Retarder	Adjust			0.9			5	
		Replace			4.2			5, 6	
		Repair				*		5, 6, 10	C
03	FUEL SYSTEM								
0301	Carburetor, Fuel Injector:								
	Fuel Injector	Adjust			0.5			5	
		Test			1.5			1, 4, 5, 31, 42, 91, 148	
		Replace			4.9			5, 6, 30, 208	
0302	Fuel Pumps:								
	Fuel Pump Assembly	Replace			3.2			5, 6, 20	
	Fuel Pump, Priming	Replace		1.5				1, 2, 30	
0304	Air Cleaner:								
	Air Cleaner Assembly	Replace		1.6				1, 4	
		Repair		2.8				1, 2, 4	
0305	Supercharger, Blower, Turbocharger or Altitude Compensator:								
	Blower Assembly	Replace			12.1			5, 6, 20	
		Repair				3.0		5, 6, 10, 14, 117, 189	
	Blower Drive Assembly	Replace			12.4			5, 6	
		Repair				1.0		5, 6, 10	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0305	Supercharger, Blower, Turbocharger or Altitude Compensator - CONT:								
	Turbocharger Assembly	Inspect	0.1					5, 6	
		Replace			5.6			5, 6, 10, 61	
		Repair				2.0		89, 132	
0306	Tanks, Lines, Fittings, Headers:								
	Fuel Lines and Fittings (each)	Inspect	0.1						
		Replace		0.2				1, 30	
0309	Fuel Filters:								
	Fuel Strainer	Service		0.1				1, 4	
	Fuel/Water Separator	Inspect	0.1						
		Service	0.4					1, 2, 30	
		Replace		2.0				1, 2, 30	
		Repair			0.8			5, 6	
0311	Engine Starting Aids:								
	Ether Starting Aid	Replace		1.0				1	
04	EXHAUST SYSTEM								
0401	Muffler and Pipes:								
	Muffler	Inspect	0.1						
		Replace		1.9				1, 2, 4	
	Pipes	Inspect	0.1						
		Replace		1.5				1	
05	COOLING SYSTEM								
0501	Radiator, Evaporative Cooler or Heat Exchanger:								
	Cooling Assembly	Inspect	0.1					1, 15, 186	
		Test		0.2				1, 2, 4, 30,	
		Replace		1.9				126	
	Radiator	Service	0.3					1, 2, 52	
		Test			0.5	0.5		186	
		Replace		6.6				1, 2, 4, 30, 126	
		Repair				1.0		5, 6, 30	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0503	Water Manifold, Headers, Thermo-Stats and Housing Gaskets:								
	Right Thermostat Housing	Replace			8.4			5, 6, 84, 109	
	Left Thermostat Housing	Replace			2.4			5, 6, 84, 109	
	Cooling System Hoses And Tubes (each)	Inspect Replace	0.1	 0.4				 1, 4, 30	
	Aftercooler	Inspect Replace			* 13.1			 5, 6	A
0504	Water Pump:								
	Water Pump Assembly	Replace Repair			2.0	 0.6		5, 6, 30 5, 6, 15, 49 84, 114, 143, 158	
0505	Fan Assembly:								
	Fan	Inspect Adjust Replace	0.1		 0.5 1.9			 5, 6	
	Fan Control Solenoid Valve	Inspect Test Replace		0.1 0.5 0.5				 1 1, 30, 126	
06	ELECTRICAL SYSTEM								
0601	Generator, Alternator:								
	Alternator Assembly	Test Replace Repair		0.3 2.0		 3.2		2 1, 2, 65 6, 8, 10	
	Alternator Belts	Inspect Adjust Replace	0.1	 0.2 1.2				 1, 2, 65 1, 2, 65	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0602	Generator Alternator (Voltage):								
	Voltage Regulator	Adjust		0.3				1, 4	
		Test		0.5				4	A
		Replace		0.1				1	
	Polarity Protection Control (145 AMP)	Adjust		0.3				1, 4	
		Test		0.5					A
		Replace		1.5				1	
	Polarity Protection Control (200 AMP)	Test		0.5				4	A
		Replace		1.5				1	
0603	Starting Motor:								
	Starter Motor	Test		0.3				4	
		Replace		2.6				1, 2, 4	
		Repair				4.0		6, 8, 10	
0607	Instrument or Engine Control Panel:								
	Instrument Panel Gages Wire Harness	Replace		2.5				1	
		Repair		*					C, E
	Instrument Panel Switch Wire Harness	Replace		1.0				1	
		Repair		*					C, E
0608	Miscellaneous Items:								
	Ether Start Aid Switch	Service		0.4					
		Replace		1.2				1	
	Crane Junction Box	Replace		2.0				5, 6	
		Repair		1.0				5, 6	
	Proximity Switches (LHS) (each)	Replace		0.5				1, 2, 71	
		Adjust		*					C
		Test		0.5				1, 4	
	Proximity Switch (Outrigger)	Replace		0.5				1	
		Adjust		*					C
		Test		0.5				1, 2	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0609	Lights:								
	Head Light Assembly (each)	Inspect	0.1						
		Adjust		0.2				1	
		Replace		0.2				1, 4	
	Lights (each)	Inspect	0.1						
		Replace		0.5				1	
		Repair		*				1, 4	C
	Work Lamp	Replace		1.0				1, 4	
		Repair		0.3				1, 4	
0610	Sending Units and Warning Switches:								
	Engine Cold Plate/ECM	Inspect		0.2					
		Test		*				1, 4, 23, 31, 148	
		Replace		2.0				1, 2, 4, 42	
	Warning Buzzer	Inspect	0.1						
		Replace		0.5				1	
	TRS/SRS	Replace			3.0			5, 6	
		Test			*			1, 4, 23, 31, 32, 148	A
		Adjust			*			88, 194	A
	Engine Throttle Sensor	Test		0.3				1, 4, 23, 31, 32, 148	
		Replace		0.8				1	
	Fuel Temperature Sensor	Test		0.4				1, 4, 23, 31, 32, 148	
		Replace		0.4				1	
	Engine Water Temperature Sensor	Test		0.3				1, 4	
		Replace		0.5				1	
	Engine Oil Temperature Sensor	Test		0.3				1, 4	
		Replace		0.5				1, 2	
	DDEC Engine Oil Pressure Sensor	Test		0.3				1, 4, 23, 31, 32, 42, 148	
		Replace		0.5				1, 2	
	Manifold Pressure	Test		0.3				1, 4, 23, 31, 32, 148	
		Replace		0.5				1, 4	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0610	Sending Units and Warning Switches-CONT:								
	Engine Fuel Pressure Sensor	Test Replace		0.3 1.0				1, 4 1	
	Transmission Electronic Control Unit (ECU)	Test Replace		0.5 1.0				1, 4 1	
	Magnetic Speed Sensor	Test Replace			0.3 0.7			5 5, 6	
	Tachometer Drive Assembly	Test Replace		* 1.1					A
	Sending Units (each)	Test Replace		* 0.5				1, 4	A
	EPAC	Test Adjust Replace			* * *			5, 6 5 5	A C C
	Differential Pressure Switch	Test Replace		* 0.9				1, 2, 4, 30	A
0611	Horn, Siren:								
	Electric Horn	Replace		0.2				1	
	Horn Relay	Replace		0.4				1	
	Horn Button	Replace		0.1				1	C
0612	Batteries, Storage (Wet or Dry):								
	Batteries	Inspect Test Service Replace	0.1	 0.3 0.3 1.0				 1, 4, 23, 31, 32, 42, 148 1, 4 1	
	Battery Box Assembly	Inspect Replace Repair	0.1	 1.6 1.0				 1 1, 2	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0613	Hull or Chassis Wiring Harness								
	Engine Wiring Harness	Test		*				1, 4, 23, 31, 32, 42, 148	A
		Replace			12.0			5	F
		Repair		*	*			1, 4, 45, 96	C, E
	DDEC Wiring Harness	Test		*				1, 4, 23, 31, 32, 148	A
		Replace			0.5			5, 42	
		Repair		0.5				1, 4, 42, 43, 44, 56, 57, 183, 184, 185, 197, 198	
	Cab Wiring Harness	Test		*				1, 4, 23, 31, 32, 42, 148	A
		Replace			12.0			2, 5	F
		Repair		*	*			1, 4, 45, 96	C, E
	STE/ICE Wiring Harness	Test		*					A
		Replace			2.0			5	F
		Repair		*	*			1, 4, 45, 96	C, E
	Chassis Wiring Harness	Test		*					A
		Replace			4.0			5	F
		Repair		*	*			1, 4, 45, 96	C, E
	Crane Wiring Harness	Replace			*			5	C
		Repair		*	*			1, 4	C, E
	LHS/Cab Interface Harness	Replace			0.8			5	
		Repair		0.5				1, 4, 45, 96	
07	TRANSMISSION								
0705	Transmission Shifting Components:								
	Transmission Shift Selector	Replace		0.4				1	
		Repair		0.2				1	
	Electronic Shifter Harness	Replace			*			5, 6	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0710	Transmission Assy:								
	Flywheel	Replace			0.8			5, 6, 121 127	
		Repair				0.2		5, 6	
	Torque Converter Stator	Replace				1.0		5, 10, 86	
		Repair				*			C
	Torque Converter Housing	Replace				0.6		5, 6	
		Repair				0.3		5, 6, 10, 41, 73, 82, 83, 99, 108, 127, 152	G
	Torque Converter Pump	Replace				1.0		5, 6, 142, 164	
		Repair				0.3		5, 10, 150	G
	Transmission Assembly	Inspect	0.1						
		Test		0.5	*			5, 6, 32, 85, 148	A
		Service		1.0				1, 2, 4, 126	
		Replace			3.0			5, 6	
		Repair				27.4		5, 6, 30, 61 86, 177	B
		Overhaul					*		D
	Output Shaft Assembly	Replace				0.2		5	
		Repair				0.2		5, 6	
	Rear Transmission Cover Assembly	Replace				0.2		5, 6	
		Repair				*		5, 6, 10, 41, 83, 99, 104, 111, 137	C
	Transmission Yoke/ Dust Shield/Oil Seal	Replace			3.0			5, 6, 16, 84, 103, 143, 169	
0713	Intermediate Clutch:								
	First Clutch Assembly	Replace				0.1		5	
		Repair				*		5, 6, 10, 101	C
	Adapter Housing	Replace				0.2		5	
		Repair				*		5, 6	C

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0713	Intermediate Clutch-CONT:								
	Forward Clutch And Input Shaft	Replace Repair				0.1 0.7		5, 6, 10, 192 5, 10, 21, 39, 138	
	Fifth Clutch	Replace Repair				0.1 0.3		5, 6, 123 5, 39	
	Fourth Clutch	Replace Repair				0.6 2.5		5, 6, 39 5, 10, 39	
	Third Clutch	Replace Repair				0.6 2.5		5, 27 5, 105	
	Center Support	Replace Repair				0.1 1.0		5, 6, 27, 123 5, 6, 10, 35, 66, 72, 101, 122	
0714	Servo Unit:								
	Control Valve Assembly	Replace Repair				* *		5, 6 5, 6	C C
	Front Plate Assembly	Replace Repair				0.5 *		5, 6 5	 C
	First Shift Valve Body Assembly	Replace Repair				* *		5 5, 6, 10	C C
	First Trimmer Valve Body Assembly	Replace Repair				0.1 0.1		5 5, 6, 10	
0721	Coolers, Pumps, Motors:								
	Oil Pump Assembly	Replace Repair				* *		5 5, 6	C C
	Low Oil Sensor Assembly	Test Replace			0.1 3.2			5 5, 6	
08	TRANSFER, FINAL DRIVE, PLANETARY AND DROP GEARBOX ASSEMBLIES (ON VEHICLE)								

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0801	Power Transfer and Final Drive Assy:								
	Transfer Case Assembly	Inspect	0.1					1, 2, 126	
		Service		0.3				5, 6, 30	C
		Replace			*			5, 6, 19	B
		Repair				8.0		58, 59, 60, 61, 177	C
		Overhaul					*		D
	Yokes	Replace			2.8			5, 6	C
	Oil Seats	Inspect	0.1						
		Replace			1.6			5	
	Upper Shaft Assembly	Repair				1.0		5, 6, 10	
	Center Shaft Assembly	Repair				0.5		5, 6, 10, 58	
	Rear Shaft Assembly	Repair				1.0		5, 6, 10	
	Differential Shaft Assembly	Repair				1.0		5, 6, 10	
	Front Shaft Assembly	Repair				1.0		5, 6, 10	
	Differential Assembly	Repair				0.6		5, 6, 10, 60	
0803	Gear Shift, Vacuum Booster and Controls:								
	Air Chamber, Differential	Inspect	0.3						
		Adjust		0.5				1	
		Replace		1.0				1, 2, 4	
	Upper Shift Rod Assembly	Repair				1.0		5, 6, 10	
	Lower Shift Rod Assembly	Repair				1.0		5, 6, 10	
	Shift Control Cable	Adjust		0.3				1	
		Replace		2.5				1, 2	
0804	Lubrication, Cooling, Or Hyd Components:								
	Lube Pump	Replace			0.8			5, 6, 30	
		Repair				0.5		5, 6	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0804	Lubrication, Cooling Or Hyd Components- CONT:								
	Lube Hoses (each)	Inspect	0.1					1, 2, 4, 30	
		Replace		0.5					
	Breather	Inspect	0.1					1	
		Service		0.1					
		Replace		0.1				1	
09	PROPELLER, PROPELLER SHAFTS, UNIVERSAL JOINTS, COUPLER ASSEMBLY								
0900	Propeller Shafts:								
	Propeller Shafts and Universal Joints	Inspect	0.2						
		Service		0.1				1	
		Replace		0.9				1, 2, 4	
		Repair		0.9				1, 2, 4	
10	FRONT AXLE								
1000	Front Axle Assembly:								
	Axle No. 1 Assy	Inspect	0.1						
		Service		0.6				1, 2	
		Replace			15.2			5, 6, 119	
		Repair				10.0		5, 176	
	Axle No. 2 Assy	Inspect	0.1						
		Service		0.5				1, 2	
		Replace			11.0			5, 6, 119	
		Repair				10.0		5, 176	
1002	Differential:								
	Axle No. 1	Replace				1.0		5, 6	
		Repair				5.5		5, 6, 10, 13, 19, 177	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1002	Differential: (CONT)								
	Axle No. 2 Differential Assembly	Replace Repair				1.5 9.8		5, 6 5, 6, 10, 13, 19, 177	
	Axle No. 2 Rear Output Assembly	Replace Repair				1.0 1.0		5, 6 5	
1003	Planetary or Final Drive:								
	Axles No. 1 and 2 Planetary Hub Gears	Service Replace		*	2.9			2, 5, 58	A
1004	Steering and Leaning Wheel Mechanism:								
	Constant Velocity Joint	Service Replace Repair	0.2		4.5 2.0			5, 6 6, 54, 55	
	Pivot and Spindle Assembly	Inspect Service Replace Repair		0.1 *	3.0	3.0		2, 4 5, 6, 54, 55, 69, 191 5, 6, 54, 55, 91	A
11	REAR AXLE								
1100	Rear Axle Assembly:								
	Axle No. 3 Assy	Inspect Service Replace	0.1	0.5	8.0			1, 2 5, 6, 119, 201	
	Axle No. 4 Assy	Inspect Service Replace	0.1	0.5	8.0			1, 2 5, 6, 119	
	Axle No. 5 Assy	Inspect Service Replace	0.1	0.5	11.0			1, 2 5, 6, 119	
	Axles No. 3 and 4 Spindle Assembly	Replace Repaire			3.2 *			5, 6 5, 6, 142	C

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1102	Differential: (CONT)								
	Axle No. 3 Differential Assembly	Replace Repair				1.6 4.9		5, 6 5, 6, 10, 13, 19, 51, 142, 173, 174, 175, 176	
	Axle No. 4 Differential Assembly	Replace Repair				1.6 4.9		5, 6 5, 6, 10, 13, 19, 177	
	Axle No. 5 Differential Assembly	Replace Repair				1.0 5.5		5, 6 5, 6, 10, 13, 19, 177	
1103	Planetary or Final Drive:								
	Axles No. 3, 4 and 5 Planetary Hub Gears	Service Replace		*	 2.9			 2, 5, 58	A
1104	Steering, Sideshift, and Wheel Leaning Mechanisms								
	Axle No. 5 Constant Velocity, Pivot & Spindle Assembly	Replace Repair			*	 *		5, 6, 54, 55, 69, 191 5, 6, 10, 165	C C
12	BRAKES								
1202	Service Brakes:								
	Brakes	Inspect		0.2				1	
	Brake Assemblies (all)	Replace Repair			1.0 7.5			5, 6 5, 6,	
	Brake Shoes	Inspect Adjust Replace		0.2 0.5 1.0				1, 71 1, 4, 71	
1206	Mechanical Brake System:								
	Pneumatic Brake Valve	Replace Repair		3.0		 1.5		1 1, 6, 135	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1208	Air Brake System:								
	Air Dryer	Inspect	0.1					1	
		Service		0.6				1, 2	
		Replace		3.0				1, 2, 4	
		Repair		1.0					
	Coalescing Filter/ Aftercooler	Inspect		0.1					
		Replace		0.7				1, 2	
		Repair		0.1				1, 4	
1209	Air Compressor Assembly:								
	Air Compressor	Inspect	0.2						
		Replace			3.2			5, 6, 30	
		Repair				4.0		5, 6, 10, 36, 117	
	Air Governor Assembly	Adjust		0.2				1	
		Replace		1.5				1, 30	
	Air Lines	Replace		*				1, 30	C
		Repair		*				1, 4	C
1211	Trailer Brake Connections And Controls:								
	Load Sensing Valve	Adjust		1.0				1, 135	
		Replace		2.0				1, 4	
13	WHEELS AND TRACKS								
1311	Wheel Assembly:								
	Wheel Assembly	Inspect	0.1						
		Replace	0.2						
		Repair		1.0				1, 4, 74	
	Wheel Hub Assembly	Inspect		0.2					
		Service		0.1				1, 4	
		Replace			3.4			5, 6, 169	
		Repair			2.1			5, 6, 50, 51, 81, 139	
	Brake Drums (all axles)	Inspect		0.2				5, 6	
		Replace		1.2				1, 4	
		Repair				*			C

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1311	Wheel Assembly - CONT:								
	Central Tire Inflation System (CTIS)	Inspect	0.2						
	CTIS Controller	Replace		0.2				1	
		Repair		0.1				1	
	CTIS Front Manifold	Replace		0.7				1, 4, 30, 206	
		Repair		0.7				1	
		Test		2.0				1	
	CTIS Rear Manifold	Replace		0.3				1, 4, 30, 206	
		Repair		0.7				1	
1313	Tires, Tubes, Tire Chains:								
	Tire	Inspect	0.1						
		Replace		*				1	C
		Repair		*					C
14	STEERING								
1400	Steering System	Inspect	0.2						
		Service		0.6				1, 2	
		Adjust		*	3.5			1, 2, 4 5, 136	A
1401	Mechanical Steering Gear Assembly:								
	Steering Column	Inspect	0.2						
		Service		*					A
		Replace		2.2				1, 2	
	Drag Links	Inspect		0.1					
		Service			*				A
		Replace			*			5, 6	C
		Repair			*			5, 6, 10	C
	Intergear Link	Inspect		0.1					
		Service		*					A
		Replace			*			5, 6	C
		Repair			*			5, 6, 10	C
	Steering Shafts	Inspect		0.2					
		Service		*					A
		Replace		1.5				1, 2	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1401	Mechanical Steering Gear Assembly - CONT:								
	Tie-Rod	Inspect		0.1					
		Service		*					A
		Adjust		2.5				1, 2	
		Replace		1.3				1, 2, 4, 119	
		Repair		2.2				1, 2, 4	
	90 Degree Gear Box	Replace		1.0				1, 2	
		Repair			3.2			5, 6, 10	
	2.21:1 Gear Reducer	Service		*					A
		Replace			0.5			5, 6	
		Repair				0.1		5, 6, 10, 143	
	Axle No. 1	Align			4.0			5, 6, 26 134	
	Axle No. 2	Align			4.0			5, 6, 26, 134	
	Axle No. 5	Align			1.0			5, 6, 26, 134	
1407	Power Steering Gear Assembly:								
	Front Steering Gear Assembly	Inspect		0.1					
		Service		*					A
		Adjust			0.5			5	
		Replace			1.3			5, 6, 30, 196	
		Repair				2.1		5, 6, 10, 143, 196	
	Intermediate Steering	Inspect		0.1					
		Service		*					A
		Replace			1.0			5, 6, 30, 196	
		Repair				0.7		5, 6, 10 143, 196	
	Rear Steering	Inspect		0.1					
		Service		*					A
		Adjust			0.5			5	
		Replace			1.0			5, 6, 30, 196	
		Repair				2.2		5, 6, 10 143, 196	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1410	Hydraulic Pump or Fluid Motor Assembly:								
	Emergency Steering Hydraulic Pump	Adjust		1.0				1	
		Replace		2.0				1	
	Emergency Steering Hydraulic Valve	Adjust			1.0			5	
		Replace			1.5			5, 6, 205	
1411	Hoses, Lines, and Fittings:								
	Hydraulic Lines And Fittings	Replace		*				1, 30	C
1413	Tanks, Reservoirs:								
	Steering Reservoir	Inspect	0.1						
		Service		*					A
		Replace		1.2				1, 2, 4, 30, 126, 205	
		Repair		1.3				1, 2, 4, 205	
	Steering Hydraulic Filter	Service		*					A
		Replace		0.2				1, 2, 4	
	Steering Hydraulic Manifold	Replace			1.3			5, 6, 30	
		Repair			0.3			5, 6	
15	FRAME, TOWING ATTACHMENTS, DRAWBARS, AND ARTICULATION SYSTEMS								
1501	Frame Assembly:								
	Cab Step Assembly	Replace		0.5				1	
		Repair		0.2				1	
	Frame Assembly	Inspect	0.1						
		Repair						5, 6, 9, 205	
1503	Pintles and Towing Attachments:								
	Self-Guided Coupler	Inspect	0.1						
		Service		0.1				1	
		Replace		1.0				1, 2, 4	
		Repair		1.5				1, 2, 4, 6	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
1504	Spare Wheel Carrier And Tire Lock:								
	Tire Carrier and Davit	Inspect Service Replace	0.1	 * 2.3				 1	 A
16	SPRINGS AND SHOCKS ABSORBERS								
1601	Springs:								
	Spring Hangers	Inspect Service Replace	0.1	 *	 *			 5	 A C
	Springs	Inspect Replace	0.1		 *			 5, 6, 118	 C
	No. 3 Axle Suspension Air Bags	Inspect Replace	0.1		 1.0			 5, 6	
1604	Shock Absorber Equipment:								
	Shock Absorber and Bushings (each)	Inspect Replace		0.1 0.3				 1, 2	
1605	Torque, Radius, and Stabilizer Rods:								
	Equalizer Beam (each)	Replace Repair			2.2 2.0			5, 6, 118 5, 93, 190	
	No. 3 Axle Air Suspension Beam Assembly	Replace Repair			3.0 1.5			5, 6 5	
	No. 3 Axle Suspension Arm	Inspect Replace Repair	0.1		 * 3.0			5, 6 5, 6 35, 202	 C
	Torque Rods (each)	Inspect Replace		0.1	 1.3			 5, 6, 119	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
18	BODY, CAB, HOOD AND HULL								
1801	Body, Cab, Hood, and Hull Assemblies:								
	Cab Assembly	Inspect	0.2						
		Service	0.1						
		Replace			7.5			5, 6	
	Cab Door	Adjust		0.3				1	
		Replace		1.5				1	
		Repair		2.5				1, 4	
	Engine Cover Assembly	Replace		0.1				1	
		Repair		0.4				1	
1802	Fenders, Running Boards with Mounting and Attaching Parts, Windshield, Glass, Etc.:								
	Windshield Glass	Inspect	0.1						
		Replace			1.4			5	
1806	Upholstery Seats and Carpets:								
	Seat Assembly	Replace		0.6				1, 4	
		Repair		1.5				1, 4	
		Alignment		0.4				1, 4	
	Sun Visor Assembly	Inspect		0.1					
		Replace		0.3				1	
1808	Stowage Racks, Boxes, Straps, Carrying Cases, Cable Reels, Hose Reels:								
	Ladder Support	Replace		0.5				1, 2	
		Repair		*				1, 2	
	Stowage Box, Crane	Replace		0.5				1, 4	
		Repair		0.4				1, 2, 4	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
20	HOIST, WINCH, CAPSTAN, WINDLASS, POWER CONTROL UNIT, AND POWER TAKE-OFF								
2001	Hoist, Capstan, Windlass, Crane or Winch Assembly:								
	Crane Assembly	Inspect	0.1						
		Service		0.5				1	
		Test		*	*			1, 5, 158	A
		Adjust			0.5			5, 6	
		Replace			4.0			5, 6, 30, 201	
	Boom Assembly	Replace			2.0			5, 6, 30	
		Repair			4.8			5, 6	
	Erection Cylinder	Replace			0.6			5, 6, 30	
		Repair				1.5		5, 6	
	Lift Cylinder Assembly	Replace			0.7			5, 6, 30	
		Repair				0.9		5, 6, 196	
	Tension Link Assembly	Replace			0.2			5, 6	
		Repair				0.5		5, 6	
	Mast Assembly	Replace			0.6			5, 6, 30	
		Repair				*		5, 6	C
	Telescope Cylinder	Replace			0.7			5, 6, 30	
		Repair				0.8		5, 6	
	Hoist Assembly	Inspect	0.1						
		Service		0.3				1	
		Replace			1.4			5, 6	
		Repair				1.6		5, 6, 10	
	Hydraulic Hoist Motor	Replace			0.2			5, 6, 30	
		Repair				1.0		5, 6	
	Remote Control Box	Replace		0.3				1	
		Repair		1.0				1, 2, 4, 202	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
2001	Hoist, Capstan, Windlass Crane Or Winch Assembly - CONT:								
	Crane Cable	Inspect		*					A
		Service		*					A
		Replace		1.0				1, 4	
	Motor Valve Assembly	Replace			0.1			5, 6, 30	
		Repair			0.4			5, 6	
	Hoist Brake Assembly	Replace			0.4			5, 6, 30	
		Repair				1.4		5, 6	
	Cable Follower Assembly	Replace			0.7			5, 6, 30	
		Repair			0.6			5, 6	
	Sub-Frame Assembly	Replace			1.7			5. 6	
		Repair				7.0		5, 6	
	Swing Drive Brake	Replace			2.0			5, 6	
		Repair				1.0		5, 6	
	Gear Reducer	Replace			1.7			5, 6, 30, 172	
		Repair				1.2		5, 6, 175	
	Override Solenoid	Replace			1.3			5, 6, 30	
		Repair			2.1			5, 6	
		Test			0.5			6	
	Hook Block Assembly	Replace		0.5				1, 2	
		Repair		0.5				1, 2, 4, 132	
	Hoist Motor	Replace			0.5			5, 6, 30, 201	
		Repair			0.1			5, 6	
	Hand Pump	Replace		1.5				1, 2, 30	
		Repair		0.5				1, 2, 4	
	Accumulator	Service			*			1, 33	A
		Replace		0.2				1	
	Remote Control Box Cable Assembly	Replace		0.3				1	
		Repair		0.2				1	
		Test		0.5				2	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
2001	Hoist, Capstan, Windlass, Crane or Winch Assembly: CONT:								
	Self-Recovery Winch Assembly	Inspect	0.1						
		Service		0.3					
		Replace		4.5				1, 2, 4, 30, 201	
		Repair				*		5, 6, 10	C
	Counter Balance Valve	Replace			0.9			5, 6, 30	
		Repair			0.9			5, 6, 10	
	Winch Brake	Replace				1.0		4, 5	
		Repair				*		5, 6, 10	
	Front Tensioner Assembly	Service		*					A
		Replace		1.0				1	
		Repair		0.4				1, 2, 4	
	Front Cable Guide	Service		*					A
		Replace		0.1				1, 4	
	Rear Tensioner	Service		*					A
		Replace		1.0				1, 4	
		Repair		0.4				1, 2, 4	
	Rear Cable Guide	Service		*					A
		Replace		1.0				1	
	Winch Cable	Inspect	*						A
		Service		*					A
		Replace		0.8				1, 4	
	Hook Machining Arm	Replace			1.8			5, 6, 207	
		Repair			*			5, 6	C
	Middle Mach Frame	Replace			6.8			5, 6, 30, 204	
		Repair			*			5	C
2006	Bulldozer Tripod, Main Frame, Jack And Mounting:								
	Outrigger Cylinder	Replace			1.0			5, 6, 30	
		Repair				4.1		5, 6	
	Outrigger Pad Assembly	Replace		0.2					
		Repair		0.2				1, 2, 4	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
22	BODY, CHASSIS, AND HULL ACCESSORY ITEMS								
2202	Accessory Items:								
	Heater	Replace		1.3				1, 30	
		Repair		3.2				1	
	Heater Blower Motor	Replace		1.0				1	
		Repair		*				1, 4	C
	Heater Control Panel	Replace		0.8				1	
		Repair		*				1	C
2210	Data Plates and Instruction Holders:								
	Data Plate (each)	Replace		0.2				1, 2	
24	HYDRAULIC AND FLUID SYSTEMS								
2400	Major Assemblage (Load Handling System):								
	Load Handling System	Inspect	0.1						
		Service		*					A
		Test			0.6				
		Replace			2.0			5, 6	
		Repair			2.0			5, 6, 30, 201	
2401	Hydraulic Pump:								
	Main Hydraulic Pump Assembly	Inspect		0.2					
		Replace			12			5, 6, 30, 146	
		Repair			19.3			5, 6, 10, 199	
	Pump Driveshaft	Inspect		*					A
		Service		*					C
		Replace		1.0				1, 2	
		Repair		0.5				1, 2, 4	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
2402	Manifold and/or Control Valves:								
	LHS Load Sensing Valve	Replace		*				1, 2	C
		Test		0.5					
	Multifunction Manifold	Replace			3.0			5, 6	
		Repair			*			5, 6	C
2405	Mast Column:								
	LHS Hook Arm Cylinder	Service		*					A
		Replace			1.4			5, 6, 131, 210	
		Repair			2.5			5, 6, 23, 196	
2406	Strainers, Filters, Lines and Fittings, Etc.:								
	LHS Main Manifold Relief Valve	Adjust			0.5			6	
		Replace			1.0			5, 6	
		Test			0.5			6	
	LHS Main Cylinder	Replace			1.1			5	
		Repair			2.5			5, 6, 23, 196	
	Hose Assembly, Low Pressure	Replace		1.0				1, 30, 126	
		Repair		*					C
	High Pressure Hydraulic Filter Head	Replace		2.0				1, 4	
		Repair		*					C
	LHS Hook Arm Manifold Assembly	Replace			1.6			1, 201, 205	
		Repair			1.6				
	LHS Main Manifold	Replace			0.6			5, 6, 30	
		Repair			0.6			5	
2408	Liquid Tanks or Reservoirs:								
	Hydraulic Reservoir Assembly	Service		0.5				1, 2, 4, 52 126	
		Replace		5.9				1, 2, 4, 201 205, 207	
		Repair		0.5				1	

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
33	SPECIAL PURPOSE KITS								
3303	Winterization Kits:								
	Engine Arctic Kits	Inspect	0.1						
		Install			*			5, 6	C
		Replace		4.5				1	
		Repair		*				1, 2, 4	C
3307	Special Purpose Kits:								
	EMM Power Interface Kit	Replace							
		Repair							
		Install							
	CHU Control Box	Repair		*				1	C
	CHU Proximity Switch And Sensing Plate (Hook Arm Up)	Adjust		*				1, 71	A
		Replace		*					C
	CHU Mode Switch	Adjust		*				1	A
		Replace		*					C
	CHU Rear Lock Limit Switch	Adjust		*				1	A
		Replace		*					C
	CHU Light Bar and Brackets Assembly	Repair		*				1	C
	CHU Container Guide	Repair		*				1	C
	CHU Slider/Pivot Assembly	Repair		*		*		1, 132	C
	CHU Short Strut and Pin Bracket Assembly	Repair		*				1, 132	C
	CHU Slider Arm Assembly	Repair		*		*		1, 132	C
	CHU Long Strut Bracket Assembly	Repair		*				1, 132	C
	CHU Lifting Frame Lower Container Lock Plate	Repair		*				1	C
	CHU Lifting Frame Flipper Bracket and Lock Plate	Repair		*				1	C

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
3307	Special Purpose Kits - CONT:								
	CHU Air Cylinder and Rotary Paddle	Adjust Replace		* *				1, 132	A C
	CHU Pivot	Repair		*				1	C
	CHU Lifting Frame Lower Container Lock Handle	Repair		*				1	C
	CHU Rail Transport ISO Corner Locks	Repair		*				1	C
34	ARMAMENT AND SIGHTING AND FIRE CONTROL (ELECTRIC/ ELECTRONIC MATERIAL)								
3402	Small Arms:								
	Machine Gun Mounting Kit	Inspect Replace	0.1	 1.0				 1, 2	
47	GAGES (NON-ELECTRICAL) WEIGHING AND MEASURING DEVICES								
4702	Gages, Mounting, Lines, and Fittings:								
	Restrictor Indicator Assembly	Inspect Replace	0.1	 0.5				 1	
68	RADIO TELEPHONE SYSTEMS								
6809	Radio Telephone System:								
	Radio Kit	Replace Install		1.0	 *			1, 2 5	 C

Section II. MAINTENANCE ALLOCATION CHART (continued)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
91	CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL (CBR) EQUIPMENT								
9111	Gas Particulate Filter Kits:								
	Gas Particulate Filter Unit Kit	Inspect	0.2						
		Install			2.0			5	
		Replace		2.2				1	
9131	Chemical Agent Alarms:								
	Chemical Alarm Kit	Inspect	0.2						
		Install			2.3			5, 6	
		Replace		1.8				1	
	Decontamination Kit	Inspect	0.2						
		Install			1.0			5	
		Replace		0.5				1, 2	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

Table B-1. Tool and Test Equipment Requirements

Tool or Test Equipment Ref Code	Maintenance Category	Nomenclature	National/ NATO Stock Number	Tool Number
1	O	TOOL KIT, General Mechanic's: Automotive	5180-00-177-7033	SC 5180-90-N26
2	O	SHOP EQUIPMENT, Automotive Maint and Repair: Common No. 1	4910-00-754-0654	SC 4910-95-A74
3	O	SHOP EQUIPMENT, Automotive Maintenance and Repair: Supp. 1	4910-00-754-0653	SC 4910-95-A73
4	O	SHOP EQUIPMENT, Automotive Maint and Repair: Common No. 2	4910-00-754-0650	SC 4910-95-A72-HR
5	F	TOOL KIT, General Mechanic's	5180-00-699-5273	SC 5180-90-N05-HR
6	F	SHOP EQUIPMENT, Automotive Maintenance and Repair: Field Maintenance, Basic	4910-00-754-0705	SC 4910-95-A31
7	F	SHOP EQUIPMENT, Automotive Maintenance and Repair: Field Maintenance	4910-00-754-0706	SC 4910-95-A62
8	F	SHOP EQUIPMENT, Fuel and Electrical System, Engine: Field Maintenance, Basic	4940-00-754-0714	SC 4940-95-B20-HR
9	F	SHOP WELDING SET	3433-00-357-6311	SC 3433-90-N01-HR
10	H	SHOP EQUIPMENT, Automotive Maintenance and Repair: Field Maintenance, Supp. 2	4910-00-754-0707	SC 4910-95-A63
11	F	SHOP EQUIPMENT, Machine Shop	3470-00-754-0708	SC 3470-95-A02
12	H	ADAPTER, Engine Stand	4910-00-146-9624	J33850
13	H	ADAPTER, Maintenance Stand, Differential	4910-01-384-6264	J-39929-A
14	F	ADAPTER, Mechanical Puller	5120-00-733-8890	J7932
15	F	ADAPTER, Quick Disconnect	5935-01-297-2481	J33765
16	O	ADAPTER, Radiator	4910-01-170-4929	J29003-A
17	F	ADAPTER, Socket (3/4 in. Female to 1/2 in. Male)	5120-00-227-8088	97-3725
18	F	ADAPTER, Socket (3/4 in. Female to 1 in. Male)	5120-00-227-8104	A-A-2172
19	H	ADAPTER KIT, Transfer Case	4910-01-385-6779	J-39911
20	F	ALIGNMENT TOOL, Blower	5120-01-158-3991	J33001

Table B-1. Tool and Test Equipment Requirements (Cont).

Tool or Test Equipment Ref Code	Maintenance Category	Nomenclature	National/ NATO Stock Number	Tool Number
21	H	ALIGNMENT TOOL, Clutch	5120-01-115-1156	J24221
22	H	ALIGNMENT TOOL, Pin	5120-01-232-0007	J24285
23	O	ANALYZER SET, STE/ICE-R	1910-01-222-6589	12259266
24	H	ATTMENT, BALL, MICRO	5120-00-221-1921	J4757
25	H	BRACKET, Lifting	5306-01-338-6292	J24408-A
26	F	BOX, Chalk, Reel and Line	5210-00-273-9793	GGG-C-291
27	H	BRACKET, Lifting	5120-01-115-1157	J24196
28	H	BRACKET, Mounting, Cylinder Liner	5340-01-158-3984	J24565-02
29	H	BRUSH, Wire, Valve Cylinder	5120-00-766-2141	J5437
30	O	CAP AND PLUG SET	5340-00-450-5718	10935405
31	O	CARTRIDGE, DDEC	7030-01-354-6174	J38500-750
32	O	CARTRIDGE, ATEC	4940-01-367-6194	J38500-300
33	F	CHARGING KIT, Pressure	4910-01-046-7109	12252157
34	F	COMPRESSOR, Air Unit	4130-00-752-9633	MIL-C-13874
35	H	COMPRESSOR SET, Snap Ring	5120-01-116-5016	J24208-D
36	H	COMPRESSOR, Ring	5120-01-048-3129	J24204-1
37	H	COMPRESSOR, Ring	4910-01-158-3974	J24227
38	F	COMPRESSOR, Ring, Piston	5120-00-250-6055	RC40C
39	H	COMPRESSOR, Seal	5120-01-048-2159	J24204-3
40	F	COMPRESSOR, Spring Valve	5120-01-297-2397	J7455-A
41	H	COMPRESSOR, Spring	5120-01-048-2160	J24219
42	O	CONNECTOR REMOVER	5120-01-355-3012	J38384
43	O	CONNECTOR REMOVER Electrical Contact	5120-01-158-4707	114010
44	O	CRIMPING TOOL	5120-01-355-0844	J35123
45	O	CRIMPING TOOL (CANNON)		995-0001-904
46	H	DETECTOR, Leak, Vacuum Gage	6685-01-061-4253	J23987-B
47	F	DRILL MACHINE, Upright	3413-00-165-4117	MIL-D-80038
48	F	DRIVER	5120-01-374-6200	2HE496
49	H	DRIVER BEARING, Gear	5120-01-033-8902	J25257
50	F	DRIVER, CTIS Seal	5120-01-355-0857	J41112
51	F	DRIVER, CTIS Seal	5120-01-355-0858	J41113
52	O	DRUM, Storage 57 gal	8110-00-082-2626	MIL-D-6054
53	F	EXPANDER, Seal, Oil	5120-00-336-0445	J4239
54	F	EXTRACTOR, Inertial		2HE226

Table B-1. Tool and Test Equipment Requirements (Cont).

Tool or Test Equipment Ref Code	Maintenance Category	Nomenclature	National/ NATO Stock Number	Tool Number
55	F	EXTRACTOR, Inertial	5120-01-354-9543	2HE227
56	O	EXTRACTOR TOOL, Elect	5120-01-015-2154	91019-3
57	O	EXTRACTOR TOOL, Elect	5120-00-020-5926	305183R
58	F	EYES, Lifting	5306-01-197-6569	3016T39
59	F	EYES, Lifting	5306-01-333-5486	8891T82
60	F	EYES, Lifting	5306-01-239-5053	3016T65
60.1	O	FAULT CODE RETRIEVAL DEVICE (FCRD)		CA1 05 020
61	H	FIXTURE, Holding	5120-01-115-1165	J24310
62	F	FIXTURE, Lifting, Cylinder Head	4910-00-456-7620	J22062-01
63	H	FIXTURE, PTO, Gear	4910-01-158-3969	J26899
64	H	FIXTURE, Test, Head	4910-01-158-3985	J28454
65	O	GAGE, Belt Tension	4935-01-254-9808	BT-33-73-BF
66	H	GAGE, Center and Front	5210-01-133-6888	J29198-3
67	H	GAGE, Cylinder, Bore	5210-01-070-4543	J5347-B
68	H	GAGE, Depth Cylinder, Liner	5210-01-174-4498	J24898
69	F	GAGE, Depth	5210-00-023-4798	J22273-01
70	F	GAGE, Dial	5120-00-494-1846	J-8165-2
71	O	GAGE, Feeler, Jacobs Brake	5210-01-214-2138	007958
72	F	GAGE, Feeler	5120-00-671-2275	J3174-02
73	H	GAGE, Groove	5220-01-028-1109	J24599
74	O	GAGE, Inflation	4910-00-204-2644	100708
75	F	GAGE Set, Feeler	5210-01-119-7601	FB310B
76	F	GAGE Set, Feeler	5210-01-245-9564	J1698-02
77	F	GAGE Set, Feeler, Piston	5210-00-416-1631	J5438-01
78	F	GAGE, Timing, Injector	5220-01-348-1638	J25502
79	F	GAGE, Valve, Adjustable	5220-00-176-0638	J9708-15
80	F	HAMMER, Slide	5120-01-112-2165	J6125-16
81	F	HANDLE, Driver	5120-00-677-2259	J8092
82	H	HANDLE, Driver	5120-00-808-5082	J3154-1
83	H	HANDLE, Driver	5120-01-054-4048	J24202-4
84	O	HANDLE, Installer	5120-00-977-5578	J7079-2
85	O	HARNESS, Breakout	6150-01-373-7771	J34517
86	F	HOLDER, Stator, Roller	5120-01-115-1158	J24218-2
87	H	HONING UNIT	5130-00-629-9782	J5902-01
88	F	INDICATOR, Dial, Timing Tool	2815-01-355-6628	J34930-A

Table B-1. Tool and Test Equipment Requirements (Cont).

Tool or Test Equipment Ref Code	Maintenance Category	Nomenclature	National/ NATO Stock Number	Tool Number
89	F	INDICATOR, Dial	5120-00-402-9619	J7872
90	H	INDICATOR, Dial, Set	5120-00-794-9178	J5959-01
91	F	RECONDITIONING SET Injector, Tube	5180-00-146-9619	J22525-B
92	F	INSERTER AND REMOVER	5120-01-166-0572	J33080
93	H	INSERTER, Bearing and Bushing	5120-01-158-3946	J25562
94	H	INSERTER, PLUG, Cylinder Block	5120-01-166-5419	J21850
95	H	INSERTER, SEAL	5120-01-340-1820	J35373
96	O	INSERTION TOOL (CANNON)	5120-01-374-8968	CIT-SS-10
97	H	INSTALLER AND REMOVER	5120-01-048-2180	J25275
98	H	INSTALLATION TOOL, Cup Plug	5120-01-297-2457	J33420
99	H	INSTALLER, Bearing	5120-01-115-1160	J24197
100	F	INSTALLER, Guide, Valve	5120-00-999-8617	J21520
101	H	INSTALLER, Lock Ring	5120-01-054-4050	J24453
102	F	INSTALLER, Oil Seal	5120-01-227-8483	J21983
103	H	INSTALLER, Output Shaft	5120-01-054-4042	J24202-1A
104	H	INSTALLER, Plug	5120-01-385-7288	J24411
105	H	INSTALLER, Plug	5120-01-054-4053	J24369
106	F	INSTALLER, Seal	5120-01-054-4049	J24198
107	F	INSTALLER, Seal, Crankshaft, Front	5120-00-936-4377	J9783
108	F	INSTALLER, Seal	5120-01-013-1678	J9791
109	O	INSTALLER, Seal	5120-00-977-5579	J8550
110	F	INSTALLER, Seal, Flywheel	4910-01-176-4230	J21112-B
111	H	INSTALLER, Seal, Oil	5120-00-937-7267	J8501
112	H	INSTALLER, Seal, Transfer Case	5120-01-383-7878	TRS6227
113	H	INSTALLER, Valve Bridge	5120-00-999-8616	J7482
114	H	INSTALLER, Water Pump Seal	5120-01-365-4079	J-38858
115	H	INSTALLING TOOL, Piston	5120-00-127-7757	J23762-A
116	H	INSTALLING TOOL, Valve	5120-01-048-3118	J24357
117	H	INSTALLING/REMOVING Tool	5120-01-130-8864	J23019
118	F	JACK, Stabilizer	2590-00-23-7418	10876244
119	O	JACK KIT, Hydraulic, Hand	5120-00-587-4144	GGG-J-60
120	F	LEVEL	4920-00-064-8974	2579573-002
121	F	LIFTING BRACKET, Flywheel	5120-01-116-6049	J24365

Table B-1. Tool and Test Equipment Requirements (Cont).

Tool or Test Equipment Ref Code	Maintenance Category	Nomenclature	National/ NATO Stock Number	Tool Number
122	H	LIFTING Bracket, Center	5120-01-116-6048	J24195
123	H	LIFTING Fixture, Clutch	5120-01-115-1159	J24209
124	H	MAG INS. UNIT, Stat	6635-00-566-9772	MIL-M-6867C
125	F	OIL, Seal, Expander	5120-01-232-0005	J8682
126	O	PAN, DRAIN 6 Gal	4910-00-287-2944	MIL-P-45819
127	F	PIN, Guide Set	5120-01-115-1163	J24315
128	F	STUDS, Guide	5315-01-162-3630	J24748
129	H	PIN, GUIDE	5315-01-165-1469	J1126
130	H	PLATE KIT, Gear Bearing	5180-01-167-4285	2SK900
131	F	PLIERS, Channel Lock	5120-00-287-2512	GGG-W-649
132	O	PLIERS, Retaining Ring	5120-01-375-5699	2BH945
133	F	PLUG, Cylinder Block	5120-01-166-5421	J24597
134	F	PLUMB BOB	5210-00-007-8229	GGG-P-501
135	O	PRESSURE TEST KIT	4910-01-378-9068	3SK911
136	F	PRESSURE TEST KIT	4910-01-378-8863	3SK912
137	H	PROTECTOR, Piston	5120-01-048-2156	J24210
138	H	PROTECTOR, Seal	5120-01-048-2157	J24216-01
139	F	PROTECTOR, Spindle	3830-01-349-7390	2HE234
140	F	PROTRACTOR, Magnetic	5210-01-415-0075	2150A251
141	F	PROTRACTOR, Square	5210-00-273-1937	05-12INCH
142	F	PULLER, Bolts	5120-01-185-6811	J26901-A
143	H	PULLER, Mech	5120-00-219-8397	J1902-B
144	F	PULLEY REMOVER	5120-00-944-0363	J5356
145	F	PUMP, FORCE	4130-01-192-0496	466-46485
146	O	PULLEY KIT, Pump, Roof Mount	5120-01-375-5700	2HP645
147	F	PUNCH, DRIFT	5120-00-004-4921	PWA14920
148	O	READER, Diagnostic (DDEC)	4910-01-343-3508	J38500-1
149	H	REMOVER, Bearing, Front Support	5120-01-117-2523	J28557
150	H	REMOVER, Snap Ring	4910-01-158-3996	J26598-A
151	H	REMOVER, Valve Bridge	5120-00-999-8615	J7453
152	H	REMOVER, Valve Pin	5120-01-048-3128	J-24412-2
153	H	REMOVER, Valve Seat	5120-01-165-1935	J23479-E
154	F	REMOVER AND INSTALLER, Piston Ring	5120-00-494-1846	7950177

Table B-1. Tool and Test Equipment Requirements (Cont).

Tool or Test Equipment Ref Code	Maintenance Category	Nomenclature	National/ NATO Stock Number	Tool Number
155	F	REMOVER ASSEMBLY	4910-01-158-3982	J24563-A
156	H	REMOVER SET, Valve Bridge	5120-00-999-8614	J7091-01
157	H	REMOVER, Guide Valve	5120-00-733-8880	J6569
158	H	REMOVER, Seal, Waterpump	4910-01-158-3979	J22150-B
159	H	COLLECTOR RING, Installer/Stalking SET	5120-01-048-3126	J24200
160	F	RIVET GUN	5130-00-982-8078	352
161	F	RULE, STEEL, Machinist	5120-00-204-1283	GGG-R-791
162	F	SCALE, TENSION	4910-00-779-6832	J-8129
163	F	SCREW, Guide	5120-01-144-4483	J1927-01
164	H	SLEEVE, Puller	4910-01-162-3633	J25007-4
165	H	SOCKET, 1-11/16 in.	5120-01-024-0168	GGG-W-641
166	H	SOCKET WRENCH Attachment, Screwdriver	5120-01-297-2374	J34650
167	H	SOCKET, 55mm	5120-01-386-5999	J39938
168	H	SOCKET, 63mm	5120-01-386-5988	J39939
169	F	SOCKET, Spindle Nut	5120-01-354-9451	J41111
170	H	SOCKET, Socket Head Screw	4470-01-350-0895	LAW124A
171	H	SOCKET, 12mm Hex Head	5120-00-240-6148	849550-3-8AF
172	F	SOCKET, Swivel 13/16 in.	5120-00-236-7619	A-A-1396
173	H	SPANNER	5120-01-354-9452	12379639
174	H	SPANNER	5120-01-354-9450	12379638
175	H	SPANNER	5120-01-354-9449	12379637
176	H	STAND, Maintenance, Axle	4910-00-241-3329	150-AX
177	H	STAND, Maintenance, Engine	4910-00-808-3372	J29109
178	H	STEAM CLEANER	7910-01-157-8272	PRO 12-5
179	H	STONE, Abrasive Cylinder	5130-00-937-7280	J5902-14
180	H	STONE, Sharpening	5345-00-584-4607	A6F0
181	H	STUD SET	5120-01-048-2155	J25002
182	F	TAP AND DIE SET	5136-01-119-0005	TDM99117
183	O	TERMINAL CRIMPER	5120-01-355-0845	J35688
184	O	TERMINAL REMOVER	5120-01-357-2937	J35689-A
185	O	TERMINAL REMOVER	5120-01-353-2534	J33095
186	O	TESTER, Pressure, Radiator	4910-01-170-4928	J24460-01
187	H	TESTING KIT, Cylinder	5180-01-252-9800	2SK737

Table B-1. Tool and Test Equipment Requirements (Cont).

Tool or Test Equipment Ref Code	Maintenance Category	Nomenclature	National/ NATO Stock Number	Tool Number
188	F	OSS TESTER	4910-01-370-4908	13189
189	H	TOOL SET, Blower	4940-00-611-7945	J6270-G
190	F	TOOL SET, Equalizer Beam	4940-01-386-6108	1764
191	F	TOOL, Knuckle, Adjusting	5120-01-355-6571	J41115
192	H	TOOL, Lifting	5120-01-159-1736	J33079-1
193	H	TOOL, Staking	5120-01-359-2757	J24200-1
194	O	TOOL, SRS/TRS Alignment	5120-01-343-1001	J39815
195	F	TORCH, Propane	3433-01-161-4998	737-1-0000
196	F	VISE, Pipe, Chain	5120-00-078-6662	CV12
197	O	WEATHERPAC CRIMPER	5120-01-374-8936	J38852
198	O	WEATHER TERMINAL REMOVER	5120-01-374-8969	J36400-5
199	F	WINCH, Cable, Hand Operating	3950-00-079-1202	415526-1
200	F	WRENCH, Chain	5120-01-192-9403	CW24
201	O	WRENCH, Combination 1 5/8 in.	5120-01-016-7144	1180
202	O	WRENCH, Combination 1 11/16 in.	5120-00-184-8566	A-A-1351
203	O	WRENCH, Combination 1 3/4 in.	5120-00-020-8658	1256
204	F	WRENCH, Combination 1 13/16 in.	5120-00-081-9099	GGG-W-636
205	O	WRENCH, Combination 1 7/8 in.	5120-00-020-8632	1260
206	O	WRENCH, Combination 2 in.		
207	O	WRENCH, Combination 2 1/8 in.	5120-00-203-4795	1268
208	O	WRENCH, Fuel Line	5120-00-019-5232	J-8932-B
209	F	WRENCH SET, Pushrod	5120-00-132-2109	J21100-D
210	H	WRENCH, Spanner	5120-01-375-4502	J41108

Section IV. REMARKS

REFERENCE CODE	REMARK
A	No specific times established. Times required for inspection, service, or test will depend on extent of testing required.
B	This task covers the entire on-stand repair. Use tools listed in the individual tasks for those tasks.
C	No specific times established. Times required for replacement or repair will depend on extent of work required.
D	No specific times established. Times required for overhaul will depend on extent of work required.
E	In the “O” category repair is limited to splicing of wires, taping of the harness or wires, and the replacement of wire ends.
F	At the “F” level the entire wire harnes is replaced.
G	Repair consists of replacing individual items.
H	High pressure hoses are non-repairable.
I	Repair of the gas particulate filter is covered in TM-(TBD).
J	Repair of the M-8 chemical alarm is covered in TM 3-6665-225-12.
K	Repair of the M-13 decontamination unit is covered in TM 3-4230-214-12&P.

APPENDIX C

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION.

C-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the PLS. These items are authorized to you by CTA50-970, Expendable Items (Except Medical, Class V, Repair parts and Heraldic Items) or CTA8-100, Army Medical Department Expendable/Durable Items.

C-2. EXPLANATION OF COLUMNS.

a. Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative task box to identify the material (e.g., "Compound, Cleaning, Item 5, Appendix C").

b. Column (2) - Level. This is the maintenance level approved to use the item listed.

c. Column (3) - National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity (CAGE) code in parentheses followed by the part number.

e. Column (5) - Unit of Measure. Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in. or pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	O		Adhesive (45152) 1490170 Sikaflex 221 gray	 gl
1.1	O		Adhesive No. 380 (05972) OTC P/N 3303334	
		8040-01-388-8704	3 gm tube (05972), 38004	gm
		8040-01-406-8424	1 oz bottle (05972), ITEM 3850	oz
		8040-01-284-3984	1 oz can (05972), 3850	
2	O		Adhesive (05972) Loctite #409	
		8040-01-321-1254	20 gram tube	gm
3	O		Deleted	
4	O		Adhesive (05972) Loctite #44581	
		8040-01-046-5061	4 gram kit	gm
5	O		Adhesive (04963) 1300	
		8040-00-148-7182	5 ounce tube	oz
6	O		Adhesive (71984) RTV 732 Black	
		8040-00-851-0211	5 oz kit	oz
		8040-00-865-8991	12 oz kit (80244) MIL-A-46106 Group 1 Type 1	oz
		8040-01-331-7470	5 oz tube	oz
7	O		Adhesive (71984) RTV 732 Clear	
		8040-00-701-9546	5 oz kit	oz
		8040-01-010-8758	12 oz kit (80244) MIL-A-46106 Group 1 Type 1	oz
		8040-01-331-7469	3 oz tube	oz
		8040-01-331-7475	12 oz cartridge	oz
8	O		Adhesive (71984) RTV 738	
		8040-01-260-1939	5 oz tube	oz
9	O		Adhesive (01139) RTV-162 (71984) Silastic 738 RTV (81349) MIL-A-46146	
		8040-00-118-2695	3 oz kit	oz

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
10	O		Adhesive	
			(01139) RTV 108	
		8040-00-843-0802	3 ounce kit	oz
		8040-01-173-9815	12 ounce tube	oz
11	O		Adhesive	
			(18876) 13086263	
		8040-00-390-7959	1 quart can	qt
12	O	8040-01-515-1050	Adhesive, Insulation	
			(28112) 540 (OTC P/N 1372150)	
			10.3 oz (305 ml) cartridge	oz
13	O		Adhesive, Retaining	
			(05972) 68035	
		8030-01-303-0502	50 ml bottle	bt
14	O		Adhesive Sealant	
			(45152) 24758FX	oz
15	O		Adhesive, (0PMN0) Sika 255 FC Blk	
			(45152) 3145938	oz
16	O		Adhesive Spray	
			(45152) 1537350	oz
17	O		Alcohol, Isopropyl	
			(53390) 7618-19-4	
		6810-01-075-5546	40 oz bottle	oz
18	O		Antifreeze	
			(81349) MIL-A-11755	
		6850-00-174-1806	55 gallon drum	gl
19	O		Antifreeze (81349) MIL-A-46153	
		6850-00-181-7929	1 gallon bottle	gl
		6850-00-181-7940	55 gallon drum	gl
20	O		Antiseize Compound	
			(81349) MIL-A-907	
		8030-00-155-6444	16 oz aerosol can	oz
21	O		Antiseize Compound	
			(81349) MIL-A-907	
		8030-00-251-3980	1 lb can	lb
22	O		Antiseize Compound, High Temperature	
			(81349) MIL-A-907	
		8030-00-597-5367	2-1/2 lb can	lb
23	O		Brush, Paint	
		8020-00-178-8305	(96906) MS16866	ea
24	O		Biocide, Fuel Preservative	
			(OU7J1) Biobar J.F.	
		6840-00-300-6373	1 quart	qt
		6840-01-173-6940	5 gallon	gl

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
25	O		Cable Ties (96906) MS3367-3	
		5975-01-273-8133	12 inches long, 100 per package	hd
26	O		Cable Ties (96906) MS3367-1	
		5975-00-074-2072	6 inches long, 100 per package	hd
27	O		Cable Ties	
		4310-01-115-2297	(56501) TY525MX	ea
28	O		Chalk, Marking, White	
		7510-00-537-6426	(83030) 1400	ea
29	O		Cleaner, Lubricant A (81349) MIL-L-63460	
		9150-01-079-6124	4 oz bottle, w/extender tube	oz
30	O		Cloth, Abrasive (Crocus) (58536) A-A-1206	
		5350-00-221-0872	50 sheet package	sh
31	O		Cloth, Cleaning (81349) MIL-C-85043	
		7920-00-165-7195	Type 1 - 10 lb box	lb
		7920-00-044-9281	Type 2 - 10 lb box	lb
32	O		Coating Compound, Bituminous, Solvent Type (70842) 765-1505	
		8030-00-546-8621	21 ounce aerosol can	oz
33	O		Coating, Rust Arresting (81349) MIL-R-10036	
		8030-00-231-2349	1 gallon can	gl
		8030-00-231-2344	5 gallon can	gl
		8030-00-174-3242	55 gallon drum	gl
34	O		Corrosion Preventive Compound (81349) MIL-C-16173	
		8030-00-062-6950	Grade 1 - 1 quart can	qt
		8030-01-149-1731	Grade 2 - 1 quart can	qt
		8030-00-837-6557	Grade 3 - 1 pint can	pt
		8030-00-903-0931	Grade 4 - 1 pint can	pt
35	O		Corrosion Preventive Compound (13548) 97940	
			8 ounce can	oz
36	O		Corrosion Preventive Compound (81349) MIL-C-11796	
		8030-00-231-2353	5 lb	lb
		8030-00-285-1570	35 lb	lb
37	O		Dye, Prussian Blue	
		8010-00-652-3626	(81349) MIL-P-30501	oz

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
38	O		Epoxy	
		8040-00-092-2816	(96900) 04001	ea
39	O		Gasket, Forming Compound	
			(0597) Loctite #515	
		5330-01-325-6993	50 ml tube	ml
40	O		Gasket, Strip	
			(45152) 2011160	
			50 ft. roll	in
41			Grease	
			(45152) 1864450	
		9150-01-197-7688	2.25 oz tube	oz
		9150-01-197-7690	1.75 lb can	lb
		9150-01-197-7689	6.5 lb can	lb
42	O		Grease, Automotive And Artillery	
			(70878) 5542P	
			(81349) MIL-G-10924	
		9150-01-197-7688	2.25 oz tube	oz
		9150-01-197-7690	1.75 lb can	lb
		9150-01-197-7689	6.5 lb can	lb
43	O		Grease, General Purpose	
			(81349) MIL-G-23549	
		9150-01-306-9202	1 pound can	lb
		9150-00-235-5555	6.5 pound can	lb
		9150-00-823-8047	35 pound can	lb
44	O		Grease, High Temperature	
		9150-01-154-1259	(81349) DOD-G-85733	qt
45	O		Grease, Instrument	
			(97343) SRI2	
		9150-01-235-5057	1 pint can	pt
46	O		Grease, Lubriplate	
		9150-00-076-1887	(73219) 06706	oz
47	O		Grease, Molybdenum Disulfide	
			(58372) 60G	
		9150-01-091-9336	1.5 lb can	lb
			(81349) MIL-G-21164	
		9150-00-754-2595	1.75 lb can	lb
		9150-00-223-4004	6.5 lb can	lb
		9150-00-965-2003	35 lb can	lb
48	O		Heatshrink, Sealed	
		5970-00-815-1295	(45152) 1704950	ea
48.1	O		Heatshrink, Sealed	
			(45152) 1704940	ea
49	O		Hot Melt	
			(04963) 3783	oz

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
50	O		Hydraulic Oil, OE/HDO 10	
			(81349) MIL-L-2104	
		9150-00-189-6727	1 quart can	qt
		9150-01-177-3988	12 quart box	qt
		9150-00-191-2772	55 gallon drum	gl
		9150-00-183-7807	Bulk	gl
51	O		Injector Test Oil	
		6850-00-779-6851	(33287) J-26400-5	oz
52	O		Insulation, Cab	
			(40501) MC5150-1/2 blk	ft
53	O		Lubricant, Tire	
			(96980) AA20	
		2540-00-256-5529	5 gallon can	gl
		2540-00-256-5526	1 quart can	qt
			(96980) AA17	
		2540-00-256-5527	1 gallon can	gl
54	O		Lubricating Oil, Engine OE/HDO 30	
			(81349) MIL-L-2104	
		9250-00-186-6681	1 quart can	qt
		9150-00-188-9858	5 gallon can	gl
		9150-00-189-6729	55 gallon drum	gl
55	O		Lubricating Oil, Engine OE/HDO 40	
			(81349) MIL-L-2104	
		9150-00-189-6730	1 quart can	qt
		9150-00-188-9862	55 gallon drum	gl
		9150-00-405-2987	Bulk	gl
56	O		Lubricating Oil, Engine OE/HDO 15W/40	
			(81349) MIL-L-2104	
		9150-01-152-4117	1 quart can	qt
		9150-01-178-4725	12 quart box	qt
		9150-01-152-4118	5 gallon can	gl
		9150-01-152-4119	55 gallon drum	gl
57	O		Lubricating Oil, Engine OEA	
			(81349) MIL-L-46167	
		9150-00-402-4478	1 quart can	qt
		9150-00-402-2372	5 gallon can	gl
		9150-00-491-7197	55 gallon can	gl
58	O		Lubricating Oil, Gear GO 75W	
			(81349) MIL-L-2105	
		9150-01-035-5390	1 quart can	qt
		9150-01-048-4593	1 gallon can	gl
		9150-01-035-5391	5 gallon can	gl

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
59	O		Lubricating Oil, Gear GO 80W/90 (81349) MIL-L-2105	
		9150-01-035-5392	1 quart can	qt
		9150-01-313-2191	1 gallon can	gl
		9150-00-001-9395	5 gallon can	gl
60	O		Lubricating Oil, Preservative (15W40) (Engine) (81349) MIL-L-21260C	
		9150-01-293-7696	5 gallon	gl
		9150-01-293-2792	55 gallon	gl
61	C		Oil, Fuel, Diesel Winter	
		9140-00-286-5286	Bulk	gl
62	C		Oil, Fuel, Diesel Regular	gl
		9140-00-286-5294	Bulk	
63	O		Petrolatum, Technical (81348) VV-P-236	
		9150-00-250-0931	8 ounce tube	oz
		9150-00-250-0926	1.75 pound can	lb
		9150-00-250-0933	7.5 pound can	lb
64	O		Primer, (0PMN0) Sika Cleaner 205 (45152) 3145939	oz
65	O		Primer, “T” 7471	oz
		8030-01-388-5604	(05972) 19267	
66	O		Protective Coating (45152) 1412020	
			1 quart can	qt
67	O		Rags, Wiping (58536) A-A-531	
		7920-00-205-1711	50 pound bale	lb
68	O		Sealant, Electrical (00CE9) RTV200-257	
69	O		Sealant, Metal (45152) 1317520	
70	O		Sealant, Rubber (45152) 1494320	
71	O		Sealant, Teflon Pipe (19207) 12297953	
		1015-01-255-4144	50 ml tube	ml

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
72	O		Sealing Compound (05972) Loctite #567	
		8030-01-054-0740	50 ml bottle	ml
		8030-00-204-9149	250 ml tube	ml
			(05972) Loctite #567-47	
		8030-01-166-0675	50 ml tube	ml
73	O		Sealing Compound (05972) Loctite #290 (80244) MIL-S-46163 Type 3 Grade R	
		8030-00-111-2763	10 ml bottle	ml
		8030-00-111-2762	50 ml bottle	ml
		8030-01-050-8288	150 ml bottle	ml
74	O		Sealing Compound (05972) Loctite #271 (80244) MIL-S-46163 Type 1 Grade K	
		8030-00-148-9833	10 ml bottle	ml
		8030-01-158-6070	50 ml bottle	ml
75	O		Sealing Compound (77247) Permatex-3D (80244) MIL-S-45180 Type 3	
		8030-00-656-1426	1 pint can	pt
76	O		Sealing Compound (05972) Loctite #262	
		8030-01-159-4374	10 ml bottle	ml
		8030-01-142-9830	50 ml bottle	ml
		8030-01-142-3131	250 ml bottle	ml
77	O		Sealing Compound (05972) Loctite #242 (80244) MIL-S-46163A Type 2 Grade N	
		8030-01-104-5392	10 ml bottle	ml
		8030-01-014-5869	50 ml bottle	ml
		8030-01-025-1692	250 ml bottle	ml
78	O		Sealing Compound (05972) Loctite 222 (80244) MIL-S-46163A Type II Grade M	
		8030-01-054-3968	10 ml bottle	ml
		8030-01-069-3046	50 ml bottle	ml
		8030-01-055-6126	250 ml bottle	ml
79			Sealing Compound (05972) Loctite #680	
		8030-01-303-0502	50 ml bottle	ml
		8030-01-387-2007	250 ml bottle	ml
80	O		Sealing Compound	
		8030-01-023-4535	(04963) 3M2084	oz

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
81	O		Sealing Compound (77247) 51D	
		8030-00-954-9371	1 pint can	pt
82	O		Sealing Compound (45152) 079-820400	
		8030-01-104-5392	10 ml bottle	ml
		8030-01-014-5869	50 ml bottle	ml
		8030-01-025-1692	250 ml bottle	ml
83	O		Sealing Compound (45152) 65270AX	
		8030-01-104-5392	10 ml bottle	ml
		8030-01-014-5869	50 ml bottle	ml
		8030-01-025-1692	250 ml bottle	ml
84	O		Silicone Compound (72984) DC 111	
		6850-00-294-0860	5 ounce Tube	oz
85	O		Silicone Compound, Anti-Corrosion (71984) DC4-2OZ	
		6850-00-177-5094	2 ounce tube	oz
86	O		Solution, Soap (81349) MIL-W-15000 Class C	
		6810-00-252-1345	1 quart bottle	qt
87	O		Solvent, Drycleaning (58536) A-A-711 (81348) P-D-680	
		6850-00-664-5685	1 quart can	qt
		6850-00-264-9038	5 gallon can (Environmentally Compliant Solvent) (0K209) Breakthrough	gl
		6850-01-378-0679	5 gallon can	gl
88	O		Tag, Identification (16956) 12-105	
		9905-00-720-3577	white	ea
89	O		Tags, Identification (81349) MIL-T-12755	
		9905-00-537-8957	white	ea
		9905-00-537-8955	yellow	ea
90	O		Tape, Adhesive (26066) 4516	
		7510-00-079-7604	36 yard roll	yd
91	O		Tape, Foam 36 yard roll	yd

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
92	O	5330-01-084-5058	Tape, Foam (45152) 107685A	in
93	O	8030-00-889-3535	Tape, Antiseizing (81755) P5025-2R (81349) MIL-T-27730 260 inch spool	in
94	O	7510-01-358-8770	Tape, Pressure Sensitive (52152) 4950 36 yard roll	yd
95			Deleted	
96			Deleted	
97	O	8010-00-401-0421	Varnish (79819) FIXATIF 1 quart can	qt
98	C	6850-00-926-2275	Washer Fluid (81348) O-C-1901 1 gallon bottle	gl
99	O	6145-01-074-7535	Wire, 16 Gage (45152) 1927FX	ft
100	O	9505-00-331-3275	Wire, Safety (96906) MS20995C41	lb
101	O	5330-01-325-6993	Wrench, Loctite #515 (05972) 25824AX	ml

APPENDIX D

ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

D-1. SCOPE.

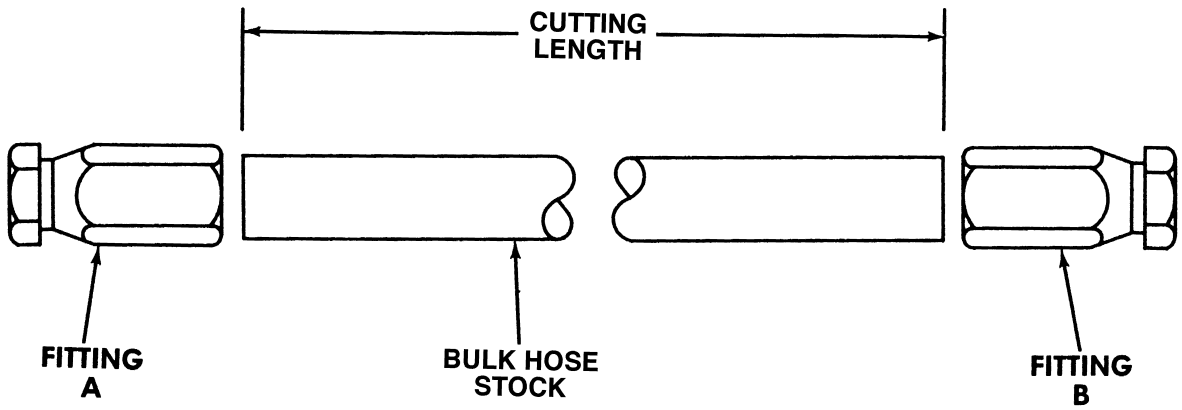
This appendix includes complete instructions for manufacturing or fabricating authorized items locally. All bulk materials needed to manufacture an item are listed by part number or specification number in a tabular list with an illustration, as needed.

Section II. MANUFACTURED ITEMS

D-2. FUEL HOSE FABRICATION.

The following hoses are cut from bulk hose using a fine toothed hacksaw or suitable cutting device. Locations and installation instructions for fuel hoses are found in Para 4-12. Table D-1 lists the fuel hoses.

Table D-1. Fuel System Hoses



Hose Assembly Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
65068AX-024	2575-48RL	24	61
47371AXU-018	FC350-04	18	46
EU102958-025	FC350-06	25	64
EU102958-052	FC350-06	52	132
1924600U-034	FC350-10	34	86
56845AXU-005	FC350-10	5	13

D-3. AIR INTAKE HOSE FABRICATION.

There are two hoses in the air intake system that require fabrication. Both hoses can be cut from bulk stock using a fine-toothed hacksaw or suitable cutting device. Refer to Para 4-7 for locations and installation instructions.

Table D-2. Air Intake Hoses

Hose Assembly Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
21033FXW-120	21020FX	120	305
1732400U-067	FC300-16	67	170

D-4. COOLING SYSTEM HOSES FABRICATION.

The following hoses for the cooling system are cut from bulk hose using a fine-toothed hacksaw or suitable cutting device. Locations and installation instructions are found in Para 6-8.

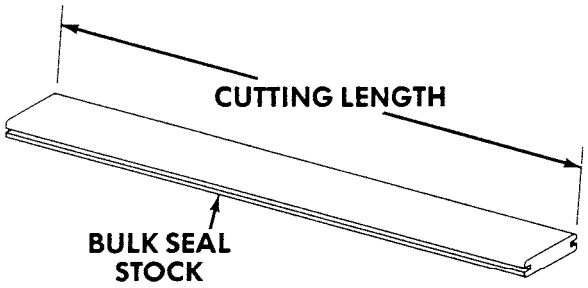
Table D-3. Cooling System Hoses

Hose Assembly Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
69940AX-048	3230-0293	48	122
4811FX-100	4811FX	100	254
46754AX-U-020	FC350-06	20	51

D-5. SEAL FABRICATION.

Fabricate seals from bulk seal stock listed in Table D-4. Use a suitable cutting tool to cut seal to length required.

Table D-4. Seal, Nonmetallic

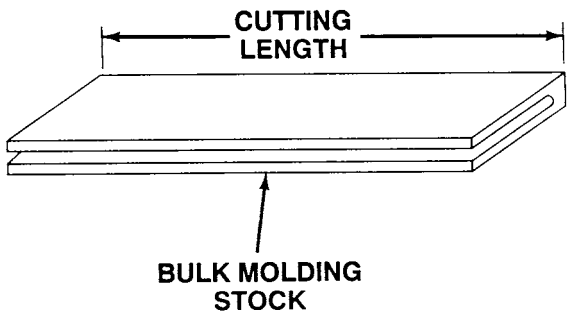


Seal Part Number	Seal Bulk Part Number	Cutoff Length	
		Inches	cm
59747AX-040	101-2203	40	102
59747AX-055	101-2203	55	140
59745AX-040	75000519	40	102
59745AX-055	75000519	55	140
125865A-047	75001366	47	119
125865A-116	75001366	116	295
125865A-160	75001366	160	409

D-6. EDGING AND MOLDING FABRICATION.

Edging and molding can be fabricated from bulk stock listed in Table D-5. Use suitable cutting tool to cut to length required.

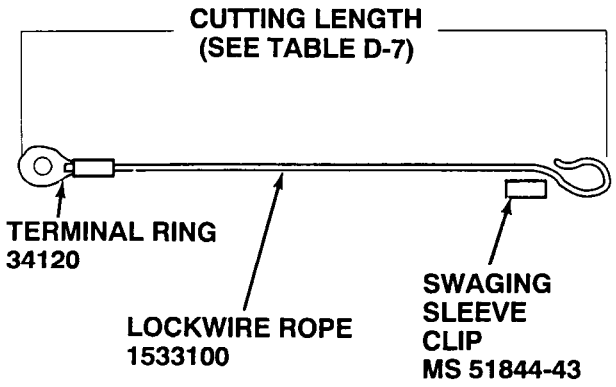
Table D-5. Edging and Molding



Edging/Molding Part Number	Edging/Molding Part Number	Cutoff Length	
		Inches	cm
1339700-011	1339700	11	28
26927AX-026	26927AX	26	66
26947BX-002	75000317	2	5
26947BX-003	75000317	3	8
26947BX-004	75000317	4	10
26947BX-005	75000317	5	13
26947BX-006	75000317	6	15
26947BX-017	75000317	17	43
26947BX-018	75000317	18	46
1467160-012	75000317	12	31
42925AX-005	OR40	5	13
27022AX-002	R-422-N	2	5
27002AX-019	R-422-N	19	48
27022AX-024	R-422-N	24	61
27022AX-043	R-422-N	43	109
27022AX-093	R-422-N	93	236
27022AX-101	R-422-N	101	257
27022AX-130	R-422-N	130	330

D-7. LOCKWIRE ROPE FABRICATION.

The lockwire length is shown in Table D-6. Crimped button stop caps are used to attach the lockwire to other components. Each application requires two swaging sleeve clips.



NOTES:

1. OBTAIN ALL COMPONENTS REQUIRED TO FABRICATE LOCKWIRE.
2. USE A FINE TOOTHED HACKSAW OR SUITABLE CUTTING DEVICE, AND CUT LOCKWIRE TO LENGTH REQUIRED.
3. SLIDE WIRE THROUGH HOLE IN COMPONENT, UNTIL LOCKWIRE COMES THROUGH OTHER SIDE.
4. SLIDE CAP ONTO LOCKWIRE, UNTIL CAP BOTTOMS AGAINST COMPONENT AND WIRE COMES THROUGH CAP.
5. CRIMP CAP TO LOCKWIRE.
6. SLIDE OPPOSITE END OF WIRE THROUGH ASSEMBLY, AND SLIDE OTHER CAP OVER END OF WIRE.
7. SLIDE WIRE THROUGH HOLE IN COMPONENT, UNTIL LOCKWIRE COMES THROUGH OTHER SIDE.
8. SLIDE CAP ONTO LOCKWIRE, UNTIL CAP BOTTOMS AGAINST COMPONENT AND WIRE COMES THROUGH CAP.
9. CRIMP CAP TO LOCKWIRE.

The following wire rope is cut from bulk stock. Refer to Table D-6 for cutting lengths.

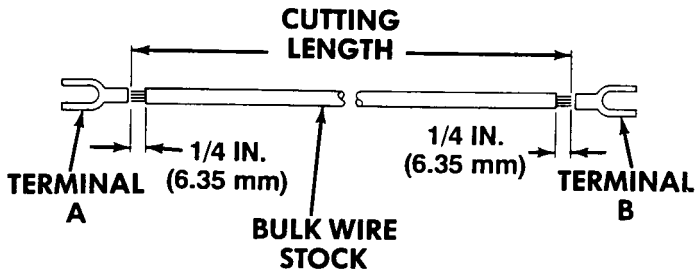
Table D-6. Lockwire Rope

Lockwire Rope Part Number	Lockwire Rope Part Number	Cutoff Length	
		Inches	cm
1533100-010	1533100	10	25
1533100-015	1533100	15	38
1533100-020	1533100	20	51
1533100-024	1533100	24	61

D-8. WIRE AND WIRE ASSEMBLIES FABRICATION.

Fabricate from bulk wire stock listed in Table D-7. Use wire cutters to cut wire to required length, then strip ends of wire ¼ in. (6.35 mm). Crimp the required lugs or terminals onto wire ends.

Table D-7. Wire And Wire Assemblies

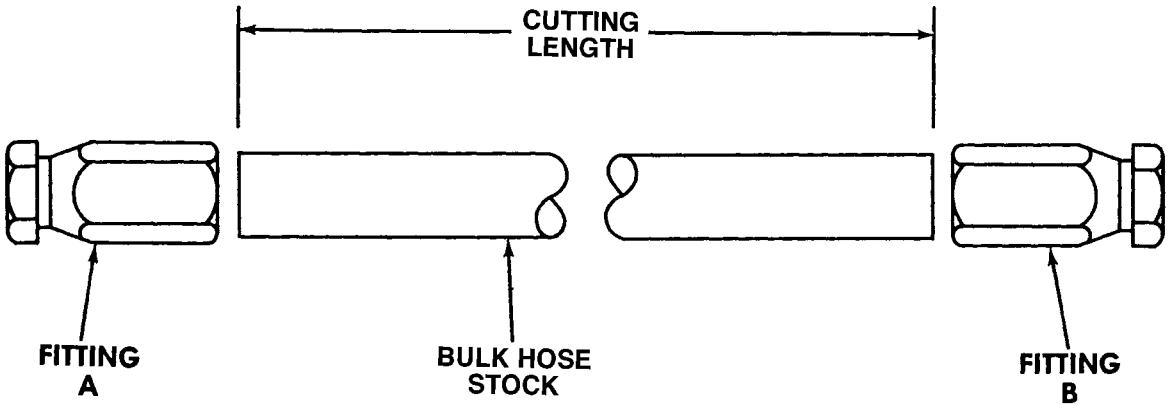


Wire/Assembly Part Number	Bulk Wire Part Number	Cutoff Length	
		Inches	cm
1884540W-012	121782A	12	31
1947560W-012	121782A	12	31
1959390W-012	121782A	12	31
1969600W-012	121782A	12	31
1977300W-010	4127FX	10	25
1974580-013	R-64951	13	33
1974590-005	R-64951	5	13
1978470W-005	R-64951	5	13

D-9. HOSES AND TUBES.

Fabricate hoses and tubes from bulk hose or tube stock listed in Table D-8. Use a fine toothed hacksaw or suitable cutting device and cut hose/tube to desired length. Place fitting A in vise and screw hose/tube counterclockwise until hose/tube bottoms out in fitting. Back off ¼ turn. Repeat for fitting B.

Table D-8. Hoses and Tubes



Hose/Tube Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
5113689-12	1525-6	12	31
21021FX-026	2102CFX	26	66
32850AX-014	22020	14	36
32850AX-016	22020	16	41
32850AX-030	22020	30	76
32850AX-036	22020	36	91
32850AX-51	22020	51	130
31270AX-029	31270AX	29	74
31270AX-082	31270AX	83	208
31270AX-096	31270AX	96	244
31270AX-140	31270AX	140	356
69940AX-006	3230-0293	6	15
69940AX-065	3230-0293	65	165
31271AX-040	3250-101	40	102
31271AX-047	3250-101	47	119
31271AX-053	3250-101	53	135
31271AX-092	3250-101	92	234

Table D-8. Hoses and Tubes

Hose/Tube Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
31271AX-150	3250-101	150	381
AAAC0085	51995757	85	216
AAAC0105	5199575	105	267
AAAC0190	5199575	190	483
AAAC0260	5199575	260	660
AAAE0090	5199575	90	229
1944510	70-062		Variable
1944520	70-062		Variable
23319FX-012	C604-200 BLK	12	31
23319FX-023	C604-200 BLK	23	58
23319FX-029	C604-200 BLK	29	74
23319FX-244	C604-200 BLK	244	620
23319FX-257	C604-200 BLK	257	653
23323FX-008	C606 BLACK	8	20
23323FX-008	C606 BLACK	8	20
23323FX-010	C606 BLACK	10	25
23323FX-010	C606 BLACK	10	25
23323FX-012	C606 BLACK	12	31
23323FX-014	C606 BLACK	14	36
23323FX-019	C606 BLACK	19	48
23323FX-022	C606 BLACK	22	56
23323FX-026	C606 BLACK	26	66
23323FX-030	C606 BLACK	30	76
23323FX-033	C606 BLACK	33	84
23323FX-042	C606 BLACK	42	107
23323FX-042	C606 BLACK	42	107
23323FX-044	C606 BLACK	44	112
23323FX-046	C606 BLACK	46	117
23323FX-050	C606 BLACK	50	127
23323FX-052	C606 BLACK	52	132
23323FX-055	C606 BLACK	55	140
23323FX-057	C606 BLACK	57	145
23323FX-060	C606 BLACK	60	152
23323FX-060	C606 BLACK	60	152
23323FX-082	C606 BLACK	82	208
23323FX-087	C606 BLACK	87	221

Table D-8. Hoses and Tubes

Hose/Tube Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
23323FX-089	C606 BLACK	89	226
23323FX-148	C606 BLACK	148	376
23323FX-159	C606 BLACK	159	404
23323FX-163	C606 BLACK	163	414
23323FX-200	C606 BLACK	200	508
23323FX-335	C606 BLACK	335	851
23323FX-377	C606 BLACK	377	958
198872A U-200	FC300-04	20	51
115134A W-004	FC300-04	4	10
1732400 U-067	FC300-16	67	170
1620950 U-099	FC350-04	99	252
47371AX U-055	FC350-04	5	13
47371AX U-006	FC350-04	6	15
47371AX U-012	FC350-04	12	31
47371AX U-017	FC350-04	17	43
47371AX U-018	FC350-04	18	46
47371AX U-120	FC350-04	120	305
60264AX U-031	FC350-04	31	79
60264AX U-034	FC350-04	34	86
60264AX U-054	FC350-04	54	137
60264AX U-057	FC350-04	57	145
60264AX U-063	FC350-04	63	160
60264AX U-082	FC350-04	82	208
60296AX U-029	FC350-04	29	74
60296AX U-036	FC350-04	36	91
60296AX U-061	FC350-04	61	155
1780700 U-032	FC350-06	32	81
1780700 U-035	FC350-06	35	89
1780700 U-039	FC350-06	39	99
1780700 U-041	FC350-06	41	104
1782400 U-022	FC350-06	22	56
1782410 U-021	FC350-06	21	53
1782450 U-025	FC350-06	25	64
47336AX-060	FC350-06	60	152
47554AX U-020	FC350-06	20	51
118971A U-022	FC350-06	22	56

Table D-8. Hoses and Tubes

Hose/Tube Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
118971A U-095	FC350-06	95	241
119784A U-010	FC350-06	10	25
119784A U-021	FC350-08	21	53
119784A U-047	FC350-08	47	119
1782340 U-019	FC350-08	19	48
1782360 U-020	FC350-08	20	51
1921290 U-025	FC350-08	25	64
1936150 U-032	FC350-08	32	81
1936150 U-034	FC350-08	34	86
1936150 U-038	FC350-08	38	97
1936150 U-040	FC350-08	40	102
69390AX U-006	FC350-08	6	15
69390AX U-019	FC350-08	19	48
69390AX U-020	FC350-08	20	51
69390AX U-020	FC350-08	20	51
69390AX U-021	FC350-08	21	53
69390AX U-025	FC350-08	25	37
1780720 U-020	FC350-10	20	51
1780720 U-051	FC350-10	51	130
1782370 U-037	FC350-10	37	94
1782380 U-031	FC350-10	31	79
1782390 U-020	FC350-10	20	51
1782420 U-039	FC350-10	39	99
1782430 U-031	FC350-10	31	79
1782440 U-019	FC350-10	19	48
1924600 U-090	FC350-10	90	229
47750AX U-009	FC350-10	9	23
58989AX U-020	FC350-10	20	51
58989AX U-034	FC350-10	34	86
58989AX U-064	FC350-10	64	163
66798AX U-020	FC350-10	20	51
66798AX U-025	FC350-10	25	64
66798AX U-030	FC350-10	30	76
66798AX U-077	FC350-10	77	196
1780710 U-082	FC350-12	82	208
1780710 U-083	FC350-12	83	211

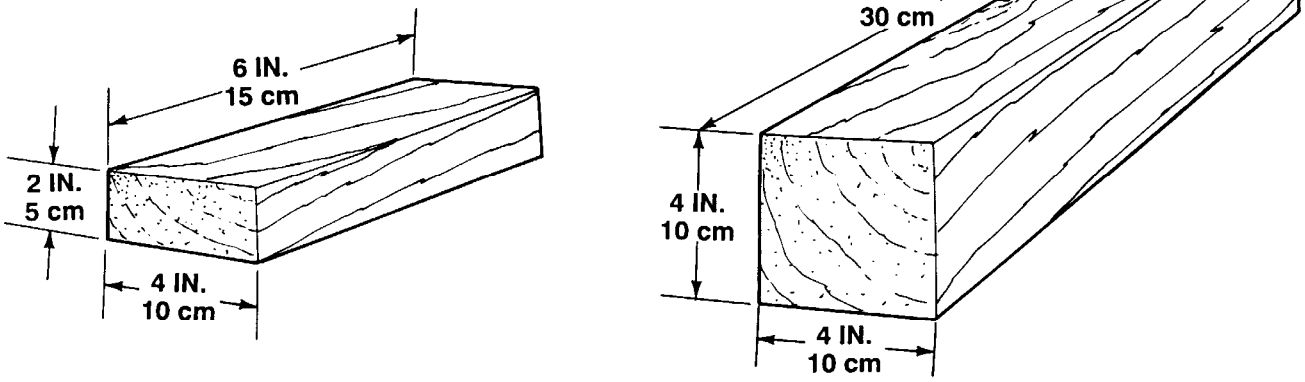
Table D-8. Hoses and Tubes

Hose/Tube Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
47369AX U-127	FC350-12	127	323
61608AX U-093	FC350-12	93	236
61608AX U-142	FC350-12	142	361
47468AX U-011	FC350-16	11	28
47468AX U-022	FC350-16	22	56
47468AX U-045	FC350-16	45	114
47468AX U-046	FC350-16	46	117
47468AX U-089	FC350-16	89	226
47213AX-012	NT10012-50FT	12	31
47213AX-015	NT10012-50FT	16	41
47213AX-021	NT10012-50FT	21	53
47213AX-023	NT10012-50FT	23	58
47213AX-025	NT10012-50FT	25	64
47213AX-025	NT10012-50FT	25	64
47213AX-060	NT10012-50FT	60	152
47213AX-073	NT10012-50FT	73	185
47213AX-073	NT10012-50FT	73	185
47213AX-173	NT10012-50FT	173	439
47213AX-194	NT10012-50FT	194	493
1656500-128	PFT-10B-GRN	128	325
1656500-183	PFT-10B-GRN	183	465
1656490-102	PFT-10B-RED	102	259
1656490-202	PFT-10B-RED	202	513
1656490-257	PFT-10B-RED	257	653
1656470-030	PFT-4A-BLU	30	76
1656470-104	PFT-4A-BLU	104	264
1656470-115	PFT-4A-BLU	115	292
1656470-139	PFT-4A-BLU	139	353
1605260-008	PFT-4A-GRN	8	20
1605330-020	PFT-4A-ORG	20	51
1605330-040	PFT-4A-ORG	40	102
1605330-071	PFT-4A-ORG	71	180
1605330-112	PFT-4A-ORG	112	285
1605330-124	PFT-4A-ORG	124	315
1605170-007	PFT-4A-RED	7	18
1605270-023	PFT-6B-GRN	23	58

Table D-8. Hoses and Tubes

Hose/Tube Part Number	Bulk Hose Part Number	Cutoff Length	
		Inches	cm
1605270-028	PFT-6B-GRN	28	71
1605270-056	PFT-6B-GRN	56	142
1605270-057	PFT-6B-GRN	57	145
1605270-100	PFT-6B-GRN	100	254
1605270-108	PFT-6B-GRN	108	274
1605270-146	PFT-6B-GRN	146	371
1605320-205	PFT-6B-ORG	205	521
1605160-012	PFT-6B-RED	12	31
1605160-014	PFT-6B-RED	14	36
1605160-030	PFT-6B-RED	30	76
1605160-031	PFT-6B-RED	31	79
1605160-047	PFT-6B-RED	47	119
1605160-048	PFT-6B-RED	48	122
1605160-049	PFT-6B-RED	49	125
1605160-055	PFT-6B-RED	55	140
1605160-102	PFT-6B-RED	102	259
1605160-103	PFT-6B-RED	103	262
1605160-114	PFT-6B-RED	114	290
1605160-165	PFT-6B-RED	165	419
1605160-213	PFT-6B-RED	213	541
1605300-026	PFT-6B-YEL	26	66
1605300-066	PFT-6B-YEL	66	168
1605300-070	PFT-6B-YEL	70	179
1605300-129	PFT-6B-YEL	129	328
1605300-132	PFT-6B-YEL	132	335
1605300-150	PFT-6B-YEL	150	381
1605300-022	PFT-8B-BLU	22	56
1605300-316	PFT-8B-BLU	316	803
W-22-13	W-22	13	33
W-22-9	W-22	9	23
40AW168-010	W-22-L	10	25
40AW168-050	W-22-L	50	127
40AW168-19	W-22-L	19	48
40AW168-27	W-22-L	27	69
40AW168-45	W-22-L	45	114

D-10. WOODEN BLOCKS.



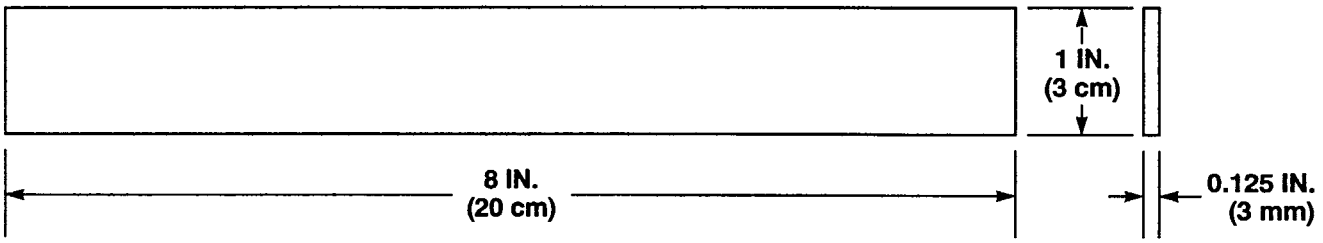
b. Fabricate from MML751 lumber stock.

b. Using saw and standard planing machine, cut stock to size required in Table D-9.

Table D-9. Wooden Blocks

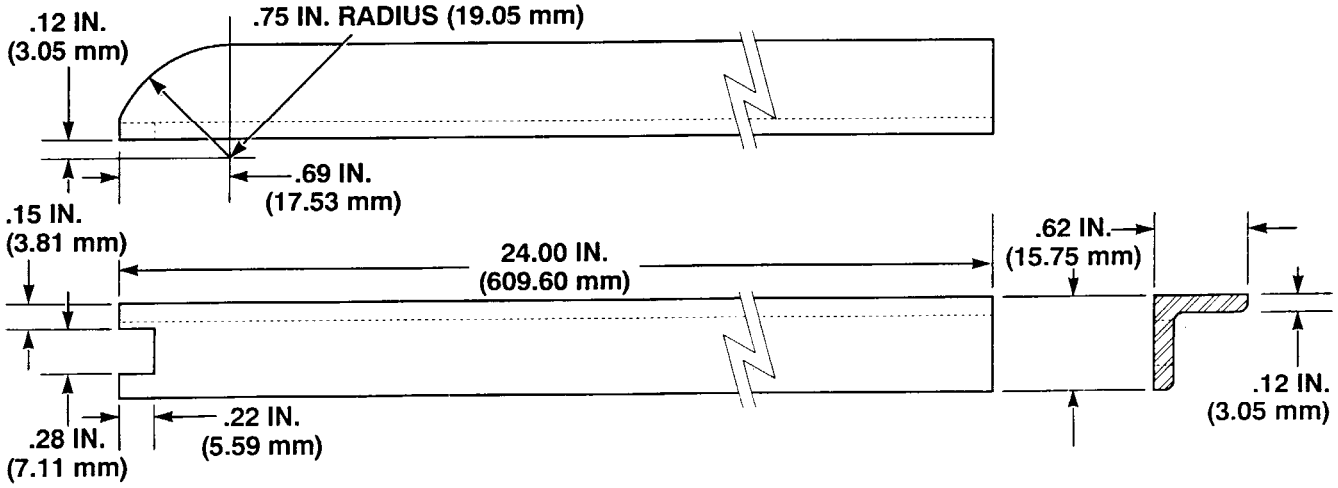
Para Number	Finished Dimensions of Block In. (cm)
2-28	4 by 4 by 12 in. (10 by 10 by 30 cm)
5-2	2 by 4 by 6 in. (5 by 10 by 15 cm)
13-2	4 by 4 by 12 in. (10 by 10 by 30 cm)

D-11. STEERING STOP PLATE.



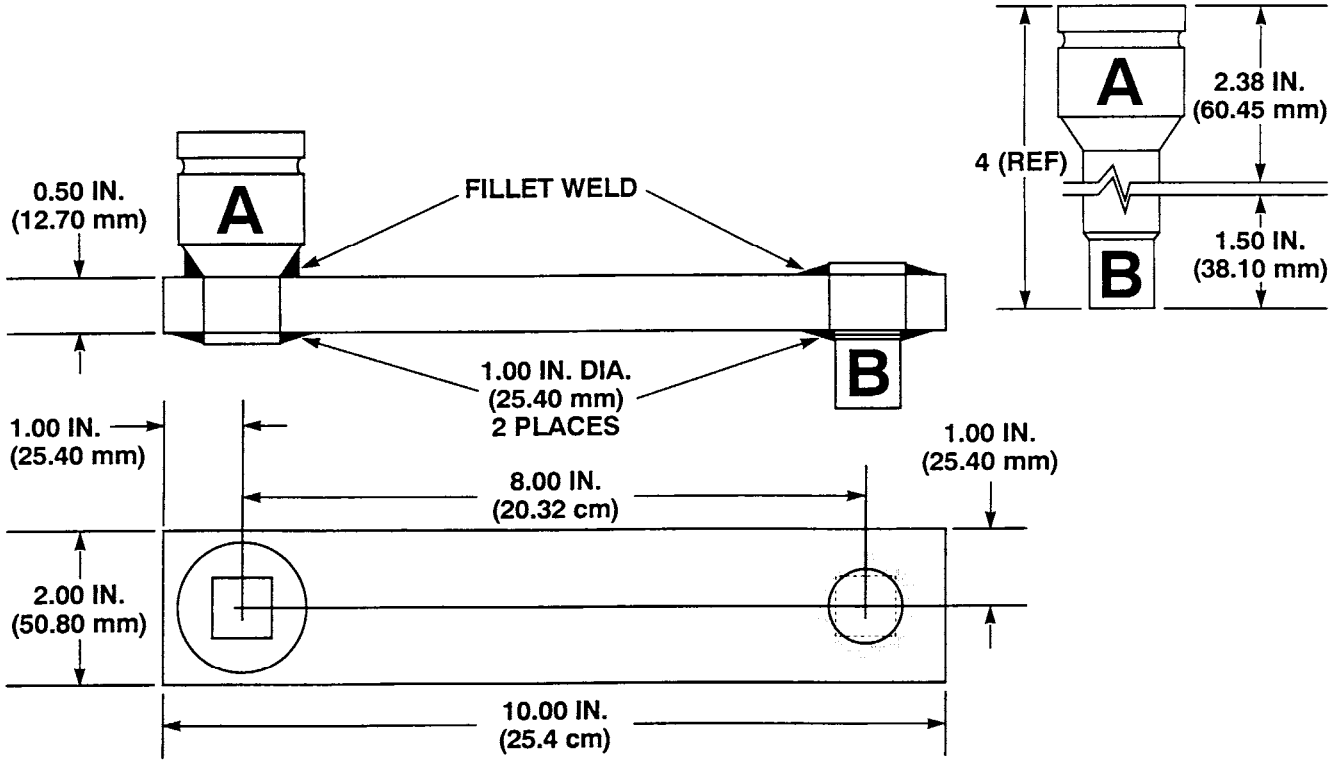
Fabricate steering stop plate from 1/8 in. (3mm) thick mild steel stock. Using a hacksaw, cut to dimension shown. File off rough edges.

D-12. BAR-BRAKE RETURN SPRING REMOVAL TOOL.



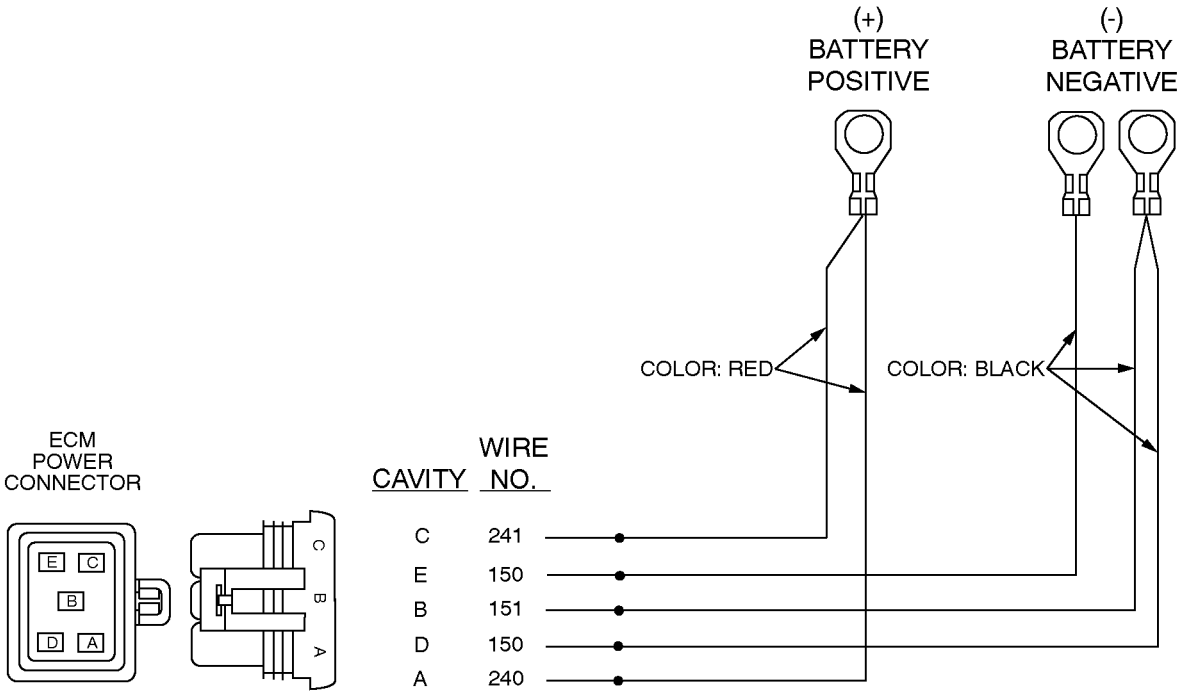
Fabricate bar-brake return spring removal tool from ASTM A36 angle aluminum. Using a hacksaw, cut to dimension shown. File off rough edges.

D-13. ADAPTER,TORQUE, 3/4 IN. DRIVE.



Fabricate torque adapter from Extension, P/N L32, NSN 5120-00-273-9208, and bar stock, Spec 23 or better. Cut part A and part B to dimensions shown.

D-14. JUMPER HARNESS (DDEC III/IV).



(1) Fabricate from 16-gage wire.

(2) Using wire cutters, cut five pieces of 16-gage wire to 180 in. (457 cm).

(3) Strip both ends of each wire .25 inch (6.4 mm).

(4) Crimp five terminals (PN 12077413) and five cable seals (PN 12015193) on wires.

(5) Insert terminals and cable seals into connector body (PN 12124634) as illustrated.

(6) Secure terminals and cable seals in connector body with secondary lock (PN 12052816).

(7) Attach terminals (PN-D-351-38) to other end of wires 150, 150 & 151, and 240 & 241, as illustrated.

APPENDIX E

TORQUE LIMITS

E-1. SCOPE.

This section provides general torque limits for the screws, hoses and fittings used on the truck. Special torque limits are listed in the maintenance procedures for applicable components. The general torque limits given in this appendix shall be used when specific torque limits are not indicated in the maintenance procedure. These general torque limits cannot be applied to screws that retain rubber components. The rubber components will be damaged before the torque limit is reached. If a special torque limit is not given in the maintenance instructions, tighten the screw or nut until it touches the metal bracket then tighten it one more turn.

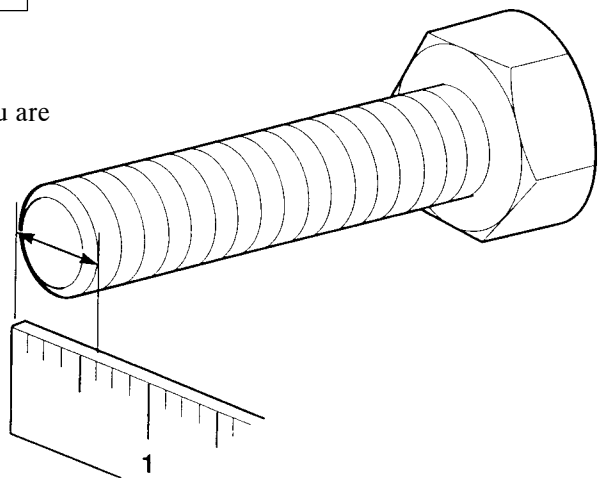
E-2. TORQUE LIMITS.

Table E-1 lists the torque limits for wet flange nuts. Table E-2 lists the torque limits for wet socket head capscrews. Table E-3 lists dry torque limits for capscrews. Dry torque limits are used on screws that do not have high pressure lubricants applied to the threads. Table E-4 lists wet torque limits for capscrews. Wet torque limits are used on screws that have high pressure lubricants applied to the threads. Table E-5 lists the torque limits for SAE 37 degree flare hose connections. Table E-6 lists the torque limits for SAE 45 degree flare hose connections. Table E-7 lists the torque limits for ORS preformed packing face seal hose connections. Table E-8 lists the torque limits for NPSM swivel connections.

E-3. HOW TO USE TORQUE TABLE.

a. Screws and Nuts.

(1) Measure the diameter of the screw you are installing with a ruler.



E-3. HOW TO USE TORQUE TABLE (CONT).

(2) Measure out one inch with a ruler and count the number of threads per inch.

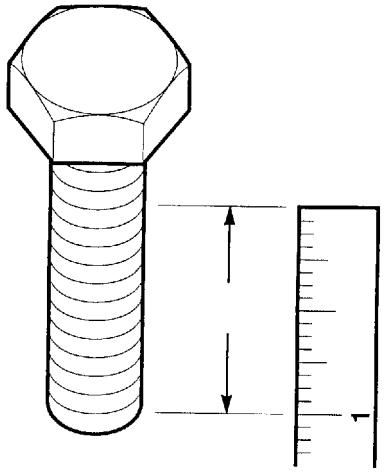
(3) Under the heading SIZE, look down the left hand column until you find the diameter of the screw you are installing (there will usually be two lines beginning with the same size).

(4) In the second column under SIZE, find the number of threads per inch that matches the number of threads per inch you counted in Step 2. (Not required for metric screws).

(5) To find the grade screw you are installing, match the markings on the head to the correct picture of CAPSCREW HEAD MARKINGS on the torque table.

(6) Look down the column under the picture you found in Step 5. until you find the torque limit (lb-ft or N·m) for the diameter and threads per inch of the screw you are installing.

(7) Use wet torque values.



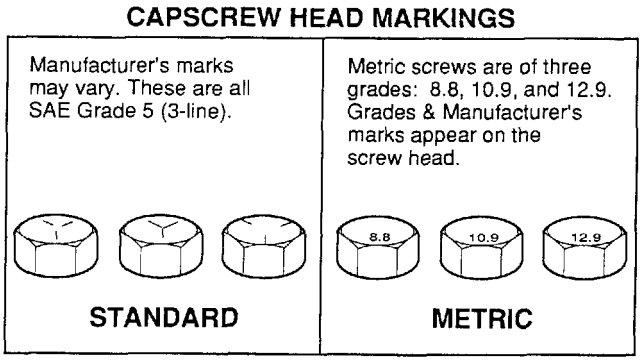


Table E-1. Torque Limits For Wet Flange Nuts

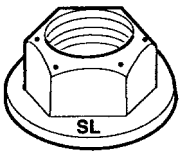
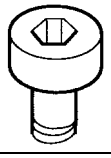
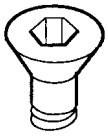
SPIRALOCK FLANGE NUT MARKINGS GRADE 8	DIAMETER		THREADS PER INCH	TORQUE	
	IN.	MM		LB-FT	N·m
	1/4	6.35	20	15	20
	5/16	7.94	18	25	34
	3/8	9.65	16	45	61
	1/2	12.70	13	110	149
	5/8	15.87	11	210	285
	3/4	19.05	10	375	508

Table E-2. Torque Limits For Wet Socket Head Cap Screws

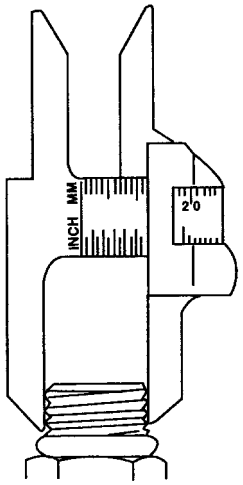
SOC HEAD/12 PT.	TORQUE IN FT. LBS. (CAP SCREWS) LUBED		
	SIZE	SOC HD OR 12 PT	SOC FLAT HD
	.10-24	5	2.5
	.25-20	12	6
	.31-18	25	12
	.38-16	44	22
SOC FLAT HEAD	.50-13	70	36
	.56-12	106	53
	.62-11	212	106
	.75-10	375	187
	1.00-8	781	

b. Hoses and Fittings.

NOTE

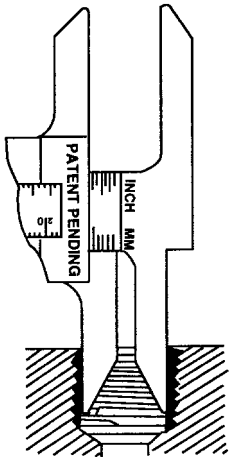
Most fluid piping system sizes are measured by dash numbers. These are universally used abbreviations for the size of the component expressed as the numerator of the fraction with the denominator always being 16. For example, a -04 port is 4/16 or 1/4-inch. Dash numbers are usually nominal (in name only) and are abbreviations that make ordering of components easier.

(1) Measure the I.D./O.D. diameter with a caliper as shown.



O.D.
(MALE THREADS)

(2) Under the heading MALE THREAD O.D. and FEMALE THREAD I.D., match the measurements with the row in table to determine proper torque.



I.D.
(FEMALE THREADS)

(3) To find the sealing surface angle, use a protractor and measure the sealing surface parallel to the center line of the fitting.

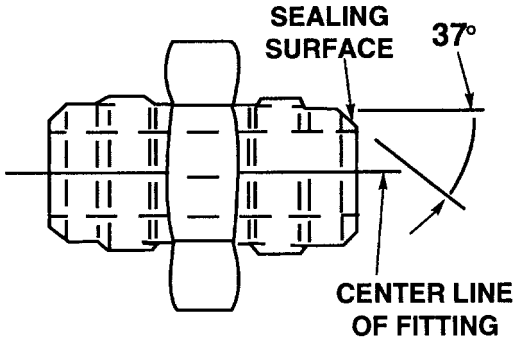
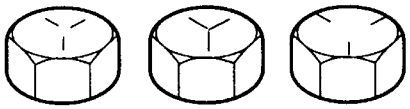
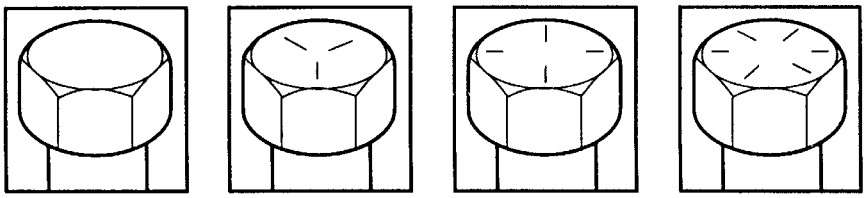


Table E-3. Torque Limits For Dry Fasteners

CAPSCREW HEAD MARKINGS



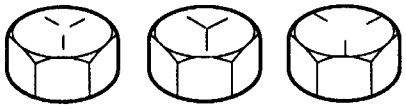
Manufacturer's marks may vary.
These are all SAE Grade 5 (3-line).



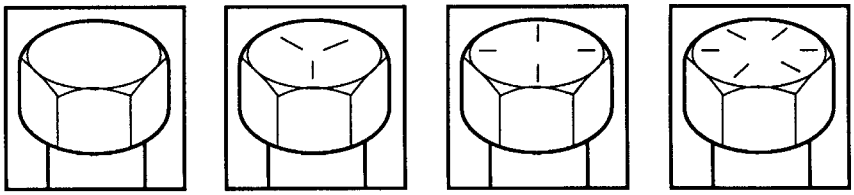
SIZE			TORQUE							
			SAE GRADE NO. 2		SAE GRADE NO. 5		SAE GRADE NO. 6 or 7		SAE GRADE NO. 8	
DIA. INCHES	THREADS PER INCH	MILLIMETERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS
1/4	20	6.35	5	7	8	11	10	14	12	16
1/4	28	6.35	6	9	10	14	12	16	14	19
5/16	18	7.94	11	15	17	23	21	28	25	34
5/16	24	7.94	12	16	19	26	24	33	25	34
3/8	16	9.53	20	27	30	41	40	54	45	61
3/8	24	9.53	23	31	35	47	45	61	50	68
7/16	14	11.11	30	41	50	68	60	81	70	95
7/16	20		35	47	55	75	70	95	80	108
1/2	13	12.70	50	68	75	102	95	129	110	149
1/2	20		55	75	90	122	100	136	120	163
9/16	12	14.29	65	88	110	149	135	183	150	203
9/16	18		75	102	120	163	150	203	170	231
5/8	11	15.88	90	122	150	203	190	258	220	298
5/8	18		100	136	180	244	210	285	240	325
3/4	10	19.05	160	217	260	353	320	434	380	515
3/4	16		180	244	300	407	360	488	420	569
7/8	9	22.23	140	190	400	542	520	705	600	814
7/8	14		155	210	440	597	580	786	660	895
1	8	25.40	220	298	580	786	800	1085	900	1220
1	12		240	325	640	868	860	1166	1000	1356
1-1/8	7	25.58	300	407	800	1085	1120	1519	1280	1736
1-1/8	12		340	461	880	1193	1260	1709	1440	1953
1-1/4	7	31.75	420	597	1120	1519	1580	2142	1820	2468
1-1/4	12		460	624	1240	1681	1760	2387	2000	2712
1-3/8	6	34.93	560	759	1460	1980	2080	2820	2380	3227
1-3/8	12		640	868	1680	2278	2380	3227	2720	3688
1-1/2	6	38.10	740	1003	1940	2631	2780	3770	3160	4285
1-1/2	12		840	1139	2200	2983	3100	4204	3560	4827

Table E-4. Torque Limits For Wet Fasteners

CAPSCREW HEAD MARKINGS

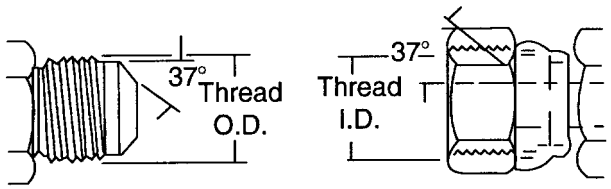


Manufacturer's marks may vary.
These are all SAE Grade 5 (3-line).



SIZE			TORQUE							
			SAE GRADE NO. 2		SAE GRADE NO. 5		SAE GRADE NO. 6 or 7		SAE GRADE NO. 8	
DIA. INCHES	THREADS PER INCH	MILLIMETERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS
1/4	20	6.35	4	6	6	8	8	11	9	12
1/4	28	6.35	5	7	7	9	9	12	10	14
5/16	18	7.94	8	11	13	18	16	22	18	24
5/16	24	7.94	9	12	14	19	18	24	20	27
3/8	16	9.53	15	20	23	31	30	41	35	47
3/8	24	9.53	17	23	25	34	30	41	35	47
7/16	14	11.11	24	33	35	47	45	61	55	75
7/16	20		25	34	40	54	50	68	60	81
1/2	13	12.70	35	47	55	75	70	95	80	108
1/2	20		40	54	65	88	80	108	90	122
9/16	12	14.29	50	68	80	108	100	136	110	149
9/16	18		55	75	90	122	110	149	130	176
5/8	11	15.88	70	95	110	149	140	190	170	231
5/8	18		80	108	130	176	160	217	180	244
3/4	10	19.05	120	163	200	271	240	325	280	380
3/4	16		140	190	220	298	280	380	320	434
7/8	9	22.23	110	149	300	407	400	542	460	624
7/8	14		120	163	320	434	440	597	500	678
1	8	25.40	160	217	440	597	600	814	680	922
1	12		170	231	480	651	660	895	740	1003
1-1/8	7	25.58	220	298	600	814	840	1139	960	1320
1-1/8	12		260	353	660	895	940	1275	1080	1464
1-1/4	7	31.75	320	434	840	1139	1100	1492	1360	1844
1-1/4	12		360	488	920	1248	1320	1790	1500	2034
1-3/8	6	34.93	420	570	1100	1492	1560	2115	1780	2414
1-3/8	12		460	624	1260	1709	1780	2414	2040	2776
1-1/2	6	38.10	560	760	1460	1980	2080	2820	2360	3200
1-1/2	12		620	841	1640	2224	2320	3146	2660	3607

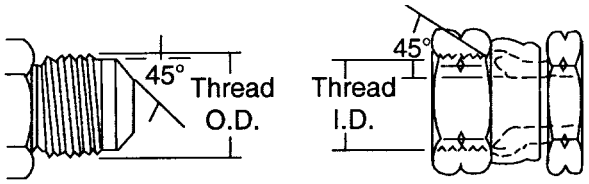
E-5. Torque Limits For 37 Degree Flare Hose Connections



Male Half **Female Half**

INCH SIZE	DASH NO.	THREAD SIZE	TORQUE LB.FT.	TORQUE N·m
1/4	04	7/16-20	11-12	15-16
3/8	06	9/16-18	18-21	24-28
1/2	08	3/4-16	36-39	49-53
5/8	10	7/8-14	57-62	77-84
3/4	12	1 1/16-12	79-87	107-118
7/8	14	1 3/16-12	83-91	113-123
1	16	1 5/16-12	108-113	146-153
1 1/4	20	1 5/8-12	127-133	172-180
1 1/2	24	1 7/8-12	158-167	214-224
2	32	2 1/2-12	245-258	332-350

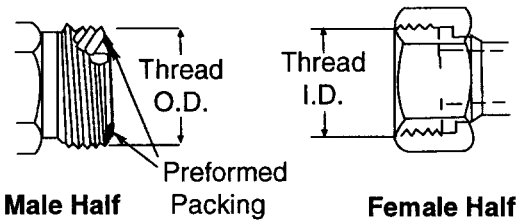
Table E-6. Torque Limits For 45 Degree Flare Hose Connections



Male Half **Female Half**

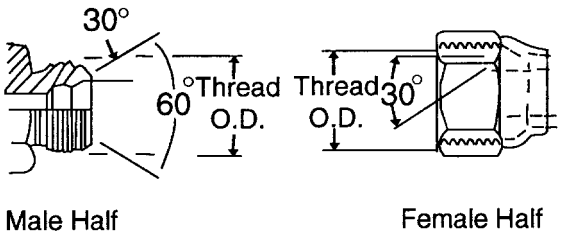
INCH SIZE	DASH NO.	THREAD SIZE	TORQUE LB.FT.	TORQUE N·m
1/4	04	7/16-20	8-9	11-12
3/8	06	5/8-18	18-20	24-27
1/2	08	3/4-16	36-38	49-51
5/8	10	7/8-14	52-54	70-73
3/4	12	1 1/16-14	71-74	97-100

Table E-7. Torque Limits For ORS Preformed Packing Face Seal Hose Connections



INCH SIZE	DASH NO.	THREAD SIZE	TORQUE LB.FT.	TORQUE N·m
1/4	04	9/16-18	10-12	14-16
3/8	06	11/16-16	18-20	24-27
1/2	08	13/16-16	32-35	43-47
5/8	10	1-14	46-50	62-68
3/4	12	1 3/16-12	65-70	88-95
1	16	1 7/16-12	108-113	146-153
1 1/4	20	1 11/16-12	127-133	172-180
1 1/2	24	2-12	158-167	214-226

Table E-8. Torque Limits For NPSM Swivel Connections



INCH SIZE	DASH NO.	THREAD SIZE	TORQUE LB.FT.	TORQUE N·m
1/8	02	1/8-27	3-4	4-5
1/4	04	1/4-18	10-11	14-15
3/8	06	3/8-18	16-18	22-24
1/2	08	1/2-14	25-27	34-37
3/4	12	3/4-14	46-48	62-65
1	16	1-1 1/2	80-83	108-113
1 1/4	20	1 1/4-11/2	130-134	176-182
1 1/2	24	1 1/2-11/2	160-164	217-222
2	32	2-11/2	170-174	231-240

APPENDIX F

MANDATORY REPLACEMENT PARTS

Section I. INTRODUCTION

F-1. SCOPE.

This appendix lists all mandatory replacement parts required for performance of Unit Support Maintenance of the PLS truck. It authorizes the requisitioning, issue, and disposition of consumable repair parts. All consumable repair parts listed in the maintenance tasks are listed here for ease of reference.

F-2. EXPLANATION OF COLUMNS (SECTION II).

a. Column (1) - Replacement Part Reference Code. This number is assigned to the entry in the listing and is referenced in the narrative task box to identify the part e.g., Clamp (Item 12, Appendix F).

b. Column (2) - Nomenclature. Indicates the federal item name and, if required, a description to identify the item.

c. Column (3) - Part Number. This is the vendor number assigned to the item.

d. Column (4) - National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

Section II. MANDATORY REPLACEMENT PARTS LIST

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
1	Belt Set, (3)	3113452	
2	Belt Set, Vee, (2)	1934800	3030-00-492-8106
3	Bushing	1X1/4PTR-B	4730-01-338-1459
4	Bushing	12406FX	5365-00-402-5376
5	Bypass Valve	A-DF-216	4820-01-359-1067
6	Cable, Drain Valve	SN-153	4010-01-348-6039
7	Cap, End Splice	7040700	
8	Capacitor	AS-1340	5330-01-111-2281
9	Channel	126916B	2540-01-155-5836
10	Channel, Rubber	101-2203	5330-01-267-7542
11	Channel, Rubber	126890	5330-01-155-1938
12	Clamp	24433	5340-01-131-8313
13	Clamp	32664AX	5340-01-131-8312
14	Clamp	5137620	5340-01-114-5623
15	Clamp	700-118	4730-01-212-8276
16	Clamp	700-120	4730-01-199-1458
17	Clamp	700-88	5340-01-355-7648
18	Clamp	90359-A	4730-01-353-9723
19	Clamp	B54-32780	4730-00-278-2523
20	Clamp	C0V-2515	5340-01-060-8686
21	Clamp	51689AX	5340-01-167-4146
22	Clamp, Loop	H360-4-2	5340-01-151-8391
23	Clip, Cable	57972	5340-01-193-9654
24	Clip, Push	H360-7-2	5340-01-224-8368
25	Contact, Electrical	12034051	5940-01-342-0712
26	Contact, Electrical	12084563	5999-01-321-1925
27	Contact, Electrical	12089305	5999-01-319-7394
28	Cross and Bearing	5-103X	2530-01-244-4949
29	Dust Boot	12010293	5975-01-226-8078
30	Dust Boot	12015323	5975-01-310-5011
31	Element, Filter	100696-E	2940-01-213-1135
32	Element, Filter	1317673	2940-01-347-7460

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
33	Element, Filter	2020-PMOR	2910-01-344-5791
34	Element, Strainer	5106910	4730-01-160-5668
35	Fastener And Seal Kit	50009501	5340-01-363-9215
36	Fastener And Seal Kit	50009503	5330-01-358-9309
37	Fastener And Seal Kit	50009504	5330-01-358-9308
38	Filter and Gasket	23518524	2940-01-314-1345
39	Filter Element Kit	MTP-95-551	4330-01-026-6371
40	Filter, Fuel	23518481	2910-01-423-2859
41	Filter, Hydraulic	1314130	4330-01-232-8305
42	Fitting, Lubrication	MS15002-3	4730-00-172-0015
43	Gasket	02343-02	5330-01-193-5315
44	Gasket	0-615C46XA	5330-01-348-8345
45	Gasket	11007B	5330-01-344-0539
46	Gasket	1198559	5330-01-358-8219
47	Gasket	1199479	5330-01-234-2618
48	Gasket	12357897	6220-01-319-5509
49	Gasket	14079550	5330-00-107-3925
50	Gasket	1728230	5330-01-347-9858
51	Gasket	1958330	5330-01-358-5561
52	Gasket	23016336	5330-01-328-7634
53	Gasket	5100860	5300-01-058-8267
54	Gasket	5104081	5330-01-078-7186
55	Gasket	5117786	5330-00-781-7117
56	Gasket	5130995	5330-00-980-1546
57	Gasket	5136678	5330-00-198-7953
58	Gasket	5766-1211-6	5330-01-242-2698
59	Gasket	731740-002	
60	Gasket	7716570	5330-00-771-6570
61	Gasket	8921312	5330-01-206-3263
62	Gasket	8924413	
63	Gasket	92-158	5330-01-058-7118
64	Gasket	A/281	5330-01-352-1997

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
65	Gasket	DIN7603A 14X18	
66	Gasket	EE100969	9330-01-185-4466
67	Gasket	M25988/1-246	5330-01-189-6351
68	Gasket	NE-71A	5330-01-277-5103
69	Gasket Strip	2050690	5330-01-394-8346
70	Gasket, Breather Filler	FB-7	5330-01-406-8221
71	Gasket, Headlight	1400940	5330-01-234-7640
72	Grommet	459-A	5330-01-049-0550
73	Guide Assy, Pawl	NA1779M195	3040-01-351-4061
74	Guide Assy, Pawl	NA22297U4597	3040-01-350-3980
75	Hardware, Mounting	GS-2655	5340-01-365-3144
76	Housing, Tach	5106771	6680-01-086-4470
77	Insulation	1949200	2540-01-370-6144
78	Insulation	1949220	2540-01-367-7392
79	Insulation	1949230	2540-01-368-9962
80	Insulation	C04610	2510-01-389-0708
81	Isolator	23512307	5340-01-414-2177
82	Journal And Bearing Kit	5-438X	2520-01-339-0533
83	Journal And Bearing Kit	5-510X	2520-01-339-0532
84	Journal And Bearing Kit	5-515X	2520-01-289-8307
85	Key	1363190	5315-01-165-2188
86	Kit, Mounting	893236	4810-01-400-6041
87	Kit, Packing	SK-10-4	
88	Lamp	E-013-001	6210-01-345-6315
89	Locknut	0-952A14	5310-00-725-9479
90	Locknut	10095	5310-01-063-1755
91	Locknut	110310A	5310-01-159-8178
92	Locknut	110311A	5310-01-111-0645
93	Locknut	110312A	5310-01-150-5918
94	Locknut	112556A	5310-01-372-6378
95	Locknut	114358AX	
96	Locknut	115307A	5310-01-151-1036

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
97	Locknut	1244954-2	5310-00-074-1387
98	Locknut	1333510	5310-01-340-5671
99	Locknut	1334320	5310-01-161-9123
100	Locknut	1408910	5310-01-111-0645
101	Locknut	1437220	
102	Locknut	1525130	5310-01-357-8840
103	Locknut	1571850	5310-01-288-5096
104	Locknut	1571870	5310-01-352-7732
105	Locknut	1598030	5310-01-342-8595
106	Locknut	1600460	5310-01-346-9445
107	Locknut	1605420	5310-00-542-0087
107.1	Locknut	1HT191	5310-01-383-6080
108	Locknut	203145	5310-00-012-0368
109	Locknut	21NE-040	5310-01-066-6759
110	Locknut	22NM04	5310-00-207-9341
111	Locknut	2-X-5731	5310-00-447-4251
112	Locknut	40X-1239	5310-01-377-1996
113	Locknut	41NE120	5310-00-530-0239
114	Locknut	434-A	5310-01-063-8970
115	Locknut	44NTE-1210	5310-01-346-3789
116	Locknut	5340910	5310-01-280-6538
117	Locknut	60860AX	
118	Locknut	60861A	5310-01-061-5678
119	Locknut	7-660-082504	5310-01-354-8734
120	Locknut	767HX1	5310-01-058-3183
121	Locknut	76985	5310-00-432-3959
122	Locknut	88881	5310-01-349-0759
123	Locknut	93604342	5310-01-081-5351
124	Locknut	AN365-1024A	5310-00-208-1918
125	Locknut	ATS2-518	5340-01-196-0380
126	Locknut	F41NE2076-1216	5310-01-357-4700
127	Locknut	L-10-MNS-500-X-1	5310-01-345-2350

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
128	Locknut	MS17828-7C	5310-01-117-5055
129	Locknut	MS21044C08	5310-00-982-6814
130	Locknut	MS51849-74	5305-00-470-3321
131	Locknut	MS51922-1	5310-00-088-1251
132	Locknut	MS51922-17	5310-00-087-4652
133	Locknut	MS51922-9	5310-00-984-3806
134	Locknut	MS51943-31	5310-00-061-4560
135	Locknut	MS51968-14	5310-00-732-0560
136	Locknut	N08	5310-00-185-6389
137	Locknut	N9406	5310-01-362-6171
138	Locknut	N9410	5310-01-348-8398
139	Locknut	SN104-NM-22	5310-01-355-0217
140	Locknut	T893R	5310-01-288-1116
141	Locknut	TLA-1213-GRC	5310-01-081-8244
142	Locknut	TLA-3410-GRC	5310-01-080-5747
143	Locknut	TLA-3816-GRC	5310-01-222-9097
144	Locknut	TLA-7809-GRC	5310-01-107-3586
145	Locknut	V75700689	5310-01-345-3757
146	Locknut	XB-769	5310-01-150-8599
147	Lockscrew	11504603	5305-01-336-6757
148	Lockscrew	31 WLFS 1420	5310-01-393-7077
149	Lockwasher	100-0000-051	5310-00-045-3299
150	Lockwasher	114021	5310-01-081-0798
151	Lockwasher	1244954-2	5310-00-074-1387
152	Lockwasher	1344950	5305-01-155-6107
153	Lockwasher	138526	5310-00-013-8526
154	Lockwasher	1459-254	5310-00-171-1734
155	Lockwasher	16FW008032	5310-00-988-8820
156	Lockwasher	1978HX	
157	Lockwasher	201506	5310-01-373-2539
158	Lockwasher	201946	5310-00-013-8572
159	Lockwasher	202210	5310-01-101-2490
160	Lockwasher	210104	5310-01-K49-2583

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
161	Lockwasher	2239HX	5310-00-209-1218
162	Lockwasher	2249HX	
162.1	Lockwasher	2250HX	
163	Lockwasher	2251HX	5310-01-354-3729
164	Lockwasher	2434	5310-00-775-5139
165	Lockwasher	318B	5310-01-061-5302
166	Lockwasher	318BX	
167	Lockwasher	3231	5310-00-032-1814
168	Lockwasher	351AX	5310-01-129-0450
169	Lockwasher	352A	5310-01-081-1283
170	Lockwasher	352AX	5310-01-081-1283
171	Lockwasher	353AX	5310-00-582-5965
172	Lockwasher	354AX	5310-01-068-8446
173	Lockwasher	355AX	5310-01-133-2130
174	Lockwasher	362AX	5310-01-062-3379
175	Lockwasher	371AX	5310-00-775-5139
176	Lockwasher	62ANBH-4	4730-01-349-7765
177	Lockwasher	777-A	5310-01-061-4481
178	Lockwasher	7-950-160050	5310-01-292-4150
179	Lockwasher	8104200064	5310-01-358-6624
180	Lockwasher	93613642	5310-01-068-8446
180.1	Lockwasher	CA300302	5310-01-478-2605
181	Lockwasher	C-972	5310-01-210-7427
182	Lockwasher	HLKW025EG	5310-01-105-2652
183	Lockwasher	L051275	5310-10-244-8747
184	Lockwasher	MS35333-37	5310-00-579-0079
185	Lockwasher	MS35333-40	5310-00-550-1130
186	Lockwasher	MS35333-51	5310-00-655-6927
187	Lockwasher	MS35335-30	5310-00-209-0788
188	Lockwasher	MS35335-31	5310-00-596-7693
189	Lockwasher	MS35335-49	5310-00-582-6714
190	Lockwasher	MS35338-100	5310-00-261-8278
191	Lockwasher	MS35338-103	5310-00-184-8971

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
192	Lockwasher	MS35338-15	5310-00-012-1326
193	Lockwasher	MS35338-42	5310-00-045-3299
194	Lockwasher	MS35338-43	5310-00-045-3296
195	Lockwasher	MS35338-44	5310-00-582-5965
196	Lockwasher	MS35338-45	5310-00-407-9566
197	Lockwasher	MS35338-46	5310-00-637-9541
198	Lockwasher	MS35338-48	5310-00-584-5272
199	Lockwasher	MS35338-50	5310-00-820-6653
200	Lockwasher	MS35338-51	5310-00-584-7888
201	Lockwasher	MS35338-6	5310-00-010-3319
202	Lockwasher	MS35338-8	5310-00-261-7340
203	Lockwasher	MS35649-204	5310-00-954-9760
204	Lockwasher	MS45904-60	5310-00-080-9786
205	Lockwasher	MS51413-8	
206	Lockwasher	MS51848-12	5310-00-688-2195
207	Lockwasher	N405P13C16	5310-01-044-2295
208	Lockwasher	N9015	5310-01-046-0186
209	Lockwasher	N9018	5310-01-032-4827
210	Lockwasher	N9461	5310-01-348-8392
211	Lockwasher	W08	5310-01-355-8794
212	Lockwasher (#10 Stud)	85020	5310-01-373-6180
213	Nut	MS35650-103	5310-00-988-2652
214	Nut	MS51967-32	5310-00-762-6242
215	Nut	MS51967-35	5310-00-762-6241
216	Nut	MS51967-38	5310-00-762-6247
217	Nut, Push On	C12044-017-4	5310-00-110-8742
218	Nut, Stop	A1300R	
219	Nut, Tenz	1244954-2	5310-00-074-1387
220	Packing, Preformed	0526453-00	5330-00-071-6651
221	Packing, Preformed	11-222	5330-00-198-6190
222	Packing, Preformed	11350	5330-01-147-6003
223	Packing, Preformed	11639519-1	5330-00-463-0200

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
224	Packing, Preformed	11639519-2	5330-00-462-0907
225	Packing, Preformed	2014N103-70	5330-00-213-8722
226	Packing, Preformed	2-016N552-90	5330-01-115-8225
227	Packing, Preformed	2-021N0552	4730-00-541-0938
228	Packing, Preformed	22012-6	5330-00-200-8125
229	Packing, Preformed	22012-8	5330-00-996-8627
230	Packing, Preformed	2-238N674-70	5330-00-172-7223
231	Packing, Preformed	22617-10	5330-01-040-4772
232	Packing, Preformed	22617-12	5330-00-228-7196
233	Packing, Preformed	22617-16	5330-01-168-0885
234	Packing, Preformed	22617-20	5330-01-168-1802
235	Packing, Preformed	22617-4	
236	Packing, Preformed	22617-6	5330-01-198-8439
237	Packing, Preformed	22617-8	5330-01-224-2273
238	Packing, Preformed	2282320	
239	Packing, Preformed	2282330	
240	Packing, Preformed	23017303	5330-01-334-9946
241	Packing, Preformed	23504641	5330-01-336-2997
242	Packing, Preformed	235063	5330-00-454-0370
243	Packing, Preformed	262332	5330-00-443-2045
244	Packing, Preformed	3-916N0552	
245	Packing, Preformed	3-924N552-90	5330-01-038-3074
246	Packing, Preformed	52-49529-00	5330-01-348-8331
247	Packing, Preformed	A-103	5330-00-115-6327
248	Packing, Preformed	A307777000-8	5330-00-920-4157
249	Packing, Preformed	ARP568-014	5330-01-213-6795
250	Packing, Preformed	FF9446-14	
251	Packing, Preformed	FF9446-18	5330-01-092-5503
252	Packing, Preformed	FF9446-21	5330-01-269-4323
253	Packing, Preformed	FF9446-219	5330-00-013-7784
254	Packing, Preformed	FF9446-222	5330-00-984-3808
255	Packing, Preformed	FF9446-25	5330-01-269-6152

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
256	Packing, Preformed	FF9855-12	5330-01-376-9629
257	Packing, Preformed	GG108-NP04-10	4730-01-346-4684
258	Packing, Preformed	MS28775-013	5331-00-684-3420
259	Packing, Preformed	MS28775-223	5330-00-171-6649
260	Packing, Preformed	MS29512-16	5330-00-263-8034
261	Packing, Preformed	V75500858	5330-01-350-6007
262	Packing, Preformed	VS-1087-4	5330-01-371-5119
263	Packing, Pump Piston	P4-4	5330-00-122-0624
264	Pad, Rubber	1946480	5330-01-363-7020
265	Pin, Cotter	0900806-1	5315-00-254-1657
266	Pin, Cotter	126761A	5315-01-157-0960
267	Pin, Cotter	1749HX	
268	Pin, Cotter	1840070	
269	Pin, Cotter	L6451-101	5315-00-187-9591
270	Pin, Cotter	MS24665-134	5315-00-839-5820
271	Pin, Cotter	MS24665-151	5315-00-815-1405
272	Pin, Cotter	MS24665-319	5315-01-267-7570
273	Pin, Cotter	MS24665-353	5315-00-839-5822
274	Pin, Cotter	MS24665-491	5315-00-059-0206
275	Pin, Cotter	MS24665-498	5315-00-849-9854
276	Pin, Cotter	MS24665-624	5315-00-059-0217
277	Pin, Cotter	MS24665-627	5315-00-013-7508
278	Pin, Cotter	XB-T-60	5315-01-204-4893
279	Pin, Roll	1840070	
280	Pin, Roll	XB-21-S-187-1250	5315-01-448-0604
281	Pin, Roll	XB-21-S-312-1250	
282	Pin, Roll	XB-21-S-312-2500	
283	Pin, Roll	XB-21-S-500-1000	5315-01-448-0599
284	Pin, Roll	XB-S05742	
285	Pin, Spring	3145955	
286	Plug	A-LF-2550	5330-01-276-7351
287	Preformed Packing Kit	RN-60-A	4440-01-337-7324

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
288	Preformed Packing Kit	RN-60-V	5330-01-377-2460
289	Quick Edge	75000317	2510-01-176-1177
290	Retainer, Packing	8-238N300-90	5330-01-065-5959
291	Rubber Liner	124660A	
292	Rubber Strip	70-17-30	9320-00-491-5351
293	Screw	118941A	5305-01-156-5099
294	Screw	1344950	5305-01-155-6107
295	Screw	1778HX	5305-01-133-2114
296	Screw	23512308	5306-01-411-6384
297	Screw	5103642	5305-01-078-1999
298	Screw	59030AX	5305-00-984-6210
299	Screw	B71-10015-002	5305-01-352-2066
300	Screw	MS35206-267	5305-00-984-6214
301	Screw	MS35207-267	5305-00-993-1851
302	Screw	MS90725-34	5306-00-225-8499
303	Screw	MS90725-60	5305-00-269-3211
304	Screw	MS90725-8	5305-00-225-3839
305	Screw	SPLE101D05	5306-01-156-8678
306	Screw (Sheet Metal)	1381HX1	5305-01-134-2052
307	Screw Washer Assembly	1756840	5305-01-354-5708
308	Screw Washer Assembly	2050700	5305-01-394-3551
309	Screw, Self-locking	02092	5305-00-696-5115
310	Screw, Self-locking	1367HX1	5305-01-062-1017
311	Screw, Self-locking	23015458	5306-01-363-4057
312	Screw, Self-locking	96-212	5305-01-205-0041
313	Screw, Self-tapping	1324510	5305-01-157-5624
314	Screw, Self-tapping	1345280	5305-01-159-8544
315	Screw, Self-tapping	1354490	5305-01-274-0028
316	Screw, Self-tapping	1723180	5305-01-145-4003
317	Screw, Self-tapping	54067AX	5305-01-150-8714
318	Screw, Tapping	2763HX	5305-01-353-6120
319	Screws, Self-locking	31 WLFS 51618-062	5306-01-350-8223

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
320	Seal	1862760	
321	Seal	1941570	5330-01-363-7019
322	Seal	2282340	
323	Seal	2282350	
324	Seal	23504641	5330-01-336-2997
325	Seal	3S9643-00	5330-00-246-6380
326	Seal	5104105	5330-01-163-8178
327	Seal	75001366	9390-01-179-4508
328	Seal	NE-71A	5330-01-277-5103
329	Seal, Door	75001366	9390-01-179-4508
330	Seal, Plain	5103646	5330-01-088-2740
331	Seal, Preformed	101-2203	5330-01-267-7542
332	Seal, Ring	N1205B1666	5330-01-351-7881
333	Seal, Ring	N1205C1667	5330-01-350-5385
334	Splice, Conductor	327025	5940-01-368-9579
335	Stem, Valve	N-1268	2640-01-354-9424
336	Strip, Nut	128757A	5310-01-157-0894
337	Strip, Rubber	350907	5330-01-156-5266
338	Strip, Rubber	352731	5330-00-114-2073
339	Stud	52-49523-00	5307-01-348-7046
340	Tape, Rubber Adhesive	SJ5816	9320-01-299-3332
341	U-joint Kit	5-471X	2520-01-359-8444
342	Valve Core	8500V	2640-00-004-8297
343	Washer	1605640	5310-01-383-7327
344	Washer	MS27183-10	5310-00-809-4058
345	Washer	MS27183-7	5310-00-809-8544
346	Washer	MS27183-8	5310-00-809-8546
347	Washer	MS37183-62	5310-01-380-3474
348	Washer	V75503675	5310-01-389-2364
349	Washer, Copper	31425BX	2520-01-041-3542
350	Washer, Key	TW107	5310-01-014-5136
351	Washer, Plastic	16FW008032	5310-00-988-8820

Section II. MANDATORY REPLACEMENT PARTS LIST (Cont)

(1) Index No.	(2) Nomenclature	(3) Part Number	(4) National Stock Number
352	Washer, Rubber	8-325N300-90	5330-00-156-3208
353	Washer, Sealing	1760040	5310-01-353-2062
353.1	Washer, Special	3264358	
354	Washer, Star	50001716	5310-01-372-6391

APPENDIX G

TOOL IDENTIFICATION LIST

Section I. INTRODUCTION

G-1. SCOPE.

This appendix lists all of the tools needed to repair the truck.

G-2. GENERAL.

This appendix is a list of tools, both common and special, test equipment and tool kits used at unit level to repair the truck. This list is arranged alphabetically and shows the nomenclature, part number (P/N), National Stock Number (NSN) and references when applicable. The index number corresponds to the index number found in the task box of maintenance procedures.

Section II. COMMON TOOLS, TEST EQUIPMENT AND TOOL KITS

Item No.	Description	Part No.	NSN	Reference
1	Adapter, Torque Wrench	J-8932-B	5120-00-019-5232	
2	Adapter, Radiator	J-29003-A	4910-01-170-4929	
3	Analyzer Set, STE/ICE-R	12259266	4910-01-222-6589	
4	Bar, Crow	10501985	5120-00-224-1390	SC 4910-95-A74
5	Bar, Wrecking	130	5120-00-293-0665	SC 4910-95-A72-HR
6	Bit, Set	38699-1	5120-01-170-4454	SC 4910-95-A72-HR
7	Caliper, Micrometer, Inside	124B	5120-00-221-1921	
8	Cap And Plug Set	10935405	5340-00-450-5718	
9	Caps, Vise Jaw	GGG-C-137	5120-00-221-1506	SC 4910-95-A74
10	Clamp, Machinist's	GGG-C-406	5120-00-222-1612	SC 4910-95-A72-HR
11	Compressor Unit, Air	MIL-C-13874	4130-00-752-9633	SC 4910-95-A72-HR
12	Connector Remover (DEUTSCH)	114010	5120-01-158-4707	
13	Crimping Tool	J35123	5120-01-355-0844	
14	Crimping Tool (Cannon)	995-0001-904	5120-01-374-8937	
15	DDEC Repair Kit	J-35888	2815-01-355-5993	
16	Dispensing Pump	FEDXXD370	4930-00-287-8293	SC 4910-95-A72-HR
17	Drill, Electric, Portable	WD00661	5130-00-293-1849	SC 4910-95-A74
18	Drill, Electric, Portable, 1/4 in.	1070	5130-00-889-8993	SC 4910-95-A31
19	Drill Set, Twist	GGG-D-751	5133-00-293-0983	SC 4910-95-A74
20	Drill Set, Twist	GGG-D-751	5133-00-449-6775	SC 3470-95-A02
21	Drum, Storage 57 Gal	MIL-D-6054	8110-00-082-2626	
22	Extractor Tool, Electrical	901019-3	5120-01-015-2154	
23	Extractor Tool, Electrical	305183	5120-01-020-5926	

Section II. COMMON TOOLS, TEST EQUIPMENT AND TOOL KITS (CONT)

Item No.	Description	Part No.	NSN	Reference
23.1	Fault Code Retrieval Device (FCRD)	CA1 05 020		
24	Funnel	L-F-1593	7240-00-404-9795	SC 4910-95-A74
25	Gage, Air Inflation	1506	4910-00-204-2644	
26	Gage, Belt Tension (Tensiometer)	BT-33-73BF	4935-01-254-9808	
27	Gage, Feeler	007958	5210-01-214-2138	
28	Gloves, Chemical Oil Protective	ZZ-G-381	8415-00-641-4601	SC 4910-95-A74
29	Gloves, Heavy Duty	A-A-50022	8415-00-268-7859	SC 4910-95-A72-HR
30	Goggles, Industrial	GGG-G-13	4140-00-269-7912	SC 4910-95-A74
31	Gun, Air Blow	GGG-G-770	4940-00-333-5541	SC 4910-95-A72-HR
32	Gun, Heat	500	4940-00-561-1002	
33	Hammer, Hand Soft Plastic	3-HD	5120-01-065-9037	SC 4910-95-A72-HR
34	Handle, Driver	J-3154-1	5120-00-808-5082	
35	Handler, Installer	J7079-2	5120-01-977-5578	
36	Harness, Breakout	J34517	6150-01-373-7771	
37	Hose, Drain	ZZ-H-461	4720-00-356-8557	SC 4910-95-A74
38	Insertion Tool, (Cannon)	CIT-SS-10	5120-01-374-8968	
39	Installer, Seal	J8550	5120-00-977-5579	
40	Jack, Hydraulic, Hand	5029209-111-101	5120-00-224-7330	SC 4910-95-A74
41	Jack, Kit, Hydraulic, Hand	GGG-J-60	5120-00-587-4144	
42	Jackstand, Trestle	306	4910-00-251-8013	SC 4910-95-A74
43	Measure, Liquid	MIL-M-43530	7240-00-138-7984	
44	Multimeter	ANURM105C	6625-00-999-6282	SC 4910-95-A72-HR
45	Multiplier, Torque	292	5120-00-574-9318	SC 4910-95-A72-HR
46	Pan, Drain (6 Gal)	MIL-P-45819	4940-00-795-3595	
47	Pan, Drain (4 Gal)	450	4940-00-387-9592	SC 4910-95-A74
48	Pliers, Brake Repair	131A	5120-00-690-8044	SC 4910-95-A74
49	Pliers, Retaining Ring	2BH945	5120-01-375-5699	
50	Pressure Test Kit	3SK911	4910-01-378-9068	
51	Puller Kit, Universal	1677	5180-00-423-1596	SC 4910-95-A73
52	Pulley Kit, Pump, Roof Mount	2HP645	5120-01-375-5700	
53	Reader, Diagnostic	J38500-1	4910-01-343-3508	
54	Removal Tool, Oil Filter	2304	5120-00-865-0933	SC 4910-95-A72-HR
55	Remover, Connector	J38384	5120-01-355-3012	
56	Repair Tool, Pneumatic Tire, Valve	7471	5120-00-308-3809	SC 4910-95-A74
57	Respirator, Air Filter	GGG-M-125/6	4240-00-022-2524	SC 4910-95-A72-HR
58	Rivet Gun	352	5130-00-982-8078	
59	Scriber, Machinist's, 8 To 9 In Long	68A	5120-00-221-7063	
60	Socket Set, Deepwell, 1/2 In.	GGG-W-641	5120-00-596-8622	SC 4910-95-A72-HR
61	Socket Set, 3/4 In.	GGG-W-641	5120-00-204-1999	SC 4910-95-A72-HR
62	Socket Set, 3/8 In.	221FSMY	5120-01-117-3876	SC 4910-95-A72-HR

Section II. COMMON TOOLS, TEST EQUIPMENT AND TOOL KITS (CONT)

Item No.	Description	Part No.	NSN	Reference
63	Socket, Wheel Bearing Adj. Nut 3 1/4 In. 6 Pt.	1908	5120-01-144-5331	SC 4910-95-A74
64	Soldering Kit, Torch	LP-999G	3439-00-542-0531	SC 4910-94-A74
65	Strainer Tool	FC 88A	5120-01-328-2504	
66	Tape, Measurer	GGG-T-106	5120-01-554-7085	SC 4910-95-A72-HR
67	Terminal Crimper	J35688	5120-01-355-0845	
68	Terminal Remover	J33095	5120-01-353-2534	
69	Terminal Remover	J35689-A	5120-01-357-2937	
70	Terminal Remover, Weatherpac	J36400-5	5120-01-374-8969	
71	Tester, Pressure, Radiator	J24460-01	4910-01-170-4928	
72	Tool Kit, Blind Rivet	D-100-MIL-1	5180-01-201-4978	SC 4910-95-A74
73	Tool Kit, Electric	7550526	5180-00-876-9336	SC 4910-95-A72-HR
74	Tool Kit, General Mechanic's: Automotive	SC-5180-90-N26	5180-00-177-7033	SC 5180-90-N26
75	Vise, Machinist's	504M2	5120-00-293-1439	SC 4910-95-A74
76	Weatherpac Crimper	J38852	5120-01-374-8936	
77	Wrench, Box 1/2 In.	J4242	5120-00-591-2685	
78	Wrench, Combination 1 1/16 In.	1234	5120-00-228-9515	SC 4910-95-A74
79	Wrench, Combination 1 1/8 In.	1172	5120-00-228-9516	SC 4910-95-A74
80	Wrench, Combination 1 1/4 In.	1173	5120-00-228-9517	SC 4910-95-A74
81	Wrench, Combination 1 5/16 In.	1174	5120-00-228-9518	SC 4910-95-A74
82	Wrench, Combination 1 3/8 In.	1176A	5120-00-228-9519	SC 4910-95-A74
83	Wrench, Combination 1 1/2 In.	1178	5120-00-277-8834	SC 4910-95-A74
84	Wrench, Combination 1 5/8 In.	1180	5120-01-016-7144	
85	Wrench, Combination 1 11/16 In.	A-A-1351	5120-00-184-8566	
86	Wrench, Combination 1 3/4 In.	1256	5120-00-020-8658	
87	Wrench, Combination 1 7/8 In.	1260	5120-00-020-8632	
88	Wrench, Combination 2 In.	1190	5120-00-957-3115	
89	Wrench, Combination 2 1/8 In.	1268	5120-00-203-4795	
90	Wrench, Crowfoot 1/2 In., 3/8 In Drive	FRH-1605	5120-01-114-4933	SC 4910-95-A74
91	Wrench, Pipe 3 1/2 In. Opening	GGG-W-651	5120-00-277-1485	
92	Wrench, Set, Combination	GGG-W-00645	5120-00-895-9566	SC 4910-95-CL-A74
93	Wrench Set, Socket 3/8 In. Drive	51200017510	5120-00-322-6231	SC 4910-95-A31
94	Wrench, Spanner	J41108	5120-01-375-4502	
95	Wrench, Torque (0 To 175 Lb-Ft [0-237 N·M])	1753LDF	5120-00-640-6364	SC 4910-95-A74
96	Wrench, Torque (0 To 300 Lb-Ft [0-407 N·M])	6134A	5120-00-555-1523	SC 4910-95-A72-HR
97	Wrench, Torque (0 To 600 Lb-Ft [0-814 N·M])	SW130-301	5120-00-221-7983	SC 4910-95-A31

Section II. COMMON TOOLS, TEST EQUIPMENT AND TOOL KITS (CONT)

Item No.	Description	Part No.	NSN	Reference
98	Wrench, Torque, 3/8 In. Drive (0 To 60 N·M)	TESI60	5120-01-112-9531	SC 4910-95-A72-HR
99	Zonal Separator, Oil And Water Spray Gun (Variable Air Supply)	MIL-S-12928CLASS1	4940-00-242-4100	SC 4910-95-A73

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SCHEMATICS

The following sections contain the schematics which are the same in all volumes of TM 9-2320-364-20 and TM 9-2320-364-34.

Section I contains the schematics for trucks equipped with the 145 amp alternator and the DDEC II engine.

Section II contains the schematics for trucks equipped with the 200 amp alternator and the DDEC III/IV engine.

SCHEMATICS

Section I. 145 AMP ALTERNATOR AND DDEC II ENGINE.

Section I contains the schematics for trucks equipped with the 145 amp alternator and the DDEC II engine.

REVISION W
CN 24230
4-15-93

MULTIPLE CONNECTORS

NUMBER	ZONE	SH	DESCRIPTION
MC1	H3	3	CAB/ELECTRICAL BOX
MC1	C26	4	CAB/ELECTRICAL BOX
MC2	D3	3	CAB/ELECTRICAL BOX
MC2	D26	4	CAB/ELECTRICAL BOX
MC3	C3	3	CHASSIS
MC3	H17	6	CHASSIS
MC4	G10	3	SWITCHES
MC5	B12	3	WIPER MOTOR
MC6	D15	3	THROTTLE SENSOR
MC7	H8	3	TURN SIGNAL
MC8	F19	3	GAUGES
MC9	G4	4	ECU ATEC
MC10	G4	4	ECU ATEC
MC11	D3	4	DDEC
MC11	D26	5	DDEC
MC12	H26	4	SHIFT CONT ATEC
MC13	F6	3	DIGN CONN DDEC
MC15	B4	6	MILITARY CONNECTOR
MC16	D4	6	TRAILER
MC17	G11	5	DDEC
MC18	E11	5	DDEC
MC19	E13	5	TRANSMISSION
MC20	E12	5	TRANSMISSION
MC21	E2	3	ENGINE SENSOR
MC21	H26	5	ENGINE SENSOR
MC22	G21	5	REGULATOR
MC23	B23	5	ETHER START
MC24	G19	5	ALTERNATOR
MC25	C17	6	TRAILER 24VDC
MC27	F18	6	FRONT TOW
MC28	E6	3	BEACON LIGHT
MC29	F8	6	CRANE
MC30	C5	6	TRAILER
MC31	B21	3	CAB/CHASSIS
MC32	B23	3	CTI CHASSIS
MC33	F17	7	LHS CAB
MC34	C19	3	24V METERS
MC35	D24	3	CTI
MC36	A5	4	THROTTLE SENSOR
MC38	C15	3	VERNIER CONTROL
MC39	H7	5	STE/ICE
MC40	G5	5	STE/ICE MODULE
MC41	G2	5	PULSE TACH DRIVE
MC42	H4	5	DIFFERENTIAL PRESS
MC43	F2	5	FUEL PRESSURE
MC44	C5	3	CAB/TRANSMISSION
MC44	F26	4	CAB/TRANSMISSION
MC45	D5	4	ECU ATEC

MULTIPLE CONNECTORS

NUMBER	ZONE	SH	DESCRIPTION
MC50	C7	4	RELAYS/ATEC
MC51	C6	4	ECU ATEC
MC52	B23	4	HEATER/DIMMER
MC53	F23	3	ENGINE BRAKE
MC54	F8	6	WORK LIGHT
MC55	B13	6	SELF RECOVERY WINCH
MC56	C23	5	ETHER THERMOSTAT
MC57	F6	6	DRIVE LINE LOCK
MC58	E7	3	GAS PART FILTER
MC59	G13	6	FAN CONTROL
MC60	G24	5	REVERSE PLRT PROTR
MC61	G10	6	FAN CONTL WTR TEMP
MC62	F13	5	DDEC ENGINE POWER
MC63	G11	6	FAN CONTROL
MC64	D15	6	AUXILIARY CTI MANF
MC65	E5	5	STE/ICE ENGINE
MC66	G2	5	TURBO OUTLET PSI
MC67	E2	5	AIR CLEANER
MC68	D2	5	AIR BOX PSI
MC69	D2	5	FUEL RETURN
MC70	C2	5	ENGINE OIL TEMP
MC71	B2	5	ENGINE WATER TEMP
MC73	F13	6	FAN CONTROL
MC76	F11	6	FAN CONTROL VALVE
MC77	E3	6	BACK UP LIGHT
MC78	F4	6	REAR LIGHT GROUP
MC79	G7	6	WORK LIGHT
MC80	G4	6	REAR LIGHT GROUP
MC81	E13	7	LHS
MC82	E12	7	LHS
MC83	E14	7	LHS
MC84	E15	7	LHS
MC85	E9	7	LHS
MC86	E7	7	LHS
MC87	D5	7	LHS
MC88	E6	7	LHS
MC90	C3	6	REAR LIGHT GP HARN
MC91	G8	3	STRN COL.-CAB HARN
MC92	F8	3	STRG COL.-CAB HARN
MC93	C17	7	LHS
MC94	B17	7	LHS
MC95	B15	5	DDEC BATTERY POWER
MC96	C2	3	LOW HYD OIL
MC97	B10	6	AIR DRYER
MC98	B9	6	AIR DRYER
MC99	B8	6	AFTER COOLER
MC102	A3	4	DDEC 6.8K RESISTOR
MC103	E5	3	CHEM DETECTOR
MC104	E5	3	CHEM ALARM

MULTIPLE CONNECTORS

NUMBER	ZONE	SH	DESCRIPTION
MC105	E24	3	CTI ACCESS OUTPUT
MC106	H4	3	DDEC DIAGNOSTIC
MC107	D6	6	FUEL WATER SEP
MC108	C20	5	FUEL PUMP
MC109	C15	6	CTI POWER MANIFOLD
MC110	C24	3	CTI AUX MANF CAB
MC111	B24	3	CTI POWER MANF CAB
MC112	B19	3	LHS LIGHTS
MC113	F16	6	EMERGENCY STEER SW
MC114	G18	5	200 AMP OPTION
MC115	H16	5	200 AMP OPTION
MC116	B12	4	EMER ENG SHUT DOWN
MC118	A9	5	STE/ICE
MC119	B22	4	ARCTIC PUMP
MC120	B7	6	ARCTIC PUMP
MC121	C12	6	SELF RECOVERY WINCH
MC122	D12	6	SELF RECOVERY WINCH
MC123	D12	6	SELF RECOVERY WINCH
MC124	E3	6	BACK-UP LIGHT/ALARM
MC125	G18	3	AIR RESTRICTION LT
MC126	E11	3	STOP LIGHTS
MC127	B15	3	THROTTLE POSN SW
MC128	G10	6	AUX WATER TEMP SW

LIGHTS

NUMBER	ZONE	SH	DESCRIPTION
L1	G16	3	PARKING BRAKE IND
L2	G17	3	LOW AIR INDICATOR
L3	G17	3	CHECK GAUGES IND
L4	G17	3	RH TURN INDICATOR
L5	G24	3	TRANS CHECK IND
L6	G18	3	CHECK ENGINE IND
L7	G17	3	DRIVE LINE LOCK IND
L8	G24	3	HI WATER TEMP IND
L9	G24	3	LOW OIL PSI IND
L10	G25	3	HI BEAM INDICATOR
L11	G28	3	LH TURN INDICATOR
L12	F27	3	RH HEADLIGHT
L13	G27	3	RH SIDE TURN SIGNAL
L14	F27	3	RH COMPOSITE
L15	E27	3	BLACKOUT DRIVE
L16	D27	3	LH COMPOSITE
L17	C27	3	LH HEADLIGHT
L18	C27	3	LH SIDE TURN SIGNAL
L19	B27	3	ID & CLEARANCE
L20	H10	3	DOME
L21	G7	6	RH WORK LIGHT
L22	G2	6	RH REAR COMPOSITE
L23	G2	6	BACK UP
L24	F2	6	LH REAR COMPOSITE
L25	C2	6	ID/CLEARANCE REAR
L26	E22	3	LHS INDICATOR
L27	E22	3	AUXILLARY HYDR IND
L28	E23	3	TRANSIT INDICATOR
L29	E23	3	LHS OVERLOAD IND
L31	D2	6	RH REAR S MKR (RED)
L32	H4	6	RH SIDE MKR (AMBER)
L33	B2	6	LH SIDE MKR (AMBER)
L34	H4	6	LH REAR S MKR (RED)
L35	G16	3	EMERGENCY STEERING
L36	G16	3	LOW HYD OIL
L37	D21	3	ENGINE BRAKE
L38	D21	3	FLAT RACK
L39	F7	6	LH WORK LIGHT
L40	F7	3	T.C. LOCKUP
L41	C2	6	L.H. B.O. CL LIGHT
L42	D2	6	R.H. B.O. CL LIGHT
L43	B5	3	POST LIGHT
L44	F5	3	HEATER PANEL LIGHT

SWITCHES

NUMBER	ZONE	SH	DESCRIPTION
S1	H6	3	TURN SIGNAL/DIMMER
S2	E13	3	IGNITION
S3	F5	3	HEATER
S4	D8	3	SELF RECOVERY CRANE
S5	H12	3	BEACON LIGHT
S6	H13	3	WORK LIGHT
S7	H14	3	WINDSHIELD WASHER
S8	G15	3	WINDSHIELD WIPER
S9	F16	3	BLACK OUT SVCE SEL
S10	F54	3	BLACK OUT MARKER
S11	F14	3	BLACK OUT DRIVE
S12	F14	3	HEADLIGHTS
S13	F5	6	DRIVE LINE LOCK
S14	F12	3	RHEOSTAT
S15	F7	3	HORN
S16	F13	3	ENGINE BRAKE
S18	D7	3	SELF RECOVERY WINCH
S19	D6	3	GAS PARTIULATE FLTR
S20	D5	3	CHEMICAL ALARM
S21	H15	3	DOME LIGHT
S22	C8	5	STE/ICE ZEROING
S23	C22	7	PROX SW HOOK ARM UP
S24	C23	7	PROX SW MDL FR DOWN
S25	D13	3	ETHER START
S26	F7	3	TC LOCKUP
S27	E5	7	HOOK ARM DOWN
S28	G8	7	OVERLOAD PSI
S29	B19	4	ARCTIC PUMP
S30	E9	3	EMER ENG SHUT DOWN
S31	C16	3	THROTTLE POSITION

PRESSURE SWITCHES

NUMBER	ZONE	SH	DESCRIPTION
PS1	G9	3	FRONT BRAKE
PS2	F9	3	REAR BRAKE
PS3	F9	3	HAND BRAKE
PS4	C14	3	PARKING BRAKE
PS5	B15	3	PARKING BRAKE SW
PS6	D17	3	LOW AIR PRESSURE
PS7	D17	3	LOW AIR PRESSURE
PS8	C22	5	ATEC OIL PRESSURE
PS9	D22	5	ENGINE OIL
PS10			GOVERNOR PRESSURE
PS11			GOVERNOR PRESSURE
PS13	F15	6	EMERGENCY STEER
PS15	F26	5	BOOST PRESSURE

TEMPERATURE SWITCHES

NUMBER	ZONE	SH	DESCRIPTION
TS1	C23	5	ETHER START
TS2	D23	5	ENGINE WATER
TS3	F10	6	ENGINE WATER
TS4	G10	6	ENGINE WATER

RELAYS

NUMBER	ZONE	SH	DESCRIPTION
R1	G24	4	HEADLIGHTS
R2	G23	4	ID/CLEARANCE LIGHTS
R3	G22	4	HORN
R4	G21	4	WORK LIGHTS
R5	G20	4	DIMMER
R6	G19	4	BEACON LIGHTS
R7	G18	4	TRANSMISSION
R8	G18	4	RATARDER
R9	G18	4	CK TRANSMISSION
R10	G17	4	REVERSE
R11	G16	4	NEUTRAL START
R12	G15	4	12 V MAG SWITCH
R13	G15	4	B.O. STOP
R14	G14	4	BO SERVICE TAIL LTS
R15	G13	4	LH TURN SIGNAL
R16	G12	4	RH TURN SIGNAL
R17	G12	4	BLACK OUT TAIL LTS
R18	G11	4	DDEC
R19	G10	4	TRANS DDEC
R20	G9	4	INTER AXLE
R21	G9	4	DIFFERENTIAL LOCK
R22	G8	4	CRANE HI IDLE
R23	G7	4	HIGH RANGE LOCKOUT
R24	G6	4	T.C. DUAL MODE
R25	B17	4	MAGNETIC SWITCH
R26	B18	4	MAGNETIC SWITCH
R27	D19	5	MAGNETIC SWITCH
R28	C21	4	MAGNETIC SWITCH
R29	C10	7	MIDDLE FR LOCKOUT
R32	B21	4	ARCTIC PUMP
R33	B20	4	ARCTIC PUMP

SENDING UNIT

NUMBER	ZONE	SH	DESCRIPTION
SU1	E21	5	WATER TEMPERATURE
SU2	D21	5	TRANSMISSION TEMP
SU3	D21	5	ENGINE OIL PRESSURE
SU4	F6	6	SPEEDOMTER
SU5	D6	6	FUEL LEVEL

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CIRCUIT BREAKERS

NUMBER	ZONE	SH	DESCRIPTION
CB1	D22	4	15 AMP
CB2	D22	4	15 AMP
CB3	D21	4	15 AMP
CB4	D21	4	15 AMP
CB5	D20	4	20 AMP
CB6	D20	4	15 AMP
CB7	D19	4	10 AMP
CB8	D19	4	15 AMP
CB9	D18	4	10 AMP
CB10	D17	4	3 AMP
CB11	D16	4	8 AMP
CB12	D16	4	8 AMP
CB13	D15	4	8 AMP
CB14	D14	4	15 AMP
CB15	D13	4	15 AMP
CB16	D12	4	15 AMP
CB17	D12	4	3 AMP
CB18	D11	4	10 AMP
CB19	D10	4	15 AMP
CB20	D9	4	15 AMP
CB21	D9	4	30 AMP
CB22	D7	4	20 AMP
CB23	D7	4	20 AMP
CB24	C20	5	3 AMP

GAUGES

NUMBER	ZONE	SH	DESCRIPTION
G1	G20	3	WATER TEMPERATURE
G2	G21	3	OIL PRESSURE
G3	G22	3	FUEL LEVEL
G4	G22	3	TACHOMETER
G5	G23	3	SPEEDOMTER
G6	G19	3	VOLTMETER 12V
G7	G19	3	VOLTMETER 24V
G10	G20	3	XMSN OIL TEMP
G11	G18	3	AIR PRESSURE
G12	H18	3	AIR RESTRICTION

MISCELLANEOUS

NUMBER	ZONE	SH	DESCRIPTION
M1	B6	3	WINDSHIELD WSHR SOL
M2	B13	3	WIPER MOTOR
M3	E17	3	LOW OIL & AIR ALARM
M4	A5	4	THROTTLE POSN CONT
M5	C20	4	FLASHER
M6	C16	5	BATTERIES
M7	E17	5	STARTER
M8	B22	5	ETHER START
M9	D6	6	FUEL/WATER SEP
M10	C10	6	LHS SOLENOID VALVE
M11	C8	6	AFTERCOOLER
M12	C20	5	FUEL PUMP
M13	B10	6	AIR DRYER
M14	E6	3	CHEMICAL DETECTOR
M14	B9	6	AIR DRYER
M15	D1	3	HORN
M16	D16	3	VERNIER CONTROL
M17	F5	3	HEATER MOTOR
M18	F24	3	LOW OIL PRESS ALARM
M19	F21	5	REGULATOR/DVS
M20	G22	5	ALTERNATOR,STD
M21	C25	5	RH SIDE ENG BK COIL
M22	C24	5	LH SIDE ENG BK COIL
M23	D18	5	SLAVE CONNECTER
M24	B15	6	CTI POWER MANIFOLOD
M25	D15	6	CTI AUXILIARY MANF
M26	E13	7	LHS CAB CONTROLLER
M27	B13	6	SELF RECOVERY WINCH
M28	E25	3	CTI CONTROLLER
M29	G14	7	CHEMICAL ALARM
M30	D11	3	GAS PART FILTER
M31	D11	3	AIR HEATER DRIVER
M32	D12	3	AIR HEATER PASS
M33	D3	7	SRW SOLENOID VALVE
M35	E15	3	THROTTLE POSITIONER
M36	C9	4	DIODE
M39	F9	4	RECTIFIER
M40	G2	5	PULSE TACH DRIVE
M41	H5	5	DIFFERENTIAL PRESS
M42	F2	5	FUEL PRESSURE
M43	G5	5	STE/ICE MODULE
M45	F10	6	FAN CONTROL VALVE
M48	D16	5	SHUNT
M49	B9	3	XFR CASE LKUP SOL
M50	B8	3	INTER AXLE SOL V
M51	B8	3	DIFF SOLENOID VALVE
M51	C11	6	FAN
M52	A21	4	RECTIFIER
M53	G11	7	LHS HOOK ARM B
M54	G10	7	LHS HOOK ARM A
M55	G10	7	LHS MAIN CYLINDER B
M56	G10	7	LHS MAIN CYLINDER A

MISCELLANEOUS

NUMBER	ZONE	SH	DESCRIPTION
M57	G9	7	LHS FREEFLOW
M58	G9	7	LHS TRANSIT
M59	F3	7	LHS LH HOOK ARM A
M60	F3	7	LHS LH HOOK ARM B
M61	F2	7	LHS RH HOOK ARM A
M62	F2	7	LHS RH HOOK ARM B
M64	H21	5	DUVAC CONTROLLER
M65	G17	5	ALTNTR 200 AMP OPT.
M66	G16	3	RECTIFIER
M67	C8	3	RECTIFIER
M68	G12	7	RECTIFIER
M70	F2	5	TURBO OUTLET PSI
M71	E2	5	AIR CLEANER
M72	D2	5	AIR BOX PSI
M73	C2	5	FUEL RETURN
M74	C2	5	ENGINE OIL TEMP
M75	B2	5	ENGINE WATER TEMP
M76	E10	4	RECTIFIER
M77	B17	5	ARCTIC BATTERIES
M78	E2	6	BACK-UP ALARM
M80	B7	6	ARCTIC PUMP
M81	F4	3	RECTIFIER
M82	E13	3	ISOLATOR

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
104	MC36-M4	4	THROTTLE SENSOR
104	MC10-MC36	4	THROTTLE SENSOR
105	MC10-MC19	4/5	ATEC
106A	MC10-MC36	4	THROTTLE SENSOR
106A	MC36-M4	4	THROTTLE SENSOR
106A	MC10-106B	4/5	ATEC
106B	106A-MC19	4/5	ATEC
107	MC10-MC19	4/5	ATEC
108	MC10-MC19	4/5	ATEC
109	MC10-MC19	4/5	ATEC
110	MC10-MC19	4/5	ATEC
111	MC10-MC19	4/5	ATEC
112	MC10-MC20	4/5	ATEC
113	MC10-MC20	4/5	ATEC
114	MC10-MC19	4/5	ATEC
115	MC11-MC18	5	ECM
115	MC11-MC102	4	6.8K RESISTOR
115	MC10-MC19	4/5	ATEC
116	MC10-MC19	4/5	ATEC
117	MC10-MC19	4/5	ATEC
118	MC10-MC19	4/5	ATEC
119	MC10-MC19	4/5	ATEC
120	MC10-MC19	4/5	ATEC
121	MC10-MC19	4/5	ATEC
122	MC10-MC19	4/5	ATEC
123	MC10-MC19	4/5	ATEC
124	MC36-M4	4	THROTTLE SENSOR
124	MC10-MC36	4	THROTTLE SENSOR
150	MC62-MC62	5/4	
150	MC17-MC62	5	
195	MC5-M2	3	
201	MC51-GROUND	4	
201	MC9-MC51	4	
202A	MC9-SPLICE	4	
203	MC9-MC51	4	
203	MC51-CB12	4	
204	MC9-MC12	4	ATEC
206	MC9-MC12	4	ATEC
207A	MC51-MC106	4	ATEC
207A	MC9-MC51	4	ATEC
207A	MC106-MC13	4	
208/209	MC11-SPLICE	4	
208/209	SPLICE-MC51	4	
208/209	M6-MC95	5	
208/209	MC95-MC11	5	
208/209	MC51-MC9	4	
210A	MC9-MC12	4	
211	R8-MC50	4	
211	MC50-R8	4	RETARDER
211	MC9-MC50	4	

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
212	MC9-MC12	4	
213	MC50-R8	4	RETARDER
213	MC9-MC50	4	
214	MC50-R10	4	REVERSE
214	MC9-MC50	4	
215	MC9-MC50	4	
215	MC50-R9	4	CHECK TRANSMISSION
216A	MC106-MC13	3	
216A	MC9-MC51	4	ATEC
216A	MC51-MC106	4	ATEC
218	MC9-MC12	4	ATEC
219	MC9-MC12	4	ATEC
220	MC9-MC12	4	ATEC
221	MC9-MC12	4	ATEC
222	MC9-GROUND	4	ATEC
223A	MC51-CB14	4	TRANSMISSION
223A	MC51-SPLICE	4	
223A	SPLC-SPLC	4	
223A	SPLC-SPLC	4	
223A	SPLC-SPLC	4	
223A	SPLICE-MC9	4	
223B	MC12-SPLICE	4	
225	CB11-MC12	4	
230	MC12-234	4	
231	MC50-MC12	4	
231	MC50-R22	4	CRANE HI IDLE
231	MC50-M36	4	
231	M36-R11	4	NEUTRAL START
233	MC50-MC12	4	
234	MC12-GROUND	4	
240	MC62-CB23	5/4	
240	CB23-M6	4/5	
240	MC17-MC62	5	
240	MC62-M6	5	
241	MC62-CB22	5/4	
241	MC62-M6	5	
241	MC17-MC62	5	
241	CB22-M6	4/5	
309	MC45-R24	4	TC DUAL MODE
313	MC45-R24	4	TC DUAL MODE
315	MC45-R24	4	TC DUAL MODE
417	MC6-M35	3	
417	MC11-MC44	4	
417	MC11-MC18	5	ECM
417	MC44-MC6	3	THROTTLE SENSOR
419	MC11-MC18	5	ECM
419	MC11-MC44	4	
419	MC44-MC8	3	
419	MC8-L6	3	CHECK ENGINE LIGHT

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CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
439	MC116-MC106	4	EMERGENCY ENG STOP
439	MC116-S30	3	EMERGENCY ENG STOP
439	MC116-S30	3	EMERGENCY ENG STOP
439	MC116-CB13	4	DDEC
439	MC106-MC13	3	
439	SPLC-MC106	4	
439	MC11-MC18	5	ECM
439	MC8-L6	3	CHECK ENGINE LIGHT
439	MC8-L3	3	ENGINE STOP LIGHT
439	MC44-MC8	3	
439	MC11-SPLICE	4	
439	SPLICE-MC44	4	
439	SPLC-MC116	4	
451	MC11-MC18	5	ECM
451	MC106-MC13	3	
451	MC11-MC106	4	
505	MC106-MC13	3	
505	MC11-MC106	4	
505	MC11-MC18	5	ECM
508	MC11-R7	4	TRANSMISSION
508	MC11-MC18	5	ECM
509	MC11-MC18	5	ECM
509	MC8-L3	3	ENGINE STOP LIGHT
509	MC44-MC8	3	
509	MC11-MC44	4	
510	MC11-MC18	5	ECM
510	MC44-PS4	3	PARKING BRAKE
510	R22-MC44	4	
510	MC11-R22	4	
900	MC11-MC106	4	
900	MC11-MC18	5	ECM
900	MC106-MC13	3	
901	MC11-MC18	5	ECM
901	MC106-MC13	3	
901	MC11-MC106	4	
908	MC11-MC18	5	ECM
908	MC11-M4	4	THROTTLE POSN CONT
916	MC44-MC6	3	
916	MC11-MC44	4	
916	MC38-M16	3	
916	MC6-MC38	3	VERNIER CONTROL
916	MC6-M35	3	THROTTLE SENSOR
916	MC11-MC18	5	ECM
952	MC38-M16	3	
952	MC11-MC44	4	
952	MC44-MC6	3	THROTTLE SENSOR
952	MC11-MC18	5	ECM
952	MC6-MC38	3	VERNIER CONTROL
1001	MC8-L4	3	
1001	MC7-SPLICE	3	
1001	MC8-SPLICE	3	
1001	SPLICE-L13	3	
1001	SPLICE-L14	3	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1001	S1-MC7	3	RH HEADLIGHT
1002	S1-MC7	3	LH HEADLIGHT
1002	MC8-L11	3	
1002	MC7-SPLICE	3	
1002	SPLICE-MC8	3	
1002	SPLICE-L18	3	
1002	SPLICE-L16	3	
1003	MC7-MC3	3	
1003	S1-MC7	3	LH RR TURN SIGNAL
1003	MC3-MC80	6	
1003	MC3-MC16	6	TRAILER CONN 12VDC
1003	MC1-R15	4	LH TURN LIGHT
1003	MC80-L24	6	LH STOP LIGHT
1003	MC27-MC3	6	FRONT TOW
1003	MC7-MC1	3	
1003C	MC25-R17	4	LH TURN LIGHT
1003C	MC25-MC15	6	TRAILER CONN 12VDC
1004	MC7-MC1	3	
1004	MC7-MC3	3	
1004	S1-MC7	3	
1004	MC3-MC80	6	
1004	MC80-L22	6	RH STOP LIGHT
1004	MC27-MC3	6	
1004	MC3-MC78	6	
1004	MC3-MC16	6	
1004	MC1-R16	4	
1004C	MC25-R16	4	RH TURN LIGHT
1004C	MC25-MC15	6	TRAILER CONN 24VDC
1005	MC126-S9	3	
1005	PS3-MC3	3	
1005	MC3-MC16	6	TRAILER CONN 24VDC
1005	MC126-PS1	3	
1005	PS2-PS3	3	
1005	MC27-MC3	6	FRONT TOW
1005	PS1-PS2	3	
1005A	MC7-MC126	3	
1005A	MC126-S9	3	
1005A	S1-MC7	3	TURN SIGNAL/DIM SW
1006	MC2-SPLICE	3	
1006	SPLICE-L12	3	
1006	SPLICE-L17	3	
1006	MC2-R5	4	DIMMER
1007	MC2-R5	4	DIMMER
1007	MC2-SPLICE	3	
1007	SPLICE-L12	3	
1007	SPLICE-L17	3	
1008	MC3-MC78	6	
1008	MC4-S12	3	HEADLIGHTS

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1008	MC27-MC3	6	FRONT TOW
1008	MC3-SPLICE	3	
1008	MC3-MC4	3	
1008	MC3-MC16	6	TRAILER CONN 12VDC
1008	MC78-L22	6	RH TAIL LIGHT
1008	MC78-L24	6	LH TAIL LIGHT
1008C	MC25-MC15	6	TRAILER CONN 24VDC
1008C	MC25-R14	4	B.O. SERVICE
1009	PS2-PS3	3	
1009	PS1-PS2	3	
1009	MC2-PS1	3	
1009	MC2-CB6	4	STOP LIGHT
1012	MC3-SPLICE	3	
1012	SPLC-SPLC	3	
1012	MC2-SPLICE	3	
1012	SPLC-SPLC	3	
1012	SPLICE-L19	3	
1012	MC2-R2	4	CLEARANCE LIGHTS
1012	MC3-SPLICE	6	
1012	SPLICE-MC27	6	
1012	SPLICE-MC80	6	
1012	SPLICE-L32	6	RH SIDE MARKER
1012	SPLICE-L34	6	LH SIDE MARKER
1012	MC90-L31	6	RR SIDE MARKER
1012	MC90-L25	6	ID LIGHTS
1012	MC80-MC90	6	
1012	MC90-L33	6	RR SIDE MARKER
1016	MC92-MC2	3	
1016	S15-MC92	3	
1016	MC2-R3	4	HORN
1017	SPLICE-R5	4	
1017	MC52-R14	4	
1017	R2-MC52	4	
1017	MC2-SPLICE	4	
1017	SPLICE-R1	4	
1017	MC91-MC2	3	
1017	S1-MC91	3	
1017A	MC91-MC2	3	
1017A	S1-MC91	3	
1017A	MC2-R5	4	
1018	MC8-L10	3	HIGH BEAM
1018	MC8-1007	3	
1019	L15-1679	3	
1020	L14-L16	3	
1020	DUVAC IGN	5	FUEL PUMP
1020	S2-MC21	3	
1020	R27-MC48	5	
1020	MC60-IGN	5	DUVAC CONTROLLER
1020	MC21-MC60	5	
1020	MC108-M81	5	
1020	M81-MC60	5	
1021	MC2-S2	3	
1021	MC2-R11	4	
1021	R11-M76	4	

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CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1021	MC52-R11	4	FRONT TOW
1021A	R11-MC1	4	
1021A	MC1-MC21	3	
1021A	MC21-MC60	5	
1021A	MC60-R27	5	
1026	MC52-CB16	4	
1029	MC2-R6	4	BEACON
1029	MC2-MC28	3	
1031	R3-SPLICE	4	
1032	MC8-MC21	3	
1032	M39-L9	3	LOW OIL PSI
1032	MC8-M39	3	
1032	PS9-MC21	5	ENGINE OIL PSI SW
1033	M39-M18	3	OIL PSI/H WTR ALM
1036	MC23-M8	5	
1036	MC23-M7	5	
1036	MC21-MC56	5	ETHER START
1036	MC21-S25	3	
1040	CB4-R4	4	WORKLIGHT
1040A	S6-MC4	3	
1040A	MC2-R4	4	WORKLIGHT
1040A	MC4-MC2	3	
1040B	MC3-MC79	6	RH WORKLIGHT
1040B	MC2-MC3	3	
1040B	MC2-R4	4	WORKLIGHT
1040B	MC3-MC54	6	LH WORKLIGHT
1045	R27-M7	5	
1049	MC2-R1	4	HEADLIGHTS
1049	MC4-MC2	3	
1049	S12-MC4	3	
1052	S20-S19	3	CHEM ALM-GPF
1052	S19-S18	3	GAS PART FLTR-SRW
1052	S18-S4	3	SRW-SRW/MHC
1052	S4-S30	3	SRW/MHC-EMER ENG S D
1052	S30-SPLICE	3	EMER ENG SHUT DOWN
1052	SPLICE-G11	3	AIR PRESSURE GAUGE
1052	MC4-SPLICE	3	
1052	SPLICE-L44	3	HEATER PANEL LIGHT
1052	S5-S6	3	BEACON LT-WORK LT
1052	S6-S7	3	WORK LT-WSHLD WSHR
1052	S7-S8	3	WSHLD WASHER-WIPERS
1052	S8-S21	3	WIPERS-DOME LIGHT
1052	S21-S9	3	DOME LT-B.O.SERV SEL
1052	S9-S10	3	BO SERV SEL-BO MKR
1052	S10-S11	3	B.O. MARKER-B.O. DR
1052	S11-S12	3	B.O. DRIVE-HEADLTS
1052	S12-S16	3	HEADLIGHTS-ENG BK
1052	S16-S14	3	ENG BRAKE-RHEO/DOME
1052	S14-SPLICE	3	RHEOSTAT/DOME
1052	SPLICE-G6	3	VOLTMETER 12V
1052	SPLC-SPLC	3	
1052	SPLICE-G10	3	XMSN OIL TEMP GAUGE
1052	SPLICE-G1	3	WATER TEMP GAUGE
1052	SPLICE-G2	3	OIL PRESSURE GAUGE
1052	SPLICE-G4	3	TACHOMETER
1052	SPLICE-G5	3	SPEEDOMETER
1052	SPLICE-G3	3	FUEL GAUGE

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1052	MC1-SPLICE	3	
1052	SPLICE-L43	3	POST LIGHT
1052	SPLC-MC125	3	
1052	MC125-G12	3	AIR RESTRICTION GA
1052	MC1-SPLICE	3	
1052	MC1-CB1	4	15 AMP HEADLIGHT
1052	MC50-MC1	4	
1055	MC115-M7	5	
1055	M7-1277	5	
1055	M7-1281	5	
1056	MC111-MC32	3	
1056	MC32-MC109	6	CTI POWER MANIFOLD
1057	M20-M20	5	
1057	MC111-MC32	3	
1057	MC32-MC109	6	CTI POWER MANIFOLD
1058	MC32-MC109	6	CTI POWER MANIFOLD
1058	MC111-MC32	3	
1059	MC32-MC109	6	CTI POWER MANIFOLD
1059	MC111-MC32	3	
1061	MC22-MC109	6	CTI POWER MANIFOLD
1061	MC111-MC32	3	
1062	MC32-MC109	6	CTI POWER MANIFOLD
1062	MC111-MC32	3	
1063	MC32-MC109	6	CTI POWER MANIFOLD
1064	MC32-MC109	6	CTI POWER MANIFOLD
1064	MC111-MC32	3	
1065	MC32-MC109	6	CTI POWER MANIFOLD
1065	MC111-MC32	3	
1066	MC32-MC64	6	CTI AUX MANIFOLD
1066	MC110-MC32	3	
1067	MC32-MC64	6	CTI AUX MANIFOLD
1068	MC32-MC64	6	CTI AUX MANIFOLD
1068	MC110-MC32	3	
1070	MC32-MC64	6	CTI AUX MANIFOLD
1070	MC110-MC32	3	
1071	MC110-MC32	3	
1071	MC32-MC64	6	CTI AUX MANIFOLD
1072	R26-R25	3	
1072	MC110-MC32	3	
1072	MC32-MC64	6	CTI AUX MANIFOLD
1073	MC32-MC64	6	CTI AUX MANIFOLD
1073	MC110-MC32	3	
1074	MC110-MC32	3	
1074	R25-CB10	4	
1074	MC32-MC64	6	CTI AUX MANIFOLD
1075	M6-R25	4/3	
1075B	R25-R18	4	
1076	MC110-MC32	3	
1076	MC32-MC64	6	CTI AUX MANIFOLD
1079	CB5-M6	4	HAZARD LIGHTS
1080	MC7-MC2	3	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1080	MC2-M5	4	TURN SIGNAL/FLASHER
1082	MC2-MC52	4	
1082	MC2-M81	3	
1082	M81-S3	3	
1082	MC52-CB15	4	HEATER
1084	MC1-CB5	4	B.O. LIGHTS
1084	MC4-MC1	3	
1084	MC4-S9	3	
1091	L17-GROUND	3	
1092	L7-MC8	3	
1092	MC8-M51	3	
1093	MC31-MC57	6	
1093	MC1-MC31	3	
1093	MC1-CB16	4	
1093	MC57-S13	6	DRIVE LINE LOCK-UP
1094	S5-S14	3	
1095	R23-R24	4	
1095	MC44-R23	4	
1095	MC31-MC44	3	
1095	MC57-S13	6	DRIVE LINE LOCK-UP
1095	MC31-MC57	6	
1108	MC44-MC8	3	
1108	505-MC44	4	
1108	MC8-G4	3	TACHOMETER
1113	MC8-MC21	3	
1113	G2-MC8	3	OIL PSI GAUGE
1113	SU3-MC21	5	ENG OIL PSI SNDG UN
1114	M66-MC8	3	
1114	MC96-MC8	3	LOW OIL LEVEL LIGHT
1114	MC8-L36	3	
1114	L36-M66	3	
1118	MC4-1919	3	
1118	S8-MC4	3	
1120	M66-MC8	3	
1120	M66-M3	3	
1120	PS6-PS7	3	
1120	PS6-MC8	3	
1120	L2-M66	3	
1137	M6(1)-M6(2)	5	
1137	M6(3)-M6(4)	5	
1138	M48-M7	5	SHUNT
1138	M7-M23	5	SLAVE
1138	M6-M48	5	SHUNT
1138	M77-M7	5	ARCTIC BATTERIES
1139	M7-M23	5	SLAVE
1139	M6-M7	5	
1139	M77-M7	5	ARCTIC BATTERIES
1147	TS2-MC21	5	ENG WTR TEMP SNDG UN
1147	M39-L8	3	HIGH WATER TEMP
1147	MC8-MC21	3	
1147	MC8-M39	3	
1149	MC1-R10	4	REVERSE
1149	MC3-MC78	6	
1149	MC1-MC124	3	
1149	MC78-MC77	6	REVERSE LIGHT
1149	MC124-MC77	6	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
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CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1153	S21-MC4	3	
1153	MC4-L20	3	DOME LIGHT
1168	MC2-R3	4	HORN
1168	MC2-M15	3	
1174	BUS BAR	4	
1175	R28-CB5	4	
1176	MC113-PS13	6	EMERGENCY STEER
1184	S5-MC4	3	
1184	MC2-R6	4	
1184	MC2-MC4	3	
1189	MC4-S9	3	
1189	MC44-R28	4	
1189	MC4-SPLICE	3	
1189	MC4-S21	3	
1189	MC2-SPLICE	3	
1189	MC2-M5	4	
1189	SPLICE-MC44	3	
1274	MC115-SPLC.	5	
1274	M64-SPLICE	5	
1274	M8-SPLICE	5	
1275	M6-M20	5	
1275	M6-200 AMP	5	
1276	MC2-MC4	3	
1276	MC2-CB8	3	
1276	SPLICE-S14	3	
1276	SPLICE-MC53	3	
1276	MC4-SPLICE	3	
1276	MC2-SPLICE	4	
1276	MC53-SPLICE	3	
1276	SPLC-SPLC	3	
1276	SPLC-SPLC	3	
1276	SPLICE-M3	3	LOW AIR ALARM
1276	SPLICE-G5	3	SPEEDOMETER
1276	SPLICE-L1	3	PARKING BRAKE
1276	SPLICE-L2	3	LOW AIR
1276	SPLICE-L35	3	EMERGENCY STEERING
1276	SPLICE-L36	3	LOW HYDR OIL
1276	SPLC-SPLC	3	
1276	SPLICE-L5	3	XMSN CHECK
1276	SPLICE-L8	3	HIGH WATER TEMP
1276	SPLICE-L9	3	LOW OIL PSI
1276	SPLICE-G3	3	FUEL GAUGE
1276	SPLICE-G6	3	VOLTMETER 12V
1276	SPLICE-G1	3	WATER TEMP GAUGE
1276	SPLICE-G2	3	OIL PRESSURE GAUGE
1276	SPLICE-G4	3	TACHOMETER
1276	SPLICE-G10	3	XMSN OIL TEMP GAUGE
1276	SPLICE-M18	3	ALARM
1277	MC115-SPLC	5	
1277	MC8-SPLICE	5	
1278	M20-M79	5	
1278	MC8-SPLICE	5	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1279	PS14-1277	5	
1279	MC115-PS14	5	
1279	M64-1280	5	
1280	CB21-R26	4	
1280	1281-R26	5	
1281	1280-MC47	5	
1281	R27-M81	5	
1281	1281-1281	5	
1292	MC4-S6	3	
1292	CB4-MC2	4	
1292	MC2-MC4	3	
1292	MC4-S12	3	
1314	1118-S7	3	
1318	MC3-MC8	3	
1318	MC3-G3	3	FUEL GAUGE
1318	MC3-SU6	6	FUEL LEVEL
1320	SU1-MC2	5	WATER TEMP SNDG UN
1320	G1-MC8	3	WATER TEMP
1320	MC8-MC21	3	
1340	CB15-MC14	4	SWING FIRE
1344	M20-MC22	5	
1362	R27-M64	5	
1371	MC8-PS5	3	
1371	L1-MC8	3	
1409	MC8-MC1	3	
1409	L5-MC8	3	
1409	MC1-R9	4	
1413	CB3-SPLICE	4	
1413	SPLICE-R6	4	
1430	R28-SH5	4/5	
1430	1832-R28	5	
1431	MC3-S2	3	
1431	MC3-M6	6	BATTERIES
1431	MC3-M6	6	BATTERIES
1431	MC1-MC119	4	
1431	MC119-R32	4	
1431	R32-S29	4	ARCTIC PUMP
1431	MC119-CB20	4	
1435	MC78-MC124	6	
1435	MC124-M78	6	
1435	MC77-MC124	6	
1435	MC85-MC86	7	
1435	MC86-MC87	7	
1435	MC33-MC84	7	
1435	GROUND	3	
1435	MC81-MC82	7	
1435	MC84-MC83	7	
1435	MC81-MC82	7	
1435	MC108-GND	5	
1435	GND	5	
1435	MC22-GND	5	
1435	M52-R26	4	
1435	M52-R28	4	
1435	R27-GND	5	
1435	MC125-GND	3	
1449	MC8-MC21	3	
1449	G10-MC8	3	TRANS OIL TEMP

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1449	SU2-MC21	5	TRANS TEMP SNDG UN
1454	MC81-MC82	7	
1460	MC81-MC82	7	
1461	MC86-MC87	7	
1461	MC85-MC86	7	
1462	MC81-MC82	7	
1463	MC81-MC82	7	
1464	MC81-MC82	7	
1465	MC81-MC82	7	
1466	MC85-MC86	7	
1466	MC86-MC87	7	
1467	MC81-MC82	7	
1468	MC81-MC82	7	
1469	MC81-MC82	7	
1469	MC86-MC87	7	
1469	MC85-MC86	7	
1470	MC86-MC87	7	
1470	MC85-MC86	7	
1471	MC85-MC86	7	
1471	MC86-MC87	7	
1471	MC81-MC82	7	
1472	MC85-MC86	7	
1472	MC81-MC82	7	
1472	MC86-MC88	7	
1475	MC85-MC86	7	
1475	MC86-MC87	7	
1480	MC84-MC93	7	
1480	MC84-MC83	7	
1481	MC84-MC83	7	
1481	MC84-MC93	7	
1482	MC84-MC93	7	
1482	MC84-MC83	7	
1483	MC83-MC84	7	
1483	MC84-MC93	7	
1484	MC83-MC84	7	
1484	MC84-MC93	7	
1485	MC84-MC94	7	
1485	MC83-MC84	7	
1486	MC84-MC94	7	
1486	MC83-MC84	7	
1487	MC1-S25	3	
1487	MC1-CB15	4	
1487	MC83-MC84	7	
1487	MC84-MC94	7	
1488	MC84-MC94	7	
1488	MC83-MC84	7	
1489	MC83-MC84	7	
1489	MC84-MC94	7	
1490	MC84-MC94	7	
1490	MC83-MC84	7	
1491	L16-1008	3	
1491	L14-1008	3	
1517	PS8-MC11	5	ATEC OIL PSI SWITCH
1517	MC11-R9	4	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1519	MC8-MC35	3	CTI OVERSPEED
1519	MC3-MC8	3	SPEEDOMETER
1519	MC8-MC35	3	CTI OVERSPEED
1519	G5-MC8	3	SPEEDOMETER
1519	MC3-SU4	6	SPEEDOMETER
1519	G5-MC8	3	SPEEDOMETER
1519	MC3-MC8	3	SPEEDOMETER
1519	MC3-SU4	6	SPEEDOMETER
1525	M16-PS4	3	
1534	MC107-M9	6	FUEL/WATER SEP
1534	MC2-SPLICE	4	
1534	SPLICE-CB8	4	
1534	MC3-MC107	6	
1534	MC2-MC3	3	
1534	MC3-S22	3	T-CASE LOCK-UP
1534	CB15-M76	4	
1538	MC97-M13	6	AIR DRYER
1538	MC25-MC97	6	
1538	MC25-CB15	4	
1538	MC25-MC98	6	
1538	MC99-M11	6	AFTER COOLER
1538	MC98-M14	6	AIR DRYER
1538	MC25-MC99	6	
1538	MC25-MC73	6	FAN CONTROL
1538	M76-MC25	4	
1640	MC119-SPLC	4	
1640	SPLICE-R26	4	
1640	SPLICE-MC44	4	
1640	MC44-S2	3	
1640	MC119-R32	4	
1644	MC119-R33	4	
1644	R33-R33	4	
1644	MC119-S29	4	ARCTIC PUMP
1644	R33-S29	4	ARCTIC PUMP
1644	MC119-MC25	4	
1644	MC25-MC120	6	
1644	MC120-M80	6	ARCTIC PUMP
1645	S29-R33	4	ARCTIC PUMP
1665C	MC25-MC15	6	TRAILER CONN 24VDC
1665C	MC25-CB20	4	
1674	S11-S10	3	
1674	S11-S9	3	
1676	R17-R16	4	
1676	R16-R15	4	
1676	R14-R3	4	
1676	R15-R14	4	
1676	CB20-R17	4	
1678	MC3-MC78	6	
1678	MC1-SPLICE	3	
1678	MC78-L24	6	LH B.O. STOP LIGHT

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CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1678	MC78-L22	6	RH B.O. STOP LIGHT
1678	SPLICE-MC3	3	
1678	MC1-R13	4	
1678	SPLICE-MC4	3	
1678	MC4-S9	3	
1678C	MC25-R13	4	B.O. STOP LIGHT
1678C	MC25-MC15	6	TRAILER CONN 24VDC
1679	L15-MC4	3	
1679	MC4-S11	3	
1680	MC3-SPLICE	3	
1680	SPLICE-MC1	3	
1680	SPLC-SPLC	3	
1680	SPLICE-MC4	3	
1680	SPLC-SPLC	3	
1680	SPLC-SPLC	3	
1680	SPLICE-L19	3	
1680	SPLICE-L19	3	
1680	MC3-MC78	6	
1680	MC4-S10	3	
1680	MC78-L24	6	LH B.O. TAIL LIGHT
1680	MC1-R17	4	B.O. LIGHTS
1680	MC78-L22	6	RH B.O. TAIL LIGHT
1680C	MC25-MC15	6	TRAILER CONN 24VDC
1680C	MC25-MC15	6	TRAILER CONN 24VDC
1680C	MC25-R17	4	B.O. TAIL LIGHTS
1680C	MC25-MC15	6	TRAILER CONN 24VDC
1702	MC44-MC34	3	
1702	MC34-G7	3	
1702	MC44-R26	4	
1708	M32-1709	3	PASSENGER AIR HTR
1709	MC58-S19	3	GAS PART FILTER SW
1709	MC58-M30	3	
1710	M31-1709	3	DRIVER AIR HEATER
1711	CB11-R7	4	
1712	MC1-CB7	4	ENGINE BRAKE
1712	MC4-MC1	3	
1713	MC53-L37	3	
1713	MC4-MC1	3	
1713	S16-MC4	3	ENGINE BRAKE
1713	MC1-R7	4	TRANSMISSION
1713	S16-MC53	3	
1714	MC1-1716	4	
1714	MC4-MC1	3	ENGINE BRAKE
1714	S16-MC4	3	ENGINE BRAKE
1715	MC4-MC1	3	ENGINE BRAKE
1715	S16-MC4	3	ENGINE BK RH COILS
1715	MC11-MC1	4	
1715	MC11-M21	5	LH ENGINE BRAKE
1716	MC11-R5	4	RETARDER
1716	MC11-M22	5	RH ENGINE BRAKE
1717	MC44-S20	3	CHEMICAL ALARM SW
1717	MC44-CB19	4	
1718	M76-M77	6	BACK-UP ALARM
1722	MC34-1734	3	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1722	L26-MC34	3	
1722	MC33-MC84	7	
1722	MC84-MC83	7	
1723	MC44-S18	3	SELF RECOVERY WN SW
1723	MC44-CB18	4	
1724	MC112-SPLC	3	
1724	SPLICE-MC33	3	
1724	MC33-MC93	7	
1724	L27-MC112	3	
1724	M67-SPLICE	3	
1724	SPLC-MC112	3	
1724	M67-MC33	3	
1725	L28-MC112	3	
1725	MC84-MC83	7	
1725	MC33-MC84	7	
1725	MC112-MC33	3	
1726	MC33-MC84	7	
1726	MC84-MC83	7	
1726	MC112-MC33	3	
1726	L29-MC112	3	
1729	MC31-S18	3	SELF RECOVERY WINCH
1729	MC31-MC55	6	
1729	MC55-MC121	6	SELF RECOVERY WINCH
1730	MC31-S18	3	SELF RECOVERY WINCH
1730	MC55-MC122	6	SELF RECOVERY WINCH
1730	MC31-MC55	6	
1731	MC3-S4	3	SELF RECOVERY WINCH
1731	MC3-S4	3	SELF RECOVERY WINCH
1731	MC3-MC29	6	CRANE
1732	MC55-MC123	6	SELF RECOVERY WINCH
1732	S4-MC31	3	SELF RECOVERY WINCH
1732	MC31-MC55	6	
1733	MC31-M67	3	
1733	MC31-M51	6	
1734	M67-SPLICE	3	
1734	SPLC-SPLC	3	
1734	SPLICE-MC31	3	
1734	MC31-M10	6	
1736	MC39-MC39	5	
1737	MC31-MC1	3	
1737	MC1-R22	4	CRANE HI IDLE
1737	MC31-MC29	6	CRANE
1738	MC44-1755	4	
1738	MC44-MC31	3	
1738	MC31-MC29	6	CRANE
1739	MC44-CB21	4	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1739	MC44-S19	3	GAS PARTICULATE SW
1744	S4-M67	3	
1745	MC103-S20	3	CHEMICAL ALARM
1746	MC103-M29	3	CHEMICAL ALARM
1747	MC103-M29	3	CHEMICAL ALARM
1755	MC84-MC83	7	
1755	MC44-CB18	4	
1755	MC33-MC84	7	
1755	MC33-MC44	3	
1765	MC3-MC113	6	
1765	L35-MC8	3	
1765	MC3-MC8	3	
1809	MC41-MC65	5	PULSE TACH DRIVE
1809	MC65-MC39	5	STE/ICE
1809	MC41-M40	5	PULSE TACH DRIVE
1810	MC65-MC39	5	STE/ICE
1810	MC41-M40	5	PULSE TACH DRIVE
1810	MC41-MC65	5	PULSE TACH DRIVE
1811	MC42-M41	5	DIFFERENTIAL PSI
1811	MC42-MC39	5	STE/ICE
1812	MC42-M41	5	DIFFERENTIAL PSI
1812	MC42-MC39	5	STE/ICE
1813	MC39-M6	5	
1814	MC39-M6	5	BATTERIES
1815	MC39-MC24	5	
1815	MC24-MC114	5	
1815	MC24-M20	5	
1816	MC39-MC65	5	STE/ICE
1816	MC39-M7	5	STARTER

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1818	MC39-M7	5	STARTER
1818	MC39-MC65	5	STE/ICE
1819	MC39-M7	5	
1820	MC24-M20	5	
1820	MC24-M20	5	
1820	MC39-MC24	5	
1821	MC39-M6	5	
1822	MC39-M6	5	BATTERIES
1824	SPLICE-MC67	5	
1824	MC66-M70	5	
1824	MC68-M72	5	
1824	SPLICE-MC70	5	
1824	SPLICE-MC71	5	
1824	MC65-MC39	5	STE/ICE
1824	SPLICE-MC68	5	
1824	MC67-M71	5	
1824	MC43-M42	5	FUEL PSI
1824	MC69-M73	5	
1824	MC70-M74	5	
1824	MC71-M75	5	
1824	SPLICE-MC69	5	
1824	MC66-SPLICE	5	
1824	SPLICE-MC65	5	
1824	SPLICE-MC43	5	
1825	MC68-MC69	5	
1825	MC70-MC71	5	
1825	MC65-MC43	5	
1825	MC43-MC67	5	
1825	MC67-MC68	5	
1825	MC70-M74	5	
1825	MC69-MC70	5	
1825	MC41-MC65	5	
1825	MC68-M72	5	
1825	MC66-M70	5	TURBO OUTLET PSI
1825	MC65-MC39	5	STE/ICE
1825	MC69-M73	5	
1825	MC67-M71	5	
1825	MC39-MC40	5	STE/ICE MODULE
1825	MC43-M42	5	FUEL PSI
1825	MC71-M75	5	
1825A	MC39-MC40	5	STE/ICE MODULE
1826	MC40-MC39	5	
1827	MC40-MC39	5	
1828	MC39-M48	5	SHUNT
1829	MC39-M48	5	SHUNT
1835	R2-CB2	4	
1839	R7-R8	4	
1860	MC39-MC24	5	
1860	MC24-MC114	5	
1861	MC24-MC114	5	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
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CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1861	MC39-MC24	5	
1866	CB12-M6	4	
1866	M6-CB12	4/3	
1867	R19-CB12	4	
1871	MC11-CB11	4	DDEC TRANS
1871	PS8-MC11	5	ATEC OIL PSI SWITCH
1871	MC11-R8	4	
1871	MC11-R11	4	
1871	MC11-R10	4	
1871	MC11-R18	4	
1872	R19-MC44	4	
1872	MC44-R18	4	DDEC
1872	MC44-1020	3	
1875	CB14-R19	4	
1880	MC4-MC35	3	
1880	MC44-CB17	4	CTI
1882	MC52-R21	4	
1882	MC52-SPLICE	4	
1882	MC52-R20	4	
1883	S26-L40	3	TC LOCK-UP LIGHT
1883	S26-M49	3	TC LOCK-UP
1884	MC1-R20	4	INTER AXLE
1884	MC1-M39	4	
1884	MC1-MC105	3	
1885	MC1-M39	4	
1885	MC1-MC105	3	
1885	R23-R21	4	
1885	MC1-R23	4	
1888	CB16-R21	4	DIFFERENTIAL LOCK
1888	CB16-R20	4	INTER AXLE
1889	MC44-R20	4	INTER AXLE
1889	MC44-M50	3	INTER AXLE LOCK
1890	MC44-M51	3	DIFFERENTIAL LOCK
1890	MC44-R21	4	DIFFERENTIAL LOCK
1891	MC52-SPLICE	4	
1891	MC52-R10	4	REVERSE
1916	S8-MC4	3	
1916	MC5-M2	3	WIPER MOTOR
1916	MC5-MC4	3	WIPER MOTOR
1917	MC5-M2	3	
1917	MC5-MC4	3	
1917	S8-MC4	3	
1919	MC2-MC5	3	
1919	MC5-M2	3	
1919	MC5-1118	3	
1919	MC2-CB10	4	
1920	MC2-1008	3	
1920	MC2-R2	4	CLEARANCE LIGHTS
1921	S7-MC4	3	
1921	M1-MC4	3	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1926	MC56-MC23	5	ETHER START
1927	R1-CB1	4	HEADLIGHTS
1928	MC34-MC31	3	
1928	L38-MC34	3	
1928	MC31-MC30	6	TRAILER
1929	MC31-MC30	6	TRAILER
1929	MC34-MC31	3	
1932	MC128-MC61	6	WATER TEMP
1932	MC61-TS3	6	WATER TEMP
1932	MC59-MC63	6	
1932	MC63-MC128	6	
1933	MC61-TS3	6	WATER TEMP
1933	MC63-MC61	6	
1933	MC59-MC63	6	
1935	MC76-M45	6	FAN CONTROL VALVE
1935	MC59-MC76	6	
1935	MC76-M45	6	FAN CONTROL VALVE
1935	MC59-MC76	6	
1938	MC70-M74	5	
1938	MC70-MC65	5	
1938	MC65-MC39	5	
1938B	MC39-S22	5	STE/ICE ZEROING
1939	MC71-M75	5	ENGINE WATER TEMP
1939	MC65-MC39	5	STE/ICE
1939	MC71-MC65	5	
1939B	MC39-S22	5	STE/ICE ZEROING
1940	MC71-MC65	5	
1940	MC71-M75	5	ENGINE WATER TEMP
1940	MC65-MC39	5	STE/ICE
1940B	MC39-S22	5	STE/ICE ZEROING
1941	MC43-M42	5	FUEL PSI
1941	MC43-MC65	5	
1941	MC65-MC39	5	STE/ICE
1942	MC43-MC65	5	
1942	MC65-MC39	5	
1942	MC43-M42	5	FUEL PSI
1943	MC65-MC39	5	STE/ICE
1943	MC66-M70	5	TURBO OUTLET PSI
1943	MC66-MC65	5	TURBO OUTLET PSI
1944	MC66-M70	5	
1944	MC65-MC39	5	STE/ICE
1944	MC66-MC65	5	TURBO OUTLET PSI
1945	MC68-MC65	5	
1945	MC68-M72	5	AIR BOX PSI
1945	MC65-MC39	5	STE/ICE
1946	MC67-M71	5	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1946	MC65-MC39	5	STE/ICE
1946	MC68-M72	5	AIR BOX PSI
1946	MC68-MC65	5	
1947	MC67-MC65	5	
1947	MC65-MC39	5	STE/ICE
1947	MC67-M71	5	AIR CLEANER
1948	MC67-MC65	5	
1948	MC65-MC39	5	STE/ICE
1949	MC69-MC65	5	FUEL RETURN
1949	MC69-MC65	5	
1949	MC65-MC39	5	STE/ICE
1950	MC5-MC4	3	
1950	S8-MC4	3	
1951	MC65-MC39	5	STE/ICE
1951	MC69-M73	5	FUEL RETURN
1951	MC69-MC65	5	
1952	MC65-MC39	5	
1952	MC70-M74	5	ENGINE OIL TEMP
1952	MC70-MC65	5	
1952B	MC39-S22	5	STE/ICE ZEROING
1953	MC39-MC24	5	
1953	MC24-MC114	5	
1953	MC24-M20	5	
1955	M67-MC21	3	FAN SPEED CONTROL
1956	MC127-MC44	3	FAN SPEED CONTROL
1957	MC127-MC21	3	FAN SPEED CONTROL
SHIELD	MC32-MC64	6	CTI AUX MANIFOLD
SHIELD	MC32-MC109	6	CTI POWER MANIFOLD

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 7 OF 35
ENGINEERING DWG 1878290 SHEET 2
FP-13/FP-14 BLANK

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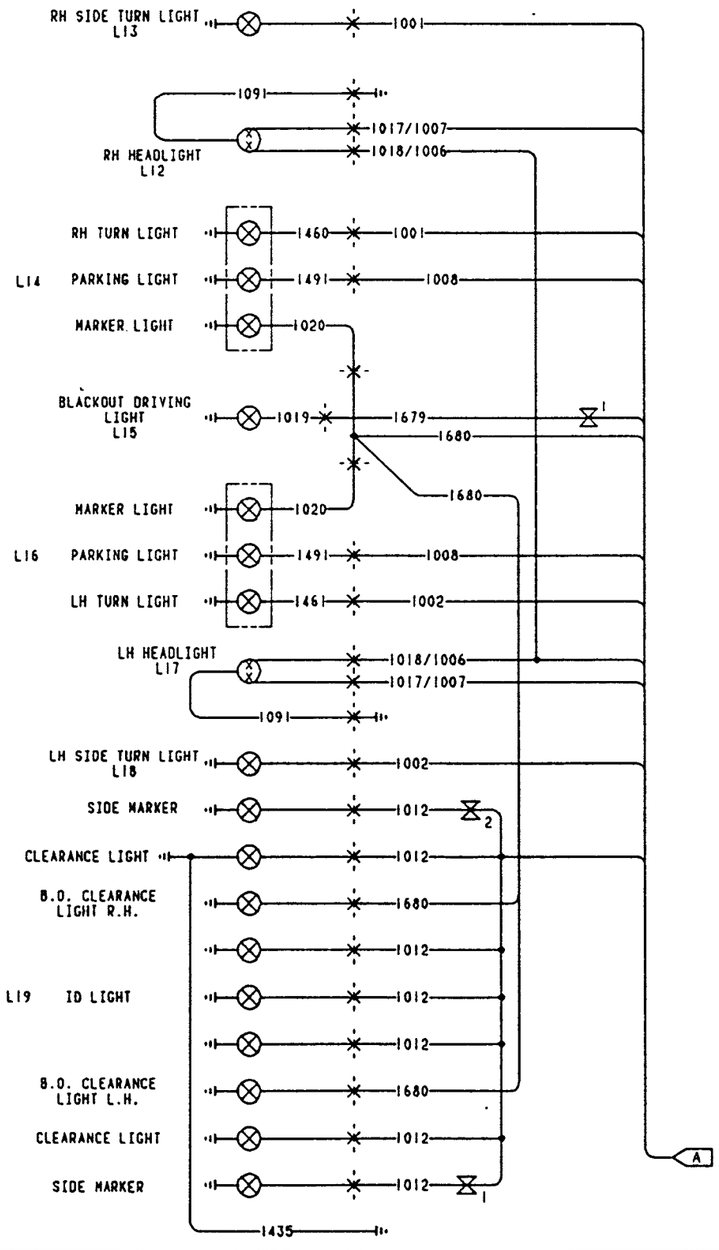


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 8 OF 35
ENGINEERING DWG 1878290 SHEET 3
FP-15/FP-16 BLANK

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LH TURN L11 | HIGH BEAM L10 | LOW OIL PSI L9 | HIGH WATER TEMP L8 | TRANS CHECK L5

SPEEDOMETER G5 | TACH G4 | FUEL GAUGE G3 | OIL PRESSURE GAUGE G2 | WATER TEMP GAUGE G1 | XMSN OIL TEMP GAUGE G10 | VOLTMETER 12V G6 | VOLTMETER 24V G7 | AIR RESTRICTION GAUGE G12 | AIR PRESSURE GAUGE G11

CHECK ENGINE L6 | DRIVE-LINE L7 | RH TURN L4

24VDC

KPM

18 GA SHIELD

AC M39

LOW OIL PSI/HI WATER TEMP ALARM CONTINUOUS TONE M18

LOW HYD OIL & LOW AIR ALARM INTERMITENT TONE M3

CTI CONTROLLER M28

BRAID

LHS OVERLOAD L29 | NO TRANSIT L28 | AUXILLARY HYDRAULIC L27 | LOAD HANDLING SYSTEM L26 | FLAT RACK L38 | ENGINE BRAKE L37

MC105

POS	CODE
1	1435
2	
3	1884
4	1885

MC35

POS	CODE
1	1519
2	1519
3	
4	
5	PLUG
6	
7	1435
8	1435
9	
10	1880

MC110

POS	CODE
1	1072
2	1073
3	1076
4	1071
5	PLUG
6	1070
7	1066
8	SHIELD
9	1068
10	1074

MC111

POS	CODE
1	1056
2	1057
3	1058
4	1059
5	PLUG
6	1061
7	1062
8	SHIELD
9	1064
10	1065

MC32

POS	CODE
A	1056
B	1063/1067
C	1065
D	PLUG
E	1074
F	1076
G	1072
H	1071
I	1070
J	1068
K	SHIELD
L	PLUG
M	1066
N	1061
O	1058
P	1064
Q	1062
R	1059
S	SHIELD
T	1057
U	1073
V	PLUG

SEE SHEET 6

MC53

POS	CODE
A	1713
B	1435
C	1276

MC125

POS	CODE
A	1052
B	1435

WHITE MC8 GAUGES

POS	CODE
A	1519
B	1519
C	1435
D	1147
E	1318
F	1320
G	1449
H	1113
I	1765
J	1114
K	1108
L	439
M	419
N	1409
O	1001
P	509
Q	1120
R	1371
S	1002
T	1018
U	1032
V	1092

CAB ⟷ CHASSIS

MC31

POS	CODE
A	
B	
C	
D	
E	1435
F	1435
G	
H	
I	
J	1729
K	1730
L	1734
M	1733
N	1732
O	
P	1738
Q	1737
R	1095
S	1093
T	1928
U	1929
V	1435

SEE SHEET 6 CHASSIS

MC33

POS	CODE
A	1755
B	1435
C	1722
D	1724
E	1725
F	1726

SEE SHEET 7 LHS

CHASSIS

MC34

POS	CODE
A	
B	
C	1702
D	1928
E	1929
F	1722

DASH ⟷ CAB

MC112

POS	CODE
A	1724
B	1725
C	1726
D	
E	
F	1435

DASH ⟷ CAB

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 9 OF 35
ENGINEERING DWG 1878290 SHEET 3
FP-17/FP-18 BLANK

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CHECK GUAGES L3
LOW AIR L2
PARKING BRAKE L1
LOW HYD OIL L36
EMERGENCY STEERING L35

DOME LIGHT S21
WINDSHIELD WIPERS S8
WINDSHIELD WASHER S7
WORK LIGHT S6
BEACON LIGHT S5
DOME LIGHT L20
DASH → CAB

MC4

POS	CODE
A	1153
B	1049
C	1040A
D	1715
E	1921
F	1052
G	1118
H	1950
I	1916
J	1917
K	1184
L	1678
M	1189
N	1680
O	1679
P	1276
Q	1292
R	1713
S	1084
T	1008
U	1714
V	1712

BLACK OUT SERVICE SELECT S9
B.O. MARKER S10
B.O. DRIVE S11
HEADLIGHTS S12
ENGINE BRAKE S16
RHEOSTAT/DOME LIGHT S14
OFF
DIM
BRIGHT

MC126

POS	CODE
A	1005
B	1005A

PS6
PS7
LOW AIR PSI SWITCH

SENSOR THROTTLE M35

MC6

POS	CODE
A	916
B	417
C	952

VERNIER CONTROL M16

MC38

POS	CODE
A	952
B	1525
C	916

PARKING BRAKE PS4

ISOLATOR M62
IGNITION SWITCH 24 VDC S2
BATT
IGN
ACC
ST
ETHER START BUTTON S25

AIR HEATER (PASSENGER) M32
GAS PARTICULATE FILTER M30
AIR HEATER (DRIVER) M31

SEE SHEET 4 ZONE B13

THROTTLE POSITION SWITCH S31

MC127

POS	CODE
A	1956
B	1957

PARKING BRAKE SWITCH PS5

WIPER MOTOR M2

MC5

WIPER MOTOR	
POS	CODE
A	1435
B	1950
C	1919
D	1916
E	1917
F	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 10 OF 35
ENGINEERING DWG 1878290 SHEET 3
FP-19/FP-20 BLANK

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CAB HARNESS | TURN SIGNAL ASSY

MC7	
POS	CODE
A	1001
B	1004
C	1002
D	1003
E	1005A
F	1080

TURN SIGNAL/ DIMMER S1

L.H. FRONT LT
R.H. FRONT LT
L.H. REAR LT
R.H. REAR LT
DIMMER

MC91	
POS	CODE
A	1017
B	1017A

MC92	
POS	CODE
A	1016

HORN SWITCH S15

FRONT BRAKE PS1
REAR BRAKE PS2
HAND BRAKE PS3

S26 SFER CASE LOCK UP

L40

DIAG CONN DDEC

MC13	
POS	CODE
A	435
B	216A
C	
D	505
E	207A
F	
G	
H	439
J	900
K	901
L	
M	451

M17 HEATER MOTOR 24VDC

.047 µfd
.010 µfd
ORANGE
FERRITE BEAD

HEATER SWITCH S3
OFF
LOW
MED
HIGH

MC28 BEACON LIGHT

L44

M81

MC106	
POS	CODE
A	216A
B	505
C	207A
D	
E	439
F	900
G	901
H	451
J	
K	

SEE SHEET 4

CAB → CONTROL BOX

MC1	
POS	CODE
A	1084
B	1052
C	1712
D	1052
E	1021A
F	1149
G	1409
H	1714
I	1093
J	
K	
L	1678
M	1713
N	1715
O	1431
P	1680
Q	1003
R	1004
S	1487
T	1884
U	1885
V	1737

SEE SHEET 4 CONTROL BOX

MC21	
POS	CODE
A	1320
B	1449
C	1113
D	1021A
E	1032
F	1147
G	1020
H	1036
I	
J	
K	
L	
M	1957
N	1955
O	
P	
Q	
R	
S	
T	
U	
V	

SEE SHEET 5 ENGINE

CAB → CONTROL BOX

MC2	
POS	CODE
A	1017A
B	1049
C	1012
D	1189
E	1168
F	1016
G	10408
H	1040A
I	1017
J	1009
K	1080
L	1007
M	1006
N	1029
O	1184
P	1919
Q	1292
R	1534
S	1021
T	1276
U	1082
V	1920

SEE SHEET 4 CONTROL BOX

HORN M15
CHASSIS

MC58	
POS	CODE
A	1709
B	1435

CHEM DET M14

MC103	
POS	CODE
A	1746
B	1435
C	1747
D	1745

MC104	
POS	CODE
A	1746
B	1747

CHEMICAL ALARM M29
RED
GREEN

S30 EMER ENG SHUTDOWN

CRANE SRC

SRV/MHC (SEE NOTES 1-3) S4

SRV S18

GAS PART FILTER S19

CHEMICAL ALARM S20

M67

MC44	
POS	CODE
A	1108
B	509
C	419
D	439
E	510
F	916
G	417
H	952
I	1723
J	1738
K	
L	1755
M	1739
N	1717
O	1095
P	1702
Q	1889
R	1890
S	1640
T	1872
U	1880
V	1189

SEE SHEET 4 CONTROL BOX

M49 T.C.
M50 INTER AXLE
M51 DIFF
M1 WINDSHIELD WASHER

.1 µf
100 Ω

L43 POST LIGHT

LOW OIL LEVEL GUAGE

MC96	
POS	CODE
A	
B	1114
C	1435

MC3	
POS	CODE
A	1678
B	1008
C	1004
D	1680
E	1003
F	1149
G	1012
H	1731
I	1005
J	1318
K	
L	
M	
N	
O	10408
P	1519
Q	1519
R	1534
S	
T	1765
U	1431
V	1431

SEE SHEET 6 CHASSIS

NOTE:

1. SWITCH IS ONLY REQUIRED ON VEHICLES EQUIPPED WITH BOTH CRANE AND SELF RECOVERY WINCH.
2. WHEN ONLY CRANE IS INSTALLED SWITCH S4 IS ELIMINATED. CONNECT 1744 AND 1731 TOGETHER.
3. WHEN ONLY SELF RECOVERY WINCH IS INSTALLED SWITCH S4 IS ELIMINATED. CONNECT 1744 AND 1732 TOGETHER.
4. GROUND LOCATION:
   - ⚠1 @ LH HEAD LIGHT
   - ⚠2 @ LH SIDE CONTROL BOX
   - ⚠3 DIODES TO BE 1N4001
5. GROMMET:
   - ⧖1 LH SIDE OF HEATER
   - ⧖2 RH SIDE OF HEATER
   - ▽ SPLICE
   - EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 11 OF 35
ENGINEERING DWG 1878290 SHEET 3
FP-21/FP-22 BLANK

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SHIFT CONTROLLER ATEC 12VDC

MC12

POS	CODE
1	210A
2	204
3	221
4	206
5	220
6	218
7	219
8	2238
9	231
10	230
11	212
12	225
13	233
14	234
15	

MC44

POS	CODE
A	1108
B	509
C	419
D	439
E	510
F	916
G	417
H	952
I	1723
J	1738
K	
L	1755
M	1739
N	1717
O	1095
P	1702
Q	1889
R	1890
S	1640
T	1872
U	1880
V	1189

SEE SHEET 3

BLACK

MC2

POS	CODE
A	1017A
B	1049
C	1012
D	1189
E	1168
F	1016
G	10408
H	1040A
I	1017
J	1009
K	1080
L	1007
M	1006
N	1029
O	1184
P	1919
Q	1292
R	1534
S	1021
T	1276
U	1082
V	1920

WHITE

MC1

POS	CODE
A	1084
B	1052
C	1712
D	1052
E	1021A
F	1149
G	1409
H	1714
I	1093
J	
K	
L	1678
M	1713
N	1715
O	1431
P	1680
Q	1003
R	1004
S	1487
T	1884
U	1885
V	1737

MC52

POS	CODE
A	1017
B	1082
C	1026
D	1021
E	1891
F	1882

MC119

POS	CODE
A	1431
B	1640
C	1644
D	1435

HEADLIGHTS R1 · CLEARANCE LIGHTS R2 · HORN R3 · WORK LIGHT R4 · DIMMER R5 · BEACON R6 · XMSN R7 · RETARDER R8 — 12 VDC

CB1 15 AMP HEAD LIGHTS
CB2 15 AMP C.L. LIGHTS
CB3 15 AMP BEACON BACK UP
CB4 15 AMP WORK LIGHT
CB5 20 AMP TURN SIGNAL
CB6 15 AMP STOP LIGHT
CB7 10 AMP ENG. BRAKE
CB8 15 AMP DASH LOCK UP

1079 SEE SHEET 5

TURN SIGNAL FLASHER M5

SEE SHEET 5 1430

12 VDC

>1μf .01μf

NAG SWITCH R28
12 VDC CIRCUITS

M52 AC AC

R32 R33

S29 ARCTIC PUMP

24 VDC IGN SEE SHEET 5 1281

24 VDC ACC 1640

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 12 OF 35
ENGINEERING DWG 1878290 SHEET 4
FP-23/FP-24 BLANK

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CK XMSN R9
REVERSE R10
NEUTRAL START R11
12V MAG R12
BLACK OUT STOP LIGHTS R13
BLACK OUT SERVICE LIGHTS R14
LH TURN LIGHT R15
RH TURN LIGHT R16
BLACK OUT TAIL LIGHTS R17
DDEC R18
TRANS DDEC R19

CB9 10 AMP WIPER
CB10 3 AMP IGN
CB11 8 AMP DDEC TRANS
CB12 8 AMP TRANS
CB13 8 AMP DDEC
CB14 15 AMP TRANS
CB15 15 AMP HEATER
CB16 15 AMP DRIVE LINE
CB17 3 AMP CTI
CB18 10 AMP LHS CRANE
CB19 15 AMP CHEM ALARM RADIO

SWING FIRE MC101

POS	CODE
A	1340
B	1435

EMERGENCY ENGINE SHUTDOWN MC116

POS	CODE
A	439
B	439

24 VDC CIRCUITS
12 VDC
MAG SWITCH R26
24 VDC MAG SWITCH R25
BATT ATEC SEE SHEET 5
SEE SHEET 5
SEE SHEET 3 ZONE 9E
RADIO LEAD 9 AMP
AC
M76

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 13 OF 35
ENGINEERING DWG 1878290 SHEET 4
FP-25/FP-26 BLANK

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DIFF LOCK R21
CRANE HI IDLE 24 VDC R22
HIGH RANGE LOCK OUT R23
T.C. DUAL MODE R24
INTER AXLE R20
M39
M36
CB21 30 AMP GAS PARTICULATE
CB20 15 AMP TRAILER LIGHTING
DDEC CB22 20 AMP
DDEC CB23 20 AMP
24V
SEE SHEET #5
SEE SHEET 3
SEE SHEET 6 24V TRAILER
SEE SHEET 5
KNIT LOOM W/COPPER
TO XSMN CONNECTOR SEE SHEET 5
CONTROL BOX
CHASSIS
CHASSIS/ENG
ECU ATEC
THROTTLE POSITION CONTROL M4
THROTTLE SENSOR
6.8K

MC9 J1A

POS	CODE
1A	208
1B	209
1C	238
1D	239
1E	217
1F	204
1G	206
1H	218
1J	207A
1K	222
2A	202A
2B	223A
2C	210A
2D	214
2E	
2F	221
2G	220
2H	219
2J	216A
2K	201
3A	203
3B	240
3C	241
3D	213
3E	
3F	211
3G	205
3H	215
3J	212
3K	224

MC10 J1B

POS	CODE
1L	112
1M	113
1N	106A
1P	124
1R	116
1S	110
1T	115
1W	105
1X	
1Y	107
2L	123
2L	108
2N	101
2P	104
2R	
2S	
2T	120
2W	119
2X	
2Y	109
3L	114
3M	111
3N	122
3P	118
3R	
3S	
3T	121
3W	
3X	
3Y	117

MC25

POS	CODE
A	1680C
B	1003C
C	1680C
D	1435
E	1008C
F	1678C
G	1680C
H	1004C
I	1665C
J	1435
K	1538
L	1644
M	1435
N	
O	
P	
Q	
R	
S	
T	
U	
V	

MC45 J3

POS	CODE
A	301
B	302
C	303
D	304
E	305
F	306
G	307
H	308
J	309
K	310
L	311
M	312
N	313
P	314
R	315
S	316

MC50

POS	CODE
A	213
B	211
C	215
D	214
E	231
F	233

MC51

POS	CODE
A	208/209
B	207A
C	223A
D	216A
E	201
F	203

MC106

POS	CODE
A	216A
B	505
C	207A
D	
E	439
F	900
G	901
H	451
J	
K	

MC36

POS	CODE
A	124
B	104
C	106A

MC102

POS	CODE
A	115
B	1435

MC11

POS	CODE
A	
B	916
C	419
D	509
E	439
F	901
G	900
H	952
J	417
K	451
L	908
M	505
N	
O	510
P	1517
Q	1871
R	1715
S	1716
T	508
U	208/209
V	115
W	
X	

X = UNUSED SEALED POSITIONS

POS	CODE
1	1000
2	
3	
4	1000
5	
6	
7	

GROUND LOCATION
1 @ LH HEAD LIGHT
2 @ RH SIDE CONTROL BOX
4 FERRISHIELD FAIRRITE PN SS2882032
5 FERRISHIELD FAIRRITE PN TC2881500
EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 14 OF 35
ENGINEERING DWG 1878290 SHEET 4
FP-27/FP-28 BLANK

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MC21	
POS	CODE
A	1320
B	1449
C	1113
D	1021A
E	1032
F	1147
G	1020
H	1036
J	X
K	X
L	X
M	1957
N	1955
O	X
P	X
Q	X
R	X
S	X
T	X
U	X
V	X

BOOST PRESSURE SWITCH PS15
SPST-N.C.
@ 7.5 PSI ± .5 PSI ON RISING PRESSURE

MC60	
POS	CODE
A	1021A
B	1020

14 GA

M20 145 AMP ALTERNATOR

DUVAC CONTROLLER WITH REVERSE POLARITY PROTECTION M64

JUMPER

MC22	
POS	CODE
1	GREEN
2	ORANGE
3	BROWN
4	RED
5	BLACK
6	PLUG
7	PLUG

REGULATOR M19

MC24	
POS	CODE
1	1860
2	1820
3	1815
4	1861
5	1953

MC114		
POS	CODE	
A	1860	+12V OUTPUT
B	1820	+24V OUTPUT
C	1815	GROUND
D	1861	SCR GATE
E	1953	FIELD

18 GA

WATER TEMPERATURE SENDING UNIT SU1

ENGINE OIL PRESSURE SWITCH PS9

TRANSMISSION TEMPERATURE SENDING UNIT SU2

ENGINE WATER TEMP SWITCH TS2

OIL MANIFOLD

ENGINE OIL PRESSURE SENDING UNIT SU3

ATEC OIL PRESSURE SWITCH PS8

R27 MAGNETIC SWITCH 24V

5 MFD 200 VDC

2 MFD

.01 MFD

C824 3 AMP

CONTROL BOX ← → CHASSIS/ENGINE

MC11	
POS	CODE
A	X
B	916
C	419
D	509
E	439
F	901
G	900
H	952
J	417
K	451
L	908
M	505
N	X
O	510
P	1517
Q	1871
R	1715
S	1716
T	508
U	208/209
V	115
W	X
X	X

ENGINE BRAKE
RH COILS M21
LH COILS M22

TS1 ETHER START

MC56	
POS	CODE
A	1036
B	1926

MC23	
POS	CODE
A	1926
B	1435

WHITE
BLACK
ETHER START M8

MC108	
POS	CODE
A	1020
B	1435

FUEL PUMP M12

4.7 MFD

SEE SHEET 4

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 15 OF 35
ENGINEERING DWG 1878290 SHEET 5
FP-29/FP-30 BLANK

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200 AMP OPTION

MC115
POS	CODE
G	1277
D	PLUG
B	1279
C	1055
A	1274
H	PLUG
E	PLUG
F	PLUG

RECTIFIER
STATOR
STATOR
"R" TERMINAL (PHASE)
ENERGIZE
M65
FIELD
+12 VOLT CIRCUIT
+24 VOLT CIRCUIT
REGULATOR
ENGINE RUN OIL PSI SW PS14
REVERSE POLARITY PROTECTION 200 A M8
1278
1020
1277
1274
1275/1435
1020
1277
1020
1274
1275
1281
1819
1435
1138
1138.000
STARTER M7
1818
1816/1818
1138
1055
1130
1275
240/241
150/150
1816/1818
10 GA
1139 4 GA
1816
1055
1055
1055
1139
1045
1139
1138
1139
SLAVE CONNECTOR M23
M48 SHUNT
1828
1829
1138
1275
150/150
BATTERIES M6
B1 (2)
A1 (4)
B2 (1)
A2 (3)
1137
1137
1137
1137
1079
208/209
ARCTIC BATTERIES M77
1137
OPTION
MC95
POS	CODE
A	208/209
SEE MC3 SHEET 6
1431/1431
1866/1075
1813/1821
1814/1822
1816/1818
1566
240/241
150/150
1079
SEE C85 SHEET 4
A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
S
T
U
V
ECM
12" MAX TO SPLICE (TYP)
MC17
POS	CODE
A	241
B	241
C	150
D	150
E	240
F	240
MC62
POS	CODE
A	240
B	150
C	241
D	150
16 GA WIRE
TWISTED PAIR SHIELDED
TRANSMISSION
TWISTED PAIR 901/900
KNIT LOOM W/COPPER
MC19
POS	CODE
A	123
B	114
C	121
D	111
E	101
F	118
G	116
H	122
J	
K	108
L	109
M	119
N	117
O	107
P	1068
Q	
R	
S	
T	115
U	105
V	120
W	110
X	
MC20
POS	CODE
A	113
B	112
18AWG
SEE SHEET 4
18AWG
MC18
POS	CODE
A1	508
A2	555
A3	916
B1	419
B2	509
B3	439
C1	901
C2	900
C3	952
D1	510
D2	417
D3	953
E1	451
E2	
E3	
F1	542
F2	544
F3	903
G1	528
G2	543
G3	545
H1	
H2	
H3	115
J1	541
J2	531
J3	908
K1	505
K2	
K3	972
906
12034398
12040947
POS	CODE
A	612
B	614
C	618
D	616
E	620
620 614 INJECTOR 4R
620 612 INJECTOR 3R
620 616 INJECTOR 2R
620 618 INJECTOR 1R
12066317
20651143
POS	CODE
L	611
K	613
J	617
H	615
G	619
619 611 INJECTOR 1L
619 617 INJECTOR 2L
619 613 INJECTOR 3L
619 615 INJECTOR 4L
POS	CODE
L1	
L2	
L3	925
M1	
M2	
M3	926
N1	
N2	
N3	
P1	432
P2	530
P3	
R1	
R2	120
R3	472
S1	112
S2	111
S3	
T1	109
T2	110
T3	
W1	416
W2	
W3	
X1	
X2	
X3	
Y1	
Y2	452
Y3	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 16 OF 35
ENGINEERING DWG 1878290 SHEET 5
FP-31/FP-32 BLANK

REVISION V
CN 24138
11-24-92

1819

STE/ICE CONNECTOR MCJ9

POS	CODE	
A		X
B		X
C		X
D	1825A	
E	1822	
F	1821	
G		X
H		X
J		X
K		X
L	1860	
M	1819	
N	1820	
O	1953	
P	1815	
R	1861	
S	1816	
T	1818	
U	1736	
V	1814	
W	1813	
X	1828	
Y	1829	
Z	1736	
A	1736	
B	1736	
C	1809	
D	1810	
E		X
F	1824	
G	1825	
H	1826	
J	1827	
K	1952	
M	1938	
N	1939	
P	1940	
Q		X
R		X
S	1811	
T	1812	
U	1941	
V	1942	
W	1943	
X	1944	
Y	1945	
Z	1946	
AA	1947	
AB	1948	
AC	1949	
AD	1951	
AE	900	
AF	901	
AG		X

DIFFERENTIAL PRESSURE M41

MC42

POS	CODE
1	1811
2	1812

STE/ICE MODULE M43

MC40

POS	CODE	
1		X
2	1826	
3	1827	
4		X
5		X
6	1825A	
7	1825	
8		X
9		X

R3

MC65

POS	CODE
A	
B	1944
C	
D	1816
E	1818
F	1809
G	1810
H	1824
I	1825
J	1941
K	1942
L	1947
M	1948
N	1945
O	1946
P	1949
Q	1951
R	1952
S	1938
T	1939
U	1940
V	1943

MC41

POS	CODE
1	1809
2	1810

PULSE TACH DRIVE M40

MC66

POS	CODE
1	1824
2	1825
3	1943
4	1944

TURBO OUTLET PSI M70

MC43

POS	CODE
1	1824
2	1825
3	1941
4	1942

FUEL PRESSURE M42

MC67

POS	CODE
1	1824
2	1825
3	1947
4	1948

AIR CLEANER M71

MC68

POS	CODE
1	1824
2	1825
3	1945
4	1946

AIR BOX PSI M72

MC69

POS	CODE
1	1824
2	1825
3	1949
4	1951

FUEL RETURN M73

MC70

POS	CODE
1	1824
2	1825
3	1952
4	1938

ENGINE OIL TEMP M74

MC71

POS	CODE
1	1824
2	1825
3	1939
4	1940

ENGINE WATER TEMP M75

X = UNUSED SEALED POSITIONS

	POS	CODE
	1	1000
X	2	
	3	
	4	1000
X	5	
X	6	
X	7	

416 GRA / 432 LT GRN / 452 BLK — TURBO BOOST

109 PPL / 110 DK GRN — SENSOR TIMING

112 WHT / 111 LTBLU — SENSOR SYNC

452 BLK / 530 BRN / 416 GRA/BLK — SENSOR OIL PSI

452 BLK / 120 TAN — SENSOR OIL TEMP

452 / 472 — FUEL TEMP

STE/ICE ZEROING S22

1408 1528 1398 1388

1828/1829
1813/1821
1814/1822
1816/1818
1935/1820/1815/1860/1861

1818

MC118

POS	CODE
A	900
B	901
C	SHIELD

⚠ DIODES TO BE IN4001

EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 17 OF 35
ENGINEERING DWG 1878290 SHEET 5
FP-33/FP-34 BLANK

REVISION M
CN 23742
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CAB ◄► CHASSIS

MC3
POS	CODE
A	1678
B	1008
C	1004
D	1680
E	1003
F	1149
G	1012
H	1731
I	1005
J	1318
K	
L	
M	
N	
O	1040B
P	1519
Q	1519
R	1534
S	
T	1765
U	1431
V	1431

1005 1012 1003 1004 1008

BATTERIES
M6
1431
1431
1 2 3 4
BATTERIES SHOWN FOR REFERENCE ONLY
SEE SHEET 5

FRONT TOW
MC27
POS	CODE
WHITE	1435
BLACK	1012
YELLOW	1003
RED	1005
GREEN	1004
BROWN	1008
BLUE	

1435

MC113
POS	CODE
A	1765
B	1435

1765 1765
EMER STRG PS13
1435

1435

CAB ◄► CHASSIS

MC31
POS	CODE
A	
B	
C	
D	
E	1435
F	1435
G	
H	
I	
J	1729
K	1730
L	1734
M	1733
N	1732
O	
P	1738
Q	1737
R	1095
S	1093
T	1928
U	1929
V	1435

BRAIDED SHIELD
1067
GROUND IS ATTACHED TO AUXILIARY MANIFOLD

REAR
MC64
POS	CODE
1	1072
2	1073
3	1076
4	1071
5	PLUG
6	1070
7	1066
8	SHIELD
9	1068
10	1074

CTI AUXILIARY MANIFOLD M25

FRONT
MC109
POS	CODE
1	1056
2	1057
3	1058
4	1059
5	1063
6	1061
7	1062
8	SHIELD
9	1064
10	1065

CTI POWER MANIFOLD M24

MC32
POS	CODE
A	1056
B	1063/1067
C	1065
D	PLUG
E	1074
F	1076
G	1072
H	1071
I	1070
J	1068
K	SHIELD
L	PLUG
M	1066
N	1061
O	1058
P	1064
Q	1062
R	1059
S	SHIELD
T	1057
U	1073
V	PLUG

MC25
POS	CODE
A	1680C
B	1003C
C	1680C
D	1435
E	1008C
F	1678C
G	1680C
H	1004C
I	1665C
J	1435
K	1538
L	1644
M	1435
N	
O	
P	
Q	
R	
S	
T	
U	
V	

TRAILER CONN 24V

1063
BRAIDED SHIELD
GROUND IS ATTACHED TO POWER MANIFOLD

FAN CONTROL

MC59
POS	CODE
A	1932
B	1933
C	1935
D	1936

MC73
POS	CODE
A	1538
B	1435

MC63
POS	CODE
A	1932
B	1933
C	DRAIN

MC128
POS	CODE
A	1933
B	1932

WATER TEMP. N.C.
TS4

MC61
POS	CODE
A	1932
B	1932

WATER TEMP.
TS3

MC76
POS	CODE
A	1936
B	1935

FAN CONTROL VALVE M45

MC123
POS	CODE
A	1732
B	1435

MC122
POS	CODE
A	1730
B	1435

MC121
POS	CODE
A	1729
B	1435

1911980
SELF RECOVERY WINCH M27

MC55
POS	CODE
A	1729
B	1730
C	1732
D	1435

1435 1538

FAN M51
LHS M10
1899700

1733 1435 1734 1435

AIR DRYER M13

MC97
POS	CODE
A	1538
B	1435

1435
1538
1435

A B C D

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 18 OF 35
ENGINEERING DWG 1878290 SHEET 6
FP-35/FP-36 BLANK

REVISION M
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A

L32
1012
SIDE MARKER
1012
L34

MC79
POS	CODE
A	10408
B	1435

WORK LIGHT RH
L21

MC54
POS	CODE
A	10408
B	1435

L39
WORK LIGHT LH

CRANE MC29

P		R
1737	A	THROTTLE WHITE
1435	B	GROUND GREEN
1738	C	+24 VDC BLACK
1731	D	SHUTOFF VALVE FEED RED
1435	E	SHIELD

TWISTED PAIR

1519
G SPEEDOMETER GENERATOR SU4
1519
18 GA SHIELDED

MC57
POS	CODE
A	1095
B	1093

S13
DRIVE LINE LOCK TRANSFER CASE HI/LO

MC80
POS	CODE
A	1012
B	1003
C	1004

1678/23
1008/21
1004/22
1680/24
L22
B.O. STOP LIGHT
TAIL LIGHT
STOP LIGHT
B.O. TAIL LIGHT
R.H.

1012
1003
1680/24

MC78
POS	CODE
A	1680
B	1678
C	1149
D	1008
E	1435
F	1435

1678/23
1008/21
1003/22
1680/24
L24
B.O. STOP LIGHT
TAIL LIGHT
STOP LIGHT
B.O. TAIL LIGHT
L.H.
1435
1435
1149

MC124
POS	CODE
A	1149
B	1435

MC77
POS	CODE
A	1149
B	1435

BACK UP LIGHT L23

718
1435
BACK UP ALARM M78

1318
1435
FUEL LEVEL SU5

MC107
POS	CODE
A	1534
B	1435

1534
FUEL/WATER SEPERATOR M9
1435

TRAILER CONNECTION 12 VDC

MC16
POS	CODE
1435	WHITE
1012	BLACK
1003	YELLOW
1005	RED
1004	GREEN
1008	BROWN
	BLUE

TRAILER
MC30
POS	CODE
A	1928
B	1929
C	PLUG
D	PLUG

1012 L31 REAR SIDE MARKER
1012 CLEARANCE LIGHTS
1680 L42 B.O. CLEARANCE LIGHT
1012
1012 L25 ID LIGHTS
1012
1680 L41 B.O. CLEARANCE LIGHT
1012 L33 CLEARANCE LIGHTS
1012 REAR SIDE MARKER
1435

MC90
POS	CODE
A	1012
B	1435
C	1680

AFTERCOOLER M11
AIR DRYER M14

MC98
POS	CODE
A	1538
B	1435

MC99
POS	CODE
A	1538
B	1435

MC120
POS	CODE
A	1644
B	1435

M80 ARCTIC PUMP
M
1644/1435

B
C
D

MC15
POS	CODE	
A	1680C	24-484
B	1003C	22-461
C	1680C	24-483
D	1435C	90
E	1008C	21-489
F	1678C	23
H	1680C	490
J	1004C	22-460
K	1665C	37
L	1435C	90
M		53
N		53

MILITARY CONNECTOR
TRAILER CONNECTION 24 VDC
SEPERATE LOOMED HARNESS

GROMMET LOCATED LH SIDE OF HEATER
DIODES TO BE IN4001
EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 19 OF 35
ENGINEERING DWG 1878290 SHEET 6
FP-37/FP-38 BLANK

REVISION AA
CN 24575
9-9-94

MC33	
POS	CODE
A	1755
B	1435
C	1722
D	1724
E	1725
F	1726

(24 VDC IN)
(GROUND)
(LHS IND & VA.)
(SRW-CRANE & VA.)
(TRANS LIGHT NO)
(OVER LOAD)

SEE SHEET 3

1860810
(7200)

MC84	
POS	CODE
A	1482
B	1481
C	1486
D	1480
E	1755
F	1435
G	1483
H	1484
J	1485
K	1722
L	1487
M	1488
N	1489
P	1490
R	1726
S	1725
T	—

1860800
(7190)

MC83	
POS	CODE
A	1482
B	1481
C	1486
D	1480
E	1755
F	1435
G	1483
H	1484
J	1485
K	1722
L	1487
M	1488
N	1489
P	1490
R	1726
S	1725
T	—

M26
CAB CONTROL BOX
1891370

M.R. "A" SOLENOID
H.A. "B" SOLENOID
M.R. "B" SOLENOID
H.A. "A" SOLENOID
SEQUENCING (3)
24 VOLT +
SEQUENCING (6)
TRANSIT VALVE
FREE FLOW VALVE
0 VOLTS
0 VOLTS
PROXIMITY H.A. DOWN

SEE SHEET 8 FOR DETAIL OF CAB CONTROL BOX

MC81	
POS	CODE
A	1465
B	1467
C	1468
D	1464
E	1466
F	1472
G	1469
H	1463
J	1462
K	1435
L	1435
M	1471
N	1460
P	1459
R	1435
S	1435
T	—

1860790
(7170)

GREEN
RED
WHITE
DRAIN WIRE

MC82	
POS	CODE
A	1465
B	1467
C	1468
D	1464
E	1466
F	1472
G	1469
H	1463
J	1462
K	1435
L	1435
M	1471
N	1460
P	1459
R	1435
S	1435
T	—

1883440

1877480
(7140)
HOOKARM
SOL A
M53

1877470
(7150)
HOOKARM
SOL B
M54

1435/WHITE
1464/BLACK
1435/WHITE
1467/BLACK

1480
1463
M68
1478
1477
1479

HOOK ARM
ELECTRIC
SAFE
LOWERING

MAIN RAM
ELECTRIC
SAFE LOWERING

A B C D E F G H J K L M N P Q R S T U V W

1465 X

1465 Y

1884570 U
MAIN JUNCTION
BOX

MC93	
POS	CODE
A	1724
B	1480
C	1481
D	1482
E	1483
F	1484

1724 — 22 — 21
18 — 17
1487 — 14 — 13
10 — 9
1481 — 12 — 11
1480 — 24 — 23
6 — 5
1486 — 8 — 7
1482 — 20 — 19
2 — 1
1484 — 4 — 3
1485 — 16 — 15

5
4
3
2
1
0

MC94	
POS	CODE
A	1485
B	1486
C	1487
D	1488
E	1489
F	1490

1891360 U
MULTI FUNCTION
SWITCH ASSY

0 OFF
1 AUTO
2 MAN HA
3 MAN MF
4 MAN TRAN
5 CRANE/SRW

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 20 OF 35
ENGINEERING DWG 1878290 SHEET 7
FP-39/FP-40 BLANK

REVISION U
CN 23966
12-1-92

1877450 (7130) MAIN CYLINDER SOL B M56
1877460 (7120) MAIN CYLINDER SOL A M55
1877440 (7110) FREEFLOW M57
1877490 (7160) TRANSIT M58

1435/WHITE 1468/BLACK
1435/WHITE 1465/BLACK
1435/WHITE 1462/BLACK
1435/WHITE 1480/BLACK

OVERLOAD PRESSURE SWITCH N.O. S28

1479/BLACK
1460/WHITE

POS
A
B
C 1
D 2
E 3
F 4
G 5
H 6
J 7
K 8
L 9
M 10
N 11
P 12
Q 13
R 14
S 15
T 16
U 17
V 18
W

1883450

MC85

POS	CODE
A	1461
B	1472
C	1435
D	1471
E	1435
F	1435
G	1469
H	1466
I	1470
J	1475

1860780 (7100)

MC86

POS	CODE
A	1461
B	1472
C	1435
D	1471
E	1435
F	1435
G	1469
H	1466
I	1470
J	1475

MC88

POS	CODE
A	1472
B	1471
C	1435

1891910 W
HOOK ARM DOWN PROXIMITY SW NORMALLY OPEN S27

+ BROWN
S BLACK
– BLUE

1860820 (7370)

MC87

POS	CODE
A	1461
B	1435
C	1435
D	1469
E	1466
F	1470
G	1475
H	—
I	—
J	—

1891410

POS
1
2
3
4
5
6
7

1891530 U
LHS JUNCTION BOX

1891930 W
MIDDLE FRAME PROXIMITY SW NORMALLY OPEN S24

1435/BLUE
1461/BROWN
1469/BLACK

1891920 W
HOOK ARM UP PROXIMITY SW NORMALLY OPEN S23

1435/BLUE
1474/BROWN
1466/BLACK

1878910 LH HOOK ARM
A M59 M60 B

1435/WHITE 1470/BLACK
1435/WHITE 1470/BLACK

1878900 RH HOOK ARM
A M61 M62 B

1435/WHITE 1475/BLACK
1435/WHITE 1475/BLACK

1435

X
Y

87A 87 85 30 86
1480

R29
MIDDLE FRAME LOCK-OUT

EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 21 OF 35
ENGINEERING DWG 1878290 SHEET 7
FP-41/FP-42 BLANK

REVISION 0

MC83	
POS	CODE
A	1482
B	1481
C	1486
D	1480
E	1755
F	1435
G	1483
H	1484
J	1485
K	1722
L	1487
M	1488
N	1489
P	1490
R	1726
S	1725
T	----

MAN. HOOK ARM UP
MAN. MID FRAME DOWN
MAN. HOOK ARM DOWN
MAN. MID FRAME UP
+24V IN
COMMON
MAN./AUTO MODE
AUTO LOAD IN
AUTO UNLOAD IN
LHS LIGHT
MAN. TRANS IN
24V OUT
UNLOAD OUT
LOAD OUT
OVERLOAD LIGHT
NO TRANSIT LIGHT
AUX MODE IN

CR1-MR2400
FU1
RP1 2.7K
R1-3.3K
LED5
Q1 2N3906
RP2 3.3K
RP3 2.7K
LED15
CR16 1.5KE39
+24V
RP1-2.7K LED3
RP1-2.7K LED1
CR2-1.5KE39
RP1-2.7K LED2
CR3-1.5KE39
CR4-1.5KE39
RP1-2.7K LED4
CR5-1.5KE39
RP1-2.7K LED6
CR7-1.5KE39
RP1-2.7K LED7
CR6-1.5KE39
RP2-2.7K LED10
CR10-1.5KE39
RP2-2.7K LED9
CR9-1.5KE39
RP2-2.7K LED8
CR8-1.5KE39

CR24-1N4007
CR27-1N5400
CR28-1N5400
CR22-1N5400
CR23-1N5400
CR29-1N5400
K1
K2
K3
K4
K5
K6
K7
DP1
RP4 1M
U1
C1-1.5µf TANT.
R4 1K
C2 1.5µf TANT
CR25 1N4743 13V
CR30 1N4007
Q2 VN10KM
CR31 1N4753 36V
C3 .022µf
RP4-1M
R3-1K
CR26 1N4148
C4 1.5µf TANT

RELAY BOARD

JS-13
JS-14
JS-24
JS-23
LOAD
UNLOAD
JOYSTICK

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 22 OF 35
ENGINEERING DWG 1878290 SHEET 8
FP-43/FP-44 BLANK

REVISION O

MC81

A — MAIN RAM A SOL.
RP3-2.7K (8, 7) LED14
CR14-1.5KE39

B — HOOK ARM B SOL
RP2-2.7K (9, 6) LED13
CR13-1.5KE39

C — MAIN RAM B SOL.
RP2-2.7K (10, 5) LED12
CR12-1.5KE39

D — HOOK ARM A SOL.
RP2-2.7K (11, 4) LED11
CR11-1.5KE39

E — HOOK ARM UP
RP3-2.7K (9, 6) LED15
CR15-1.5KE39

F — +24V OUT
+24V

G — MID FRAM DOWN
RP3-2.7K (10, 5) LED21
CR21-1.5KE39

H — TRANSIT VALVE
RP3-2.7K (12, 13) LED19
CR19-1.5KE39

J — FREE FLOW VALVE
RP3-2.7K (14, 1) LED17
CR17-1.5KE39

K — 0 VOLTS

L — 0 VOLTS

M — HOOK ARM DOWN
RP3-2.7K (13, 2) LED18
CR18-1.5KE39

N — OVERLOAD IN
RP3-2.7K (11, 4) LED20
CR20-1.5KE39

P
R
S
T

MC81	
POS	CODE
A	1465
B	1467
C	1468
D	1464
E	1466
F	1472
G	1469
H	1463
J	1462
K	1435
L	1435
M	1471
N	1460
P	1459
R	1435
S	1435
T	---

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 23 OF 35
ENGINEERING DWG 1878290 SHEET 8
FP-45/FP-46 BLANK

REVISION O

SYSTEM SHUTDOWN RELAY

CONTROL LOCKOUT RELAY

THROTTLE RELAY

GROUND

POWER CABLE TO VEHICLE

MC29	
POS	CODE
A	WHT
B	GRN
C	BLK
D	RED
E	SHIELD

PASSENGER SIDE REMOTE CABLE

POS	CODE
A	RED
B	GRN
C	YEL
D	WHT
E	BLU
F	BLK
G	ORG
H	VIO
J	RED/GRN
K	GRY
L	TAN
M	BRN
N	PNK
P	SHIELD

OVERLOAD SHUTDOWN SYSTEM

POS	CODE
A	BLK
B	WHT
C	GRN
D	RED

POS	CODE
A	BLU
B	BLK
C	BRN

HOIST LAYER SENSING SWITCH

POS	CODE
A	WHT
B	BLK
C	RED
D	GRN
E	SHIELD

HOIST LOAD CELL

CRANE FUNCTION SOLENOIDS

SWING: CCW, CW

TELE: OUT, IN

LIFT: UP, DWN

HOIST: UP, DWN

MHC MAIN HYD PRESS

OVERLOAD SOLENOIDS: LIFT UP & DOWN, HOIST UP, TELE OUT, CRANE FUNCTION L/O

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 24 OF 35
ENGINEERING DWG 1878290 SHEET 9
FP-47/FP-48 BLANK

REVISION O

JUNCTION BOX ASSY

A
B
C
D
E
F
G
H
J
K
L
M
N

BLU
BRN
BLK
19/3
E

BRN
BLU
BLK
DRIVER SIDE O/R ENGAGED SENSING SWITCH

D6
D7
WHT
WHT

D9
D8
RED/GRN

GRN
RED
BLK
WHT
BLK
LINE LOAD
POWER SWITCH 10 AMP MAGNETIC CIRCUIT BREAKER

GRN
RED
GRN
RED
HIGH IDLE SWITCH LATCH-UNLATCH

BLK
WHT
RED
GRN
16/4
D
18/15
F

DRIVER SIDE REMOTE CABLE

POS	CODE
A	RED
B	GRN
C	YEL
D	WHT
E	BLU
F	BLK
G	ORG
H	VIO
J	RED/GRN
K	GRY
L	TAN
M	BRN
N	PNK
P	SHIELD

BRN
BLK
BLU

REMOTE CONTROL CABLE
18/15

C
19/3
BRN
BLU
BLK
PASSENGER SIDE O/R ENGAGED SENSING SWITCH

O
18/2
D2
WHT
BLK
O/R MAST SHUTDOWN SOLENOID

REMOTE CONTROL BOX

POS	CODE
A	RED
B	GRN
C	YEL
D	WHT
E	BLU
F	BLK
G	ORG
H	VIO
J	RED/GRN
K	GRY
L	TAN
M	BRN
N	PNK
P	SHIELD

2

SWING

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	CCW
4	BLU	CW

8
2
9
10

TELE

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	OUT
4	BLU	IN

8
2
11
12

ON
4
26
20
SHUT DOWN

BOOM

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	UP
4	BLU	DWN

8
2
13
14

HOIST

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	UP
4	BLU	DWN

8
2
15
16

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 25 OF 35
ENGINEERING DWG 1878290 SHEET 9
FP-49/FP-50 BLANK

REVISION F
CN 24526
3-28-94

DUAL AIR GAGE
RED GRN
RESTRICTION INDICATOR GAGE
.25 TBG RED
2641
2610 .25 TBG GREEN
.16 ID HOSE
2381
.38 TBG GREEN
2073
.38 TBG RED
2006
DASH PANEL
AUX
RSVR 2
RSVR 1
EX
TRAILER CHARGE
SYSTEM PARK
TRACTOR D
TRAILER D
2611 .38 TBG YELLOW
2612 .38 TBG YELLOW
PARKING BRAKE STOPLIGHT SWITCH
PARKING BRAKE STOPLIGHT SWITCH
DEL
IN EX
HAND CONTROL VALVE
STOPLIGHT SWITCH
2662 .38 TBG BLACK
2663 .38 TBG BLACK
2028 .38 TBG BLACK
2029 .38 TBG BLACK
2027 .38 TBG GREEN
CAB MANIFOLD
2662 .38 TBG BLACK
2663 .38 TBG BLACK
2612 .38 TBG YELLOW
2029
2073 .38 TBG GREEN
2027 .38 TBG GREEN
2381 .16 ID HOSE
2623 .38 TBG GREEN
2488 .38 TBG GREEN
ENGINE AIR INTAKE
#4 HOSE
2381
2623 .38 TBG GREEN
2488 .38 TBG GREEN
A
B
C
D
E
F
G
H
STOPLIGHT SWITCH
TREADLE VALVE
FRONT
REAR
LOW AIR PRESSURE SWITCH
LOW AIR PRESSURE SWITCH
STOPLIGHT SWITCH
2619 .62 TBG GREEN
2005 .62 TBG RED
2665 .38 TBG RED
2006 .38 TBG RED
2489 .38 TBG RED
2665 .38 TBG RED
2489 .38 TBG RED
2684 .38 TBG RED
2686 .38 TBG RED
DOUBLE CHECK VALVE
2074 .25 TBG BLACK
SEE SHEET 2
(CTI FRONT MANIFOLD)
2074 .25 TBG BLUE
FOUR POSITION SOLENOID VALVE
2074 .25 TBG BLACK
DIFF LOCK
INTER AXLE LOCK
TRANSFER CASE LOCK
2071 .25 TBG BLACK
2412 .25 TBG ORANGE
2069 .25 TBG BLUE
2923 .25 TBG ORANGE
WINDSHIELD WASHER BOTTLE
2071 .25 TBG BLACK
OUT IN
AIR REGULATOR
2005 .62 TBG RED
2005 .62 TBG RED
2005 .62 TBG RED
INLET
QUICK RELEASE VALVE
SERVICE
EMERGENCY
2894 .38 TBG RED
2895 .38 TBG RED
GLAD HANDS
2923 .25 TBG ORANGE
2923 .25 TBG ORANGE
2069 .25 TBG BLUE
2069 .25 TBG BLUE
2412 .25 TBG ORANGE
2412 .25 TBG ORANGE
2619 .62 TBG GREEN
2619 .62 TBG GREEN
J
K
L
M
N
P

NOTES:
1. A DASHED LINE WITH A LARGE ARROW SIGNIFIES A HARD CONNECTION DIRECTLY TO THE COMPONENT (WITH A TEE FITTING). THIS SYMBOL DOES NOT REPRESENT THE PRESENCE OF NYLON TUBING.
2. SEE DOD-STD-100 FOR DRAWING INTERPRETATION STANDARDS
3. PARENTHETICAL IDENTITIES ARE FOR REFERENCE ONLY

FIGURE FO-2. AIR SYSTEM SCHEMATIC
FOLDOUT 26 OF 35
ENGINEERING DWG 1878300 SHEET 1
FP-51/FP-52 BLANK

REVISION D
CN 24303
6-25-93

2933
2069
2412
2133
2662 .38 TBG BLACK
2661 .38 TBG BLACK
2622 .38 TBG YELLOW
2663 .38 TBG BLACK
2661 .38 TBG BLACK
DOUBLE CHECK VALVE
DOUBLE CHECK VALVE
2664 .38 TBG GREEN
2622 .38 TBG YELLOW
SPRING BRAKE VALVE
S D C R
2612 .38 TBG YELLOW
2621 .38 TBG YELLOW
2665 .38 TBG RED
2623 .38 TBG GREEN
2874 .38 TBG BLACK
2874 .38 TBG BLACK EX
2013 #8 HOSE
2013 #8 HOSE
2013 #8 HOSE
2874 .38 TBG BLACK
2874 .38 TBG BLACK EX
2387 #8 HOSE
2387 #8 HOSE
2387 #8 HOSE
AIR BAG
LOAD SENSING VALVE
.38 TBG BLACK
2376
#4
2793
AIR TANK 836 CU IN
.75 TBG BLACK
2793
.75 TBG BLACK
EX
2022 #6 HOSE
#8 HOSE 2546
2874 .38 TBG BLACK
2639 .38 TBG RED
EXHAUST
2874 .50 TBG BLACK
2874 .38 TBG BLACK
MANIFOLD
2387 #8 HOSE
MANIFOLD
BALL VALVE
2044 .38 TBG BLACK
2044 .38 TBG BLACK
SPRING BRAKE RELAY VALVE R-14
2075
#8 HOSE
2545 #10 HOSE
MANIFOLD
#6 HOSE
2668 .38 TBG RED
.38 TBG BLACK
2374
.38 TBG BLACK
2375
LOAD SENSING VALVE
#5
.75 TBG BLACK 2794
AIR TANK 836 CU IN
#3 AXLE SUSPENSION
SERVICE BRAKE RELAY VALVE R-12
2188
.38 TBG GREEN
2543 #10 HOSE
2544 #10 HOSE
SERVICE BRAKE RELAY VALVE R-12
.62 TBG BLACK
2536
2012 #8 HOSE
2012 #8 HOSE
2012 #8 HOSE
2388 #8 HOSE
2388 #8 HOSE
2388 #8 HOSE
2669 .62 TBG RED
2620 .62 TBG BLACK
2014 .62 TBG RED
.75 TBG BLACK 2793
2011 .62 TBG RED
AIR BAG
EX
2874 .38 TBG BLACK
2874 .38 TBG BLACK EX
2874 .38 TBG BLACK
2874 .38 TBG BLACK EX
#1 AXLE
#2 AXLE
#3 AXLE
2684 .38 TBG RED
EXHAUST
2668 .38 TBG RED
2669 .38 TBG RED
QUICK RELEASE VALVE
2011 .62 TBG RED
2620 .62 TBG BLACK
2614 .62 TBG BLACK
2014 .62 TBG RED
2003 .62 TBG BLACK
2003 .62 TBG BLACK
#3
REAR AIR TANK 2500 CU IN
2621 .38 TBG YELLOW
2895 .38 TBG RED
.75 TBG BLACK
2007
2044 .38 TBG BLACK
2074 .25 TBG BLACK
2133 .38 TBG ORANGE
AIR REGULATOR VALVE
PRESSURE PROTECTION VALVE
2536 .62 TBG BLACK
PRESET 77 PSIG
MANIFOLD
2008 .50 TBG BLACK
2613 .62 TBG BLACK
#2
2184 .75 TBG BLACK
2184 .75 TBG BLACK
FRONT AIR TANK 1791 CU IN
2619 .62 TBG GREEN
2620 .62 TBG BLACK
2614 .62 TBG BLACK

FIGURE FO-2. AIR SYSTEM SCHEMATIC
FOLDOUT 27 OF 35
ENGINEERING DWG 1878300 SHEET 1
FP-53/FP-54 BLANK

REVISION D
CN 24303
6-25-93

TRACTOR PROTECTION VALVE
2133 .38 TBG ORANGE — AUXILLARY
2654 .38 TBG BLACK — GLAD HANDS EMERGENCY
2653 .38 TBG BLACK — SERVICE
2638 .38 TBG YELLOW
2874 .50 TBG BLACK
2874 .38 TBG BLACK
2923 .25 TBG ORANGE
2412 .25 TBG ORANGE
2069 .25 TBG BLUE
MANIFOLD
EXHAUST
2660 .38 TBG RED
2368 #8 HOSE
SPRING BRAKE RELAY VALVE R-14
SERVICE BRAKE RELAY VALVE R-12
#10 HOSE 2143
2144 #10 HOSE
MANIFOLD
2614 .62 TBG BLACK
#8 HOSE 2017
#6 HOSE 2138
2139
2015
#4 AXLE
#8 HOSE 2018
#6 HOSE 2140
2874 .38 TBG BLACK
2369
#8 HOSE
2016
2141
#5 AXLE
XFER CASE
AXLE #1
AXLE #2
AXLE #3
AXLE #4
AXLE #5
#4 HOSE 2419
2420
2056
2421
2339
2359
2422
2338
2069 .25 TBG BLUE
2412 .25 TBG ORANGE
2069
PURGE TANK 390 CU IN
2031 .38 TBG BLACK
2030 .38 TBG BLACK
WET TANK 1224 CU IN
#1
2002 .75 TBG BLACK
AIR DRYER
2035 .75 TBG BLACK
2037 .75 TBG BLACK
2036 .75 TBG BLACK
2032 .38 TBG BLACK
COALESCING FILTER
.75 TBG BLACK 2034
AFTERCOOLER
2001 #16 TEFLON HOSE
AIR COMPRESSOR
2600 #16 TEFLON HOSE
ENGINE AIR INTAKE
2114 #4 HOSE
2033 .38 TBG BLACK
2040 .38 TBG BLACK
2159 #4 HOSE
2994 .50 TBG BLUE
2993 .50 TBG BLUE
2184 .75 TBG BLACK
SEE SHEET 2 (CTI REAR MANIFOLD)
SEE SHEET 2 (CTI FRONT MANIFOLD)
RSVR UNL
RES UNL
EXH
RSVR UNL
GOVERNOR:
CUT IN: 105±3 PSI
CUT OUT: 125±4 PSI

FIGURE FO-2. AIR SYSTEM SCHEMATIC
FOLDOUT 28 OF 35
ENGINEERING DWG 1878300 SHEET 1
FP-55/FP-56 BLANK

REVISION B
CN 23468
8-8-91

STEEL TBG .62 OD
STEEL TBG .62 OD
STEEL TBG .62 OD
STEEL TBG .62 OD
.25 TBG BLACK 2893
2097 #10 HOSE
2097 #10 HOSE
.25 TBG BLACK 2893
2099 #10 HOSE
2099 #10 HOSE
SEE SHEET 1 — 2994 .50 TBG BLUE
SEE SHEET 1 — 2993 .50 TBG BLUE
A
FRONT CTI MANIFOLD 1888660
2098 #12 HOSE
MANIFOLD 1579630
SEE SHEET 1 — 2074 .25 TBG BLUE
2096 #12 HOSE
STEEL TBG 1.25 OD
2101 #10 HOSE
2103 #10 HOSE
.25 TBG BLACK 2893
.25 TBG BLACK 2893
2101 #10 HOSE
2103 #10 HOSE
STEEL TBG .62 OD
STEEL TBG .62 OD
STEEL TBG .62 OD
STEEL TBG .62 OD
#1 AXLE
#2 AXLE

FIGURE FO-2. AIR SYSTEM SCHEMATIC
FOLDOUT 29 OF 35
ENGINEERING DWG 1878300 SHEET 2
FP-57/FP-58 BLANK

REVISION B
CN 23468
8-8-91

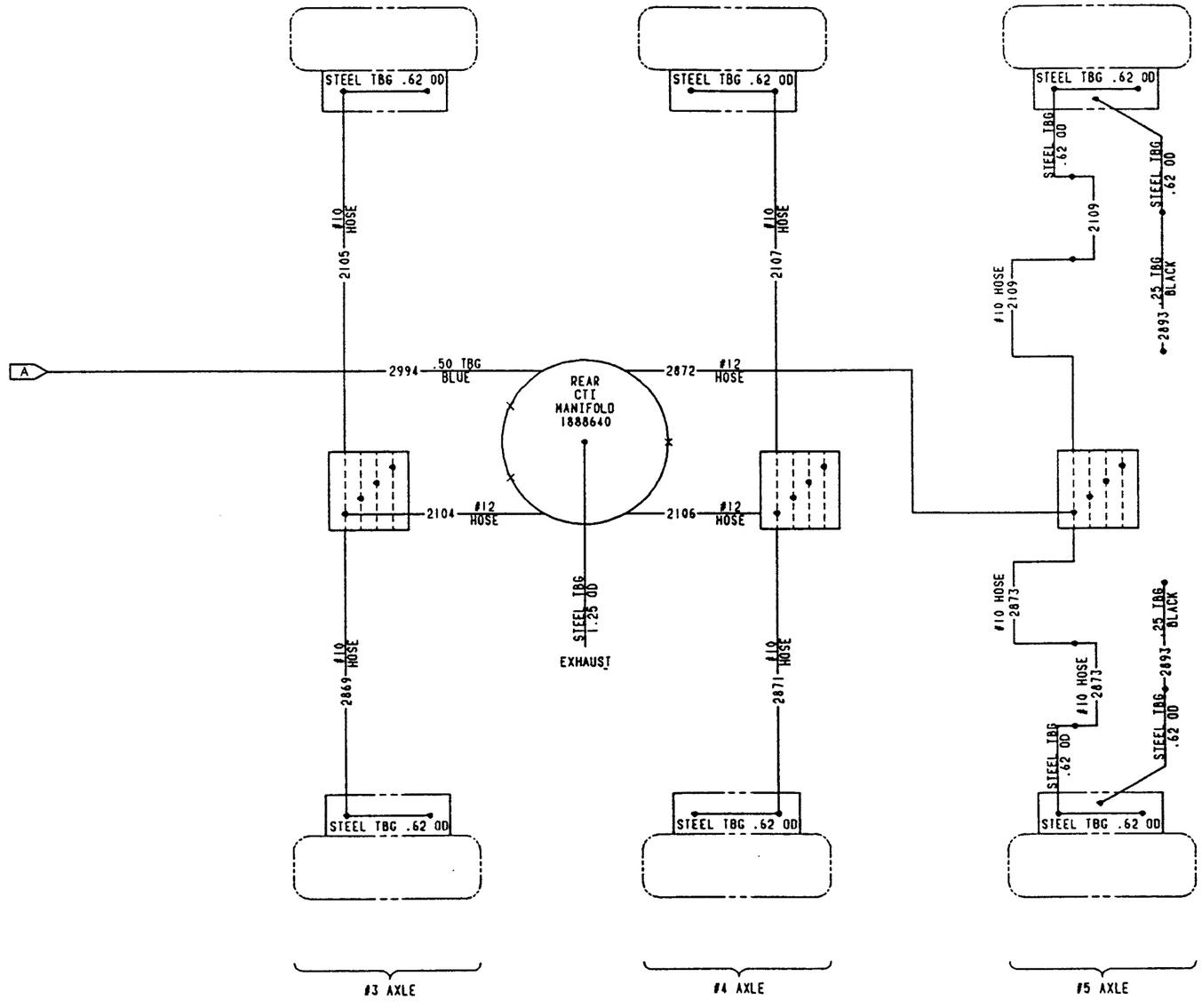


FIGURE FO-2. AIR SYSTEM SCHEMATIC
FOLDOUT 30 OF 35
ENGINEERING DWG 1878300 SHEET 2
FP-59/FP-60 BLANK

REVISION H
CN 24303
6-25-93

MAIN HYDR PUMP 1899690
COMPENSATOR SET APPROX. 3675 PSI
HIGH PRESSURE FILTER 1929250
IN
OUT
SOLENOID VALVE 1913660 U
CRACKING PRESSURE 65PSI
OIL COOLER 2028850
FAN MOTOR 1945260
FAN MANIFOLD 1945240
RETURN FILTER
1905170 U
MAIN RESERVOIR
MULTI-FUNCTION MANIFOLD 1959140
10-12 GPM
30 GPM
MAIN CYLINDER Ø125/Ø63-1665 STROKE
MAIN CYLINDER MANIFOLD RH
MANIFOLD
STEEL TBG .75 OD
RH HOOK ARM CYLINDER MANIFOLD
LH HOOK ARM CYLINDER MANIFOLD
HOOK ARM CYLINDER Ø125/Ø 63-870 STROKE
HOOK ARM CYLINDER Ø125/Ø 63-870 STROKE

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 31 OF 35
ENGINEERING DWG 1878310 SHEET 1
FP-61/FP-62 BLANK

REVISION H
CN 2225
4/14/00

MAIN CYLINDER
Ø125/Ø63-1665 STROKE
CB
CA
MAIN CYLINDER MANIFOLD LH
VB
T
VA
2889 #8 HOSE
2889 #8 HOSE
2890 #8 HOSE
T1
T2
2588 #8 HOSE
2888 #8 HOSE
TPMB
TPMA
2588 #8 HOSE
2588 #8 HOSE
MA1
#8 HOSE 2666
2666 #8 HOSE
MA2
#8 HOSE 2888
2888 #8 HOSE
MB2
2887 #8 HOSE
2887 #8 HOSE
MB1
STEEL TBG 1.00 OD
2892 #12 HOSE
B1
STEEL TBG 1.00 OD
2891 #12 HOSE
A1
LOAD HANDLING SYSTEM CONTROL MANIFOLD
LOAD HANDLING SYSTEM
TPP
TPT
P
T
STEEL TUBE 1.00 OD .120 WALL
1923580
1923570
STEEL TUBE 1.00 OD .120 WALL
1495720
1495730
1495730
QUICK DISCONNECTS
1495720
2777 #16 HOSE
2902 #12 HOSE
2902 #12 HOSE
2694 #8 HOSE
#12 HOSE 2904
2899 #12 HOSE
2899 #12 HOSE
#16 HOSE 2724
1757360
RETURN LINE MANIFOLD
2917 #16 HOSE
2886 #16 HOSE
2886 #16 HOSE
2886A #16 HOSE
2776 #4 HOSE
LOAD SENSE LINE TO PUMP
2902 #12 HOSE
MAIN SUPPLY LINE 19 GPM
CRANE
2724 #16 HOSE
MAIN RETURN LINE
SUCTION LINE HAND PUMP
#12 2902 HOSE
2694 #8 HOSE
2724 #16 HOSE
2809 #4 HOSE
2809 #4 HOSE
2809A #4 HOSE
.031
.031
TELESCOPE CYLINDERS
PILOT RATIO 7.35:1
A
B
C
D
E
F
.030
.030
PILOT RATIO 4.60:1
LIFT CYLINDERS
H
G
GROVE HOIST
SERVICE RELEASE
4 TO 6 PSI CRACK
LS
DS1
P
A
B
T
WINCH SUPPLY VALVE 1911980
12 GPM
SELF RECOVERY WINCH
STEEL TBG 1916430 .62 OD .083 WALL
STEEL TBG 1916440 .62 OD .083 WALL
V2
V1
MOTOR DRAIN
BP
.020
V1
V2
PILOT RATIO 7.35:1
K
J

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 32 OF 35
ENGINEERING DWG 1878310 SHEET 1
FP-63/FP-64 BLANK

REVISION H
CN 24303
6-25-93

SWING DRIVE
BRAKE RELEASE
.089 .089
1780 1780
1780
5 CU. IN. PRECHARGE
190 TO 210 PSI
ACC
LS G1 X1 X2
3000 TO 3100 PSI CRACK
SWING
TELESCOPE
LIFT
HOIST
X.128
X.147
X.154
X.234
2100 PSI FULL FLOW
CW 5 GPM A
CCW 5 GPM B
EXTEND 7 GPM A
RETRACT 5 GPM B
P
T
UP 7 GPM A
DOWN 5 GPM B
RAISE 12 GPM A
LOWER 12 GPM B
A B C D E F G H J K
X.040
X.040
S1
S2
HP
PILOT RATIO 2.31:1
Z3
LEFT STABILIZER (JACK) CYLINDER
EXTEND 7 GPM RETRACT
MAST ERECTION
.030
RIGHT STABILIZER (JACK) CYLINDER
7 GPM
PILOT RATIO 7.35:1 THERMAL 4400 TO 4700 PSI
X.062
RIGHT STABILIZER
RATIO 2.97:1 THERMAL 3750 TO 4250 PSI
PILOT RATIO 7.35:1 THERMAL 4400 TO 4700 PSI
X.062
LEFT STABILIZER
RATIO 2.97:1 THERMAL 3750 TO 4250 PSI
PILOT RATIO 3.75:1 THERMAL 2350 TO 2650 PSI
RETRACT .50 GPM
X.015
X.015
EXTEND .75 GPM
MAST ERECTION CYLINDER
RETRACT EXTEND PRESSURE TANK RETRACT EXTEND
.147 .147
LEFT STABILIZER 7 GPM
MAIN RELIEF
RIGHT STABILIZER 7 GPM

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 33 OF 35
ENGINEERING DWG 1878310 SHEET 1
FP-65/FP-66 BLANK

REVISION E
CN 23777
2-14-92

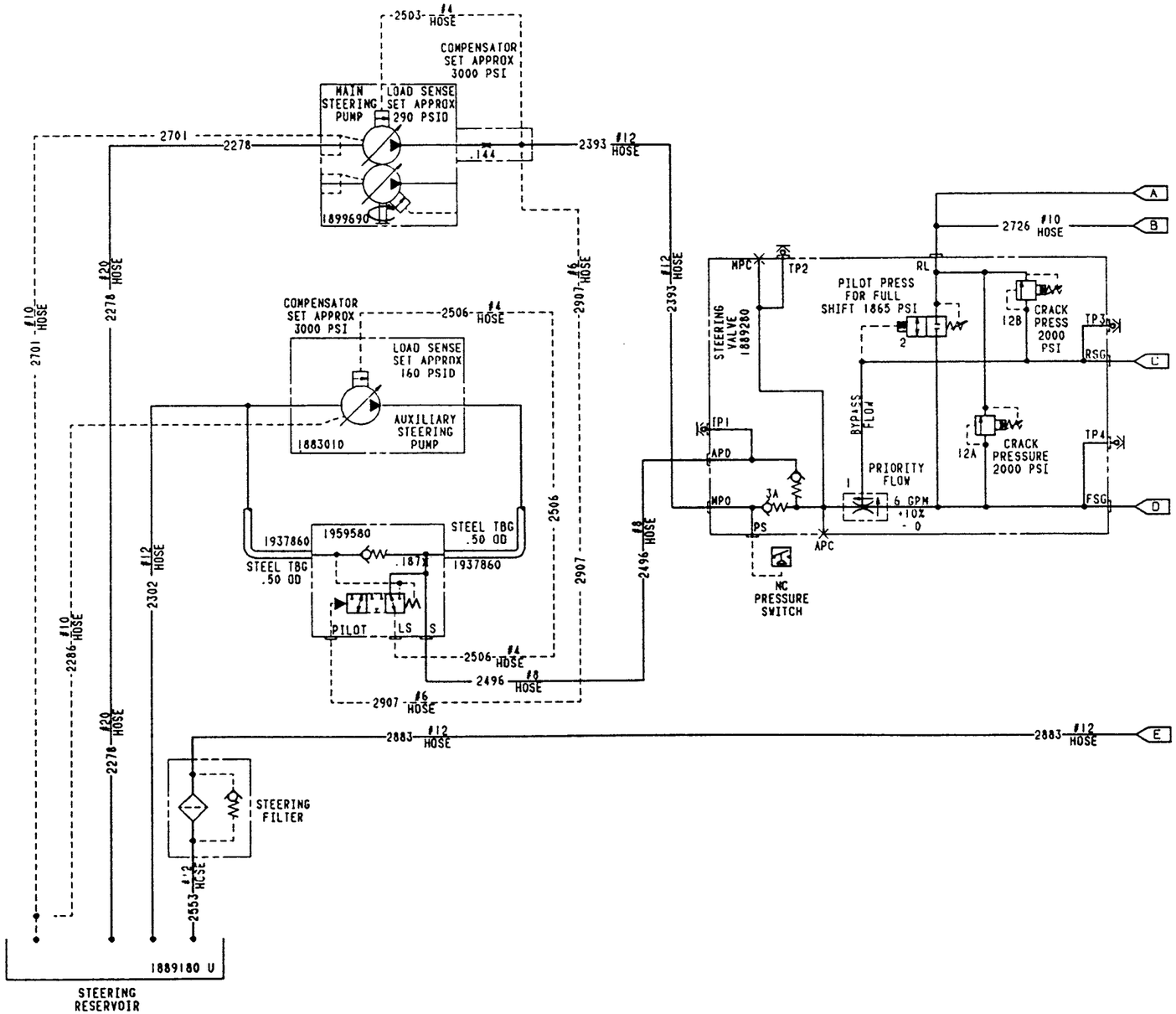


FIGURE FO-3. HYDRAILIC SYSTEM SCHEMATIC
FOLDOUT 34 OF 35
ENGINEERING DWG 1878310 SHEET 2
FP-67/FP-68 BLANK

REVISION E
CN 23777
2-14-92

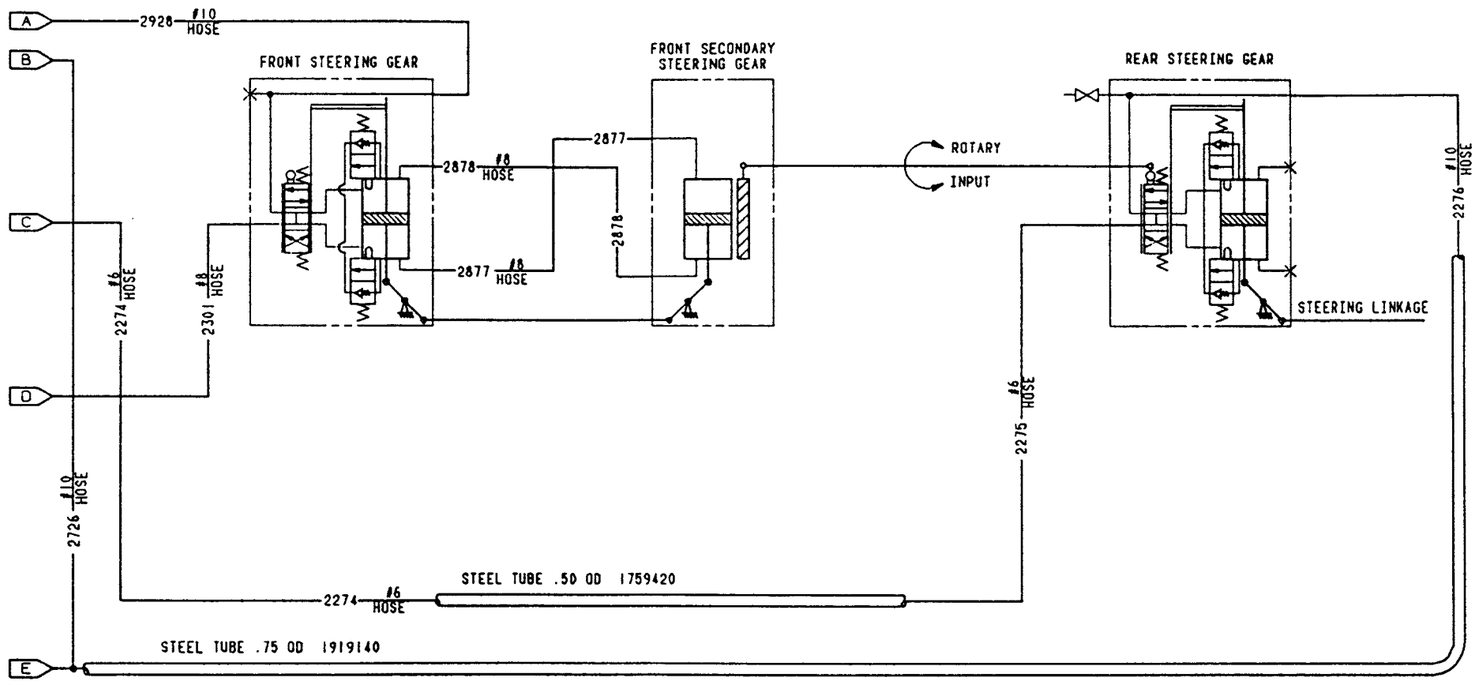


FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 35 OF 35
ENGINEERING DWG 1878310 SHEET 2
FP-69/FP-70 BLANK

SCHEMATICS

Section II. 200 AMP ALTERNATOR AND DDEC III/IV ENGINE.

Section II contains the schematics for trucks equipped with the 200 amp alternator and the DDEC III/IV engine.

REVISION H
CN 2225
4/14/00

MULTIPLE CONNECTORS

NUMBER	ZONE	SH	DESCRIPTION
MC1	H3	3	CAB/ELECTRICAL BOX
MC1	C26	4	CAB/ELECTRICAL BOX
MC2	D3	3	CAB/ELECTRICAL BOX
MC2	D26	4	CAB/ELECTRICAL BOX
MC3	C3	3	CHASSIS
MC3	H17	6	CHASSIS
MC4	G10	3	SWITCHES
MC5	B12	3	WIPER MOTOR
MC6	D15	3	THROTTLE SENSOR
MC7	H8	3	TURN SIGNAL
MC8	F19	3	GAUGES
MC9	G4	4	ECU ATEC
MC10	G4	4	ECU ATEC
MC11	D3	4	DDEC
MC11	D26	5	DDEC
MC12	H26	4	SHIFT CONT ATEC
MC13	F6	3	DIGN CONN DDEC
MC14	B4	4	DDEC SIGNAL GROUND
MC15	B4	6	MILITARY CONNECTOR
MC16	D4	6	TRAILER
MC17	G11	5	DDEC
MC18	E11	5	DDEC
MC19	E13	5	TRANSMISSION
MC20	E12	5	TRANSMISSION
MC21	E2	3	ENGINE SENSOR
MC21	H26	5	ENGINE SENSOR
MC23	B23	5	ETHER START
MC24	G19	5	ALTERNATOR
MC25	C17	6	TRAILER 24VDC
MC27	F18	6	FRONT TOW
MC28	E6	3	BEACON LIGHT
MC29	F8	6	CRANE
MC30	C5	6	TRAILER
MC31	B21	3	CAB/CHASSIS
MC32	B23	3	CTI CHASSIS
MC33	F17	7	LHS CAB
MC34	C19	3	24V METERS
MC35	D24	3	CTI
MC36	A5	4	THROTTLE SENSOR
MC38	C15	3	VERNIER CONTROL
MC39	H7	5	STE/ICE
MC40	G5	5	STE/ICE MODULE
MC41	G2	5	PULSE TACH DRIVE
MC42	H4	5	DIFFERENTIAL PRESS
MC43	F2	5	FUEL PRESSURE
MC44	C5	3	CAB/TRANSMISSION
MC44	F26	4	CAB/TRANSMISSION
MC45	D5	4	ECU ATEC

MULTIPLE CONNECTORS

NUMBER	ZONE	SH	DESCRIPTION
MC50	C7	4	RELAYS/ATEC
MC51	C6	4	ECU ATEC
MC52	B23	4	HEATER/DIMMER
MC53	F23	3	ENGINE BRAKE
MC54	F8	6	WORK LIGHT
MC55	B13	6	SELF RECOVERY WINCH
MC56	C23	5	ETHER THERMOSTAT
MC57	F6	6	DRIVE LINE LOCK
MC58	E7	3	GAS PART FILTER
MC59	G13	6	FAN CONTROL
MC60	G24	5	REVERSE PLRT PROTR
MC61	G10	6	FAN CONTL WTR TEMP
MC62	F13	5	DDEC ENGINE POWER
MC63	G11	6	FAN CONTROL
MC64	D15	6	AUXILIARY CTI MANF
MC65	E5	5	STE/ICE ENGINE
MC66	G2	5	TURBO OUTLET PSI
MC67	E2	5	AIR CLEANER
MC68	D2	5	AIR BOX PSI
MC69	D2	5	FUEL RETURN
MC70	C2	5	ENGINE OIL TEMP
MC71	B2	5	ENGINE WATER TEMP
MC73	F13	6	FAN CONTROL
MC76	F11	6	FAN CONTROL VALVE
MC77	E3	6	BACK UP LIGHT
MC78	F4	6	REAR LIGHT GROUP
MC79	G7	6	WORK LIGHT
MC80	G4	6	REAR LIGHT GROUP
MC81	E13	7	LHS
MC82	E12	7	LHS
MC83	E14	7	LHS
MC84	E15	7	LHS
MC85	E9	7	LHS
MC86	E7	7	LHS
MC87	D5	7	LHS
MC88	E6	7	LHS
MC90	C3	6	REAR LIGHT GP HARN
MC91	G8	3	STRN COL.-CAB HARN
MC92	F8	3	STRG COL.-CAB HARN
MC93	C17	7	LHS
MC94	B17	7	LHS
MC95	B15	5	DDEC BATTERY POWER
MC96	C2	3	LOW HYD OIL
MC97	B10	6	AIR DRYER
MC98	B9	6	AIR DRYER
MC99	B8	6	AFTER COOLER
MC102	A3	4	DDEC 6.8K RESISTOR
MC103	E5	3	CHEM DETECTOR
MC104	E5	3	CHEM ALARM

MULTIPLE CONNECTORS

NUMBER	ZONE	SH	DESCRIPTION
MC105	E24	3	CTI ACCESS OUTPUT
MC106	H4	3	DDEC DIAGNOSTIC
MC107	D6	6	FUEL WATER SEP
MC108	C20	5	FUEL PUMP
MC109	C15	6	CTI POWER MANIFOLD
MC110	C24	3	CTI AUX MANF CAB
MC111	B24	3	CTI POWER MANF CAB
MC112	B19	3	LHS LIGHTS
MC113	F16	6	EMERGENCY STEER SW
MC116	B12	4	EMER ENG SHUT DOWN
MC118	A9	5	STE/ICE
MC119	B22	4	ARCTIC PUMP
MC120	B7	6	ARCTIC PUMP
MC121	C12	6	SELF RECOVERY WINCH
MC122	D12	6	SELF RECOVERY WINCH
MC123	D12	6	SELF RECOVERY WINCH
MC124	E3	6	BACK-UP LIGHT/ALARM
MC125	G18	3	AIR RESTRICTION LT
MC126	E11	3	STOP LIGHTS
MC127	B15	3	THROTTLE POSN SW
MC128	G10	6	AUX WATER TEMP SW

LIGHTS

NUMBER	ZONE	SH	DESCRIPTION
L1	G16	3	PARKING BRAKE IND
L2	G17	3	LOW AIR INDICATOR
L3	G17	3	CHECK GAUGES IND
L4	G17	3	RH TURN INDICATOR
L5	G24	3	TRANS CHECK IND
L6	G18	3	CHECK ENGINE IND
L7	G17	3	DRIVE LINE LOCK IND
L8	G24	3	HI WATER TEMP IND
L9	G24	3	LOW OIL PSI IND
L10	G25	3	HI BEAM INDICATOR
L11	G28	3	LH TURN INDICATOR
L12	F27	3	RH HEADLIGHT
L13	G27	3	RH SIDE TURN SIGNAL
L14	F27	3	RH COMPOSITE
L15	E27	3	BLACKOUT DRIVE
L16	D27	3	LH COMPOSITE
L17	C27	3	LH HEADLIGHT
L18	C27	3	LH SIDE TURN SIGNAL
L19	B27	3	ID & CLEARANCE
L20	H10	3	DOME
L21	G7	6	RH WORK LIGHT
L22	G2	6	RH REAR COMPOSITE
L23	G2	6	BACK UP
L24	F2	6	LH REAR COMPOSITE
L25	C2	6	ID/CLEARANCE REAR
L26	E22	3	LHS INDICATOR
L27	E22	3	AUXILLARY HYDR IND
L28	E23	3	TRANSIT INDICATOR
L29	E23	3	LHS OVERLOAD IND
L31	D2	6	RH REAR S MKR (RED)
L32	H4	6	RH SIDE MKR (AMBER)
L33	B2	6	LH SIDE MKR (AMBER)
L34	H4	6	LH REAR S MKR (RED)
L35	G16	3	EMERGENCY STEERING
L36	G16	3	LOW HYD OIL
L37	D21	3	ENGINE BRAKE
L38	D21	3	FLAT RACK
L39	F7	6	LH WORK LIGHT
L40	F7	3	T.C. LOCKUP
L41	C2	6	L.H. B.O. CL LIGHT
L42	D2	6	R.H. B.O. CL LIGHT
L43	B5	3	POST LIGHT
L44	F5	3	HEATER PANEL LIGHT

SWITCHES

NUMBER	ZONE	SH	DESCRIPTION
S1	H6	3	TURN SIGNAL/DIMMER
S2	E13	3	IGNITION
S3	F5	3	HEATER
S4	D8	3	SELF RECOVERY CRANE
S5	H12	3	BEACON LIGHT
S6	H13	3	WORK LIGHT
S7	H14	3	WINDSHIELD WASHER
S8	G15	3	WINDSHIELD WIPER
S9	F16	3	BLACK OUT SVCE SEL
S10	F54	3	BLACK OUT MARKER
S11	F14	3	BLACK OUT DRIVE
S12	F14	3	HEADLIGHTS
S13	F5	6	DRIVE LINE LOCK
S14	F12	3	RHEOSTAT
S15	F7	3	HORN
S16	F13	3	ENGINE BRAKE
S17	F7	3	DIAGNOSTIC REQUEST
S18	D7	3	SELF RECOVERY WINCH
S19	D6	3	GAS PARTIULATE FLTR
S20	D5	3	CHEMICAL ALARM
S21	H15	3	DOME LIGHT
S22	C8	5	STE/ICE ZEROING
S23	C22	7	PROX SW HOOK ARM UP
S24	C23	7	PROX SW MDL FR DOWN
S25	D13	3	ETHER START
S26	F7	3	TC LOCKUP
S27	E5	7	HOOK ARM DOWN
S28	G8	7	OVERLOAD PSI
S29	B19	4	ARCTIC PUMP
S30	E9	3	EMER ENG SHUT DOWN
S31	C16	3	THROTTLE POSITION
S32	C17	5	BATTERY DISCONNECT

PRESSURE SWITCHES

NUMBER	ZONE	SH	DESCRIPTION
PS1	G9	3	FRONT BRAKE
PS2	F9	3	REAR BRAKE
PS3	F9	3	HAND BRAKE
PS4	C14	3	PARKING BRAKE
PS5	B15	3	PARKING BRAKE SW
PS6	D17	3	LOW AIR PRESSURE
PS7	D17	3	LOW AIR PRESSURE
PS8	C22	5	ATEC OIL PRESSURE
PS9	D22	5	ENGINE OIL
PS10			GOVERNOR PRESSURE
PS11			GOVERNOR PRESSURE
PS13	F15	6	EMERGENCY STEER
PS12	D23	5	ALTER. OIL PRESSURE
PS15	F26	5	BOOST PRESSURE

TEMPERATURE SWITCHES

NUMBER	ZONE	SH	DESCRIPTION
TS1	C23	5	ETHER START
TS2	D23	5	ENGINE WATER
TS3	F10	6	ENGINE WATER
TS4	G10	6	ENGINE WATER

RELAYS

NUMBER	ZONE	SH	DESCRIPTION
R1	G24	4	HEADLIGHTS
R2	G23	4	ID/CLEARANCE LIGHTS
R3	G22	4	HORN
R4	G21	4	WORK LIGHTS
R5	G20	4	DIMMER
R6	G19	4	BEACON LIGHTS
R7	G18	4	TRANSMISSION
R8	G18	4	RATARDER
R9	G18	4	CK TRANSMISSION
R10	G17	4	REVERSE
R11	G16	4	NEUTRAL START
R12	G15	4	12 V MAG SWITCH
R13	G15	4	B.O. STOP
R14	G14	4	BO SERVICE TAIL LTS
R15	G13	4	LH TURN SIGNAL
R16	G12	4	RH TURN SIGNAL
R17	G12	4	BLACK OUT TAIL LTS
R18	G11	4	DDEC
R19	G10	4	TRANS DDEC
R20	G9	4	INTER AXLE
R21	G9	4	DIFFERENTIAL LOCK
R22	G8	4	CRANE HI IDLE
R23	G7	4	HIGH RANGE LOCKOUT
R24	G6	4	T.C. DUAL MODE
R25	B17	4	MAGNETIC SWITCH
R26	B18	4	MAGNETIC SWITCH
R27	D19	5	MAGNETIC SWITCH
R28	C21	4	MAGNETIC SWITCH
~~R29~~	~~C10~~	~~7~~	~~MIDDLE FR LOCKOUT~~
R32	B21	4	ARCTIC PUMP
R33	B20	4	ARCTIC PUMP
R40	G5	10	CRANE/SRW RELAY

SENDING UNIT

NUMBER	ZONE	SH	DESCRIPTION
SU1	E21	5	WATER TEMPERATURE
SU2	D21	5	TRANSMISSION TEMP
SU3	D21	5	ENGINE OIL PRESSURE
SU4	F6	6	SPEEDOMTER
SU5	D6	6	FUEL LEVEL

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CIRCUIT BREAKERS			
NUMBER	ZONE	SH	DESCRIPTION
CB1	D22	4	15 AMP
CB2	D22	4	15 AMP
CB3	D21	4	15 AMP
CB4	D21	4	15 AMP
CB5	D20	4	20 AMP
CB6	D20	4	15 AMP
CB7	D19	4	10 AMP
CB8	D19	4	15 AMP
CB9	D18	4	10 AMP
CB10	D17	4	3 AMP
CB11	D16	4	8 AMP
CB12	D16	4	8 AMP
CB13	D15	4	8 AMP
CB14	D14	4	15 AMP
CB15	D13	4	15 AMP
CB16	D12	4	15 AMP
CB17	D12	4	3 AMP
CB18	D11	4	10 AMP
CB19	D10	4	15 AMP
CB20	D9	4	15 AMP
CB21	D9	4	30 AMP
CB22	D7	4	20 AMP
CB23	D7	4	20 AMP
CB24	C20	5	3 AMP
CB25	A14	4	15 AMP
CB26	A13	4	15 AMP

GAUGES			
NUMBER	ZONE	SH	DESCRIPTION
G1	G20	3	WATER TEMPERATURE
G2	G21	3	OIL PRESSURE
G3	G22	3	FUEL LEVEL
G4	G22	3	TACHOMETER
G5	G23	3	SPEEDOMTER
G6	G19	3	VOLTMETER 12V
G7	G19	3	VOLTMETER 24V
G10	G20	3	XMSN OIL TEMP
G11	G18	3	AIR PRESSURE
G12	H18	3	AIR RESTRICTION

MISCELLANEOUS			
NUMBER	ZONE	SH	DESCRIPTION
M1	B6	3	WINDSHIELD WSHR SOL
M2	B13	3	WIPER MOTOR
M3	E17	3	LOW OIL & AIR ALARM
M4	A5	4	THROTTLE POSN CONT
M5	C20	4	FLASHER
M6	C16	5	BATTERIES
M7	E17	5	STARTER
M8	B22	5	ETHER START
M9	D6	6	FUEL/WATER SEP
M10	C10	6	LHS SOLENOID VALVE
M11	C8	6	AFTERCOOLER
M12	C20	5	FUEL PUMP
M13	B10	6	AIR DRYER
M14	E6	3	CHEMICAL DETECTOR
M14	B9	6	AIR DRYER
M15	D1	3	HORN
M16	D16	3	VERNIER CONTROL
M17	F5	3	HEATER MOTOR
M18	F24	3	LOW OIL PRESS ALARM
M20	G22	5	ALTERNATOR,STD
M21	C25	5	RH SIDE ENG BK COIL
M22	C24	5	LH SIDE ENG BK COIL
M23	D18	5	SLAVE CONNECTER
M24	B15	6	CTI POWER MANIFOLOD
M25	D15	6	CTI AUXILIARY MANF
M26	E13	7	LHS CAB CONTROLLER
M27	B13	6	SELF RECOVERY WINCH
M28	E25	3	CTI CONTROLLER
M29	G14	7	CHEMICAL ALARM
M30	D11	3	GAS PART FILTER
M31	D11	3	AIR HEATER DRIVER
M32	D12	3	AIR HEATER PASS
M33	D3	7	SRW SOLENOID VALVE
M35	E15	3	THROTTLE POSITIONER
M36	C9	4	DIODE
M39	F9	4	RECTIFIER
M40	G2	5	PULSE TACH DRIVE
M41	H5	5	DIFFERENTIAL PRESS
M42	F2	5	FUEL PRESSURE
M43	G5	5	STE/ICE MODULE
M45	F10	6	FAN CONTROL VALVE
M48	D16	5	SHUNT
M49	B9	3	XFR CASE LKUP SOL
M50	B8	3	INTER AXLE SOL V
M51	B8	3	DIFF SOLENOID VALVE
M51	C11	6	FAN
M52	A21	4	RECTIFIER
M53	G11	7	LHS HOOK ARM B
M54	G10	7	LHS HOOK ARM A
M55	G10	7	LHS MAIN CYLINDER B
M56	G10	7	LHS MAIN CYLINDER A

MISCELLANEOUS			
NUMBER	ZONE	SH	DESCRIPTION
M57	G9	7	LHS FREEFLOW
M58	G9	7	LHS TRANSIT
M59	F3	7	LHS LH HOOK ARM A
M60	F3	7	LHS LH HOOK ARM B
M61	F2	7	LHS RH HOOK ARM A
M62	F2	7	LHS RH HOOK ARM B
M64	C19	5	POLARITY PROTECTION
M66	G16	3	RECTIFIER
M67	C8	3	RECTIFIER
M68	G12	7	RECTIFIER
M70	F2	5	TURBO OUTLET PSI
M71	E2	5	AIR CLEANER
M72	D2	5	AIR BOX PSI
M73	C2	5	FUEL RETURN
M74	C2	5	ENGINE OIL TEMP
M75	B2	5	ENGINE WATER TEMP
M76	E10	4	RECTIFIER
M77	B17	5	ARCTIC BATTERIES
M78	E2	6	BACK-UP ALARM
M80	B7	6	ARCTIC PUMP
M81	F4	3	RECTIFIER
M83	F3	10	LHS FUSE - 5 AMP

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
104	MC36-M4	4	THROTTLE SENSOR
104	MC10-MC36	4	THROTTLE SENSOR
105	MC10-MC19	4/5	ATEC
106A	MC10-MC36	4	THROTTLE SENSOR
106A	MC36-M4	4	THROTTLE SENSOR
106A	MC10-106B	4/5	ATEC
106B	106A-MC19	4/5	ATEC
107	MC10-MC19	4/5	ATEC
108	MC10-MC19	4/5	ATEC
109	MC10-MC19	4/5	ATEC
110	MC10-MC19	4/5	ATEC
111	MC10-MC19	4/5	ATEC
112	MC10-MC20	4/5	ATEC
113	MC10-MC20	4/5	ATEC
114	MC10-MC19	4/5	ATEC
115	MC11-MC18	5	ECM
115	MC11-MC102	4	6.8K RESISTOR
115	MC10-MC19	4/5	ATEC
116	MC10-MC19	4/5	ATEC
117	MC10-MC19	4/5	ATEC
118	MC10-MC19	4/5	ATEC
119	MC10-MC19	4/5	ATEC
120	MC10-MC19	4/5	ATEC
121	MC10-MC19	4/5	ATEC
122	MC10-MC19	4/5	ATEC
123	MC10-MC19	4/5	ATEC
124	MC36-M4	4	THROTTLE SENSOR
124	MC10-MC36	4	THROTTLE SENSOR
150	MC62-MC62	5/4	
150	MC17-MC62	5	
195	MC5-M2	3	
201	MC51-GROUND	4	
201	MC9-MC51	4	
202A	MC9-SPLICE	4	
203	MC9-MC51	4	
203	MC51-CB12	4	
204	MC9-MC12	4	ATEC
206	MC9-MC12	4	ATEC
207A	MC51-MC106	4	ATEC
207A	MC9-MC51	4	ATEC
207A	MC106-MC13	4	
208/209	MC11-SPLICE	4	
208/209	SPLICE-MC51	4	
208/209	M6-MC95	5	
208/209	MC95-MC11	5	
208/209	MC51-MC9	4	
210A	MC9-MC12	4	
211	R8-MC50	4	
211	MC50-R8	4	RETARDER
211	MC9-MC50	4	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
212	MC9-MC12	4	
213	MC50-R8	4	RETARDER
213	MC9-MC50	4	
214	MC50-R10	4	REVERSE
214	MC9-MC50	4	
215	MC9-MC50	4	
215	MC50-R9	4	CHECK TRANSMISSION
216A	MC106-MC13	3	
216A	MC9-MC51	4	ATEC
216A	MC51-MC106	4	ATEC
218	MC9-MC12	4	ATEC
219	MC9-MC12	4	ATEC
220	MC9-MC12	4	ATEC
221	MC9-MC12	4	ATEC
222	MC9-GROUND	4	ATEC
223A	MC51-CB14	4	TRANSMISSION
223A	MC51-SPLICE	4	
223A	SPLC-SPLC	4	
223A	SPLC-SPLC	4	
223A	SPLC-SPLC	4	
223A	SPLICE-MC9	4	
223B	MC12-SPLICE	4	
225	CB11-MC12	4	
230	MC12-234	4	
231	MC50-MC12	4	
231	MC50-R22	4	CRANE HI IDLE
231	MC50-M36	4	
231	M36-R11	4	NEUTRAL START
233	MC50-MC12	4	
234	MC12-GROUND	4	
240	MC62-CB23	5/4	
240	CB23-M6	4/5	
240	MC17-MC62	5	
240	MC62-M6	5	
241	MC62-CB22	5/4	
241	MC62-M6	5	
241	MC17-MC62	5	
241	CB22-M6	4/5	
309	MC45-R24	4	TC DUAL MODE
313	MC45-R24	4	TC DUAL MODE
315	MC45-R24	4	TC DUAL MODE
417	MC6-M35	3	
417	MC11-MC44	4	
417	MC11-MC18	5	ECM
417	MC44-MC6	3	THROTTLE SENSOR
419	MC11-MC18	5	ECM
419	MC11-MC44	4	
419	MC44-MC8	3	
419	MC8-L6	3	CHECK ENGINE LIGHT

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CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
439	MC116-MC106	4	EMERGENCY ENG STOP
439	MC116-S30	3	EMERGENCY ENG STOP
439	MC116-S30	3	EMERGENCY ENG STOP
439	MC116-CB13	4	DDEC
439	MC106-MC13	3	
439	SPLC-MC106	4	
439	MC11-MC18	5	ECM
439	MC8-L6	3	CHECK ENGINE LIGHT
439	MC8-L3	3	ENGINE STOP LIGHT
439	MC44-MC8	3	
439	MC11-SPLICE	4	
439	SPLICE-MC44	4	
439	SPLC-MC116	4	
505	MC44-MC8	3	TACHOMETER
505	MC11-MC44	4	
505	MC8-G4	3	
505	MC11-MC18	5	
509	MC11-MC18	5	ECM
509	MC8-L3	3	ENGINE STOP LIGHT
509	MC44-MC8	3	
509	MC11-MC44	4	
510	MC11-MC18	5	ECM
510	MC44-PS4	3	PARKING BRAKE
510	R22-MC44	4	
510	MC11-R22	4	
528	MC11-MC18	5	DIAG. REQ.
528	MC106-S17	3	
528	MC11-MC106	4	
900	MC11-MC106	4	
900	MC11-MC18	5	ECM
900	MC106-MC13	3	
901	MC11-MC18	5	ECM
901	MC106-MC13	3	
901	MC11-MC106	4	
908	MC11-MC18	5	ECM
908	MC11-M4	4	THROTTLE POSN CONT
916	MC44-MC6	3	
916	MC11-MC44	4	
916	MC38-M16	3	
916	MC6-MC38	3	VERNIER CONTROL
916	MC6-M35	3	THROTTLE SENSOR
916	MC11-MC18	5	ECM
952	MC38-M16	3	
952	MC11-MC44	4	
952	MC44-MC6	3	THROTTLE SENSOR
952	MC11-MC18	5	ECM
952	MC6-MC38	3	VERNIER CONTROL
953	M6-MC14	5	DDEC SIGNAL GROUND
953	MC14-SPLICE	4	
953	SPLICE-MC102	4	
953	SPLICE-R22	4	
953	SPLICE-MC106	4	
953	MC106-S17	3	
953	S17-MC13	3	
988	MC11-R7	4	TRANSMISSION
988	MC11-MC18	5	ECM
1001	MC8-L4	3	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1001	MC7-SPLICE	3	
1001	MC8-SPLICE	3	
1001	SPLICE-L13	3	
1001	SPLICE-L14	3	
1001	S1-MC7	3	RH HEADLIGHT
1002	S1-MC7	3	LH HEADLIGHT
1002	MC8-L11	3	
1002	MC7-SPLICE	3	
1002	SPLICE-MC8	3	
1002	SPLICE-L18	3	
1002	SPLICE-L16	3	
1003	MC7-MC3	3	
1003	S1-MC7	3	LH RR TURN SIGNAL
1003	MC3-MC80	6	
1003	MC3-MC16	6	TRAILER CONN 12VDC
1003	MC1-R15	4	LH TURN LIGHT
1003	MC80-L24	6	LH STOP LIGHT
1003	MC27-MC3	6	FRONT TOW
1003	MC7-MC1	3	
1003C	MC25-R17	4	LH TURN LIGHT
1003C	MC25-MC15	6	TRAILER CONN 12VDC
1004	MC7-MC1	3	
1004	MC7-MC3	3	
1004	S1-MC7	3	
1004	MC3-MC80	6	
1004	MC80-L22	6	RH STOP LIGHT
1004	MC27-MC3	6	
1004	MC3-MC78	6	
1004	MC3-MC16	6	
1004	MC1-R16	4	
1004C	MC25-R16	4	RH TURN LIGHT
1004C	MC25-MC15	6	TRAILER CONN 24VDC
1005	MC126-S9	3	
1005	PS3-MC3	3	
1005	MC3-MC16	6	TRAILER CONN 24VDC
1005	MC126-PS1	3	
1005	PS2-PS3	3	
1005	MC27-MC3	6	FRONT TOW
1005	PS1-PS2	3	
1005A	MC7-MC126	3	
1005A	MC126-S9	3	
1005A	S1-MC7	3	TURN SIGNAL/DIM SW
1006	MC2-SPLICE	3	
1006	SPLICE-L12	3	
1006	SPLICE-L17	3	
1006	MC2-R5	4	DIMMER
1007	MC2-R5	4	DIMMER
1007	MC2-SPLICE	3	
1007	SPLICE-L12	3	
1007	SPLICE-L17	3	
1008	MC3-MC78	6	
1008	MC4-S12	3	HEADLIGHTS

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1008	MC27-MC3	6	FRONT TOW
1008	MC3-SPLICE	3	
1008	MC3-MC4	3	
1008	MC3-MC16	6	TRAILER CONN 12VDC
1008	MC78-L22	6	RH TAIL LIGHT
1008	MC78-L24	6	LH TAIL LIGHT
1008C	MC25-MC15	6	TRAILER CONN 24VDC
1008C	MC25-R14	4	B.O. SERVICE
1009	PS2-PS3	3	
1009	PS1-PS2	3	
1009	MC2-PS1	3	
1009	MC2-CB6	4	STOP LIGHT
1012	MC3-SPLICE	3	
1012	SPLC-SPLC	3	
1012	MC2-SPLICE	3	
1012	SPLC-SPLC	3	
1012	SPLICE-L19	3	
1012	MC2-R2	4	CLEARANCE LIGHTS
1012	MC3-SPLICE	6	
1012	SPLICE-MC27	6	
1012	SPLICE-MC80	6	
1012	SPLICE-L32	6	RH SIDE MARKER
1012	SPLICE-L34	6	LH SIDE MARKER
1012	MC90-L31	6	RR SIDE MARKER
1012	MC90-L25	6	ID LIGHTS
1012	MC80-MC90	6	
1012	MC90-L33	6	RR SIDE MARKER
1016	MC92-MC2	3	
1016	S15-MC92	3	
1016	MC2-R3	4	HORN
1017	SPLICE-R5	4	
1017	MC52-R14	4	
1017	R2-MC52	4	
1017	MC2-SPLICE	4	
1017	SPLICE-R1	4	
1017	MC91-MC2	3	
1017	S1-MC91	3	
1017A	MC91-MC2	3	
1017A	S1-MC91	3	
1017A	MC2-R5	4	
1018	MC8-L10	3	HIGH BEAM
1018	MC8-1007	3	
1019	L15-1679	3	
1020	L14-L16	3	
1020	S2-MC21	3	
1020	MC60-CB24	5	
1020	MC21-MC60	5	
1020	M12-MC60	5	
1020A	CB24-PS12	5	
1020B	PS12-ENG	5	ALTERNATOR
1021	MC2-S2	3	
1021	MC2-R11	4	
1021	R11-M76	4	
1021A	R11-MC1	4	
1021A	MC1-MC21	3	
1021B	MC21-MC60	5	
1021B	MC60-R27	5	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 3 OF 26
ENGINEERING DWG 3053493 SHEET 1
FP-5/FP-6 BLANK

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CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1021	MC52-R11	4	FRONT TOW
1021A	R11-MC1	4	
1021A	MC1-MC21	3	
1021A	MC21-MC60	5	
1021A	MC60-R27	5	
1026	MC52-CB16	4	
1029	MC2-R6	4	BEACON
1029	MC2-MC28	3	
1031	R3-SPLICE	4	
1032	MC8-MC21	3	
1032	M39-L9	3	LOW OIL PSI
1032	MC8-M39	3	
1032	PS9-MC21	5	ENGINE OIL PSI SW
1033	M39-M18	3	OIL PSI/H WTR ALM
1036	MC23-M8	5	
1036	MC23-M7	5	
1036	MC21-MC56	5	ETHER START
1036	MC21-S25	3	
1040	C84-R4	4	WORKLIGHT
1040A	S6-MC4	3	
1040A	MC2-R4	4	WORKLIGHT
1040A	MC4-MC2	3	
1040B	MC3-MC79	6	RH WORKLIGHT
1040B	MC2-MC3	3	
1040B	MC2-R4	4	WORKLIGHT
1040B	MC3-MC54	6	LH WORKLIGHT
1045	R27-M7	5	
1049	MC2-R1	4	HEADLIGHTS
1049	MC4-MC2	3	
1049	S12-MC4	3	
1052	S20-S19	3	CHEM ALM-GPF
1052	S19-S18	3	GAS PART FLTR-SRW
1052	S18-S4	3	SRW-SRW/MHC
1052	S4-S30	3	SRW/MHC-EMER ENG S D
1052	S30-SPLICE	3	EMER ENG SHUT DOWN
1052	SPLICE-G11	3	AIR PRESSURE GAUGE
1052	MC4-SPLICE	3	
1052	SPLICE-L44	3	HEATER PANEL LIGHT
1052	S5-S6	3	BEACON LT-WORK LT
1052	S6-S7	3	WORK LT-WSHLD WSHR
1052	S7-S8	3	WSHLD WASHER-WIPERS
1052	S8-S21	3	WIPERS-DOME LIGHT
1052	S21-S9	3	DOME LT-B.O.SERV SEL
1052	S9-S10	3	BO SERV SEL-BO MKR
1052	S10-S11	3	B.O. MARKER-B.O. DR
1052	S11-S12	3	B.O. DRIVE-HEADLTS
1052	S12-S16	3	HEADLIGHTS-ENG BK
1052	S16-S14	3	ENG BRAKE-RHEO/DOME
1052	S14-SPLICE	3	RHEOSTAT/DOME
1052	SPLICE-G6	3	VOLTMETER 12V
1052	SPLC-SPLC	3	
1052	SPLICE-G10	3	XMSN OIL TEMP GAUGE
1052	SPLICE-G1	3	WATER TEMP GAUGE
1052	SPLICE-G2	3	OIL PRESSURE GAUGE
1052	SPLICE-G4	3	TACHOMETER
1052	SPLICE-G5	3	SPEEDOMETER
1052	SPLICE-G3	3	FUEL GAUGE

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1052	MC1-SPLICE	3	
1052	SPLICE-L43	3	POST LIGHT
1052	SPLC-MC125	3	
1052	MC125-G12	3	AIR RESTRICTION GA
1052	MC1-SPLICE	3	
1052	MC1-CB1	4	15 AMP HEADLIGHT
1052	MC50-MC1	4	
1055	M7-R27	5	
1056	MC111-MC32	3	
1056	MC32-MC109	6	CTI POWER MANIFOLD
1057	MC111-MC32	3	
1057	MC32-MC109	6	CTI POWER MANIFOLD
1058	MC32-MC109	6	CTI POWER MANIFOLD
1058	MC111-MC32	3	
1059	MC32-MC109	6	CTI POWER MANIFOLD
1059	MC111-MC32	3	
1061	MC22-MC109	6	CTI POWER MANIFOLD
1061	MC111-MC32	3	
1062	MC32-MC109	6	CTI POWER MANIFOLD
1062	MC111-MC32	3	
1063	MC32-MC109	6	CTI POWER MANIFOLD
1064	MC32-MC109	6	CTI POWER MANIFOLD
1064	MC111-MC32	3	
1065	MC32-MC109	6	CTI POWER MANIFOLD
1065	MC111-MC32	3	
1066	MC32-MC64	6	CTI AUX MANIFOLD
1066	MC110-MC32	3	
1067	MC32-MC64	6	CTI AUX MANIFOLD
1068	MC32-MC64	6	CTI AUX MANIFOLD
1068	MC110-MC32	3	
1070	MC32-MC64	6	CTI AUX MANIFOLD
1070	MC110-MC32	3	
1071	MC110-MC32	3	
1071	MC32-MC64	6	CTI AUX MANIFOLD
1072	R26-R25	3	
1072	MC110-MC32	3	
1072	MC32-MC64	6	CTI AUX MANIFOLD
1073	MC32-MC64	6	CTI AUX MANIFOLD
1073	MC110-MC32	3	
1074	MC110-MC32	3	
1074	R25-CB10	4	
1074	MC32-MC64	6	CTI AUX MANIFOLD
1075	M6-R25	4/3	
1075B	R25-R18	4	
1076	MC110-MC32	3	
1076	MC32-MC64	6	CTI AUX MANIFOLD
1079	CB5-M6	4	HAZARD LIGHTS
1080	MC7-MC2	3	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1080	MC2-M5	4	TURN SIGNAL/FLASHER
1082	MC2-MC52	4	
1082	MC2-M81	3	
1082	M81-S3	3	
1082	MC52-CB15	4	HEATER
1084	MC1-CB5	4	B.O. LIGHTS
1084	MC4-MC1	3	
1084	MC4-S9	3	
1091	L17-GROUND	3	
1092	L7-MC8	3	
1092	MC8-M51	3	
1093	MC31-MC57	6	
1093	MC1-MC31	3	
1093	MC1-CB16	4	
1093	MC57-S13	6	DRIVE LINE LOCK-UP
1094	S5-S14	3	
1095	R23-R24	4	
1095	MC44-R23	4	
1095	MC31-MC44	3	
1095	MC57-S13	6	DRIVE LINE LOCK-UP
1095	MC31-MC57	6	
1113	MC8-MC21	3	
1113	G2-MC8	3	OIL PSI GAUGE
1113	SU3-MC21	5	ENG OIL PSI SNDG UN
1114	M66-MC8	3	
1114	MC96-MC8	3	LOW OIL LEVEL LIGHT
1114	MC8-L36	3	
1114	L36-M66	3	
1118	MC4-1919	3	
1118	S8-MC4	3	
1120	M66-MC8	3	
1120	M66-M3	3	
1120	PS6-PS7	3	
1120	PS6-MC8	3	
1120	L2-M66	3	
1137	M6(1)-M6(2)	5	
1137	M6(3)-M6(4)	5	
1138	M48-M7	5	SHUNT
1138	M7-M23	5	SLAVE
1138	M6-M48	5	SHUNT
1138	M77-M7	5	ARCTIC BATTERIES
1139	M7-M23	5	SLAVE
1139	M6-M7	5	
1139	M77-M7	5	ARCTIC BATTERIES
1147	TS2-MC21	5	ENG WTR TEMP SNDG UN
1147	M39-L8	3	HIGH WATER TEMP
1147	MC8-MC21	3	
1147	MC8-M39	3	
1149	MC1-R10	4	REVERSE
1149	MC3-MC78	6	
1149	MC1-MC124	3	
1149	MC78-MC77	6	REVERSE LIGHT
1149	MC124-MC77	6	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 4 OF 26
ENGINEERING DWG 3053493 SHEET 2
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CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1153	S21-MC4	3	
1153	MC4-L20	3	DOME LIGHT
1168	MC2-R3	4	HORN
1168	MC2-M15	3	
1174	BUS BAR	4	
1175	R28-CB5	4	
1176	MC113-PS13	6	EMERGENCY STEER
1184	S5-MC4	3	
1184	MC2-R6	4	
1184	MC2-MC4	3	
1189	MC4-S9	3	
1189	MC44-R28	4	
1189	MC4-SPLICE	3	
1189	MC4-S21	3	
1189	MC2-SPLICE	3	
1189	MC2-M5	4	
1189	SPLICE-MC44	3	
1274	M20-M6	5	
1274	M8-SPLICE	5	
1275	M6-M20	5	
1276	MC2-MC4	3	
1276	MC2-CB8	3	
1276	SPLICE-S14	3	
1276	SPLICE-MC53	3	
1276	MC4-SPLICE	3	
1276	MC2-SPLICE	4	
1276	MC53-SPLICE	3	
1276	SPLC-SPLC	3	
1276	SPLC-SPLC	3	
1276	SPLICE-M3	3	LOW AIR ALARM
1276	SPLICE-G5	3	SPEEDOMETER
1276	SPLICE-L1	3	PARKING BRAKE
1276	SPLICE-L2	3	LOW AIR
1276	SPLICE-L35	3	EMERGENCY STEERING
1276	SPLICE-L36	3	LOW HYDR OIL
1276	SPLC-SPLC	3	
1276	SPLICE-L5	3	XMSN CHECK
1276	SPLICE-L8	3	HIGH WATER TEMP
1276	SPLICE-L9	3	LOW OIL PSI
1276	SPLICE-G3	3	FUEL GAUGE
1276	SPLICE-G6	3	VOLTMETER 12V
1276	SPLICE-G1	3	WATER TEMP GAUGE
1276	SPLICE-G2	3	OIL PRESSURE GAUGE
1276	SPLICE-G4	3	TACHOMETER
1276	SPLICE-G10	3	XMSN OIL TEMP GAUGE
1276	SPLICE-M18	3	ALARM
1279	PS14-1277	5	
1279	MC115-PS14	5	
1279	M64-1280	5	
1280	CB21-R26	4	

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1280	1281-R26	5	
1281	1280-MC47	5	
1281	R27-M81	5	
1281A	M6-S32	5	BATTERIES
1281A	S32-SPLICE	5	
1281A	SPLICE-M64	5	
1281A	SPLICE-M20	5	
1292	MC4-S6	3	
1292	CB4-MC2	4	
1292	MC2-MC4	3	
1292	MC4-S12	3	
1314	1118-S7	3	
1318	MC3-MC8	3	
1318	MC3-G3	3	FUEL GAUGE
1318	MC3-SU5	6	FUEL LEVEL
1320	SU1-MC2	5	WATER TEMP SNDG UN
1320	G1-MC8	3	WATER TEMP
1320	MC8-MC21	3	
1340	CB15-MC14	4	SWING FIRE
1344	M20-MC22	5	
1362	R27-M64	5	
1371	MC8-PS5	3	
1371	L1-MC8	3	
1409	MC8-MC1	3	
1409	L5-MC8	3	
1409	MC1-R9	4	
1413	CB3-SPLICE	4	
1413	SPLICE-R6	4	
1430	R28-SH5	4/5	
1430	1832-R28	5	
1431	MC3-S2	3	
1431	MC3-M64	5/6	POLARITY PROTECTION
1431	MC3-M64	5/6	POLARITY PROTECTION
1431	MC1-MC119	4	
1431	MC119-R32	4	
1431	R32-S29	4	ARCTIC PUMP
1431	MC119-CB20	4	
1435	MC78-MC124	6	
1435	MC124-M78	6	
1435	MC77-MC124	6	
1435	MC85-MC86	7	
1435	MC86-MC87	7	
1435	MC33-MC84	7	
1435	GROUND	3	
1435	MC81-MC82	7	
1435	MC84-MC83	7	
1435	MC81-MC82	7	
1435	MC108-GND	5	
1435	GND	5	
1435	MC22-GND	5	
1435	M52-R26	4	
1435	M52-R28	4	
1435	R27-GND	5	
1435	MC125-GND	3	
1435	MC23-M7	5	
1435	MC23-M8	5	EITHER START

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1449	MC8-MC21	3	
1449	G10-MC8	3	TRANS OIL TEMP
1449	SU2-MC21	5	TRANS TEMP SNDG UN
1454	MC81-MC82	7	
1460	MC81-MC82	7	
1461	MC86-MC87	7	
1461	MC85-MC86	7	
1462	MC81-MC82	7	
1463	MC81-MC82	7	
1464	MC81-MC82	7	
1465	MC81-MC82	7	
1466	MC85-MC86	7	
1466	MC86-MC87	7	
1467	MC81-MC82	7	
1468	MC81-MC82	7	
1469	MC81-MC82	7	
1469	MC86-MC87	7	
1469	MC85-MC86	7	
1470	MC86-MC87	7	
1470	MC85-MC86	7	
1471	MC85-MC86	7	
1471	MC86-MC87	7	
1471	MC81-MC82	7	
1472	MC85-MC86	7	
1472	MC81-MC82	7	
1472	MC86-MC88	7	
1475	MC85-MC86	7	
1475	MC86-MC87	7	
1480	MC84-MC93	7	
1480	MC84-MC83	7	
1481	MC84-MC83	7	
1481	MC84-MC93	7	
1482	MC84-MC93	7	
1482	MC84-MC83	7	
1483	MC83-MC84	7	
1483	MC84-MC93	7	
1484	MC83-MC84	7	
1484	MC84-MC93	7	
1485	MC84-MC94	7	
1485	MC83-MC84	7	
1486	MC84-MC94	7	
1486	MC83-MC84	7	
1487	MC1-S25	3	
1487	MC1-CB15	4	
1487	MC83-MC84	7	
1487	MC84-MC94	7	
1488	MC84-MC94	7	
1488	MC83-MC84	7	
1489	MC83-MC84	7	
1489	MC84-MC94	7	
1490	MC84-MC94	7	
1490	MC83-MC84	7	
1491	L16-1008	3	
1491	L14-1008	3	
1517	PS8-MC11	5	ATEC OIL PSI SWITCH
1517	MC11-R9	4	

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1519	MC8-MC35	3	CTI OVERSPEED
1519	MC3-MC8	3	SPEEDOMETER
1519	MC8-MC35	3	CTI OVERSPEED
1519	G5-MC8	3	SPEEDOMETER
1519	MC3-SU4	6	SPEEDOMETER
1519	G5-MC8	3	SPEEDOMETER
1519	MC3-MC8	3	SPEEDOMETER
1519	MC3-SU4	6	SPEEDOMETER
1525	M16-PS4	3	
1534	MC107-M9	6	FUEL/WATER SEP
1534	MC2-SPLICE	4	
1534	SPLICE-CB8	4	
1534	MC3-MC107	6	
1534	MC2-MC3	3	
1534	MC3-S22	3	T-CASE LOCK-UP
1534	CB15-M76	4	
1538	MC97-M13	6	AIR DRYER
1538	MC25-MC97	6	
1538	MC25-CB15	4	
1538	MC25-MC98	6	
1538	MC99-M11	6	AFTER COOLER
1538	MC98-M14	6	AIR DRYER
1538	MC25-MC99	6	
1538	MC25-MC73	6	FAN CONTROL
1538	M76-MC25	4	
1640	MC119-SPLC	4	
1640	SPLICE-R26	4	
1640	SPLICE-MC44	4	
1640	MC44-S2	3	
1640	MC119-R32	4	
1644	MC119-R33	4	
1644	R33-R33	4	
1644	MC119-S29	4	ARCTIC PUMP
1644	R33-S29	4	ARCTIC PUMP
1644	MC119-MC25	4	
1644	MC25-MC120	6	
1644	MC120-M80	6	ARCTIC PUMP
1645	S29-R33	4	ARCTIC PUMP
1665C	MC25-MC15	6	TRAILER CONN 24VDC
1665C	MC25-CB20	4	
1674	S11-S10	3	
1674	S11-S9	3	
1676	R17-R16	4	
1676	R16-R15	4	
1676	R14-R3	4	
1676	R15-R14	4	
1676	CB20-R17	4	
1678	MC3-MC78	6	
1678	MC1-SPLICE	3	
1678	MC78-L24	6	LH B.O. STOP LIGHT

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
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FP-9/FP-10 BLANK

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CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1678	MC78-L22	6	RH B.O. STOP LIGHT
1678	SPLICE-MC3	3	
1678	MC1-R13	4	
1678	SPLICE-MC4	3	
1678	MC4-S9	3	
1678C	MC25-R13	4	B.O. STOP LIGHT
1678C	MC25-MC15	6	TRAILER CONN 24VDC
1679	L15-MC4	3	
1679	MC4-S11	3	
1680	MC3-SPLICE	3	
1680	SPLICE-MC1	3	
1680	SPLC-SPLC	3	
1680	SPLICE-MC4	3	
1680	SPLC-SPLC	3	
1680	SPLC-SPLC	3	
1680	SPLICE-L19	3	
1680	SPLICE-L19	3	
1680	MC3-MC78	6	
1680	MC4-S10	3	
1680	MC78-L24	6	LH B.O. TAIL LIGHT
1680	MC1-R17	4	B.O. LIGHTS
1680	MC78-L22	6	RH B.O. TAIL LIGHT
1680C	MC25-MC15	6	TRAILER CONN 24VDC
1680C	MC25-MC15	6	TRAILER CONN 24VDC
1680C	MC25-R17	4	B.O. TAIL LIGHTS
1680C	MC25-MC15	6	TRAILER CONN 24VDC
1702	MC44-MC34	3	
1702	MC34-G7	3	
1702	MC44-R26	4	
1708	M32-1709	3	PASSENGER AIR HTR
1709	MC58-S19	3	GAS PART FILTER SW
1709	MC58-M30	3	
1710	M31-1709	3	DRIVER AIR HEATER
1711	CB11-R7	4	
1712	MC1-CB7	4	ENGINE BRAKE
1712	MC4-MC1	3	
1713	MC53-L37	3	
1713	MC4-MC1	3	
1713	S16-MC4	3	ENGINE BRAKE
1713	MC1-R7	4	TRANSMISSION
1713	S16-MC53	3	
1714	MC1-1716	4	
1714	MC4-MC1	3	ENGINE BRAKE
1714	S16-MC4	3	ENGINE BRAKE
1715	MC4-MC1	3	ENGINE BRAKE
1715	S16-MC4	3	ENGINE BK RH COILS
1715	MC11-MC1	4	
1715	MC11-M21	5	LH ENGINE BRAKE
1716	MC11-R5	4	RETARDER
1716	MC11-M22	5	RH ENGINE BRAKE
1717	MC44-S20	3	CHEMICAL ALARM SW
1717	MC44-CB19	4	
1718	M76-M77	6	BACK-UP ALARM
1722	MC34-1734	3	

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1722	L26-MC34	3	
1722	MC33-MC84	7	
1722	MC84-MC83	7	
1723	MC44-S18	3	SELF RECOVERY WN SW
1723	MC44-CB18	4	
1724	MC112-SPLC	3	
1724	SPLICE-MC33	3	
1724	MC33-MC93	7	
1724	L27-MC112	3	
1724	M67-SPLICE	3	
1724	SPLC-MC112	3	
1724	M67-MC33	3	
1725	L28-MC112	3	
1725	MC84-MC83	7	
1725	MC33-MC84	7	
1725	MC112-MC33	3	
1726	MC33-MC84	7	
1726	MC84-MC83	7	
1726	MC112-MC33	3	
1726	L29-MC112	3	
1729	MC31-S18	3	SELF RECOVERY WINCH
1729	MC31-MC55	6	
1729	MC55-MC121	6	SELF RECOVERY WINCH
1730	MC31-S18	3	SELF RECOVERY WINCH
1730	MC55-MC122	6	SELF RECOVERY WINCH
1730	MC31-MC55	6	
1731	MC3-S4	3	SELF RECOVERY WINCH
1731	MC3-S4	3	SELF RECOVERY WINCH
1731	MC3-MC29	6	CRANE
1732	MC55-MC123	6	SELF RECOVERY WINCH
1732	S4-MC31	3	SELF RECOVERY WINCH
1732	MC31-MC55	6	
1733	MC31-M67	3	
1733	MC31-M51	6	
1734	M67-SPLICE	3	
1734	SPLC-SPLC	3	
1734	SPLICE-MC31	3	
1734	MC31-M10	6	
1736	MC39-MC39	5	
1737	MC31-MC1	3	
1737	MC1-R22	4	CRANE HI IDLE
1737	MC31-MC29	6	CRANE
1738	MC44-1755	4	
1738	MC44-MC31	3	
1738	MC31-MC29	6	CRANE
1739	MC44-CB21	4	

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1739	MC44-S19	3	GAS PARTICULATE SW
1744	S4-M67	3	
1745	MC103-S20	3	CHEMICAL ALARM
1746	MC103-M29	3	CHEMICAL ALARM
1747	MC103-M29	3	CHEMICAL ALARM
1755	MC84-MC83	7	
1755	MC44-CB18	4	
1755	MC33-MC84	7	
1755	MC33-MC44	3	
1765	MC3-MC113	6	
1765	L35-MC8	3	
1765	MC3-MC8	3	
1809	MC41-MC65	5	PULSE TACH DRIVE
1809	MC65-MC39	5	STE/ICE
1809	MC41-M40	5	PULSE TACH DRIVE
1810	MC65-MC39	5	STE/ICE
1810	MC41-M40	5	PULSE TACH DRIVE
1810	MC41-MC65	5	PULSE TACH DRIVE
1811	MC42-M41	5	DIFFERENTIAL PSI
1811	MC42-MC39	5	STE/ICE
1812	MC42-M41	5	DIFFERENTIAL PSI
1812	MC42-MC39	5	STE/ICE
1813	MC39-M6	5	
1814	MC39-M6	5	BATTERIES
1815	MC39-MC24	5	
1815	MC24-MC114	5	
1815	MC24-M20	5	
1816	MC39-MC65	5	STE/ICE
1816	MC39-M7	5	STARTER

CODE SORT

CODE	ROUTING	SH	DESCRIPTION
1818	MC39-M7	5	STARTER
1818	MC39-MC65	5	STE/ICE
1819	MC39-M7	5	
1820	MC24-M20	5	
1820	MC24-M20	5	
1820	MC39-MC24	5	
1821	MC39-M6	5	
1822	MC39-M6	5	BATTERIES
1824	SPLICE-MC67	5	
1824	MC66-M70	5	
1824	MC68-M72	5	
1824	SPLICE-MC70	5	
1824	SPLICE-MC71	5	
1824	MC65-MC39	5	STE/ICE
1824	SPLICE-MC68	5	
1824	MC67-M71	5	
1824	MC43-M42	5	FUEL PSI
1824	MC69-M73	5	
1824	MC70-M74	5	
1824	MC71-M75	5	
1824	SPLICE-MC69	5	
1824	MC66-SPLICE	5	
1824	SPLICE-MC65	5	
1824	SPLICE-MC43	5	
1825	MC68-MC69	5	
1825	MC70-MC71	5	
1825	MC65-MC43	5	
1825	MC43-MC67	5	
1825	MC67-MC68	5	
1825	MC70-M74	5	
1825	MC69-MC70	5	
1825	MC41-MC65	5	
1825	MC68-M72	5	
1825	MC66-M70	5	TURBO OUTLET PSI
1825	MC65-MC39	5	STE/ICE
1825	MC69-M73	5	
1825	MC67-M71	5	
1825	MC39-MC40	5	STE/ICE MODULE
1825	MC43-M42	5	FUEL PSI
1825	MC71-M75	5	
1825A	MC39-MC40	5	STE/ICE MODULE
1826	MC40-MC39	5	
1827	MC40-MC39	5	
1828	MC39-M48	5	SHUNT
1829	MC39-M48	5	SHUNT
1835	R2-CB2	4	
1839	R7-R8	4	
1860	MC39-MC24	5	
1860	MC24-MC114	5	
1861	MC24-MC114	5	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 6 OF 26
ENGINEERING DWG 3053493 SHEET 2
FP-11/FP-12 BLANK

REVISION D

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1861	MC39-MC24	5	
1866	CB12-M6	4	
1866	M6-CB12	4/3	
1867	R19-CB12	4	
1871	MC11-CB11	4	DDEC TRANS
1871	PS8-MC11	5	ATEC OIL PSI SWITCH
1871	MC11-R8	4	
1871	MC11-R11	4	
1871	MC11-R10	4	
1871	MC11-R18	4	
1872	R19-MC44	4	
1872	MC44-R18	4	DDEC
1872	MC44-1020	3	
1875	CB14-R19	4	
1880	MC4-MC35	3	
1880	MC44-CB17	4	CTI
1882	MC52-R21	4	
1882	MC52-SPLICE	4	
1882	MC52-R20	4	
1883	S26-L40	3	TC LOCK-UP LIGHT
1883	S26-M49	3	TC LOCK-UP
1884	MC1-R20	4	INTER AXLE
1884	MC1-M39	4	
1884	MC1-MC105	3	
1885	MC1-M39	4	
1885	MC1-MC105	3	
1885	R23-R21	4	
1885	MC1-R23	4	
1888	CB16-R21	4	DIFFERENTIAL LOCK
1888	CB16-R20	4	INTER AXLE
1889	MC44-R20	4	INTER AXLE
1889	MC44-M50	3	INTER AXLE LOCK
1890	MC44-M51	3	DIFFERENTIAL LOCK
1890	MC44-R21	4	DIFFERENTIAL LOCK
1891	MC52-SPLICE	4	
1891	MC52-R10	4	REVERSE
1916	S8-MC4	3	
1916	MC5-M2	3	WIPER MOTOR
1916	MC5-MC4	3	WIPER MOTOR
1917	MC5-M2	3	
1917	MC5-MC4	3	
1917	S8-MC4	3	
1919	MC2-MC5	3	
1919	MC5-M2	3	
1919	MC5-1118	3	
1919	MC2-CB10	4	
1920	MC2-1008	3	
1920	MC2-R2	4	CLEARANCE LIGHTS
1921	S7-MC4	3	
1921	M1-MC4	3	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1926	MC56-MC23	5	ETHER START
1927	R1-CB1	4	HEADLIGHTS
1928	MC34-MC31	3	
1928	L38-MC34	3	
1928	MC31-MC30	6	TRAILER
1929	MC31-MC30	6	TRAILER
1929	MC34-MC31	3	
1932	MC128-MC61	6	WATER TEMP
1932	MC61-TS3	6	WATER TEMP
1932	MC59-MC63	6	
1932	MC63-MC128	6	
1933	MC61-TS3	6	WATER TEMP
1933	MC63-MC61	6	
1933	MC59-MC63	6	
1935	MC76-M45	6	FAN CONTROL VALVE
1935	MC59-MC76	6	
1935	MC76-M45	6	FAN CONTROL VALVE
1935	MC59-MC76	6	
1938	MC70-M74	5	
1938	MC70-MC65	5	
1938	MC65-MC39	5	
1938B	MC39-S22	5	STE/ICE ZEROING
1939	MC71-M75	5	ENGINE WATER TEMP
1939	MC65-MC39	5	STE/ICE
1939	MC71-MC65	5	
1939B	MC39-S22	5	STE/ICE ZEROING
1940	MC71-MC65	5	
1940	MC71-M75	5	ENGINE WATER TEMP
1940	MC65-MC39	5	STE/ICE
1940B	MC39-S22	5	STE/ICE ZEROING
1941	MC43-M42	5	FUEL PSI
1941	MC43-MC65	5	
1941	MC65-MC39	5	STE/ICE
1942	MC43-MC65	5	
1942	MC65-MC39	5	
1942	MC43-M42	5	FUEL PSI
1943	MC65-MC39	5	STE/ICE
1943	MC66-M70	5	TURBO OUTLET PSI
1943	MC66-MC65	5	TURBO OUTLET PSI
1944	MC66-M70	5	
1944	MC65-MC39	5	STE/ICE
1944	MC66-MC65	5	TURBO OUTLET PSI
1945	MC68-MC65	5	
1945	MC68-M72	5	AIR BOX PSI
1945	MC65-MC39	5	STE/ICE
1946	MC67-M71	5	

CODE SORT			
CODE	ROUTING	SH	DESCRIPTION
1946	MC65-MC39	5	STE/ICE
1946	MC68-M72	5	AIR BOX PSI
1946	MC68-MC65	5	
1947	MC67-MC65	5	
1947	MC65-MC39	5	STE/ICE
1947	MC67-M71	5	AIR CLEANER
1948	MC67-MC65	5	
1948	MC65-MC39	5	STE/ICE
1949	MC69-MC65	5	FUEL RETURN
1949	MC69-MC65	5	
1949	MC65-MC39	5	STE/ICE
1950	MC5-MC4	3	
1950	S8-MC4	3	
1951	MC65-MC39	5	STE/ICE
1951	MC69-M73	5	FUEL RETURN
1951	MC69-MC65	5	
1952	MC65-MC39	5	
1952	MC70-M74	5	ENGINE OIL TEMP
1952	MC70-MC65	5	
1952B	MC39-S22	5	STE/ICE ZEROING
1953	MC39-MC24	5	
1953	MC24-MC114	5	
1953	MC24-M20	5	
1955	M67-MC21	3	FAN SPEED CONTROL
1956	MC127-MC44	3	FAN SPEED CONTROL
1957	MC127-MC21	3	FAN SPEED CONTROL
SHIELD	MC32-MC64	6	CTI AUX MANIFOLD
SHIELD	MC32-MC109	6	CTI POWER MANIFOLD

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 7 OF 26
ENGINEERING DWG 3053493 SHEET 2
FP-13/FP-14 BLANK

REVISION D

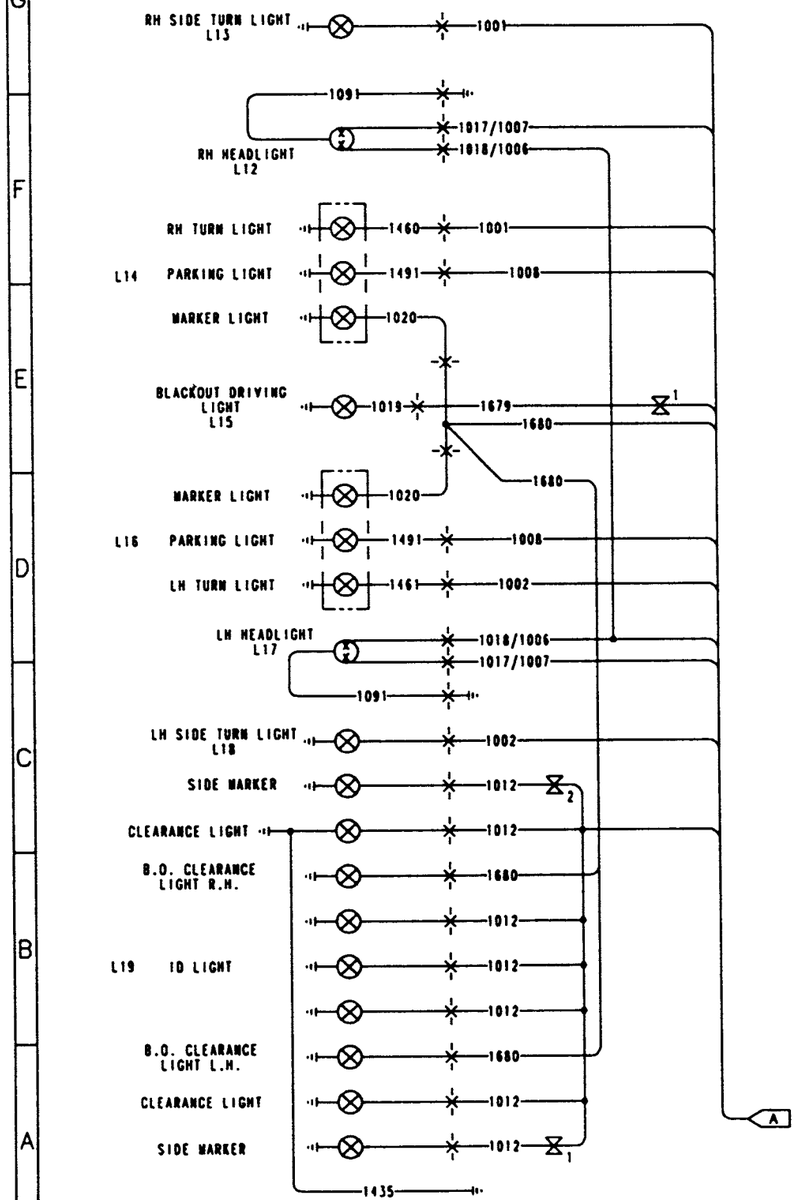


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 8 OF 26
ENGINEERING DWG 3053493 SHEET 3
FP-15/FP-16 BLANK

REVISION O

LH TURN L11 · HIGH BEAM L10 · LOW OIL PSI L9 · HIGH WATER TEMP L8 · TRANS CHECK L5 · 24VDC

SPEEDOMETER G5 · TACH G4 · FUEL GAUGE G3 · OIL PRESSURE GAUGE G2 · WATER TEMP GAUGE G1 · XMSN OIL TEMP GAUGE G10 · VOLTMETER 12V G6 · VOLTMETER 24V G7 · AIR RESTRICTION GAUGE G12 · AIR PRESSURE GAUGE G11

WHITE · BLUE · BLACK · RED · KPH · 4 3 2 1

18 GA SHIELD

CHECK ENGINE L6 · DRIVE-LINE L7 · RH TURN L4

AC · AC · M39

LOW OIL PSI/HI WATER TEMP ALARM CONTINUOUS TONE M18

LOW HYD OIL & LOW AIR ALARM INTERMITENT TONE M3

CTI CONTROLLER M28

LHS OVERLOAD L29 · NO TRANSIT L28 · AUXILLARY HYDRAULIC L27 · LOAD HANDLING SYSTEM L26 · FLAT RACK L38 · ENGINE BRAKE L37

BRAID

SEE SHEET 6

SEE SHEET 6 CHASSIS

SEE SHEET 7 LHS

CAB ◄► CHASSIS · DASH ◄► CAB · CHASSIS

MC105

POS	CODE
1	1435
2	
3	1884
4	1885

MC35

POS	CODE
1	1519
2	1519
3	
4	
5	PLUG
6	
7	1435
8	1435
9	
10	1880

MC110

POS	CODE
1	1072
2	1073
3	1076
4	1071
5	PLUG
6	1070
7	1066
8	SHIELD
9	1068
10	1074

MC111

POS	CODE
1	1056
2	1057
3	1058
4	1059
5	PLUG
6	1061
7	1062
8	SHIELD
9	1064
10	1065

MC32

POS	CODE
A	1056
B	1063/1067
C	1065
D	PLUG
E	1074
F	1076
G	1072
H	1071
I	1070
J	1068
K	SHIELD
L	PLUG
M	1066
N	1061
O	1058
P	1064
Q	1062
R	1059
S	SHIELD
T	1057
U	1073
V	PLUG

MC31

POS	CODE
A	
B	
C	
D	
E	1435
F	1435
G	
H	
I	
J	1729
K	1730
L	1734
M	1733
N	1732
O	
P	1738
Q	1737
R	1095
S	1093
T	1928
U	1929
V	1435

MC53

POS	CODE
A	1713
B	1435
C	1276

MC125

POS	CODE
A	1052
B	1435

WHITE MC8 GAUGES

POS	CODE
A	1519
B	1519
C	1435
D	1147
E	1318
F	1320
G	1449
H	1113
I	1765
J	1114
K	1108
L	439
M	419
N	1409
O	1001
P	509
Q	1120
R	1371
S	1002
T	1018
U	1032
V	1092

MC34

POS	CODE
A	
B	
C	1702
D	1928
E	1929
F	1722

MC33

POS	CODE
A	1755
B	1435
C	1722
D	1724
E	1725
F	1726

MC112

POS	CODE
A	1724
B	1725
C	1726
D	
E	
F	1435

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 9 OF 26
ENGINEERING DWG 3053493 SHEET 3
FP-17/FP-18 BLANK

REVISION D

CHECK GUAGES L3 · LOW AIR L2 · PARKING BRAKE L1 · LOW HYD OIL L36 · EMERGENCY STEERING L35

DOME LIGHT S21 · WINDSHIELD WIPERS S8 · WINDSHIELD WASHER S7 · WORK LIGHT S6 · BEACON LIGHT S5

DASH → CAB · BLACK

MC4 POS	CODE
A	1153
B	1049
C	1040A
D	1715
E	1921
F	1052
G	1118
H	1950
I	1916
J	1917
K	1184
L	1678
M	1189
N	1680
O	1679
P	1276
Q	1292
R	1713
S	1084
T	1008
U	1714
V	1712

DOME LIGHT L20

BLACK OUT SERVICE SELECT S9 · B.O. MARKER S10 · B.O. DRIVE S11 · HEADLIGHTS S12 · ENGINE BRAKE S16 · RHEOSTAT/DOME LIGHT S14 (OFF, BRIGHT, DIM)

MC126 POS	CODE
A	1005
B	1005A

SENSOR THROTTLE M35

MC6 POS	CODE
A	916
B	417
C	952

ISOLATOR M82 · IGNITION SWITCH 24 VDC S2 (BATT, IGN, ACC, ST) · ETHER START BUTTON S25

AIR HEATER (PASSENGER) M32 · GAS PARTICULATE FILTER M30 · AIR HEATER (DRIVER) M31

PS6 · PS7 · LOW AIR PSI SWITCH

VERNIER CONTROL M16

MC38 POS	CODE
A	952
B	1525
C	916

PARKING BRAKE PS4

THROTTLE POSITION SWITCH S31

MC127 POS	CODE
A	1956
B	1957

PARKING BRAKE SWITCH PS5

WIPER MOTOR M2

MC5 WIPER MOTOR POS	CODE
A	1435
B	1950
C	1919
D	1916
E	1917
F	

SEE SHEET 4 ZONE B13

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 10 OF 26
ENGINEERING DWG 3053493 SHEET 3
FP-19/FP-20 BLANK

REVISION O

CAB HARNESS | TURN SIGNAL ASSY

MC7	
POS	CODE
A	1001
B	1004
C	1002
D	1003
E	1005A
F	1080

TURN SIGNAL/ DIMMER S1

L.H. FRONT LT
R.H. FRONT LT
L.H. REAR LT
R.H. REAR LT
DIMMER

MC91	
POS	CODE
A	1017
B	1017A

MC92	
POS	CODE
A	1016

FRONT BRAKE PS1
REAR BRAKE PS2
HAND BRAKE PS3

HORN SWITCH S15

528

DIAG CONN DDEC

MC13	
POS	CODE
A	953
B	216A
C	
D	
E	207A
F	
G	
H	439
J	900
K	901
L	
M	

M17 HEATER MOTOR 24VDC

FERRITE BEAD

ORANGE

HEATER SWITCH S3

OFF
LOW
MED
HIGH

L40 1435

S26 SFER CASE LOCK UP

MC28 BEACON LIGHT

L44

M81

AC

MC106	
POS	CODE
A	216A
B	
C	207A
D	953
E	439
F	900
G	901
H	528
J	
K	

SEE SHEET 4

CAB ◄► CONTROL BOX

MC1	
POS	CODE
A	1084
B	1052
C	1712
D	1052
E	1021A
F	1149
G	1409
H	1714
I	1093
J	
K	
L	1678
M	1713
N	1715
O	1431
P	1680
Q	1003
R	1004
S	1487
T	1884
U	1885
V	1737

SEE SHEET 4 CONTROL BOX

MC21	
POS	CODE
A	1320
B	1449
C	1113
D	1021A
E	1032
F	1147
G	1020
H	1036
I	
J	
K	
L	
M	1957
N	1955
O	
P	
Q	
R	
S	
T	
U	
V	

SEE SHEET 5 ENGINE

CAB ◄► CONTROL BOX

MC2	
POS	CODE
A	1017A
B	1049
C	1012
D	1189
E	1168
F	1016
G	10408
H	1040A
I	1017
J	1009
K	1080
L	1007
M	1006
N	1029
O	1184
P	1919
Q	1292
R	1534
S	1021
T	1276
U	1082
V	1920

SEE SHEET 4 CONTROL BOX

1168 → CHASSIS

HORN M15

LOW OIL LEVEL GUAGE

MC96	
POS	CODE
A	
B	1114
C	1435

MC3	
POS	CODE
A	1678
B	1008
C	1004
D	1680
E	1003
F	1149
G	1012
H	1731
I	1005
J	1318
K	
L	
M	
N	
O	10408
P	1519
Q	1519
R	1534
S	
T	1765
U	1431
V	1431

SEE SHEET 6 CHASSIS

MC58

POS	CODE
A	1709
B	1435

CHEM DET M14

MC103

POS	CODE
A	1746
B	1435
C	1747
D	1745

MC104

POS	CODE
A	1746
B	1747

CHEMICAL ALARM M29
RED
GREEN

S30 EMER ENG SHUTDOWN

CRANE SRC

SRW/MHC (SEE NOTES 1-3) S4

SRW S18

GAS PART FILTER S19

CHEMICAL ALARM S20

M67

MC44	
POS	CODE
A	1108
B	509
C	419
D	439
E	510
F	916
G	417
H	952
I	1723
J	1738
K	
L	1755
M	1739
N	1717
O	1095
P	1702
Q	1889
R	1890
S	1640
T	1872
U	1880
V	1189

SEE SHEET 4 CONTROL BOX

M49 T.C.
M50 INTER AXLE
M51 DIFF
M1 WINDSHIELD WASHER

.1 uf
100 Ω

L43 POST LIGHT

NOTE:

1. SWITCH IS ONLY REQUIRED ON VEHICLES EQUIPPED WITH BOTH CRANE AND SELF RECOVERY WINCH.
2. WHEN ONLY CRANE IS INSTALLED SWITCH S4 IS ELIMINATED. CONNECT 1744 AND 1731 TOGETHER.
3. WHEN ONLY SELF RECOVERY WINCH IS INSTALLED SWITCH S4 IS ELIMINATED. CONNECT 1744 AND 1732 TOGETHER.
4. GROUND LOCATION:
   - ⚠1 • LH HEAD LIGHT
   - ⚠2 • LH SIDE CONTROL BOX
   - ⚠ DIODES TO BE 1N4001
5. GROMMET:
   - ⧖1 LH SIDE OF HEATER
   - ⧖2 RH SIDE OF HEATER
   - ▽ SPLICE
   - ⬭ EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 11 OF 26
ENGINEERING DWG 3053493 SHEET 3
FP-21/FP-22 BLANK

REVISION C
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SHIFT CONTROLLER ATEC 12VDC

MC12

POS	CODE
1	210A
2	204
3	221
4	206
5	220
6	218
7	219
8	2238
9	231
10	230
11	212
12	225
13	233
14	234
15	

MC44

POS	CODE
A	1108
B	509
C	419
D	439
E	510
F	916
G	417
H	952
I	1723
J	1738
K	
L	1755
M	1739
N	1717
O	1095
P	1702
Q	1889
R	1890
S	1840
T	1872
U	1880
V	1189

SEE SHEET 3

BLACK

MC2

POS	CODE
A	1017A
B	1049
C	1012
D	1189
E	1168
F	1016
G	1040B
H	1040A
I	1017
J	1009
K	1080
L	1007
M	1006
N	1029
O	1184
P	1919
Q	1292
R	534
S	1021
T	1276
U	1082
V	1920

WHITE

MC1

POS	CODE
A	1084
B	1052
C	1712
D	1052
E	1021A
F	1149
G	1409
H	1714
I	1093
J	
K	
L	1678
M	1713
N	1715
O	1431
P	1680
Q	1003
R	1004
S	1487
T	1884
U	1885
V	1737

HEADLIGHTS R1 — CLEARANCE LIGHTS R2 — HORN R3 — WORK LIGHT R4 — DIMMER R5 — BEACON R6 — XMSN R7 — RETARDER R8 — 12 VDC

CB1 15 AMP HEAD LIGHTS
CB2 15 AMP C.L. LIGHTS
CB3 15 AMP BEACON BACK UP
CB4 15 AMP WORK LIGHT
CB5 20 AMP TURN SIGNAL
CB6 15 AMP STOP LIGHT
CB7 10 AMP ENG. BRAKE
CB8 15 AMP DASH LOCK UP

SEE SHEET 5
MAG SWITCH R28
12 VDC CIRCUITS
.1uf
.01uf

1079 SEE SHEET 5
TURN SIGNAL FLASHER M5

MC52

POS	CODE
A	1017
B	1082
C	1026
D	1021
E	1891
F	1882

MC119

POS	CODE
A	1431
B	1640
C	1644
D	1435

R32 R33

M52 AC

S29 ARCTIC PUMP

24 VDC IGN SEE SHEET 5
24 VDC ACC

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 12 OF 26
ENGINEERING DWG 3053493 SHEET 4
FP-23/FP-24 BLANK

REVISION C
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CK XMSN R9
REVERSE R10
NEUTRAL START R11
12V MAG R12
BLACK OUT STOP LIGHTS R13
BLACK OUT SERVICE LIGHTS R14
LH TURN LIGHT R15
RH TURN LIGHT R16
BLACK OUT TAIL LIGHTS R17
DDEC R18
TRANS DDEC R19

CB9 10 AMP WIPER
CB10 3 AMP IGN
CB11 8 AMP DDEC TRANS
CB12 8 AMP TRANS
CB13 8 AMP DDEC
CB14 15 AMP TRANS
CB15 15 AMP HEATER
CB16 15 AMP DRIVE LINE
CB17 3 AMP CTI
CB18 10 AMP LHS CRANE
CB19 15 AMP CHEM ALARM RADIO
CB25 15 AMP 12V AUX
CB26 15 AMP 24V AUX

SWING FIRE

MC101	
POS	CODE
A	1340
B	1435

EMERGENCY ENGINE SHUTDOWN

MC116	
POS	CODE
A	439
B	439

24 VDC CIRCUITS
12 VDC
MAG SWITCH R26
24 VDC MAG SWITCH R25
BATT ATEC SEE SHEET 5
SEE SHEET 5
SEE SHEET 3 ZONE 9E
RADIO LEAD 9 AMP
M76

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 13 OF 26
ENGINEERING DWG 3053493 SHEET 4
FP-25/FP-26 BLANK

REVISION C
CN 14815
12-15-97

INTER AXLE R20 87A 87 85 30 86
DIFF LOCK R21 87A 87 85 30 86
CRANE HI IDLE 24 VDC R22 87A 87 85 30 86
HIGH RANGE LOCK OUT R23 87A 87 85 30 86
T.C. DUAL MODE R24 87A 87 85 30 86

CB21 30 AMP GAS PARTICULATE
CB20 15 AMP TRAILER LIGHTING
DDEC CB22 20 AMP
DDEC CB23 20 AMP
M39
M36

MC9 J1A

POS	CODE
1A	208
1B	209
1C	238
1D	239
1E	217
1F	204
1G	206
1H	218
1J	207A
1K	222
2A	202A
2B	223A
2C	210A
2D	214
2E	
2F	221
2G	220
2H	219
2J	216A
2K	201
3A	203
3B	240
3C	241
3D	215
3E	
3F	211
3G	205
3H	215
3J	212
3K	224

MC10 J1B

POS	CODE
1L	112
1M	113
1N	106A
1P	124
1R	116
1S	110
1T	115
1W	105
1X	
1Y	107
2L	123
2L	108
2N	101
2P	104
2R	
2S	
2T	120
2W	119
2X	
2Y	109
3L	114
3M	111
3N	122
3P	118
3R	
3S	
3T	121
3W	
3X	
3Y	117

MC25

POS	CODE
A	1680C
B	1003C
C	1680C
D	1435
E	1008C
F	1678C
G	1680C
H	1004C
I	1665C
J	1435
K	1538
L	1644
M	1435
N	
O	
P	
Q	
R	
S	
T	
U	
V	

CONTROL BOX CHASSIS

SEE SHEET 6
24V TRAILER

KNIT LOOM W/COPPER

TO XSMN CONNECTOR SEE SHEET 5

MC45 J3

POS	CODE
A	301
B	302
C	303
D	304
E	305
F	306
G	307
H	308
J	309
K	310
L	311
M	312
N	313
P	314
R	315
S	316

ECU ATEC

SEE SHEET #5

MC50

POS	CODE
A	213
B	211
C	215
D	214
E	231
F	233

MC51

POS	CODE
A	209/204
B	207A
C	223A
D	216A
E	201
F	203

MC106

POS	CODE
A	216A
B	
C	207A
D	953
E	439
F	900
G	901
H	528
J	
K	

SEE SHEET 5

THROTTLE POSITION CONTROL M4

THROTTLE SENSOR MC36

POS	CODE
A	124
B	104
C	106A

MC14

POS	CODE
A	953

6.8K

MC102

POS	CODE
A	115
B	953

CONTROL BOX CHASSIS/EMG

MC11

POS	CODE
A	
B	916
C	419
D	509
E	439
F	901
G	900
H	952
J	417
K	451
L	908
M	505
N	
O	510
P	1517
Q	1871
R	1715
S	1716
T	508
U	208/209
V	115
W	
X	

SEE SHEET 5

X = UNUSED SEALED POSITIONS

POS	CODE
1	1000
2	
3	
4	1000
5	
6	
7	

GROUND LOCATION

⚠1 • LH HEAD LIGHT

⚠2 • RH SIDE CONTROL BOX

⚠3 FERRISHIELD FAIRRITE PN SS28B2032

⚠4 FERRISHIELD FAIRRITE PN TC28B1500

EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 14 OF 26
ENGINEERING DWG 3053493 SHEET 4
FP-27/FP-28 BLANK

REVISION C
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MC21	
POS	CODE
A	1320
B	1449
C	1113
D	1021A
E	1032
F	1147
G	1020
H	1036
J	
K	
L	
M	1957
N	1955
O	
P	
Q	
R	
S	
T	
U	
V	

MC60	
POS	CODE
A	1021A
B	1020

BOOST PRESSURE SWITCH PS15
SPST-N.C.
@ 7.5 PSI ± .5 PSI
ON RISING PRESSURE

200 AMP ALTERNATOR M20
RECTIFIER
STATOR
SCR
FIELD
+24 VOLTS
+12 VOLTS
ENG
DUAL VOLTAGE REGULATOR
FIELD SENSE (NEGATIVE)
SCR REGULATOR RECEPTACLE

STE/ICE MC24	
POS	CODE
1	1860
2	1820
3	1815
4	1861
5	1953

WATER TEMPERATURE SENDING UNIT SU1
ENGINE OIL PRESSURE SWITCH PS9
TRANSMISSION TEMPERATURE SENDING UNIT SU2
OIL MANIFOLD
ENGINE WATER TEMP SWITCH TS2
ENGINE OIL PRESSURE SENDING UNIT SU3
ALT OIL PSI SW PS12
ATEC OIL PRESSURE SWITCH PS8
CB24 3 AMP

R27 MAGNETIC SWITCH 24V
5 MFD 200 VDC
2 MFD
.01 MFD

CONTROL BOX ↔ CHASSIS/ENGINE

MC11	
POS	CODE
A	
B	916
C	419
D	509
E	439
F	901
G	900
H	952
J	417
K	528
L	908
M	505
N	
O	510
P	1517
Q	1871
R	1715
S	1716
T	988
U	208/209
V	115
W	
X	

ENGINE BRAKE
RH COILS M21
LH COILS M22
TS1 ETHER START

MC56	
POS	CODE
A	1036
B	1926

MC23	
POS	CODE
A	1926
B	1435

WHITE
BLACK
ETHER START M8

MC108	
POS	CODE
A	1020
B	1435

FUEL PUMP M12
4.7 MFD
SEE MC3 SHEET 6 — 1431/1431

POS	CODE
A	1020
B	1435

24 VDC
12 VDC
POLARITY PROTECTION DEVICE M64
1079 SEE CB5 SHEET 4

SEE SHEET 4
150
240/240
241/241
150
1866/1075
1281
1430
1435
1517
1871
1715
1716
1036
1147
1020
1020A
1021A
1032
1113
1320
1449
1208
1274
1281A
1820
1953
1860
1815
1275
1055
1435
1045
1566
240/241

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 15 OF 26
ENGINEERING DWG 3053493 SHEET 5
FP-29/FP-30 BLANK

REVISION G6
CN 20233
10/12/99

MC62	
POS	CODE
A	240
B	151
C	241
D	150
E	150

MC17	
POS	CODE
A	240
B	151
C	241
D	150
E	150

ECM

12066317

12040947	
POS	CODE
A	612
B	614
C	618
D	616
E	620

620 614 INJECTOR 4R
620 612 INJECTOR 3R
620 616 INJECTOR 2R
620 618 INJECTOR 1R

2065143	
POS	CODE
L	611
K	613
J	617
H	615
G	619

619 611 INJECTOR 1L
619 617 INJECTOR 2L
619 613 INJECTOR 3L
619 615 INJECTOR 4L

TWISTED PAIR SHIELDED

TWISTED PAIR 901/900

KNIT LOOM W/COPPER

TRANSMISSION

MC19	
POS	CODE
A	123
B	114
C	121
D	111
E	101
F	118
G	116
H	122
X J	
K	108
L	109
M	119
N	117
O	107
P	106B
X Q	
X R	
X S	
T	115
U	105
V	120
W	110
X X	

MC20	
POS	CODE
A	113
B	112

MC18	
POS	CODE
A1	988
X A2	555
A3	916
B1	419
B2	509
B3	439
C1	901
C2	900
C3	952
D1	510
D2	417
X D3	749
X E1	451
X E2	
X E3	
X F1	542
X F2	544
X F3	499
G1	528
X G2	543
X G3	545
X H1	
X H2	
H3	115
X J1	541
X J2	531
J3	908
K1	505
X K2	
X K3	

12034398

POS	CODE	
L1		X
L2		X
L3	925	
M1		X
M2		X
M3	926	
N1		X
N2		X
N3		X
P1	432	
P2	530	
P3		X
R1		X
R2	120	
R3	472	
S1	112	
S2	111	
S3		X
T1	109	
T2	110	
T3		X
W1	416	
W2		X
W3		X
X1		X
X2		X
X3		X
Y1		X
Y2	452	
Y3		X

SEE SHEET 4

18AWG
18AWG

STARTER M7

SLAVE CONNECTOR M23

10 GA
4 GA

M48 SHUNT

BATTERIES M6

B1 (2)
B2 (1)
A1 (4)
A2 (3)

ARCTIC BATTERIES M77

OPTION

BATTERY DISCONNECT SWITCH S32

MC14	
POS	CODE
A	953

MC95	
POS	CODE
A	208/209

A
B 1275
C 1055 1819
D 1435 1138 1138 000
1818 1816/1818
1138 1139 1816 1055 1139 1045 1138 1139 1139 1138 1137 1137 1137

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STE/ICE CONNECTOR MC39

POS	CODE	
A		X
B		X
C		X
D	1825A	
E	1822	
F	1821	
G		X
H		X
J		X
K		X
L	1860	
M	1819	
N	1820	
O	1953	
P	1815	
R	1861	
S	1816	
T	1818	
U	1736	
V	1814	
W	1813	
X	1828	
Y	1829	
Z	1736	
A	1736	
B	1736	
C	1809	
D	1810	
E		X
F	1824	
G	1825	
H	1826	
J	1827	
K	1952	
M	1938	
N	1939	
P	1940	
Q		X
R		X
S	1811	
T	1812	
U	1941	
V	1942	
W	1943	
X	1944	
Y	1945	
Z	1946	
AA	1947	
AB	1948	
AC	1949	
AD	1951	
AE	900	
AF	901	
AG		X

DIFFERENTIAL PRESSURE M41

MC42

POS	CODE
1	1811
2	1812

STE/ICE MODULE M43

MC40

POS	CODE	
1		X
2	1826	
3	1827	
4		X
5		X
6	1825A	
7	1825	
8		X
9		X

R3

MC65

POS	CODE
A	
B	1944
C	
D	1816
E	1818
F	1809
G	1810
H	1824
I	1825
J	1941
K	1942
L	1947
M	1948
N	1945
O	1946
P	1949
Q	1951
R	1952
S	1938
T	1939
U	1940
V	1943

MC41

POS	CODE
1	1809
2	1810

PULSE TACH DRIVE M40

MC66

POS	CODE
1	1824
2	1825
3	1943
4	1944

TURBO OUTLET PSI M70

MC43

POS	CODE
1	1824
2	1825
3	1941
4	1942

FUEL PRESSURE M42

MC67

POS	CODE
1	1824
2	1825
3	1947
4	1948

AIR CLEANER M71

MC68

POS	CODE
1	1824
2	1825
3	1945
4	1946

AIR BOX PSI M72

MC69

POS	CODE
1	1824
2	1825
3	1949
4	1951

FUEL RETURN M73

MC70

POS	CODE
1	1824
2	1825
3	1952
4	1938

ENGINE OIL TEMP M74

MC71

POS	CODE
1	1824
2	1825
3	1939
4	1940

ENGINE WATER TEMP M75

X = UNUSED SEALED POSITIONS

	POS	CODE
	1	1000
X	2	
	3	
	4	1000
X	5	
X	6	
X	7	

⚠ DIODES TO BE 1N4001

B 416 GRA, C 432 LT GRN, D 452 BLK — TURBO BOOST
E 109 PPL, F 110 DK GRN — SENSOR TIMING
G 112 WHT, H 111 LTBLU — SENSOR SYNC
I 452 BLK, J 530 BRN, K 416 GRA/BLK — SENSOR OIL PSI
L 452 BLK, M 120 TAN — SENSOR OIL TEMP
N 452, O 472 — FUEL TEMP

STE/ICE ZEROING S22 (1940B, 1952B, 1939B, 1938B)

P 1828/1829
Q 1813/1821
R 1814/1822
S 1816/1818
T 1935/1820/1815/1860/1861
U

MC118

POS	CODE
A	900
B	901
C	SHIELD

1816

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 17 OF 26
ENGINEERING DWG 3053493 SHEET 5
FP-33/FP-34 BLANK

REVISION O

CAB ◄ ► CHASSIS

MC3

POS	CODE
A	1678
B	1008
C	1004
D	1680
E	1003
F	1149
G	1012
H	1731
I	1005
J	1318
K	
L	
M	
N	
O	1040B
P	1519
Q	1519
R	1534
S	
T	1765
U	1431
V	1431

1005 1012 1003 1004 1008

BATTERIES MG

1431
1431

1 2 3 4

BATTERIES SHOWN FOR REFERENCE ONLY SEE SHEET 5

FRONT TOW

MC27

POS	CODE
WHITE	1435
BLACK	1012
YELLOW	1003
RED	1005
GREEN	1004
BROWN	1008
BLUE	

1435

MC113

POS	CODE
A	1765
B	1435

1765 1765

EMER STRG PS13

1435

1765

1435

FAN CONTROL

MC59

POS	CODE
A	1932
B	1933
C	1935
D	1936

MC73

POS	CODE
A	1538
B	1435

MC63

POS	CODE
A	1932
B	1933
C	DRAIN

MC128

POS	CODE
A	1933
B	1932

WATER TEMP. N.C.

TS4

MC61

POS	CODE
A	1932
B	1932

WATER TEMP.

TS3

MC76

POS	CODE
A	1936
B	1935

FAN CONTROL VALVE M45

CAB ◄ ► CHASSIS

MC31

POS	CODE
A	
B	
C	
D	
E	1435
F	1435
G	
H	
I	
J	1729
K	1730
L	1734
M	1733
N	1732
O	
P	1738
Q	1737
R	1095
S	1093
T	1928
U	1929
V	1435

BRAIDED SHIELD

1067

GROUND IS ATTACHED TO AUXILIARY MANIFOLD

REAR

MC84

POS	CODE
1	1072
2	1073
3	1076
4	1071
5	PLUG
6	1070
7	1066
8	SHIELD
9	1068
10	1074

CTI AUXILIARY MANIFOLD M25

FRONT

MC109

POS	CODE
1	1056
2	1057
3	1058
4	1059
5	1063
6	1061
7	1062
8	SHIELD
9	1064
10	1065

CTI POWER MANIFOLD M24

MC32

POS	CODE
A	1056
B	1063/1067
C	1065
D	PLUG
E	1074
F	1076
G	1072
H	1071
I	1070
J	1068
K	SHIELD
L	PLUG
M	1066
N	1061
O	1058
P	1064
Q	1062
R	1059
S	SHIELD
T	1057
U	1073
V	PLUG

MC25

TRAILER CONN 24V

POS	CODE
A	1680C
B	1003C
C	1680C
D	1435
E	1008C
F	1678C
G	1680C
H	1004C
I	1665C
J	1435
K	1538
L	1644
M	1435
N	
O	
P	
Q	
R	
S	
T	
U	
V	

1063

GROUND IS ATTACHED TO POWER MANIFOLD

BRAIDED SHIELD

MC123

POS	CODE
A	1732
B	1435

MC122

POS	CODE
A	1730
B	1435

MC121

POS	CODE
A	1729
B	1435

1911980

SELF RECOVERY WINCH M27

MC55

POS	CODE
A	1729
B	1730
C	1732
D	1435

1435 1538

FAN M51

1899700

LHS M10

AIR DRYER M13

1733 1734

1435 1435

MC97

POS	CODE
A	1538
B	1435

1435

1538

1435

A B C D

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 18 OF 26
ENGINEERING DWG 3053493 SHEET 6
FP-35/FP-36 BLANK

REVISION O

L32 1012 SIDE MARKER 1012 L34

A

WORK LIGHT RH

MC79	
POS	CODE
A	1040B
B	1435

L21

MC54	
POS	CODE
A	1040B
B	1435

L39

WORK LIGHT LH

CRANE MC29

P	R	
1737	A	THROTTLE WHITE
1435	B	GROUND GREEN
1738	C	+24 VDC BLACK
1731	D	SHUTOFF VALVE FEED RED
1435	E	SHIELD

TWISTED PAIR

1519 SPEEDOMETER GENERATOR SU4

1519

18 GA SHIELDED

MC57	
POS	CODE
A	1095
B	1093

S13 DRIVE LINE LOCK TRANSFER CASE HI/LO

MC80	
POS	CODE
A	1012
B	1003
C	1004

1678/23 1008/21 1004/22 1680/24 L22 B.O. STOP LIGHT TAIL LIGHT STOP LIGHT B.O. TAIL LIGHT R.H.

1012 1003 1680/24

1678/23 1008/21 1003/22 1680/24 L24 B.O. STOP LIGHT TAIL LIGHT STOP LIGHT B.O. TAIL LIGHT L.H.

1435

MC78	
POS	CODE
A	1680
B	1678
C	1149
D	1008
E	1435
F	1435

1435

1149

MC124	
POS	CODE
A	1149
B	1435

MC77	
POS	CODE
A	1149
B	1435

BACK UP LIGHT L23

1718 1435

BACK UP ALARM M78

1435

1318 1435

FUEL LEVEL SU5

MC107	
POS	CODE
A	1534
B	1435

1534 FUEL/WATER SEPERATOR M9 1435

TRAILER CONNECTION 12 VDC

MC16	
POS	CODE
1435	WHITE
1012	BLACK
1003	YELLOW
1005	RED
1004	GREEN
1008	BROWN
	BLUE

1012 L31 REAR SIDE MARKER

1012 CLEARANCE LIGHTS

1680 L42 B.O. CLEARANCE LIGHT

1012

1012 L25 10 LIGHTS

1012

1680 L41 B.O. CLEARANCE LIGHT

1012 L33 CLEARANCE LIGHTS

1012 REAR SIDE MARKER

1435

MC90	
POS	CODE
A	1012
B	1435
C	1680

TRAILER

MC30	
POS	CODE
A	1928
B	1929
C	PLUG
D	PLUG

AFTERCOOLER M11

AIR DRYER M14

MC98	
POS	CODE
A	1538
B	1435

MC99	
POS	CODE
A	1538
B	1435

MC120	
POS	CODE
A	1644
B	1435

M80 ARCTIC PUMP

1644/1435

B C D

MC15		
POS	CODE	
A	1680C	24-484
B	1003C	22-461
C	1680C	24-483
D	1435C	90
E	1008C	21-489
F	1678C	23
H	1680C	490
J	1004C	22-460
K	1665C	37
L	1435C	90
M		53
N		53

MILITARY CONNECTOR

TRAILER CONNECTION 24 VDC

SEPERATE LOOMED HARNESS

X1 GROMMET LOCATED LH SIDE OF HEATER

DIODES TO BE 1N4001

EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 19 OF 26
ENGINEERING DWG 3053493 SHEET 6
FP-37/FP-38 BLANK

REVISION 0

MC33	
POS	CODE
A	1755
B	1435
C	1722
D	1724
E	1725
F	1726

(24 VDC IN)
(GROUND)
(LHS IND & VA.)
(SRW-CRANE & VA.)
(TRANS LIGHT NO)
(OVER LOAD)

SEE SHEET 3

1860810 (7200)

MC84	
POS	CODE
A	1482
B	1481
C	1486
D	1480
E	1755
F	1435
G	1483
H	1484
J	1485
K	1722
L	1487
M	1488
N	1489
P	1490
R	1726
S	1725
T	—

1860800 (7190)

MC83	
POS	CODE
A	1482
B	1481
C	1486
D	1480
E	1755
F	1435
G	1483
H	1484
J	1485
K	1722
L	1487
M	1488
N	1489
P	1490
R	1726
S	1725
T	—

M26
CAB CONTROL BOX
1891370

M.R. "A" SOLENOID	
H.A. "B" SOLENOID	
M.R. "B" SOLENOID	
H.A. "A" SOLENOID	
SEQUENCING (3)	
24 VOLT +	
SEQUENCING (6)	
TRANSIT VALVE	
FREE FLOW VALVE	
0 VOLTS	
0 VOLTS	
PROXIMITY H.A. DOWN	

SEE SHEET 8 FOR DETAIL OF CAB CONTROL BOX

MC81	
POS	CODE
A	1465
B	1467
C	1468
D	1464
E	1466
F	1472
G	1469
H	1463
J	1462
K	1435
L	1435
M	1471
N	1460
P	1459
R	1435
S	1435
T	—

1860790 (7170)

GREEN
RED
WHITE
DRAIN WIRE

MC82	
POS	CODE
A	1465
B	1467
C	1468
D	1464
E	1466
F	1472
G	1469
H	1463
J	1462
K	1435
L	1435
M	1471
N	1460
P	1459
R	1435
S	1435
T	—

1883440

1877480 (7140) HOOKARM SOL A M53

1877470 (7150) HOOKARM SOL B M54

1435/WHITE -
1464/BLACK +

1435/WHITE -
1467/BLACK +

M68

1480
1463
1478
1477
1479

HOOK ARM ELECTRIC SAFE LOWERING

MAIN RAM ELECTRIC SAFE LOWERING

A B C D E F G H J K L M N P Q R S T U V W X Y

1465

1884570 U
MAIN JUNCTION BOX

MC93	
POS	CODE
A	1724
B	1480
C	1481
D	1482
E	1483
F	1484

MC94	
POS	CODE
A	1485
B	1486
C	1487
D	1488
E	1489
F	1490

1724 — 22 — 21
18 — 17
1487 — 14 — 13
10 — 9
1481 — 12 — 11
1480 — 24 — 23
6 — 5
1486 — 8 — 7
1482 — 20 — 19
2 — 1
1484 — 4 — 3
1485 — 16 — 15

5
4
3
2
1
0

0 OFF
1 AUTO
2 MAN HA
3 MAN MF
4 MAN TRAN
5 CRANE/SRW

1891360 U
MULTI FUNCTION SWITCH ASSY

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 20 OF 26
ENGINEERING DWG 3053493 SHEET 7
FP-39/FP-40 BLANK

REVISION 0

1877450 (7130) MAIN CYLINDER SOL B M56
1877460 (7120) MAIN CYLINDER SOL A M55
1877440 (7110) FREEFLOW M57
1877490 (7160) TRANSIT M58

OVERLOAD PRESSURE SWITCH N.O. S28

1891930 W MIDDLE FRAME PROXIMITY SW NORMALLY OPEN S24
1891920 W HOOK ARM UP PROXIMITY SW NORMALLY OPEN S23
1878910 LH HOOK ARM
1878900 RH HOOK ARM
1891910 W HOOK ARM DOWN PROXIMITY SW NORMALLY OPEN S27

1883450
1860780 (7100)
1860820 (7370)
1891410

MC85	
POS	CODE
A	1461
B	1472
C	1435
D	1471
E	1435
F	1435
G	1469
H	1466
I	1470
J	1475

MC86	
POS	CODE
A	1461
B	1472
C	1435
D	1471
E	1435
F	1435
G	1469
H	1466
I	1470
J	1475

MC87	
POS	CODE
A	1461
B	1435
C	1435
D	1469
E	1466
F	1470
G	1475
H	—
I	—
J	—

MC88	
POS	CODE
A	1472
B	1471
C	1435

R29 MIDDLE FRAME LOCK-OUT

1891530 U LHS JUNCTION BOX

EMI SHIELDED WIRES

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 21 OF 26
ENGINEERING DWG 3053493 SHEET 7
FP-41/FP-42 BLANK

REVISION 0

MC83

POS	CODE
A	1482
B	1481
C	1486
D	1480
E	1755
F	1435
G	1483
H	1484
J	1485
K	1722
L	1487
M	1488
N	1489
P	1490
R	1726
S	1725
T	....

MAN. HOOK ARM UP
MAN. MID FRAME DOWN
MAN. HOOK ARM DOWN
MAN. MID FRAME UP
+24V IN
COMMON
MAN./AUTO MODE
AUTO LOAD IN
AUTO UNLOAD IN
LHS LIGHT
MAN. TRANS IN
24V OUT
UNLOAD OUT
LOAD OUT
OVERLOAD LIGHT
NO TRANSIT LIGHT
AUX MODE IN

CR1-MR2400, FU1, RP1 2.7K, LED5, R1-3.3K, Q1 2N3906, RP2 3.3K, RP3 2.7K, LED15, CR16 1.5KE39, +24V
RP1-2.7K LED3, CR24-1N4007
RP1-2.7K LED1, CR2-1.5KE39, CR27-1N5400, K2, CR28-1N5400
RP1-2.7K LED2, CR3-1.5KE39, CR22-1N5400, K1, CR23-1N5400
CR4-1.5KE39, K3, K4, CR29-1N5400, K5
RP1-2.7K LED4, CR5-1.5KE39, DP1, RP4 1M, U1, C1-1.5uf TANT., R4 1K, C2 1.5uf TANT, CR25 1N4743 13V, K6, CR30 1N4007, Q2 VN10KM, CR31 1N4753 36V, C3 .022uf, RP4 1M, RP4-1M, R5-1K, CR26 1N4148, C4 1.5uf TANT
+24V
RP1-2.7K LED6, CR7-1.5KE39
RP1-2.7K LED7, CR6-1.5KE39
RP2-2.7K LED10, CR10-1.5KE39
RP2-2.7K LED9, CR9-1.5KE39
RP2-2.7K LED8, CR8-1.5KE39
+24V, K6, +24V, 30, 87, 87A
JS-13, JS-14, JS-24, JS-23, LOAD, UNLOAD, JOYSTICK

RELAY BOARD

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 22 OF 26
ENGINEERING DWG 3053493 SHEET 8
FP-43/FP-44 BLANK

REVISION O

MC81

A — MAIN RAM A SOL.
RP3-2.7K LED14 (8, 7)
CR14-1.5KE39

B — HOOK ARM B SOL
RP2-2.7K LED13 (9, 6)
CR13-1.5KE39

C — MAIN RAM B SOL.
RP2-2.7K LED12 (10, 5)
CR12-1.5KE39

D — HOOK ARM A SOL.
RP2-2.7K LED11 (11, 4)
CR11-1.5KE39

E — HOOK ARM UP
RP3-2.7K LED15 (9, 6)
CR15-1.5KE39

F — +24V OUT
+24V

G — MID FRAM DOWN
RP3-2.7K LED21 (10, 5)
CR21-1.5KE39

H — TRANSIT VALVE
RP3-2.7K LED19 (12, 13)
CR19-1.5KE39

J — FREE FLOW VALVE
RP3-2.7K LED17 (14, 1)
CR17-1.5KE39

K — 0 VOLTS

L — 0 VOLTS

M — HOOK ARM DOWN
RP3-2.7K LED18 (13, 2)
CR18-1.5KE39

N — OVERLOAD IN
RP3-2.7K LED20 (11, 4)
CR20-1.5KE39

P, R, S, T

MC81	
POS	CODE
A	1465
B	1467
C	1468
D	1464
E	1466
F	1472
G	1469
H	1463
J	1462
K	1435
L	1435
M	1471
N	1460
P	1459
R	1435
S	1435
T	---

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 23 OF 35
ENGINEERING DWG 1878290 SHEET 8
FP-45/FP-46 BLANK

REVISION D

SYSTEM SHUTDOWN RELAY

CONTROL LOCKOUT RELAY

THROTTLE RELAY

GROUND

POWER CABLE TO VEHICLE

MC29	
POS	CODE
A	WHT
B	GRN
C	BLK
D	RED
E	SHIELD

PASSENGER SIDE REMOTE CABLE

POS	CODE
A	RED
B	GRN
C	YEL
D	WHT
E	BLU
F	BLK
G	ORG
H	VIO
J	RED/GRN
K	GRY
L	TAN
M	BRN
N	PNK
P	SHIELD

POS	CODE
A	BLK
B	WHT
C	GRN
D	RED

OVERLOAD SHUTDOWN SYSTEM

POS	CODE
A	BLU
B	BLK
C	BRN

HOIST LAYER SENSING SWITCH

POS	CODE
A	WHT
B	BLK
C	RED
D	GRN
E	SHIELD

HOIST LOAD CELL

CRANE FUNCTION SOLENOIDS

SWING: CCW, CW

TELE: OUT, IN

LIFT: UP, DWN

HOIST: UP, DWN

MHC MAIN HYD PRESS

OVERLOAD SOLENOIDS: LIFT UP & DOWN, HOIST UP, TELE OUT, CRANE FUNCTION L/O

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 24 OF 26
ENGINEERING DWG 3053493 SHEET 9
FP-47/FP-48 BLANK

REVISION 0

JUNCTION BOX ASSY

A
B
C
D
E
F
G
H
J
K
L
M
N

BLU
BRN
BLK
19/3
E

BRN
BLU
BLK
DRIVER SIDE O/R ENGAGED SENSING SWITCH

D6 WHT
WHT
D7
D9
D8
RED/GRN

GRN
RED
BLK
WHT
LINE LOAD
POWER SWITCH 10 AMP MAGNETIC CIRCUIT BREAKER
GRN
RED
BLK
HIGH IDLE SWITCH LATCH-UNLATCH

BLK
WHT
RED
GRN
16/4
D

18/15
F

DRIVER SIDE REMOTE CABLE

POS	CODE
A	RED
B	GRN
C	YEL
D	WHT
E	BLU
F	BLK
G	ORG
H	VIO
J	RED/GRN
K	GRY
L	TAN
M	BRN
N	PNK
P	SHIELD

BRN
BLK
BLU

REMOTE CONTROL CABLE
18/15

C
19/3
BRN
BLU
BLK
PASSENGER SIDE O/R ENGAGED SENSING SWITCH

N
O
18/2
D22
WHT
BLK
O/R MAST SHUTDOWN SOLENOID

REMOTE CONTROL BOX

POS	CODE
A	RED
B	GRN
C	YEL
D	WHT
E	BLU
F	BLK
G	ORG
H	VIO
J	RED/GRN
K	GRY
L	TAN
M	BRN
N	PNK
P	SHIELD

2

SWING

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	CCW
4	BLU	CW

8
2
9
10

TELE

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	OUT
4	BLU	IN

8
2
11
12

ON
4
26
20
SHUT DOWN

BOOM

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	UP
4	BLU	DWN

8
2
13
14

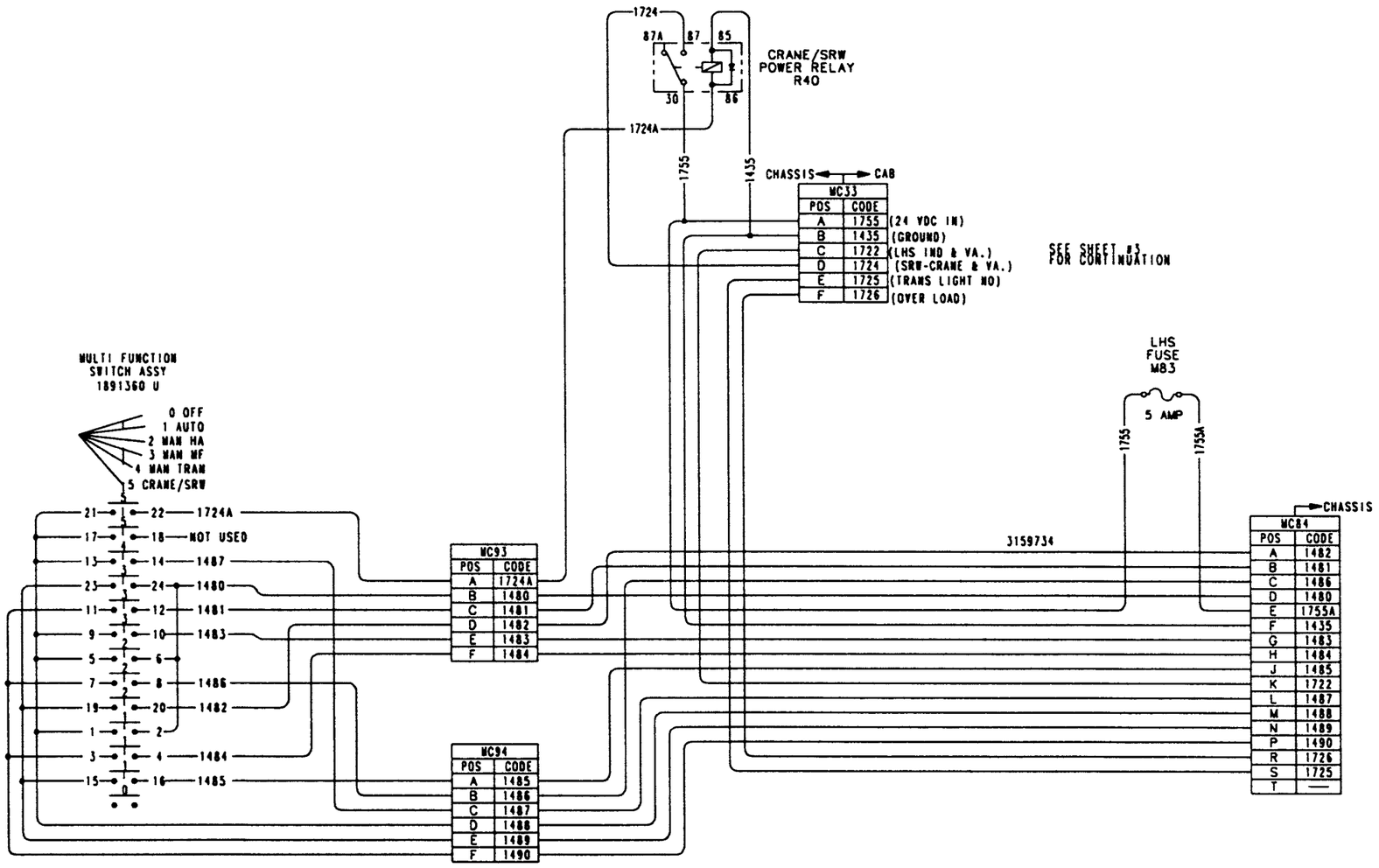
HOIST

POS	CODE	
1	RED	+
2	GRN	-
3	WHT	UP
4	BLU	DWN

8
2
15
16

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 25 OF 26
ENGINEERING DWG 3053493 SHEET 9
FP-49/FP-50 BLANK

REVISION 0



FOR LHS CIRCUIT
PROTECTION CONFIGURATION

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 26 OF 26
ENGINEERING DWG 3053493 SHEET 10
FP-51/FP-52 BLANK

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:



SANDRA R. RILEY
Administrative Assistant to the
Secretary of the Army
0525706

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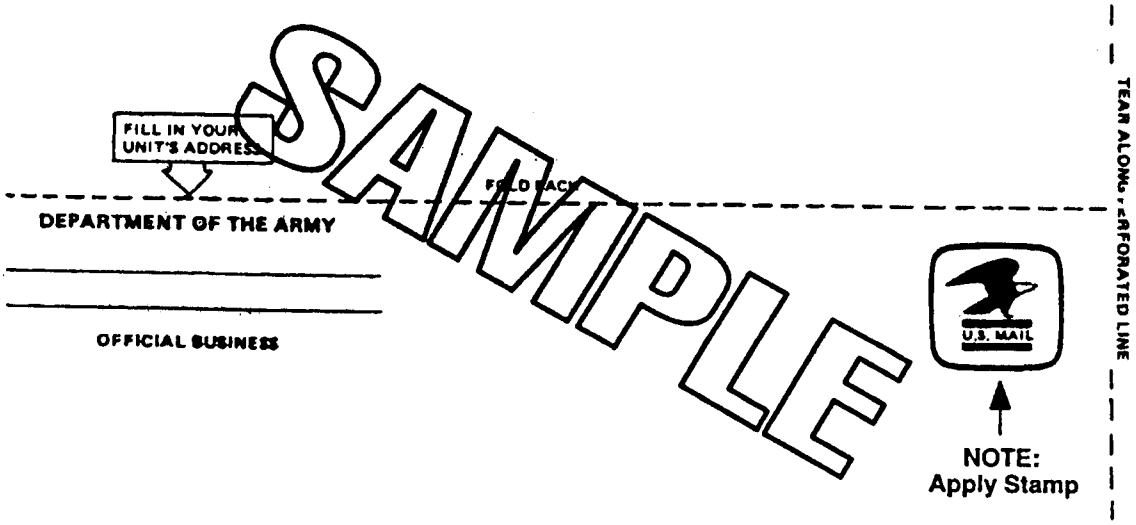
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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter=10 Millimeters=0.01 Meters=0.3937 Inches
1 Meter=100 Centimeters=1000 Millimeters=39.37 Inches
1 Kilometer=1000 Meters=0.621 Miles

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

LIQUID MEASURE
1 Milliliter=0.001 Liters=0.0338 Fluid Ounces
1 Liter=1000 Milliliters=33.82 Fluid Ounces

SQUARE MEASURE
1 Sq Centimeter=100 Sq Millimeters=0.155 Sq Inches
1 Sq Meter=10,000 Sq Centimeters=10.76 Sq Feet
1 Sq Kilometer=1,000,000 Sq Meters=0.386 Sq Miles

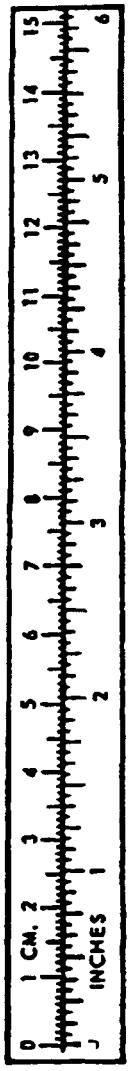
CUBIC MEASURE
1 Cu Centimeter=1000 Cu Millimeters=0.06 Cu Inches
1 Cu Meter=1,000,000 Cu Centimeters=35.31 Cu Feet

TEMPERATURE
5/9 (°F − 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 C° + 32 = F°

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds/Sq Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
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



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