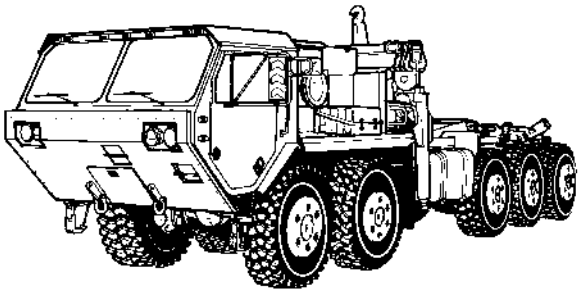
TM 9-2320-364-20-3

THIS MANUAL SUPERSEDES TM 9-2320-364-20-3 DATED 25 FEB 1994, INCLUDING ALL CHANGES.

TECHNICAL MANUAL

UNIT MAINTENANCE
VOLUME III

PALLETIZED LOAD SYSTEM



MODEL M1074/M1075

NSN 2320-01-304-2277
NSN 2320-01-304-2278

CENTRAL TIRE INFLATION SYSTEM TROUBLESHOOTING	2-1912
AIR SYSTEM TROUBLESHOOTING	2-2181
LOAD HANDLING SYSTEM TROUBLESHOOTING	2-2226
CRANE TROUBLESHOOTING	2-2510
SELF RECOVERY WINCH TROUBLESHOOTING	2-2813
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DISTRIBUTION RESTRICTION
Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY
AUGUST 1999

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.

LIST OF EFFECTIVE PAGES Insert latest changed pages. Destroy superseded pages.

NOTE

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

Dates of issue for original and changed pages are:

Original ..... 0 ... 25 February 1994 Revision 1 .. 0 ..... 1 August 1999

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 1346 CONSISTING OF THE FOLLOWING:

Page No.	*Change No.	Page No.	*Change No.	Page No.	*Change No.
Title	0	F-14 Blank	0		
Blank	0	G-1 - G-3	0		
a - z	0	G-4 Blank	0		
A	0	INDEX-1 - INDEX-15	0		
B Blank	0	INDEX-16 Blank	0		
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2-2180 Blank	0				
2-2181 - 2-2811	0				
2-2812 Blank	0				
2-2813 - 2-2845	0				
2-2846 Blank	0				
2-2847 - 2-2973	0				
2-2974 Blank	0				
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B-40 Blank	0				
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TECHNICAL MANUAL

No. 9-2320-364-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C. 01 August 1999

Unit Maintenance Manual

PALLETIZED LOAD SYSTEM

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

Current as of 01 August 1999

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

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B MAINTENANCE ALLOCATION CHART B-1

C EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST C-1

D ILLUSTRATED LIST OF MANUFACTURED ITEMS D-1

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* This manual supersedes TM 9-2320-364-20-3, 25 February 1994.

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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.

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.

2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING.

This paragraph covers Central Tire Inflation System (CTIS) Troubleshooting. The CTIS Fault Index, Table 2-45, lists faults for the CTIS of the PLS truck. Refer to electrical and CTIS air schematics Figures 2-48 and 2-49 when performing tests and corrective actions.

Table 2-45. Central Tire Inflation System (CTIS) Fault Index

Fault No.	Description	Page
1.	One Tire Will Not Inflate Or Deflate	2-1916
2.	CTIS Inoperative	2-1924
3.	All Tires On Axles No. 3 Through No. 5 Will Not Deflate	2-1938
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7.	Axles No. 1 And No. 2 Tire Pressures Do Not Agree With CTIS Settings	2-2012
8.	Axles No. 3 Through No. 5 Tire Pressures Do Not Agree With CTIS Settings	2-2026
9.	CTIS Does Not Automatically Inflate To The Next Higher Setting	2-2040
10.	Front Manifold Clicks Continually/Low Air Light Flashing	2-2046
11.	Rear Manifold Clicks Continually/Low Air Light Flashing	2-2102
12.	Tires On No. 1 Through No. 5 Axles Deflate Upon Completion Of Adjustment Cycle	2-2158
13.	CTIS Low Air Indicator Stays On Over 110 psi	2-2168

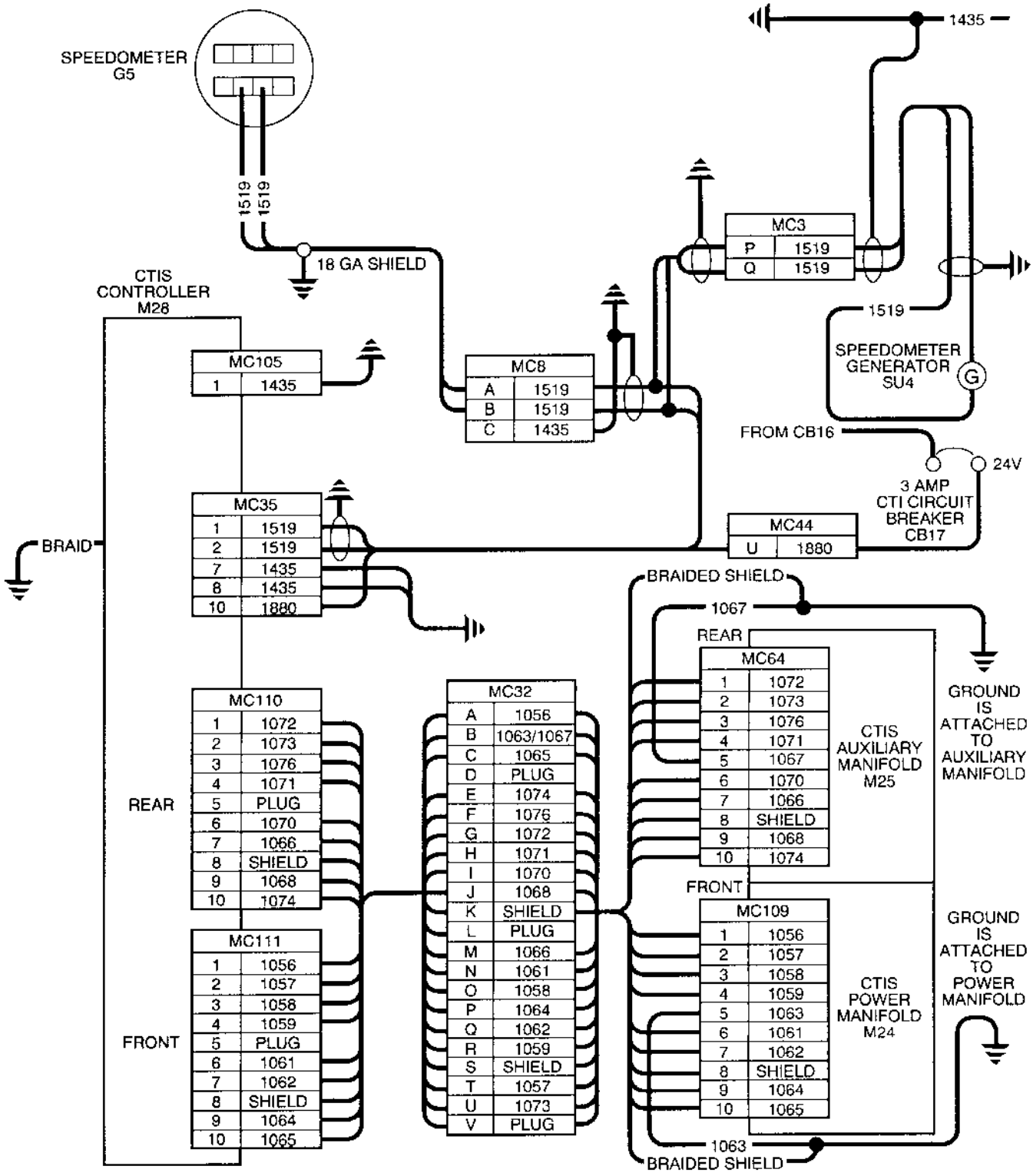


Figure 2-48. CTIS Wiring Schematic (Sheet 1 of 2)

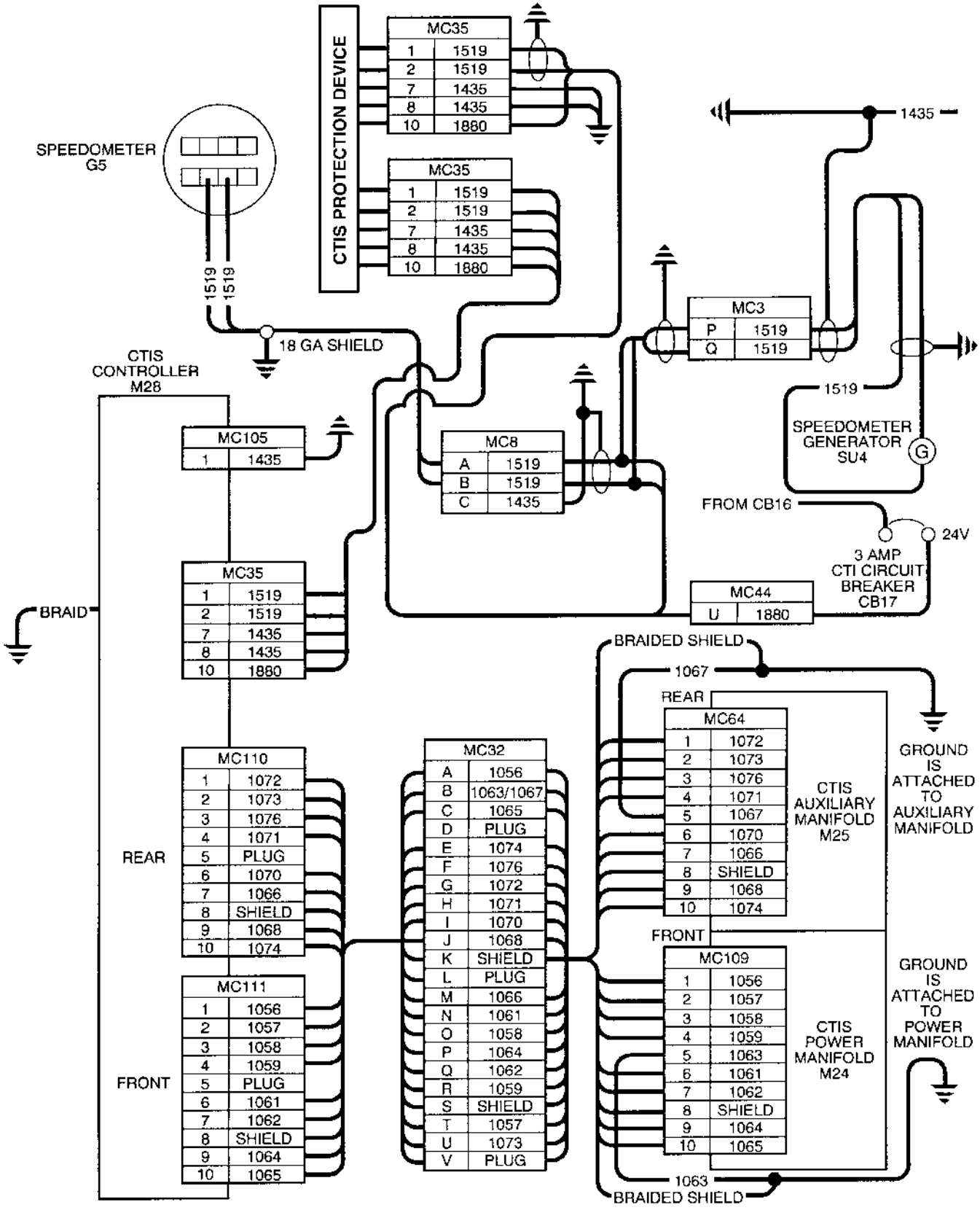


Figure 2-48. CTIS Wiring Schematic (With CTIS Protection Device) (Sheet 2 of 2)

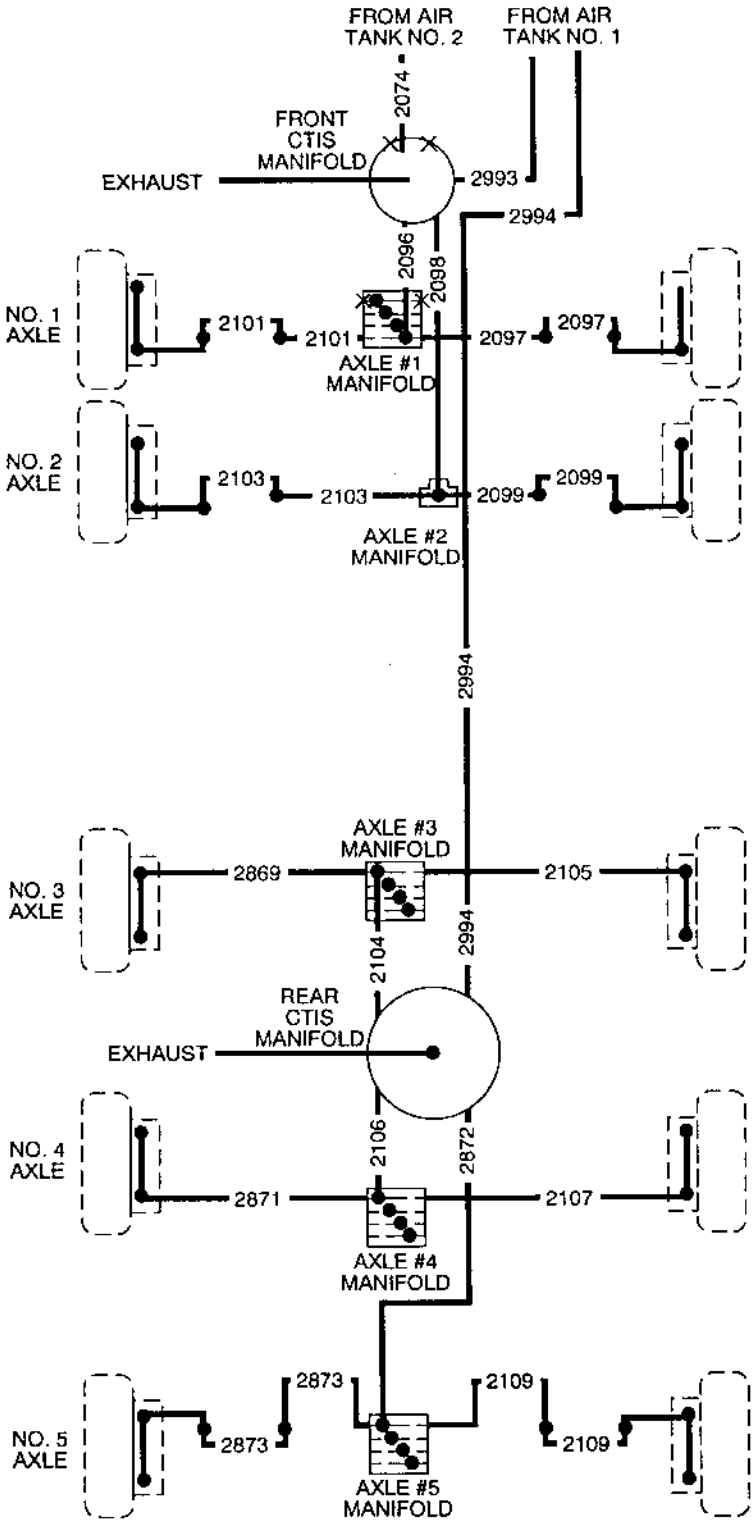


Figure 2-49. CTIS Air Diagram

2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

1. ONE TIRE WILL NOT INFLATE OR DEFLATE.

INITIAL SETUP

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

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

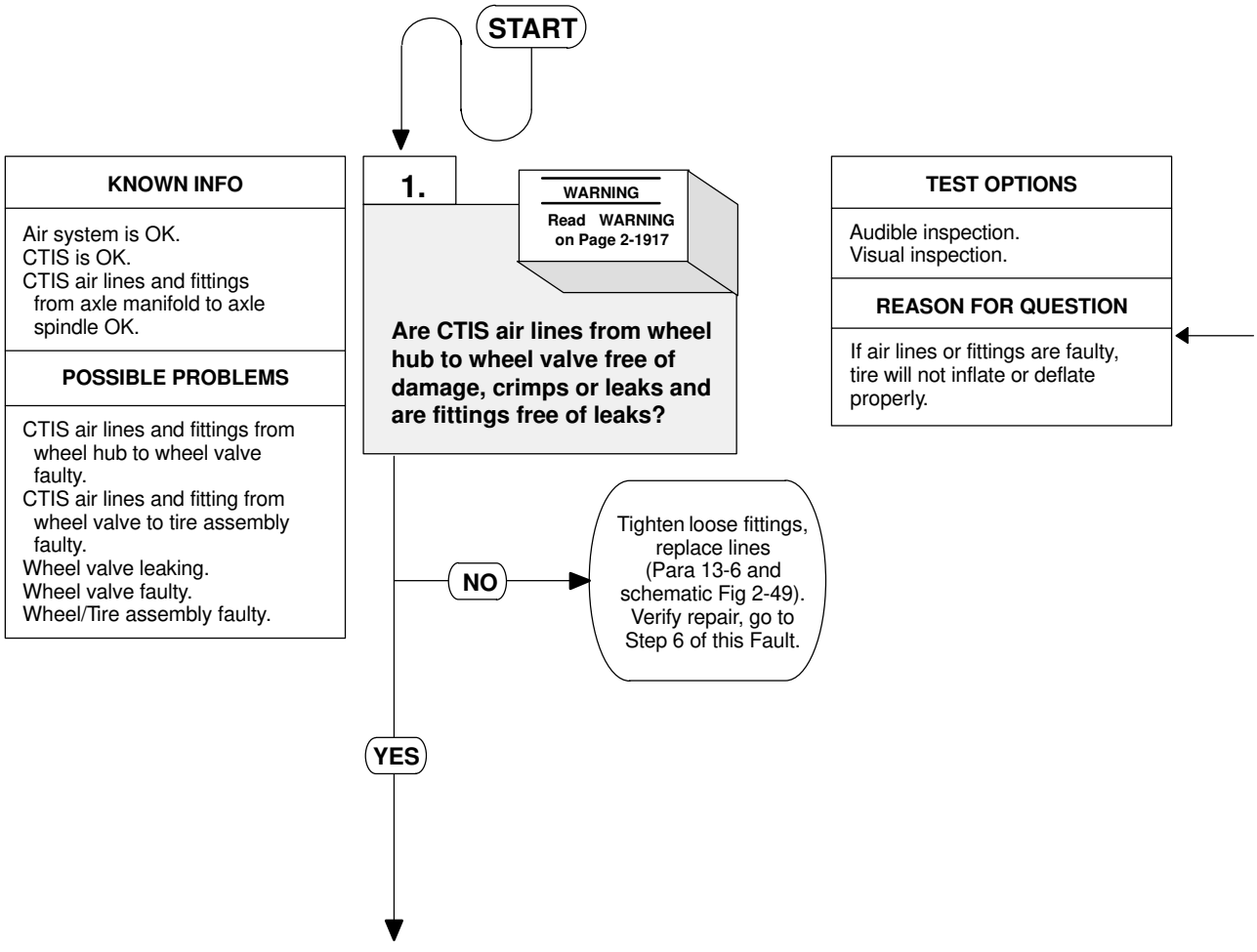
Personnel Required
Two

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)
CTIS turned on, (TM 9-2320-364-10)

NOTE

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



WARNING

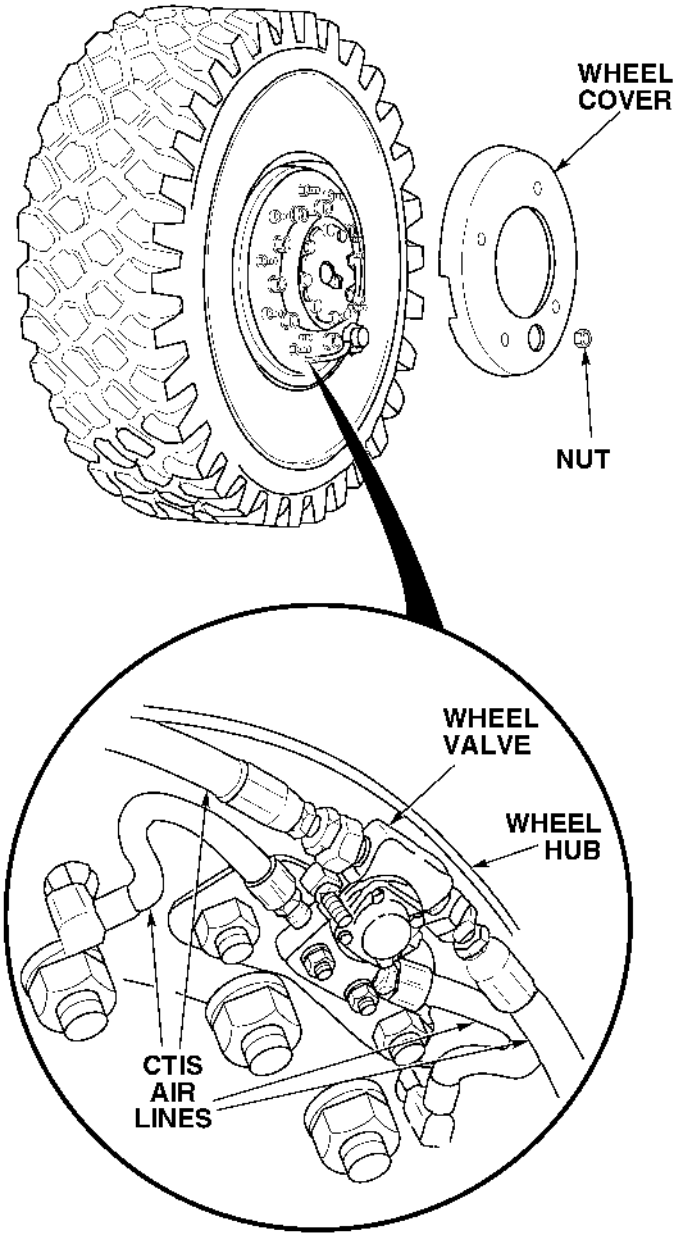
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

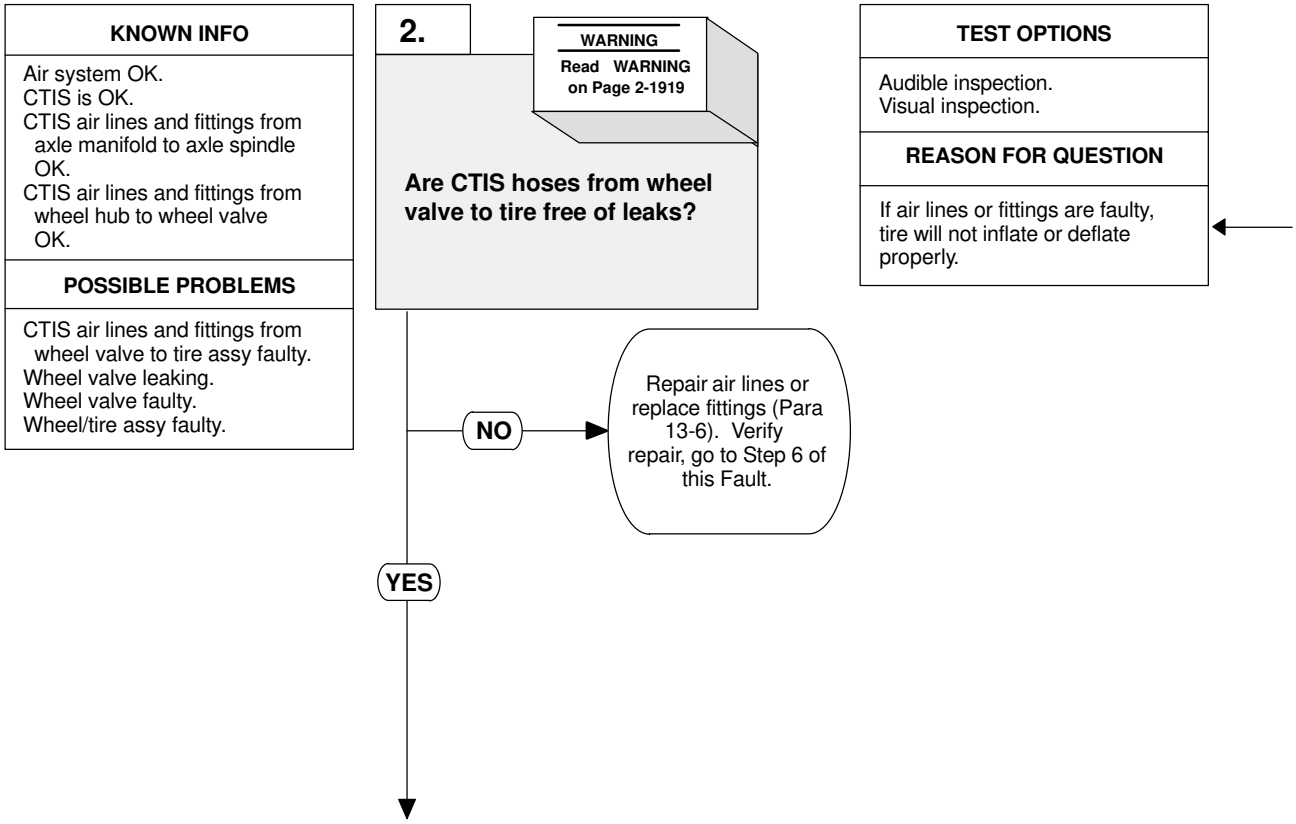
CTIS hub air lines are pressurized only when CTIS is in the inflate, deflate or test cycle.

VISUAL/AUDIBLE INSPECTION

(1) Remove four nuts and wheel cover.
(2) Deflate tire to 40 psi (276 kPa). or less, using tire gage.
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller to HIGHWAY.
(5) Push CTIS START button.
(6) Check air lines from wheel hub to CTIS wheel valve for damage, crimps or leaks.
    (a) If air lines are damaged, crimped or leaking, tighten fittings, replace air lines (Para 13-6).
    (b) If there are no leaks, crimps or damage, air lines and fittings are OK.



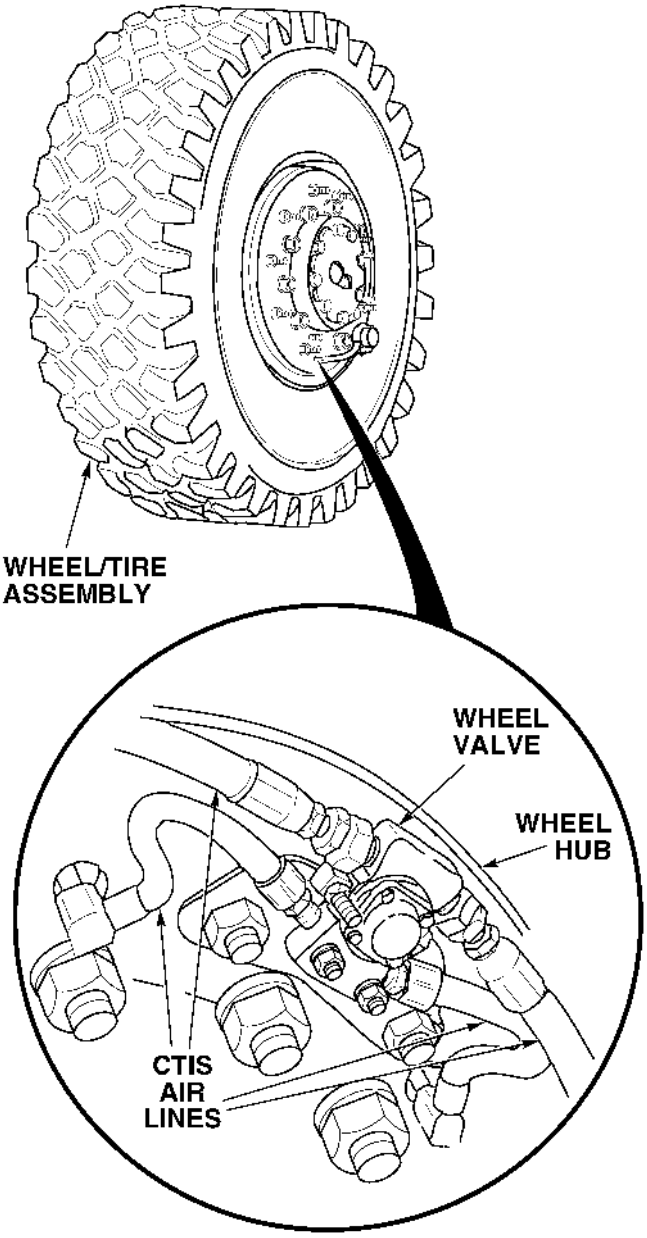
1. ONE TIRE WILL NOT INFLATE OR DEFLATE (CONT).



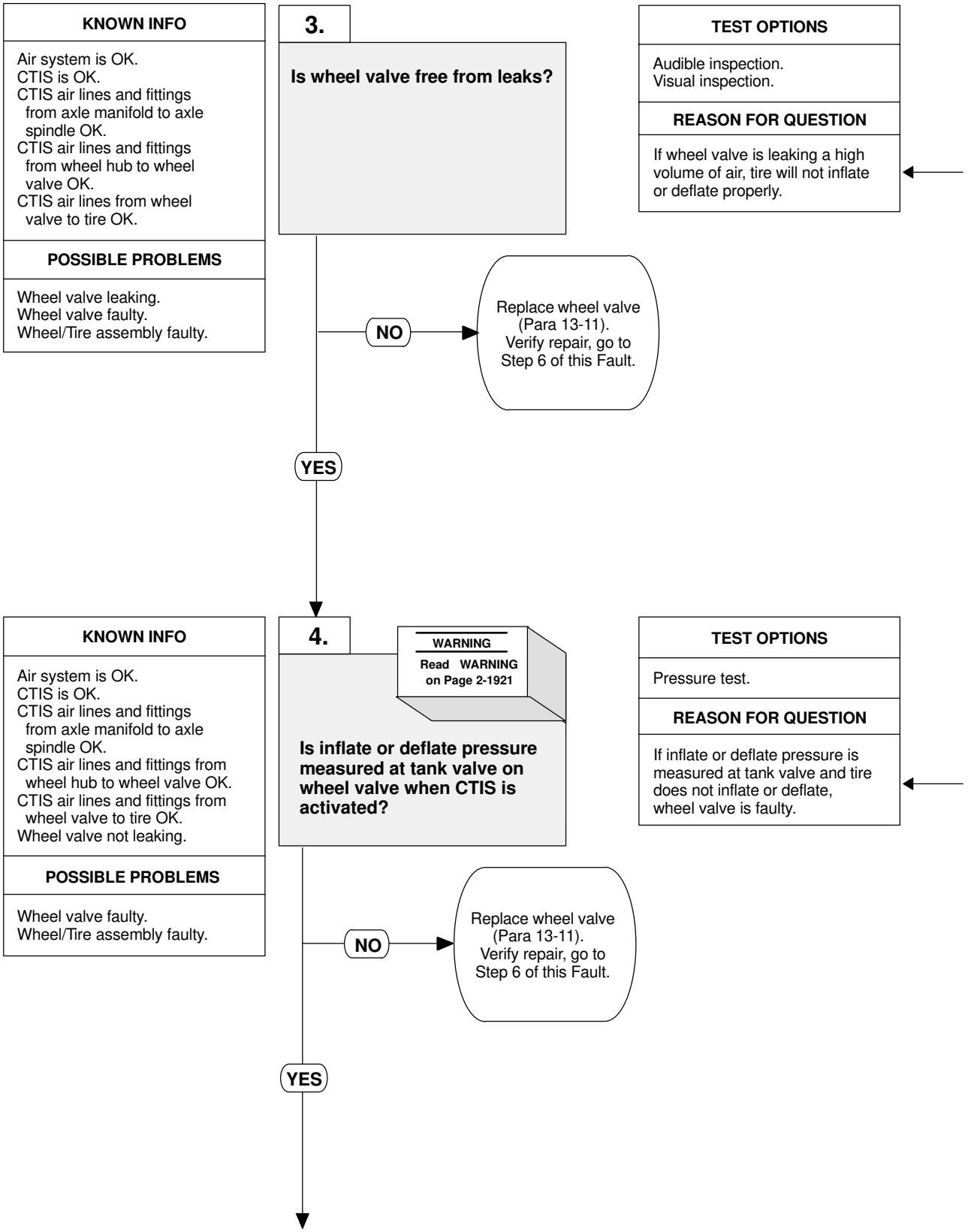
WARNING

- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

VISUAL/AUDIBLE INSPECTION
Check air lines from wheel valve to tire for damage or leaks. (1) If air lines are damaged, crimped or leaking; tighten fittings, replace air lines (Para 13-6). (2) If there are no leaks, crimps or damage; air lines and fittings are OK.



1. ONE TIRE WILL NOT INFLATE OR DEFLATE (CONT).



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.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.
- High air pressure will be released from valve stem when valve core is removed. Stay clear of valve stem after core is removed. Ensure all personnel wear suitable eye protection. Failure to comply may result in injury to personnel.

NOTE

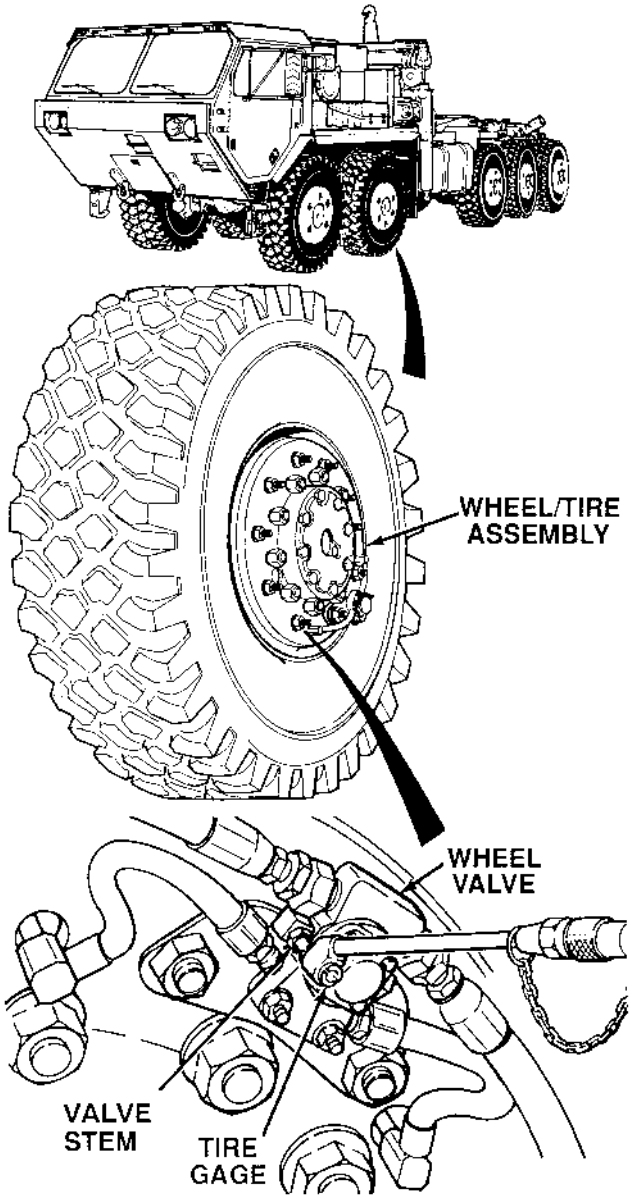
Some air leakage may occur at breather during inflation/deflation cycles. Rapid exhaust of air a breather indicates a faulty valve.

AUDIBLE/VISUAL INSPECTION

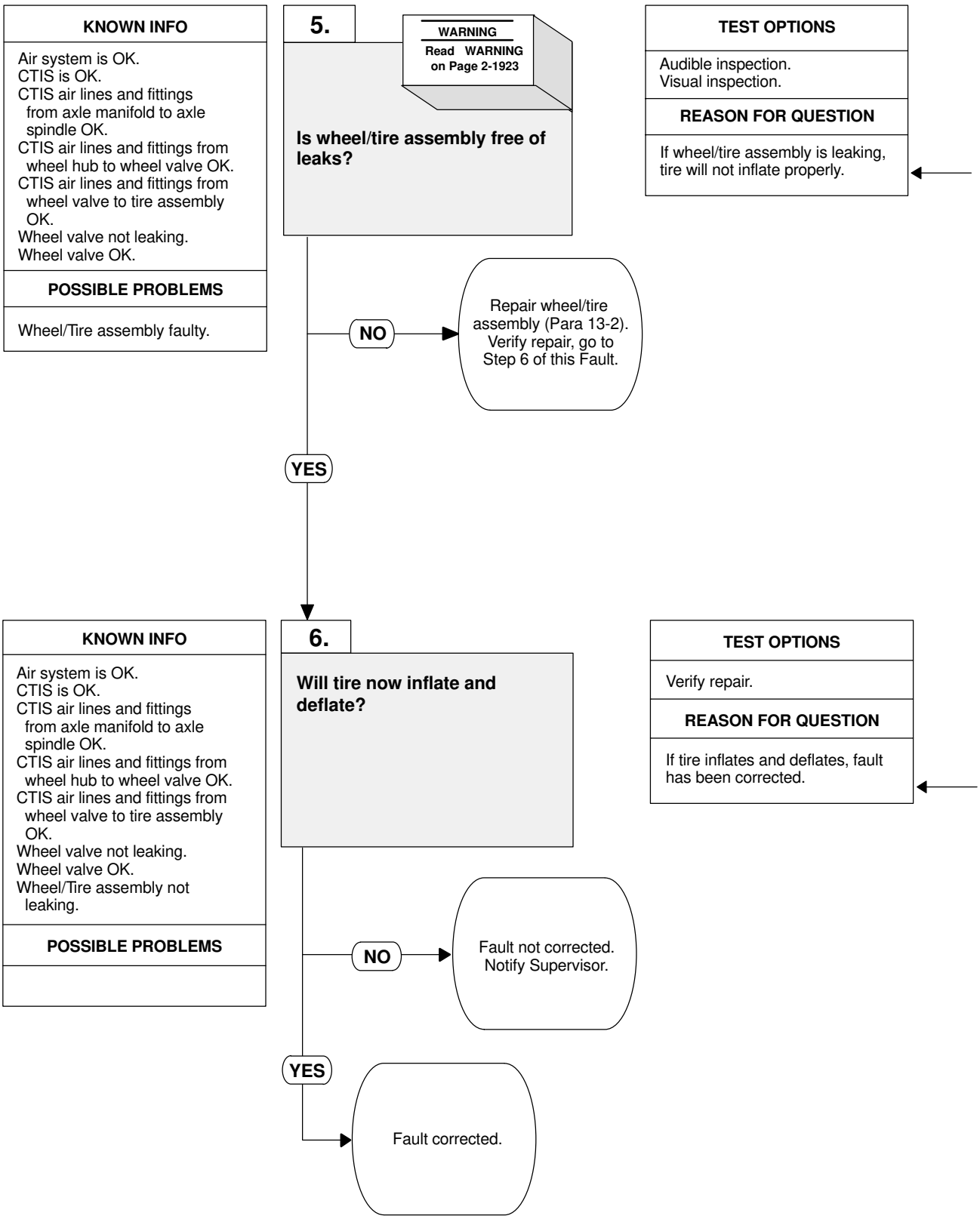
(1) Check wheel valve for air leaks
  (a) If wheel valve is leaking, turn OFF ENGINE switch and replace wheel valve (Para 13-11).
  (b) If there are no leaks, wheel valve is OK.
(2) Turn OFF ENGINE switch.

PRESSURE TEST

(1) Remove valve cap from valve stem.
(2) Position air pressure gage on valve stem.
(3) Start engine (TM 9-2320-364-10).
(4) Position CTIS controller to HIGH-WAY setting.
(5) As assistant presses CTIS start button, observe air gage.
  (a) If there is no increase in air pressure, perform Steps (8) and (9) below and replace wheel valve (Para 13-11).
  (b) If there is an increase in air pressure, go to Step (6) below.
(6) Set CTIS controller to CROSS COUNTRY.
(7) As assistant presses CTIS start button, observe air gage.
  (a) If there is no decrease in air pressure, perform Steps (8) and (9) below and replace wheel valve (Para 13-11).
  (b) If there is a decrease in air pressure, wheel valve is OK.
(8) Turn OFF ENGINE switch.
(9) Remove air gage.
(10) Install valve cap on valve stem.



1. ONE TIRE WILL NOT INFLATE OR DEFLATE (CONT).

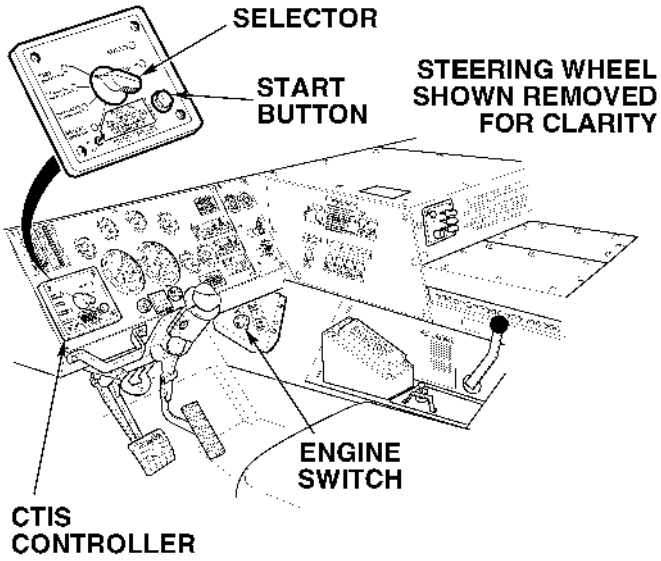


WARNING

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

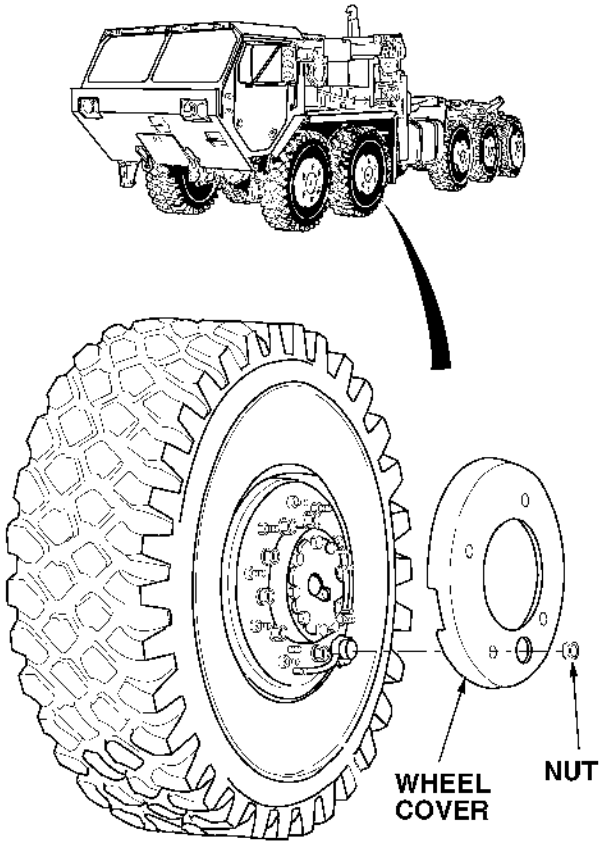
AUDIBLE/VISUAL INSPECTION

(1) Check wheel/tire assembly for leaks.
  (a) If wheel/tire assembly is leaking, repair wheel/tire assembly (Para 13-2).
  (b) If there are no leaks, wheel/tire assembly is OK.
(2) Install wheel cover and four nuts.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
  (a) If tire does not inflate, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
  (b) If tire inflates, go to Step (4) below.
(4) Set CTIS controller selector to CROSS COUNTRY.
(5) Press CTIS START button.
  (a) If tire does not deflate, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
  (b) If tire deflates, fault has been corrected.
(6) Turn OFF ENGINE switch.



2-25. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

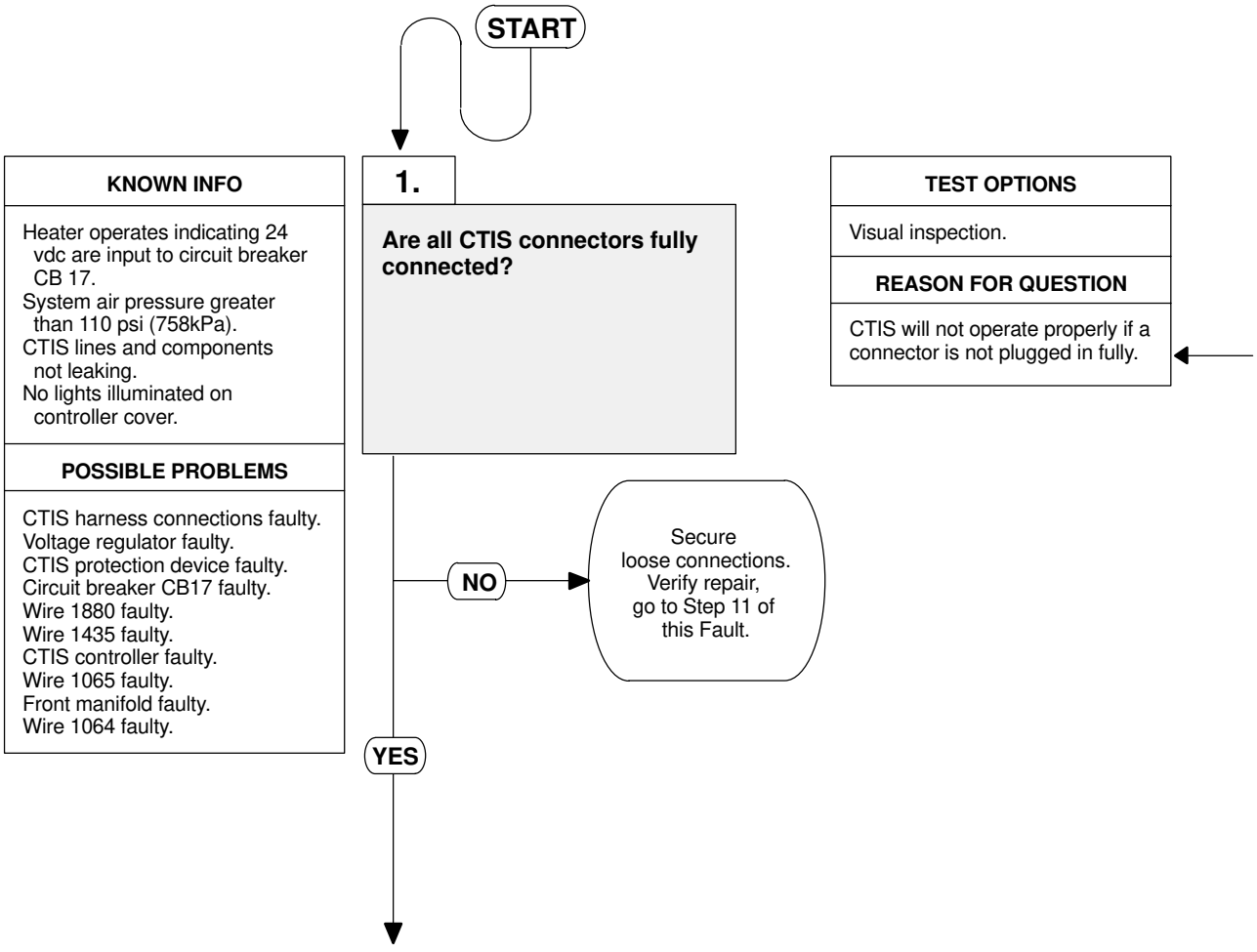
2. CTIS INOPERATIVE.

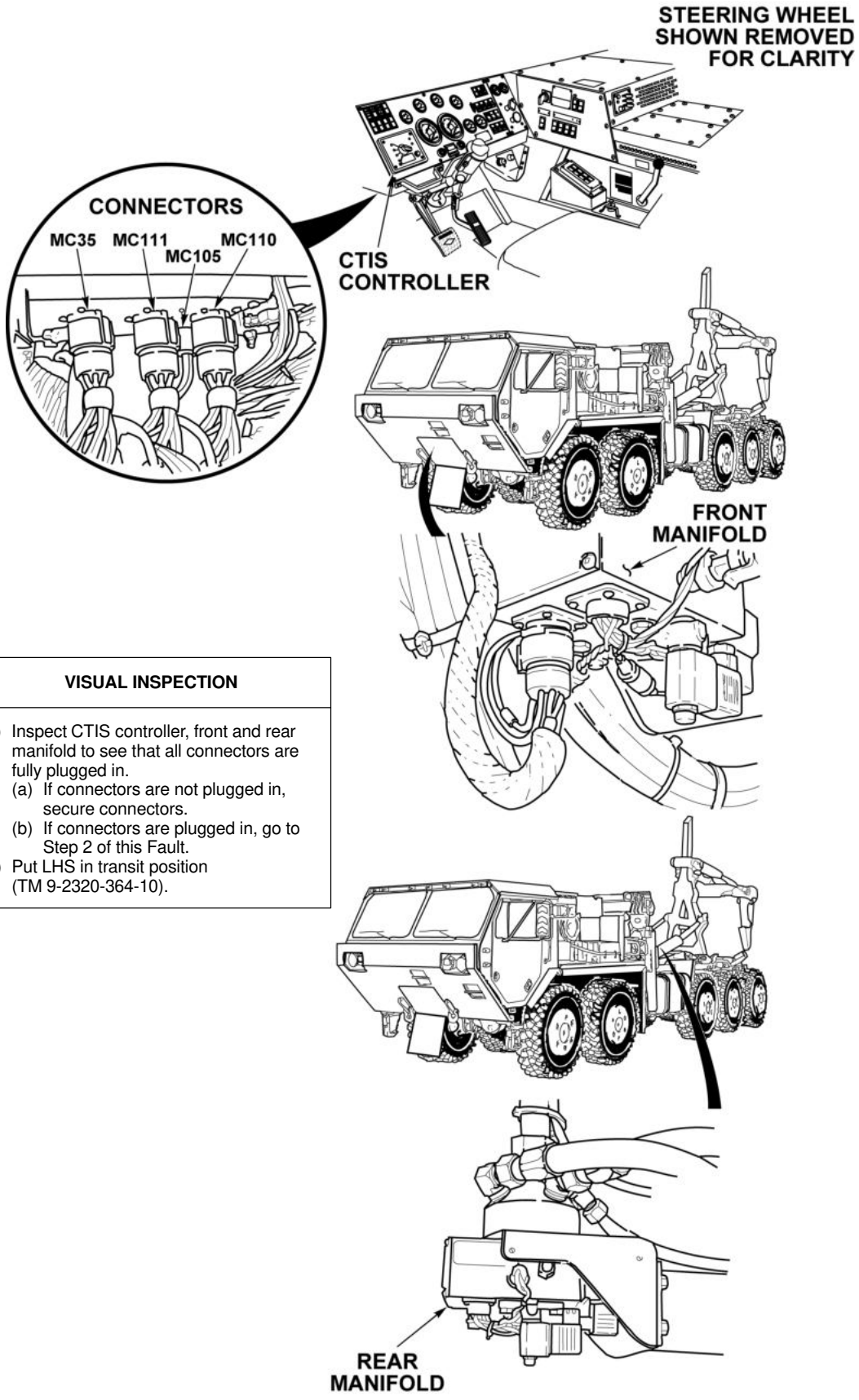
INITIAL SETUP

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)
Jumperwire

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)
Front access cover opened, (TM 9-2320-364-10)
CTIS turned on, (TM 9-2320-364-10)
LHS fully extended, (TM 9-2320-364-10)

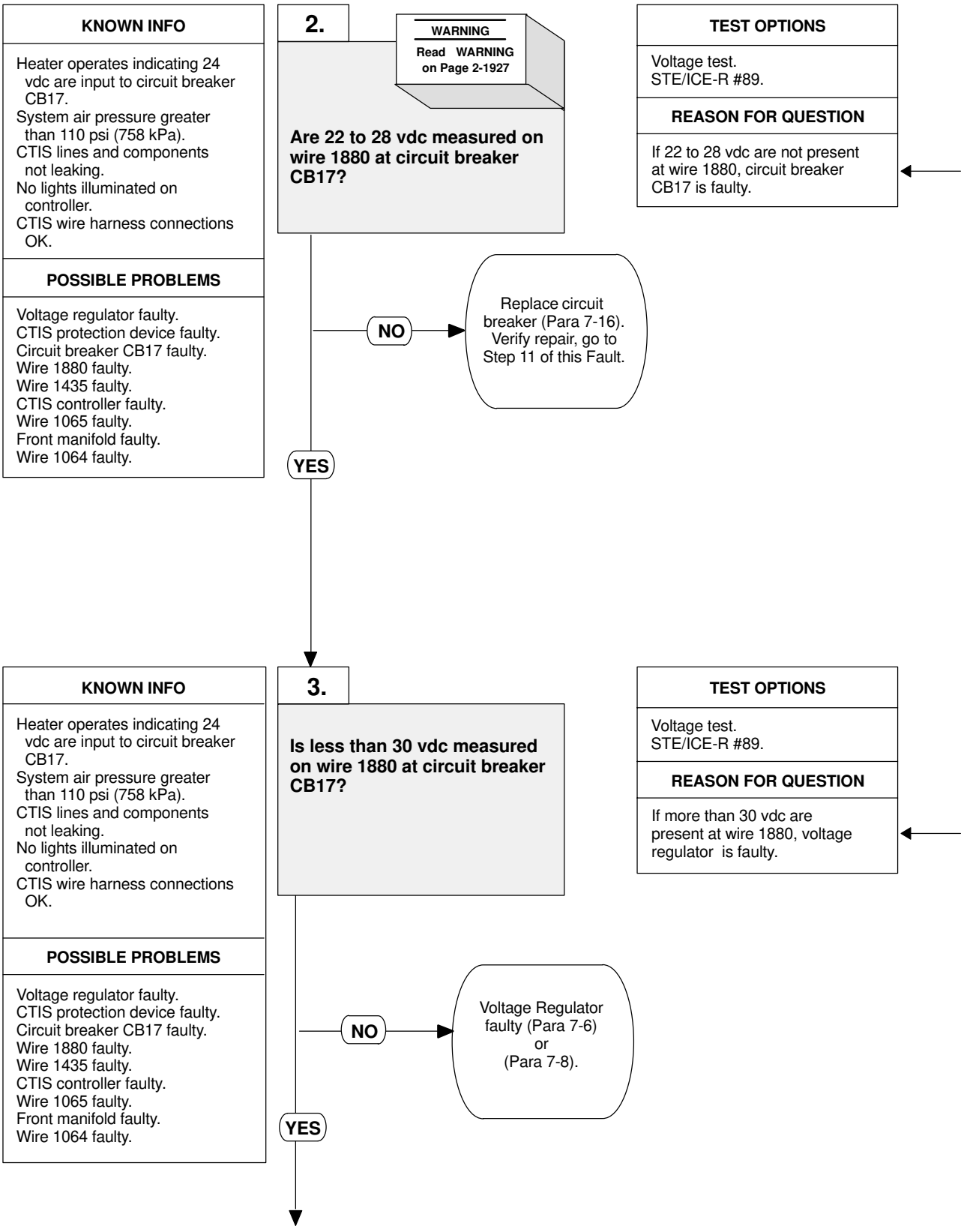




VISUAL INSPECTION

(1) Inspect CTIS controller, front and rear manifold to see that all connectors are fully plugged in.
   (a) If connectors are not plugged in, secure connectors.
   (b) If connectors are plugged in, go to Step 2 of this Fault.
(2) Put LHS in transit position (TM 9-2320-364-10).

2. CTIS INOPERATIVE (CONT).



WARNING

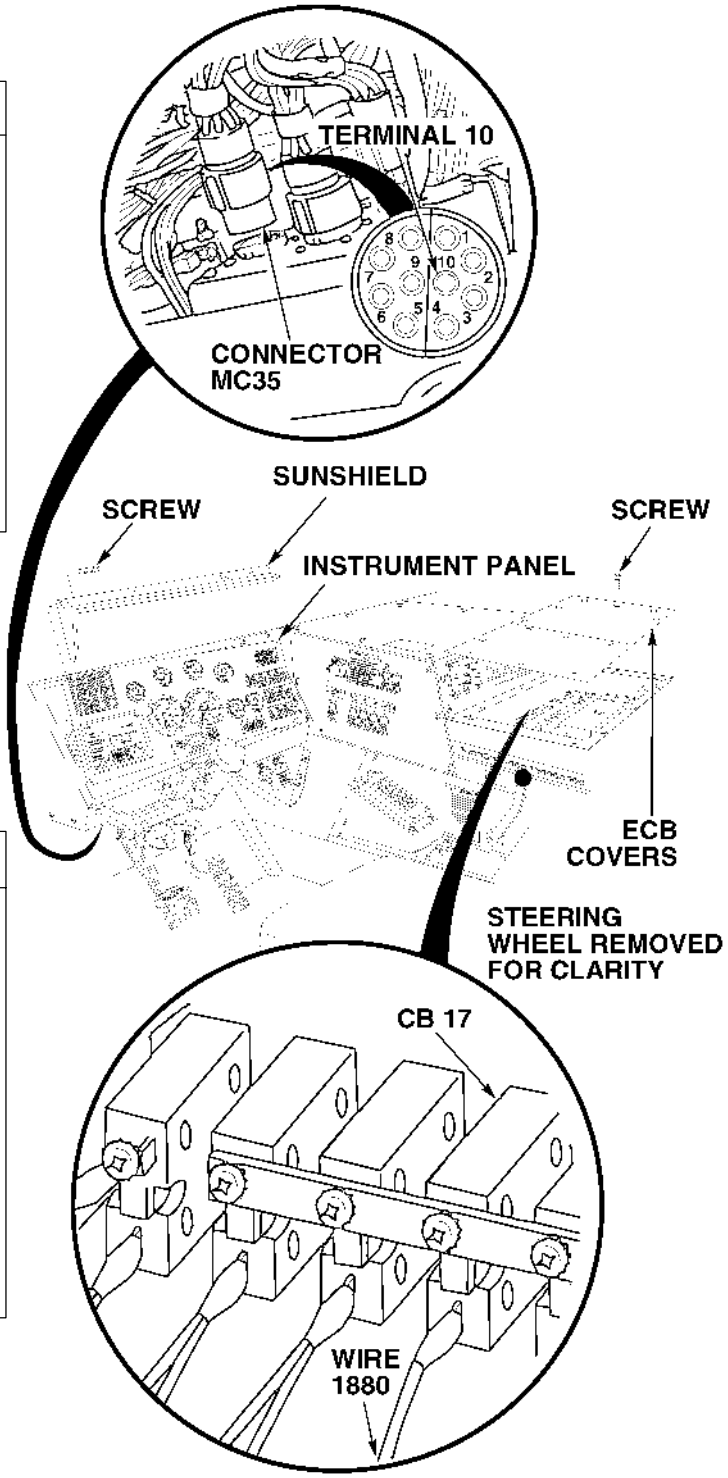
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positve electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

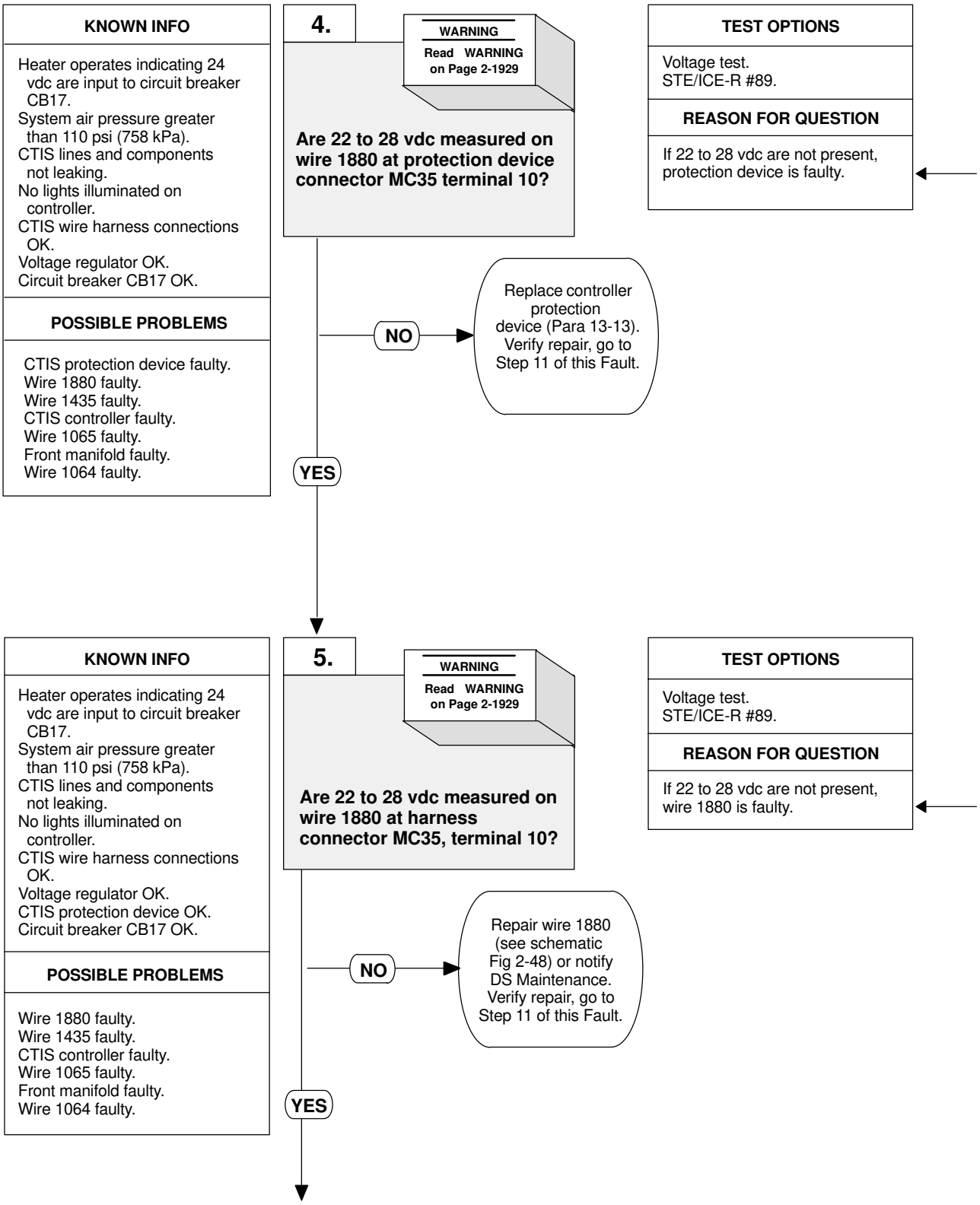
(1) Remove 15 screws and ECB covers.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to wire 1880 at CB17.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace CB17 (Para 7-16).
  (b) If 22 to 28 vdc are present, CB17 is OK.
(6) Turn OFF ENGINE switch.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to wire 1880 at CB17.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 30± vdc are present, turn OFF ENGINE switch and replace voltage regulator (Para 7-6) or Para 7-8).
  (b) If 22 to 28 vdc are present, voltage output is OK.
(5) Turn OFF ENGINE switch.
(6) Install ECB covers and 15 screws.



2. CTIS INOPERATIVE (CONT).

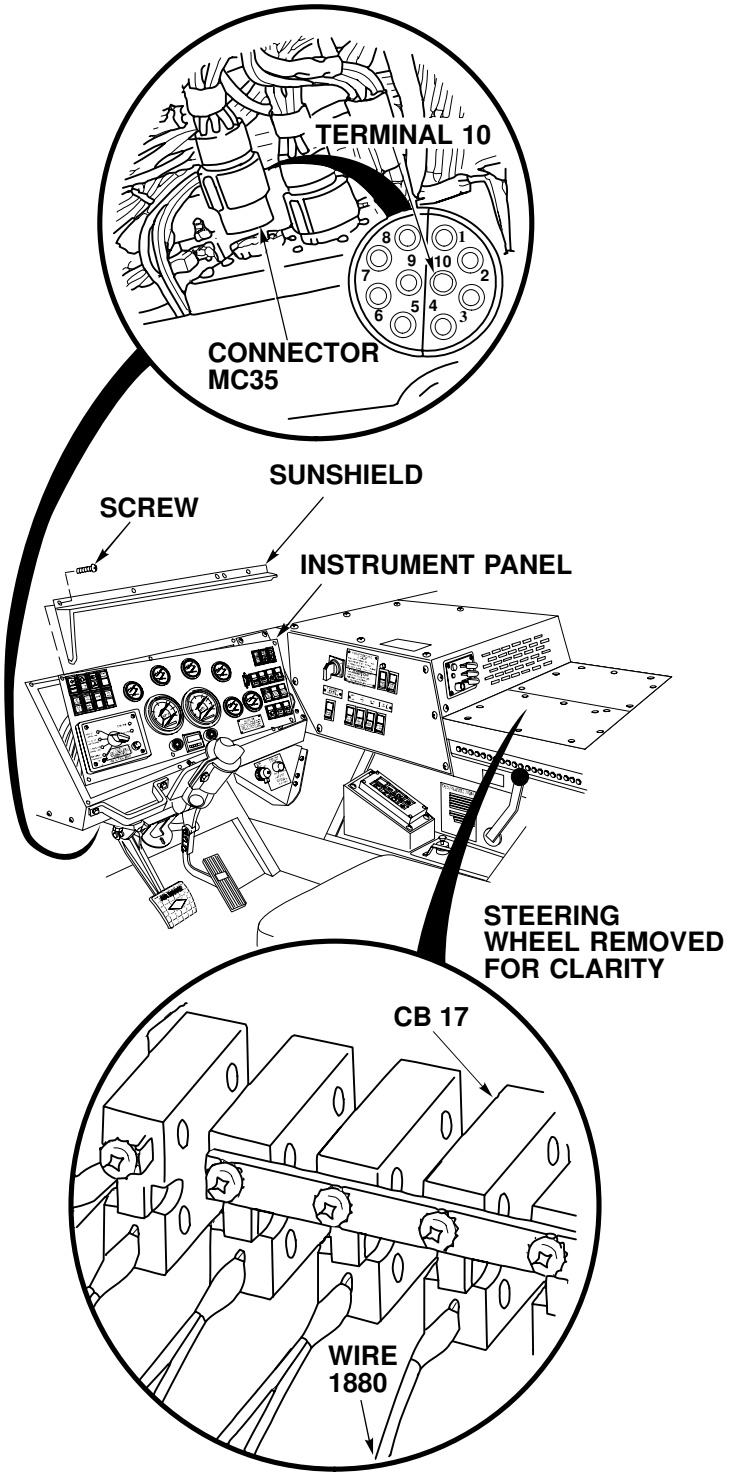


WARNING

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

VOLTAGE TEST

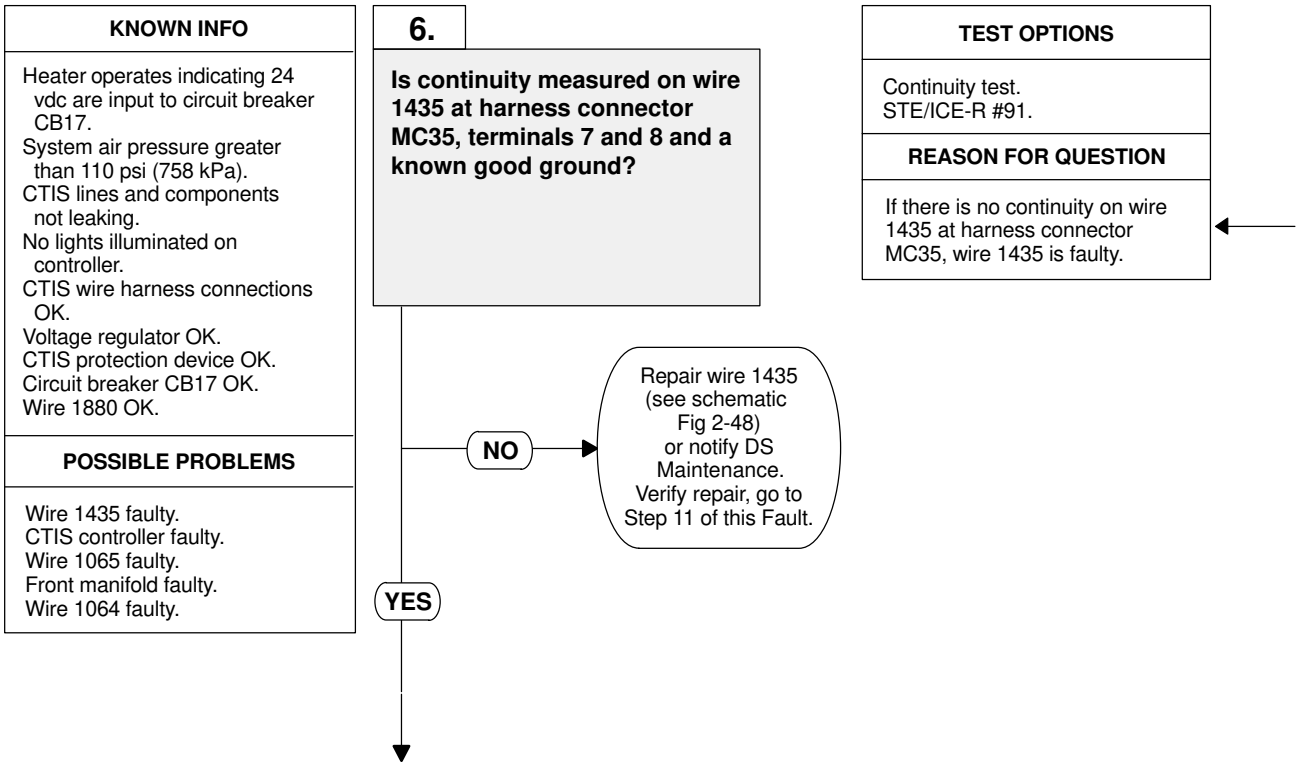
(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect harness connector MC35 from back of CTIS controller.
(4) Connect positive (+) multimeter lead to wire 1880 at harness connector MC35, terminal 10.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present turn OFF ENGINE switch and replace controller protection device (Para 13-13) (see schematic Fig 2-48) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, controller protection device is OK.
(7) Turn OFF ENGINE switch.



VOLTAGE TEST

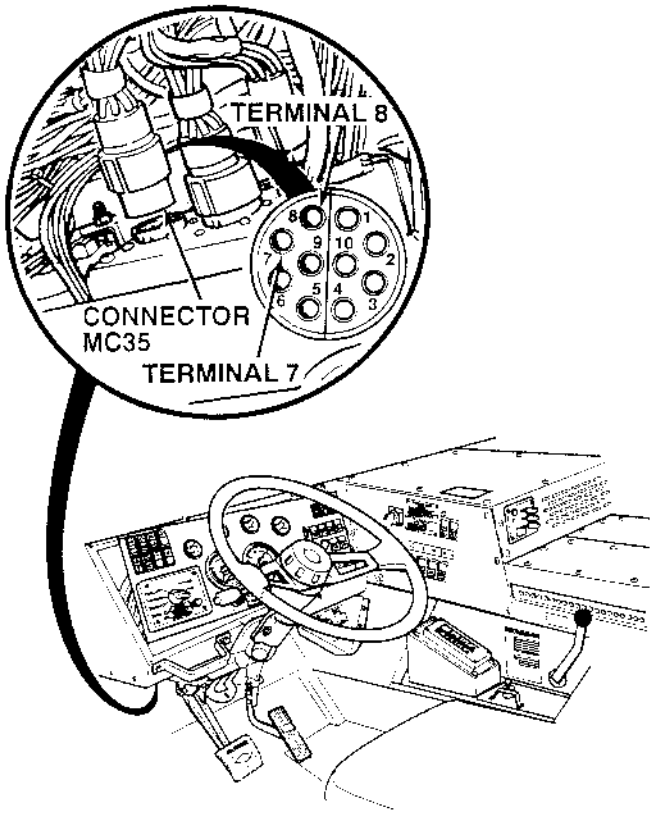
(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect harness connector MC35 from back of CTIS controller.
(4) Connect positive (+) multimeter lead to wire 1880 at harness connector MC35, terminal 10.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) 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 1880 (see schematic Fig 2-48) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, wire 1880 is OK.
(7) Turn OFF ENGINE switch.

2. CTIS INOPERATIVE (CONT).

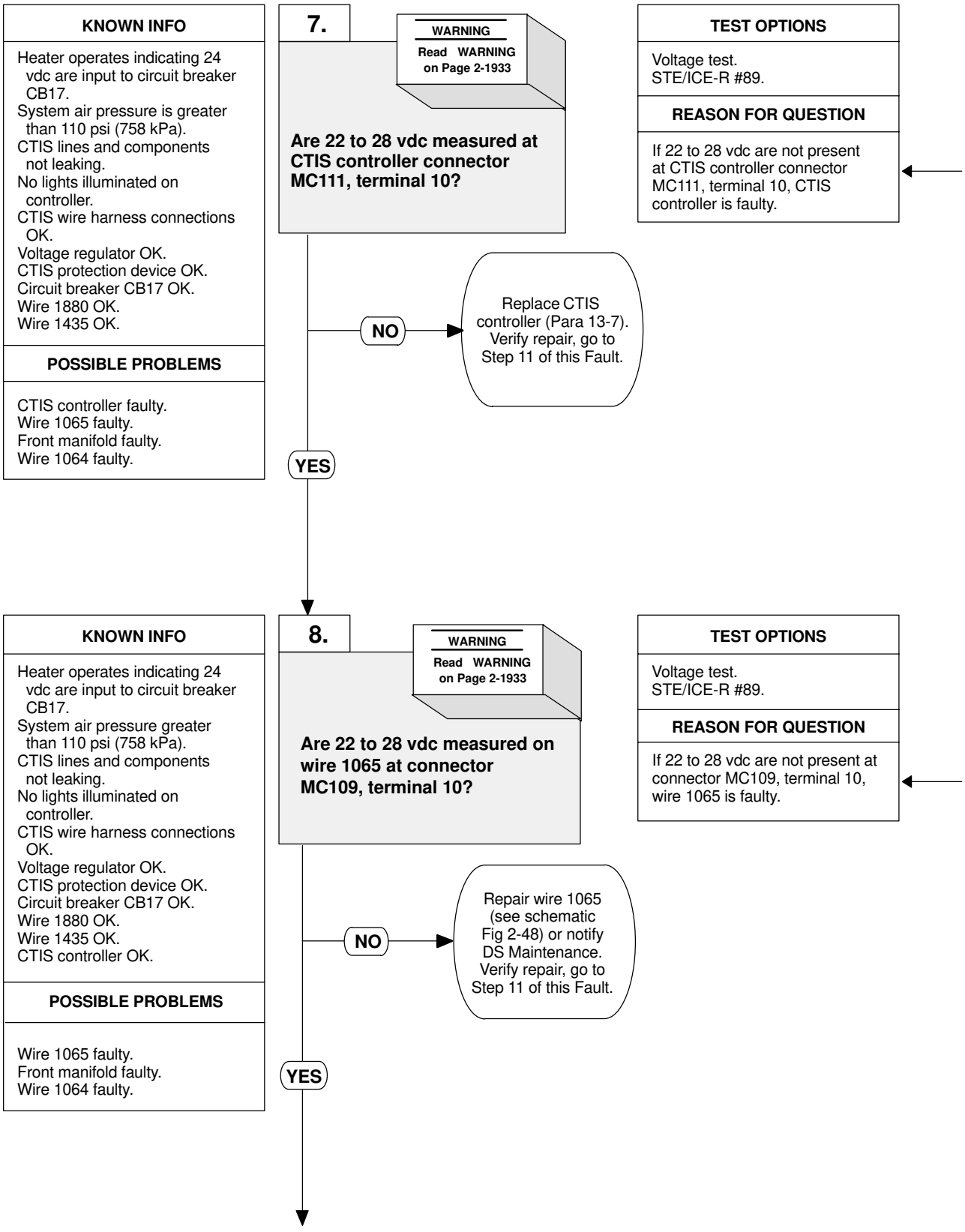


CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between harness connector MC35, terminal 7 and a known good ground and terminal 8 and a known good ground?
    (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-48) or notify DS Maintenance.
    (b) If there is continuity, wire 1435 is OK.
(3) Connect harness connector MC35 at CTIS controller.



2. CTIS INOPERATIVE (CONT).

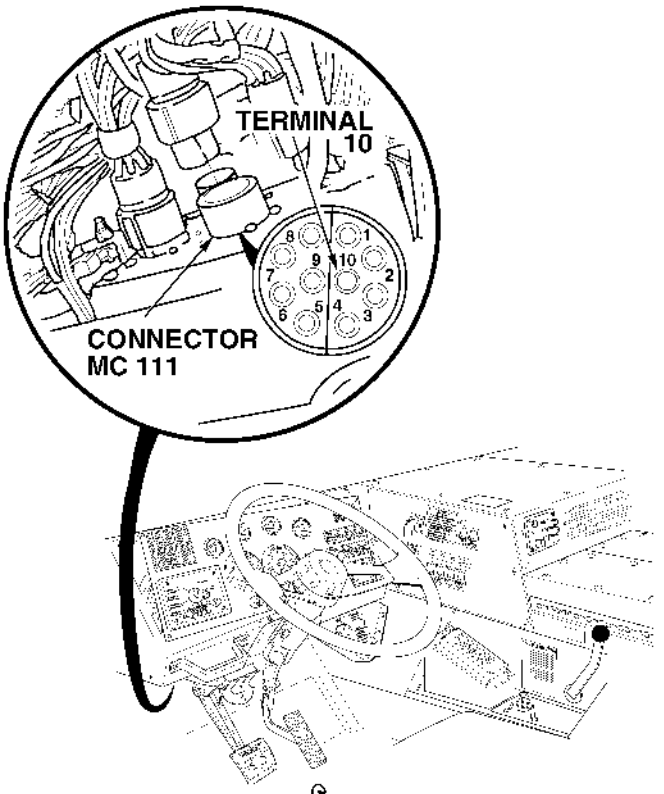


WARNING

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

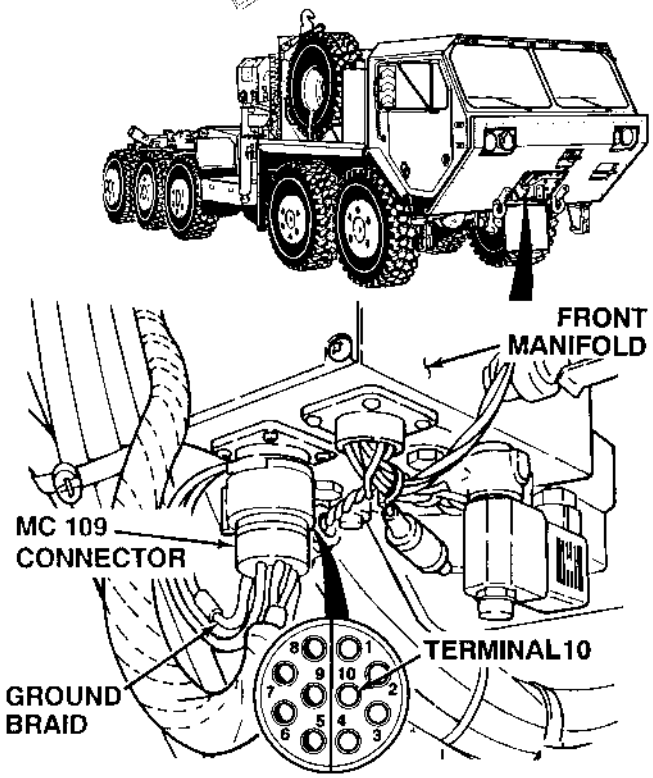
VOLTAGE TEST

(1) Disconnect harness connector MC111 from back of CTIS controller.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to CTIS controller connector MC111, terminal 10.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace CTIS controller (Para 13-7).
  (b) If 22 to 28 vdc are present, CTIS controller is OK.
(6) Turn OFF ENGINE switch.
(7) Connect harness connector MC111 on back of CTIS controller.



VOLTAGE TEST

(1) Disconnect front manifold harness connector MC109.
(2) Connect positive (+) multimeter lead to wire 1065 at harness connector MC109, terminal 10.
(3) Connect negative (–) multimeter lead to front manifold ground braid.
(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 1065 (see schematic Fig 2-48) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, wire 1065 is OK.
(5) Turn OFF ENGINE switch.
(6) Connect harness connector MC109 on front manifold.



2. CTIS INOPERATIVE (CONT).

KNOWN INFO

Heater operates indicating 24 vdc are input to circuit breaker CB17.
System air pressure is greater than 110 psi (758 kPa).
CTIS lines and components not leaking.
No lights illuminated on controller.
CTIS wire harness connections OK.
Votlage regulator OK.
CTIS protection device OK.
Circuit breaker CB17 OK.
Wire 1880 OK.
Wire 1435 OK.
CTIS controller OK.
Wire 1065 OK.

POSSIBLE PROBLEMS

Front manifold faulty.
Wire 1064 faulty.

9.

WARNING
Read WARNING on Page 2-1935

Are 13-14 vdc measured at back of connector MC109, terminal 9 with MC109 connected to front manifold?

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If 13-14 vdc are not present at front manifold connector MC109, terminal 9, front manifold is faulty.

NO → Replace front manifold (Para 13-8). Verify repair, go to Step 11 of this Fault.

YES

KNOWN INFO

Heater operates indicating 24 vdc are input to circuit breaker CB17.
System air pressure is greater than 110 psi (758 kPa).
CTIS lines and components not leaking.
No lights illuminated on controller.
CTIS wire harness connections OK.
Voltage regulator OK.
CTIS protection device OK.
Circuit breaker CB17 OK.
Wire 1880 OK.
Wire 1065 OK.
Wire 1435 OK.
CTIS controller OK.
Wire 1065 OK.
Front manifold OK.

POSSIBLE PROBLEMS

Wire 1064 faulty.

10.

Is continuity measured on wire 1064 between harness connector MC109 and harness connector MC111?

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If there is no continuity, wire 1064 is faulty. If there is continuity, CTIS controller is faulty.

NO → Repair wire 1064 (see schematic Fig 2-48) or notify DS Maintenance. Verify repair, go to Step 11 of this Fault.

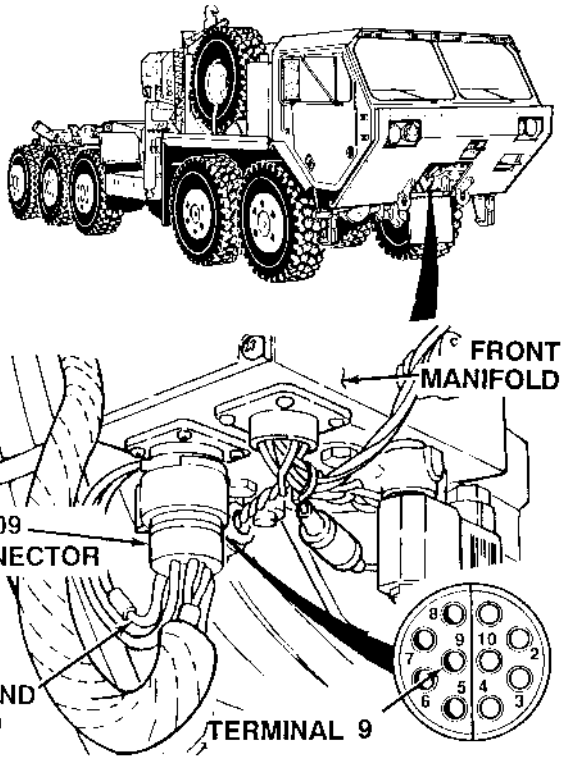
YES → Replace CTIS controller (Para 13-7). Verify repair, go to Step 9 of this Fault.

WARNING

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

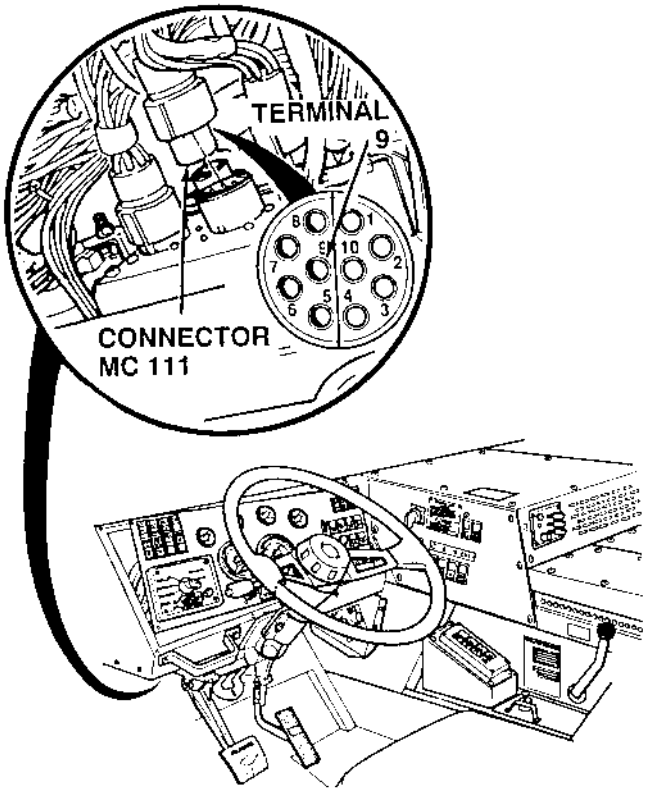
VOLTAGE TEST

(1) Insert positive (+) multimeter lead, with long probe installed, at back of connector MC109, terminal 9.
(2) Connect negative (–) multimeter lead to front manifold ground braid.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 13-14 vdc are not present, turn OFF ENGINE switch and replace front manifold (Para 13-8).
  (b) If 13-14 vdc are present, front manifold is OK.
(4) Turn OFF ENGINE switch.

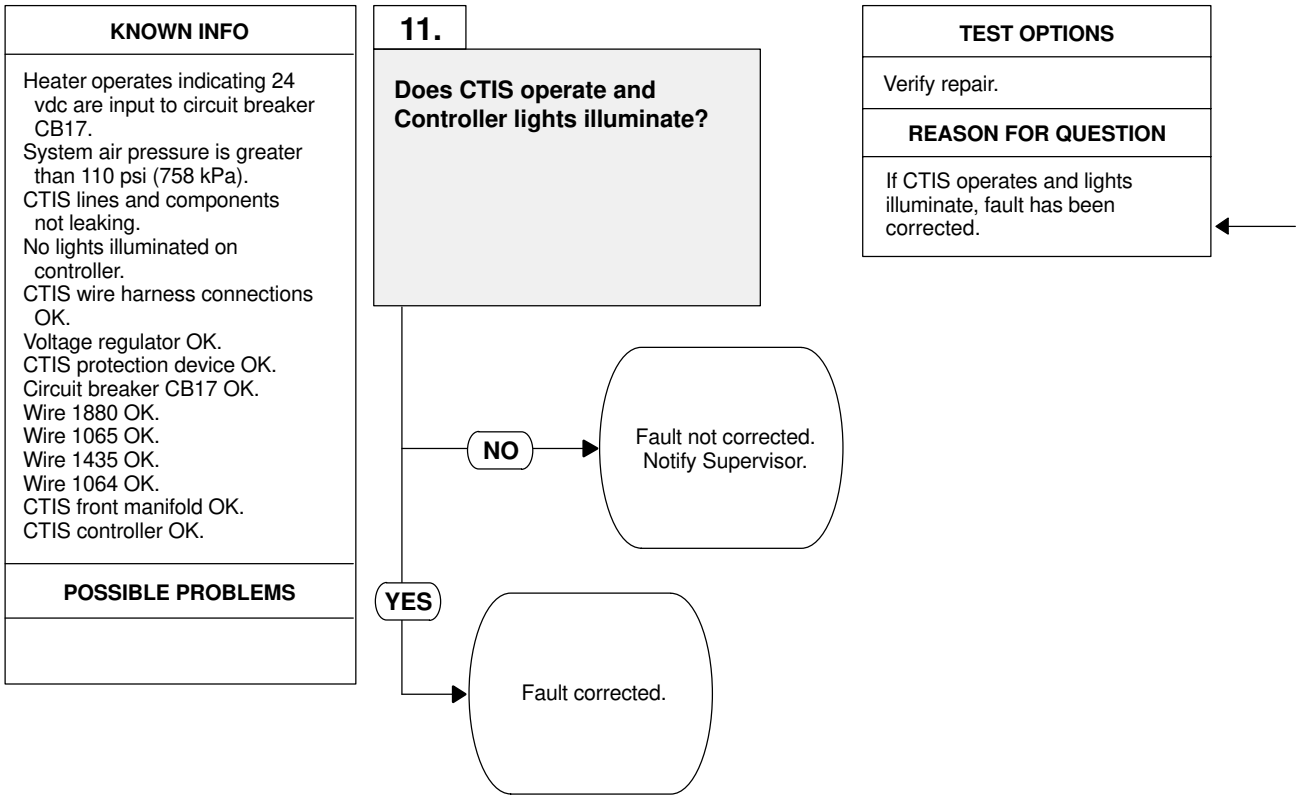


CONTINUITY TEST

(1) Disconnect harness connectors MC109 and MC111.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between harness connectors MC109, terminal 9 and MC111, terminal 9?
  (a) If there is no continuity, repair wire 1064 (see schematic Fig 2-48) or notify DS Maintenance.
  (b) If there is continuity, wire 1064 is OK, replace CTIS controller (Para 13-7).
(4) Connect harness connectors MC109 and MC111.
(5) Close front access cover (TM 9-2320-364-10).

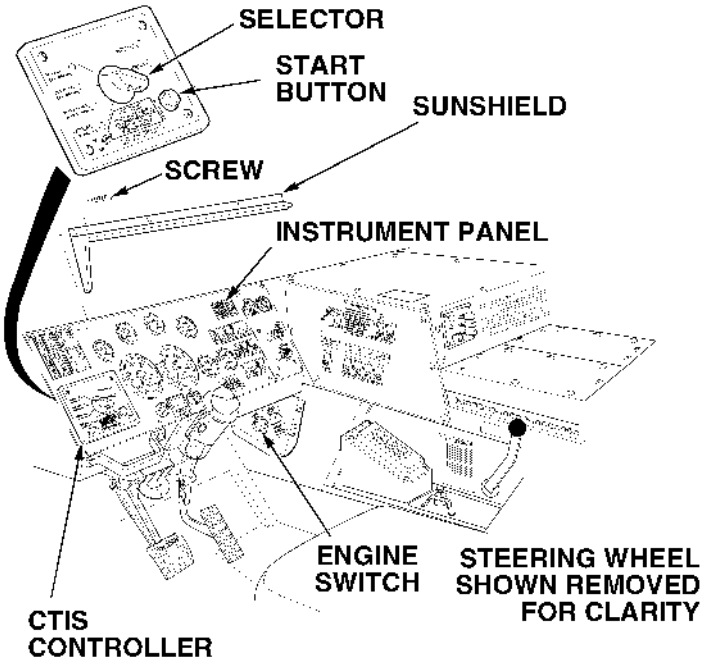


2. CTIS INOPERATIVE (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to CROSS COUNTRY.
(3) Press CTIS START button.
    (a) If tires do not deflate, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If tires deflate, go to Step (4) below.
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
    (a) If tires do not inflate, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If tires inflate, fault has been corrected.
(6) Turn OFF ENGINE switch.
(7) Install instrument panel and sunshield with ten screws.
(8) Stow LHS in transit position.



2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

3. ALL TIRES ON AXLES NO. 3 THROUGH NO. 5 WILL NOT DEFLATE.

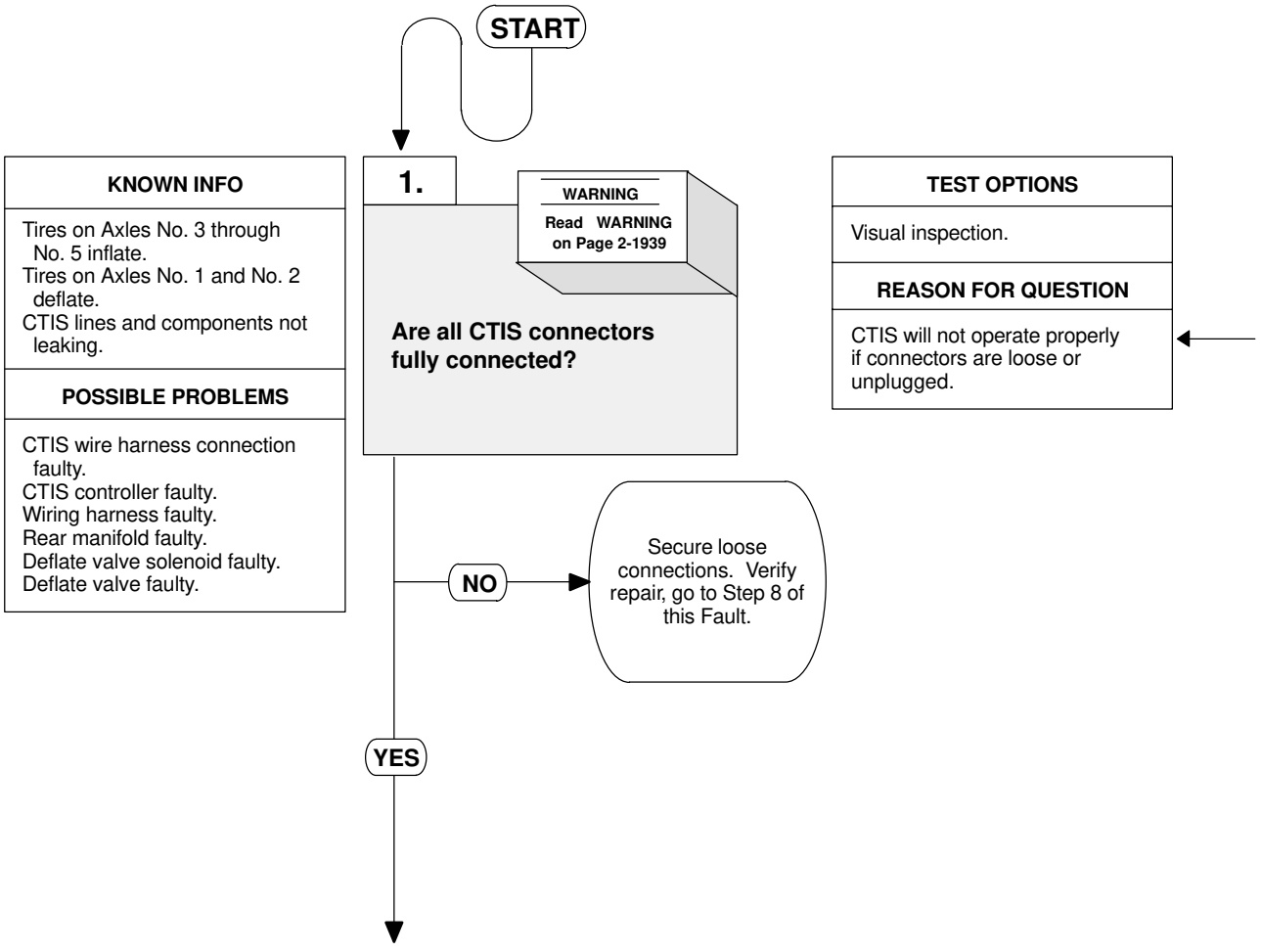
INITIAL SETUP

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)
Jumperwire

Personnel Required
Two

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)
CTIS rear manifold cover removed, (Para 13-9)
Load Handling System (LHS) extended fully, (TM 9-2320-364-10)
CTIS turned on, (TM 9-2320-364-10)
Front access cover opened, (TM 9-2320-364-10)



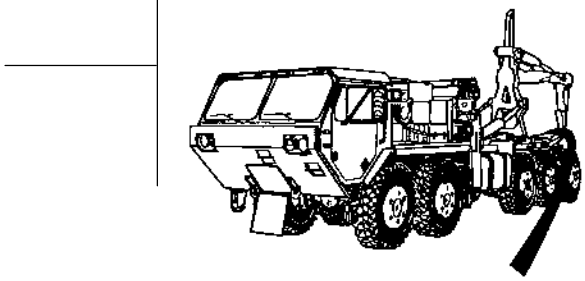
WARNING

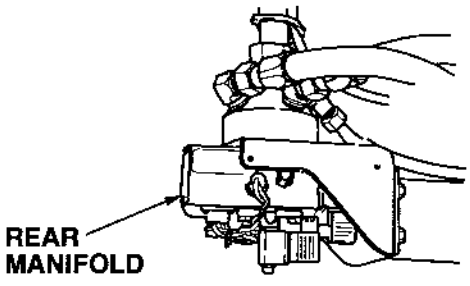
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

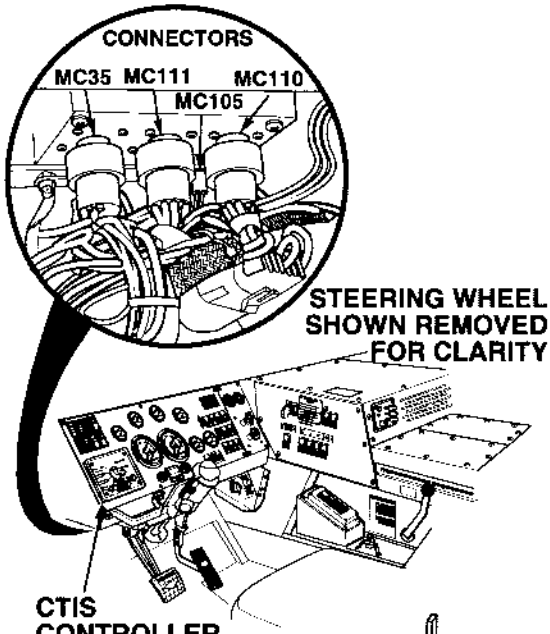
NOTE

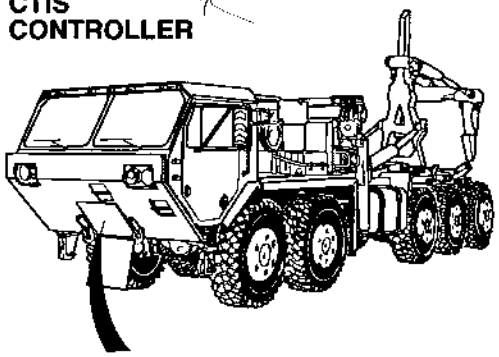
The CTIS initially and periodically checks for system air leaks. The CTIS controller will display a flashing Low Air light and shut off if 6 psi (41 kPa) cannot be maintained by the CTIS. The manifold will click during this check for approximately 1-1/2 minutes.

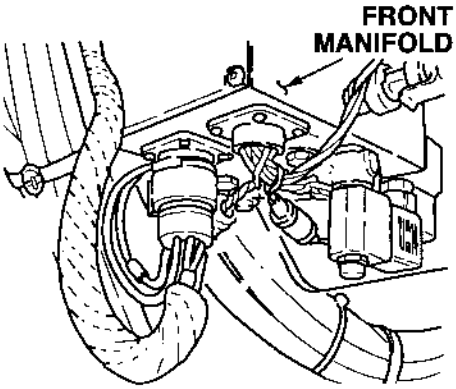
VISUAL INSPECTION
(1) Inspect CTIS controller, front and rear manifolds to ensure that all connectors are fully plugged in. (a) If connectors are not plugged in, secure connectors. (b) If connectors are plugged in, go to Step 2 of this Fault. (2) Close front access cover (TM 9-2320-364-10).



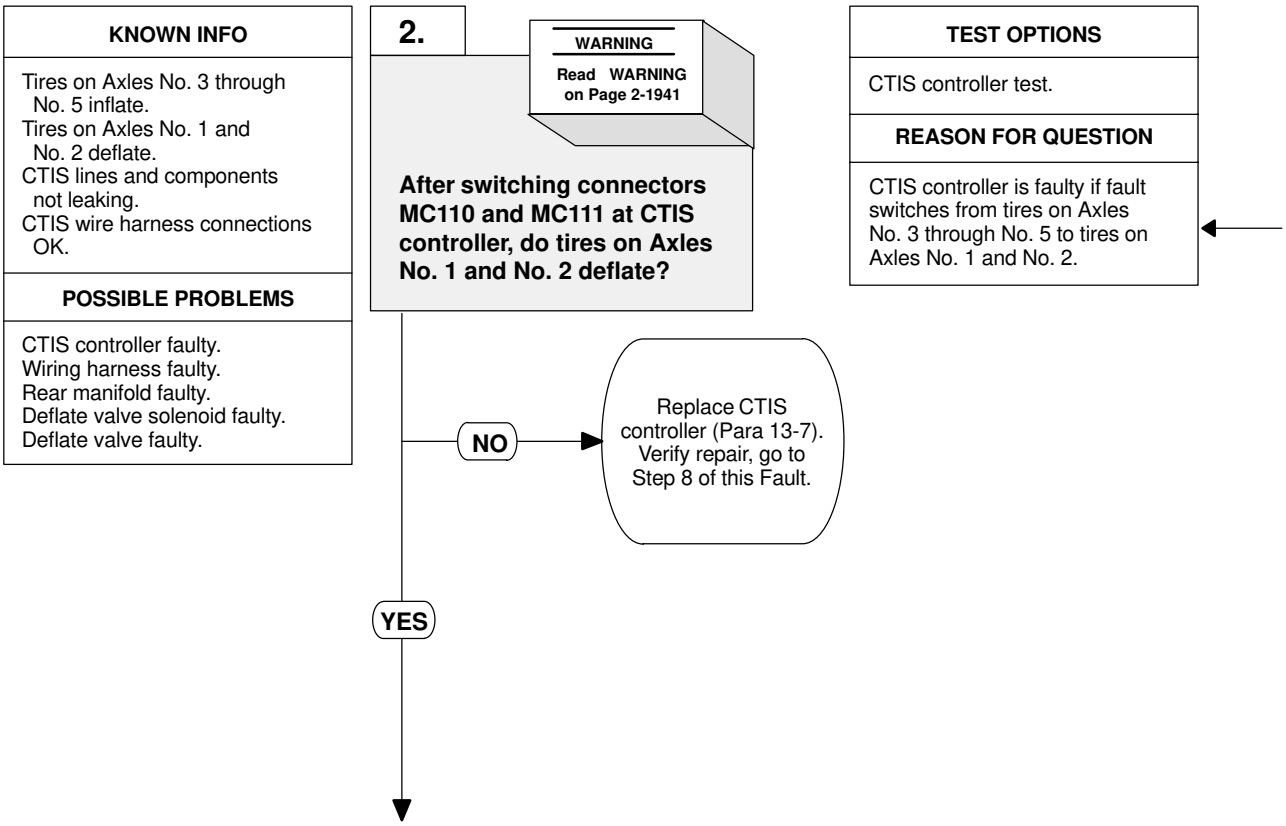








3. ALL TIRES ON AXLES NO. 3 THROUGH NO. 5 WILL NOT DEFLATE (CONT).

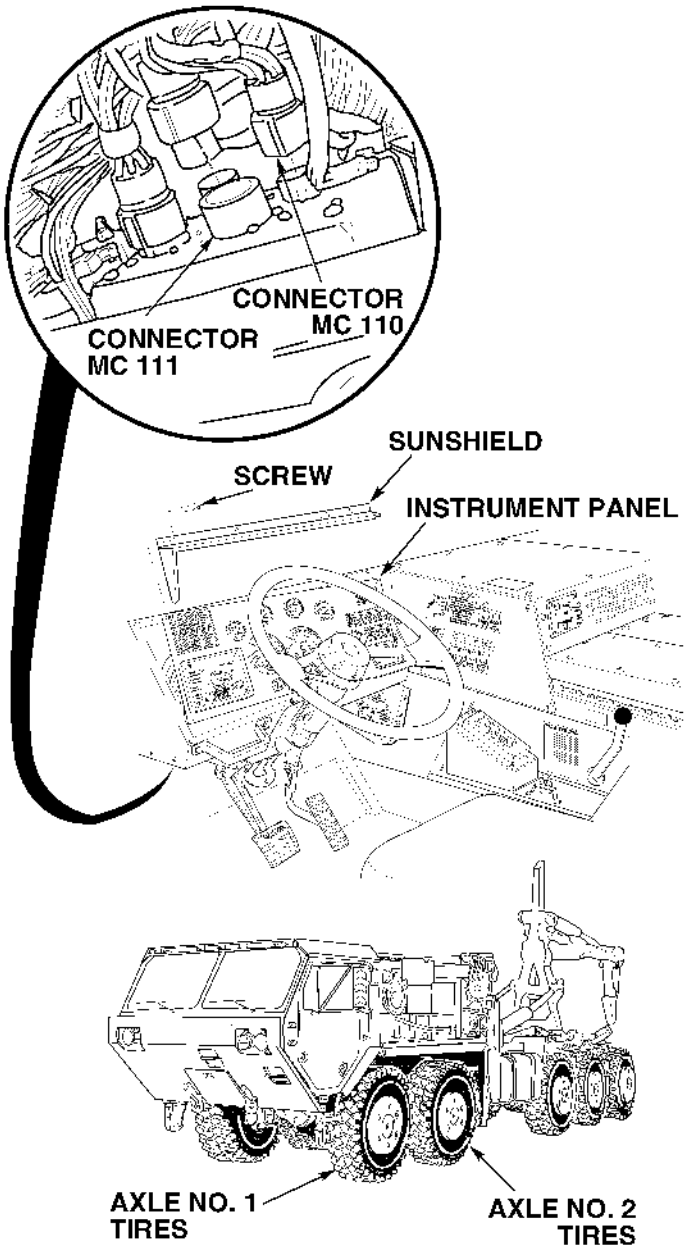


WARNING

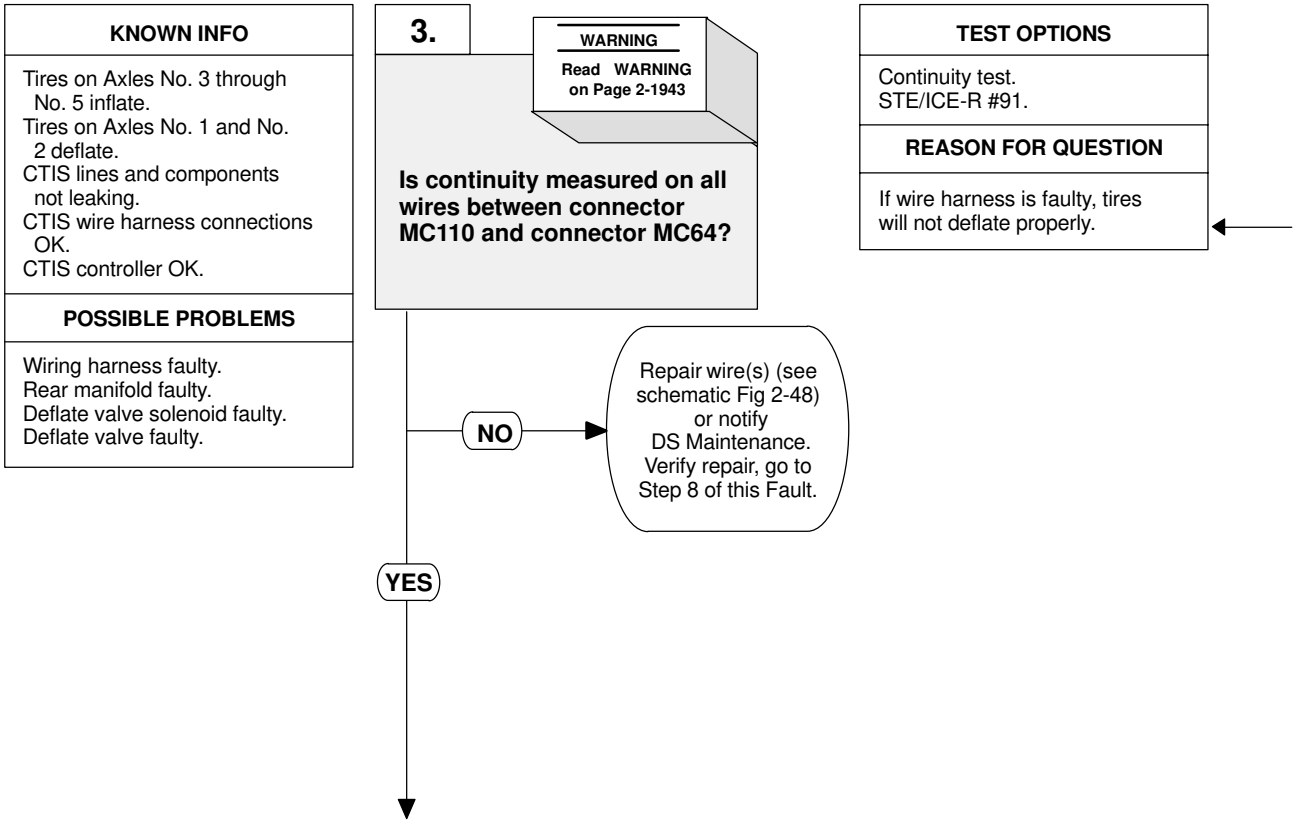
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positve electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CTIS CONTROLLER TEST

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect rear manifold harness connector MC110 from back of CTIS controller.
(4) Disconnect front manifold harness connector MC111 from back of CTIS controller.
(5) Connect harness connector MC111 into CTIS controller where connector MC110 was disconnected.
(6) Connect harness connector MC110 into CTIS controller where connector MC111 was disconnected.
(7) Start engine (TM 9-2320-364-10).
(8) Set CTIS controller to CROSS COUNTRY.
(9) As assistant pushes CTIS controller START button, observe tires.
  (a) If tires on Axles No. 1 and No. 2 do not deflate, replace CTIS controller (Para 13-7).
  (b) If tires on Axles No. 1 and No. 2 deflate, CTIS controller is OK.
(10) Turn OFF ENGINE switch.
(11) Disconnect and connect connectors MC110 and MC111 to correct CTIS controller connectors.
(12) Start engine.
(13) Set CTIS controller to HIGHWAY and allow tire pressure to build.
(14) Turn OFF ENGINE switch.



3. ALL TIRES ON AXLES NO. 3 THROUGH NO. 5 WILL NOT DEFLATE (CONT).



WARNING

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

NOTE

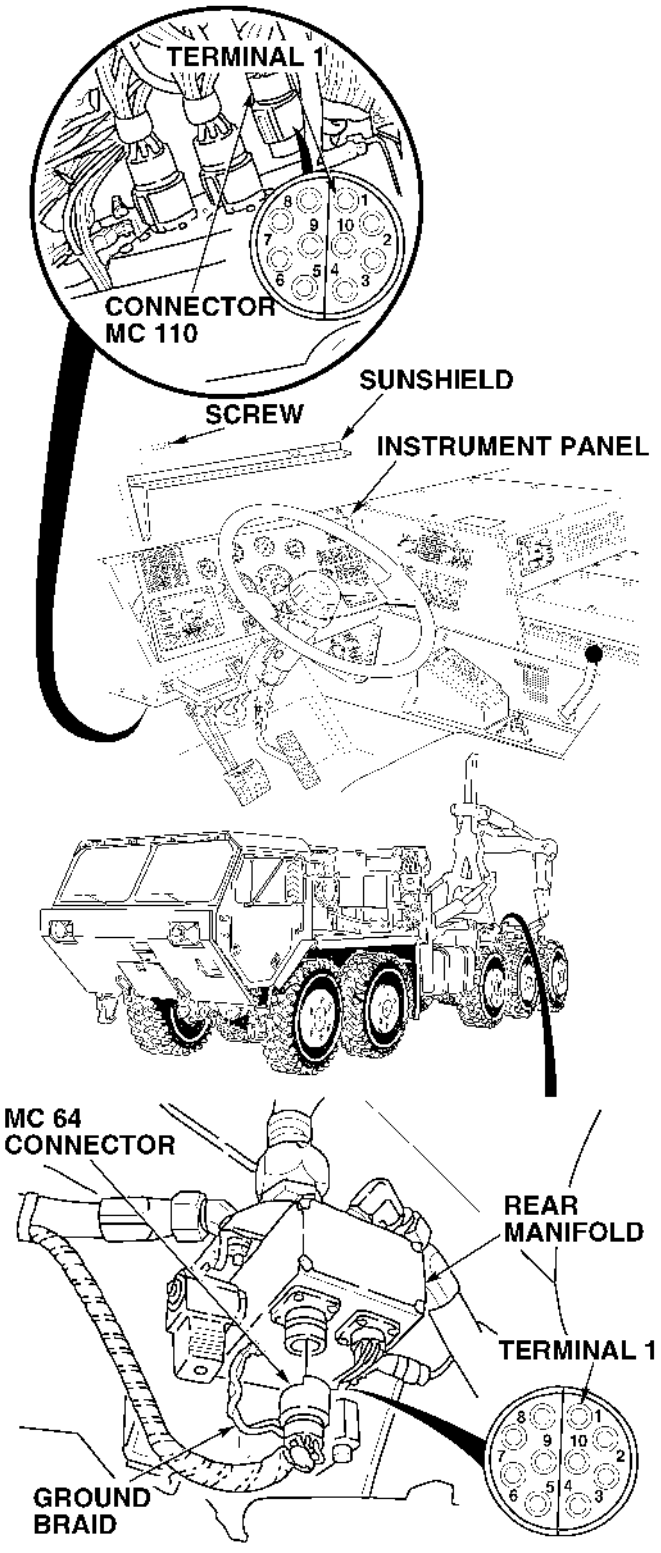
Terminal (5) at MC 110 is plugged and does not connect to Terminal (5) on MC 64.

CONTINUITY TEST

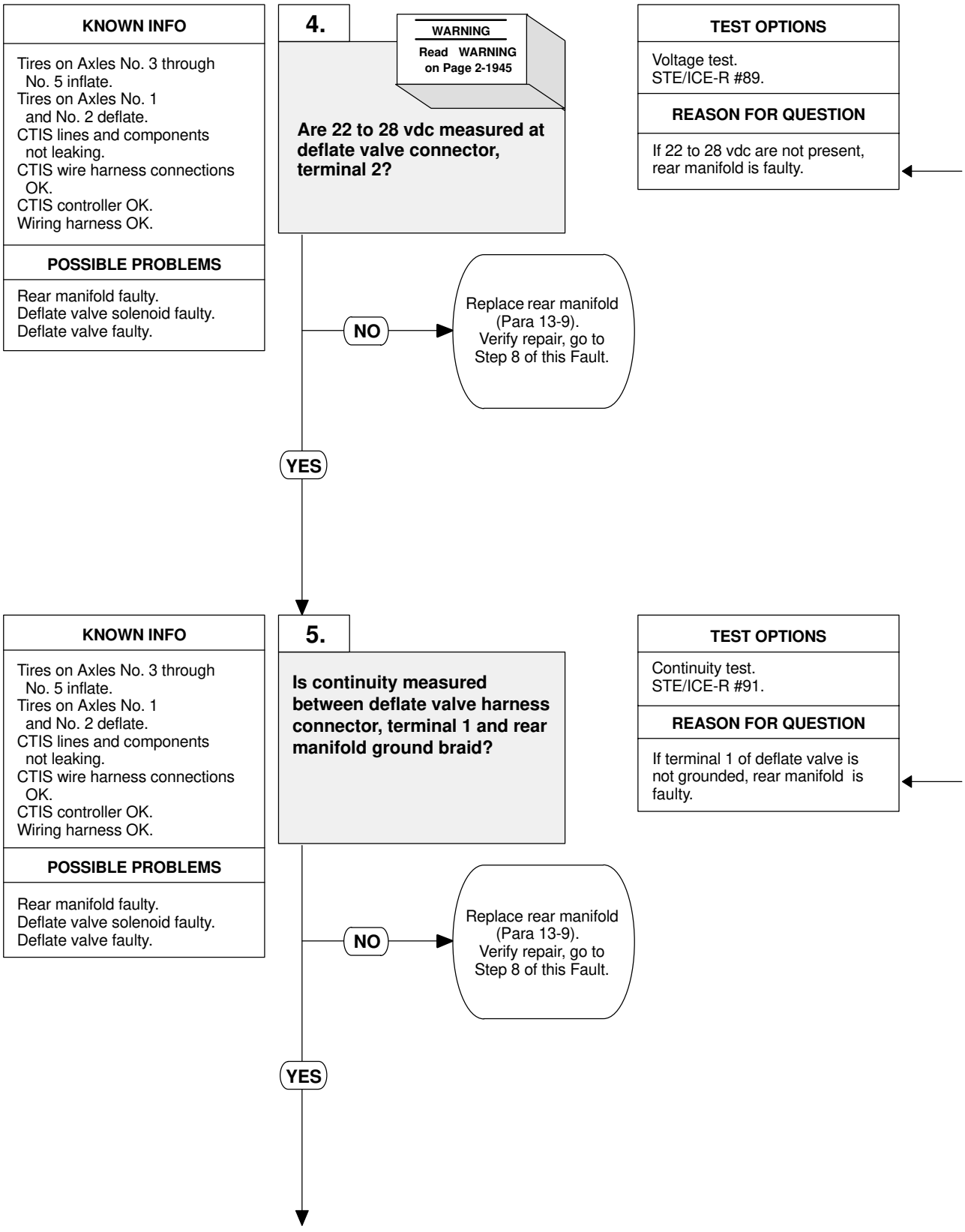
(1) Disconnect connector MC64 from rear manifold.
(2) Connect jumperwire between wire 1072 on CTIS controller connector MC110, terminal 1 and a known good ground.
(3) Set multimeter select switch to ohms.
(4) Is there continuity between connector MC64, terminal 1 and rear manifold ground braid?
  (a) If there is no continuity, repair wire 1072 (see schematic Fig 2-48) or notify DS Maintenance, and perform Steps (6) through (9) below.
  (b) If there is continuity, wire 1072 is OK.
(5) Check continuity of remaining wires and terminals using Steps (2) through (4) above. The wires and corresponding terminals are listed below (see schematic Fig 2-48).

  1073(2) 1070(6) 1068(9)
  1076(3) 1066(7) 1074(10)
  1071(4) Shield(8)
  1067(5) to ground (MC 64 only)

(6) Remove jumperwire.
(7) Connect connector MC110 to back of CTIS controller.
(8) Connect connector MC64 to rear manifold.
(9) Install instrument panel and sun-shield with ten screws.



3. ALL TIRES ON AXLES NO. 3 THROUGH NO. 5 WILL NOT DEFLATE (CONT).



WARNING

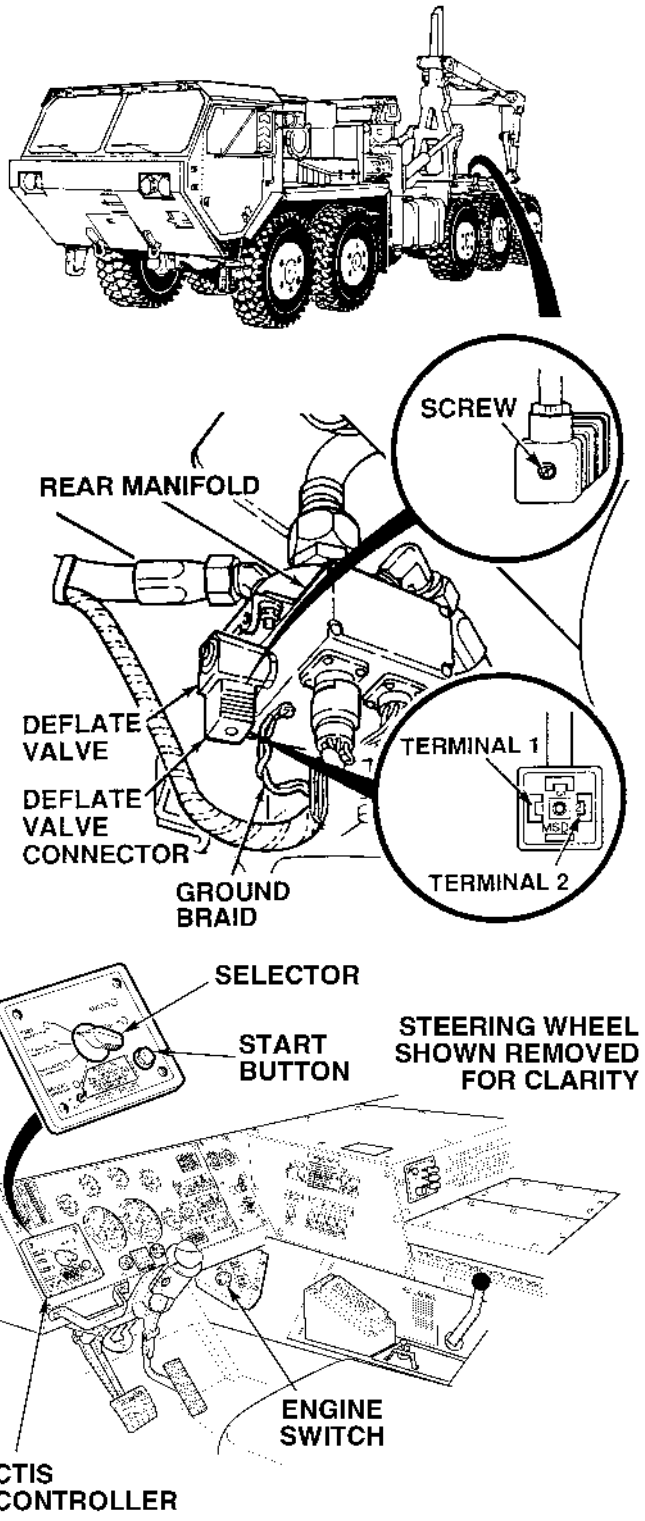
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positve electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

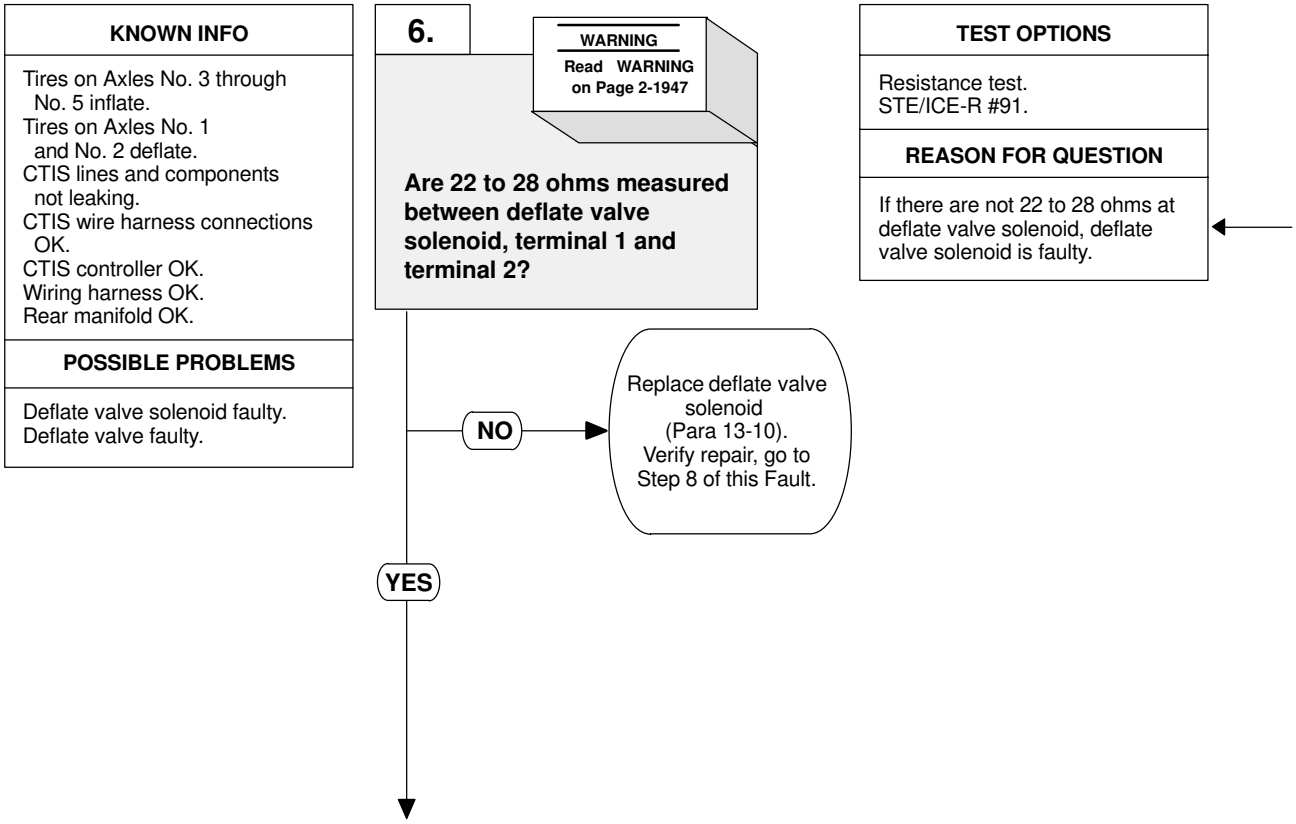
(1) Loosen screw and disconnect deflate valve connector.
(2) Set multimeter select switch to vdc.
(3) Connect positive (+) multimeter lead to deflate valve connector, terminal 2.
(4) Connect negative (–) multimeter lead to rear manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set CTIS controller to CROSS-COUNTRY.
(7) Assistant pushes CTIS START button.
  (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace rear manifold (Para 13-9).
  (b) If 22 to 28 vdc are present, turn OFF ENGINE switch and go to Step 5 of this Fault.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between deflate valve connector, terminal 1 and rear manifold ground braid?
  (a) If there is no continuity, replace rear manifold (Para 13-9).
  (b) If there is continuity, go to Step 6 of this Fault.



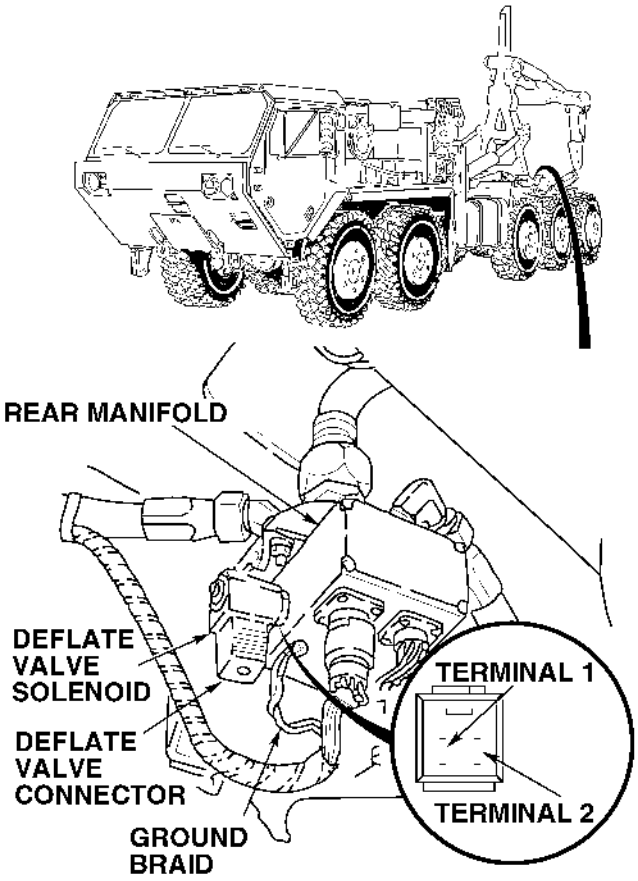
3. ALL TIRES ON AXLES NO. 3 THROUGH NO. 5 WILL NOT DEFLATE (CONT).



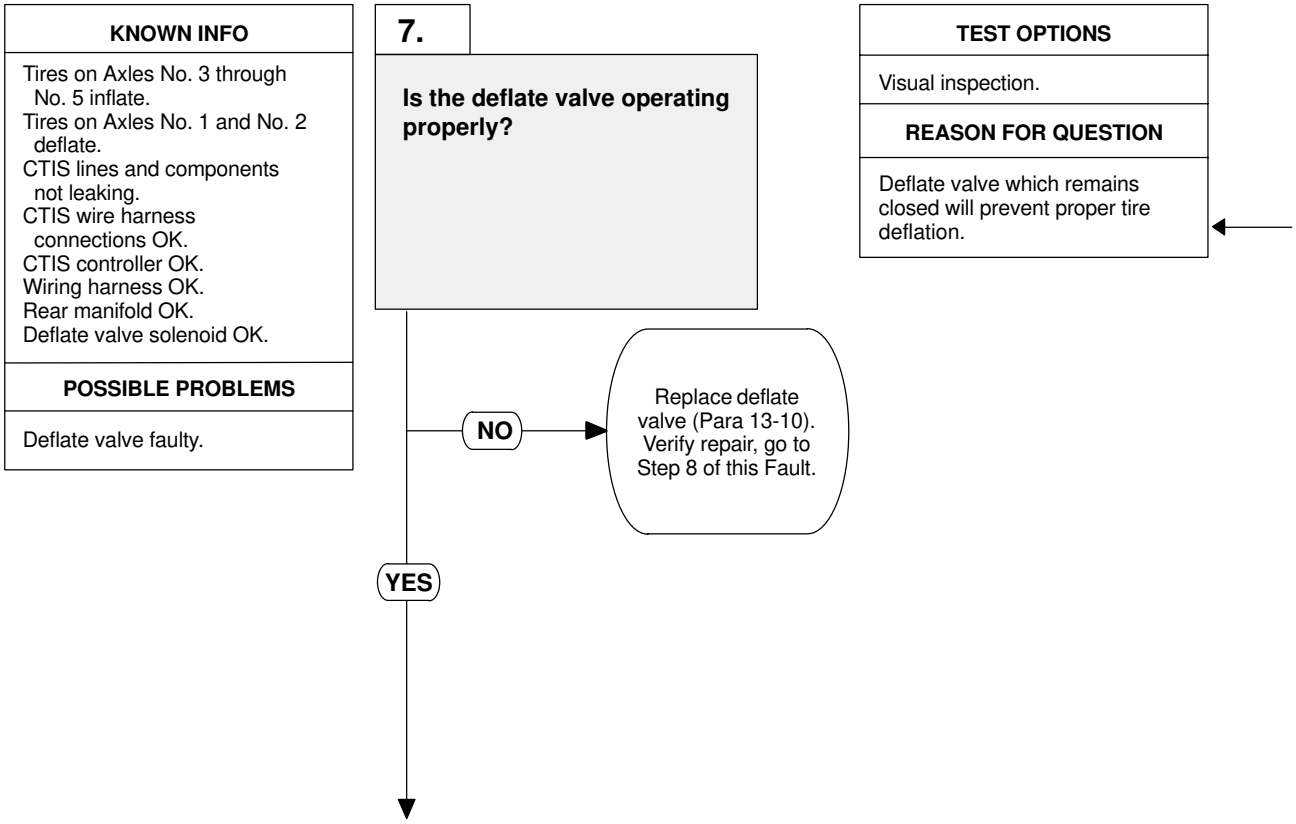
WARNING

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

RESISTANCE TEST
Read resistance between terminals 1 and 2 of deflate valve solenoid. (1) If there are not 22 to 28 ohms, replace deflate valve solenoid (Para 13-10). (2) If there are 22 to 28 ohms, deflate valve solenoid is OK.

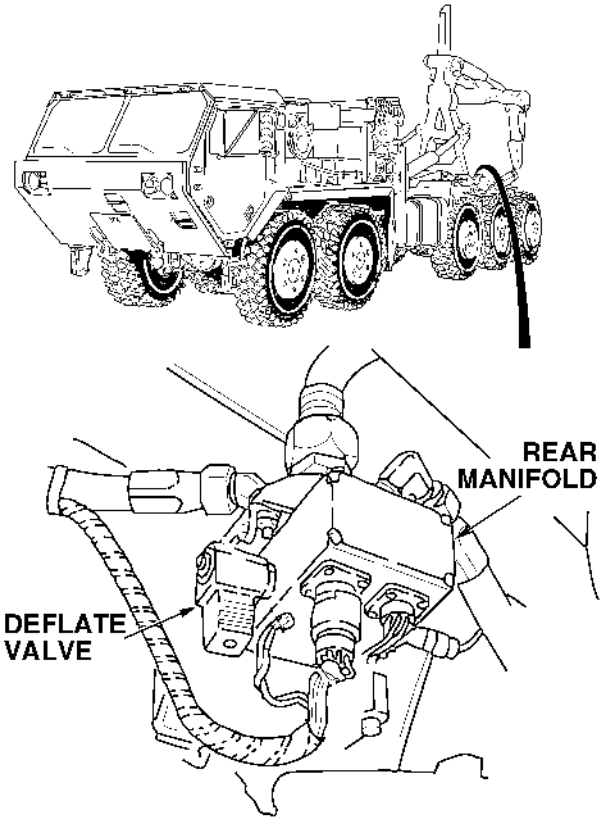


3. ALL TIRES ON AXLES NO. 3 THROUGH NO. 5 WILL NOT DEFLATE (CONT).

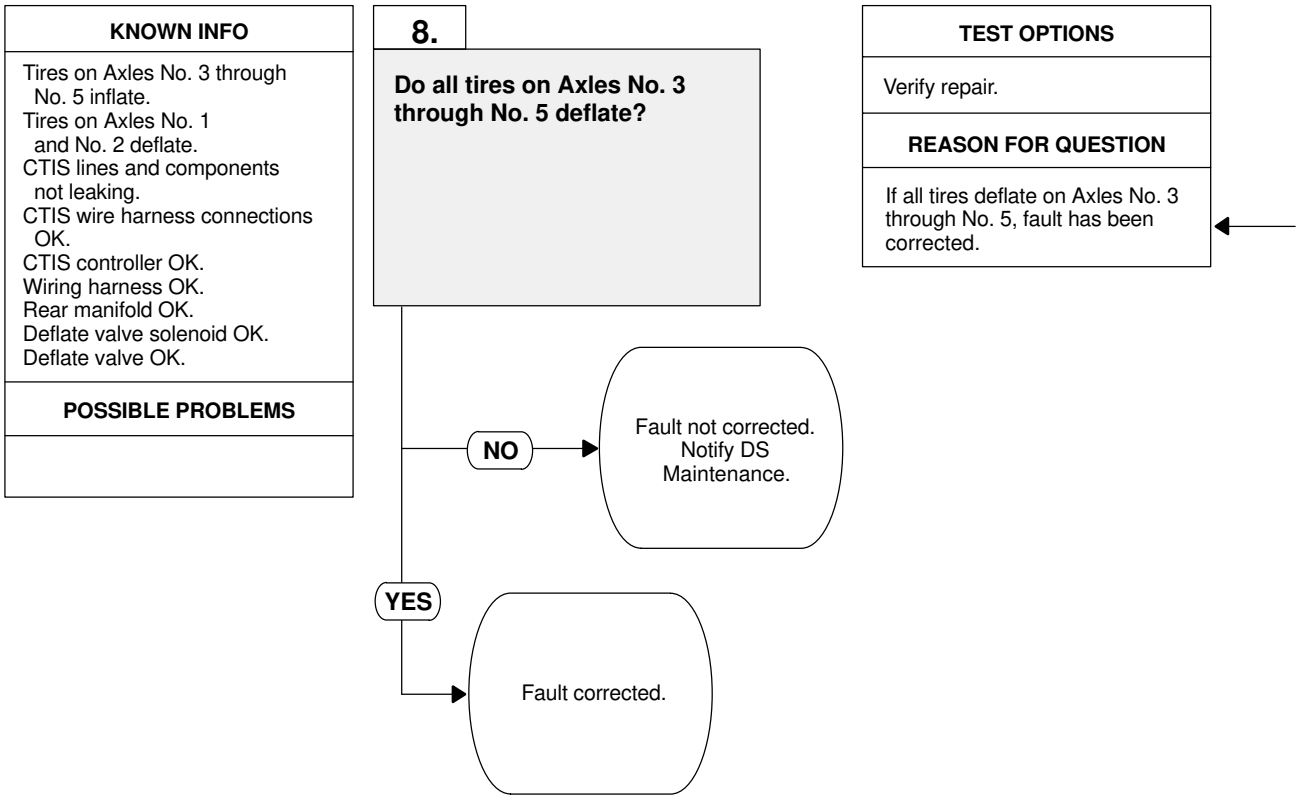


VISUAL INSPECTION

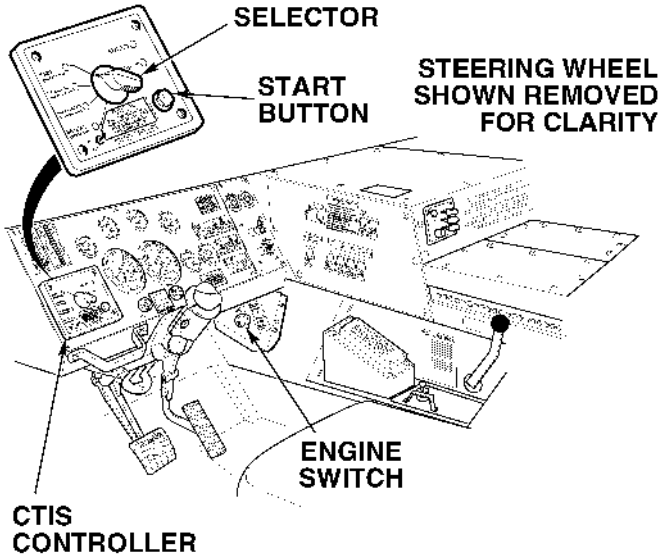
(1) Remove deflate valve (Para 13-10).
(2) Inspect valve assembly for broken springs, damaged diaphram, sticking or any other damage.
    (a) If damaged parts are found, replace deflate valve.
    (b) If no damaged parts are found, deflate valve is OK.
(3) Connect deflate valve connector.
(4) Install rear manifold cover (Para 13-9).
(5) Put LHS in transit position (TM 9-2320-364-10).



3. ALL TIRES ON AXLES NO. 3 THROUGH NO. 5 WILL NOT DEFLATE (CONT).



VERIFY REPAIR
(1) Start engine (TM 9-2320-364-10). (2) Set CTIS controller to CROSS COUNTRY. (3) As assistant pushes CTIS START button, observe tires. (a) If tires do not deflate, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance. (b) If tires deflate, fault has been corrected. (4) Turn OFF ENGINE switch.



2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

4. ALL TIRES ON AXLES NO. 1 AND NO. 2 WILL NOT DEFLATE.

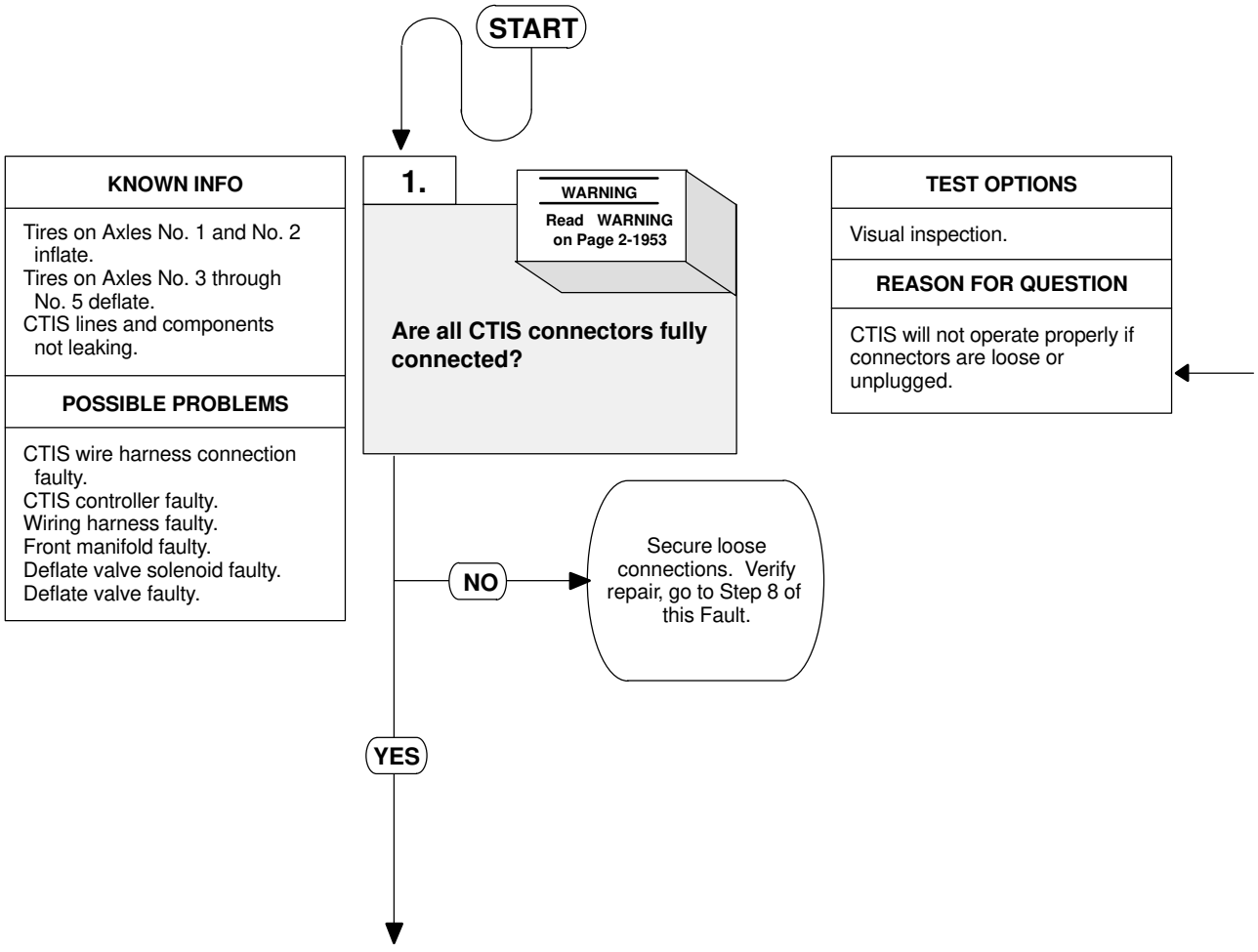
INITIAL SETUP

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)
Jumperwire

Personnel Required
Two

References
TM 9-2320-364-10
TM 9-4910-517-12&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)
CTIS front manifold cover removed, (Para 13-8)
CTIS turned on, (TM 9-2320-364-10)
Front access cover opened, (TM-9-2320-364-10)
Load Handling System (LHS) extended fully, (TM 9-2320-364-10)



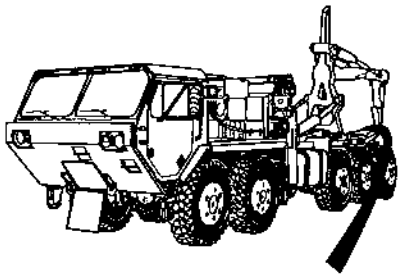
WARNING

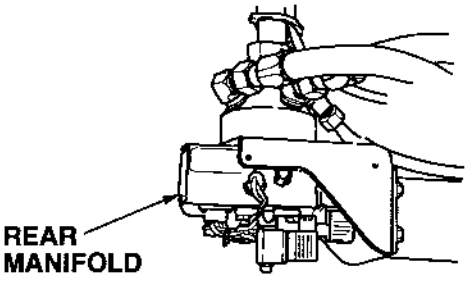
Remove all jewlery such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

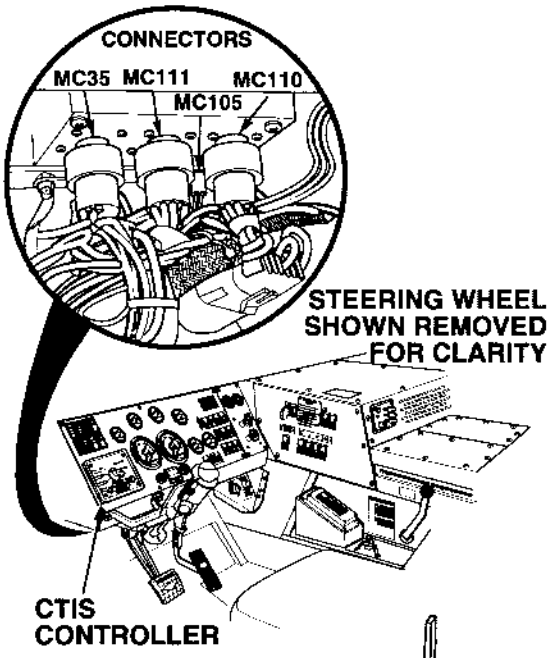
NOTE

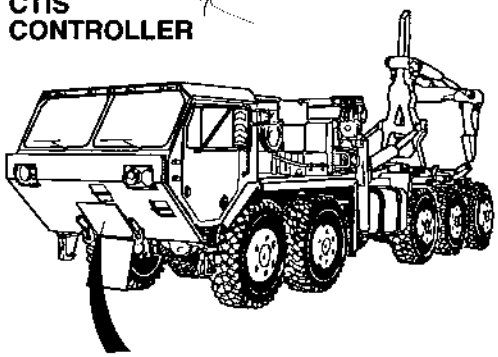
The CTIS initially and periodically checks for system air leaks. The CTIS controller will display a flashing LOW AIR light and shut off if 6 psi (41 kPa) cannot be maintained by the CTIS. The manifold will click during this check for approximately 1-1/2 minutes.

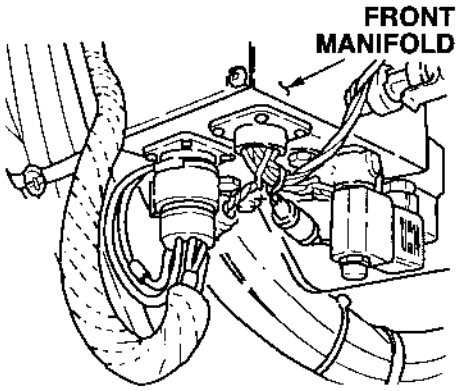
VISUAL INSPECTION
(1) Inspect CTIS controller, front and rear manifolds to ensure that all connectors are fully plugged in. (a) If connectors are not plugged in, secure connectors. (b) If connectors are plugged in, go to Step 2 of this Fault. (2) Put LHS in transit position (TM 9-2320-364-10).



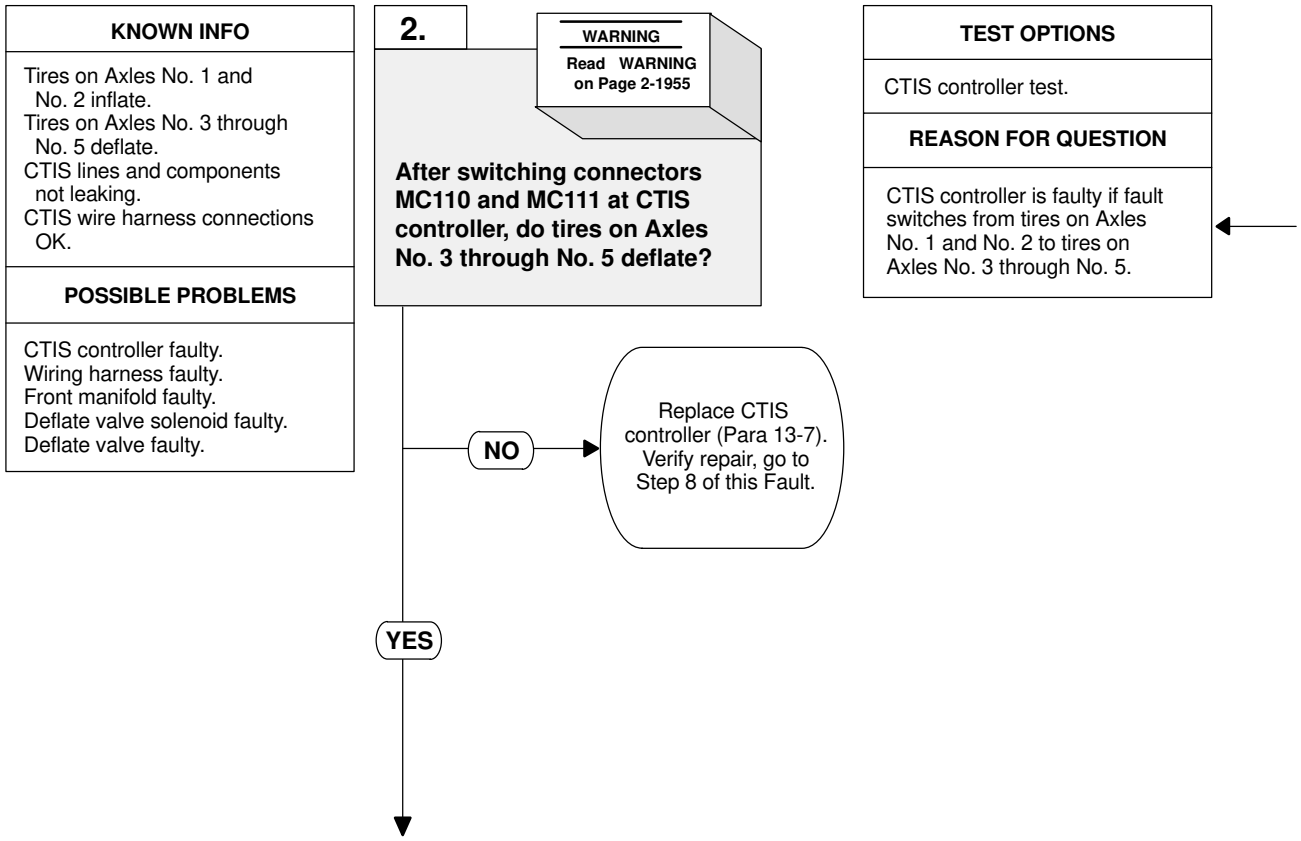








4. ALL TIRES ON AXLES NO. 1 AND NO. 2 WILL NOT DEFLATE (CONT).

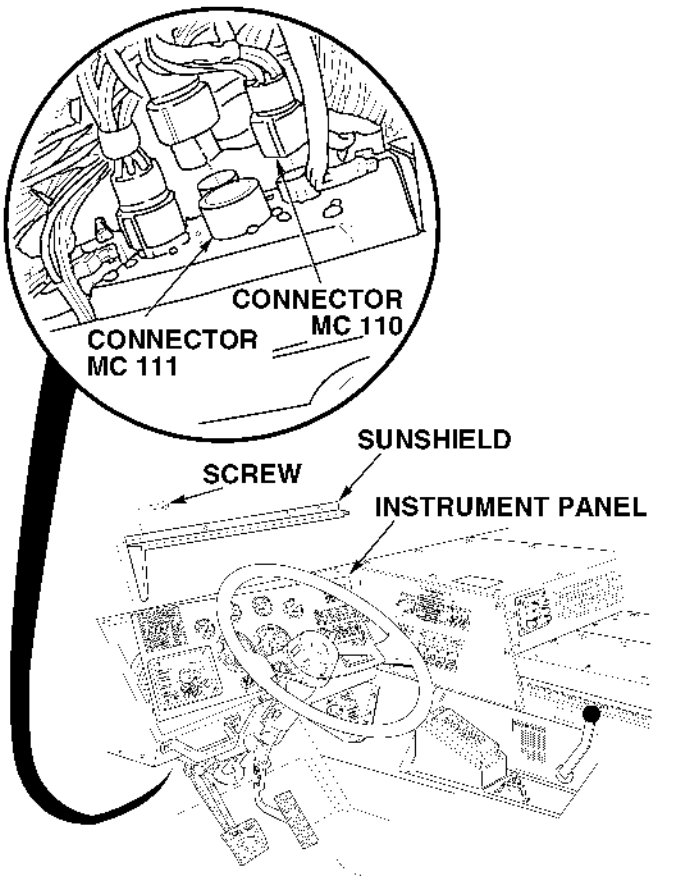


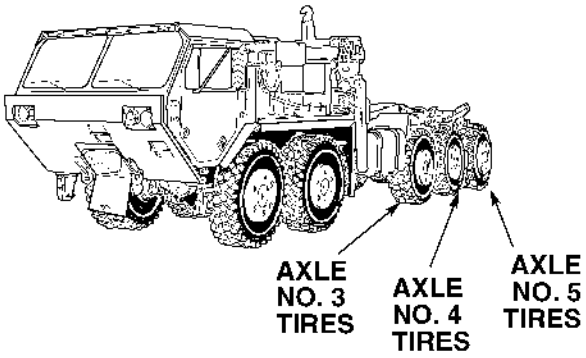
WARNING

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.

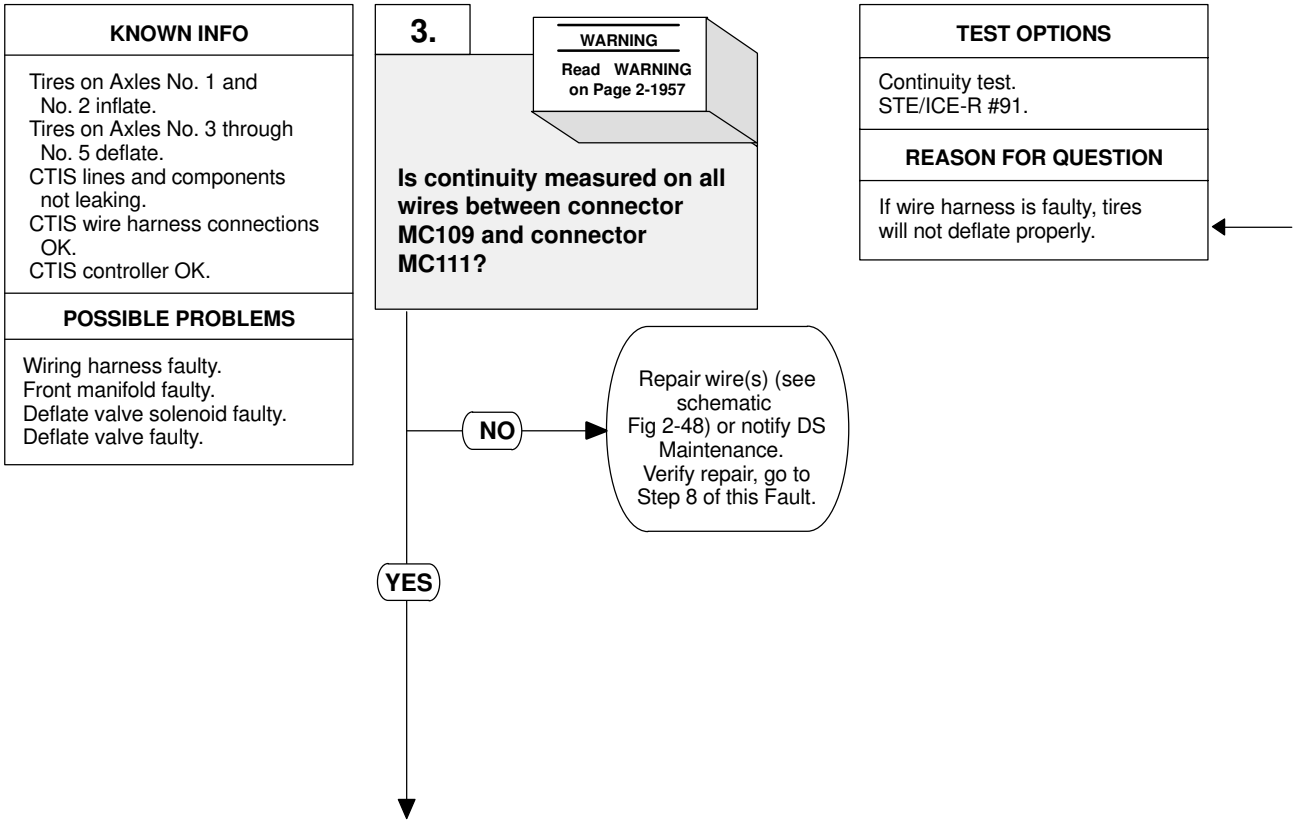
CTIS CONTROLLER TEST

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect rear manifold harness connector MC110 from back of CTIS controller.
(4) Disconnect front manifold harness connector MC111 from back of CTIS controller.
(5) Connect harness connector MC111 into CTIS controller where connector MC110 was disconnected.
(6) Connect harness connector MC110 into CTIS controller where connector MC111 was disconnected.
(7) Start engine (TM 9-2320-364-10).
(8) Set CTIS controller to CROSS COUNTRY.
(9) As assistant pushes CTIS controller START button, observe tires.
    (a) If tires on Axles No. 3 through No. 5 do not deflate, turn OFF ENGINE switch and replace CTIS controller (Para 13-7).
    (b) If tires on Axles No. 3 through No. 5 deflate, CTIS controller is OK.
(10) Turn OFF ENGINE switch.
(11) Disconnect and connect connector MC110 to correct CTIS controller connector.
(12) Start engine.
(13) Set CTIS controller to HIGHWAY and allow pressure to build.
(14) Turn OFF ENGINE switch.





4. ALL TIRES ON AXLES NO. 1 AND NO. 2 WILL NOT DEFLATE (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

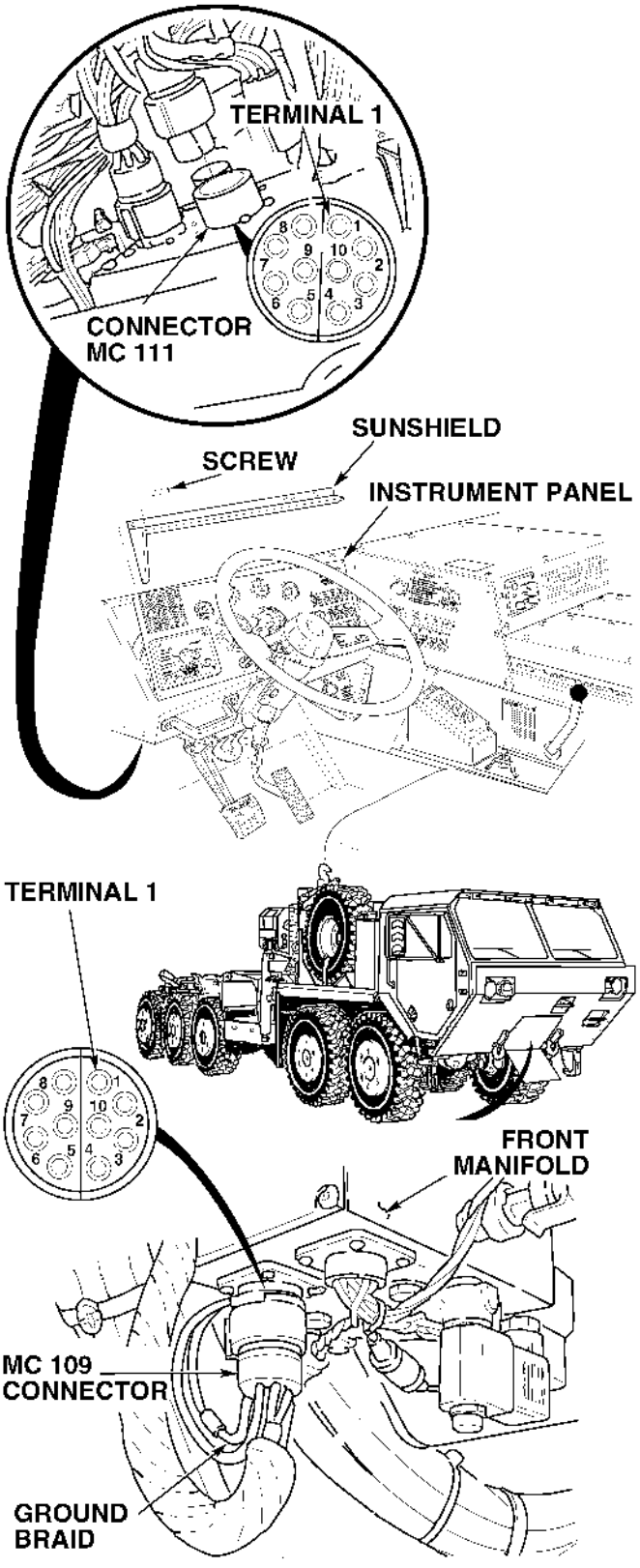
Terminal (5) at MC111 is plugged and does not connect to Terminal (5) on MC109.

CONTINUITY TEST

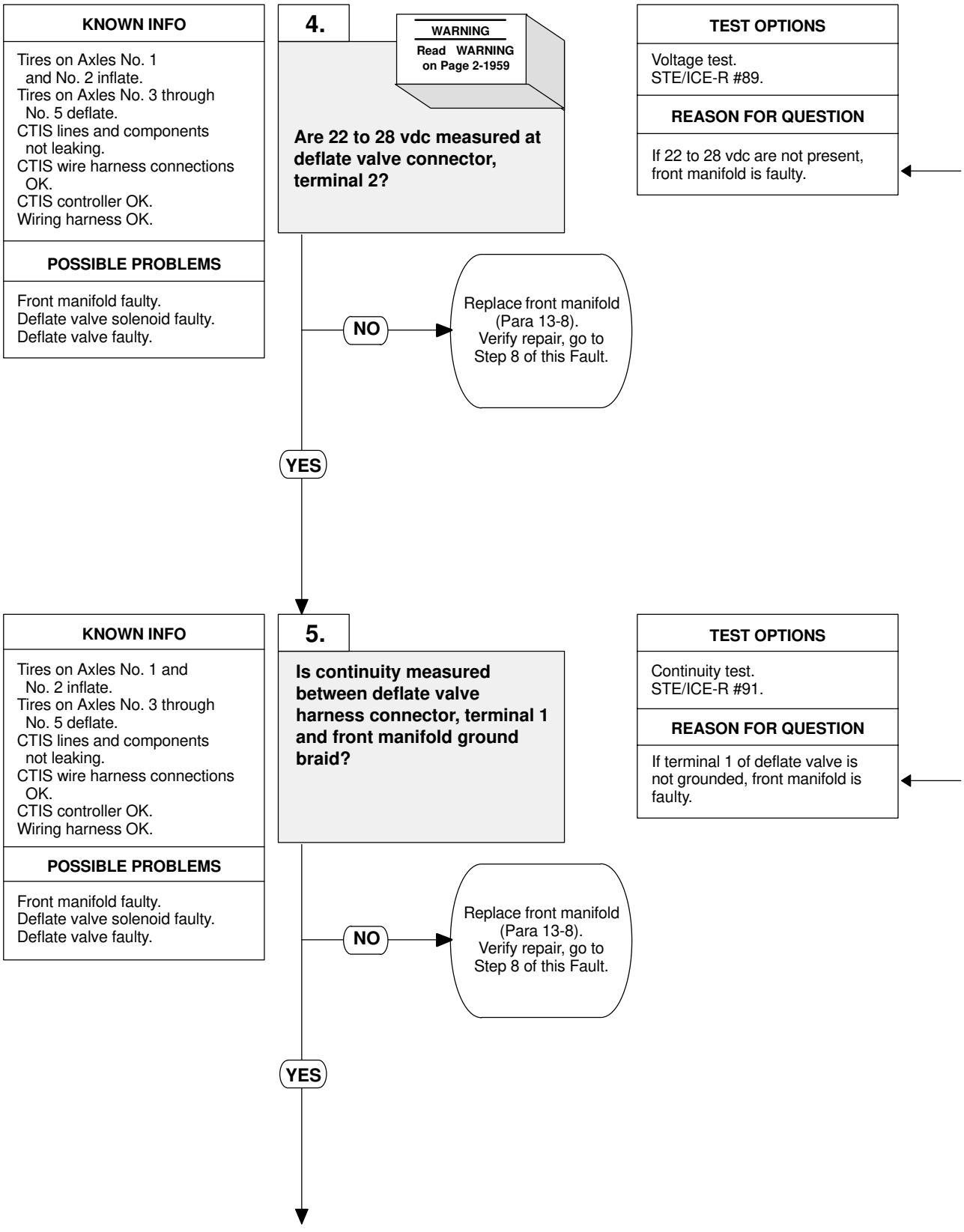
(1) Disconnect connector MC109 from CTIS front manifold.
(2) Set multimeter select switch to ohms.
(3) Connect jumperwire between wire 1056 on CTIS controller connector MC111, terminal 1 and a known good ground.
(4) Is there continuity between connector MC109, terminal 1 and front manifold ground braid?
  (a) If there is no continuity, repair wire 1056 (see schematic Fig 2-48 or notify DS Maintenance, and perform Steps (6) through (9) below.
  (b) If there is continuity, wire 1056 is OK.
(5) Check continuity of remaining wires and terminals using Steps (2) through (4) above. The wires and corresponding terminals are listed below (see schematic Fig 2-48).

  1057(2) 1061(6) 1064(9)
  1058(3) 1062(7) 1065(10)
  1059(4) Shield(8)
  1063(5) to ground (MC 109 only)

(6) Remove jumperwire.
(7) Connect connector MC111 on back of CTIS controller.
(8) Connect connector MC109 on CTIS front manifold.
(9) Install instrument panel and sunshield with ten screws.



4. ALL TIRES ON AXLES NO. 1 AND NO. 2 WILL NOT DEFLATE (CONT).



WARNING

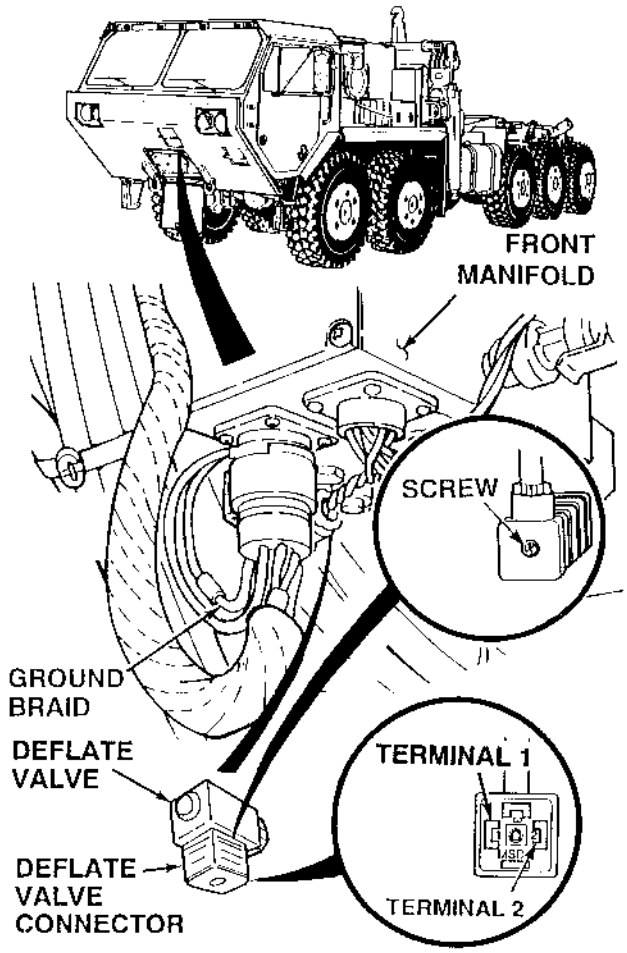
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positve electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

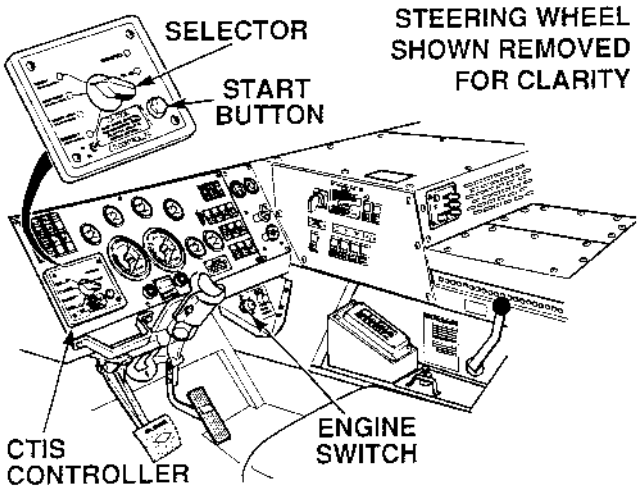
VOLTAGE TEST

(1) Loosen screw and disconnect deflate valve connector.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to deflate valve connector, terminal 2.
(4) Connect negative (–) multimeter lead to front manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set CTIS controller to CROSS-COUNTRY.
(7) Assistant pushes CTIS START button.
    (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace front manifold (Para 13-8).
    (b) If 22 to 28 vdc are present, turn OFF ENGINE switch and go to Step 5 of this Fault.

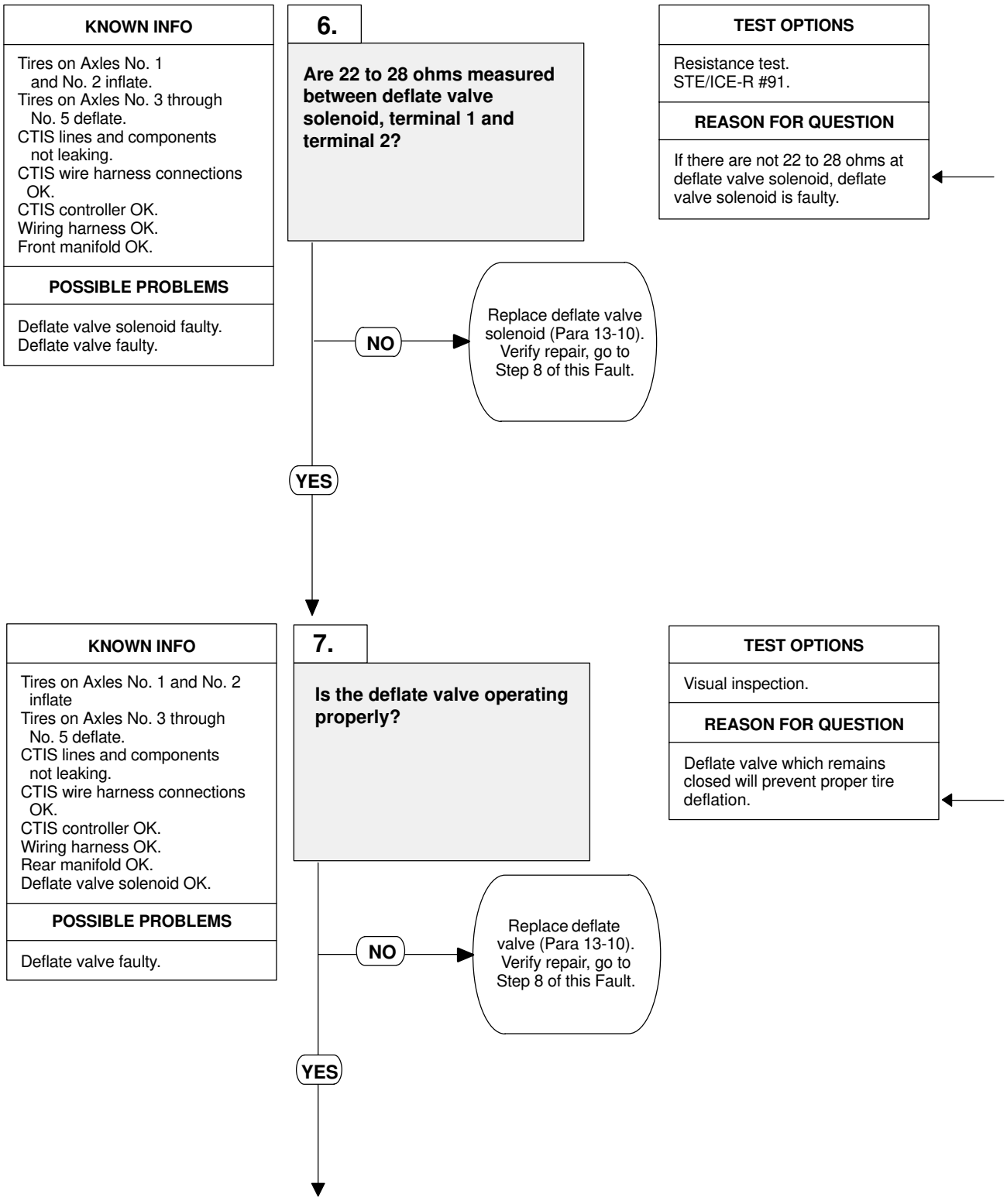
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between deflate valve connector, terminal 1 and front manifold ground braid?
    (a) If there is no continuity, replace front manifold (Para 13-8).
    (b) If there is continuity, go to Step 6 of this Fault.





4. ALL TIRES ON AXLES NO. 1 AND NO. 2 WILL NOT DEFLATE (CONT).



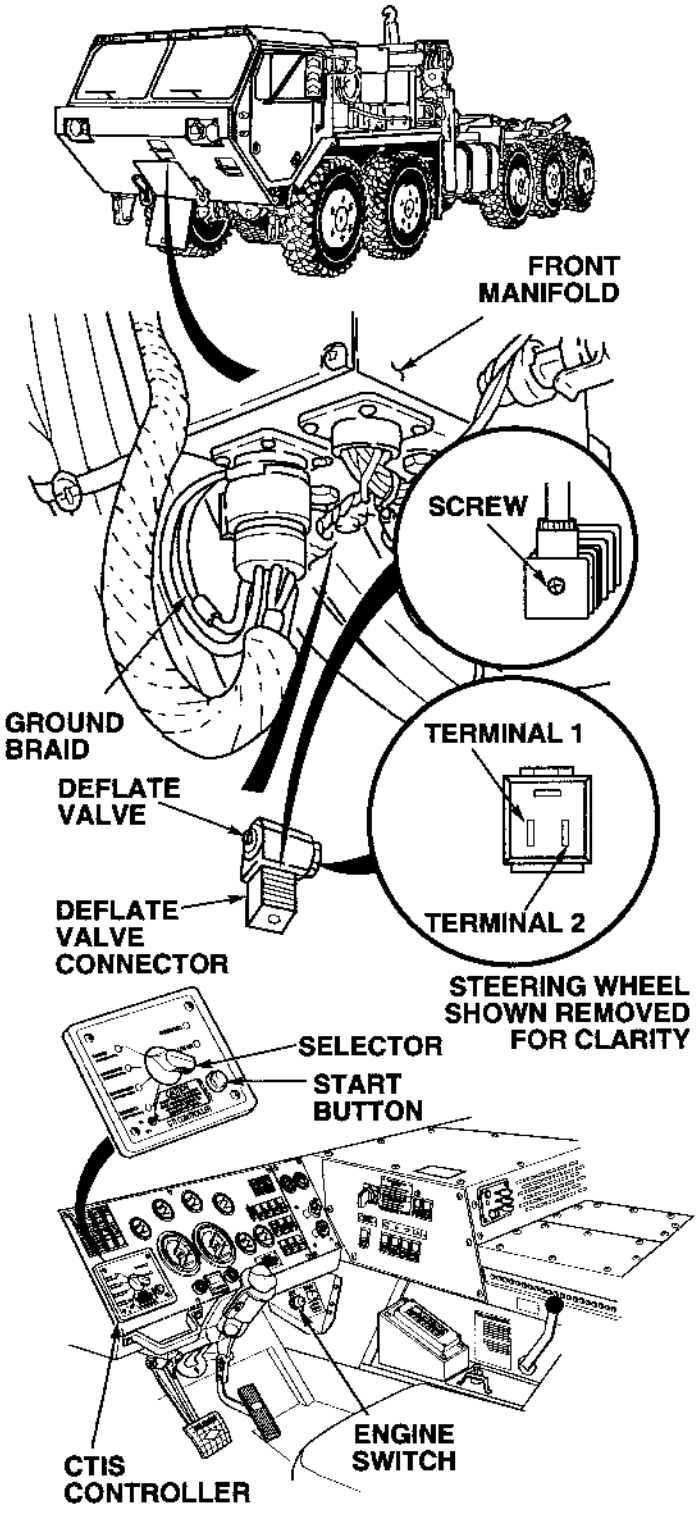
RESISTANCE TEST

Read resistance between terminals 1 and 2 of deflate valve solenoid.

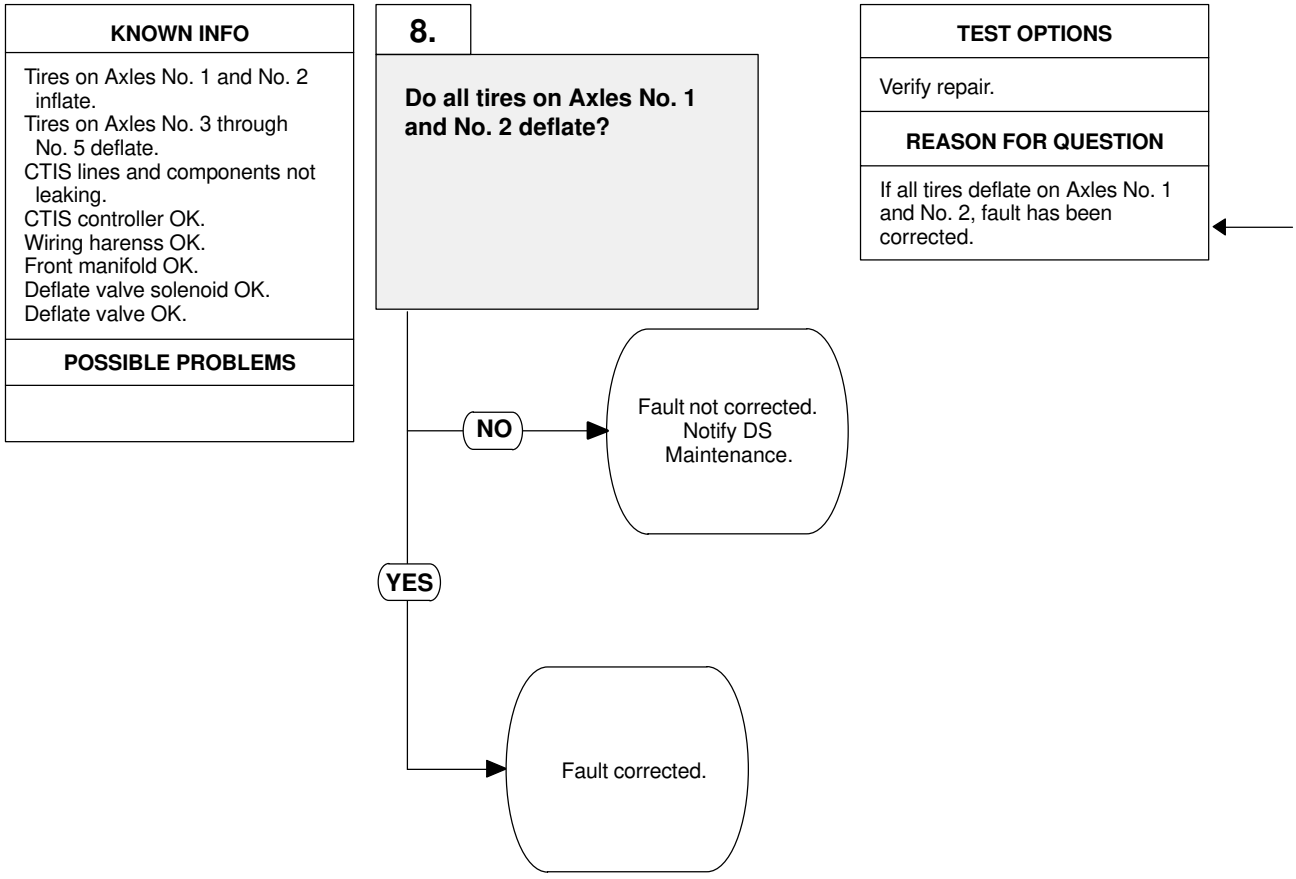
(1) If there are not 22 to 28 ohms, replace deflate valve solenoid (Para 13-10).
(2) If there are 22 to 28 ohms, deflate valve solenoid is OK.

VISUAL INSPECTION

(1) Remove deflate valve (Para 13-10).
(2) Inspect valve assembly for broken springs, damaged diaphragm, sticking or any other damage.
    (a) If damaged parts are found, replace deflate valve.
    (b) If no damaged parts are found, deflate valve is OK.
(3) Connect deflate valve solenoid connector and tighten screw.
(4) Install front manifold cover (Para 13-8).
(5) Close front access cover (TM 9-2320-364-10).

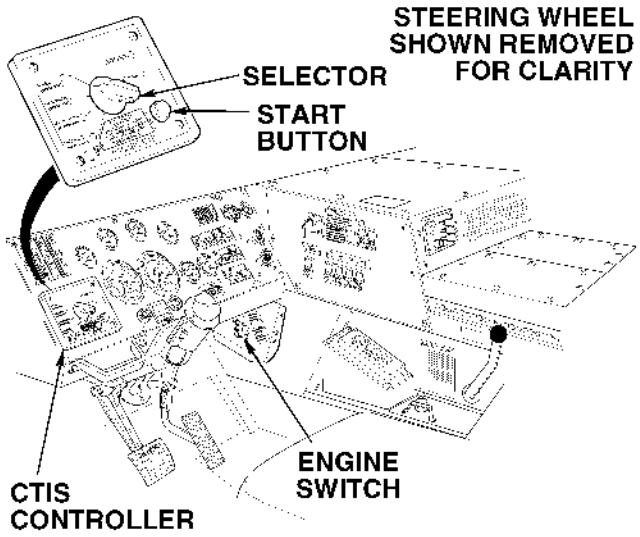


4. ALL TIRES ON AXLES NO. 1 AND NO. 2 WILL NOT DEFLATE (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to CROSS-COUNTRY.
(3) As assistant pushes CTIS START button, observe tires.
    (a) If tires do not deflate, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
    (b) If tires deflate, fault has been corrected.
(4) Turn OFF ENGINE switch.



2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY.

INITIAL SETUP

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

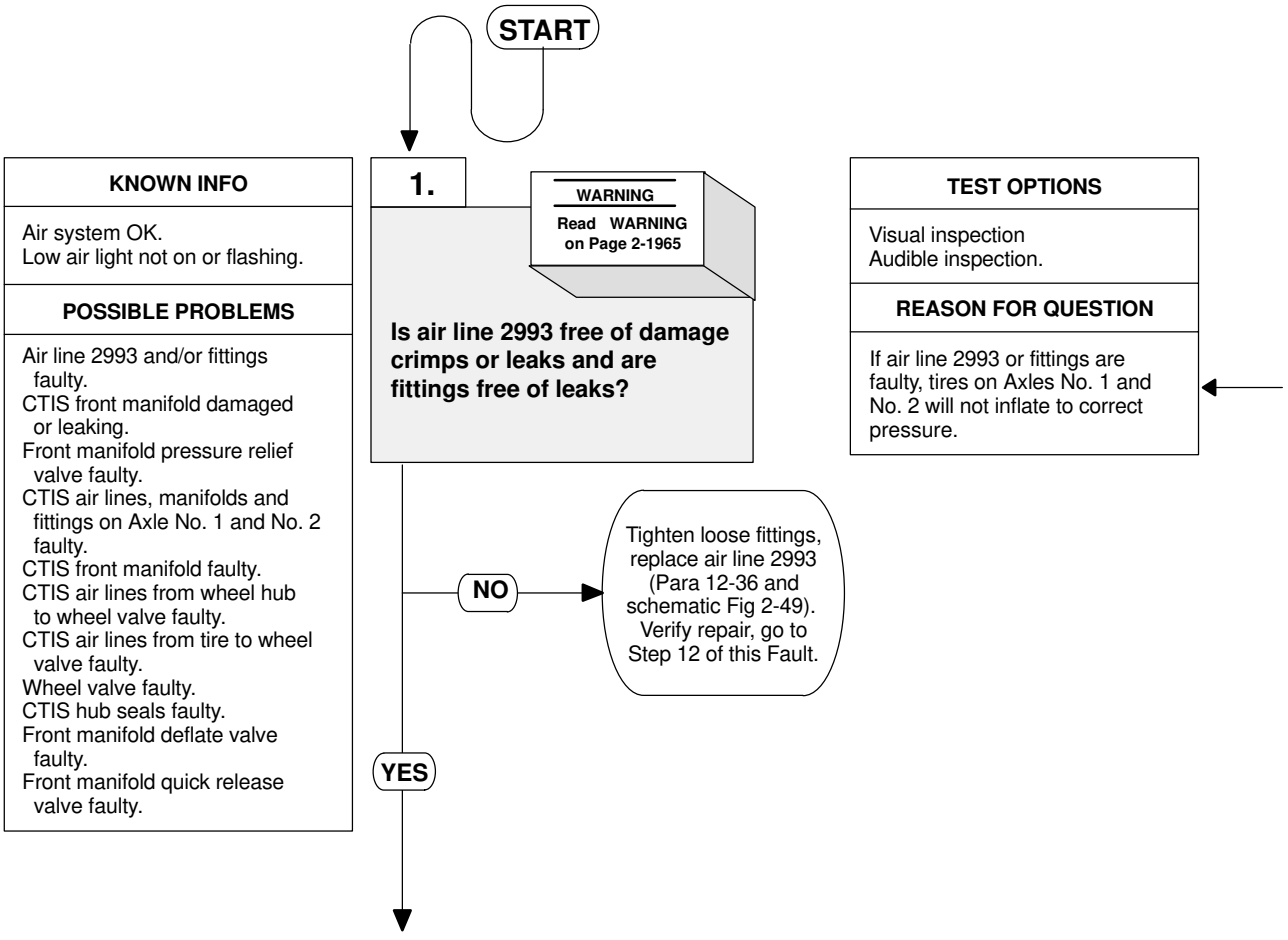
Materials/Parts
Solution, Soap (Item 86, Appendix C)

Personnel Required
Two

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)
Front access cover opened, (TM 9-2320-364-10)
CTIS turned on, (TM 9-2320-364-10)
CTIS front manifold cover removed, (Para 13-8)

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

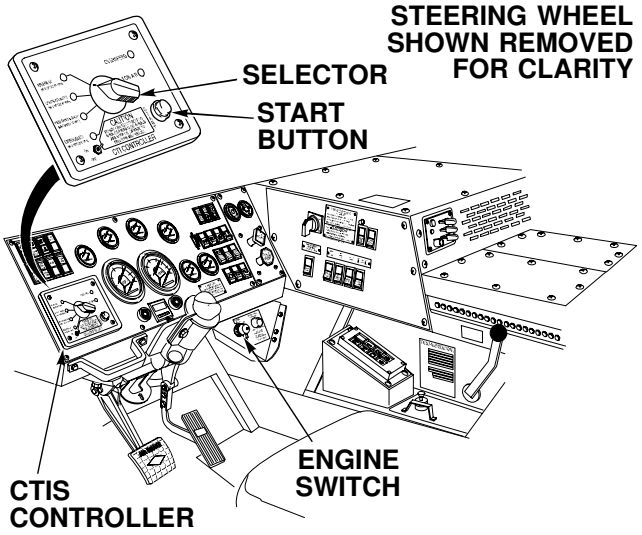


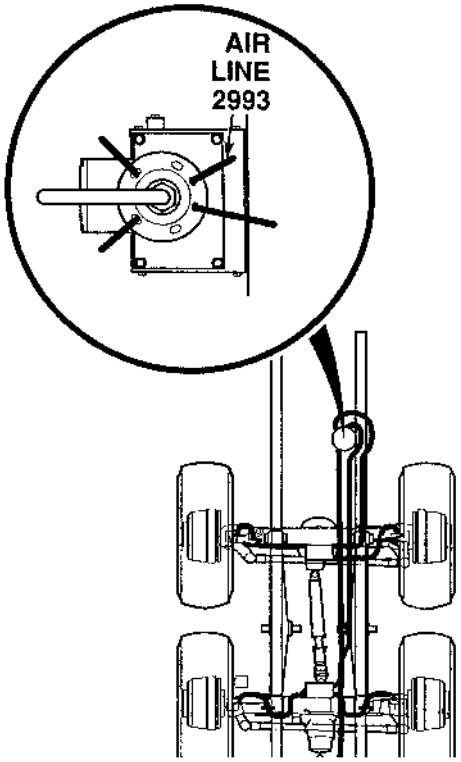
WARNING

- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

- Excessive inflation times without a low air light are caused by minor leaks in CTIS system.
- CTIS air lines are pressurized only when CTIS is in inflate, deflate or test cycles.
- Excessive inflation times, sometimes accompanied by low air light is normal if engine is at idle speed and/or air operated accessories are being used.
- CTIS initially and periodically checks for system air leaks. CTIS controller will display a flashing LOW AIR light and will shut off if about 6 psi (41 kPa) cannot be maintained by the CTIS system. The manifold will click during this check.

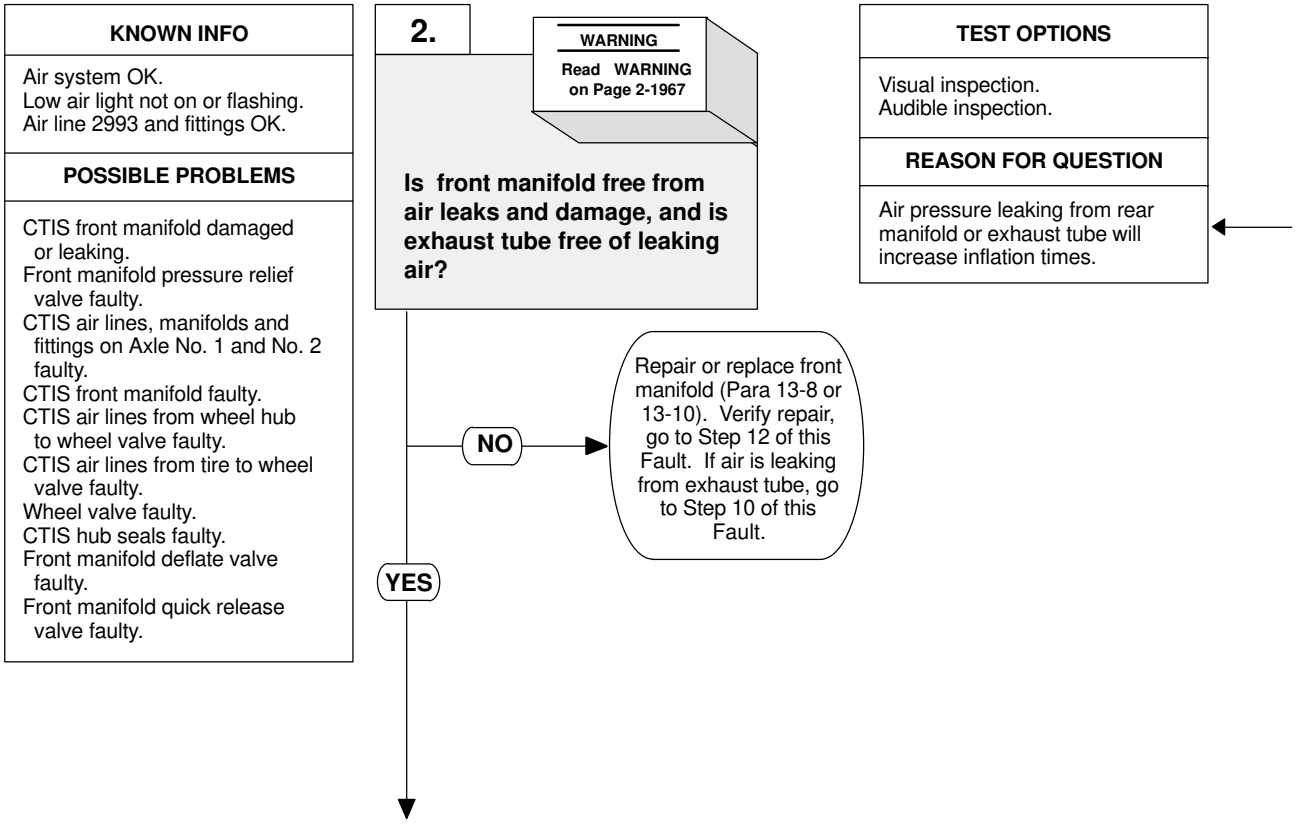




VISUAL/AUDIBLE INSPECTION

(1) Remove valve cap from any valve stem on Axles No. 1 or No. 2.
(2) Using tire gage, deflate any one tire on Axles No. 1 or No. 2 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check CTIS air line No. 2993 and fittings for damage, crimps, or leaks (see schematic Fig. 2-49).
    (a) If air line No. 2993 or fittings are damaged, crimped or leaking, perform Steps (7) and (8) below, and tighten fittings, replace air lines (Para 12-36 and schematic Fig 2-49).
    (b) If there are no leaks, crimps or damage, air line and fittings are OK.
(7) Turn OFF ENGINE switch.
(8) Install valve cap on valve stem.

5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).

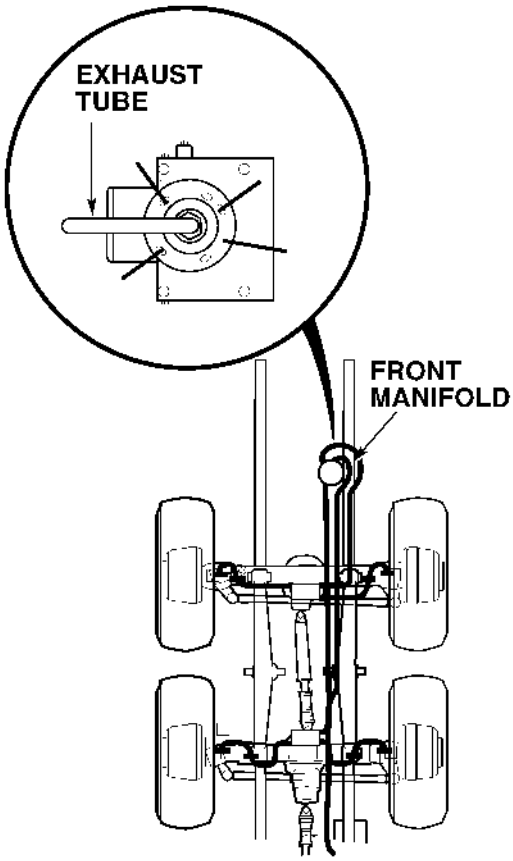


WARNING

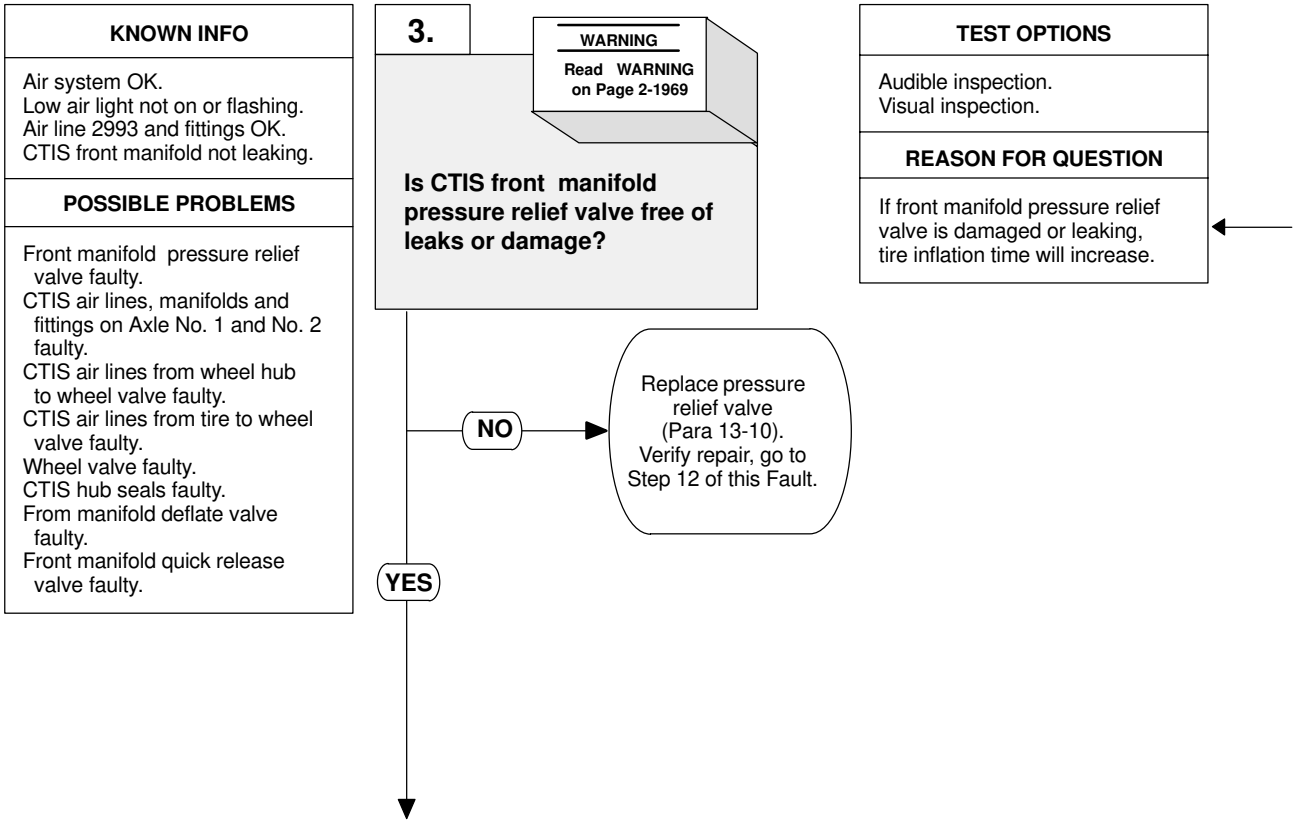
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS front manifold for damage and leaks.
  (a) If manifold is damaged or leaking, turn OFF ENGINE switch and repair or replace manifold (Para 13-8 or 13-10).
  (b) If air is leaking from exhaust tube, turn OFF ENGINE switch and go to Step 10 of this Fault.
  (c) If manifold is not damaged or leaking, turn OFF ENGINE switch and go to Step 3 of this Fault.



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

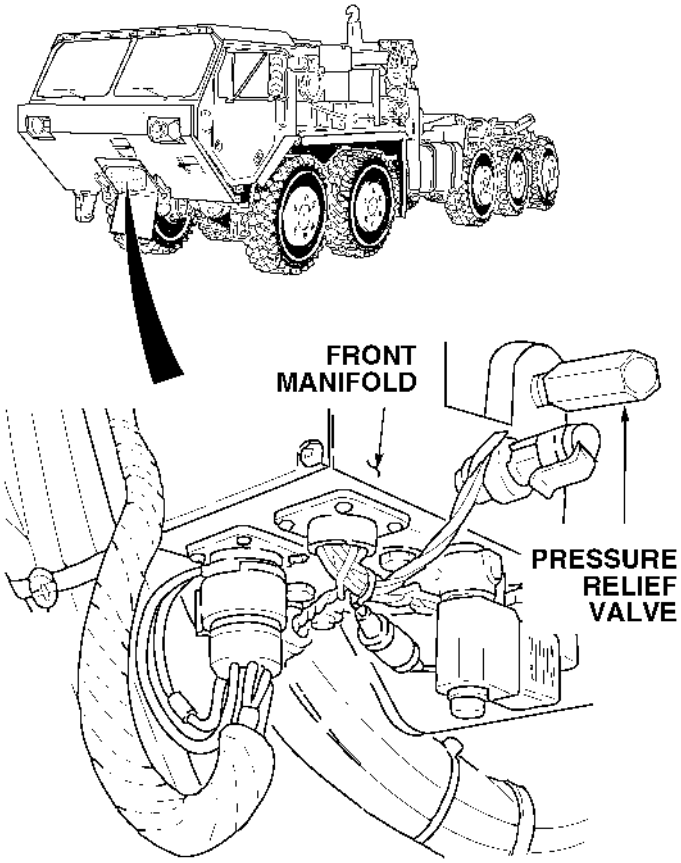
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

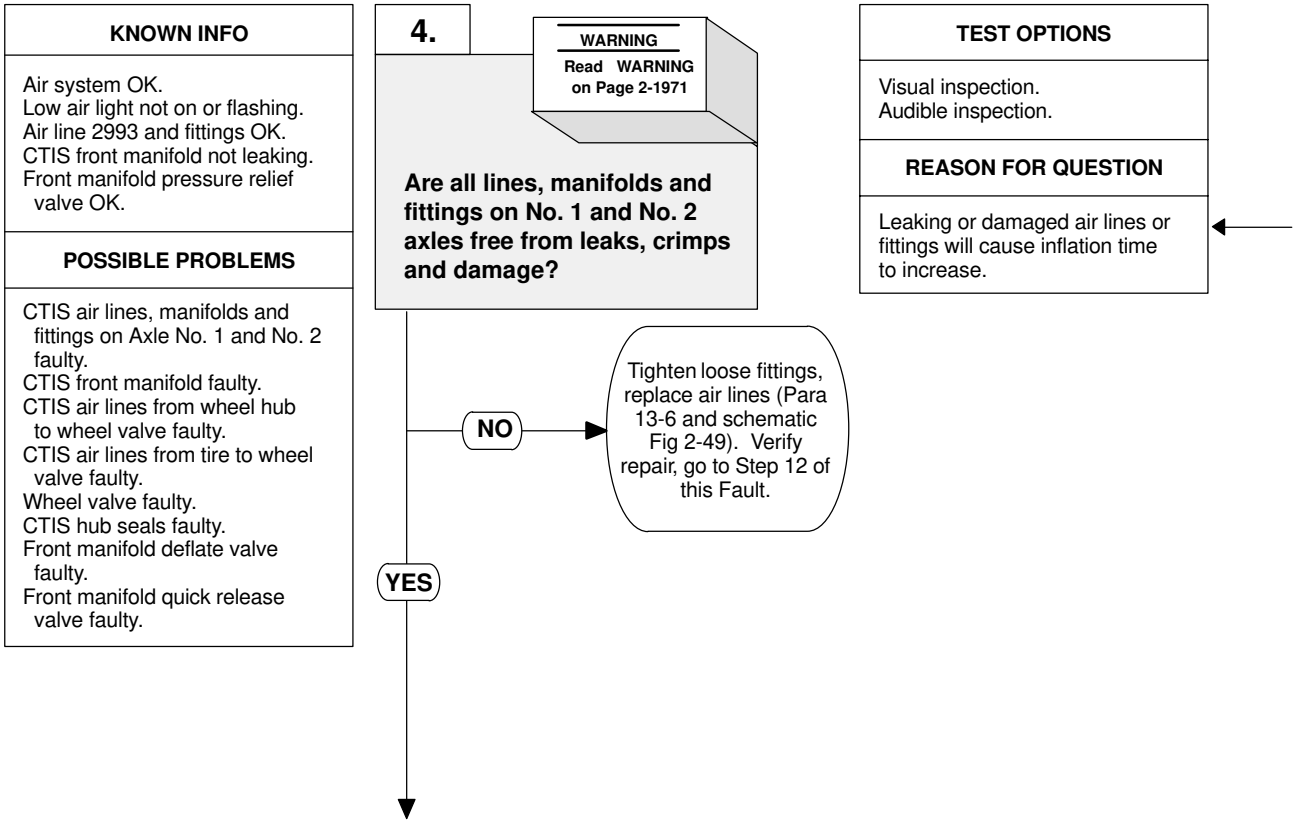
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage (bubbles forming) may occur during inflation/deflation cycle at relief valve. A rapid exhaust of air indicates a problem.
- Pressure relief valve should remain closed up to 85 psi (586 Kpa).

AUDIBLE/VISUAL INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Assistant presses CTIS START button.
(4) Check CTIS front manifold pressure relief valve for damage and leaks.
  (a) If pressure relief valve is damaged or leaking, turn OFF ENGINE switch and replace valve (Para 13-10).
  (b) If pressure relief valve is not damaged or leaking, relief valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install front CTIS manifold cover (Para 13-8).



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



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

NOTE

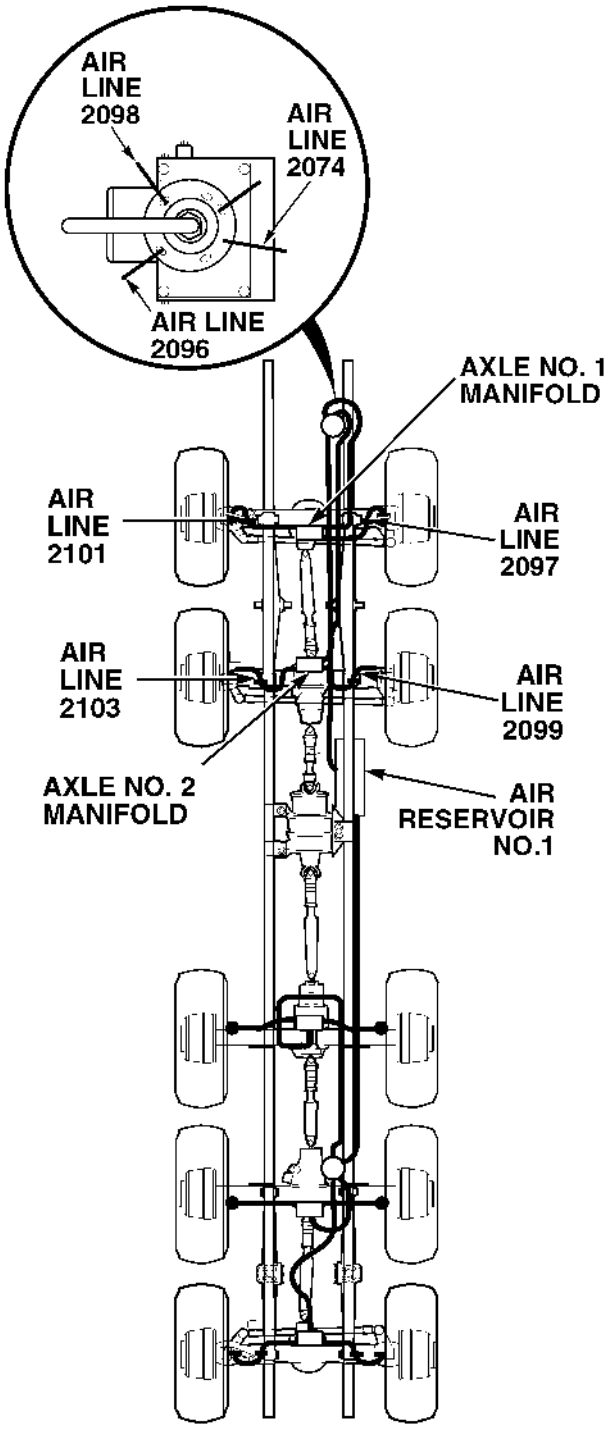
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

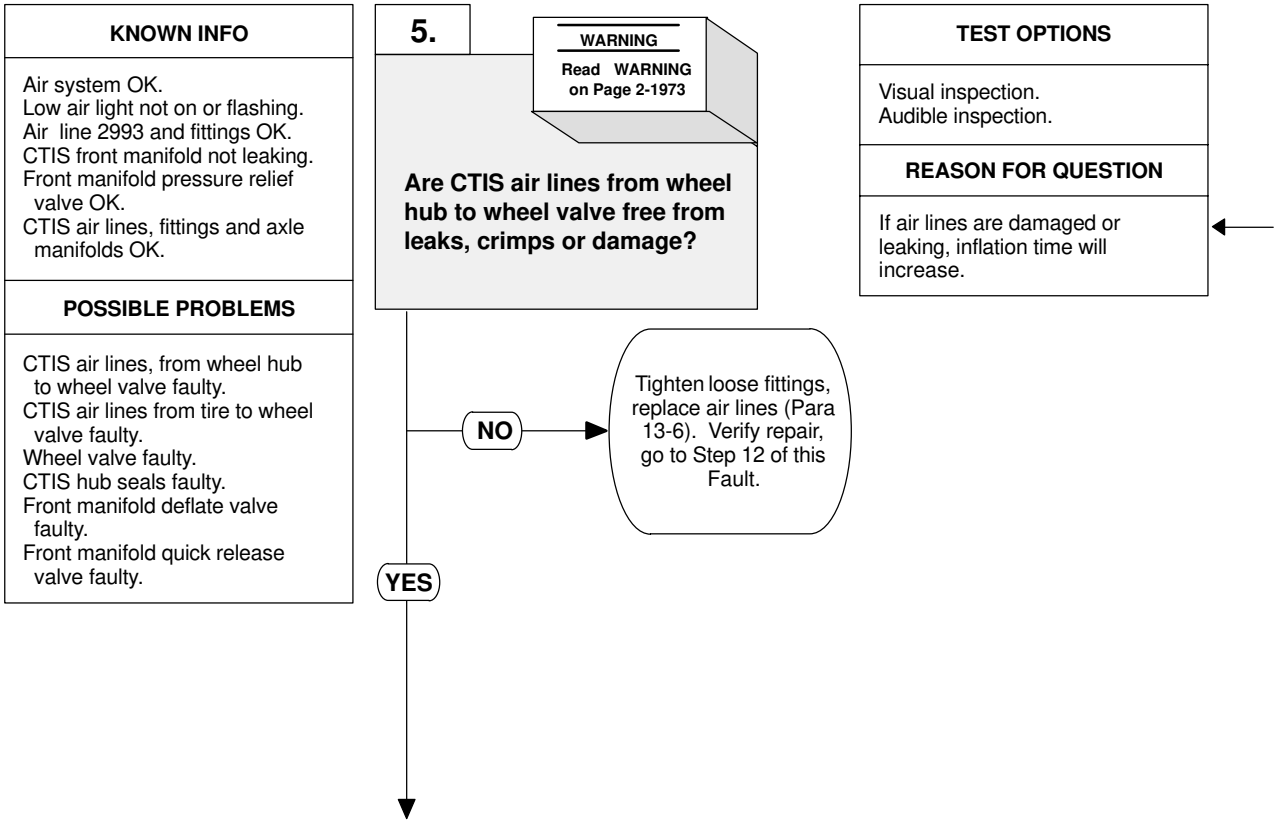
(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS air lines listed below and axle manifolds and fittings for damage, crimps or leaks (see schematic Fig 2-49).

2074	2101
2096	2103
2097	
2098	
2099	

(a) If air lines, fittings, or axle manifolds are damaged or leaking, perform Step (5) below and tighten fittings, or replace air lines or axle manifold (Para 13-6 and schematic Fig. 2-49).
(b) If there are no leaks, crimps, or damage, air lines, fittings and axle manifolds are OK.
(5) Turn OFF ENGINE switch.



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

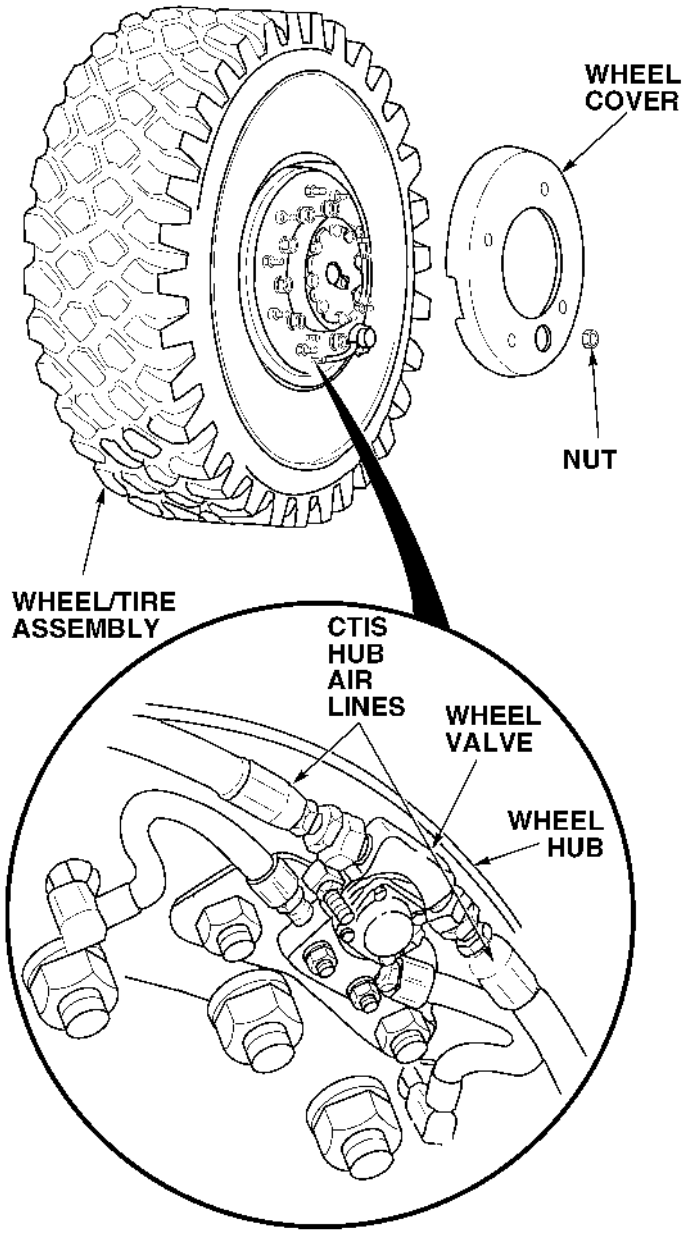
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

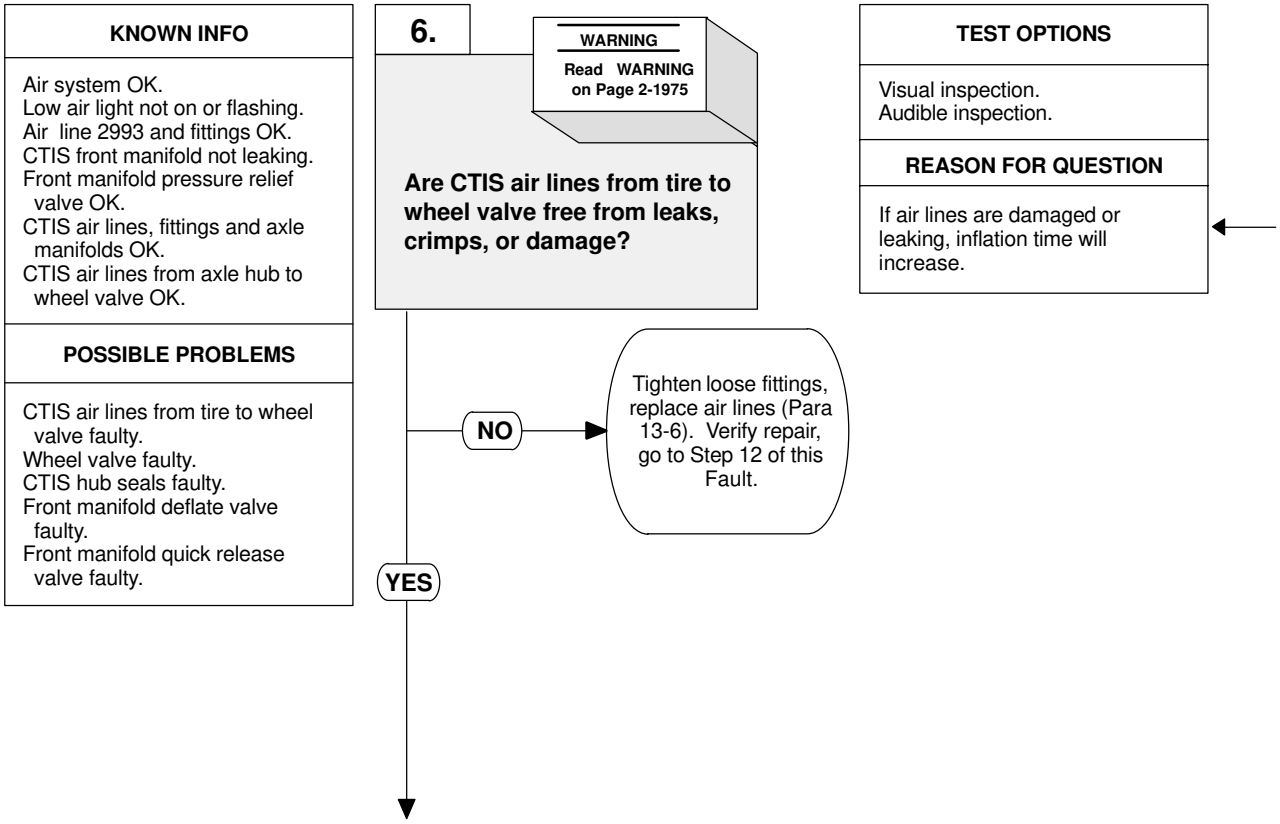
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Remove four nuts and wheel cover.
(2) Start engine (TM 9-2320-364-10).
(3) Set CTIS controller to HIGHWAY.
(4) Press CTIS START button.
(5) Check air lines at wheel hub to wheel valve for air leakage.
  (a) If air lines are damaged, crimped or leaking, perform Step (6) below, and tighten loose fittings, replace air lines or fittings (Para 13-6).
  (b) If there are no leaks, crimps, or damage, air lines, and fittings are OK.
(6) Turn OFF ENGINE switch.



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

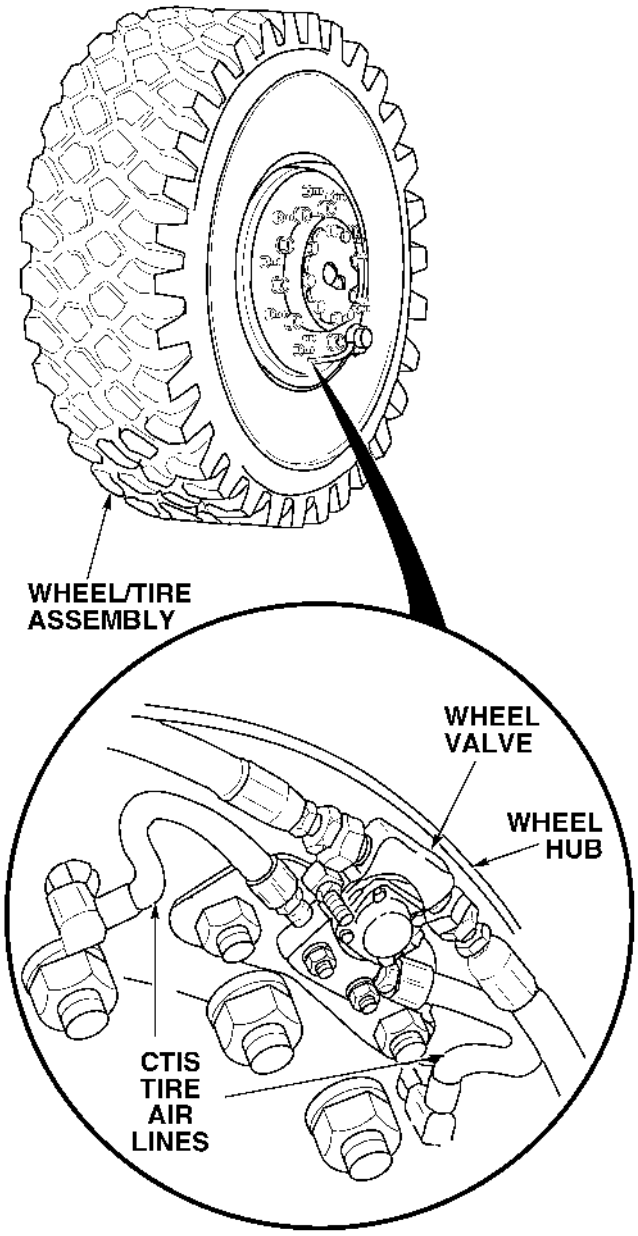
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

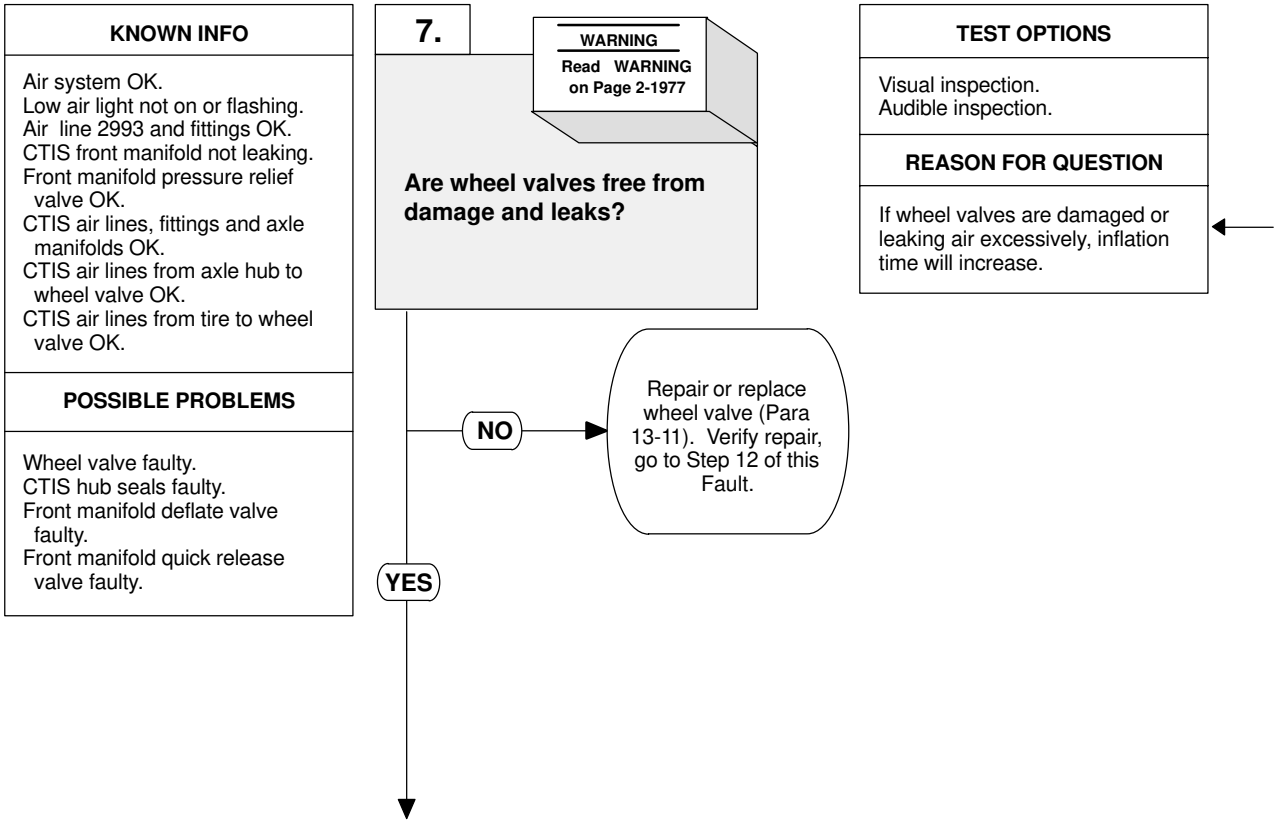
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS air lines at tire to wheel valve for air leakage.
  (a) If air lines are damaged, crimped or leaking, perform Step (5) below and tighten loose fittings, replace air lines or fittings (Para 13-6).
  (b) If there are no leaks, crimps or damage, air lines and fittings are OK.
(5) Turn OFF ENGINE switch.



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

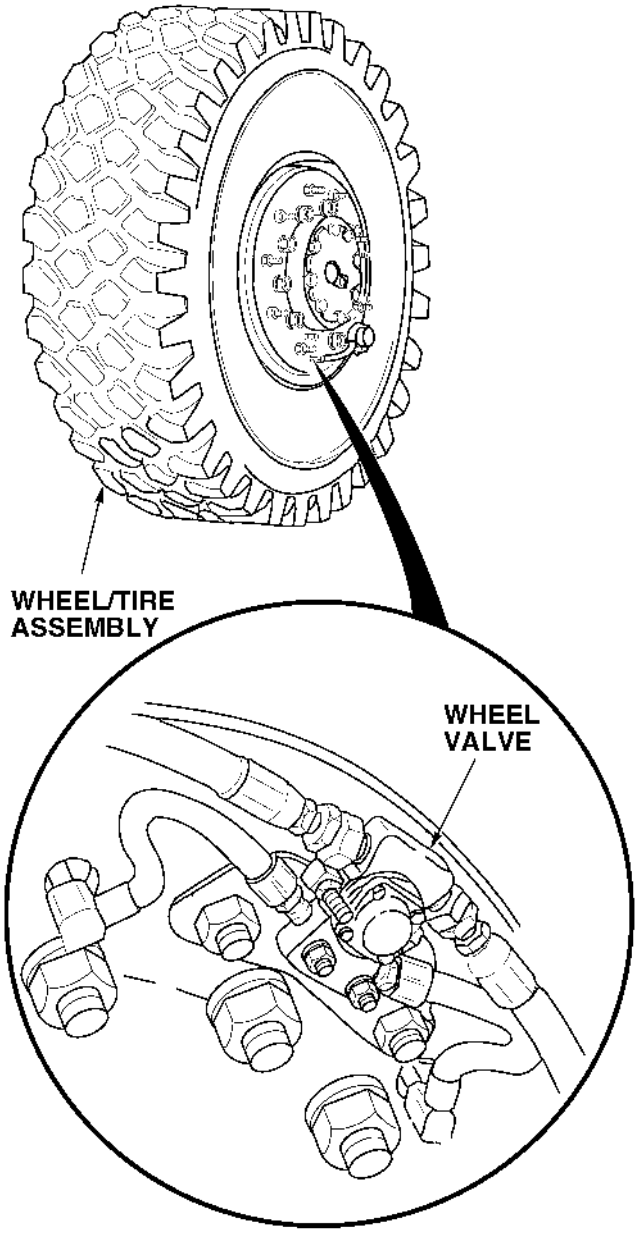
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

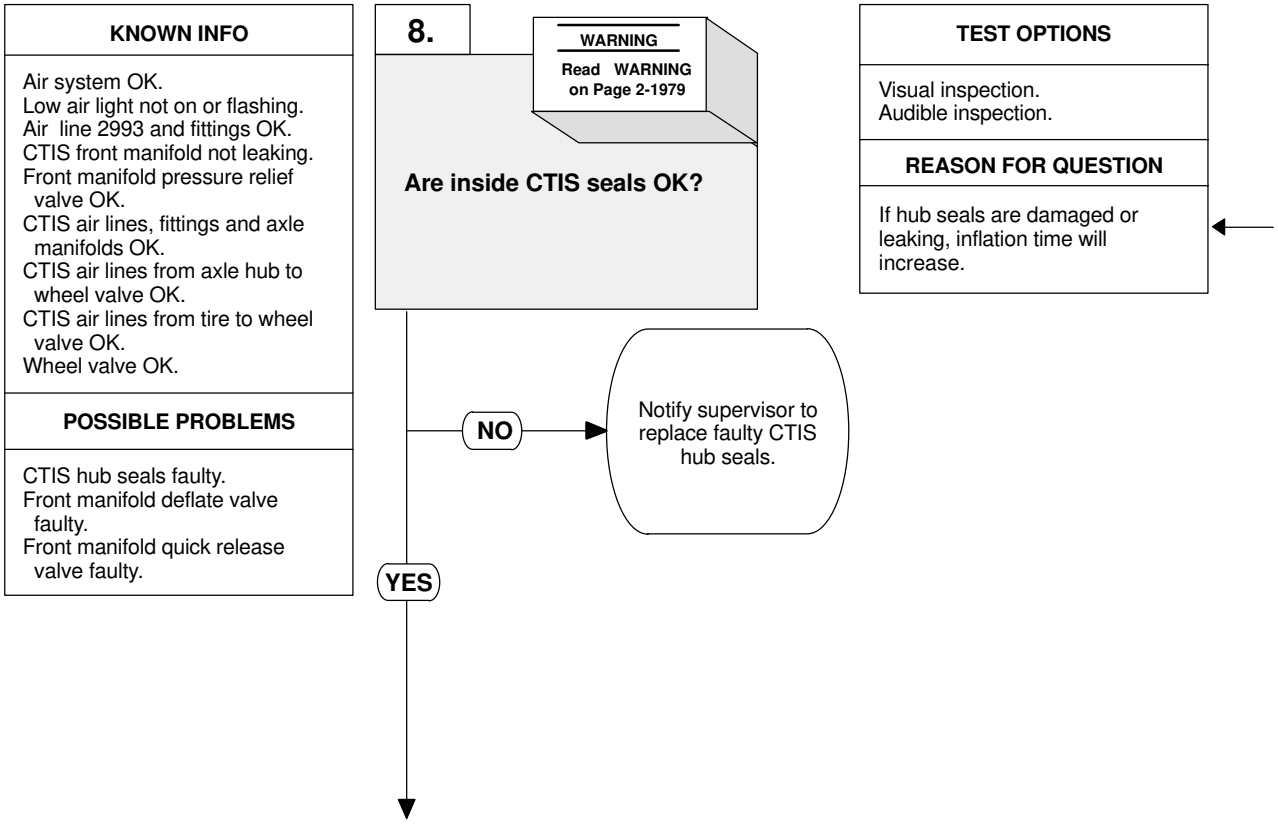
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage may occur at breather during inflation/deflation cycles. Rapid exhaust of air at breather indicates a faulty valve.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS wheel valves for air leakage.
  (a) If wheel valve is damaged or leaking air, perform Step (5) below and repair or replace wheel valve (Para 13-11).
  (b) If there are no leaks or damage, wheel valve is OK.
(5) Turn OFF ENGINE switch.



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

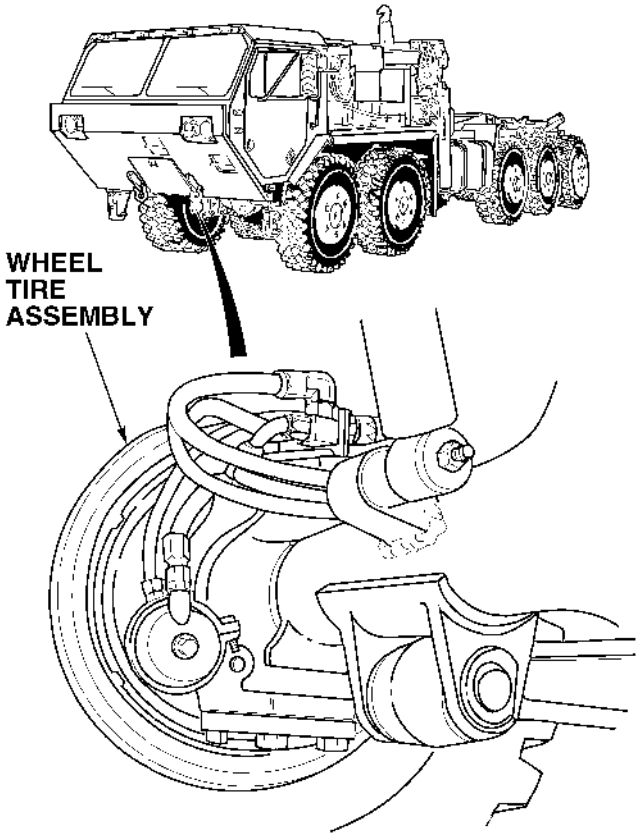
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

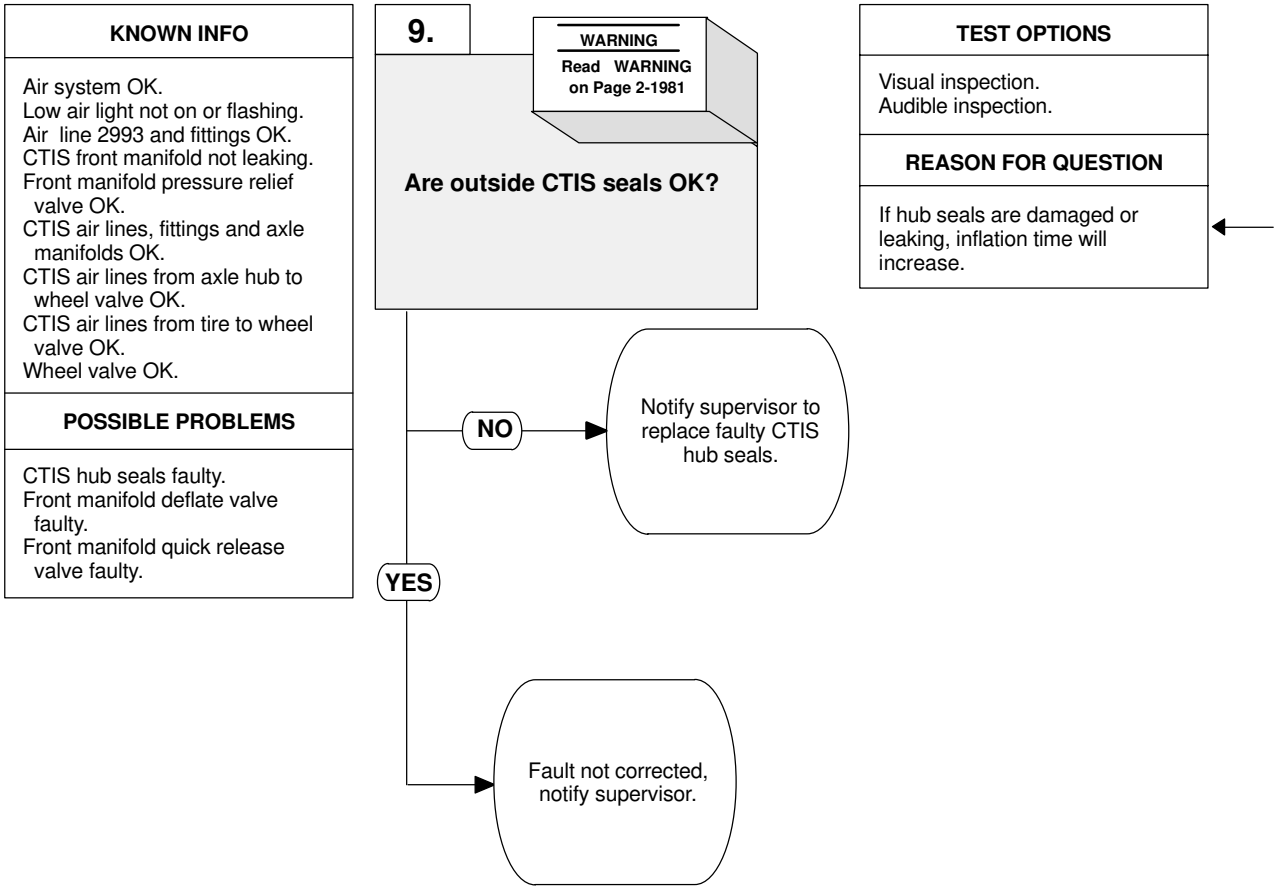
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check for air escaping from the inside portion of the wheel and tire assemblies.
    (a) If air is escaping, turn OFF ENGINE switch and notify supervisor to replace faulty CTIS hub seals.
    (b) If there is no air escaping, inside CTIS hub seals are OK.
(5) Turn OFF ENGINE switch.



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

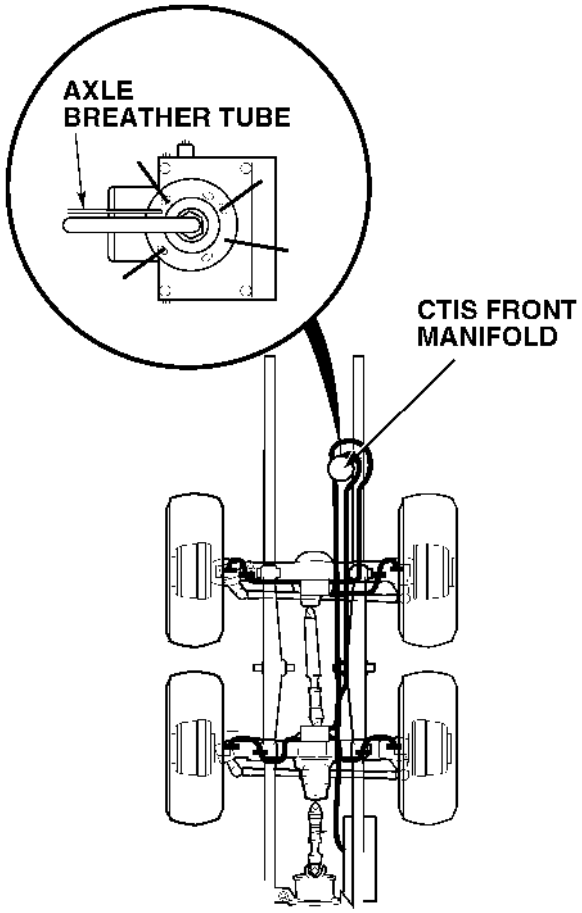
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

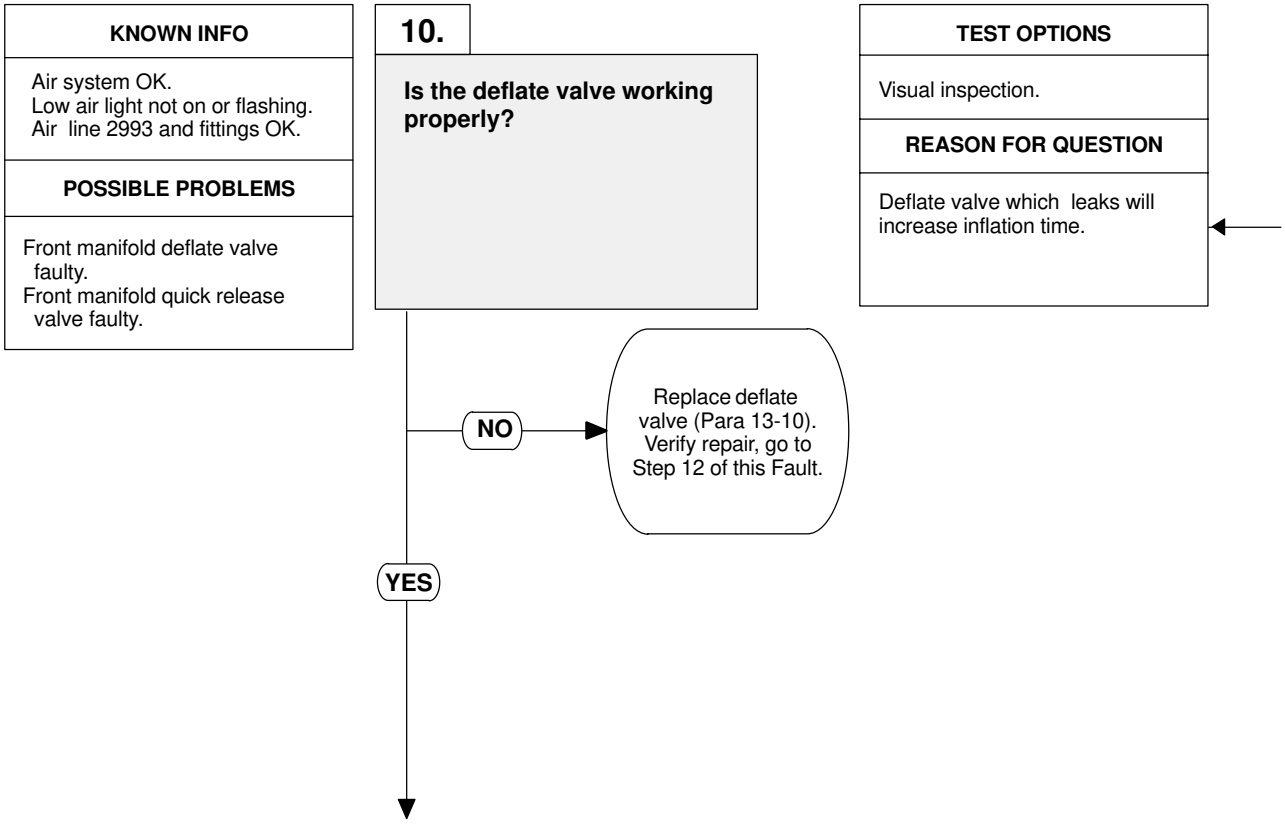
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check for air escaping from the axle breather tube.
    (a) If air is escaping, turn OFF ENGINE switch and notify supervisor to replace faulty CTIS hub seals.
    (b) If there is no air escaping, CTIS hub seals are OK. Fault not corrected, notify supervisor.
(5) Turn OFF ENGINE switch.

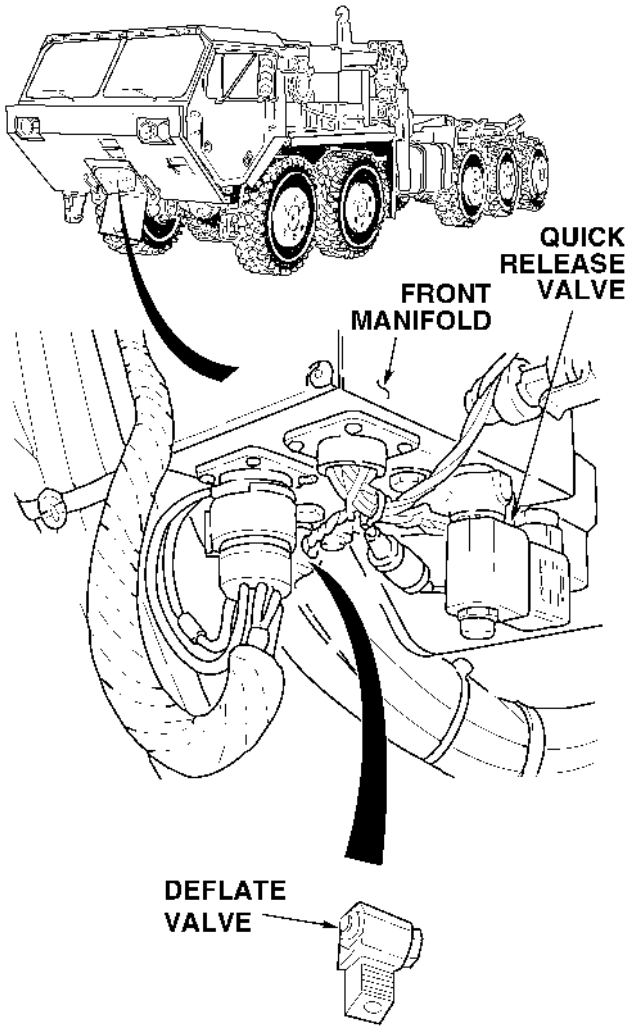


5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).

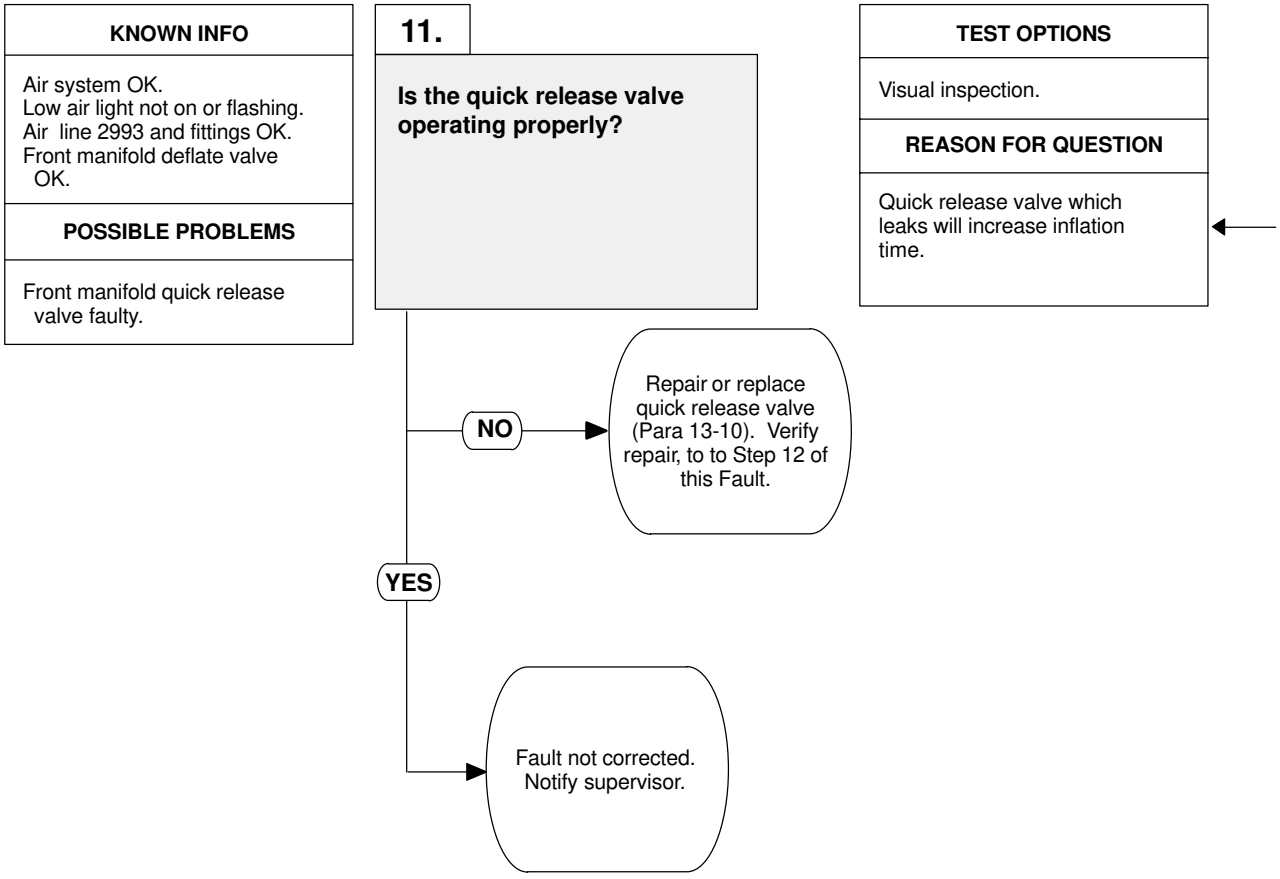


VISUAL INSPECTION

(1) Remove deflate valve from front manifold (Para 13-10).
(2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking, or any other physical damage.
    (a) If deflate valve is damaged, repair or replace deflate valve (Para 13-10).
    (b) If valve is not damaged, install deflate valve and go to Step 11 of this Fault.

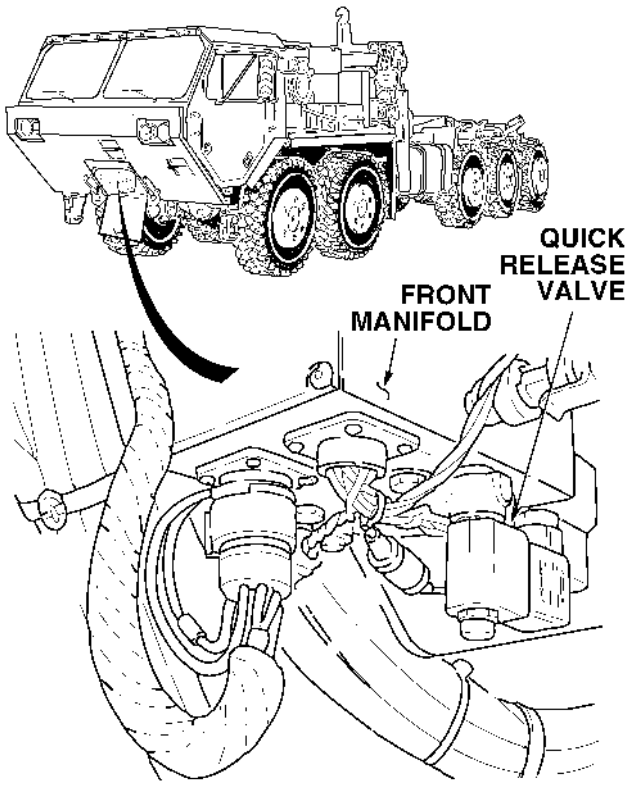


5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).

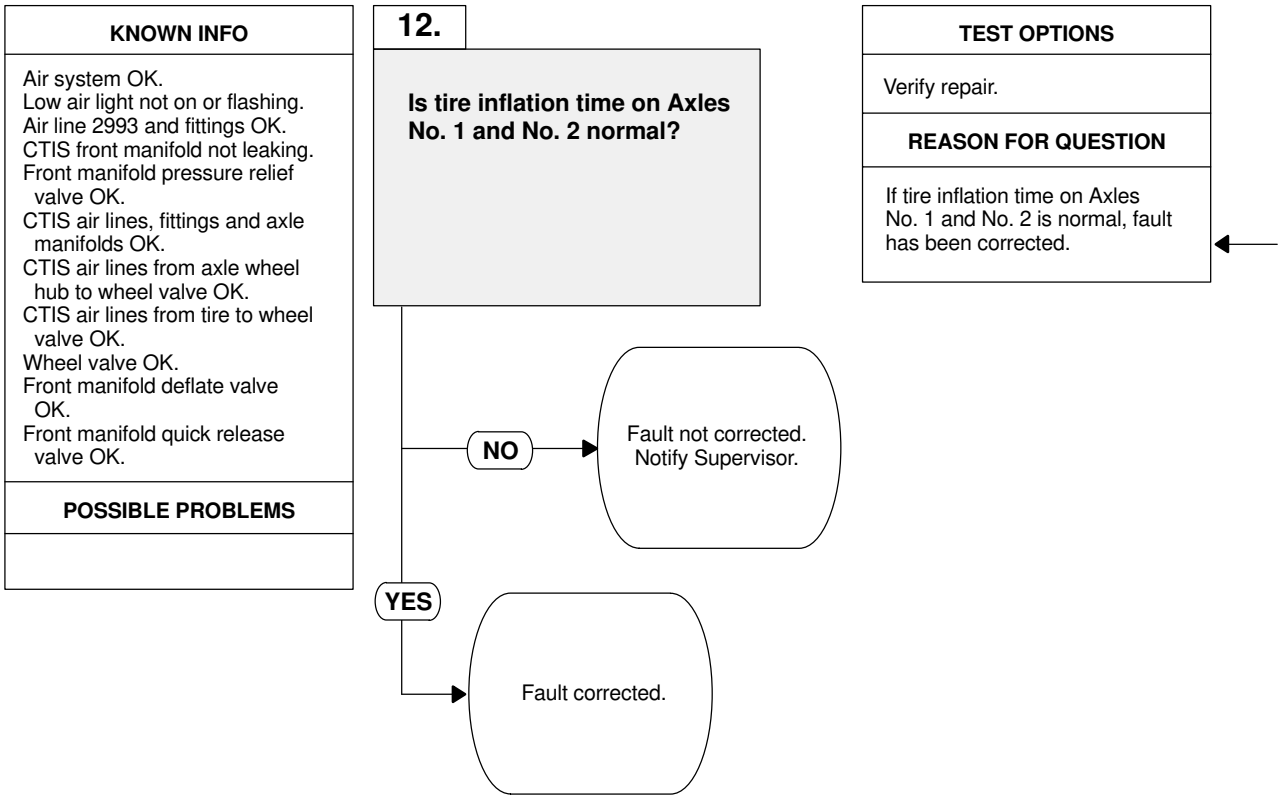


VISUAL INSPECTION

(1) Remove quick release valve from front manifold (Para 13-10).
(2) Inspect valve assembly for metal shavings or dirt between the diaphragm and valve seat, or for a broken spring, damaged diaphragm, sticking, or any other physical damage.
  (a) If quick release valve is damaged, repair or replace quick release valve (Para 13-10).
  (b) If quick release valve is not damaged, Fault not corrected. Notify supervisor.
(3) Close front access cover (TM 9-2320-364-10).



5. EXCESS INFLATION TIME AXLES NO. 1 AND NO. 2, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



NOTE

All inflation times are with engine running at full governed speed.

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
    (a) If tire inflation time is excessive (Table 2-46), fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If tire inflation time is normal, fault has been corrected.
(4) Turn OFF ENGINE switch.

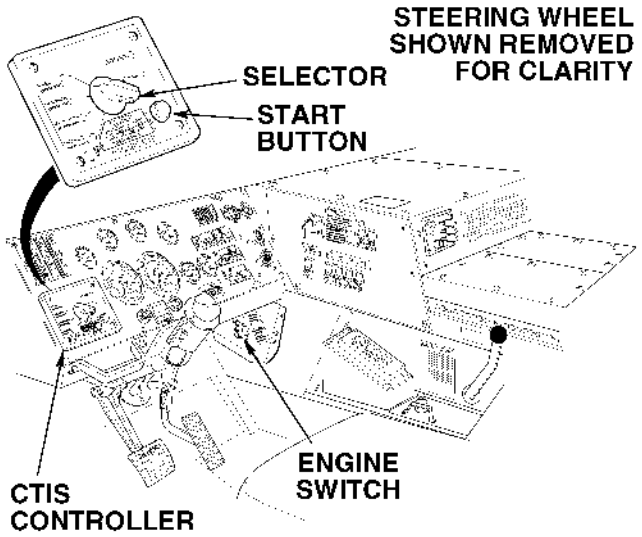


Table 2-46. CTIS Tire Inflation and Deflation Time

From	To	Maximum Time Allowed (Minutes)
Inflation		
Cross-country	Highway	12:30
Mud/Snow/Sand	Cross-country	5:30
Emergency	Mud/Sand/Snow	3:00
Deflation		
Highway	Cross-country	4:00
Cross-country	Mud/Sand/Snow	4:00
Mud/Snow/Sand	Emergency	3:00

2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY.

INITIAL SETUP

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

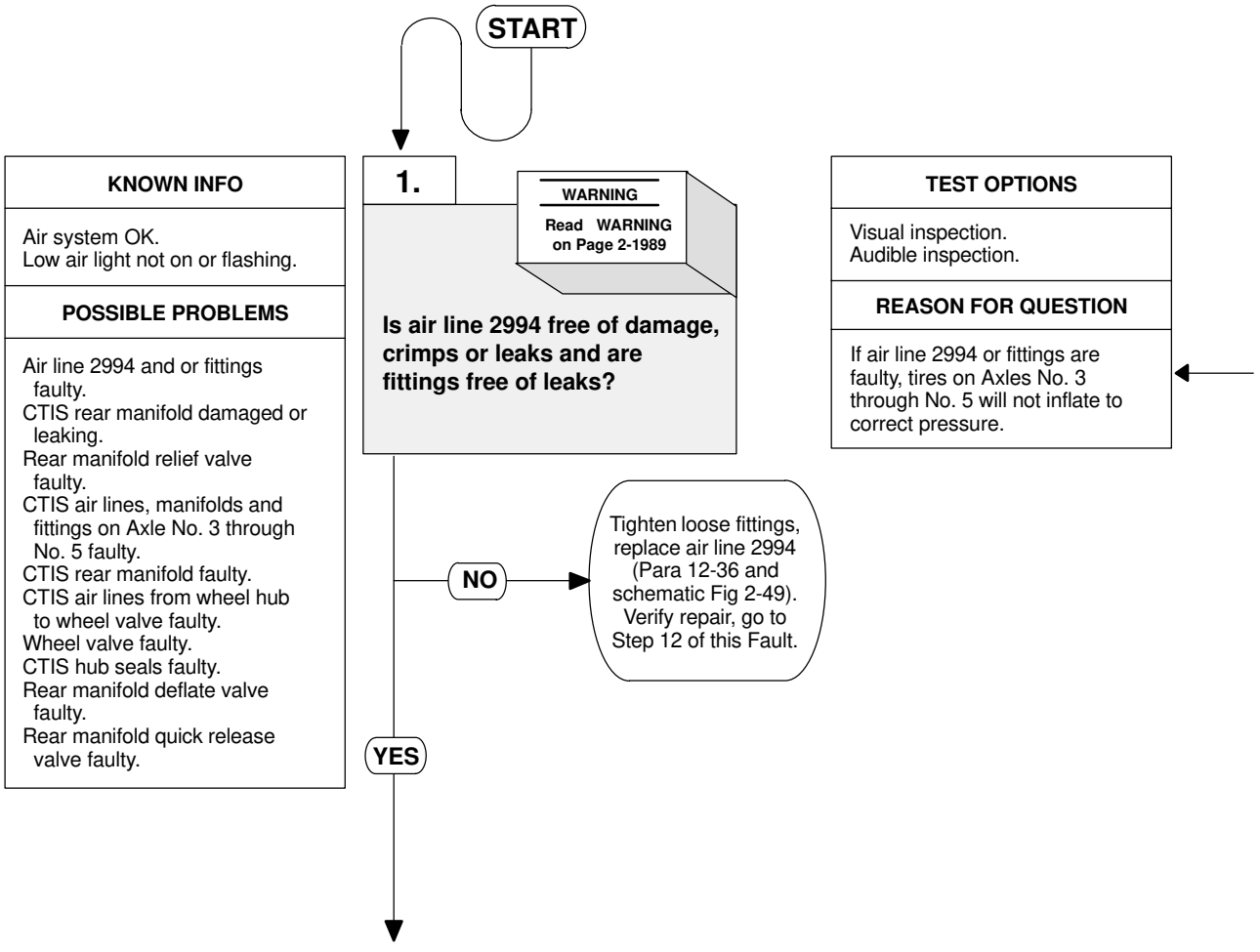
Materials/Parts
Solution, Soap (Item 86, Appendix C)

Personnel Required
Two

References
TM 9-2320-364-10

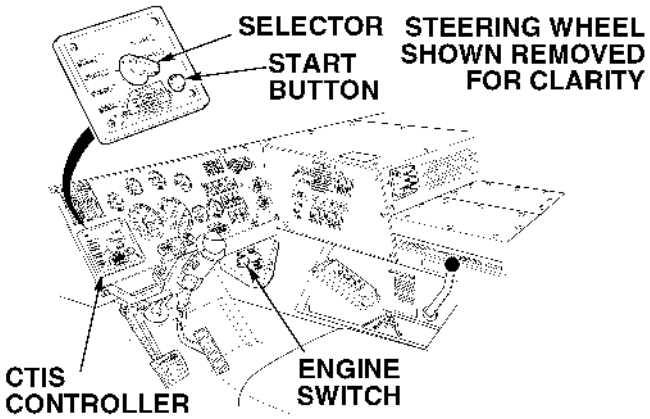
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Load Handling System (LHS) extended fully, (TM 9-2320-364-10)
CTIS turned on, (TM 9-2320-364-10)
CTIS rear manifold cover removed, (Para 13-9)

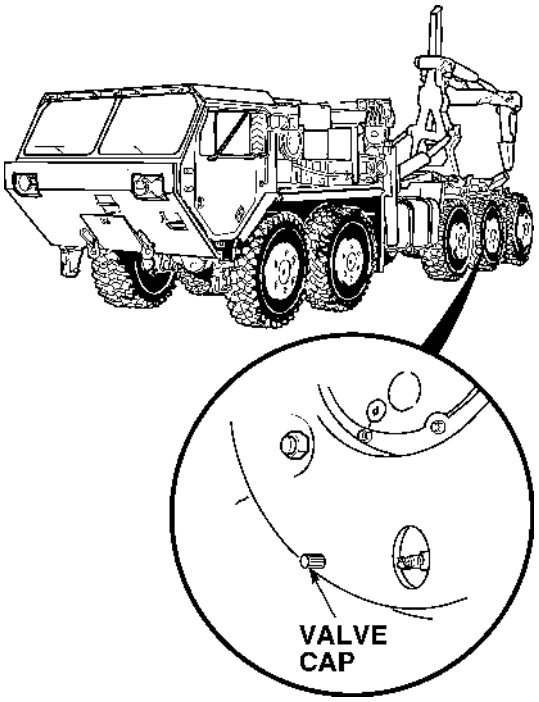
NOTE
Soap and water solution can be used to visually check for leaks.



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



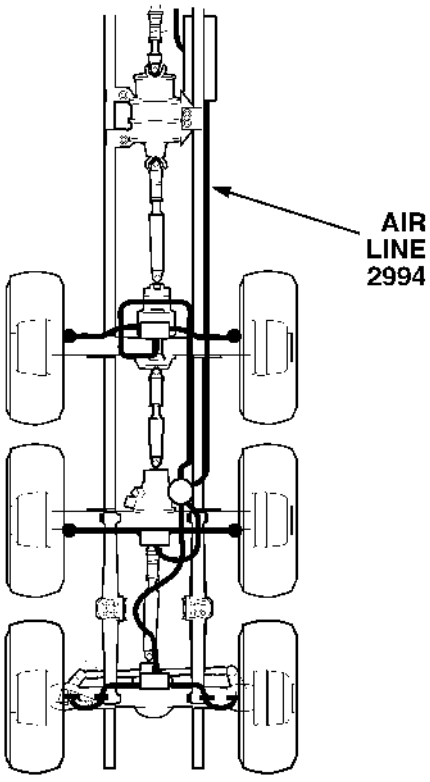


NOTE

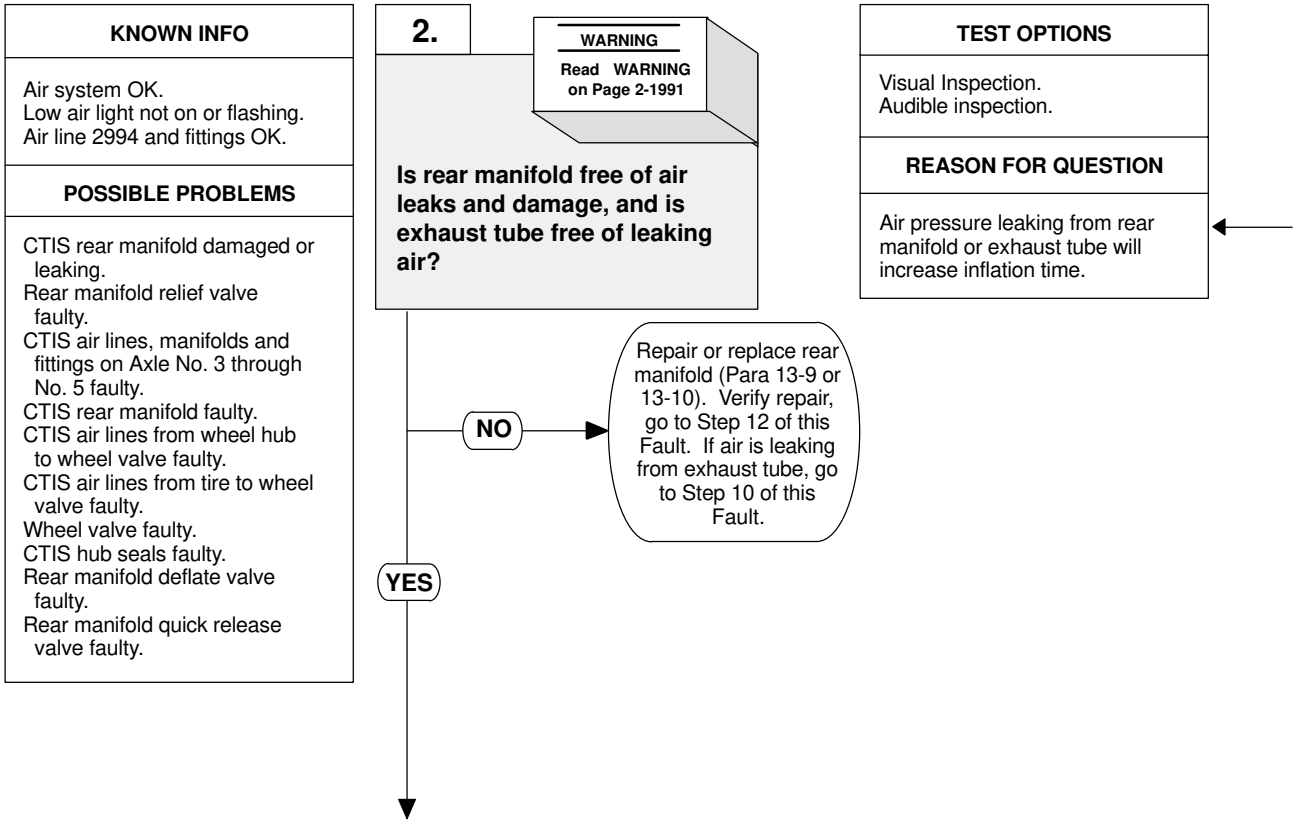
- Excessive inflation times with out a low air light are caused by minor leaks in CTIS system.
- CTIS air lines are pressurized only when CTIS is in inflate, deflate or test cycles.
- Excessive inflation times, sometimes accompanied by low air light is normal if engine is at idle speed and/or air operated accessories are being used.
- CTIS initially and periodically checks for system air leaks. CTIS controller will display a flashing LOW AIR light and will shut off if about 6 psi cannot be maintained.

VISUAL/AUDIBLE INSPECTION

(1) Remove valve cap from any wheel valve stem on Axles No. 3 through No. 5.
(2) Using tire gage, deflate any one tire on Axles No. 3 through No. 5 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check CTIS air line 2994 for damage, crimps or leaks (see schematic Fig 2-49).
  (a) If air line 2994 is damaged, crimped or leaking; perform Steps (7) and (8) below, and tighten fittings, replace air line (Para 12-36 and see schematic Fig 2-49).
  (b) If there are no leaks, crimps or damage; air line 2994 and fittings are OK.
(7) Turn OFF ENGINE switch.
(8) Install valve cap on wheel valve stem.



6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).

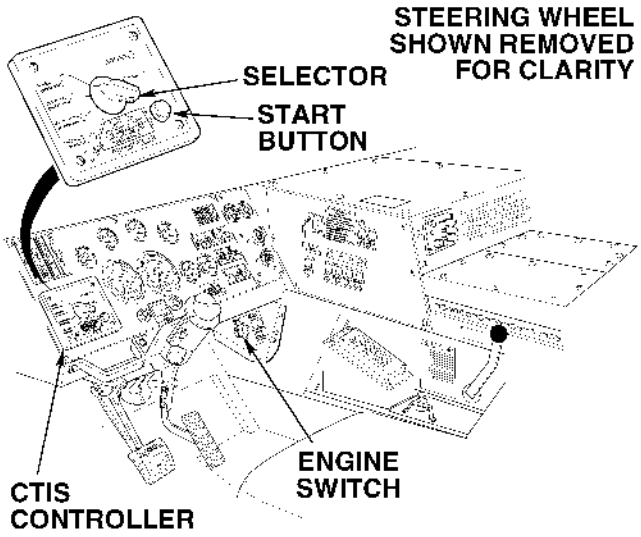


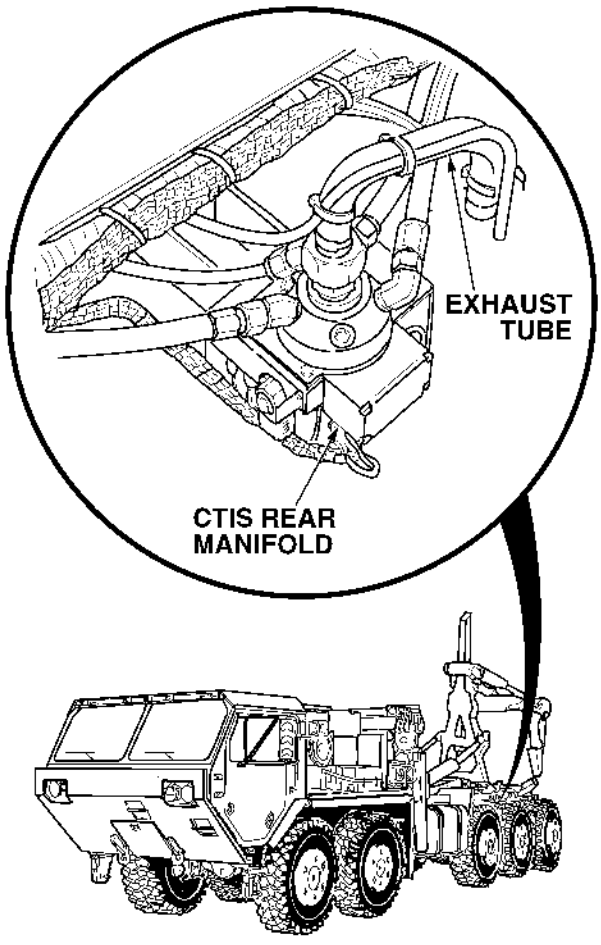
WARNING

- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

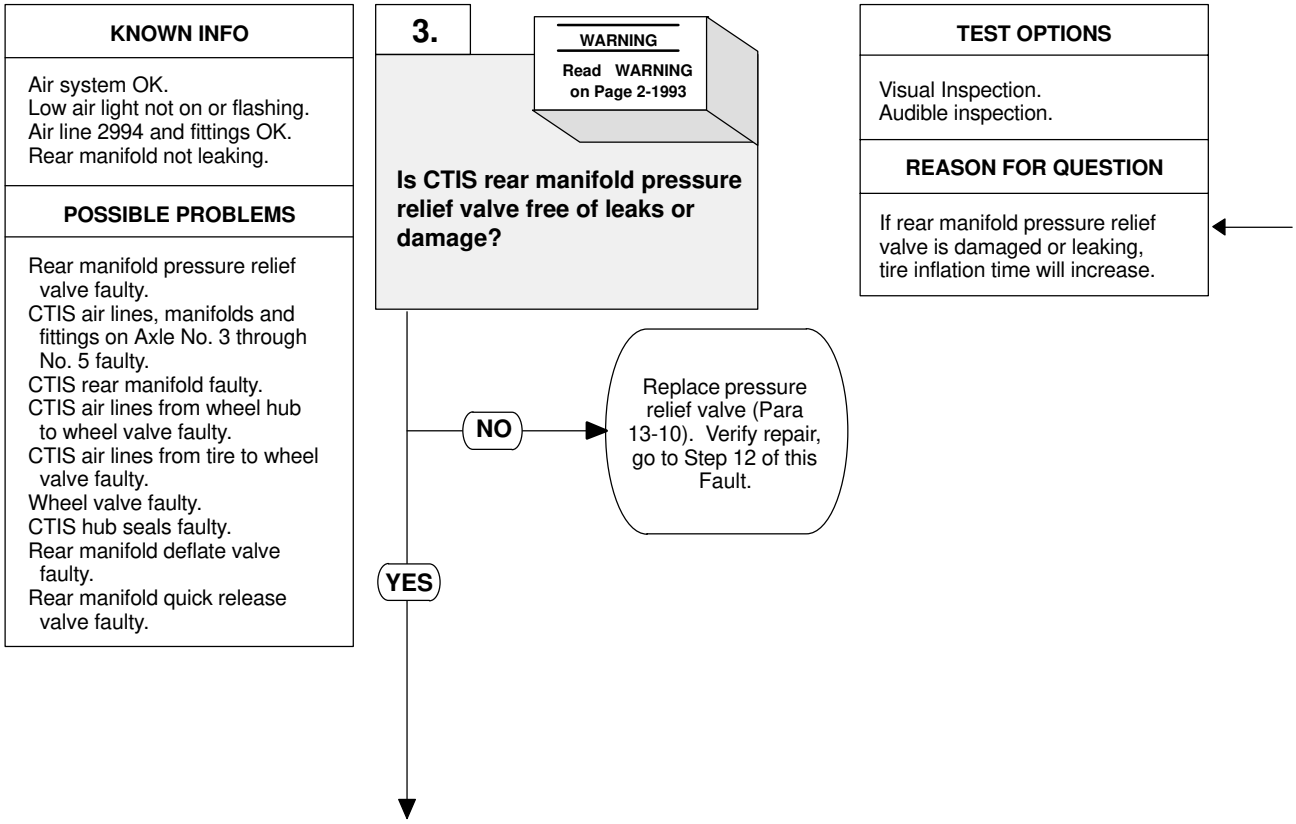
VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS rear manifold for damage and leaks.
  (a) If manifold is damaged or leaking, turn OFF ENGINE switch and repair or replace rear manifold (Para 13-9) or (Para 13-10).
  (b) If air is leaking from exhaust tube, turn OFF ENGINE switch and go to Step 10 of this Fault.
  (c) If manifold is not damaged or leaking, turn OFF ENGINE switch and go to Step 3 of this Fault.





6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

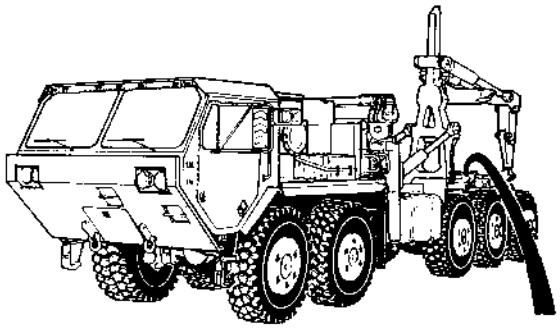
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

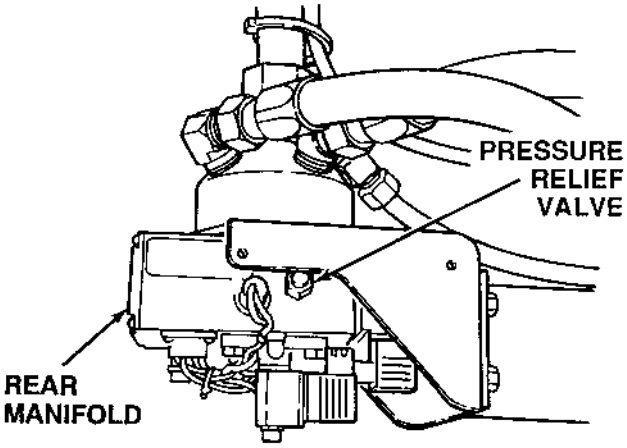
NOTE

- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage (bubbles forming) may occur during inflation/deflation cycle at relief valve. A rapid exhaust of air indicates a problem.
- Pressure relief valve should remain closed up to 85 psi (586 kPa).

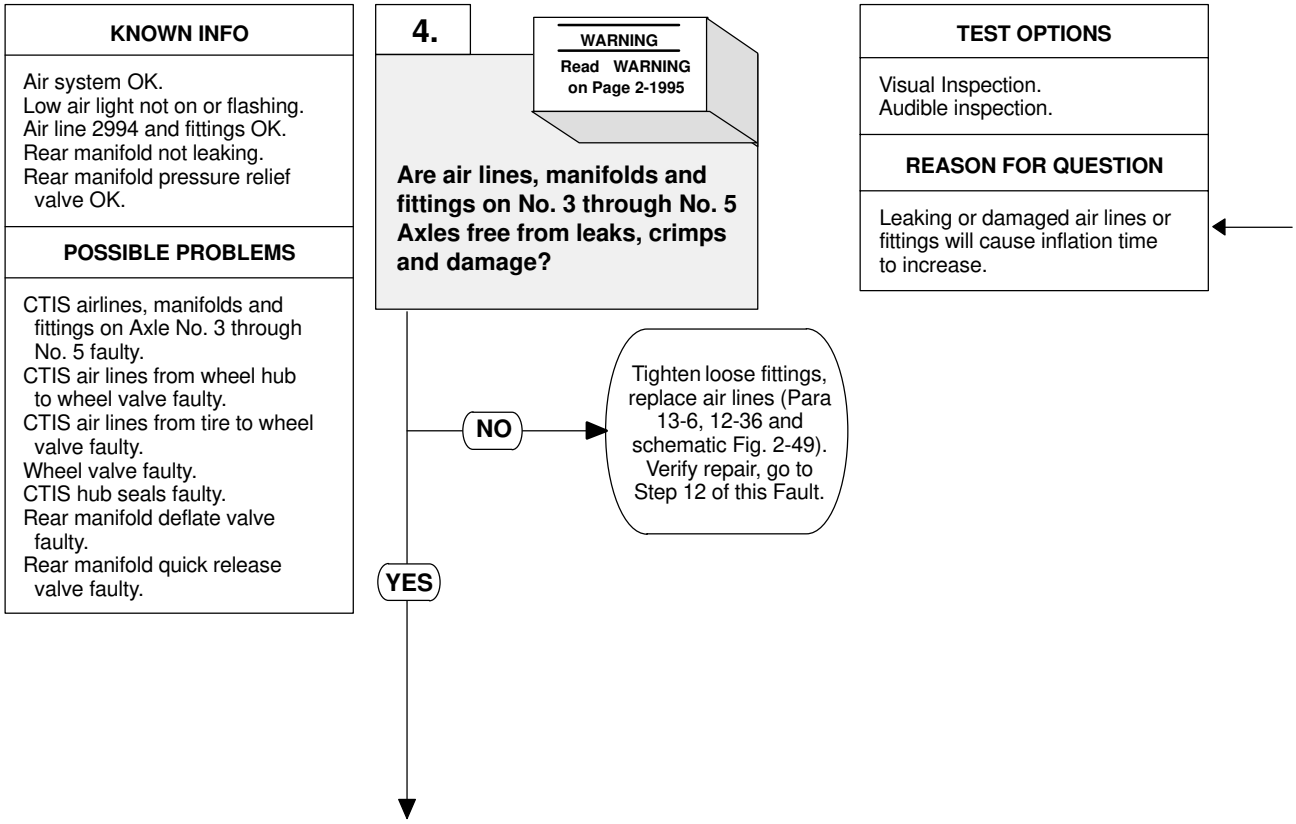
VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS rear manifold pressure relief valve for damage and leaks.
  (a) If pressure relief valve is damaged or leaking, turn OFF ENGINE switch and replace valve (Para 13-10).
  (b) If pressure relief valve is not damaged or leaking, relief valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install rear CTIS manifold cover (Para 13-9).
(7) Put LHS in transit position.



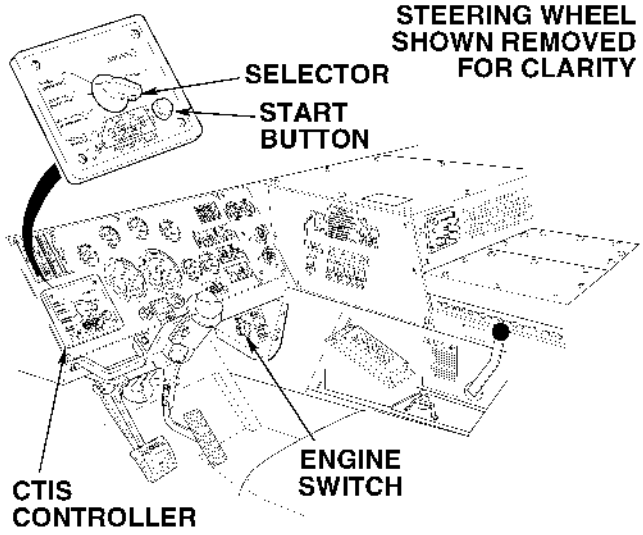


6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



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



NOTE

Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

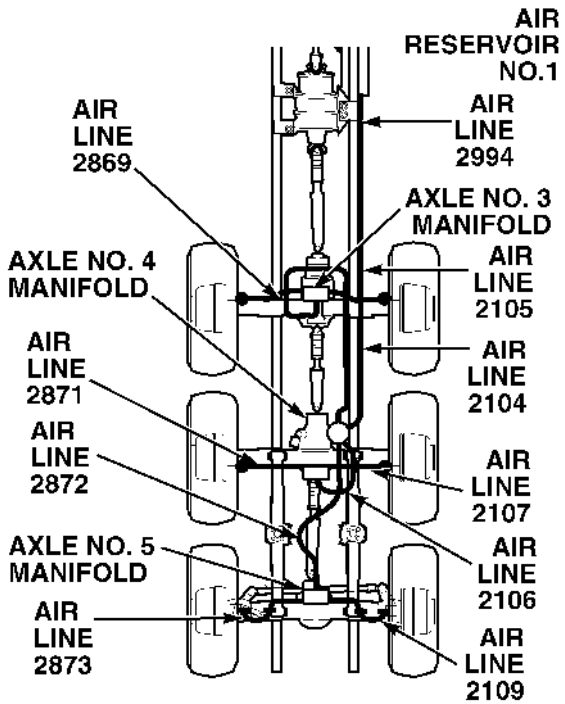
VISUAL/AUDIBLE INSPECTION

(1) Remove valve cap from any valve stem on Axles No. 3 through No. 5.
(2) Using tire gage, deflate any one tire on Axles No. 3 through No. 5 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check CTIS air lines listed below for damage, crimps or leaks (see schematic Fig 2-49).

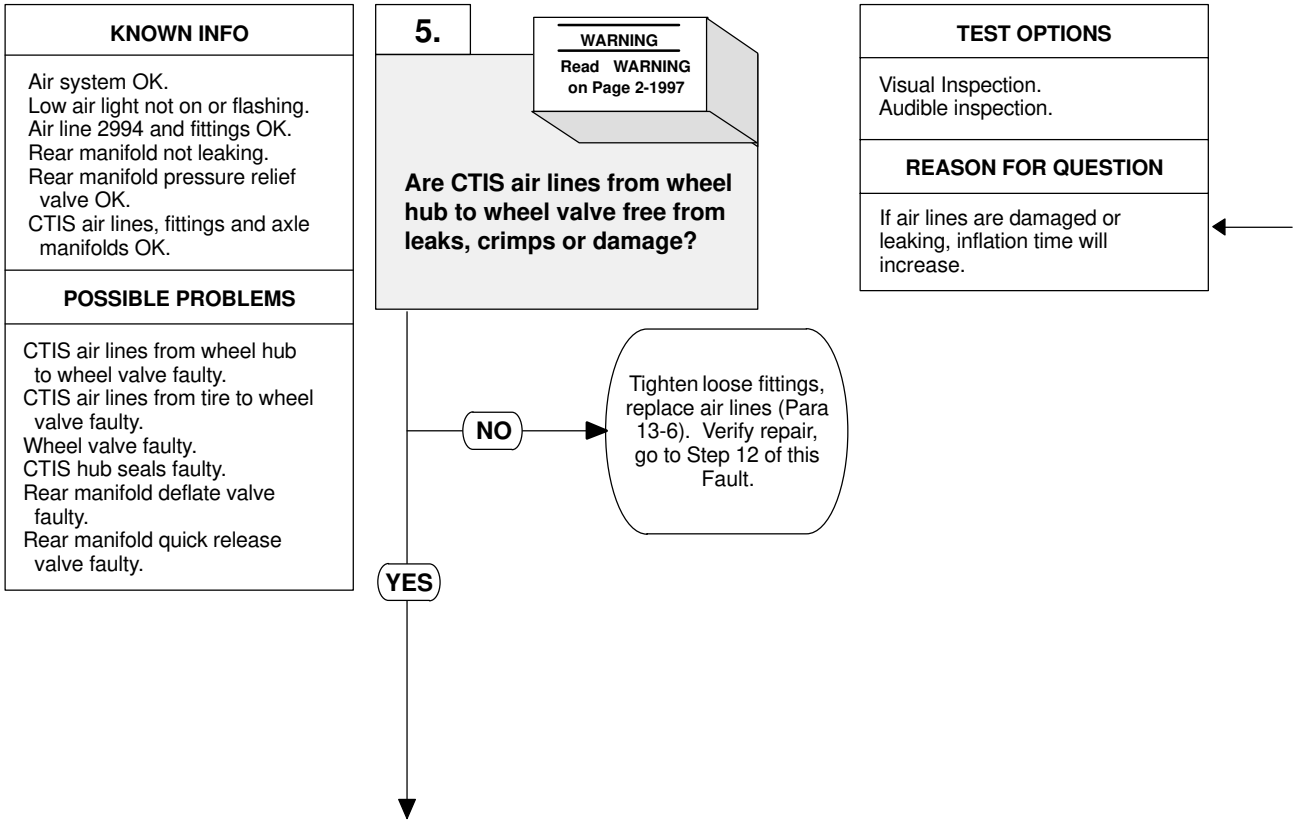
2104 2107 2871 2873
2105 2109 2872 2994
2106 2869

(a) If air lines are damaged, crimped or leaking, perform Steps (7) and (8) below, tighten fittings, replace air lines (Para 13-6, 12-36 and schematic Fig 2-49).
(b) If there are no leaks, crimps or damage, air lines and fittings are OK.

(7) Turn OFF ENGINE switch.
(8) Install valve cap on valve stem.



6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

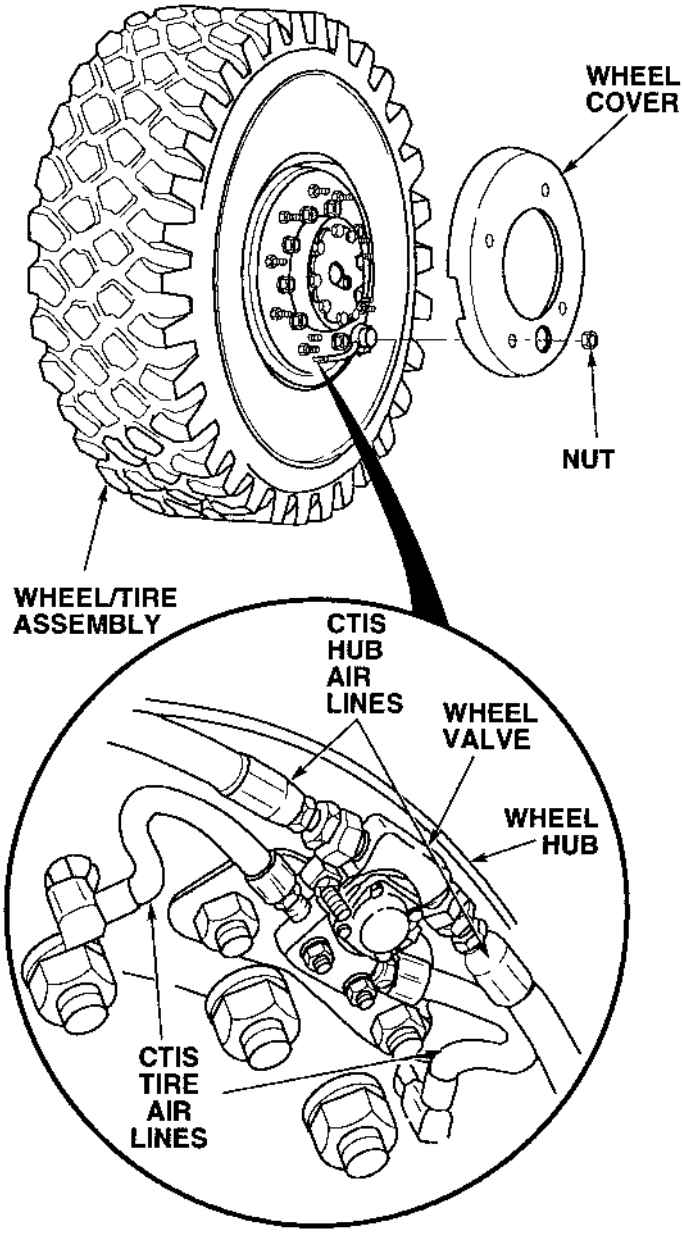
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

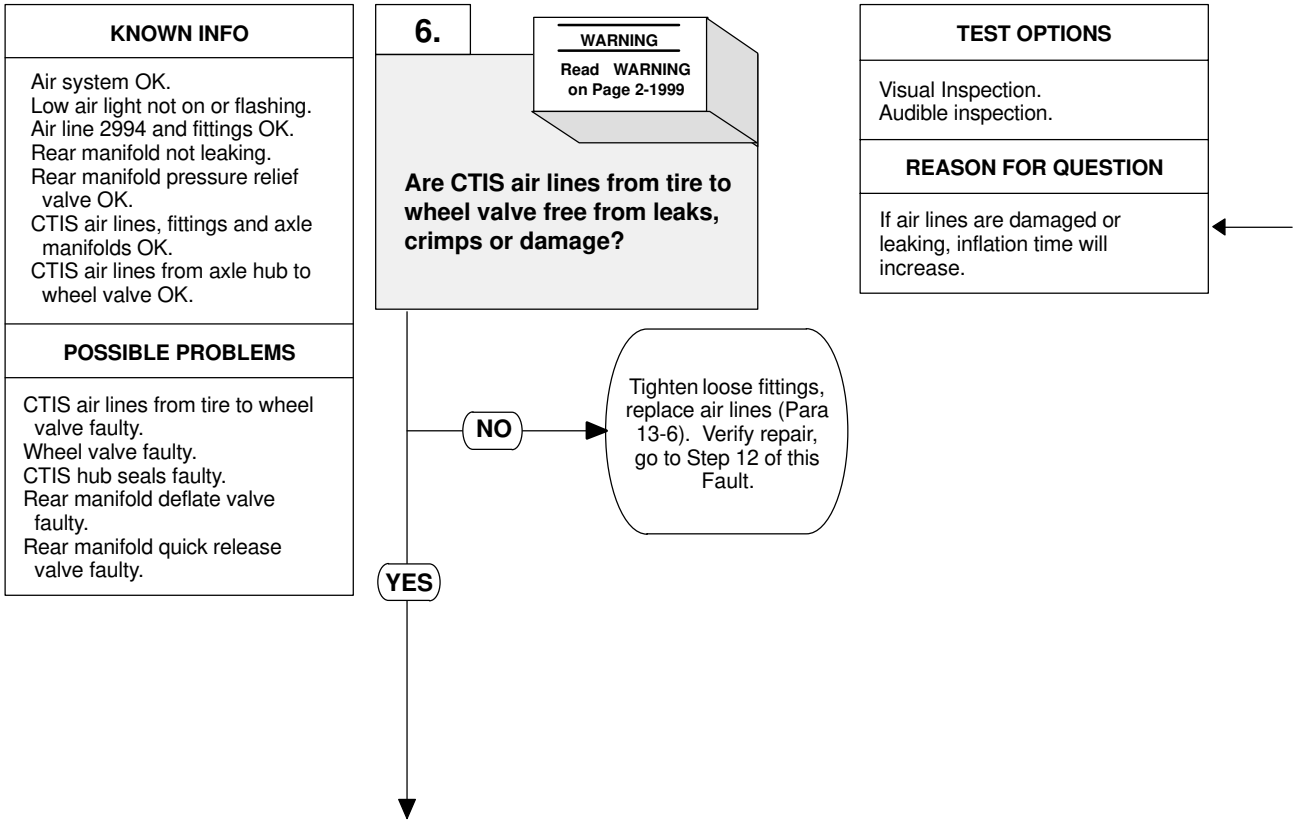
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Remove four nuts and wheel cover.
(2) Start engine (TM 9-2320-364-10).
(3) Set CTIS controller to HIGHWAY.
(4) Press CTIS START button.
(5) Check air lines at wheel hub to wheel valve for air leakage.
  (a) If air lines are damaged, crimped or leaking, perform step (6) below, and tighten loose fittings, replace air lines or fittings (Para 13-6).
  (b) If there are no leaks, crimps or damage, air lines and fittings are OK.
(6) Turn OFF ENGINE switch.



6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

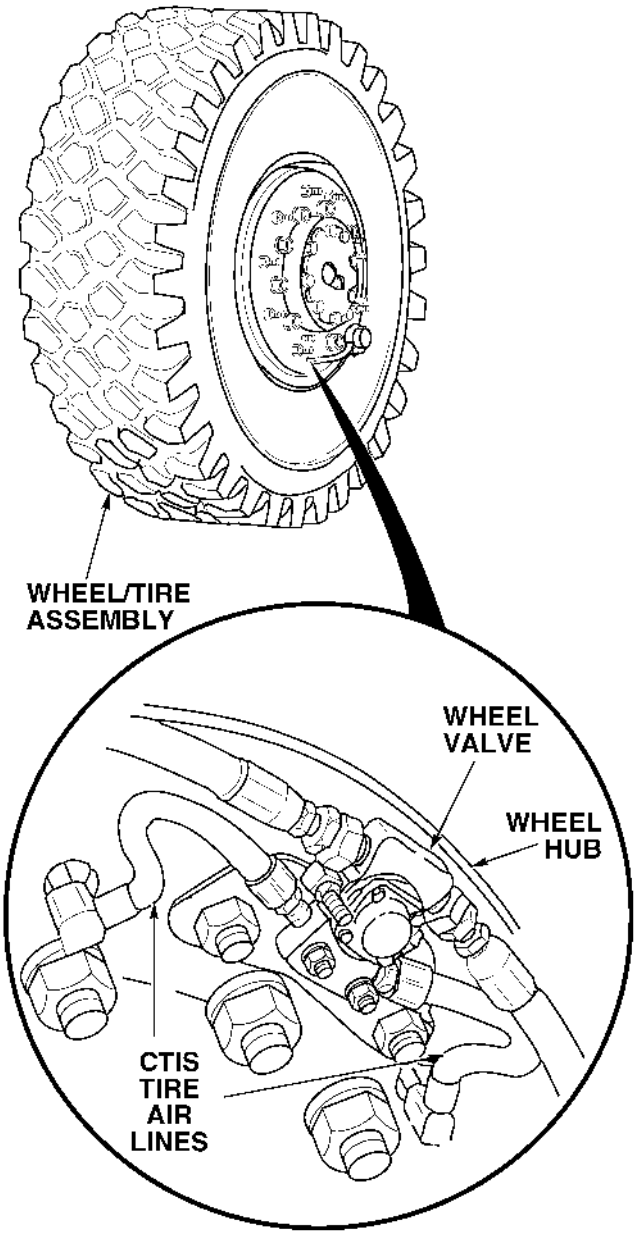
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

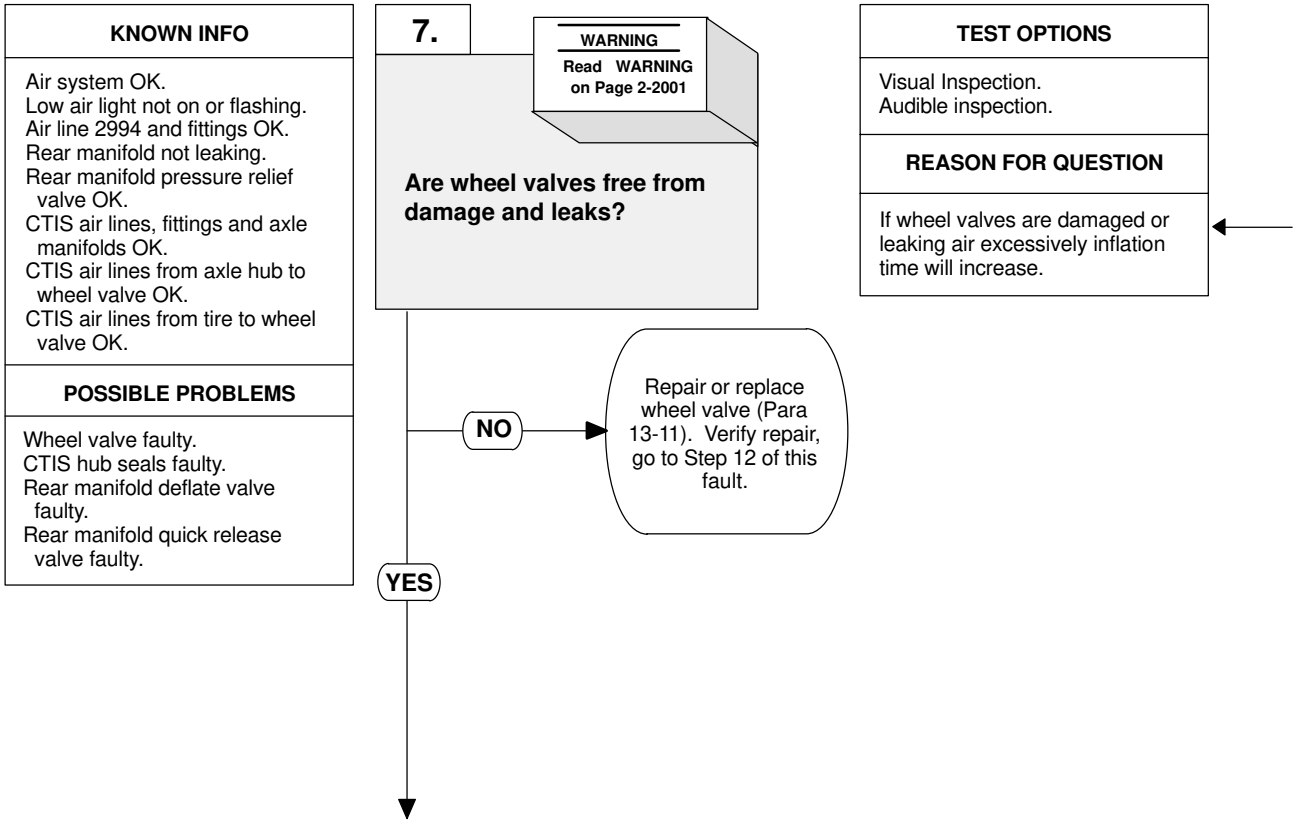
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS air lines at tire to wheel valve for air leakage.
    (a) If air lines are damaged, crimped or leaking, perform Step (5) below and tighten loose fittings, replace air lines or fittings (Para 13-6).
    (b) If there are no leaks, crimps or damage, air lines and fittings are OK.
(5) Turn OFF ENGINE switch.



6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

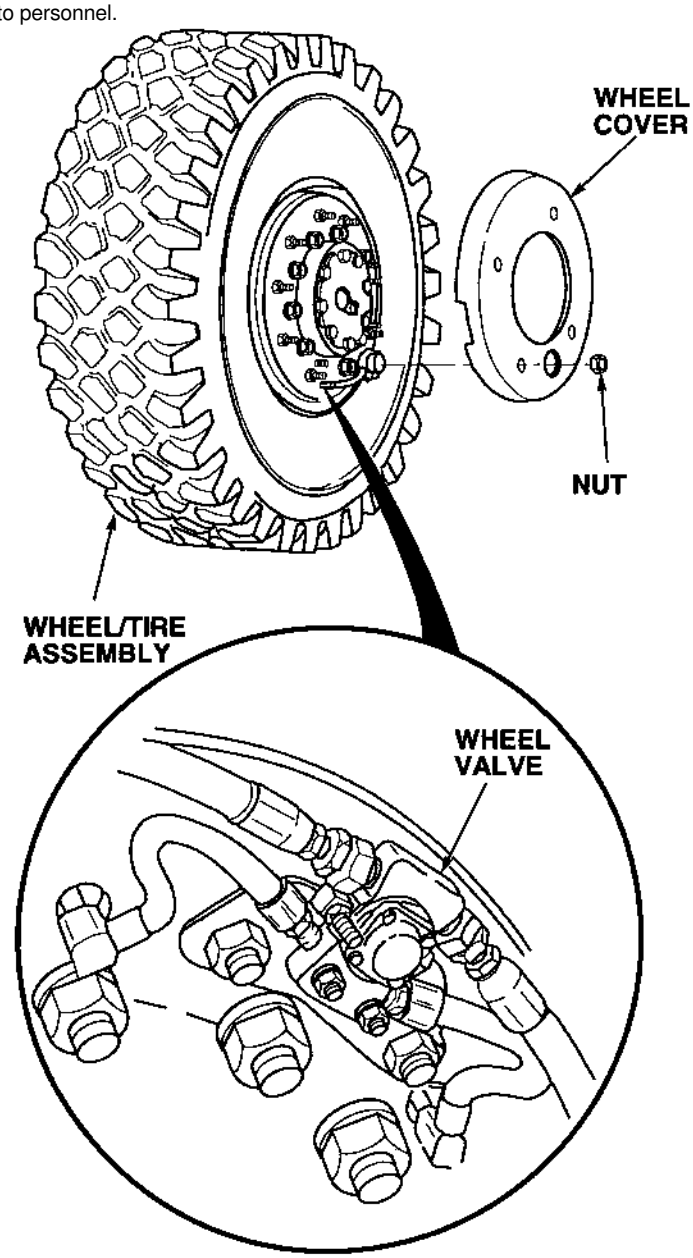
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

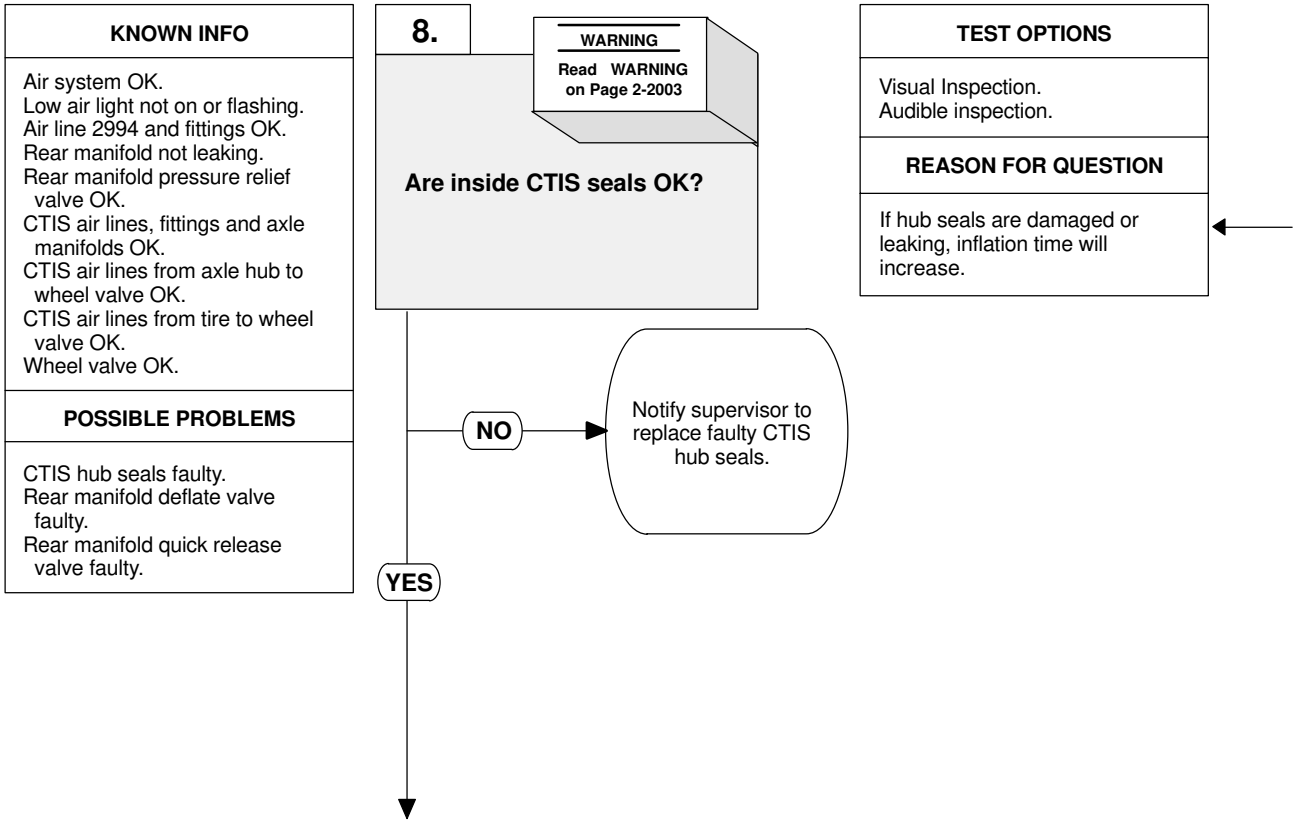
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage may occur at breather during inflation/deflation cycles. Rapid exhaust of air at breather indicates a faulty valve.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS wheel valves for air leakage.
  (a) If wheel valve is damaged or leaking air, perform Step (5) below and repair or replace wheel valve (Para 13-11).
  (b) If there are no air leaks or damage, wheel valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install wheel cover and four nuts.



6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

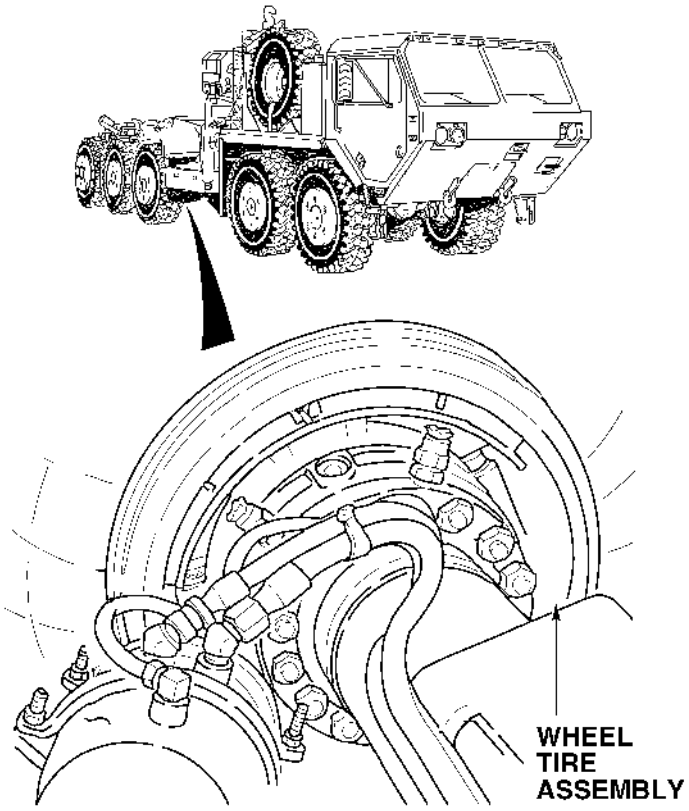
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

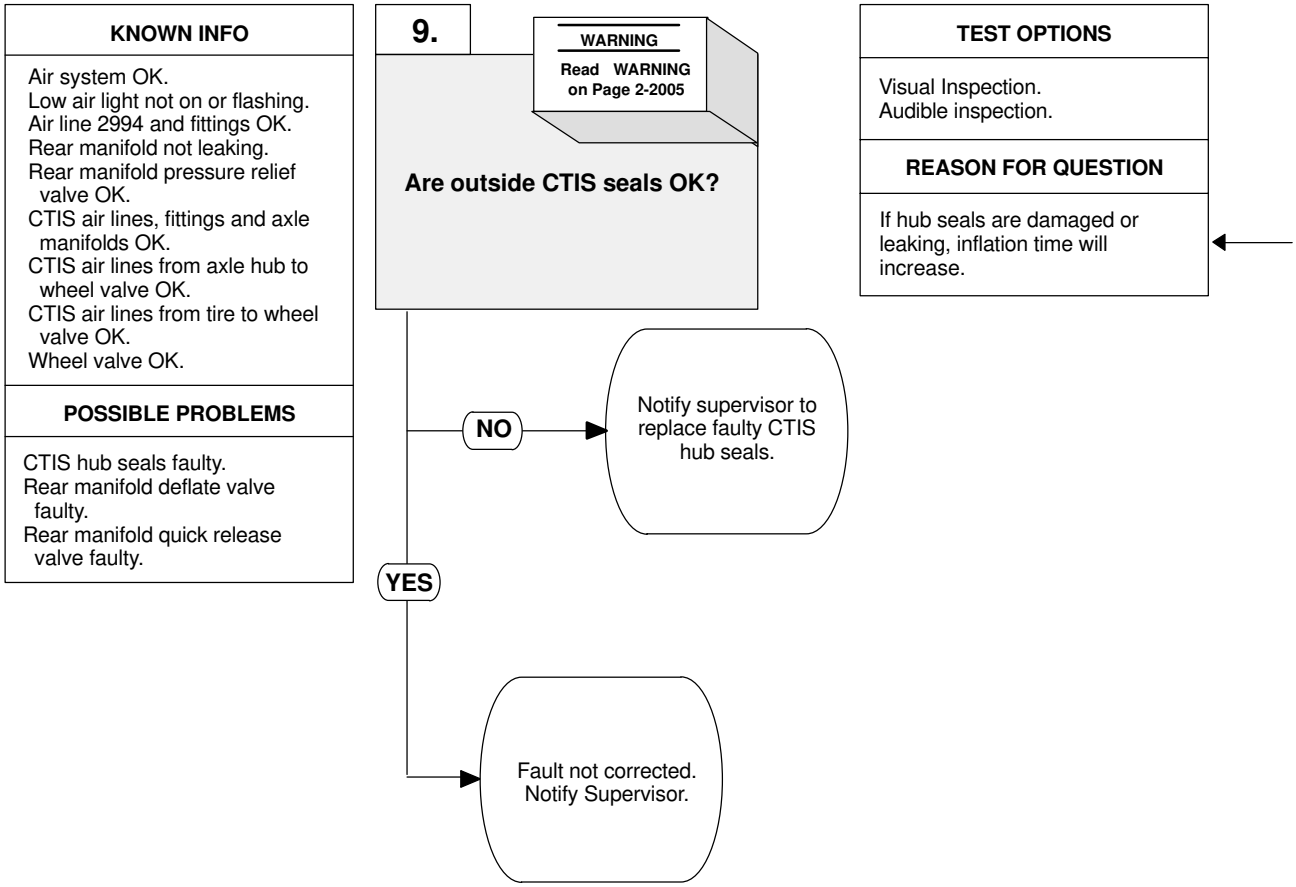
Tires must be deflated to 60 psi (414 kPa) or less to perform this test

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check for air escaping from the inside portion of the wheel and tire assemblies.
  (a) If air is escaping, turn OFF ENGINE switch and notify supervisor to replace faulty CTIS hub seals.
  (b) If there is no air escaping, inside CTIS hub seals are OK.
(5) Turn OFF ENGINE switch.



6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



WARNING

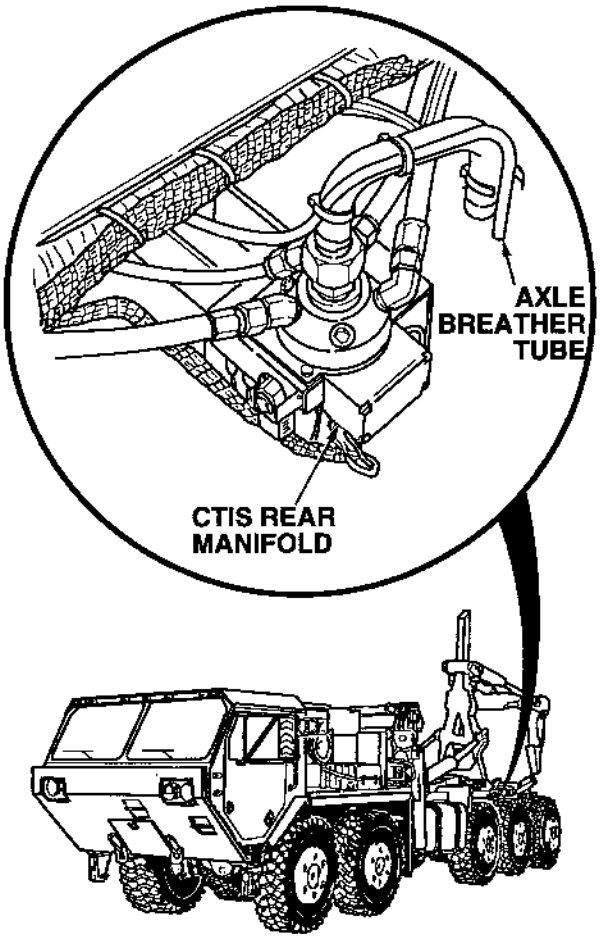
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

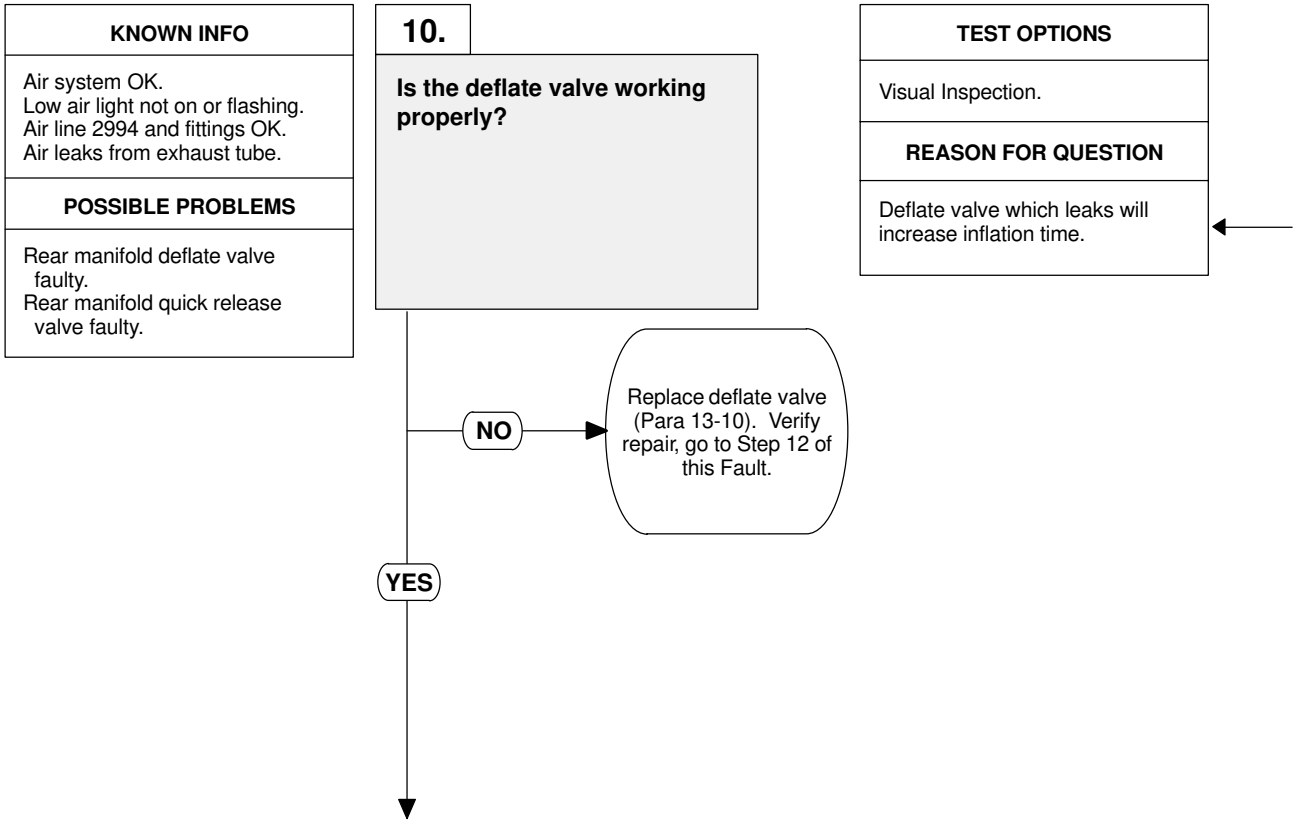
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check for air escaping from the axle breather tube.
  (a) If air is escaping, turn OFF ENGINE switch and notify supervisor to replace faulty CTIS hub seals.
  (b) If there is no air escaping, CTIS hub seals are OK. Notify Supervisor.
(5) Turn OFF ENGINE switch.

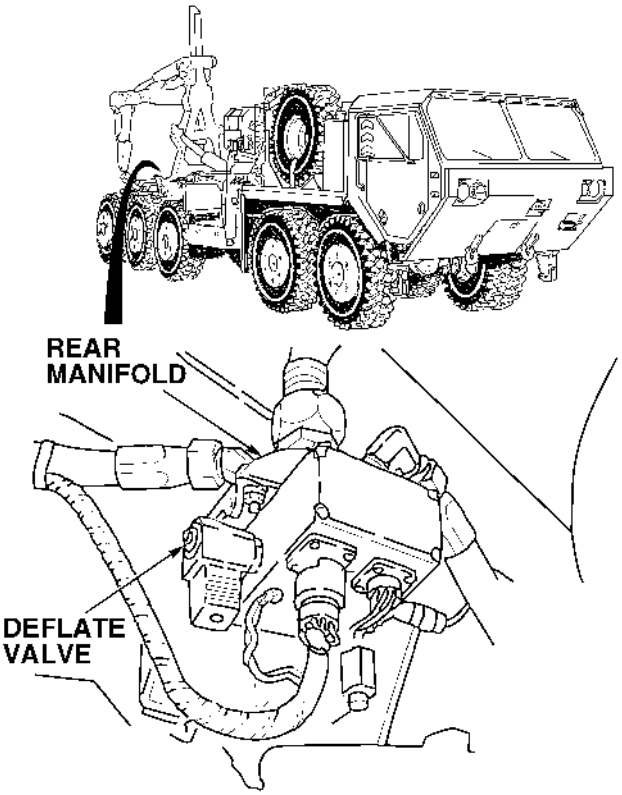


6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).

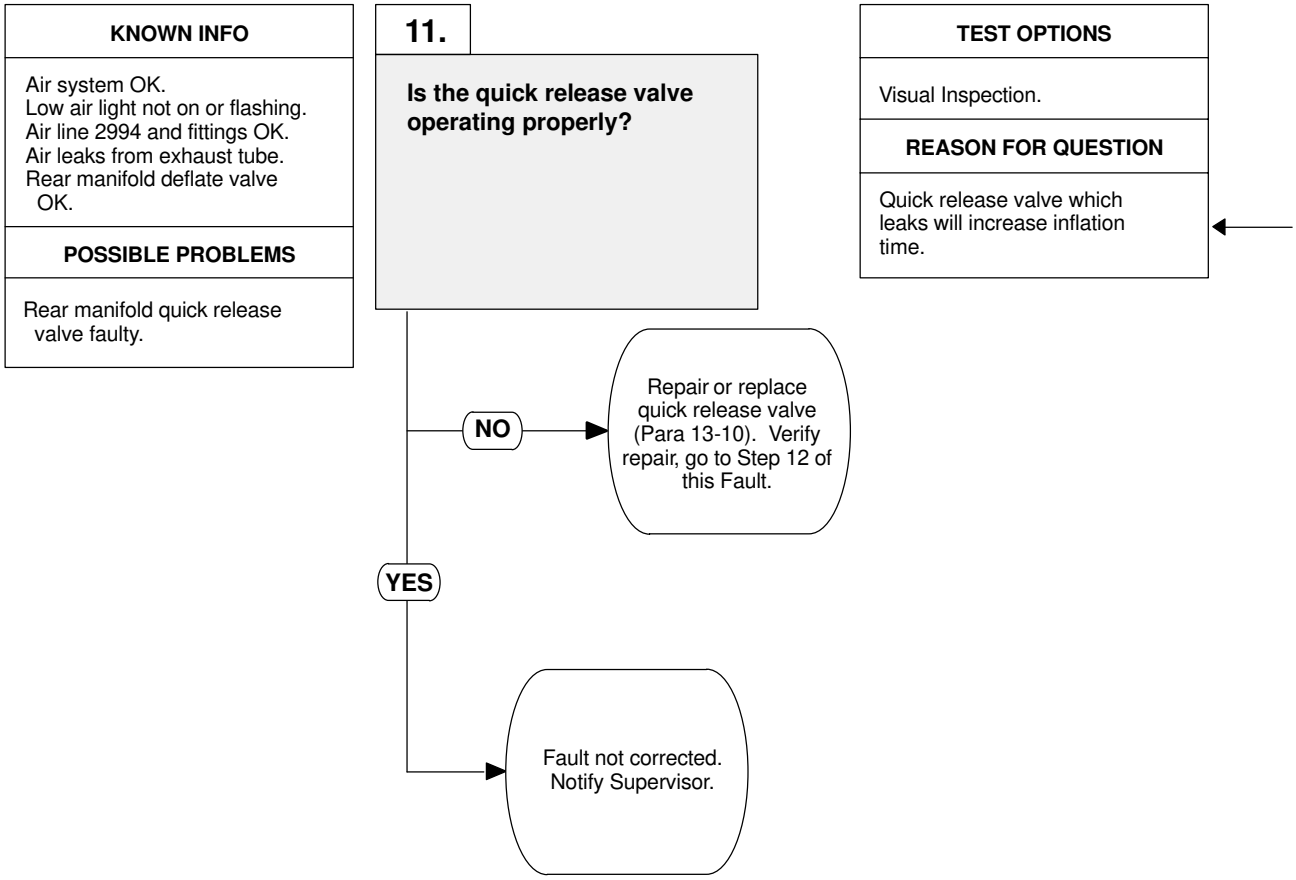


VISUAL INSPECTION

(1) Remove deflate valve from rear manifold (Para 13-10).
(2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking, or any other physical damage.
    (a) If deflate valve is damaged, repair or replace deflation valve (Para 13-10).
    (b) If deflate valve is not damaged, install deflate valve and go to Step 11 of this Fault.

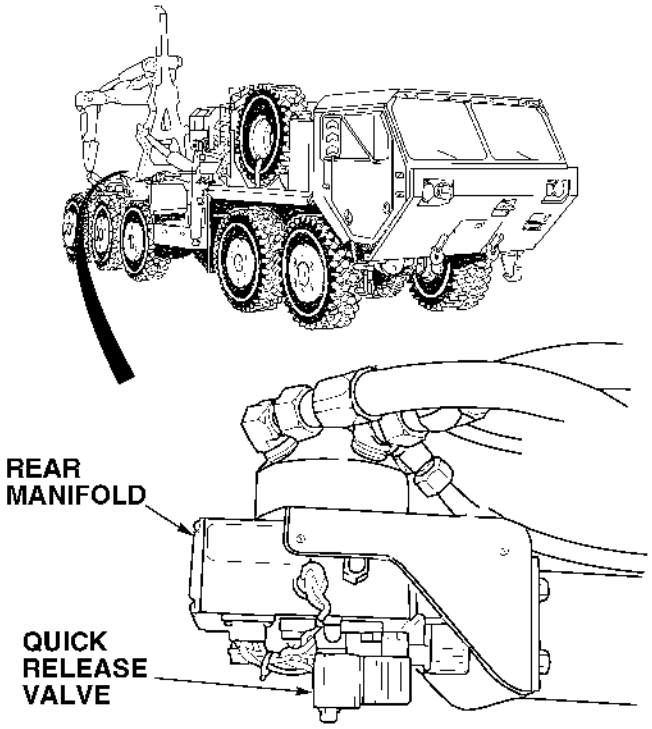


6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).

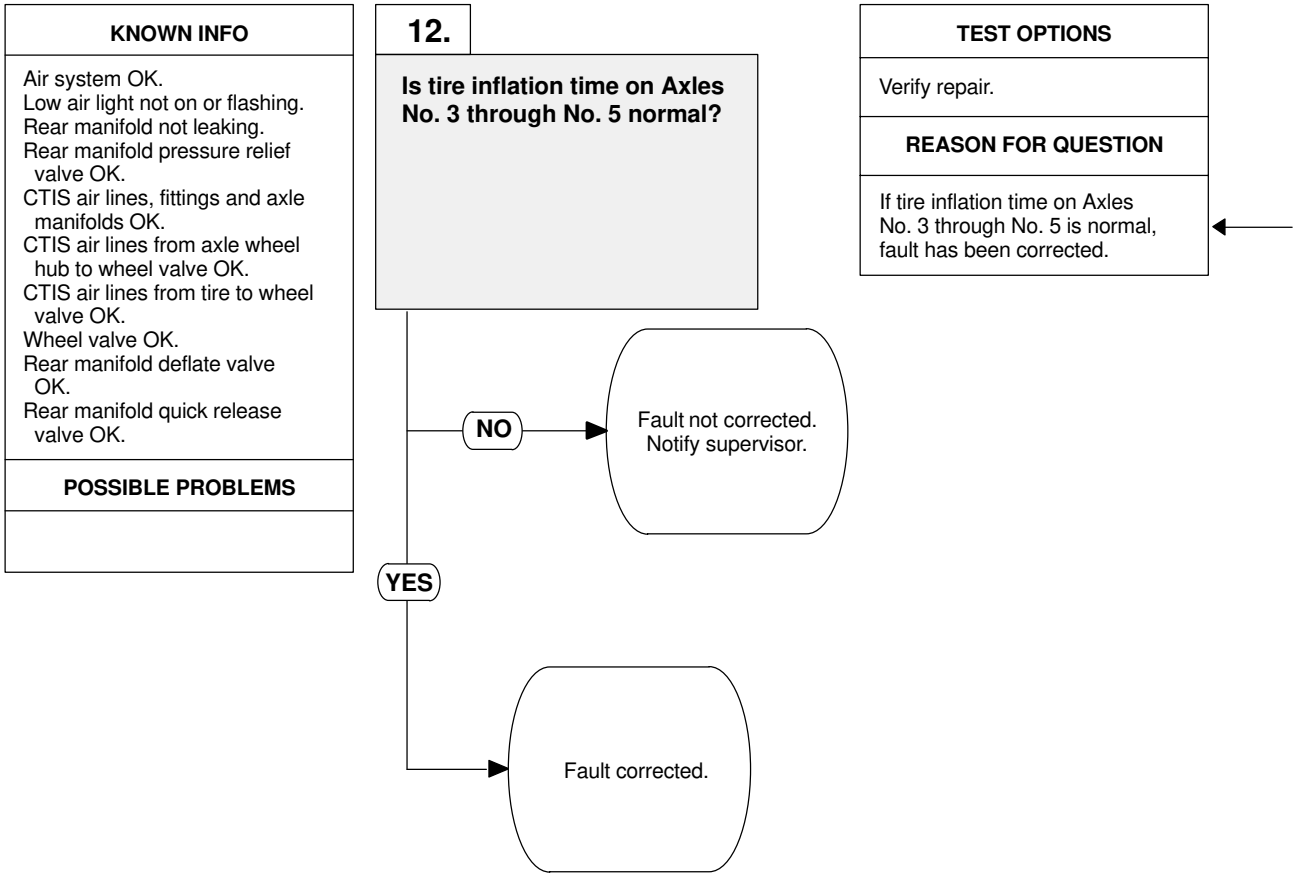


VISUAL INSPECTION

(1) Remove quick release valve from rear manifold (Para 13-10).
(2) Inspect valve assembly for metal shavings or dirt between the diaphragm and valve seat, or for a broken spring, damaged diaphragm, sticking, or any other physical damage.
    (a) If quick release valve is damaged, repair or replace quick release valve (Para 13-10) and perform Steps (3) and (4) below.
    (b) If valve is not damaged, Fault is not corrected, notify supervisor.
(3) Install rear manifold cover (Para 13-9).
(4) Put LHS in transit position (TM 9-2320-364-10).



6. EXCESS INFLATION TIME AXLES NO. 3 THROUGH NO. 5, CTIS GREEN INDICATOR FLASHES TOO LONG OR CONTINUALLY (CONT).



NOTE

All inflation times are with engine running at full governed speed.

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
    (a) If tire inflation time is excessive (Table 2-47), fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If tire inflation time is normal, fault has been corrected.
(4) Turn OFF ENGINE switch.

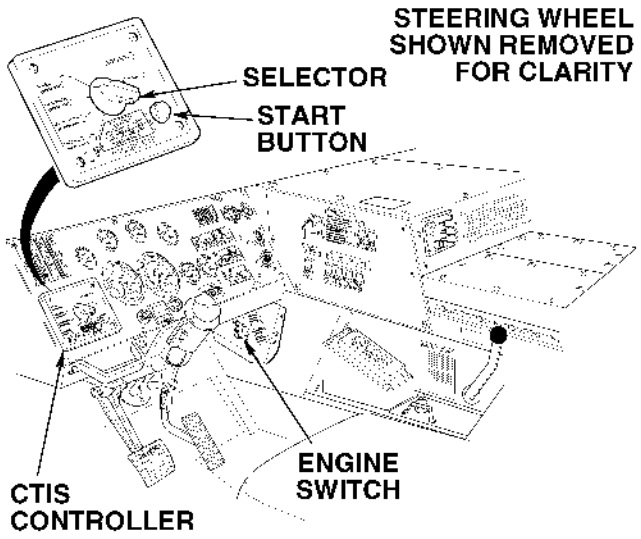


Table 2-47. CTIS Tire Inflation and Deflation Time

From	To	Maximum Time Allowed (Minutes)
Inflation		
Cross-country	Highway	12:30
Mud/Snow/Sand	Cross-country	5:30
Emergency	Mud/Sand/Snow	3:00
Deflation		
Highway	Cross-country	4:00
Cross-country	Mud/Sand/Snow	4:00
Mud/Snow/Sand	Emergency	3:00

2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

7. AXLES NO. 1 AND NO. 2 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS.

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Multimeter (Item 44, Appendix G)
Variable Air Supply (Item 99, Appendix G)
Jumperwire

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

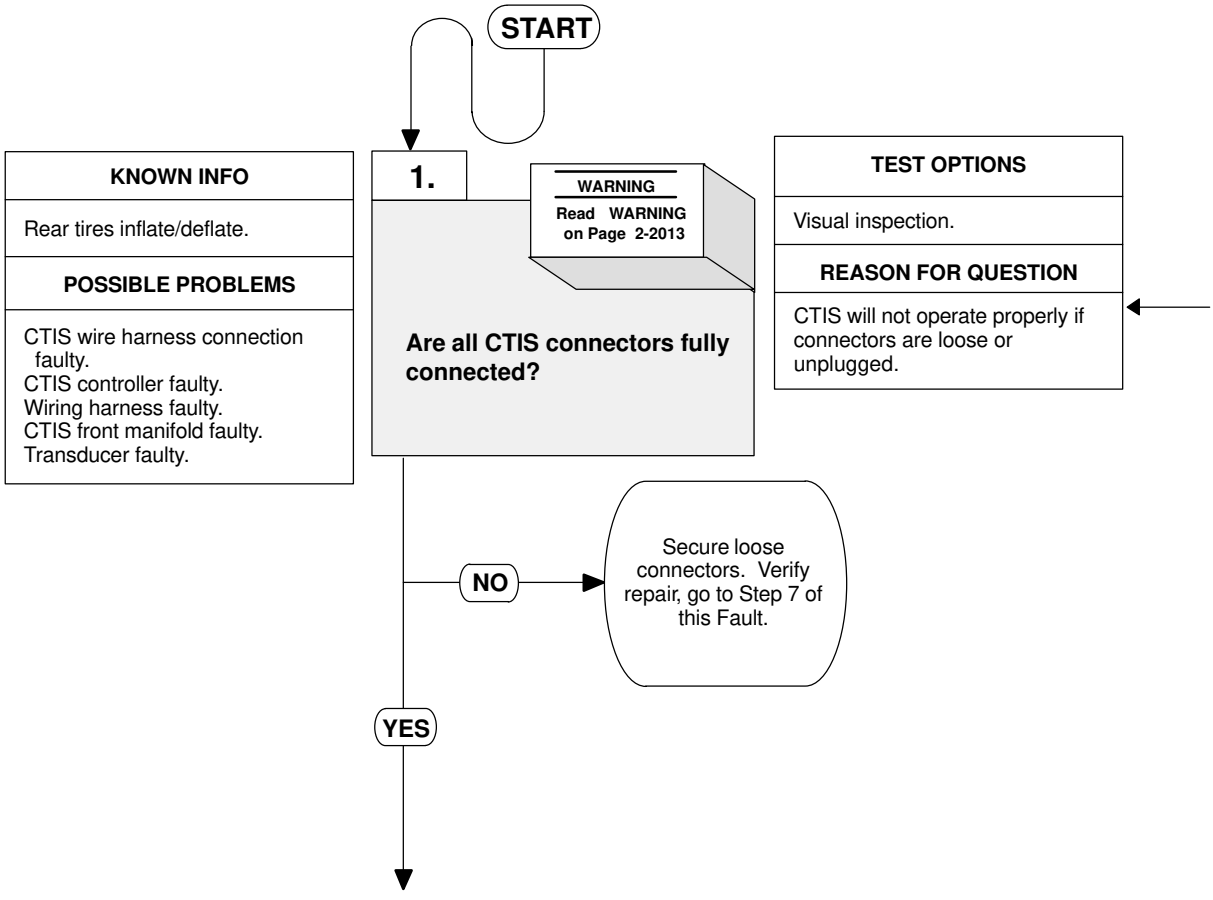
Personnel Required
Two

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)
Front access cover opened, (TM 9-2320-364-10)
CTIS front manifold cover removed, (Para 13-8)
CTIS turned on, (TM 9-2320-364-10)
Load Handling System (LHS) extended fully, (TM 9-2320-364-10)

NOTE

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



WARNING

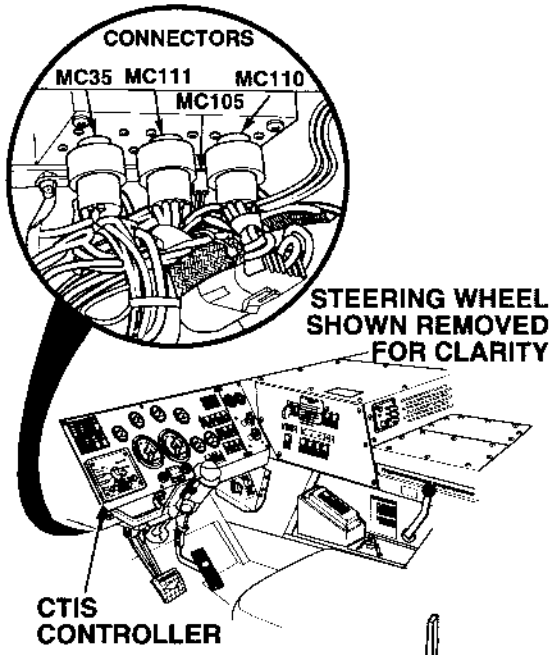
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

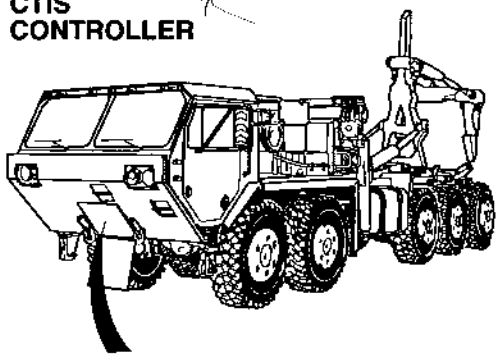
NOTE

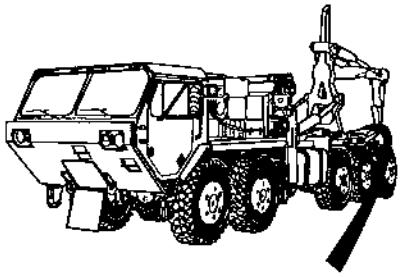
The CTIS initially and periodically checks for system air leaks. The CTIS controller will display flashing LOW AIR light and shut off if 6 psi (41 kPa) cannot be maintained by the CTIS. The manifold will click during this check for approximately 1-1/2 minutes.

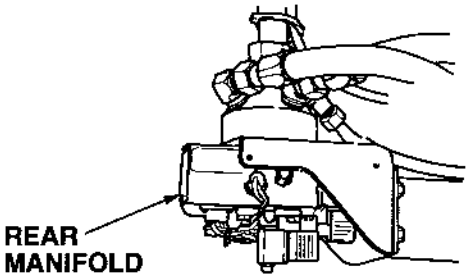
VISUAL INSPECTION

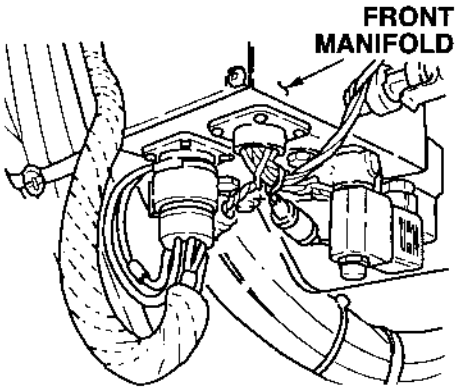
(1) Inspect CTIS controller, front and rear manifolds to ensure that all connectors are fully plugged in.
   (a) If connectors are not plugged in, secure connectors.
   (b) If connectors are plugged in, go to Step 2 of this Fault.
(2) Put LHS in transit position (TM 9-2320-364-10).



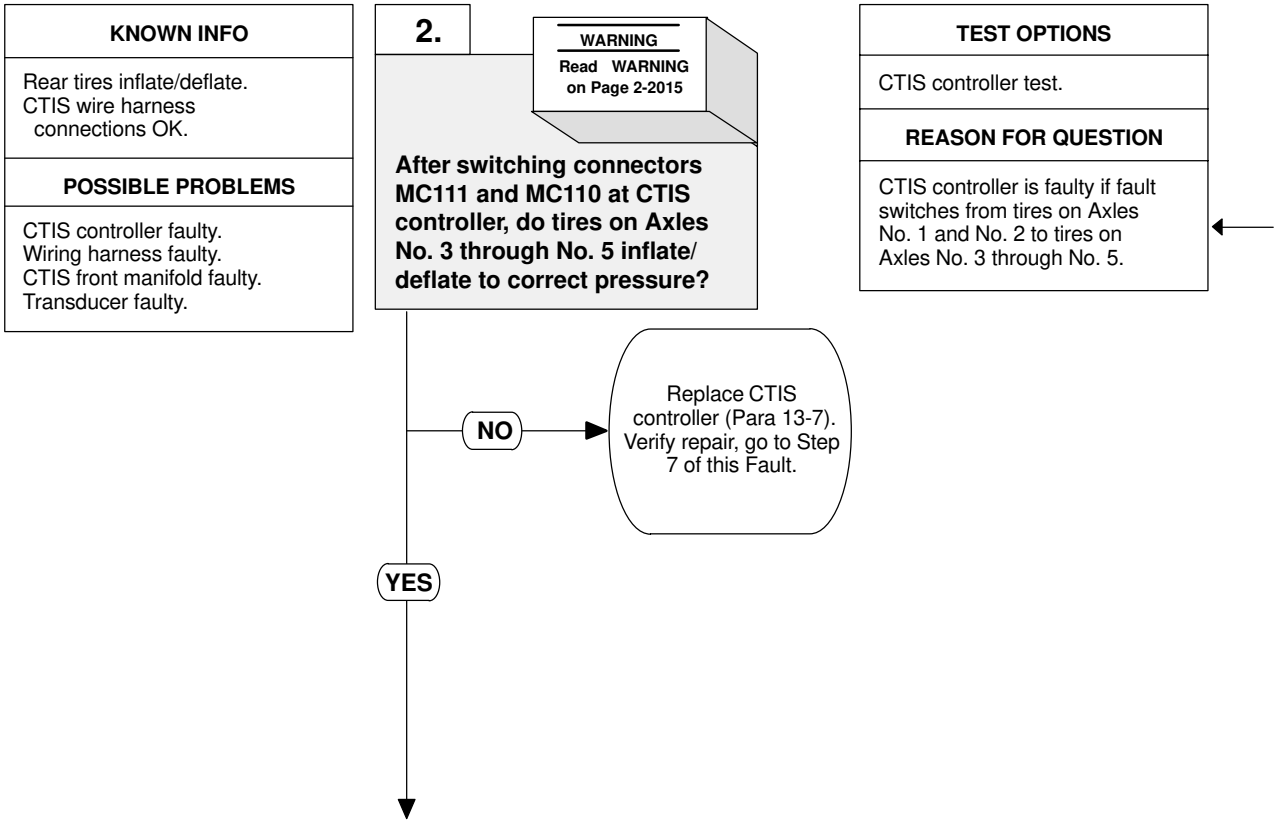








7. AXLES NO. 1 AND NO. 2 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).



WARNING

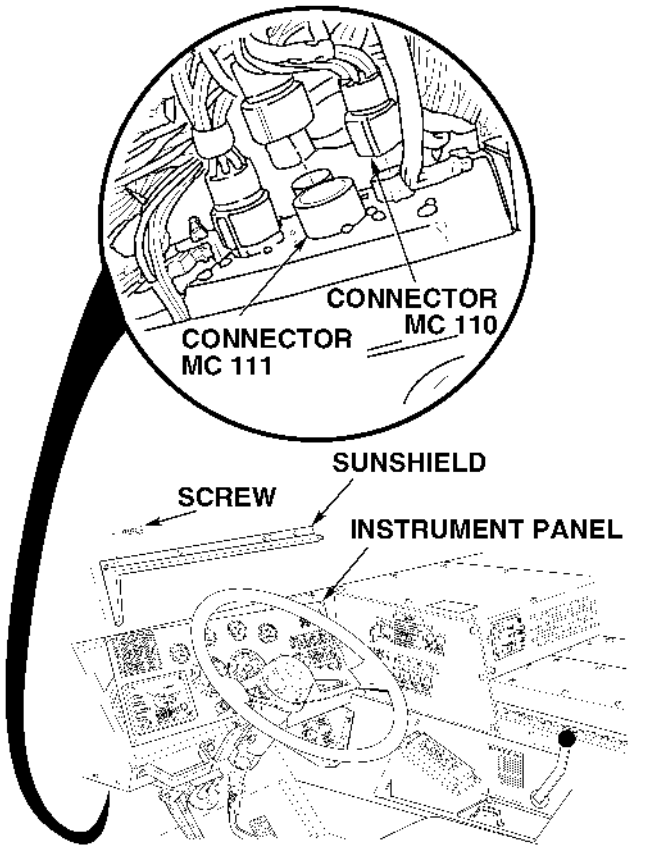
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positve electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

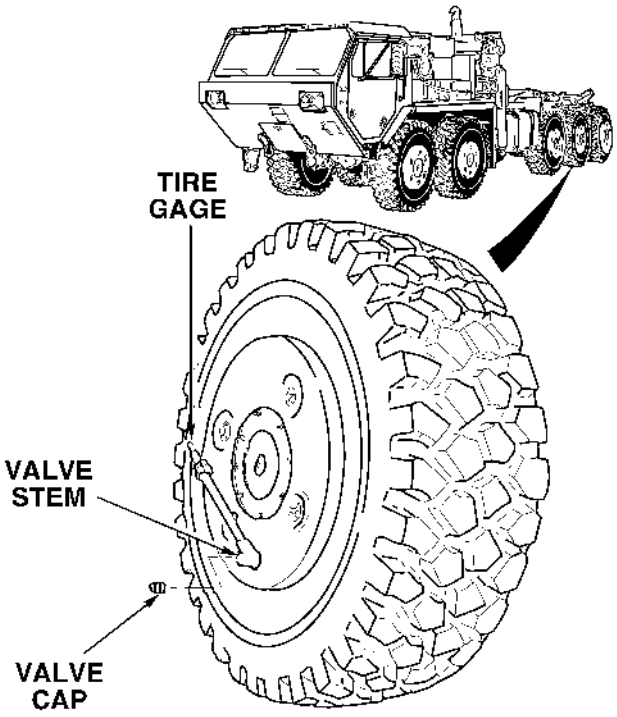
NOTE

When switching MC110 connector and MC111 connector, tire pressures of front axles and rear axles will also be reversed.

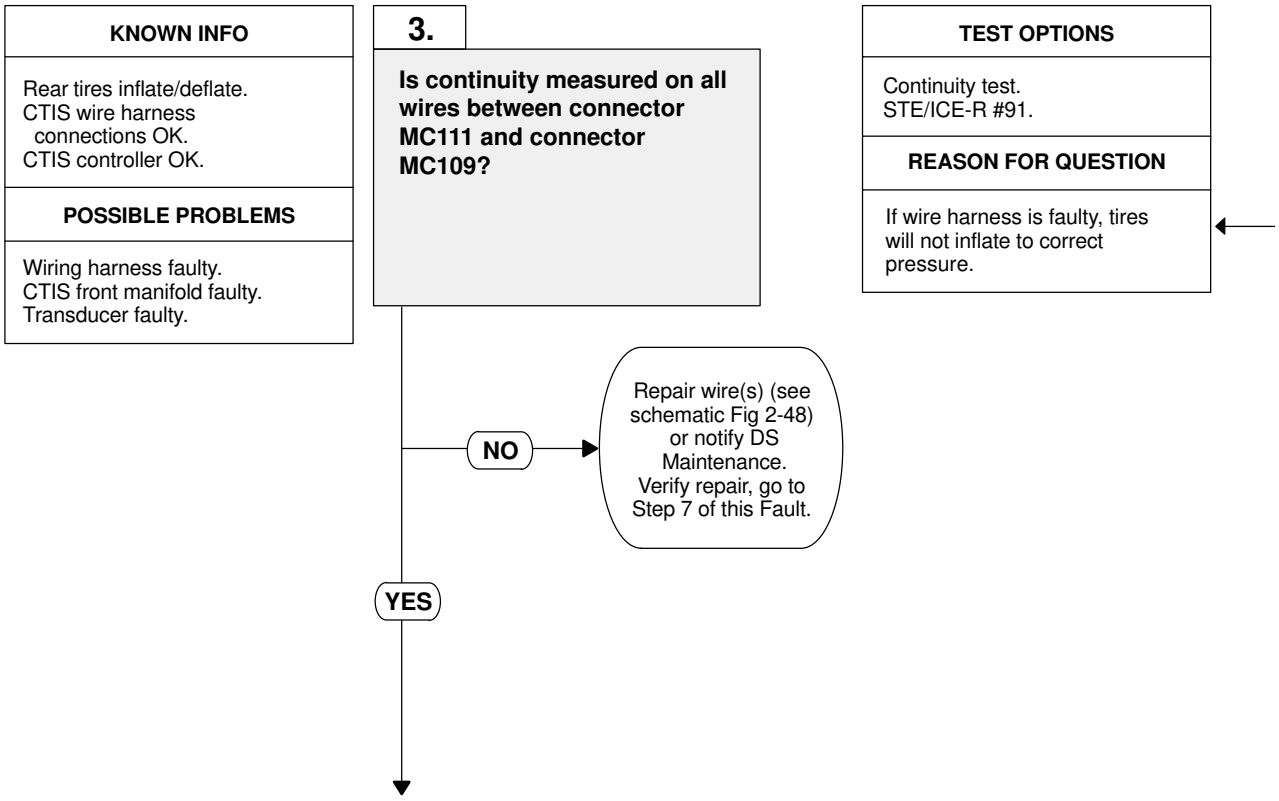
CTIS CONTROLLER TEST

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect front manifold harness connector MC110 from back of CTIS controller.
(4) Disconnect rear manifold harness connector MC111 from back of CTIS controller.
(5) Connect harness connector MC111 into CTIS controller where connector MC110 was disconnected.
(6) Connect harness connector MC110 into CTIS controller where connector MC111 was disconnected.
(7) Remove valve cap from any wheel valve stem on Axles No. 3 through No. 5.
(8) Using tire gage, deflate any one tire on Axles No. 3 through No. 5 to 40 psi (276 kPa).
(9) Start engine (TM 9-2320-364-10).
(10) As assistant pushes CTIS START button, observe deflated tires.
  (a) If deflated tires do not inflate to correct pressures, turn OFF ENGINE switch and replace CTIS controller (Para 13-7).
  (b) If deflated tires inflate to correct pressures, CTIS controller is OK.
(11) Position LHS in transit position.
(12) Turn OFF ENGINE switch.
(13) Disconnect and connect connectors MC 110 and MC111 to correct CTIS controller connectors.





7. AXLES NO. 1 AND NO. 2 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).



NOTE

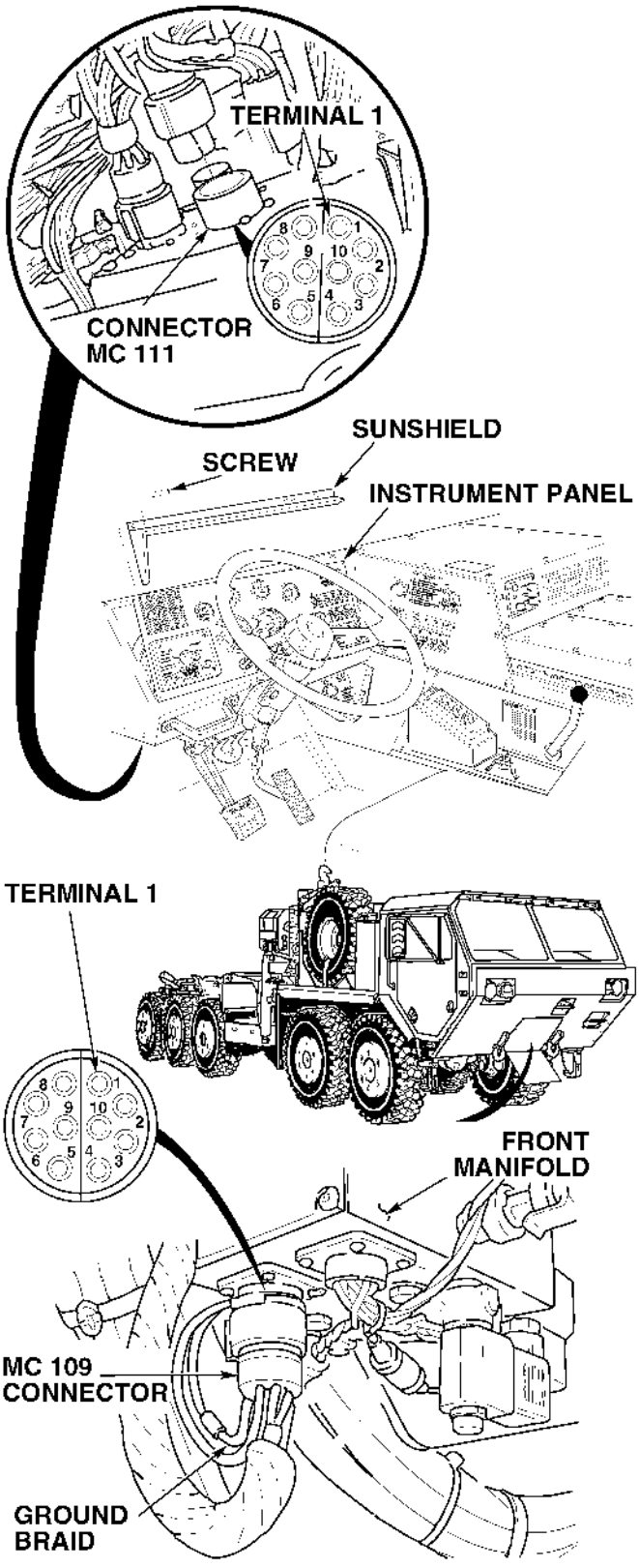
Terminal (5) at MC 111 is plugged and does not connect to Terminal (5) on MC 109.

CONTINUITY TEST

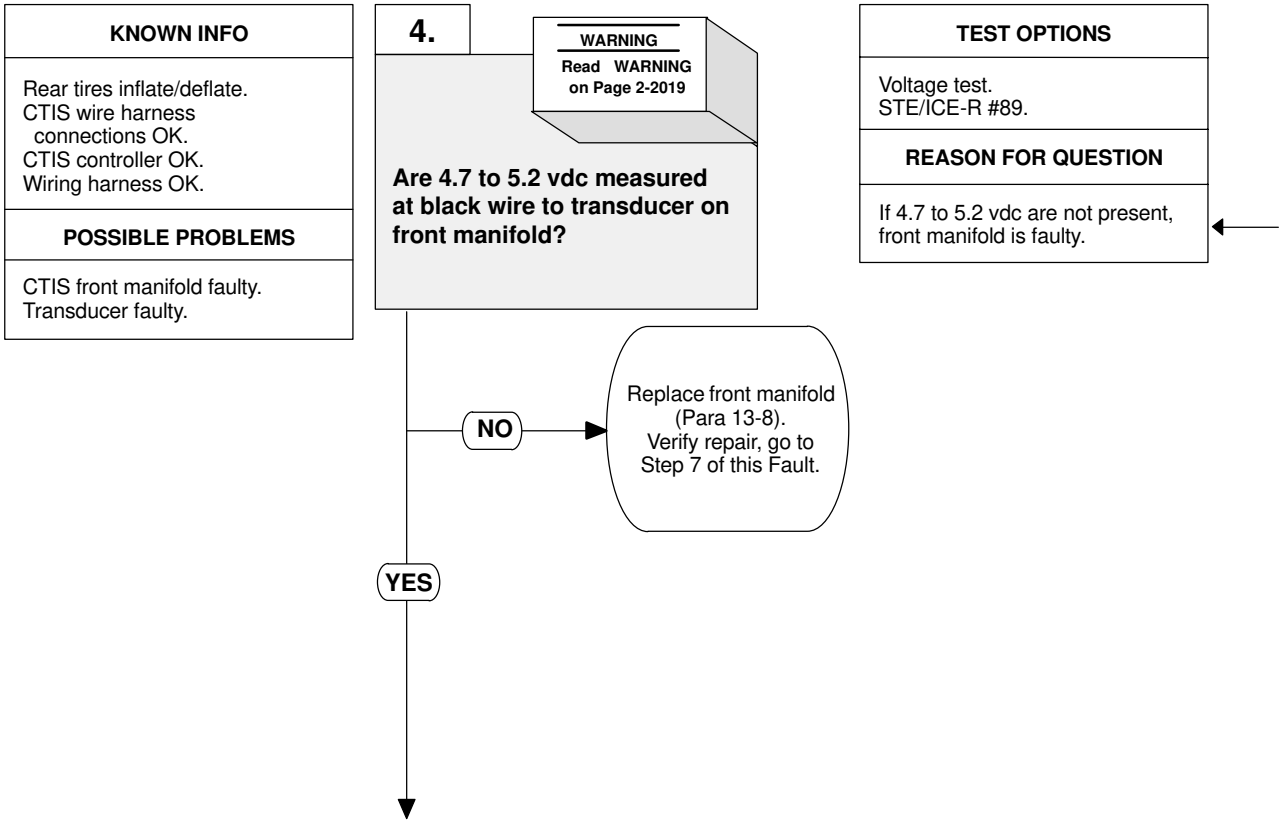
(1) Disconnect connector MC109 from CTIS front manifold.
(2) Set multimeter select switch to ohms.
(3) Connect jumperwire between wire 1056 on CTIS controller connector MC111, terminal 1 and a known good ground.
(4) Is there continuity between connector MC109, terminal 1 and front manifold ground braid?
  (a) If there is no continuity, repair wire 1056 (see schematic Fig 2-48) or notify DS Maintenance and perform Steps (6) through (9) below.
  (b) If there is continuity, wire 1056 is OK.
(5) Check continuity on remaining wires and terminals using Steps (2) through (4) above. The wires and corresponding terminals are listed below (see schematic Fig 2-48).

  1057(2) Shield(8)
  1058(3) 1061(6) 1064(9)
  1059(4) 1062(7) 1065(10)
  1063(5) to ground (MC 109 only)

(6) Remove jumperwire.
(7) Connect connector MC111 on back of CTIS controller.
(8) Connect connector MC109 on CTIS front manifold.
(9) Install instrument panel and sunshield with ten screws.



7. AXLES NO. 1 AND NO. 2 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).

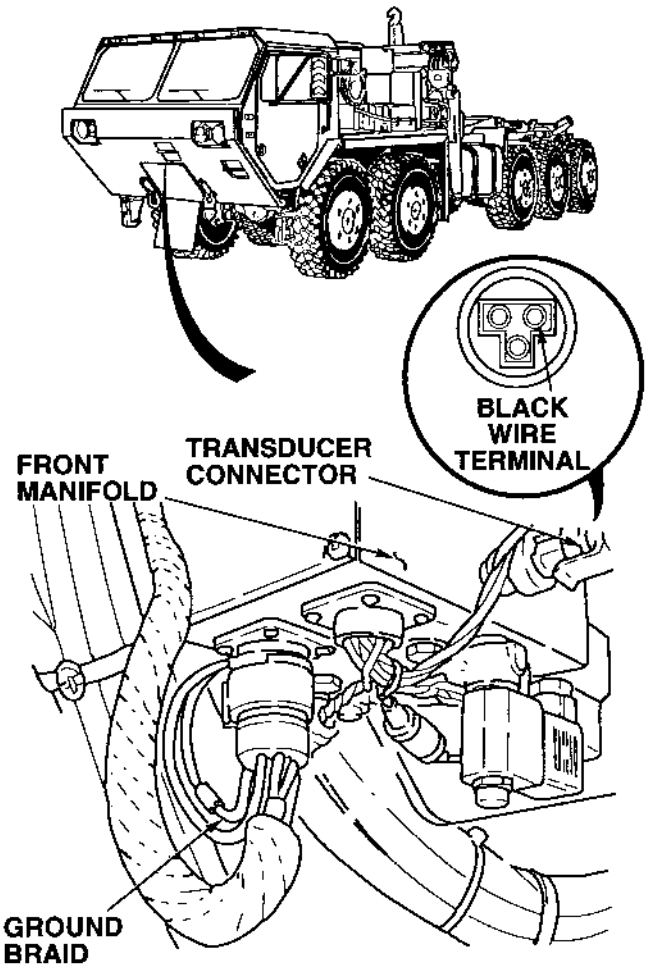


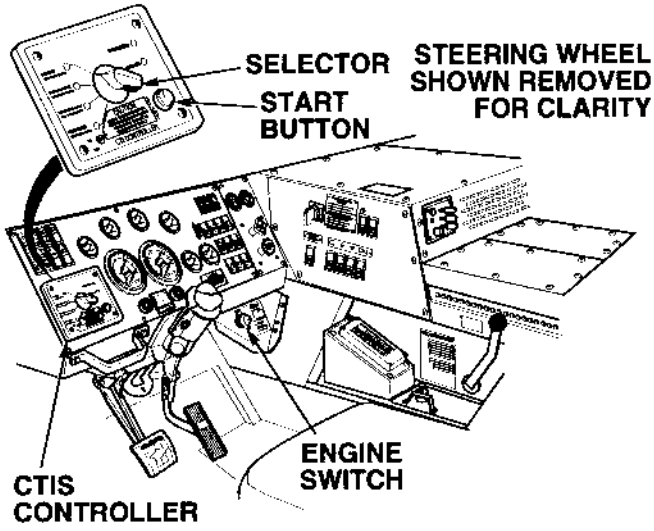
WARNING

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

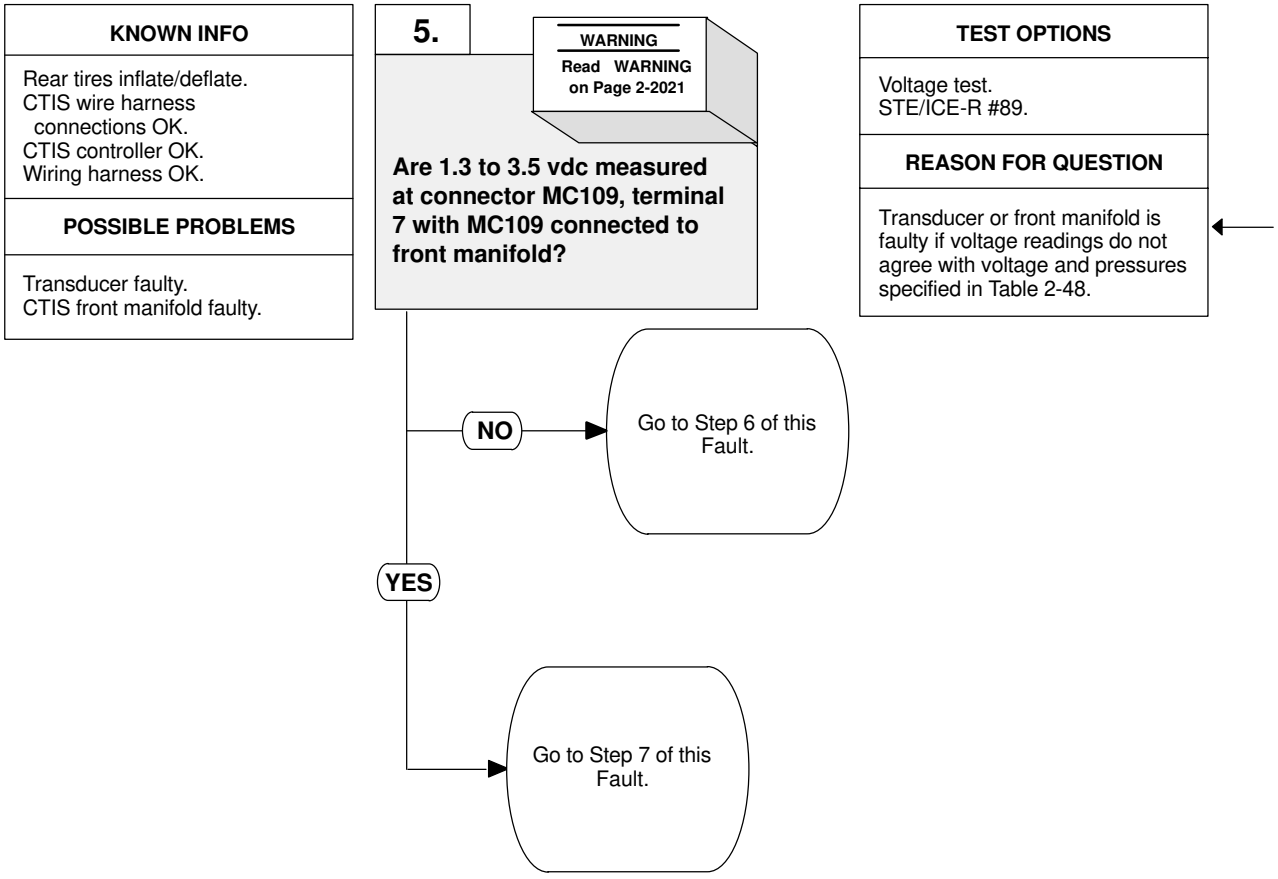
VOLTAGE TEST

(1) Disconnect connector from transducer on front manifold.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to black wire terminal at transducer connector.
(4) Connect negative (–) multimeter lead to front manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Push CTIS START button.
    (a) If 4.7 to 5.2 vdc are not present, turn OFF ENGINE switch and replace front manifold (Para 13-8).
    (b) If there are 4.7 to 5.2 vdc present, turn OFF ENGINE switch and go to Step 5 of this Fault.





7. AXLES NO. 1 AND NO. 2 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).

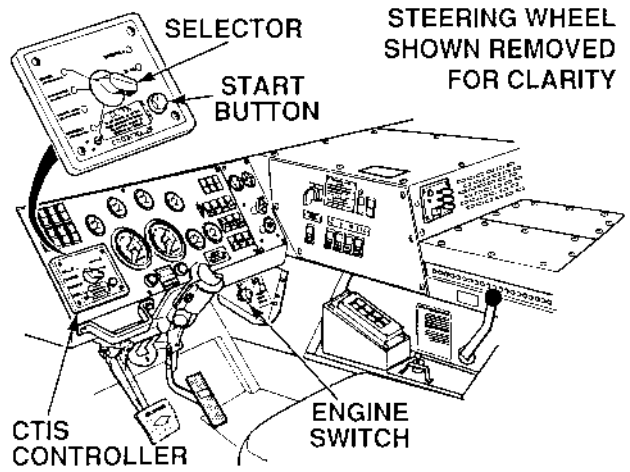


WARNING

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

VOLTAGE TEST

(1) Remove pressure transducer (Para 13-10).
(2) Connect pressure transducer to variable air pressure supply 0 to 75 psi (0 - 517 kPa).
(3) Connect pressure transducer connector to transducer.
(4) Deflate any one tire on Axles No. 1 or No. 2 to less than 40 psi (276 kPa).
(5) Set multimeter select switch to volts dc.
(6) Insert positive (+) multimeter lead, with long probe installed, at white wire 1062 in back of connector MC109, terminal 7.
(7) Connect negative (–) multimeter lead to ground braid on front manifold.
(8) Set CTIS controller switch to HIGHWAY position (TM9-2320-364-10).
(9) While assistant turns ON ENGINE switch and pushes CTIS START button, observe voltage reading at each pressure specified in Table 2-48.
    (a) If voltage readings do not agree, turn OFF ENGINE switch and go to Step 6 of this Fault.
    (b) If voltage readings agree pressure transducer and front manifold are OK.
(10) Turn OFF ENGINE switch.
(11) Disconnect lead from back of connector MC109.
(12) Disconnect pressure transducer connector from transducer.
(13) Remove pressure transducer from variable air pressure supply.
(14) Install pressure transducer in front manifold (Para 13-10).
(15) Install front manifold cover (Para 13-8).
(16) Close front access cover.



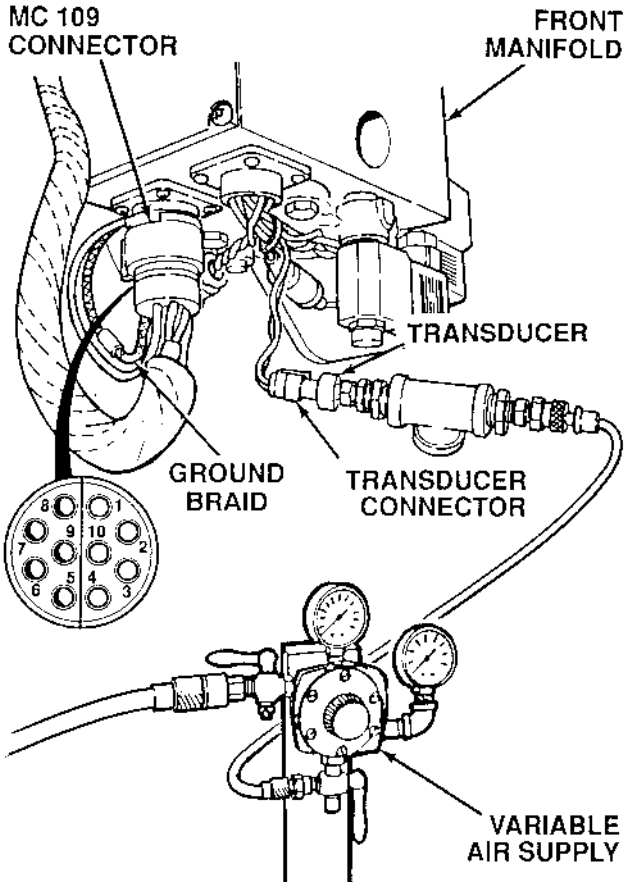
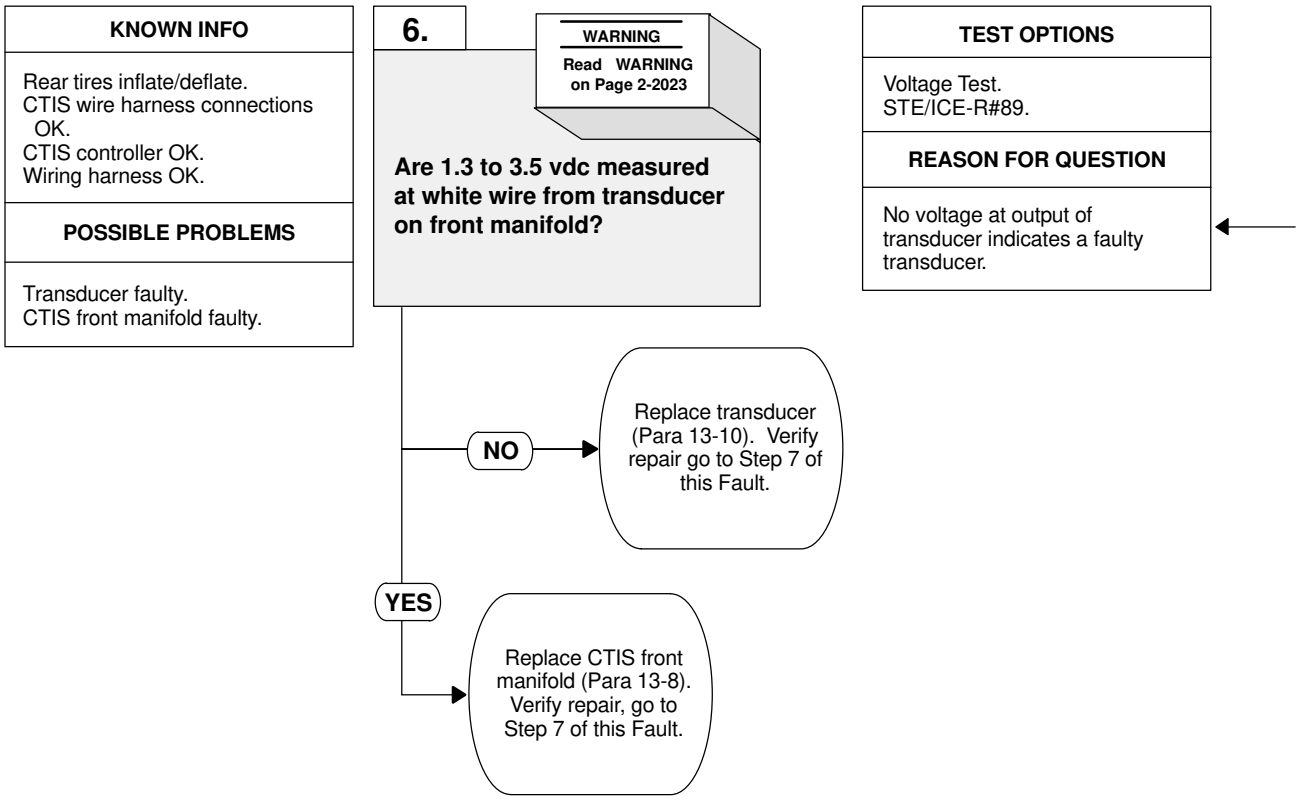


Table 2-48. CTIS Volts Versus Pressure (PSI)

PSI	kPa	Volts (Plus/Minus 0.2 volts)
75	517-	3.5
70	482-	3.3
60	413-	2.9
50	345-	2.5
40	276-	2.0
30	207-	1.7
20	138-	1.3

7. AXLES NO. 1 AND NO. 2 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).



WARNING

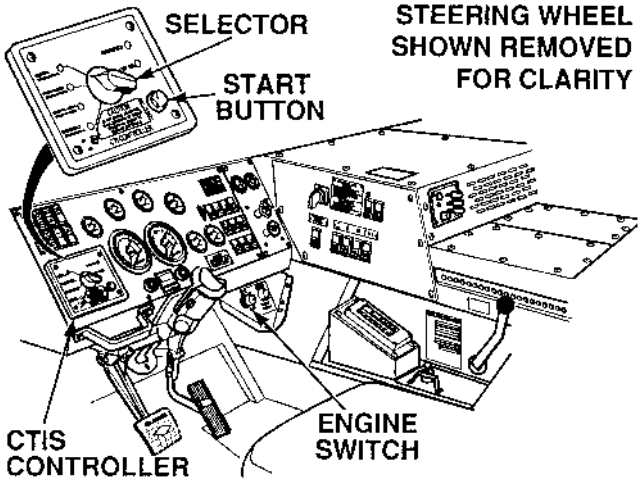
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

All connectors must be connected to manifold and transducer to perform this test.

VOLTAGE TEST

(1) Insert positive (+) multimeter lead with long probe installed, at white wire in transducer.
(2) Connect negative (–) multimeter lead to ground braid on front manifold.
(3) While assistant turns ON ENGINE switch and pushes CTIS START button, observe voltage reading at each pressure specified in Table 2-49.
  (a) If voltage readings do not agree, turn OFF ENGINE switch and replace transducer (Para 13-10). Perform Steps (5) through (10) below.
  (b) If voltage readings agree, replace CTIS front manifold (Para 13-8).
(4) Turn OFF ENGINE switch.
(5) Disconnect lead from back of transducer.
(6) Disconnect pressure transducer connector from pressure transducer.
(7) Remove pressure transducer from variable air supply.
(8) Install pressure tranducer in front manifold (Para 13-10).
(9) Install manifold cover (Para 13-8).
(10) Close front access cover (TM 9-2320-364-10).



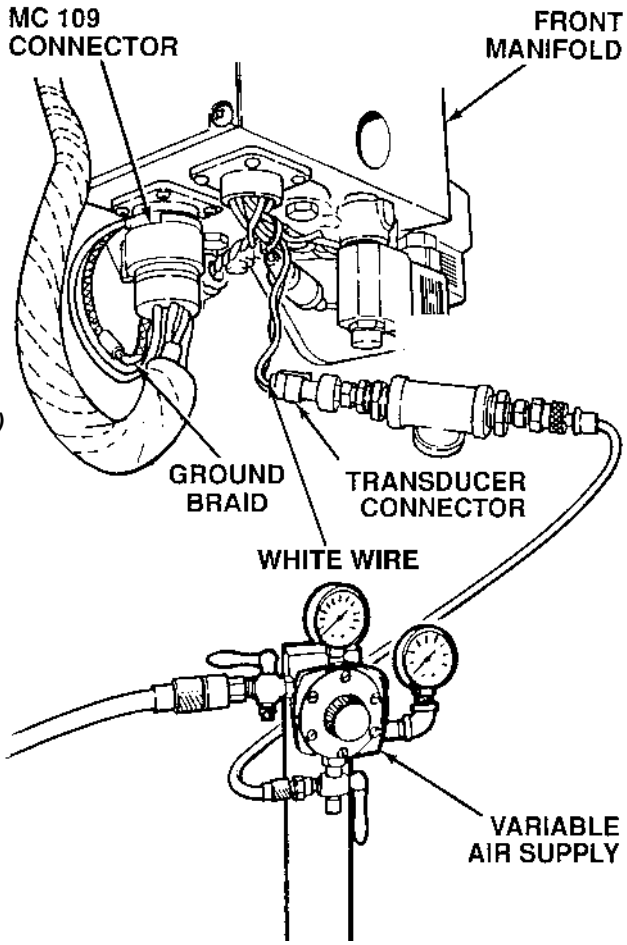
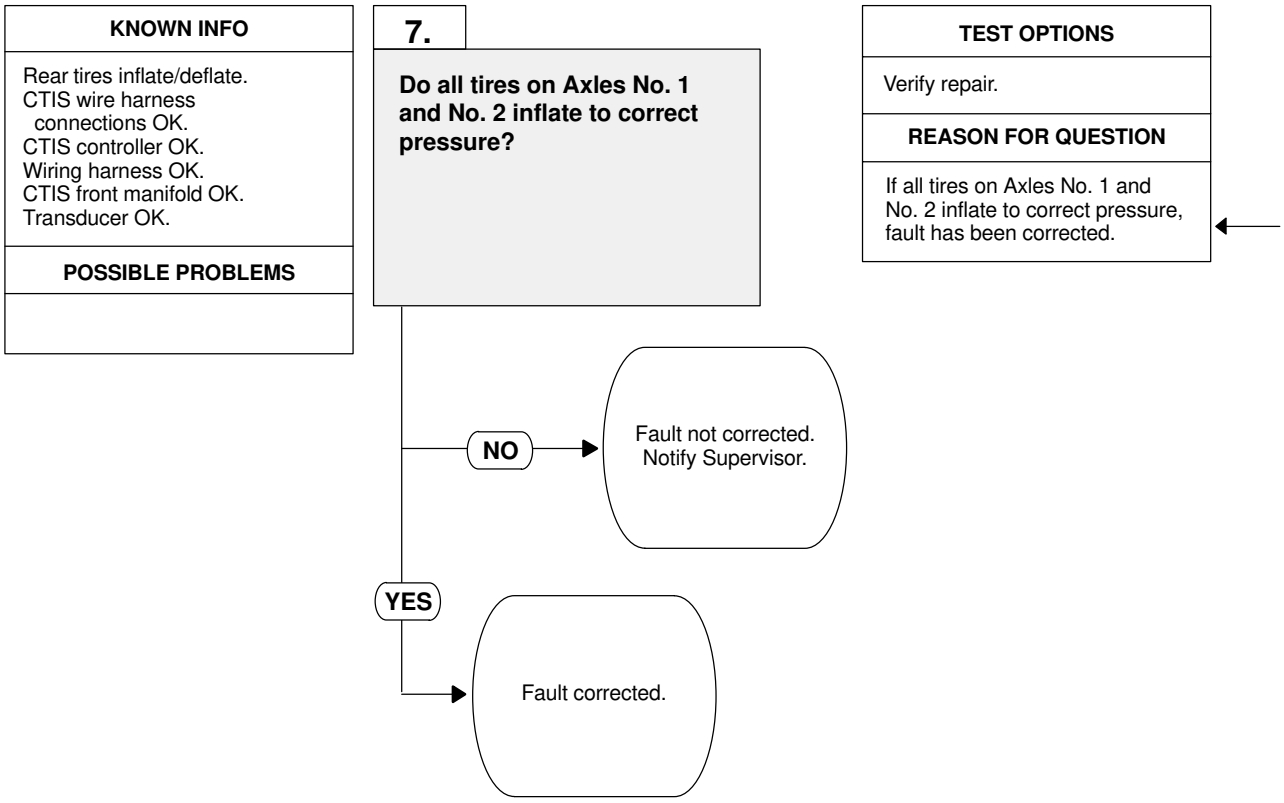
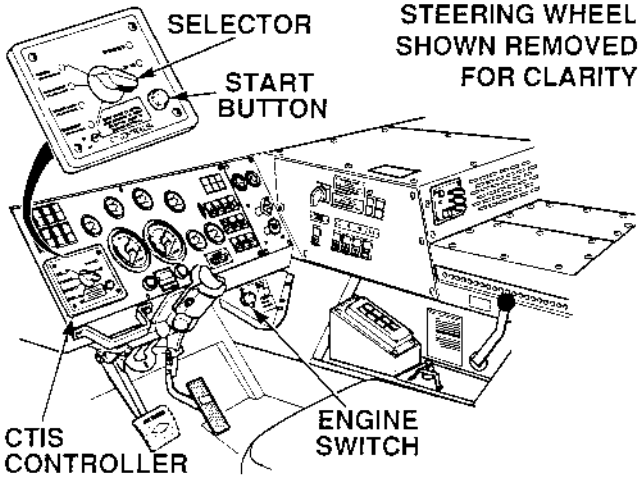


Table 2-49. CTIS Volts Versus Pressure (PSI)

PSI	kPa	Volts (Plus/Minus 0.2 volts)
75	517-	3.5
70	482-	3.3
60	413-	2.9
50	345-	2.5
40	276-	2.0
30	207-	1.7
20	138-	1.3

7. AXLES NO. 1 AND NO. 2 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).





VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
    (a) If tires do not inflate to correct pressure, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If tires inflate to correct pressure, fault has been corrected.
(4) Turn OFF ENGINE switch.

2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

8. AXLES NO. 3 THROUGH NO. 5 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS.

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Multimeter (Item 44, Appendix G)
Variable Air Supply (Item 99, Appendix G)
Jumperwire

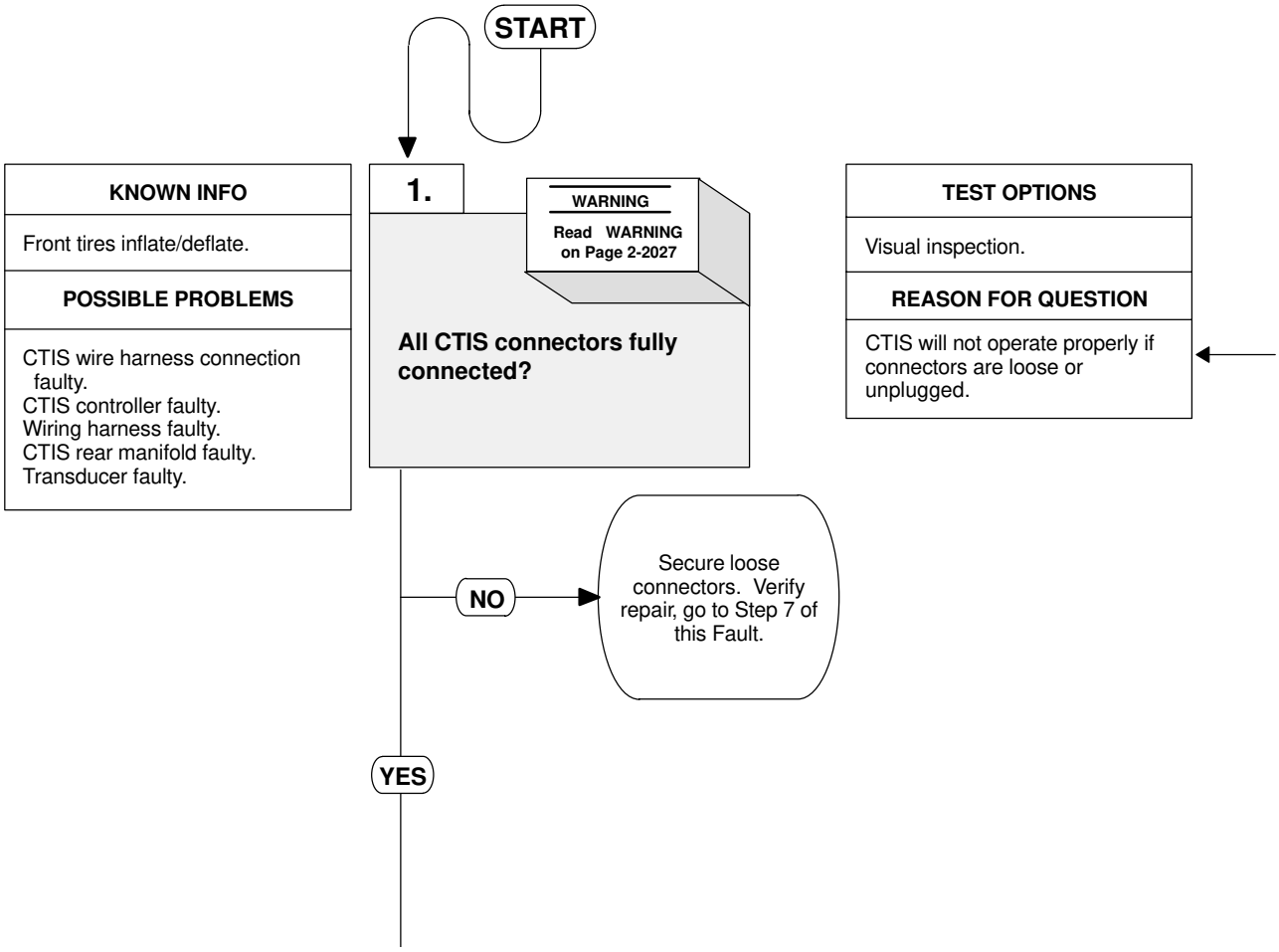
Materials/Parts
Solution, Soap (Item 86, Appendix C)

Personnel Required
Two

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)
Load Handling System (LHS) extended fully, (TM 9-2320-364-10)
CTIS rear manifold cover removed, (Para 13-9)
CTIS turned on, (TM 9-2320-364-10)

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



WARNING

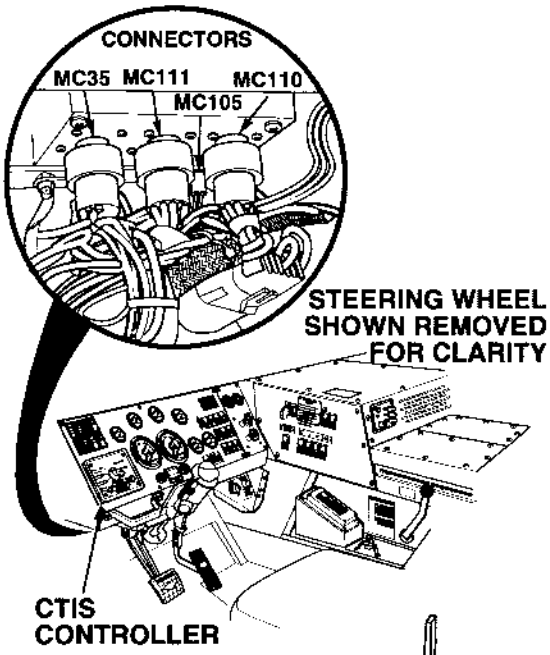
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

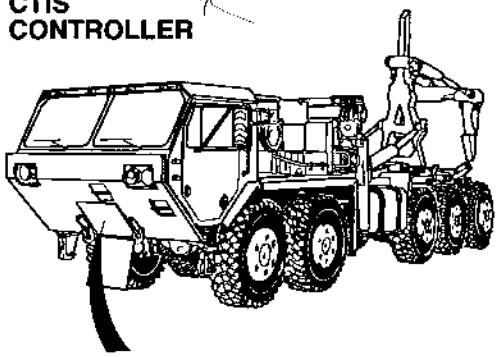
NOTE

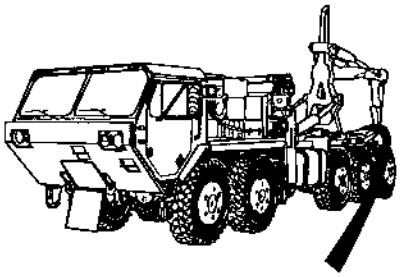
The CTIS initially and periodically checks for system air leaks. The CTIS controller will display flashing LOW AIR light and shut off if 6 psi (41 kPa) cannot be maintained by the CTIS. The manifold will click during this check for approximately 1-1/2 minutes.

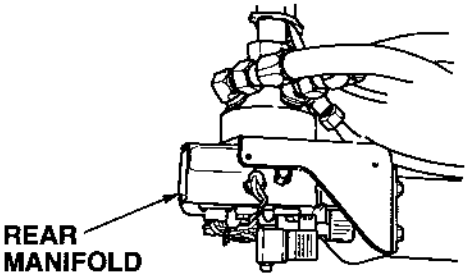
VISUAL INSPECTION

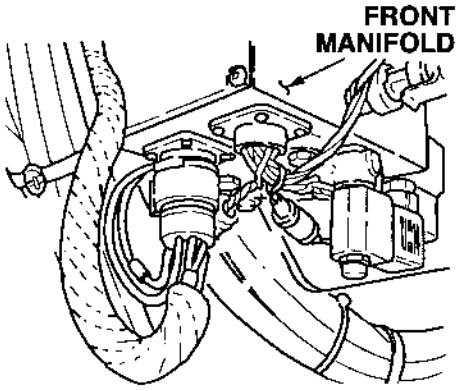
(1) Inspect CTIS controller, front and rear manifolds to ensure that all connectors are fully plugged in.
   (a) If connectors are not plugged in, secure connectors.
   (b) If connectors are plugged in, go to Step 2 of this Fault.
(2) Close front access cover (TM 9-2320-364-10).



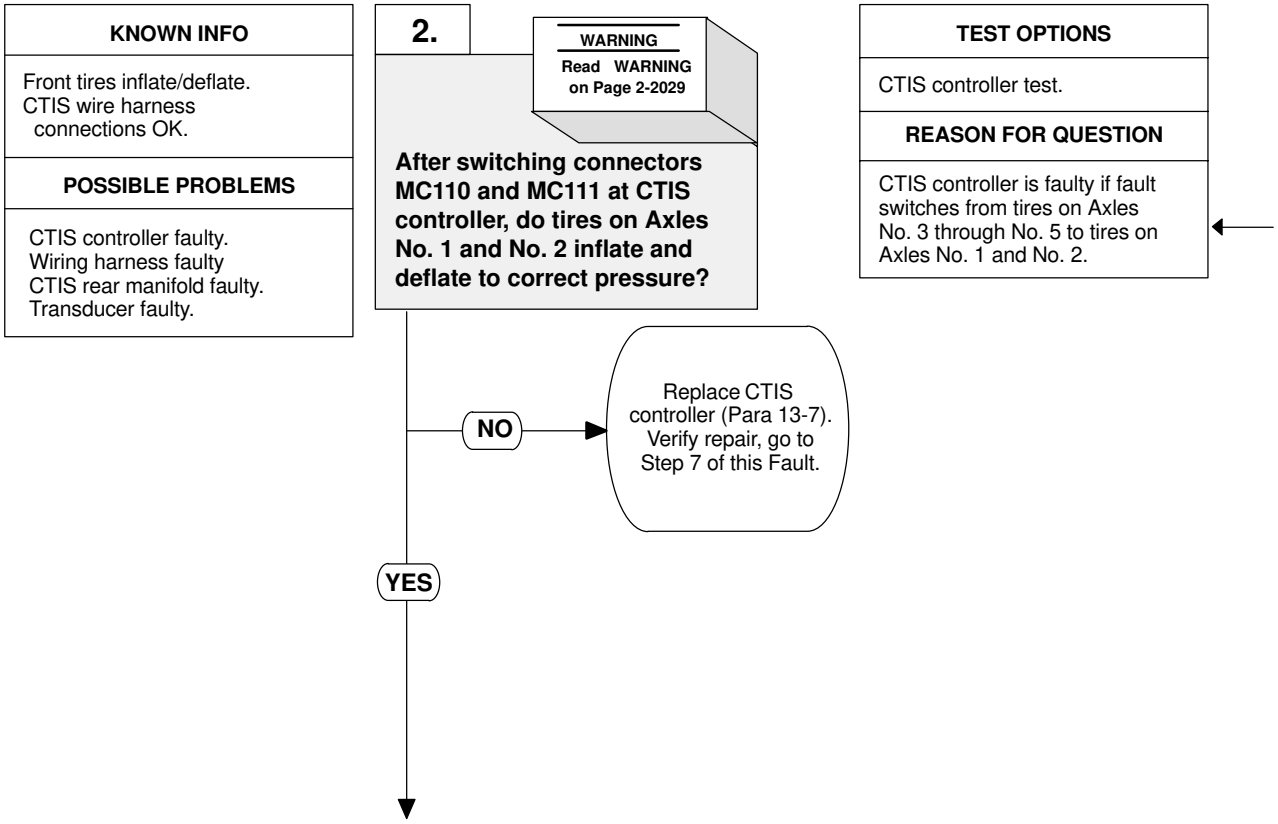








8. AXLES NO. 3 THROUGH NO. 5 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).



WARNING

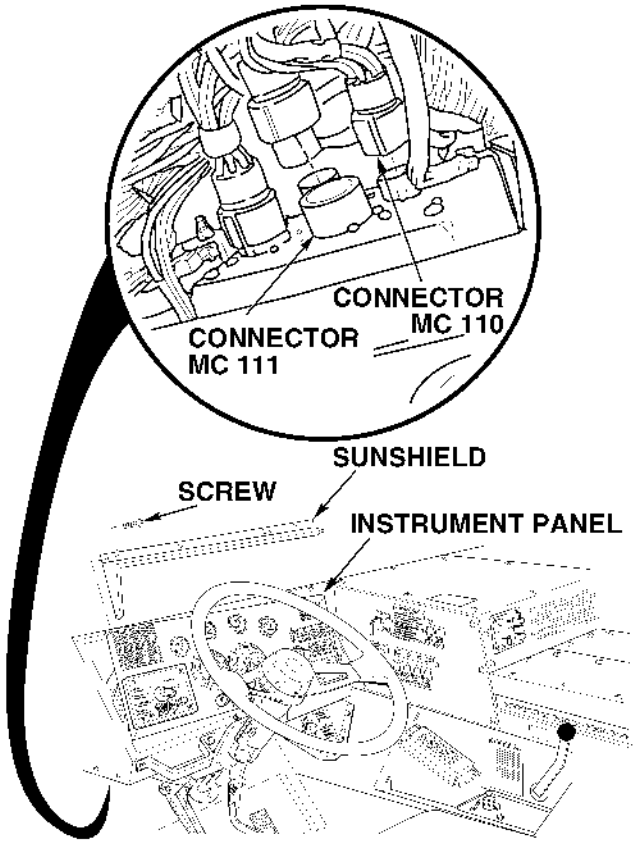
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

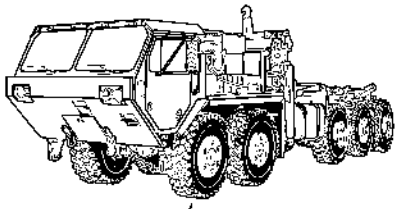
NOTE

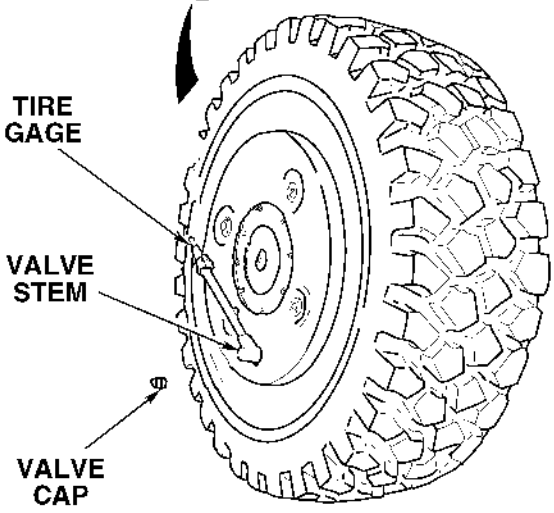
When switching MC110 connector and MC111 connector, tire pressures of front axles and rear axles will also be reversed.

CTIS CONTROLLER TEST

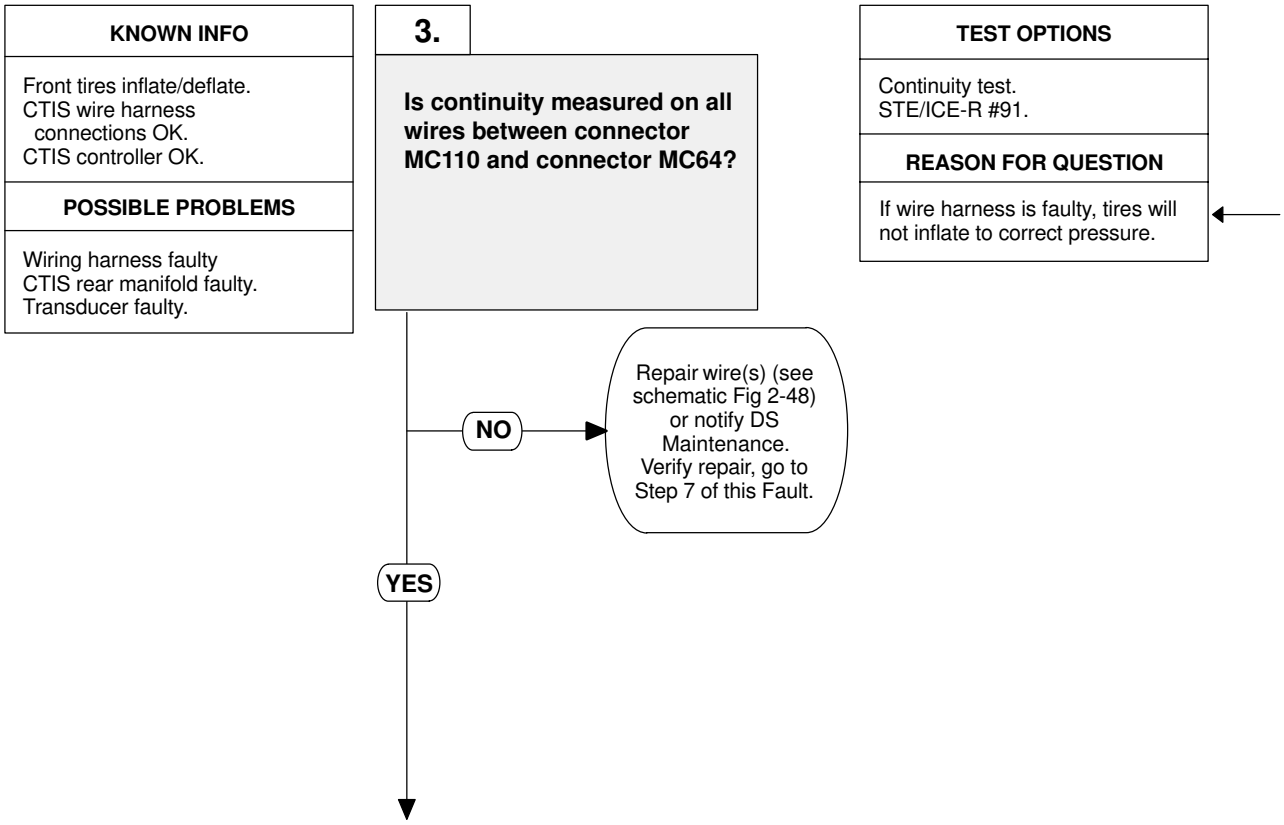
(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect front manifold harness connector MC110 from back of CTIS controller.
(4) Disconnect rear manifold harness connector MC111 from back of CTIS controller.
(5) Connect harness connector MC111 into CTIS controller where connector MC110 was disconnected.
(6) Connect harness connector MC110 into CTIS controller where connector MC111 was disconnected.
(7) Remove valve cap from any wheel valve stem on Axles No. 1 or No. 2.
(8) Using tire gage, deflate any one tire on Axles No. 1 or No. 2 to 40 psi (276 kPa).
(9) Start engine (TM 9-2320-364-10).
(10) As assistant pushes CTIS START button, observe deflated tires.
  (a) If deflated tires do not inflate to correct pressures, turn OFF ENGINE switch and replace CTIS controller (Para 13-7).
  (b) If deflated tires inflate to correct pressures, CTIS controller is OK.
(11) Turn OFF ENGINE switch.
(12) Disconnect and connect connector MC110 and MC 111 to correct CTIS controller connectors.







8. AXLES NO. 3 THROUGH NO. 5 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).



NOTE

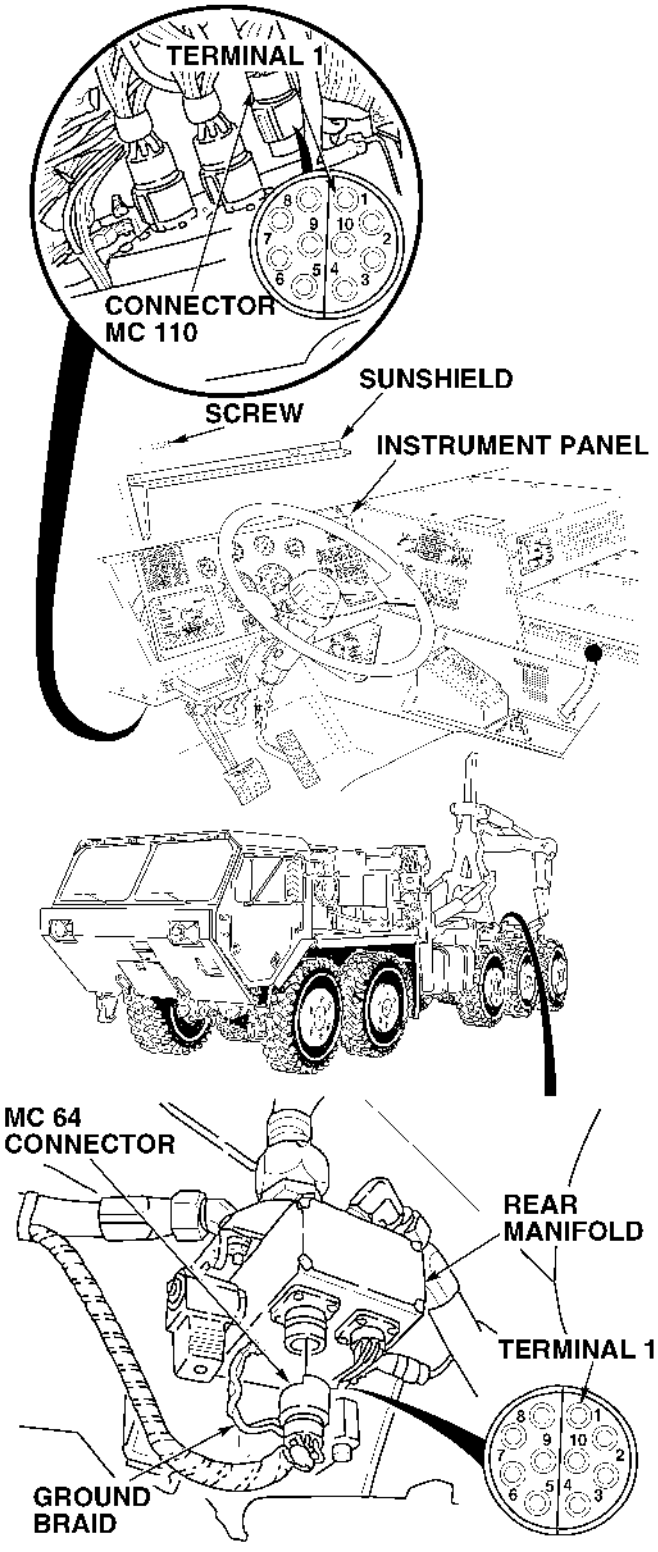
Terminal (5) at MC 110 is plugged and does not connect to terminal (5) on MC 64.

CONTINUITY TEST

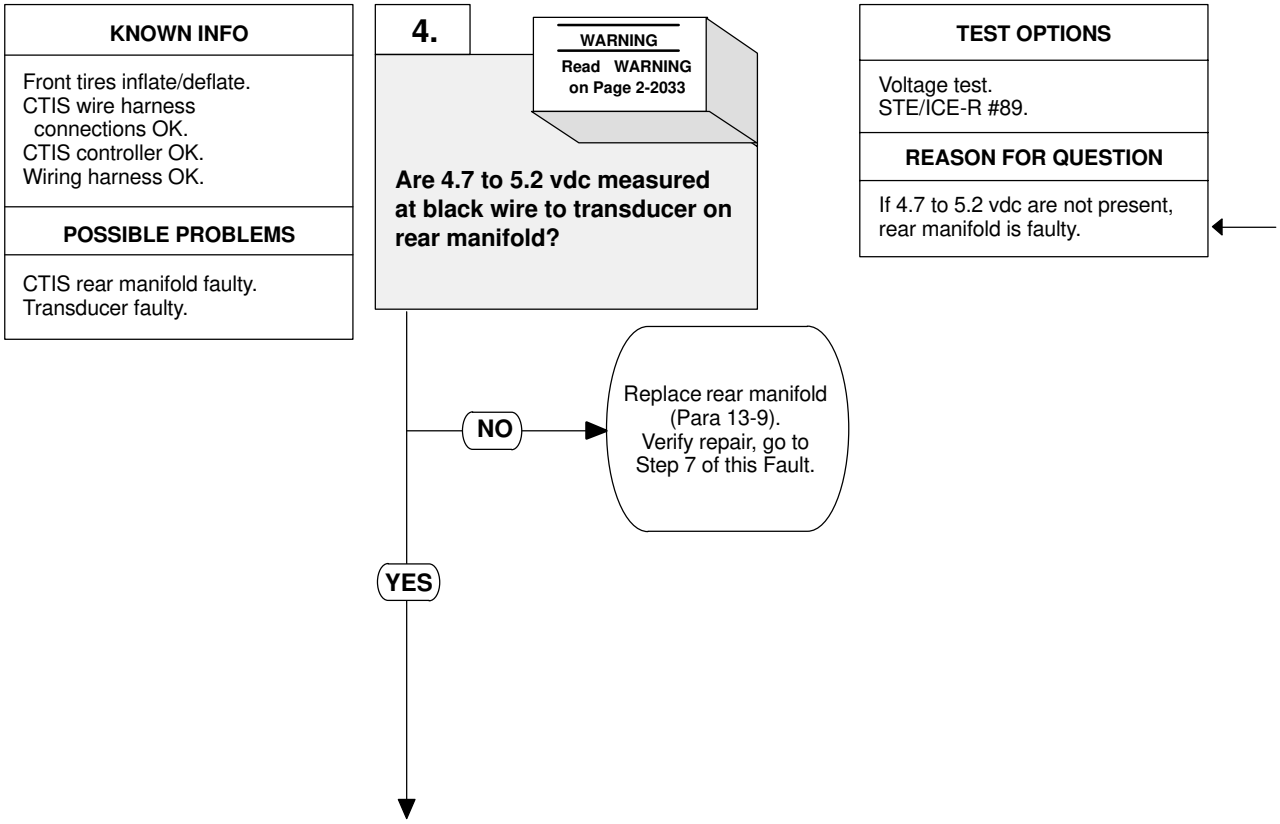
(1) Disconnect connector MC64 from CTIS rear manifold.
(2) Set multimeter select switch to ohms.
(3) Connect jumperwire between wire 1072 on CTIS controller connector MC110, terminal 1 and a known good ground.
(4) Is there continuity between connector MC64, terminal 1 and rear manifold ground braid?
  (a) If there is no continuity, repair wire 1072 (see schematic Fig 2-48) or notify DS Maintenance, and perform Steps (6) through (9) below.
  (b) If there is continuity, wire 1072 is OK.
(5) Check continuity on remaining wires in harness. The wires and corresponding terminals are listed below (see schematic Fig 2-48).

  1073(2) 1070(6) 1068(9)
  1076(3) 1066(7) 1074(10)
  1071(4) Shield(8)
  1067(5) to ground (MC 64 only)

(6) Remove jumperwire.
(7) Connect connector MC110 on back of CTIS controller.
(8) Connect connector MC64 on CTIS rear manifold.
(9) Install instrument panel and sunshield with ten screws.



8. AXLES NO. 3 THROUGH NO. 5 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).

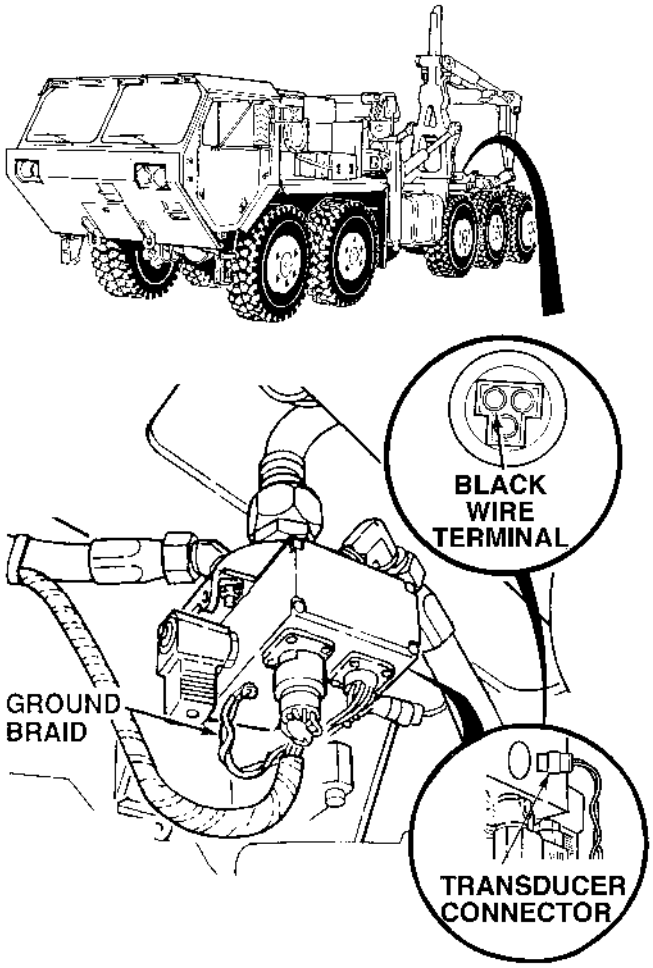


WARNING

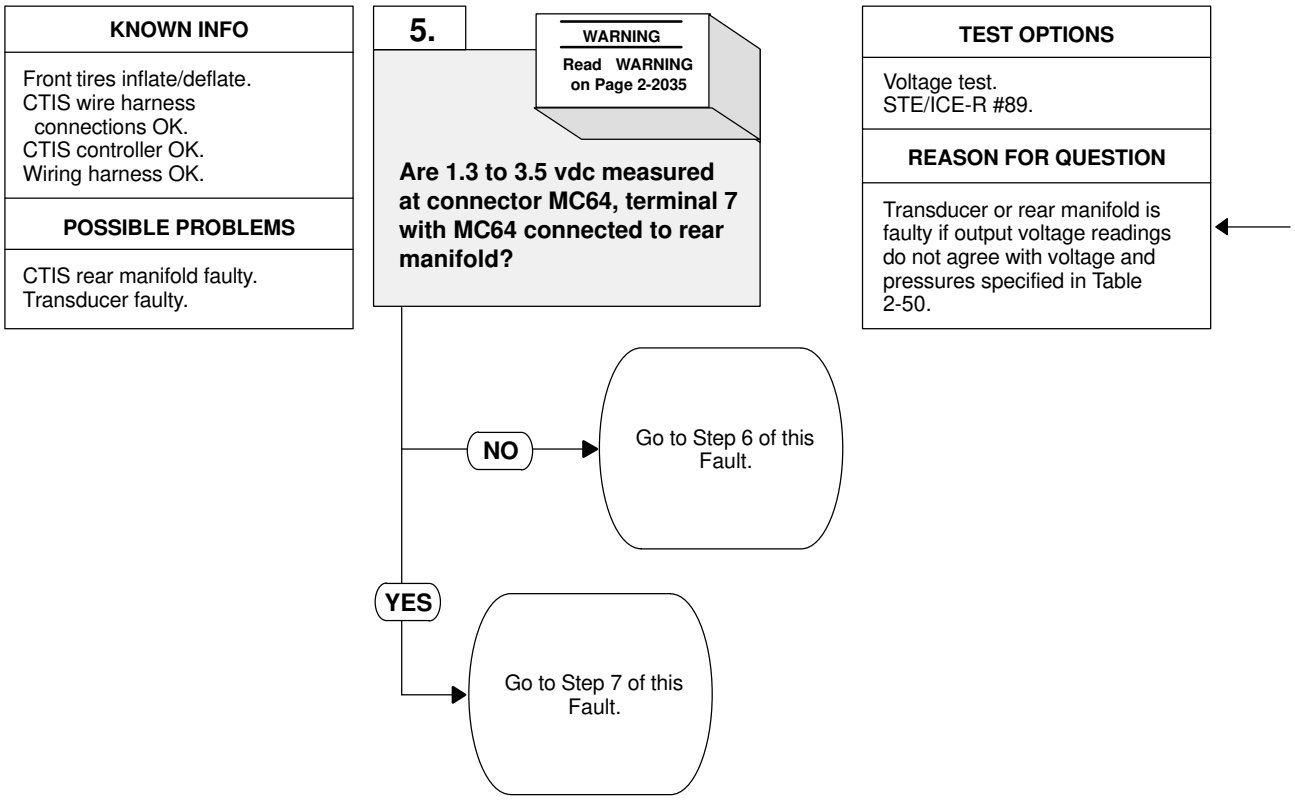
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positve electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Disconnect connector from transducer on rear manifold.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to black wire terminal at transducer connector.
(4) Connect negative (–) multimeter lead to rear manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Push CTIS START button.
  (a) If 4.7 to 5.2 vdc are not present, turn OFF ENGINE switch and replace rear manifold (Para 13-9).
  (b) If 4.7 to 5.2 vdc are present, turn OFF ENGINE switch and go to Step 5 of this Fault.
(7) Connect connector on transducer.



8. AXLES NO. 3 THROUGH NO. 5 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (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.
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

VOLTAGE TEST

(1) Remove pressure transducer (Para 13-10).
(2) Connect pressure transducer to variable air pressure supply 0 to 75 psi (0 to 517 kPa).
(3) Connect pressure transducer connector to transducer.
(4) Using tire gage, deflate any one tire on Axles No. 3 through No. 5 to less than 40 psi (276 kPa).
(5) Set multimeter select switch to volts dc.
(6) Insert positive (+) multimeter lead, with long probe installed, at white wire 1066 in back of connector MC64, terminal 7.
(7) Connect negative (–) multimeter lead to ground braid on rear manifold.
(8) Set CTIS controller switch to HIGHWAY position (TM 9-2320-364-10).
(9) While assistant turns ON ENGINE switch and pushes CTIS START button, observe voltage reading at each pressure specified in Table 2-50.
    (a) If voltage readings do not agree, turn OFF ENGINE switch and go to Step 6 of this Fault. Perform step (11).
    (b) If voltage readings agree, pressure transducer and front manifold are OK.
(10) Turn OFF ENGINE switch.
(11) Disconnect lead from back of connector MC64.
(12) Disconnect pressure transducer connector from transducer.
(13) Remove pressure transducer from variable air pressure supply.
(14) Install pressure transducer in rear manifold (Para 13-10).
(15) Install rear manifold cover (Para 13-9).
(16) Put LHS in transit position.

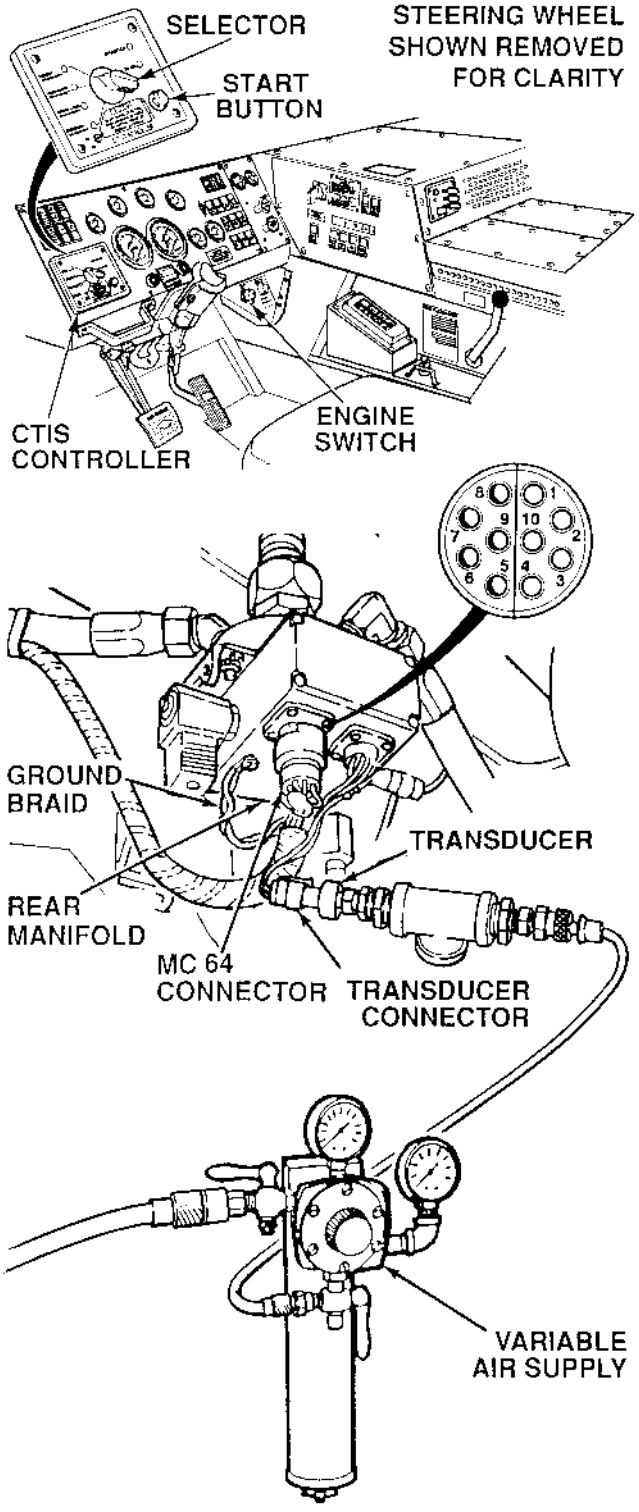
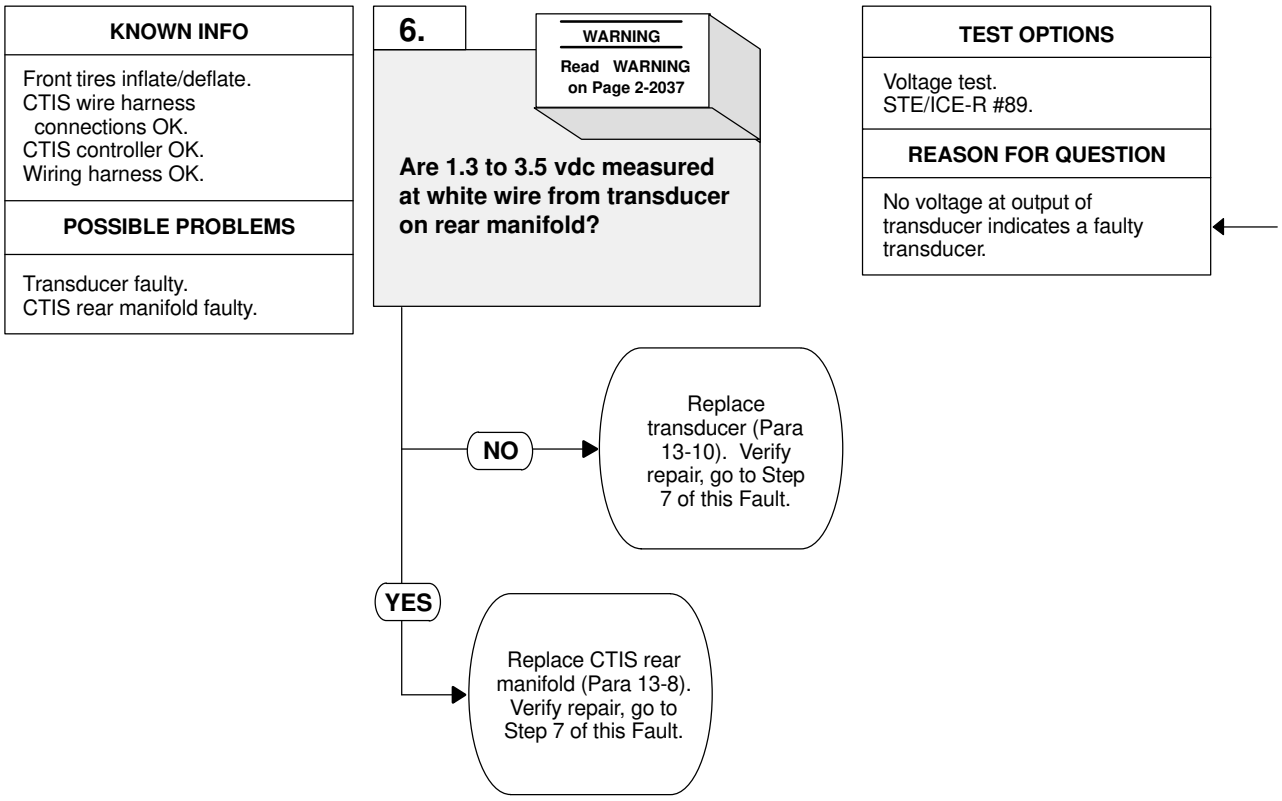


Table 2-50. CTIS Volts Versus Pressure (PSI)

PSI	kPa	Volts (Plus/Minus 0.2 volts)
75	517-	3.5
70	482-	3.3
60	413-	2.9
50	345-	2.5
40	276-	2.0
30	207-	1.7
20	138-	1.3

8. AXLES NO. 3 THROUGH NO. 5 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).



WARNING

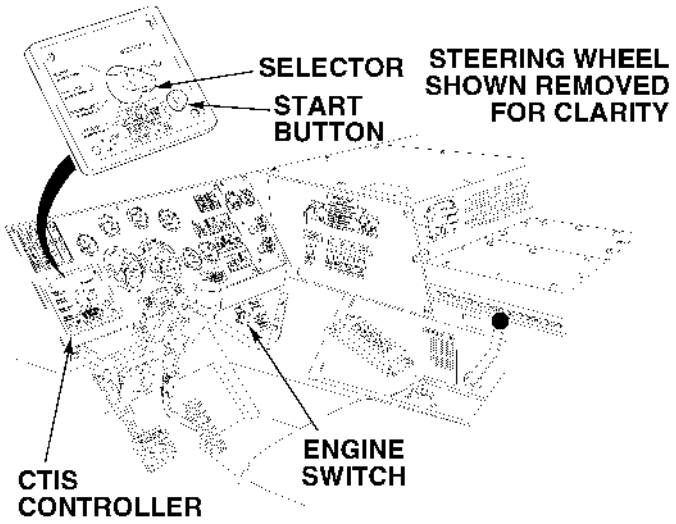
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

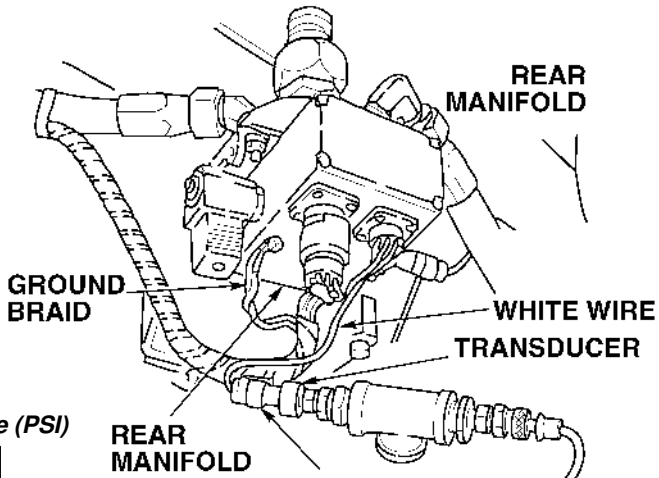
NOTE

All connectors must be connected to manifold and transducer to perform this test.

VOLTAGE TEST

(1) Insert positive (+) multimeter lead with long probe installed, at white wire in transducer connector.
(2) Connect negative (–) multimeter lead to ground braid on front manifold.
(3) While assistant turns ON ENGINE switch and push CTIS START button, observe voltage reading at each pressure specified in Table 2-51.
  (a) If voltage readings do not agree turn OFF ENGINE switch and replace transducer (Para 13-10). Perform Steps (4) through (10) below.
  (b) If voltage readings agree, replace CTIS rear manifold (Para 13-9).
(4) Turn OFF ENGINE switch.
(5) Disconnect lead from back of transducer.
(6) Disconnect pressure transducer connector from pressure transducer.
(7) Remove pressure transducer from variable air supply.
(8) Install pressure transducer in rear manifold (Para 13-10).
(9) Install rear manifold cover (Para 13-9).
(10) Put LHS in transit position.





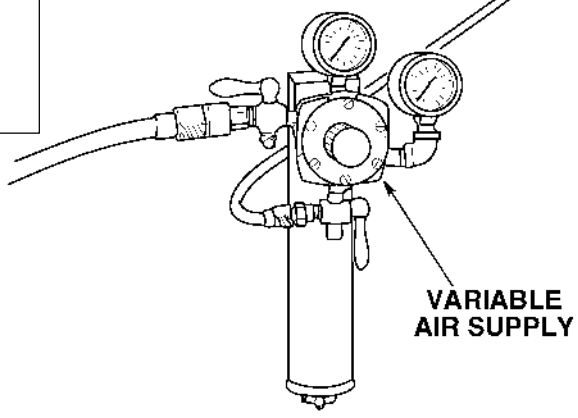
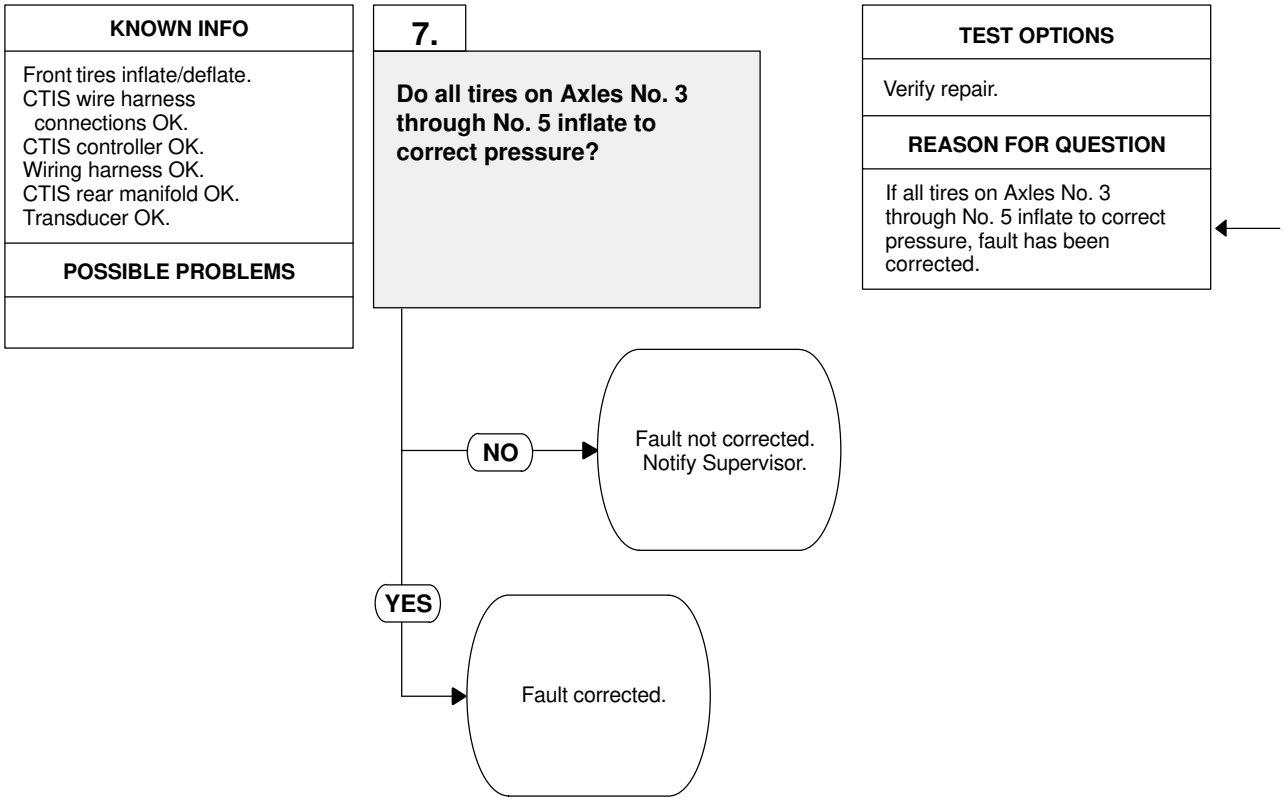
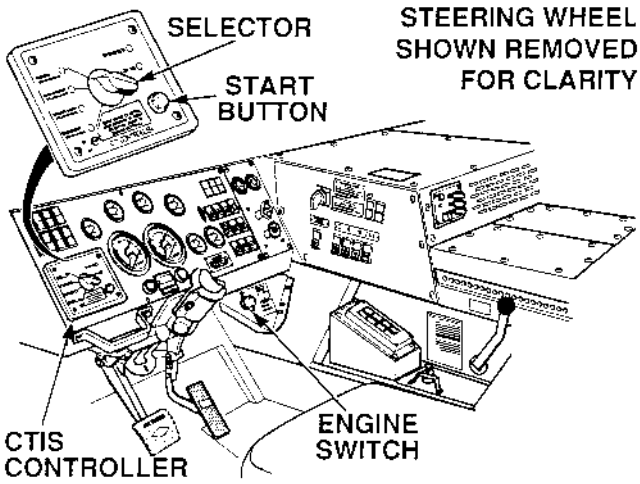


Table 2-51. CTIS Volts Versus Pressure (PSI)

PSI	kPa (Plus/Minus 0.2 volts)	Volts
75	517-	3.5
70	482-	3.3
60	413-	2.9
50	345-	2.5
40	276-	2.0
30	207-	1.7
20	138-	1.3

8. AXLES NO. 3 THROUGH NO. 5 TIRE PRESSURES DO NOT AGREE WITH CTIS SETTINGS (CONT).





VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
    (a) If tires do not inflate to correct pressure, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If tires inflate to correct pressure, fault has been corrected.
(4) Turn OFF ENGINE switch.

2-25. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

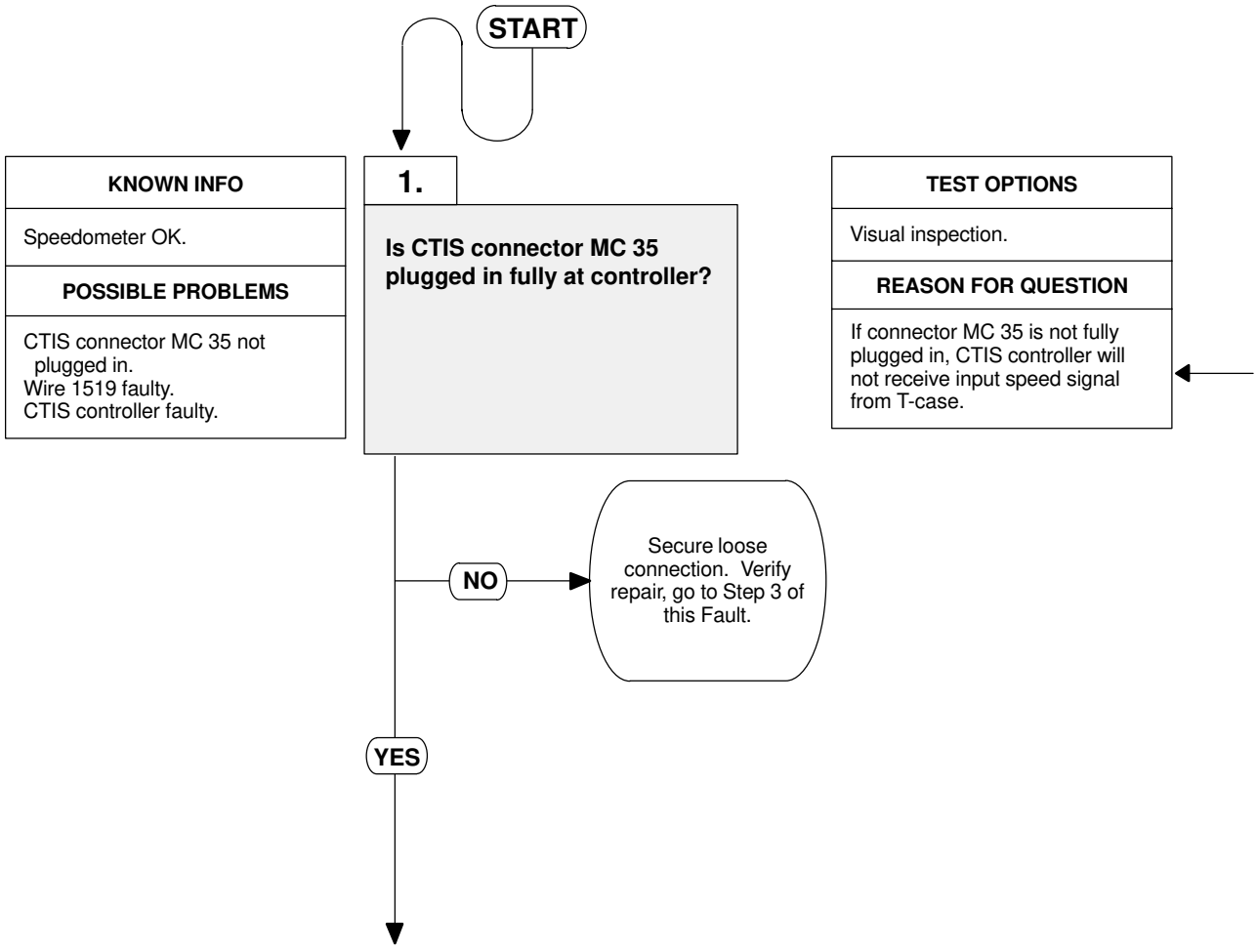
9. CTIS DOES NOT AUTOMATICALLY INFLATE TO THE NEXT HIGHER SETTING.

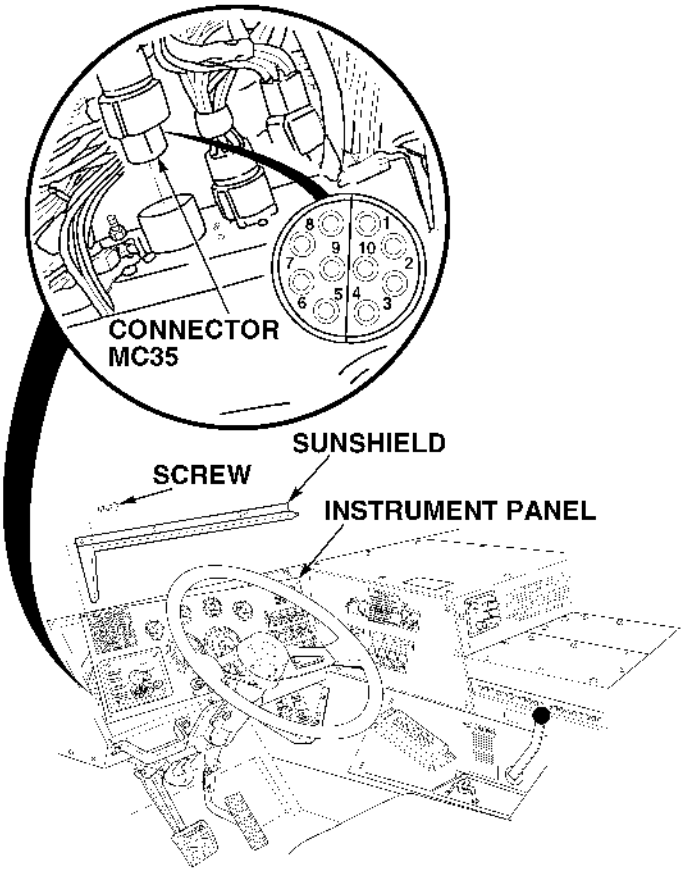
INITIAL SETUP

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

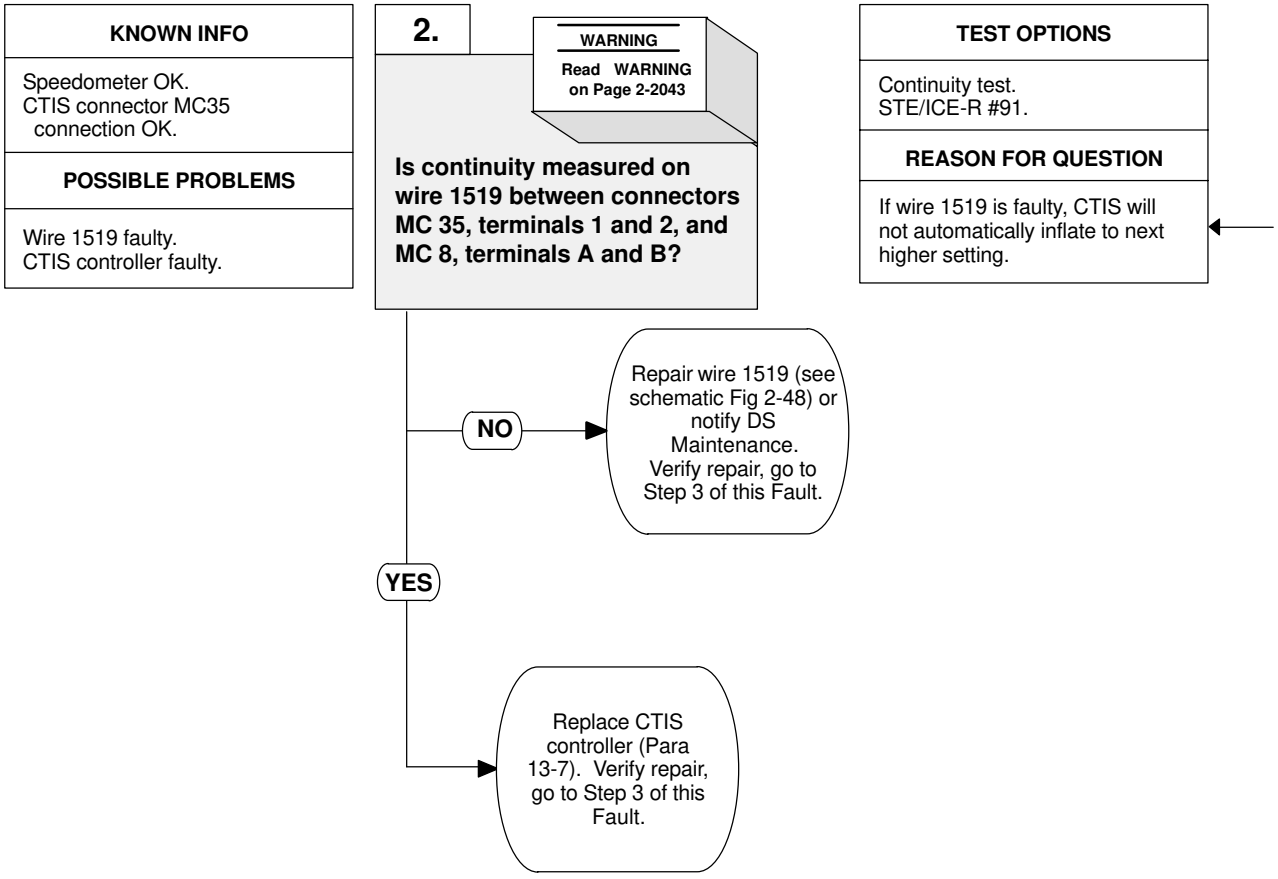




VISUAL INSPECTION

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Inspect MC 35 at CTIS controller to ensure it is fully plugged in.
    (a) If MC 35 is not fully plugged in, secure connector.
    (b) If MC 35 is fully plugged in, go to Step 2 of this Fault.

9. CTIS DOES NOT AUTOMATICALLY INFLATE TO THE NEXT HIGHER SETTING (CONT).

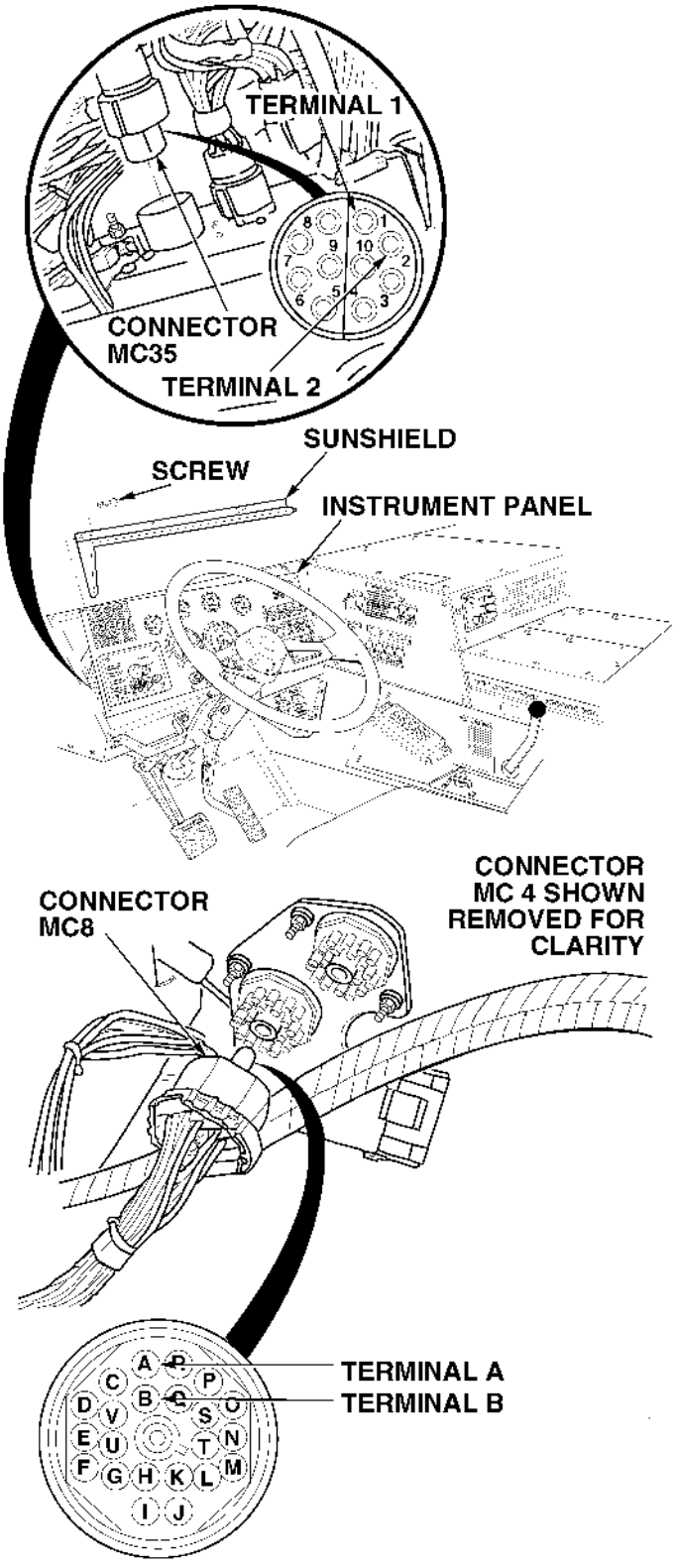


WARNING

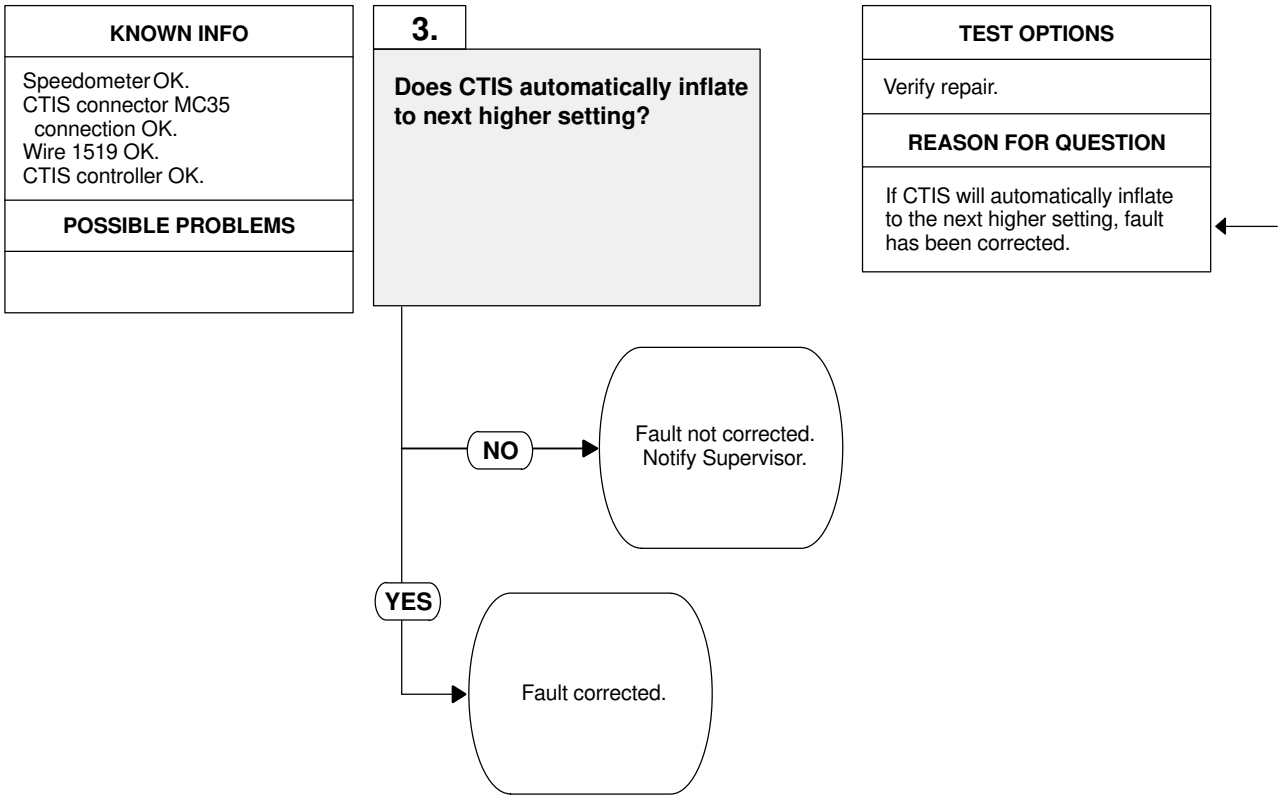
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

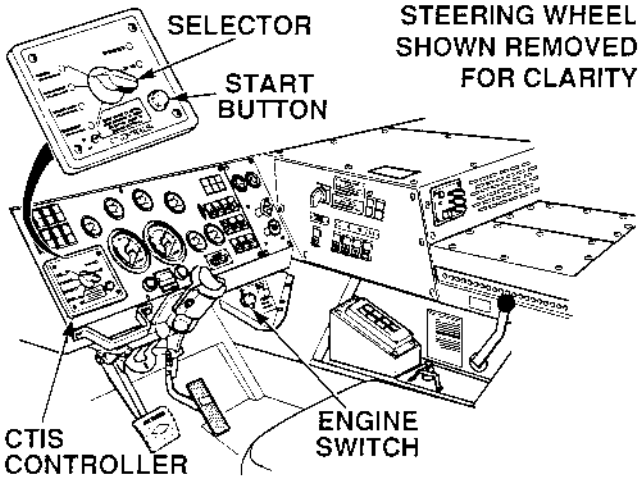
CONTINUITY TEST

(1) Disconnect connector MC35 from CTIS controller.
(2) Disconnect connector MC8 from cab wiring harness.
(3) Set multimeter select switch to ohms.
(4) Is there continuity between connector MC35, terminal 1 and connector MC8, terminal A?
  (a) If there is no continuity, repair wire 1519 (see schematic Fig 2-48) or notify DS Maintenance.
  (b) If there is continuity, go to Step (5) below.
(5) Is there continuity between connector MC35, terminal 2 and connector MC8, terminal B?
  (a) If there is no continuity, repair wire 1519 (see schematic Fig 2-48) or notify DS Maintenance.
  (b) If there is continuity, replace CTIS controller (Para 13-7), then perform Steps (6) through (8) below.
(6) Connect connector MC8 on cab wiring harness.
(7) Connect connector MC35 on CTIS controller.
(8) Install instrument panel and sunshield with ten screws.



9. CTIS DOES NOT AUTOMATICALLY INFLATE TO THE NEXT HIGHER SETTING (CONT).





VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Turn CTIS selector to CROSS COUNTRY position.
(3) Press CTIS START button.
(4) Operate truck above 40 mph (64 km/h) and verify if CTIS automatically switches to HIGHWAY setting.
    (a) If CTIS does not automatically switch to HIGHWAY setting, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If CTIS automatically switches to HIGHWAY setting, fault has been corrected.
(5) Turn OFF ENGINE switch.

2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING.

INITIAL SETUP

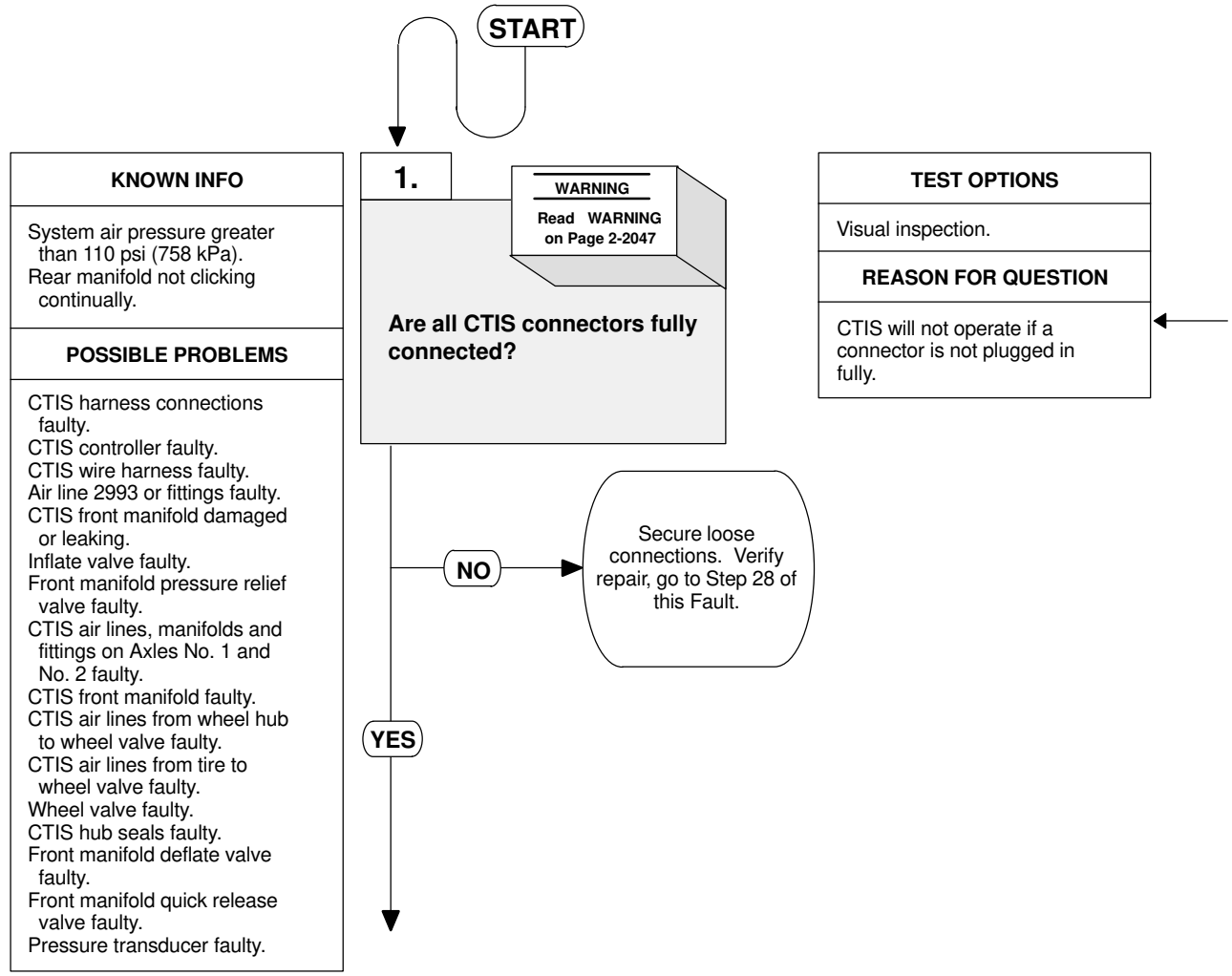
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Multimeter (Item 44, Appendix G)
Jumperwire

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

Personnel Required
Two

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)
Front access cover opened, (TM 9-2320-364-10)
CTIS front manifold cover removed, (Para 13-8)
CTIS turned on, (TM 9-2320-364-10)
Load Handling System (LHS) extended fully, (TM 9-2320-364-10)



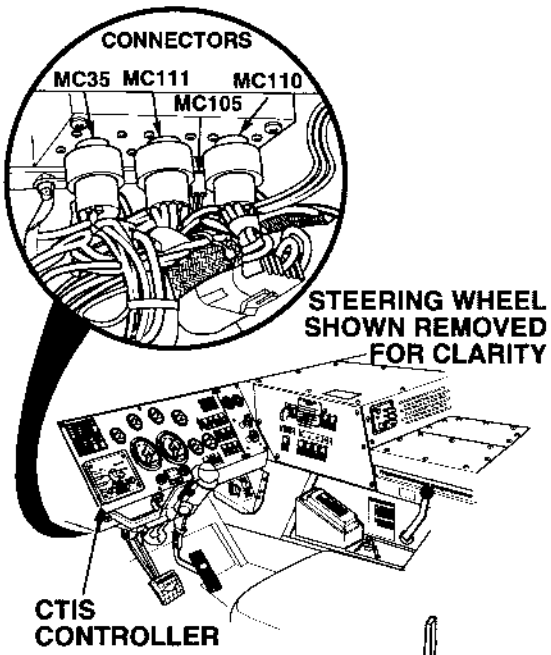
WARNING

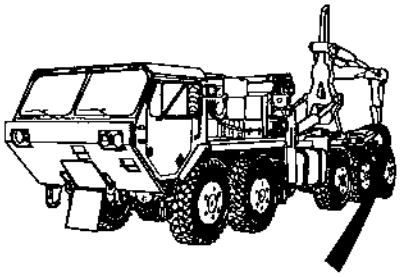
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

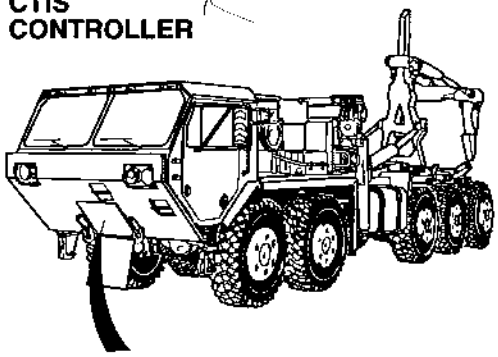
NOTE

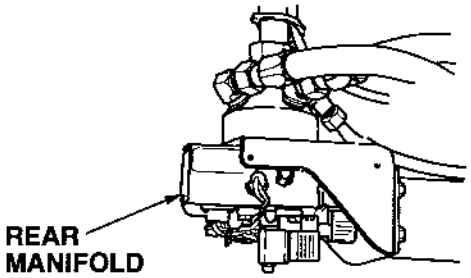
The CTIS initially and periodically checks for system air leaks. The CTIS controller will display a flashing LOW AIR light and shut off if 6 psi (41 kPa) cannot be maintained by the CTIS. The manifold will click during this check for approximately 1-1/2 minutes.

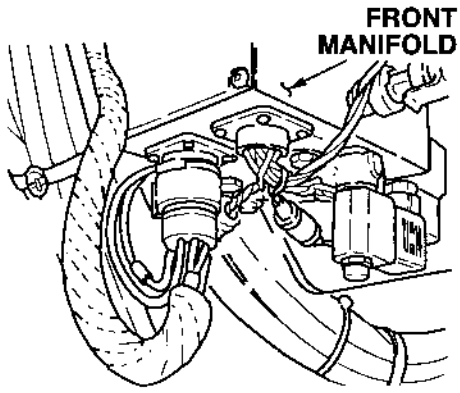
VISUAL INSPECTION
(1) Inspect CTIS controller, front and rear manifolds to ensure that all connectors are fully plugged in. (a) If connectors are not plugged in, secure connectors. (b) If connectors are plugged in, go to Step 2 of this Fault. (2) Put LHS in transit position (TM 9-2320-364-10).



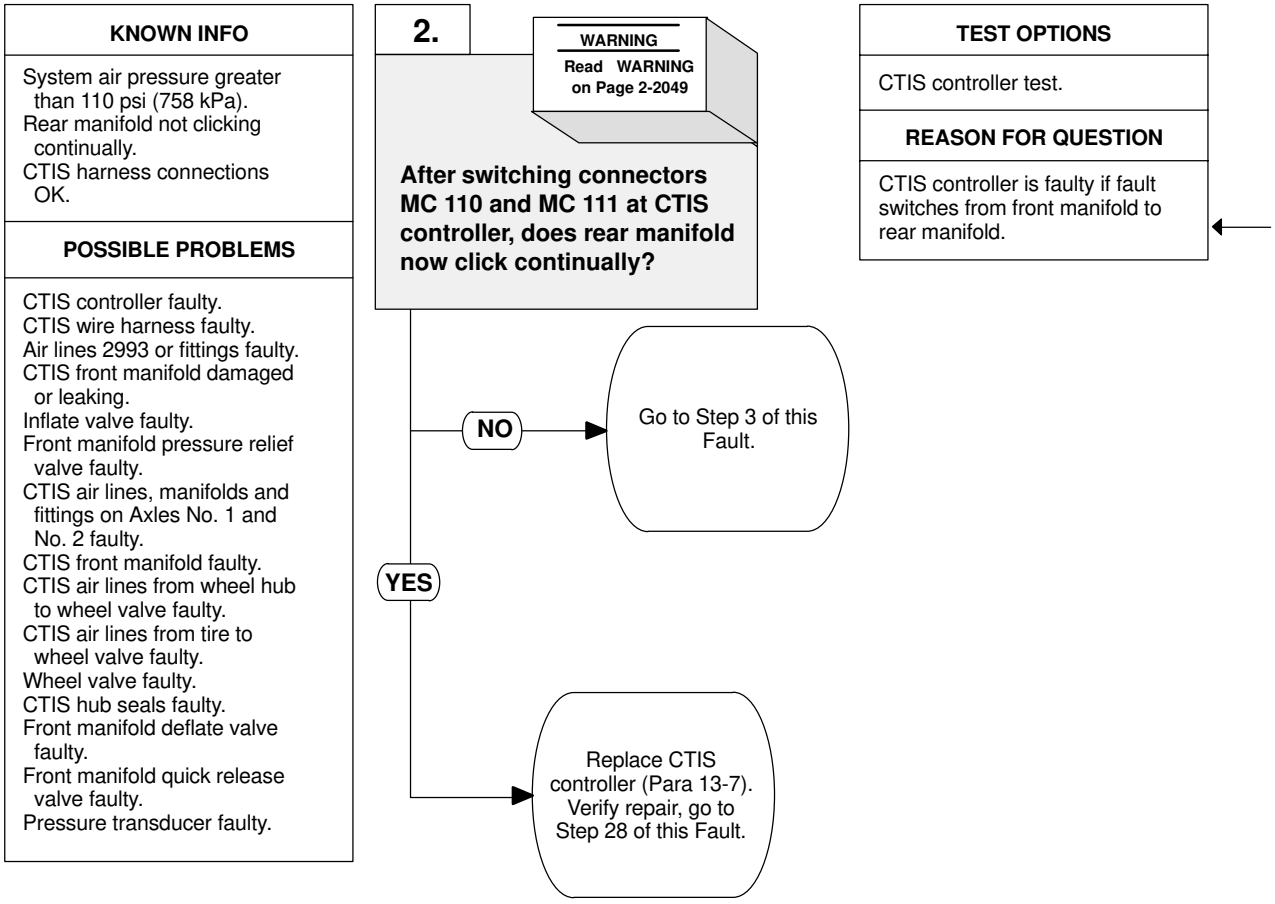








10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

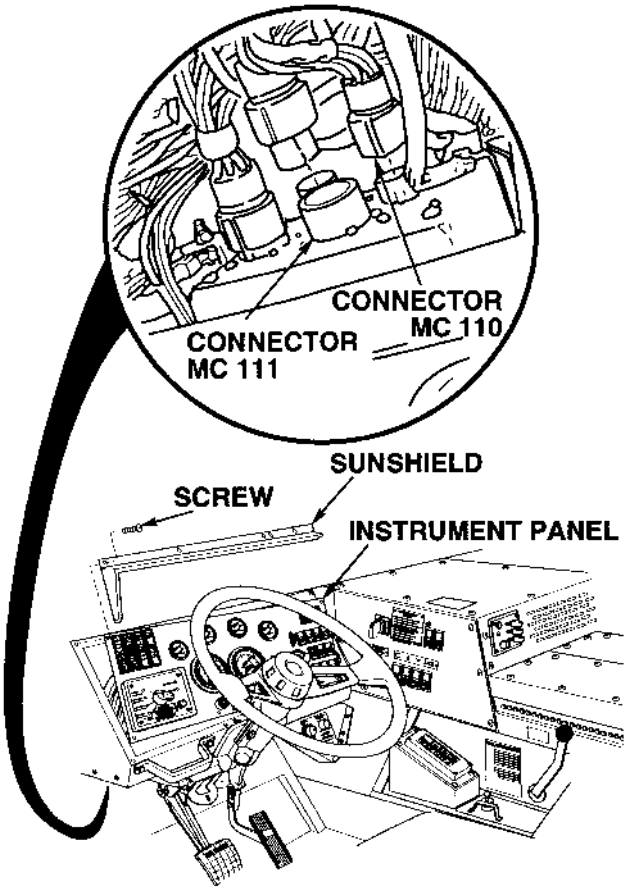


WARNING

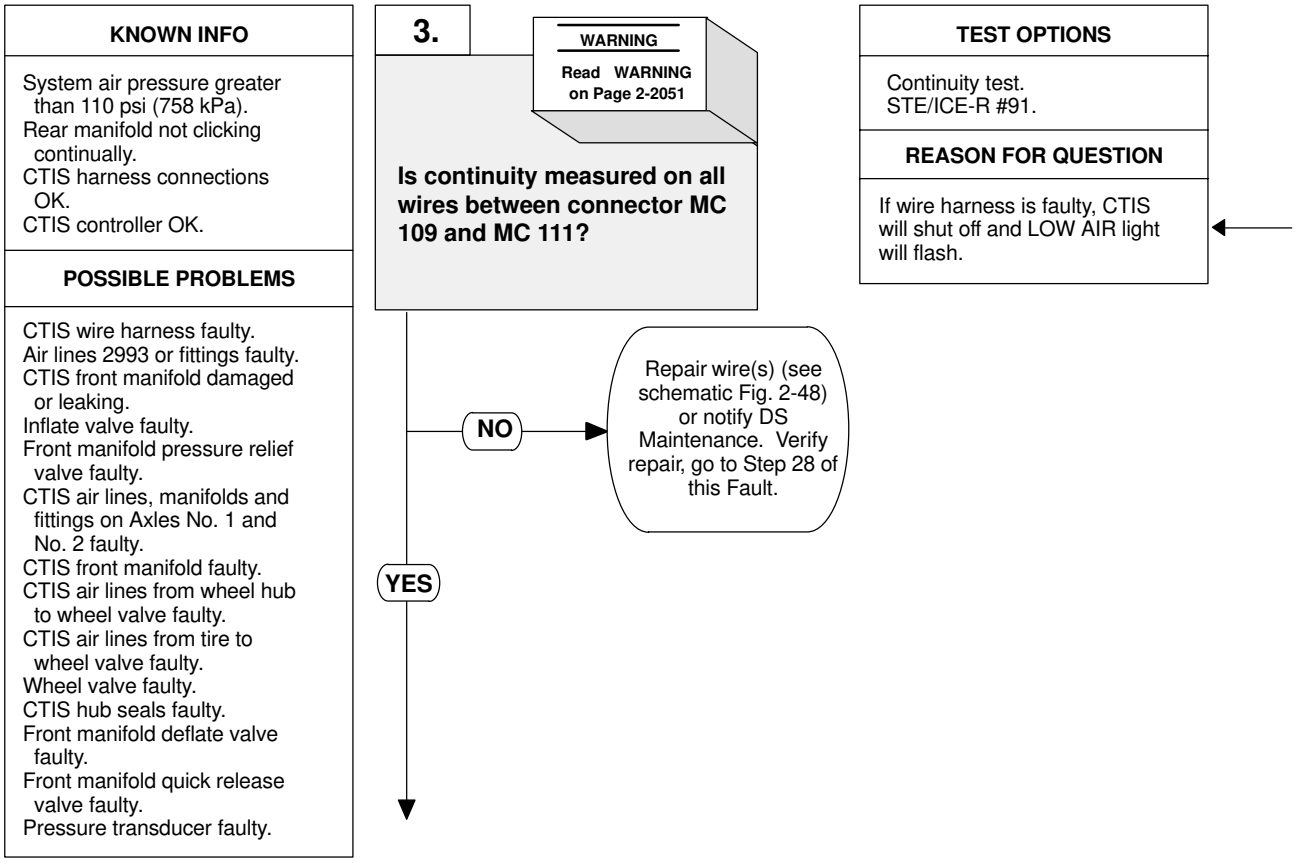
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CTIS CONTROLLER TEST

(1) Remove ten screws, sunshield and tilt instrument panel.
(2) Disconnect front manifold harness connector MC 110 from back of CTIS controller.
(3) Disconnect rear manifold harness connector MC 111 from back of CTIS controller.
(4) Connect harness connector MC 111 into CTIS controller where connector MC 110 was disconnected.
(5) Connect harness connector MC 110 into CTIS controller where connector MC 111 was disconnected.
(6) Start engine (TM 9-2320-364-10).
(7) As assistant pushes CTIS controller START button, listen to rear manifold for continuous clicking.
    (a) If rear manifold is clicking continuously, replace CTIS controller (Para 13-7).
    (b) If rear manifold is not clicking continuously, CTIS controller is OK.
(8) Turn OFF ENGINE switch.
(9) Disconnect and connect connectors MC 110 and MC 111 to correct CTIS controller connectors.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (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

Terminal (5) on MC111 is plugged and does not connect to Terminal (5) on MC109.

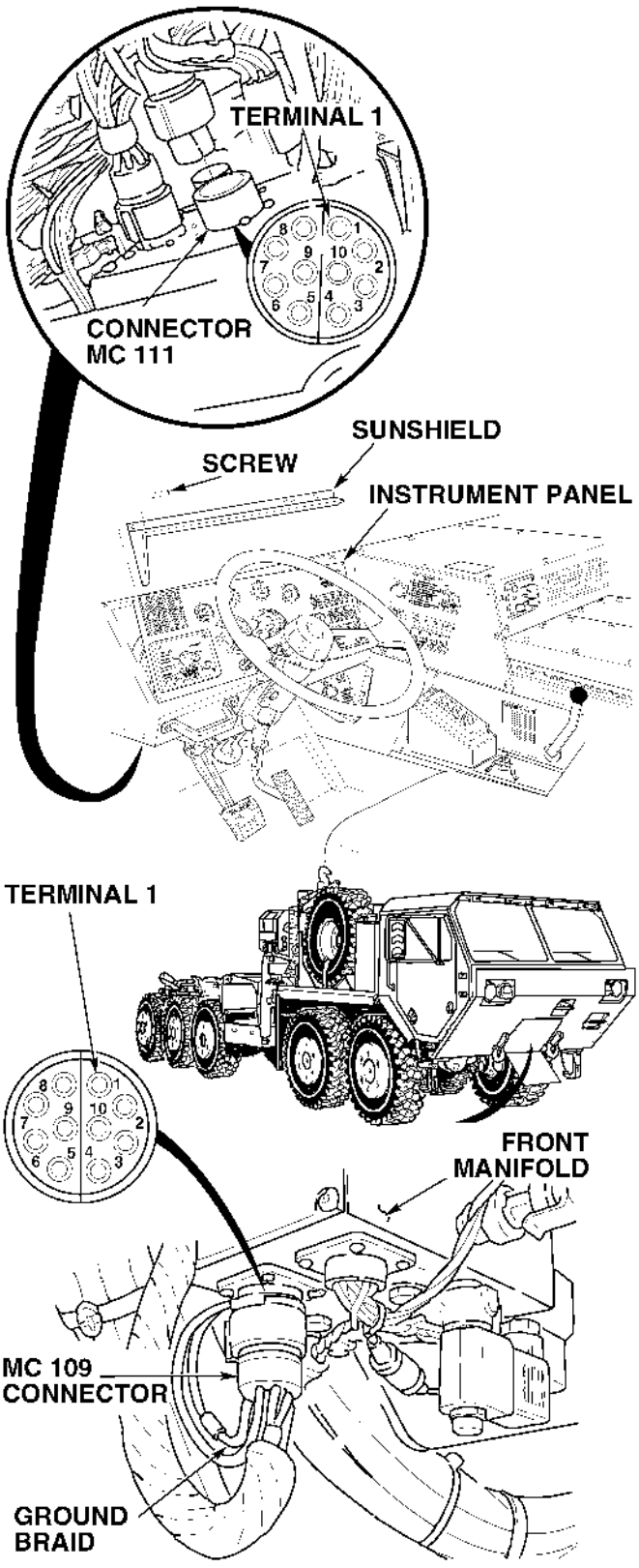
CONTINUITY TEST

(1) Disconnect connector MC 109 from CTIS front manifold.
(2) Set multimeter select switch to ohms.
(3) Connect jumperwire between wire 1056 on CTIS controller connector MC 111, terminal 1 and a known good ground.
(4) Is there continuity between connector MC 109, terminal 1 and front manifold ground braid?
  (a) If there is no continuity, repair wire 1056 (see schematic Fig 2-48 or notify DS Maintenance, and perform Steps (6) through (9) below.
  (b) If there is continuity, wire 1056 is OK.
(5) Check continuity of remaining wires and terminals using Steps (2) through (4) above. The wires and corresponding terminals are listed below (see schematic Fig 2-48).

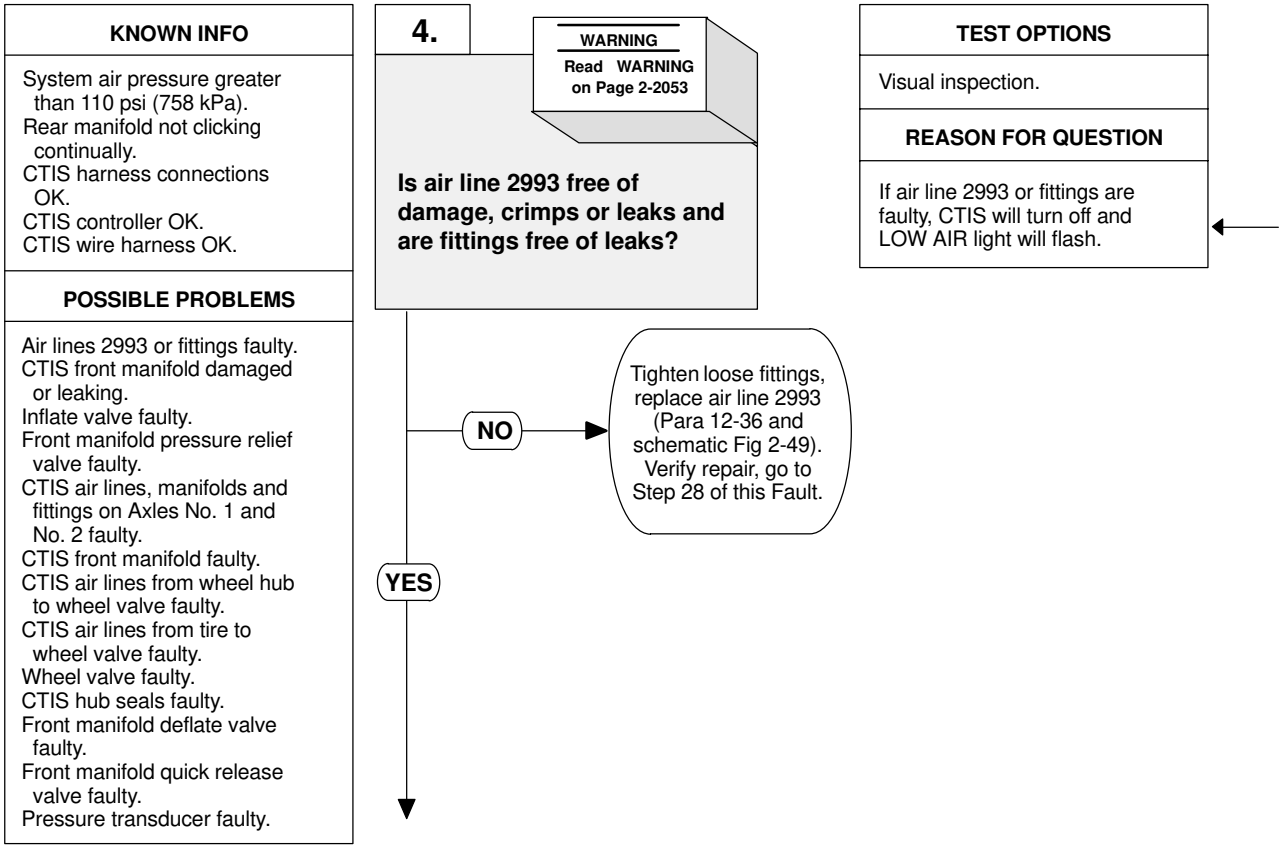
1057(2)		Shield(8)
1058(3)	1061(6)	1064(9)
1059(4)	1062(7)	1065(10)

1063(5) to ground (MC109 only)

(6) Remove jumperwire.
(7) Connect connector MC 111 on back of CTIS controller.
(8) Connect connector MC 109 to CTIS front manifold.
(9) Install instrument panel, sunshield, and ten screws.

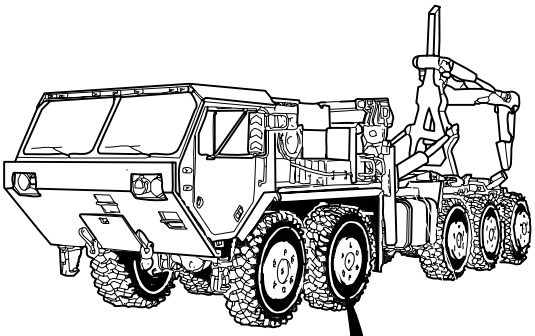


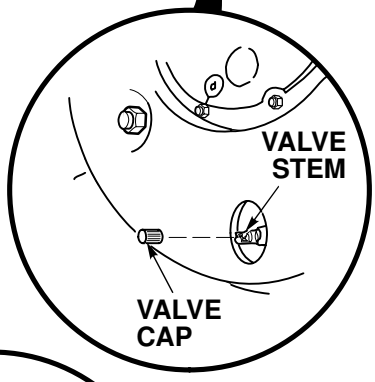
10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

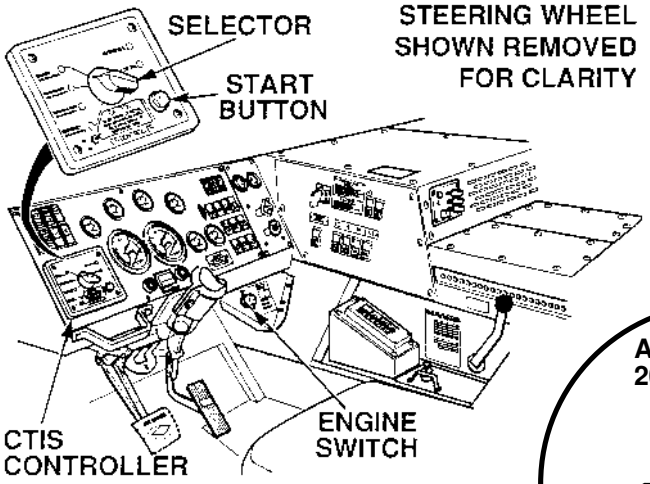


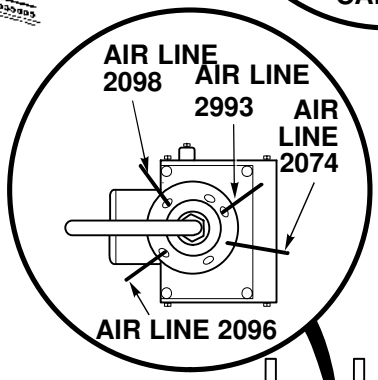
WARNING

- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.



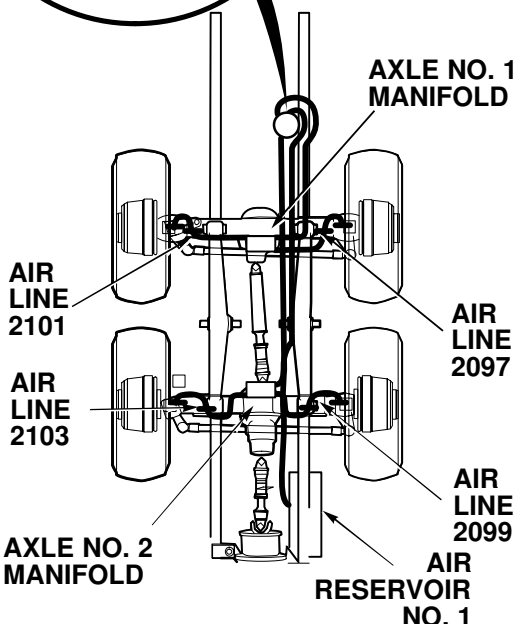




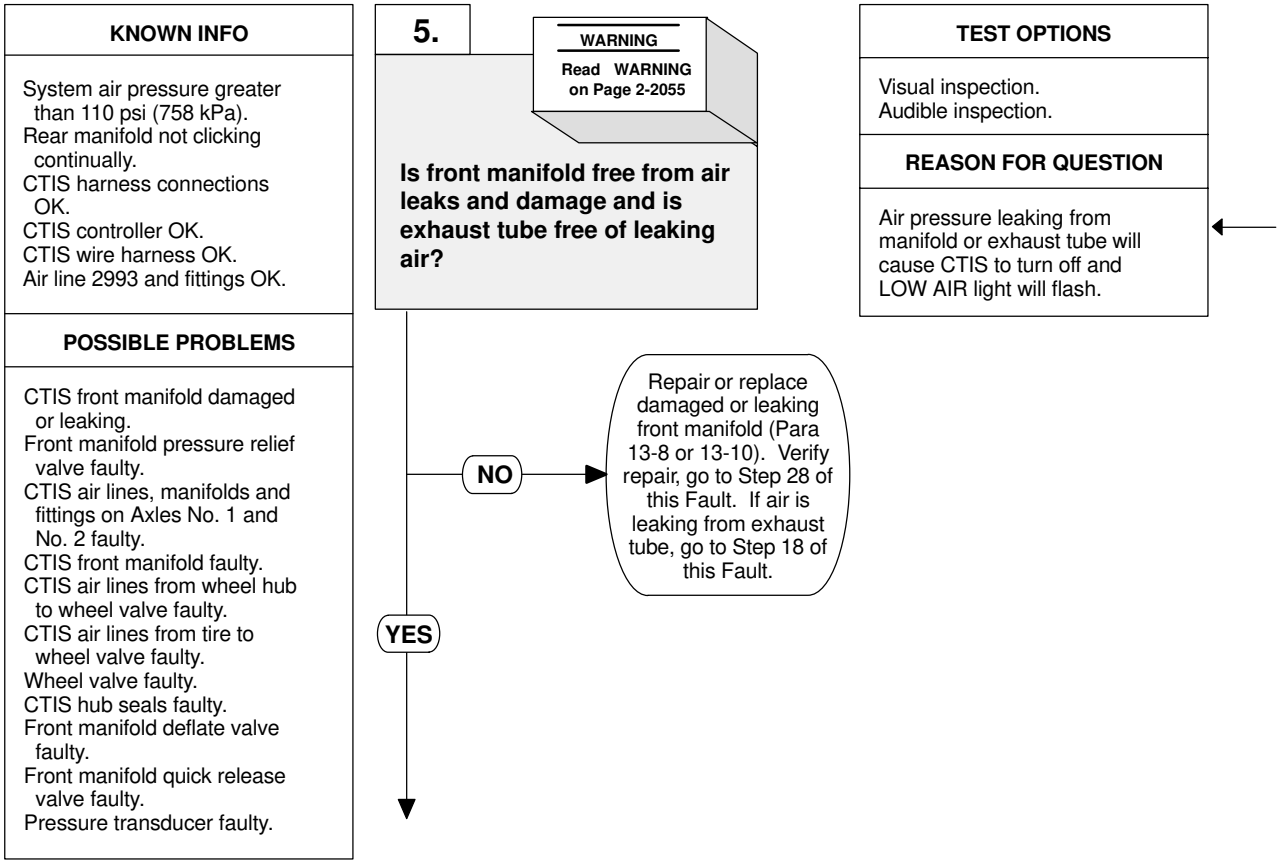


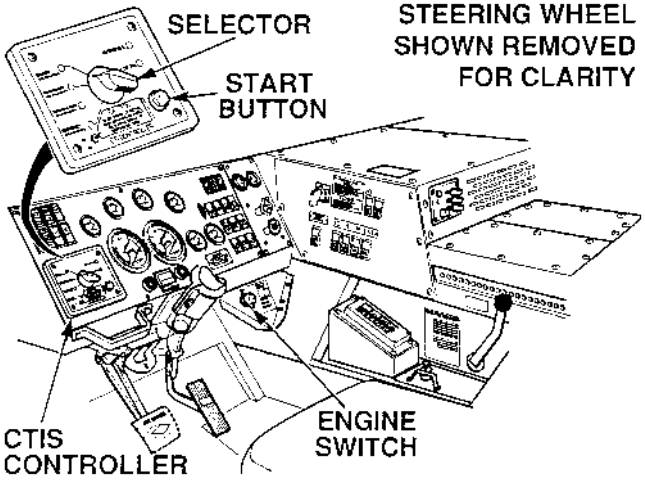
VISUAL INSPECTION

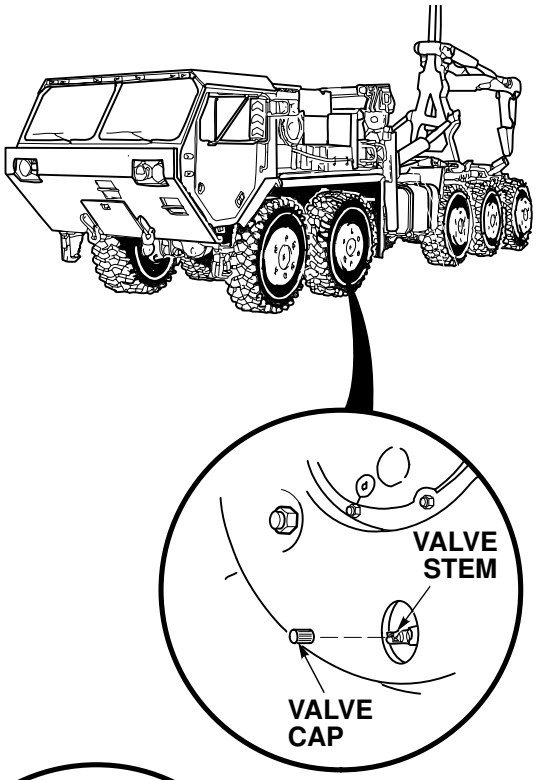
(1) Remove valve cap from any wheel valve stem on Axles No. 1 and No. 2.
(2) Using tire gage, deflate any one tire on Axles No. 1 or No. 2 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check CTIS air line 2993 for damage, crimps or leaks (see schematic Fig 2-49).
  (a) If air line 2993 is damaged, crimped or leaking; tighten fittings, perform Steps (7) and (8) below, and replace air line (Para 12-36 and schematic Fig 2-49).
  (b) If there are no leaks, crimps or damage, air line 2993 and fittings are OK.
(7) Turn OFF ENGINE switch.
(8) Install valve cap on wheel valve stem.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).







WARNING

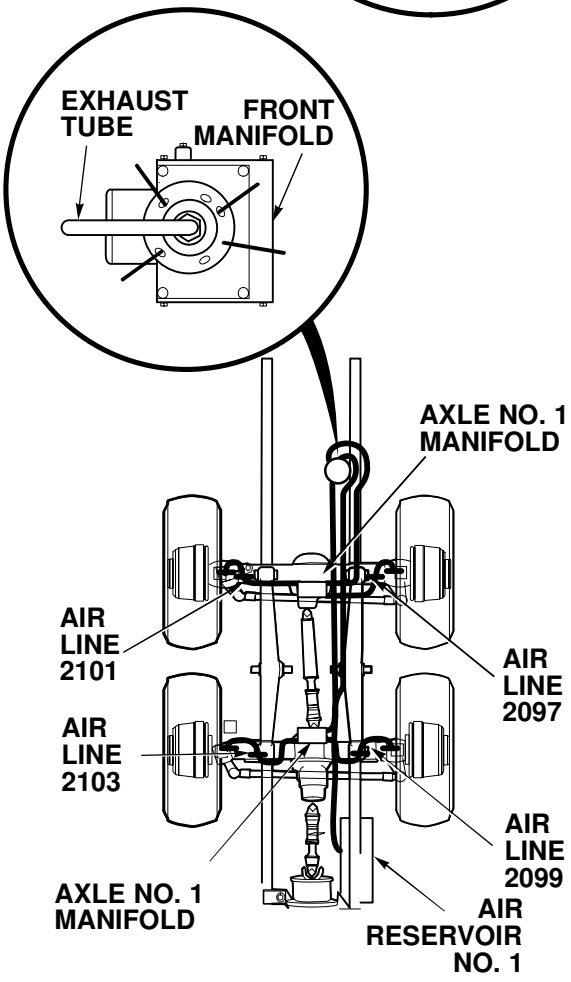
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

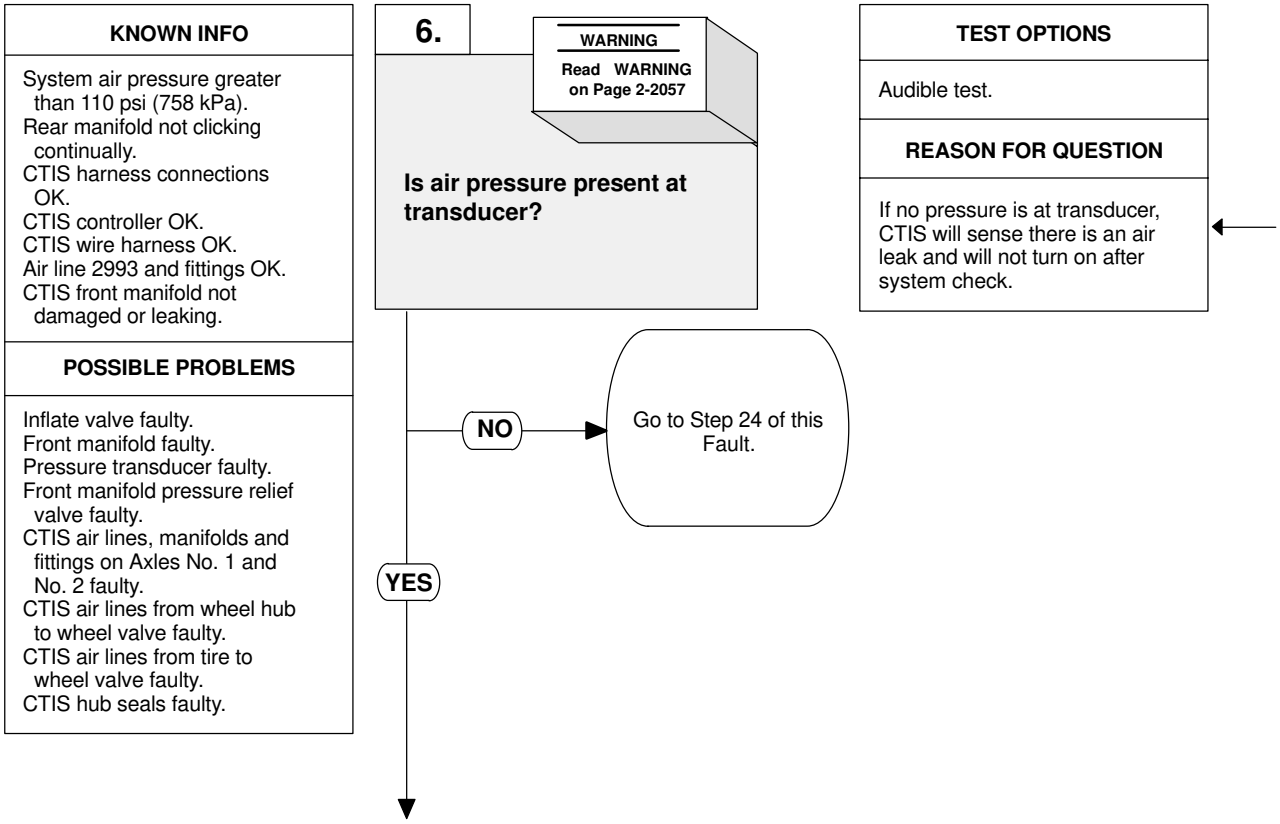
- Soap and water solution can be used to visually check for leaks.
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL INSPECTION

(1) Remove valve cap from any wheel valve stems on Axles No. 1 or No. 2.
(2) Using tire gage, deflate any one tire on Axles No. 1 or No. 2 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check CTIS front manifold for damage, or leaks.
  (a) If front manifold is damaged, or leaking; perform Steps (7) and (8) below, and repair or replace front manifold (Para 13-8 or 13-10).
  (b) If there are no leaks, or damage, front manifold is OK.
  (c) If front manifold is leaking air out of exhaust tube, go to Step 18 of this Fault.
(7) Turn OFF ENGINE switch.
(8) Install valve cap on wheel valve stem.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

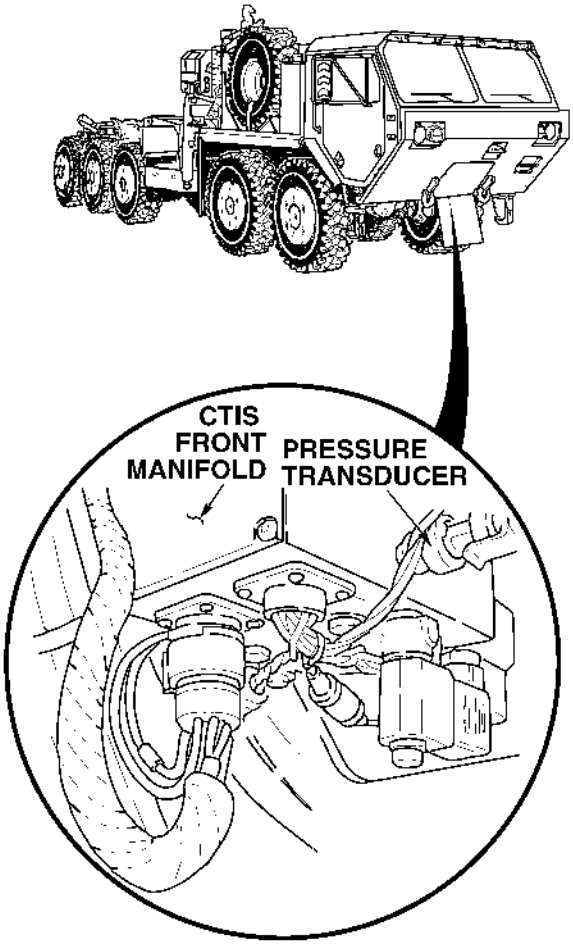


WARNING

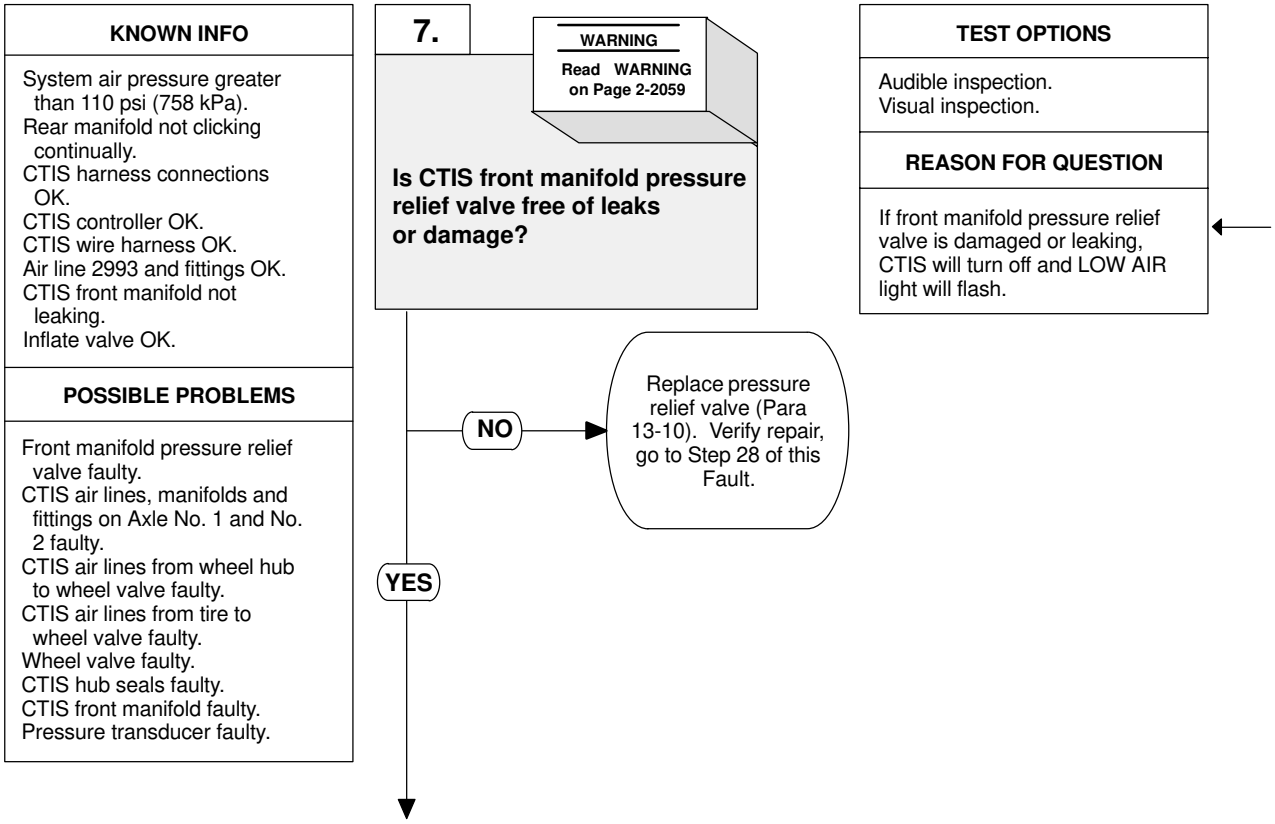
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

AUDIBLE TEST

(1) Remove pressure transducer from front manifold (Para 13-10).
(2) Set CTIS controller to HIGHWAY (TM 9-2320-364-10).
(3) Start engine.
(4) As assistant pushes CTIS controller START button, listen for air exhausting from the transducer port.
  (a) If air does not exhaust, perform Steps (5) and (6) below, and go to Step 24 of this Fault.
  (b) If air exhausts, inflate valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install pressure transducer in front manifold.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

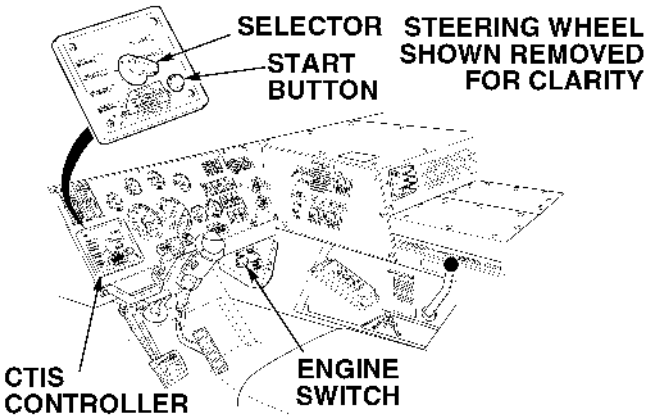


WARNING

- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

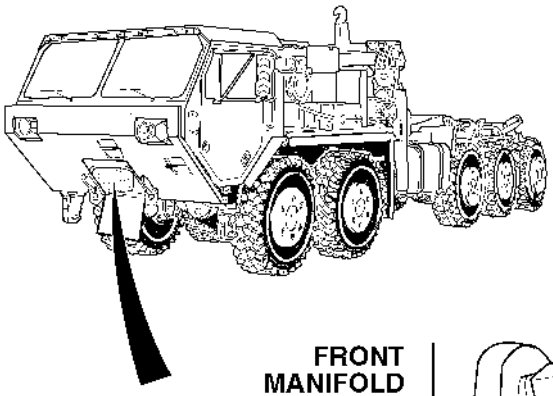
NOTE

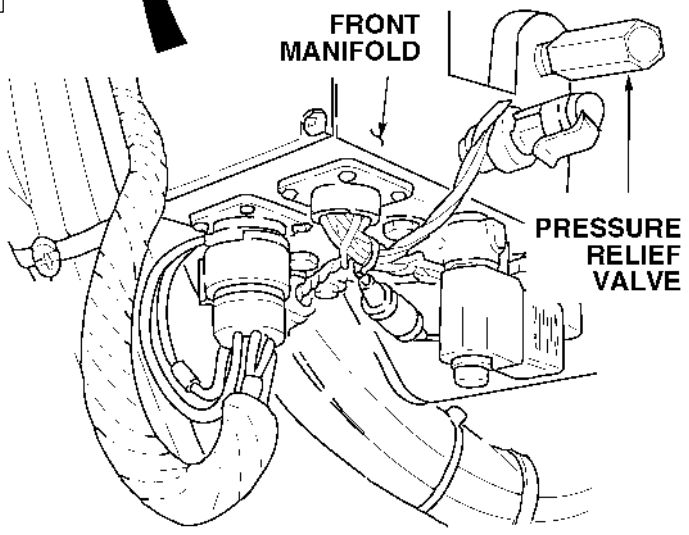
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage (bubbles forming) may occur during inflation/deflation cycle at relief valve. A rapid exhaust of air indicates a problem.
- Pressure relief valve should remain closed up to 85 psi (586 kPa).



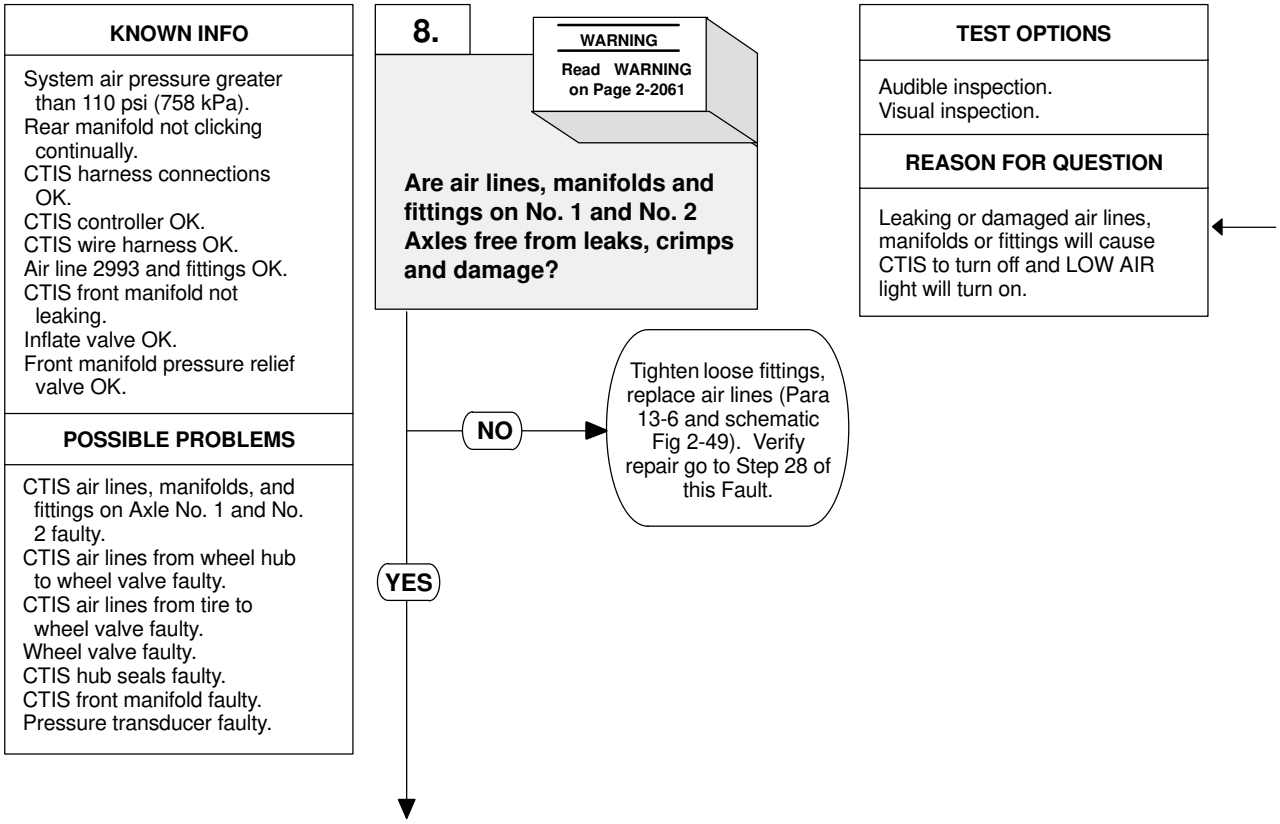
VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Assistant presses CTIS START button.
(4) Check CTIS front manifold pressure relief valve for damage and leaks.
  (a) If pressure relief valve is damaged or leaking, turn OFF ENGINE switch and replace valve (Para 13-10).
  (b) If pressure relief valve is not damaged or leaking, relief valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install front CTIS manifold cover (Para 13-8).
(7) Close front access cover.





10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



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

NOTE

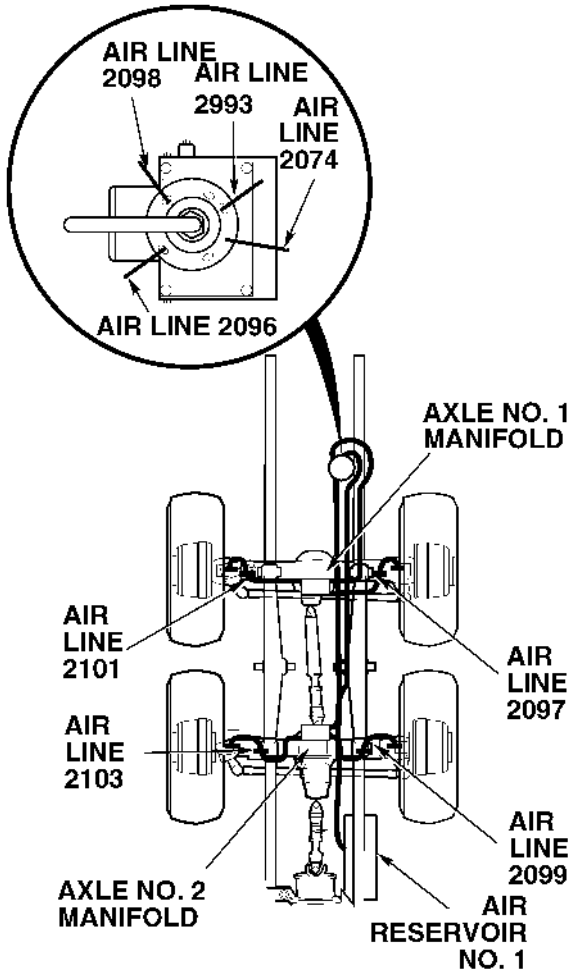
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

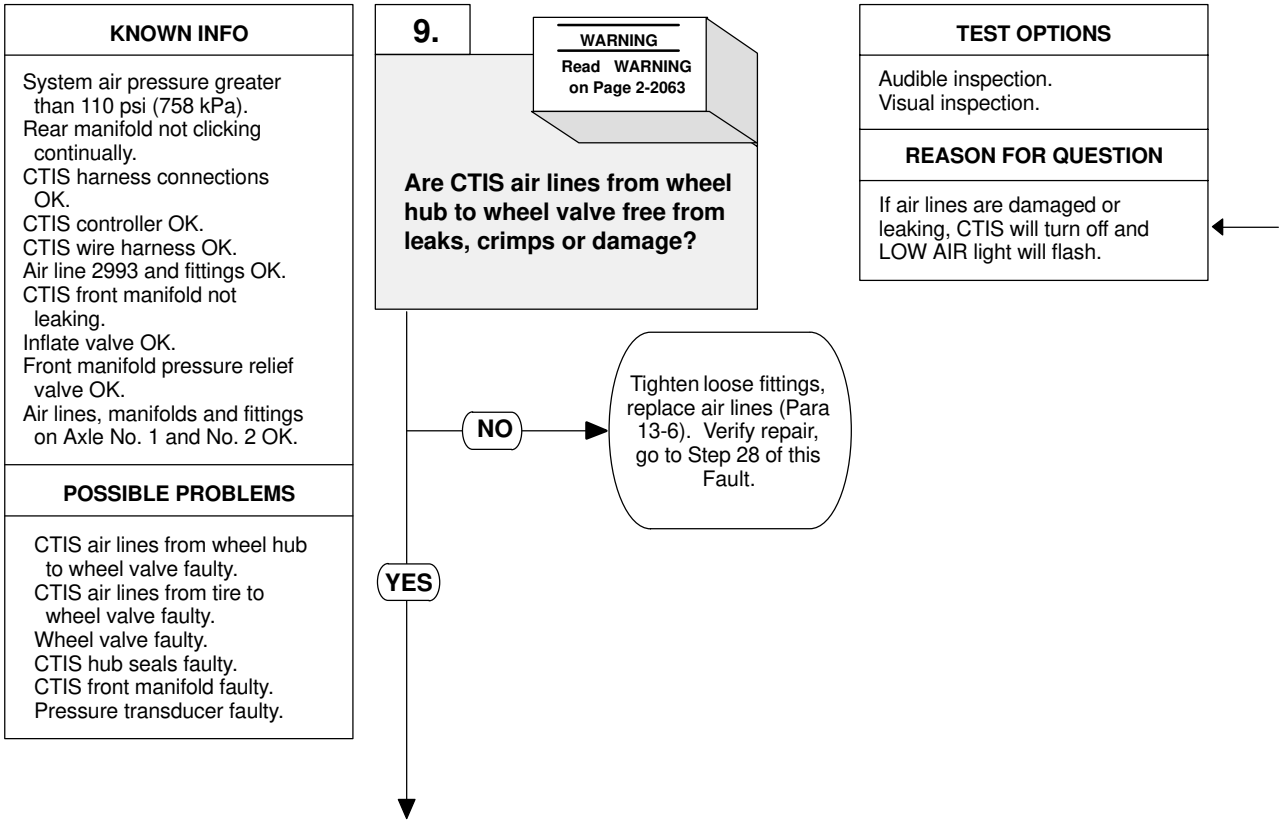
(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS air lines listed below and axle manifold and fittings for damage, crimps or leaks (see schematic Fig 2-49).

2074	2101
2096	2103
2097	2993
2098	
2099	

(a) If air lines, fittings or axle manifolds are damaged or leaking, perform Step (5) below and tighten fittings or replace air lines or axle manifold (Para 13-6 and schematic Fig 2-49).
(b) If there are no leaks, crimps, or damage, air lines fittings and axle manifolds are OK.
(5) Turn OFF ENGINE switch.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

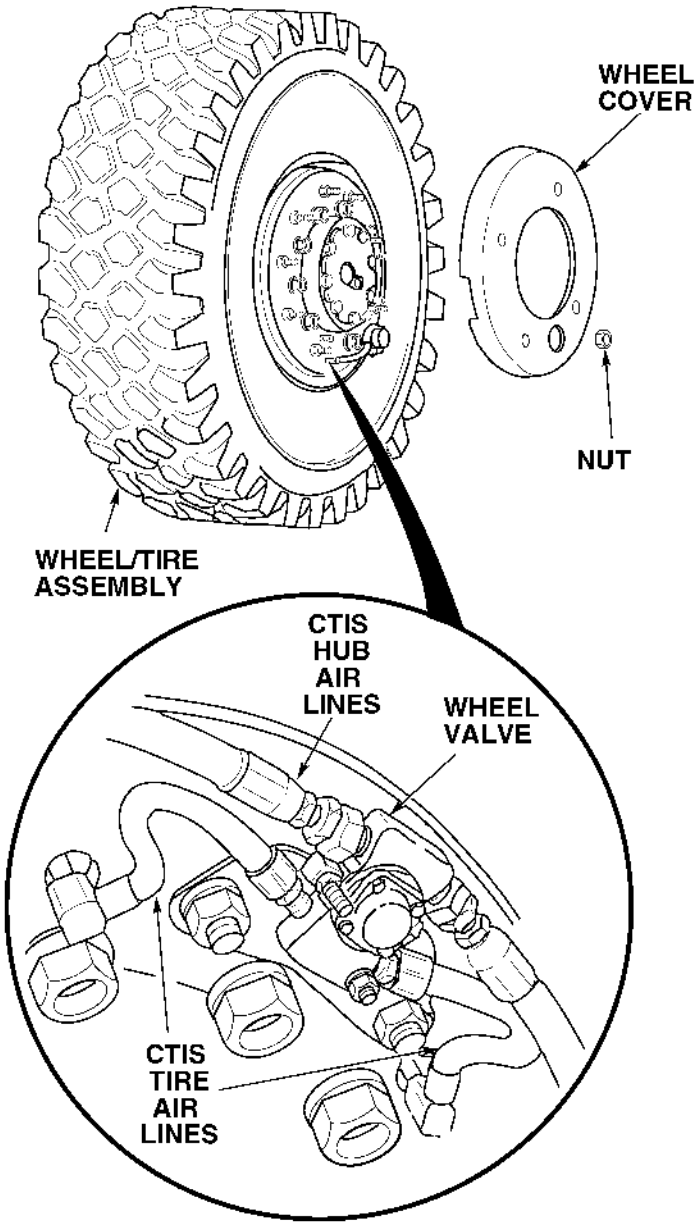
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

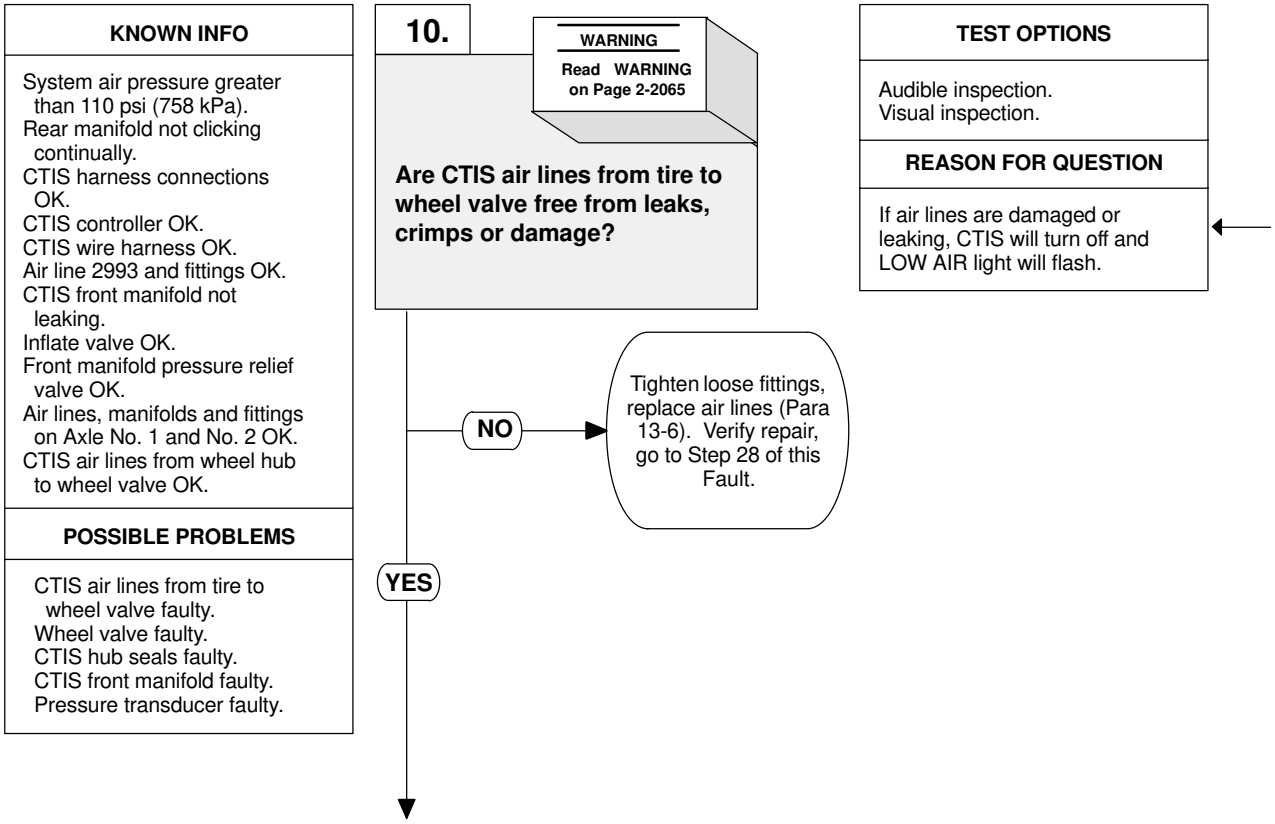
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Remove four nuts and wheel cover.
(2) Start engine (TM 9-2320-364-10).
(3) Set CTIS controller to HIGHWAY.
(4) Press CTIS START button.
(5) Check air lines at wheel hub to wheel valve for air leakage.
  (a) If air lines are damaged, crimped or leaking, perform Step (6) below, and tighten loose fittings, replace air lines or fittings (Para 13-6).
  (b) If there are no leaks, crimps or damage, air lines and fittings are OK.
(6) Turn OFF ENGINE switch.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

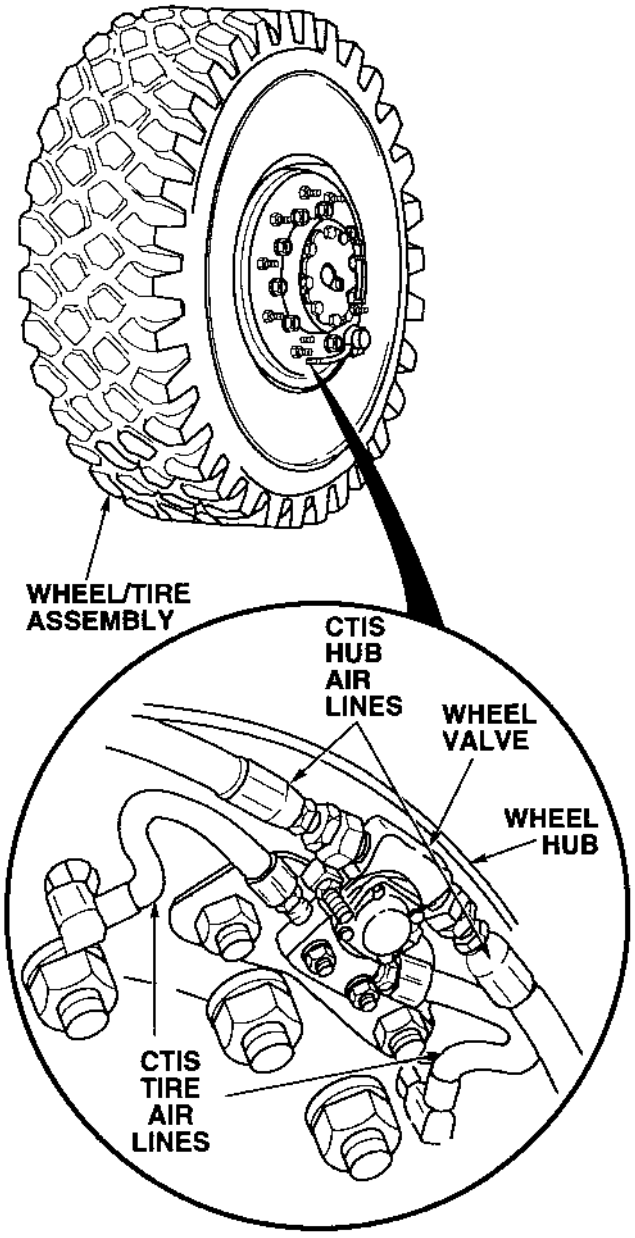
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

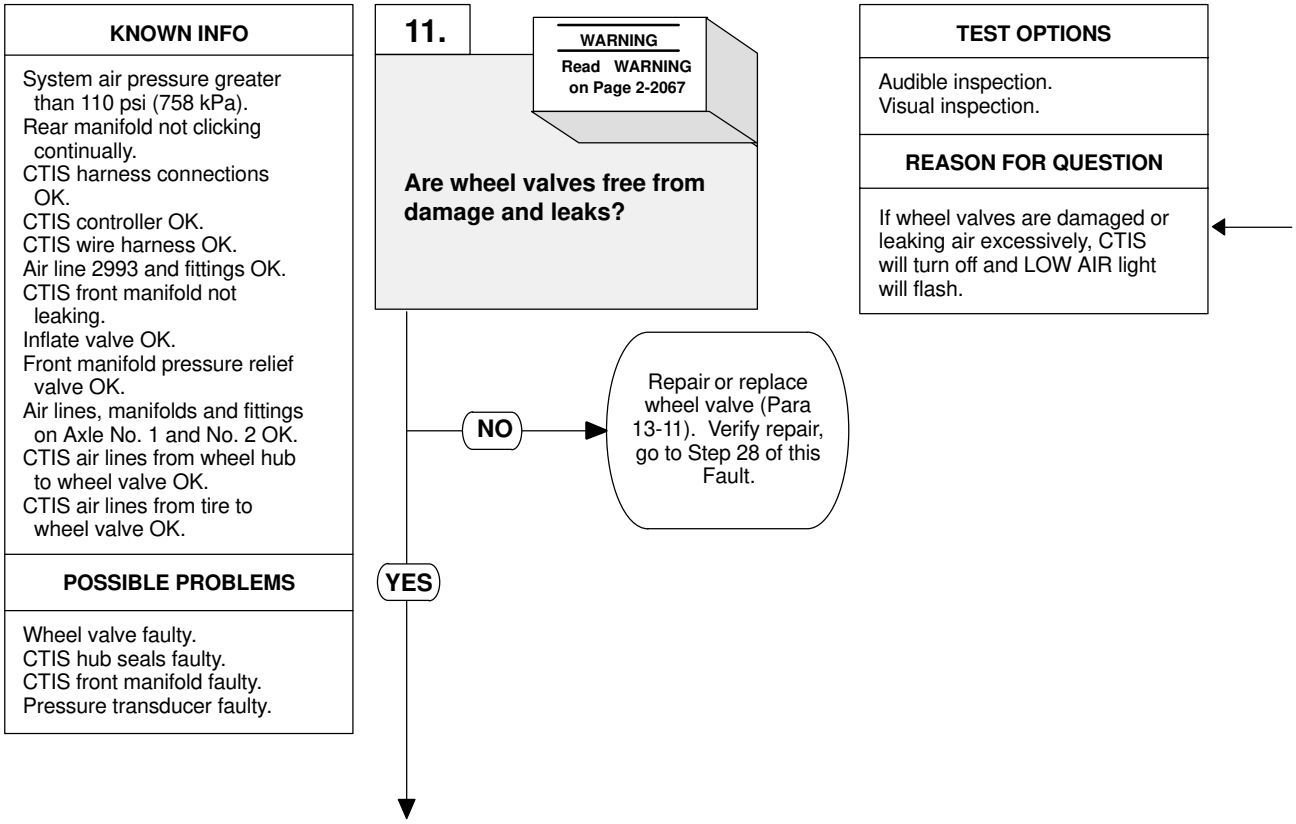
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS air lines at tire to wheel valve for air leakage.
  (a) If air lines are damaged, crimped or leaking, perform Step (5) below and tighten loose fittings, replace air lines or fittings (Para 13-6).
  (b) If there are no leaks, crimps or damage, air lines and fittings are OK.
(5) Turn OFF ENGINE switch.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

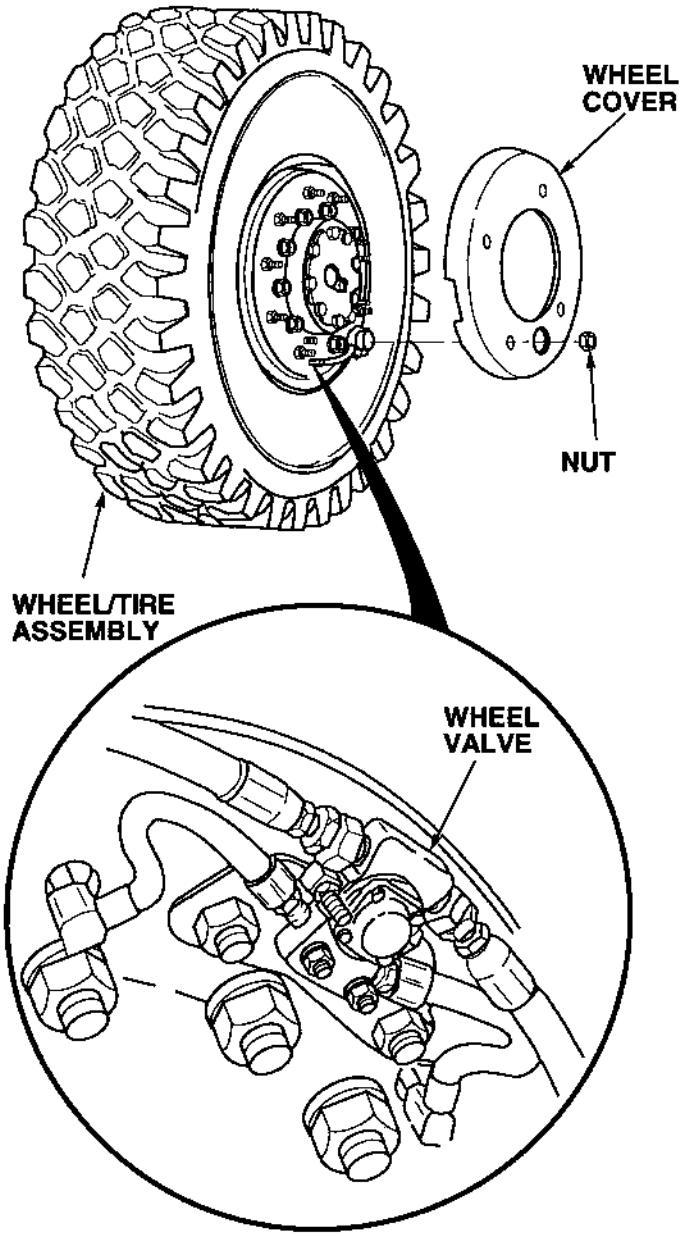
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

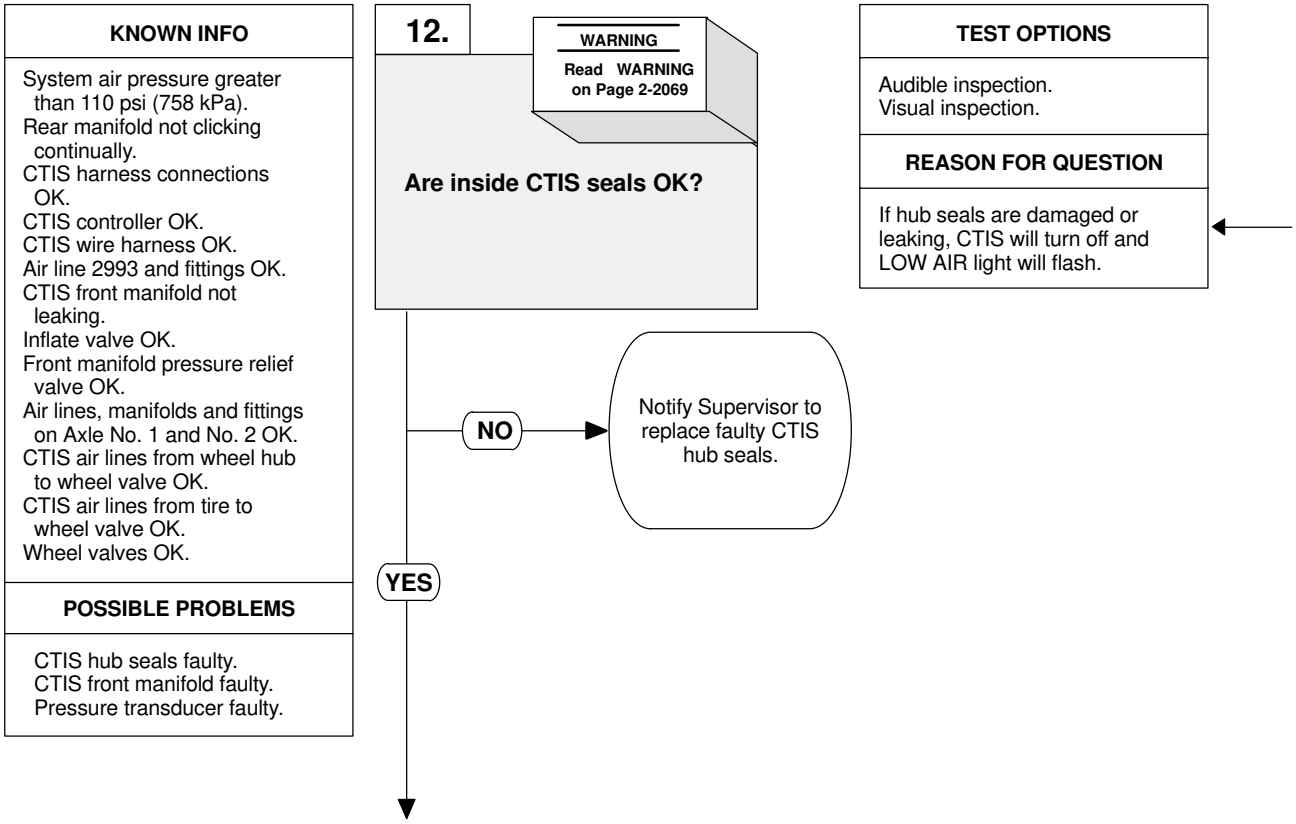
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage (bubbles forming) may occur at breather during inflation/deflation cycles. A rapid exhaust of air indicates a problem.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320–364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS wheel valves for air leakage.
  (a) If wheel valve is damaged or leaking air, perform Step (5) below and repair or replace wheel valve (Para 13-11).
  (b) If there are no air leaks or damage, wheel valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install wheel cover with four nuts.

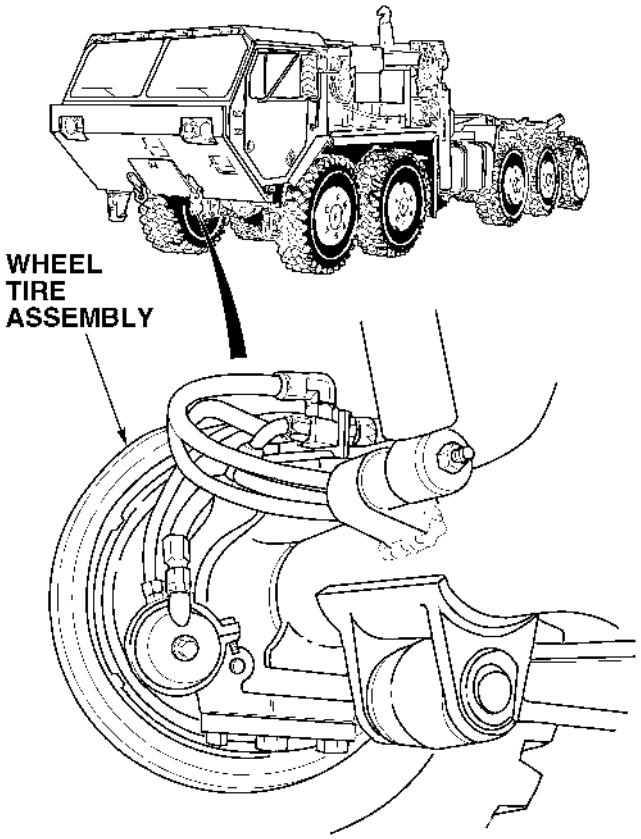


10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



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



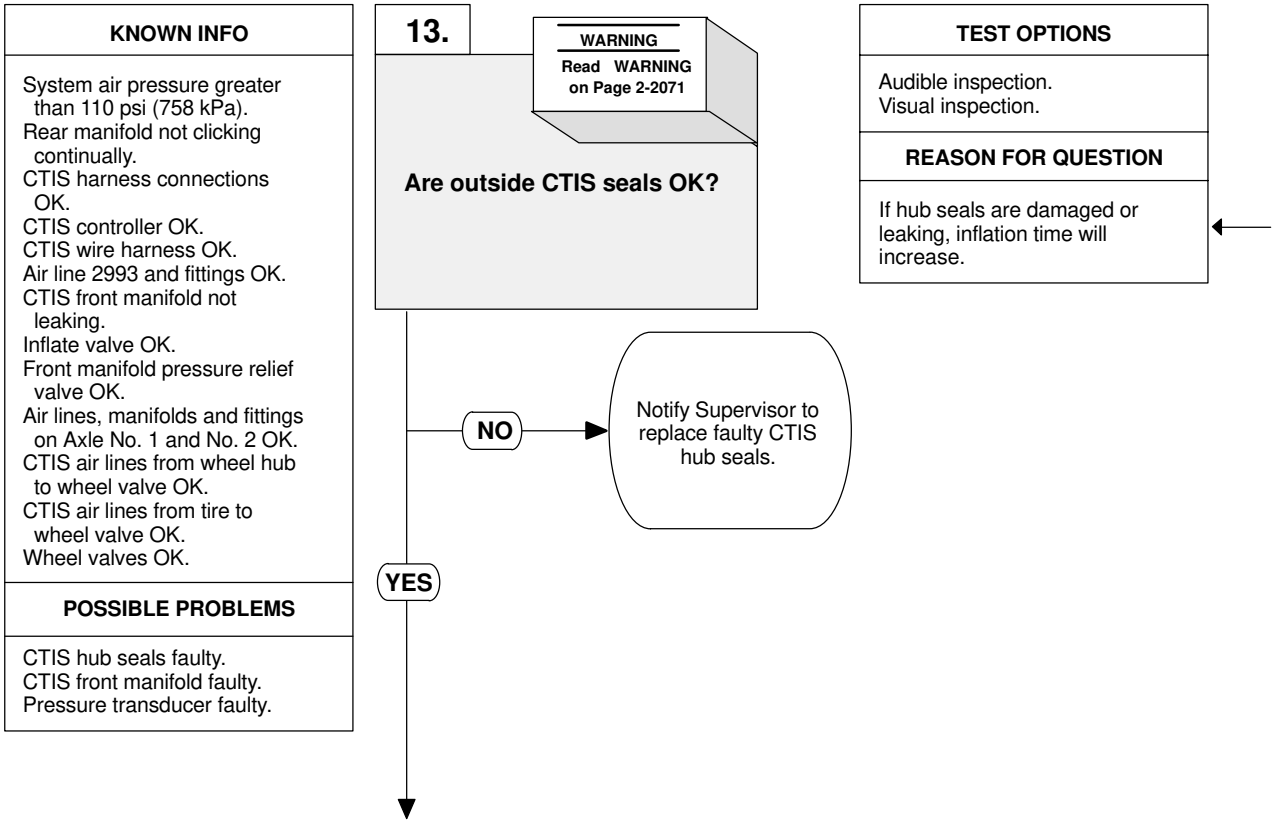
NOTE

Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

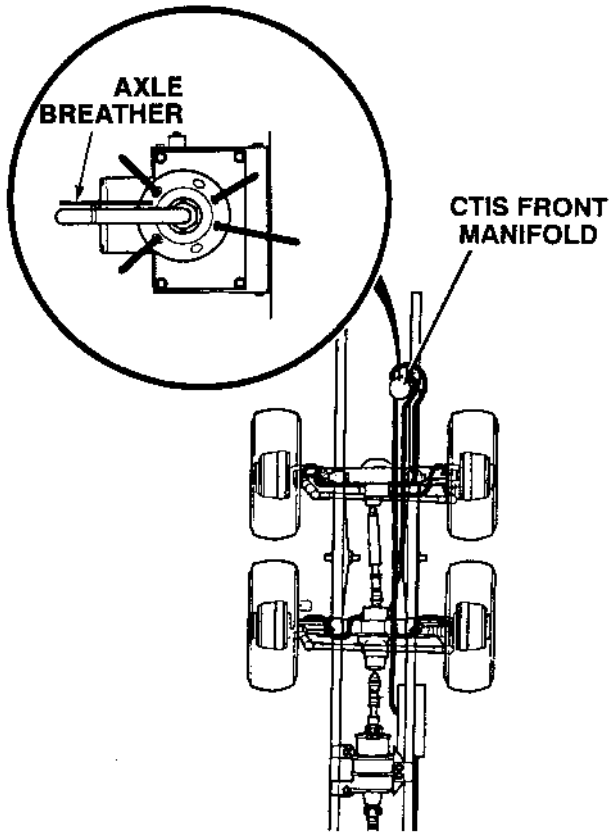
(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press START button.
(4) Check for air escaping from the inside portion of the wheel and tire assemblies.
  (a) If air is escaping, turn off ENGINE SWITCH and notify Supervisor to replace faulty CTIS hub seals.
  (b) If there is no air escaping, inside CTIS hub seals are OK.
(5) Turn OFF ENGINE switch.

10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



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



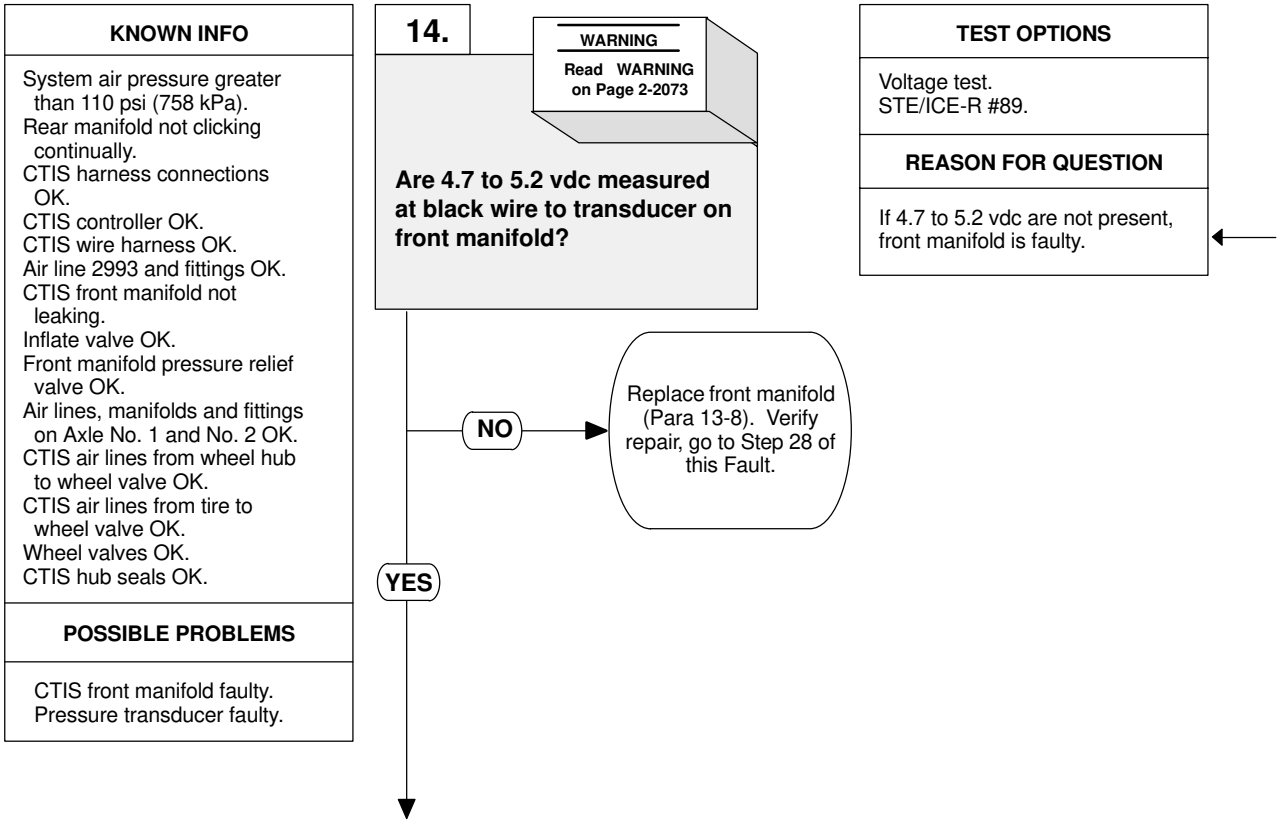
NOTE

Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press START button.
(4) Check for air escaping from the axle breather tube.
    (a) If air is escaping, turn OFF ENGINE switch, notify Supervisor to replace faulty CTIS hub seals.
    (b) If there is no air escaping, CTIS hub seals are OK.
(5) Turn OFF ENGINE switch.

10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

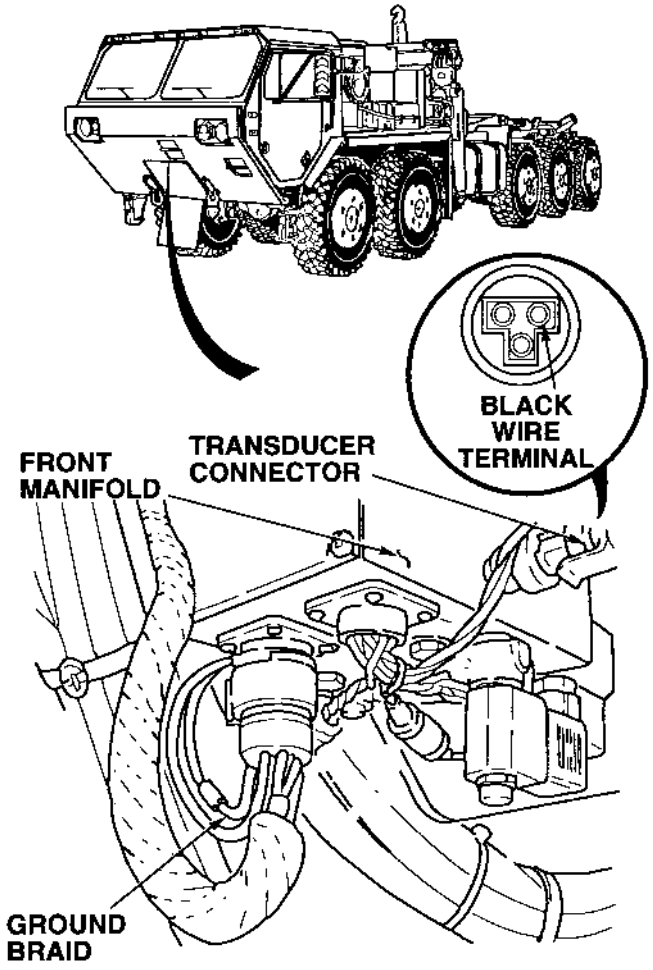


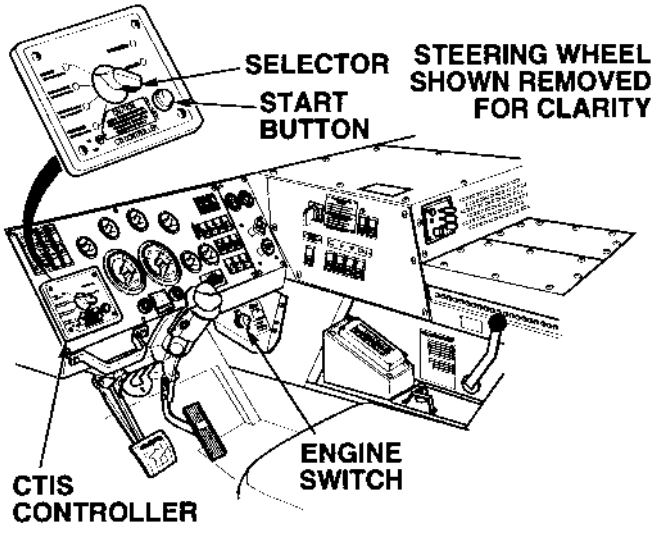
WARNING

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

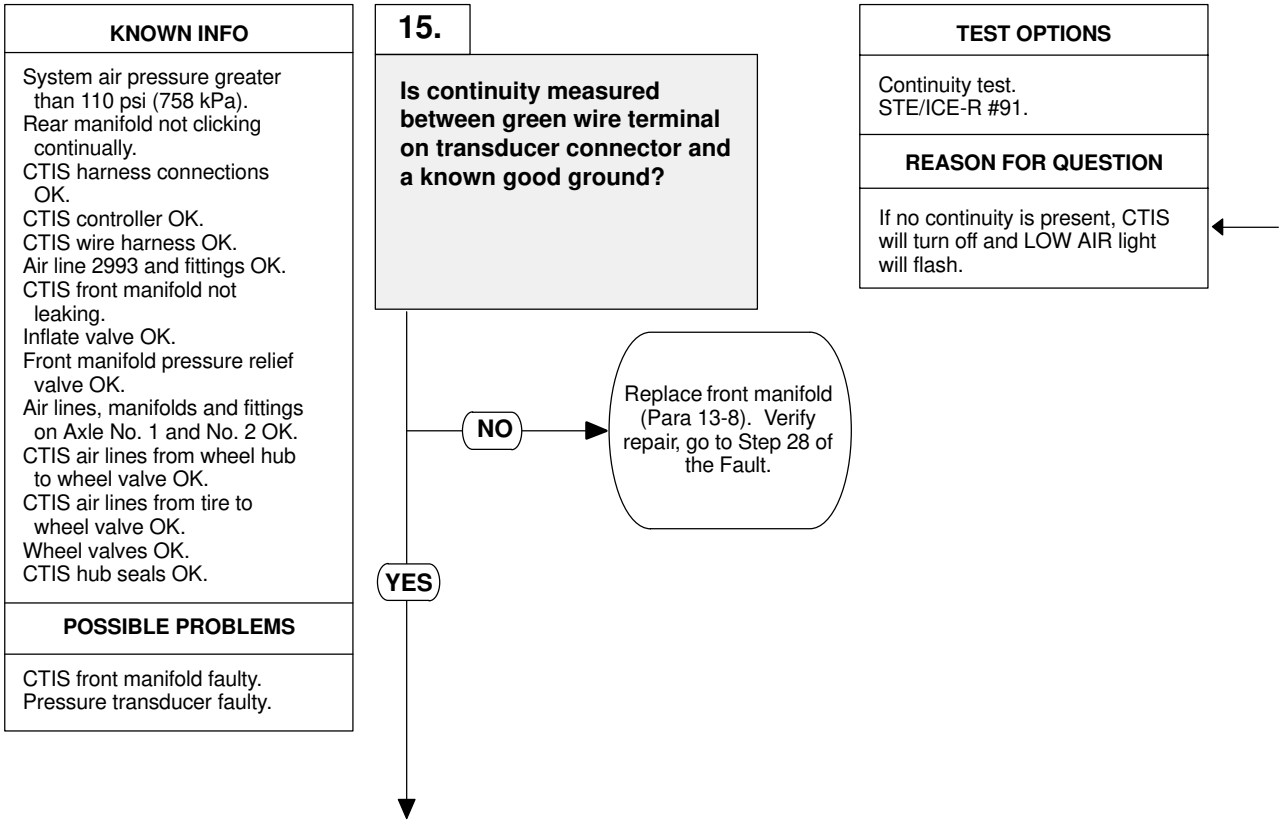
VOLTAGE TEST

(1) Disconnect connector from transducer on front manifold.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to black wire terminal at transducer connector.
(4) Connect negative (–) multimeter lead to front manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Push CTIS START button.
  (a) If 4.7 to 5.2 vdc are not present, turn OFF ENGINE switch and replace front manifold (Para 13-8).
  (b) If there are 4.7 to 5.2 vdc present, turn OFF ENGINE switch and go to Step 15 of this Fault.

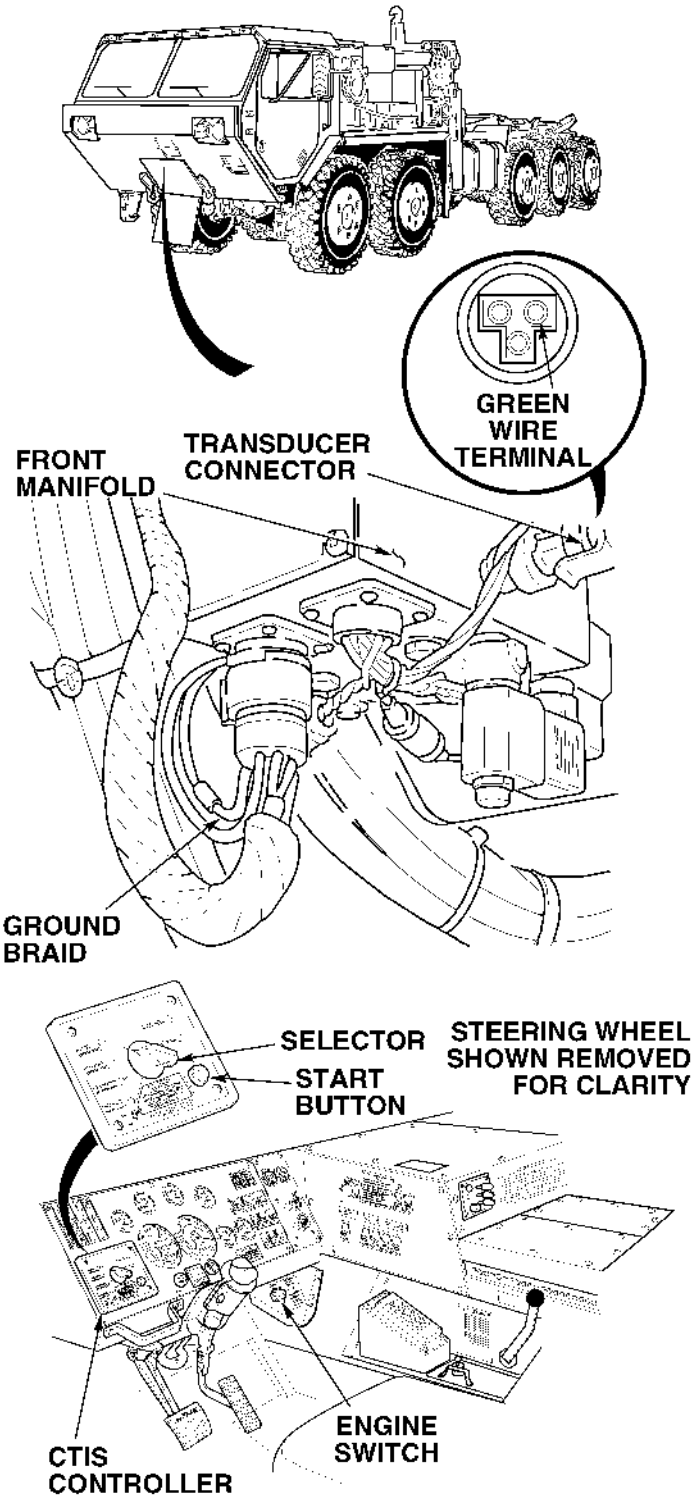




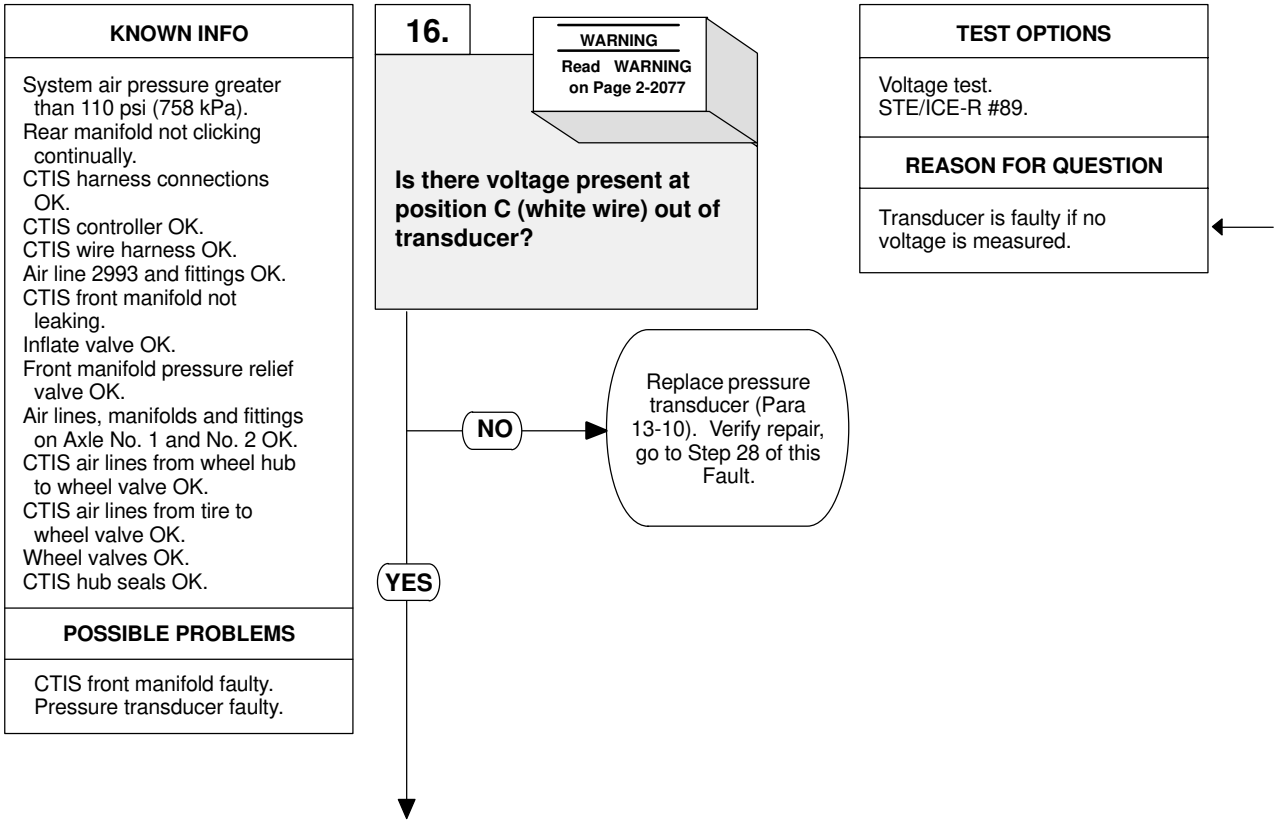
10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



CONTINUITY TEST
(1) Set multimeter select switch to ohms. (2) Is there continuity between pressure transducer connector, green wire terminal and a known good ground? (a) If there is no continuity, replace front manifold (Para 13-8). (b) If there is continuity, go to Step 16 of this Fault.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

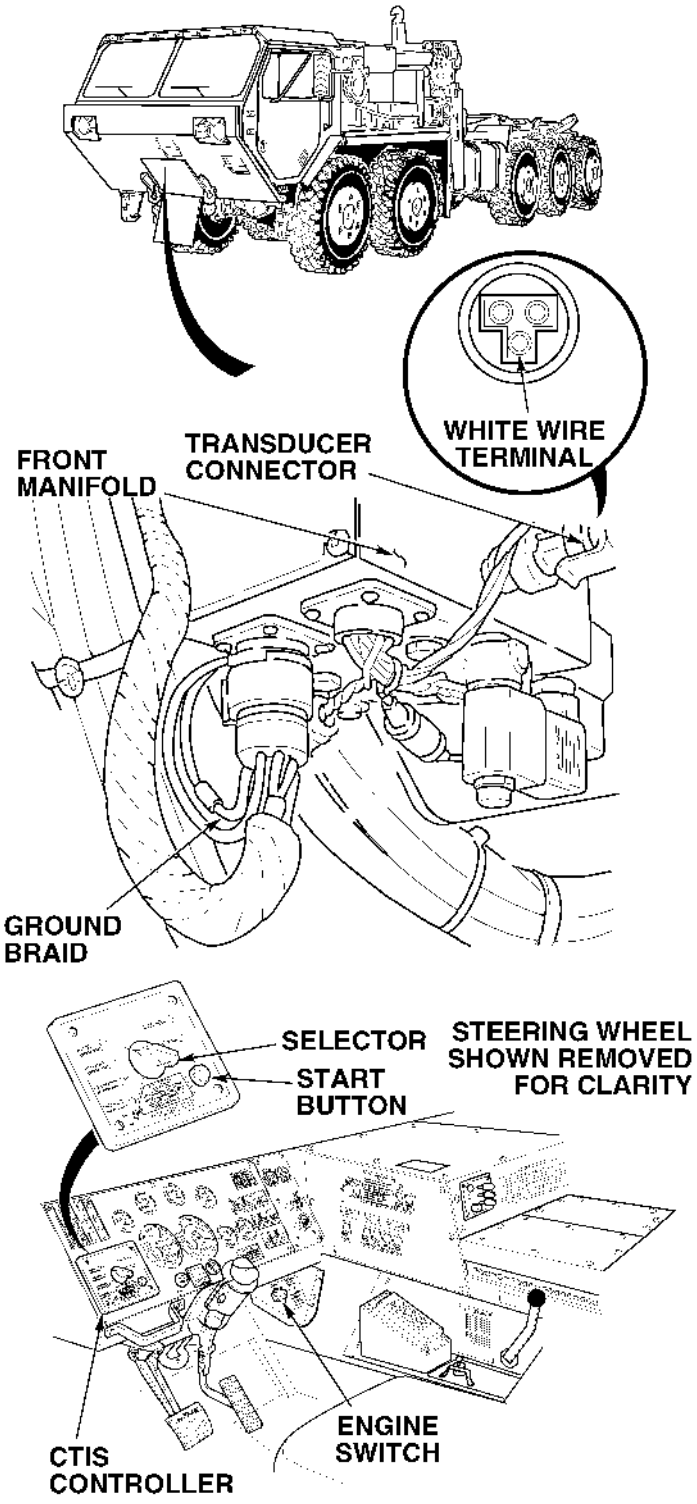
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

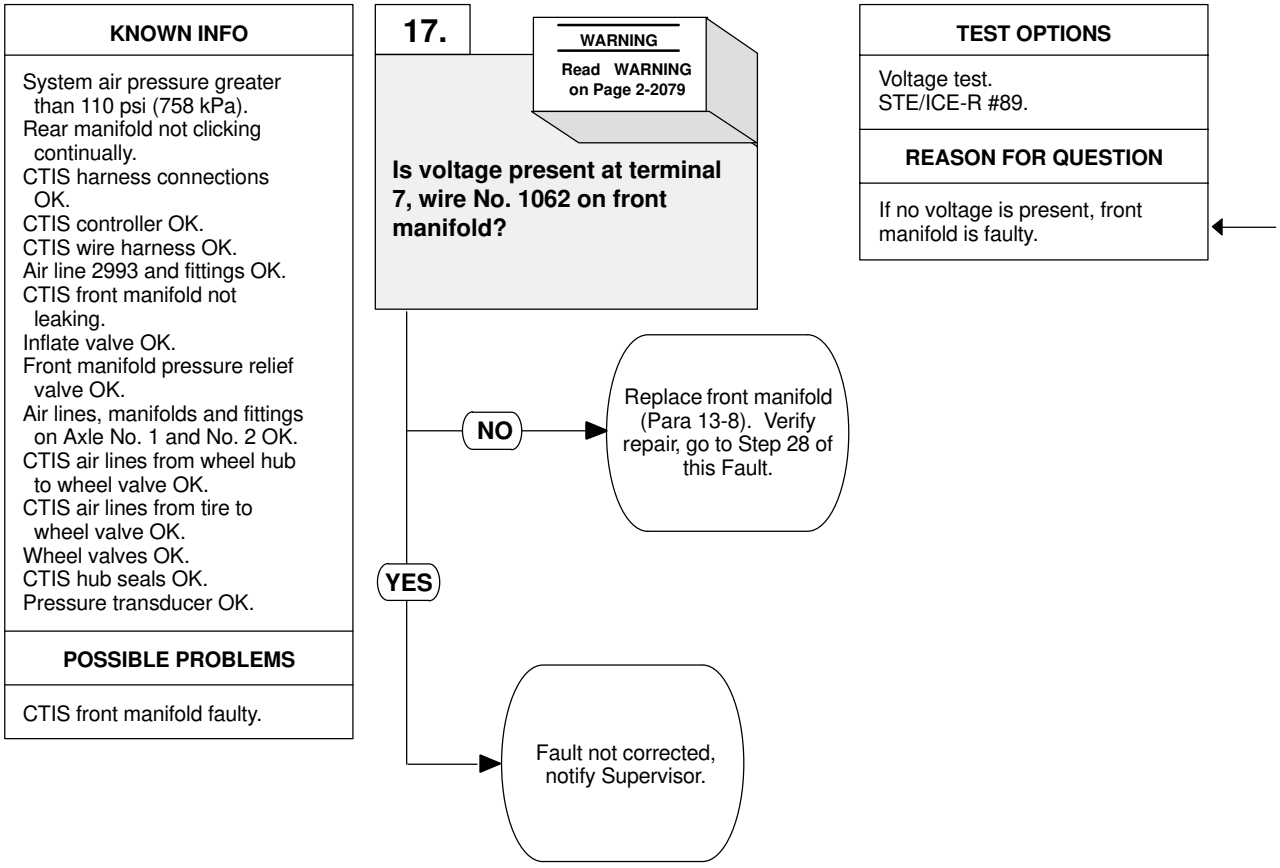
All connectors must be fully plugged in to perform this test.

VOLTAGE TEST

(1) Connect pressure transducer connector to pressure transducer.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to white wire.
(4) Connect negative (–) multimeter lead to manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) While assistant presses CTIS START button, check multimeter for any vdc.
  (a) If no vdc is measured, replace transducer (Para 13-10).
  (b) If any vdc is measured, go to Step 17 of this Fault.
(7) Turn OFF ENGINE switch.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

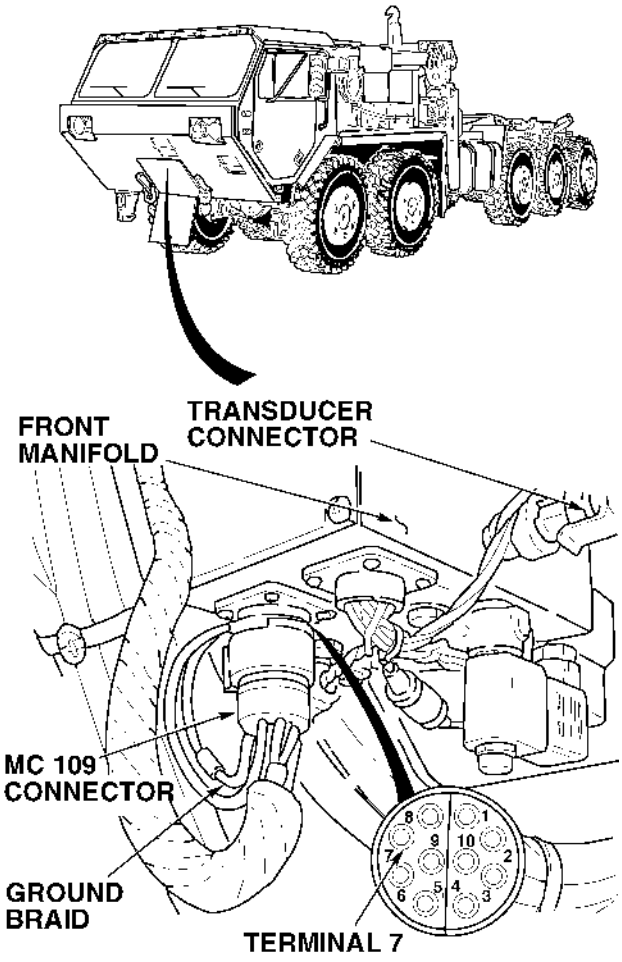
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

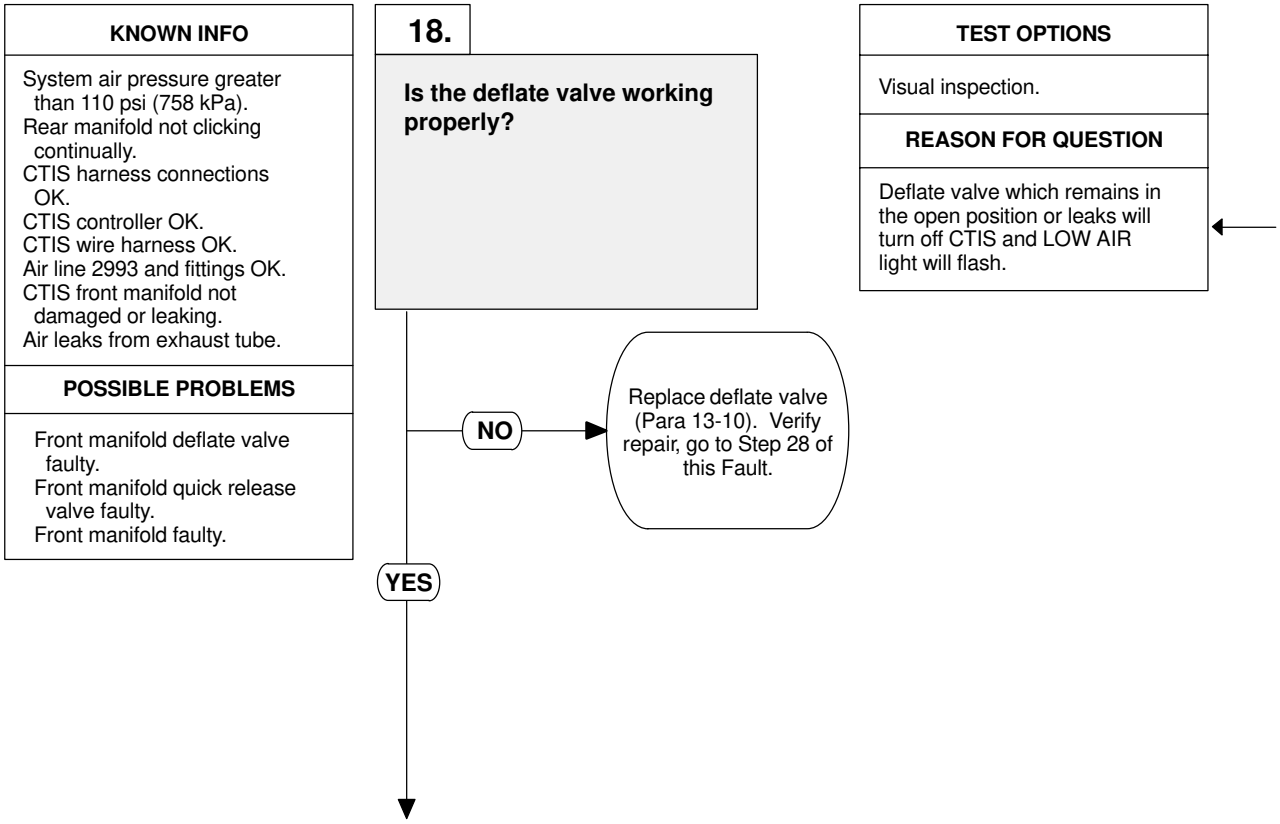
All connectors must be fully plugged in to perform this test.

VOLTAGE TEST

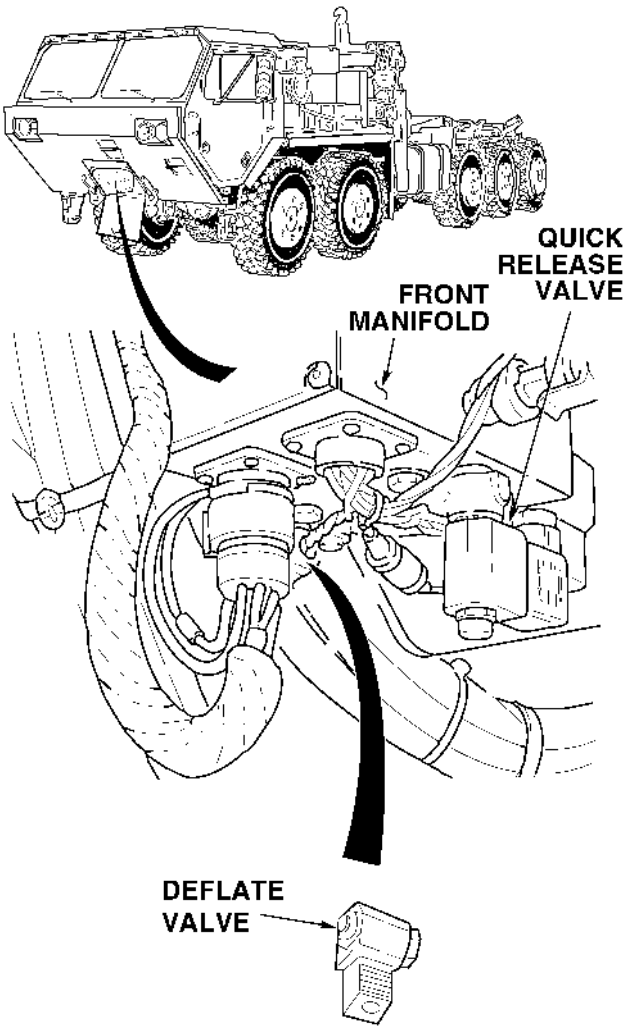
(1) Connect positive (+) multimeter lead (with long probe installed) on terminal 7 at front manifold wire harness.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch.
(4) As assistant pushes CTIS START button.
  (a) If there is no voltage present, replace front manifold (Para 13-8).
  (b) If there is voltage, Fault is not corrected. Notify Supervisor.
(5) Turn OFF ENGINE switch.
(6) Close front access cover (TM 9-2320-364-10).



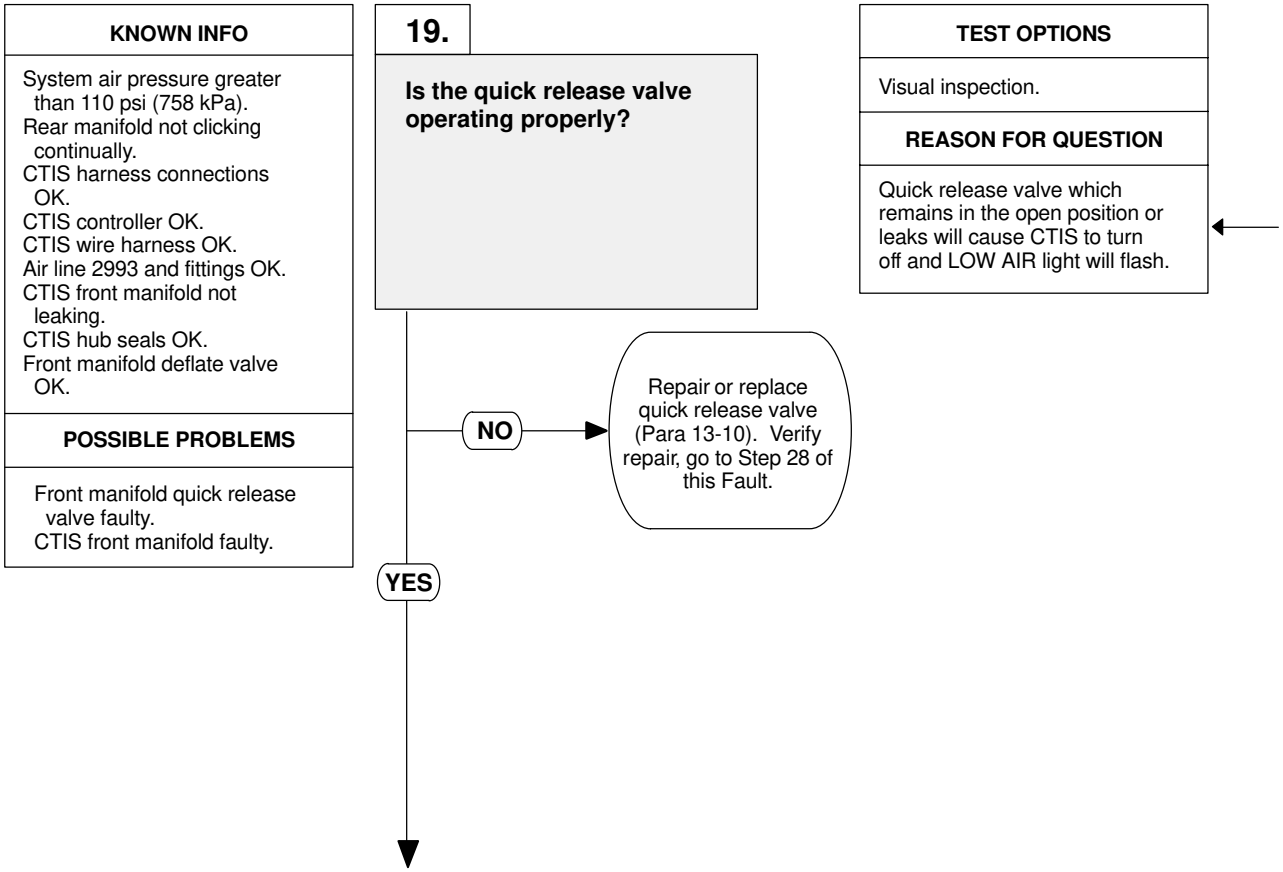
10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

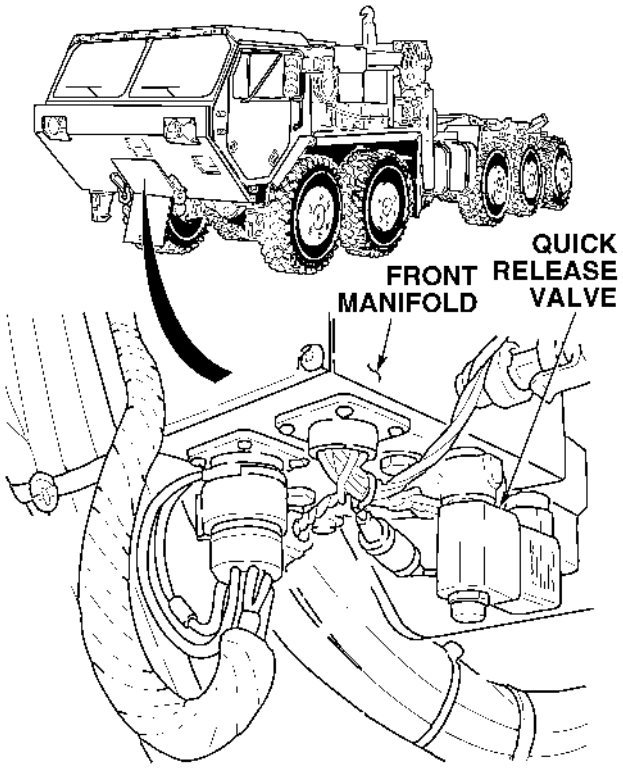


VISUAL INSPECTION
(1) Remove deflate valve from front manifold (Para 13-10). (2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking, or any other physical damage. (a) If deflate valve is damaged, repair or replace deflate valve (Para 13-10). (b) If deflate valve is not damaged, install deflate valve and go to Step 19 of this Fault.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

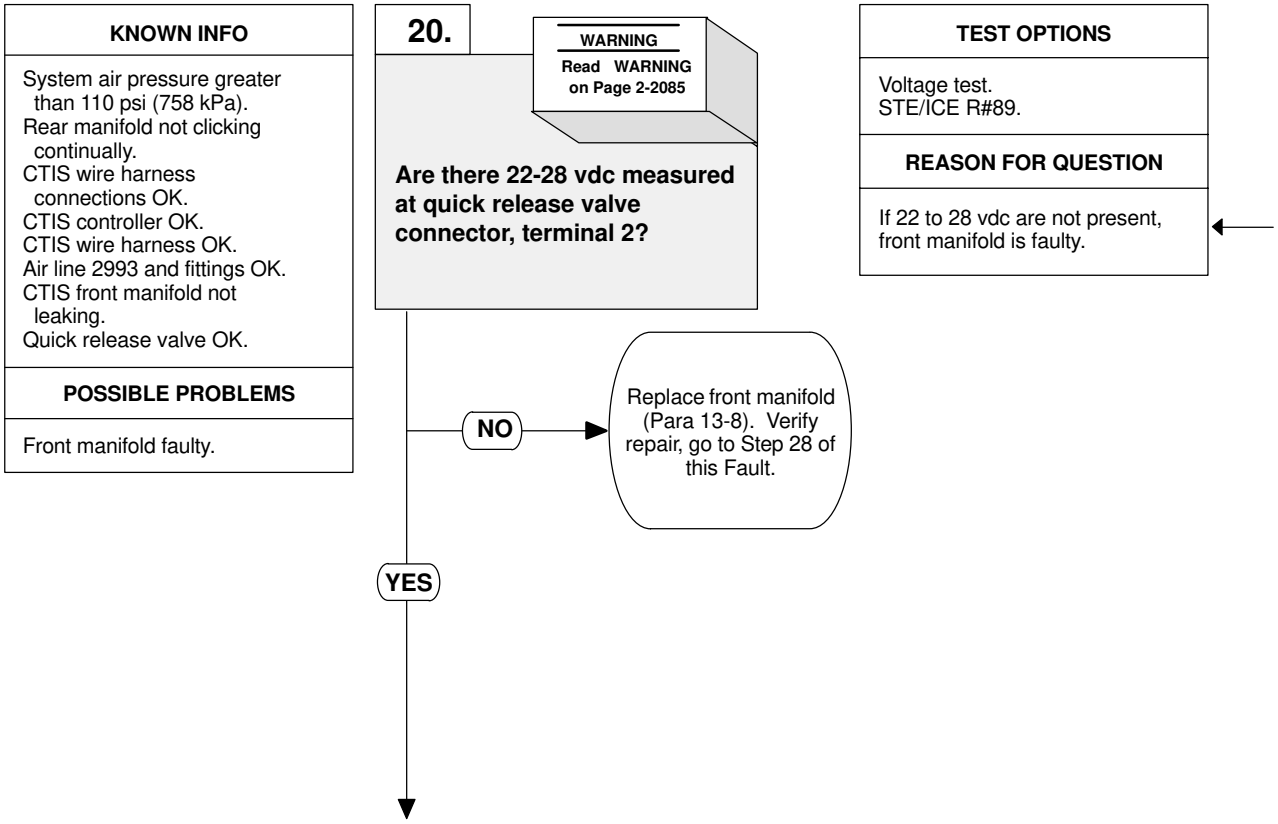




VISUAL INSPECTION

(1) Remove quick release valve from front manifold (Para 13-10).
(2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking or any other physical damage.
    (a) If quick release valve is damaged, repair or replace quick release valve (Para 13-10).
    (b) If quick release valve is not damaged, go to Step 20 of this Fault.

10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

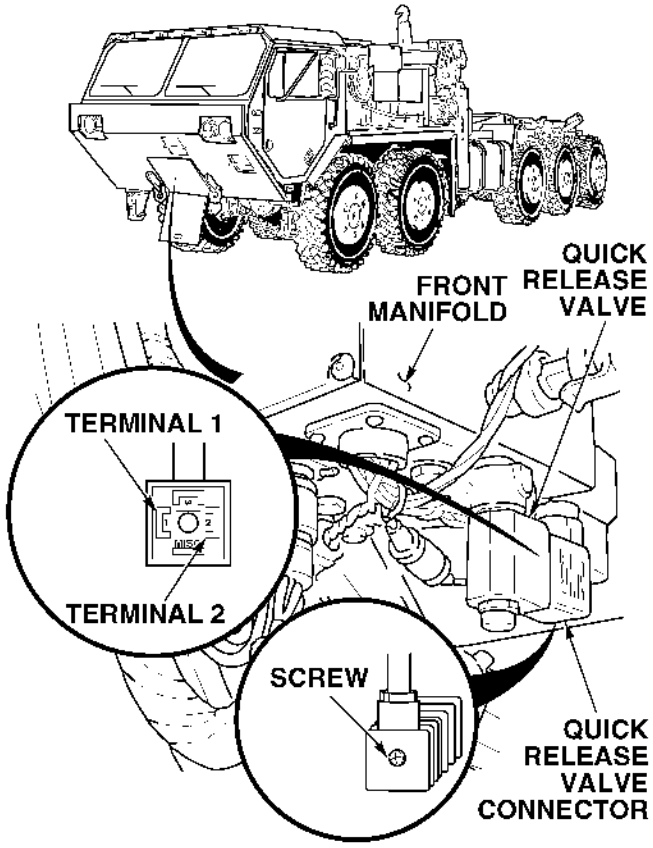


WARNING

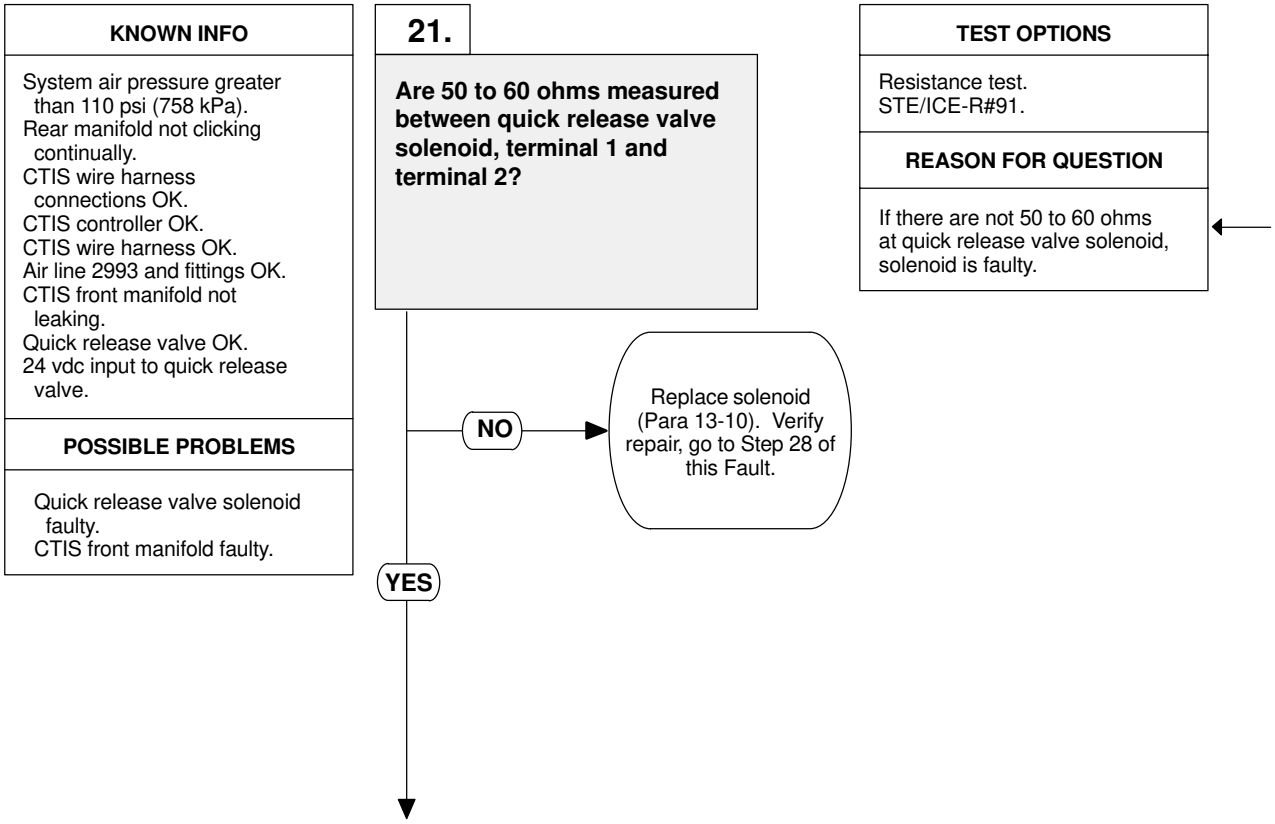
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen screw and disconnect quick release valve connector.
(2) Connect positive (+) multimeter lead to quick release valve connector, terminal 2.
(3) Connect negative (–) multimeter lead to front manifold ground braid.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Assistant pushes CTIS START button.
    (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace front manifold (Para 13-8).
    (b) If 22 to 28 vdc are present, go to Step 21 of this Fault.

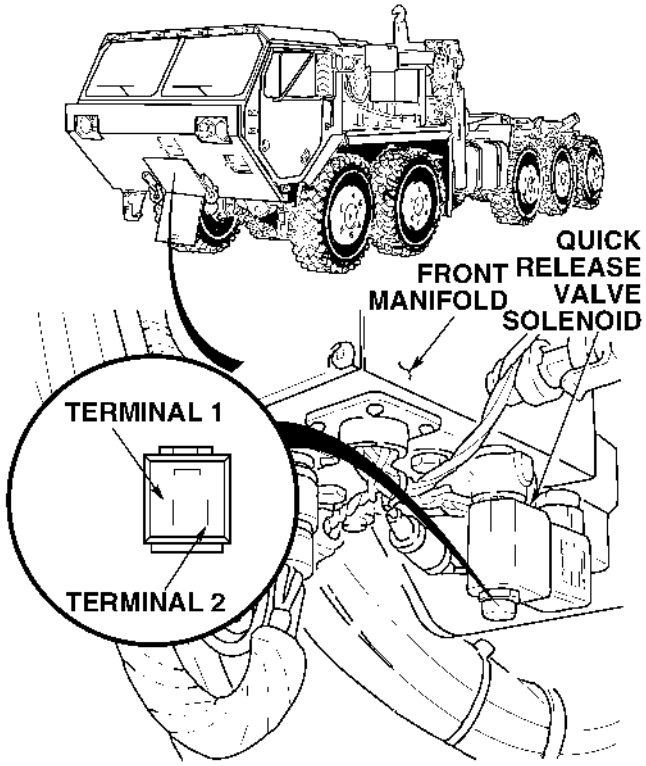


10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

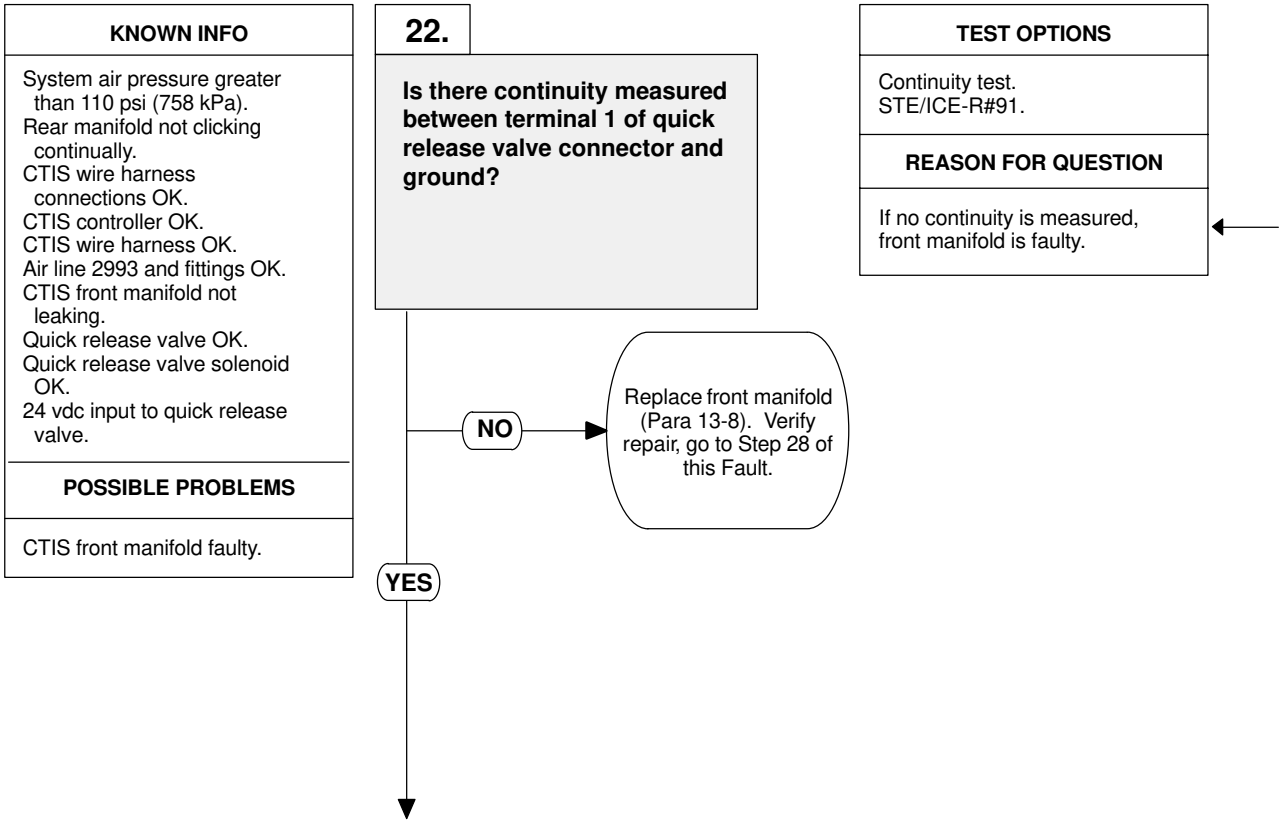


RESISTANCE TEST

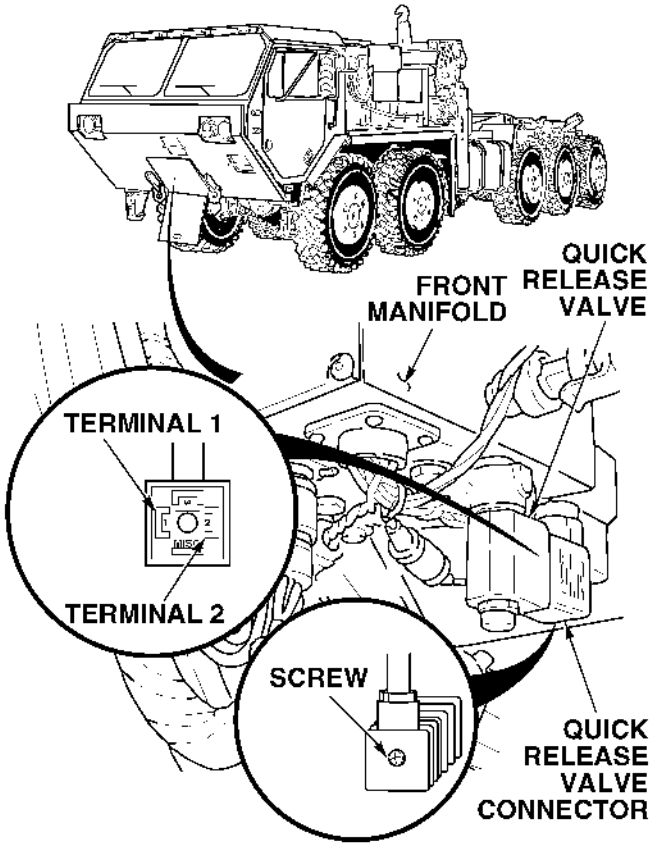
(1) Set multimeter select switch to ohms.
(2) Read resistance between terminal 1 and 2 of quick release valve solenoid.
  (a) If there are not 50 to 60 ohms, replace solenoid (Para 13-10).
  (b) If there are 50 to 60 ohms, solenoid is OK, go to Step 22 of this Fault.



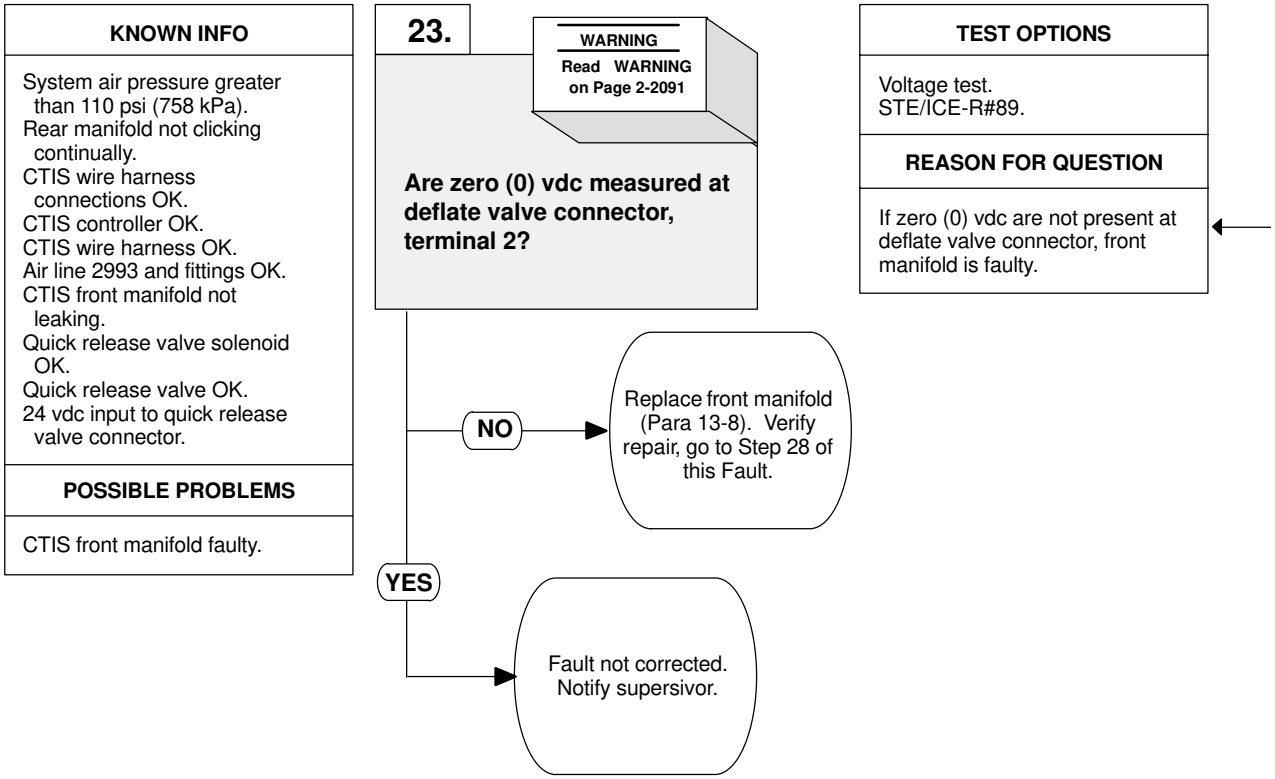
10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



CONTINUITY TEST
Is there continuity measured between terminal 1 at quick release valve connector and a known good ground? (1) If there is no continuity measured, replace front manifold (Para 13-8). (2) If there is continuity measured, install harness connector on quick release valve and tighten screw.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

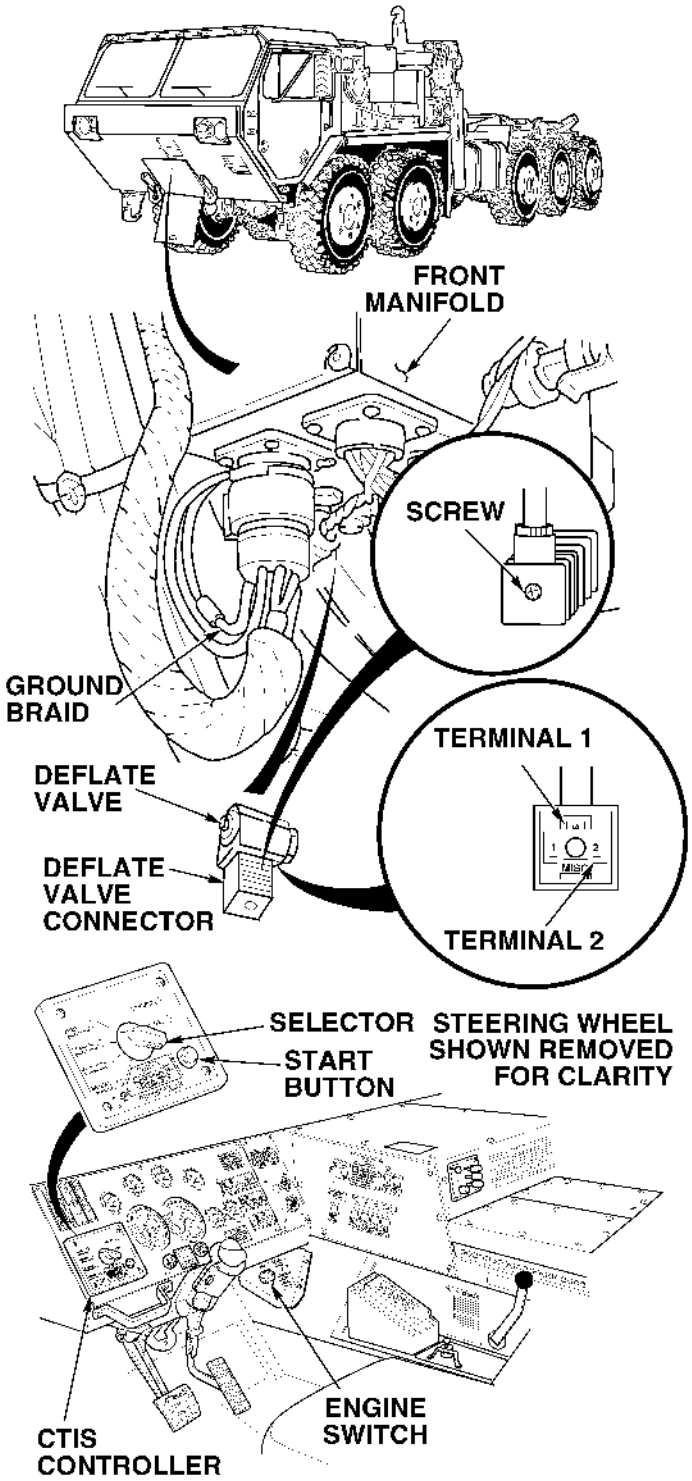
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

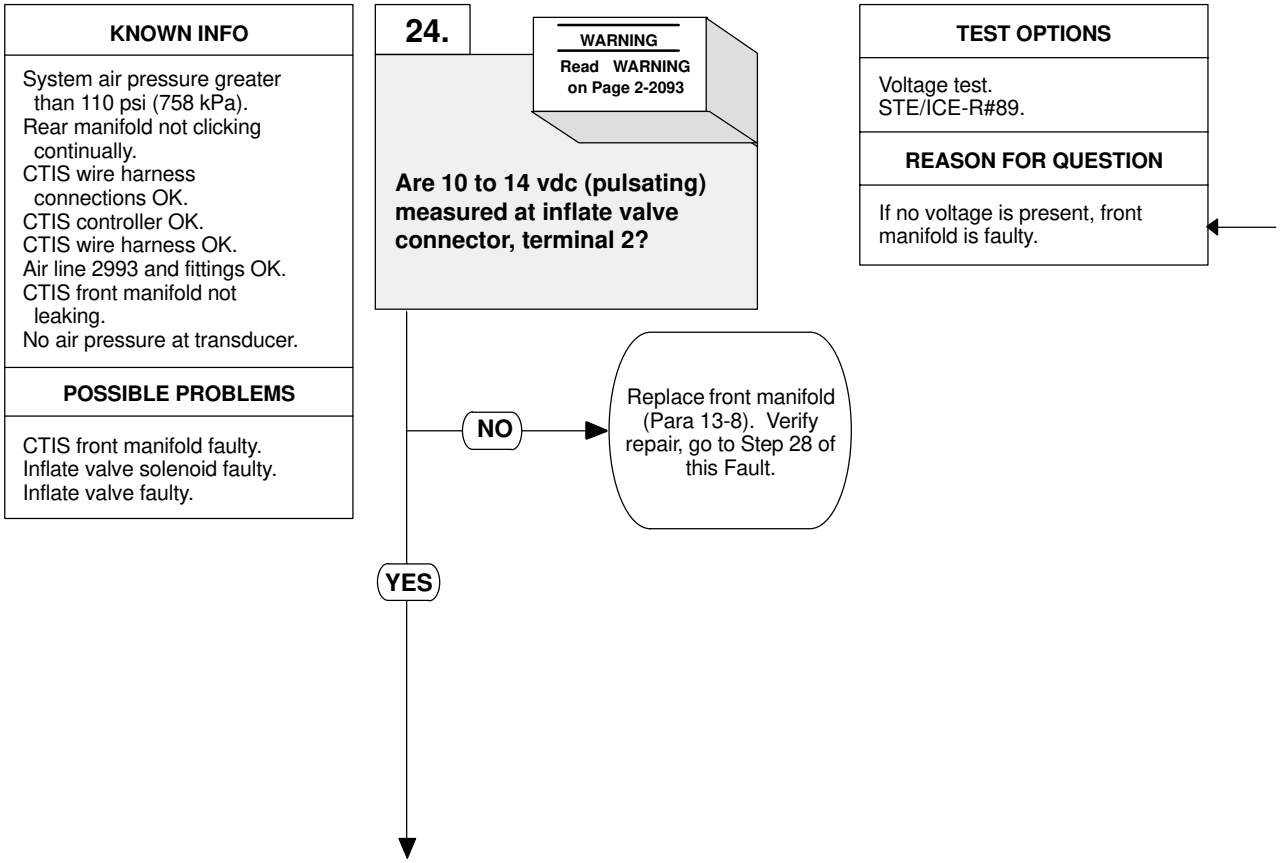
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VOLTAGE TEST

(1) Loosen screw and disconnect deflate valve connector from front manifold.
(2) Connect positive (+) multimeter lead to deflate valve connector, terminal 2.
(3) Connect negative (–) multimeter lead to front manifold ground braid.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Assistant pushes CTIS START button.
  (a) If 22 to 28 vdc are present, turn OFF ENGINE switch and replace front manifold.
  (b) If zero (0) vdc are present, manifold is OK. Fault not corrected, notify supervisor.
(6) Turn OFF ENGINE switch.
(7) Connect deflate valve connector and tighten screw.
(8) Install front CTIS manifold cover (Para 13-8).
(9) Close front access cover.



10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

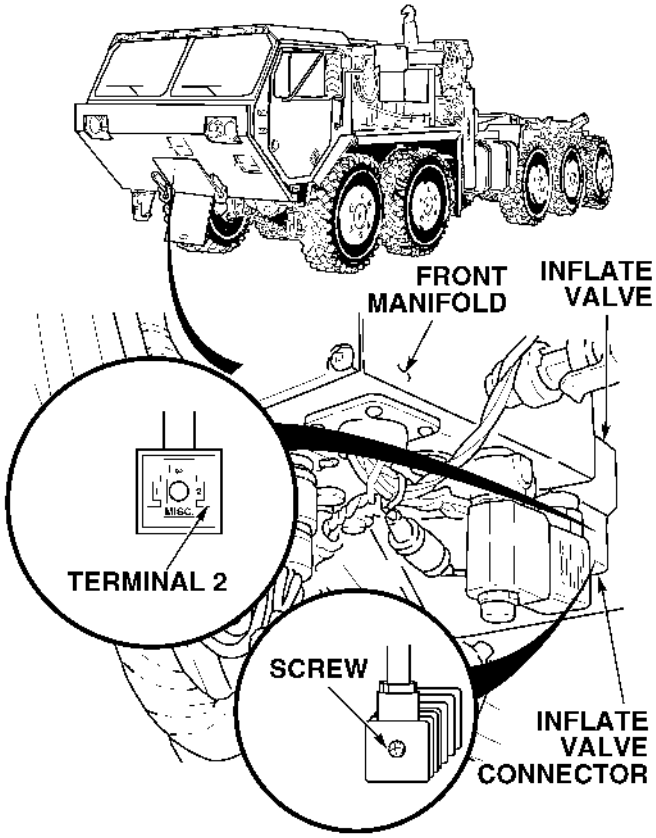
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

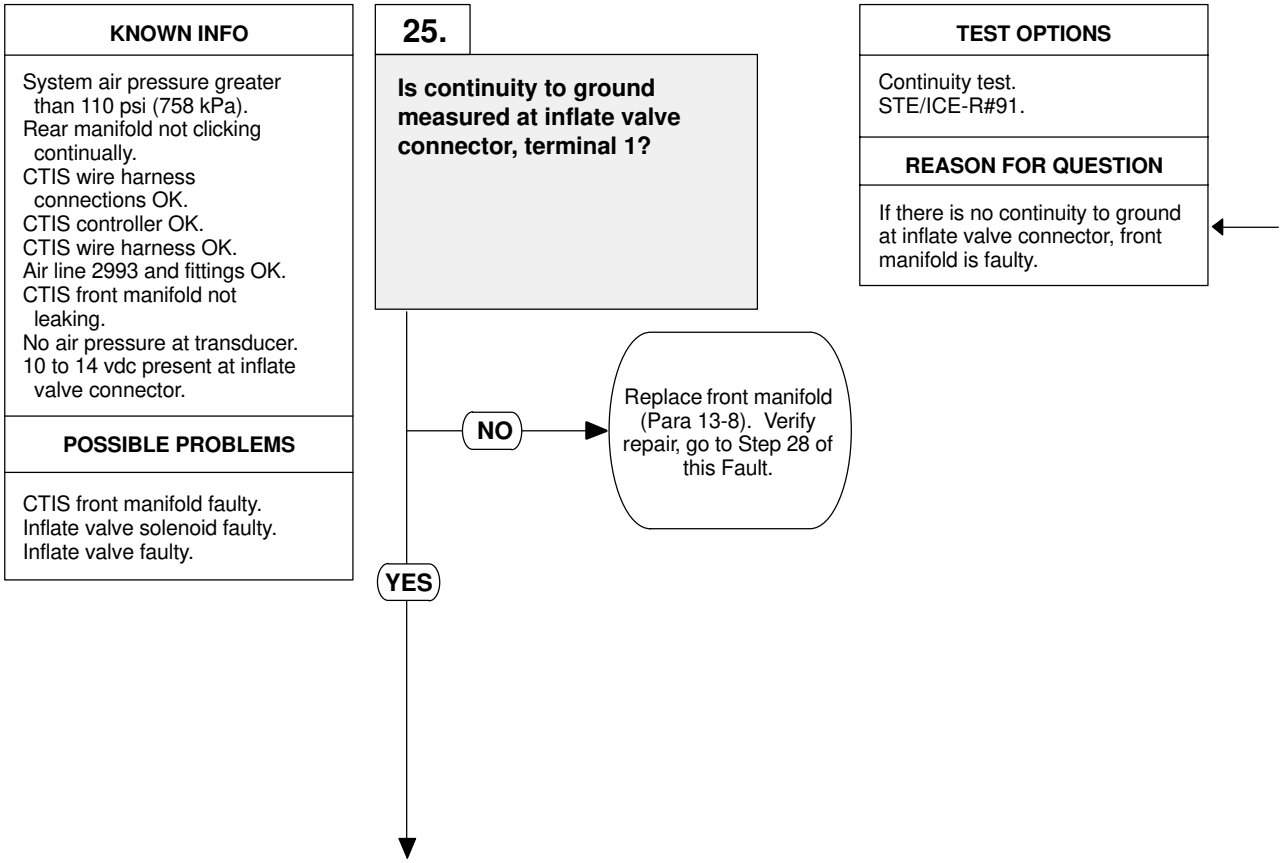
- 10 to 14 vdc (pulsating) will cycle at least five times, then drop to 0 vdc.
- During the cycle course of this test, 10 to 14 vdc will be measured intermittently, then drop to 0 vdc.
- Voltmeter must read 10 to 14 vdc at least one time before dropping to 0 vdc.

VOLTAGE TEST

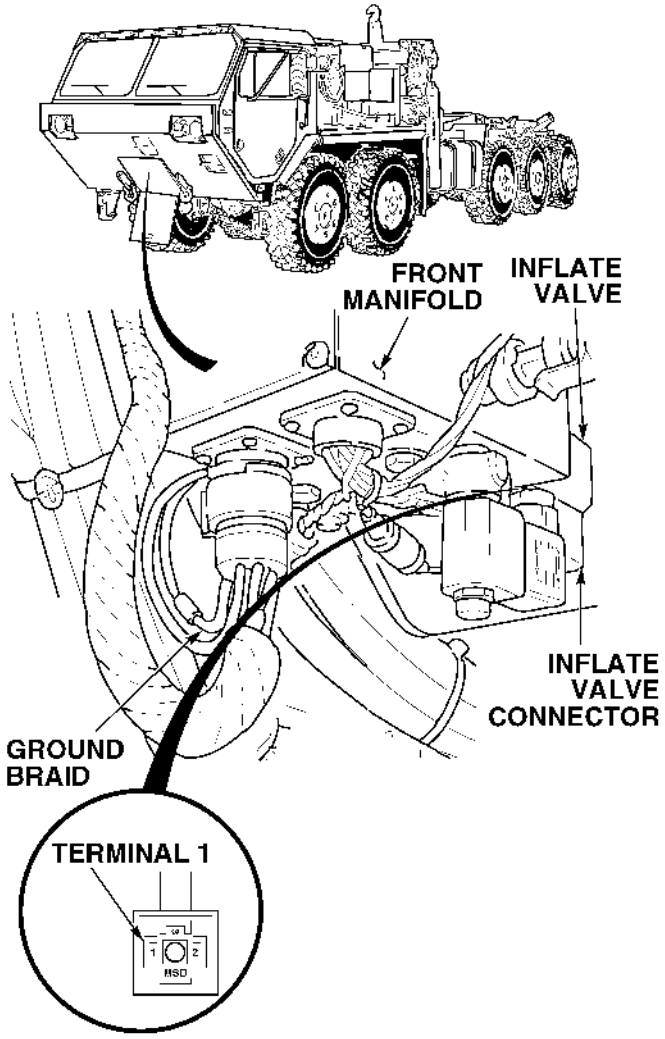
(1) Loosen screw and disconnect inflate valve connector.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to inflate valve harness connector, terminal 2.
(4) Connect negative (–) multimeter lead to front manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Assistant pushes CTIS START button.
  (a) If 10 to 14 vdc (pulsating) are not present, turn OFF ENGINE switch and replace front manifold (Para 13-8).
  (b) If 10 to 14 vdc (pulsating) are present, turn OFF ENGINE switch and go to Step 25 of this Fault.



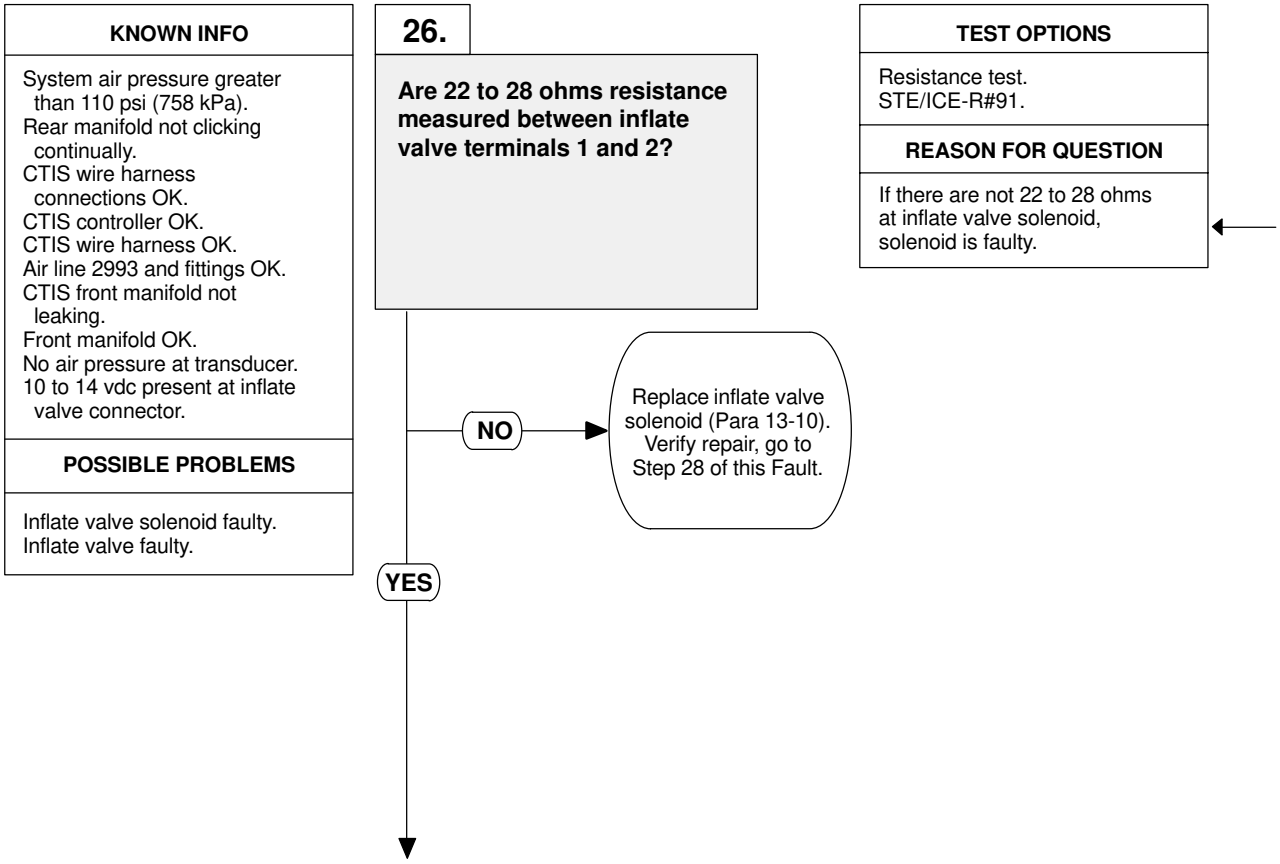
10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



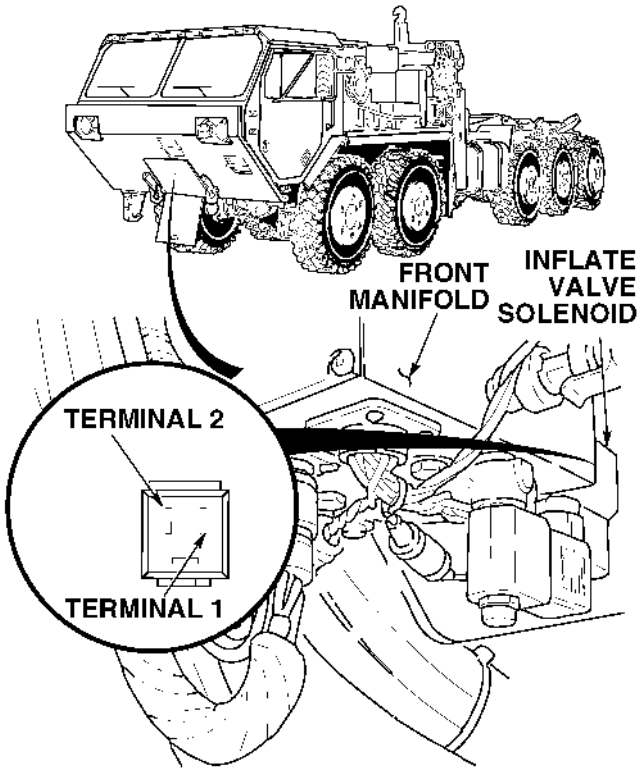
CONTINUITY TEST
(1) Set multimeter select switch to ohms. (2) Is there continuity between inflate valve connector, terminal 1 and front manifold ground braid? (a) If there is no continuity, replace front manifold (Para 13-8). (b) If there is continuity, go to Step 26 of this Fault.



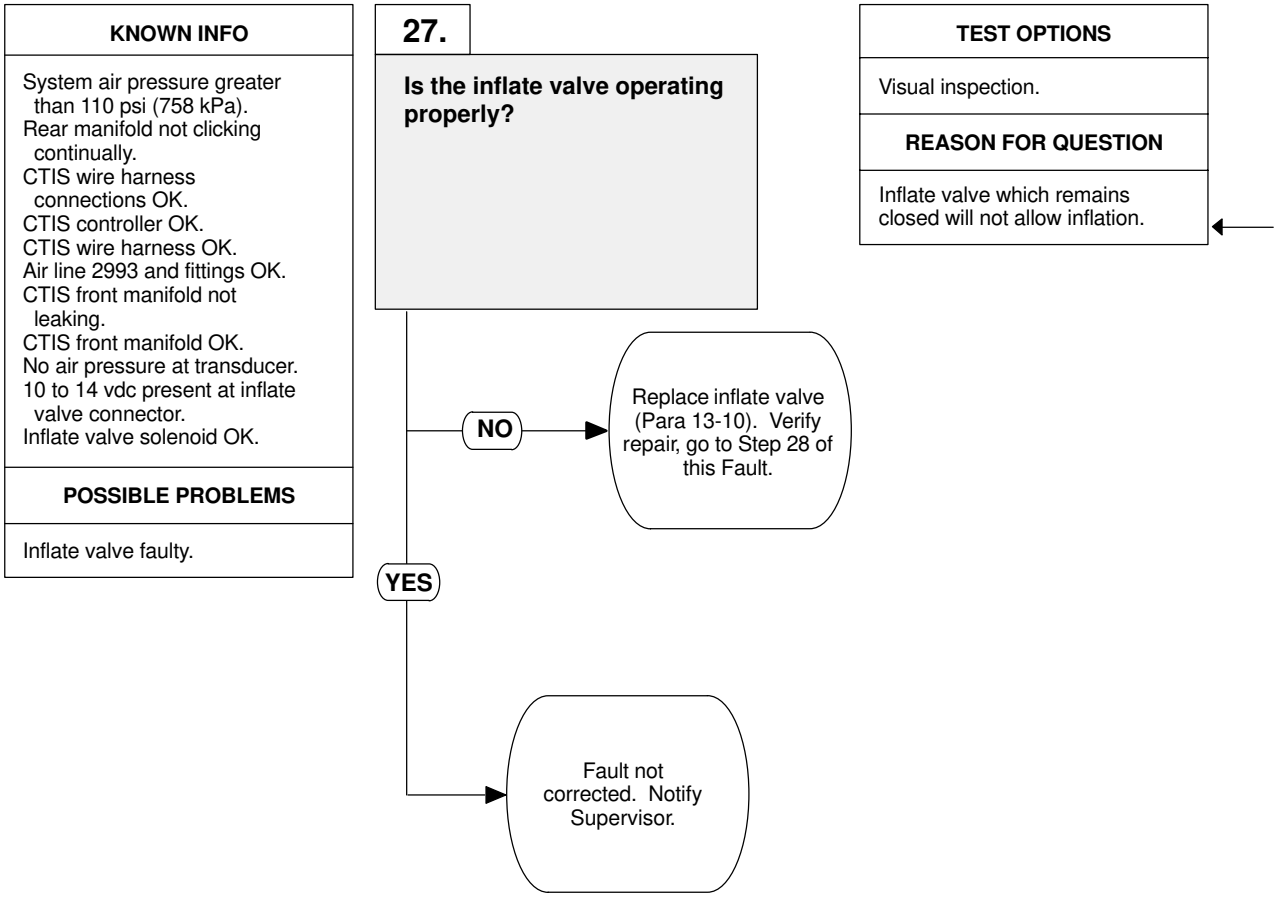
10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



RESISTANCE TEST
Read resistance between terminals 1 and 2 of inflate valve solenoid. (1) If there are not 22 to 28 ohms, replace inflate valve solenoid (Para 13-10). (2) If there are 22 to 28 ohms, inflate valve solenoid is OK, go to Step 27 of this Fault.

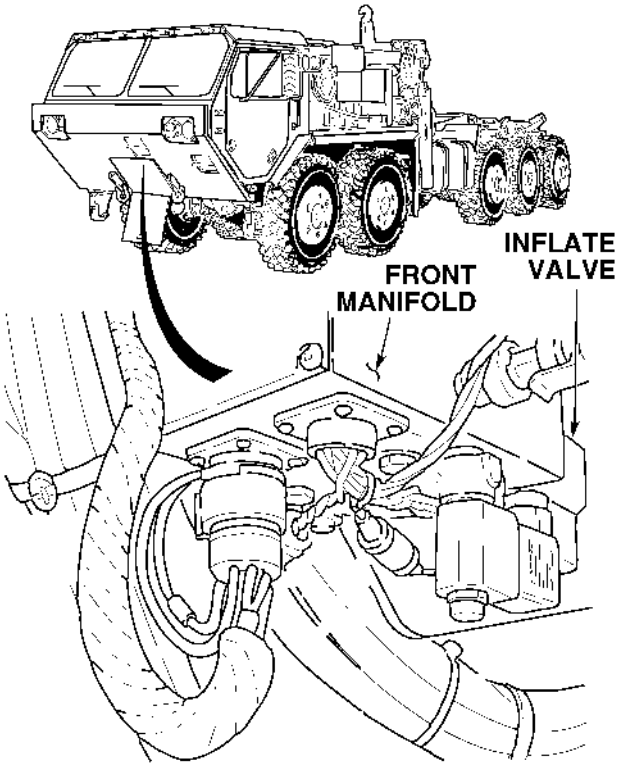


10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

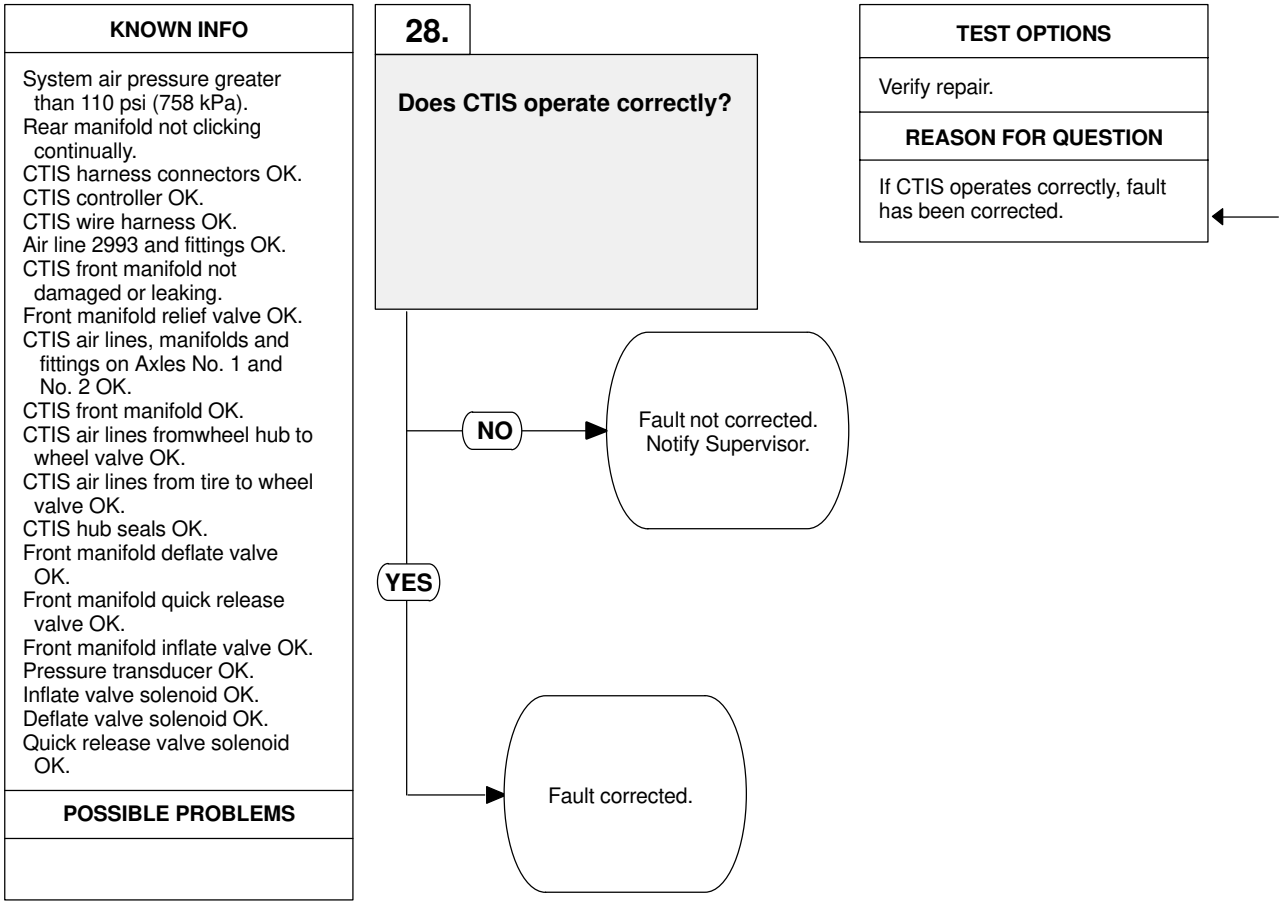


VISUAL INSPECTION

(1) Remove inflate valve from front manifold (Para 13-10).
(2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking or any other physical damage.
  (a) If inflate valve is damaged, repair or replace inflate valve (Para 13-10).
  (b) If inflate valve is not damaged, fault is not corrected. Notify Supervisor.
(3) Install inflate valve.
(4) Connect inflate valve harness connector and tighten screw.
(5) Install front CTIS manifold cover (Para 13-8).
(6) Close front access cover (TM 9-2320-364-10).

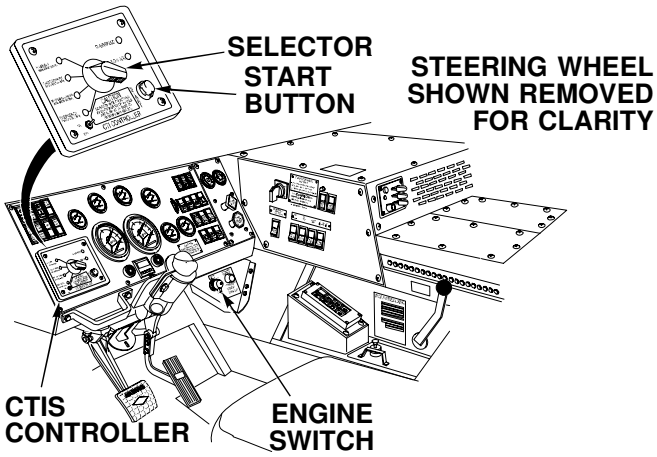


10. FRONT MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
    (a) If front manifold clicks continually and LOW AIR light flashes, fault not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If front manifold does not click continuously and LOW AIR light does not flash, fault has been corrected.
(4) Turn OFF ENGINE switch.



2-26. CENTRAL TIRE INFLATION (CTIS) TROUBLESHOOTING (CONT).

11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING.

INITIAL SETUP

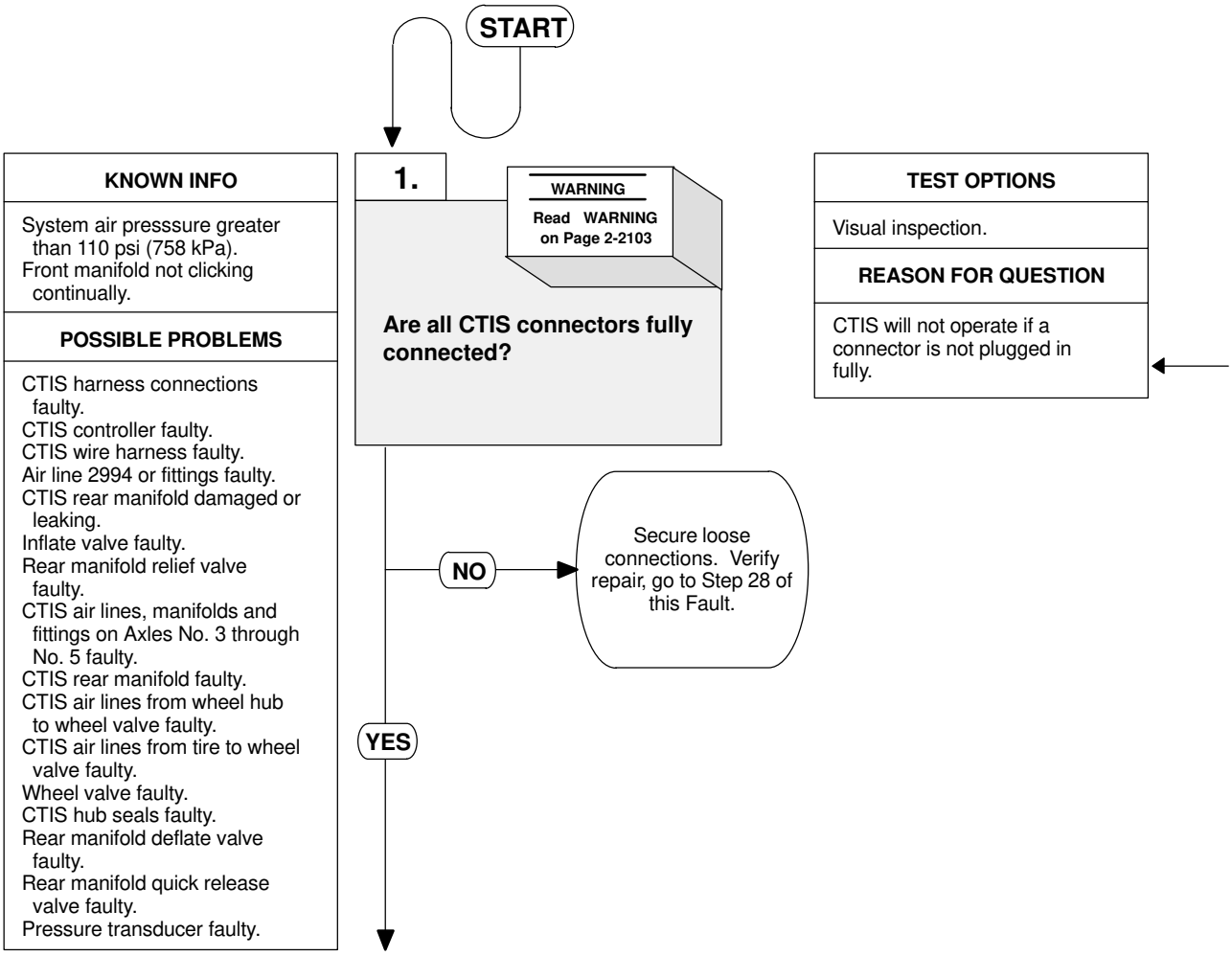
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Multimeter (Item 44, Appendix G)
Jumperwire

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

Personnel Required
Two

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)
LHS extended fully, (TM 9-2320-364-10)
CTIS rear manifold cover removed, (Para 13-9)
CTIS turned on, (TM 9-2320-364-10)



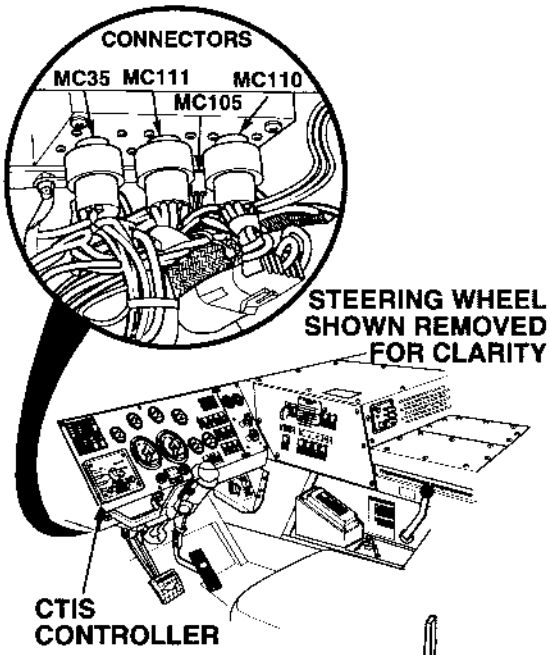
WARNING

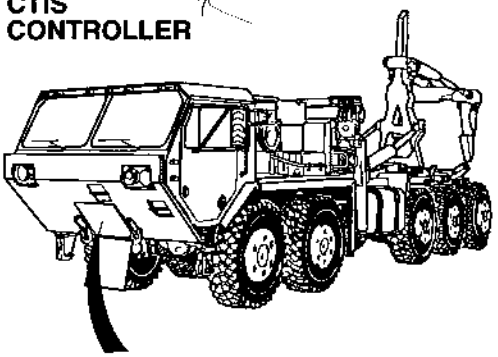
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

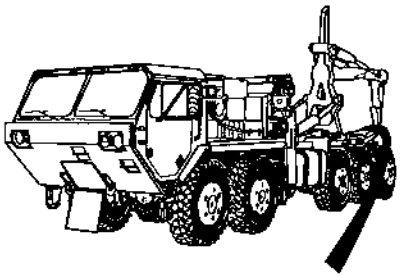
NOTE

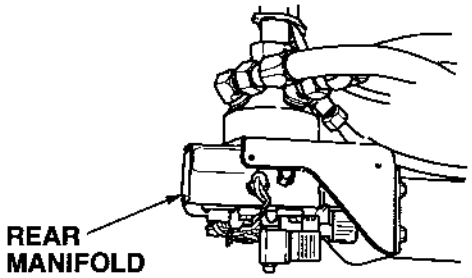
The CTIS initially and periodically checks for system air leaks. The CTIS controller will display a flashing LOW AIR light and shut off if 6 psi (41 kPa) cannot be maintained by the CTIS. The manifold will click during this check for approximately 1-1/2 minutes.

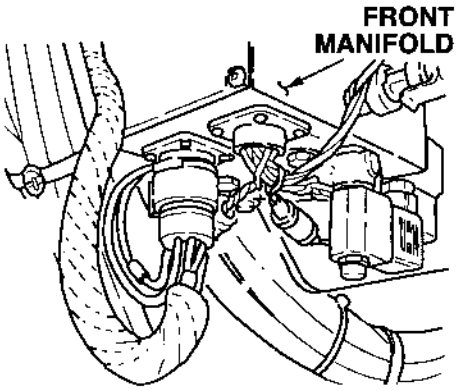
VISUAL INSPECTION
(1) Inspect CTIS controller, front and rear manifolds to ensure that all connectors are fully plugged in. (a) If connectors are not plugged in, secure connectors. (b) If connectors are plugged in, go to Step 2 of this Fault. (2) Close front access cover (TM 9-2320-364-10).



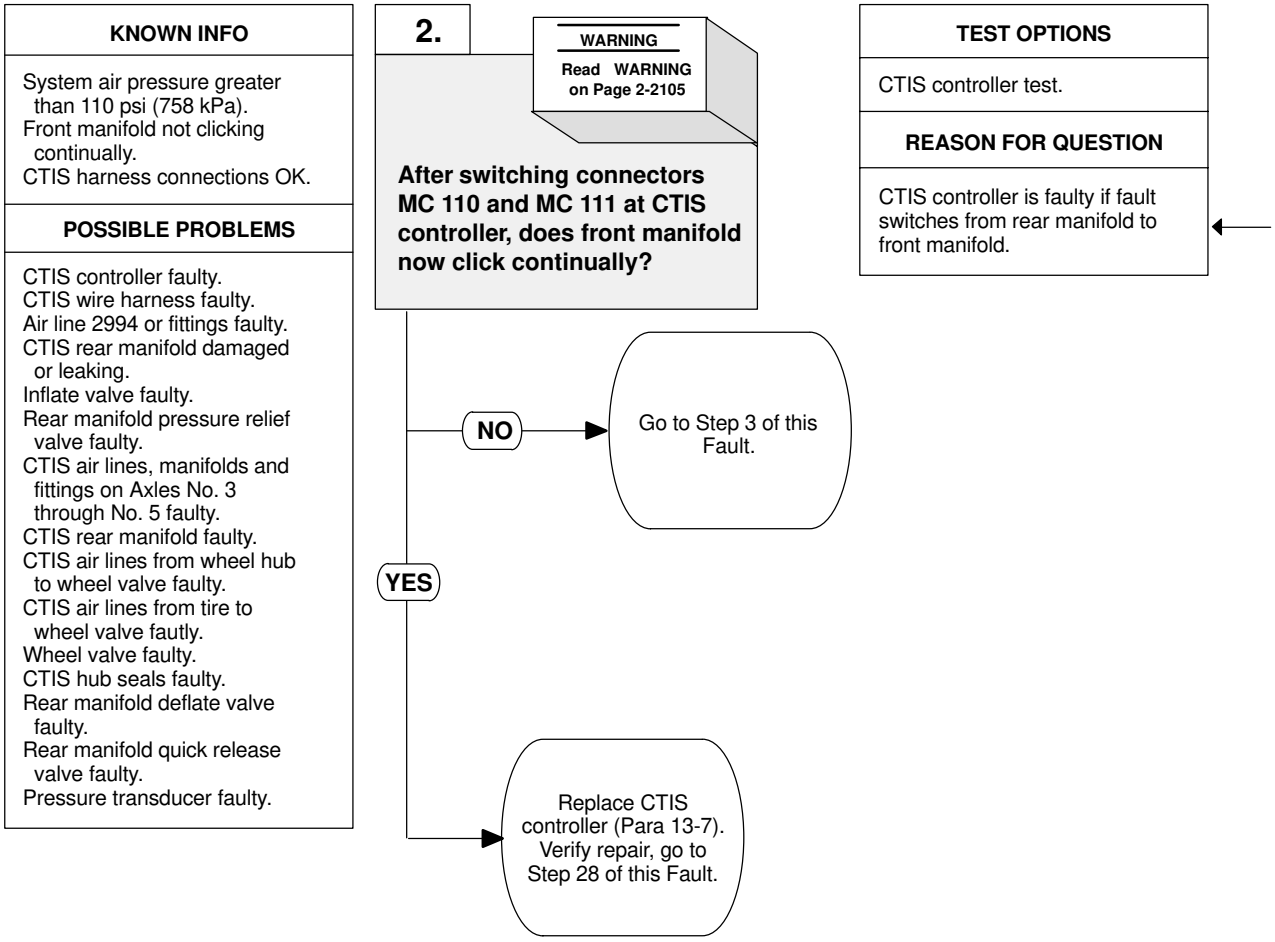








11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

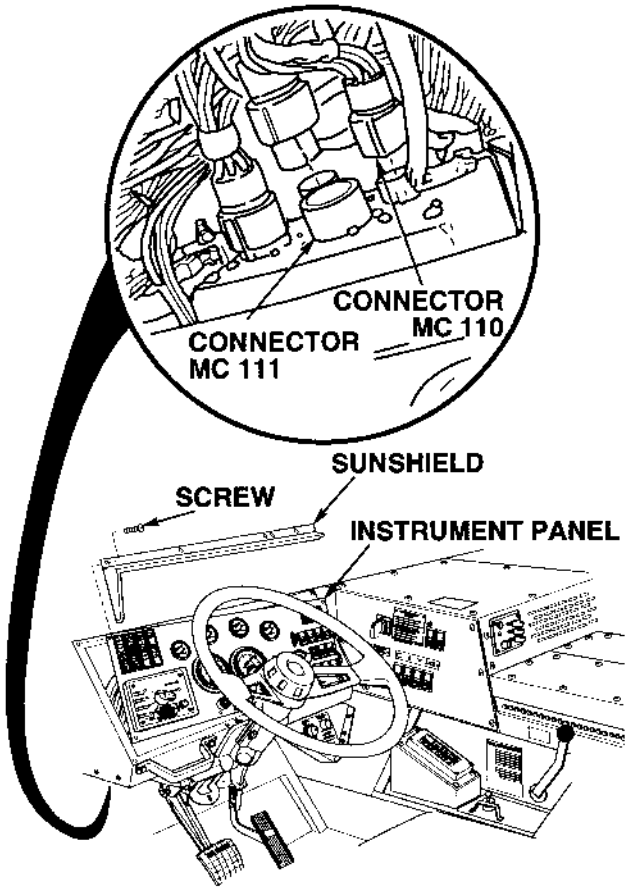


WARNING

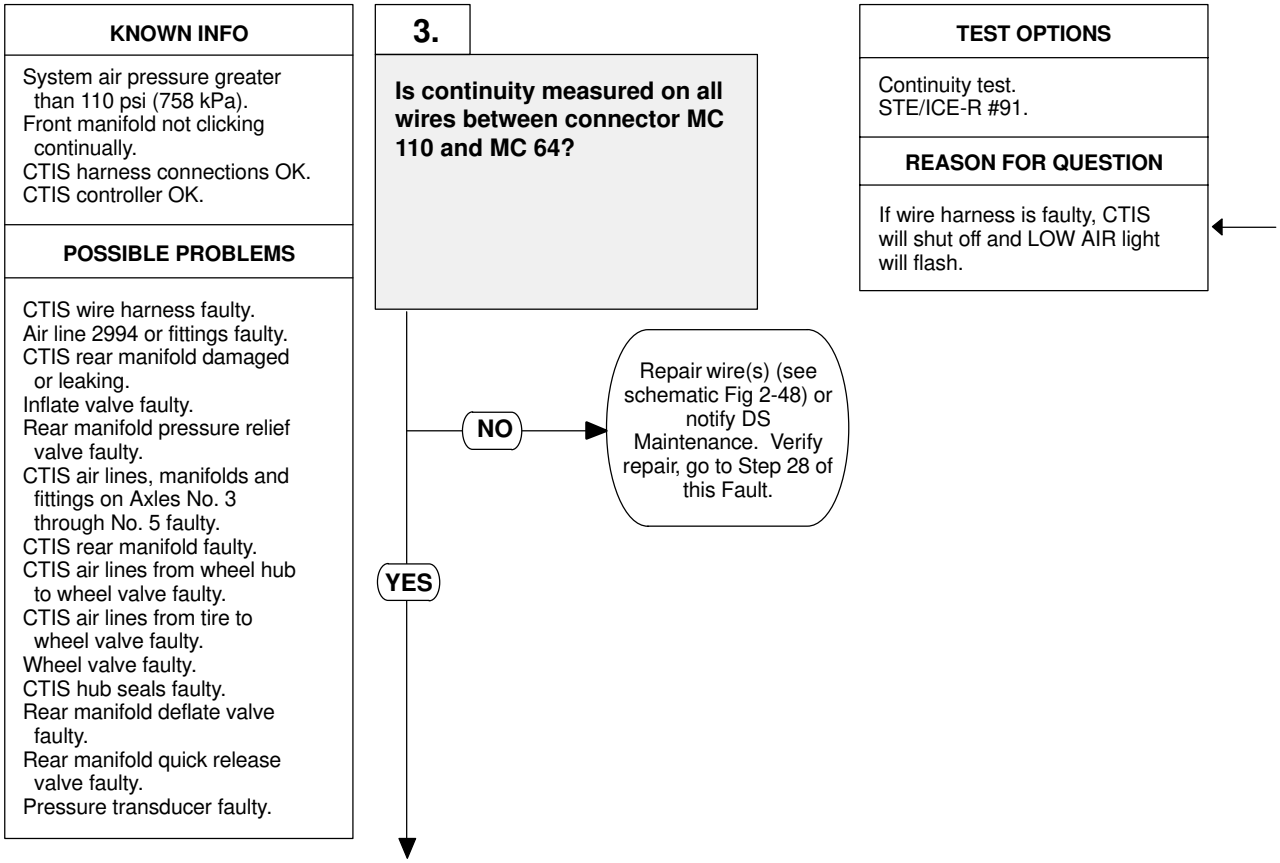
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CTIS CONTROLLER TEST

(1) Remove ten screws, sunshield and tilt instrument panel.
(2) Disconnect front manifold harness connector MC 110 from back of CTIS controller.
(3) Disconnect rear manifold harness connector MC 111 from back of CTIS controller.
(4) Connect harness connector MC 111 into CTIS controller where connector MC 110 was disconnected.
(5) Connect harness connector MC 110 into CTIS controller where connector MC 111 was disconnected.
(6) Start engine (TM-2320-364-10).
(7) As assistant pushes CTIS controller START button, listen to front manifold for contiuous clicking.
    (a) If front manifold is clicking continuously, replace CTIS controller (Para 13-7).
    (b) If front manifold is not clicking continuously, CTIS controller is OK.
(8) Turn OFF ENGINE switch.
(9) Disconnect and connect connectors MC 110 and MC 111 to correct CTIS controller connectors.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



NOTE

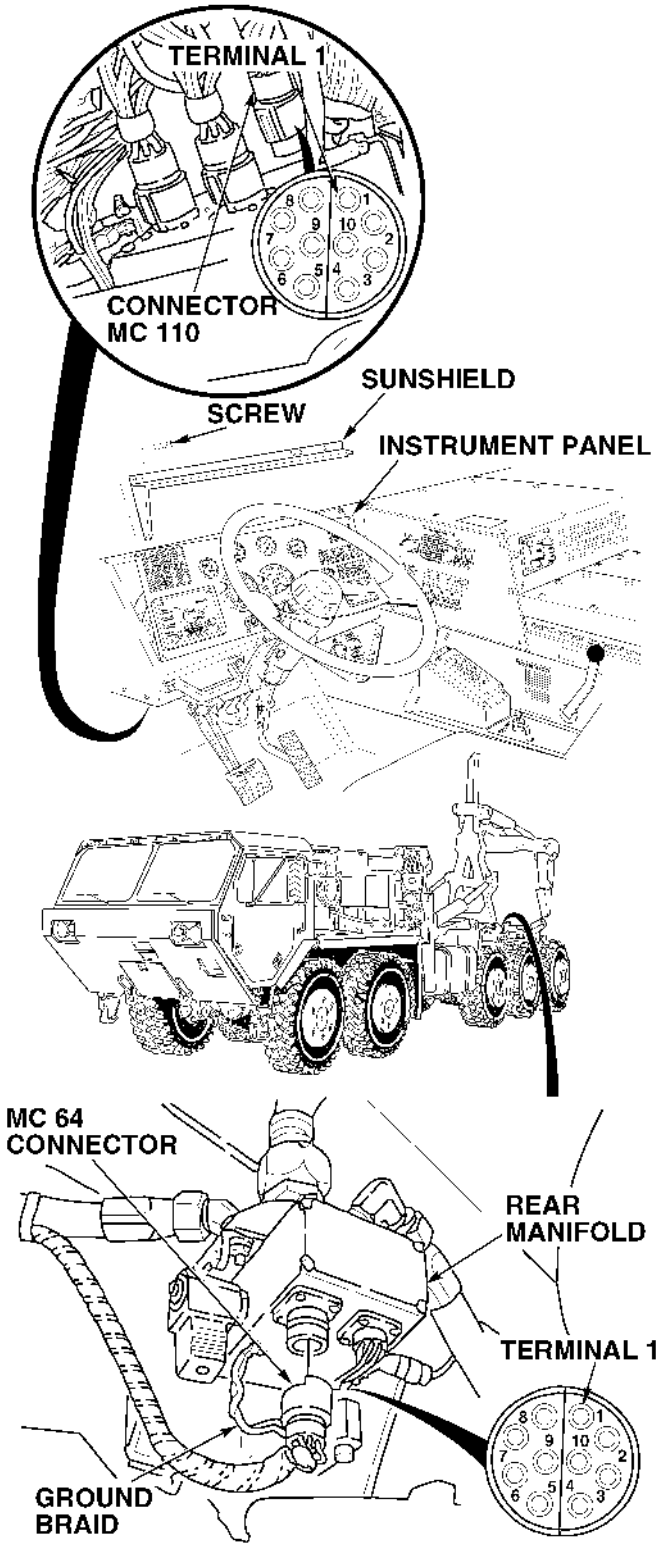
Terminal (5) at MC110 is plugged and does not connect to Terminal (5) at MC64.

CONTINUITY TEST

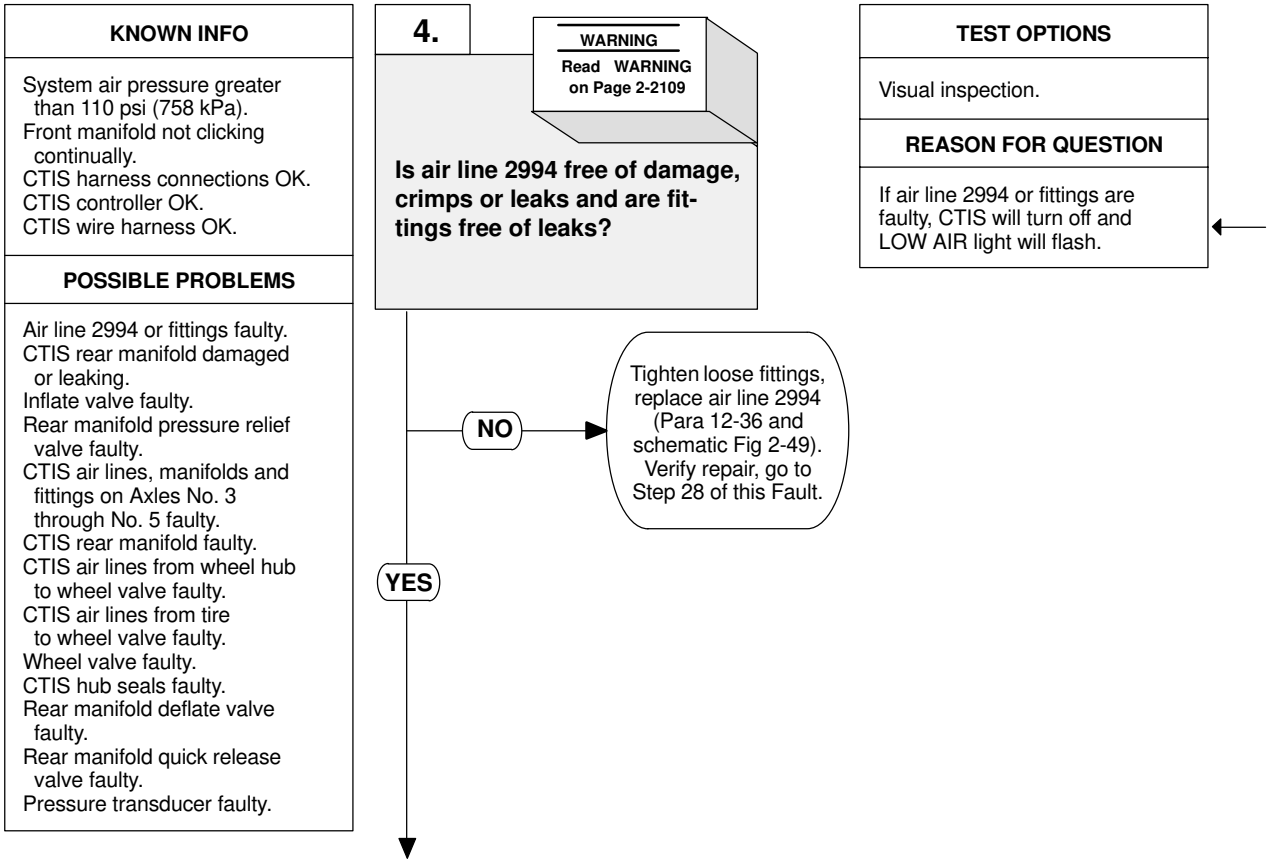
(1) Disconnect connector MC 64 from CTIS rear manifold.
(2) Disconnect rear manifold harness connector MC 110 from back of CTIS controller.
(3) Set multimeter select switch to ohms.
(4) Connect jumperwire between wire 1072 on CTIS controller connector MC 110, terminal 1 and a known good ground.
(5) Is there continuity between connector MC 64, terminal 1 and rear manifold ground braid?
    (a) If there is no continuity, repair wire 1072 (see schematic Fig 2-48) or notify DS Maintenance and performs Steps (6) through (9) below.
    (b) If there is continuity, wire 1072 is OK.
(6) Check continuity of remaining wires and terminals using Steps (4) and (5) above. The wires and corresponding terminals to be checked are listed below (see schematic Fig 2-48).

    1073(2) 1070(6) 1068(9)
    1076(3) 1066(7) 1074(10)
    1071(4) Shield(8)
    1067 to ground (5) (MC64 only)

(7) Remove jumperwire.
(8) Connect connector MC 110 to back of CTIS controller.
(9) Install instrument panel, sunshield and ten screws.

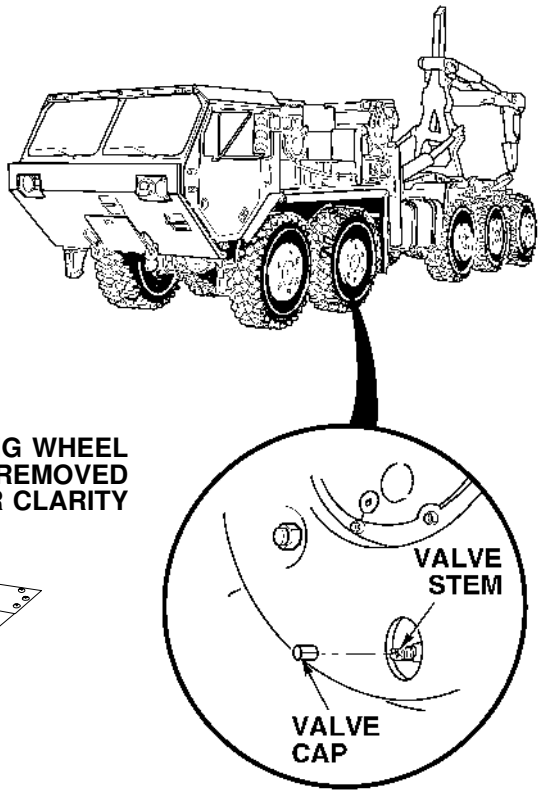


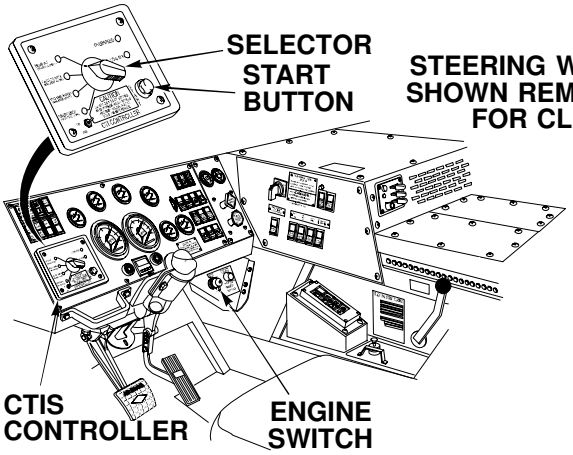
11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



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



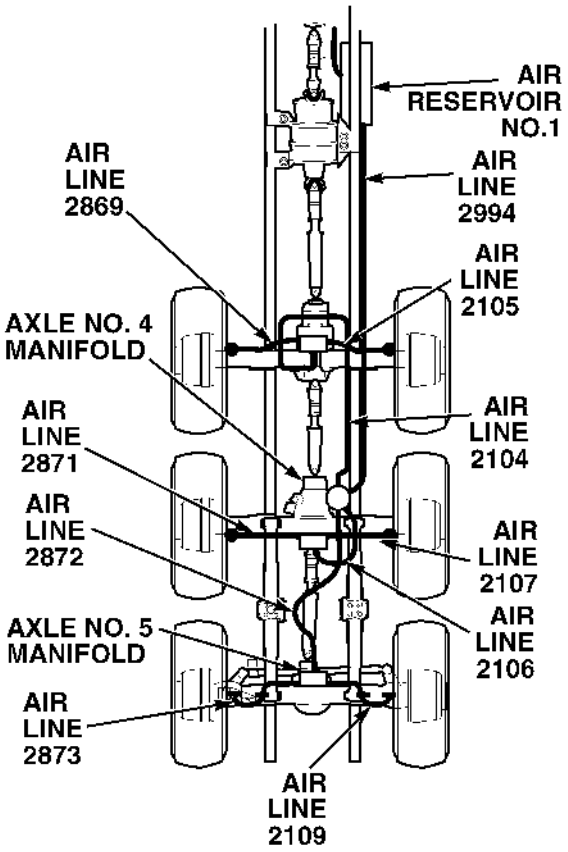


NOTE

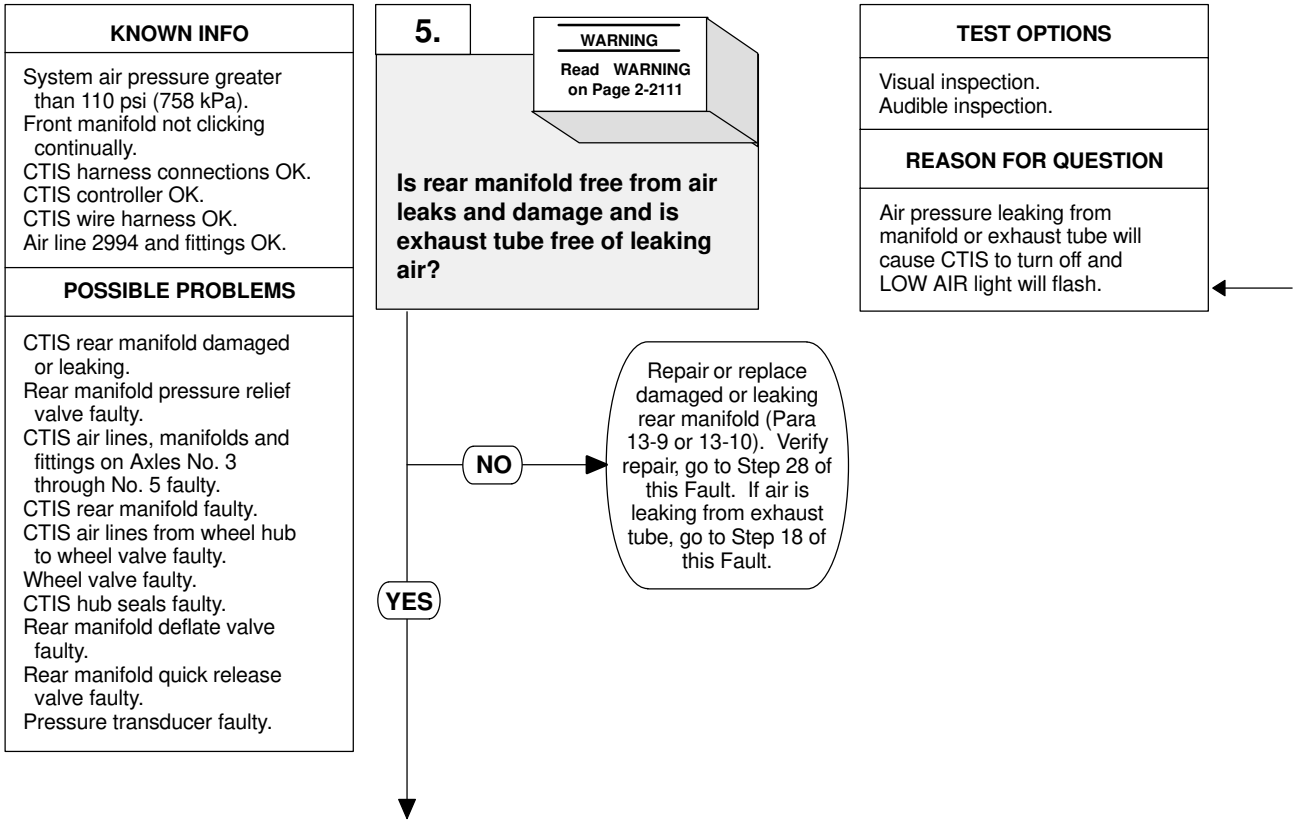
Soap and water solution can be used to visually check for leaks.

VISUAL INSPECTION

(1) Remove valve cap from any wheel valve stem on Axles No. 3 through No. 5.
(2) Using tire gage, deflate any one tire on Axles No. 3 through No. 5 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check CTIS air line 2994 for damage, crimps or leaks (see schematic Fig 2-49).
  (a) If air line 2994 is damaged, crimped or leaking; perform Steps (7) and (8) below, and tighten fittings, replace air line (see Para 12-36 and schematic Fig 2-49).
  (b) If there are no leaks, crimps or damage; air line 2994 and fittings are OK.
(7) Turn OFF ENGINE switch.
(8) Install valve cap on wheel valve stem.

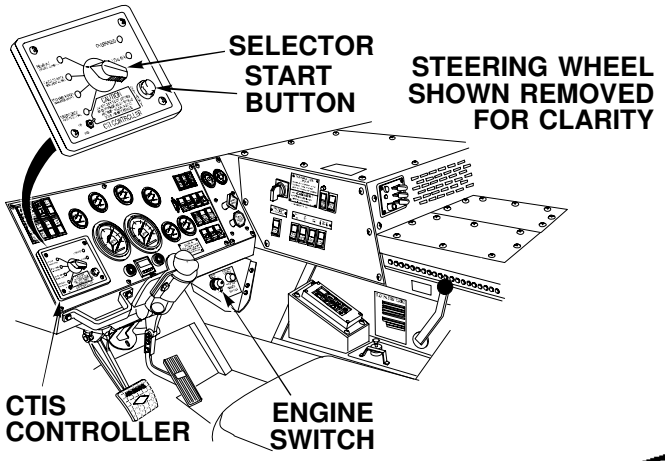


11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



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

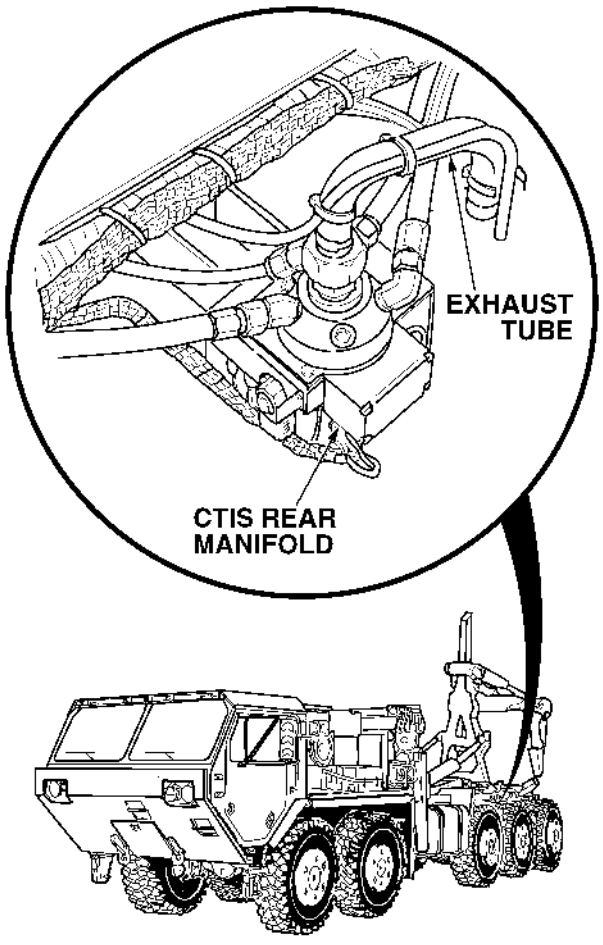


NOTE

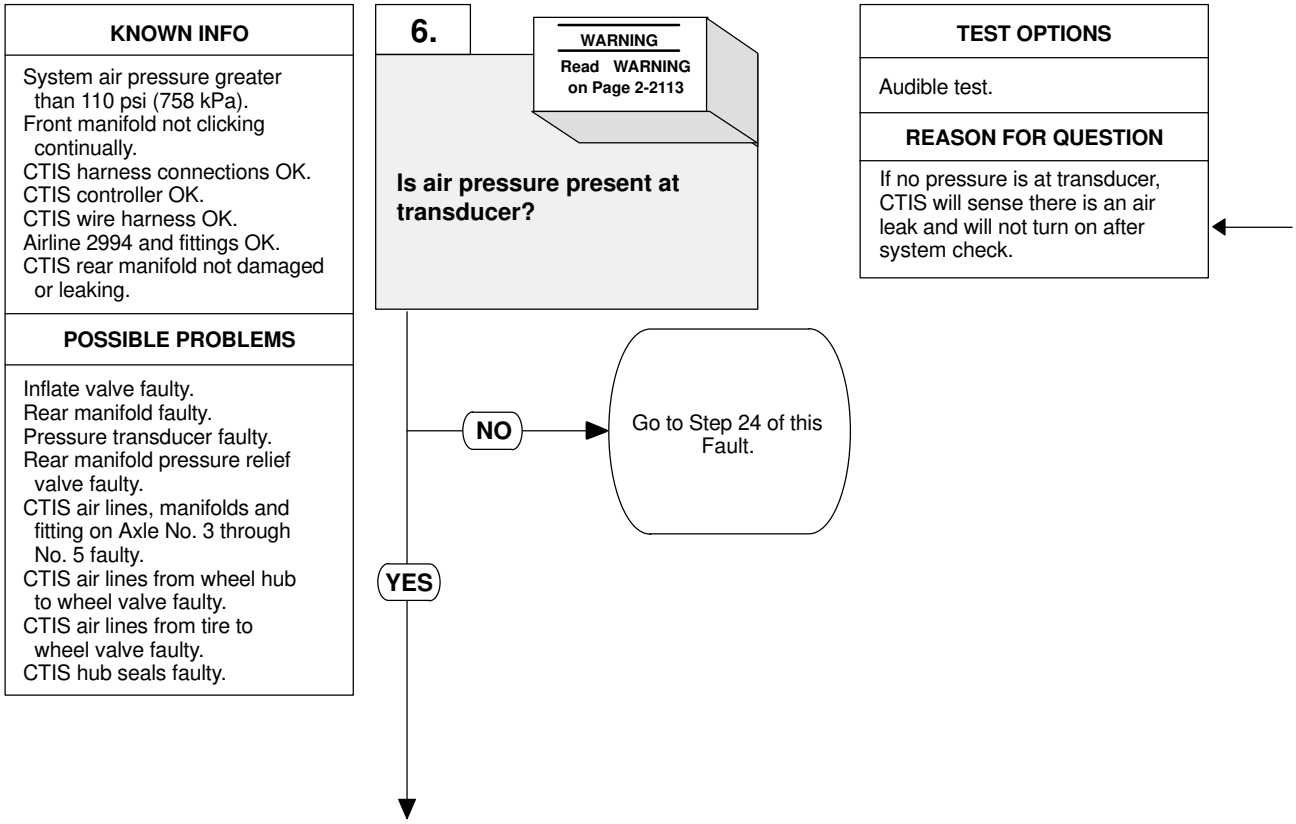
- Soap and water solution can be used to visually check for leaks.
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Remove valve cap from any wheel valve stem on Axles No. 3 through No. 5.
(2) Using tire gage, deflate any one tire on Axles No. 3 through No. 5 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check CTIS rear manifold for damage, or leaks.
    (a) If rear manifold is damaged, or leaking; perform Steps (7) and (8) below, and repair or replace rear manifold (Para 13-9 or 13-10).
    (b) If there are no leaks, or damage; rear manifold is OK.
    (c) If rear manifold is leaking air out of exhaust tube, go to Step 18 of this Fault.
(7) Turn OFF ENGINE switch.
(8) Install valve cap on wheel valve stem.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

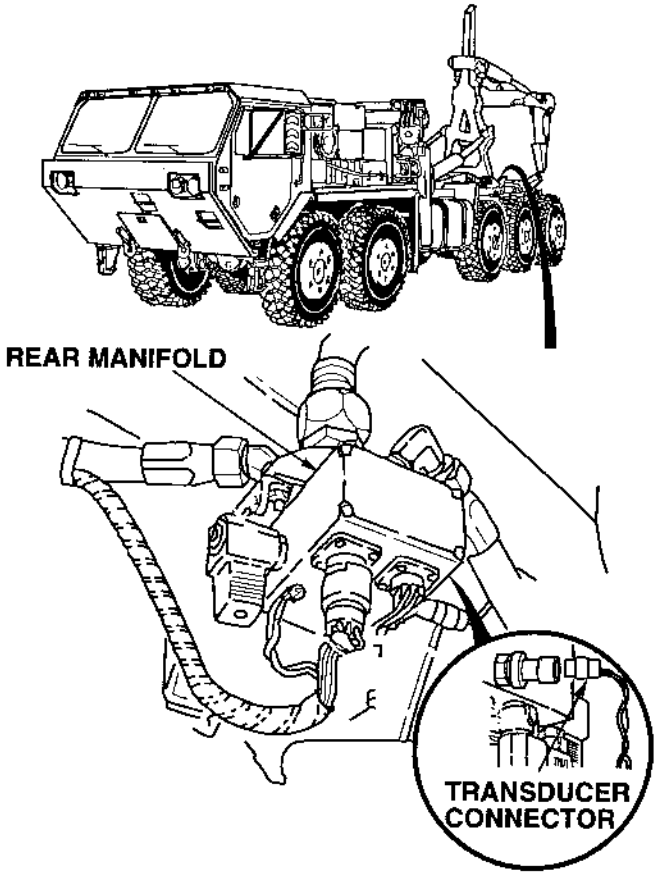


WARNING

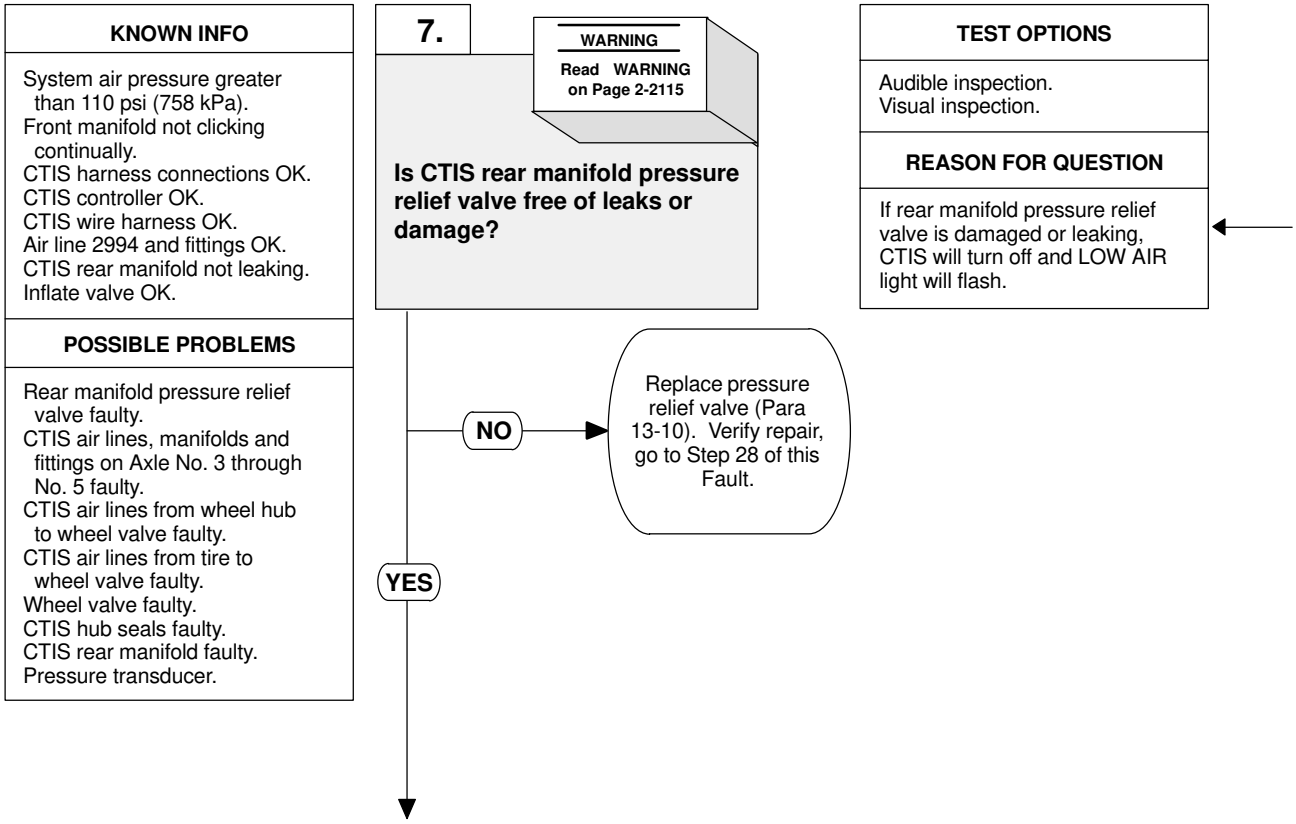
- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

AUDIBLE TEST

(1) Remove pressure transducer from rear manifold (Para 13-10).
(2) Set CTIS controller to HIGHWAY (TM 9-2320-364-10).
(3) Start engine.
(4) As assistant pushes CTIS controller START button, listen for air exhausting from the transducer port.
    (a) If air does not exhaust, perform Steps (5) and (6), and go to Step 24 of this Fault.
    (b) If air exhausts, inflate valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install pressure transducer in rear manifold.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT.)



WARNING

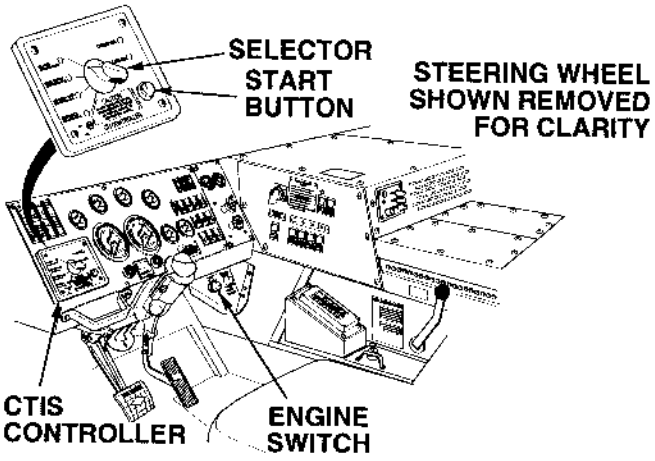
- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

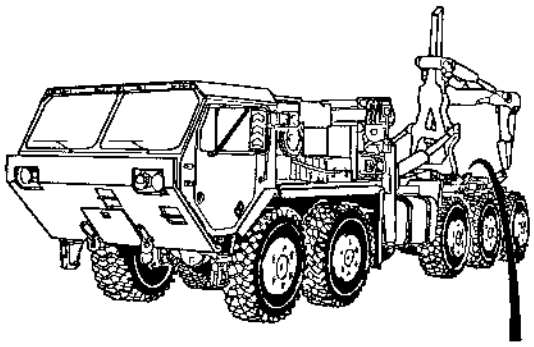
NOTE

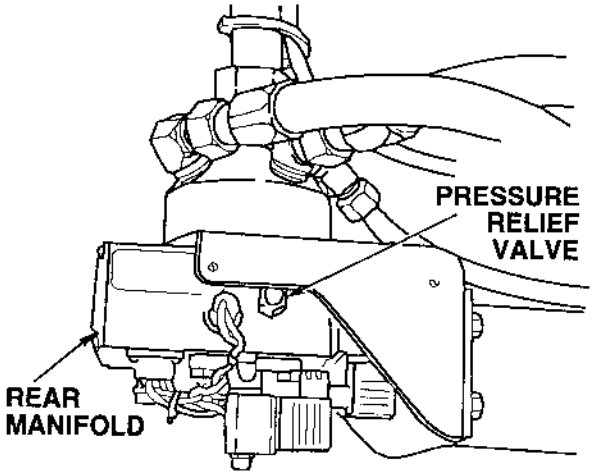
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage (bubbles forming) may occur during inflation/deflation cycle at relief valve. A rapid exhaust of air indicates a problem.
- Pressure relief valve should remain closed up to 85 psi (586 kPa).

VISUAL/AUDIBLE INSPECTION

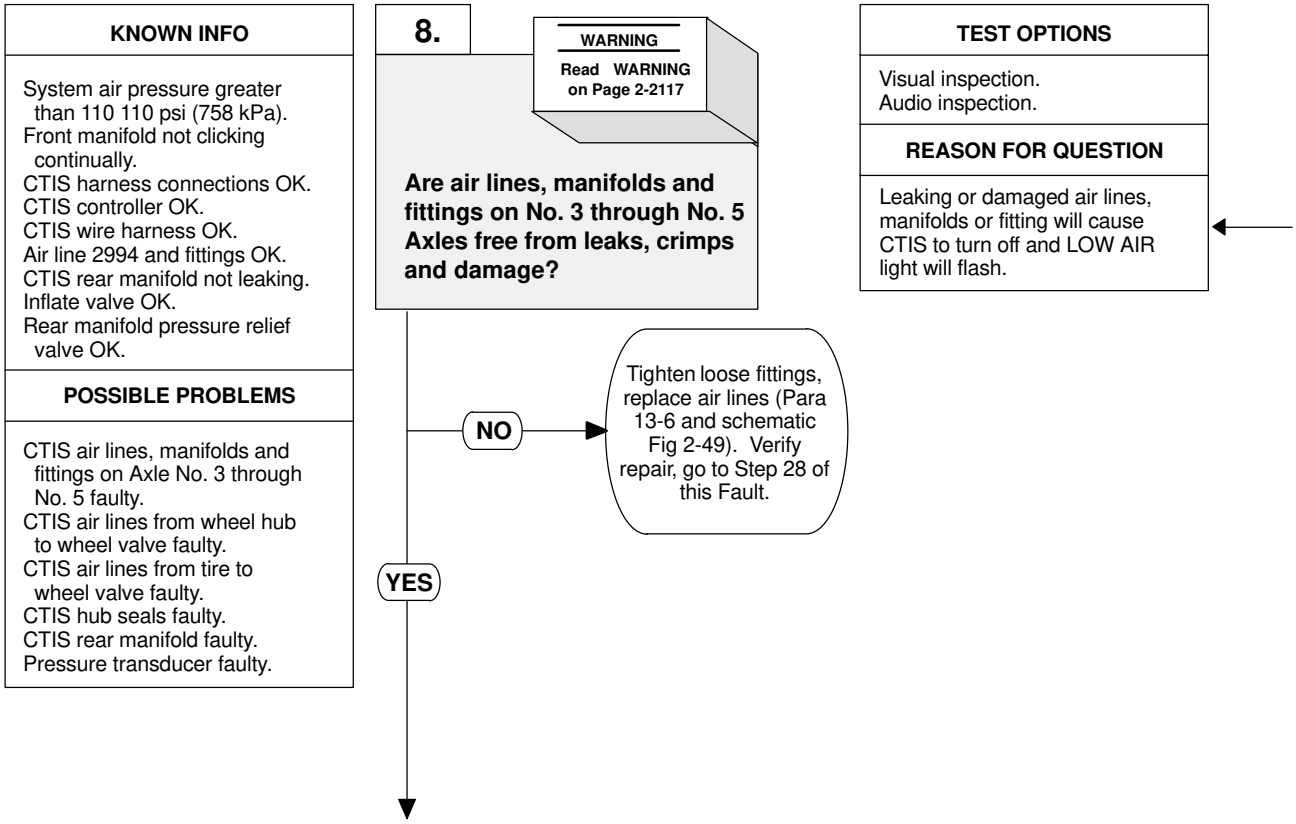
(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Assistant presses CTIS START button.
(4) Check CTIS rear manifold pressure relief valve for damage and leaks.
  (a) If pressure relief valve is damaged or leaking, turn OFF ENGINE switch and replace valve (Para 13-10).
  (b) If pressure relief valve is not damaged or leaking, relief valve is OK.
(5) Turn OFF ENGINE switch.





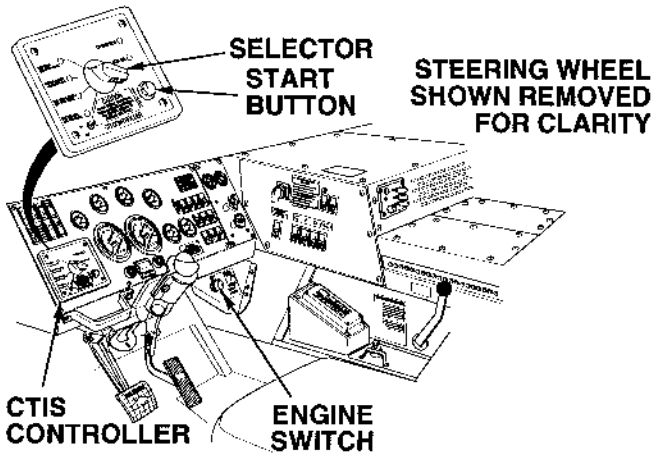


11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.



NOTE

Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

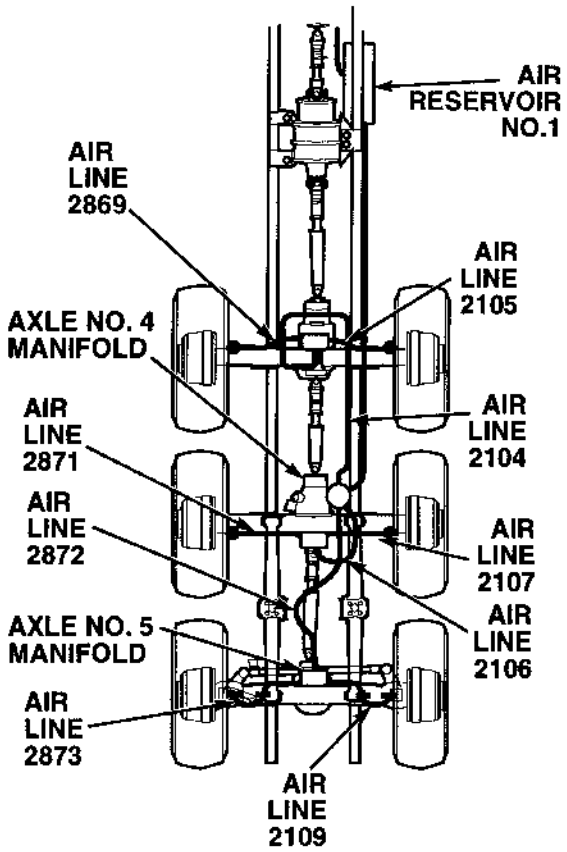
VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS air lines listed below and axle manifolds and fittings for damage, crimps or leaks (see schematic Fig 2-49).

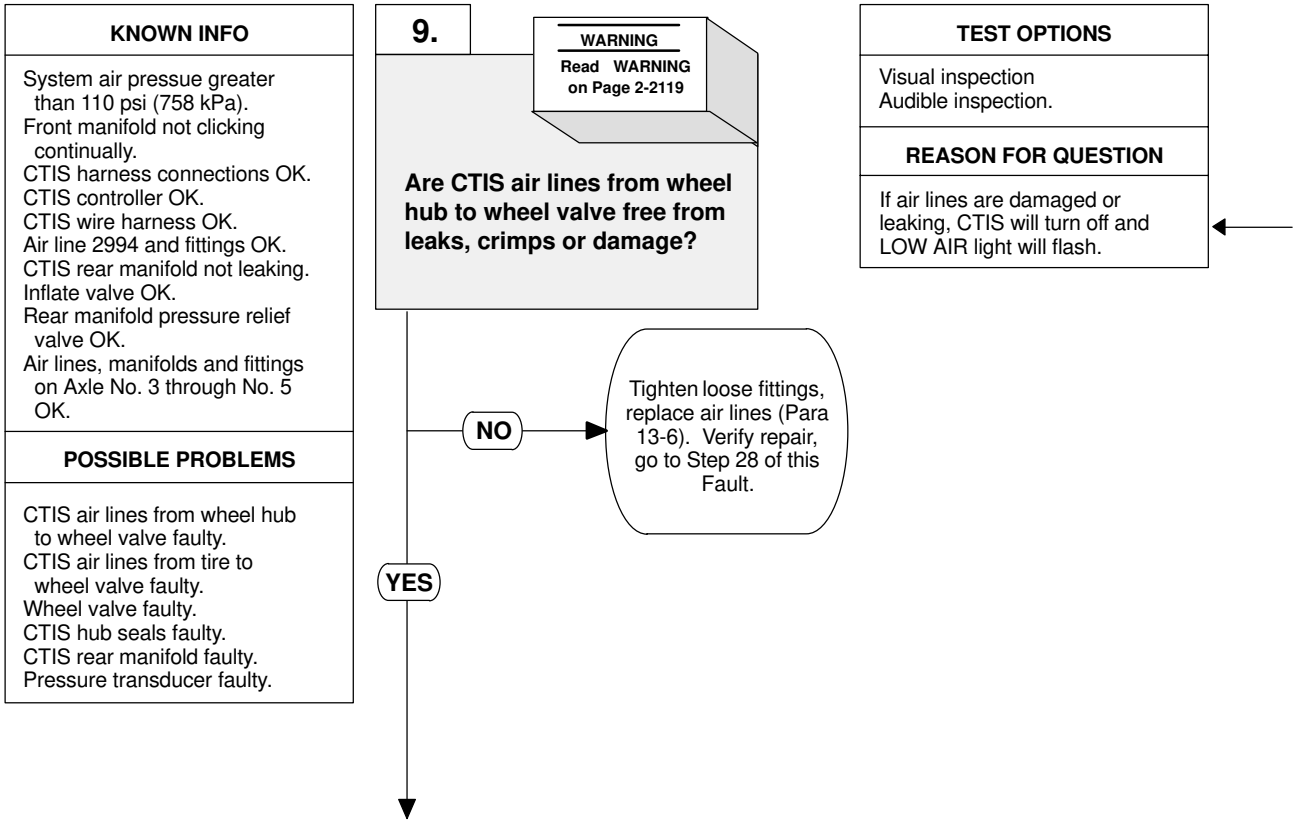
2869	2105
2871	2104
2872	2107
2873	2106
	2109

(a) If air lines, fittings or axle manifolds are damaged or leaking, perform Step (5) below and tighten fittings, or replace air lines or axle manifold (see schematic Fig 2-49 and Para 13-6).
(b) If there are no leaks, crimps, or damage, air lines, fittings and axle manifolds are OK.

(5) Turn OFF ENGINE switch.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

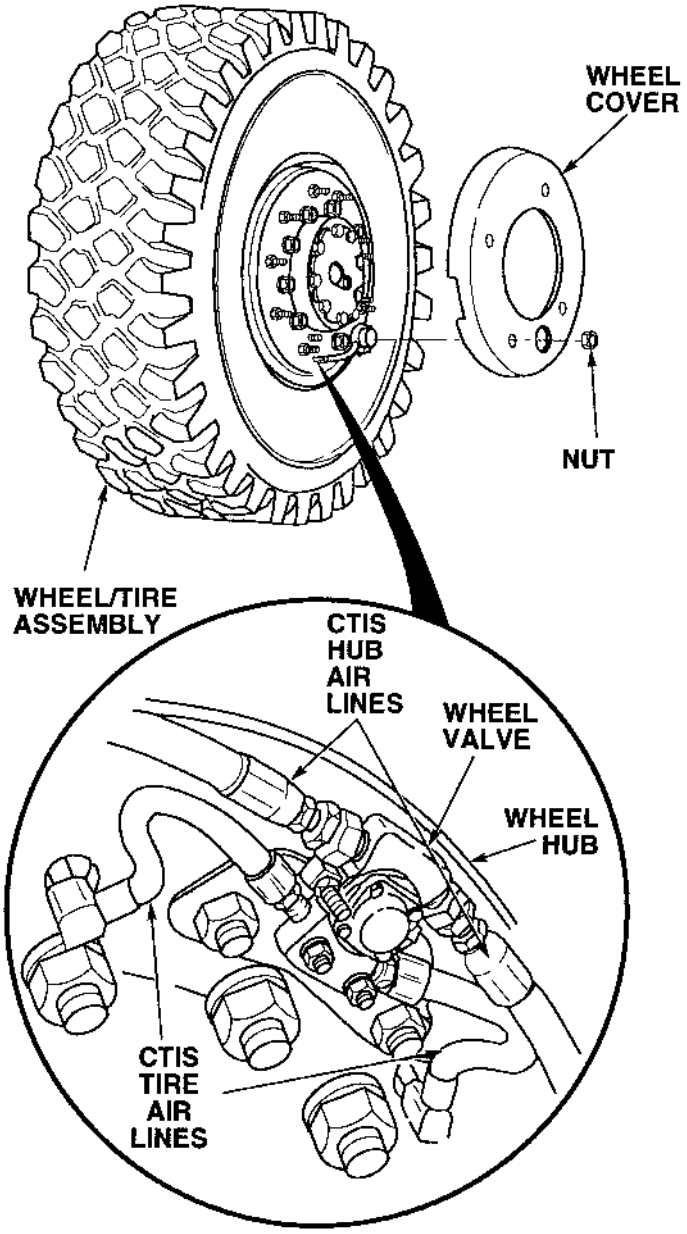
- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

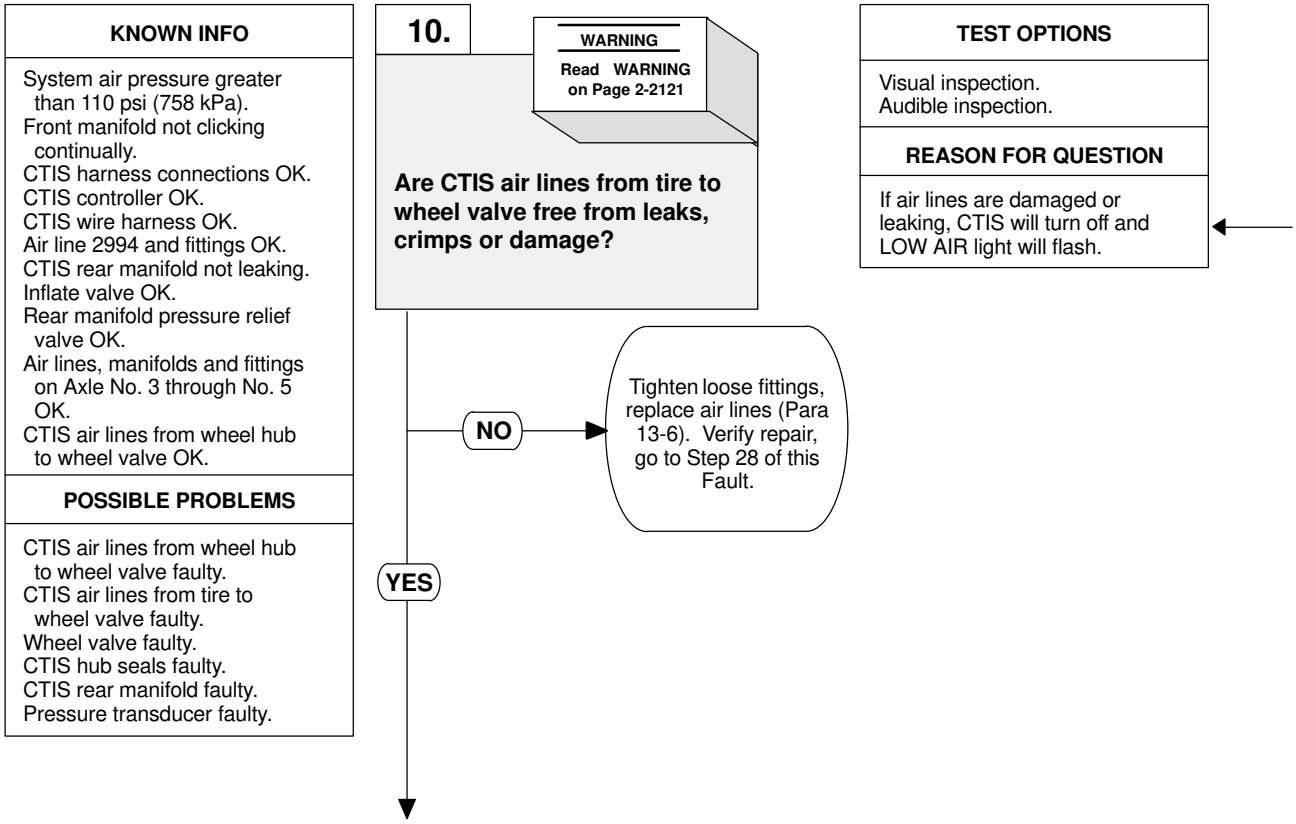
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Remove four nuts and wheel cover.
(2) Start engine (TM 9-2320-364-10).
(3) Set CTIS controller to HIGHWAY.
(4) Press CTIS START button.
(5) Check air lines at wheel hub to wheel valve for air leakage.
  (a) If air lines are damaged, crimped or leaking, perform Step (6) below, and tighten loose fittings, replace air lines or fittings (Para 13-6).
  (b) If there are no leaks, crimps or damage, air lines and fittings are OK.
(6) Turn OFF ENGINE switch.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

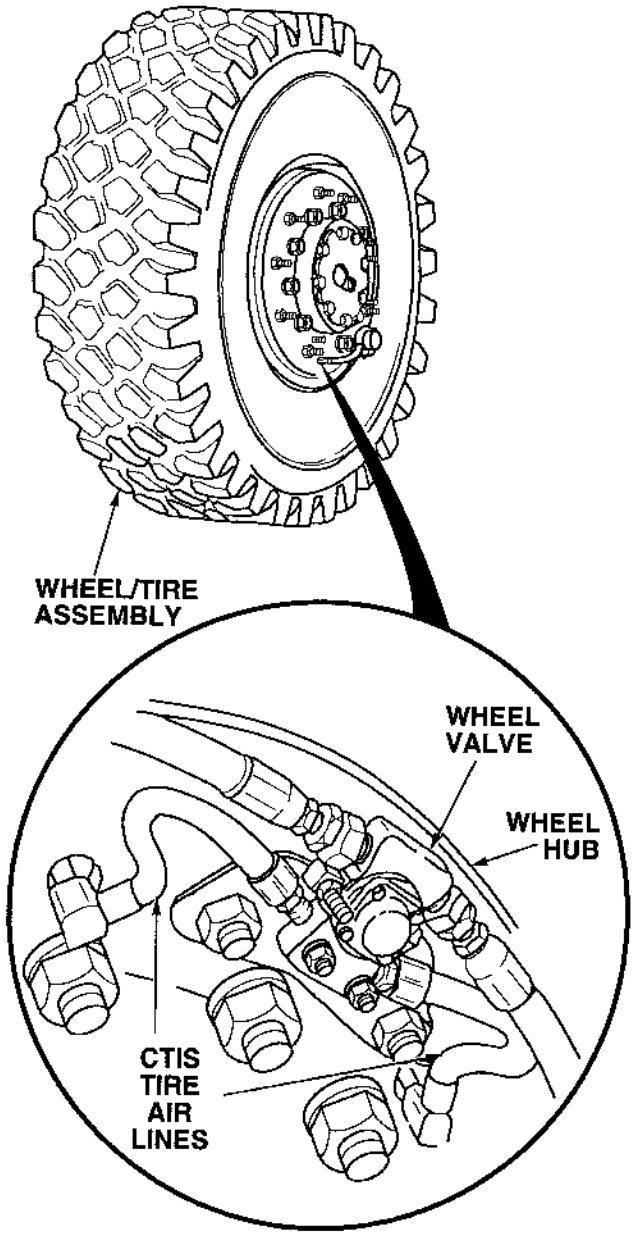
- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

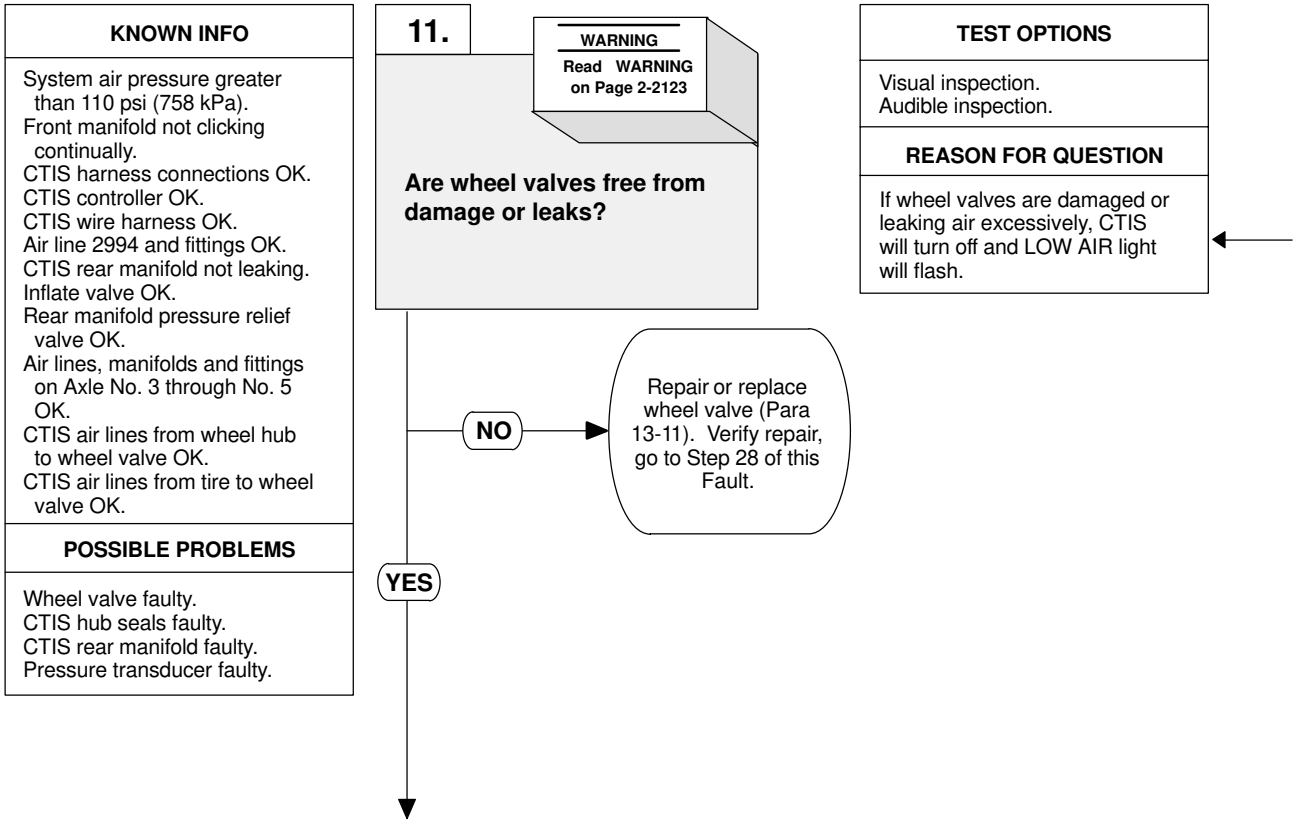
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS air lines at tire to wheel valve for air leakage.
    (a) If air lines are damaged, crimped or leaking, perform Step (5) below, and tighten loose fittings, replace air lines or fittings (Para 13-6).
    (b) If there are no leaks, crimps or damage, air lines and fittings are OK.
(5) Turn OFF ENGINE switch.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

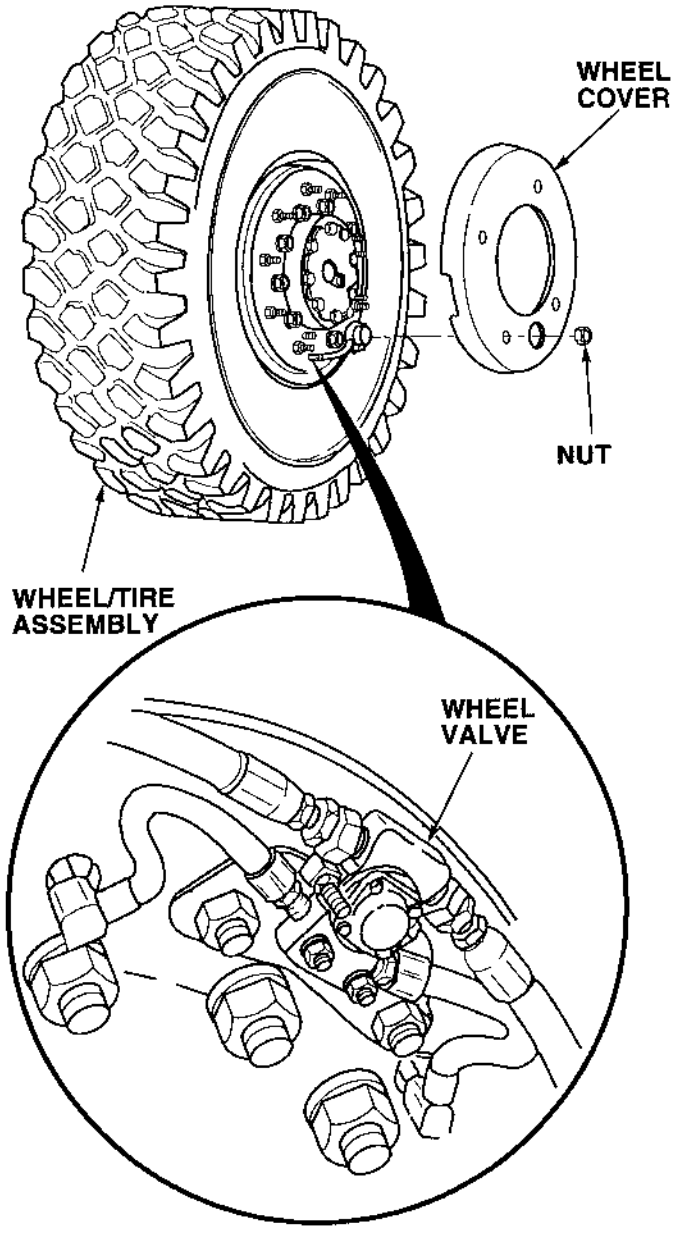
- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

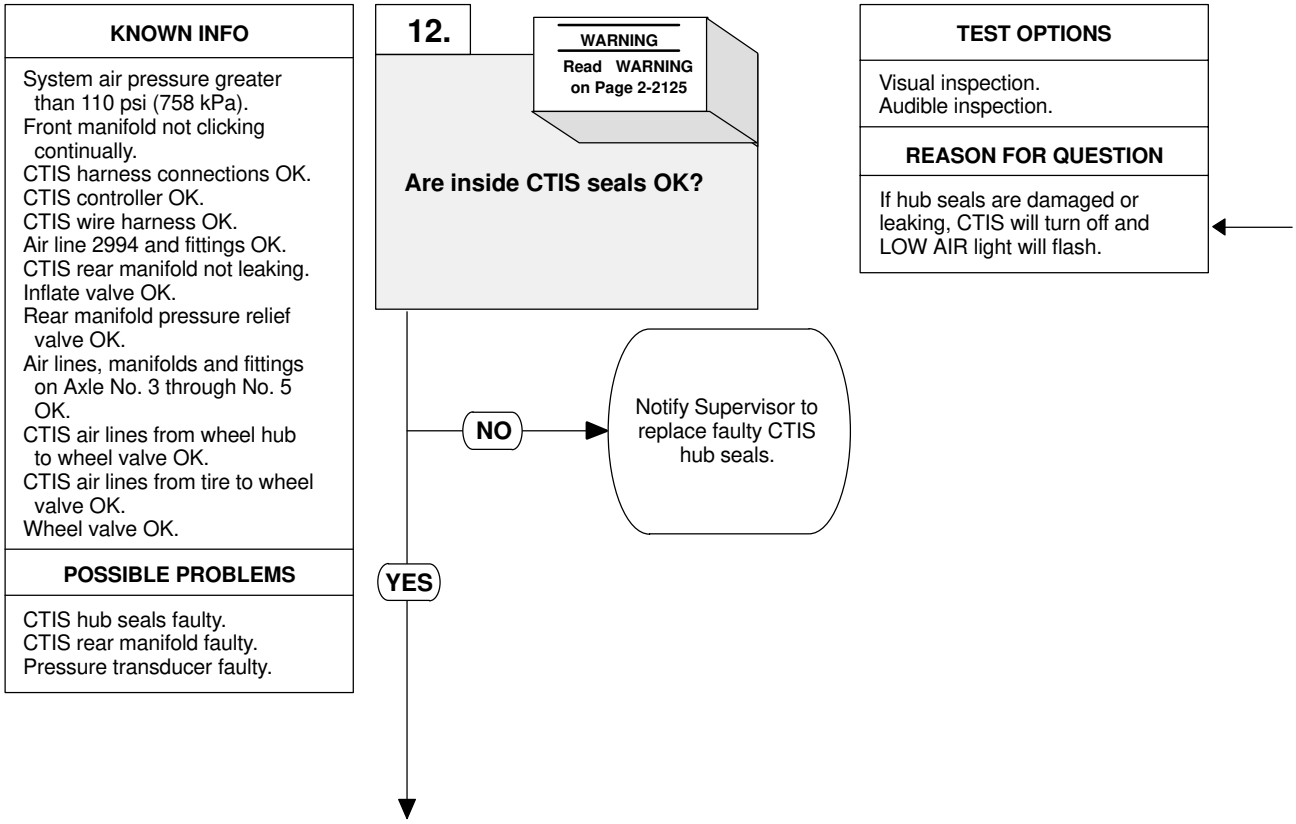
- Tires must be deflated to 60 psi (414 kPa) or less to perform this test.
- Some air leakage may occur at breather during inflation/deflation cycles. Rapid exhaust of air at breather indicates a faulty valve.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button.
(4) Check CTIS wheel valves for air leakage.
  (a) If wheel valve is damaged or leaking air, perform Step (5) below and repair or replace wheel valve (Para 13-11).
  (b) If there are no air leaks or damage, wheel valve is OK.
(5) Turn OFF ENGINE switch.
(6) Install wheel cover with four nuts.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

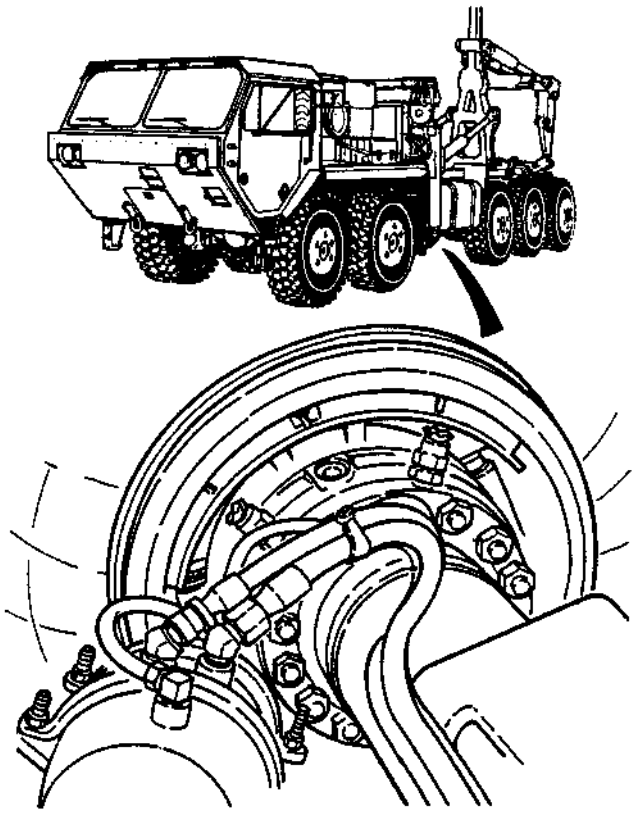
- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

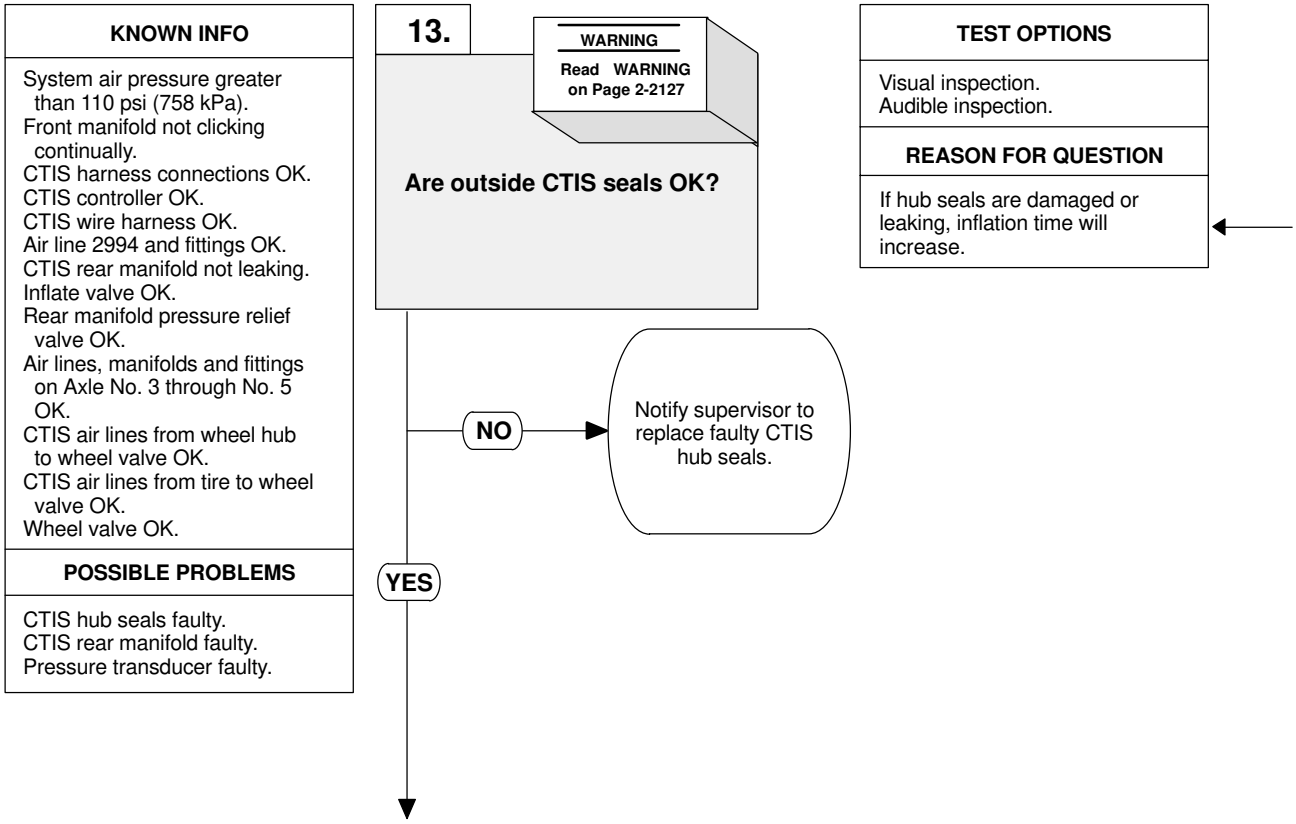
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check for air escaping from the inside portion of the wheel and tire assemblies.
    (a) If air is escaping, turn OFF ENGINE switch and notify Supervisor to replace faulty CTIS hub seals.
    (b) If there is no air escaping, inside CTIS hub seals are OK.
(5) Turn OFF ENGINE switch.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

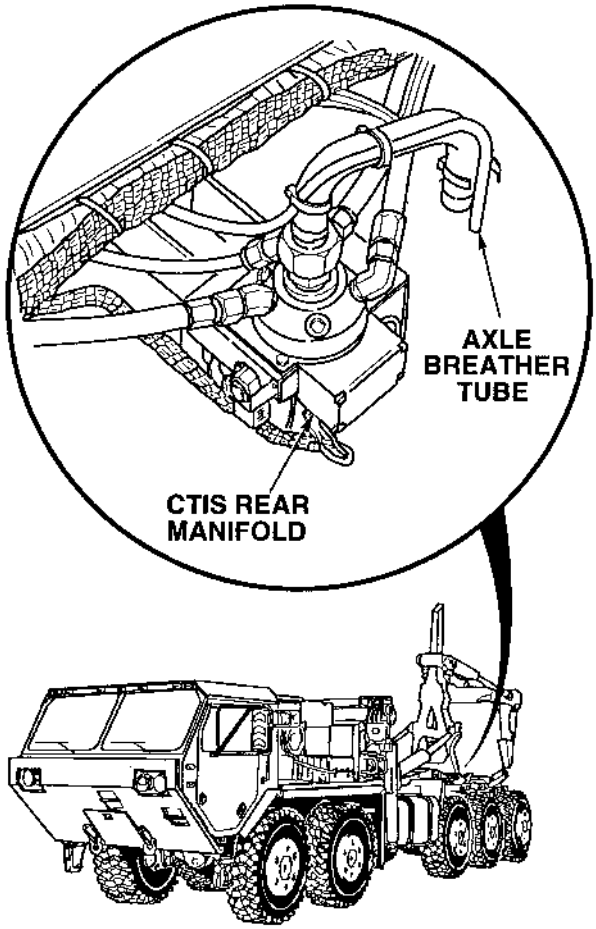
- Wear safety goggles when performing leakage test on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

NOTE

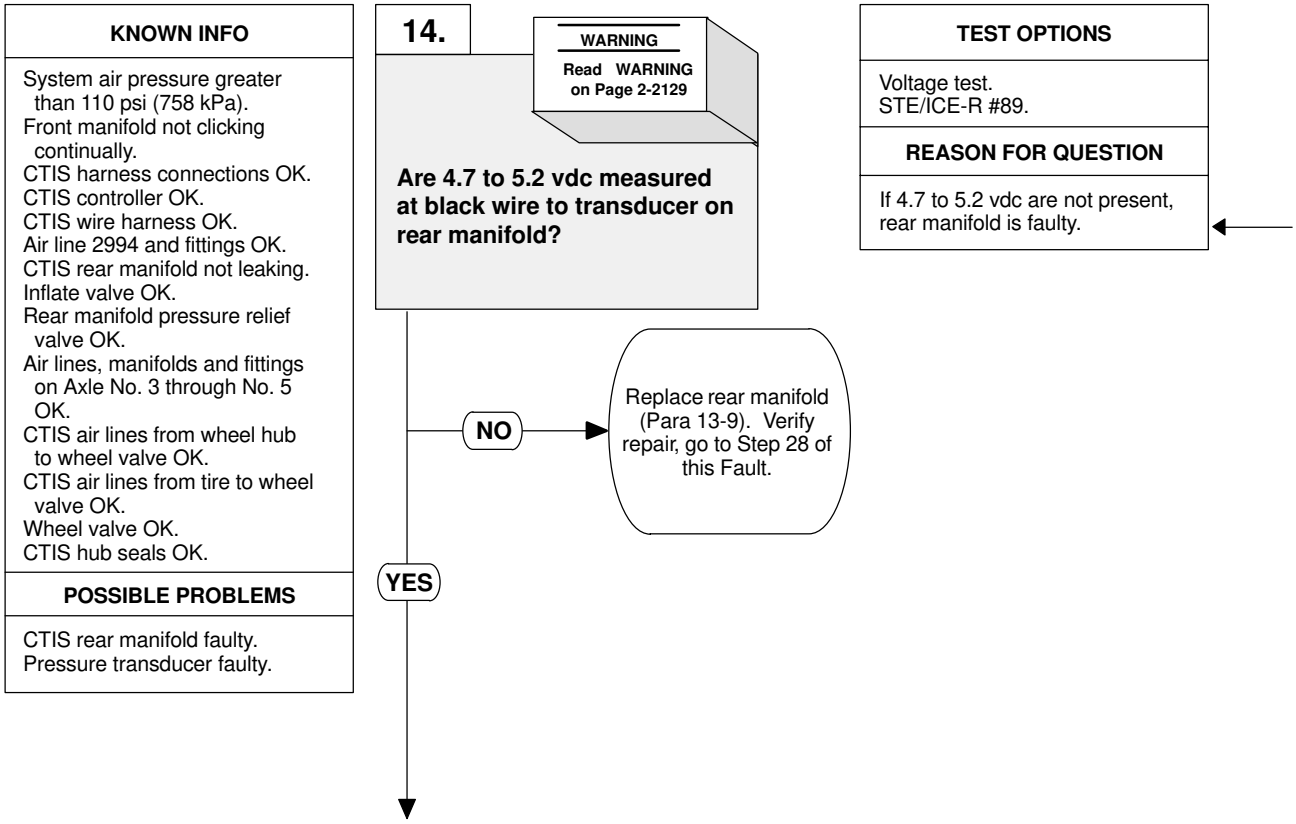
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller to HIGHWAY.
(3) Press CTIS START button.
(4) Check for air escaping from the axle breather tube.
    (a) If air is escaping, turn OFF ENGINE switch and notify Supervisor to replace faulty CTIS hub seals.
    (b) If there is no air escaping, inside CTIS hub seals are OK.
(5) Turn OFF ENGINE switch.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

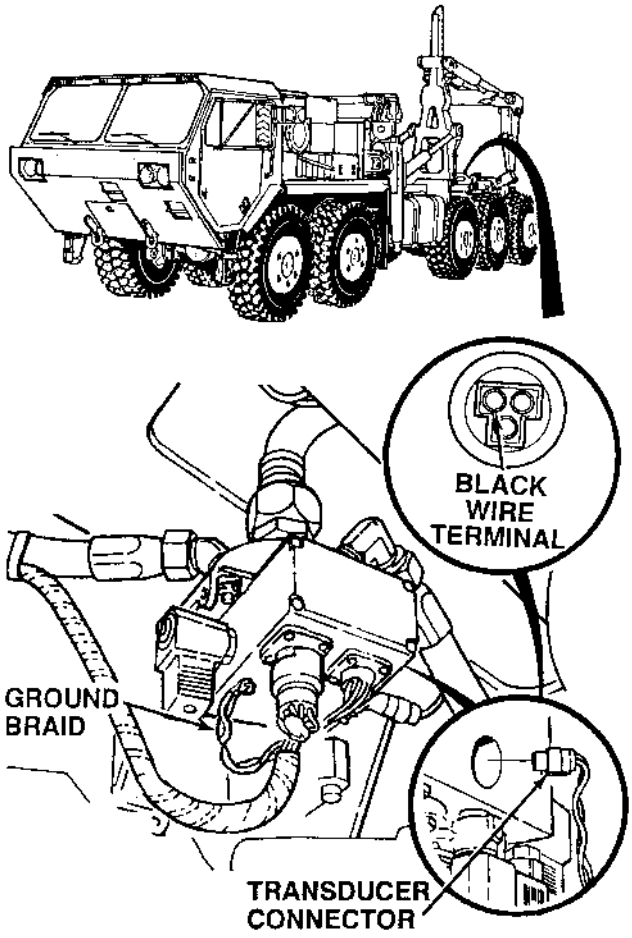


WARNING

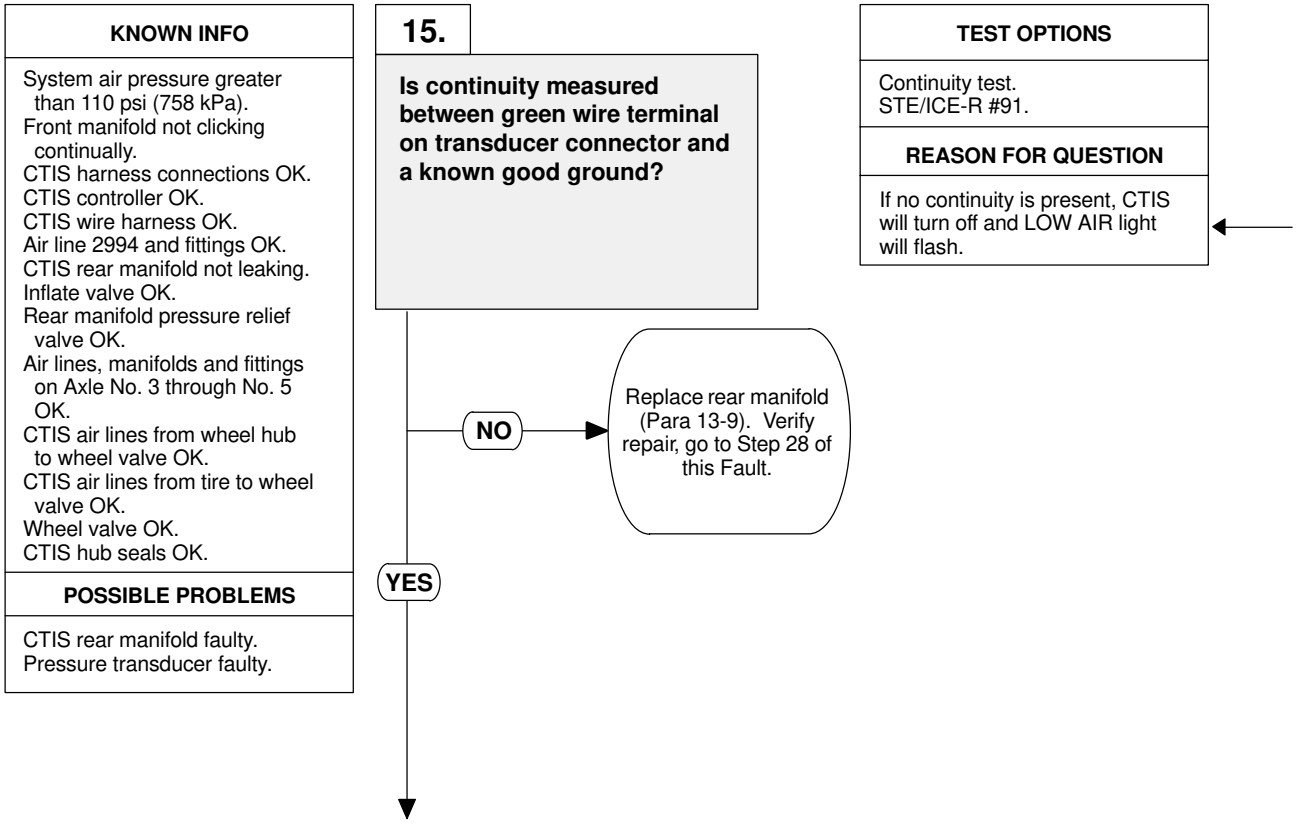
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

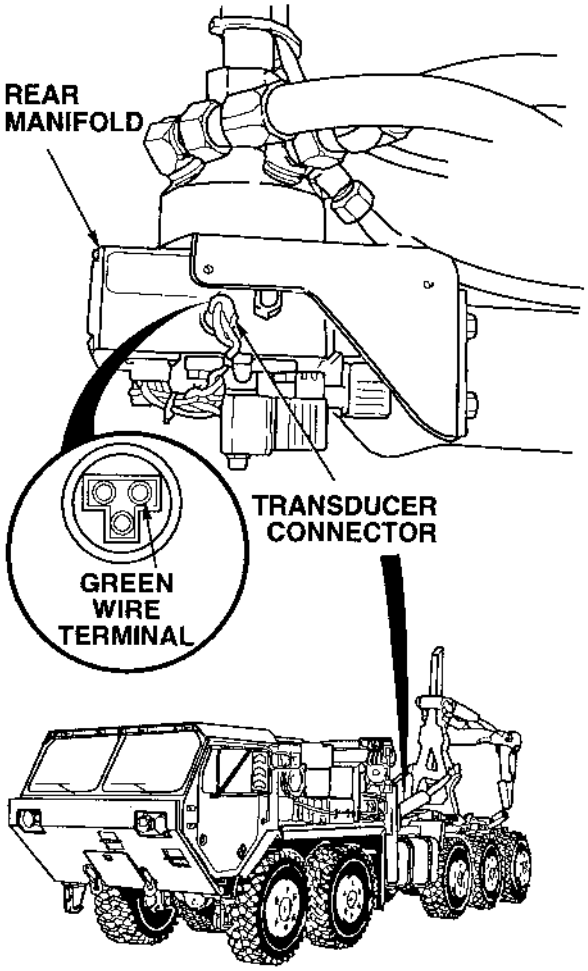
(1) Disconnect connector from transducer on rear manifold.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to blackwire terminal at transducer connector.
(4) Connect negative (–) multimeter lead to rear manifold ground braid.
(5) Turn ON ENGINE switch. (TM 9-2320-364-10).
(6) Push CTIS START button.
    (a) If 4.7 to 5.2 vdc are not present, turn OFF ENGINE switch and replace rear manifold (Para 13-9).
    (b) If 4.7 to 5.2 vdc are present, turn OFF ENGINE switch and go to Step 15 of this Fault.



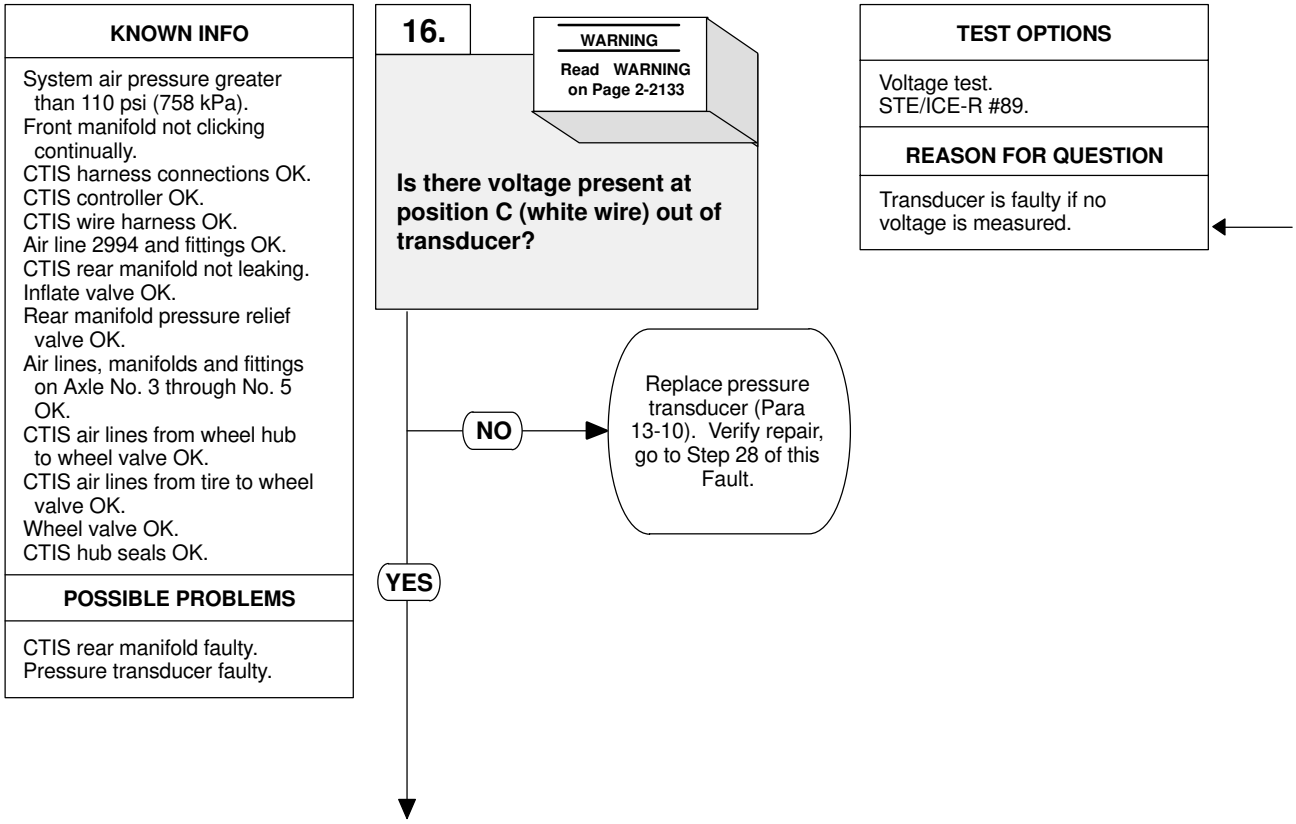
11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



CONTINUITY TEST
(1) Set Multimeter select switch to ohms. (2) Is there continuity between pressure transducer connector, green wire terminal, and a known good ground? (a) If there is no continuity, replace rear manifold (Para 13-9). (b) If there is continuity, go to Step 16 of this Fault.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



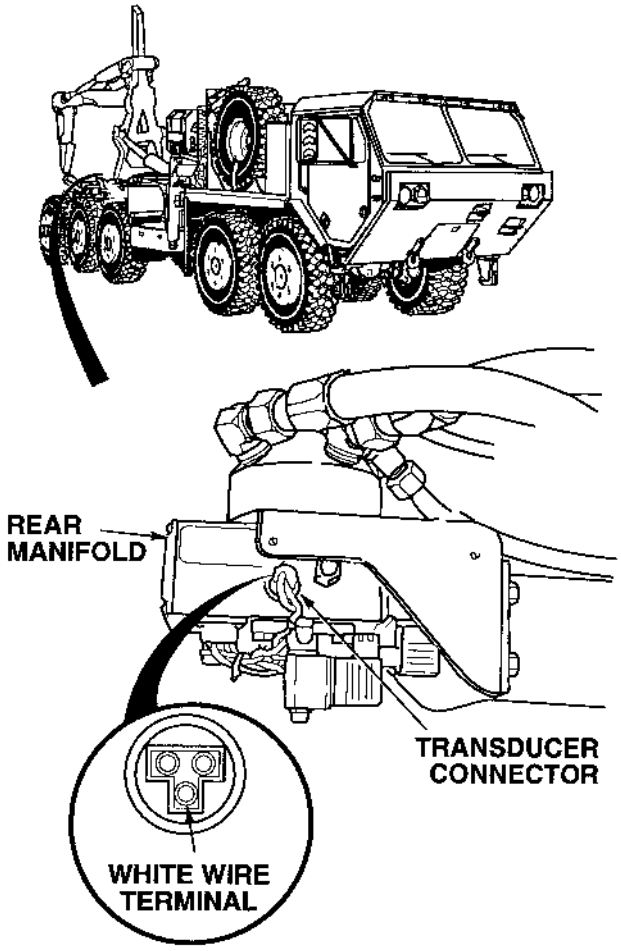
WARNING

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.

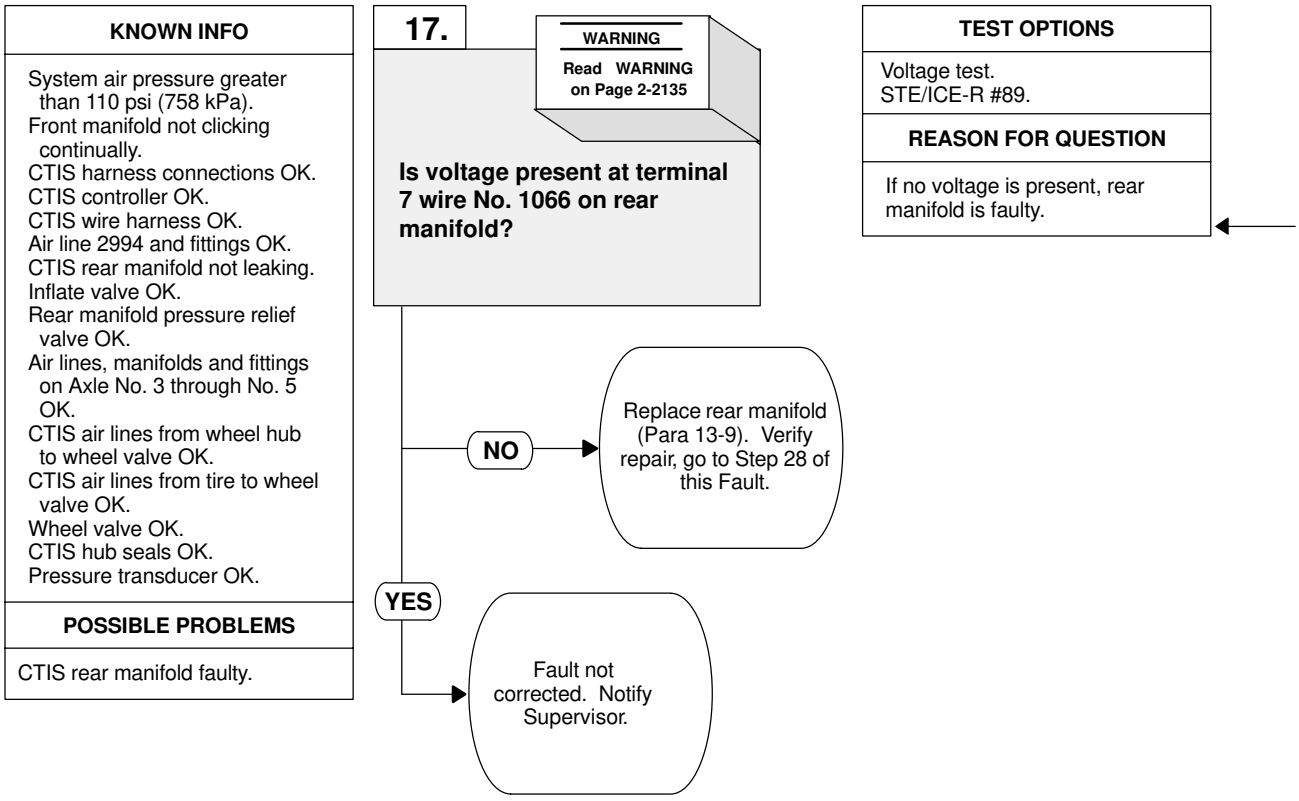
NOTE

All connectors must be fully plugged in to perform this test

VOLTAGE TEST
(1) Connect pressure transducer connector to pressure transducer. (2) Set multimeter select switch to volts dc. (3) Connect positive (+) multimeter lead to white wire. (4) Connect negative (–) multimeter lead to manifold ground braid. (5) Turn ON ENGINE switch (TM 9-2320-364-10). (6) While assistant presses CTIS START button, check multimeter for any vdc. (a) If no vdc is measured, replace transducer (Para 13-10). (b) If any vdc is measured, go to Step 17 of this Fault. (7) Turn OFF ENGINE switch.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

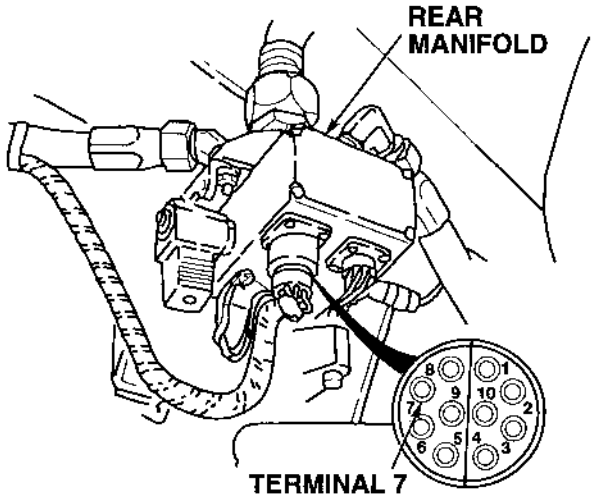
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

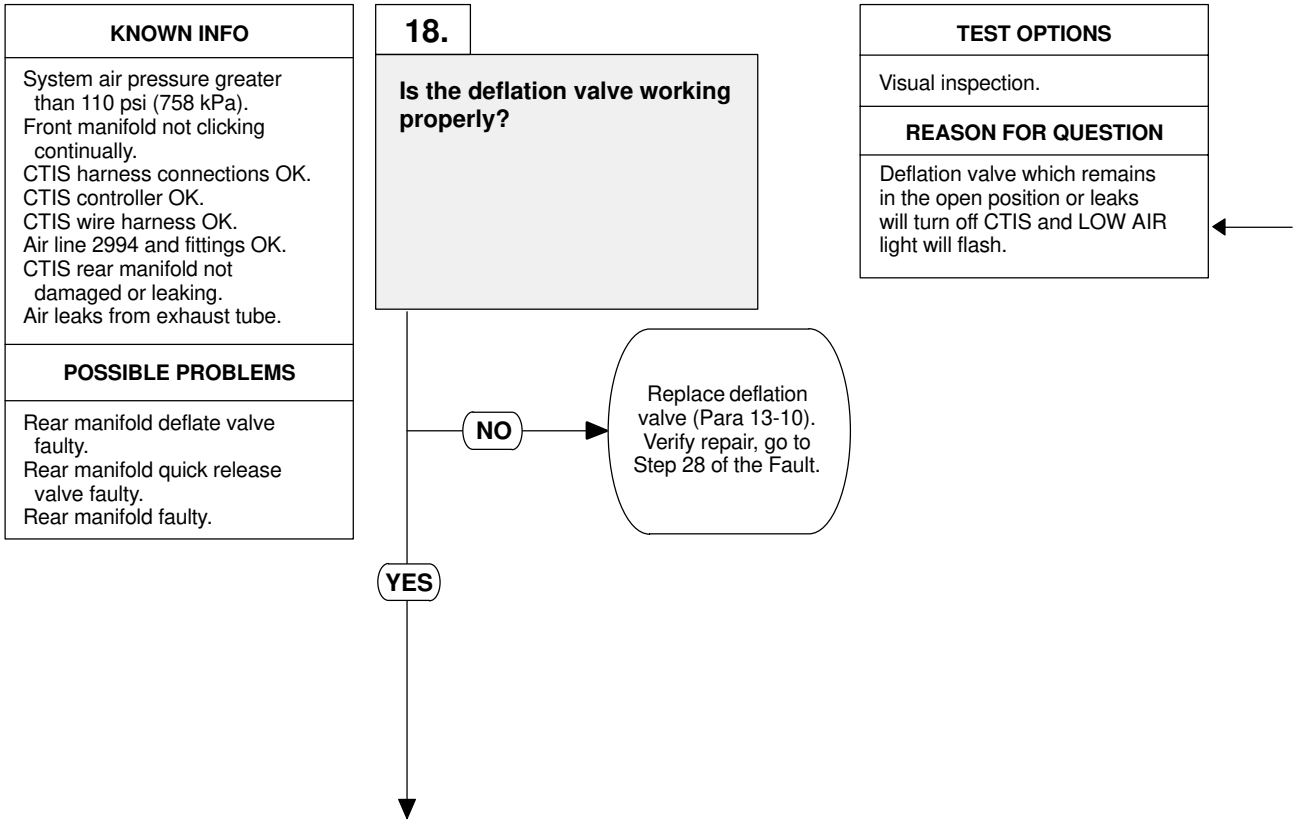
All connectors must be fully plugged in to perform this test.

VOLTAGE TEST

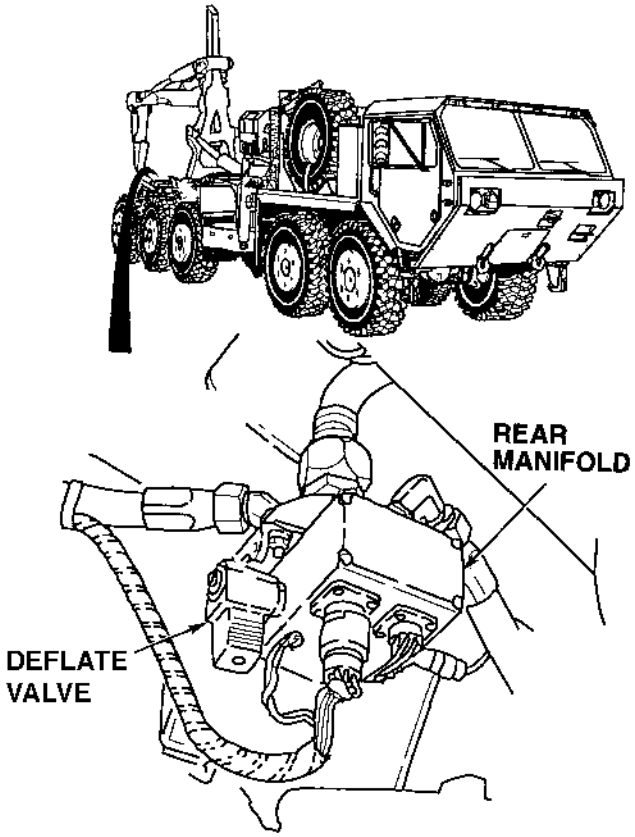
(1) Connect positive (+) multimeter lead (with long probe installed) on terminal 7 at rear manifold wire harness (MC 64).
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch.
(4) Assistant pushes CTIS START button.
    (a) If there is no voltage present, replace rear manifold (Para 13-9).
    (b) If there is voltage, Fault is not corrected. Notify Supervisor.
(5) Turn OFF ENGINE switch.



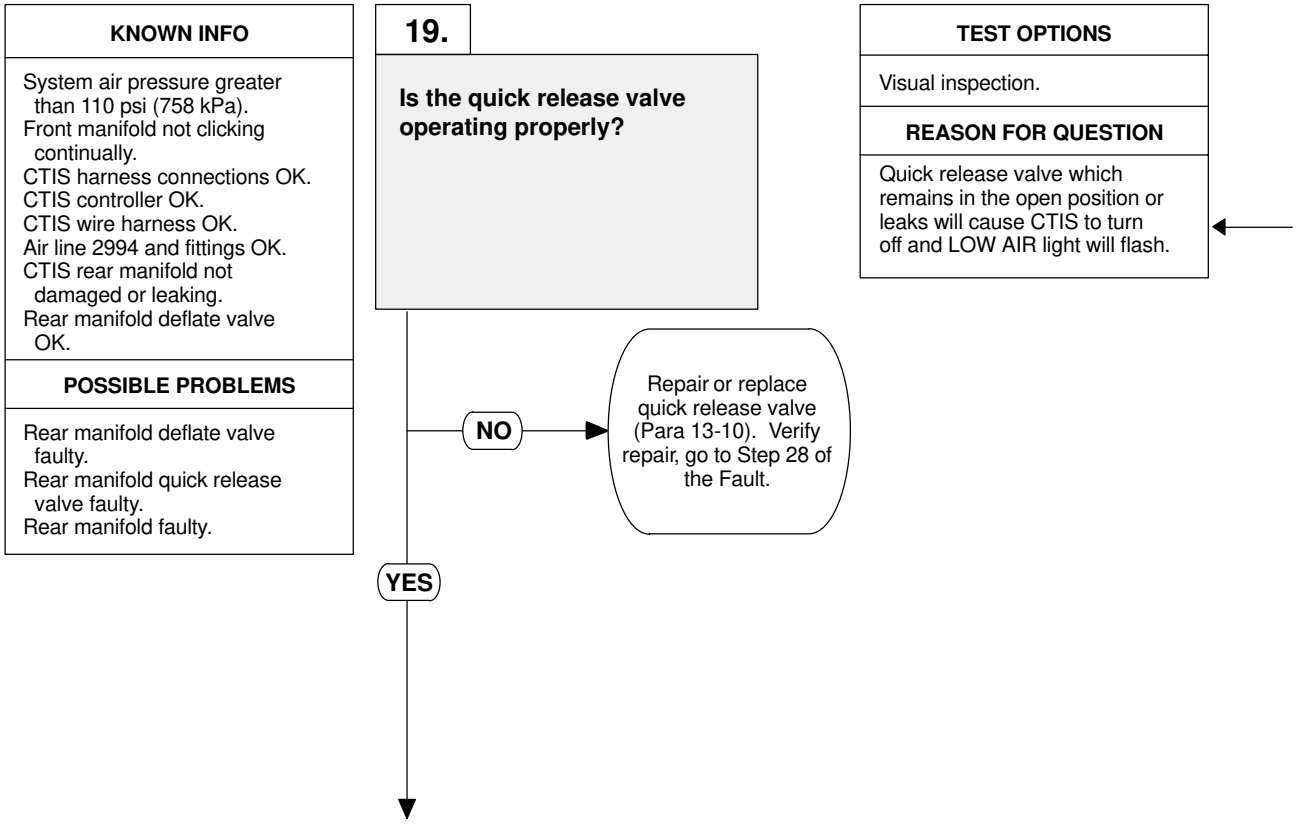
11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



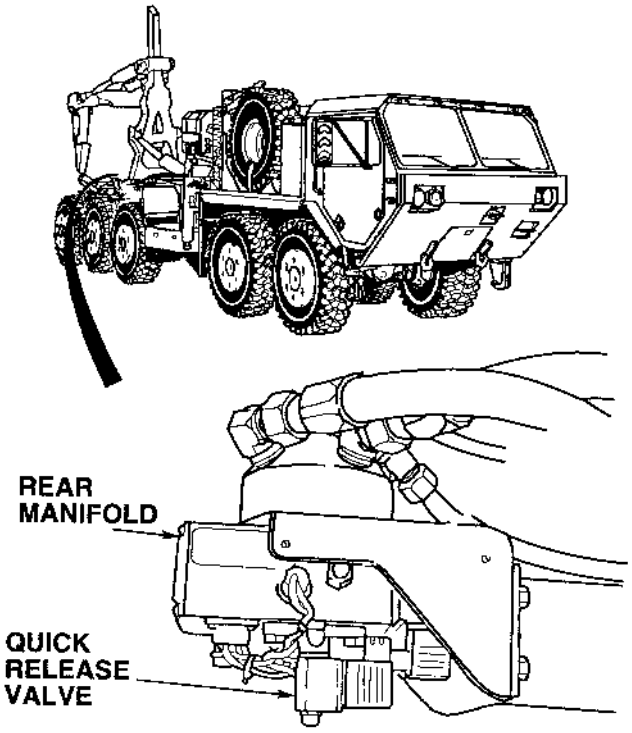
VISUAL INSPECTION
(1) Remove deflation valve from rear manifold (Para 13-10). (2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking, or any other physical damage. (a) If deflation valve is damaged, repair or replace deflation valve (Para 13-10). (b) If deflation valve is not damaged, install deflation valve and go to Step 19 of this Fault.



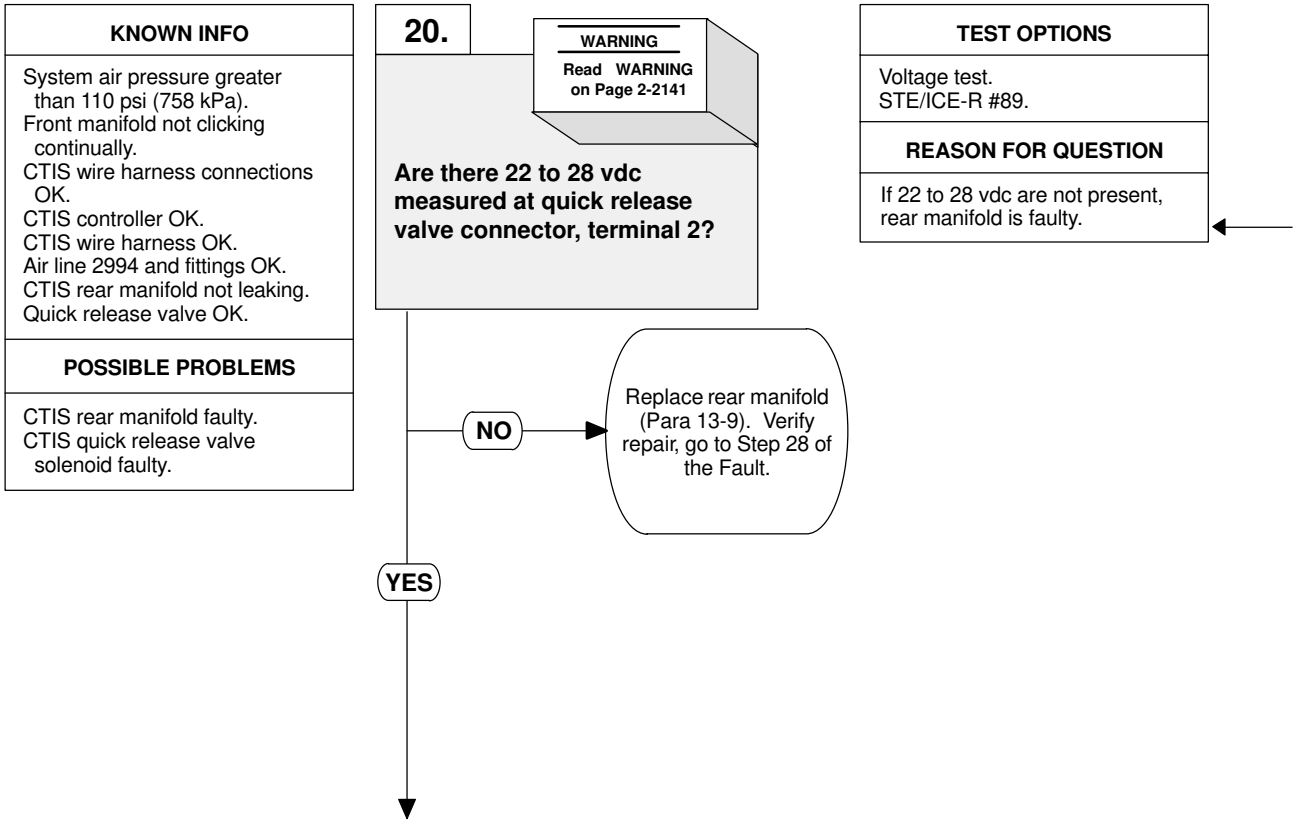
11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



VISUAL INSPECTION
(1) Remove quick release valve from rear manifold (Para 13-10). (2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking or any other physical damage. (a) If quick release valve is damaged, repair or replace quick release valve (Para 13-10). (b) If quick release valve is not damaged, go to Step 20 of this Fault.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

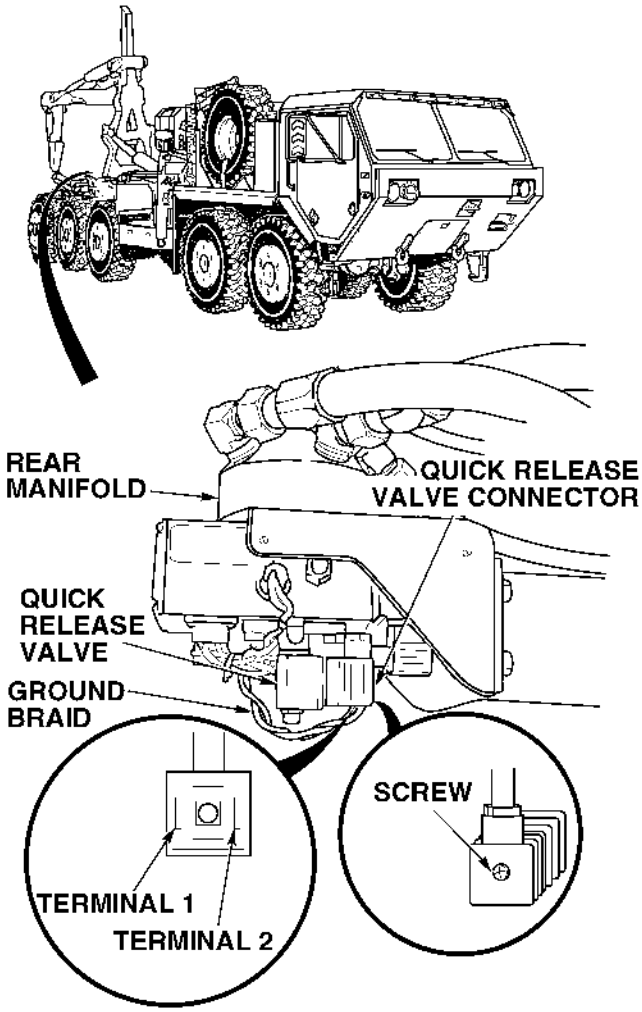


WARNING

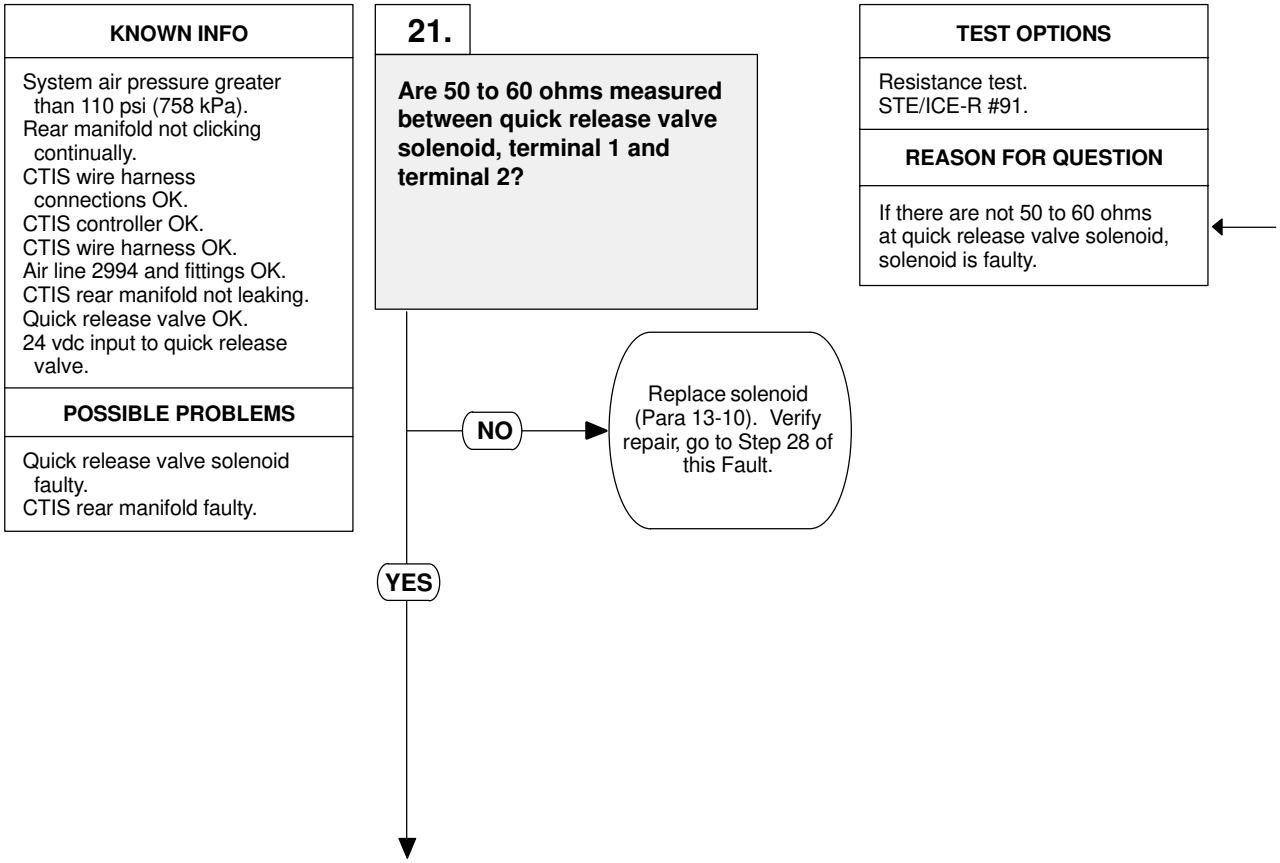
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

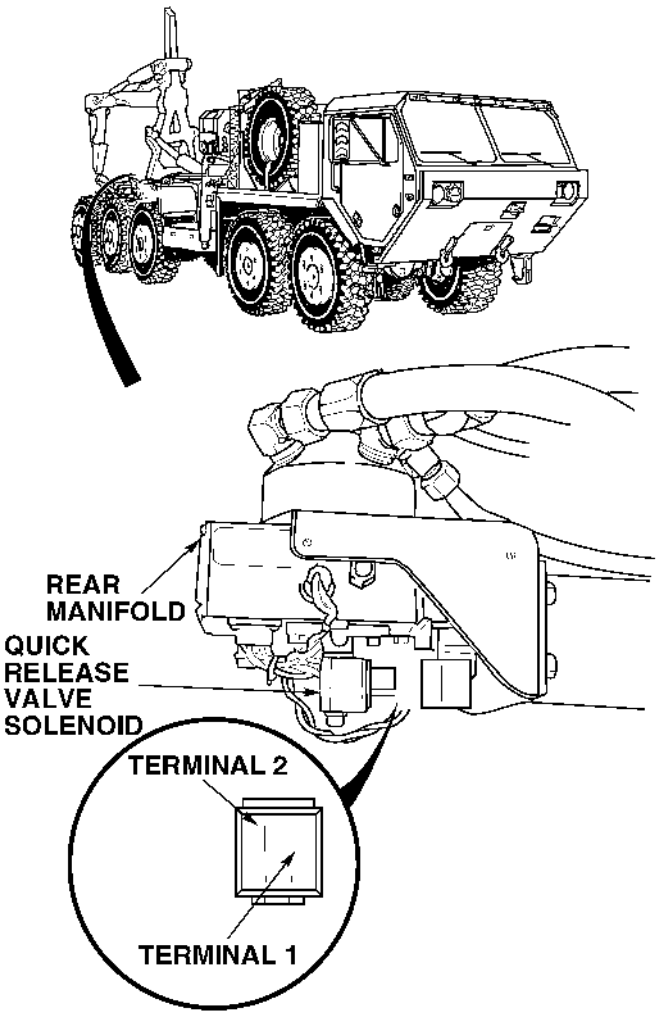
(1) Loosen screw and disconnect quick release valve connector.
(2) Connect positive (+) multimeter lead to quick release valve connector terminal 2.
(3) Connect negative (–) multimeter lead to rear manifold ground braid.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Assistant pushes CTIS START button.
  (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace rear manifold (Para 13-8).
  (b) If 22 to 28 vdc are present, go to Step 21 of this Fault.



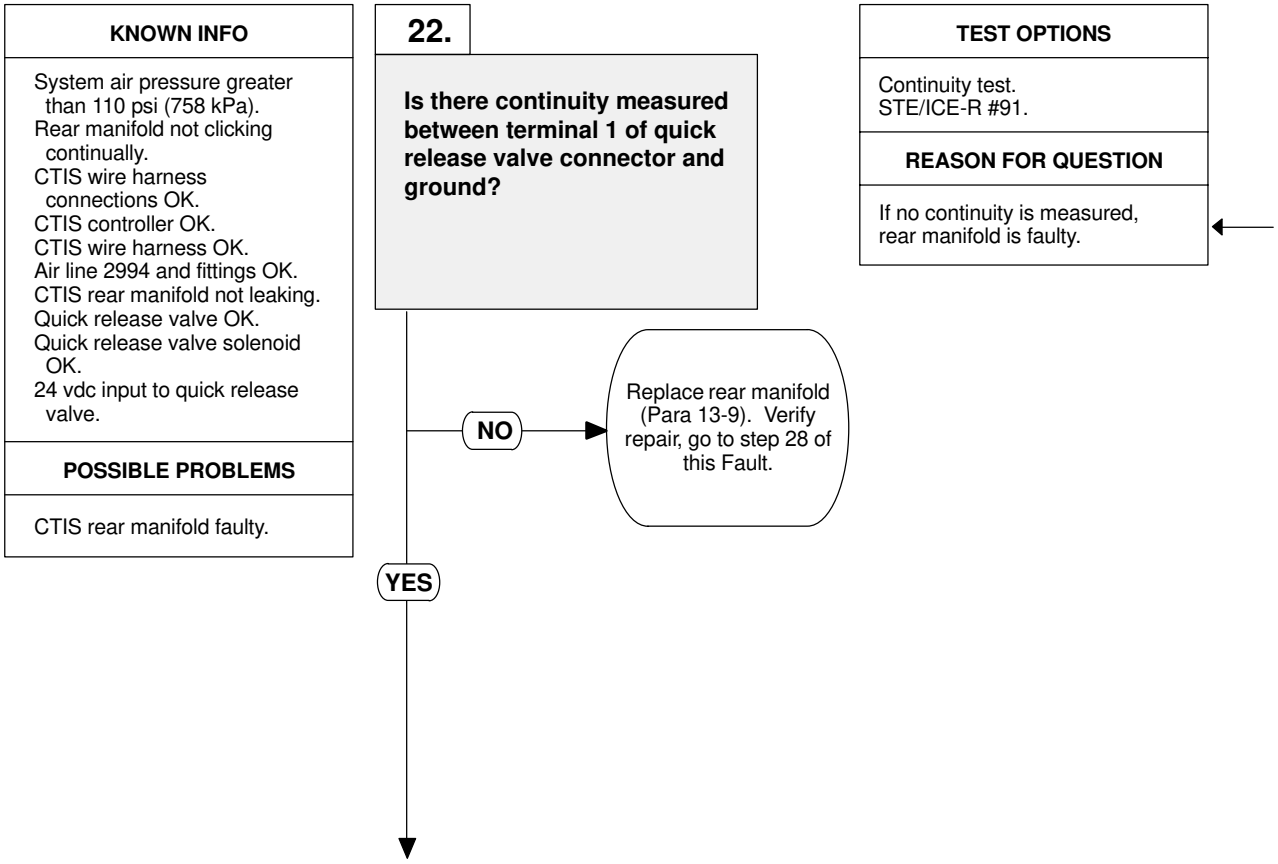
11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



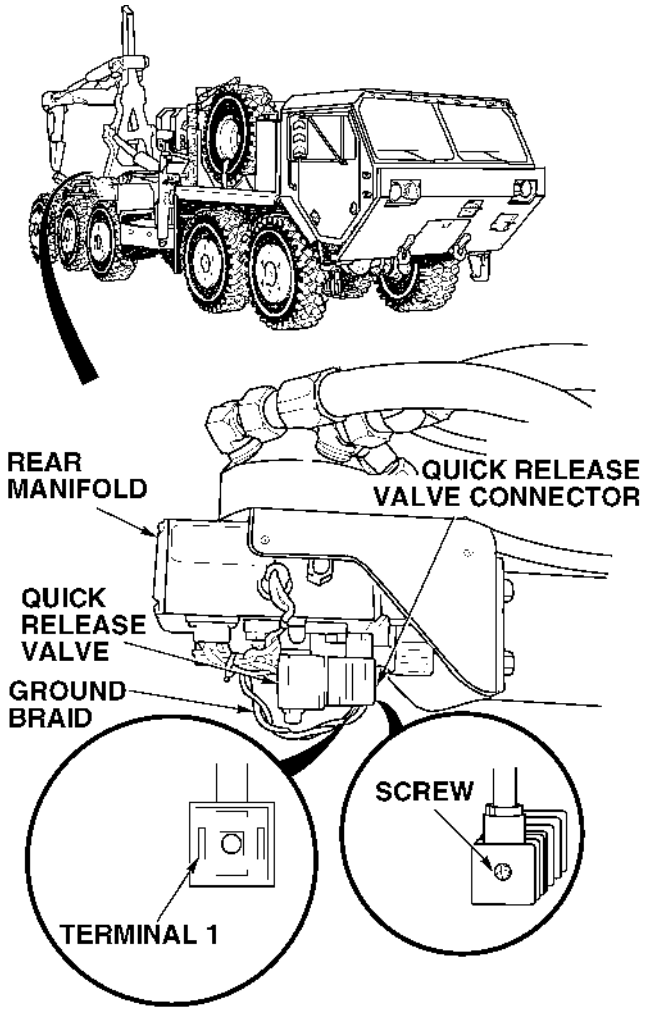
RESISTANCE TEST
(1) Set multimeter select switch to ohms. (2) Read resistance between terminals 1 and 2 of quick release valve solenoid. (a) If there are not 50 to 60 ohms, replace solenoid (Para 13-10). (b) If there are 50 to 60 ohms, solenoid is OK, go to Step 22 of this Fault.



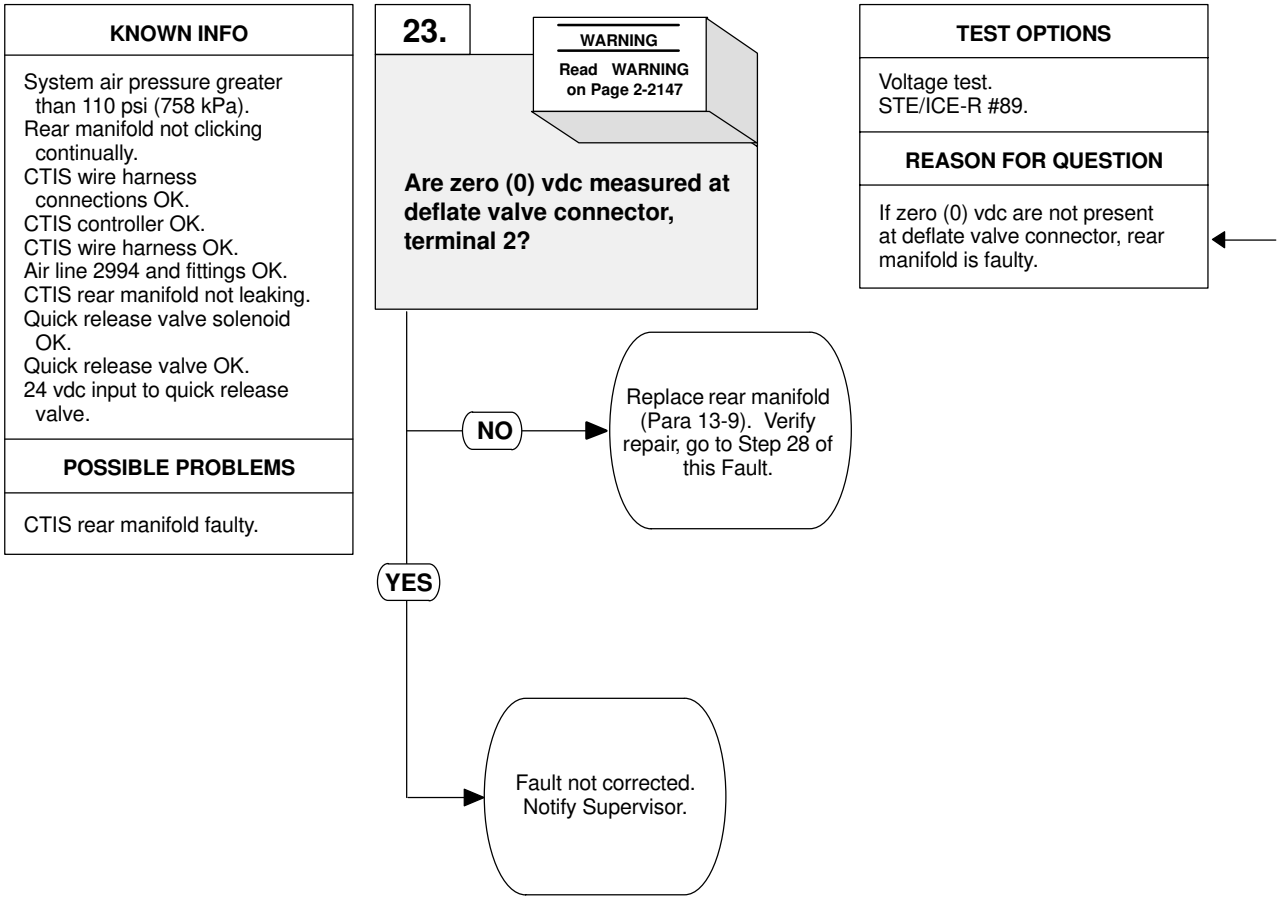
11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



CONTINUITY TEST
Is there continuity measured between terminal 1 at quick release valve connector and a known good ground? (1) If there is no continuity measured, replace rear manifold (Para 13-9). (2) If there is continuity measured, install harness connector on quick release valve and tighten screw.



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

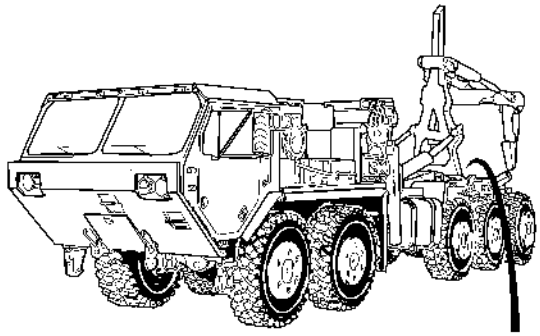
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

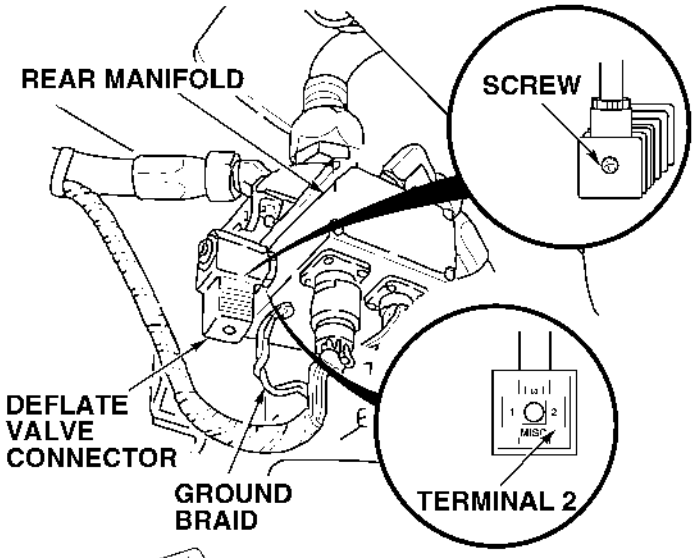
NOTE

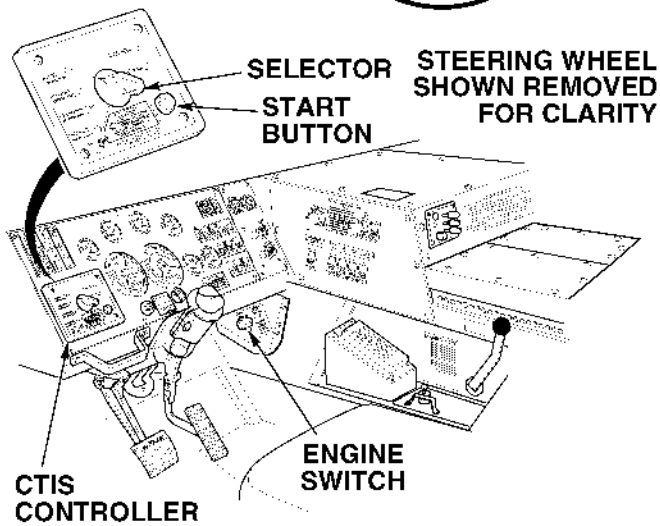
Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VOLTAGE TEST

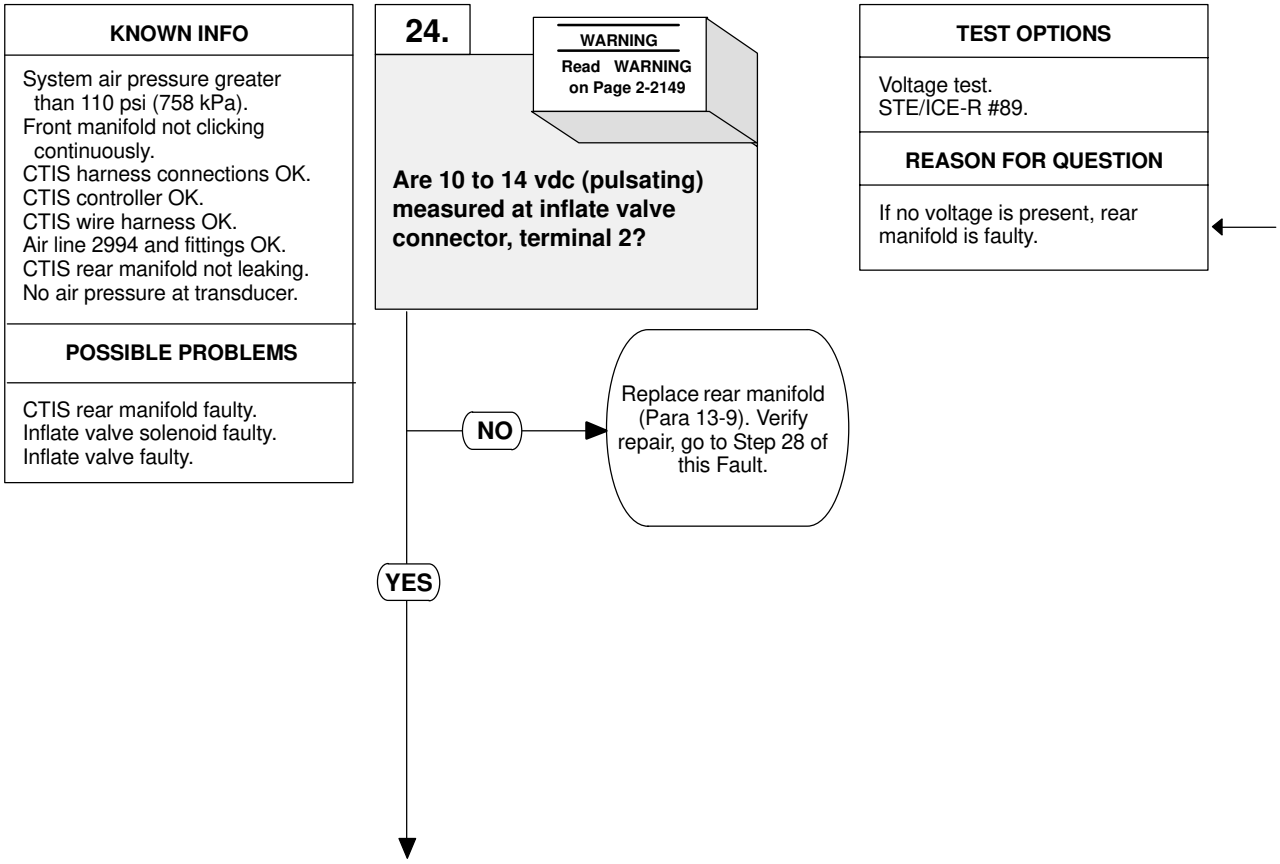
(1) Loosen screw and disconnect deflate valve connector from rear manifold.
(2) Connect positive (+) multimeter lead to deflate valve connector, terminal 2.
(3) Connect negative (–) multimeter lead to rear manifold ground braid.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Assistant pushes CTIS START button.
    (a) If any vdc are present, turn OFF ENGINE switch and replace rear manifold.
    (b) If zero (0) vdc are present manifold is OK. Fault not corrected. Notify Supervisor.
(6) Turn OFF ENGINE switch.
(7) Connect deflate valve connector and tighten screw.







11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



WARNING

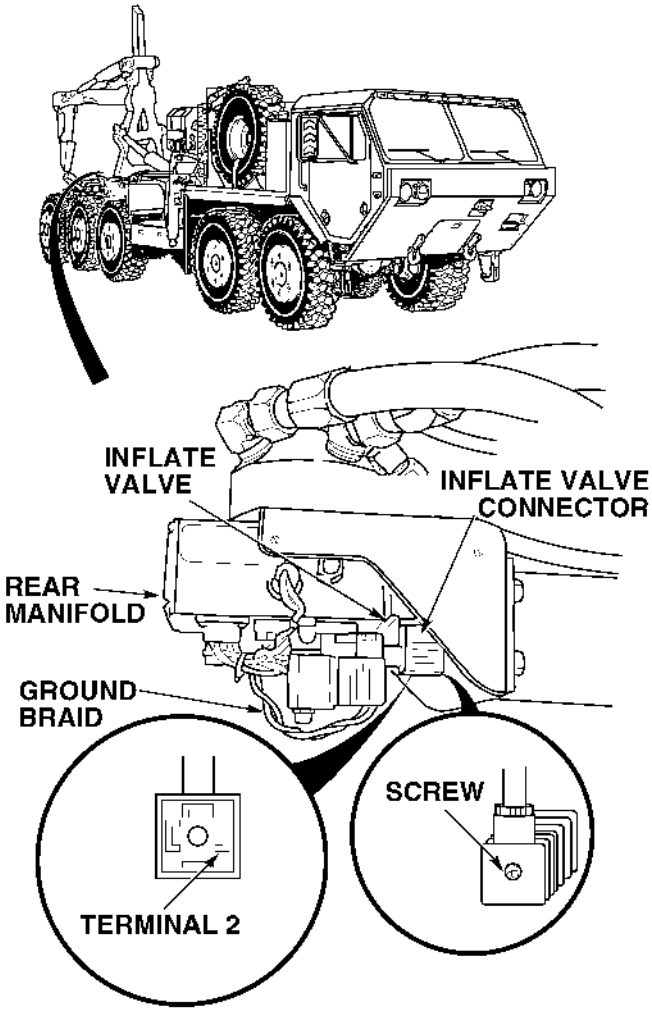
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

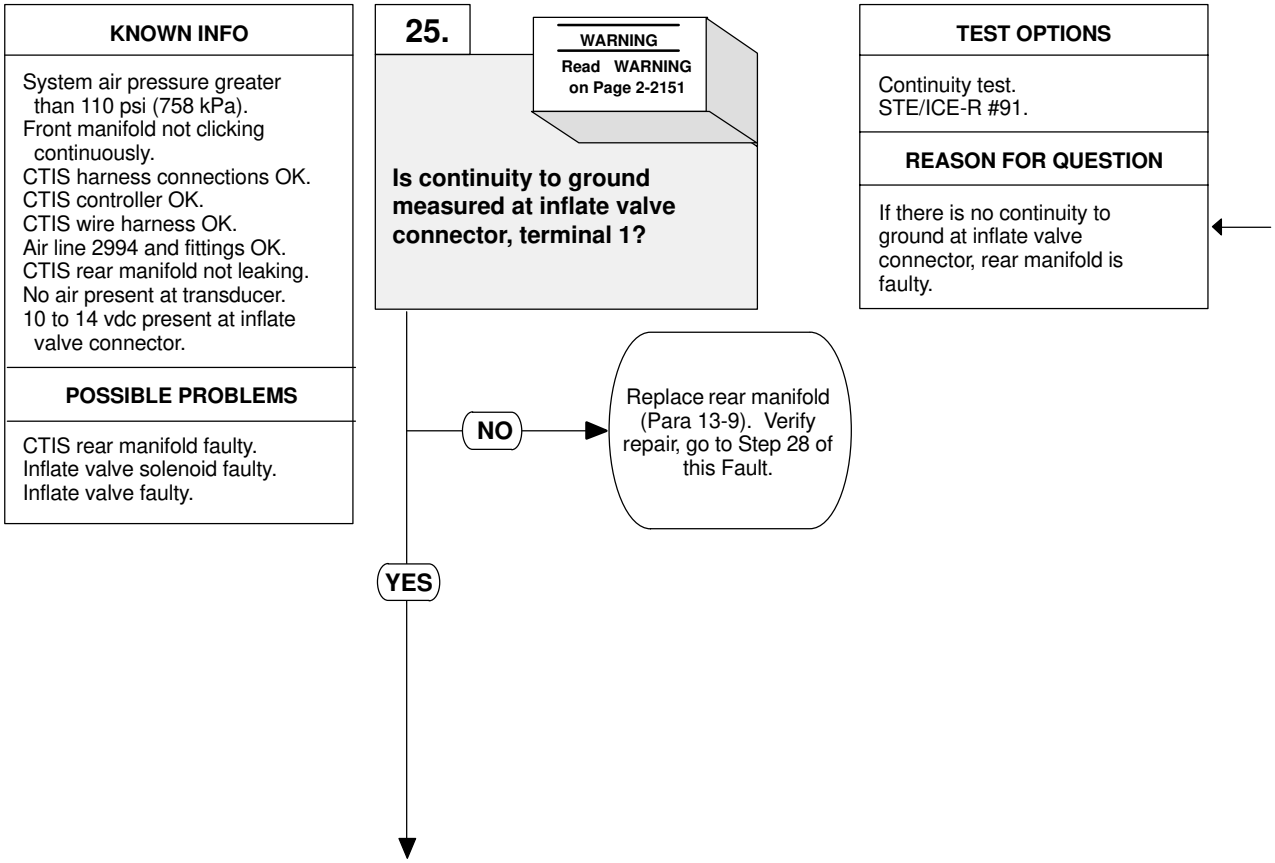
- 10 to 14 vdc (pulsating) will cycle at least five times, then drop to 0 vdc.
- During the cycle course of this test, 10 to 14 vdc will be measured intermittently, then drop to 0 vdc.
- Voltmeter must read 10 to 14 vdc at least one time before dropping to 0 vdc.

VOLTAGE TEST

(1) Loosen screw and disconnect inflate valve connector.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to inflate valve harness connector, terminal 2.
(4) Connect negative (–) multimeter lead to rear manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Assistant pushes CTIS START button.
  (a) If 10 to 14 vdc (pulsating) are not present, turn OFF ENGINE switch and replace rear manifold (Para 13-9).
  (b) If 10 to 14 vdc (pulsating) are present, turn OFF ENGINE switch and go to Step 25 of this Fault.



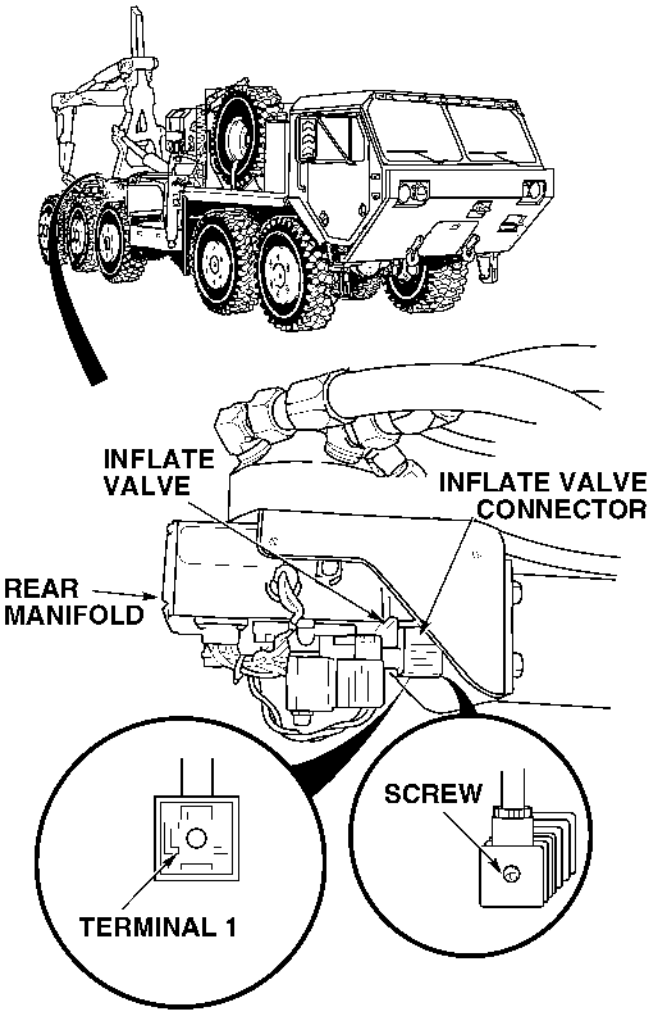
11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



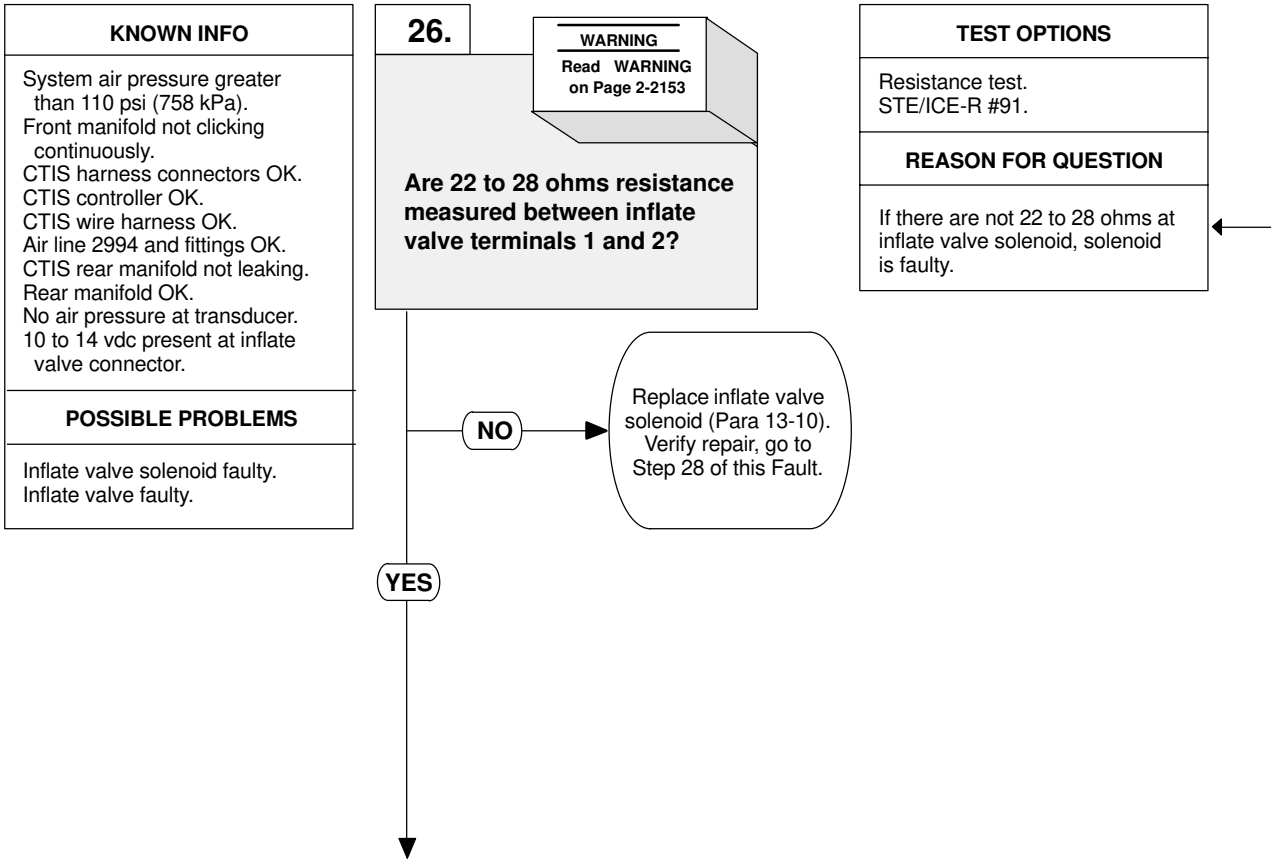
WARNING

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 inflate valve connector, terminal 1 and rear manifold ground braid? (a) If there is no continuity, replace rear manifold (Para 13-9). (b) If there is continuity, go to Step 26 of this Fault.

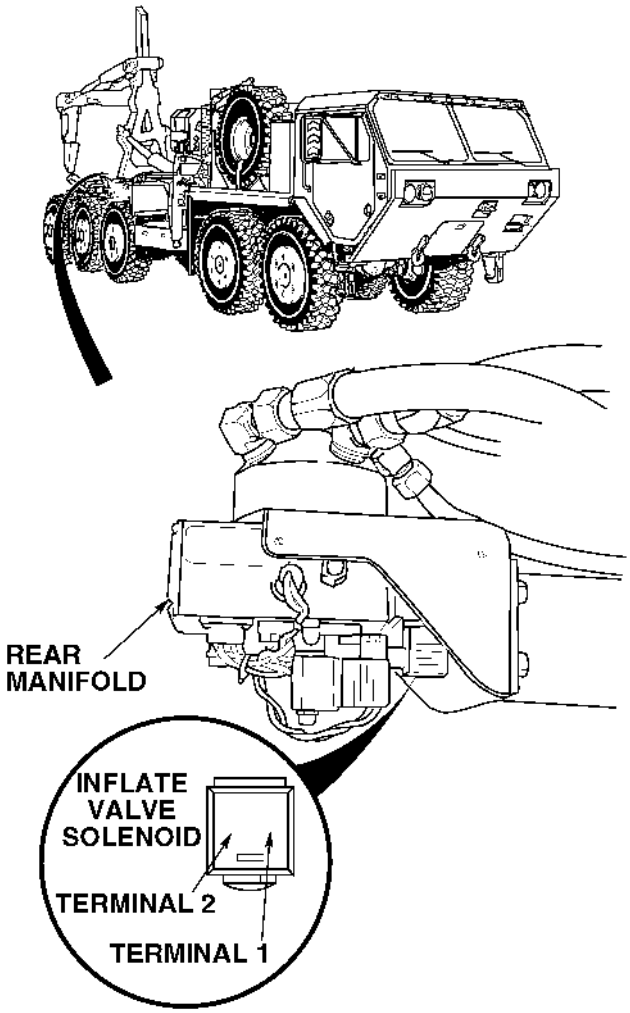


11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



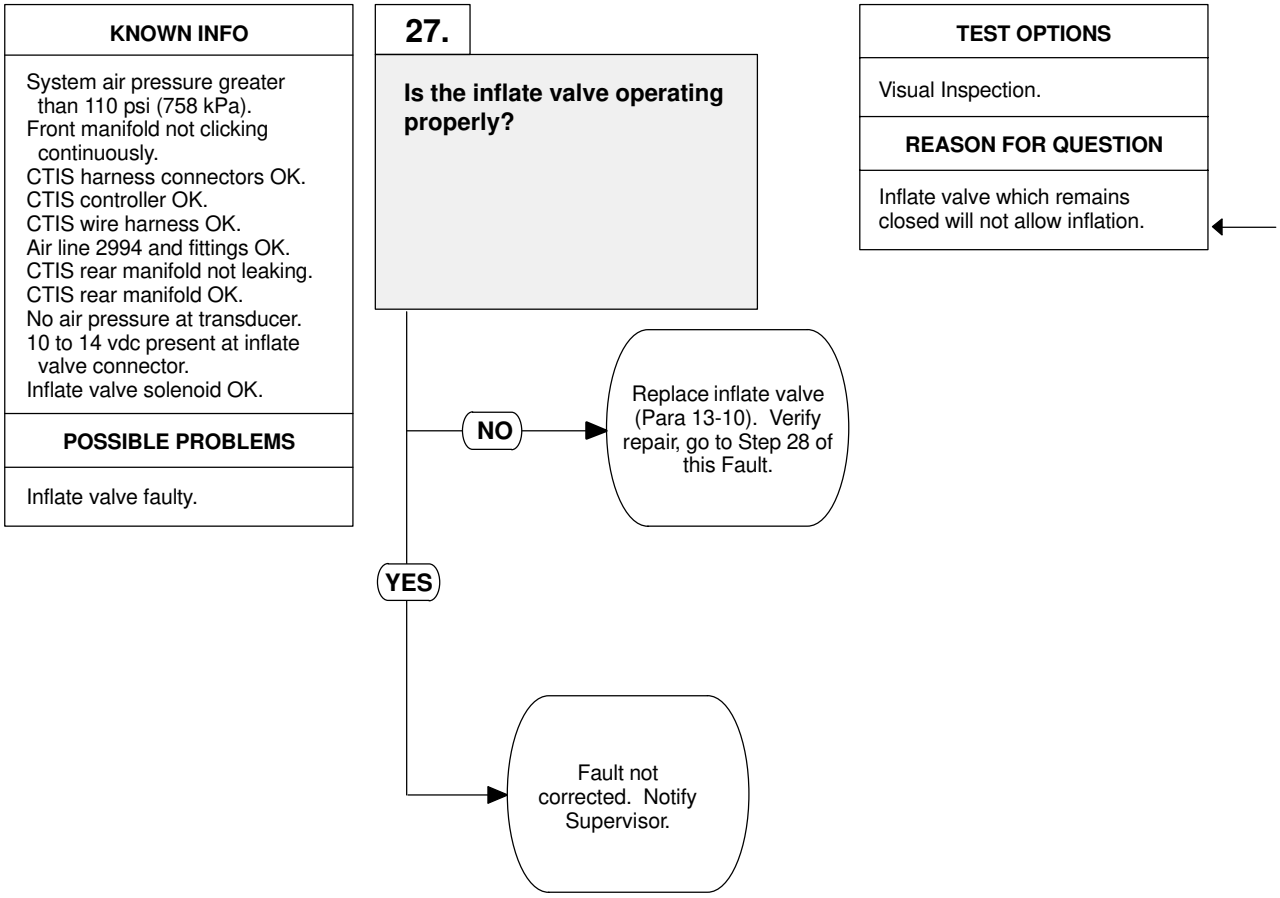
WARNING

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.



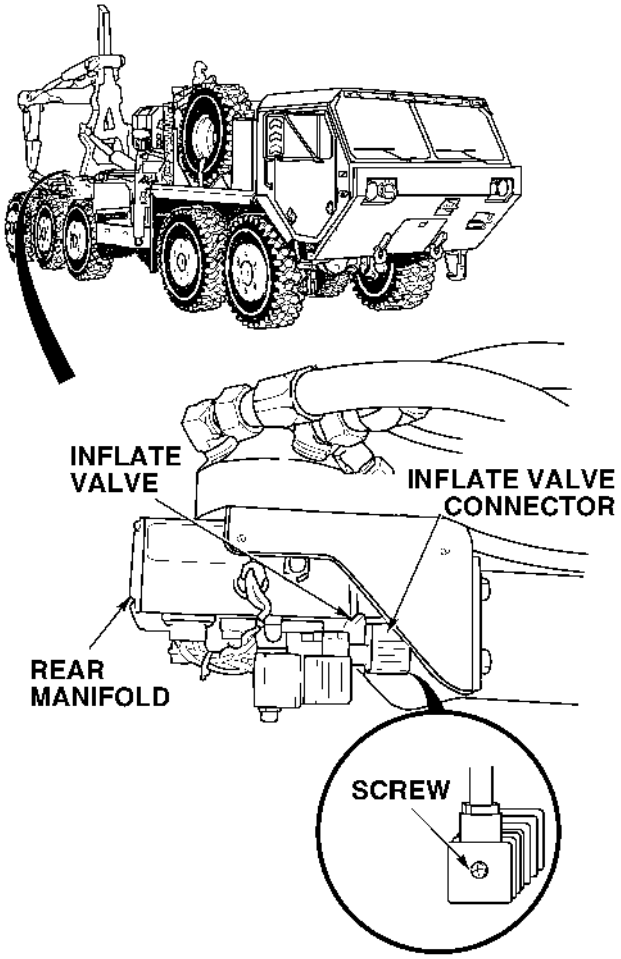
RESISTANCE TEST
Read resistance between terminals 1 and 2 of inflate valve solenoid. (1) If there are not 22 to 28 ohms, replace inflate valve solenoid (Para 13-10). (2) If there are 22 to 28 ohms, inflate valve solenoid is OK, go to Step 27 of this Fault.

11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).

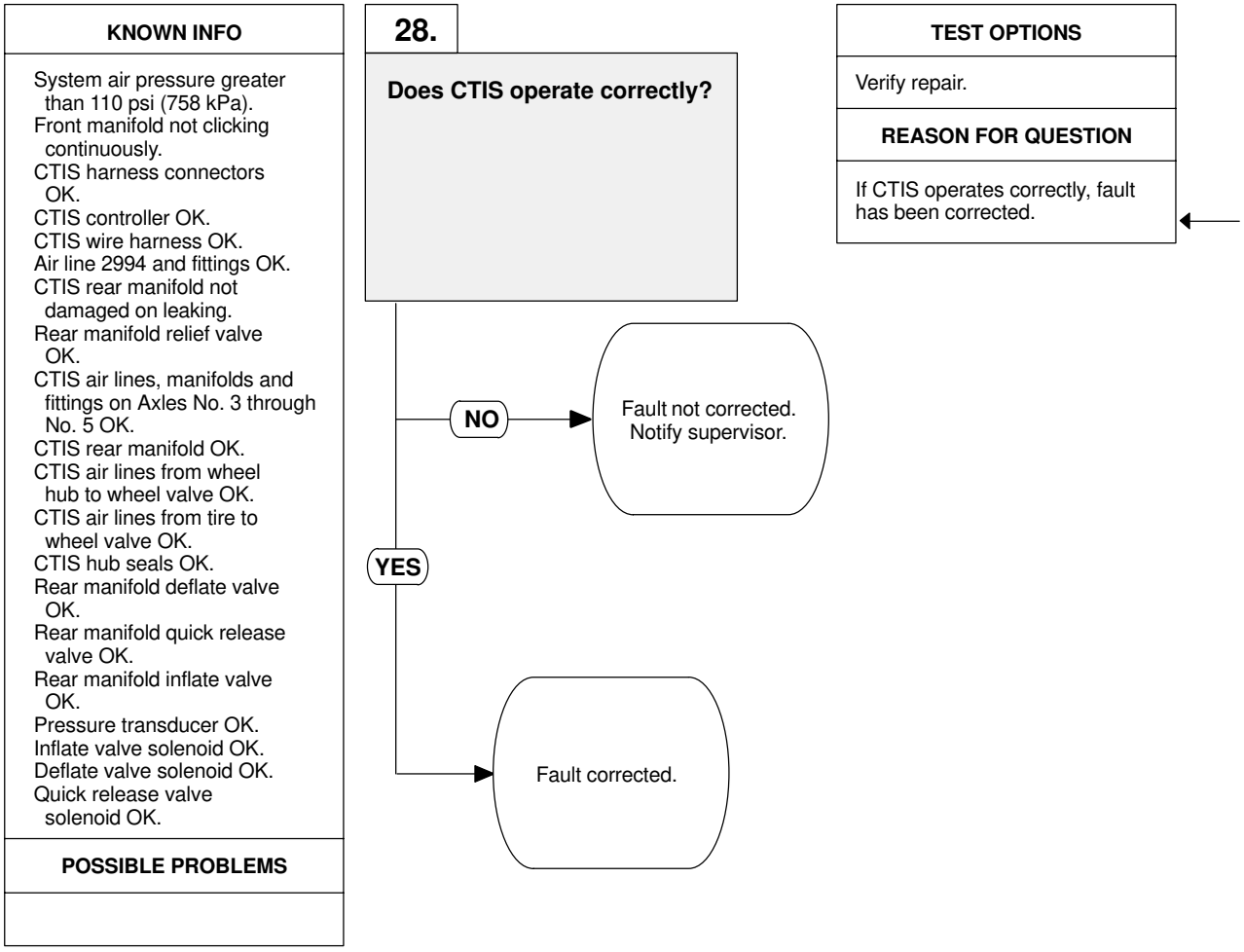


VISUAL INSPECTION

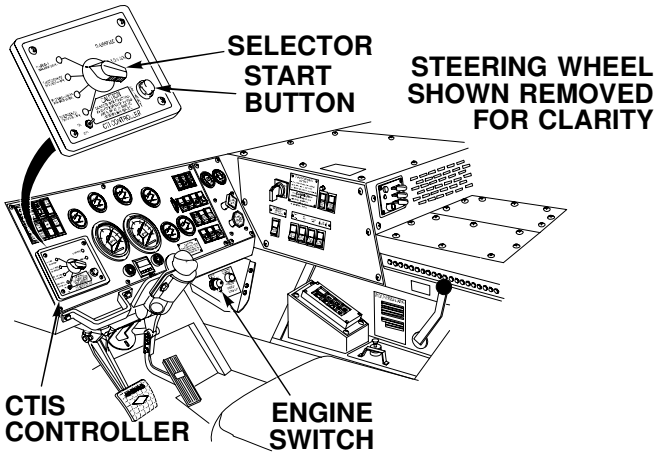
(1) Remove inflate valve from rear manifold (Para 13-10).
(2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking, or any other physical damage.
  (a) If inflate valve is damaged, repair or replace inflate valve (Para 13-10).
  (b) If inflate valve is not damaged, fault is not corrected. Notify supervisor.
(3) Install inflate valve.
(4) Connect inflate valve harness connector and tighten screw.
(5) Install rear manifold cover.
(6) Put LHS in transit position (TM 9-2320-364-10).



11. REAR MANIFOLD CLICKS CONTINUALLY/LOW AIR LIGHT FLASHING (CONT).



VERIFY REPAIR
(1) Start engine (TM 9-2320-364-10). (2) Set CTIS controller selector to HIGHWAY. (3) Press CTIS START button. (a) If rear manifold clicks continually and LOW AIR light flashes, fault not corrected. Turn OFF ENGINE switch and notify Supervisor. (b) If rear manifold does not click continuously and LOW AIR light does not flash, fault has been corrected. (4) Turn OFF ENGINE switch.



2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT).

12. TIRES ON NO. 1 THROUGH NO. 5 AXLES, DEFLATE UPON COMPLETION OF ADJUSTMENT CYCLE.

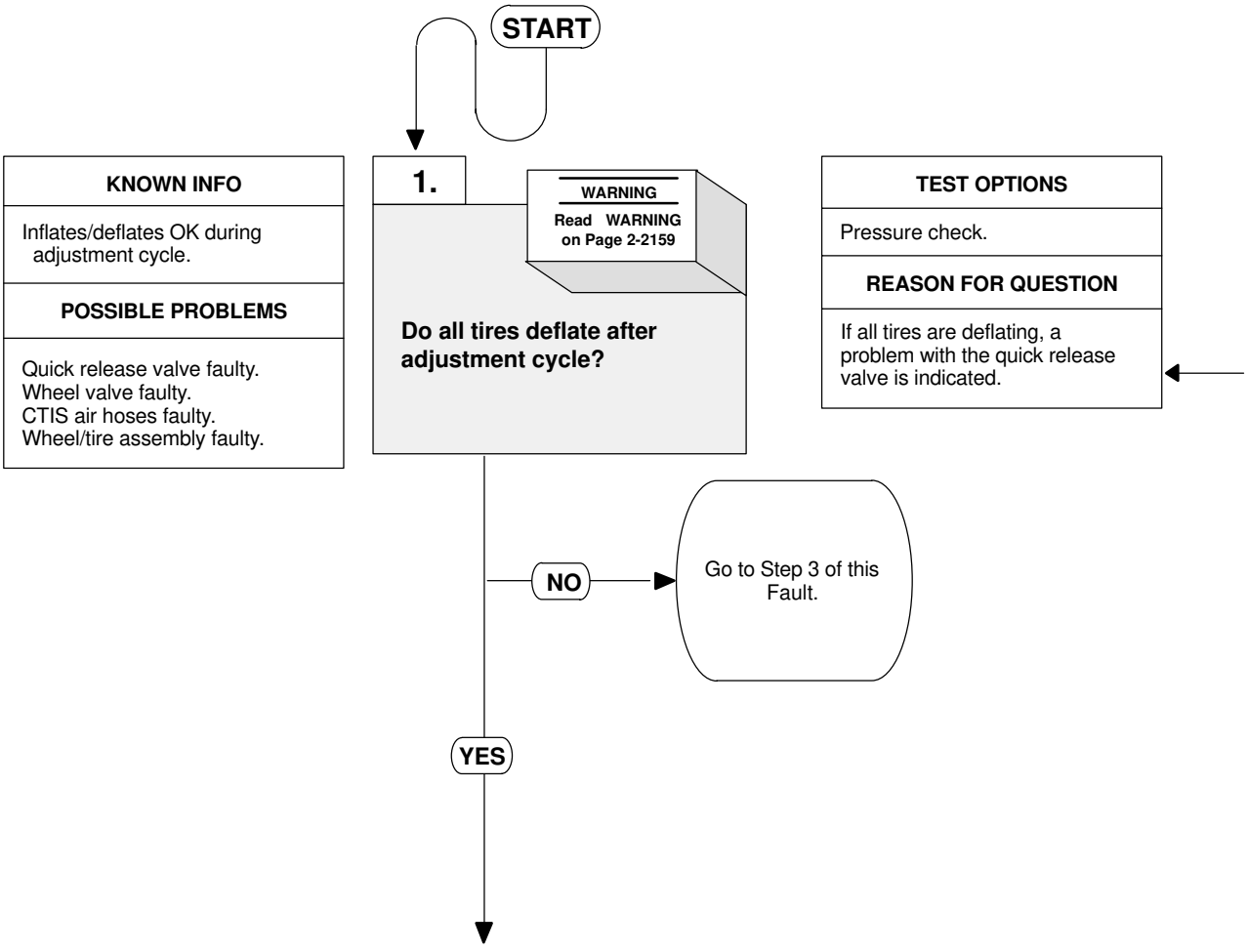
INITIAL SETUP

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

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

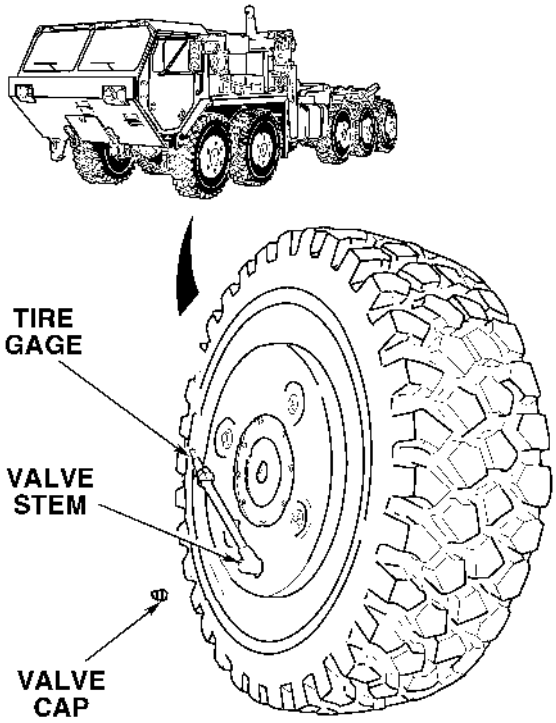
References
TM 9-2320-364-10

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



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



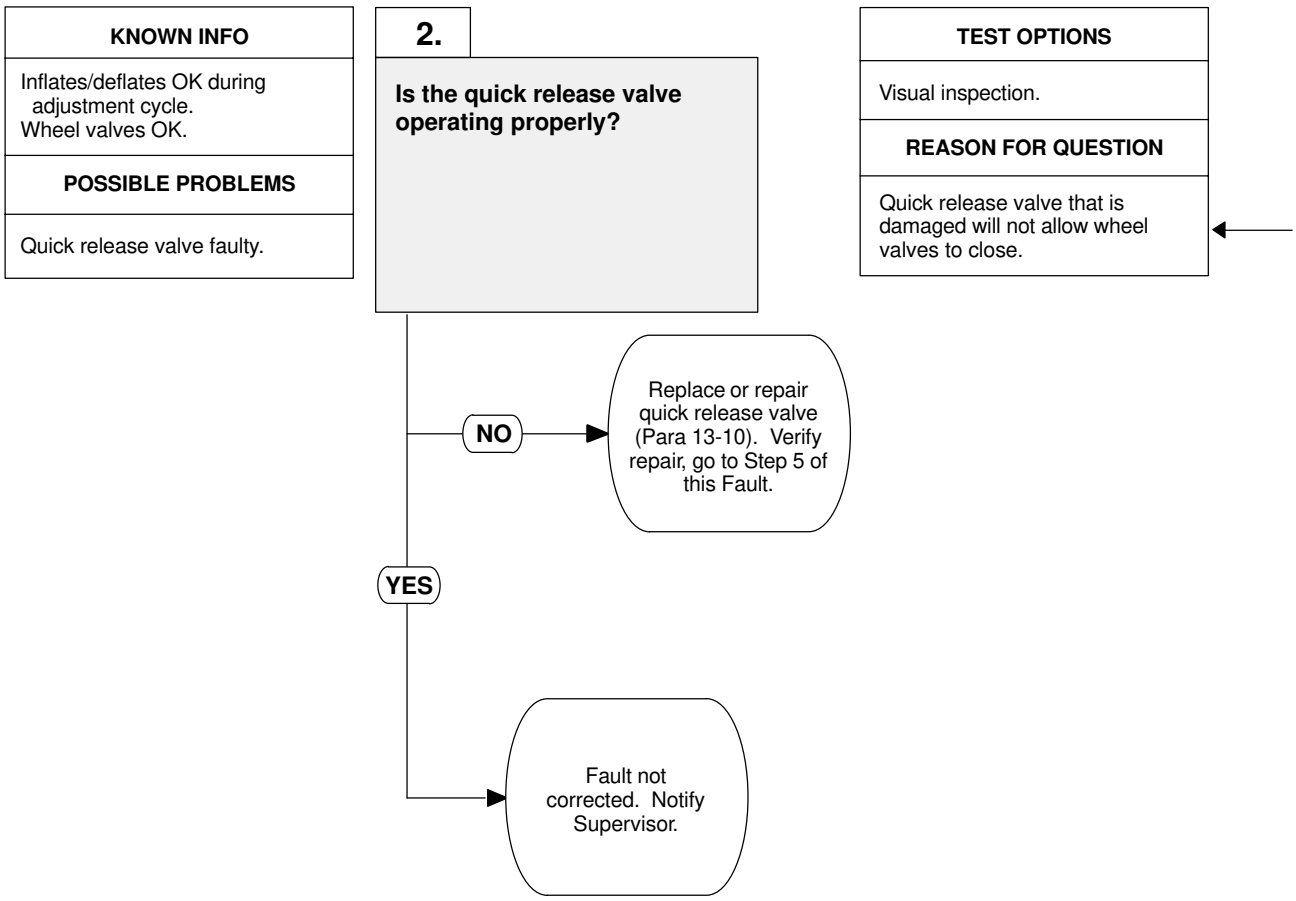
NOTE

- Tires must be deflated to 60 psi (414) kPa) or less to perform this test.
- Troubleshooting procedures are the same for Axles No. 1 and No. 2 as well as Axles No. 3 through No. 5. Axles No. 1 and No. 2 are covered in this procedure.

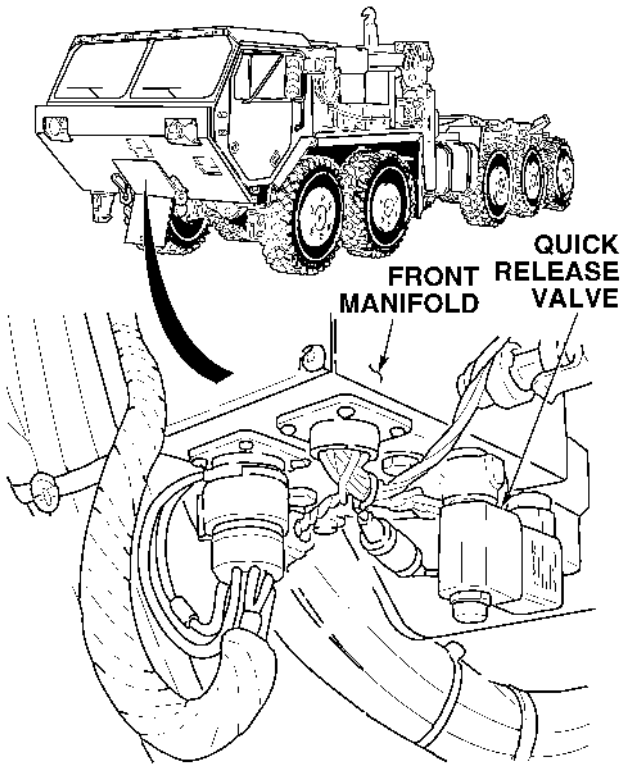
PRESSURE CHECK

(1) Remove valve cap from any valve stem on Axles No. 1 or No. 2.
(2) Using tire gage, deflate any one tire on Axles No. 1 or No. 2 to 40 psi (276 kPa).
(3) Start engine (TM 9-2320-364-10).
(4) Set CTIS controller selector to HIGHWAY.
(5) Press CTIS START button.
(6) Check pressure in all tires with tire gage.
    (a) If all tires are not deflating, turn OFF ENGINE switch and go to Step 3 of this Fault.
    (b) If all tires are deflating, wheel valves are OK.
(7) Turn OFF ENGINE switch.

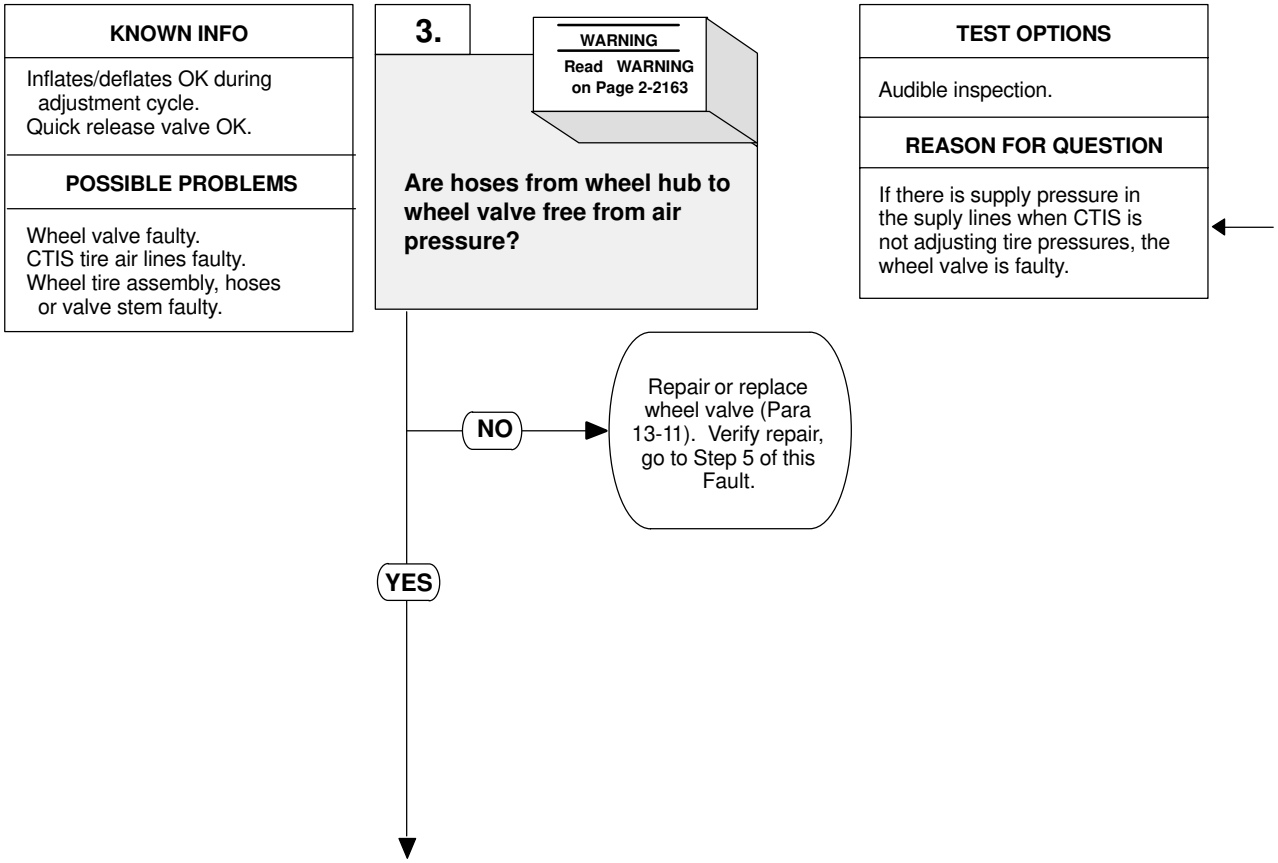
12. TIRES ON NO. 1 THROUGH NO. 5 AXLES DEFLATE UPON COMPLETION OF ADJUSTMENT CYCLE (CONT).



VISUAL INSPECTION
(1) Remove quick release valve from front manifold (Para 13-10). (2) Inspect valve assembly for a broken spring, damaged diaphragm, sticking, or any other physical damage. (a) If quick release valve is damaged, repair or replace valve (Para 13-10). (b) If quick release valve is not damaged, install quick release valve and notify supervisor.



12. TIRES ON NO. 1 THROUGH NO. 5 AXLES DEFLATE UPON COMPLETION OF ADJUSTMENT CYCLE (CONT).

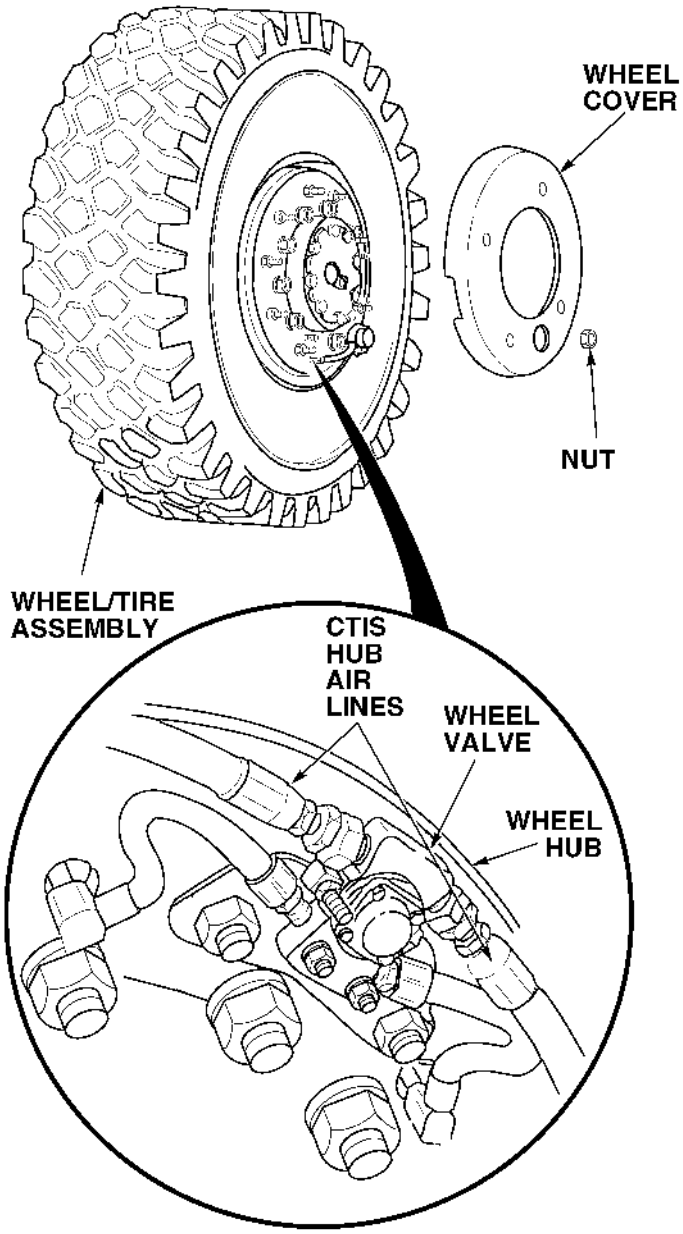


WARNING

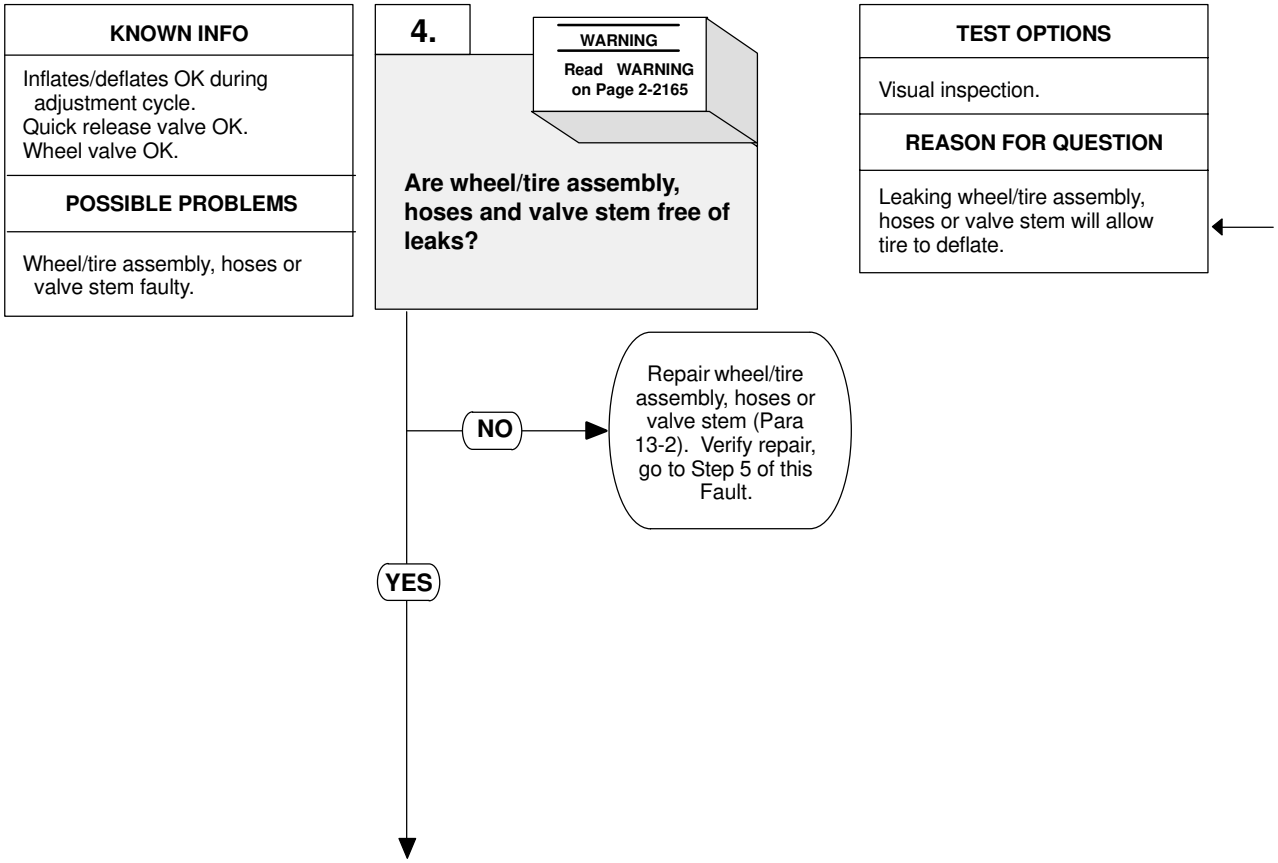
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

AUDIBLE INSPECTION

(1) Remove four nuts and wheel cover.
(2) Start engine (TM 9-2320-364-10).
(3) Set CTIS controller to HIGHWAY.
(4) Press CTIS START button.
(5) Check for air pressure in hub to wheel valve air lines by cracking open fittings at wheel valve.
    (a) If air is escaping, turn OFF ENGINE switch and repair or replace wheel valve (Para 13-11).
    (b) If no air is escaping, wheel valve is OK.
(6) Turn OFF ENGINE switch.



12. TIRES ON NO. 1 THROUGH NO. 5 AXLES DEFLATE UPON COMPLETION OF ADJUSTMENT CYCLE (CONT).



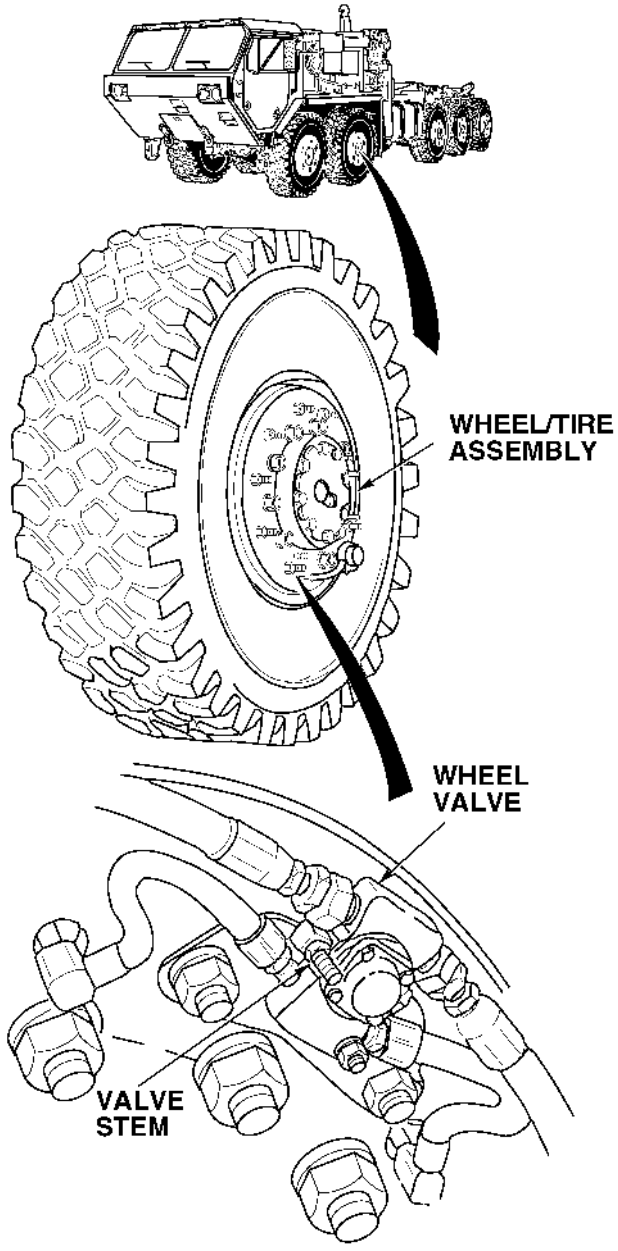
WARNING

- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.
- Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

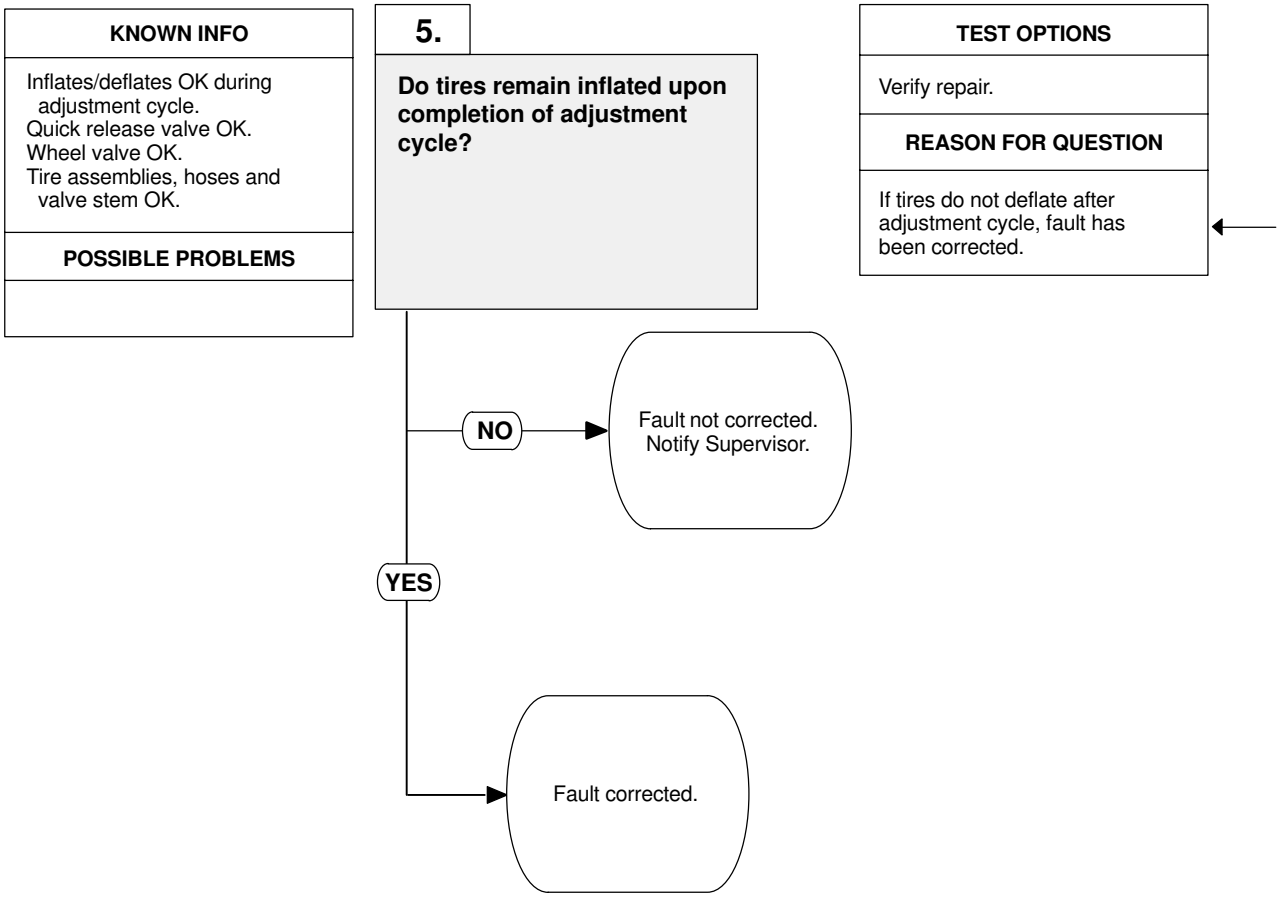
NOTE

Soap and water solution can be used to check for leaks.

VISUAL INSPECTION
(1) Inspect wheel/tire assembly, hoses and valve stem for leaks. (a) If leaks are found, repair or replace damaged components (Para 13-2). (b) If no leaks are found, fault is not corrected, notify Supervisor. (2) Install wheel cover and four nuts.



12. TIRES ON NO. 1 THROUGH NO. 5 AXLES DEFLATE UPON COMPLETION OF ADJUSTMENT CYCLE (CONT).

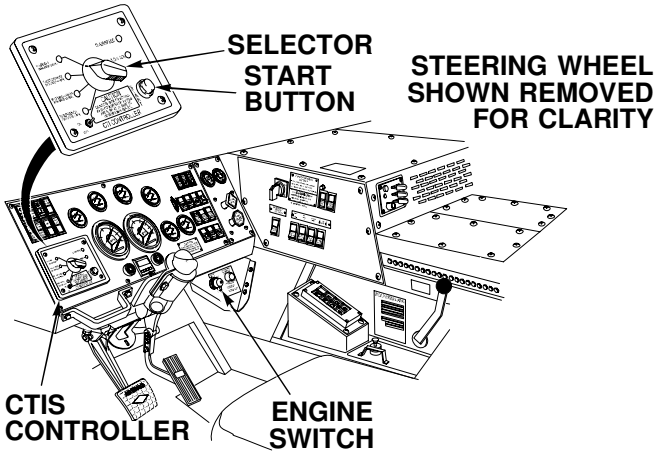


NOTE

Tires must be deflated to 60 psi (414 kPa) or less to perform this test.

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set CTIS controller selector to HIGHWAY.
(3) Press CTIS START button and allow tires to fill to HIGHWAY setting.
(4) Check pressure of tires with tire pressure gage.
    (a) If tires are deflating, fault is not corrected. Turn OFF ENGINE switch and notify Supervisor.
    (b) If tires do not deflate, fault has been corrected.
(5) Turn OFF ENGINE switch.



2-26. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING (CONT.)

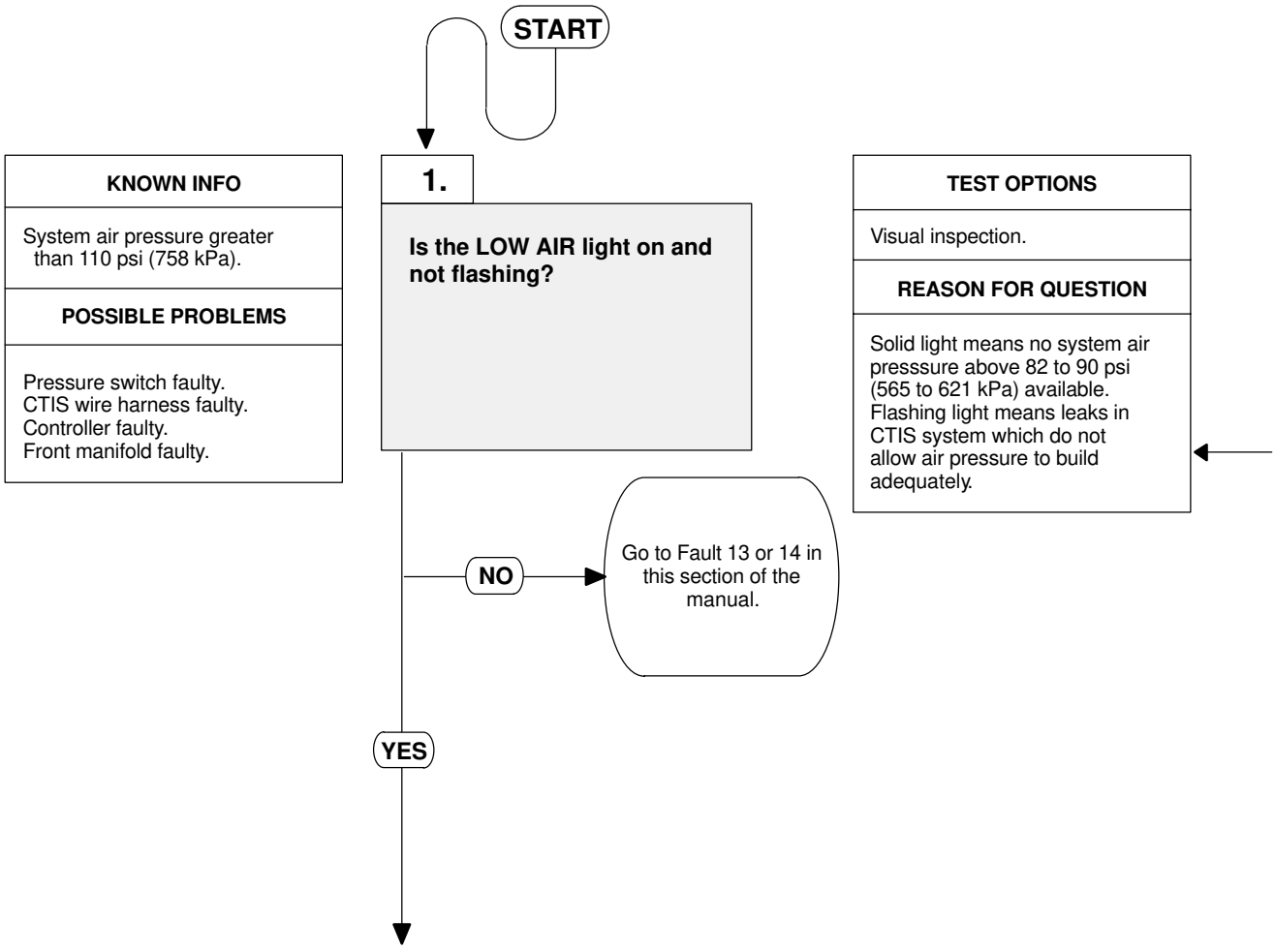
13. CTIS LOW AIR INDICATOR STAYS ON OVER 110 PSI.

INITIAL SETUP

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

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

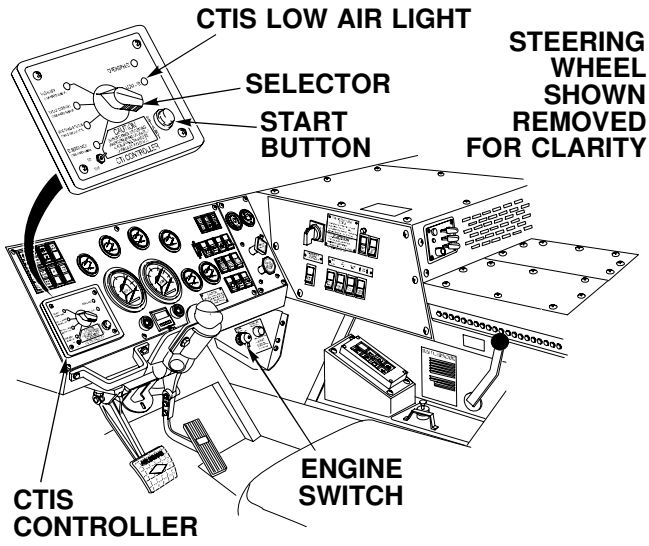
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheel chocked, (TM 9-2320-364-10)
CTIS front manifold cover removed, (Para 13-8)
Front access cover opened, (TM 9-2320-364-10)
CTIS turned on, (TM 9-2320-364-10)



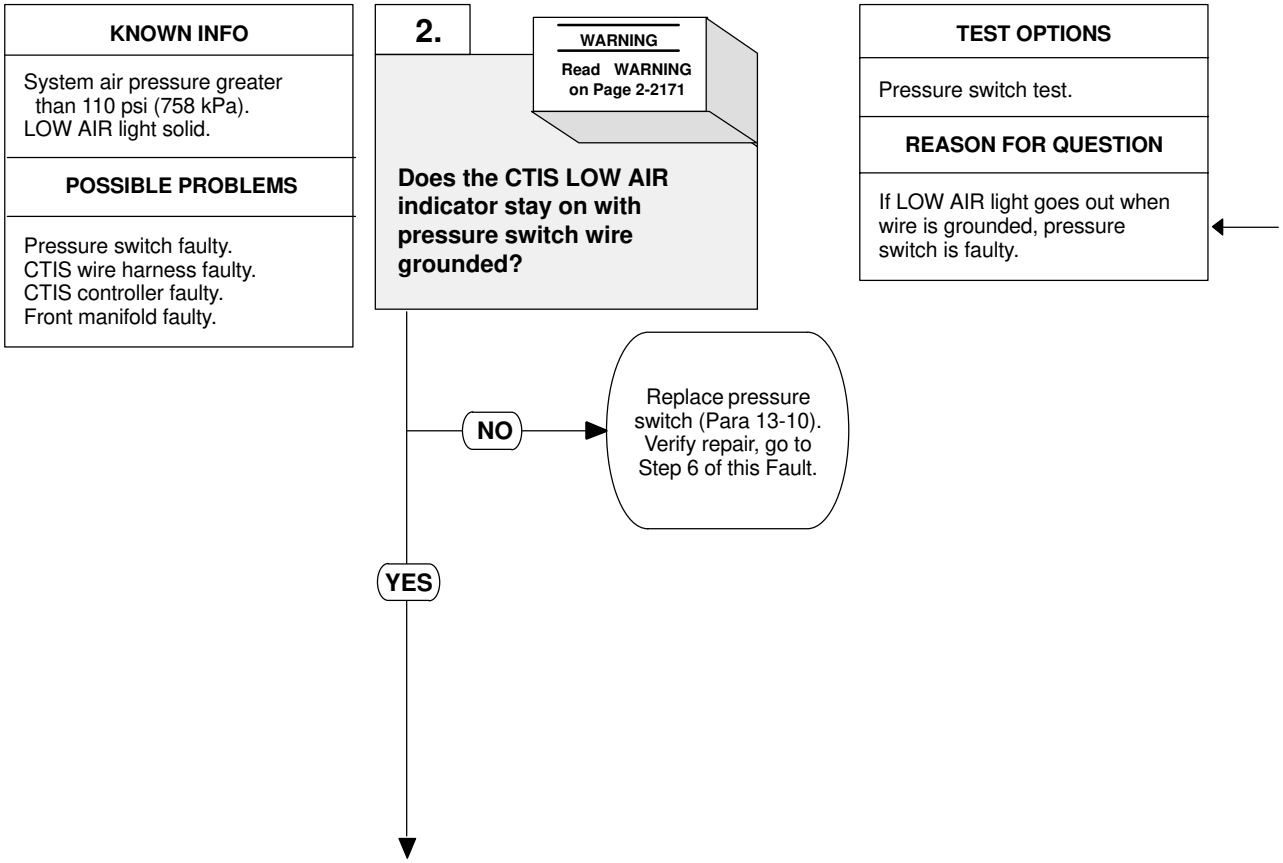
NOTE

- The CTIS initially and periodically checks for system air leaks. The CTIS will display a flashing LOW AIR light and shut off if 6 psi cannot be maintained by the CTIS system. The manifold will click during this check for approximately 1-1/2 minutes.
- CTIS air lines are pressurized only when CTIS is in inflate, deflate, or test cycles.
- Tests 1 thru 5 can be made consecutively while the CTIS system is in the inflate cycle.
- Normal inflation time from EMERGENCY to HIGHWAY setting is approximately 12 minutes at high idle.
- Excess inflation times, sometimes accompanied by a flashing LOW AIR light is normal if engine is at idle rpm and/or air operated accessories are being used.

VISUAL INSPECTION
(1) Start engine (TM 9-2320-364-10). (2) Build up air pressure to 120 psi $\pm$ 5 (830 kPa $\pm$ 34). (3) Observe CTIS LOW AIR light. (a) If CTIS LOW AIR light is flashing, go to Fault 13 or 14. (b) If CTIS LOW AIR light is on, go to Step 2 of this Fault.



13. CTIS LOW AIR INDICATOR STAYS ON OVER 110 PSI (CONT).

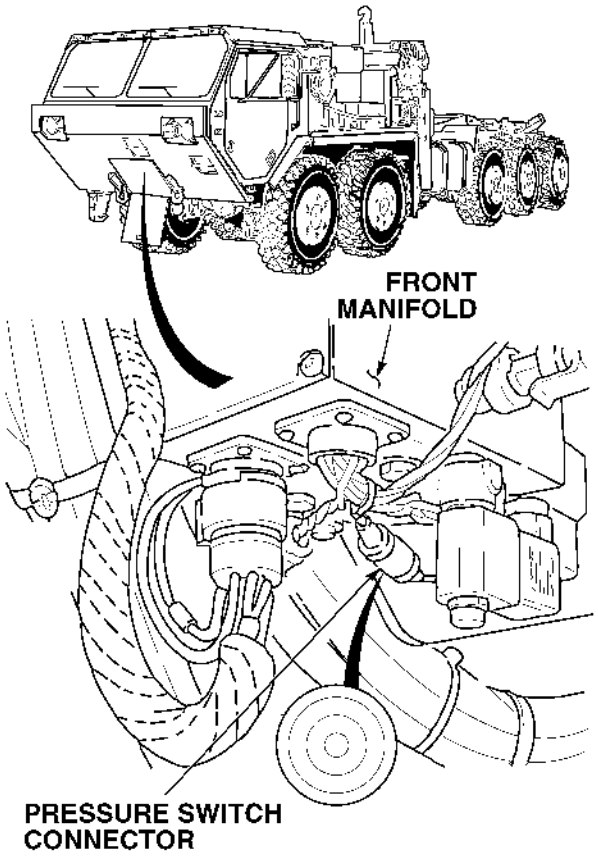


WARNING

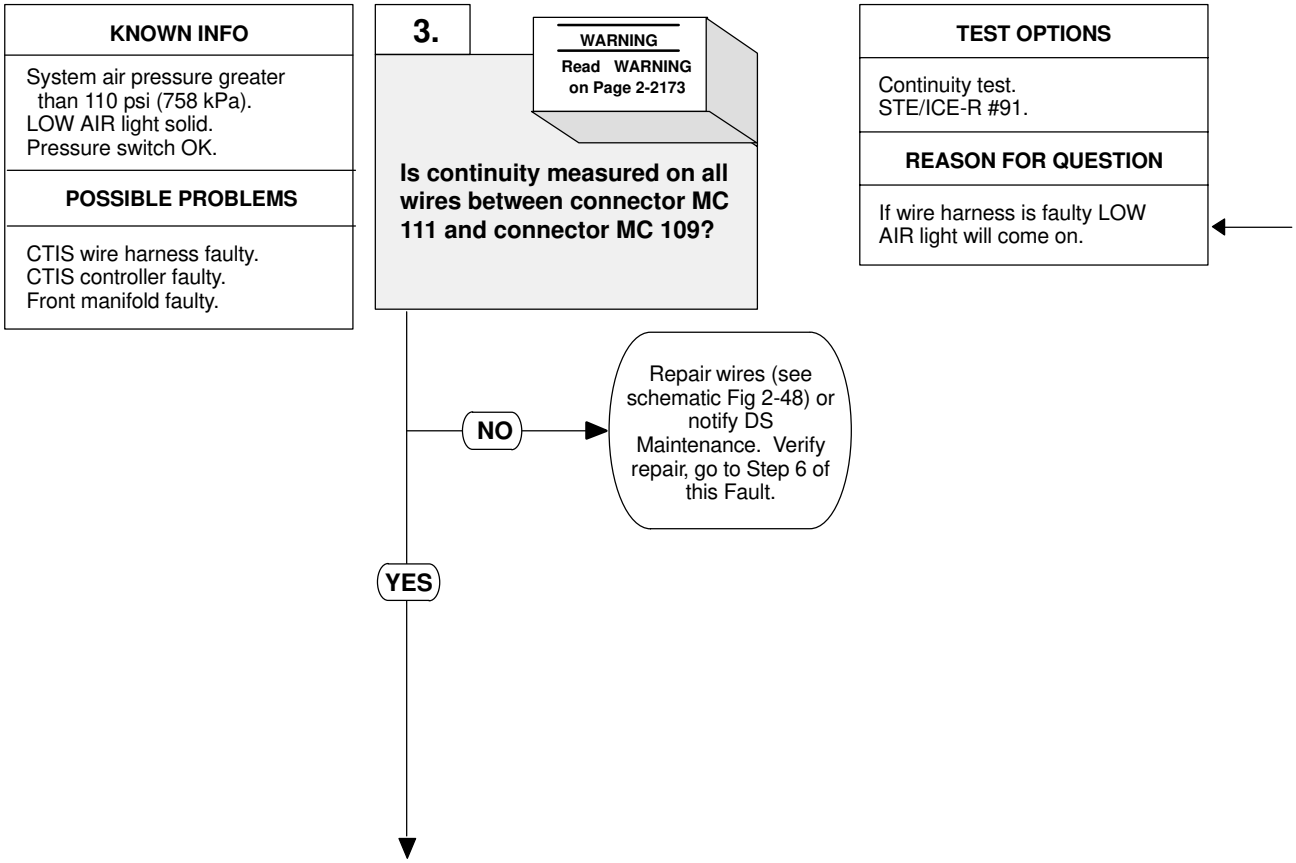
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

PRESSURE SWITCH TEST

(1) Disconnect pressure switch connector.
(2) Using jumperwire, attach harness end of pressure switch wire to a known good ground.
   (a) If LOW AIR light goes out, turn OFF ENGINE switch and replace pressure switch (Para 13-10).
   (b) If LOW AIR light remains on, pressure switch is OK.
(3) Turn OFF ENGINE switch (TM 9-2320-364-10).



13. CTIS LOW AIR INDICATOR STAYS ON OVER 110 PSI (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

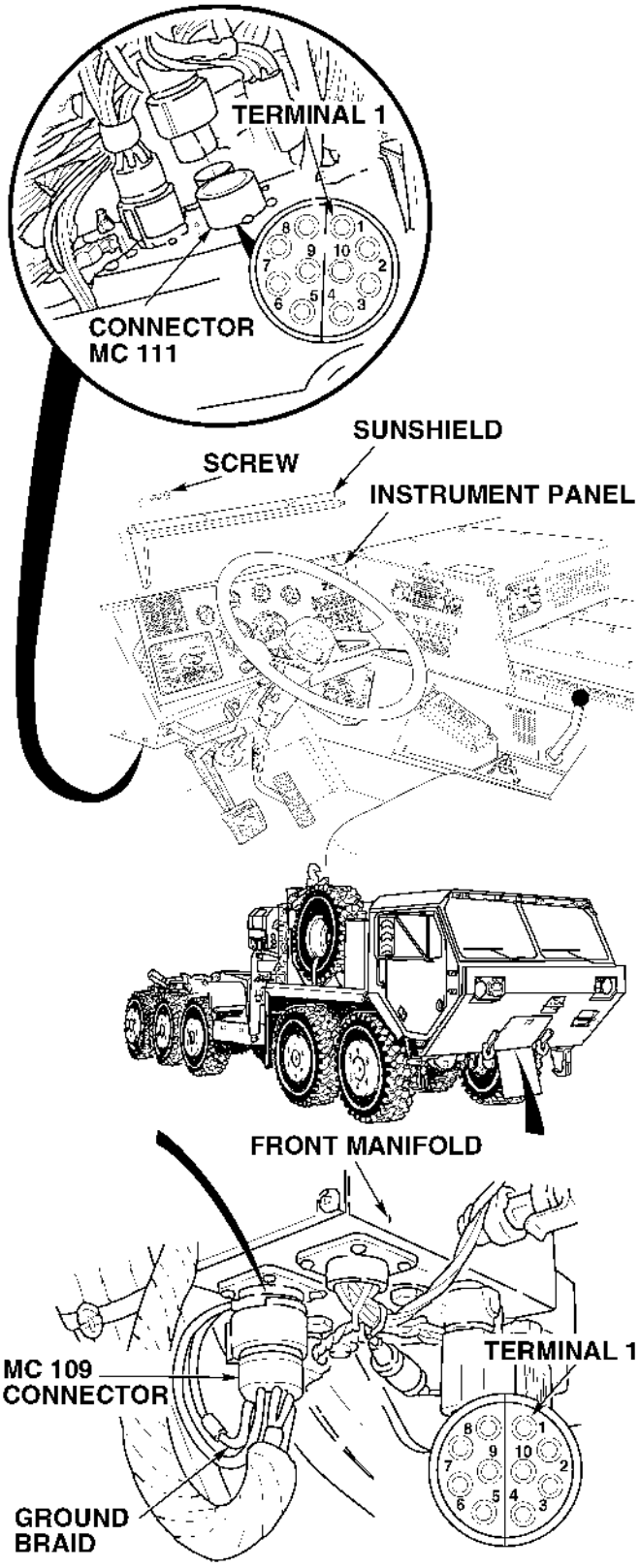
Terminal (5) at MC111 is plugged and does not connect to terminal (5) on MC109.

CONTINUITY TEST

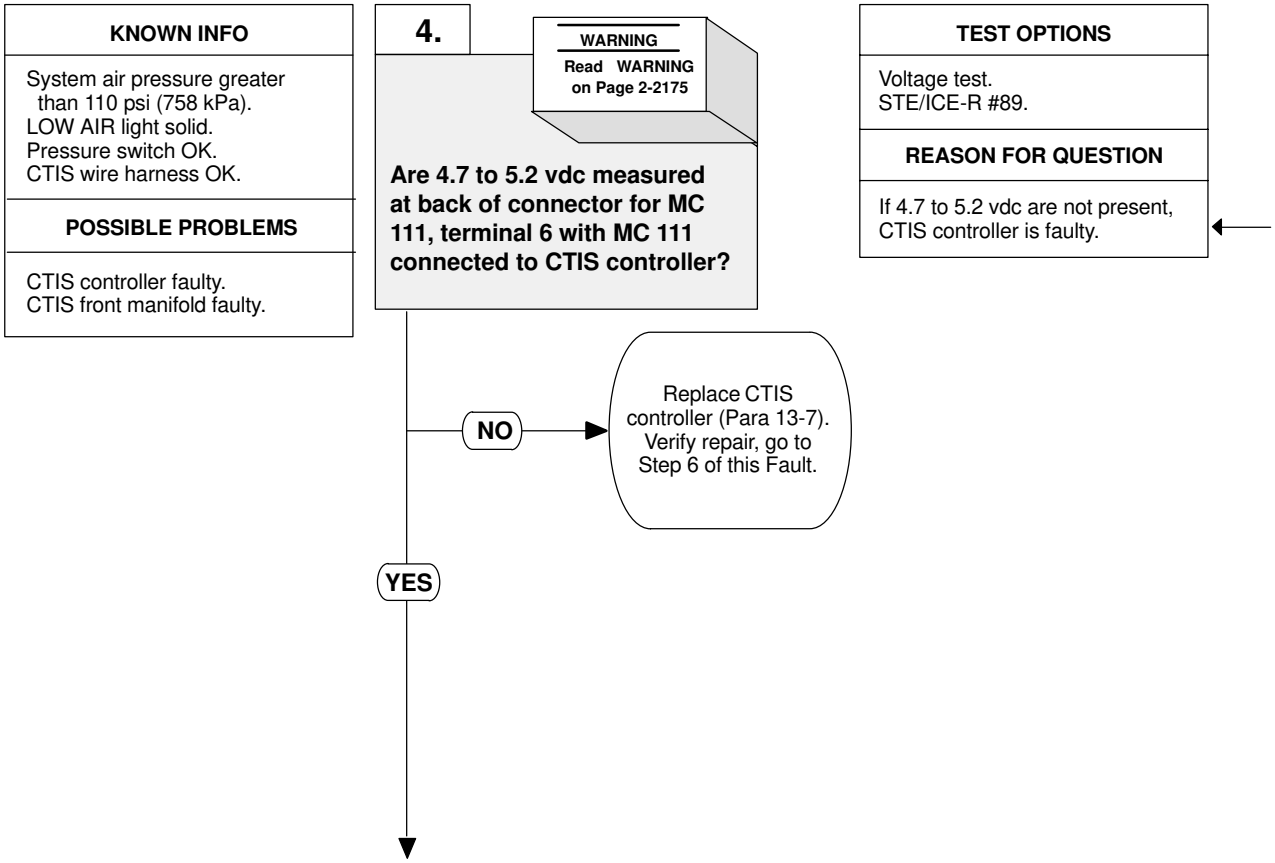
(1) Remove ten screws, sunshield and tilt instrument panel.
(2) Disconnect connector MC 109 from CTIS front manifold.
(3) Set multimeter select switch to ohms.
(4) Disconnect front manifold harness connector MC 111 from back of CTIS controller.
(5) Connect jumperwire between wire 1056 on CTIS controller connector MC 111, terminal 1 and a known good ground.
(6) Is there continuity between connector MC 109, terminal 1 and front manifold ground braid?
  (a) If there is no continuity, repair wire 1056 (see schematic Fig 2-48) or notify DS Maintenance, and perform Steps (7) through (9) below.
  (b) If there is continuity, wire 1056 is OK.
(7) Check continuity of remaining wires and terminals using Steps (5) and (6) above. The wires and corresponding terminals are listed below (see schematic Fig 2-48).

1057(2)	1063(5) to ground (MC109 only)	
1058(3)	1061(6)	Shield (8)
1059(4)	1062(7)	1064(9)
		1065(10)

(8) Remove jumperwire.
(9) Connect connector MC 111 to back of CTIS controller.



13. CTIS LOW AIR INDICATOR STAYS ON OVER 110 PSI (CONT).

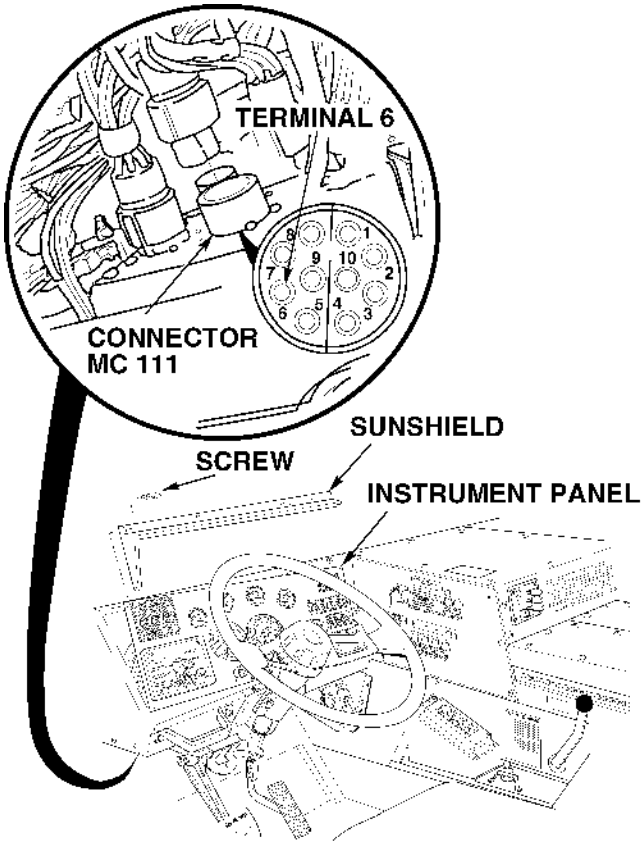


WARNING

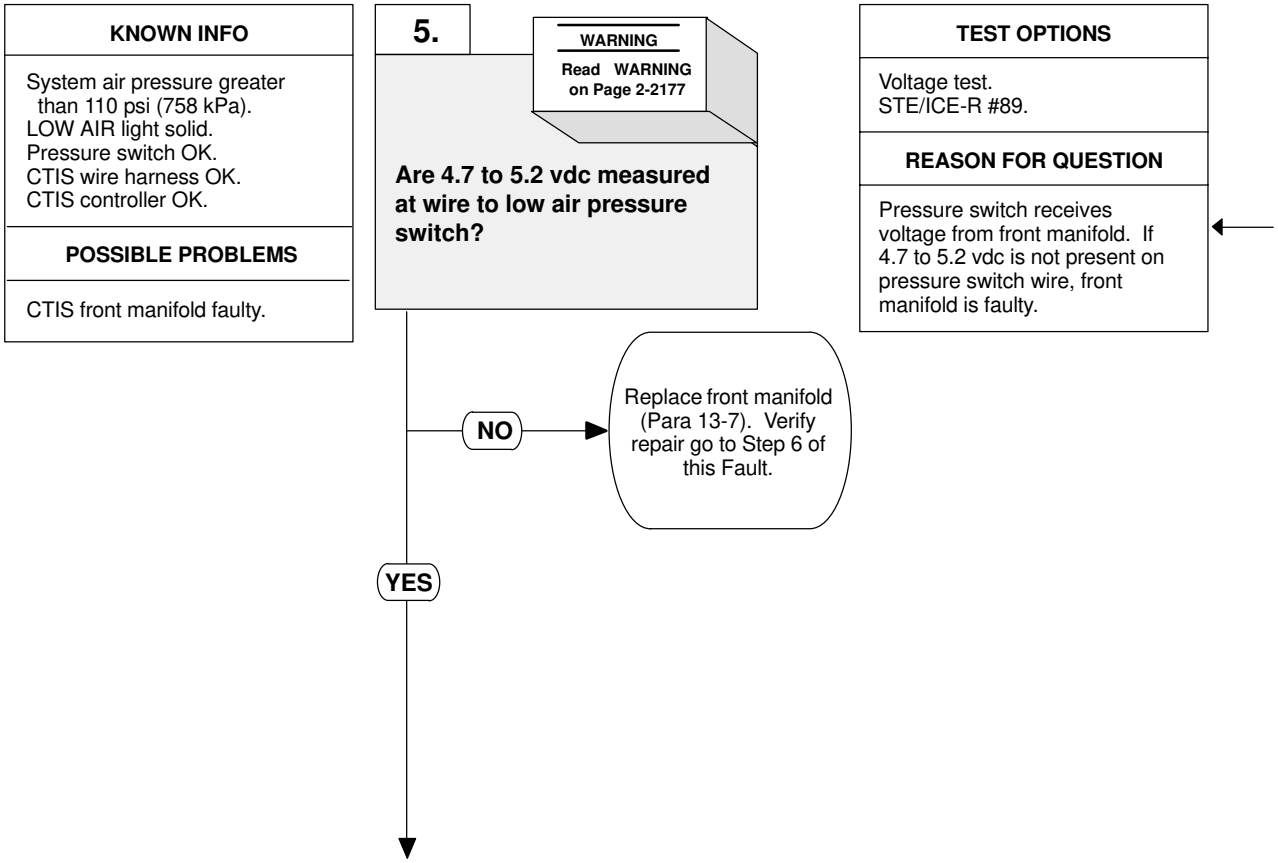
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to vdc.
(2) Insert positive (+) multimeter lead, with long probe installed, at back of connector MC 111, terminal 6.
(3) Connect negative (–) multimeter lead to front manifold ground braid.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
    (a) If 4.7 to 5.2 vdc are not present, turn OFF ENGINE switch and replace CTIS controller (Para 13-7).
    (b) If 4.7 to 5.2 vdc are present, turn OFF ENGINE switch and go to Step 5 of this Fault.
(5) Install instrument panel, sunshield and ten screws.



13. CTIS LOW AIR INDICATOR STAYS ON OVER 110 PSI (CONT).

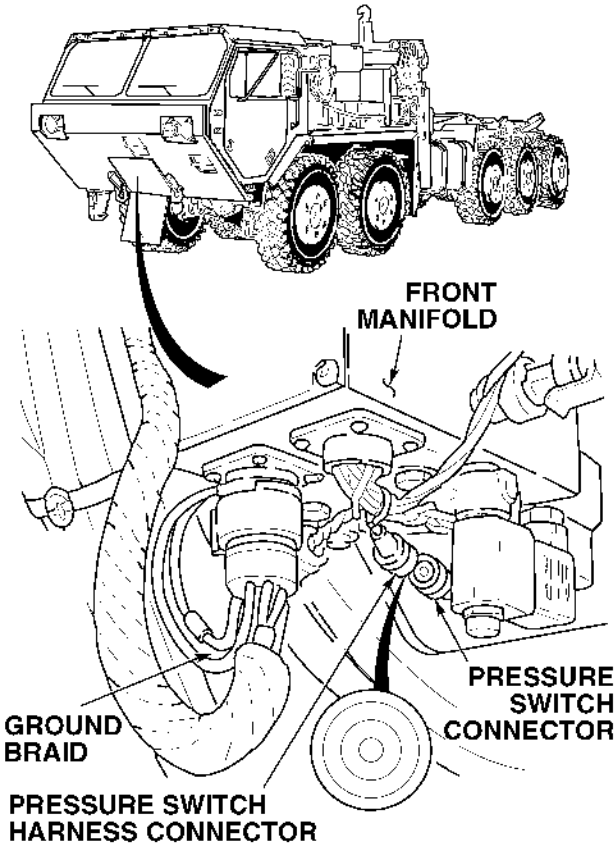


WARNING

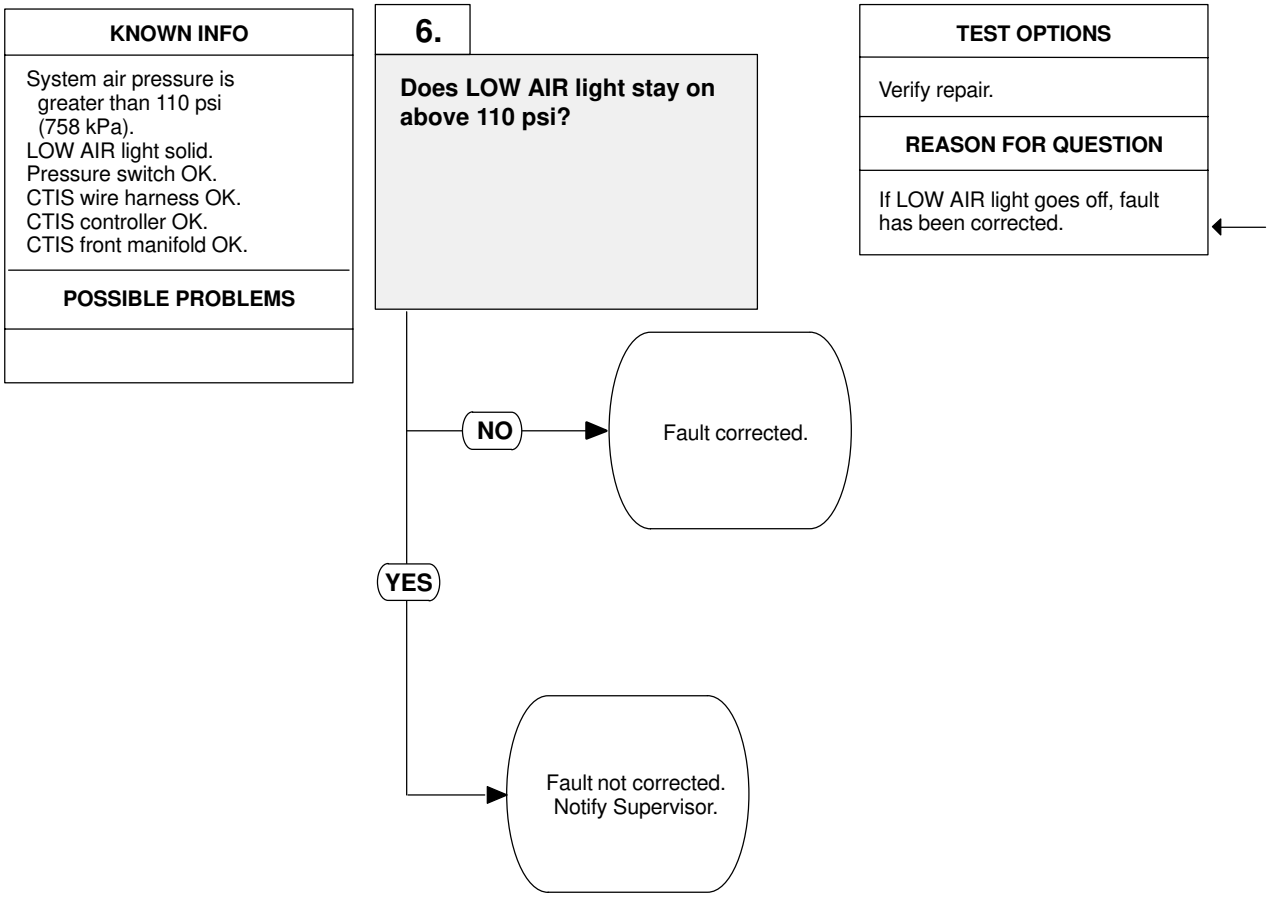
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

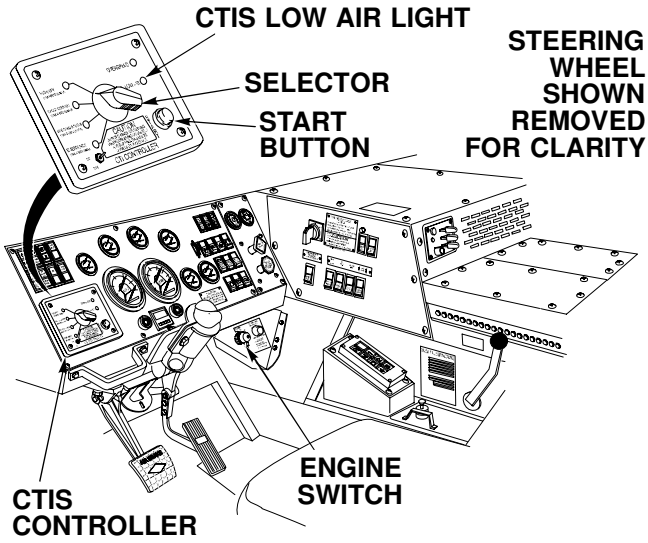
(1) Disconnect pressure switch harness connector.
(2) Set multimeter select switch to vdc.
(3) Connect positive (+) multimeter lead to pressure switch wire harness connector at front manifold.
(4) Connect negative (–) multimeter lead to front manifold ground braid.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
    (a) If 4.7 to 5.2 vdc are not present, turn OFF ENGINE switch and replace front manifold (Para 13-7).
    (b) If 4.7 to 5.2 vdc are present, turn OFF ENGINE switch.
(6) Close front access cover.



13. CTIS LOW AIR INDICATOR STAYS ON OVER 110 PSI (CONT).



VERIFY REPAIR
(1) Start engine (TM 9-2320-364-10). (2) Set CTIS controller selector to HIGHWAY. (3) Press CTIS START button. (a) If LOW AIR light goes out, fault has been corrected. (b) If LOW AIR light does not go out, fault is not corrected. Notify Supervisor. (4) Turn OFF ENGINE switch.



2-27. AIR SYSTEM TROUBLESHOOTING.

This paragraph covers Air System Troubleshooting. The Air System Fault Index, Table 2-52, lists faults for the air system of the PLS truck. Refer to schematic Figures 2-50 and 2-51 when performing tests and corrective actions.

Table 2-52. Air System Fault Index

Fault No.	Description	Page
1.	Air Pressure Buildup Is Slow	2-2184
2.	Air Dryer(s) And/Or Aftercooler Continually Purge	2-2198
3.	Compressor Fails To Unload (Air System Pressure Builds Up To More Than 129 psi [889 kPa])	2-2204
4.	Noisy Air Compressor Operation	2-2208
5.	Air Pressure Drops Rapidly After Engine Shutdown	2-2214
6.	Air Horn Will Not Operate	2-2222

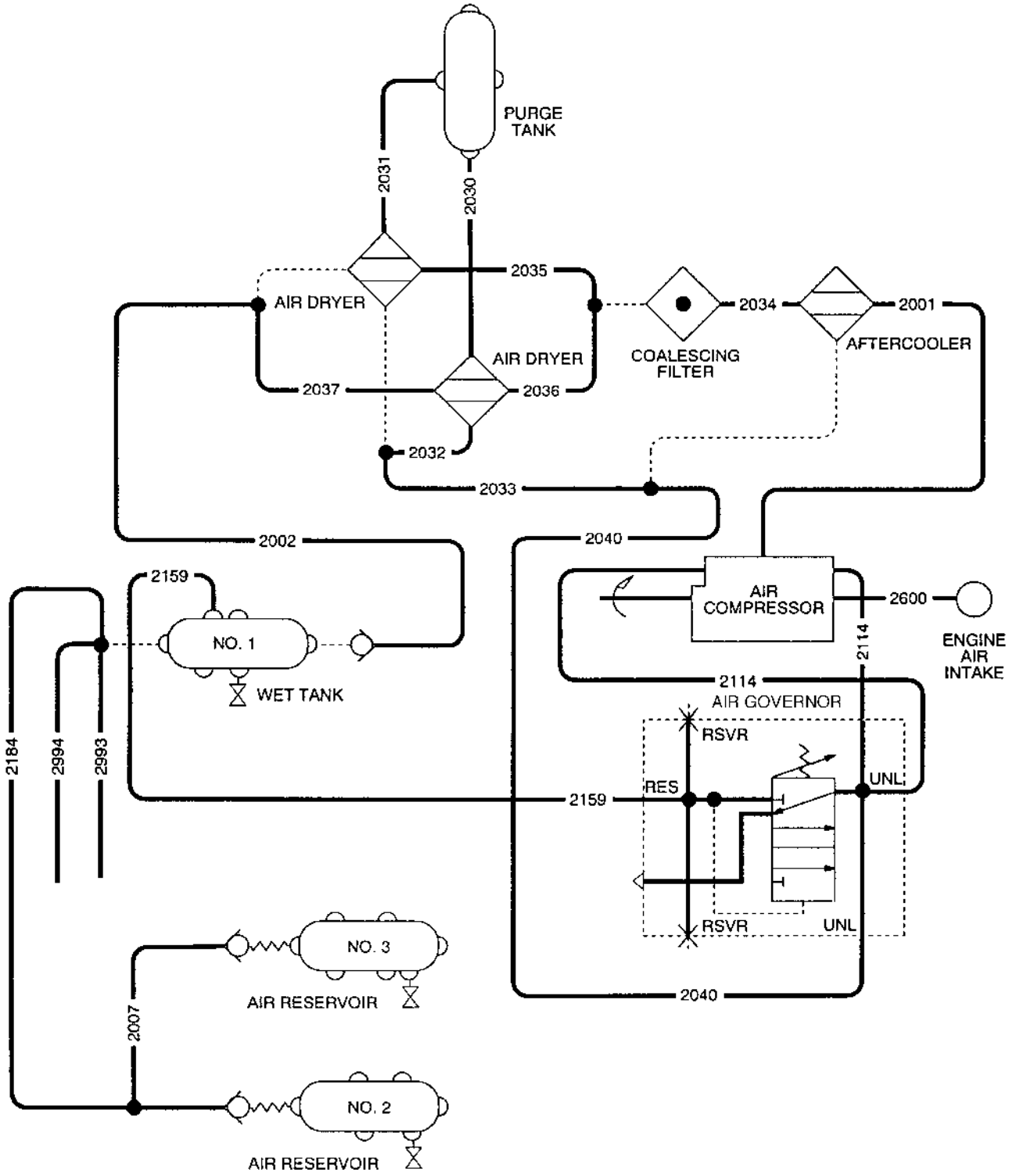


Figure 2-50. Air System Air Diagram

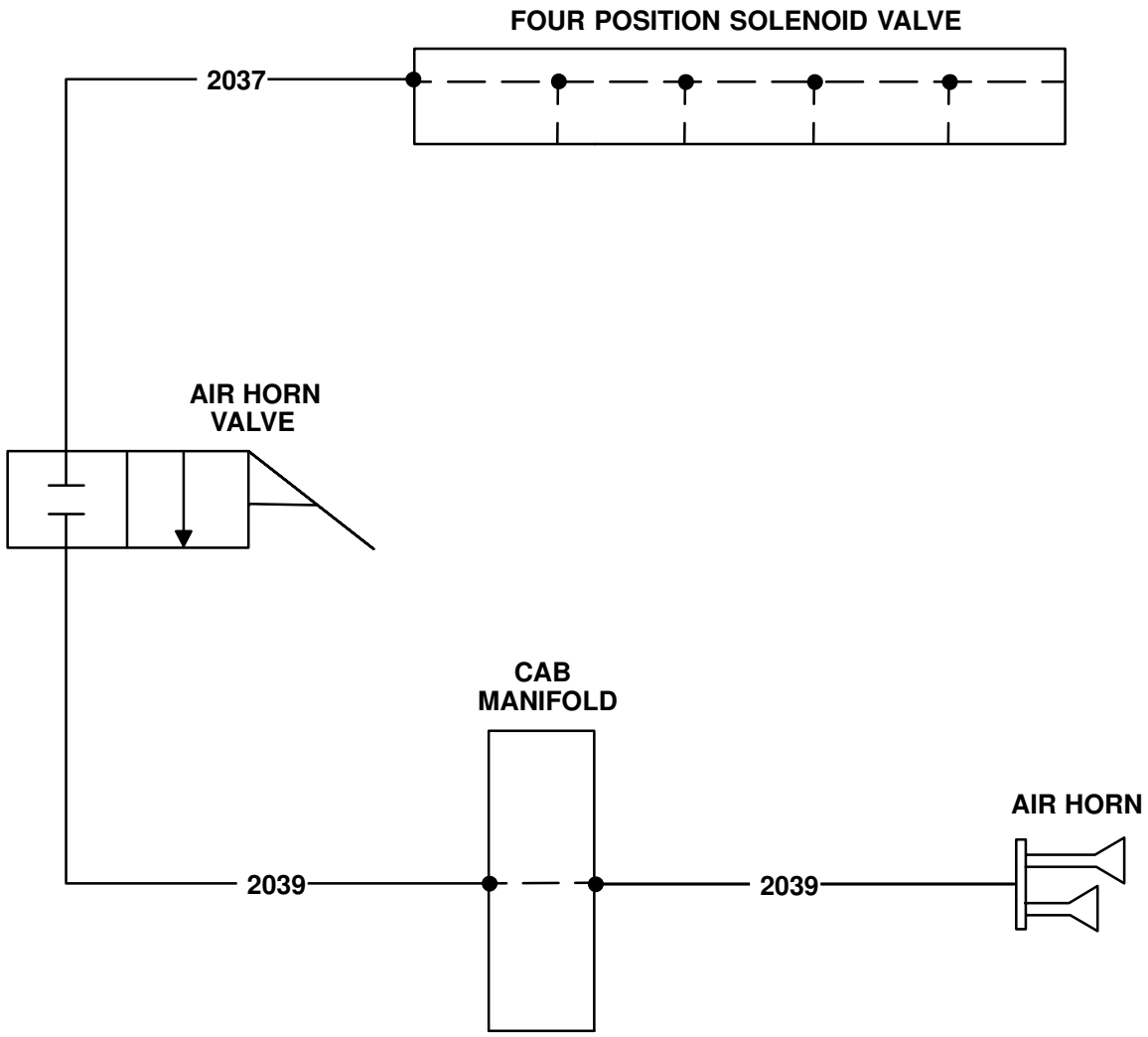


Figure 2-51. Air Horn Diagram

2-27. AIR SYSTEM TROUBLESHOOTING (CONT).

1. AIR PRESSURE BUILDUP IS SLOW.

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Pressure Test Kit (Item 50, Appendix G)

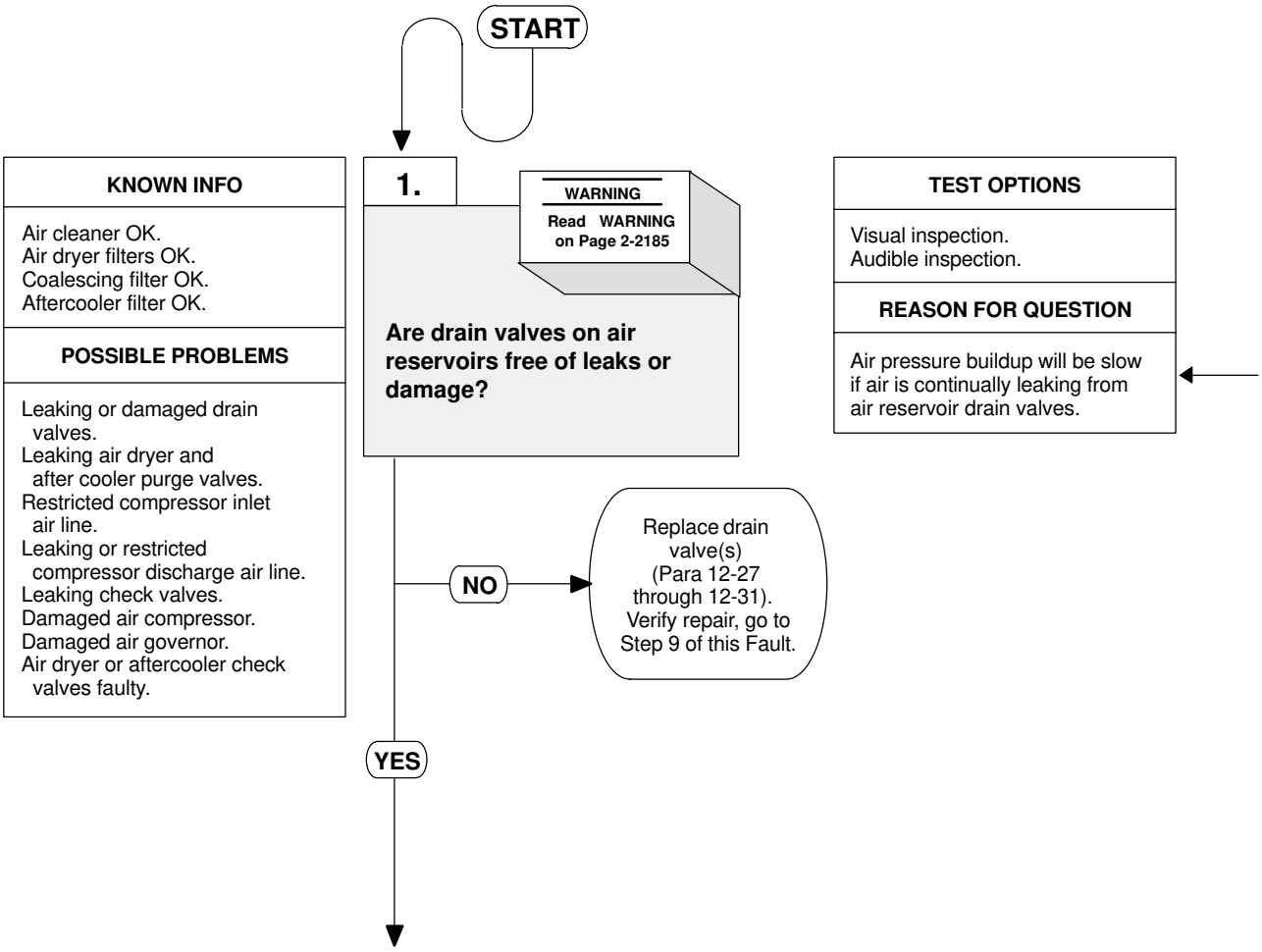
Materials/Parts
Sealant, Teflon Pipe (Item 71, Appendix C)
Solution, Soap (Item 86, Appendix C)

Personnel Required
Two

References
TM 9-2320-364-10

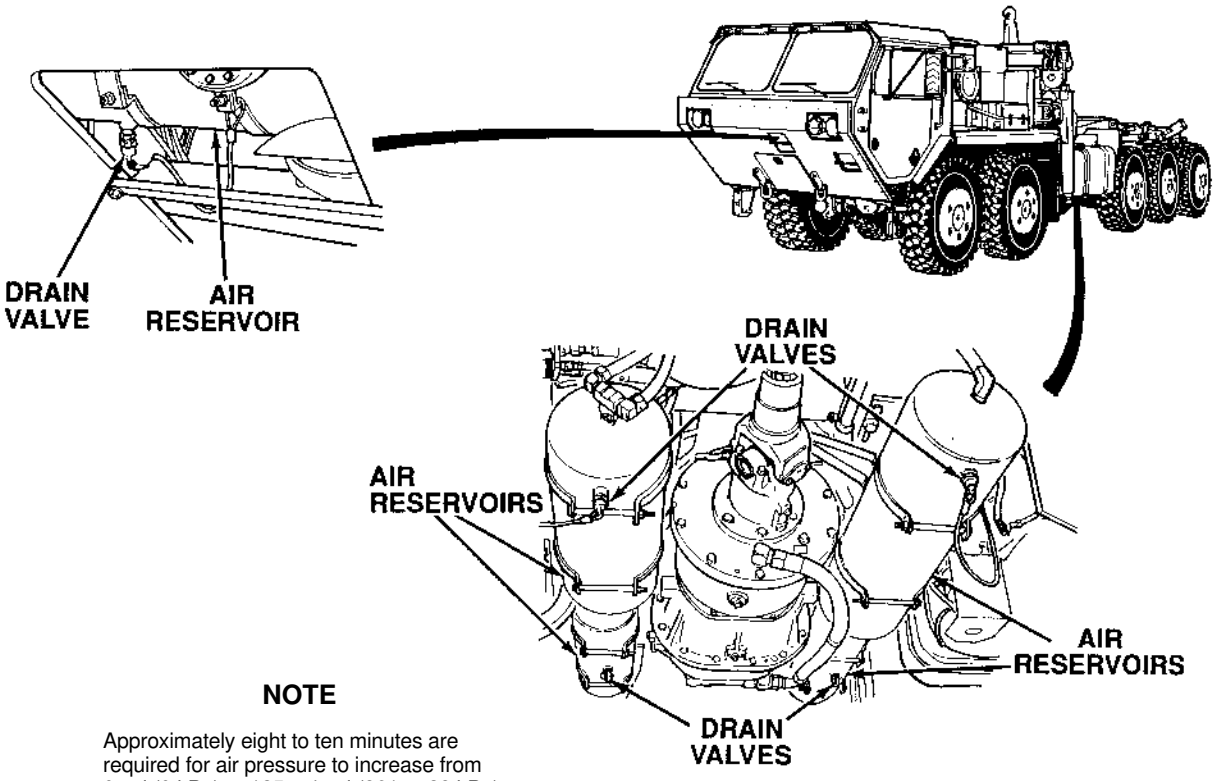
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right side noise panel removed, (Para 17-26)

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



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.

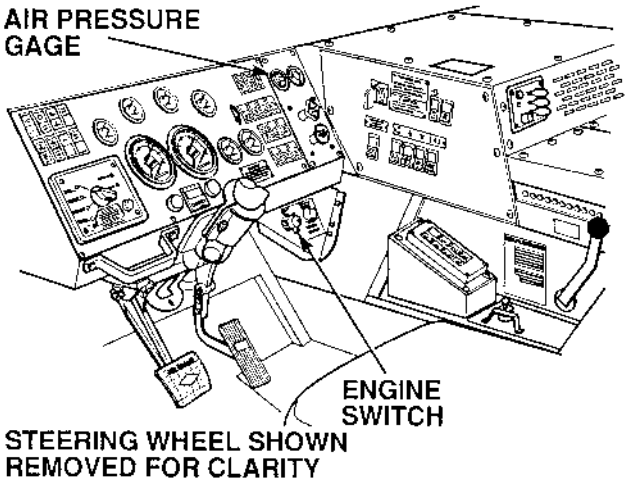


NOTE

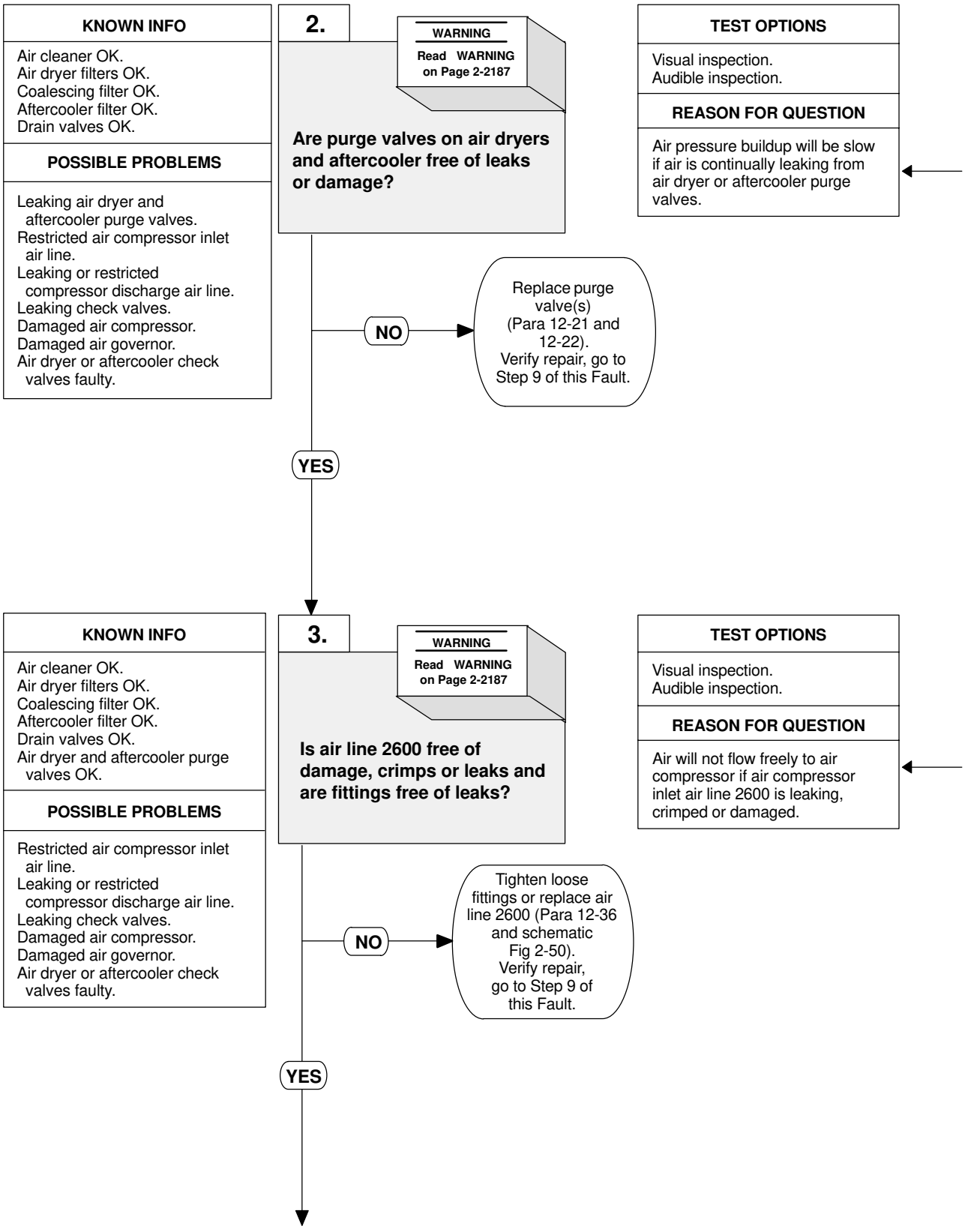
Approximately eight to ten minutes are required for air pressure to increase from 0 psi (0 kPa) to 125 ± 4 psi (861 ± 28 kPa) when engine is at idle rpm.

VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Run at idle until air pressure gage reads 125 ± 4 psi (861 ± 28 kPa).
(3) Turn OFF ENGINE switch.
(4) Check drain valves on air reservoirs for leaks or damage.
    (a) If drain valves are leaking or damaged, replace valves (Para 12-27 through 12-31).
    (b) If drain valves are not leaking or damaged, valves are OK.



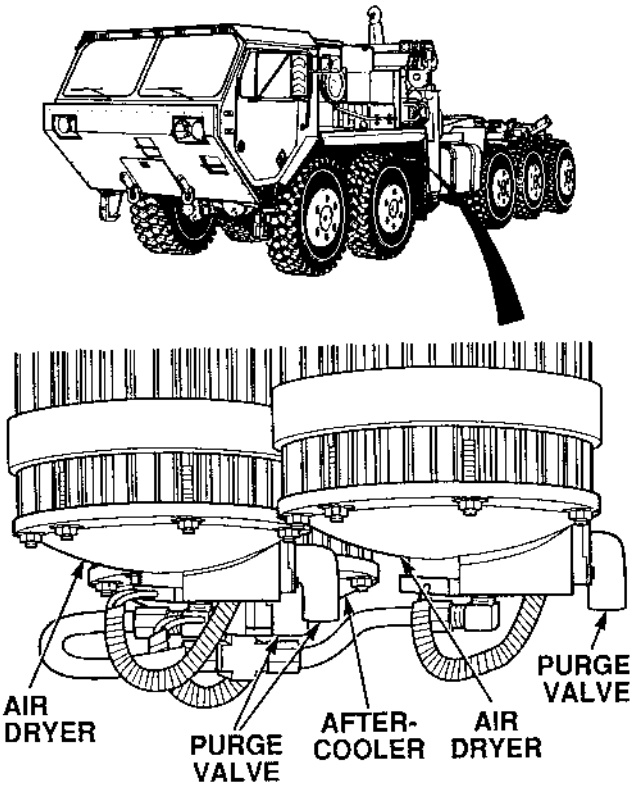
1. AIR PRESSURE BUILDUP IS SLOW (CONT).



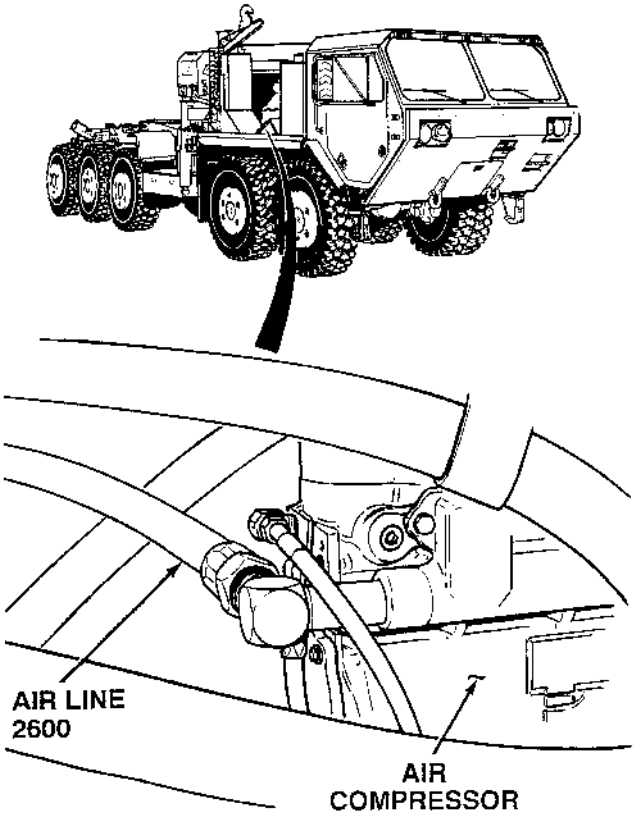
WARNING

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

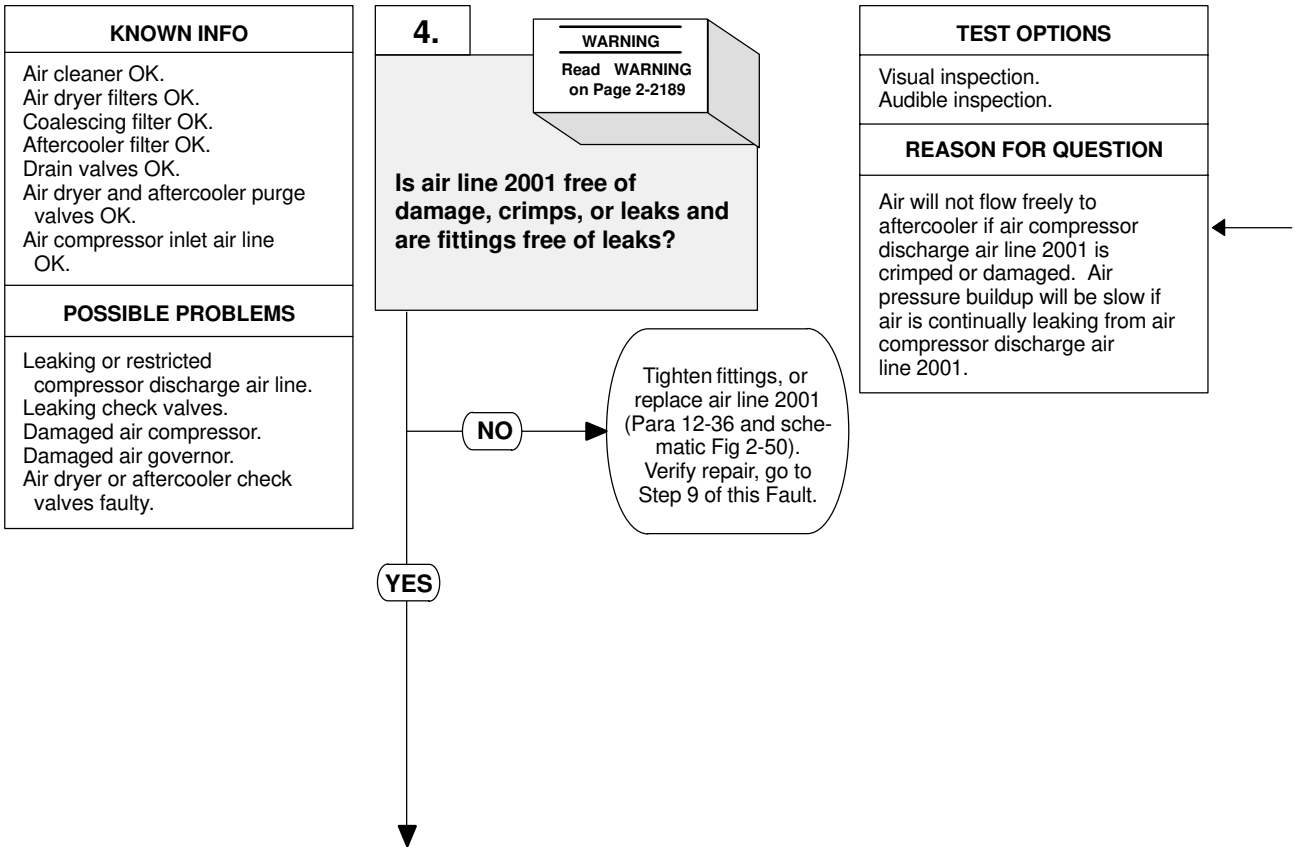
VISUAL/AUDIBLE INSPECTION
Check purge valves on air dryers and aftercooler for air leaks or damage. (1) If purge valves are leaking or damaged, replace valves (Para 12-21 and 12-22). (2) If purge valves are not leaking or damaged, valves are OK.



VISUAL/AUDIBLE INSPECTION
Check air line 2600 for damage, crimps or leaks (Para 12-36 and schematic Fig 2-50). (1) If air line is damaged, crimped or leaking; tighten fittings, or replace air lines. (2) If there are no leaks, crimps, or damage; air line 2600 and fittings are OK.



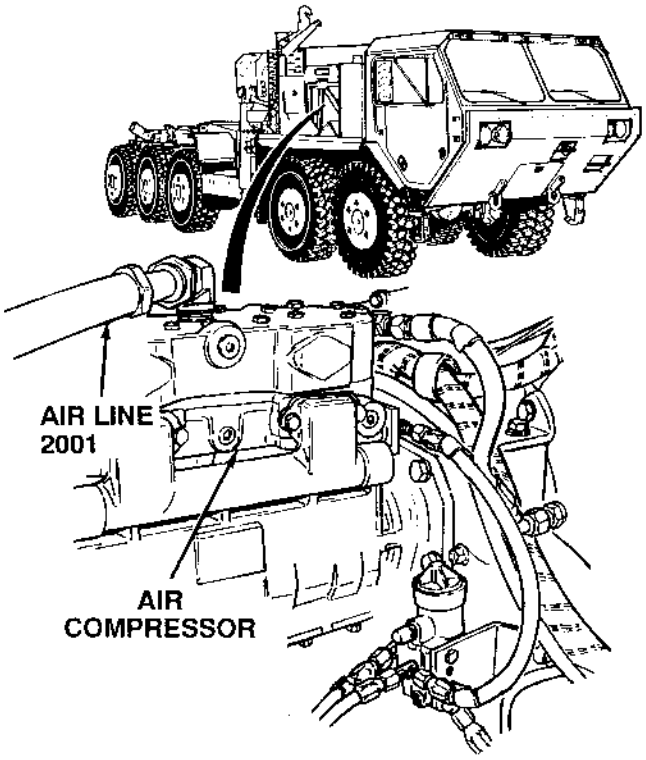
1. AIR PRESSURE BUILDUP IS SLOW (CONT).

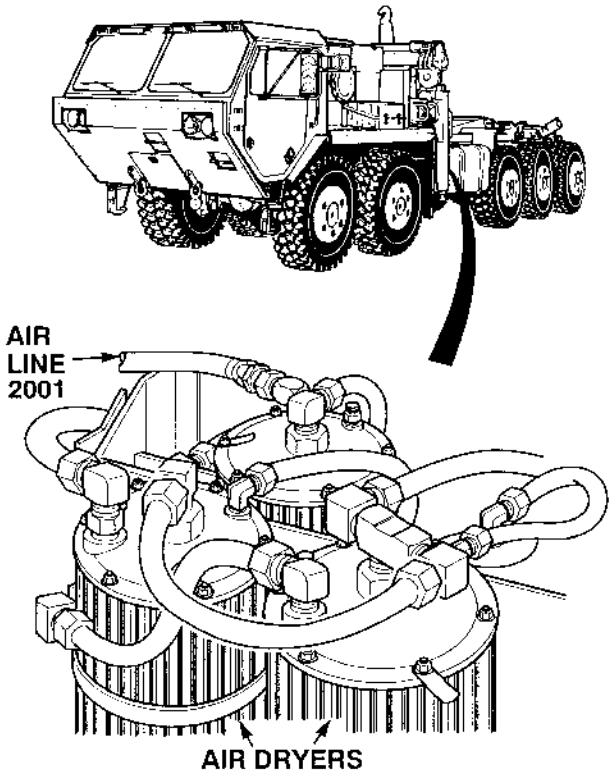


WARNING

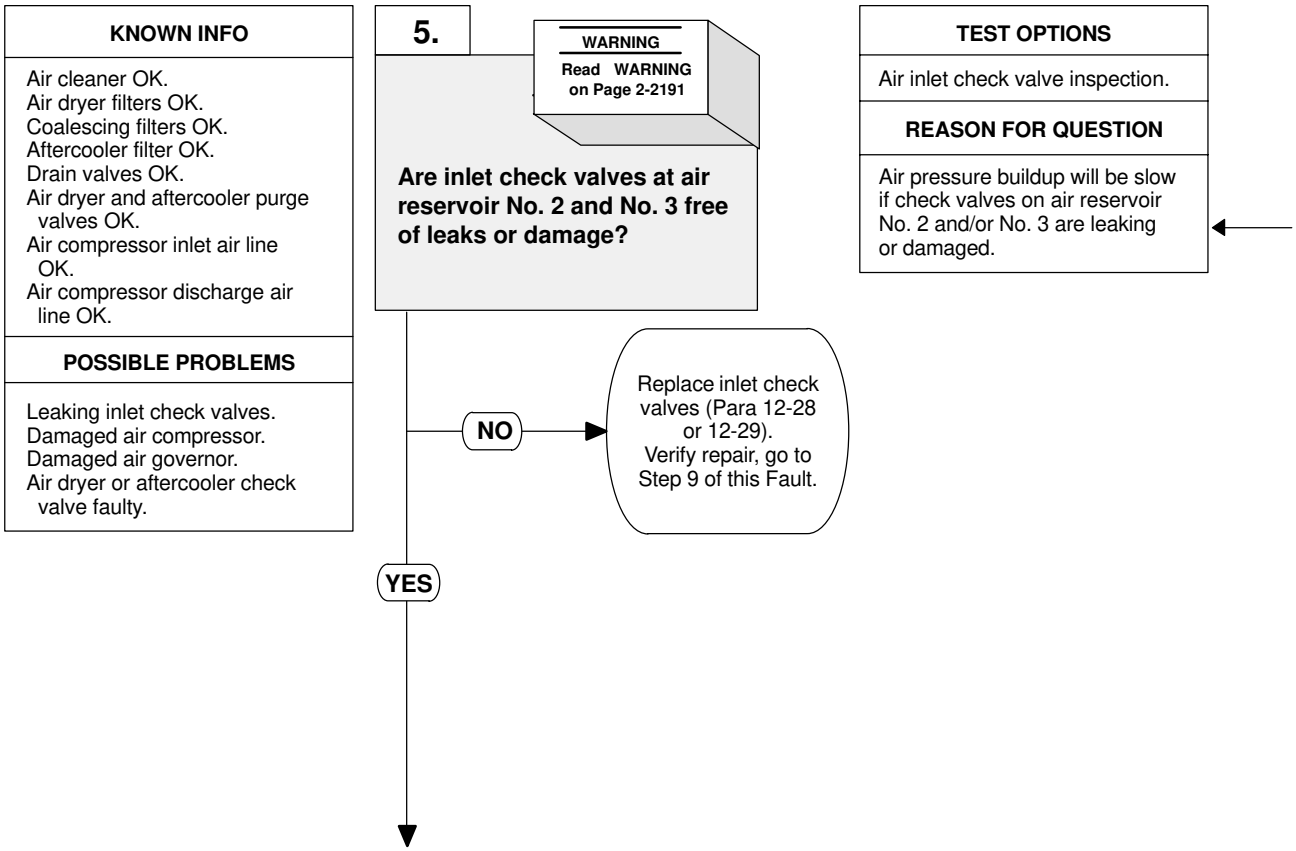
- Allow engine to cool before performing troubleshooting maintenance. If necessary use insulated pads and gloves. Hot engine components will burn and cause injury to personnel.
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

VISUAL/AUDIBLE INSPECTION
Check air line 2001 for damage, crimps or leaks (Para 12-35 and schematic Fig 2-50). (1) If air line 2001 is damaged, crimped or leaking; tighten fittings, or replace air line (Para 12-36 and schematic Fig 2-50). (2) If there are no leaks, crimps, or damage; air line 2001 and fittings are OK.





1. AIR PRESSURE BUILDUP IS SLOW (CONT).

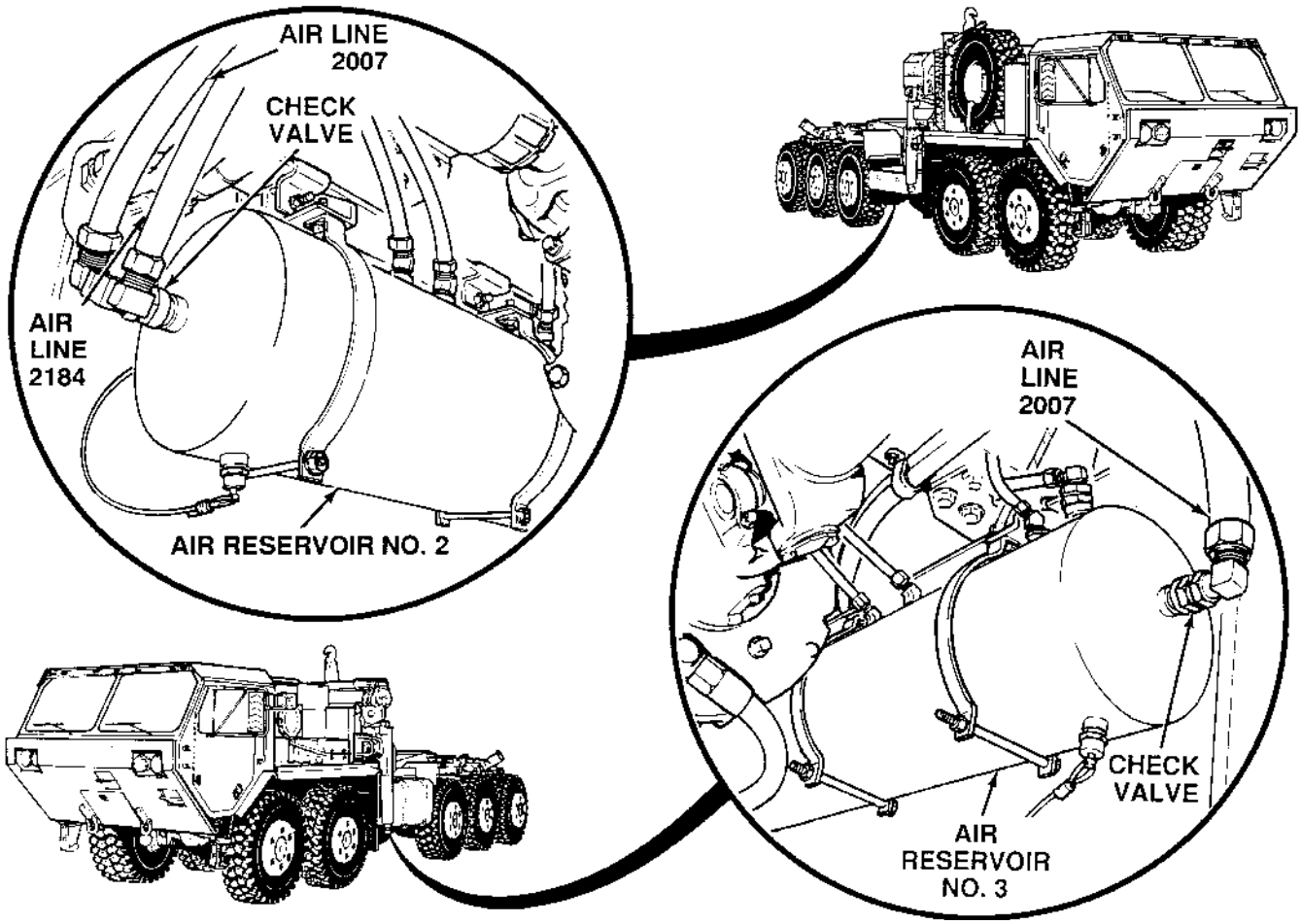


WARNING

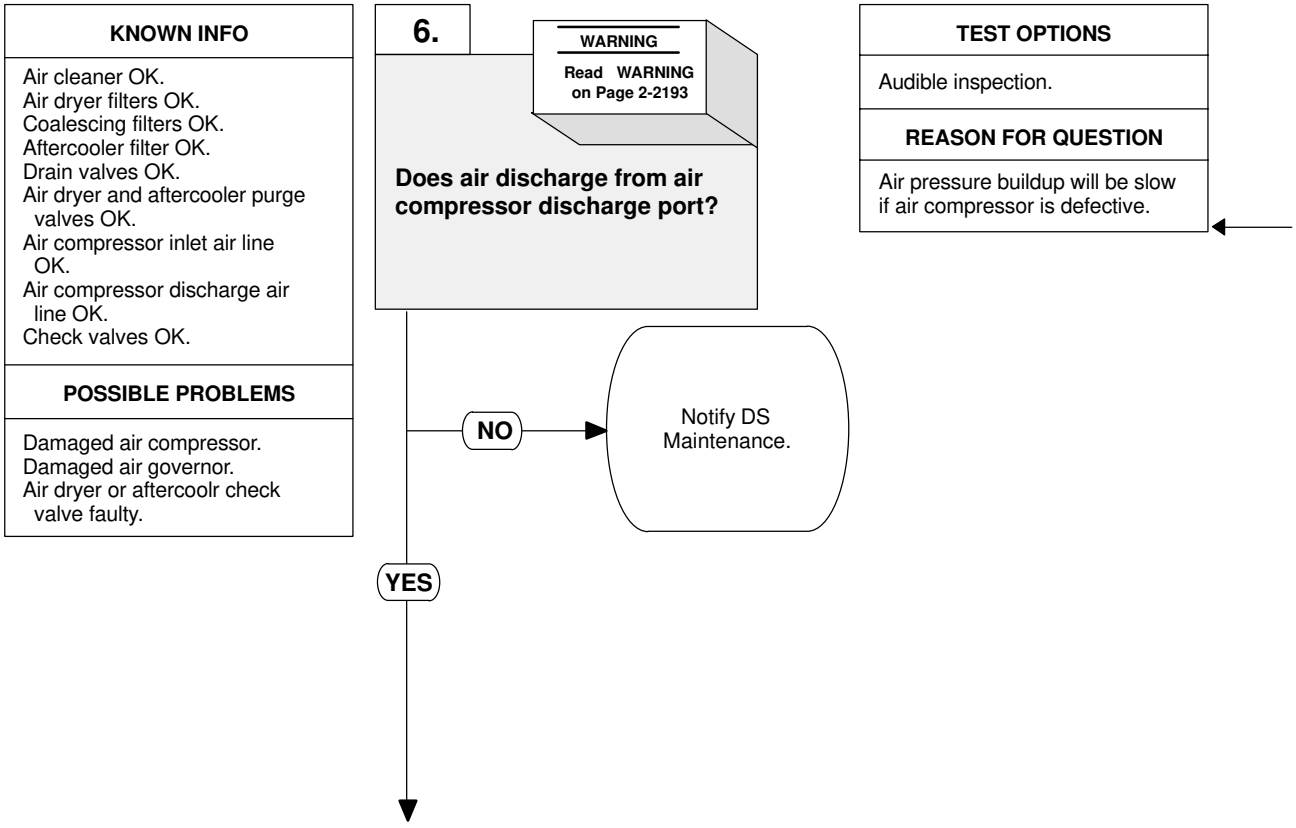
Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

AIR INLET CHECK VALVE INSPECTION

(1) Drain air system.
(2) Disconnect air line 2184 from air reservoir No. 2 check valve.
(3) Remove air line 2007 from air reservoir No. 3 check valve (Para 12-29).
(4) Inspect check valves at No. 2 and No. 3 air reservoirs for leaks or damage.
  (a) If check valves are leaking or damaged, replace check valves (Para 12-28 and 12-29) and perform Steps (5) and (6) below.
  (b) If check valves are not leaking or damaged, valves are OK.
(5) Install air line 2007 on air reservoir No. 3 check valve.
(6) Install air line 2184 on air reservoir No. 2 check valve.



1. AIR PRESSURE BUILDUP IS SLOW (CONT).

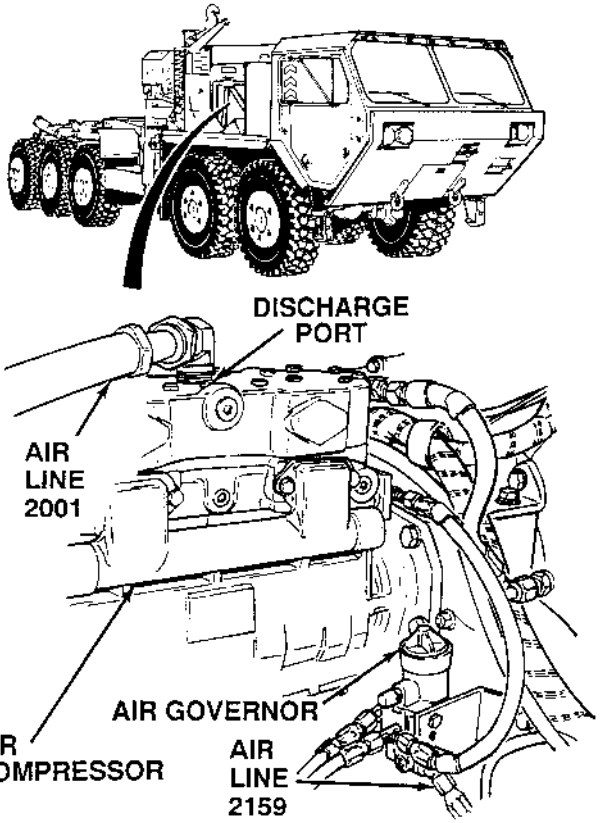


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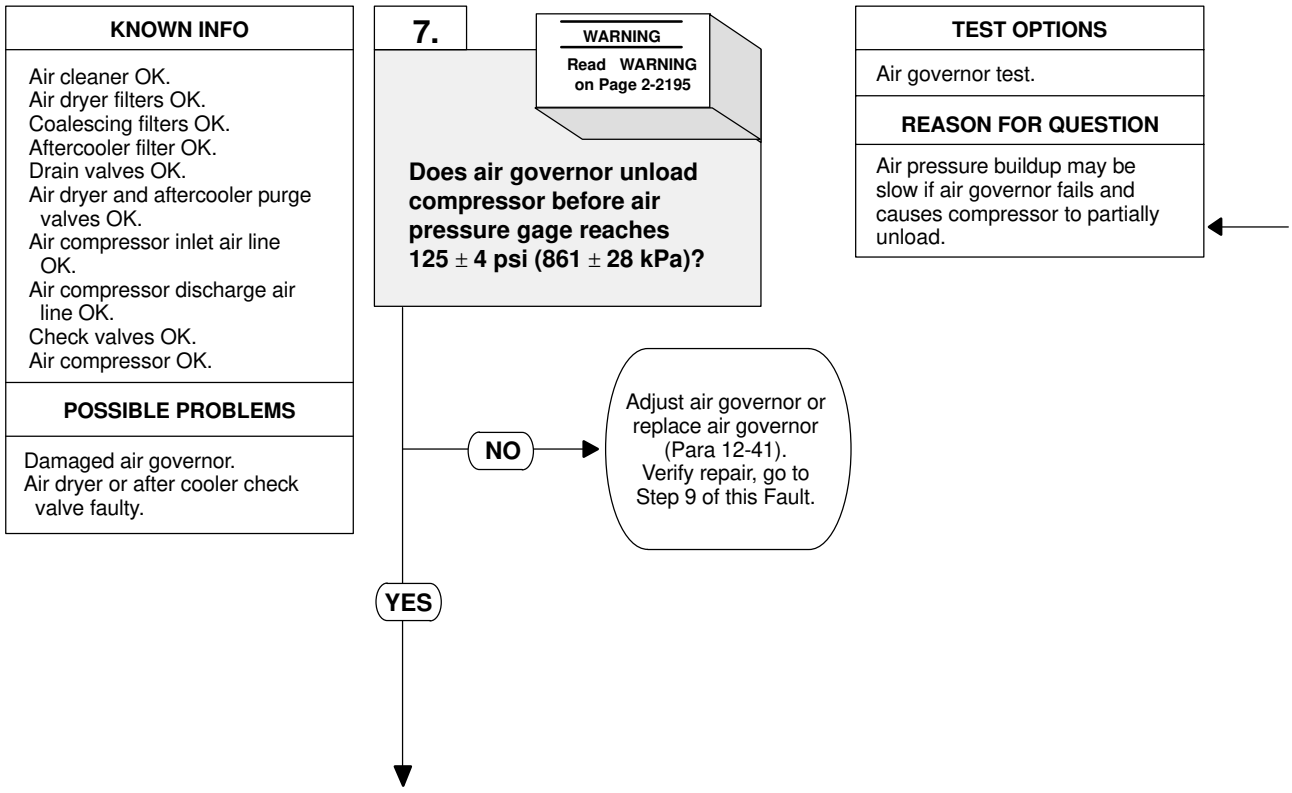
- Allow engine to cool before performing troubleshooting maintenance. If necessary use insulated pads and gloves. Hot engine components will burn and cause injury to personnel.
- Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

AUDIBLE INSPECTION

(1) Drain air system (TM 9-2320-364-10).
(2) Disconnect governor control air line 2159 from air governor.
(3) Disconnect air compressor discharge air line 2001 from air compressor.
(4) While assistant starts engine, listen to air compressor discharge port.
  (a) If little or no air flows from discharge port, perform Steps (5) through (7) below, and notify DS maintenance.
  (b) If air flows freely from discharge port, air compressor is OK.
(5) Turn OFF ENGINE switch.
(6) Install air compressor discharge air line 2001 on air compressor.
(7) Install governor control air line 2159 on air governor.



1. AIR PRESSURE BUILDUP IS SLOW (CONT).



WARNING

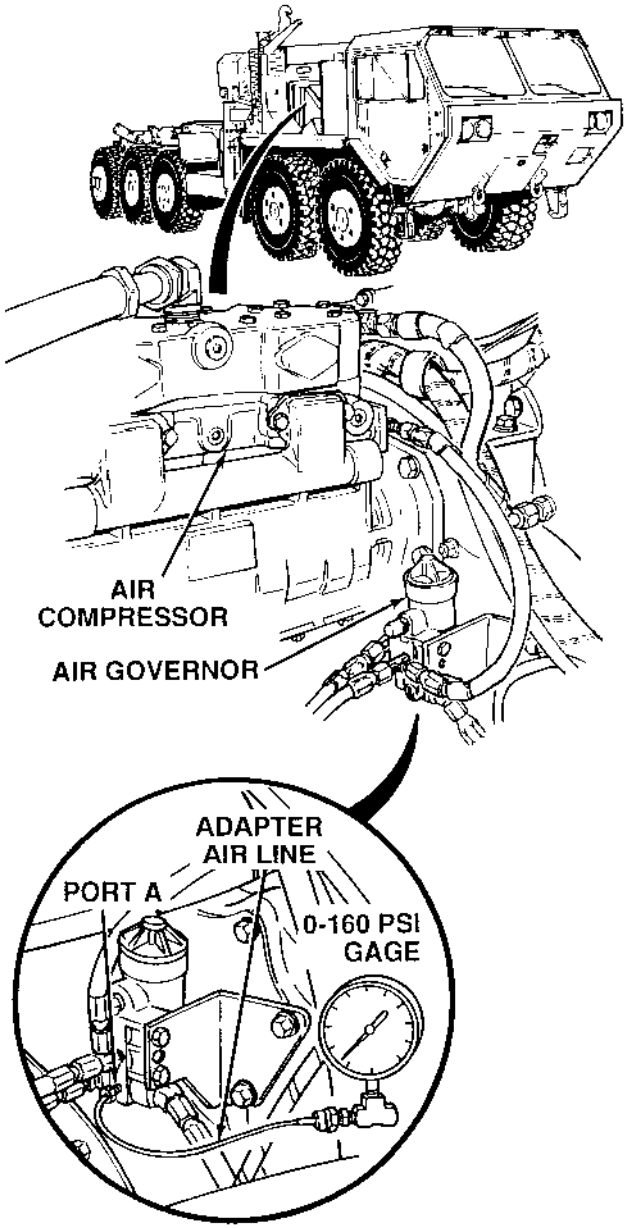
- Adhesive, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing wash immediately with soap and water.
- Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

NOTE

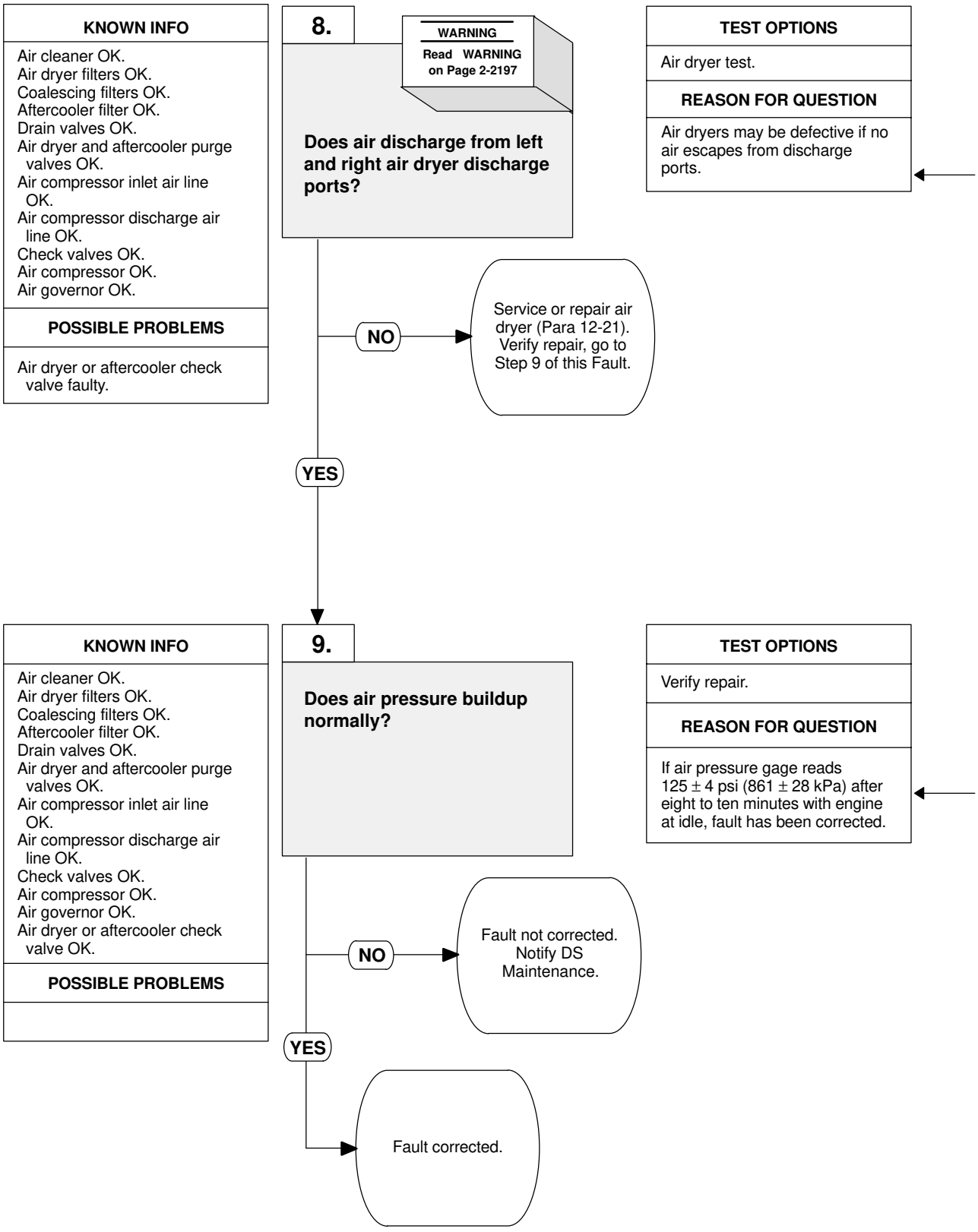
When air governor cuts out, a sudden escape of air from the air dryer will be heard.

AIR GOVERNOR TEST

(1) Remove plug from air governor port A.
(2) Connect 0 to 160 psi (0 to 1103 kPa) gage and adapter hose to port A.
(3) While assistant starts engine, monitor pressure build up until air governor cut out is heard (TM 9-2320-364-10).
(4) Pressure gage should read 125 ± 4 psi (861 ± 28 kPa) when air governor cuts out.
  (a) If air governor does not cut out at 125 ± 4 psi (861 ± 28 kPa), turn OFF ENGINE switch and adjust air governor (Para 12-41).
  (b) If air governor does not cut out at 125 ± 4 psi (861 ± 28 kPa) after adjustment, perform Steps (5) through (8) below and replace air governor (Para 12-41).
  (c) If air governor cuts out at 125 ± 4 psi (861 ± 28 kPa), air governor is OK.
(5) Turn OFF ENGINE switch.
(6) Remove pressure gage adapter hose from port A.
(7) Apply sealing compound to threads of plug.
(8) Install plug in port A.



1. AIR PRESSURE BUILDUP IS SLOW (CONT).

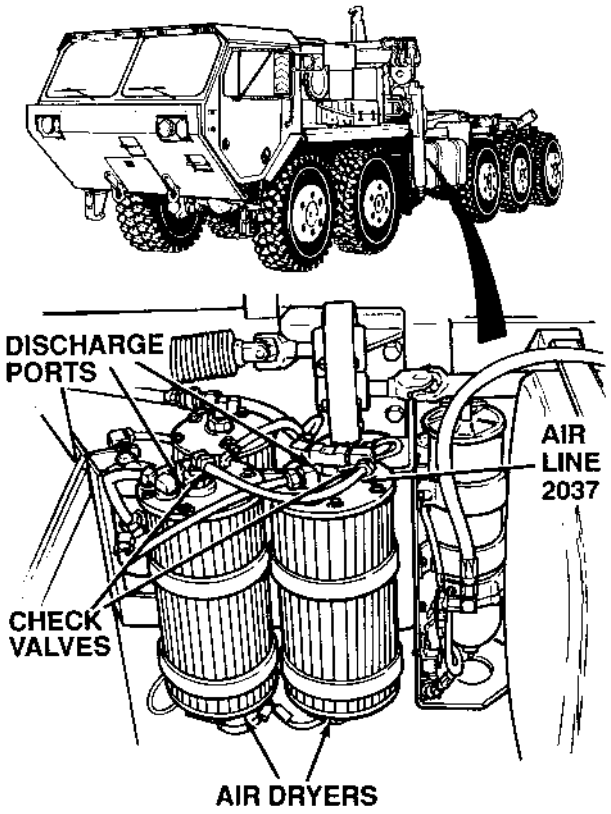


WARNING

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

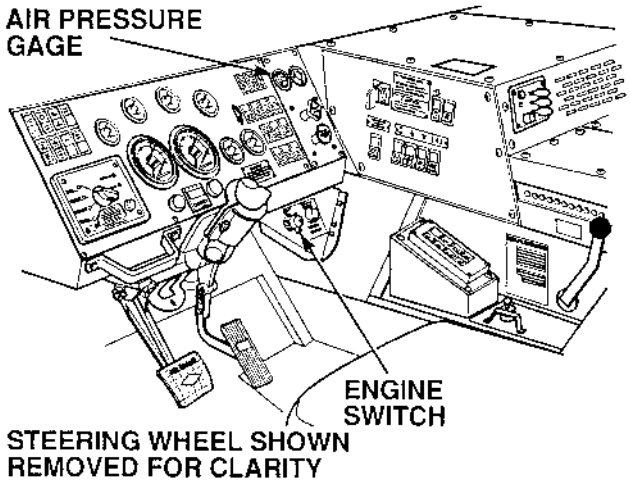
AIR DRYER TEST

(1) Drain air system.
(2) Remove air dryer discharge air line 2037 from left and right air dryers.
(3) Start engine and check for air flow from left and right air dryer discharge ports (TM 9-2320-364-10).
  (a) If no air flows from discharge ports, perform Steps (4) and (5) below and service air dryers (Para 12-21).
  (b) If air flows from discharge ports, air dryers are OK.
(4) Turn OFF ENGINE switch.
(5) Install air dryer discharge air line 2037 on left and right air dryers.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Run at idle for 10 minutes.
(3) Observe air pressure gage.
  (a) If air pressure gage does not read 125 ± 4 psi (861 ± 28 kPa), fault not corrected. Perform Step (4) below, and notify DS Maintenance.
  (b) If air pressure gage reads 125 ± 4 psi (861 ± 28 kPa), fault has been corrected.
(4) Turn OFF ENGINE switch.
(5) Install right side noise panel (Para 17-26).



2-27. AIR SYSTEM TROUBLESHOOTING (CONT).

2. AIR DRYER(S) AND/OR AFTERCOOLER CONTINUALLY PURGE.

INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Pressure Test Kit (Item 50, Appendix G)

Materials/Parts
Sealant, Teflon Pipe (Item 71, Appendix C)
Solution, Soap (Item 86, Appendix C)

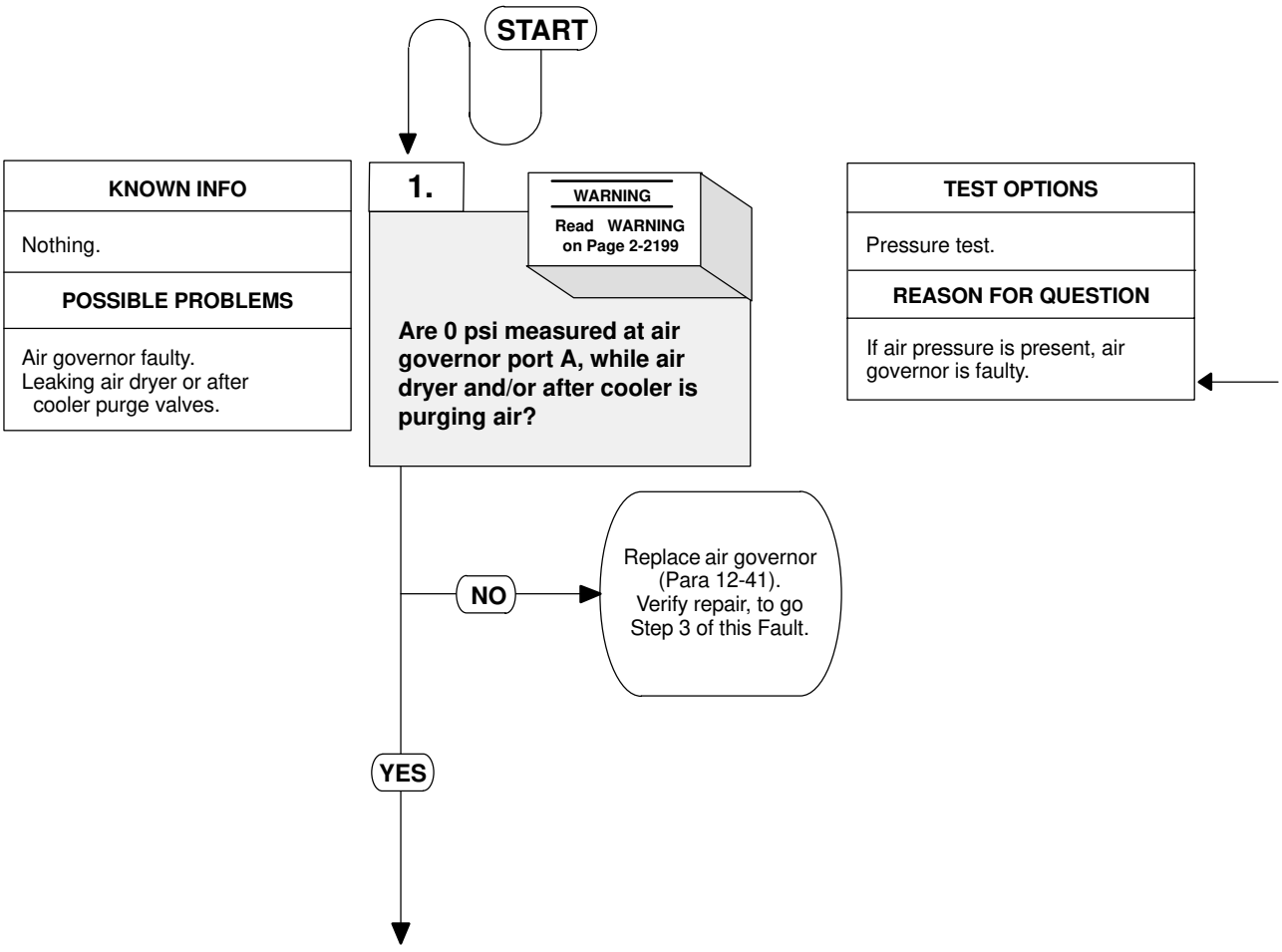
Personnel Required
Two

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)

NOTE

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

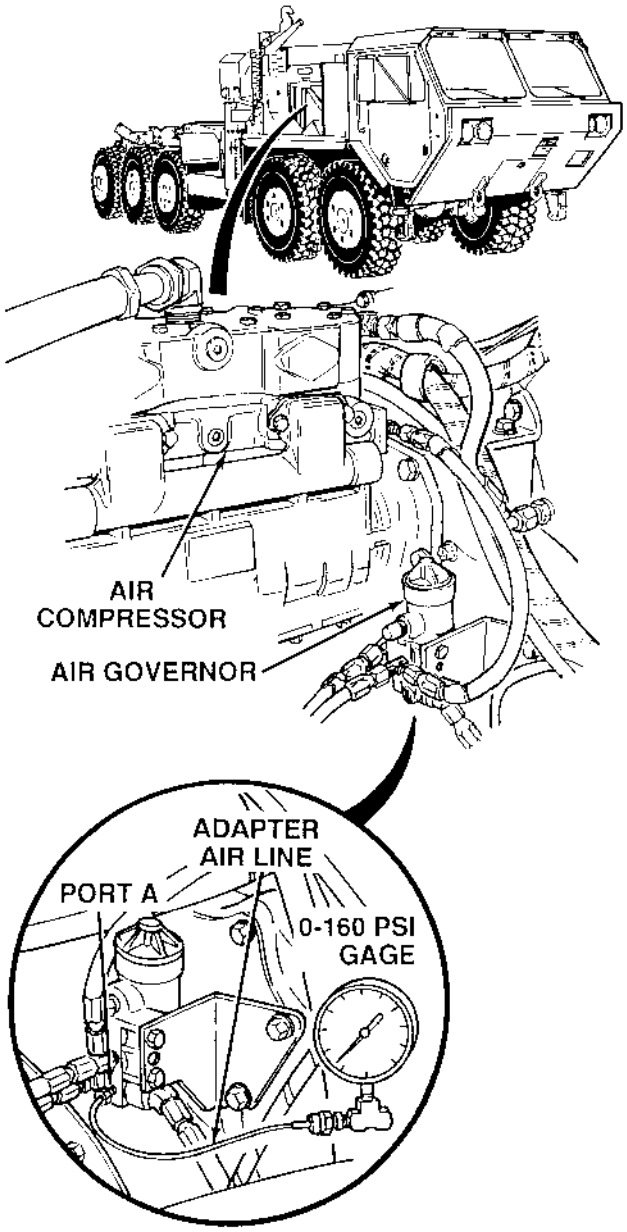


WARNING

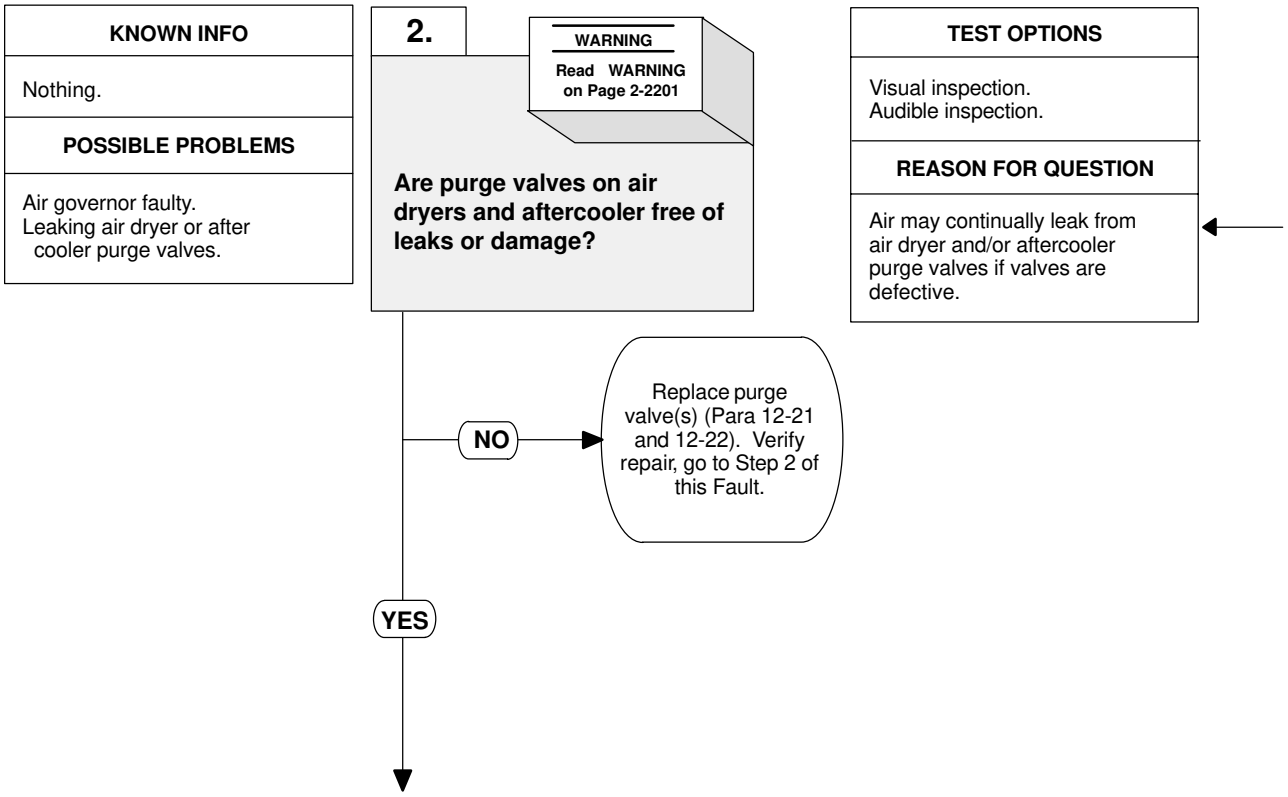
- Adhesive, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing wash immediately with soap and water.
- Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye inury due to high pressure air.

PRESSURE TEST

(1) Remove plug from air governor port A.
(2) Connect 0 to 160 psi (0 to 1103 kPa) gage and adapter hose to port A.
(3) While assistant starts engine, check for 0 psi (0 kPa) on pressure gage (TM 9-2320-364-10).
  (a) If 0 psi (0 kPa) is not present, perform Steps (4) through (7) below and replace air governor (Para 12-41).
  (b) If 0 psi (0 kPa) is present, air governor is OK.
(4) Turn OFF ENGINE switch.
(5) Remove pressure gage adapter hose from port A.
(6) Apply sealing compound to threads of plug.
(7) Install plug in port A.



2. AIR DRYER(S) AND/OR AFTERCOOLER CONTINUALLY PURGE (CONT).

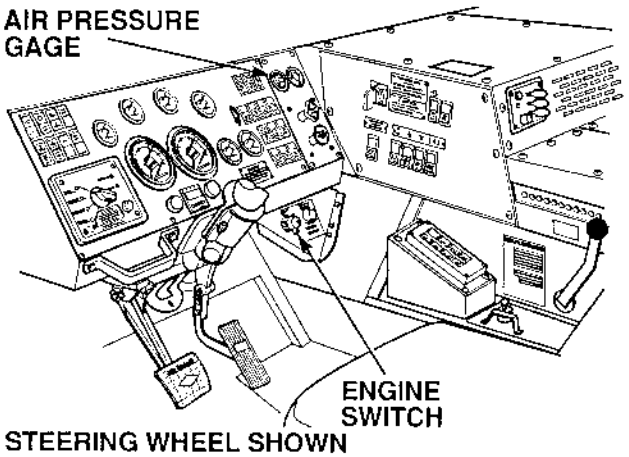


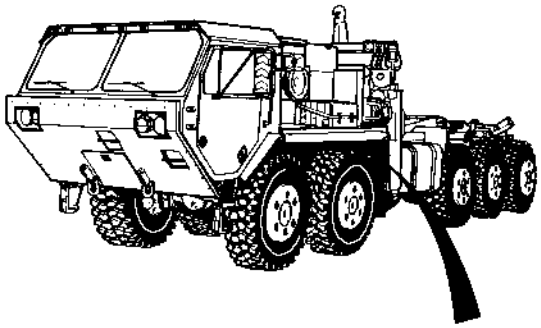
WARNING

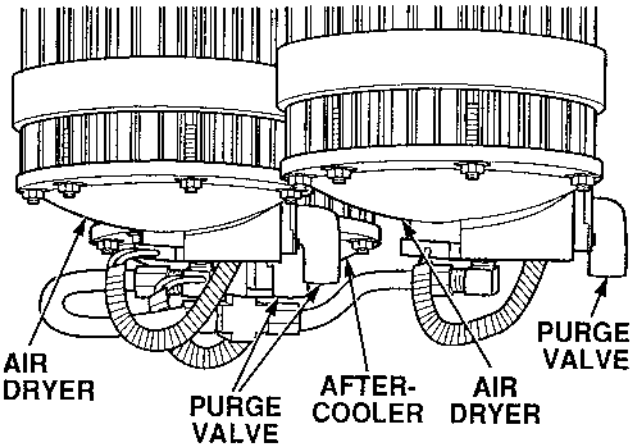
Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

VISUAL/AUDIBLE INSPECTION

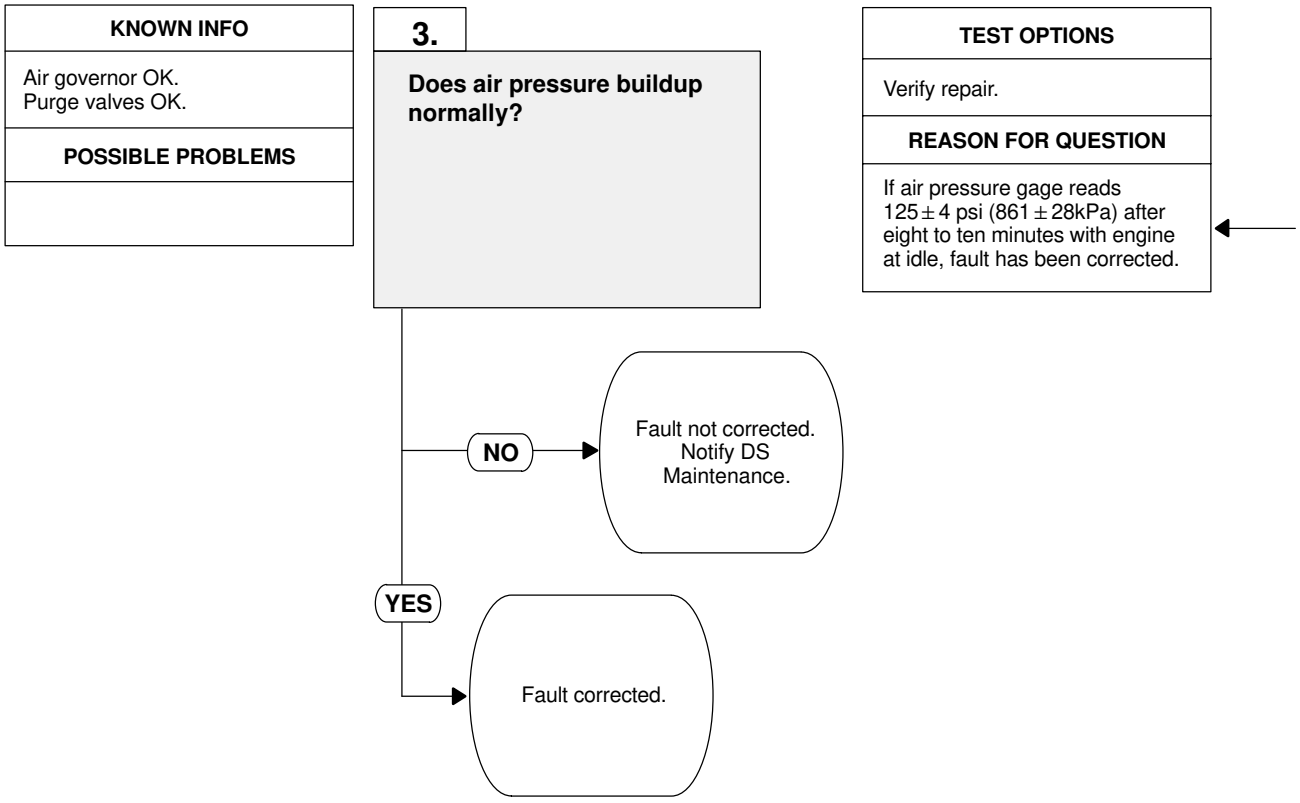
(1) Start engine (TM 9-2320-364-10).
(2) Run at idle until air pressure gage reads 125 ± 4 psi (861 ± 28 kPa).
(3) Turn OFF ENGINE switch.
(4) Check purge valves on air dryers and after cooler for air leaks or damage.
    (a) If purge valves are leaking or damaged, replace valves (Para 12-21 and 12-22).
    (b) If purge valves are not leaking or damaged, valves are OK.





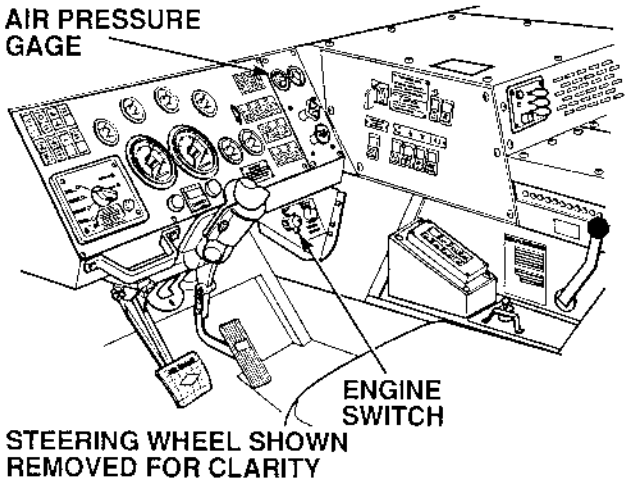


2. AIR DRYER(S) AND/OR AFTERCOOLER CONTINUALLY PURGE (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Run at idle for 10 minutes.
(3) Observe air pressure gage.
    (a) If air pressure gage does not read 125 ± 4 psi (861 ± 28kPa), fault not corrected. Perform Step (4) below and notify DS Maintenance.
    (b) If air pressure gage reads 125 ± 4 psi (861 ± 28 kPa), fault has been corrected.
(4) Turn OFF ENGINE switch.



2-27. AIR SYSTEM TROUBLESHOOTING (CONT).

3. COMPRESSOR FAILS TO UNLOAD (AIR SYSTEM PRESSURE BUILDS UP TO MORE THAN 129 PSI (889 KPA)).

INITIAL SETUP

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

Personnel Required
Two

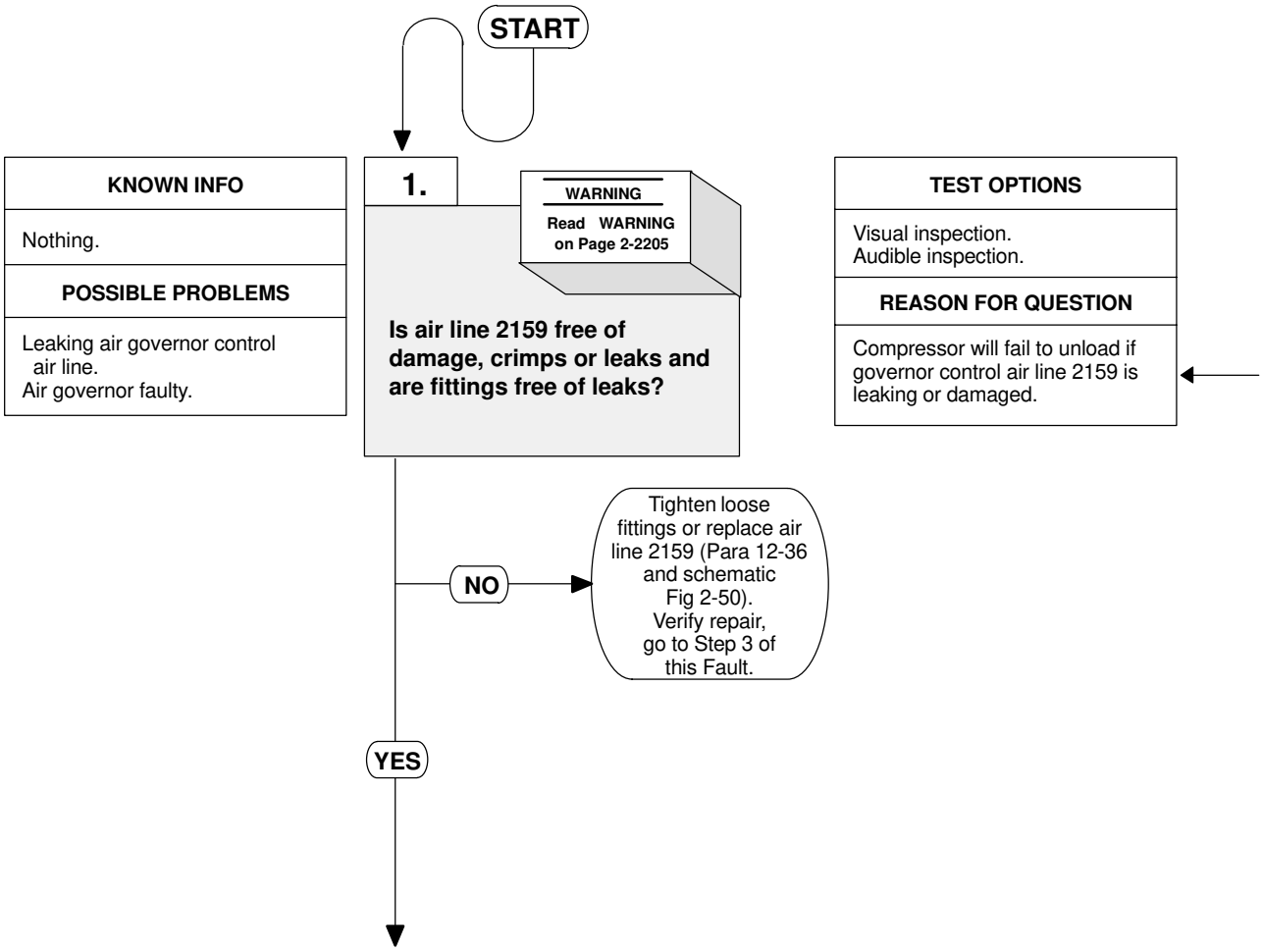
Materials/Parts
Solution, Soap (Item 86, Appendix C)

References
TM 9-2320-364-10

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brakes applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right side noise panel removed, (Para 17-26)

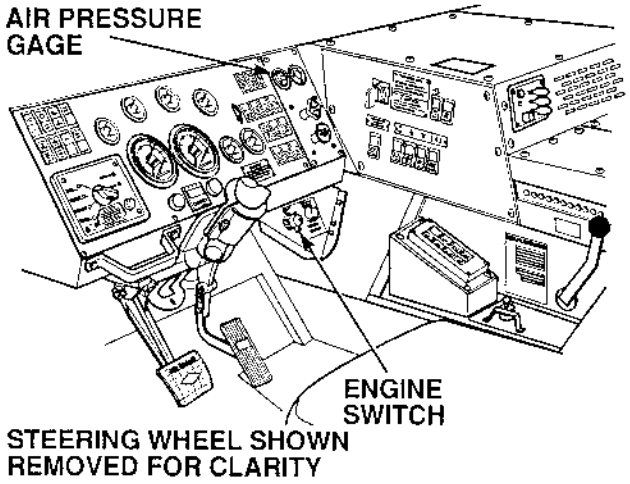
NOTE

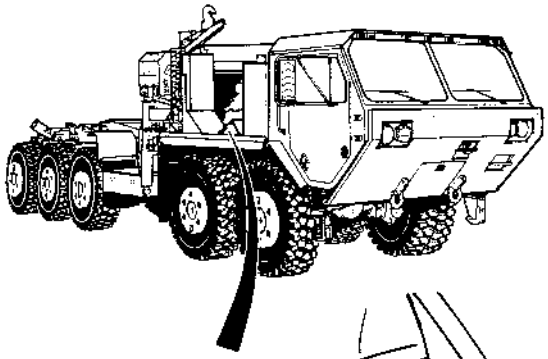
Soap and water solution will be used to visually check for leaks.



WARNING

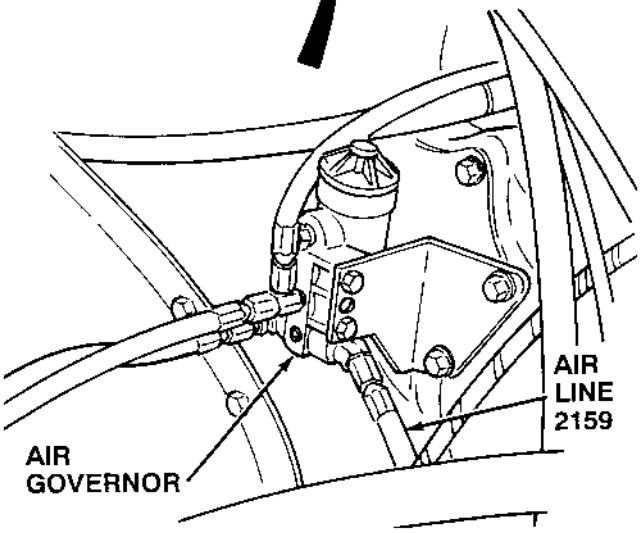
Wear safety goggles when performing leakage tests. Failure to do so may result in serious eye injury due to high pressure air.



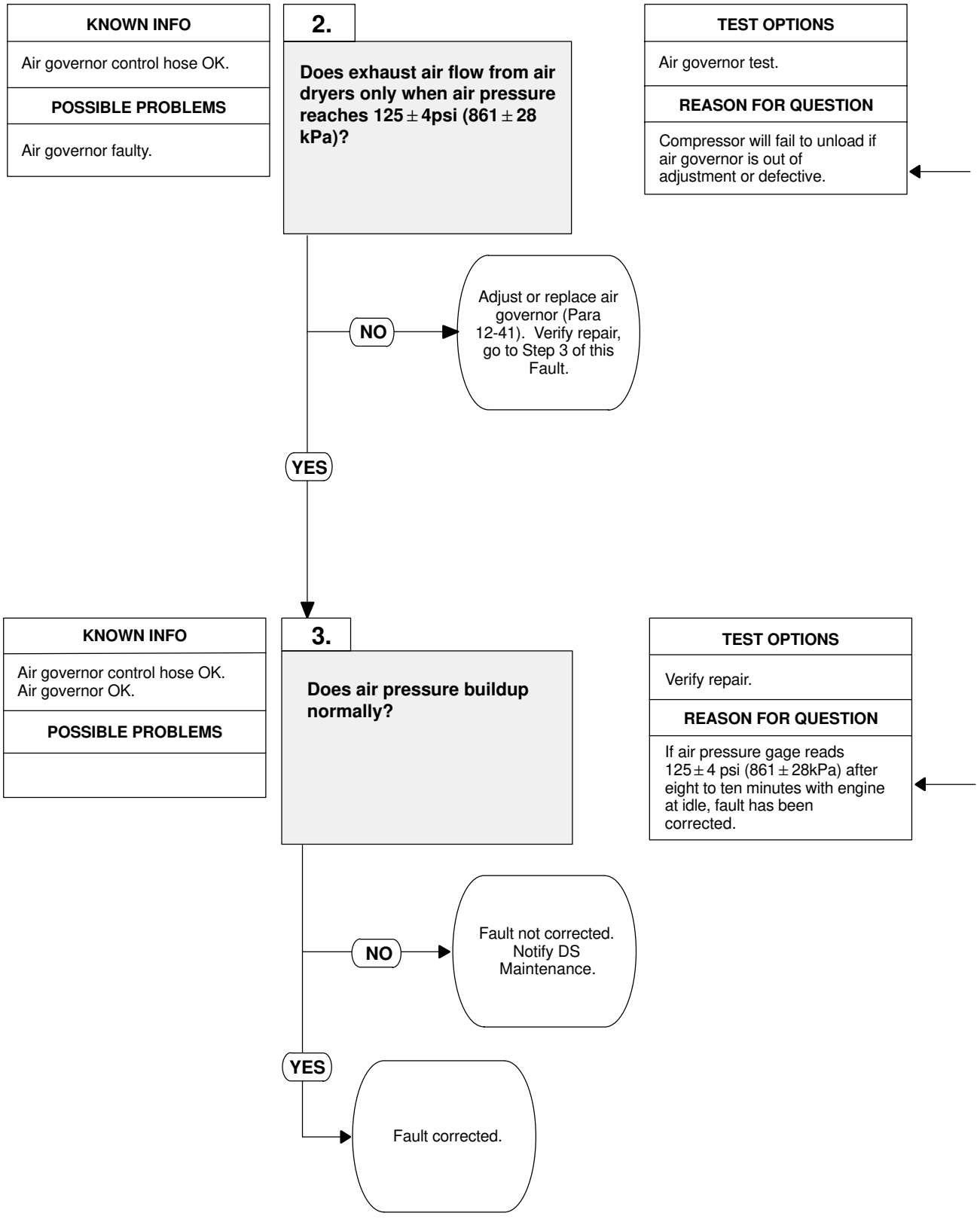


VISUAL INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Run engine at idle until air pressure gage reads 125 ± 4 psi (861 ± 28 kPa).
(3) Turn OFF ENGINE switch.
(4) Check air line 2159 for damage, crimps or leaks (Para 12-36 and schematic Fig 2-50).
    (a) If air line is damaged, crimped or leaking; tighten fittings, or replace air line 2159 (Para 12-36 and schematic Fig 2-50).
    (b) If there are no leaks, crimps or damage, air line 2159 and fittings are OK.



3. COMPRESSOR FAILS TO UNLOAD (AIR SYSTEM PRESSURE BUILDS UP TO MORE THAN 129 PSI (899 kPa)) (CONT).

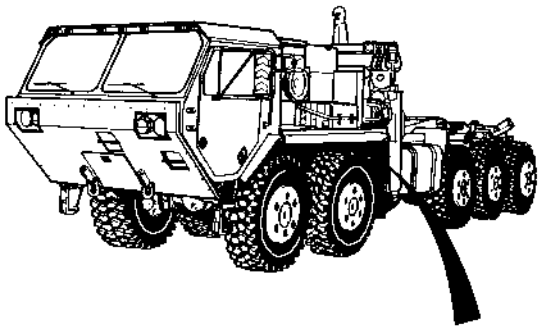


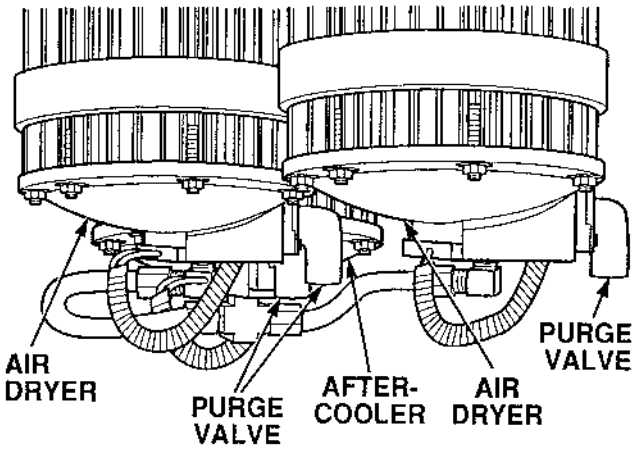
NOTE

Air will be released from air dryer when air governor cuts out.

AIR GOVERNOR TEST

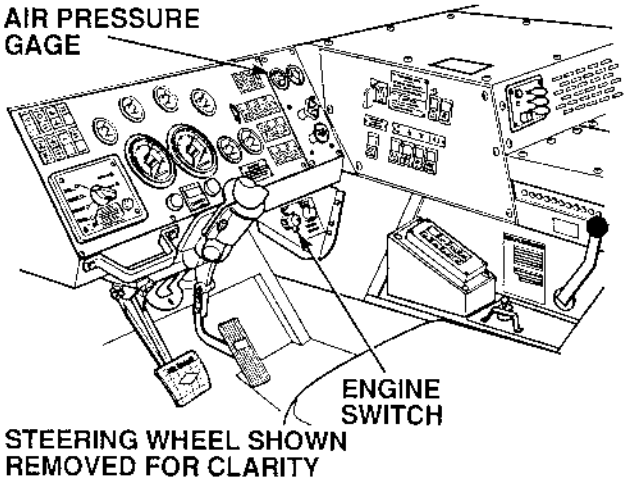
(1) Listen to air dryer while assistant starts engine (TM 9-2320-364-10) and observes AIR PRESS gages in cab Green and red needles should move up scale as pressure builds up.
   (a) If exhaust air is heard coming from air dryer before truck air pressure reaches 125 ± 4 psi (861 ± 28 kPa), turn OFF ENGINE switch, and adjust or replace air governor (Para 12-41).
   (b) If exhaust air can only be heard coming from air dryer when truck air pressure reaches 125 ± 4 psi (861 ± 28 kPa), air governor is OK.
(2) Turn OFF ENGINE switch.
(3) Install right side noise panel (Para 17-26).





VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Run at idle for 10 minutes.
(3) Observe air pressure gage.
   (a) If air pressure gage does not read 125 ± 4 psi (861 ± 28 kPa), fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
   (b) If air pressure gage reads 125 ± 4 psi (861 ± 28 kPa), fault has been corrected.
(4) Turn OFF ENGINE switch.



2-27. AIR SYSTEM TROUBLESHOOTING (CONT).

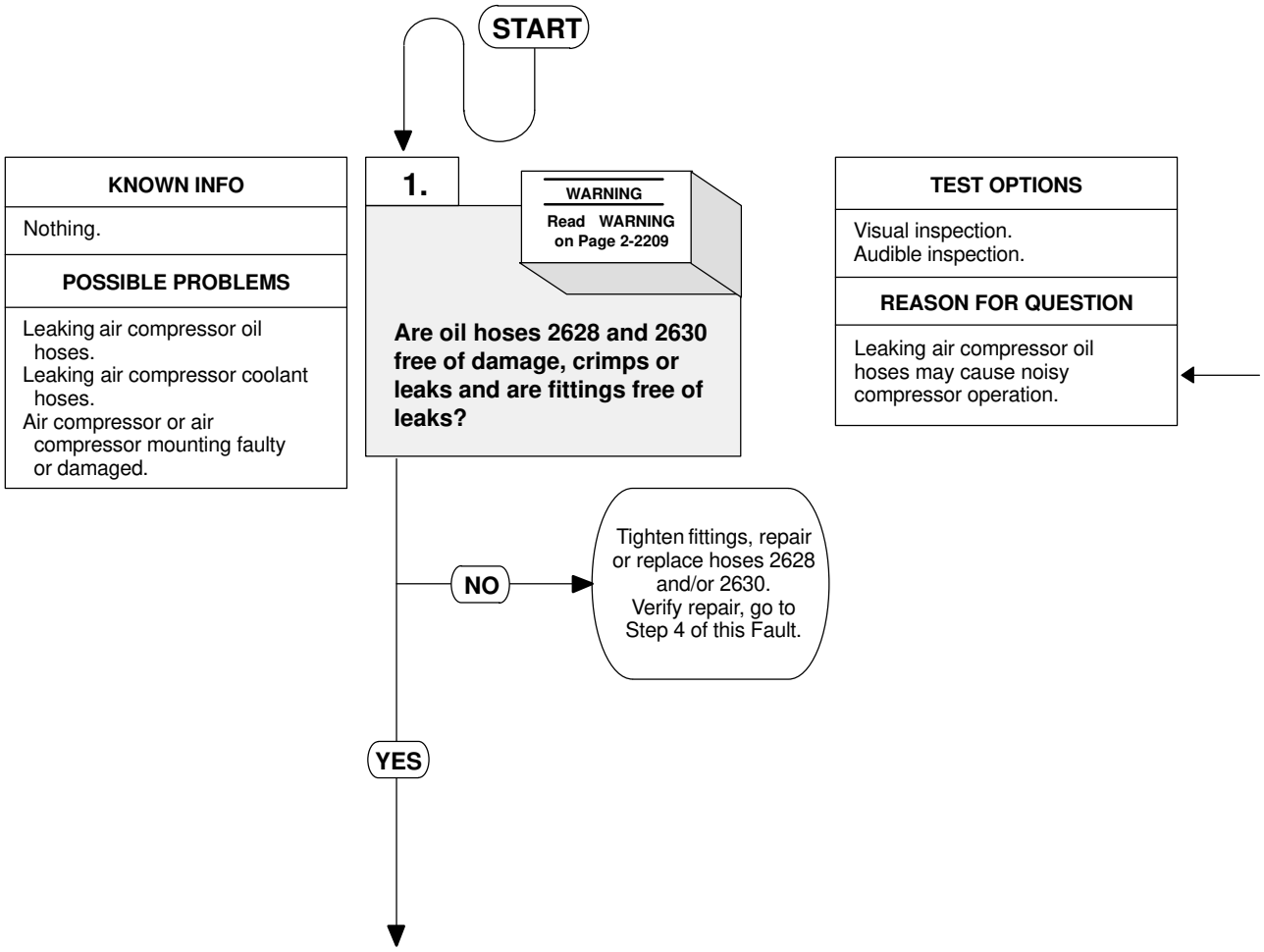
4. NOISY AIR COMPRESSOR OPERATION.

INITIAL SETUP

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

References
TM 9-2320-364-10

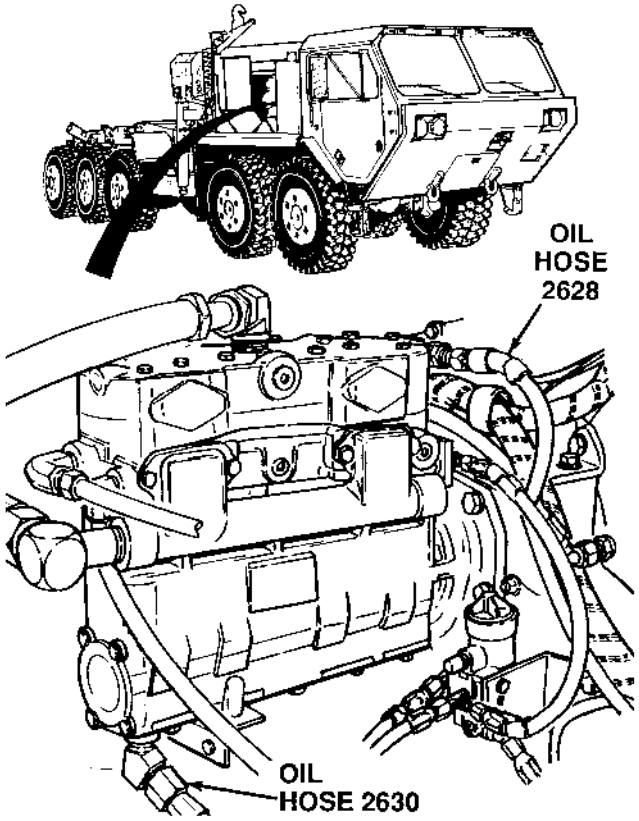
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brakes applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right side noise panel removed, (Para 17-26)



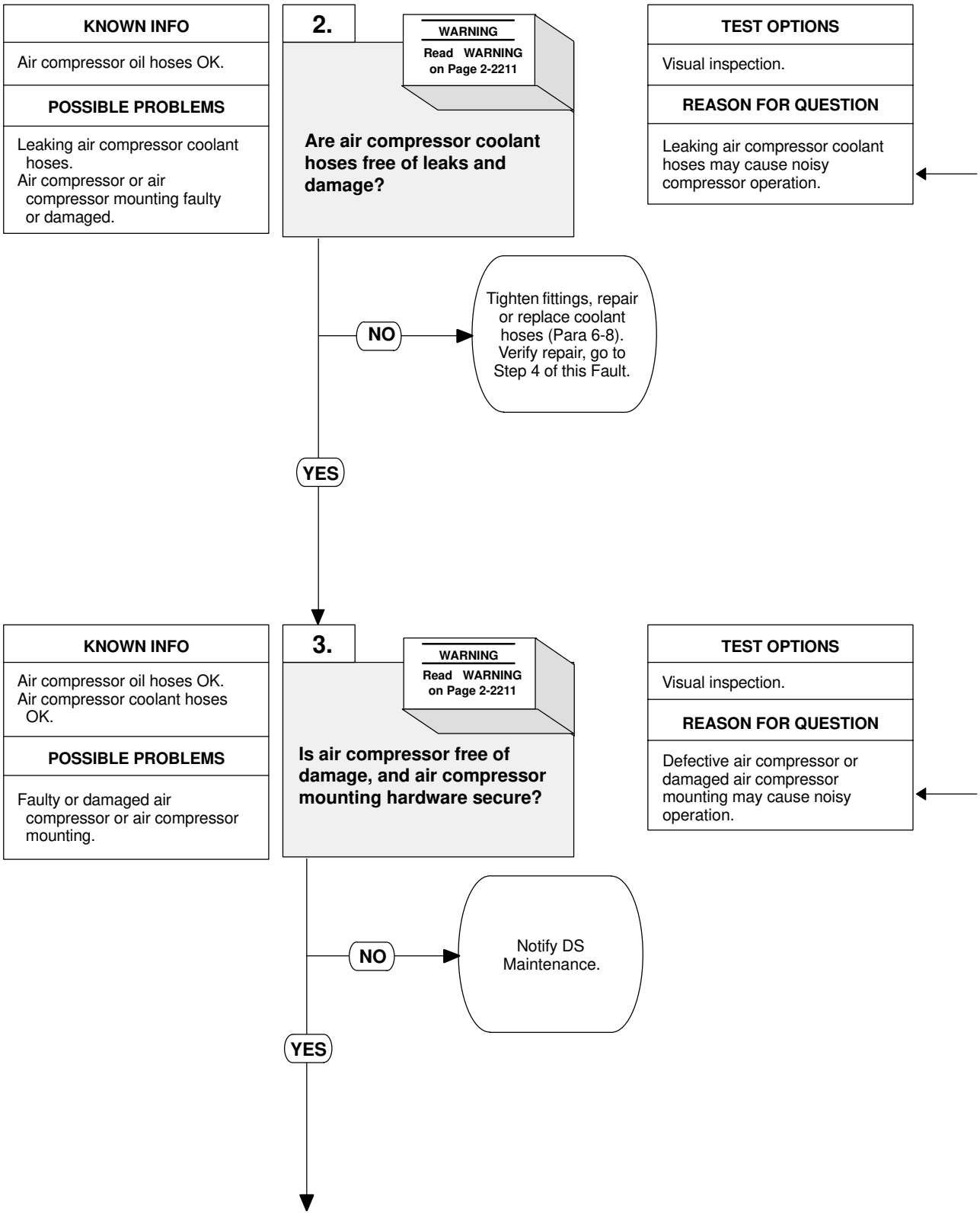
WARNING

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

VISUAL/AUDIBLR INSPECTION
Check oil hoses 2628 and 2630 for damage, crimps or leaks. (1) If hose(s) are damaged, crimped or leaking, tighten fittings or replace hose 2628 and/or 2630. (2) If there are no leaks, crimps or damage, hoses and fittings are OK.



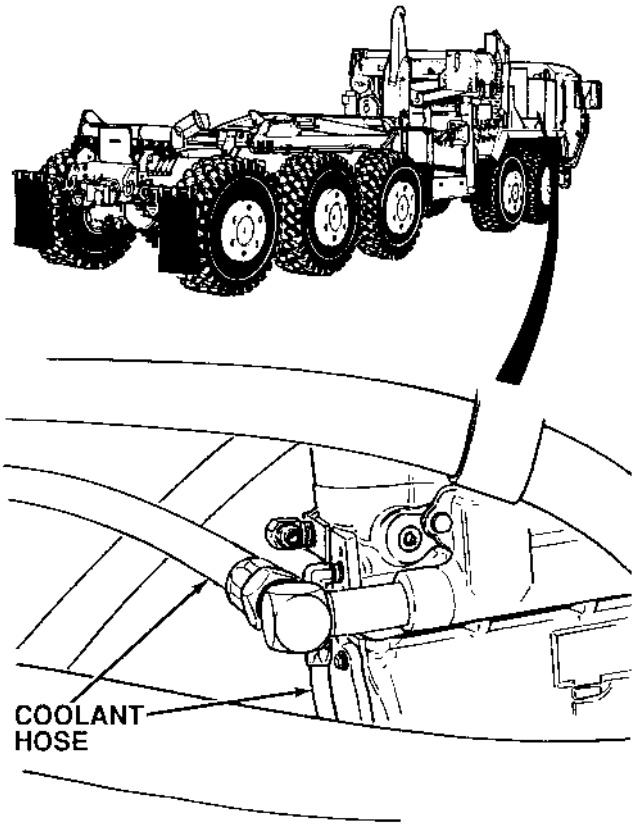
4. NOISY AIR COMPRESSOR OPERATION (CONT).



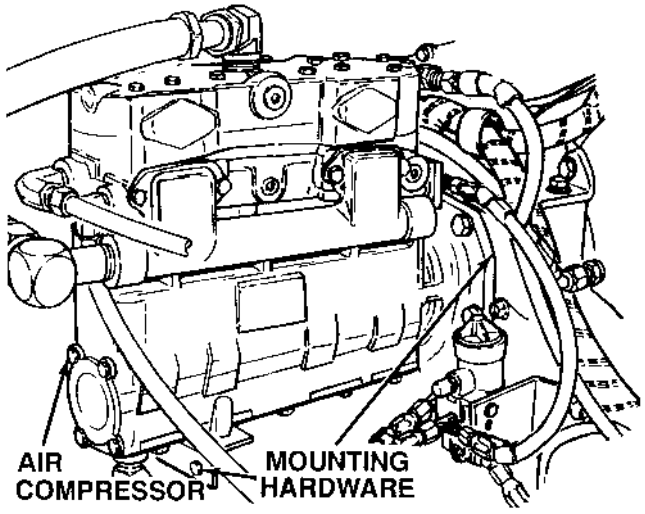
WARNING

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

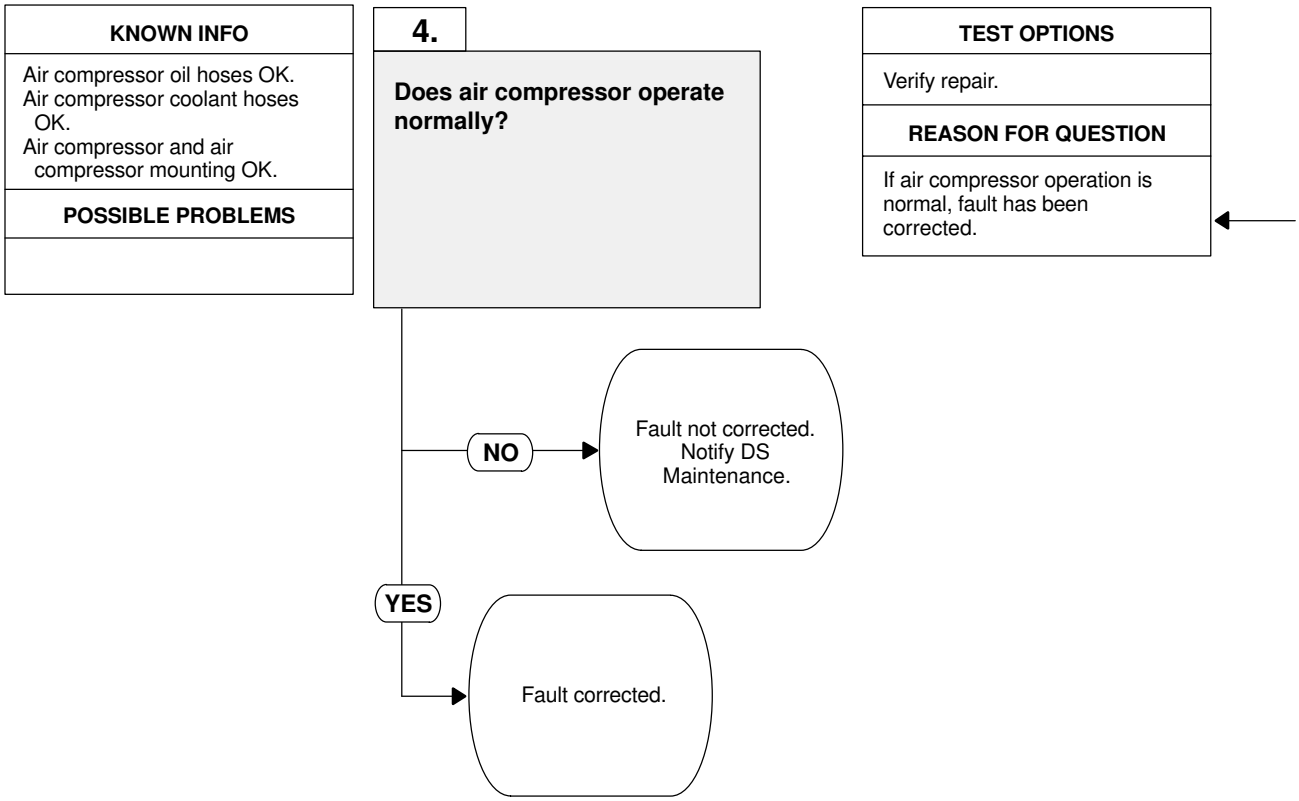
VISUAL INSPECTION
Check air compressor coolant hoses and fittings for leaks or damage. (1) If hoses are leaking or damaged, tighten fittings, repair or replace coolant hoses (Para 6-8). (2) If hoses are not leaking or damaged, go to Step 3 of this Fault.



VISUAL INSPECTION
(1) Check air compressor for damage and loose or damaged mounting hardware. (a) If compressor is cracked, leaking, or seized, notify DS Maintenance. (b) If compressor mounting is loose, notify DS Maintenance. (c) If compressor is securely mounted and not damaged, go to Step 4 of this Fault. (2) Install right side noise panel (Para 17-26).

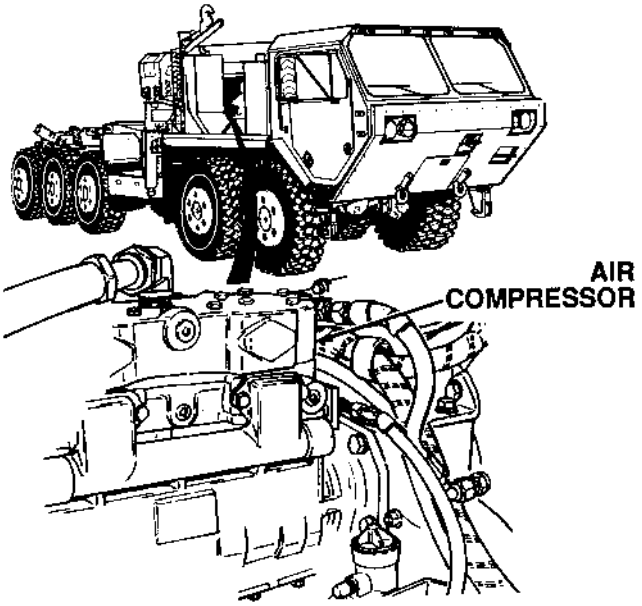


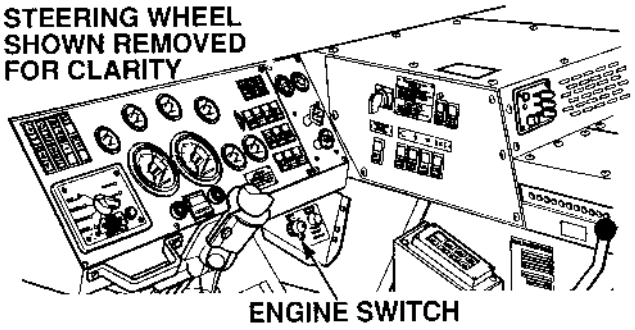
4. NOISY AIR COMPRESSOR OPERATION (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Monitor air compressor operation for excessive noise.
    (a) If air compressor is noisy, fault not corrected. Perform Step (3) below and notify DS Maintenance.
    (b) If air compressor operates normally, fault has been corrected.
(3) Turn OFF ENGINE switch.





2-27. AIR SYSTEM TROUBLESHOOTING (CONT).

5. AIR PRESSURE DROPS RAPIDLY AFTER ENGINE SHUTDOWN.

INITIAL SETUP

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

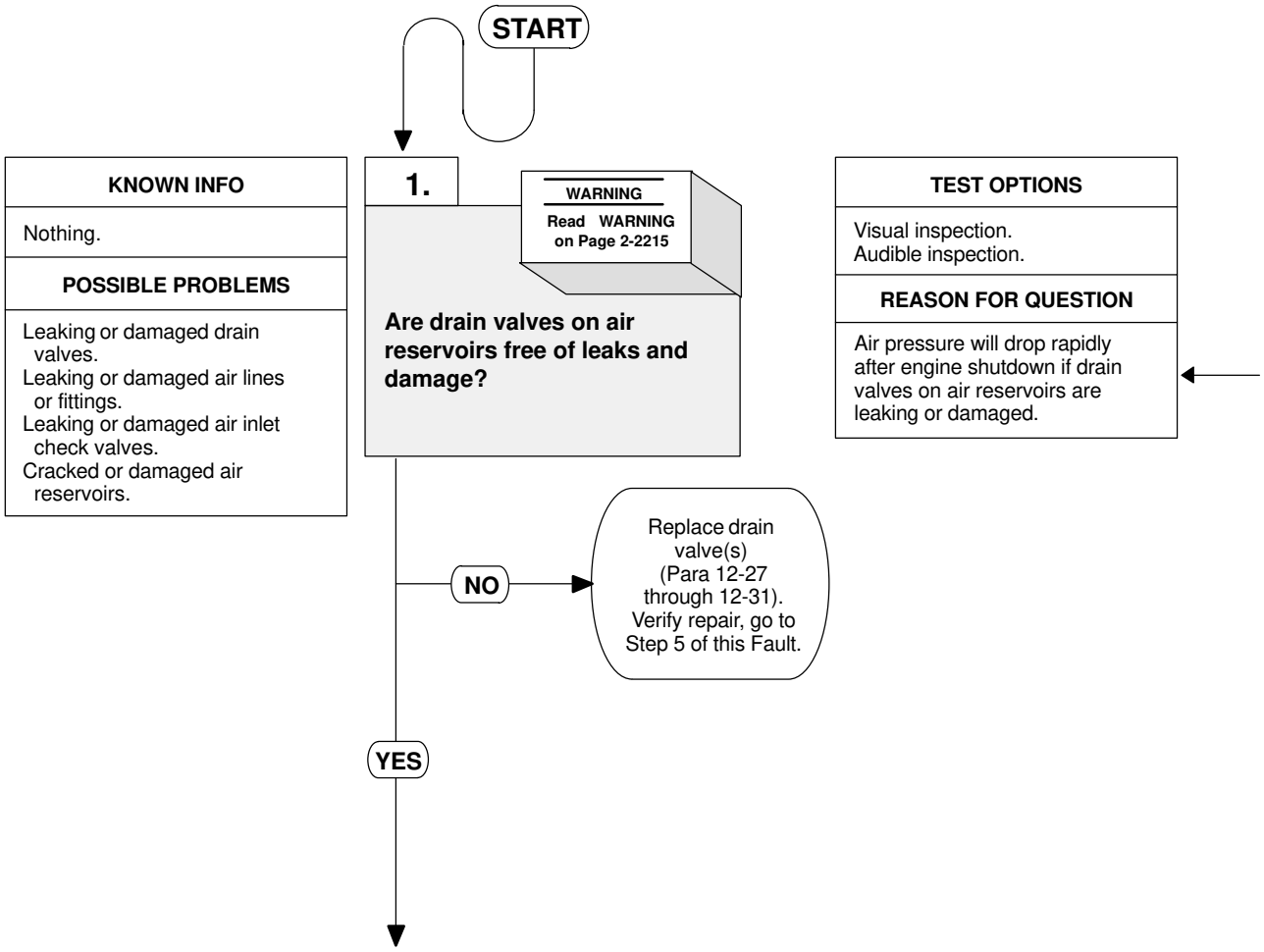
Materials/Parts
Solution, Soap (Item 86, Appendix C)

References
TM 9-2320-364-10

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

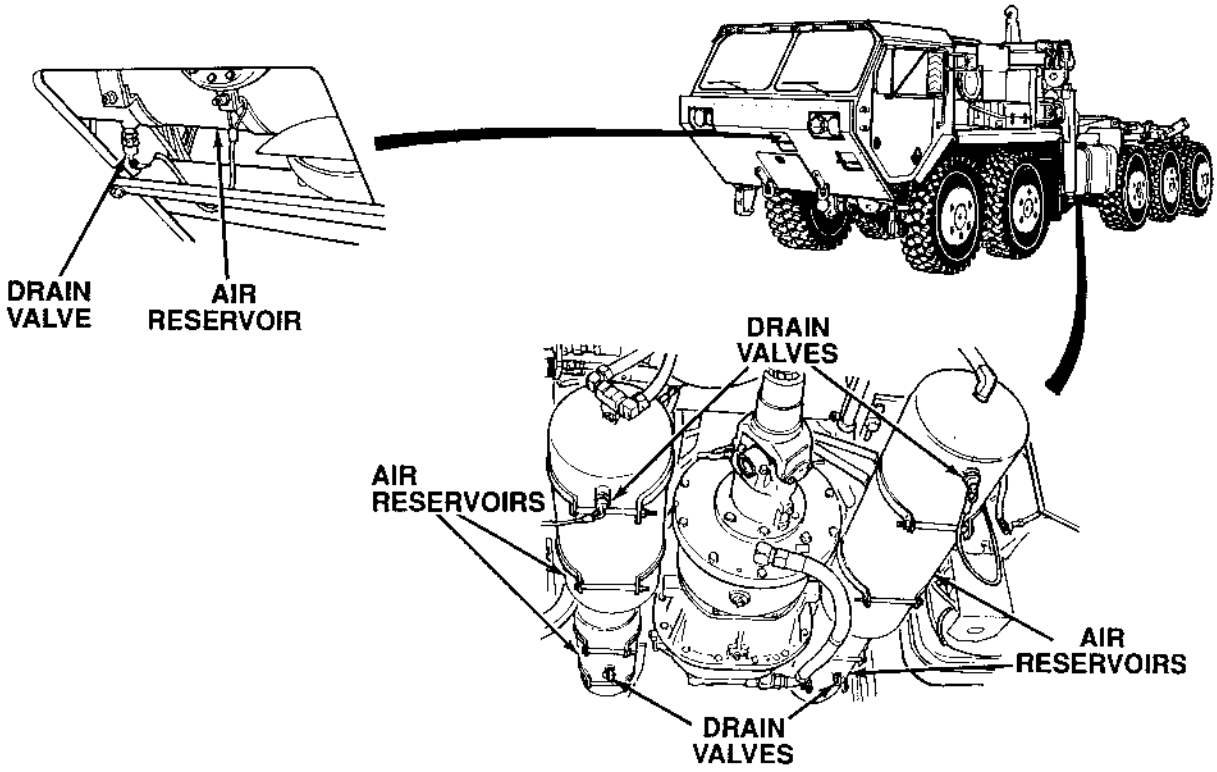
NOTE

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



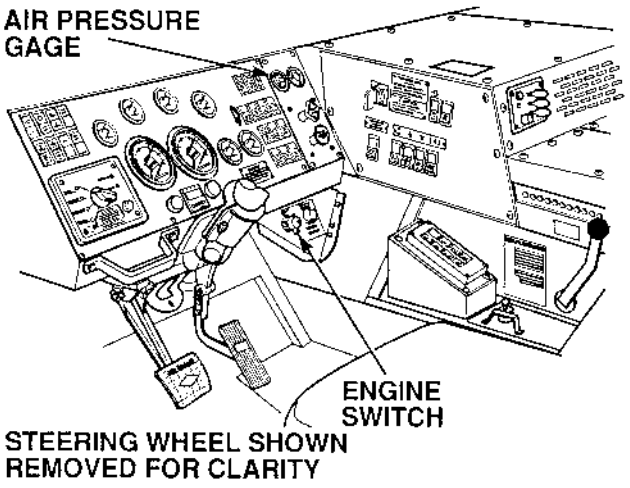
WARNING

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

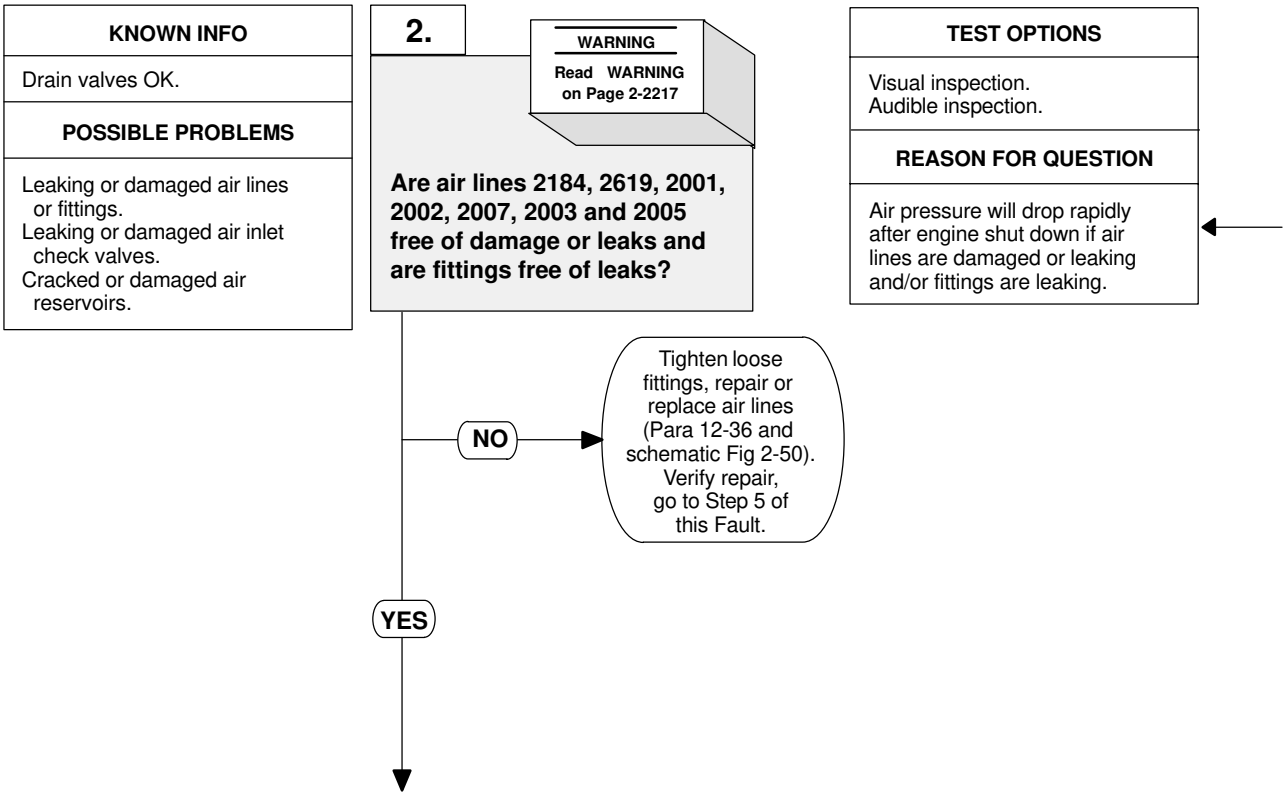


VISUAL/AUDIBLE INSPECTION

(1) Start engine (TM 9-2320-364-10).
(2) Run engine at idle until air pressure gage reads 125 ± 4 psi (861 ± 28 kPa).
(3) Turn OFF ENGINE switch.
(4) Check drain valves on air reservoirs for leaks or damage.
  (a) If drain valves are leaking or damaged, replace valves (Para 12-27 through 12-31).
  (b) If drain valves are not leaking or damaged, valves are OK.



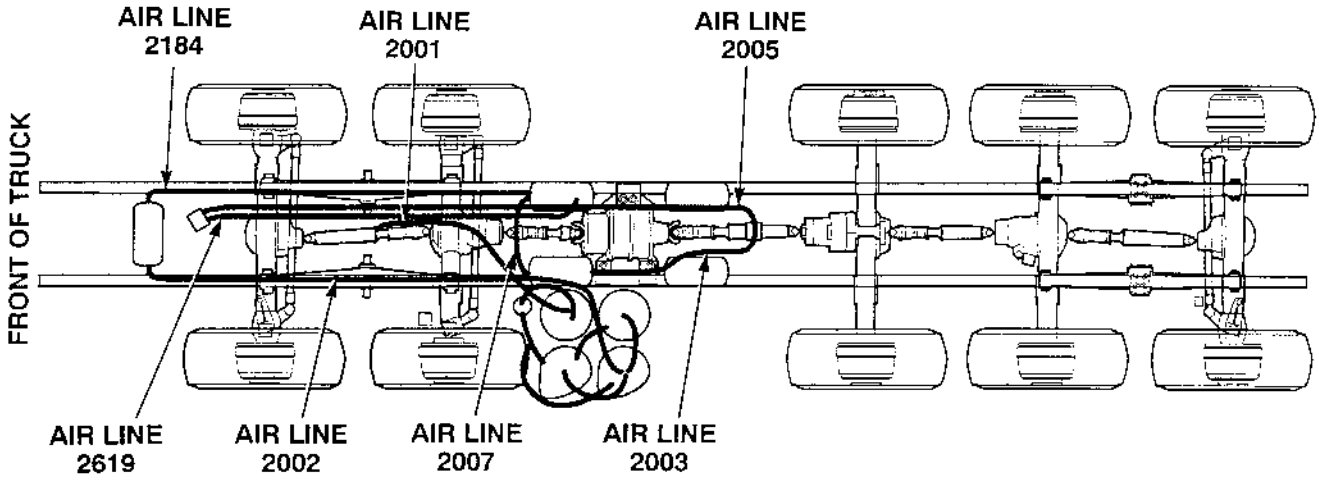
5. AIR PRESSURE DROPS RAPIDLY AFTER ENGINE SHUTDOWN (CONT).



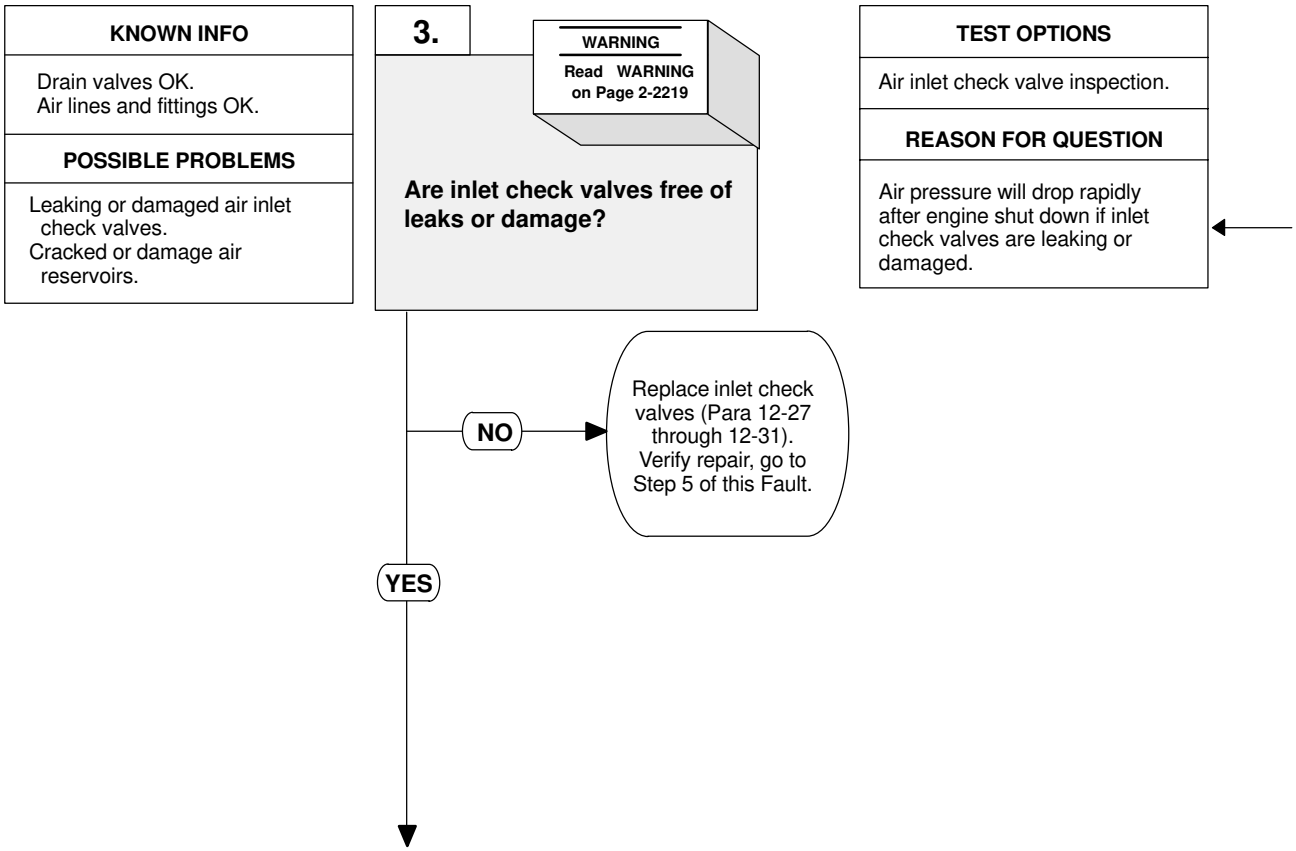
WARNING

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

VISUAL/AUDIBLE INSPECTION
Check air lines 2184, 2619, 2001, 2002, 2007, 2003 and 2005 for damage or leaks (Para 12-36 and schematic Fig 2-50). (1) If air lines are damaged or leaking, tighten fittings, repair or replace air lines (Para 12-36 and schematic Fig 2-50). (2) If there are no leaks or damage, air lines and fittings are OK.



5. AIR PRESSURE DROPS RAPIDLY AFTER ENGINE SHUTDOWN (CONT).

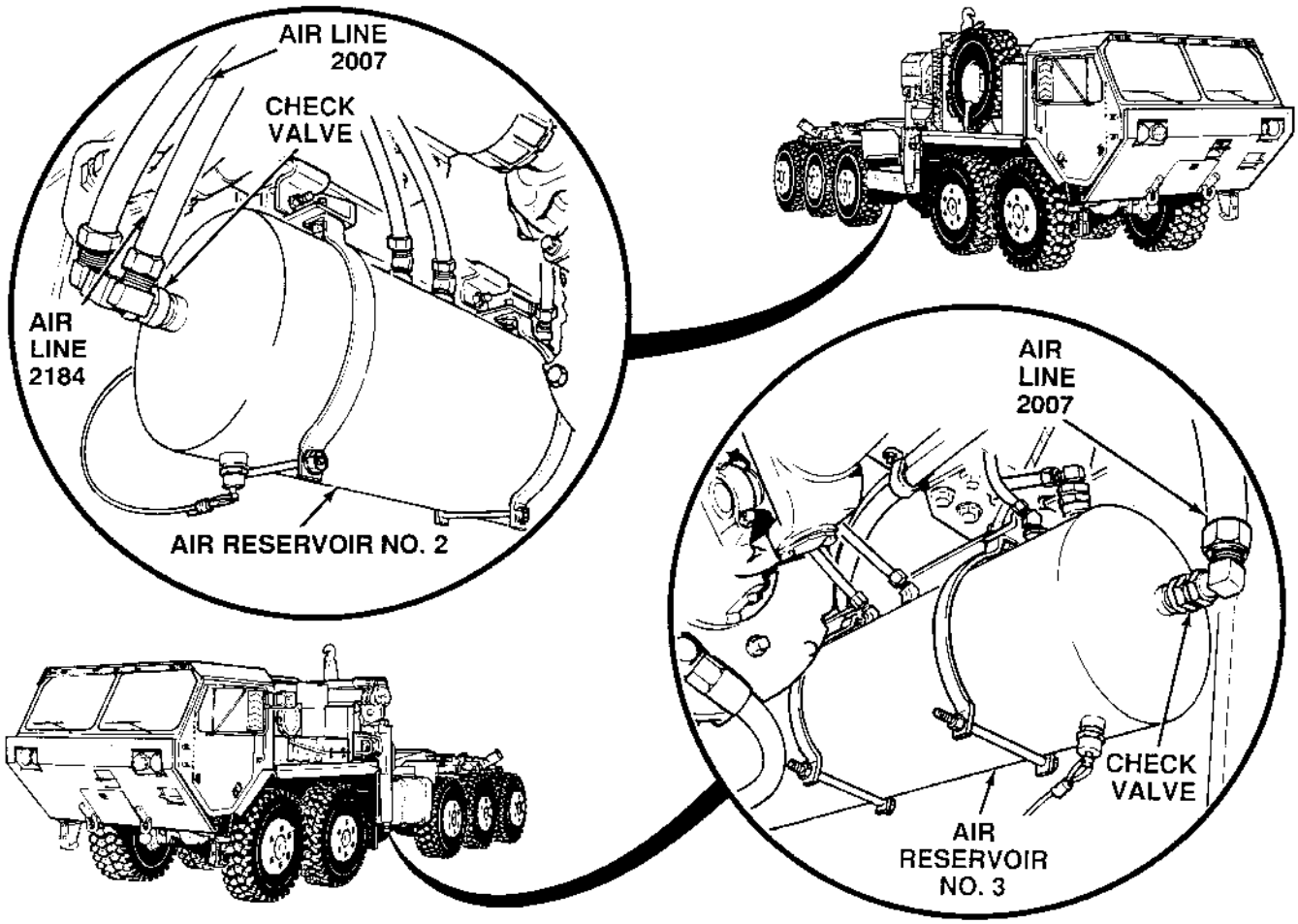


WARNING

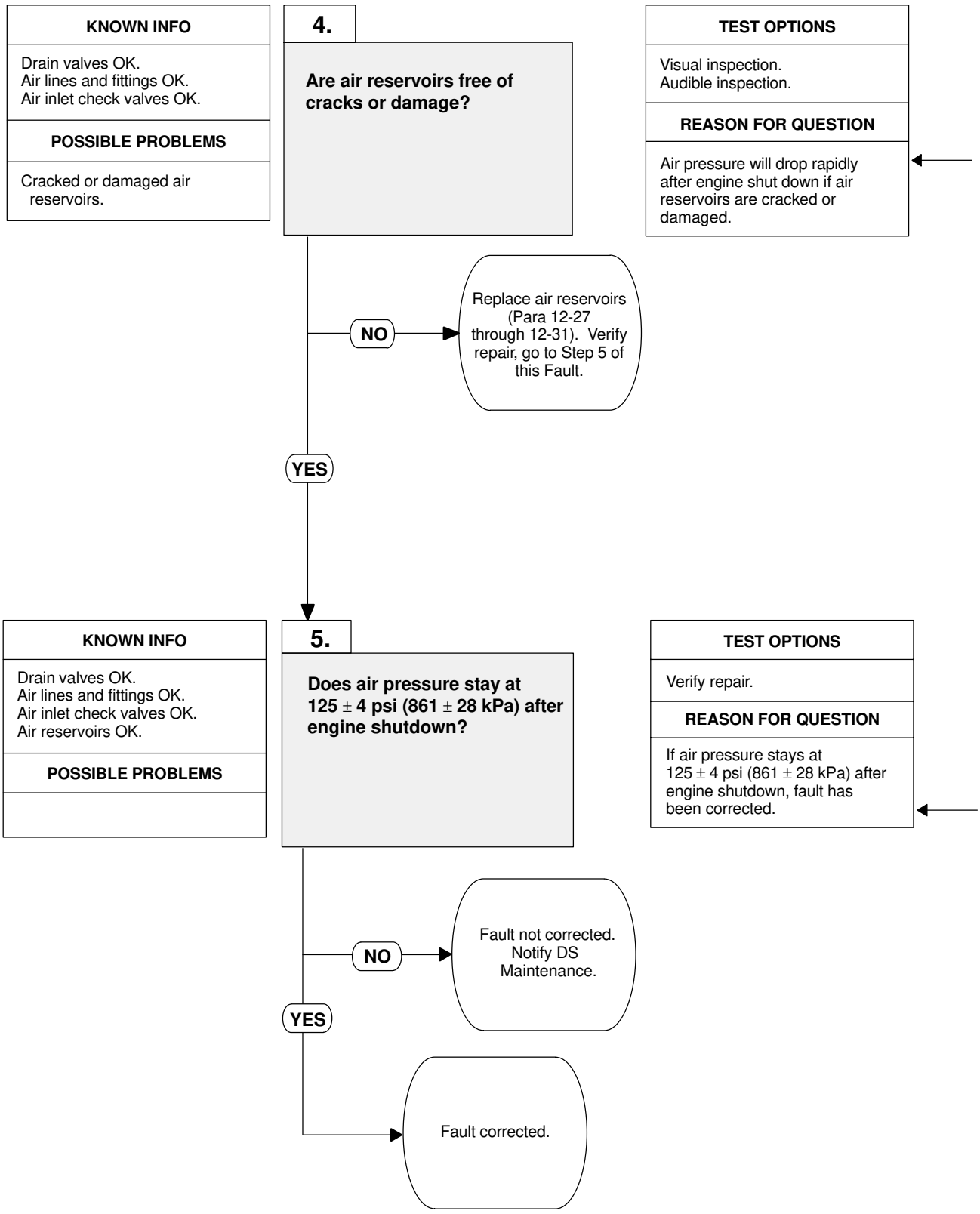
Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

AIR INLET CHECK VALVE INSPECTION

(1) Drain air system.
(2) Disconnect air lines 2184 and 2007 from air reservoirs No. 2 and No. 3.
(3) Inspect check valves on air reservoirs No. 2 and No. 3 for air leaks or damage.
    (a) If check valves are leaking or damaged, replace valves (Para 12-28 and 12-29).
    (b) If check valves are not leaking or damaged, valves are OK.
(4) Connect air lines 2184 and 2007 to air reservoirs No. 2 and No. 3.



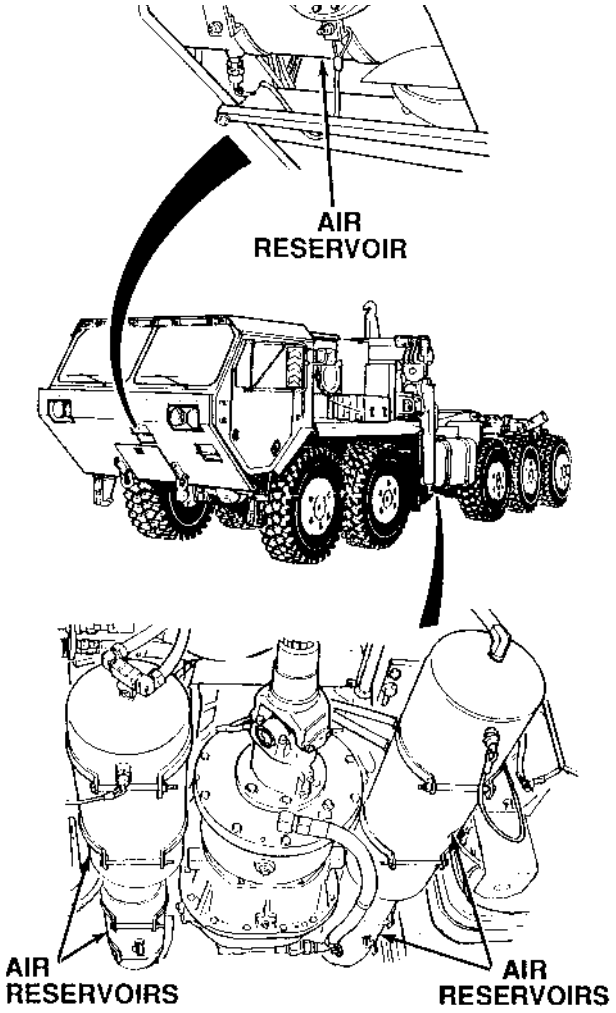
5. AIR PRESSURE DROPS RAPIDLY AFTER ENGINE SHUTDOWN (CONT).



VISUAL/AUDIBLE INSPECTION

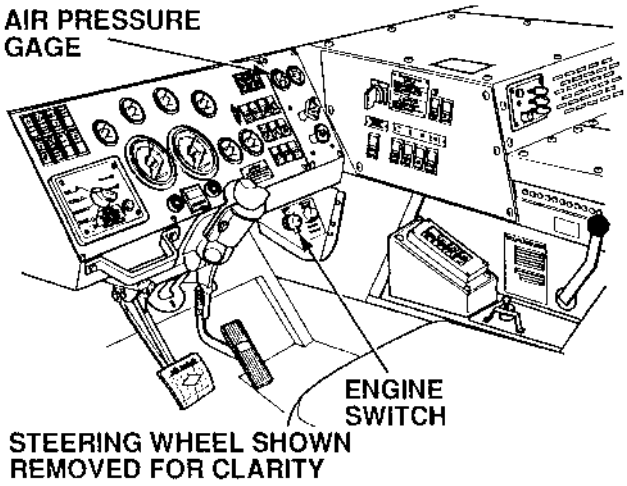
Check air reservoirs for cracks, dents, split seams, holes or other damage.

(1) If air reservoirs are damaged, replace air reservoir(s) (Para 12-27 through 12-31).
(2) If air reservoirs are not damaged, reservoirs are OK.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Run at idle for 10 minutes.
(3) Turn OFF ENGINE switch.
(4) Observe air pressure gage.
    (a) If air pressure gage drops below 125 ± 4 psi (861 ± 28 kPa), fault not corrected. Notify DS Maintenance.
    (b) If air pressure gage stays at 125 ± 4 psi (861 ± 28 kPa), fault has been corrected.



2-27. AIR SYSTEM TROUBLESHOOTING (CONT).

6. AIR HORN WILL NOT OPERATE.

INITIAL SETUP

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

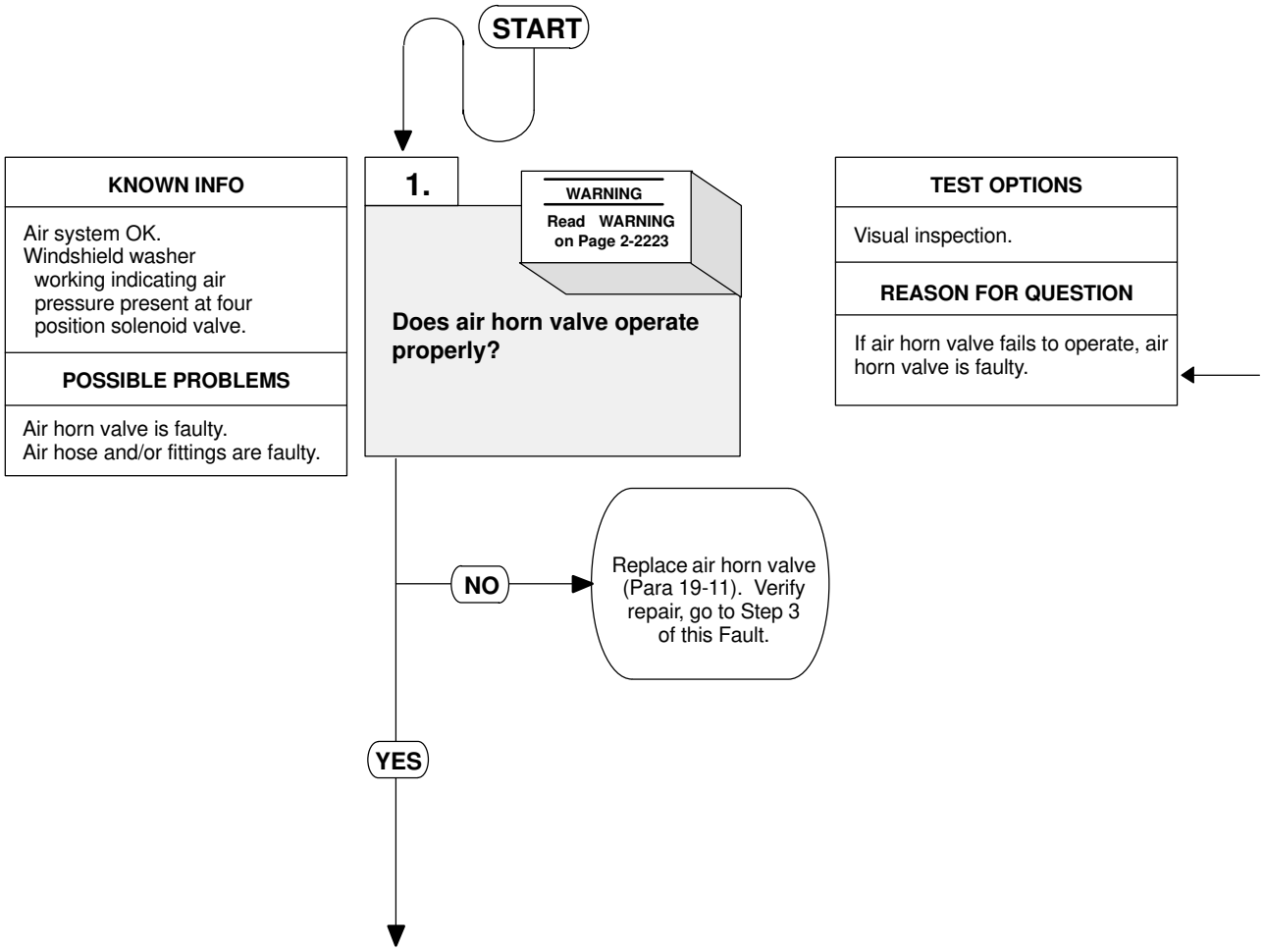
Materials/Parts
Solution, Soap (Item 86, Appendix C)

References
TM 9-2320-364-10

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brakes applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system charged, (TM 9-2320-364-10)

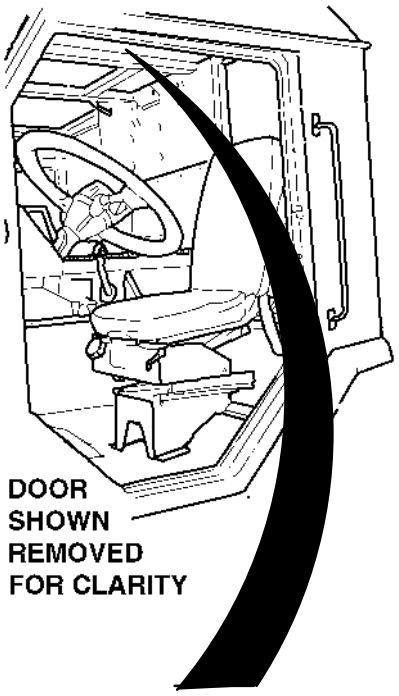
NOTE

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

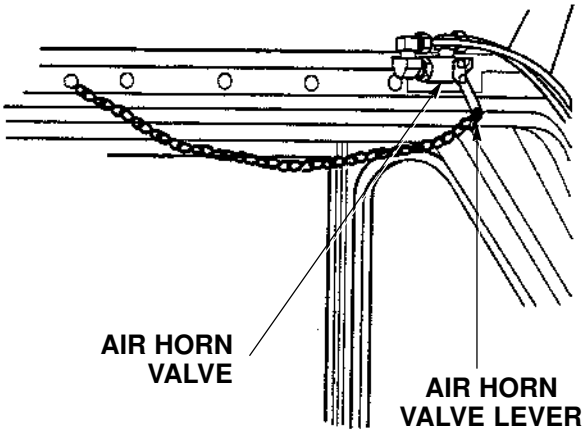


WARNING

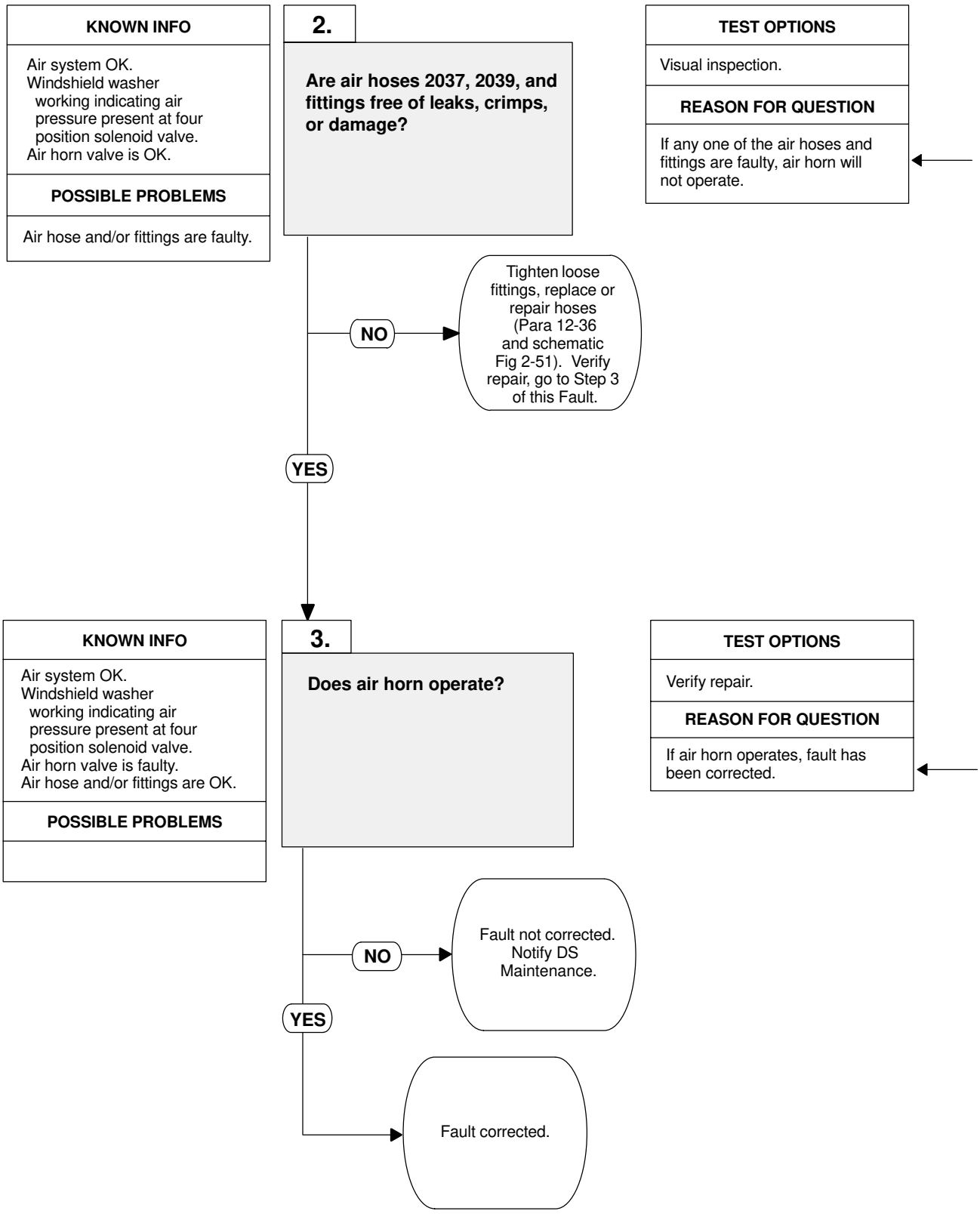
Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.



VISUAL INSPECTION
Check air horn valve lever for free movement and air horn valve for damage or leaks. (1) If air horn valve lever does not have free movement and/or air horn valve is damaged or leaking, replace air horn valve (Para 19-11). (2) If air horn valve lever has free movement and/or air horn valve is not damaged or leaking, go to Step 2 of this Fault.



6. AIR HORN WILL NOT OPERATE (CONT).

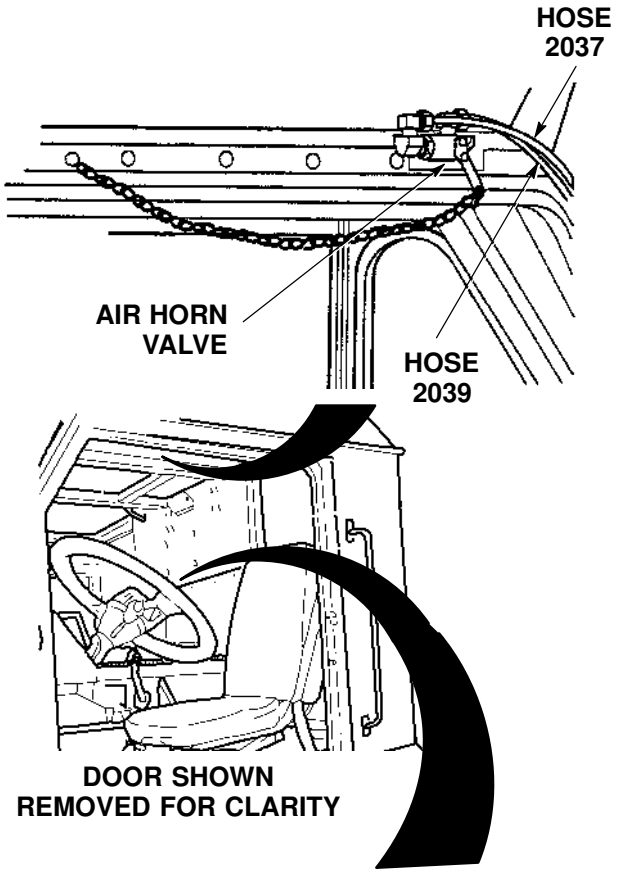


VISUAL INSPECTION

Check air hose 2037 and 2039 for damage, crimps or leaks (Para 12-36 and schematic Fig 2-51).

(1) If air hose(s) are damaged, crimped or leaking; tighten fittings, replace hoses (Para 12-36 and schematic Fig 2-51).

(2) If there are no leaks, crimps or damage, air hoses and fittings are OK.

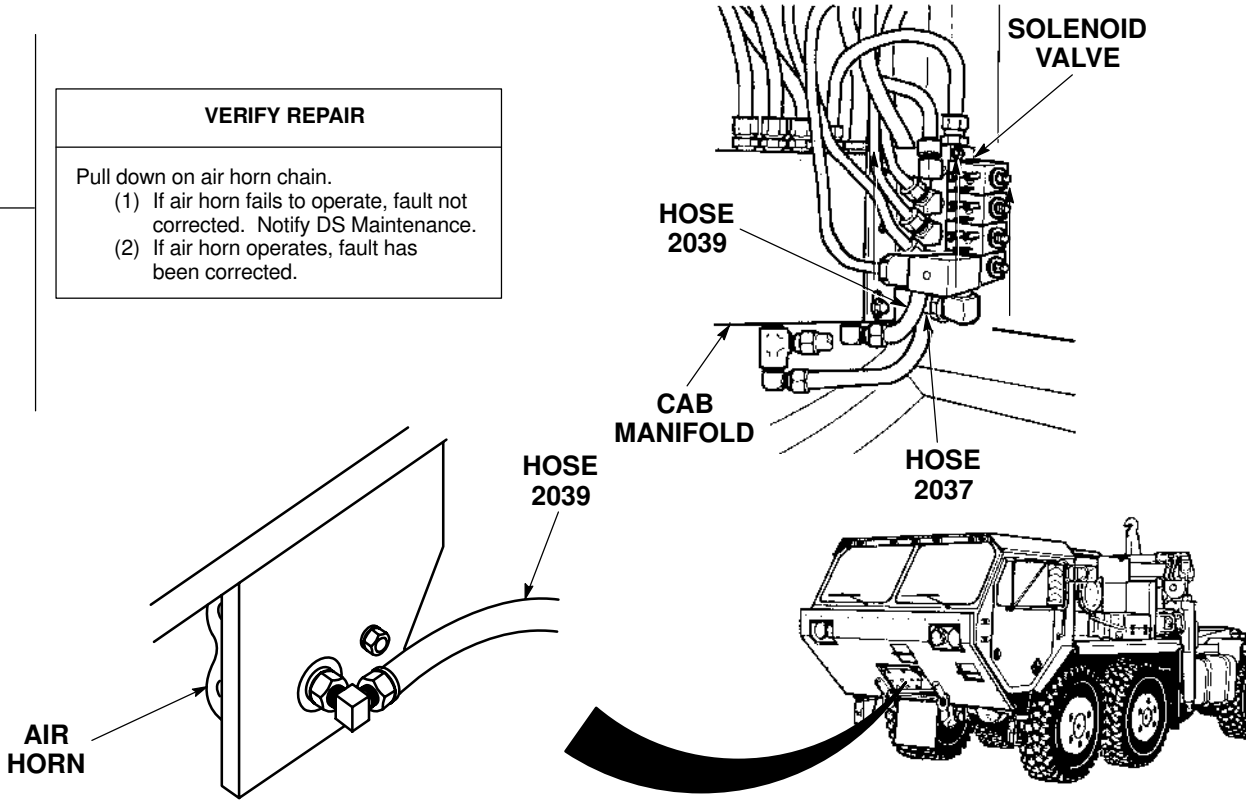


VERIFY REPAIR

Pull down on air horn chain.

(1) If air horn fails to operate, fault not corrected. Notify DS Maintenance.

(2) If air horn operates, fault has been corrected.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING.

This paragraph covers Load Handling System (LHS) Troubleshooting. The LHS Fault Index, Table 2-53, lists faults for the LHS of the PLS truck. Refer to schematics, Figures 2-52 through 2-57 when performing tests and corrective actions.

Table 2-53. Load Handling System Fault Index

Fault No.	Description	Page
1.	LHS Light Does Not Operate	2-2236
2.	LHS No Trans Light Does Not Operate	2-2258
3.	LHS Overload Light Does Not Operate	2-2282
4.	LHS Overload Light Does Not Go Out	2-2300
5.	Loss Of Supply Voltage To Main Junction Box	2-2304
6.	Loss Of Middle Frame Safe Lowering Function	2-2308
7.	Loss Of Hook Arm Safe Lowering Function	2-2324
8.	LHS Does Not Operate	2-2340
9.	Hook Arm Does Not Unload In Manual Mode	2-2362
10.	Hook Arm Does Not Load In Manual Mode	2-2382
11.	Middle Frame Does Not Unload In Manual Mode	2-2402
12.	Middle Frame Does Not Load In Manual Mode	2-2422
13.	LHS Does Not Load In Auto Mode	2-2440
14.	LHS Does Not Unload In Auto Mode	2-2458
15.	LHS Inoperative With Interface Kit Installed	2-2474

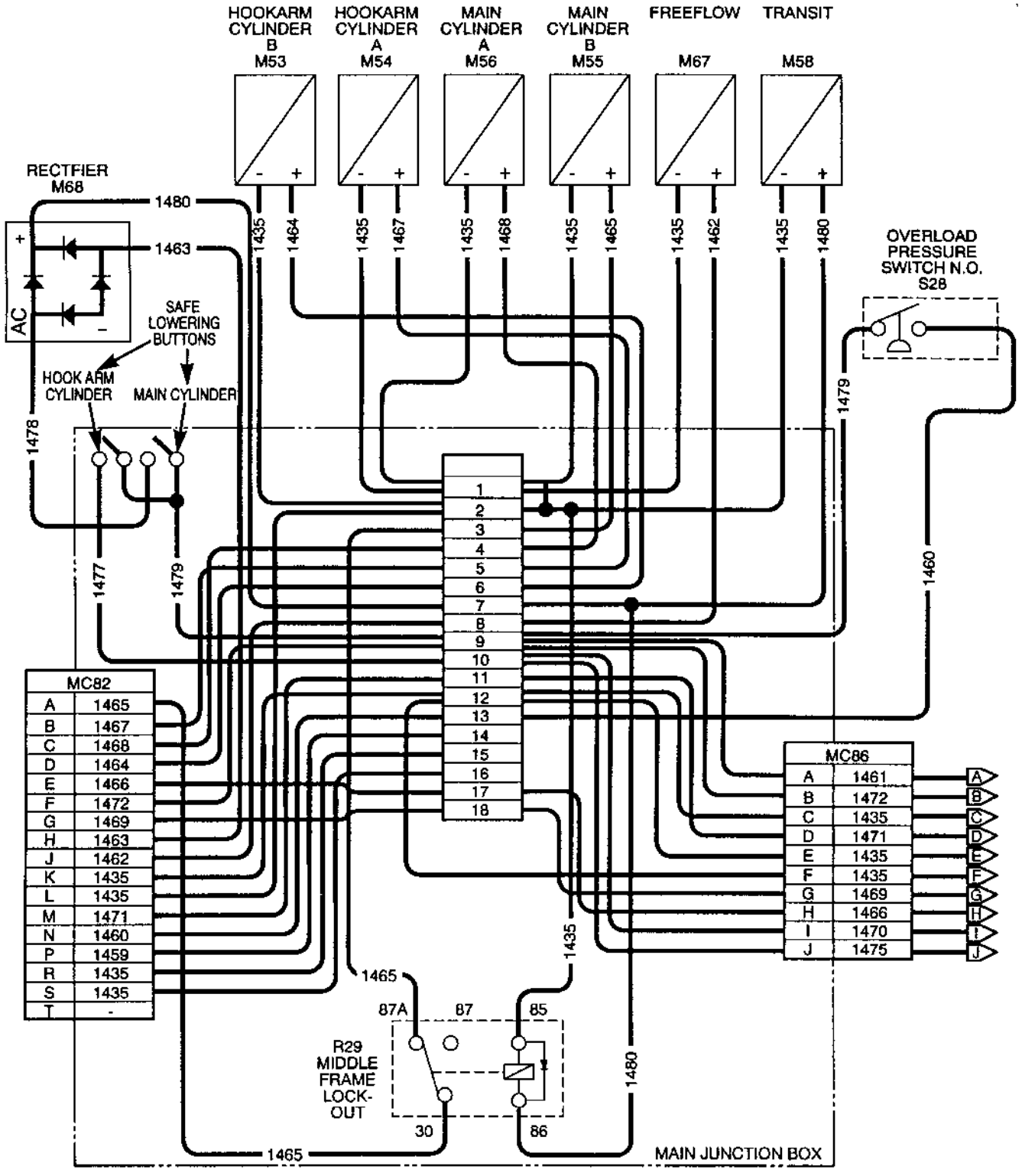


Figure 2-52. LHS and Main Hydraulics Wiring Schematic (Sheet 1 of 4)

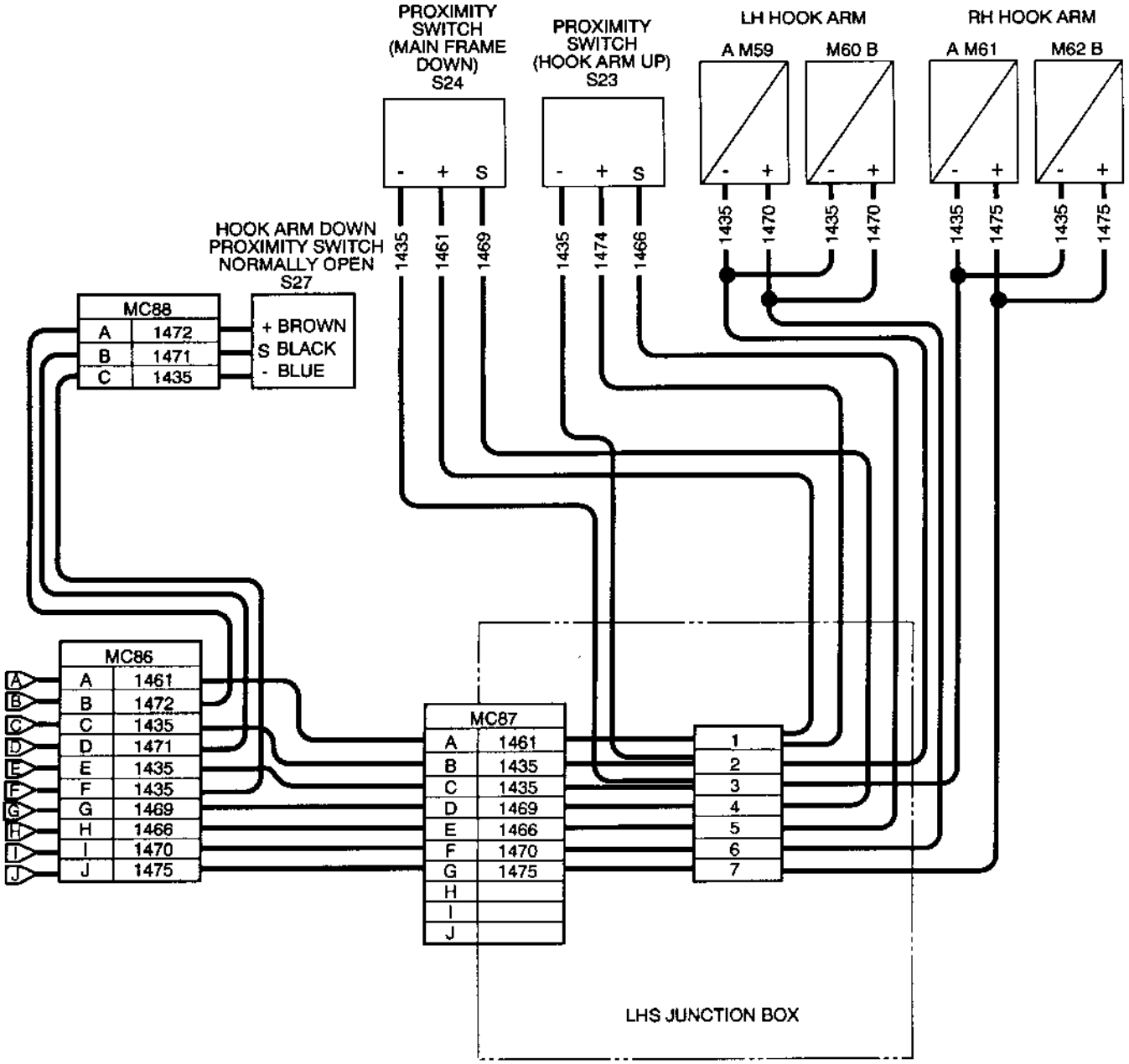


Figure 2-52. LHS and Main Hydraulics Wiring Schematic (Sheet 2 of 4)

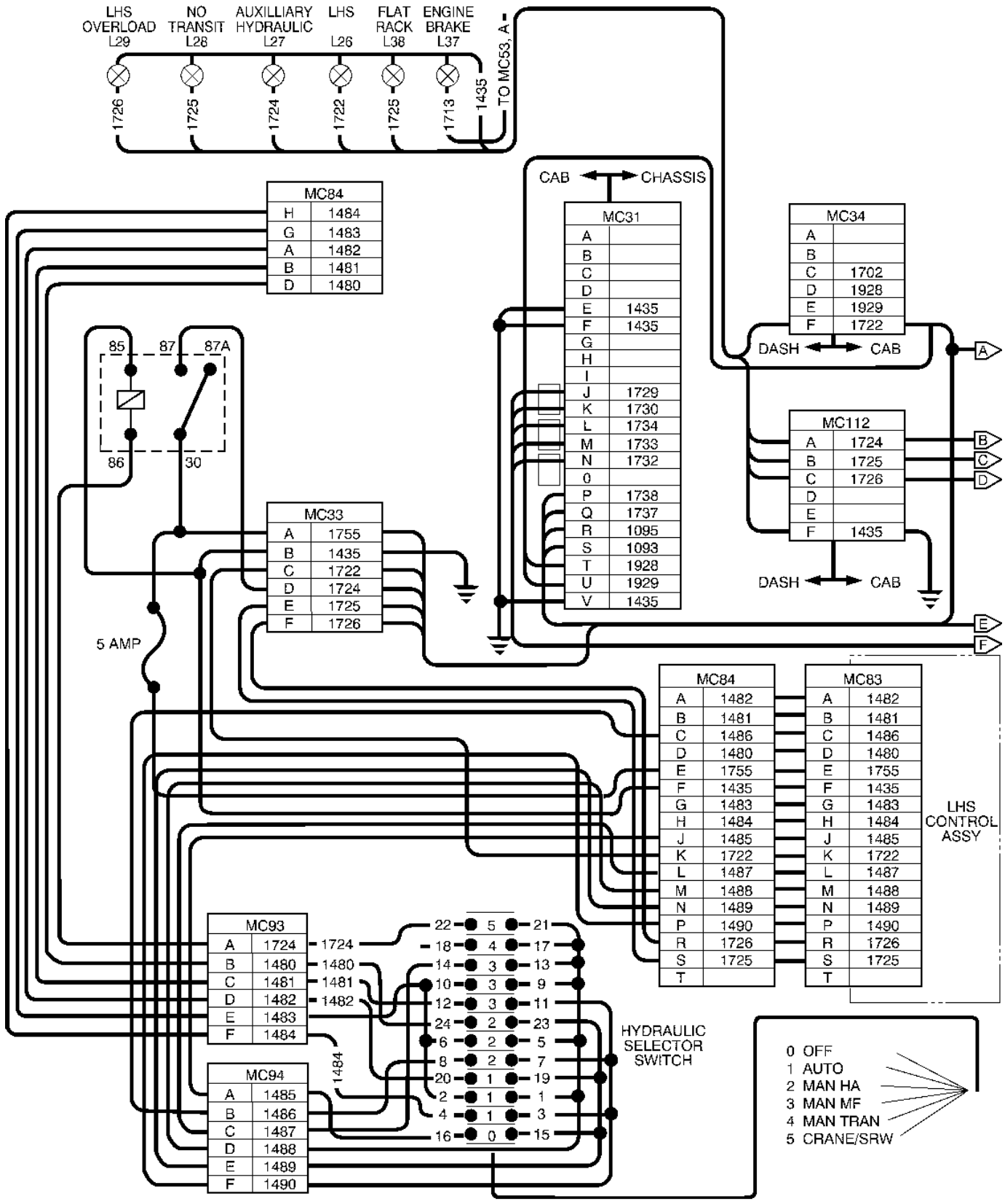


Figure 2-52. LHS and Main Hydraulics Wiring Schematic (Sheet 3 of 4)

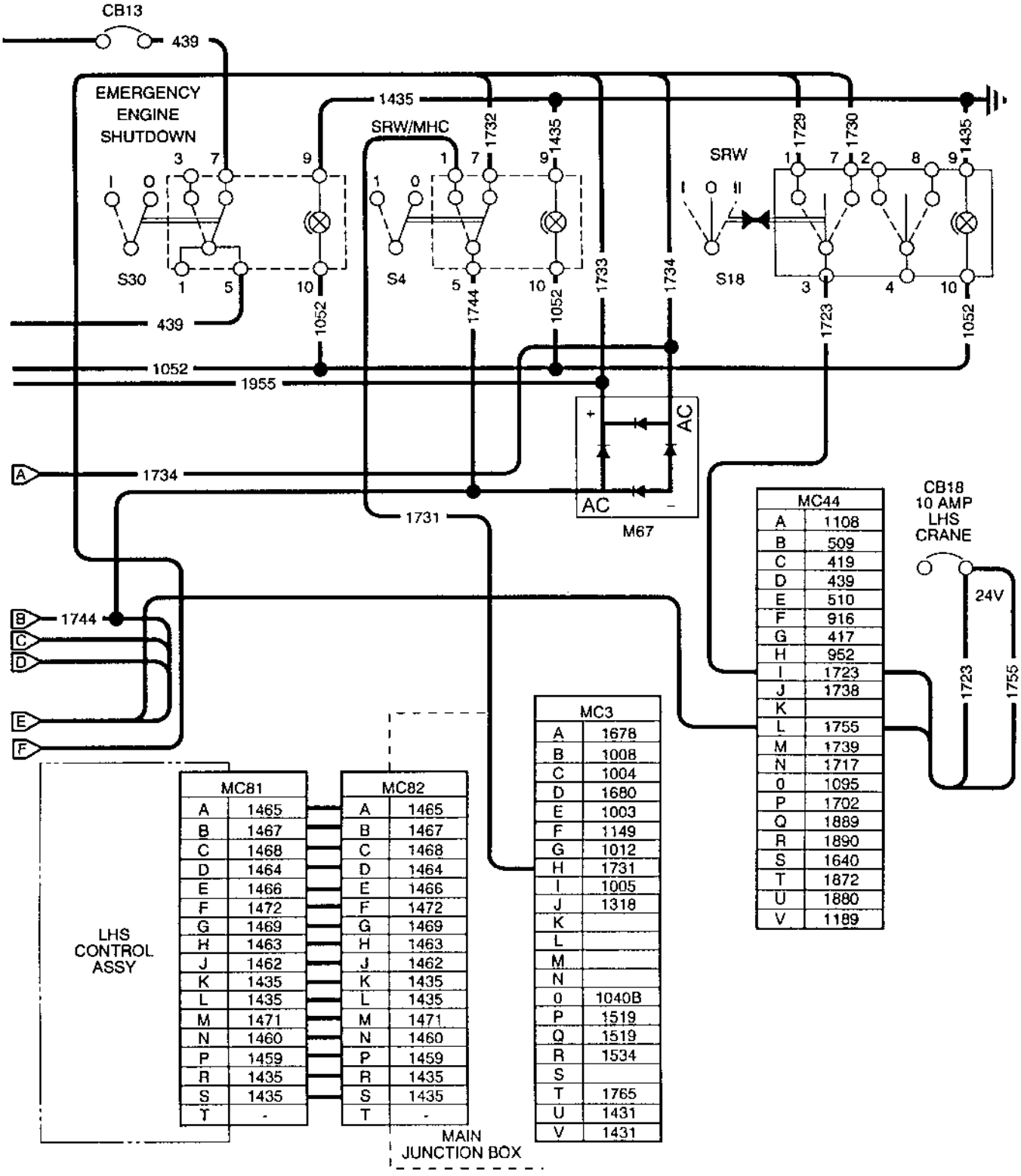


Figure 2-52. LHS and Main Hydraulics Wiring Schematic (Sheet 4 of 4)

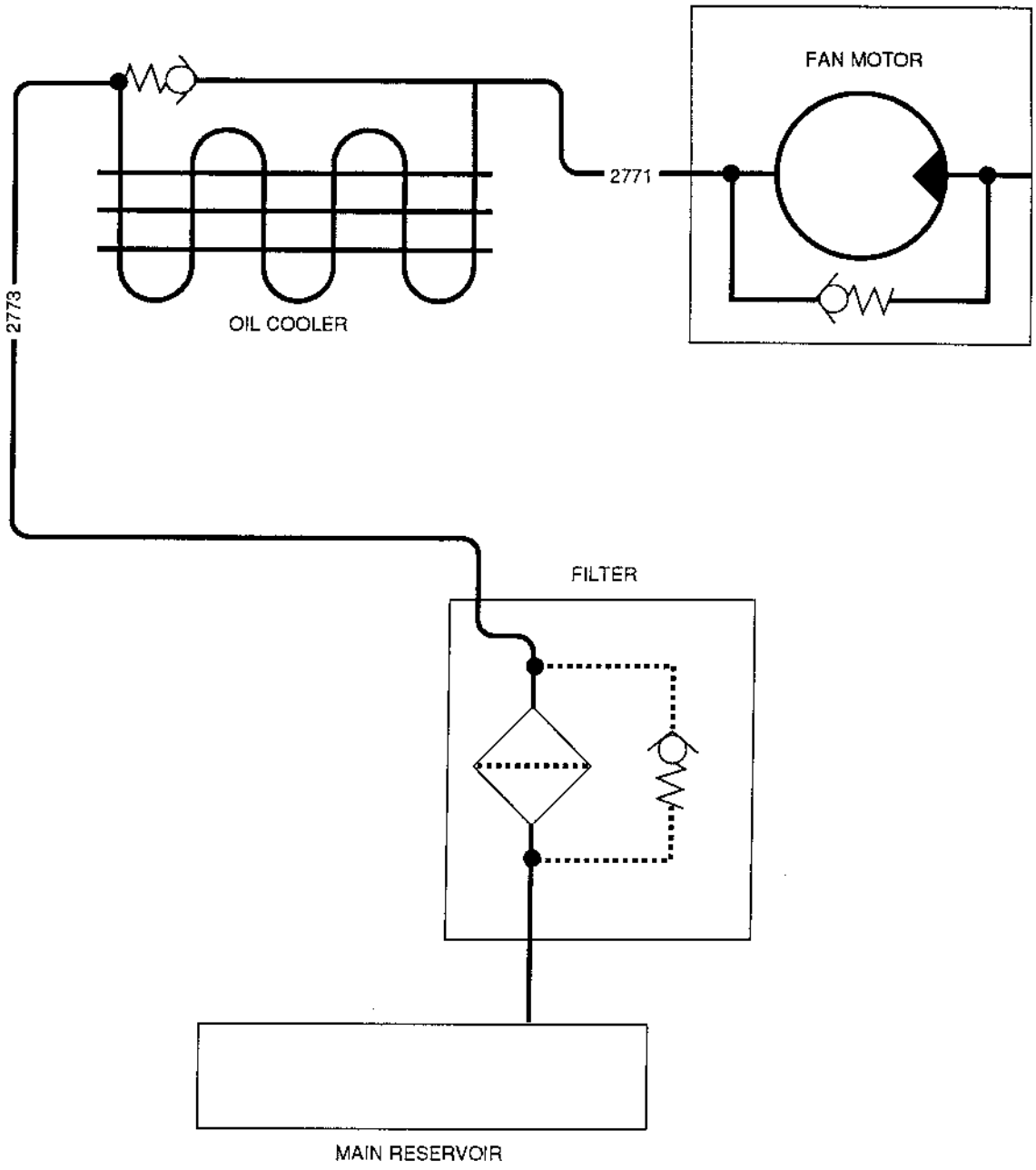


Figure 2-53. LHS Hydraulic Diagram

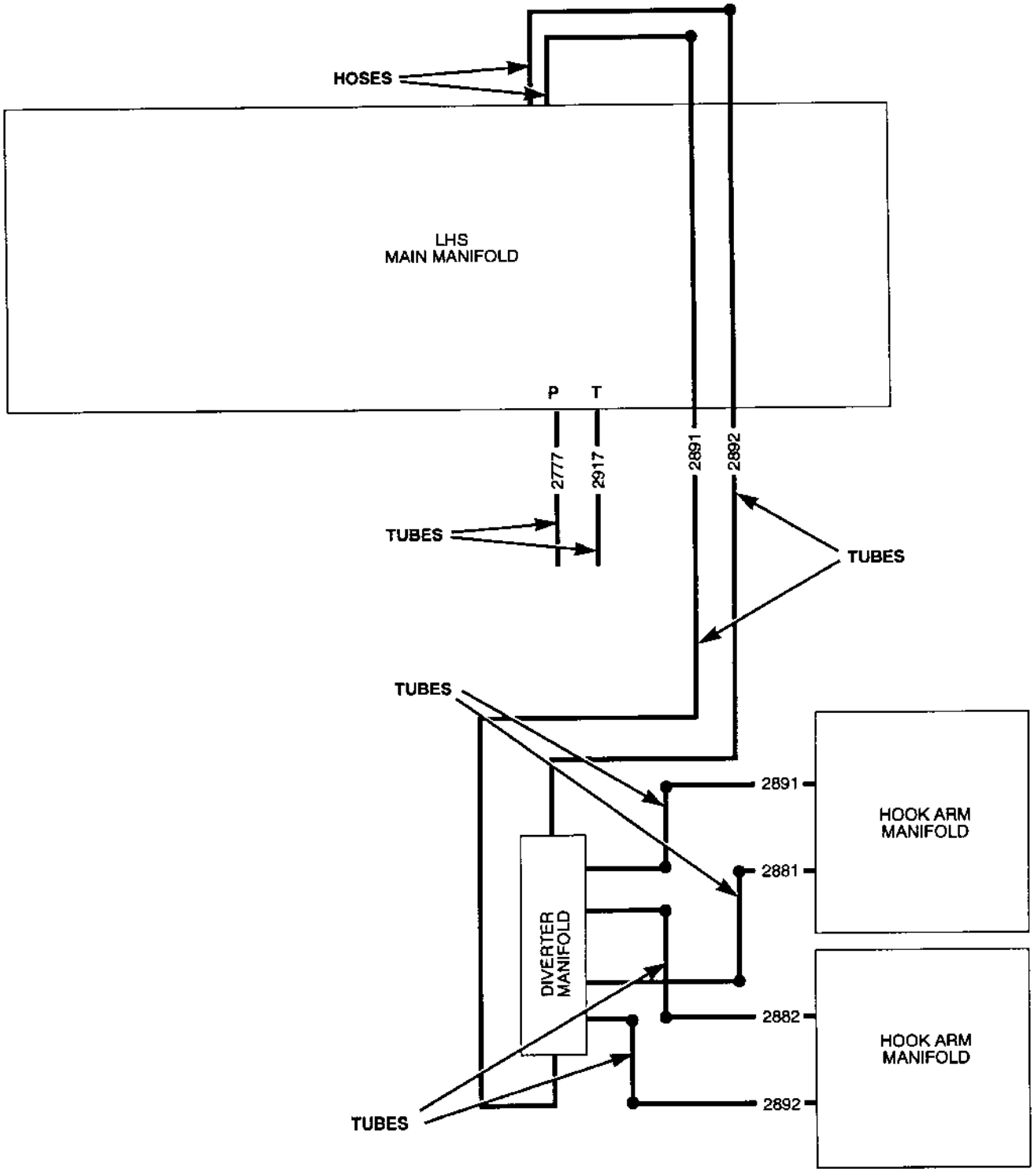


Figure 2-54. LHS Hook Arm Hydraulic Diagram

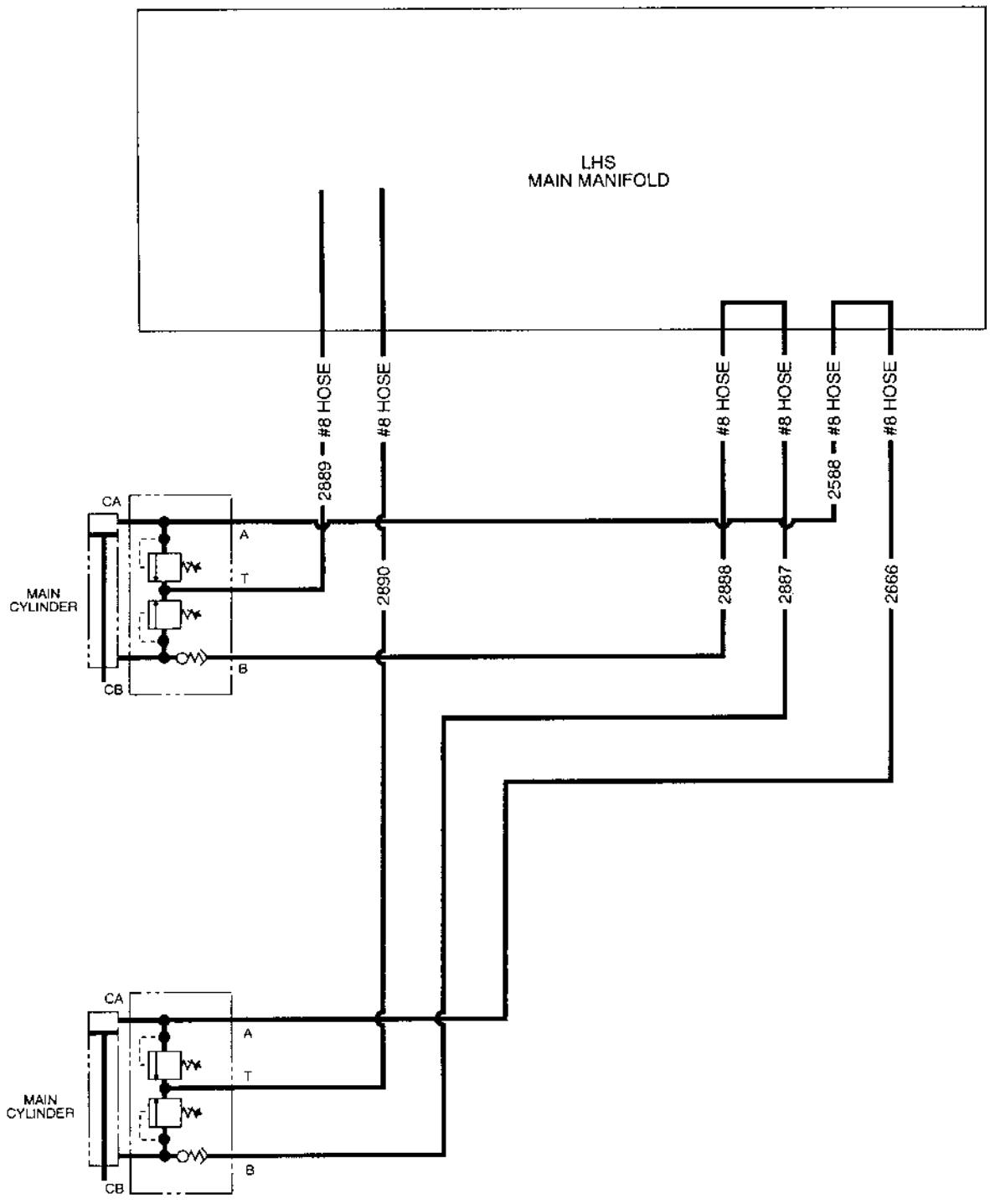


Figure 2-55. LHS Middle Frame Hydraulic Diagram

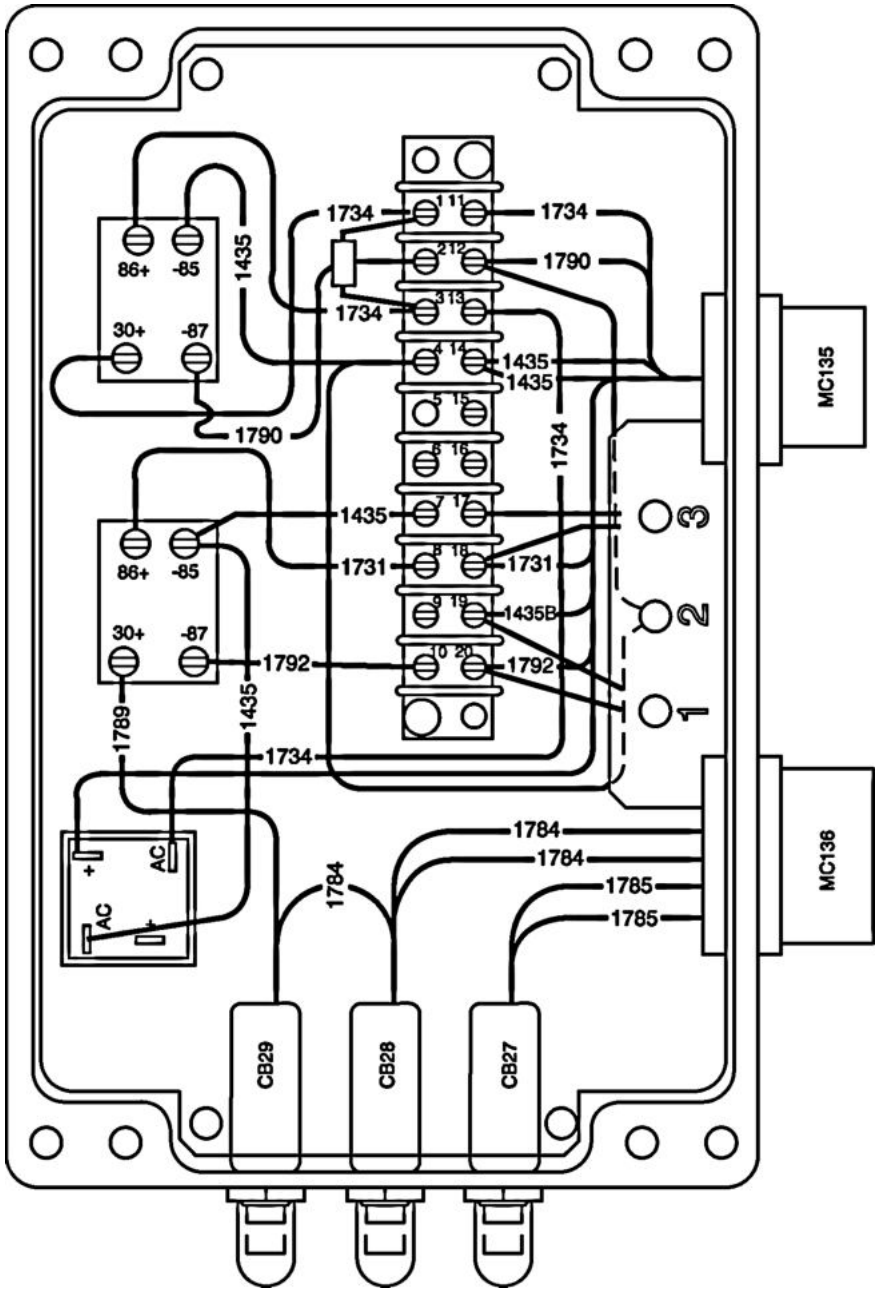


Figure 2-56. Interface Power Box Wiring Diagram

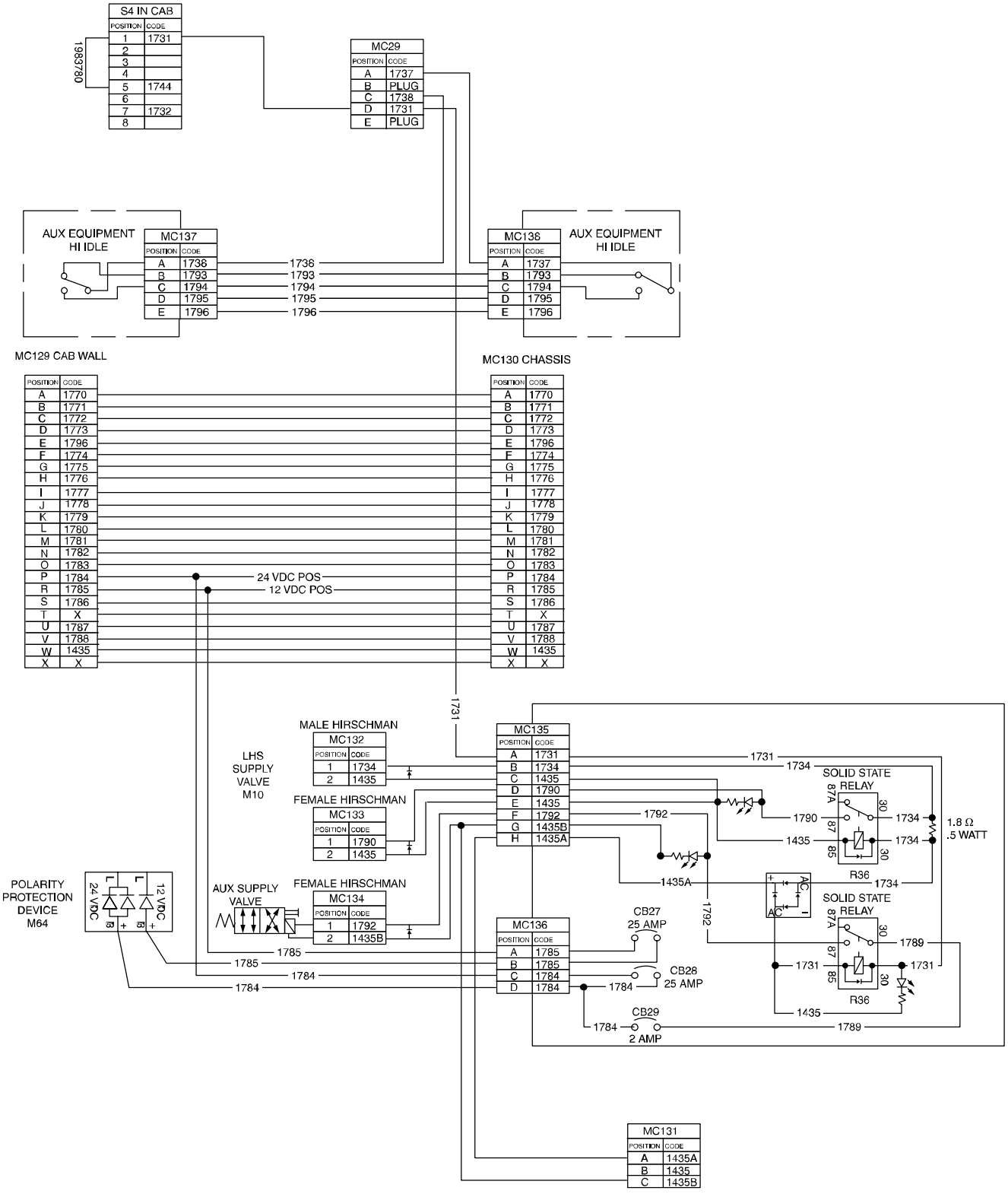


Figure 2-57. Interface Wiring Diagram

2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

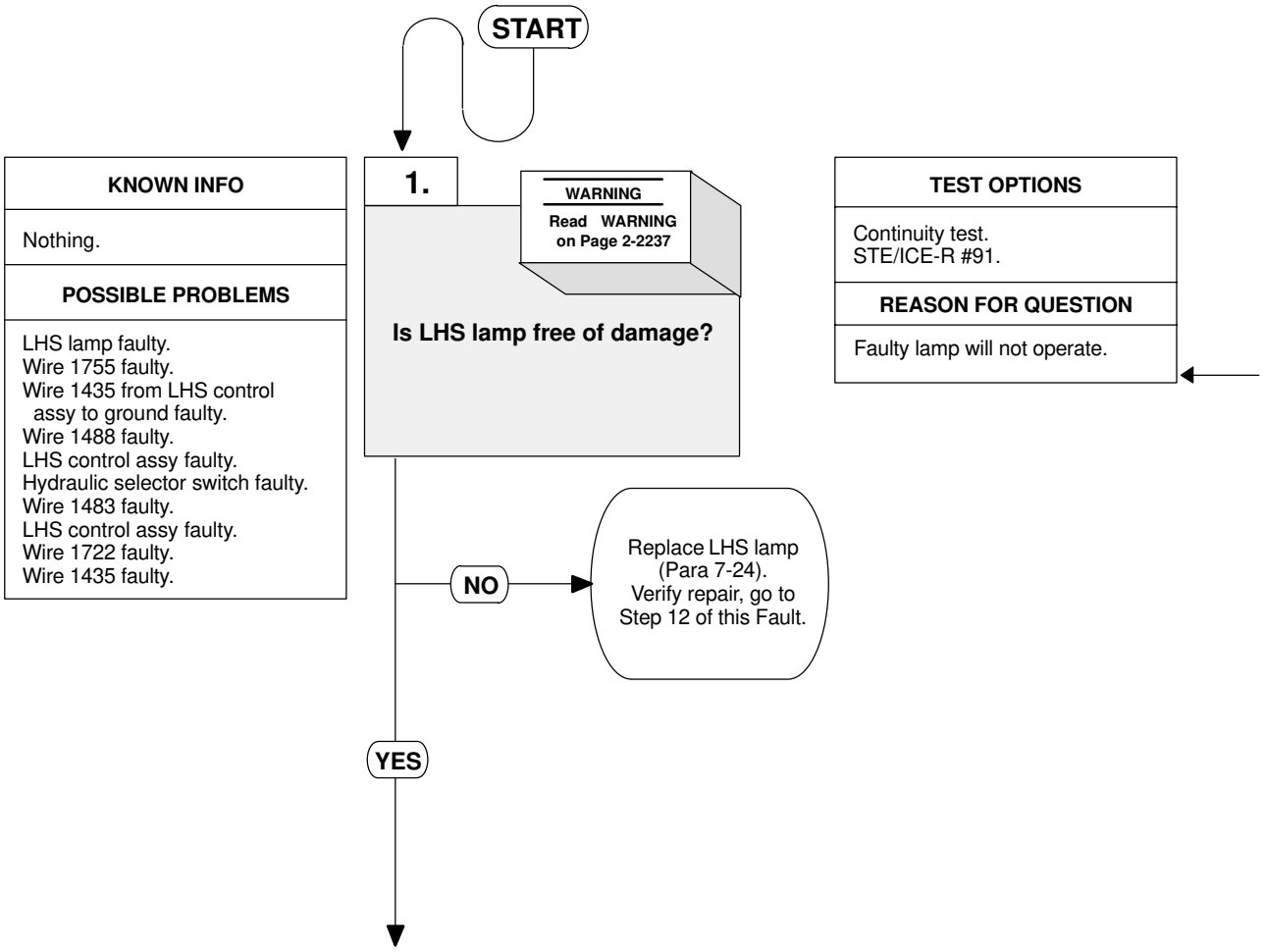
1. LHS LIGHT DOES NOT OPERATE.

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)
Jumperwire

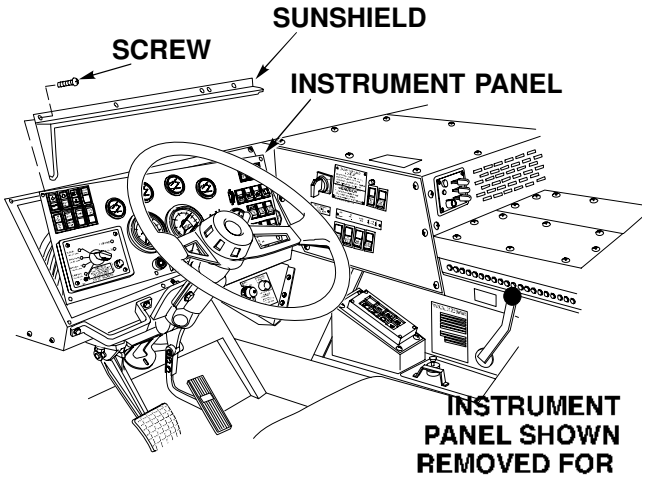
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



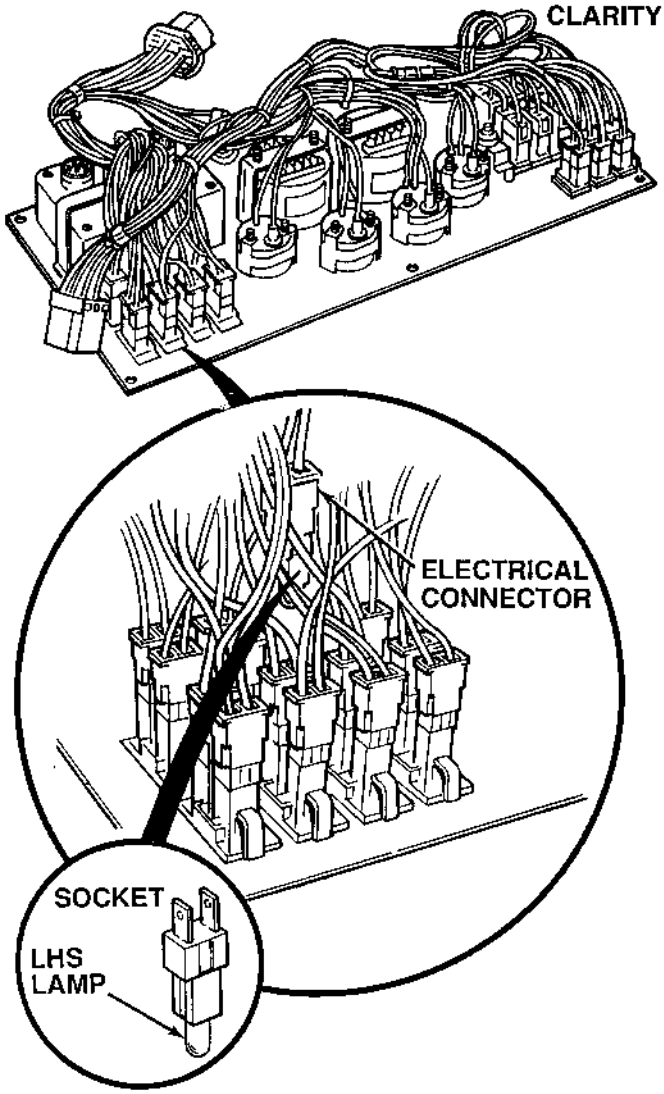
WARNING

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.

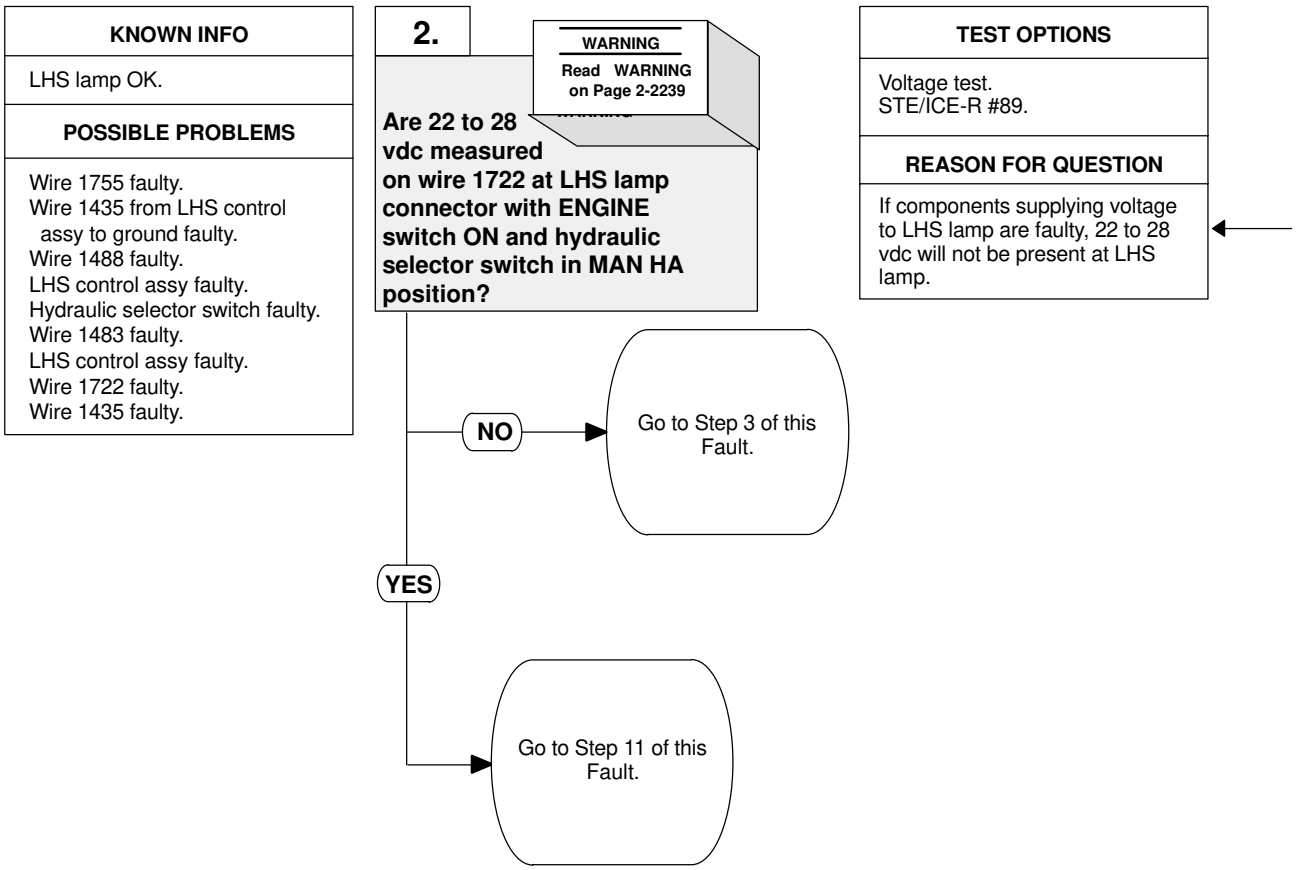


CONTINUITY TEST

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect electrical connector from LHS lamp socket.
(4) Remove lamp and socket from instrument panel.
(5) Set multimeter select switch to ohms.
(6) Is there continuity between terminals of lamp?
  (a) If there is no continuity, replace LHS lamp (Para 7-24) and perform Steps (7) and (8) below.
  (b) If there is continuity, LHS lamp is OK, go to Step 2 of this Fault.
(7) Install LHS lamp and socket in instrument panel.
(8) Install instrument panel and sunshield with ten screws.



1. LHS LIGHT DOES NOT OPERATE (CONT).

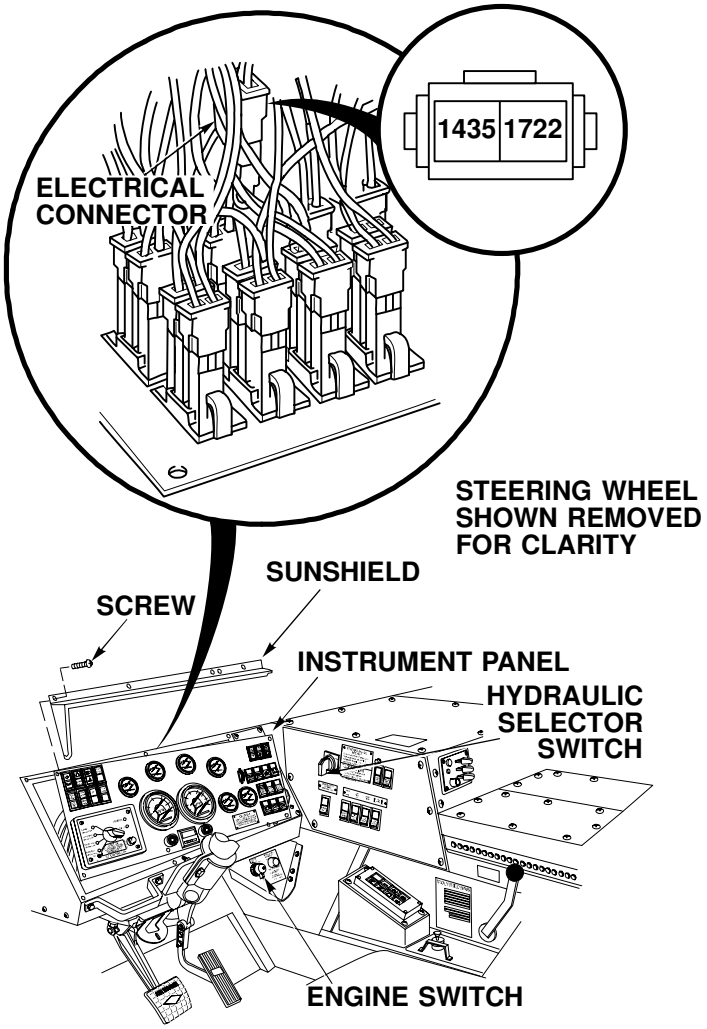


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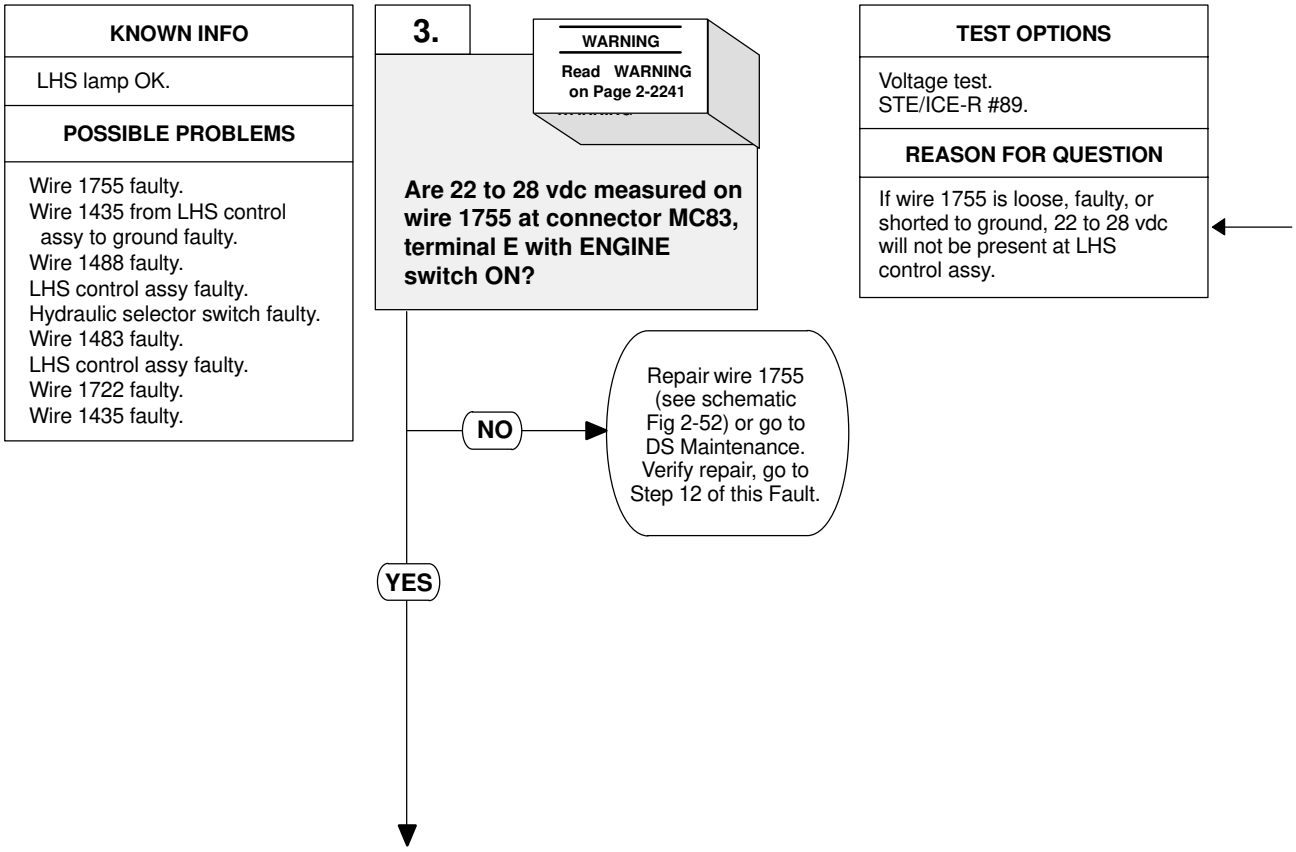
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to wire 1722 at LHS lamp electrical connector terminal.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Set hydraulic selector switch to MAN HA position.
  (a) If 22 to 28 vdc are not present, perform Steps (6) through (9) below and go to Step 3 of this Fault.
  (b) If 22 to 28 vdc are present, perform Steps (6) through (9) below and go to Step 11 of this Fault.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.
(8) Install LHS lamp and socket in instrument panel.
(9) Install instrument panel and sunshield with ten screws.



1. LHS LIGHT DOES NOT OPERATE (CONT).

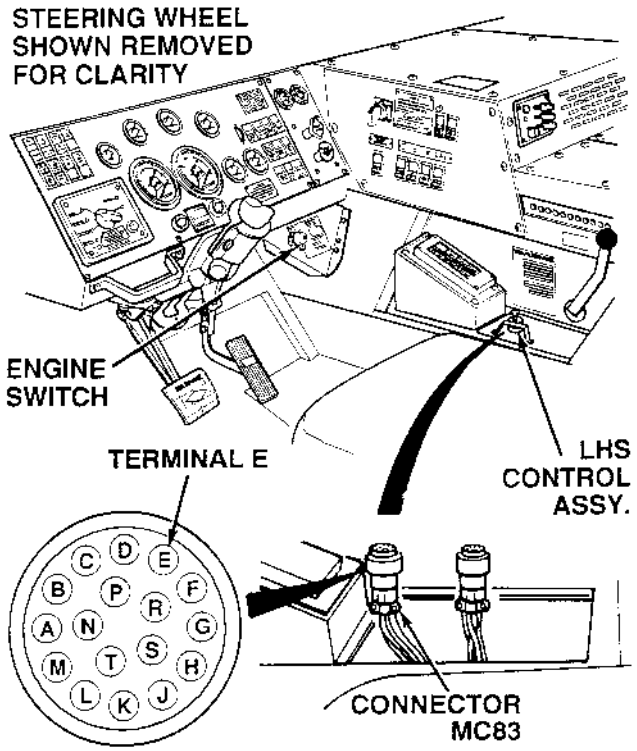


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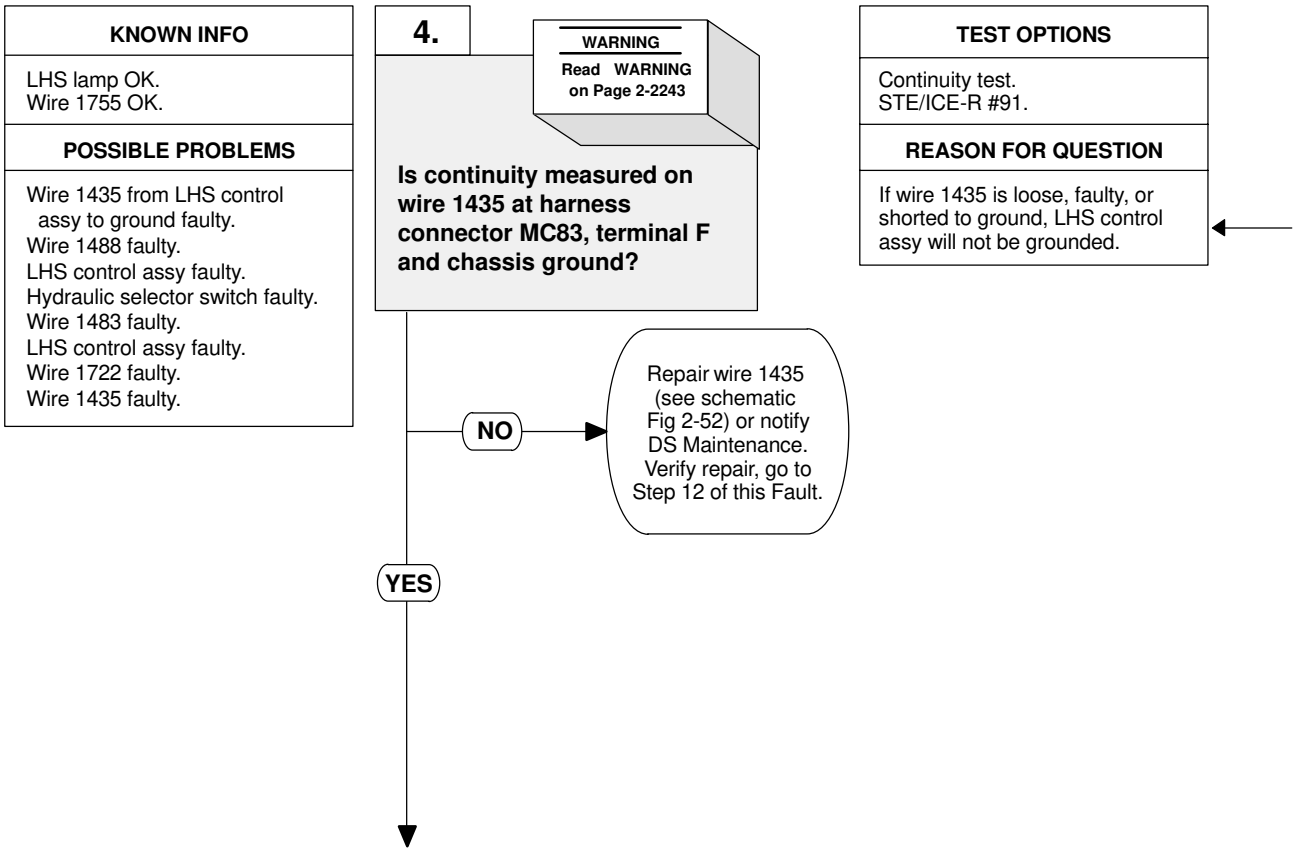
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Remove LHS control assy (Para 7-40).
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to wire 1755 at connector MC83, terminal E.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch.
  (a) If there are not 22 to 28 vdc present, perform Step (6) below and repair wire 1755 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there are 22 to 28 vdc present, wire 1755 is OK.
(6) Turn OFF ENGINE switch.



1. LHS LIGHT DOES NOT OPERATE (CONT).

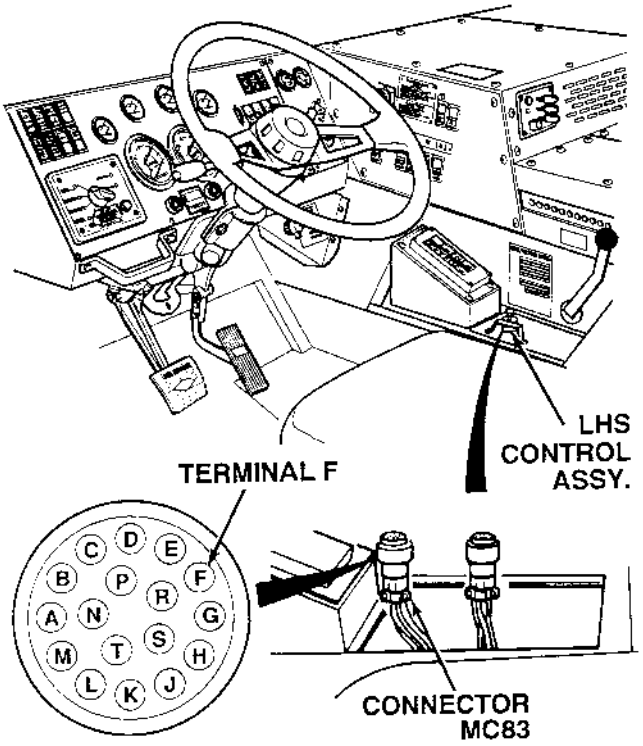


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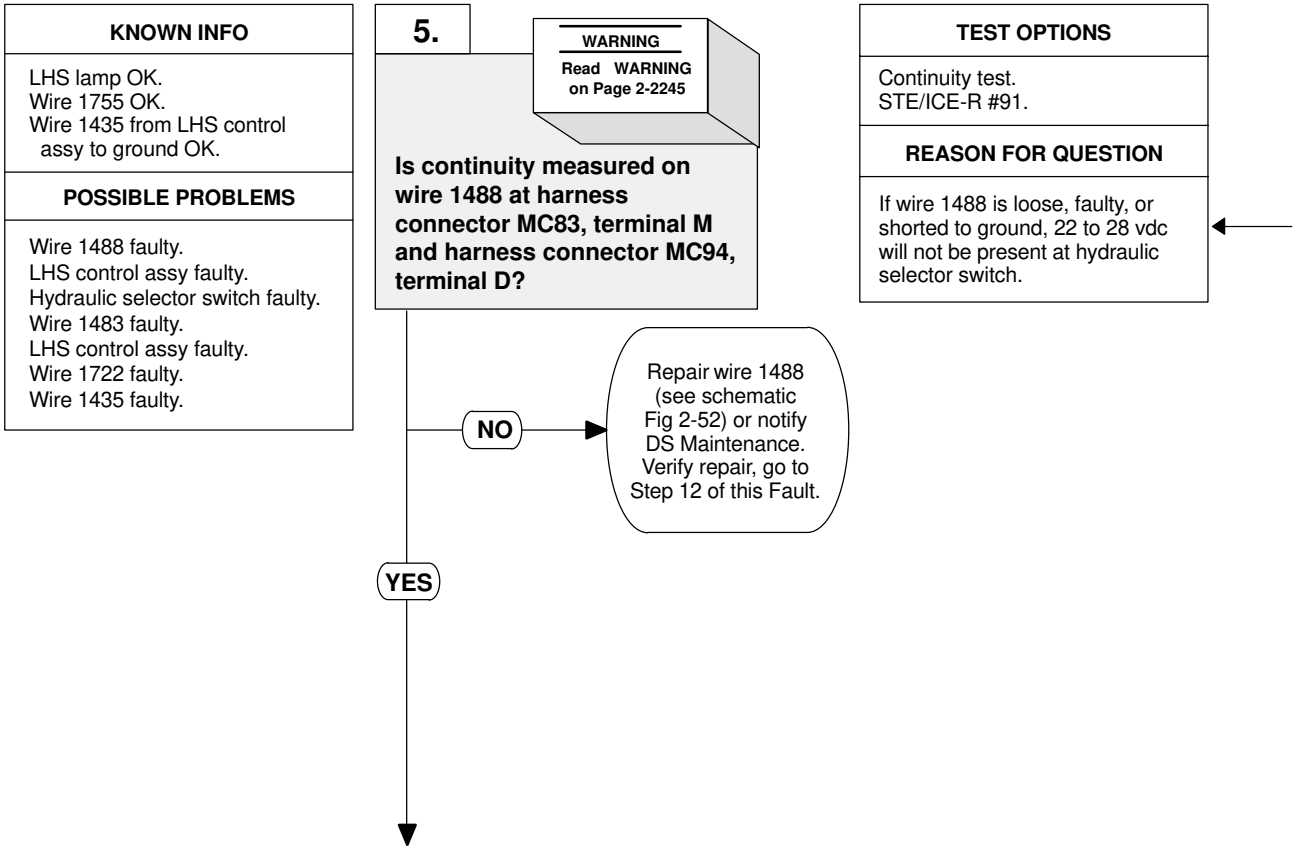
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between harness connector MC83, terminal F and a known good ground?
   (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1435 is OK.



1. LHS LIGHT DOES NOT OPERATE (CONT).

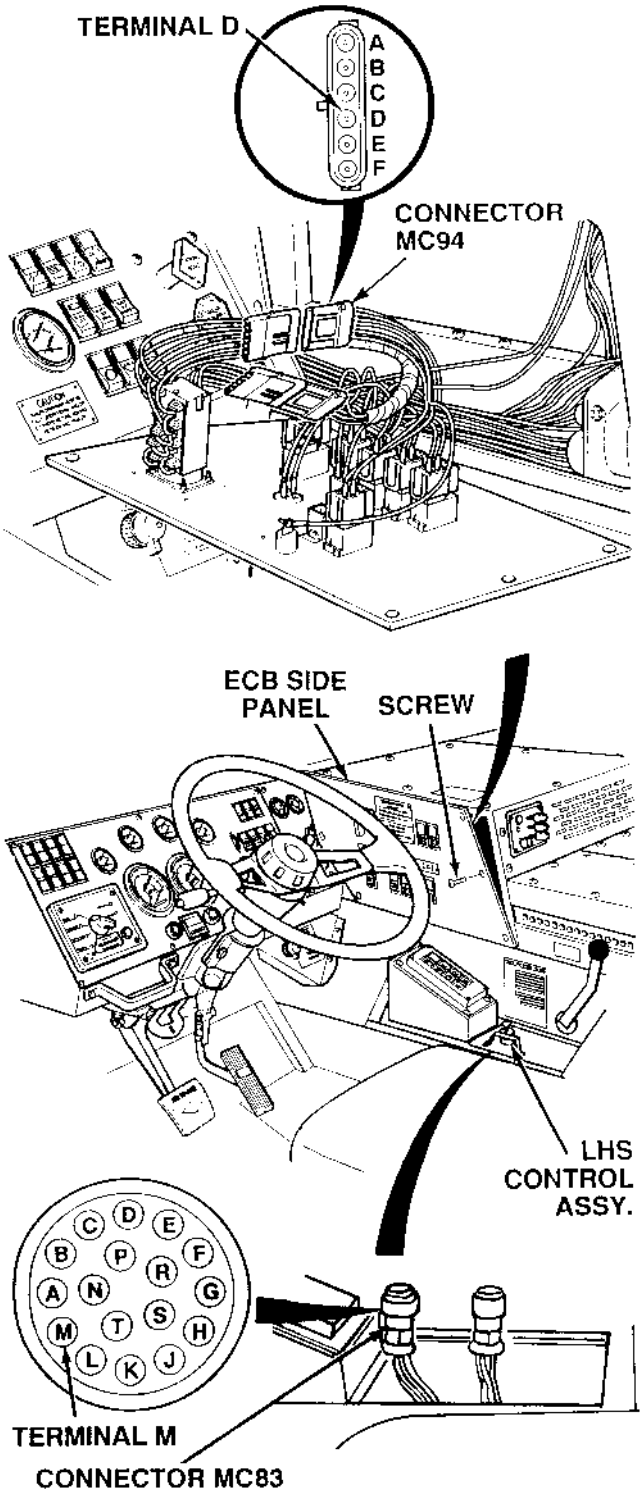


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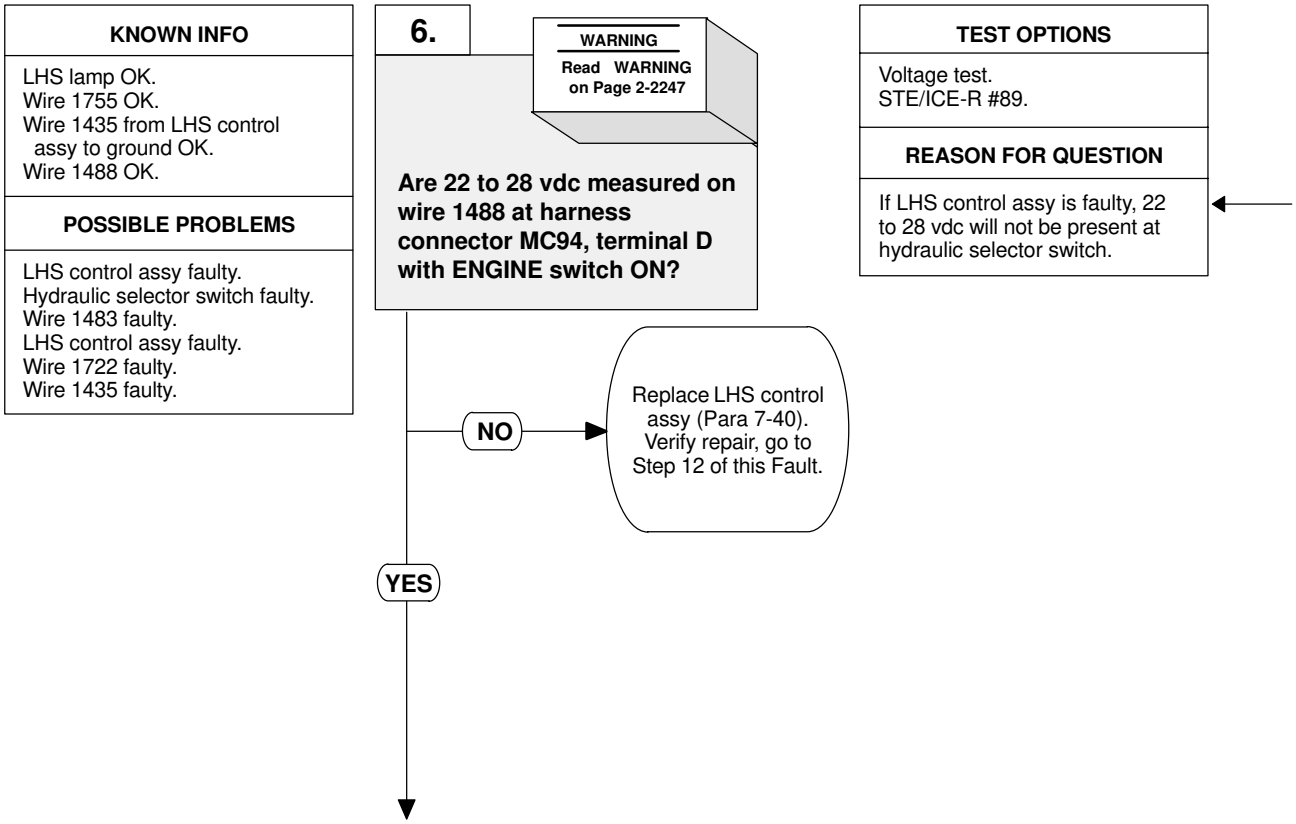
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove six screws and tilt ECB side panel.
(2) Disconnect harness connector MC94.
(3) Is there continuity between harness connector MC83, terminal M and harness connector MC94, terminal D?
  (a) If there is no continuity, repair wire 1488 (see schematic Fig 2-52) and perform Step (4) below or notify DS Maintenance).
  (b) If there is continuity, wire 1488 is OK.
(4) Install LHS control assy (Para 7-40).



1. LHS LIGHT DOES NOT OPERATE (CONT).

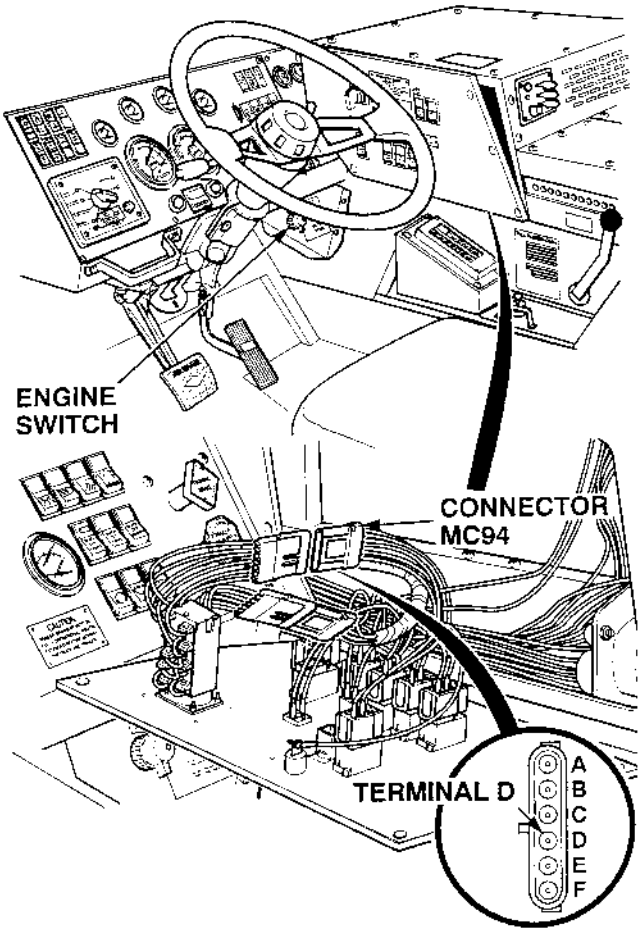


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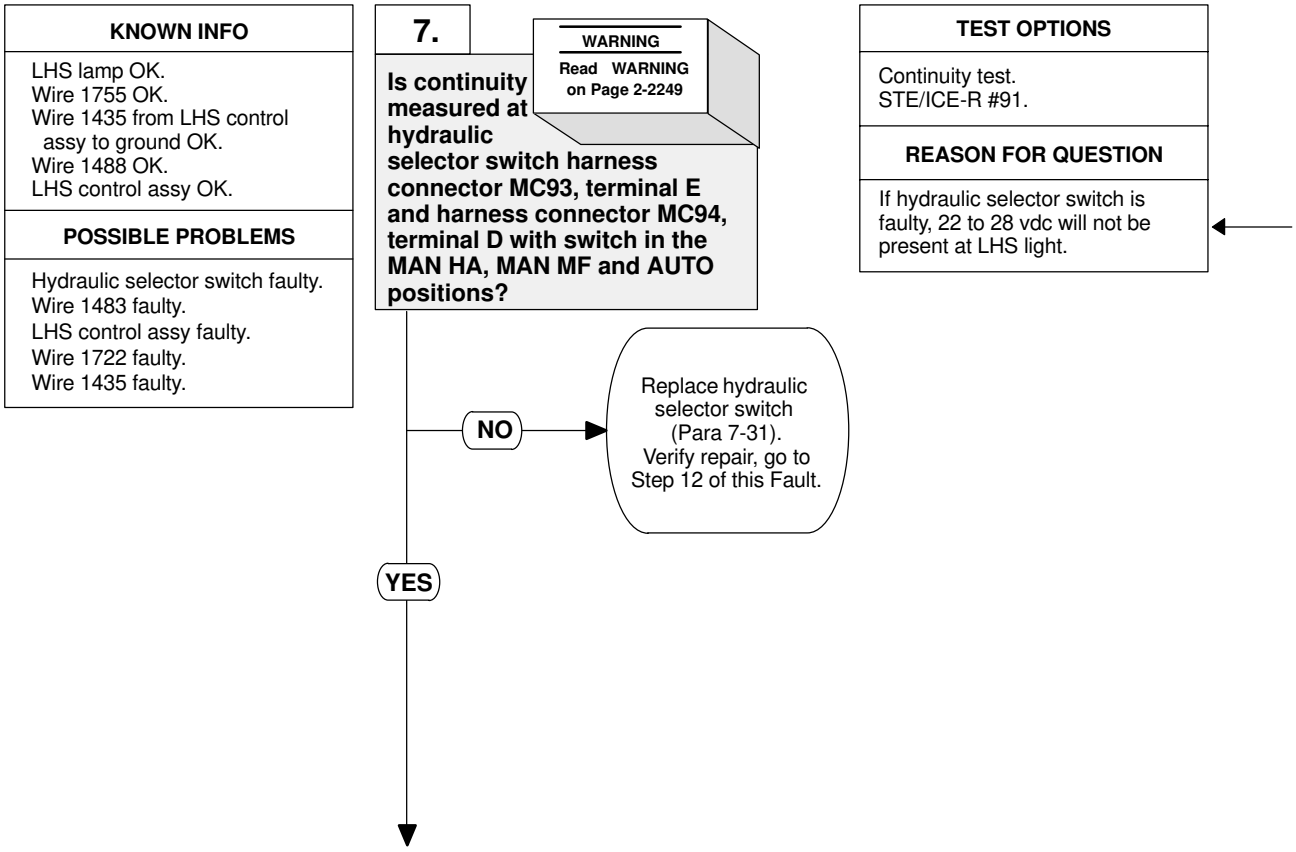
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead on wire 1488 at harness connector MC94, terminal D.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch.
  (a) If there are not 22 to 28 vdc present, perform Step (5) below and replace LHS control assy (Para 7-40).
  (b) If there are 22 to 28 vdc present, LHS control assy is OK.
(5) Turn OFF ENGINE switch.



1. LHS LIGHT DOES NOT OPERATE (CONT).

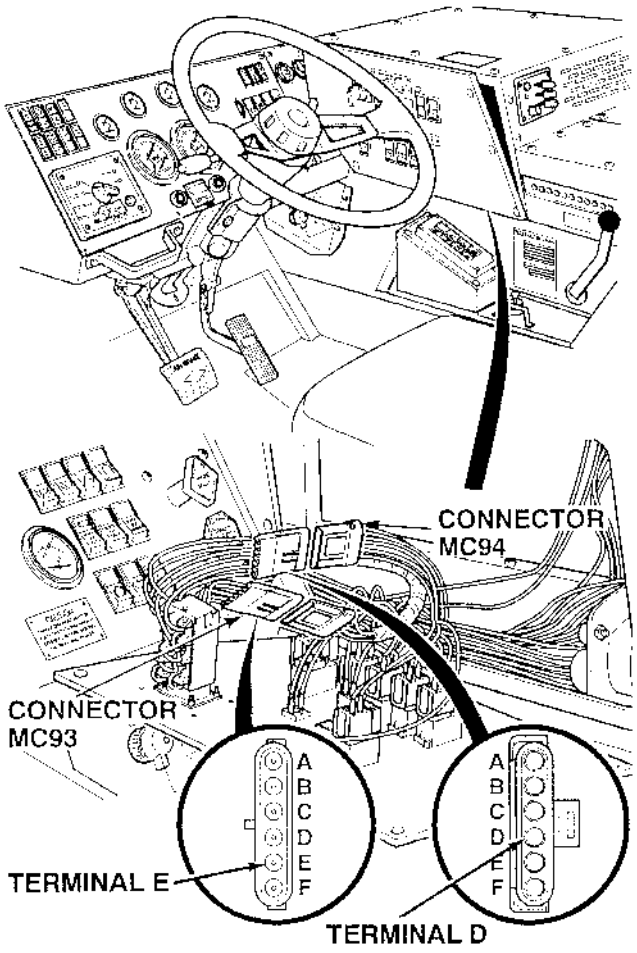


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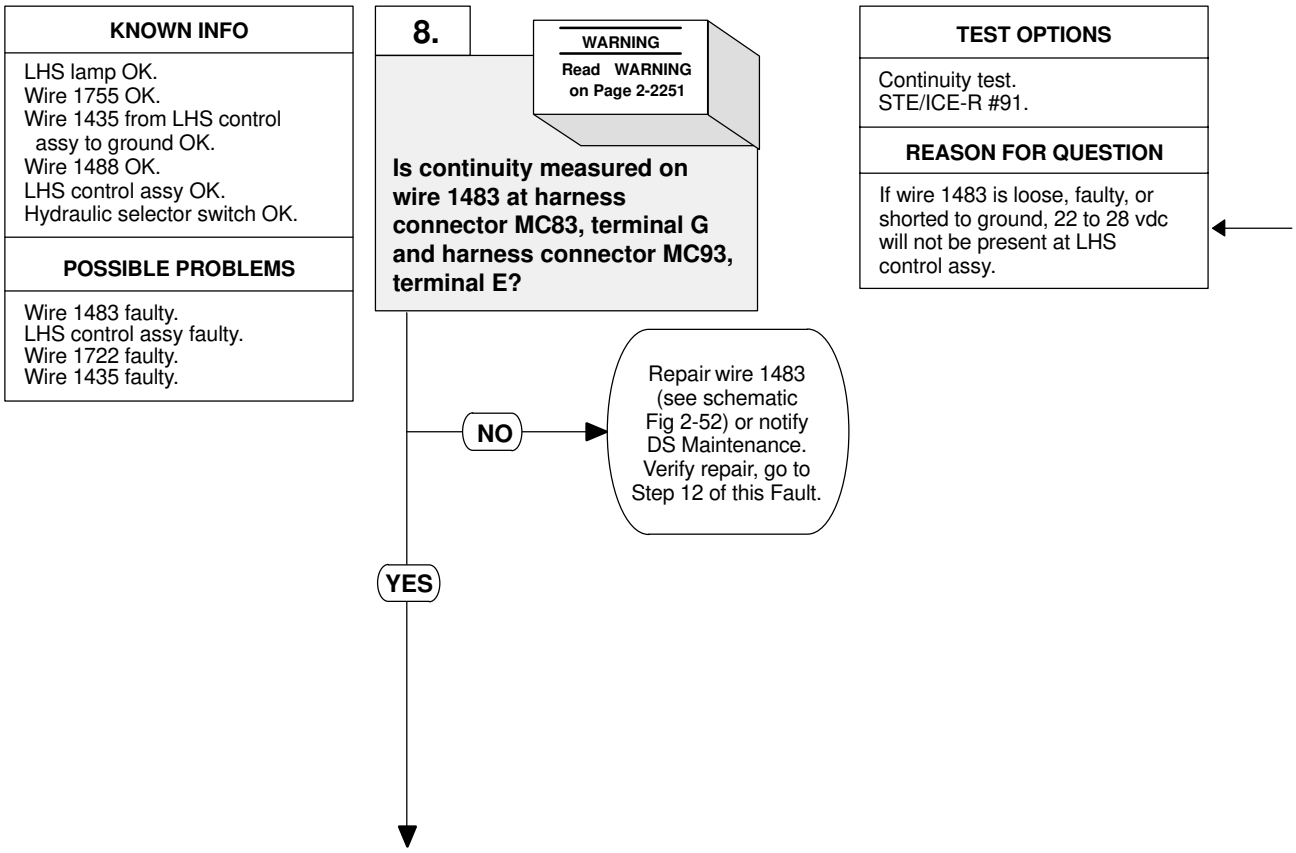
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect harness connector MC93 from switch connector.
(2) Set hydraulic selector switch to MAN HA position (TM 9-2320-364-10).
(3) Set multimeter select switch to ohms.
(4) Is there continuity between harness connector MC93, terminal E and harness connector MC94, terminal D?
  (a) If there is no continuity, replace hydraulic selector switch (Para 7-31) and perform Steps (7) and (8) below.
  (b) If there is continuity, perform Step (5) below.
(5) Set hydraulic selector switch to MAN MF and repeat Step (4) above. If there is continuity, perform Step (6) below.
(6) Set hydraulic selector switch to AUTO and repeat Step (4) above. If there is continuity, hydraulic selector switch is OK and perform Steps (7) and (8) below.
(7) Set hydraulic selector switch to OFF position.
(8) Connect harness connector MC94 to switch connector.



1. LHS LIGHT DOES NOT OPERATE (CONT).

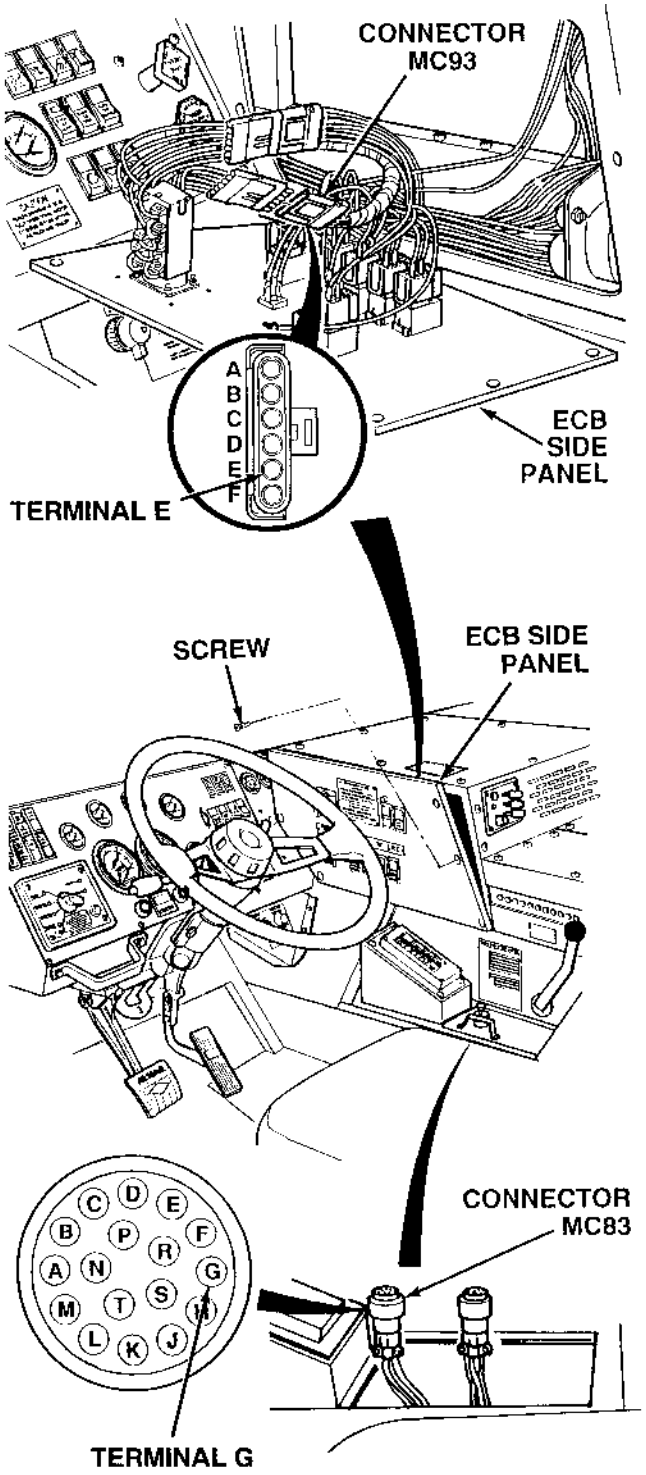


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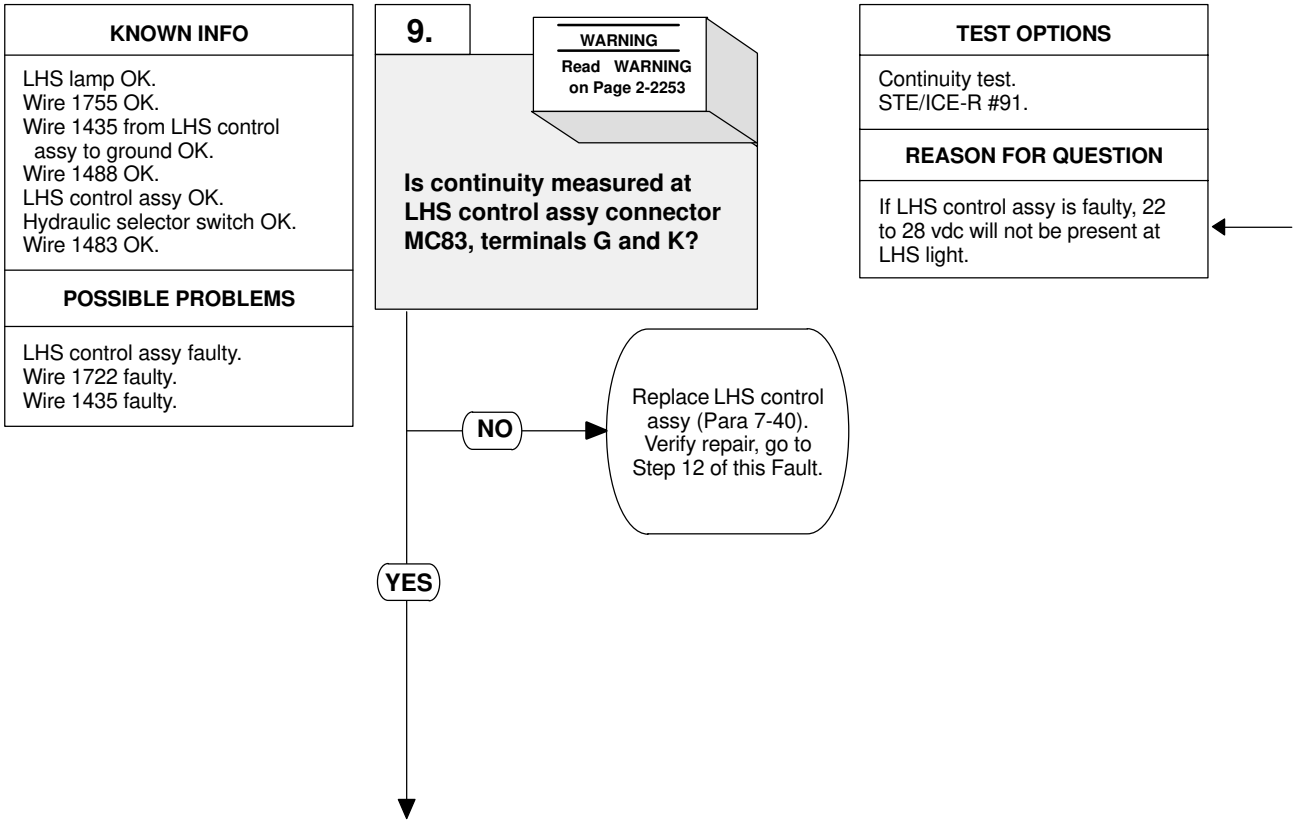
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove LHS control assy (Para 7-40).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between harness connector MC83, terminal G and harness connector MC93, terminal E?
  (a) If there is no continuity, repair wire 1483 (see schematic Fig 2-52) and perform Steps (4) and (5) below or notify DS Maintenance.
  (b) If there is continuity, wire 1483 is OK.
(4) Connect harness connector MC93.
(5) Install ECB side panel and six screws.



1. LHS LIGHT DOES NOT OPERATE (CONT).

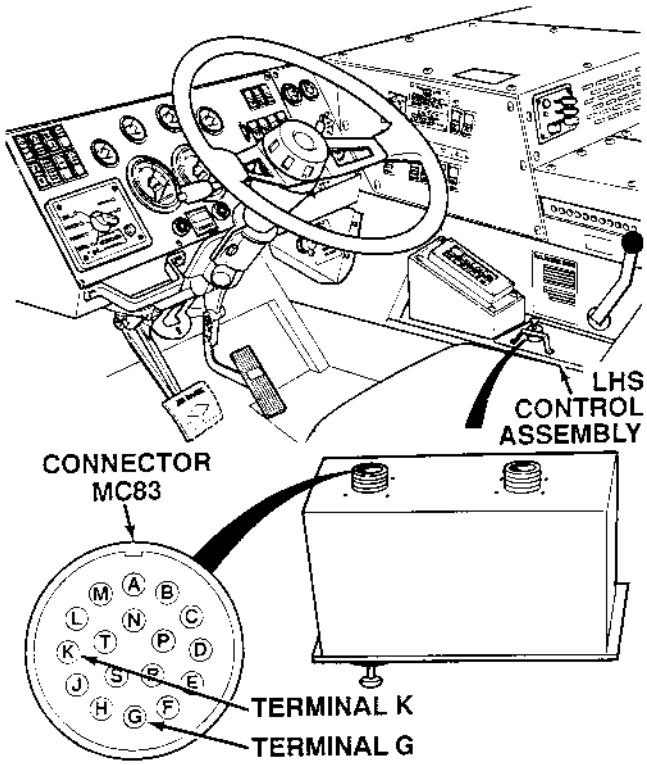


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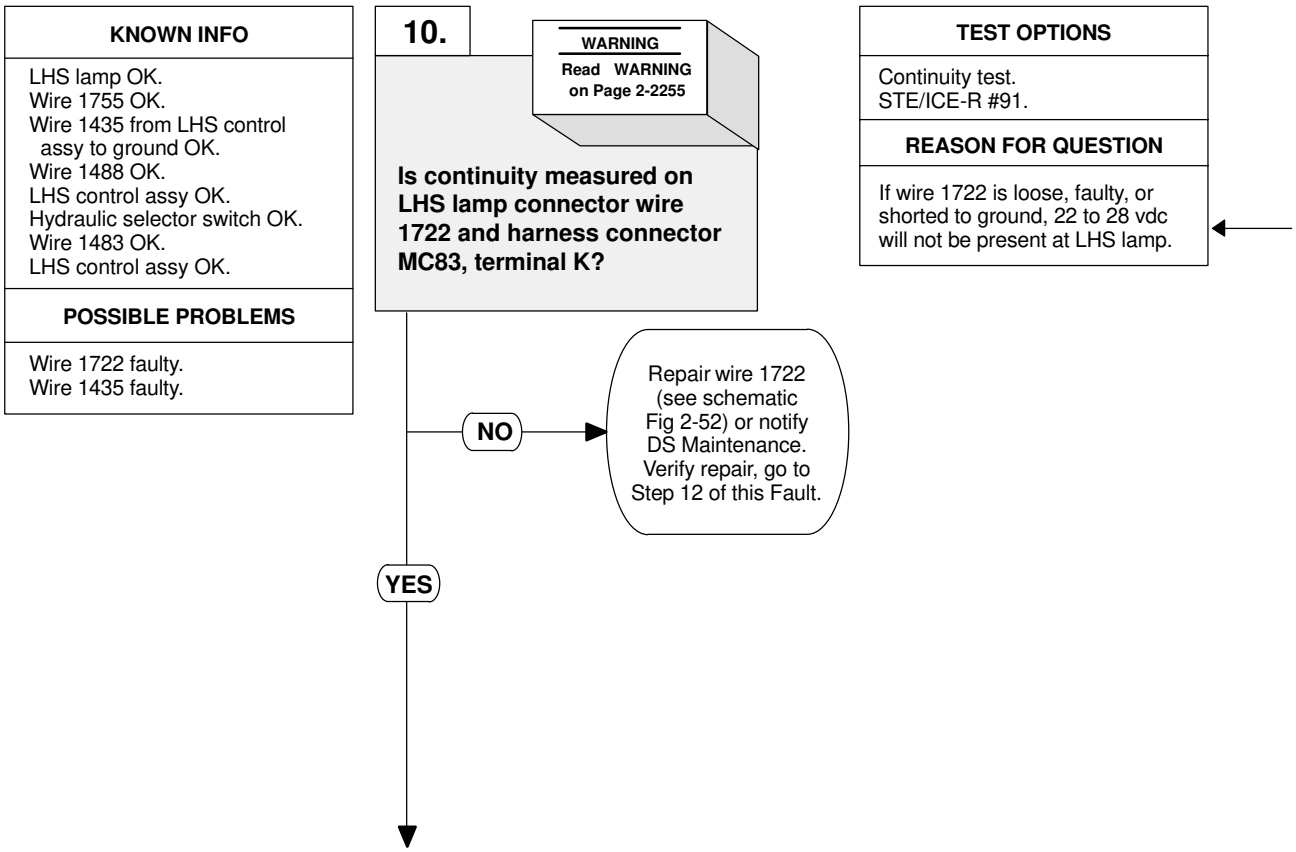
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between LHS control assy connector MC83, terminals G and K?
   (a) If there is no continuity, replace LHS control assy (Para 7-40).
   (b) If there is continuity, LHS control assy is OK.



1. LHS LIGHT DOES NOT OPERATE (CONT).

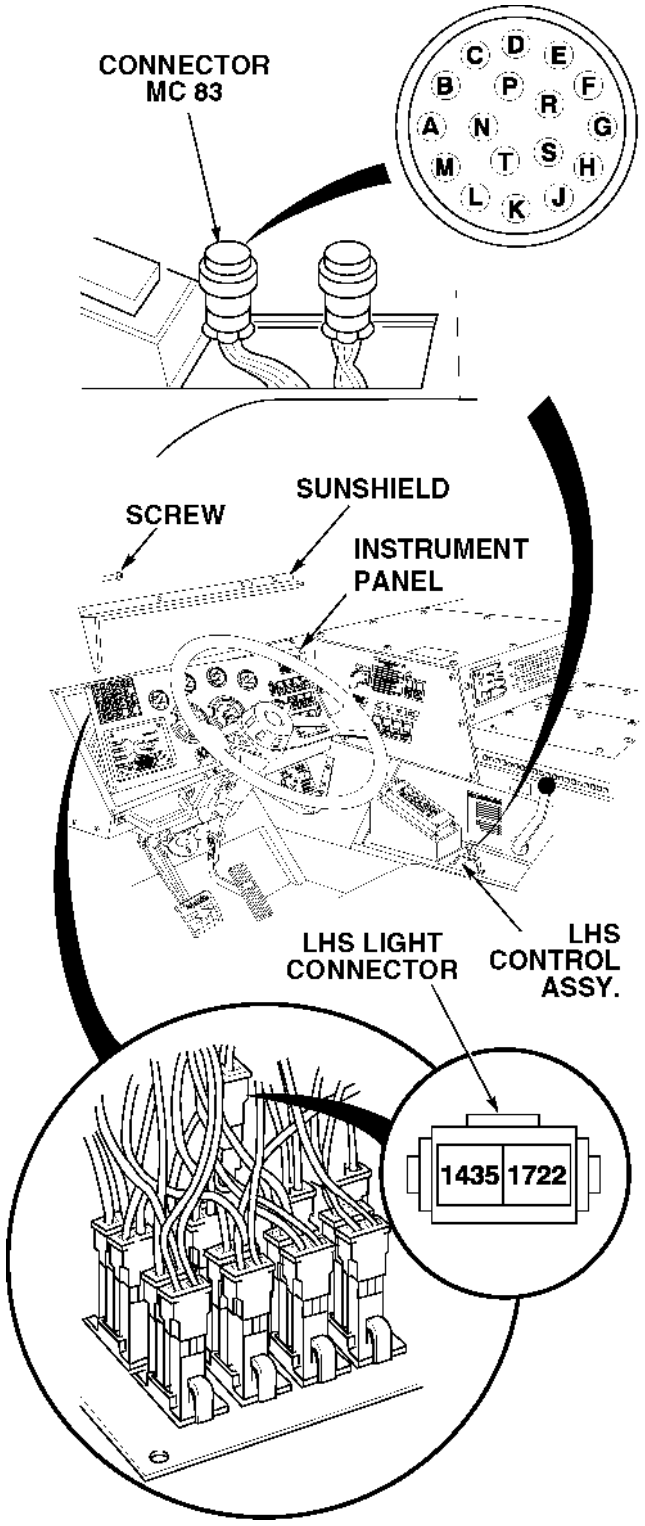


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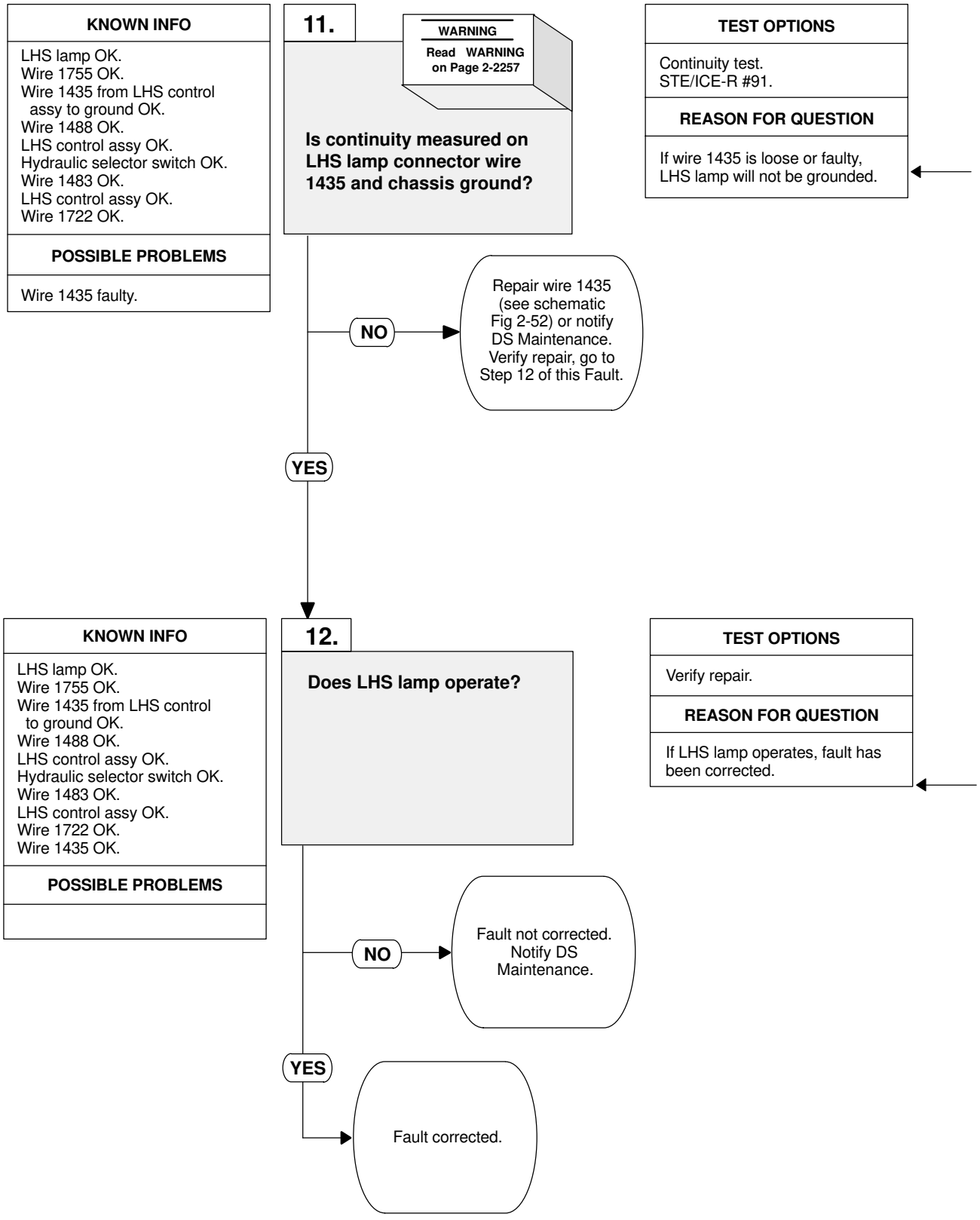
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Set multimeter select switch to ohms.
(4) Is there continuity between harness connector MC83, terminal K and LHS lamp connector wire 1722 terminal?
    (a) If there is no continuity, repair wire 1722 (see schematic Fig 2-52) and perform Step (3) below or notify DS Maintenance.
    (b) If there is continuity, wire 1722 is OK.
(5) Install LHS control assy (Para 7-40).

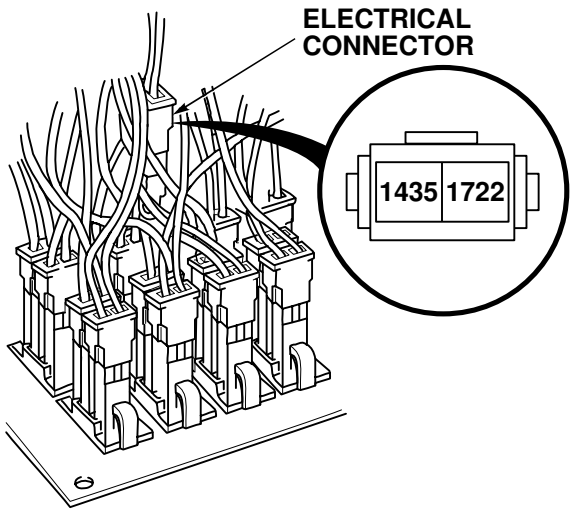


1. LHS LIGHT DOES NOT OPERATE (CONT).



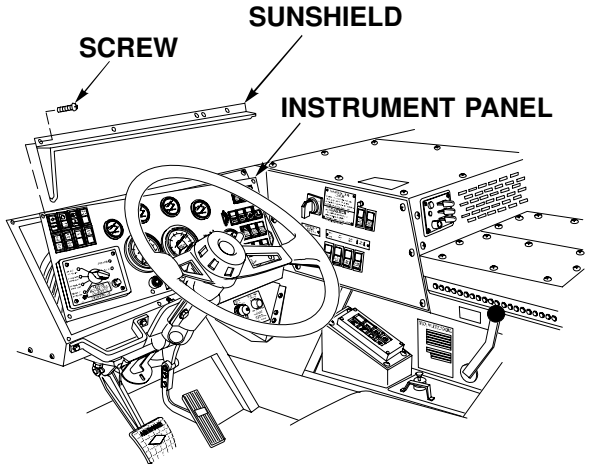
WARNING

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.



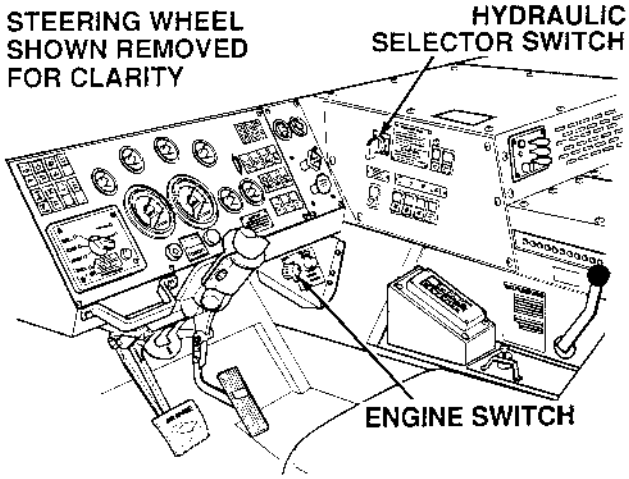
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between LHS lamp electrical connector wire 1435 terminal and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) and perform Steps (3) and (4) below or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK.
(3) Connect electrical connector to LHS lamp socket.
(4) Install instrument panel and sunshield with ten screws.



VERIFY REPAIR

(1) Turn ON ENGINE switch.
(2) While observing LHS light, cycle hydraulic selector switch to MAN HA, MAN MF and AUTO positions.
  (a) If LHS light does not operate, fault not corrected. Perform Steps (3) and (4) below and notify DS Maintenance.
  (b) If LHS light does operate, fault has been corrected.
(3) Set hydraulic selector switch to OFF position.
(4) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

2. LHS NO TRANS LIGHT DOES NOT OPERATE.

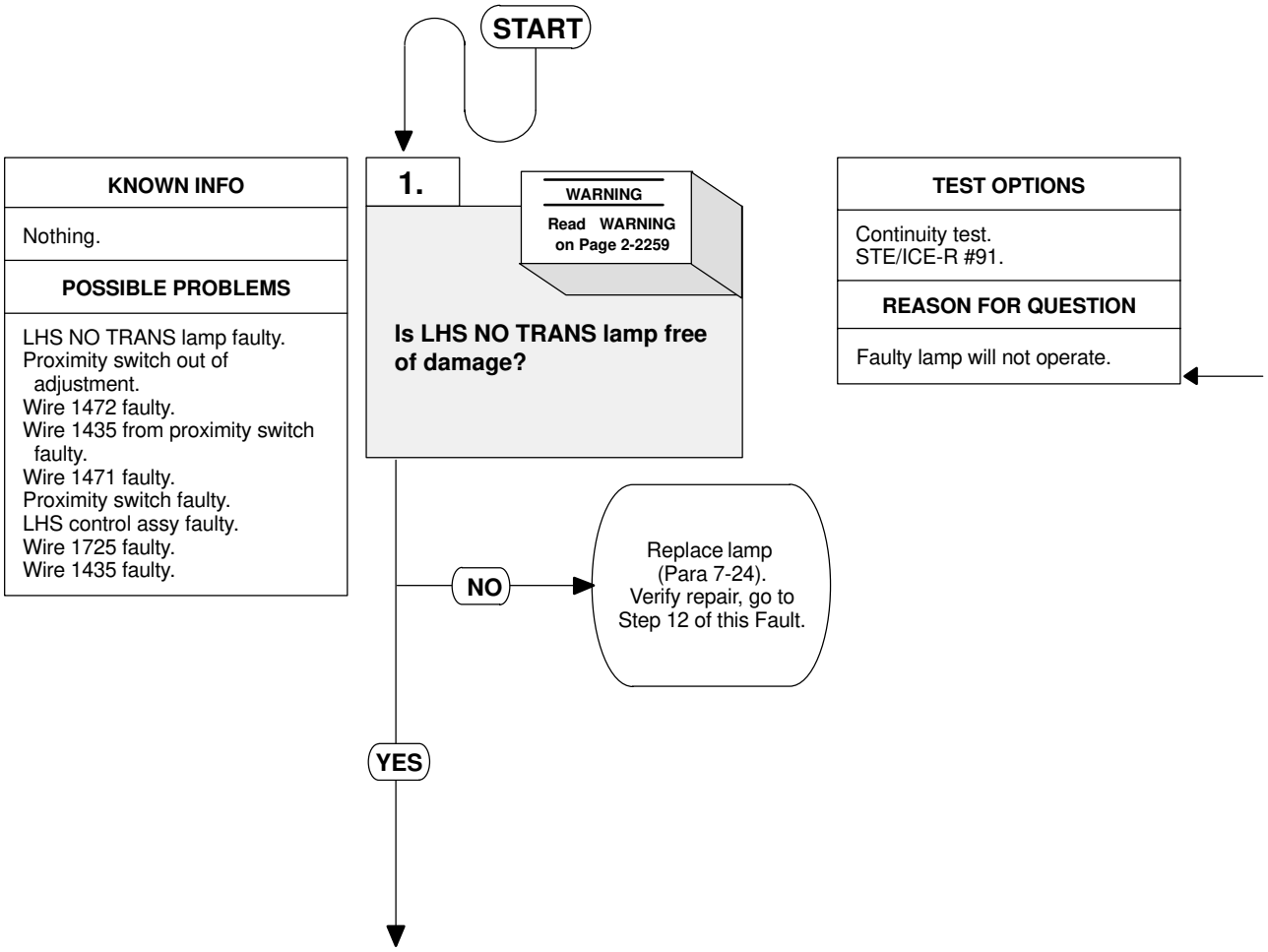
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)

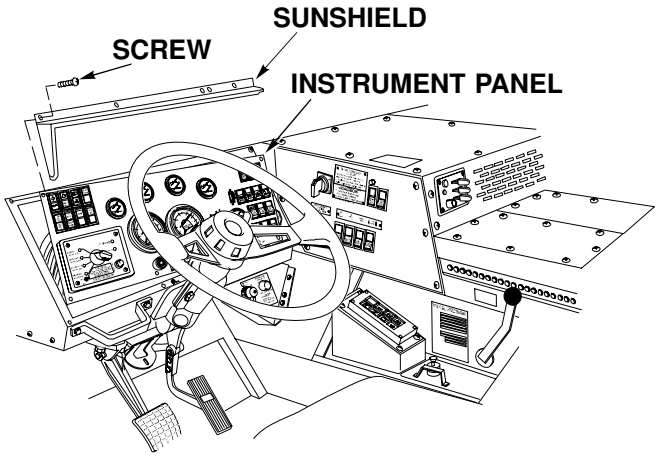
References
TM 9-2320-364-10
TM 9-4910-571-12&P

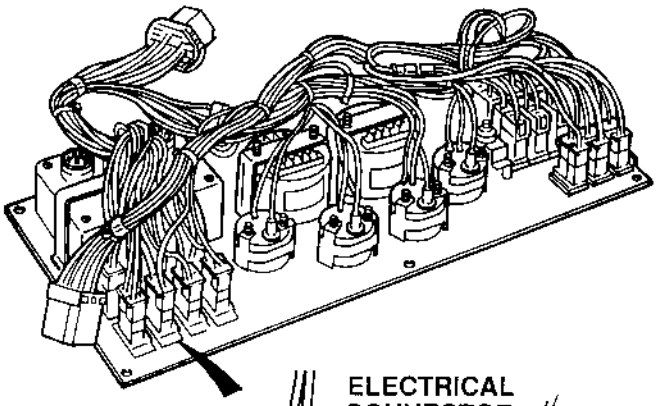
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

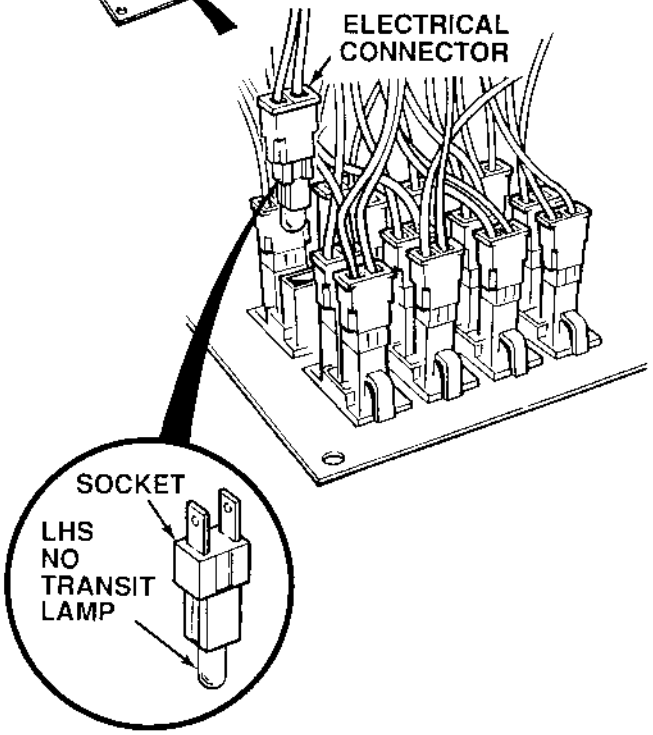


WARNING

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.



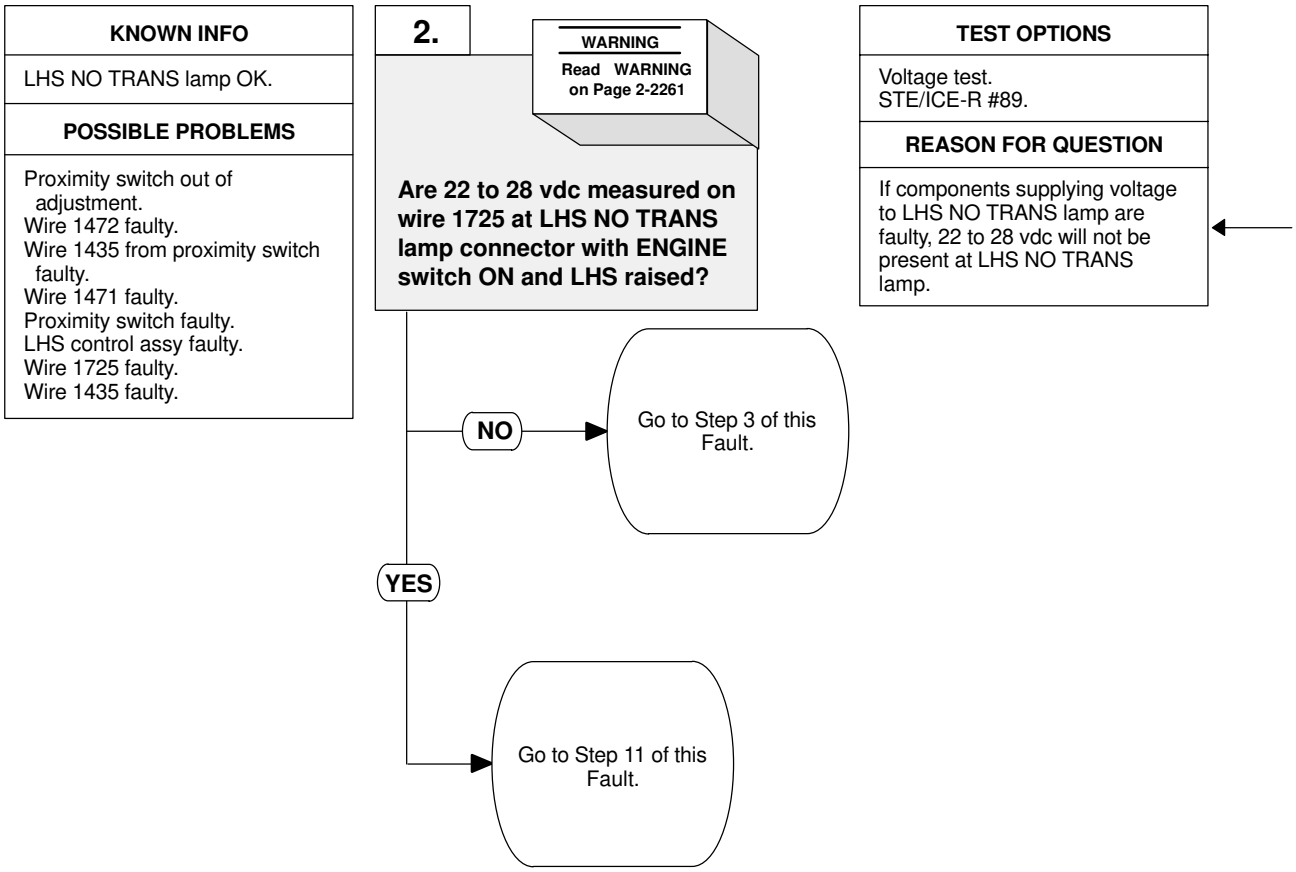




CONTINUITY TEST

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect electrical connector from LHS NO TRANS lamp socket.
(4) Remove lamp and socket from instrument panel.
(5) Set multimeter select switch to ohms.
(6) Is there continuity between terminals of lamp?
    (a) If there is no continuity, replace LHS NO TRANS lamp (Para 7-24) and perform Step (7) below.
    (b) If there is continuity, LHS NO TRANS lamp is OK.
(7) Install LHS NO TRANS lamp and socket in instrument panel.

2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

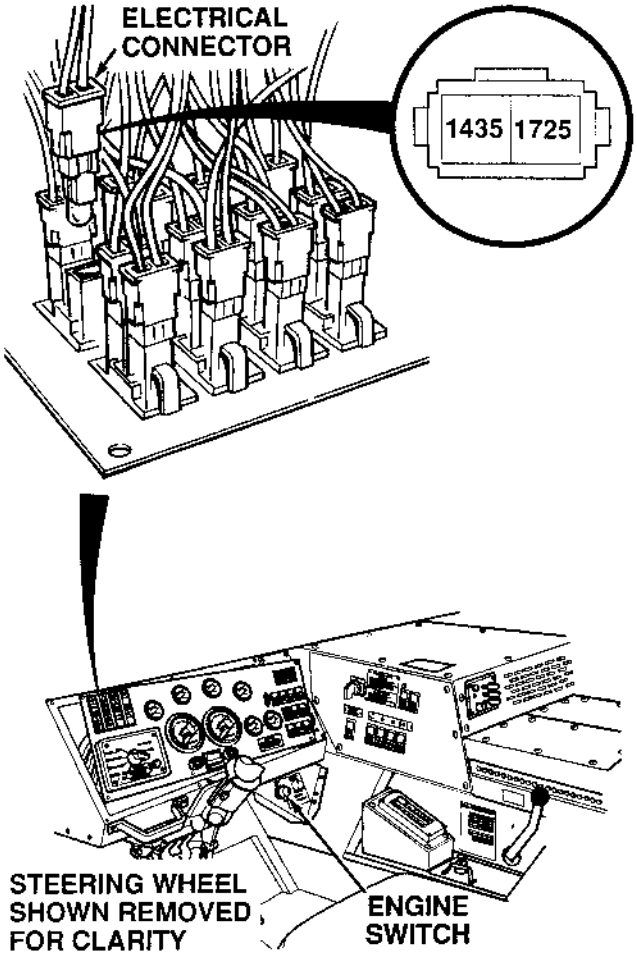


WARNING

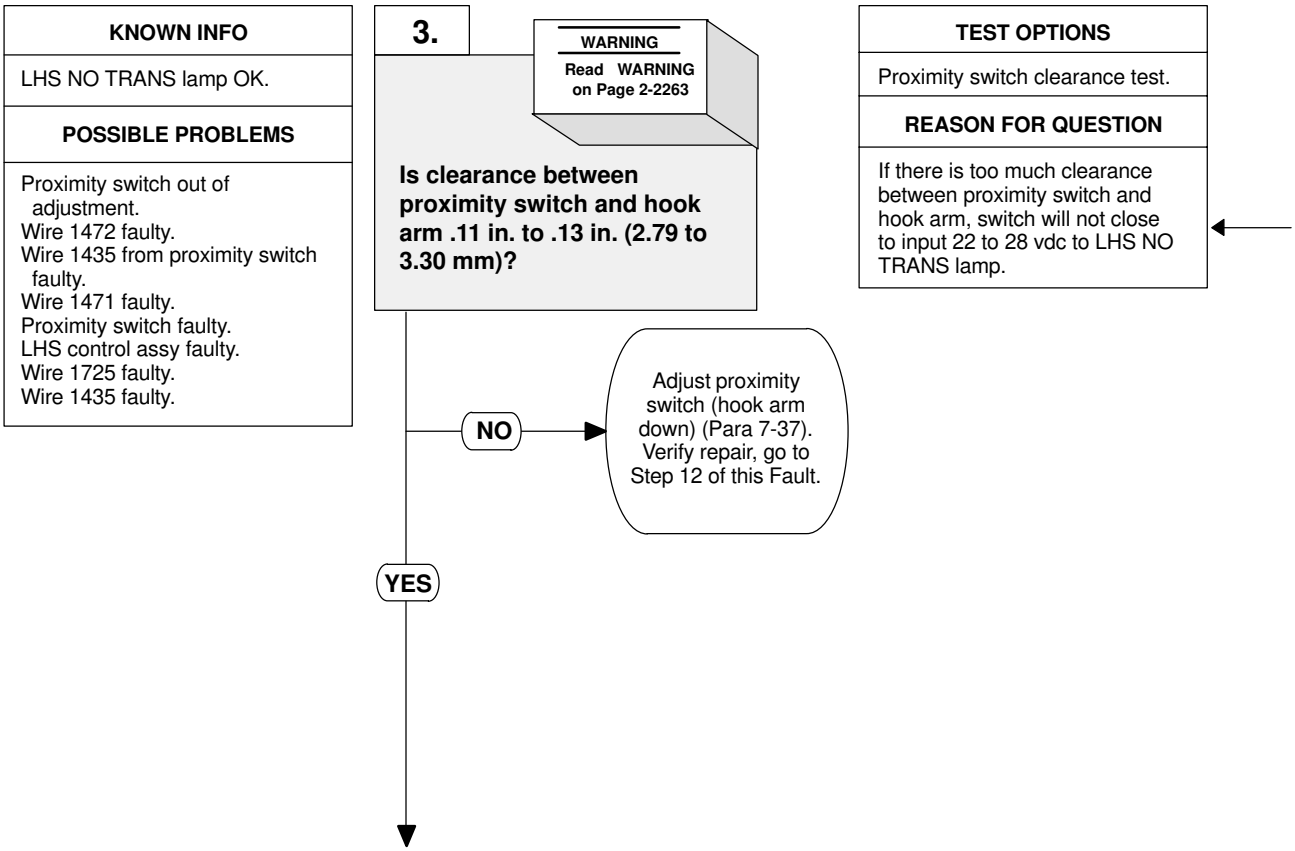
- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Start engine (TM 9-2320-364-10).
(2) Raise LHS until middle frame is approximately 3 ft (91 cm) above the transit position.
(3) Turn OFF ENGINE switch.
(4) Turn ON ENGINE switch.
(5) Set multimeter select switch to volts dc.
(6) Connect positive (+) multimeter lead to wire 1725 at LHS NO TRANS lamp electrical connector terminal.
(7) Connect negative (–) multimeter lead to a known good ground.
  (a) If there are not 22 to 28 vdc present, perform Steps (8) and (9) below and go to Step 3 of this Fault.
  (b) If there are 22 to 28 vdc present, perform Steps (8) and (9) below and go to Step 11 of this Fault.
(8) Set hydraulic selector switch to OFF position.
(9) Turn OFF ENGINE switch.



2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

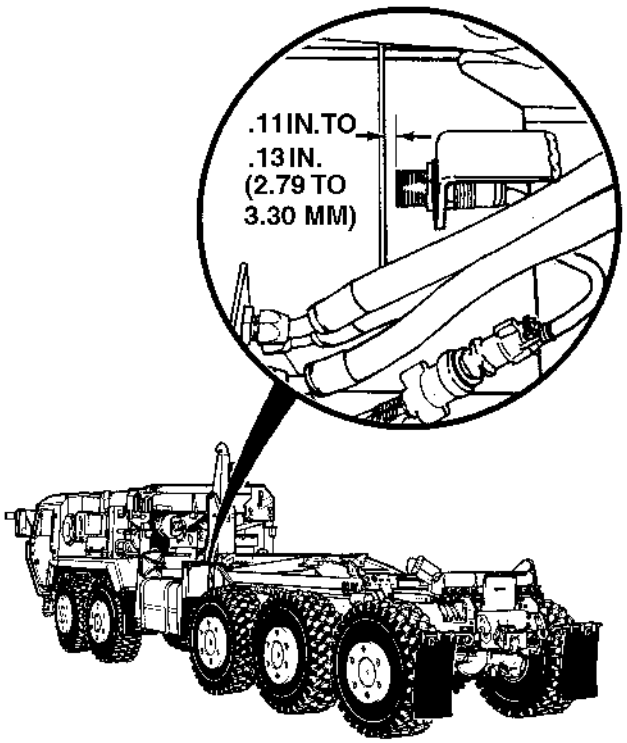


WARNING

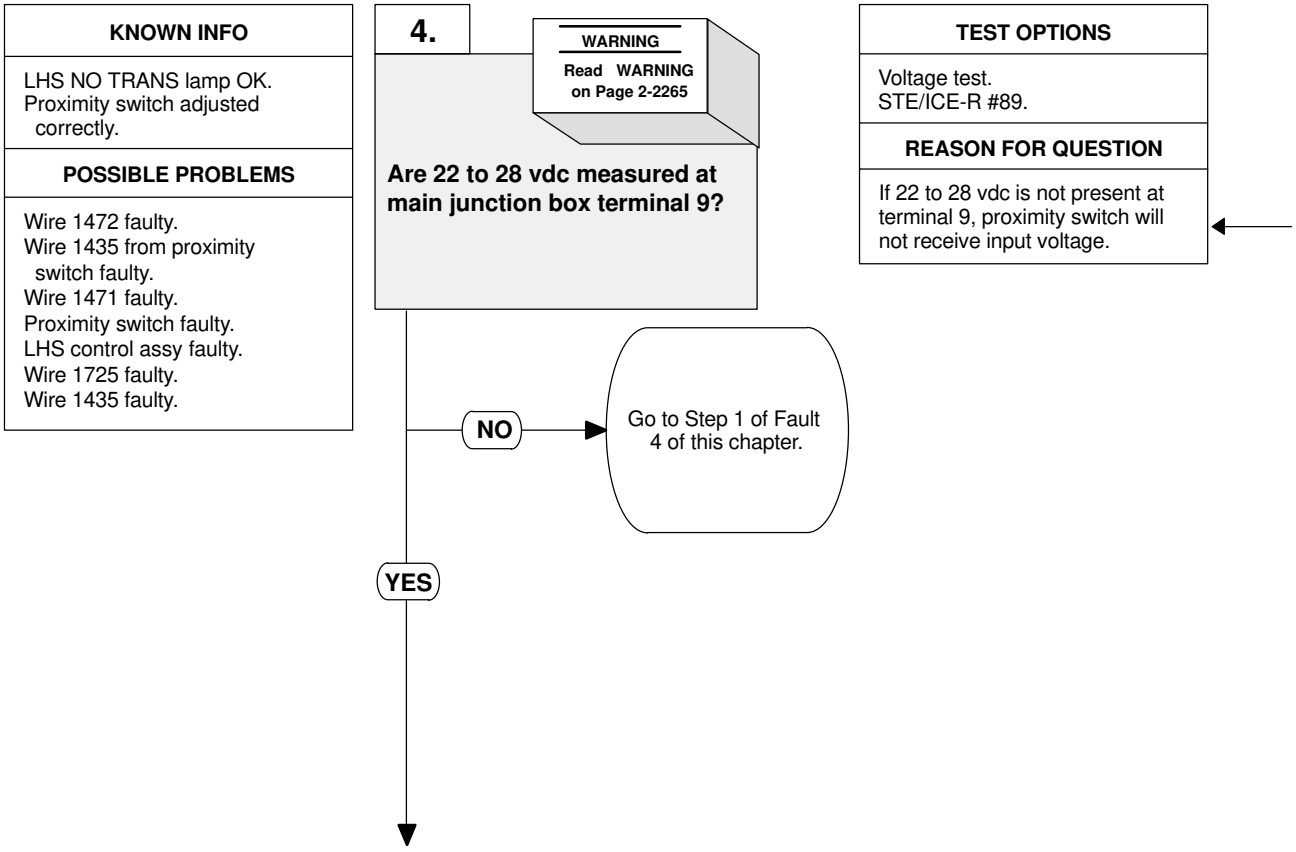
Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.

PROXIMITY SWITCH CLEARANCE TEST

(1) Put LHS in transit position (TM 9-2320-364-10).
(2) Turn OFF ENGINE switch.
(3) Check clearance between proximity switch and hook arm.
   (a) If clearance is more than .13 in. (3.30 mm) or less than .11 in. (2.79 mm), adjust proximity switch (Para 7-37).
   (b) If clearance is between .13 in. (3.30 mm) and .11 in. (2.79 mm), proximity switch is adjusted correctly.



2. LHS NO TRANS LIGHT 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.

CAUTION

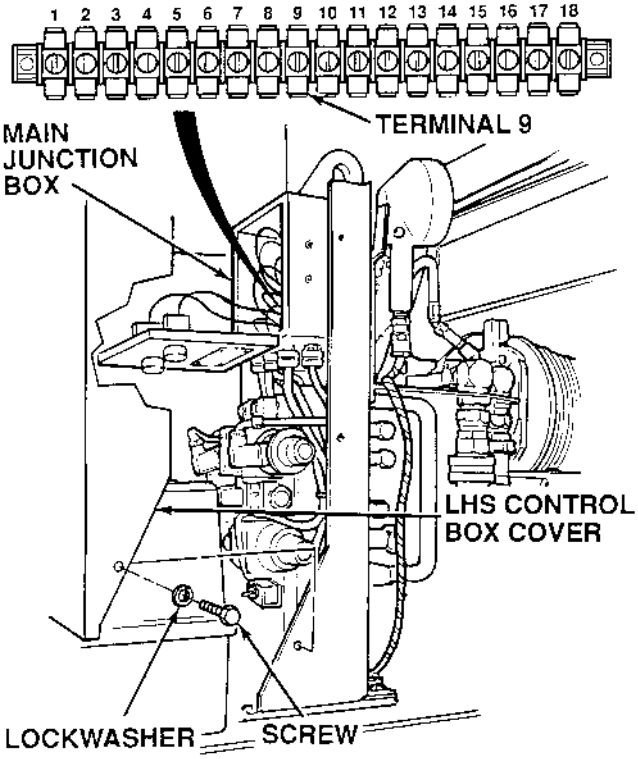
When opening the main junction box, do not pull or allow front of junction box to hang by the wire connections. Failure to comply will damage the wire connections.

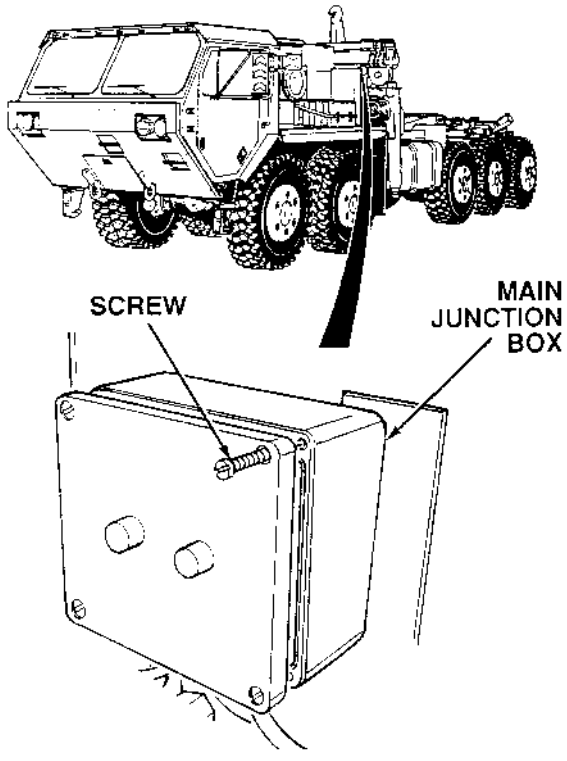
NOTE

Only remove center screw on engine side of LHS control box cover.

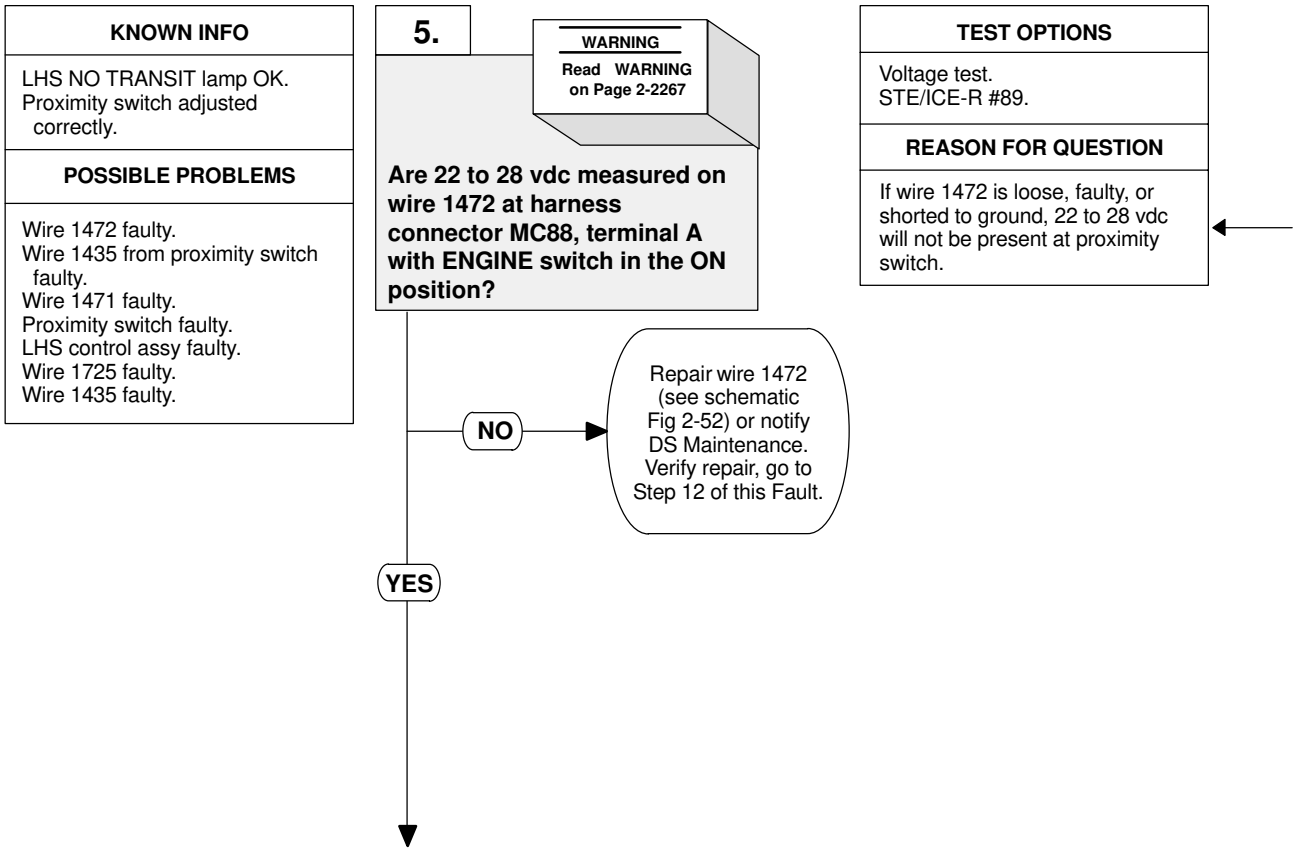
VOLTAGE TEST

(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen four screws to open main junction box.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead at main junction box terminal 9.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
    (a) If there are not 22 to 28 vdc present, perform Step (7) below and go to Step 1 of Fault 4 of this chapter.
    (b) If there are 22 to 28 vdc present, perform Step (7) below.
(7) Turn OFF ENGINE switch.





2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

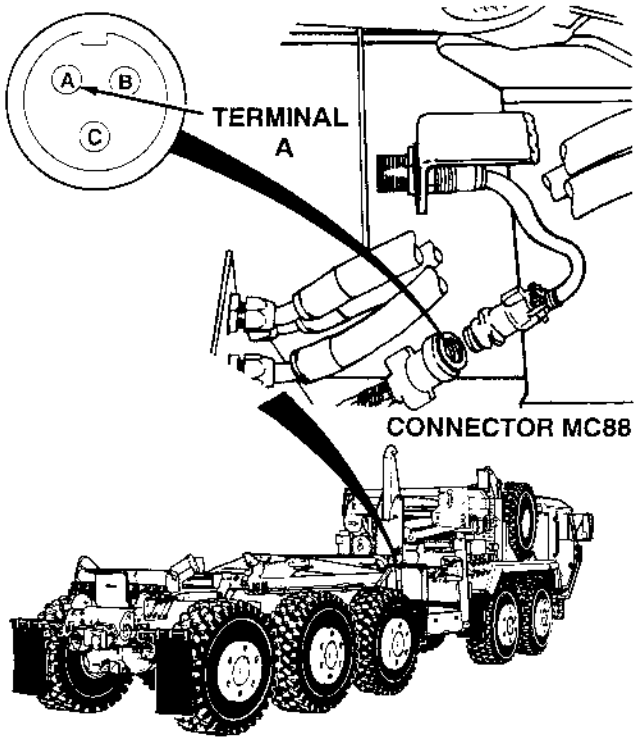


WARNING

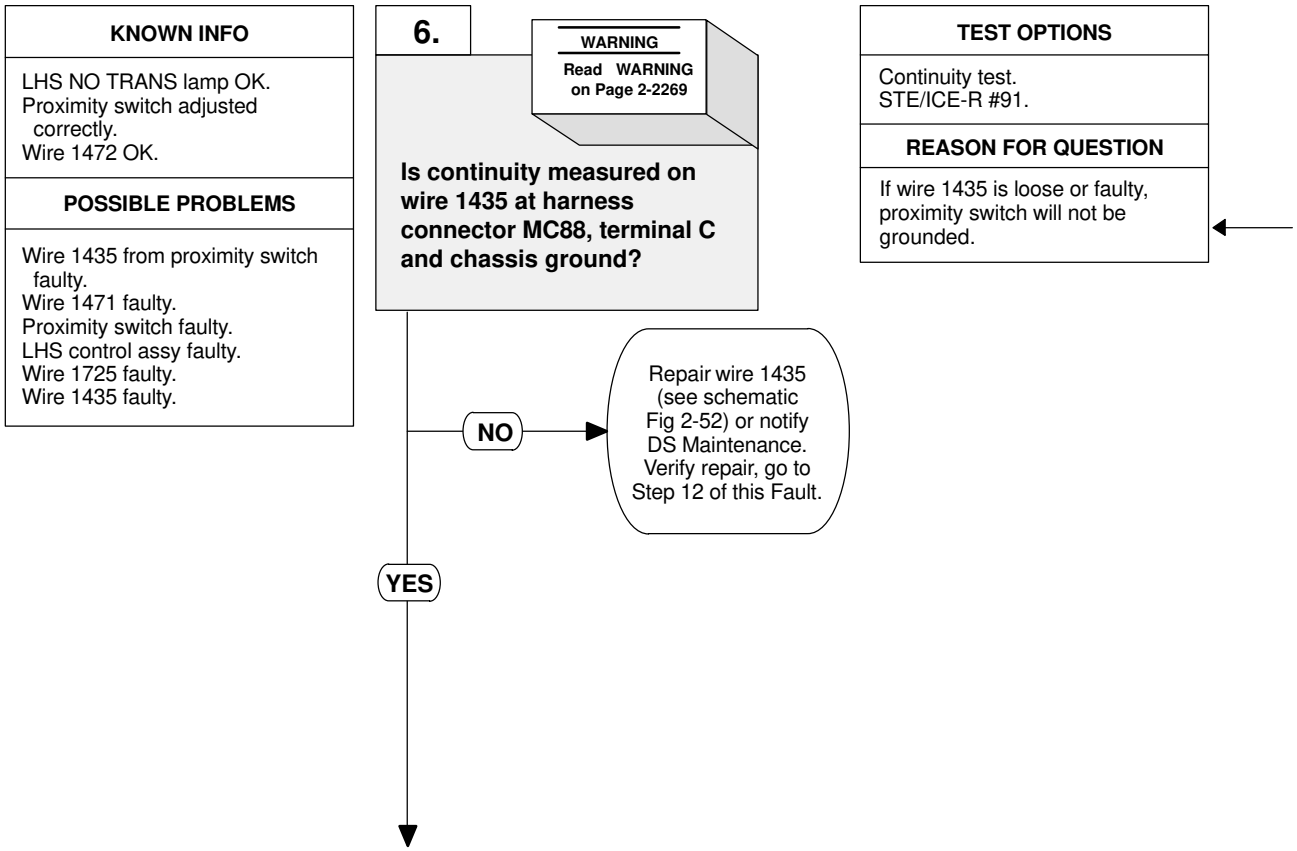
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Disconnect harness connector MC88 from proximity switch (hook arm down) connector.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead on wire 1472 at harness connector MC88, terminal A.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch.
  (a) If there are not 22 to 28 vdc present, turn OFF ENGINE switch and repair wire 1472 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there are 22 to 28 vdc present, wire 1472 is OK.
(6) Turn OFF ENGINE switch.



2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

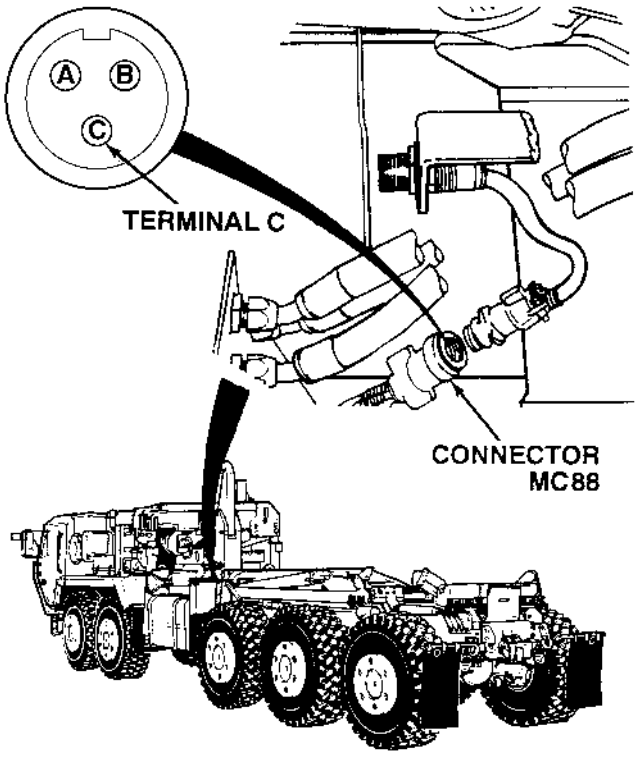


WARNING

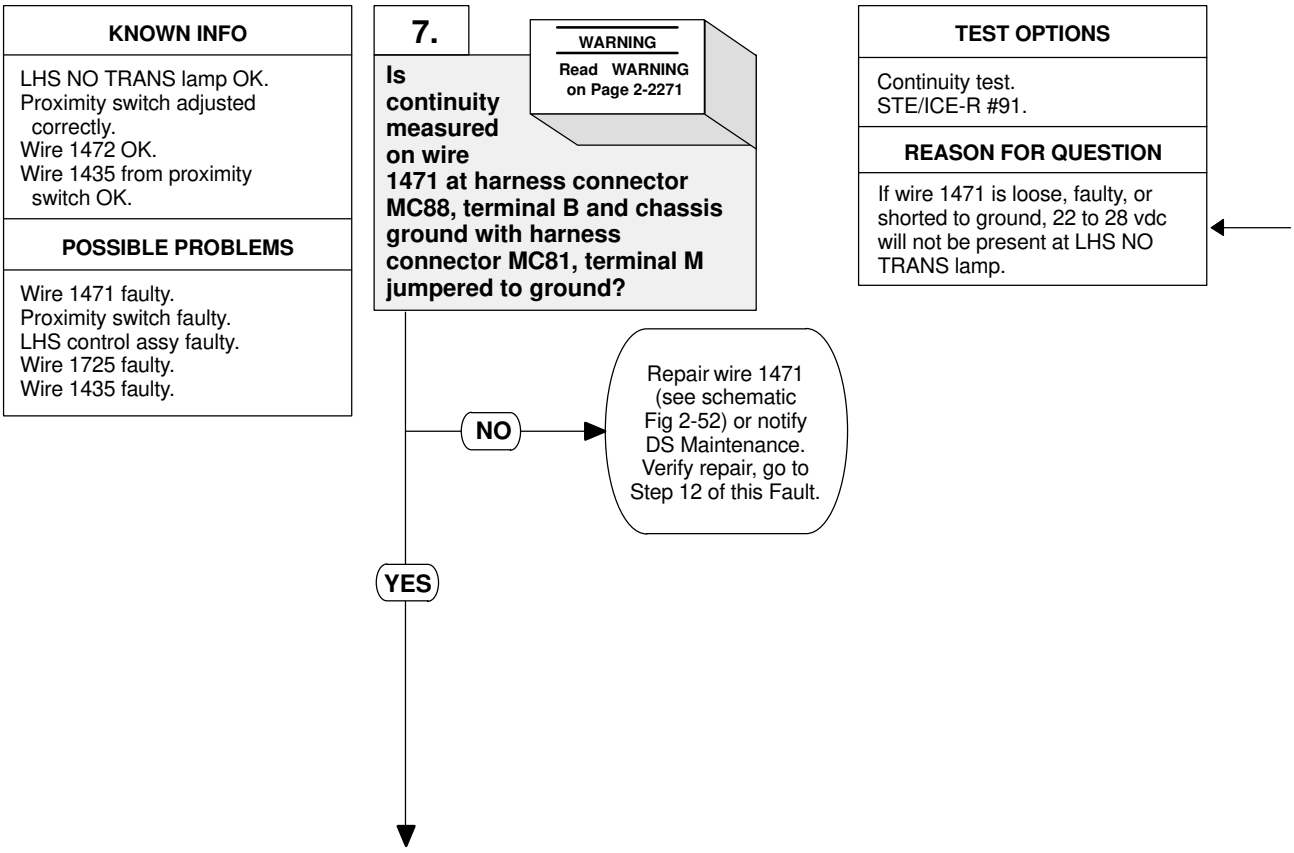
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between harness connector MC88, terminal C and a known good ground?
   (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1435 is OK.



2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

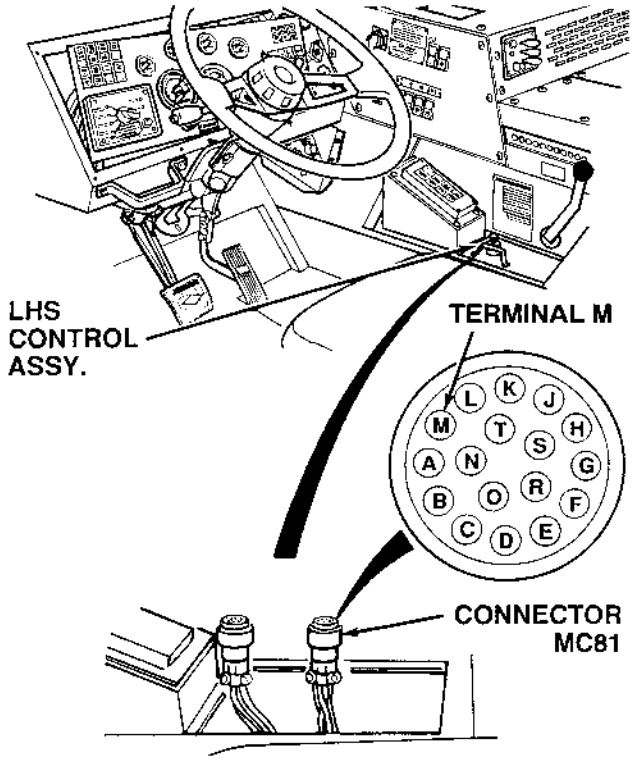


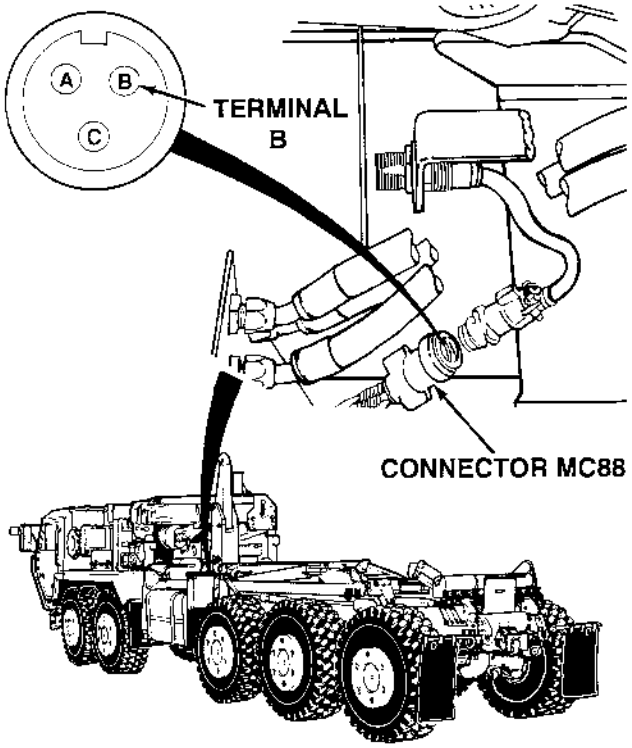
WARNING

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.

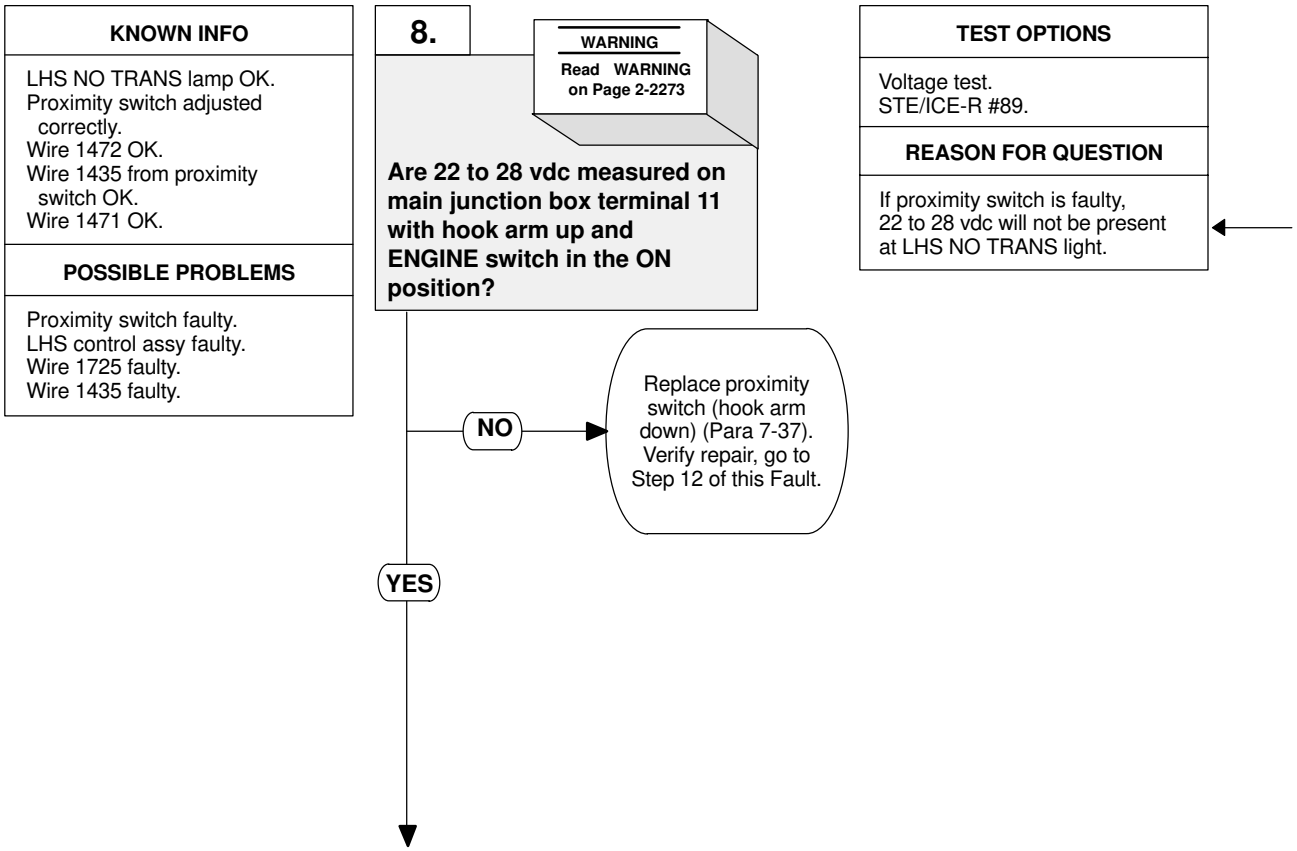
CONTINUITY TEST

(1) Remove LHS control assy (Para 7-40).
(2) Connect harness connector MC81, terminal M to ground using jumperwire.
(3) Is there continuity between harness connector MC88, terminal B and a known good ground?
  (a) If there is no continuity, repair wire 1471 (see schematic Fig 2-52) and perform Steps (4) through (6) below or notify DS Maintenance.
  (b) If there is continuity, wire 1471 is OK.
(4) Remove jumperwire from harness connector MC81 terminal M and ground.
(5) Connect harness connector MC88 to proximity switch connector.
(6) Install LHS control assy (Para 7-40).





2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).



WARNING

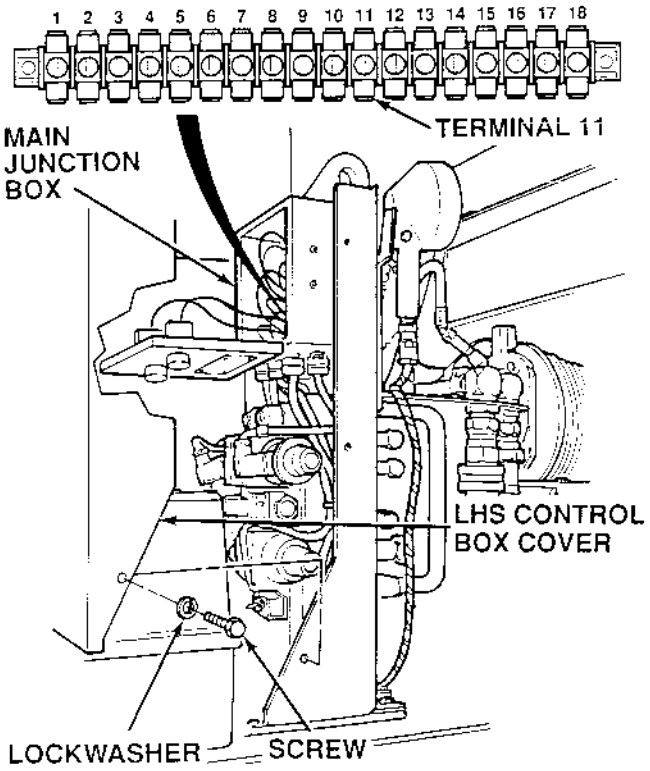
- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

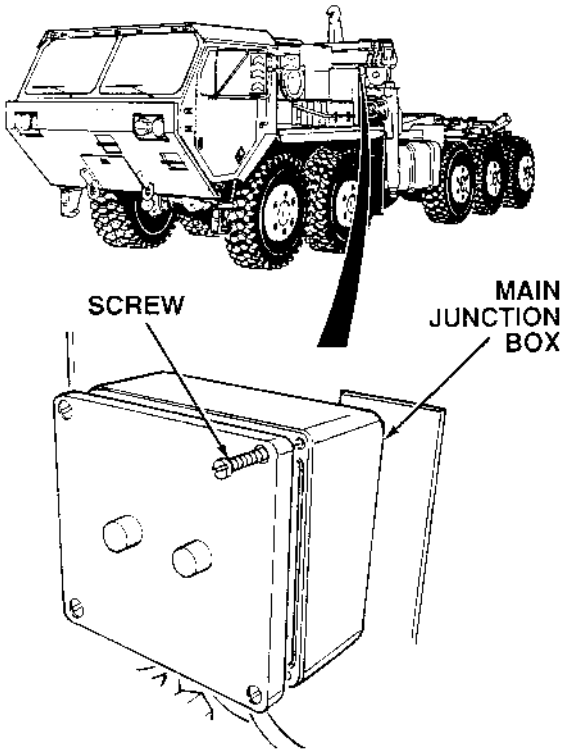
CAUTION

When opening the main junction box, do not pull or allow front of junction box to hang by the wire connections. Failure to comply will damage the wire connections.

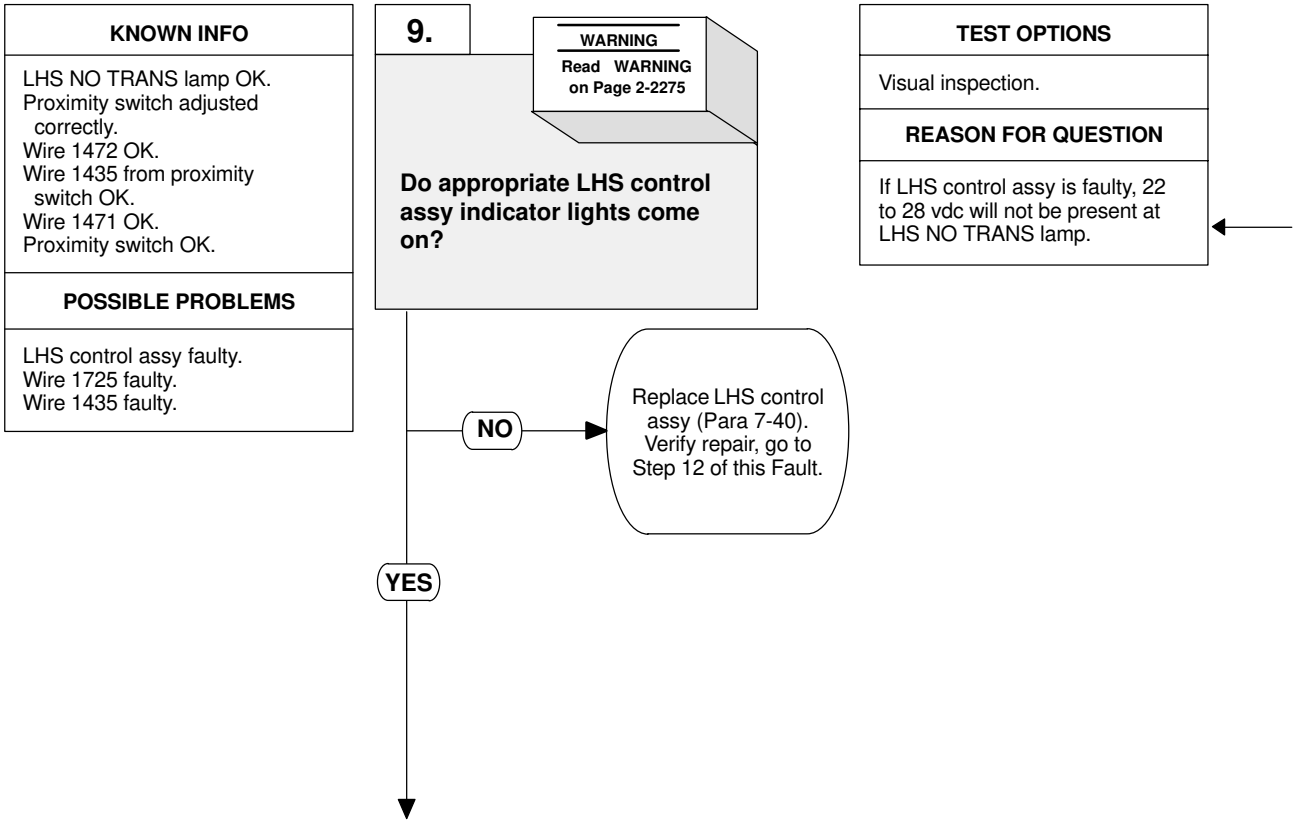
VOLTAGE TEST

(1) Start engine (TM 9-2320-364-10).
(2) Raise LHS until middle frame is approximately 3 ft (91 cm) above the transit position.
(3) Turn OFF ENGINE switch.
(4) Set multimeter select switch to volts dc.
(5) Connect positive (+) multimeter lead at main junction box terminal 11.
(6) Connect negative (–) multimeter lead to a known good ground.
(7) Turn ON ENGINE switch.
  (a) If there are not 22 to 28 vdc present, turn OFF ENGINE switch, replace proximity switch (Para 7-37) and perform Steps (8) through (12) below.
  (b) If there are 22 to 28 vdc present, proximity switch is OK. Perform Steps (8) through (12) below.
(8) Start engine.
(9) Put LHS in transit position.
(10) Turn OFF ENGINE switch.
(11) Close main junction box and tighten four screws.
(12) Install LHS control box cover, four lockwashers and screws.





2. LHS NO TRNS LIGHT DOES NOT OPERATE (CONT).

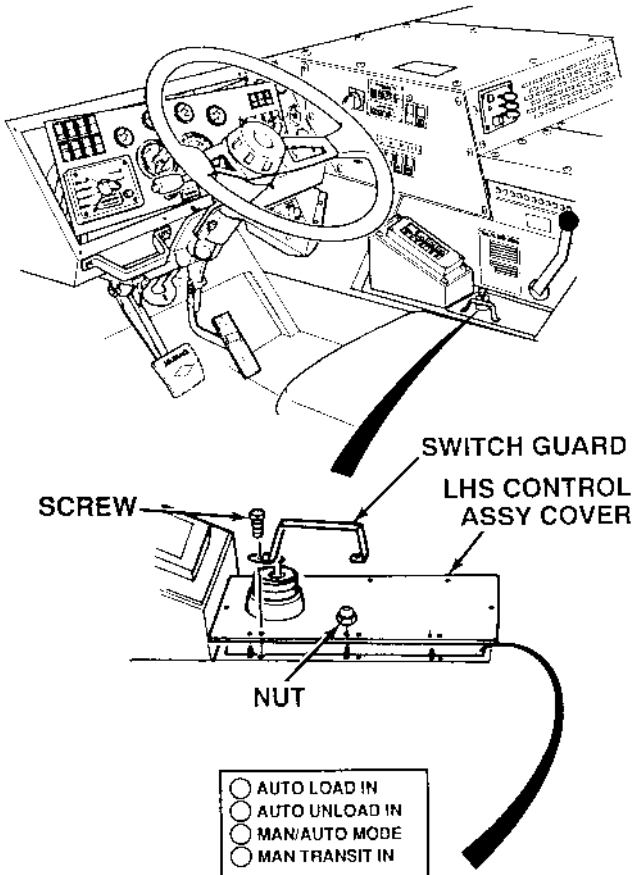


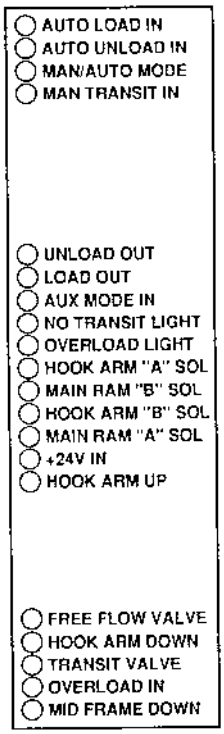
WARNING

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

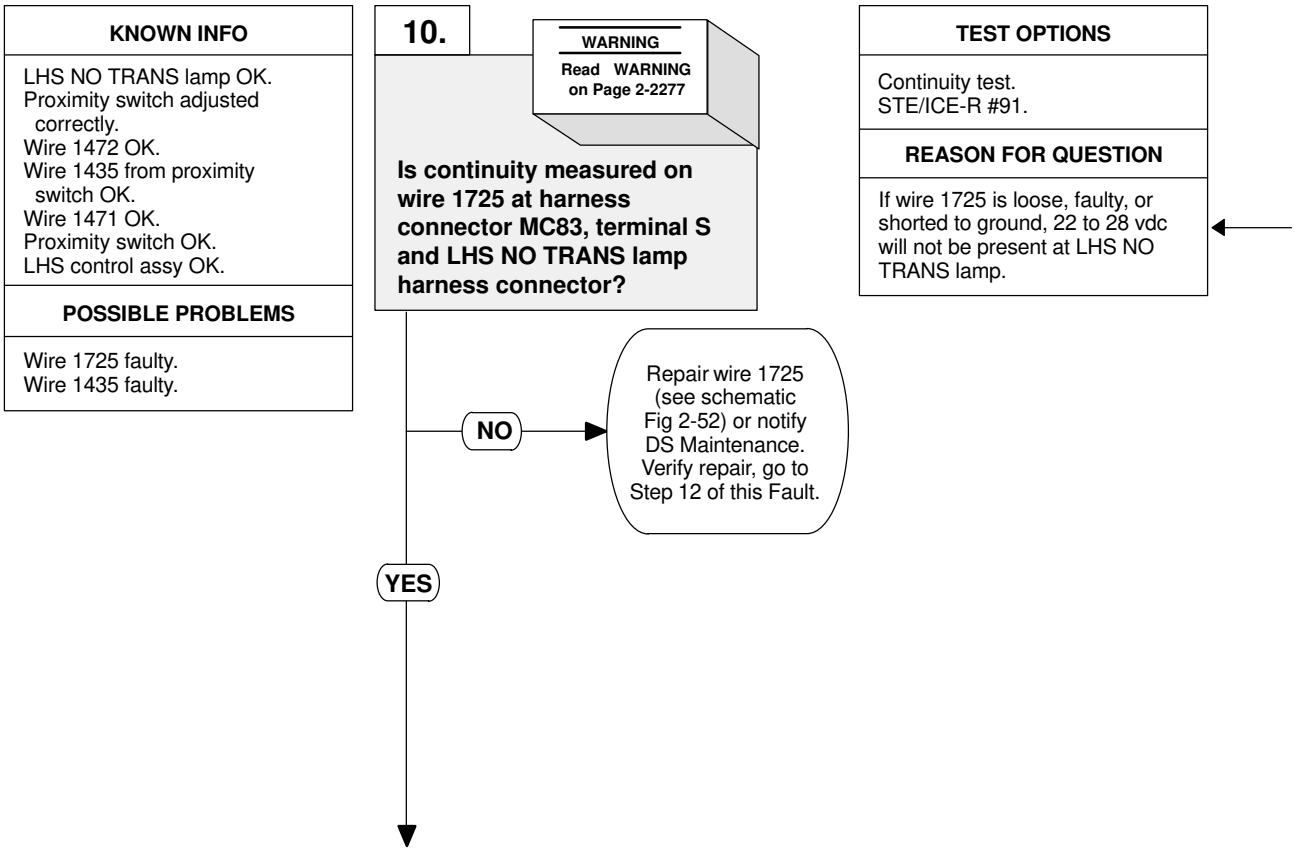
VISUAL INSPECTION

(1) Remove eight nuts, screws and switch guard from LHS control assy.
(2) Carefully lift off LHS control assy cover. Do not allow cover to dangle by joystick connecting wires.
(3) Observe red indicator light at bottom of LHS control assy while turning ON ENGINE switch (TM 9-2320-364-10).
  (a) If NO TRANSIT LIGHT lamp is illuminated, turn OFF ENGINE switch and replace LHS control assy (Para 7-40).
  (b) If NO TRANSIT LIGHT lamp is not illuminated, perform Steps (4) through (7) below.
(4) Raise LHS completely.
(5) Observe red indicator light at bottom of LHS control assy while turning ON ENGINE switch.
  (a) If NO TRANSIT LIGHT lamp is not illuminated, turn OFF ENGINE switch and replace LHS control assy (Para 7-40).
  (b) If NO TRANSIT LIGHT lamp is illuminated, LHS control assy is OK.
(6) Turn OFF ENGINE switch.
(7) Install cover, switch guard and eight nuts on LHS control assy.





2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

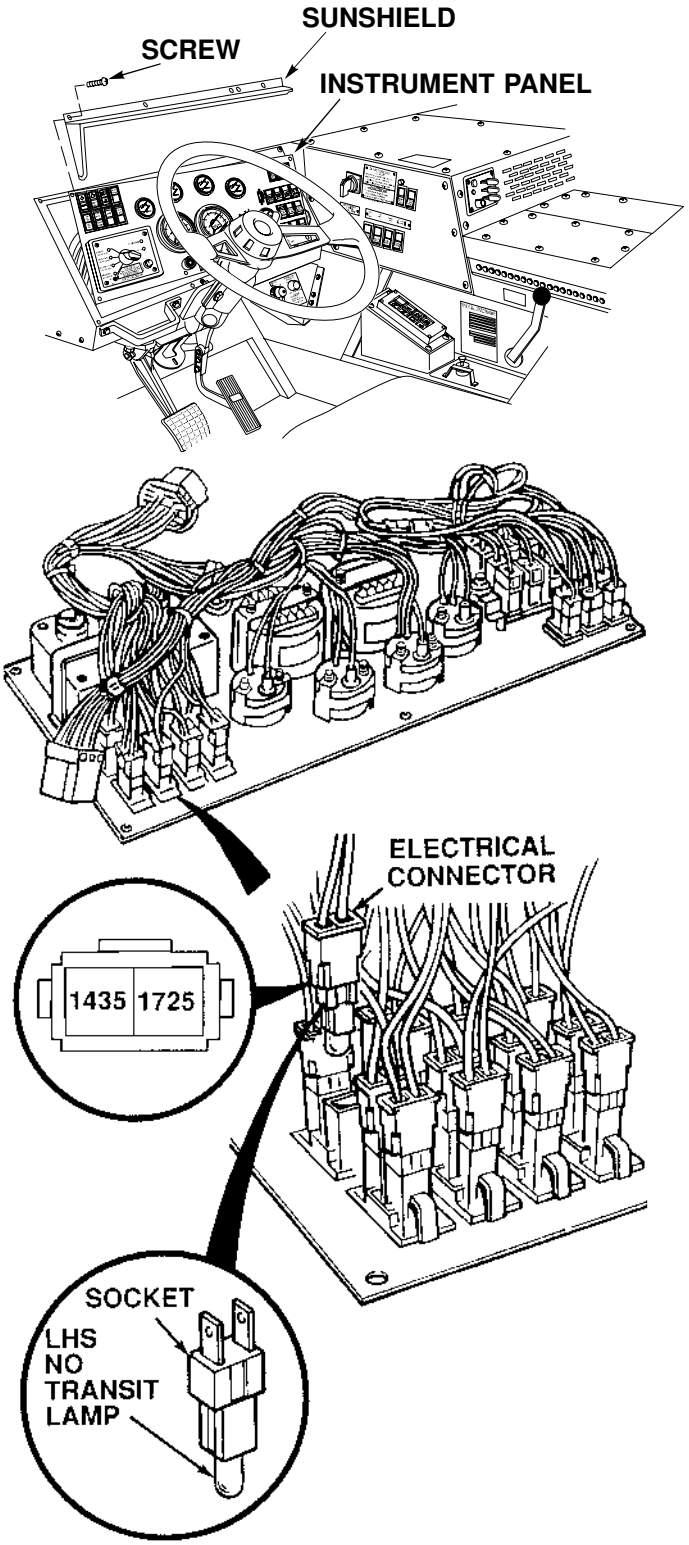


WARNING

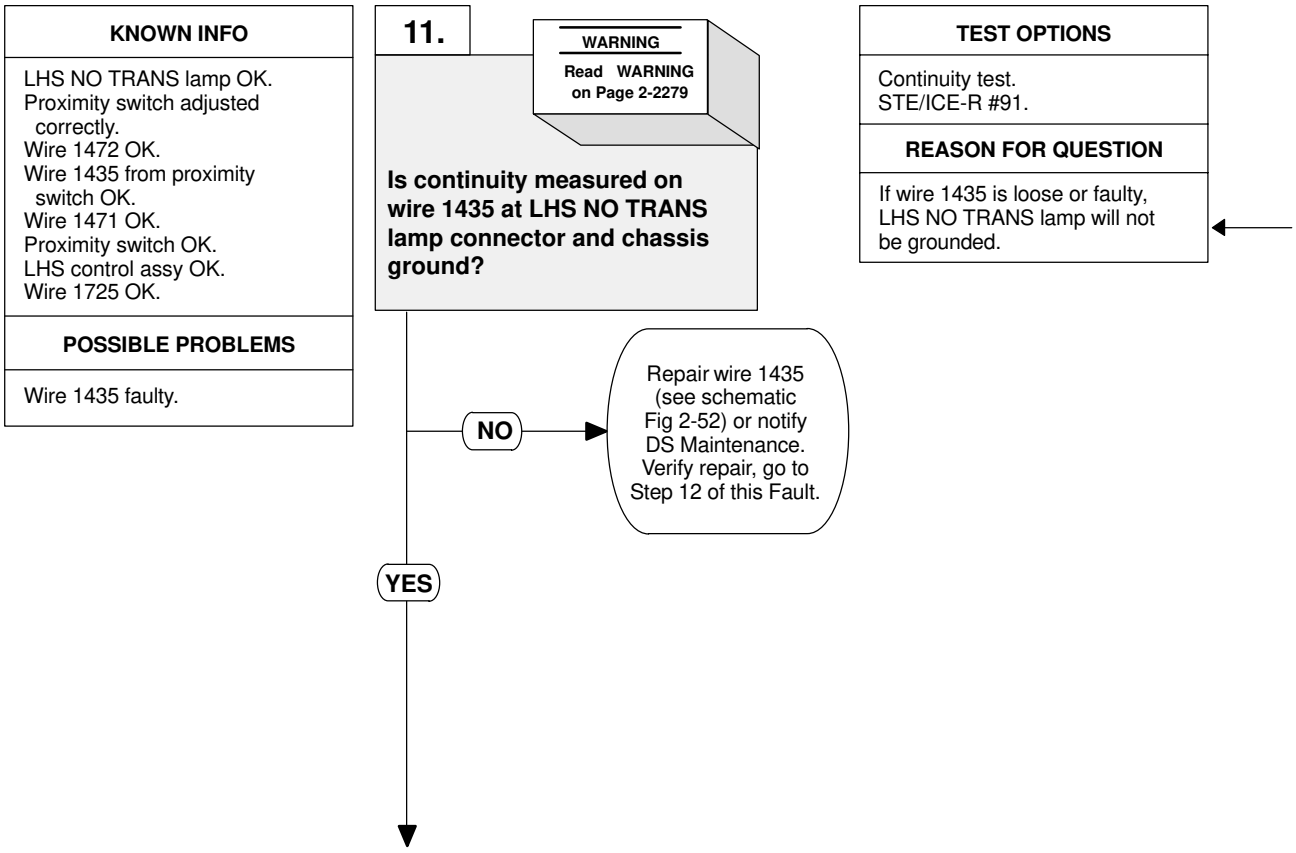
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Remove LHS control assy (Para 7-40).
(3) Is there continuity between LHS NO TRANS lamp electrical connector wire 1725 terminal and harness connector MC83, terminal S?
  (a) If there is no continuity, repair wire 1725 (see schematic Fig 2-52) and perform Step (4) below or notify DS Maintenance.
  (b) If there is continuity, wire 1725 is OK.
(4) Install LHS control assy (Para 7-40).



2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

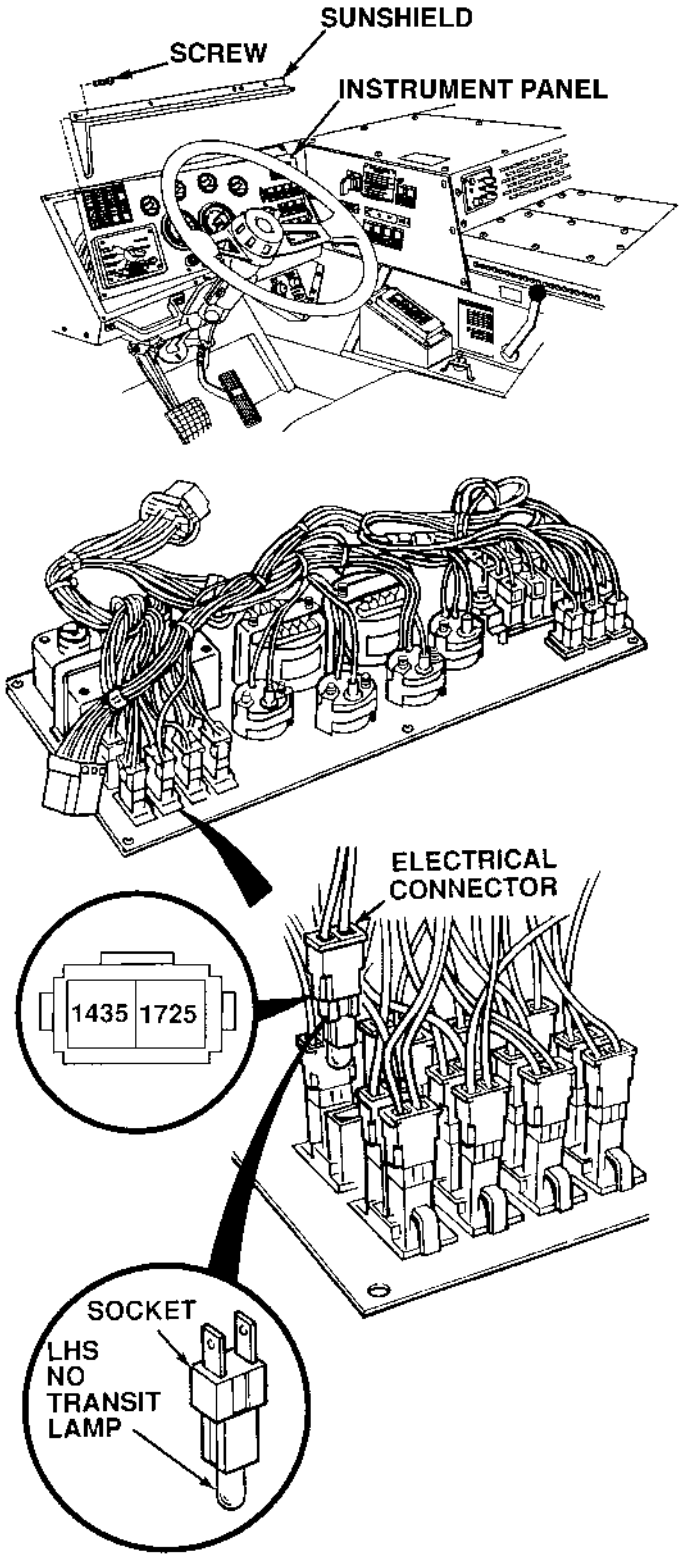


WARNING

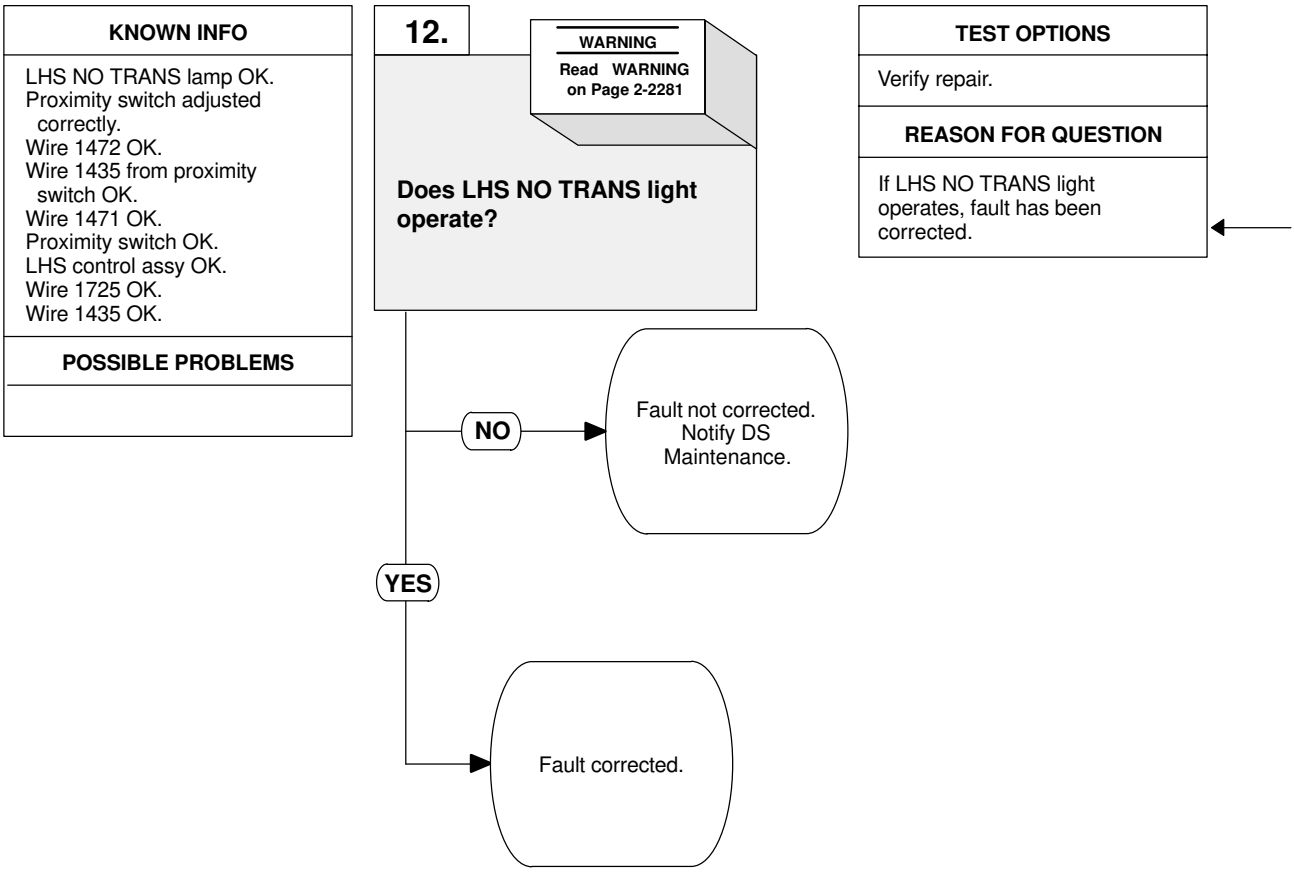
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between LHS NO TRANS lamp electrical connector wire 1435 terminal and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) and perform Steps (3) and (4) below or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK.
(3) Connect electrical connector to LHS NO TRANS lamp socket.
(4) Install instrument panel and sunshield with ten screws.



2. LHS NO TRANS LIGHT DOES NOT OPERATE (CONT).

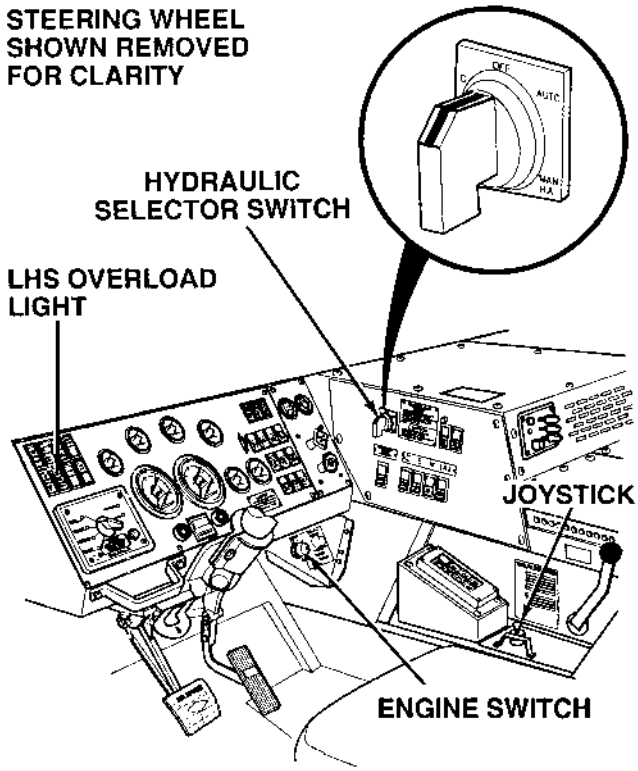


WARNING

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

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) While observing LHS NO TRANS light, raise LHS in AUTO mode using joystick until middle frame is approximately 3 ft (91 cm) above transit position.
   (a) If LHS NO TRANS light does not operate, fault not corrected. Perform Steps (3) and (4) below and notify DS Maintenance.
   (b) If LHS NO TRANS light does operate, fault has been corrected.
(3) Set hydraulic selector switch to OFF position.
(4) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

3. LHS OVERLOAD LIGHT DOES NOT OPERATE.

INITIAL SETUP

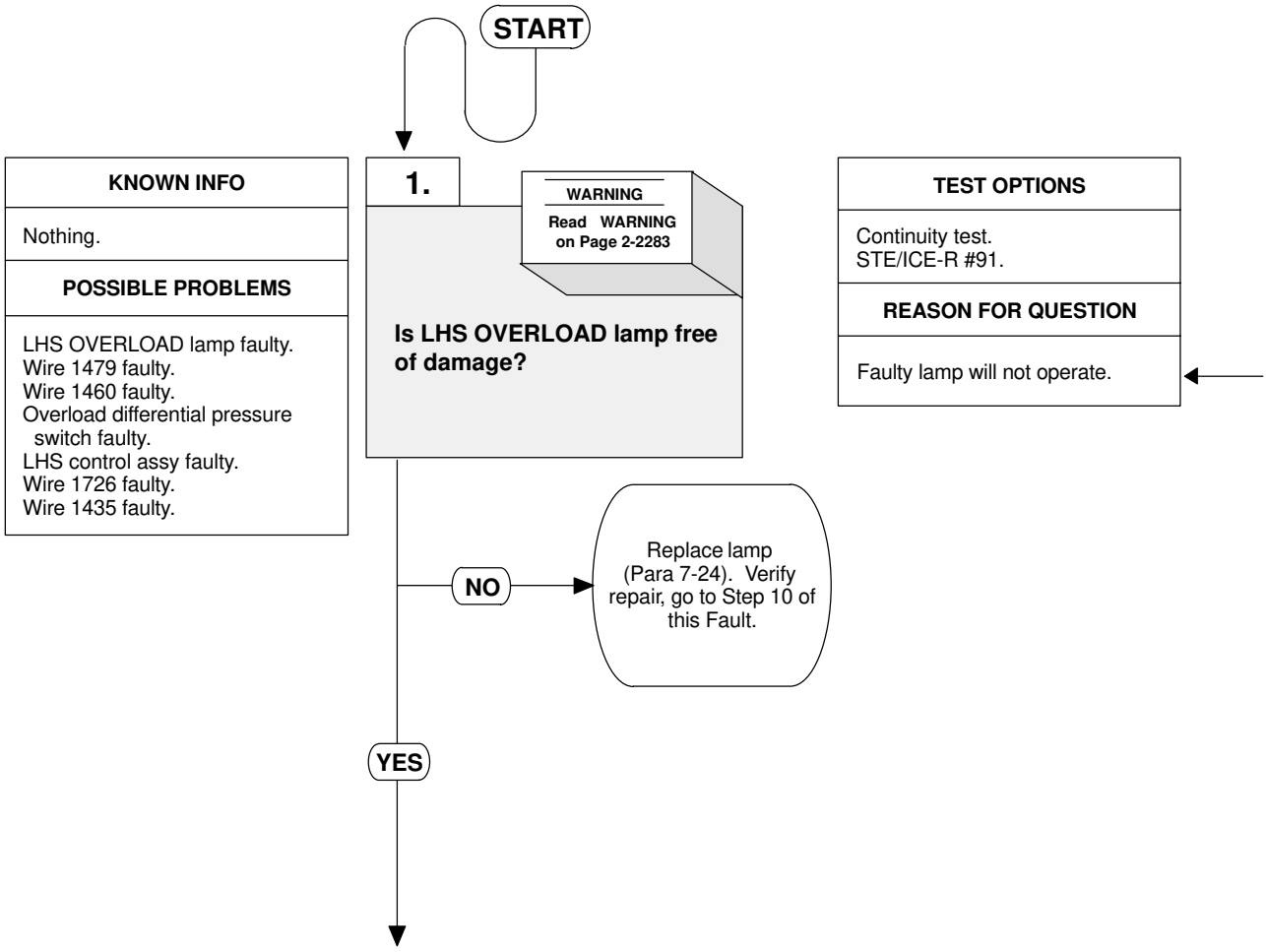
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
Adhesive (Item 8, Appendix C)

Personnel Required
Two

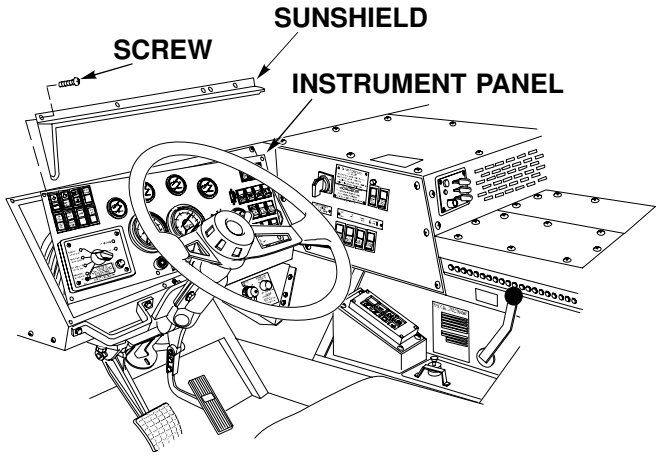
References
TM 9-2320-364-10
TM 9-4910-571-12&P

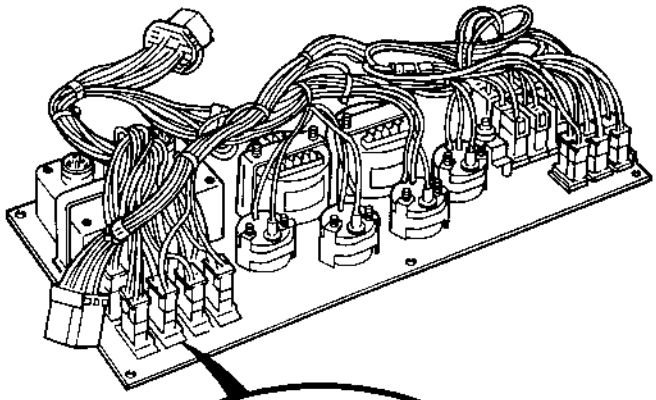
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

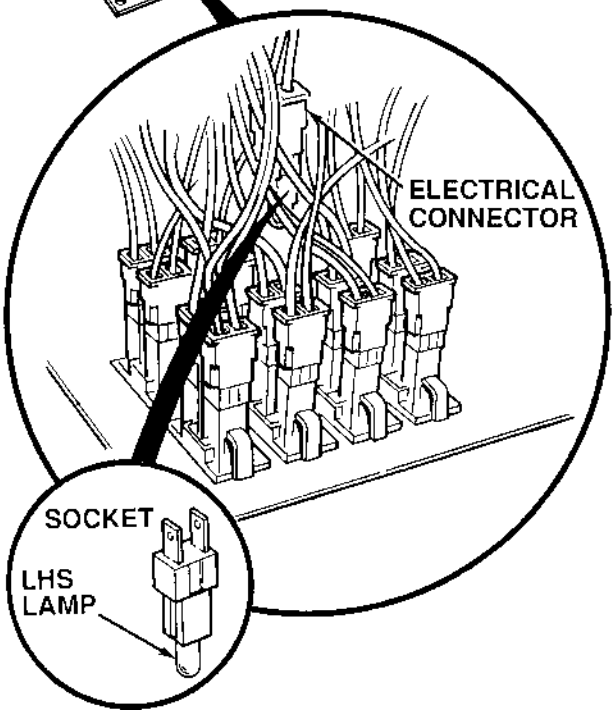


WARNING

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.



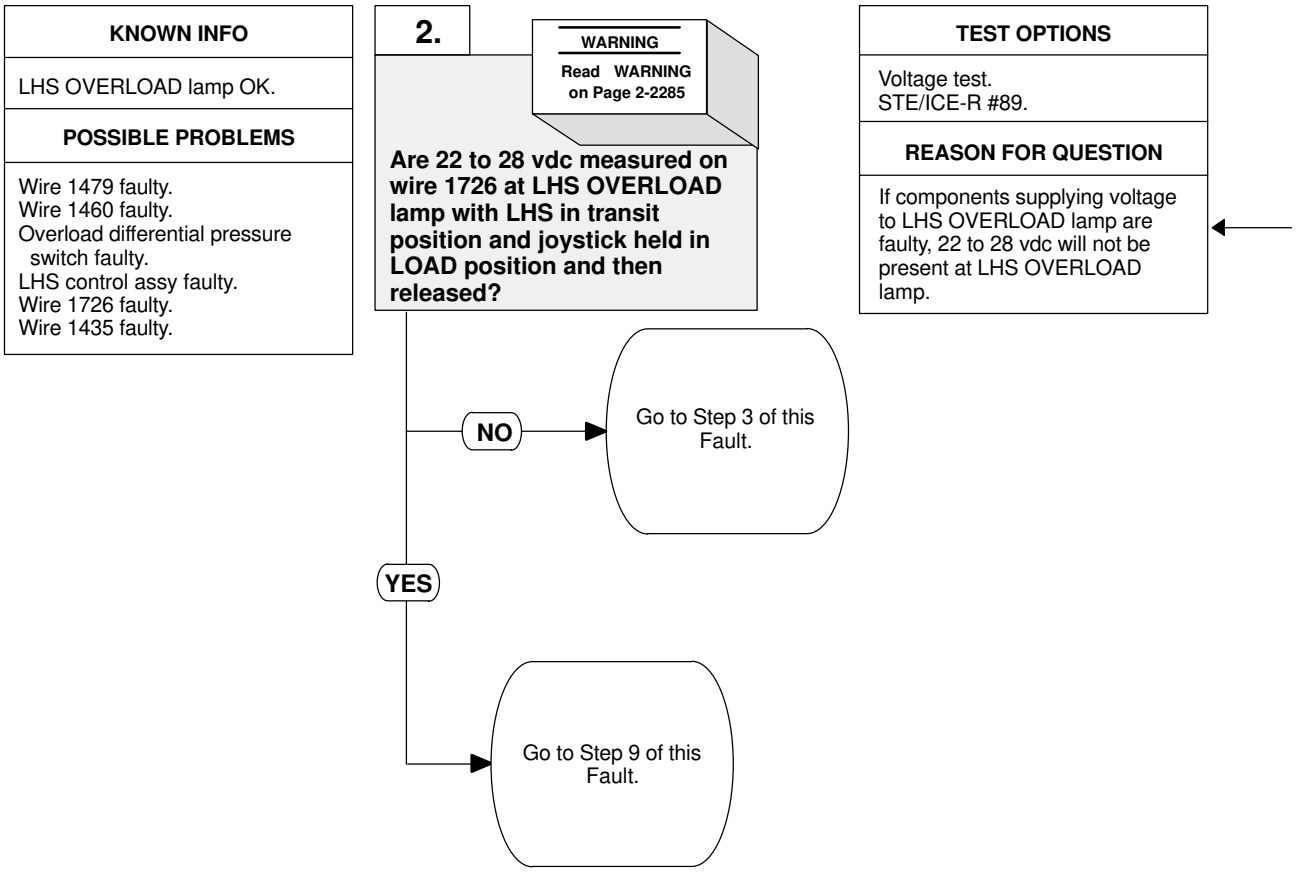




CONTINUITY TEST

(1) Remove ten screws and sunshield from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Disconnect electrical connector from LHS OVERLOAD lamp socket.
(4) Remove lamp and socket from instrument panel.
(5) Set multimeter select switch to ohms.
(6) Is there continuity between terminals of lamp?
  (a) If there is no continuity, replace LHS OVERLOAD lamp (Para 7-24) and perform Step (7) below.
  (b) If there is continuity, LHS OVERLOAD lamp is OK.
(7) Install LHS OVERLOAD lamp and socket in instrument panel.

3. LHS OVERLOAD LIGHT DOES NOT OPERATE (CONT).

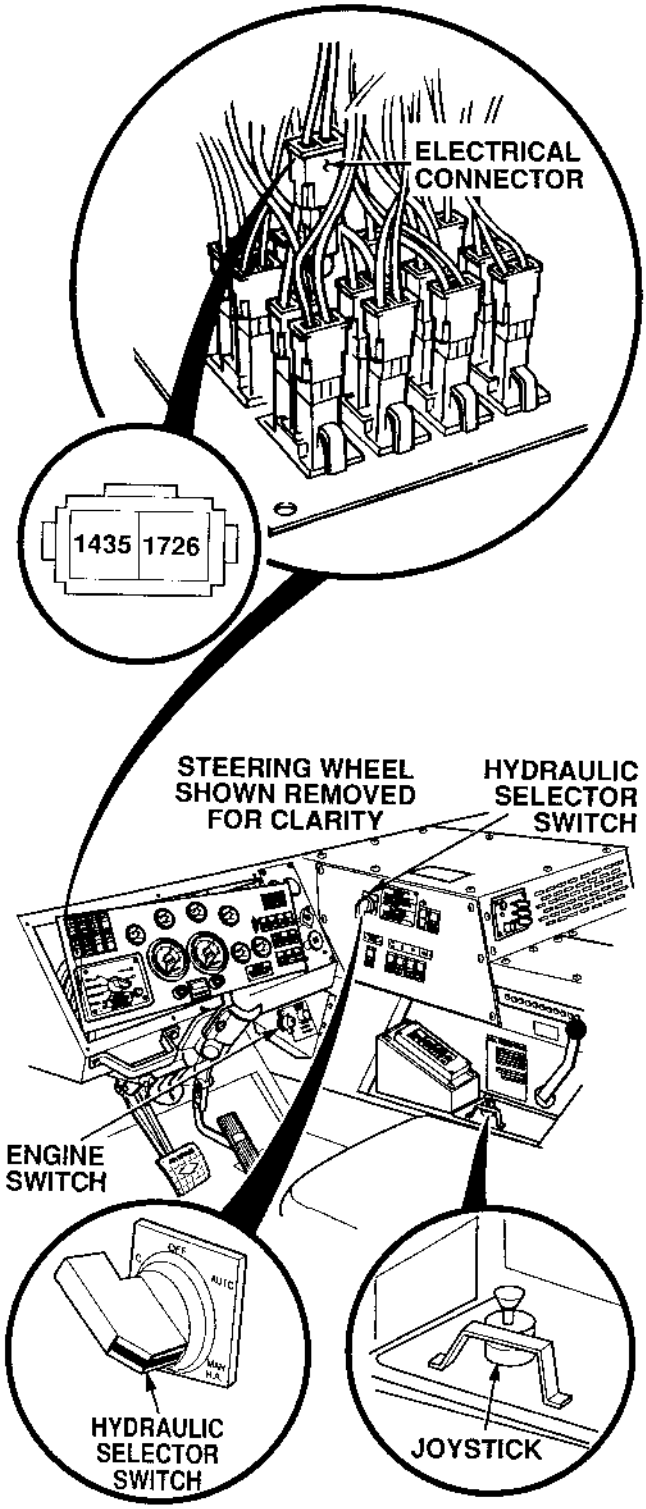


WARNING

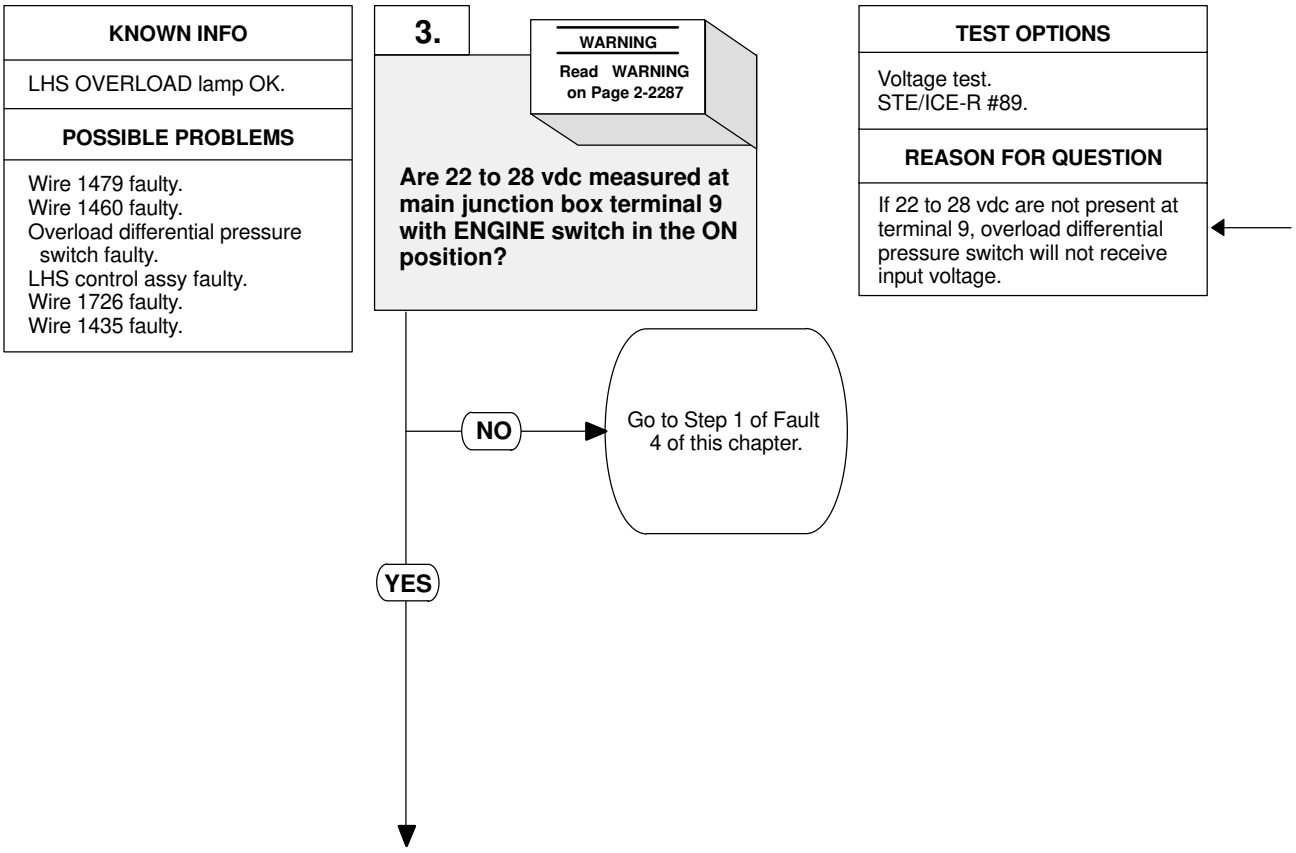
- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to wire 1726 at LHS OVERLOAD lamp electrical connector terminal.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Start engine (TM 9-2320-364-10).
(5) Put LHS in transit position.
(6) Set hydraulic selector switch to MAN HA position.
(7) Put joystick in LOAD position for five seconds and release.
    (a) If there are not 22 to 28 vdc present immediately after joystick is released, perform Steps (8) and (9) below and go to Step 3 of this Fault.
    (b) If there are 22 to 28 vdc present, perform Steps (8) and (9) below and go to Step 9 of this Fault.
(8) Set hydraulic selector switch to OFF position.
(9) Turn OFF ENGINE switch.



3. LHS OVERLOAD LIGHT 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.

CAUTION

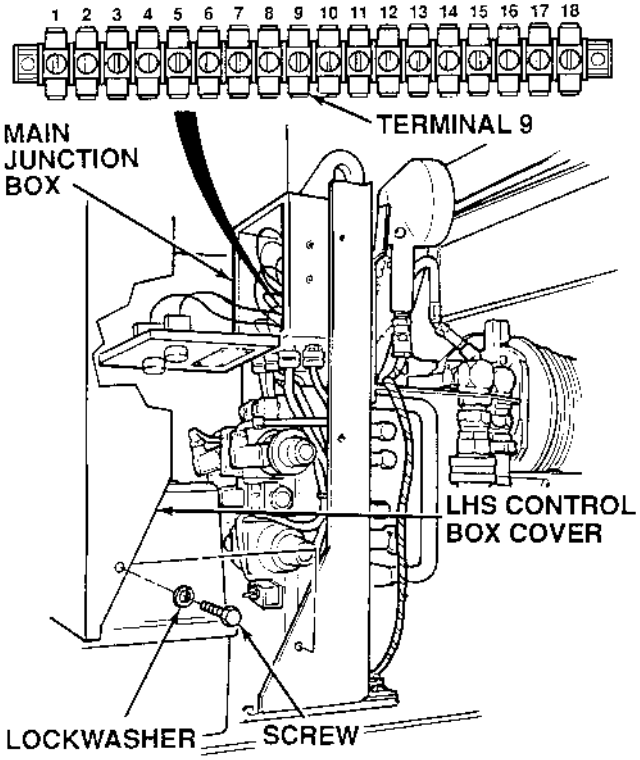
When opening the main junction box, do not pull or allow front of junction box to hang by the wire connections. Failure to comply will damage the wire connections.

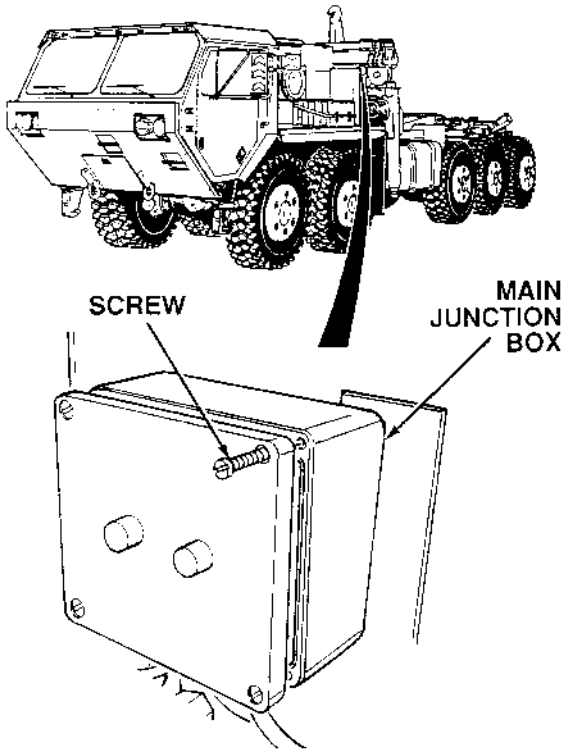
NOTE

Only remove center screw on engine side of LHS control box cover.

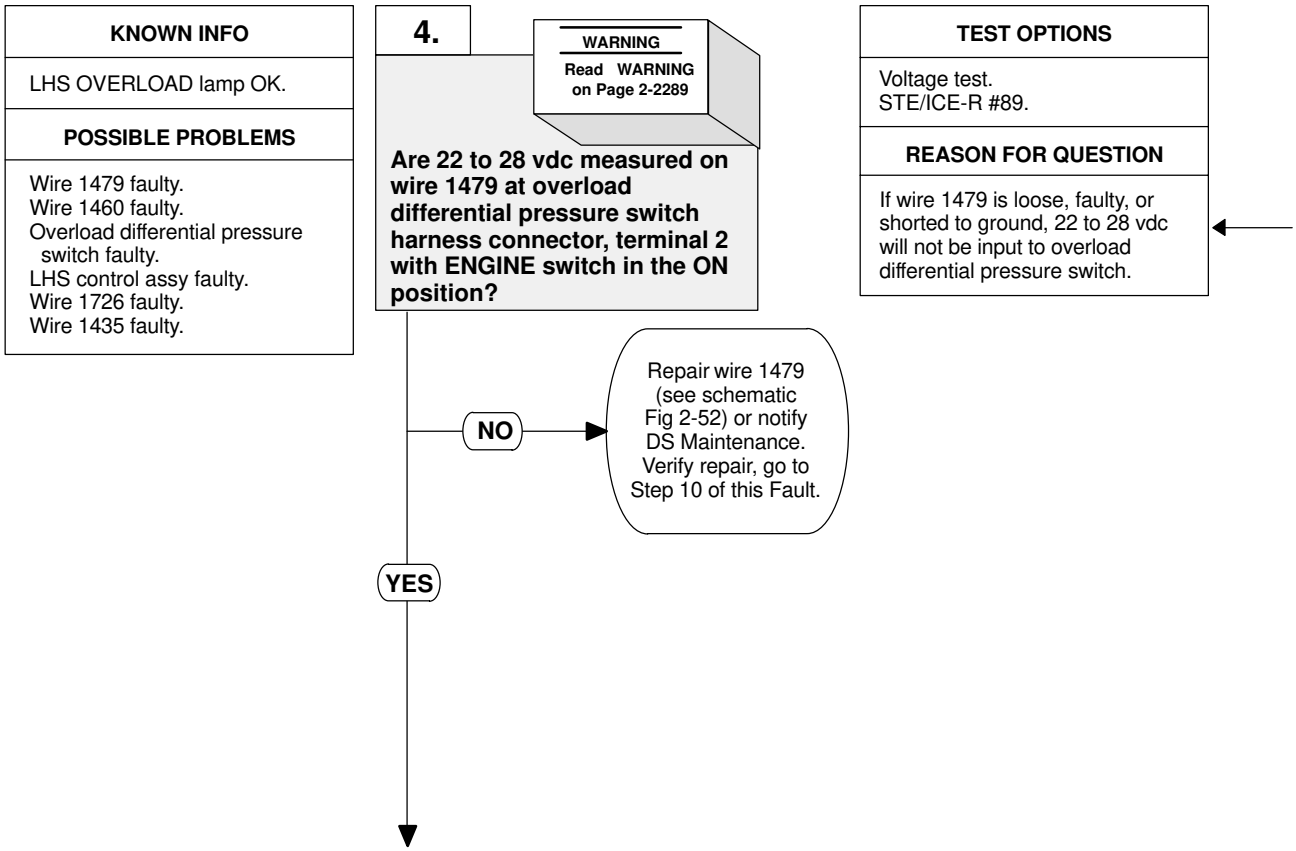
VOLTAGE TEST

(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen four screws and open main junction box.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead at main junction box terminal 9.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch.
  (a) If there are not 22 to 28 vdc present, perform Steps (7) and (8) below and go to Step 1 of Fault 4 of this Chapter.
  (b) If there are 22 to 28 vdc present, perform Steps (7) and (8) below.
(7) Turn OFF ENGINE switch (TM 9-2320-364-10).
(8) Close main junction box and tighten four screws.





3. LHS OVERLOAD LIGHT DOES NOT OPERATE (CONT).

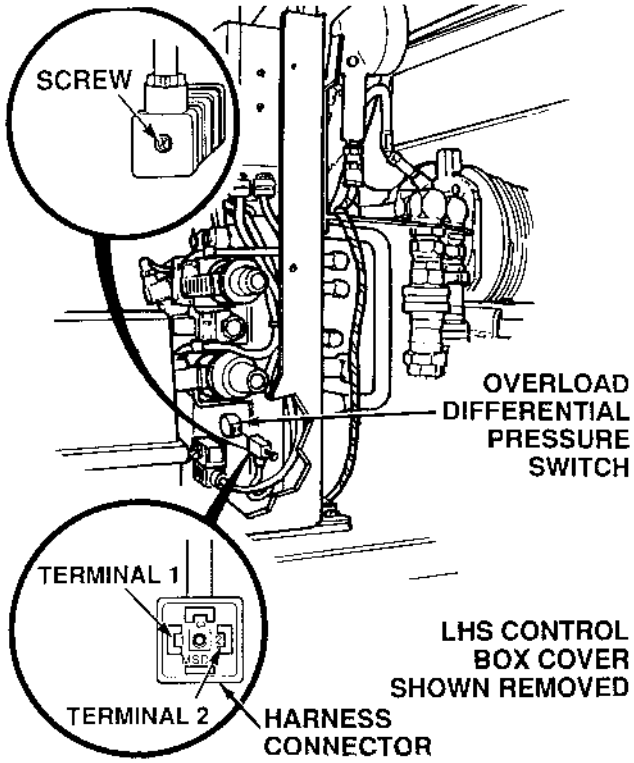


WARNING

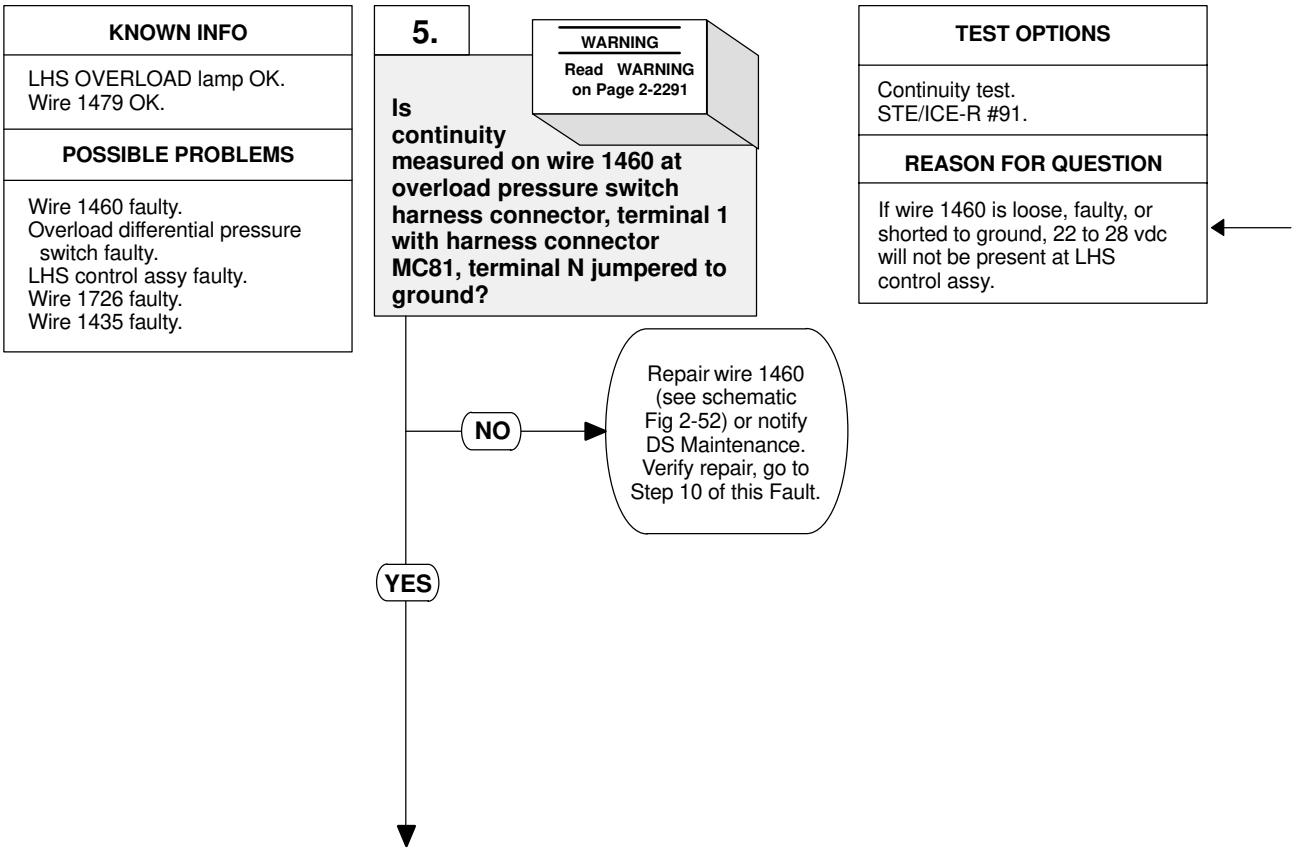
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Disconnect harness connector from overload differential pressure switch connector.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead at harness connector, terminal 2.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
    (a) If there are not 22 to 28 vdc present, turn OFF ENGINE switch and repair wire 1479 (see schematic Fig 2-52) or notify DS Maintenance.
    (b) If there are 22 to 28 vdc present, wire 1479 is OK.
(6) Turn OFF ENGINE switch.



3. LHS OVERLOAD LIGHT DOES NOT OPERATE (CONT).

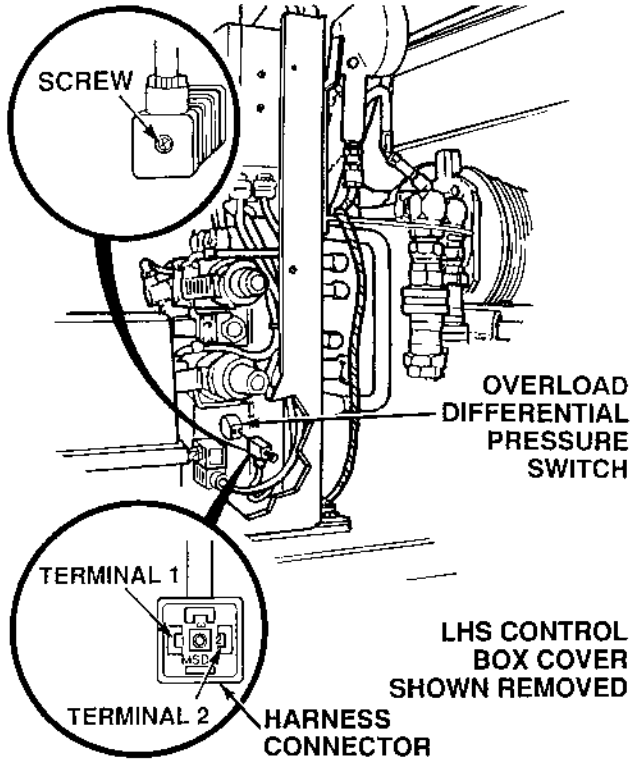


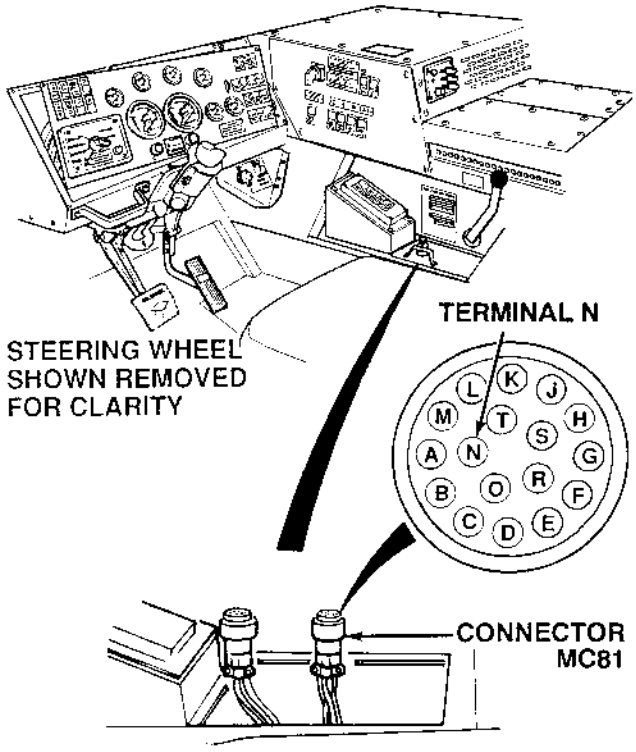
WARNING

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.

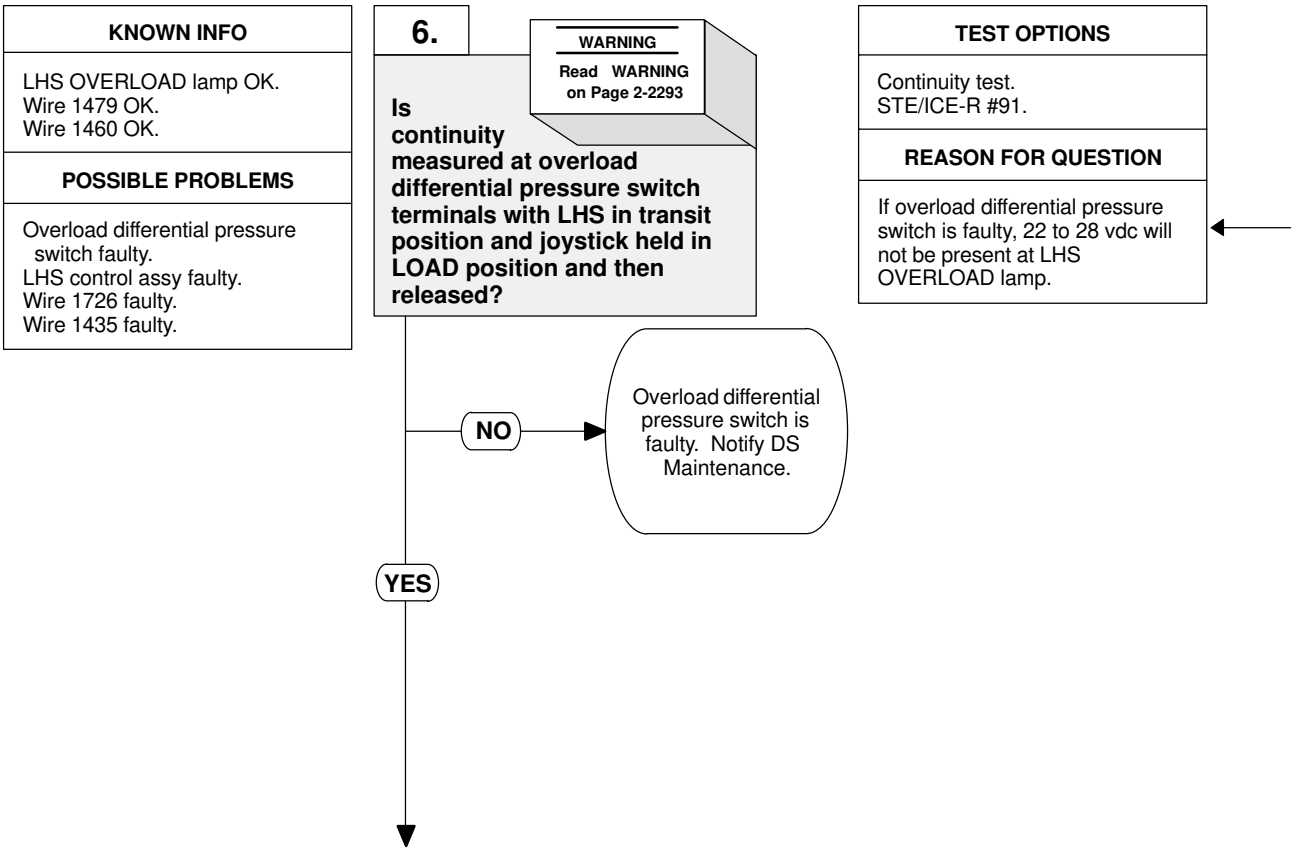
CONTINUITY TEST

(1) Remove LHS control assy (Para 7-40).
(2) Set multimeter select switch to ohms.
(3) Connect harness connector MC81, terminal N to ground using jumperwire.
(4) Is there continuity between overload differential pressure switch harness connector, terminal 1 and a known good ground?
    (a) If there is no continuity, remove jumperwire from harness connector MC81 to ground and repair wire 1460 (see schematic Fig 2-52) or notify DS Maintenance.
    (b) If there is continuity, wire 1460 is OK.
(5) Remove jumperwire from harness connector MC81, terminal N and ground.
(6) Install LHS control assembly (Para 7-40).





3. LHS OVERLOAD LIGHT DOES NOT OPERATE (CONT).

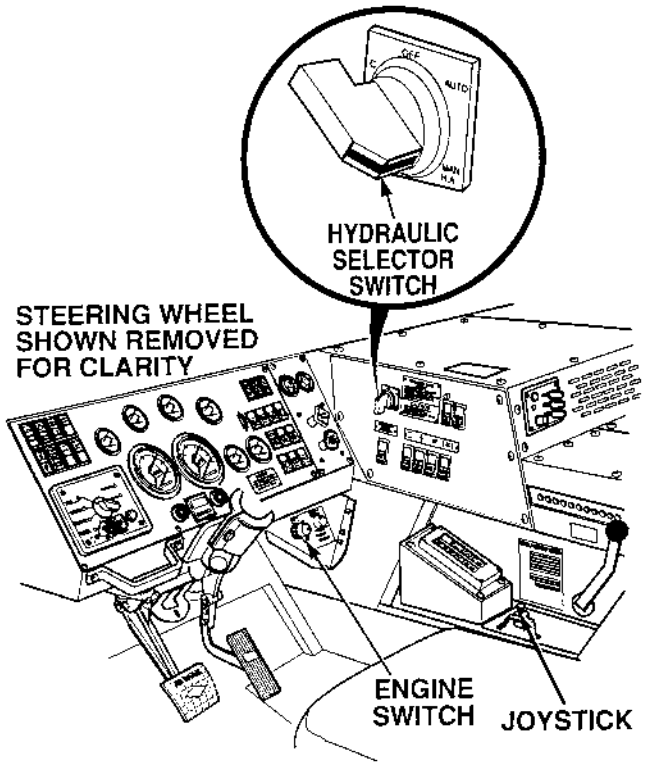


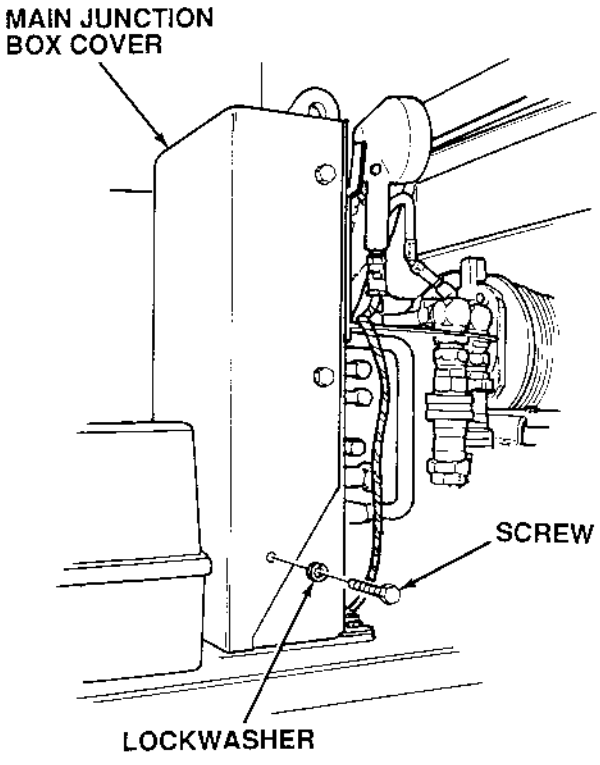
WARNING

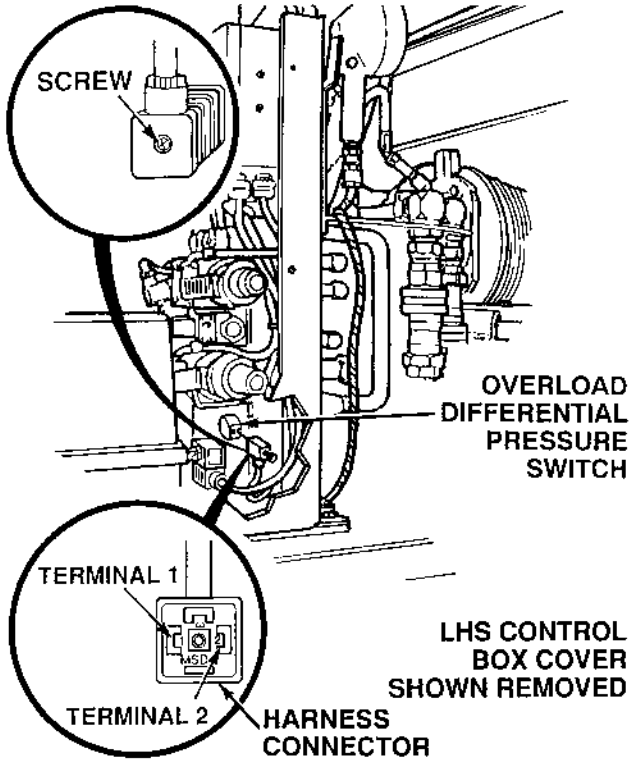
- Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush eyes with water for 15 minutes and get immediate medical attention.
- Remove all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

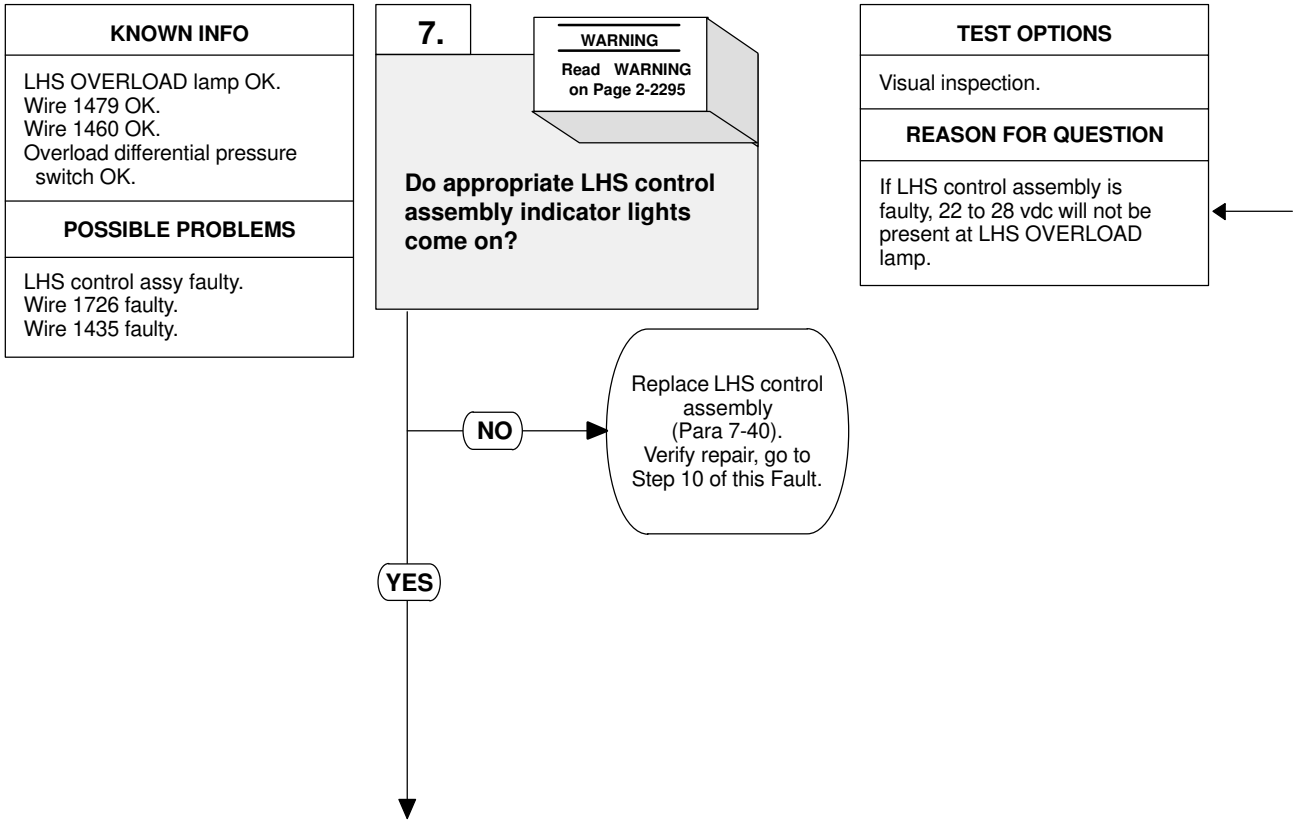
(1) Set hydraulic selector switch to MAN HA position (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Hold joystick in LOAD position for five seconds and release joystick while assistant observes multimeter.
(4) Is there continuity between overload differential pressure switch terminals?
  (a) If there is no continuity when joystick is released, notify DS Maintenance.
  (b) If there is continuity, switch is OK.
(5) Set hydraulic selector switch to OFF position.
(6) Connect harness connector to overload differential pressure switch and tighten screw, coat head of connector screw with adhesive.
(7) Install LHS control box cover, four lockwashers and screws.







3. LHS OVERLOAD LIGHT DOES NOT OPERATE (CONT).

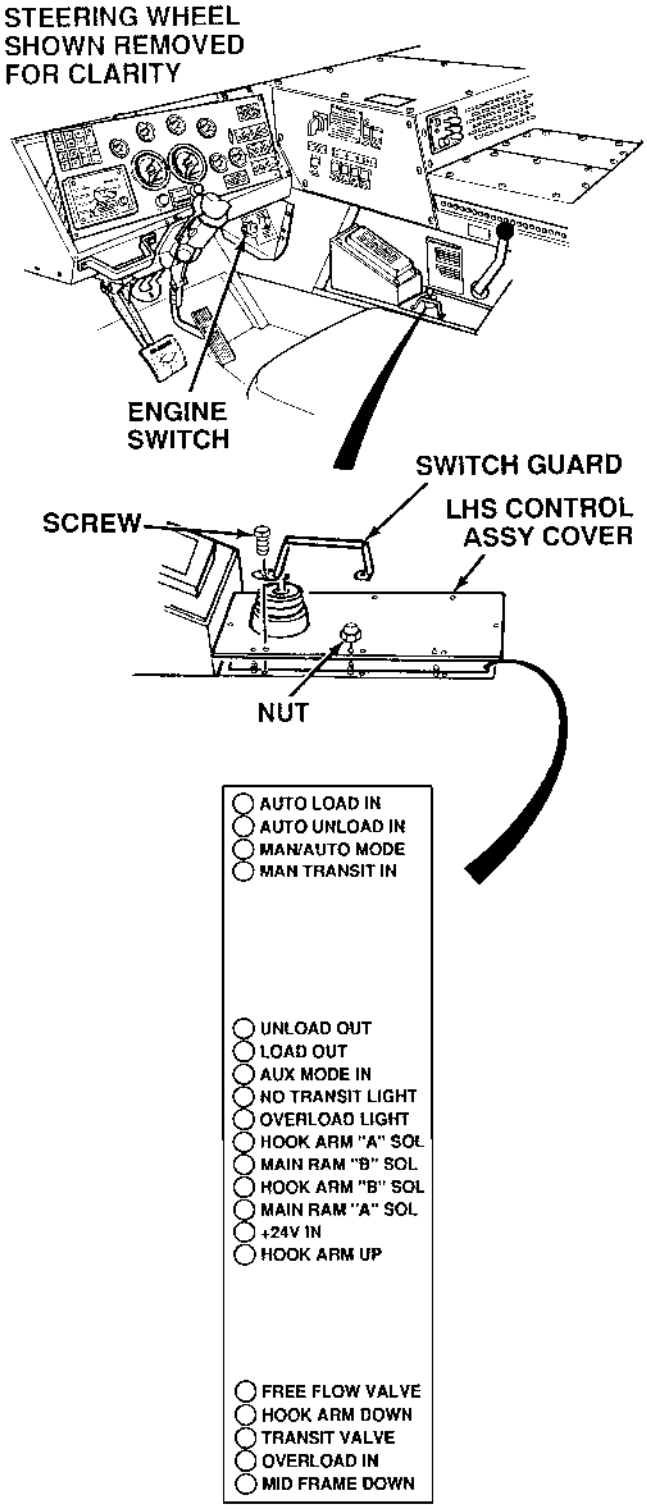


WARNING

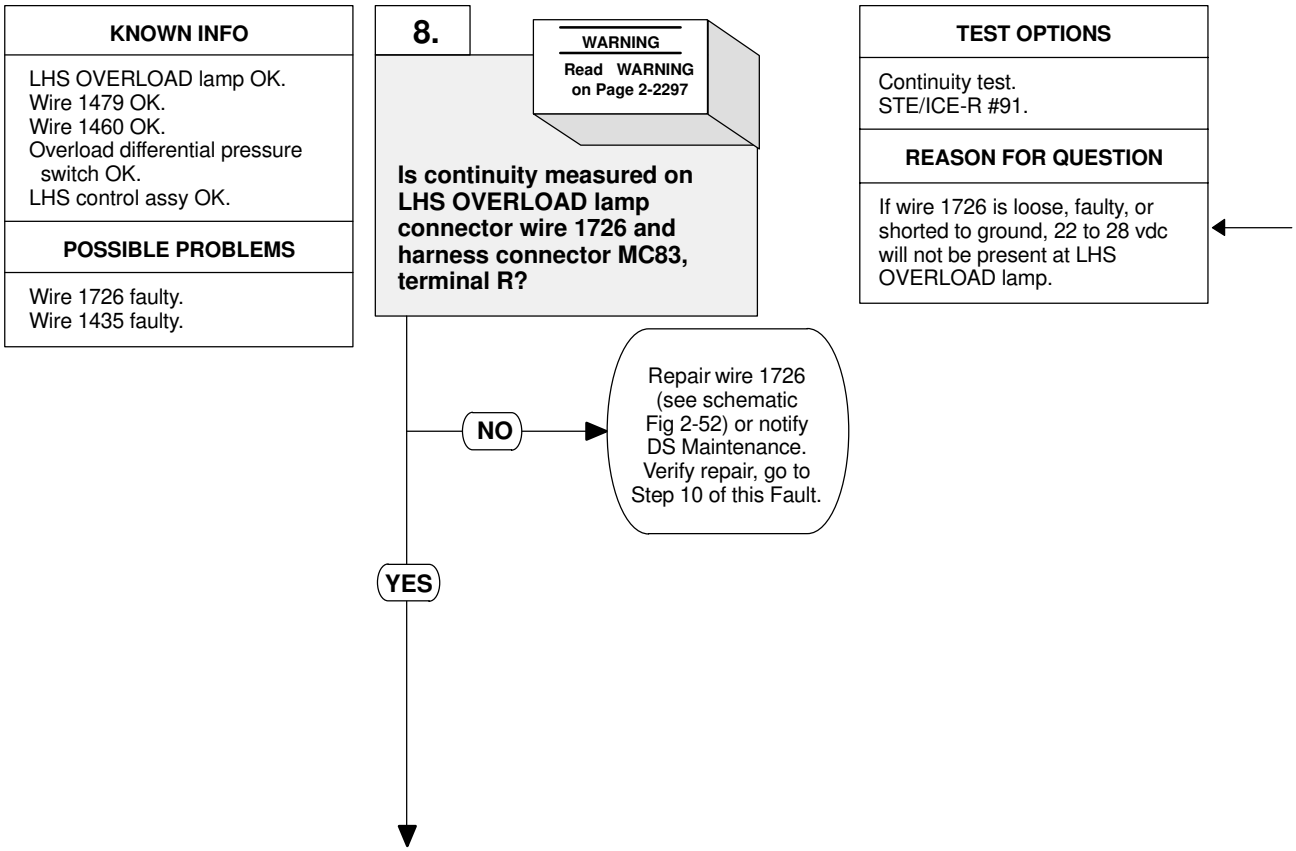
- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tool contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VISUAL INSPECTION

(1) Remove eight nuts, screws, and switch guard from LHS control assy.
(2) Carefully lift off LHS control assy cover. Do not allow cover to dangle by joystick connecting wires.
(3) Start engine (TM 9-2320-364-10).
(4) Set hydraulic selector switch to MAN HA position.
(5) Hold joystick in LOAD position for five seconds and release joystick while observing red indicator lights at bottom of LHS control assy.
  (a) If OVERLOAD LIGHT lamp is not illuminated, replace LHS control assy (Para 7-40).
  (b) If OVERLOAD LIGHT is illuminated, LHS control assy is OK.
(6) Turn OFF ENGINE switch.
(7) Set hydraulic selector switch to OFF position.



3. LHS OVERLOAD LIGHT DOES NOT OPERATE (CONT).

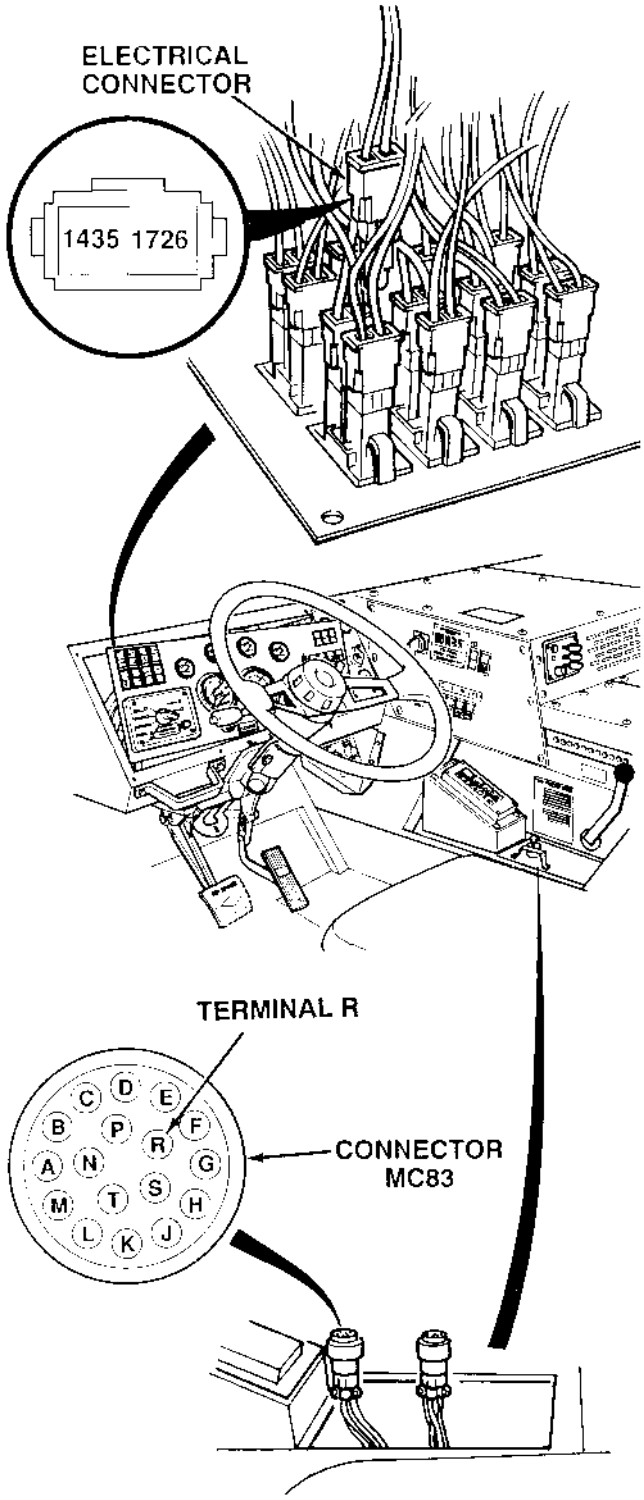


WARNING

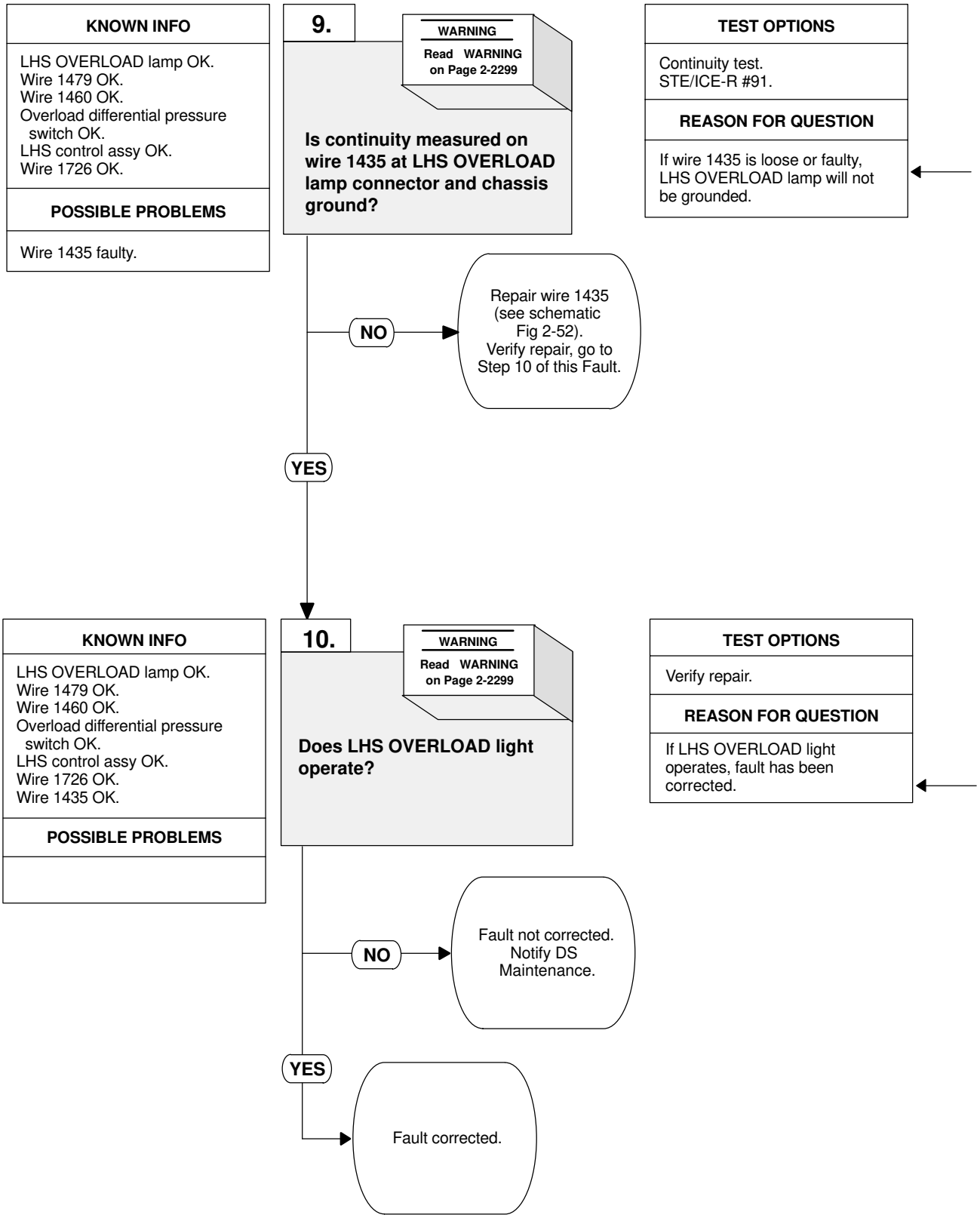
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect LHS control assembly from harness connectors.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between harness connector MC83, terminal R and LHS OVERLOAD lamp connector wire 1726 terminal?
  (a) If there is no continuity, repair wire 1726 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1726 is OK.
(4) Install LHS control assy (Para 7-40).



3. LHS OVERLOAD LIGHT DOES NOT OPERATE (CONT).



WARNING

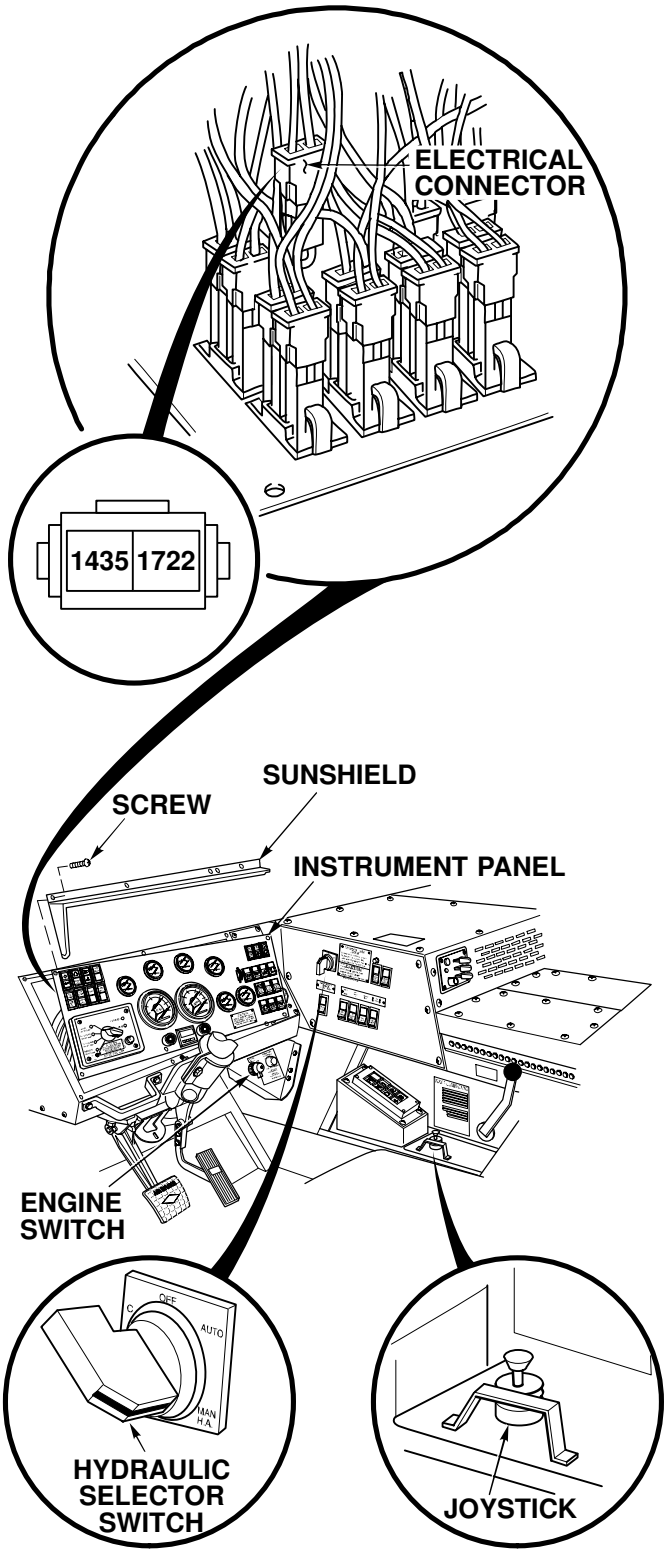
- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between LHS OVERLOAD lamp electrical connector wire 1435 terminal and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) and perform Steps (3) and (4) below or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK.
(3) Connect electrical connector to LHS OVERLOAD lamp socket.
(4) Install instrument panel and sunshield with ten screws.

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to MAN HA position.
(3) While observing LHS OVERLOAD light, put joystick in LOAD position for five seconds and release.
  (a) If LHS OVERLOAD light does not operate, fault not corrected. Perform Steps (4) and (5) below and notify DS Maintenance.
  (b) If LHS OVERLOAD light operates, fault has been corrected.
(4) Set hydraulic selector switch to OFF position.
(5) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

4. LHS OVERLOAD LIGHT DOES NOT GO OUT.

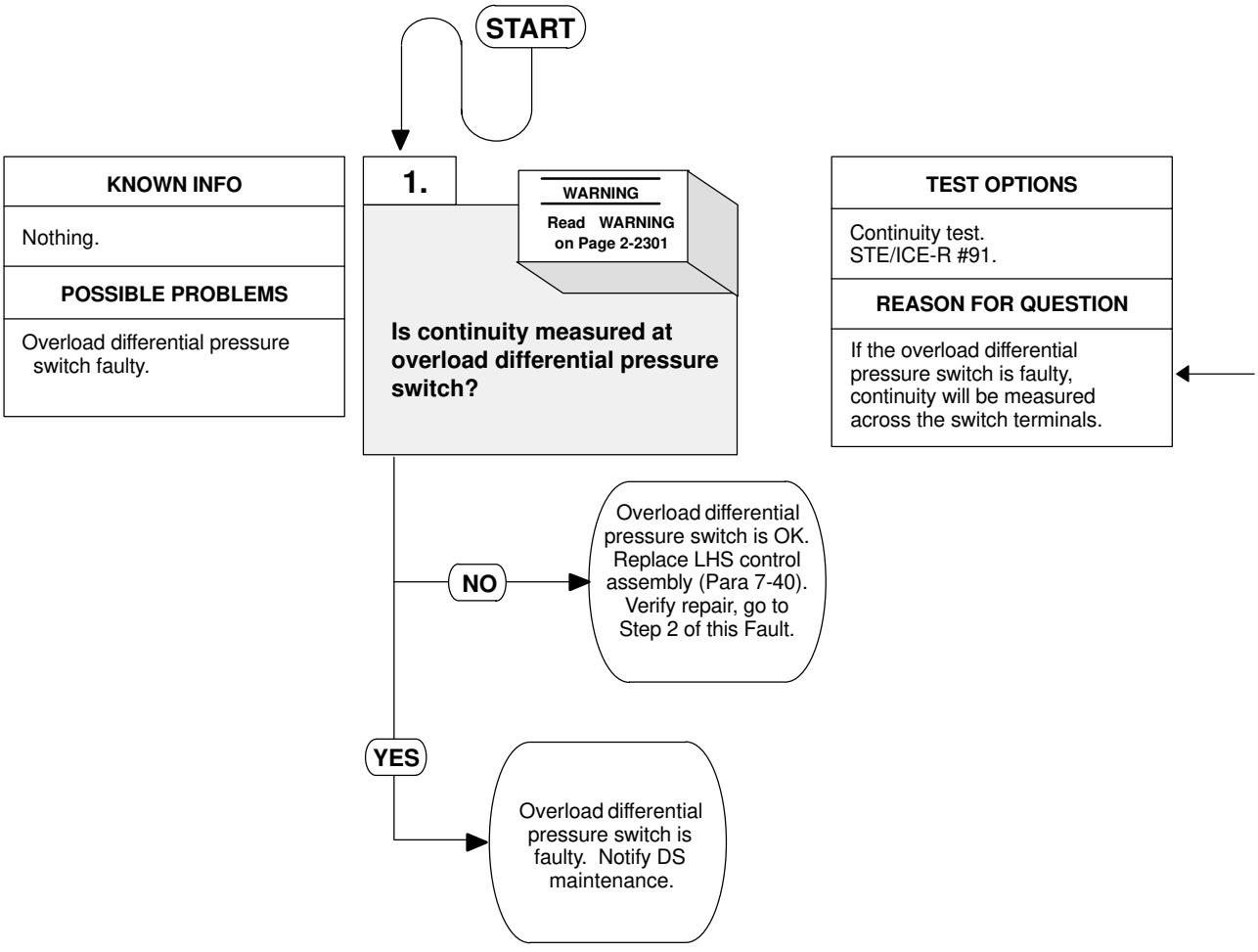
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
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)

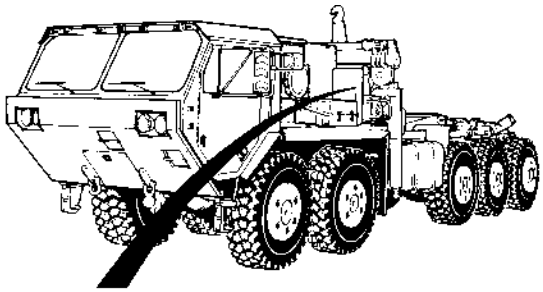


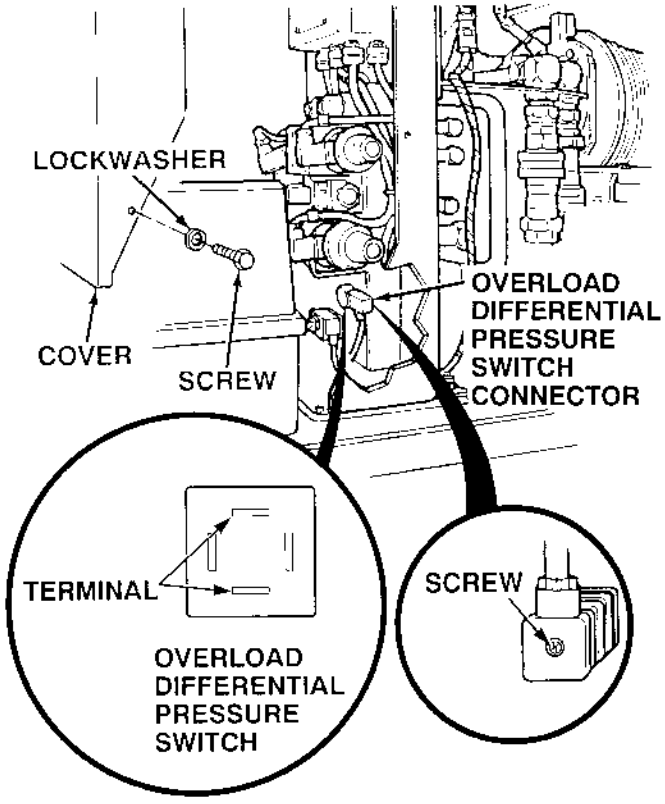
WARNING

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.

NOTE

Only remove center screw on engine side of LHS control box cover.

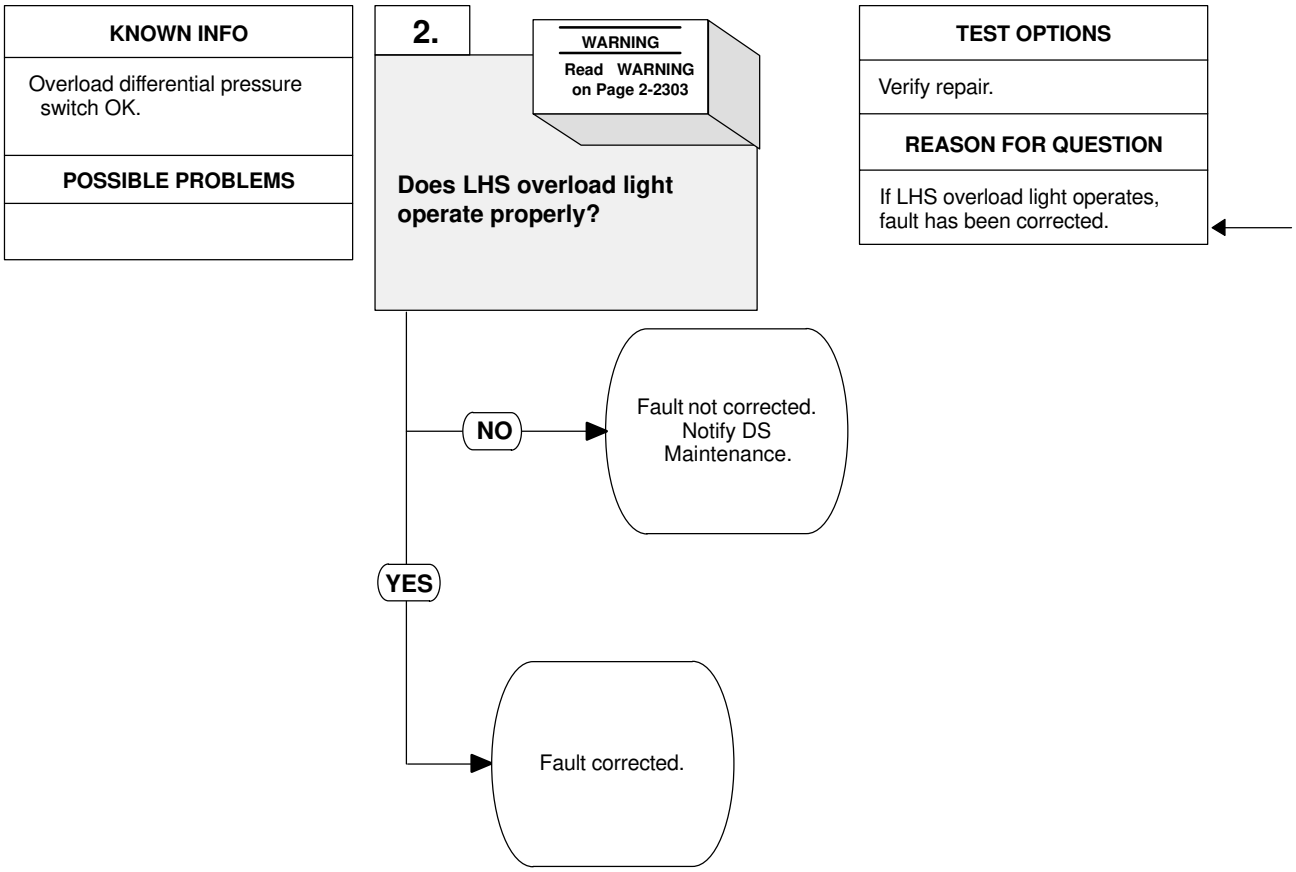




CONTINUITY TEST

(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen screw and disconnect harness connector from overload differential pressure switch.
(3) Set multimeter select switch to ohms.
(4) Is there continuity measured across overload differential pressure switch terminals?
    (a) If there is continuity, overload differential pressure switch is faulty. Notify DS maintenance.
    (b) If there is no continuity, switch is OK. Replace LHS control assembly (Para 7-40). Verify repair, go to Step 2 of this fault.
(5) Connect harness connector to overload differential pressure switch and tighten screw, coat head of screw with adhesive.
(6) Install LHS control box cover, four lockwashers and screws.

4. LHS OVERLOAD LIGHT DOES NOT GO OUT (CONT).

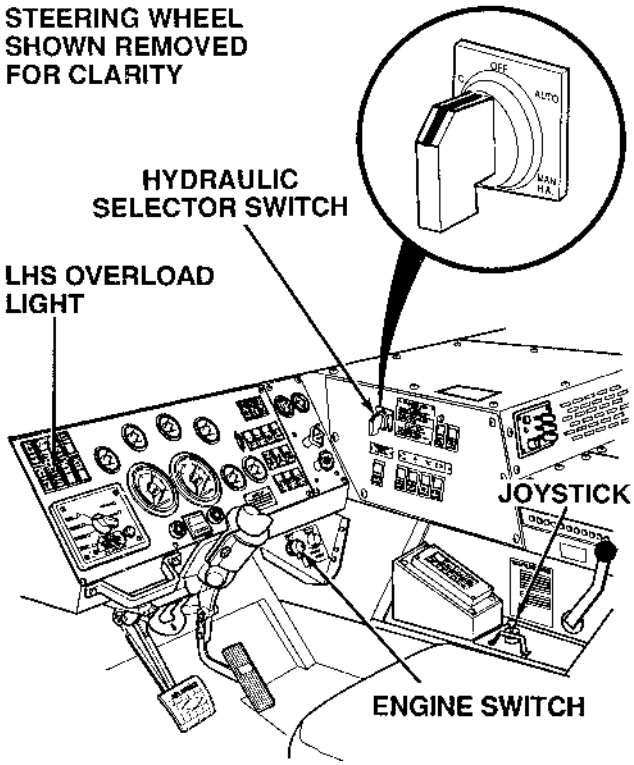


WARNING

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

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to MAN HA position.
(3) While observing LHS overload light, put joystick in LOAD position for five seconds and release.
   (a) If LHS overload light operates and fails to go out, fault is not corrected. Perform Step (4) below and notify DS Maintenance.
   (b) If LHS overload light operates and goes out, fault has been corrected.
(4) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

5. LOSS OF SUPPLY VOLTAGE TO MAIN JUNCTION BOX.

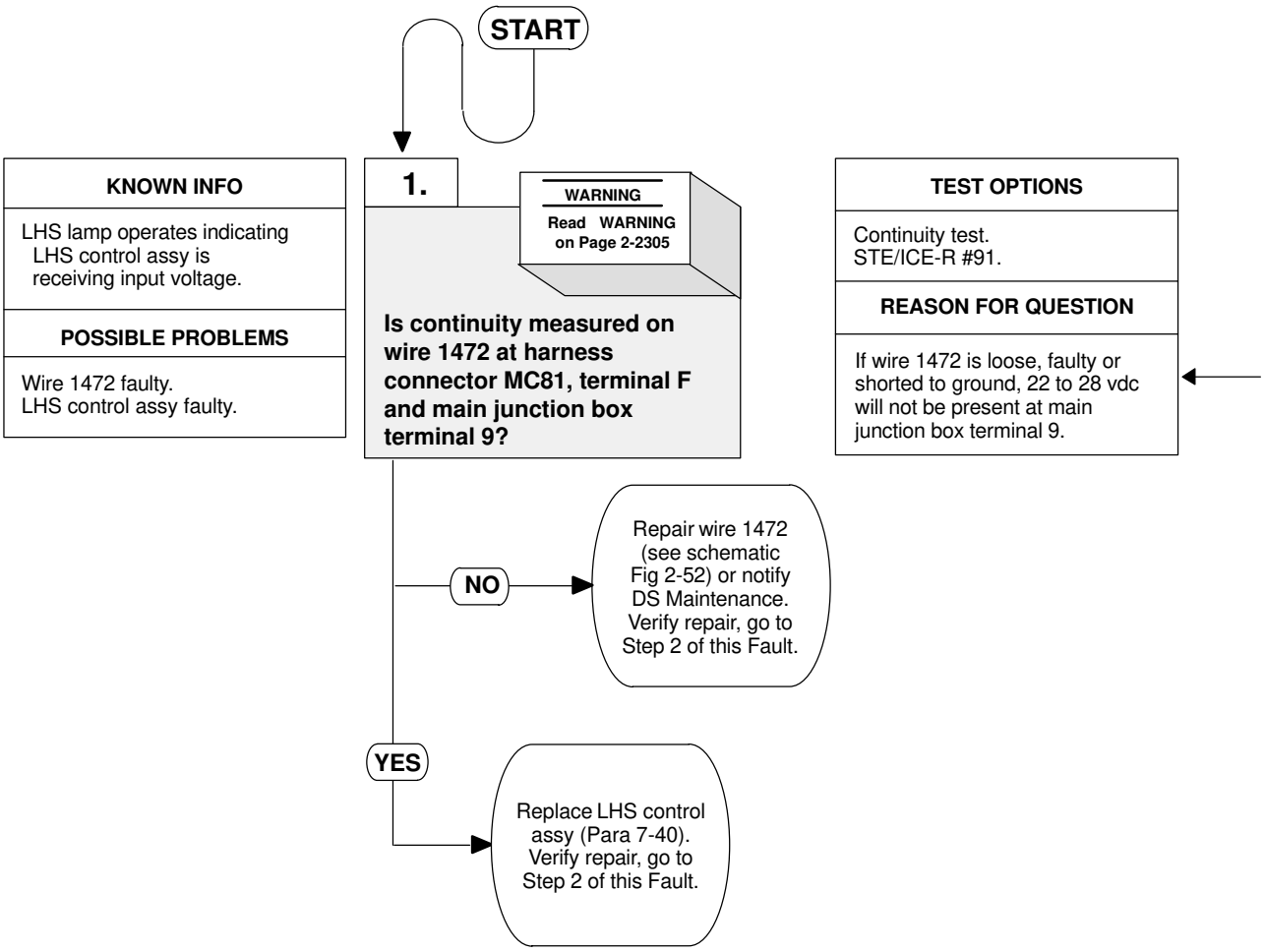
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)

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)



WARNING

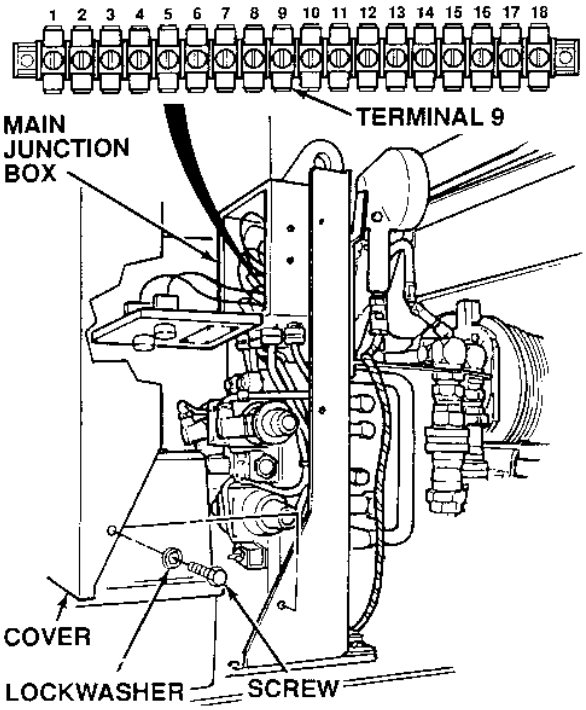
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

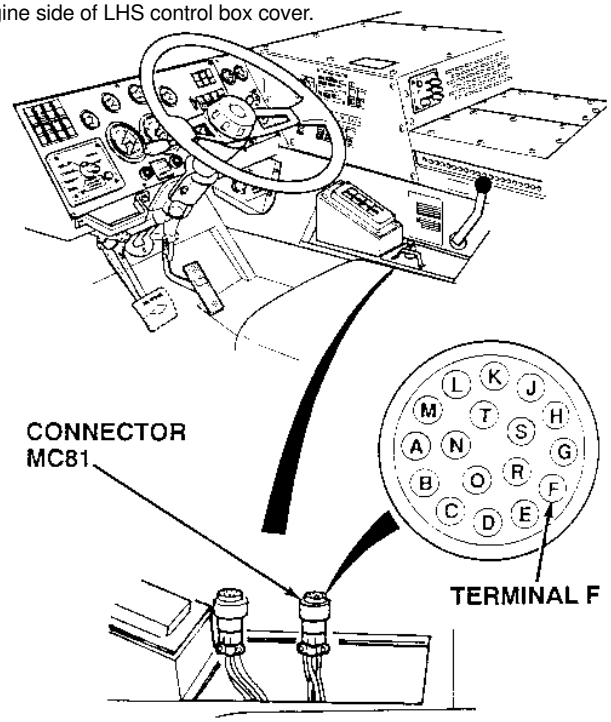
CAUTION

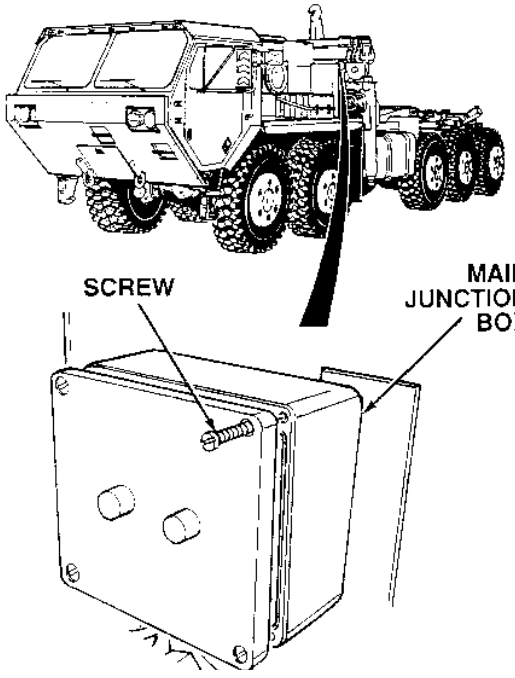
When opening the main junction box, do not pull or allow front of junction box to hang by the wire connections. Failure to comply will damage the wire connections.

NOTE

Only remove center screw on engine side of LHS control box cover.



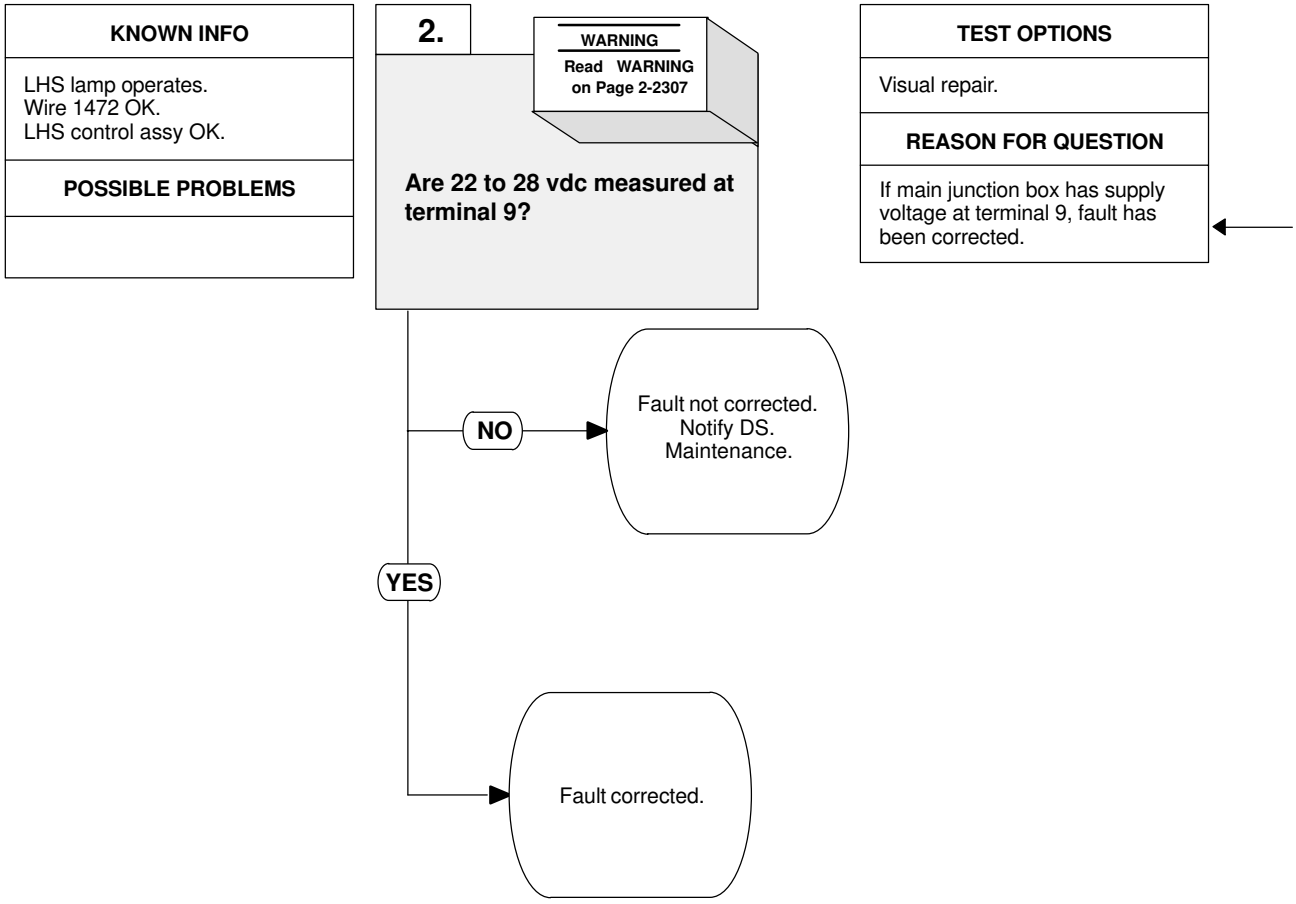




CONTINUITY TEST

(1) Remove LHS control assy (Para 7-40).
(2) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(3) Loosen four screws and open main junction box.
(4) Connect main junction box terminal 9 to a known good ground using jumperwire.
(5) Set multimeter select switch to ohms.
(6) Is there continuity between harness connector MC81, terminal F and a known good ground?
  (a) If there is no continuity, repair wire 1472 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, replace LHS control assy (Para 7-40) and perform Steps (7) and (8) below.
(7) Remove jumperwire from main junction box terminal F and ground.
(8) Install LHS control assy (Para 7-40).

5. LOSS OF SUPPLY VOLTAGE TO MAIN JUNCTION BOX (CONT).

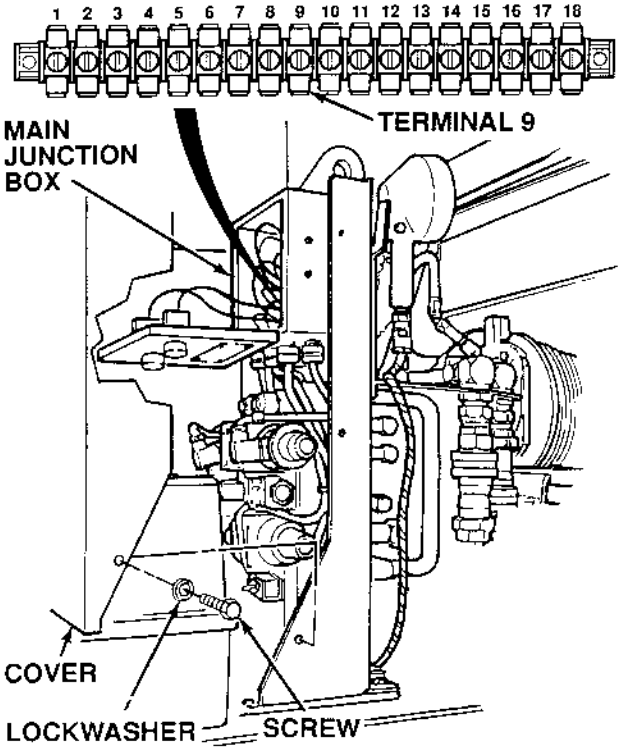


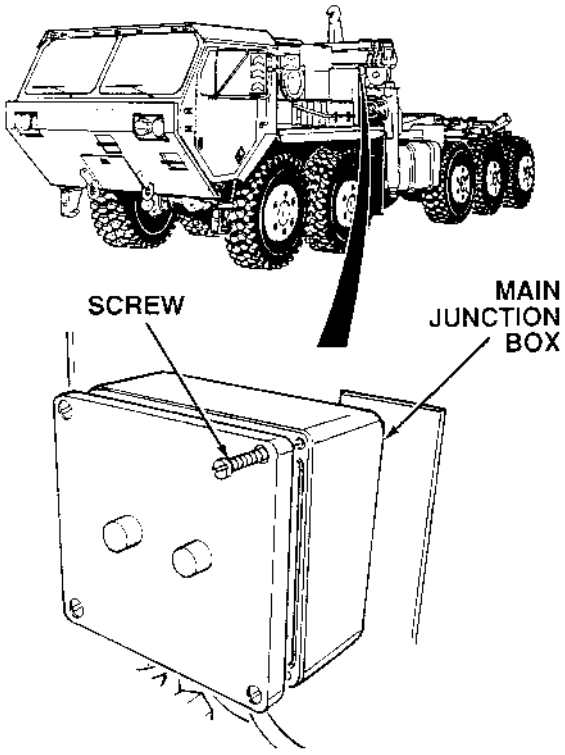
WARNING

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) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead at main junction box terminal 9.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If there are not 22 to 28 vdc present, Perform Steps (5) through (7) below and notify DS Maintenance.
  (b) If there are 22 to 28 vdc present, fault has been corrected.
(5) Turn OFF ENGINE switch.
(6) Close main junction box and tighten four screws.
(7) Install LHS control box cover, four lockwashers and screws.





2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION.

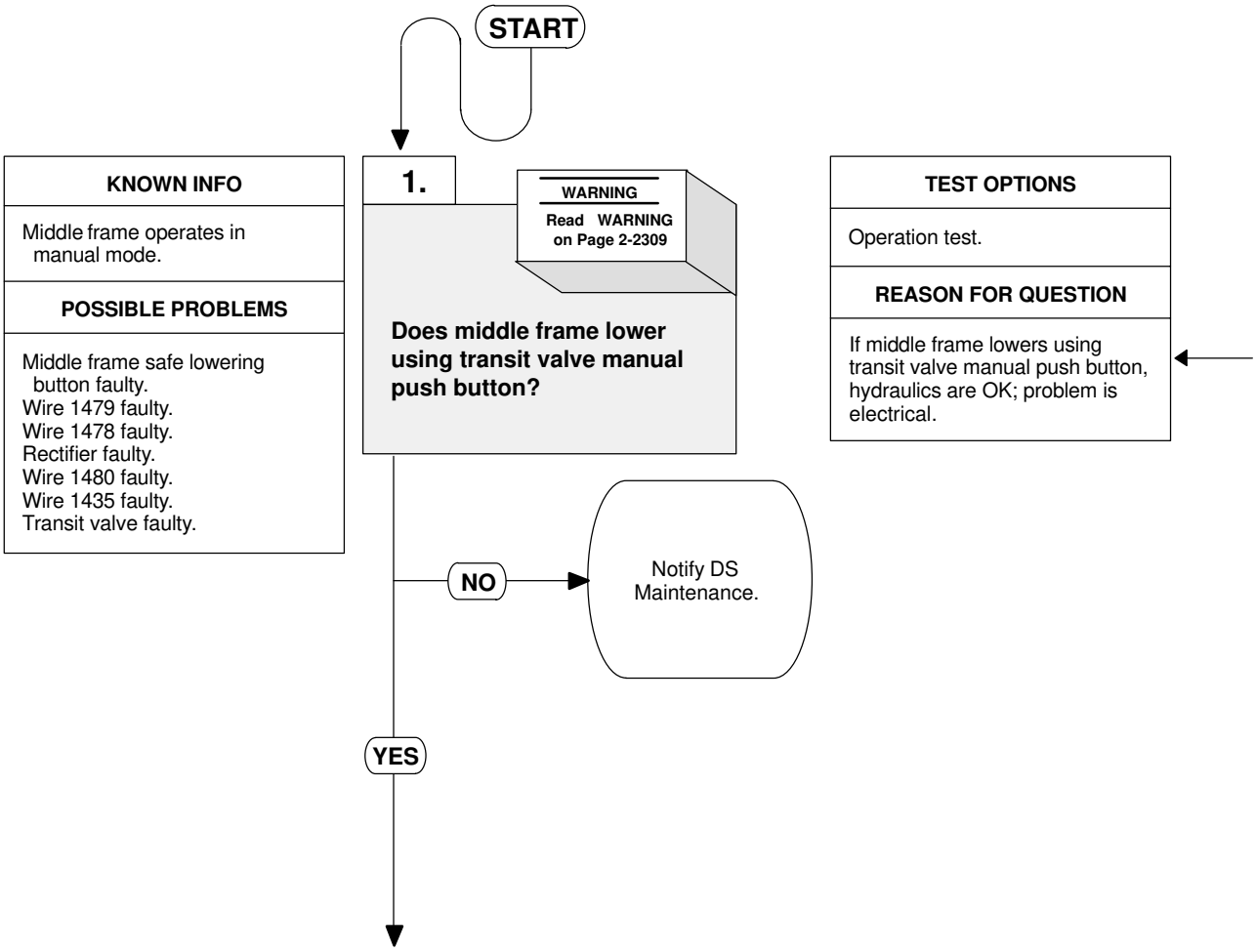
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
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)



WARNING

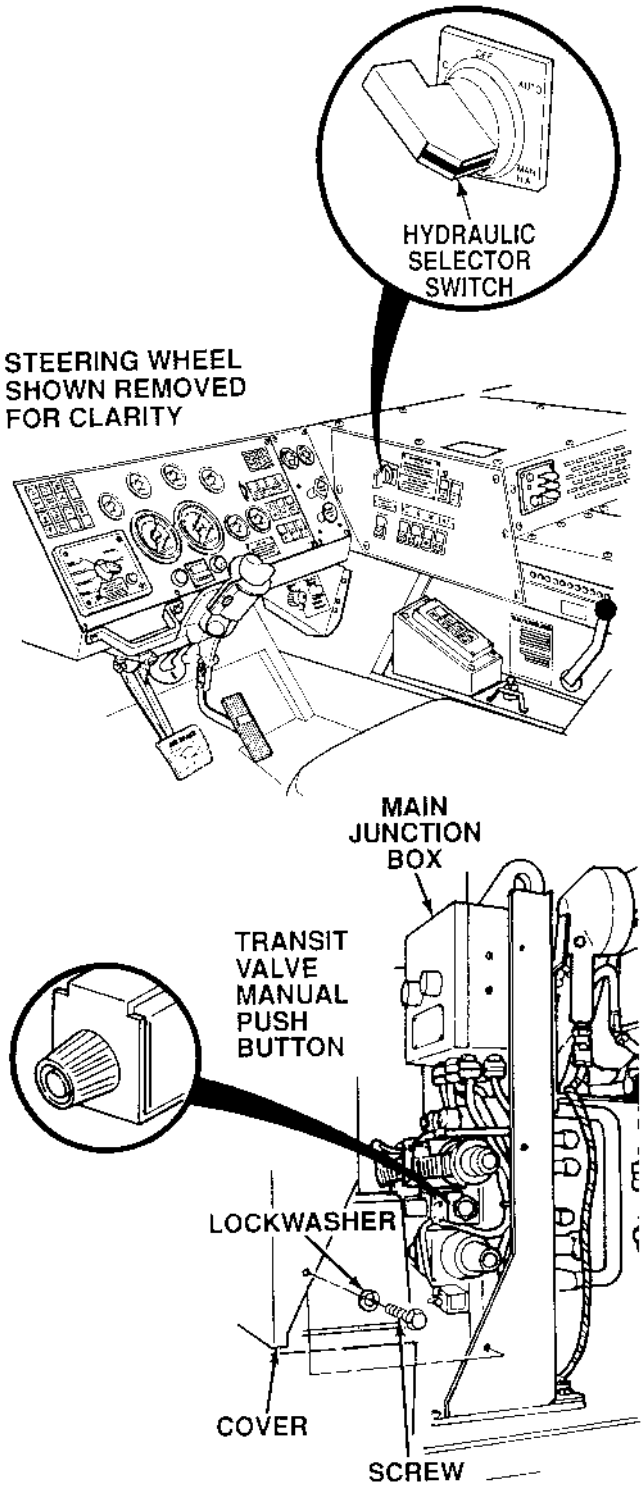
Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.

NOTE

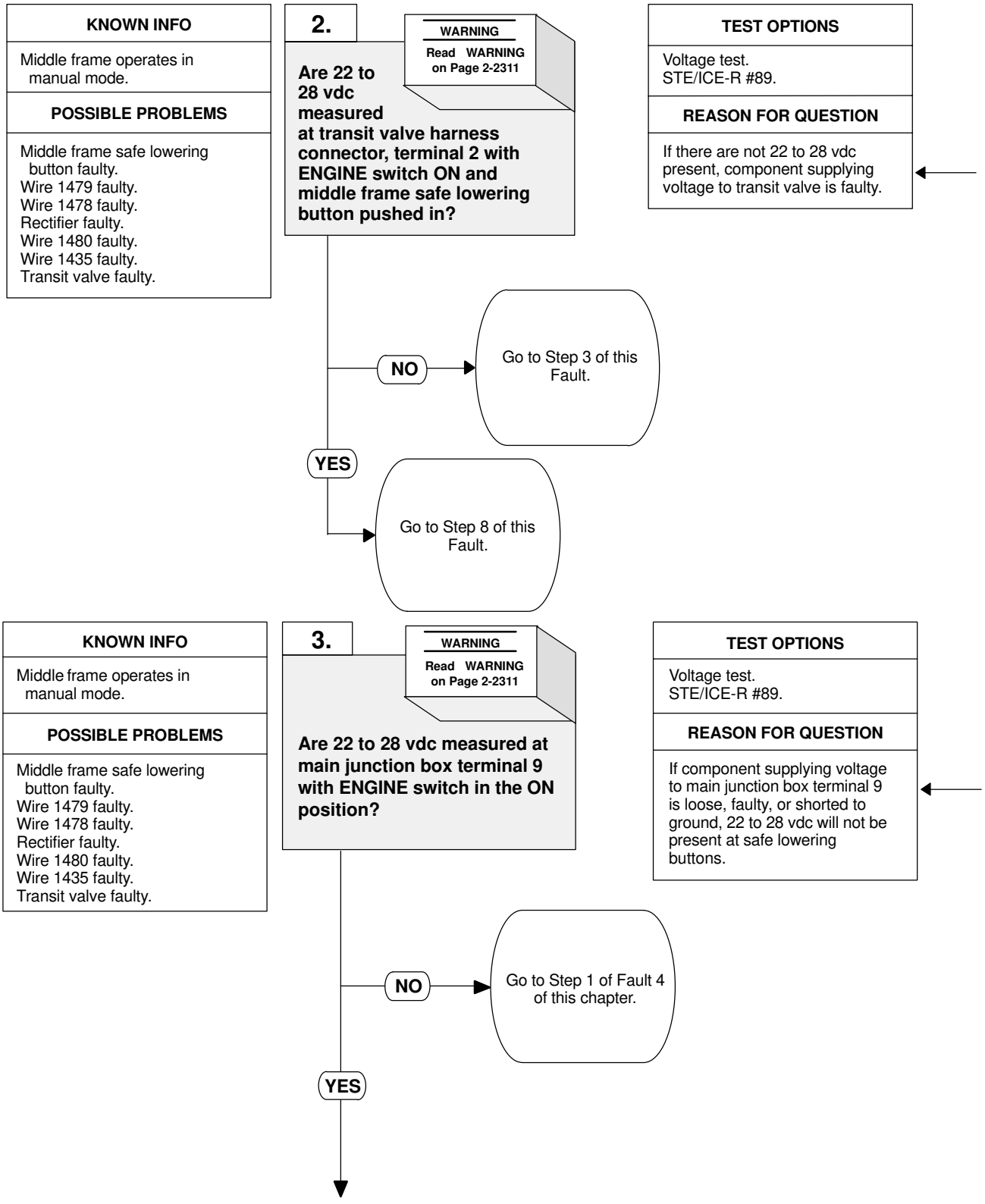
Only remove center screw on engine side of LHS control box cover.

OPERATION TEST

(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Start engine (TM 9-2320-364-10).
(3) Set hydraulic selector switch to MAN MF position.
(4) Raise LHS until middle frame is approximately 3 ft (91 cm) above transit position.
(5) Push in transit valve manual push button to lower middle frame.
    (a) If middle frame does not lower to transit position, lower middle frame using joystick. Perform Steps (6) and (7) below and notify DS Maintenance.
    (b) If middle frame lowers to transit position, perform Steps (6) and (7) below.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.



6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION (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 and injury or death to personnel may occur.
- Adhesive, solvents, and sealing compounds can burn easily, can 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

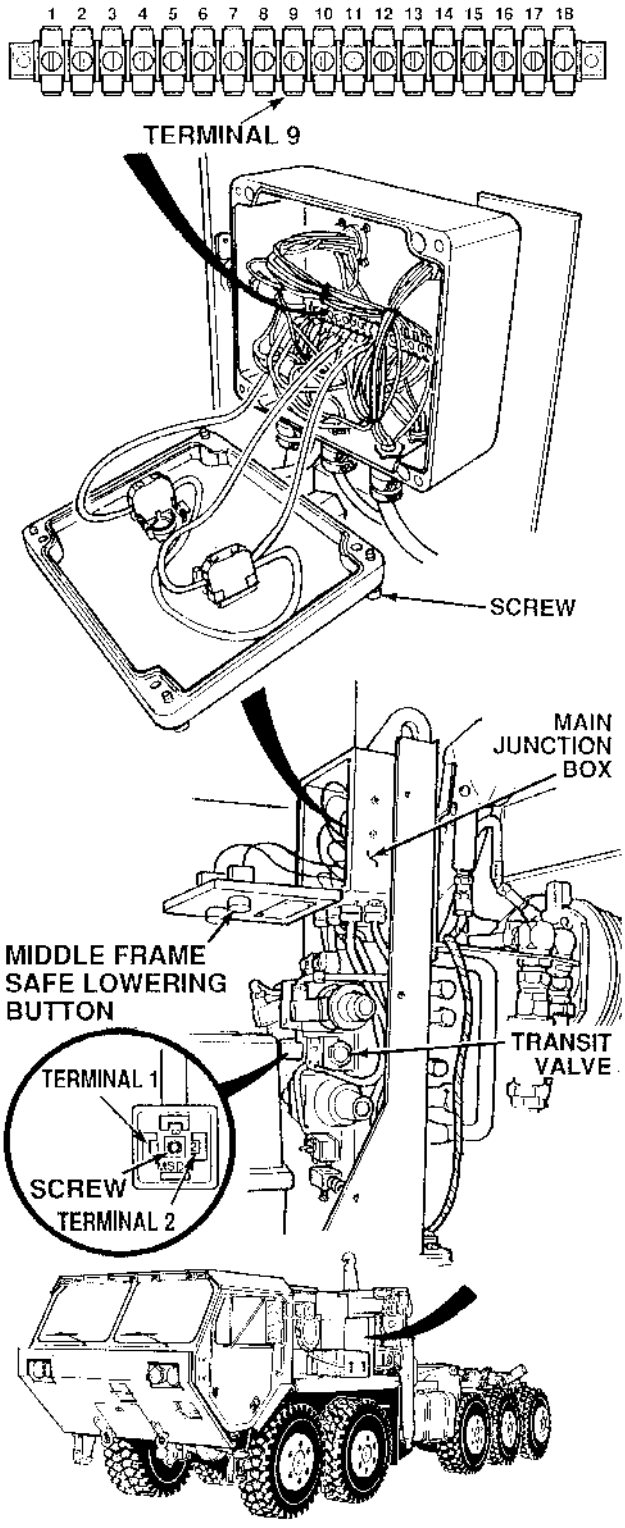
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

VOLTAGE TEST

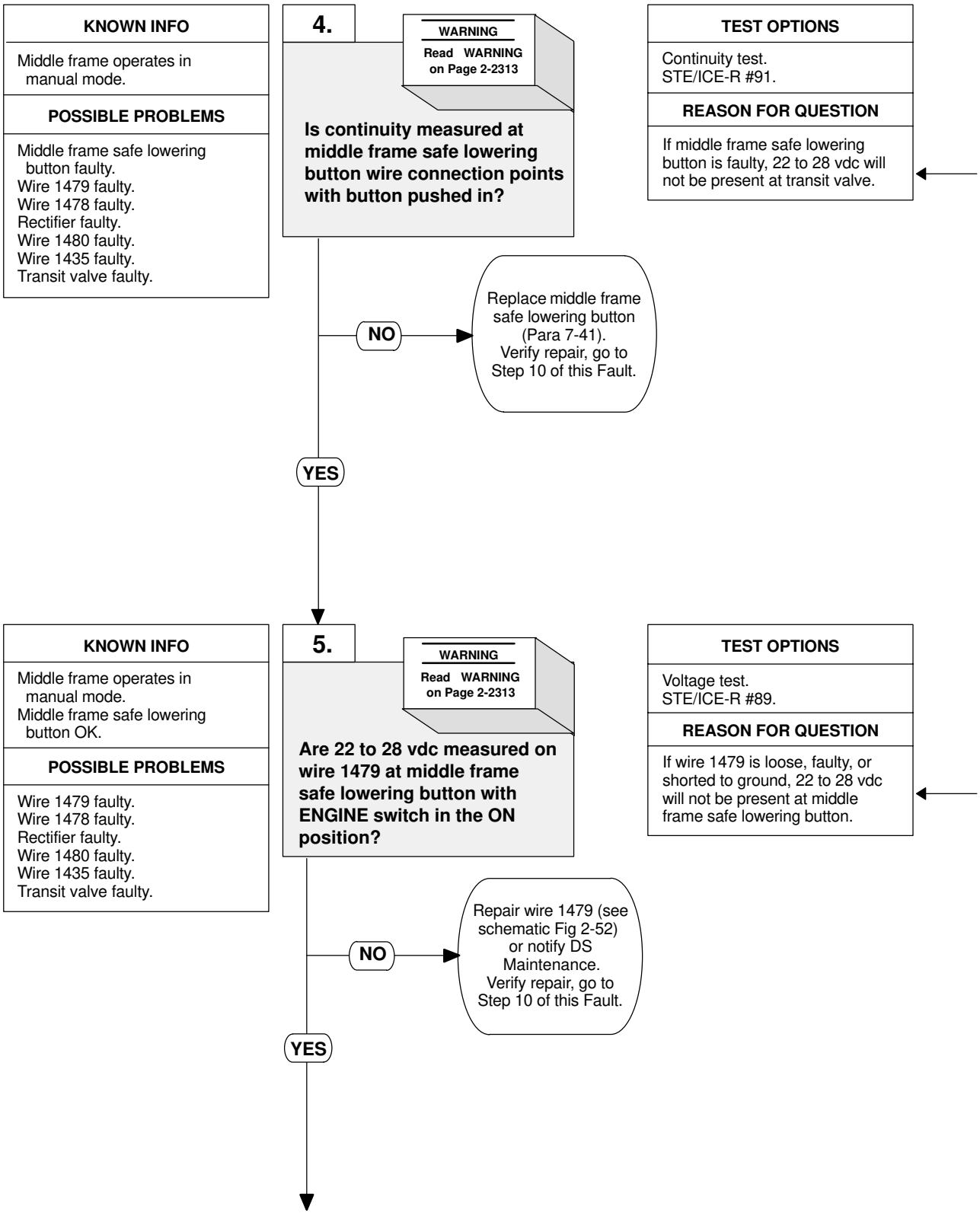
(1) Remove harness connector from transit valve.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead at connector, terminal 2.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Push in middle frame safe lowering button.
    (a) If there are not 22 to 28 vdc present, perform Steps (7) through (9) below and go to Step 3 of this Fault.
    (b) If there are 22 to 28 vdc present, perform Steps (7) through (9) below and go to Step 8 of this Fault.
(7) Turn OFF ENGINE switch.
(8) Install harness connector on transit valve.
(9) Tighten connector screw and coat head of screw with adhesive.

VOLTAGE TEST

(1) Loosen four screws and open main junction box.
(2) Connect positive (+) multimeter lead at main junction box terminal 9.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
    (a) If there are not 22 to 28 vdc present, perform Step (5) below and go to Step 1 of Fault 4 of this Chapter.
    (b) If there are 22 to 28 vdc present, perform Step (5) below.
(5) Turn OFF ENGINE switch.



6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION (CONT).



WARNING

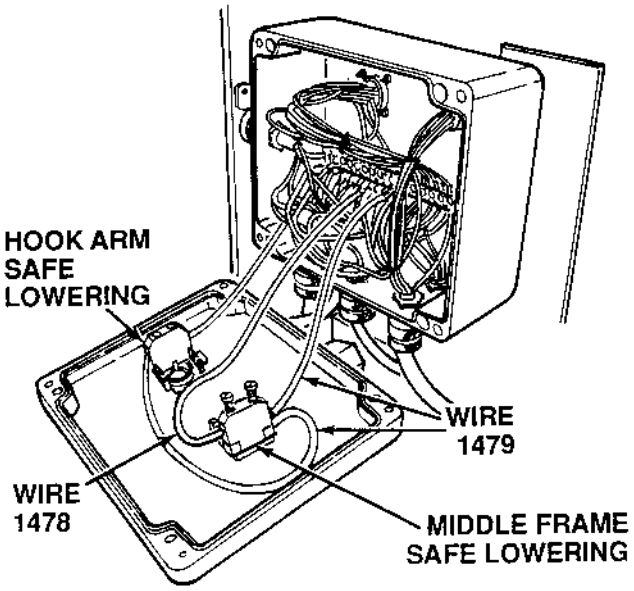
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

CONTINUITY TEST

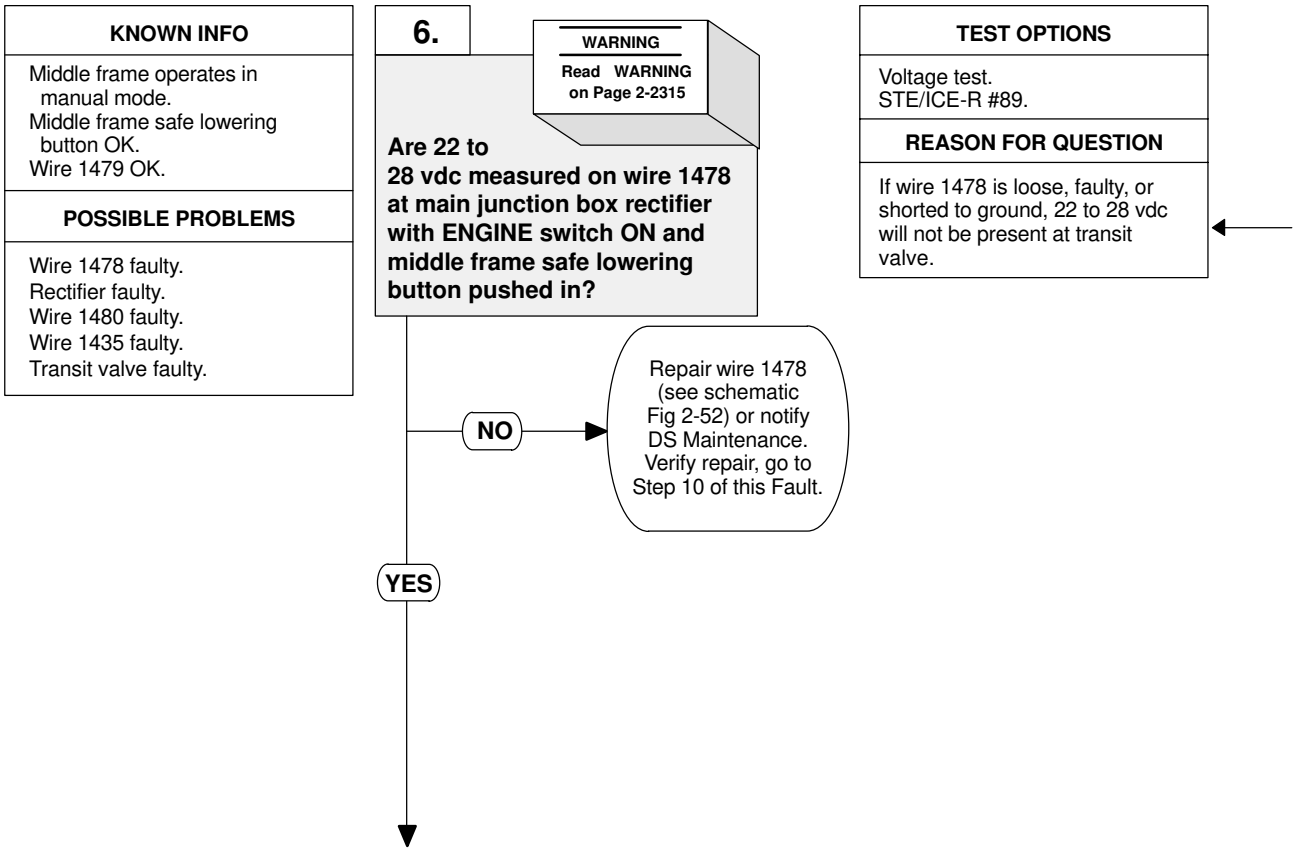
(1) Set multimeter select switch to ohms.
(2) Push in middle frame safe lowering button.
(3) Is there continuity between middle frame safe lowering button wire 1478 and wire 1479?
   (a) If there is no continuity, replace middle frame safe lowering button (Para 7-41).
   (b) If there is continuity, safe lowering button is OK.



VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead at middle frame safe lowering button wire 1479.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
   (a) If there are not 22 to 28 vdc present, turn OFF ENGINE switch and repair wire 1479 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there are 22 to 28 vdc present, wire 1479 is OK.
(5) Turn OFF ENGINE switch.

6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION (CONT).



WARNING

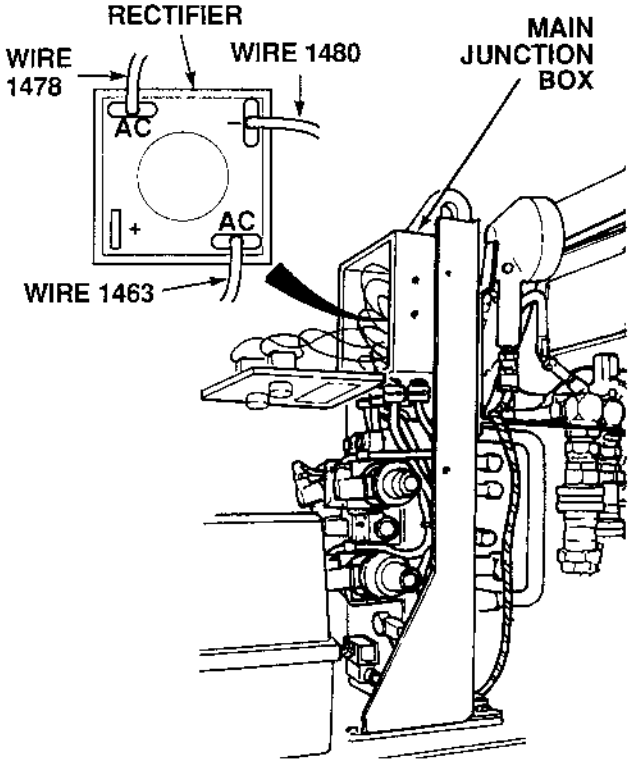
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

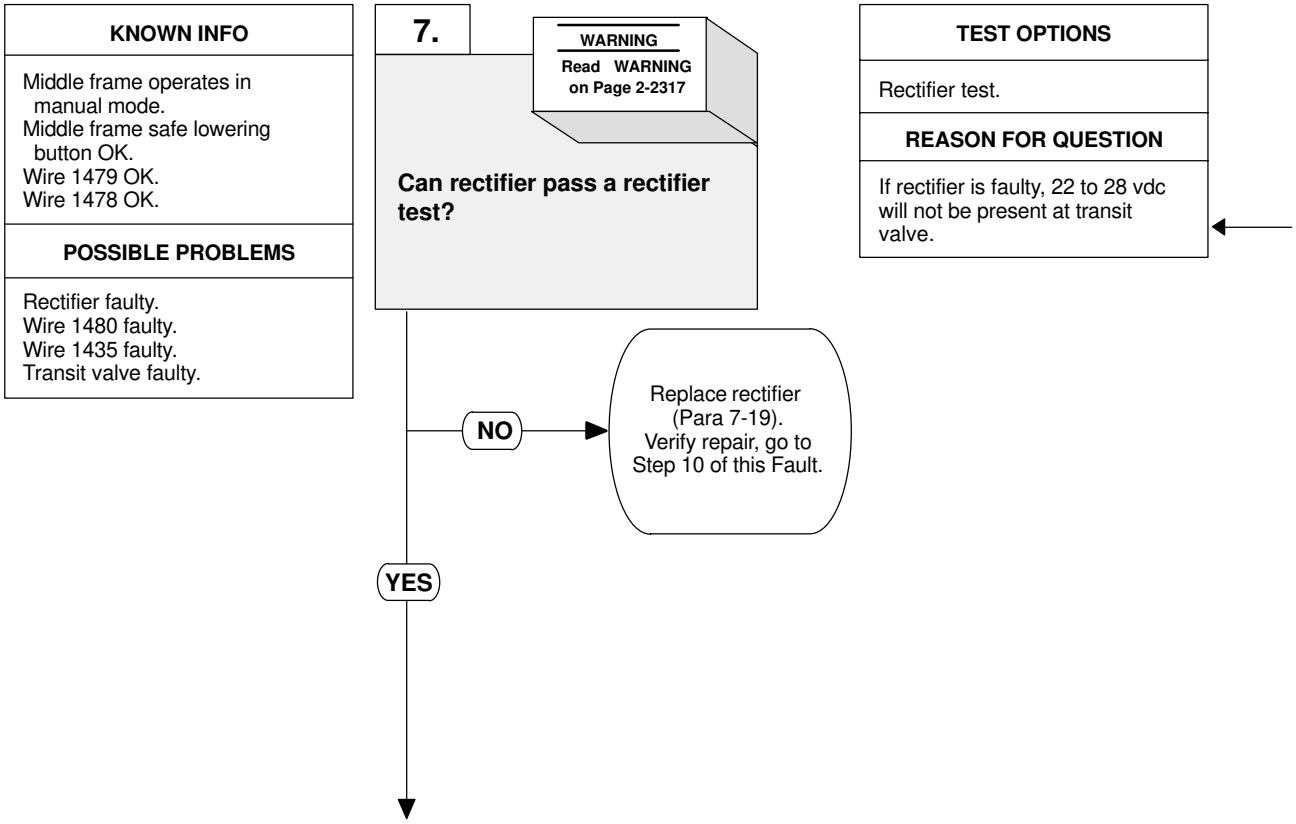
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead at rectifier wire 1478.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Push in middle frame safe lowering button.
  (a) If there are not 22 to 28 vdc present, turn OFF ENGINE switch and repair wire 1478 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there are 22 to 28 vdc present, wire 1478 is OK.
(6) Turn OFF ENGINE switch.



6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION (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

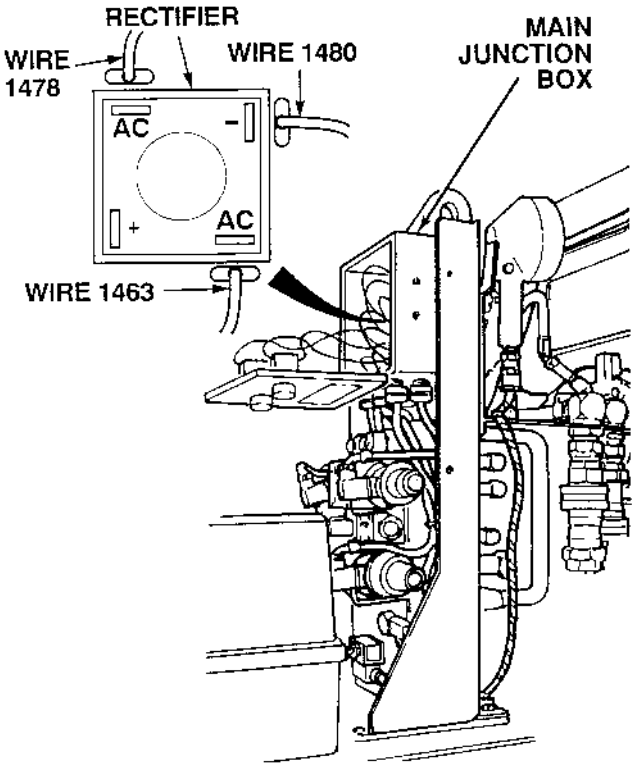
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

NOTE

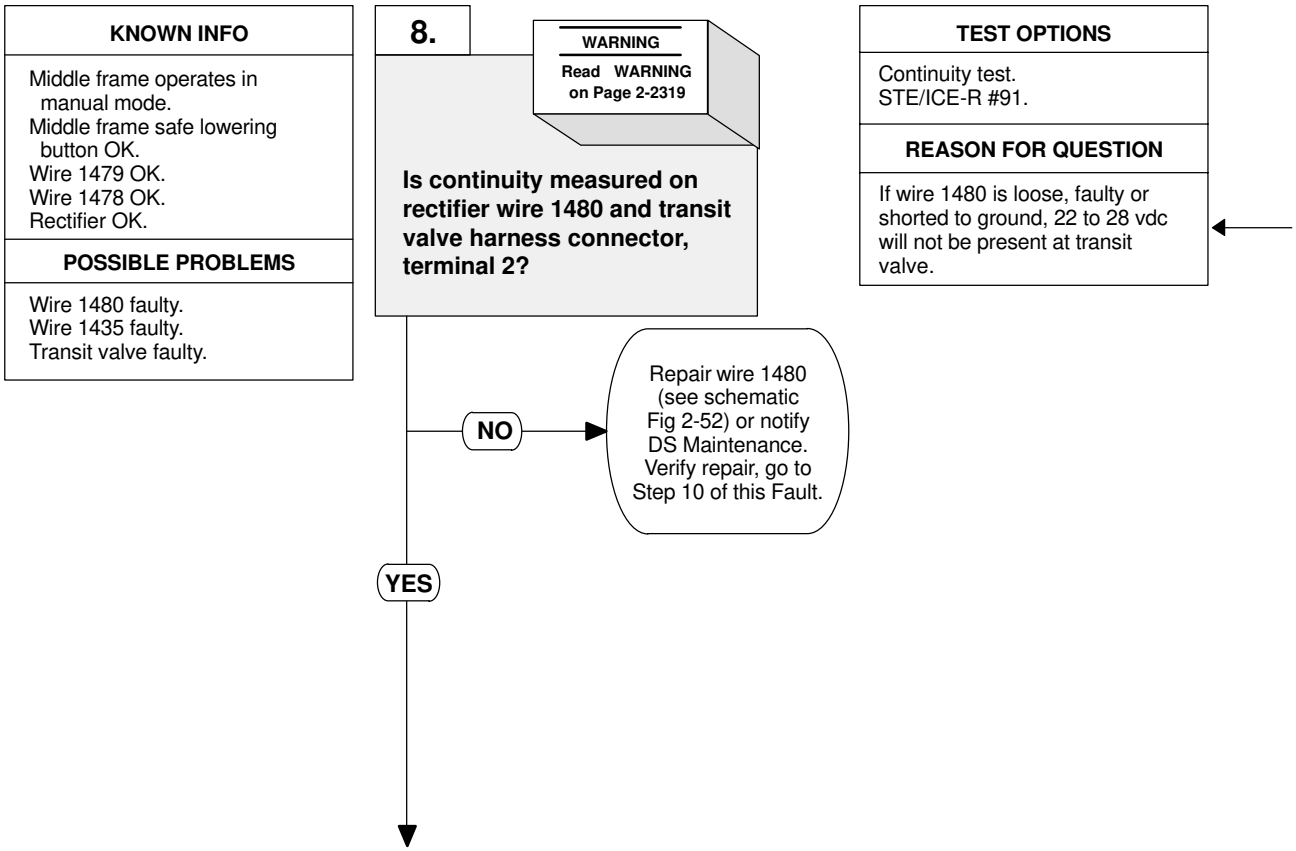
Tag and mark all wires prior to disconnecting.

RECTIFIER TEST

(1) Disconnect all wires from rectifier.
(2) Set multimeter select switch to diode position.
(3) Connect positive (+) multimeter lead at negative terminal.
(4) Connect negative (–) multimeter lead at each AC terminal.
  (a) If there are not any vdc present at both AC terminals, replace rectifier (Para 7-19).
  (b) If there is any vdc present at both AC terminals, perform Steps (5) and (6) below.
(5) Connect negative (–) multimeter lead at positive terminal on rectifier.
(6) Connect positive (+) multimeter lead at each AC terminal.
  (a) If there is not any vdc present at both AC terminals, replace rectifier (Para 7-19) and perform Step (7) below.
  (b) If there is any vdc present, rectifier is OK.
(7) Connect wires to rectifier.



6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION (CONT).

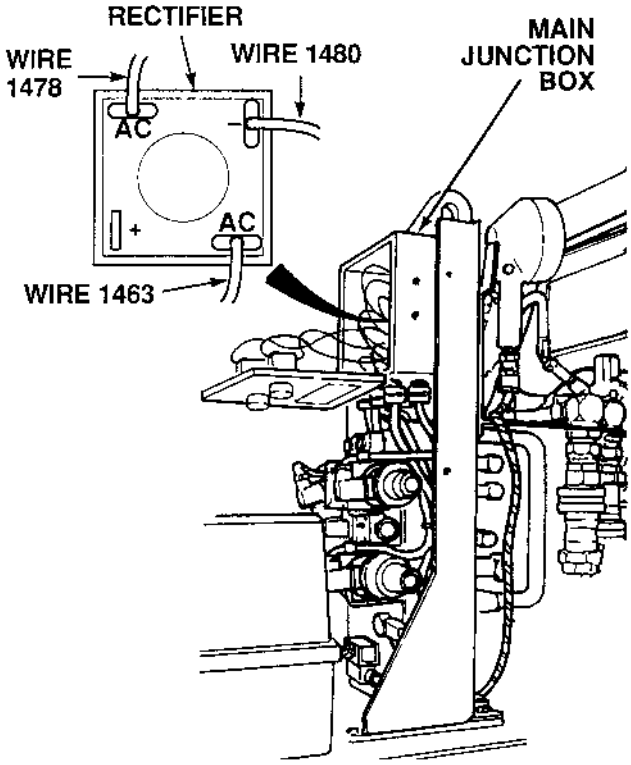


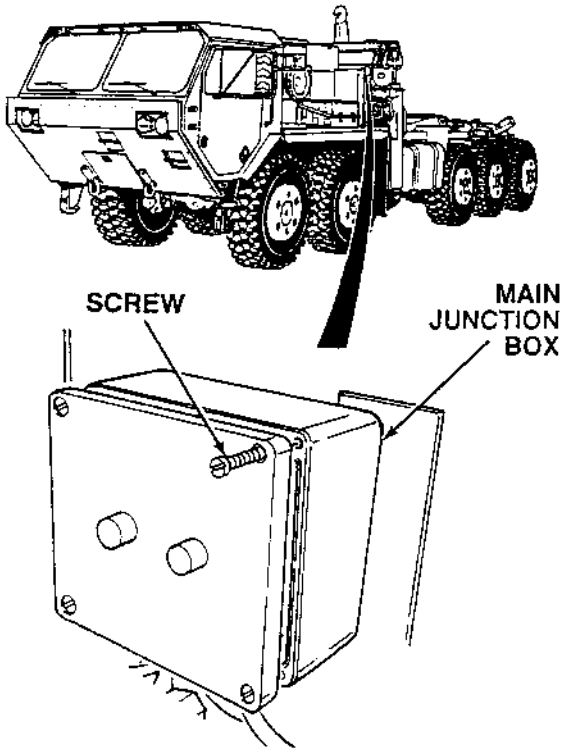
WARNING

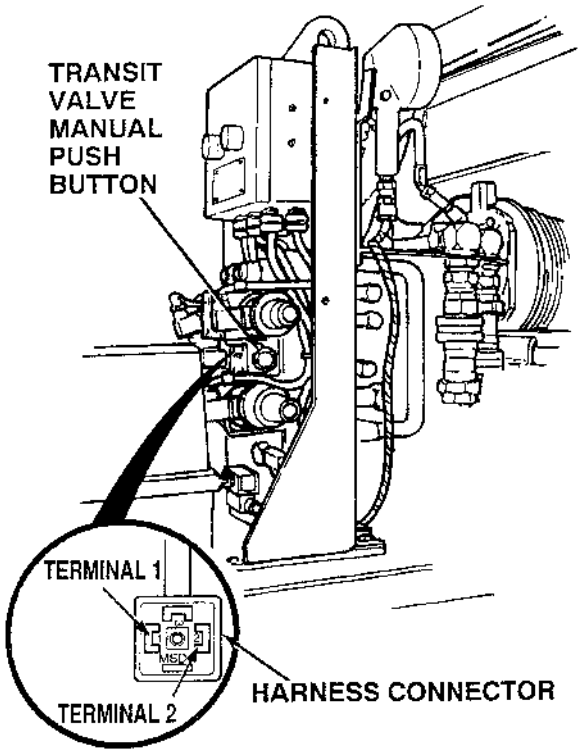
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

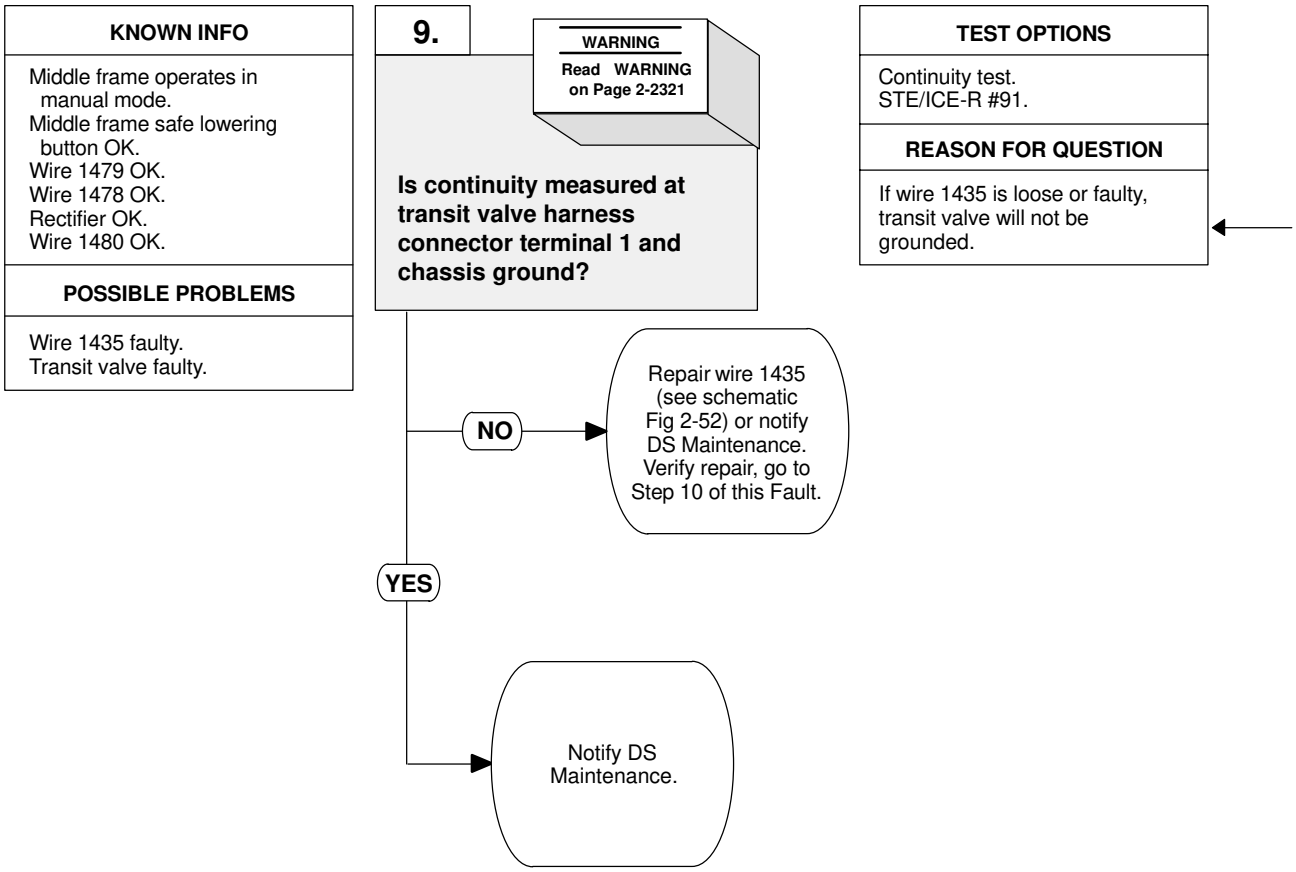
(1) Loosen screw and remove harness connector from transit valve.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between main junction box rectifier wire 1480 and transit valve harness connector terminal 2?
   (a) If there is no continuity, repair wire 1480 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1480 is OK.
(4) Close main junction box and tighten four screws.







6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION (CONT).

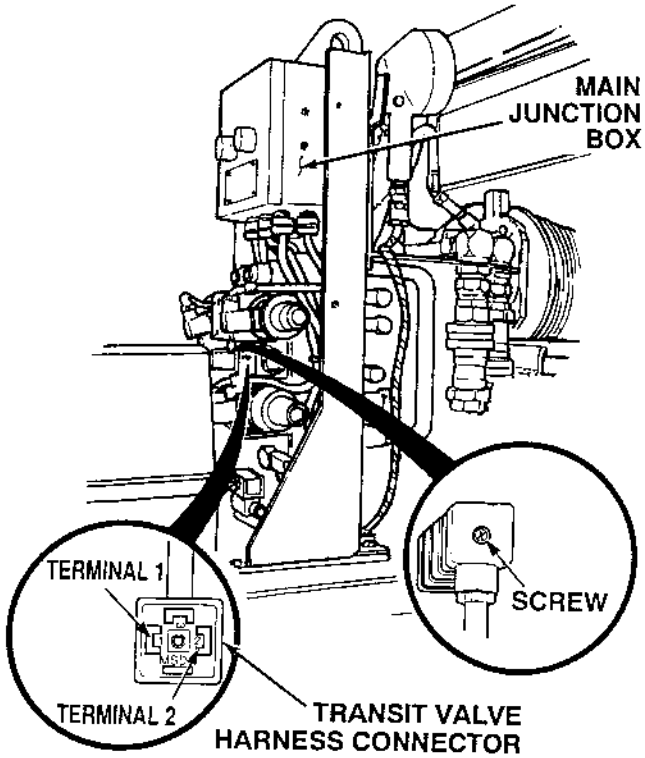


WARNING

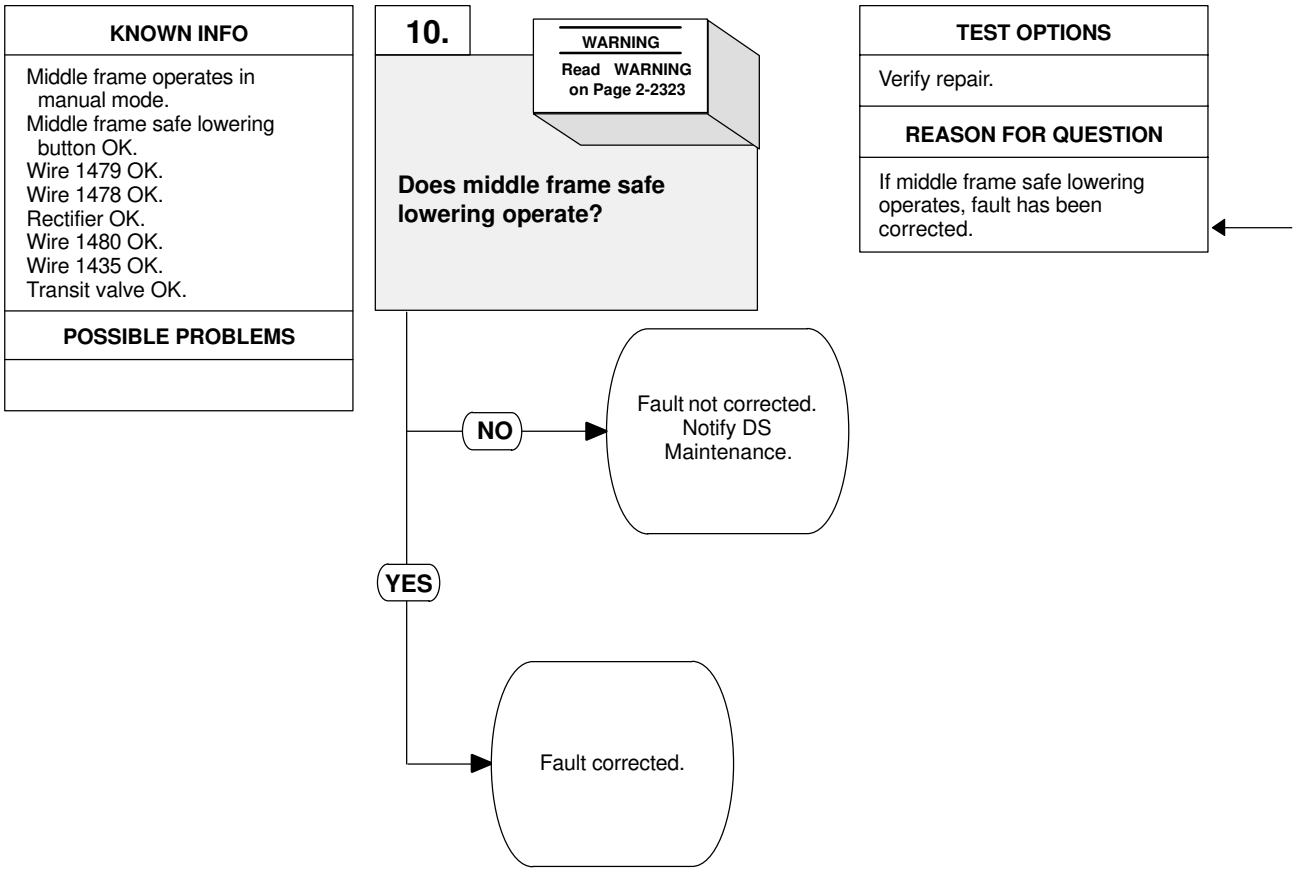
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Adhesive, solvents, and sealing compounds can burn easily, can give off harmful vapors, and 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 select switch to ohms.
(2) Is there continuity between transit valve harness connector terminal 1 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK. Notify DS Maintenance.
(3) Install connector on transit valve and tighten connector screw, coat head of connector screw with adhesive.



6. LOSS OF MIDDLE FRAME SAFE LOWERING FUNCTION (CONT).

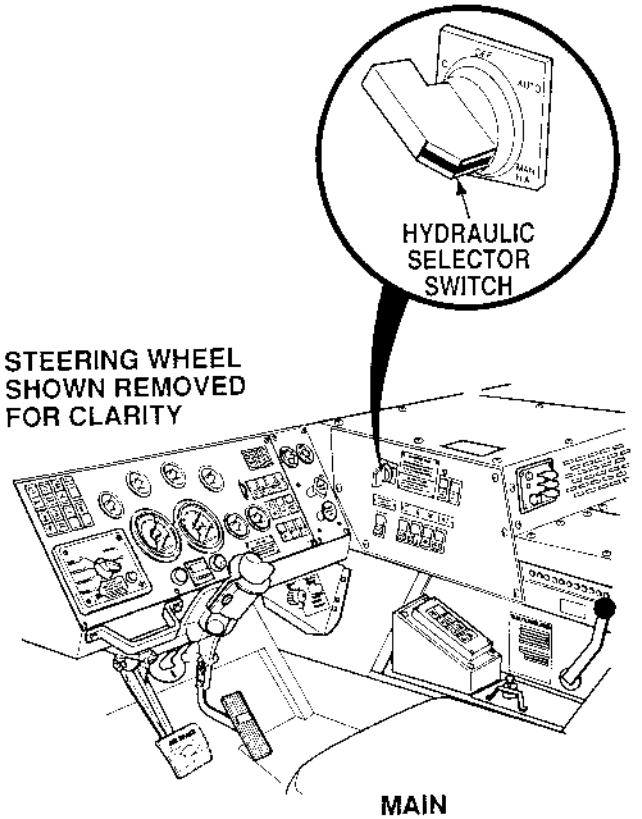


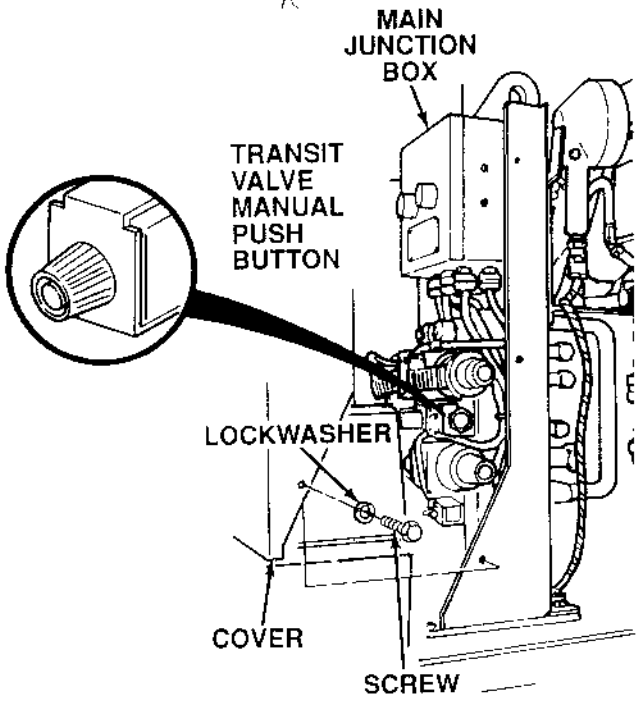
WARNING

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

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to OFF position.
(3) Raise LHS until middle frame is approximately 3 ft (91 cm) above the transit position.
(4) Push in transit valve manual push button to lower middle frame.
    (a) If middle frame does not lower, fault not corrected. Perform Steps (5) through (8) below and notify DS Maintenance.
    (b) If middle frame lowers, fault has been corrected.
(5) Put LHS in transit position.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.
(8) Install LHS control box cover, four lockwashers and screws.





2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

7. LOSS OF HOOK ARM SAFE LOWERING FUNCTION.

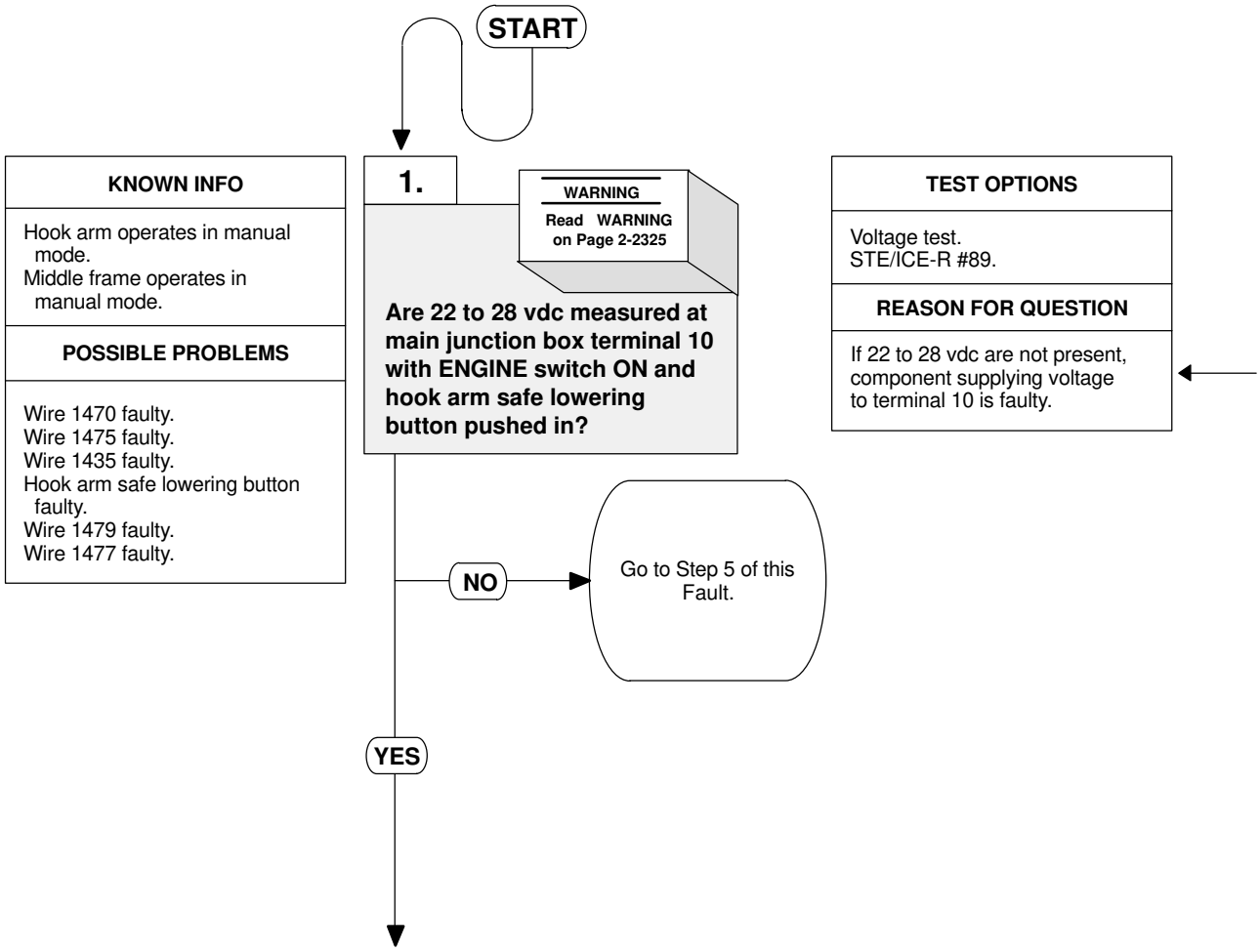
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Wooden blocks (2) (Appendix D)
Lockwasher (4) (Item 180, Appendix F)

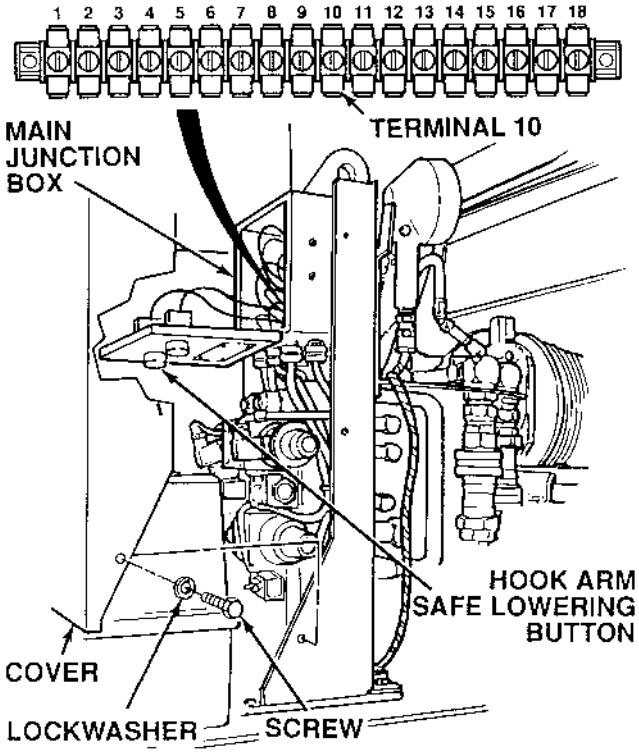
References
TM 9-2320-364-10
TM 9-4910-571-12&P

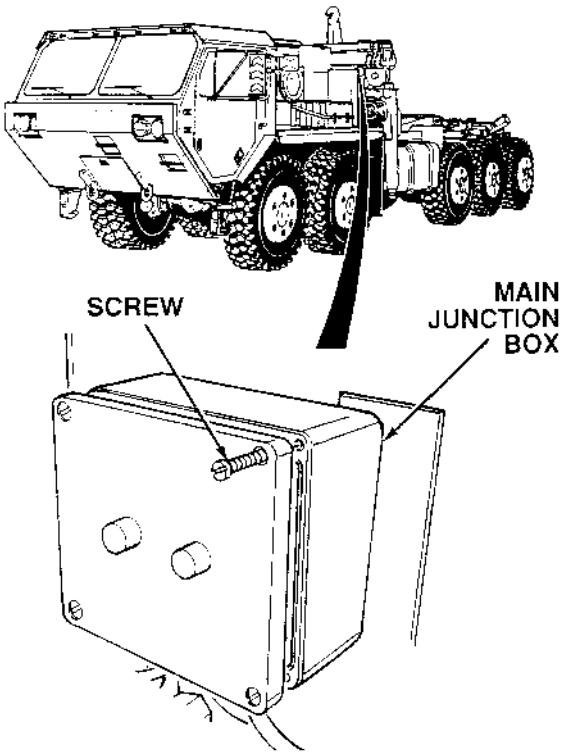
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)



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.



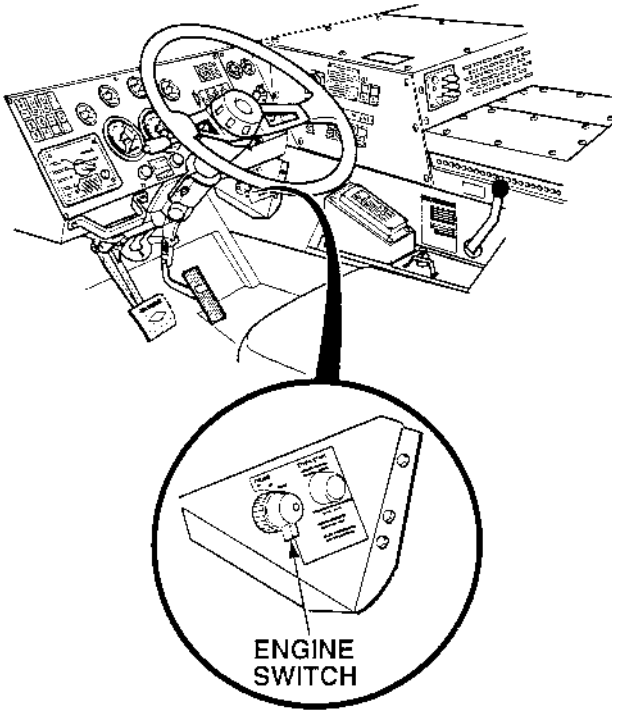


NOTE

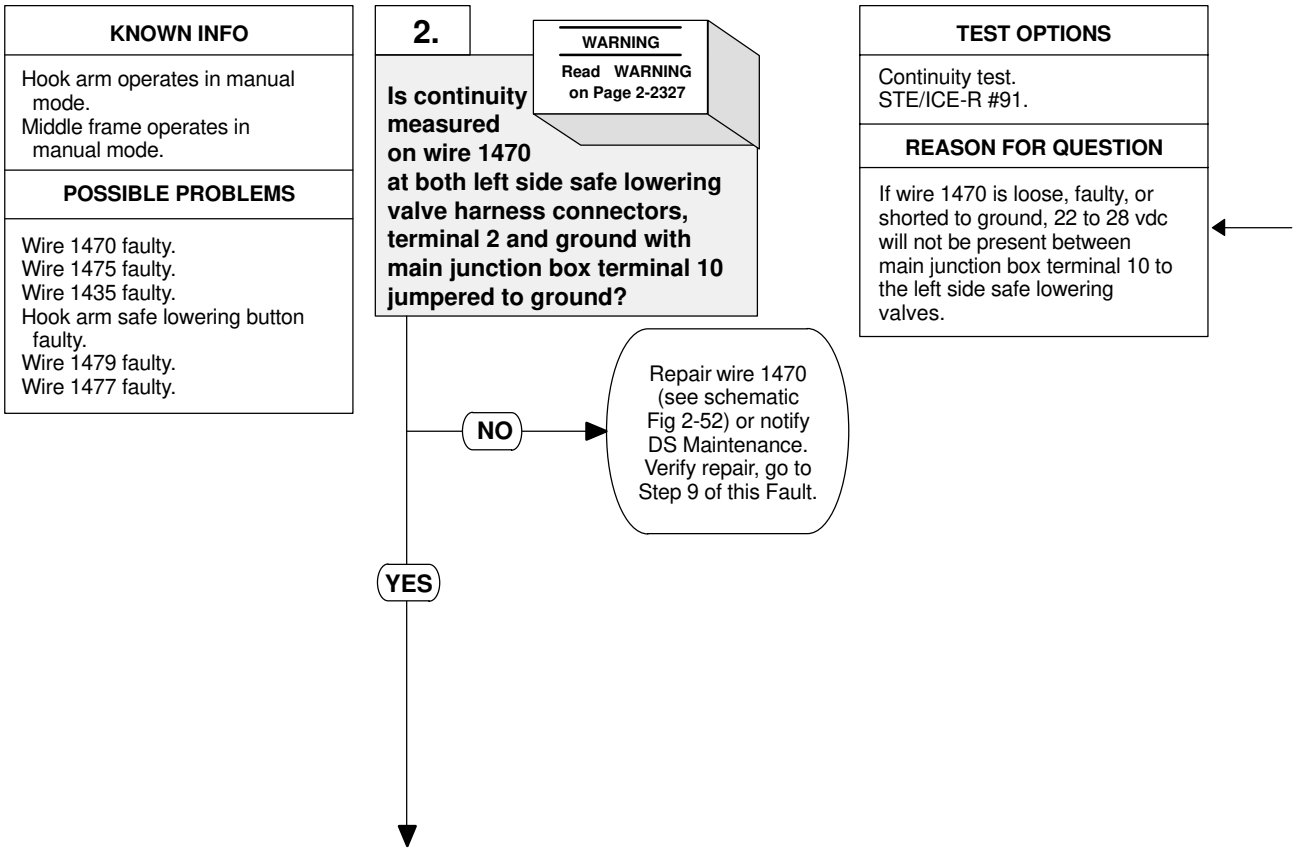
Only remove center screw on engine side of LHS control box cover.

VOLTAGE TEST

(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen four screws and open main junction box.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead at main junction box terminal 10.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Push in hook arm safe lowering button.
  (a) If there are not 22 to 28 vdc present, perform Step (8) below and go to Step 5 of this Fault.
  (b) If there are 22 to 28 vdc present, components supplying voltage to terminal 10 are OK. Perform Step (8) below.
(8) Turn OFF ENGINE switch.



7. LOSS OF HOOK ARM SAFE LOWERING FUNCTION (CONT).



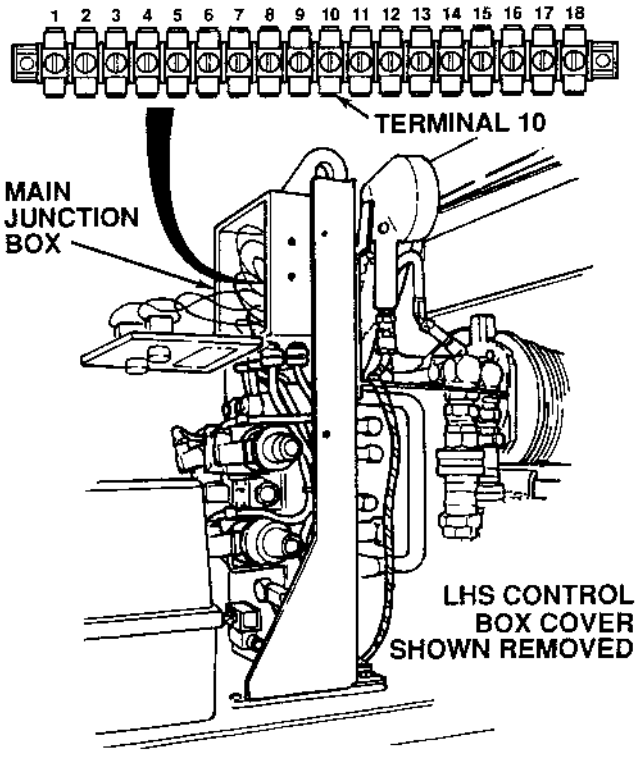
WARNING

- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- 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.
- Never crawl under equipment when performing maintenance unless equipment is securely blocked. Equipment may fall and cause serious injury or death to personnel.
- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to AUTO position.
(3) Raise LHS until middle frame is approximately 3 ft (91 cm) above transit position.
(4) Turn OFF ENGINE switch.
(5) Set hydraulic selector switch to OFF position.
(6) Block middle frame up in two places securely.
(7) Set multimeter select switch to ohms.
(8) Connect main junction box terminal 10 to a known good ground using jumperwire.

Continued next page.



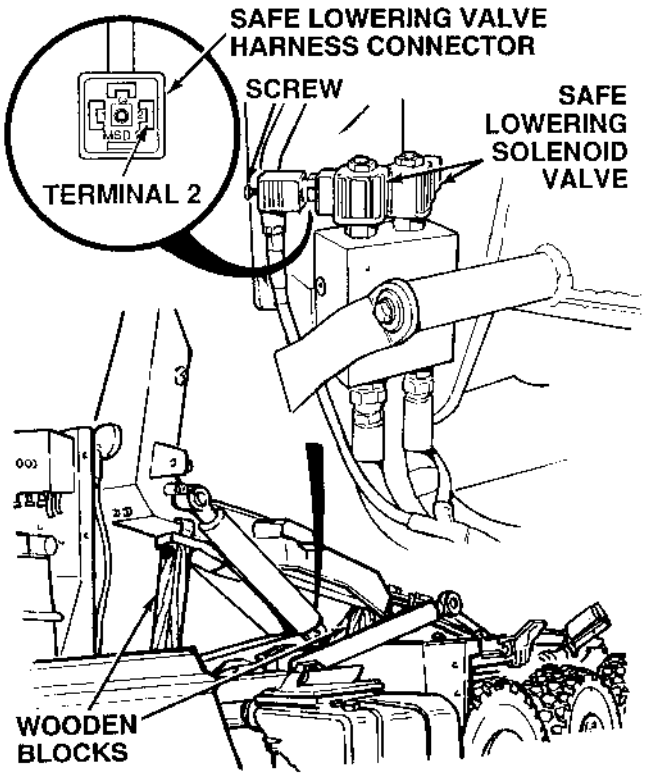
WARNING

- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- 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.
- Never crawl under equipment when performing maintenance unless equipment is securely blocked. Equipment may fall and cause serious injury or death to personnel.
- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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 (cont).

(9) Loosen screw and disconnect connector from one of the safe lowering valves on the LH side of the LHS.
(10) Is there continuity between either left side safe lowering valve harness connector terminal 2 and a known good ground.
  (a) If there is no continuity, repair wire 1470 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, perform Steps (11) through (14) below.
(11) Connect connector to safe lowering valve.

Continued next page.

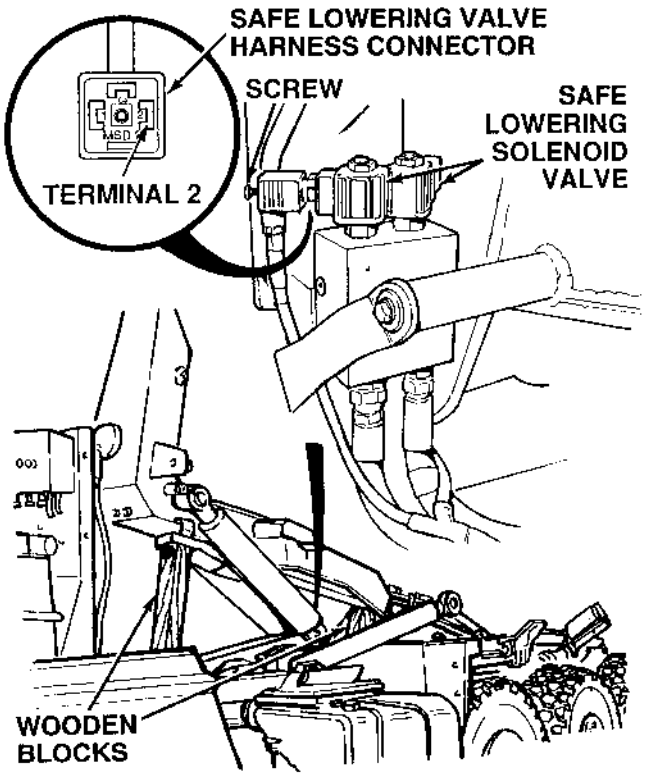


WARNING

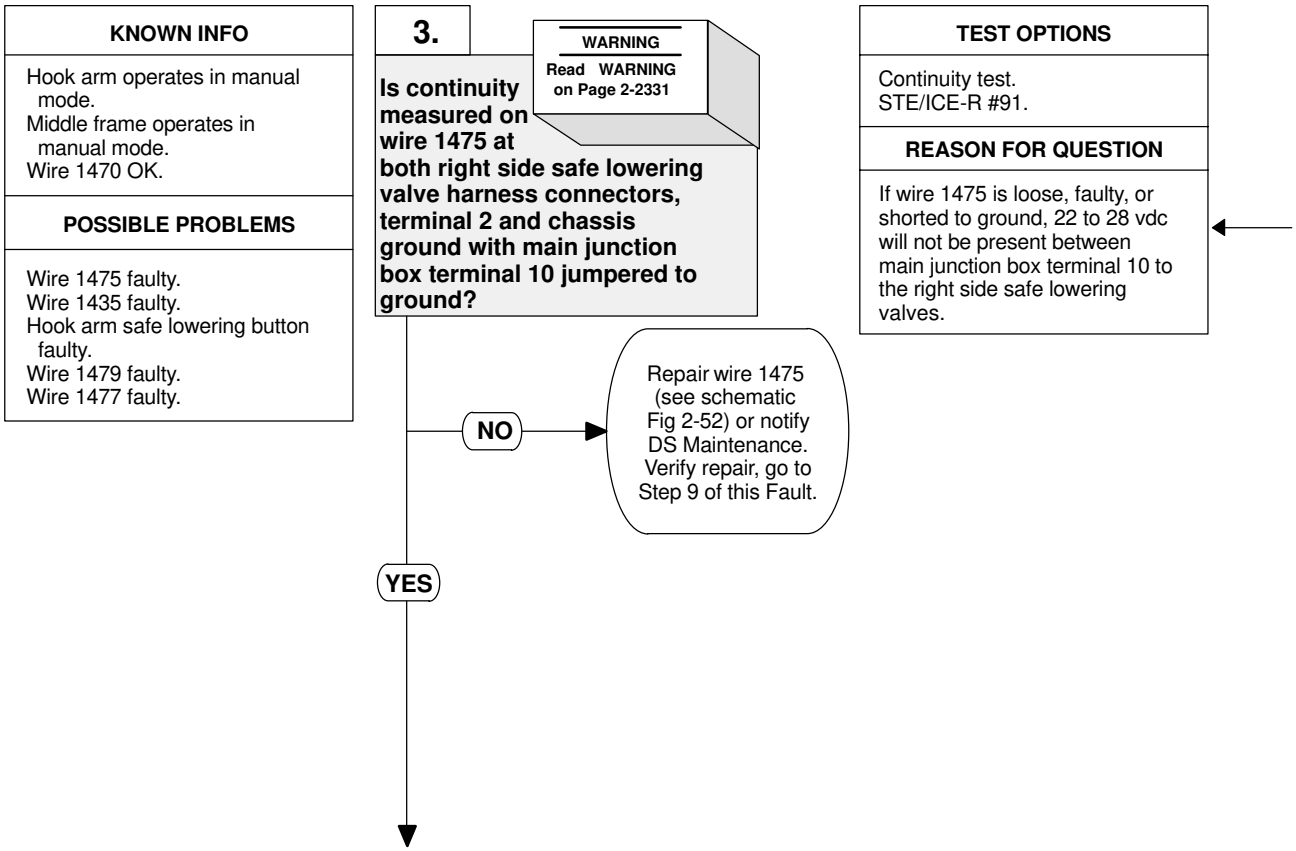
- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Never crawl under equipment when performing maintenance unless equipment is securely blocked. Equipment may fall and cause serious injury or death to personnel.
- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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 (cont).

(12) Tighten screw and coat head of connector screw with adhesive.
(13) Loosen screw and disconnect connector from the remaining safe lowering valve on the LH side of the LHS.
(14) Is there continuity between remaining left side lowering valve harness connector terminal 2 and a known good ground?
  (a) If there is no continuity, repair wire 1470 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, perform Steps (15) and (16) below.
(15) Connect connector to safe lowering valve.
(16) Tighten connector screw and coat head of connector screw with adhesive.



7. LOSS OF HOOK ARM SAFE LOWERING FUNCTION (CONT).

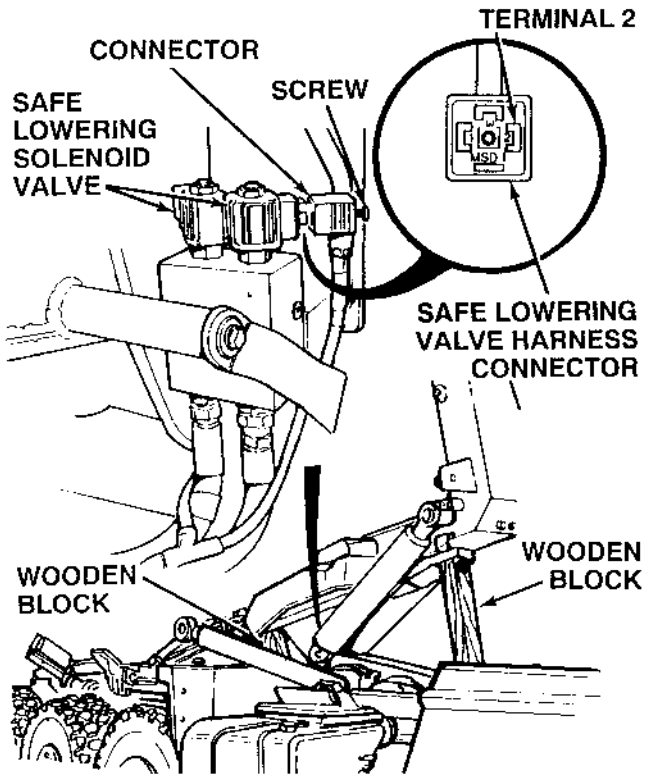


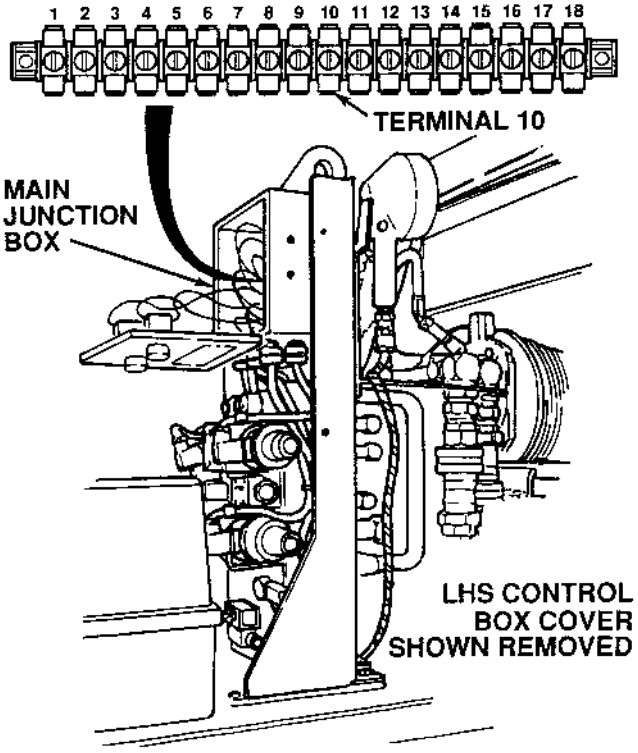
WARNING

- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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.

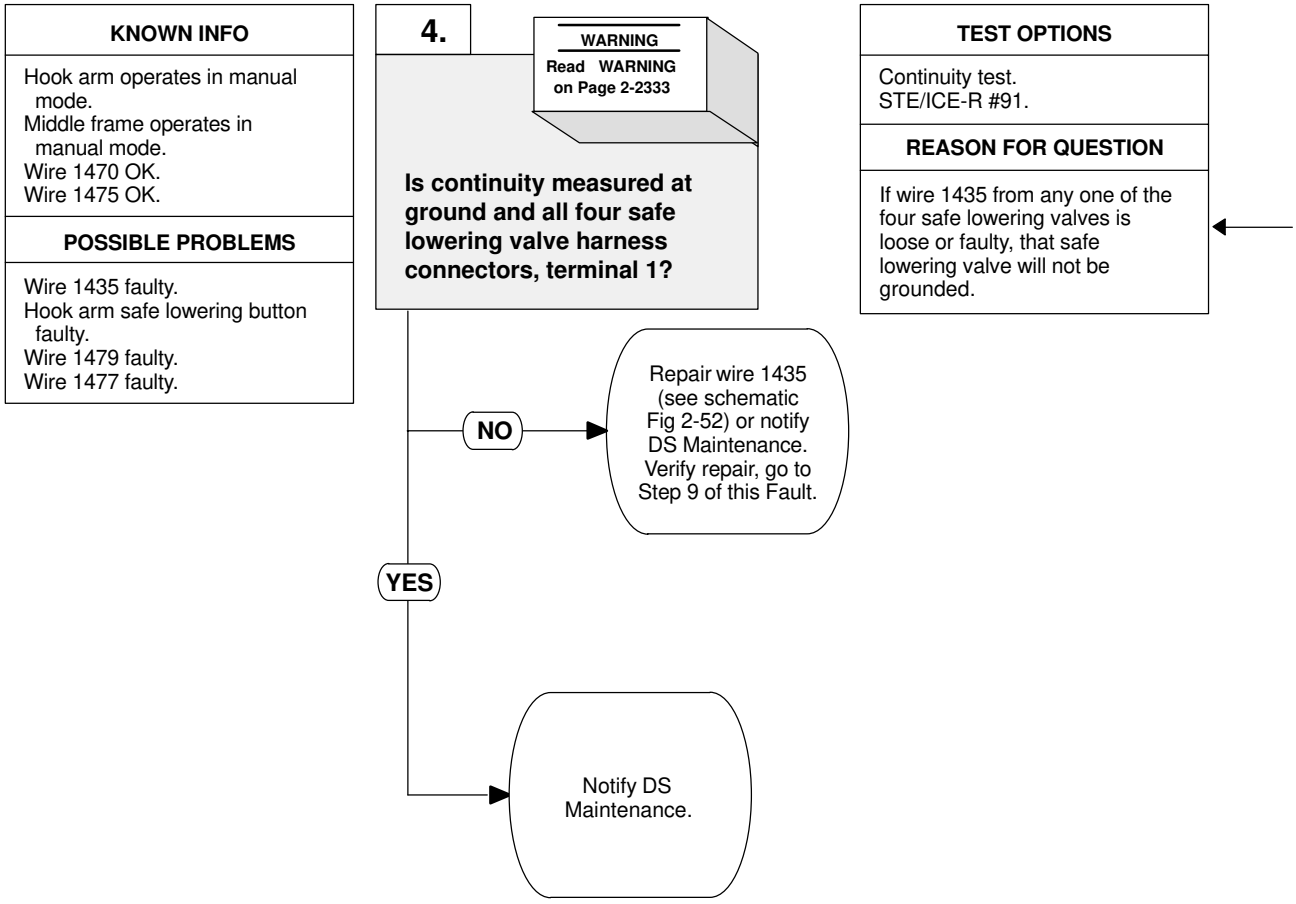
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Loosen screw and disconnect connector from one of the safe lowering valves on the RH side of the LHS.
(3) Is there continuity between either right side safe lowering valve harness connector, terminal 2 and a known good ground.
  (a) If there is no continuity, repair wire 1475 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, perform Steps (4) through (7) below.
(4) Connect connector to safe lowering valve.
(5) Tighten connector screw and coat head of connector screw with adhesive.
(6) Loosen screw and disconnect connector from the remaining safe lowering valve on the RH side of the LHS.
(7) Is there continuity between remaining right side safe lowering valve harness connector, terminal 2 and a known good ground?
  (a) If there is no continuity, repair wire 1475 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, perform Steps (8) through (10) below.
(8) Remove jumperwire from main junction box terminal 10 and ground.
(9) Connect connector to safe lowering valve.
(10) Tighten connector screw and coat head of connector screw with adhesive.





7. LOSS OF HOOK ARM SAFE LOWERING FUNCTION (CONT).

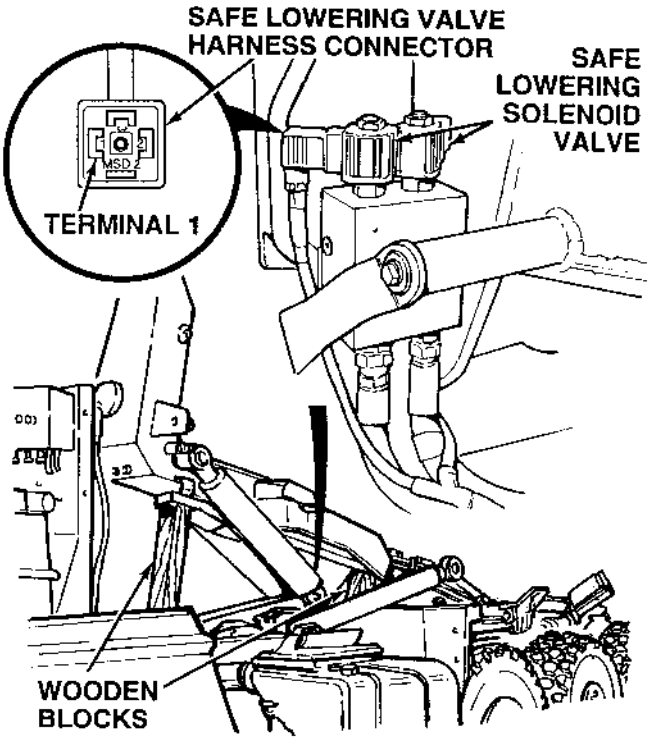


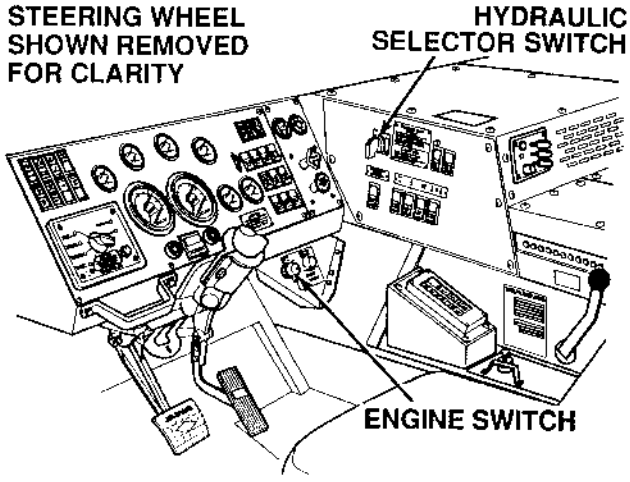
WARNING

- Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.
- Never crawl under equipment when performing maintenance unless equipment is securely blocked. Equipment may fall and cause serious injury or death to personnel.
- 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.

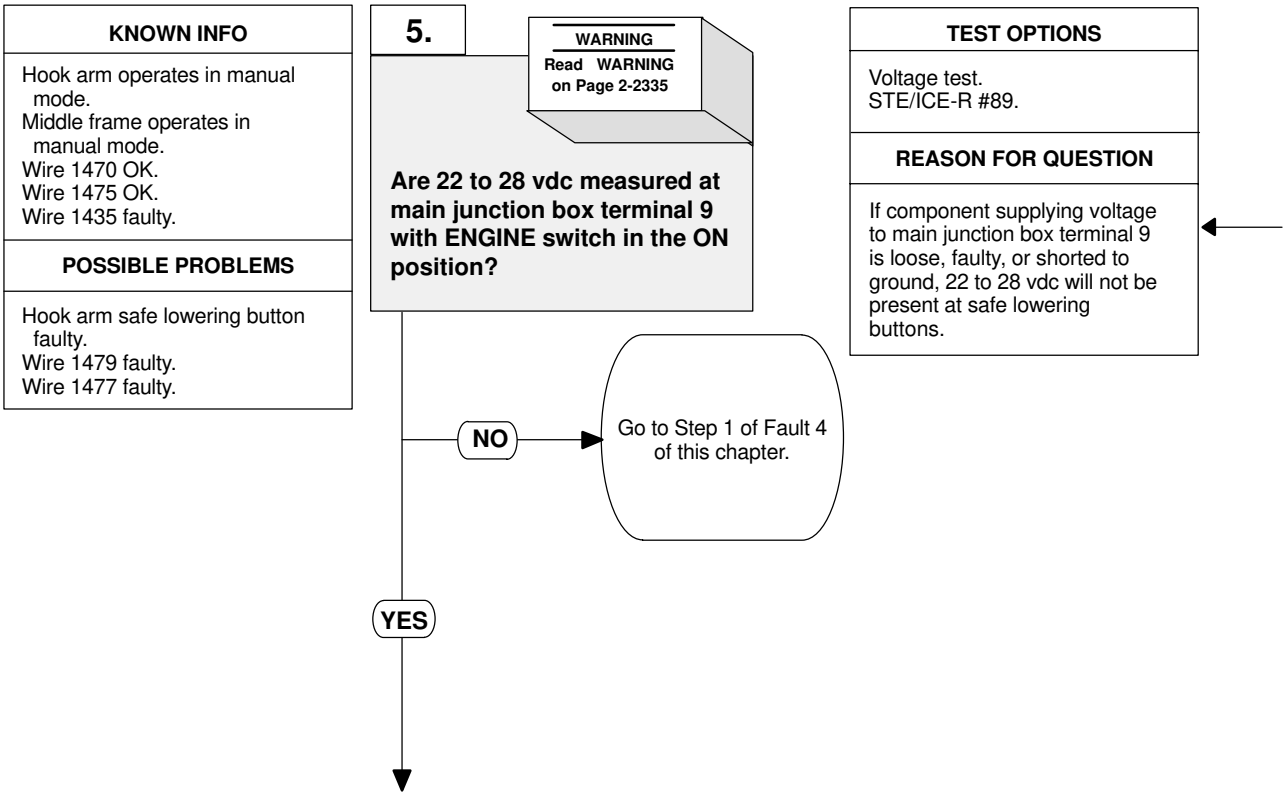
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between one of the four safe lowering valve harness connectors at terminal 1 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, notify DS Maintenance.
(3) Check remaining three safe lowering valve harness connectors at terminal 1 for continuity with ground and repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance if there is no continuity. If there is continuity, notify DS Maintenance.
(4) Install four safe lowering valve harness connectors.
(5) Start engine (TM 9-2320-364-10).
(6) Set hydraulic selector switch to AUTO position.
(7) Raise LHS until middle frame is approximately 3 ft (91 cm) above transit position.
(8) Remove blocking from middle frame.
(9) Lower LHS to transit position.
(10) Set hydraulic selector switch to OFF position.
(11) Turn OFF ENGINE switch.



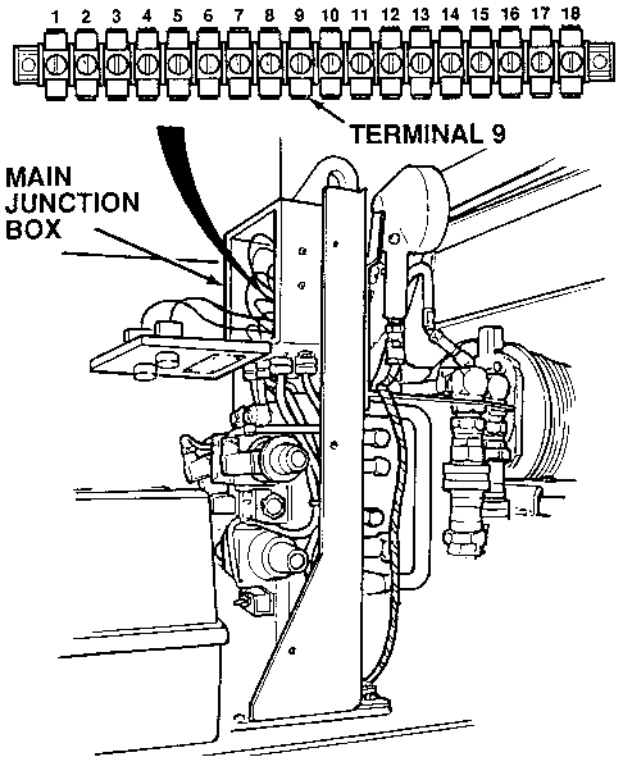


7. LOSS OF HOOK ARM SAFE LOWERING FUNCTION (CONT).



WARNING

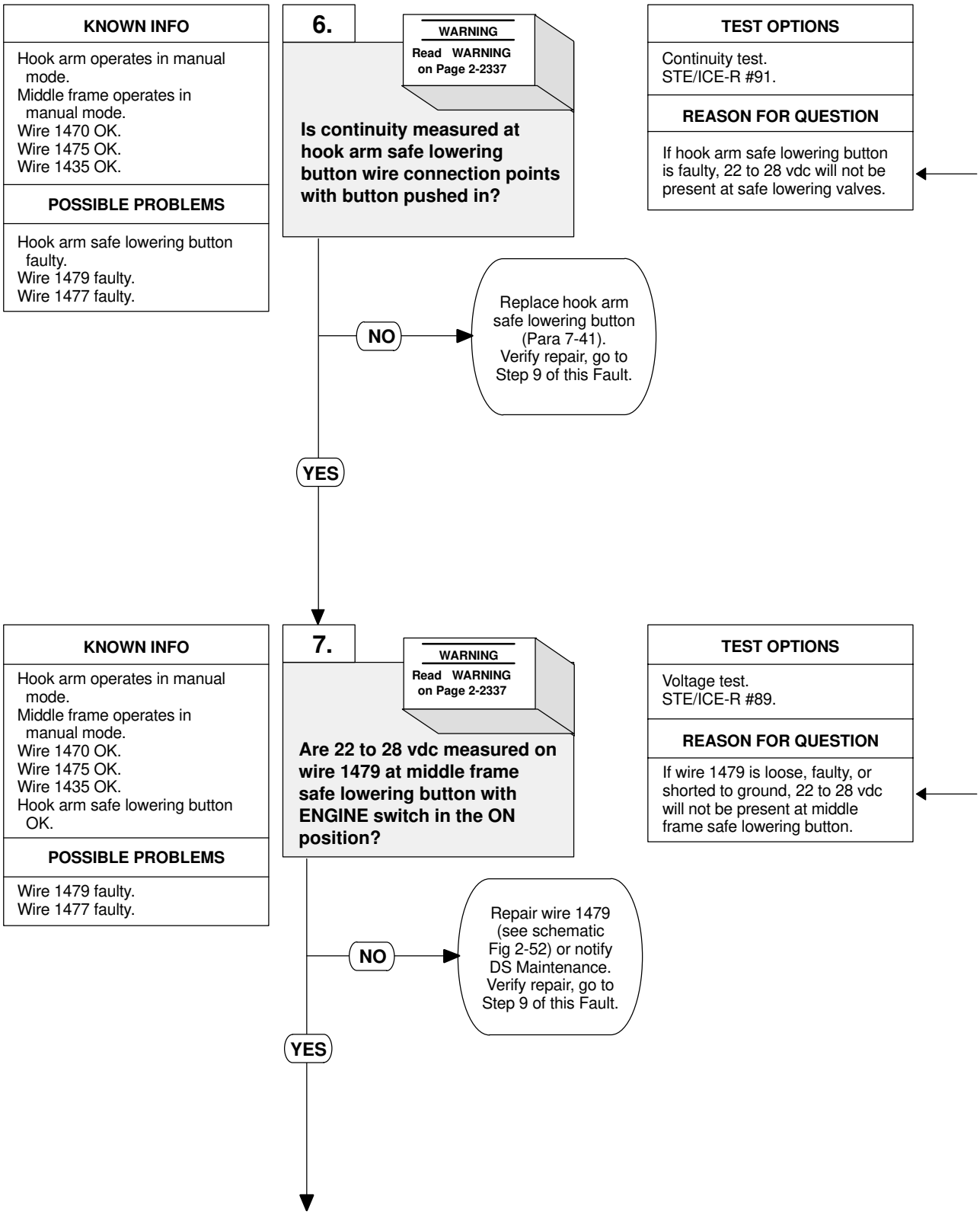
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead at main junction box terminal 9.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If there are not 22 to 28 vdc present, perform Step (5) below and go to Step 1 of Fault 4 of this Chapter.
  (b) If there are 22 to 28 vdc present, components supplying input voltage to main junction box, terminal 9 are OK.
(5) Turn OFF ENGINE switch.

7. LOSS OF HOOK ARM SAFE LOWERING FUNCTION (CONT).

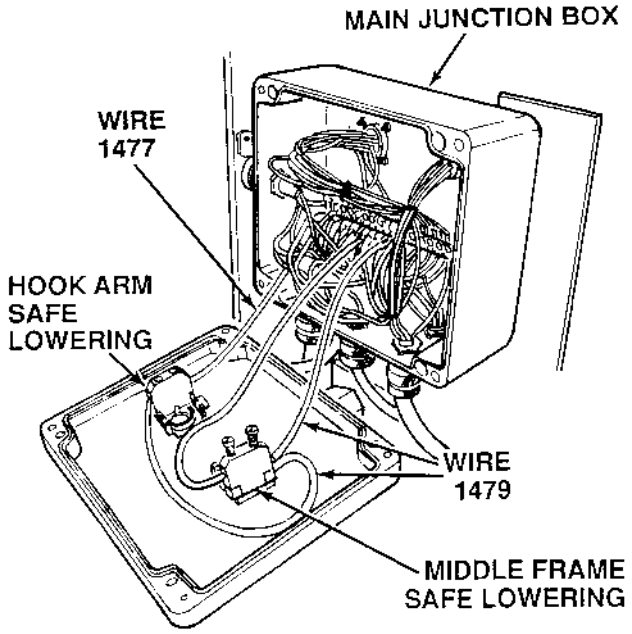


WARNING

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

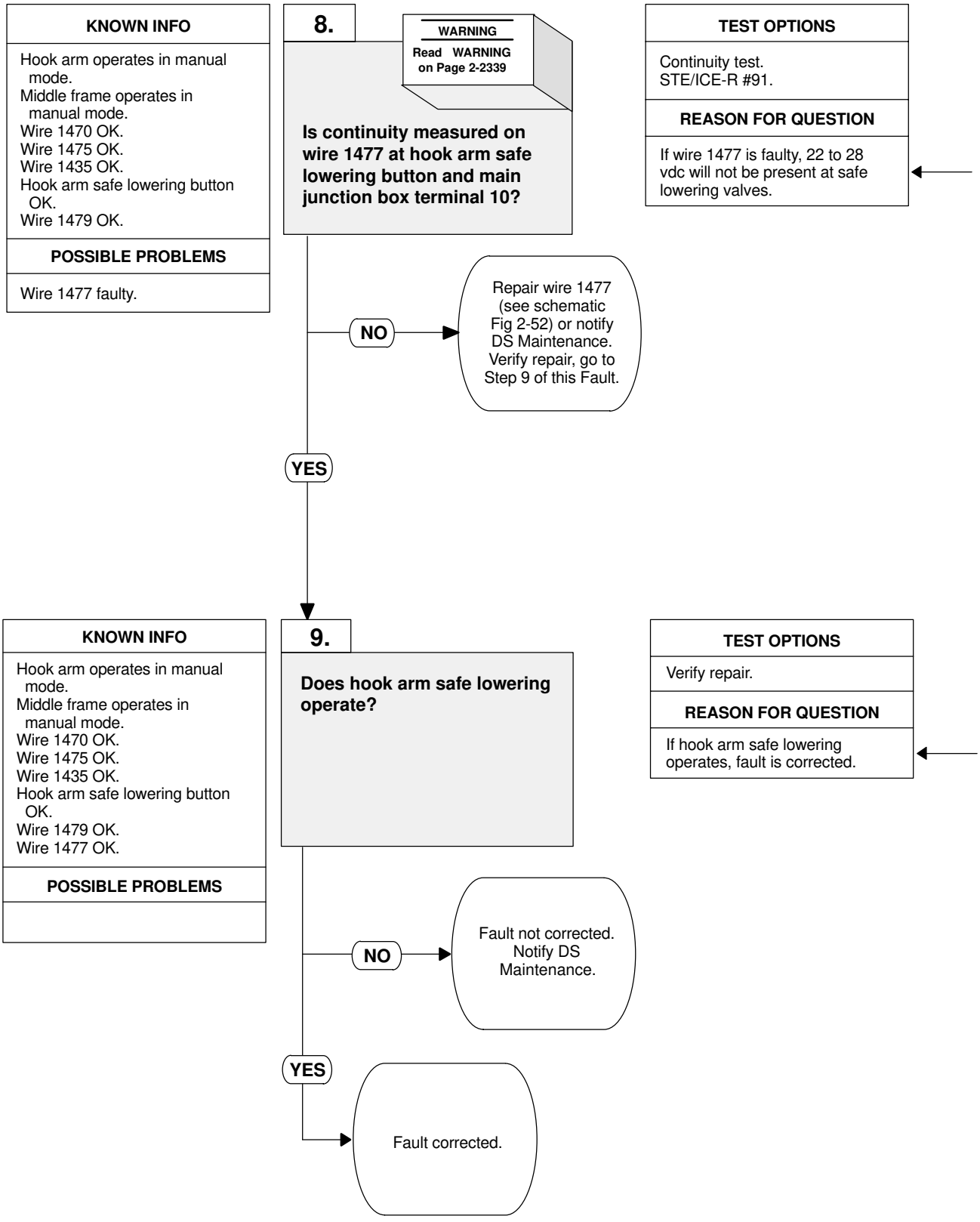
(1) Set multimeter select switch to ohms.
(2) Push in hook arm safe lowering button.
(3) Is there continuity between hook arm safe lowering button wire 1477 and button wire 1479?
   (a) If there is no continuity, replace hook arm safe lowering button (Para 7-41).
   (b) If there is continuity, safe lowering button is OK.



VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to middle frame safe lowering button wire 1479.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
   (a) If there are not 22 to 28 vdc present, perform Step (5) below and repair wire 1479 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there are 22 to 28 vdc present, wire 1479 is OK.
(5) Turn OFF ENGINE switch.

7. LOSS OF HOOK ARM SAFE LOWERING FUNCTION (CONT).

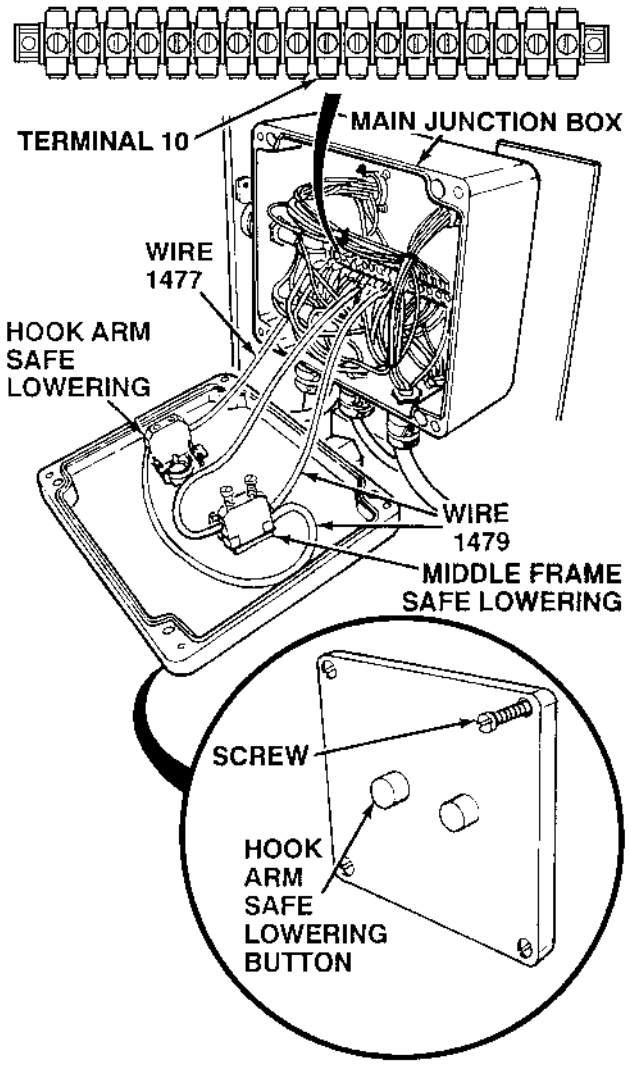


WARNING

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.

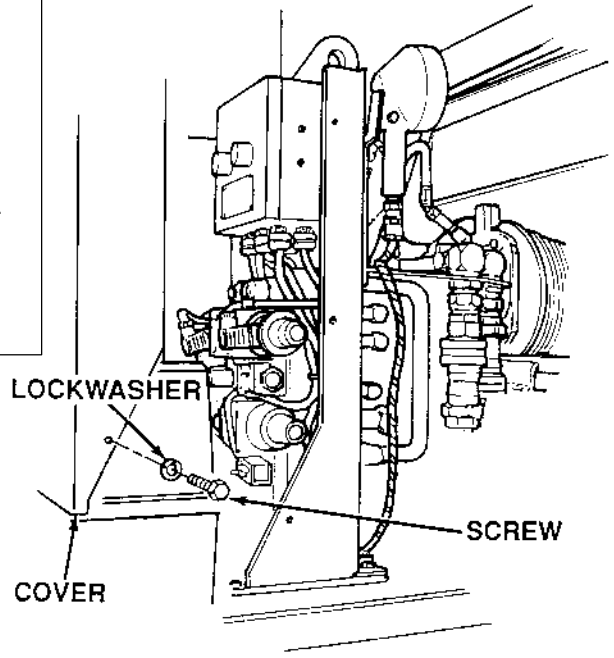
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between safe lowering button wire 1477 and main junction box terminal 10?
  (a) If there is no continuity, repair wire 1477 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1477 is OK.
(3) Close main junction box and tighten four screws.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to AUTO position.
(3) Raise LHS until middle frame is approximately 3 ft (91 cm) above transit position.
(4) Push in hook arm safe lowering button.
  (a) If hook arm does not lower to the transit position, fault not corrected. Perform Steps (5) through (7) below and notify DS Maintenance.
  (b) If hook arm lowers to the transit position, fault has been corrected.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.
(7) Install LHS control box cover, four lockwashers and screws.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

8. LHS DOES NOT OPERATE.

INITIAL SETUP

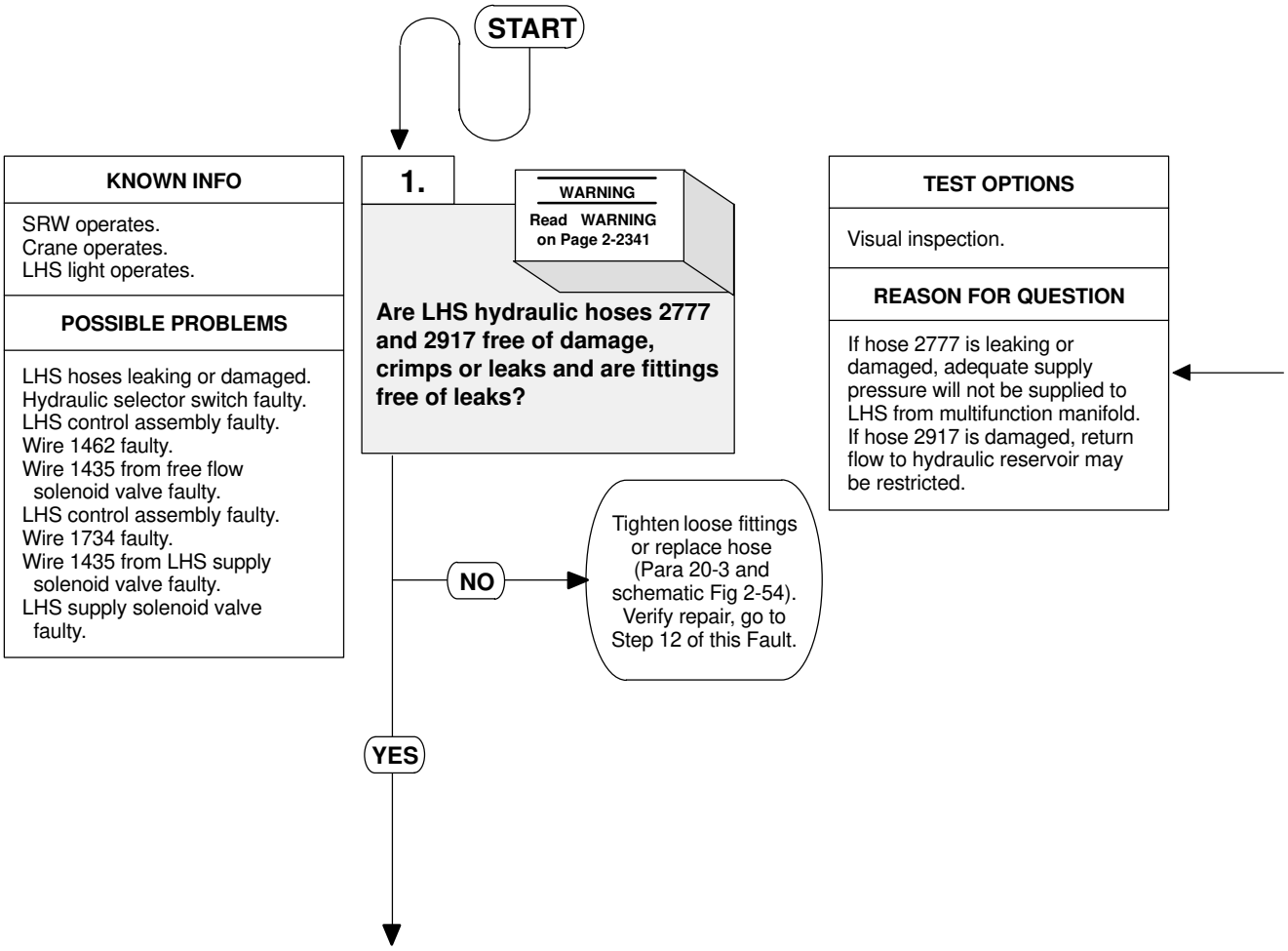
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
Adhesive (Item 8, Appendix C)

Personnel Required
Two

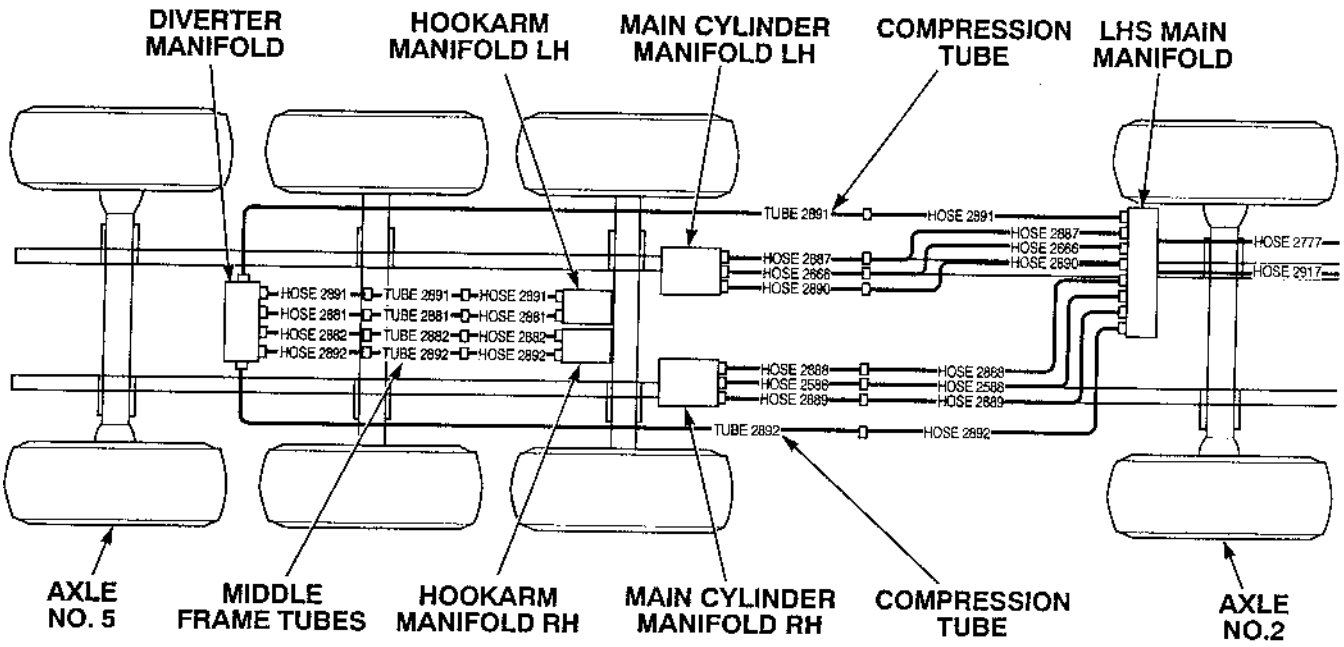
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



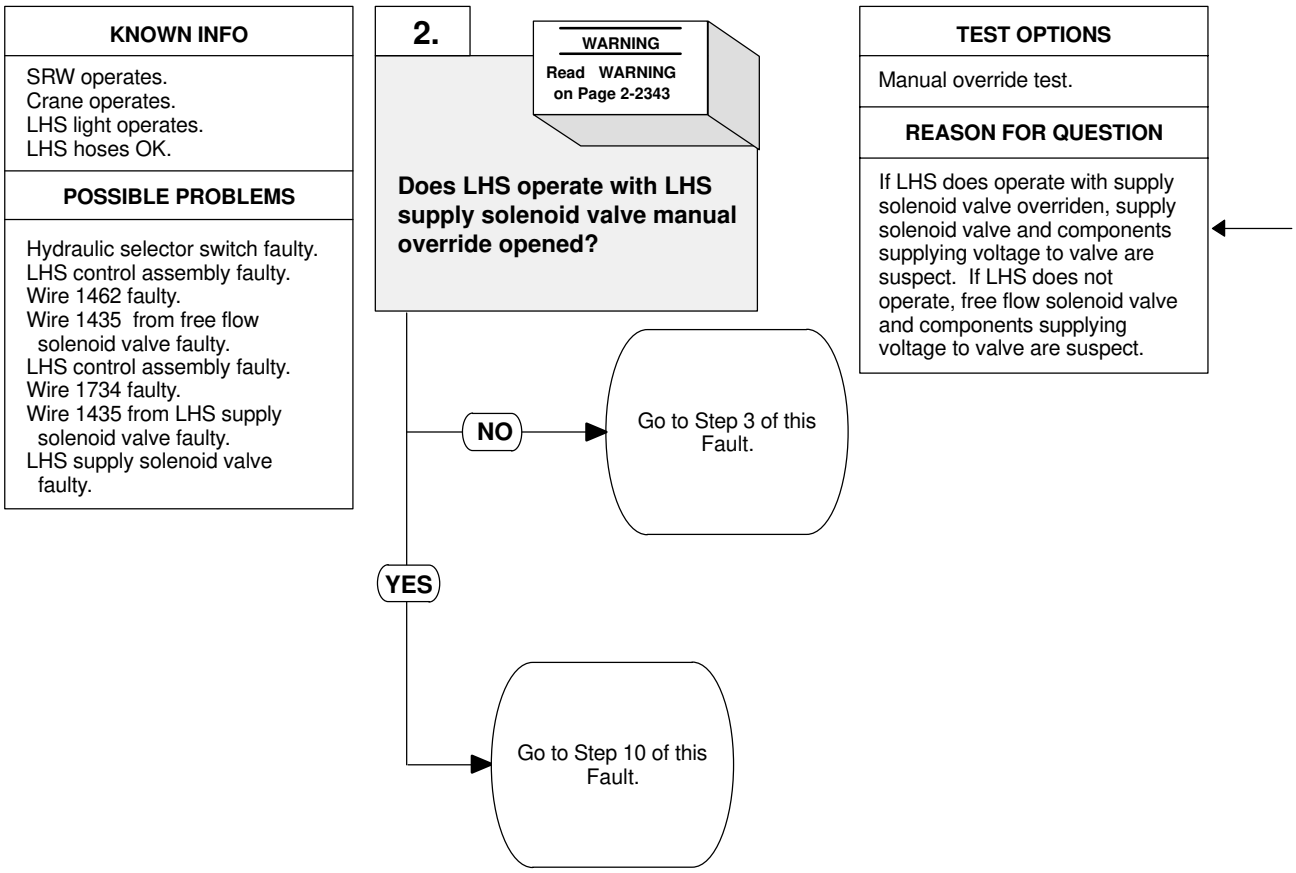
WARNING

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. A high pressure oil stream can pierce body and cause severe injury to personnel.



VISUAL INSPECTION
Inspect LHS hydraulic hoses 2777 and 2917 for damage, crimps or leaks. (1) If hoses are damaged, crimped or leaking, tighten fittings or replace hoses (Para 20-3 and schematic Fig 2-54). (2) If there are no leaks, crimps or damage, hoses and fittings are OK.

8. LHS DOES NOT OPERATE (CONT).



WARNING

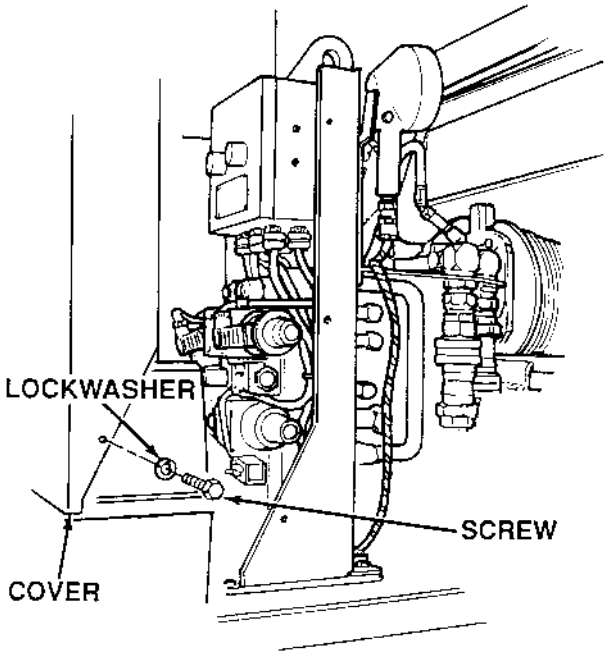
Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.

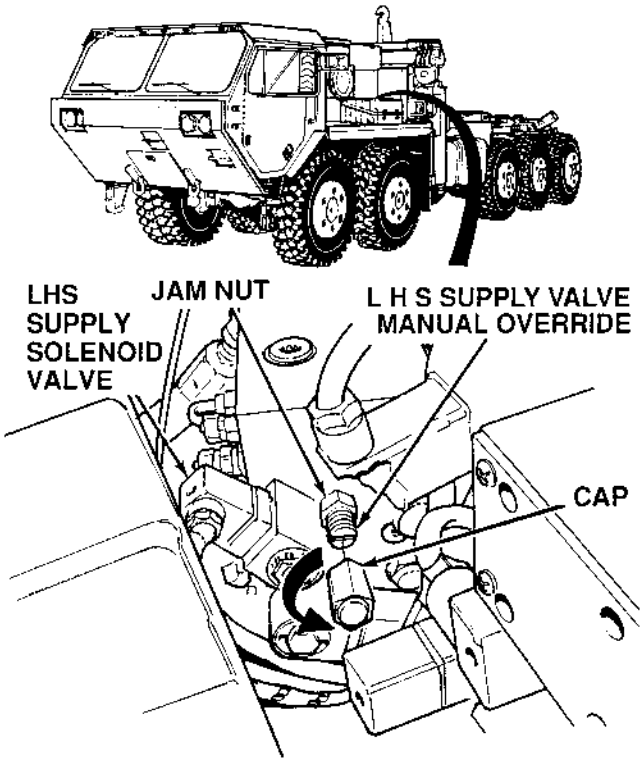
NOTE

Only remove center screw on engine side of LHS control box cover.

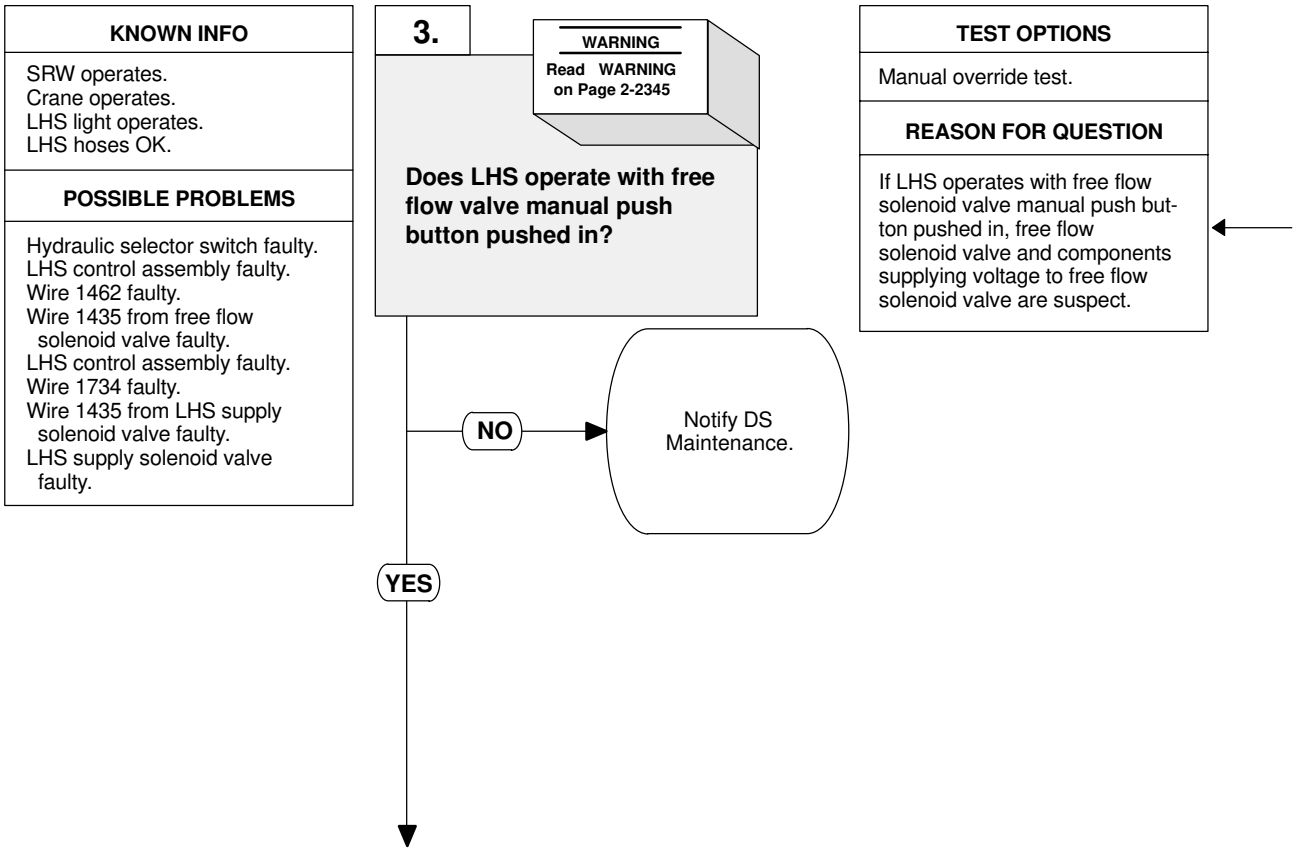
MANUAL OVERRIDE TEST

(1) Remove four screws and lockwashers and LHS control box cover.
(2) Remove cap from LHS supply solenoid valve manual override and loosen jamnut.
(3) Open manual override by turning set screw counter clockwise no more than three turns.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Start engine.
(6) Set hydraulic selector switch to MAN HA position.
(7) Operate LHS.
  (a) If LHS does not operate, perform Steps (8) through (11) below and go to Step 3 of this Fault.
  (b) If LHS operates, perform Steps (8) through (11) below and go to step 10 of this Fault.
(8) Set hydraulic selector switch to OFF position.
(9) Turn OFF ENGINE switch.
(10) Close LHS supply solenoid valve manual override and tighten jam nut.
(11) Install cap on LHS supply solenoid valve manual override, and tighten securely.





8. LHS DOES NOT OPERATE (CONT).



WARNING

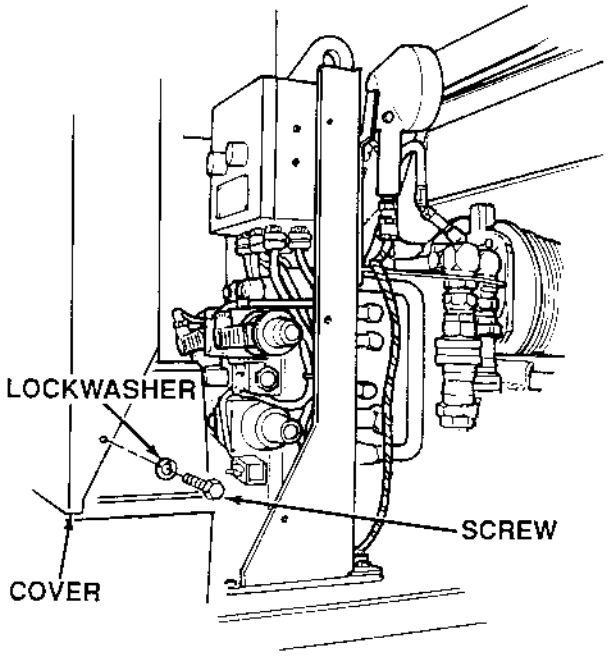
Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.

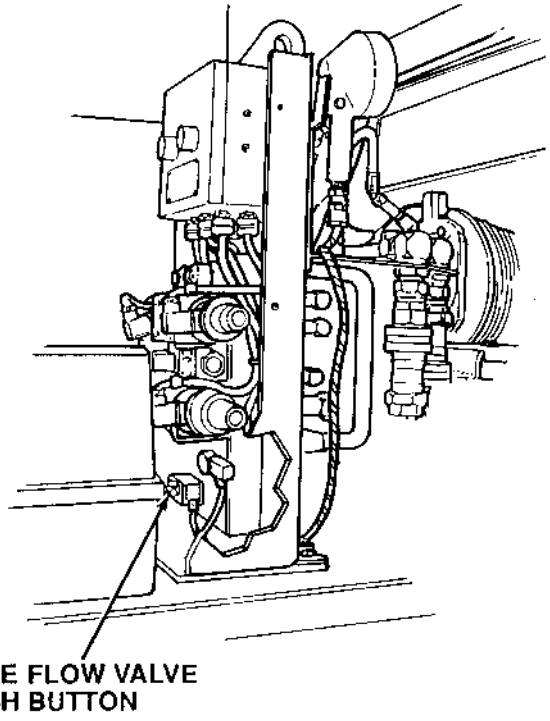
NOTE

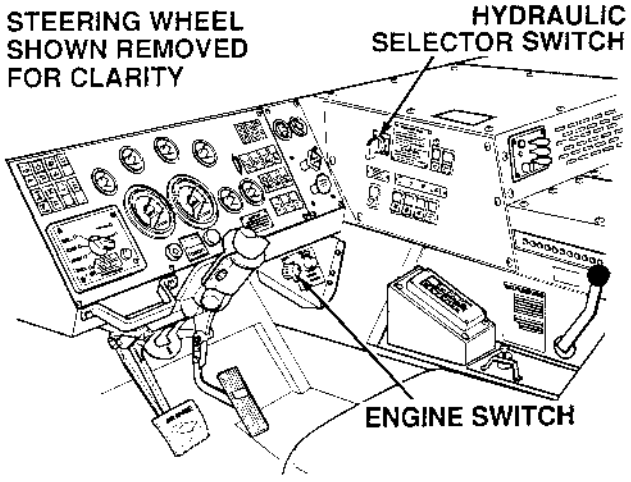
Only remove center screw on engine side of LHS control box cover.

MANUAL OVERRIDE TEST

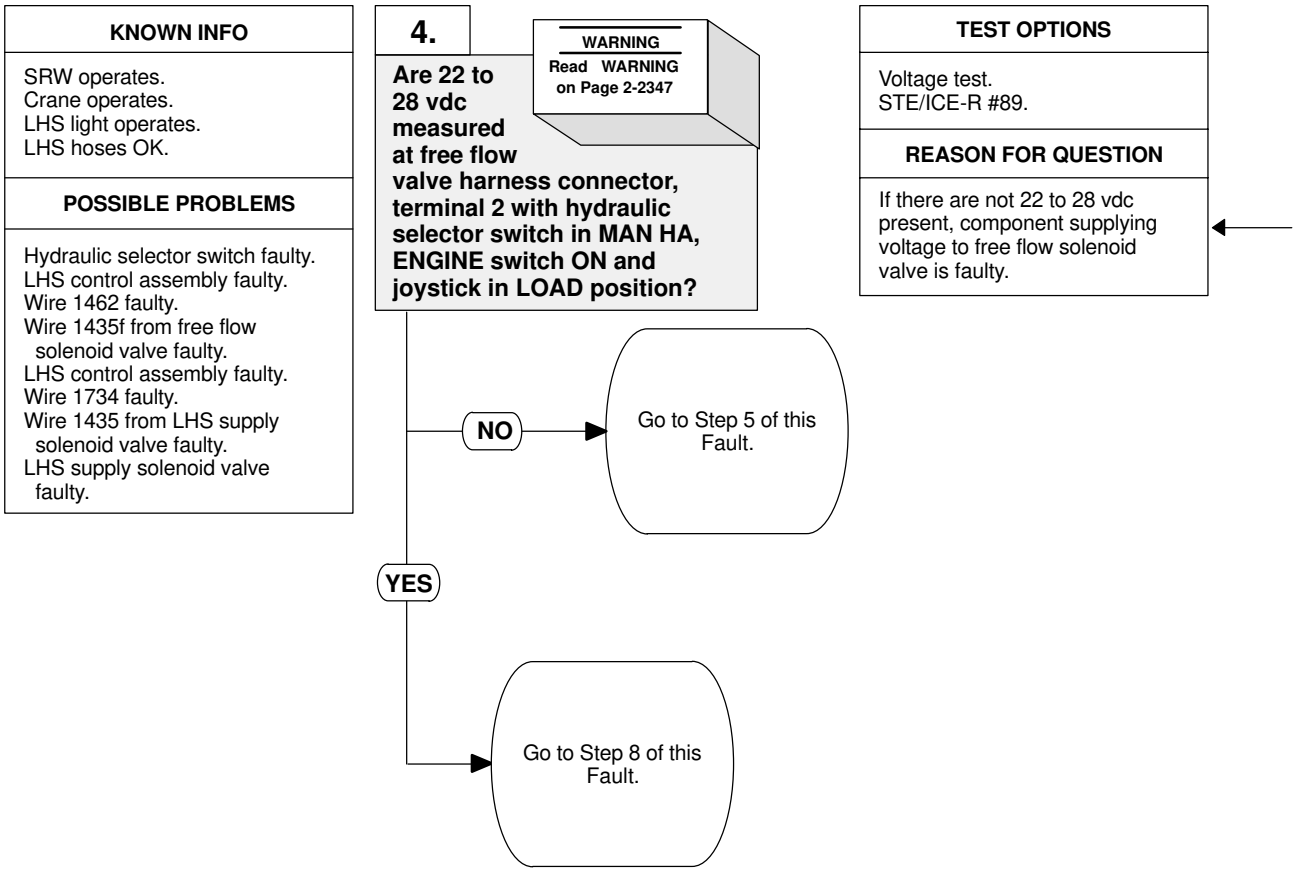
(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Start engine (TM 9-2320-364-10).
(3) Set hydraulic selector switch to MAN HA position.
(4) Push in free flow solenoid valve manual pushbutton while assistant operates LHS.
  (a) If LHS does not operate, notify DS Maintenance.
  (b) If LHS operates, perform Steps (5) and (6) below.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.







8. LHS DOES NOT OPERATE (CONT).

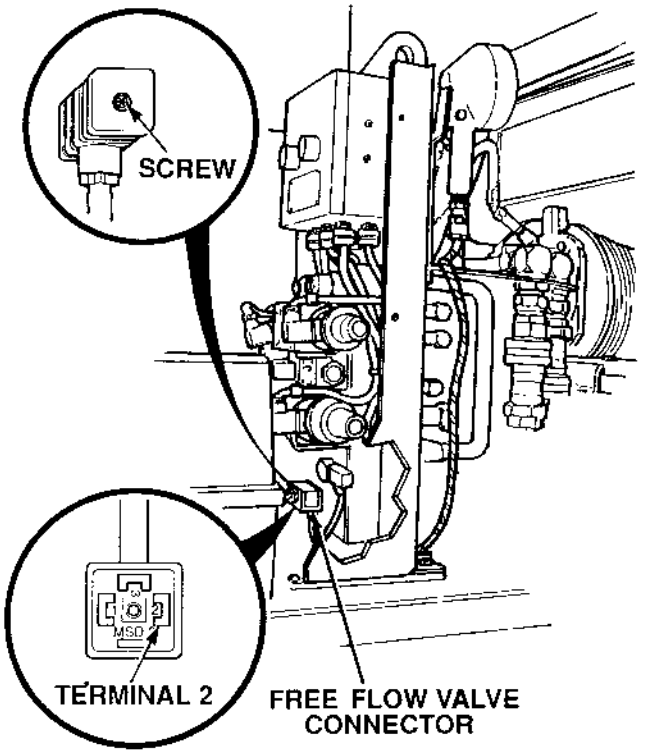


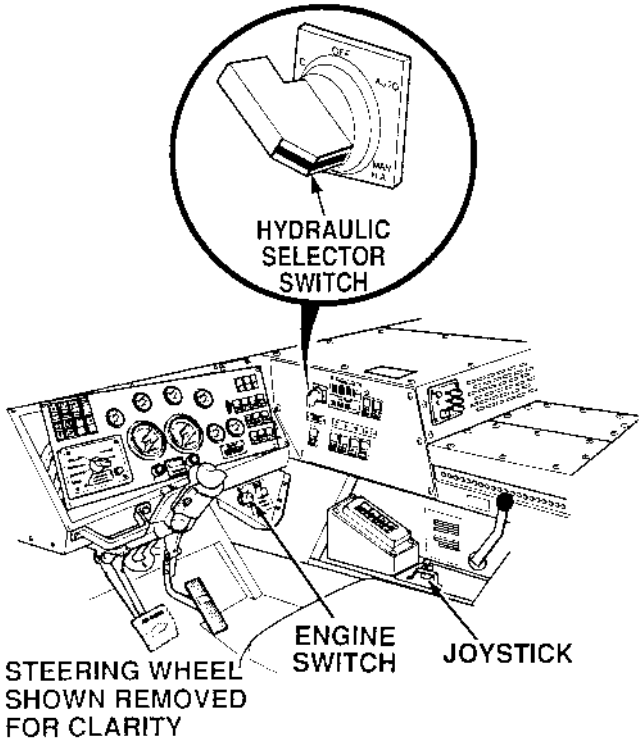
WARNING

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.

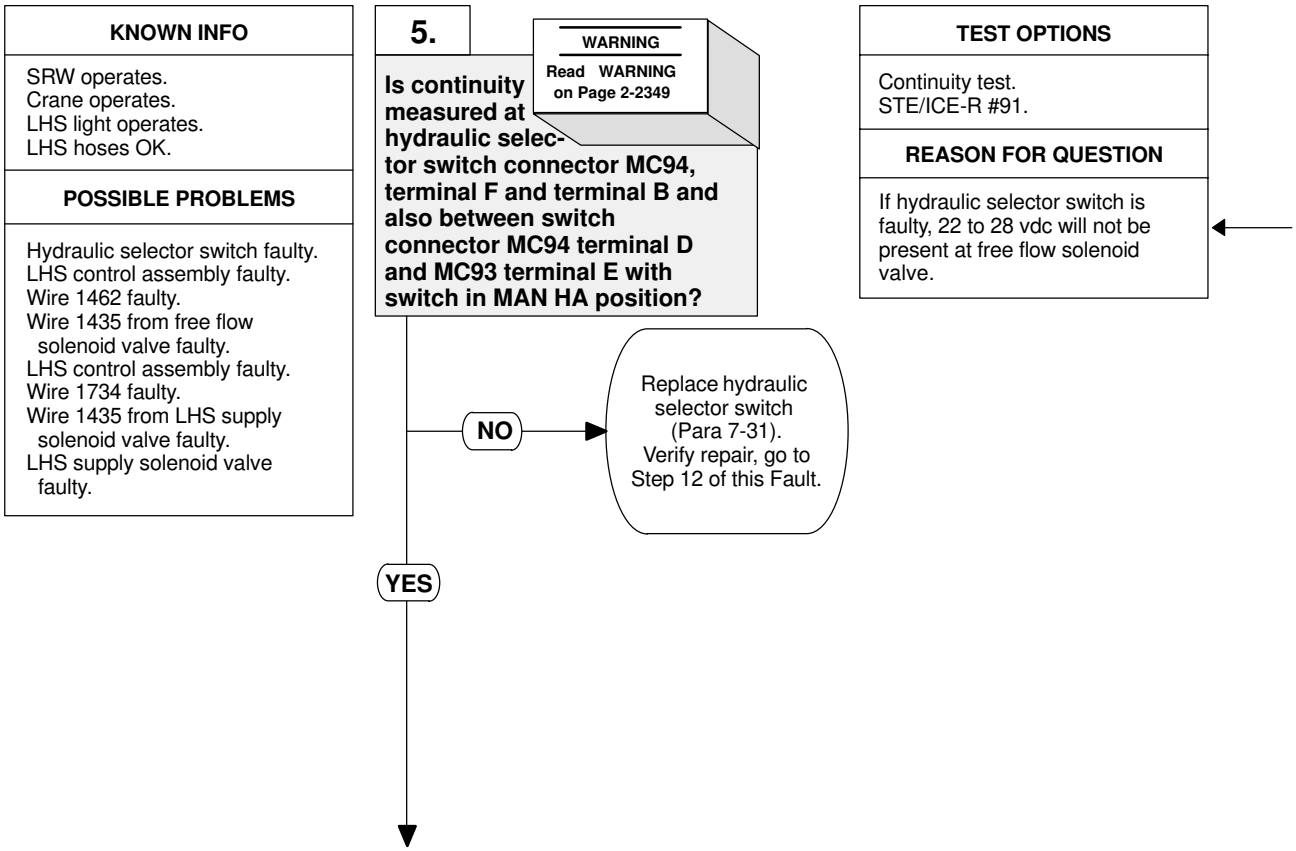
VOLTAGE TEST

(1) Remove harness connector from free flow solenoid valve.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to harness connector, terminal 2.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to MAN HA position.
(7) Hold joystick in LOAD position.
    (a) If there are not 22 to 28 vdc present, perform Steps (8) and (9) below and go to Step 5 of this Fault.
    (b) If there are 22 to 28 vdc present, perform Steps (8) and (9) below and go to Step 8 of this Fault.
(8) Set hydraulic selector switch to OFF position.
(9) Turn OFF ENGINE switch.





8. LHS DOES NOT OPERATE (CONT).

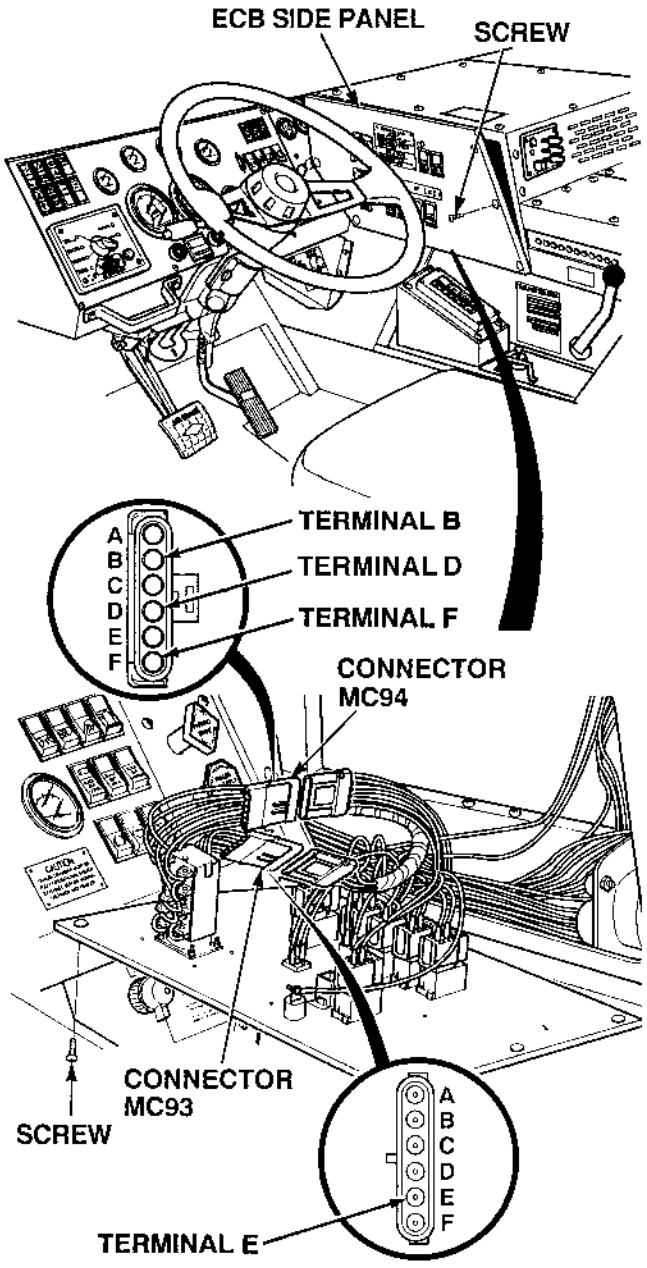


WARNING

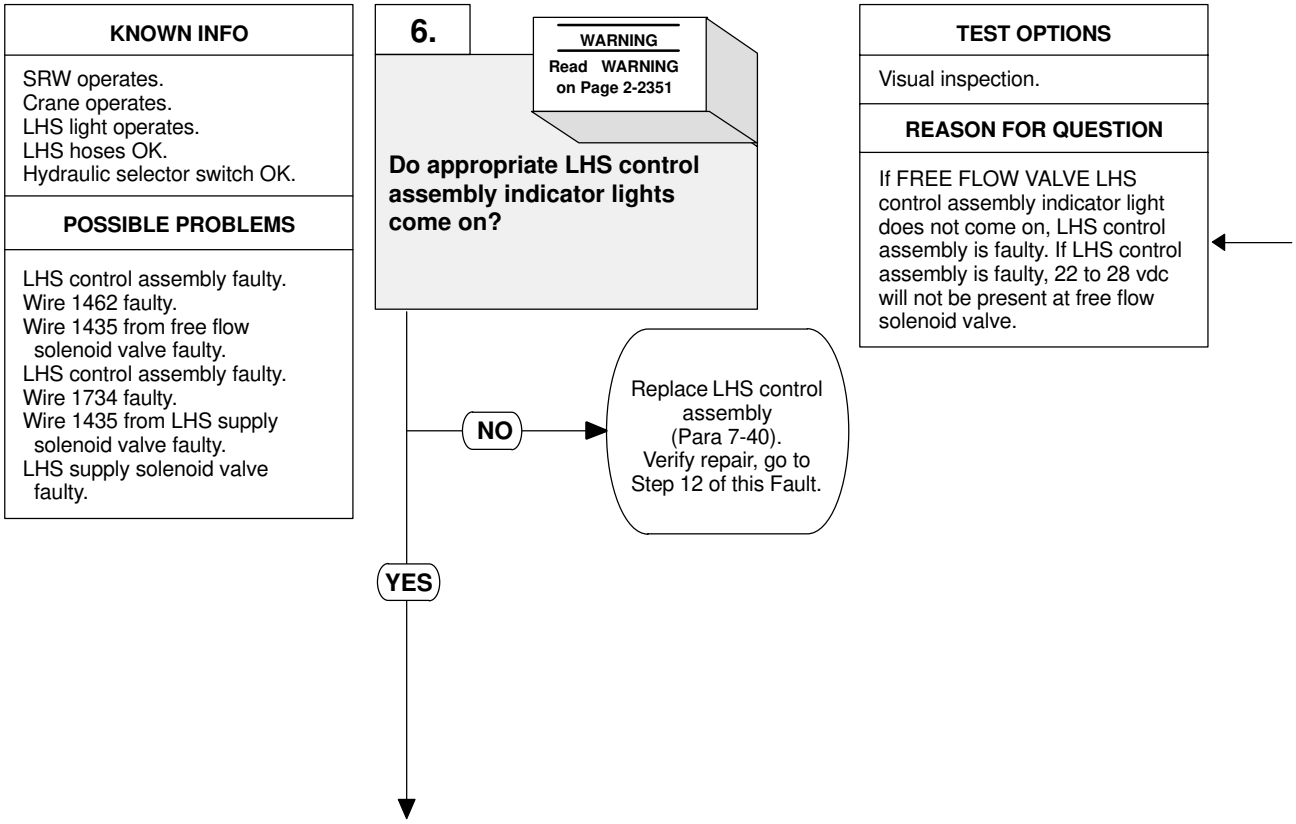
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove six screws and tilt ECB side panel.
(2) Disconnect harness connectors MC93 and MC94 from hydraulic selector switch connectors.
(3) Set hydraulic selector switch to MAN HA position (TM 9-2320-364-10).
(4) Set multimeter select switch to ohms.
(5) Is there continuity between harness connector MC94, terminal F and terminal B?
    (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
    (b) If there is continuity, perform Step (6) below.
(6) Is there continuity between connector MC93, terminal E and connector MC94, terminal D?
    (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
    (b) If there is continuity, hydraulic selector switch is OK.
(7) Set hydraulic selector switch to OFF position.
(8) Connect harness connector MC93 and MC94 to hydraulic selector switch connector.
(9) Install ECB side panel and six screws.



8. LHS DOES NOT OPERATE (CONT).



WARNING

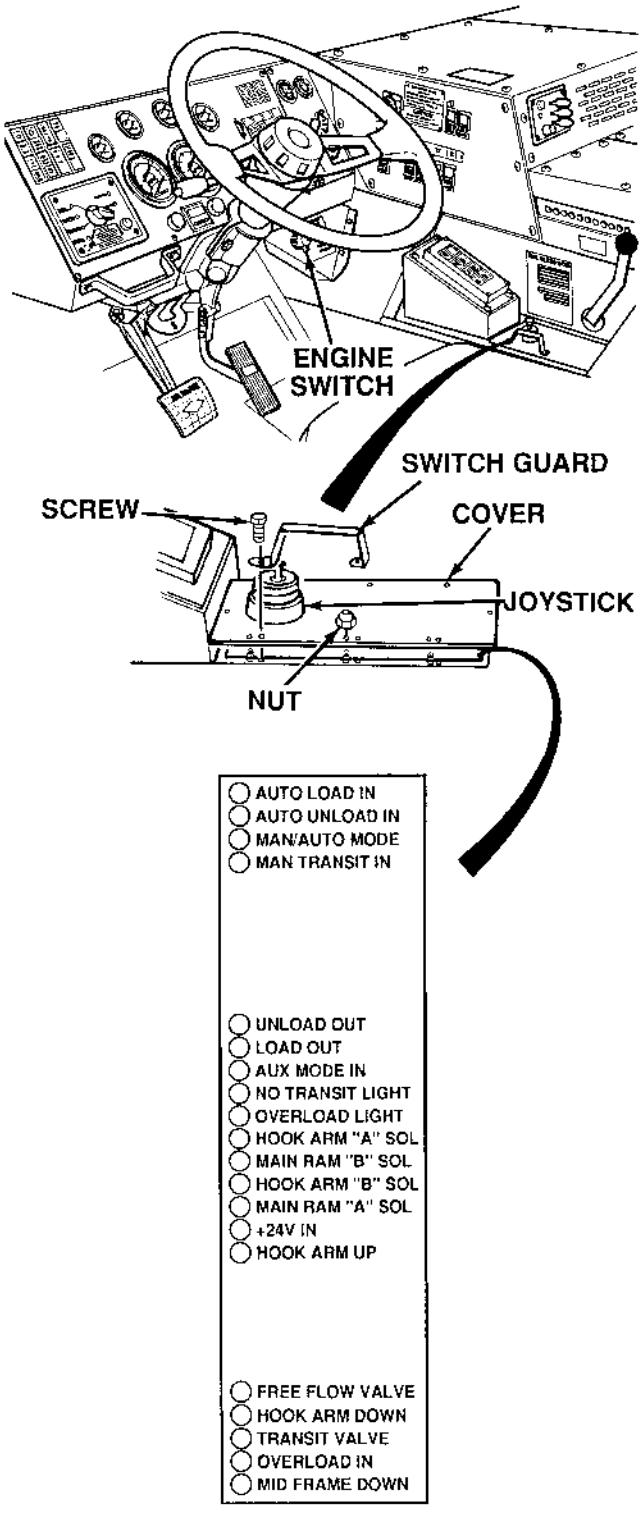
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

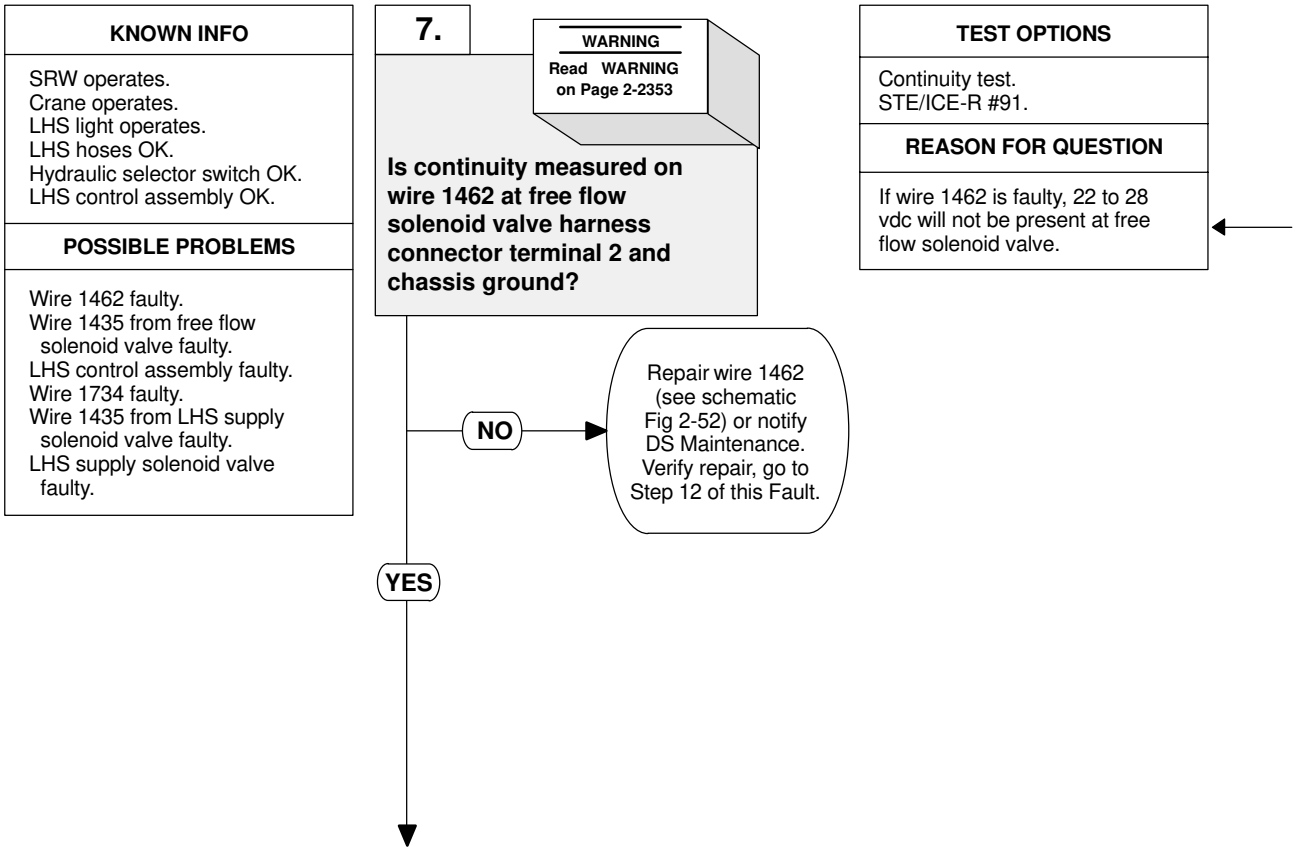
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

VISUAL INSPECTION

(1) Remove eight nuts, screws, and switch guard from LHS control assembly.
(2) Carefully lift LHS control assembly. cover off. Do not allow cover to dangle by joystick connecting wires.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Set hydraulic selector switch to MAN HA position.
(5) Observe red indicator lights at bottom of LHS control assembly while holding joystick in LOAD position.
  (a) If FREE FLOW VALVE light does not illuminate, replace LHS control assembly (Para 7-40).
  (b) If FREE FLOW VALVE light illuminates, LHS control assembly is OK.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.
(8) Install cover, switch guard and eight nuts on LHS control assembly.



8. LHS DOES NOT OPERATE (CONT).

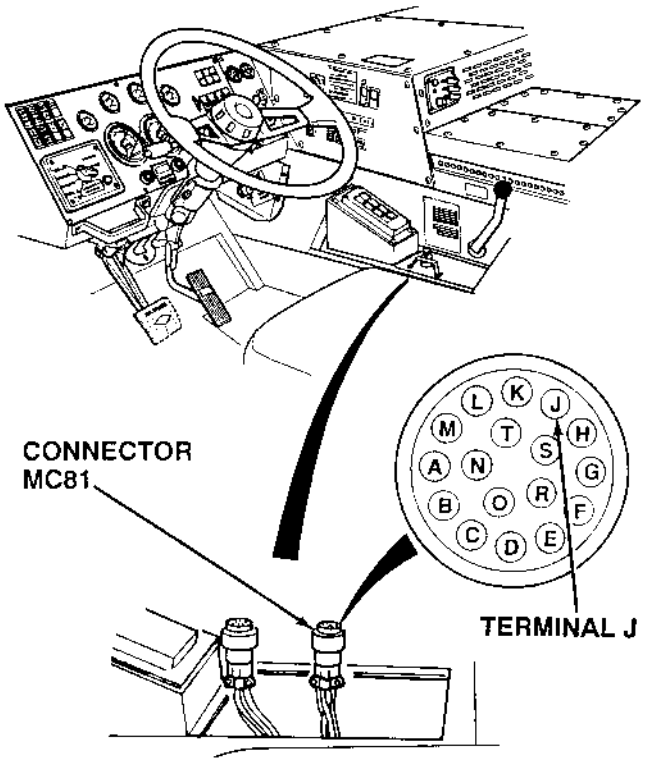


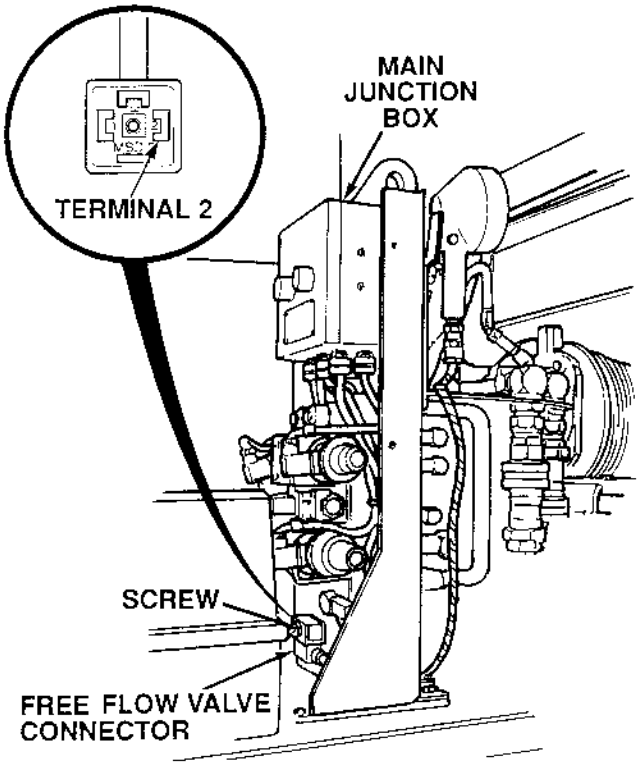
WARNING

- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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.

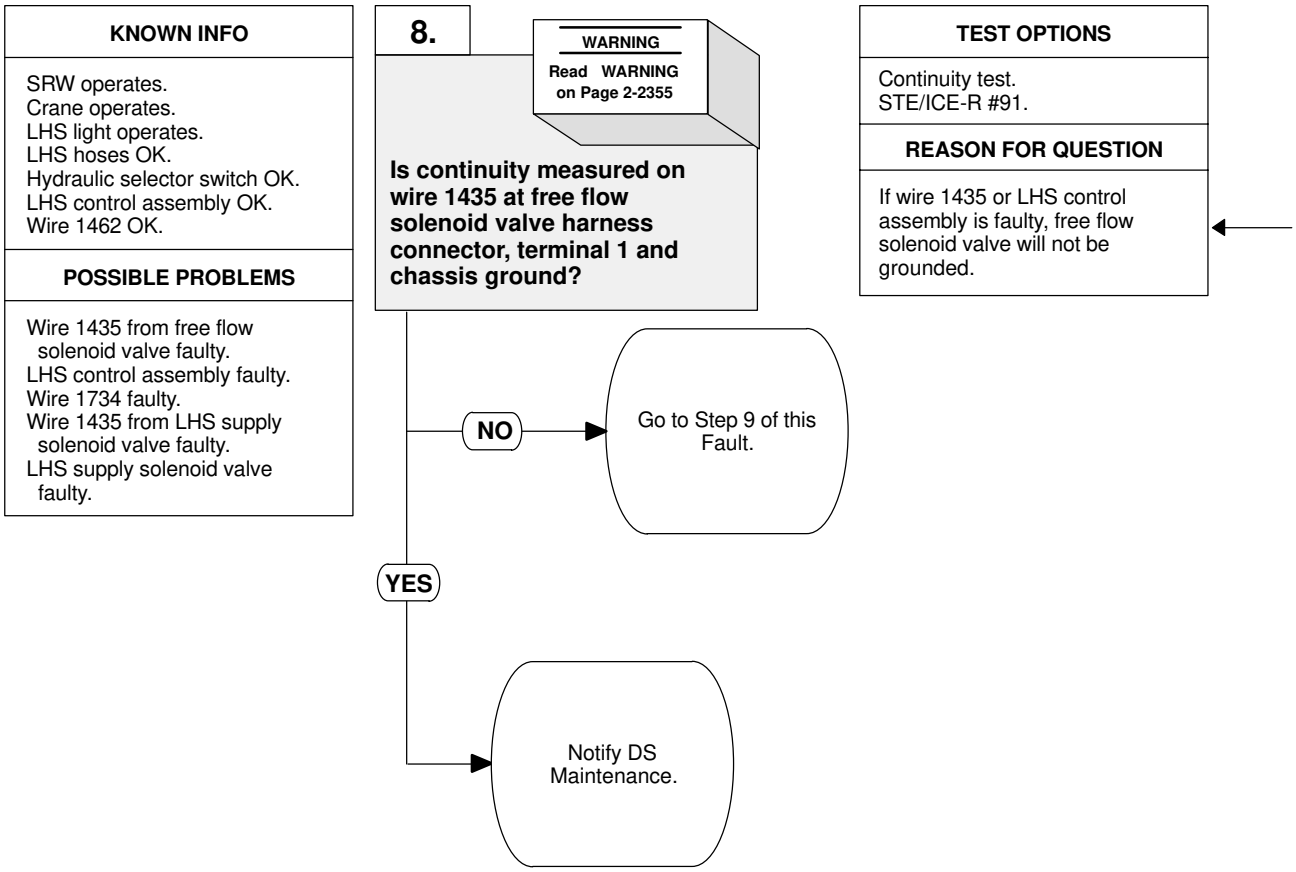
CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Disconnect free flow valve harness connector.
(3) Connect harness connector MC81, terminal J to a known good ground using jumperwire.
(4) Set multimeter select switch to ohms.
(5) Is there continuity between free flow valve harness connector, terminal 2 and a known good ground?
    (a) If there is no continuity, repair wire 1462 (see schematic Fig 2-52) or notify DS Maintenance.
    (b) If there is continuity, wire 1462 is OK.
(6) Install harness connector on free flow solenoid valve.
(7) Tighten connector screw and coat head of connector screw with adhesive.





8. LHS DOES NOT OPERATE (CONT).

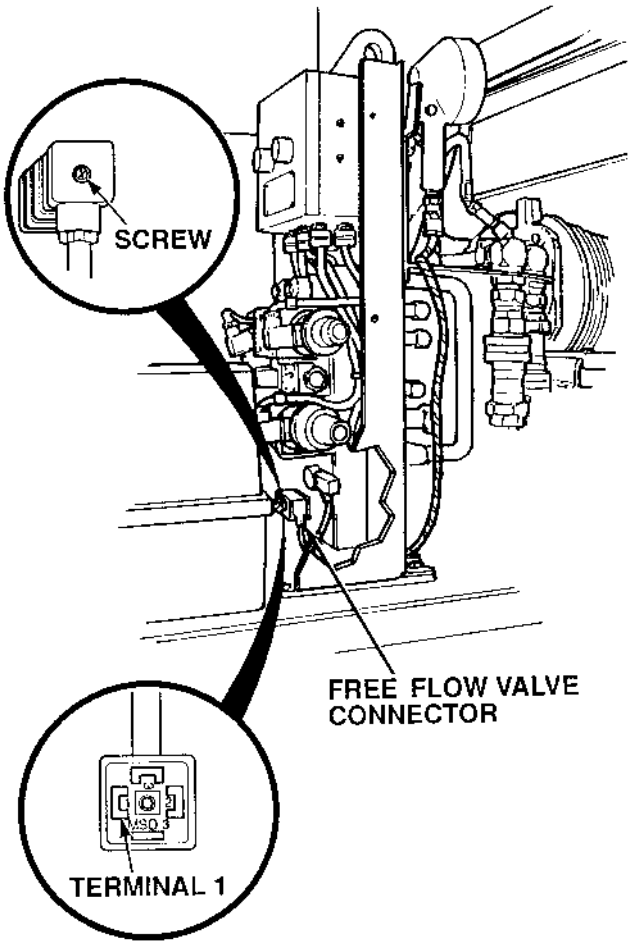


WARNING

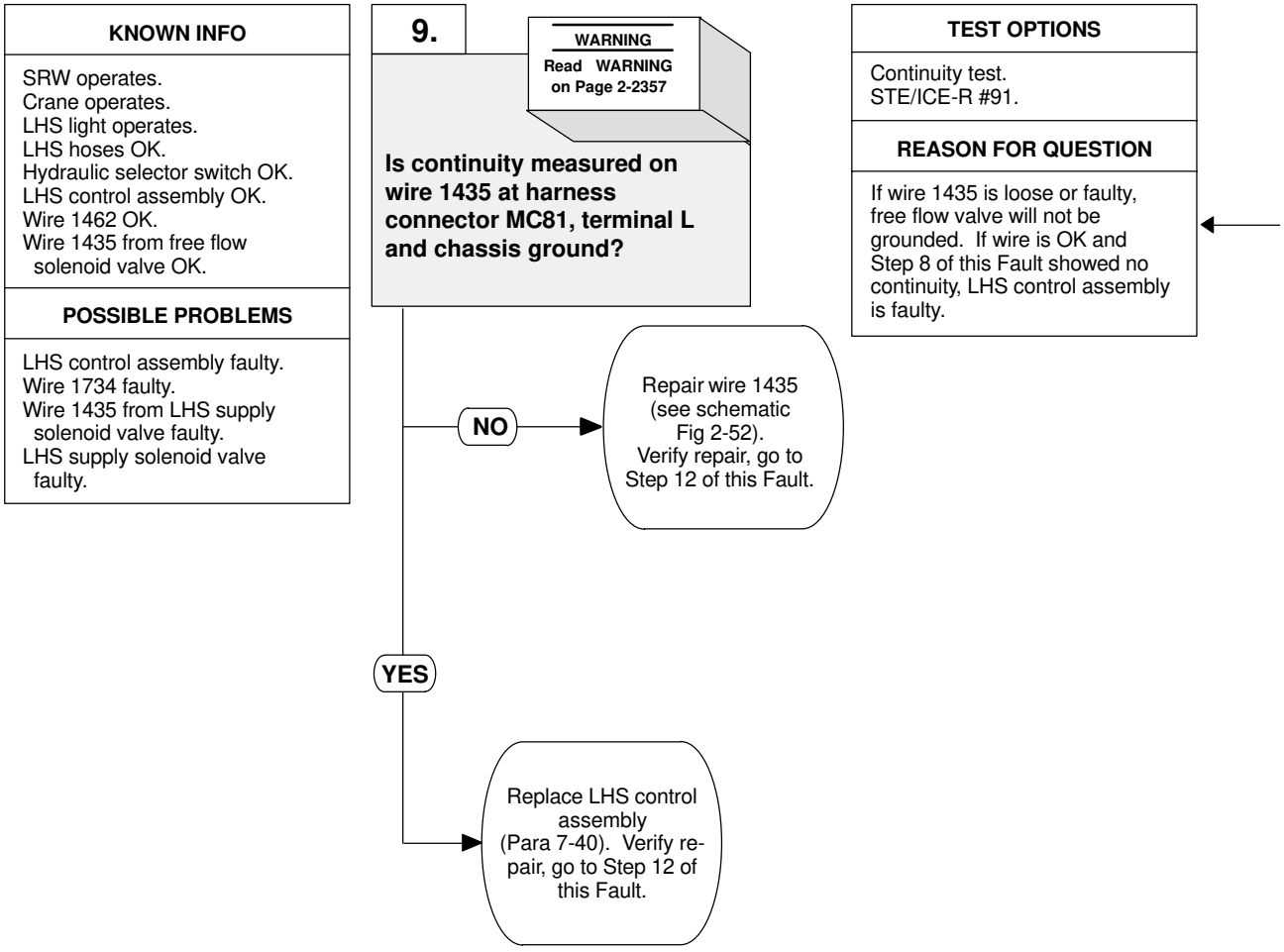
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Loosen screw and disconnect free flow solenoid valve harness connector.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between free flow solenoid valve harness connector, terminal 1 and a known good ground?
   (a) If there is no continuity, go to Step 9 of this Fault.
   (b) If there is continuity, notify DS Maintenance.



8. LHS DOES NOT OPERATE (CONT).

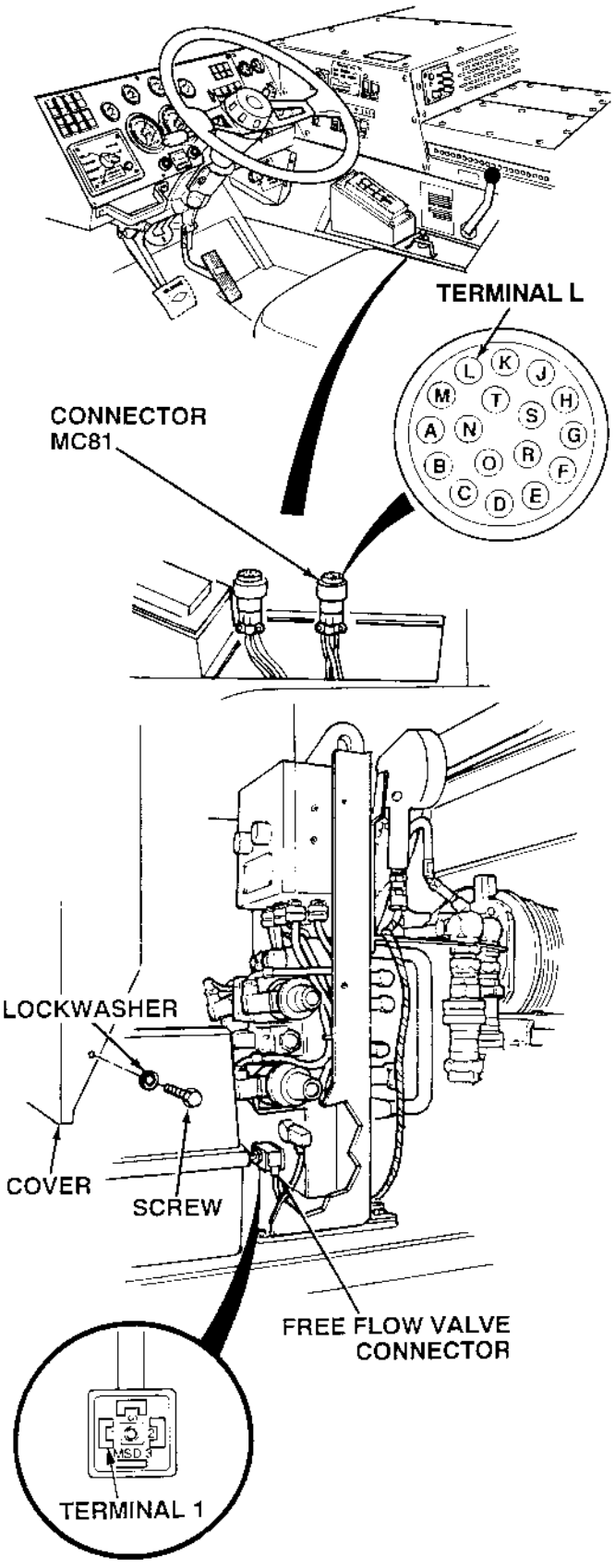


WARNING

- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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) Connect free flow valve connector terminal 1 to a known good ground using jumperwire.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between harness connector MC81 terminal L and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK. Replace LHS control assembly (Para 7-40).
(4) Remove jumperwire from free flow solenoid valve harness connector terminal 1 and ground.
(5) Install harness connector on free flow solenoid valve.
(6) Tighten connector screw and coat head of connector screw with adhesive.
(7) Install LHS control assembly (Para 7-40).
(8) Install LHS control box cover with four screws and lockwashers.



8. LHS DOES NOT OPERATE (CONT).

KNOWN INFO

SRW operates.
Crane operates.
LHS light operates.
LHS hoses OK.
Hydraulic selector switch OK.
LHS control assembly OK.
Wire 1462 OK.
Wire 1435 from free flow solenoid valve OK.
LHS control assembly OK.

POSSIBLE PROBLEMS

Wire 1734 faulty.
Wire 1435 from LHS supply solenoid valve faulty.
LHS supply solenoid valve faulty.

10.

WARNING
Read WARNING on Page 2-2359

Are 22 to 28 vdc measured on wire 1734 at LHS supply solenoid valve harness connector, terminal 2 with ENGINE switch ON and hydraulic selector switch in MAN HA position?

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If wire 1734 is loose, faulty, or shorted to ground, 22 to 28 vdc will not be present at LHS supply solenoid valve.

NO → Repair wire 1734 (see schematic Fig 2-52). Verify repair, go to Step 12 of this Fault.

YES

KNOWN INFO

SRW operates.
Crane operates.
LHS light operates.
LHS hoses OK.
Hydraulic selector switch OK.
LHS control assembly OK.
Wire 1462 OK.
Wire 1435 from free flow solenoid valve OK.
LHS control assembly OK.
Wire 1734 OK.

POSSIBLE PROBLEMS

Wire 1435 from LHS supply solenoid valve faulty.
LHS supply solenoid valve faulty.

11.

WARNING
Read WARNING on Page 2-2359

Is continuity measured on wire 1435 at LHS supply solenoid valve harness connector, terminal 1 and chassis ground?

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If wire 1435 is loose or faulty, LHS supply solenoid valve will not be grounded.

NO → Repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance. Verify repair, go to Step 12 of this Fault.

YES → LHS supply solenoid valve is faulty. Notify DS Maintenance.

WARNING

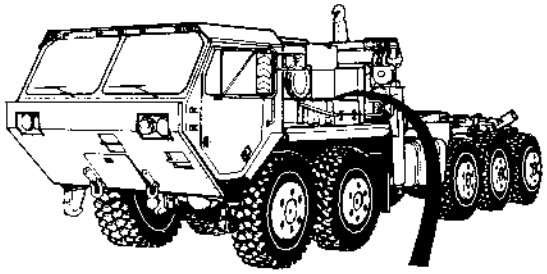
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Adhesive, solvents, and sealing compounds can burn easily, can give off harmful vapors, and 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.

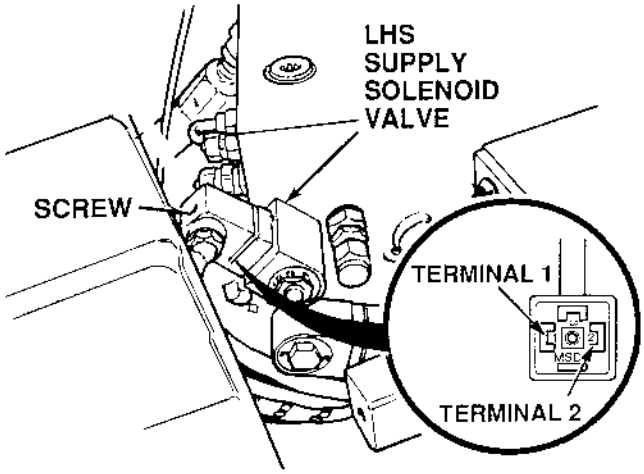
VOLTAGE TEST

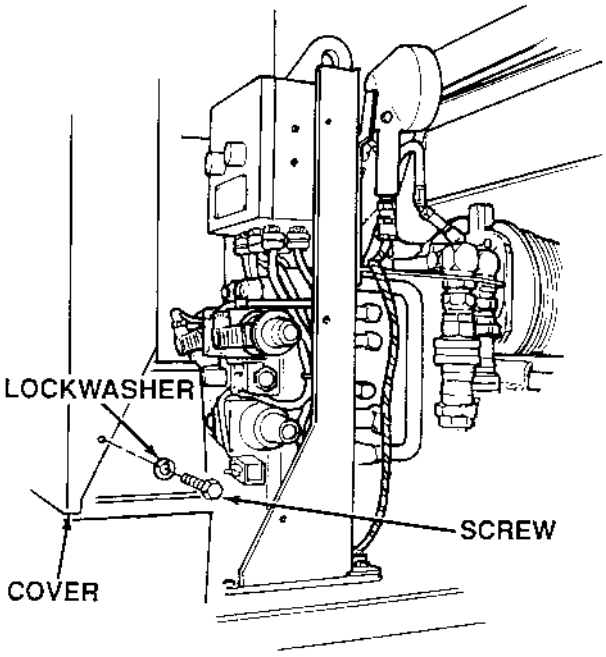
(1) Set multimeter select switch to volts dc.
(2) Remove harness connector from LHS supply solenoid valve.
(3) Connect positive (+) multimeter lead at harness connector, terminal 2.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to MAN HA position.
    (a) If there are not 22 to 28 vdc present, perform Steps (7) and (8) below and repair wire 1734 (see schematic Fig 2-52) or notify DS Maintenance.
    (b) If there are 22 to 28 vdc present, wire 1734 is OK.
(7) Set hydraulic selector switch to OFF position.
(8) Turn OFF ENGINE switch.

CONTINUITY TEST

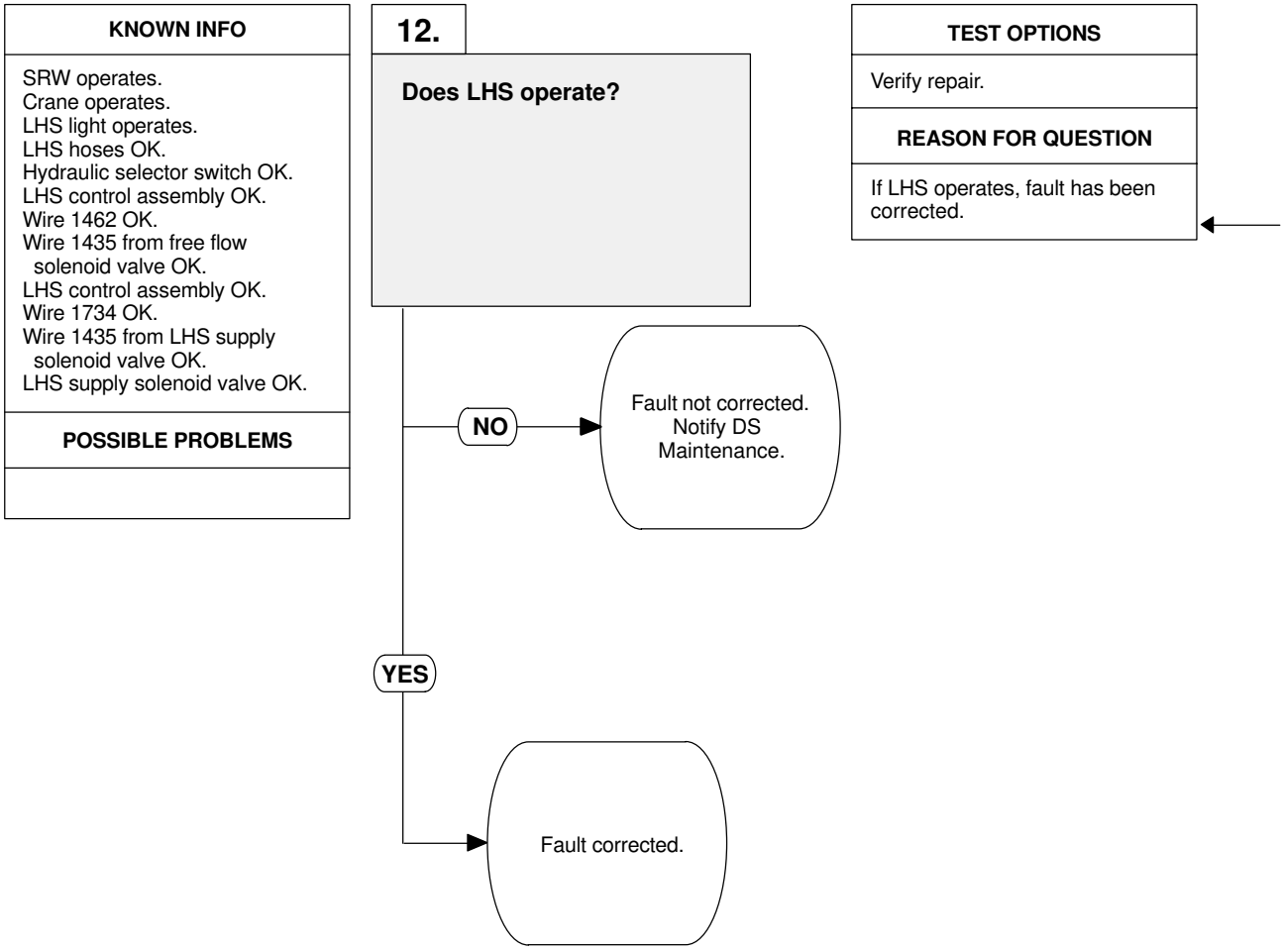
(1) Set multimeter select switch to ohms.
(2) Is there continuity between LHS supply solenoid valve harness connector, terminal 1 and a known good ground?
    (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52).
    (b) If there is continuity, wire is OK. Notify DS Maintenance.
(3) Install harness connector on LHS supply solenoid valve.
(4) Tighten connector screw and coat head of connector screw with adhesive.
(5) Install LHS control box cover, four lockwashers and screws.





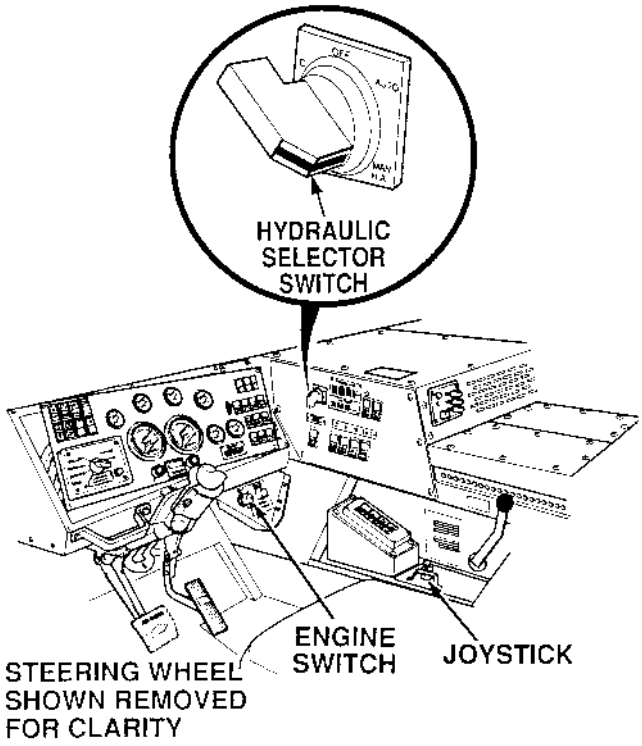


8. LHS DOES NOT OPERATE (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to AUTO position.
(3) Operate LHS.
    (a) If LHS does not operate, fault not corrected. Perform Steps (4) and (5) below and notify DS Maintenance.
    (b) Is LHS operates, fault has been corrected.
(4) Set hydraulic selector switch to OFF position.
(5) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE.

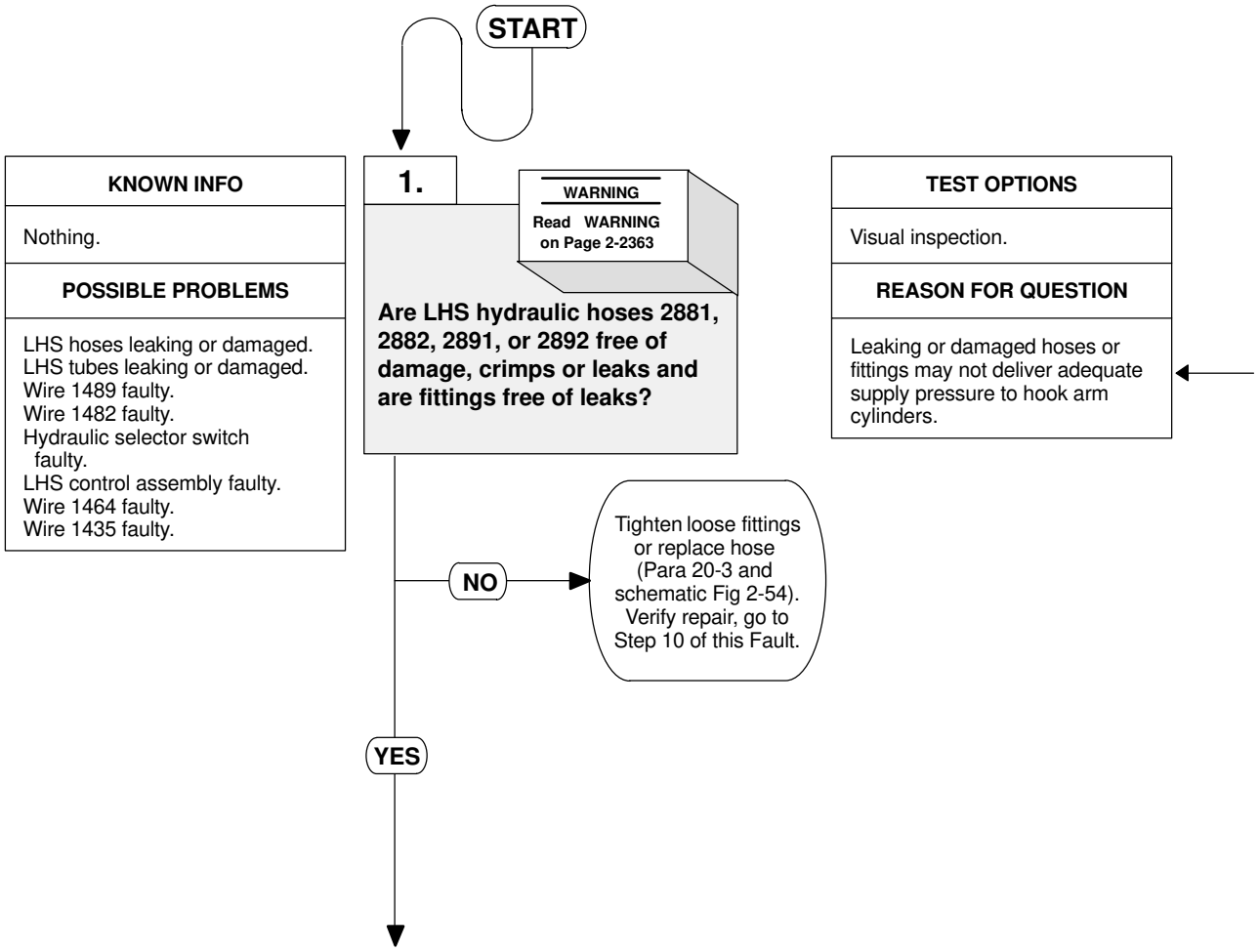
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
Adhesive (Item 8, Appendix C)

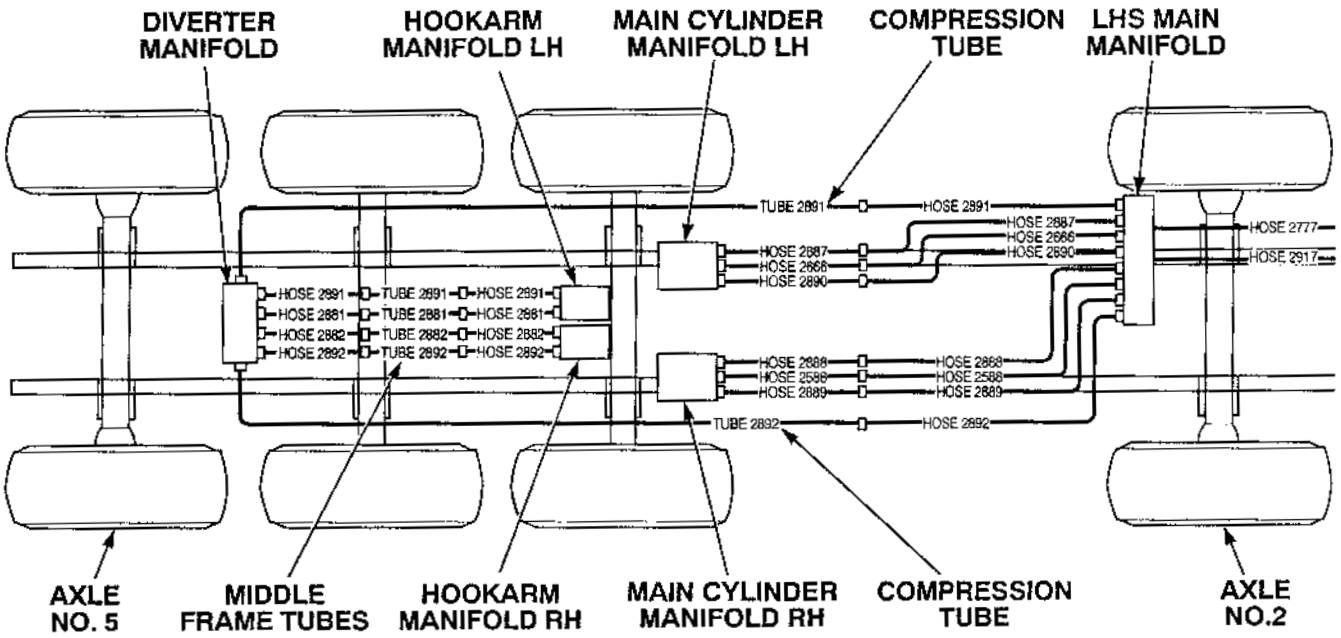
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



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. A high pressure oil stream can pierce body and cause severe injury to personnel.



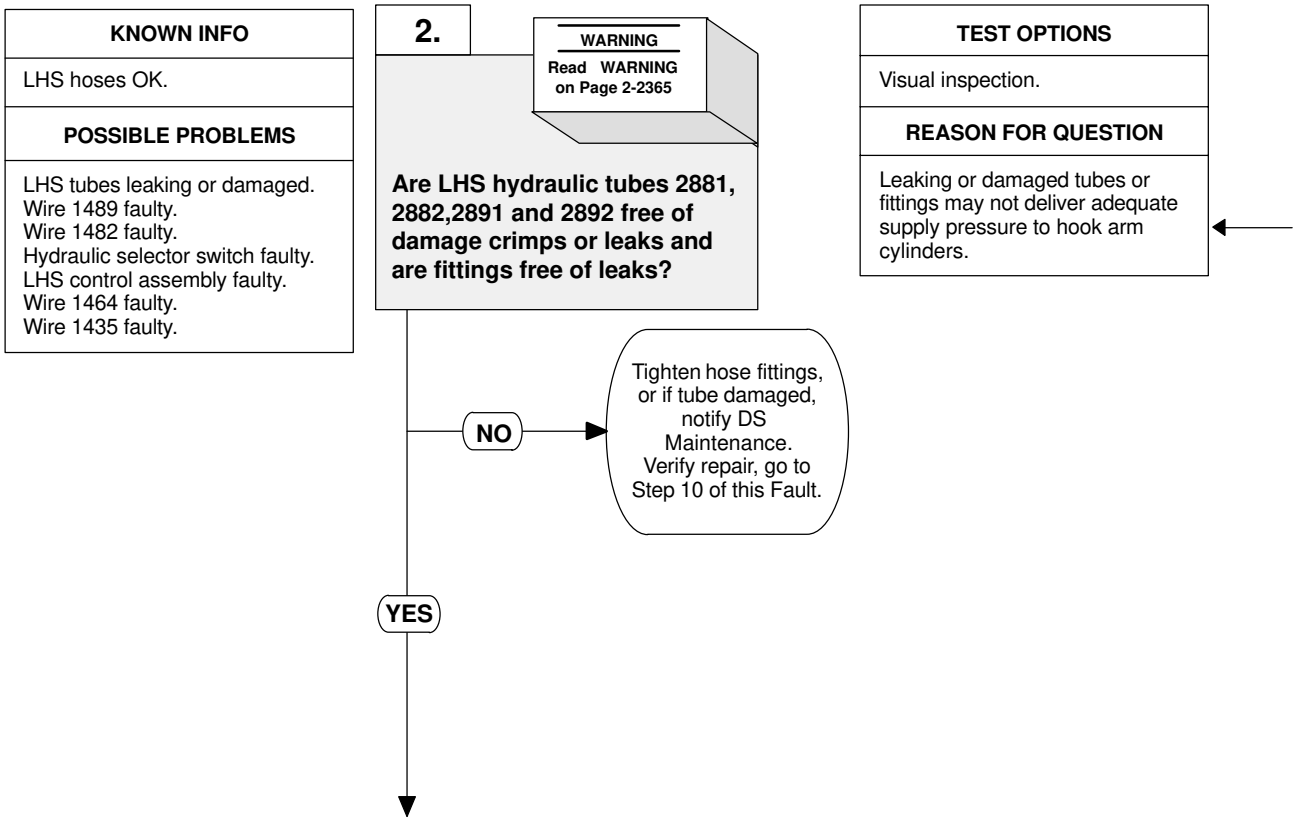
VISUAL INSPECTION

Inspect LHS hydraulic hoses 2881, 2882, 2891 and 2892 for damage, crimps or leaks.

(1) If hoses are damaged, crimped or leaking; tighten fittings or replace hoses (Para 20-3 and schematic Fig 2-54).

(2) If there are no leaks, crimps or damage; hoses and fittings are OK.

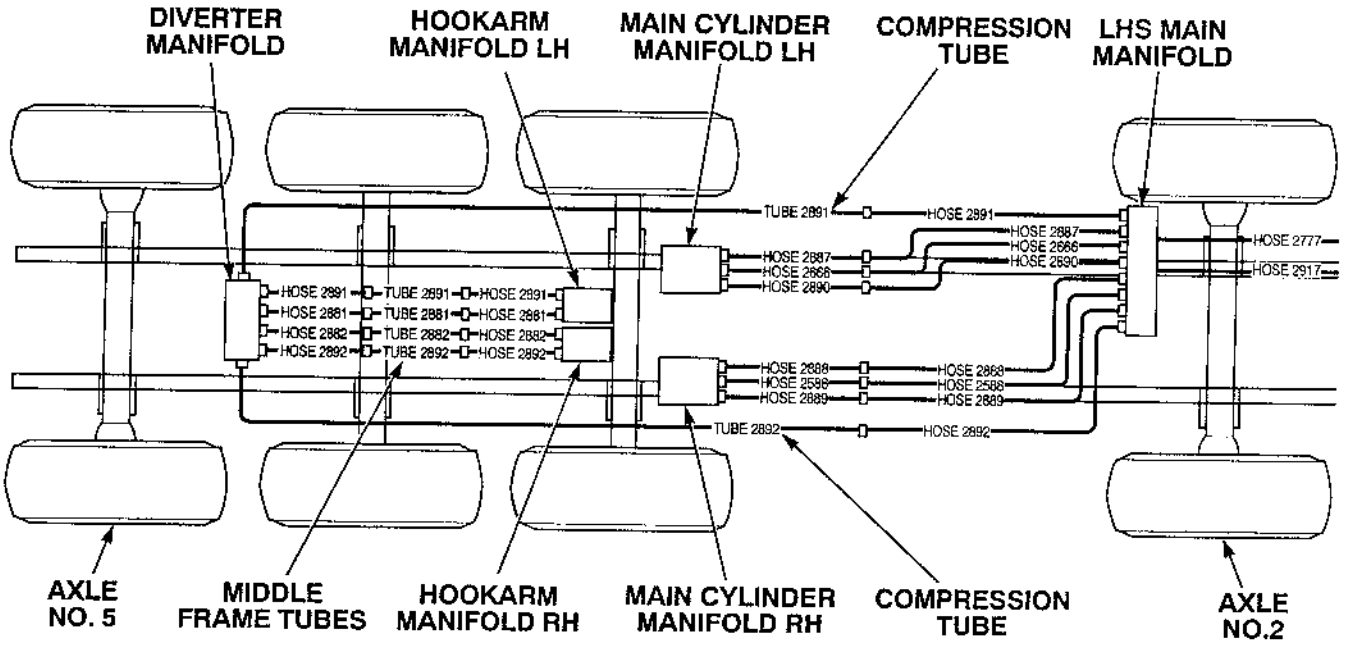
9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).



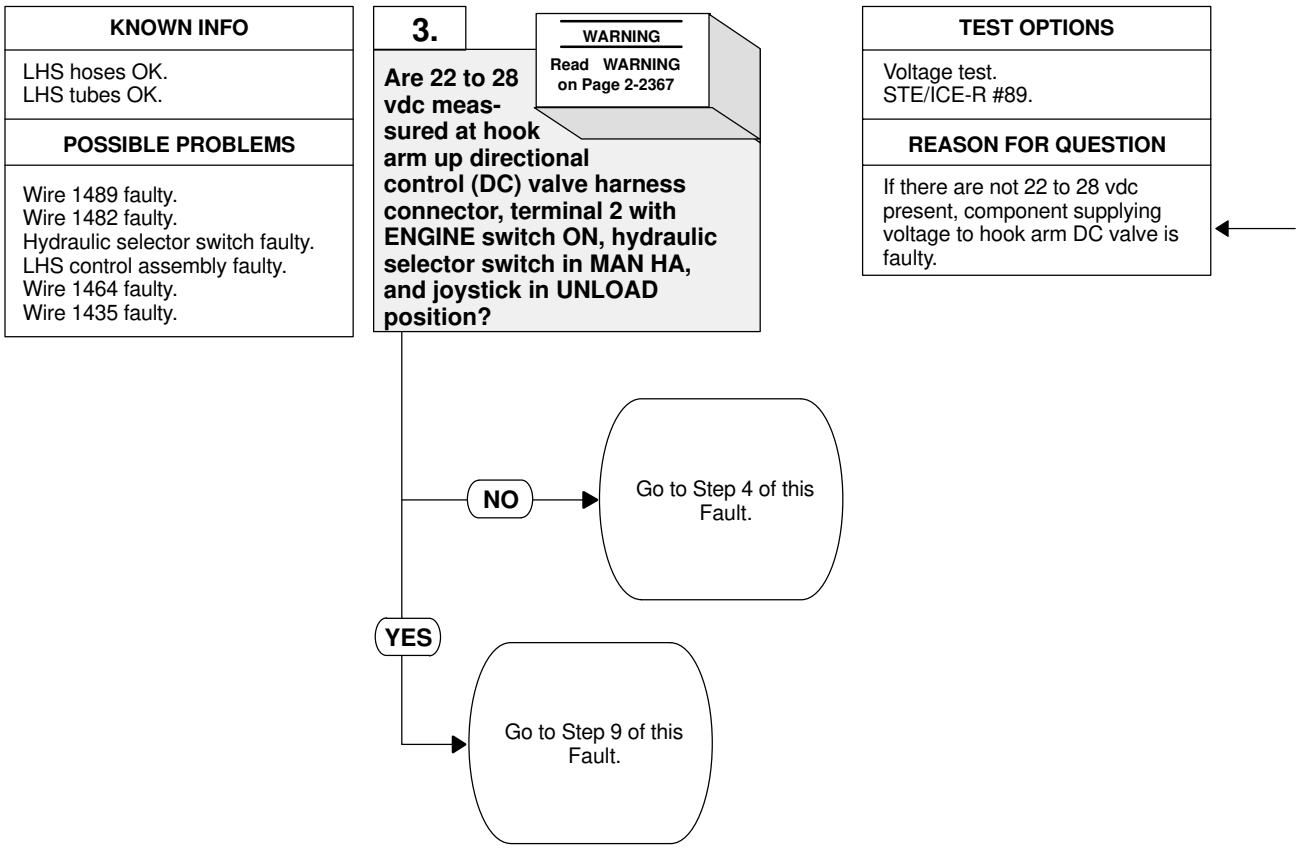
WARNING

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. A high pressure oil stream can pierce body and cause severe injury to personnel.

VISUAL INSPECTION
(1) Inspect two compression frame, LHS hydraulic tubes for damage, crimps or leaks. (2) Inspect four middle frame LHS hydraulic tubes 2881, 2882, 2891, and 2892 for damage, crimps or leaks. (a) If tubes are leaking, tighten fittings. (b) If tubes are damaged, notify DS Maintenance. (c) If there are no leaks, crimps or damage; tubes and fittings are OK.



9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).



WARNING

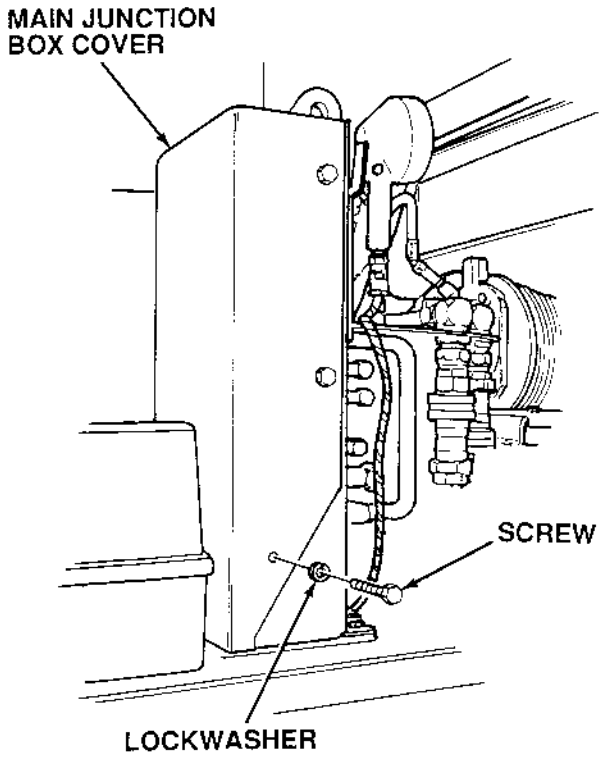
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

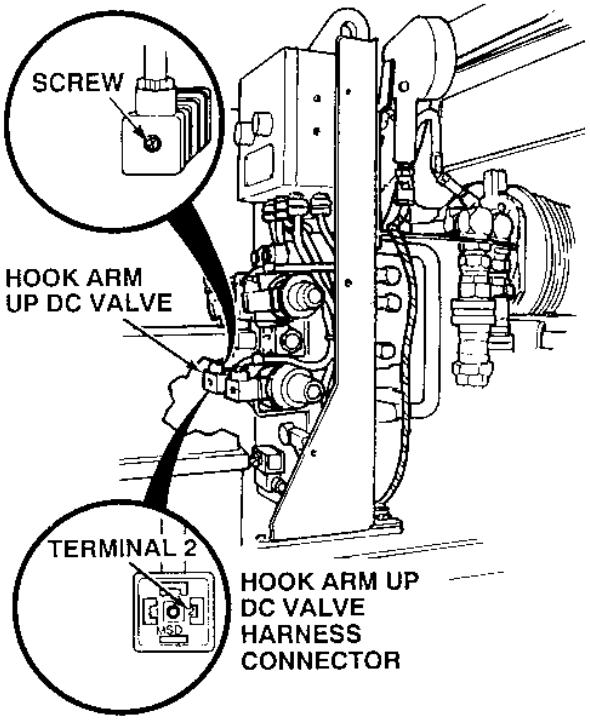
NOTE

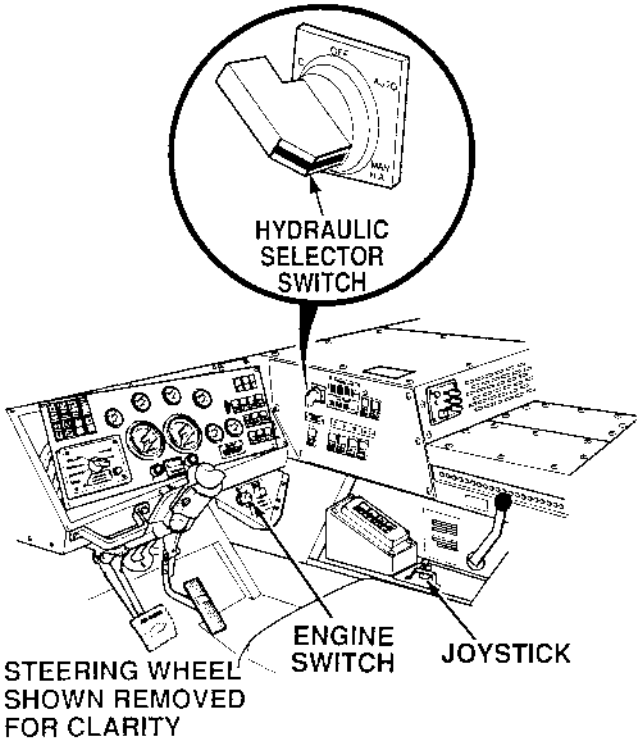
Only remove center screw on engine side of LHS control box cover.

VOLTAGE TEST

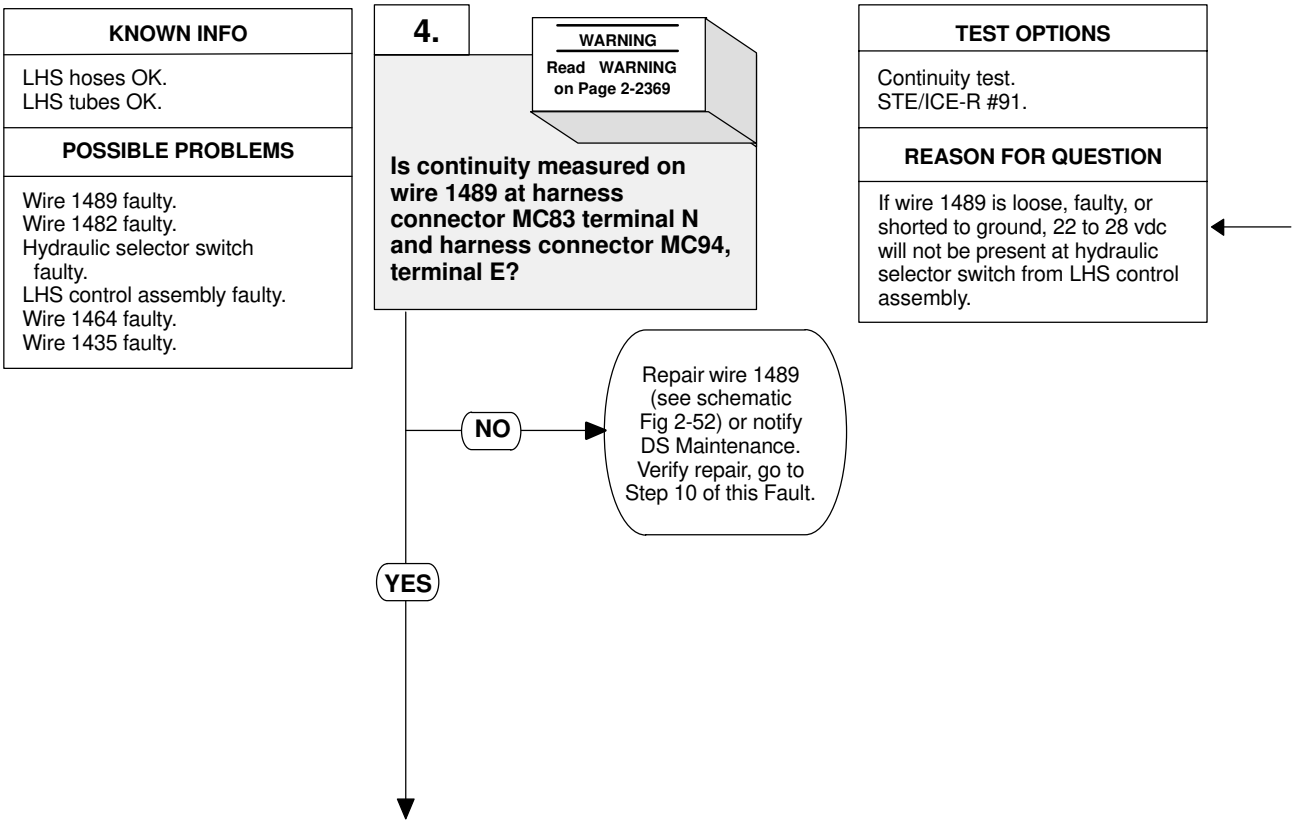
(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen screw and disconnect harness connector from hook arm up DC valve.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead at harness connector, terminal 2.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to MAN HA position.
(8) Hold joystick in UNLOAD position.
  (a) If there are not 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 4 of this Fault.
  (b) If there are 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 9 of this Fault.
(9) Set hydraulic selector switch to OFF position.
(10) Turn OFF ENGINE switch.







9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).

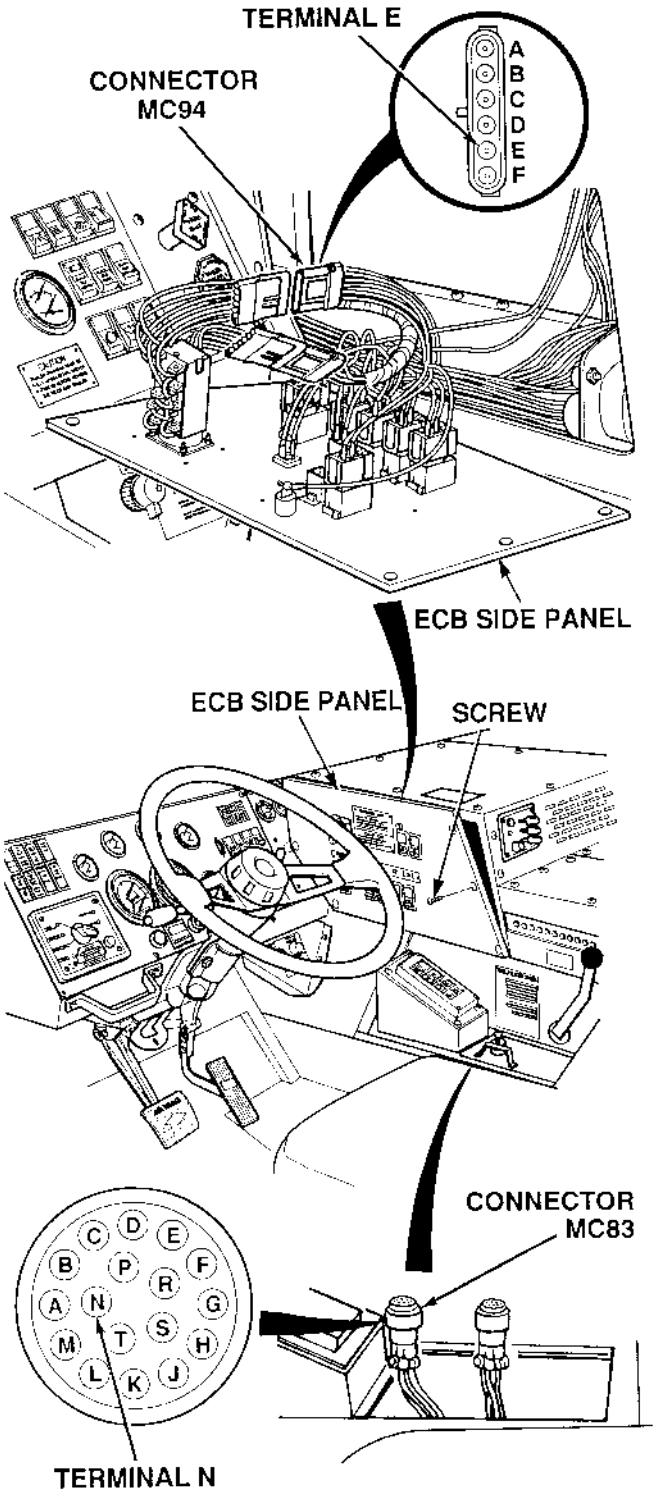


WARNING

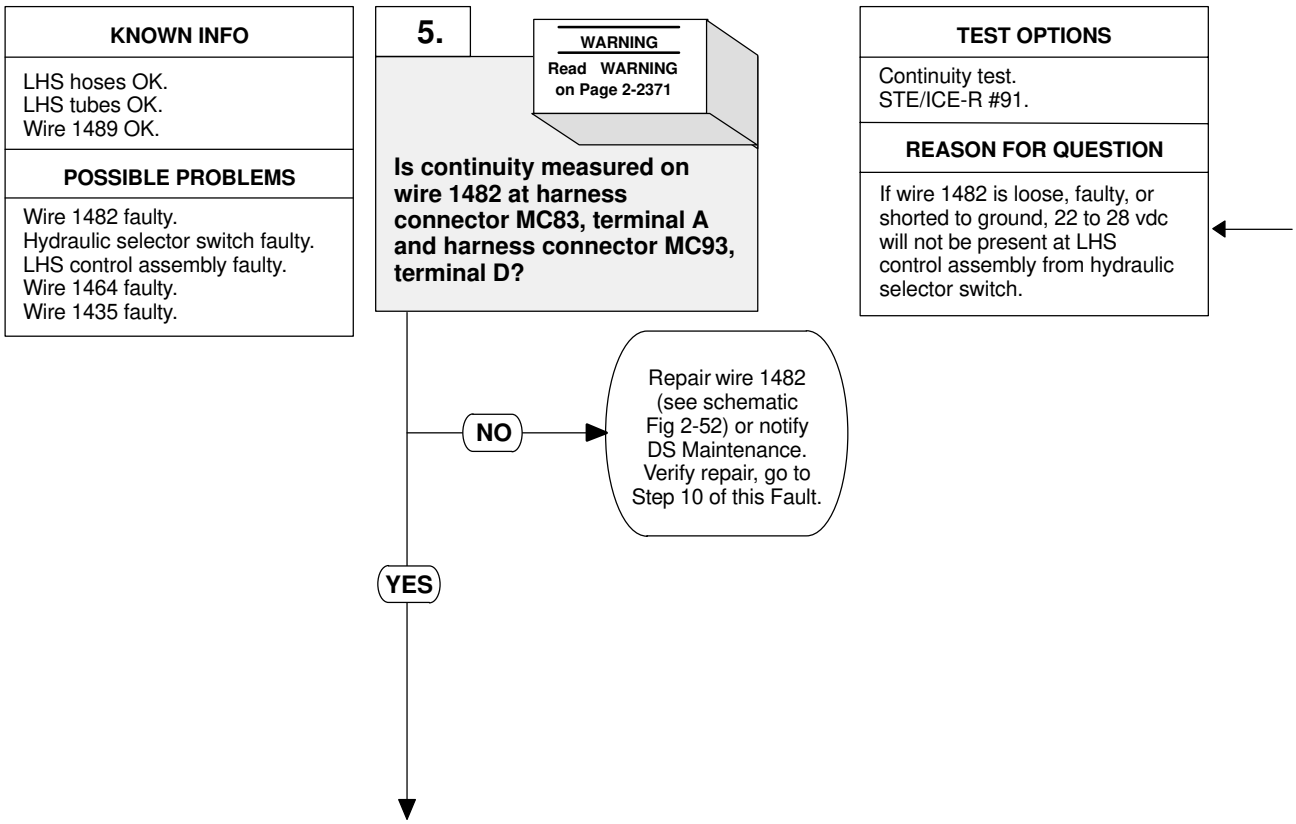
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Remove six screws and tilt ECB side panel.
(3) Disconnect harness connector MC94 from hydraulic selector switch connector.
(4) Set multimeter select switch to ohms.
(5) Is there continuity between harness connector MC83, terminal N and harness connector MC94, terminal E?
   (a) If there is no continuity, repair wire 1489 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1489 is OK.



9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).

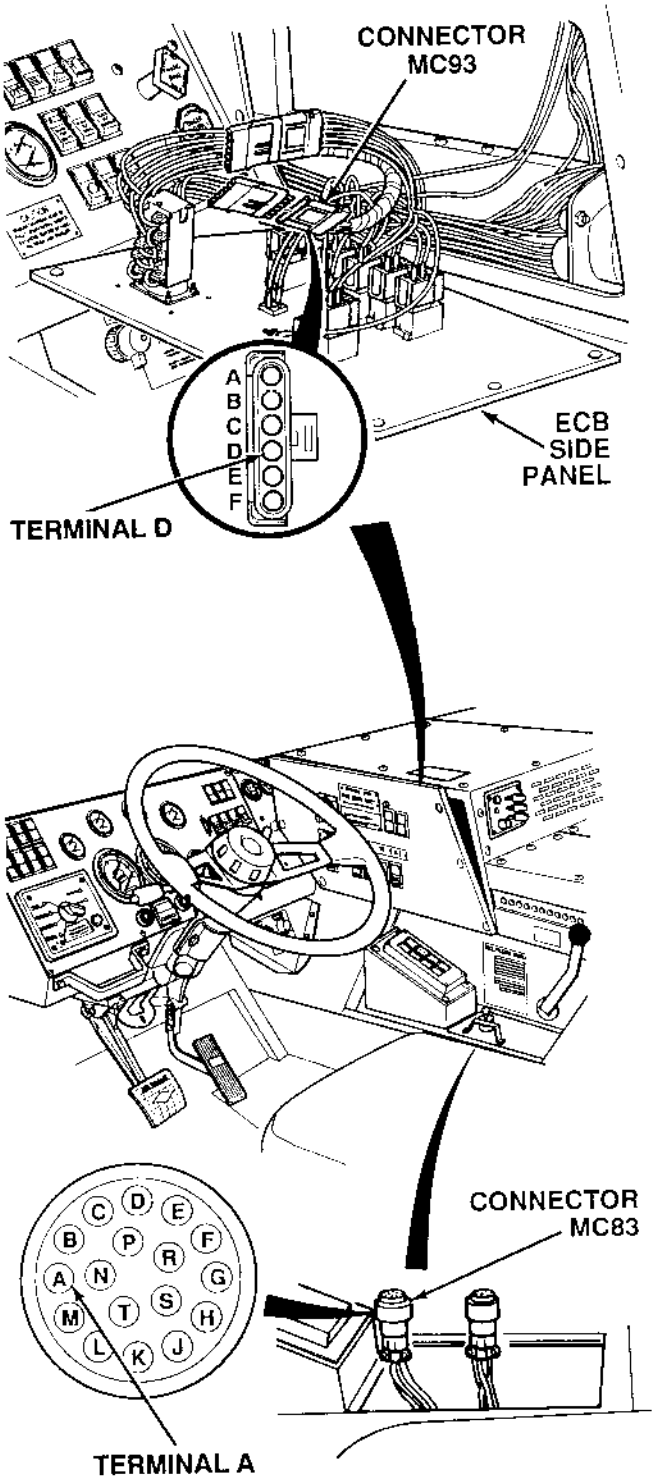


WARNING

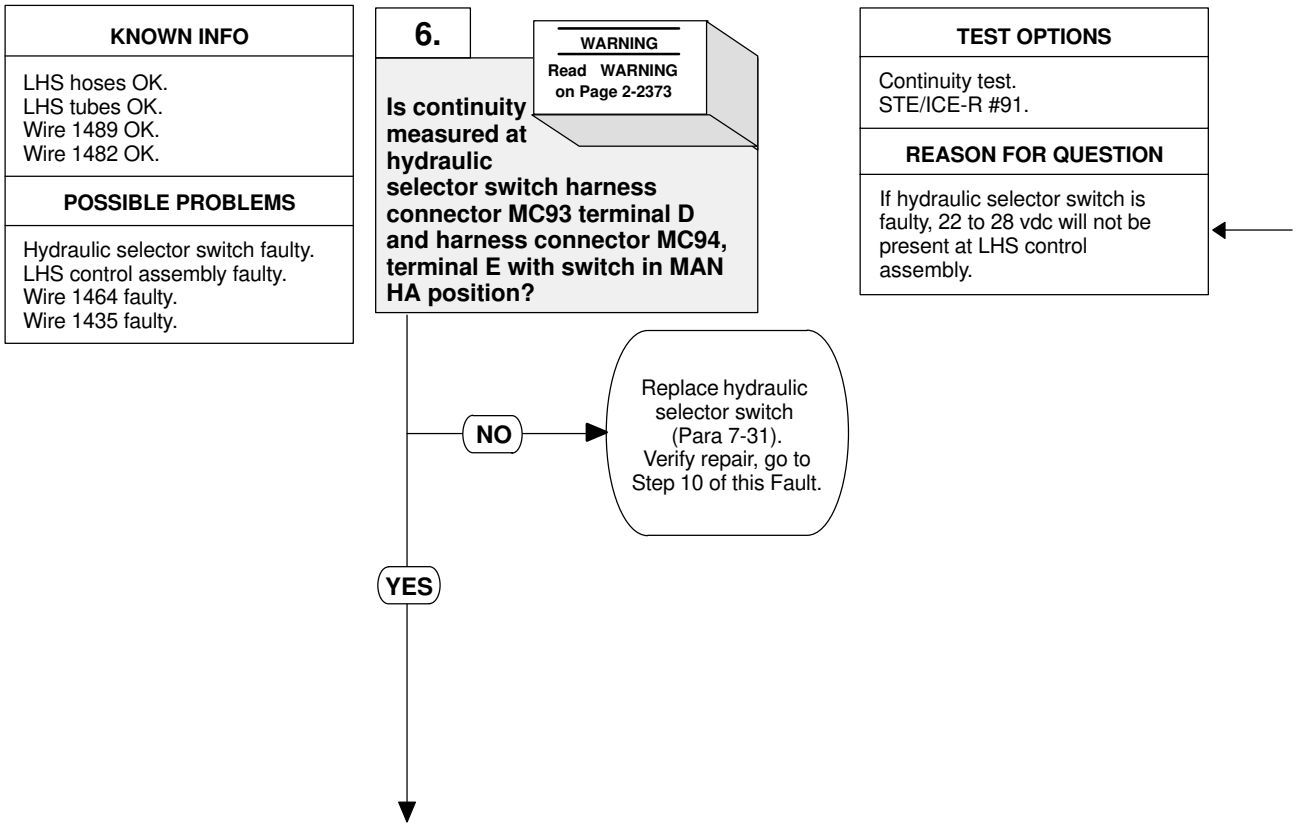
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect harness connector MC93 from hydraulic selector switch connector.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between harness connector MC83, terminal A and harness connector MC93, terminal D?
  (a) If there is no continuity, repair wire 1482 (see schematic Fig 2-52).
  (b) If there is continuity, wire 1482 is OK.
(4) Install LHS control assembly (Para 7-40).



9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).

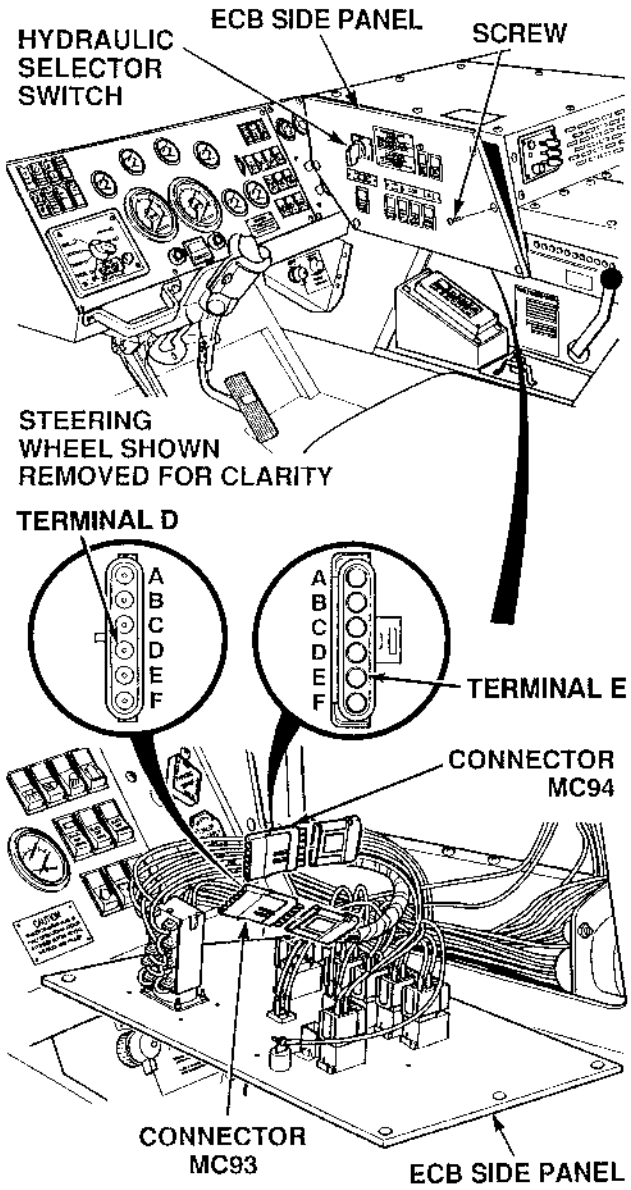


WARNING

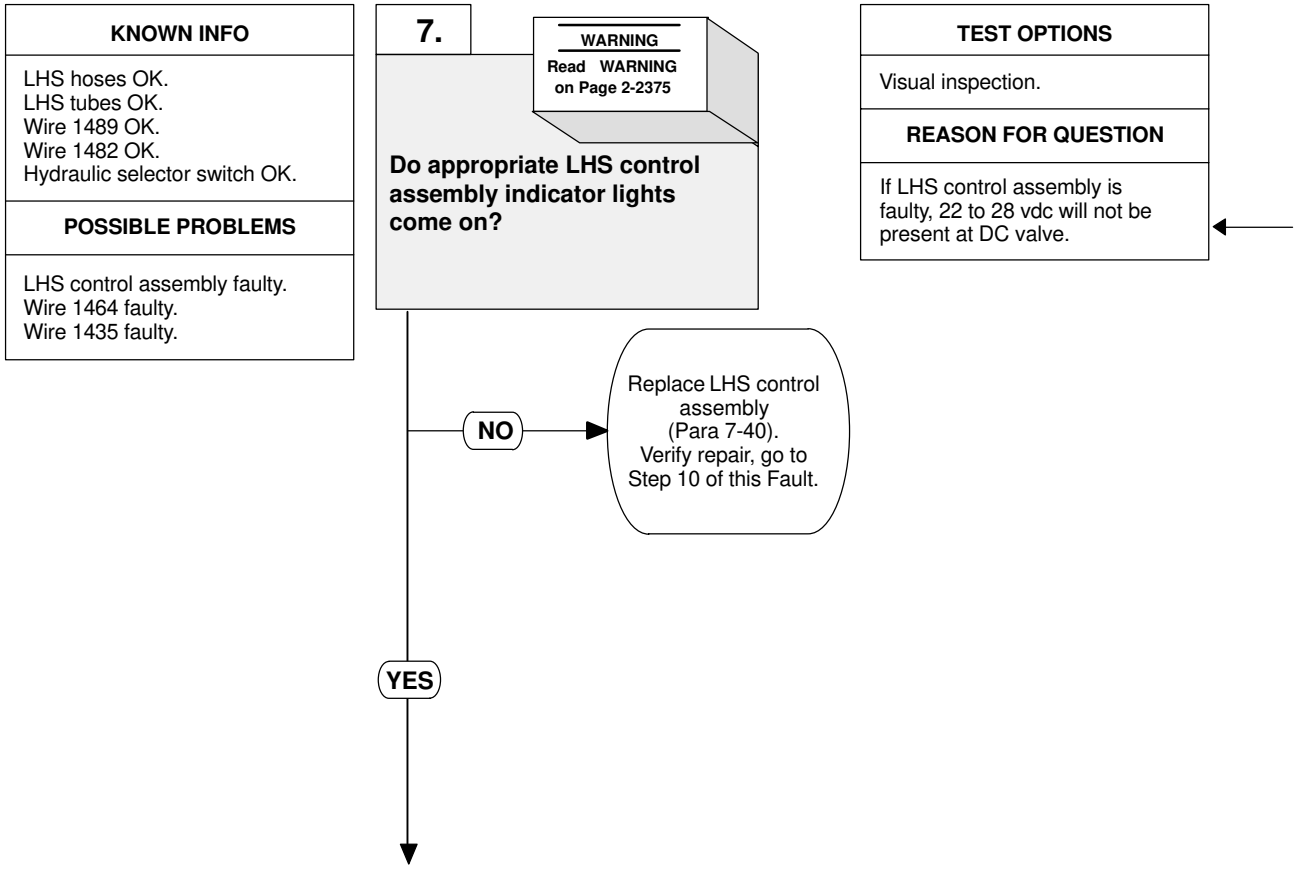
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set hydraulic selector switch to MAN HA position (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between harness connector MC93, terminal D and harness connector MC94, terminal E?
  (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
  (b) If there is continuity, hydraulic selector switch is OK.
(4) Connect harness connector MC94 to hydraulic selector switch connector.
(5) Connect harness connector MC93 to hydraulic selector switch connector.
(6) Install ECB side panel and six screws.



9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).



WARNING

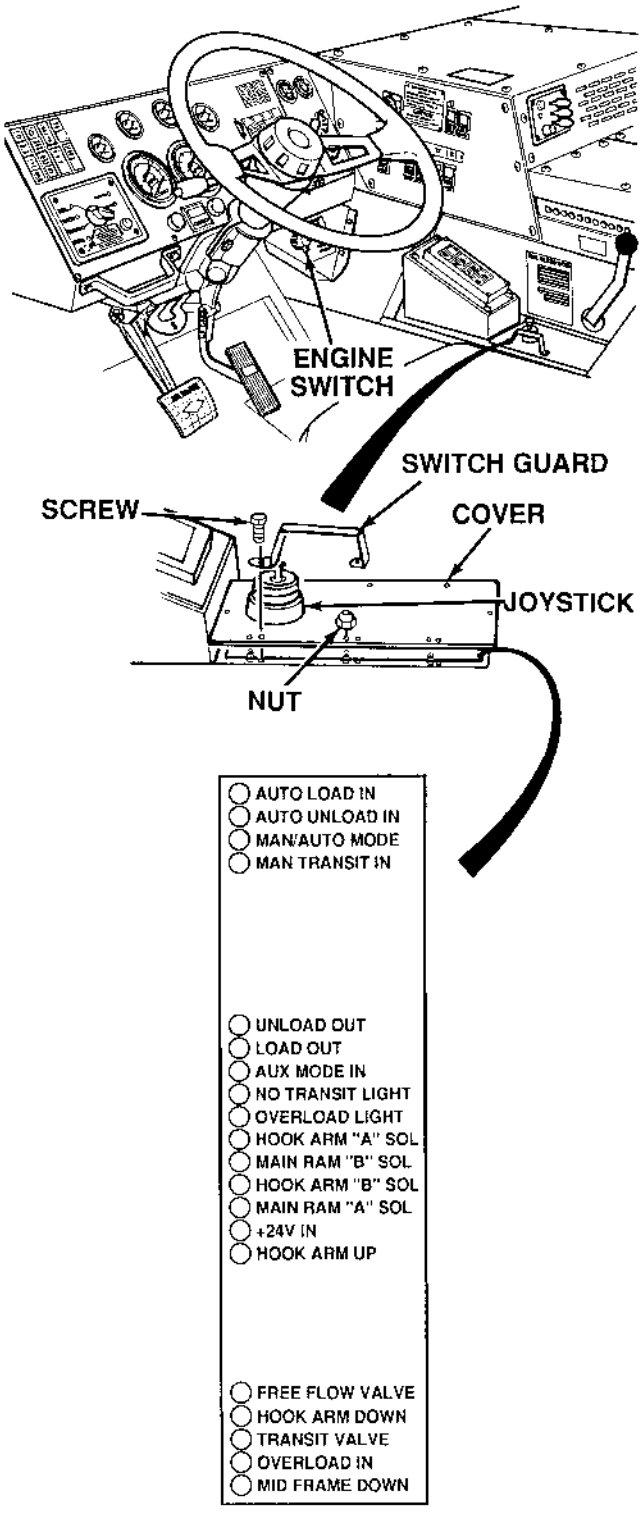
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

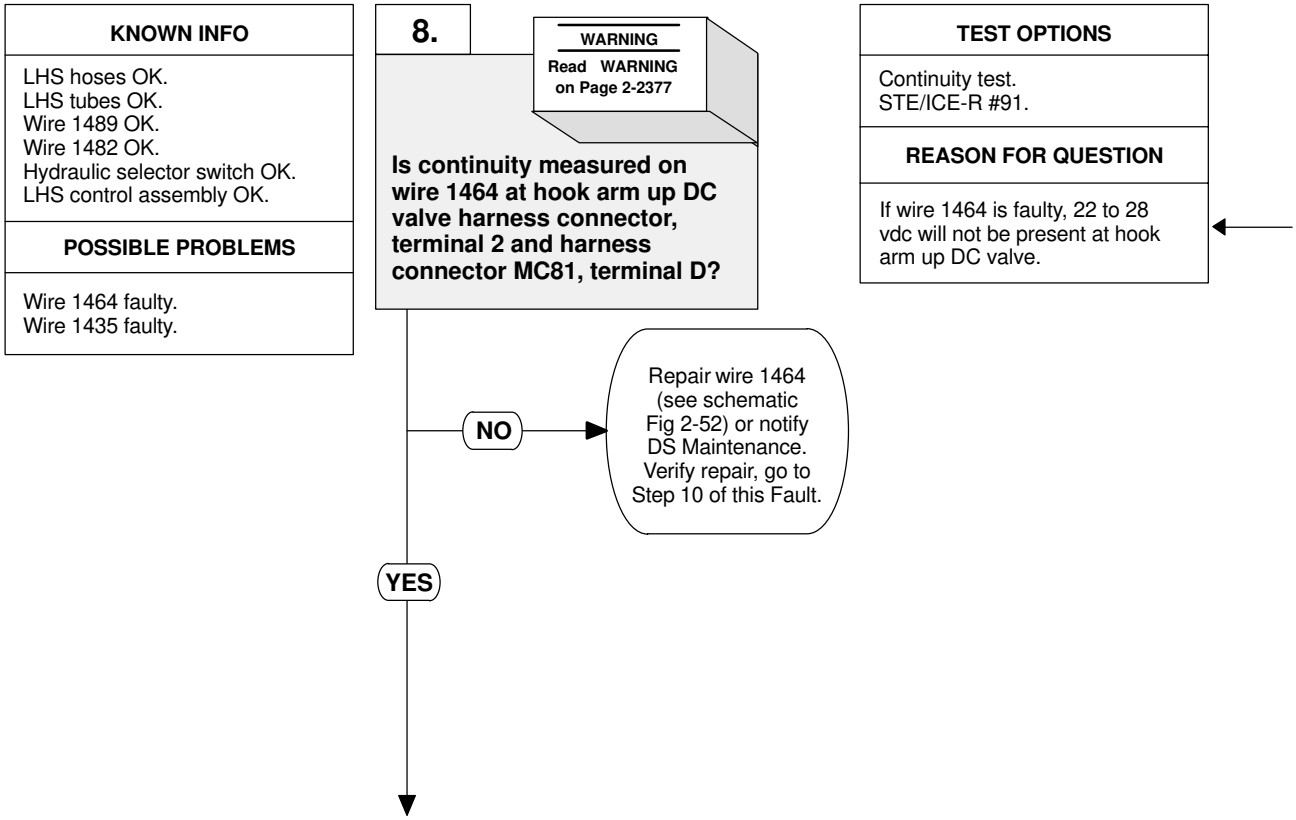
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

VISUAL INSPECTION

(1) Remove eight screws, switch guard and eight nuts from LHS control assembly.
(2) Carefully lift off LHS control assembly cover. Do not allow cover to dangle by joystick connecting wires.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Set hydraulic selector switch to MAN HA position.
(5) Hold joystick in UNLOAD position.
(6) Observe red indicator lights in bottom of LHS control assembly.
  (a) If HOOK ARM A indicator lamp does not illuminate with joystick in UNLOAD position, perform Steps (7) and (8) below and install LHS control assembly cover, switch guard and eight nuts and replace LHS control assembly (Para 7-40).
  (b) If HOOK ARM A indicator lamp illuminates, LHS control assembly is OK.
(7) Set hydraulic selector switch to OFF position.
(8) Turn OFF ENGINE switch.



9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).

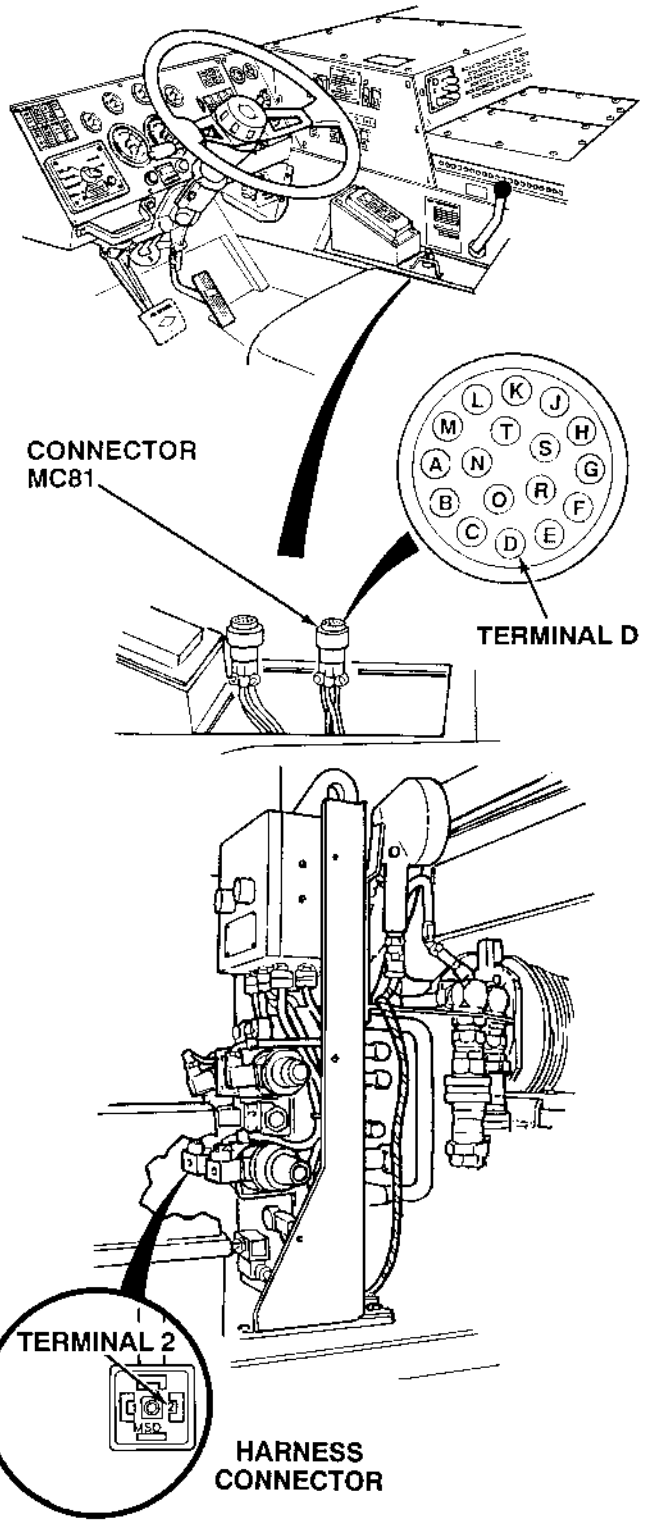


WARNING

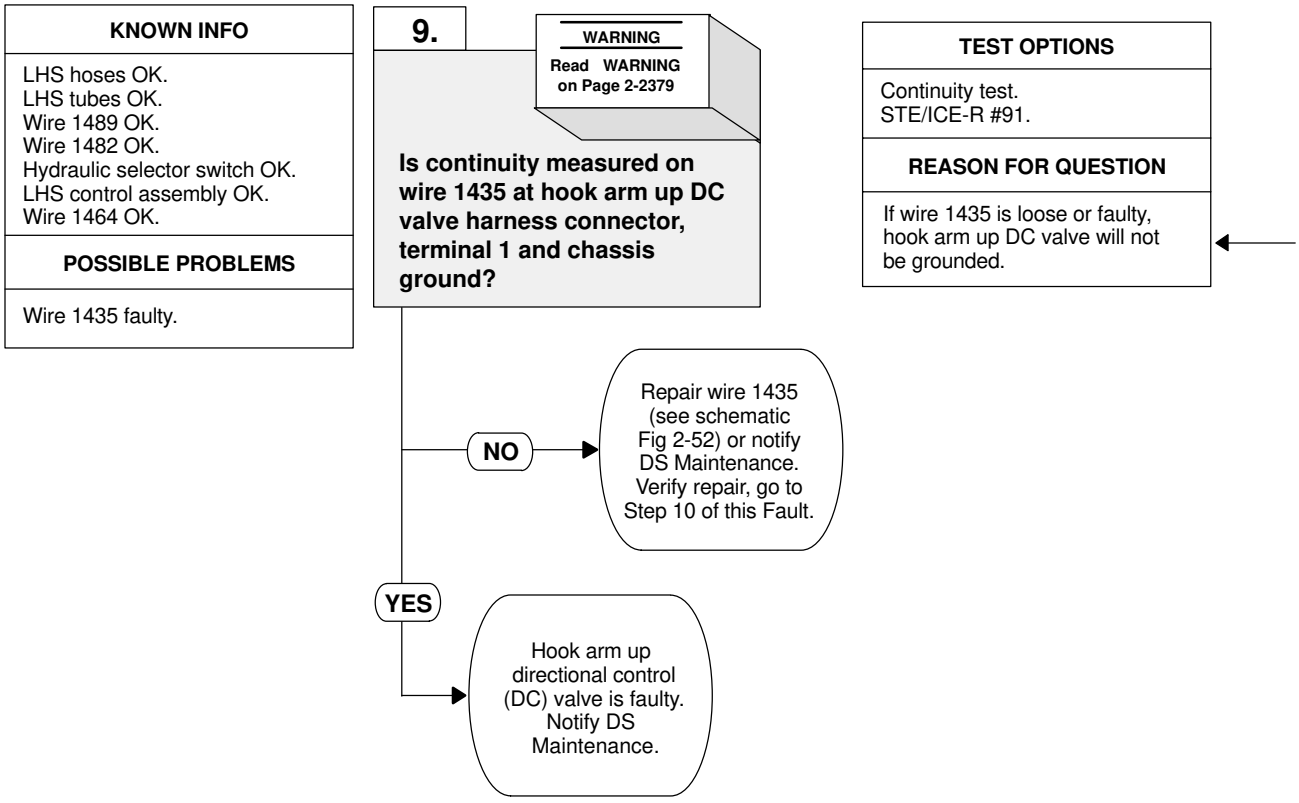
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect LHS control assembly from connectors.
(2) Set multimeter select switch to ohms.
(3) Using jumperwire, connect DC valve harness connector, terminal 2 to known good ground.
(4) Is there continuity between harness connector MC81, terminal D and known good ground?
  (a) If there is no continuity, repair wire 1464 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1464 is OK.
(5) Install LHS control assembly (Para 7-40).



9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).

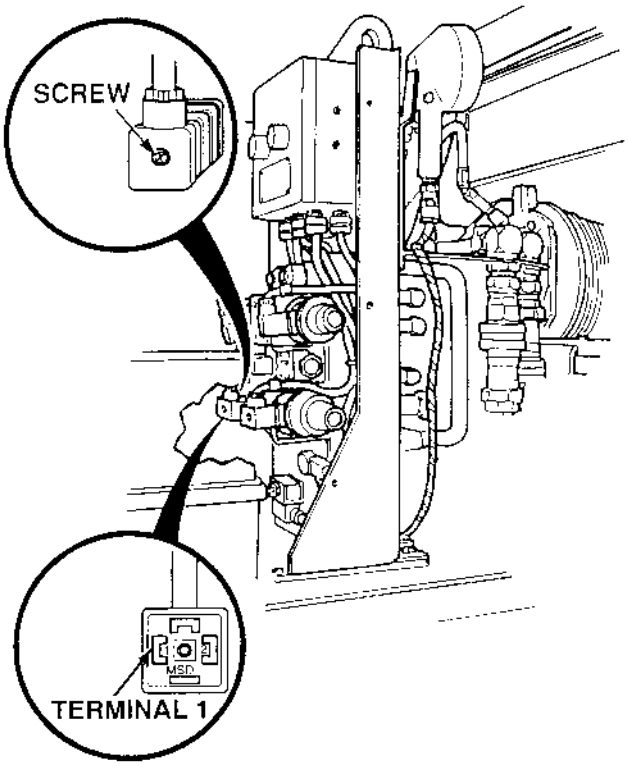


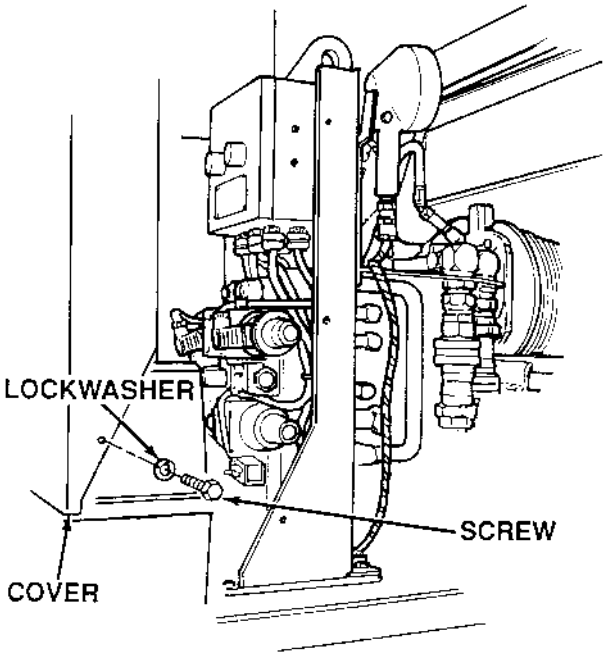
WARNING

- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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.

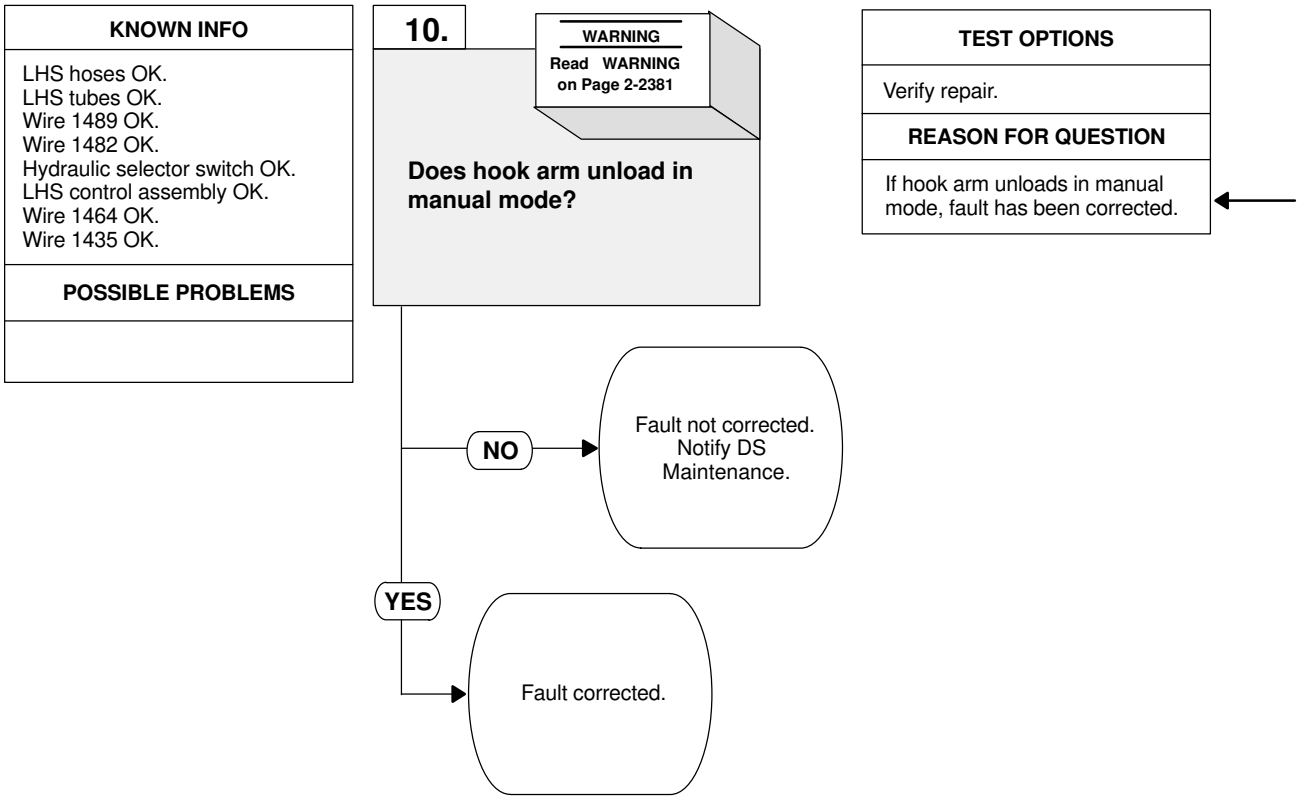
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between hook arm up DC valve harness connectors, terminal 1 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52).
  (b) If there is continuity, wire 1435 is OK.
(3) Install harness connector on hook arm up DC valve.
(4) Tighten connector screw and coat head of connector screw with adhesive.
(5) Install LHS control box cover, four lockwashers and screws.





9. HOOK ARM DOES NOT UNLOAD IN MANUAL MODE (CONT).

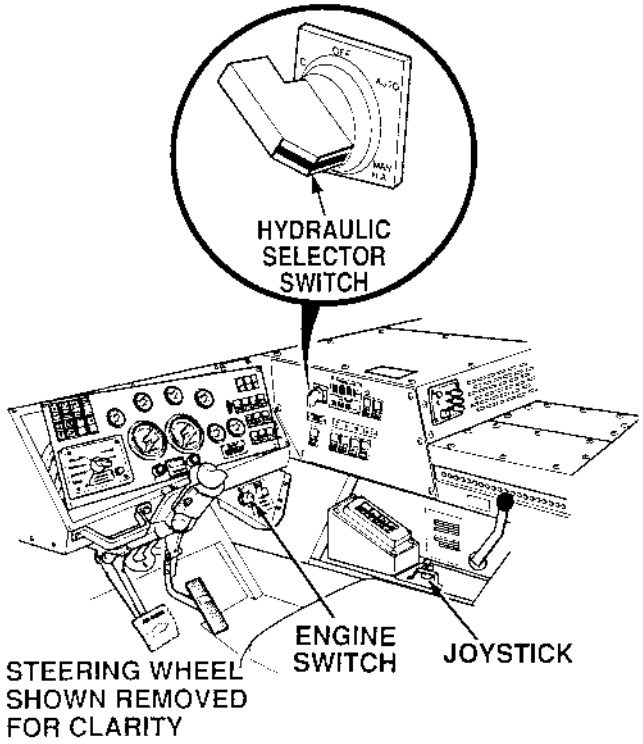


WARNING

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

VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch in MAN HA position.
(3) Hold joystick in UNLOAD position.
    (a) If hook arm does not unload, fault not corrected. Perform Steps (4) through (6) below and notify DS Maintenance.
    (b) If hook arm unloads, fault has been corrected.
(4) Release joystick.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING PROCEDURES (CONT).

10. HOOK ARM DOES NOT LOAD IN MANUAL MODE.

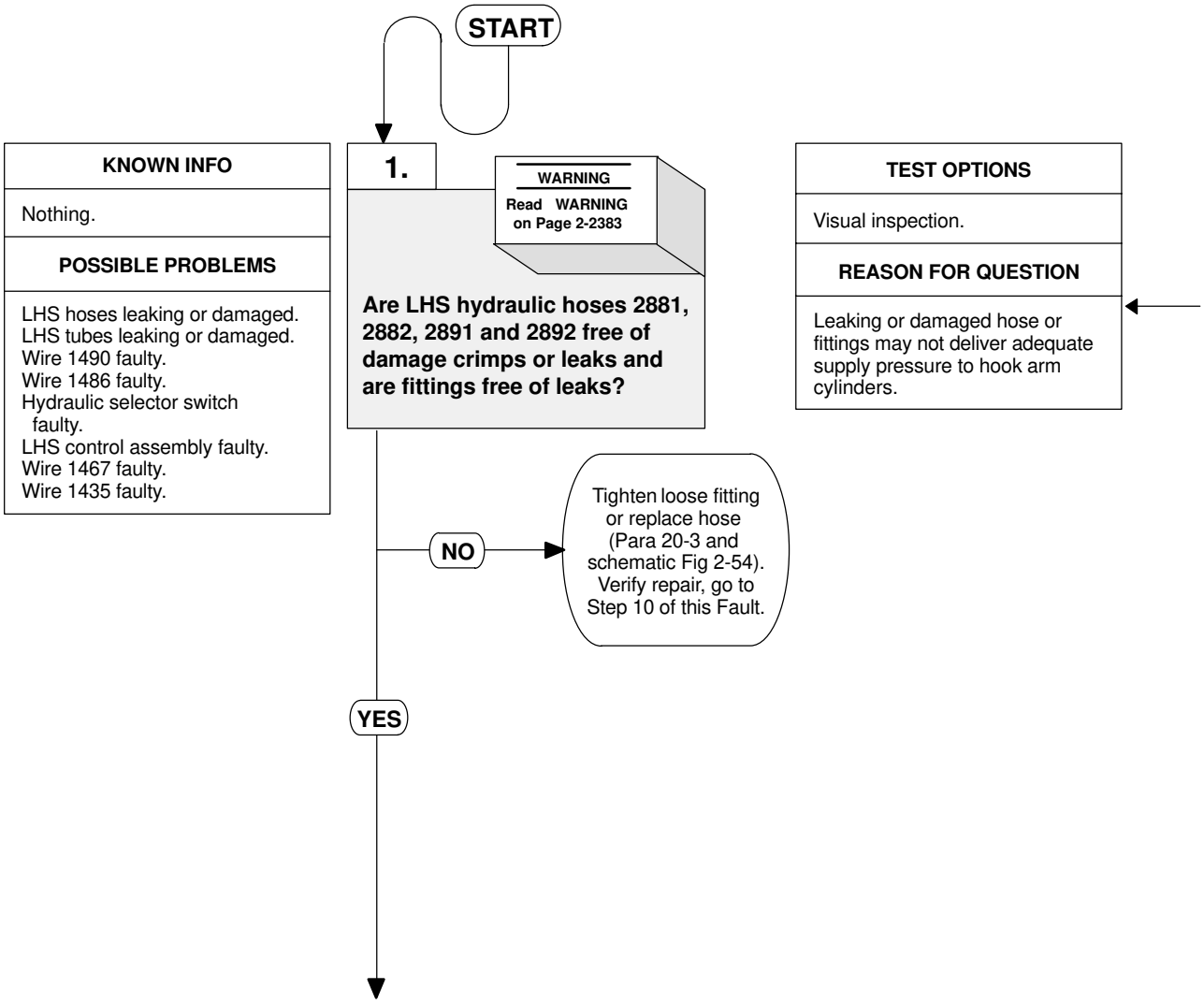
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
Adhesive (Item 8, Appendix C)

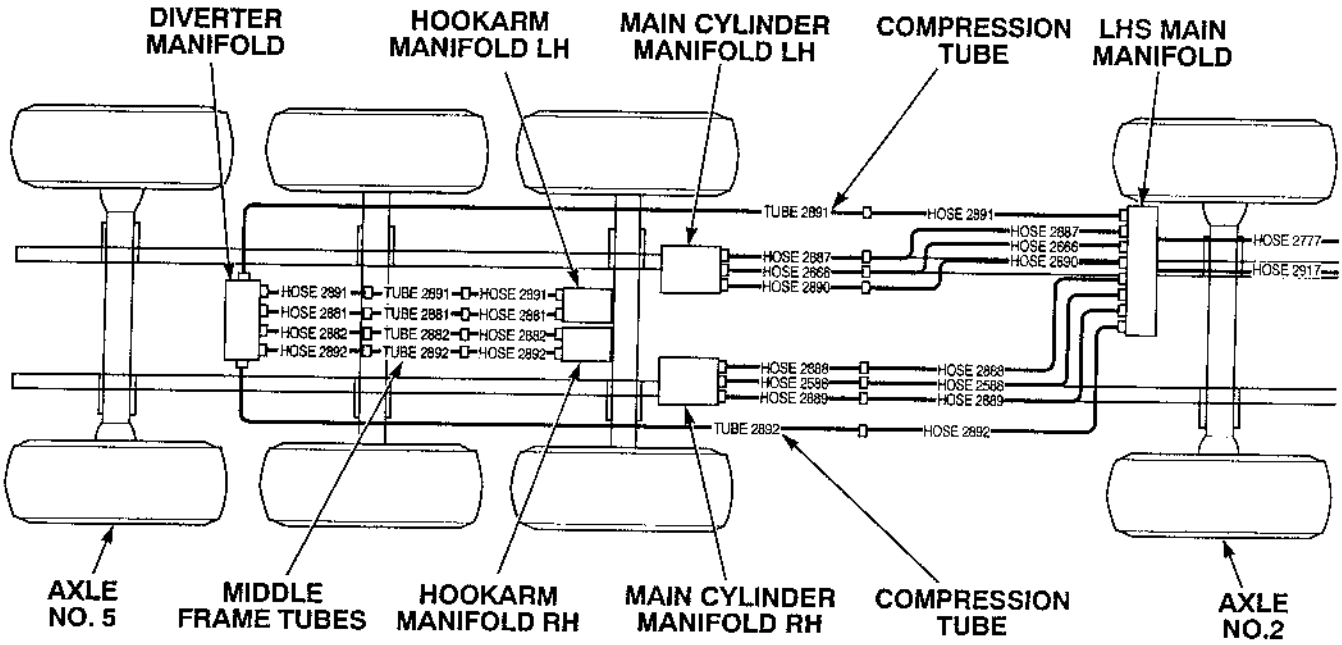
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



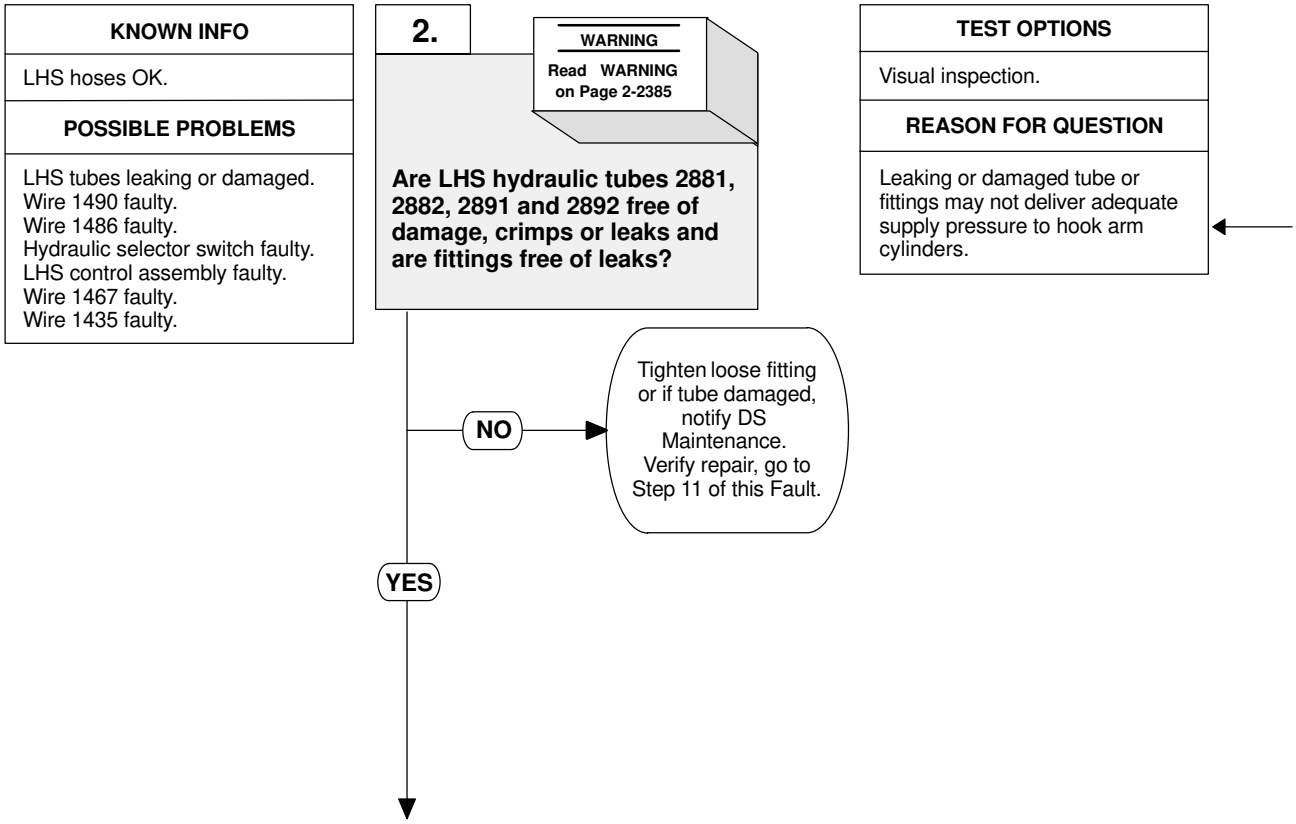
WARNING

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. A high pressure oil stream can pierce body and cause severe injury to personnel.



	VISUAL INSPECTION
	Inspect LHS hydraulic hoses 2881, 2882, 2891 and 2892 for damage, crimps or leaks. (1) If hoses are damaged, crimped or leaking; tighten fittings or replace hoses (Para 20-3 and schematic Fig 2-54). (2) If there are no leaks, crimps and damage; hoses and fittings are OK.

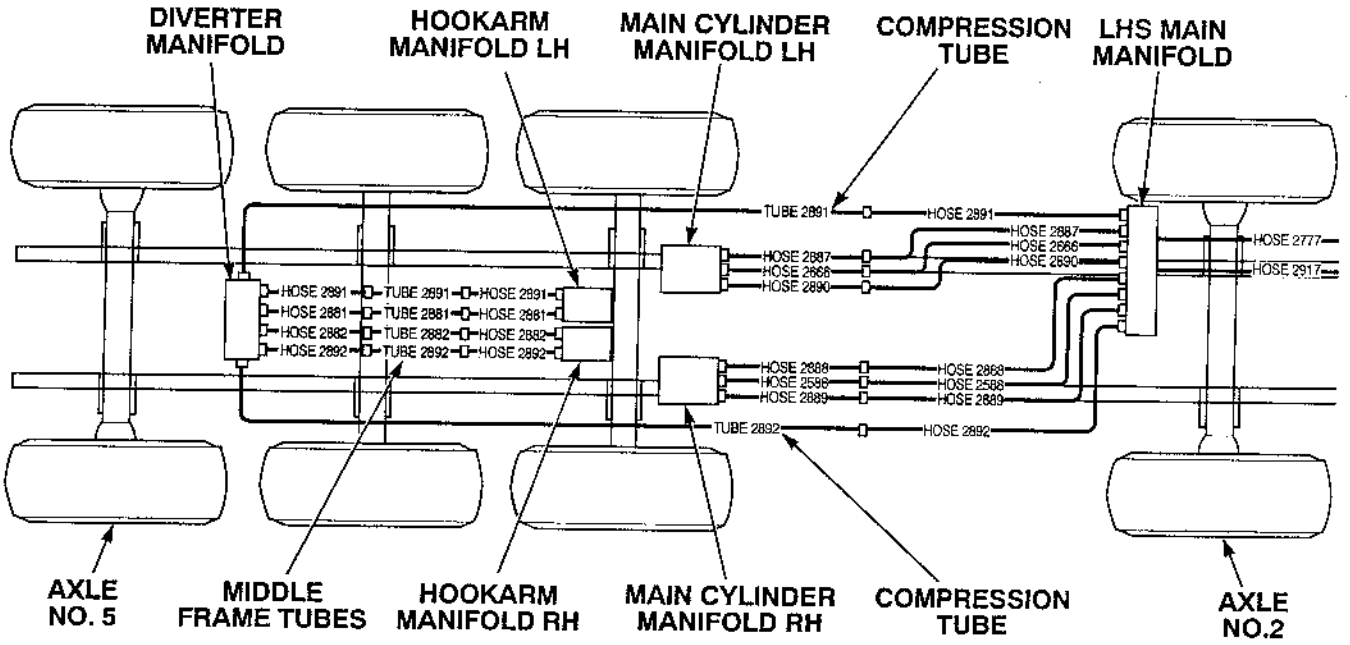
10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).



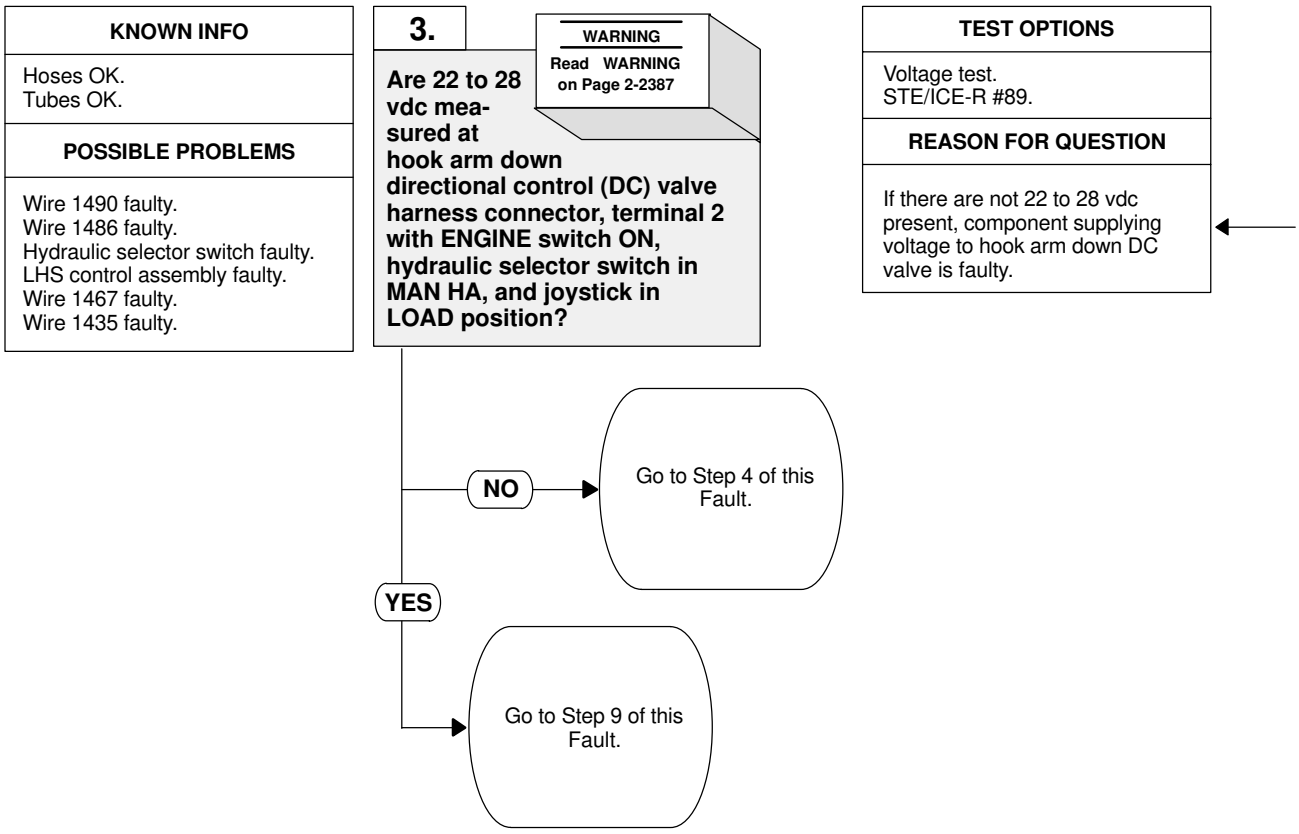
WARNING

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. A high pressure oil stream can pierce body and cause severe injury to personnel.

VISUAL INSPECTION
(1) Inspect two compression frame LHS hydraulic tubes for damage, crimps or leaks. (2) Inspect four middle frame LHS hydraulic tubes for damage, crimps or leaks. (a) If tubes are leaking, tighten fittings. (b) If tubes are damaged, notify DS Maintenance. (c) IF there are no leaks, crimps or damage, tubes and fittings are OK.



10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).



WARNING

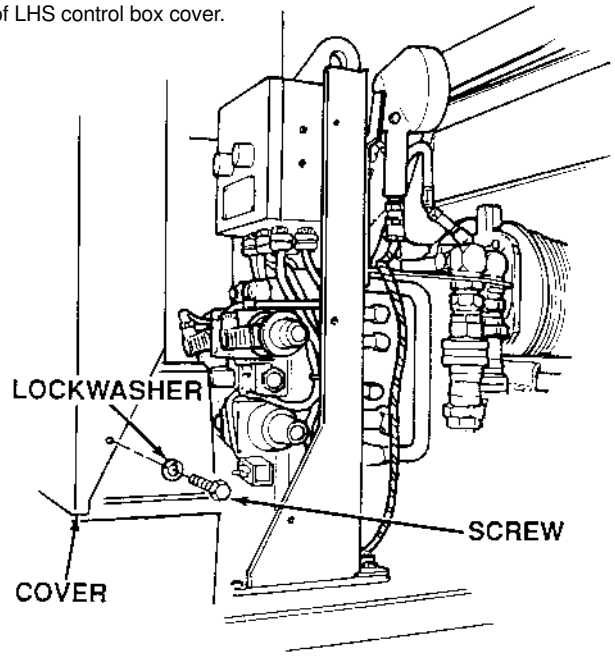
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

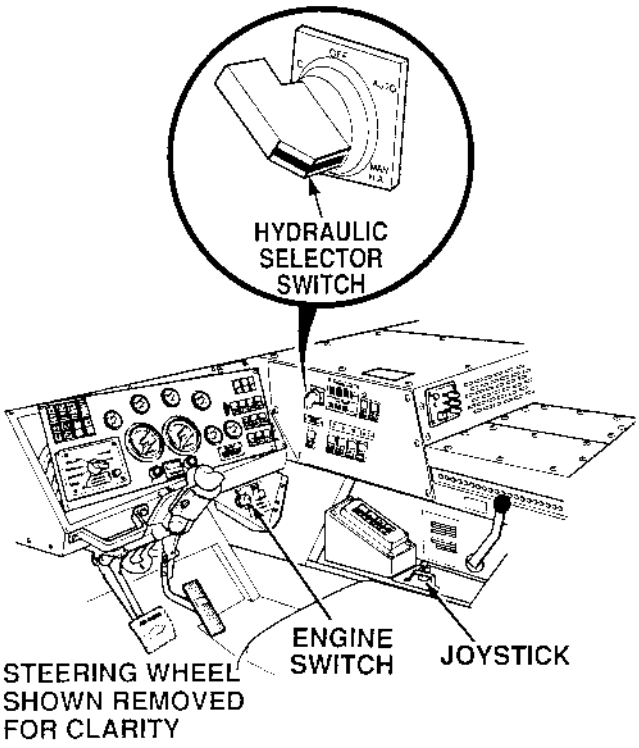
NOTE

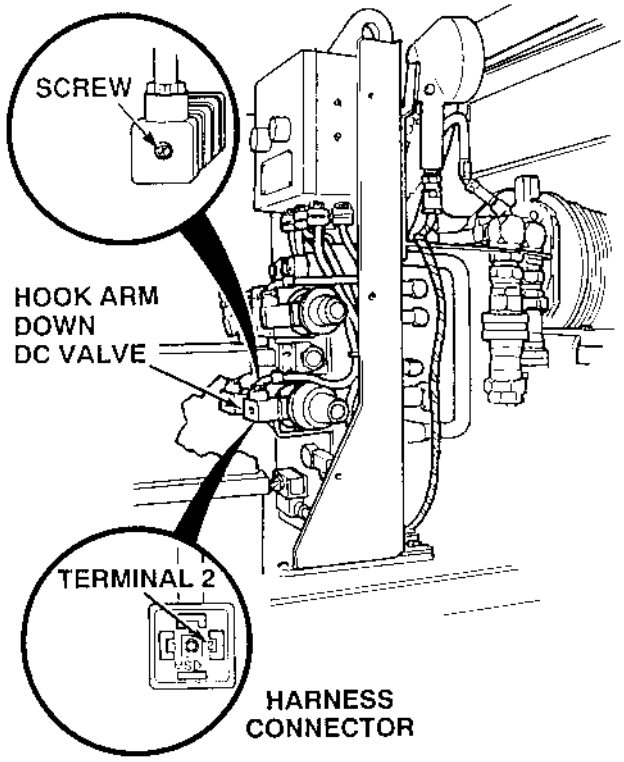
Only remove center screw on engine side of LHS control box cover.

VOLTAGE TEST

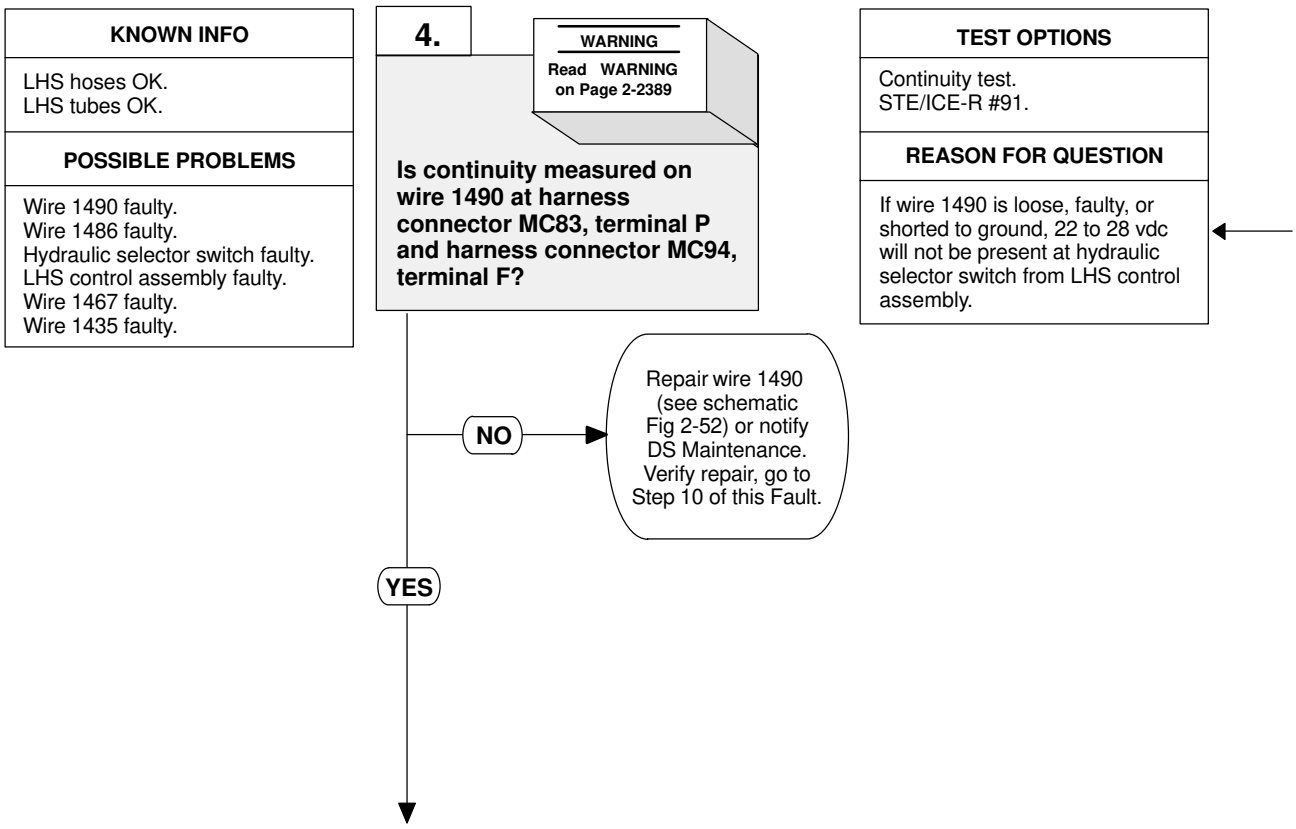
(1) Remove four screws, lockwashers, and LHS control box cover. Discard lockwashers.
(2) Loosen screw and remove harness connector from hook arm down DC valve.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead at harness connector, terminal 2.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to MAN HA position.
(8) Hold joystick in LOAD position.
  (a) If there are not 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 4 of this Fault.
  (b) If there are 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 9 of this Fault.
(9) Set hydraulic selector switch to OFF position.
(10) Turn OFF ENGINE switch.







10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).

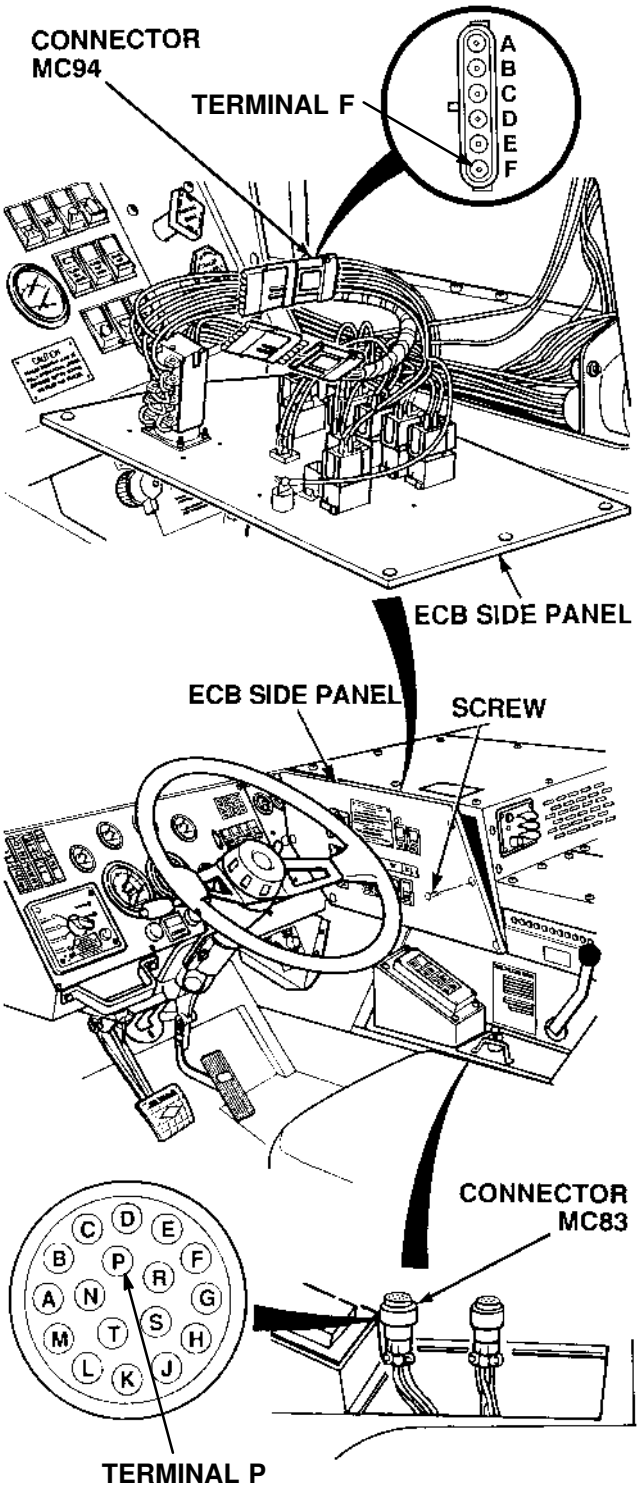


WARNING

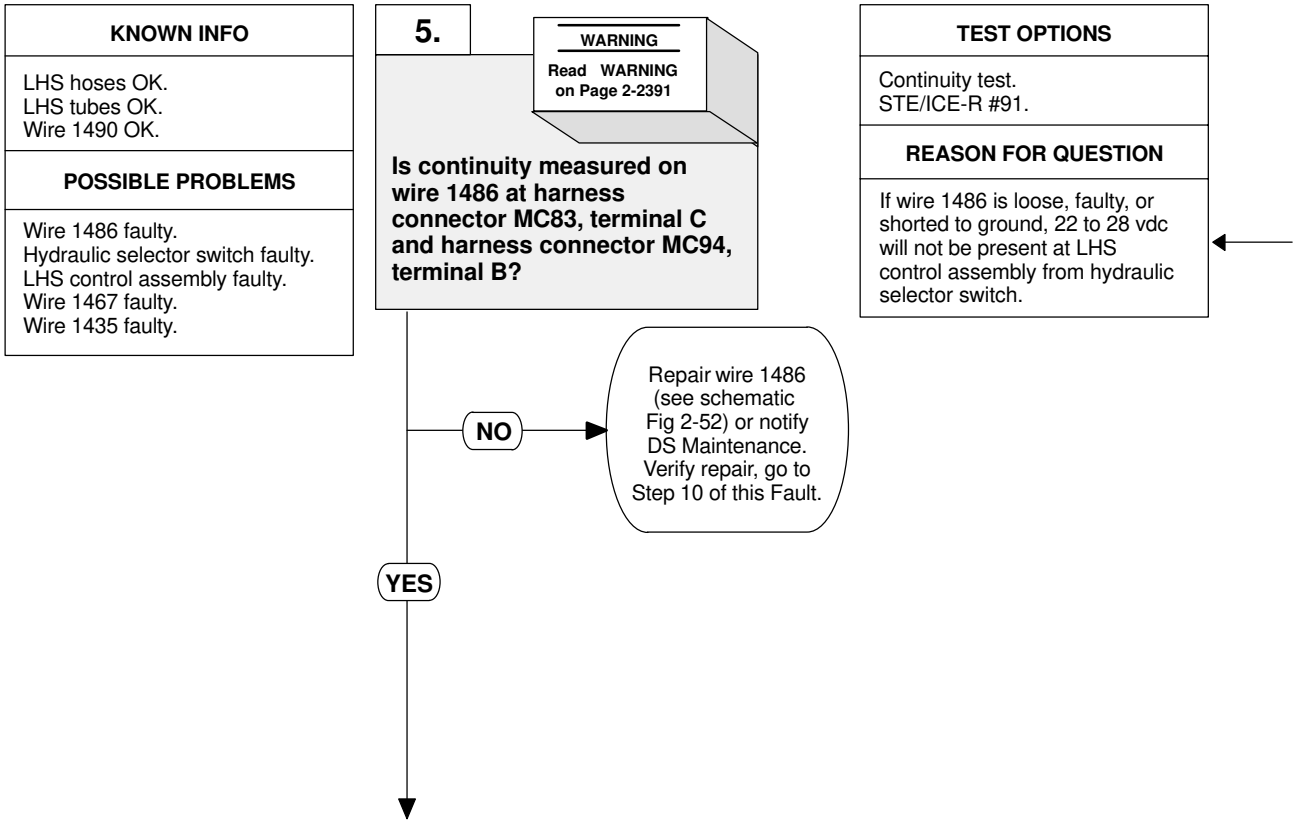
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Remove six screws and tilt ECB side panel.
(3) Disconnect harness connector MC94 from hydraulic selector switch connector.
(4) Set multimeter select switch to ohms.
(5) Is there continuity between harness connector MC83, terminal P and harness connector MC94, terminal F?
   (a) If there is no continuity, repair wire 1490 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1490 is OK.



10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).

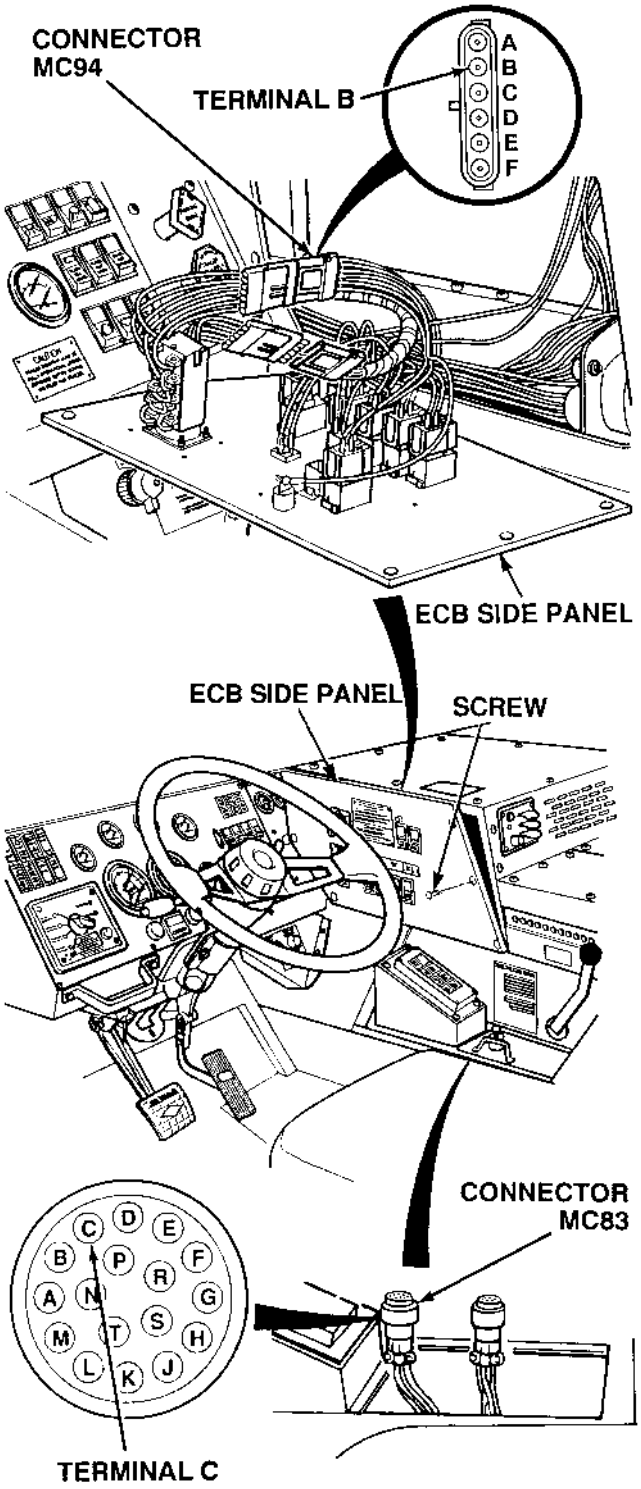


WARNING

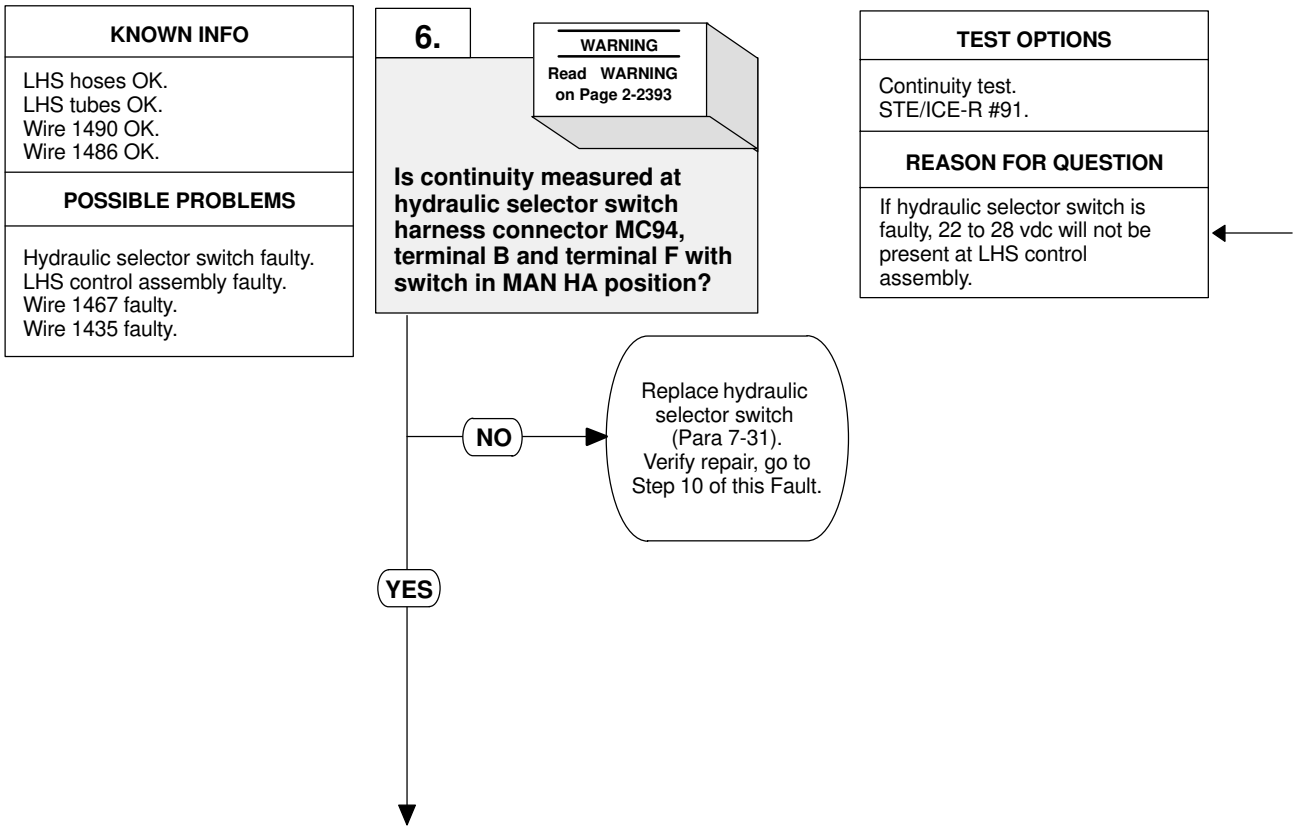
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between harness connector MC 83, terminal C and harness connector MC94, terminal B?
   (a) If there is no continuity, repair wire 1486 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1486 is OK.
(3) Install LHS control assembly (Para 7-40).



10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).

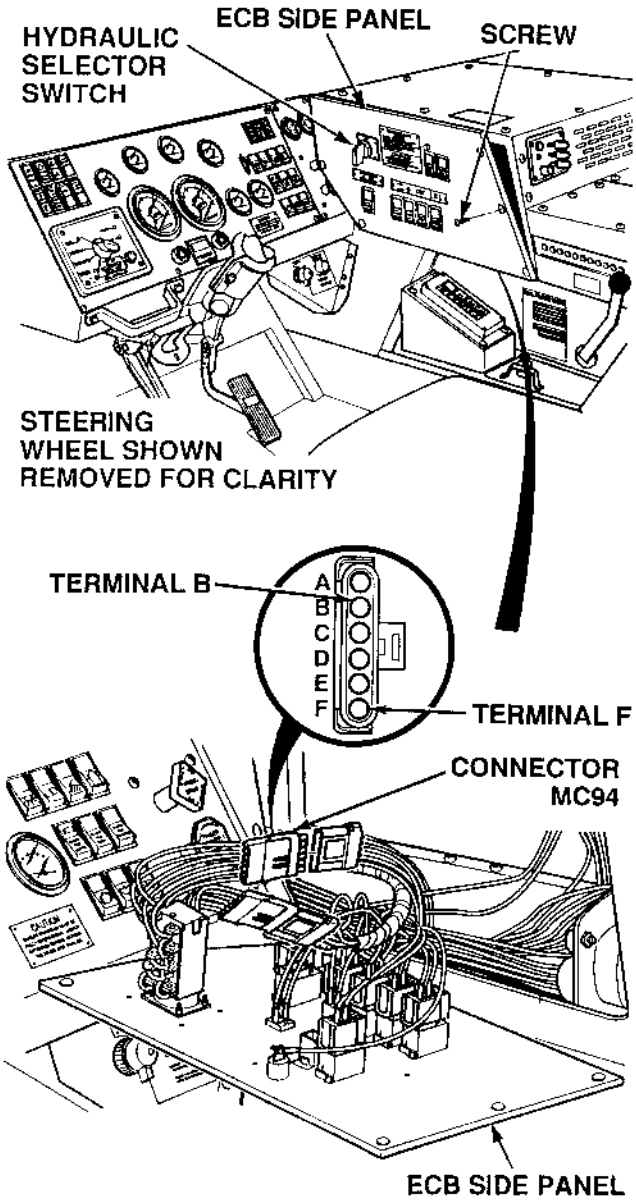


WARNING

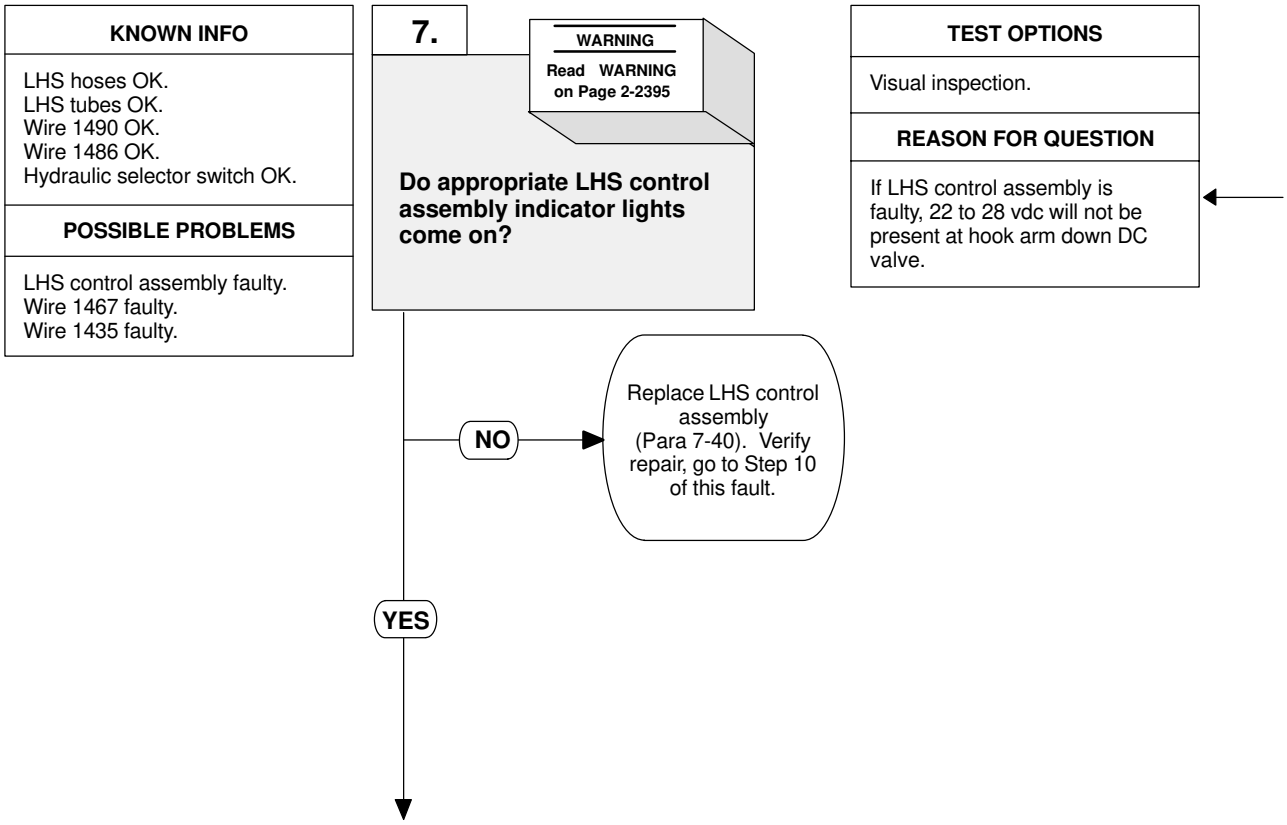
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set hydraulic selector switch to MAN HA position (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between switch harness connector MC94, terminal B and terminal F?
   (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
   (b) If there is continuity, hydraulic selector switch is OK.
(4) Install harness connector MC94 on hydraulic selector switch connector.
(5) Install ECB side panel and six screws.



10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).



WARNING

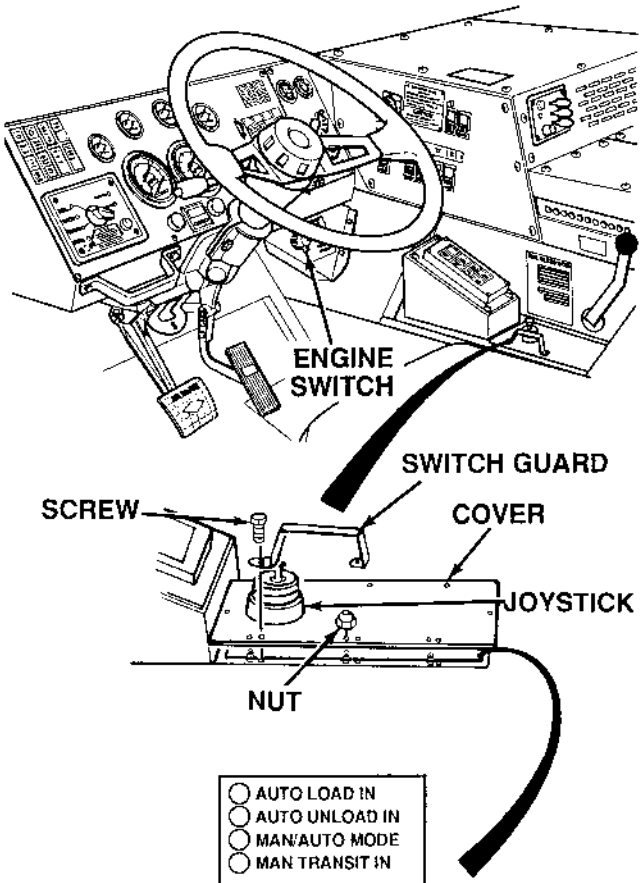
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

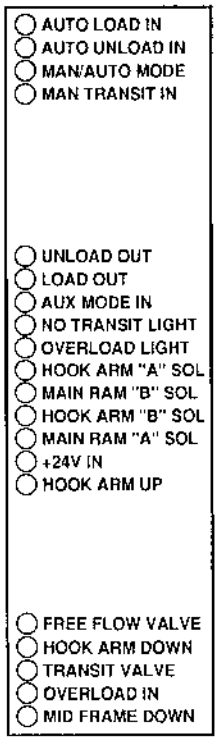
CAUTION

Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

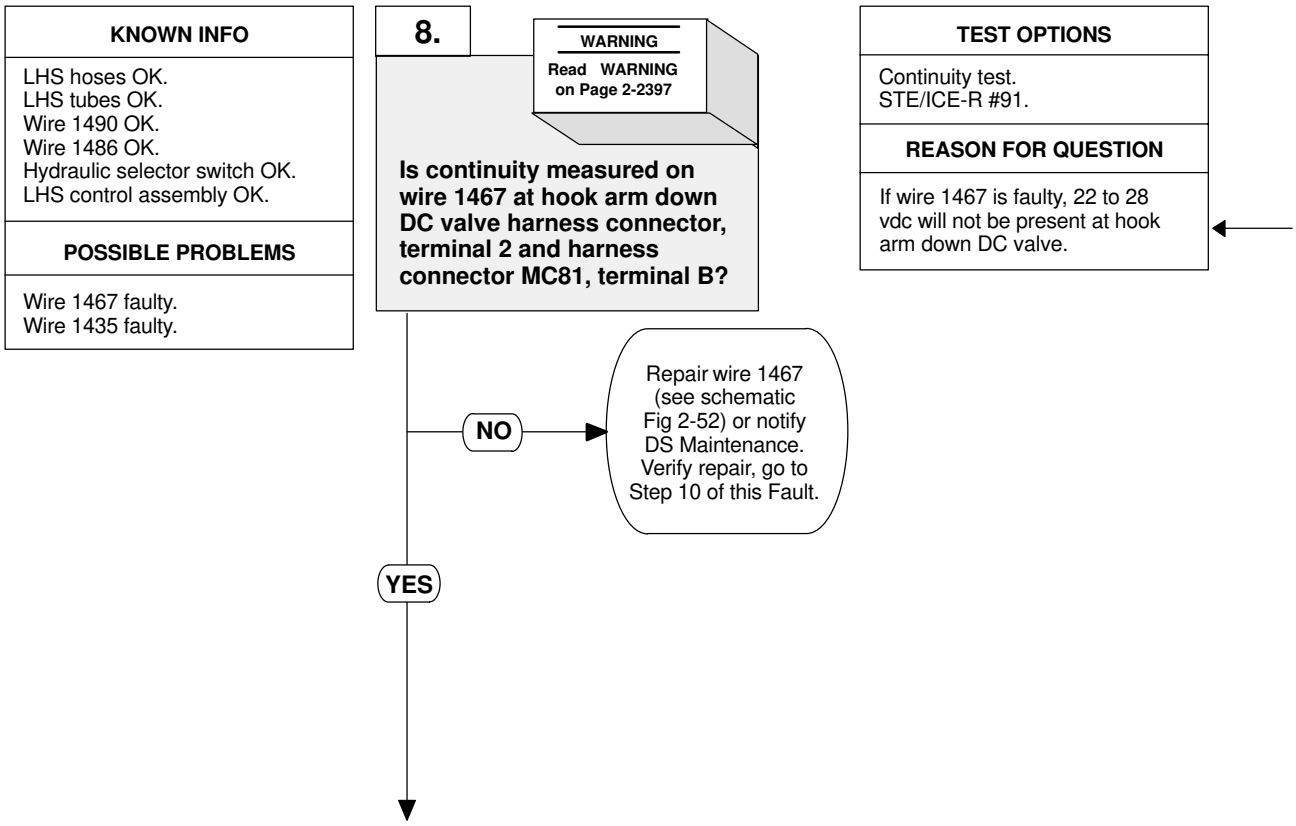
VISUAL INSPECTION

(1) Remove eight screws, switch guard and eight nuts from LHS control assembly.
(2) Carefully lift control box cover off. Do not allow cover to dangle by joystick connecting wires.
(3) Turn ON ENGINE switch, (TM 9-2320-364-10).
(4) Set hydraulic selector switch to MAN HA position.
(5) Hold joystick in LOAD position.
(6) Observe red indicator lights in bottom of LHS control assembly.
   (a) If HOOK ARM B indicator lamp does not illuminate with joystick in LOAD position, perform Steps (7) and (8) below and replace LHS control assembly (Para 7-40).
   (b) If HOOK ARM B indicator lamp illuminates, LHS control assembly is OK.
(7) Turn OFF ENGINE switch.
(8) Set hydraulic selector switch to OFF position.





10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).

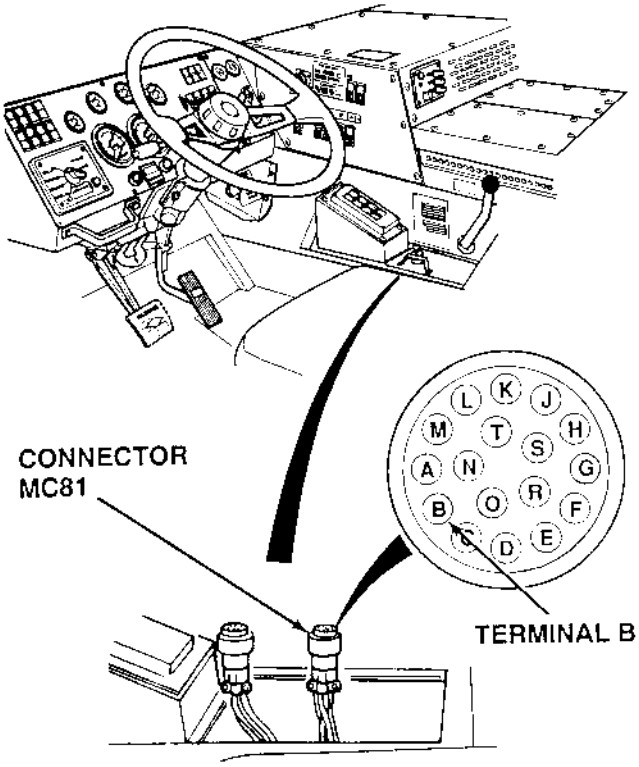


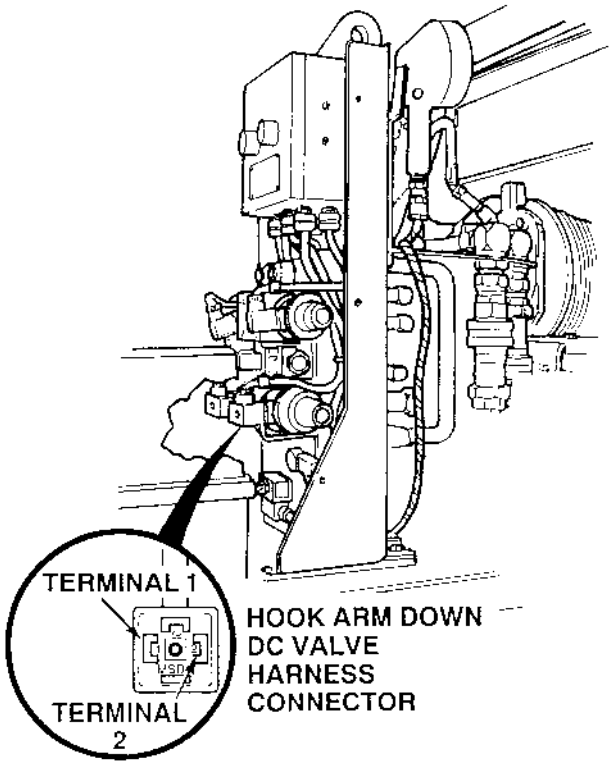
WARNING

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.

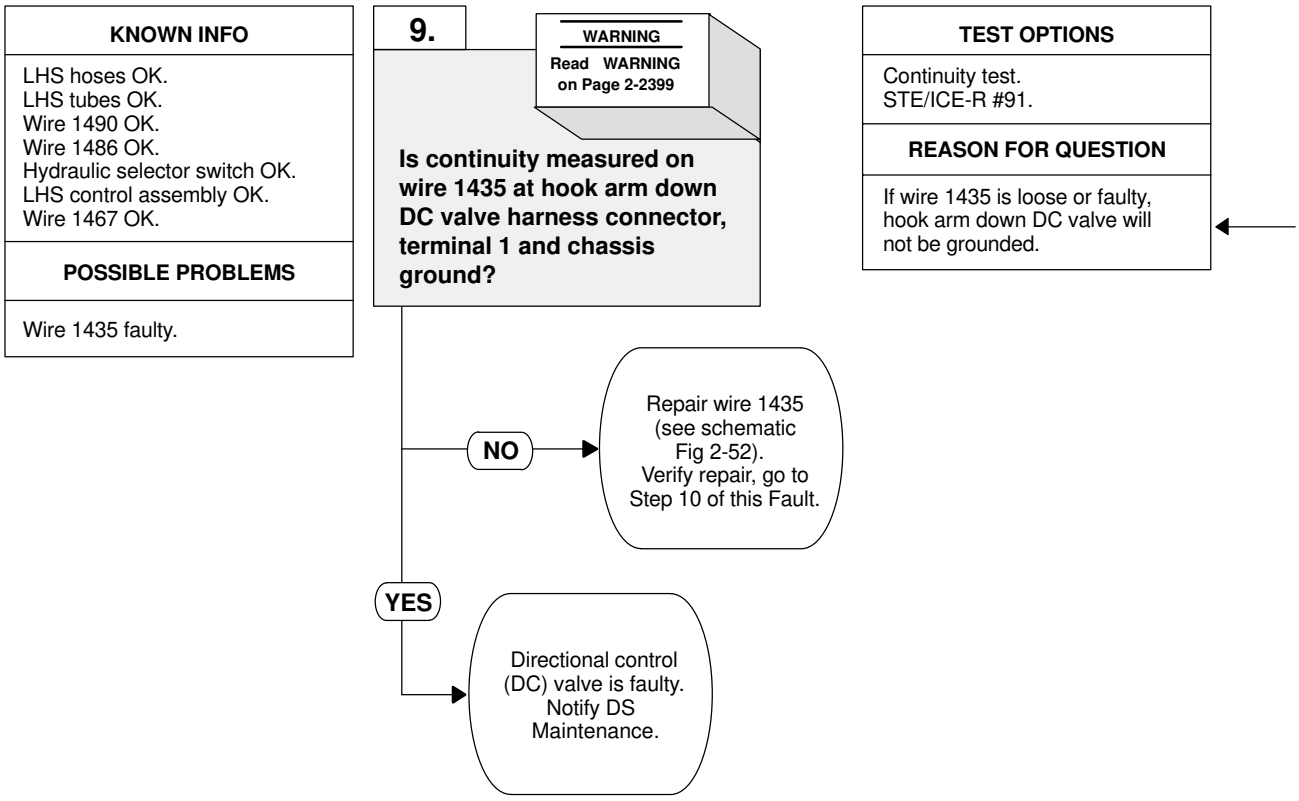
CONTINUITY TEST

(1) Disconnect LHS control assembly from connectors.
(2) Set multimeter select switch to ohms.
(3) Connect DC valve harness connector, terminal 2 to a known good ground.
(4) Is there continuity between harness connector MC81, terminal B and a known good ground.
  (a) If there is no continuity, repair wire 1467 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1467 is OK.
(5) Install LHS control assembly (Para 7-40).





10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).

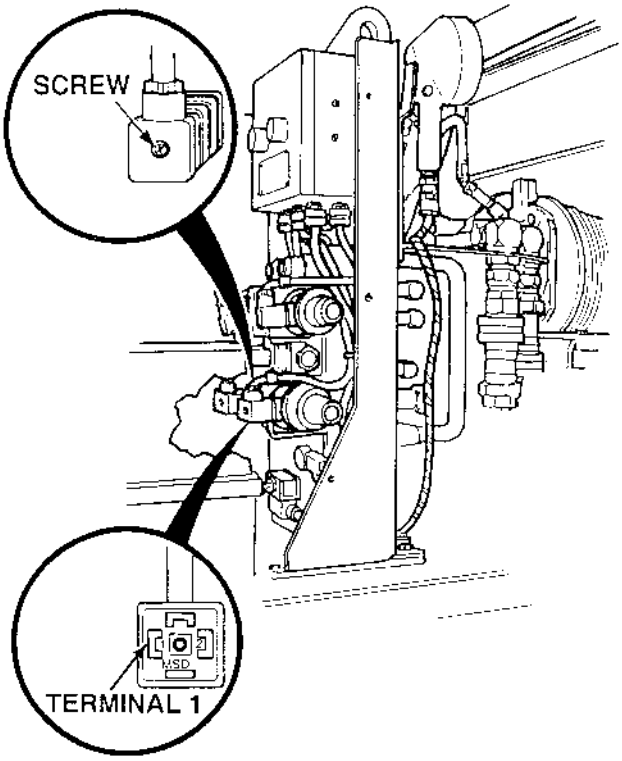


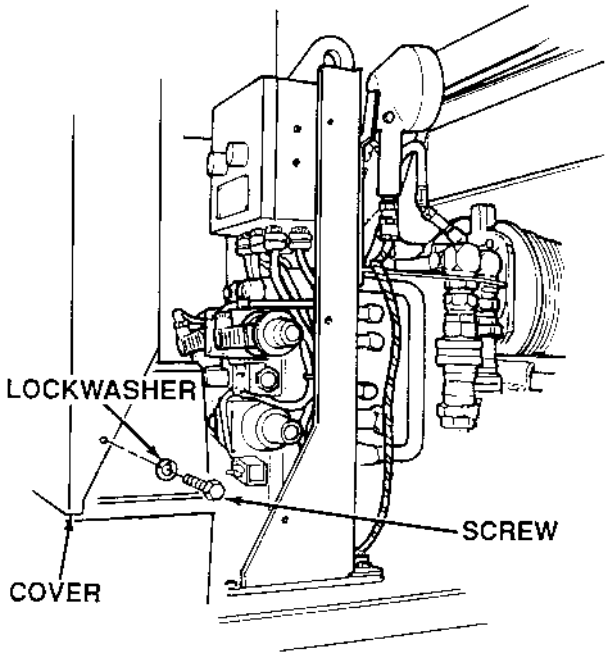
WARNING

- 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.
- 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.

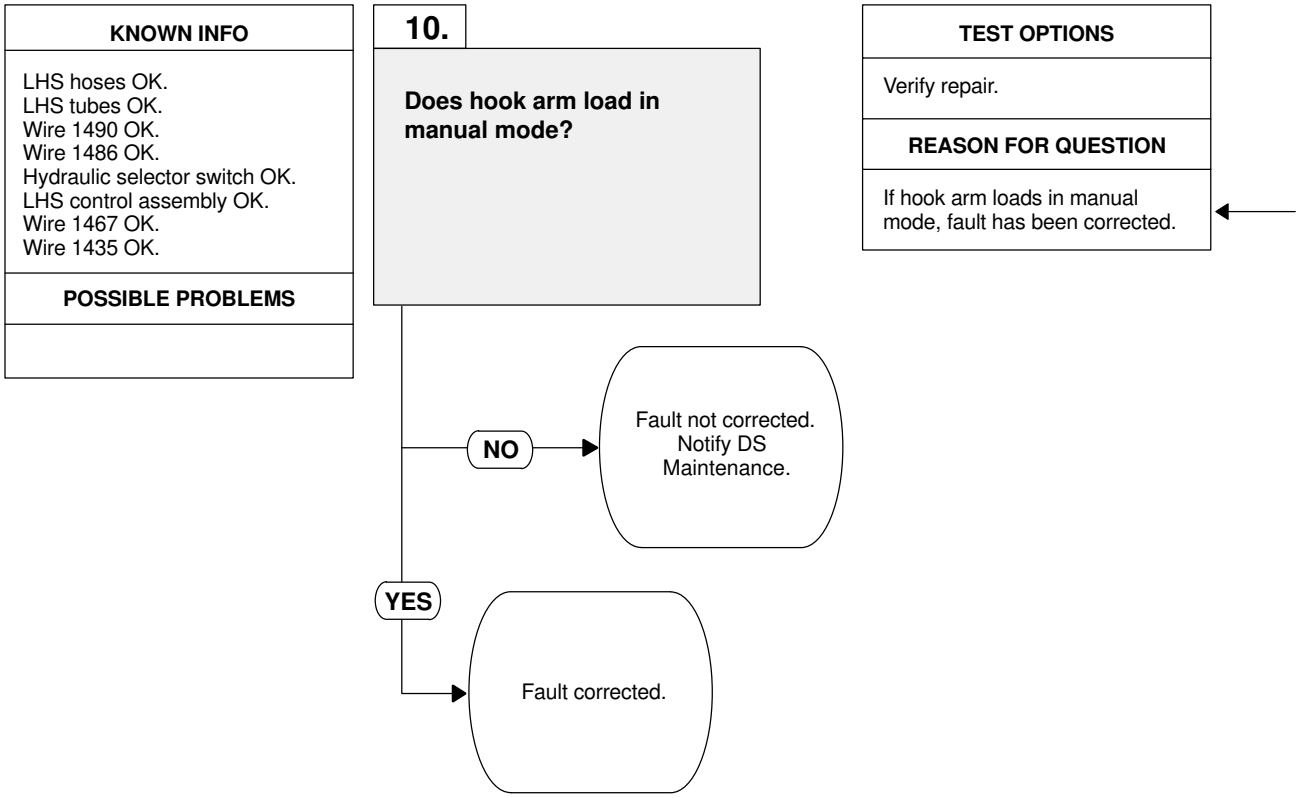
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between hook arm down DC valve harness connector, terminal 1 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK. Notify DS Maintenance.
(3) Install harness connector on hook arm down DC valve.
(4) Tighten connector screw and coat head of screw with adhesive.
(5) Install LHS control box cover, four lock washer and four screws.



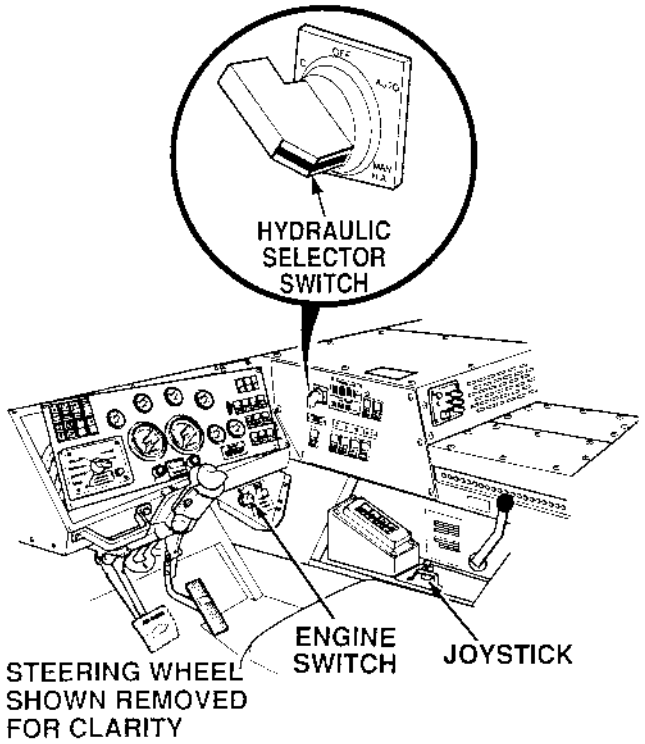


10. HOOK ARM DOES NOT LOAD IN MANUAL MODE (CONT).



VERIFY REPAIR

(1) Turn ON ENGINE switch.
(2) Start engine.
(3) Set hydraulic selector switch in MAN HA position.
(4) Hold joystick in LOAD position.
  (a) If hook arm does not load, fault not corrected. Perform Steps (5) through (7) below and notify DS Maintenance.
  (b) If hook arm loads, fault has been corrected.
(5) Release joystick.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING PROCEDURES (CONT).

11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE.

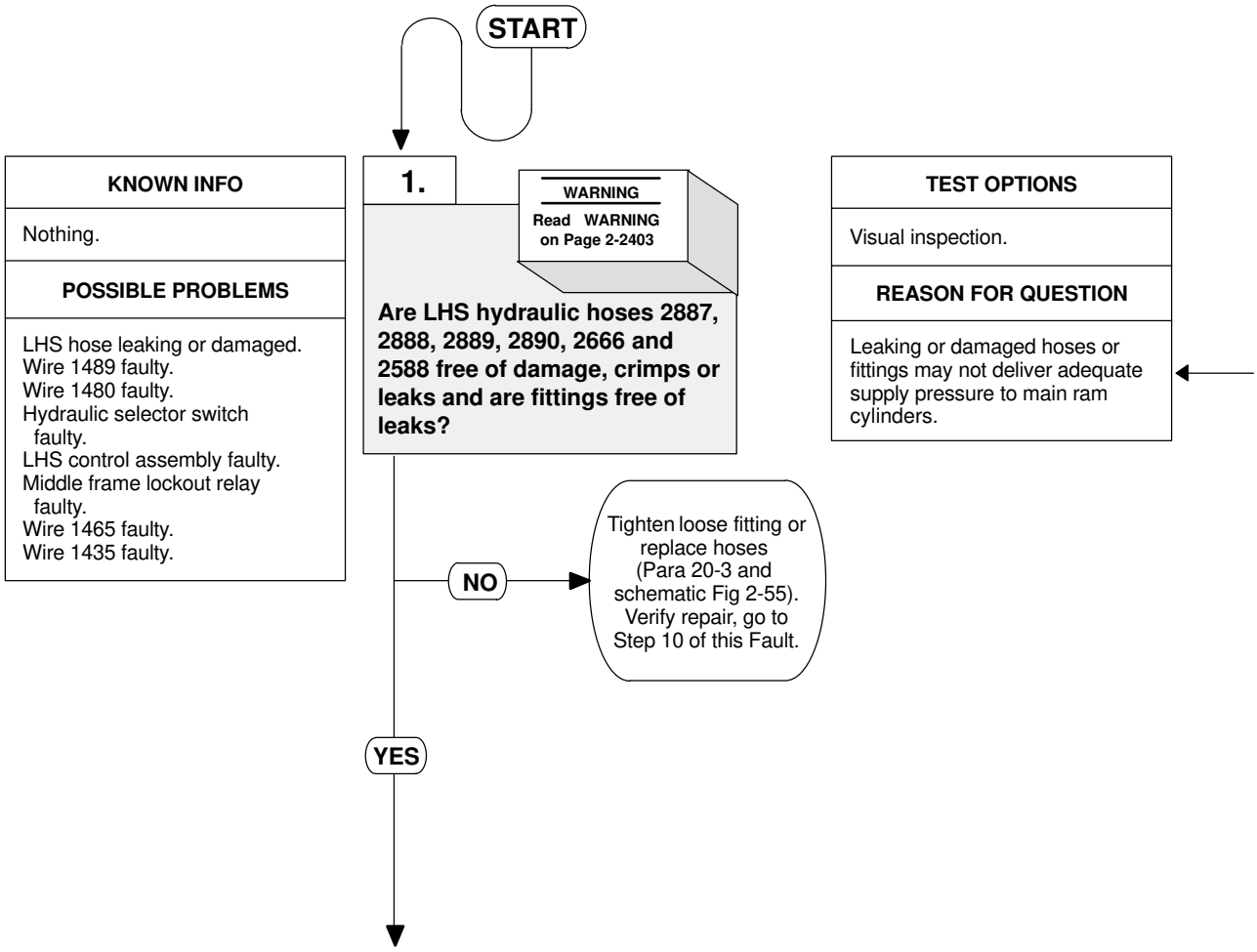
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
Adhesive (Item 8, Appendix C)

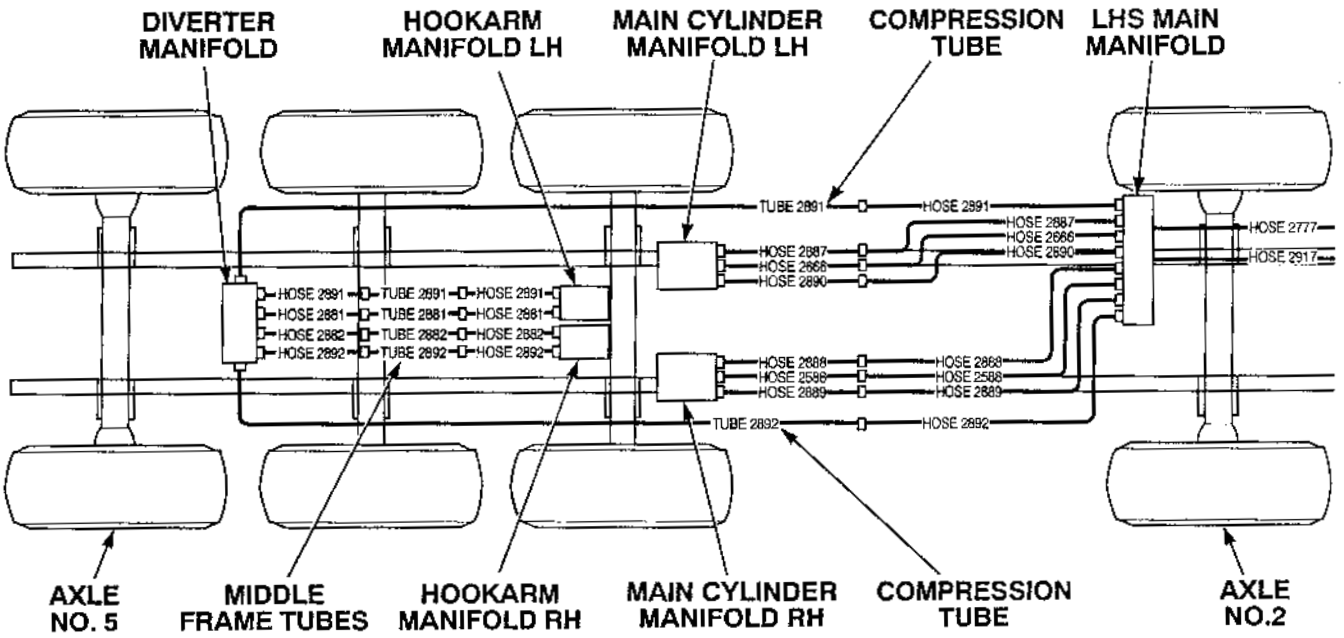
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



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. A high pressure oil stream can pierce body and cause severe injury to personnel.



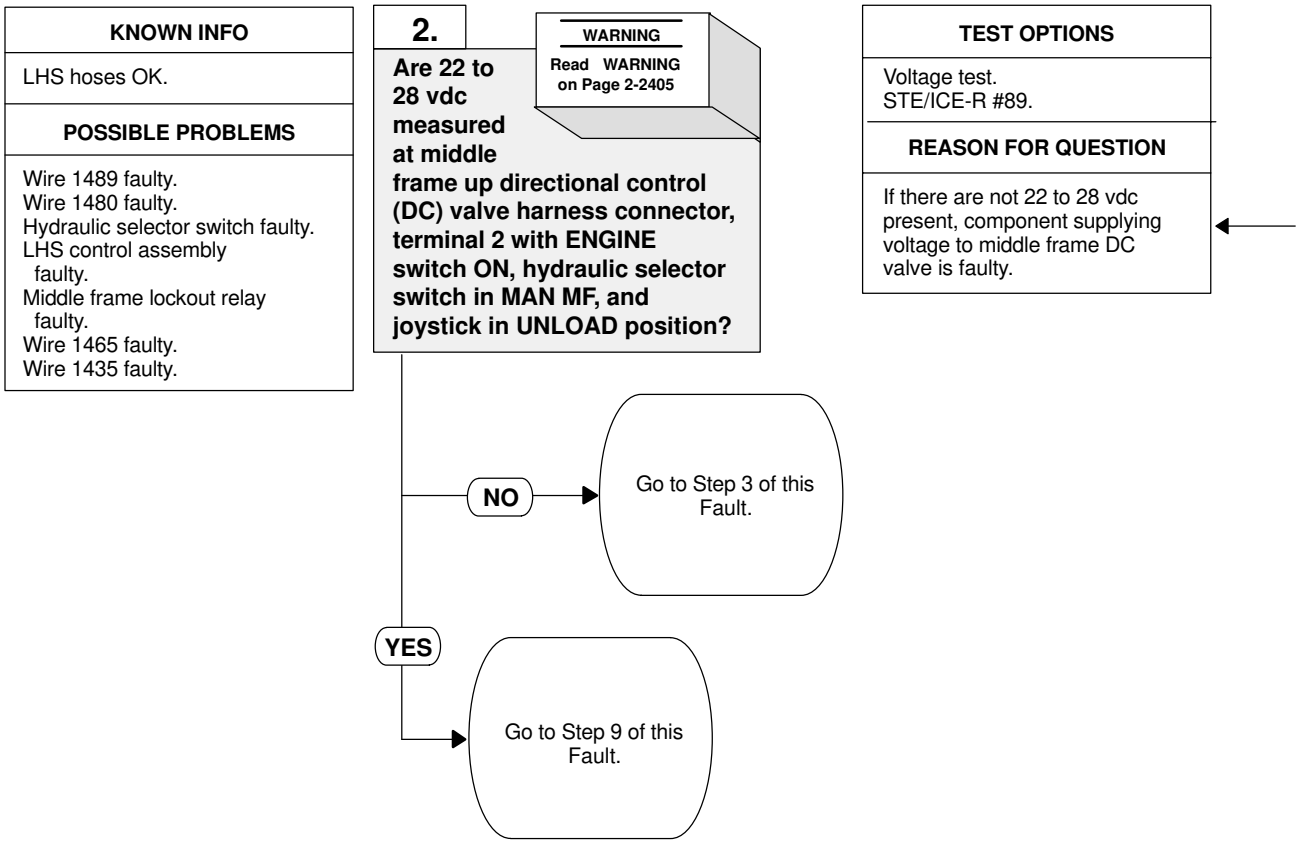
VISUAL INSPECTION

Inspect LHS hydraulic hoses 2887, 2888, 2889, 2890, 2666 and 2588 for damage, crimps or leaks.

(1) If hoses are damaged, crimped or leaking; tighten fittings or replace hoses (Para 20-3 and schematic Fig. 2-55).

(2) If there are not leaks, crimps or damage; hoses and fitting are OK.

11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).



WARNING

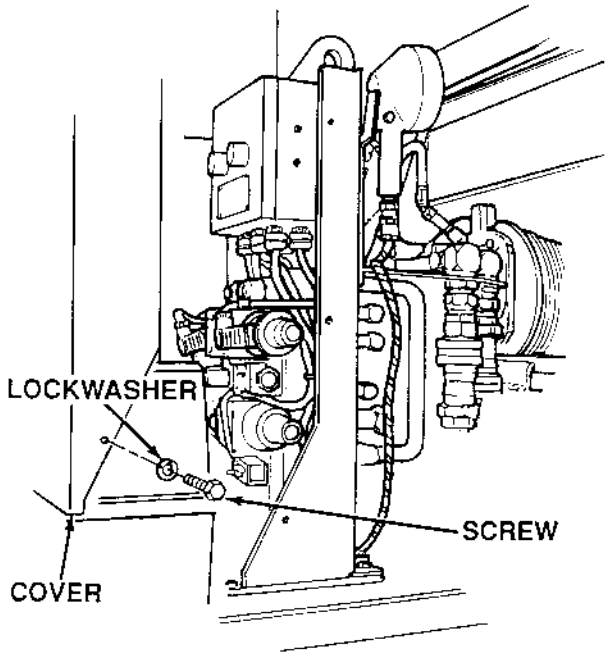
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

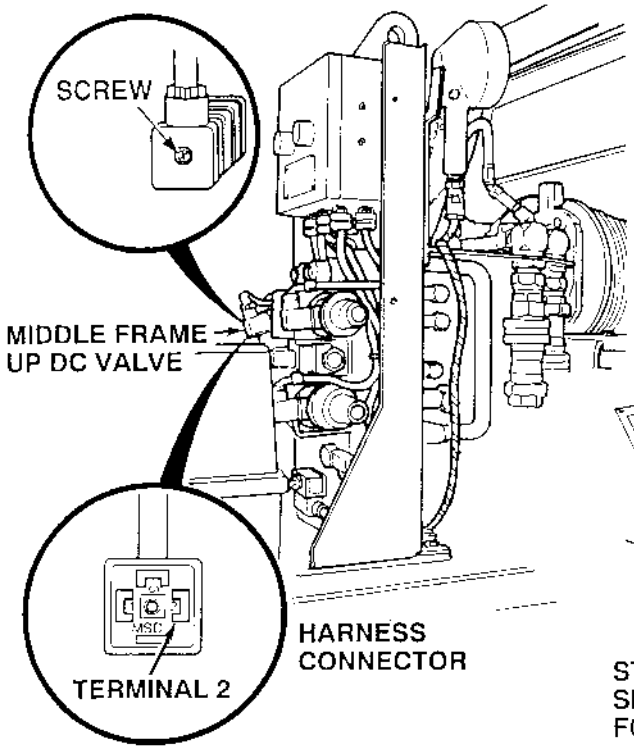
NOTE

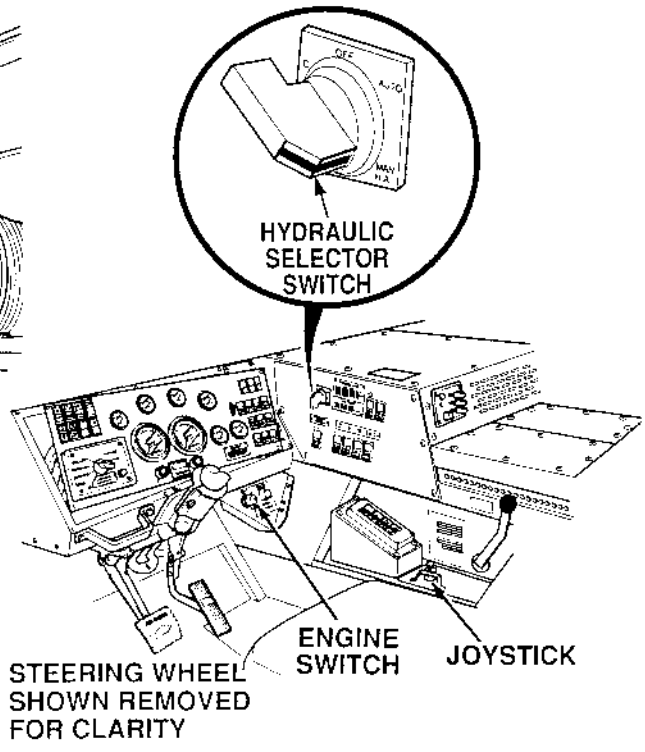
Only remove center screw on engine side of LHS control box cover.

VOLTAGE TEST

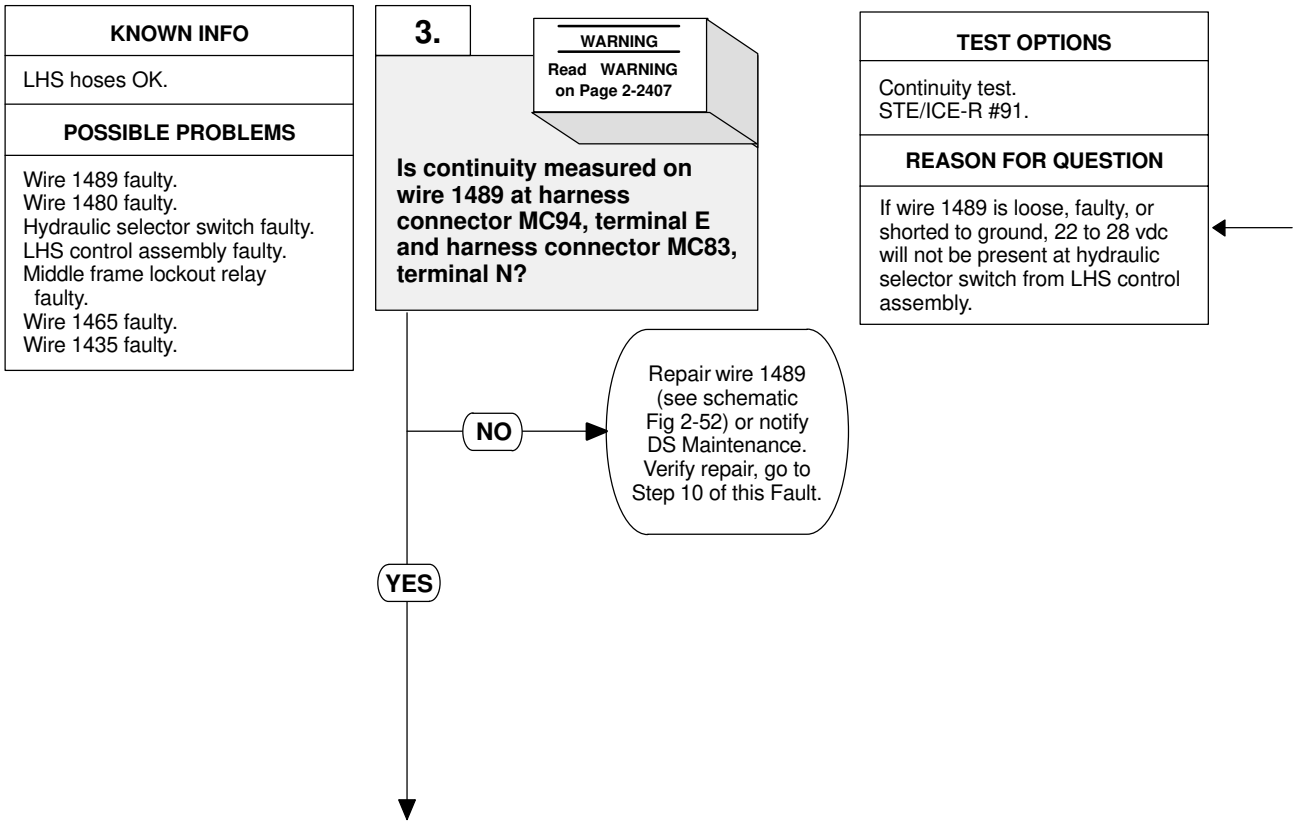
(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwasher.
(2) Loosen screw and remove harness connector from middle frame up (top left) DC valve.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to harness connector, terminal 2.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to MAN MF position.
(8) Hold joystick in UNLOAD position.
  (a) If there are not 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 3 of this Fault.
  (b) If there are 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 9 of this Fault.
(9) Set hyudraulic selector switch to OFF position.
(10) Turn OFF ENGINE switch.







11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).

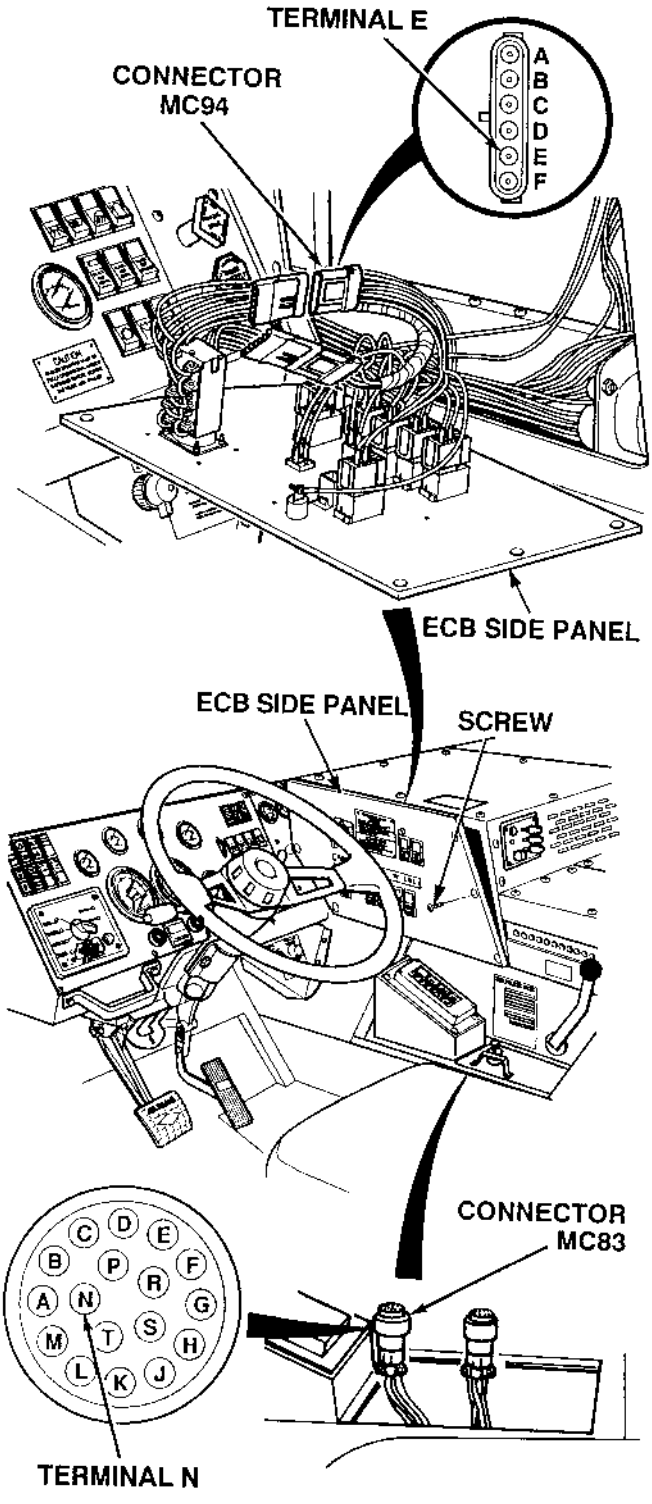


WARNING

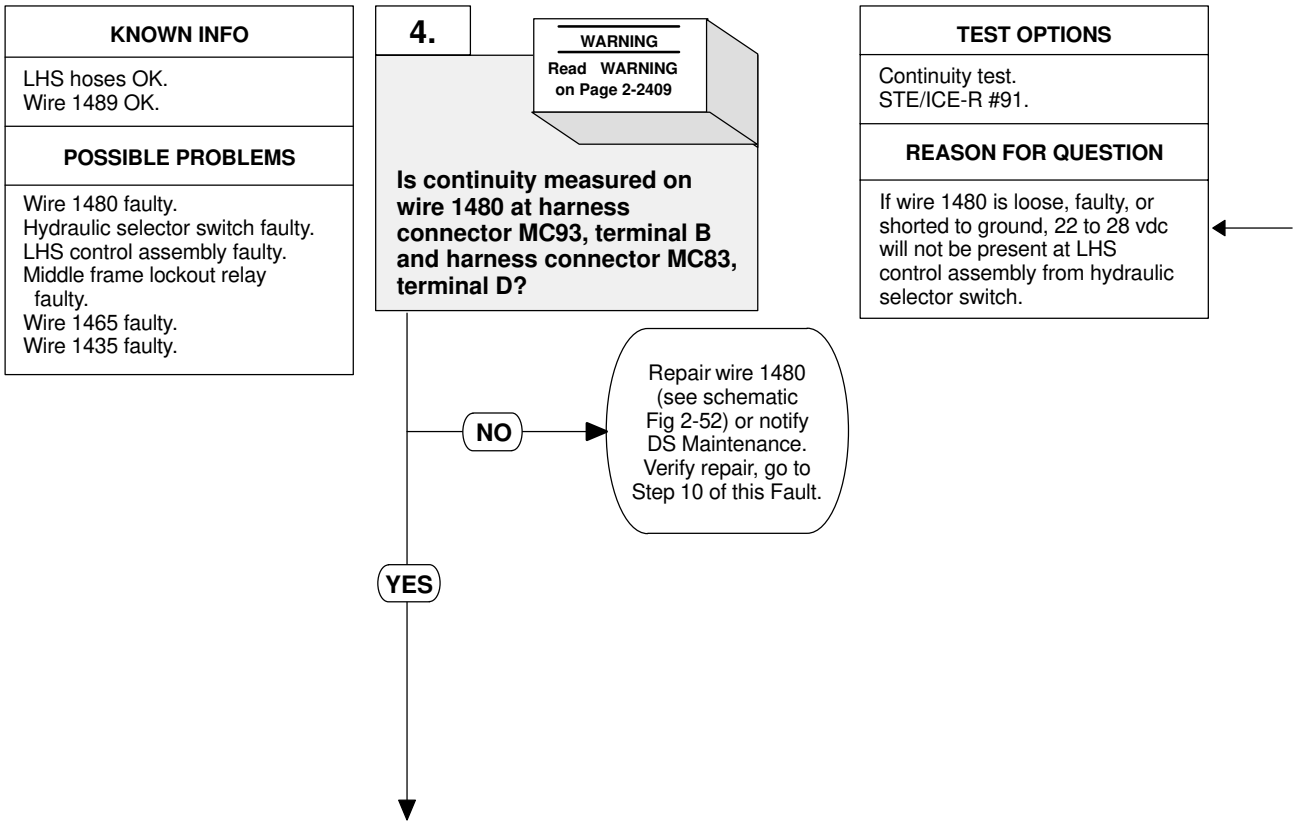
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Remove six screw and tilt ECB side panel.
(3) Disconnect harness connector MC94 from hydraulic selector switch connector.
(4) Set multimeter select switch ohms.
(5) Is there continuity between switch harness connector MC94, terminal E and harness connector MC83, terminal N?
   (a) If there is no continuity, repair wire 1489 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there continuity, wire 1489 is OK.



11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).

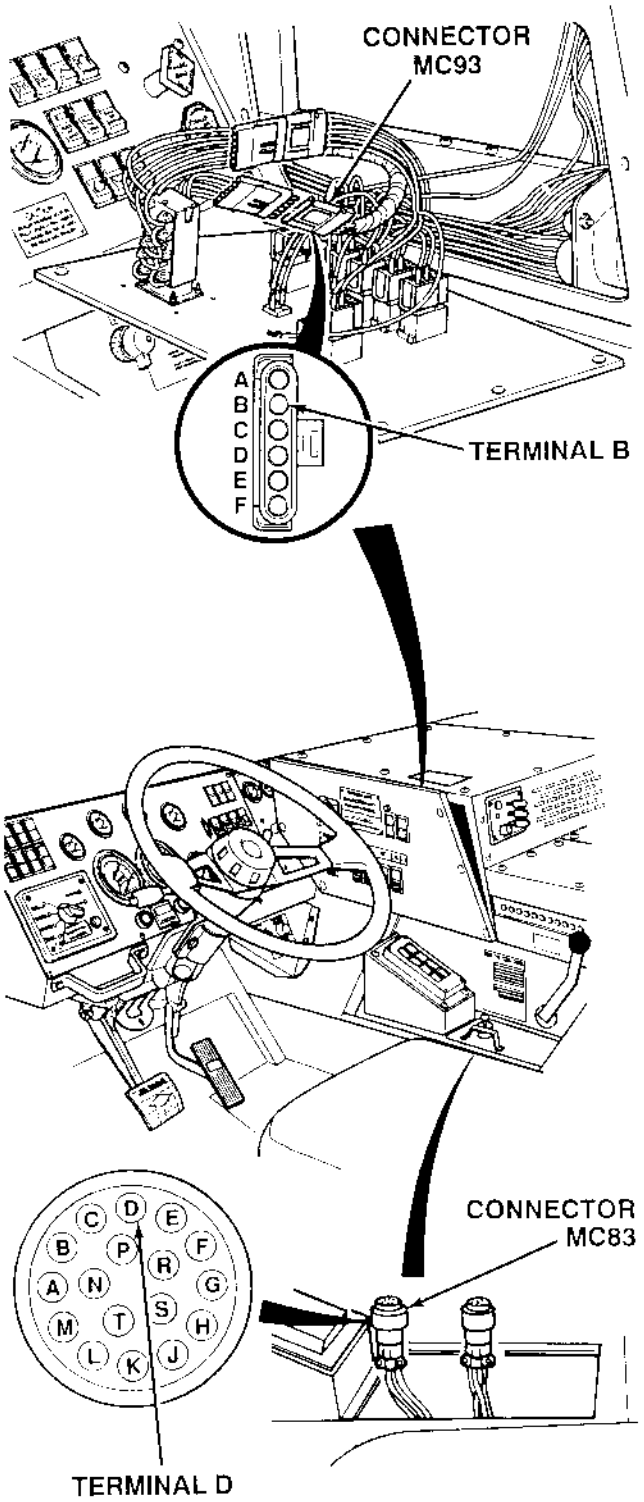


WARNING

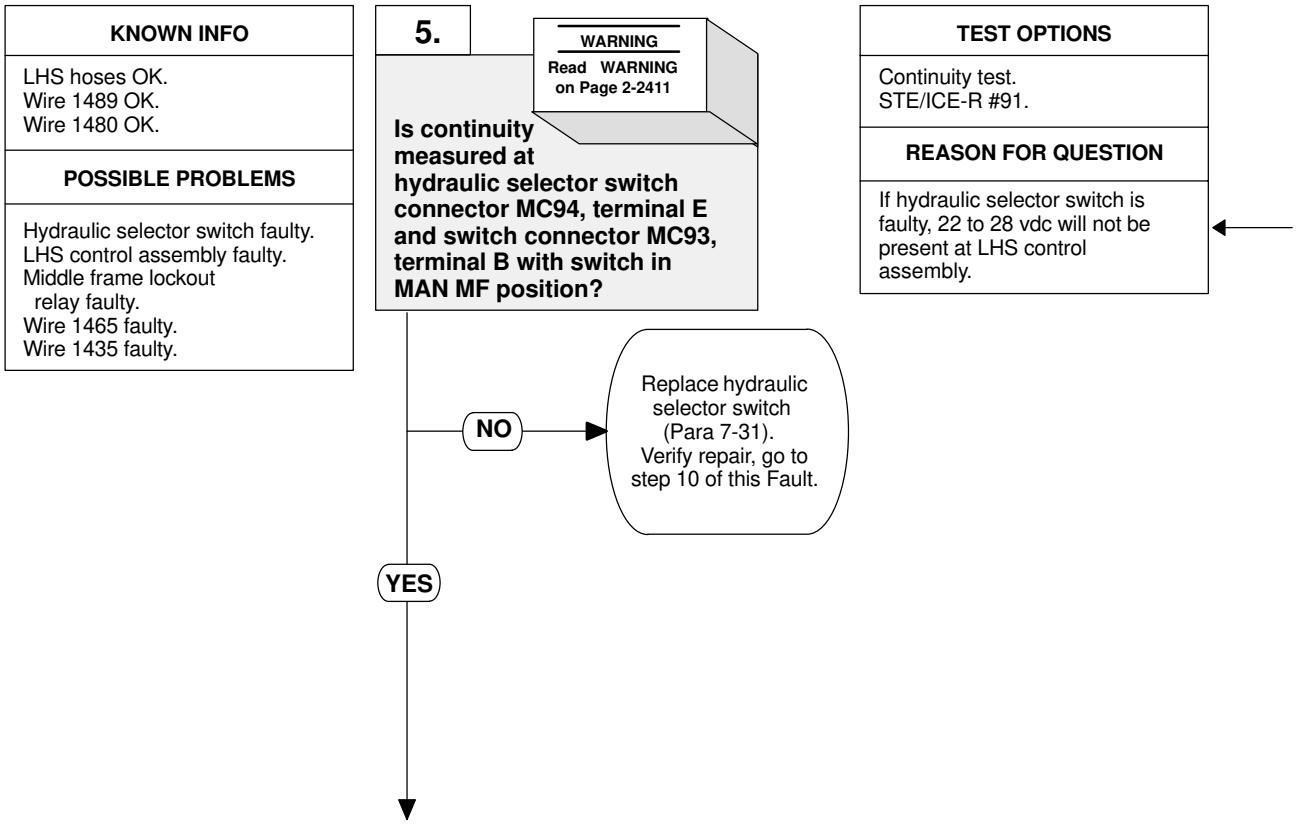
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect harness connector MC93 from hydraulic selector switch connector.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between harness connector MC93, terminal B and harness connector MC83, terminal D?
  (a) If there is no continuity, repair wire 1480 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1480 is OK.
(4) Install LHS control assembly (Para 7-40).



11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).

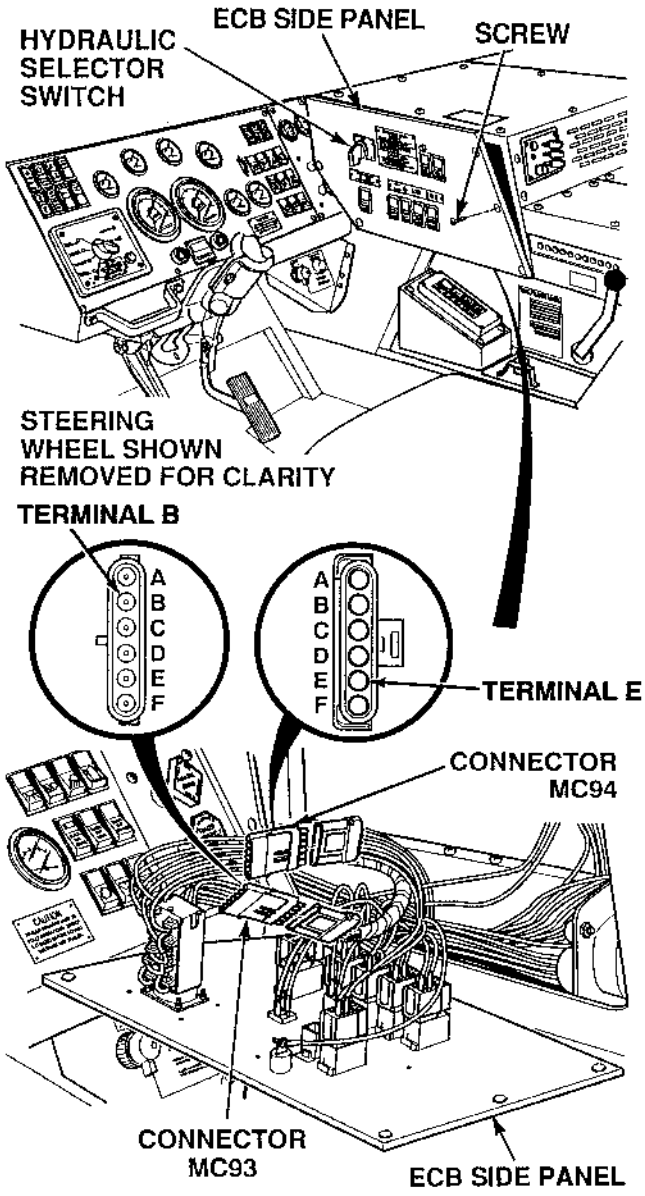


WARNING

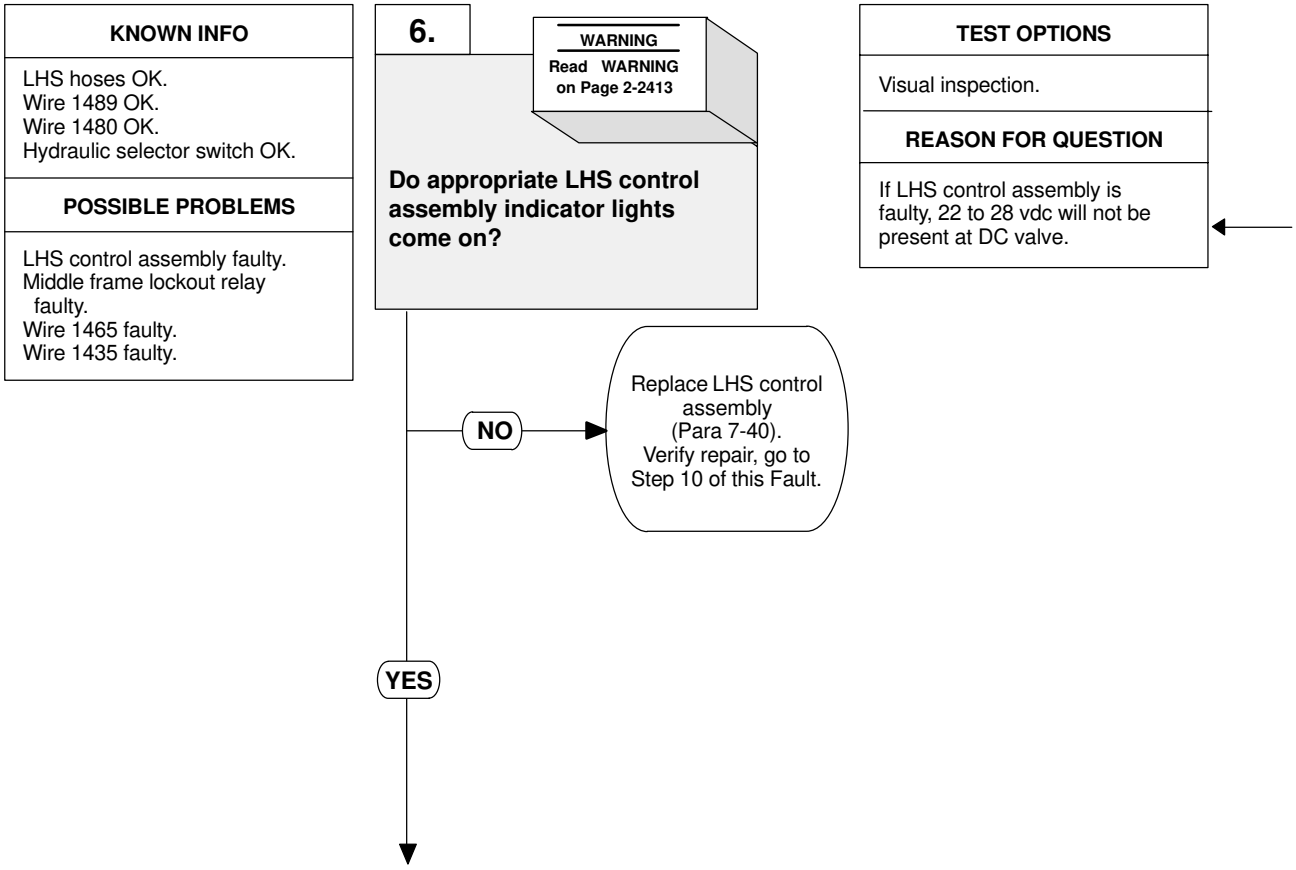
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set hydraulic selector switch to MAN MF position (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between switch harness connector MC94, terminal E and harness connector MC93, terminal B?
   (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
   (b) If there is continuity, hydraulic selector switch is OK.
(4) Install harness connector MC94 on hydraulic selector switch connector.
(5) Install harness connector MC93 on hydraulic selector switch connector.
(6) Install ECB side panel and six screws.



11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).



WARNING

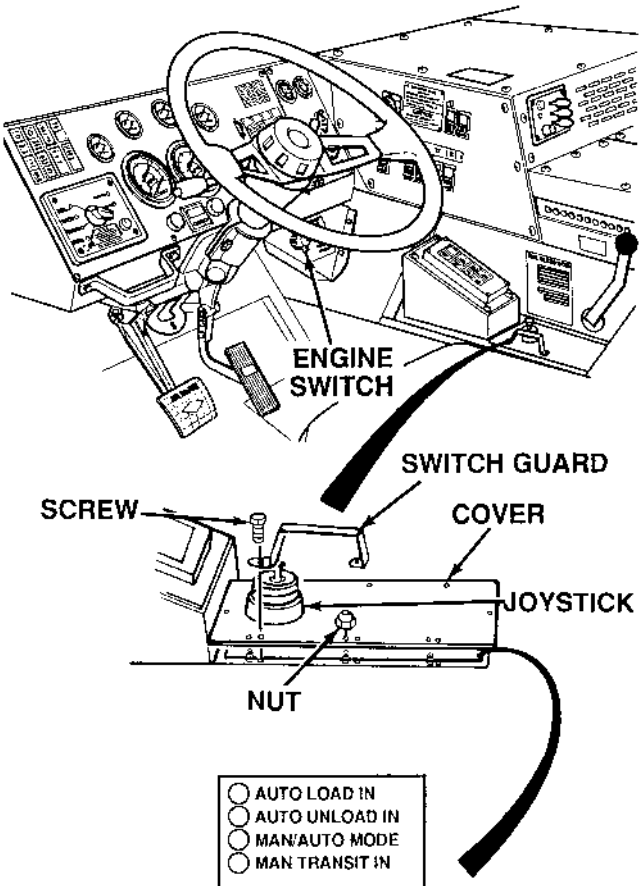
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

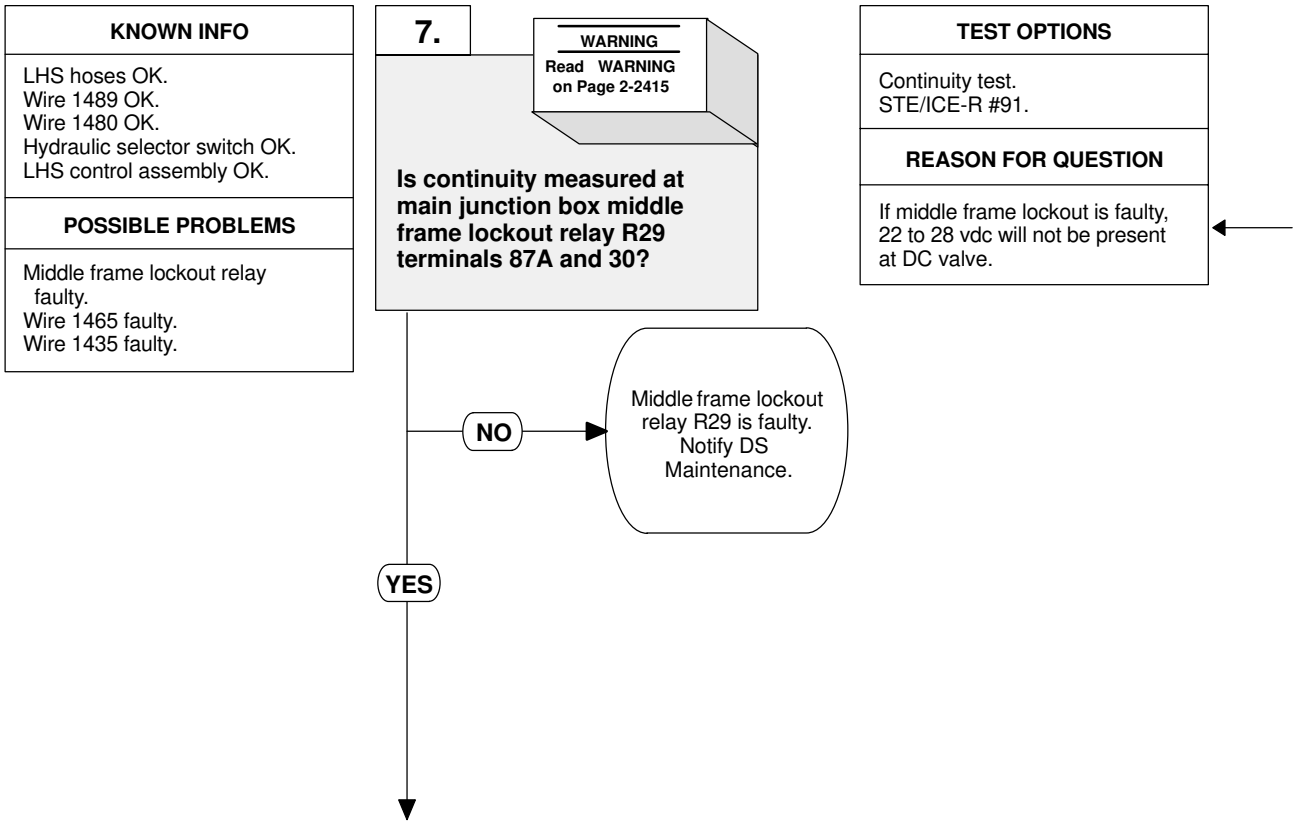
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

VISUAL INSPECTION

(1) Remove eight screws, switch guard and eight nuts from LHS control assembly.
(2) Carefully lift off LHS control assembly cover. Do not allow cover to dangle by joystick connecting wires.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Set hydraulic selector switch to MAN MF position.
(5) Hold joystick in UNLOAD position.
(6) Observe red indicator lights in bottom of LHS control assembly.
  (a) If MAIN RAM A indicator lamp does not illuminate with joystick in UNLOAD position replace LHS control assembly (Para 7-40).
  (b) If MAIN RAM A indicator lamp does illuminate, LHS control assembly is OK.
(7) Turn OFF ENGINE switch.
(8) Set hydraulic selector switch to OFF position.



11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).



WARNING

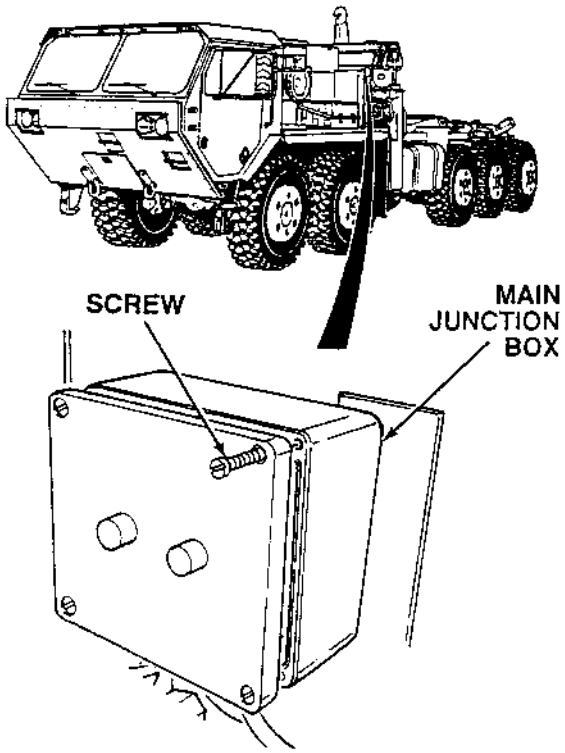
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

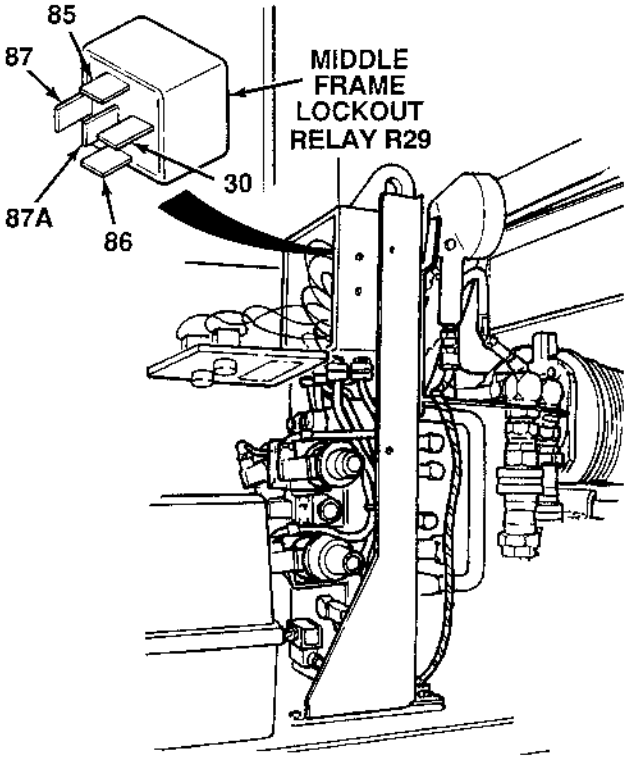
CAUTION

When opening the main junction box, do not pull or allow front of junction box to hang by the wire connections. Failure to comply will damage the wire connections.

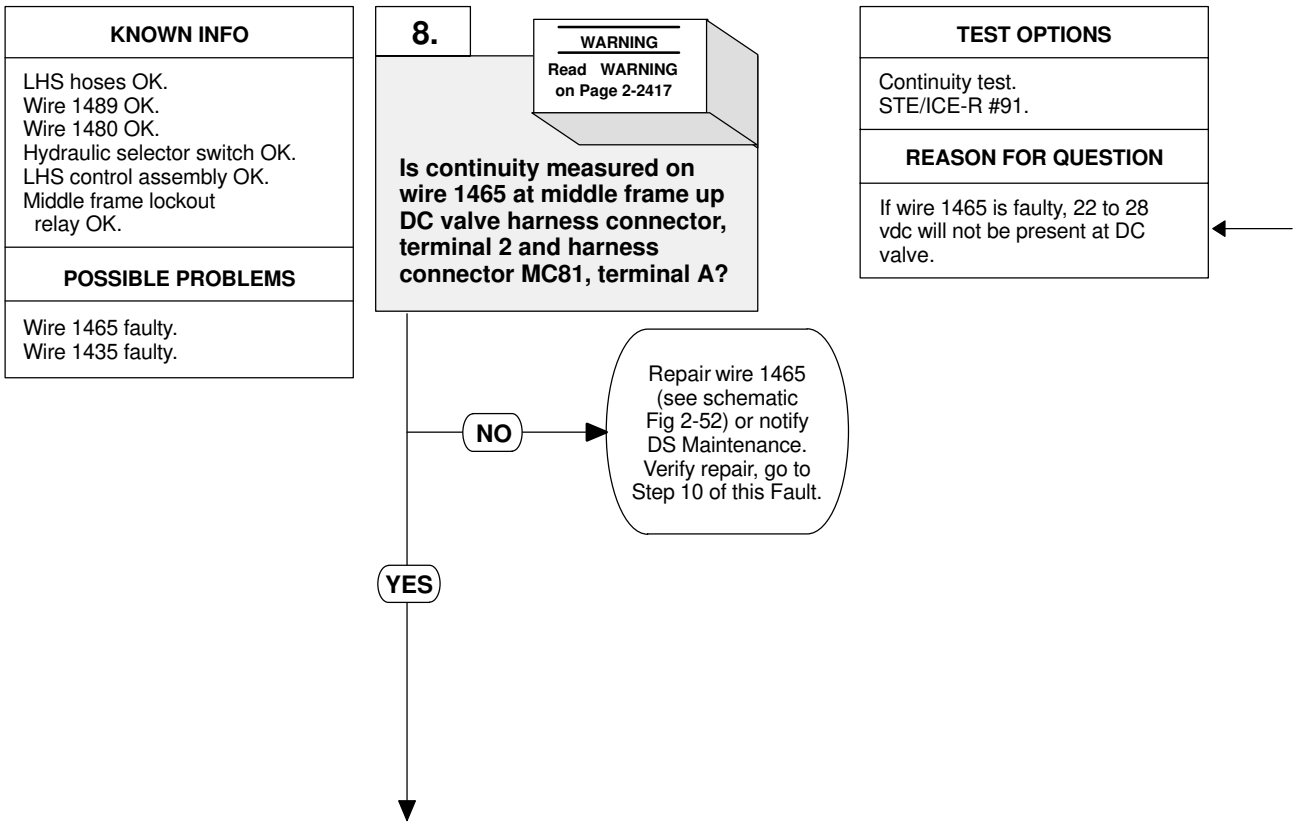
CONTINUITY TEST

(1) Loosen four screws and open main junction box.
(2) Remove middle frame lockout relay R29 from main junction box.
(3) Set multimeter select switch to ohms.
(4) Is there continuity between main junction box middle frame lockout relay R29 terminals 87A and 30?
   (a) If there is no continuity, notify DS Maintenance.
   (b) If there is continuity, middle frame lockout relay R29 is OK.
(5) Install middle frame lockout in main junction box.
(6) Close main junction box and tighten four screws.





11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).

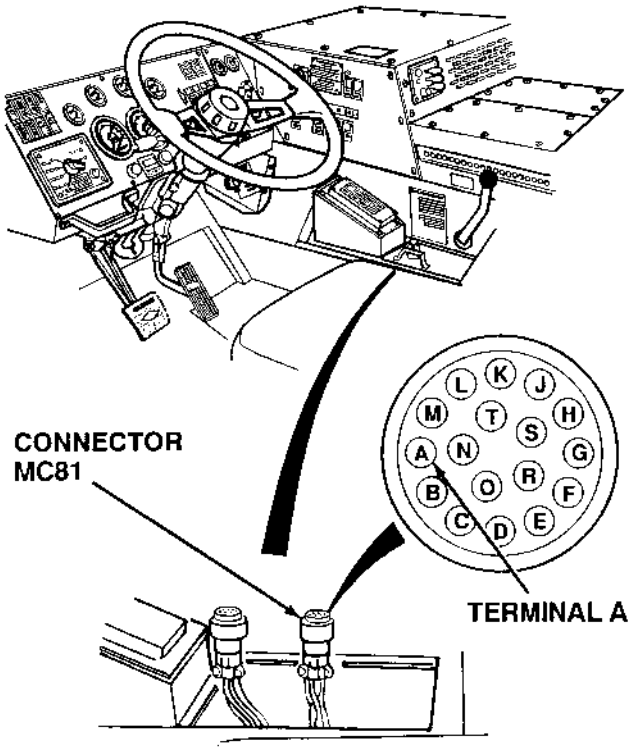


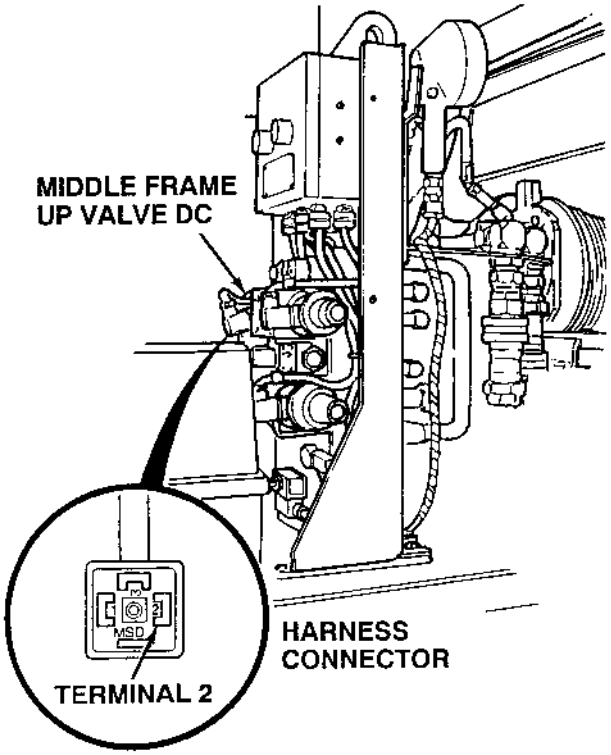
WARNING

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.

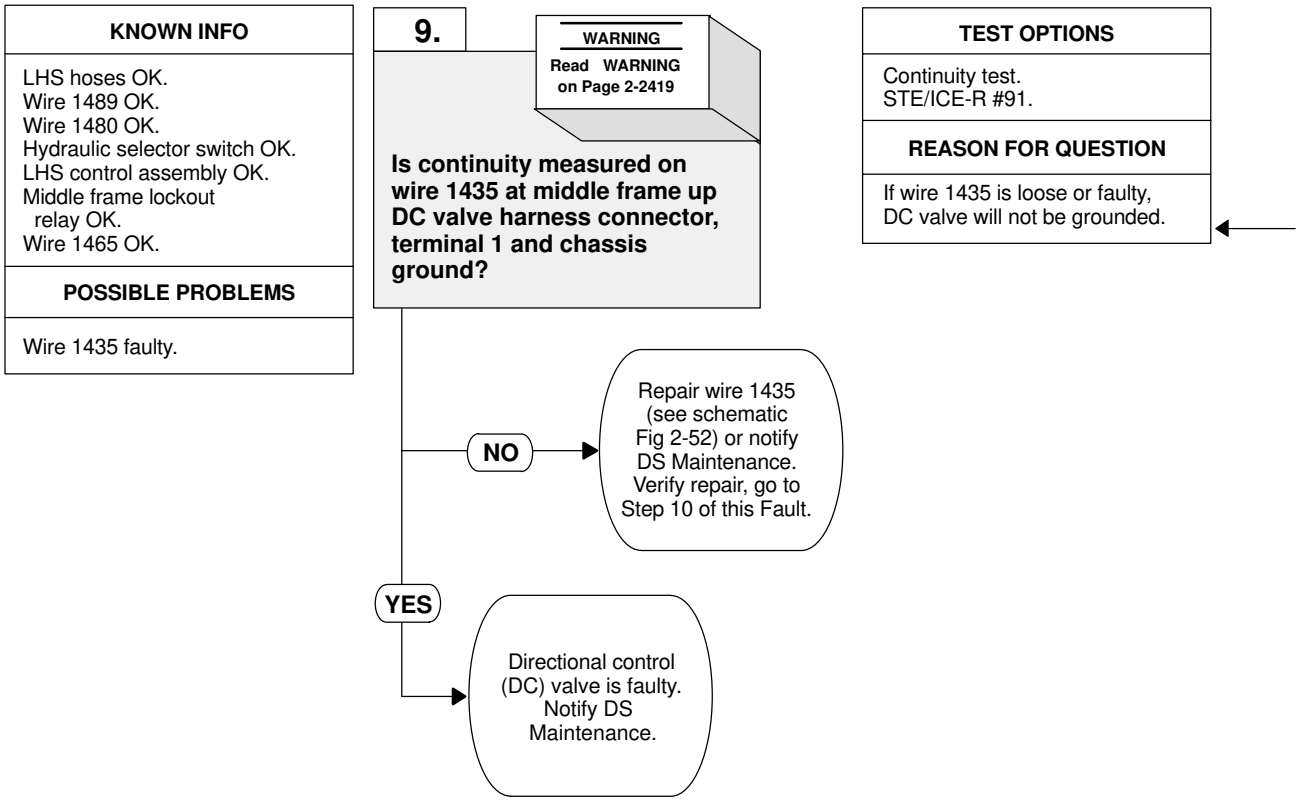
CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Set multimeter select switch to ohms.
(3) Using jumperwire, connect DC valve harness connector, terminal 2 to known good ground.
(3) Is there continuity between connector MC81, terminal A and a known good ground?
  (a) If there is no continuity, repair wire 1465 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1465 is OK.
(4) Install LHS control assembly (Para 7-40).





11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).

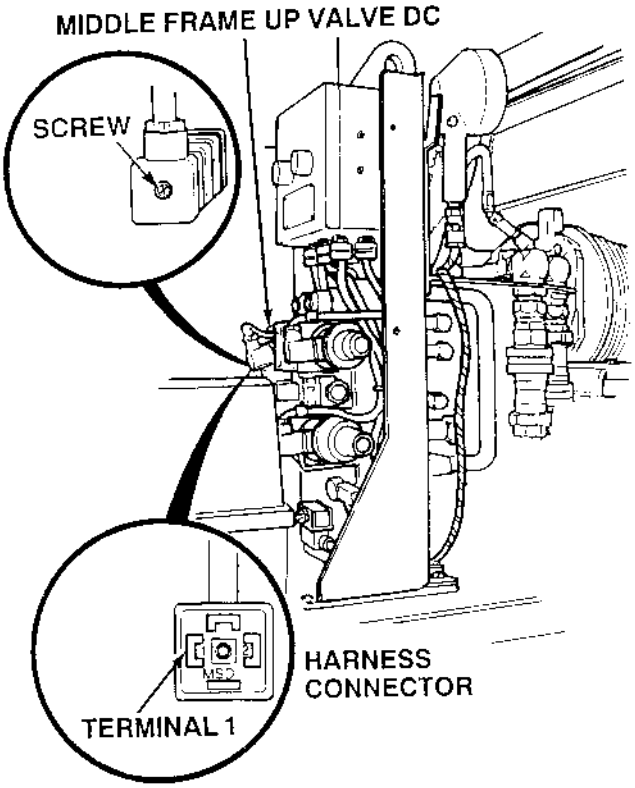


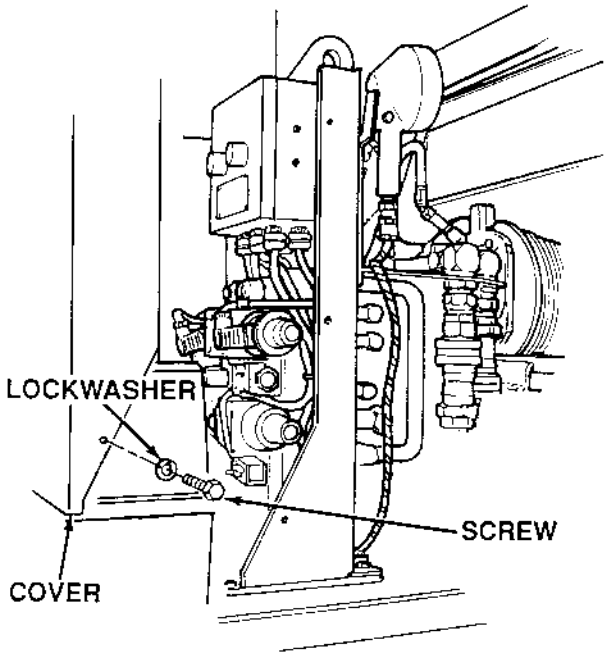
WARNING

- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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.

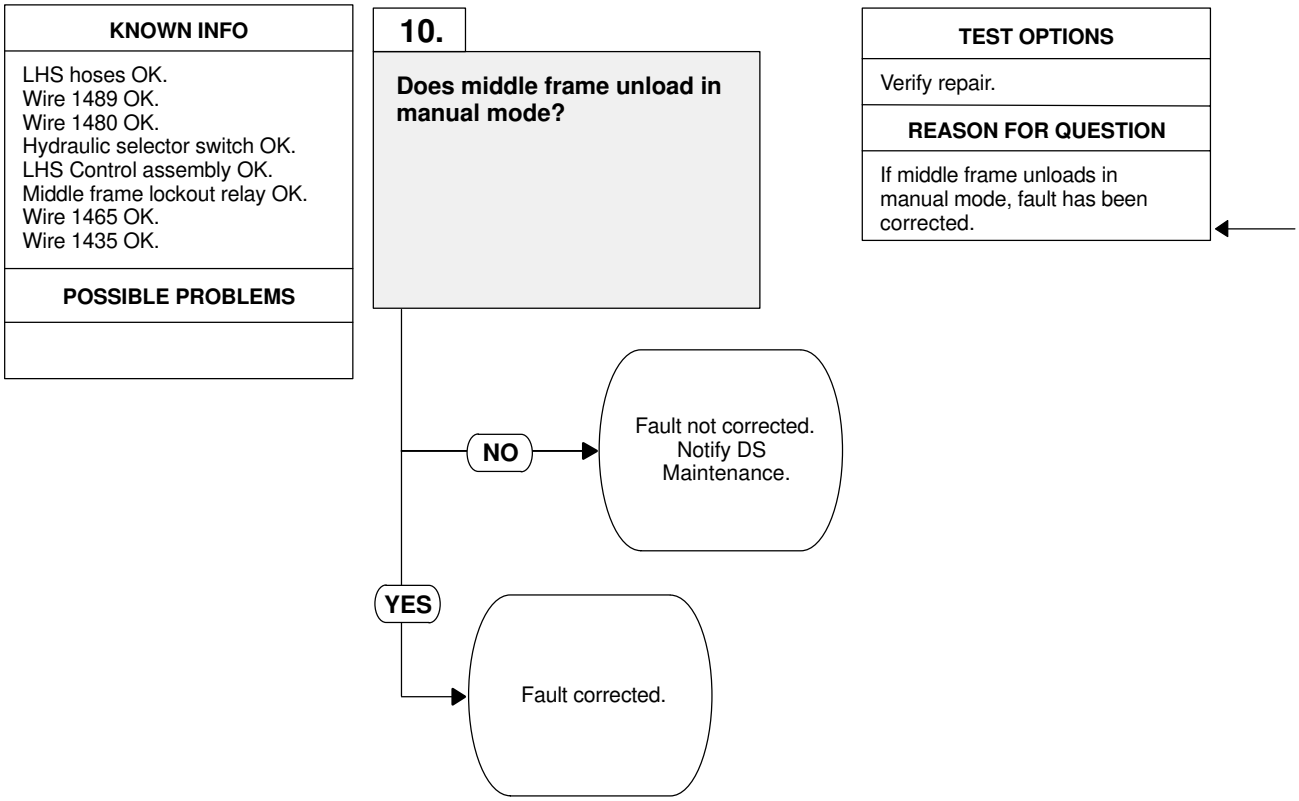
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between middle frame up DC valve harness connector, terminal 1 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK. Notify DS Maintenance.
(3) Install harness connector on middle frame up DC valve.
(4) Tighten screw and coat head of connector screw with adhesive.
(5) Install LHS control box cover, four lockwashers and screws.



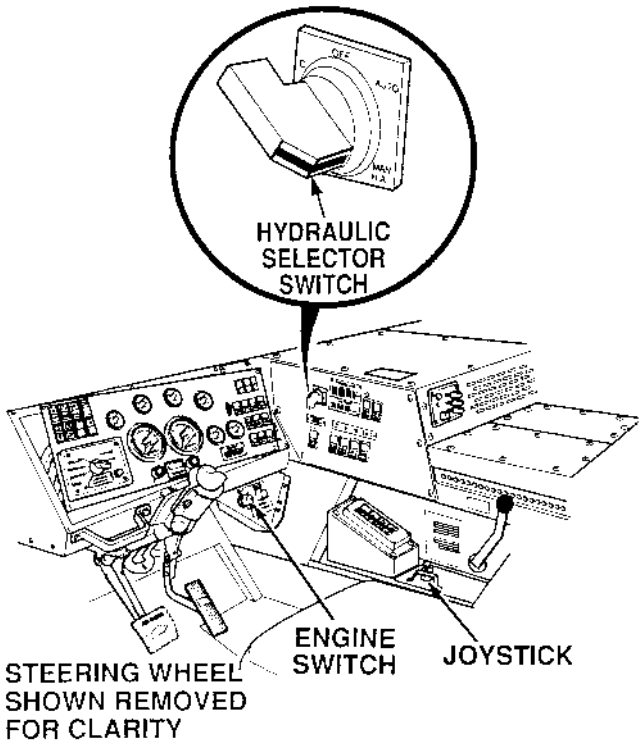


11. MIDDLE FRAME DOES NOT UNLOAD IN MANUAL MODE (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch in MAN HA position.
(3) Hold joystick in UNLOAD position.
    (a) If middle frame does not unload, fault not corrected. Perform Steps (4) through (6) below and notify DS Maintenance.
    (b) If middle frame unloads, fault has been corrected.
(4) Release joystick.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE.

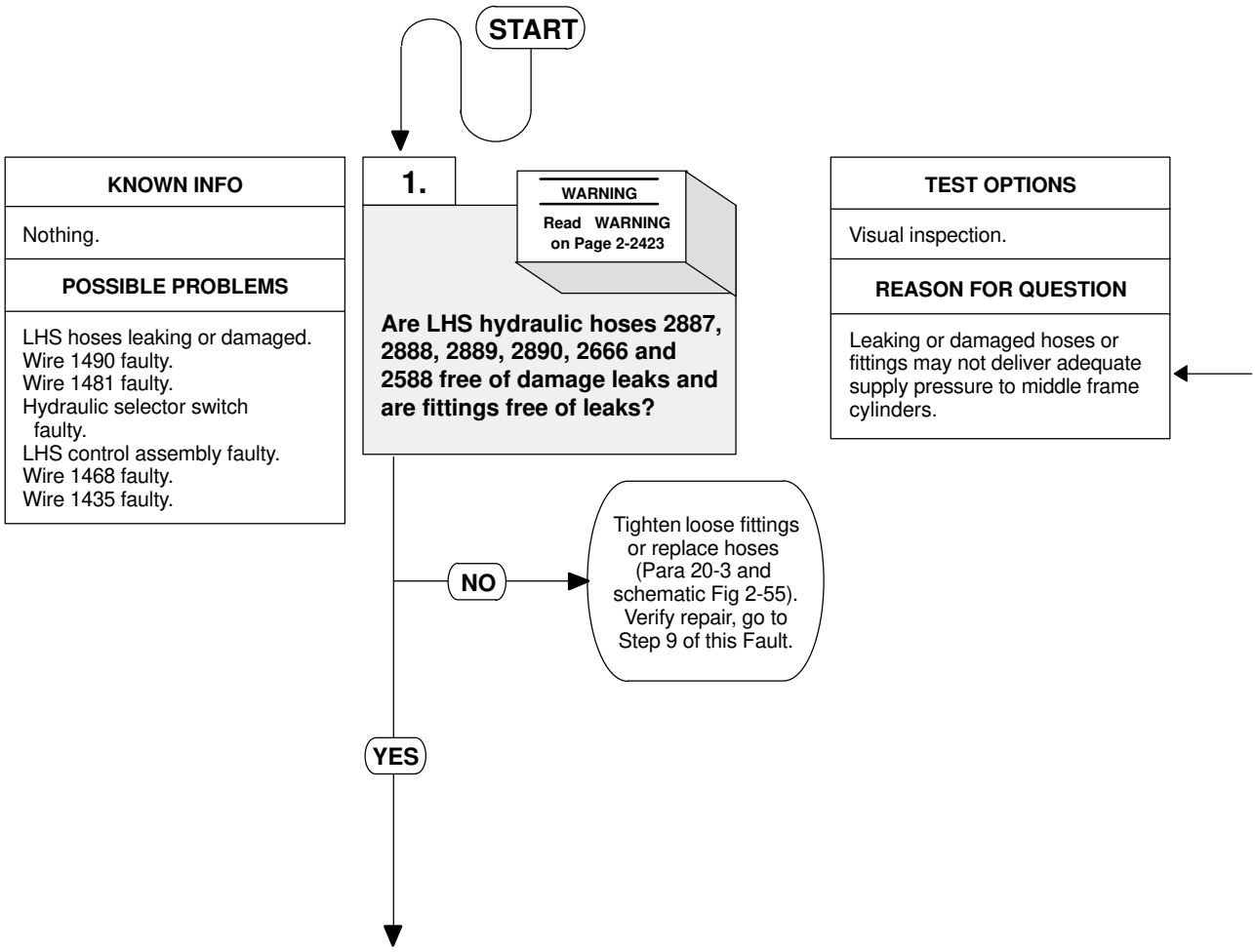
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)
Adhesive (Item 8, Appendix C)

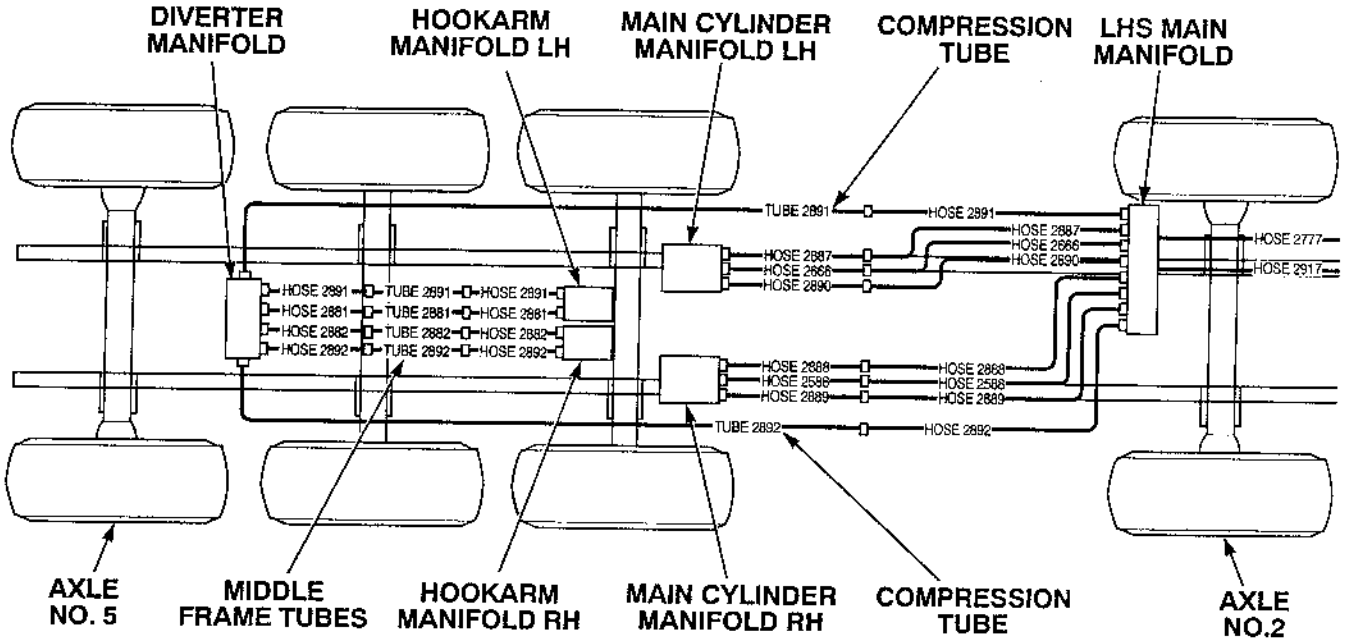
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



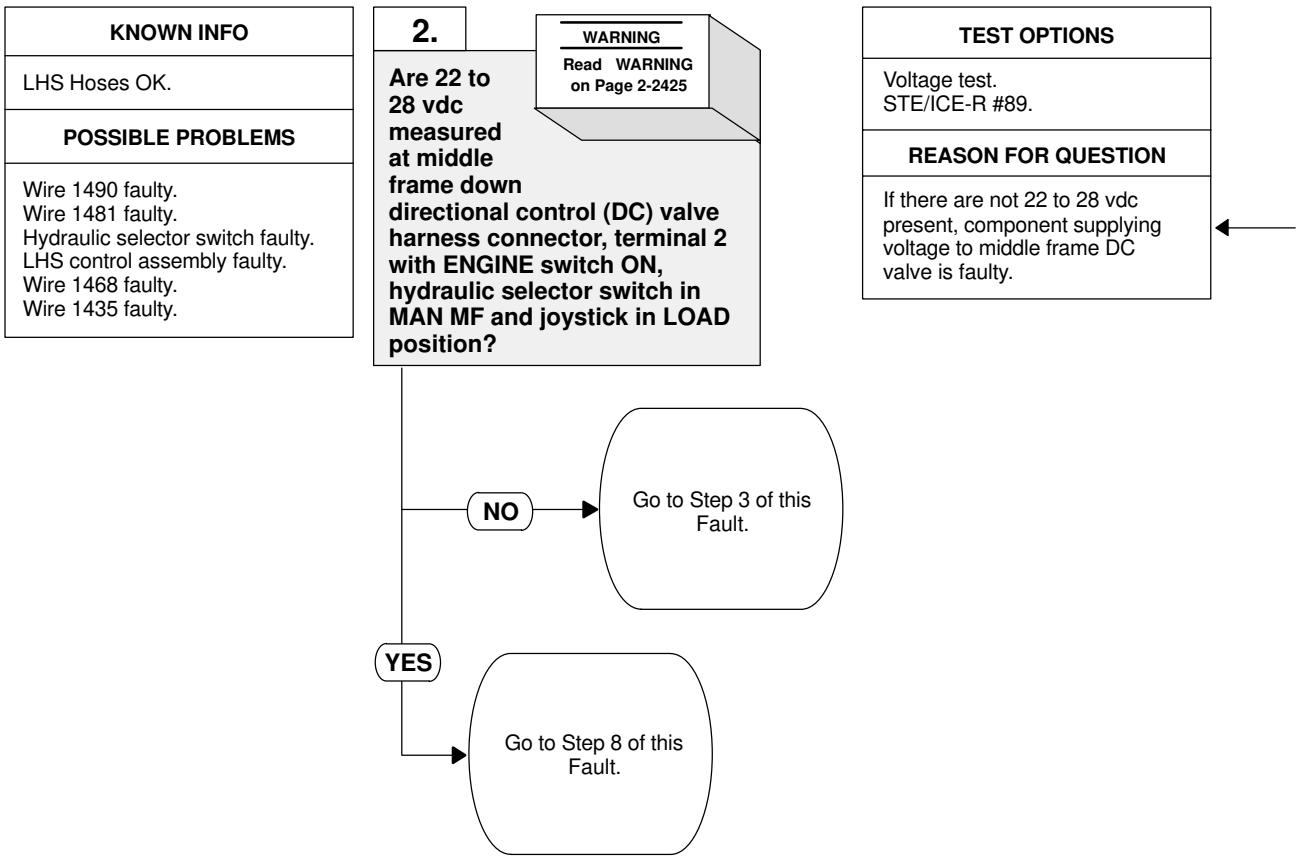
WARNING

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. A high pressure oil stream can pierce body and cause severe injury to personnel.



VISUAL INSPECTION
Inspect LHS hoses 2887, 2888, 2889, 2890, 2666 and 2588 for damage, crimps, or leaks. (1) If hoses are damaged, crimped or leaking; tighten fittings or replace hoses (Para 20-3 and schematic Fig 2-55). (2) If there are no leaks, crimps or damage; hoses and fittings are OK.

12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).



WARNING

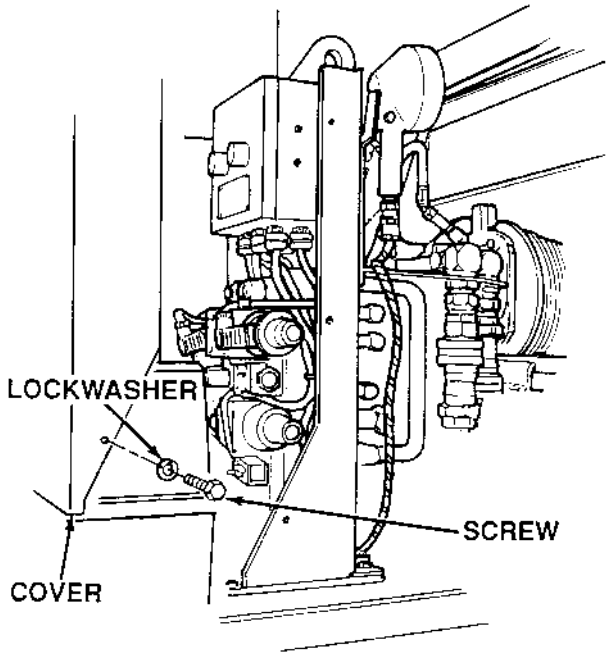
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

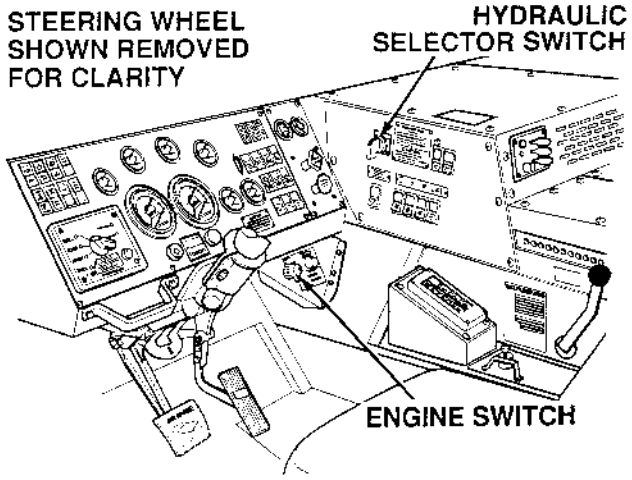
NOTE

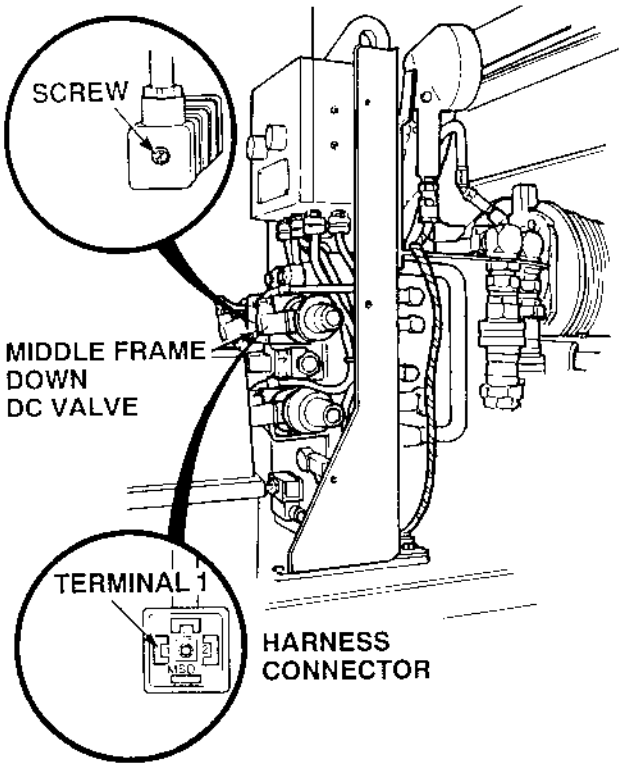
Only remove center screw on engine side of LHS control box cover.

VOLTAGE TEST

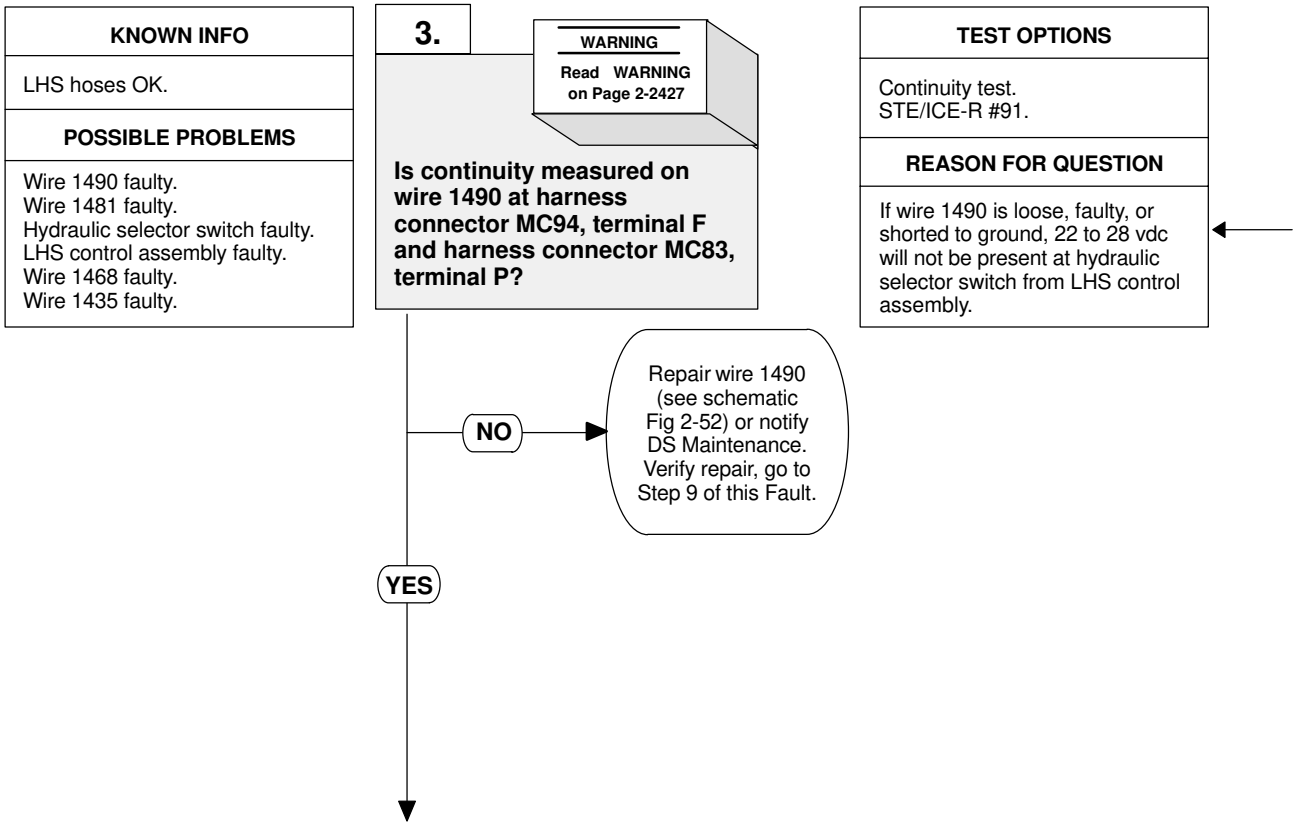
(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen screw and remove harness connector from middle frame down (top left) DC valve.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to harness connector, terminal 2.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to MAN MF position.
(8) Hold joystick in LOAD position.
  (a) If there are not 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 3 of this Fault.
  (b) If there are 22 to 28 vdc present, perform Steps (9) and (10) below and go to Step 8 of this Fault.
(9) Set hydraulic selector switch to OFF position.
(10) Turn OFF ENGINE switch.







12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).

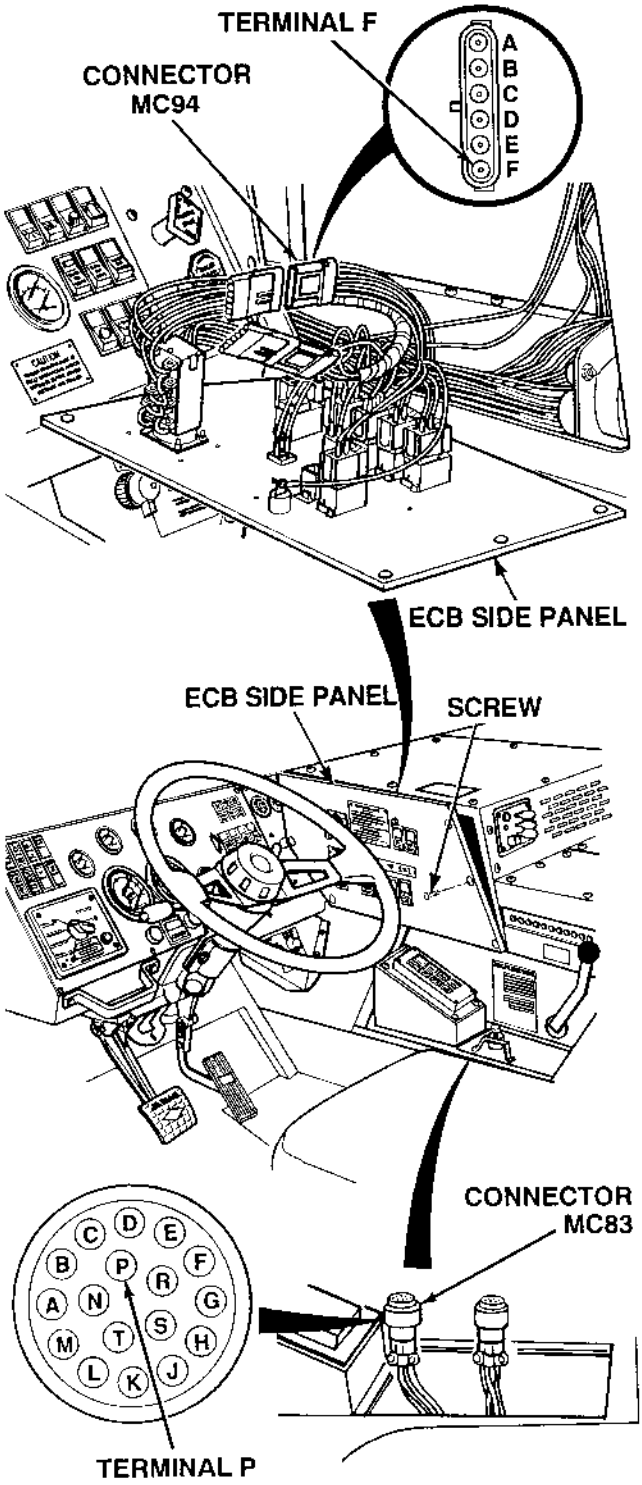


WARNING

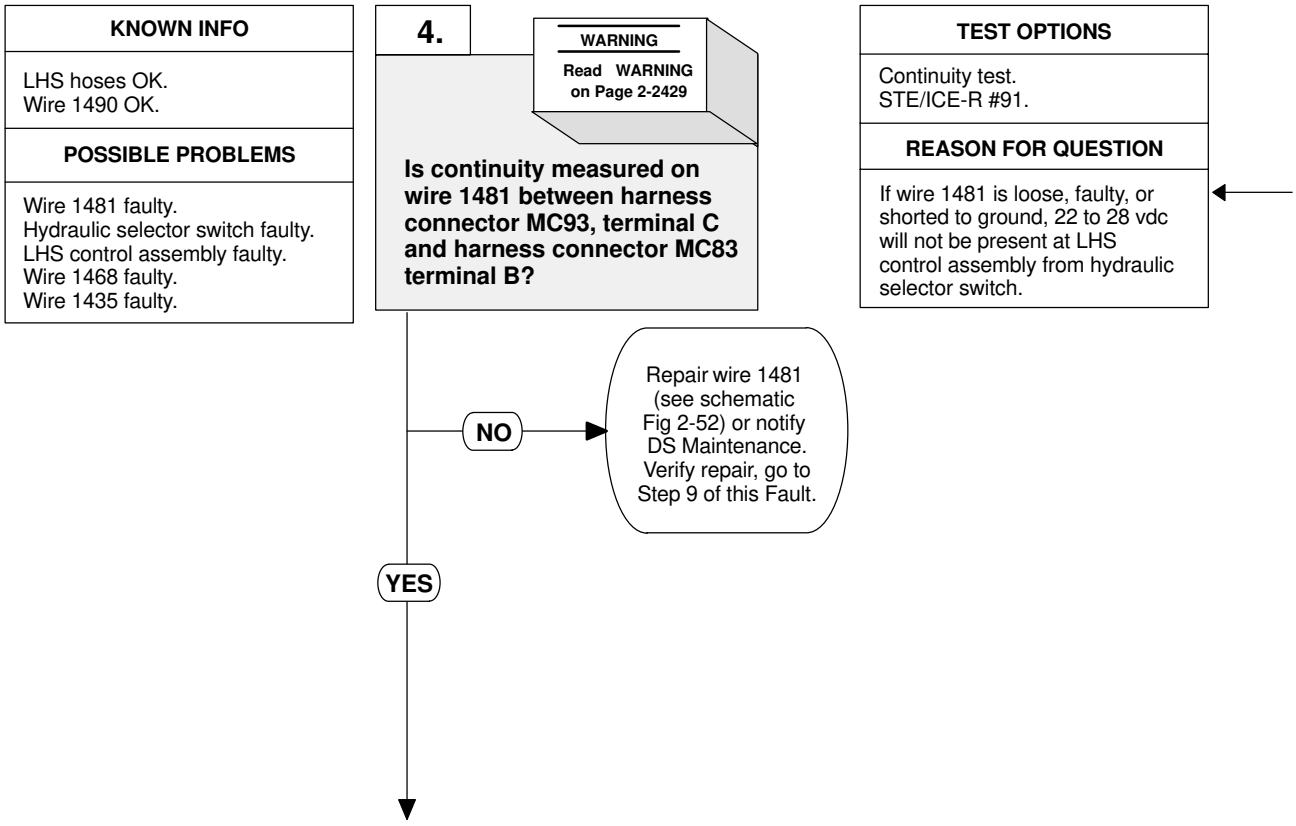
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Remove six screws and tilt ECB side panel.
(3) Disconnect harness connector MC94 from hydraulic selector switch connector.
(4) Set multimeter select switch to ohms.
(5) Is there continuity between harness connector MC94, terminal F and harness connector MC83, terminal P?
   (a) If there is no continuity, repair wire 1490 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1490 is OK.



12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).

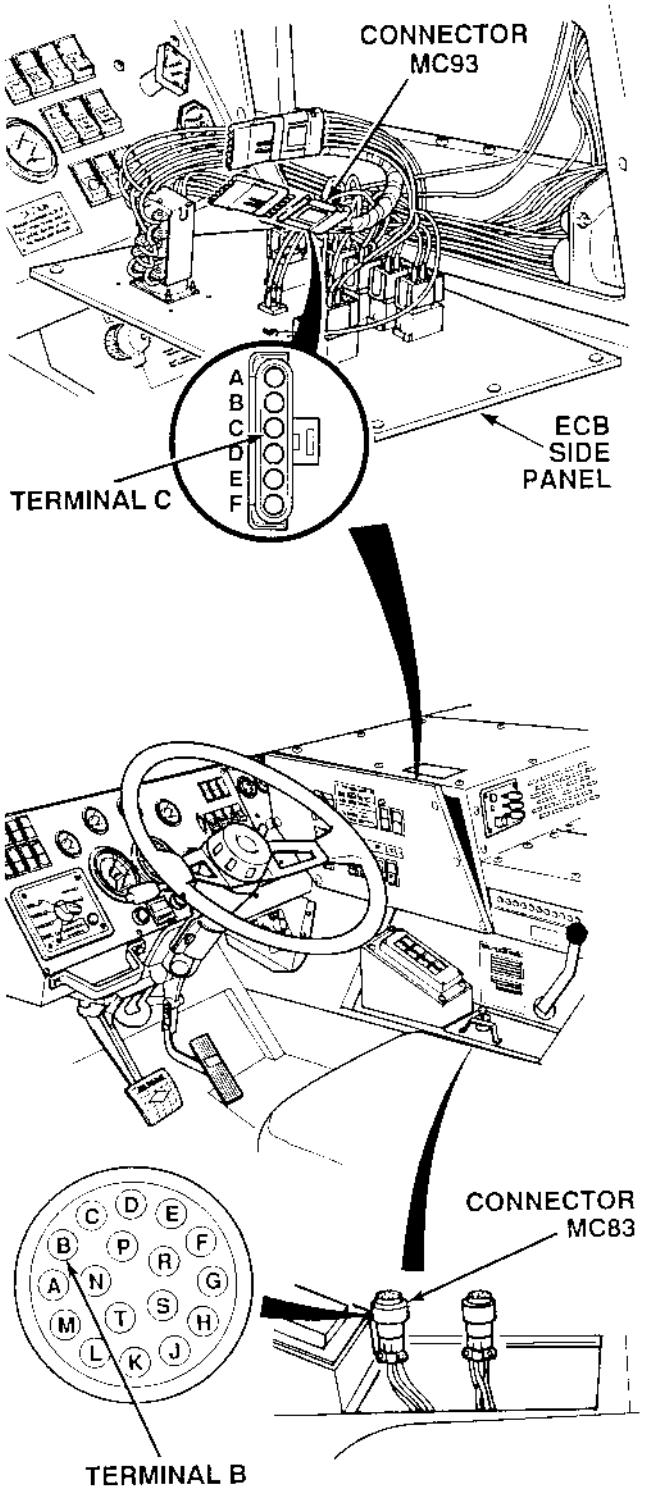


WARNING

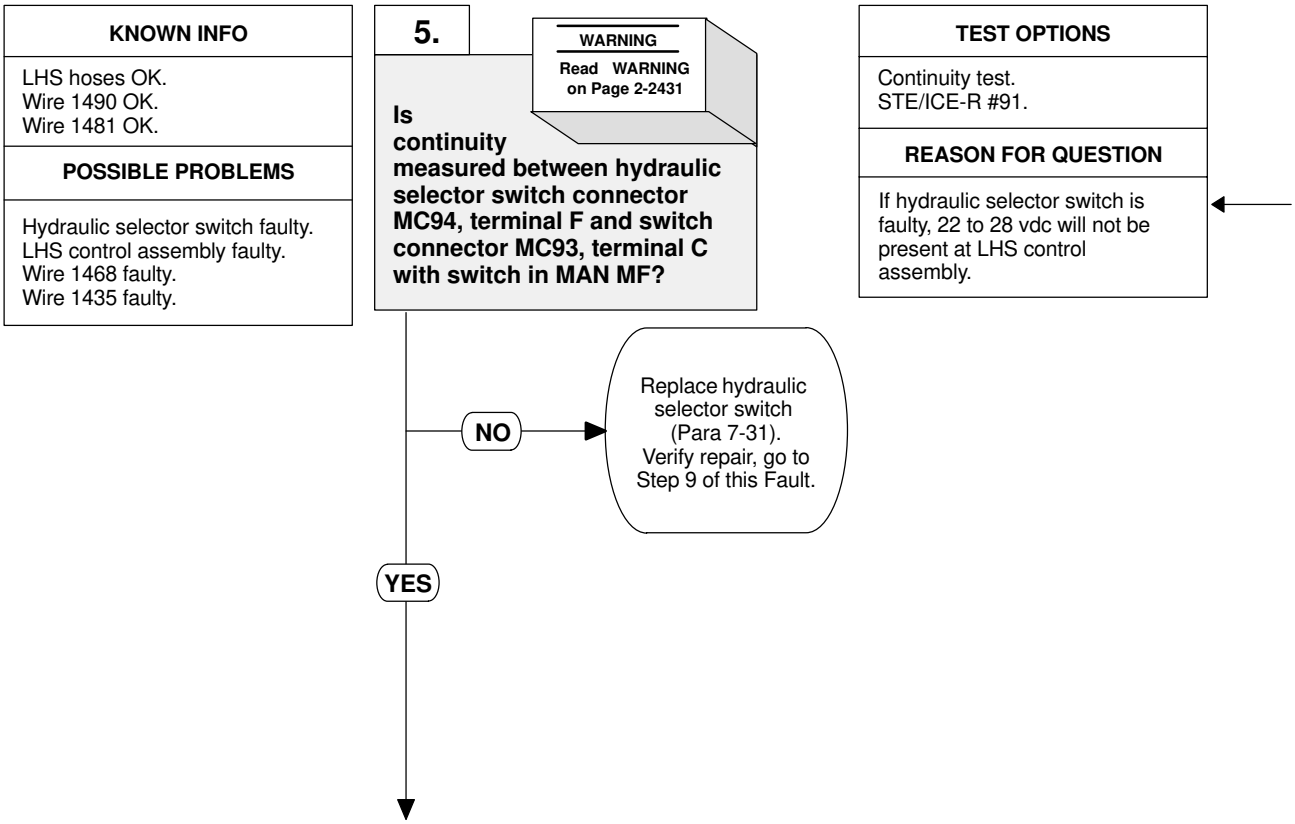
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect harness connector MC93 from hydraulic selector switch connector.
(2) Set multimeter selector switch to ohms.
(3) Is there continuity between harness connector MC93, terminal C and harness connector MC83, terminal B?
  (a) If there is no continuity, repair wire 1481 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1481 is OK.
(4) Install LHS control assembly (Para 7-40).



12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).

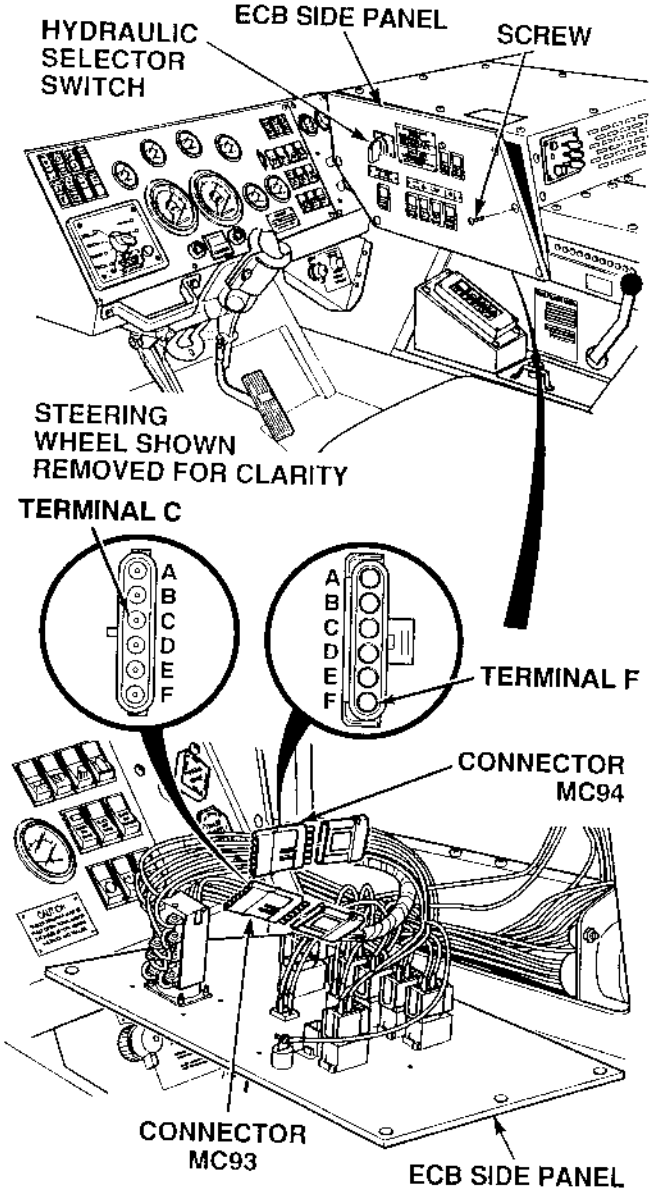


WARNING

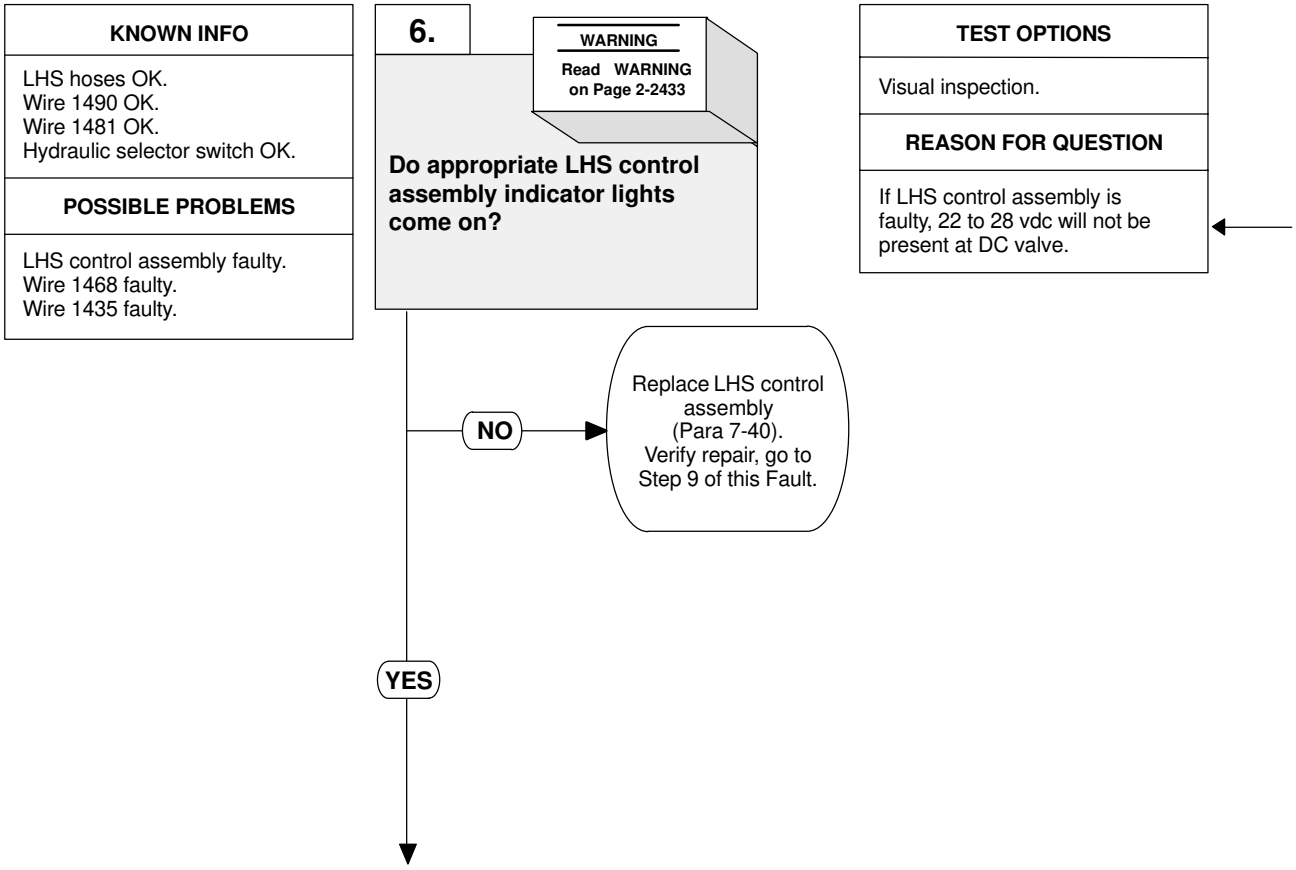
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set hydraulic selector switch to MAN MF position (TM 9-2320-364-10).
(2) Set multimeter selector switch to ohms.
(3) Is there continuity between switch harness connector MC94, terminal F and harness connector MC93, terminal C?
   (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
   (b) If there is continuity, hydraulic selector switch is OK.
(4) Connect harness connector MC94 on hydraulic selector switch connector.
(5) Connect harness connector MC93 on hydraulic selector switch connector.
(6) Install ECB side panel and six screws.



12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).



WARNING

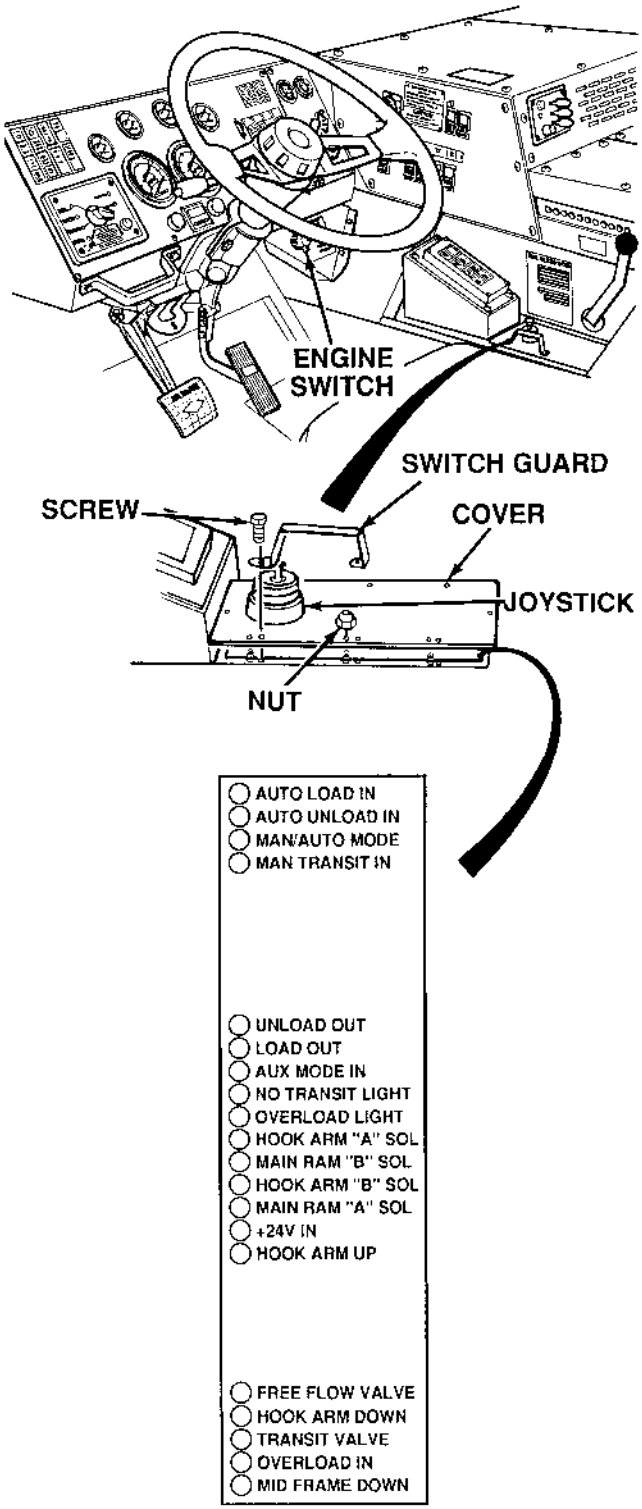
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

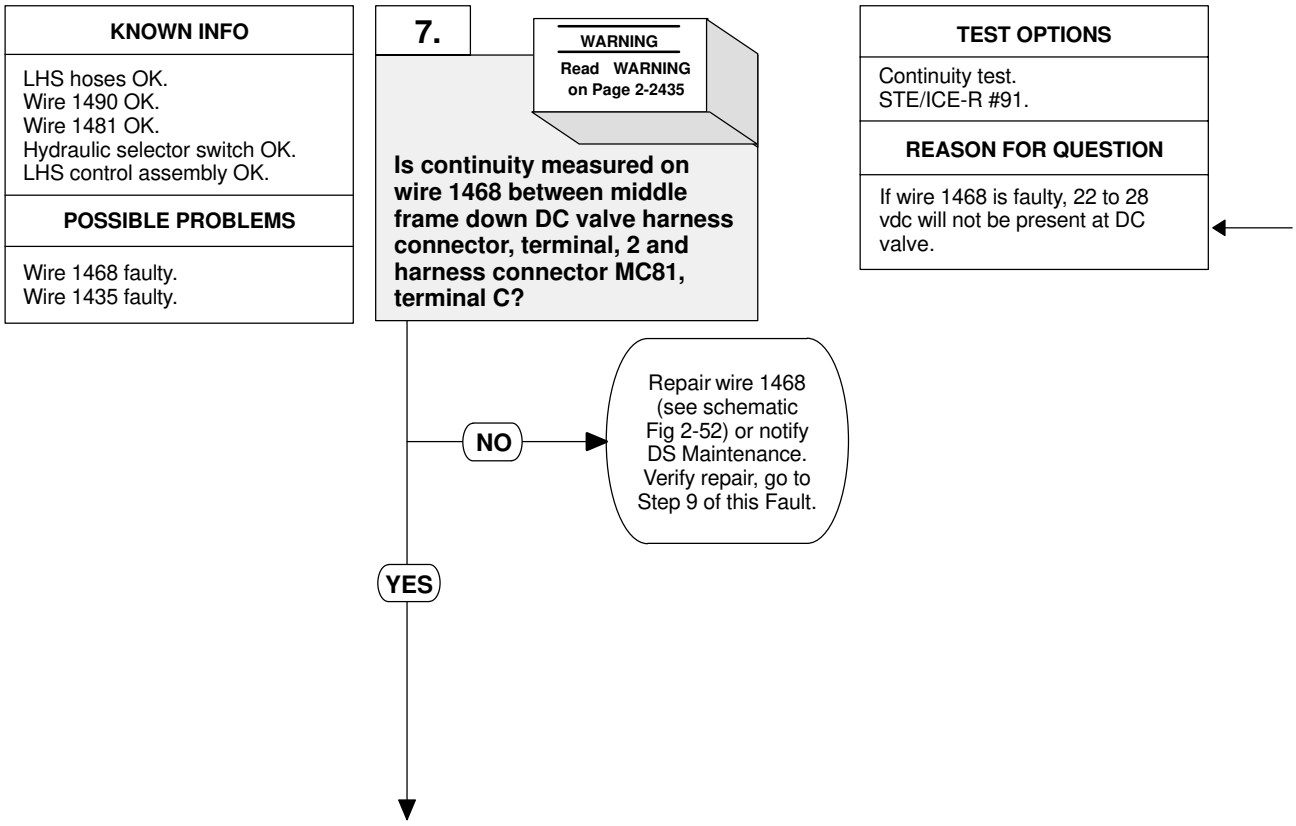
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

VISUAL INSPECTION

(1) Remove eight screws, switch guard and eight nuts from LHS control assembly.
(2) Carefully lift off control assembly cover. Do not allow cover to dangle by joystick connecting wires.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Set hydraulic selector switch to MAN MF position.
(5) Hold joystick in LOAD position.
(6) Observe red indicator lights in bottom of LHS control assembly.
    (a) If MAIN RAM B indicator lamp does not illuminate with joystick in LOAD position, turn OFF ENGINE switch and install cover and replace LHS control assembly (Para 7-40).
    (b) If MAIN RAM B indicator lamp does illuminate, LHS control assembly is OK.
(7) Turn OFF ENGINE switch.
(8) Set hydraulic selector switch to OFF position.



12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).

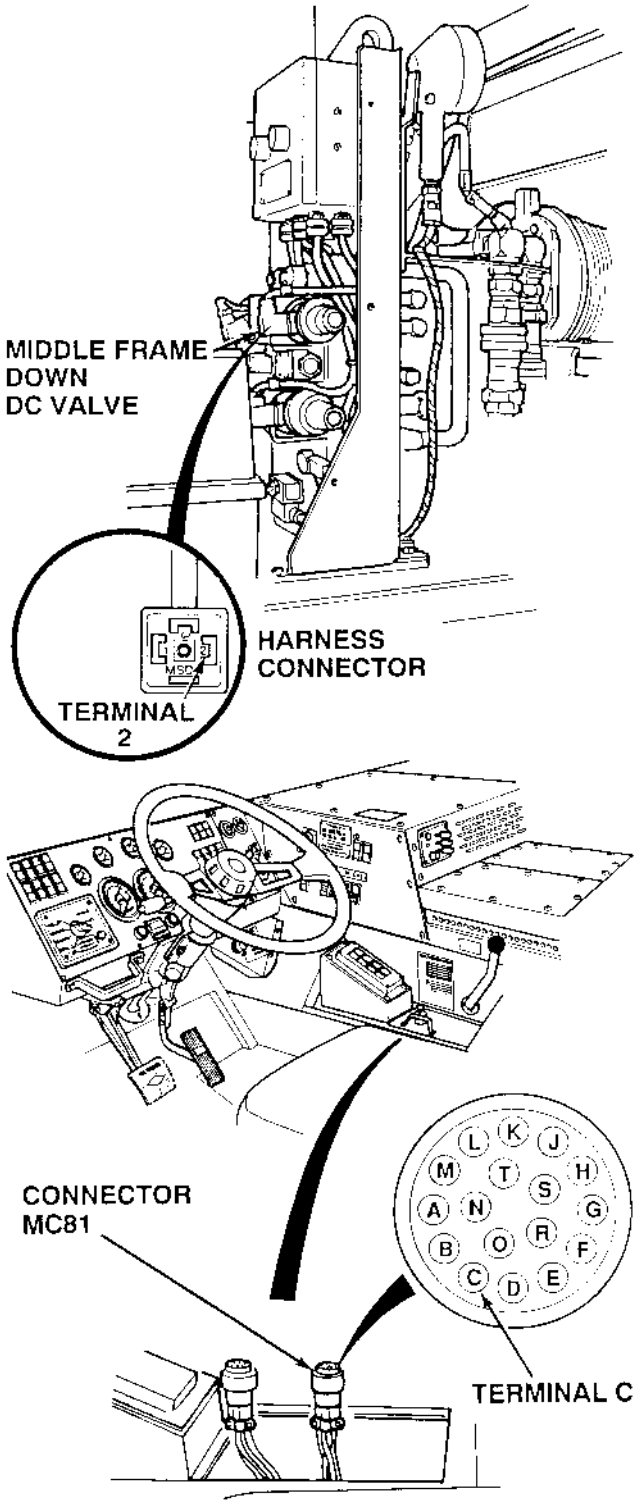


WARNING

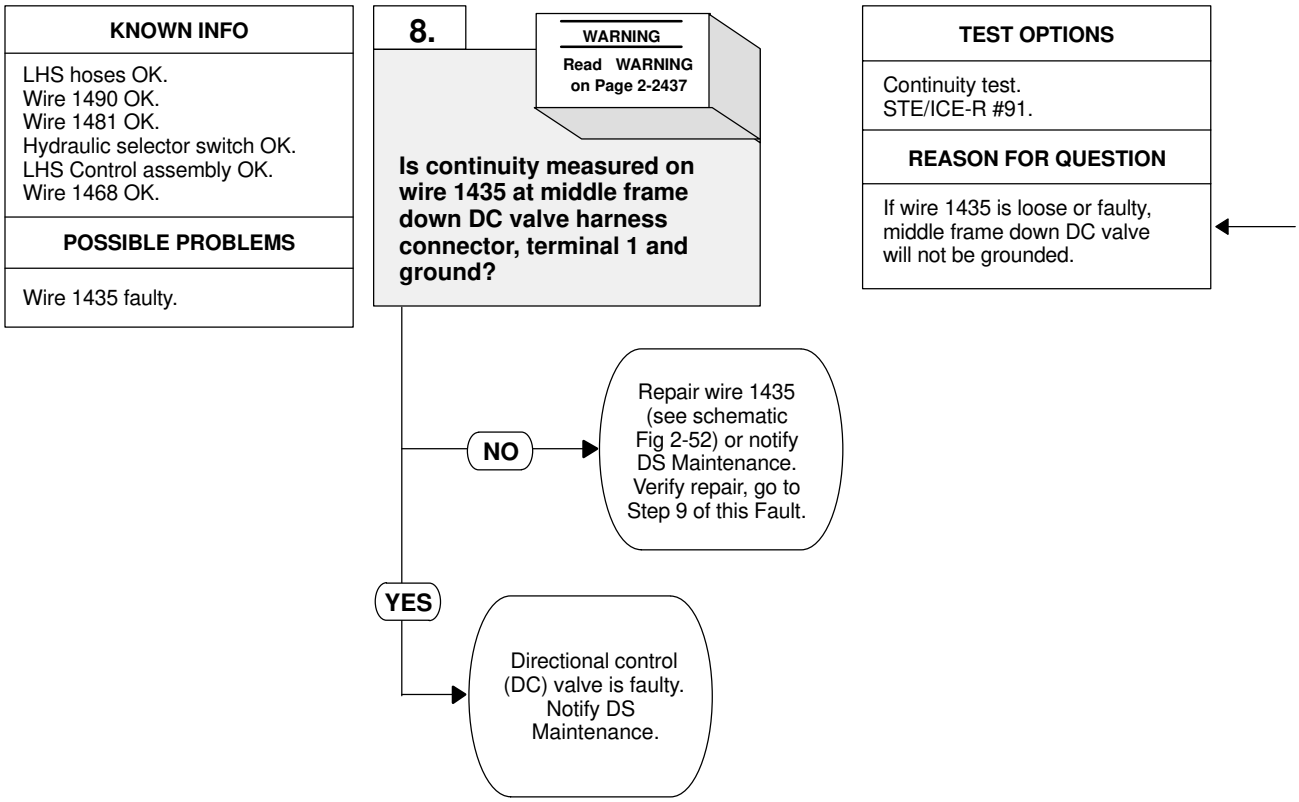
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect LHS control assembly from connectors.
(2) Set multimeter selector switch to ohms.
(3) Is there continuity between middle frame down DC valve harness connector, terminal 2 and harness connector MC81, terminal C?
  (a) If there is no continuity, repair wire 1468 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1468 is OK.
(4) Install LHS control assembly (Para 7-40).



12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).

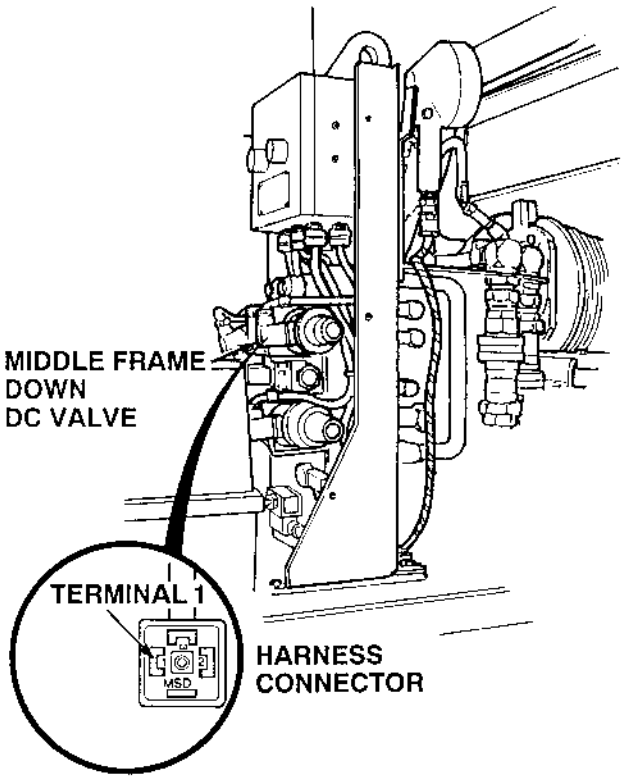


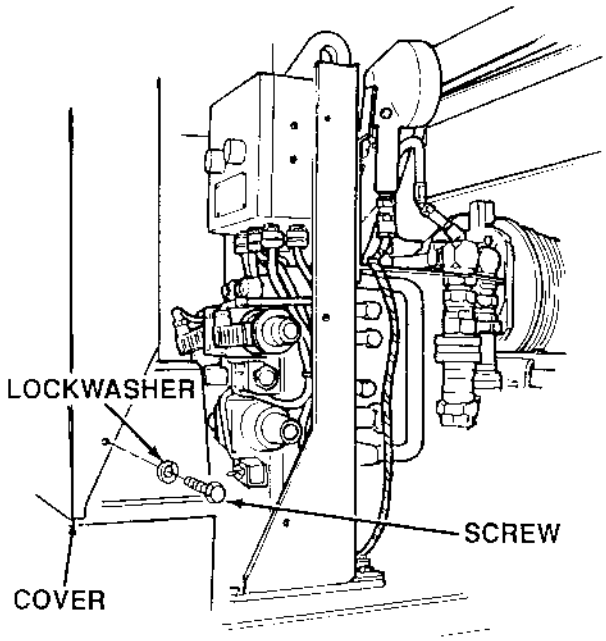
WARNING

- 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.
- Adhesive, solvents, and sealing compounds can burn easily, can 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.

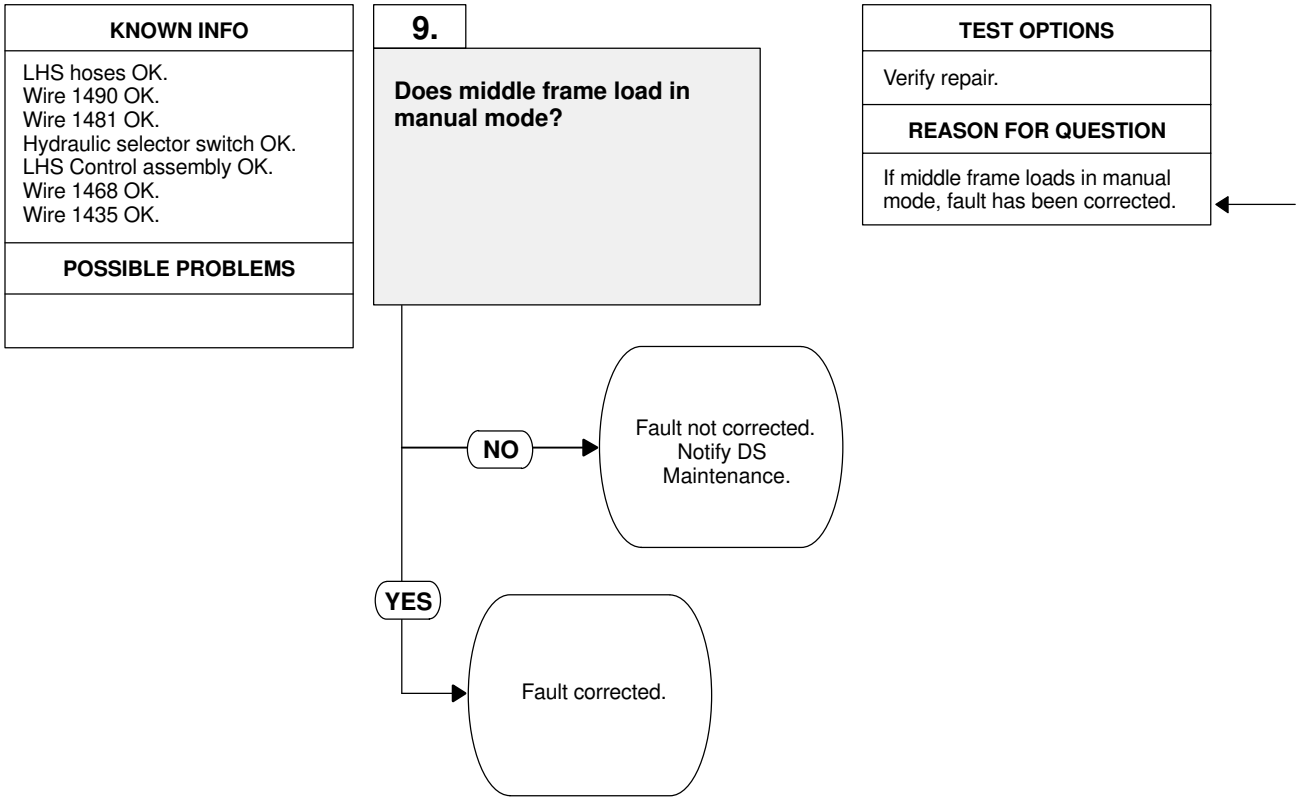
CONTINUITY TEST

(1) Set multimeter selector switch to ohms.
(2) Is there continuity on wire 1435 between middle frame down DC valve harness connector, terminal 1 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK.
(3) Install harness connector on middle frame down DC valve.
(4) Coat head of connector screw with adhesive and tighten screw.
(5) Install LHS control box cover, four lockwashers and screws.



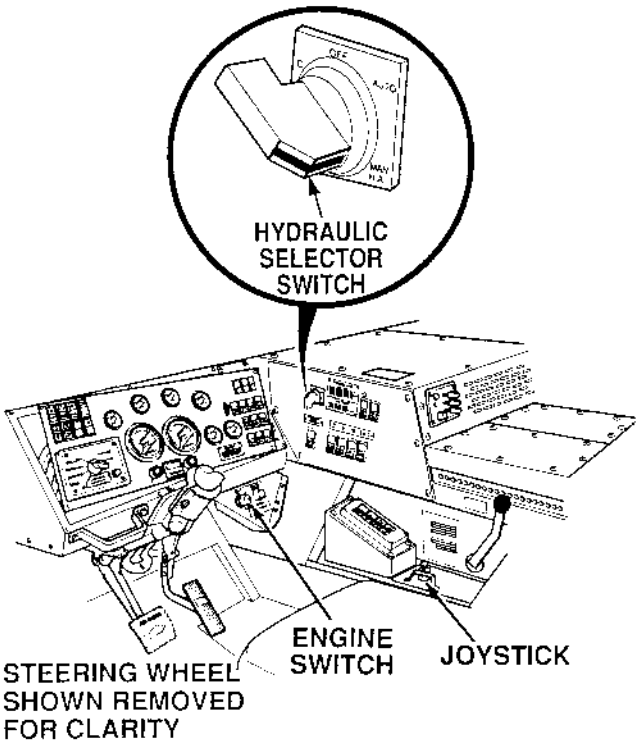


12. MIDDLE FRAME DOES NOT LOAD IN MANUAL MODE (CONT).



VERIFY REPAIR

(1) Turn ON ENGINE switch.
(2) Start engine.
(3) Set hydraulic selector switch in MAN MF position.
(4) Hold joystick in LOAD position.
    (a) If middle frame does not load, fault not corrected. Perform Steps (5) through (7) below and notify DS Maintenance.
    (b) If middle frame loads, fault has been corrected.
(5) Release joystick.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

13. LHS DOES NOT LOAD IN AUTO MODE.

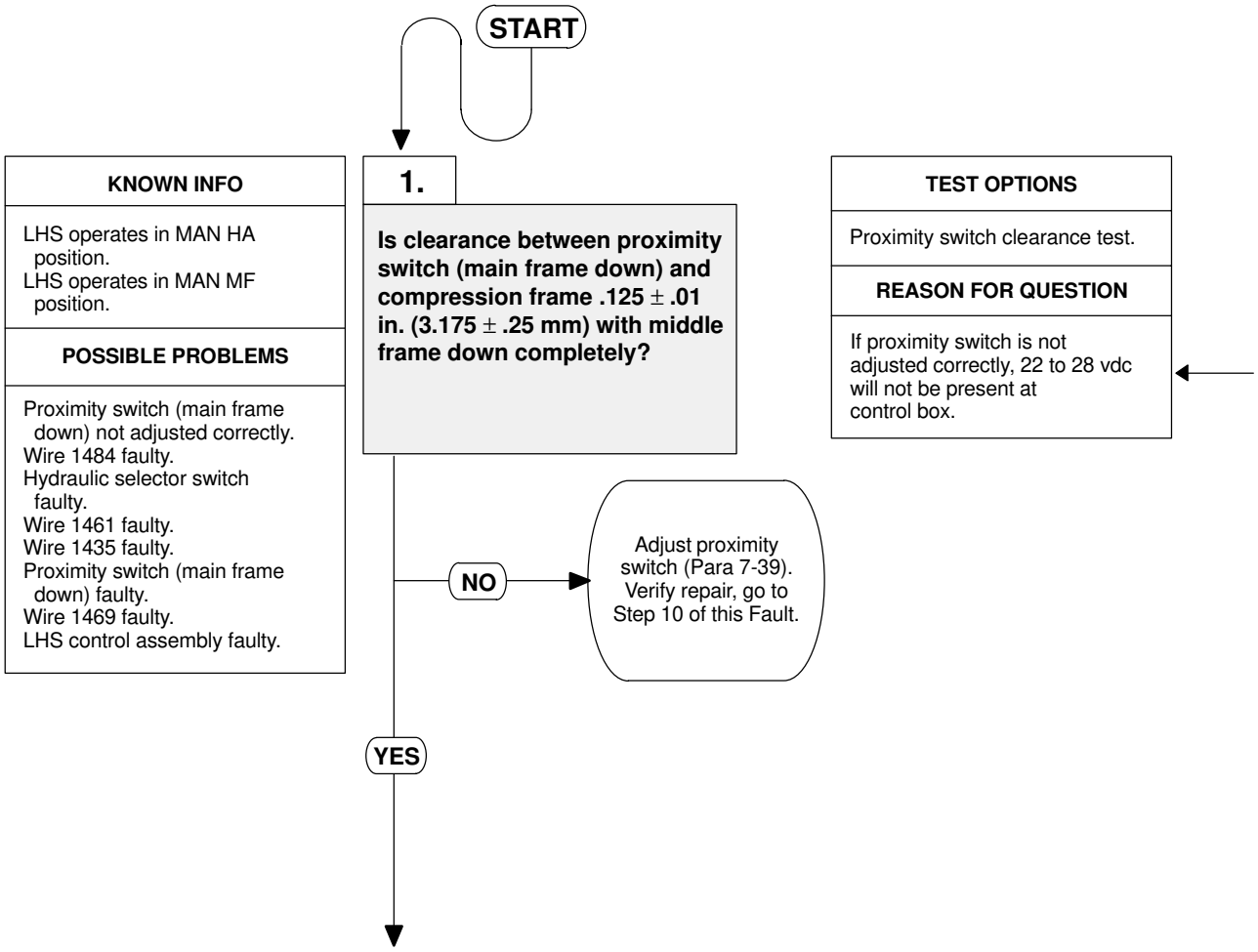
INITIAL SETUP

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)
Jumperwire

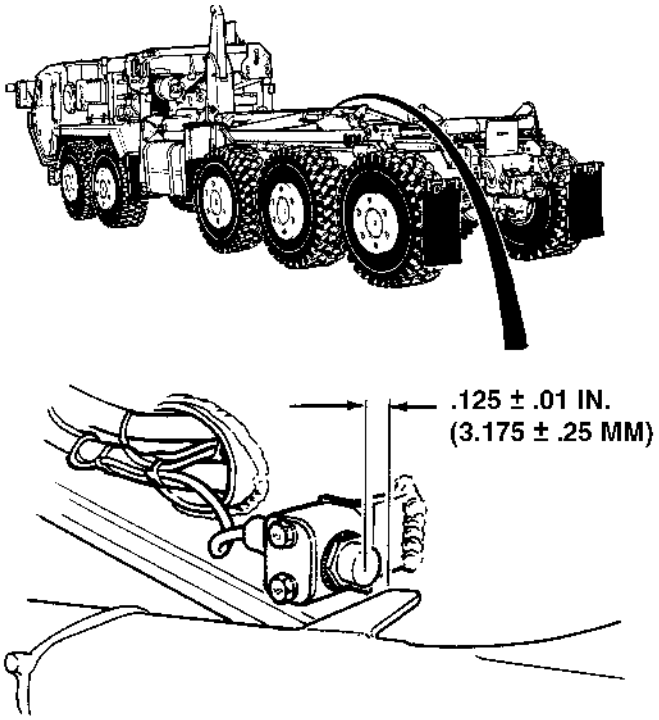
Materials/Parts
Lockwasher (4) (Item 180, Appendix F)

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

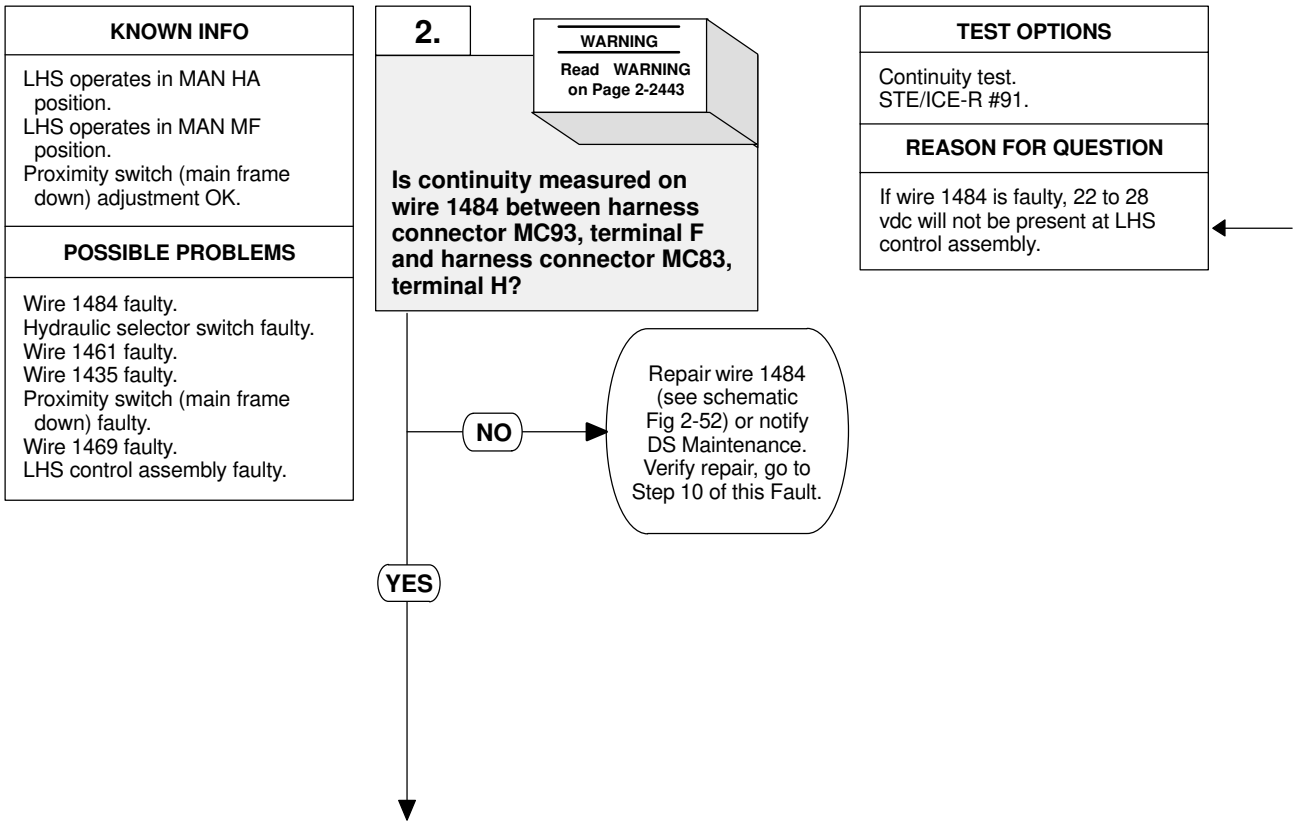
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
LHS in transit position, (TM 9-2320-364-10)



PROXIMITY SWITCH CLEARANCE TEST
Check clearance between proximity switch and compression frame. (1) If clearance is more than .135 in. (3.43 mm) or less than .115 in. (2.92 mm), proximity switch is not adjusted correctly. Adjust proximity switch (main frame down) (Para 7-39). (2) If clearance is between .135 in. (3.43 mm) and .115 in. (2.92 mm), proximity switch adjustment is OK.



13. LHS DOES NOT LOAD IN AUTO MODE (CONT).

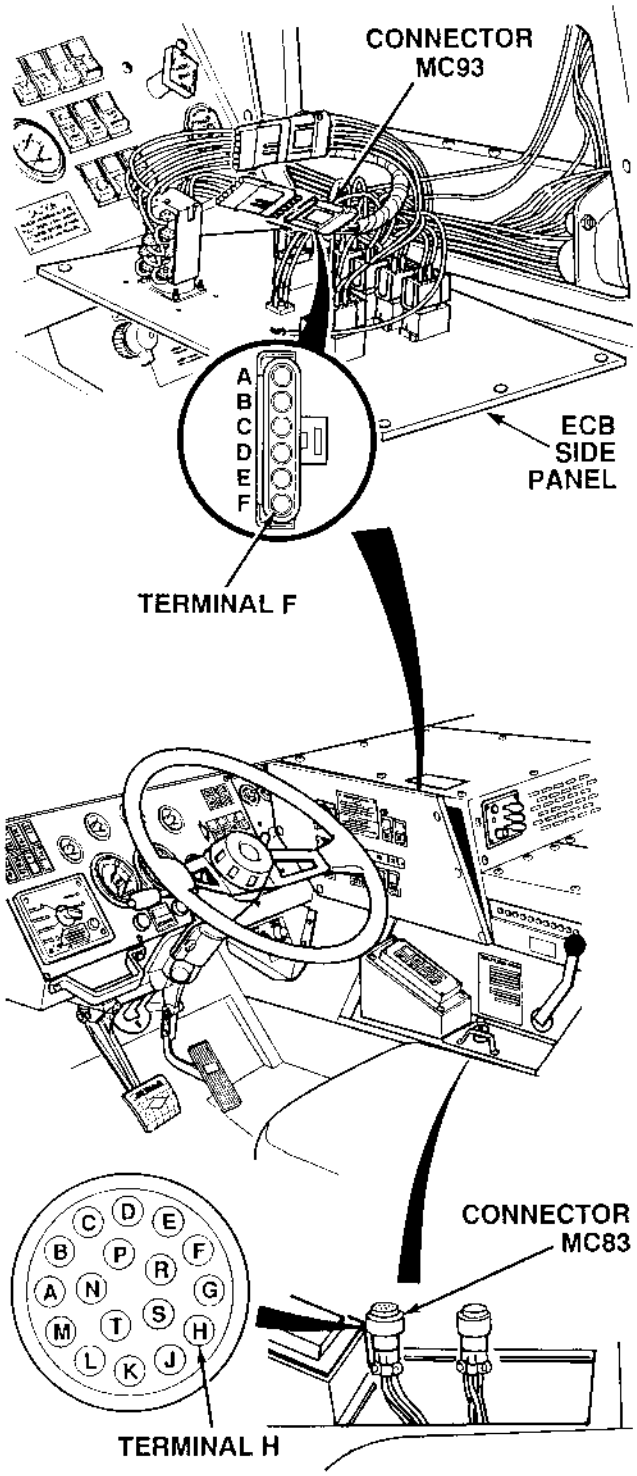


WARNING

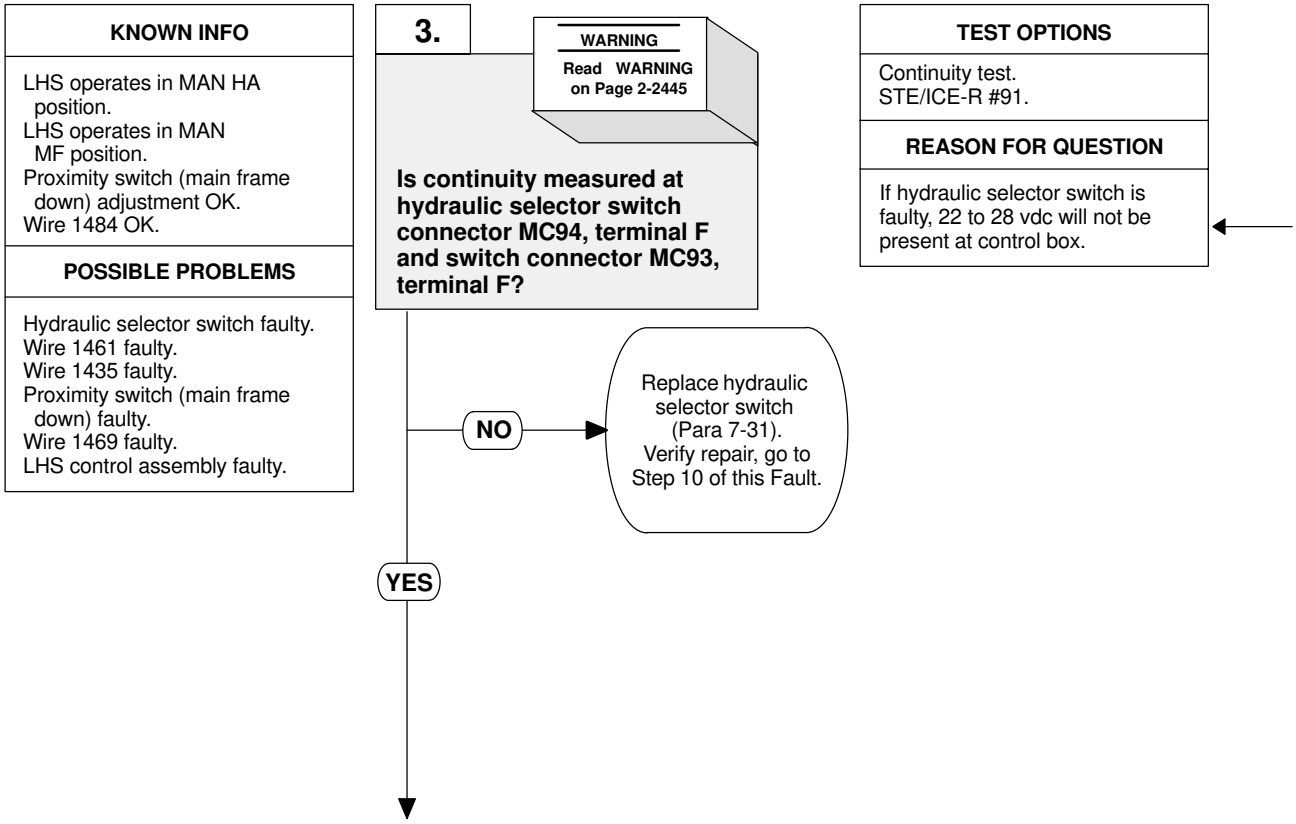
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Remove six screws and tilt ECB side panel.
(3) Disconnect harness connector MC93 from hydraulic selector switch connector.
(4) Set multimeter select switch to ohms.
(5) Is there continuity between harness connector MC93 terminal F and harness connector MC83, terminal H?
  (a) If there is no continuity, repair wire 1484 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1484 is OK.
(6) Install LHS control assembly LHS control assembly.



13. LHS DOES NOT LOAD IN AUTO MODE (CONT).

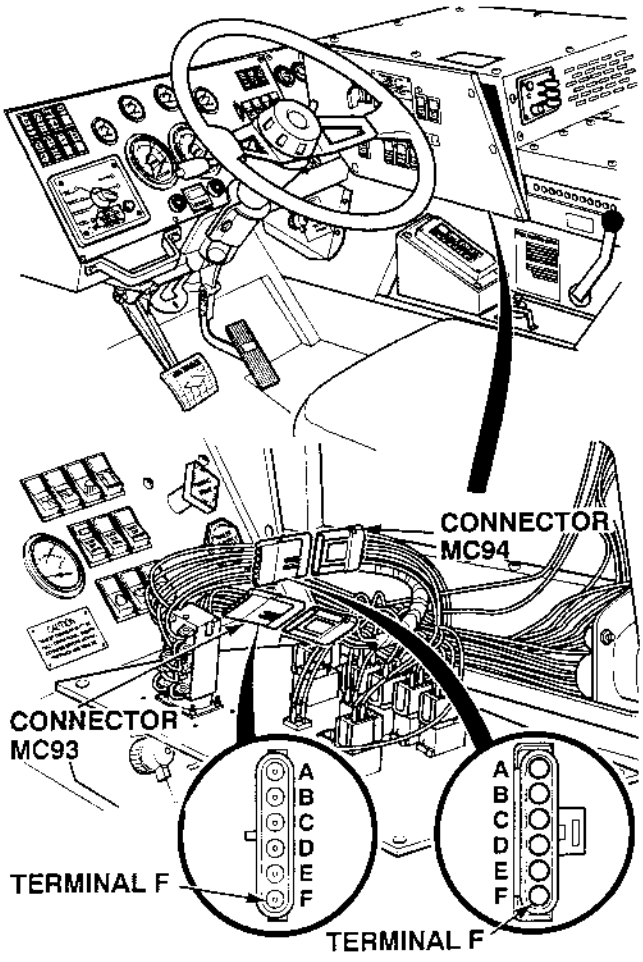


WARNING

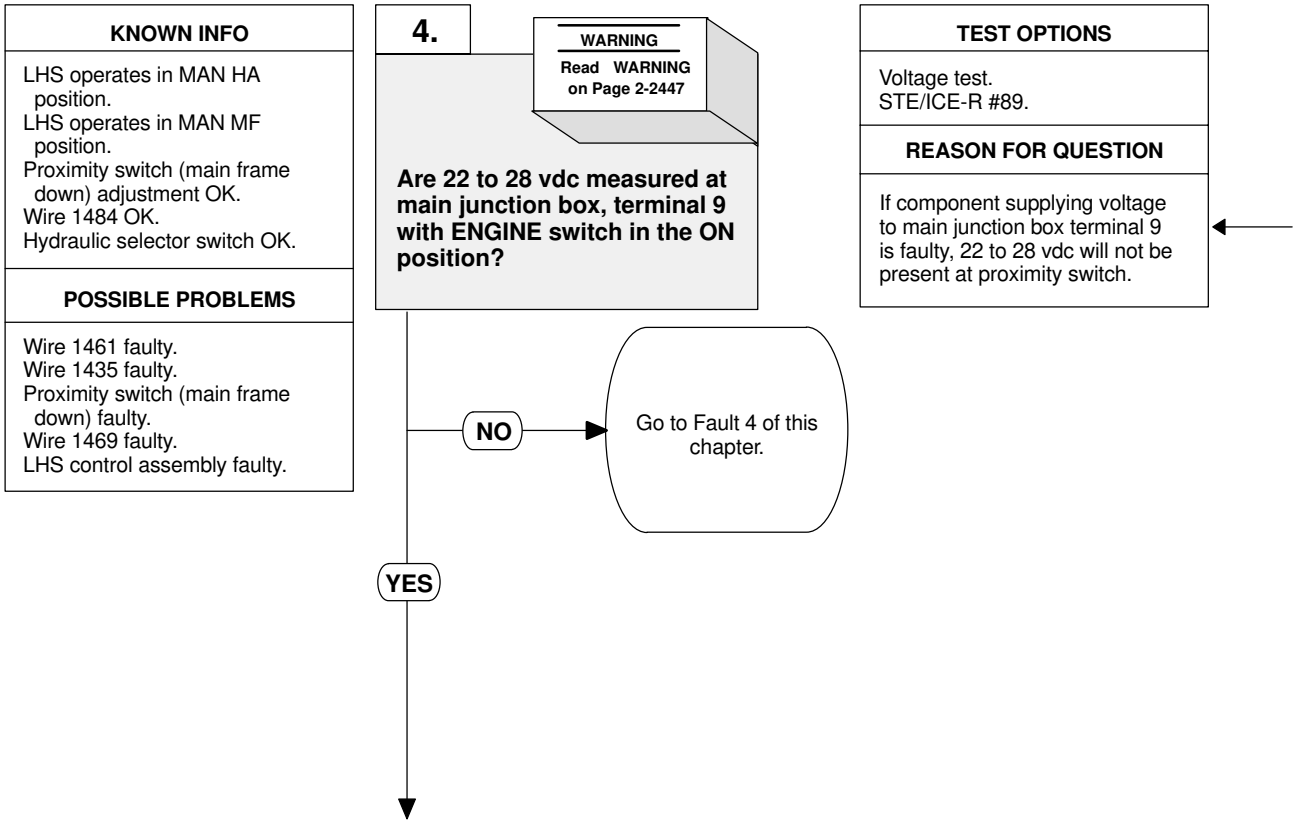
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur

CONTINUITY TEST

(1) Set hydraulic selector switch to AUTO position (TM 9-2320-364-10).
(2) Disconnect harness connector MC94 from hydraulic selector switch connector.
(3) Set multimeter selector switch to ohms.
(4) Is there continuity between switch harness connector MC94, terminal F and harness connector MC93, terminal F?
    (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
    (b) If there is continuity, hydraulic selector switch is OK.
(5) Install harness connector MC94 on hydraulic selector switch connector.
(6) Install harness connector MC93 on hydraulic selector switch connector.
(7) Install ECB side panel and six screws.



13. LHS DOES NOT LOAD IN AUTO MODE (CONT).



WARNING

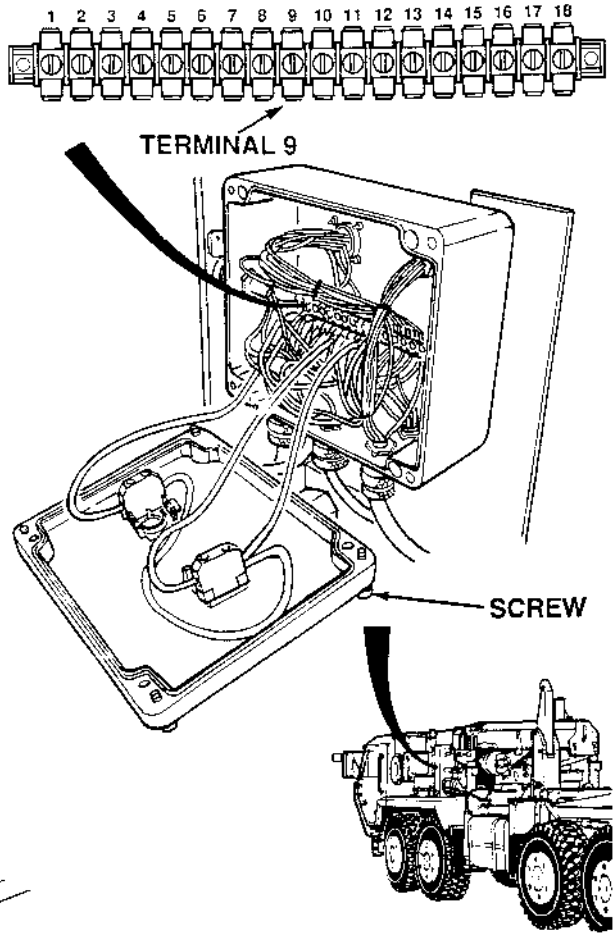
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

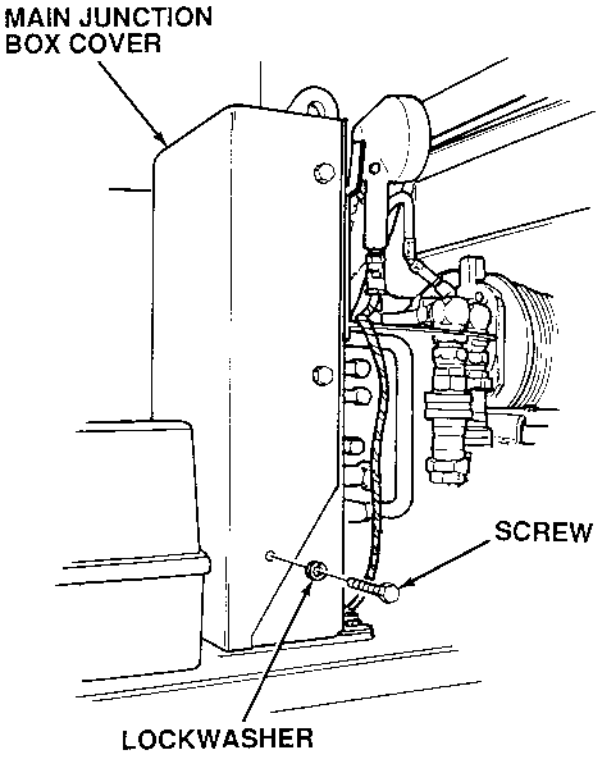
NOTE

Only remove center screw on engine side of LHS control box cover.

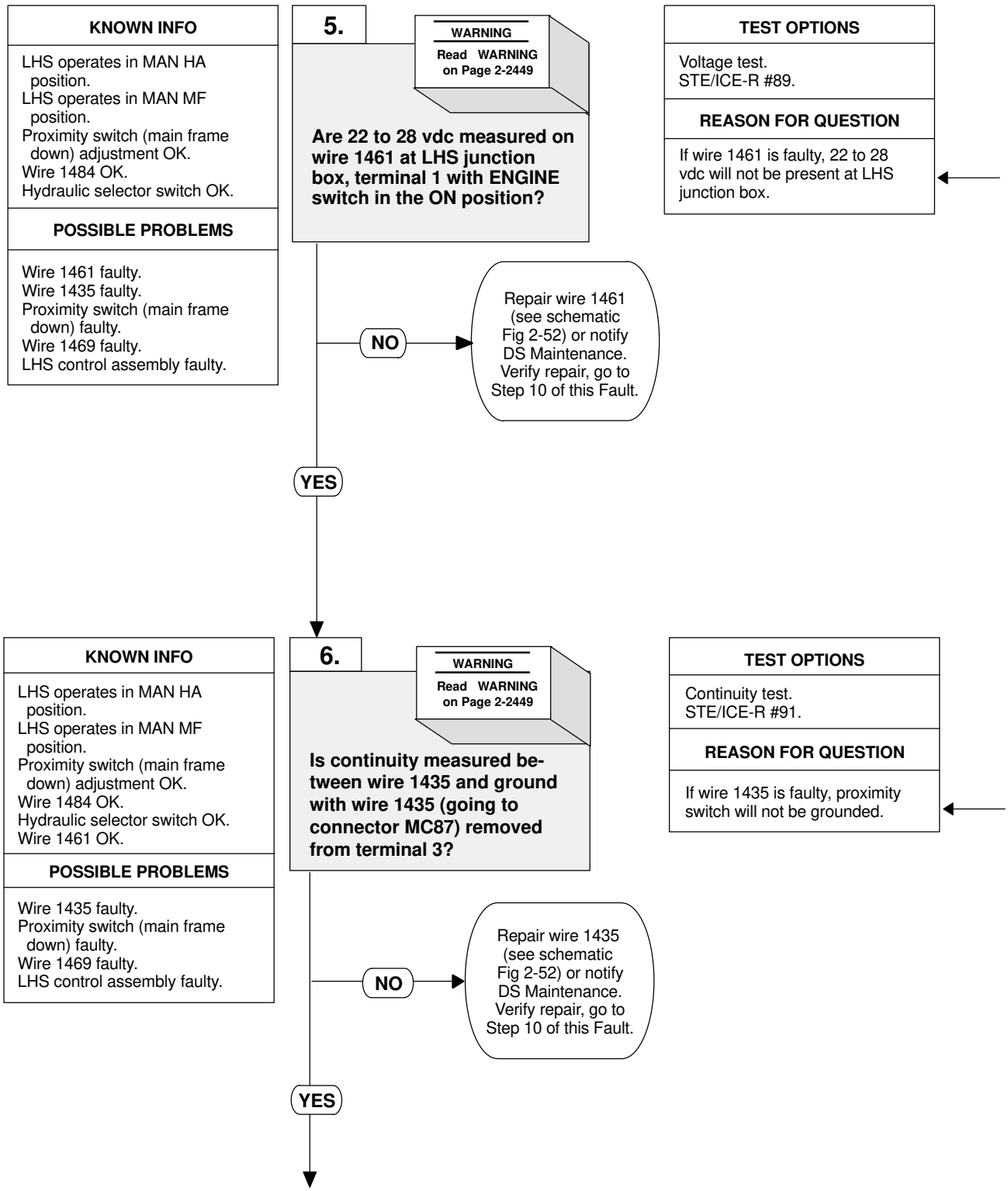
VOLTAGE TEST

(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen four screws and open main junction box.
(3) Set multimeter selector switch to volts dc.
(4) Connect positive (+) multimeter lead to main junction box, terminal 9.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If there are not 22 to 28 vdc present, perform Steps (7) and (8) below and go to Fault 4 of this chapter.
  (b) If there are 22 to 28 vdc present, perform Steps (7) through (9) below.
(7) Turn OFF ENGINE switch.
(8) Close main junction box and tighten four screws.
(9) Install LHS control box cover, four lockwashers and screws.





13. LHS DOES NOT LOAD IN AUTO MODE (CONT).

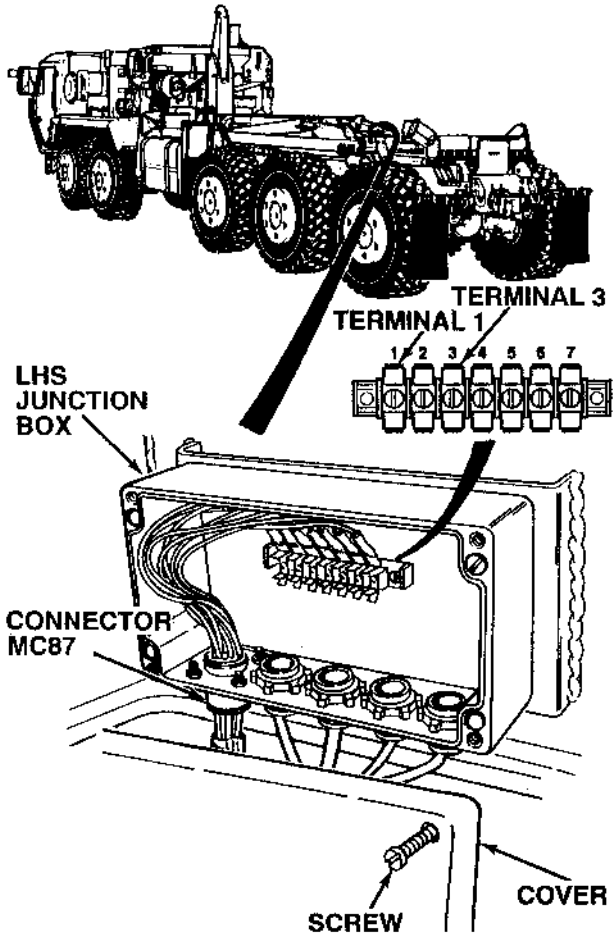


WARNING

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.

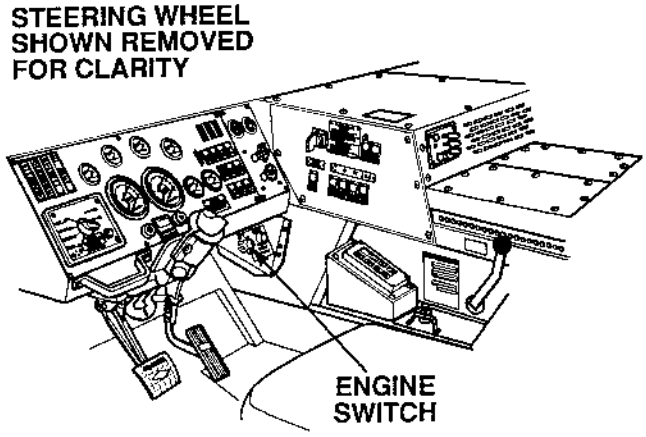
VOLTAGE TEST

(1) Loosen four screws and open LHS junction box.
(2) Set multimeter selector switch to volts dc.
(3) Connect positive (+) multimeter lead to LHS junction box, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If there are not 22 to 28 vdc present, repair wire 1461 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there are 22 to 28 vdc are present, wire 1461 is OK.
(6) Turn OFF ENGINE switch.

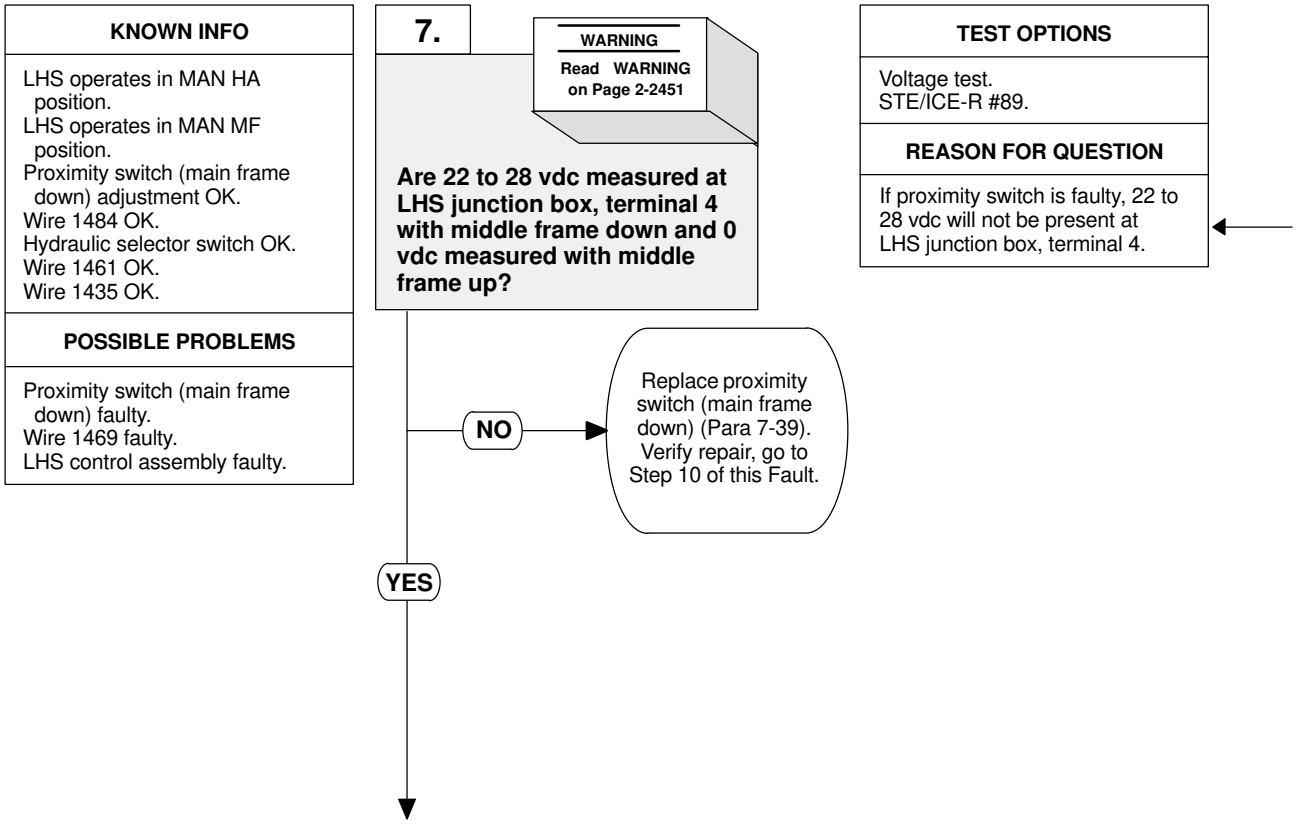


CONTINUITY TEST

(1) Disconnect wire 1435 from terminal 3.
(2) Set multimeter selector switch to ohms.
(3) Is there continuity between wire 1435 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance and perform Step (5) below.
  (b) If there is continuity, wire 1435 is OK.



13. LHS DOES NOT LOAD IN AUTO MODE (CONT).

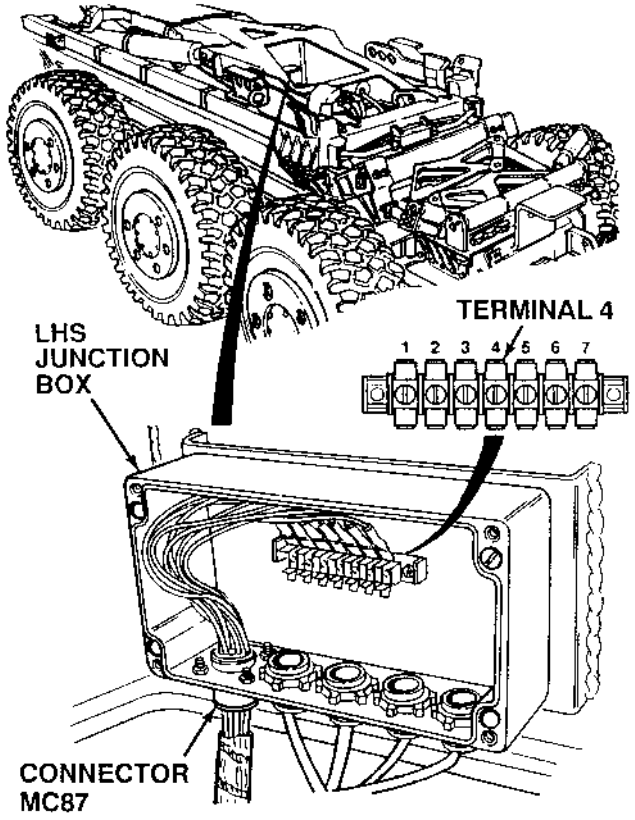


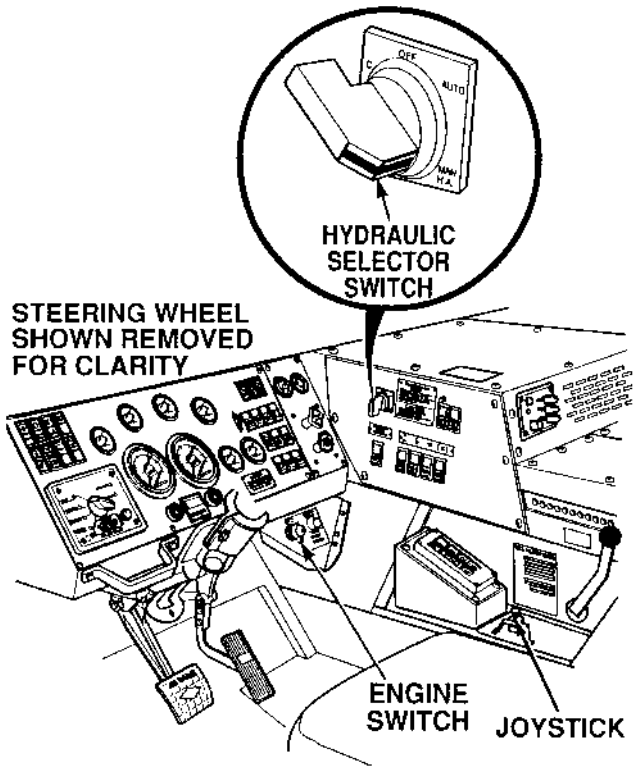
WARNING

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.

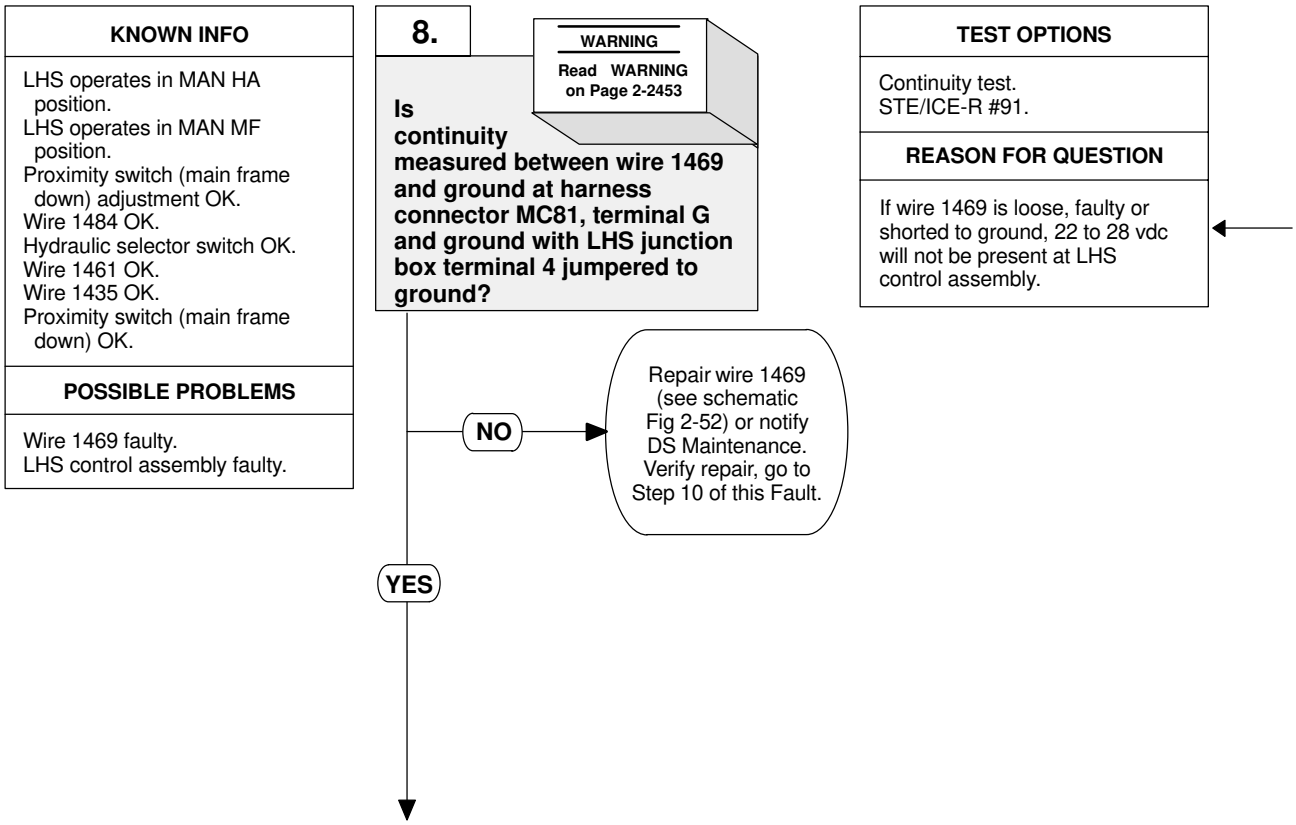
VOLTAGE TEST

(1) Set multimeter selector switch to vdc.
(2) Connect positive (+) multimeter lead to LHS junction box, terminal 4.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If there are not 22 to 28 vdc present, turn OFF ENGINE switch and replace proximity switch (main frame down) (Para 7-39).
  (b) If there are 22 to 28 vdc present, perform Steps (5) through (8) below.
(5) Start engine.
(6) Raise LHS completely in AUTO mode.
(7) Turn OFF ENGINE switch.
(8) Turn ON ENGINE switch.
  (a) If there are 22 to 28 vdc present, replace proximity switch (main frame down) (Para 7-39).
  (b) If there are not 22 to 28 vdc present, proximity switch is OK.
(9) Put LHS in transit position.





13. LHS DOES NOT LOAD IN AUTO MODE (CONT).

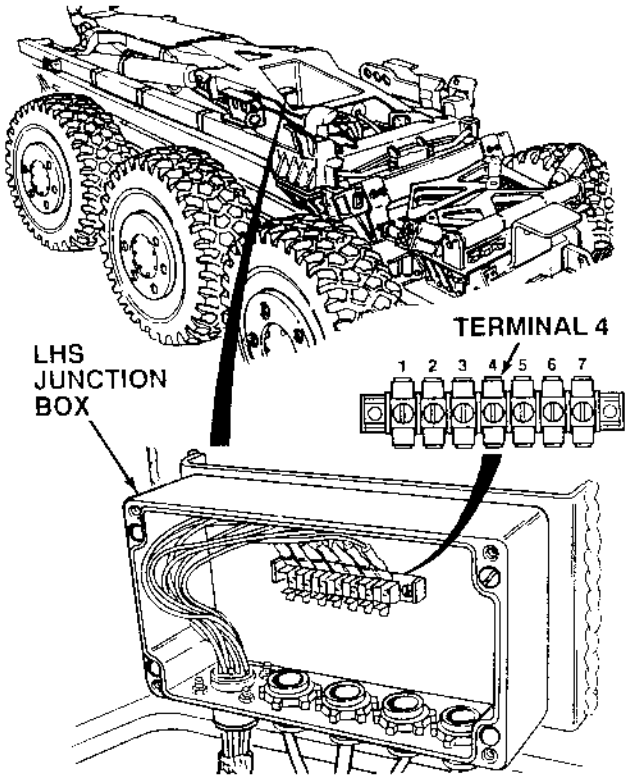


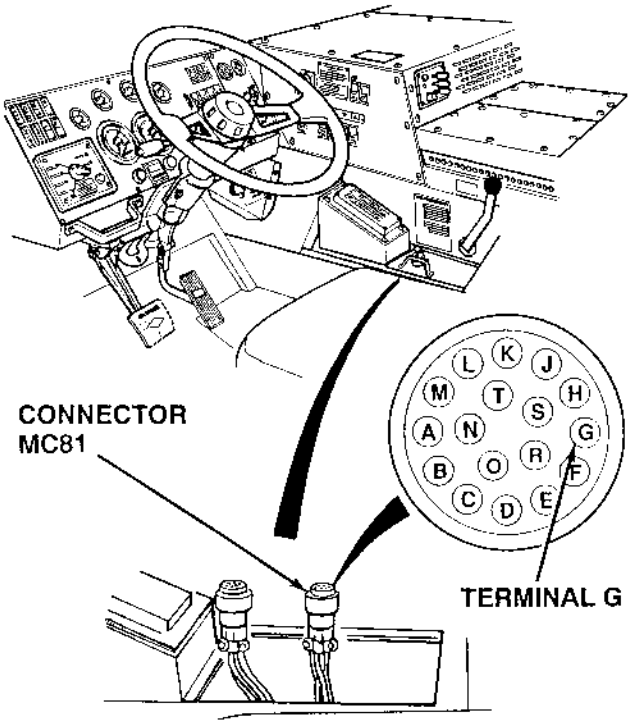
WARNING

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.

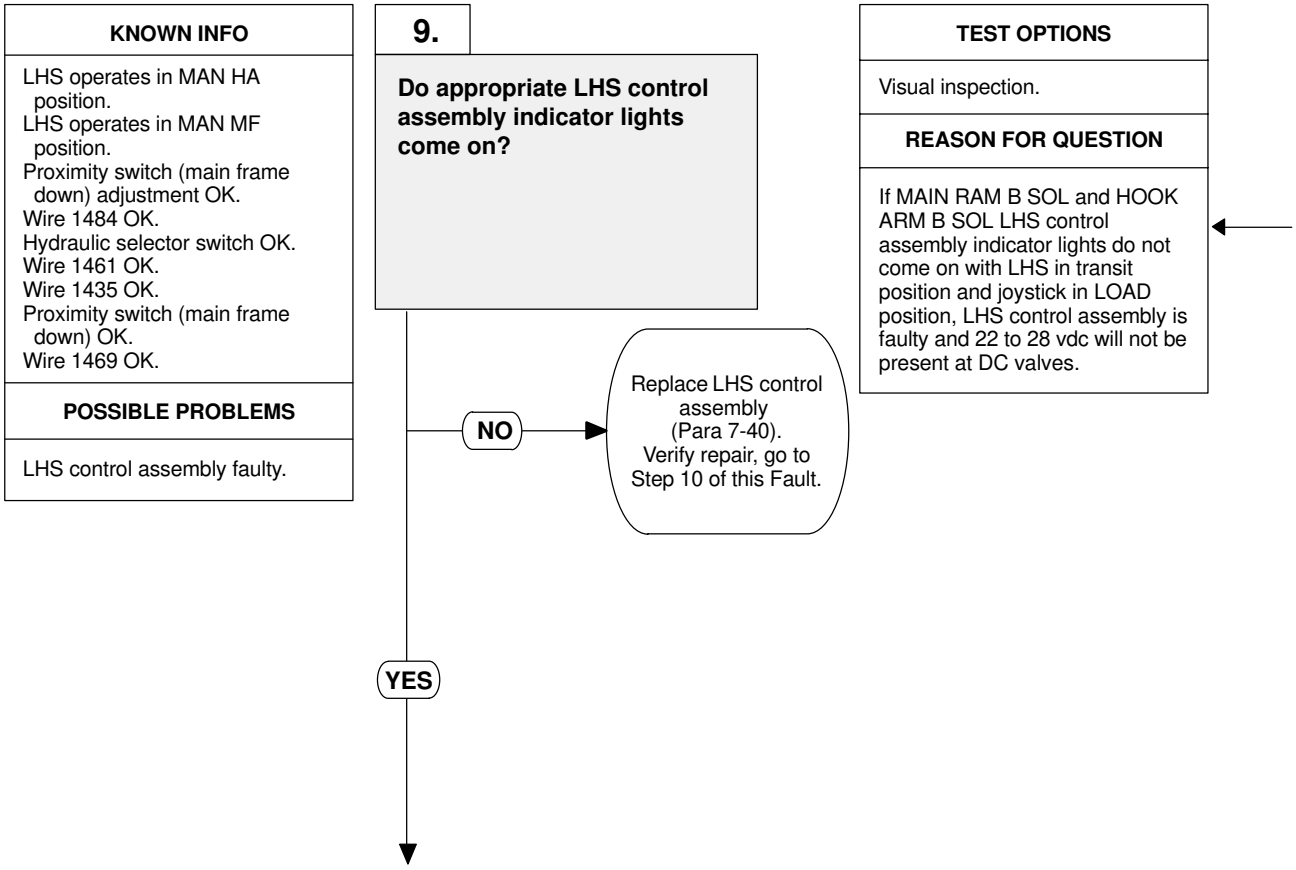
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Connect LHS junction box terminal 4 to a known good ground using jumperwire.
(3) Remove LHS control assembly (Para 7-40).
(4) Set multimeter selector switch to ohms.
(5) Is there continuity between harness connector MC81, terminal G and a known good ground?
  (a) If there is no continuity, repair wire 1469 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1469 is OK.
(6) Remove jumperwire form terminal 4.
(7) Close LHS junction box cover and tighten four screws.





13. LHS DOES NOT LOAD IN AUTO MODE (CONT).



WARNING

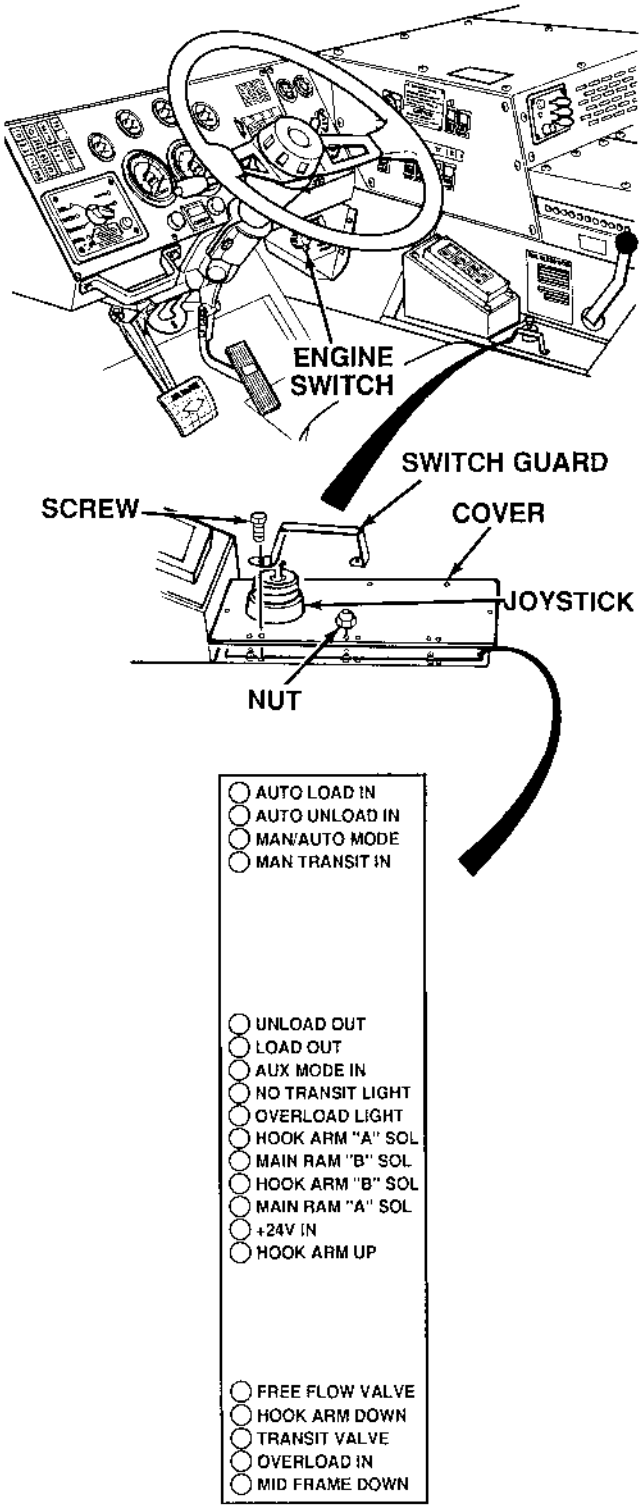
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CAUTION

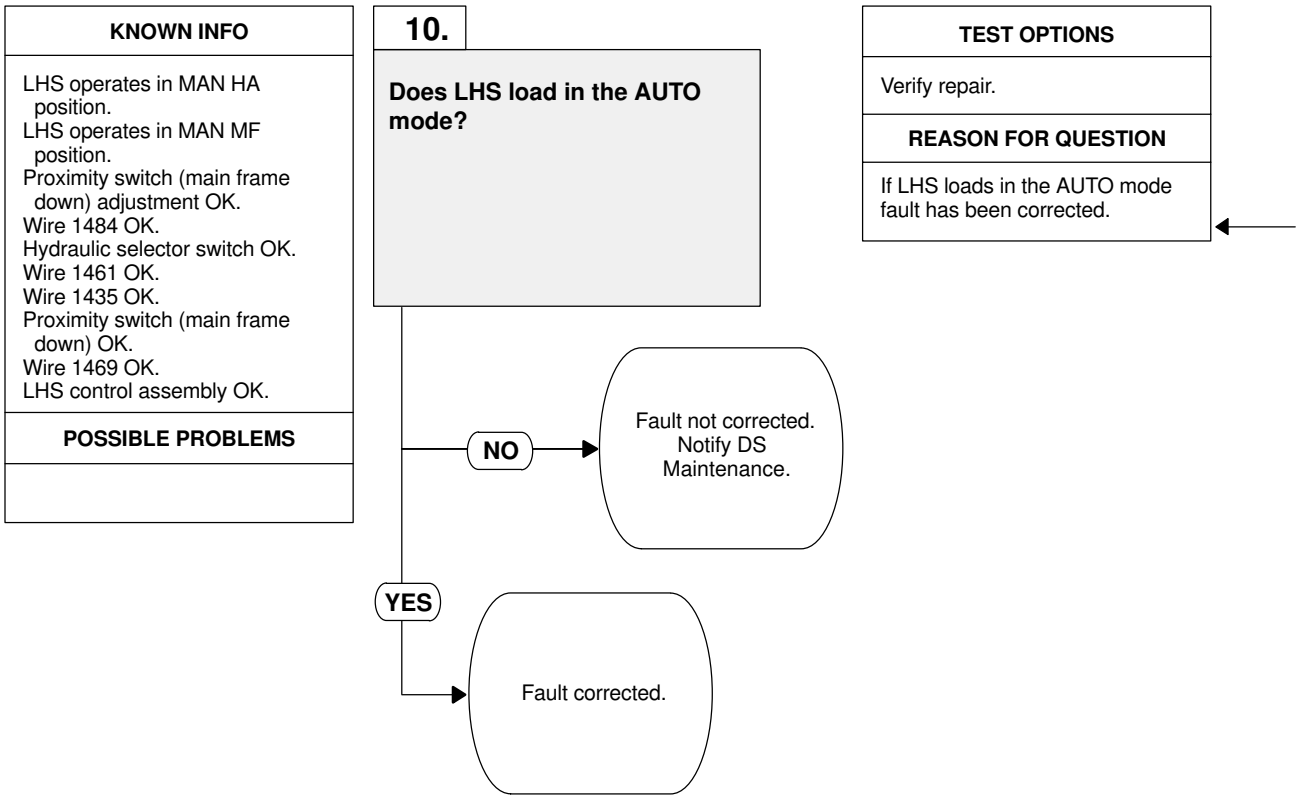
Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

VISUAL INSPECTION

(1) Connect LHS control assembly.
(2) Carefully lift off LHS control assembly cover from LHS control box assembly. Do not allow cover to dangle by joystick connecting wires.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Observe red indicator lights at bottom of LHS control assembly while hold ing joystick in LOAD position.
  (a) If HOOK ARM B SOL light and MAIN RAM B SOL light are not on, LHS control assembly is faulty. Replace LHS control assembly (Para 7-40).
  (b) If HOOK ARM B SOL light and MAIN RAM B SOL light are on, perform Steps (5) through (9) below.
(5) Start engine.
(6) Raise LHS in AUTO mode until middle frame is approximately 3 ft (91 cm) above transit position.
(7) Turn OFF ENGINE switch.
(8) Turn ON ENGINE switch.
(9) Observe red indicator lights at bottom of LHS control box assembly while holding joystick in LOAD position.
  (a) If HOOK ARM B SOL light is on or MAIN RAM B SOL light is not on, replace LHS control assembly (Para 7-40).
  (b) If HOOK ARM B SOL light is not on and MAIN RAM B SOL light is on, LHS control box assembly is OK.
(10) Install cover and switch guard on LHS control assembly with eight screws and nuts.

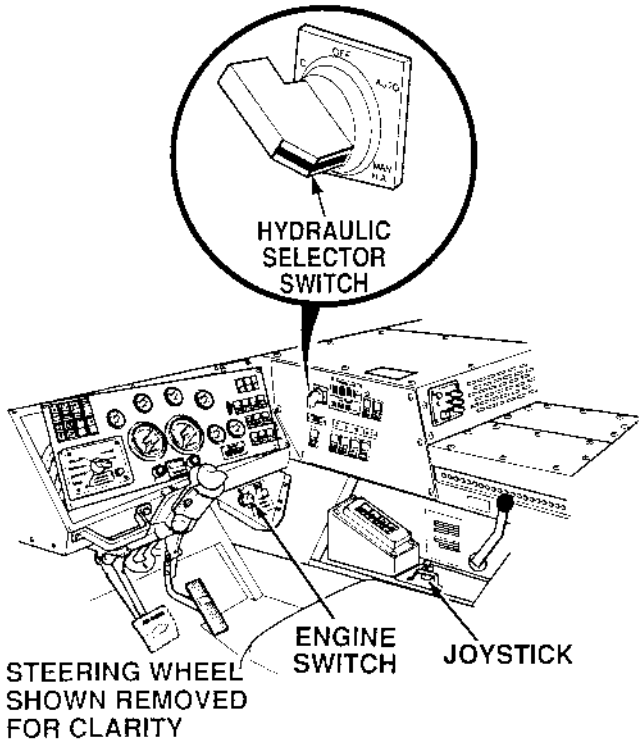


13. LHS DOES NOT LOAD IN AUTO MODE (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch in the AUTO position.
(3) Hold joystick in the LOAD position.
  (a) If LHS does not load, fault not corrected. Perform Steps (4) through (6) below and notify DS maintenance.
  (b) If LHS loads, fault has been corrected.
(4) Position LHS in transit position.
(5) Set hydraulic selector switch to OFF.
(6) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

14. LHS DOES NOT UNLOAD IN AUTO MODE.

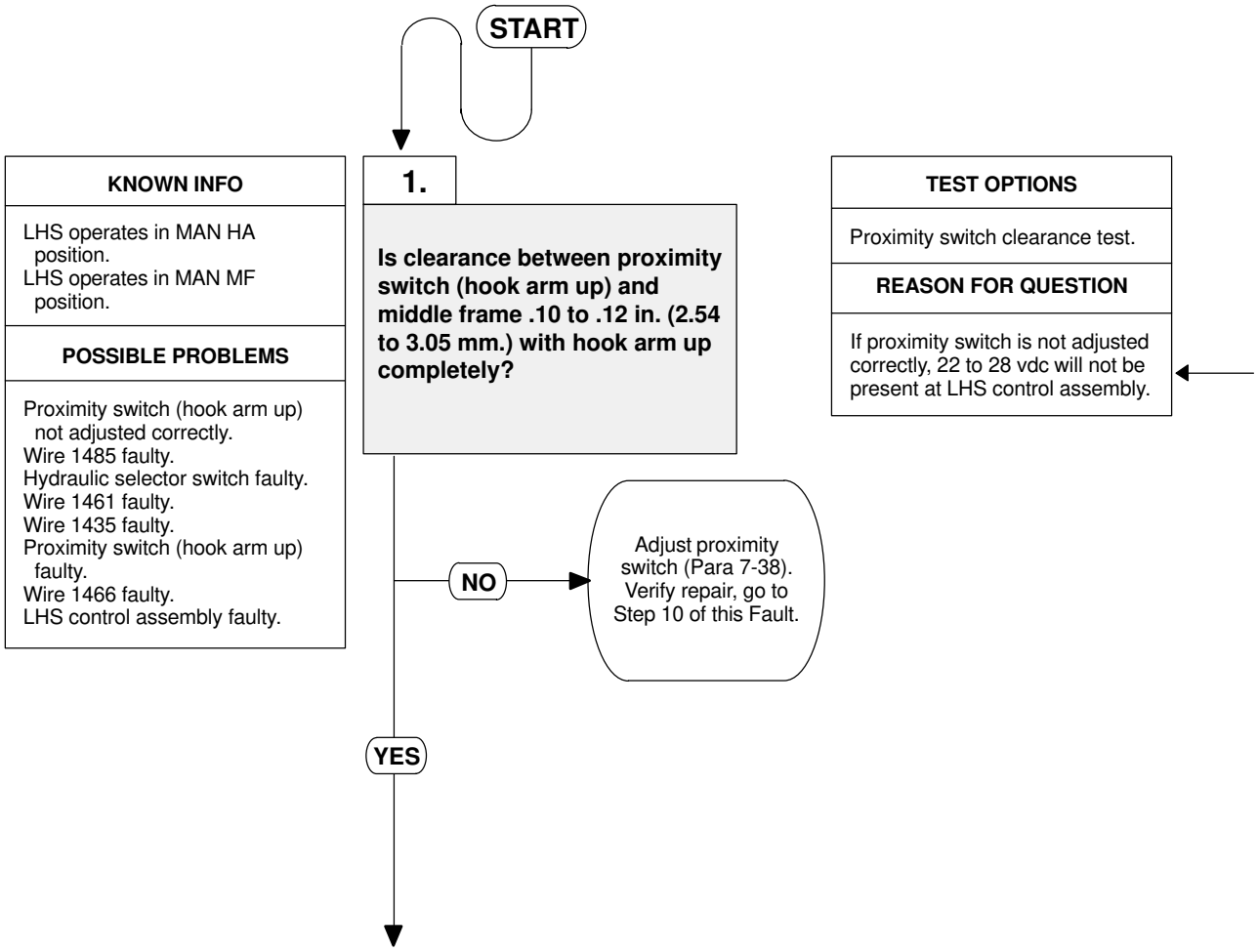
INITIAL SETUP

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)
Jumperwire

Materials/Parts
Lockwasher (4) (Item 180, Appendix F)

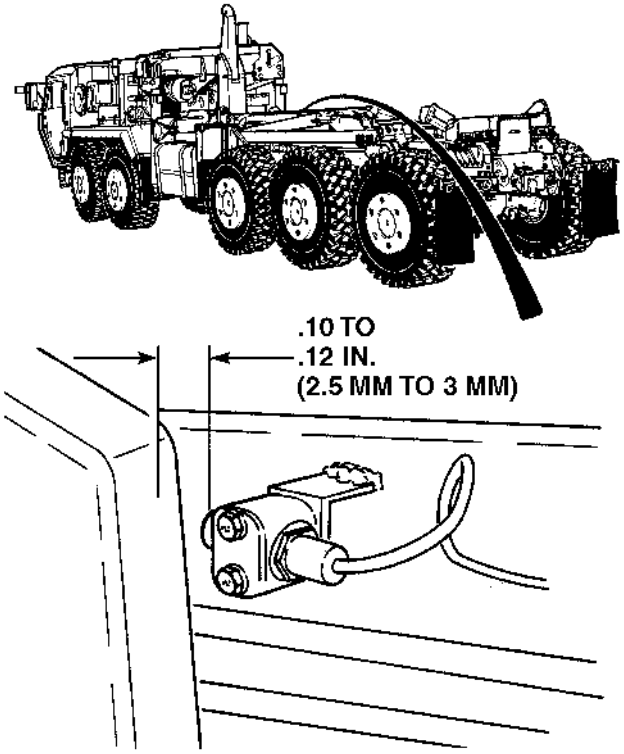
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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

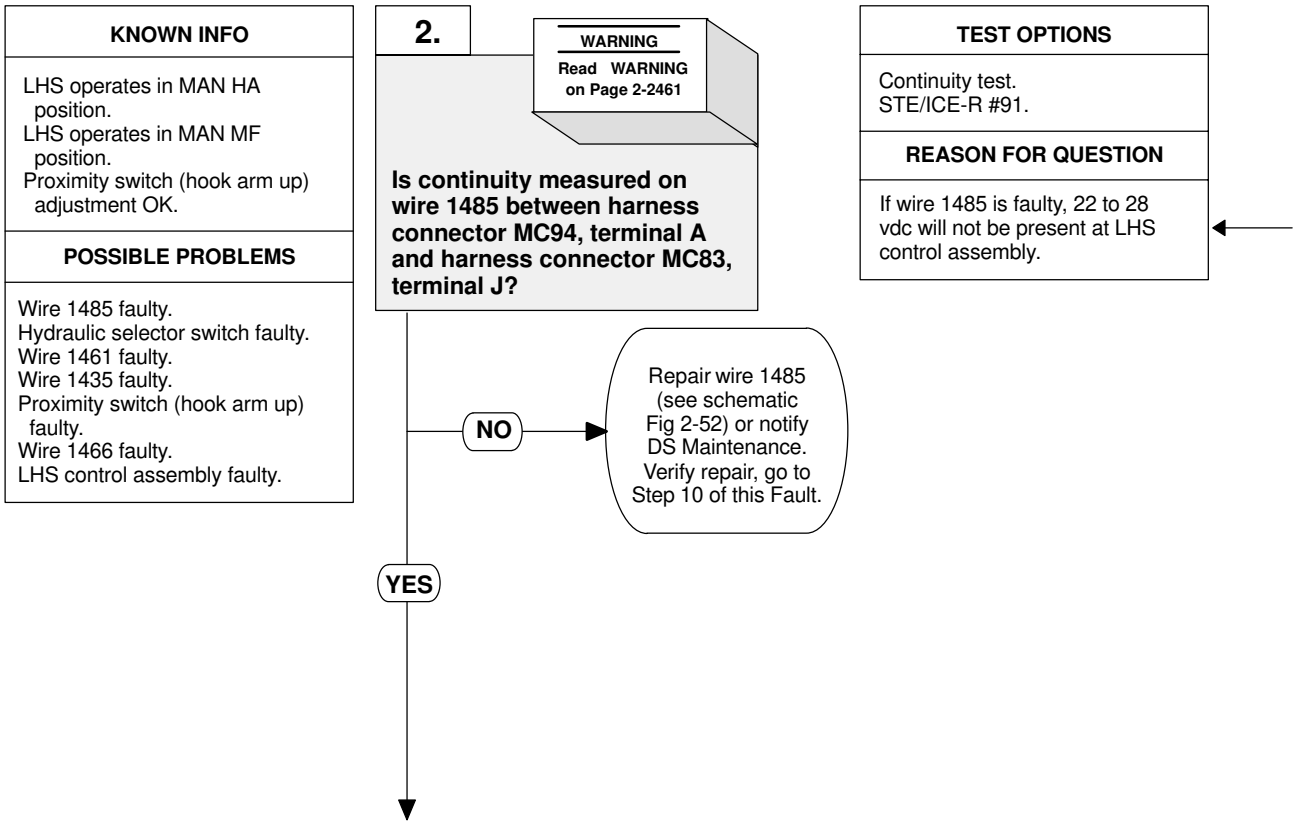


PROXIMITY SWITCH CLEARANCE TEST

(1) Raise hook arm completely (TM 9-2320-364-10).
(2) Check clearance between proximity switch and middle frame.
  (a) If clearance is more than .12 in. (3.04 mm) or less than .10 in. (2.54 mm), adjust proximity switch (hook arm up) (Para 7-38).
  (b) If clearance is between .12 in. (3.05 mm) and .10 in. (2.54 mm), proximity switch adjustment is OK.



14. LHS DOES NOT UNLOAD IN AUTO MODE (CONT).

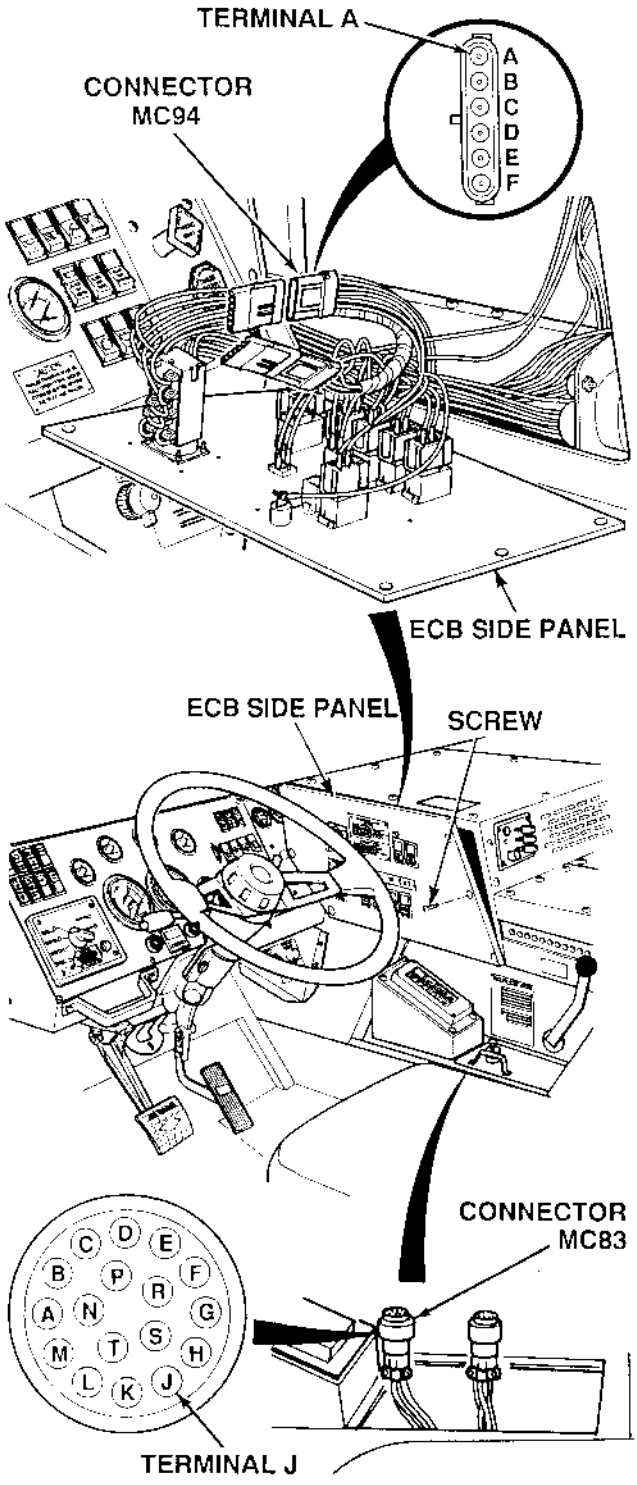


WARNING

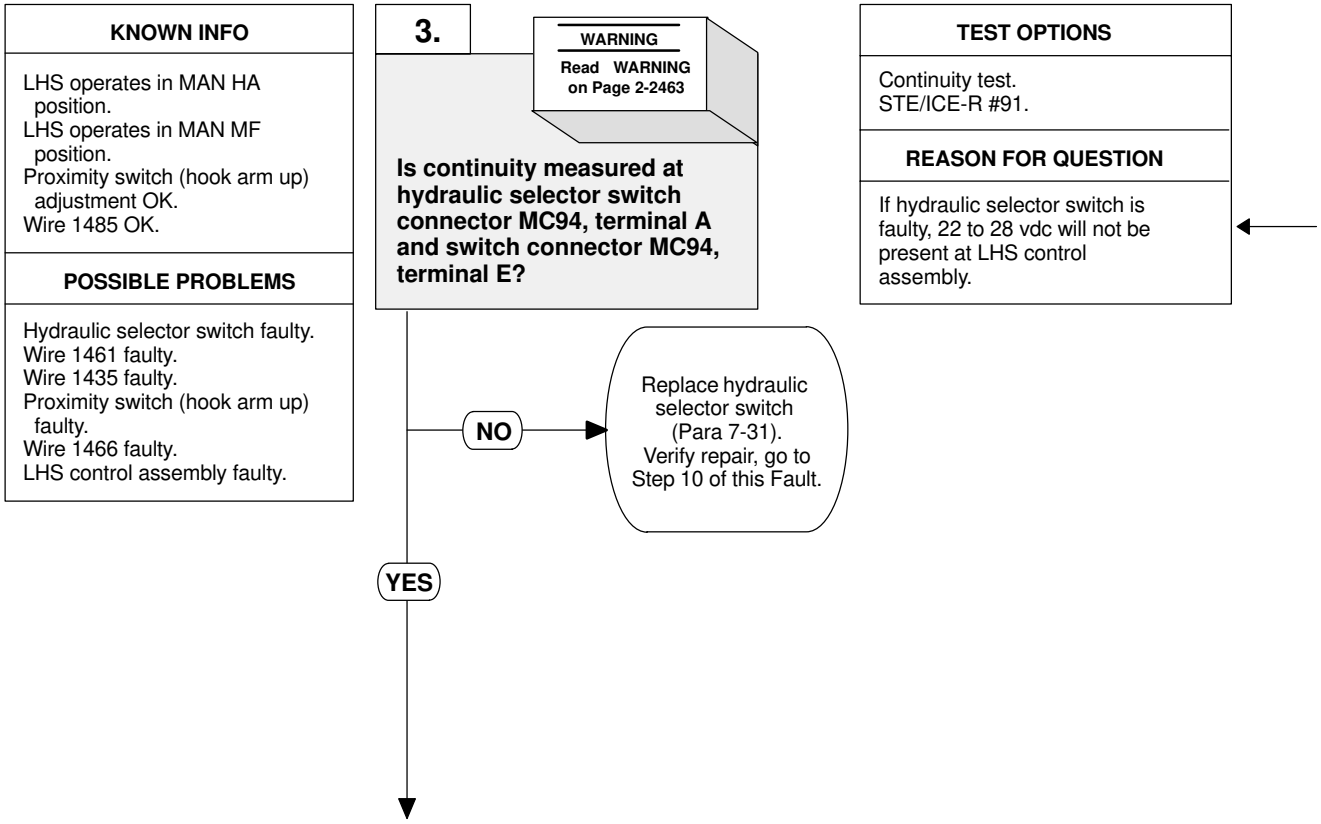
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Remove six screws and tilt ECB side panel.
(3) Disconnect harness connector MC94 from hydraulic selector switch connector.
(4) Set multimeter select switch to ohms.
(5) Is there continuity between harness connector MC94, terminal A and harness connector MC83, terminal J?
  (a) If there is no continuity, repair wire 1485 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1485 is OK.
(6) Install LHS control assembly (Para 7-40).



14. LHS DOES NOT UNLOAD IN AUTO MODE (CONT).

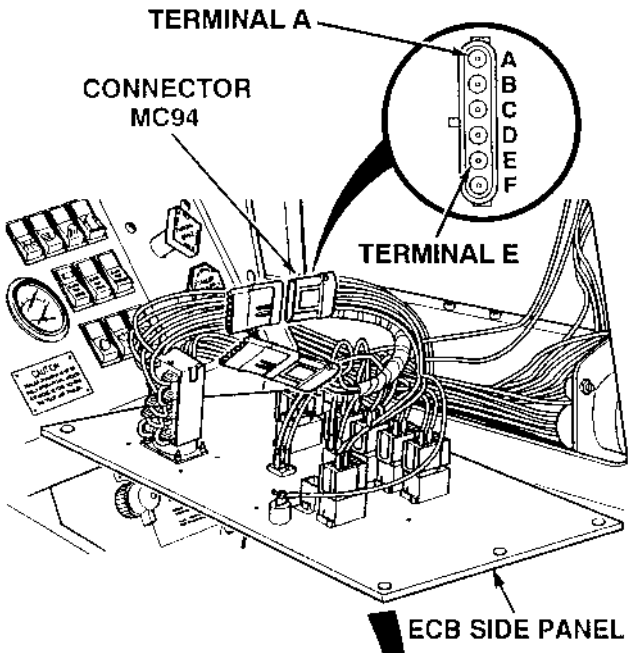


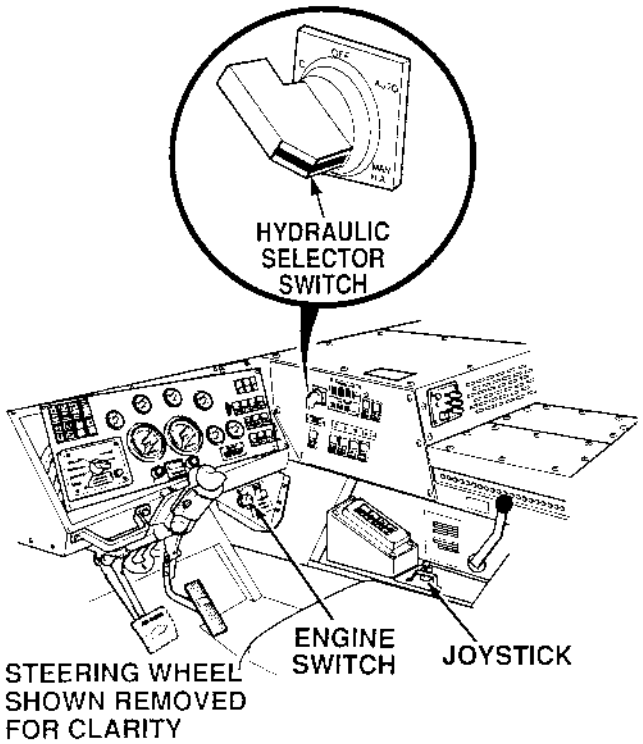
WARNING

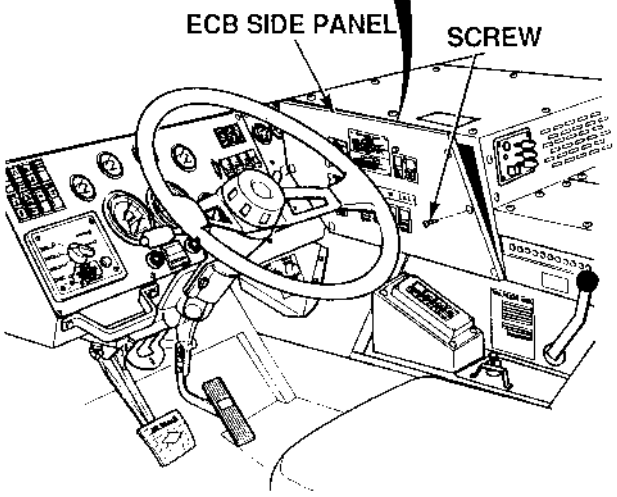
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

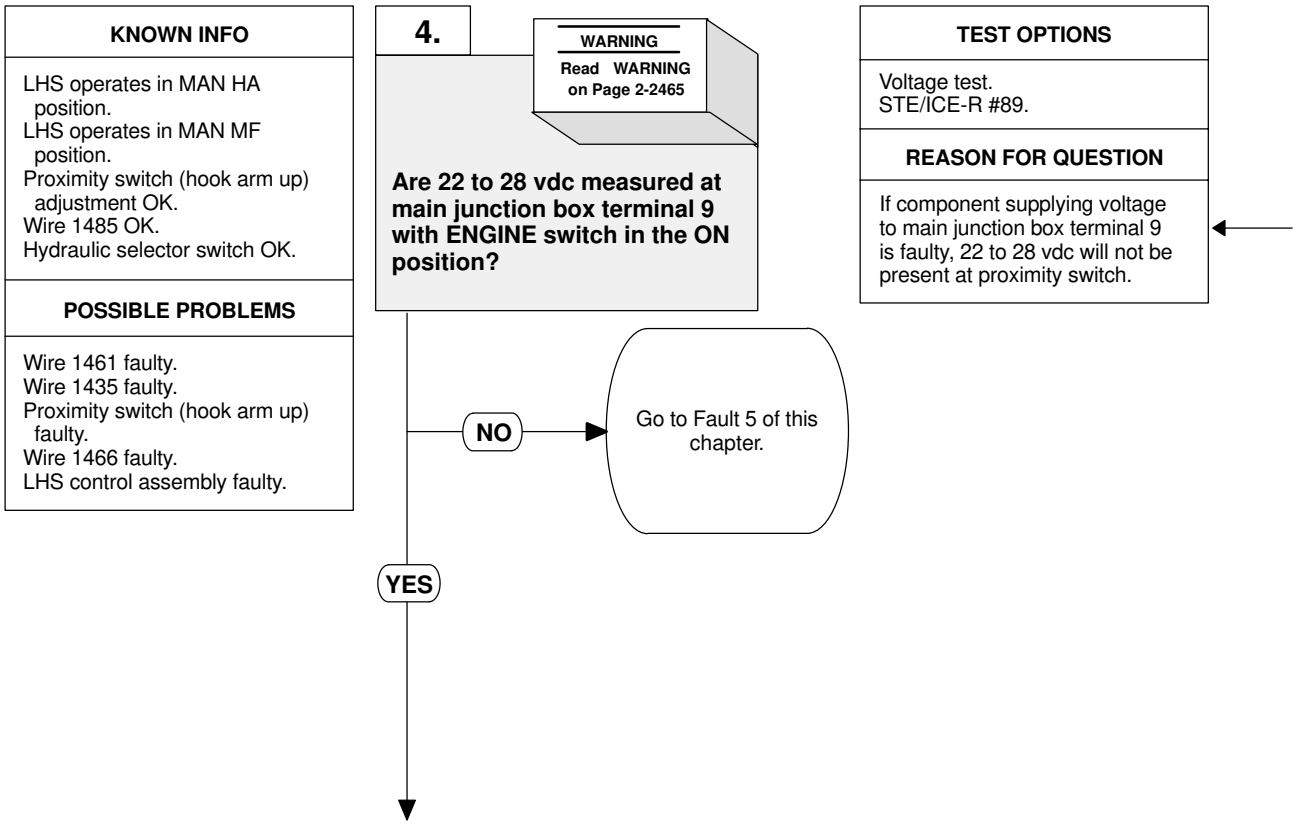
(1) Set hydraulic selector switch to AUTO position (TM 9-2320-364-10).
(2) Set multimeter selector switch to ohms.
(3) Is there continuity between switch connector MC94, terminal E and terminal A?
  (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
  (b) If there is continuity, hydraulic selector switch is OK.
(4) Install harness connector MC94 on hydraulic selector switch connector.
(5) Install ECB side panel and six screws.







14. LHS DOES NOT UNLOAD IN AUTO MODE (CONT).



WARNING

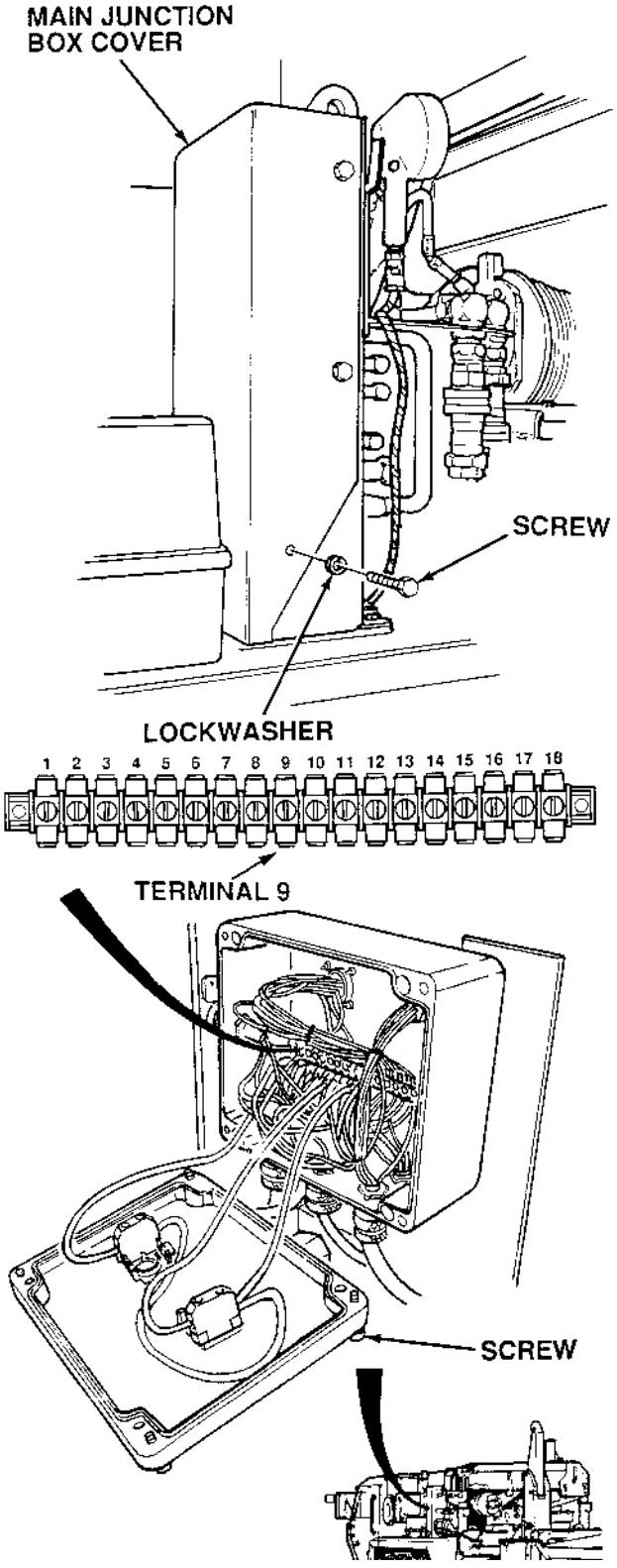
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

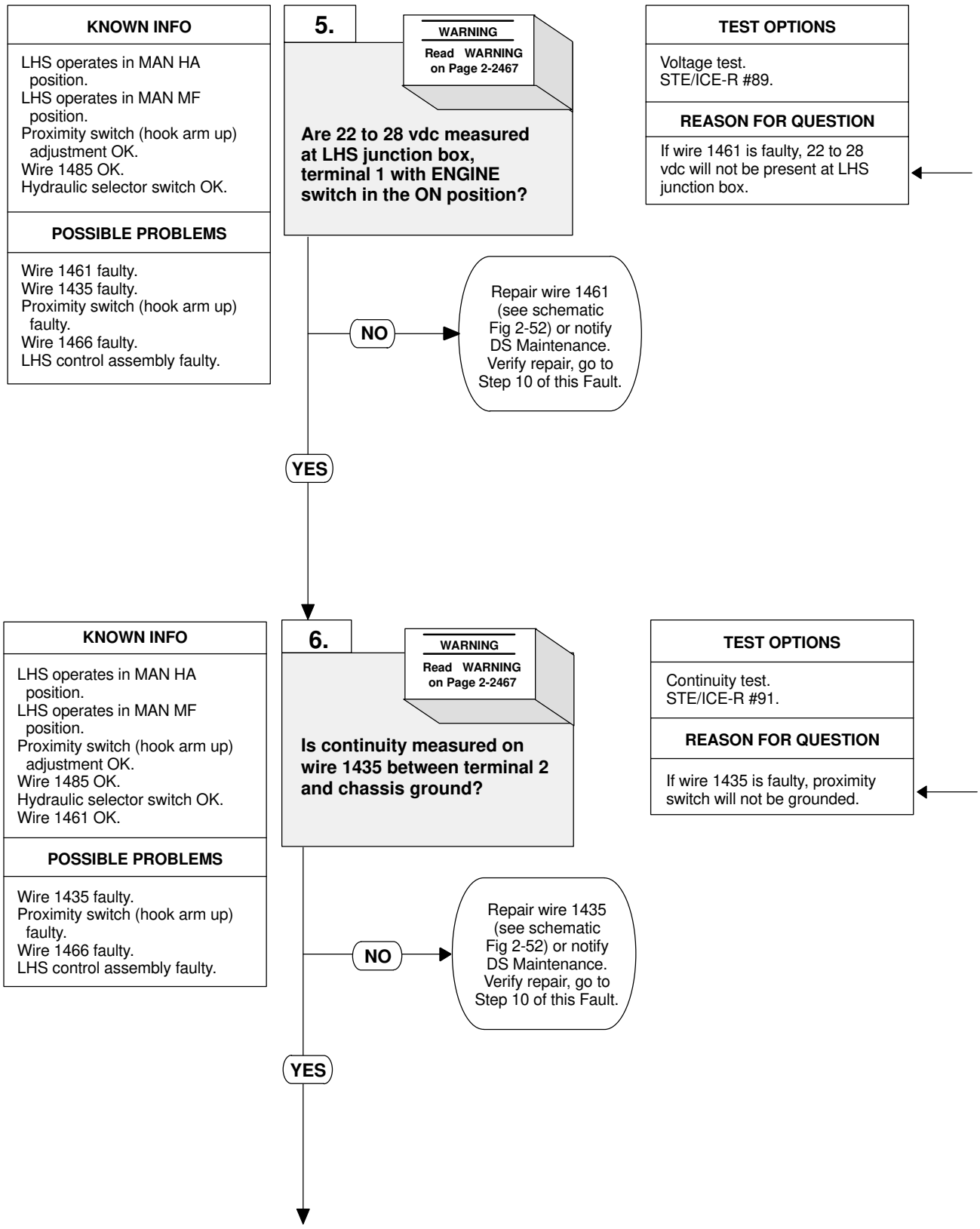
Only remove center screw on engine side of LHS control box cover.

VOLTAGE TEST

(1) Remove four screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Loosen four screws and open main junction box.
(3) Set multimeter selector switch to volts dc.
(4) Connect positive (+) multimeter lead to main junction box, terminal 9.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If there are not 22 to 28 vdc present, perform Steps (7) through (9) below and go to Fault 5 of this chapter.
  (b) If there are 22 to 28 vdc present, perform Steps (7) through (9) below and go to Step 5 of this Fault.
(7) Turn OFF ENGINE switch.
(8) Close main junction box and tighten four screws.
(9) Install LHS control box cover, four lockwashers and screws.



14. LHS DOES NOT UNLOAD IN AUTO MODE (CONT).



WARNING

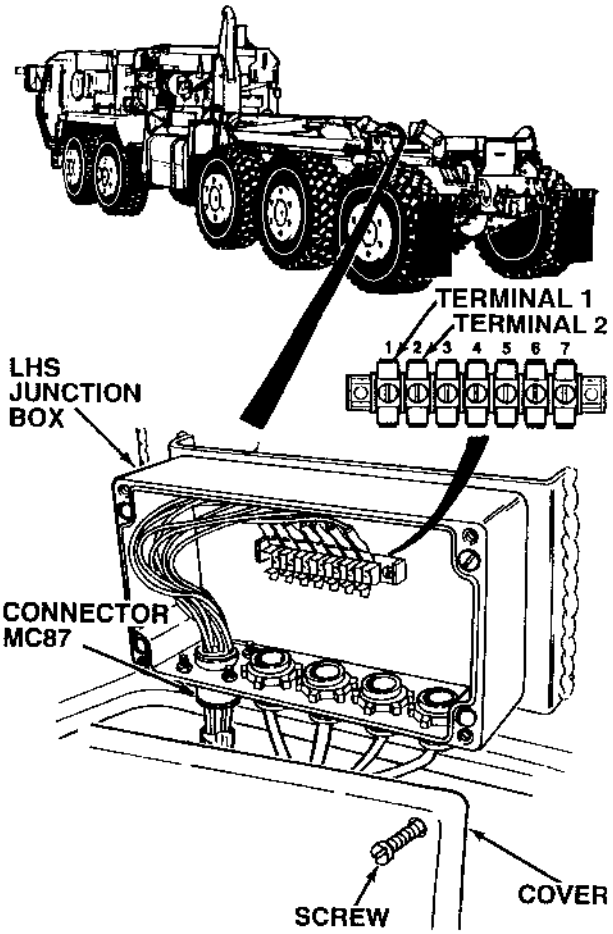
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

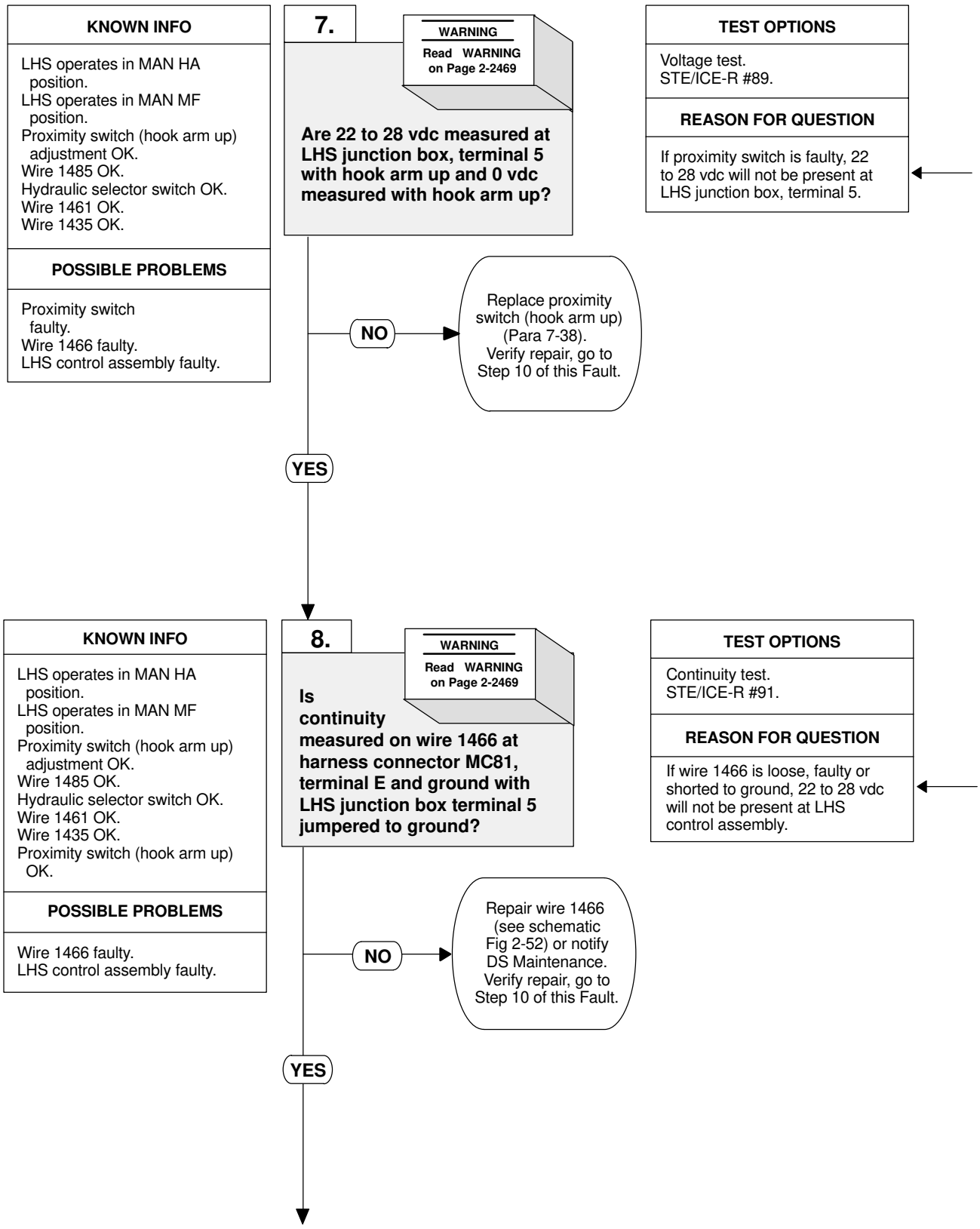
(1) Loosen four screws and open LHS junction box.
(2) Set multimeter selector switch to volts dc.
(3) Connect positive (+) multimeter lead to LHS junction box, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If there are not 22 to 28 vdc present, perform Step (6) below.
  (b) If there are 22 to 28 vdc present, wire 1461 is OK.
(6) Turn OFF ENGINE switch, (TM 9-2320-364-10).

CONTINUITY TEST

(1) Disconnect wire 1435 (coming from harness connector MC87) from terminal 2.
(2) Set multimeter selector switch to ohms.
(3) Is there continuity between harness connector MC87, terminal 2 wire 1435 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1435 is OK.
(4) Connect wire 1435 to terminal 2.



14. LHS DOES NOT UNLOAD IN AUTO MODE (CONT).

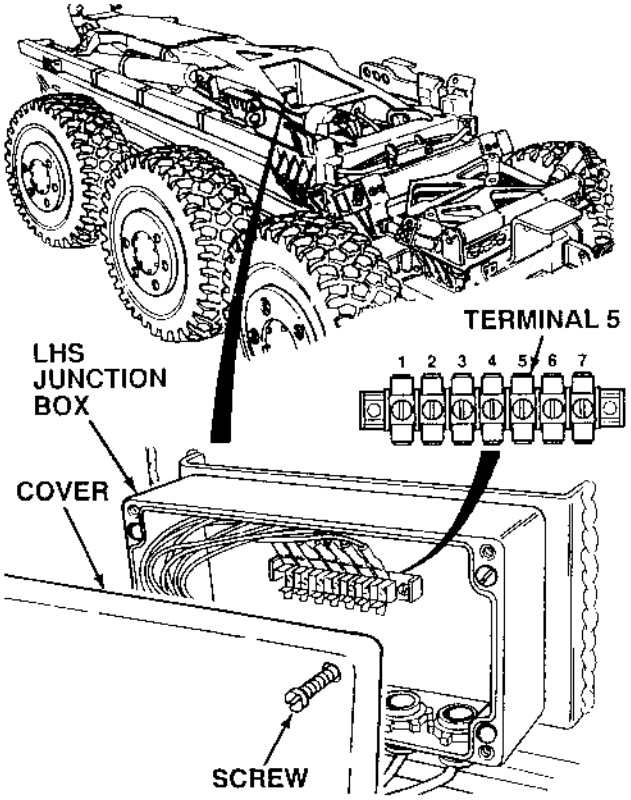


WARNING

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.

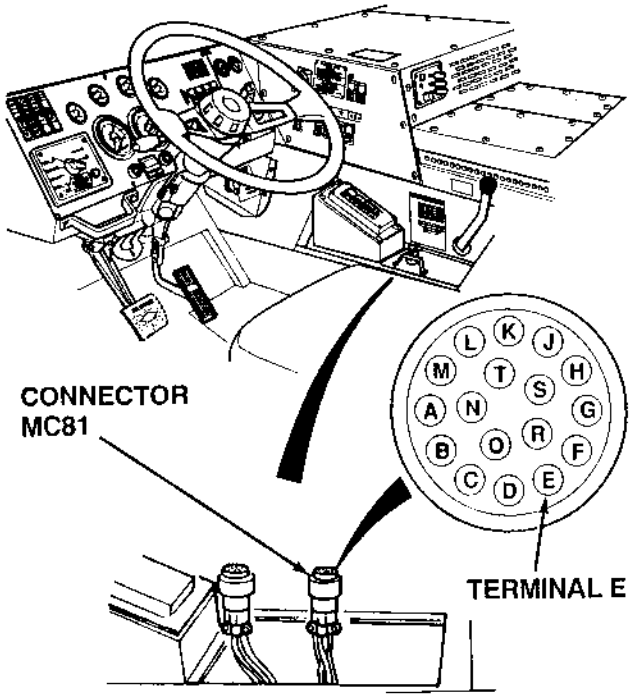
VOLTAGE TEST

(1) Put LHS in transit position (TM 9-2320-364-10).
(2) Set multimeter selector switch to volts dc.
(3) Connect positive (+) multimeter lead to LHS junction box, terminal 5.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch.
  (a) If there are 22 to 28 vdc present, perform Step (10) below and replace proximity switch (hook arm up) (Para 7-38).
  (b) If there are not 22 to 28 vdc present, perform Step (6) below.
(6) Start engine.
(7) Raise hook arm completely.
(8) Turn OFF ENGINE switch.
(9) Turn ON ENGINE switch.
  (a) If there are not 22 to 28 vdc present, perform Step (10) below and replace proximity switch (hook arm up) (Para 7-38).
  (b) If there are 22 to 28 vdc present, proximity switch is OK.
(10) Start engine.
(11) Put LHS in transit position.
(12) Turn OFF ENGINE switch.

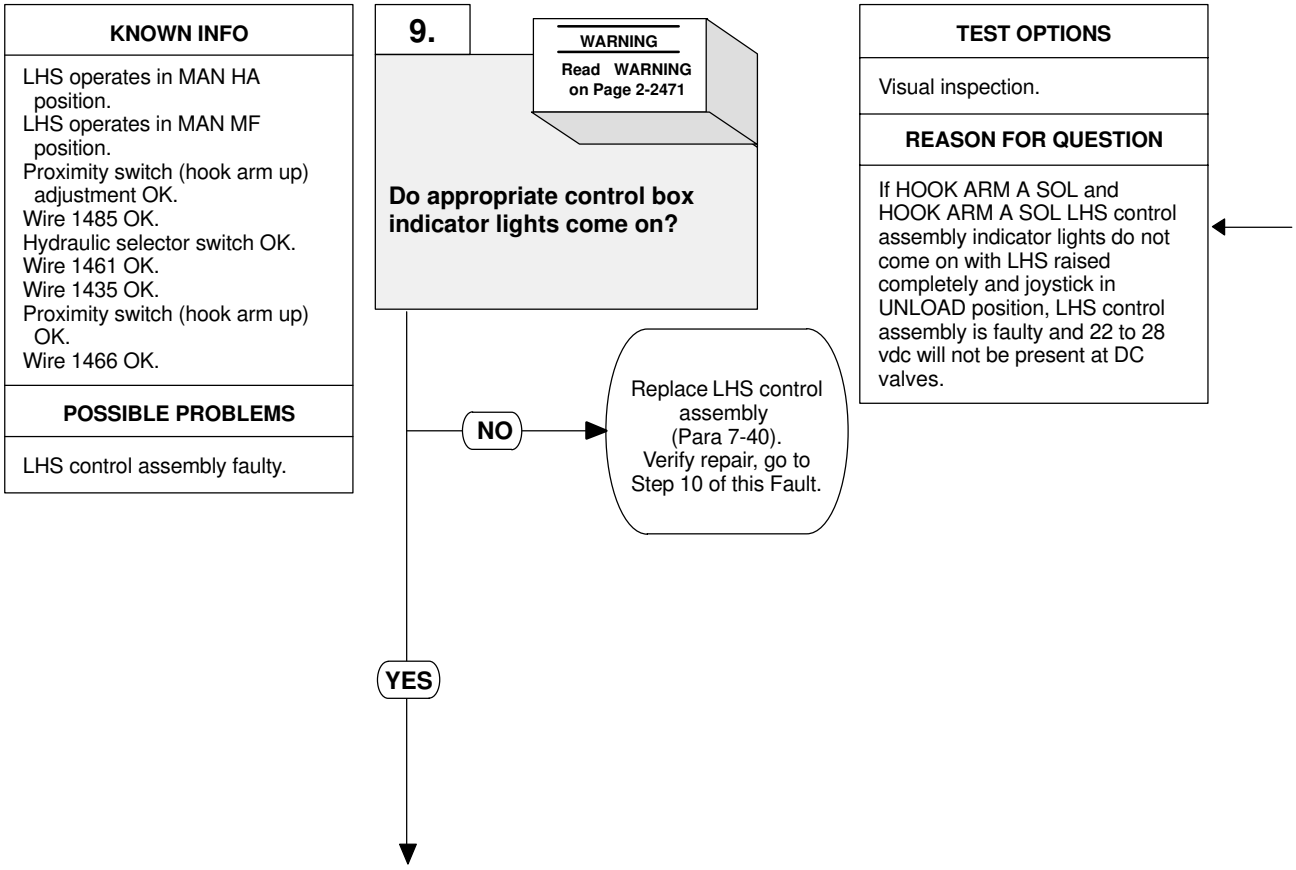


CONTINUITY TEST

(1) Connect LHS junction box terminal 5 to a known good ground using jumperwire.
(2) Remove control assembly (Para 7-40).
(3) Set multimeter selector switch to ohms.
(4) Is there continuity between harness connector MC81, terminal E and a known good ground?
  (a) If there is no continuity, repair wire 1466 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If there is continuity, wire 1466 is OK.
(5) Remove jumperwire from LHS junction box terminal 5 and ground.
(6) Close LHS junction box and tighten four screws.



14. LHS DOES NOT UNLOAD IN AUTO MODE (CONT).



WARNING

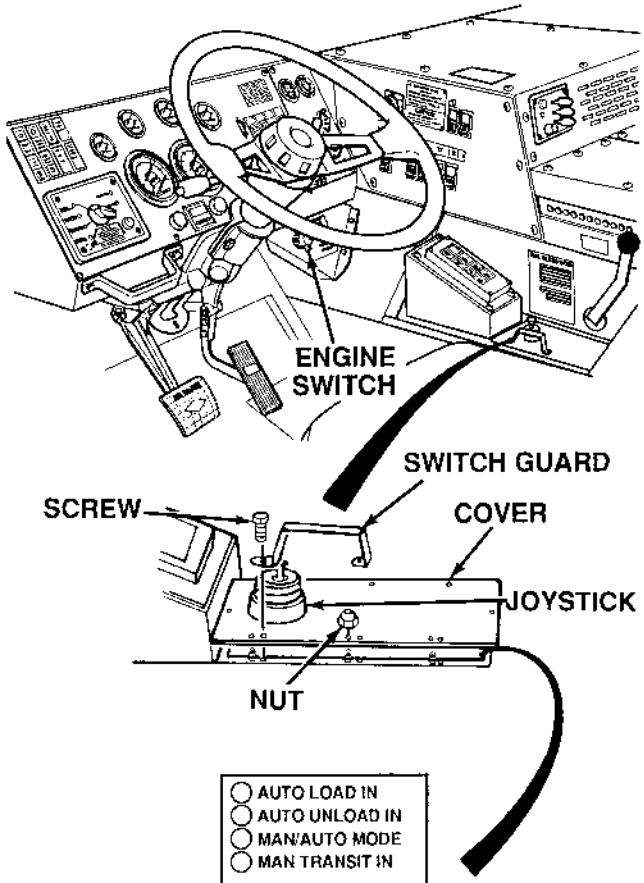
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

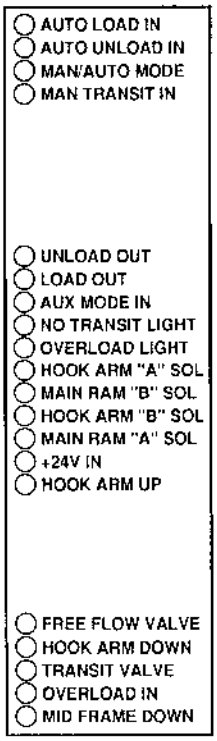
CAUTION

Do not allow the LHS control box assembly cover to hang from console by the wire connections to the control box assembly. Failure to comply will damage the wire connections.

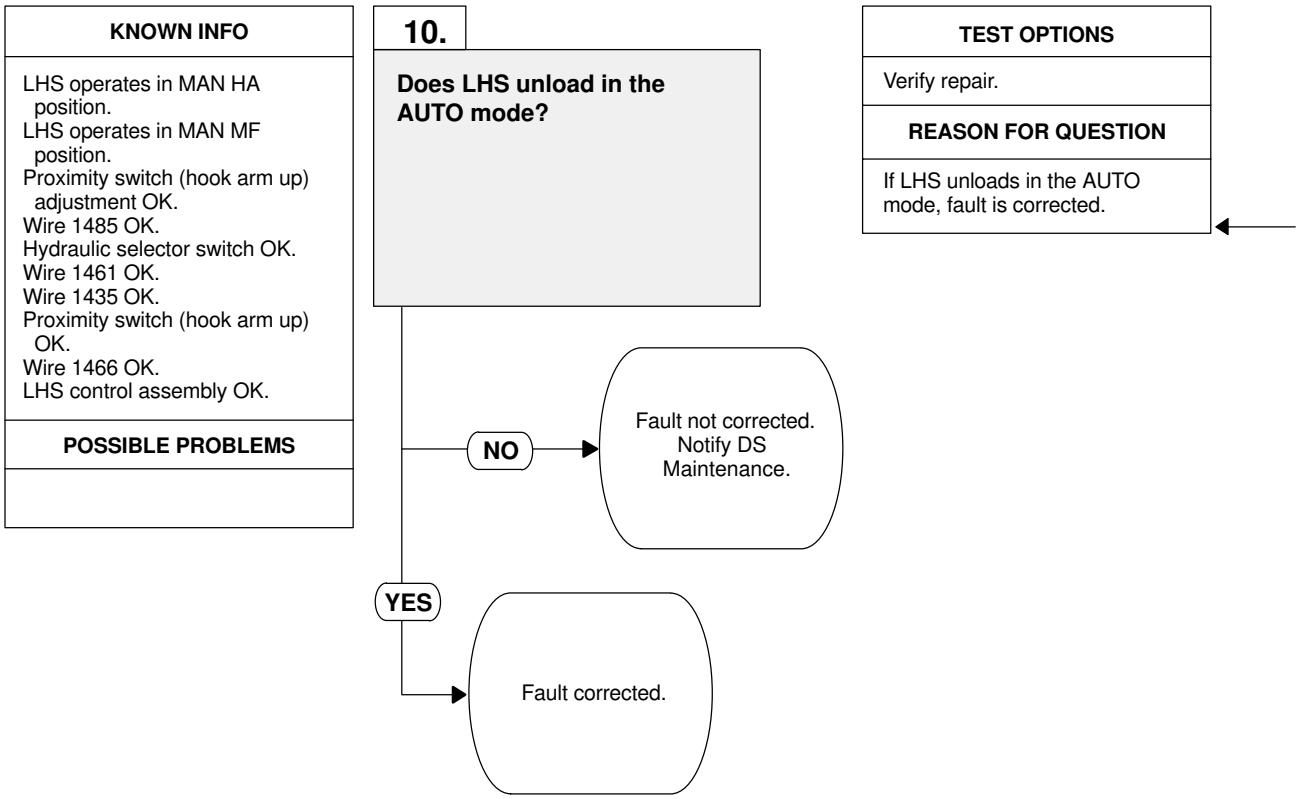
VISUAL INSPECTION

(1) Connect LHS control assembly.
(2) Start engine (TM 9-2320-364-10).
(3) Raise LHS completely so that both hook arm and middle frame are off compression frame.
(4) Turn OFF ENGINE switch.
(5) Carefully lift off LHS control assembly cover. Do not allow cover to dangle by joystick connecting wires.
(6) Turn ON ENGINE switch.
(7) Observe red indicator lights at bottom of LHS control assembly while holding joystick in UNLOAD position.
    (a) If HOOK ARM A SOL light and MAIN RAM A SOL light are not on, replace LHS control assembly (Para 7-40).
    (b) If HOOK ARM A SOL light and MAIN RAM A SOL light are on, perform Steps (8) and (9) below.
(8) Put LHS in transit position.
(9) Observe red indicator lights at bottom of LHS control assembly while holding joystick in UNLOAD position.
    (a) If HOOK ARM A SOL light is not on or MAIN RAM A SOL light is on, replace LHS control assembly (Para 7-40).
    (b) If HOOK ARM A SOL light is on and MAIN RAM A SOL light is not on, LHS control assembly is OK.
(10) Install cover and switch guard on LHS control assembly with eight screws and nuts.



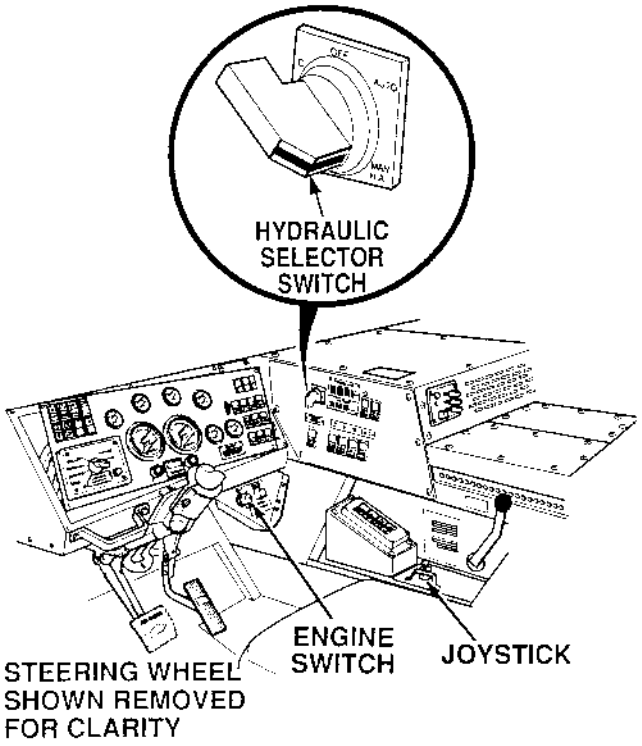


14. LHS DOES NOT UNLOAD IN AUTO MODE (CONT).



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.
    (a) If LHS does not unload, fault not corrected. Perform Steps (4) through (6) below and notify DS Maintenance.
    (b) If LHS unloads, fault has been corrected.
(4) Position LHS in transit position.
(5) Set hydraulic selector switch in OFF position.
(6) Turn OFF ENGINE switch.



2-28. LOAD HANDLING SYSTEM (LHS) TROUBLESHOOTING (CONT).

15. LHS INOPERATIVE WITH INTERFACE KIT INSTALLED.

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)

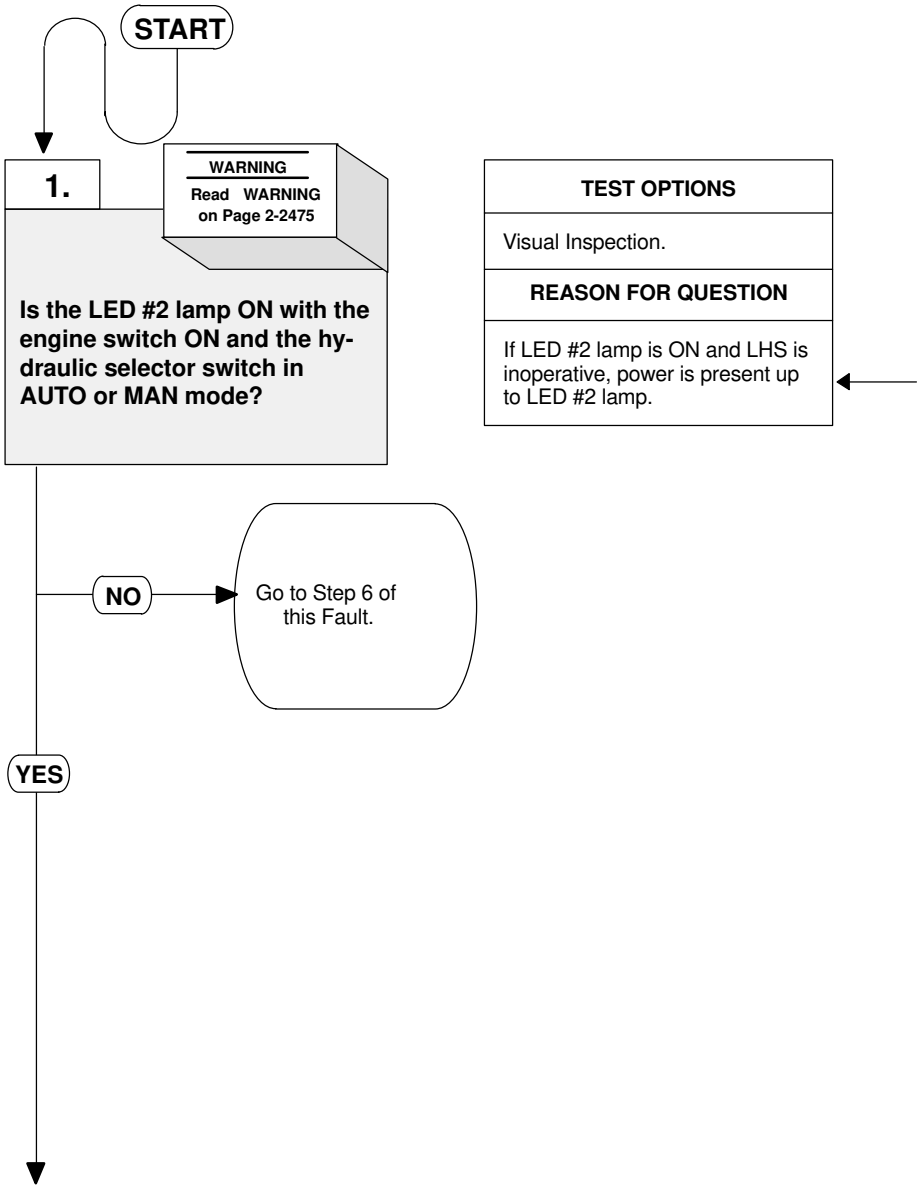
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

KNOWN INFO

No mission module hooked up to interface quick disconnect.

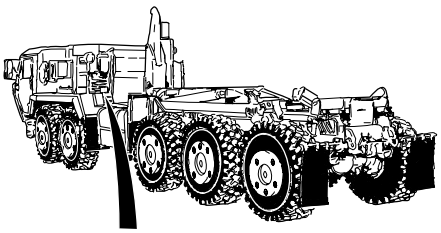
POSSIBLE PROBLEMS

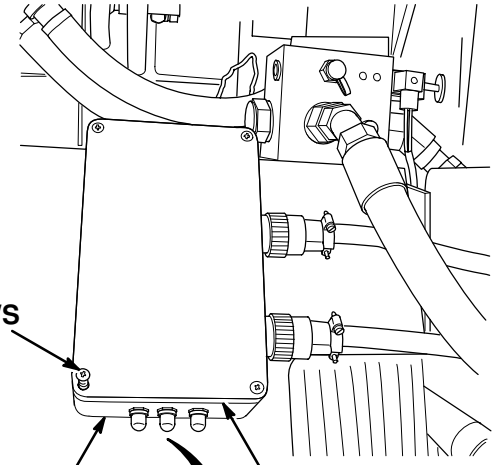
LED #2 lamp is not ON.
Wire 1790 from LED #2 lamp to connector MC135 terminal D faulty.
Wire 1790 from connector MC135 terminal D to connector MC133 terminal 1 faulty.
Wire 1435 between connector MC133 terminal 2 and connector MC135 terminal E faulty.
Wire 1435 between connector MC135 terminal E and LED #2 lamp faulty.
LED #2 lamp faulty.
Wire 1790 between LED #2 lamp and relay R35 terminal 87 faulty.
Relay R35 faulty.
Wire 1734 between relay R35 terminal 30 and resistor faulty.
Resistor faulty.
Wire 1734 between resistor and rectifier terminal AC faulty.
Wire 1734 between resistor and connector MC135 terminal B faulty.
Wire 1734 between connector MC135 terminal B and connector MC132 terminal 1 faulty.
Wire 1435 between connector MC132 terminal 2 and connector MC135 terminal C faulty.
Wire 1435 between connector MC135 terminal C and LED #2 lamp faulty.
Wire 1435 between LED #2 lamp and relay R35 terminal 85 faulty.
Wire 1734 between relay R35 terminal 86 and resistor faulty.



WARNING

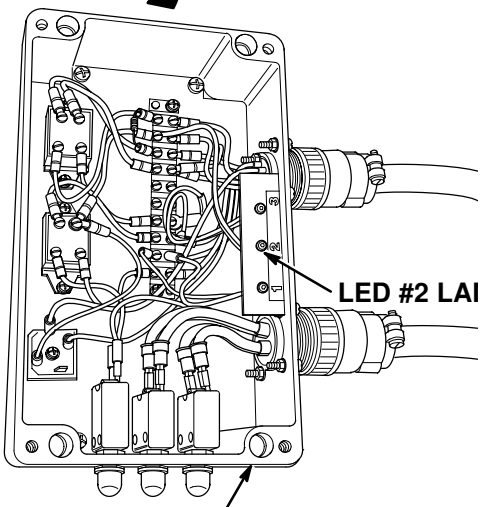
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

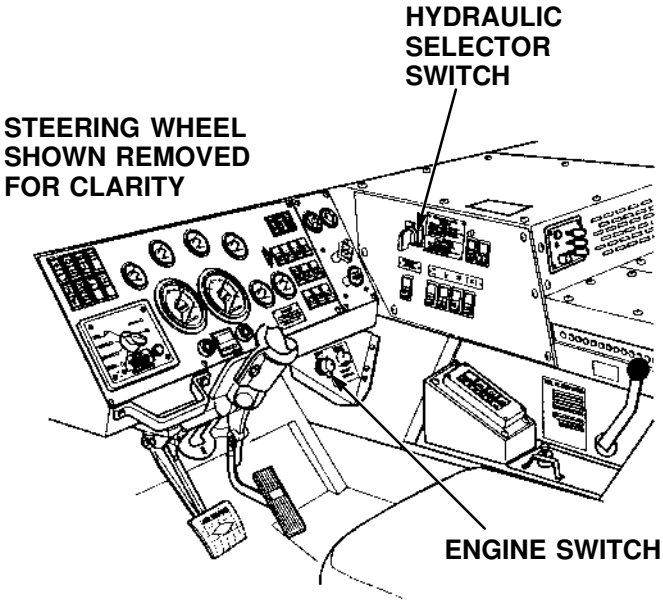




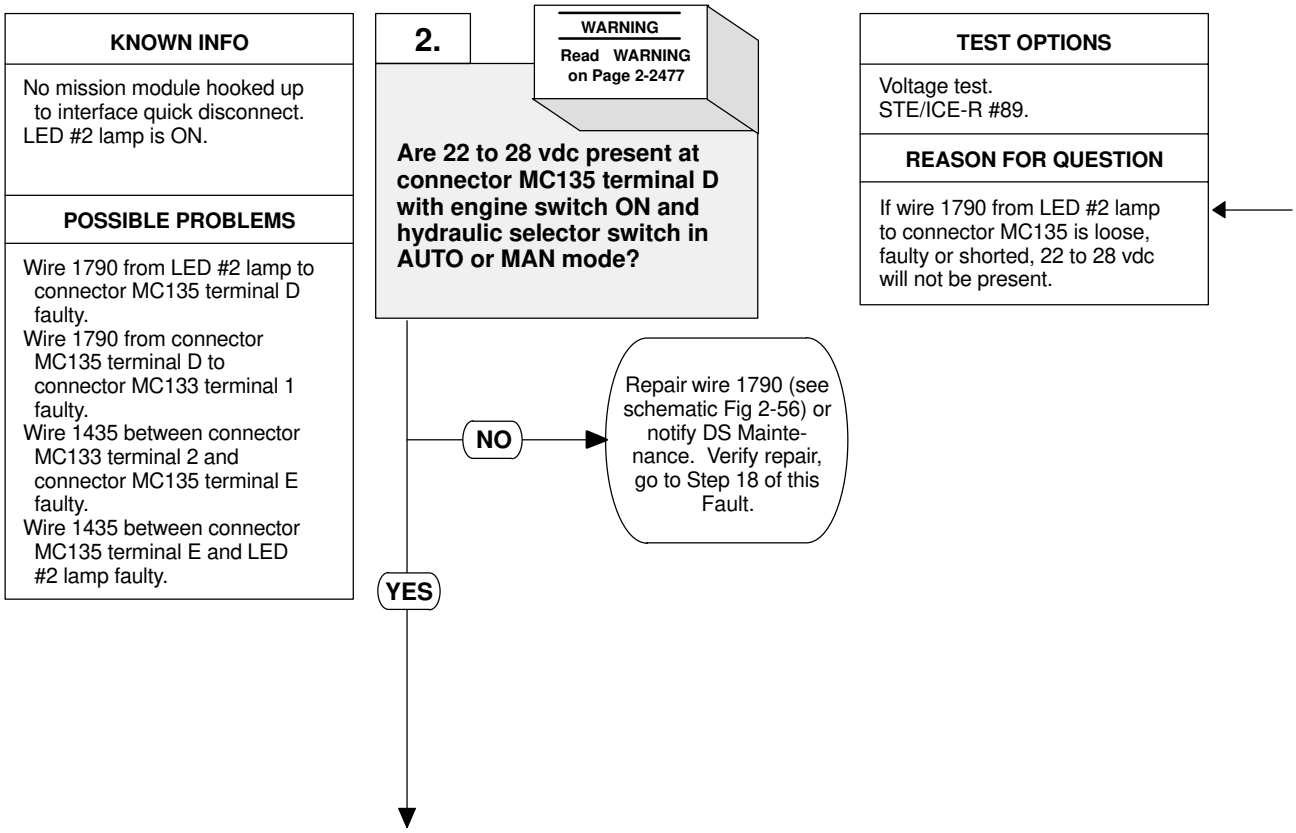
VISUAL INSPECTION

(1) Loosen four screws and remove powerbox cover (Para 21-16).
(2) Turn ON engine switch (TM 9-2320-364-10).
(3) Set hydraulic selector switch to AUTO or MAN mode.
(4) Observe LED #2 lamp in powerbox.
  (a) If lamp is not ON, perform STEP (5) below and go to Step 6 of this Fault.
  (b) If LED #2 lamp is on and LHS is inoperative, perform Step (5) below and go to Step 2 of this Fault.
(5) Turn OFF engine switch.





15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

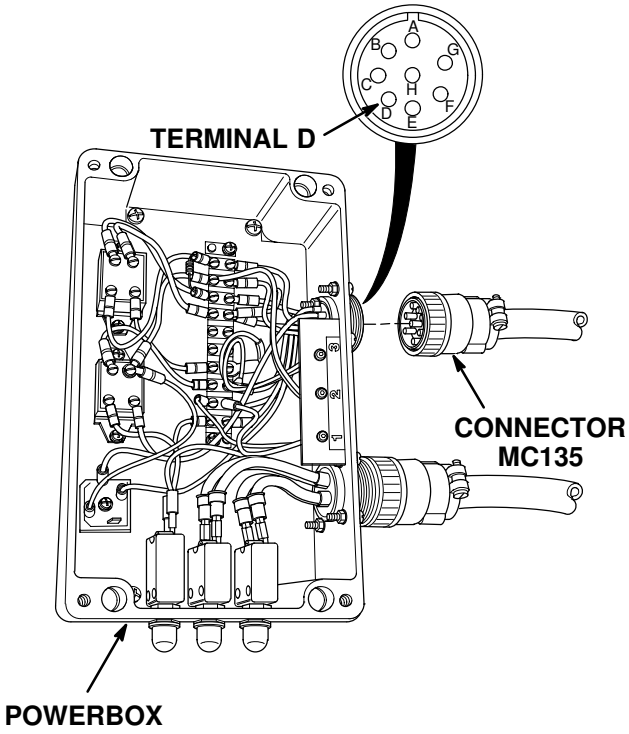


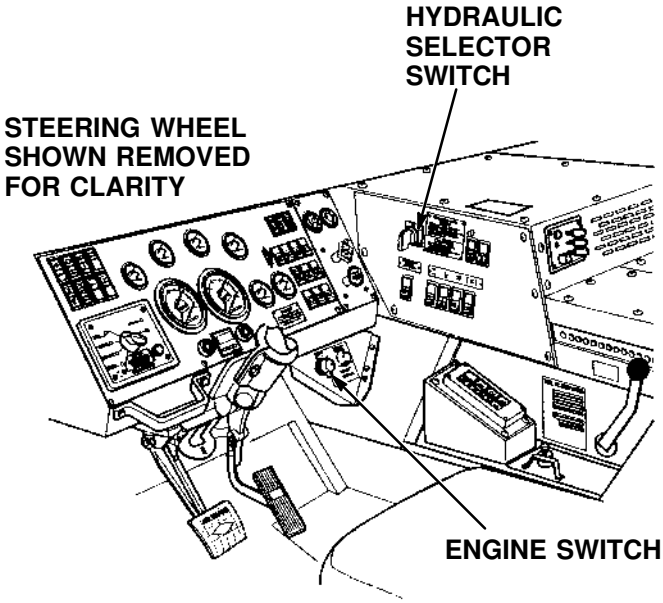
WARNING

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

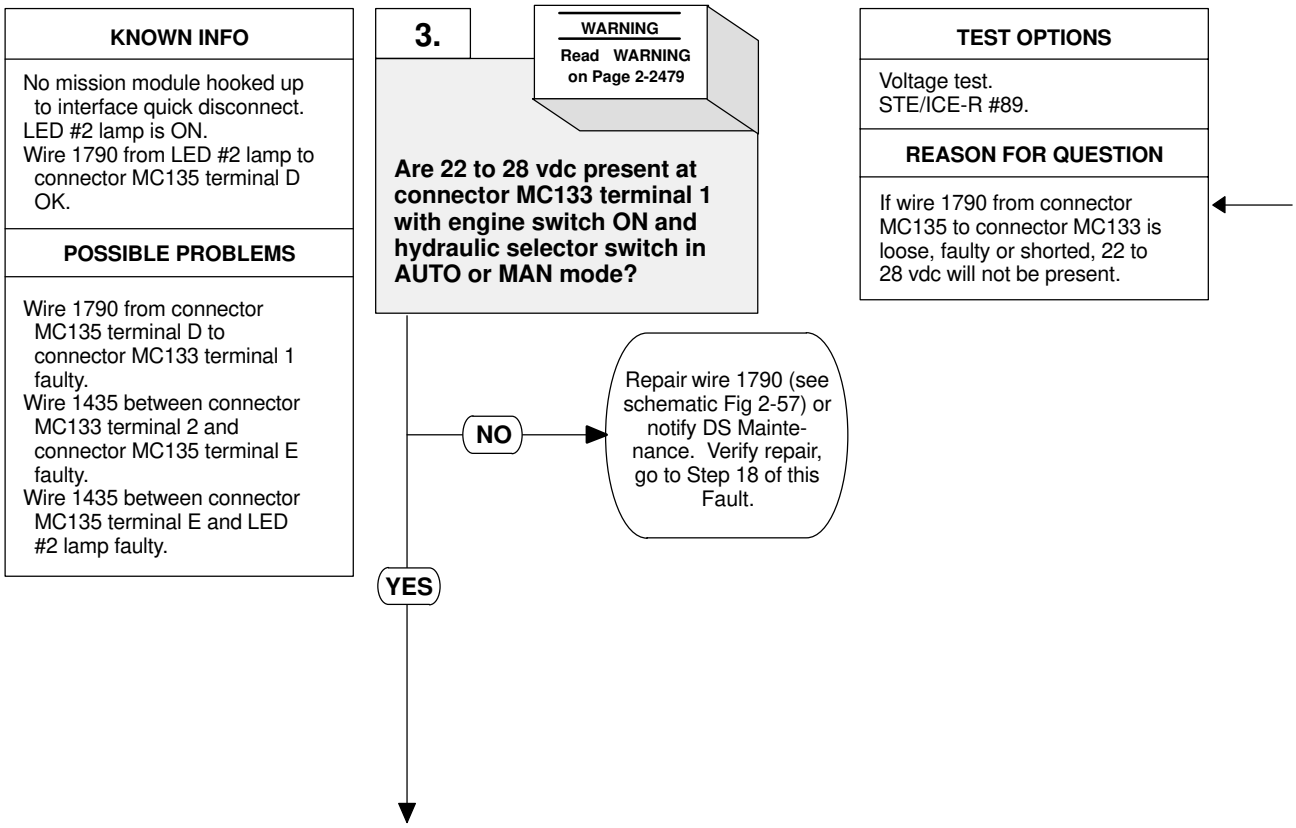
VOLTAGE TEST

(1) Disconnect connector MC135 from powerbox.
(2) Set multimeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to connector MC135 terminal D.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1790 (see schematic Fig 2-56) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 3 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect connector MC135 to powerbox.





15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

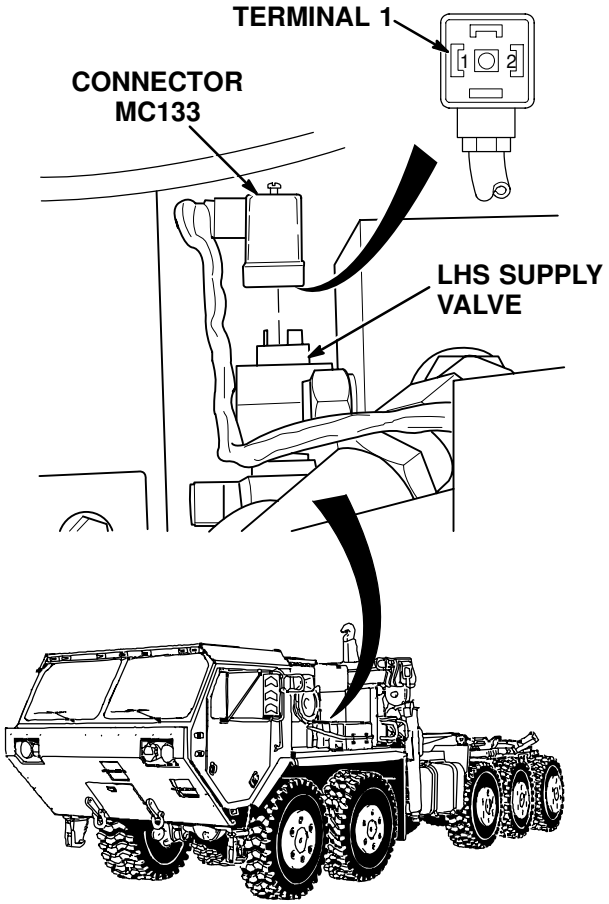


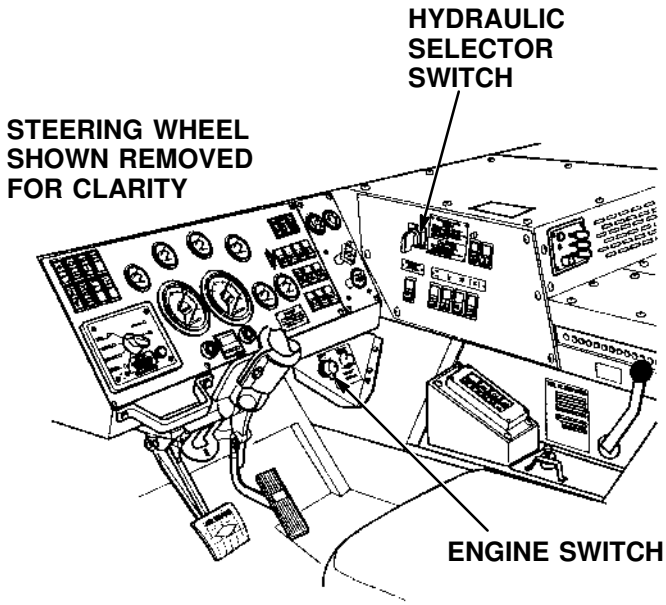
WARNING

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

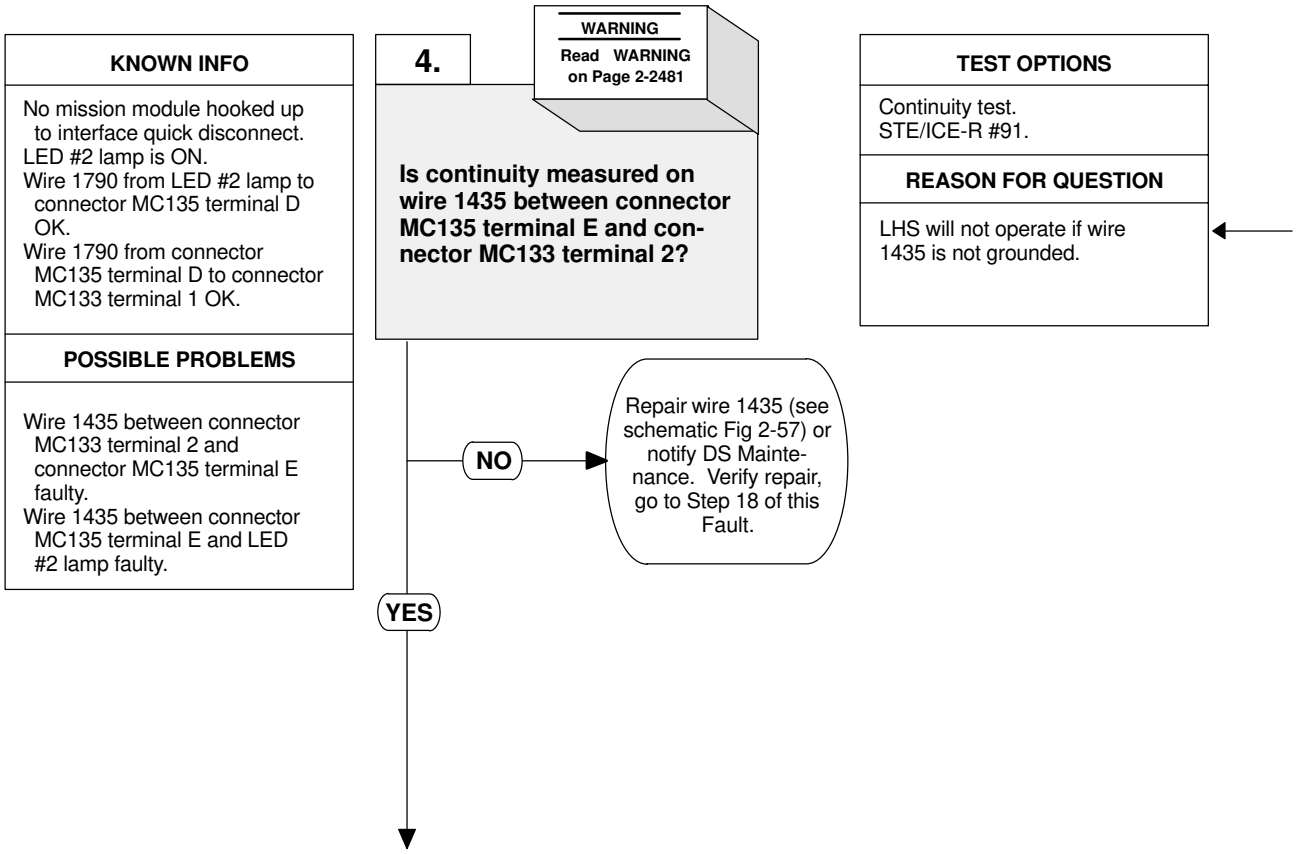
VOLTAGE TEST

(1) Disconnect connector MC133 from LHS supply valve.
(2) Set multimeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to connector MC133 terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1790 (see schematic Fig 2-57) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 4 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect connector MC133 to LHS supply valve.





15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

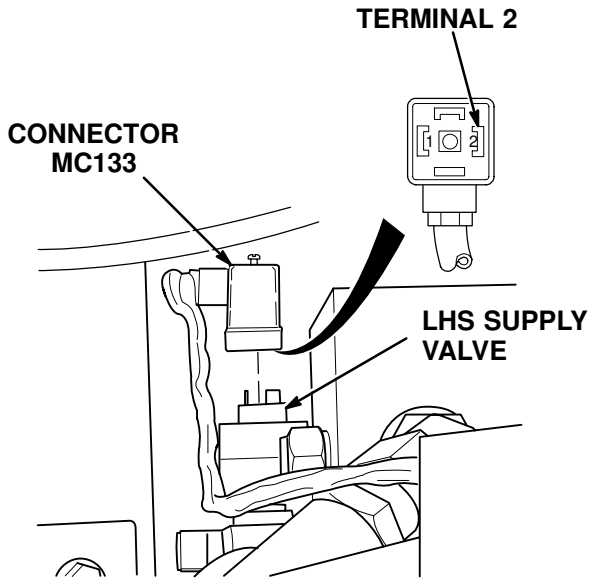


WARNING

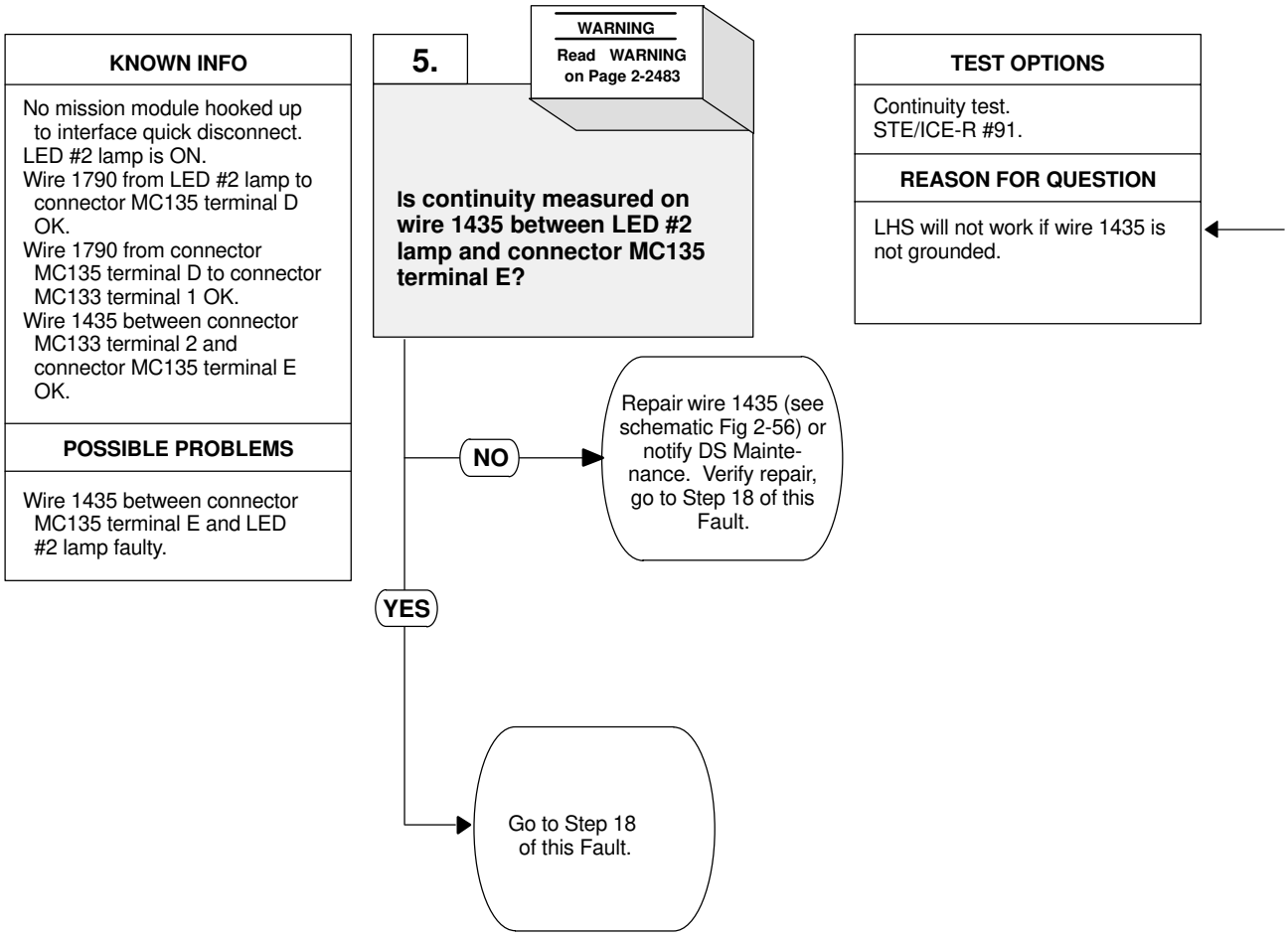
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector MC133 from LHS supply valve.
(2) Set multimeter select switch to OHMS.
(3) If there is continuity between wire 1435 connector MC133 terminal 2 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-57) or notify DS Maintenance.
  (b) If there is continuity, perform Step (4) below and go to Step 5 of this Fault.
(4) Connect connector MC133 to LHS supply valve.



15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

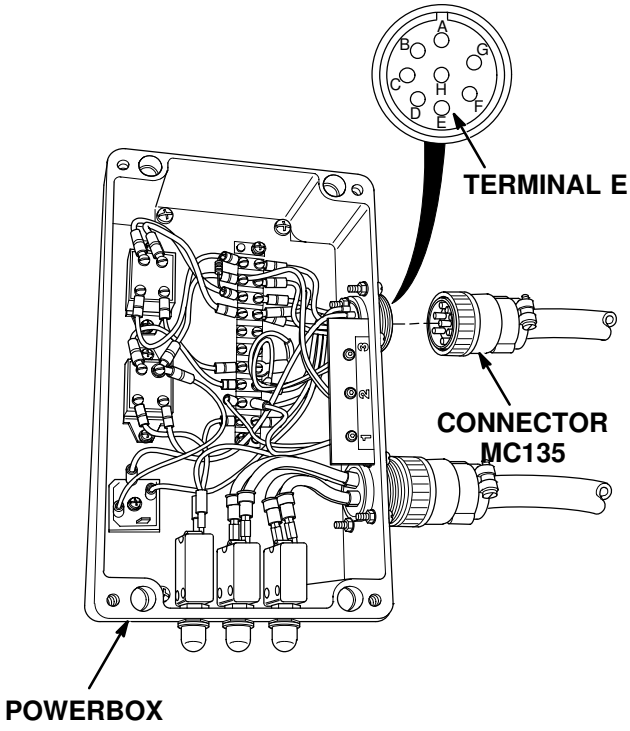


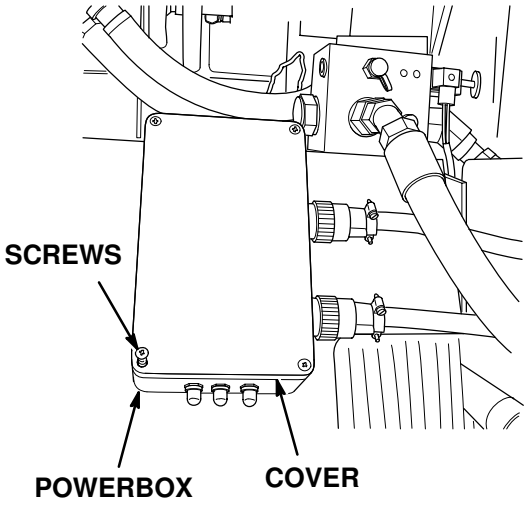
WARNING

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

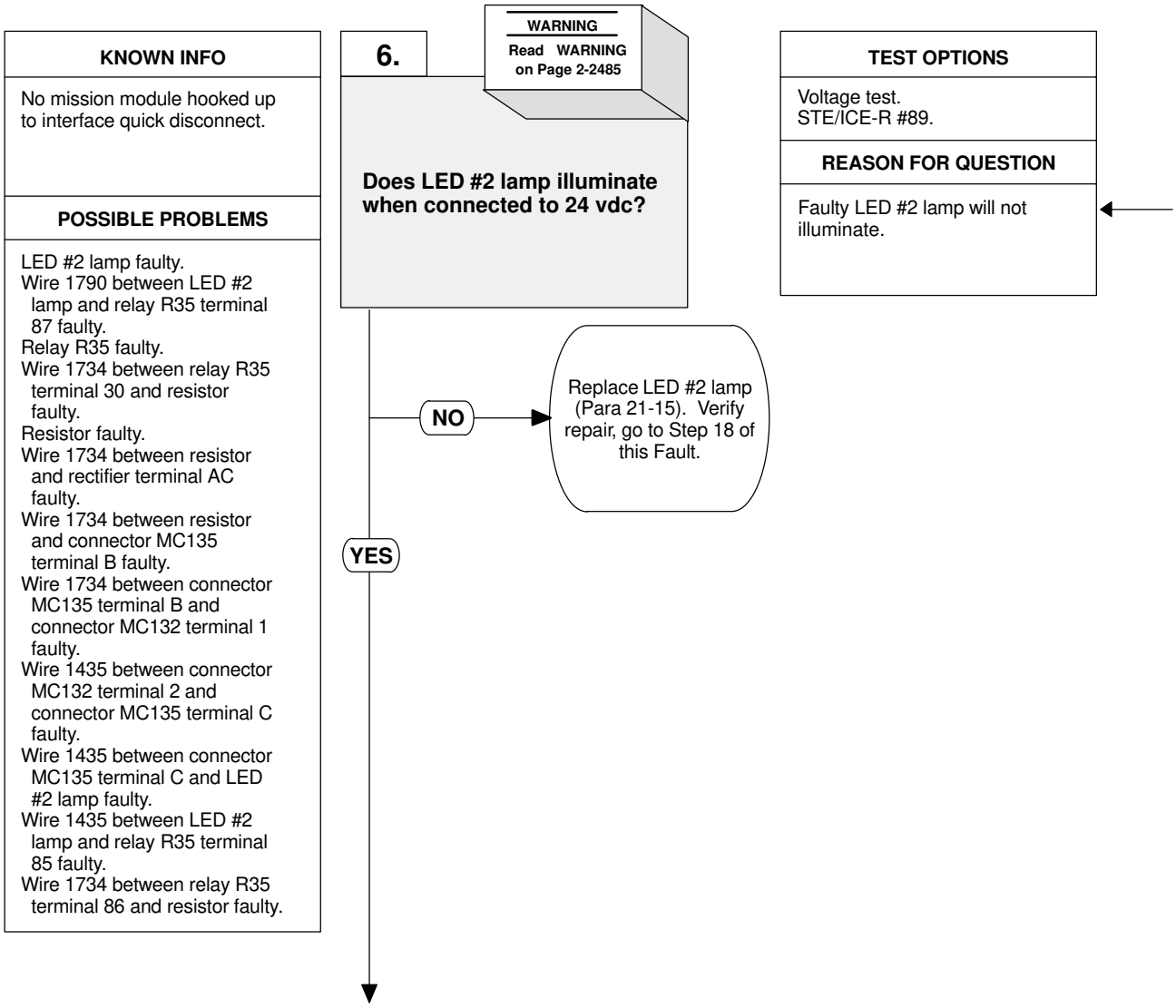
CONTINUITY TEST

(1) Remove connector MC135 from powerbox.
(2) Set multimeter select switch to OHMS.
(3) Is there continuity between connector MC135 terminal E and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-56) or notify DS Maintenance. Perform Steps (4) and (5) below and go to Step 18 of this Fault.
  (b) If there is continuity, perform Steps (4) and (5) below and go to Step 18 of this Fault.
(4) Connect connector MC135 to powerbox.
(5) Install cover on powerbox with four screws.





15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).



WARNING

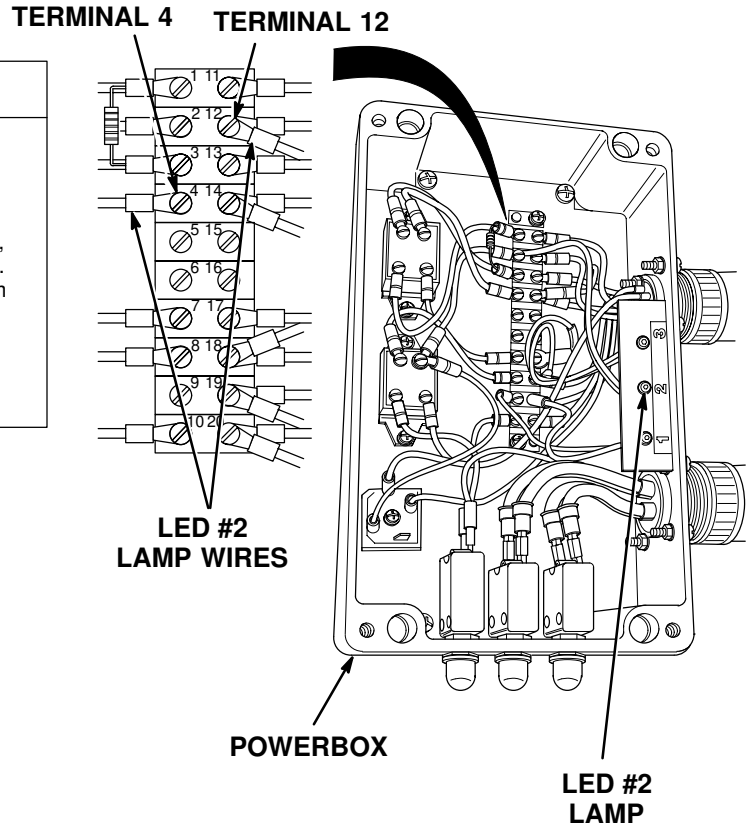
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

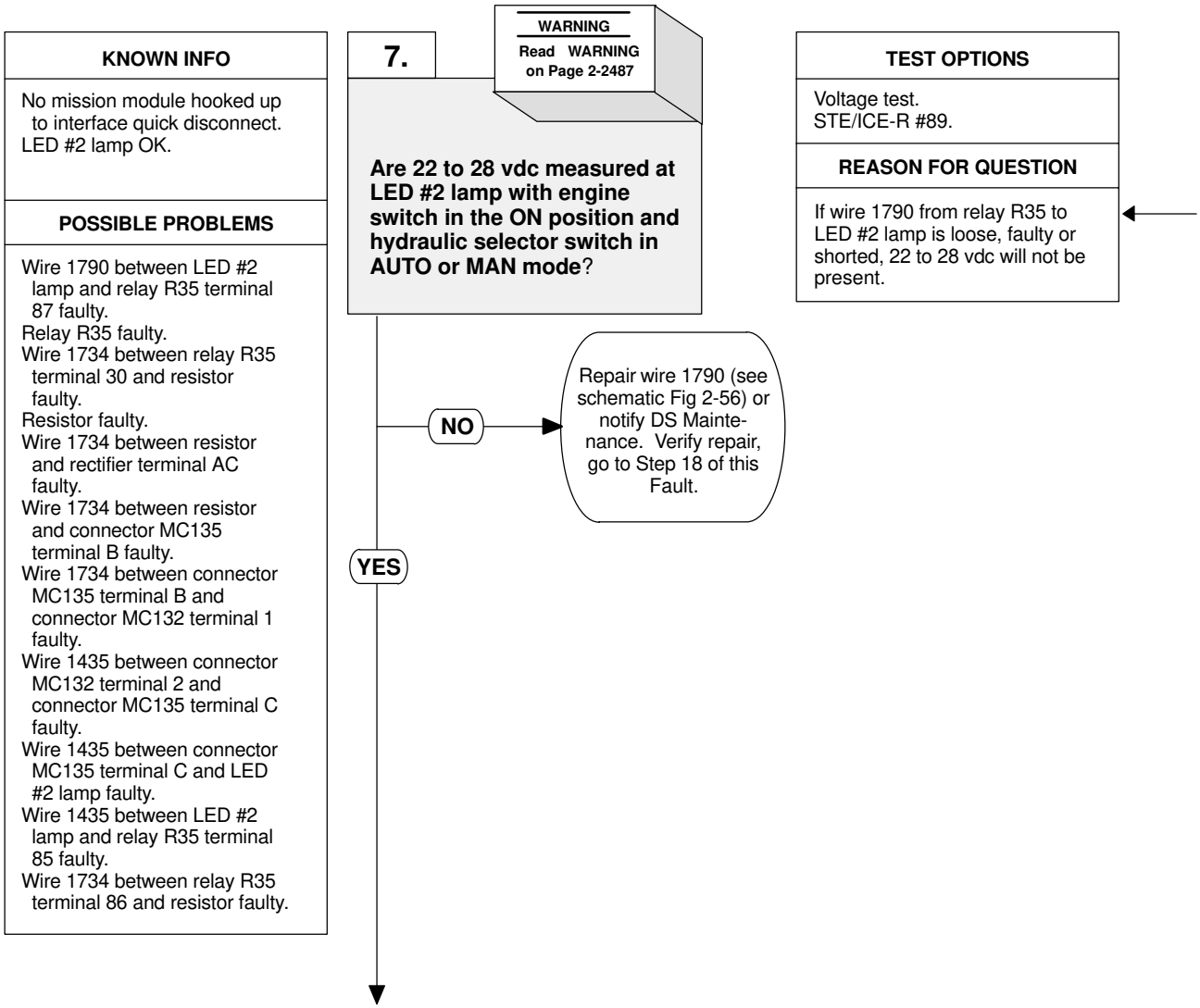
Tag and mark all wires prior to removal.

VOLTAGE TEST

(1) Remove LED #2 lamp wires from powerbox terminals 4 and 12.
(2) Connect LED #2 lamp wires to known good 24 vdc source.
  (a) If LED #2 lamp does not illuminate, replace LED #2 lamp (Para 21-15).
  (b) If LED #2 lamp illuminates, perform Step (3) below and go to Step 7 of this Fault. LED #2 lamp is OK.
(3) Connect LED #2 lamp wires to powerbox terminals 4 and 12.



15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

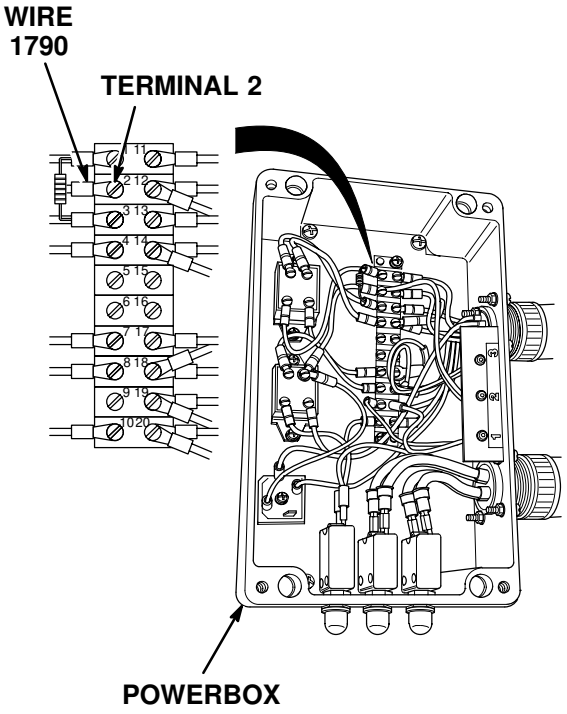


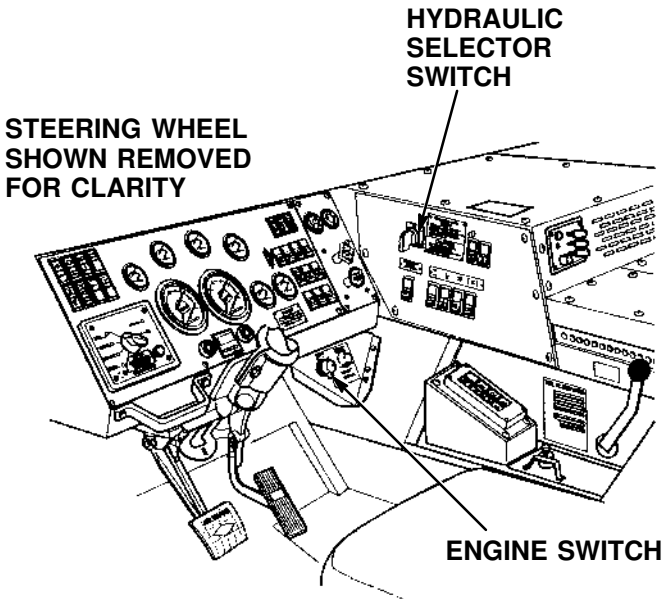
WARNING

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.

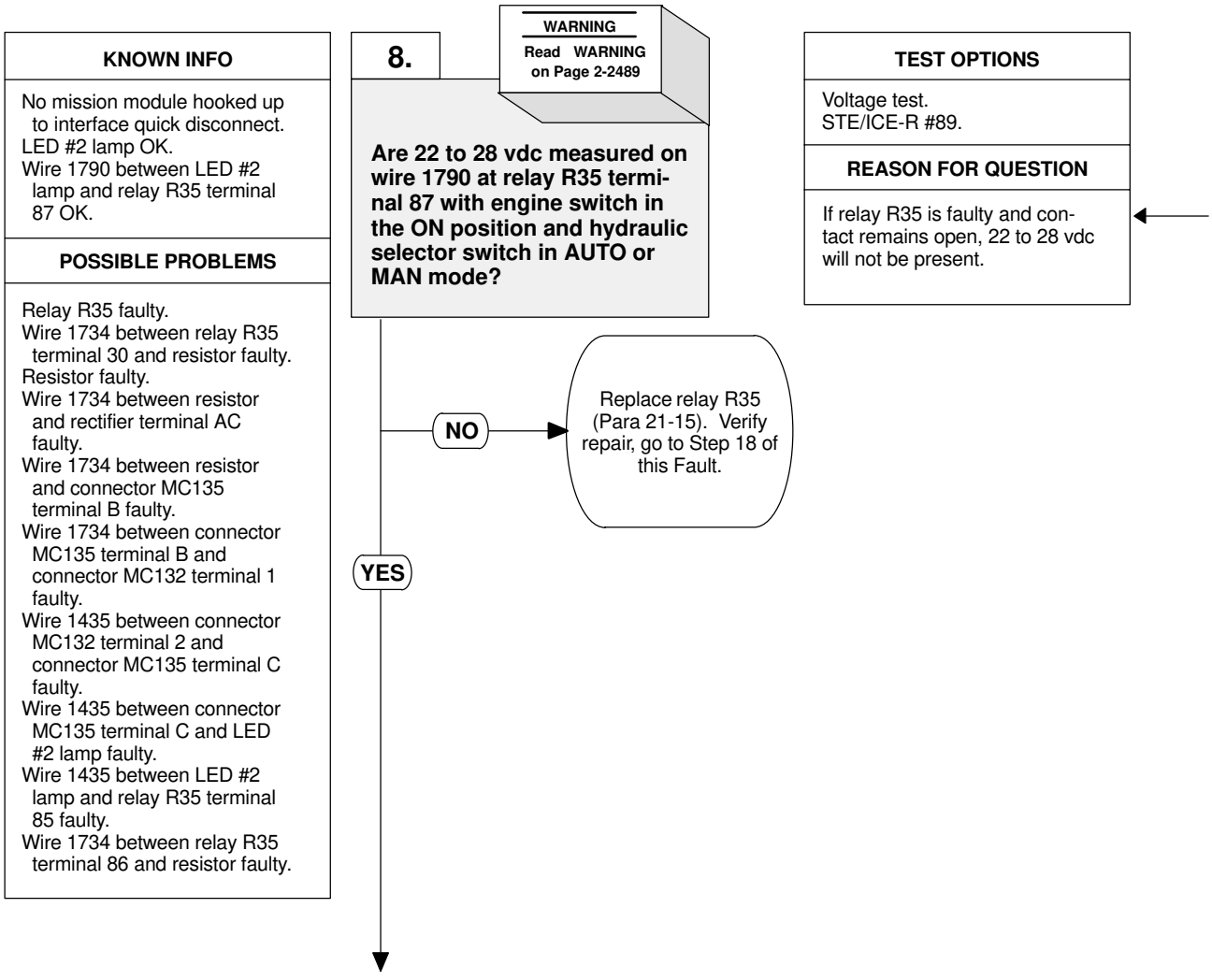
VOLTAGE TEST

(1) Disconnect wire 1790 from powerbox terminal 2.
(2) Set multimeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to wire 1790.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1790 (see schematic Fig 2-56) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 8 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect wire 1790 to powerbox terminal 2.



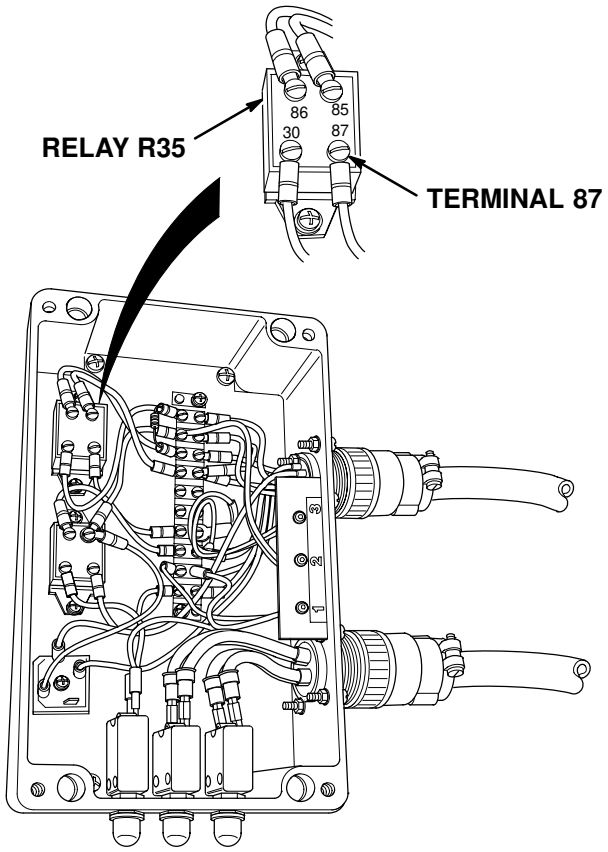


15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).



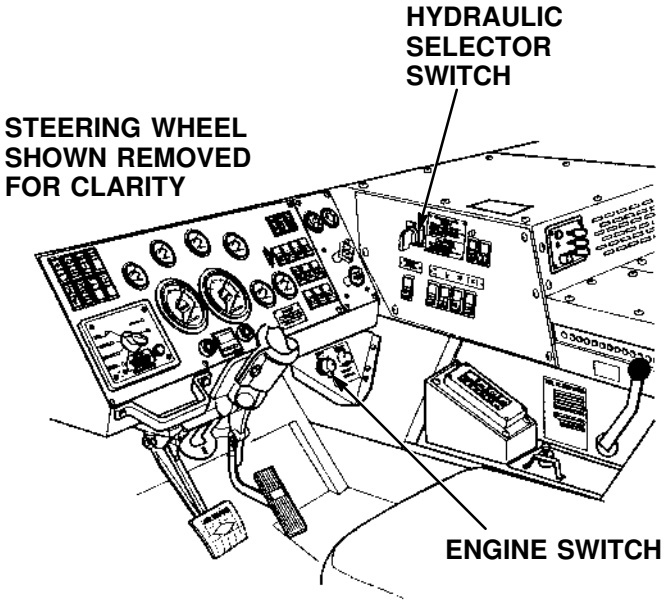
WARNING

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.

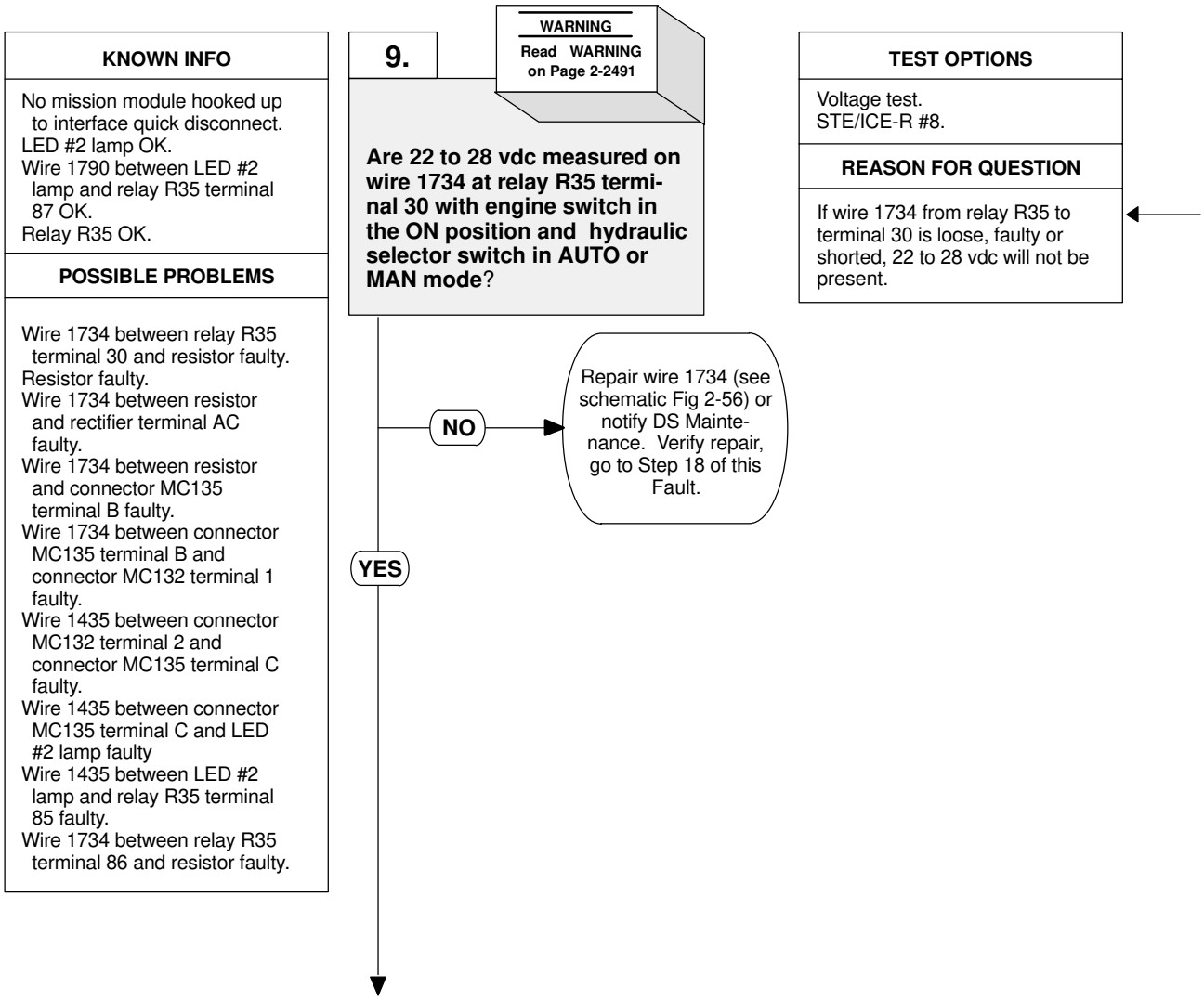


VOLTAGE TEST

(1) Set multimeter select switch to volts DC.
(2) Connect positive (+) mulitmeter lead to relay R35 at 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, replace relay R35 (Para 21-15) and perform Step (5) below.
  (b) If 22 to 28 vdc are present, perform Step (5) below and go to Step 9 of this Fault.
(5) Turn OFF ENGINE switch.



15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

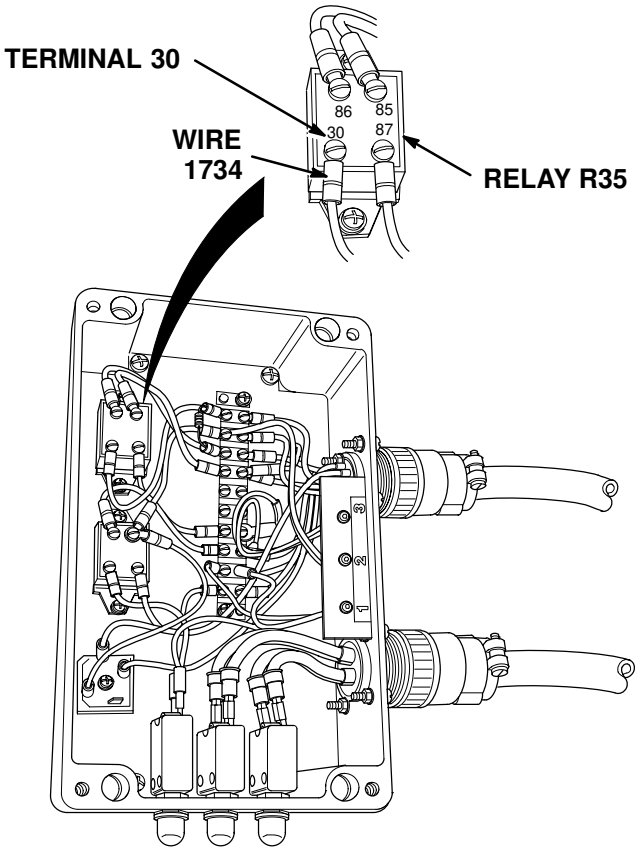


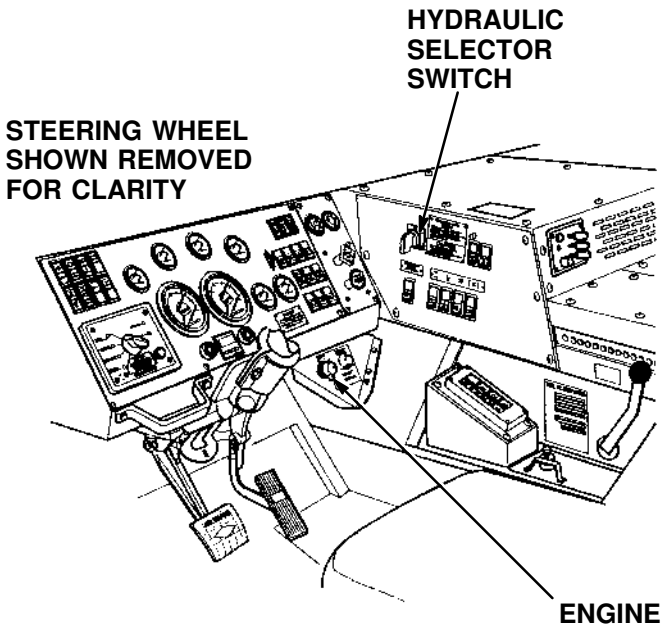
WARNING

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.

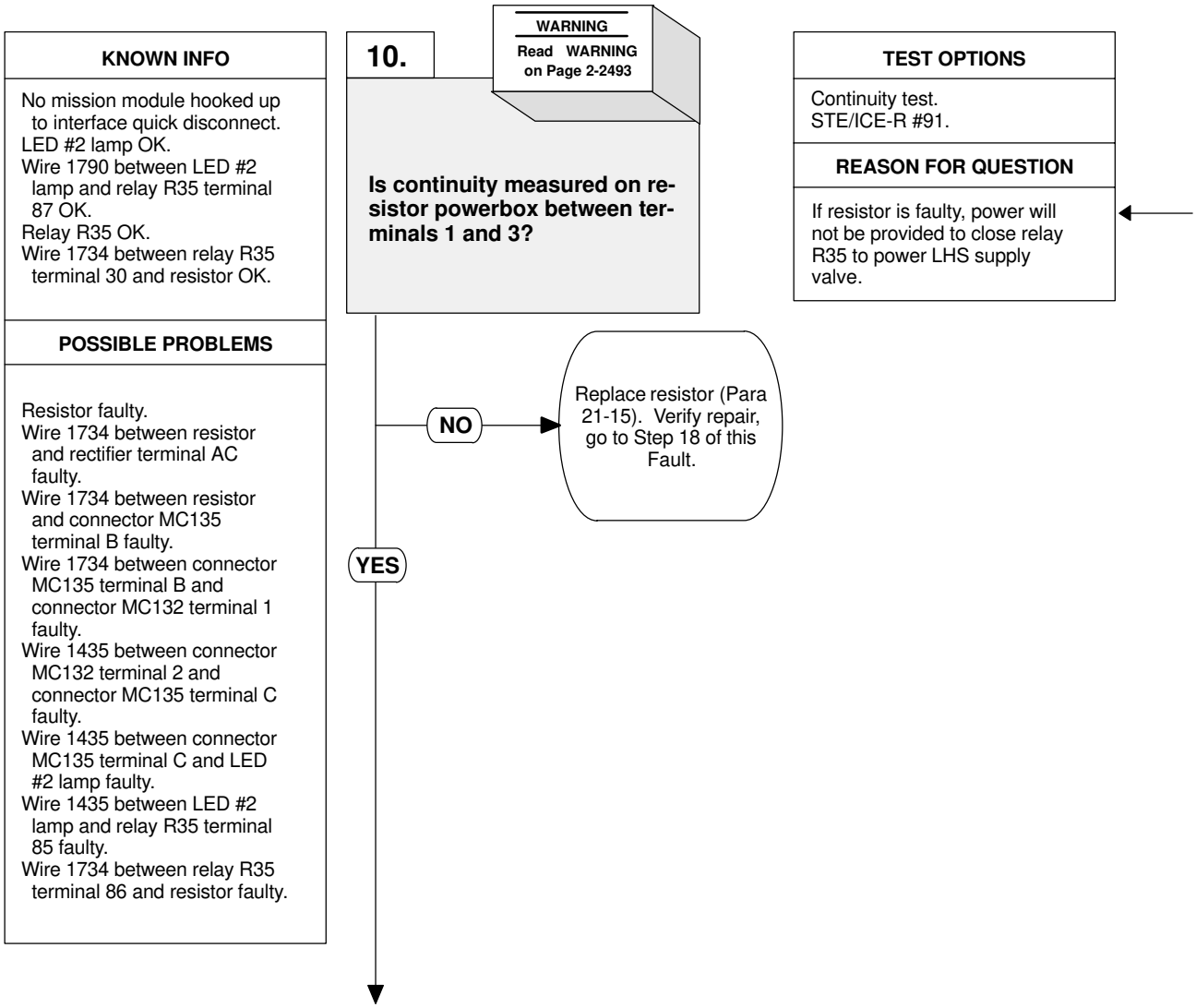
VOLTAGE TEST

(1) Disconnect wire 1734 from relay R35 terminal 30.
(2) Set multimeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to wire 1734.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
    (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1734 (see schematic Fig 2-56) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 10 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect wire 1734 to relay R35 terminal 30.





15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

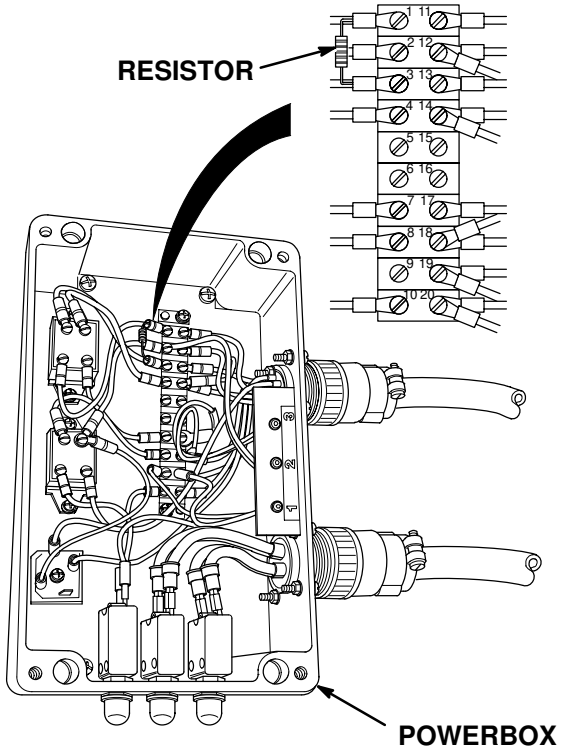


WARNING

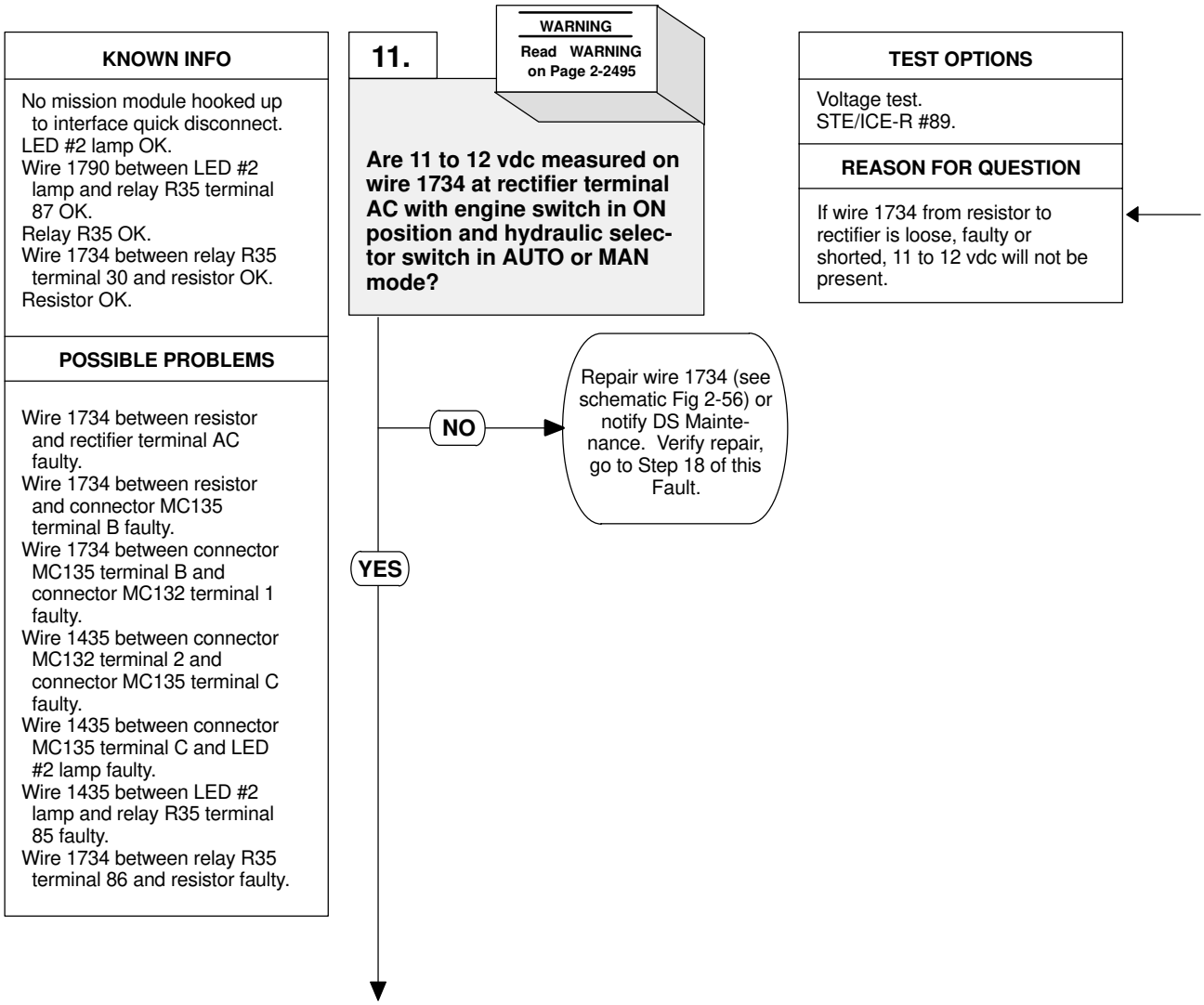
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to OHMS.
(2) Measure resistance at ends of resistor. Refer to schematic Fig 2-56.
   (a) If resistance is not approximately 1.8k, replace resistor (Para 21-15).
   (b) If resistance is approximately 1.8k, resistor is OK, go to Step 11 of this Fault.



15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

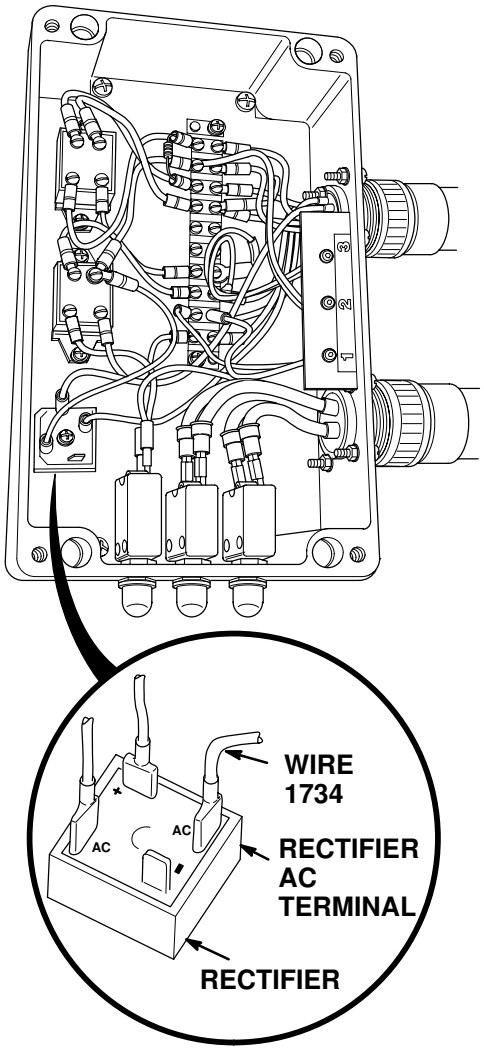


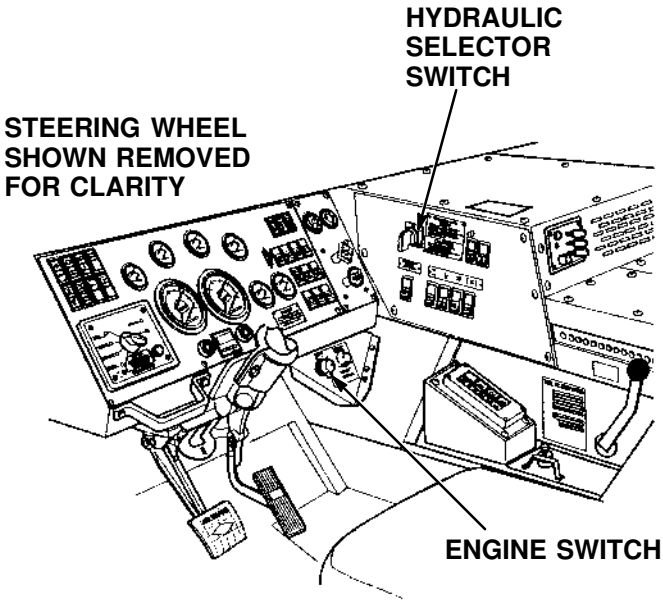
WARNING

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.

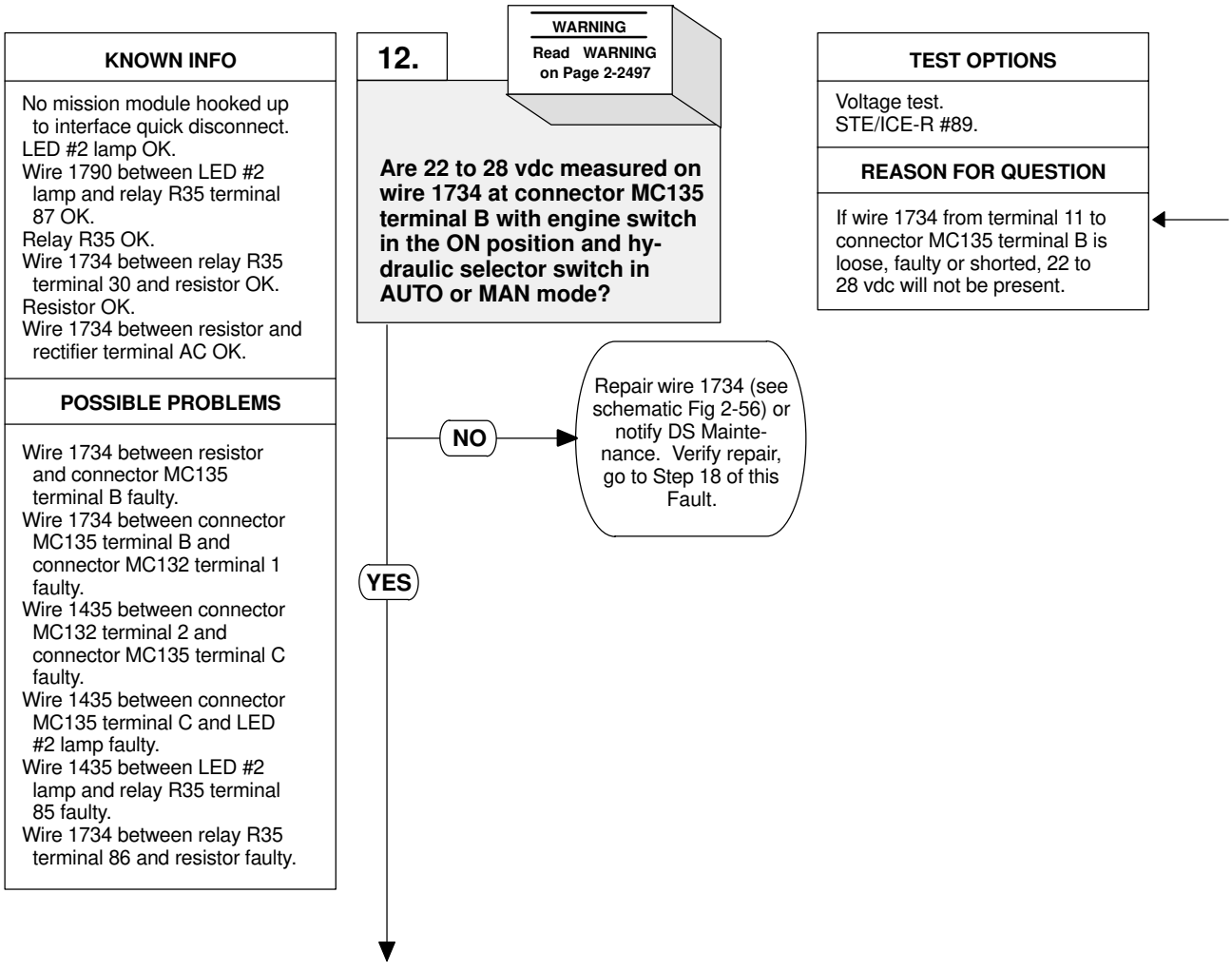
VOLTAGE TEST

(1) Disconnect wire 1734 from rectifier terminal AC.
(2) Set mulitmeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to wire 1734.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 11 to 12 vdc are not present, perform Step (6) below and repair wire 1734 (see schematic Fig 2-56) or notify DS Maintenance.
  (b) If 11 to 12 vdc are present, perform Steps (6) and (7) below and go to Step 12 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect wire 1734 to rectifier terminal AC.





15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

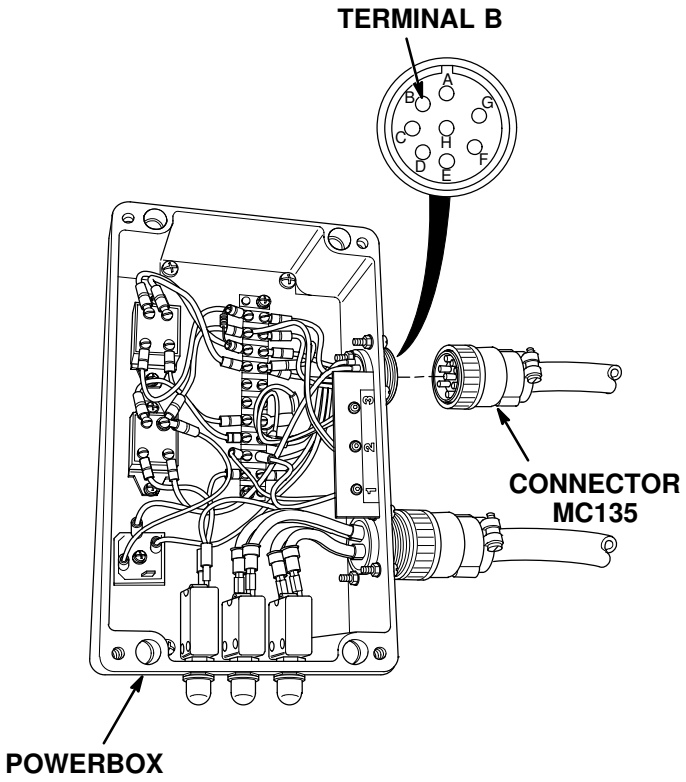


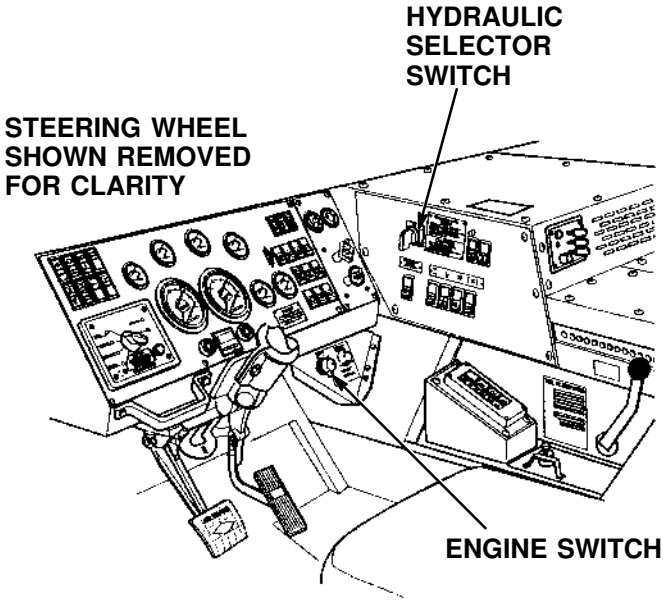
WARNING

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

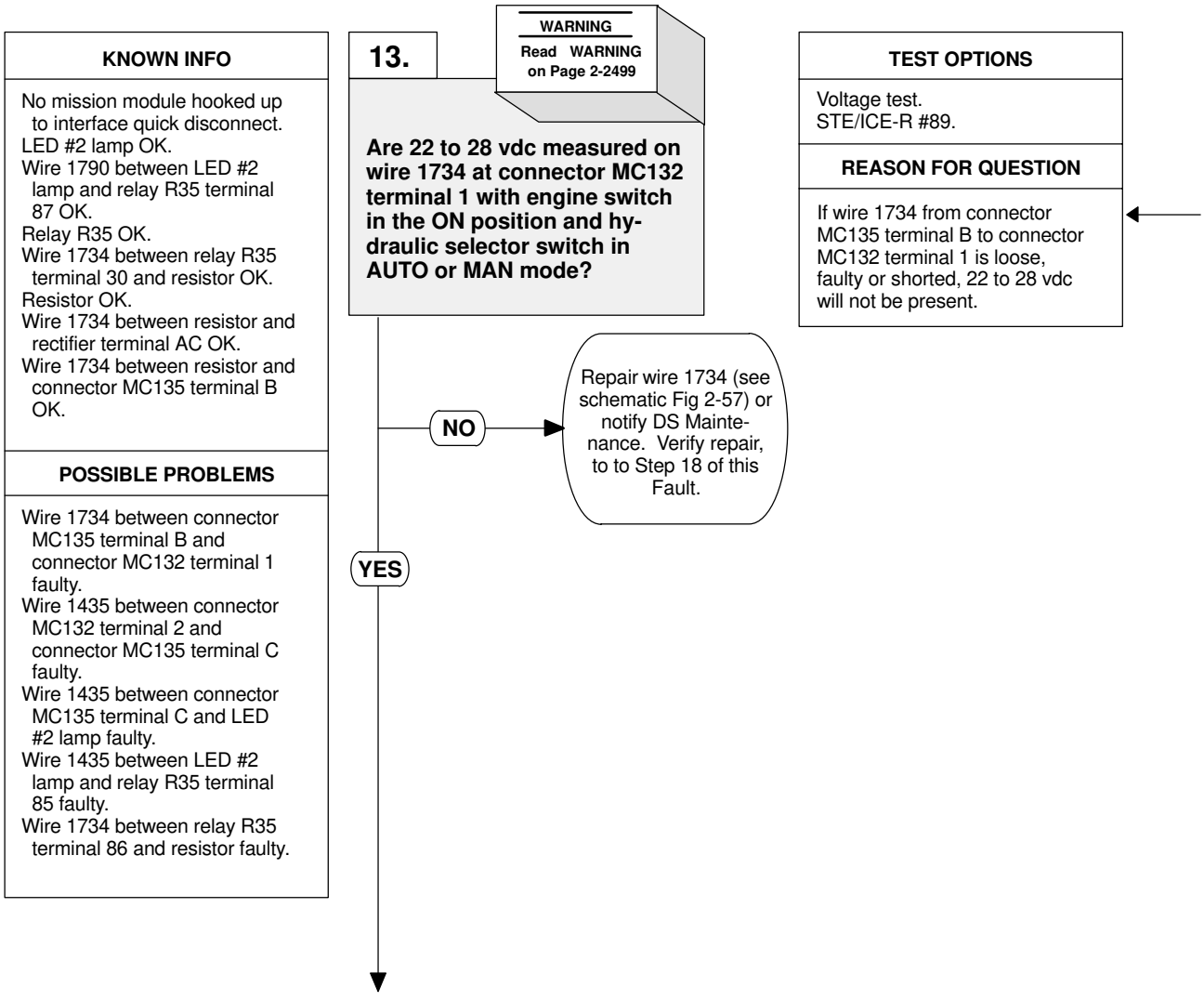
VOLTAGE TEST

(1) Disconnect connector MC135 from powerbox.
(2) Set multimeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to connector MC135 terminal B.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1734 (see schematic Fig 2-56) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 13 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect connector MC135 to powerbox.



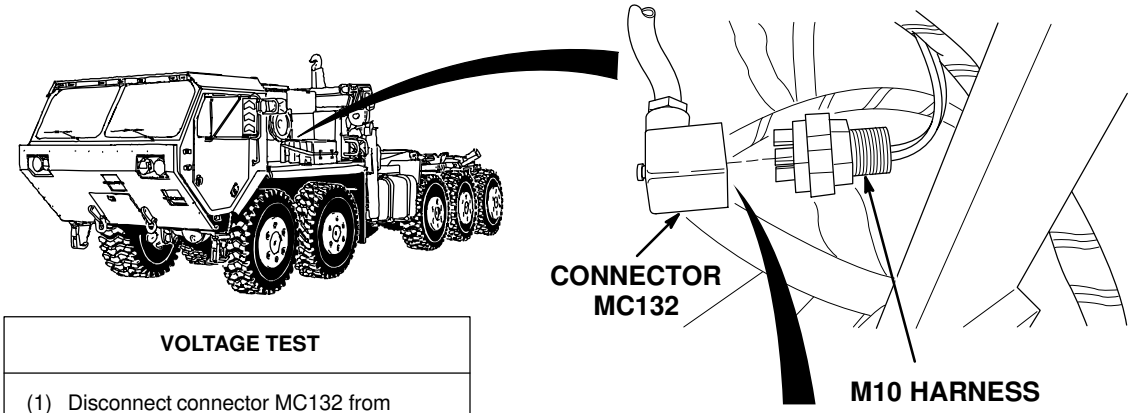


15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).



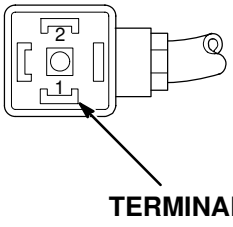
WARNING

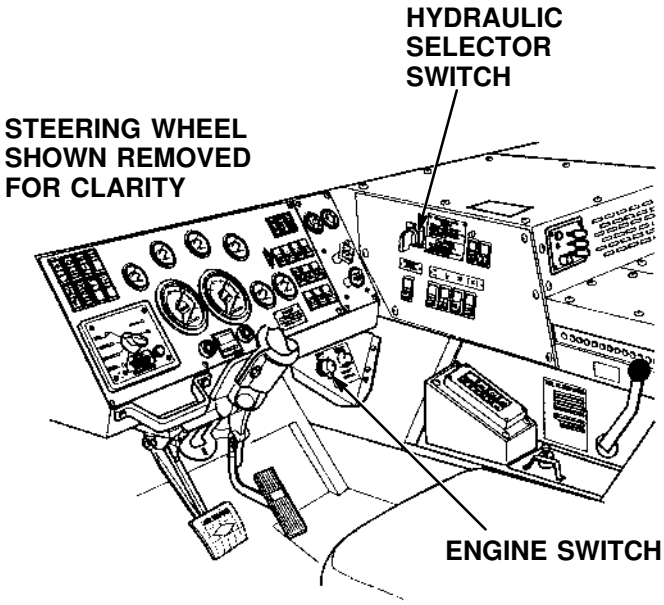
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



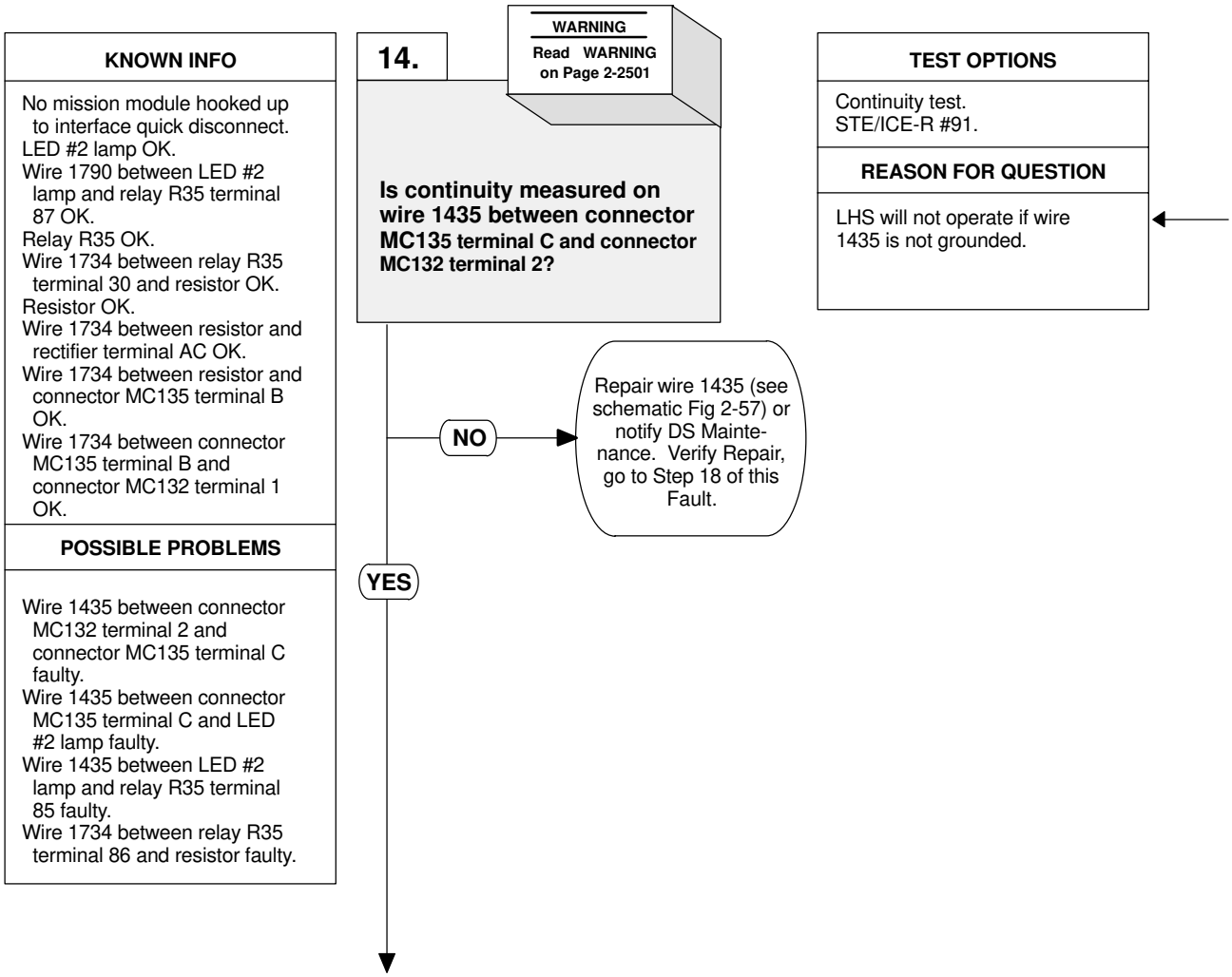
VOLTAGE TEST

(1) Disconnect connector MC132 from M10 harness.
(2) Set multimeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to connector MC132 terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1734 (see schematic Fig 2-57) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 14 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect connector MC132 to M10 harness.



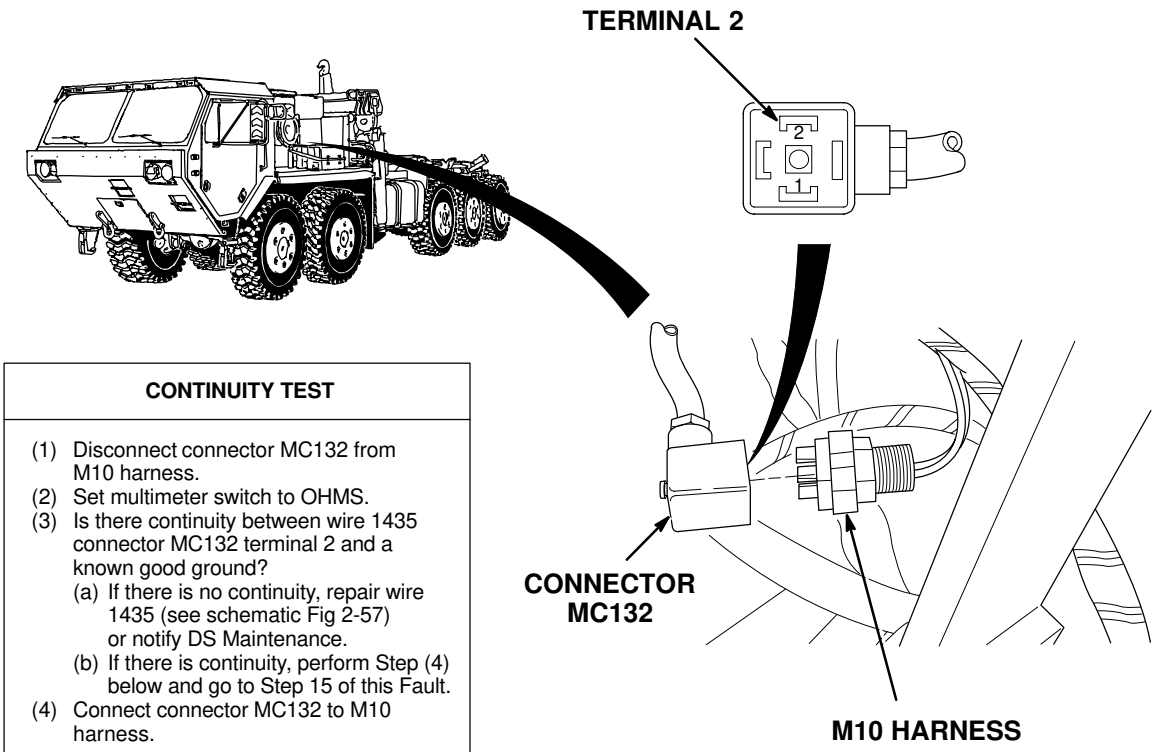


15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).



WARNING

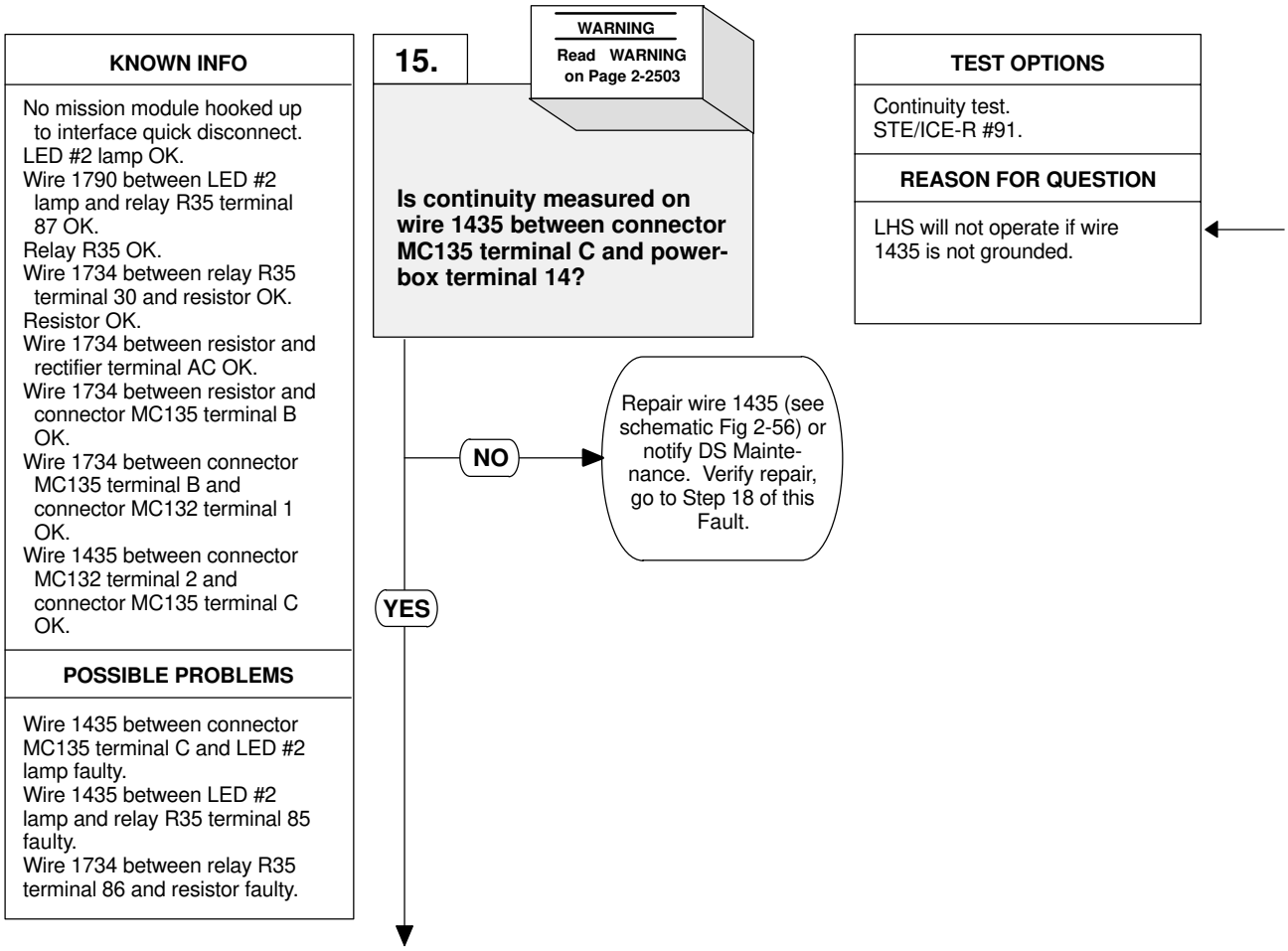
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



CONTINUITY TEST

(1) Disconnect connector MC132 from M10 harness.
(2) Set multimeter switch to OHMS.
(3) Is there continuity between wire 1435 connector MC132 terminal 2 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-57) or notify DS Maintenance.
  (b) If there is continuity, perform Step (4) below and go to Step 15 of this Fault.
(4) Connect connector MC132 to M10 harness.

15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

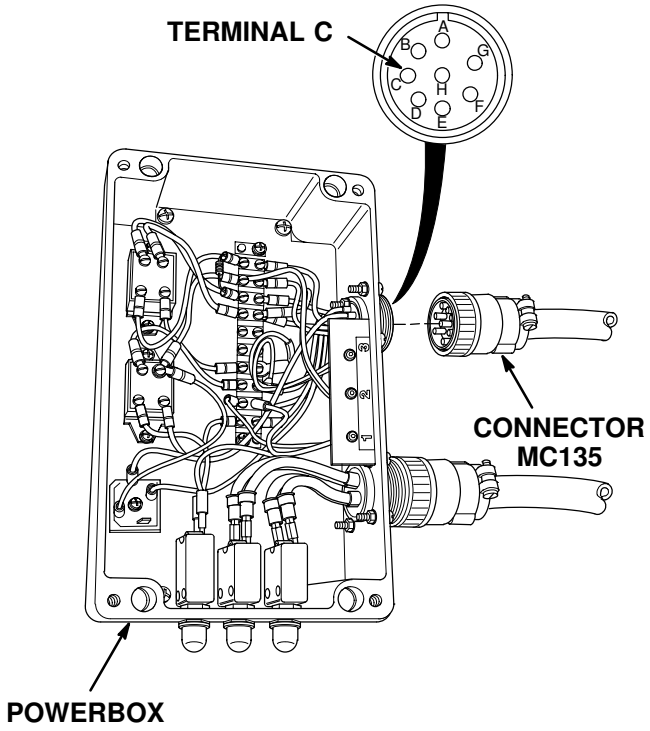


WARNING

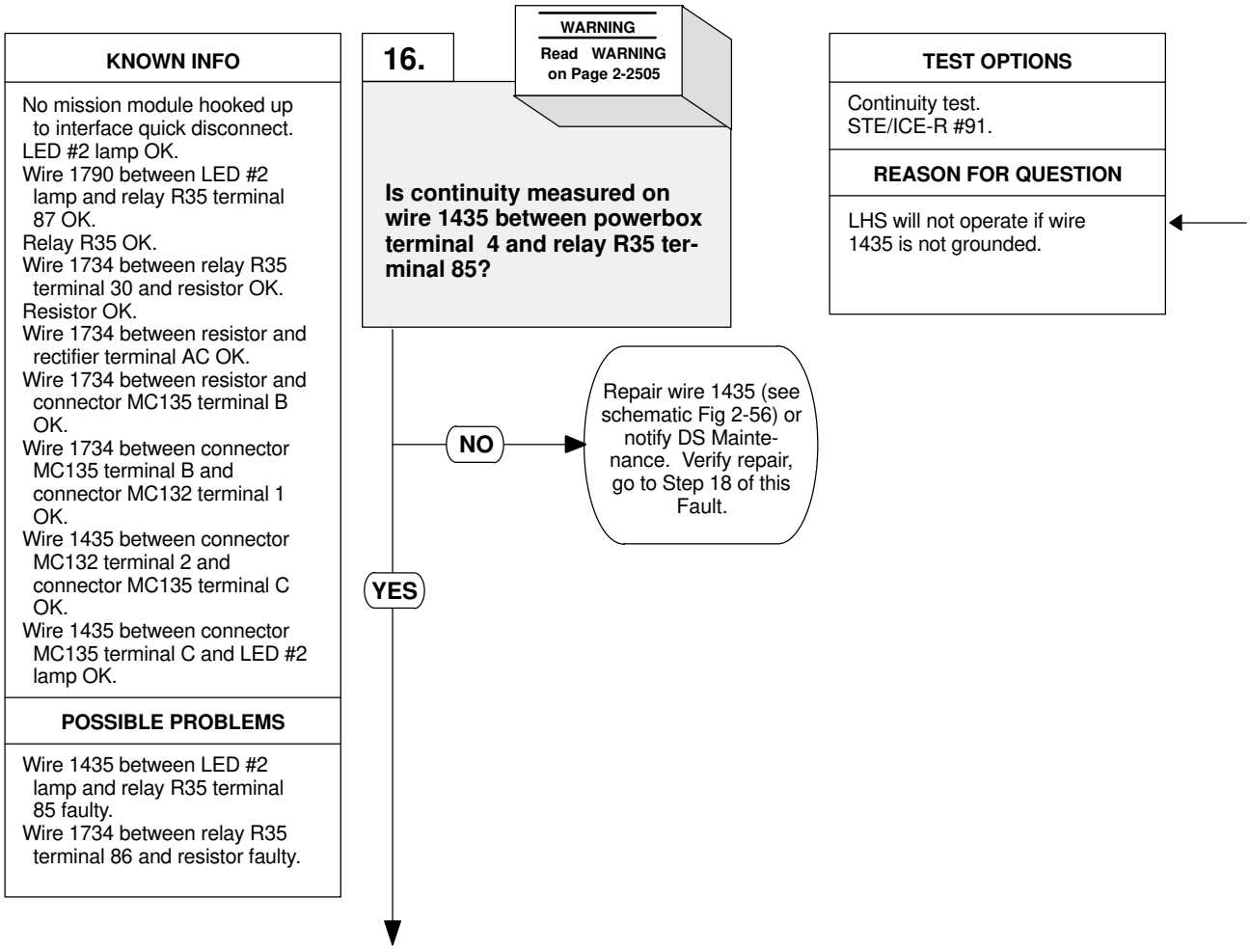
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector MC135 from powerbox.
(2) Set multimeter switch to OHMS.
(3) Is there continuity between wire 1435 connector MC135 terminal C and a known good ground?
   (a) If there is continuity, repair wire 1435 (see schematic Fig 2-56) or notify DS Maintenance.
   (b) If there is continuity, perform Step (4) below and go to Step 16 of this Fault.
(4) Connect connector MC135 to powerbox.

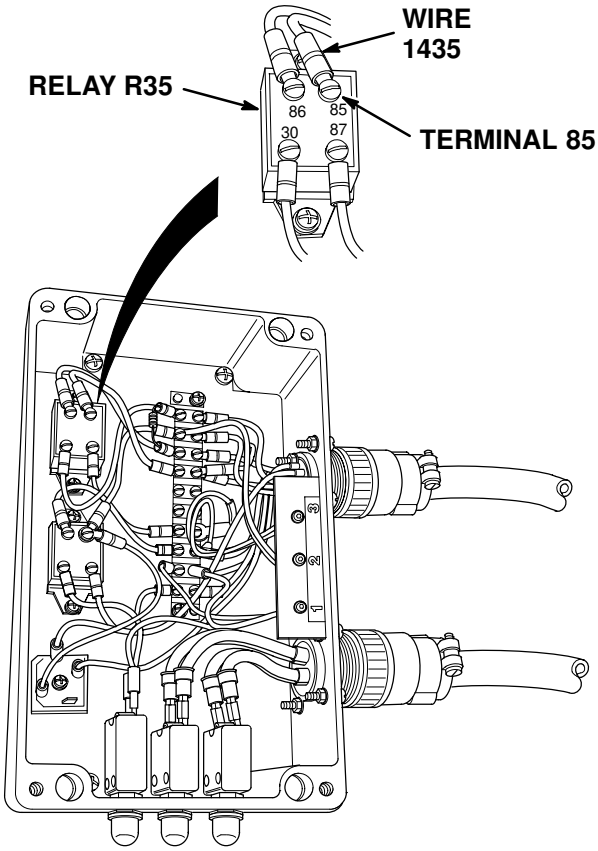


15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).



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 relay R35 terminal 85 and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-56) or notify DS Maintenance.
  (b) If there is continuity, go to Step 17 of this Fault.

15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).

KNOWN INFO

No mission module hook-up to interface quick disconnect.
LED #2 lamp OK.
Wire 1790 between LED #2 lamp and relay R35 terminal 87 OK.
Relay R35 OK.
Wire 1734 between relay R35 terminal 30 and resistor OK.
Resistor OK.
Wire 1734 between resistor and rectifier terminal AC OK.
Wire 1734 between resistor and connector MC135 terminal B OK.
Wire 1734 between connector MC135 terminal B and connector MC132 terminal 1 OK.
Wire 1435 between connector MC132 terminal 2 and connector MC135 terminal C OK.
Wire 1435 between connector MC135 terminal C and LED #2 lamp OK.
Wire 1435 between LED #2 lamp and relay R35 terminal 85 OK.

POSSIBLE PROBLEMS

Wire 1734 between relay R35 terminal 86 and resistor faulty.

17.

WARNING
Read WARNING on Page 2-2507

Are 22 to 28 vdc measured on wire 1734 at powerbox relay R35 terminal 86 with engine switch in the ON position and hydraulic selector switch in AUTO or MAN mode?

NO → Repair wire 1734 (see schematic Fig 2-56) or notify DS Maintenance. Verify repair, go to Step 18 of this Fault.

YES

TEST OPTIONS

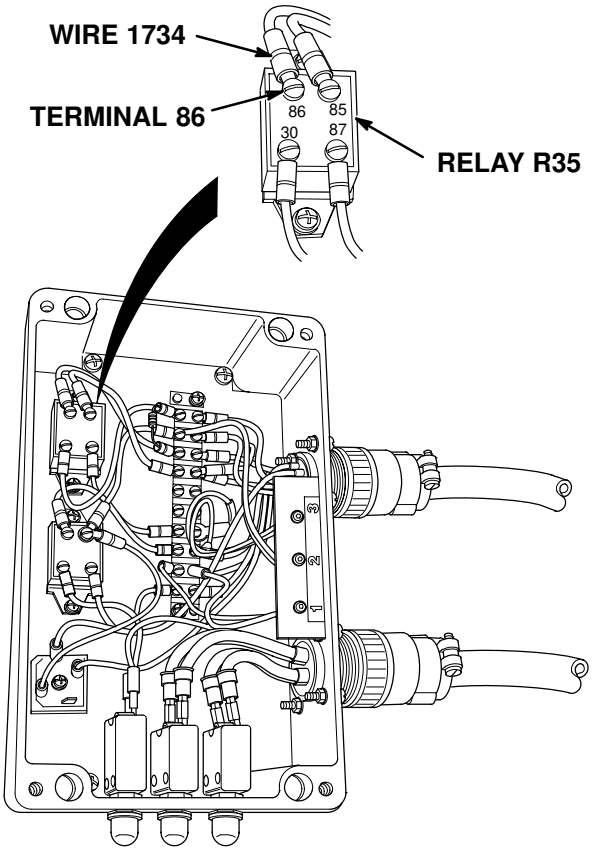
Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If wire 1734 from relay R35 terminal 86 to powerbox terminal 3 is loose, faulty or shorted, 22 to 28VDC will not be present.

WARNING

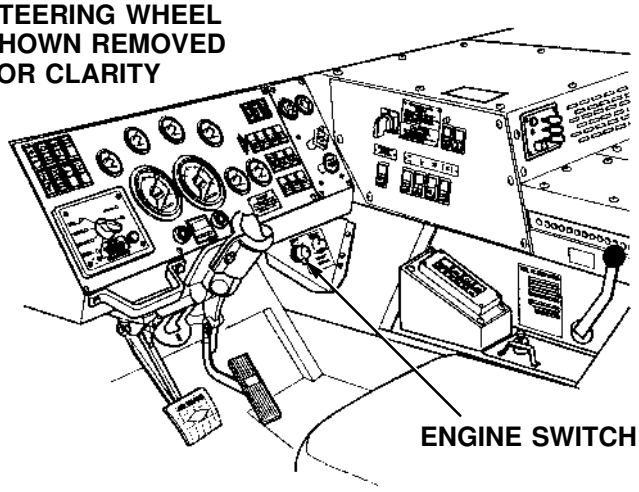
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

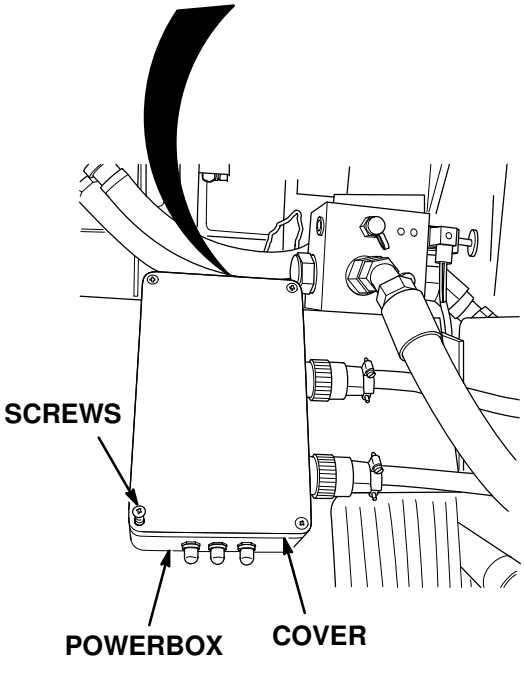


VOLTAGE TEST

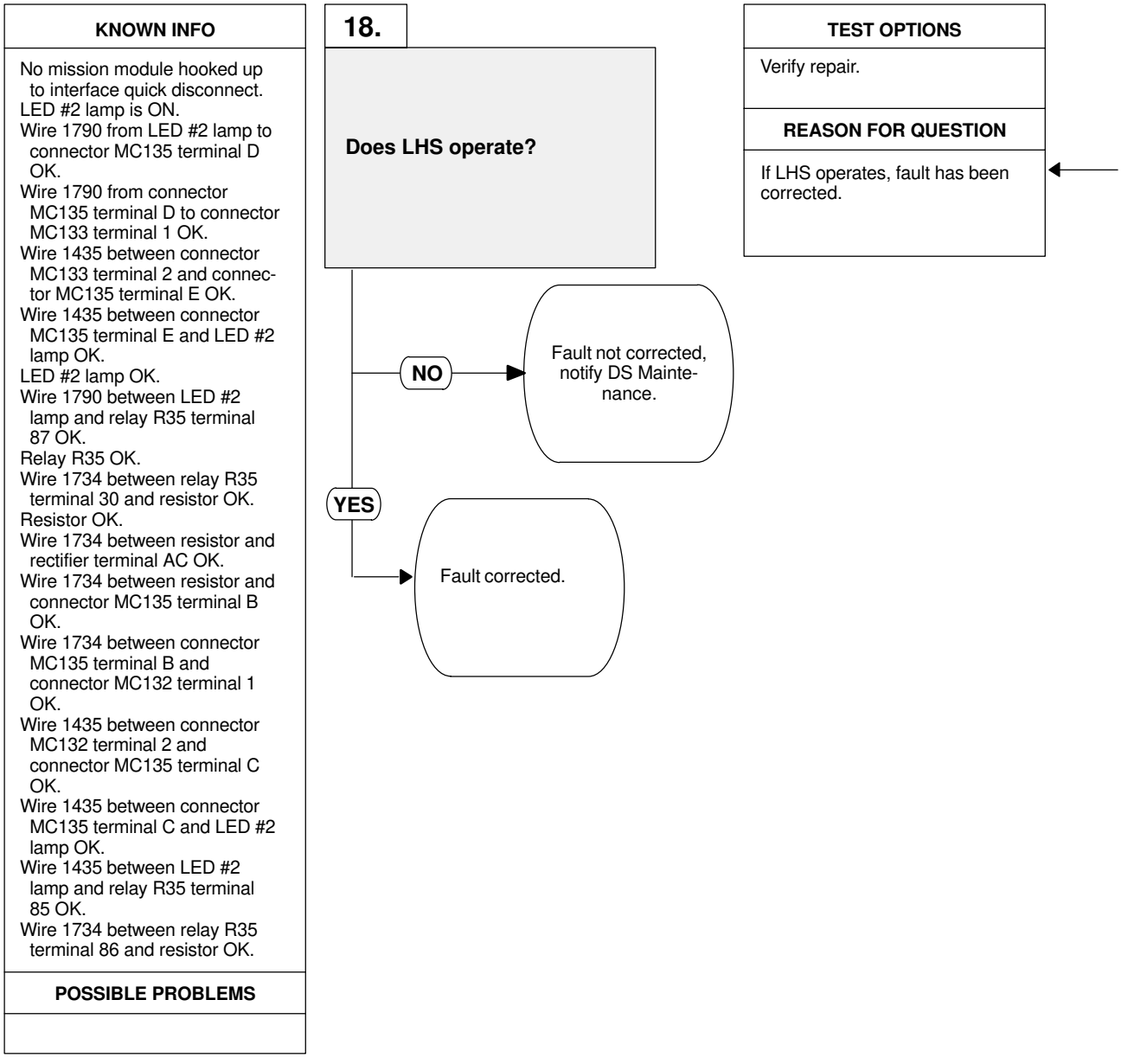
(1) Disconnect wire 1734 from relay R35 terminal 86.
(2) Set multimeter select switch to volts DC.
(3) Connect positive (+) multimeter lead to wire 1734.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON engine switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Steps (6) below and repair wire 1734 or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6), (7) and (8) below.
(6) Turn OFF ENGINE switch.
(7) Connect wire 1734 to relay R35 terminal 86.
(8) Install powerbox cover with four screws.

STEERING WHEEL SHOWN REMOVED FOR CLARITY



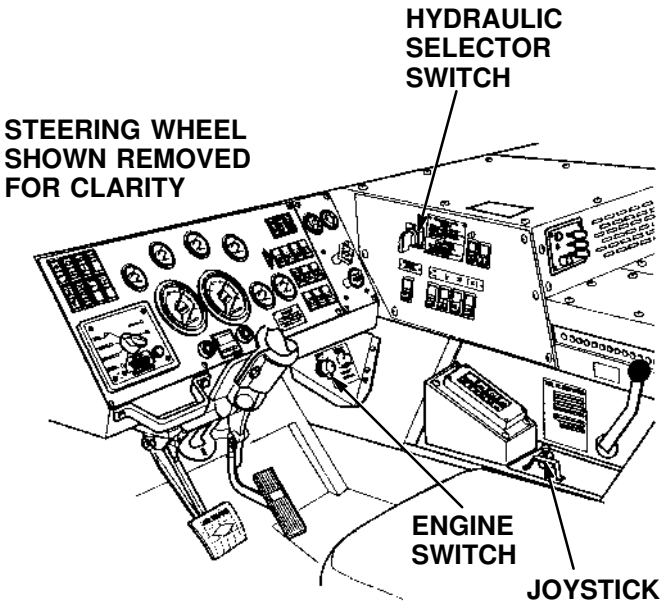


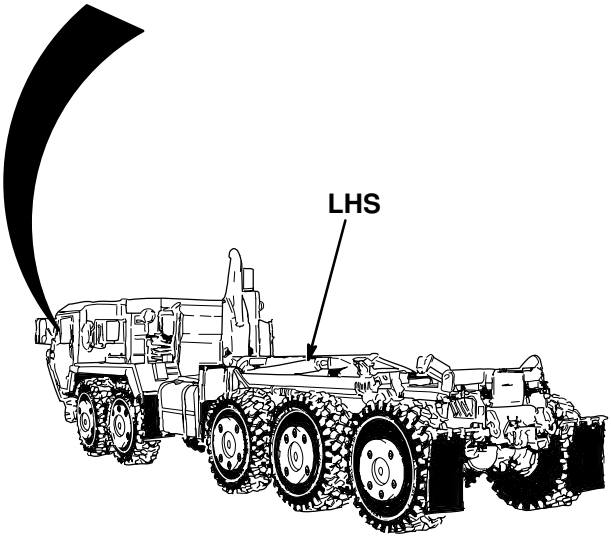
15 LHS INOPERATIVE WITH INTERFACE KIT INSTALLED (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to AUTO or MAN mode.
(3) Hold joystick in UNLOAD position and then in LOAD position.
  (a) If LHS does not operate, fault is not corrected. Perform Steps (4) and (5) below and notify supervisor.
  (b) If LHS does operate, fault has been corrected.
(4) Set hydraulic selector switch to OFF position.
(5) Turn OFF ENGINE switch.





2-29. CRANE TROUBLESHOOTING.

This paragraph covers Crane System Troubleshooting. The Crane System Fault Index, Table 2-54, lists faults for the crane system of the PLS truck. Refer to the schematics Figures 2-58 through 2-64 when performing tests and corrective actions

Table 2-54. Crane System Fault Index

Fault No.	Description	Page
1.	No Crane Functions Work Using Remote Control	2-2518
2.	Hoist Will Not Lower Using Remote Control Unit	2-2528
3.	Hoist Will Not Raise Using Remote Control Unit	2-2546
4.	Boom Will Not Lower Using Remote Control Unit	2-2564
5.	Boom Will Not Raise Using Remote Control Unit	2-2582
6.	Boom Will Not Telescope In Using Remote Control Unit	2-2600
7.	Boom Will Not Telescope Out Using Remote Control Unit	2-2618
8.	Crane Will Not Swing CW Using Remote Control Unit	2-2636
9.	Crane Will Not Swing CCW Using Remote Control Unit	2-2654
10.	Outriggers Do Not Operate	2-2672
11.	Loss Of Crane Functions (Swing, Telescope, Boom, And Hoist)	2-2720
12.	Boom Does Not Operate	2-2750
13.	Telescope Does Not Operate	2-2754
14.	Hoist Does Not Operate	2-2758
15.	Crane Does Not Swing	2-2762
16.	Mast Does Not Operate	2-2766
17.	Lift And Hoist Do Not Operate Or Operate Slowly	2-2770
18.	Swing And Telescope Do Not Operate Or Operate Slowly	2-2772
19.	Crane High Idle Not Working	2-2774

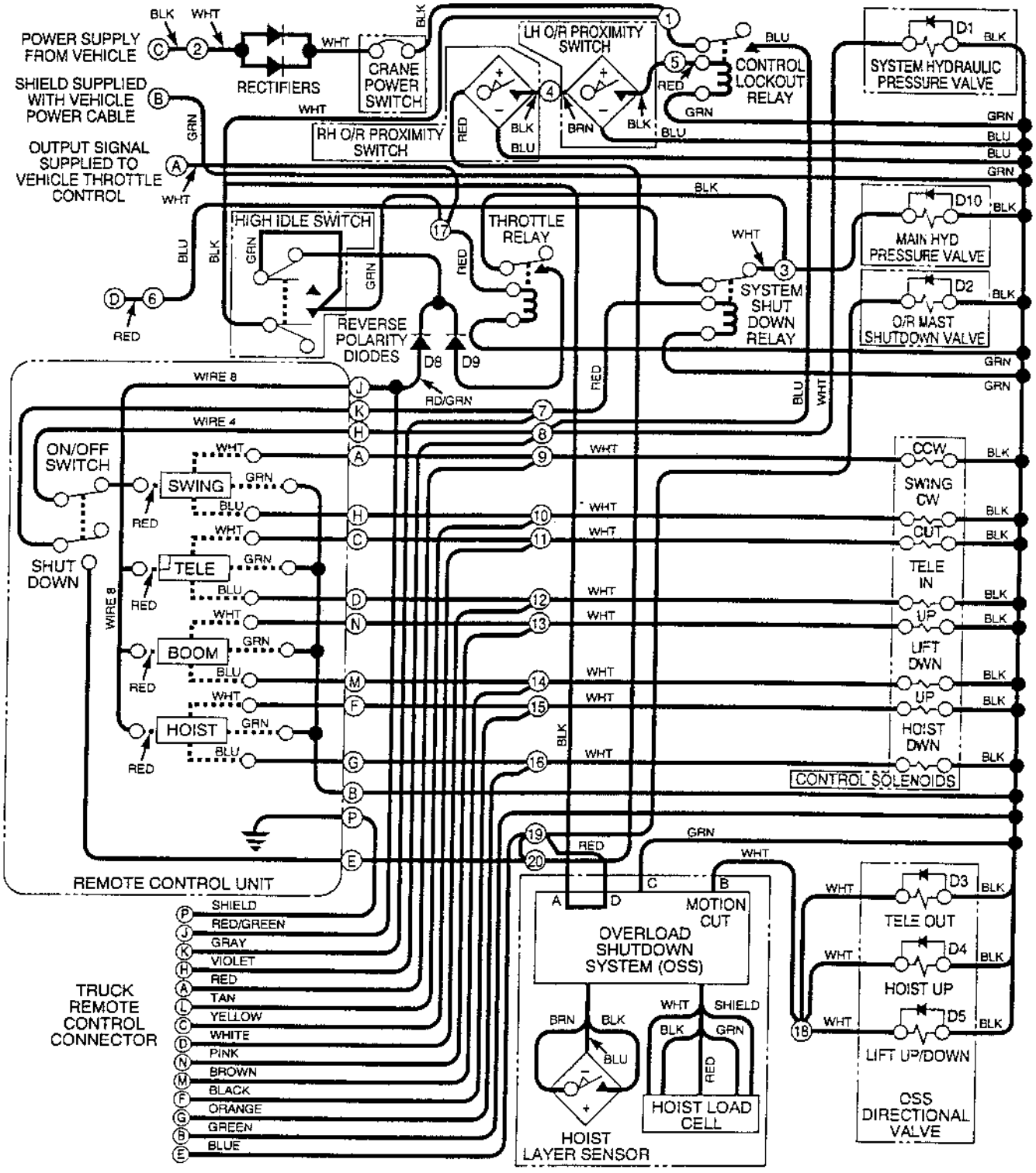


Figure 2-58. Crane Wiring Schematic

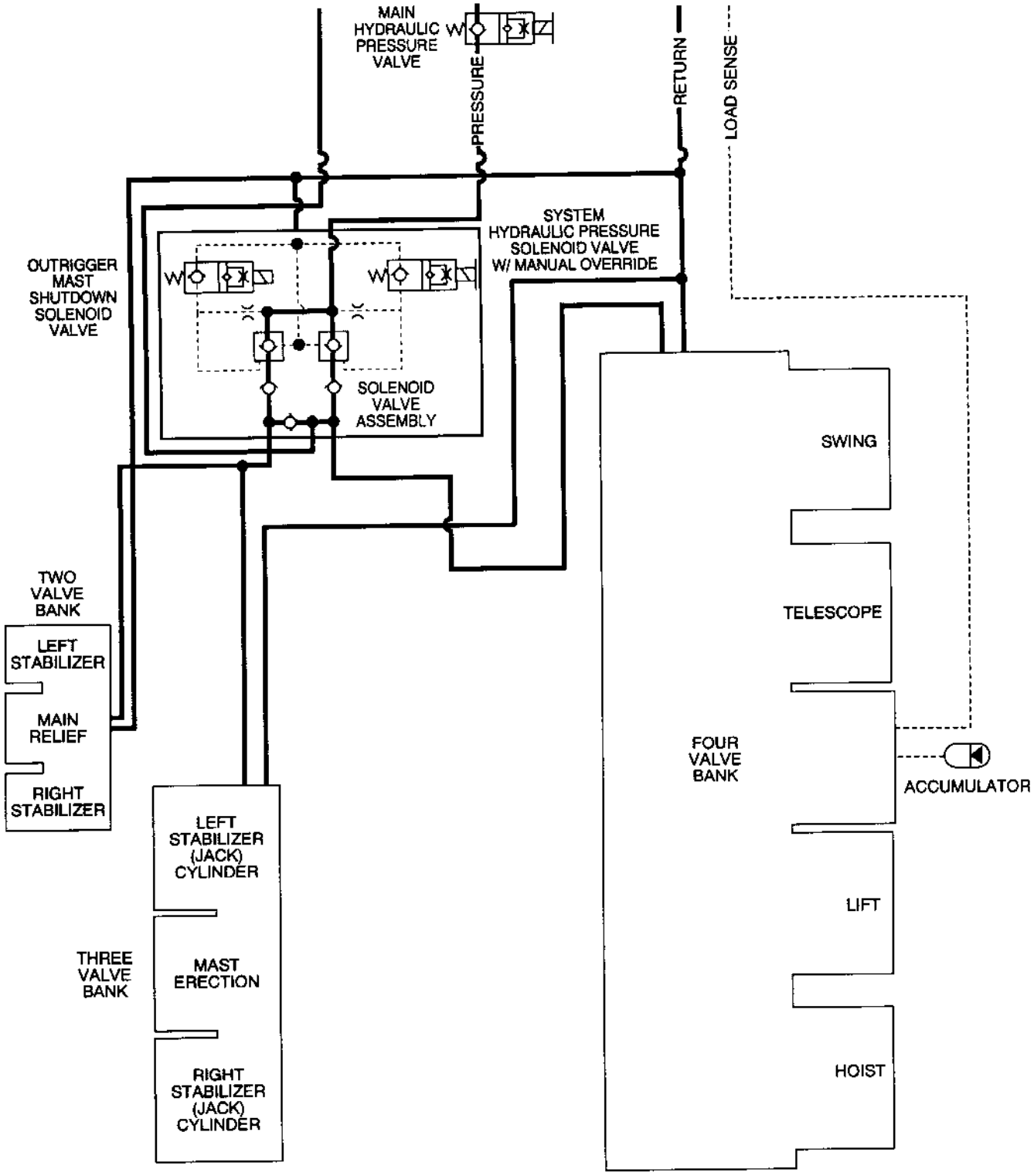


Figure 2-59. Crane Hydraulic Diagram

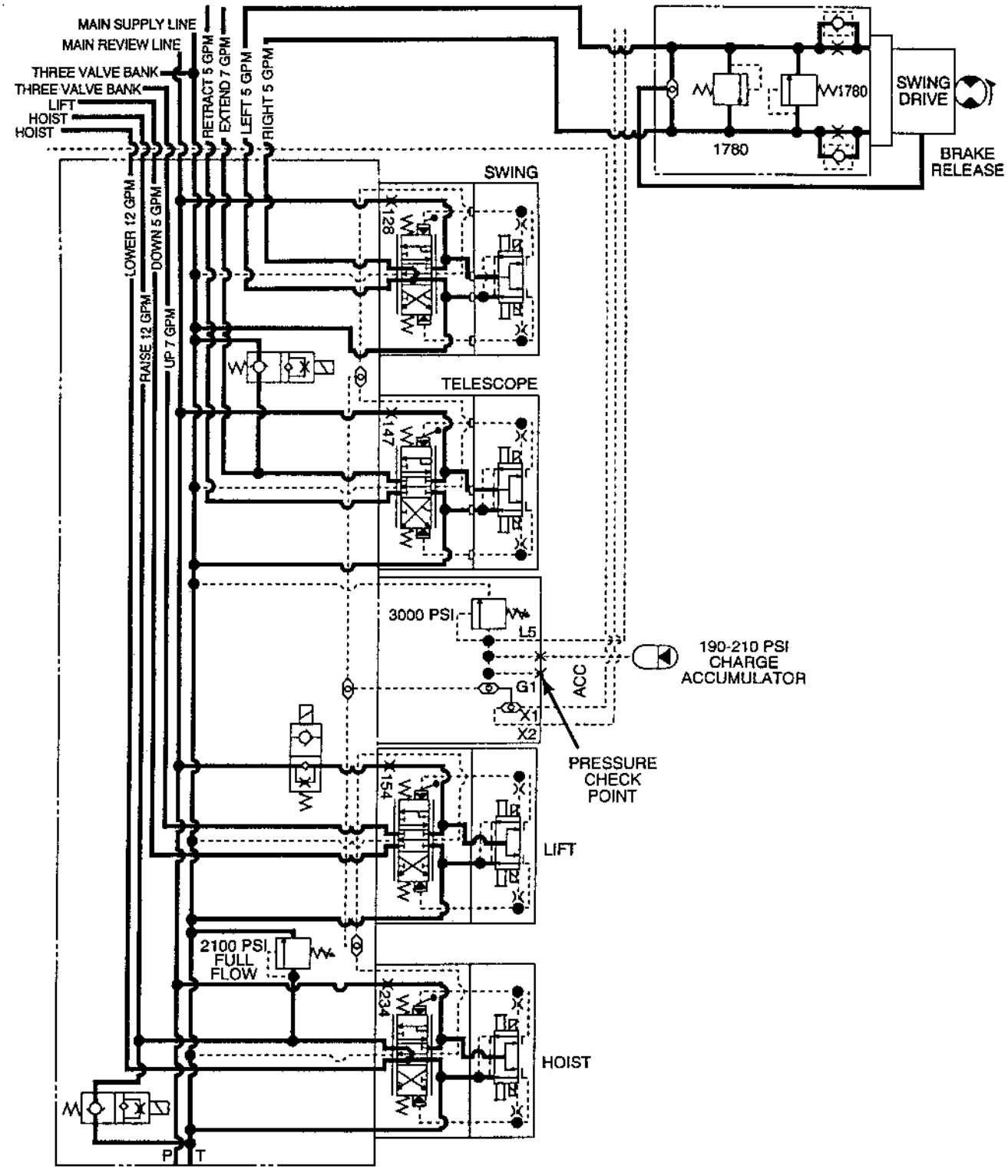


Figure 2-60. Crane Swing Hydraulic Diagram

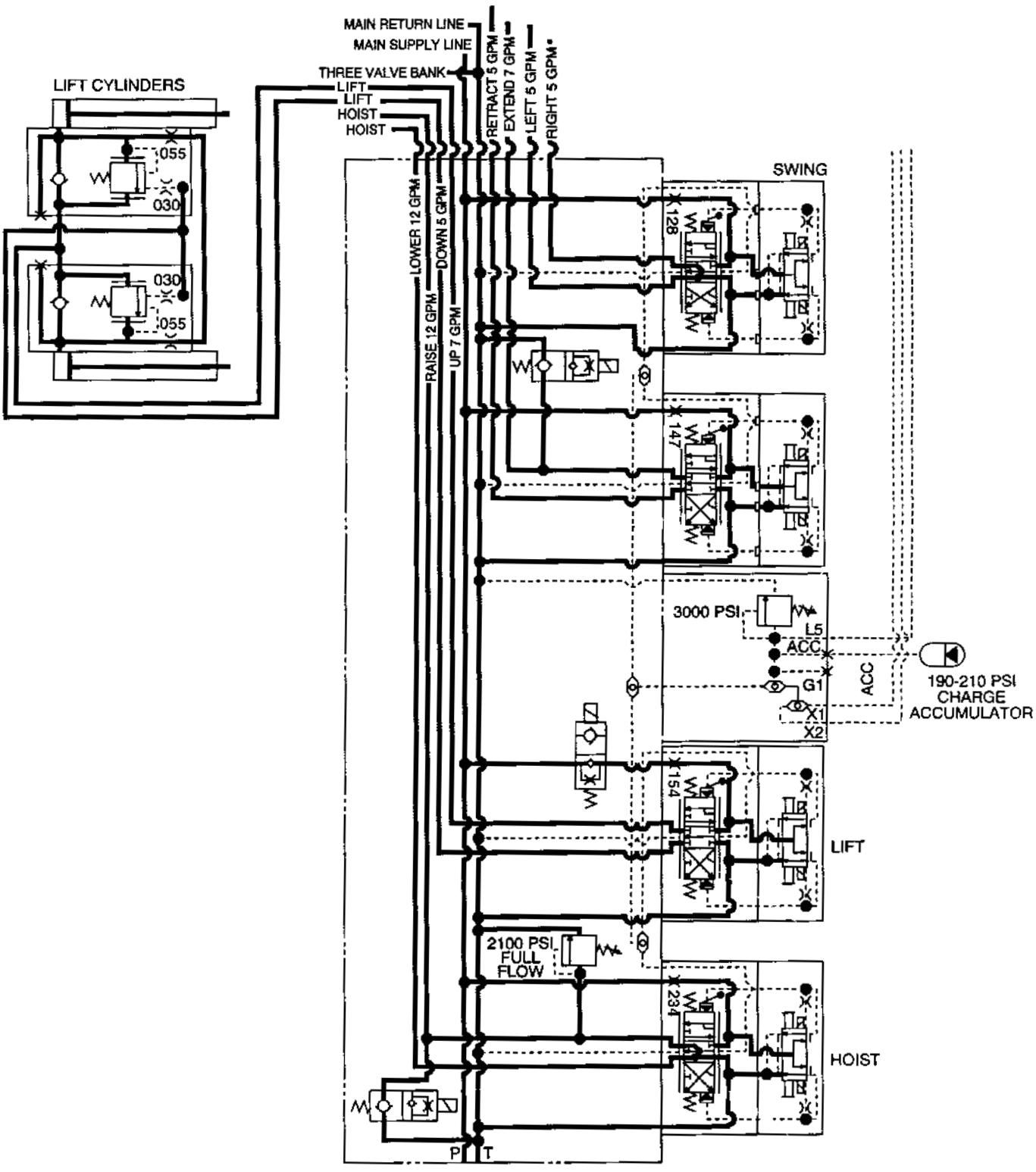


Figure 2-61. Crane Boom Hydraulic Diagram

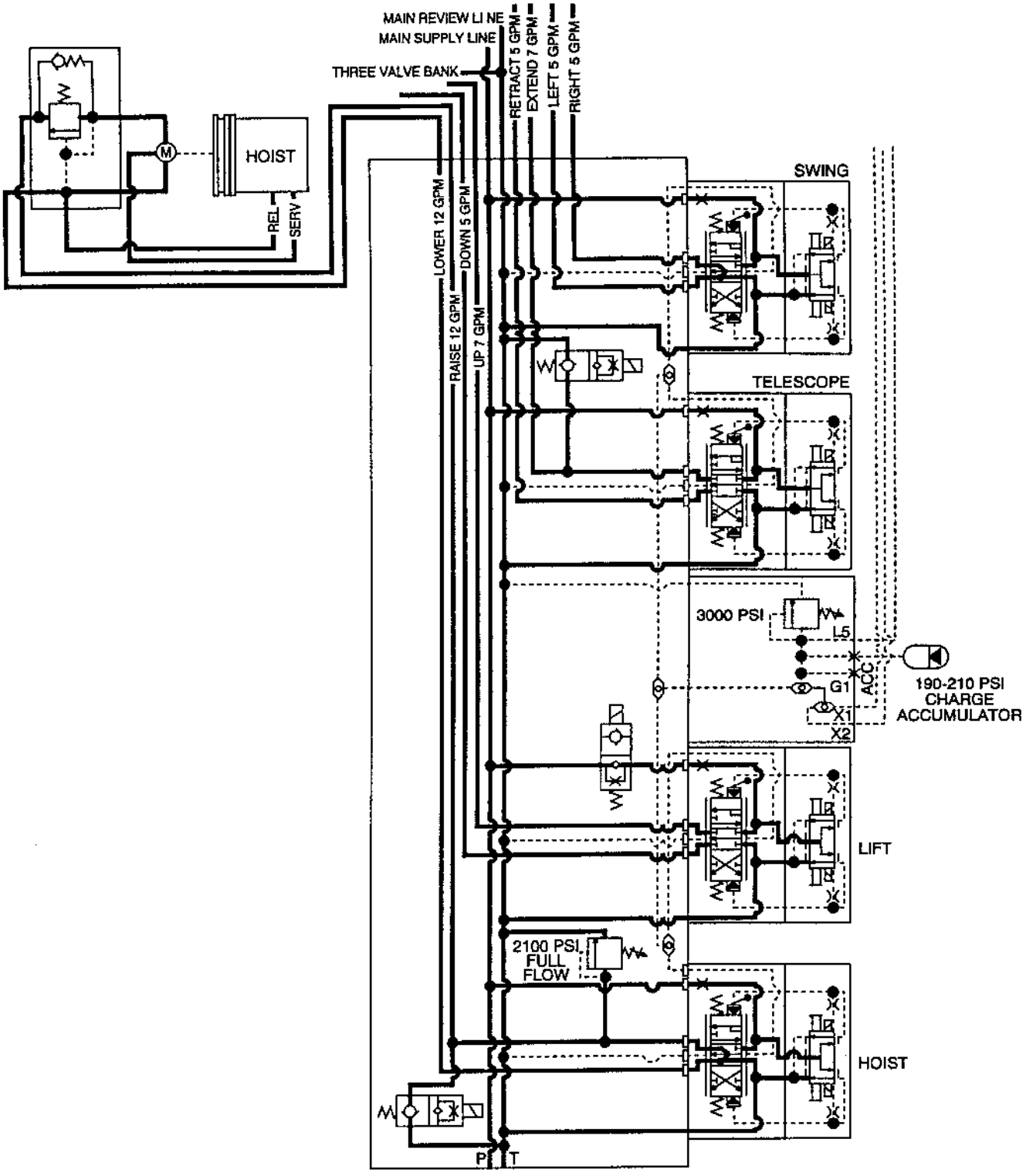


Figure 2-62. Crane Hoist Hydraulic Diagram

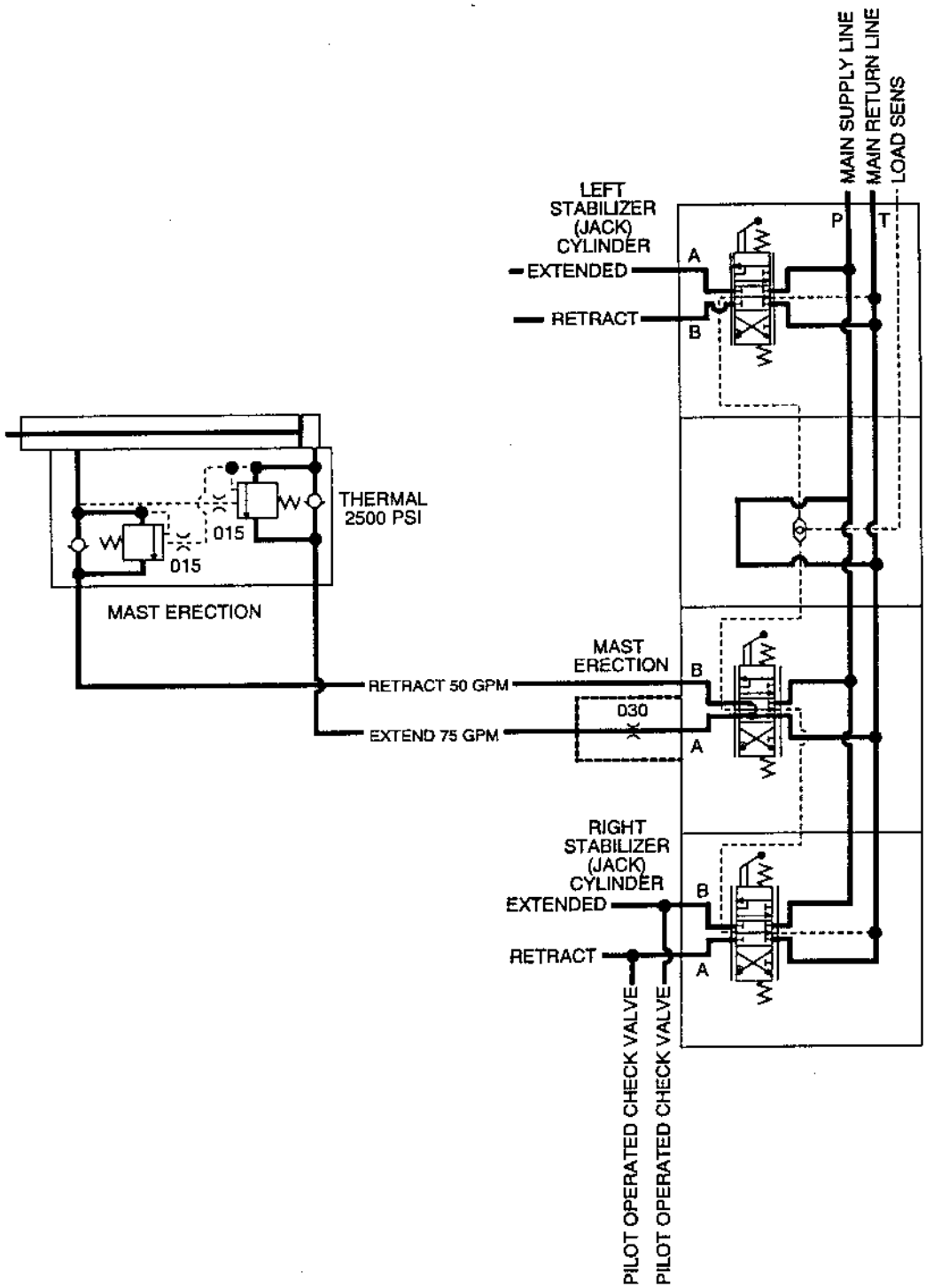


Figure 2-63. Crane Mast Hydraulic Diagram

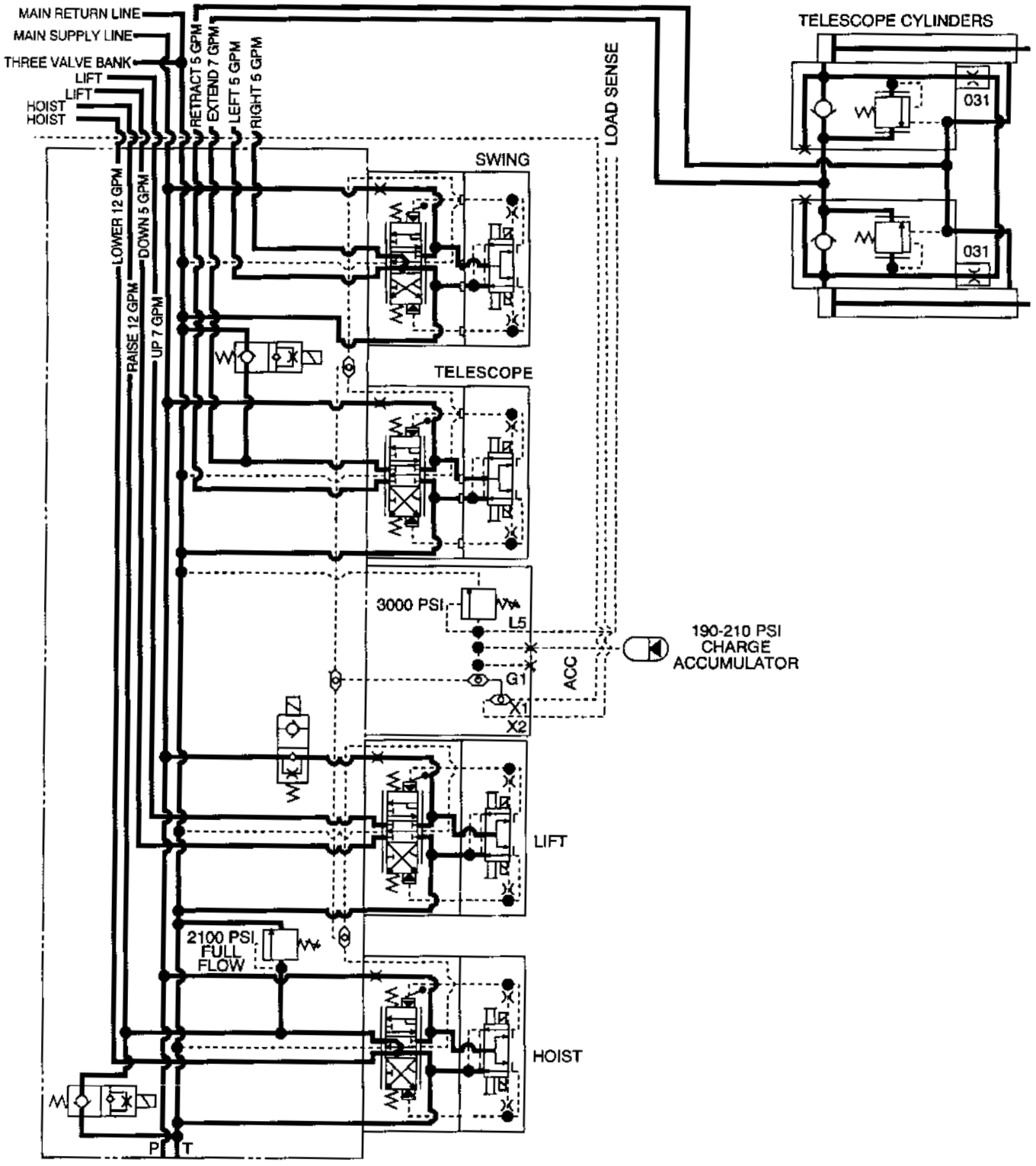


Figure 2-64. Crane Telescope Hydraulic Diagram

2-29. CRANE TROUBLESHOOTING (CONT).

1. NO CRANE FUNCTIONS WORK USING REMOTE CONTROL.

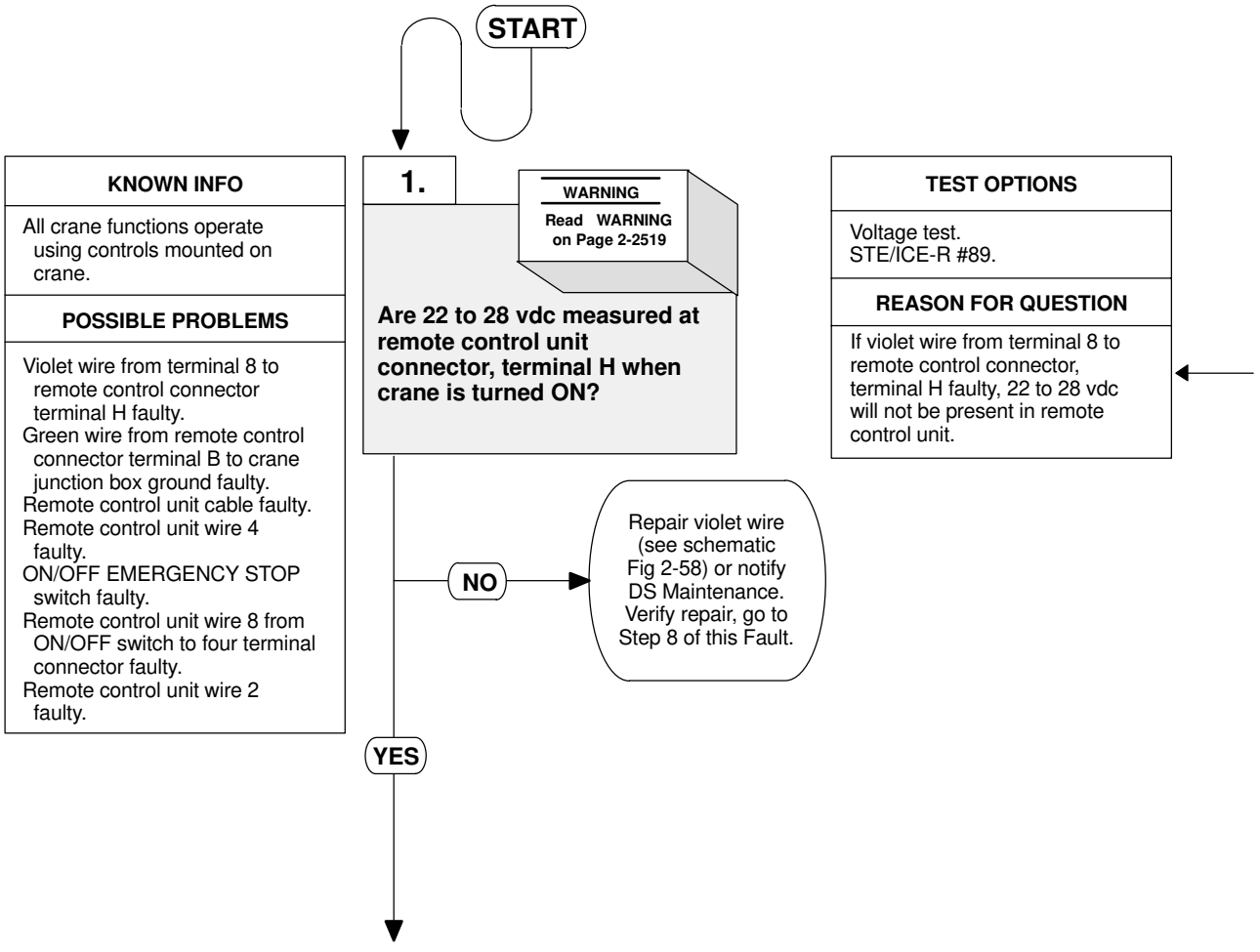
INITIAL SETUP

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

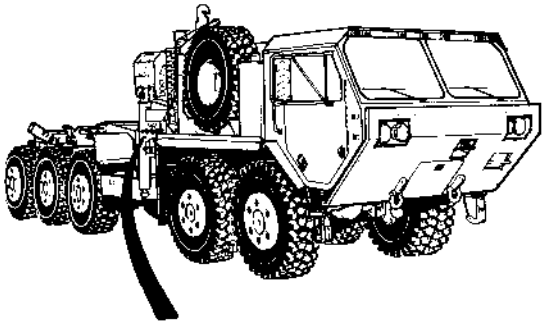
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)

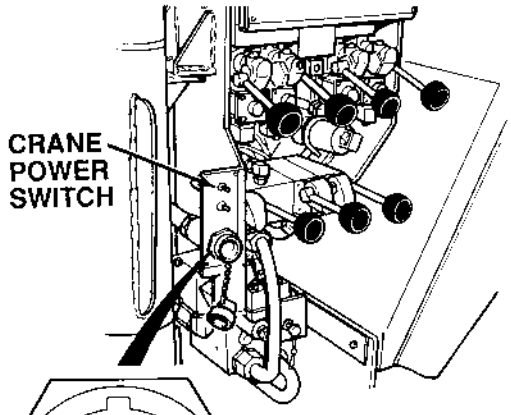
NOTE
Tag and mark all wires prior to removal.

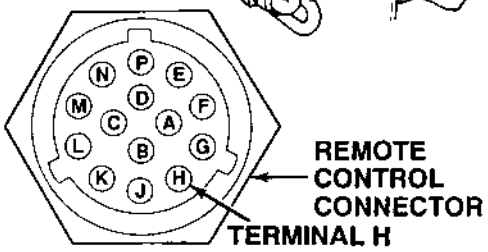


WARNING

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.

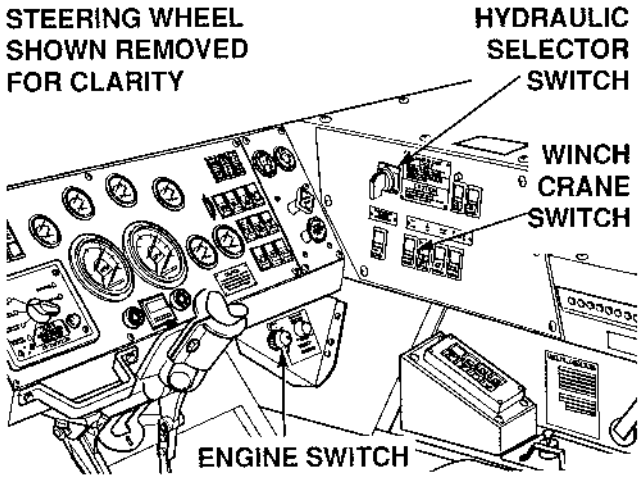




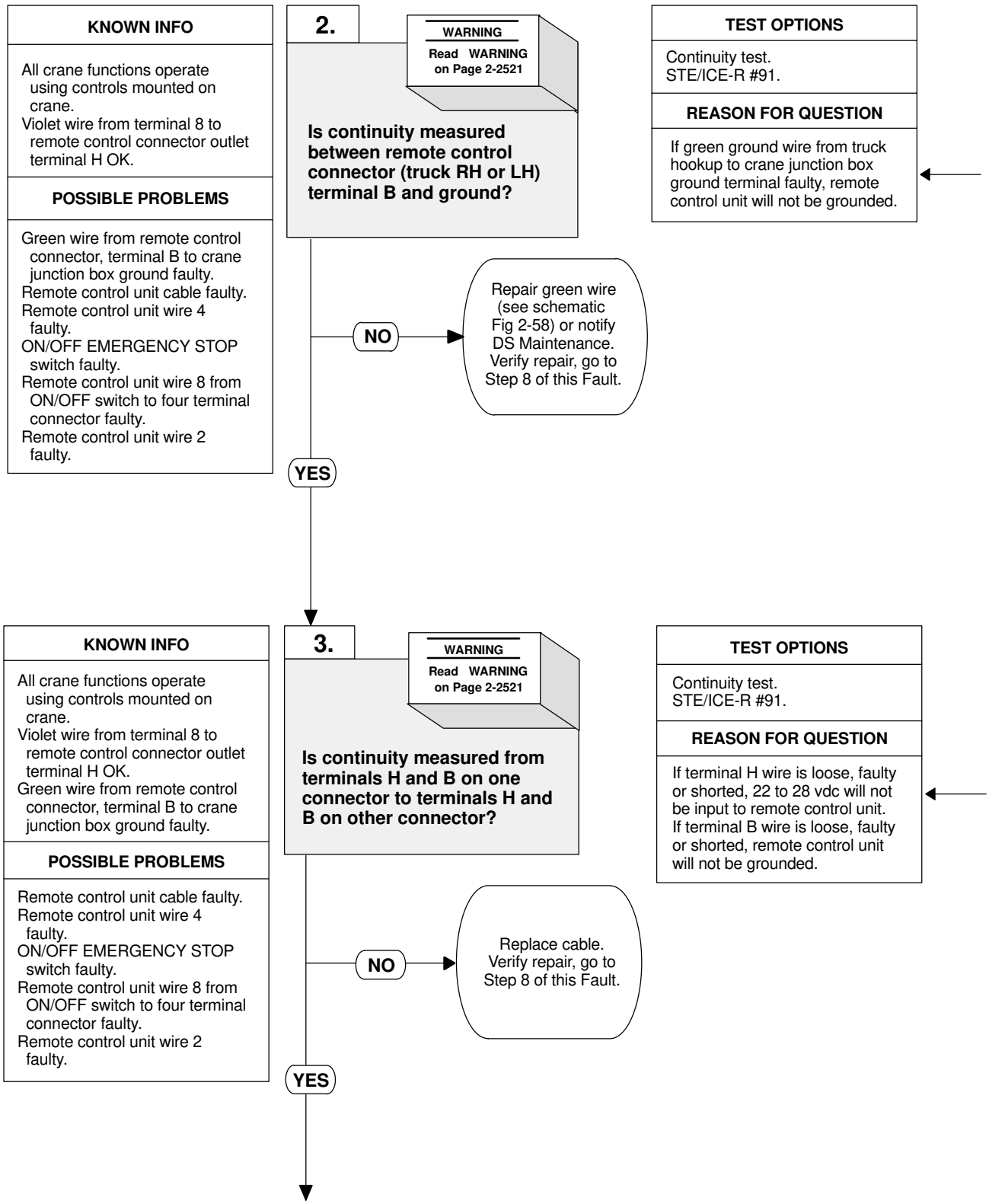


VOLTAGE TEST

(1) Disconnect remote control cable from truck remote control connector (TM 9-2320-364-10).
(2) Turn ON ENGINE switch.
(3) Put WINCH/CRANE switch in CRANE position.
(4) Put hydraulic selector switch in CRANE/SRW position.
(5) Turn ON crane POWER switch.
(6) Connect positive (+) multimeter lead to terminal H of LH or RH remote control connector outlet.
(7) Connect negative (–) multimeter lead to a known good ground.
  (a) If 22 to 28 vdc are not present, perform Step (8) below and repair violet wire (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 are vdc present, perform Step (8) below and go to Step 2 of this Fault.
(8) Put the following switches in the OFF position: crane POWER switch, hydraulic selector switch and ENGINE switch.



1. NO CRANE FUNCTIONS WORK USING REMOTE CONTROL (CONT).



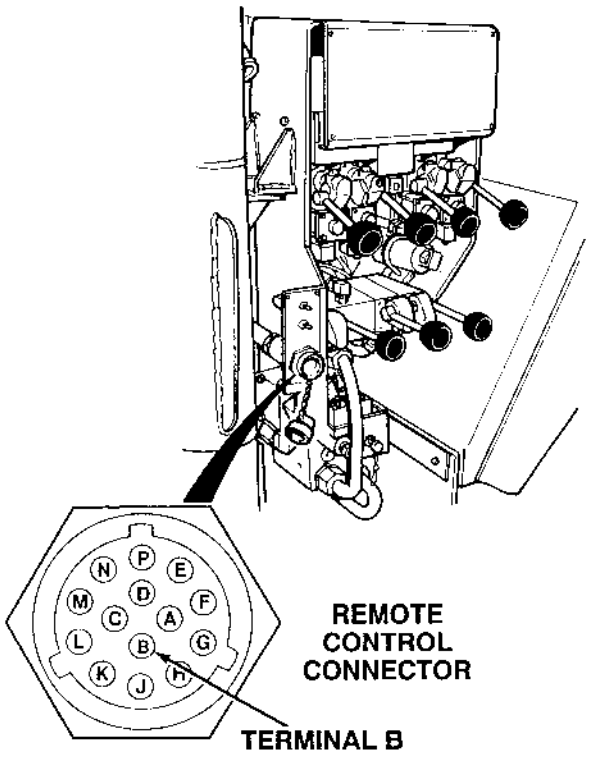
WARNING

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

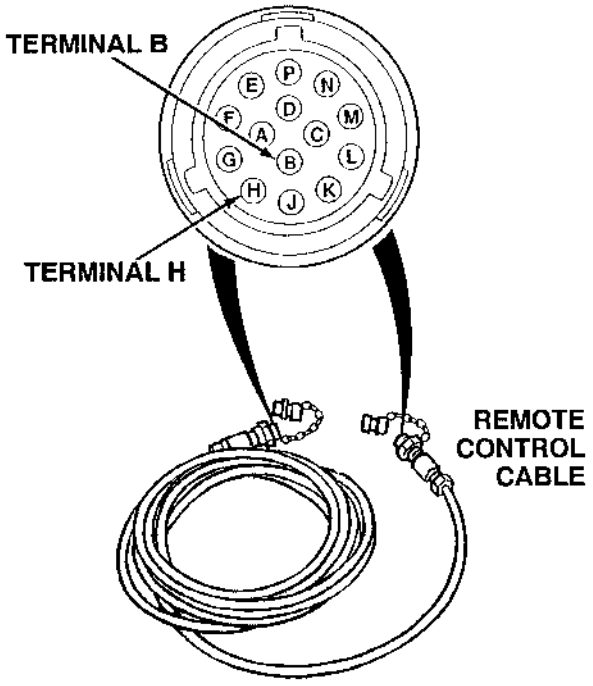
Is there continuity between remote control connector, terminal B and a known good ground?

(1) If there is no continuity, repair green wire between hookup and ground terminal strip in crane junction box (see schematic Fig 2-58) or notify DS Maintenance.
(2) If there is continuity, wire is OK.

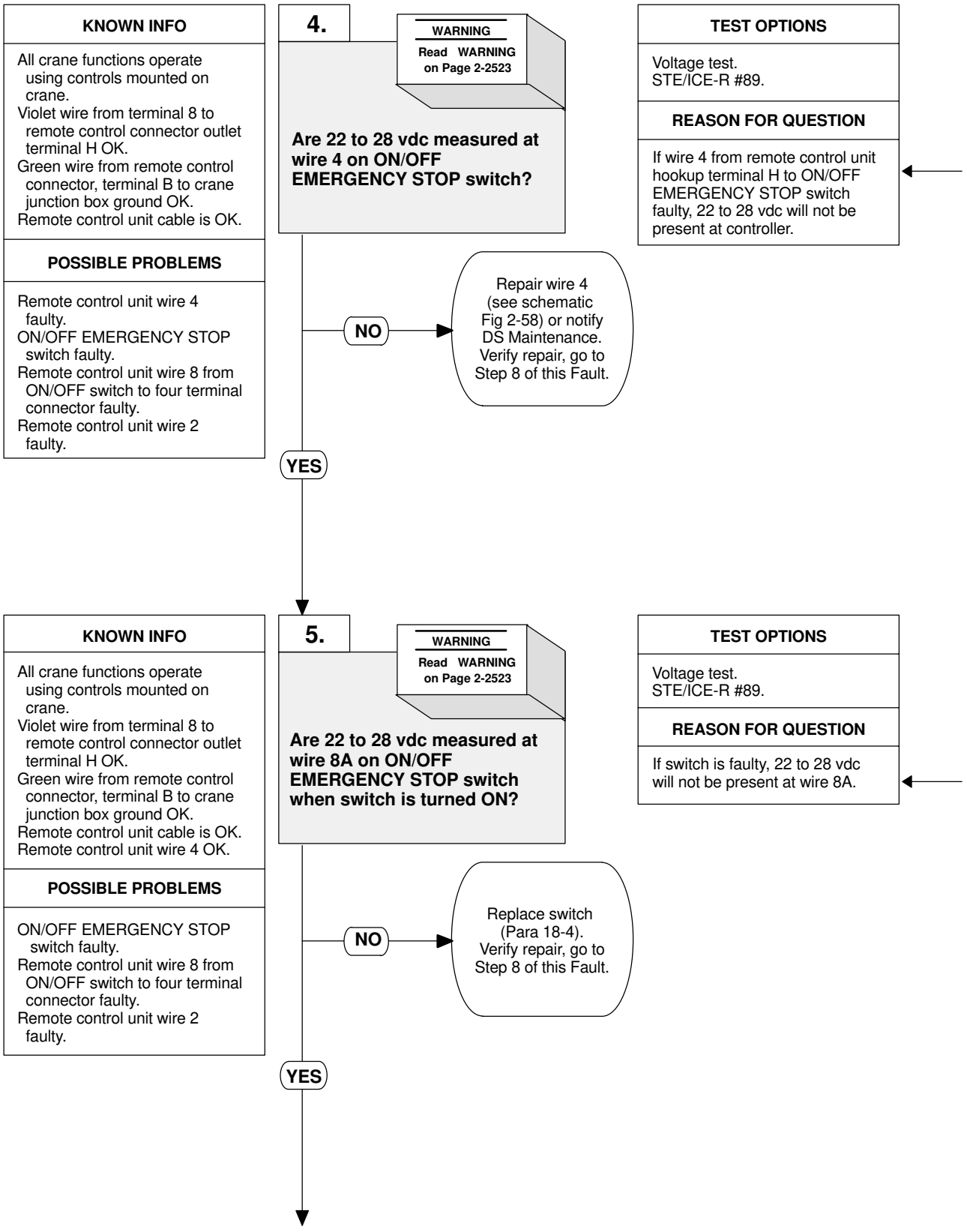


CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between terminal H at one end of cable and terminal H at other end?
    (a) If there is no continuity, replace cable.
    (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between terminal B at one end of cable and terminal B at other end?
    (a) If there is no continuity, replace cable.
    (b) If there is continuity, perform Step (4) below and go to Step 4 of this Fault.
(4) Connect remote control unit cable to truck hookup and remote control unit connector.



1. NO CRANE FUNCTIONS WORK USING REMOTE CONTROL (CONT).



WARNING

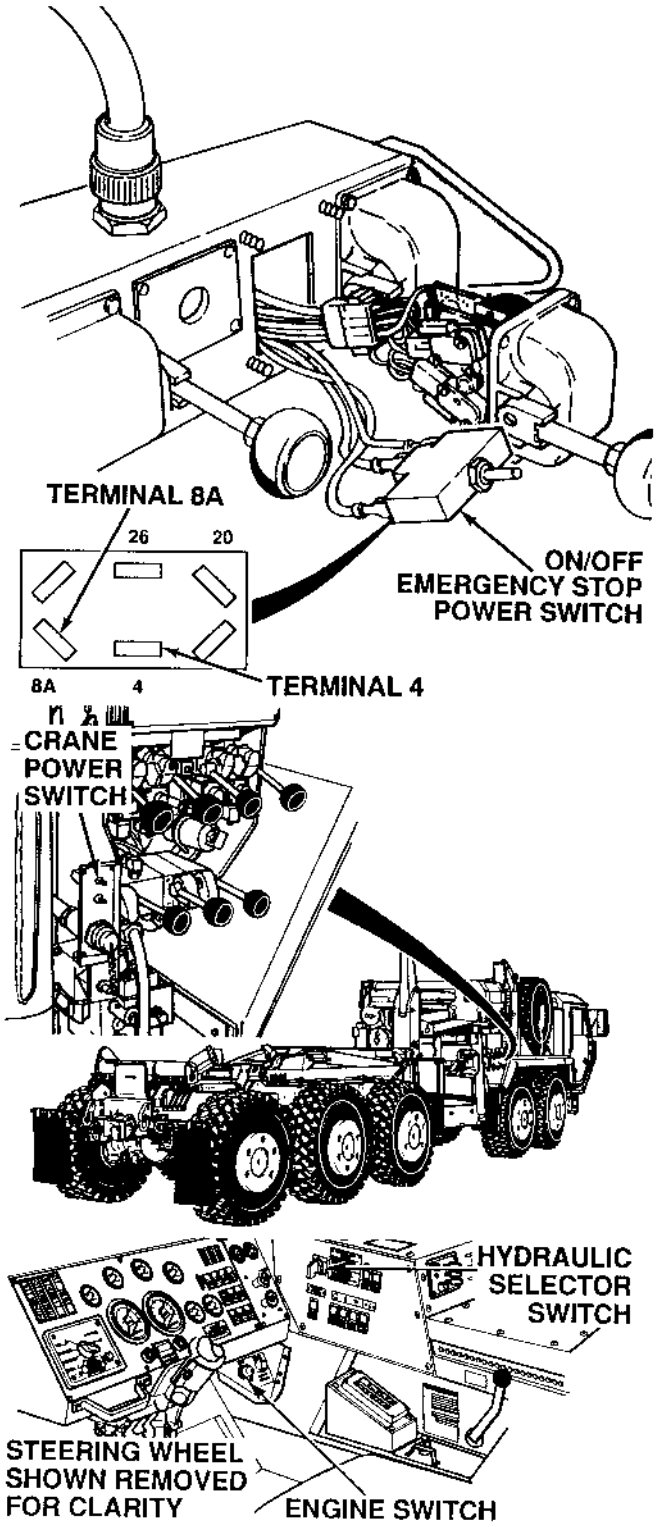
Remove all jewelry such as rings, dog tags, bracelets etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

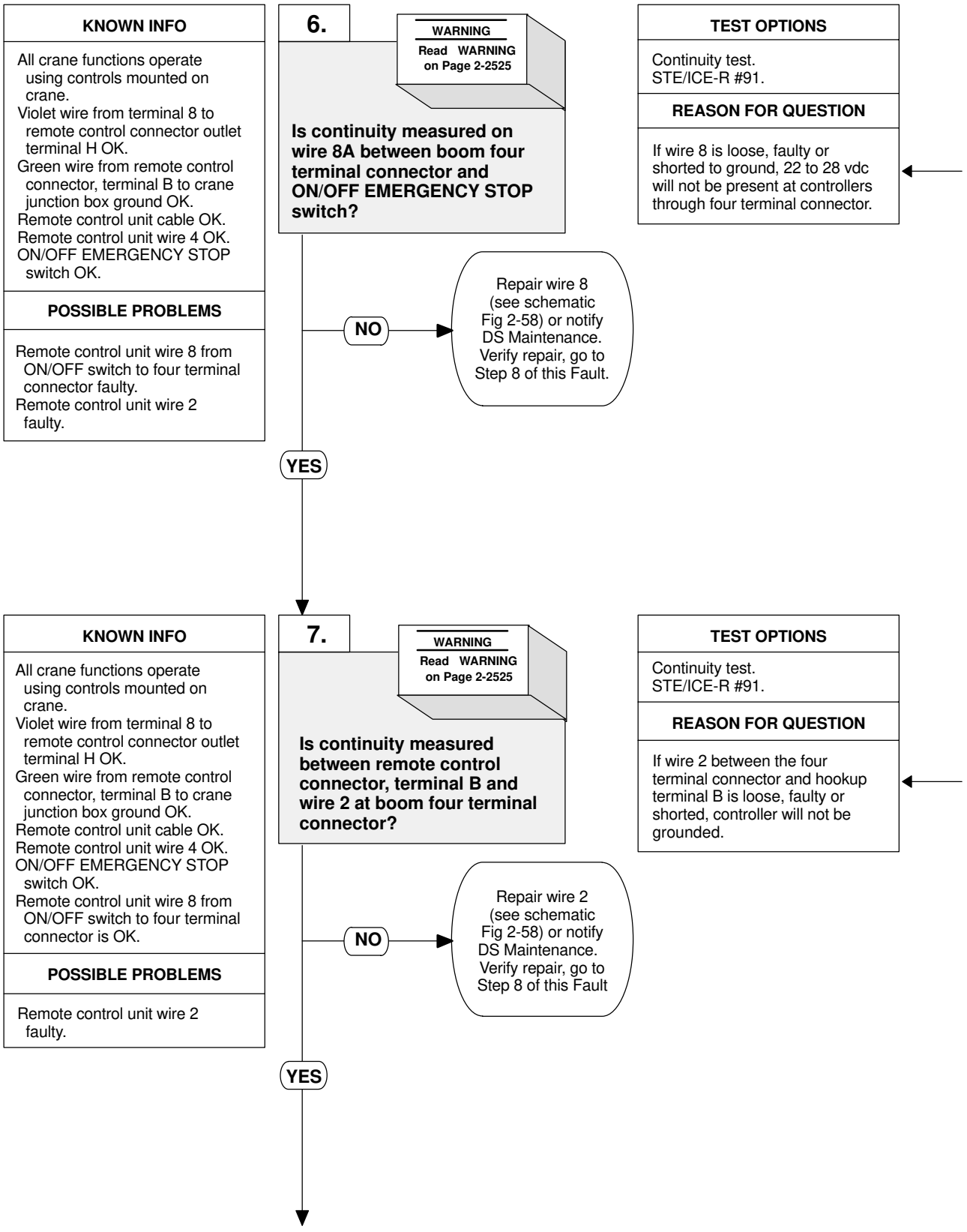
(1) Remove Boom controller and ON/OFF EMERGENCY STOP switch from remote control unit, but do not disconnect wires (Para 18-4).
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to terminal 4 on ON/OFF EMERGENCY STOP switch.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Put hydraulic selector switch in CRANE/SRW position.
(7) Turn ON crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Step (8) below and repair wire 4 from remote control unit hookup terminal H to ON/OFF EMERGENCY STOP switch (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 -28 vdc are present, perform Step (8) below and go to Step 5 of this Fault.
(8) Put following switches in OFF position: crane POWER switch, hydraulic selector switch and ENGINE switch.

VOLTAGE TEST

(1) Connect positive (+) multimeter lead to terminal 8A where connected to ON/OFF EMERGENCY STOP switch.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Put hydraulic selector switch in CRANE/SRW position.
(5) Turn ON crane POWER switch.
(6) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
  (a) If 22 to 28 vdc are not present, perform Step (7) below and replace switch (Para 18-4).
  (b) If 22 to 28 vdc are present, perform Step (7) below and go to Step 6 of this Fault.
(7) Put following switches in OFF position: crane POWER switch, hydraulic selector switch and ENGINE switch.



1. NO CRANE FUNCTIONS WORK USING REMOTE CONTROL (CONT).

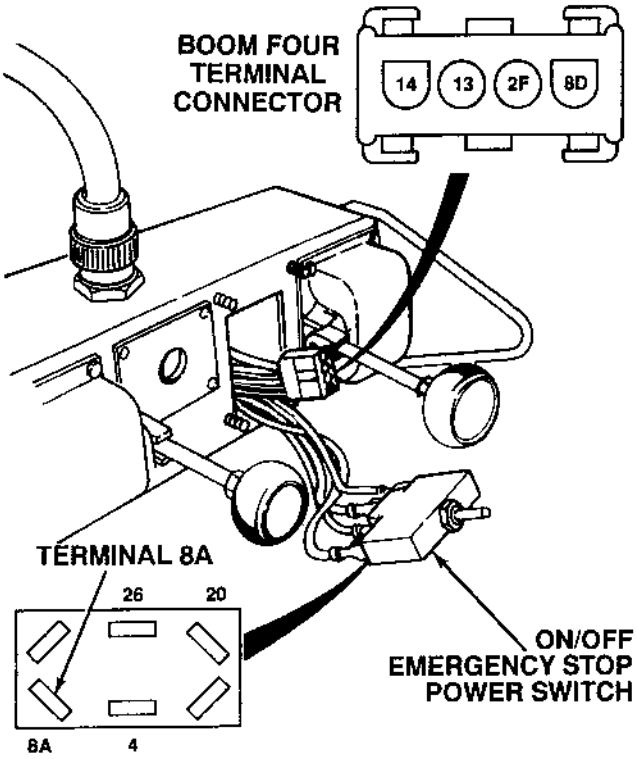


WARNING

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 result.

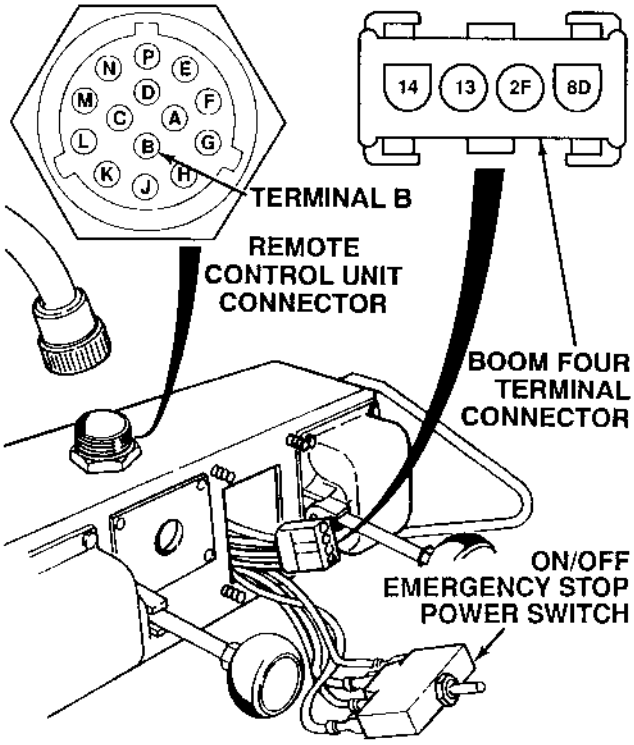
CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between ON/OFF EMERGENCY STOP switch, terminal 8A and Boom four terminal connector, terminal 8D?
  (a) If there is no continuity, repair wire 8 between switch and BOOM four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, wire 8 is OK.

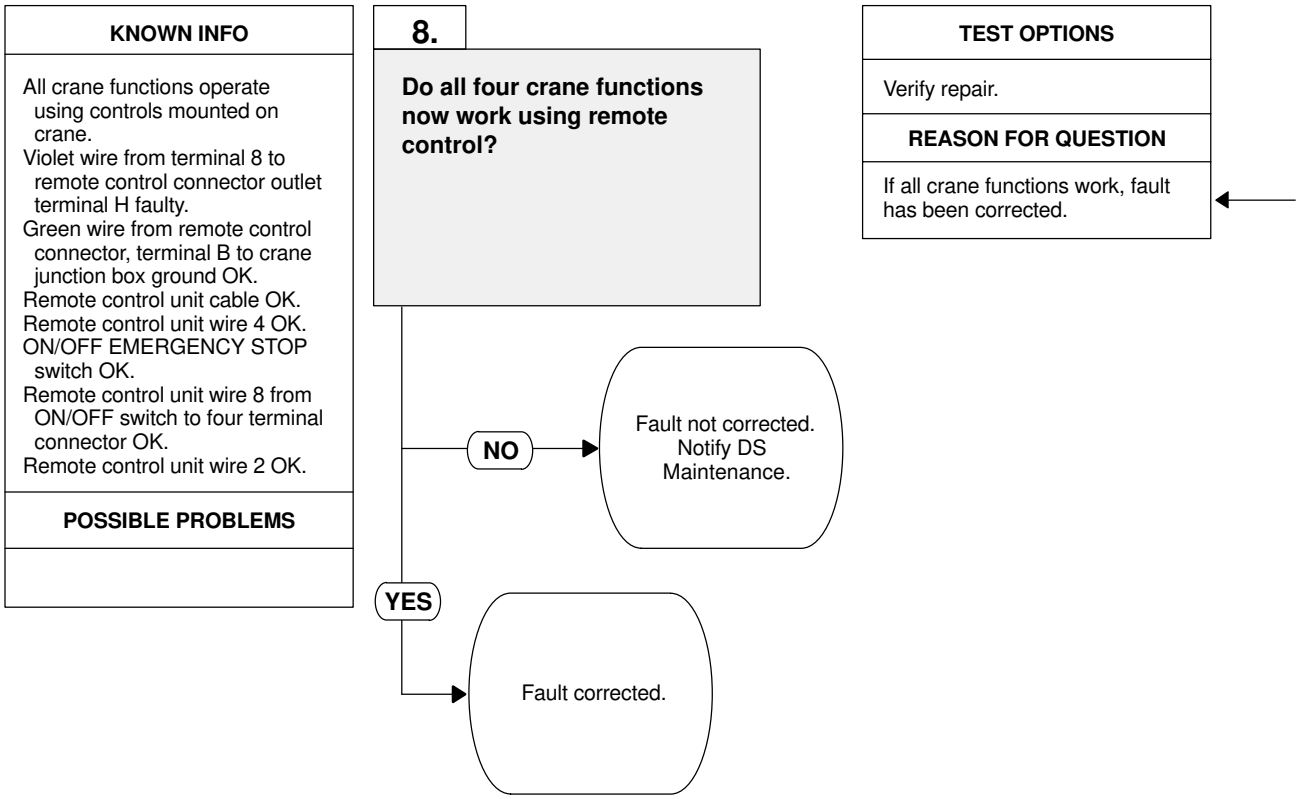


CONTINUITY TEST

(1) Disconnect remote control unit cable (TM 9-2320-364-10).
(2) Is there continuity between remote control unit hookup, terminal B and four terminal connector, terminal 2F?
  (a) If there is no continuity, repair wire 2 between hookup and connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, perform Steps (3) through (5) below and go to Step 8 of this Fault.
(3) Install ON/OFF EMERGENCY STOP switch (Para 18-4).
(4) Install controller (Para 18-4).
(5) Install boom controller (Para 18-4).

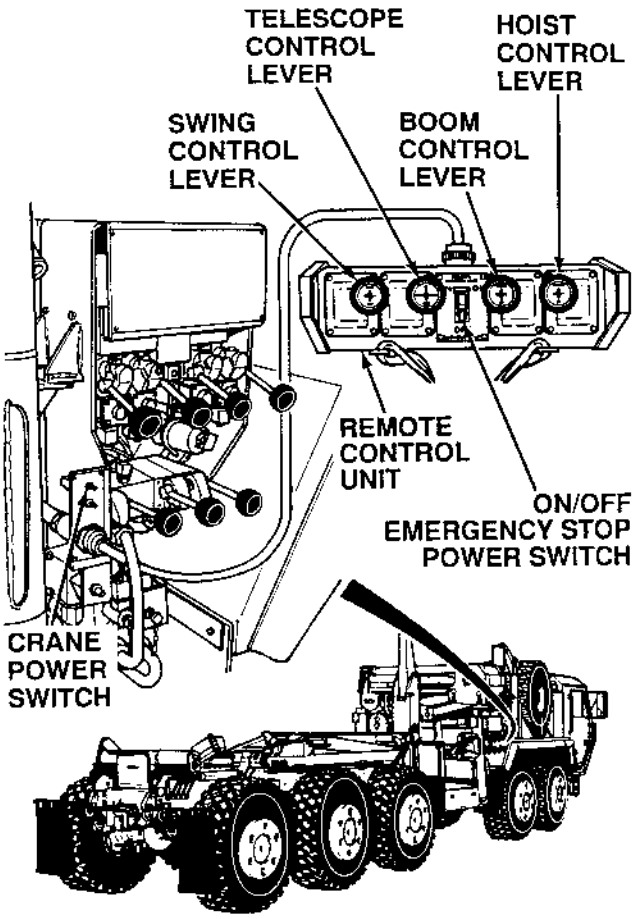


1. NO CRANE FUNCTIONS WORK USING REMOTE CONTROL (CONT).



VERIFY REPAIR

(1) Connect remote control unit cable to truck hookup and remote control connector (TM 9-2320-364-10).
(2) Operate crane using remote control unit.
    (a) If no crane functions work, fault not corrected. Notify DS Maintenance.
    (b) If all crane functions work, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT.

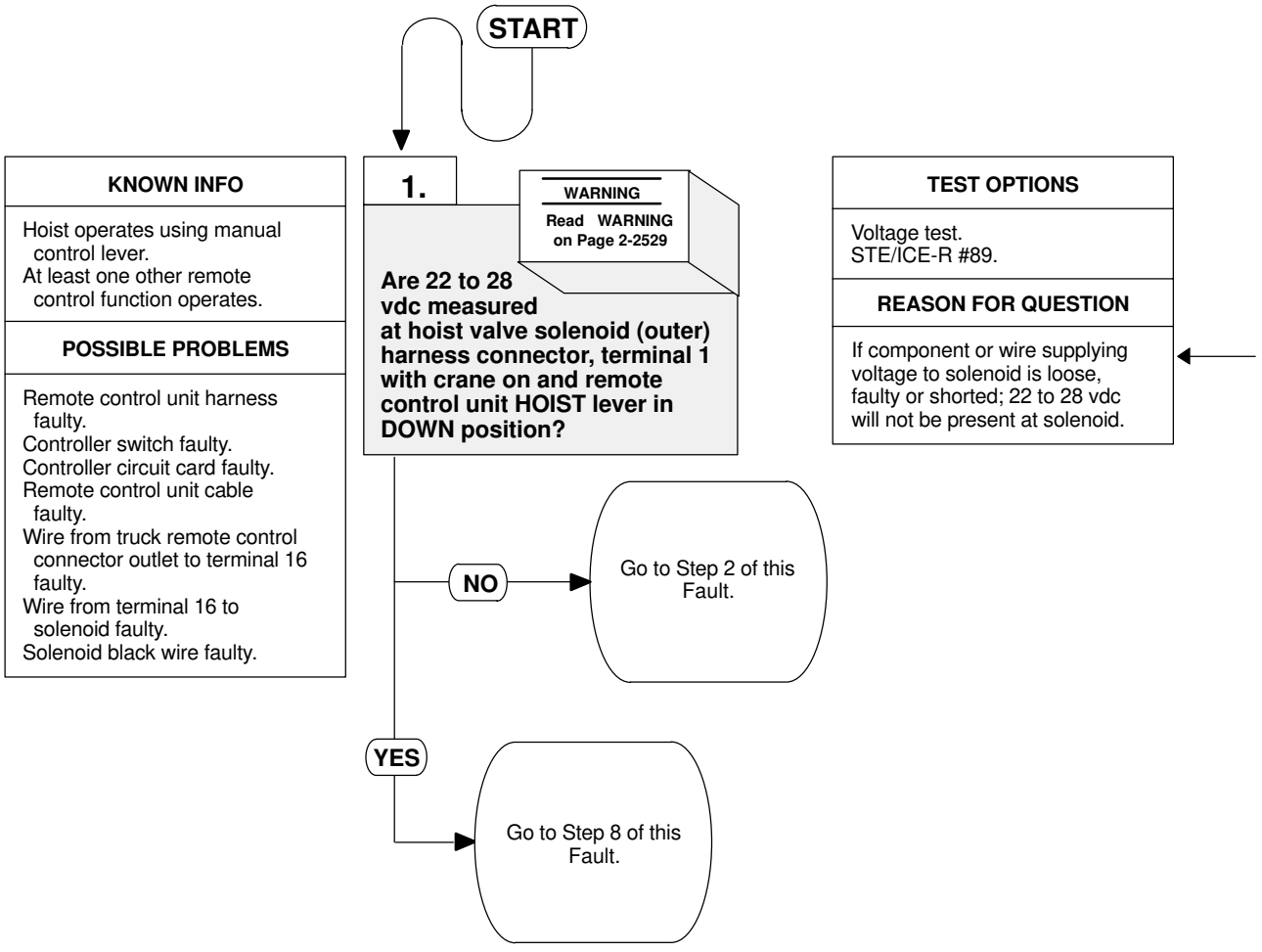
INITIAL SETUP

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 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)

NOTE
This problem can occur at the right or left hand remote control connector. Only the right hand connector is illustrated.

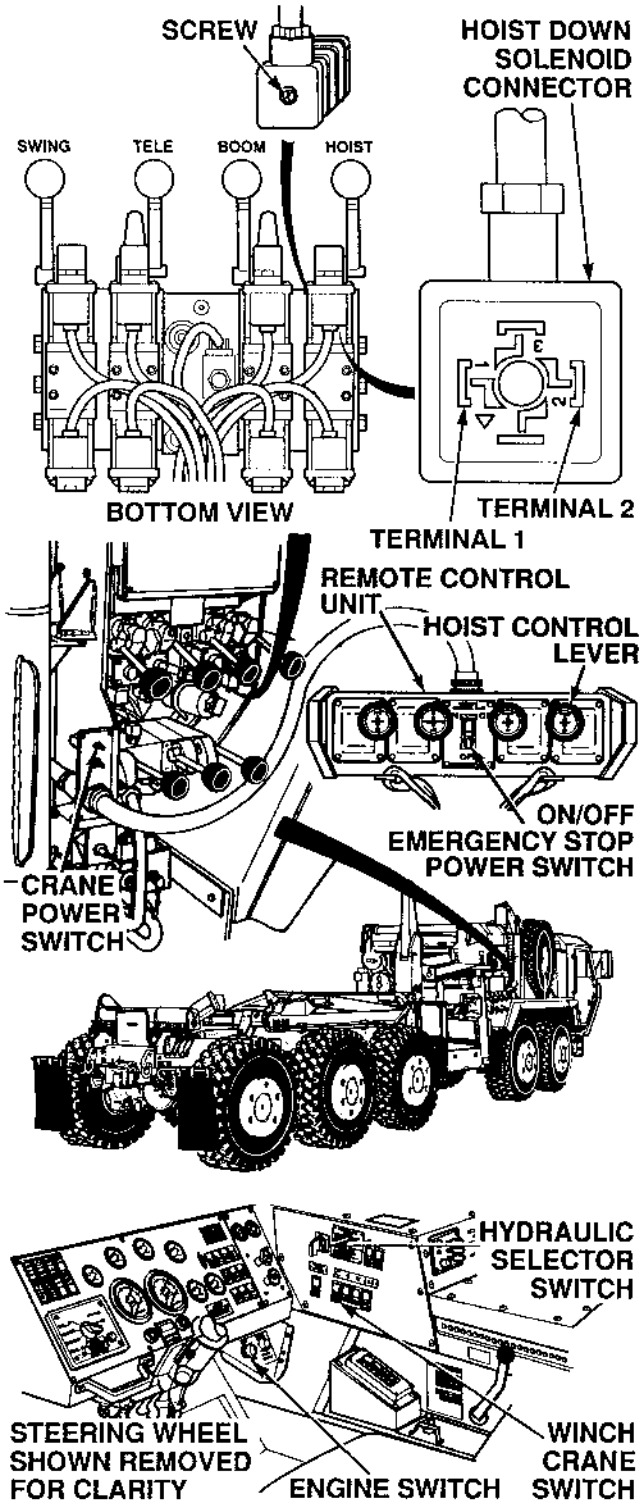


WARNING

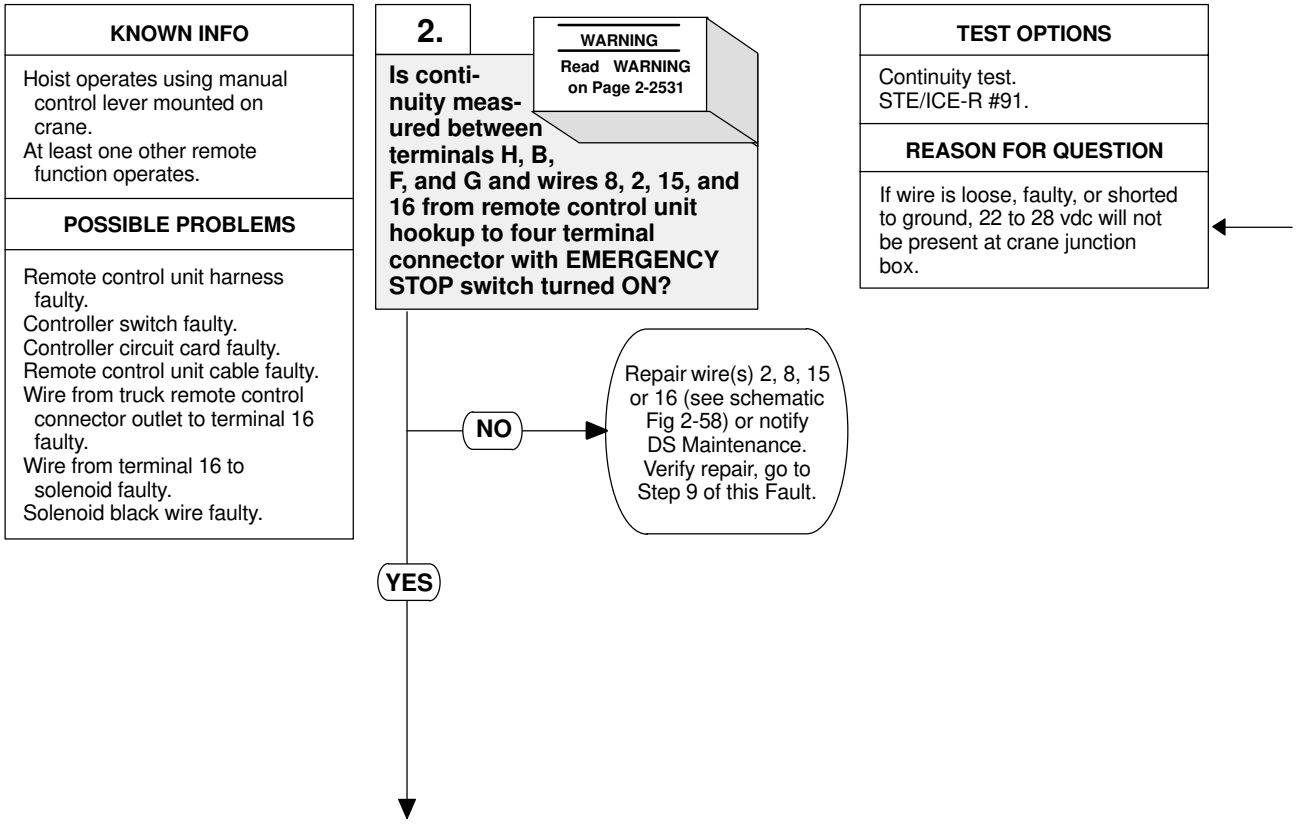
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen screw and remove connector from hoist DOWN solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP POWER switch to ON position.
(10) Hold remote control unit hoist controller in DOWN position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Put the following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

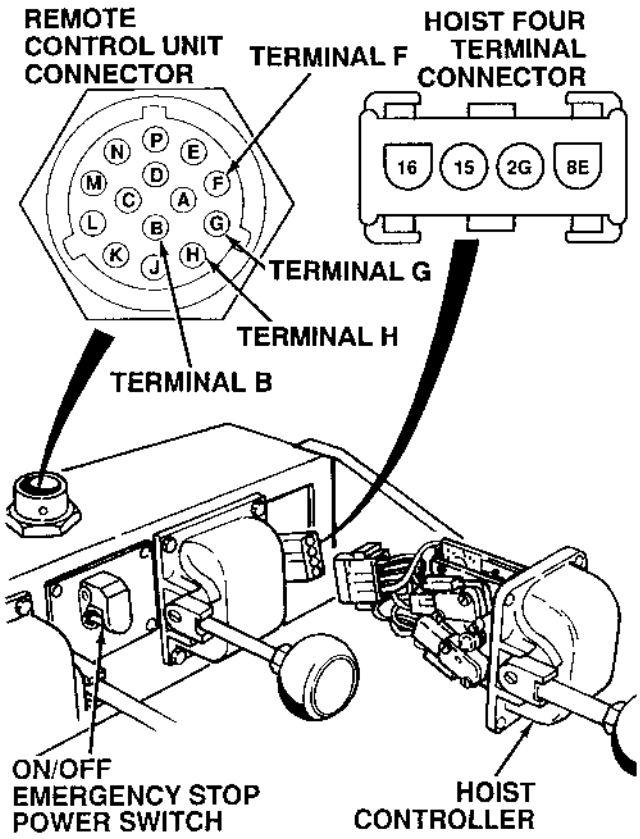


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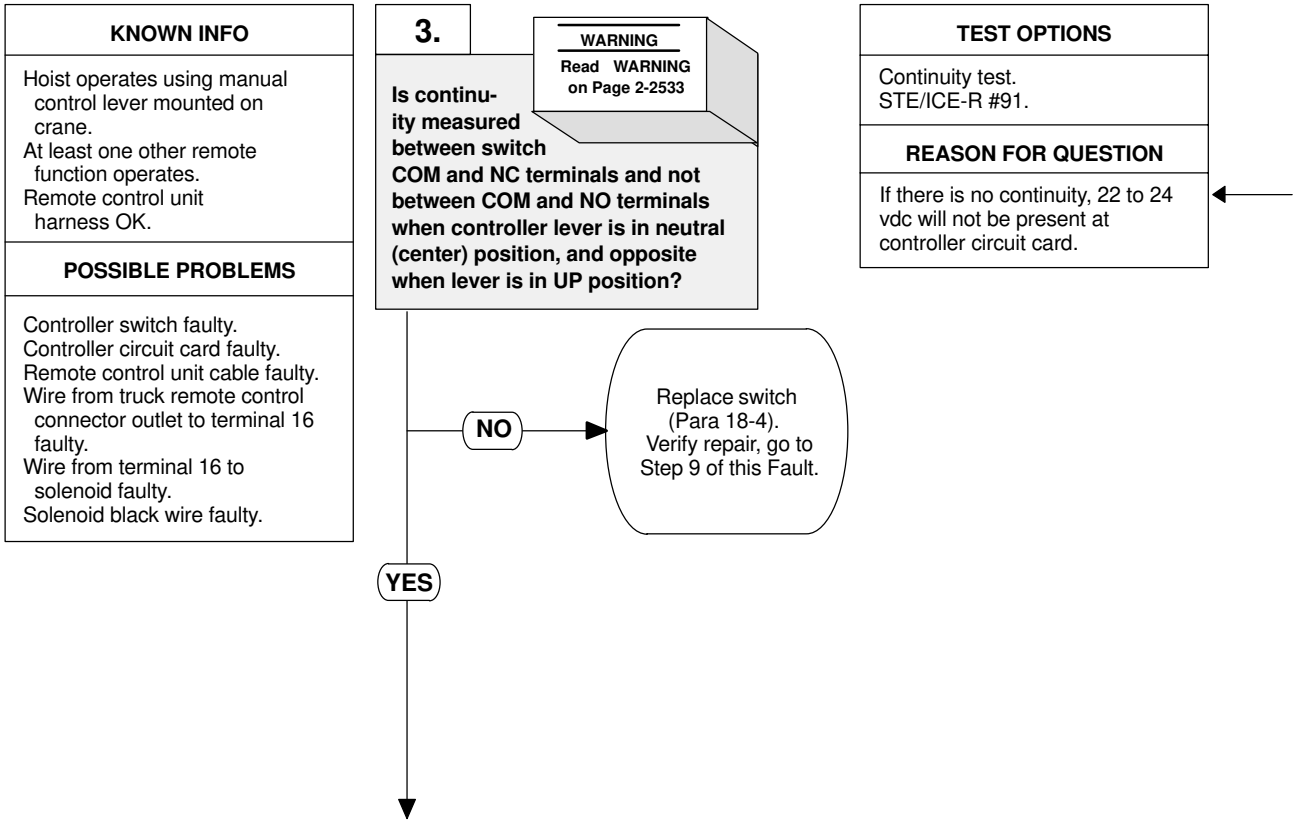
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove HOIST controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity between remote control unit hookup, terminal H and four terminal connector, terminal 8E?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit hookup, terminal B and four terminal connector, terminal 2G?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit hookup, terminal F and four terminal connector, terminal 15?
  (a) If there is no continuity, repair wire 15 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit hookup, terminal G and four terminal connector, terminal 16?
  (a) If there is no continuity, repair wire 16 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this Fault.



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

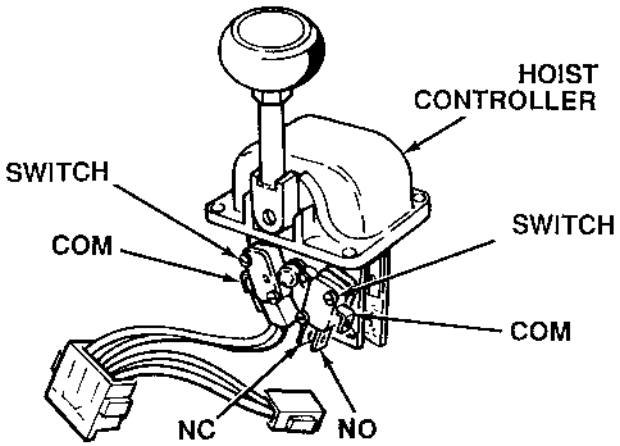


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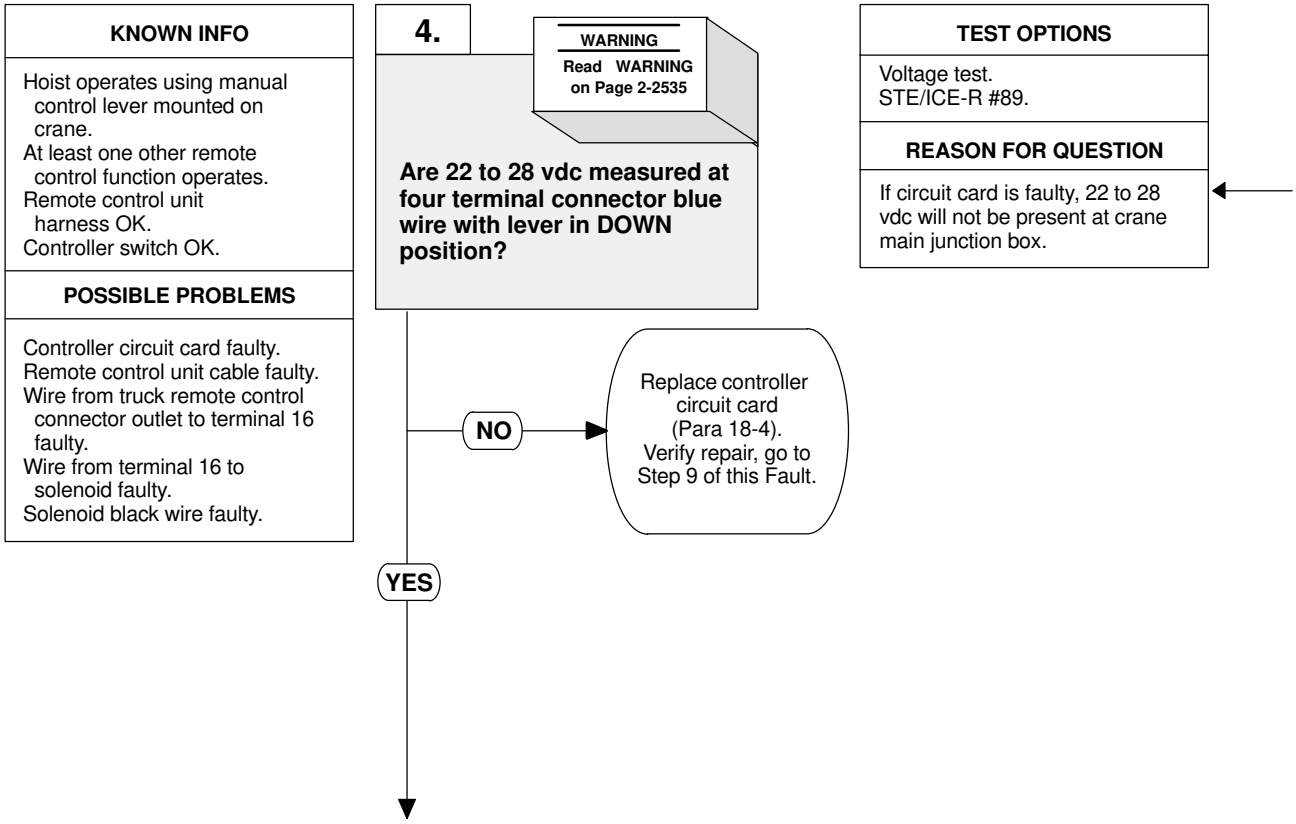
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in UP position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in UP position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (6) below.
(6) Repeat Steps (1) through (5) for other switch.
(7) Install both connectors on switches.



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

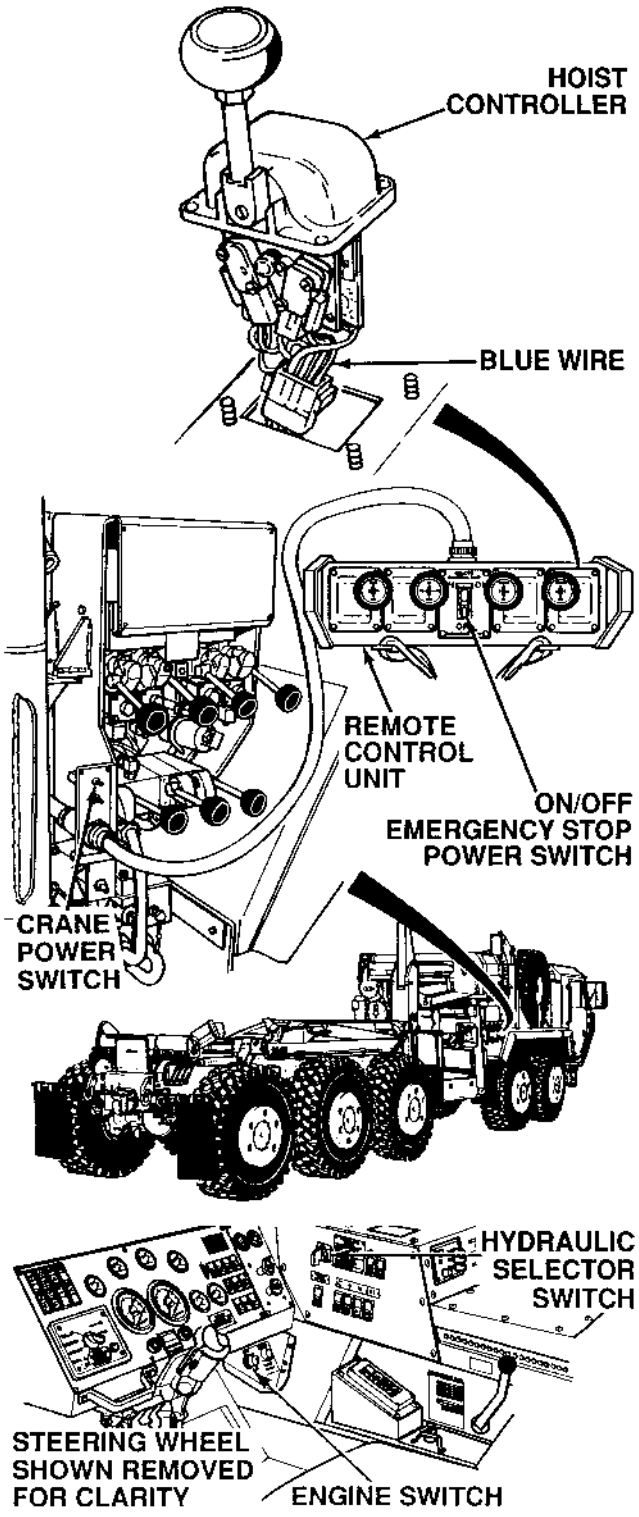


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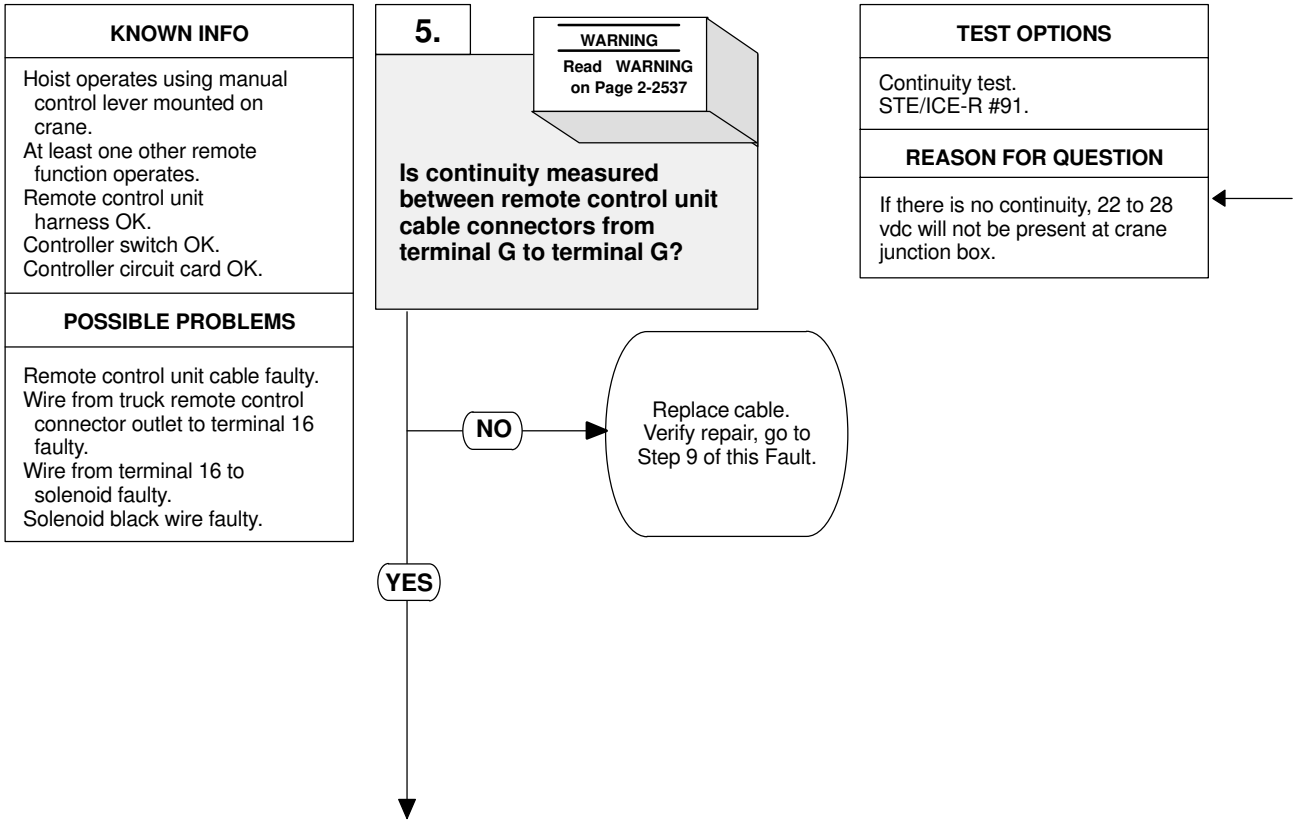
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable.
(2) Connect controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive lead to blue wire terminal.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP POWER switch to ON position.
(10) Hold HOIST controller in DOWN position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, perform Steps (11) and (12) below and go to Step 5 of this Fault.
(11) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.
(12) Assemble remote control unit (Para 18-4).



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

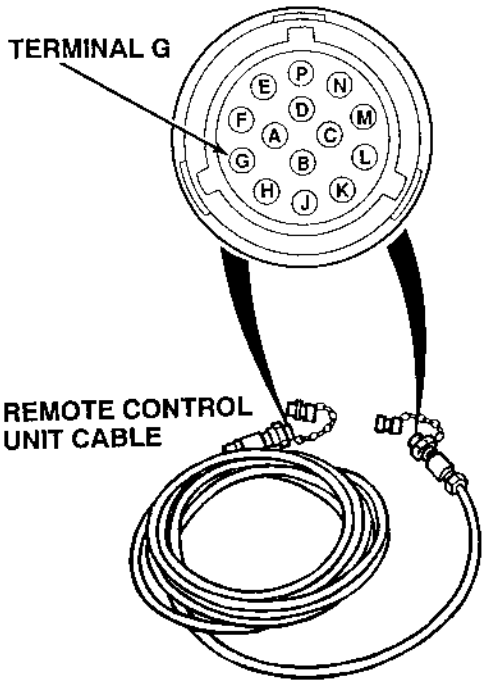


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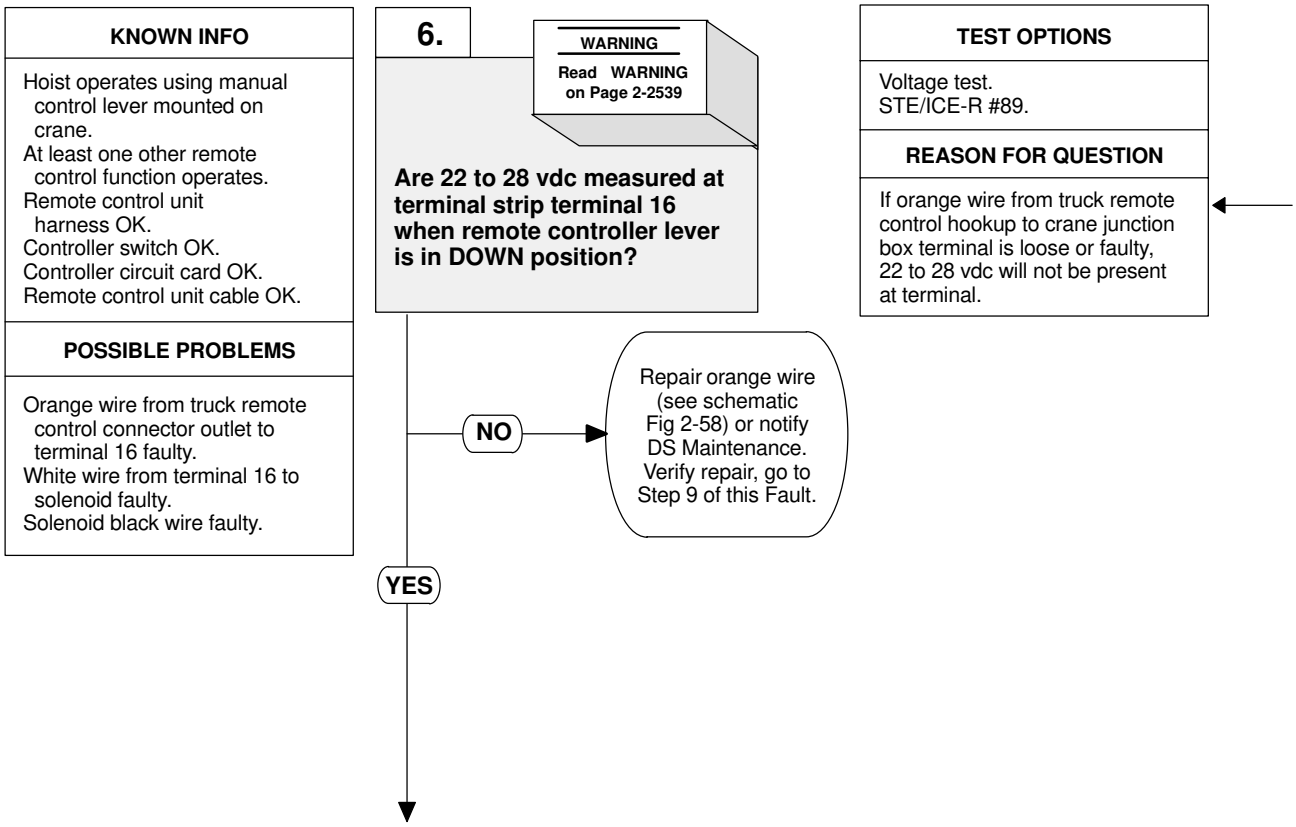
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal G at both ends?
   (a) If there is no continuity, replace cable and perform Step (4) below. Go to Step 9 of this Fault.
   (b) If there is continuity, perform Step (4) below and go to Step 6 of this Fault.
(4) Reconnect cable to truck hookup and remote control unit hookup.



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

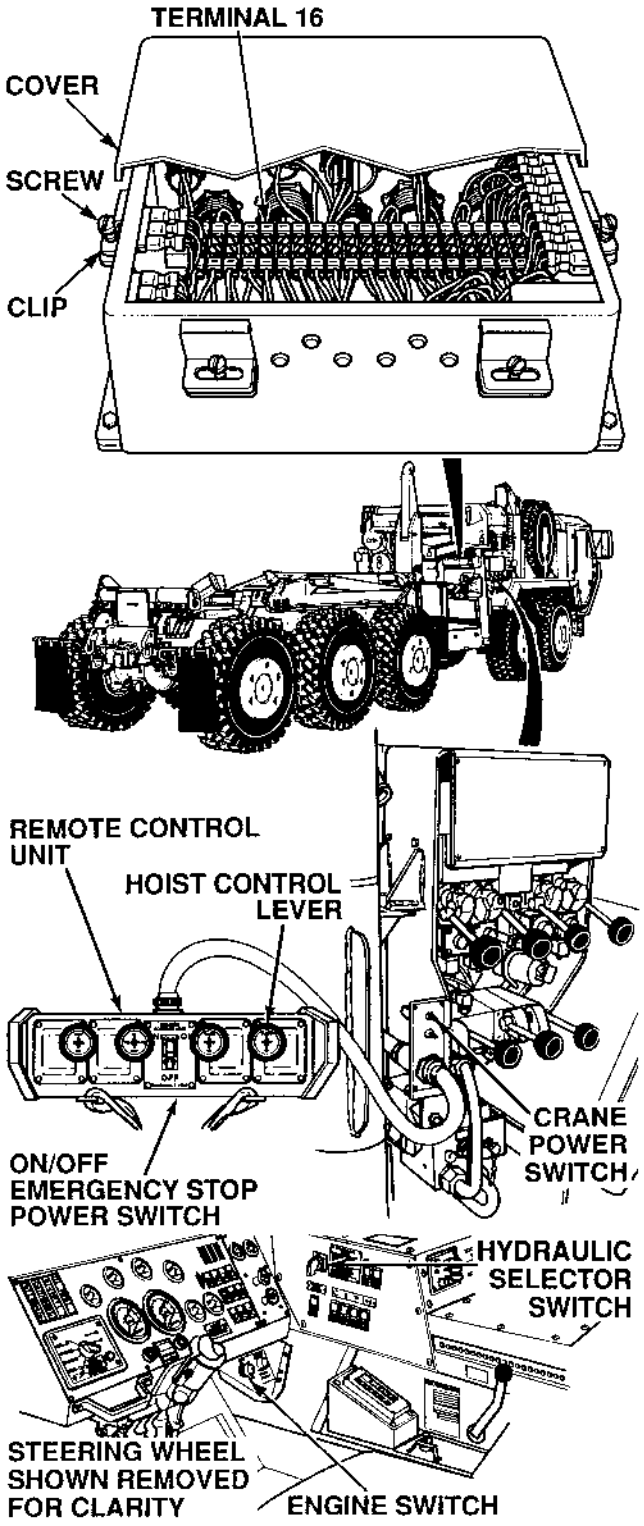


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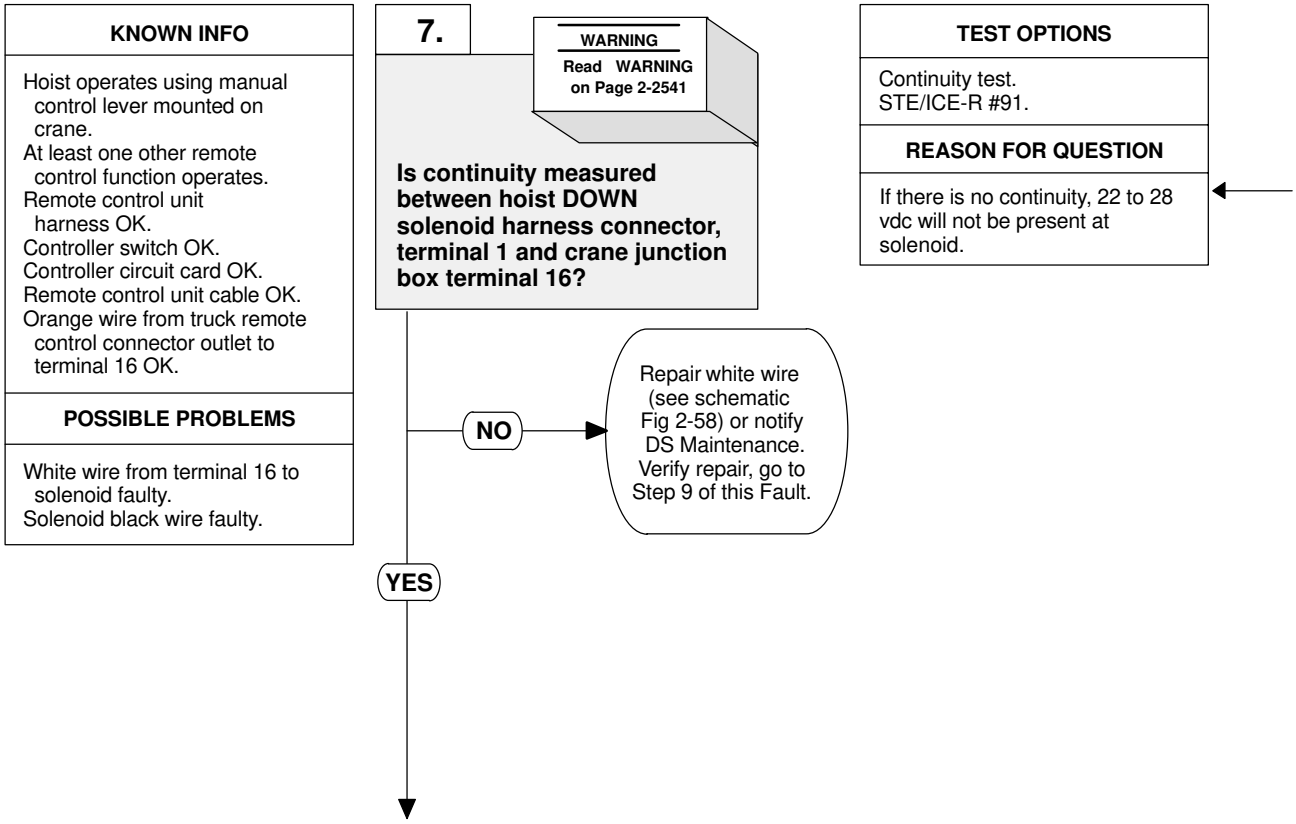
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box terminal 16.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to CRANE/SRW position.
(7) Set crane switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit HOIST control lever in the DOWN position.
    (a) If 22 to 28 vdc are not present, perform Step (10) below and repair orange wire from truck remote control hookup to terminal 16 (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

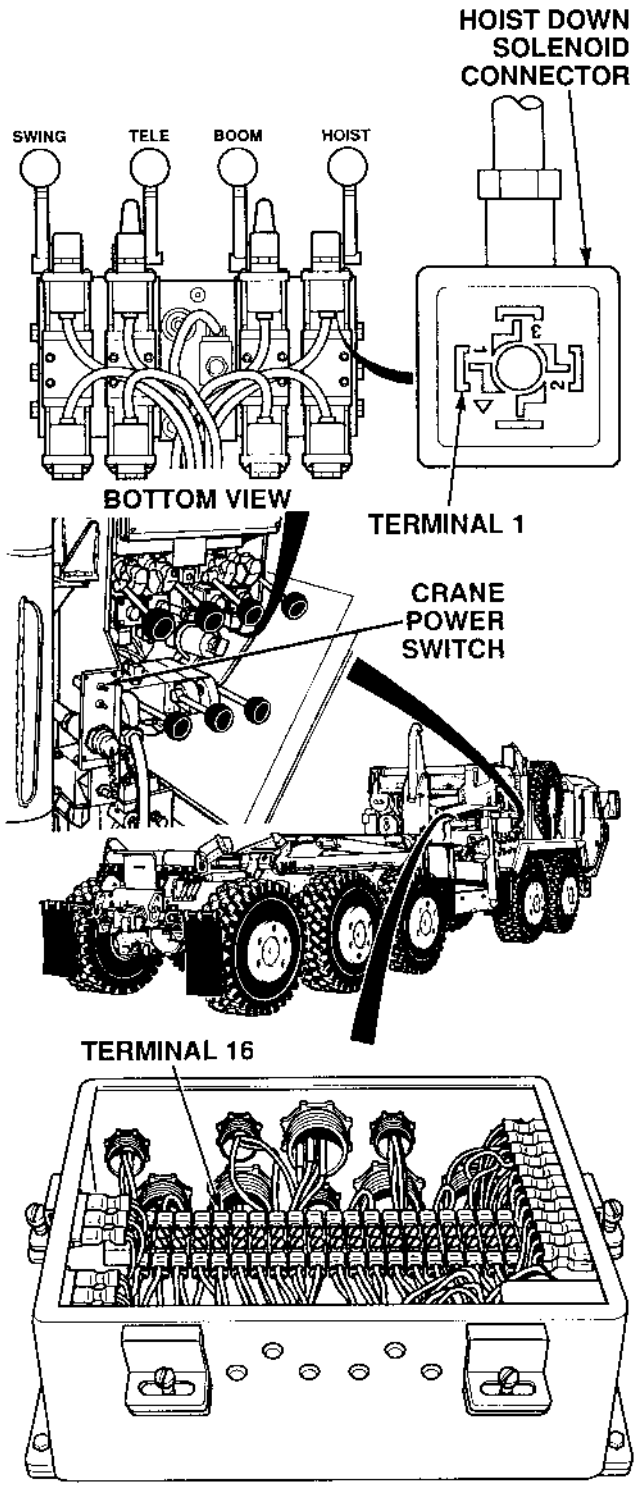


WARNING

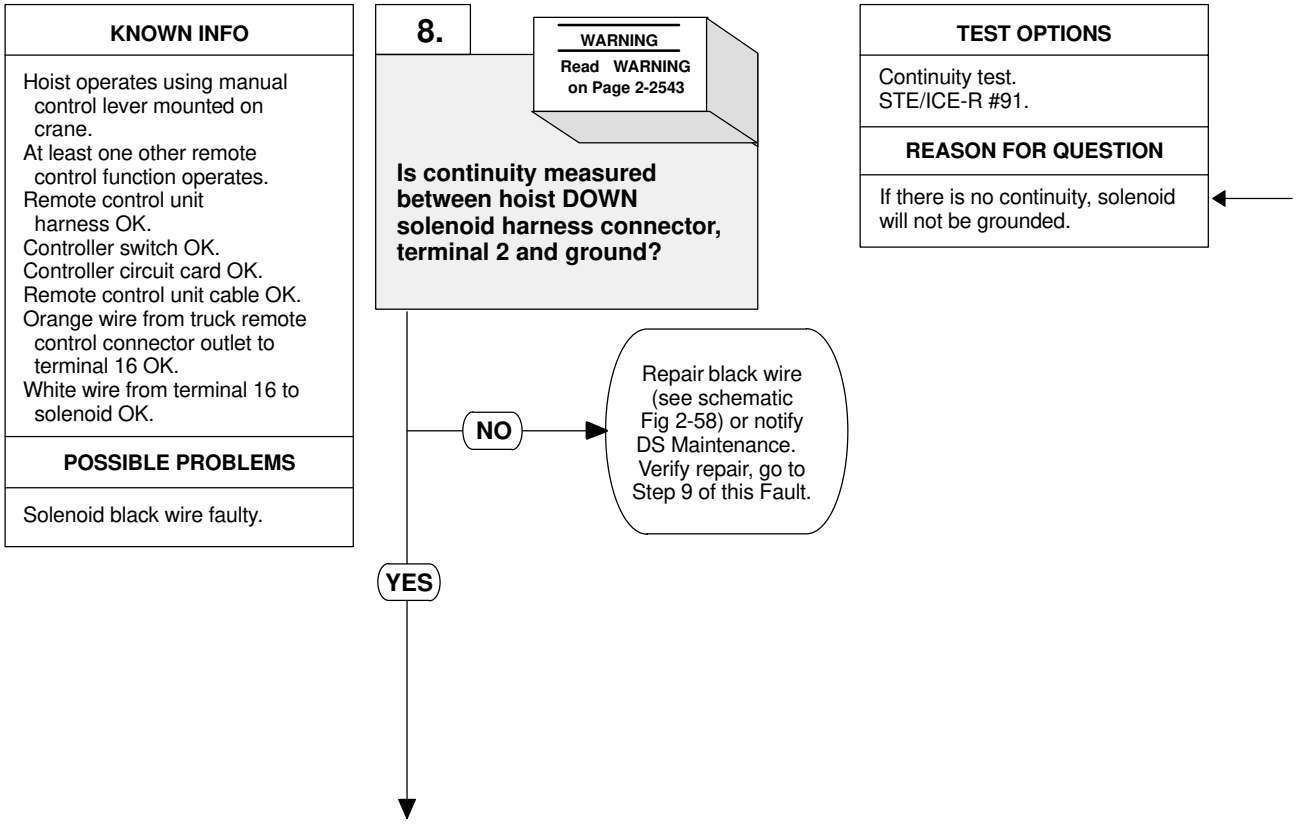
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector, terminal 1 and crane main junction box, terminal 16?
   (a) If there is no continuity, repair white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

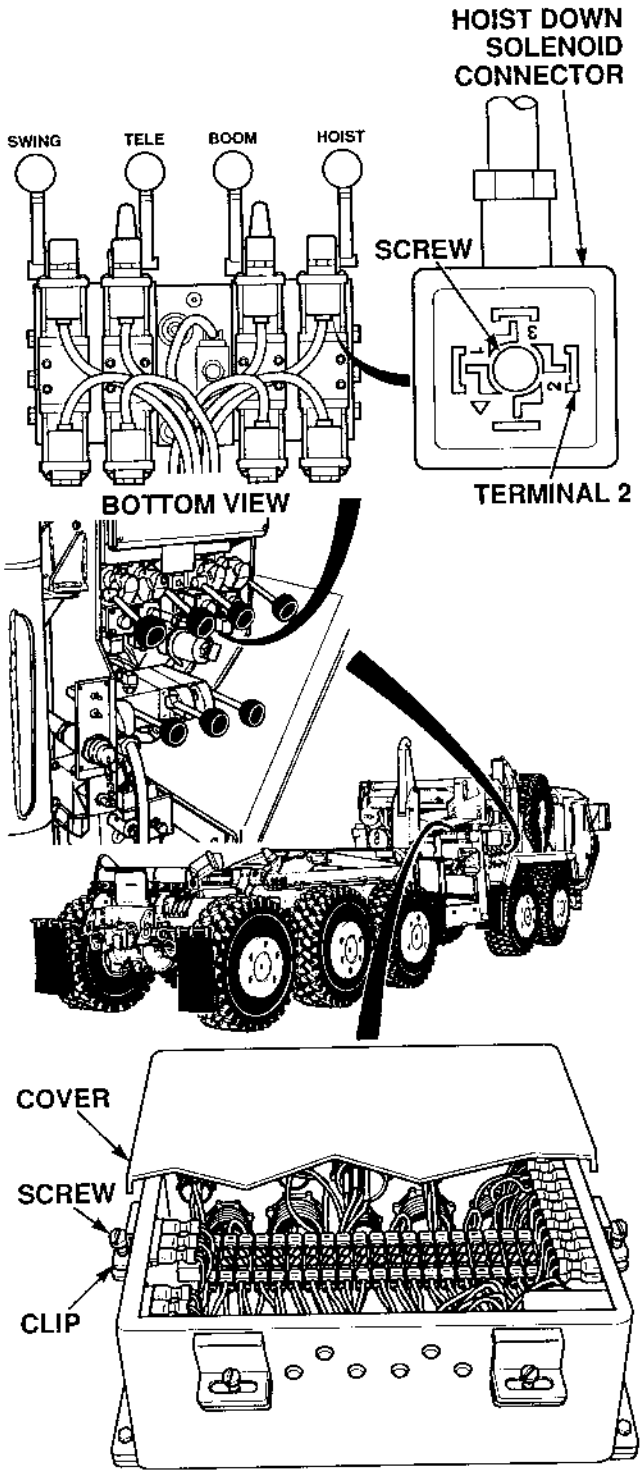


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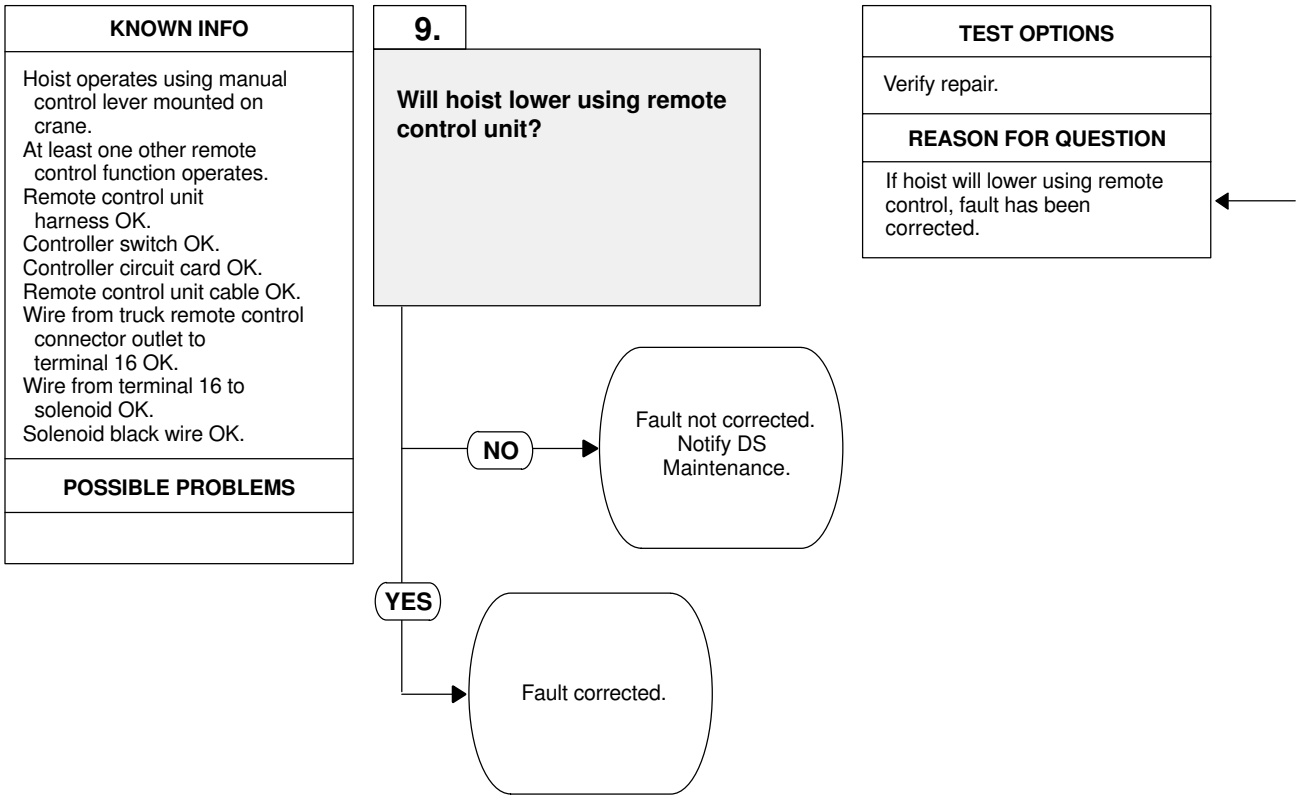
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

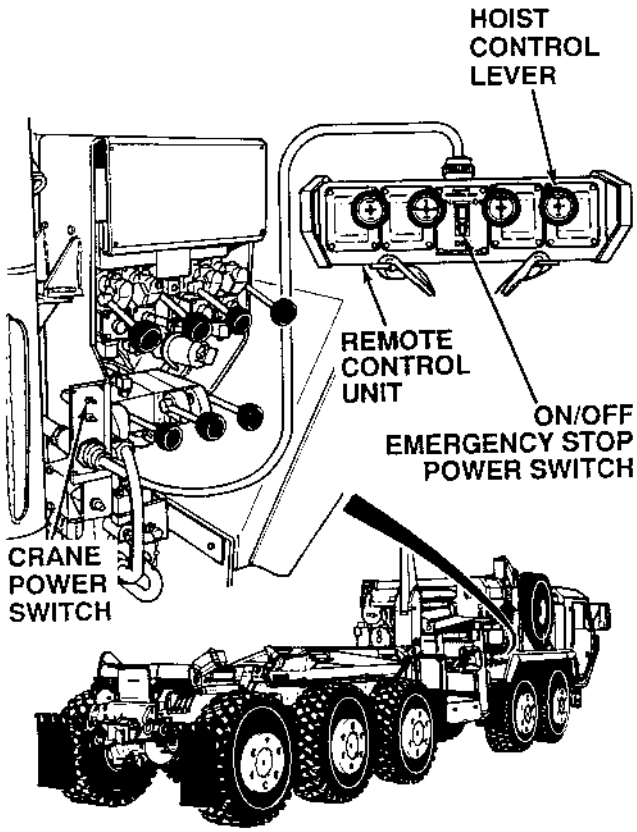
(1) Is there continuity between connector terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on hoist DOWN solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.



2. HOIST WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR
Operate crane using remote control unit (TM 9-2320-364-10). (1) If hoist will not lower using remote control unit, Fault not corrected. Notify DS Maintenance. (2) If hoist will lower, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT.

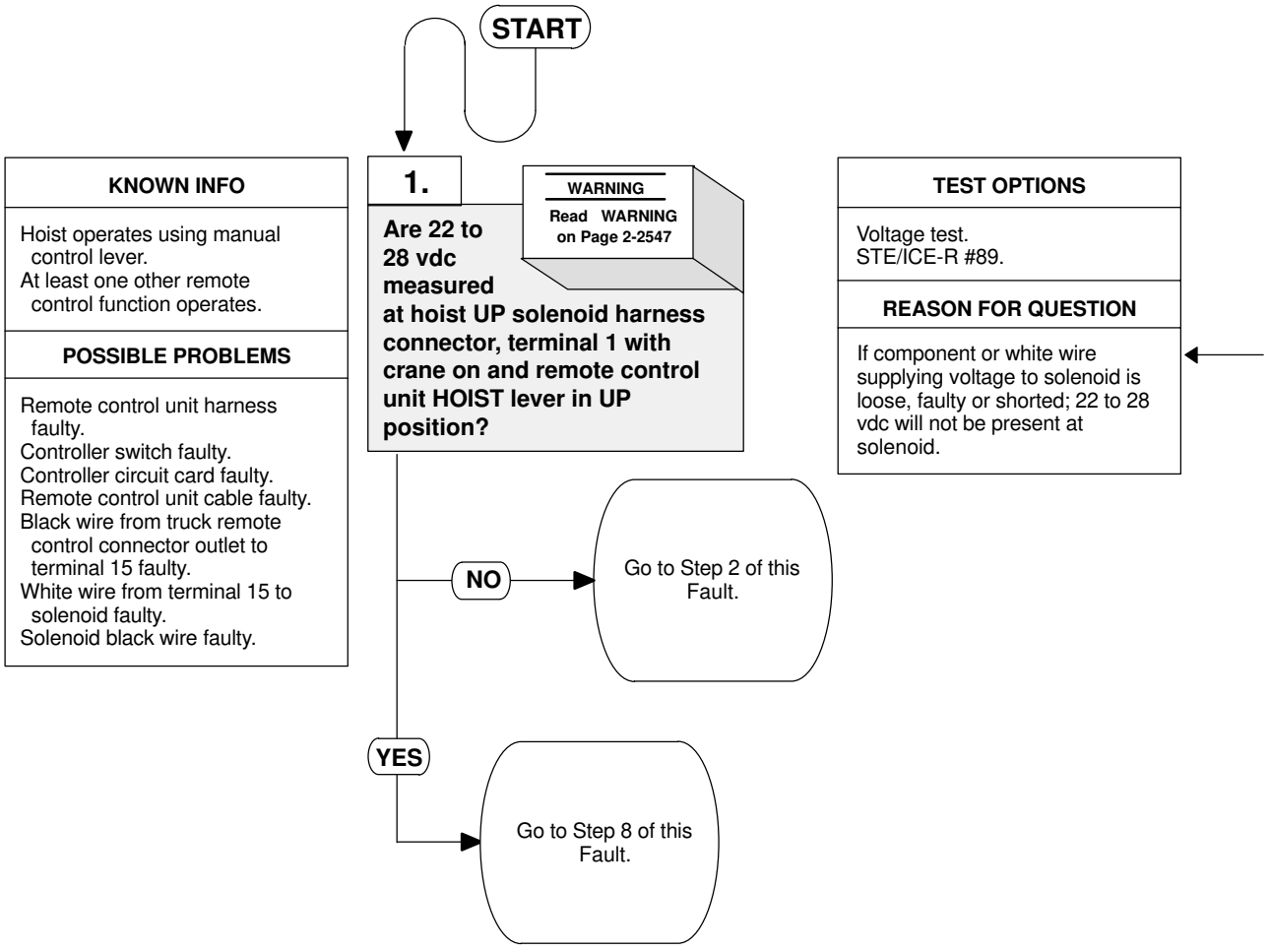
INITIAL SETUP

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

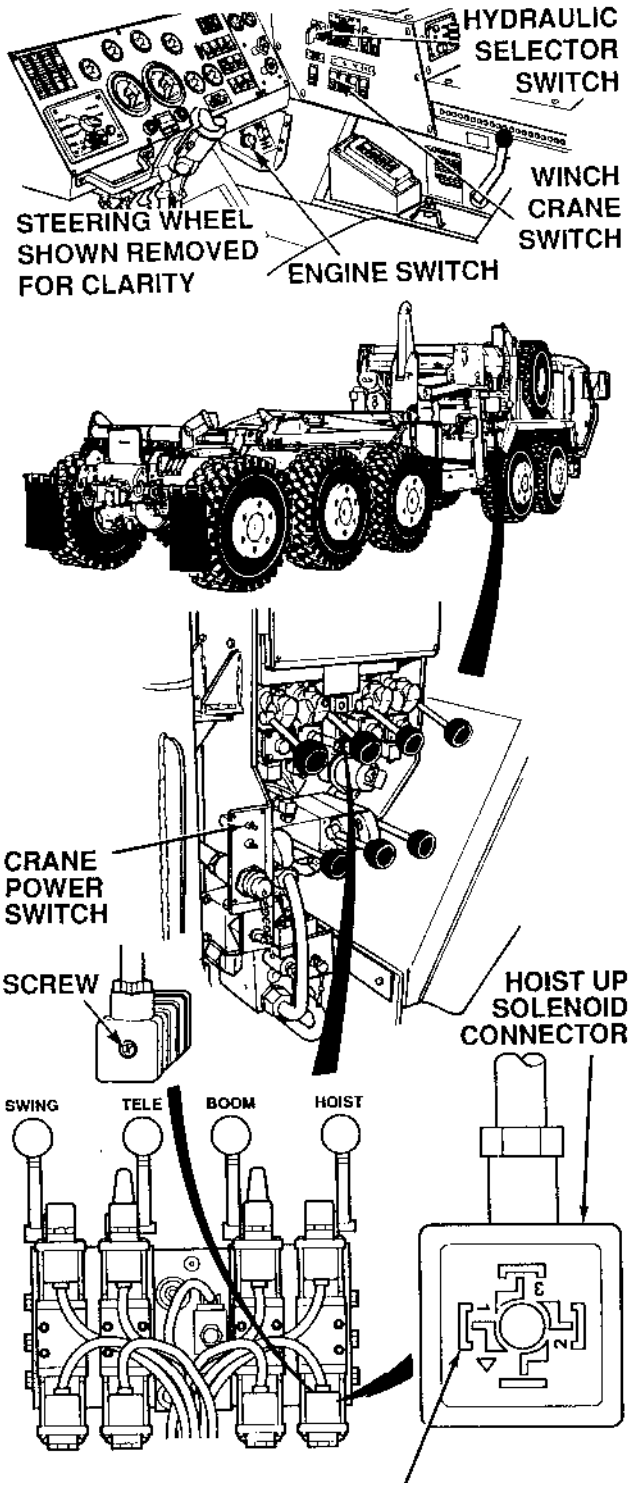
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)

NOTE
This problem can occur at the right or left hand remote control connector. Only the right hand connector is illustrated herein.



WARNING

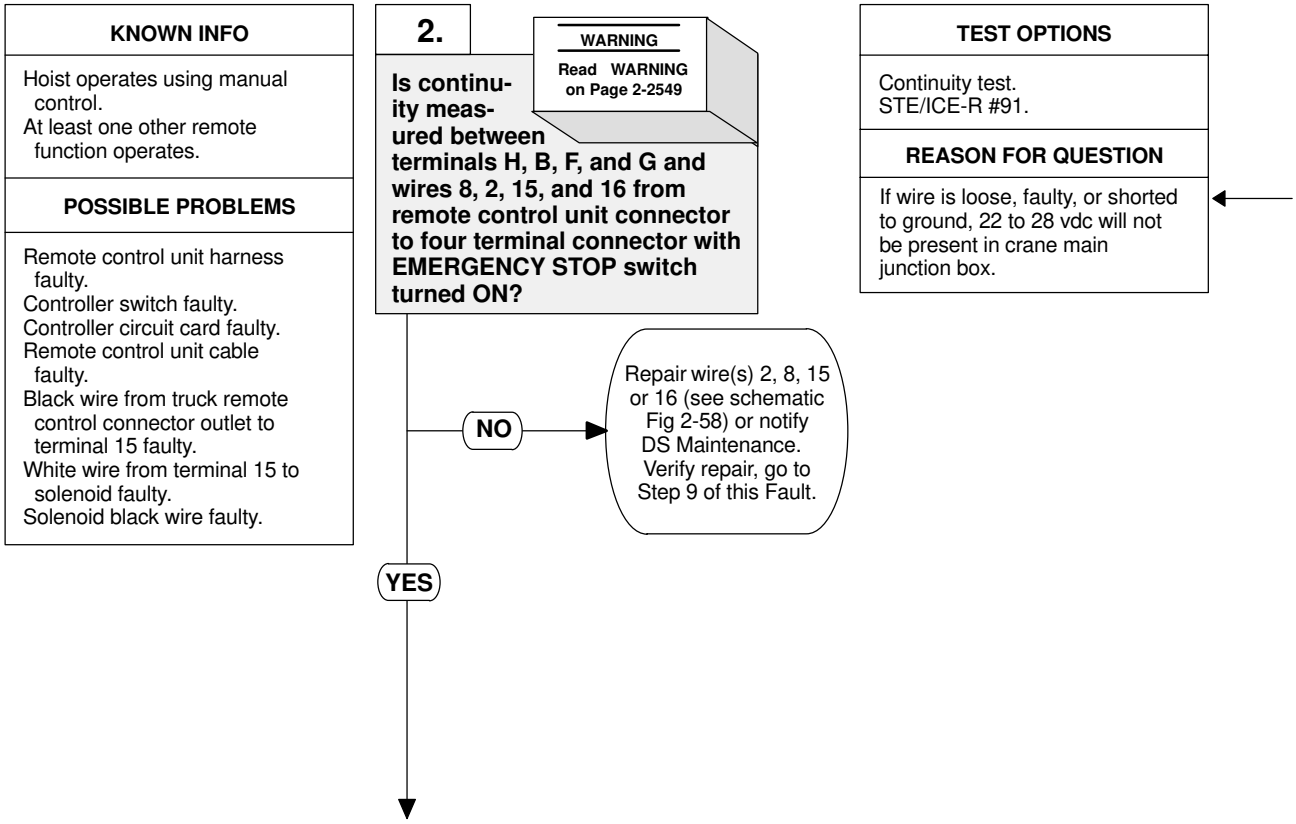
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



VOLTAGE TEST

(1) Loosen screw and remove connector from hoist UP solenoid.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane main POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold remote control unit hoist controller in UP position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Set the following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane main POWER switch, hydraulic selector switch and ENGINE switch.

3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

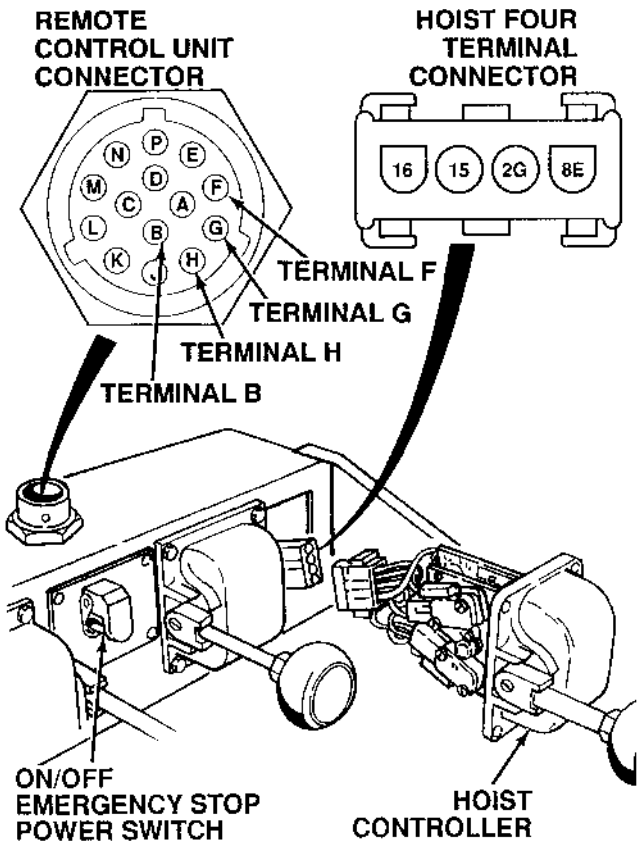


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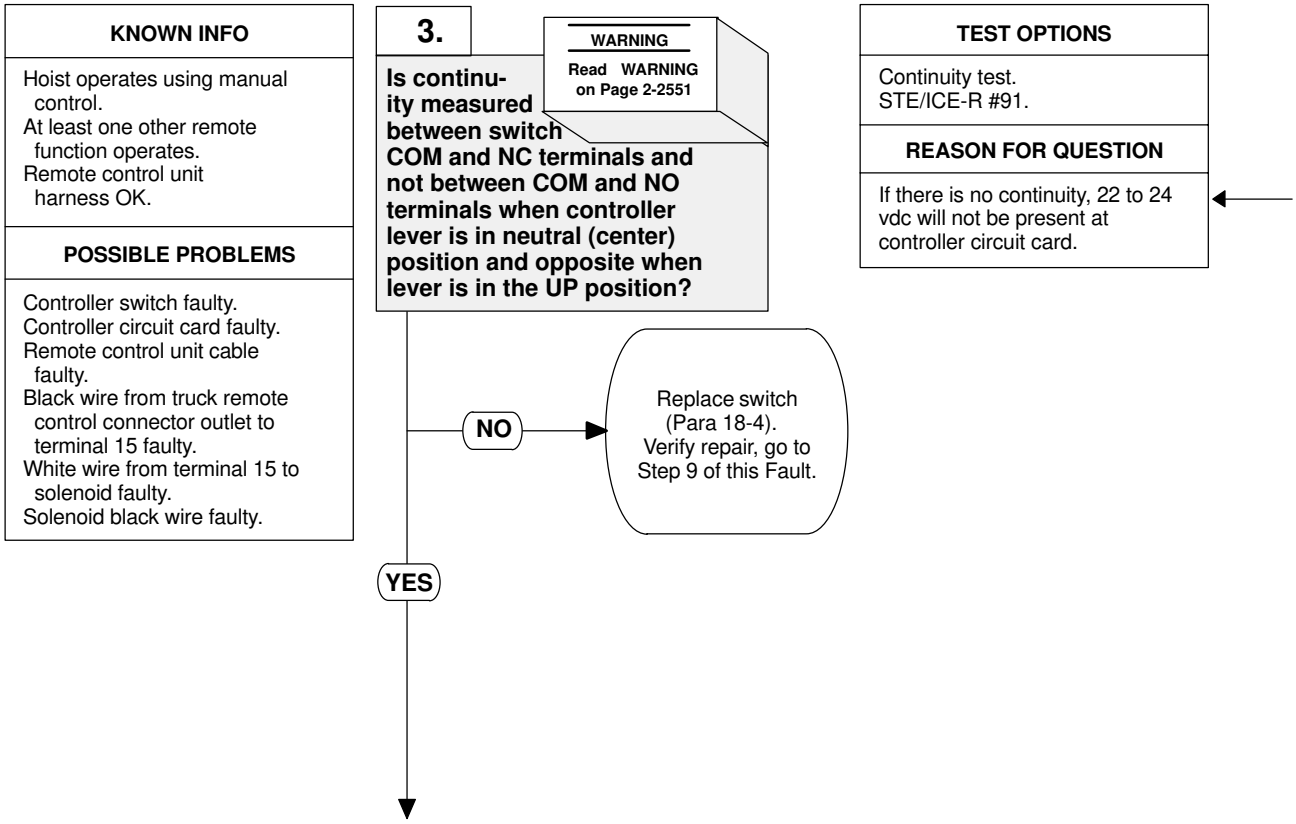
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity at violet wire between remote control unit connector, terminal H and four terminal connector, terminal 8E?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit connector, terminal B and four terminal connector, terminal 2G?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit connector, terminal F and four terminal connector, terminal 15?
  (a) If there is no continuity, repair wire 15 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit connector, terminal G and four terminal connector, terminal 16?
  (a) If there is no continuity, repair wire 16 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this Fault.



3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

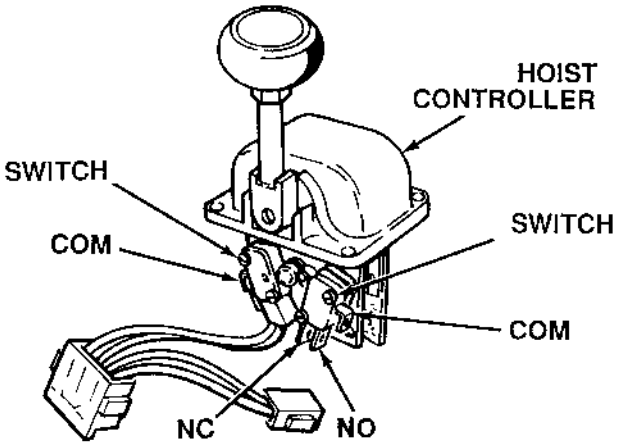


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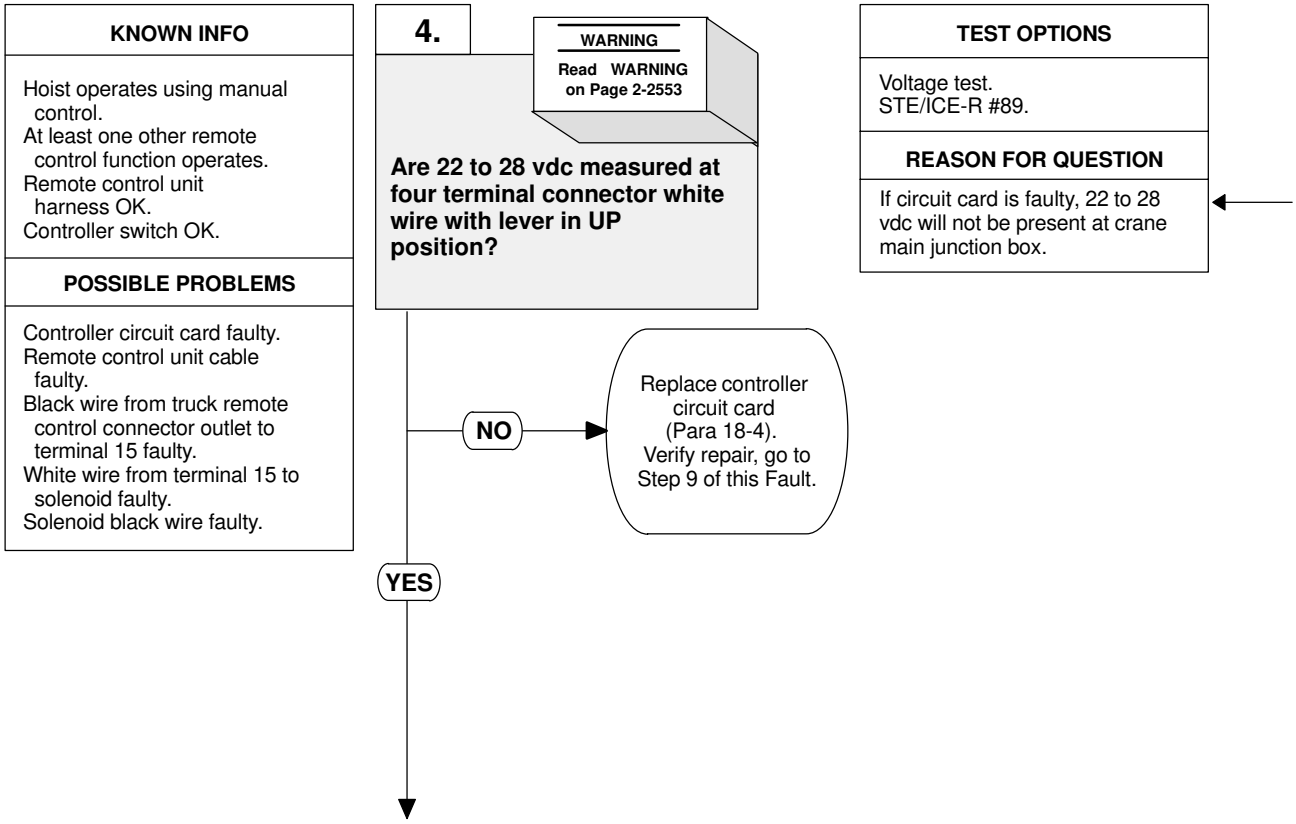
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in UP position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in UP position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (6) below.
(6) Repeat Steps (1) through (5) for other switches.
(7) Install both connectors on switches.



3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

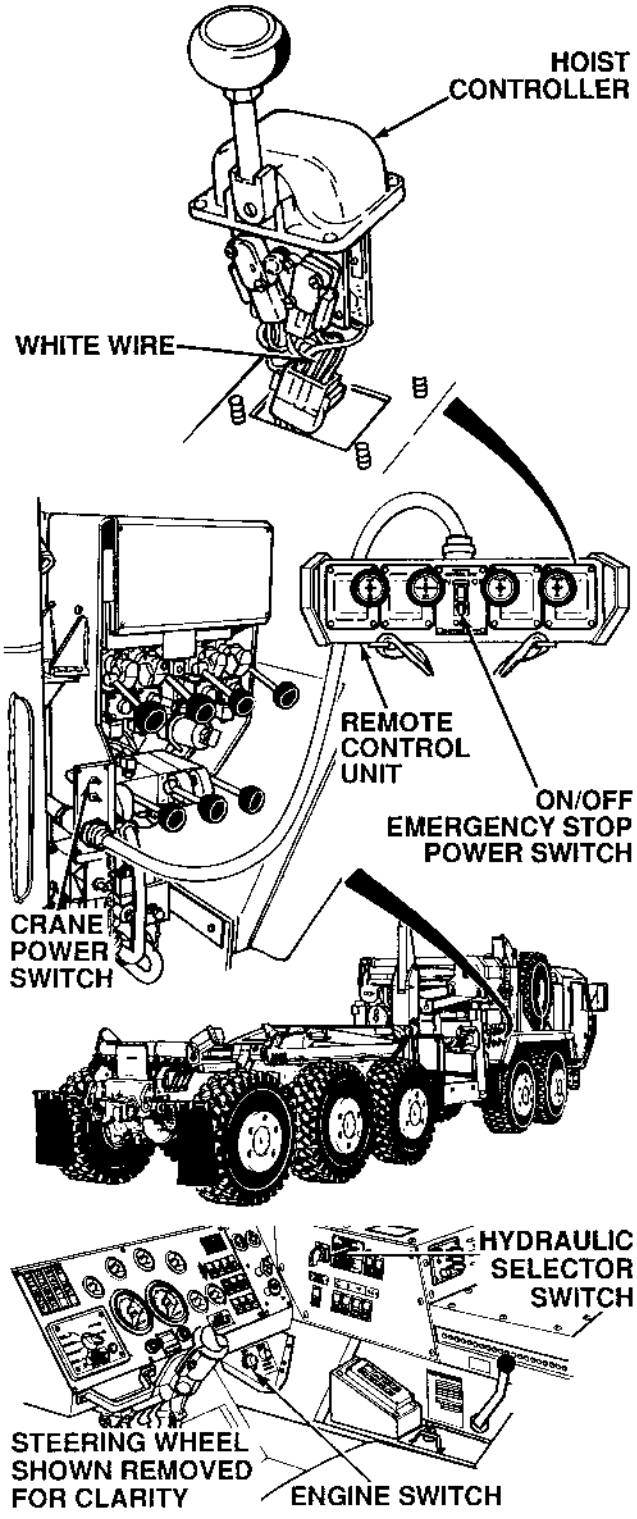


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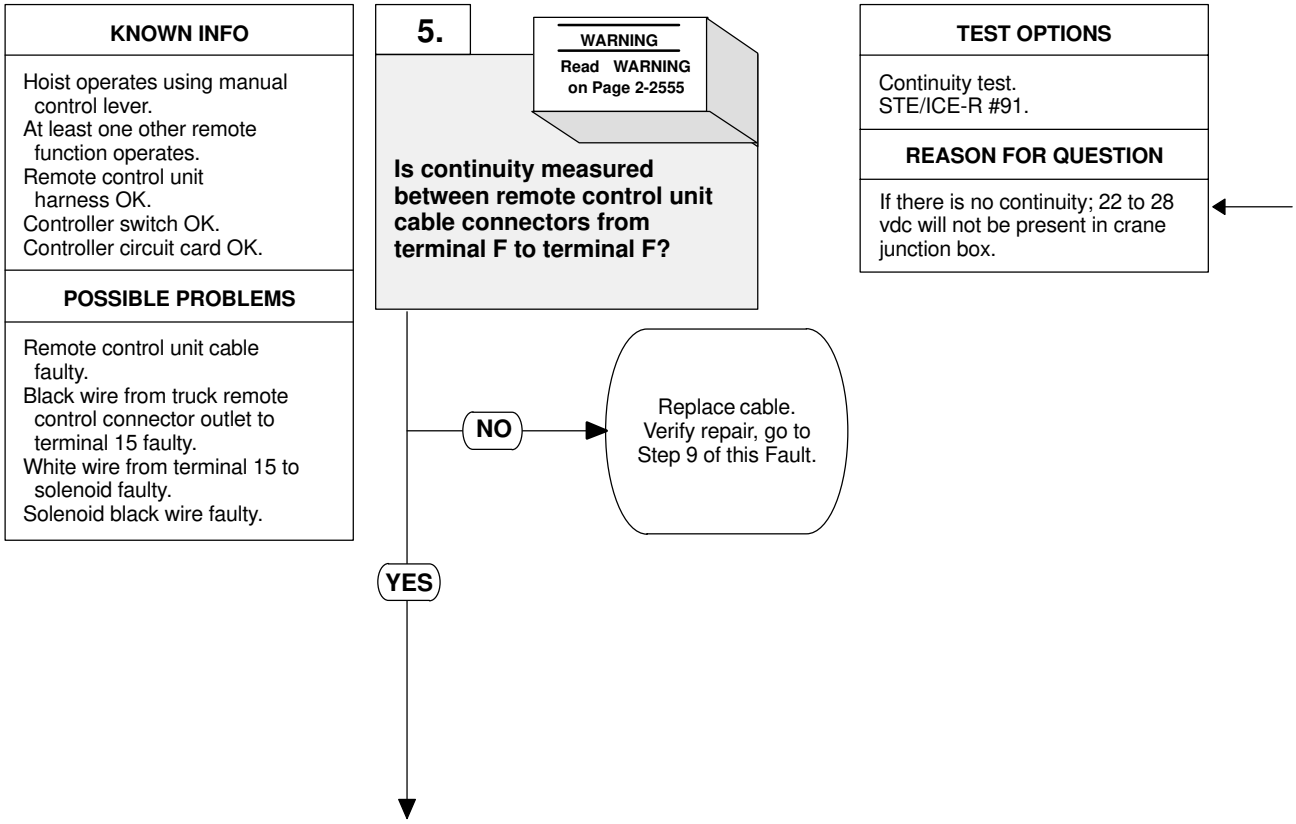
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable (TM 9-2320-364-10).
(2) Connect hoist controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to white wire terminal in four terminal connector.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane MAIN POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold HOIST controller in UP position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, go to Step (11) below.
(11) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane MAIN POWER switch, hydraulic selector switch and ENGINE switch.
(12) Assemble remote control unit (Para 18-4).



3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

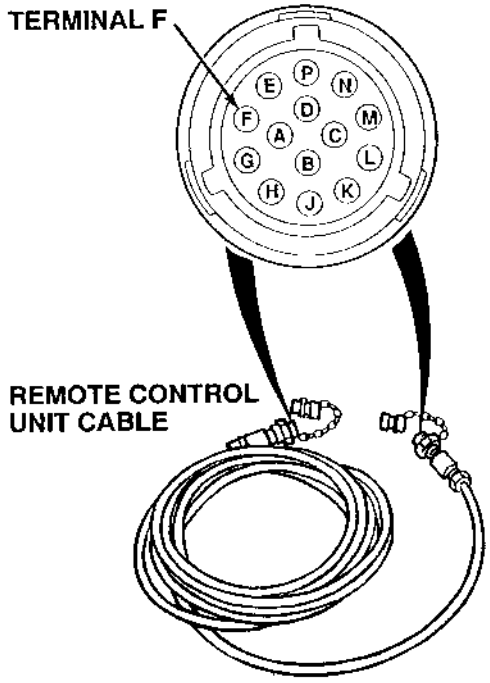


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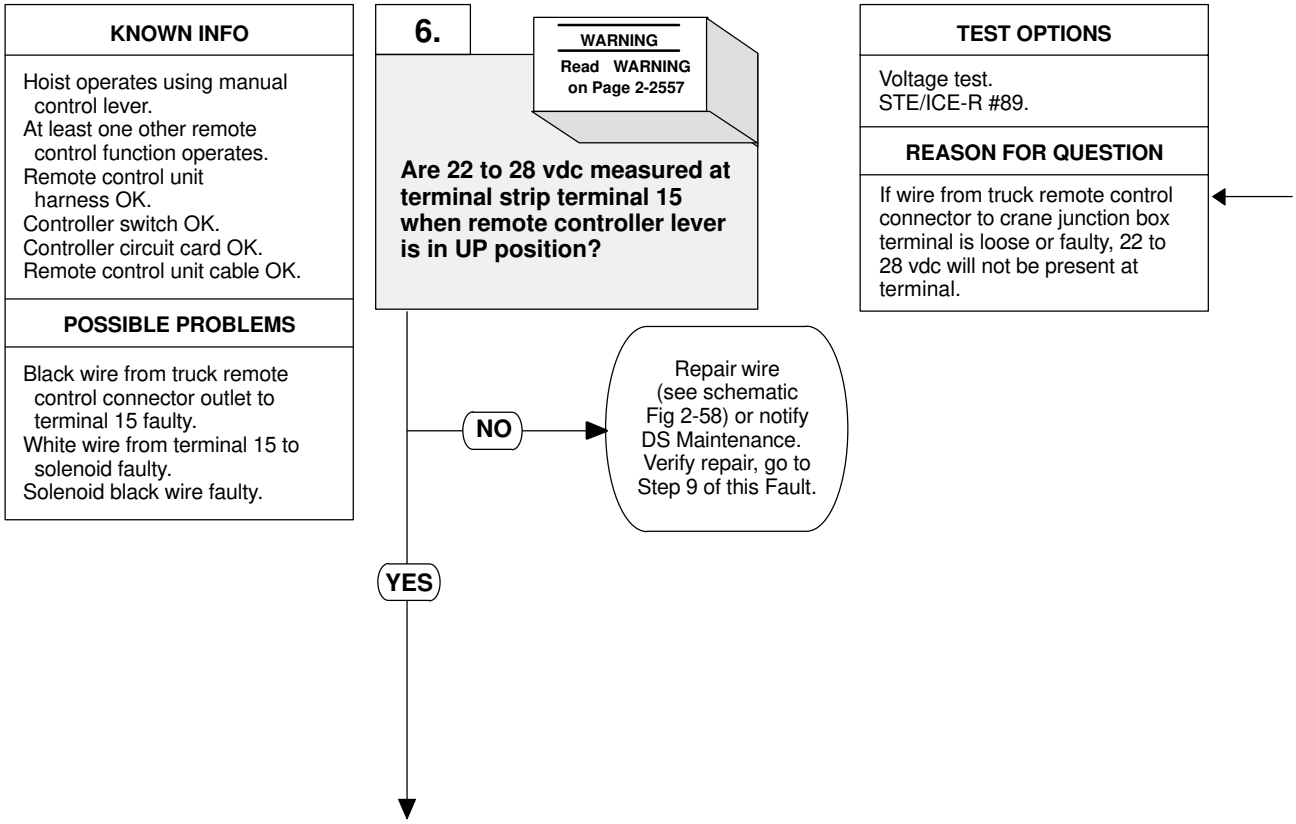
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal F at both ends?
   (a) If there is no continuity, replace cable.
   (b) If there is continuity, reconnect cable to truck connector and remote control unit connector and go to Step 9 of this Fault.



3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

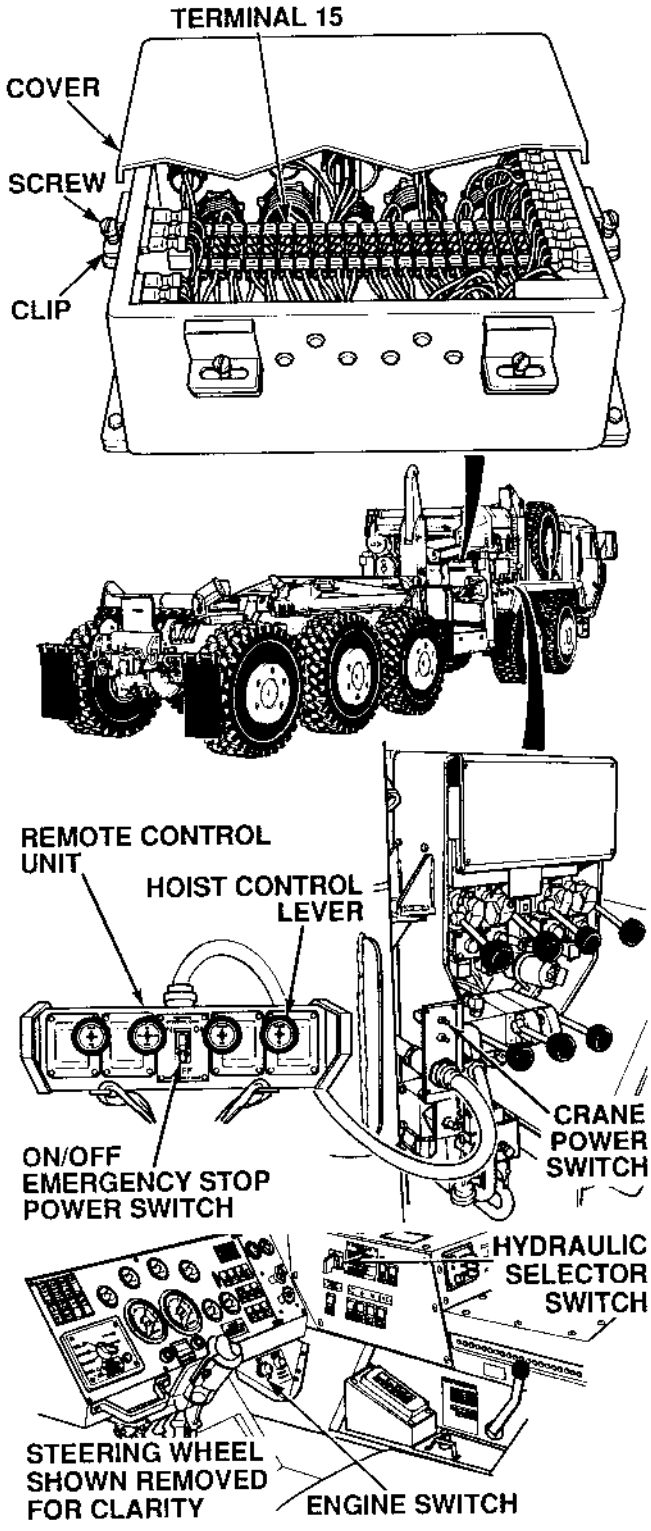


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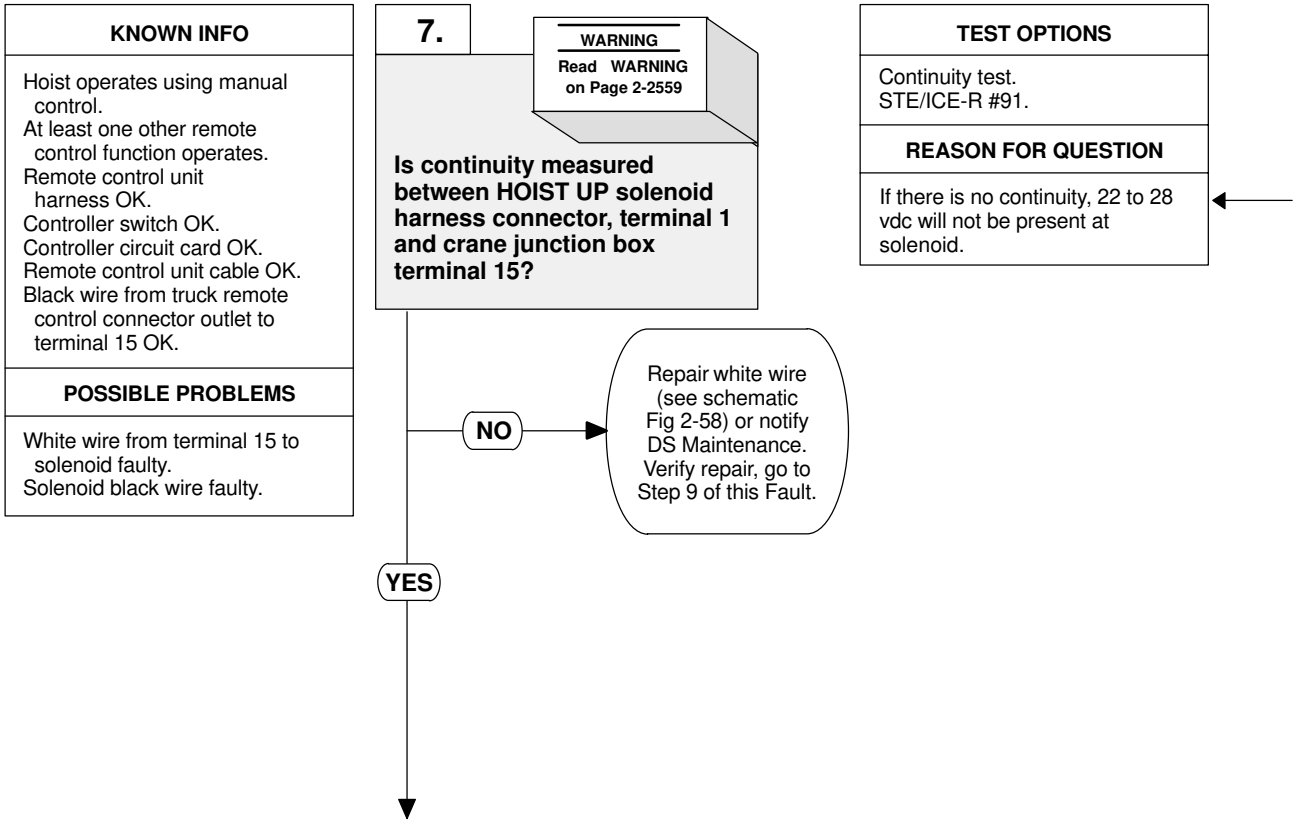
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box terminal 15.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to SRW/CRANE position.
(7) Set crane main POWER switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit HOIST control lever in the UP position.
    (a) If 22 to 28 vdc are not present, perform Step (10) below and repair black wire from truck remote control connector to terminal 15 (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane main POWER switch, hydraulic selector switch and ENGINE switch.



3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

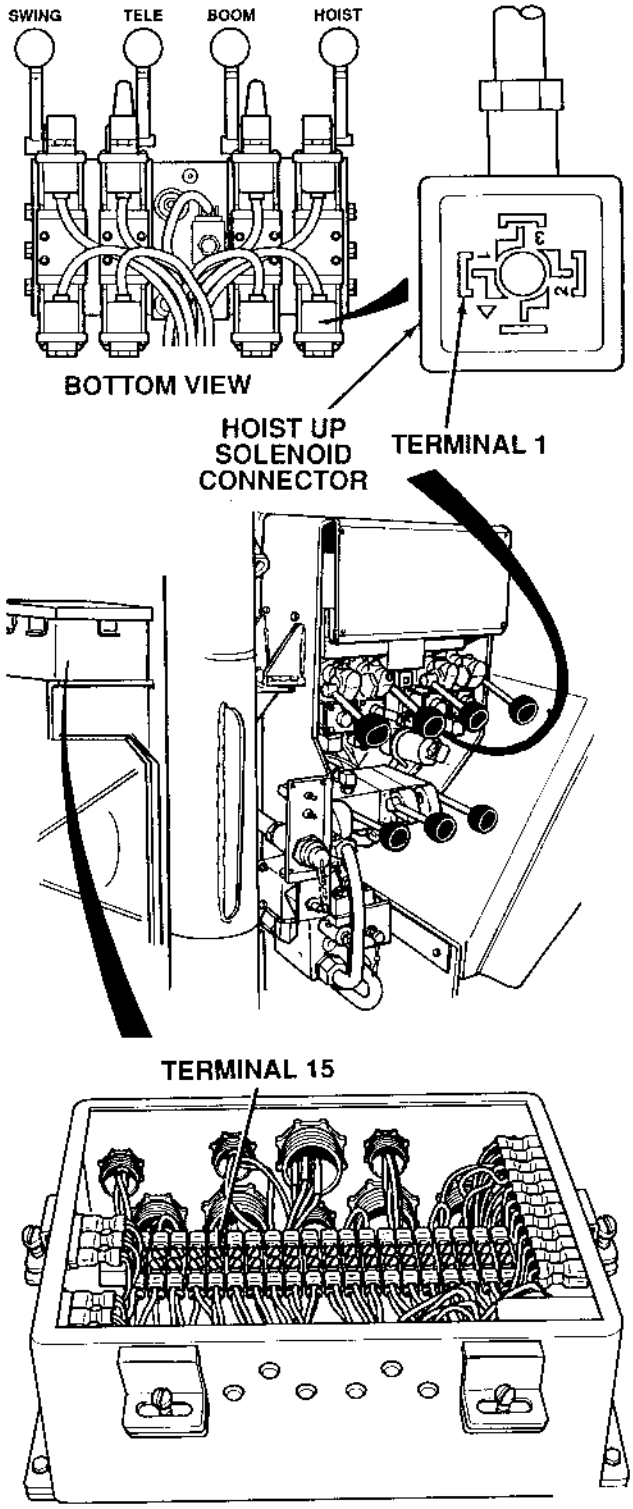


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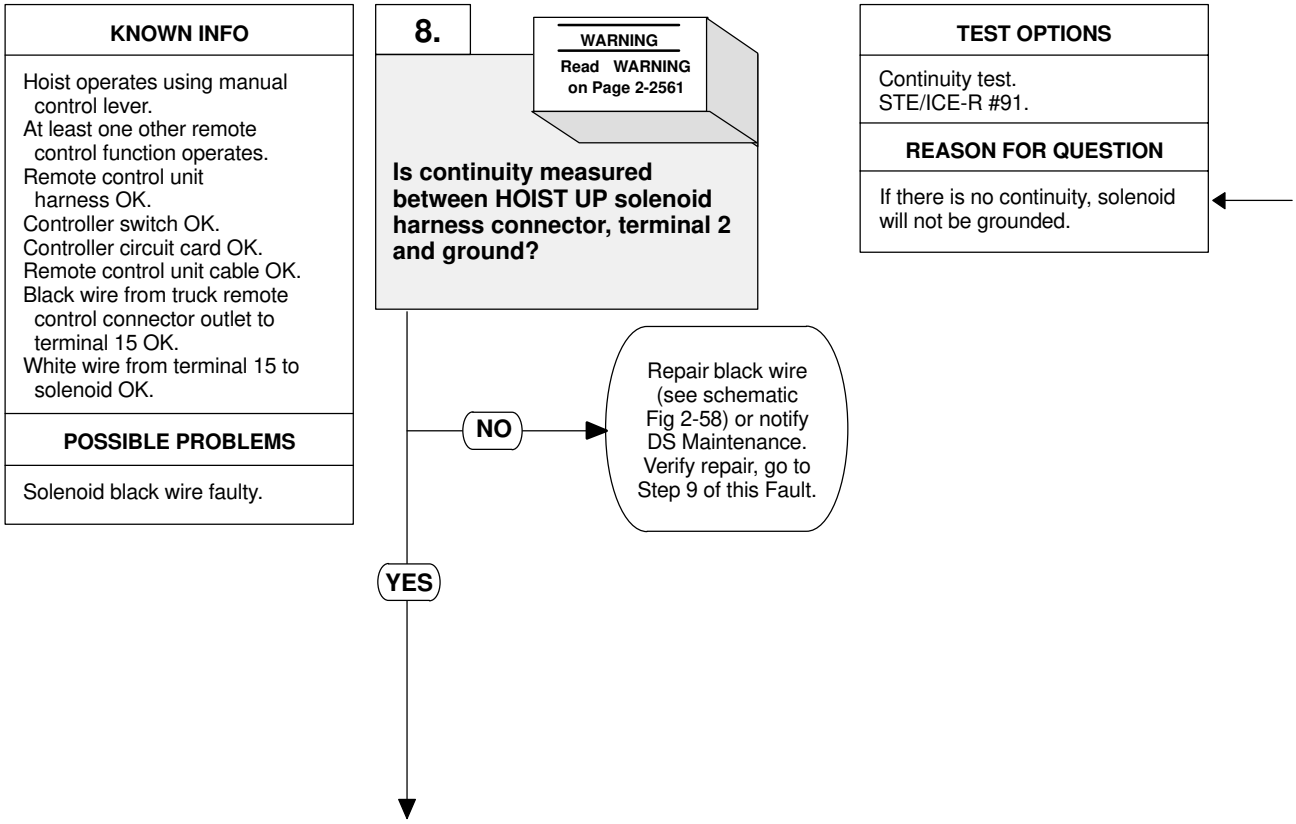
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector terminal 1 and crane main junction box terminal strip 15?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

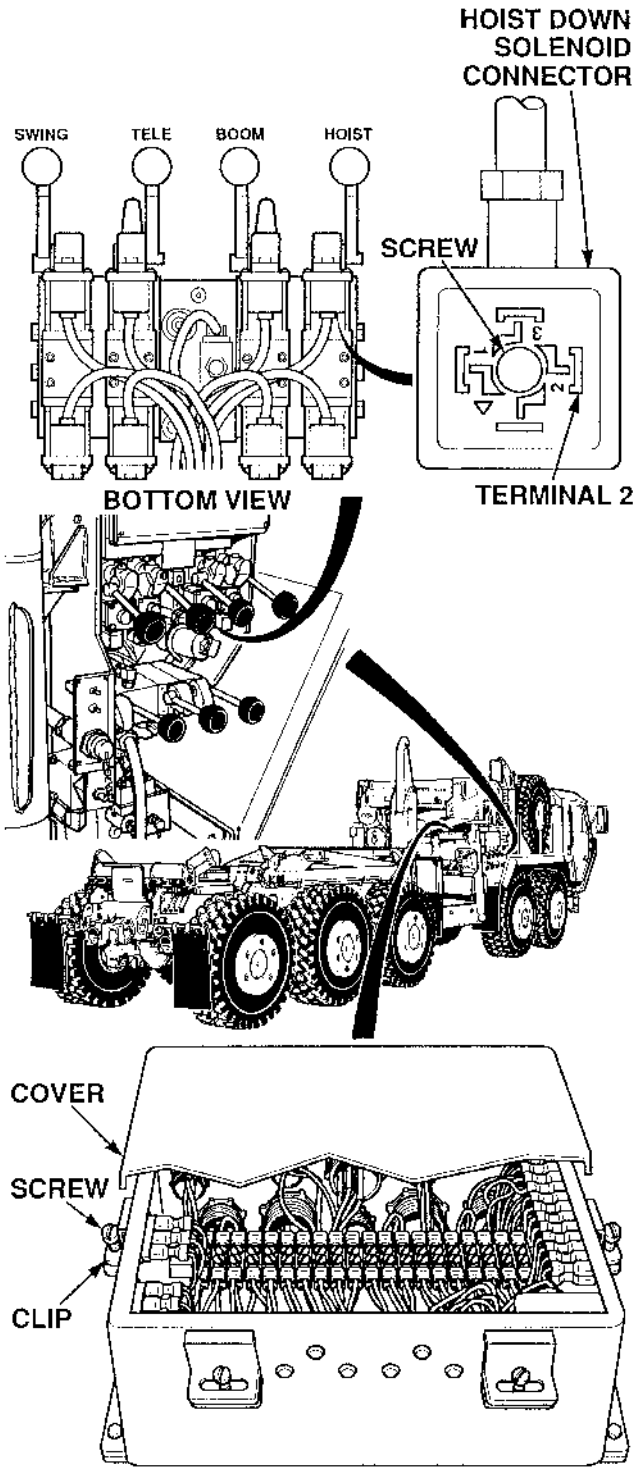


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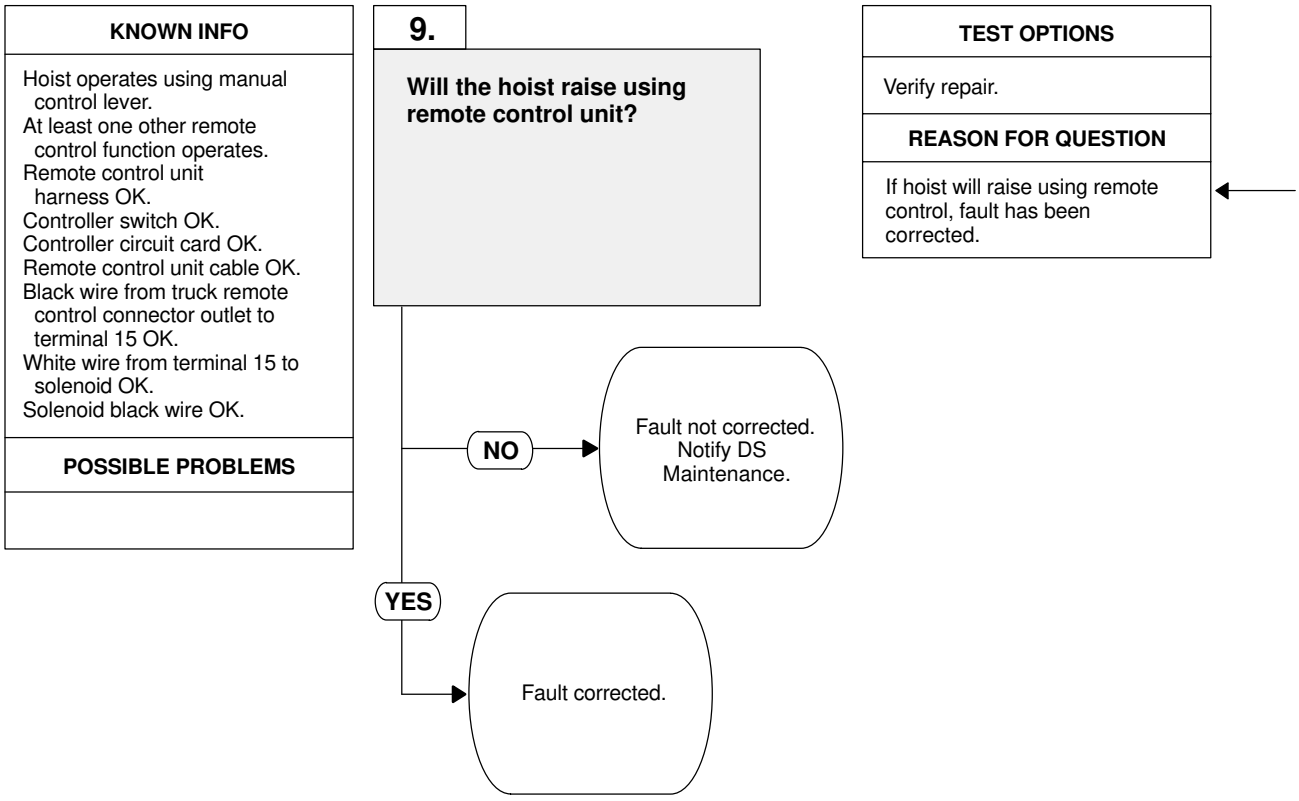
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

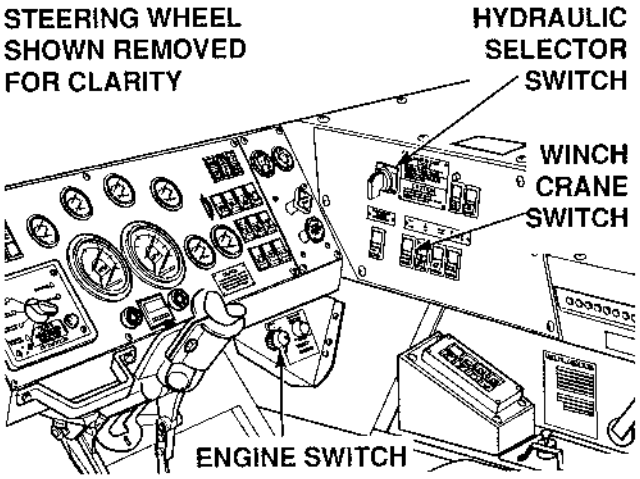
(1) Is there continuity between connector terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on hoist valve solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.



3. HOIST WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR
(1) Connect remote control unit cable to truck connector and remote control unit connector (TM 9-2320-364-10). (2) Operate crane using remote control unit. (a) If hoist will not raise using remote control unit, fault not corrected. Notify DS Maintenance. (b) If hoist will raise, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

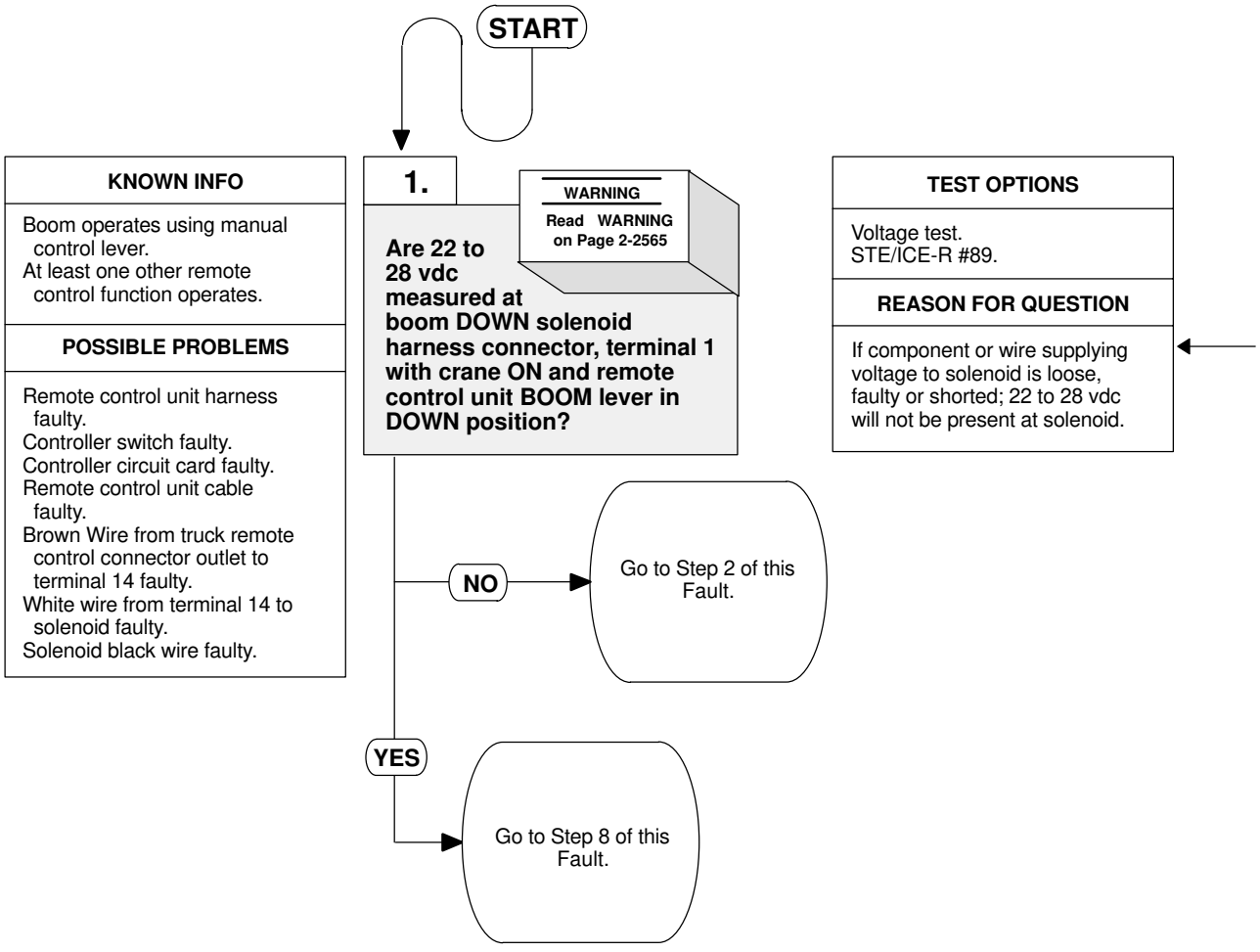
4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT.

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 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)

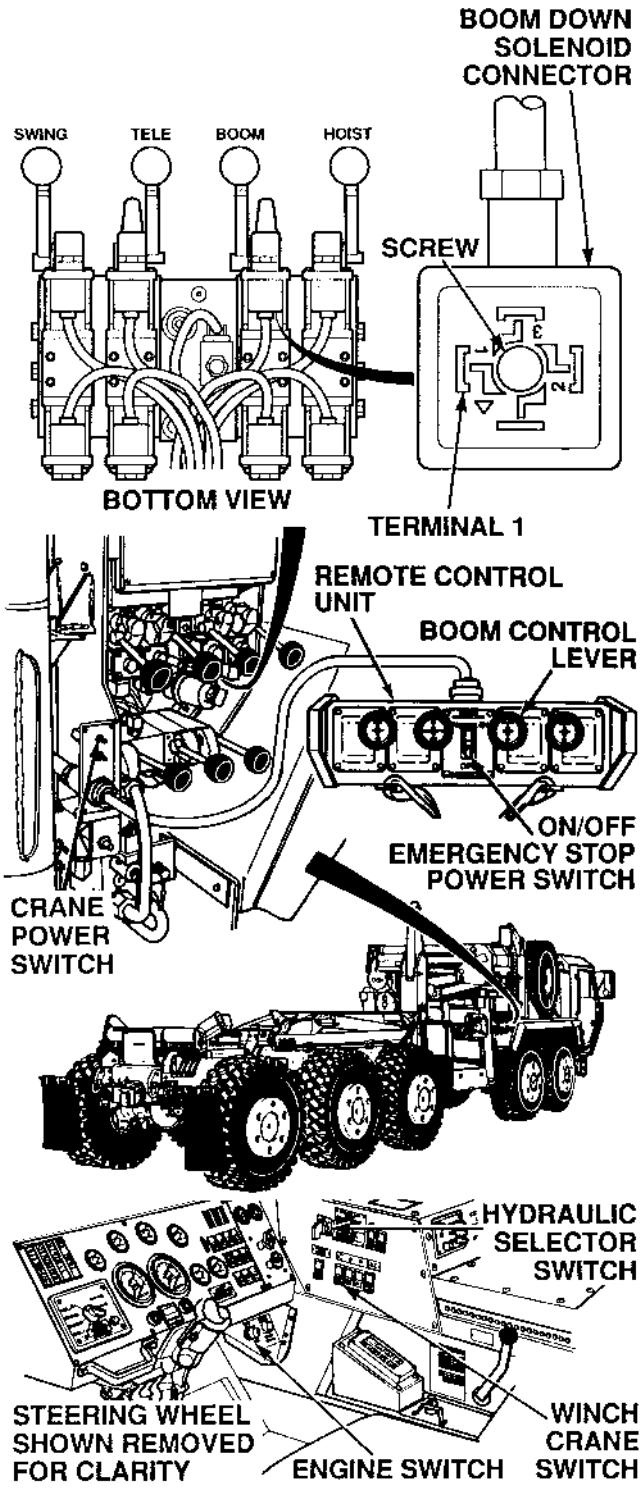


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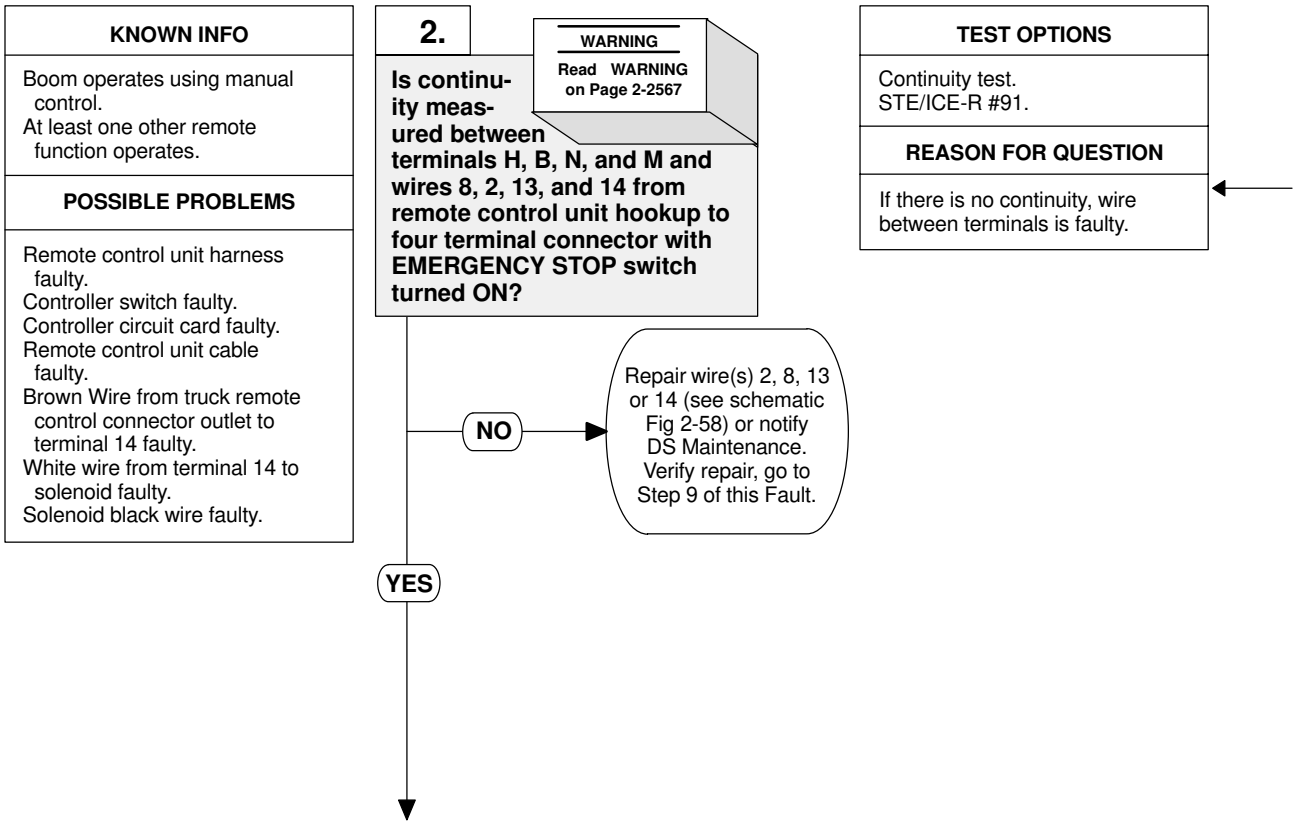
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen screw and remove connector from boom DOWN solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold remote control unit BOOM controller in DOWN position.
  (a) If 22 to 28 vdc are not present, go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Set following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

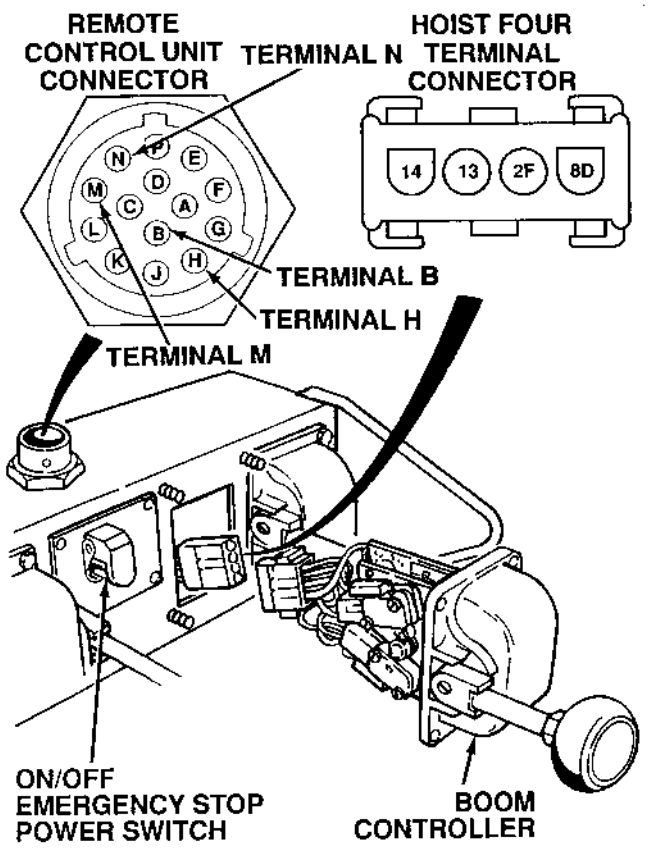


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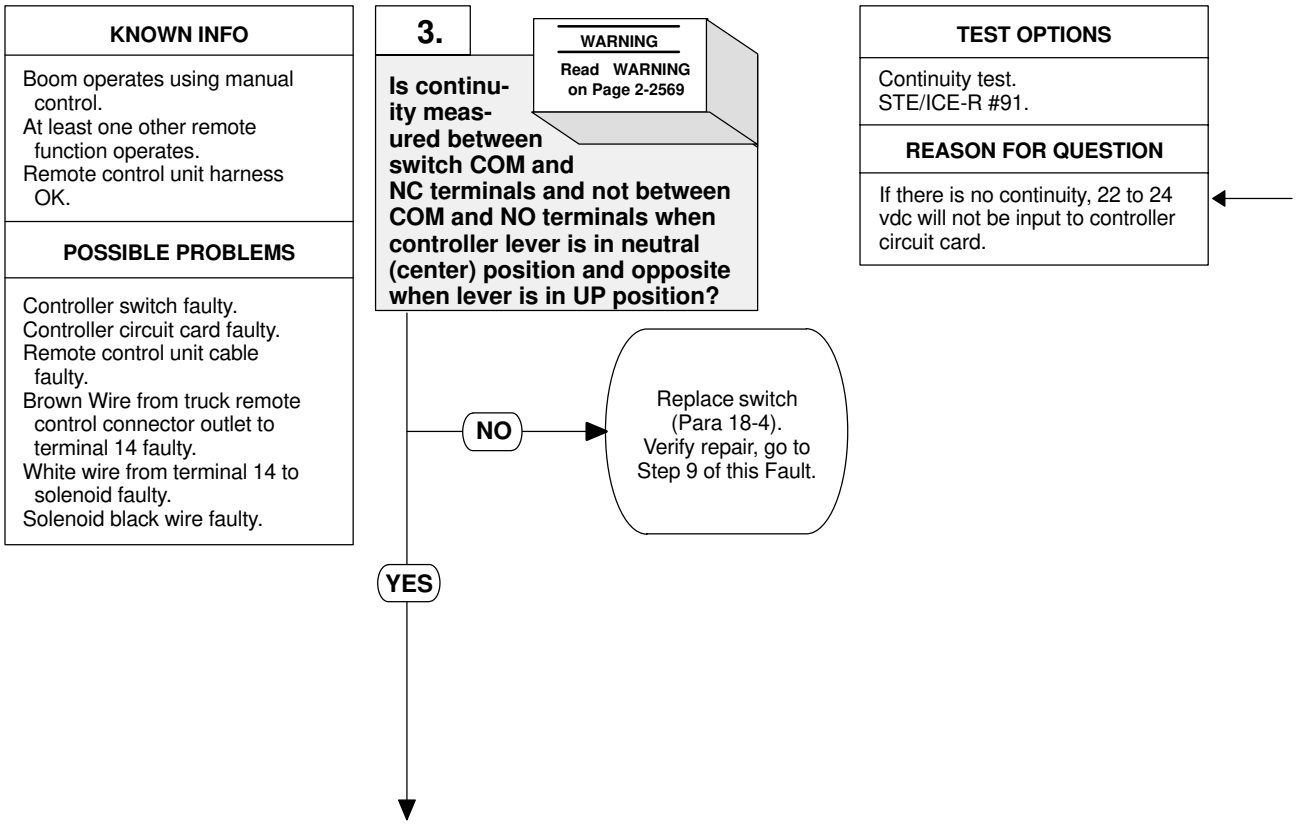
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove BOOM controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity between remote control unit hookup, terminal H and four terminal connector, terminal 8D?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit hookup, terminal B and four terminal connector, terminal 2F?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit hookup, terminal N and four terminal connector, terminal 13?
  (a) If there is no continuity, repair wire 13 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit hookup, terminal M and four terminal connector, terminal 14?
  (a) If there is no continuity, repair wire 14 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this Fault.



4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

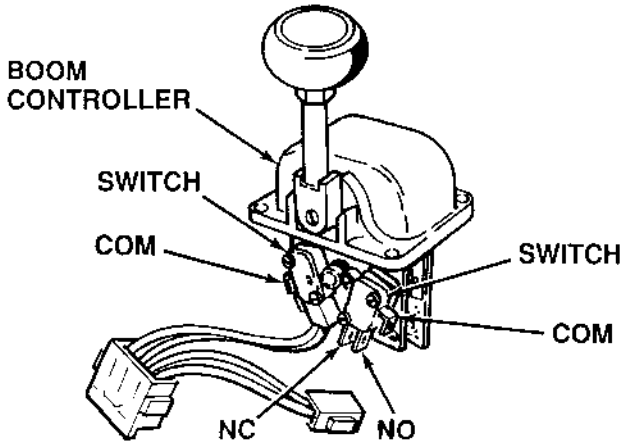


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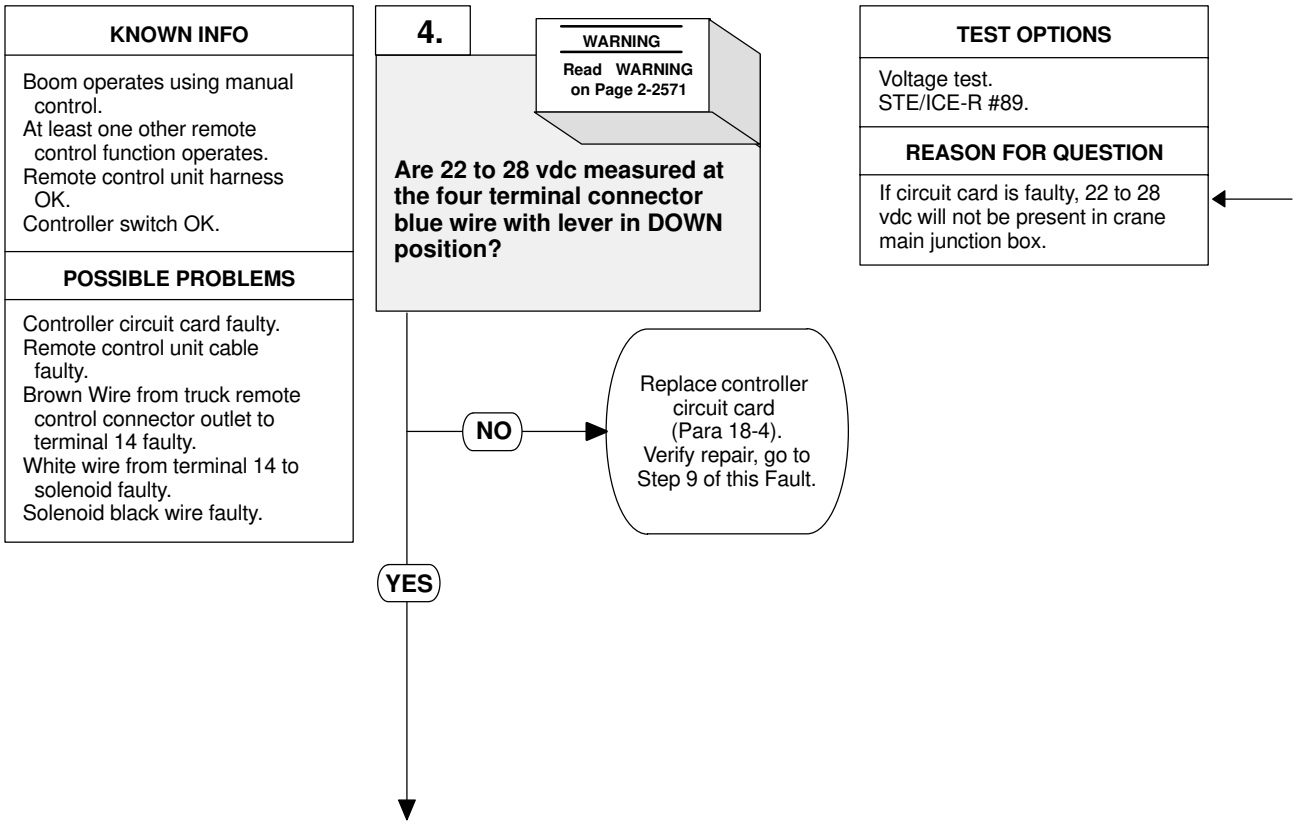
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in UP position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in UP position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (6) below.
(6) Repeat Steps (1) through (5) for other switch.
(7) Install both connectors on switches.



4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

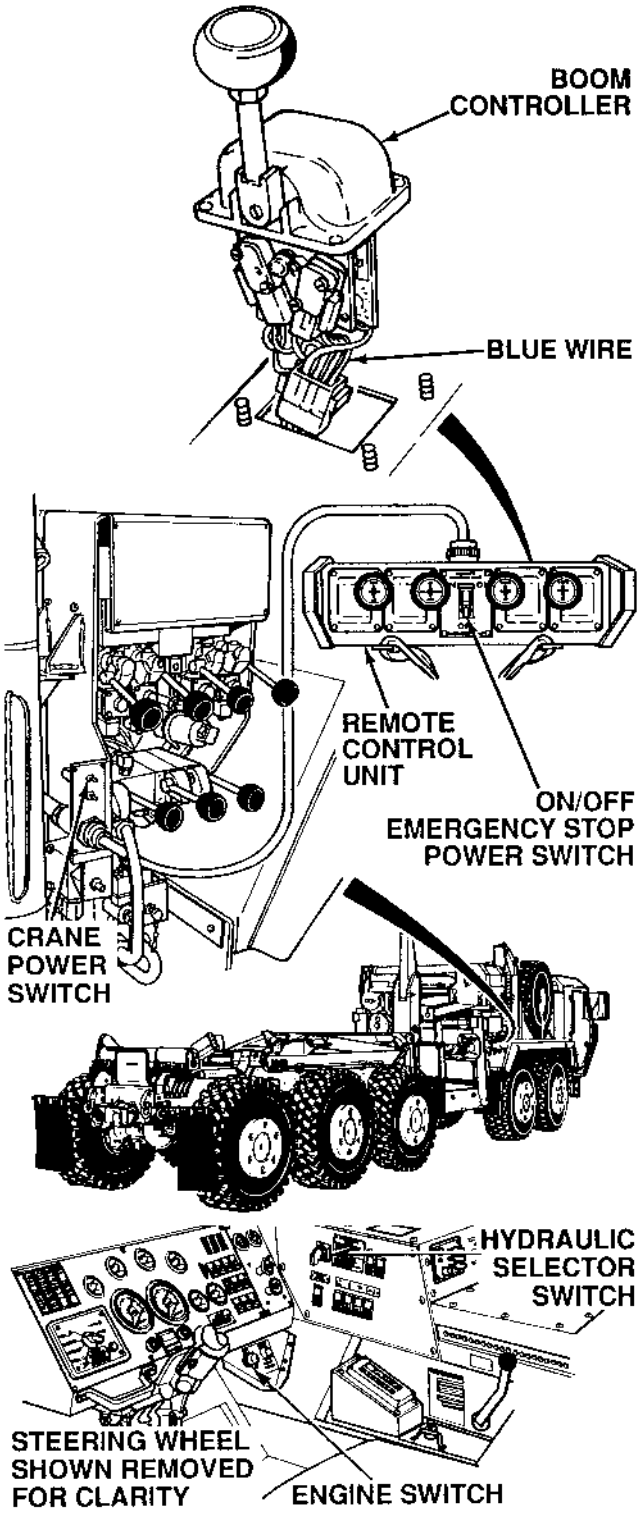


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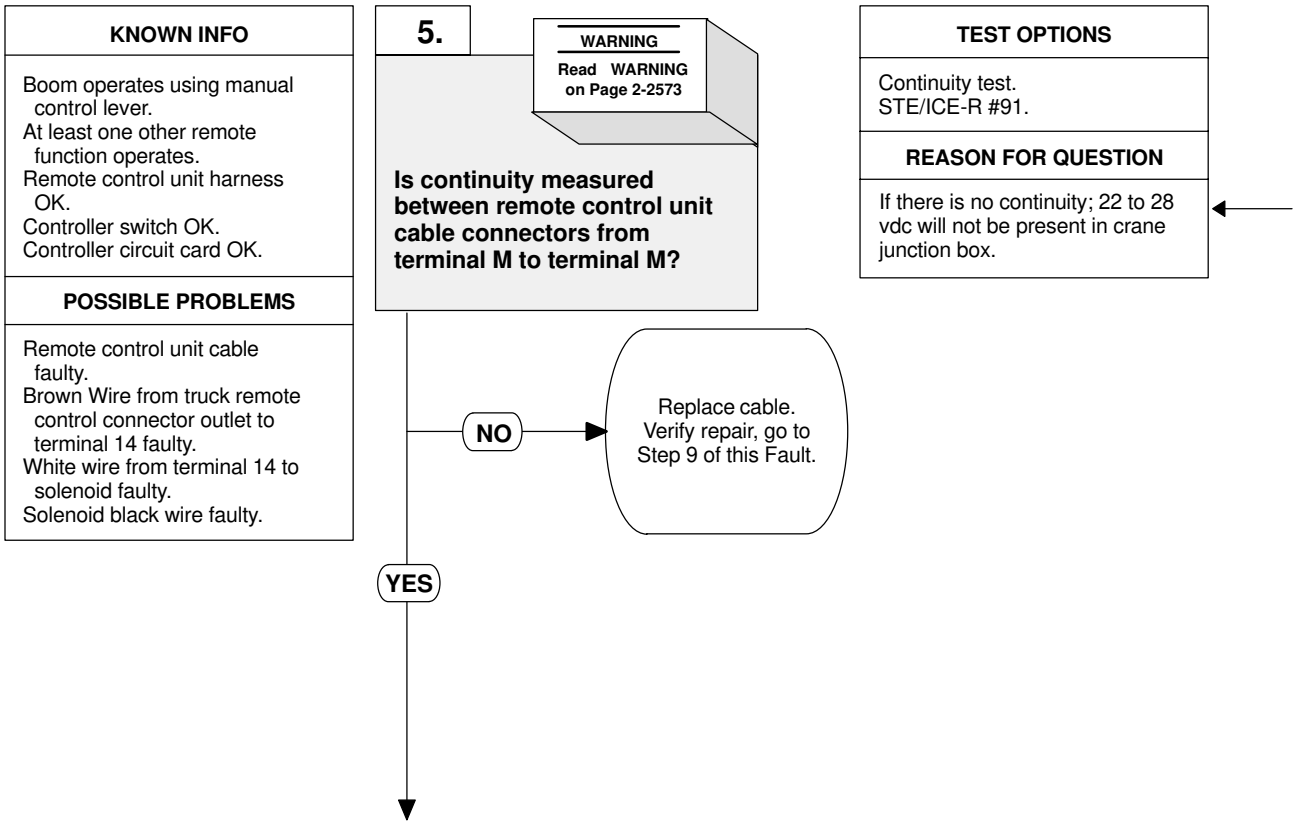
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable.
(2) Connect BOOM controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to blue wire terminal in four terminal connector.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold BOOM controller in the DOWN position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 5 of this Fault.
(11) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.
(12) Assemble remote control unit (Para 18-4).



4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

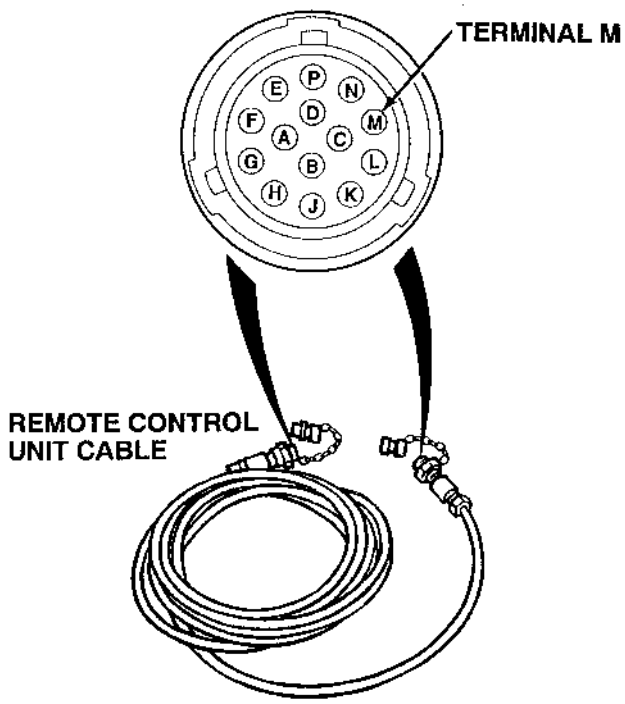


WARNING

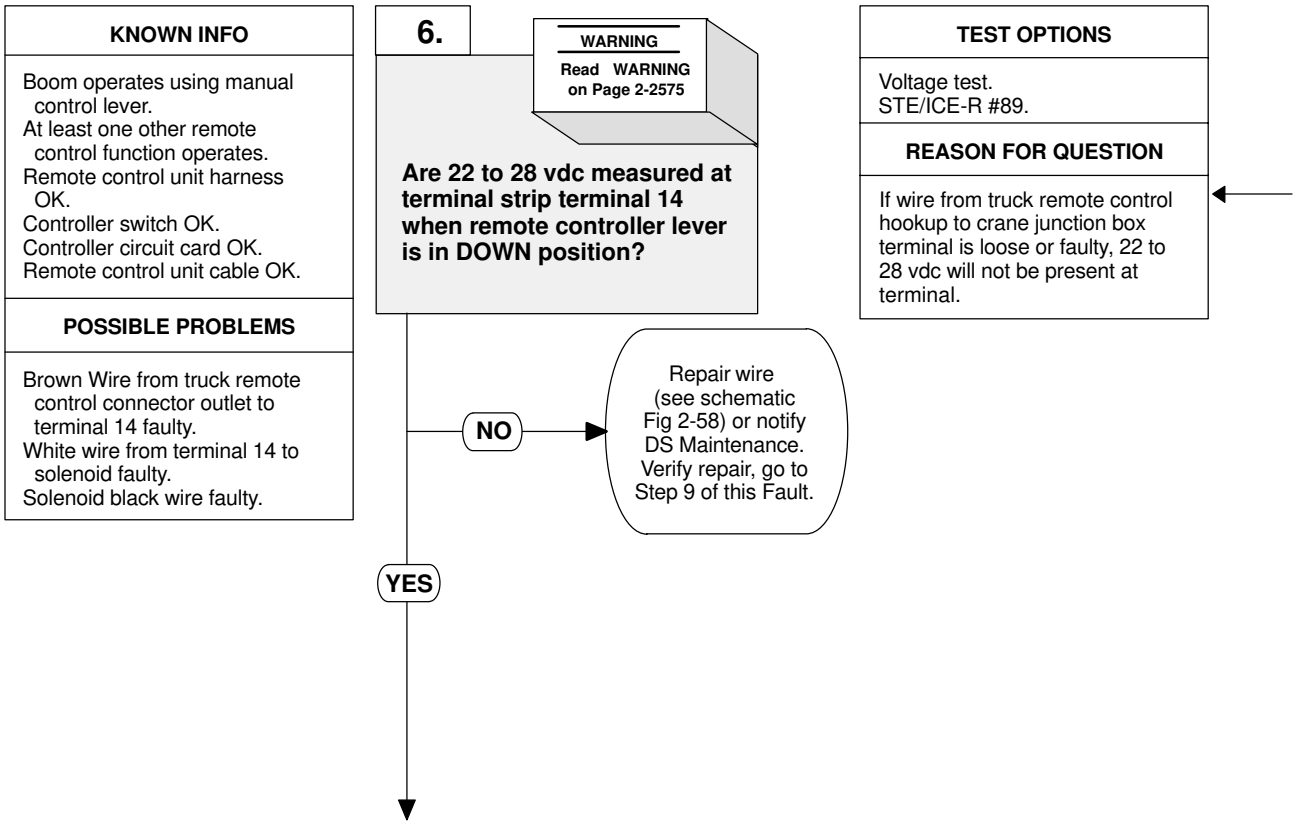
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal M at both ends?
  (a) If there is no continuity, replace cable.
  (b) If there is continuity, perform Step (4) below and go to Step 6 of this Fault.
(4) Reconnect cable to truck hookup and remote control unit hookup.

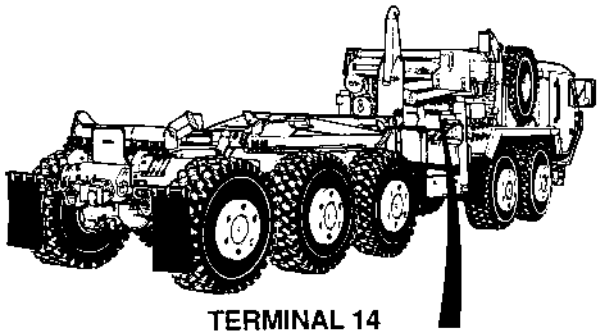


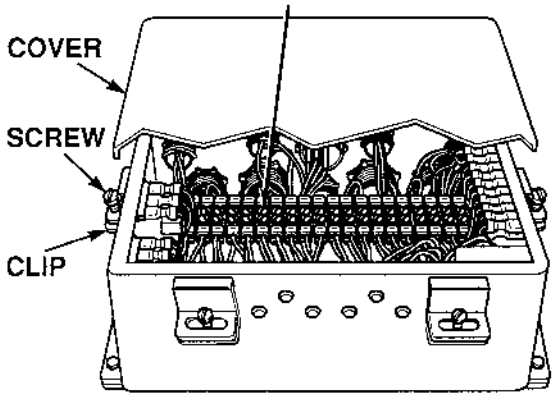
4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).



WARNING

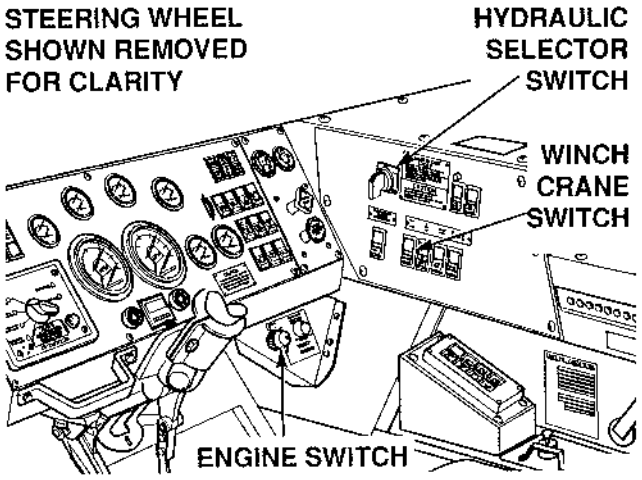
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



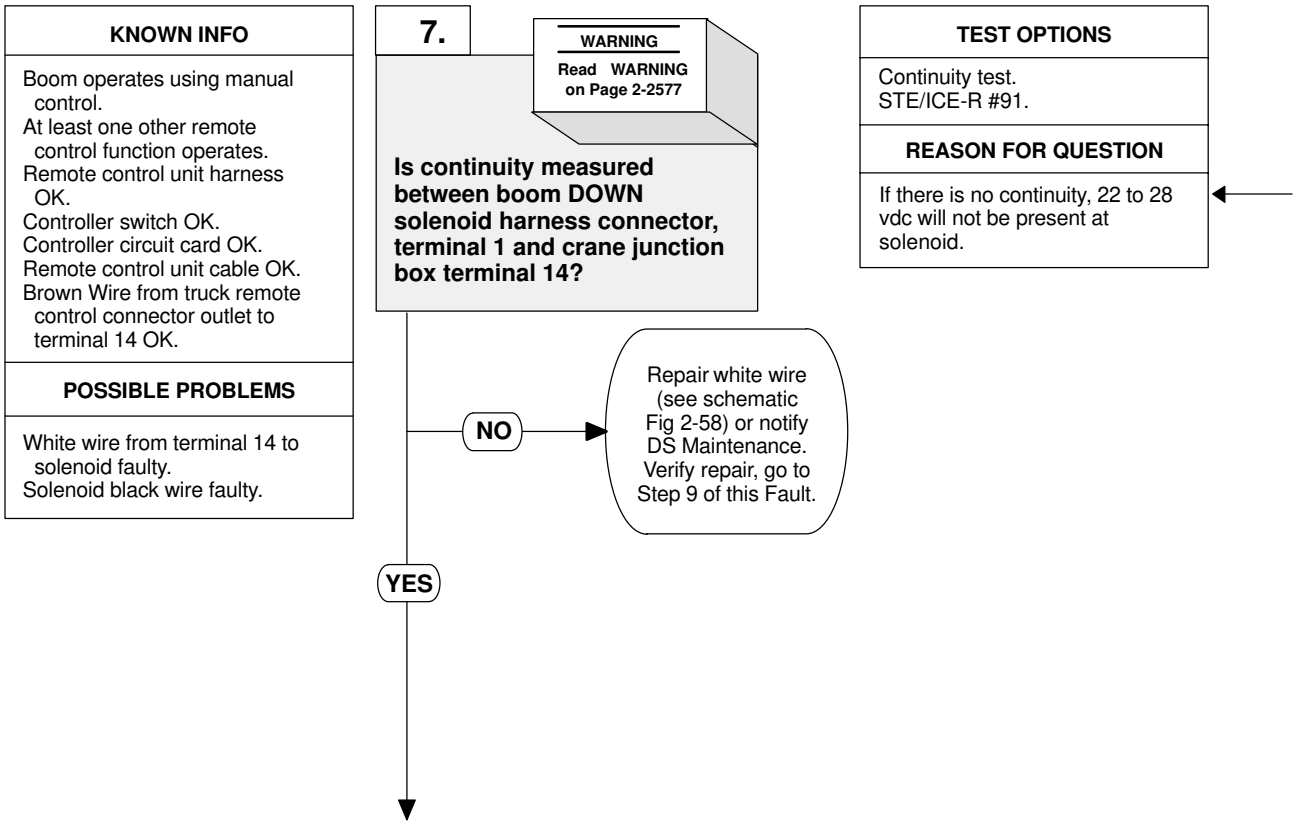


VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box terminal 14.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to SRW/CRANE position.
(7) Set crane POWER switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit BOOM control lever in the DOWN position.
    (a) If 22 to 28 vdc are not present, perform Step (10) below and repair brown wire from truck remote control hookup to terminal 14 (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If there are 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

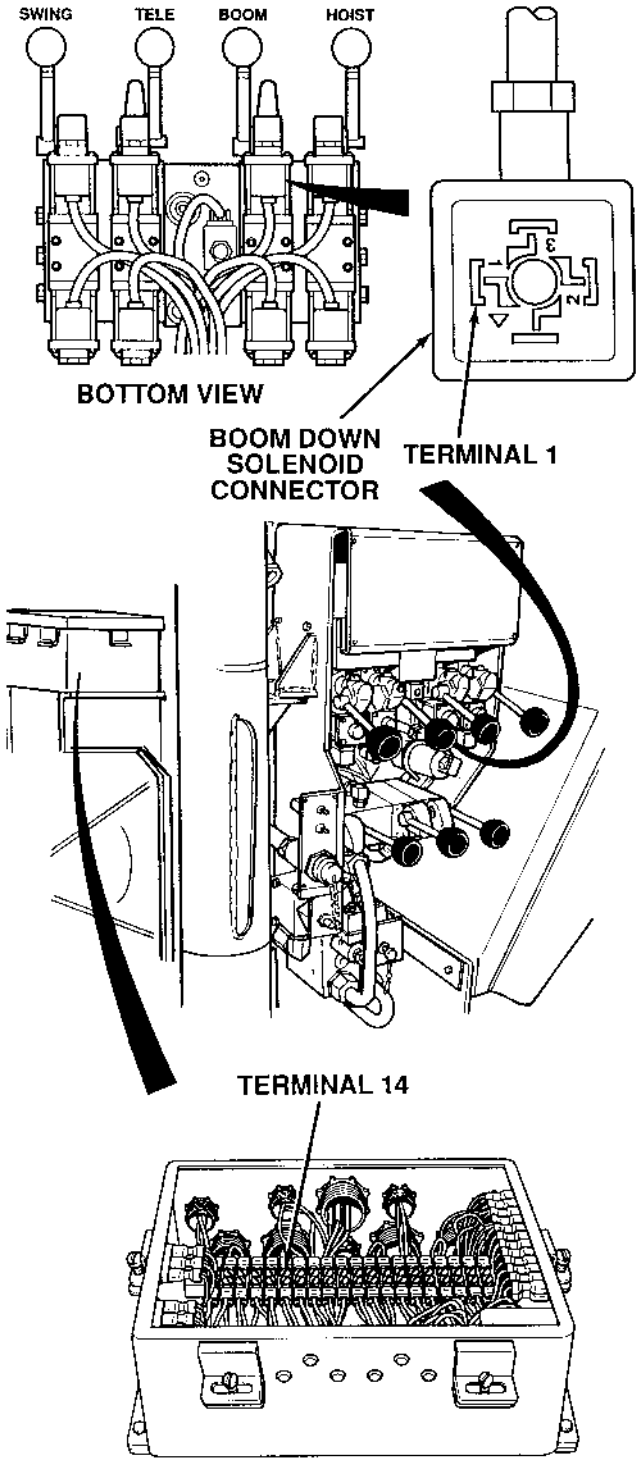


WARNING

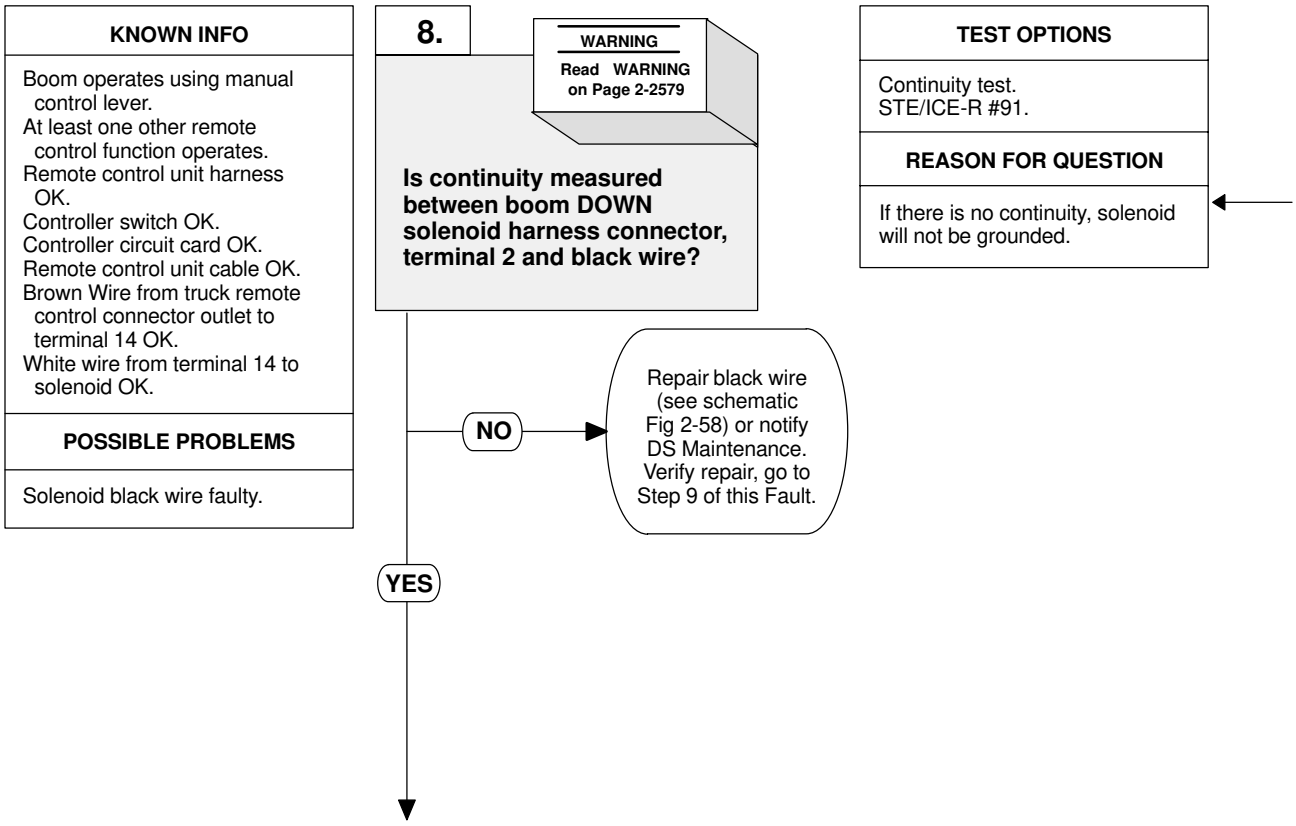
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector terminal 1 and crane main junction box terminal 14.
   (a) If there is no continuity, repair white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).

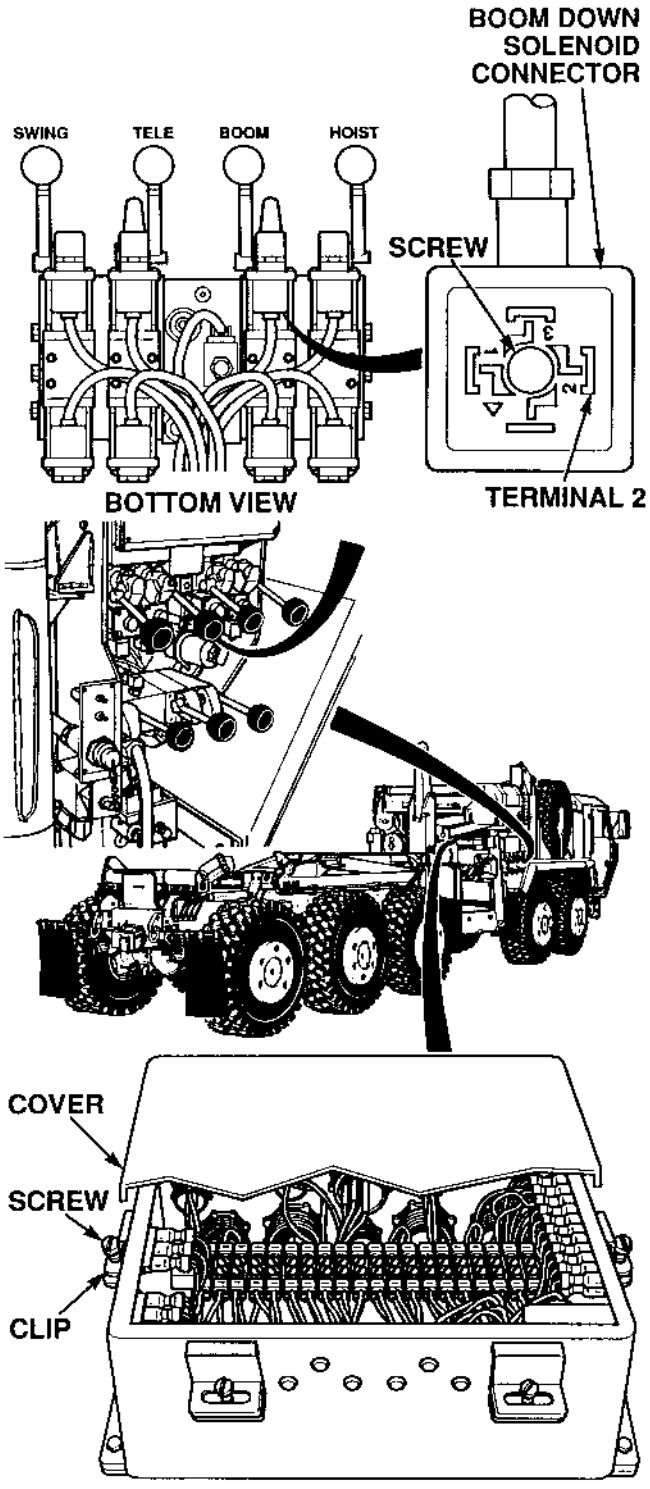


WARNING

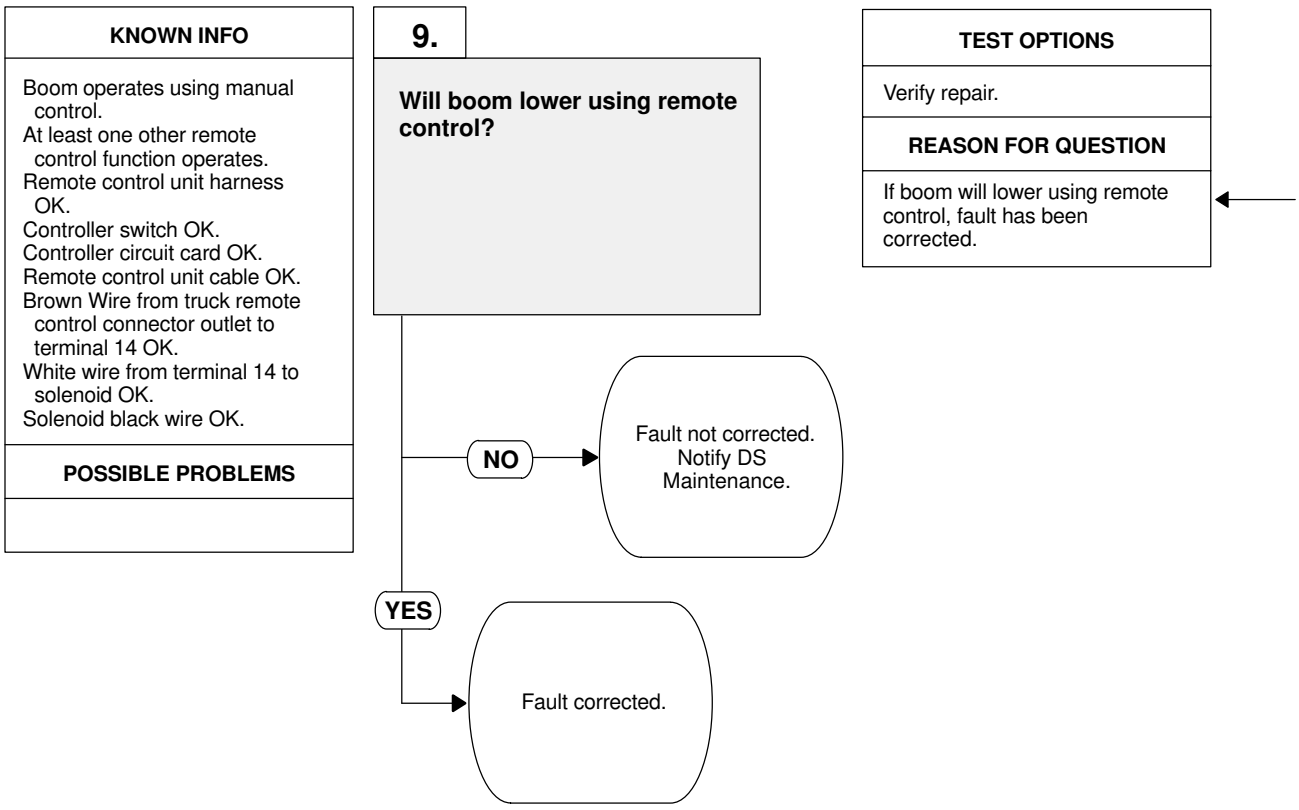
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Is there continuity between connector terminal 2 and a known good ground?
   (a) If there is no continuity, repair black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on boom DOWN hoist control solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.

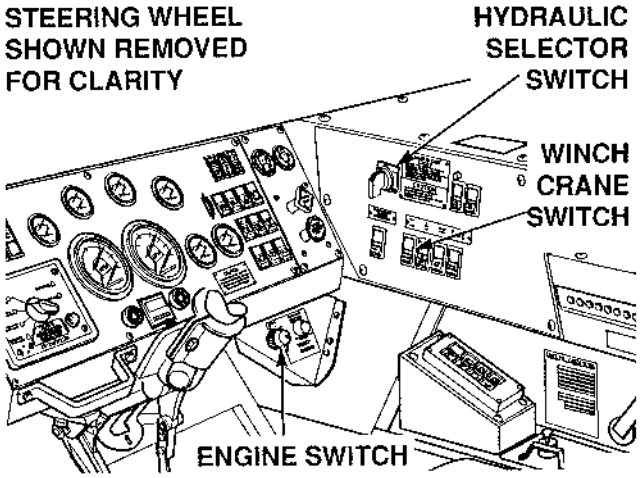


4. BOOM WILL NOT LOWER USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR

(1) Connect remote control unit cable to truck hookup and remote control unit hookup (TM 9-2320-364-10).
(2) Operate crane using remote control unit.
    (a) If boom will not lower using remote control unit, fault not corrected. Notify DS Maintenance.
    (b) If boom will lower, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

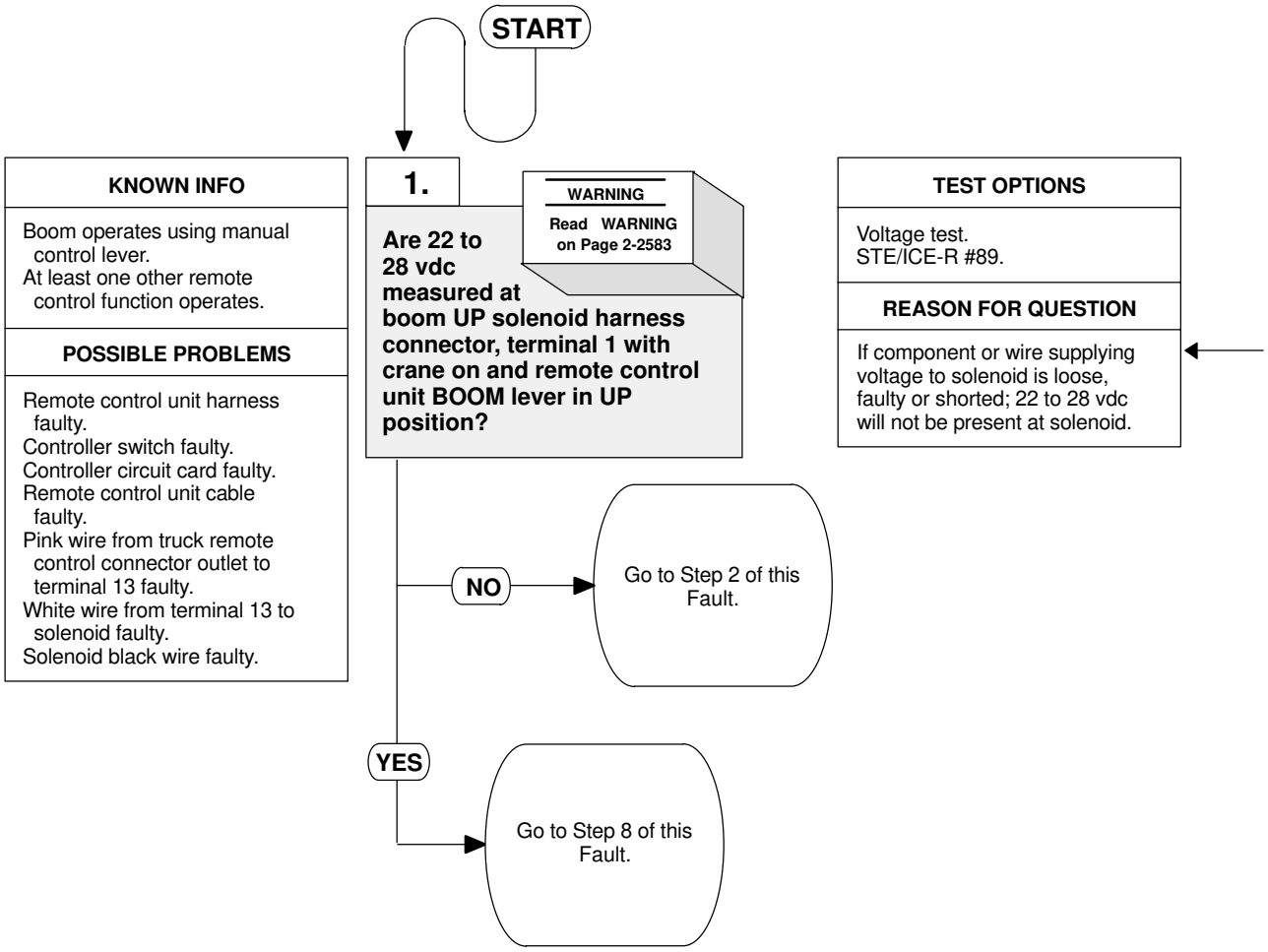
5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT.

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)

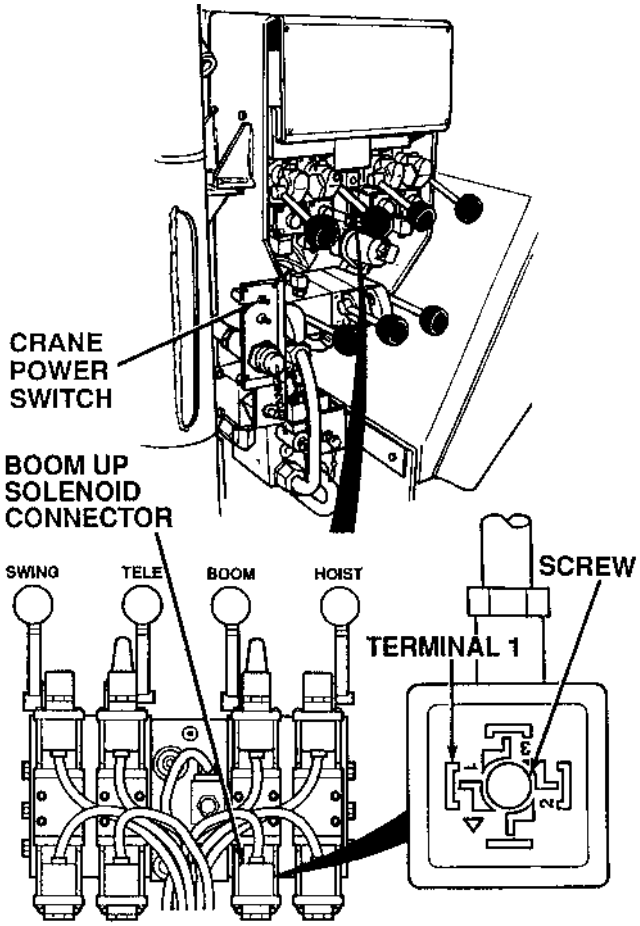
References
TM 9-2320-364-10
TM 9-4910-571-12&P

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)



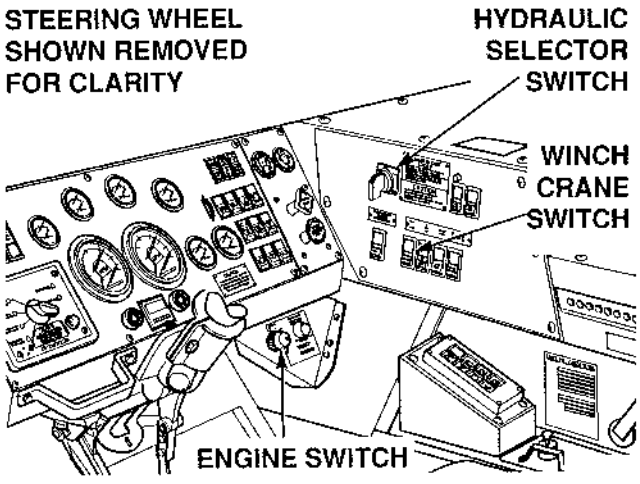
WARNING

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.

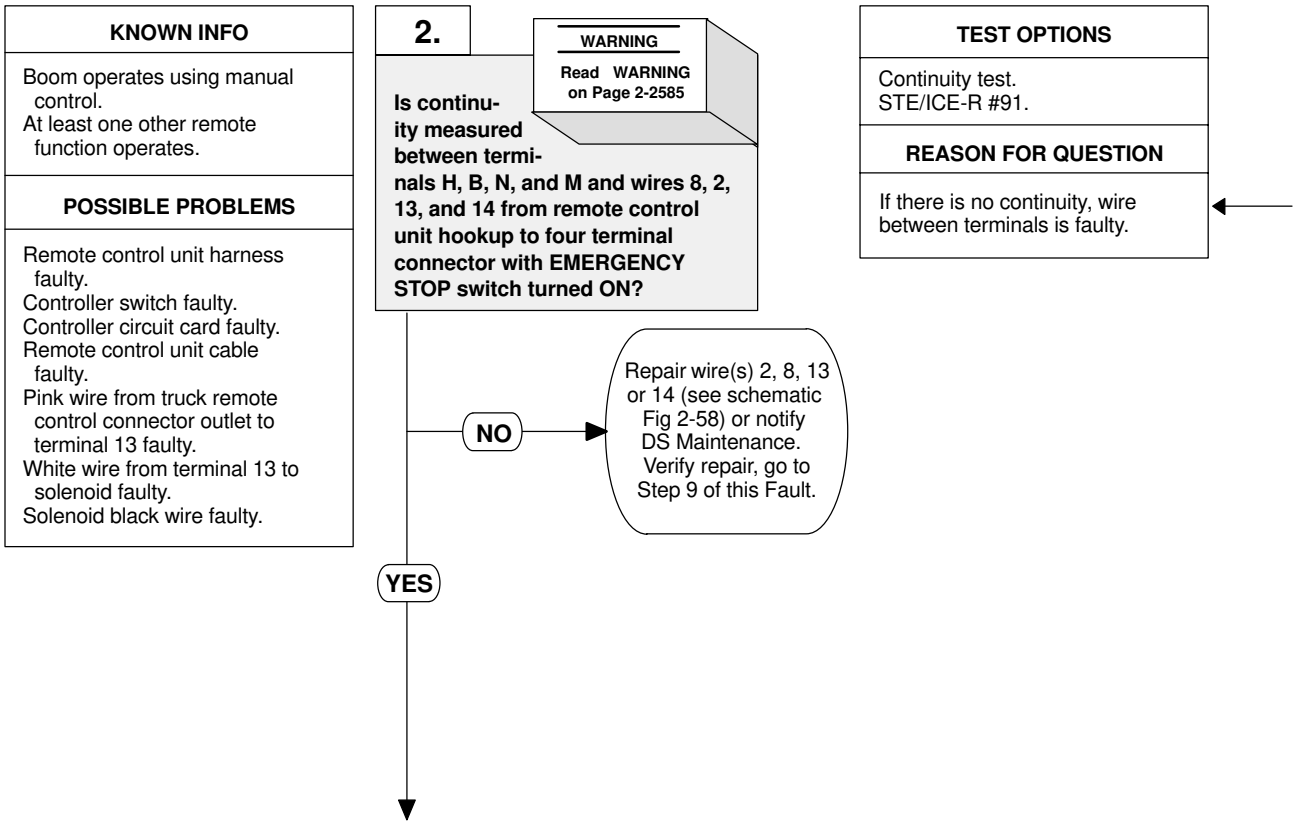


VOLTAGE TEST

(1) Loosen screw and remove connector from boom UP solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to harness connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold remote control unit BOOM controller in the UP position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Set the following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

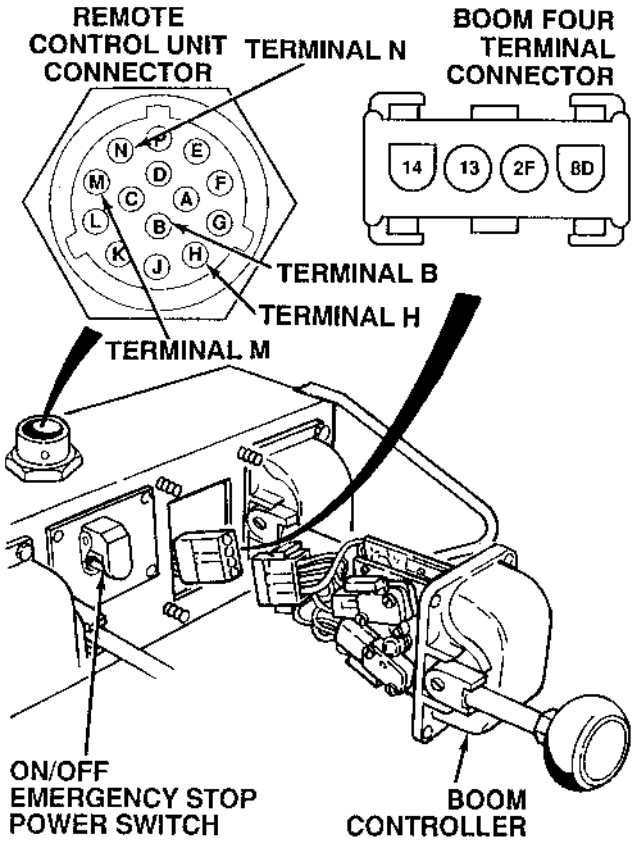


WARNING

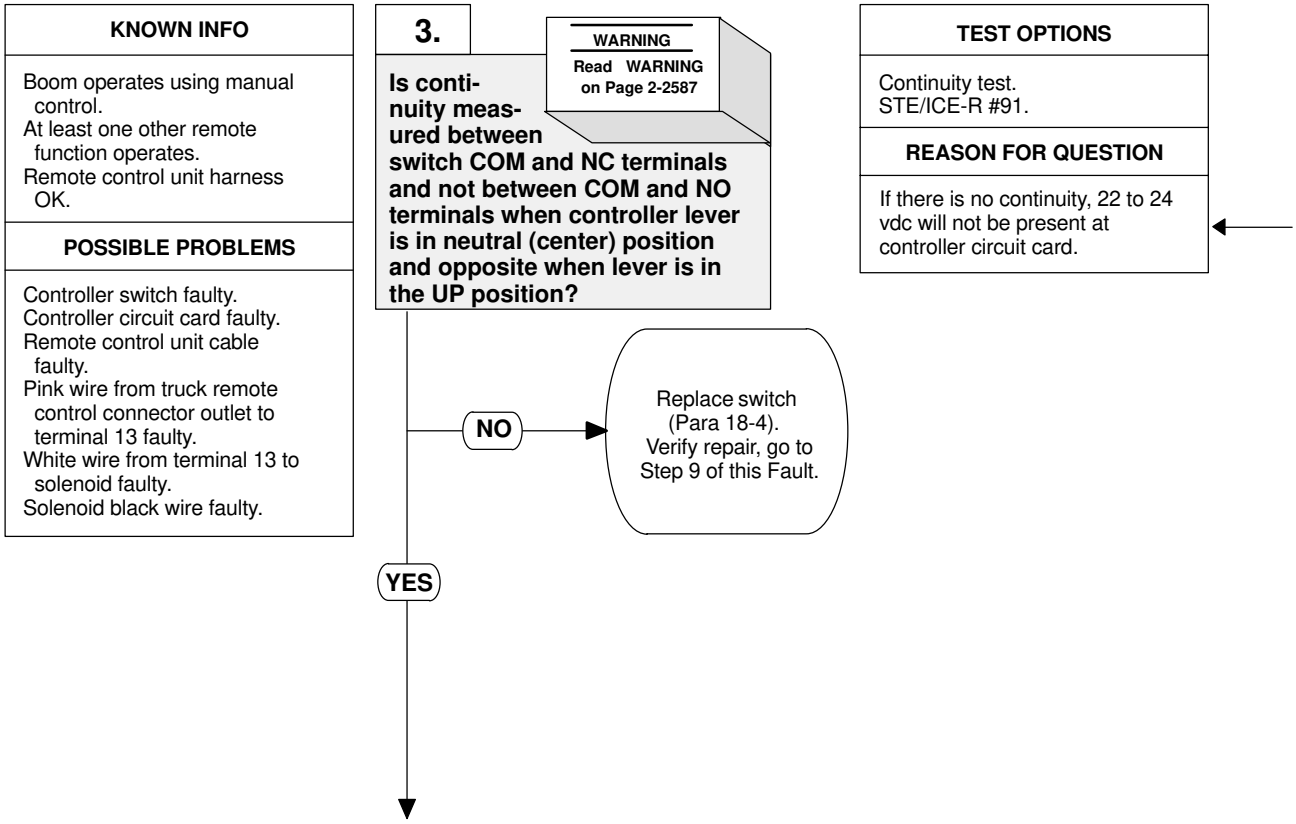
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove BOOM controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity between remote control unit hookup, terminal H and four terminal connector, terminal 8D?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit hookup, terminal B and four terminal connector, terminal 2F?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit hookup, terminal N and four terminal connector, terminal 13?
  (a) If there is no continuity, repair wire 13 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit hookup, terminal M and four terminal connector, terminal 14?
  (a) If there is no continuity, repair wire 14 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this Fault.



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

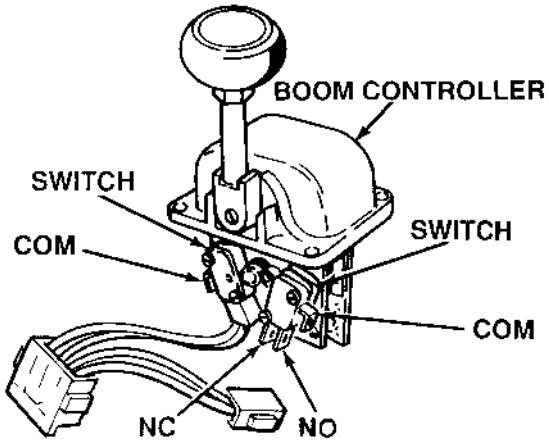


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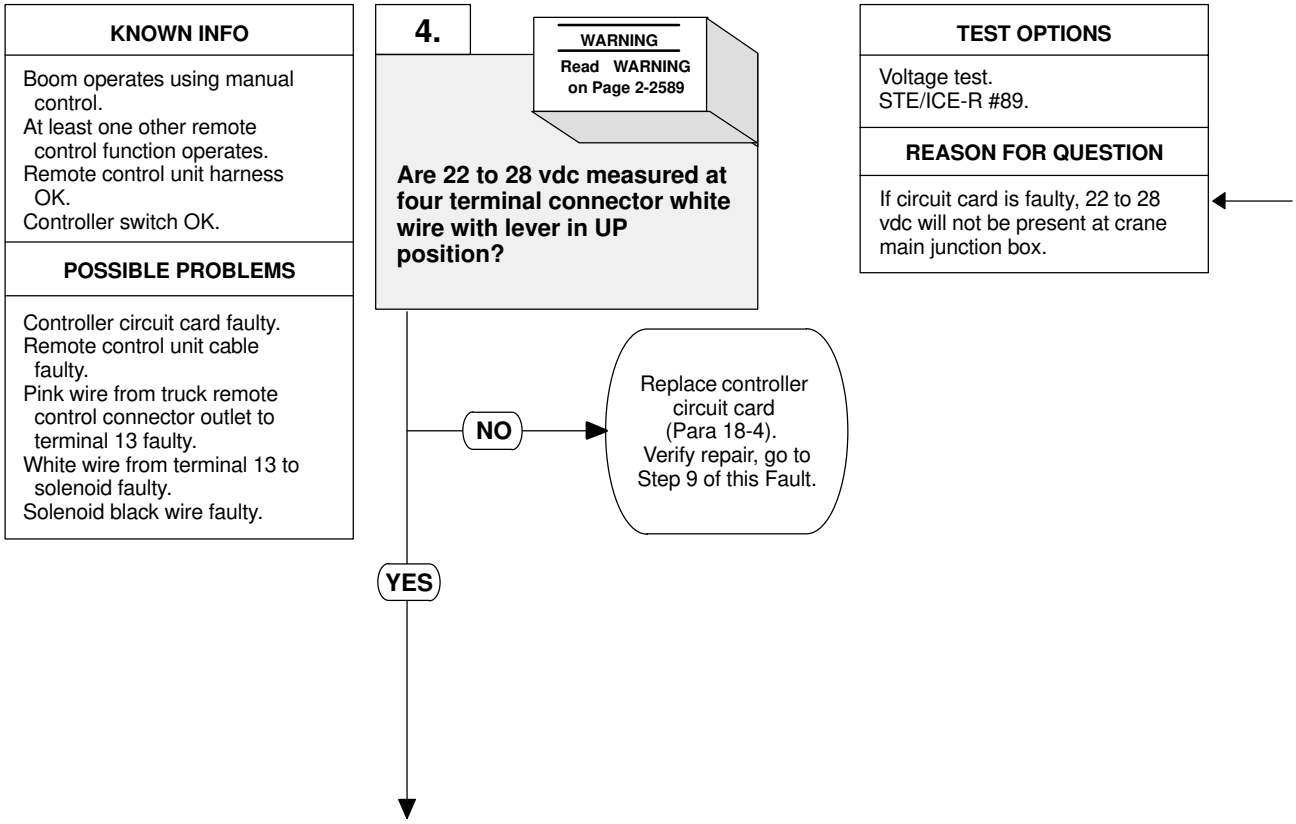
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in UP position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in UP position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (6) below.
(6) Repeat Steps (1) through (5) for other switch.
(7) Install both connectors on switches.



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

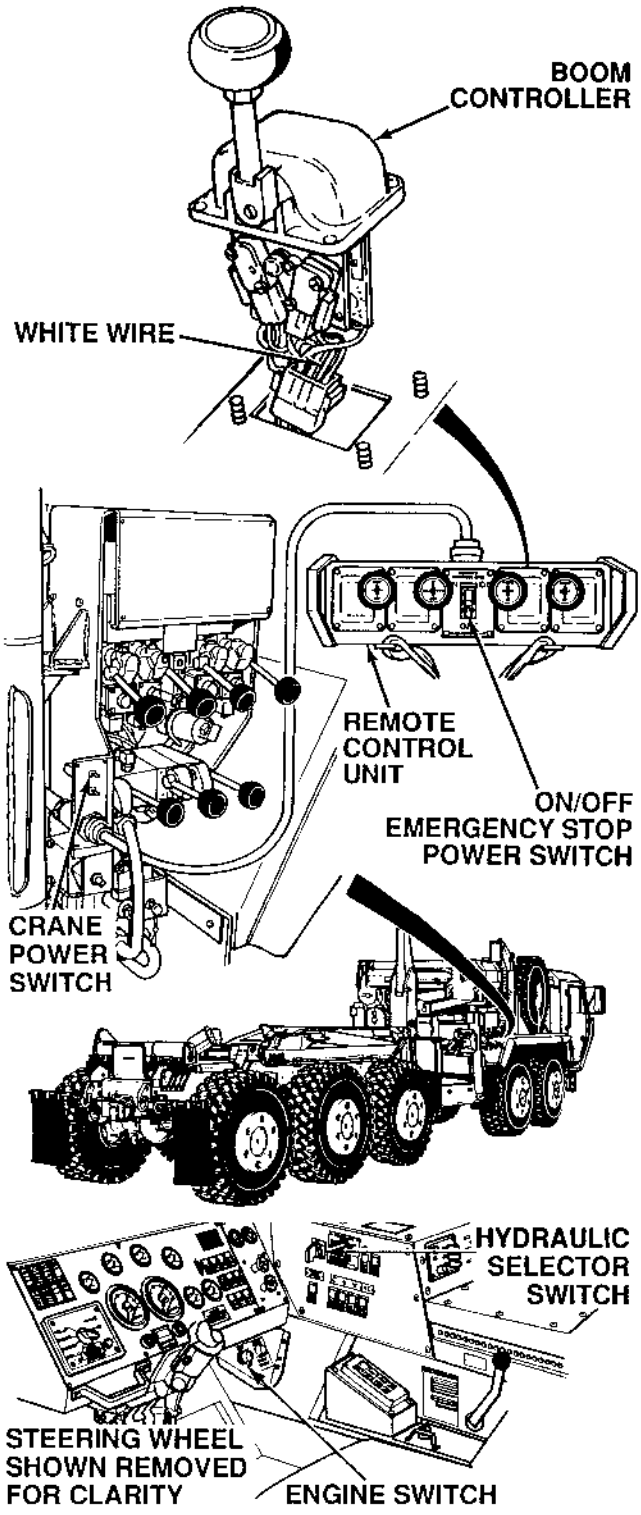


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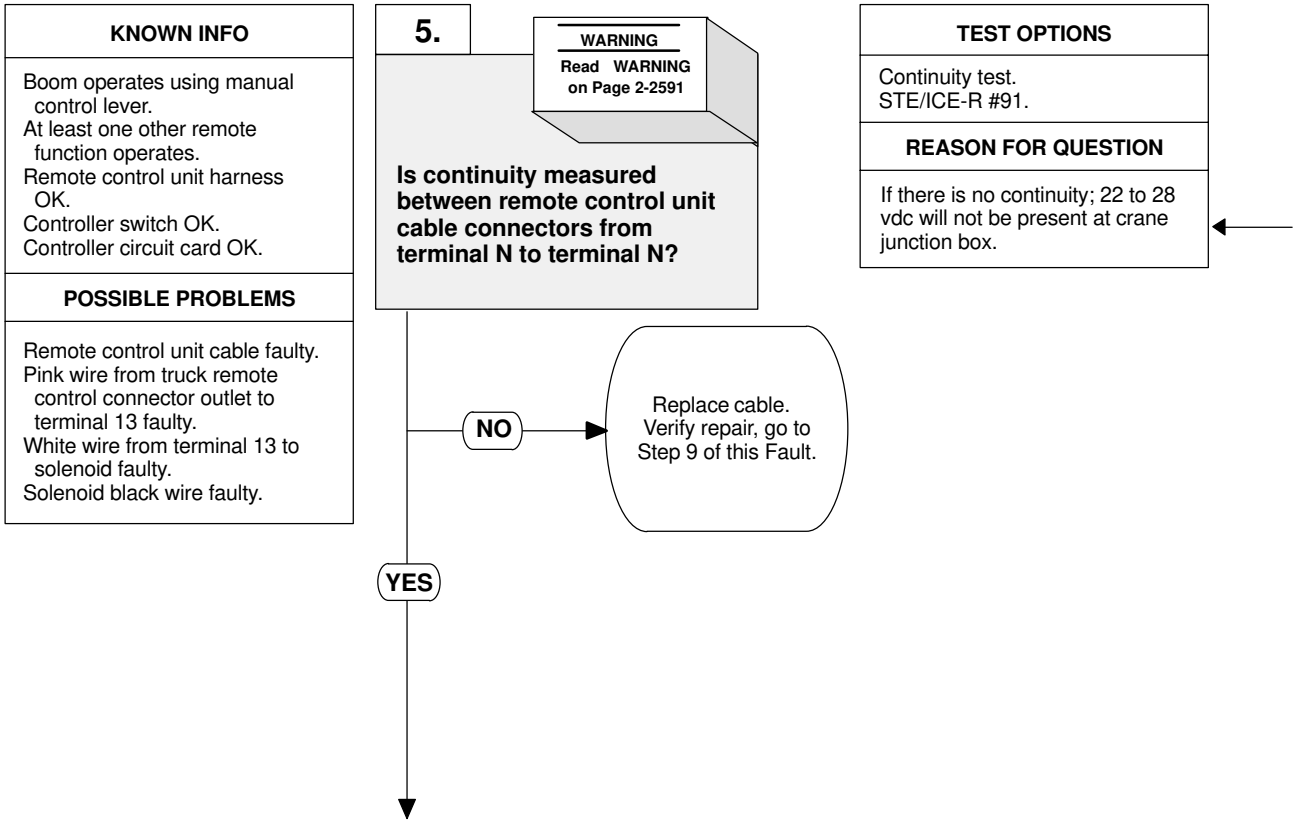
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable (TM 9-2320-364-10).
(2) Connect controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to white wire terminal in four terminal connector.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold BOOM controller in the UP position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, perform Steps (11) through (13) below.
(11) Set crane POWER switch to OFF position.
(12) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.
(13) Assemble remote control unit (Para 18-4).



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

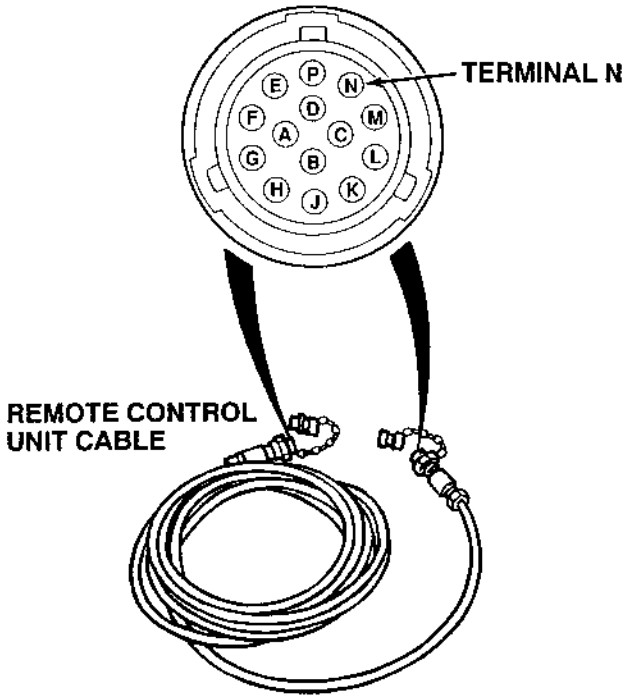


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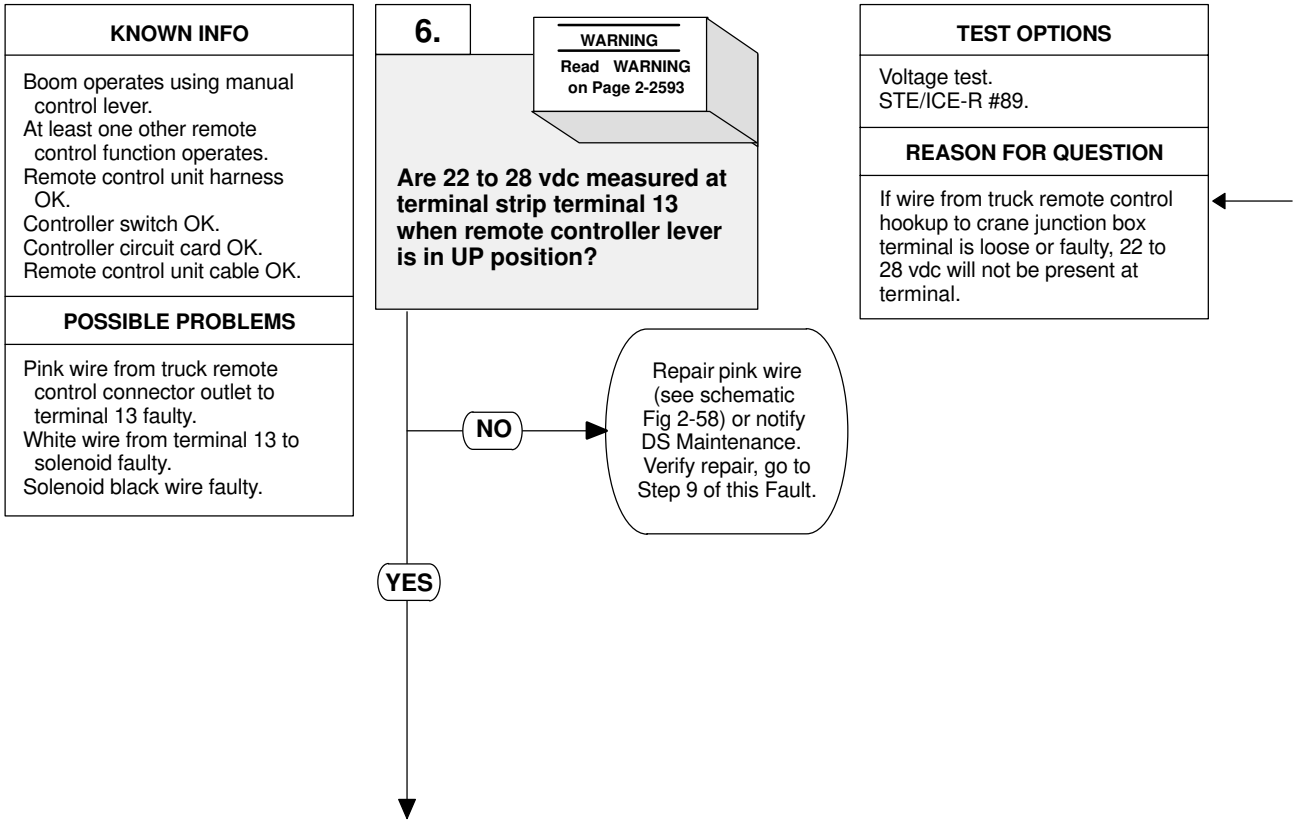
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal N at both ends?
   (a) If there is no continuity, replace cable.
   (b) If there is continuity, connect cable to truck hookup and remote control unit hookup and go to Step 6 of this Fault.



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

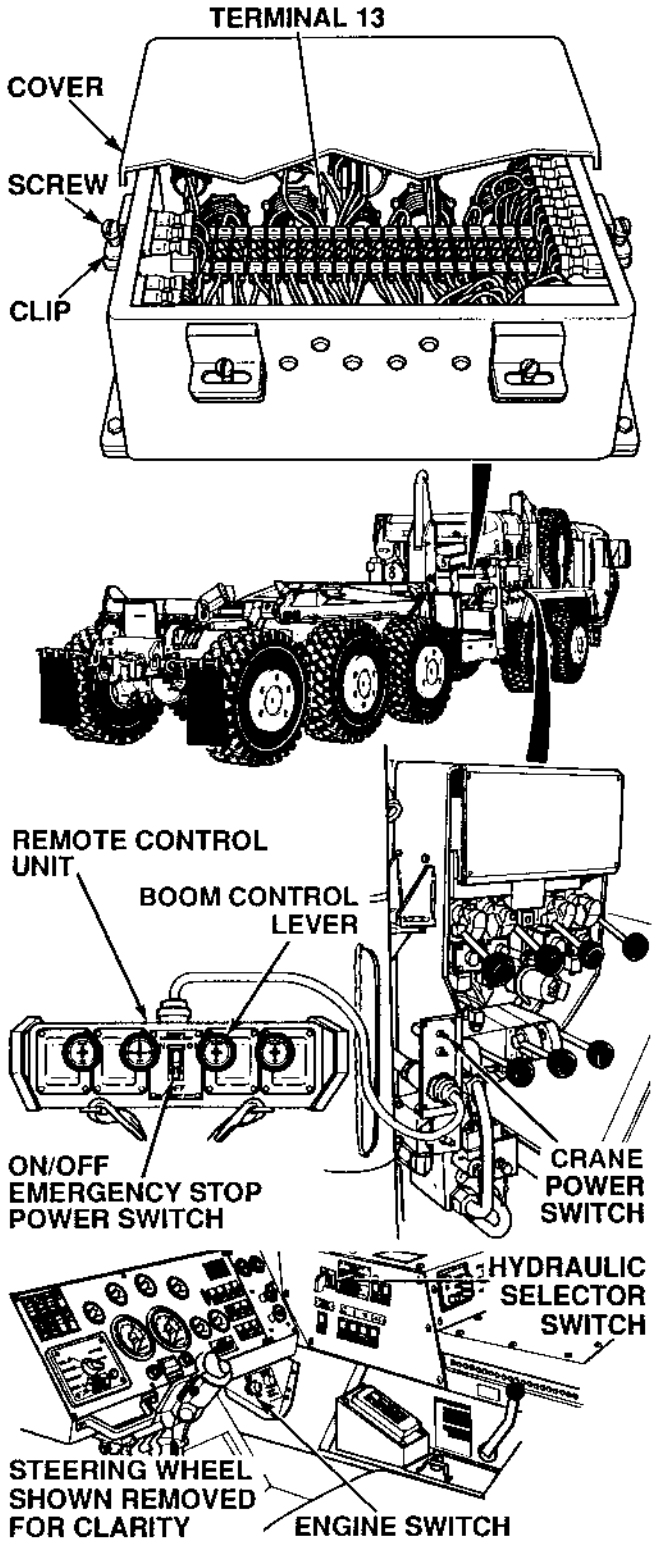


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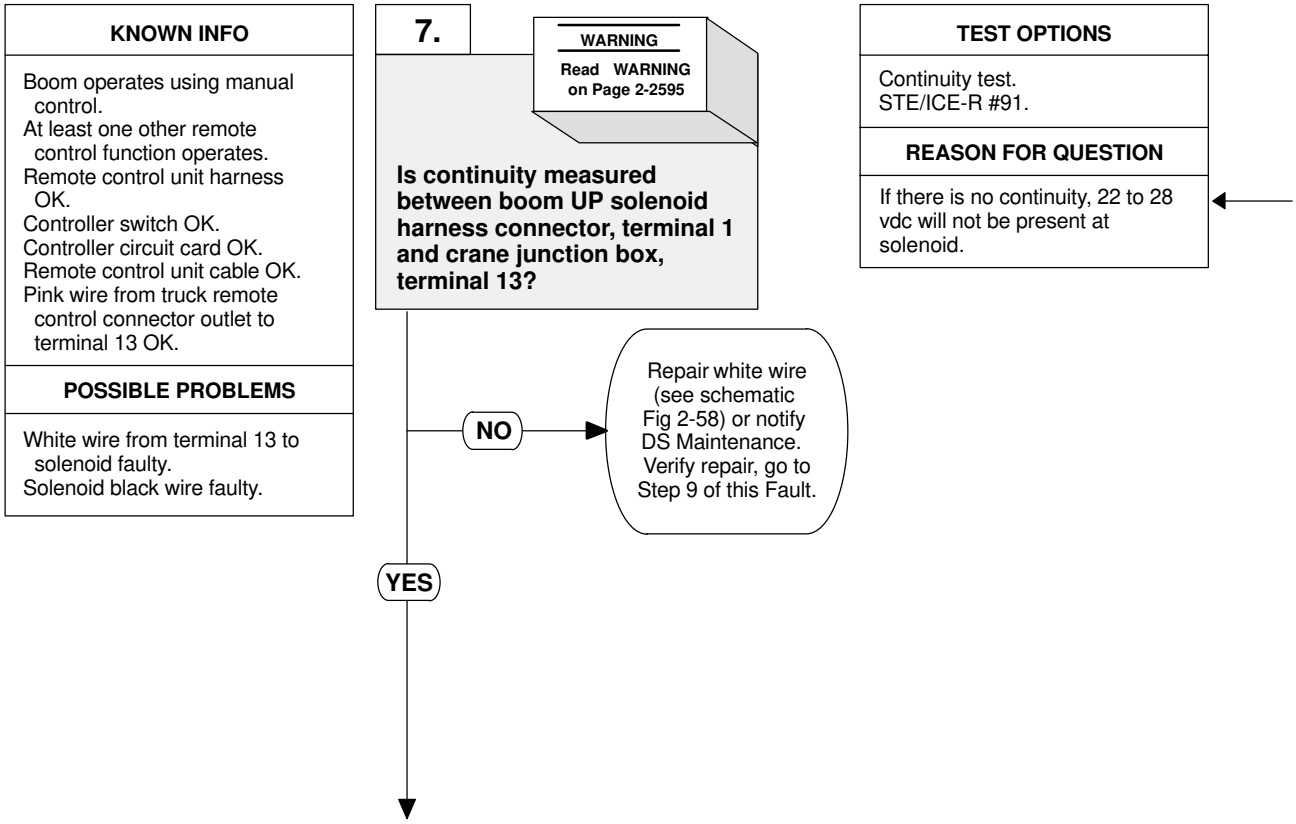
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box, terminal 13.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to SRW/CRANE position.
(7) Set crane POWER switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit BOOM control lever in the UP position.
    (a) If 22 to 28 vdc are not present, perform Step (10) below and repair pink wire from truck remote control hookup to terminal 13 (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

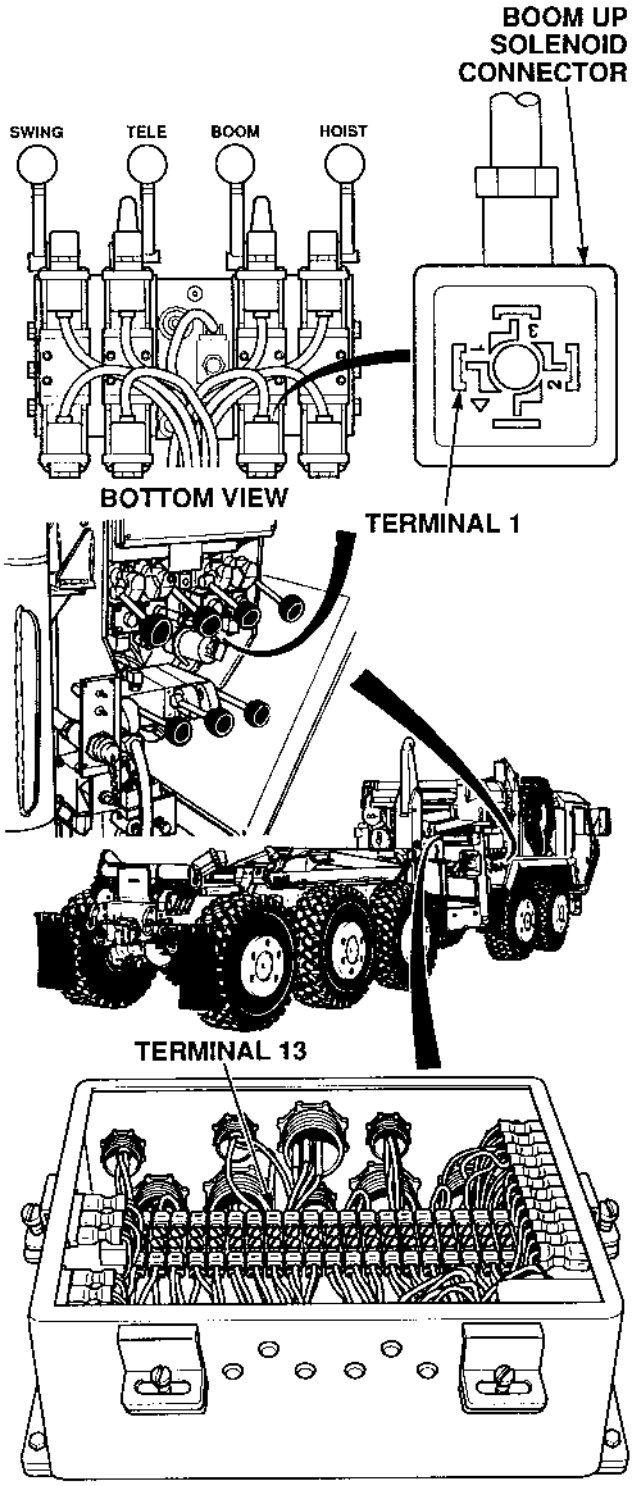


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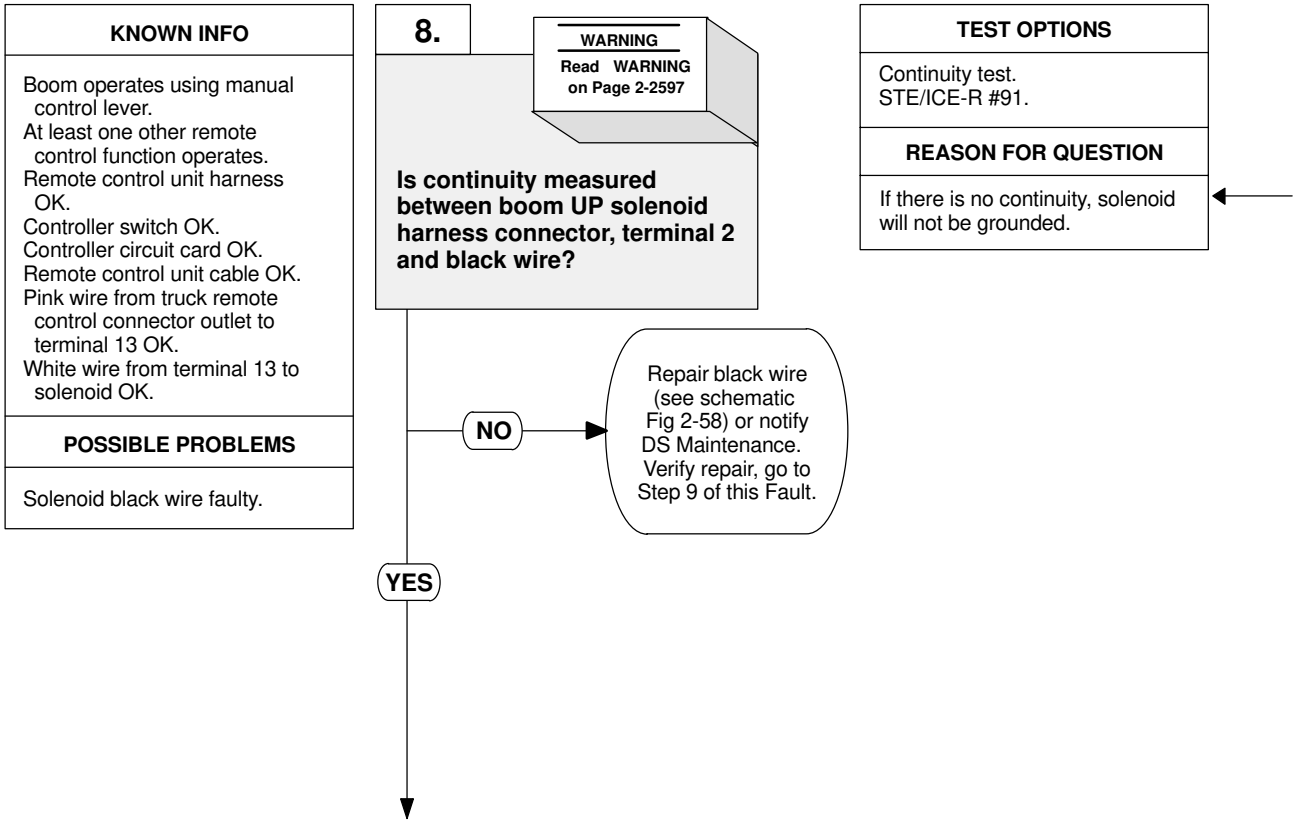
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector terminal 1 and crane main junction box terminal 13?
   (a) If there is no continuity, repair white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).

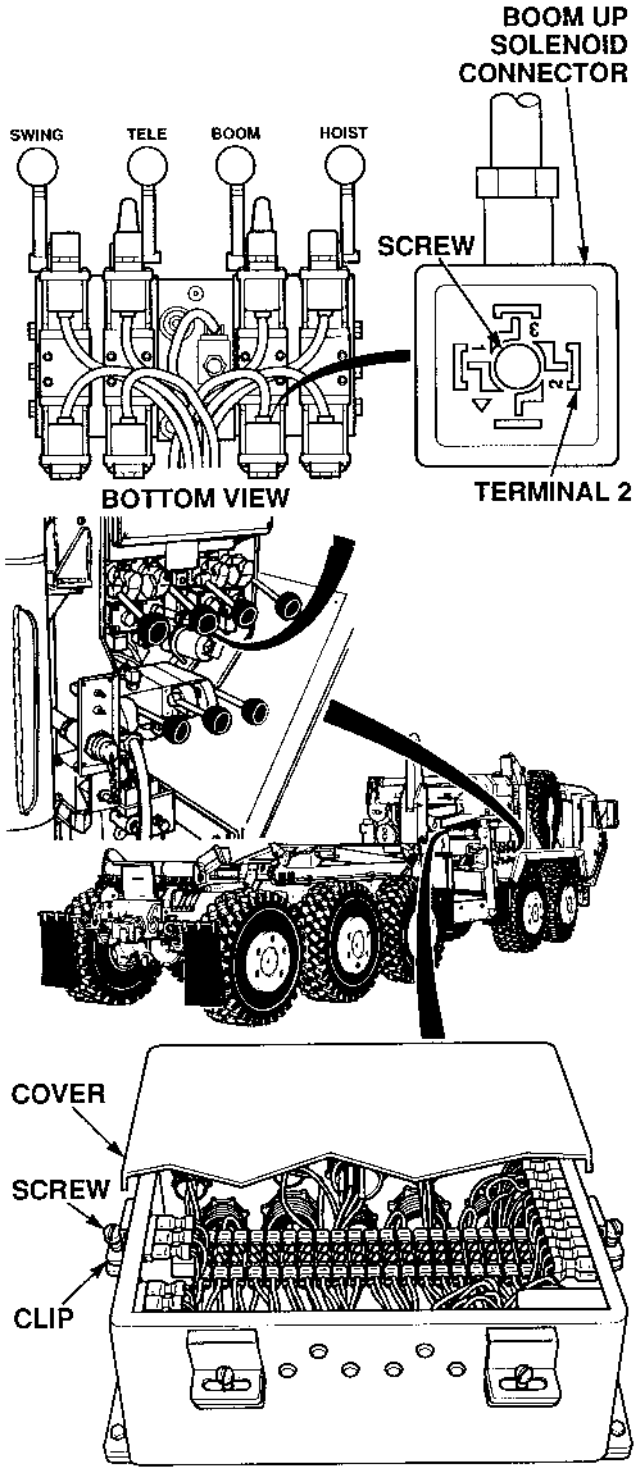


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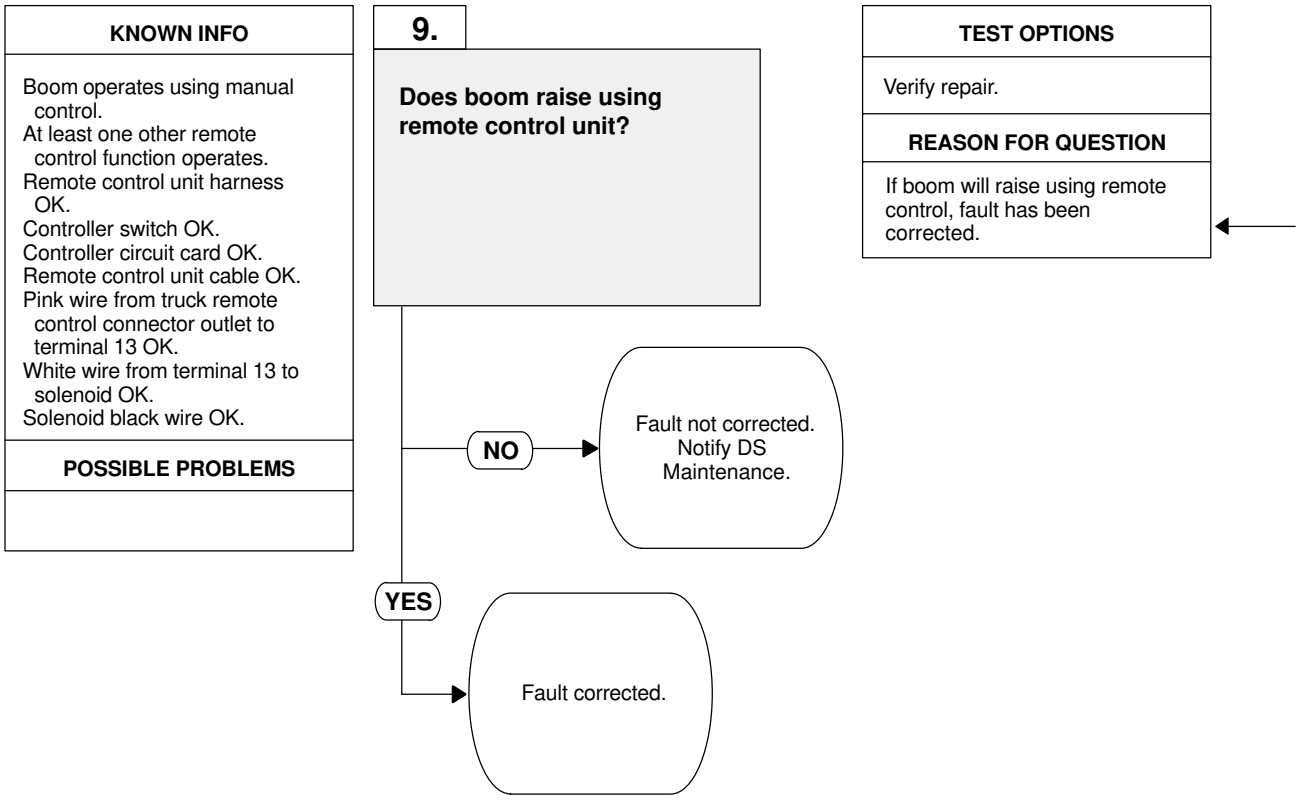
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

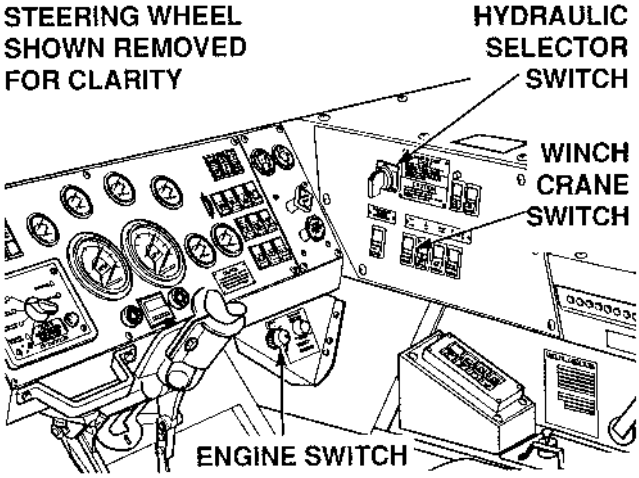
(1) Is there continuity between connector terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on boom UP solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.



5. BOOM WILL NOT RAISE USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR
(1) Connect remote control unit cable to truck hookup and remote control unit hookup (TM 9-2320-364-10). (2) Operate crane using remote control unit. (a) If boom will not raise using remote control unit, fault not corrected. Notify DS Maintenance. (b) If boom will raise, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

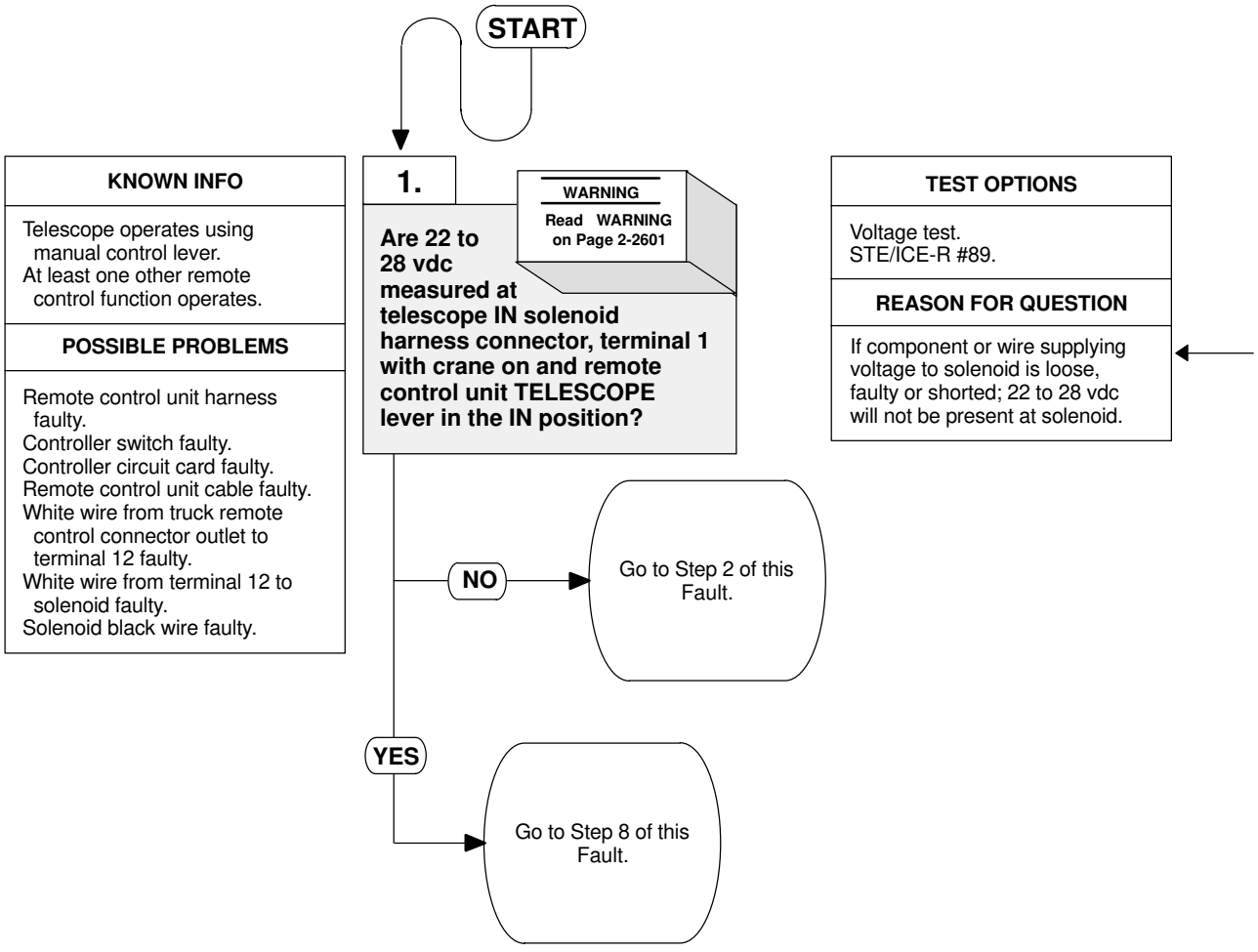
6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT.

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 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)

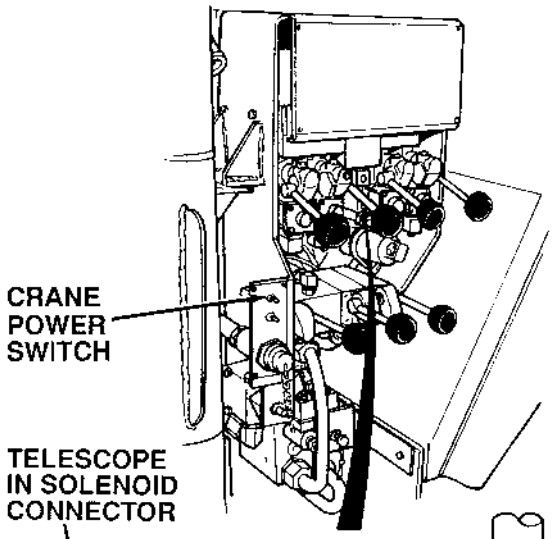


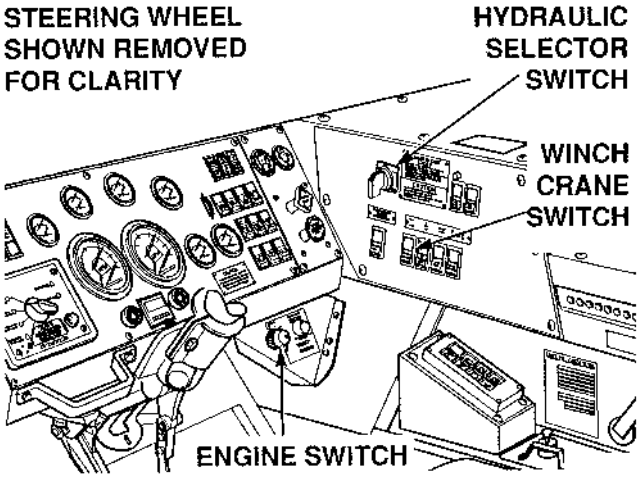
WARNING

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.

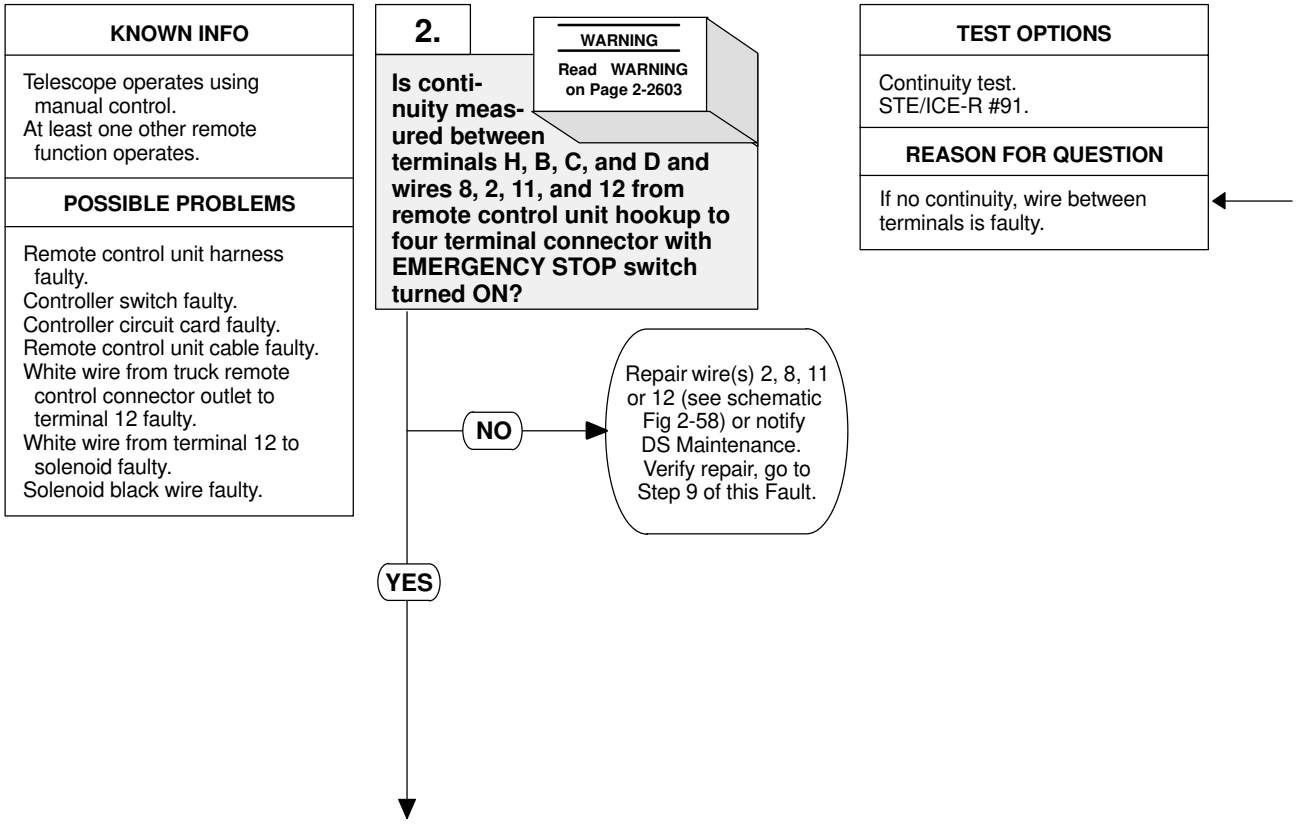
VOLTAGE TEST

(1) Loosen screw and remove connector from telescope IN solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to harness connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold remote control unit TELESCOPE controller in the IN position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Set the following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane POWER switch, hydraulic selector switch and ENGINE switch.





6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).

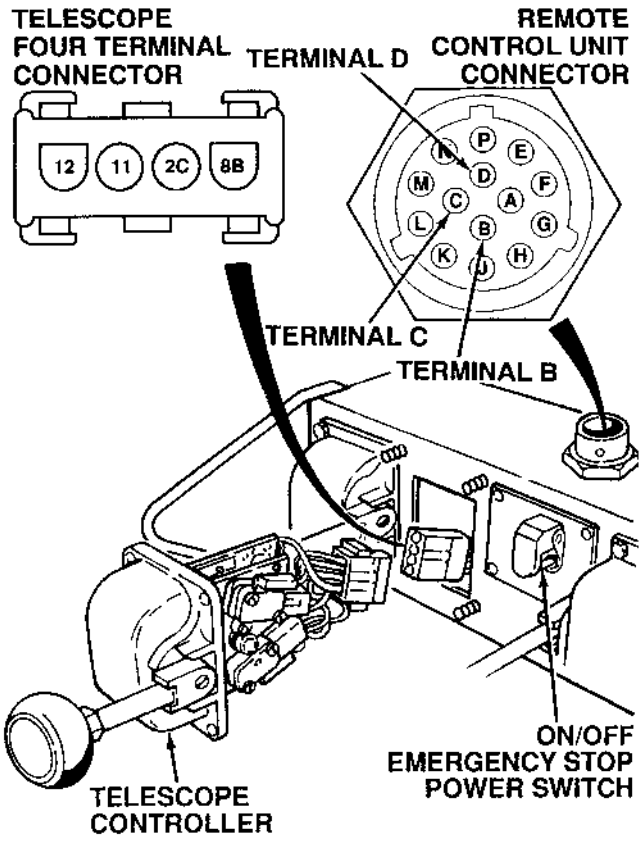


WARNING

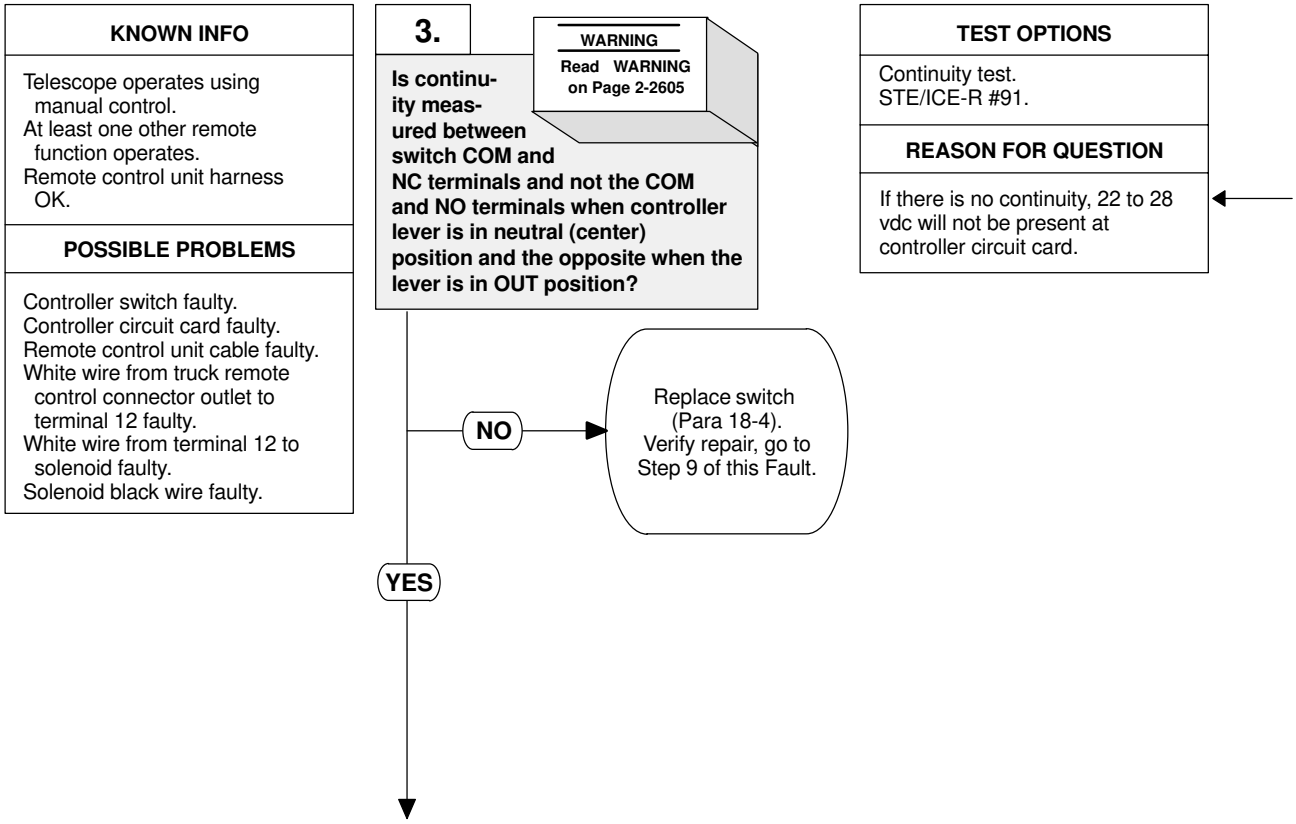
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove TELESCOPE controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity between remote control unit hookup, terminal H and four terminal connector, terminal 8B?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit hookup, terminal B and four terminal connector, terminal 2C?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit hookup, terminal C and four terminal connector, terminal 11?
  (a) If there is no continuity, repair wire 11 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit hookup, terminal D and four terminal connector, terminal 12?
  (a) If there is no continuity, repair wire 12 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this fault.



6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).

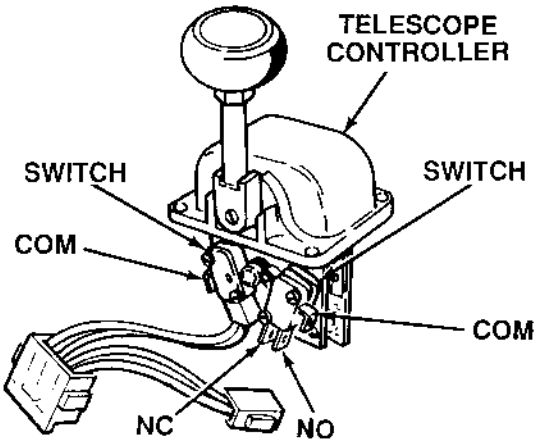


WARNING

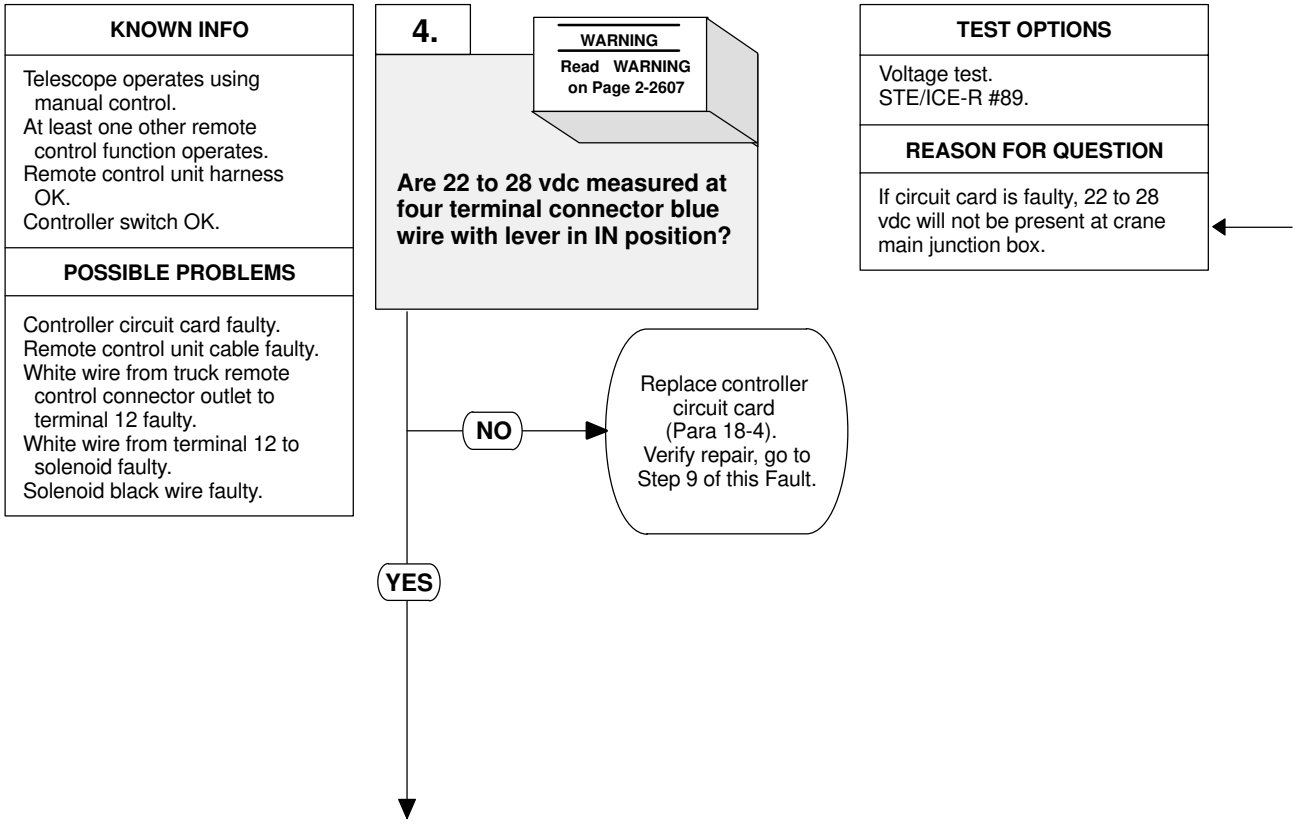
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in OUT position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in OUT position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (6) below.
(6) Repeat Steps (1) thru (5) for other switch.
(7) Install both connectors on switches.



6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).

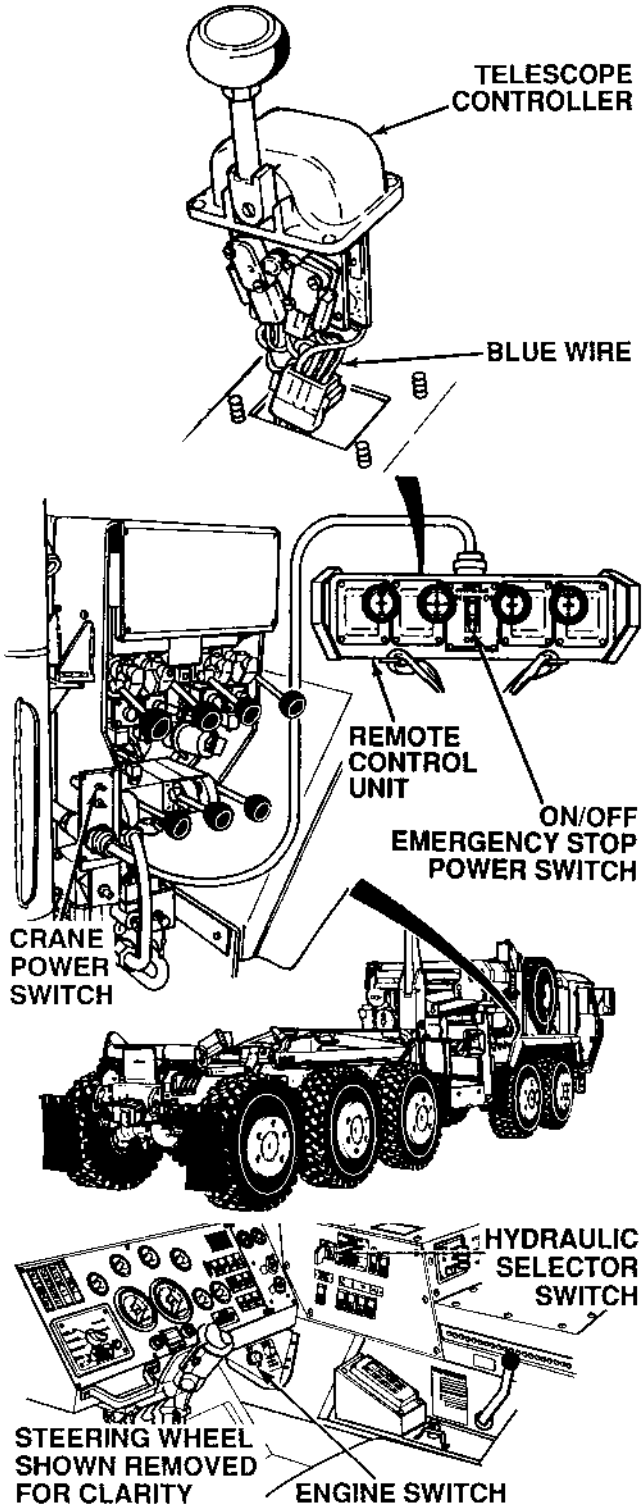


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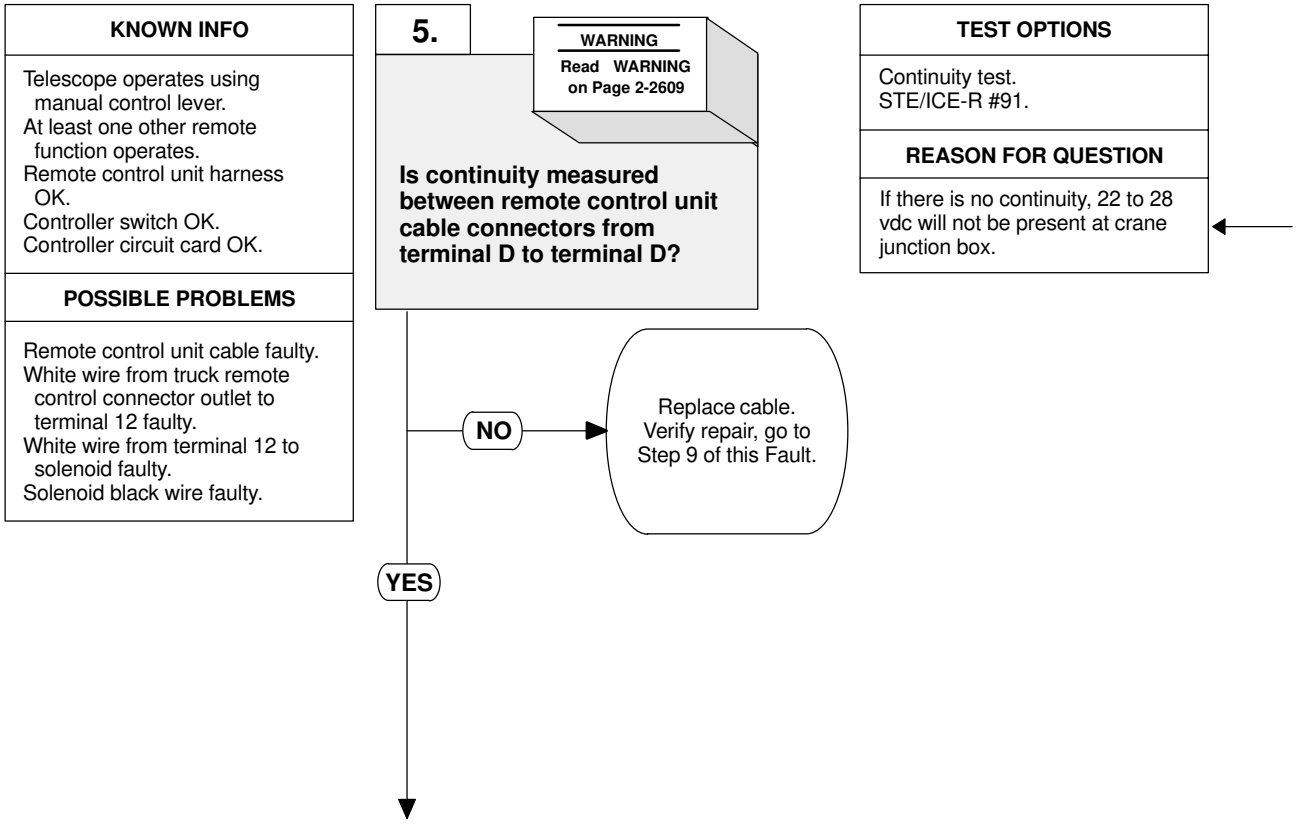
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable.
(2) Connect controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to blue wire terminal in four terminal connector.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold TELESCOPE controller in the IN position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, perform Steps (11) and (12) below.
(11) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.
(12) Assemble remote control unit (Para 18-4).



6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).

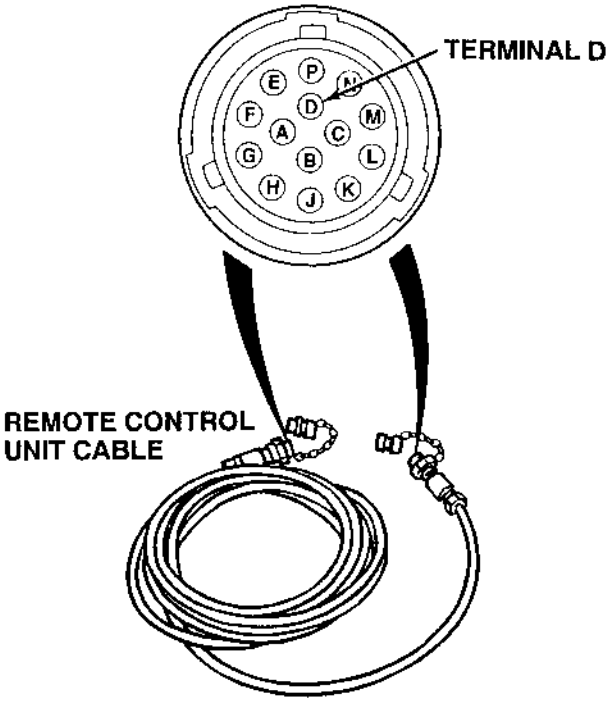


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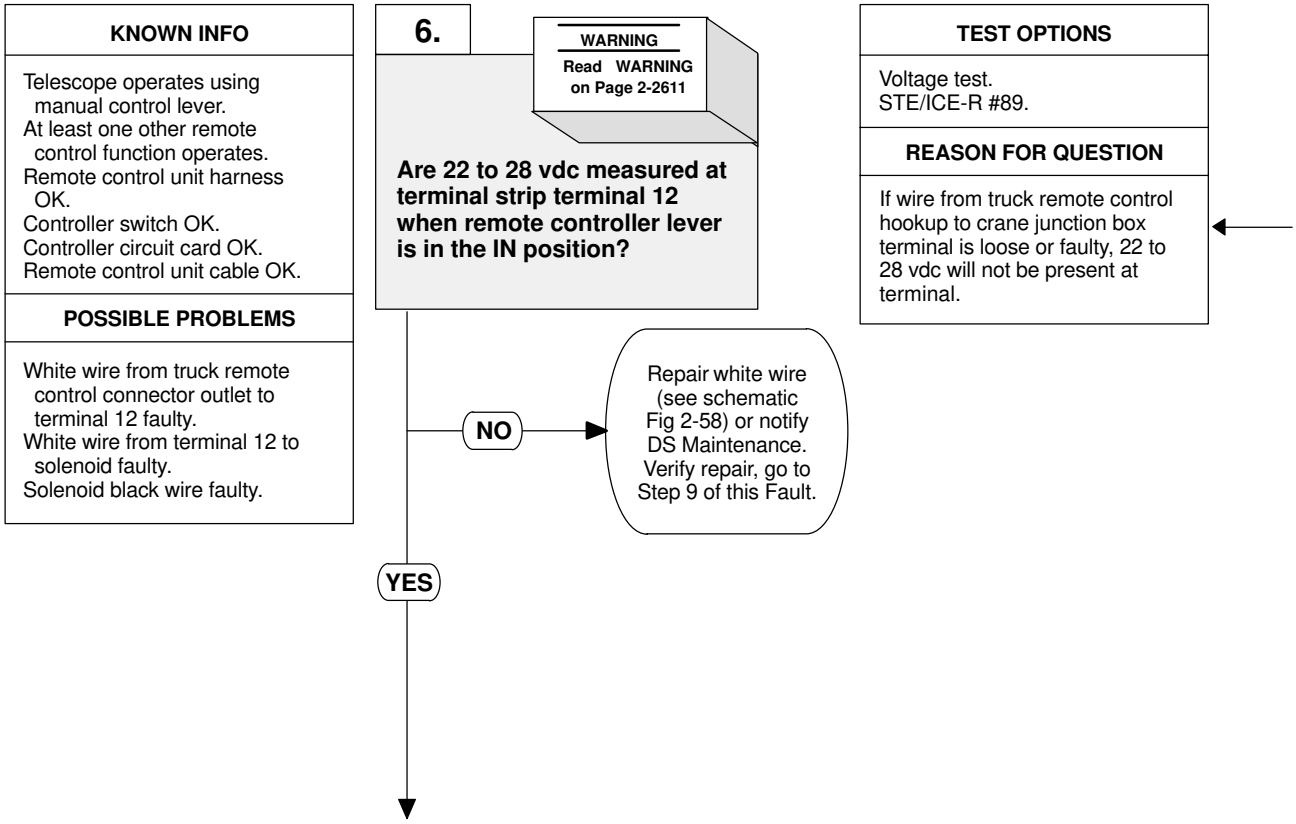
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal D at both ends?
   (a) If there is no continuity, replace cable.
   (b) If there is continuity, connect cable to truck hookup and remote control unit hookup and go to Step 6 of this Fault.



6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).

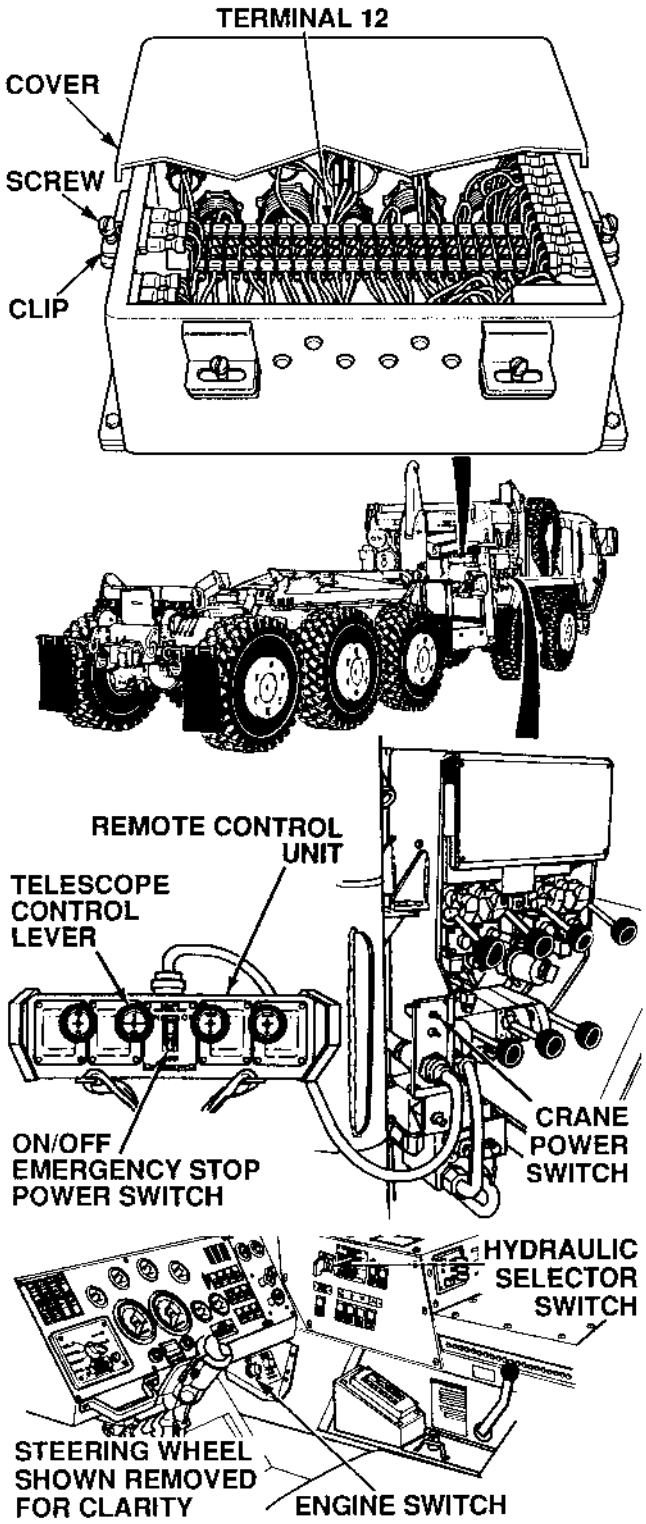


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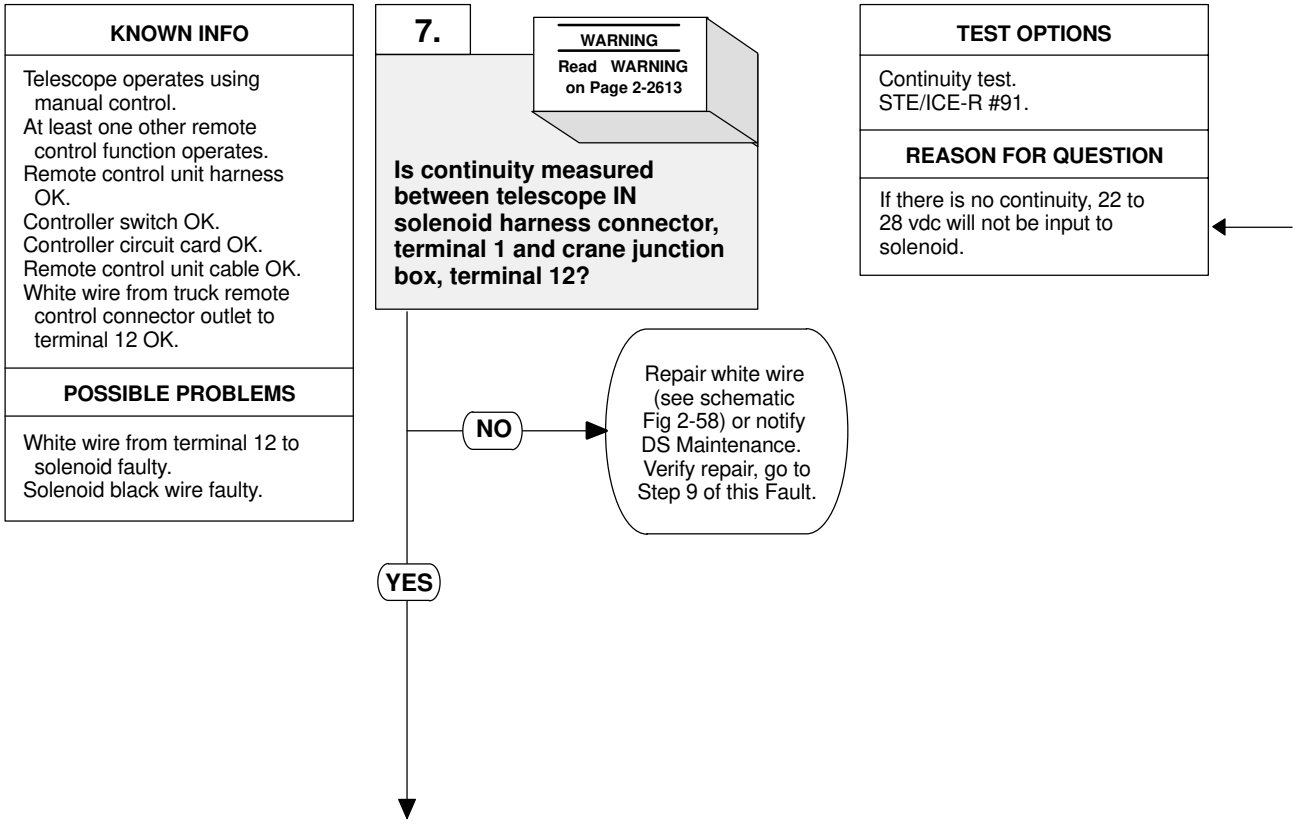
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box, terminal 12.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to SRW/CRANE position.
(7) Set crane POWER switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit TELESCOPE control lever in the IN position.
    (a) If 22 to 28 vdc are not present, perform Step (10) below and repair white wire from truck remote control hookup to terminal 12 (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).

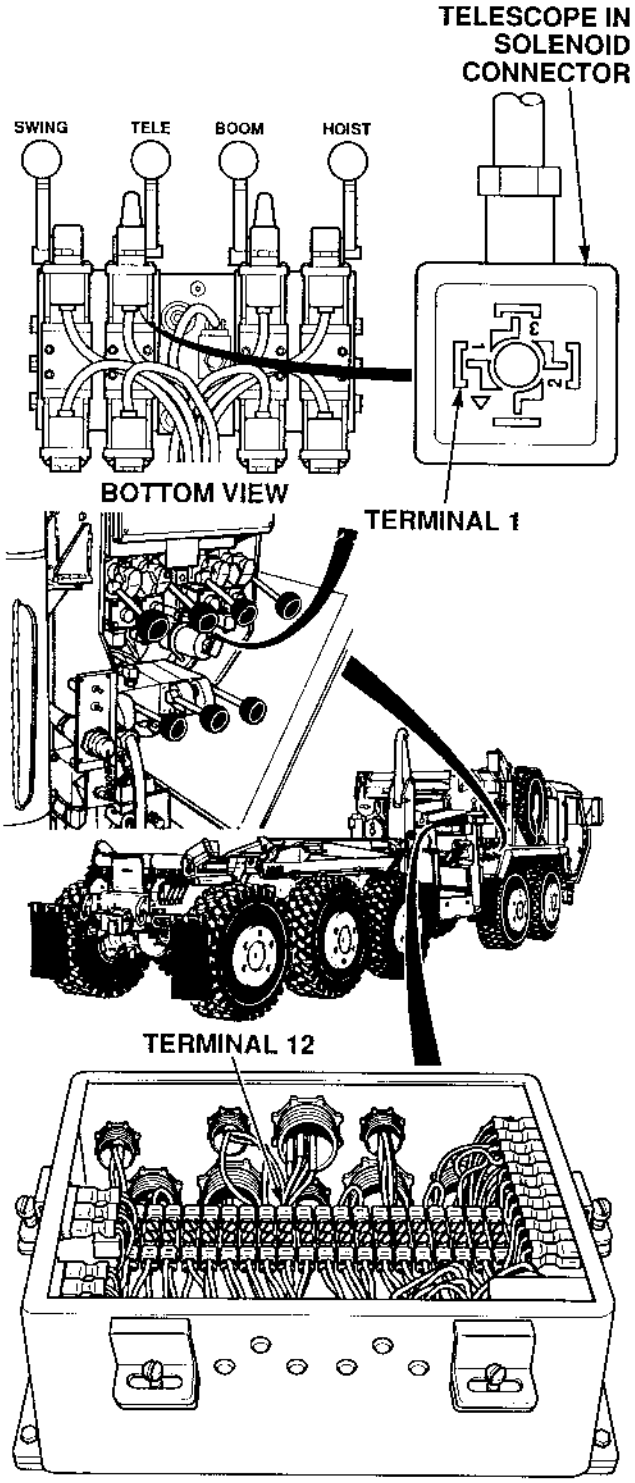


WARNING

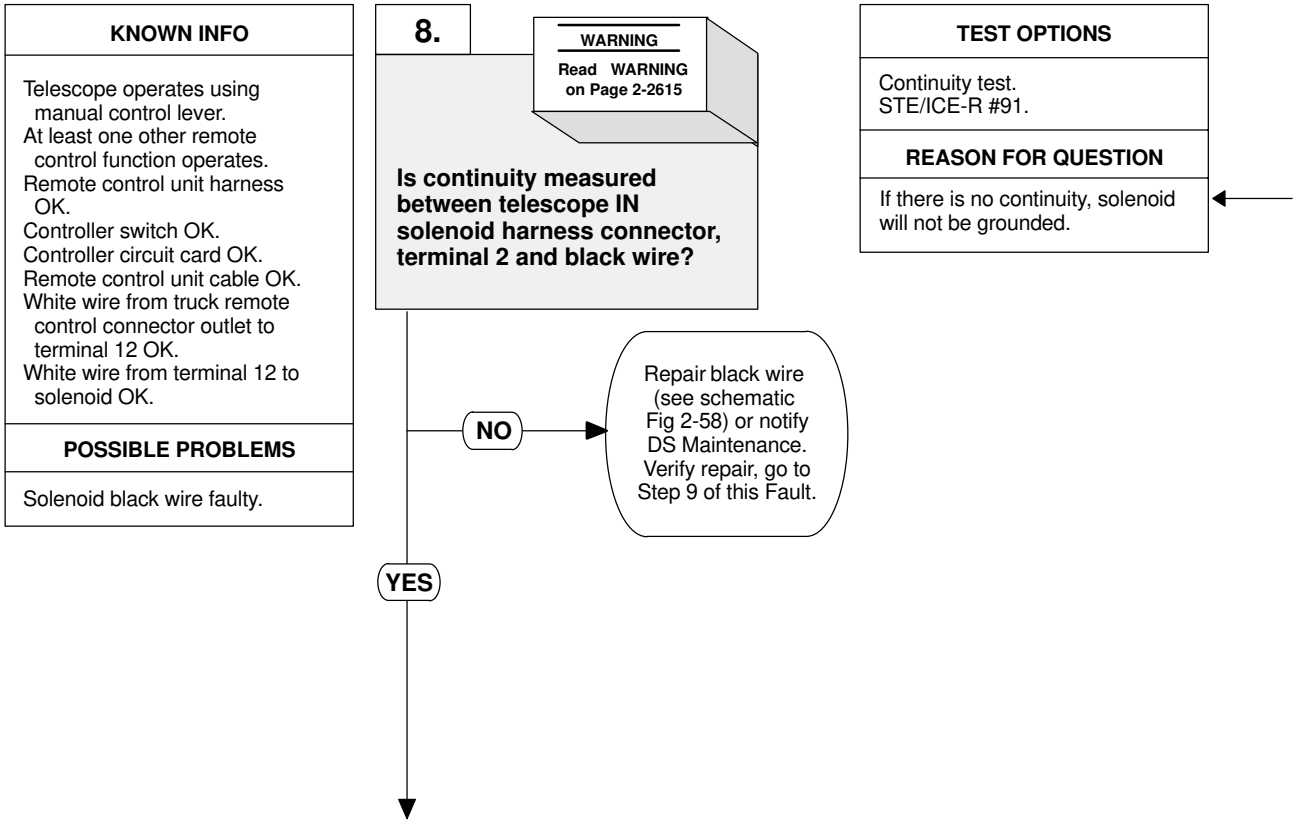
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector terminal 1 and crane main junction box, terminal 12?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).

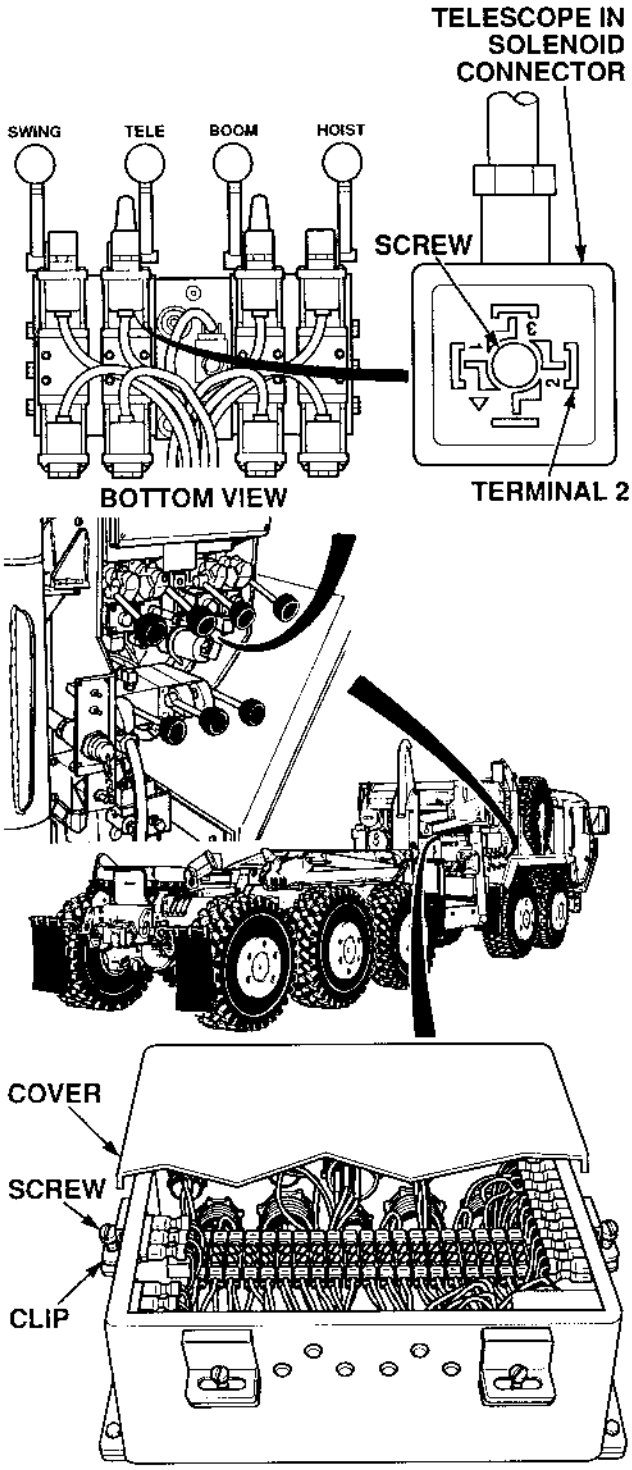


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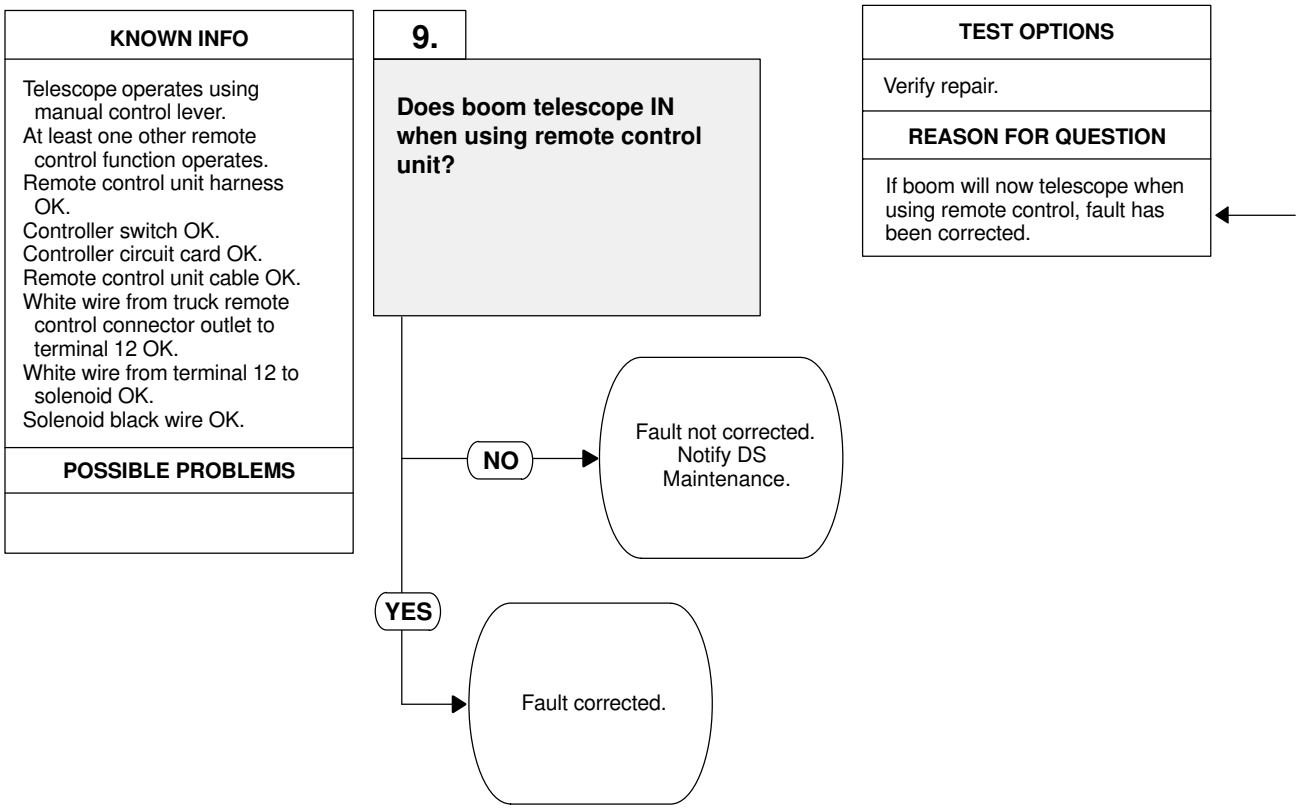
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

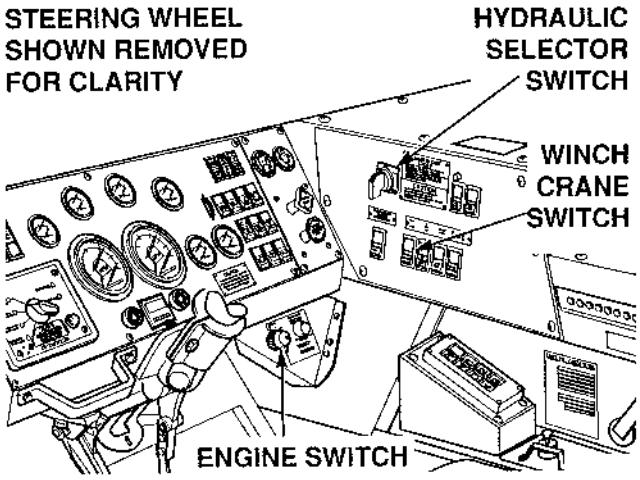
(1) Is there continuity between connector, terminal 2 and a known good ground?
   (a) If there is no continuity, repair black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on telescope IN solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.



6. BOOM WILL NOT TELESCOPE IN USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR
(1) Connect remote control unit cable to truck hookup and remote control unit hookup (TM 9-2320-364-10). (2) Operate crane using remote control unit. (a) If boom will not telescope IN using remote control unit, fault not corrected. Notify DS Maintenance. (b) If boom will telescope IN, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

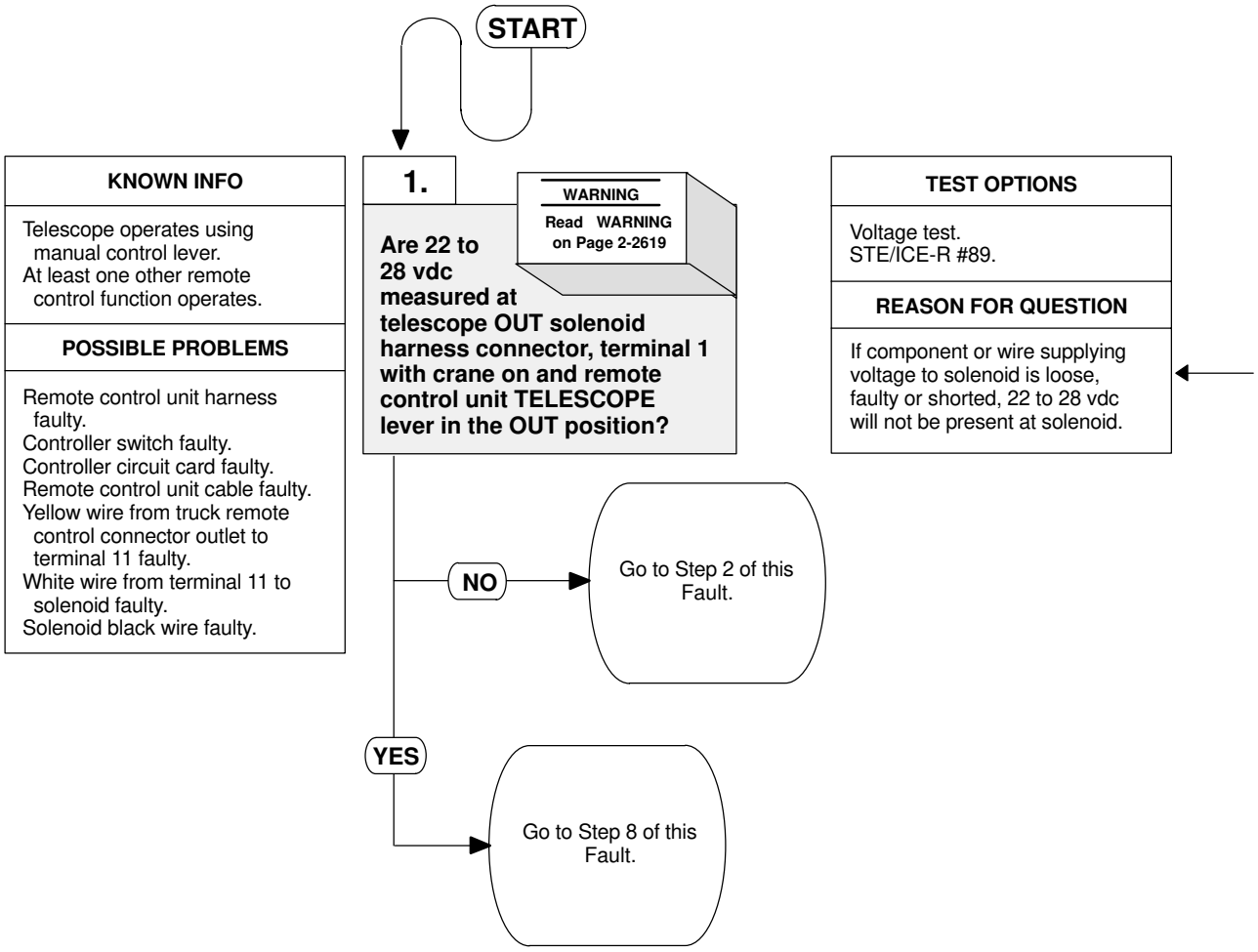
7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT.

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)

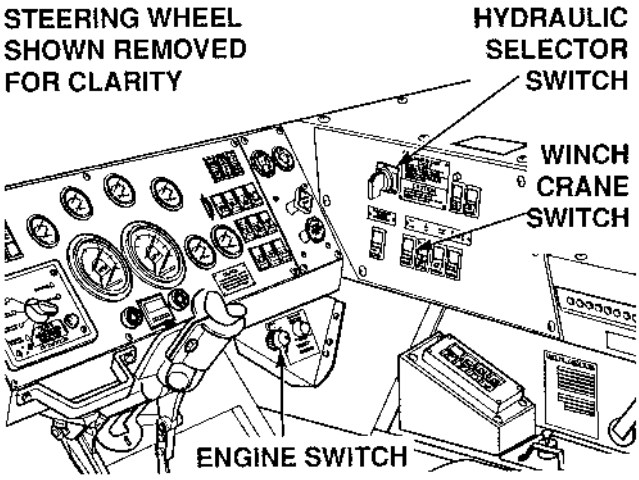
References
TM 9-2320-364-10
TM 9-4910-571-12&P

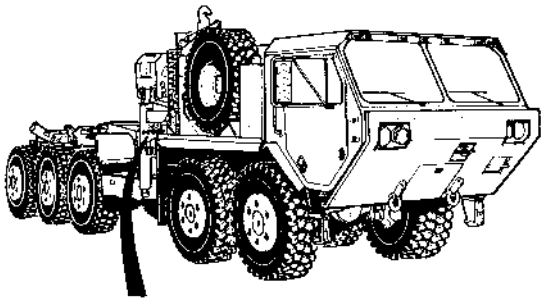
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)

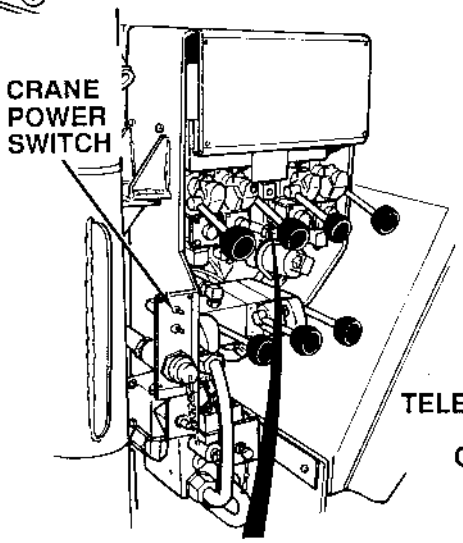


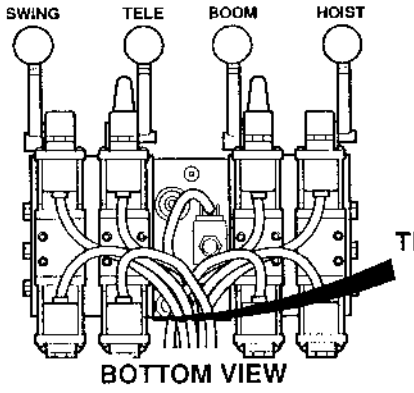
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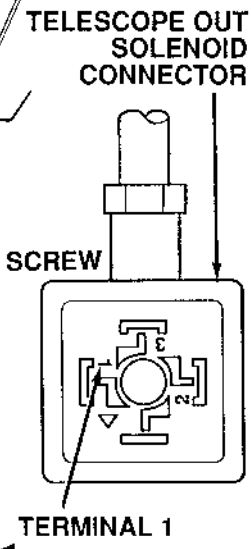
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.







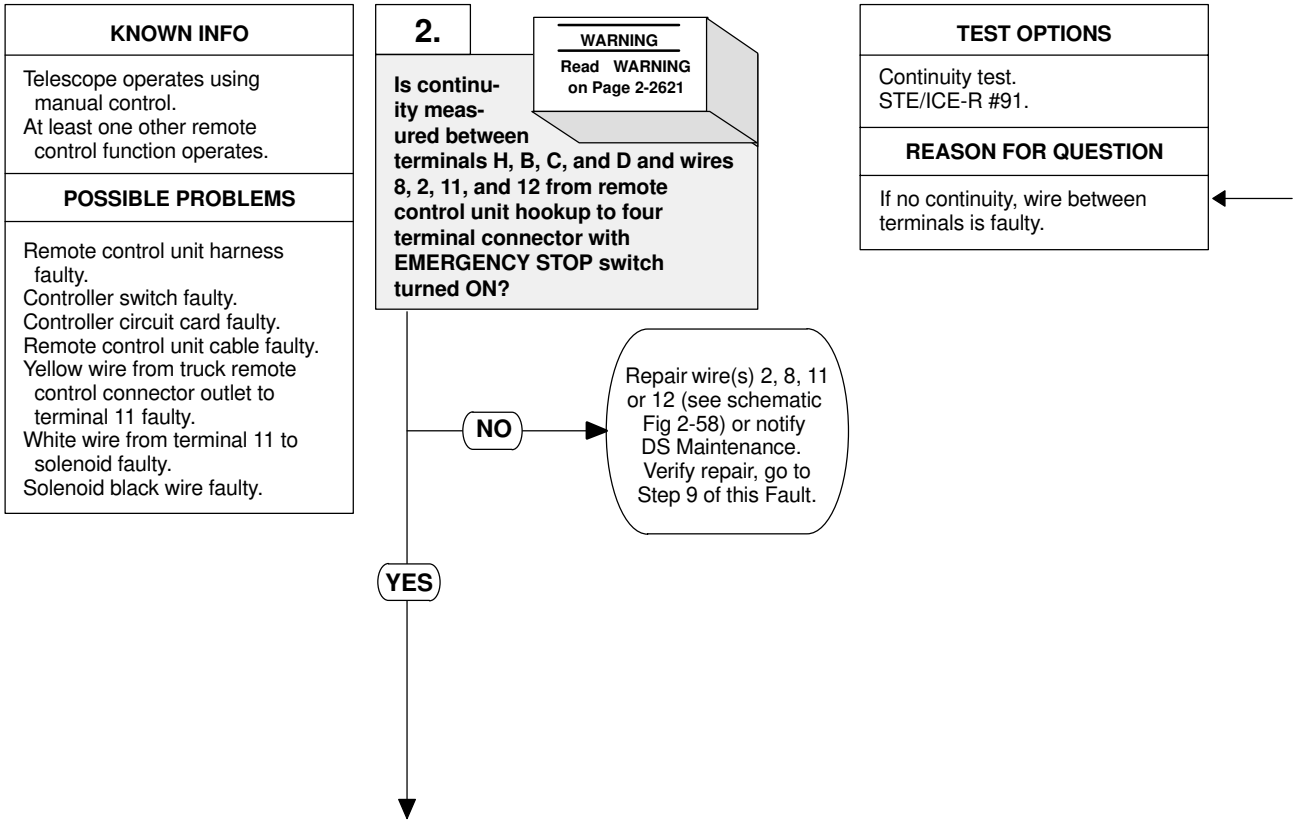




VOLTAGE TEST

(1) Loosen screw and remove connector from telescope OUT solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to harness connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold remote control unit TELESCOPE controller in the OUT position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Set the following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane POWER switch, hydraulic selector switch and ENGINE switch.

7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).

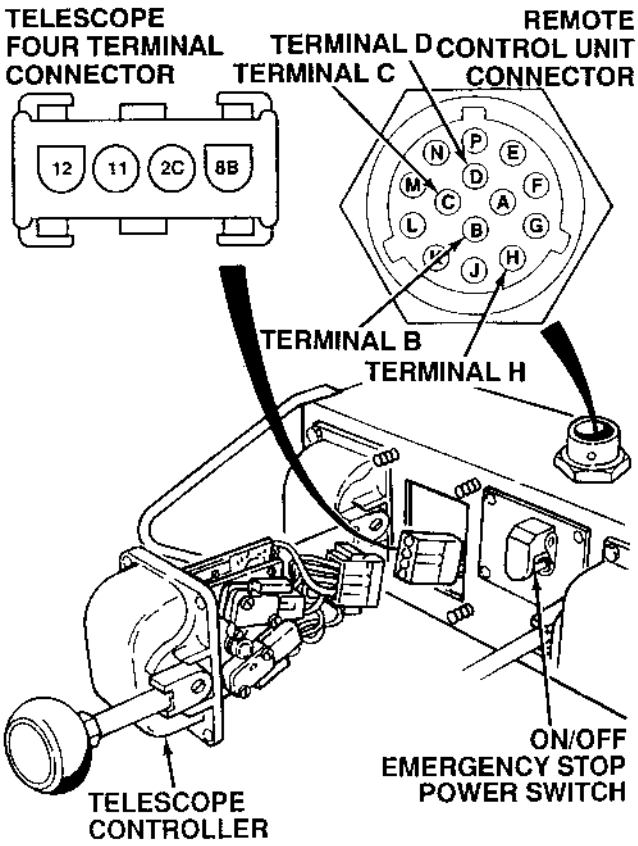


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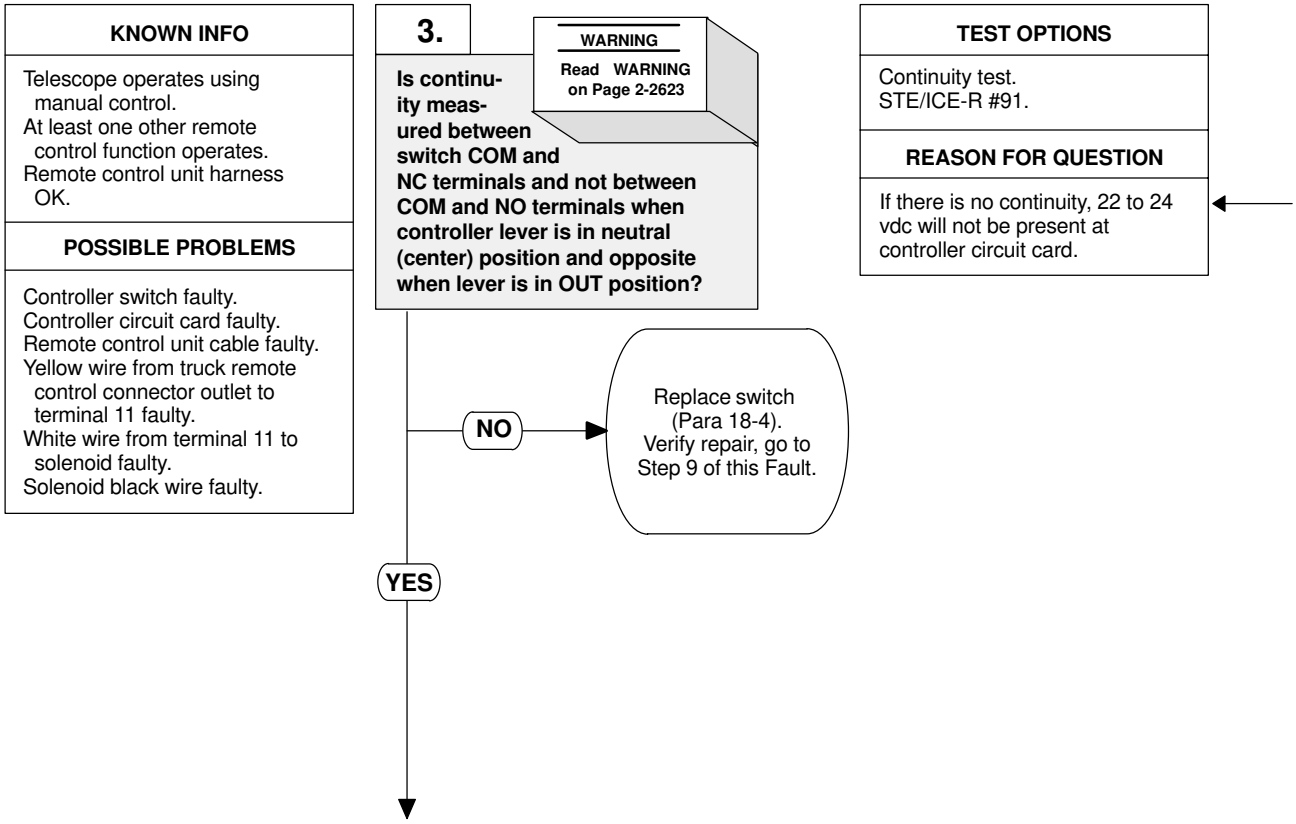
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove TELESCOPE controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity between remote control unit hookup, terminal H and four terminal connector, terminal 8B?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit hookup, terminal B and four terminal connector, terminal 2C?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit hookup, terminal C and four terminal connector, terminal 11?
  (a) If there is no continuity, repair wire 11 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit hookup, terminal D and four terminal connector, terminal 12?
  (a) If there is no continuity, repair wire 12 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this Fault.



7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).

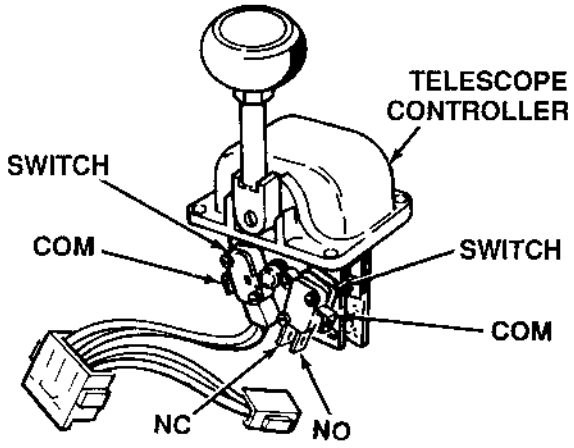


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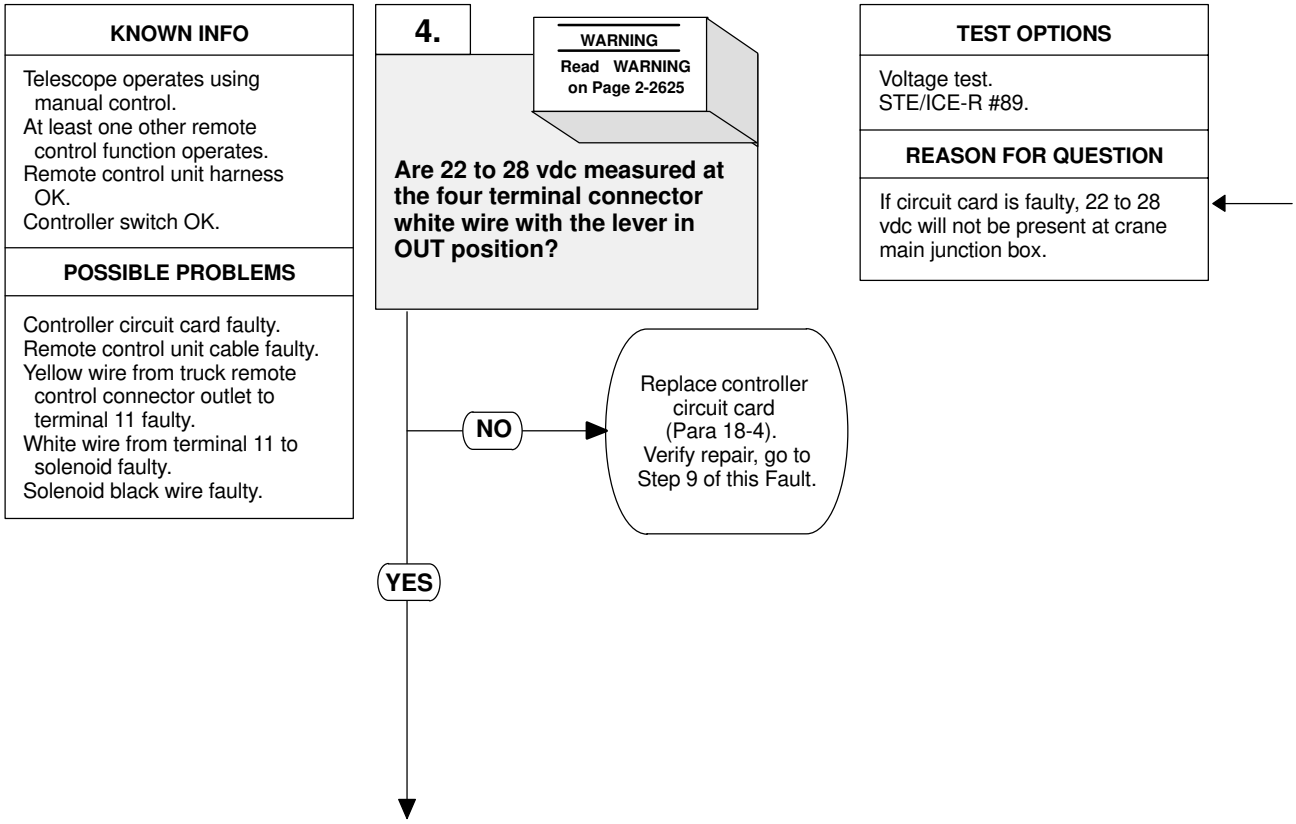
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in OUT position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in OUT position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (6) below.
(6) Repeat Steps (1) thru (5) for other switch.
(7) Install both connectors on switches.



7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).

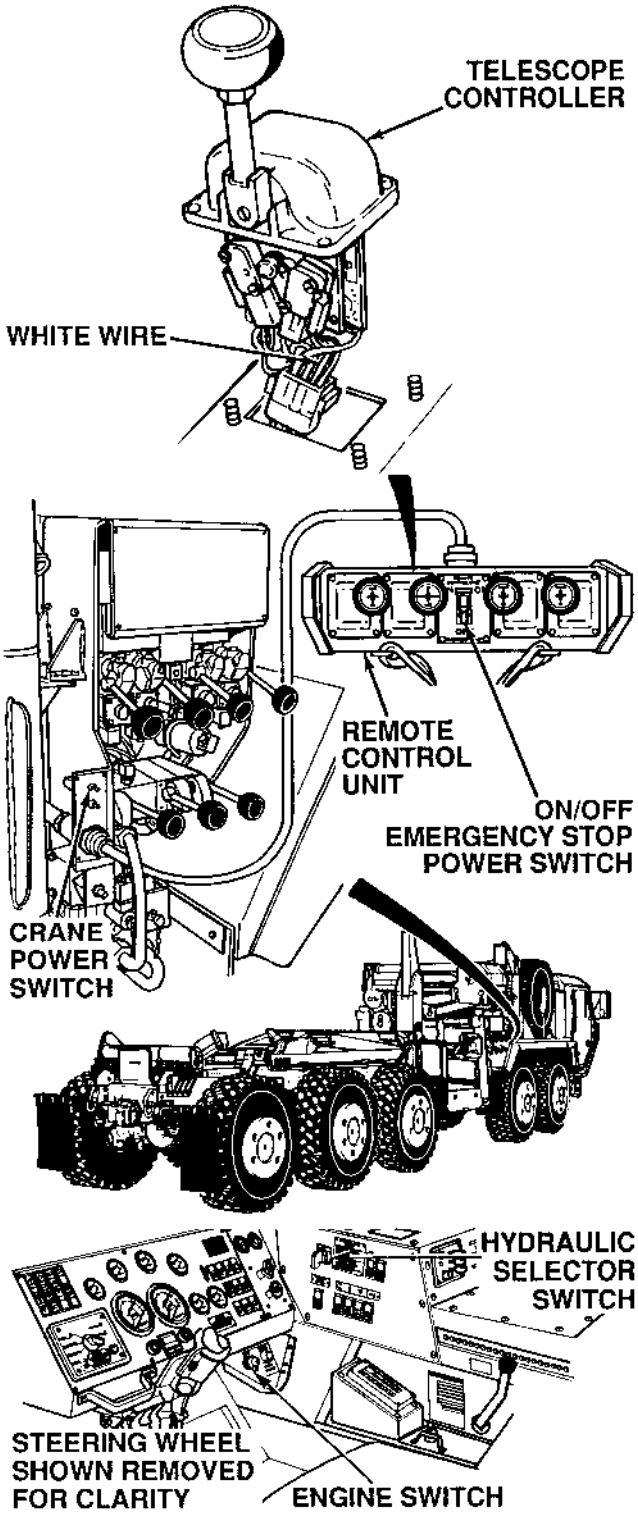


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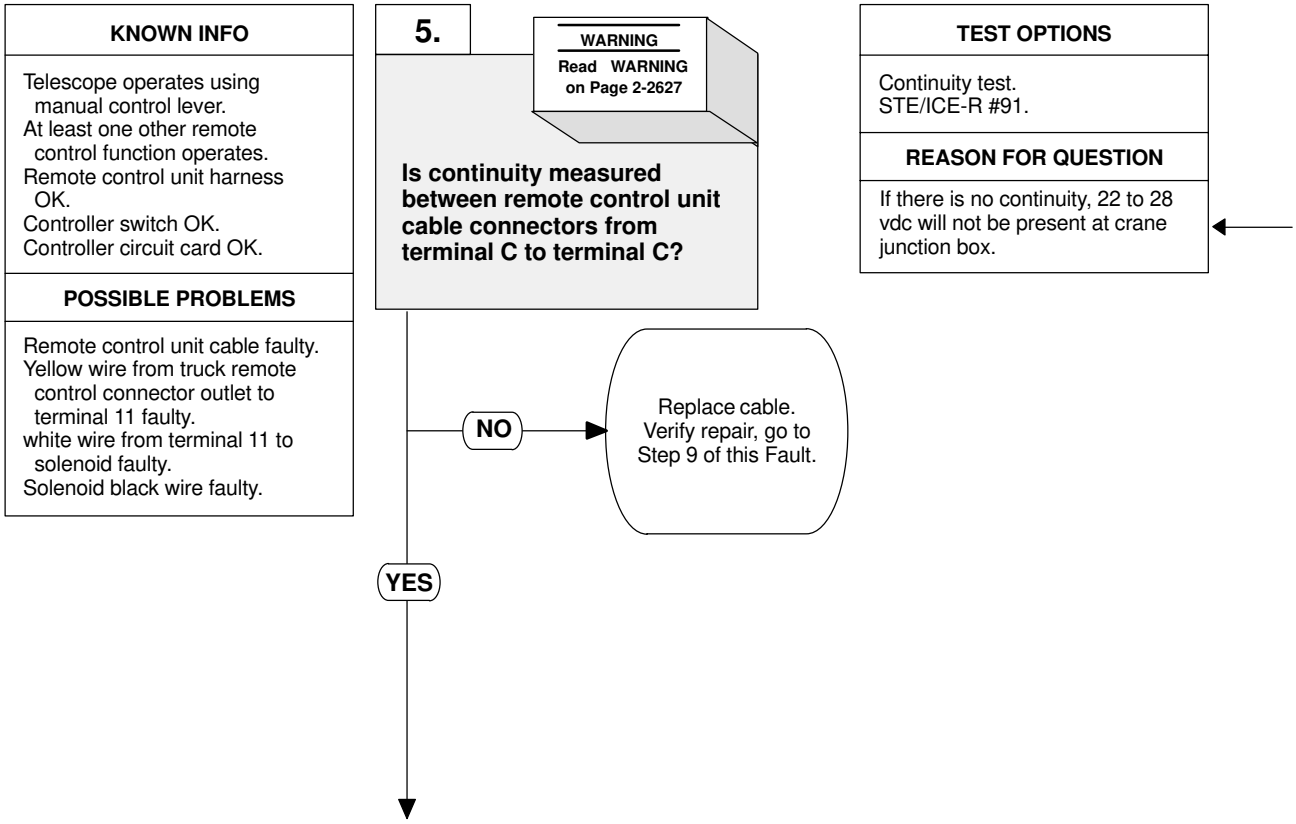
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable.
(2) Connect controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to white wire terminal in four terminal connector.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold TELESCOPE controller in the OUT position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, perform Steps (11) and (12) below.
(11) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.
(12) Assemble remote control unit (Para 18-4).



7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).

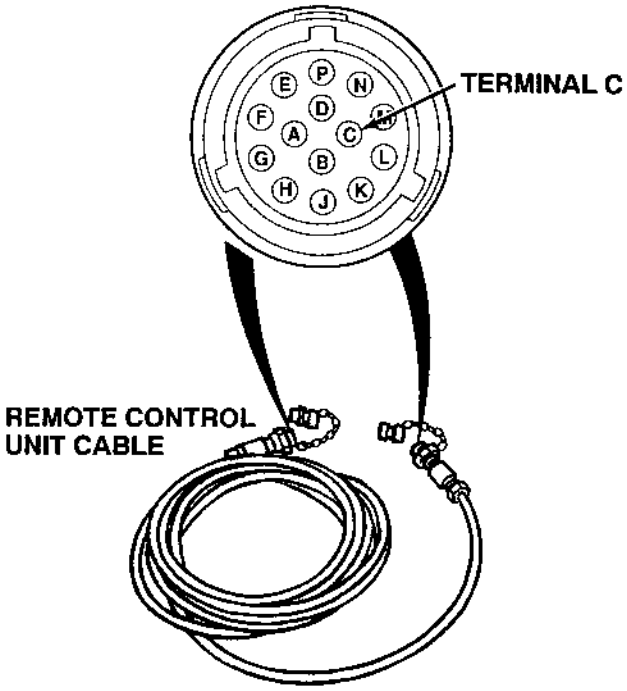


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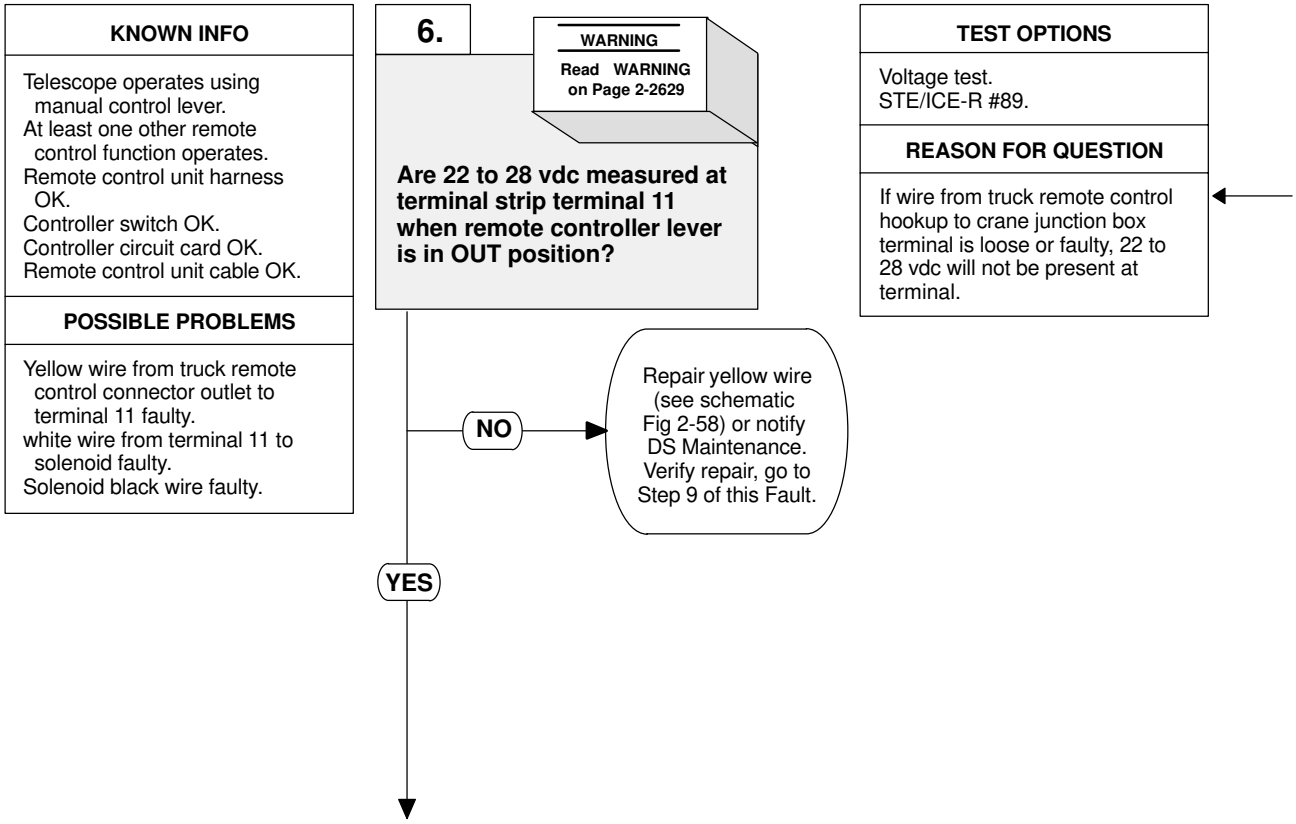
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal C at both ends?
   (a) If there is no continuity, replace cable.
   (b) If there is continuity, connect cable to truck hookup and remote control unit hookup and go to Step 6 of this Fault.



7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).

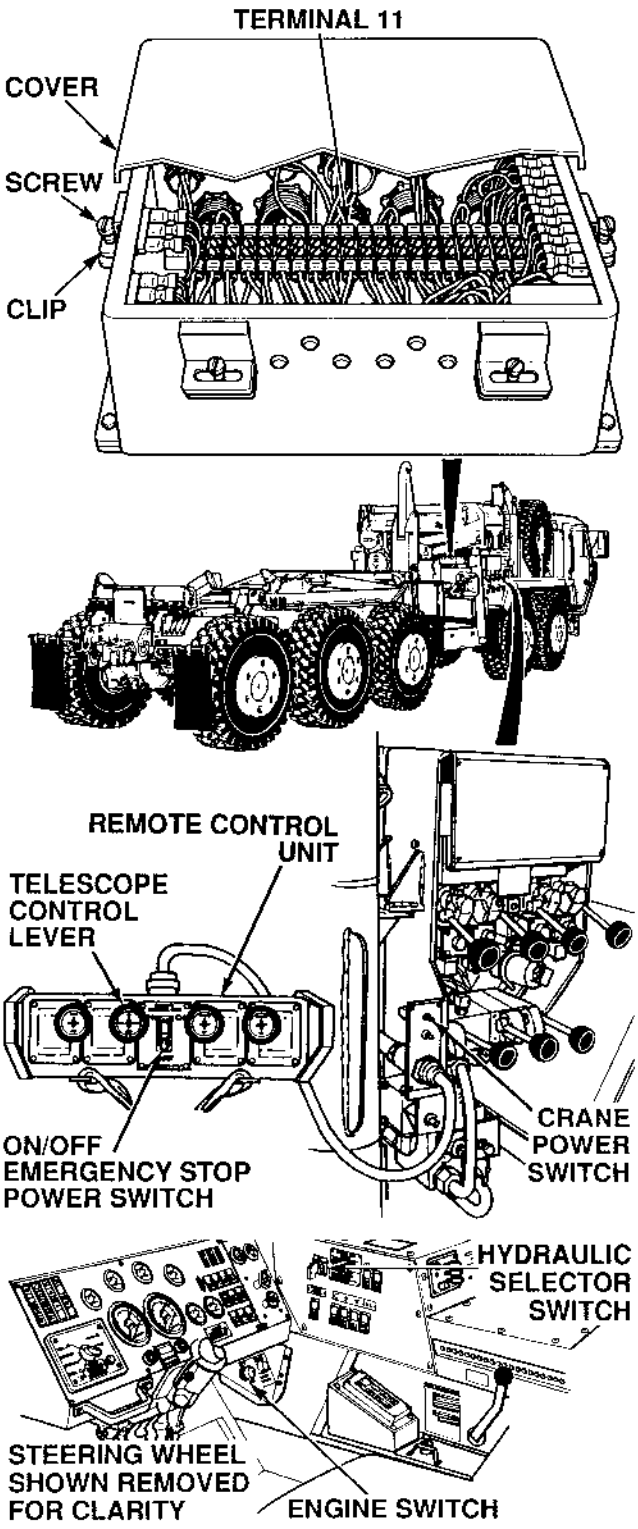


WARNING

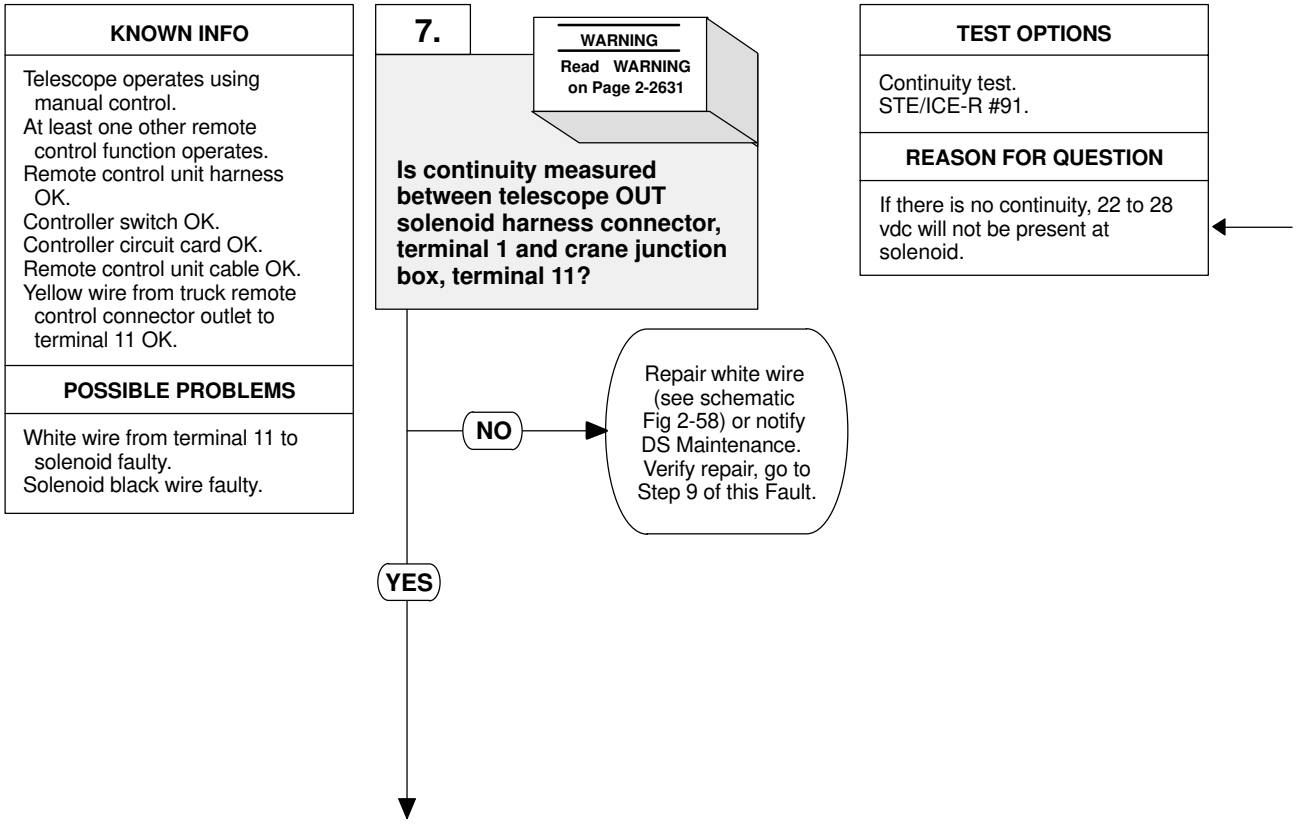
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box, terminal 11.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to CRANE/SRW position.
(7) Set crane main switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit TELESCOPE control lever in the OUT position.
  (a) If 22 to 28 vdc are not present, perform Step (10) below and repair yellow wire from truck remote control hookup to terminal 11 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).

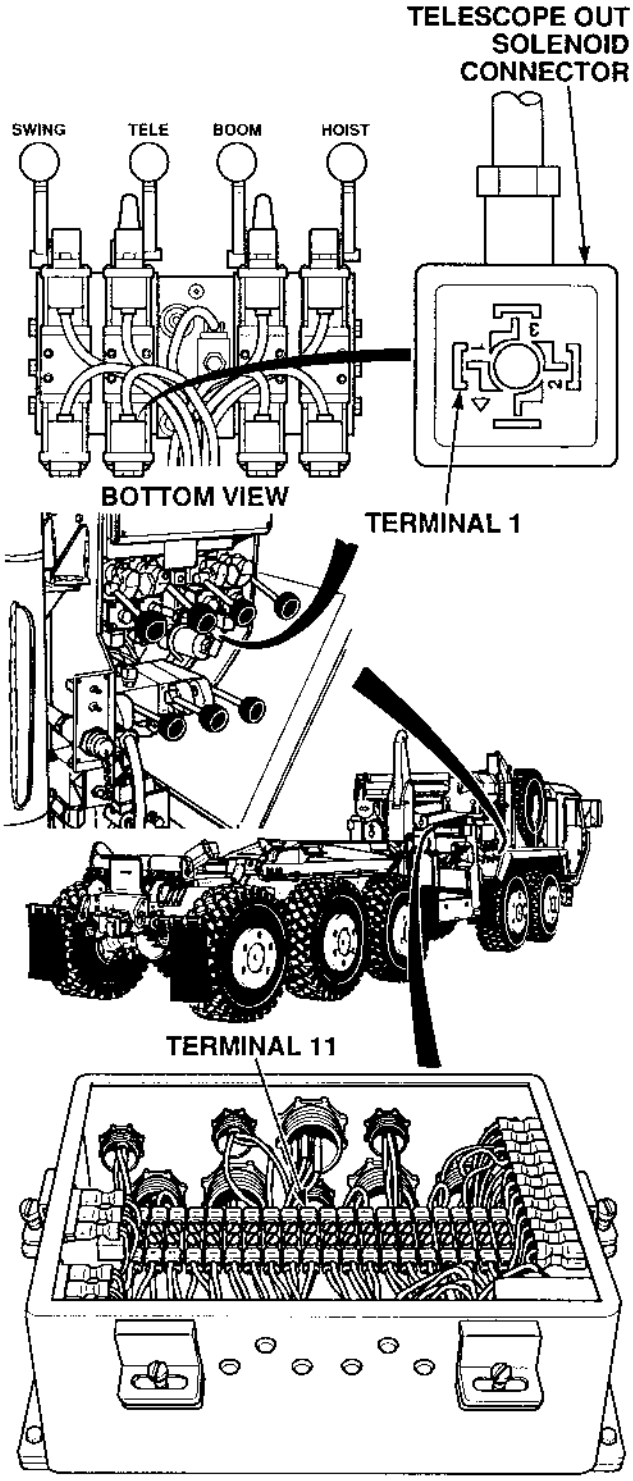


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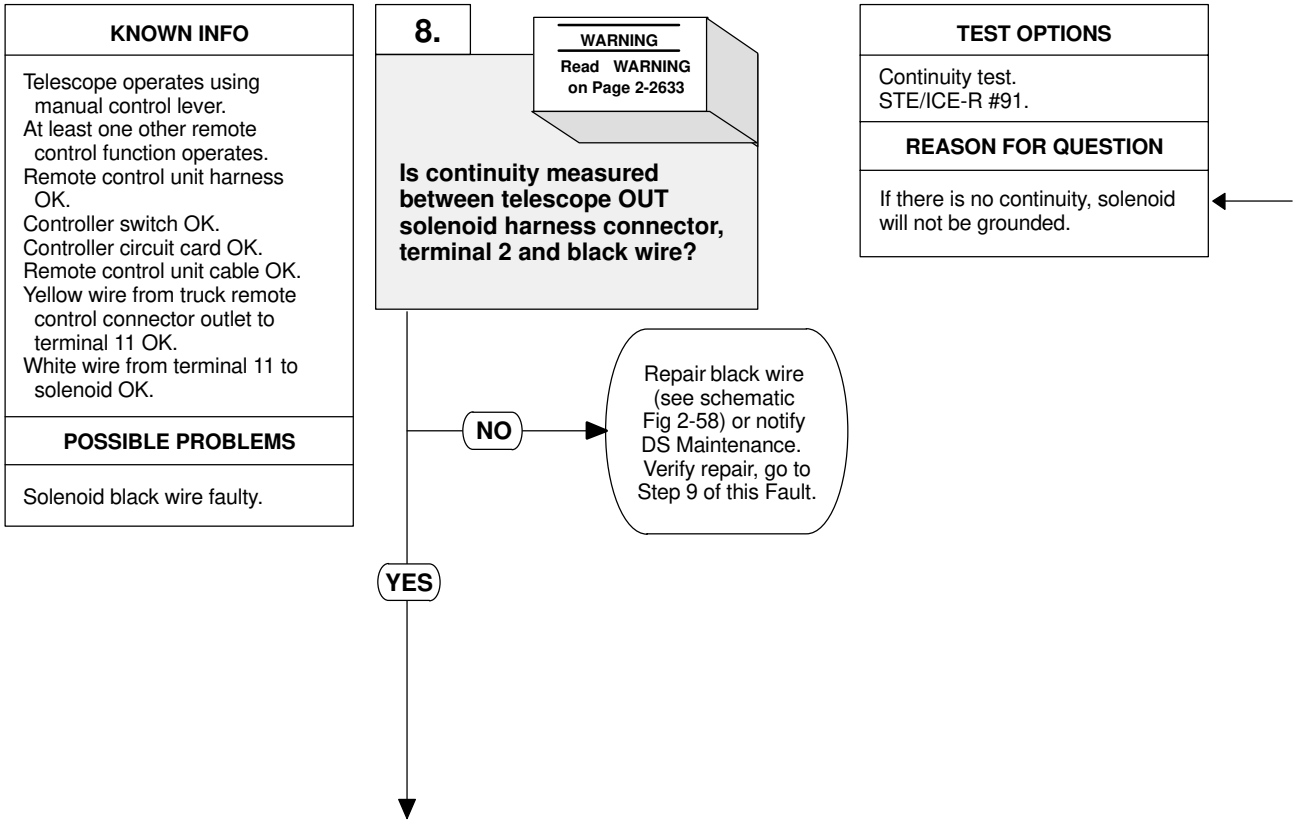
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector, terminal 1 and crane main junction box, terminal 11?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).

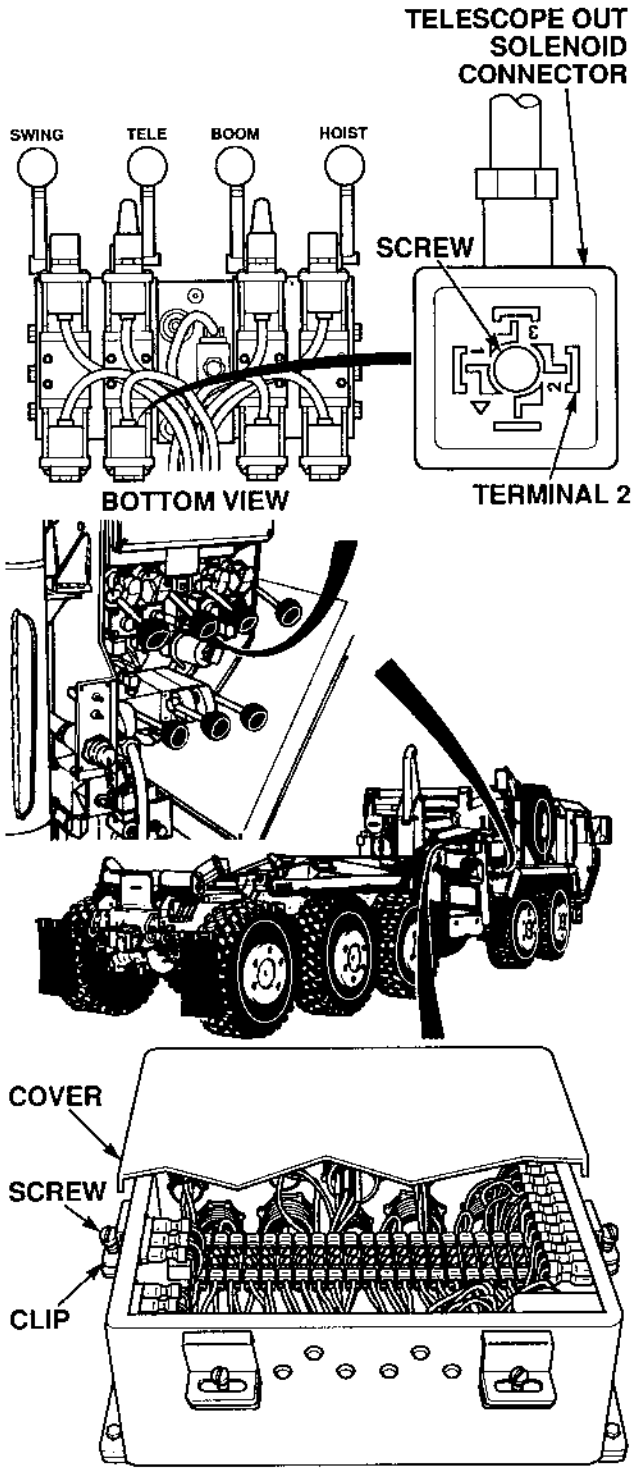


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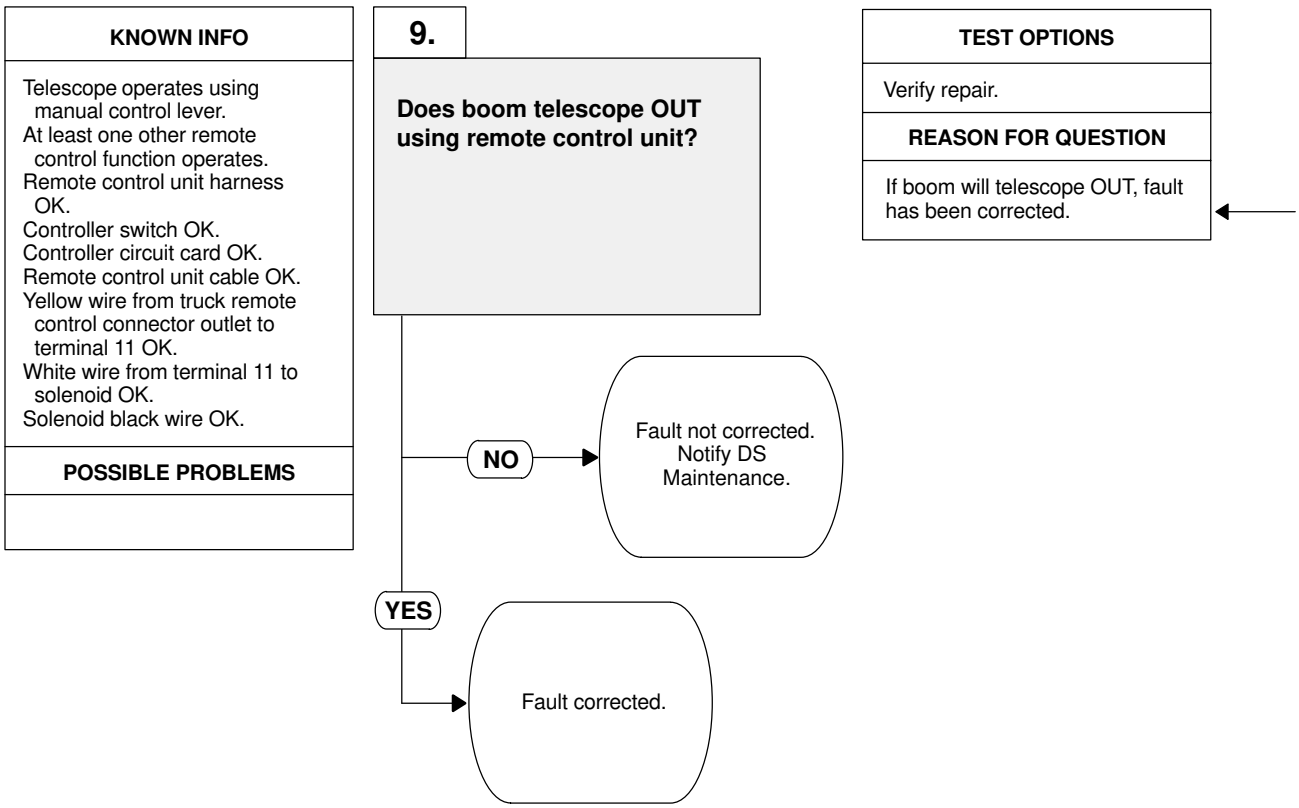
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Is there continuity between connector, terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on telescope OUT solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.

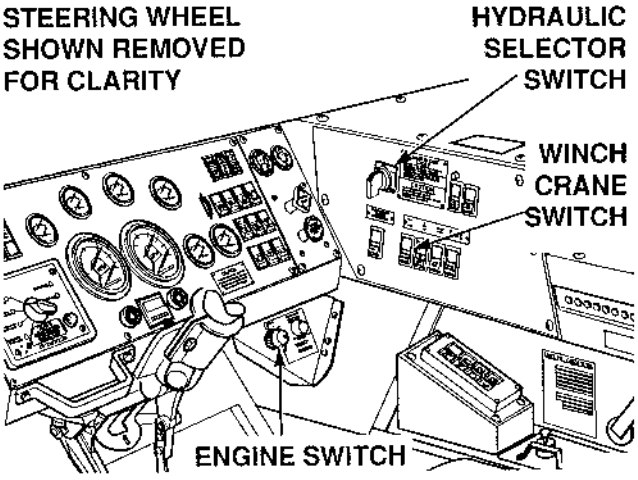


7. BOOM WILL NOT TELESCOPE OUT USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR

(1) Connect remote control unit cable to truck hookup and remote control unit hookup (TM 9-2320-364-10).
(2) Operate crane using remote control unit.
  (a) If boom will not telescope out using remote control unit, fault not corrected. Notify DS Maintenance.
  (b) If boom will telescope OUT, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

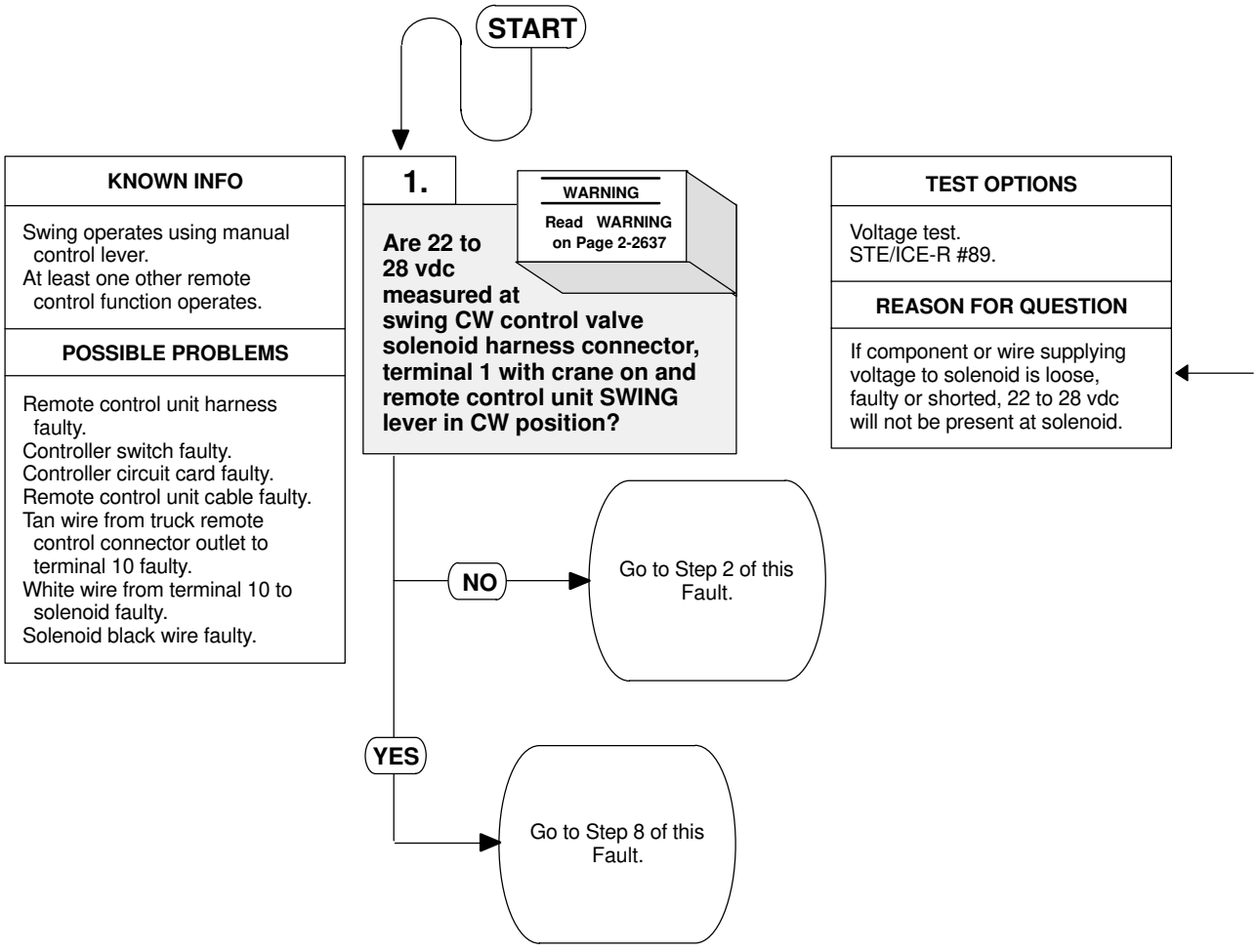
8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT.

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 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Remote control unit connected, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)

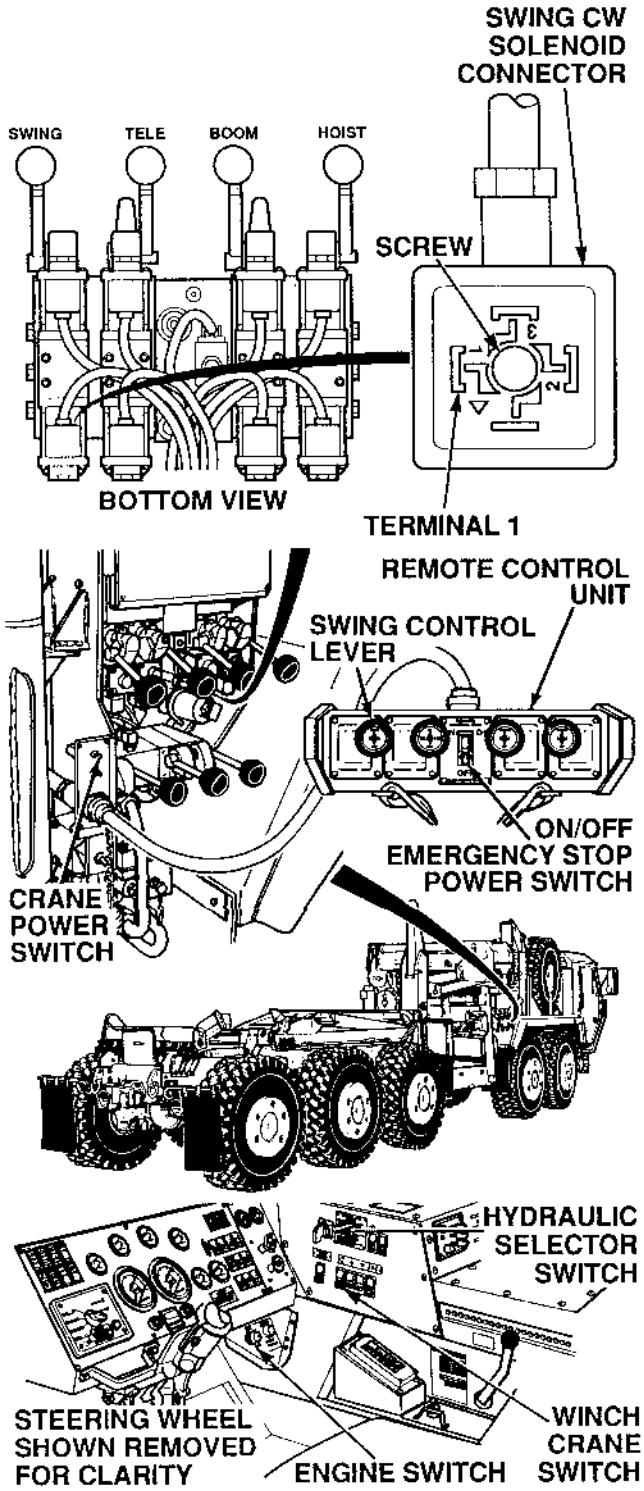


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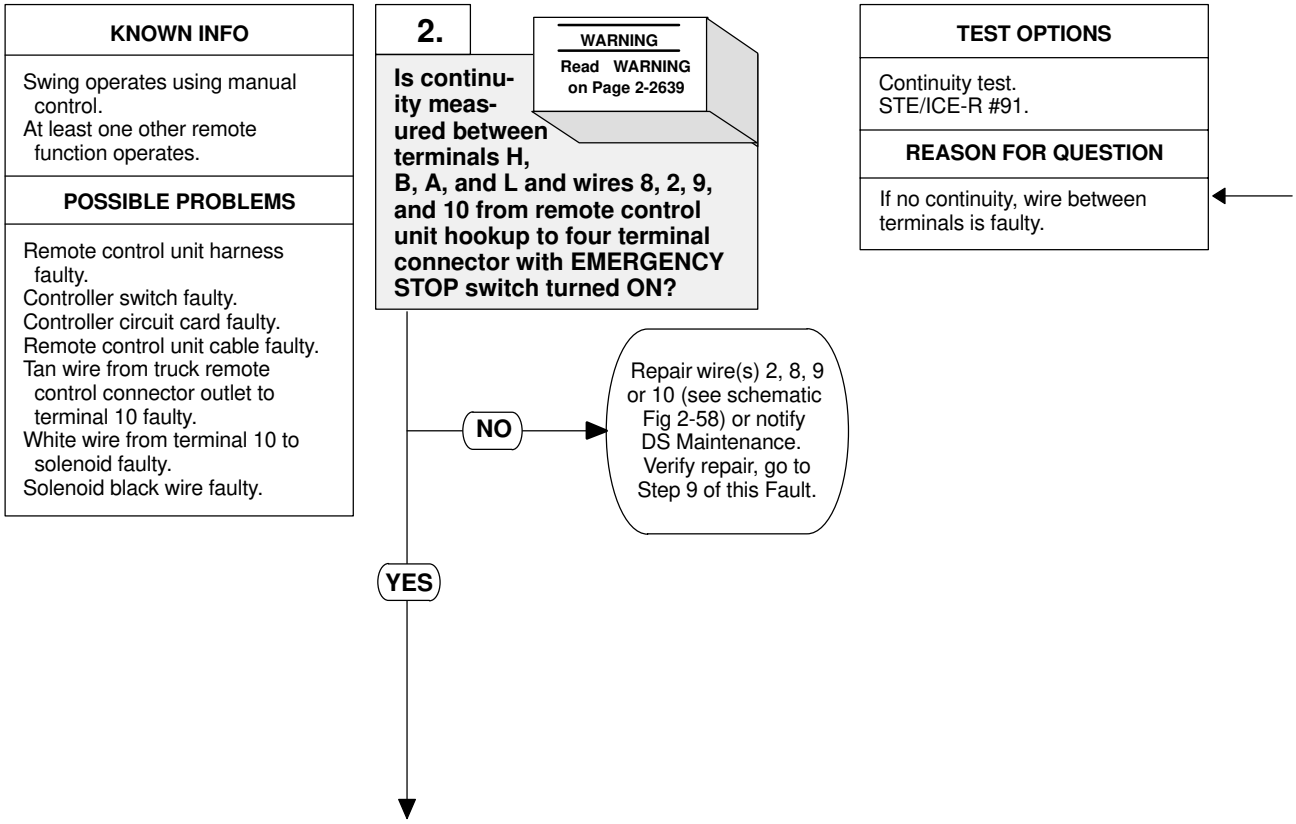
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen screw and remove connector from swing CW solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to harness connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold remote control unit SWING controller in the CW position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Set the following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).

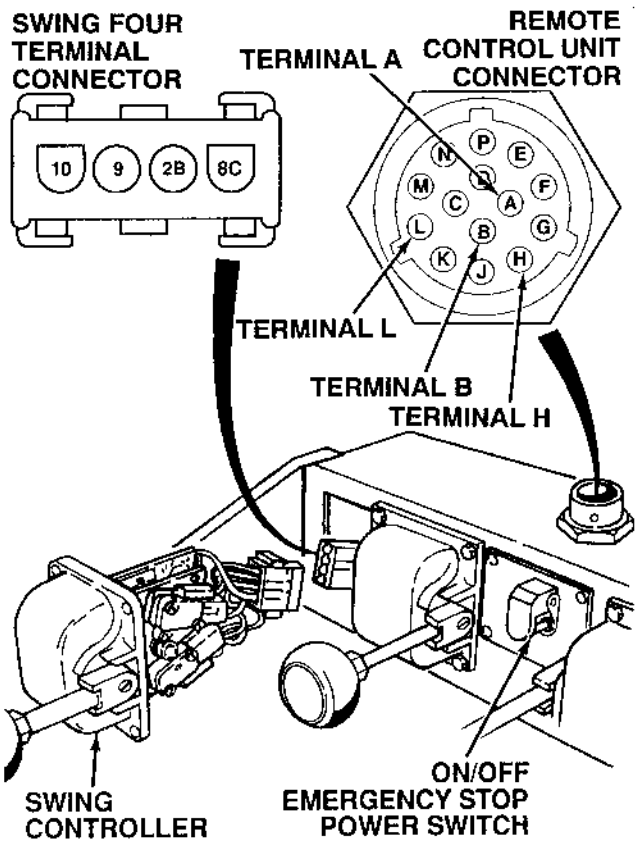


WARNING

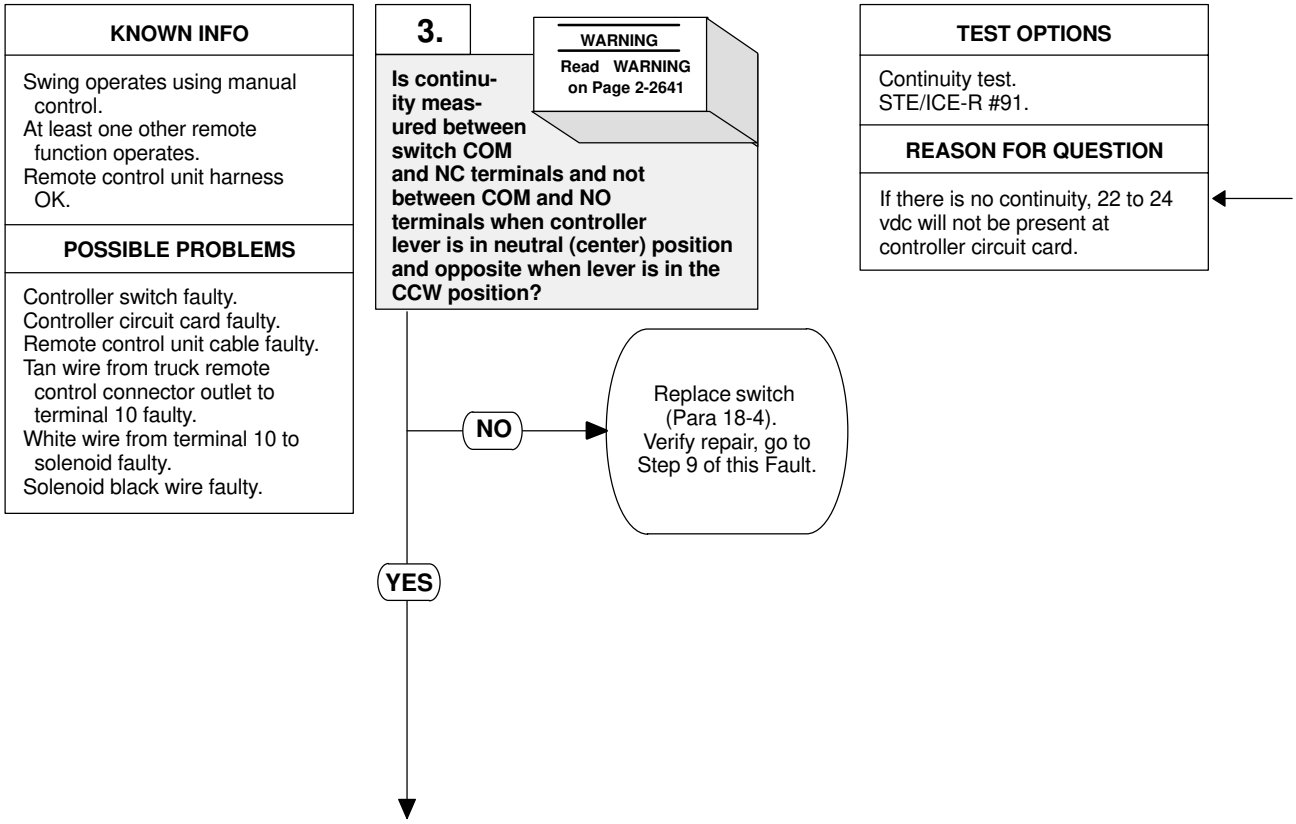
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove SWING controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity between remote control unit connector, terminal H and four terminal connector, terminal 8C?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit connector, terminal B and four terminal connector, terminal 2B?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit connector, terminal A and four terminal connector, terminal 9?
  (a) If there is no continuity, repair wire 9 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit hookup, terminal L and four terminal connector, terminal 10?
  (a) If there is no continuity, repair wire 10 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this Fault.



8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).

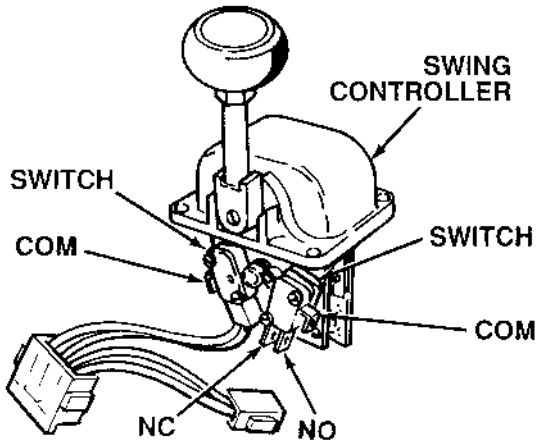


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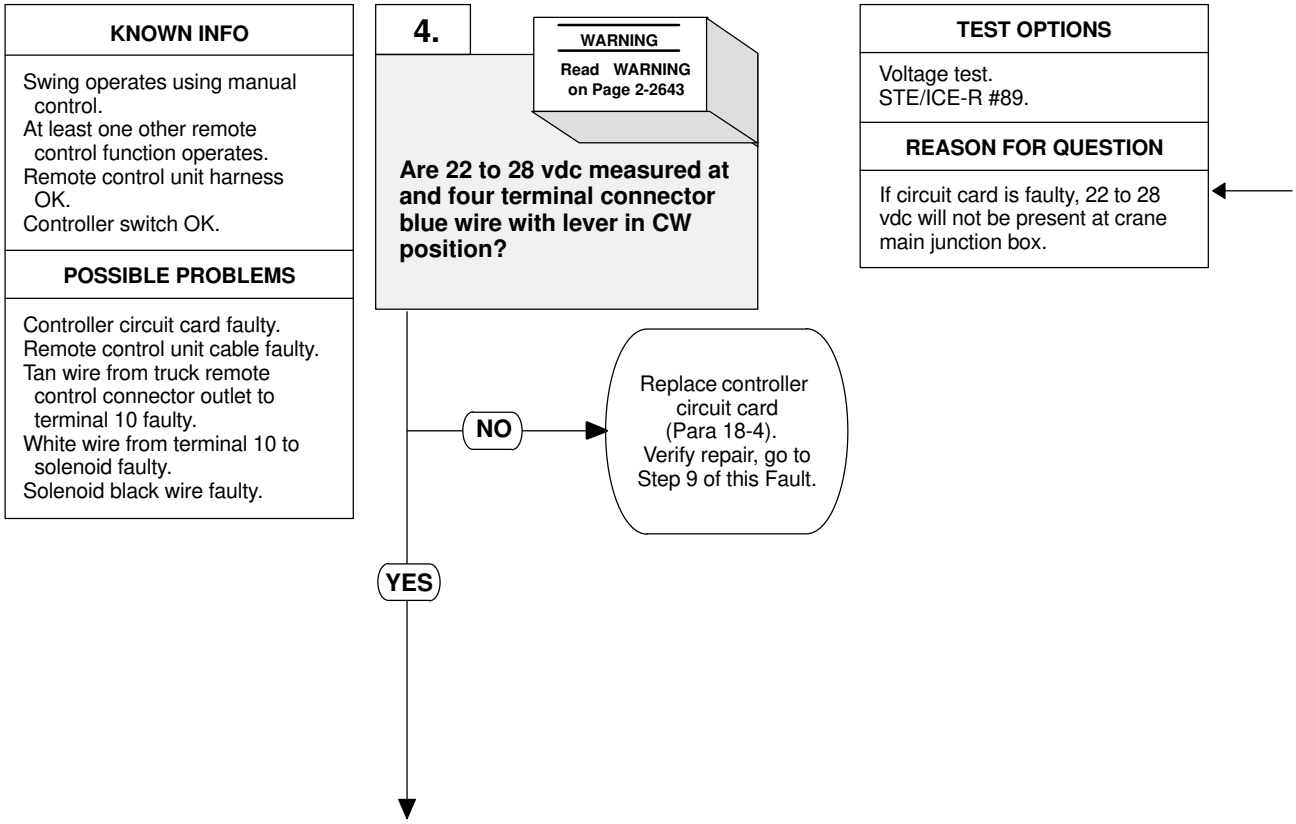
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in CCW position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in CCW position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step 6 below.
(6) Repeat Steps (1) through (5) for other switch.
(7) Install both connectors on switches.



8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).

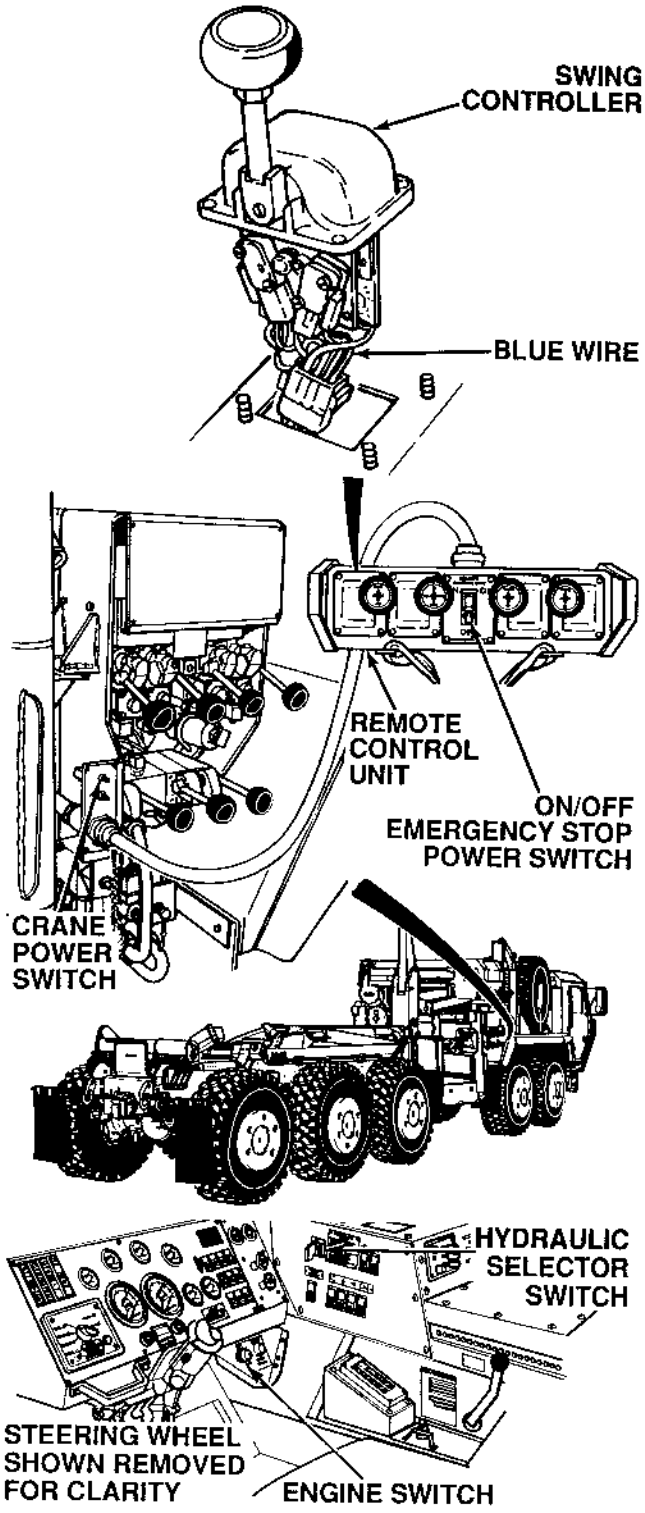


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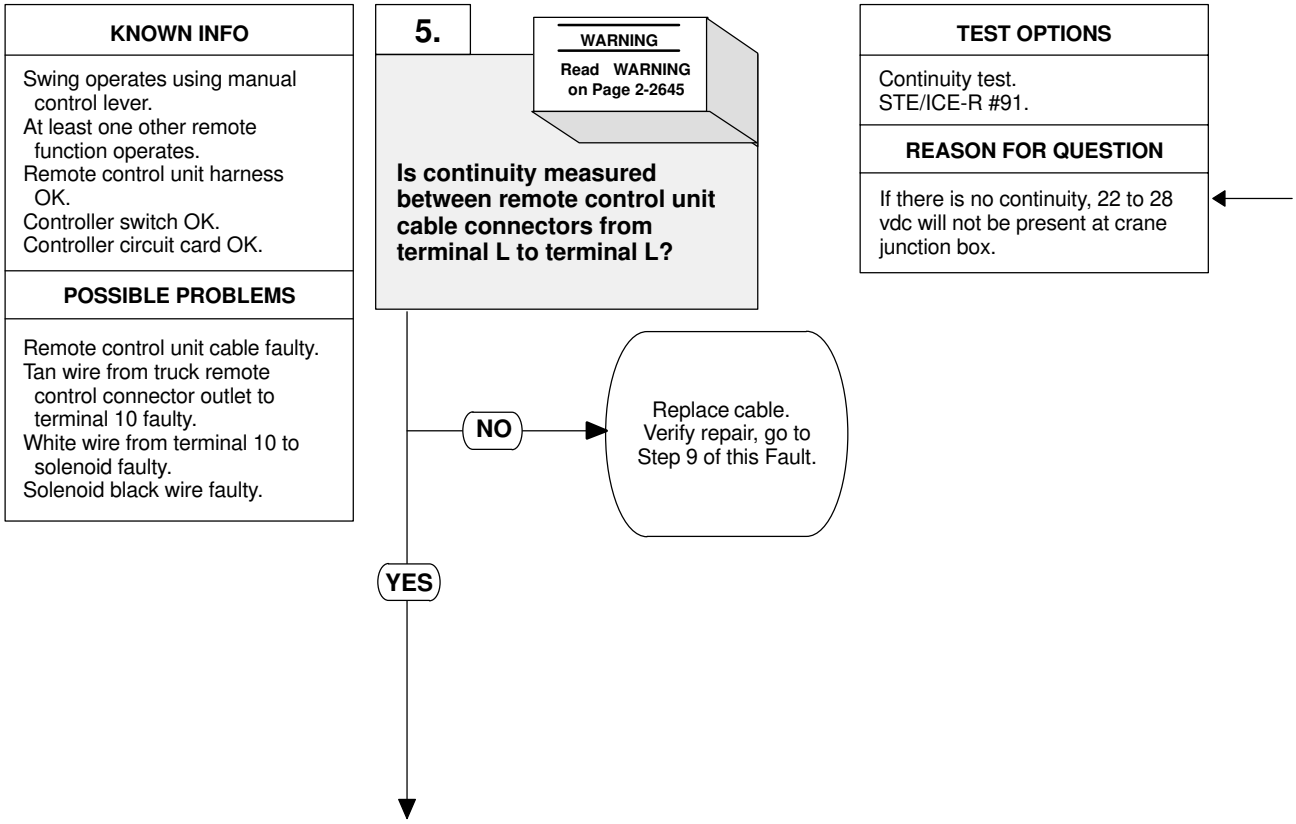
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable (TM 9-2320-364-10).
(2) Connect controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to blue wire terminal in four terminal connector.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold SWING controller in the CW position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, perform Steps (11) and (12) below and go to Step 5 of this Fault.
(11) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.
(12) Assemble remote control unit (Para 18-4).



8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).

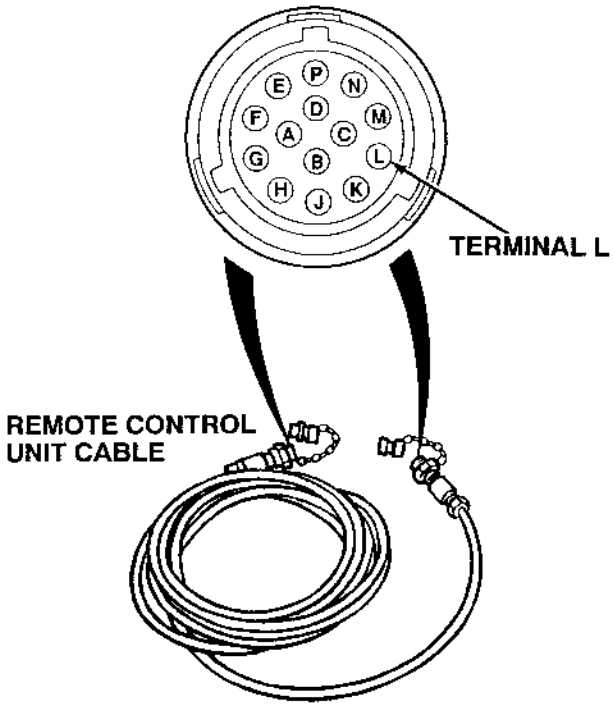


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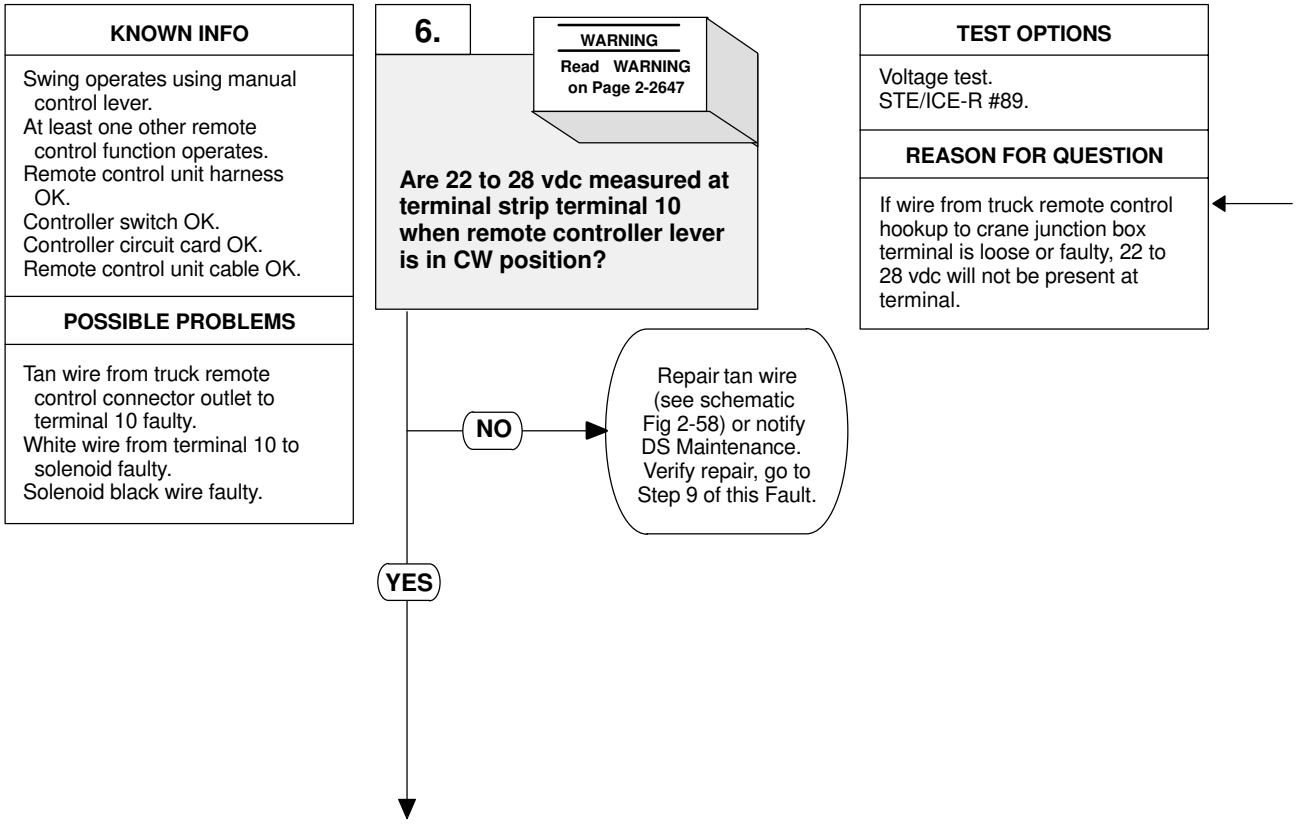
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal L at both ends?
   (a) If there is no continuity, replace cable.
   (b) If there is continuity, connect cable to truck hookup and remote control unit hookup and go to Step 6 of this Fault.



8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).

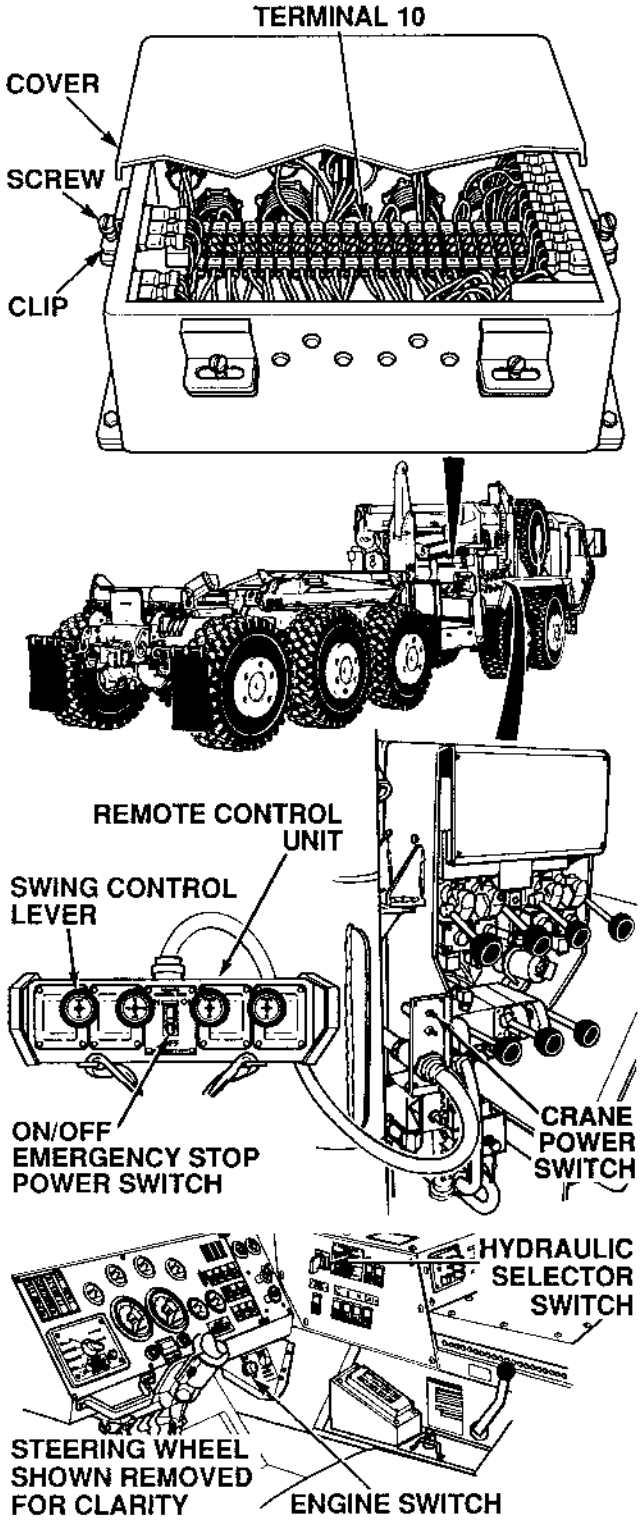


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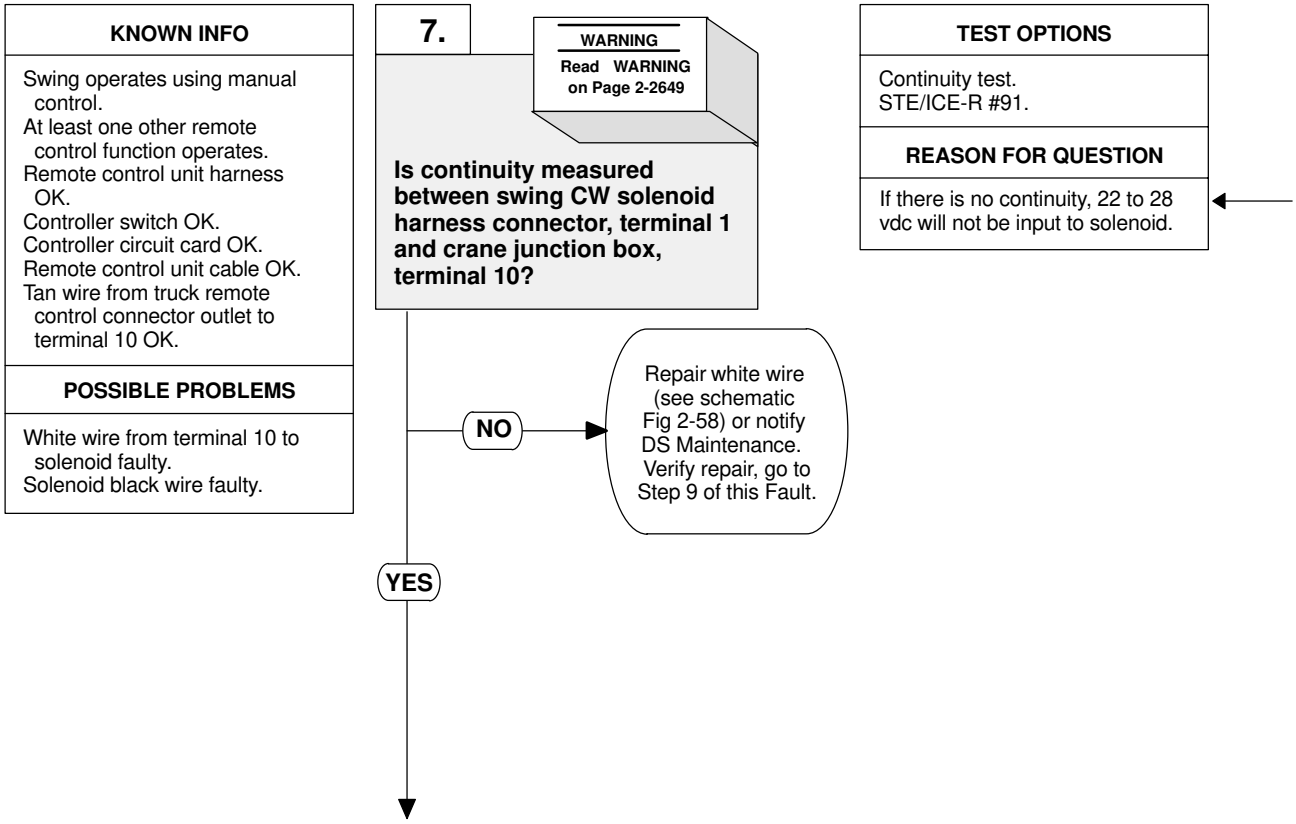
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box, terminal 10.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to CRANE/SRW position.
(7) Set crane POWER switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit SWING control lever in the CW position.
  (a) If 22 to 28 vdc are not present, perform Step (10) below and repair tan wire from truck remote control hookup to terminal 10 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).

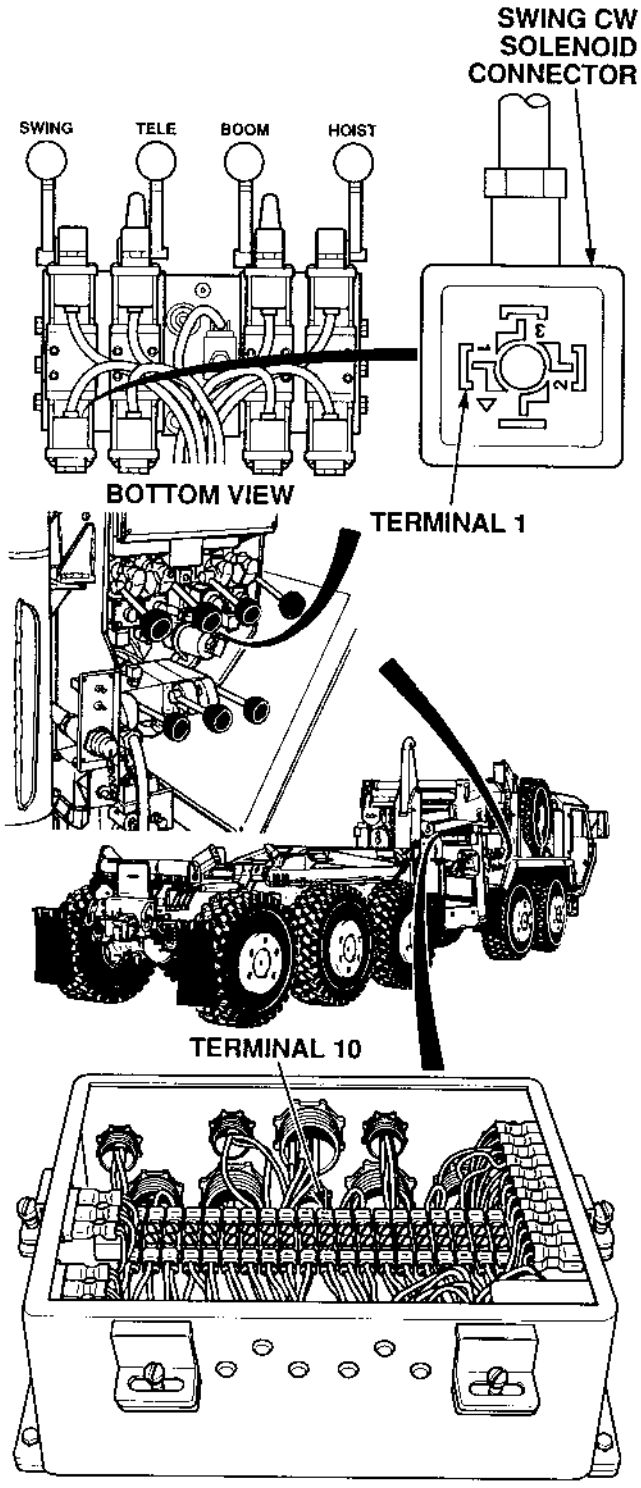


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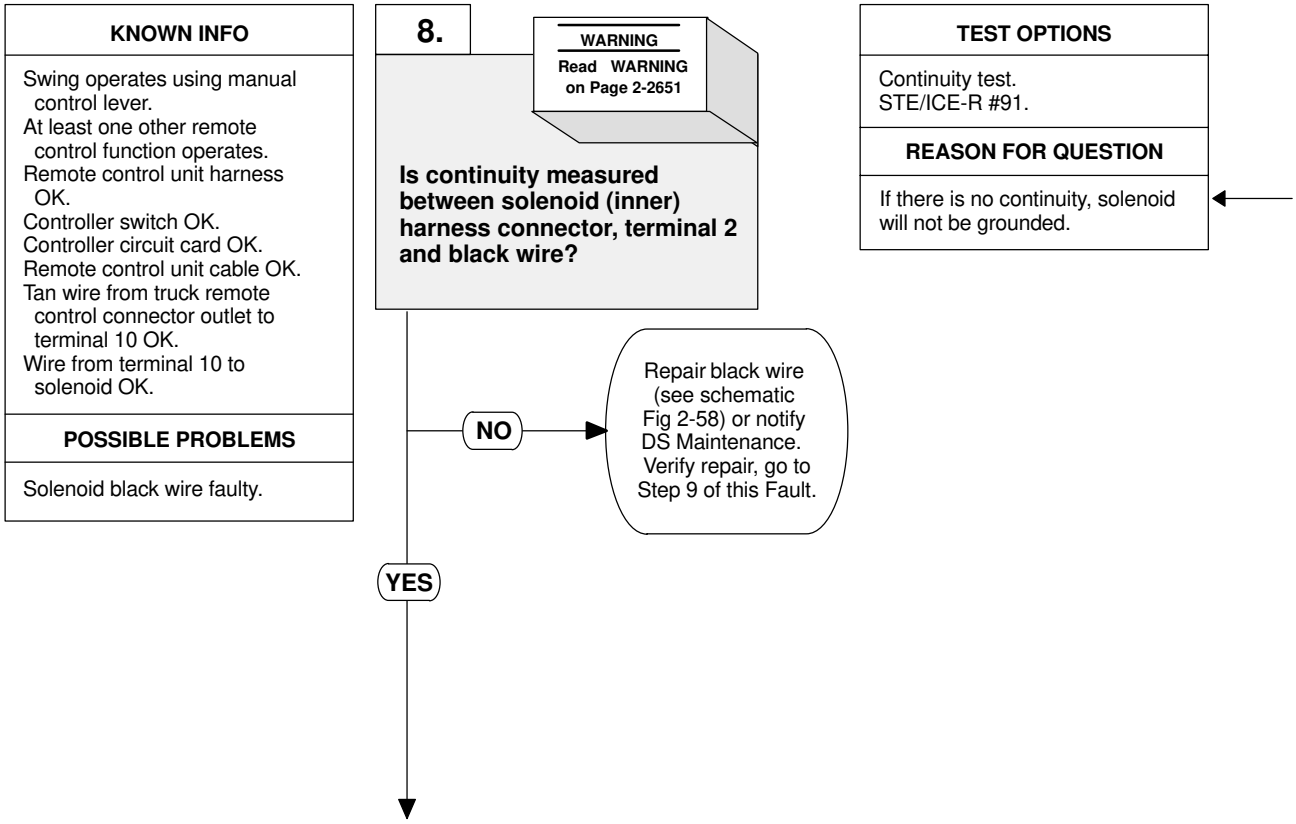
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector, terminal 1 and crane main junction box, terminal 10?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).

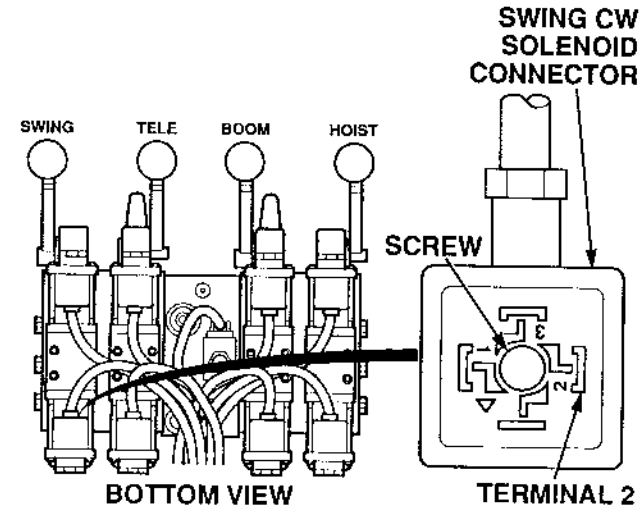


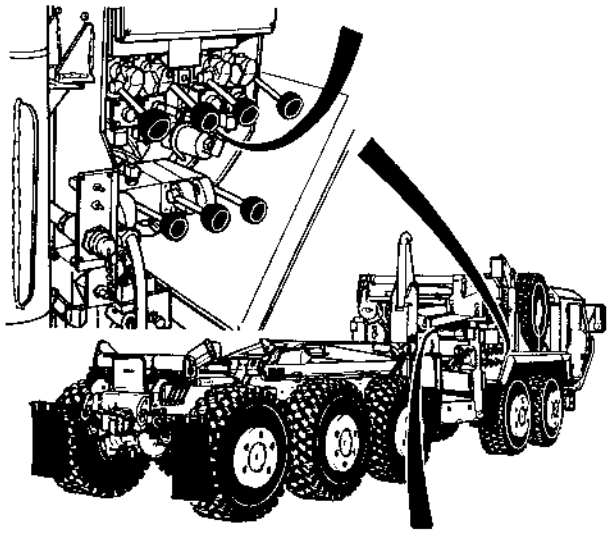
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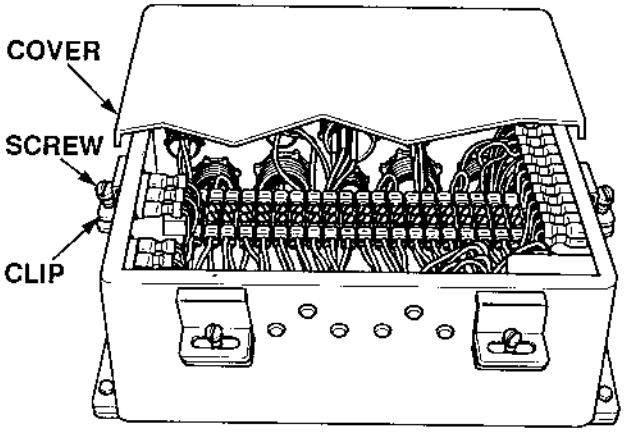
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

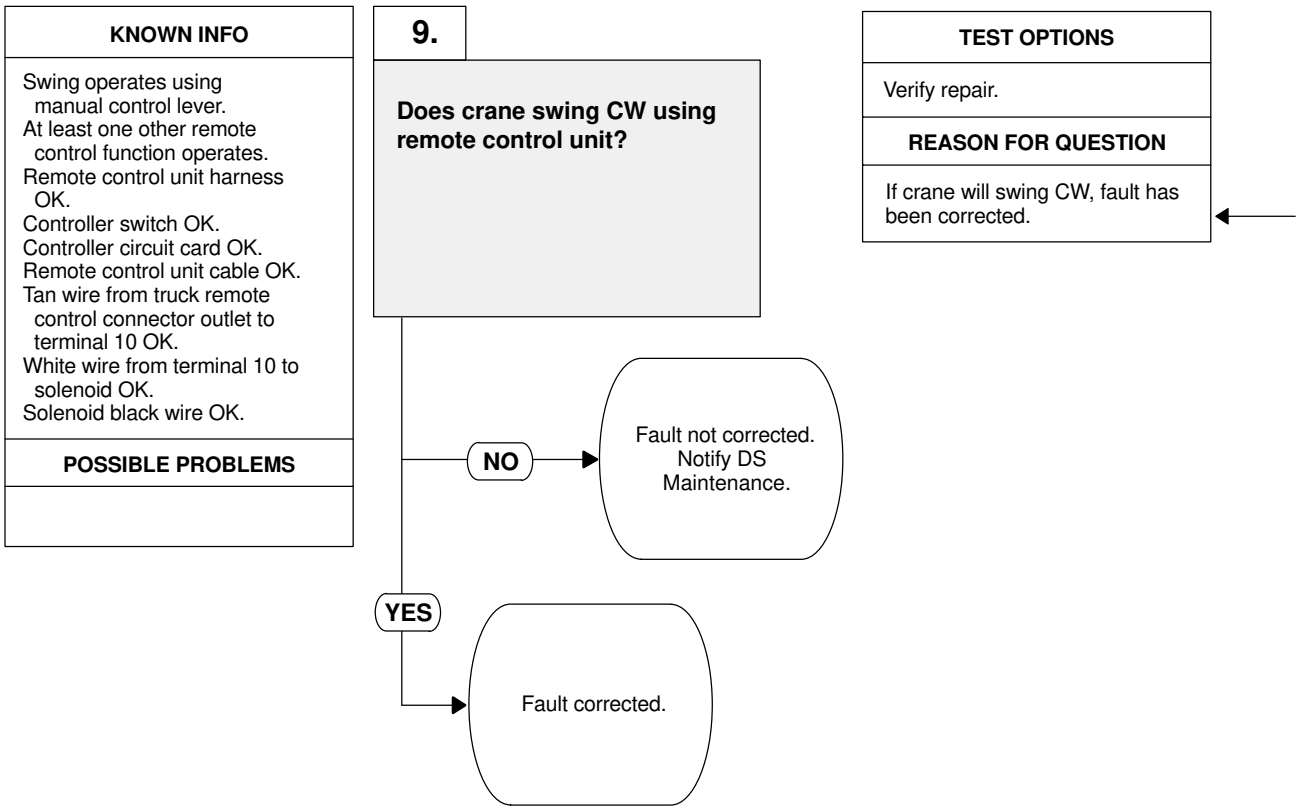
(1) Is there continuity between connector, terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on swing CW solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.





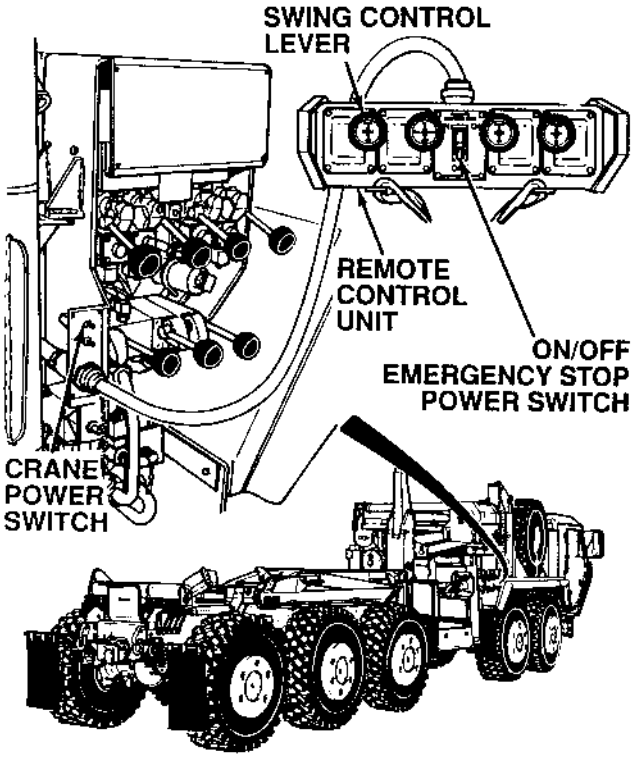


8. CRANE WILL NOT SWING CW USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR

(1) Connect remote control unit cable to truck hookup and remote control unit hookup (TM 9-2320-364-10).
(2) Operate crane using remote control unit.
  (a) If crane will not swing CW using remote control unit, fault not corrected. Notify DS Maintenance.
  (b) If crane will swing CW, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

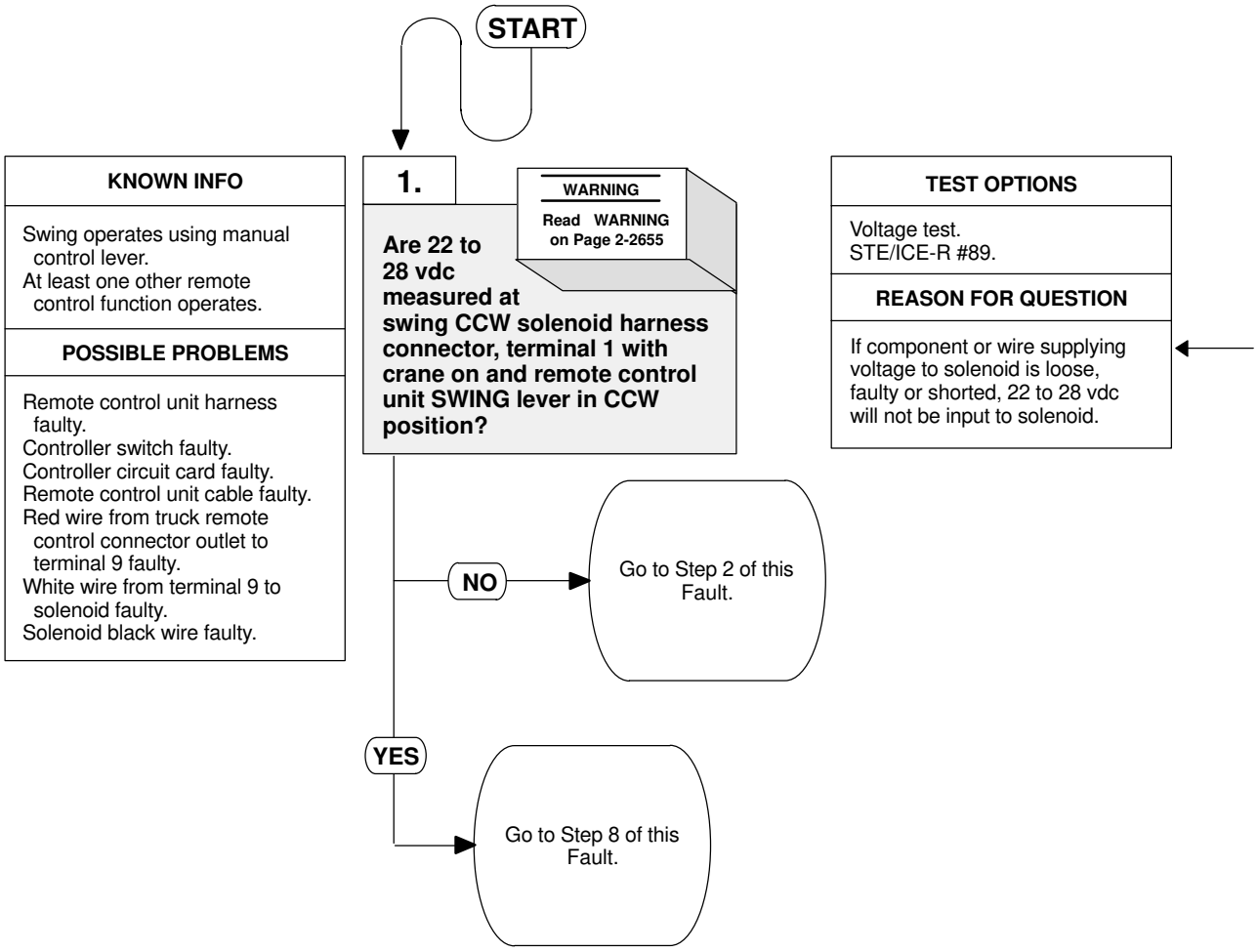
9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT.

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)

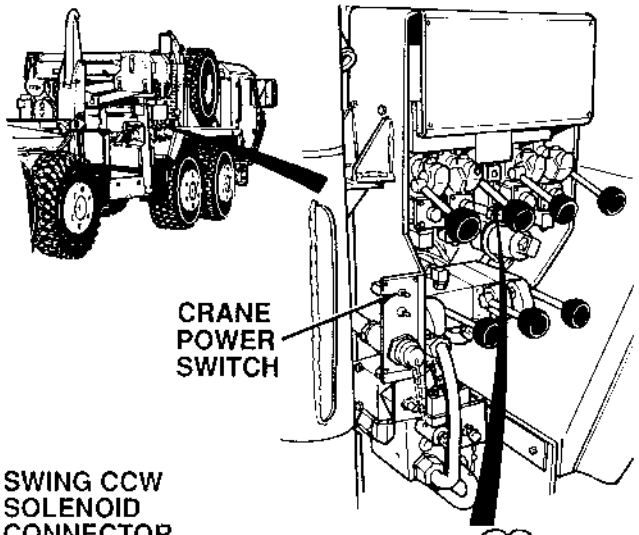
References
TM 9-2320-364-10
TM 9-4910-571-12&P

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)



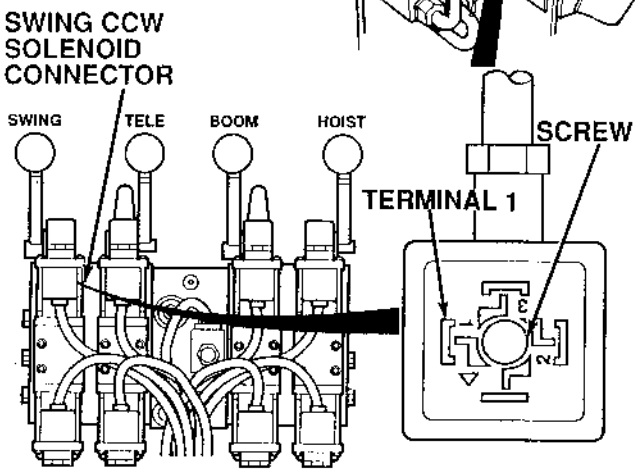
WARNING

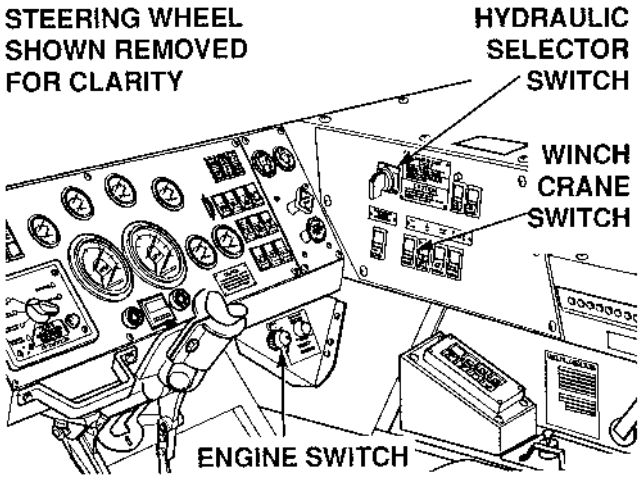
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



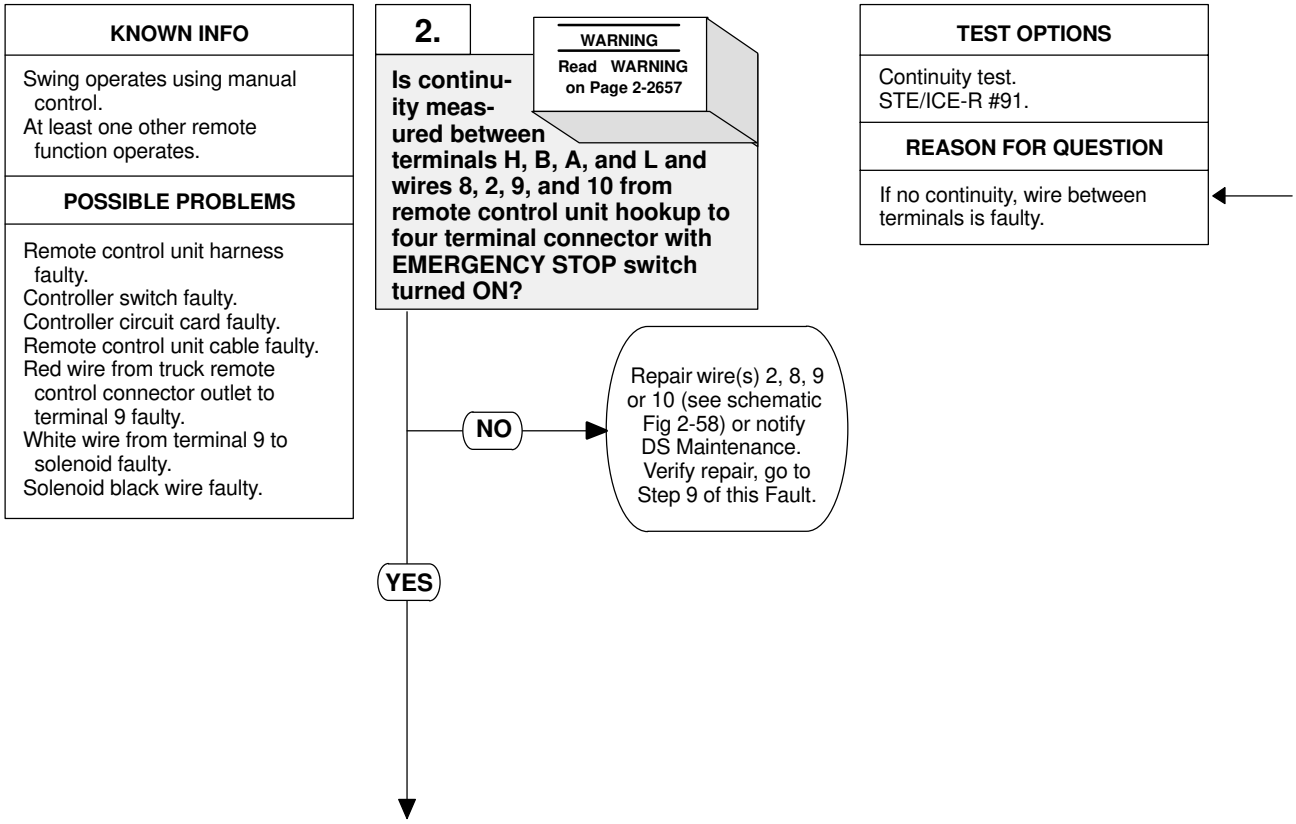
VOLTAGE TEST

(1) Loosen screw and remove connector from swing CCW solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to harness connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set WINCH/CRANE switch to CRANE position.
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold remote control unit SWING controller in the CCW position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and go to Step 2 of this Fault.
  (b) If 22 to 28 vdc are present, perform Step (11) below and go to Step 8 of this Fault.
(11) Set the following switches in OFF position: REMOTE CONTROL UNIT ON/OFF EMERGENCY STOP switch, crane POWER switch, hydraulic selector switch and ENGINE switch.





9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).

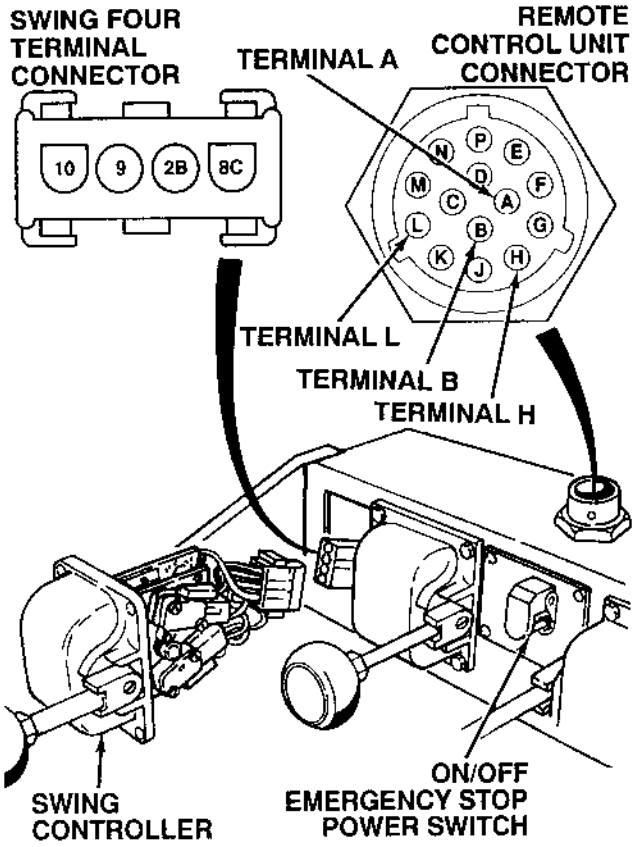


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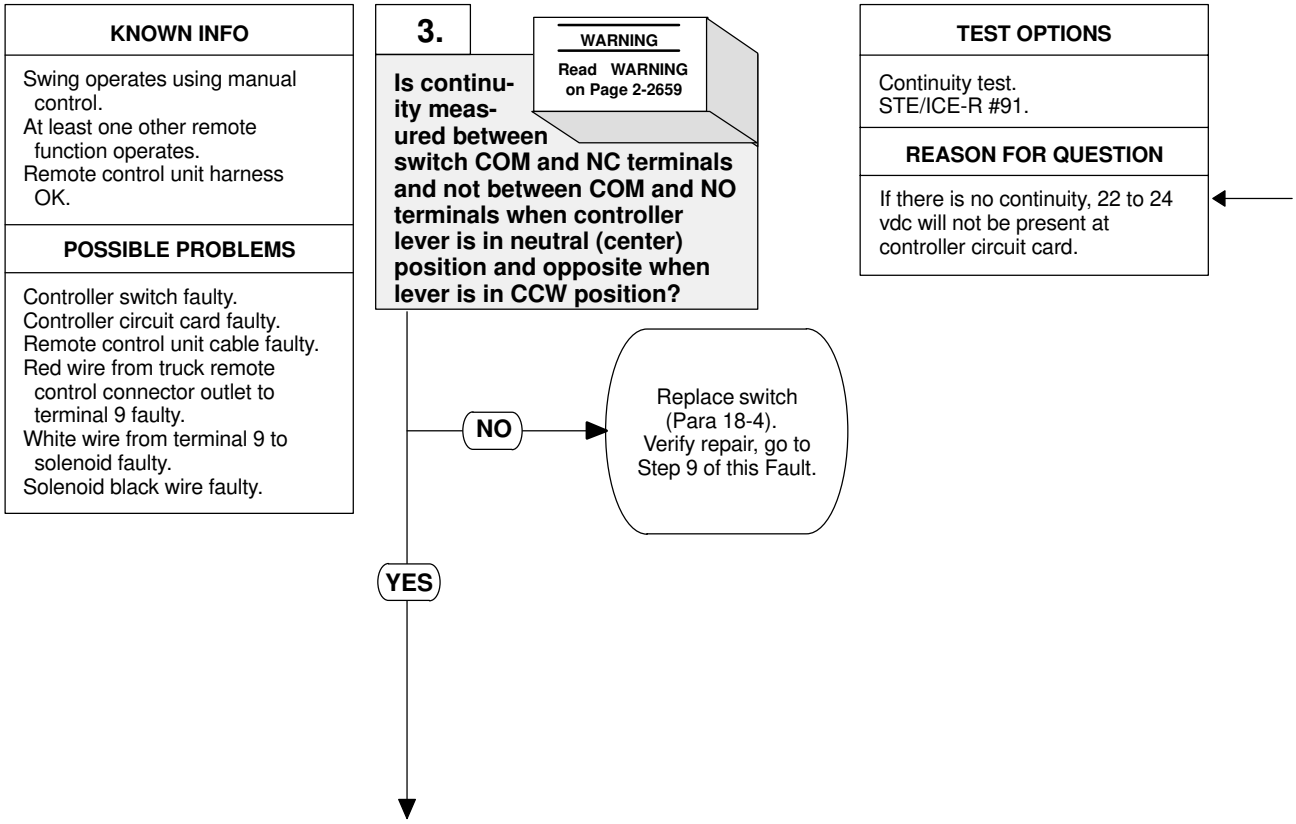
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect cable from remote control unit (TM 9-2320-364-10).
(2) Remove SWING controller from remote control unit (Para 18-4).
(3) Set multimeter select switch to ohms.
(4) Turn ON remote control unit ON/OFF EMERGENCY STOP switch.
(5) Is there continuity between remote control unit hookup, terminal H and four terminal connector, terminal 8C?
  (a) If there is no continuity, repair wire 8 between switch and four terminal connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (6) below.
(6) Is there continuity between remote control unit hookup, terminal B and four terminal connector, terminal 2B?
  (a) If there is no continuity, repair wire 2 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (7) below.
(7) Is there continuity between remote control unit hookup, terminal A and four terminal connector, terminal 9?
  (a) If there is no continuity, repair wire 9 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step (8) below.
(8) Is there continuity between remote control unit hookup, terminal L and four terminal connector, terminal 10?
  (a) If there is no continuity, repair wire 10 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, go to Step 3 of this Fault.
(9) Install both connectors on switches.



9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).

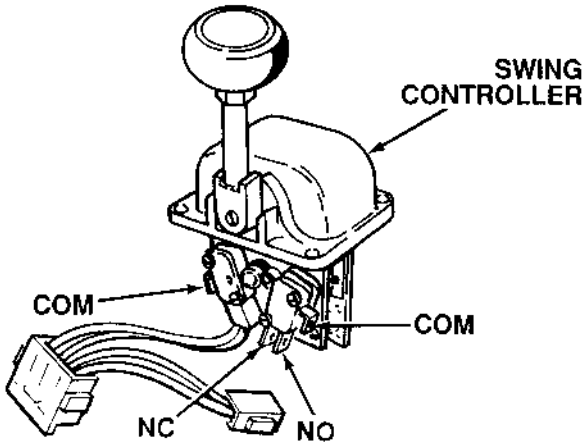


WARNING

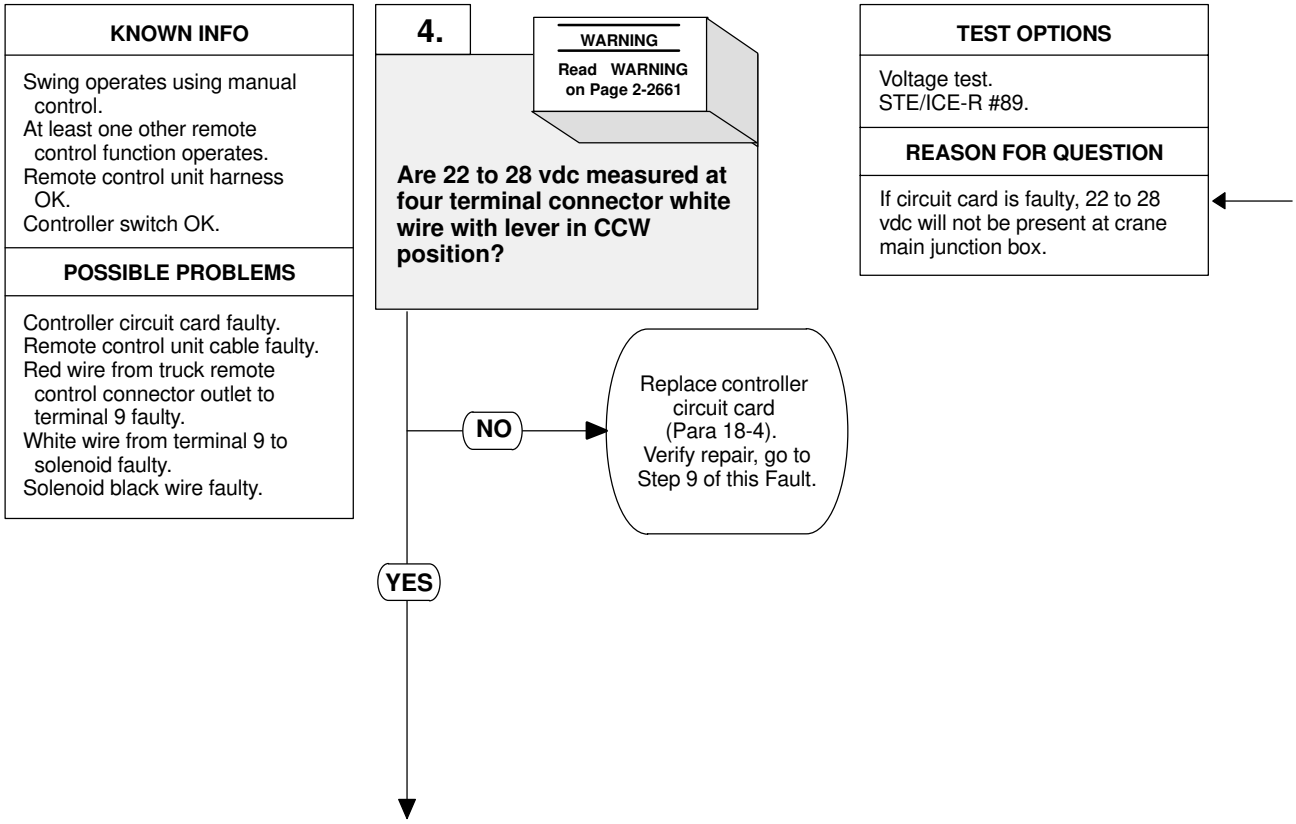
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector from one of the two switches.
(2) Is there continuity between switch NC terminal and switch COM terminal?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (3) below.
(3) Is there continuity between switch COM terminal and switch NO terminal?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (4) below.
(4) Is there continuity between switch NC terminal and switch COM terminal with controller lever held in CCW position?
  (a) If there is continuity, replace switch (Para 18-4).
  (b) If there is no continuity, go to Step (5) below.
(5) Is there continuity between switch COM terminal and switch NO terminal with controller lever held in CCW position?
  (a) If there is no continuity, replace switch (Para 18-4).
  (b) If there is continuity, go to Step (6) below.
(6) Repeat Steps (1) through (5) for other switch.
(7) Install both connectors on switches.



9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).

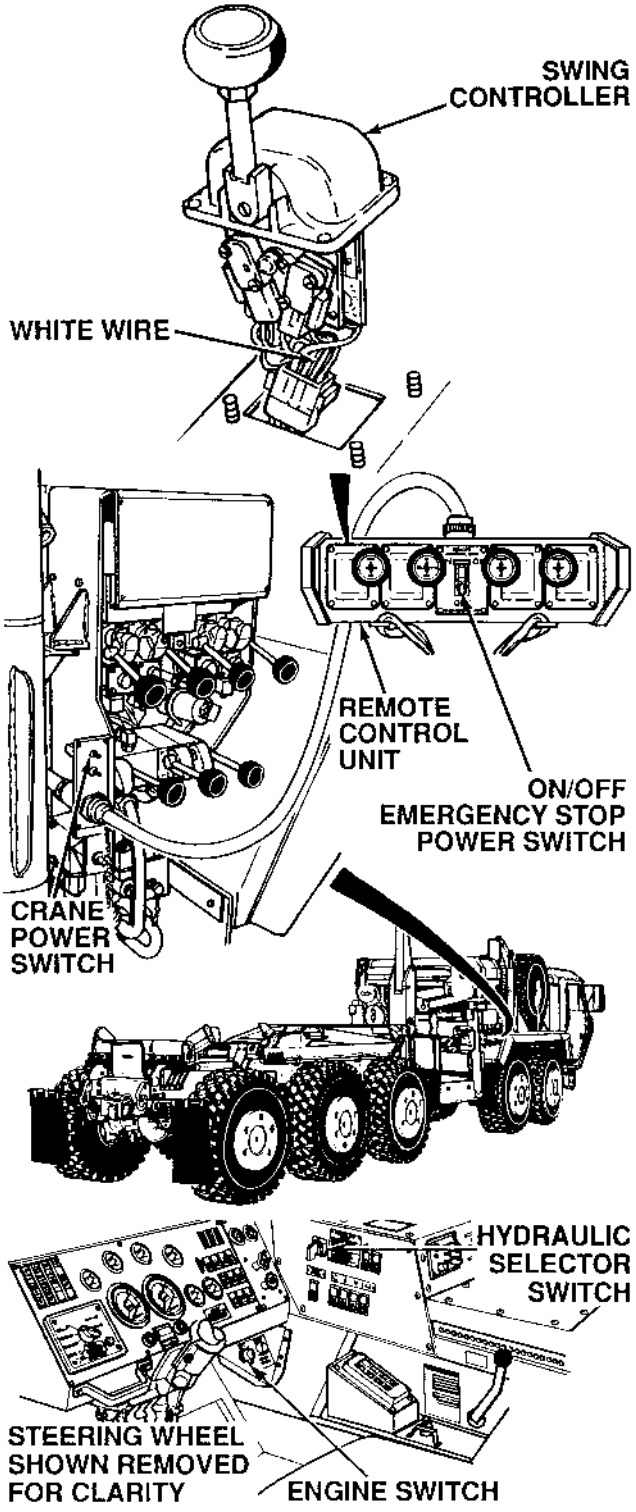


WARNING

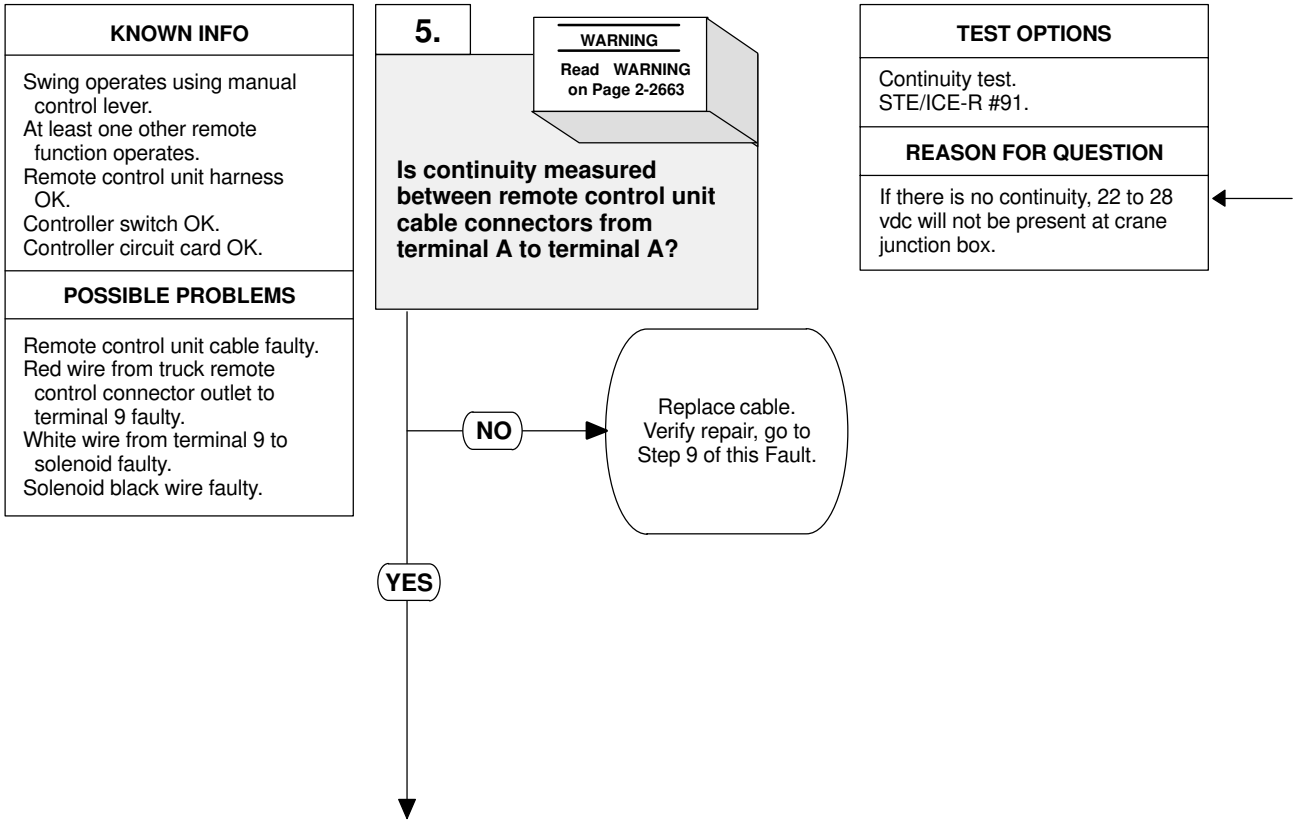
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect remote control unit to remote control unit cable.
(2) Connect controller four terminal connector to remote control unit harness four terminal connector.
(3) Set multimeter select switch to volts dc.
(4) Connect positive (+) multimeter lead to white wire terminal in four terminal connector.
(5) Connect negative (–) multimeter lead to a known good ground.
(6) Turn ON ENGINE switch (TM 9-2320-364-10).
(7) Set hydraulic selector switch to CRANE/SRW position.
(8) Set crane POWER switch to ON position.
(9) Set remote control ON/OFF EMERGENCY STOP power switch to ON position.
(10) Hold SWING controller in the CCW position.
  (a) If 22 to 28 vdc are not present, perform Step (11) below and replace circuit card (Para 18-4).
  (b) If 22 to 28 vdc are present, go to Step (11) below.
(11) Set the following switches to the OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.
(12) Assemble remote control unit (Para 18-4).



9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).

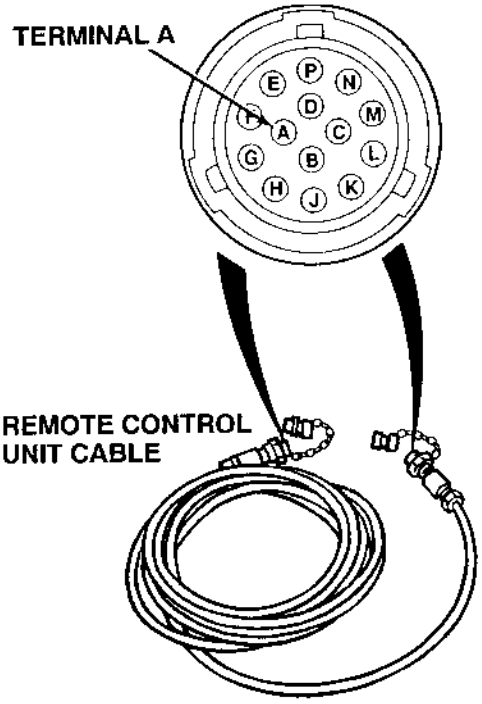


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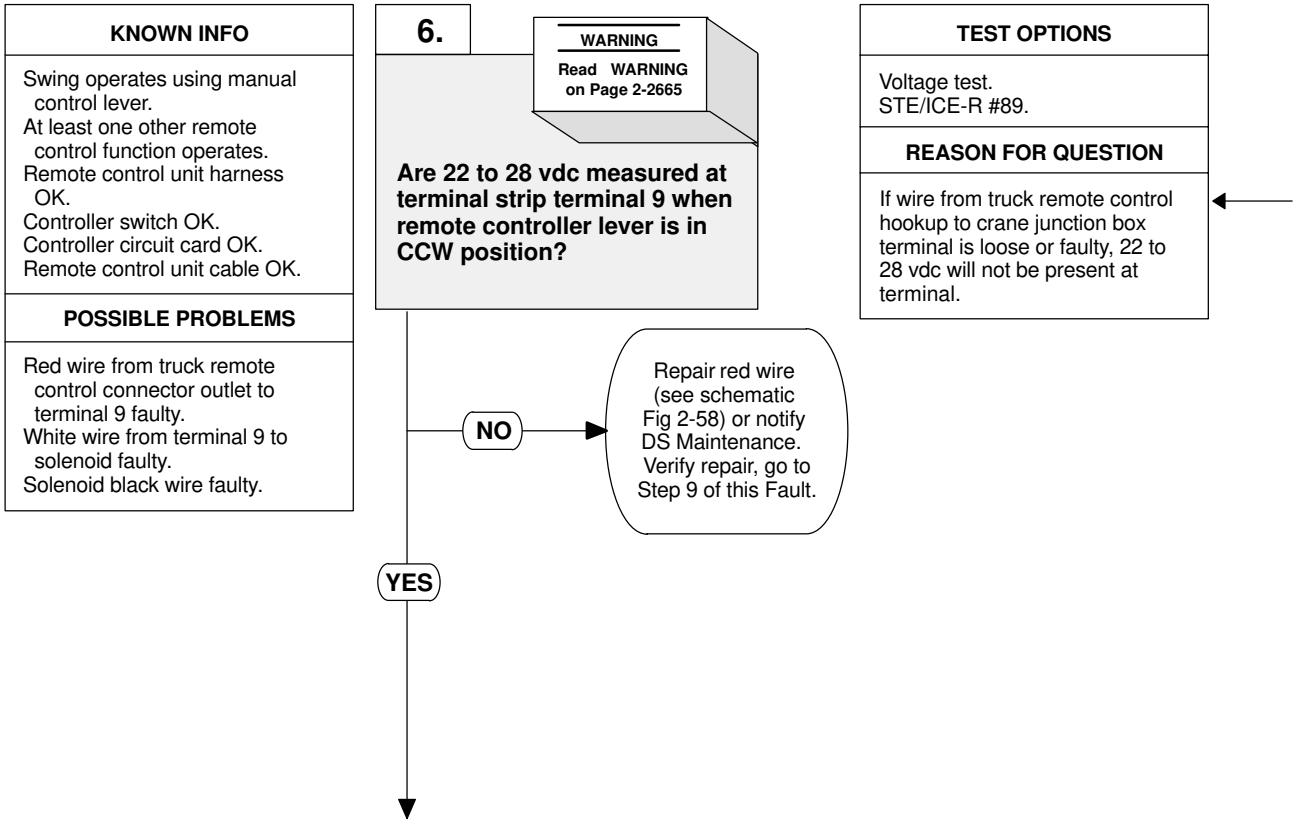
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect remote control unit cable from truck and remote control unit (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between cable connector terminal A at both ends?
   (a) If there is no continuity, replace cable.
   (b) If there is continuity, connect cable to truck hookup and remote control unit hookup and go to Step 6 of this Fault.



9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).

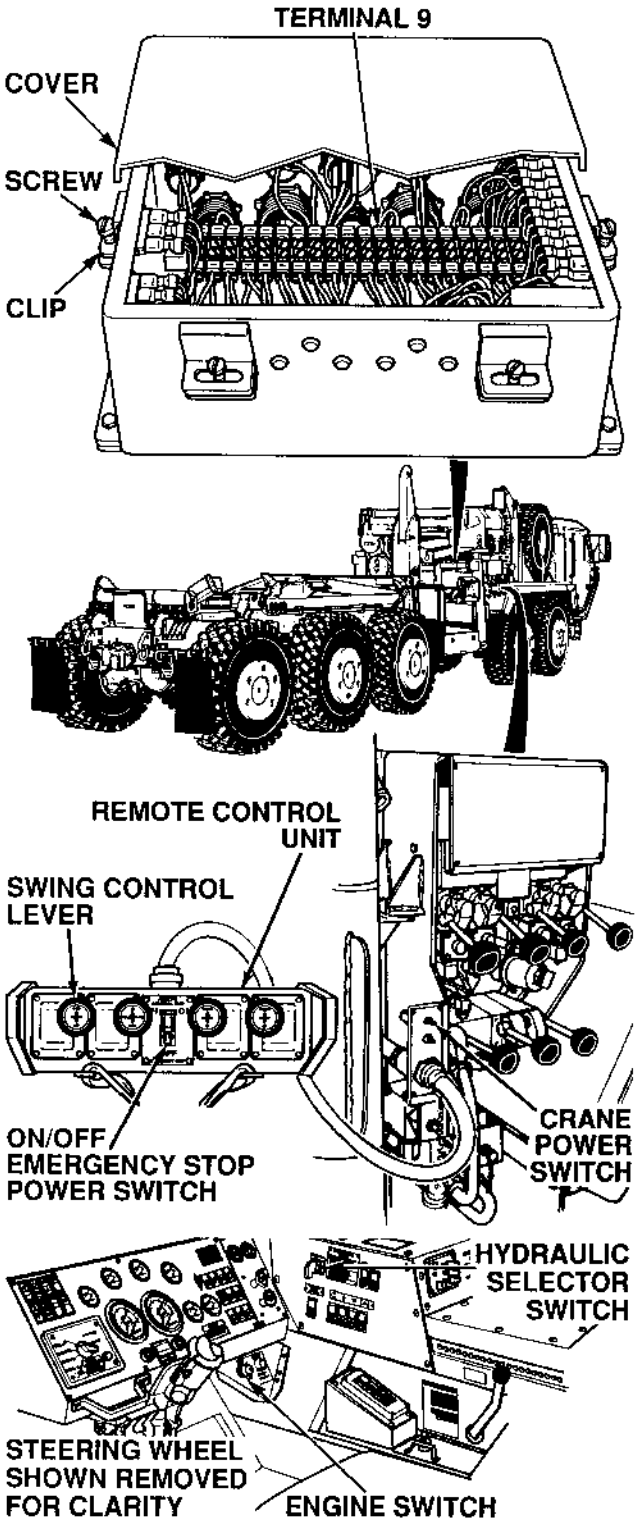


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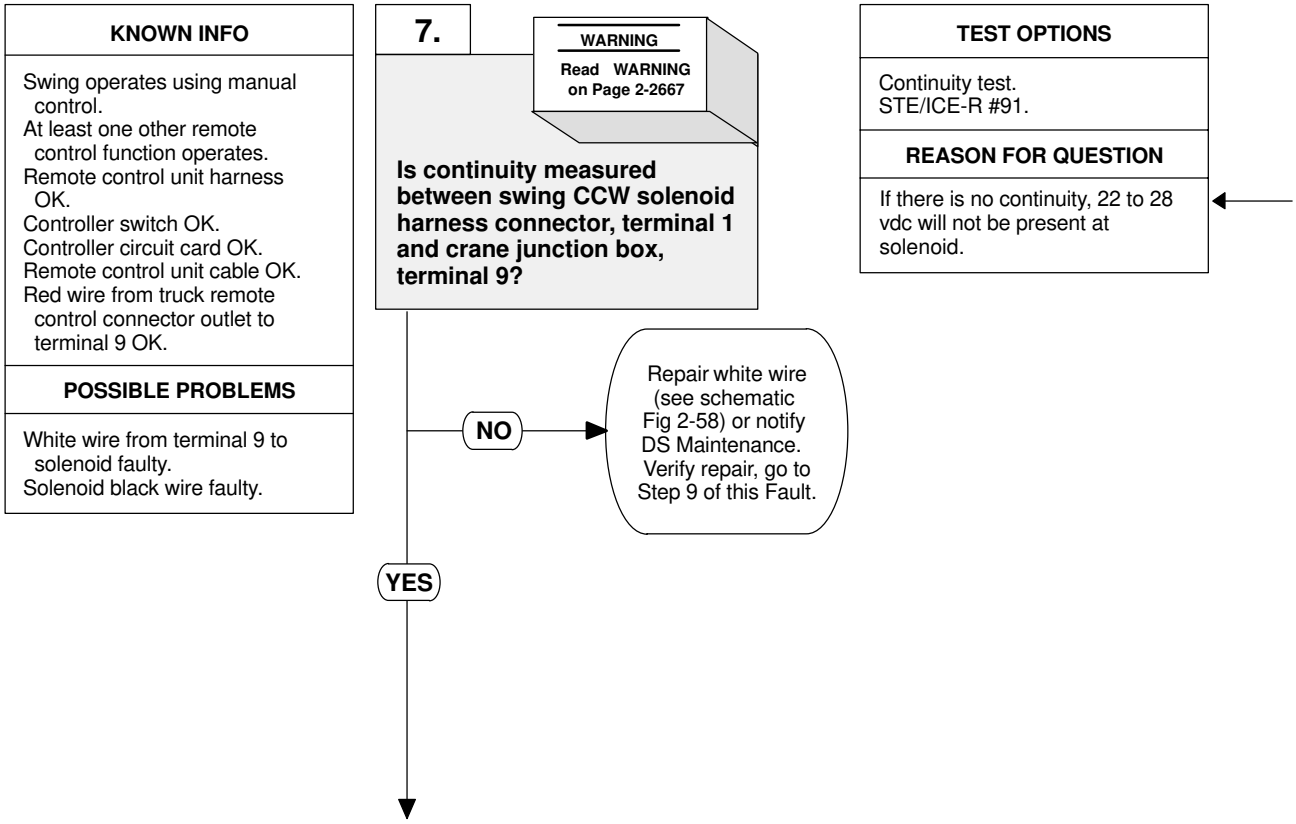
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to crane junction box, terminal 9.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to CRANE/SRW position.
(7) Set crane POWER switch to ON position.
(8) Set remote control ON/OFF EMERGENCY STOP power switch to ON.
(9) Put remote control unit SWING control lever in the CCW position.
  (a) If 22 to 28 vdc are not present, perform Step (10) below and repair red wire from truck remote control hookup to terminal 9 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Step (10) below and go to Step 7 of this Fault.
(10) Put the following switches in OFF position: remote control ON/OFF EMERGENCY STOP power switch, crane POWER switch, hydraulic selector switch and ENGINE switch.



9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).

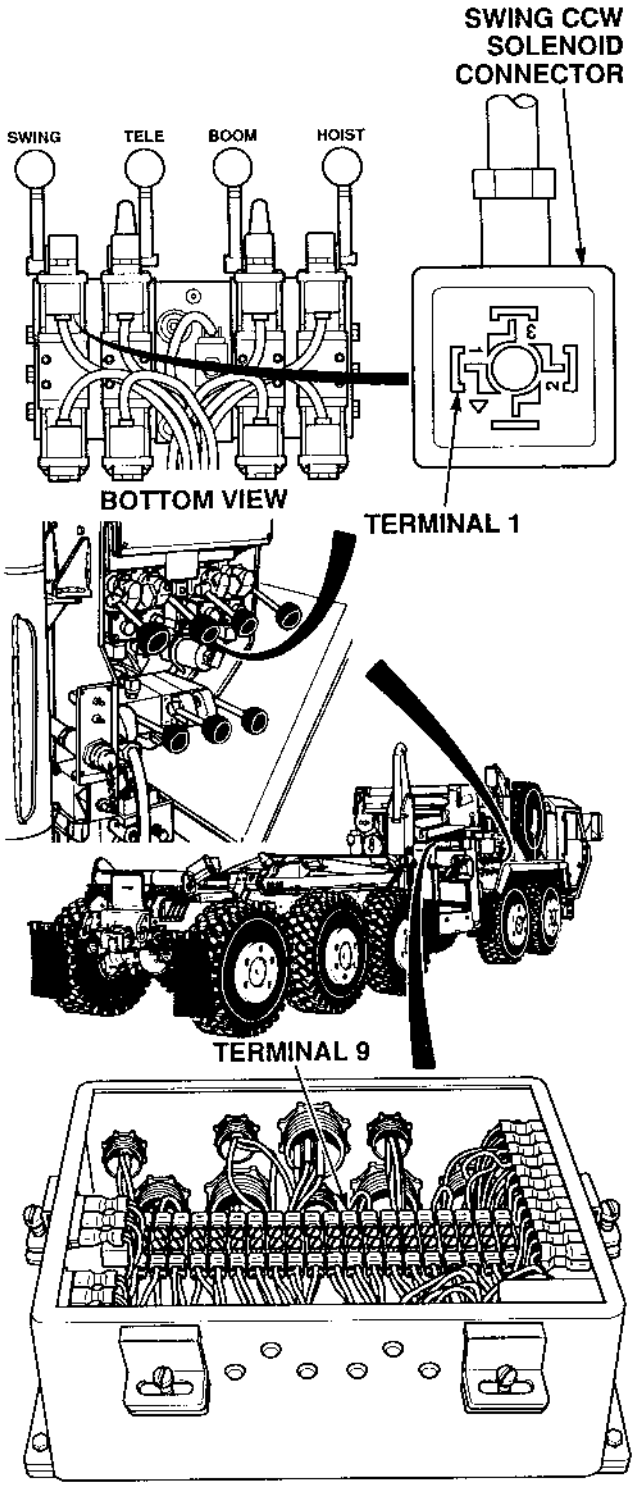


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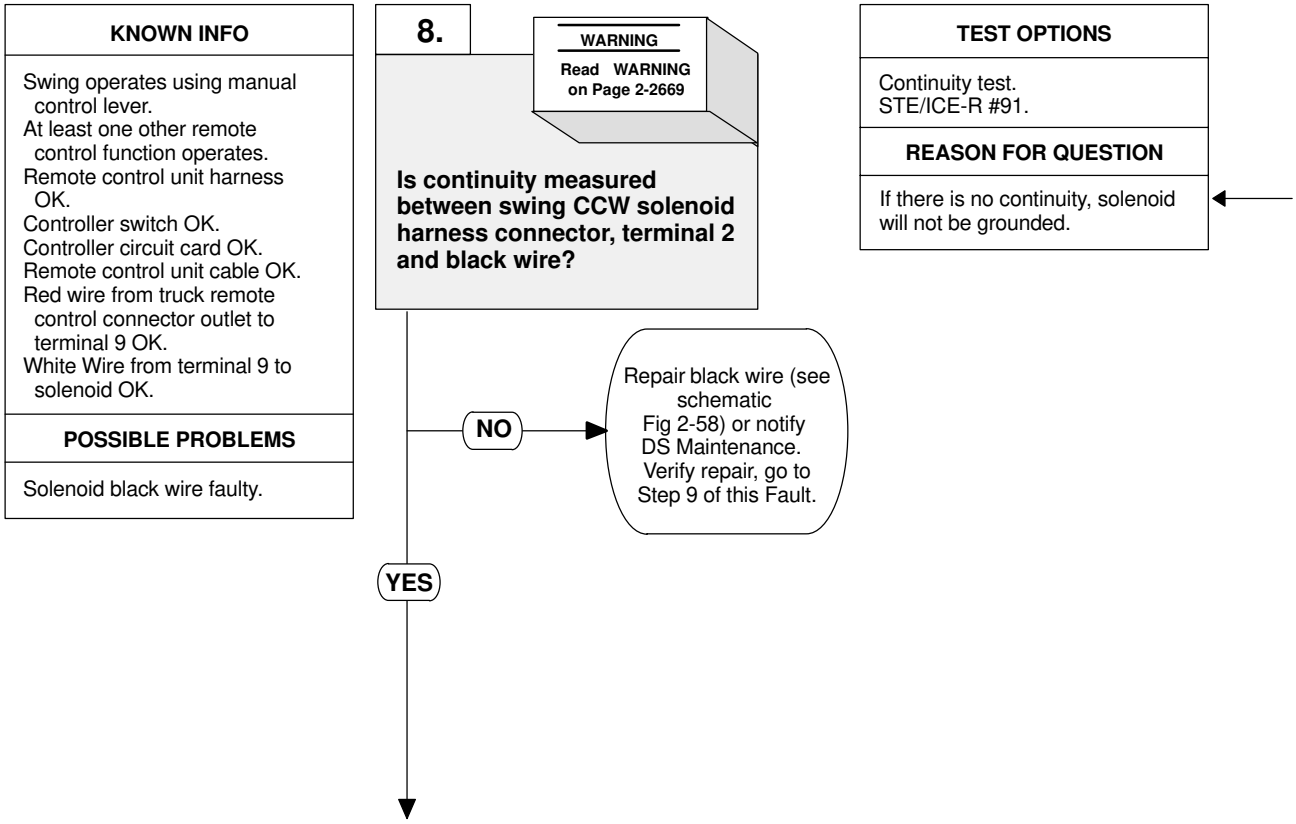
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector, terminal 1 and crane main junction box, terminal 9?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, white wire is OK.



9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).

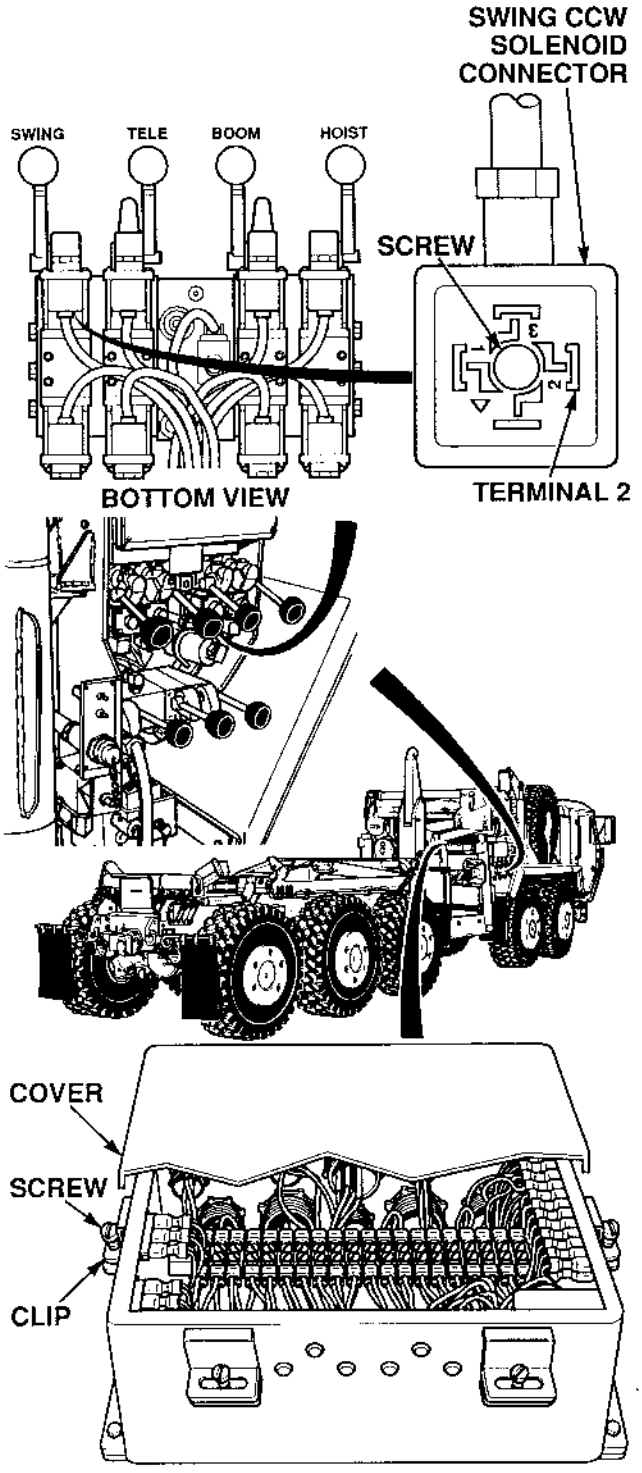


WARNING

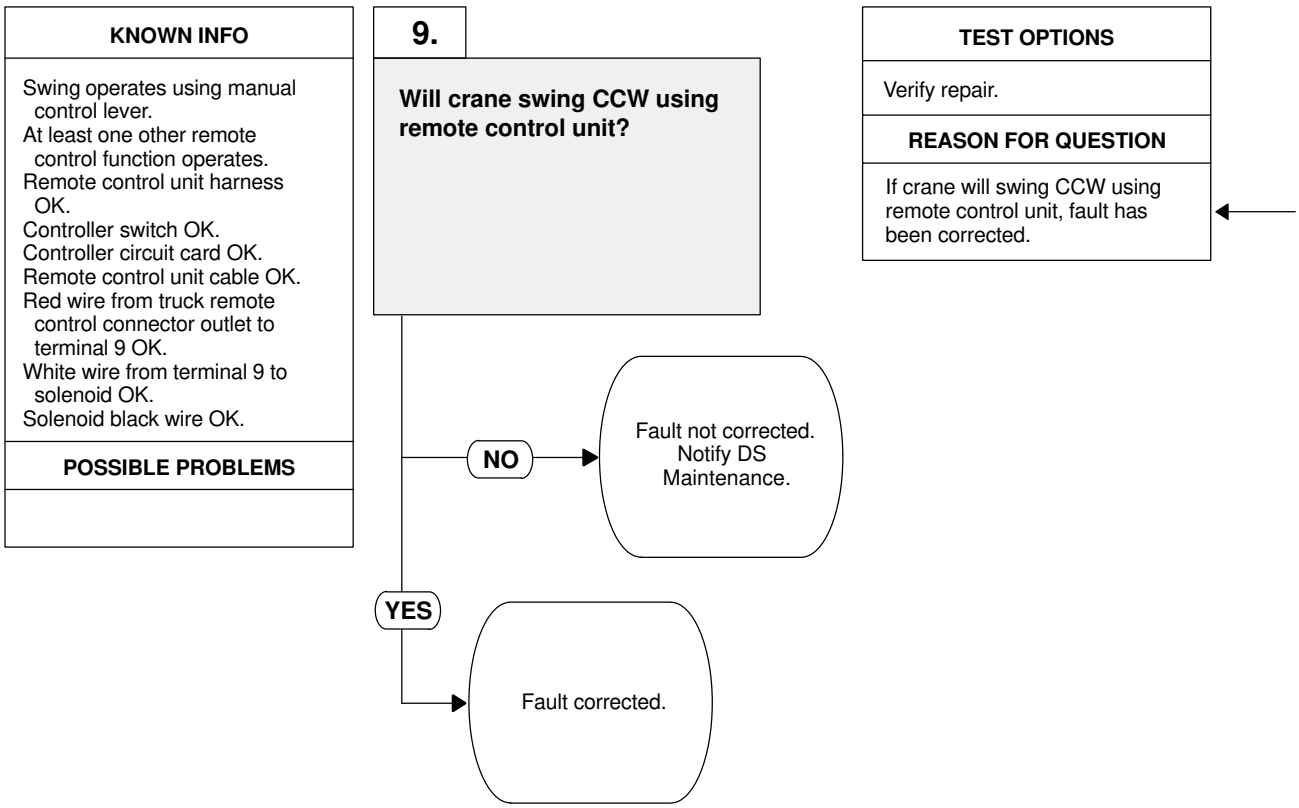
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

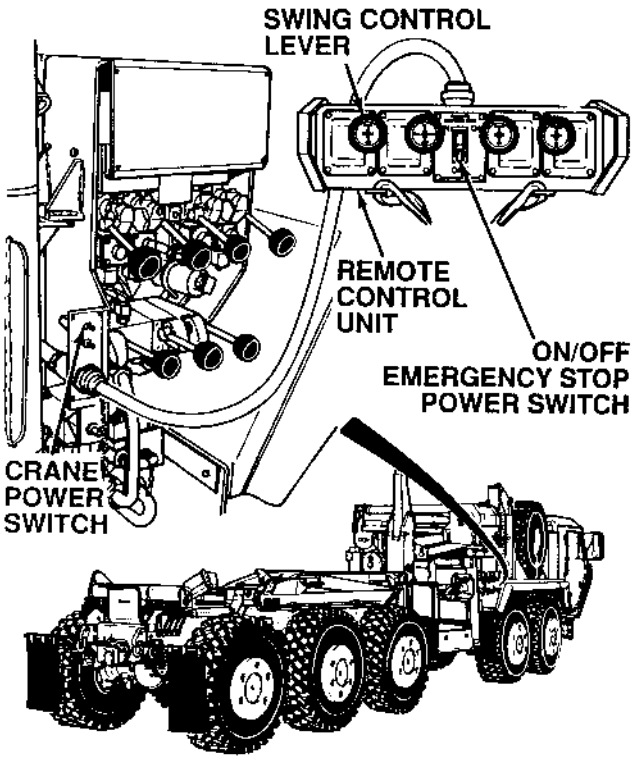
(1) Is there continuity between connector, terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance and perform Steps (2) and (3) below.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 9 of this Fault.
(2) Install connector on swing control solenoid and tighten screw.
(3) Install crane junction box cover with six clips and screws.



9. CRANE WILL NOT SWING CCW USING REMOTE CONTROL UNIT (CONT).



VERIFY REPAIR
(1) Connect remote control unit cable to truck hookup and remote control unit hookup (TM 9-2320-364-10). (2) Operate crane using remote control unit. (a) If crane will not swing CCW using remote control unit, fault not corrected. Notify DS Maintenance. (b) If crane swings CCW, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

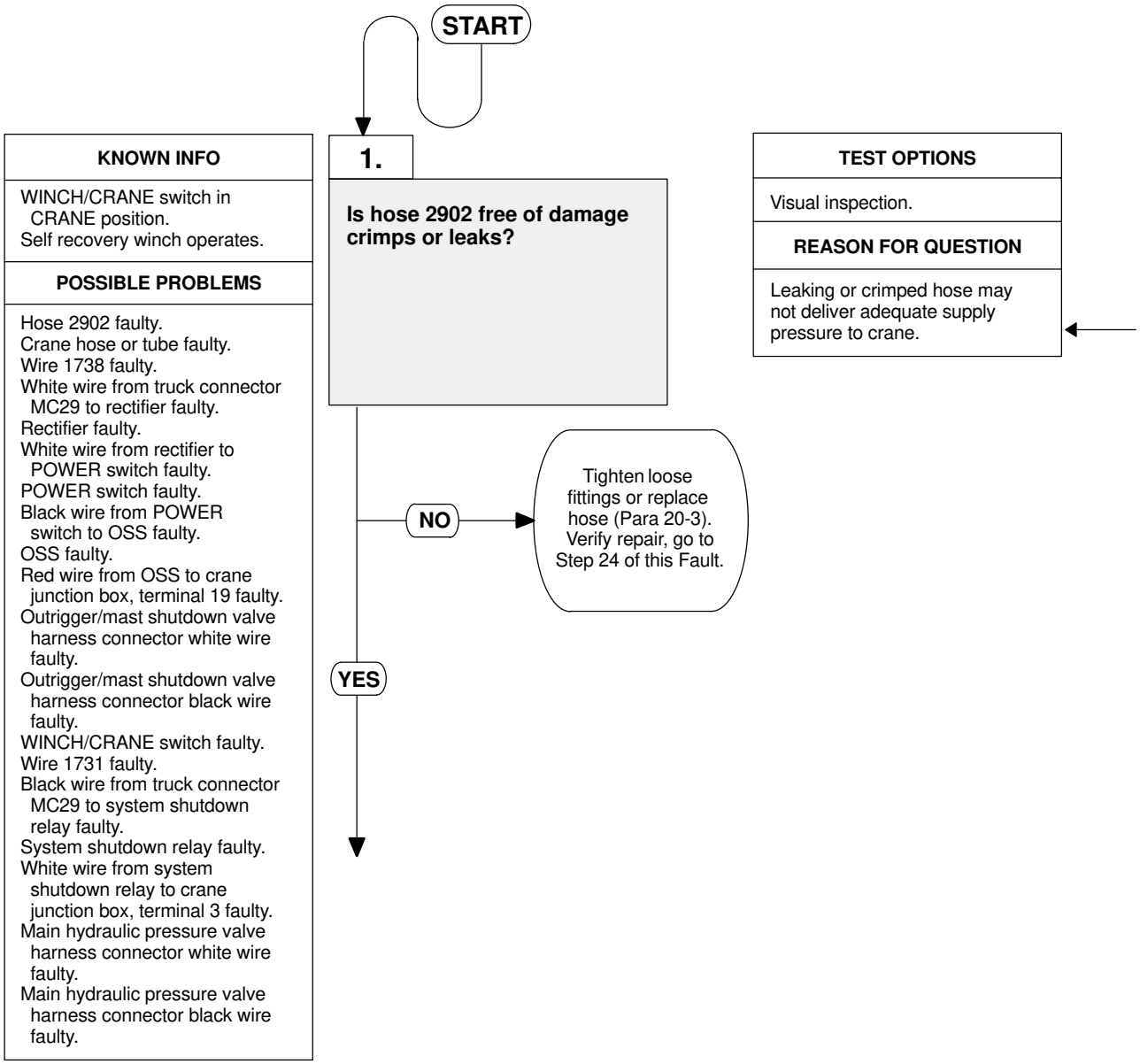
10. OUTRIGGERS DO NOT OPERATE.

INITIAL SETUP

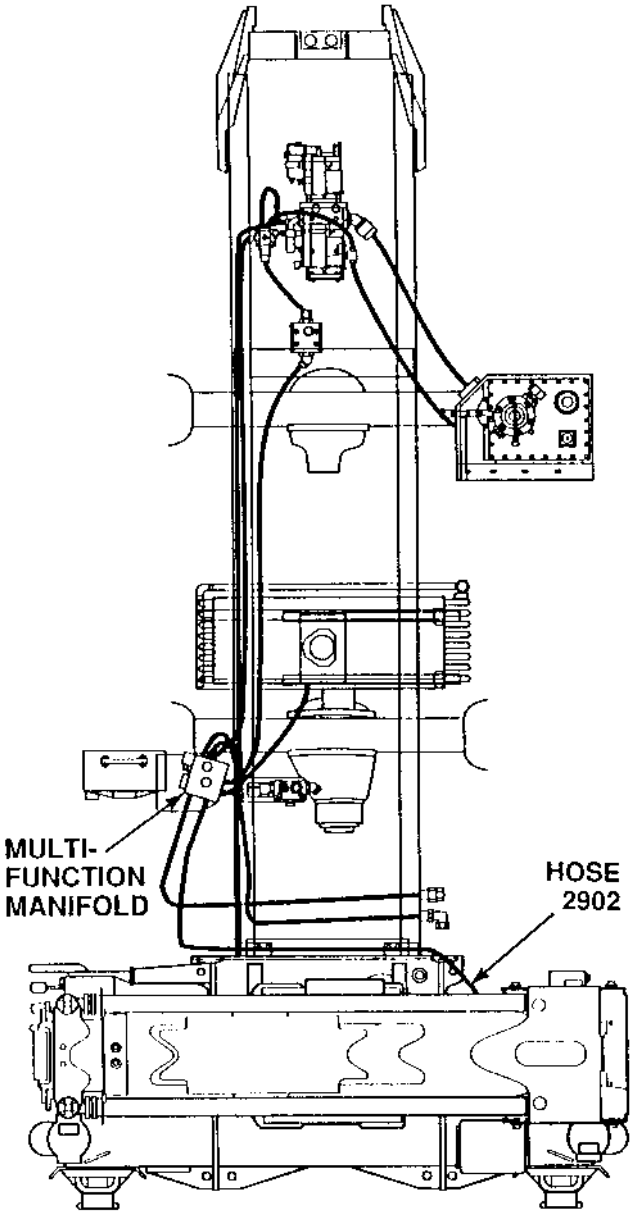
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)

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

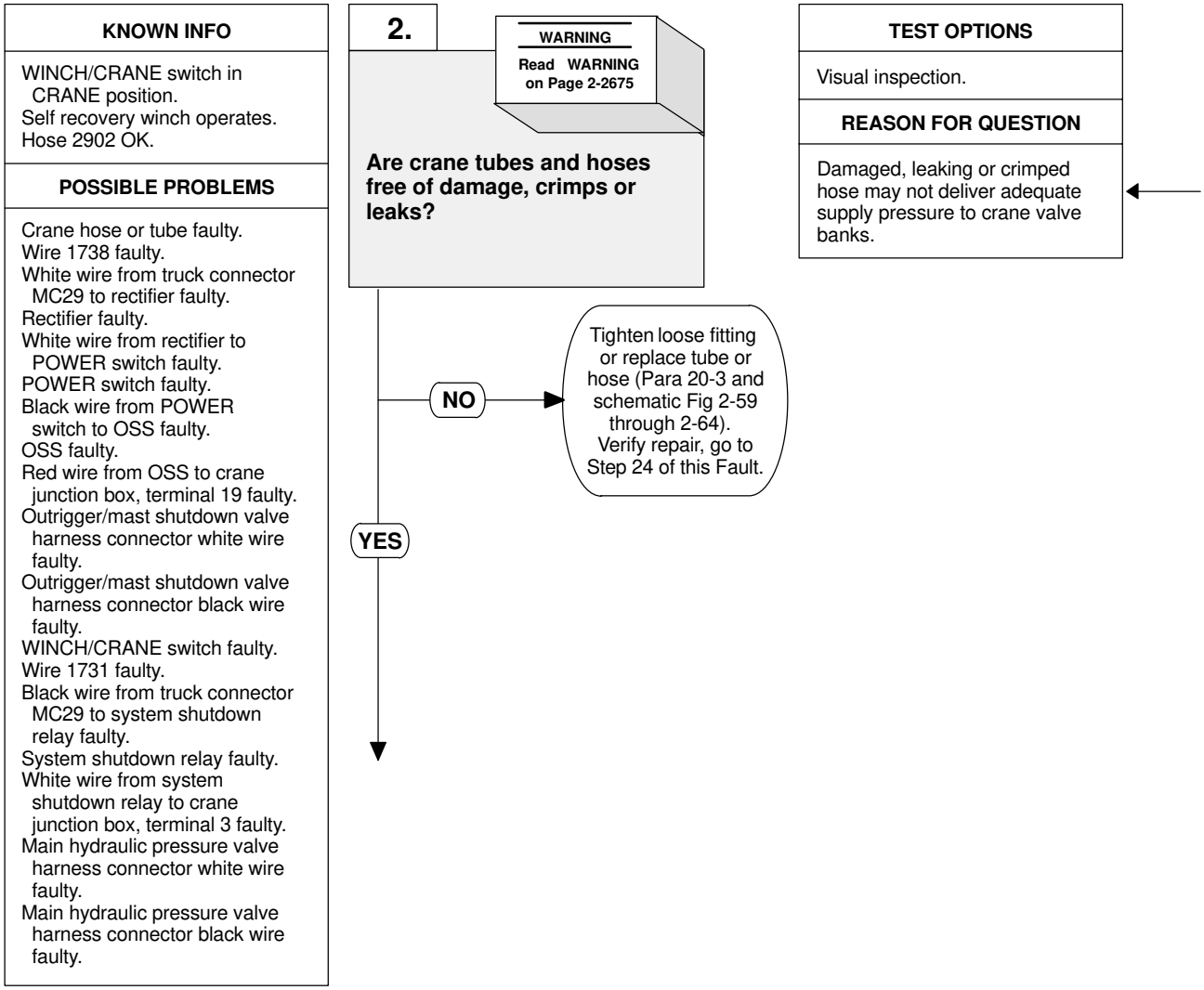
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)



VISUAL INSPECTION
Inspect hose 2902 for leaks and crimps. (1) If hose is found to be leaking or crimped, replace hose (Para 20-3). (2) If hose is not leaking or crimped, go to Step 2 of this Fault.



10. OUTRIGGERS DO NOT OPERATE (CONT).

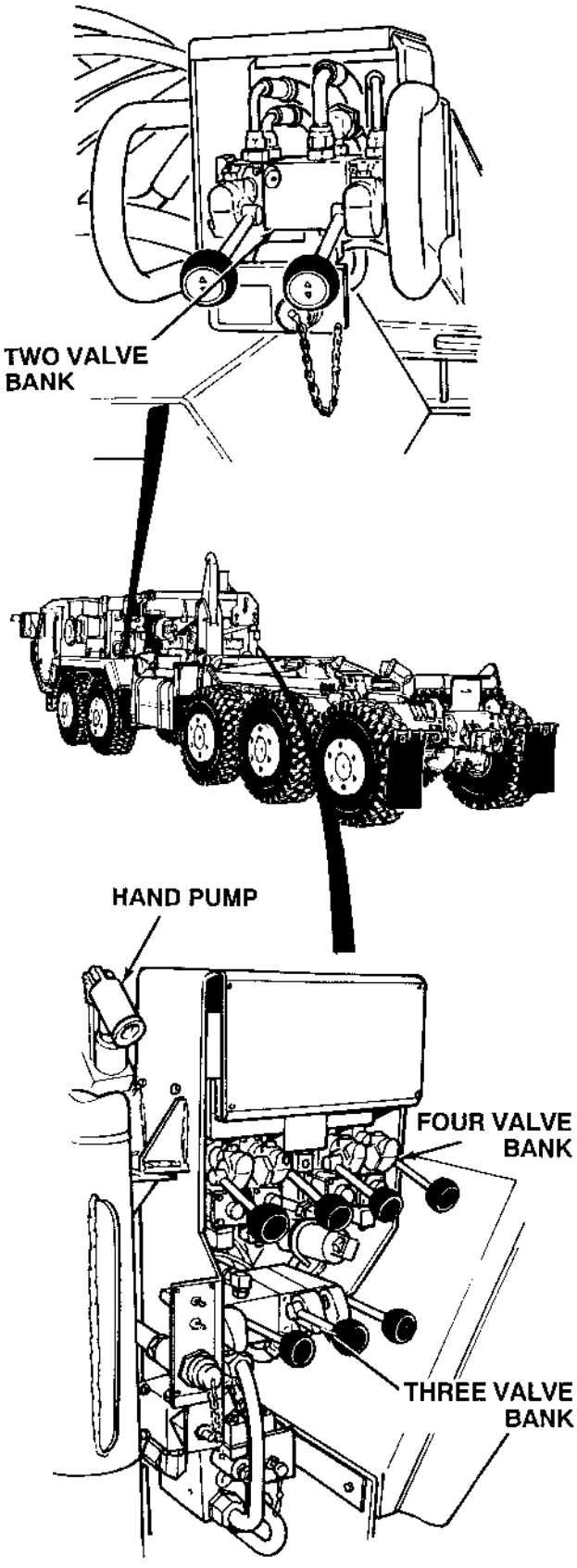


WARNING

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.

VISUAL INSPECTION

(1) Inspect all tubes around crane control valve banks and hand pump.
   (a) If tube is damaged, crimped or leaking, tighten loose fitting or replace tube (Para 20-3 and schematic Fig 2-59 through 2-64).
   (b) If tubes are not damaged, crimped or leaking, go to Step (2).
(2) Inspect all hoses around crane control valve banks.
   (a) If hose is damaged, crimped or leaking, tighten loose fitting or replace hose (Para 20-3).
   (b) If hoses are not leaking or crimped, go to Step 3 of this Fault.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Crane hoses and tubes OK.

POSSIBLE PROBLEMS

Wire 1738 faulty.
White wire from truck connector MC29 to rectifier faulty.
Rectifier faulty.
White wire from rectifier to POWER switch faulty.
POWER switch faulty.
Black wire from POWER switch to OSS faulty.
OSS faulty.
Red wire from OSS to crane junction box, terminal 19 faulty.
Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

3.

Do outriggers operate when main hydraulic pressure valve is overridden?

NO → Go to Step 4 of this Fault.

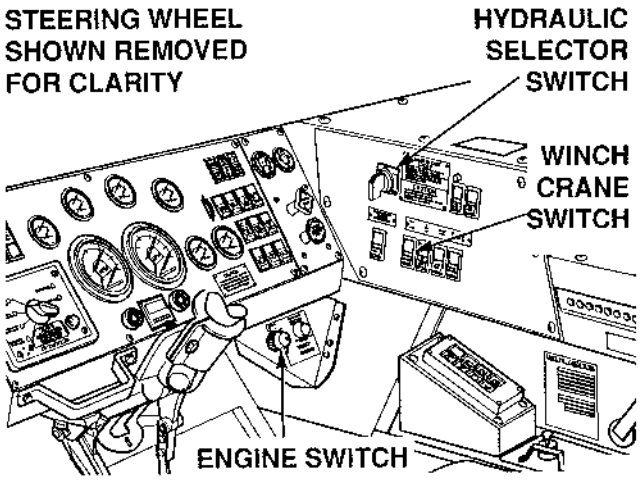
YES → Go to Step 16 of this Fault.

TEST OPTIONS

Manual override test.

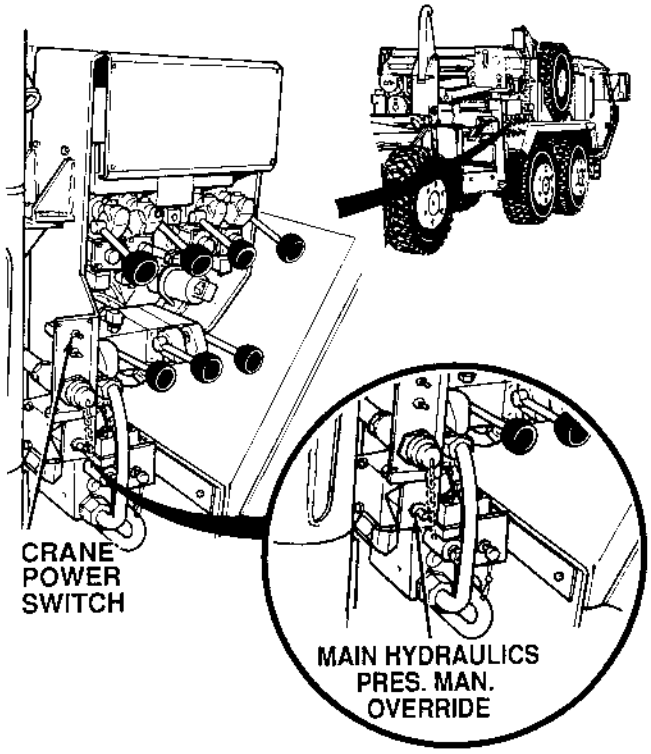
REASON FOR QUESTION

If outriggers operate with valve manually overridden, solenoid or component supplying power to solenoid is faulty.

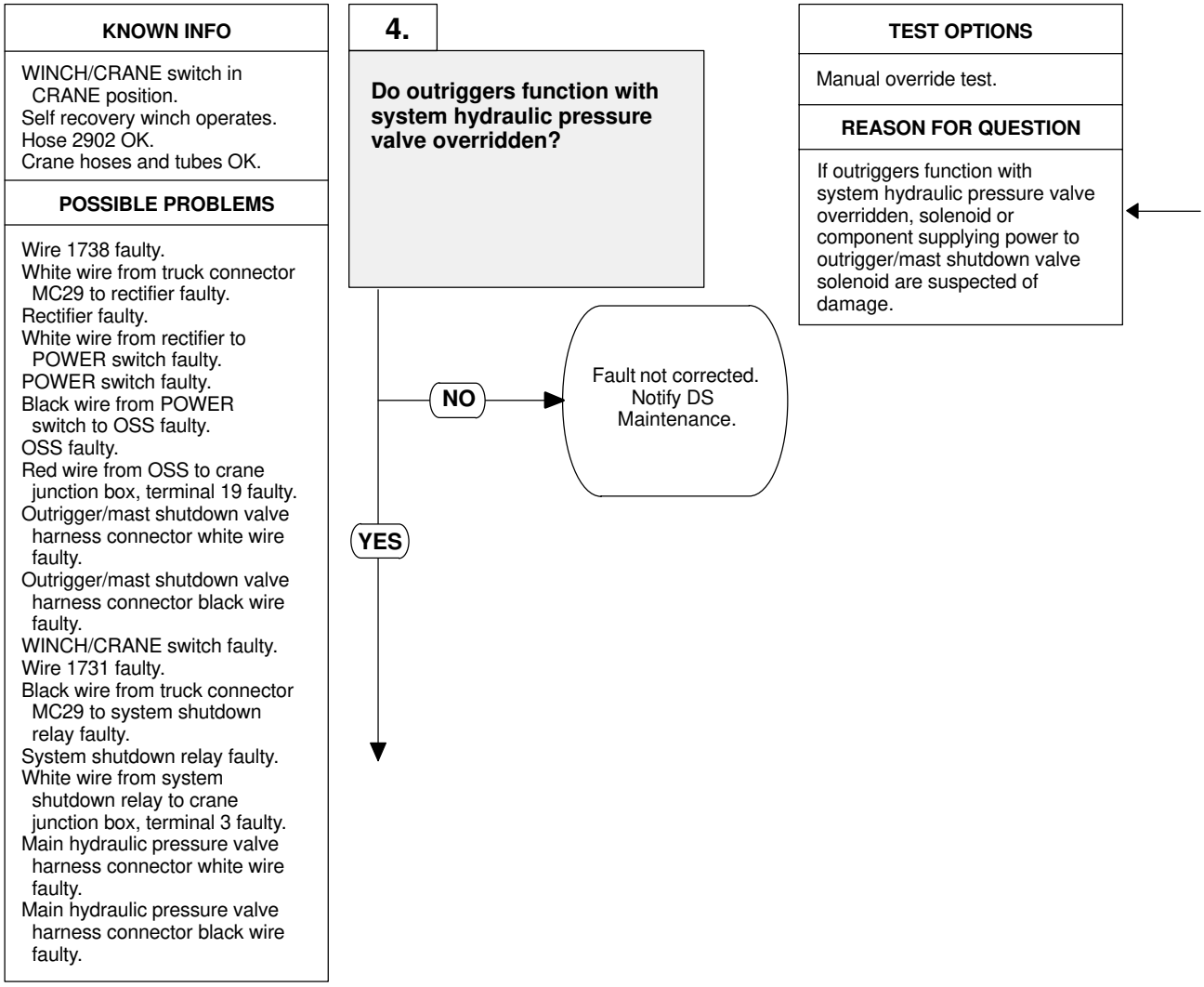


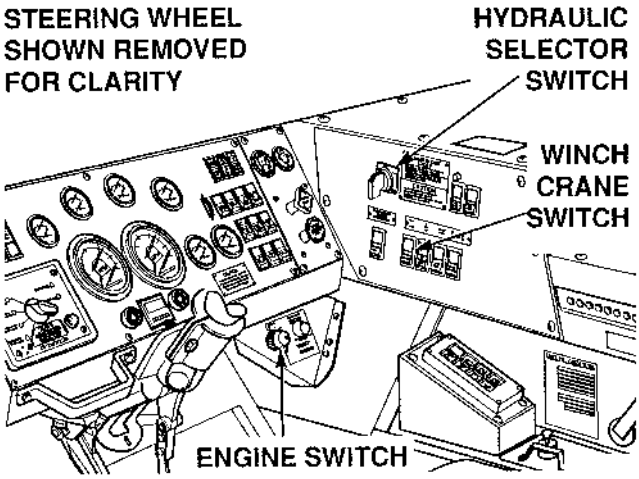
MANUAL OVERRIDE TEST

(1) START engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to CRANE/SRW position.
(3) Turn ON crane POWER switch.
(4) Release MHC MAIN HYDRAULIC PRESSURE MANUAL OVERRIDE.
(5) Operate outriggers.
    (a) If outriggers function with override released, perform Steps (7) through (9) below and go to Step 4 of this Fault.
    (b) If outriggers do not function with override released, perform Steps (6) through (9) below and go to Step 16 of this Fault.
(6) Push in MHC MAIN HYDRAULIC PRESSURE MANUAL OVERRIDE and rotate to lock in position.
(7) Turn OFF crane POWER switch.
(8) Set hydraulic selector switch to the OFF position.
(9) Turn OFF ENGINE switch.



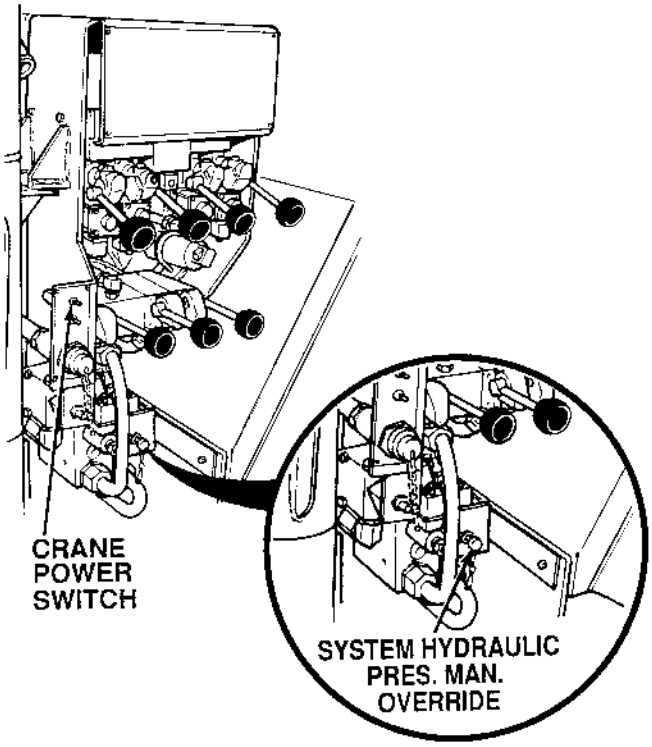
10. OUTRIGGERS DO NOT OPERATE (CONT).





MANUAL OVERRIDE TEST

(1) START engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to CRANE/SRW position.
(3) Turn ON crane POWER switch.
(4) Remove wire and push MHC SYSTEM HYDRAULIC PRESSURE MANUAL OVERRIDE in and hold in position.
    (a) If outriggers do not operate with override locked in position, perform Steps (5) through (8) below and notify DS Maintenance.
    (b) If outriggers operate with override locked in position, perform Steps (5) through (8) below and go to Step 5 of this Fault.
(5) Unlock and pull out MHC SYSTEM HYDRAULIC PRESSURE MANUAL OVERRIDE.
(6) Turn OFF crane POWER switch.
(7) Set hydraulic selector switch to the OFF position.
(8) Turn OFF ENGINE switch.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.

POSSIBLE PROBLEMS

Wire 1738 faulty.
White wire from truck connector MC29 to rectifier faulty.
Rectifier faulty.
White wire from rectifier to POWER switch faulty.
POWER switch faulty.
Black wire from POWER switch to OSS faulty.
OSS faulty.
Red wire from OSS to crane junction box, terminal 19 faulty.
Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

5.

WARNING

Read WARNING on Page 2-2681

Are 22 to 28 vdc measured at outrigger/mast shutdown valve harness connector, terminal 1?

NO → Go to Step 6 of this Fault.

YES → Go to Step 15 of this Fault.

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

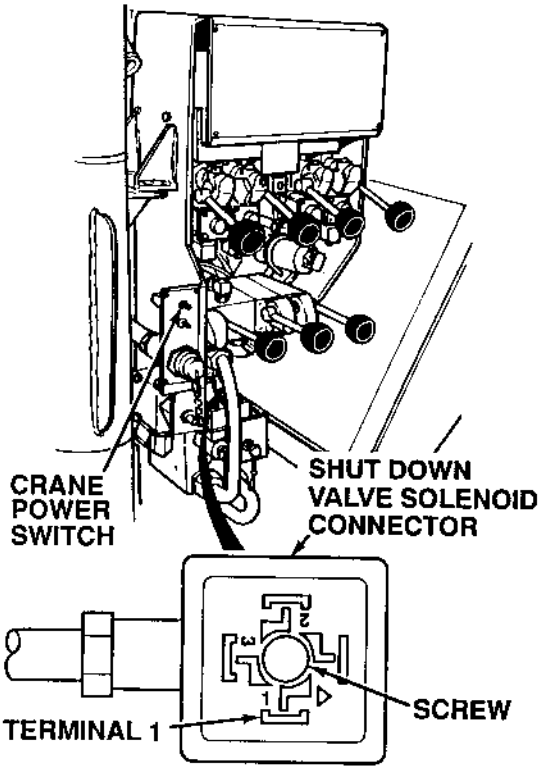
If there are 22 to 28 vdc present, component supplying power to solenoid are suspected of damage.

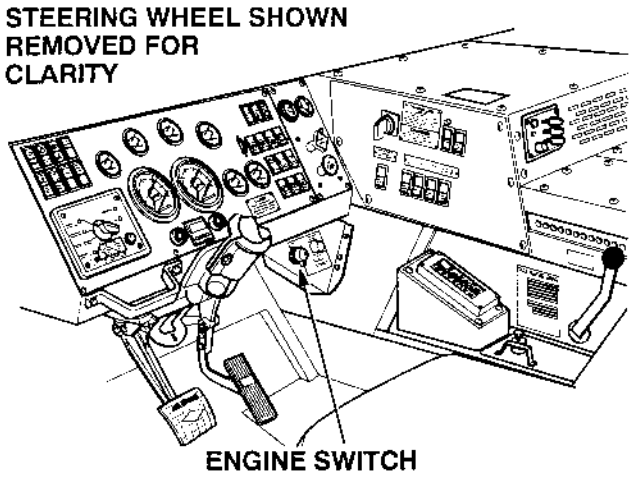
WARNING

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 screw and disconnect harness connector from outrigger/mast shutdown valve solenoid.
(2) Set multimeter select switch to volts.
(3) Connect positive (+) multimeter lead to harness connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Turn ON crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (7) and (8) below and go to Step 6 of this Fault.
  (b) If 22 to 28 vdc are present, perform Steps (7) and (8) below and go to Step 15 of this Fault.
(7) Turn OFF crane POWER switch.
(8) Turn OFF ENGINE switch.





10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.

POSSIBLE PROBLEMS

Wire 1738 faulty.
White wire from truck connector MC29 to rectifier faulty.
Rectifier faulty.
White wire from rectifier to POWER switch faulty.
POWER switch faulty.
Black wire from POWER switch to OSS faulty.
OSS faulty.
Red wire from OSS to crane junction box, terminal 19 faulty.
Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

6.

WARNING

Read WARNING on Page 2-2683

Are 22 to 28 vdc measured at connector MC29, terminal C with engine switch in the ON position?

NO → Repair wire 1738 (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES

TEST OPTIONS

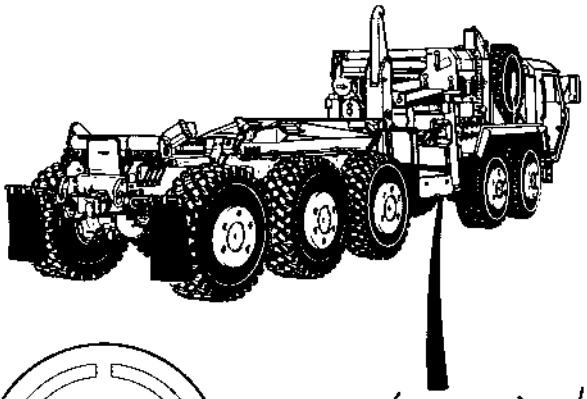
Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If wire 1738 from wire 1755 to Connector MC29 is loose, faulty, or shorted to black wire, 22 to 28 vdc will not be in put to crane POWER switch.

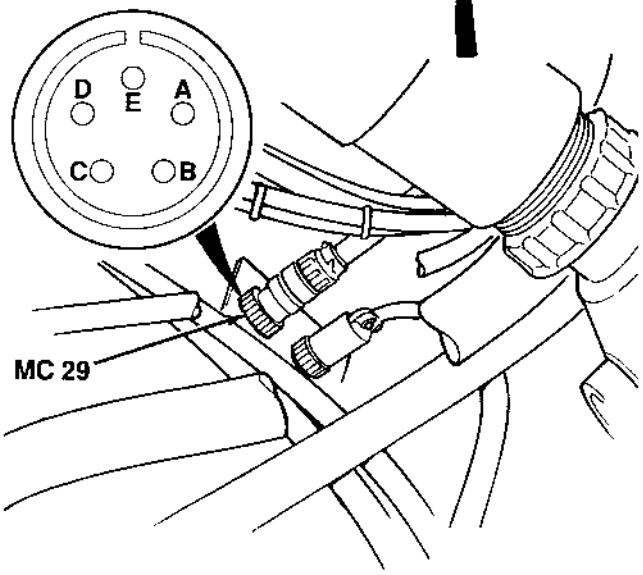
WARNING

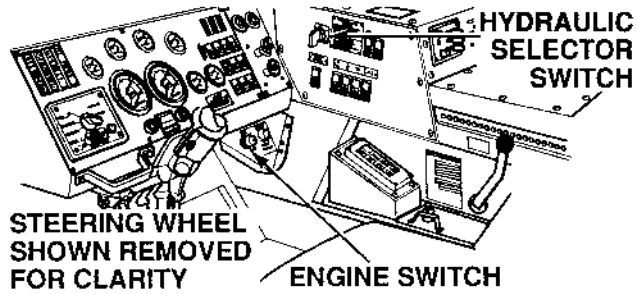
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



VOLTAGE TEST

(1) Disconnect connector MC29 from crane connector.
(2) Connect positive (+) multimeter lead to connector MC29, terminal C.
(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 1738 from its splice into wire 1755 to connector MC29 (see schematic 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 7 of this Fault.
(5) Turn OFF ENGINE switch.
(6) Connect connector MC29 to crane connector.





10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.

POSSIBLE PROBLEMS

White wire from truck connector MC29 to rectifier faulty.
Rectifier faulty.
White wire from rectifier to POWER switch faulty.
POWER switch faulty.
Black wire from POWER switch to OSS faulty.
OSS faulty.
Red wire from OSS to crane junction box, terminal 19 faulty.
Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

7.

WARNING
Read WARNING on Page 2-2685

Are 22 to 28 vdc measured at white wire connected to rectifier AC terminal with ENGINE switch in the ON position?

NO → Repair white wire (see schematic 2-58) or notify DS Maintenance. Verify repair and go to step 24 of this Fault.

YES

TEST OPTIONS

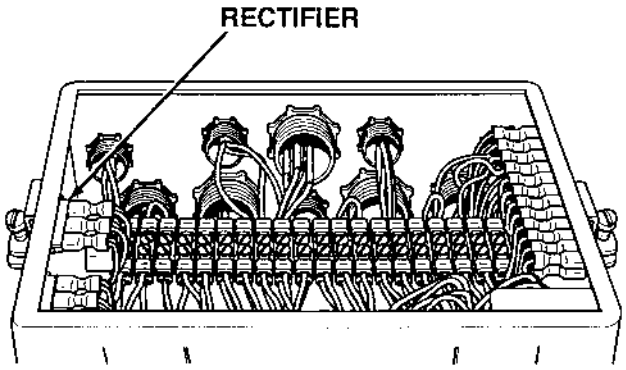
Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If wire from truck connector MC29 through crane junction box, terminal 2 to rectifier is faulty, 22 to 28 vdc will not be input to crane POWER switch.

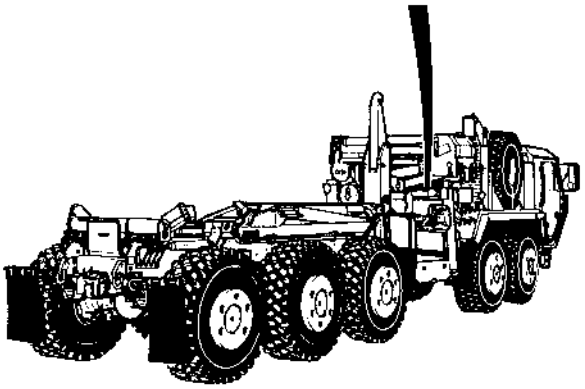
WARNING

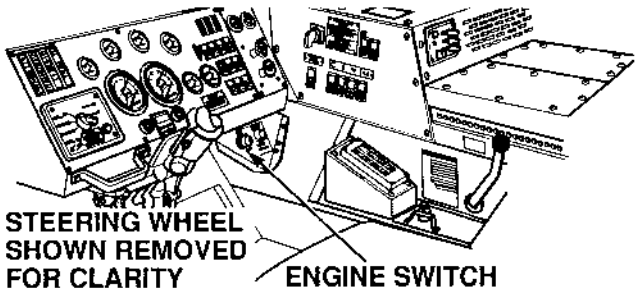
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



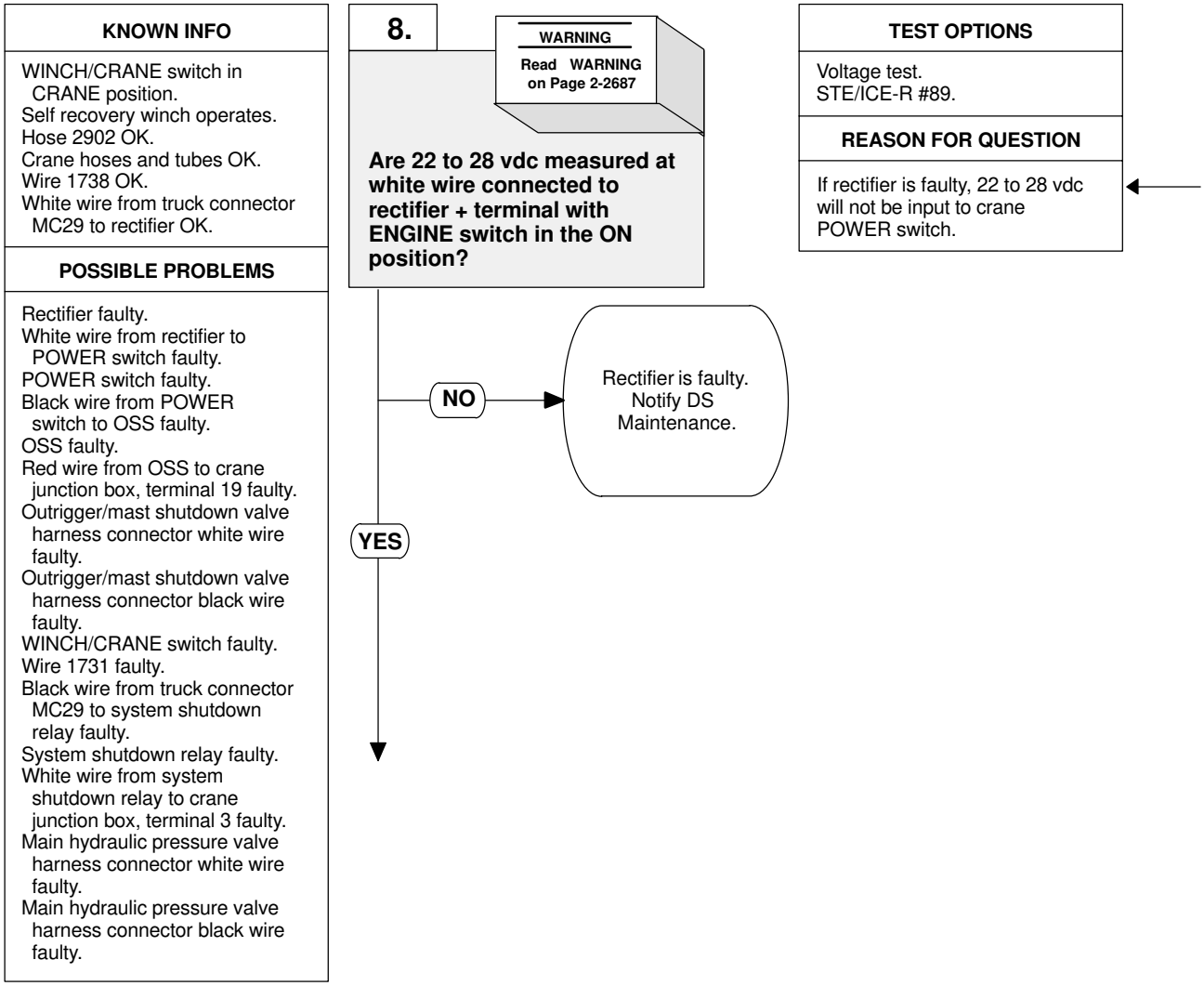
VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Connect positive (+) multimeter lead to front AC terminal of rectifier where white wire is connected.
(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 white wire from connector MC29 through terminal 2 to rectifier (see schematic 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Step (5) below and go to Step (8) of this Fault.
(5) Turn OFF ENGINE switch.



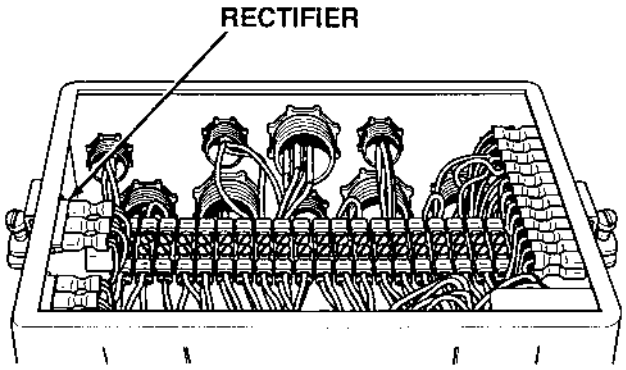


10. OUTRIGGERS DO NOT OPERATE (CONT).



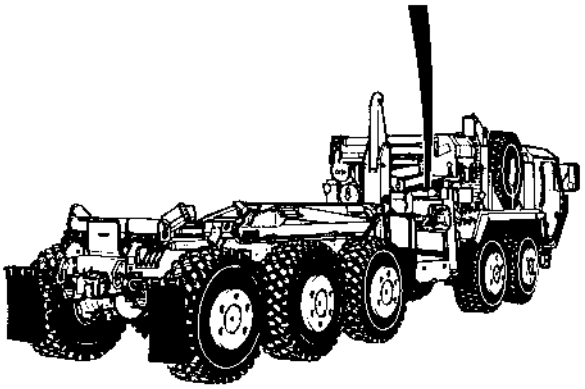
WARNING

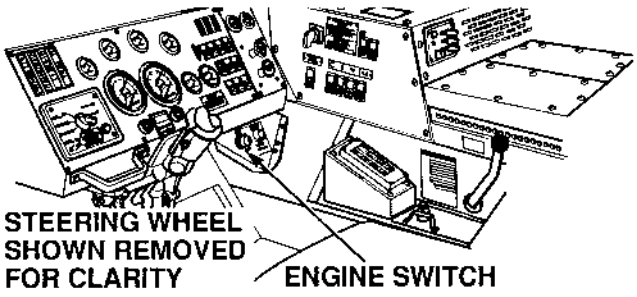
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



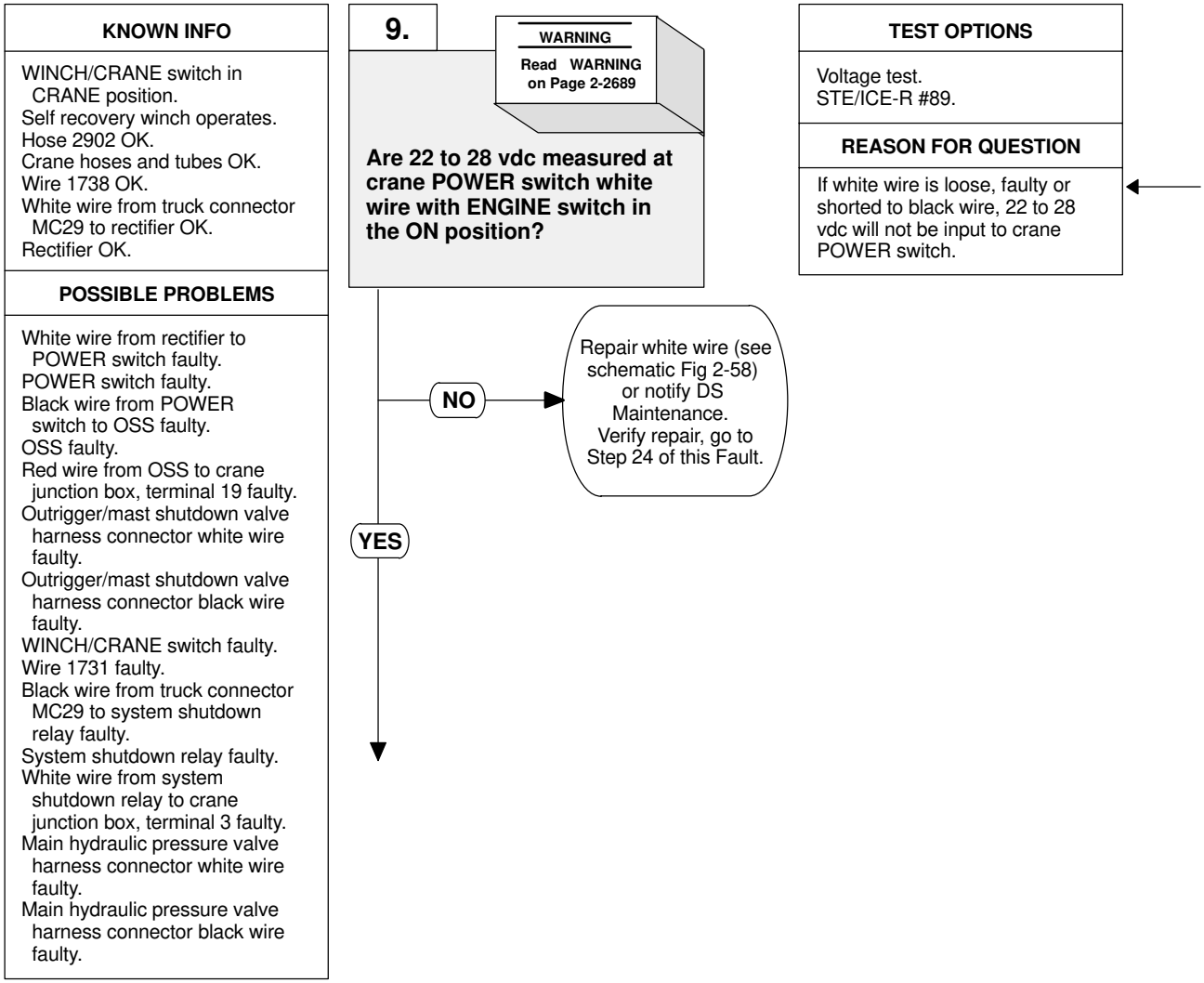
VOLTAGE TEST

(1) Connect positive (+) multimeter lead to (+) terminal of rectifier.
(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 notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Step (4) below and go to Step 9 of this Fault.
(4) Turn OFF ENGINE switch.





10. OUTRIGGERS DO NOT OPERATE (CONT).

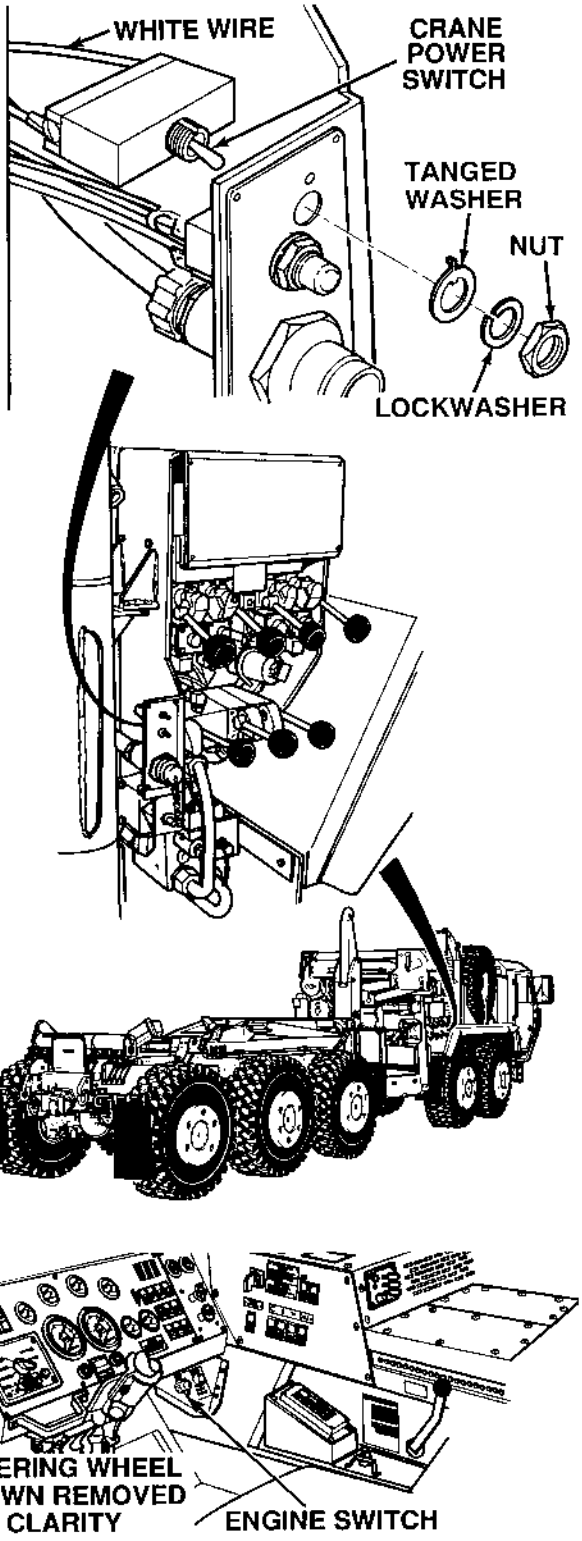


WARNING

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.

VOLTAGE TEST

(1) Remove nut, lockwasher, tanged washer and crane POWER switch.
(2) Connect positive (+) multimeter lead to crane POWER switch white wire.
(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 from rectifier to crane POWER switch (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Step (5) below and go to Step 10 of this Fault.
(5) Turn OFF ENGINE switch.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.

POSSIBLE PROBLEMS

POWER switch faulty.
Black wire from POWER switch to OSS faulty.
OSS faulty.
Red wire from OSS to crane junction box, terminal 19 faulty.
Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

10.

WARNING
Read WARNING on Page 2-2691

Are 22 to 28 vdc measured at crane POWER switch black wire with ENGINE switch ON and crane POWER switch ON?

NO → Power switch faulty. Noify DS Maintenance.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

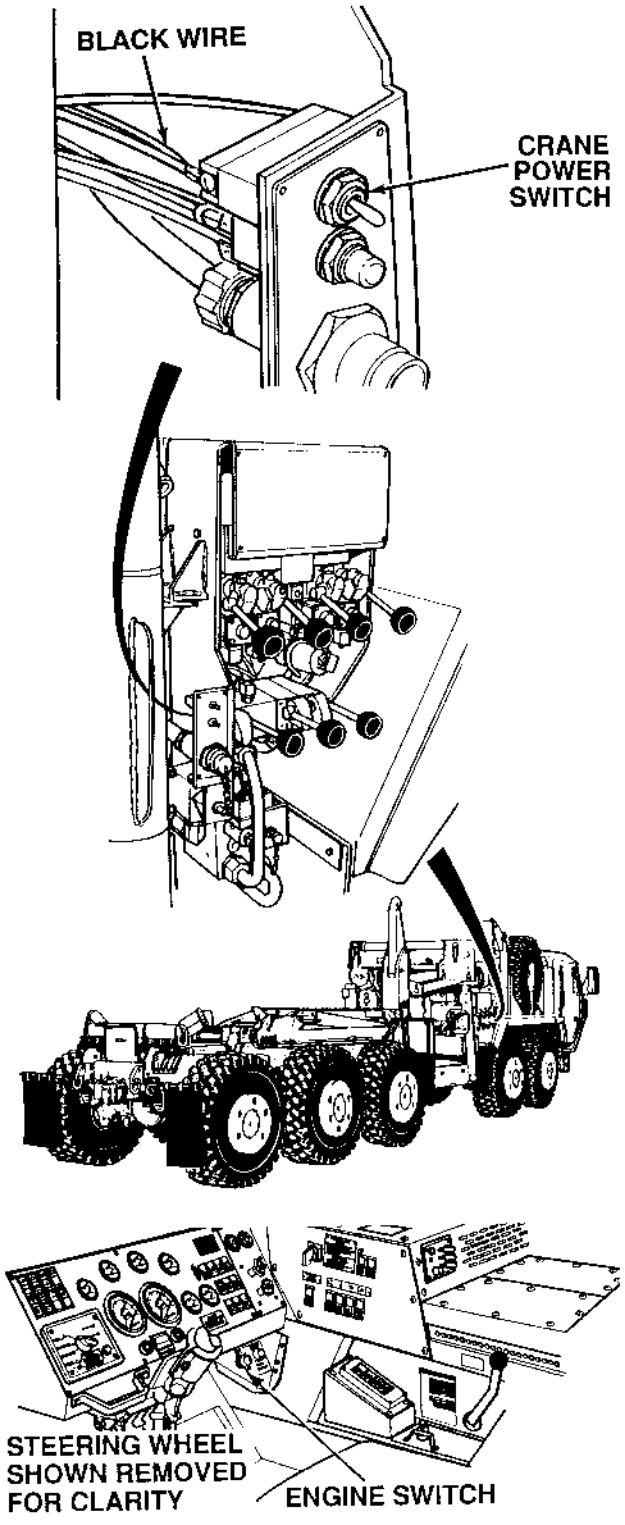
If switch is faulty, 22 to 28 vdc will not be input to outrigger/mast shutdown valve solenoid.

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 crane POWER switch black wire.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Turn ON crane POWER switch.
  (a) If 22 to 28 vdc are not present, power switch faulty, perform Steps (5) through (7) below and notify DS Maintenance.
  (b) If 22 to 28 vdc are present, install switch, perform Steps (5) through (7) below and go to Step 11 of this Fault.
(5) Install crane POWER switch, tanged washer, lockwasher and nut.
(6) Turn OFF crane POWER switch.
(7) Turn OFF ENGINE switch.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.

POSSIBLE PROBLEMS

Black wire from POWER switch to OSS faulty.
OSS faulty.
Red wire from OSS to crane junction box, terminal 19 faulty.
Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

11.

WARNING

Read WARNING on Page 2-2693

Are 22 to 28 vdc measured at terminal A of top OSS (overload shutdown system) connector removed from OSS with ENGINE switch and crane POWER switch in the ON position?

NO → Repair black wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

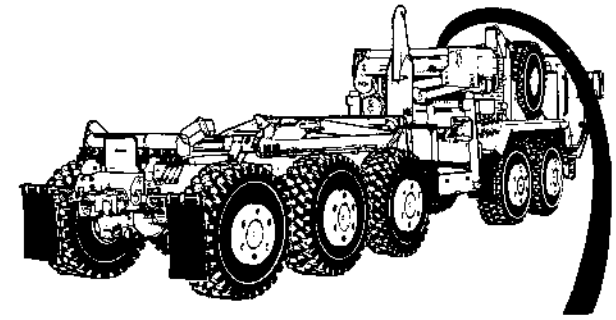
If black wire from crane POWER switch through terminal A to OSS is faulty, 22 to 28 vdc will not be input to outrigger/mast shutdown valve solenoid.

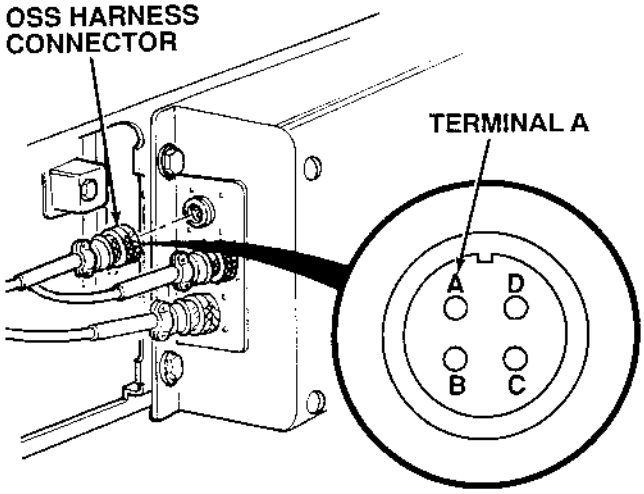
WARNING

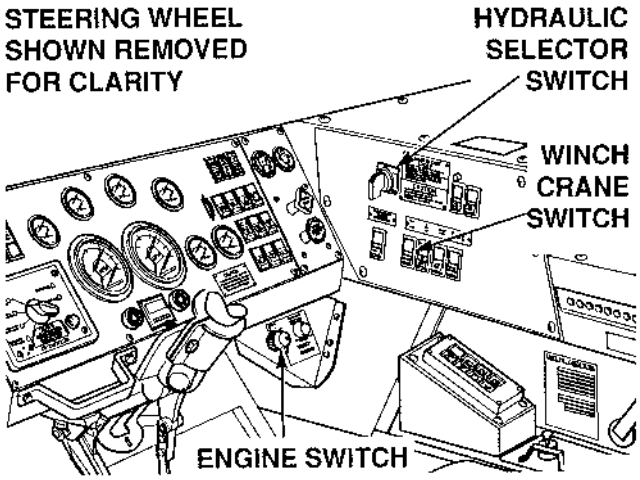
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

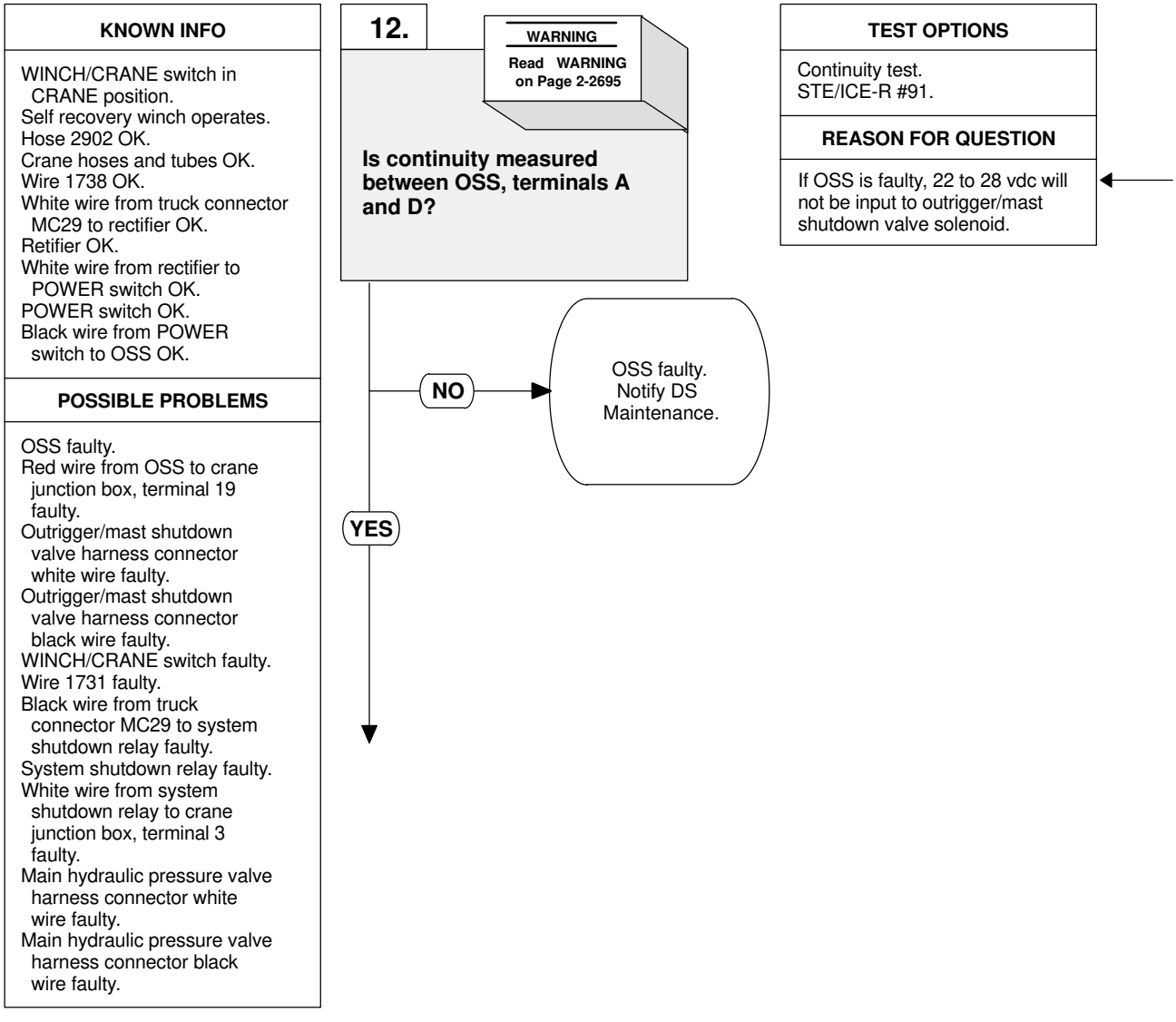
(1) Disconnect top connector from OSS.
(2) Connect positive (+) multimeter lead to terminal A of removed connector.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch TM 9-2320-364-10).
(5) Turn ON crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair black wire from POWER switch through terminal A to connector (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 12 of this Fault.
(6) Turn OFF crane POWER switch.
(7) Turn OFF ENGINE switch.







10. OUTRIGGERS DO NOT OPERATE (CONT).

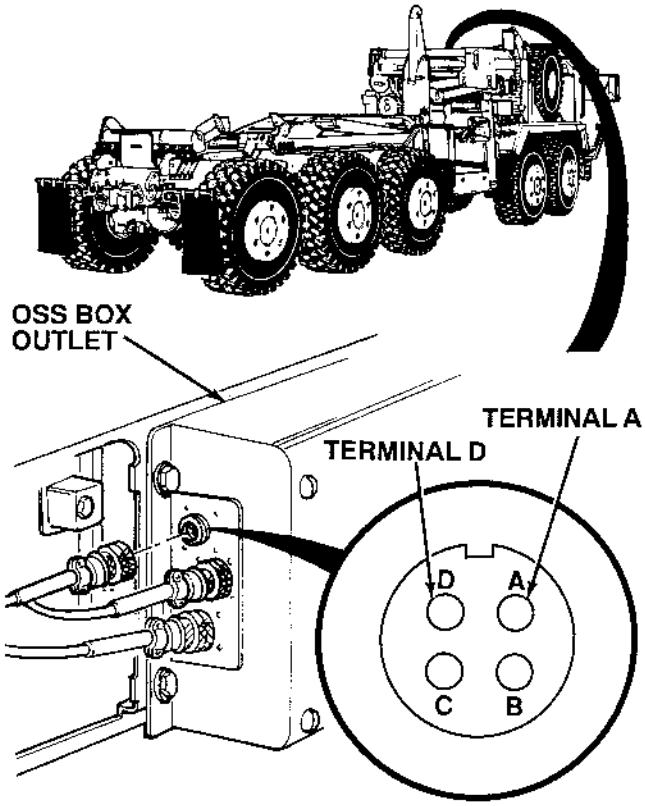


WARNING

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 OSS top outlet, terminals D and A?
   (a) If there is no continuity, OSS is faulty, notify DS Maintenance.
   (b) If there is continuity present, OSS is OK, perform Step (3) below and go to Step 13 of this Fault.
(3) Connect connector to top OSS outlet.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.

POSSIBLE PROBLEMS

Red wire from OSS to crane junction box, terminal 19 faulty.
Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

13.

WARNING

Read WARNING on Page 2-2697

Are 22 to 28 vdc measured at crane junction box, terminal 19 with ENGINE switch ON and crane POWER switch ON?

NO → Repair red wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

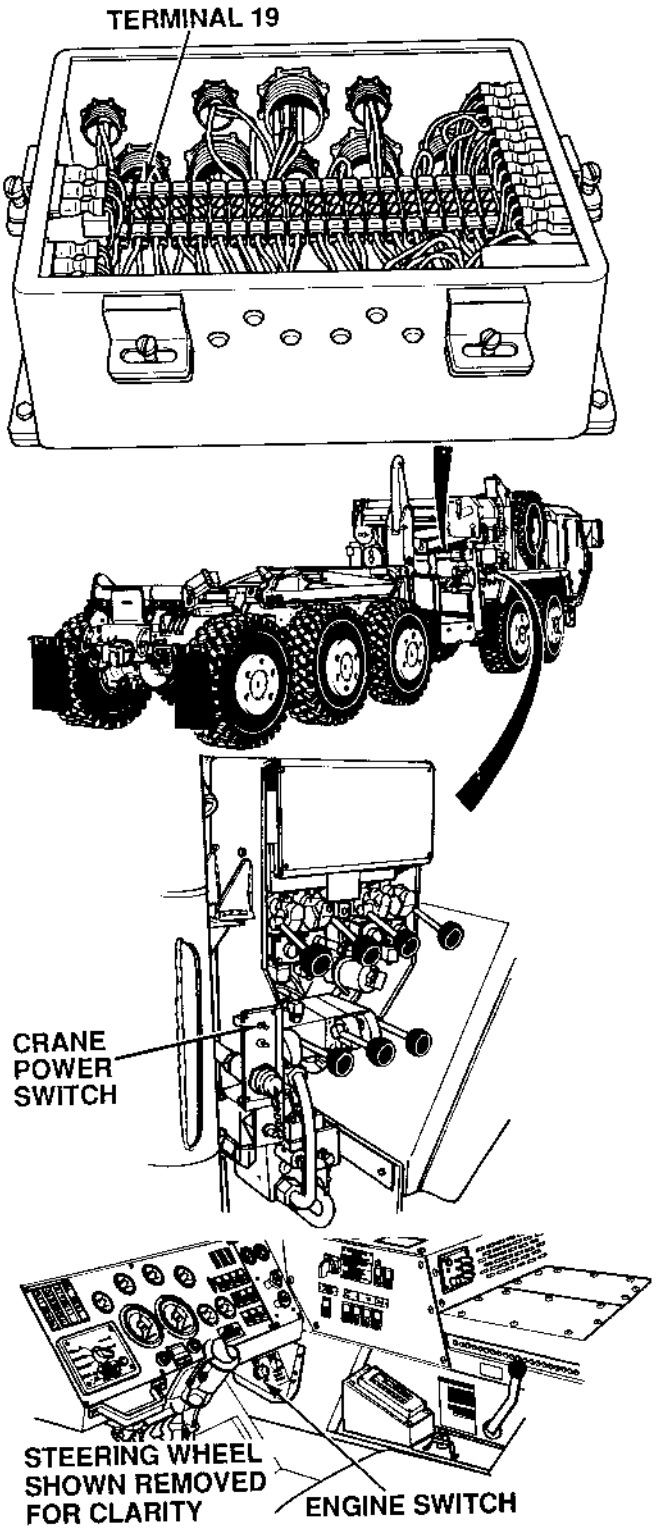
If red wire from OSS harness connector terminal D to crane junction box, terminal 19 is loose, faulty or shorted to black wire, 22 to 28 vdc will not be input to outrigger/mast shutdown valve.

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.
(2) Connect positive (+) multimeter lead crane junction box, terminal 19.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Turn ON crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair red wire from OSS harness connector terminal D to crane junction box terminal 19 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 14 of this Fault.
(6) Turn OFF crane POWER switch.
(7) Turn OFF ENGINE switch.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.
Red wire from OSS to crane junction box, terminal 19 OK.

POSSIBLE PROBLEMS

Outrigger/mast shutdown valve harness connector white wire faulty.
Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

14.

WARNING

Read WARNING on Page 2-2699

Is continuity measured between outrigger/mast shutdown valve connector, terminals 1 and 19?

NO → Repair white wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES

TEST OPTIONS

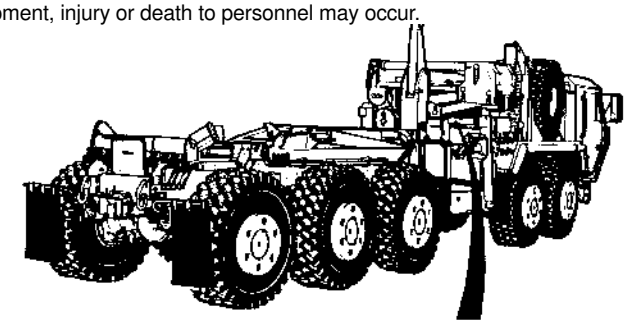
Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If harness connector white wire is loose, faulty, or shorted to black wire, 22 to 28 vdc will not be input to outrigger/mast shutdown valve solenoid.

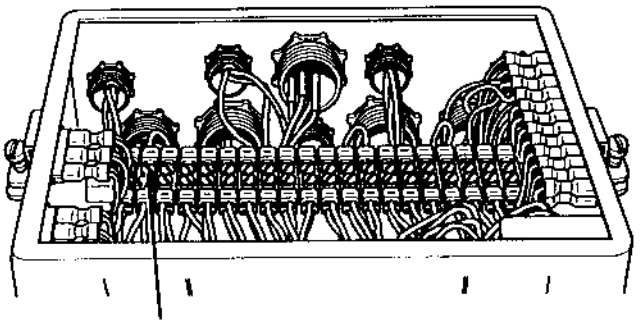
WARNING

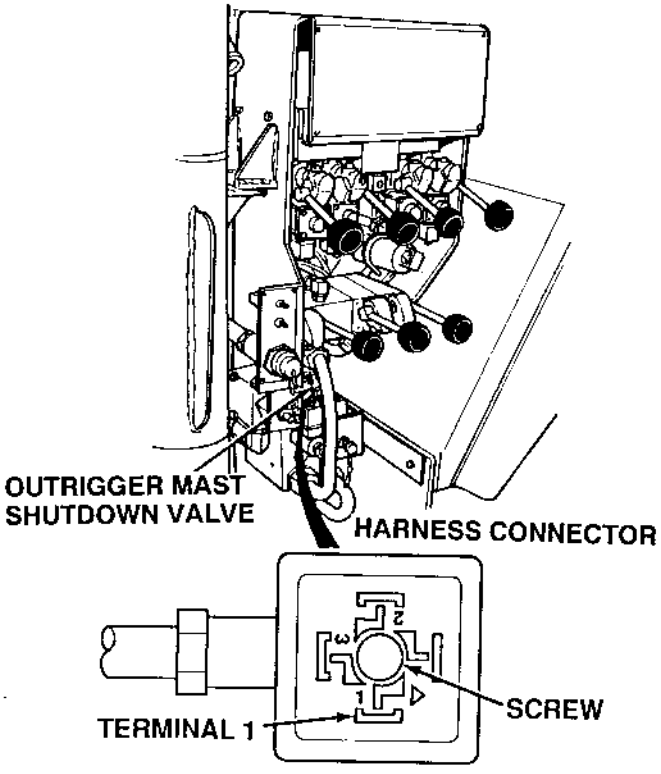
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



CONTINUITY TEST

(1) Loosen screw and disconnect outrigger mast shutdown valve harness connector.
(2) Set multimeter select switch to ohms.
(3) Is there continuity between crane junction box, terminal 19 and outrigger mast shutdown valve connector, terminal 1?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, wire is OK.





10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.
Red wire from OSS to crane junction box, terminal 19 OK.
Outrigger/mast shutdown valve harness connector white wire OK.

POSSIBLE PROBLEMS

Outrigger/mast shutdown valve harness connector black wire faulty.
WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

15.

WARNING

Read WARNING on Page 2-2701

Does outrigger/mast shutdown valve harness connector, terminal 2 have continuity with black wire?

NO → Repair black wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES → Fault corrected. Verify repair, go to Step 24 of this Fault.

TEST OPTIONS

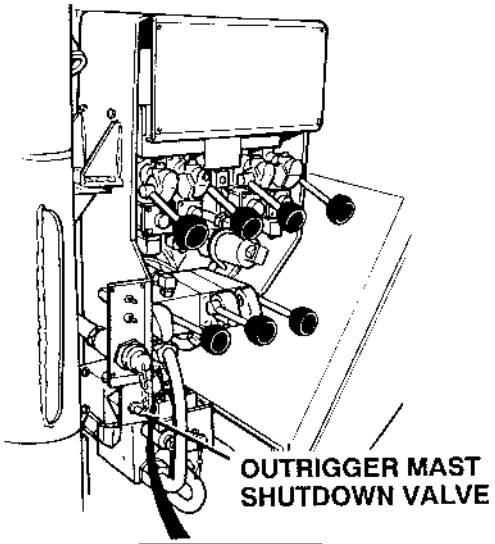
Continuity test.
STE/ICE-R #89.

REASON FOR QUESTION

If connector black wire is not grounded, outrigger/mast shutdown solenoid valve will not operate.

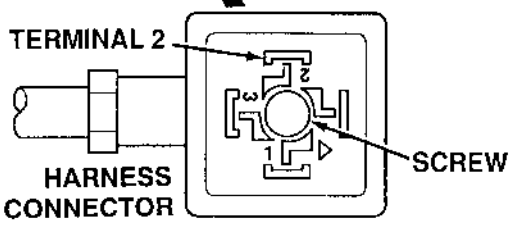
WARNING

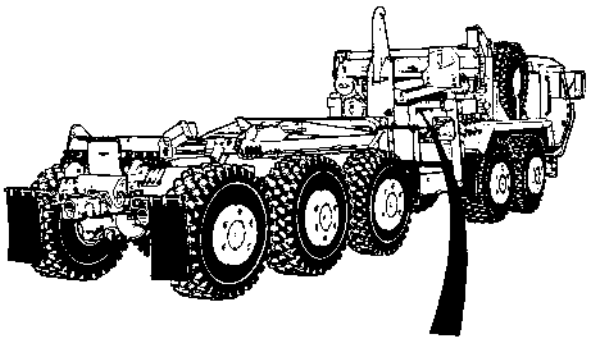
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

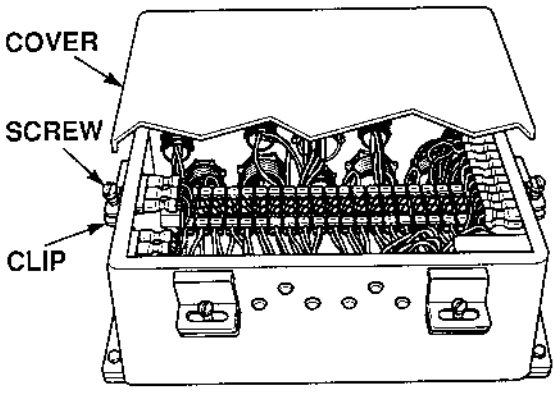


CONTINUITY TEST

(1) Is there continuity between outrigger mast shutdown valve harness connector, terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, perform Steps (2) and (3) below and go to Step 24 of this Fault.
(2) Install harness connector on outrigger/ mast shutdown valve solenoid and tighten screw.
(3) Install crane main junction box cover with six clips and screws.







10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.
Red wire from OSS to crane junction box, terminal 19 OK.
Outrigger/mast shutdown valve harness connector white wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.

POSSIBLE PROBLEMS

WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

16.

WARNING

Read WARNING on Page 2-2703

Are 22 to 28 vdc measured at main hydraulic pressure valve harness connector, terminal 1 with ENGINE switch ON and hydraulic selector switch in CRANE/SRW position?

NO → Go to Step 17 of this Fault.

YES → Go to Step 23 of this Fault.

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

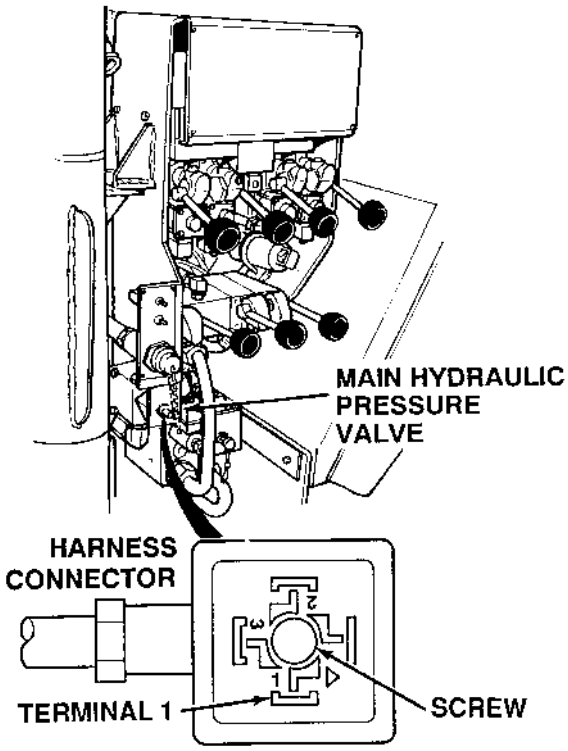
If 22 to 28 vdc are not present, component supplying voltage is faulty.

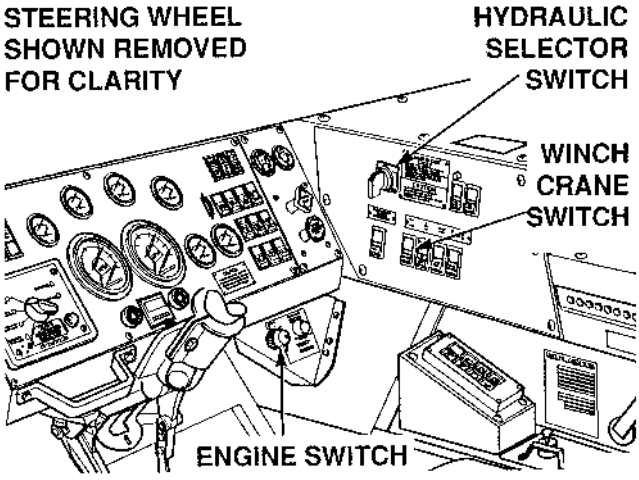
WARNING

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.

VOLTAGE TEST

(1) Loosen screw and disconnect harness connector from main hydraulic pressure valve.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to harness connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch in CRANE/SRW position.
    (a) If 22 to 28 vdc are not present, perform Steps (7) and (8) below and go to Step 17 of this Fault.
    (b) If 22 to 28 vdc are present, perform Steps (7) and (8) below and go to Step 23 of this Fault.
(7) Turn OFF ENGINE switch.
(8) Put hydraulic selector switch in OFF position.





10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.
Red wire from OSS to crane junction box, terminal 19 OK.
Outrigger/mast shutdown valve harness connector white wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.

POSSIBLE PROBLEMS

WINCH/CRANE switch faulty.
Wire 1731 faulty.
Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

17.

WARNING

Read WARNING on Page 2-2705

Is continuity measured between WINCH/CRANE switch, terminals 1 and 5 with switch in CRANE position?

NO → Replace WINCH/CRANE switch (Para 17-20). Verify repair, go to Step 24 of this Fault.

YES

TEST OPTIONS

Continuity test.
STEC/ICE-R #91.

REASON FOR QUESTION

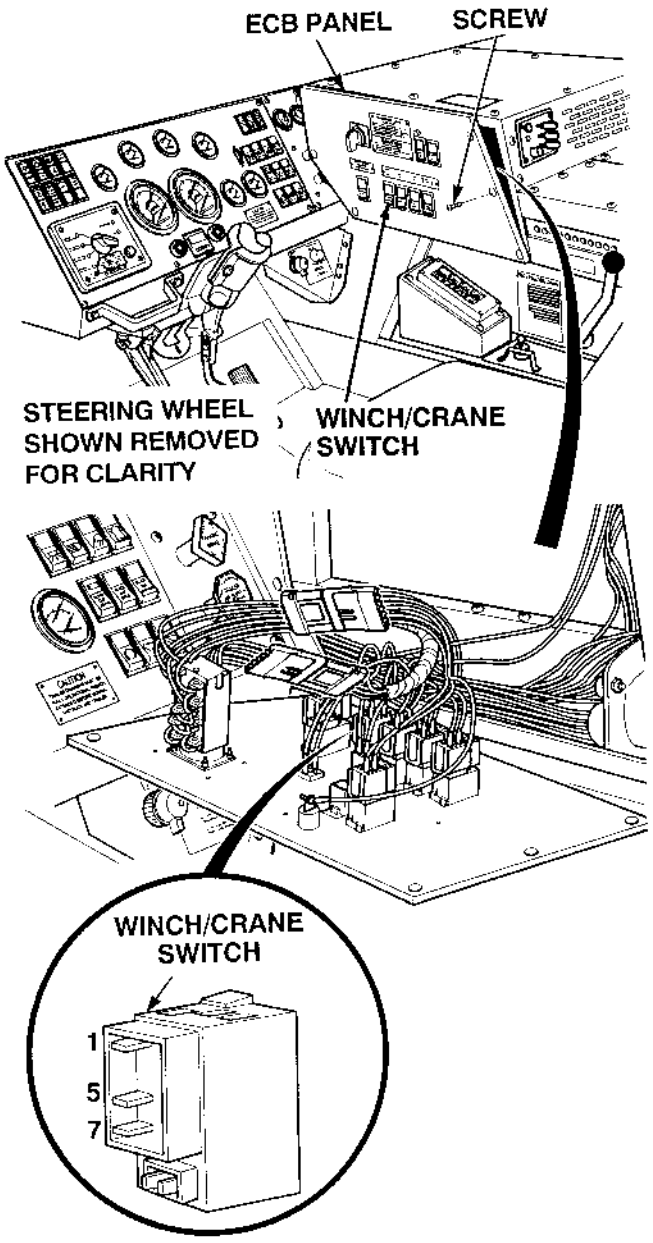
If WINCH/CRANE switch is faulty, 22 to 28 vdc will not be input to main hydraulic pressure valve.

WARNING

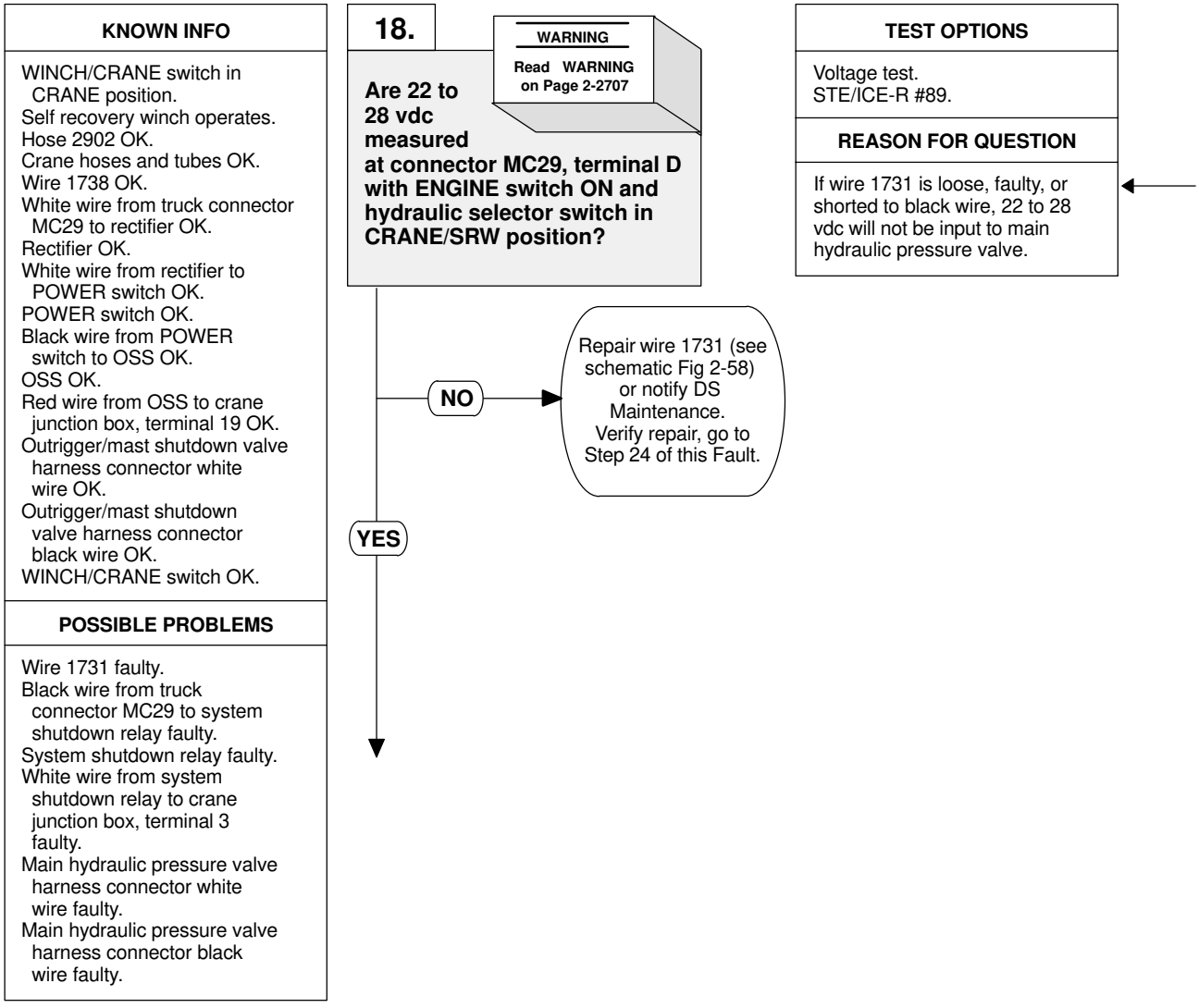
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Remove six screws and tilt ECB panel.
(2) Set WINCH/CRANE switch to CRANE position.
(3) Is there continuity between WINCH/CRANE switch, terminals 5 and 1?
   (a) If there is no continuity, replace WINCH/CRANE switch (Para 17-20).
   (b) If there is continuity, install ECB side panel with six screws and go to Step 18 of this Fault.



10. OUTRIGGERS DO NOT OPERATE (CONT).

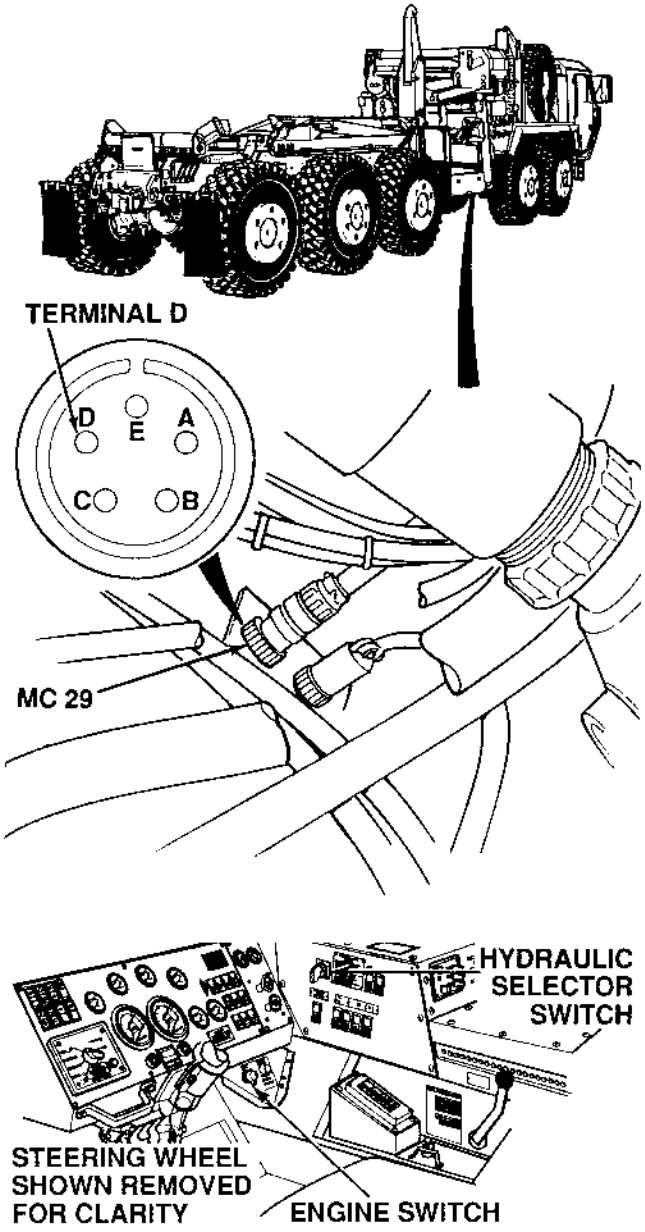


WARNING

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.

VOLTAGE TEST

(1) Disconnect connector MC29 from crane connector.
(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).
(5) Set hydraulic selector switch to CRANE/SRW position.
    (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair wire 1731 between WINCH/CRANE switch and connector MC29 (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Steps (6) through (8) below and go to Step 19 of this Fault.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.
(8) Connect connector MC29 to crane connector.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.
Red wire from OSS to crane junction box, terminal 19 OK.
Outrigger/mast shutdown valve harness connector white wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.
WINCH/CRANE switch OK.
Wire 1731 OK.

POSSIBLE PROBLEMS

Black wire from truck connector MC29 to system shutdown relay faulty.
System shutdown relay faulty.
White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

19.

WARNING
Read WARNING on Page 2-2709

Are 22 to 28 vdc measured at system shutdown relay black wire with engine switch ON and hydraulic selector switch in CRANE/SRW position?

NO → Repair black wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

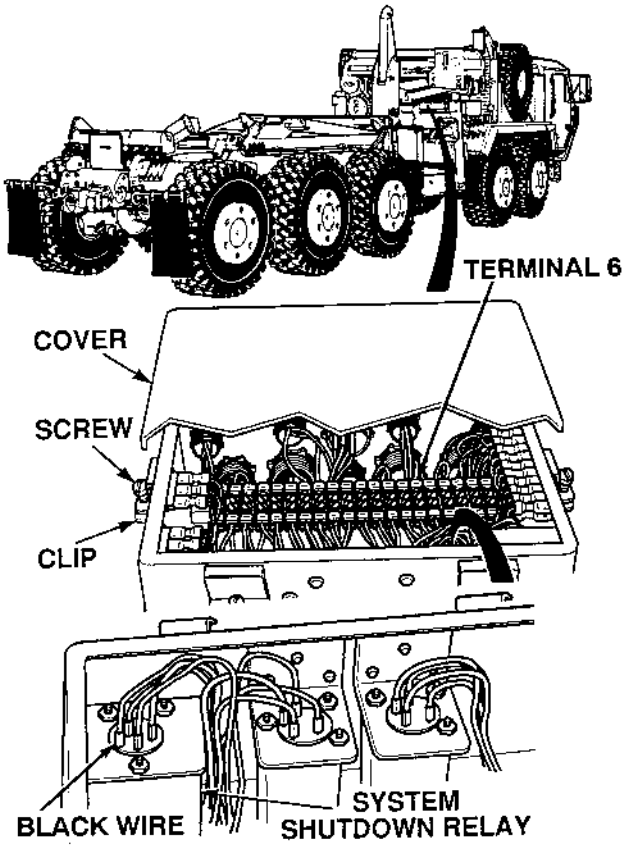
If black wire from truck connector MC29 through crane junction box terminal 6 to system shutdown relay is loose, faulty or shorted to black wire; 22 to 28 vdc will not be input to main hydraulic pressure valve.

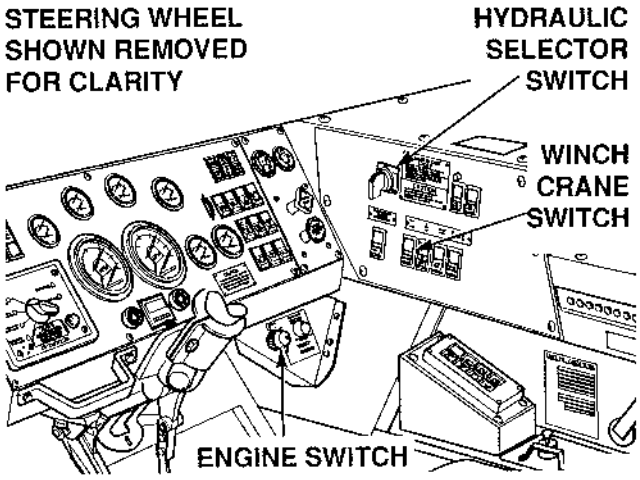
WARNING

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.

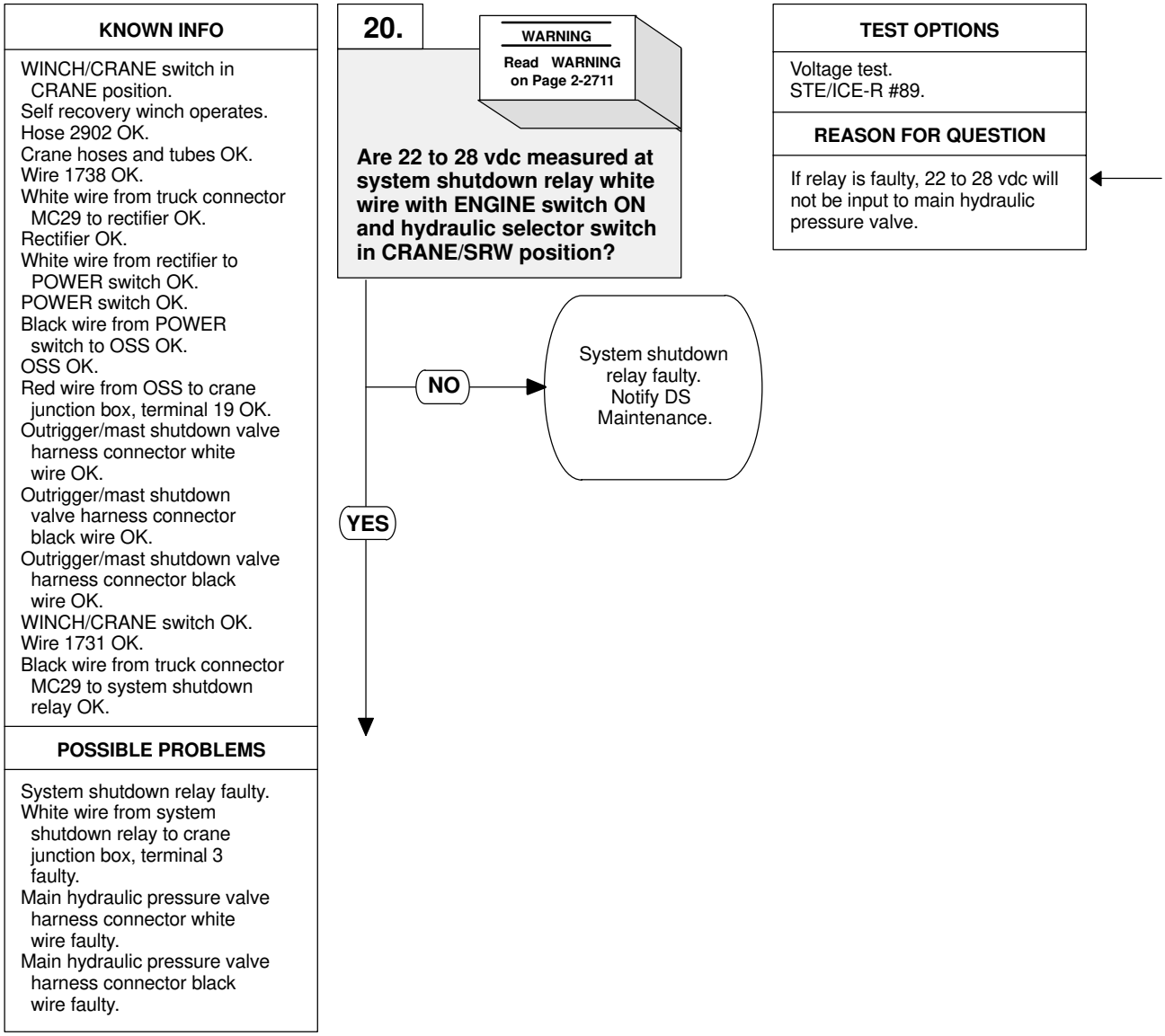
VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Connect positive (+) multimeter lead to system shutdown relay black wire.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Set hydraulic selector switch in CRANE/SRW position.
  (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair black wire from connector MC29 through crane terminal 6 to system shutdown relay (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 20 of this Fault.
(6) Set hydraulic selector switch in OFF position.
(7) Turn OFF ENGINE switch.



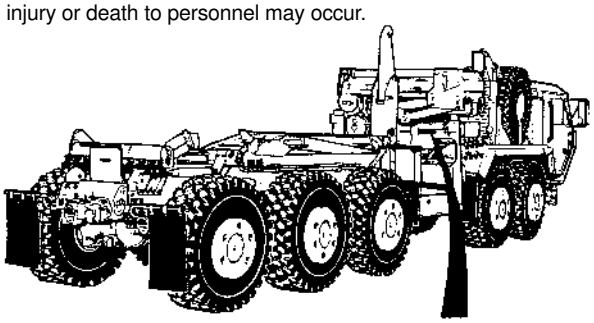


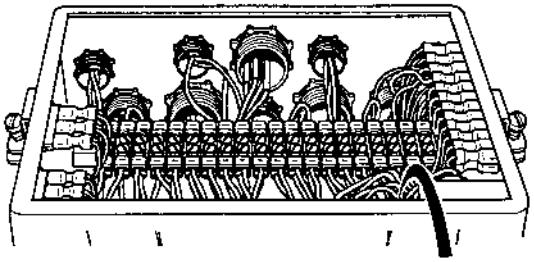
10. OUTRIGGERS DO NOT OPERATE (CONT).

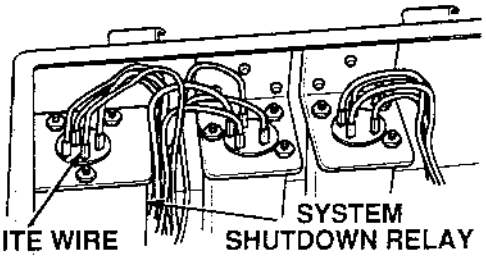


WARNING

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.

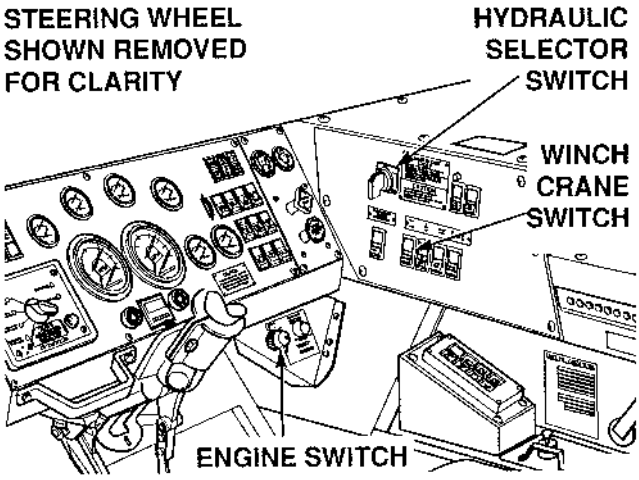






VOLTAGE TEST

(1) Connect positive (+) multimeter lead to system shutdown relay white wire.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Set hydraulic selector switch in CRANE/SRW position.
  (a) If 22 to 28 vdc are not present, system shutdown relay faulty, perform Steps (5) and (6) below and notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 21 of this Fault.
(5) Set hydraulic selector switch in OFF position.
(6) Turn OFF ENGINE switch.



10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.
Red wire from OSS to crane junction box, terminal 19 OK.
Outrigger/mast shutdown valve harness connector white wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.
WINCH/CRANE switch OK.
Wire 1731 OK.
Black wire from truck connector MC29 to system shutdown relay OK.
System shutdown relay OK.

POSSIBLE PROBLEMS

White wire from system shutdown relay to crane junction box, terminal 3 faulty.
Main hydraulic pressure valve harness connector white wire faulty.
Main hydraulic pressure valve harness connector black wire faulty.

21.

WARNING

Read WARNING on Page 2-2713

Are 22 to 28 vdc measured at crane junction box, terminal 3 with ENGINE switch ON and hydraulic selector switch in CRANE/SRW position?

NO → Repair white wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

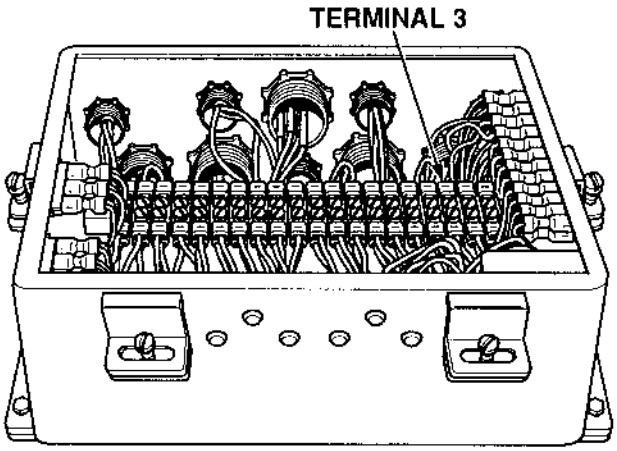
If white wire from system shut down relay to terminal 3 is faulty, 22 to 28 vdc will not be input to main hydraulic pressure valve.

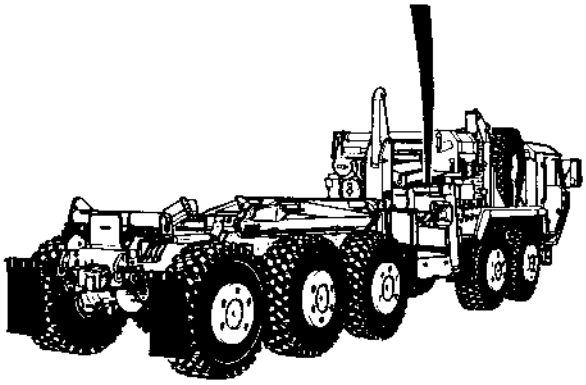
WARNING

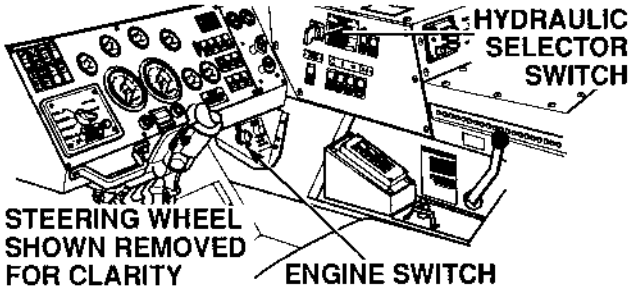
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

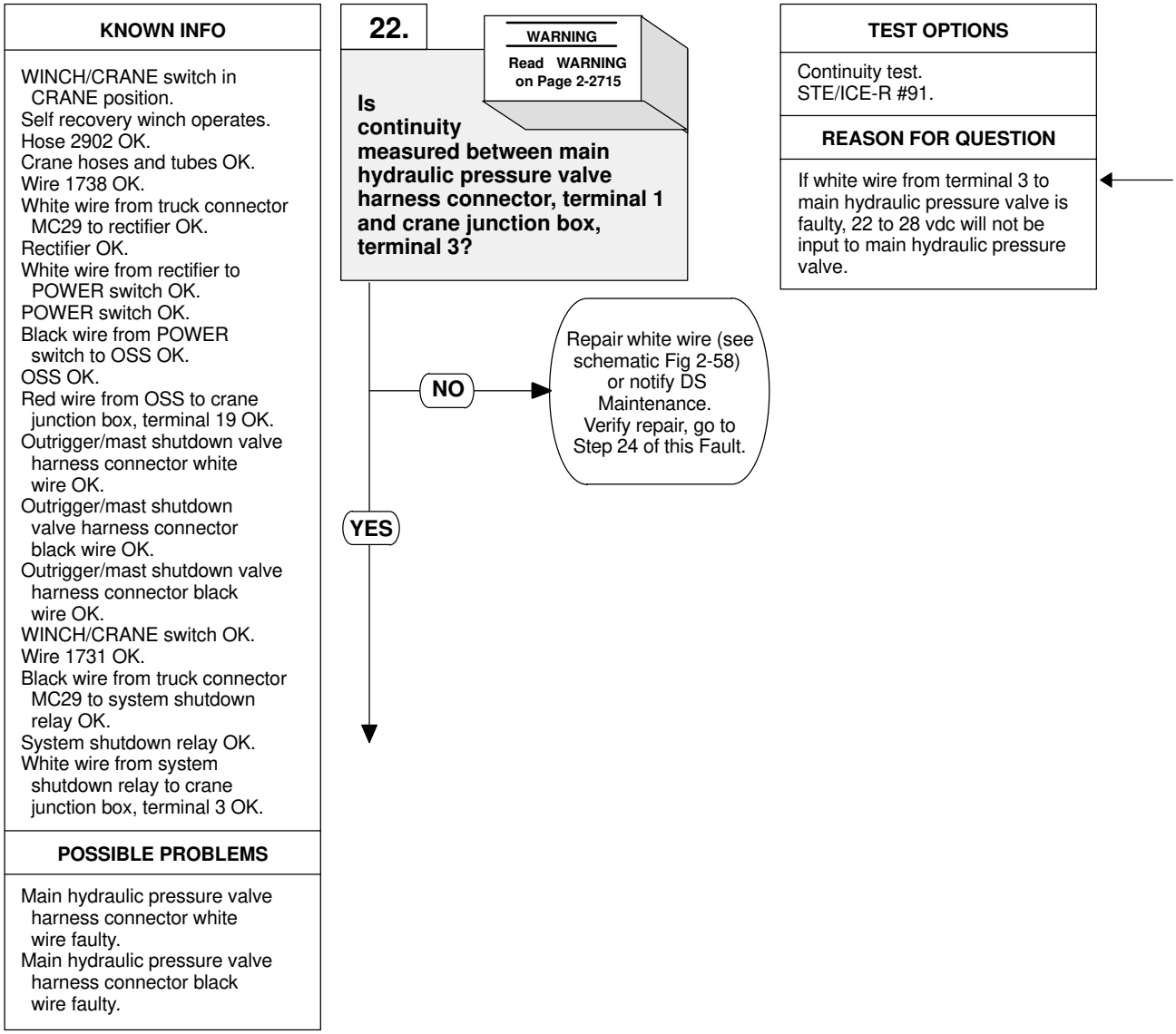
(1) Connect positive (+) multimeter lead to crane junction box, terminal 3.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Set hydraulic selector switch in CRANE/SRW position.
    (a) If 22 to 28 vdc are not present, perform Steps (5) and (6) below and repair white wire from system shutdown relay to terminal 3 (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 22 of this Fault .
(5) Set hydraulic selector switch in OFF position.
(6) Turn OFF ENGINE switch.





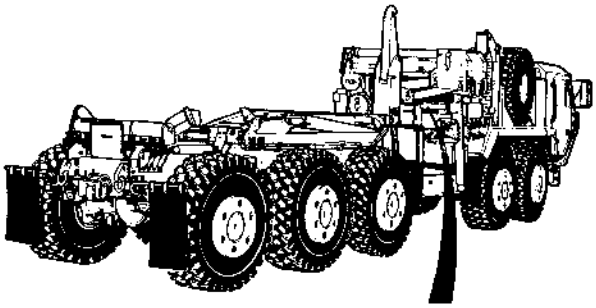


10. OUTRIGGERS DO NOT OPERATE (CONT).



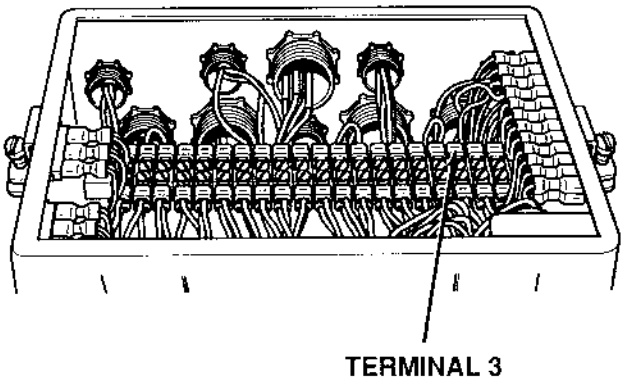
WARNING

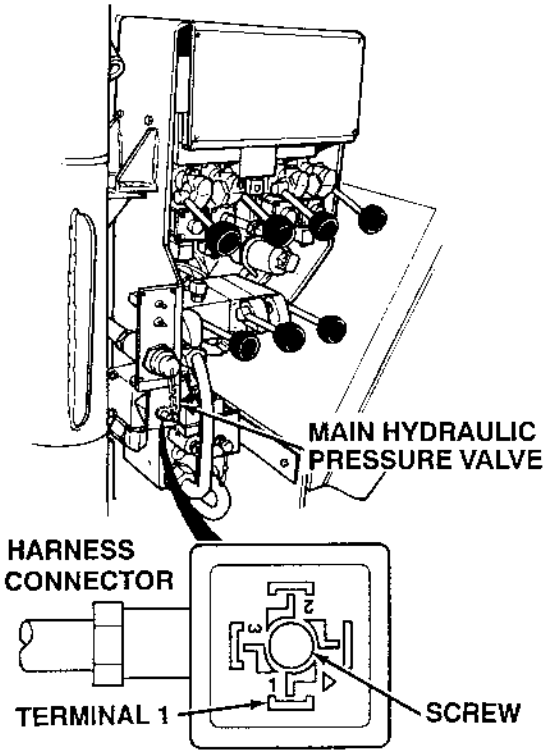
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between crane junction box, terminal 3 and main hydraulic pressure valve harness connector, terminal 1?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, install cover with six clips and screws and go to Step 23 of this Fault.





10. OUTRIGGERS DO NOT OPERATE (CONT).

KNOWN INFO

WINCH/CRANE switch in CRANE position.
Self recovery winch operates.
Hose 2902 OK.
Crane hoses and tubes OK.
Wire 1738 OK.
White wire from truck connector MC29 to rectifier OK.
Rectifier OK.
White wire from rectifier to POWER switch OK.
POWER switch OK.
Black wire from POWER switch to OSS OK.
OSS OK.
Red wire from OSS to crane junction box, terminal 19 OK.
Outrigger/mast shutdown valve harness connector white wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.
Outrigger/mast shutdown valve harness connector black wire OK.
WINCH/CRANE switch OK.
Wire 1731 OK.
Black wire from truck connector MC29 to system shutdown relay OK.
System shutdown relay OK.
White wire from system shutdown relay to crane junction box, terminal 3 OK.
Main hydraulic pressure valve harness connector white wire OK.

POSSIBLE PROBLEMS

Main hydraulic pressure valve harness connector black wire faulty.

23.

WARNING

Read WARNING on Page 2-2717

Is continuity measured between main hydraulic pressure valve harness connector, terminal 2 and black wire?

NO → Repair black wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 24 of this Fault.

YES → Fault not corrected. Notify DS Maintenance.

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

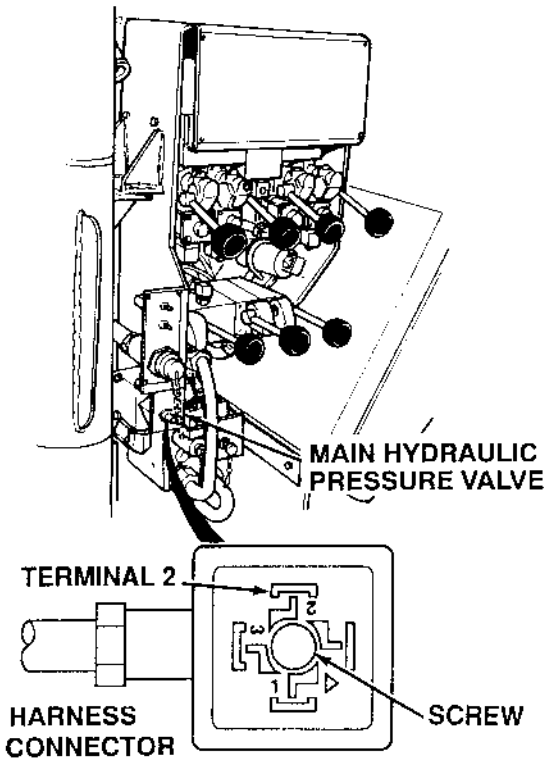
REASON FOR QUESTION

If connector black wire is loose or faulty, main hydraulic pressure valve solenoid will not be grounded.

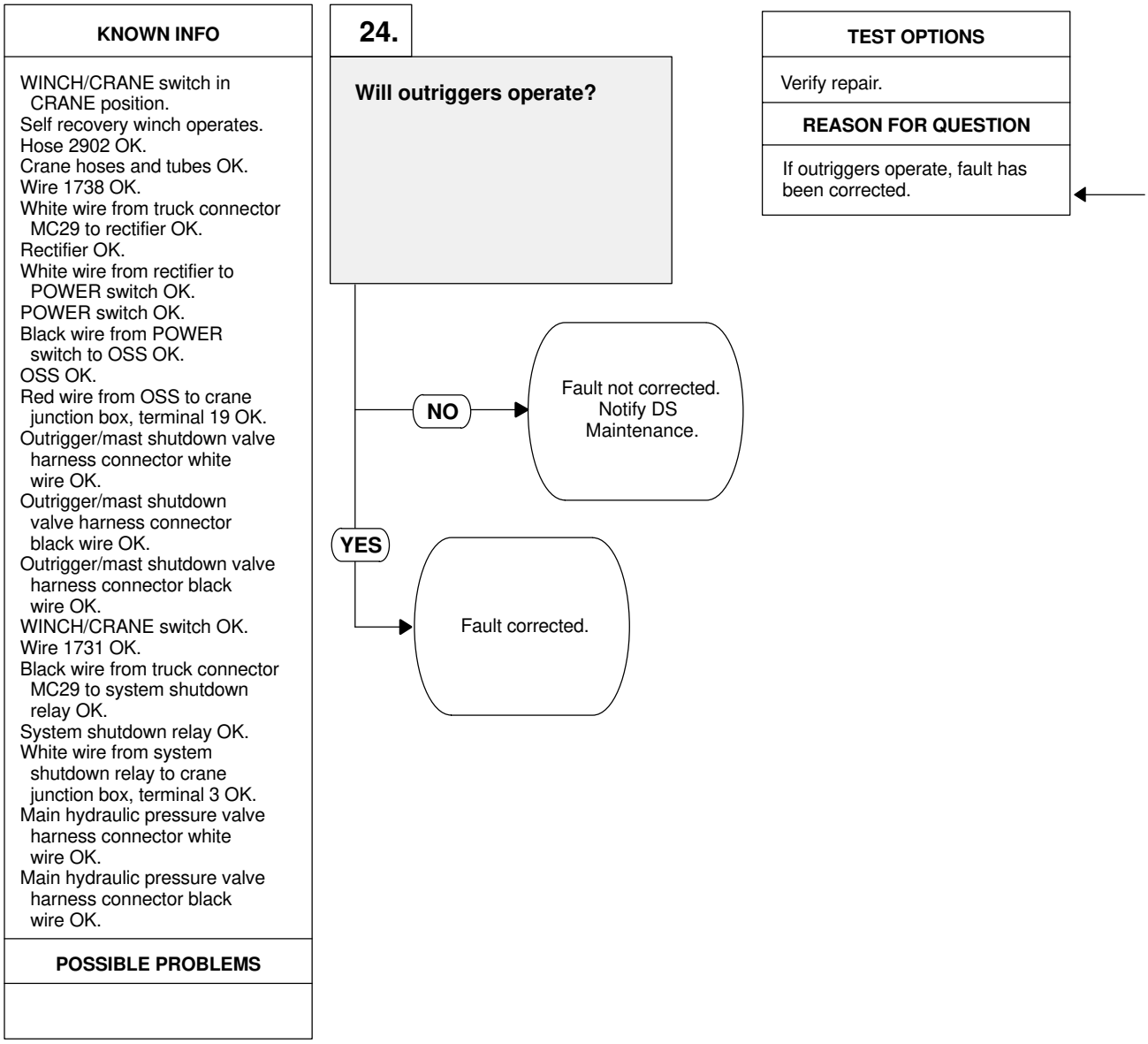
WARNING

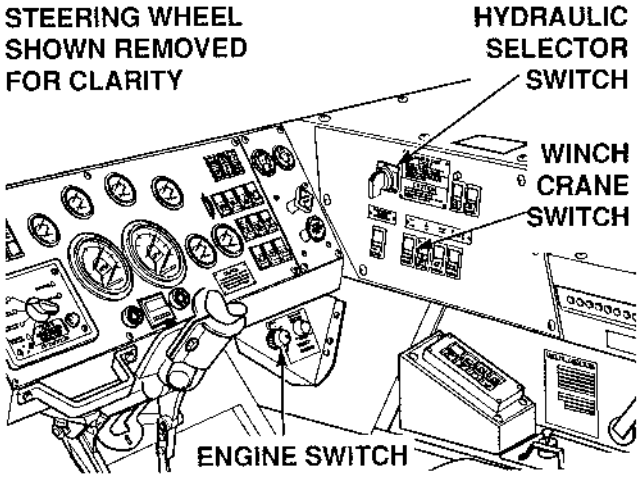
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST
Is there continuity between main hydraulic pressure valve connector, terminal 2 and a known good ground? (1) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance. (2) If there is continuity, connect connector, and tighten screw. Fault not corrected, notify DS Maintenance.



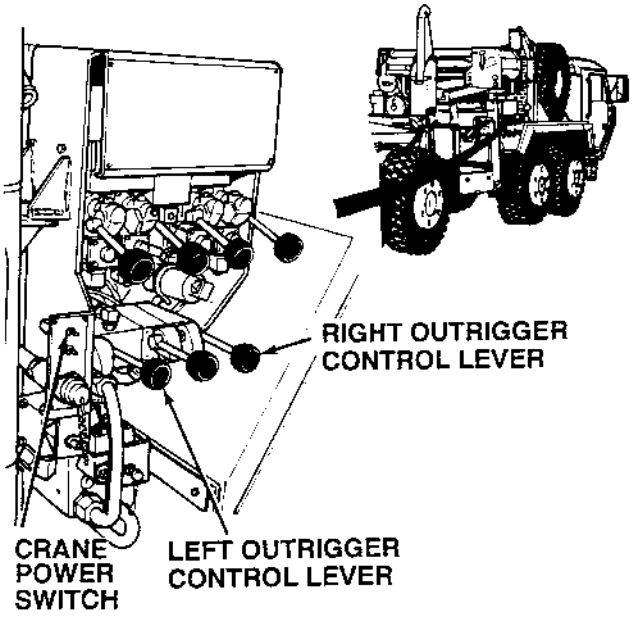
10. OUTRIGGERS DO NOT OPERATE (CONT).





VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set hydraulic selector switch to CRANE/SRW position.
(3) Turn ON crane POWER switch.
(4) Operate outriggers.
    (a) If outriggers do not function, fault not corrected. Perform Steps (5) and (6) below and notify DS Maintenance.
    (b) If outriggers function, fault has been corrected.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.



2-29. CRANE TROUBLESHOOTING (CONT).

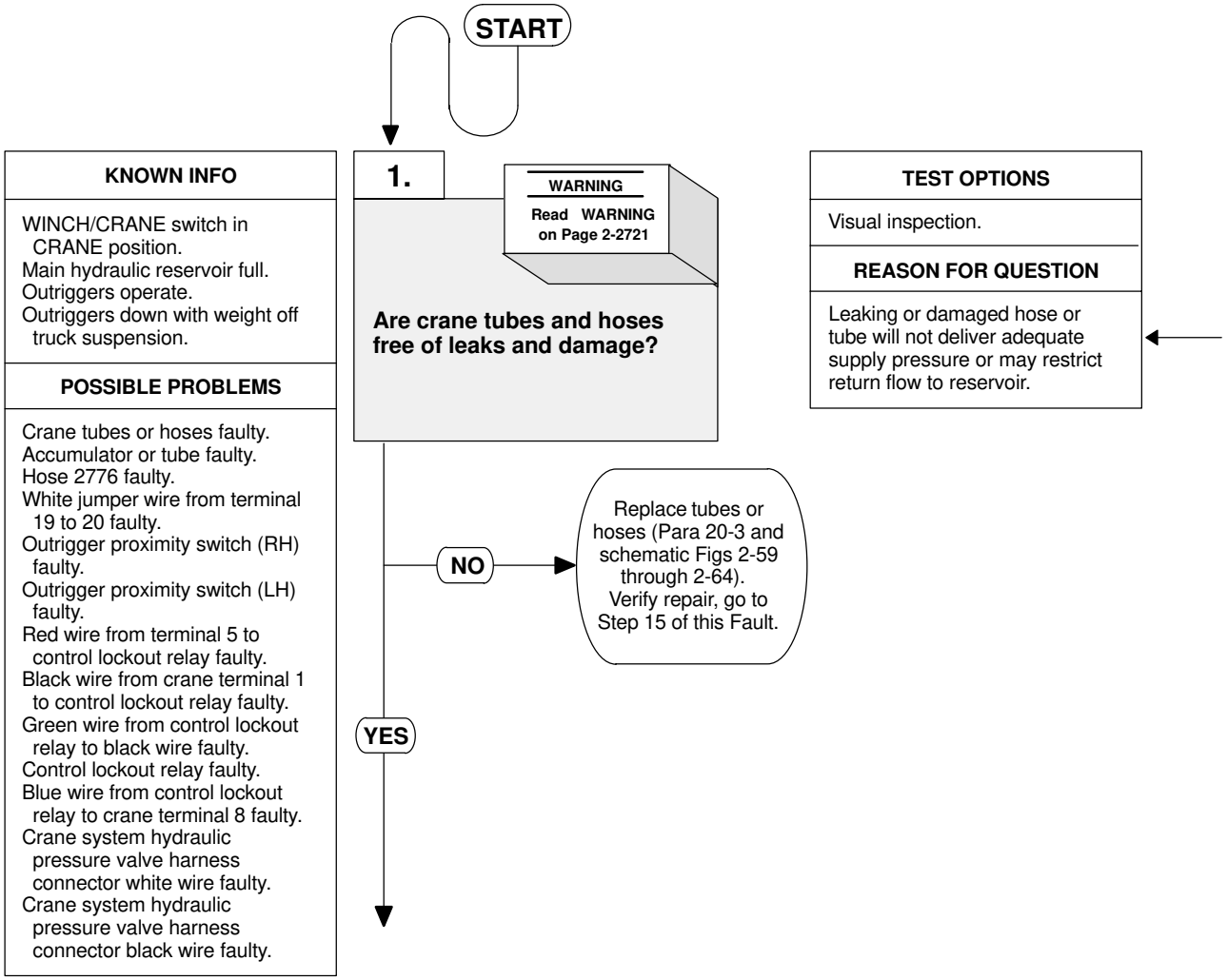
11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM, AND HOIST).

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)

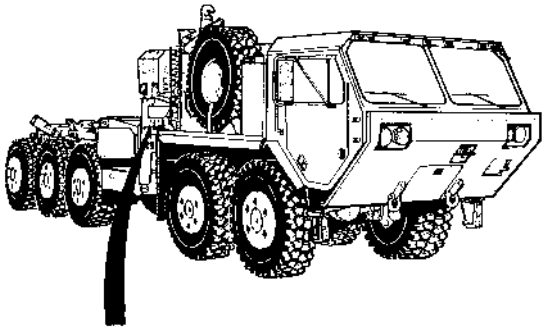
References
TM 9-2320-364-10
TM 9-4910-571-12&P

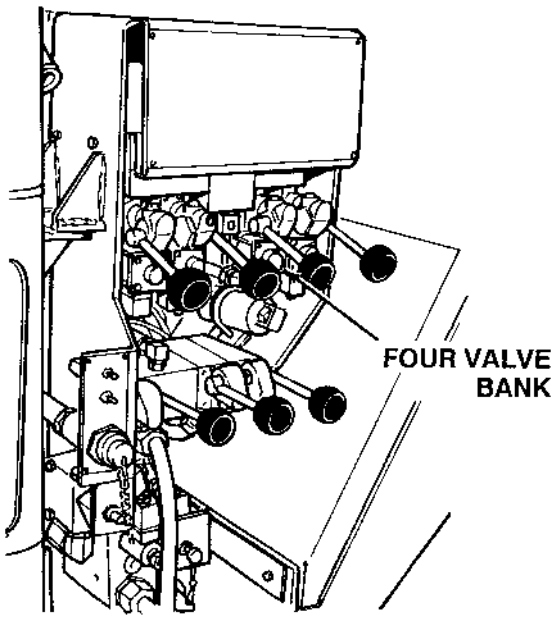
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)



WARNING

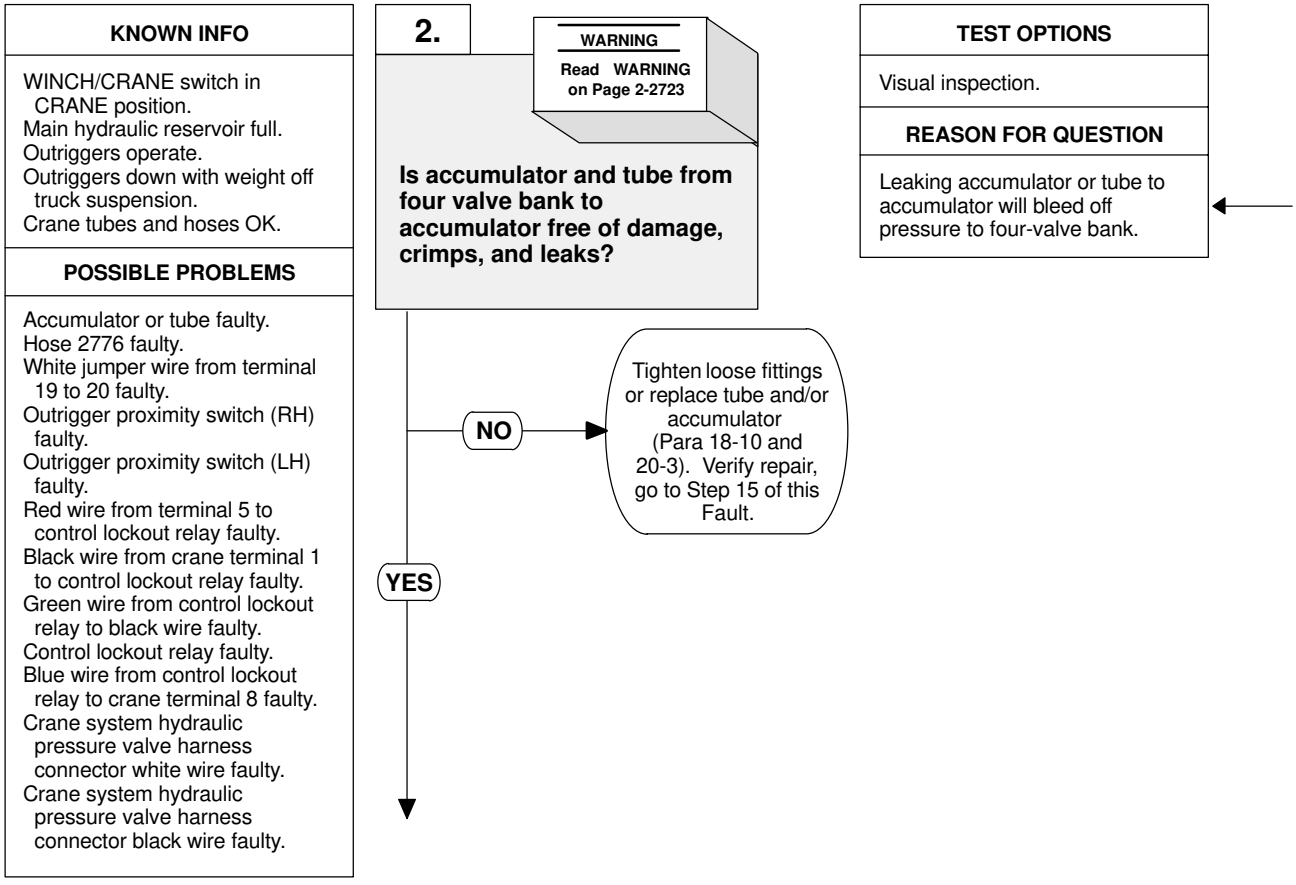
High pressure hydraulics [oil under 3,100 psi (21,374 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body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





VISUAL INSPECTION
Inspect tubes and hoses around four valve bank for leaks and damage. (1) If hoses are damaged, crimped or leaking, tighten loose fittings or repair hoses (Para 20-3 and schematic Figs 2-59 through 2-64). (2) If hoses are not damaged, crimped or leaking, go to Step 2 of this Fault.

11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).



WARNING

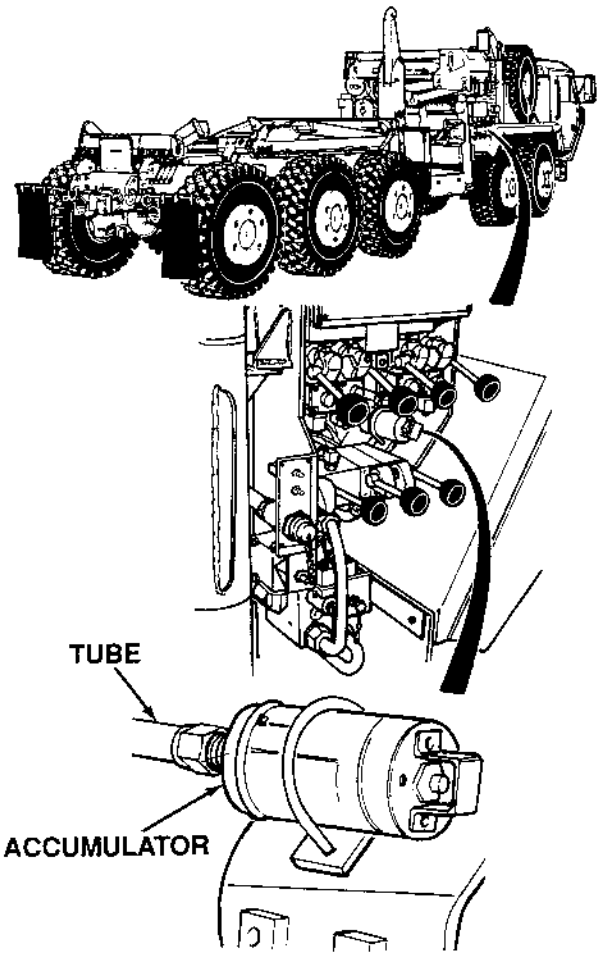
High pressure hydraulics [oil under 3,100 psi (21,374 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body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

VISUAL INSPECTION

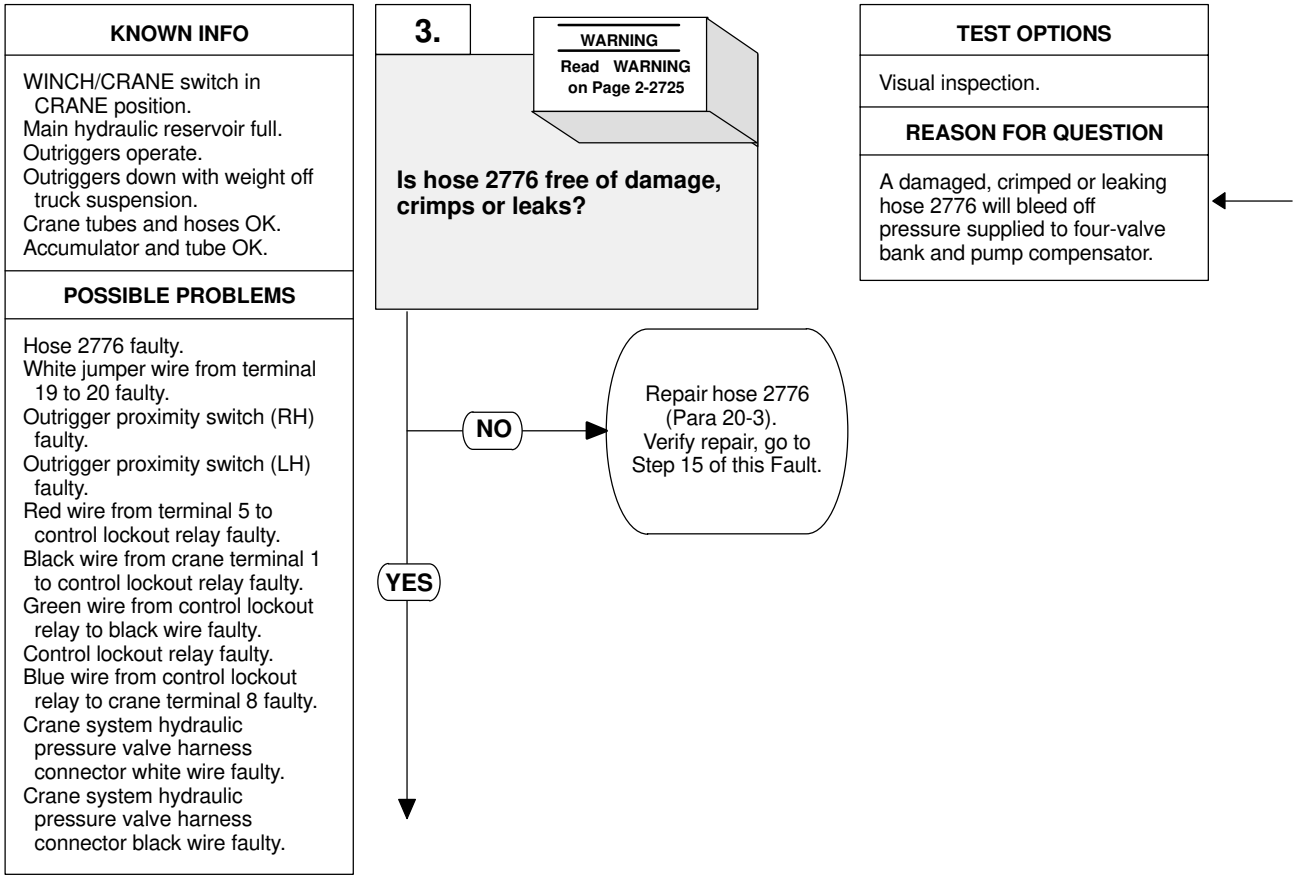
Inspect accumulator and tube from four bank valve to accumulator for damage, crimps or leaks.

(1) If accumulator or tube is leaking, tighten loose fittings or replace tube (Para 20-3) or accumulator (Para 18-10).

(2) If no damage, crimps or leaks are found, go to Step 3 of this Fault.



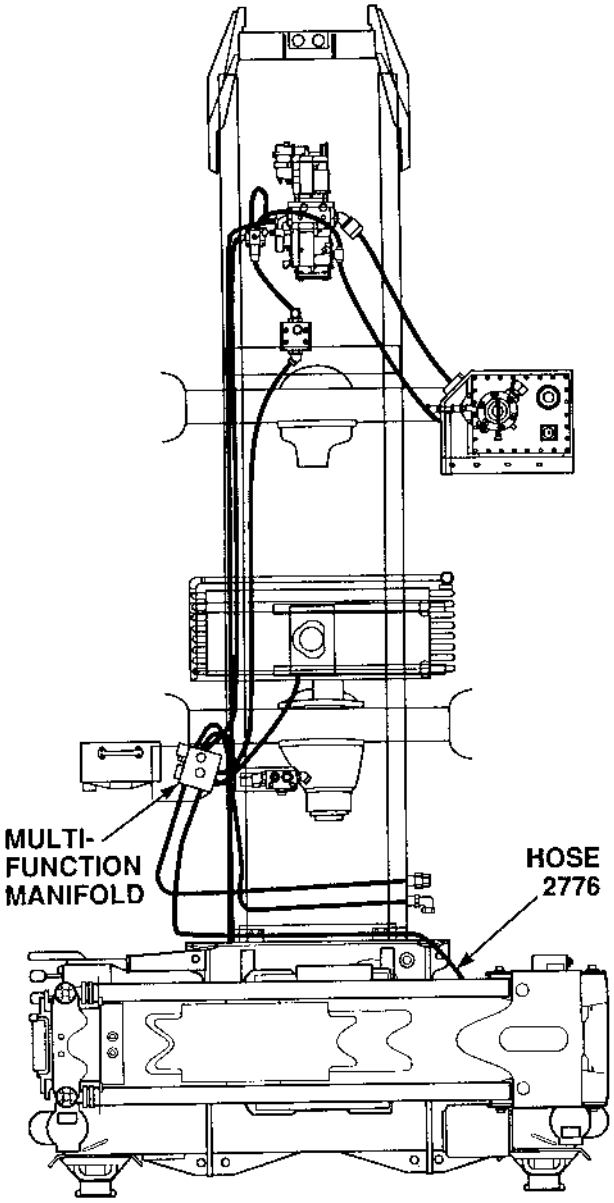
11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).



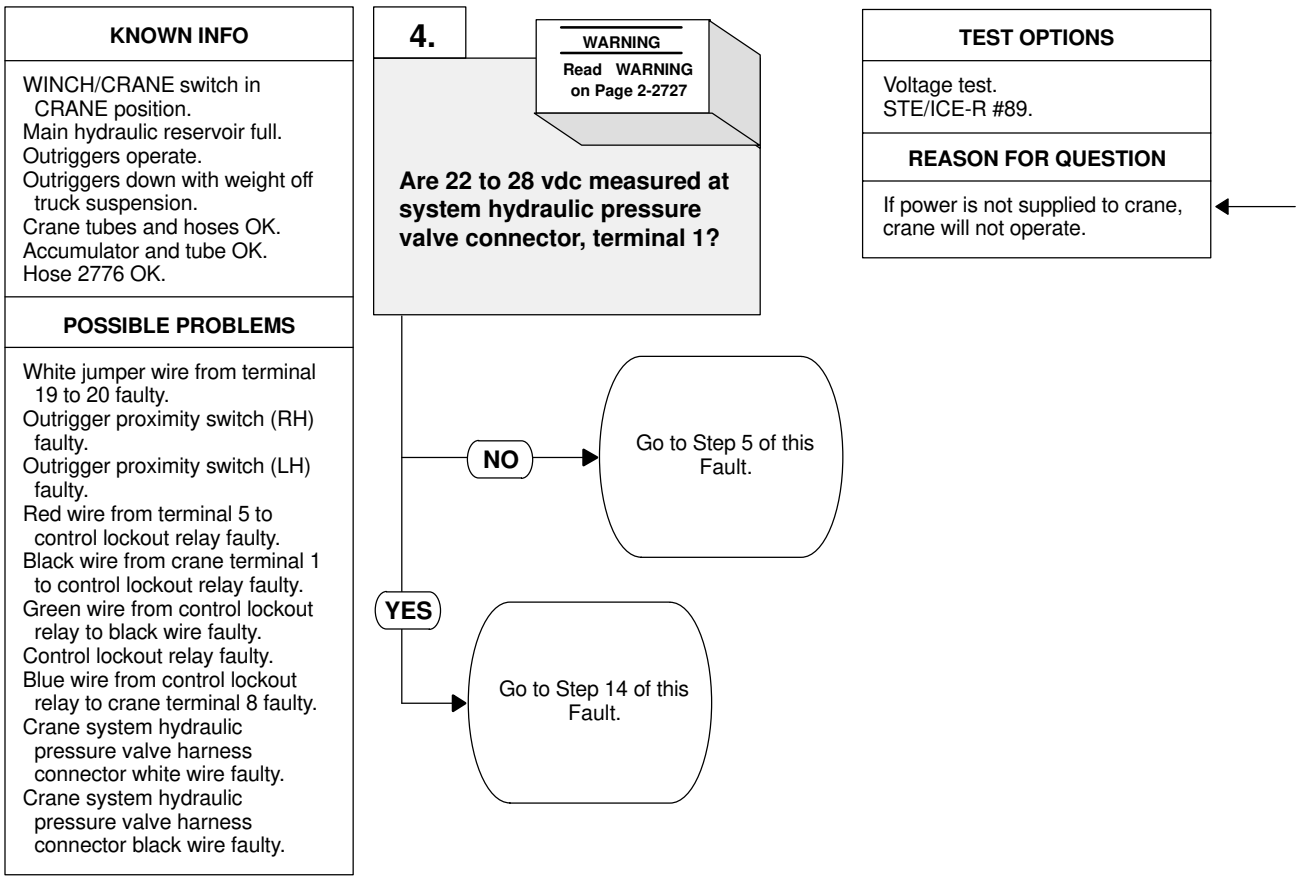
WARNING

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.

VISUAL INSPECTION
Inspect hose 2776 for leaks. (1) If hose is damaged, crimped or leaking, tighten loose fittings or repair hose (Para 20-3). (2) If hose is not damaged, crimped or leaking, go to Step 4 of this Fault.



11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

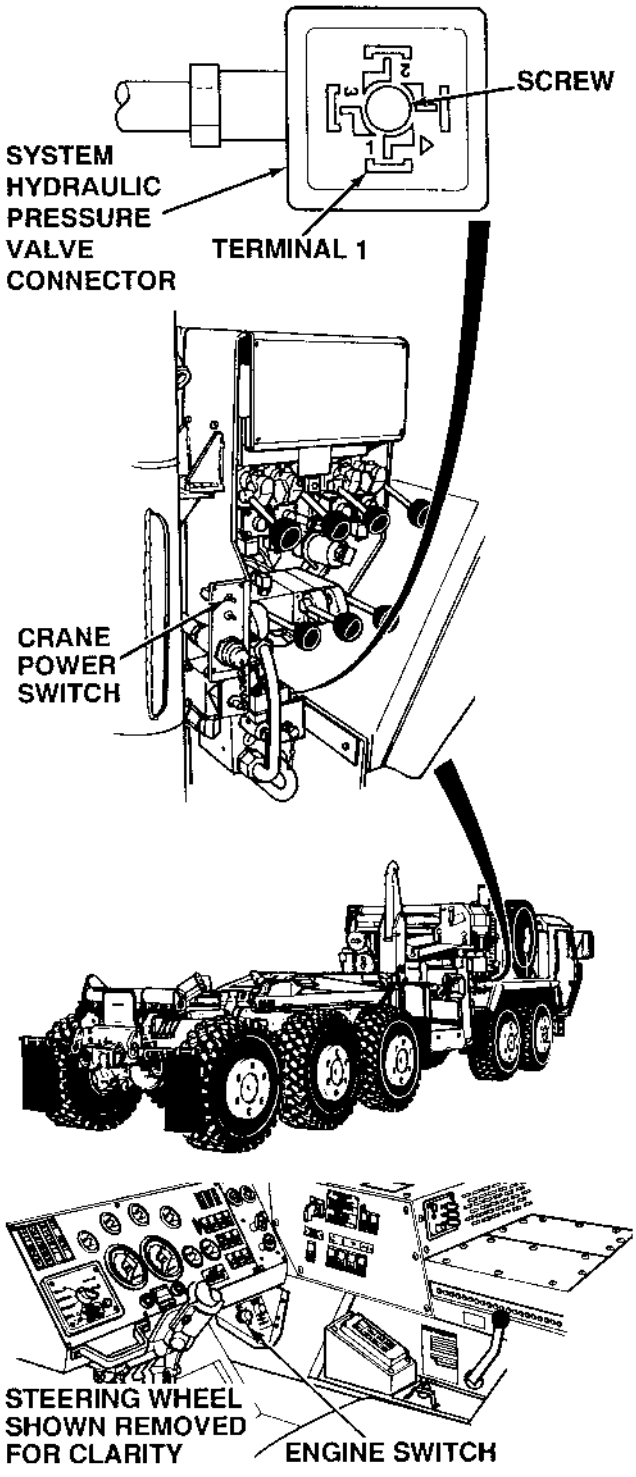


WARNING

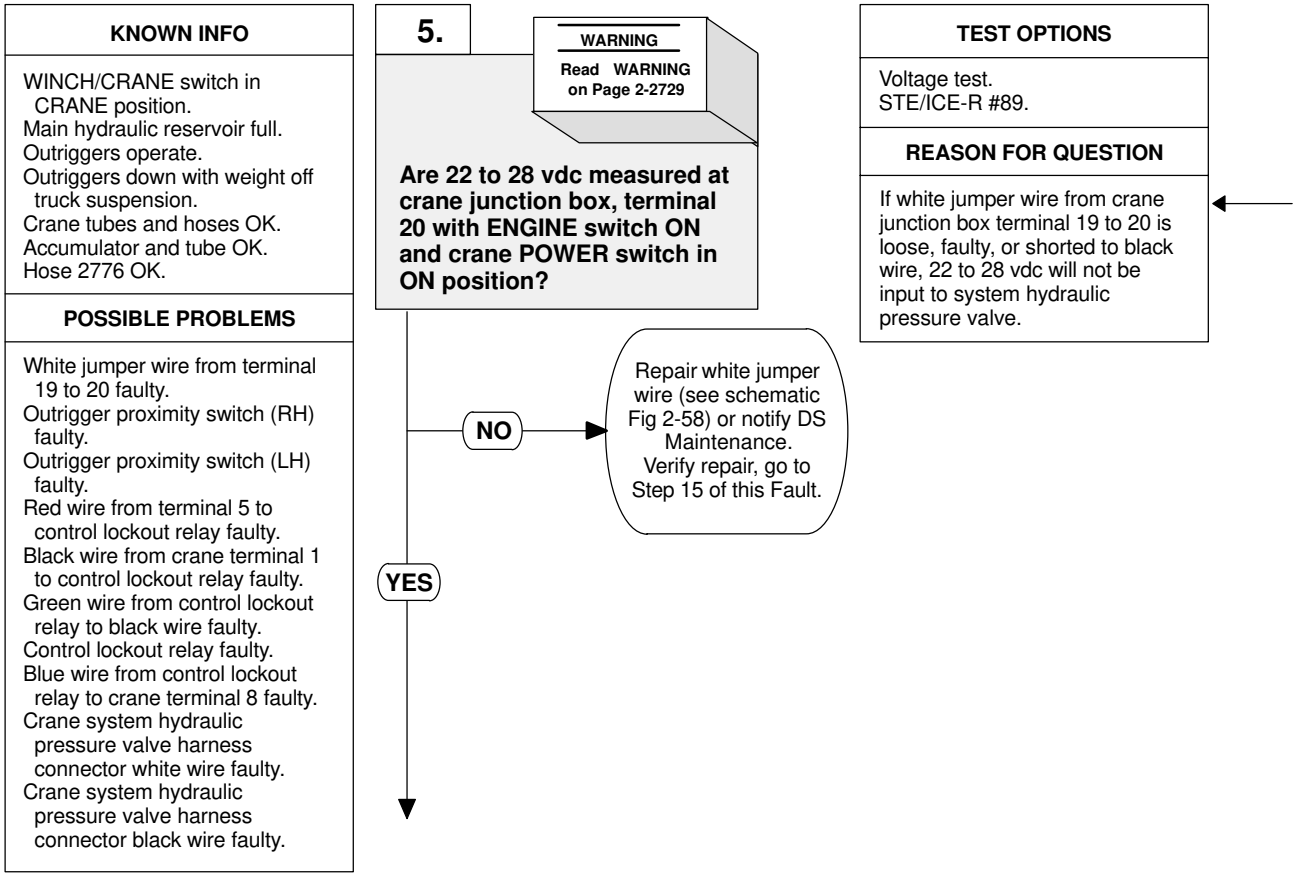
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen screw and remove harness connector from system hydraulic pressure valve solenoid.
(2) Set multimeter selector switch to volts.
(3) Connect positive (+) multimeter lead to connector, terminal 1.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-264-10).
(6) Turn on crane POWER switch.
    (a) If 22 to 28 vdc are not present, perform Steps (7) and (8) below and go to Step 5 of this Fault.
    (b) If 22 to 28 vdc are present, perform Steps (7) and (8) below and go to Step 14 of this Fault.
(7) Turn off crane POWER switch.
(8) Turn OFF ENGINE switch.



11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

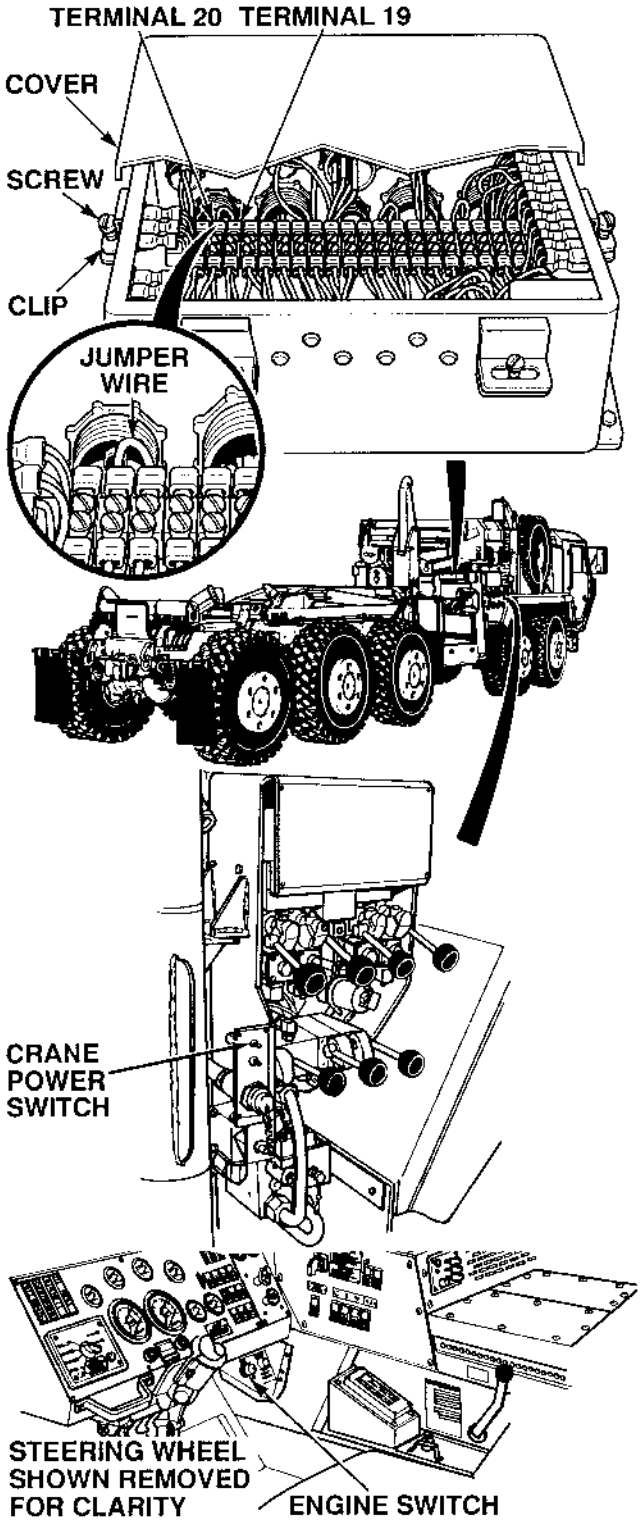


WARNING

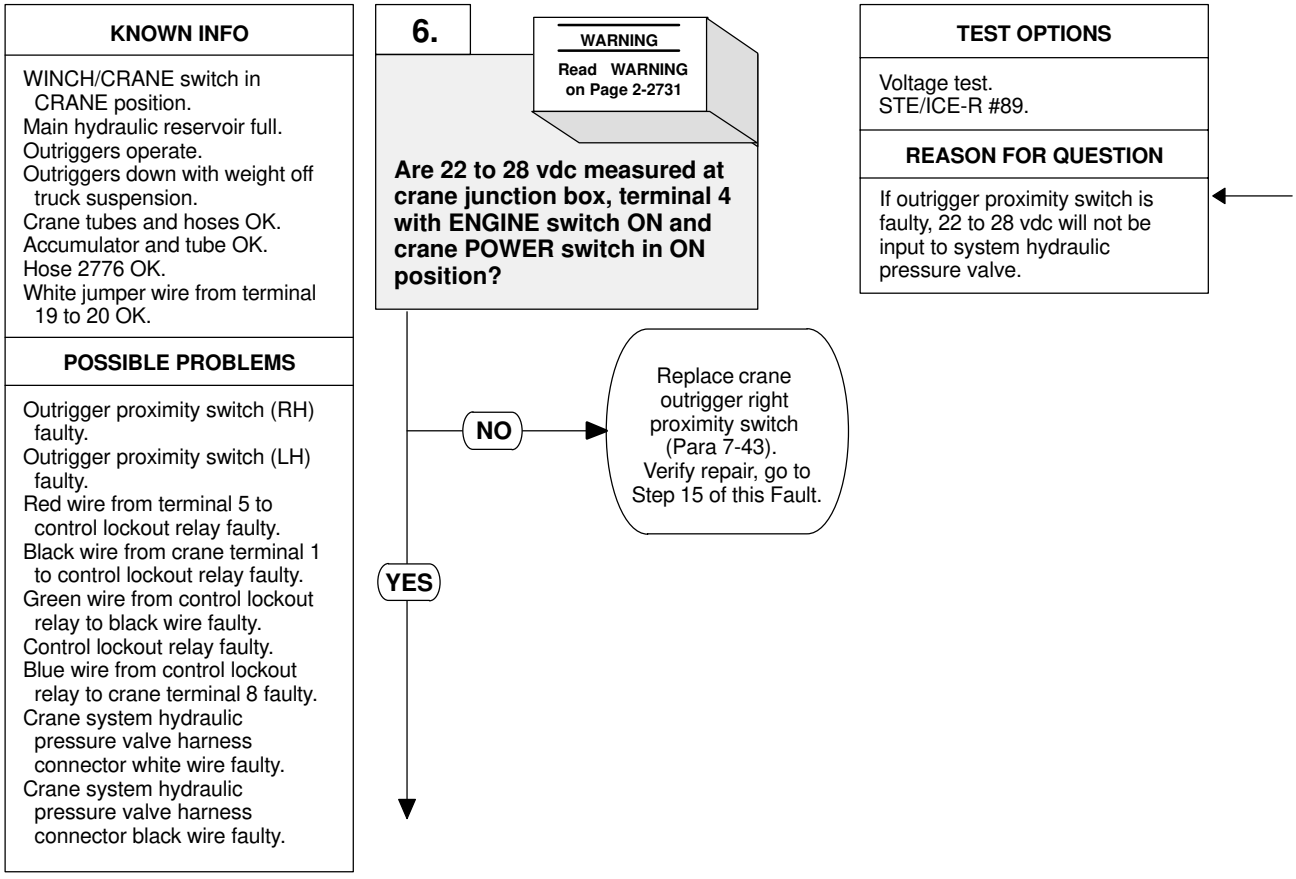
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Connect positive (+) multimeter lead to crane junction box, terminal 20.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Turn on crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair white jumper wire from terminal 19 to 20 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Step (6) and (7) below and go to Step 6 of this Fault.
(6) Turn off crane POWER switch.
(7) Turn OFF ENGINE switch.



11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

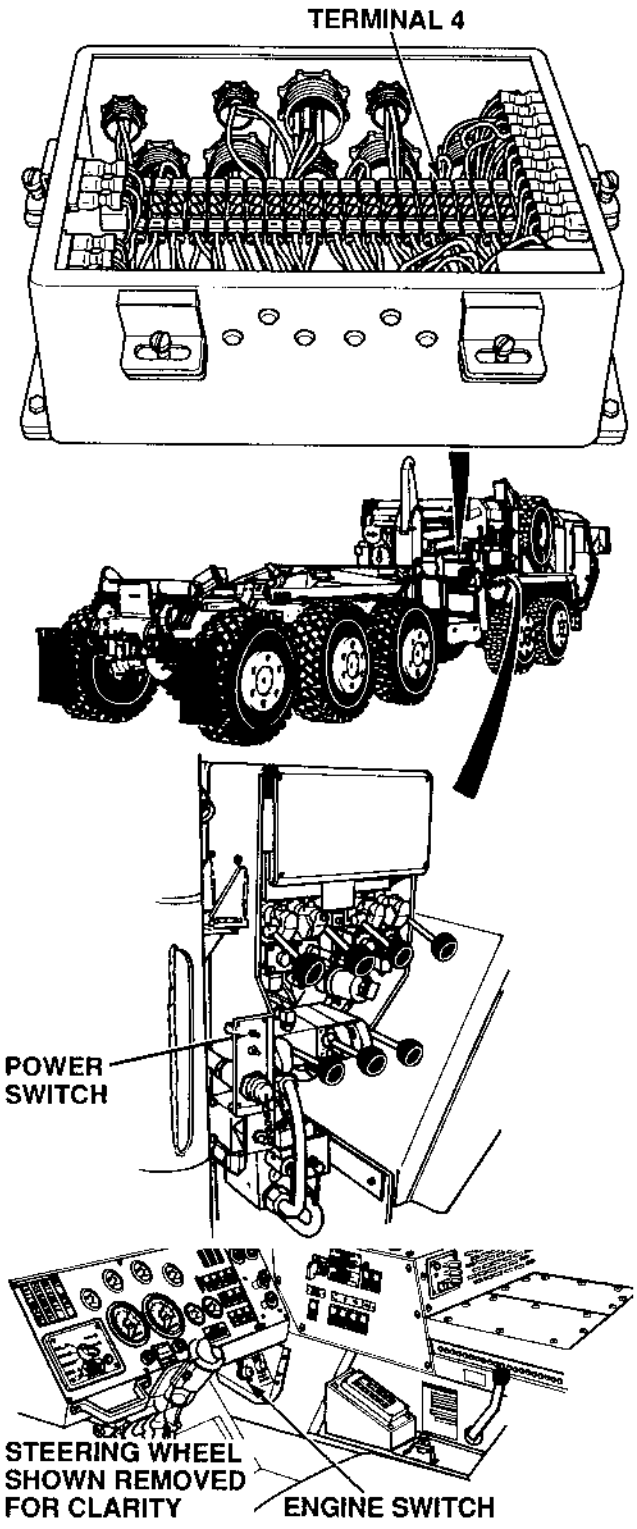


WARNING

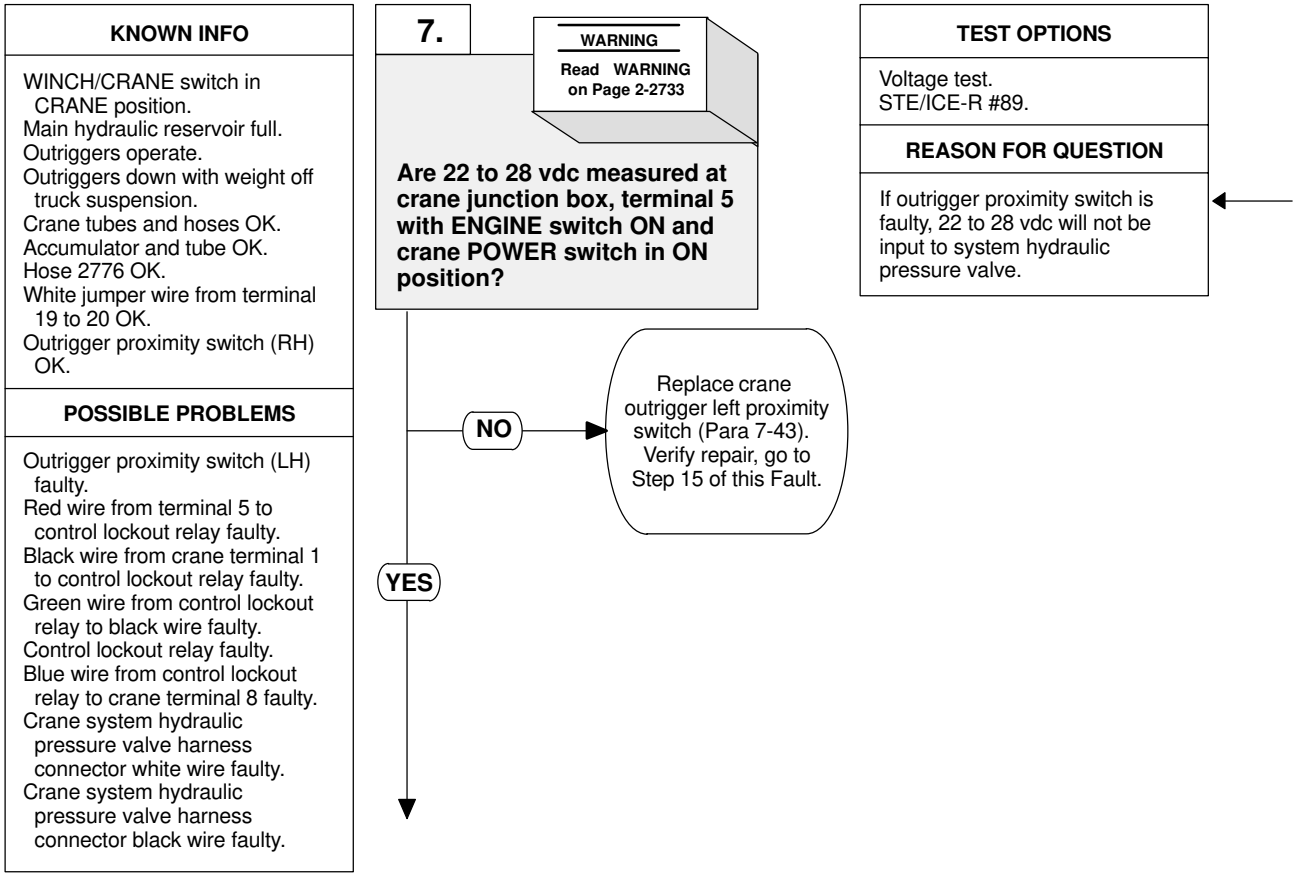
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect positive (+) multimeter lead to crane junction box, terminal 4.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Turn on crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (5) and (6) below and replace RH proximity switch (Para 7-43).
  (b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 7 of this Fault.
(5) Turn off crane POWER switch.
(6) Turn OFF ENGINE switch.



11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

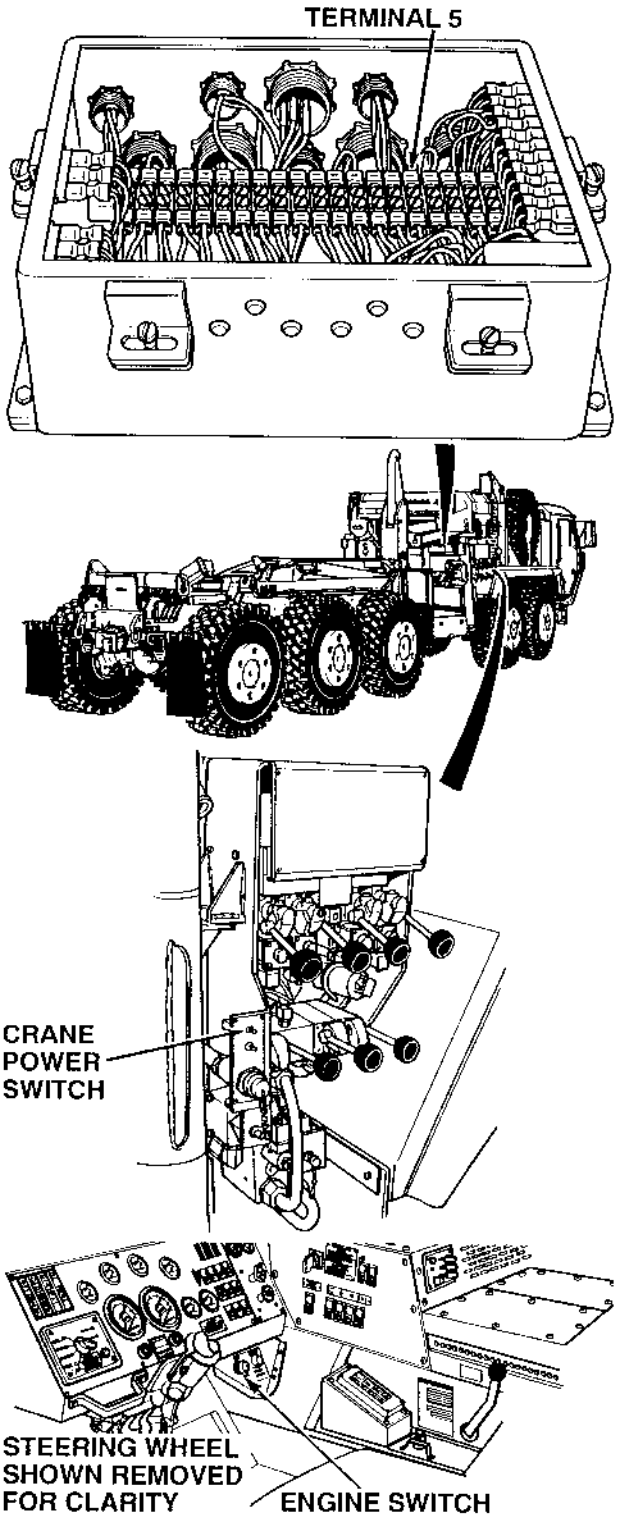


WARNING

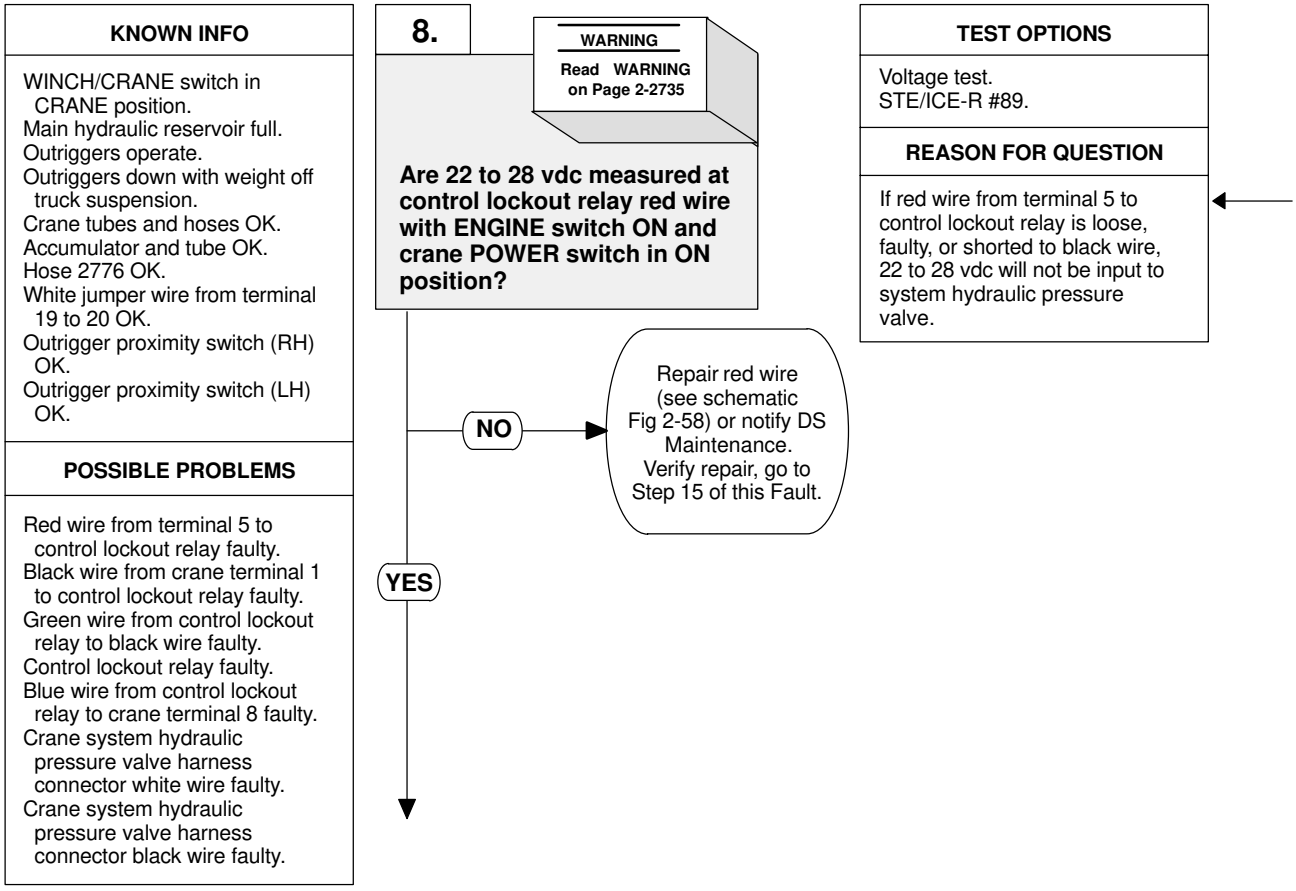
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect positive (+) multimeter lead to crane junction box, terminal 5.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch.
(4) Turn on crane POWER switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Steps (5) and (6) below and replace LH proximity switch (Para 7-43).
  (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 crane POWER switch.
(6) Turn OFF ENGINE switch.

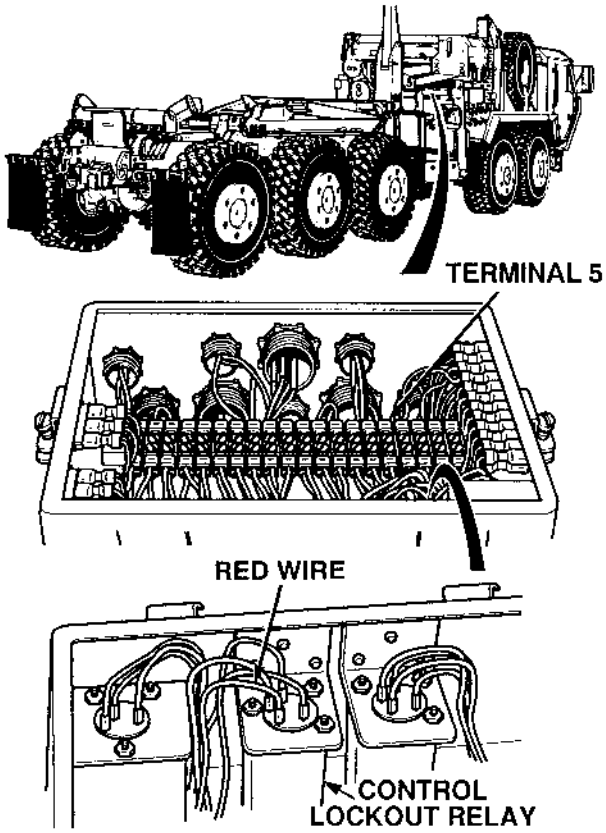


11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).



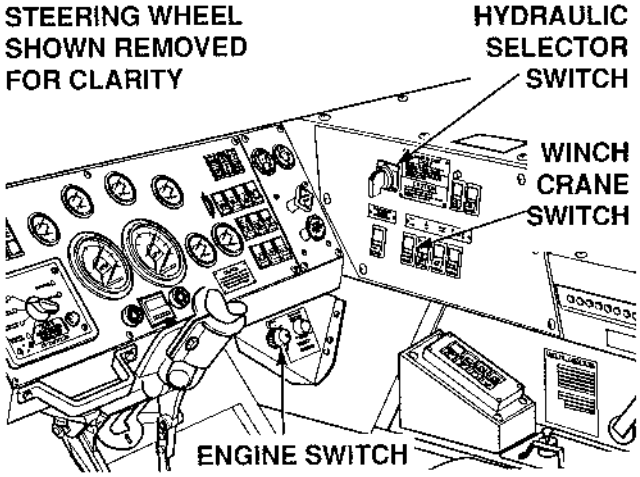
WARNING

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

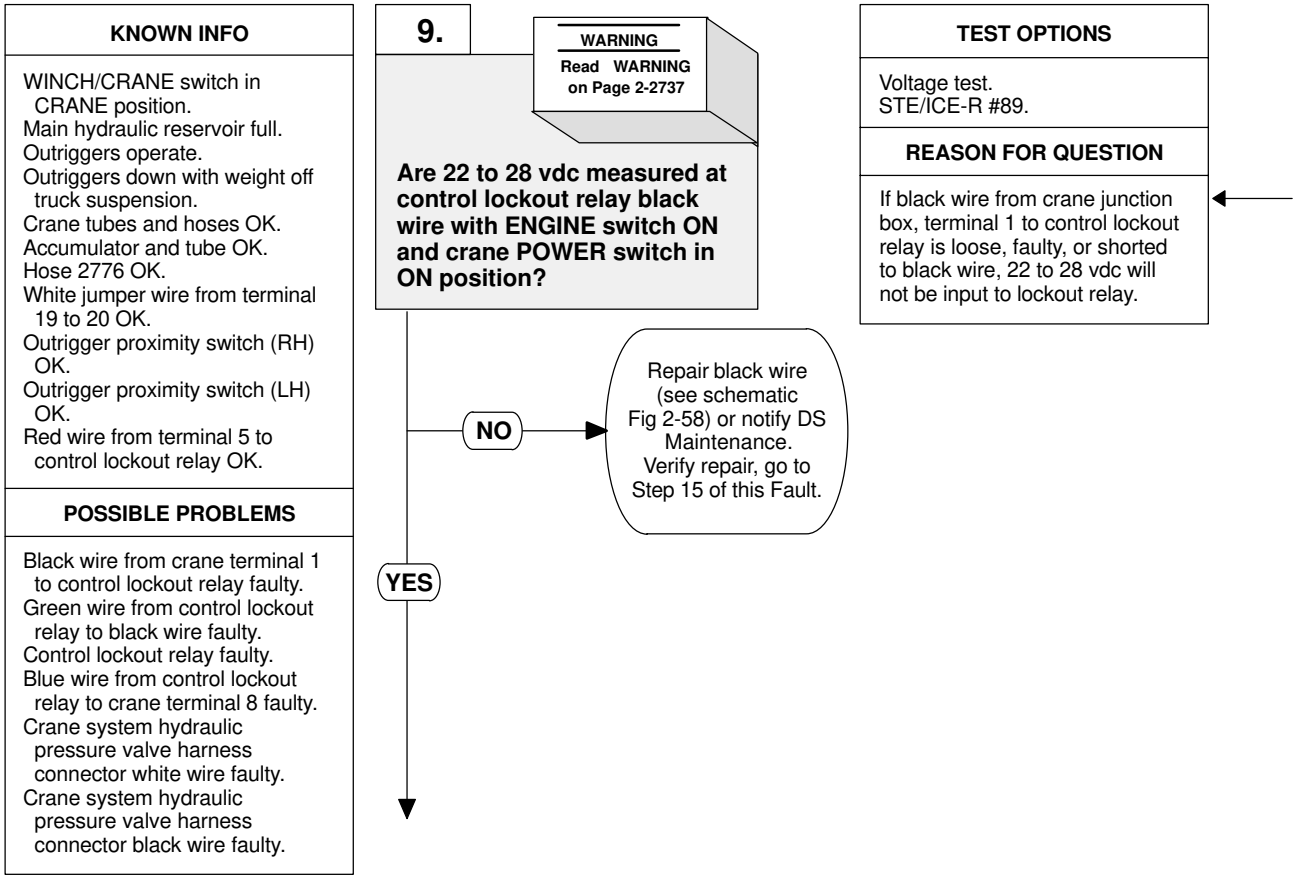


VOLTAGE TEST

(1) Connect positive (+) multimeter lead to control lockout relay red wire.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Turn on crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (5) and (6) below and repair red wire from crane junction box terminal 5 to control lockout relay (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 10 of this Fault.
(5) Turn off crane POWER switch.
(6) Turn OFF ENGINE switch.



11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

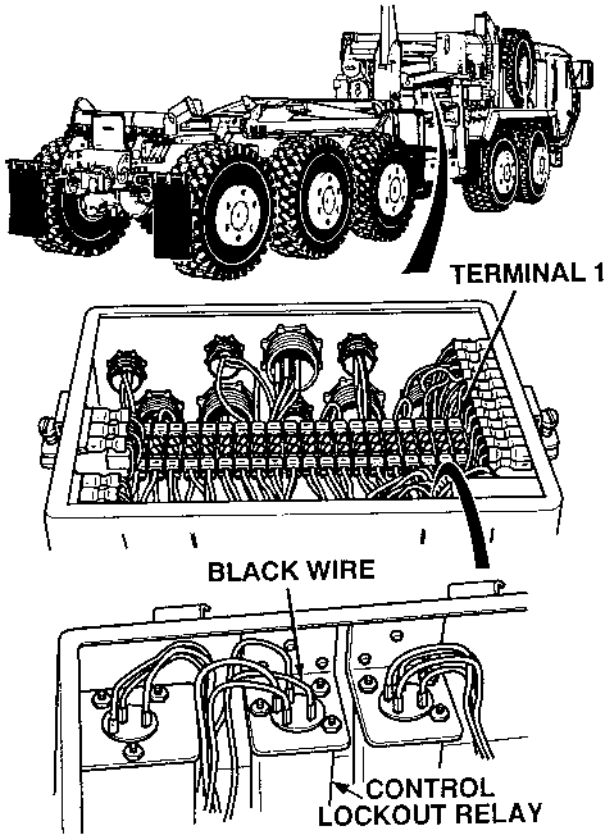


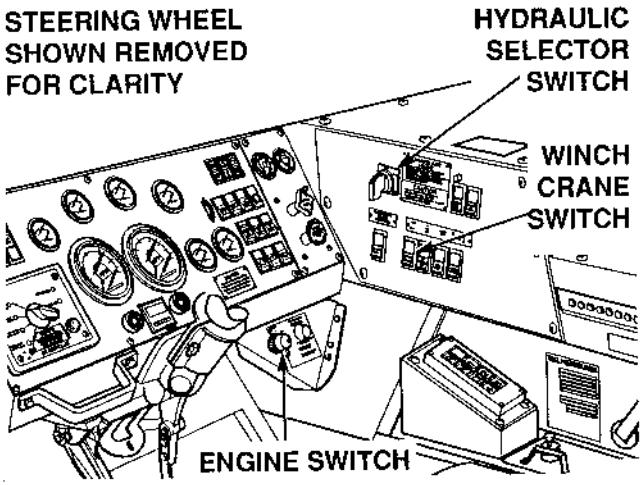
WARNING

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

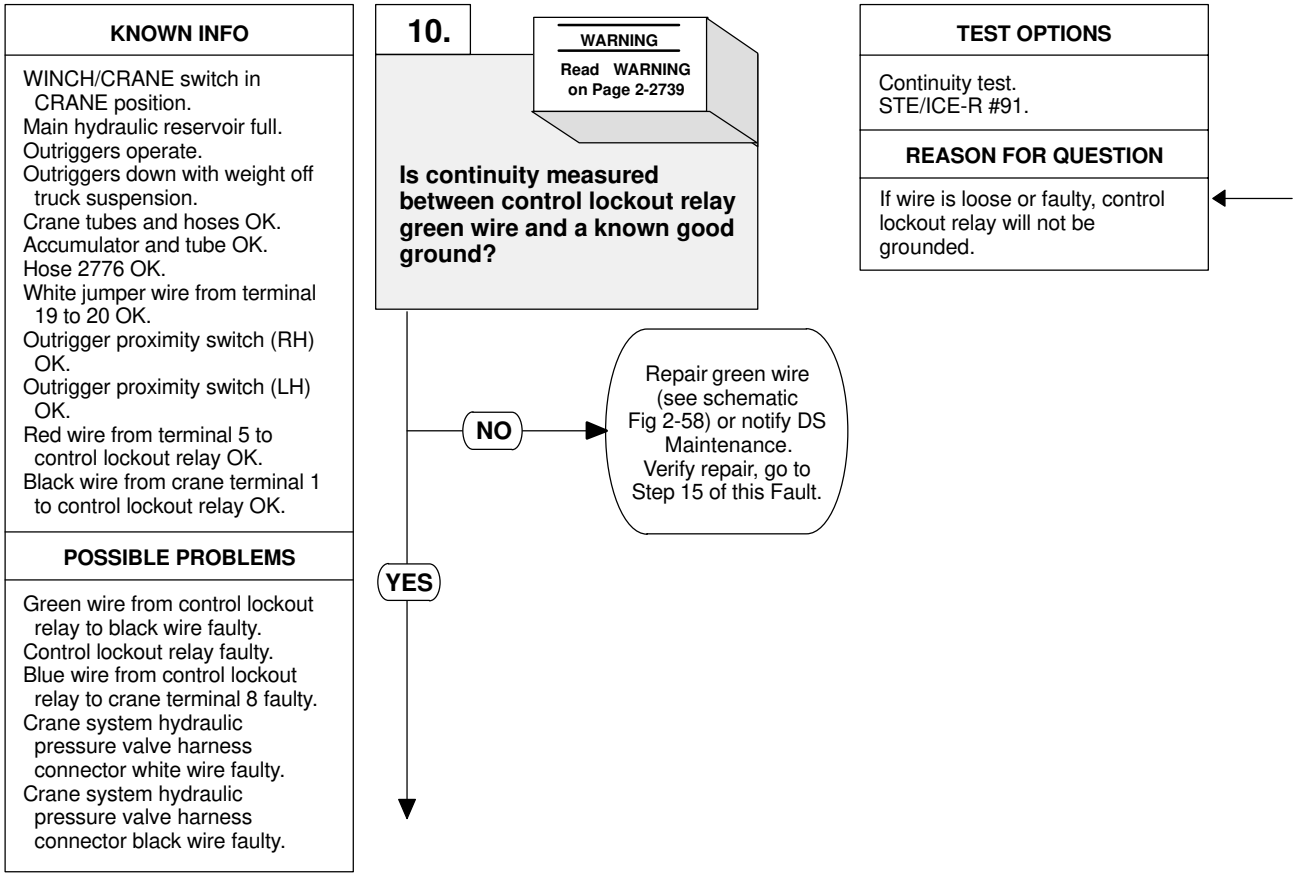
VOLTAGE TEST

(1) Connect positive (+) multimeter lead control lockout relay black wire.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Turn on crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (5) and (6) below and repair black wire from crane junction box terminal 1 to control lockout relay (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 11 of this Fault.
(5) Turn off crane POWER switch.
(6) Turn OFF ENGINE switch.



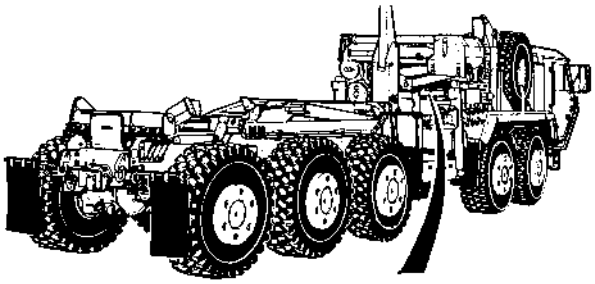


11. LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).



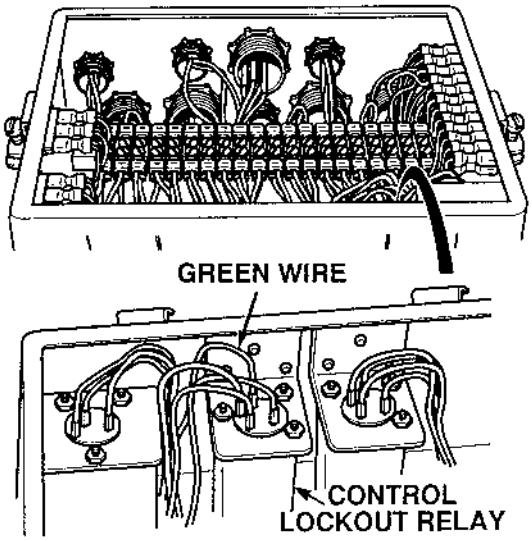
WARNING

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.

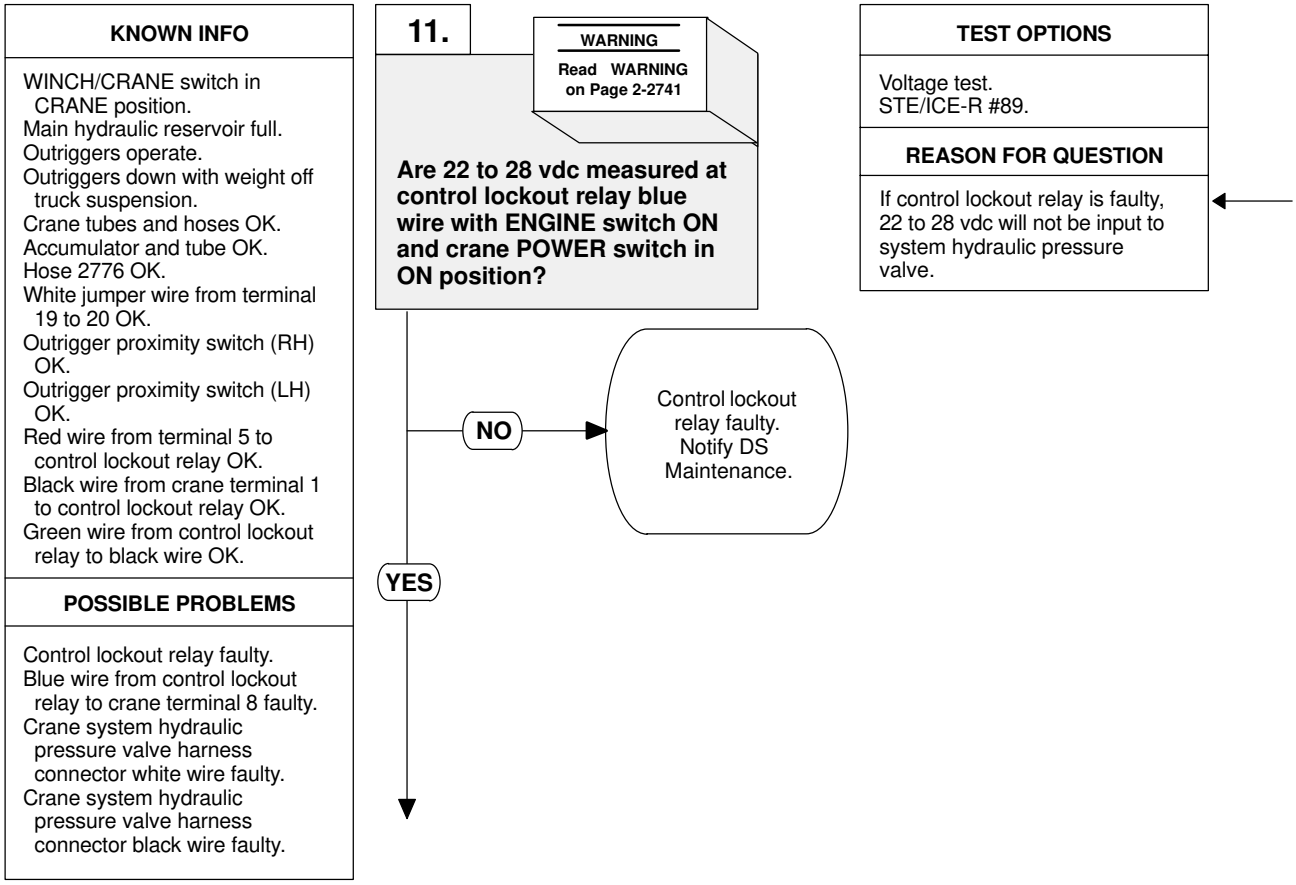


CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between control lockout relay green wire and a known good ground?
   (a) If there is no continuity, repair green wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, wire is OK.



11 LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

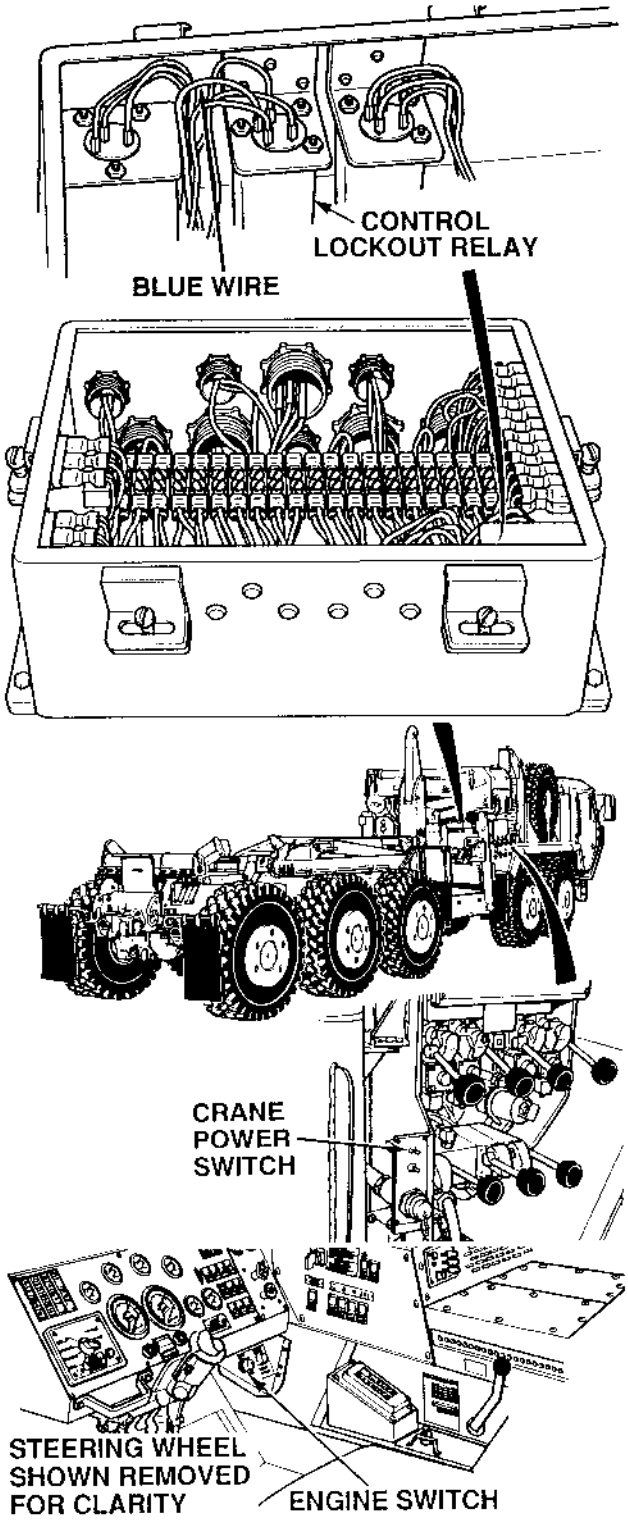


WARNING

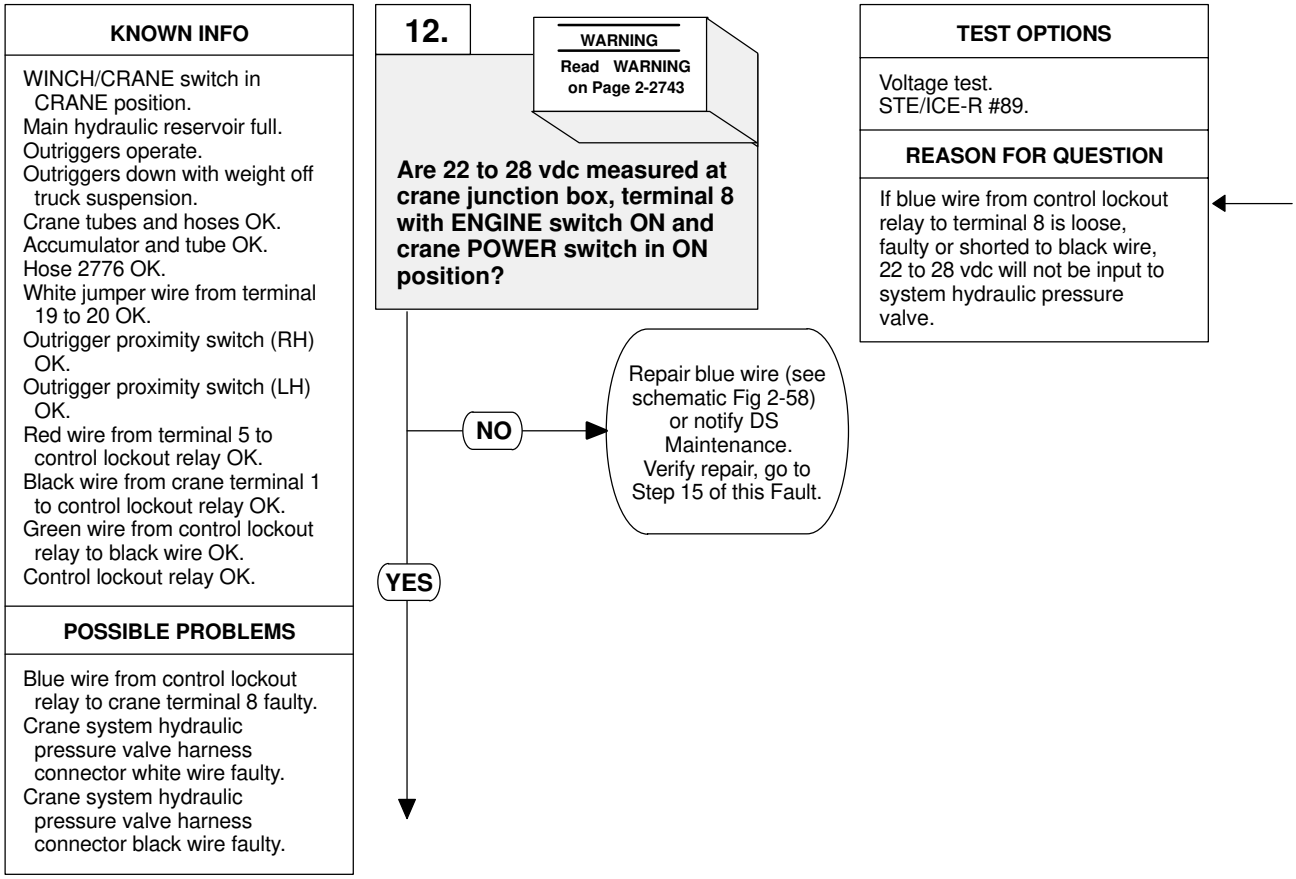
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to volts.
(2) Connect positive (+) multimeter lead to control lockout relay blue wire.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Turn on crane POWER switch.
    (a) If 22 to 28 vdc are not present, control lockout relay faulty. Perform Steps (6) and (7) below and notify DS Maintenance.
    (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 12 of this Fault.
(6) Turn off crane POWER switch.
(7) Turn OFF ENGINE switch.



11 LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

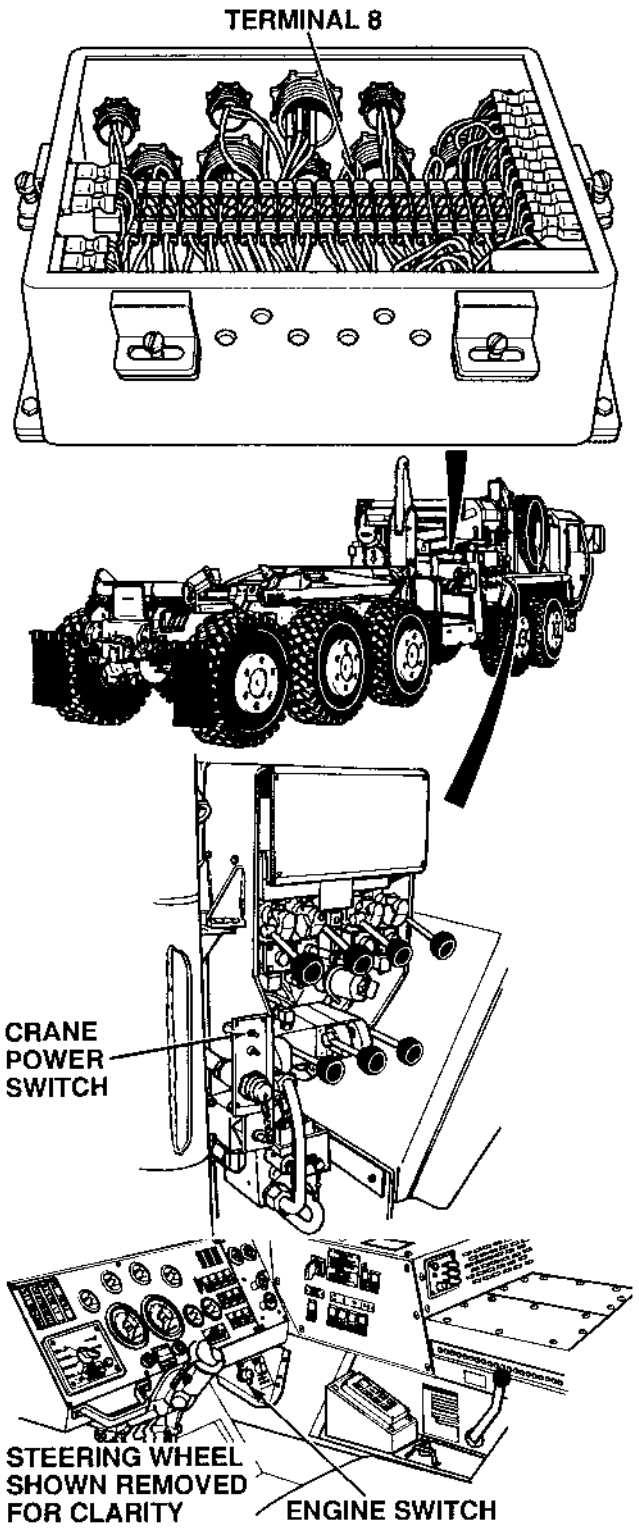


WARNING

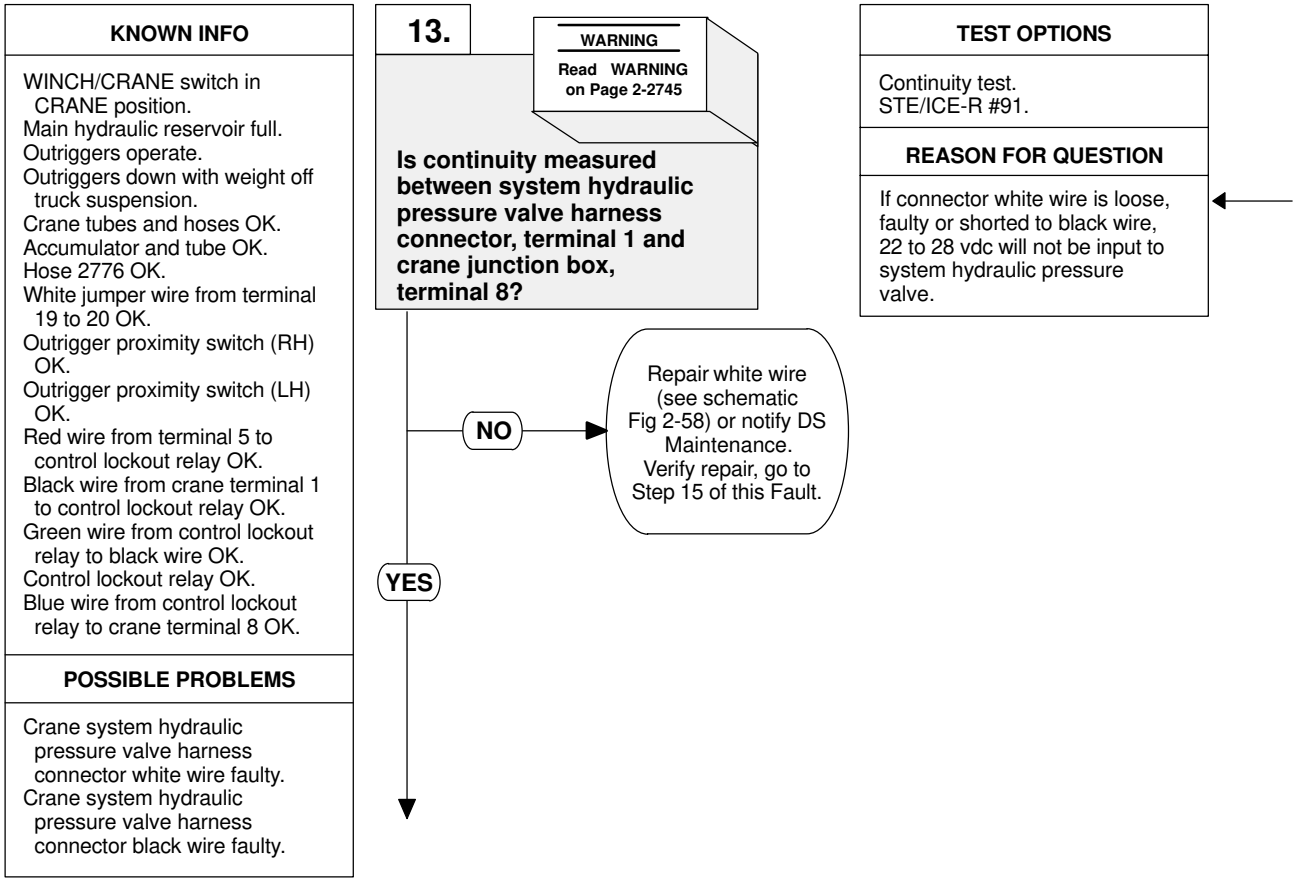
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Connect positive (+) multimeter lead to crane junction box, terminal 8.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Turn on crane POWER switch.
  (a) If 22 to 28 vdc are not present, perform Steps (5) and (6) below and repair blue wire from control lockout relay to terminal 8 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 13 of this Fault.
(5) Turn off crane POWER switch.
(6) Turn OFF ENGINE switch.



11 LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

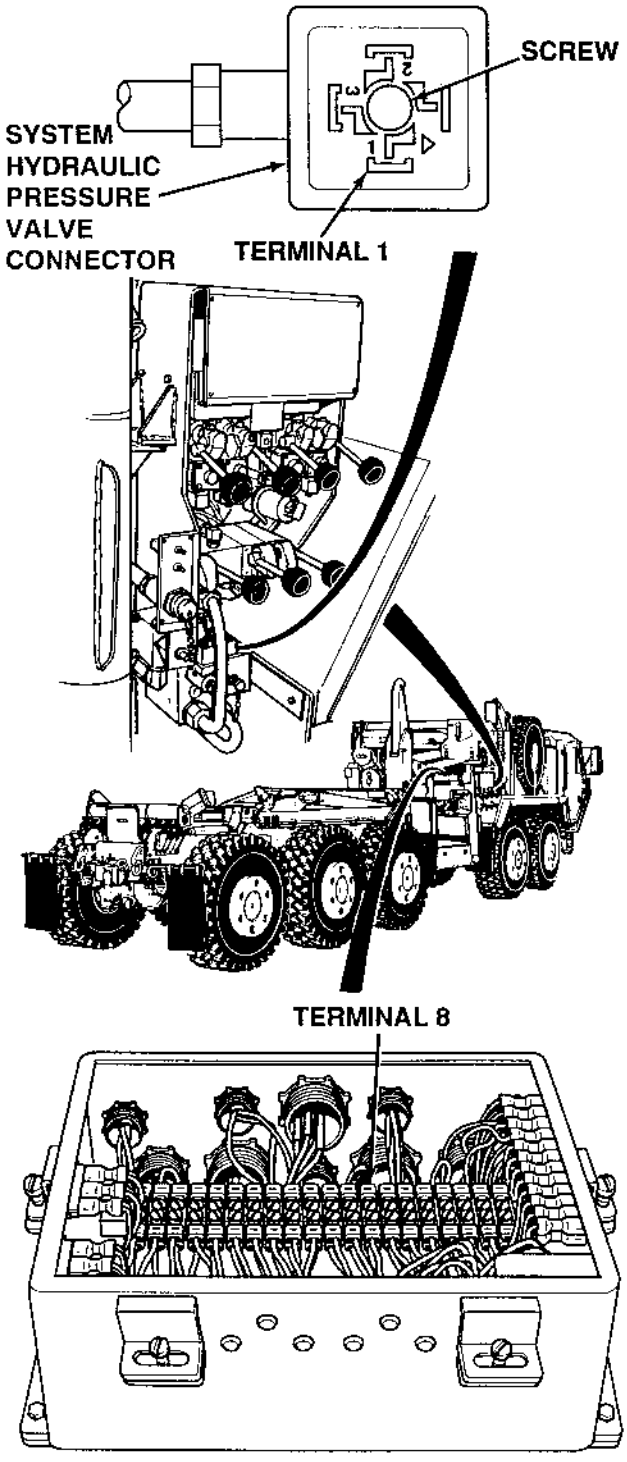


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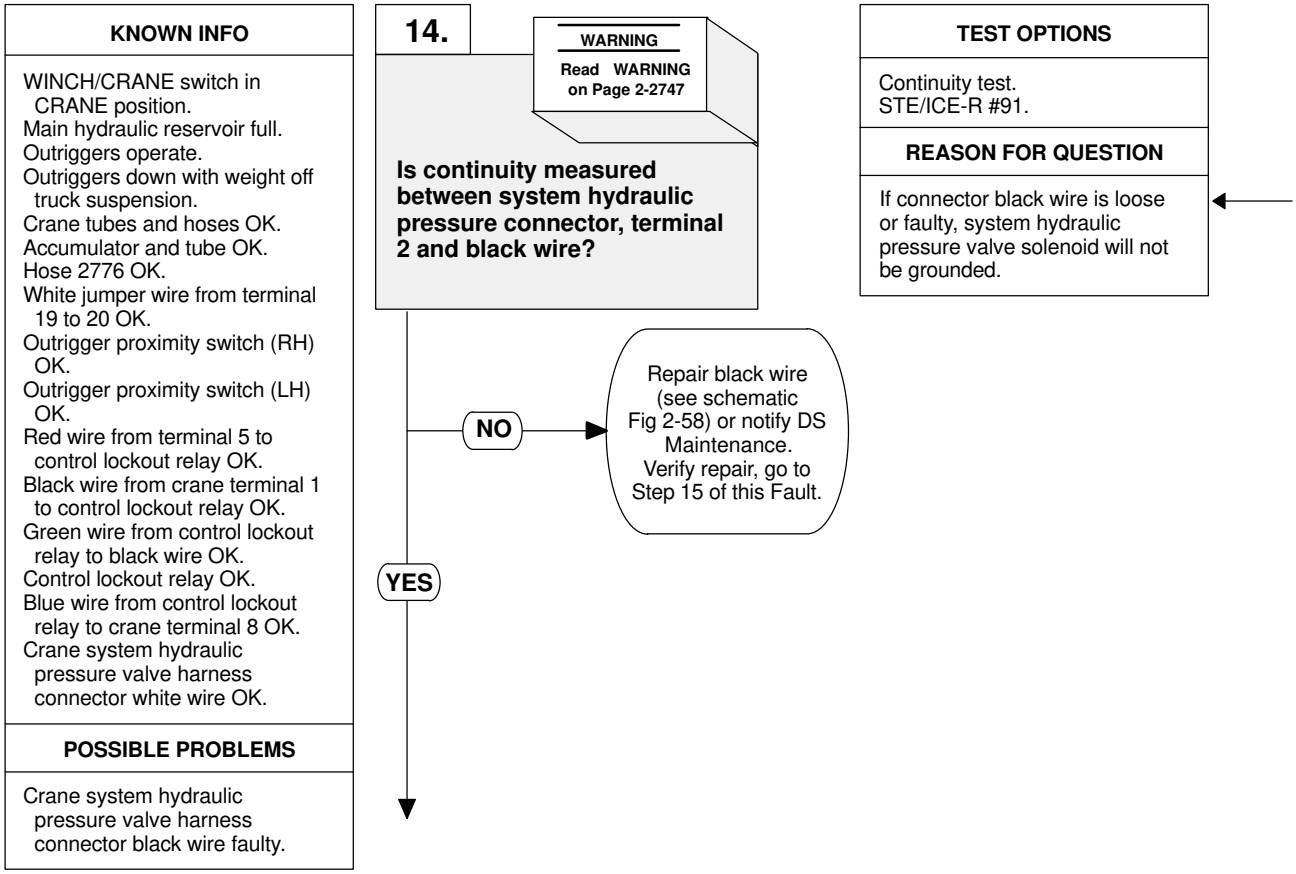
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between system hydraulic pressure valve connector, terminal 1 and crane junction box, terminal 8?
   (a) If there is no continuity, repair connector white wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, perform Step (3) below and go to Step 14 of this Fault.
(3) Connect system hydraulic pressure harness connector and tighten screw.



11 LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).

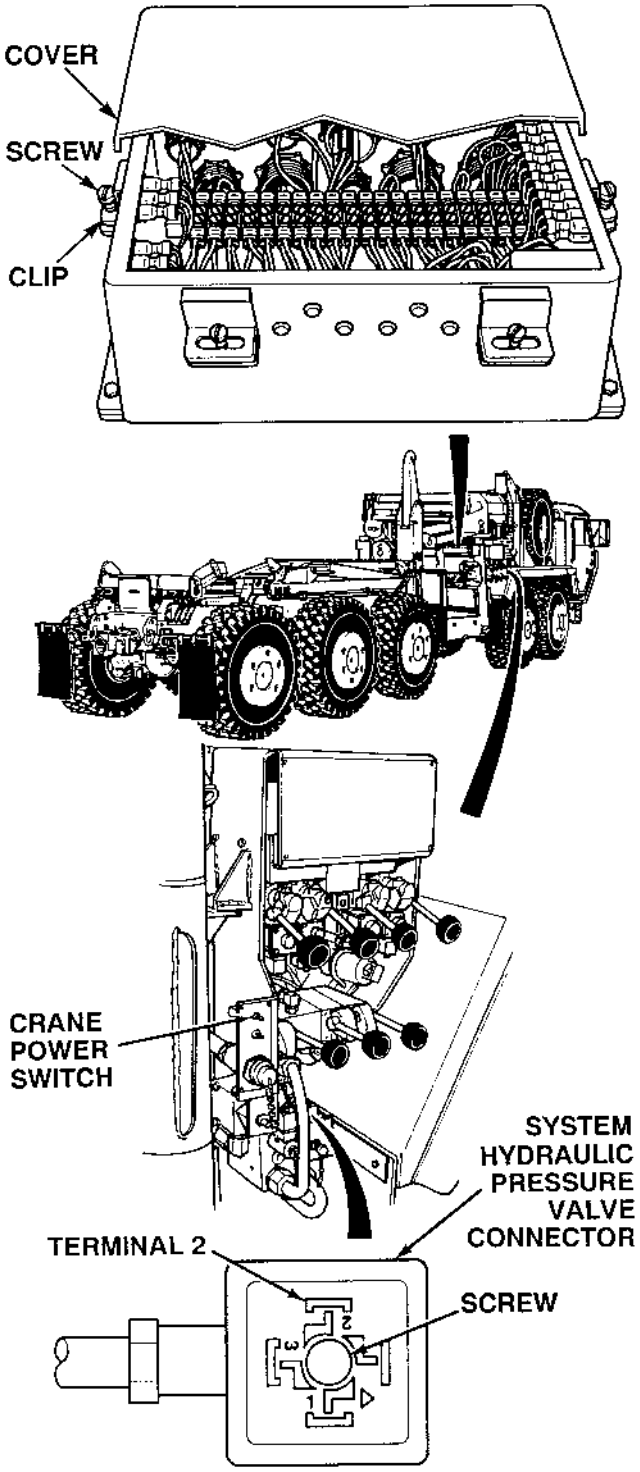


WARNING

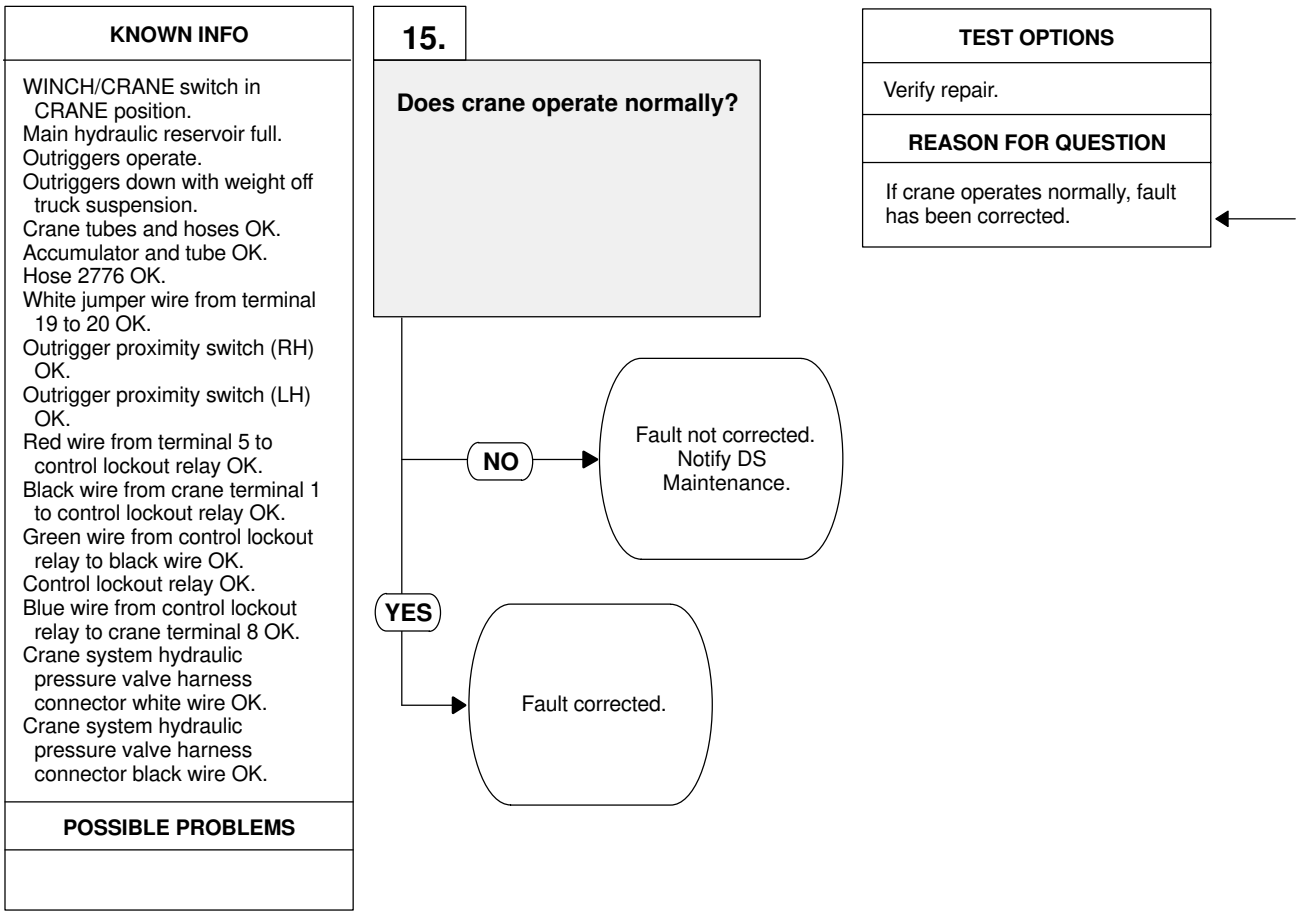
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

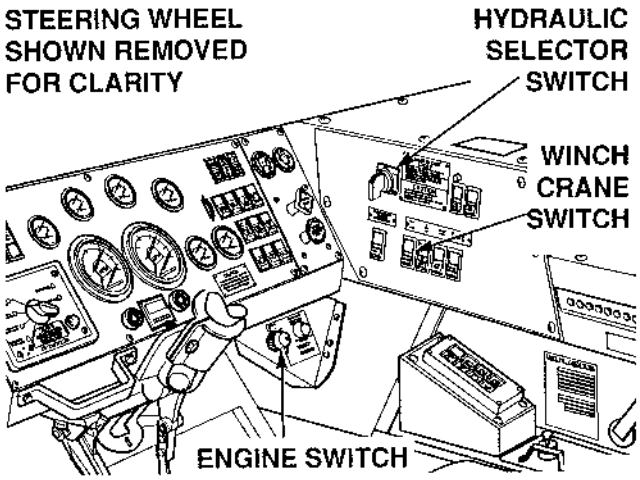
(1) Is there continuity between system hydraulic pressure valve connector, terminal 2 and a known good ground?
   (a) If there is no continuity, repair connector black wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, connector black wire is OK.
(2) Install junction box cover, six screws and clips.



11 LOSS OF CRANE FUNCTIONS (SWING, TELESCOPE, BOOM AND HOIST) (CONT).



VERIFY REPAIR
Operate crane (TM 9-2320-364-10). (1) If crane does not operate normally, fault not corrected. Notify DS Maintenance. (2) If crane operates normally, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

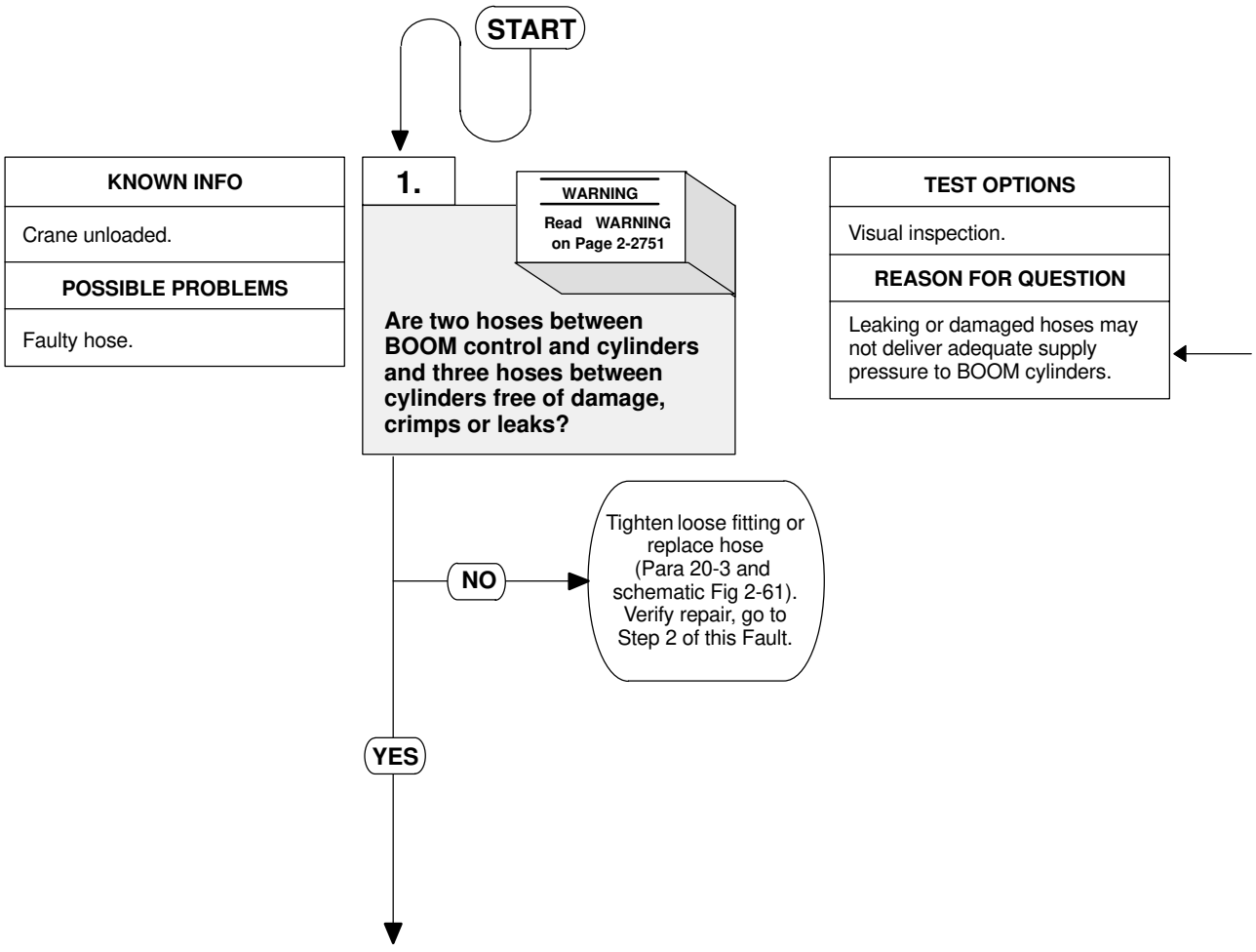
12. BOOM DOES NOT OPERATE.

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 applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Outriggers down with weight off truck suspension, (TM 9-2320-364-10)



WARNING

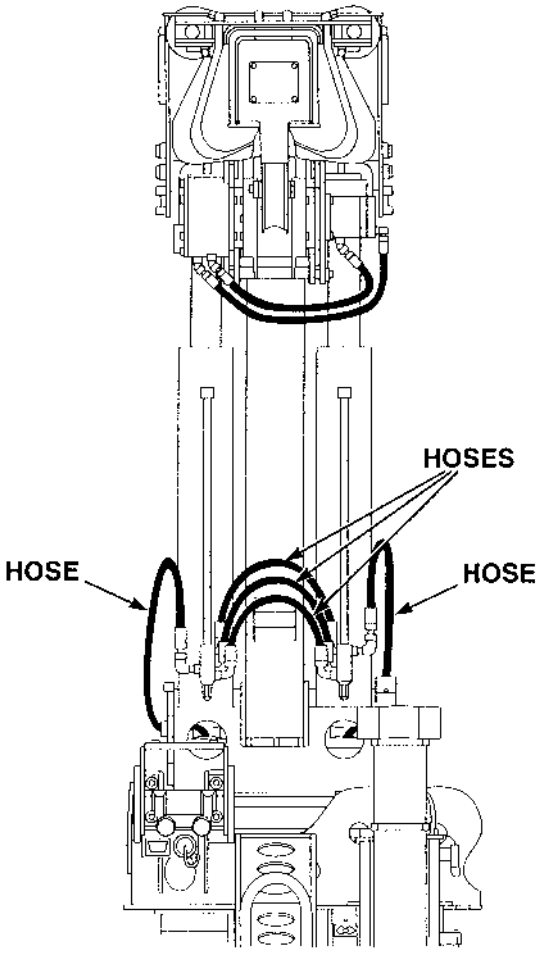
High pressure hydraulics [oil under 3,100 psi (21,374 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body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

VISUAL INSPECTION

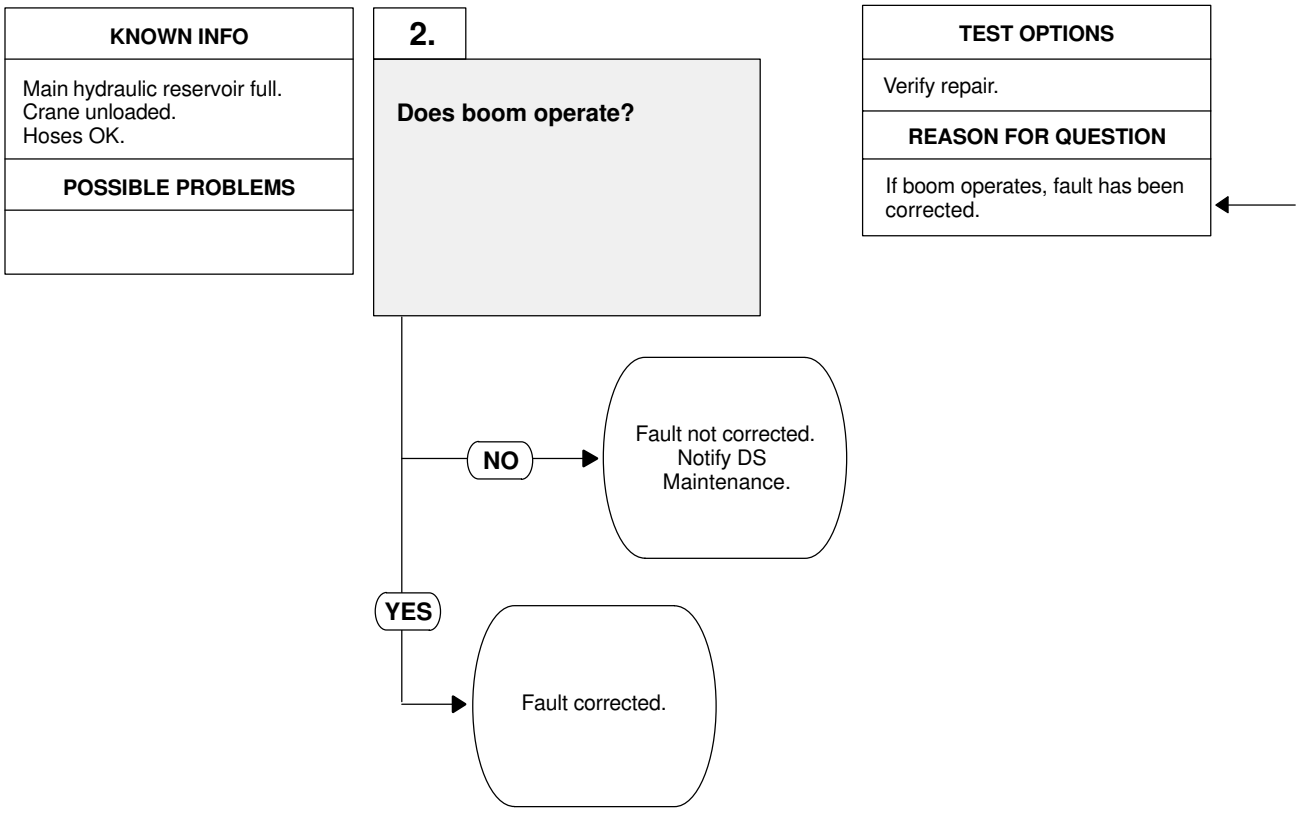
Inspect two hoses between BOOM control and cylinders and three hoses between cylinders for leaks and damage.

(1) If hoses are damaged, crimped or leaking repair hoses (Para 20-3 and schematic Fig 2-61).

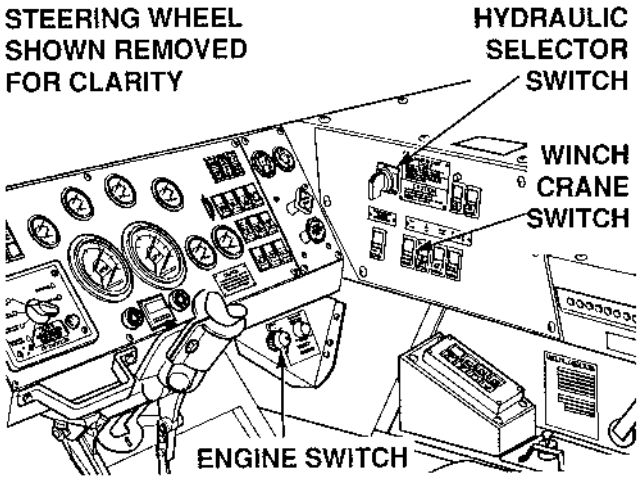
(2) If hoses are not crimped or leaking, notify DS Maintenance.



12. BOOM DOES NOT OPERATE (CONT).



VERIFY REPAIR
Operate crane (TM 9-2320-364-10). (1) If boom does not operate, fault not corrected. Notify DS Maintenance. (2) If crane operates, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

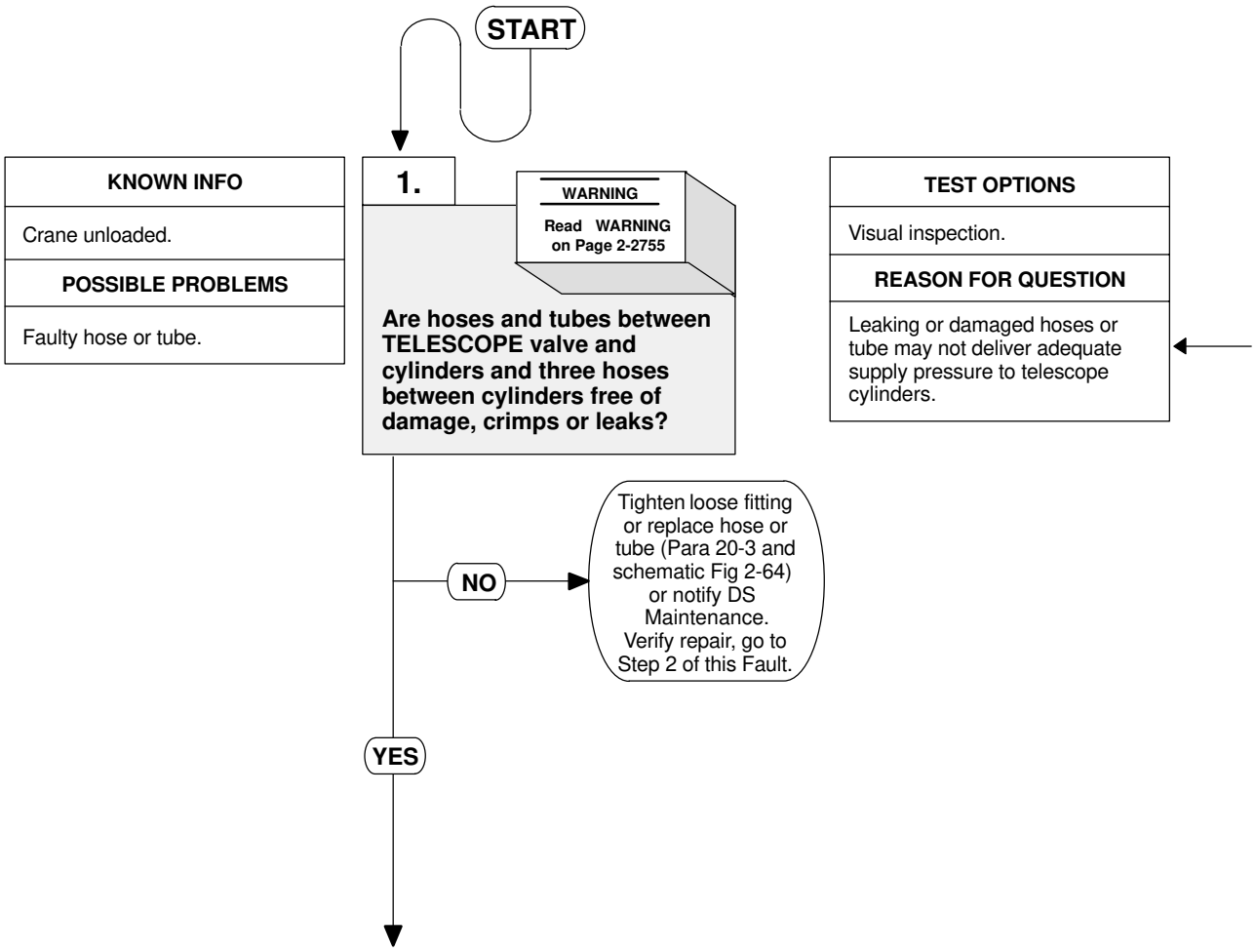
13. TELESCOPE DOES NOT OPERATE.

INITIAL SETUP

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

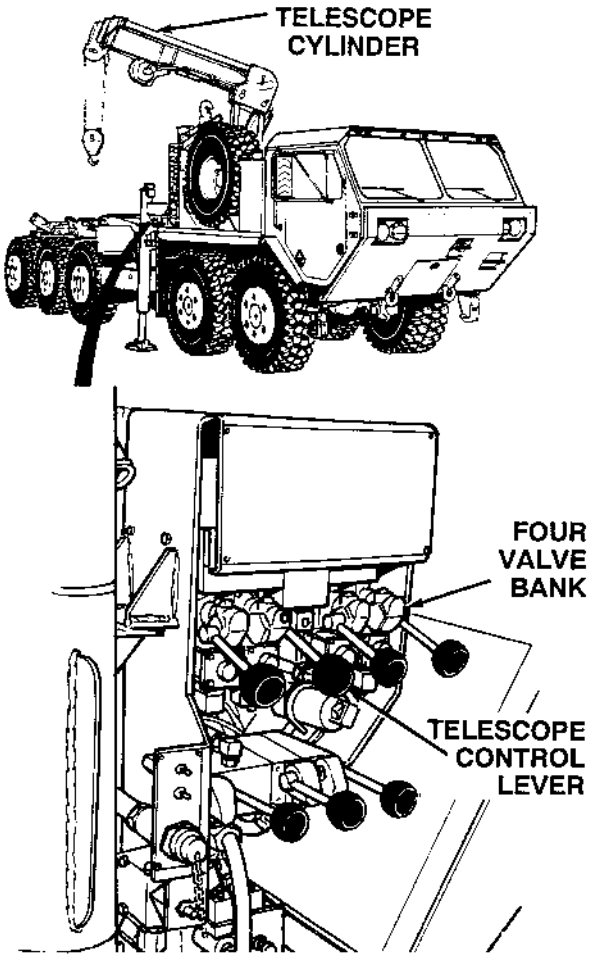
References
TM 9-2320-364-10

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Outriggers down with weight off truck suspension, (TM 9-2320-364-10)



WARNING

High pressure hydraulics [oil under 3100 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.



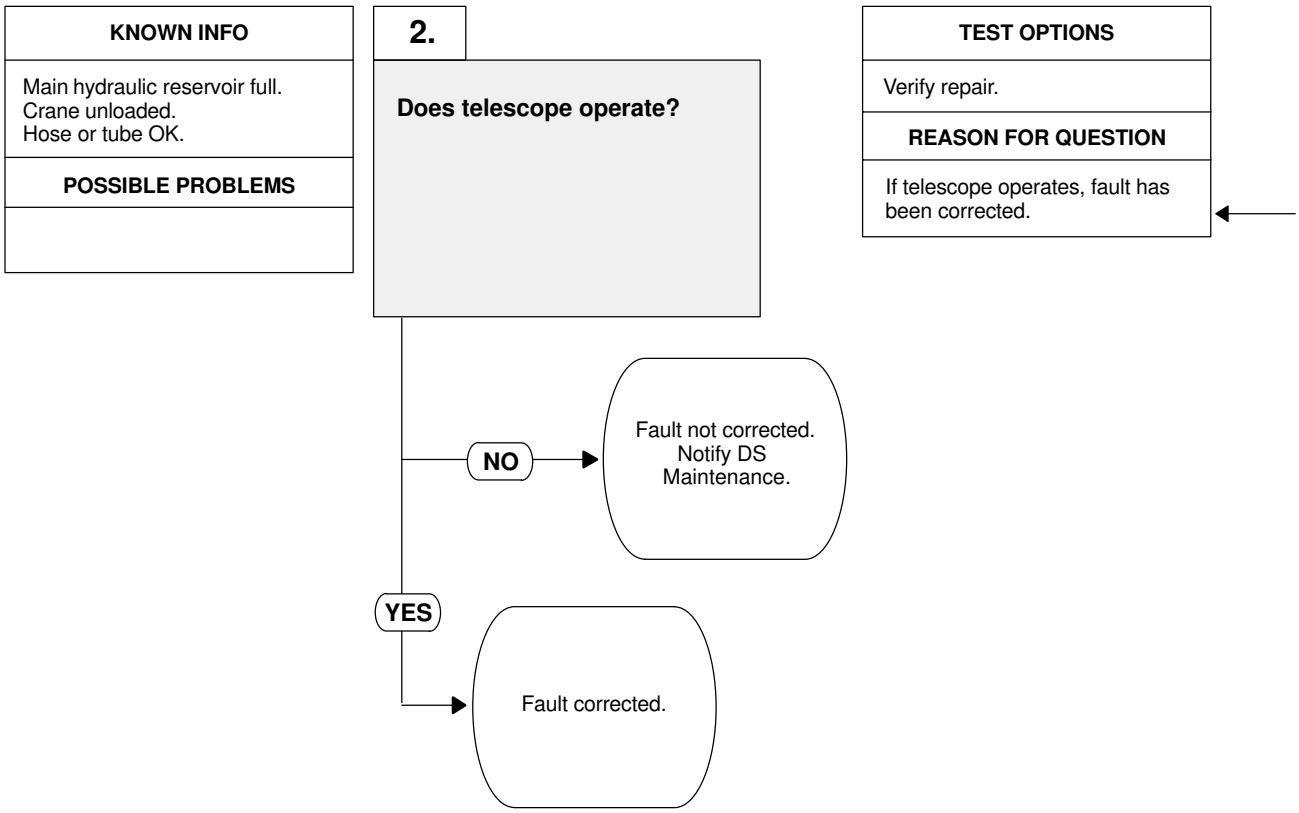
VISUAL INSPECTION

Inspect hoses and tubes between TELESCOPE valve and cylinders and three hoses between cylinders for damage, crimps or leaks.

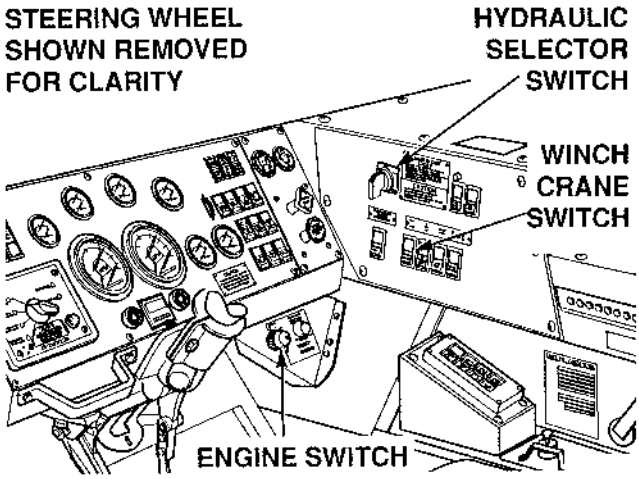
(1) If hoses are damaged, crimped or leaking secure loose fittings repair hose (Para 20-3 and schematic Fig 2-64) or notify DS Maintenance.

(2) If hoses are not damaged, crimped or leaking, notify DS Maintenance.

13. TELESCOPE DOES NOT OPERATE (CONT).



VERIFY REPAIR
Operate crane (TM 9-2320-364-10). (1) If telescope does not operate, fault not corrected, notify DS Maintenance. (2) If telescope operates, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

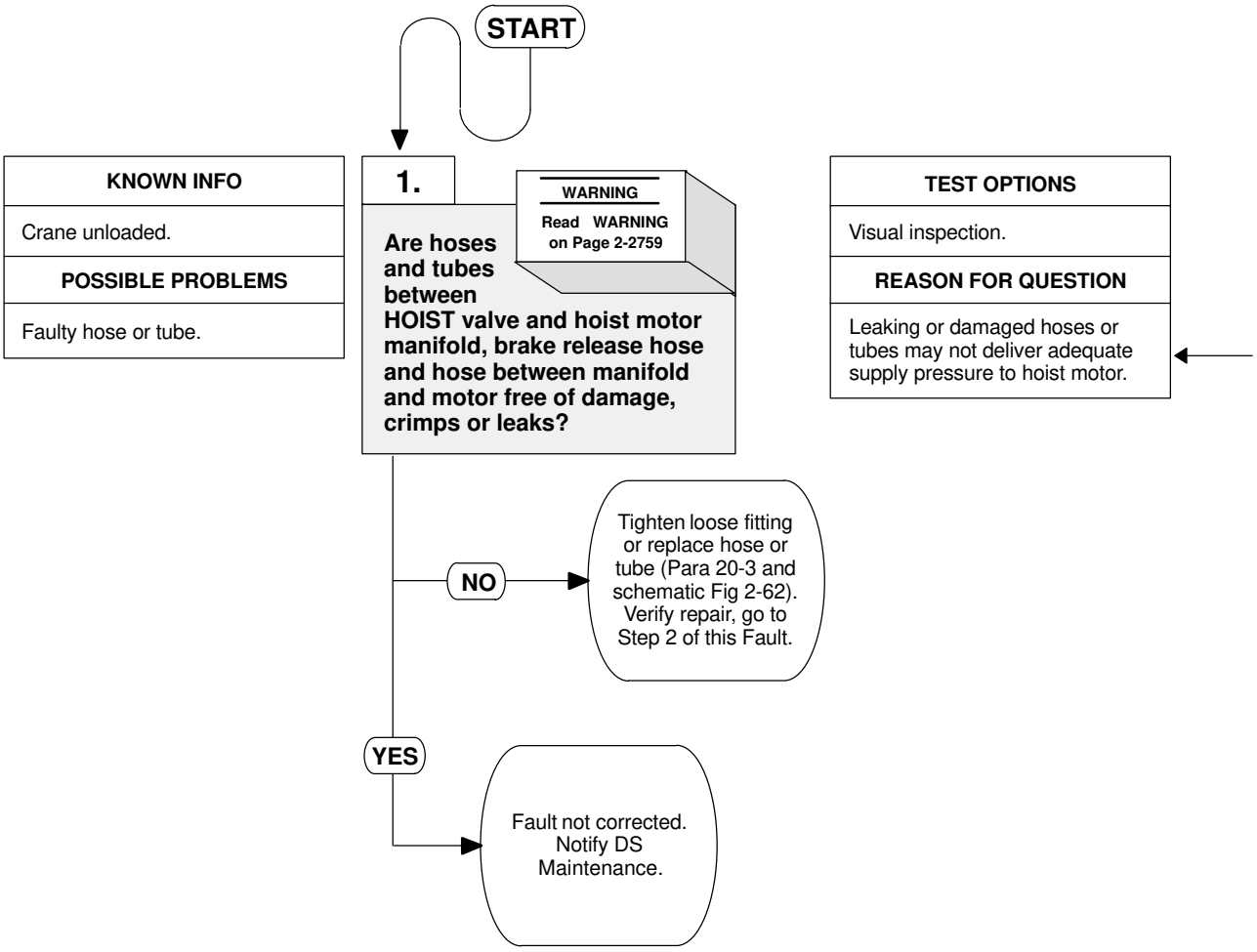
14. HOIST DOES NOT OPERATE.

INITIAL SETUP

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

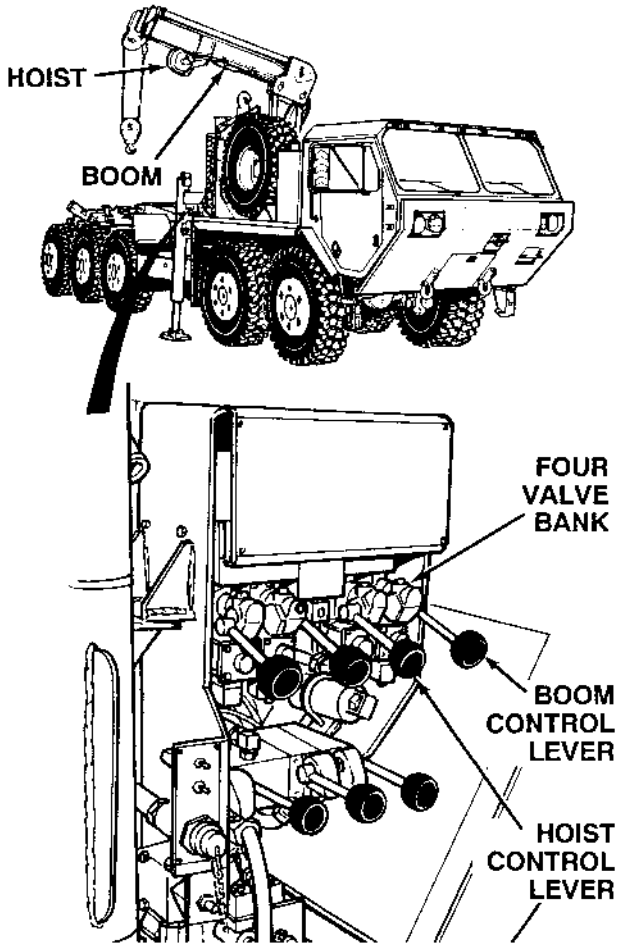
References
TM 9-2320-364-10

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Outriggers down with weight off truck suspension, (TM 9-2320-364-10)



WARNING

High pressure hydraulics [oil under 3100 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.

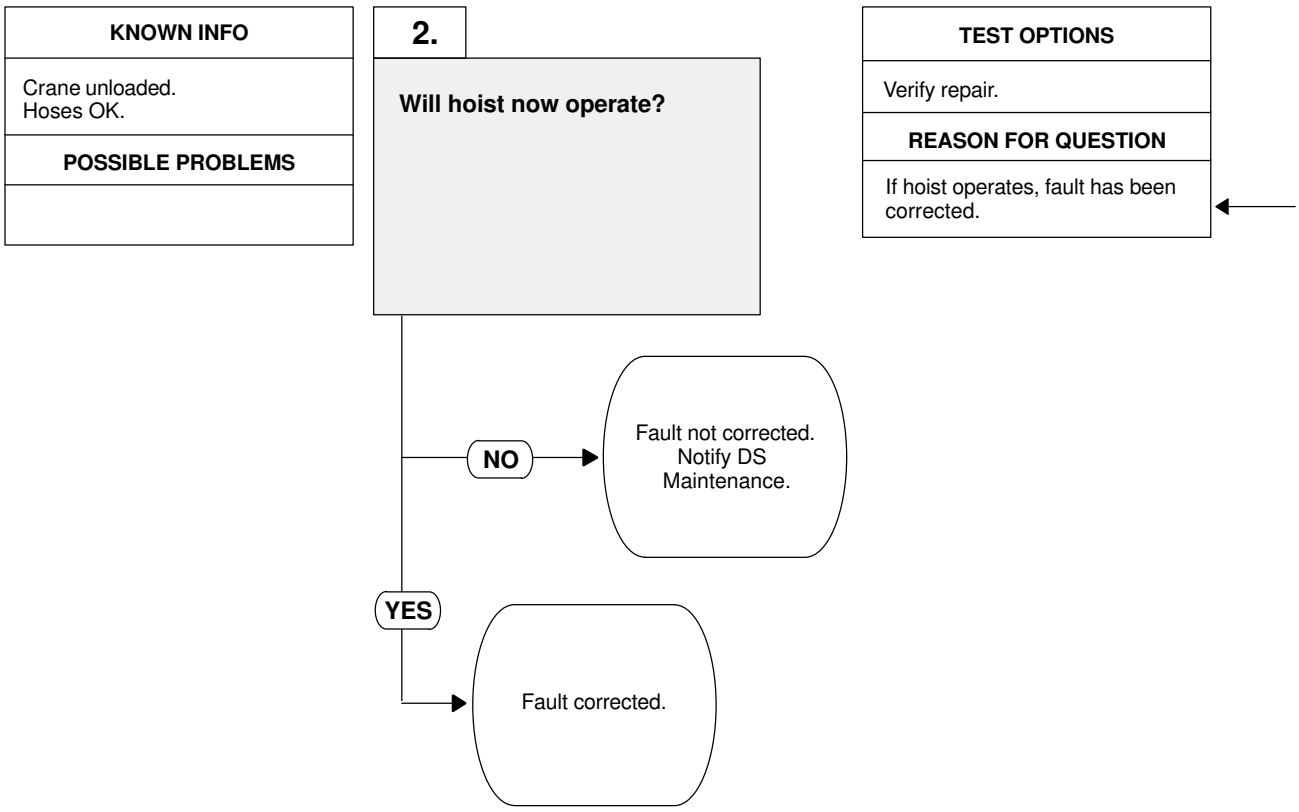


VISUAL INSPECTION

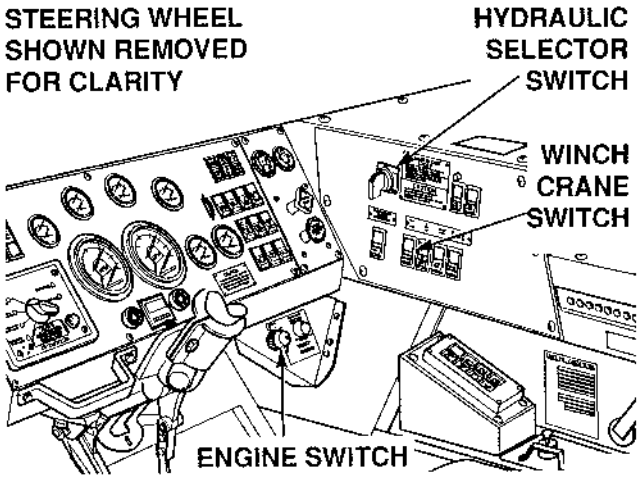
Inspect hoses and tubes between HOIST valve and hoist motor manifold, hose between manifold and motor and hose between motor and brake for damage, crimps or leaks.

(1) If hoses are damage, crimps or leaks secure loose fittings repair hose (Para 20-3 and schematic Fig 2-62).
(2) If hoses are not crimped or leaking, notify DS Maintenance.

14. HOIST DOES NOT OPERATE (CONT).



VERIFY REPAIR
Operate crane (TM 9-2320-364-10). (1) If hoist does not operate, fault not corrected, notify DS Maintenance. (2) If hoist operates, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

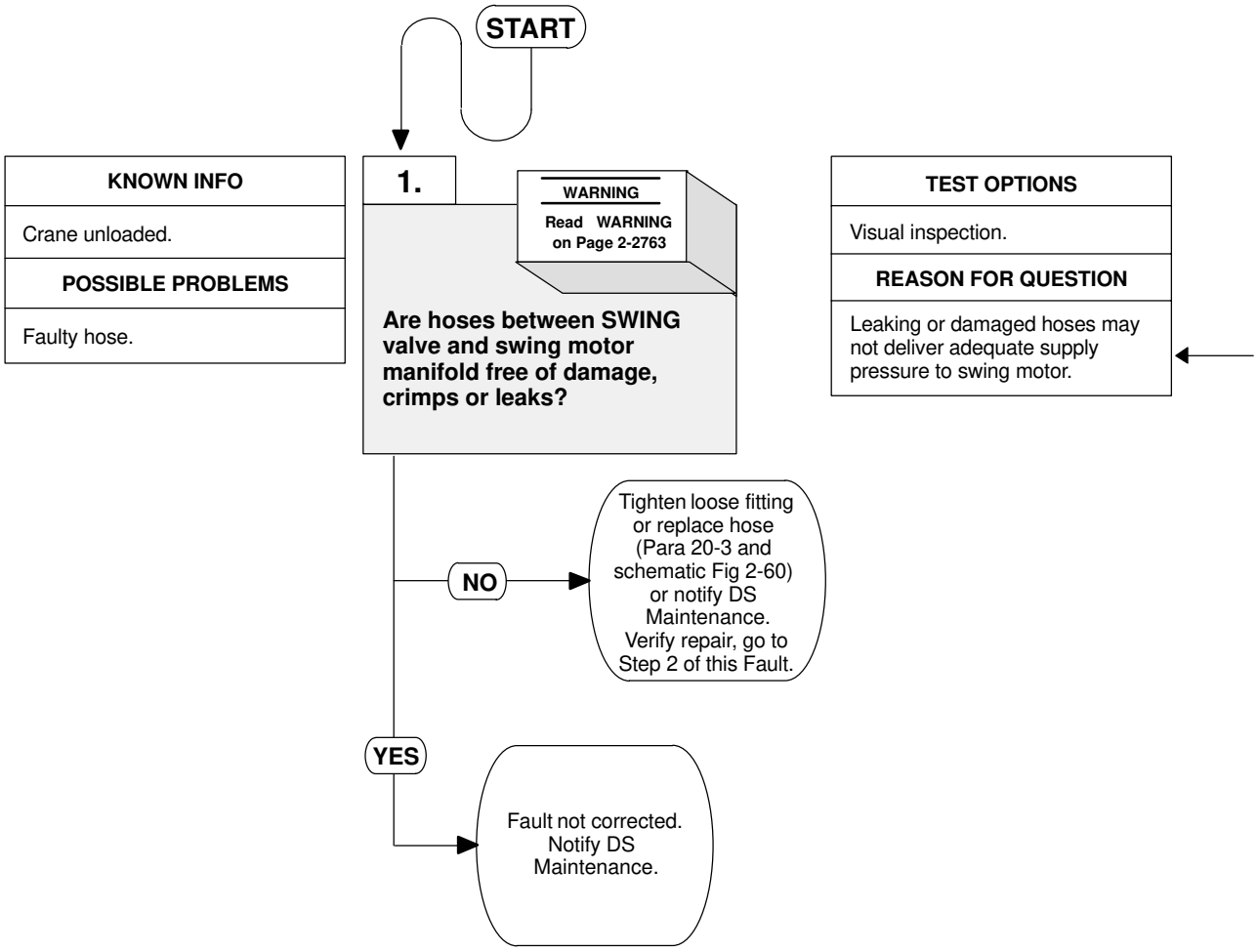
15. CRANE DOES NOT SWING.

INITIAL SETUP

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

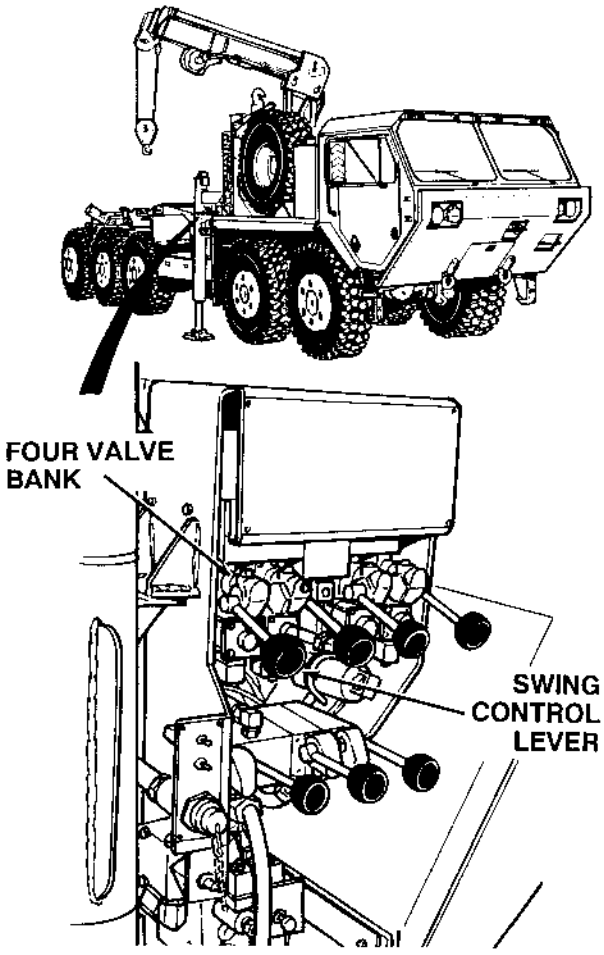
References
TM 9-2320-364-10

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Outriggers down with weight off truck suspension, (TM 9-2320-364-10)



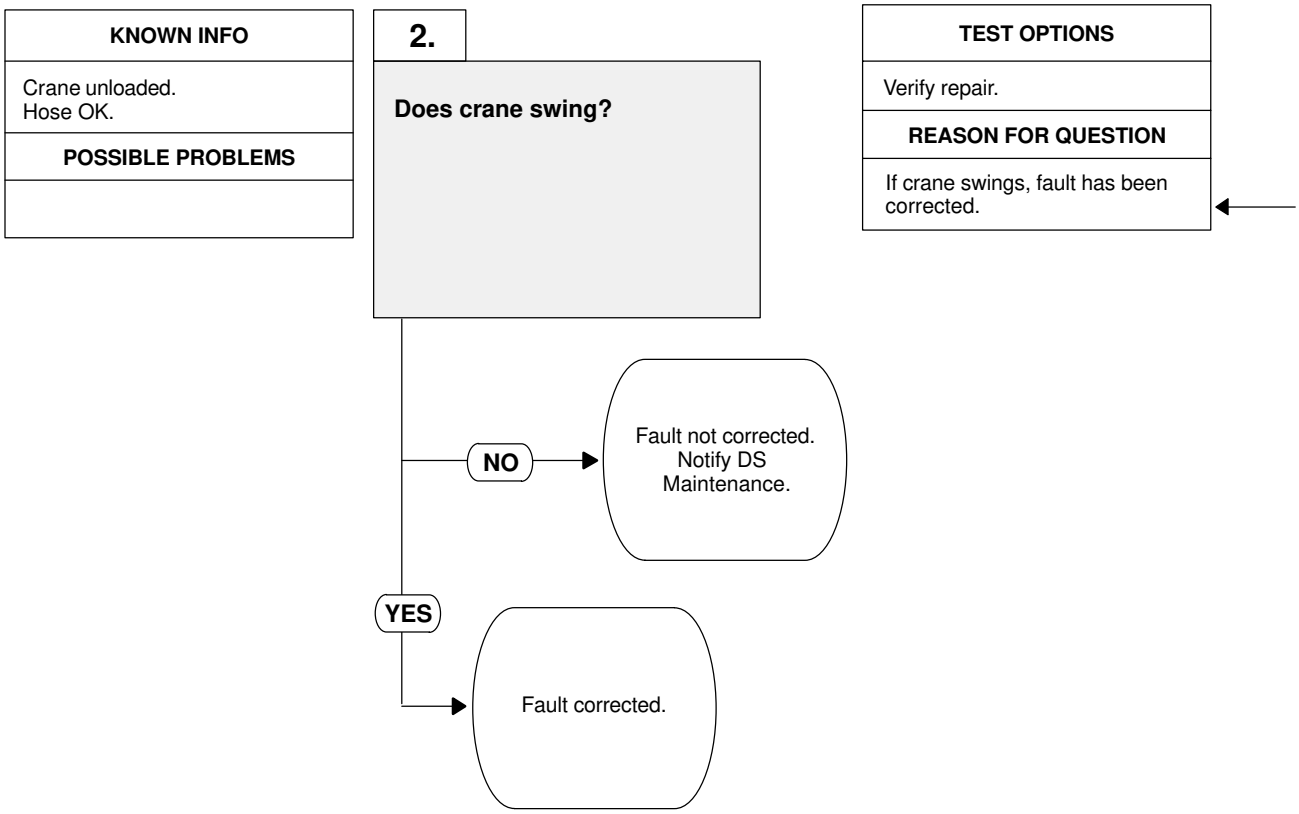
WARNING

High pressure hydraulics [oil under 3100 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.

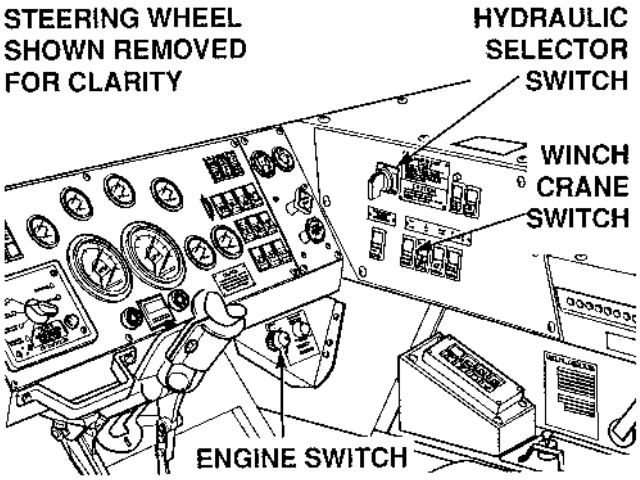


VISUAL INSPECTION
Inspect hoses between SWING valve and swing motor manifold for damage, crimps or leaks. (1) If hoses are damaged, crimped or leaking secure loose fittings repair hose (Para 20-3 and schematic Fig 2-60) or notify DS Maintenance. (2) If hoses are not damaged, crimped or leaking, notify DS Maintenance.

15. CRANE DOES NOT SWING (CONT).



VERIFY REPAIR
Operate crane (TM 9-2320-364-10). (1) If crane will not swing, fault not corrected. Notify DS Maintenance. (2) If crane swings, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

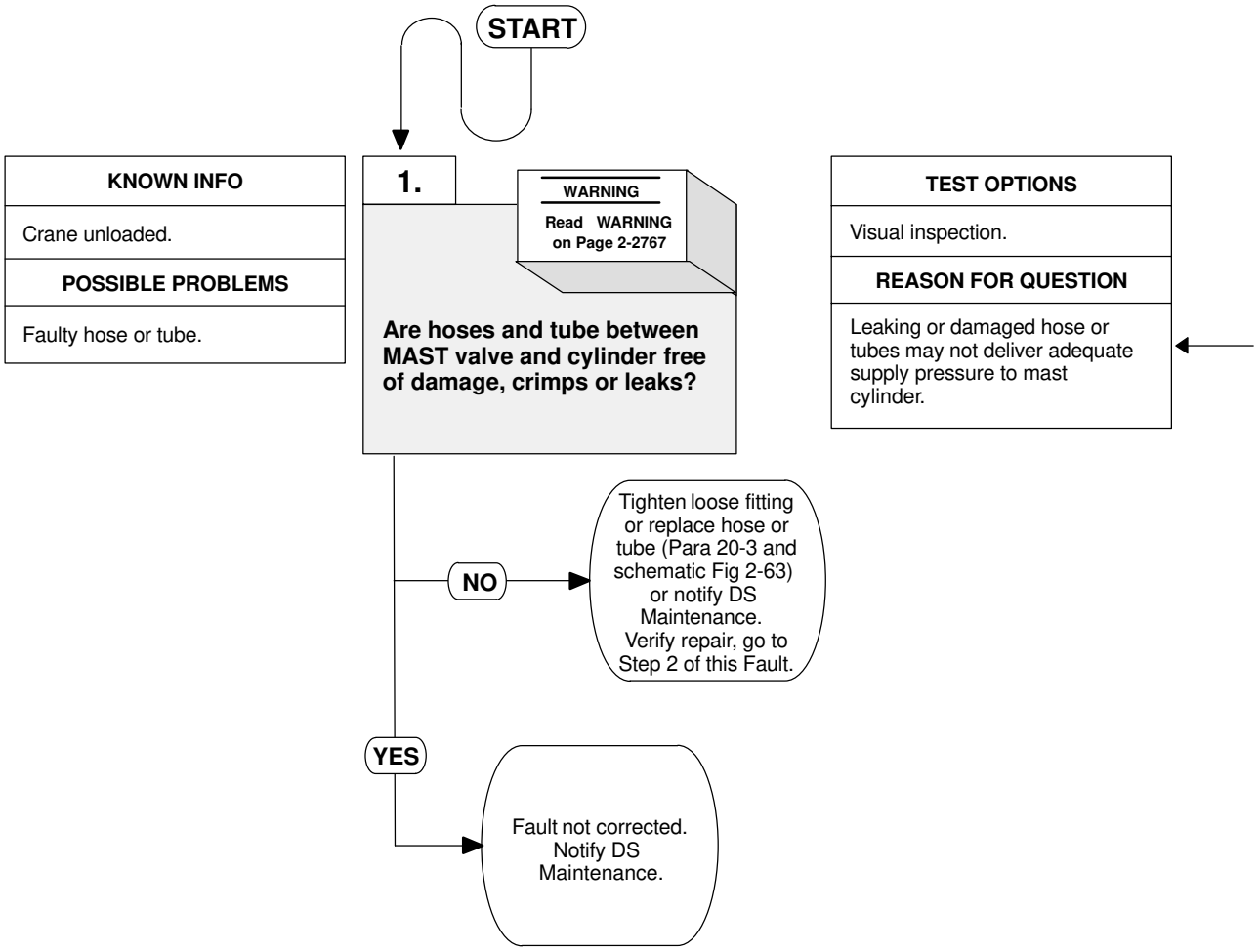
16. MAST DOES NOT OPERATE.

INITIAL SETUP

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

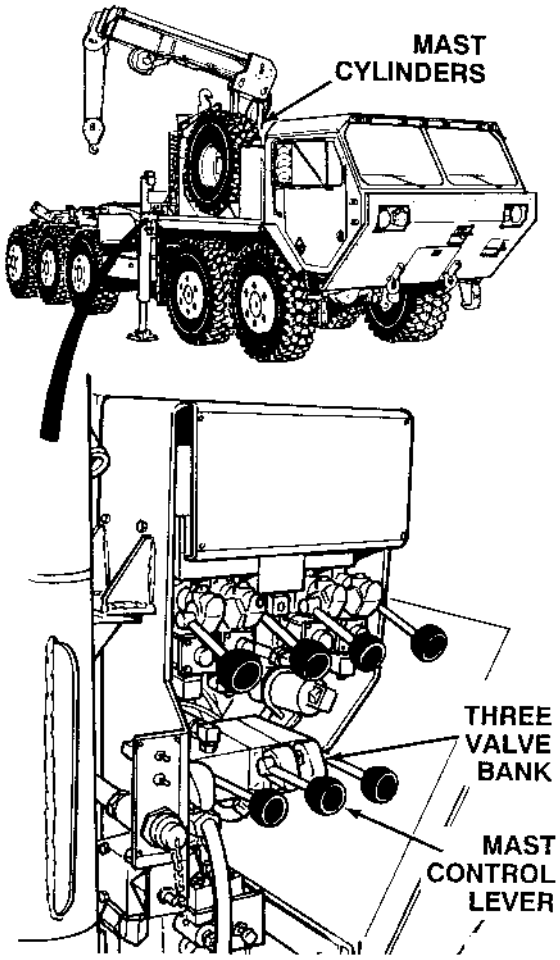
References
TM 9-2320-364-10

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Outriggers down with weight off truck suspension, (TM 9-2320-364-10)



WARNING

High pressure hydraulics [oil under 3100 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.



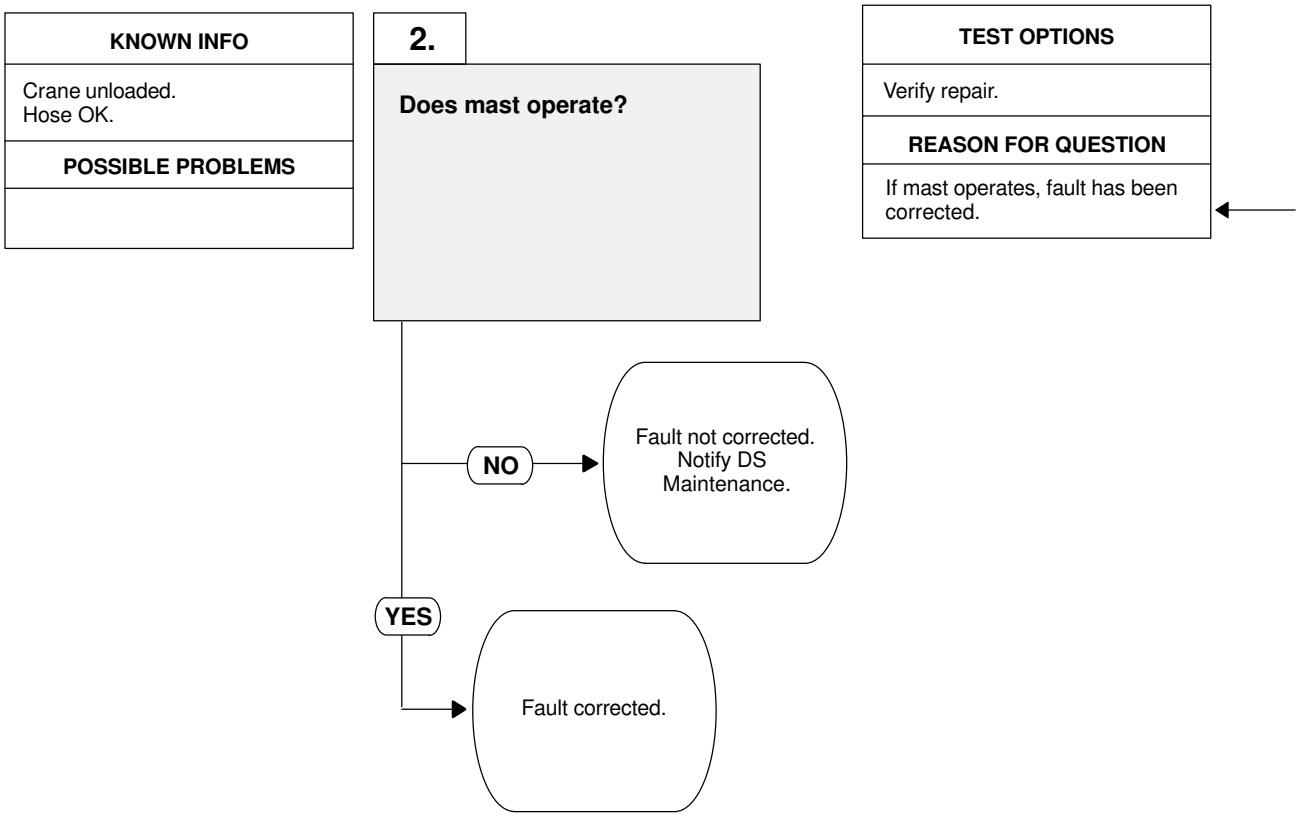
VISUAL INSPECTION

Inspect hoses and tube between mast control valve and cylinder for damage, crimps or leaks.

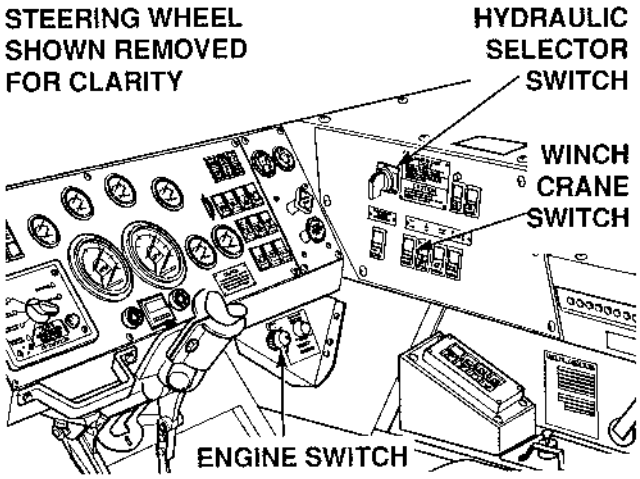
(1) If hoses are damaged, crimped or leaking secure loose fittings or repair hose (Para 20-3 and schematic Fig 2-63) or notify DS Maintenance.

(2) If hoses are not damaged, crimped or leaking, notify DS Maintenance.

16. MAST DOES NOT OPERATE (CONT).



VERIFY REPAIR
Operate crane (TM 9-2320-364-10). (1) If mast does not operate, fault not corrected. Notify DS Maintenance. (2) If mast operates, fault has been corrected.



2-29. CRANE TROUBLESHOOTING (CONT).

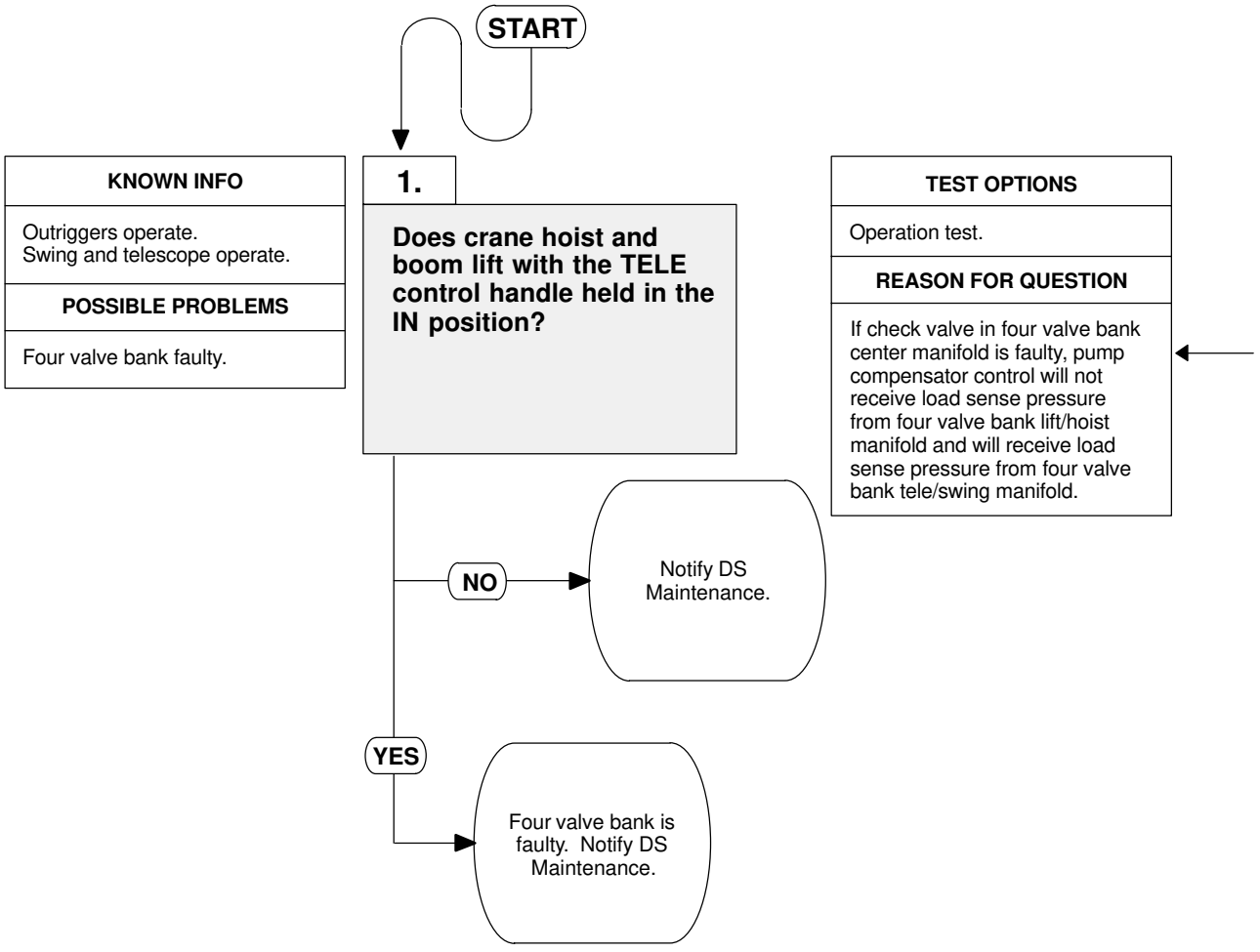
17. LIFT AND HOIST DO NOT OPERATE OR OPERATE SLOWLY.

INITIAL SETUP

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

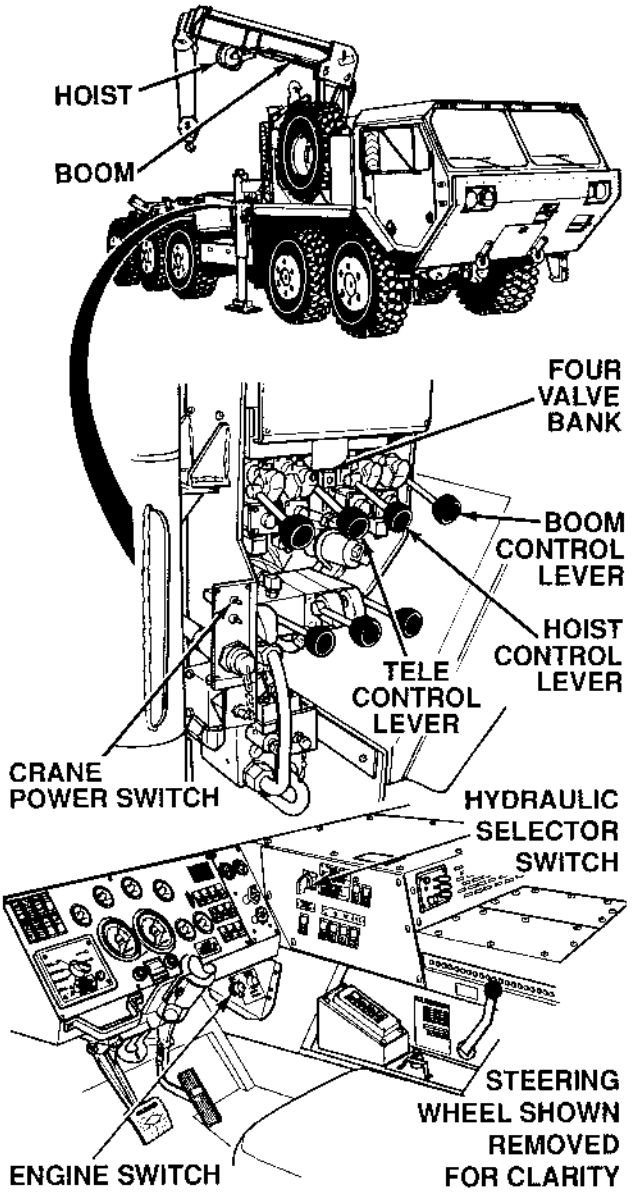
References
TM 9-2320-364-10

Equipment Condition
Engine Off, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Outriggers down with weight off vehicle suspension, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)



OPERATION TEST

(1) Attempt to operate hoist and then boom lift using HOIST and BOOM control levers while holding TELE control lever in the IN position (TM 9-2320-364-10).
   (a) If hoist and boom lift do not operate, perform Steps (2) through (4) below and notify DS Maintenance.
   (b) If hoist and boom do operate, check valve in four valve bank center manifold is faulty. Perform Steps (2) through (4) below and notify DS Maintenance.
(2) Set crane power switch to OFF position.
(3) Set hydraulic selector switch to OFF position.
(4) Turn OFF ENGINE switch.



2-29. CRANE TROUBLESHOOTING (CONT).

18. SWING AND TELESCOPE DO NOT OPERATE OR OPERATE SLOWLY.

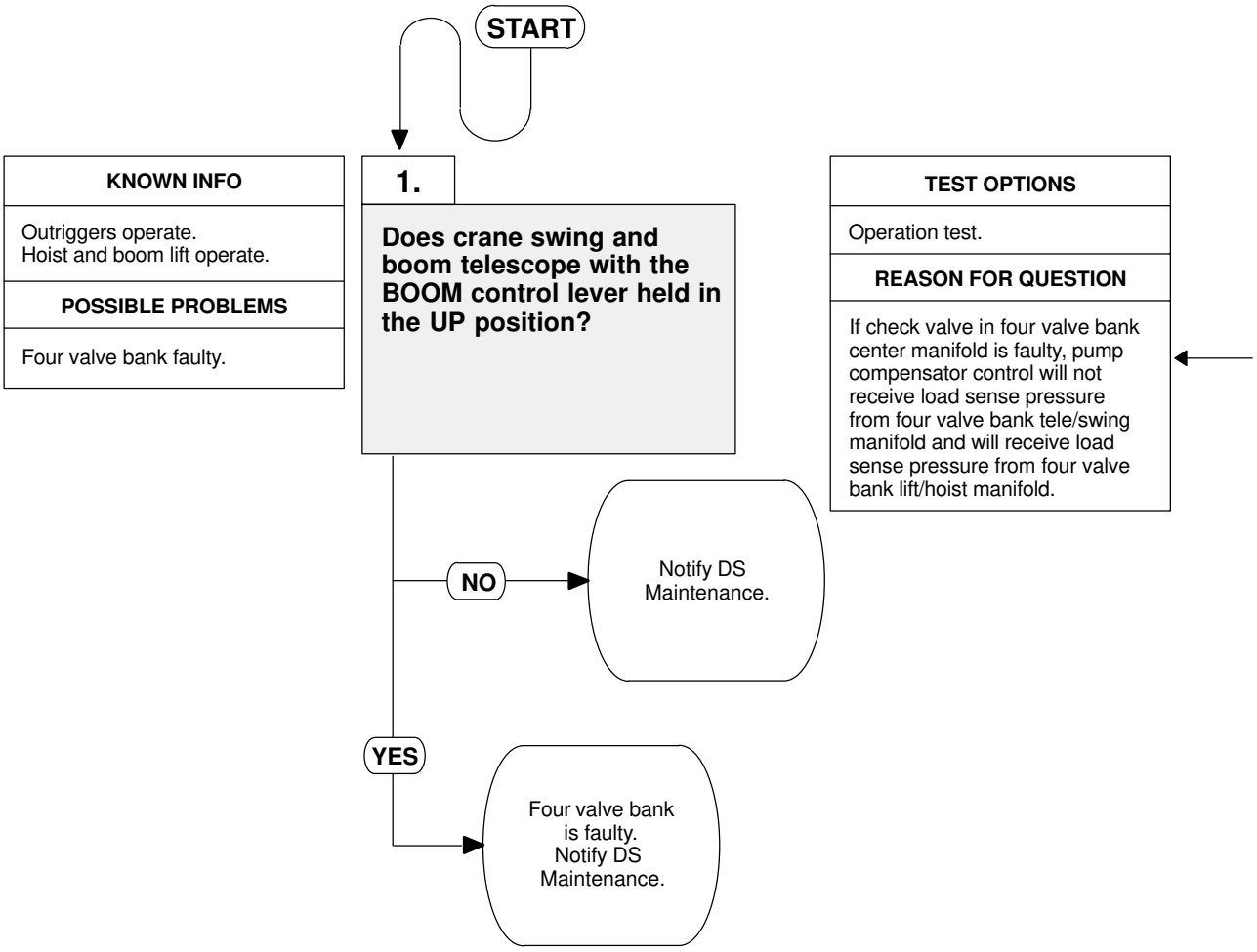
INITIAL SETUP

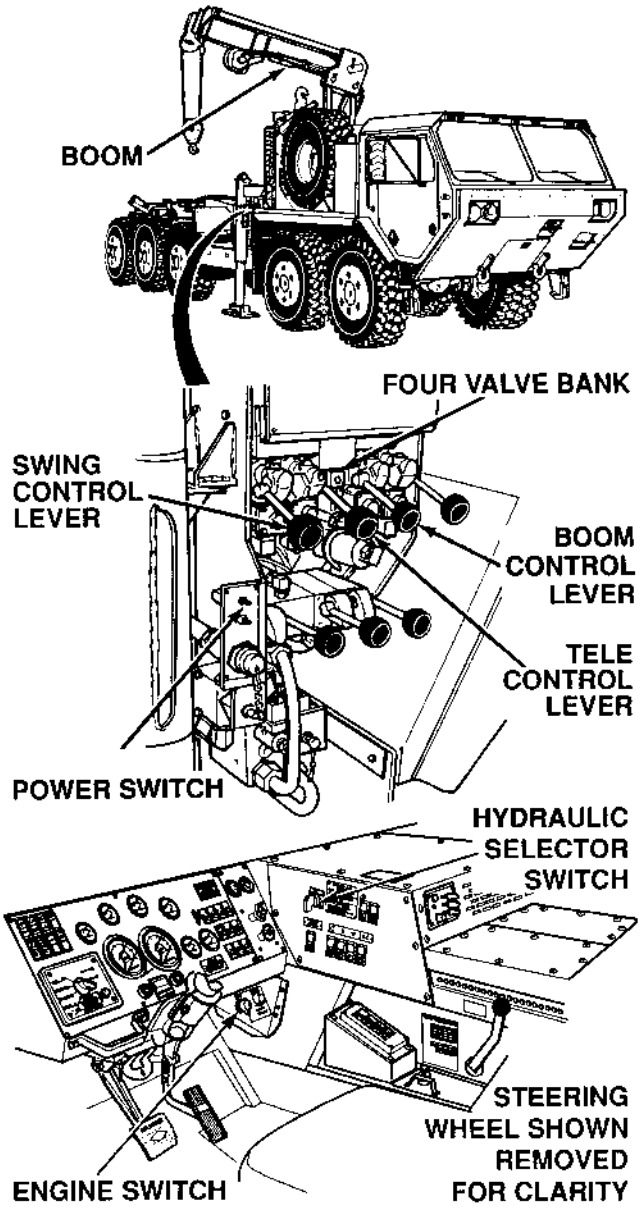
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Personnel Required
Two

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)
Outriggers down with weight off vehicle suspension, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)





OPERATION TEST

(1) With aid of assistant, attempt to swing crane and then telescope boom using SWING and TELE control levers while holding BOOM control lever in the UP position (TM 9-2320-364-10).
   (a) If swing and telescope do not operate, perform Steps (2) through (4) below and notify DS Maintenance.
   (b) If swing and telescope operate, shuttle valve in four valve bank center manifold is faulty. Perform Steps (2) through (4) below and Notify DS Maintenance.
(2) Set crane power switch to OFF position.
(3) Set hydraulic selector switch to OFF position.
(4) Turn OFF ENGINE switch.

2-29. CRANE TROUBLESHOOTING (CONT).

19. CRANE HIGH IDLE NOT WORKING.

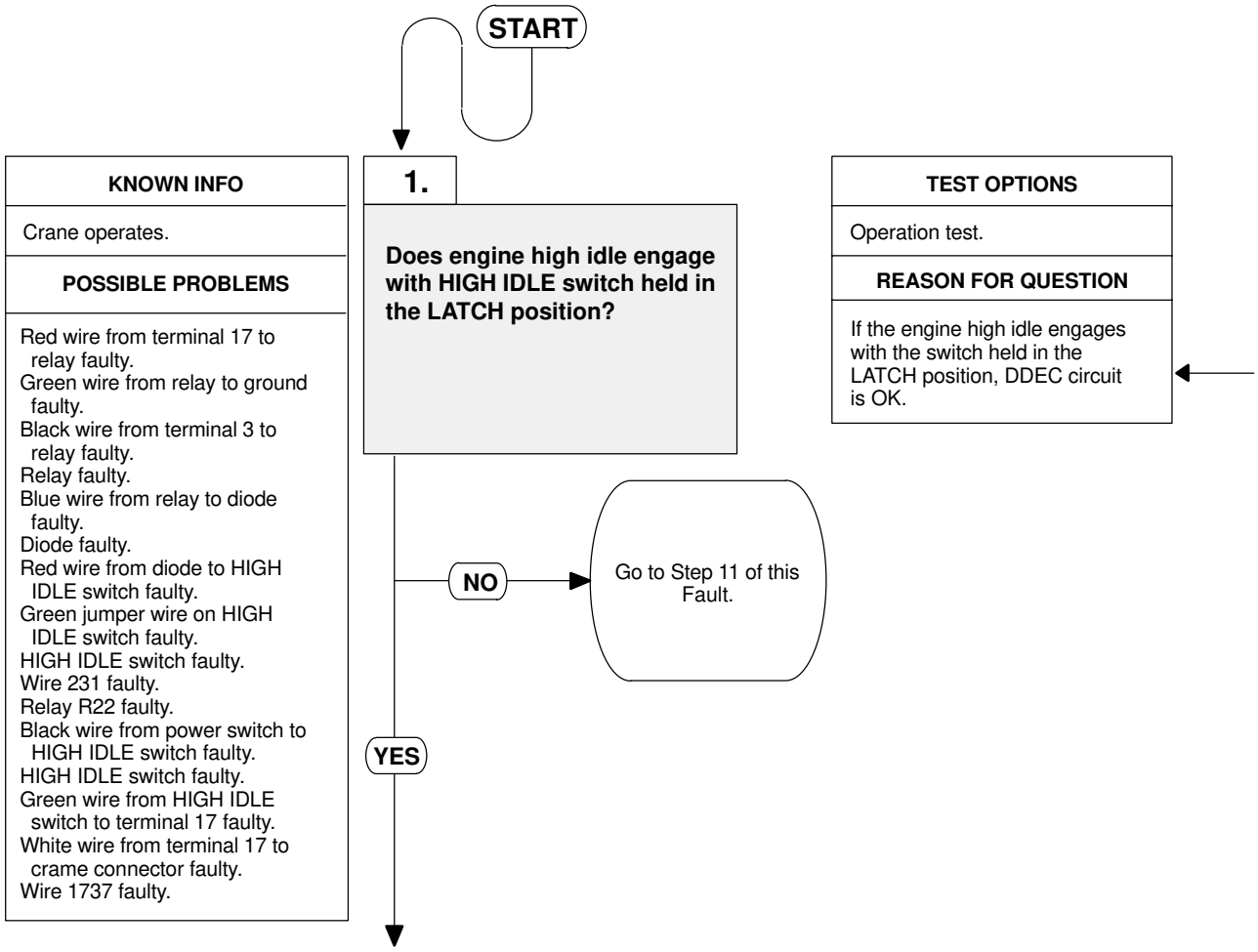
INITIAL SETUP

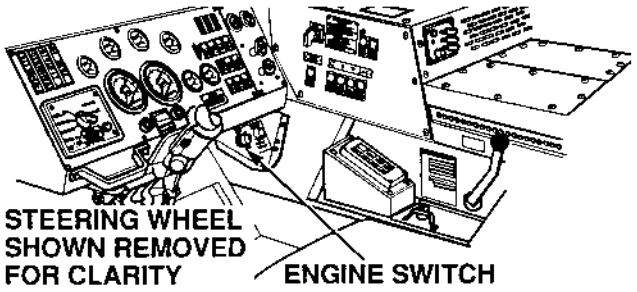
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)
Rivet Gun (Item 58, Appendix G)

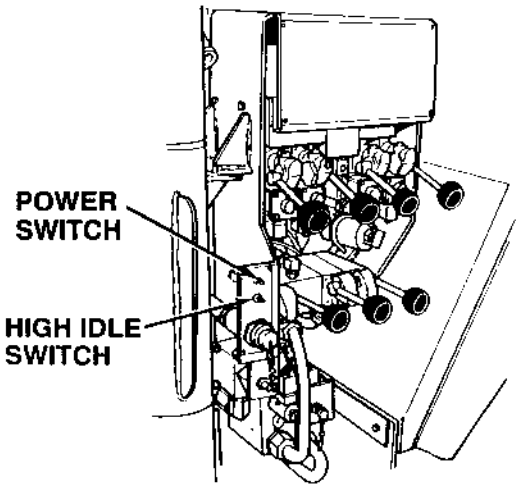
Personnel Required
Two

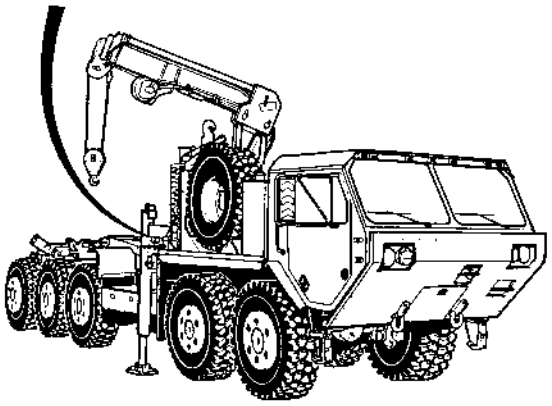
References
TM 9-2320-364-10
TM 9-4910-571-12&P

Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Crane outriggers down, (TM 9-2320-364-10)
Mast fully erected, (TM 9-2320-364-10)









OPERATION TEST

(1) Start engine (TM 9-2320-364-10).
(2) Set crane POWER switch to ON position.
(3) Hold HIGH IDLE switch in LATCH position.
    (a) If engine high idle does not engage perform Steps (4) and (5) below and go to Step 11 of this Fault.
    (b) If engine high idle engages, perform Steps (4) and (5) below and go to Step 2 of this Fault.
(4) Set crane POWER switch to OFF position.
(5) Turn OFF ENGINE switch.

19. CRANE HIGH IDLE NOT WORKING (CONT).

KNOWN INFO

Crane operates.

POSSIBLE PROBLEMS

Red wire from terminal 17 to relay faulty.
Green wire from relay to ground faulty.
Black wire from terminal 3 to relay faulty.
Relay faulty.
Blue wire from relay to diode faulty.
Diode faulty.
Red wire from diode to HIGH IDLE switch faulty.
Green jumper wire on HIGH IDLE switch faulty.
HIGH IDLE switch faulty.
Wire 231 faulty.
Relay R22 faulty.
Black wire from power switch to HIGH IDLE switch faulty.
HIGH IDLE switch faulty.
Green wire from HIGH IDLE switch to terminal 17 faulty.
White wire from terminal 17 to crane connector faulty.
Wire 1737 faulty.

2.

WARNING

Read WARNING on Page 2-2777

Is there continuity on red wire between terminal 17 and throttle relay?

NO → Repair red wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 19 of this Fault.

YES

TEST OPTIONS

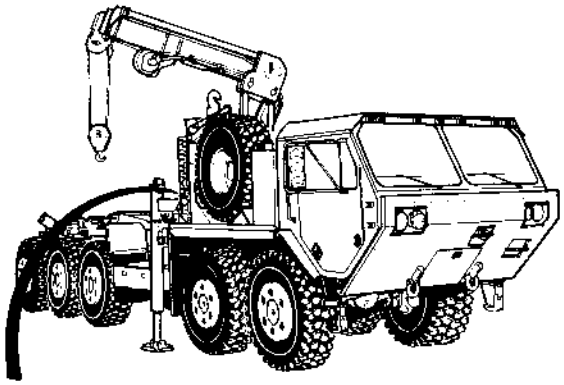
Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If red wire is loose, faulty, or shorted to ground, 22 to 28 VDC will not be input to throttle relay.

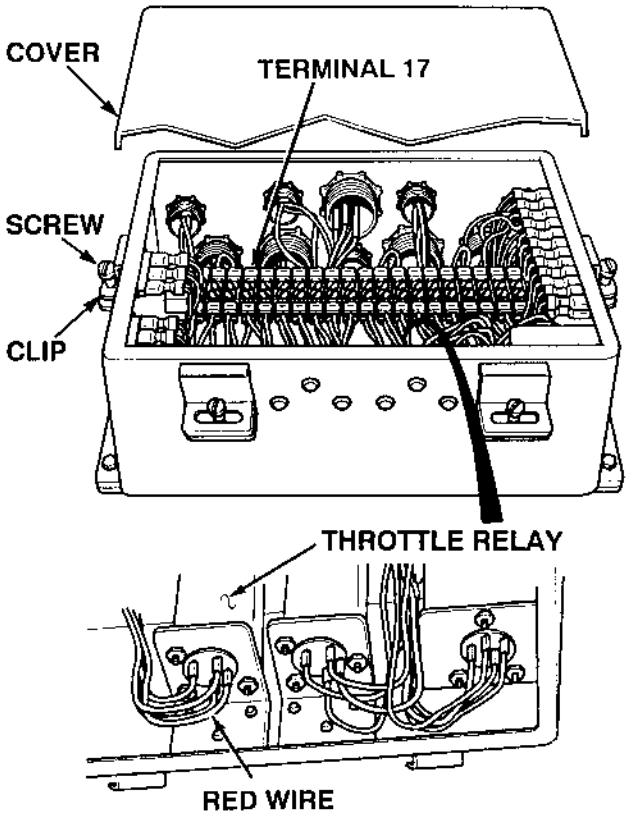
WARNING

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.

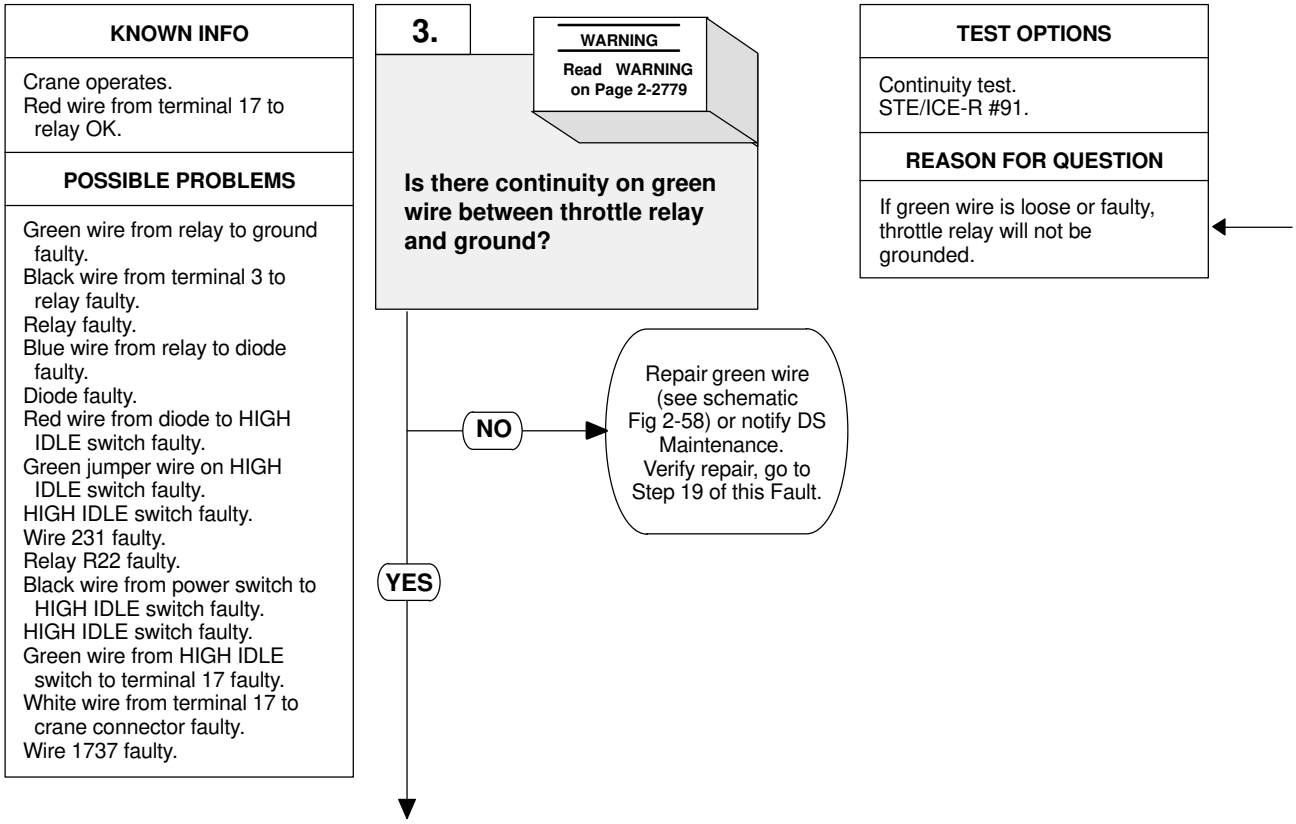


CONTINUITY TEST

(1) Loosen six screws, clips and remove crane junction box cover.
(2) Set multimeter select switch to ohms.
(3) Is there continuity on red wire between throttle relay and terminal 17?
   (a) If there is no continuity, repair red wire (see schematic Fig 2-58) or notify DS Maintenance.
   (b) If there is continuity, go to Step 3 of this Fault.

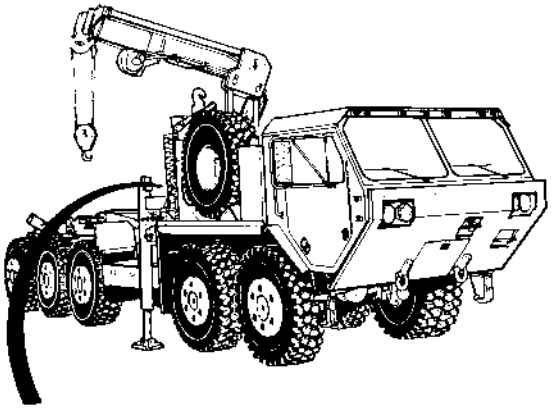


19. CRANE HIGH IDLE NOT WORKING (CONT).

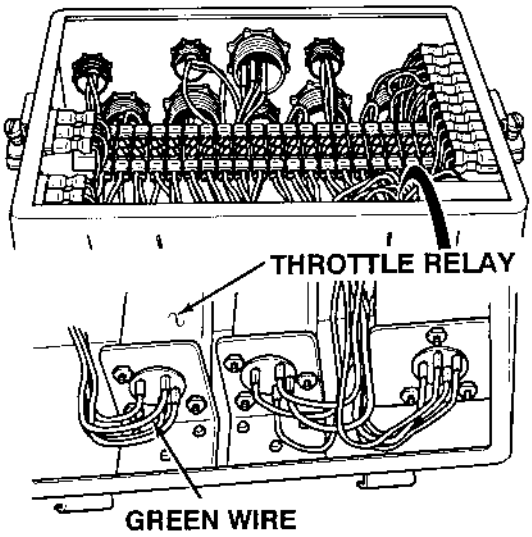


WARNING

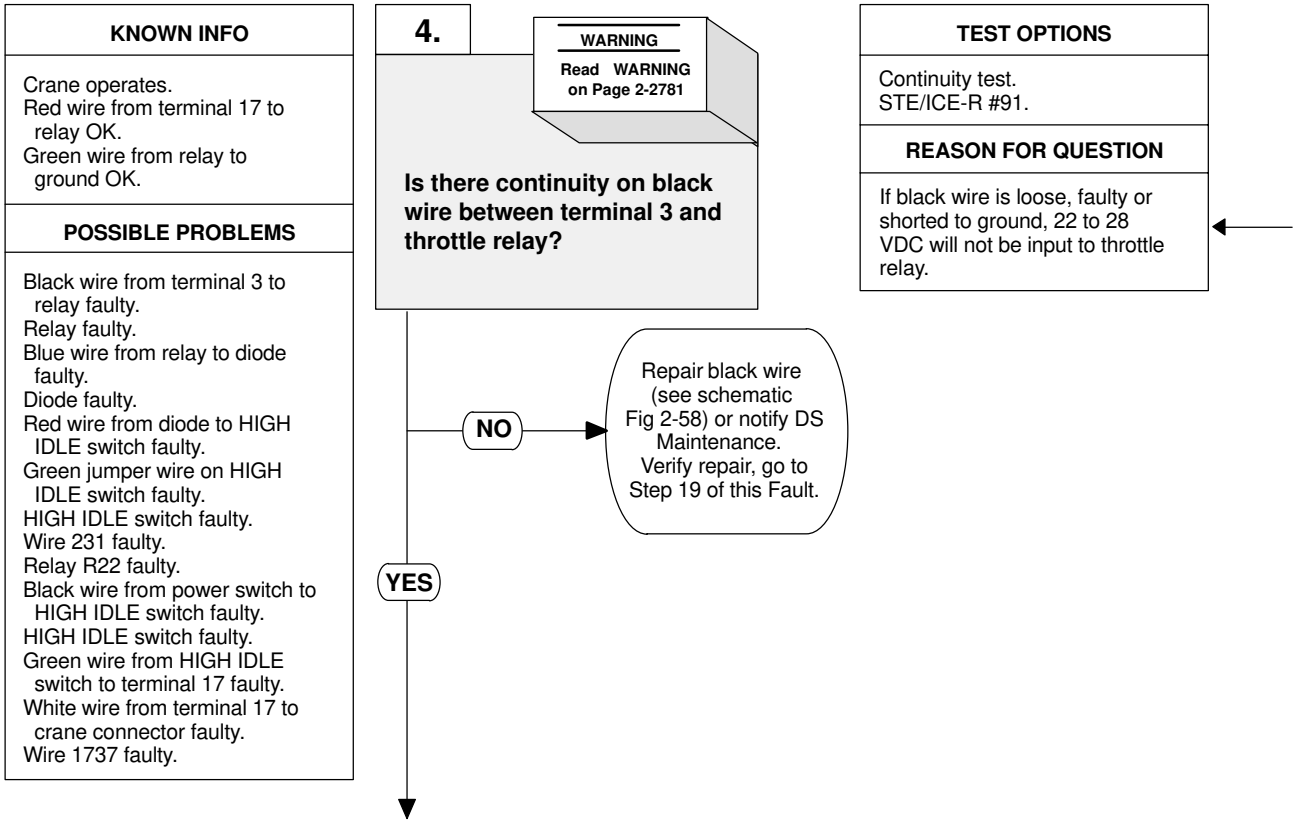
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



CONTINUITY TEST
Is there continuity on green wire between throttle relay and a known good ground? (1) If there is no continuity, repair green wire (see schematic Fig 2-58) or notify DS Maintenance. (2) If there is continuity, go to Step 4 of this Fault.



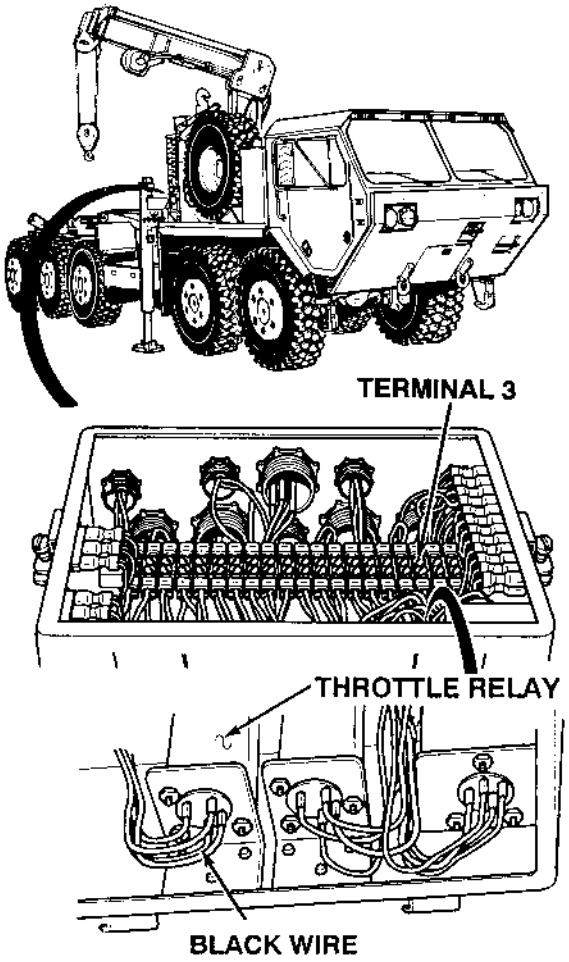
19. CRANE HIGH IDLE NOT WORKING (CONT).



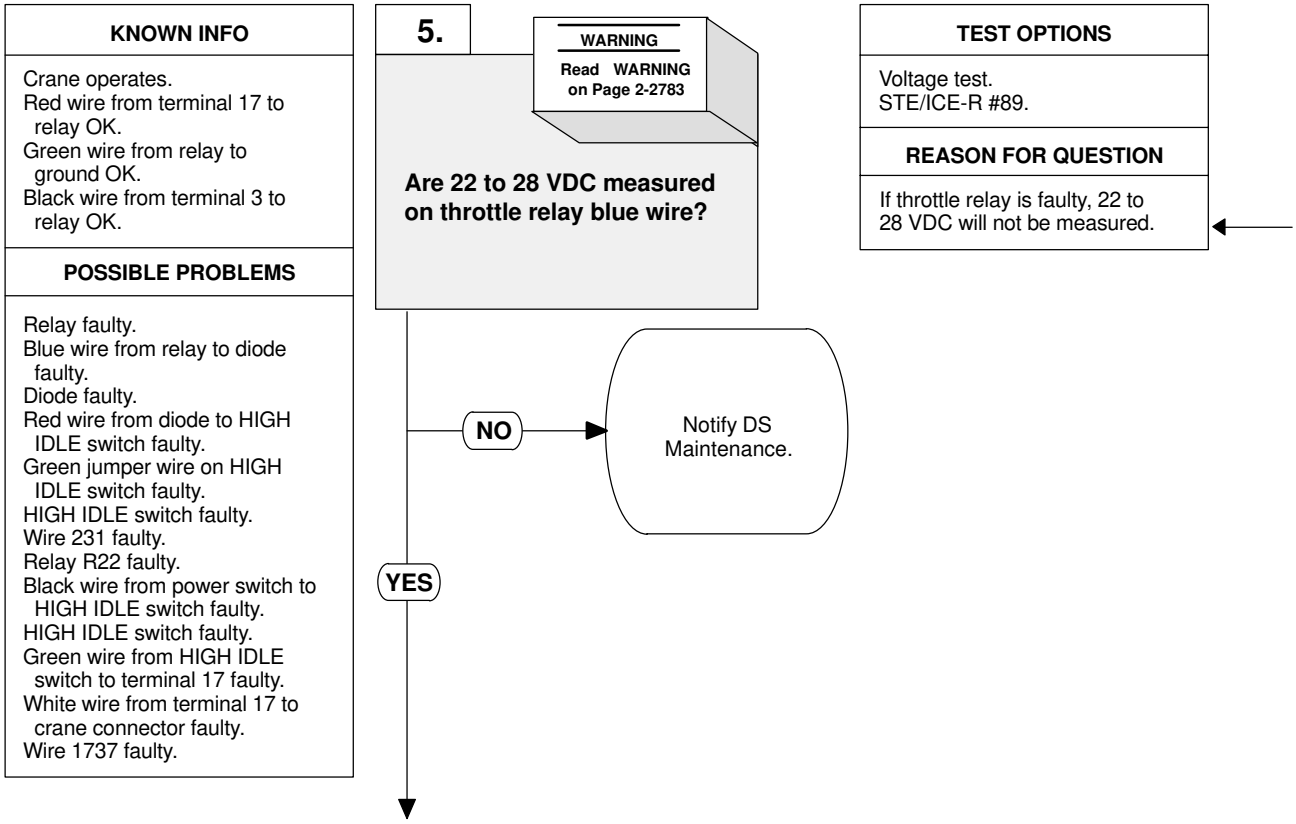
WARNING

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
Is there continuity on black wire between terminal 3 and throttle relay? (1) If there is no continuity, repair black wire (see schematic Fig 2-58) or notify DS Maintenance. (2) If there is continuity, go to Step 5 of this Fault.

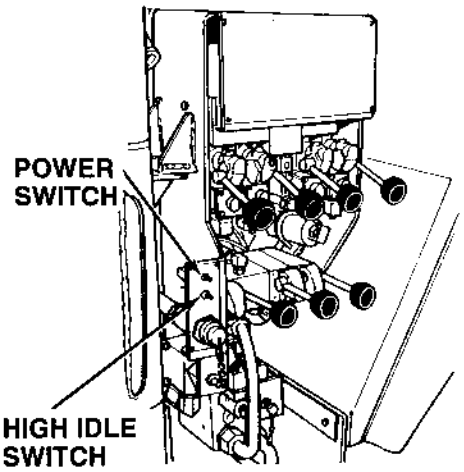


19. CRANE HIGH IDLE NOT WORKING (CONT).



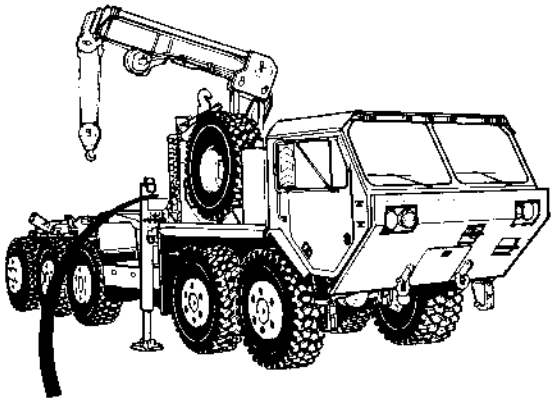
WARNING

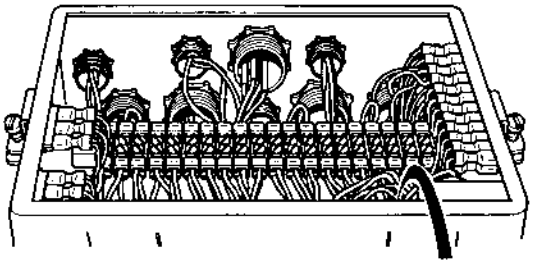
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

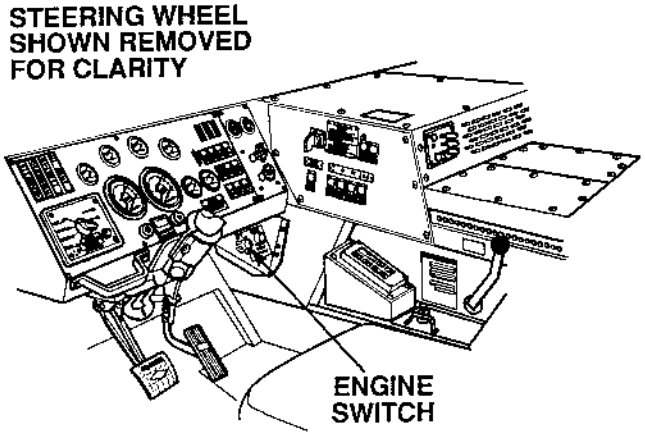


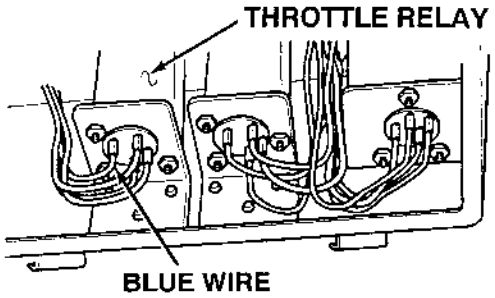
VOLTAGE TEST

(1) Set multimeter select switch to volts.
(2) Connect positive (+) multimeter lead to throttle relay at the blue wire.
(3) Connect negative multimeter (–) lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Set crane POWER switch to ON position.
(6) With the aid of an assistant, observe multimeter while HIGH IDLE switch is held in the LATCH position.
  (a) If 22 to 28 vdc are not present, perform Steps (7) and (8) below and notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (7) and (8) below and go to Step 6 of this Fault.
(7) Set crane POWER switch to OFF position.
(8) Turn OFF ENGINE switch.

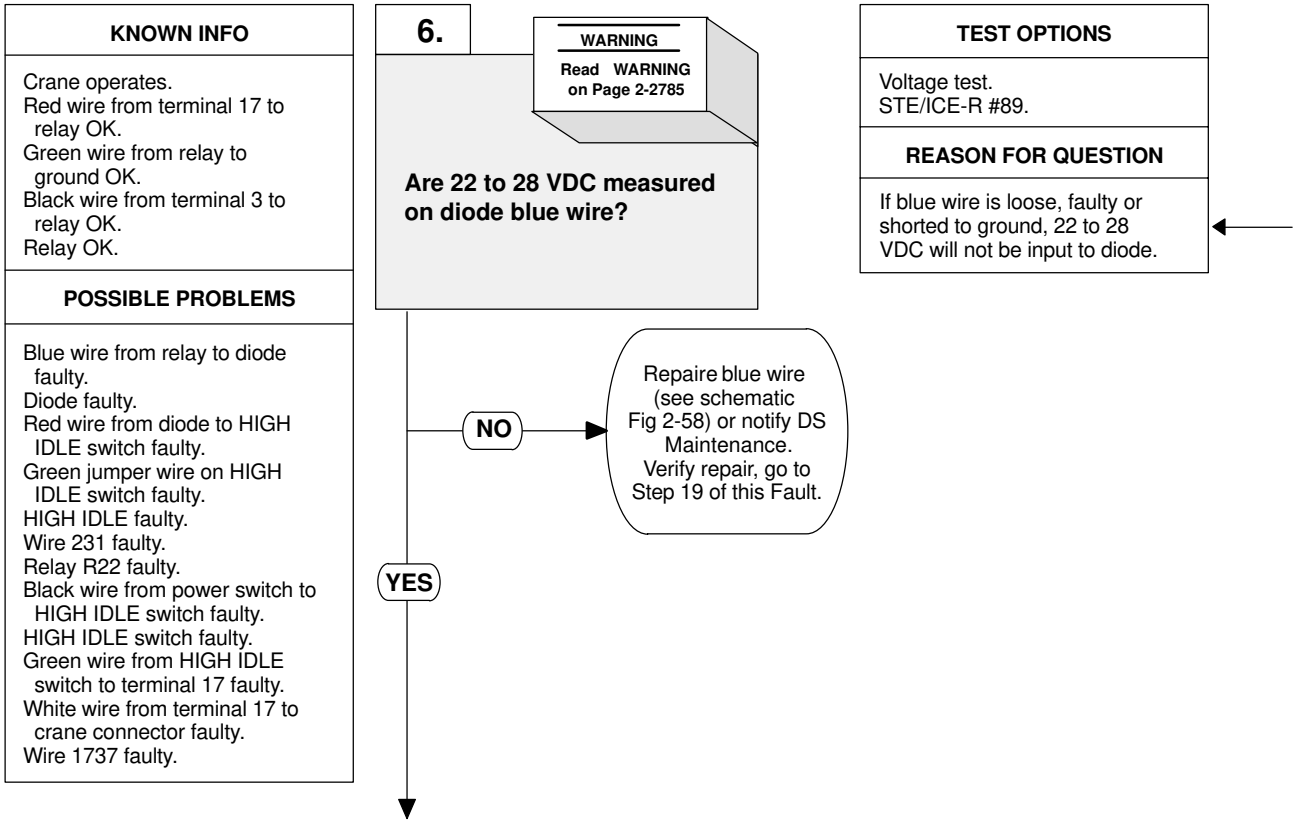








19. CRANE HIGH IDLE NOT WORKING (CONT).

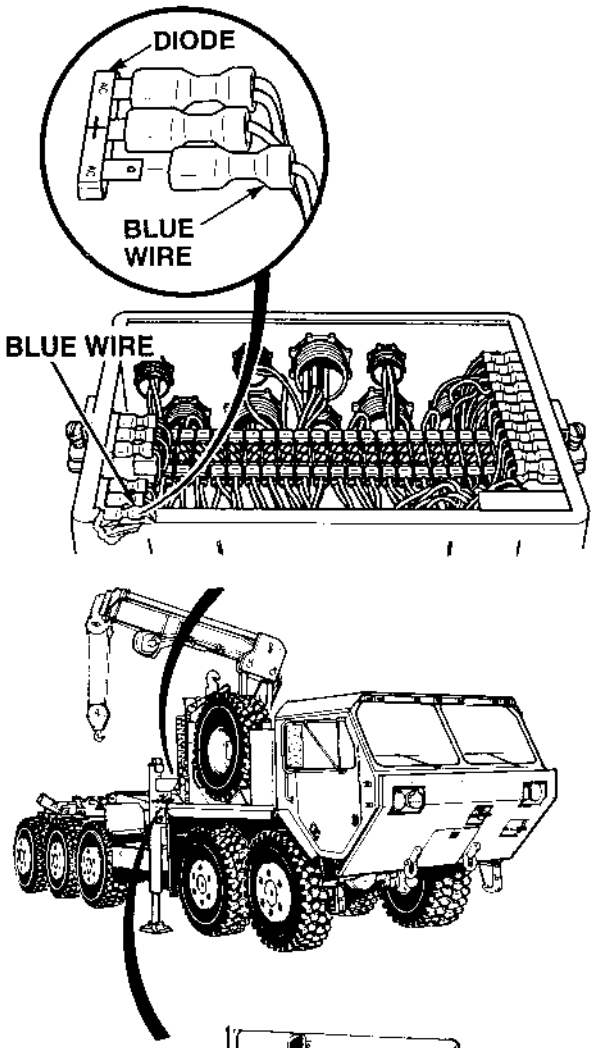


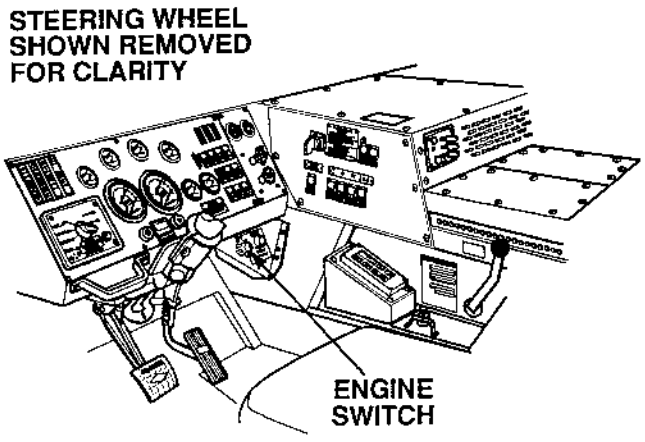
WARNING

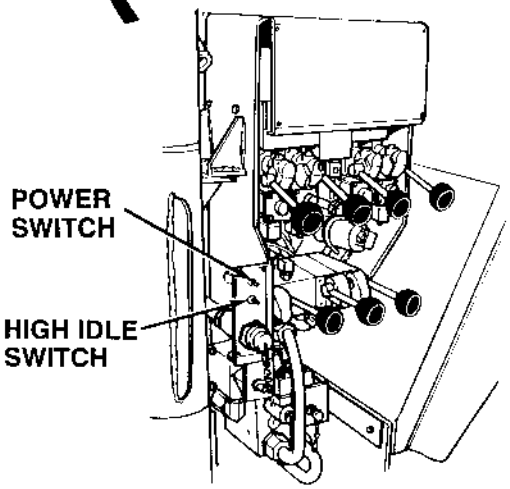
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

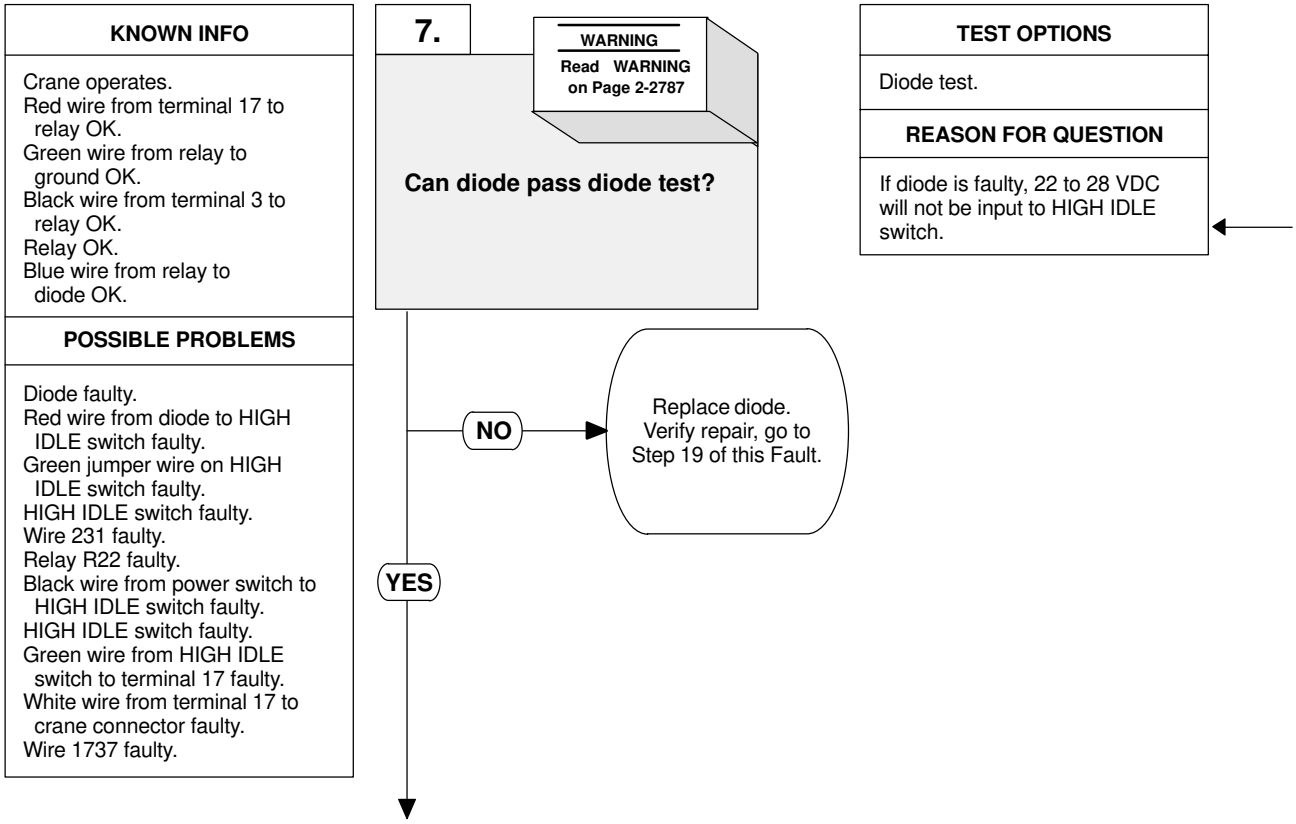
(1) Connect positive (+) multimeter lead to diode at blue wire.
(2) Connect negative multimeter (–) lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Set crane POWER switch to ON position.
(5) With the aid of an assistant, observe multimeter while HIGH IDLE switch is held in the LATCH position.
  (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair blue wire (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 7 of this Fault.
(6) Set crane POWER switch to OFF position.
(7) Turn OFF ENGINE switch.





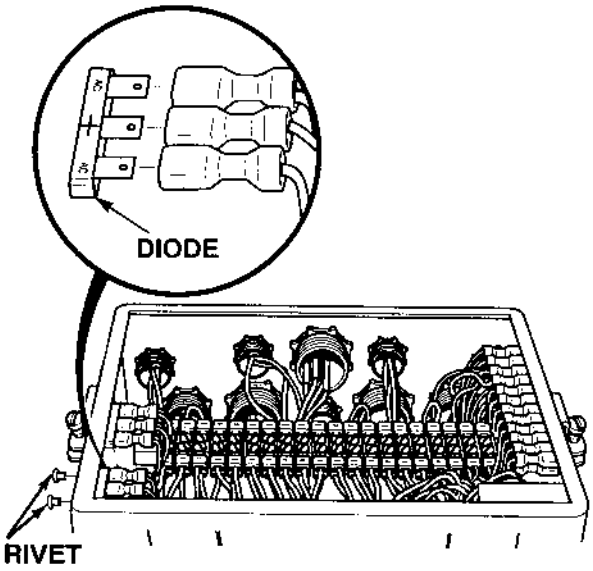


19. CRANE HIGH IDLE NOT WORKING (CONT).



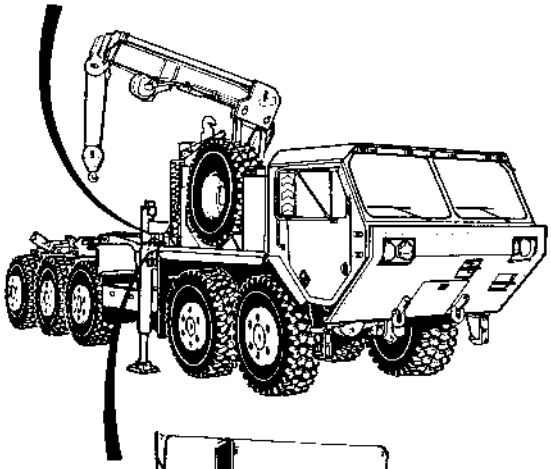
WARNING

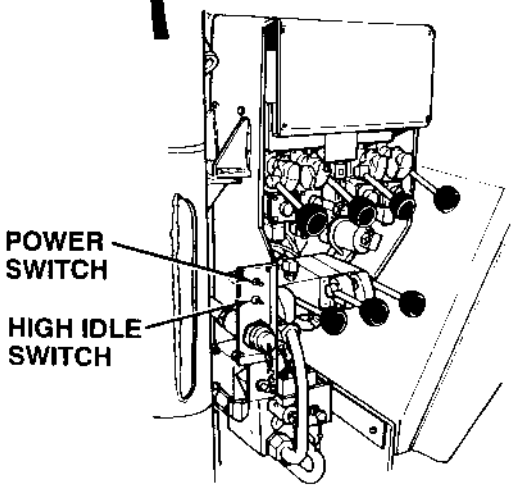
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

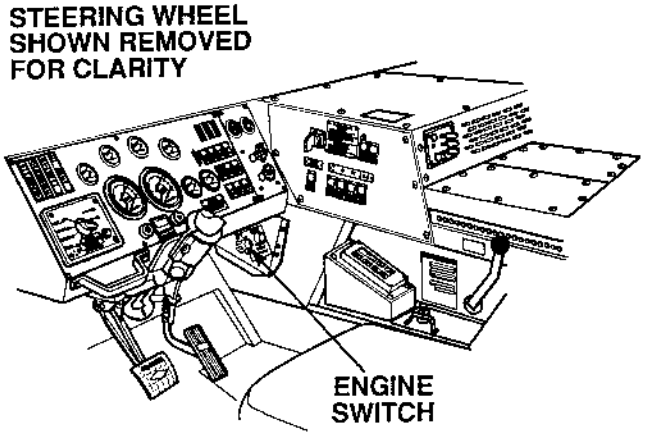


DIODE TEST

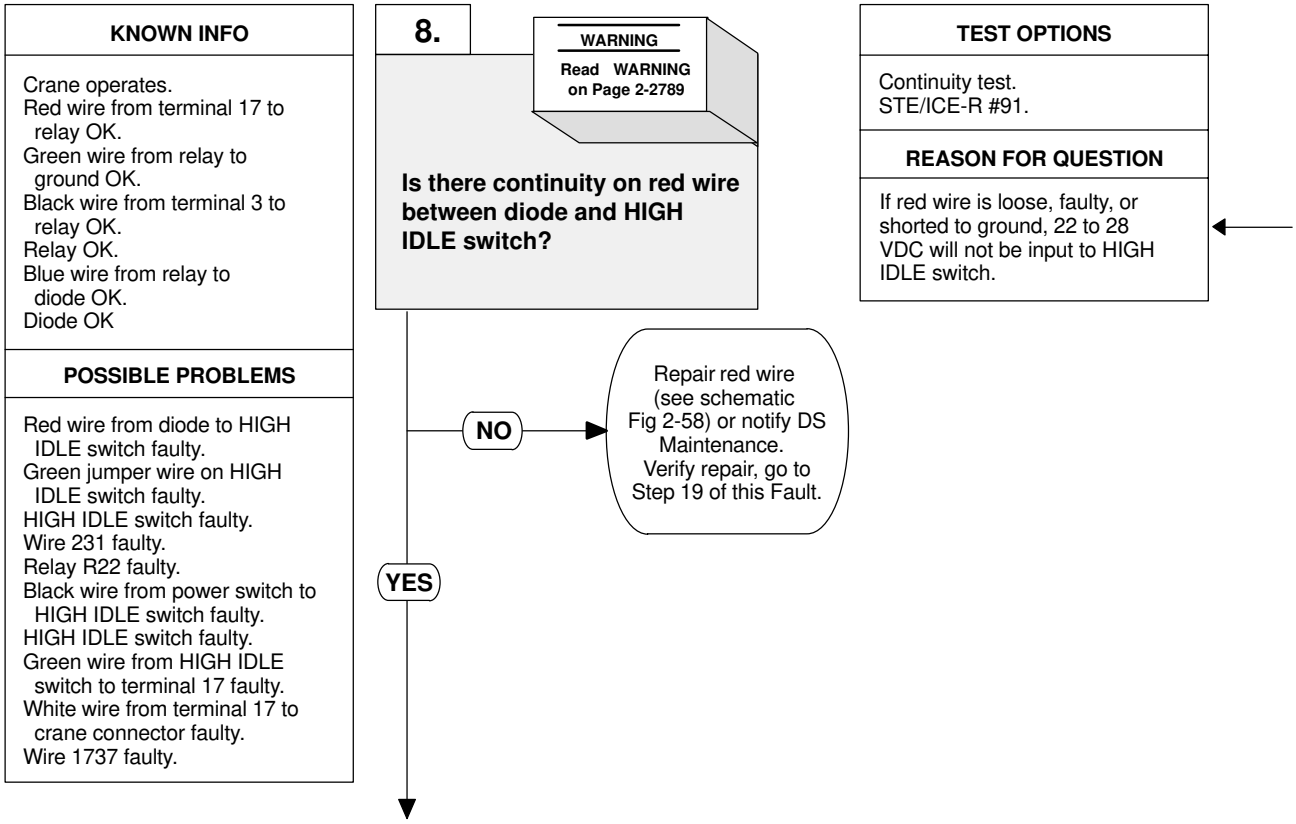
(1) Set multimeter select switch to diode test.
(2) Tag, mark and disconnect three wires from diode.
(3) Connect negative (–) multimeter lead to diode middle (+) terminal.
(4) Connect positive multimeter (+) lead to each of the AC terminals, one at a time.
  (a) If any vdc are not present, perform Steps (7) through (9) below.
  (b) If any vdc are present, go to Step (5) below.
(5) Connect positive (+) multimeter lead to diode middle (+) terminal.
(6) Connect negative multimeter (–) lead to each of the AC terminals, one at a time.
  (a) If any vdc are present at either terminal, perform Steps (7) through (9) below.
  (b) If any vdc are not present at both terminals, perform Step (9) below and go to Step 8 of this Fault.
(7) Remove two rivets and diode from junction box. Discard rivets and diode.
(8) Install new diode with rivets.
(9) Connect three wires to diode.







19. CRANE HIGH IDLE NOT WORKING (CONT).



WARNING

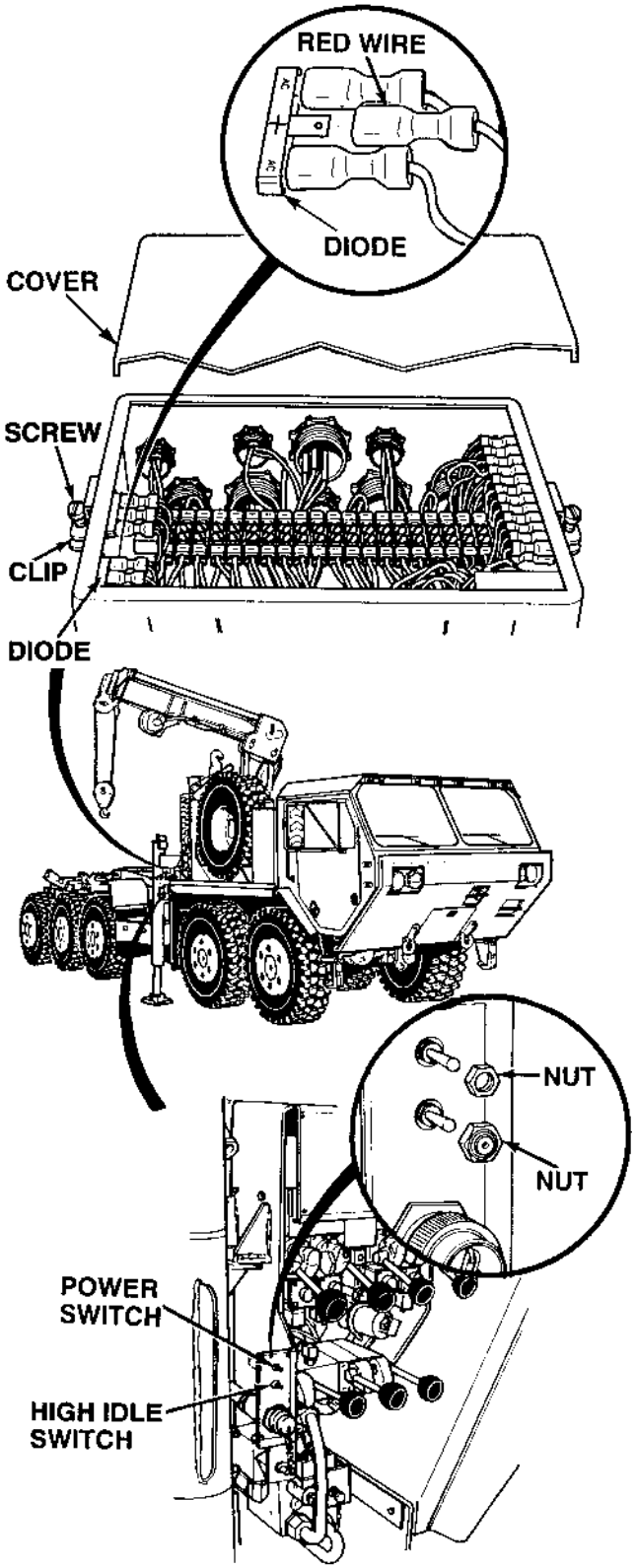
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

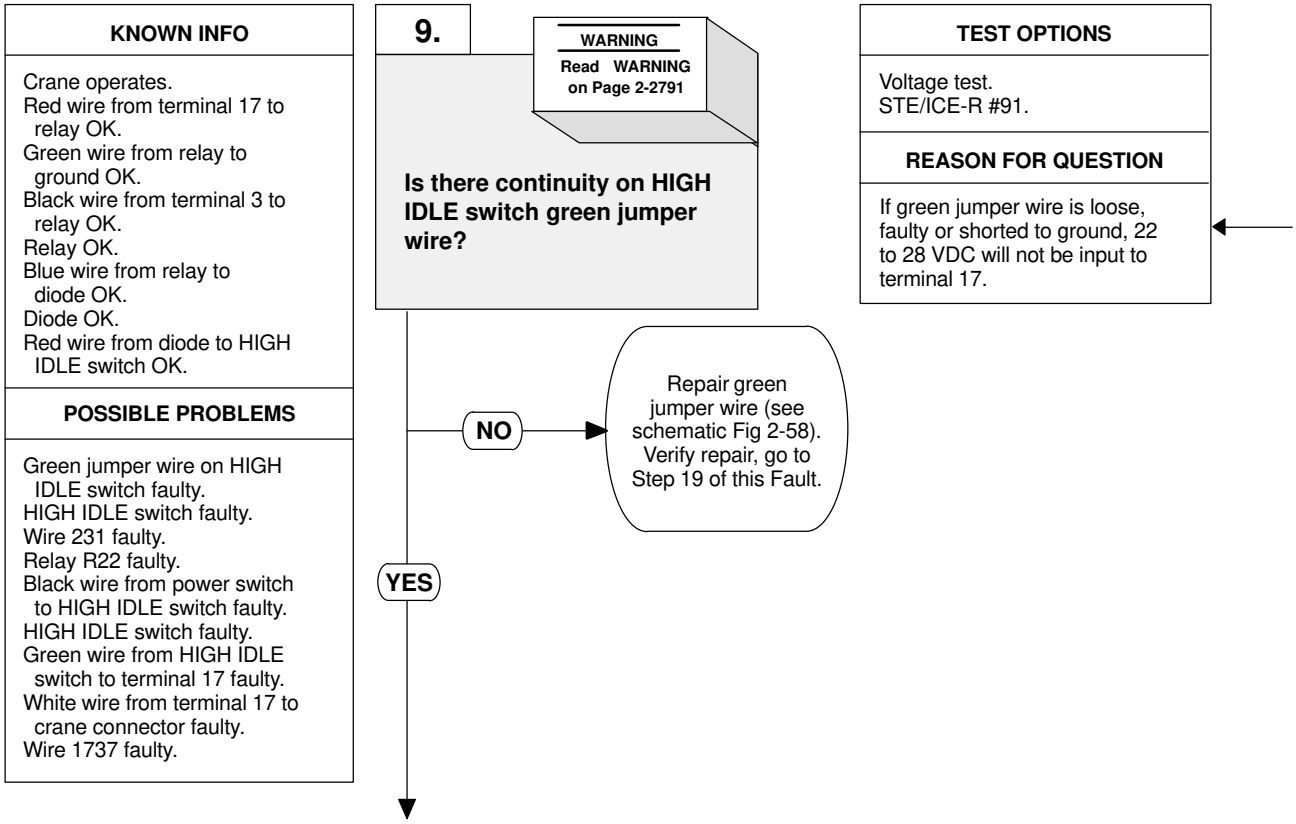
Leave all wires connected to switches.

CONTINUITY TEST

(1) Remove nut and POWER switch.
(2) Remove nut and HIGH IDLE switch.
(3) Set multimeter select switch to ohms.
(4) Is there continuity on red wire (middle of diode) between diode and HIGH IDLE switch?
  (a) If there is no continuity, repair red wire (see schematic Fig 2-58) or Notify DS Maintenance.
  (b) If there is continuity, perform Step (5) below and go to Step 9 of this Fault.
(5) Install crane junction box cover with six clips and screws.

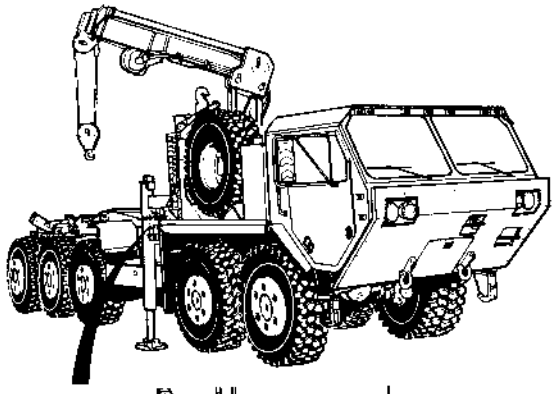


19. CRANE HIGH IDLE NOT WORKING (CONT).



WARNING

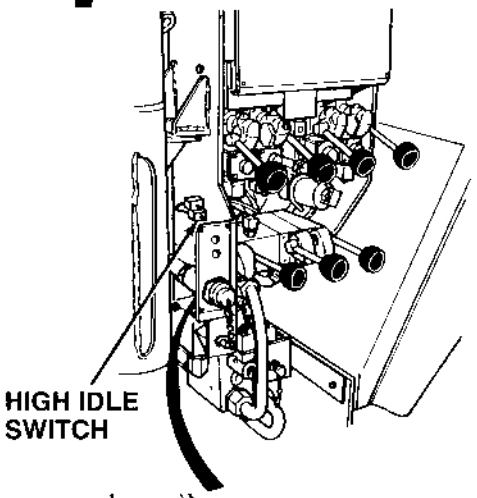
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

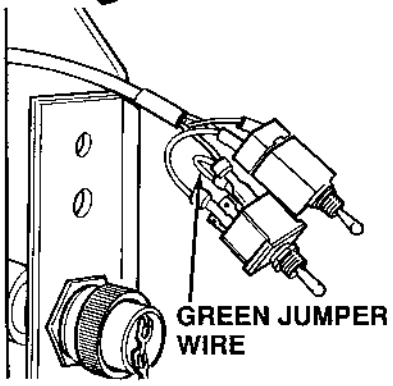


NOTE

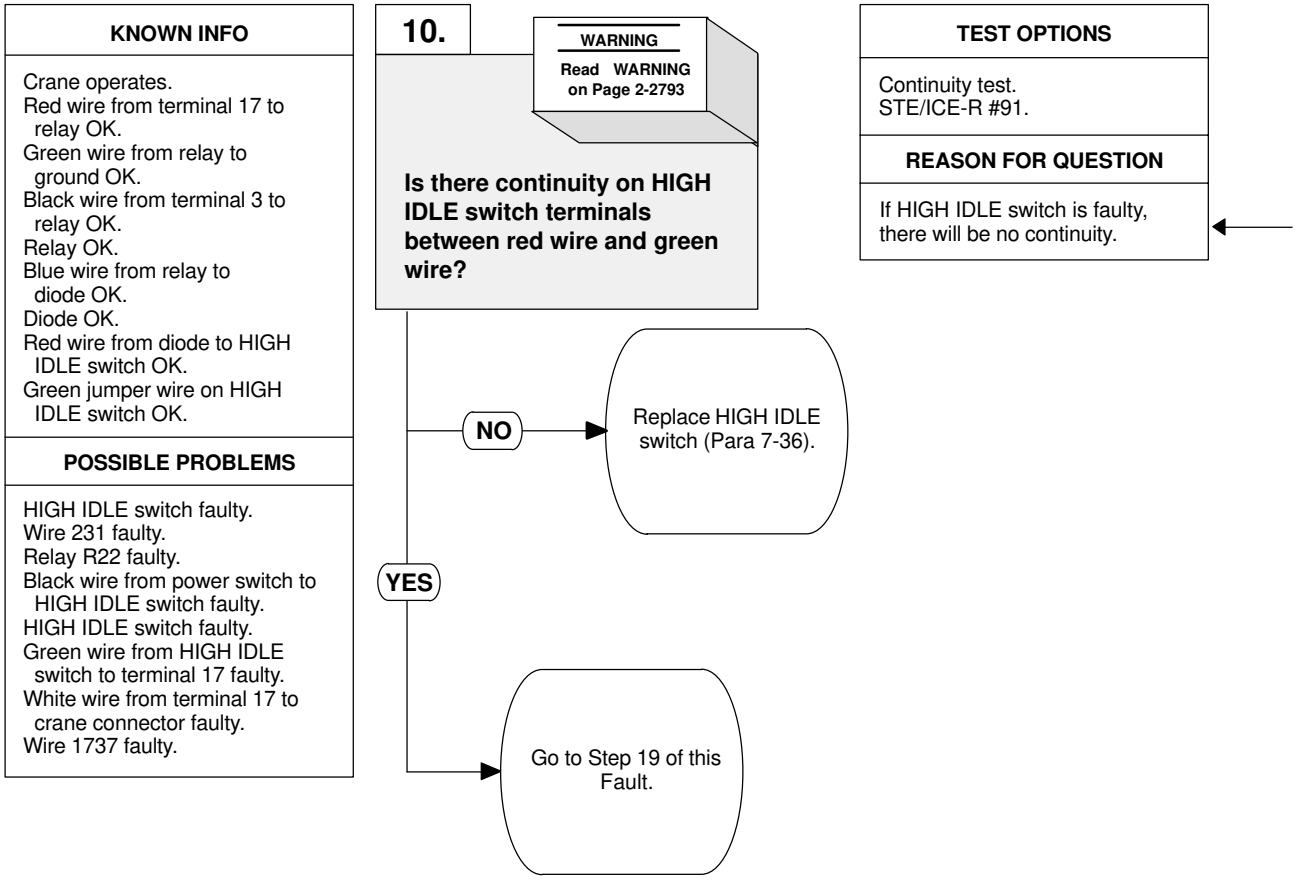
Leave all wires connected to switches.

CONTINUITY TEST
Is there continuity on green jumper wire between its ends where it is connected to HIGH IDLE switch? (1) If there is no continuity, repair wire (see schematic Fig 2-58). (2) If there is continuity, go to Step 10 of this Fault.





19. CRANE HIGH IDLE NOT WORKING (CONT).



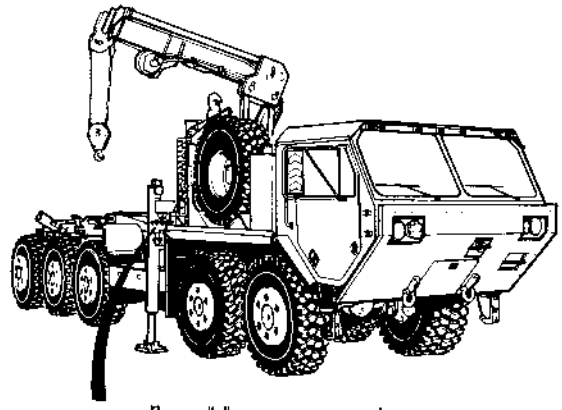
WARNING

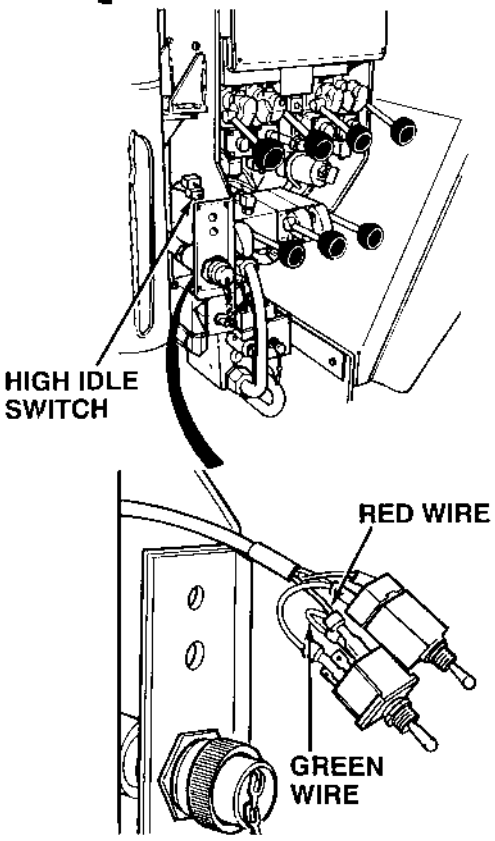
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

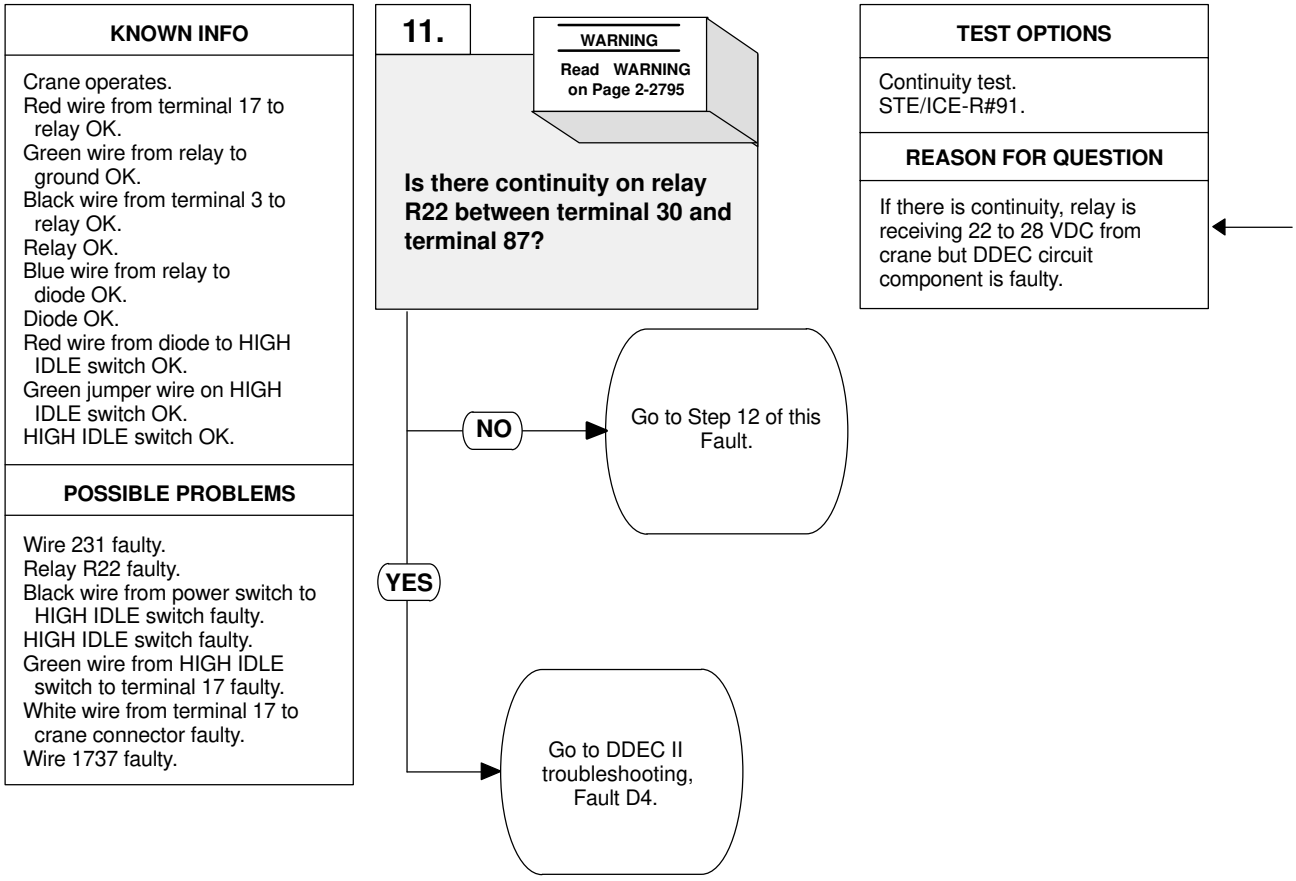
- Leave all wires connected to switches.
- Terminals of switch are being tested, not the wires.
- Switch terminal with two green wires if terminal is to be tested.

CONTINUITY TEST
Is there continuity on HIGH IDLE switch terminals between green wire and red wire? (1) If there is no continuity, replace HIGH IDLE switch (Para 7-36). (2) If there is continuity, go to Step 19 of this Fault.





19. CRANE HIGH IDLE NOT WORKING (CONT).



WARNING

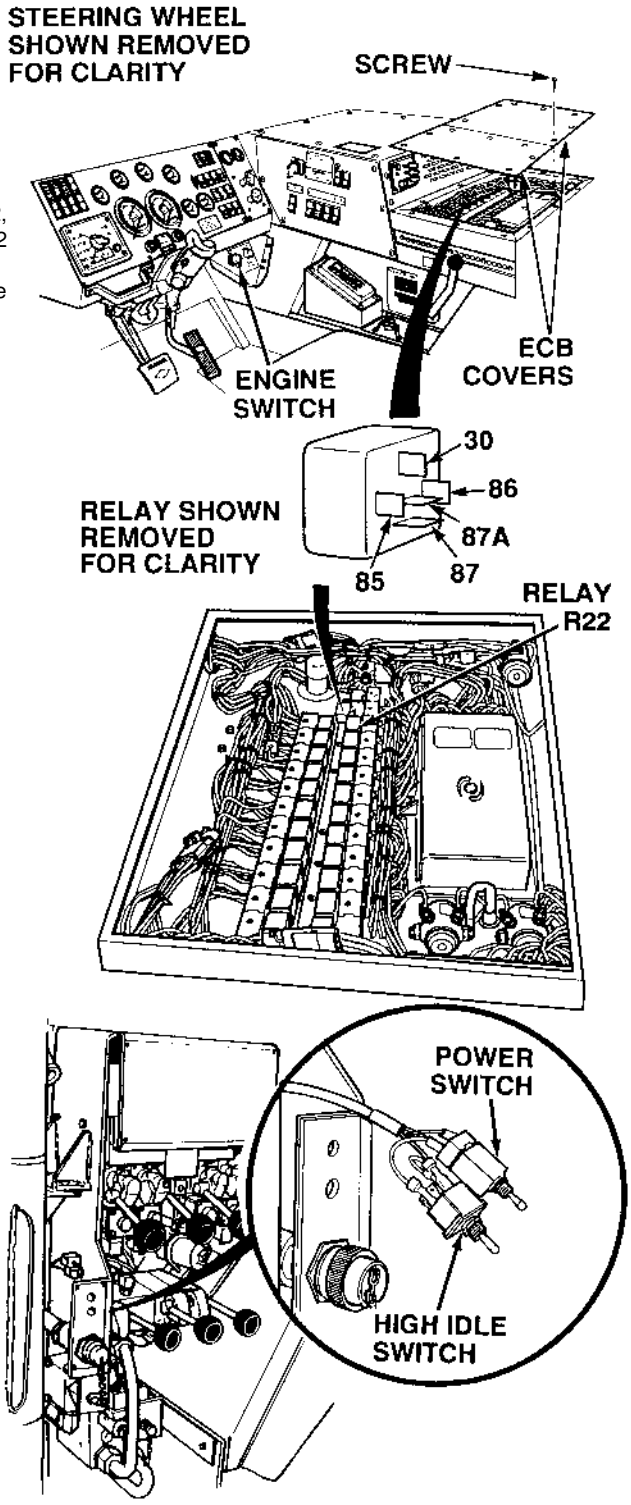
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32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

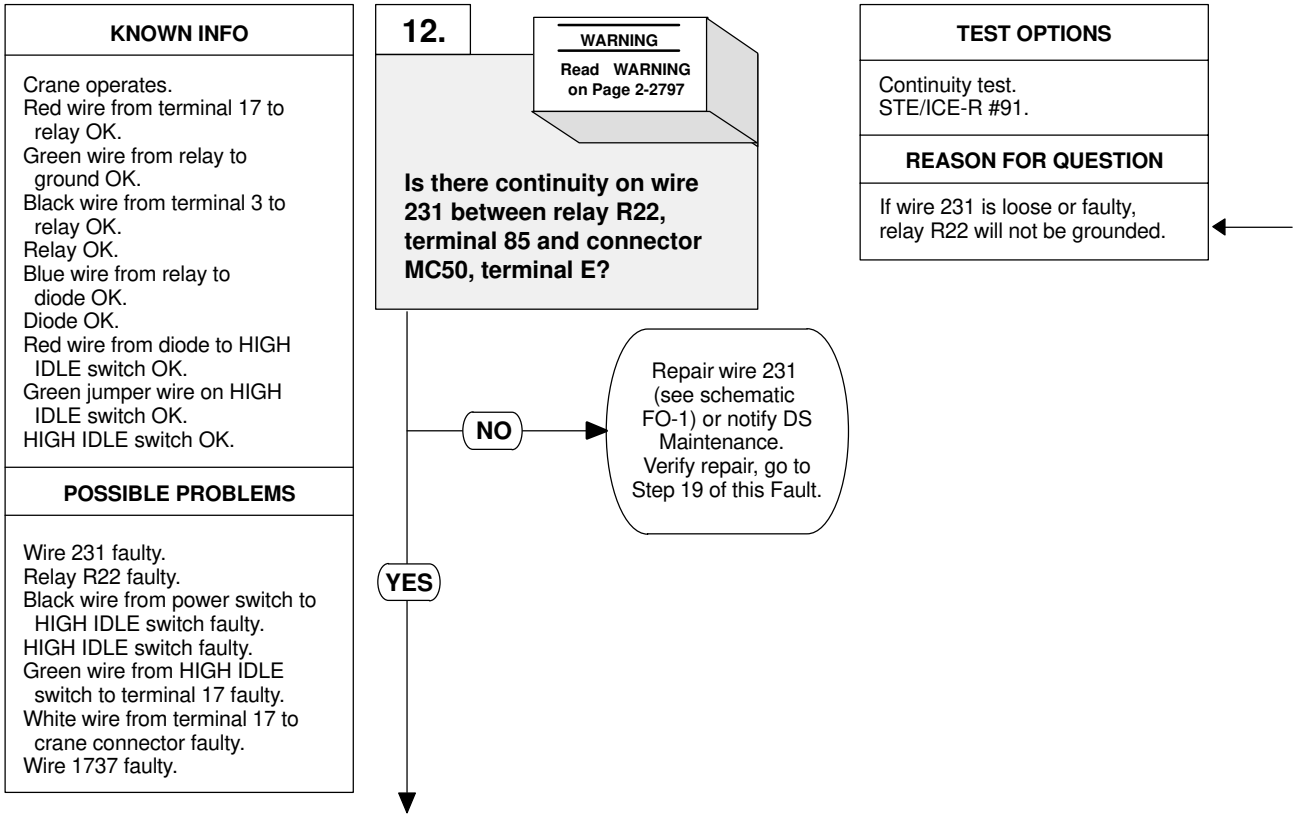
- Relay test must be performed with relay partially removed.
- Use of insulated test leads are required for Steps (3) and (4).

CONTINUITY TEST

(1) Remove 15 screws and ECB covers.
(2) Set multimeter select switch to ohms.
(3) Connect multimeter positive (+) lead to relay R22, terminal 30.
(4) Connect negative multimeter (–) lead to relay R22, terminal 87.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set crane POWER switch to ON position.
(7) Press the HIGH IDLE switch to LATCH position and release.
  (a) If there is no continuity, perform Steps (8) and (9) below and go to Step 12 of this Fault.
  (b) If there is continuity, perform Steps (8) through (10) below and go to DDEC II troubleshooting, Fault 4.
(8) Set crane POWER switch to OFF position.
(9) Turn OFF ENGINE switch.
(10) Install ECB covers with 15 screws.



19. CRANE HIGH IDLE NOT WORKING (CONT).



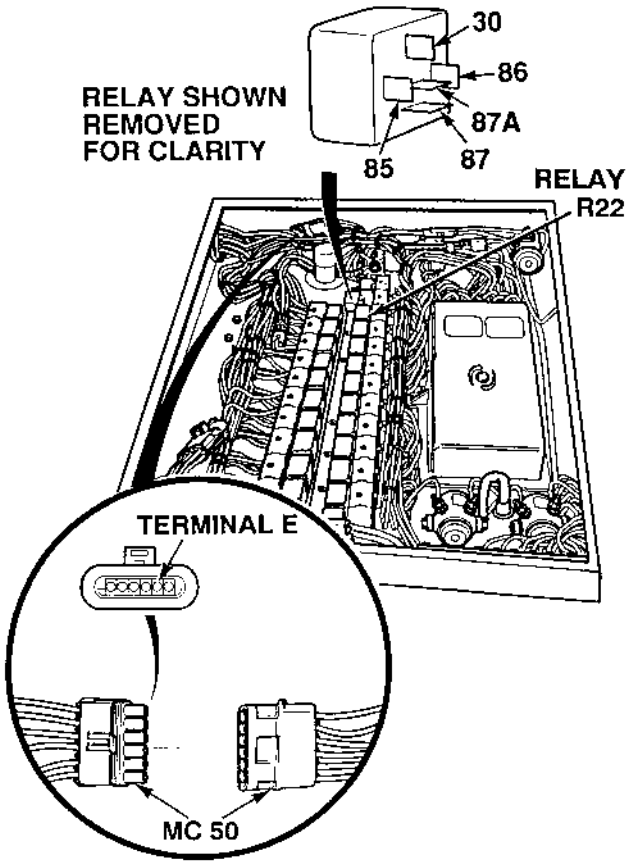
WARNING

- 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 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.

NOTE

Relay test must be performed with relay partially removed.

CONTINUITY TEST
(1) Disconnect connector MC50. (2) Is there continuity between MC50, terminal E and relay R22, terminal 85? (a) If there is no continuity, repair wire 231 (see schematic FO-1) or notify DS Maintenance. (b) If there is continuity, perform Step (3) below and go to Step 13 of this Fault. (3) Connect connector MC50.



19. CRANE HIGH IDLE NOT WORKING (CONT).

KNOWN INFO

Crane operates.
Red wire from terminal 17 to relay OK.
Green wire from relay to ground OK.
Black wire from terminal 3 to relay OK.
Relay OK.
Blue wire from relay to diode OK.
Diode OK.
Red wire from diode to HIGH IDLE switch OK.
Green jumper wire on HIGH IDLE switch OK.
HIGH IDLE switch OK.
Wire 231 OK.

POSSIBLE PROBLEMS

Relay R22 faulty.
Black wire from power switch to HIGH IDLE switch faulty.
High IDLE switch faulty.
Green wire from HIGH IDLE switch to terminal 17 faulty.
White wire from terminal 17 to crane connector faulty.
Wire 1737 faulty.

13.

WARNING

Read WARNING on Page 2-2799

Are 22 to 28 VDC measured at relay R22, terminal 86?

NO → Go to Step 14 of this Fault.

YES → Replace relay R22 (Para 7-95). Verify repair, go to Step 19 of this Fault.

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

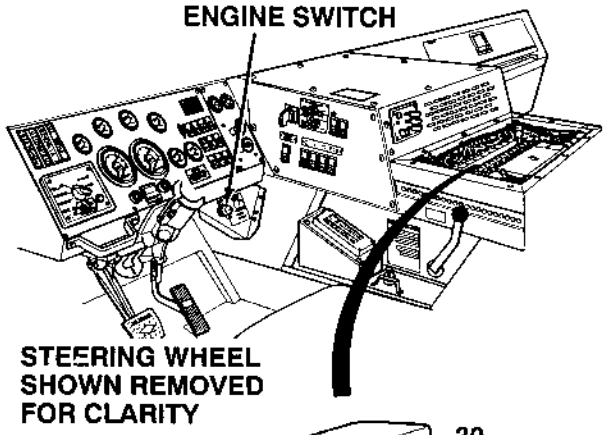
If 22 to 28 VDC is measured, relay R22 is faulty.

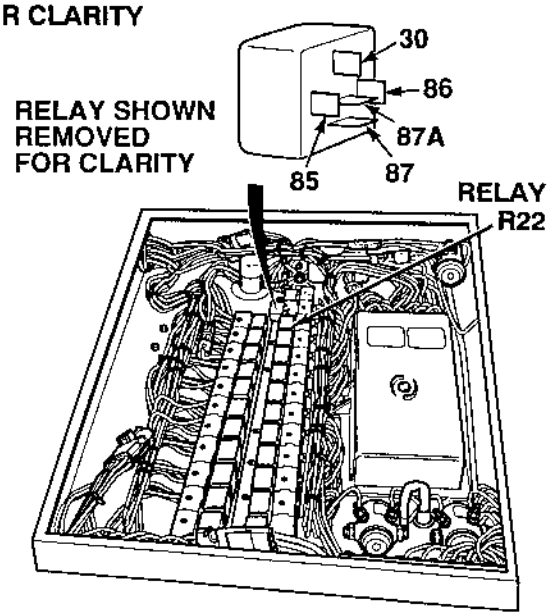
WARNING

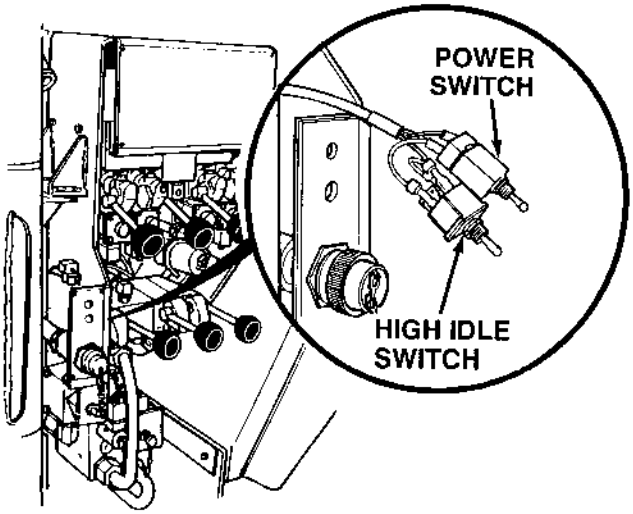
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment and injury or death to personnel may occur.

VOLTAGE TEST

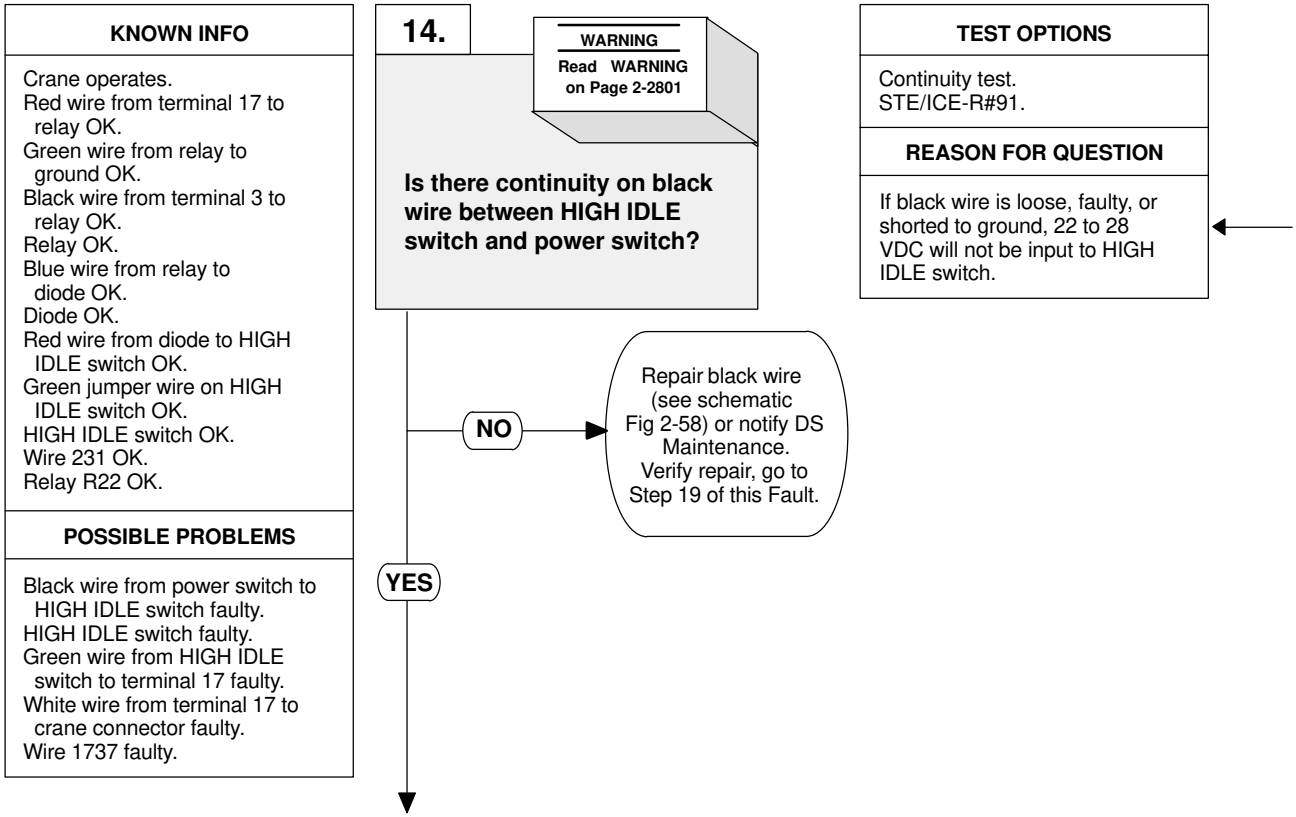
(1) Set multimeter select switch to volts dc.
(2) Connect positive multimeter (+) lead to relay R22, terminal 86.
(3) Connect negative multimeter (–) lead to a known good ground.
(4) Turn ON ENGINE switch.
(5) Set crane POWER switch to ON position.
(6) Press HIGH IDLE switch to LATCH position and release.
    (a) If 22 to 28 VDC are not present, perform Steps (7) and (8) below and go to Step 14 of this Fault.
    (b) If 22 to 28 VDC are present, perform Steps (7) and (8) below and replace relay R22 (Para 7-95).
(7) Set crane POWER switch to OFF position.
(8) Turn OFF ENGINE switch.





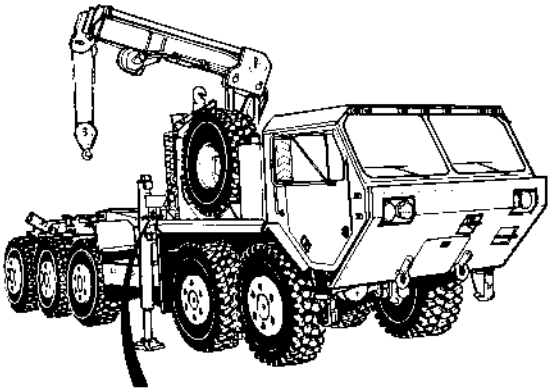


19. CRANE HIGH IDLE NOT WORKING (CONT).



WARNING

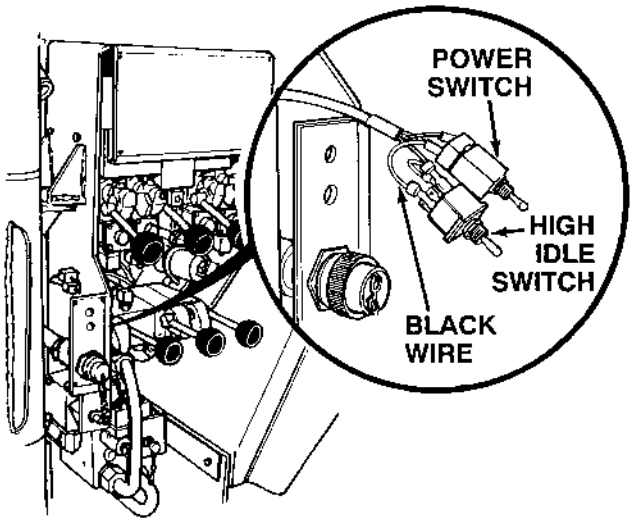
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



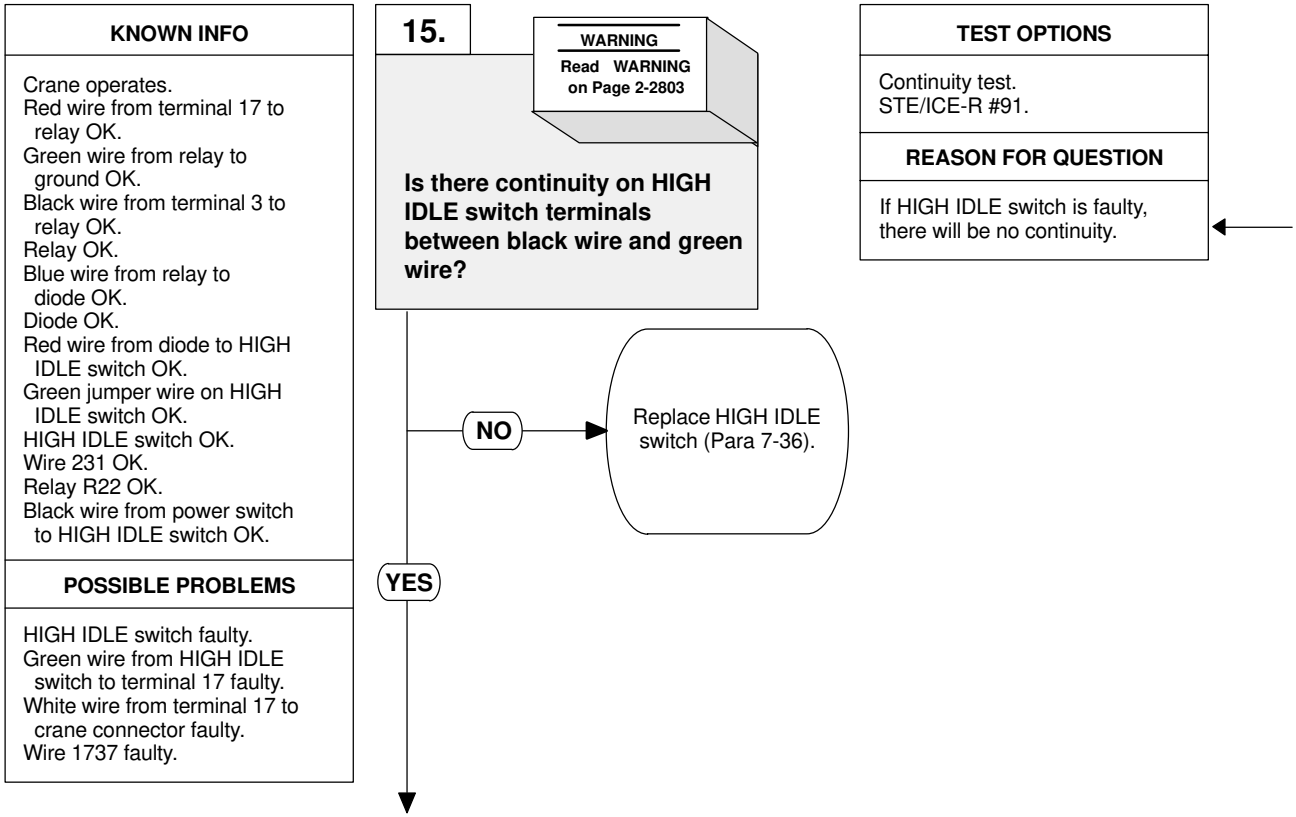
NOTE

Leave all wires attached to switches.

CONTINUITY TEST
(1) Set multimeter select switch to ohms. (2) Is there continuity on black wire between HIGH IDLE switch and power switch? (a) If there is no continuity, repair black wire (see schematic Fig 2-58). (b) If there is continuity, go to Step 15 of this Fault.



19. CRANE HIGH IDLE NOT WORKING (CONT).



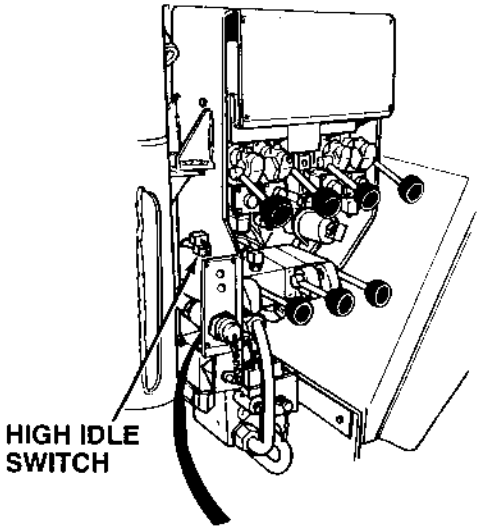
WARNING

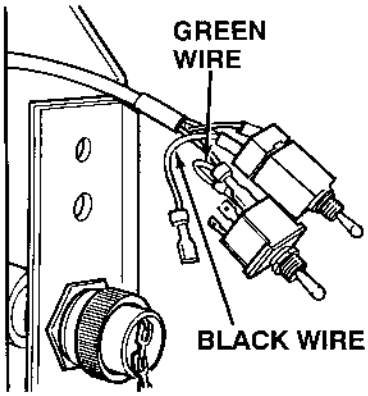
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

Terminals of switch are being tested, not the wires.

CONTINUITY TEST
(1) Remove black wire from HIGH IDLE switch. (2) Is there continuity on HIGH IDLE switch between green wire and black wire while holding switch in LATCH position? (a) If there is no continuity, replace HIGH IDLE switch (Para 7-36). (b) If there is continuity, perform Step (3) below and go to Step 16 of this Fault. (3) Connect black wire to HIGH IDLE switch.





19. CRANE HIGH IDLE NOT WORKING (CONT).

KNOWN INFO

Crane operates.
Red wire from terminal 17 to relay OK.
Green wire from relay to ground OK.
Black wire from terminal 3 to relay OK.
Relay OK.
Blue wire from relay to diode OK.
Diode OK.
Red wire from diode to HIGH IDLE switch OK.
Green jumper wire on HIGH IDLE switch OK.
HIGH IDLE switch OK.
Wire 231 OK.
Relay R22 OK.
Black wire from power switch to HIGH IDLE switch OK.
HIGH IDLE switch OK.

POSSIBLE PROBLEMS

Green wire from HIGH IDLE switch to terminal 17 faulty.
White wire from terminal 17 to crane connector faulty.
Wire 1737 faulty.

16.

WARNING

Read WARNING on Page 2-2805

Is there continuity on green wire between HIGH IDLE switch and terminal 17?

NO → Repair green wire (see schematic Fig 2-58) or notify DS Maintenance. Verify repair, go to Step 19 of this Fault.

YES

TEST OPTIONS

Continuity test.
STE/ICE-R#91.

REASON FOR QUESTION

If green wire is loose, faulty, or shorted to ground, 22 to 28 VDC will not be input to relay R22.

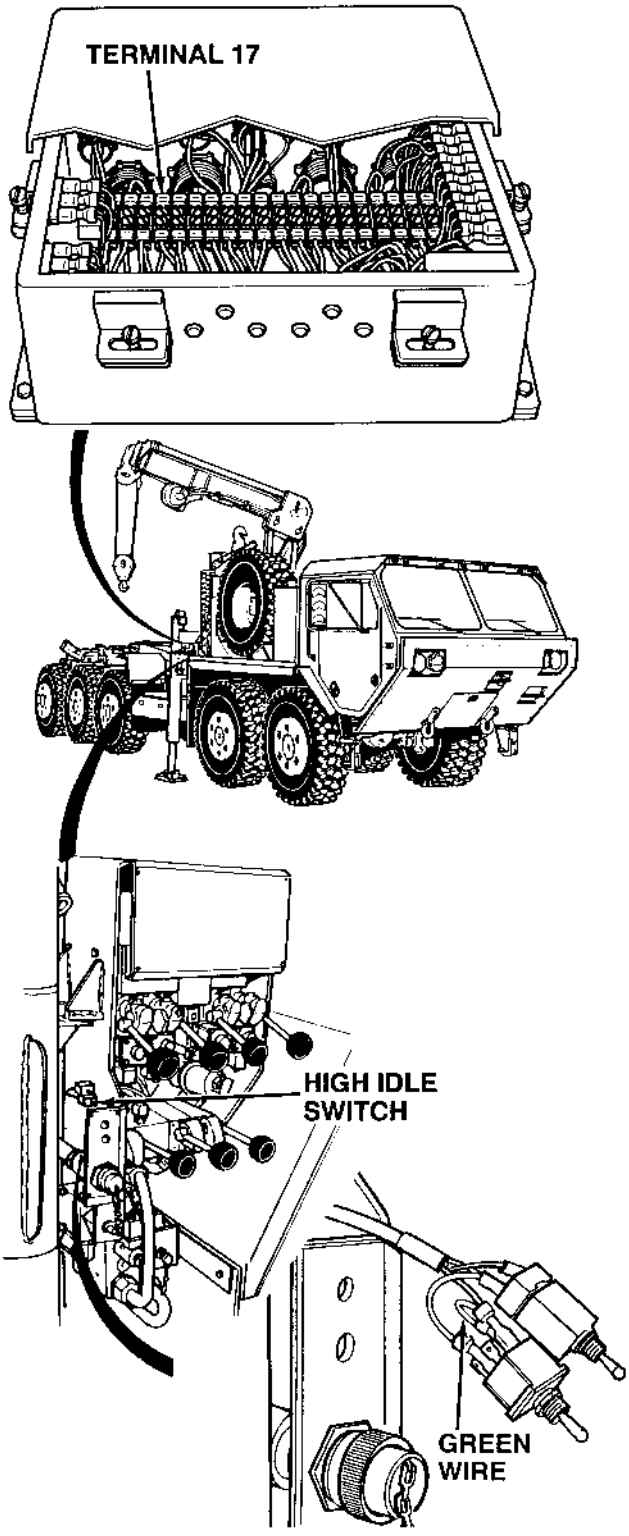
WARNING

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.

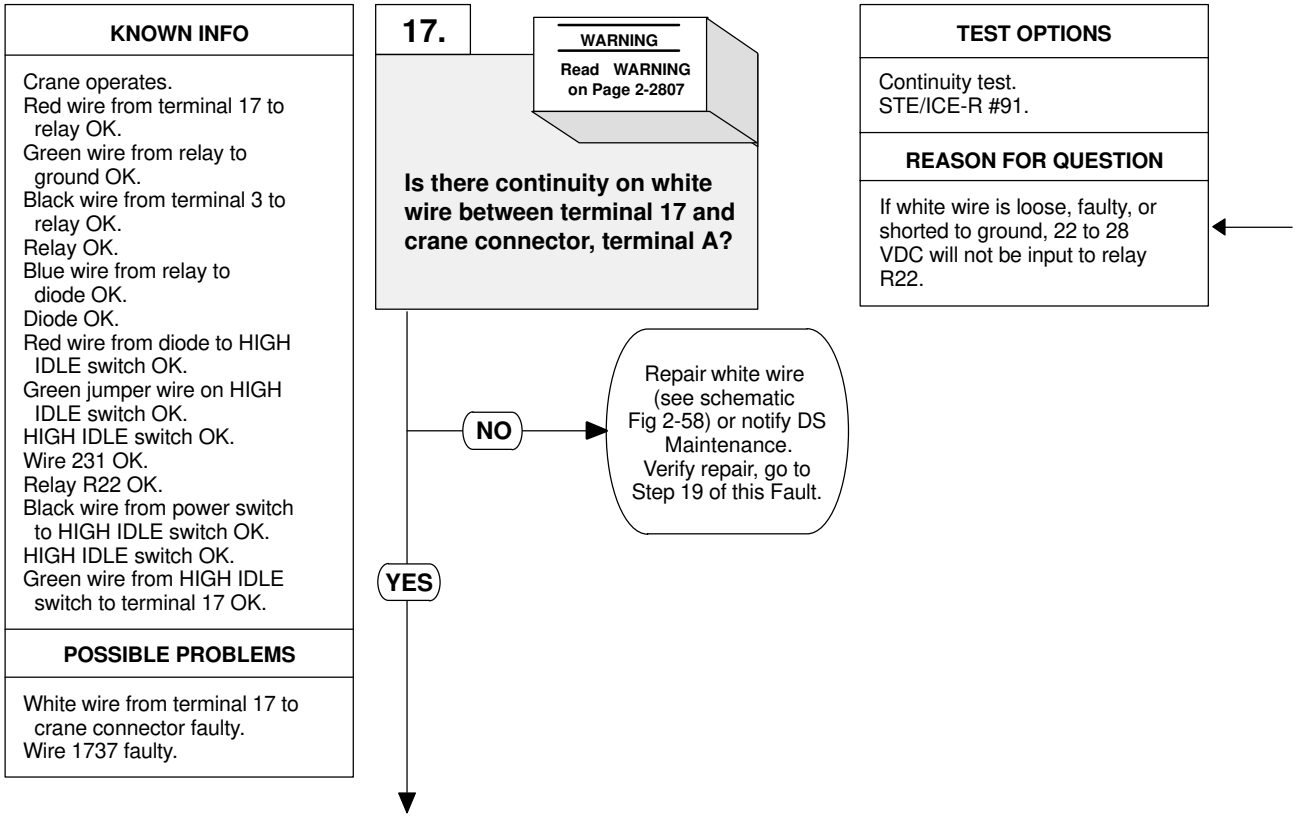
NOTE

Leave all wires attached to switches.

CONTINUITY TEST
Is there continuity on green wire between HIGH IDLE switch and terminal 17? (1) If there is no continuity, repair green wire (see schematic Fig 2-58) or notify DS Maintenance. (2) If there is continuity, go to Step 17 of this Fault.



19. CRANE HIGH IDLE NOT WORKING (CONT).

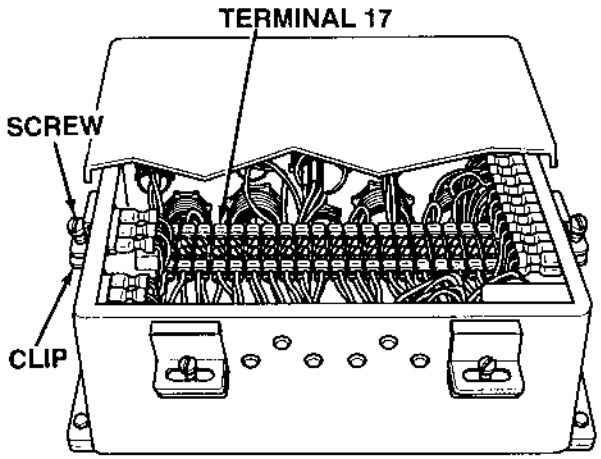


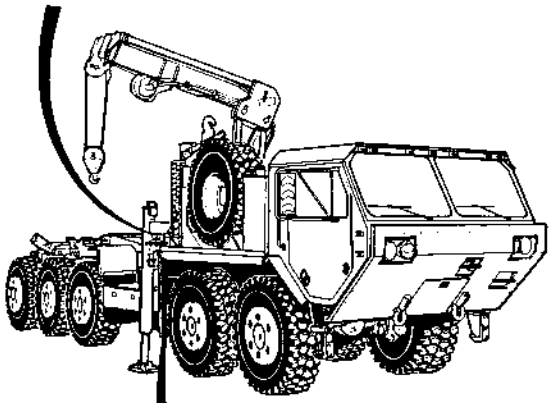
WARNING

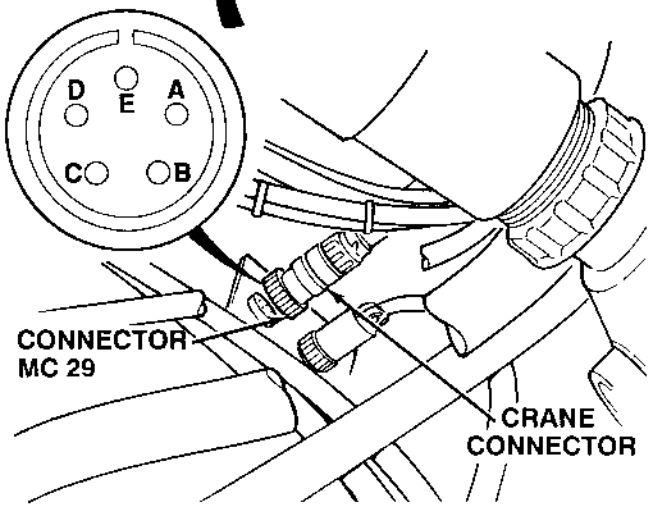
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

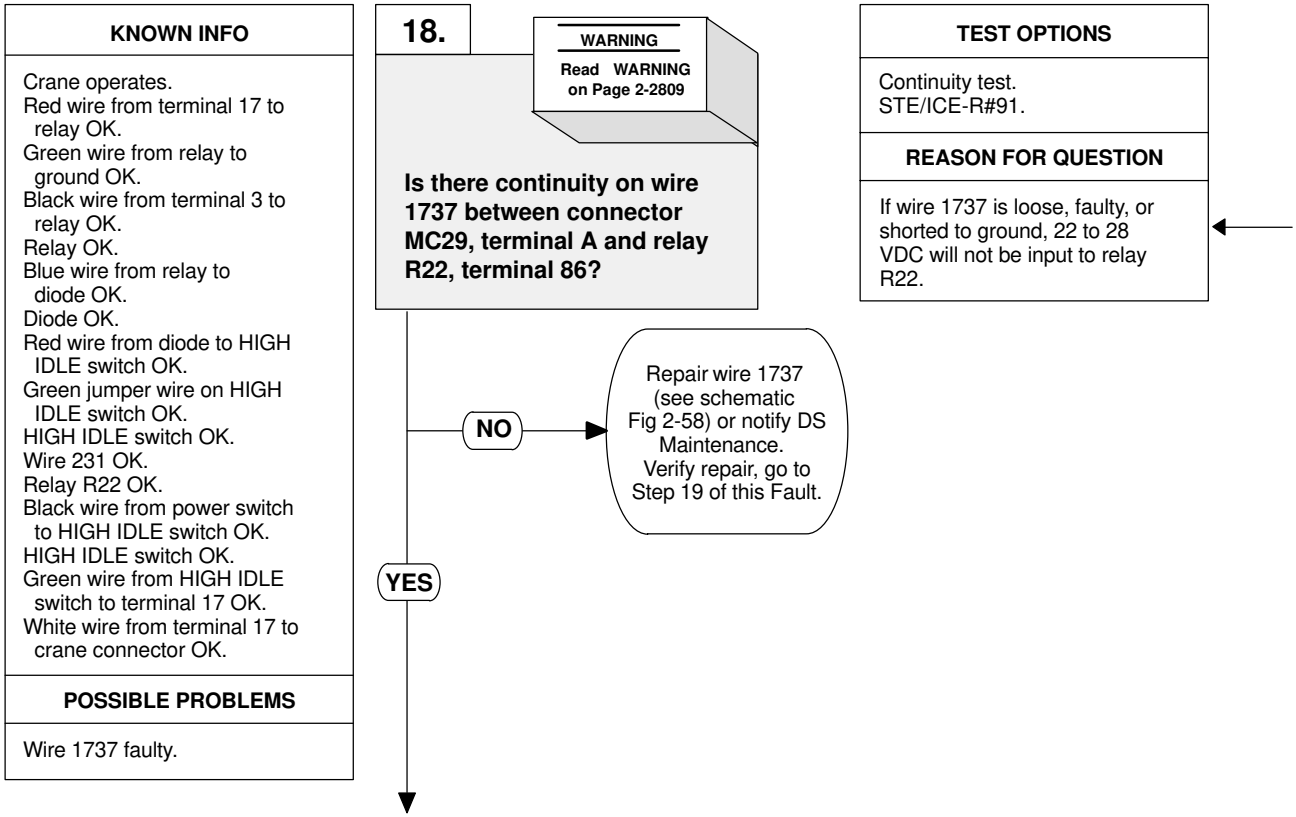
(1) Disconnect crane connector from truck connector MC29.
(2) Using a jumper wire, connect connector MC29, terminal A to a known good ground.
(3) Is there continuity on white wire at terminal 17 and a known good ground?
    (a) If there is no continuity, repair white wire (see schematic Fig 2-58) or notify DS Maintenance.
    (b) If there is continuity, perform Step (4) and (5) below and go to Step 18 of this Fault.
(4) Install junction box cover with six clips and screws.
(5) Remove jumper wire.







19. CRANE HIGH IDLE NOT WORKING (CONT).



WARNING

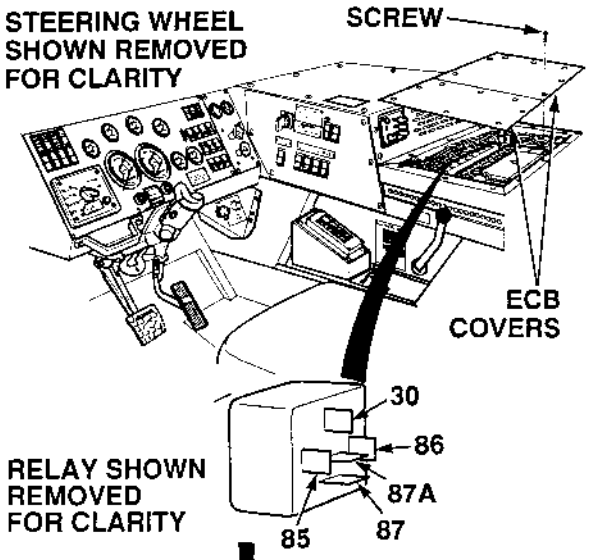
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32,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

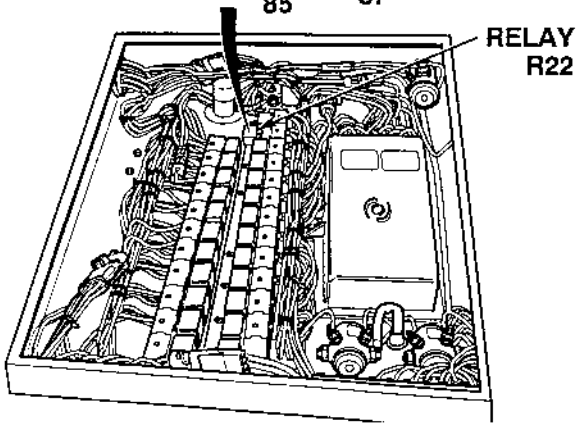
NOTE

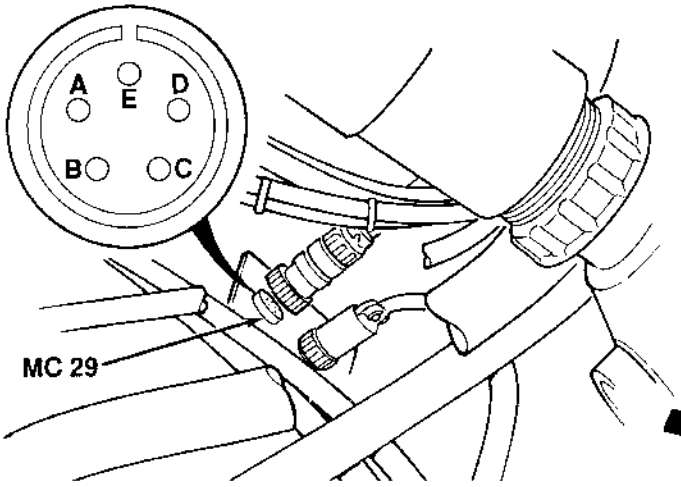
Relay test must be performed with relay partially removed.

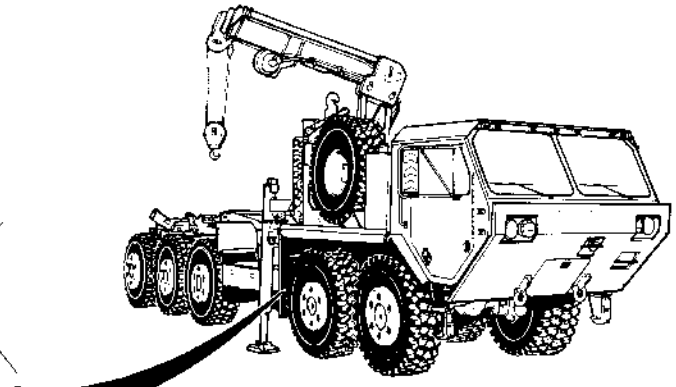
CONTINUITY TEST

(1) Using a jumper wire, connect connector MC29, terminal A to a known good ground.
(2) Is there continuity on wire 1737 between relay R22, terminal 86 and a known good ground?
  (a) If there is no continuity, repair wire 1737 (see schematic Fig 2-58) or notify DS Maintenance.
  (b) If there is continuity, perform Steps (3) and (4) below.
(3) Connect crane connector to truck connector MC29.
(4) Install ECB covers with 15 screws.

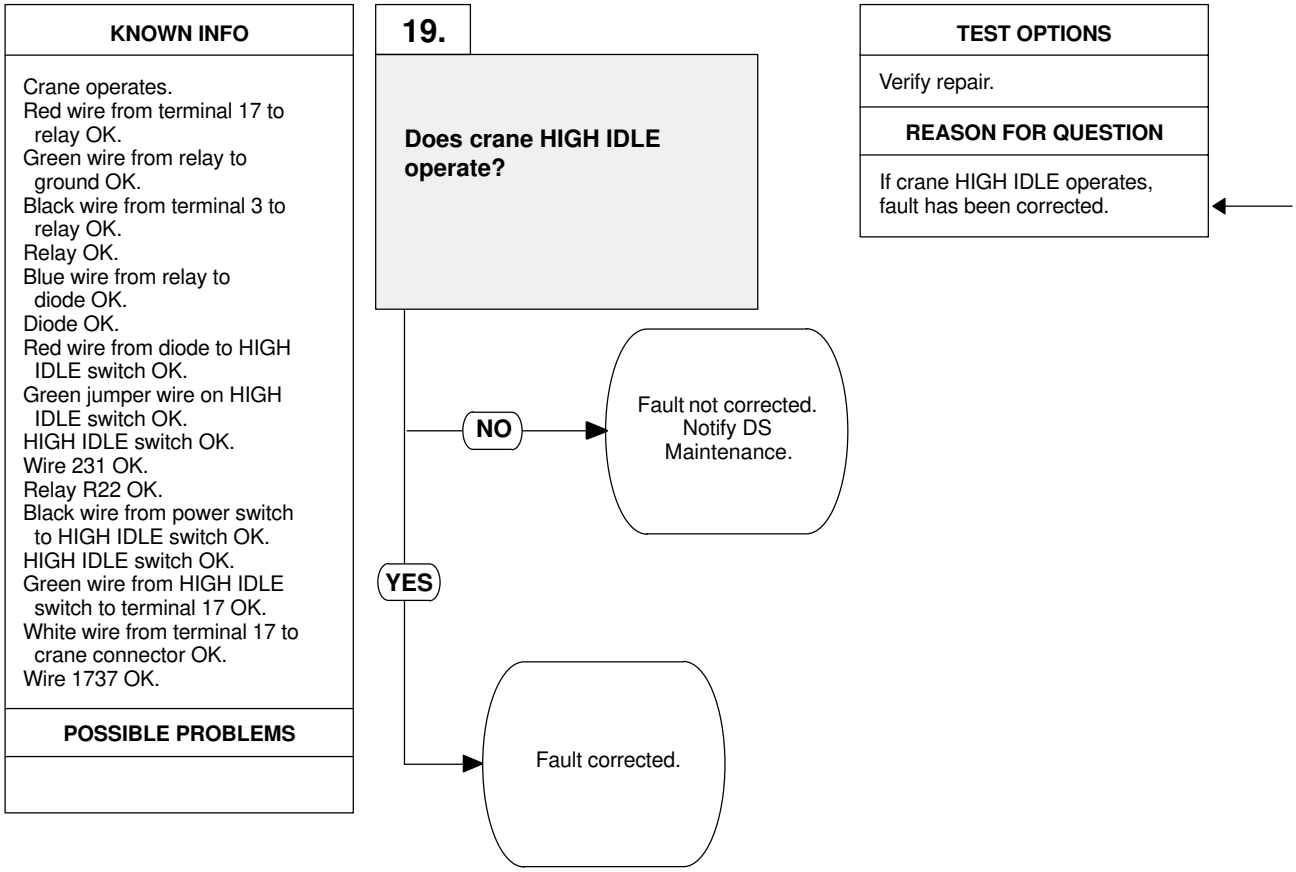


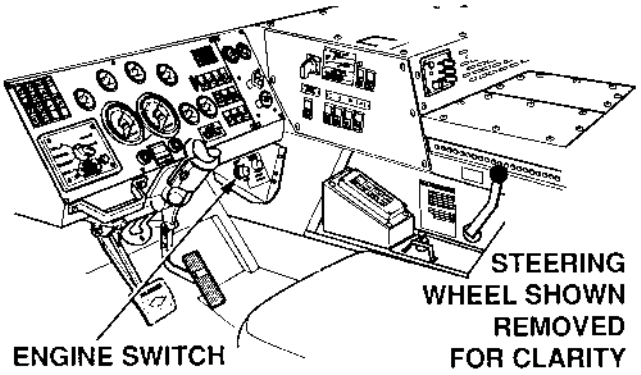


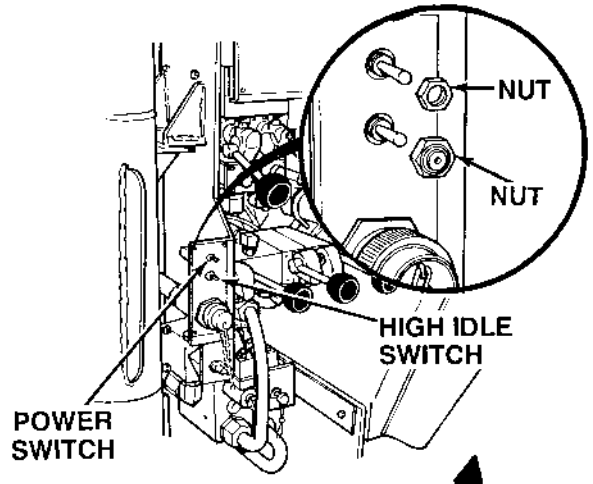




19. CRANE HIGH IDLE NOT WORKING (CONT).

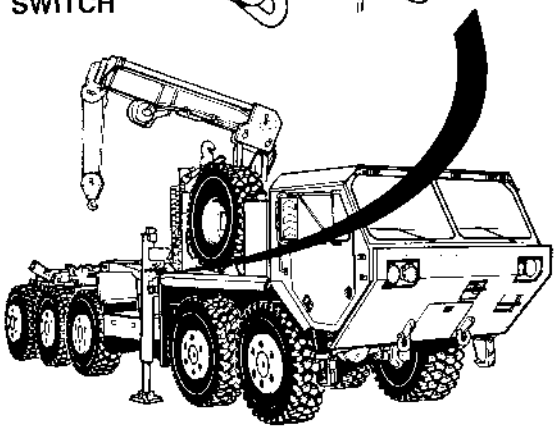






VERIFY REPAIR

(1) Install HIGH IDLE switch with nut.
(2) Install POWER switch with nut.
(3) Start engine (TM 9-2320-364-10).
(4) Set crane POWER switch to ON position.
(5) Press HIGH IDLE switch to LATCH position and release.
  (a) If high idle does not engage and latch, fault not corrected. Perform Steps (6) through (8) below and notify DS Maintenance.
  (b) If high idle does engage and latch, fault corrected.
(6) Stow crane.
(7) Set crane POWER switch to OFF position.
(8) Turn OFF ENGINE switch.



2-30. SELF RECOVERY WINCH (SRW) TROUBLESHOOTING.

This paragraph covers Self Recovery Winch (SRW) System Troubleshooting. The Self Recovery Winch (SRW) System Fault Index, Table 2-55, lists faults for the Self Recovery Winch (SRW) system of the PLS truck. Refer to schematics Figure 2-65 and 2-66 when performing tests and corrective actions.

Table 2-55. Self Recovery Winch (SRW) System Fault Index

Fault No.	Description	Page
1.	Self Recovery Winch (SRW) Will Not Pay In Or Out Using Control Lever	2-2816
2.	Self Recovery Winch (SRW) Will Not Pay In Or Out Using Cab Winch In/Out Switch	2-2824
3.	Self Recovery Winch (SRW) Will Not Pay In Using Cab Winch In/Out Switch	2-2828
4.	Self Recovery Winch (SRW) Will Not Pay Out Using Cab Winch In/Out Switch	2-2834
5.	Cable Cannot Be Free-Spooled Out From Front Or Rear Of Truck	2-2840

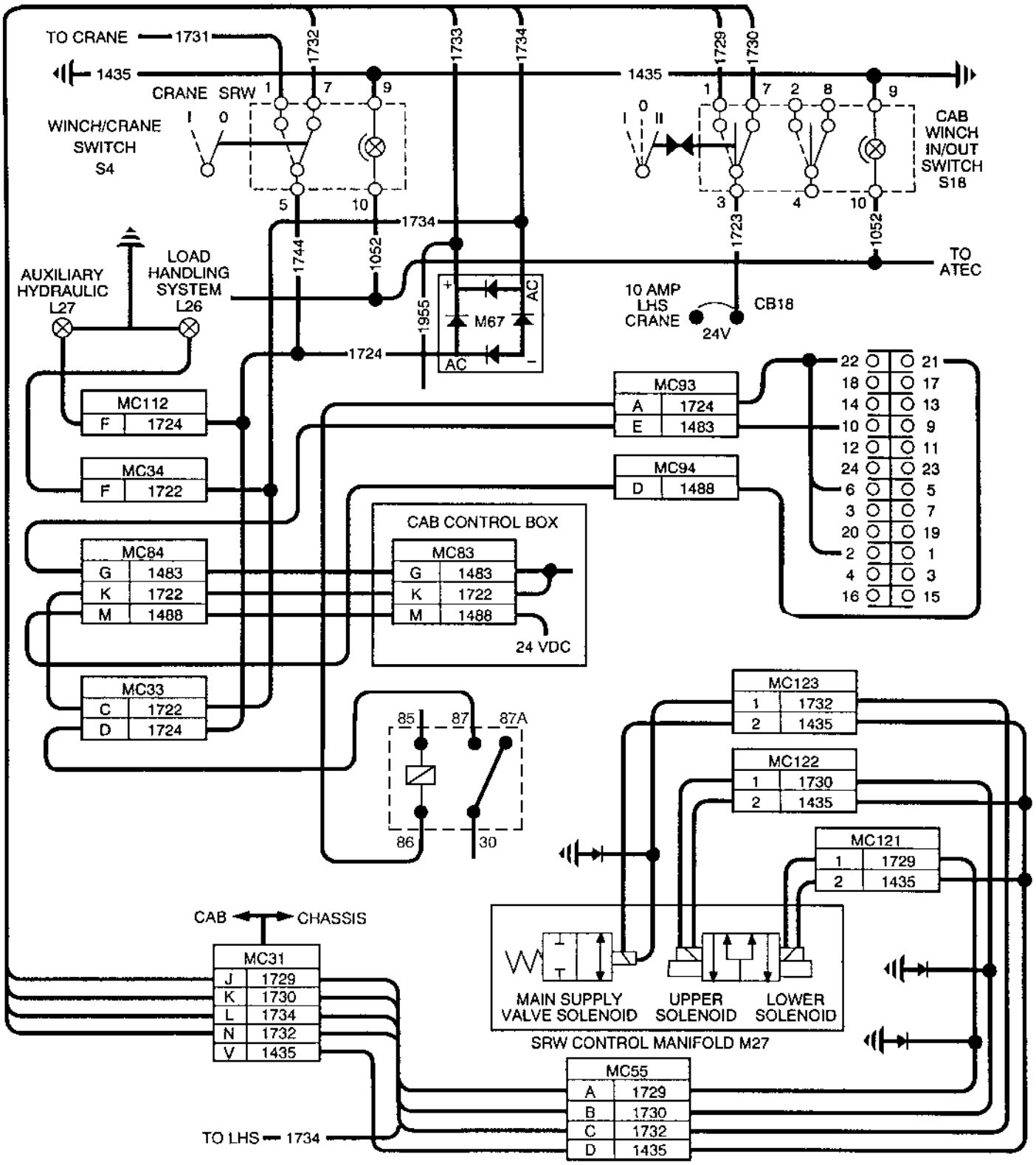


Figure 2-65. Winch Wiring Schematic

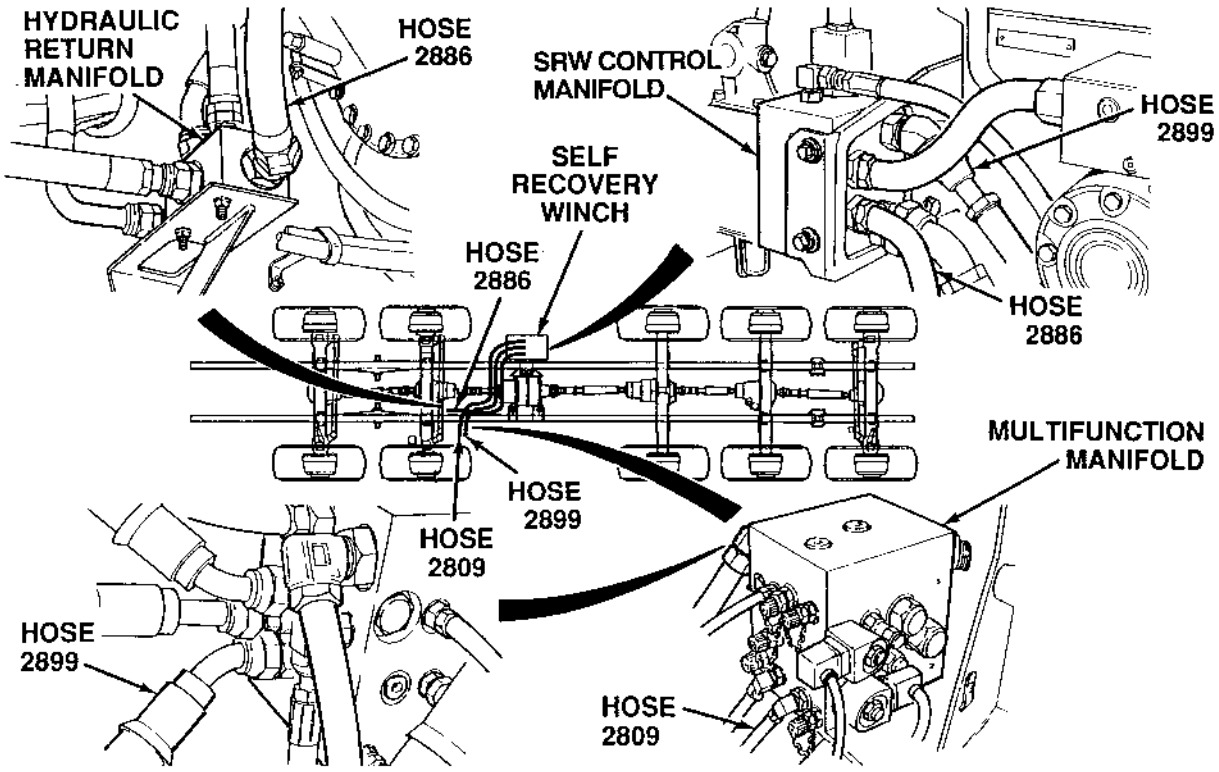


Figure 2-66. Winch Hydraulic Diagram

2-30. SELF RECOVERY WINCH (SRW) TROUBLESHOOTING (CONT).

1. SELF RECOVERY WINCH (SRW) WILL NOT PAY IN OR OUT USING CONTROL LEVER.

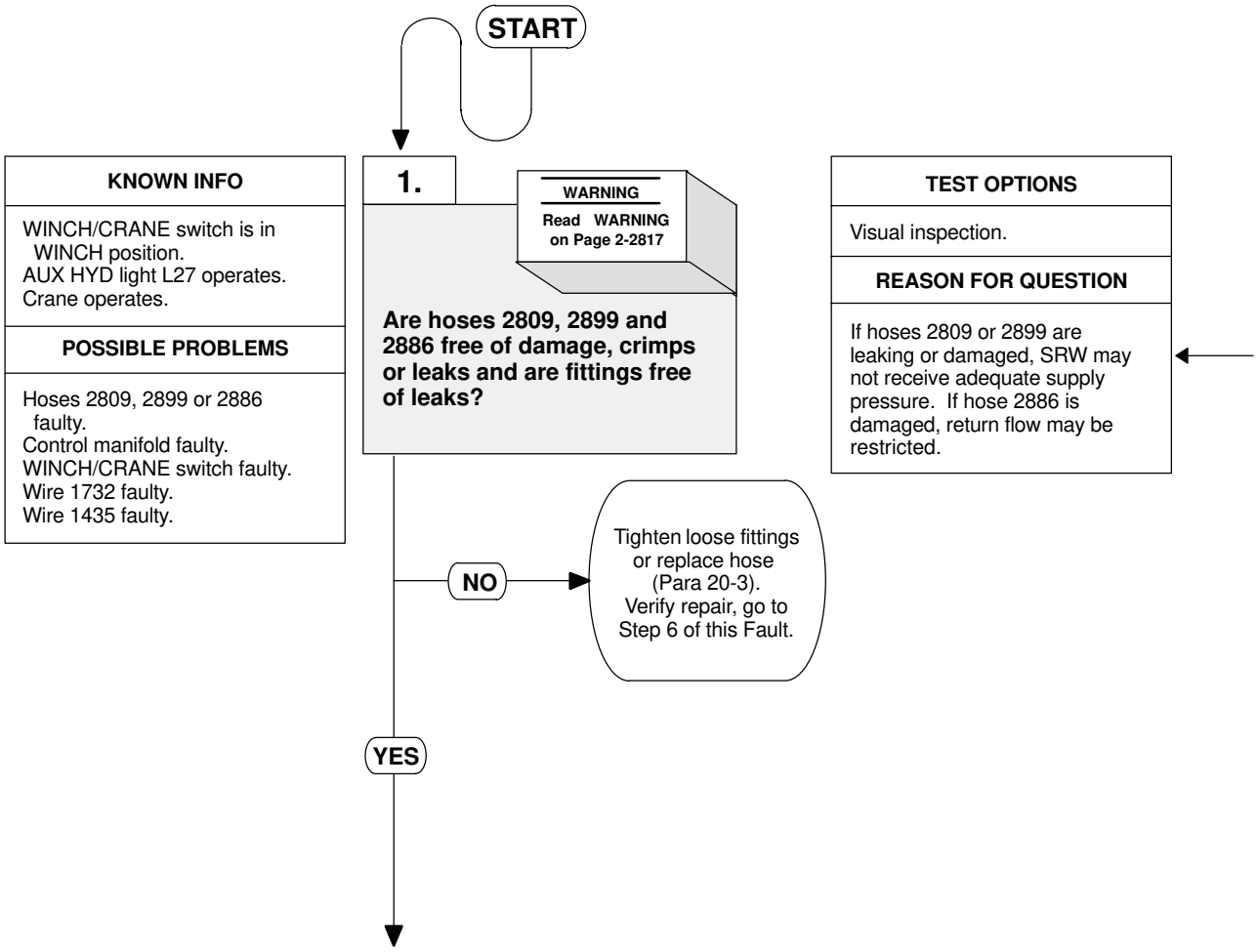
INITIAL SETUP

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)

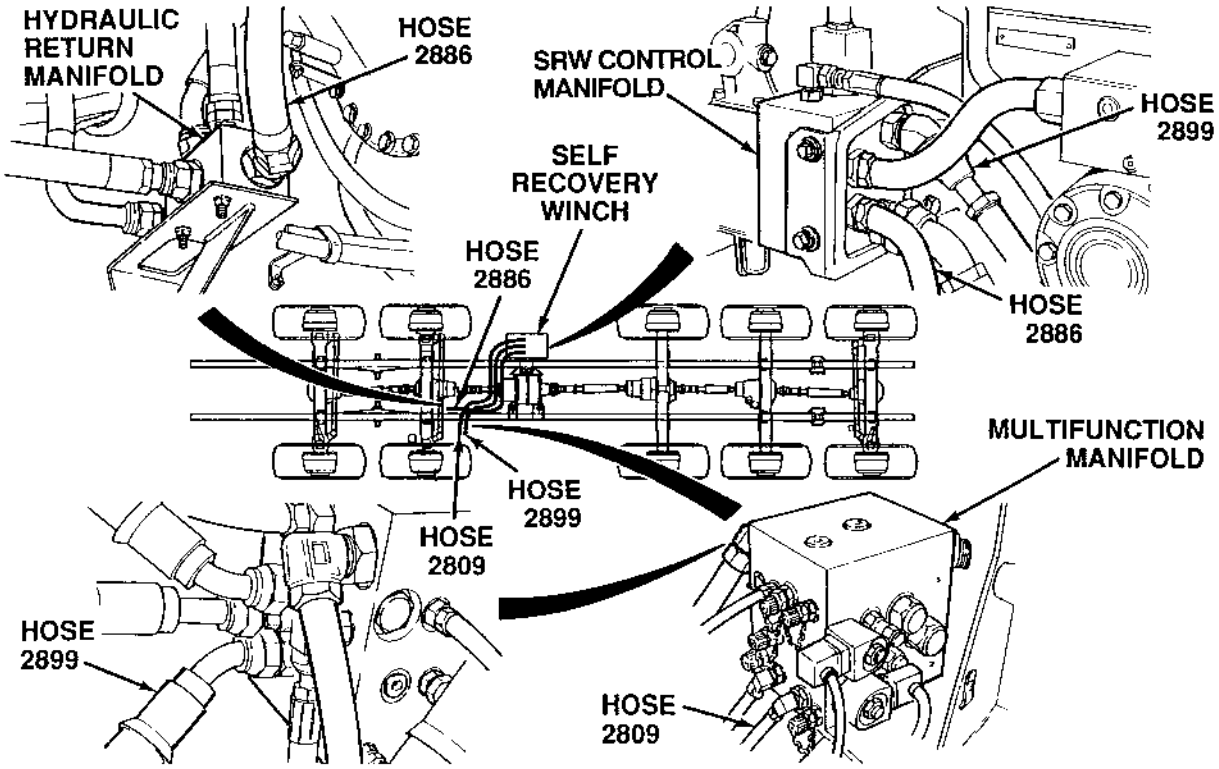
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



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. A high pressure oil stream can pierce body and cause severe injury to personnel.



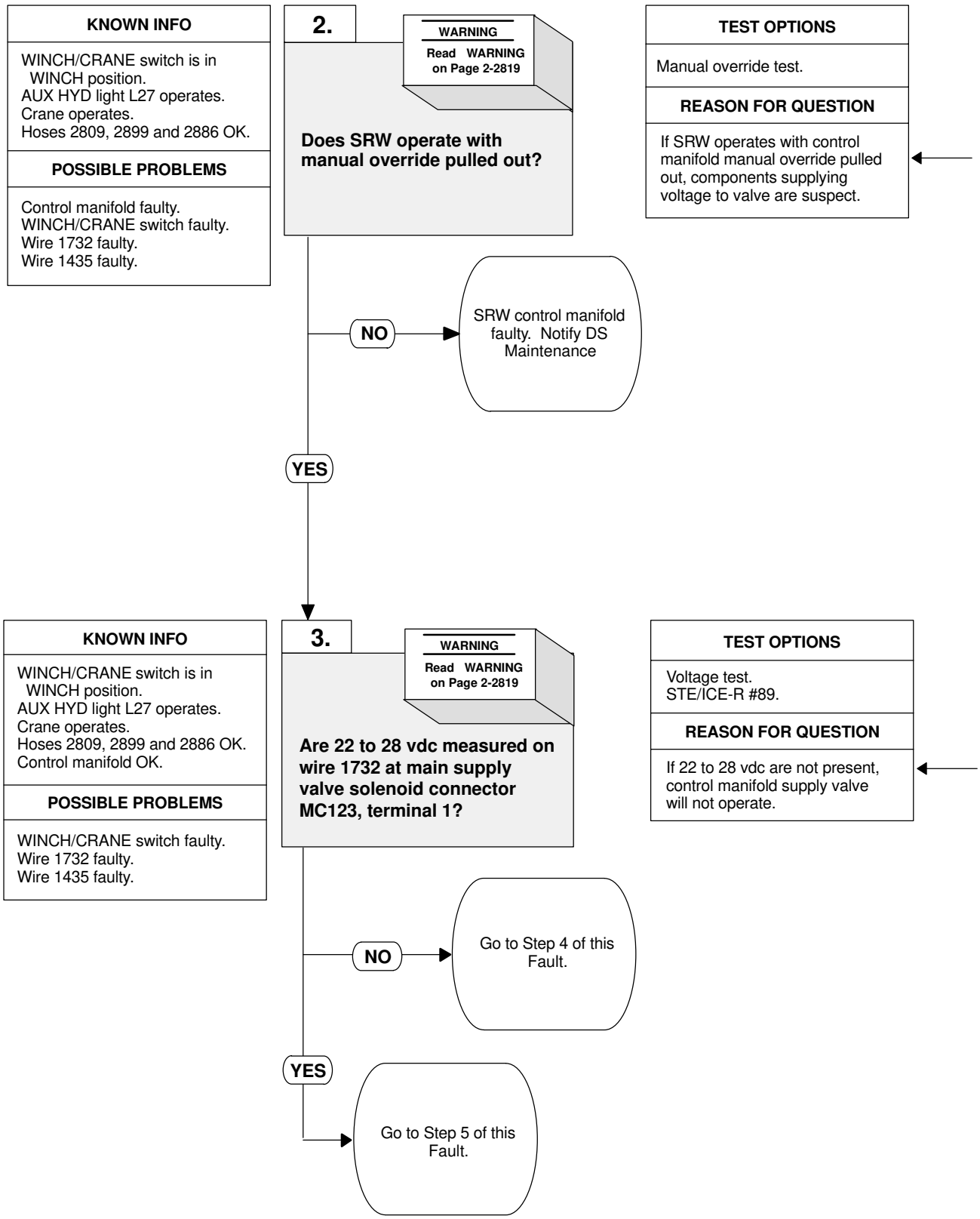
VISUAL INSPECTION

Inspect hoses 2809, 2899 and 2886 for leaks and damage (Fig 2-66).

(1) If hose is leaking or damaged, tighten loose fittings or replace hose (Para 20-3).

(2) If hoses are OK, go to Step 2 of this Fault.

1. SELF RECOVERY WINCH (SRW) WILL NOT PAY IN OR OUT USING CONTROL LEVER (CONT).



WARNING

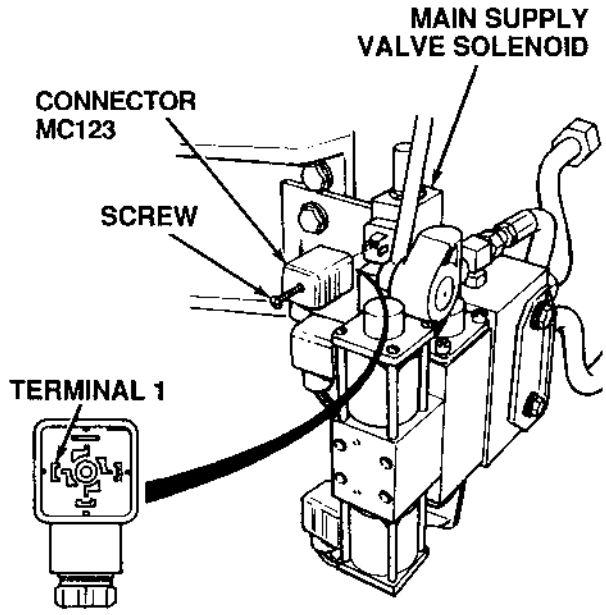
- Remove all jewelry such as rings, dog tags, bracelets etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and 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.

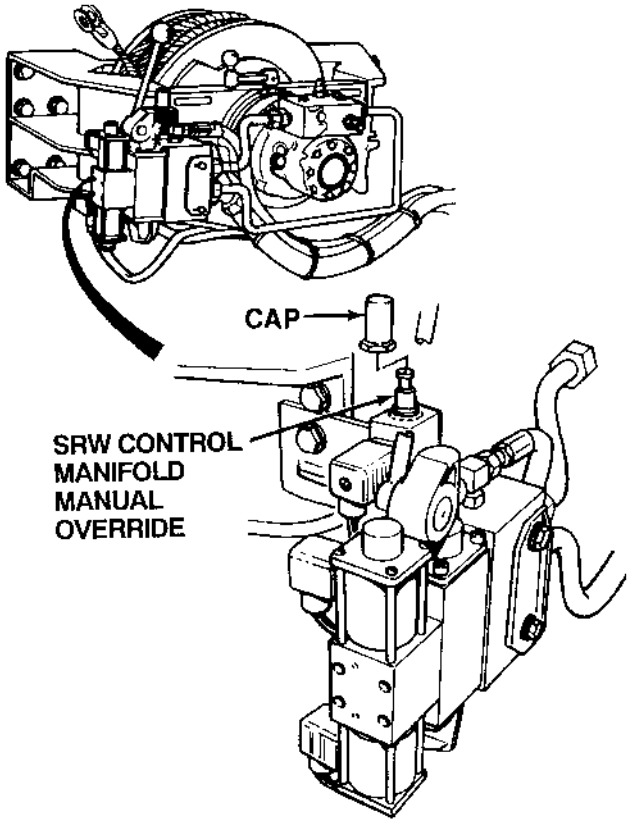
MANUAL OVERRIDE TEST

(1) Start engine (TM 9-2320-364-10).
(2) Remove cap from SRW control manifold manual override.
(3) Rotate manual override button and pull up.
(4) Operate SRW.
  (a) If SRW does not operate, SRW control manifold is faulty. Perform Steps (5) through (7) below and notify DS Maintenance.
  (b) If SRW does operate, perform Steps (5) through (7) below and go to Step 3 of this Fault.
(5) Push down on manual override button and rotate to lock in down position.
(6) Install cap on manual override and tighten securely.
(7) Turn OFF ENGINE switch.

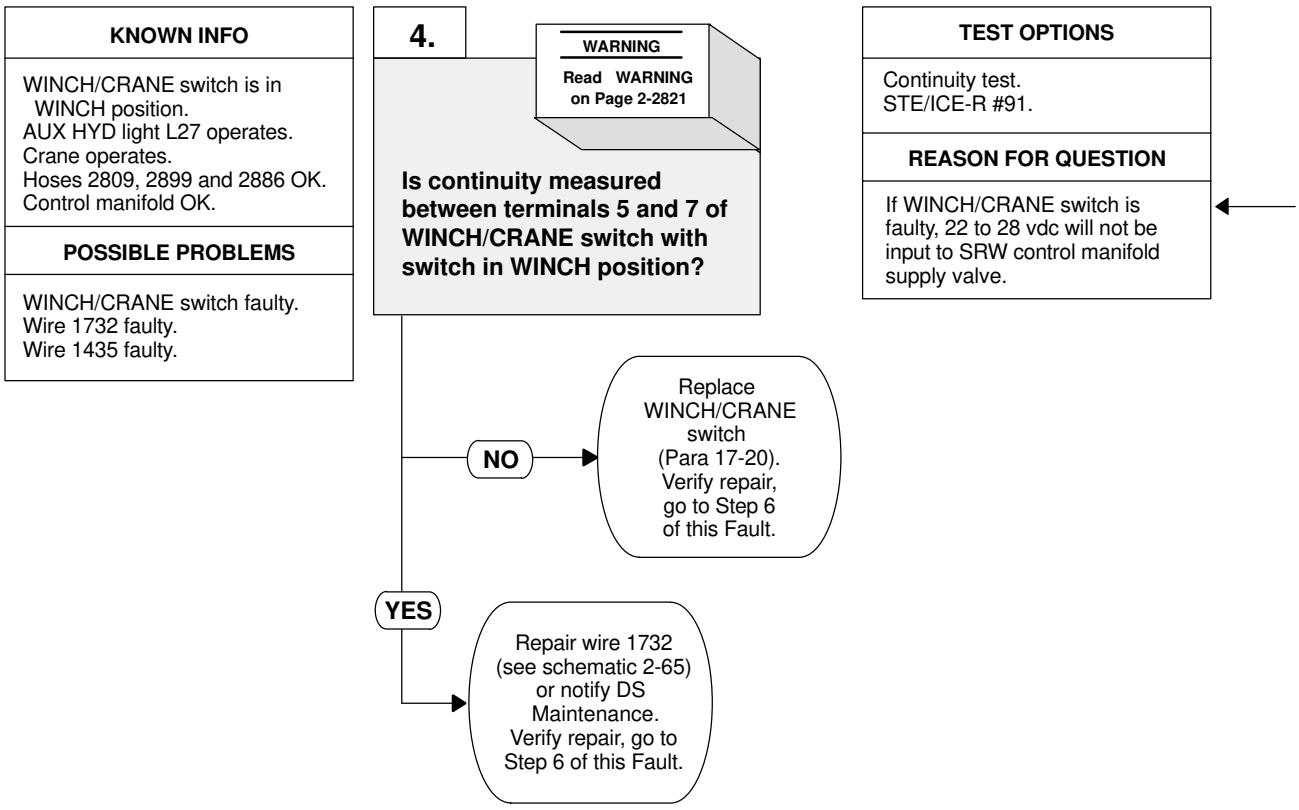
VOLTAGE TEST

(1) Loosen screw and disconnect solenoid connector MC123 from SRW control manifold main supply valve.
(2) Connect positive (+) multimeter lead to wire 1732 at main supply valve solenoid connector MC123, terminal 1.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Set hydraulic selector switch to CRANE/SRW position.
  (a) If 22 to 28 vdc are not present, perform Steps (6) through (9) below and go to Step 4 of this Fault.
  (b) If 22 to 28 vdc are present, wire 1732 is OK. Perform Steps (6) and (7) below and go to Step 5 of this Fault.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.
(8) Install connector on SRW control.
(9) Tighten connector screw and coat head of connector screw with adhesive.





1. SRW WILL NOT PAY IN OR OUT USING CONTROL LEVER (CONT).

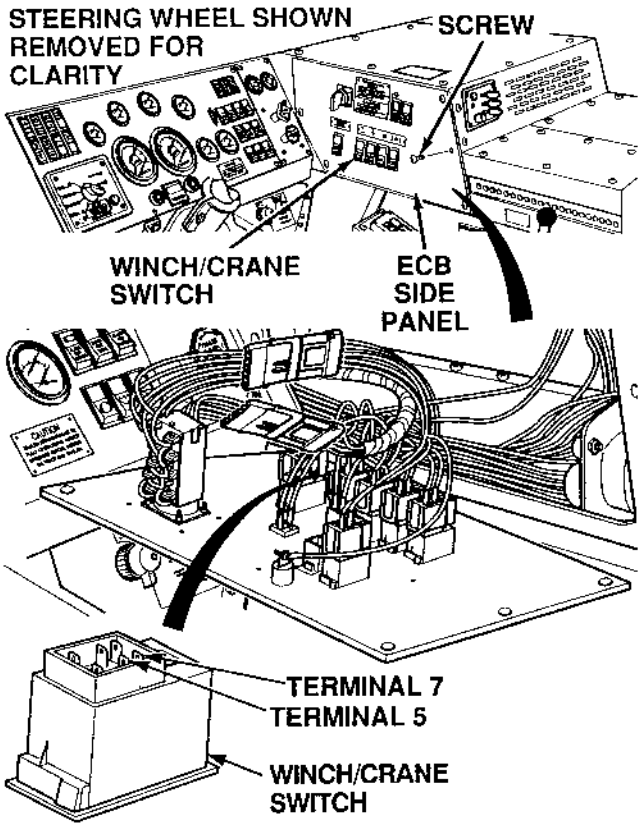


WARNING

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 six screws and tilt ECB side panel.
(2) Disconnect WINCH/CRANE switch harness connector.
(3) Set multimeter select switch to ohms.
(4) Is there continuity between terminals 5 and 7 on the CRANE/WINCH switch?
  (a) If there is no continuity, replace switch (Para 17-20) and go to Step 6 of this Fault.
  (b) If there is continuity, CRANE/WINCH switch is OK. Repair wire 1732 (see schematic Fig 2-65) or notify DS Maintenance. Go to Step 6 of this Fault.
(5) Connect WINCH/CRANE harness connector.
(6) Install ECB side panel with six screws.



1. SRW WILL NOT PAY IN OR OUT USING CONTROL LEVER (CONT).

KNOWN INFO

WINCH/CRANE switch is in WINCH position.
AUX HYD light L27 operates.
Crane operates.
Hoses 2809, 2899 and 2886 OK.
Control manifold OK.
WINCH/CRANE switch OK.
Wire 1732 OK.

POSSIBLE PROBLEMS

Wire 1435 faulty.

5.

WARNING
Read WARNING on Page 2-2823

Is continuity measured on wire 1435 between main supply valve solenoid connector MC123, terminal 2 and a known good ground?

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If wire 1435 is loose or faulty, SRW control manifold supply valve solenoid will not be grounded.

NO → Repair wire 1435 (see schematic Fig 2-65) or notify DS Maintenance. Verify repair, go to Step 6 of this Fault.

YES → Fault not corrected. Notify DS Maintenance.

KNOWN INFO

WINCH/CRANE switch is in WINCH position.
AUX HYD light L27 operates.
Crane operates.
Hoses 2809, 2899 and 2886 OK.
Control manifold OK.
WINCH/CRANE switch OK.
Wire 1732 OK.
Wire 1435 OK.

POSSIBLE PROBLEMS

6.

Does winch operate correctly when operating the control lever?

TEST OPTIONS

Verify repair.

REASON FOR QUESTION

If winch operates correctly, the fault is corrected.

NO → Fault not corrected. Notify DS Maintenance.

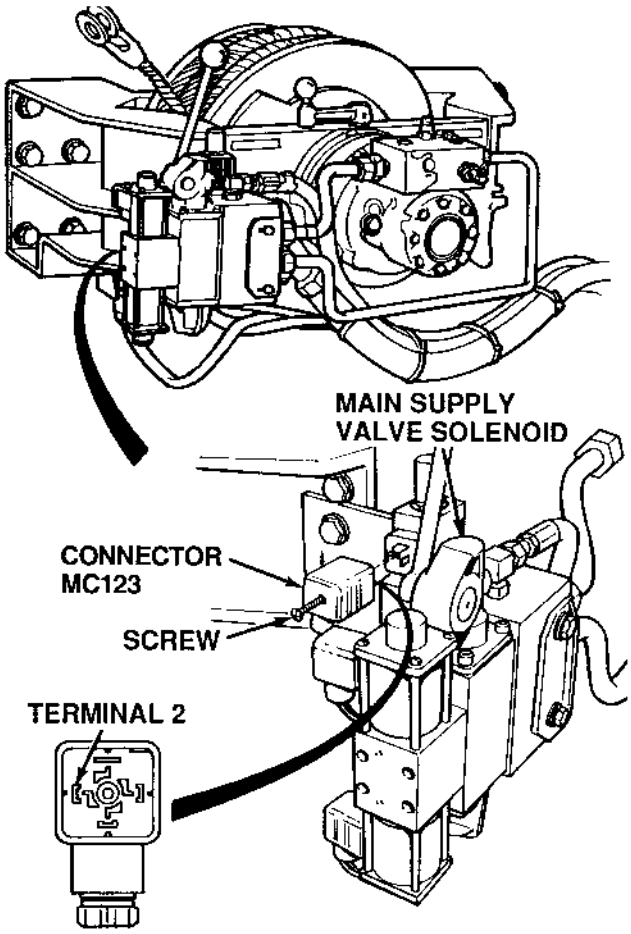
YES → Fault corrected.

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.

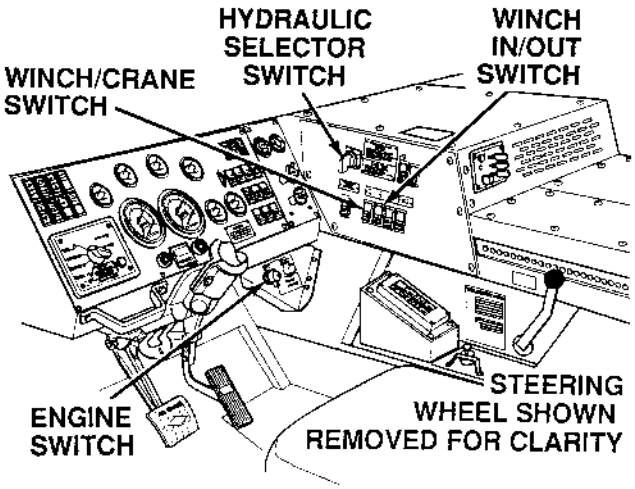
CONTINUITY TEST

(1) Is there continuity between main supply valve solenoid connector MC123, terminal 2 and a known good ground?
   (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-65) or notify DS Maintenance.
   (b) If there is continuity, wire 1435 is OK. Perform Steps (2) and (3) below and notify DS Maintenance.
(2) Connect solenoid connector to supply valve.
(3) Tighten screw and coat head of connector screw with adhesive.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Operate SRW.
   (a) If SRW does not operate correctly, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
   (b) If SRW operates correctly, fault has been corrected.
(3) Turn OFF engine switch.



2-30. SELF RECOVERY WINCH (SRW) TROUBLESHOOTING (CONT).

2. SELF RECOVERY WINCH (SRW) WILL NOT PAY IN OR OUT USING CAB WINCH IN/OUT SWITCH.

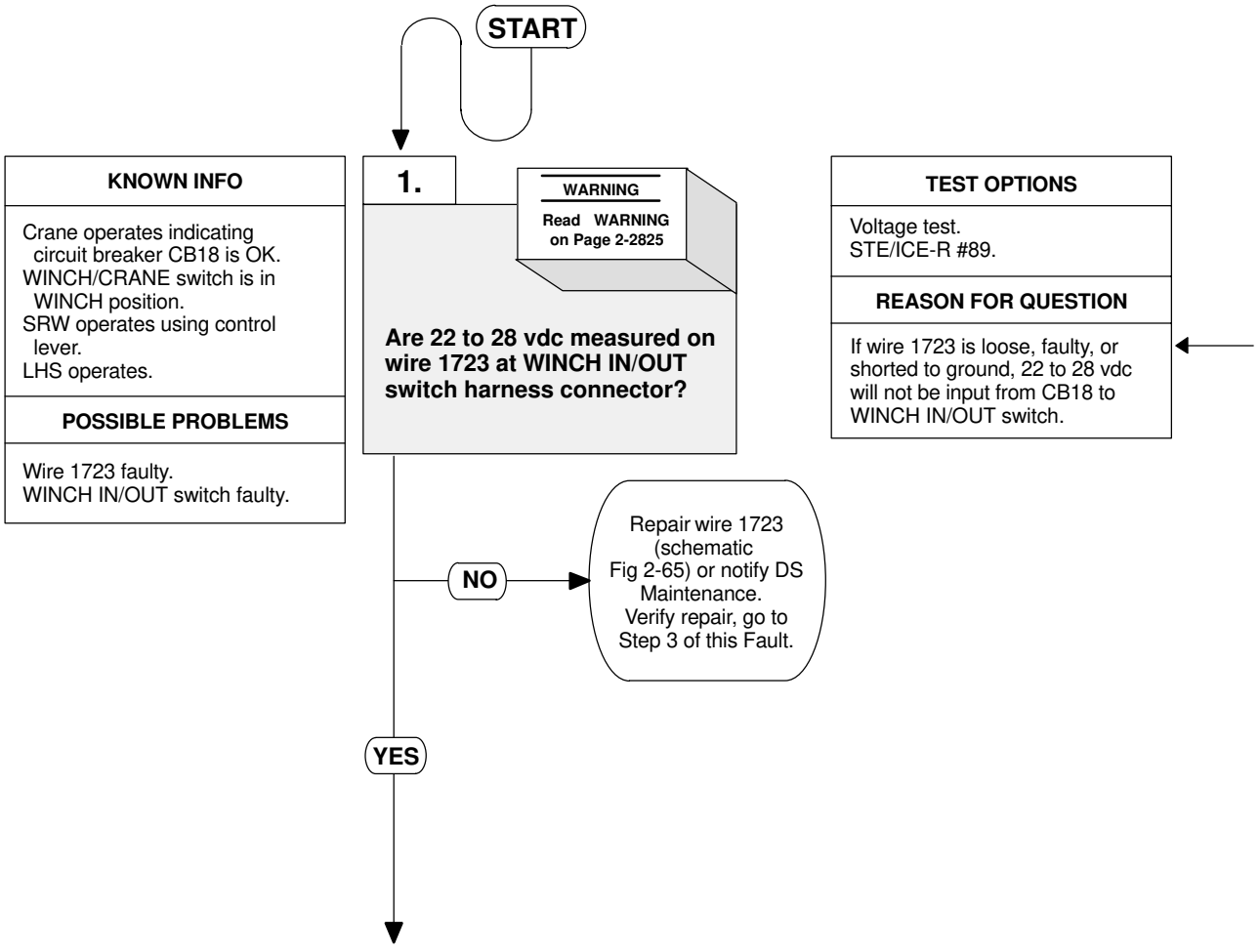
INITIAL SETUP

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)

Personnel Required
Two

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

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

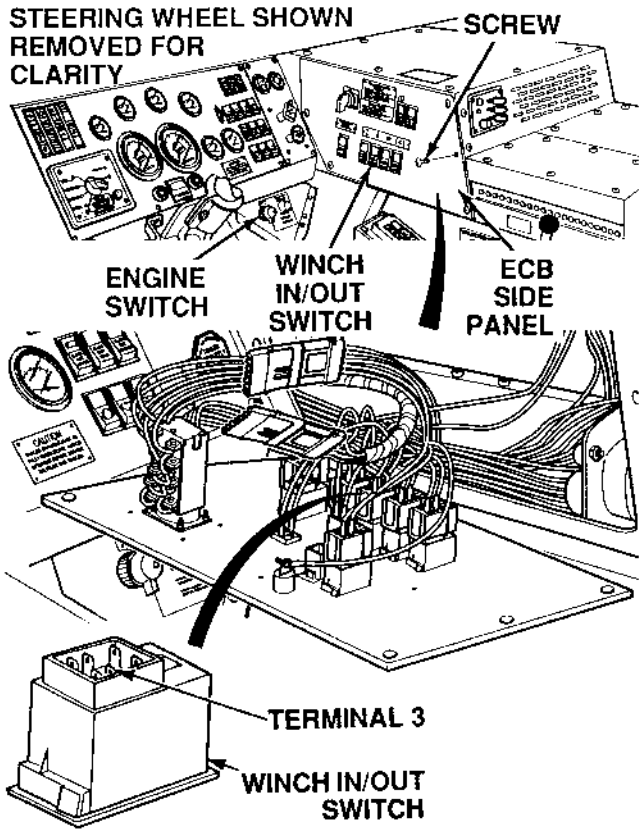


WARNING

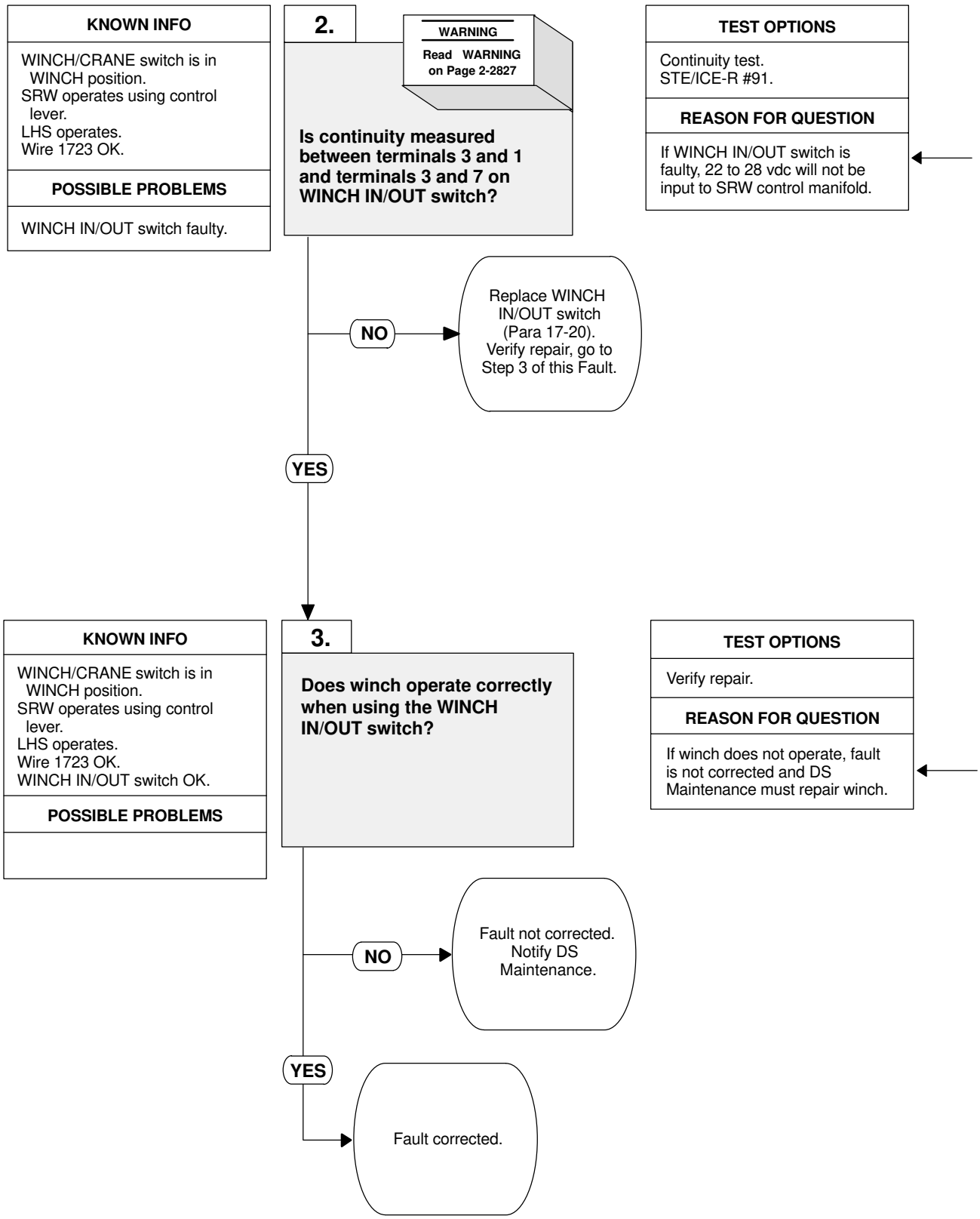
Remove all jewelry such as rings, dog tags, bracelets etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Remove six screws and ECB side panel.
(2) Disconnect harness connector from WINCH IN/OUT switch.
(3) Connect positive (+) multimeter lead to WINCH IN/OUT switch harness connector, terminal 3.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
    (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1723 (see schematic Fig 2-65) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, wire 1723 is OK. Perform Step (6) below and go to Step 2 of this Fault.
(6) Turn OFF ENGINE switch.



2. SRW WILL NOT PAY IN OR OUT USING CAB WINCH IN/OUT SWITCH (CONT).

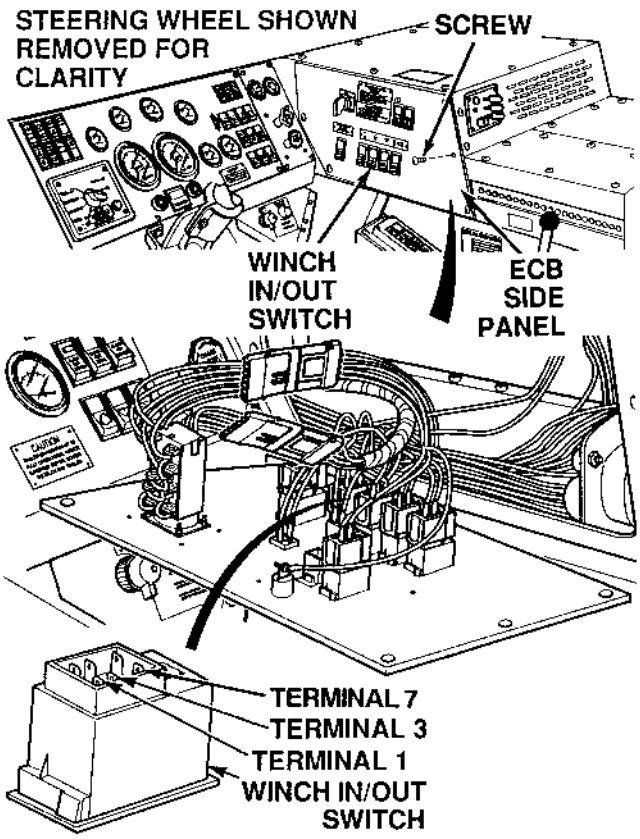


WARNING

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.

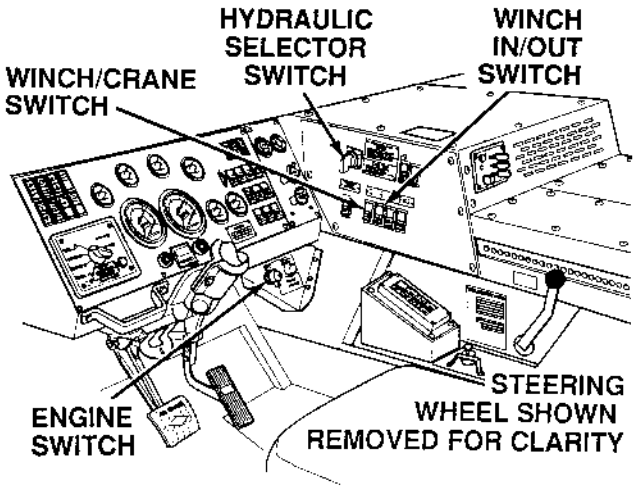
CONTINUITY TEST

(1) Set WINCH IN/OUT switch to OUT position (TM 9-2320-364-10).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between WINCH IN/OUT switch terminals 3 and 1?
  (a) If there is no continuity, replace switch (Para 17-20).
  (b) If there is continuity, go to Step (4) below.
(4) Set WINCH IN/OUT switch to the IN position.
(5) Is there continuity between WINCH IN/OUT switch terminals 3 and 7?
  (a) If there is no continuity, replace switch (Para 17-20).
  (b) If there is continuity, perform Steps (6) and (7) below and go to Step 3 of this Fault.
(6) Connect harness connector to WINCH IN/OUT switch.
(7) Install ECB side panel and six screws.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set WINCH/CRANE switch to WINCH position.
(3) Set hydraulic selector switch to CRANE/SRW position.
(4) Attempt to operate SRW using WINCH IN/OUT switch while assistant observes operation.
  (a) If winch does not operate, fault not corrected. Perform Steps (5) and (6) below and notify DS Maintenance.
  (b) If winch operates, fault has been corrected.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.



2-30. SELF RECOVERY WINCH (SRW) TROUBLESHOOTING (CONT).

3. SELF RECOVERY WINCH (SRW) WILL NOT PAY IN USING CAB WINCH IN/OUT SWITCH.

INITIAL SETUP

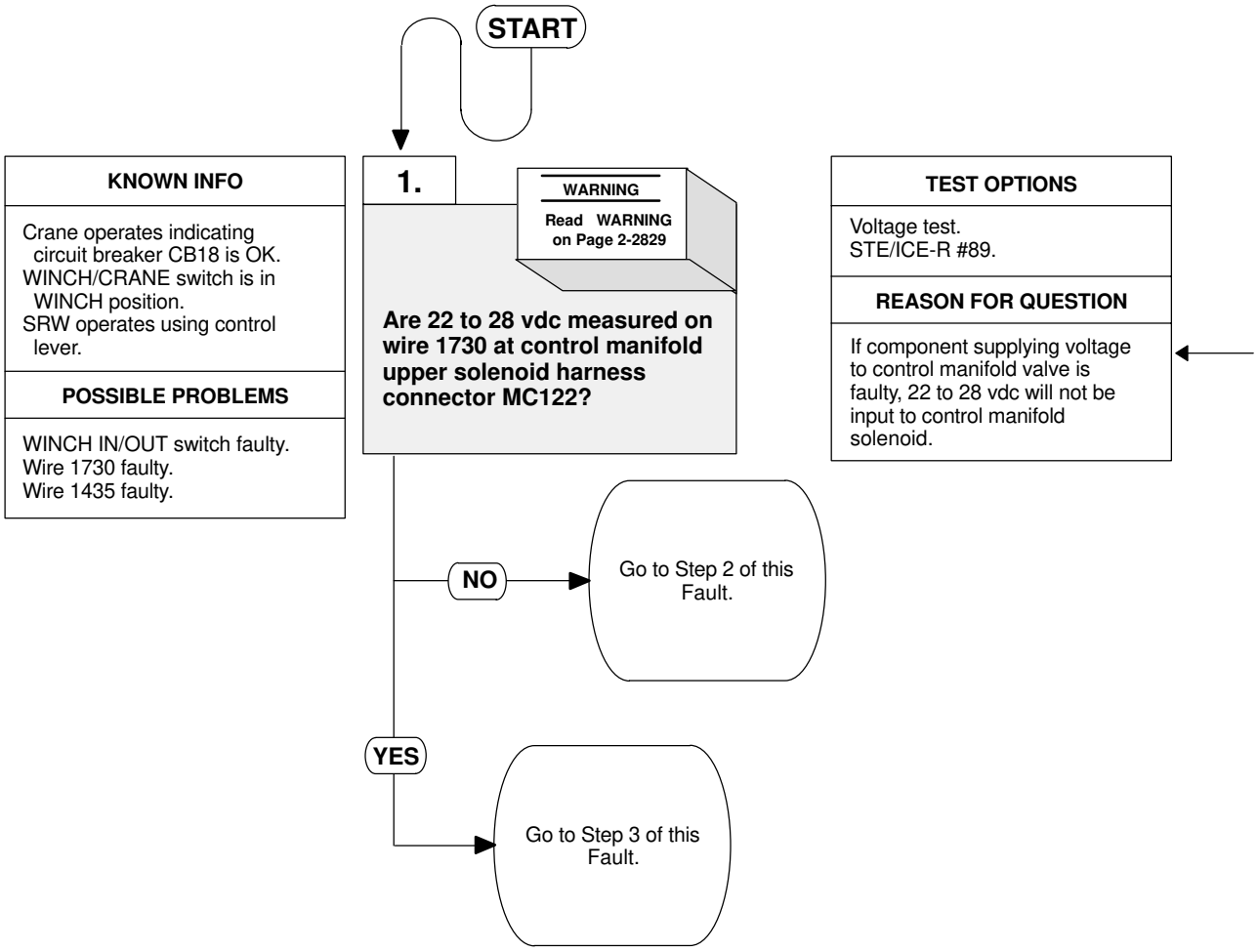
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)

Materials/Parts
Adhesive (Item 9, Appendix C)

Personnel Required
Two

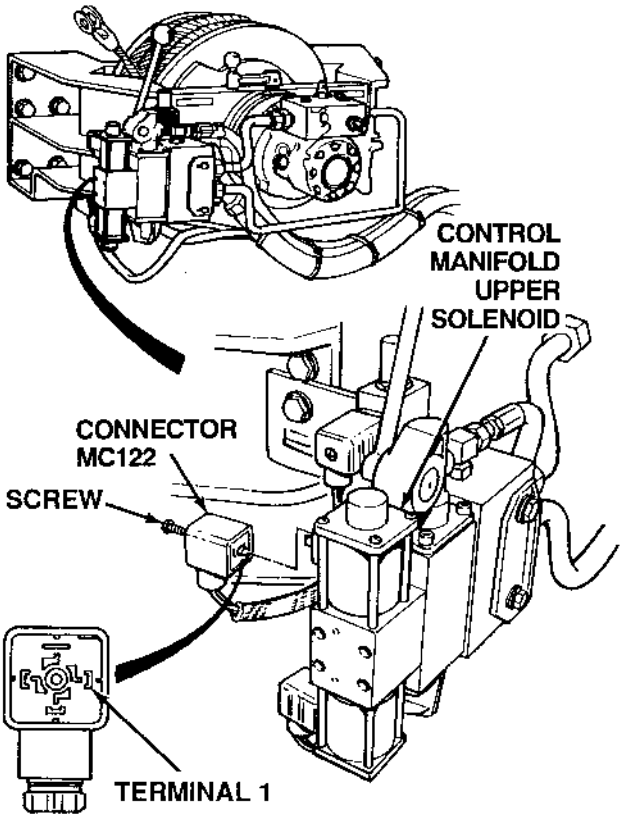
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



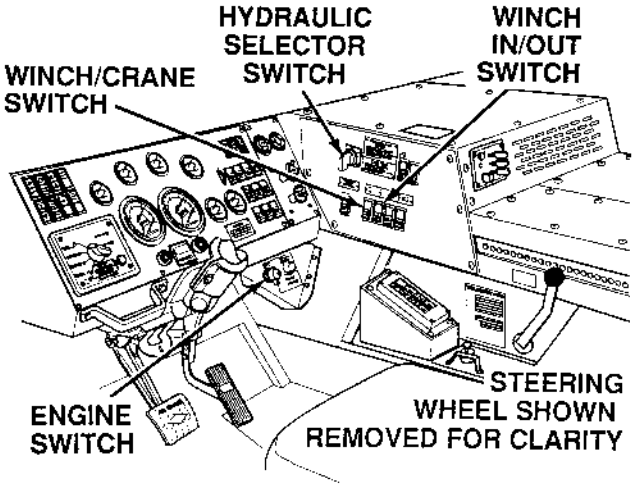
WARNING

- 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.
- Adhesives, solvents, and sealing compounds can burn easily, can 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.

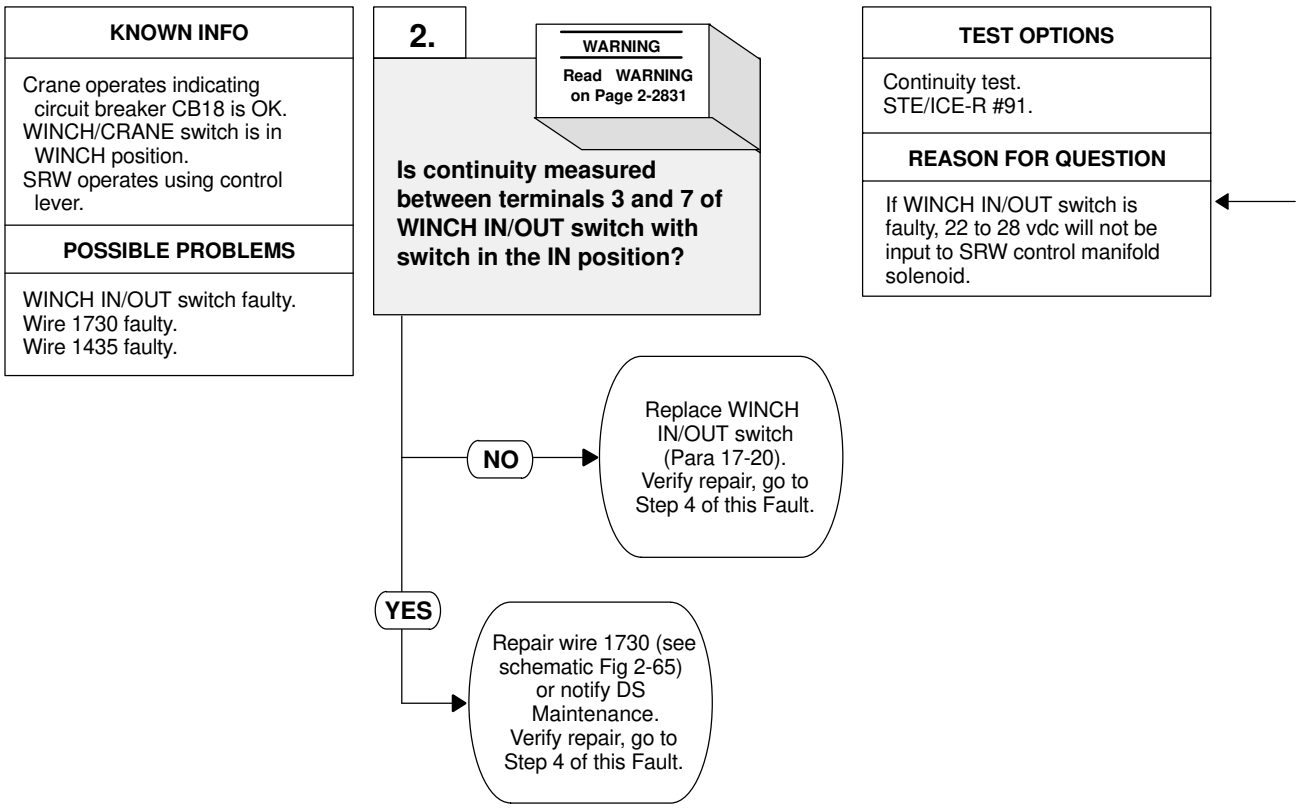


VOLTAGE TEST

(1) Loosen screw and disconnect connector MC122 from control manifold upper control solenoid.
(2) Connect positive (+) multimeter lead to wire 1730 at harness connector MC122, terminal 1.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) With the aid of an assistant, hold WINCH IN/OUT switch in the IN position.
    (a) If 22 to 28 vdc are not present, perform Steps (6) through (8) below and go to Step 2 of this Fault.
    (b) If 22 to 28 vdc are present, wire 1730 is OK. Perform Step (6) below and go to Step 3 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect connector MC122 to control manifold upper solenoid.
(8) Tighten screw and coat head of connector screw with adhesive.



3. SRW WILL NOT PAY IN USING CAB WINCH IN/OUT SWITCH (CONT).

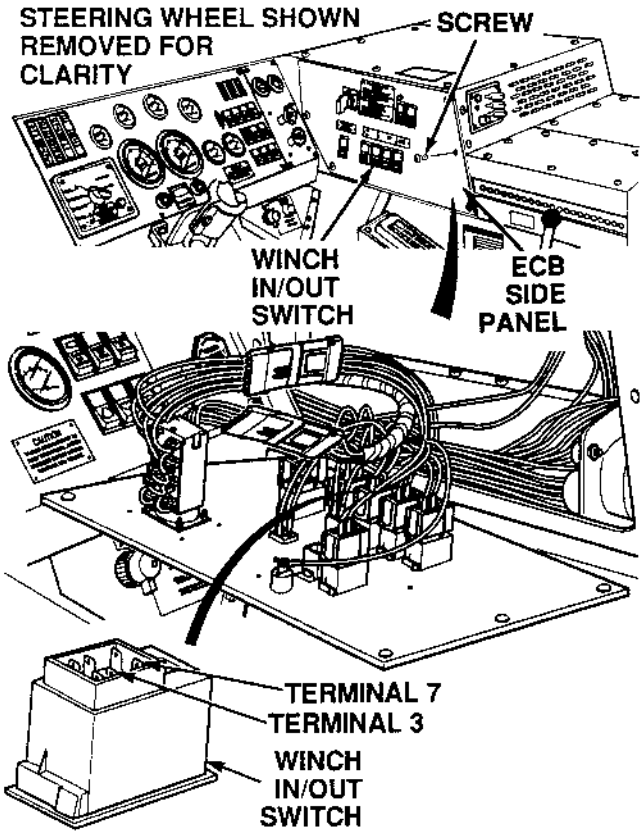


WARNING

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 six screws and tilt ECB side panel.
(2) Disconnect harness connector from WINCH IN/OUT switch.
(3) Set multimeter select switch to ohms.
(4) Hold winch switch in the IN position.
(5) Check continuity between WINCH IN/OUT switch terminals 3 and 7 with switch in the IN position.
  (a) If there is no continuity, replace switch (Para 17-20) and go to Step 4 of this Fault.
  (b) If there is continuity, repair wire 1730 (see schematic Fig 2-65) or notify DS Maintenance. Perform Steps (6) and (7) below.
(6) Connect harness connector to WINCH IN/OUT switch.
(7) Install ECB side panel with six screws.



3. SRW WILL NOT PAY IN USING CAB WINCH IN/OUT SWITCH (CONT).

KNOWN INFO

Crane operates indicating circuit breaker CB18 is OK.
WINCH/CRANE switch is in WINCH position.
SRW operates using control lever.
WINCH IN/OUT switch OK.
Wire 1730 OK.

POSSIBLE PROBLEMS

Wire 1435 faulty.

3.

WARNING
Read WARNING on Page 2-2833

Is continuity measured on wire 1435 between control manifold upper control solenoid connector MC122, terminal 2 and a known good ground?

NO → Repair wire 1435 (see schematic Fig 2-65) or notify DS Maintenance. Verify repair, go to Step 4 of this Fault.

YES → Fault not corrected. Notify DS Maintenance.

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If wire 1435 is loose or faulty, control manifold valve will not be grounded.

KNOWN INFO

Crane operates indicating circuit breaker CB18 is OK.
WINCH/CRANE switch is in WINCH position.
SRW operates using control lever.
WINCH IN/OUT switch OK.
Wire 1730 OK.
Wire 1435 OK.

POSSIBLE PROBLEMS

4.

Does winch operate correctly when using WINCH IN/OUT switch?

NO → Fault not corrected. Notify DS Maintenance.

YES → Fault corrected.

TEST OPTIONS

Verify repair.

REASON FOR QUESTION

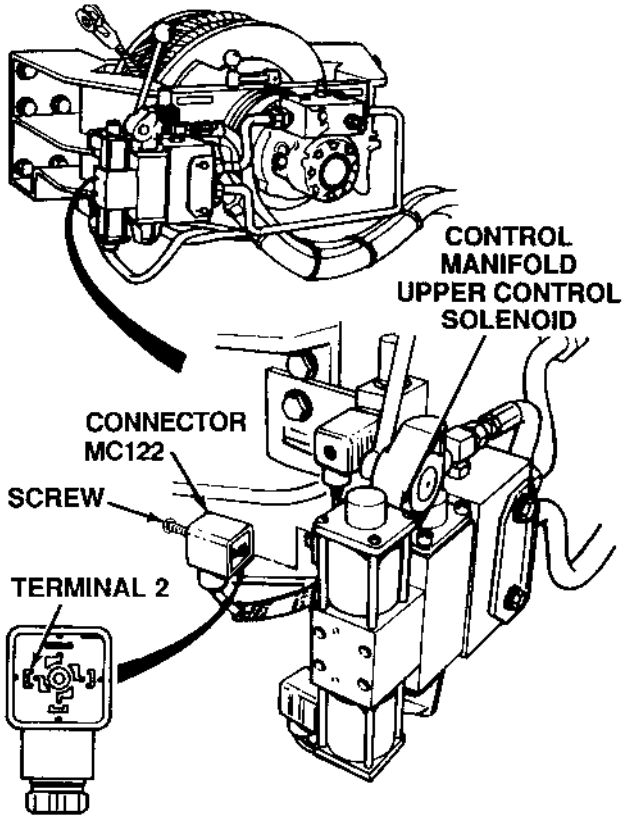
If winch operates, Fault has been corrected.

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.

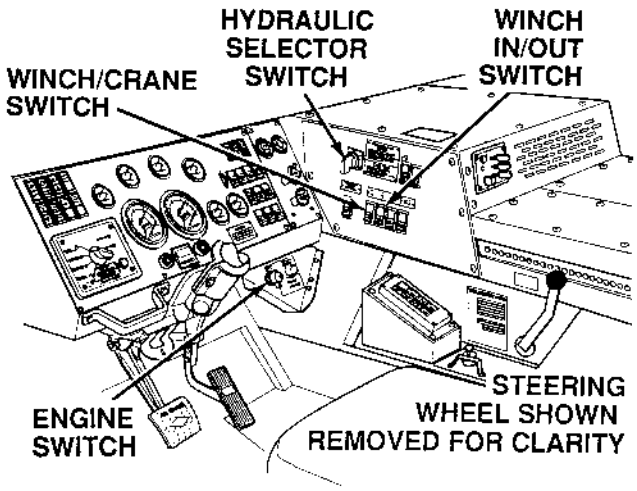
CONTINUITY TEST

(1) Is there continuity between upper control solenoid harness connector MC122, terminal 2 and a known good ground?
   (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-65) or notify DS Maintenance. Go to Step 4 of this Fault.
   (b) If there is continuity, wire 1435 is OK. Perform Steps (2) and (3) below and go to Step 4 of this Fault.
(2) Connect solenoid connector MC122 to upper solenoid.
(3) Tighten connector screw and coat head of connector screw with adhesive.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set WINCH/CRANE switch to WINCH position.
(3) Set hydraulic selector switch to CRANE/SRW position.
(4) Attempt to operate SRW using WINCH IN/OUT switch while assistant observes operation.
   (a) If winch does not operate, fault not corrected. Perform Steps (5) and (6) below and notify DS Maintenance.
   (b) If winch operates, fault has been corrected.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.



2-30. SELF RECOVERY WINCH (SRW) TROUBLESHOOTING (CONT).

4. SELF RECOVERY WINCH (SRW) WILL NOT PAY OUT USING CAB WINCH IN/OUT SWITCH.

INITIAL SETUP

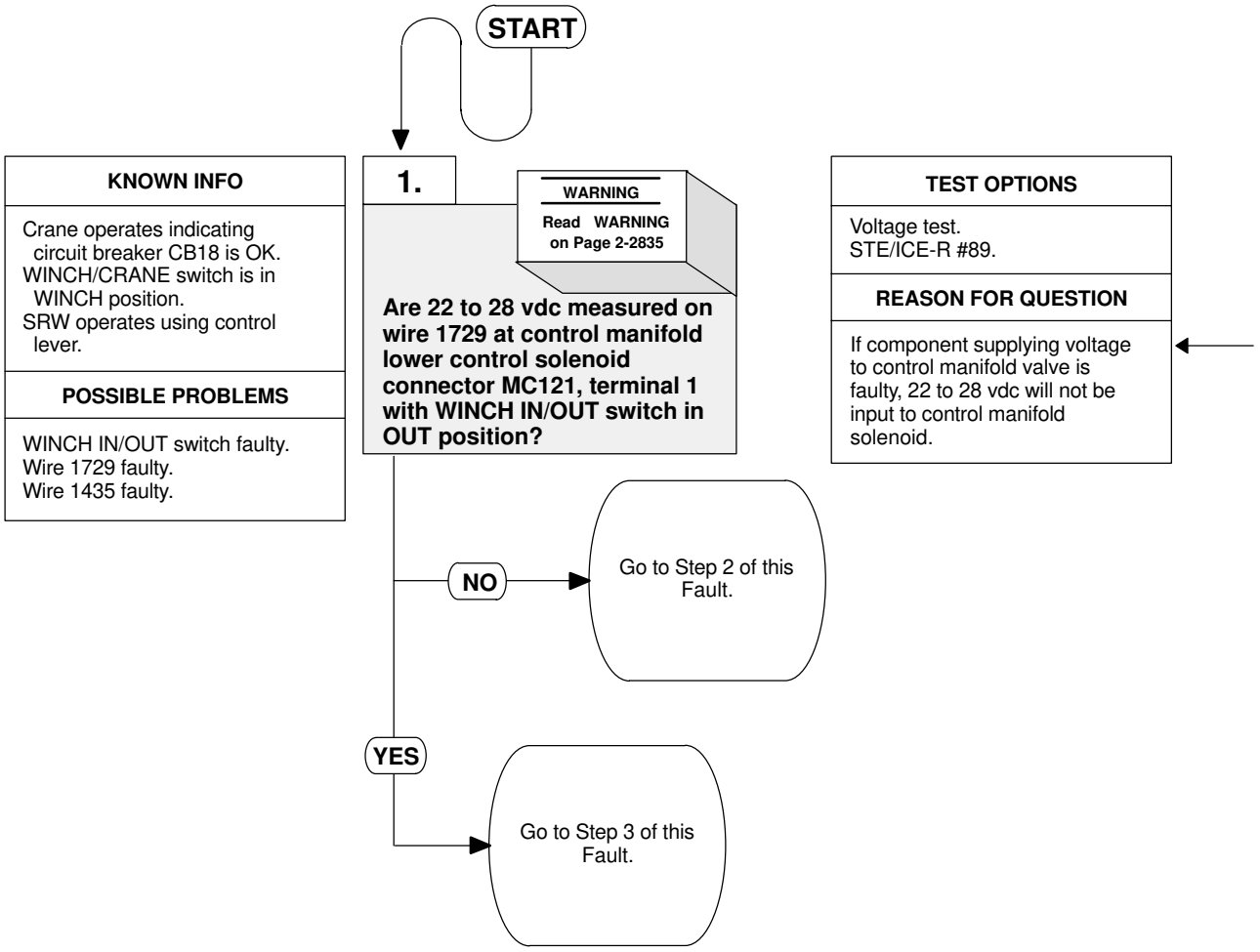
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)

Materials/Parts
Adhesive (Item 9, Appendix C)

Personnel Required
Two

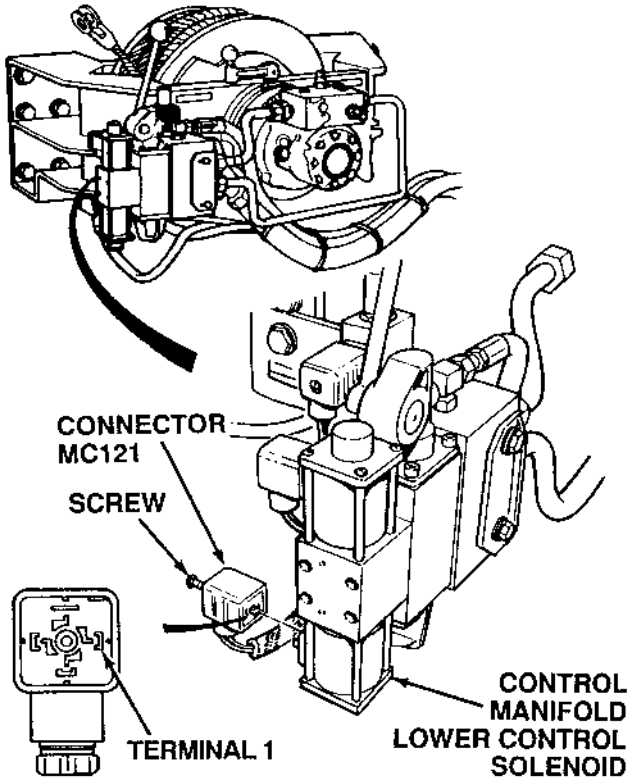
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



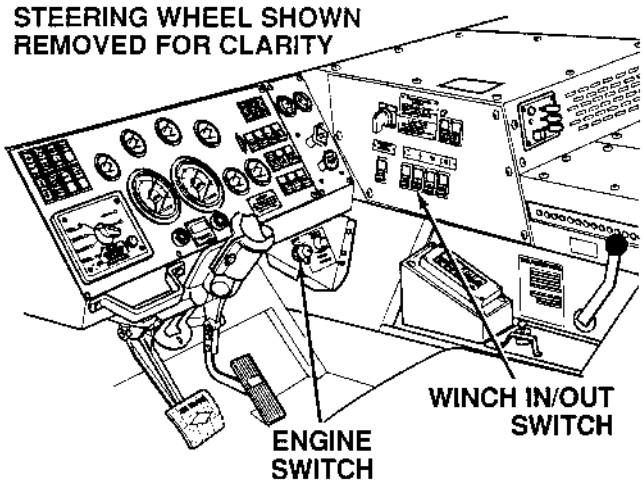
WARNING

- 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.
- Adhesives, solvents, and sealing compounds can burn easily, can 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.

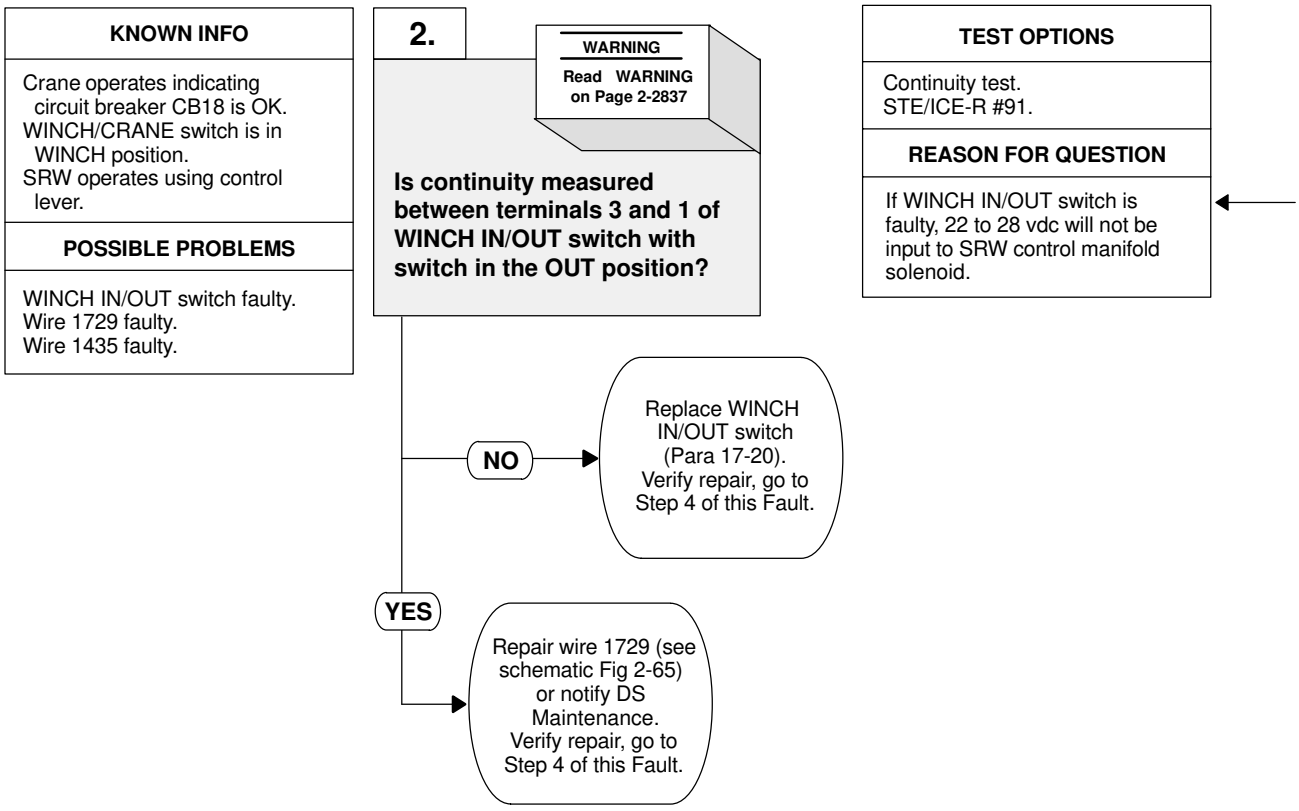


VOLTAGE TEST

(1) Loosen screw and disconnect connector MC121 from control manifold lower control solenoid.
(2) Connect positive (+) multimeter lead to wire 1729 at harness connector MC121, terminal 1.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) With the aid of an assistant, hold WINCH IN/OUT switch in the OUT position.
    (a) If 22 to 28 vdc are not present, perform Steps (6) through (8) below and go to Step 2 of this Fault.
    (b) If 22 to 28 vdc are present, wire 1729 is OK. Perform Step (6) below and go to Step 3 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect connector to control manifold lower control solenoid.
(8) Tighten connector screw and coat head of connector screw with adhesive.



4. SRW WILL NOT PAY OUT USING CAB WINCH IN/OUT SWITCH (CONT).

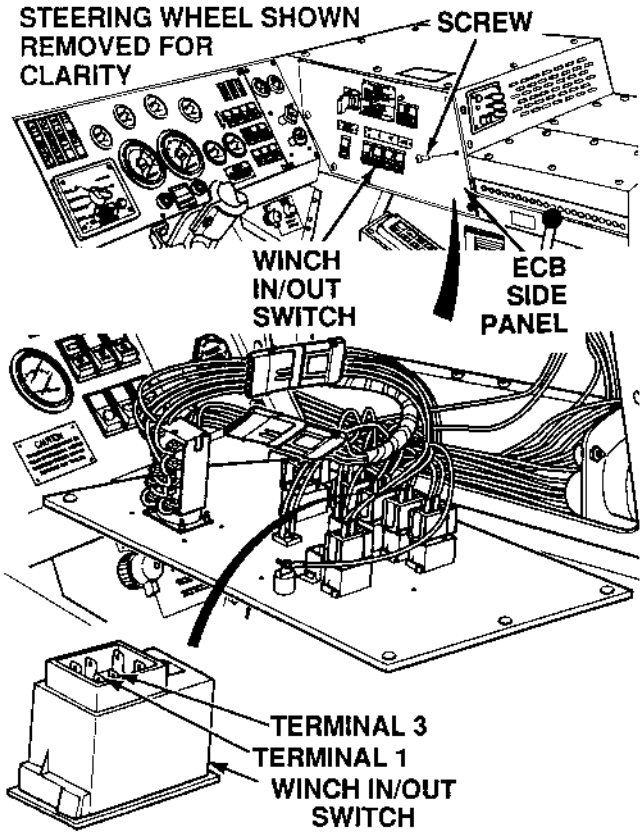


WARNING

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 six screws and tilt ECB side panel. Do not disconnect wires.
(2) Disconnect harness connector from WINCH IN/OUT switch.
(3) Set multimeter select switch to ohms.
(4) Is there continuity between WINCH IN/OUT terminals 1 and 3 with switch in the OUT position.
  (a) If there is no continuity, replace switch (Para 17-20) and go to Step 4 of this Fault.
  (b) If there is continuity, repair wire 1729 (see schematic Fig 2-65) and perform Steps (5) and (6) below or notify DS Maintenance.
(5) Connect harness connector to WINCH IN/OUT switch.
(6) Install ECB side panel with six screws.



4. SRW WILL NOT PAY IN USING CAB WINCH IN/OUT SWITCH (CONT).

KNOWN INFO
Crane operates indicating circuit breaker CB18 is OK. WINCH/CRANE switch is in WINCH position. Winch operates using control lever. WINCH IN/OUT switch OK. Wire 1729 OK.
POSSIBLE PROBLEMS
Wire 1435 faulty.

3.

WARNING
Read WARNING on Page 2-2839

Is continuity measured on wire 1435 between control manifold lower control solenoid connector MC121 and a known good ground?

TEST OPTIONS
Continuity test. STE/ICE-R #91.
REASON FOR QUESTION
If wire 1435 is loose or faulty, control manifold valve will not be grounded.

NO → Repair wire 1435 (see schematic Fig 2-65) or notify DS Maintenance. Verify repair, go to Step 4 of this Fault.

YES → Fault not corrected. Notify DS Maintenance.

KNOWN INFO
Crane operates indicating circuit breaker CB18 is OK. WINCH/CRANE switch is in WINCH position. SRW operates using control lever. WINCH IN/OUT switch OK. Wire 1729 OK. Wire 1435 OK.
POSSIBLE PROBLEMS

4.

Does winch pay in when using WINCH IN/OUT switch?

TEST OPTIONS
Verify repair.
REASON FOR QUESTION
If winch operates, Fault has been corrected.

NO → Fault not corrected. Notify DS Maintenance.

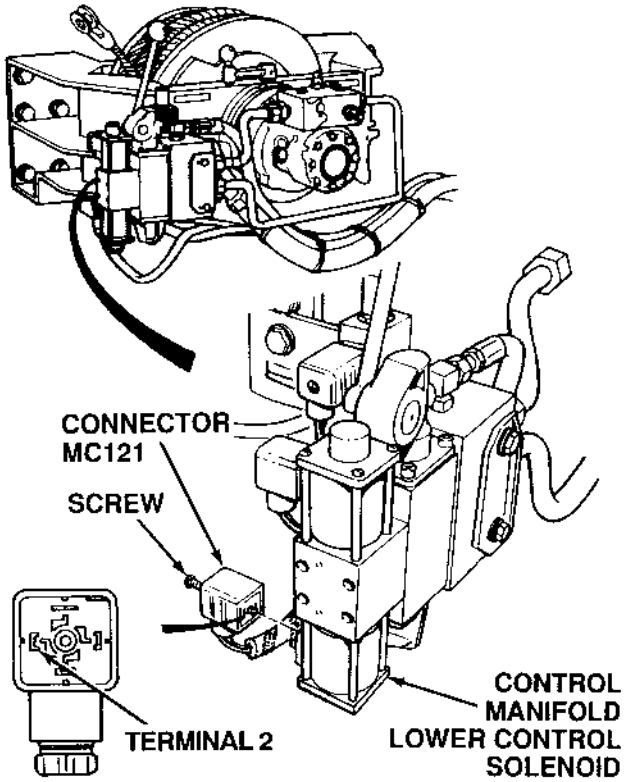
YES → Fault corrected.

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.

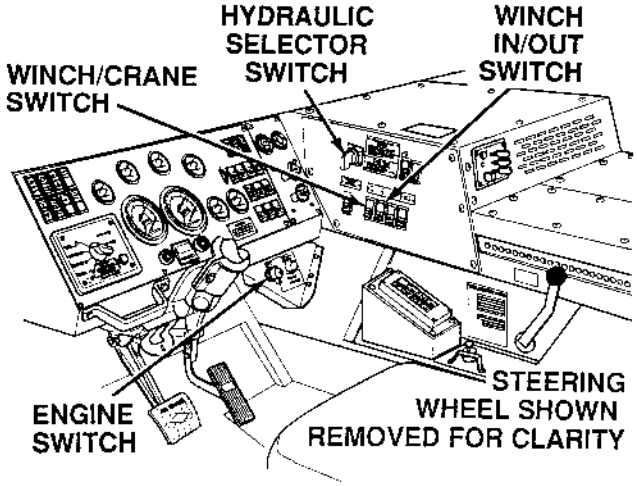
CONTINUITY TEST

(1) Is there continuity between control manifold lower control solenoid harness connector MC121, terminal 2 and a known good ground?
   (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-65) or notify DS Maintenance. Perform Steps (2) and (3) below.
   (b) If there is continuity, wire 1435 is OK. Perform Step (2) and (3) below and Notify DS Maintenance.
(2) Connect solenoid connector to solenoid.
(3) Tighten connector screw and coat head of connector screw with adhesive.



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Set WINCH/CRANE switch to WINCH position.
(3) Set hydraulic selector switch to CRANE/SRW position.
(4) Attempt to operate SRW using WINCH IN/OUT switch while assistant observes operation.
   (a) If winch does not operate, fault not corrected. Perform Steps (5) and (6) below and notify DS Maintenance.
   (b) If winch operates, fault has been corrected.
(5) Set hydraulic selector switch to OFF position.
(6) Turn OFF ENGINE switch.



2-30. SELF RECOVERY WINCH (SRW) TROUBLESHOOTING (CONT).

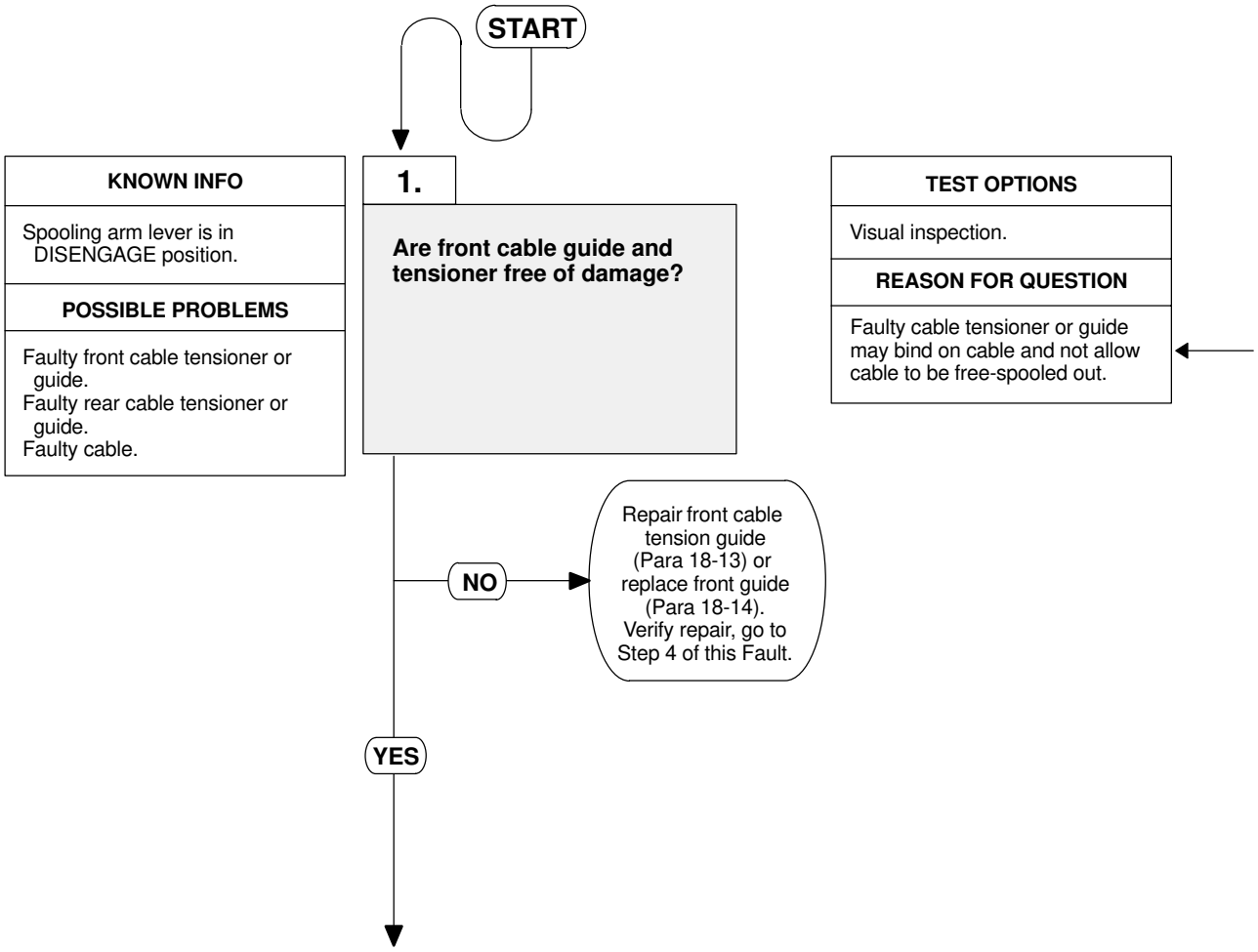
5. CABLE CANNOT BE FREE-SPOOLED OUT FROM FRONT OR REAR OF TRUCK.

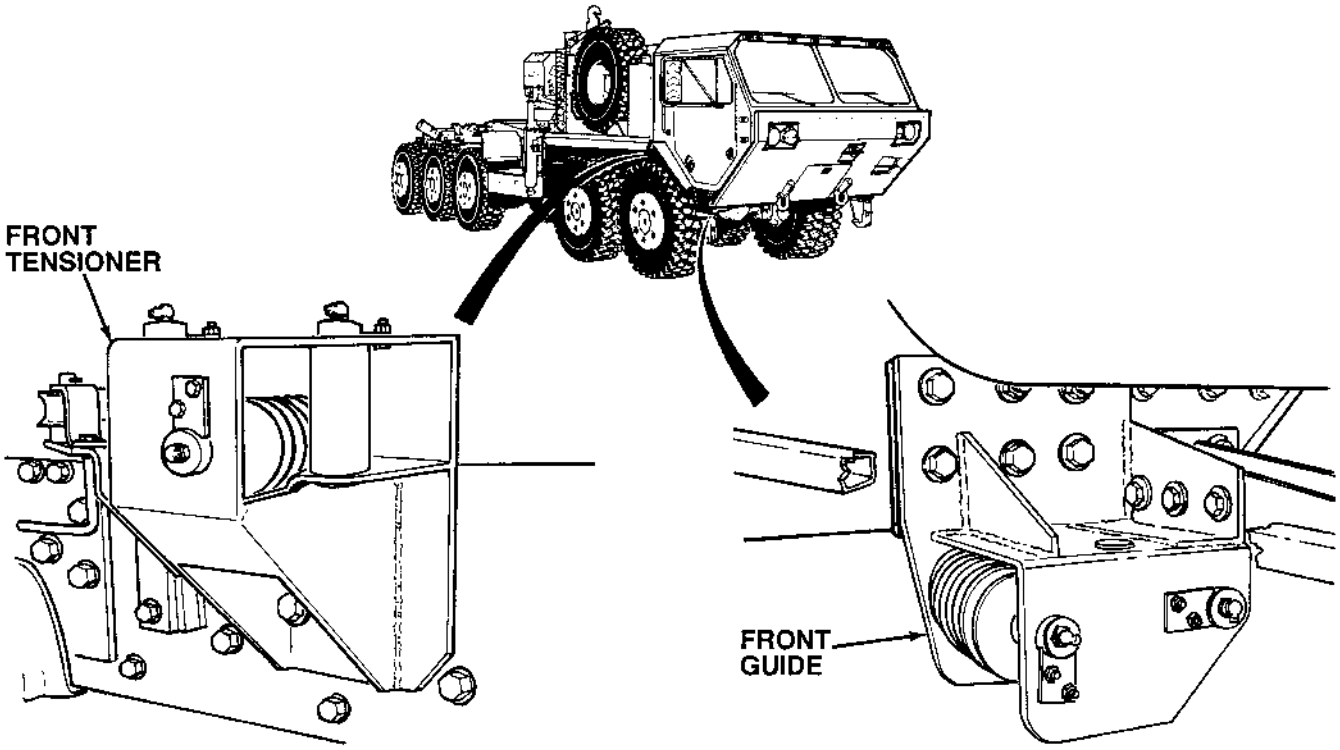
INITIAL SETUP

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Gloves, Heavy Duty (Item 29, 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)

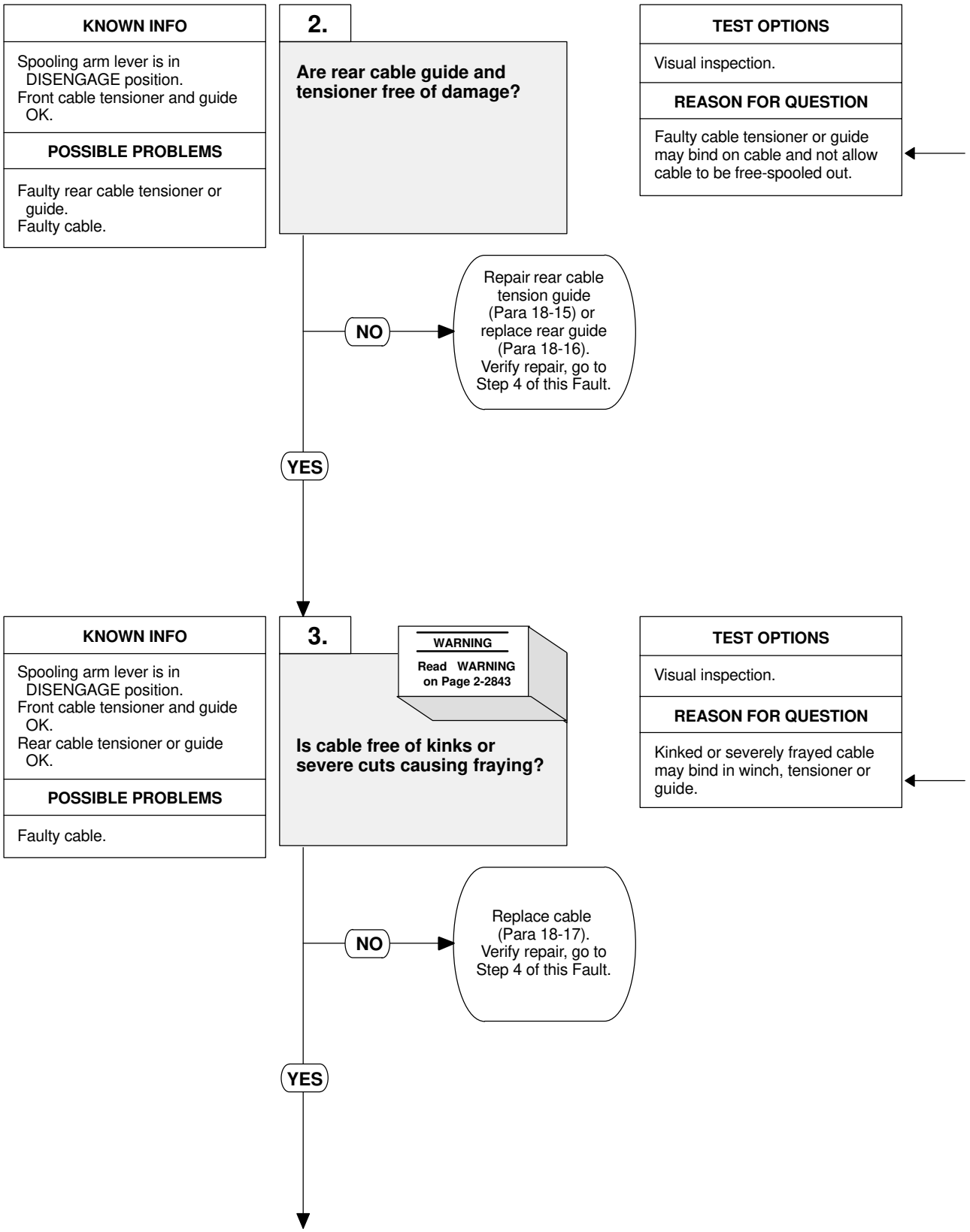
References
TM 9-2320-364-10





VISUAL INSPECTION
Inspect front cable tensioner and guide for damage. (1) If tension guide or guide is damaged or will not roll freely, repair tension guide (Para 18-13) or replace guide (Para 18-14). (2) If tension guide and guide are not damaged and roll freely, go to Step 2 of this Fault.

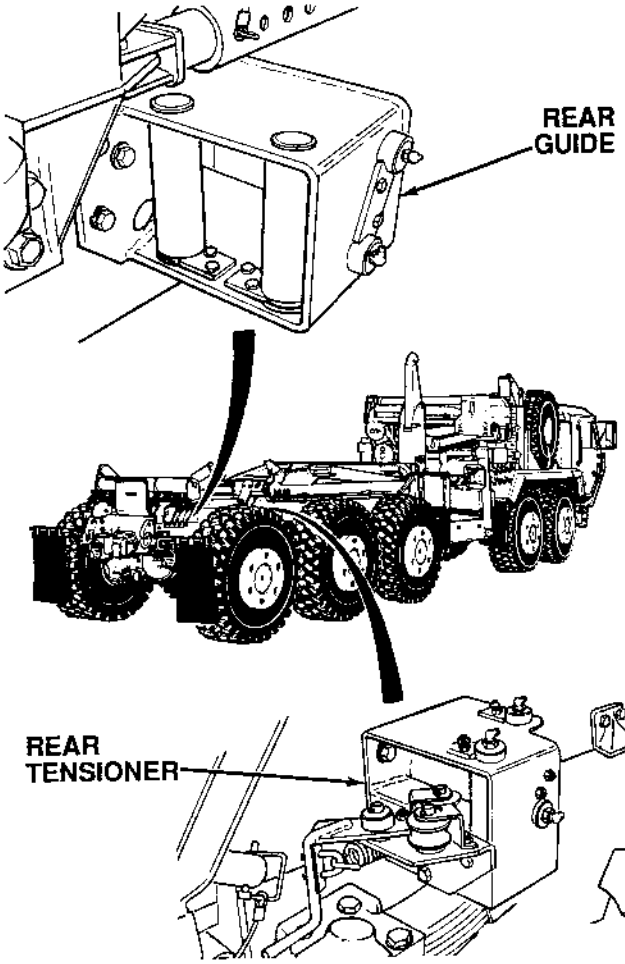
5. CABLE CANNOT BE FREE-SPOOLED OUT FROM FRONT OR REAR OF TRUCK (CONT).



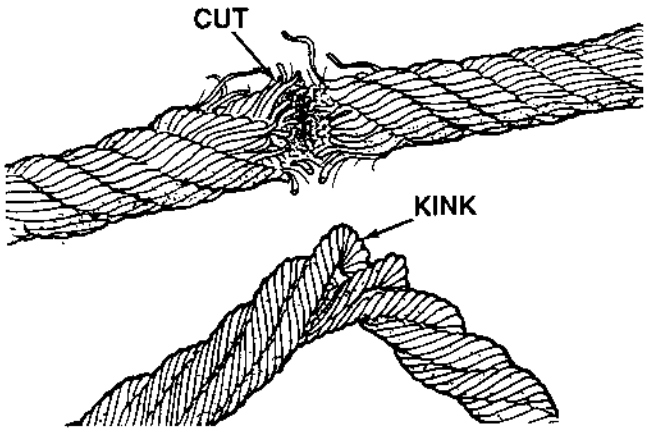
WARNING

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

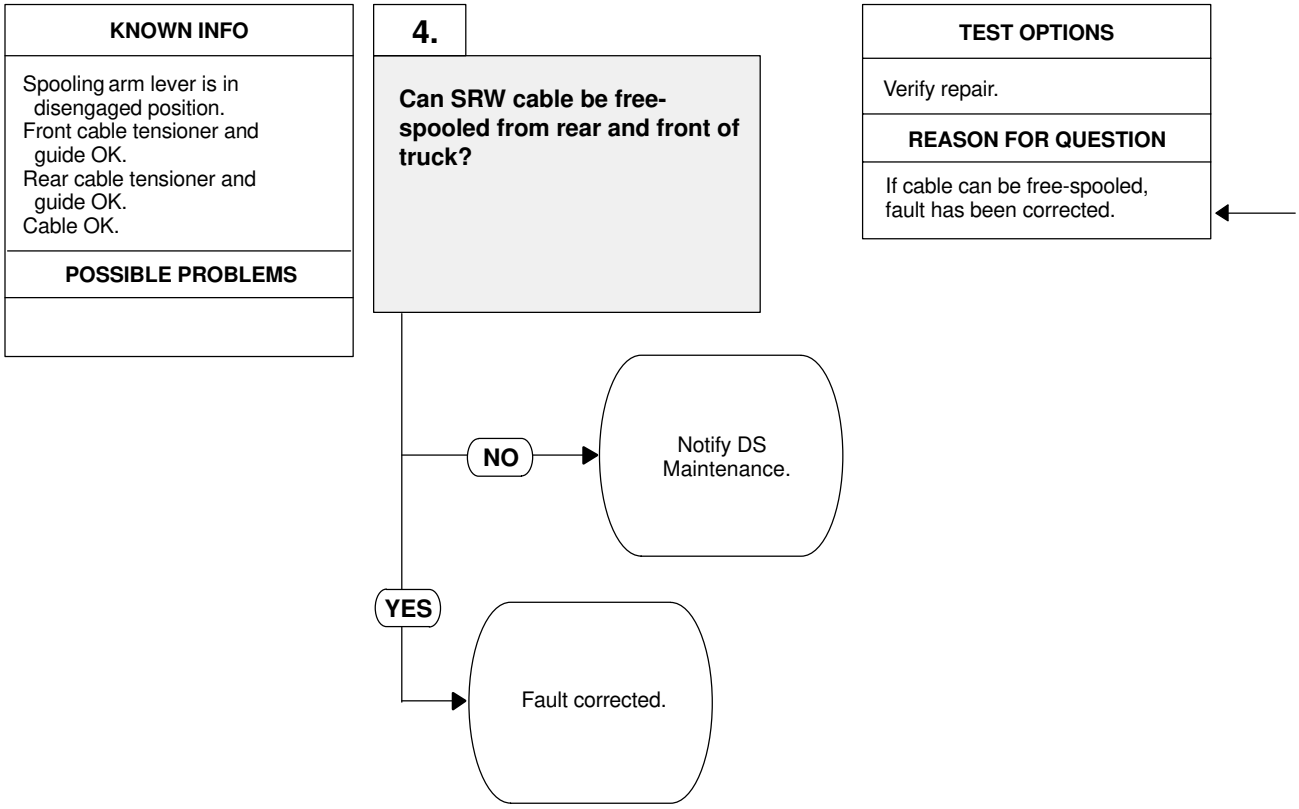
VISUAL INSPECTION
Inspect rear cable tensioner and guide for damage. (1) If tension guide or guide is damaged or will not roll freely, repair tension guide (Para 18-15) or replace guide (Para 18-16). (2) If tension guide and guide are not damaged and roll freely, go to Step 3 of this Fault.



VISUAL INSPECTION
Inspect cable for severe kinks or fraying causing it to bind with winch, cable guide, tensioner or truck where cable is routed. (1) If cable is severely kinked to the point that it will not roll up properly on winch cable drum, replace cable (Para 18-17). (2) If cable has more than three broken wires per inch on same strand or more than six broken wires on all strands in a one-inch running length of cable, replace cable (Para 18-17). The maximum number of broken wires must not occur in any two consecutive inches of cable; that is, if six wires are broken in one inch of cable, none would be allowed in the next consecutive inch. (3) If cable is not severely kinked or frayed, cable is OK.

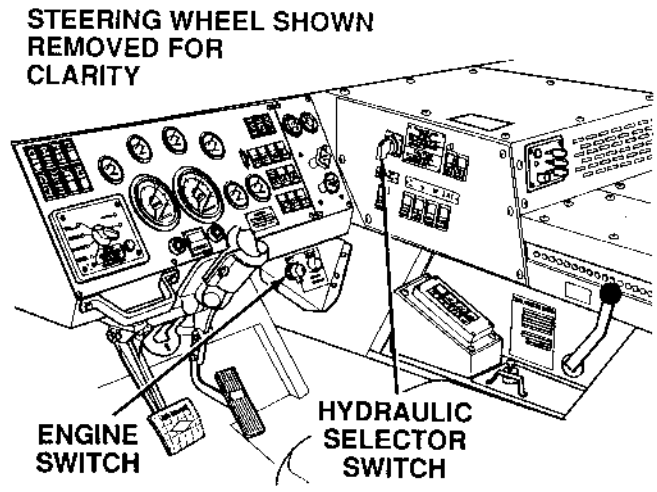


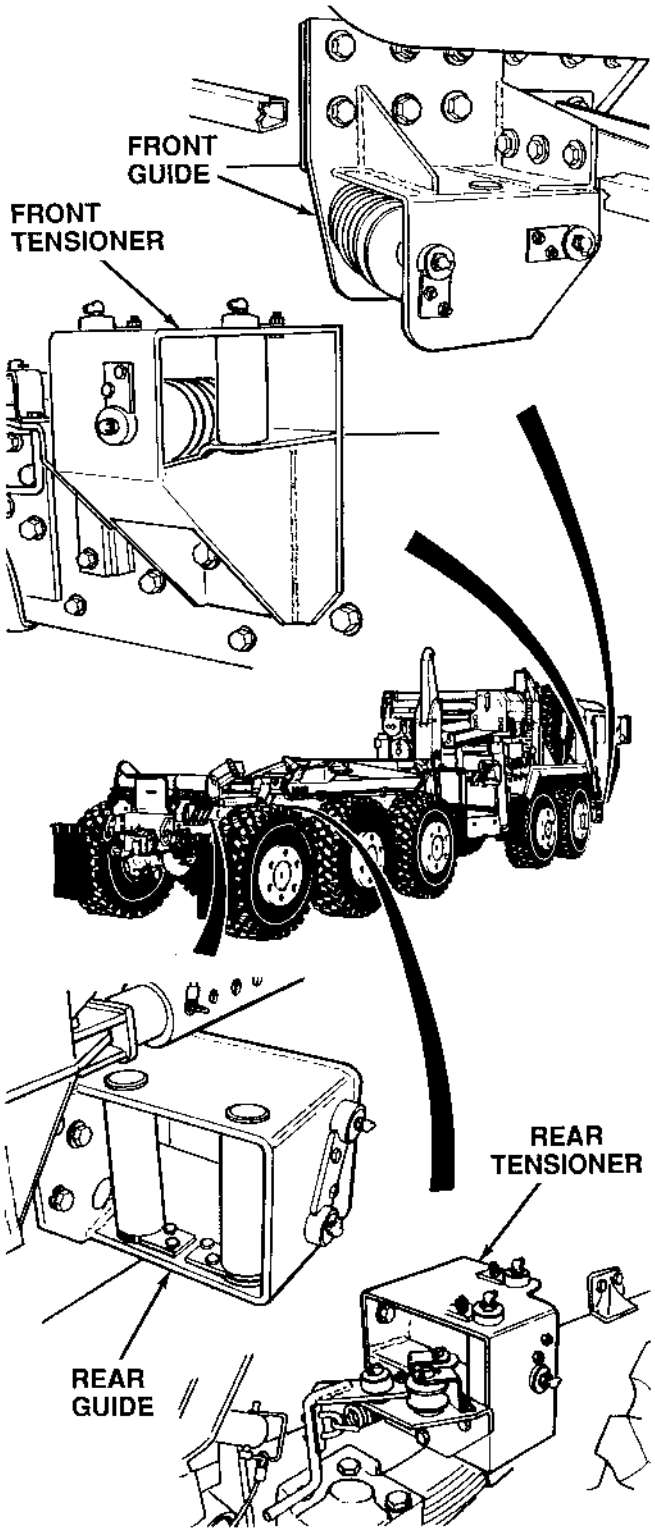
5. CABLE CANNOT BE FREE-SPOOLED OUT FROM FRONT OR REAR OF TRUCK (CONT).



VERIFY REPAIR

(1) Route SRW cable through front guide and tensioner (TM 9-2320-364-10).
(2) Attempt to free-spool SRW cable.
  (a) If SRW does not free-spool, fault not corrected. Perform Steps (5) through (7) below and notify DS Maintenance.
  (b) If SRW free-spools, pay in SRW cable and go to Step (3) below.
(3) Route SRW cable through rear guide and tensioner (TM 9-2320-364-10).
(4) Attempt to free-spool SRW cable.
  (a) If SRW does not free-spool, fault not corrected. Perform Steps (5) through (7) below and notify DS Maintenance.
  (b) If SRW free-spools, fault has been corrected.
(5) Pay in SRW cable.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.





2-31. HYDRAULIC SYSTEM TROUBLESHOOTING.

This paragraph covers Hydraulic System Troubleshooting. The Hydraulic System Fault Index, Table 2-56, lists faults for the hydraulic system of the PLS truck. Refer to schematics Figures 2-67 through 2-70 when performing tests and corrective actions.

Table 2-56. Hydraulic System Fault Index

Fault No.	Description	Page
1.	Auxiliary Hydraulics (Aux Hyd) Light Does Not Operate	2-2852
2.	Crane And Winch (SRW) Do Not Operate	2-2874
3.	LHS, Winch And Crane Do Not Operate	2-2884
4.	Fan, LHS, Winch And Crane Do Not Operate	2-2894
5.	Fan Does Not Operate	2-2904
6.	Fan Speed Does Not Lower From High Speed To Low Speed	2-2908

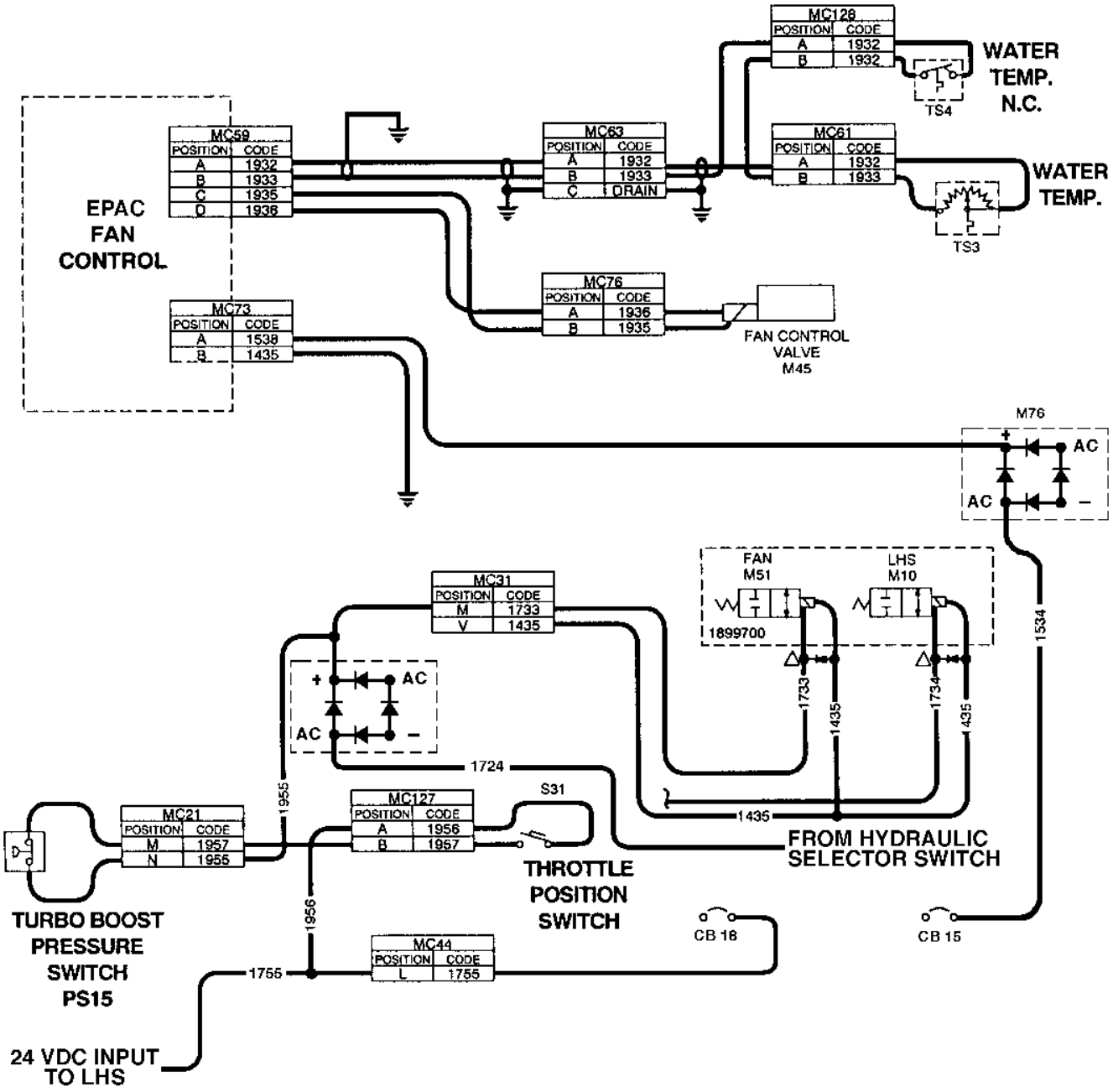


Figure 2-67. Hydraulic Fan System Wiring Schematic

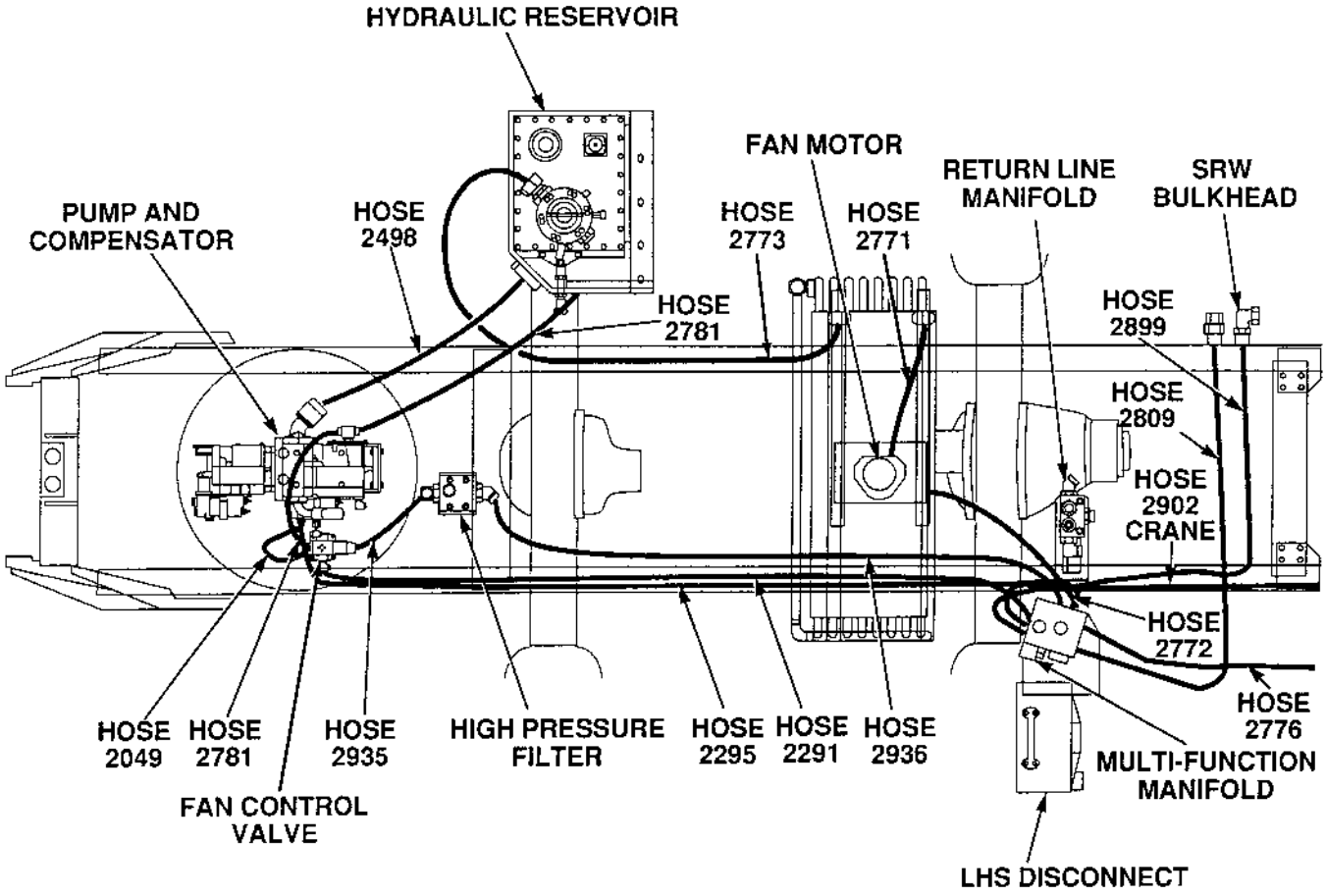


Figure 2-68. Main Hydraulic System Routing Diagram

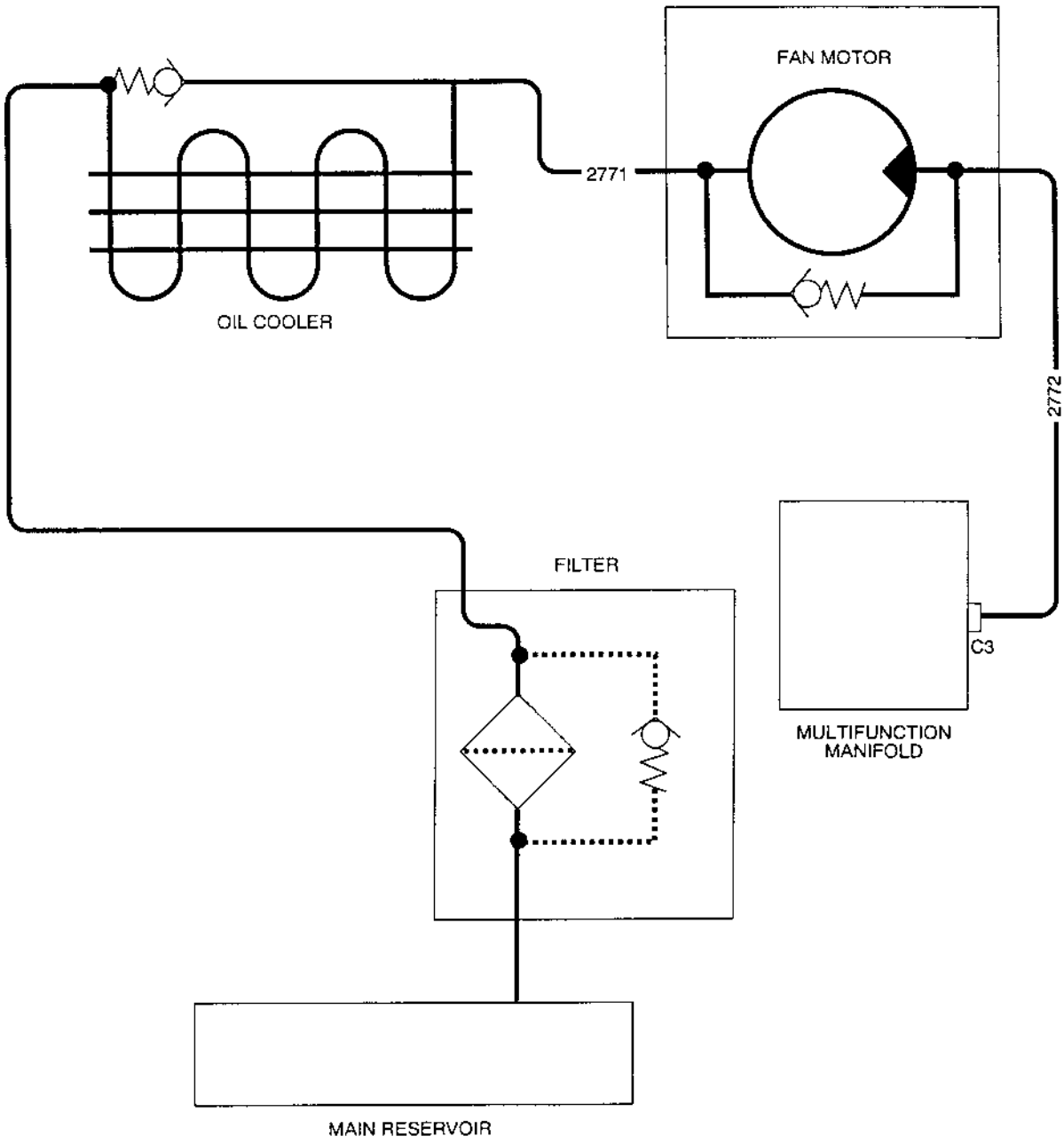


Figure 2-69. Fan Hydraulic Diagram

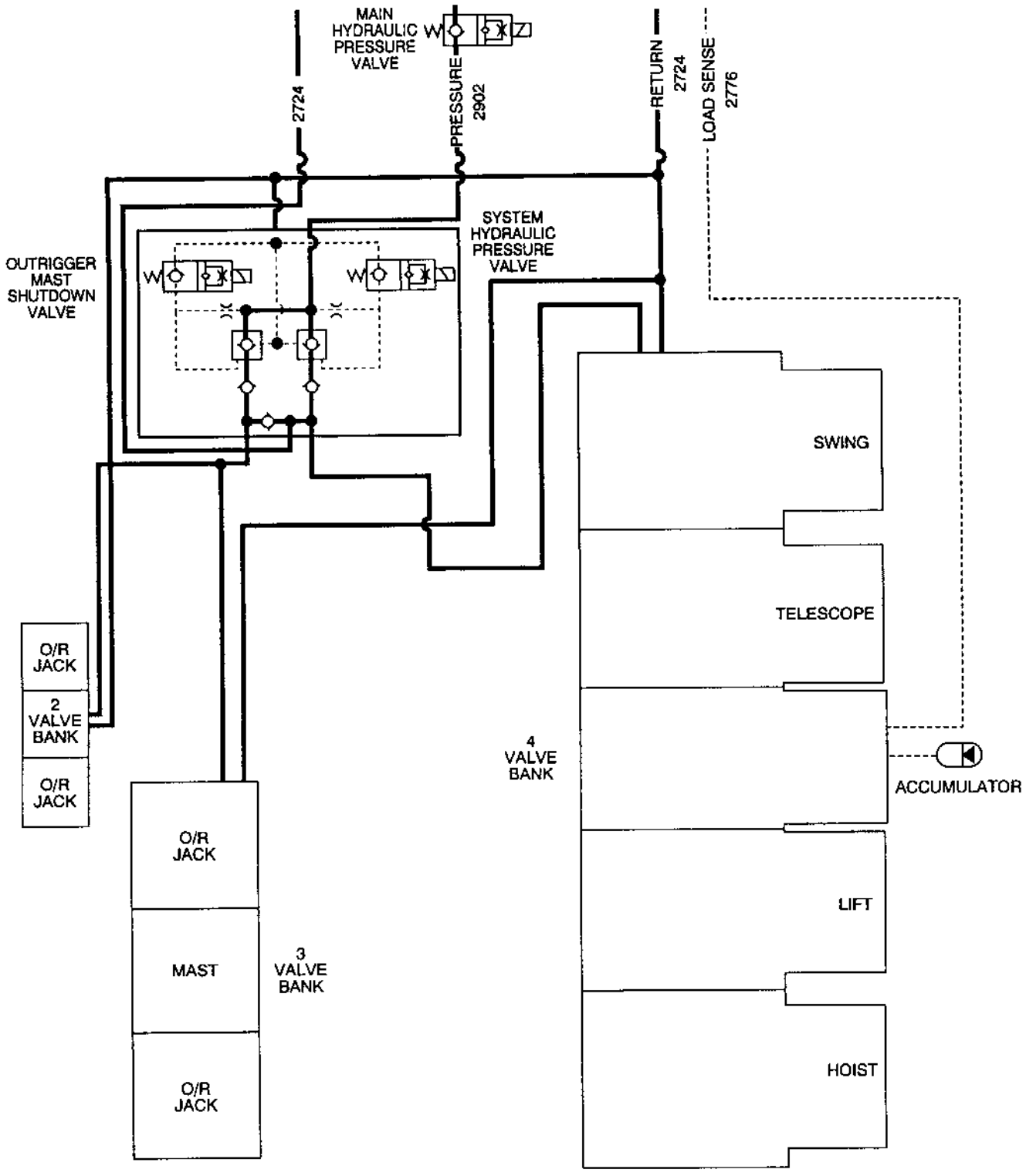


Figure 2-70. Crane Hydraulic Diagram

2-31. HYDRAULIC SYSTEM TROUBLESHOOTING (CONT).

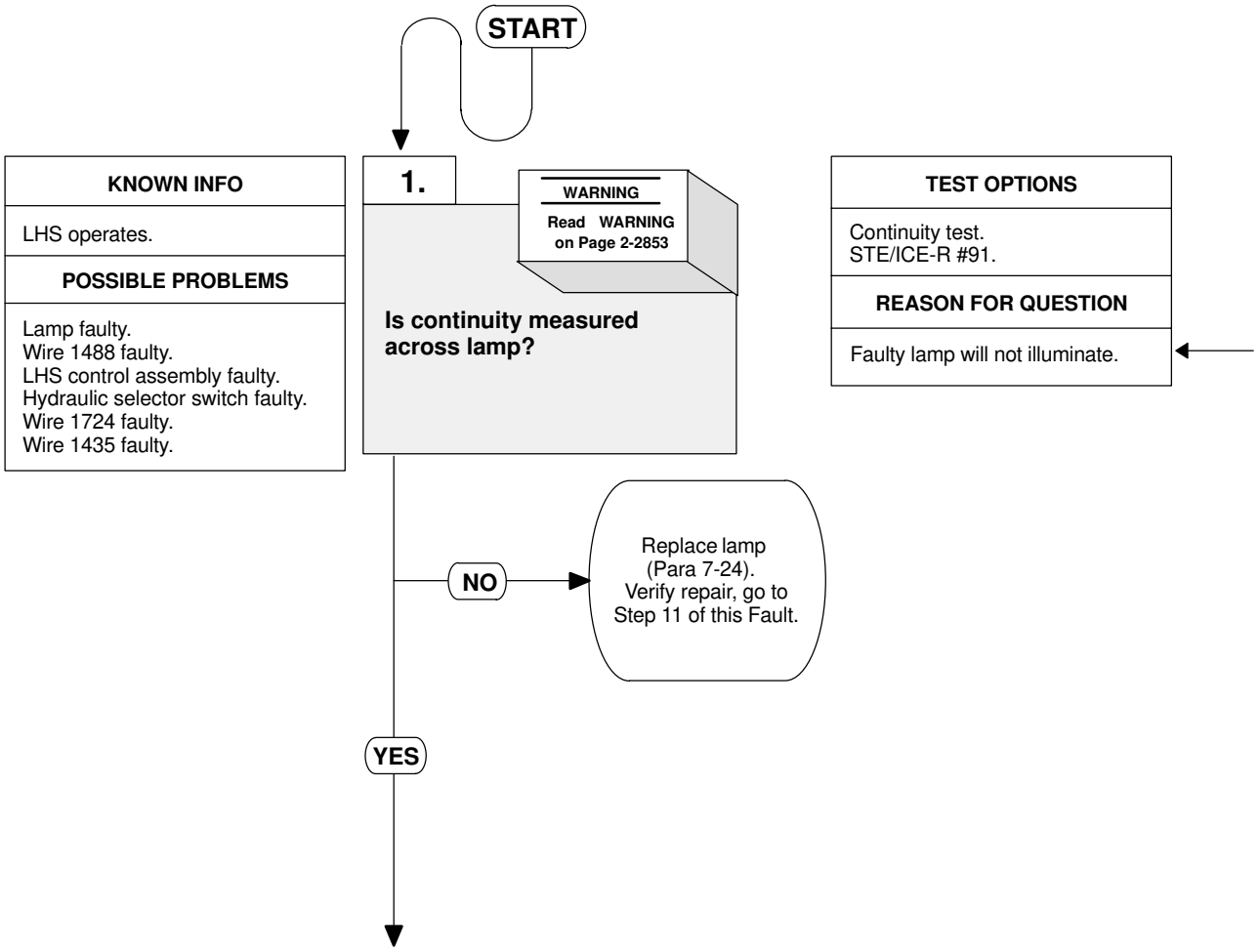
1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE.

INITIAL SETUP

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

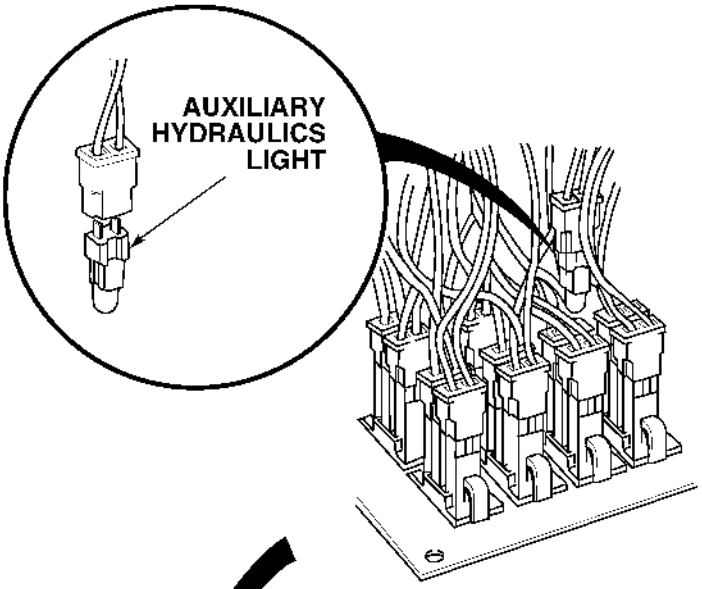
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

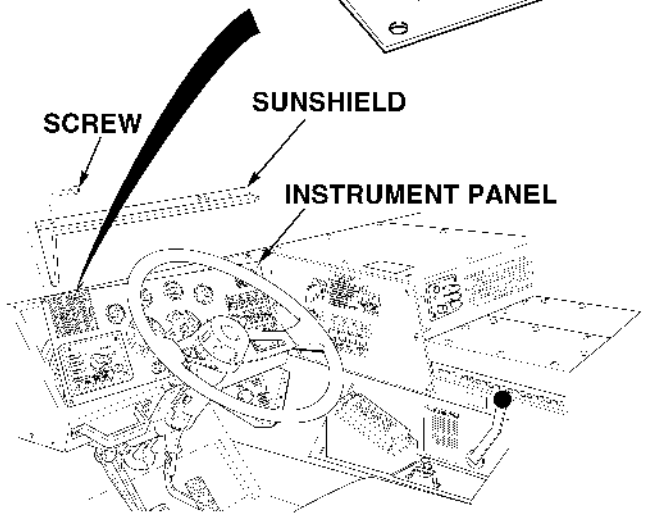
References
TM 9-2320-364-10
TM 9-4910-571-12&P



WARNING

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

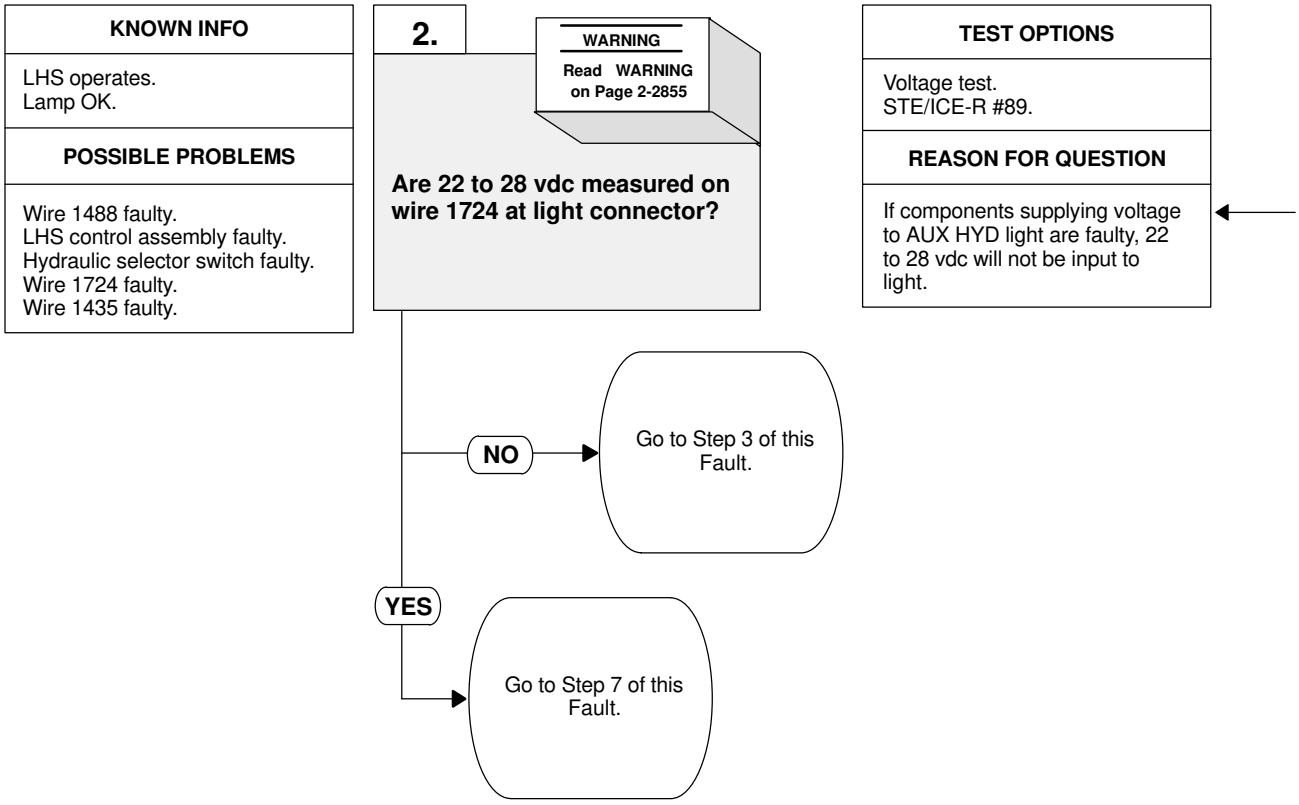




CONTINUITY TEST

(1) Remove ten screws and sunshield- from instrument panel.
(2) Pull top of instrument panel toward steering wheel.
(3) Remove AUX HYD lamp.
(4) Set multimeter select switch to ohms.
(5) Is continuity measured across terminals of lamp?
    (a) If there is no continuity, replace lamp (Para 7-24).
    (b) If there is continuity, go to Step 2 of this Fault.

1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).

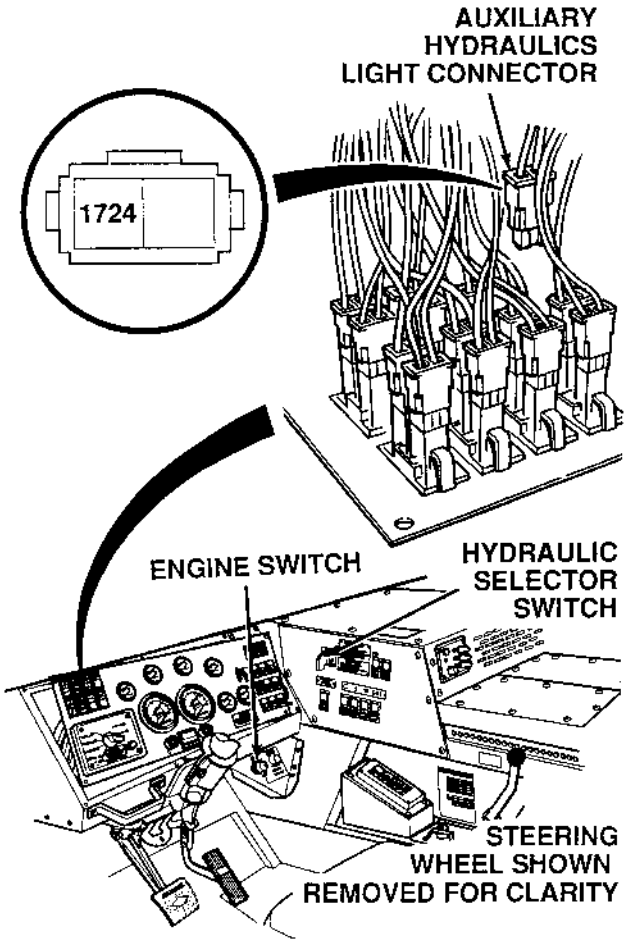


WARNING

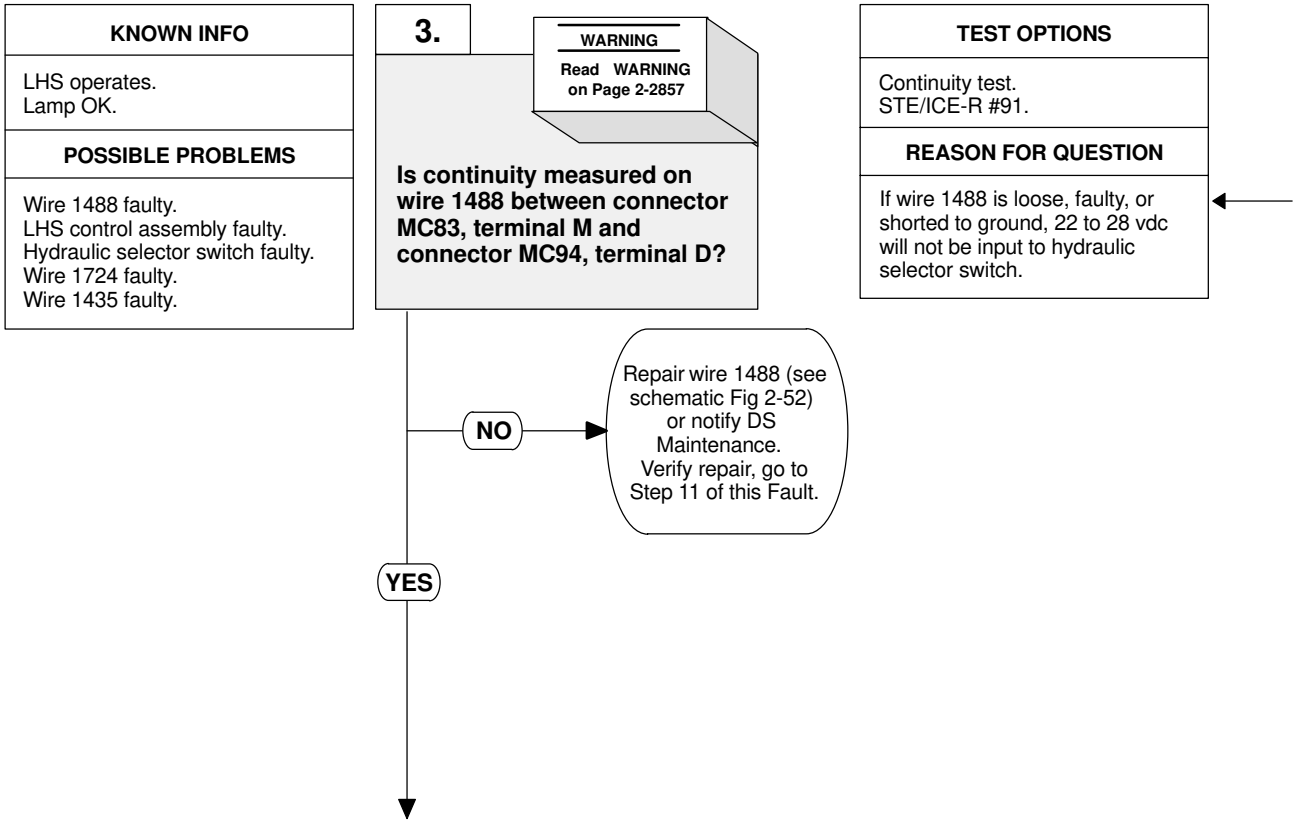
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contacts positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to wire 1724 at AUX HYD light connector terminal.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Set hydraulic selector switch to WINCH/CRANE position.
    (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and go to Step 3 of this Fault.
    (b) If 22 to 28 vdc are present, perform Steps (6) and (7) below and go to Step 7 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Set hydraulic selector switch to OFF position.



1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).



WARNING

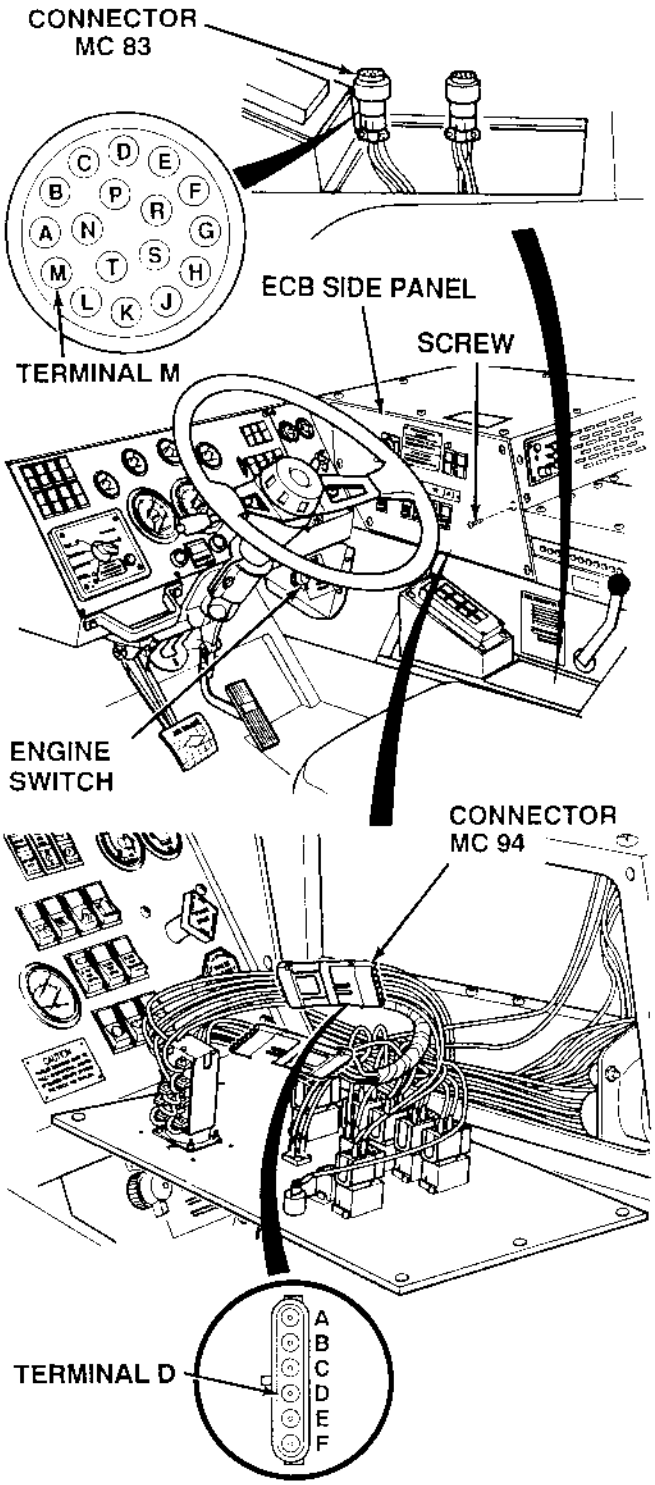
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment and injury or death to personnel may occur.

NOTE

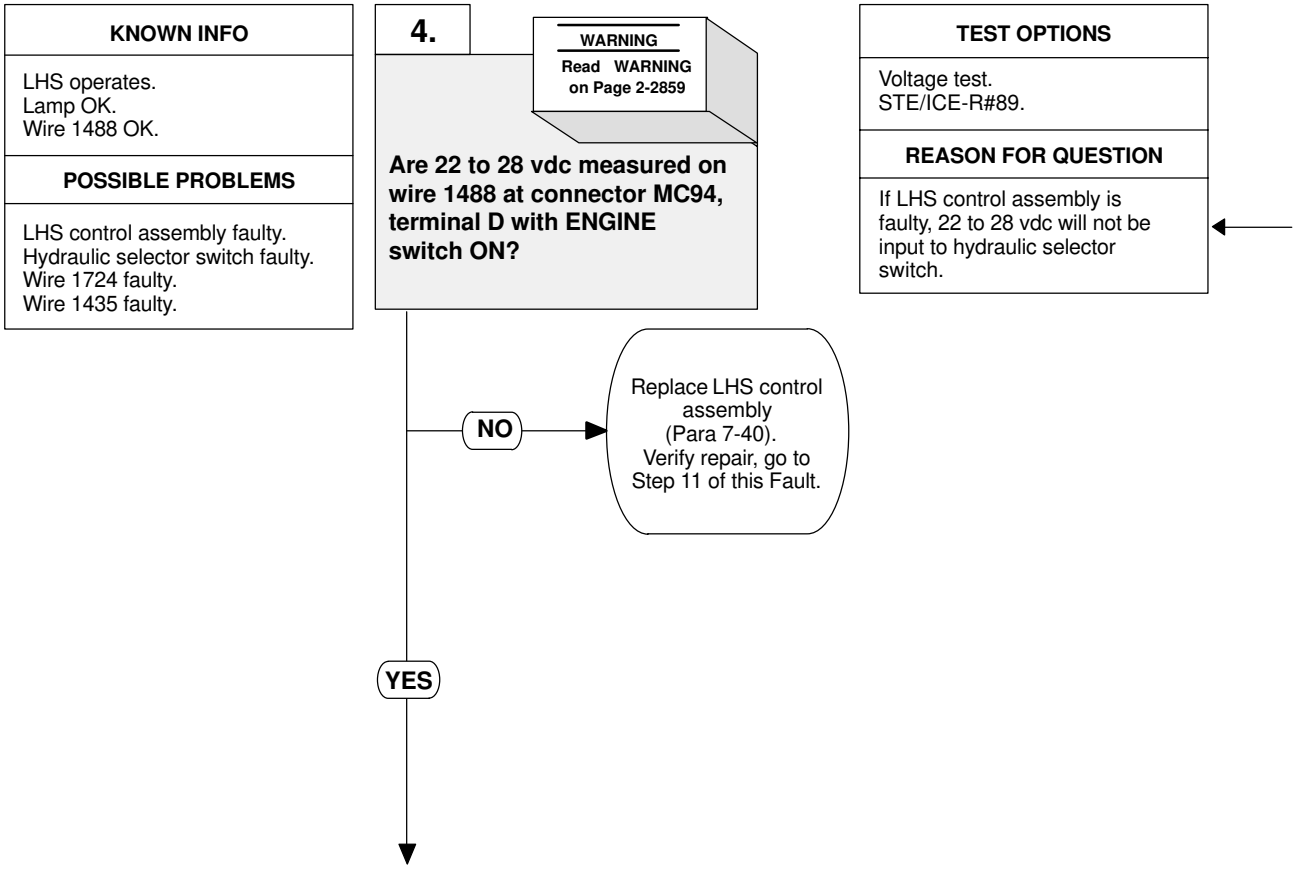
Connectors are removed by gently prying up on tabs.

CONTINUITY TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Remove six screws and tilt ECB side panel.
(3) Disconnect connector MC94 from hydraulic selector switch connector.
(4) Set multimeter select switch to ohms.
(5) Is there continuity on wire 1488 between connector MC94, terminal D and connector MC83, terminal M?
  (a) If there is no continuity, repair wire 1488 (see schematic Fig 2-52) and perform Step (6) below.
  (b) If there is continuity, wire 1488 is OK.
(6) Install LHS control assembly (Para 7-40).



1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).

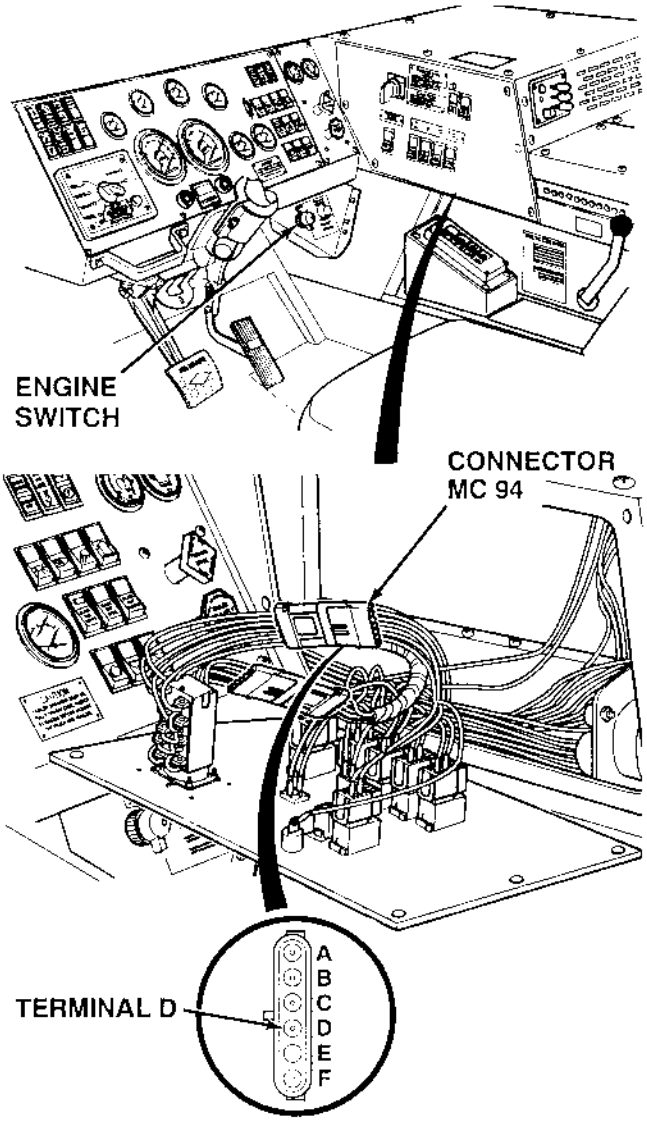


WARNING

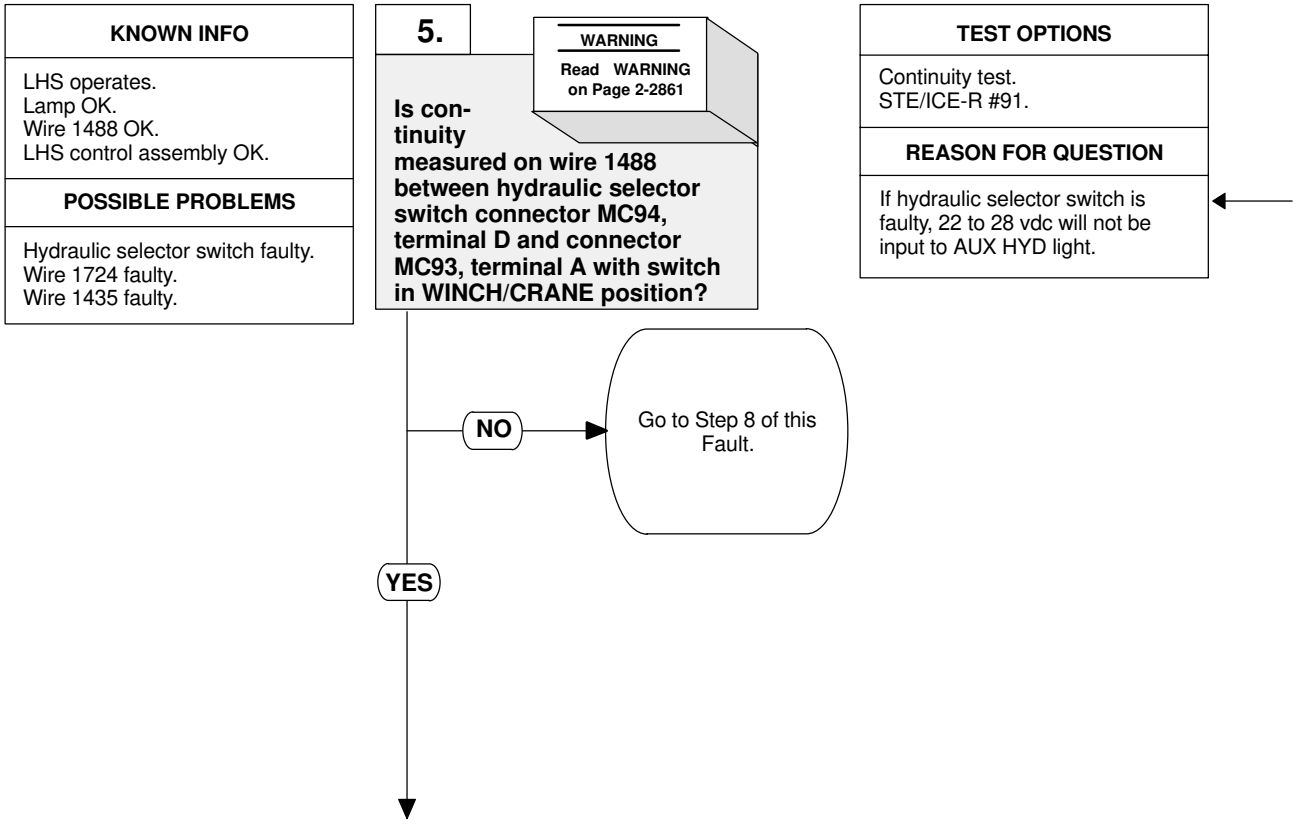
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment and injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to wire 1488 on connector MC94, terminal D.
(3) Connect negative (–) multimeter lead to a known good ground (TM 9-2320-364-10).
(4) Turn ON ENGINE switch.
    (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace LHS control assembly (Para 7-40).
    (b) If 22 to 28 vdc are present, LHS control assembly is OK.
(5) Turn OFF ENGINE switch.



1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).



WARNING

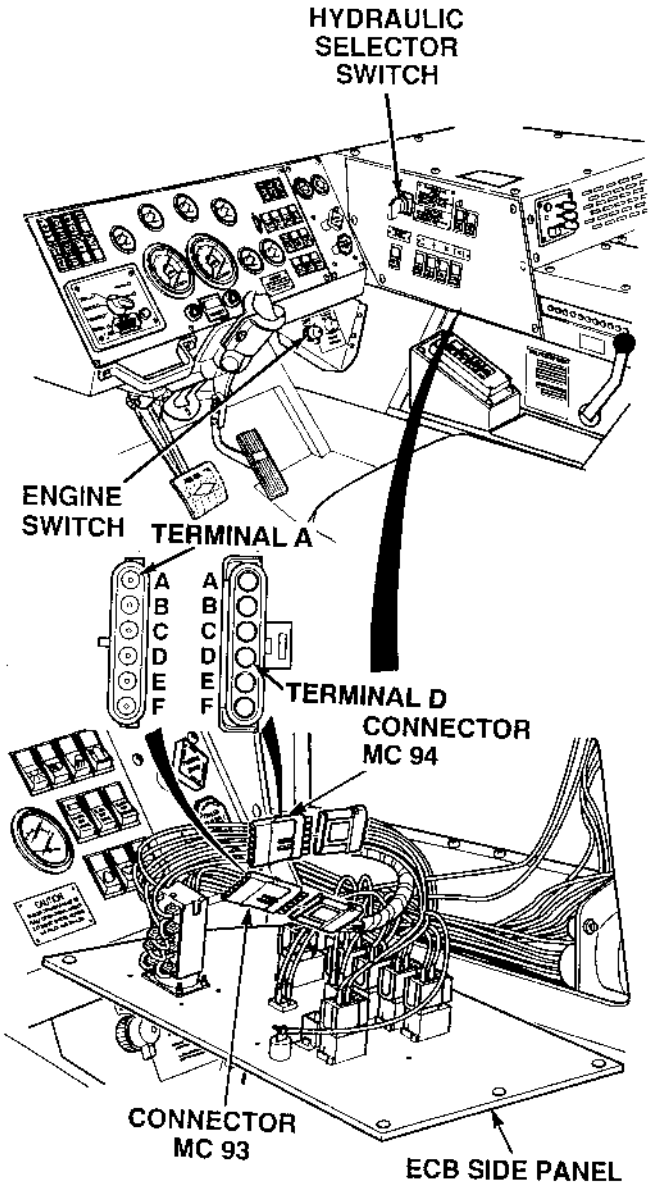
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

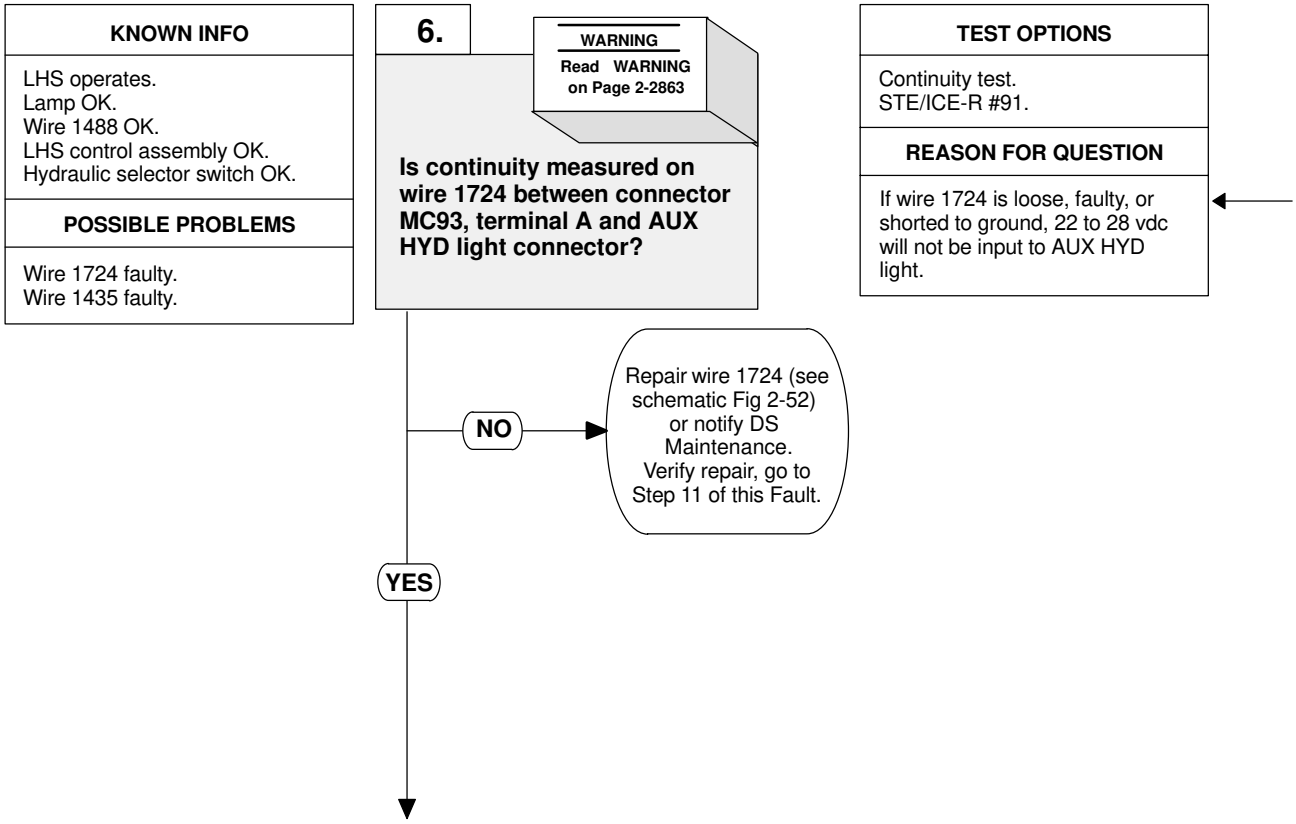
Connectors are removed by gently prying up on tabs.

CONTINUITY TEST

(1) Disconnect connector MC93 from hydraulic selector switch connector.
(2) Set hydraulic selector switch to WINCH/CRANE position.
(3) Set multimeter select switch to ohms.
(4) Is there continuity on wire 1488 between MC94, terminal D and MC93, terminal A switch connectors?
  (a) If there is no continuity, set hydraulic selector switch to OFF and go to Step 8 of this Fault.
  (b) If there is continuity, hydraulic selector switch is OK.
(5) Set hydraulic selector switch to OFF.



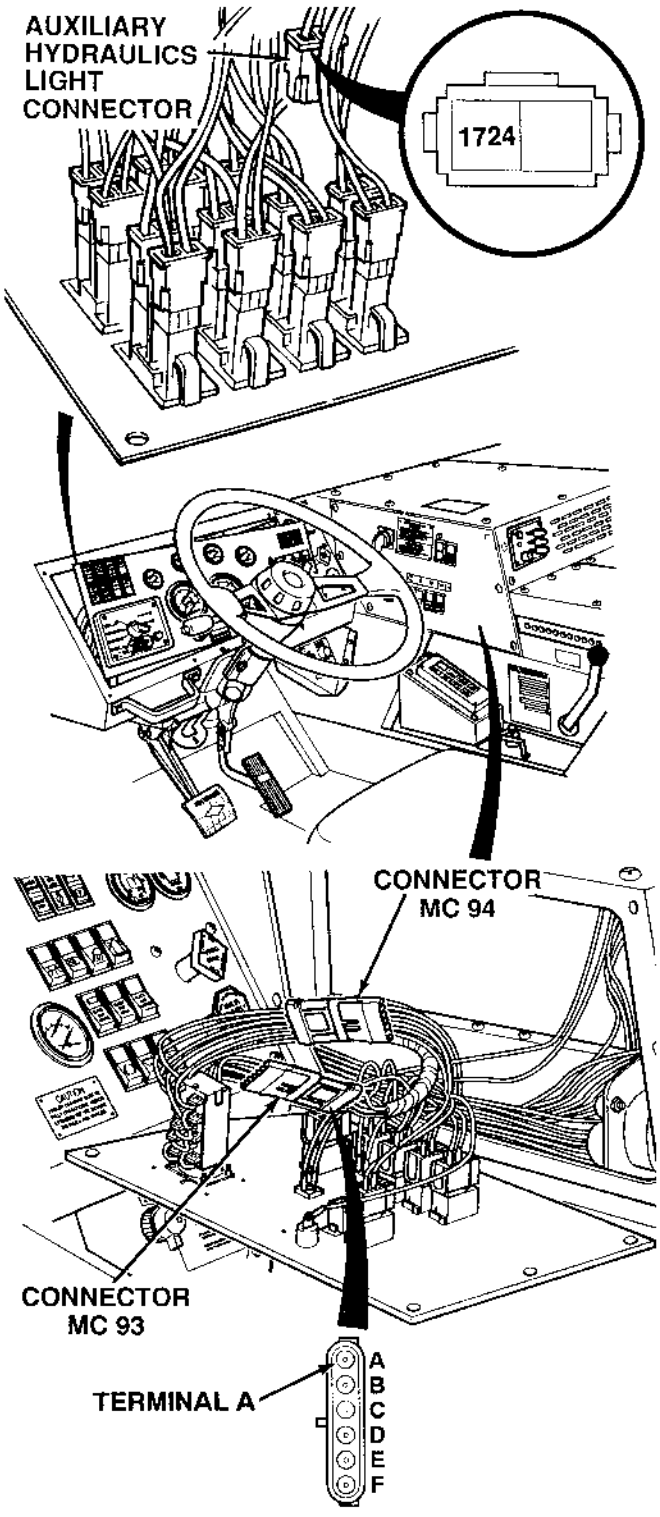
1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).



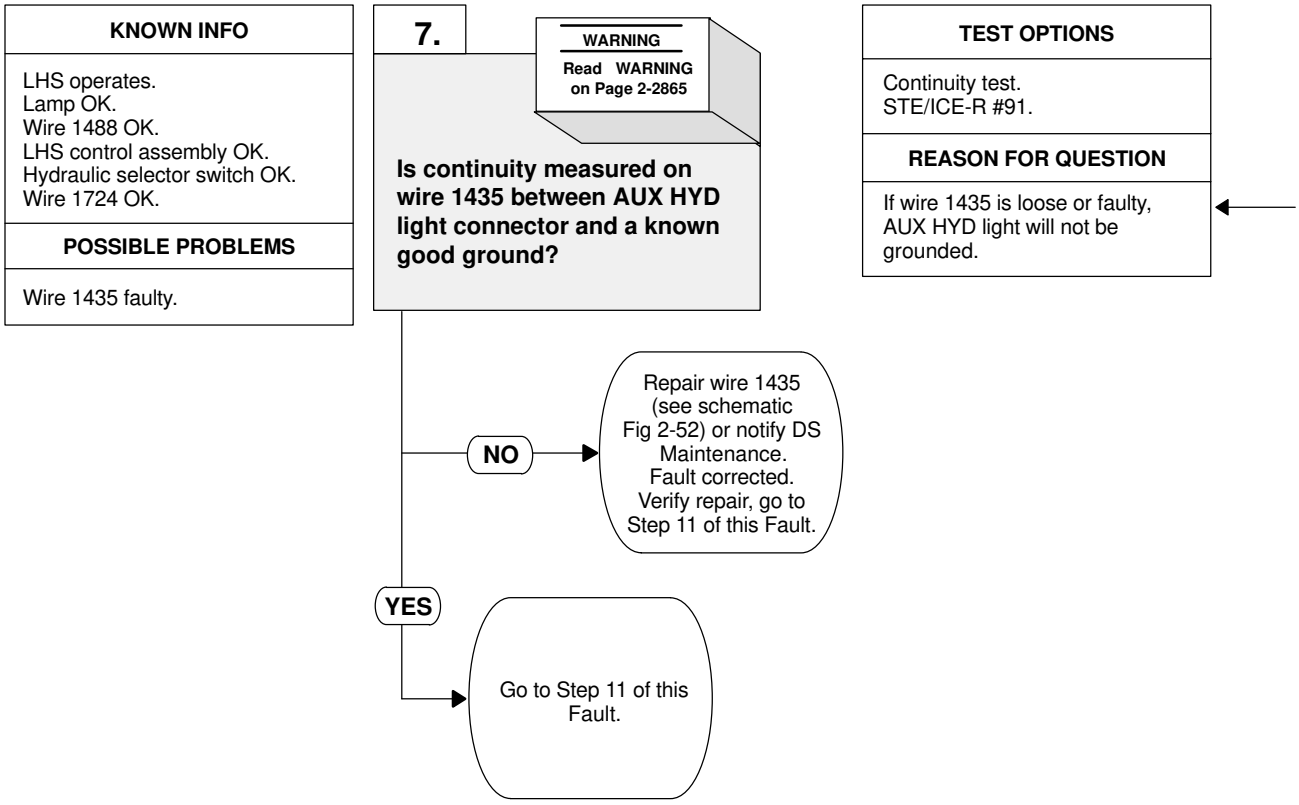
WARNING

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) Is there continuity on wire 1724 between connector MC93, terminal A and AUX HYD light connector? (a) If there is no continuity, repair wire 1724 (see schematic Fig 2-52) or notify DS Maintenance. Perform Step (2) below. (b) If there is continuity, wire 1724 is OK. (2) Install connectors MC93 and MC94 on hydraulic selector switch connectors.



1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).

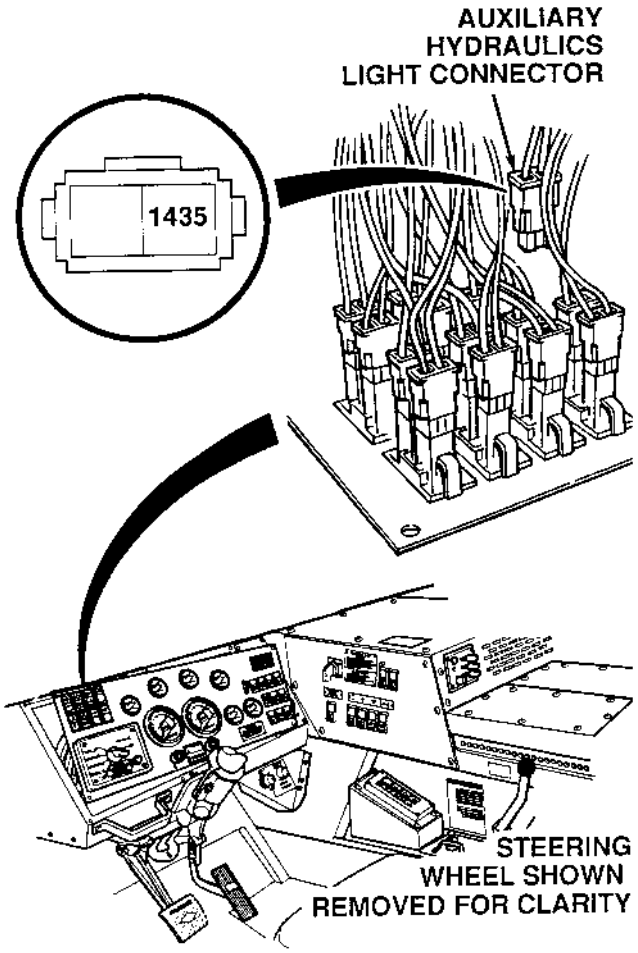


WARNING

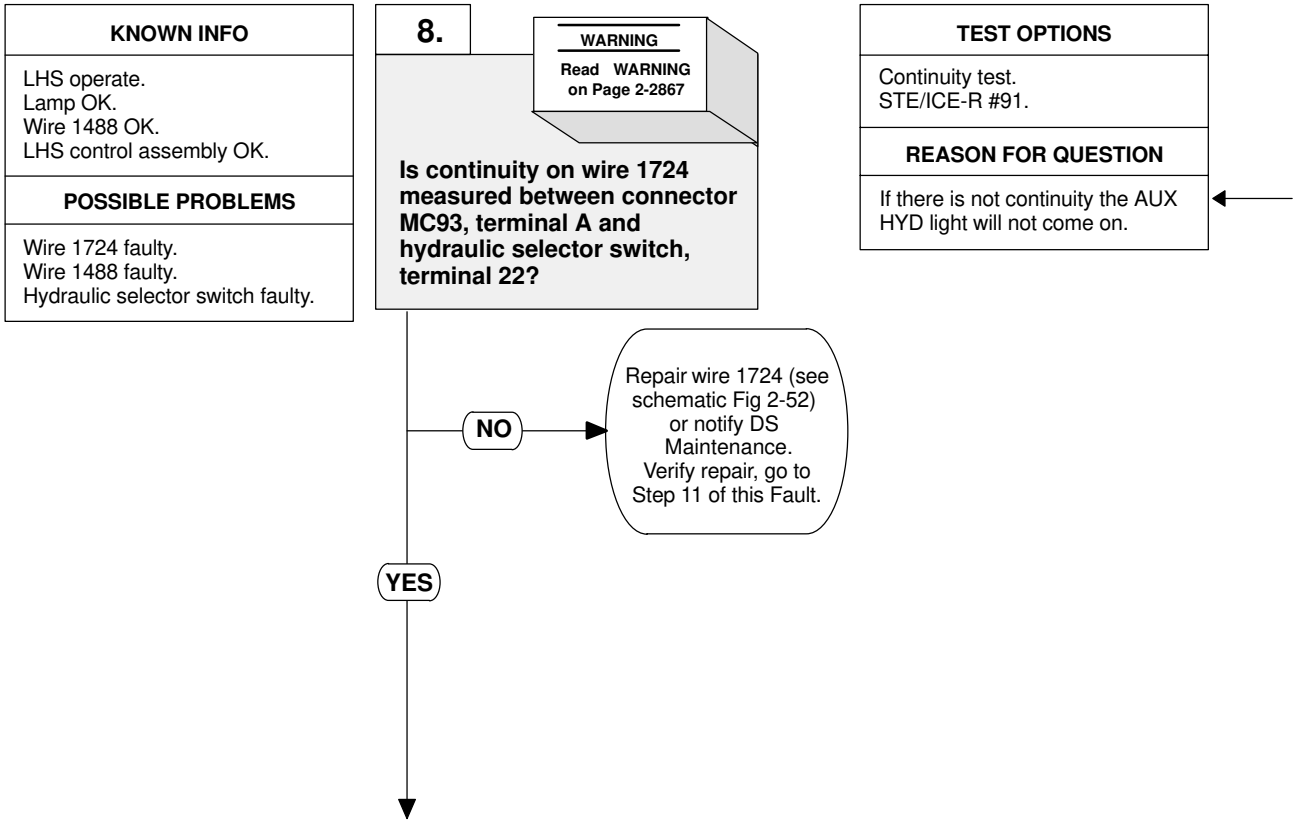
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity on wire 1435 between AUX HYD light connector and a known good ground?
   (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance. Perform Step (3) below.
   (b) If there is continuity, wire 1435 is OK.
(3) Install AUX HYD light.



1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).

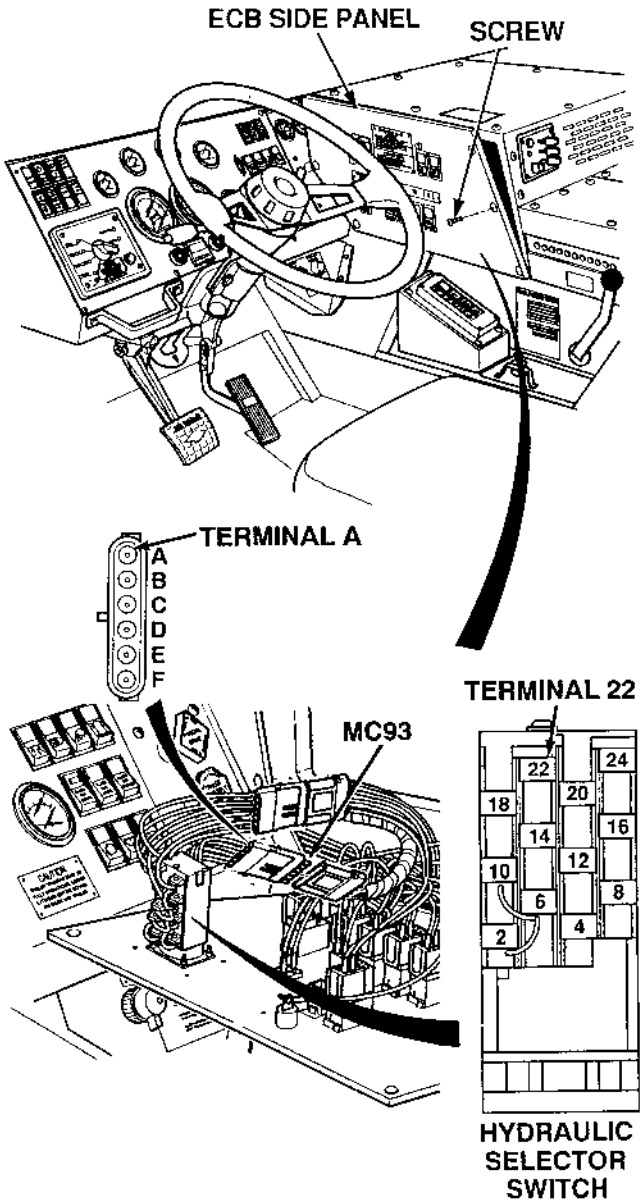


WARNING

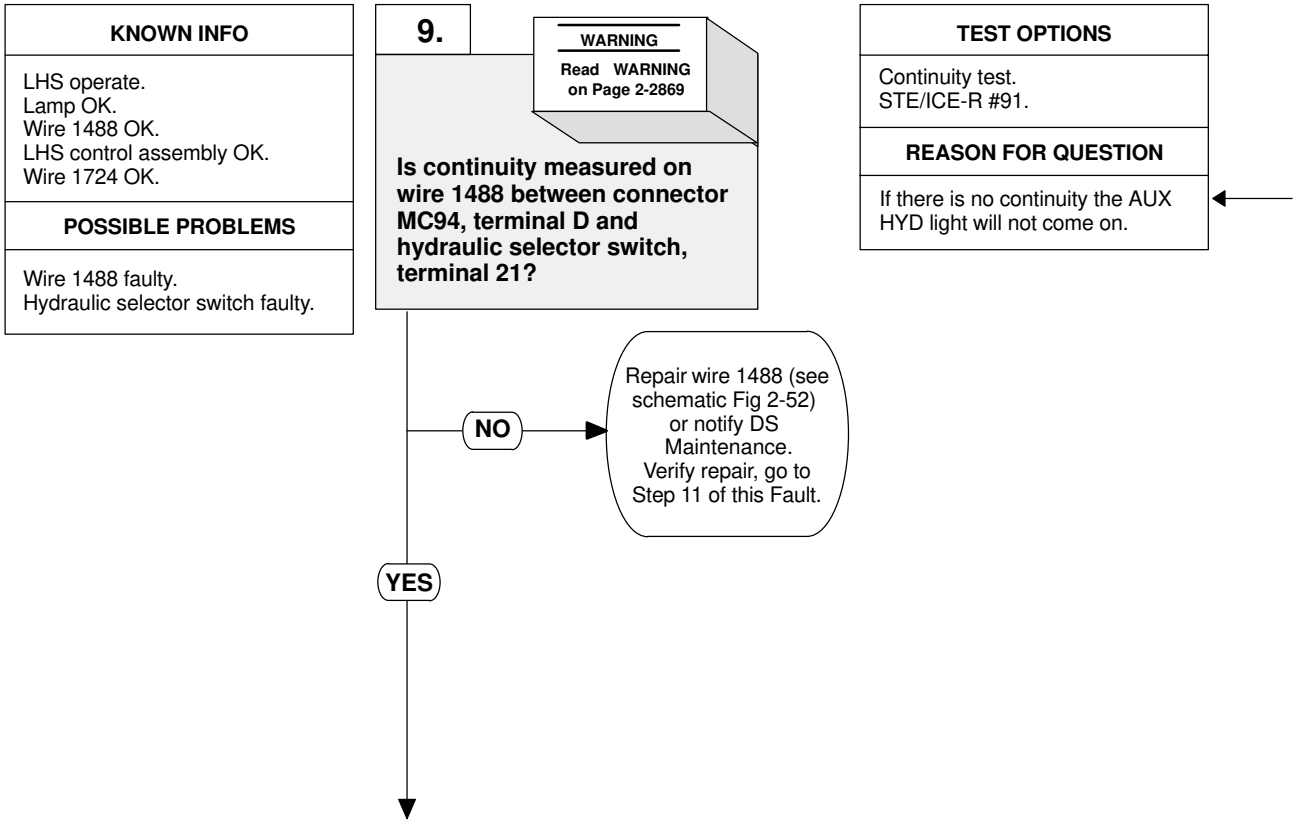
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector MC93 from switch connector.
(2) Is there continuity on wire 1724 between connector MC93, terminal A and hydraulic selector switch, terminal 22?
   (a) If there is no continuity, repair wire 1724 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1724 is OK.



1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).

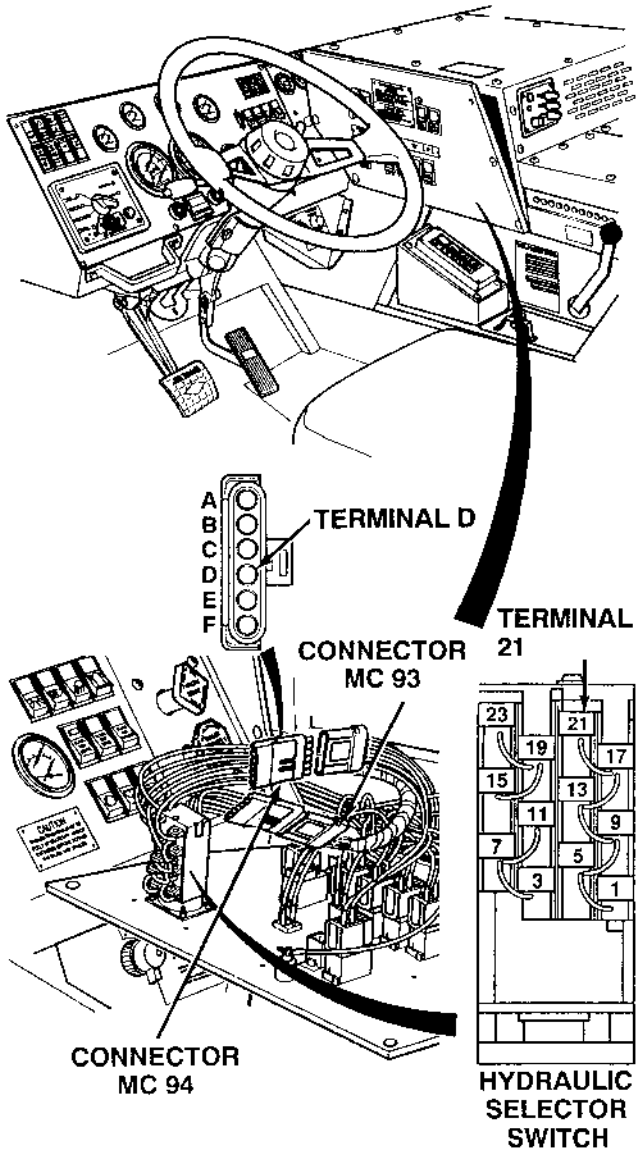


WARNING

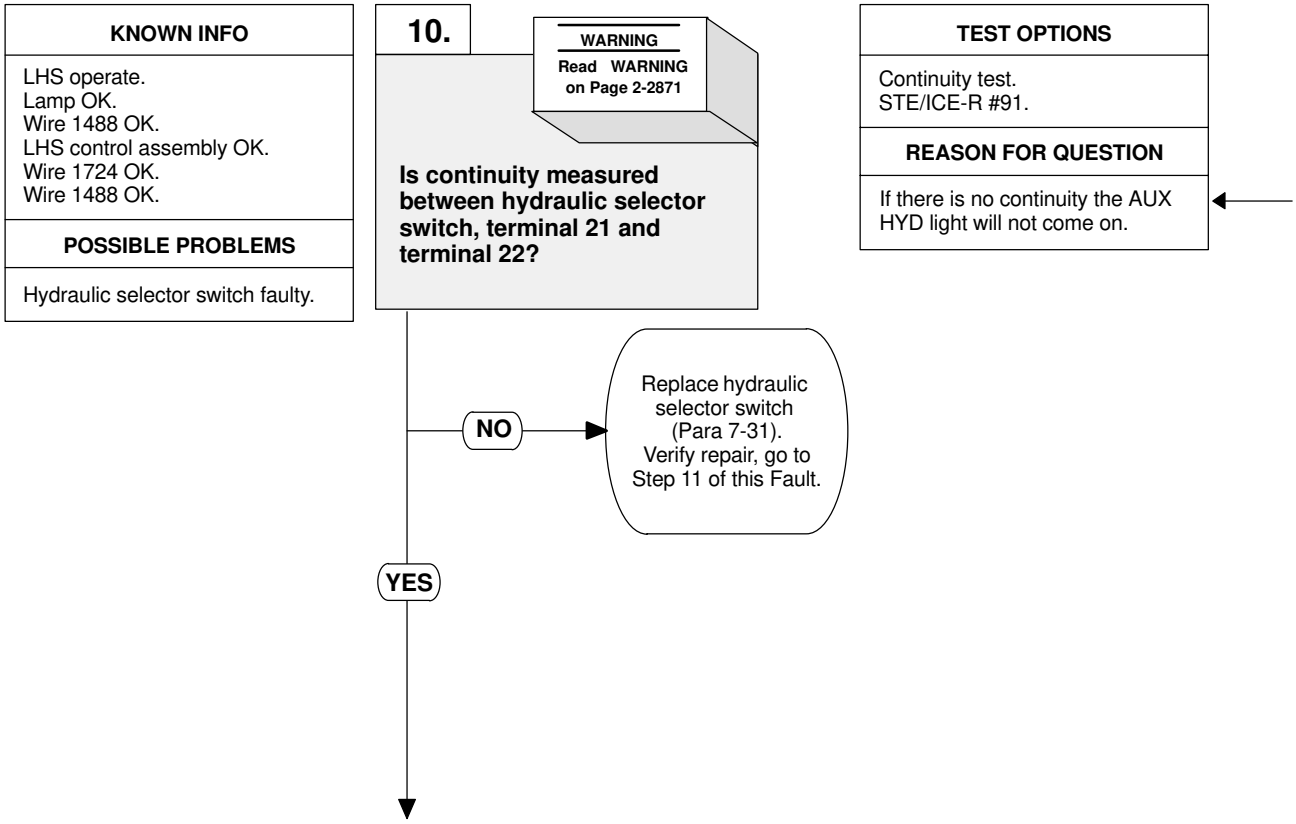
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector MC94 from switch connector.
(2) Is there continuity on wire 1488 between switch connector MC94, terminal D and hydraulic selector switch, terminal 21?
   (a) If there is no continuity, repair wire 1488 (see schematic Fig 2-52) or notify DS Maintenance. Perform Step (2) below.
   (b) If there is continuity, wire 1488 is OK.
(3) Connect connectors MC94 and MC93 to hydraulic selector switch connectors.

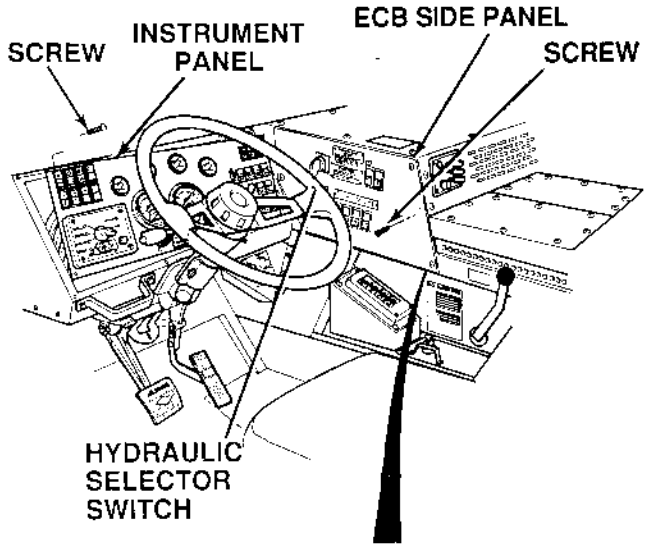


1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).



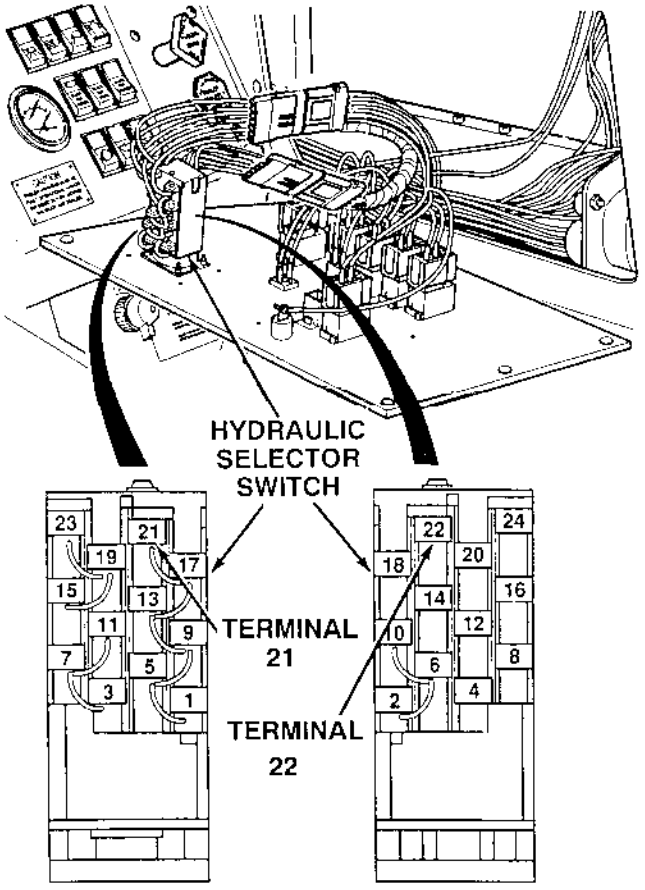
WARNING

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 and injury or death to personnel may occur.

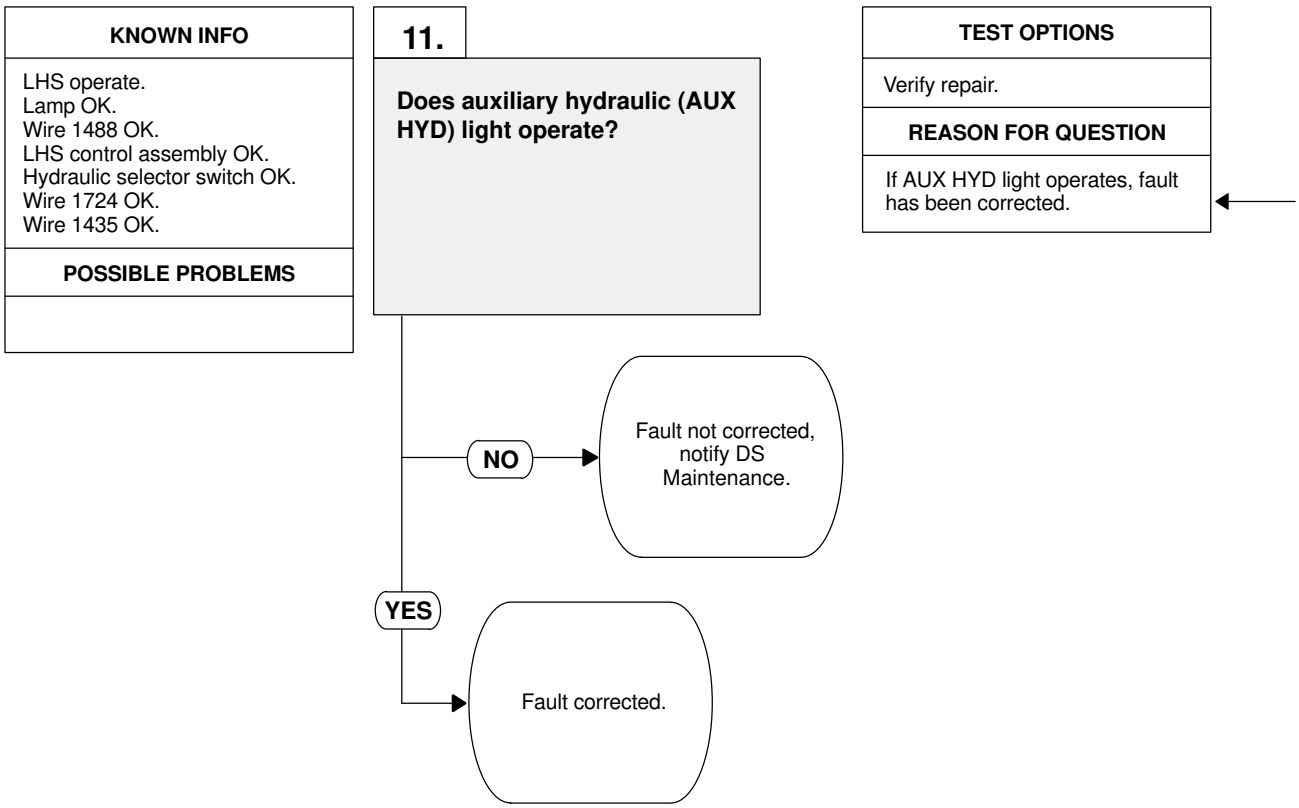


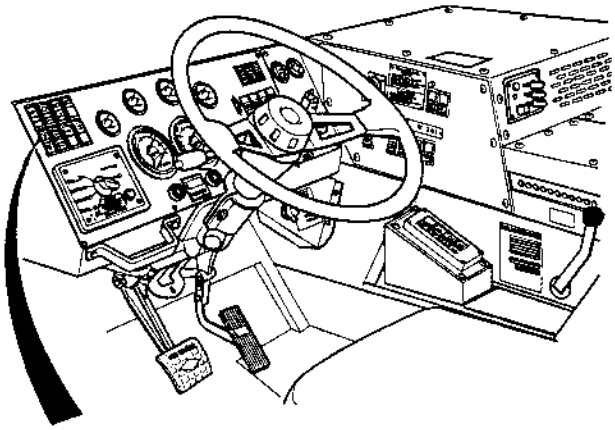
CONTINUITY TEST

(1) Set hydraulic selector switch to WINCH/CRANE position.
(2) Is there continuity between hydraulic selector switch, terminal 21 and 22?
  (a) If there is no continuity, replace the hydraulic selector switch (Para 7-31).
  (b) If there is continuity, hydraulic selector switch is OK.
(3) Install instrument panel and sunshield with ten screws.
(4) Install ECB side panel with six screws.

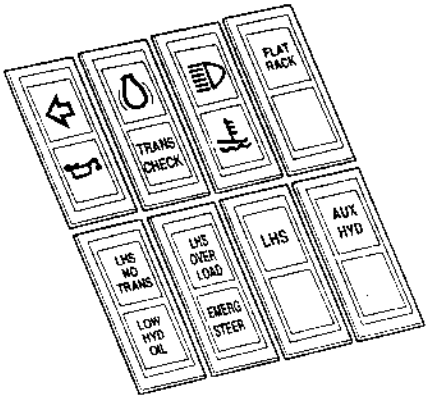


1. AUXILIARY HYDRAULICS (AUX HYD) LIGHT DOES NOT OPERATE (CONT).





VERIFY REPAIR
Operate auxiliary hydraulic (AUX HYD) light (TM 9-2320-364-10). (1) If lamp does not light, fault not corrected. Notify DS Maintenance. (2) If lamp lights, fault has been corrected.



2-31. HYDRAULIC SYSTEM TROUBLESHOOTING (CONT).

2. CRANE AND WINCH (SRW) DO NOT OPERATE.

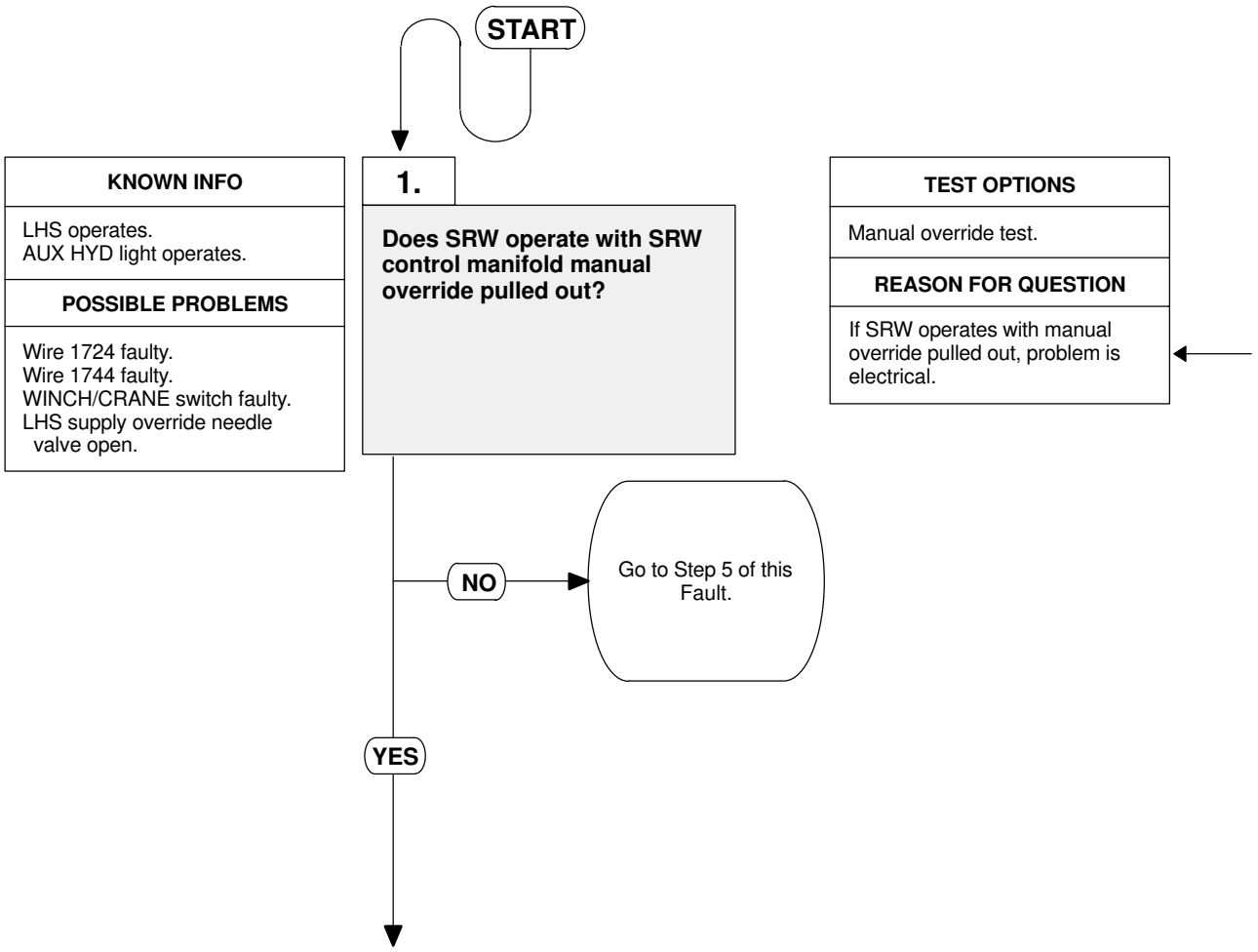
INITIAL SETUP

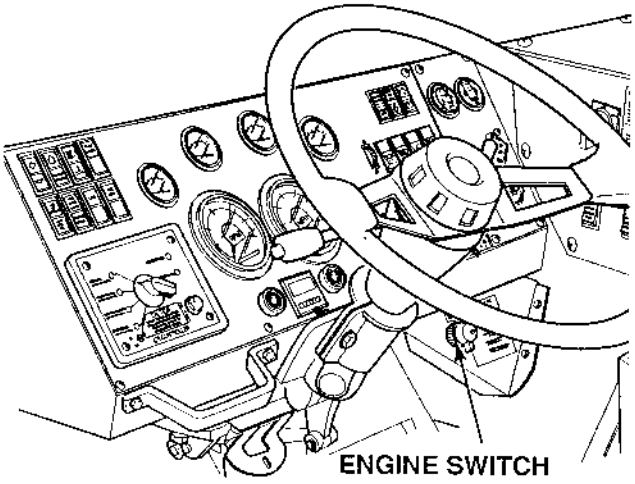
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)

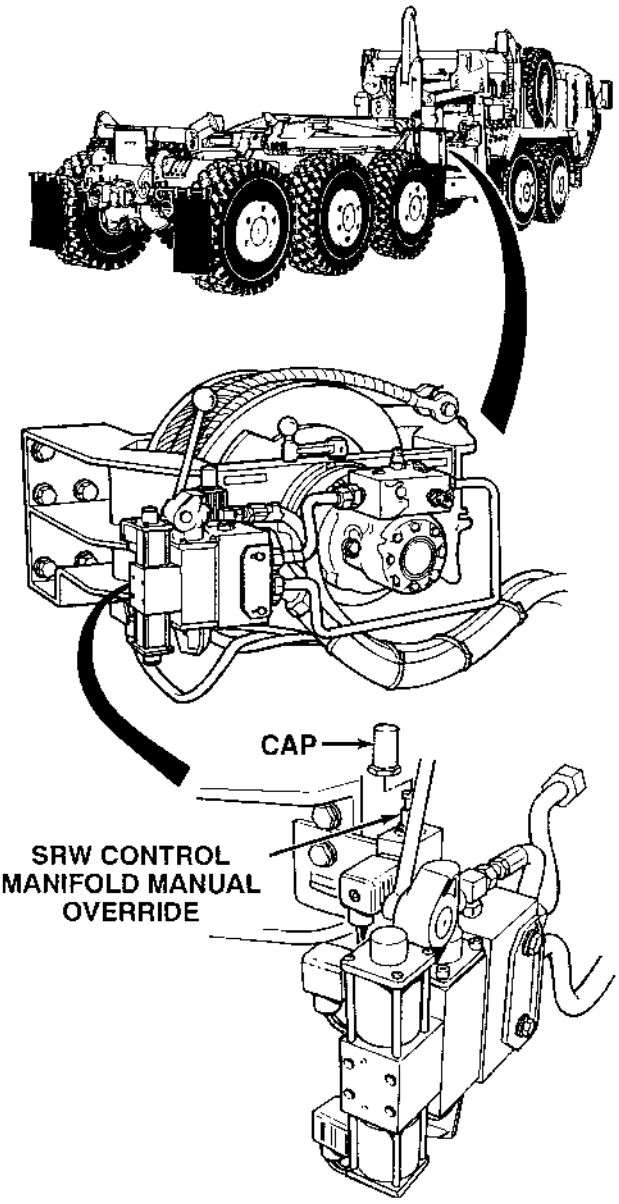
Materials/Parts
Lockwashers (6) (Item 195, Appendix F)

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)



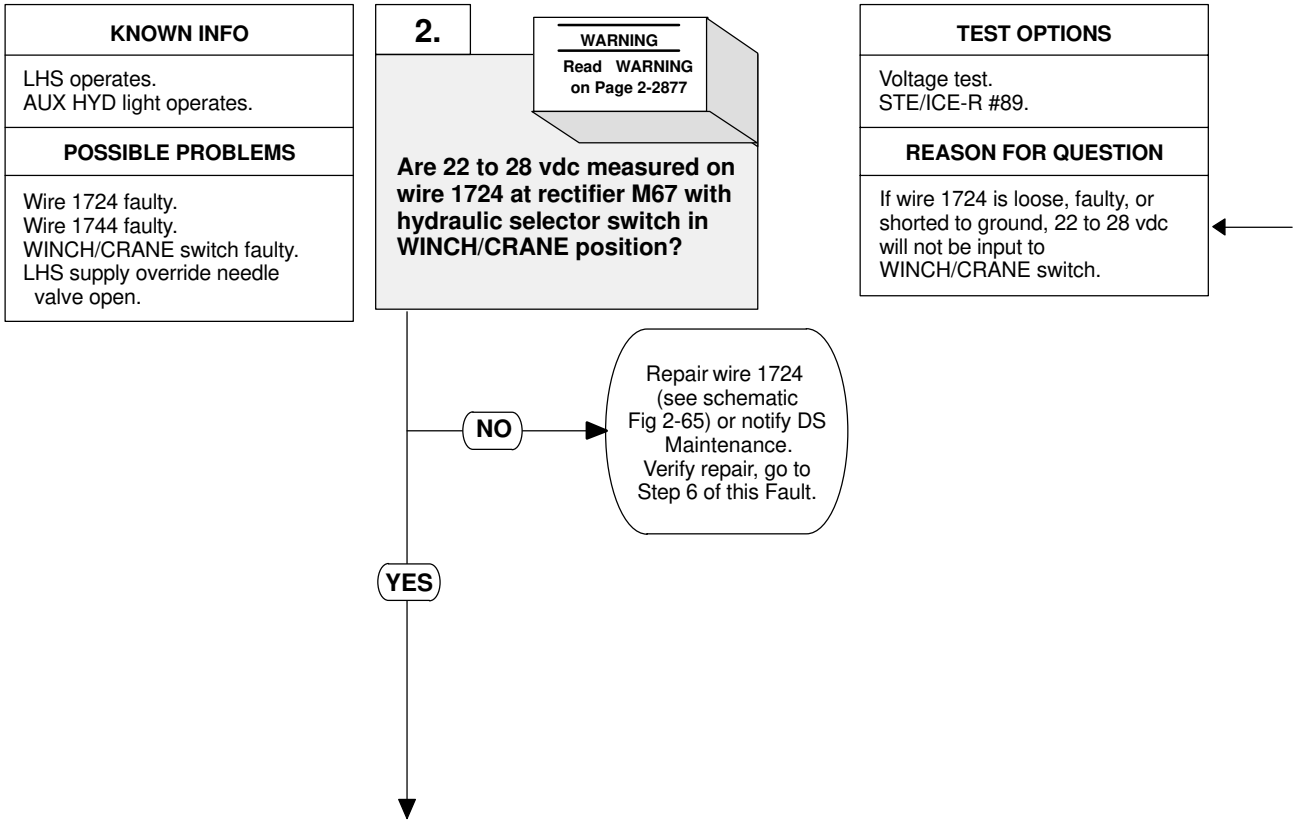




MANUAL OVERRIDE TEST

(1) START engine (TM 9-2320-364-10).
(2) Remove cap from SRW control manifold supply override.
(3) Rotate manual override to unlock and pull up.
(4) Operate SRW using manual control.
    (a) If SRW does not operate, problem is hydraulic. Perform Steps (5) through (7) below and go to Step 5 of this Fault.
    (b) If SRW operates, problem is electrical.
(5) Push down on manual override and rotate to lock in down position.
(6) Install cap on manual override.
(7) Turn OFF ENGINE switch.

2. CRANE AND WINCH (SRW) DO NOT OPERATE (CONT).

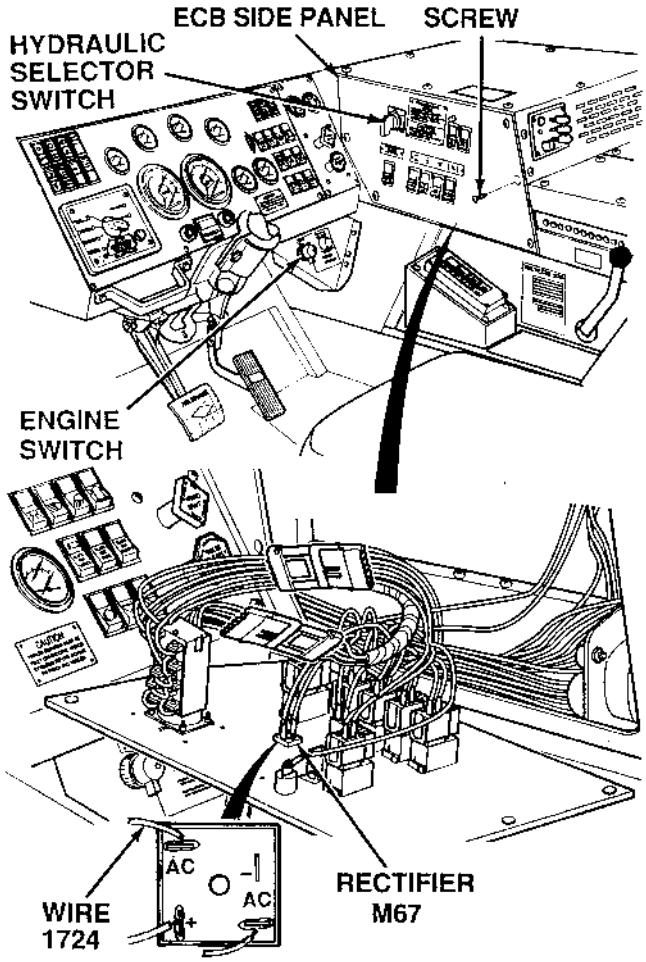


WARNING

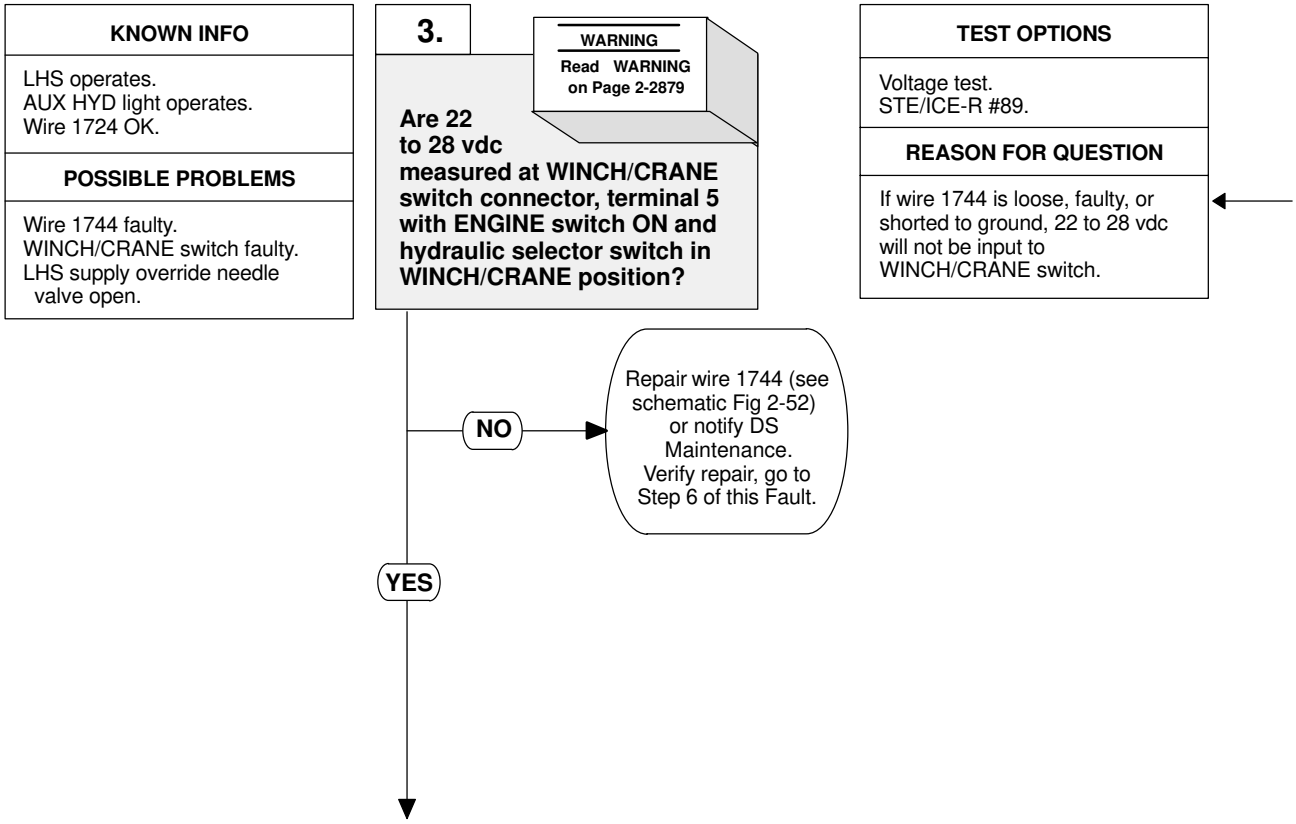
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Remove six screws and tilt ECB side panel.
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to wire 1724 at rectifier M67.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to WINCH/CRANE position.
    (a) If 22 to 28 vdc are not present, perform Steps (7) and (8) below and repair wire 1724 (see schematic Fig 2-65) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, wire is OK.
(7) Set hydraulic selector switch to OFF position.
(8) Turn OFF ENGINE switch.



2. CRANE AND WINCH (SRW) DO NOT OPERATE (CONT).



WARNING

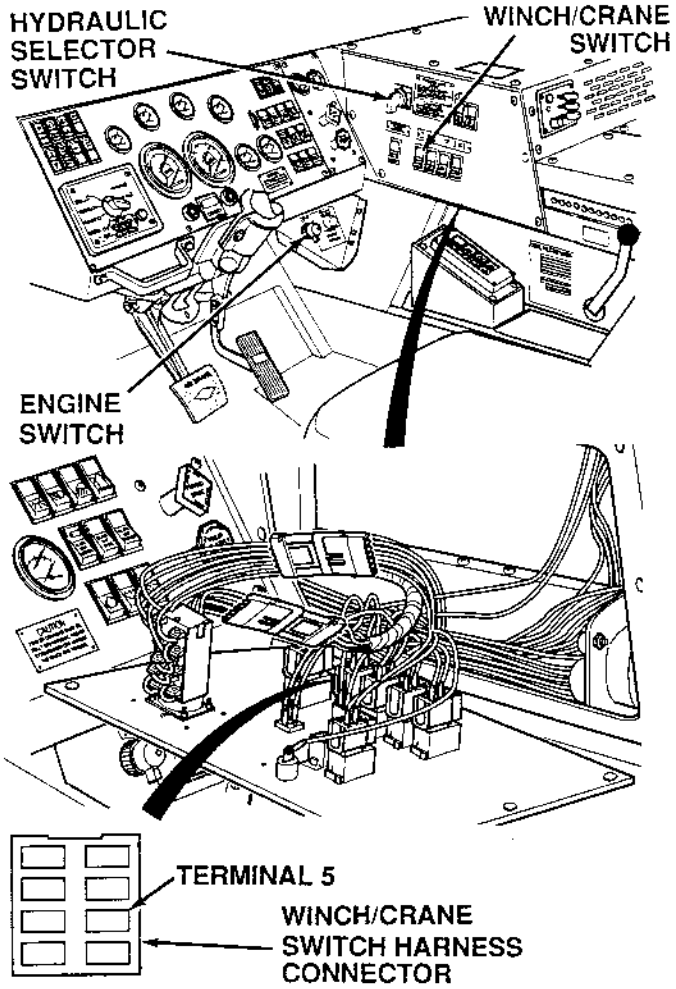
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

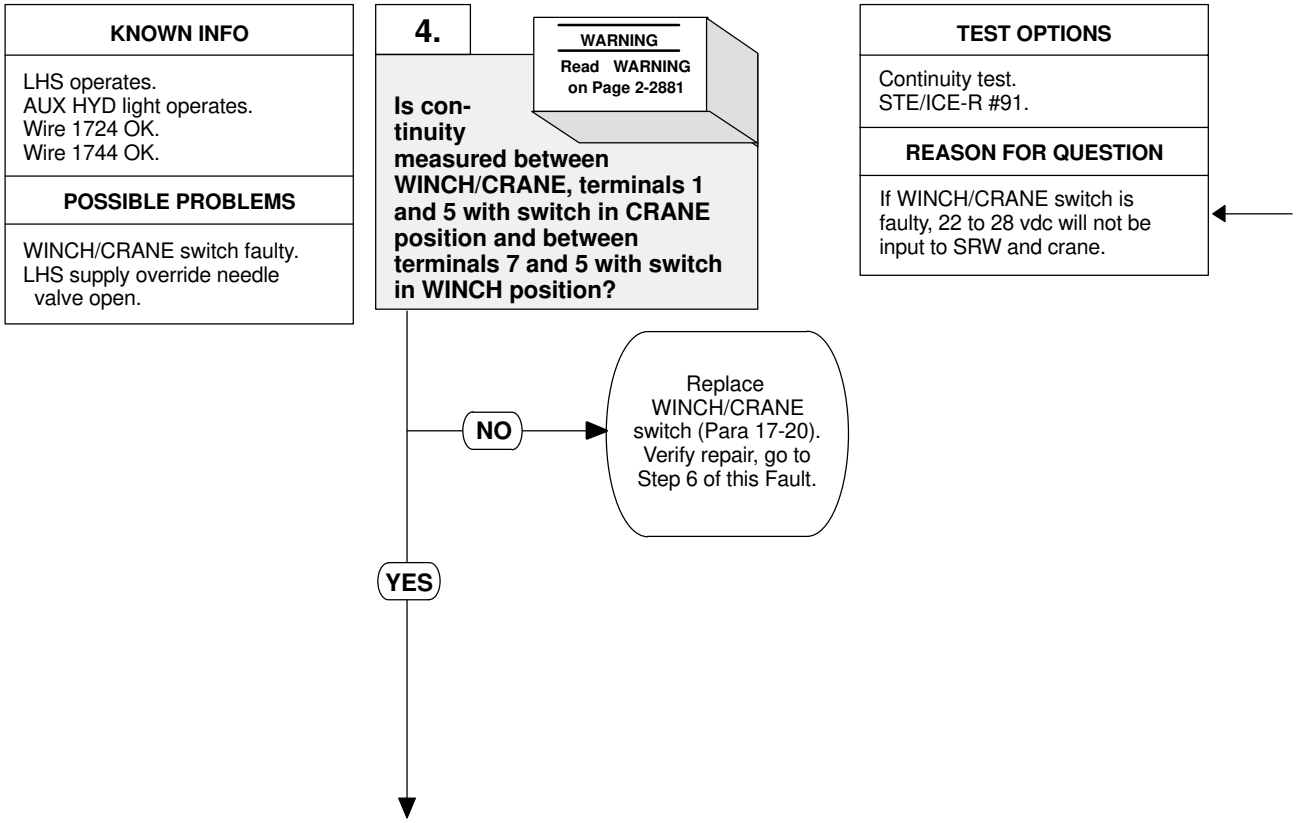
Connectors are removed by gently prying up on tabs.

VOLTAGE TEST

(1) Disconnect connector from WINCH/CRANE switch.
(2) Connect positive (+) multimeter lead to wire 1744 at WINCH/CRANE switch connector, terminal 5.
(3) Connect negative (–) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(5) Set hydraulic selector switch to WINCH/CRANE position.
  (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair wire 1744 (see schematic Fig 2-52) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, wire 1744 is OK.
(6) Set hydraulic selector switch to OFF position.
(7) Turn OFF ENGINE switch.



2. CRANE AND WINCH (SRW) DO NOT OPERATE (CONT).

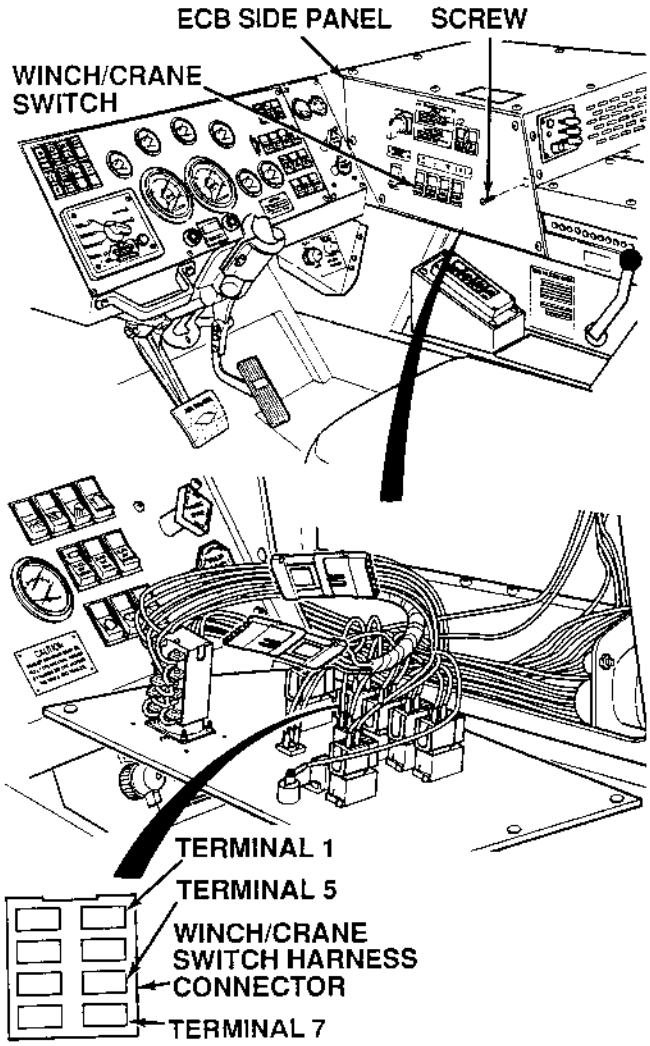


WARNING

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) Set WINCH/CRANE switch to CRANE position (TM 9-2320-364-10).
(3) Is there continuity between WINCH/CRANE switch, terminals 1 and 5?
   (a) If there is no continuity, replace switch (Para 17-20).
   (b) If there is continuity, go to Step (4) below.
(4) Set WINCH/CRANE switch to WINCH position.
(5) Is there continuity between WINCH/CRANE switch, terminals 5 and 7?
   (a) If there is no continuity, replace switch (Para 17-20).
   (b) If there is continuity, switch is OK.
(6) Connect connector to WINCH/CRANE switch.
(7) Install ECB side panel with six screws.



2. CRANE AND WINCH (SRW) DO NOT OPERATE (CONT).

KNOWN INFO

LHS operates.
AUX HYD light operates.
Wire 1724 OK.
Wire 1744 OK.
WINCH/CRANE switch OK.

POSSIBLE PROBLEMS

LHS supply override needle valve open.

5.

WARNING

Read WARNING on Page 2-2883

Is LHS supply valve manual override needle valve closed?

TEST OPTIONS

Visual inspection.

REASON FOR QUESTION

If LHS supply override needle valve is not closed completely, supply pressure to SRW and crane will be bled off at LHS main manifold.

NO → Close needle valve. Verify repair, go to Step 6 of this Fault.

YES → Fault not corrected. Notify DS Maintenance.

KNOWN INFO

LHS operates.
AUX HYD light operates.
Wire 1724 OK.
Wire 1744 OK.
WINCH/CRANE switch OK.
LHS supply override needle valve closed.

POSSIBLE PROBLEMS

6.

Do crane and winch (SRW) operate?

TEST OPTIONS

Verify repair.

REASON FOR QUESTION

If crane and winch operate, fault has been corrected.

NO → Fault not corrected. Notify DS Maintenance.

YES → Fault corrected.

WARNING

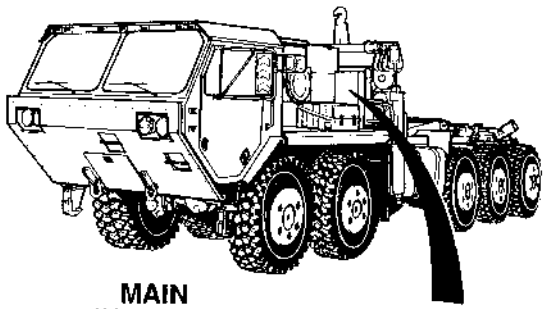
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

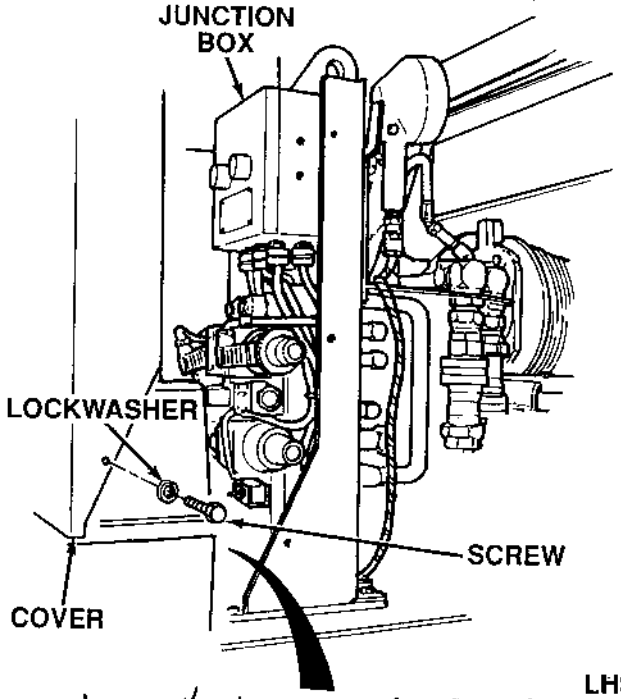
VISUAL INSPECTION

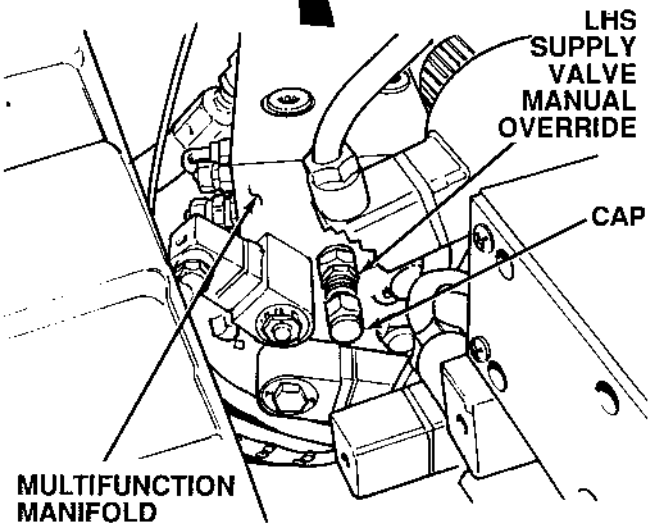
(1) Remove six screws, lockwashers and LHS control box cover. Discard lockwashers.
(2) Remove cap from LHS supply override needle valve.
(3) Using hex key, check position of override valve. Override valve is closed if turned all the way in against stop.
  (a) If override is not closed, close override by turning screw in and perform Steps (4) and (5) below.
  (b) If override is closed, perform Step (4) and (5) below.
(4) Install cap on manual override.
(5) Install LHS control box cover with six screws and lockwashers.

VERIFY REPAIR

(1) Start engine (TM 9-2220-364-10).
(2) Operate SRW.
  (a) If SRW does not operate, fault not corrected, turn OFF ENGINE switch and notify DS Maintenance.
  (b) If SRW operates normally, fault has been corrected.
(3) Turn OFF ENGINE switch.







2-31. HYDRAULIC SYSTEM TROUBLESHOOTING (CONT).

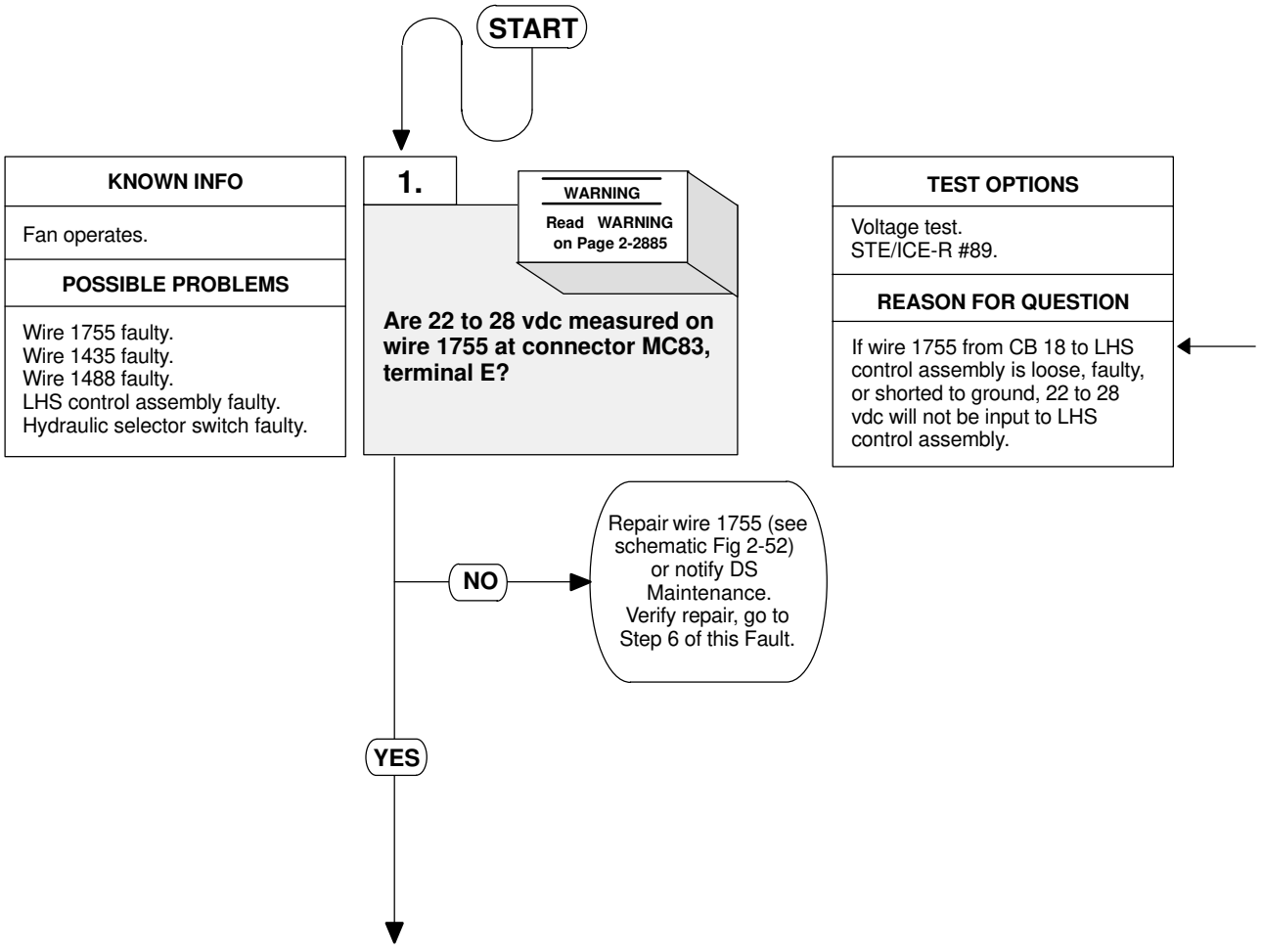
3. LHS, WINCH AND CRANE DO NOT OPERATE.

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)

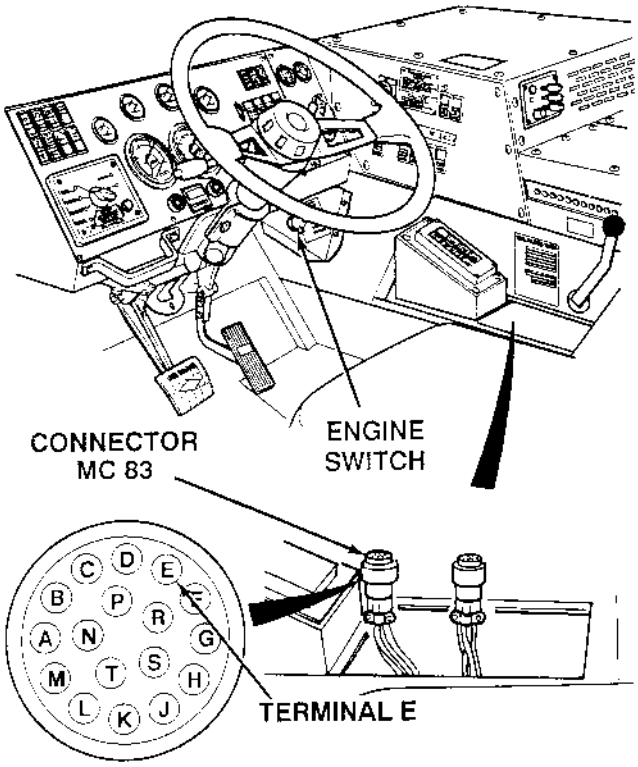
References
TM 9-2320-364-10
TM 9-4910-571-12&P

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



WARNING

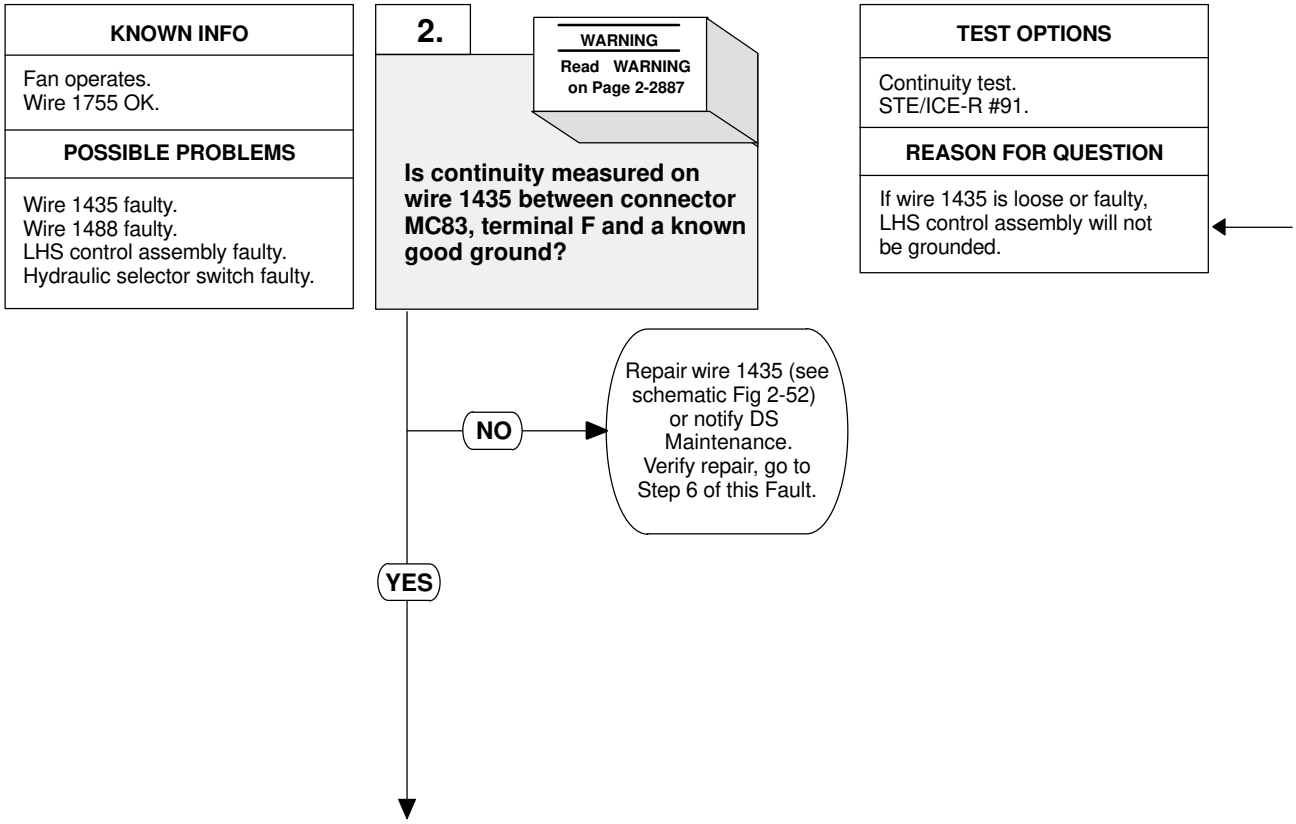
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment and injury or death to personnel may occur.



VOLTAGE TEST

(1) Remove LHS control assembly (Para 7-40).
(2) Set multimeter select switch to volts dc.
(3) Connect positive (+) multimeter lead to wire 1755 on connector MC83, terminal E.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) 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 1755 (see schematic Fig 2-52) or notify DS Maintenance. Install LHS control assembly (Para 7-40).
  (b) If 22 to 28 vdc are present, wire 1755 is OK.
(6) Turn OFF ENGINE switch.

3. LHS, WINCH, AND CRANE DO NOT OPERATE (CONT).

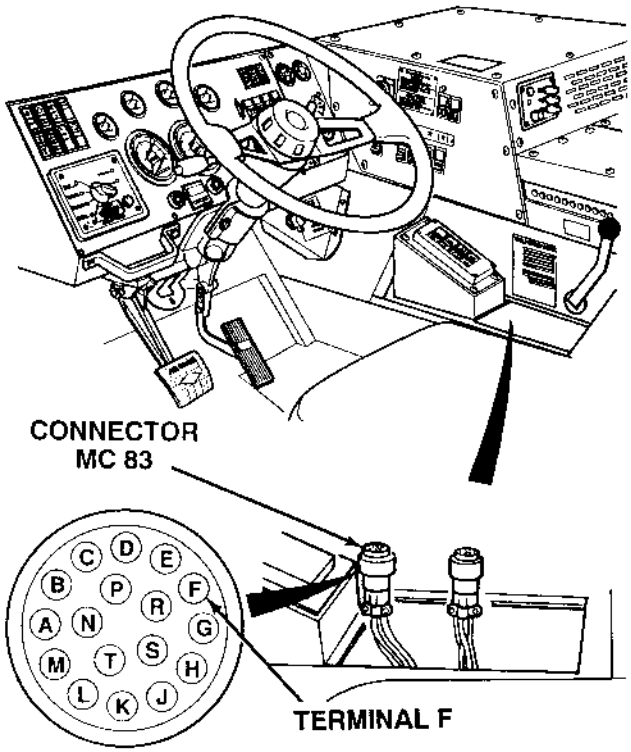


WARNING

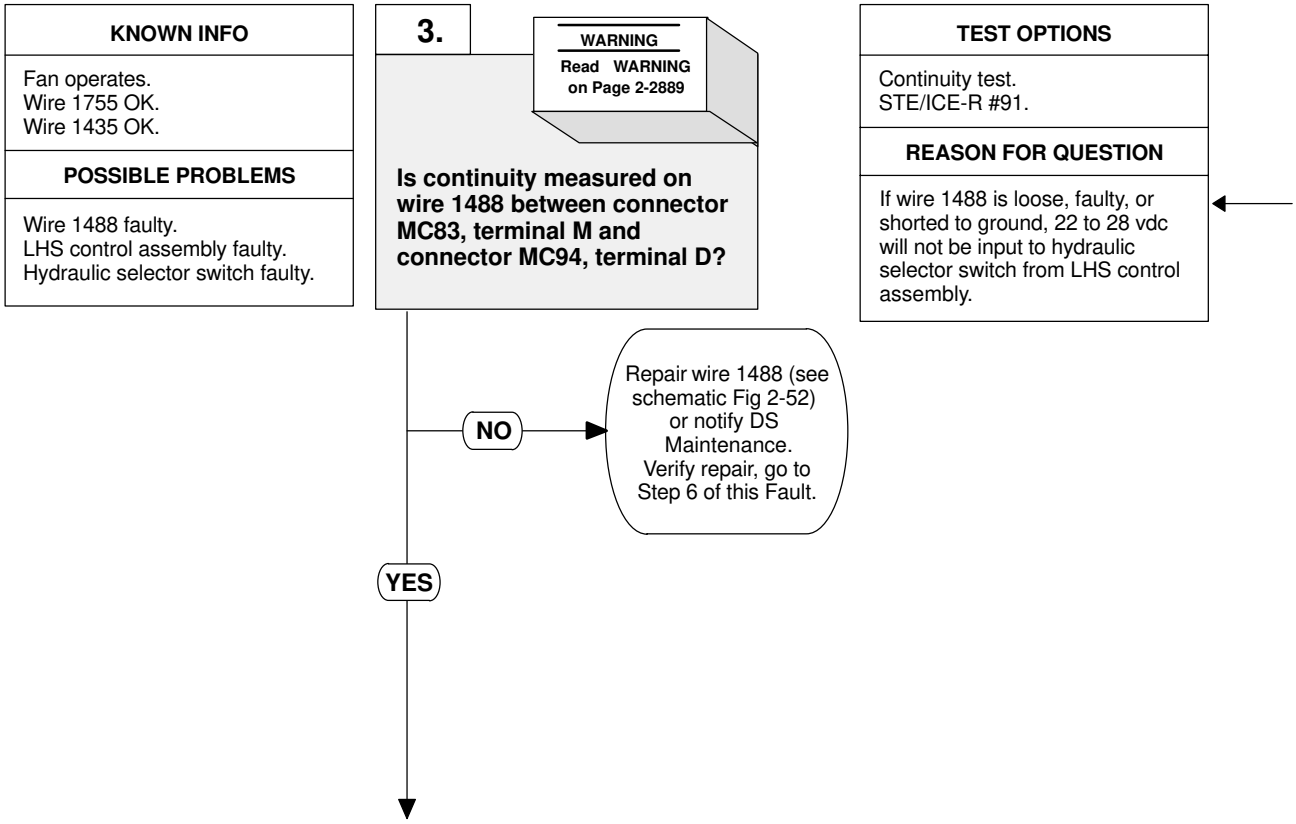
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity on wire 1435 between connector MC83, terminal F and a known good ground?
   (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-52) or notify DS Maintenance.
   (b) If there is continuity, wire 1435 is OK.



3. LHS, WINCH, AND CRANE DO NOT OPERATE (CONT).



WARNING

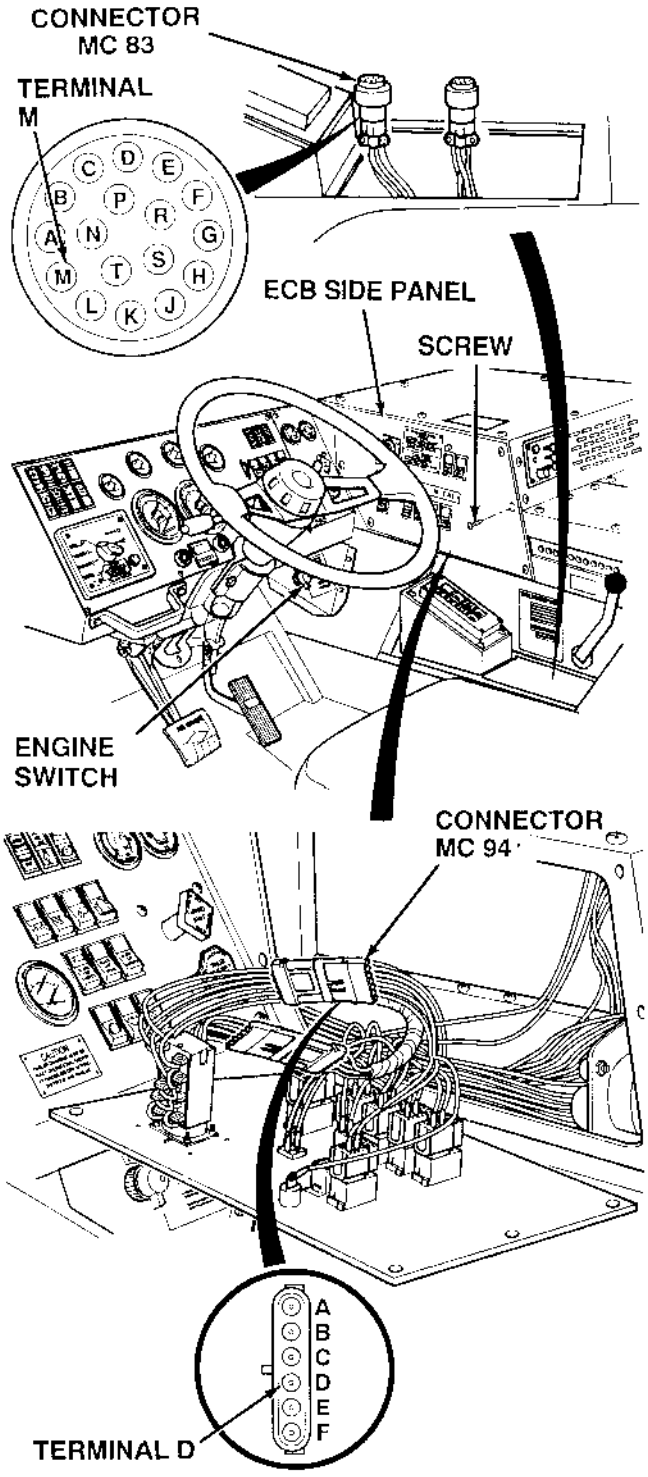
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

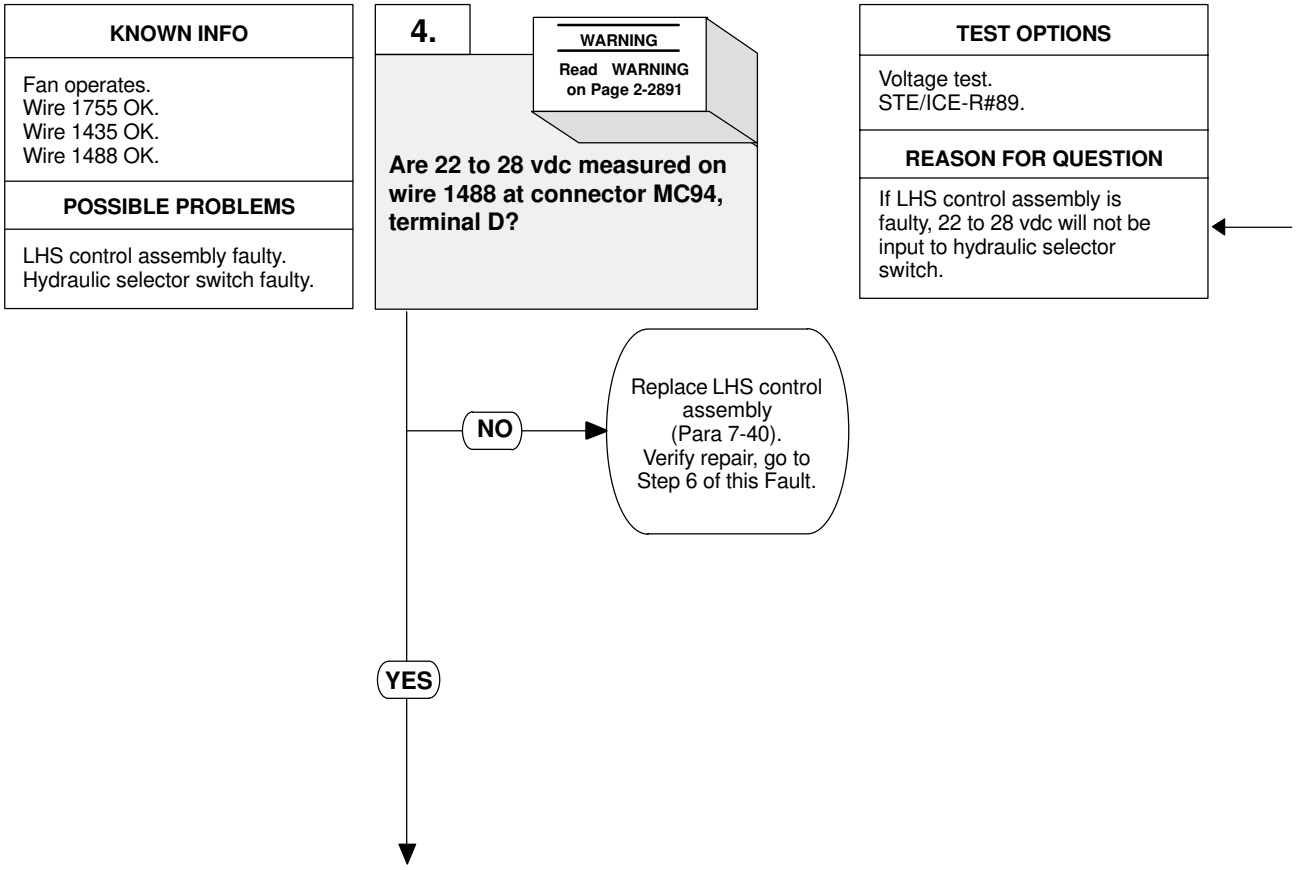
Connectors are removed by gently prying up on tabs.

CONTINUITY TEST

(1) Remove six screws and ECB side panel.
(2) Disconnect connector MC94 from hydraulic selector switch connector.
(3) Is there continuity on wire 1488 between connector MC94, terminal D and connector MC83, terminal M?
   (a) If there is no continuity, repair wire 1488 (see schematic Fig 2-52) or notify DS Maintenance. Perform Step (4) below.
   (b) If there is continuity, wire 1488 is OK.
(4) Install LHS control assembly (Para 7-40).



3. LHS, WINCH, AND CRANE DO NOT OPERATE (CONT.)

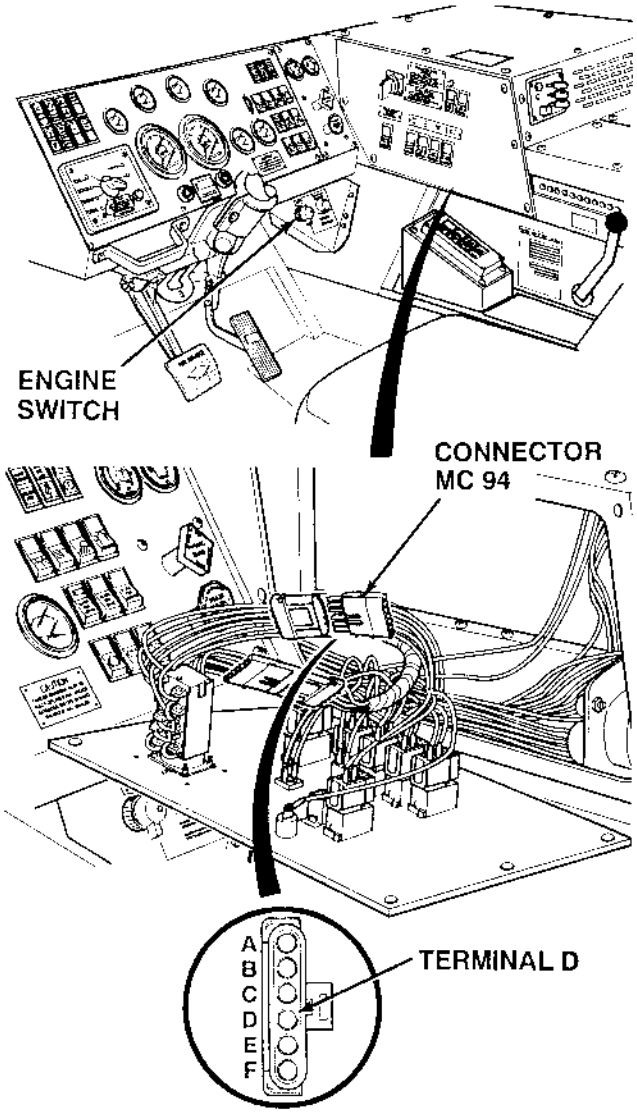


WARNING

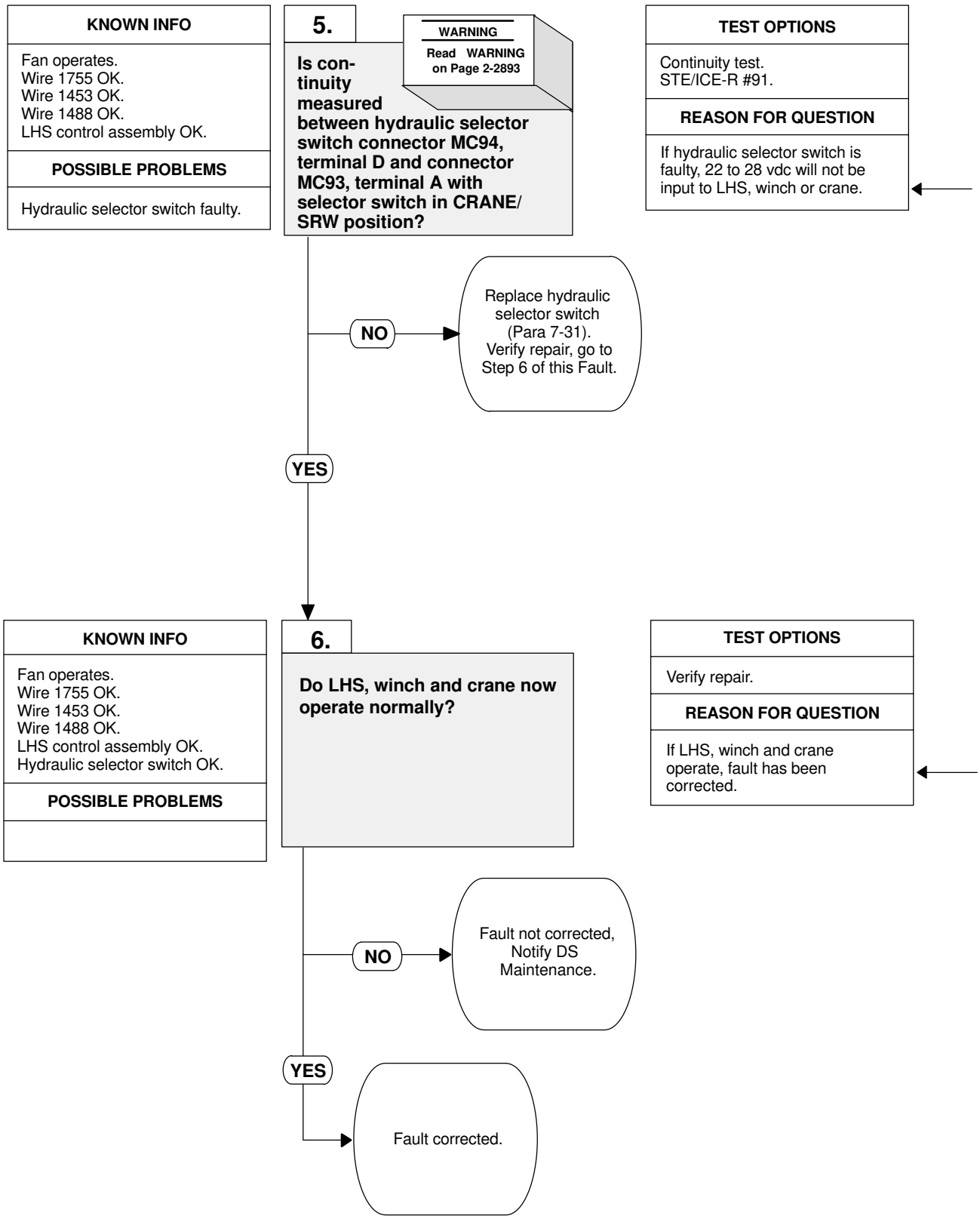
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

(1) Set multimeter select switch to volts dc.
(2) Connect positive (+) multimeter lead to connector MC94, 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, turn OFF ENGINE switch and replace LHS control assembly (Para 7-40).
    (b) If 22 to 28 vdc are present, LHS control assembly is OK.
(5) Turn OFF ENGINE switch.



3. LHS, WINCH, AND CRANE DO 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

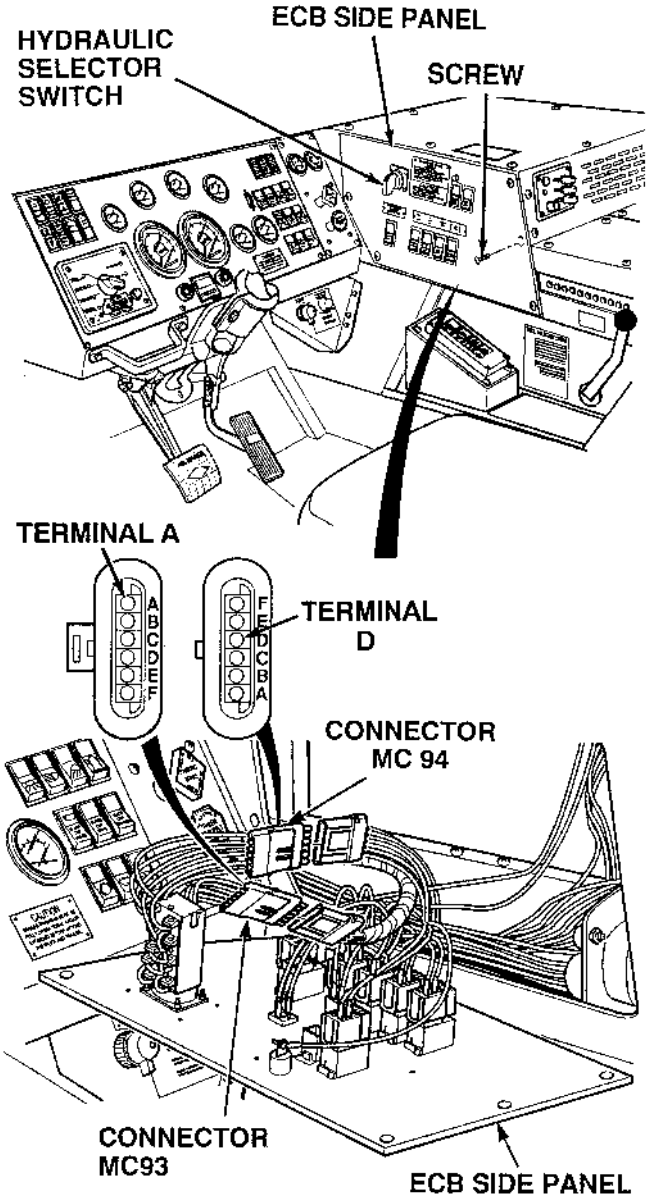
Connectors are removed by gently prying up on tabs.

CONTINUITY TEST

(1) Disconnect connector MC93 from hydraulic selector switch connector.
(2) Set hydraulic selector switch to WINCH/CRANE position (TM 9-2320-364-10).
(3) Set multimeter select switch to ohms.
(4) Is there continuity between MC94, terminal D and MC93, terminal A switch connectors?
  (a) If there is no continuity, replace hydraulic selector switch (Para 7-31).
  (b) If there is continuity, hydraulic selector switch is OK.
(5) Set hydraulic selector switch to OFF position and perform Step (6) below.
(6) Connect connectors MC94 and MC93 to hydraulic selector switch connectors.
(7) Install ECB side cover with six screws.

VERIFY REPAIR

(1) Operate LHS, winch and crane (TM 9-2320-364-10).
  (a) If LHS, winch, and crane do not operate, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
  (b) If LHS, winch, and crane operate, fault has been corrected.
(2) Turn OFF ENGINE switch.



2-31. HYDRAULIC SYSTEM TROUBLESHOOTING (CONT).

4. FAN, LHS, WINCH AND CRANE DO NOT OPERATE.

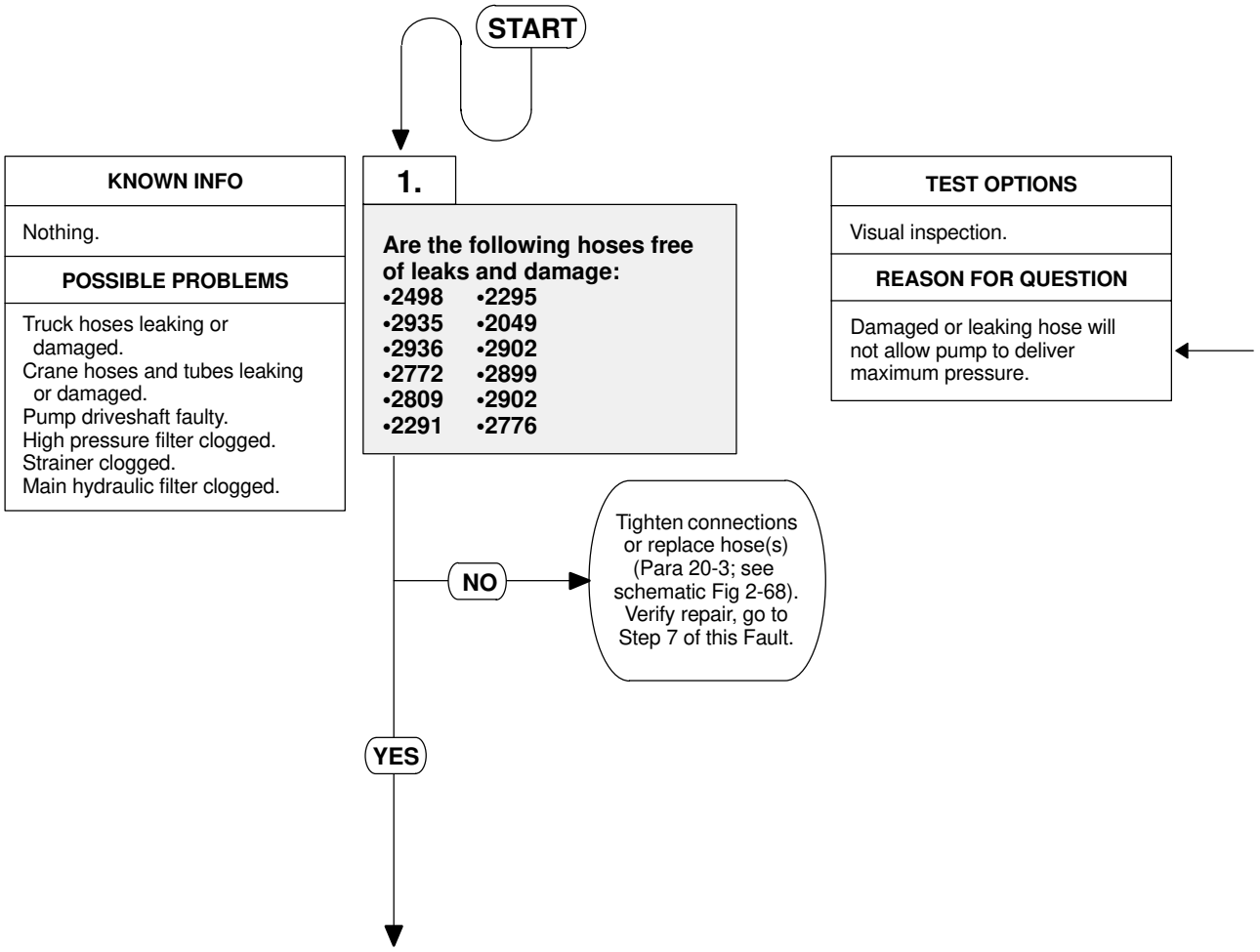
INITIAL SETUP

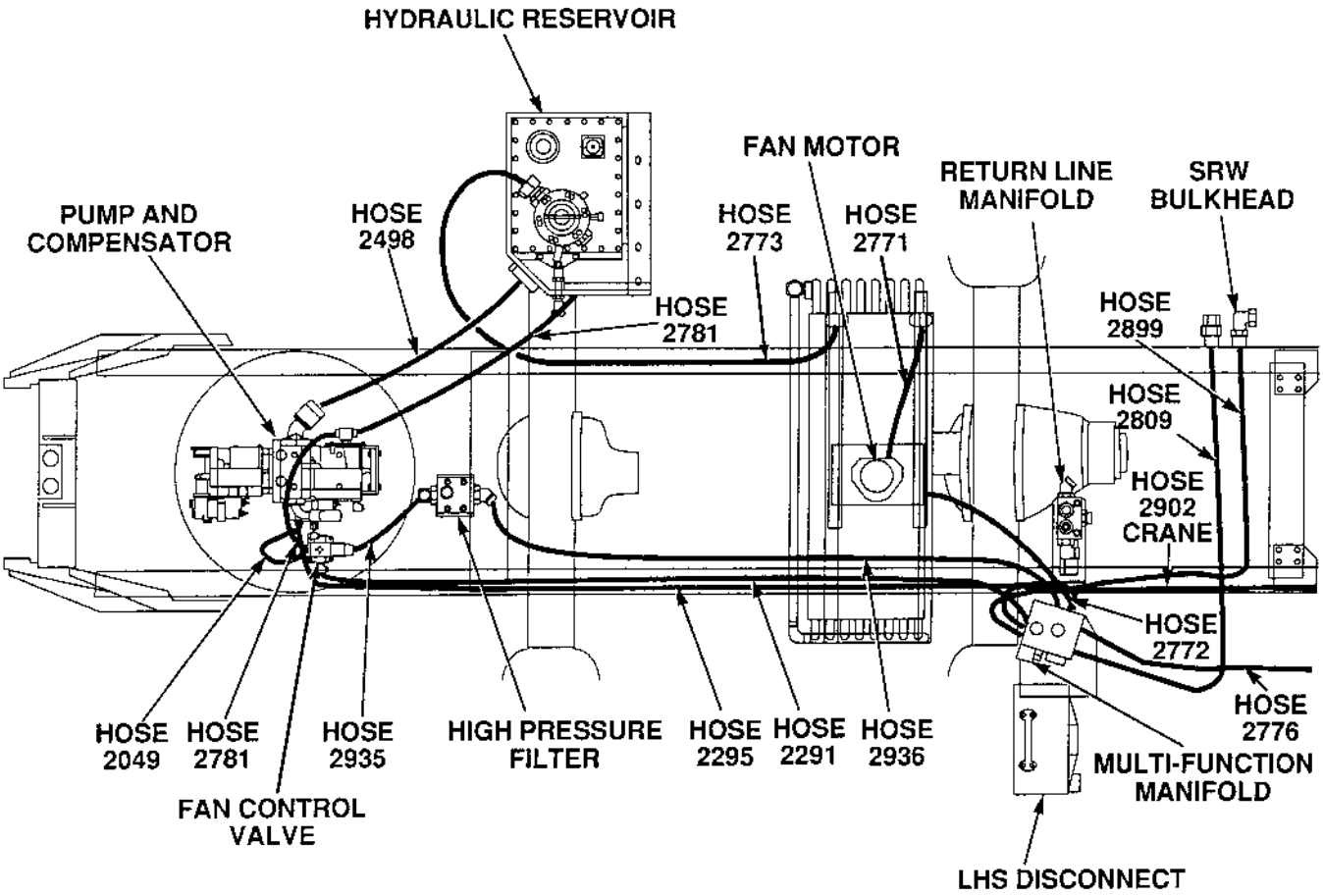
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts
Lockwashers (22) (Item 195, 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)



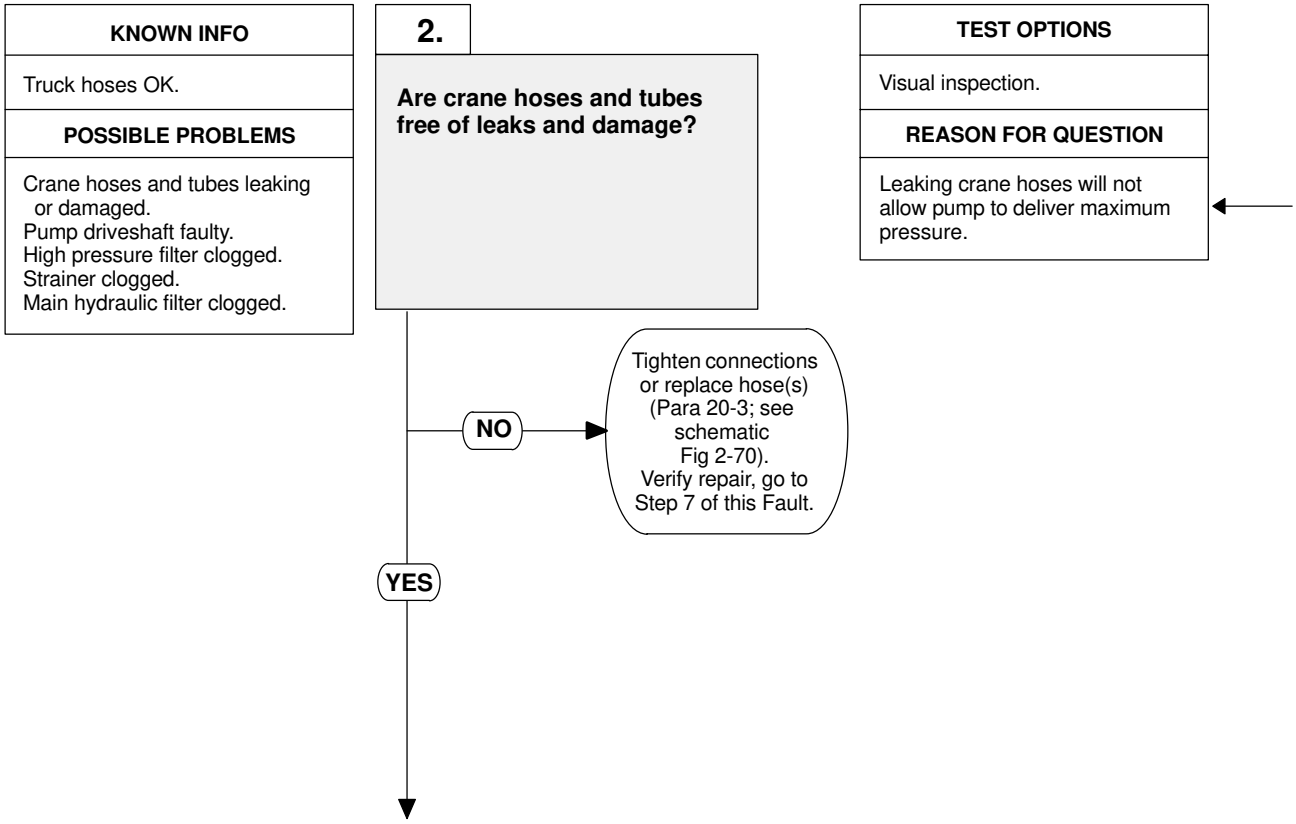


VISUAL INSPECTION
Check hoses and fittings listed in Table 2-57 for leaks and/or damage. (1) If hoses and/or fittings leak, tighten fittings or replace hoses (Para 20-3). (2) If hoses and fittings are free from damage, go to Step 2 of this Fault.

Table 2-57. Hydraulic System Hoses

HOSE NO.	FROM	TO
2498	Hydraulic reservoir	Hydraulic pump
2935	Hydraulic pump	High pressure filter
2936	High pressure filter	Multifunction manifold
2772	Multifunction manifold	Fan motor
2899	Multifunction manifold	Self recovery winch
2902	Multifunction manifold	Crane
2291	Multifunction manifold	Fan control solenoid valve
2295	Multifunction manifold	Pump control
2049	Pump control	Pump drain
2776	Multifunction manifold	Crane
2809	Multifunction manifold	Self recovery winch

4. FAN, LHS, WINCH AND CRANE DO NOT OPERATE (CONT).



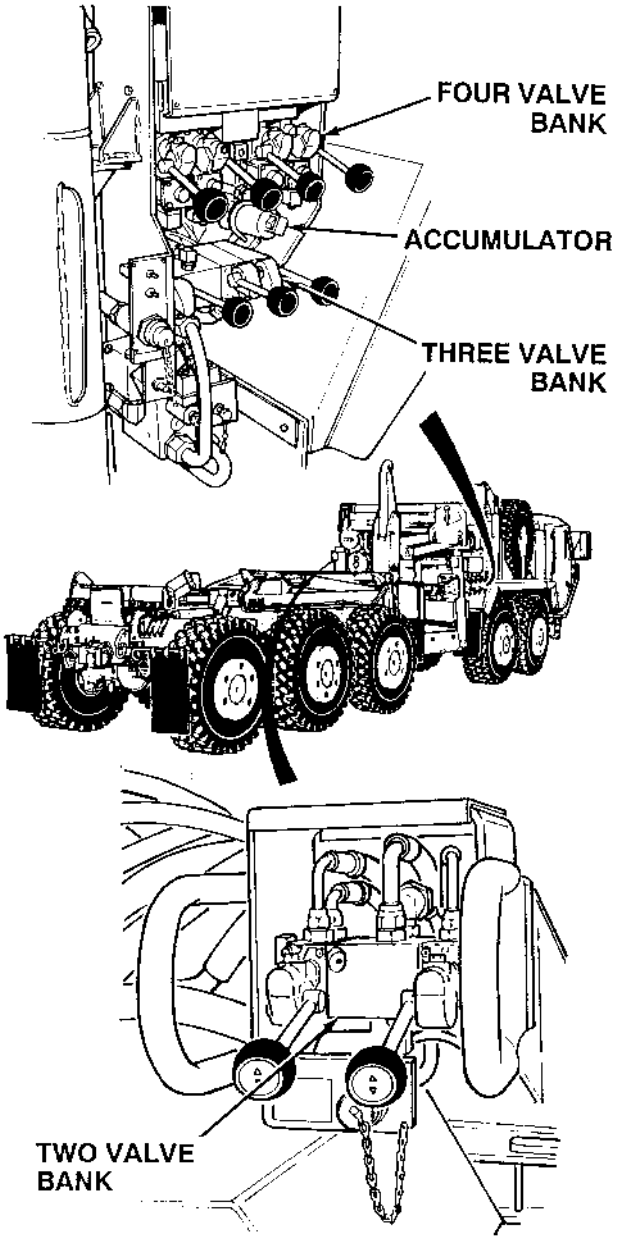
VISUAL INSPECTION

Inspect the following crane hoses and tubes (see schematic Fig 2-70):

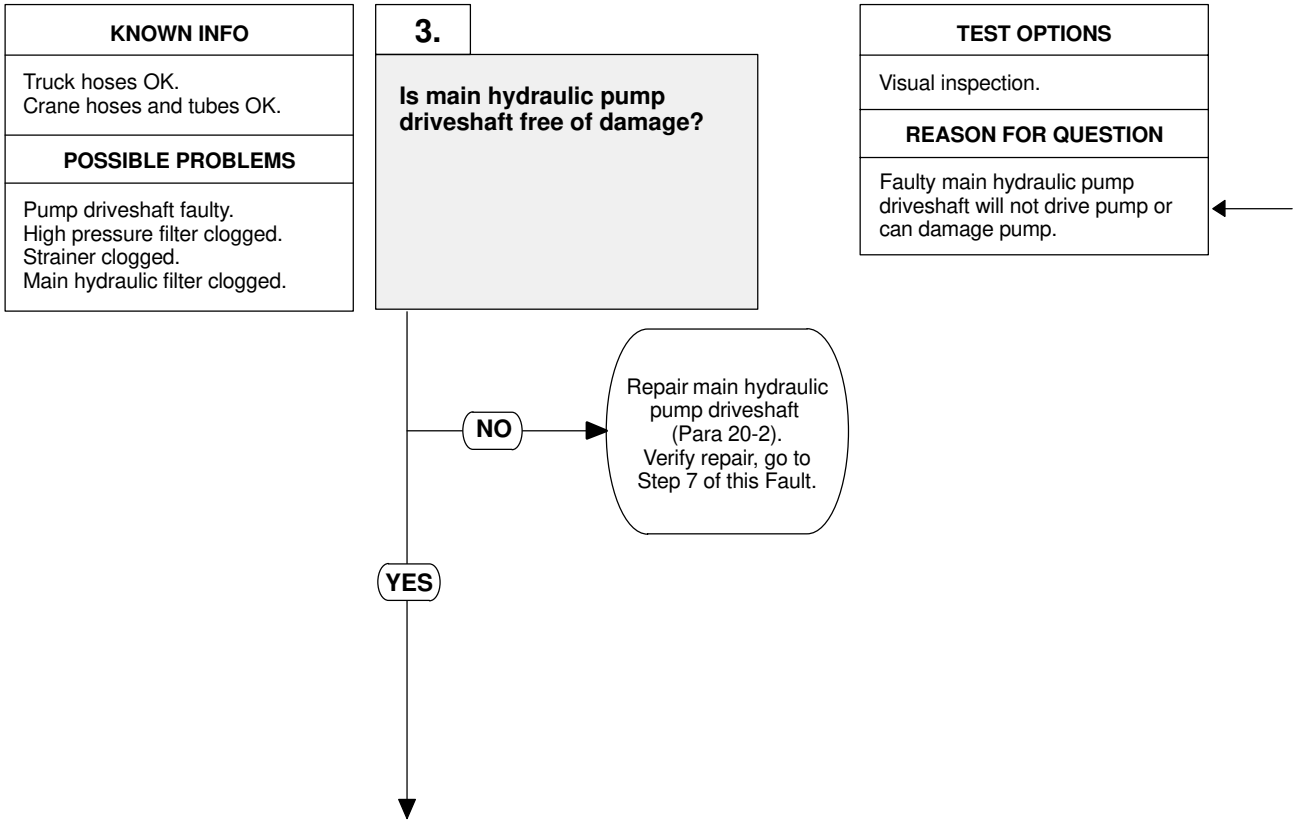
- tube from hose 2902 to main hydraulic pressure valve.
- hose from four valve bank to accumulator.
- load sensing hose from hose 2776 to four valve bank.
- load sensing hose from four valve bank to two valve bank.
- load sensing hose from four valve bank to three valve bank.

(1) If hose or tube is leaking, tighten connection or replace hose or tube (Para 20-3; see schematic Fig 2-70).

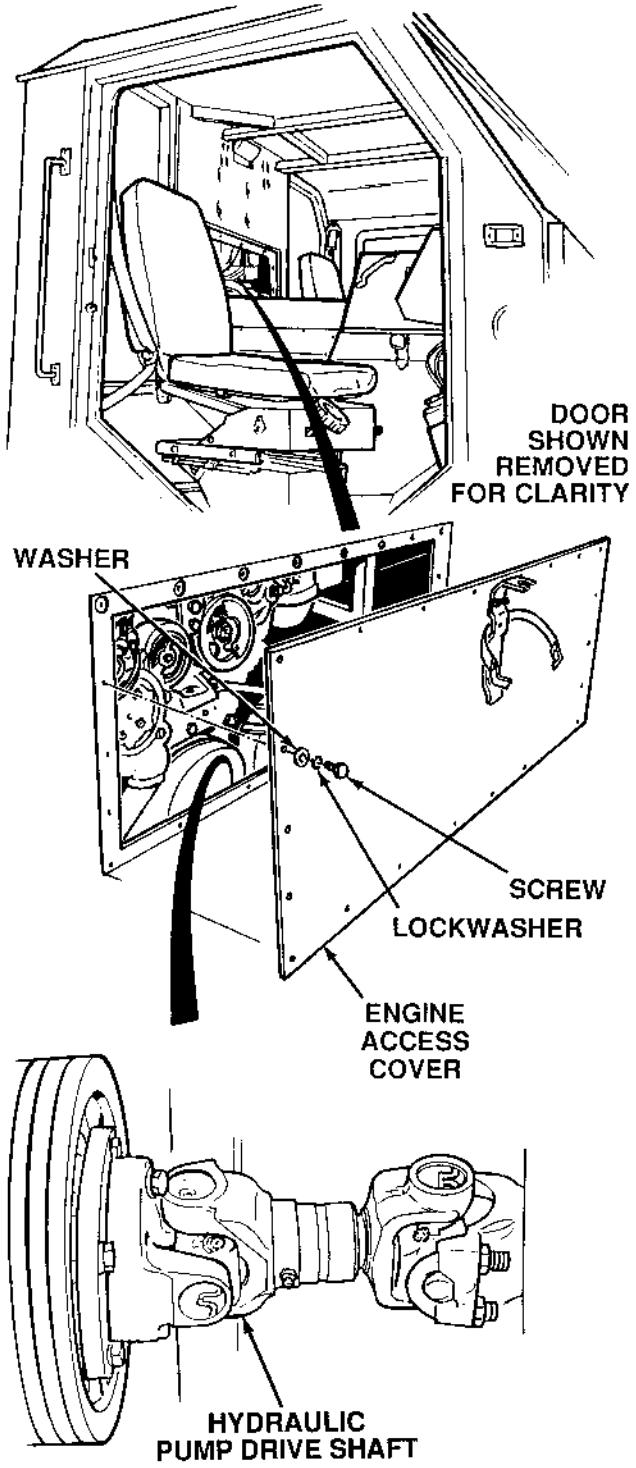
(2) If hoses and tubes are OK, go to Step 3 of this Fault.



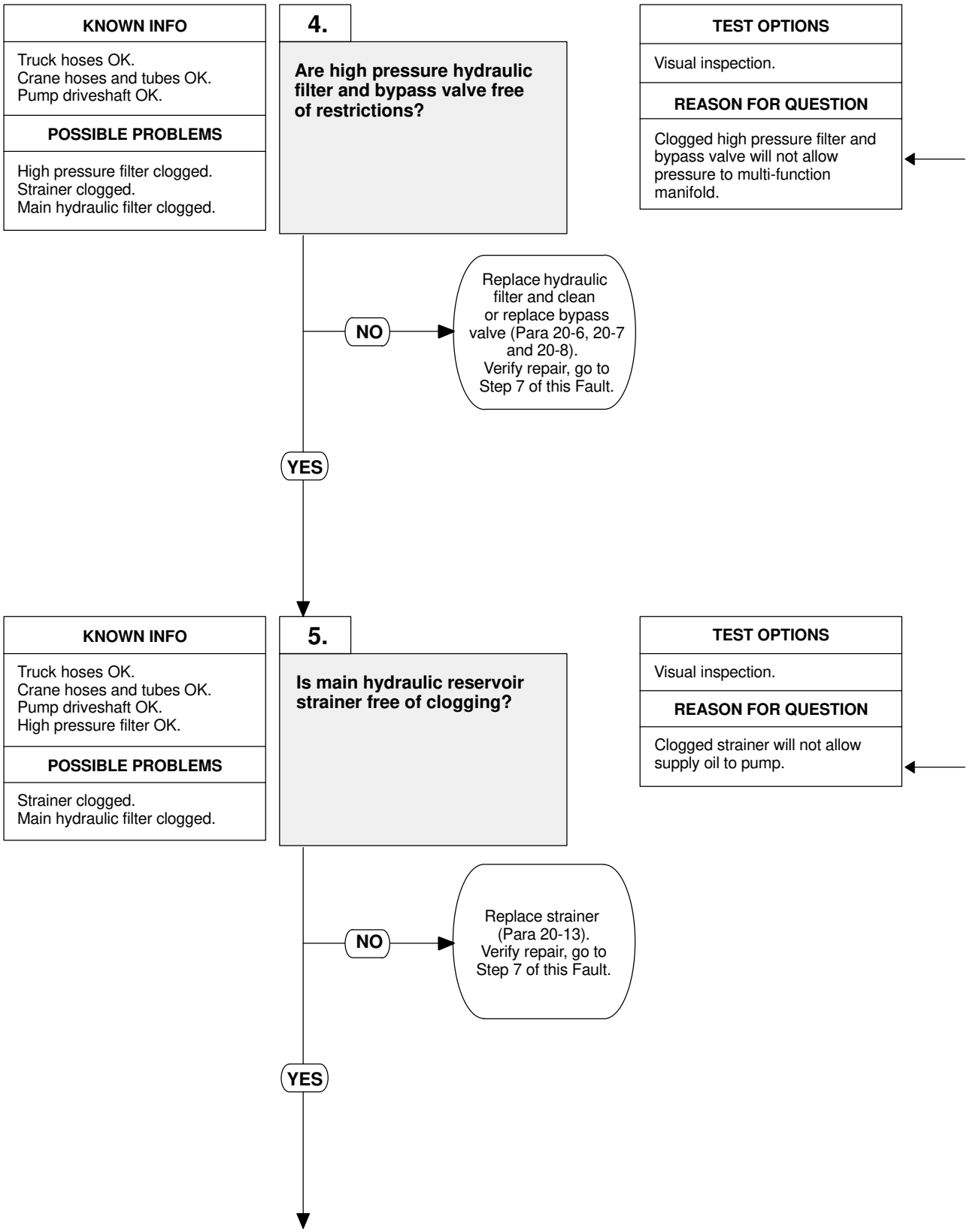
4. FAN, LHS, WINCH AND CRANE DO NOT OPERATE (CONT).



VISUAL INSPECTION
(1) Remove 22 screws, lockwashers and washers and engine access cover. Discard lockwashers. (2) Inspect main hydraulic pump driveshaft for damage. (a) If driveshaft is damaged, repair driveshaft (Para 20-2). (b) If driveshaft is not damaged, go to Step 4 of this Fault. (3) Install engine access cover with 22 screws, lockwashers and washers.

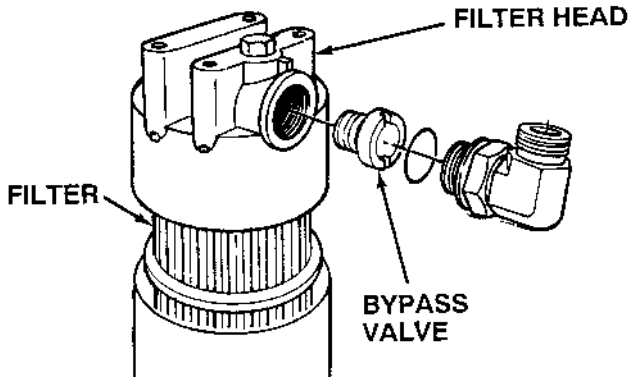


4. FAN, LHS, WINCH AND CRANE DO NOT OPERATE (CONT).



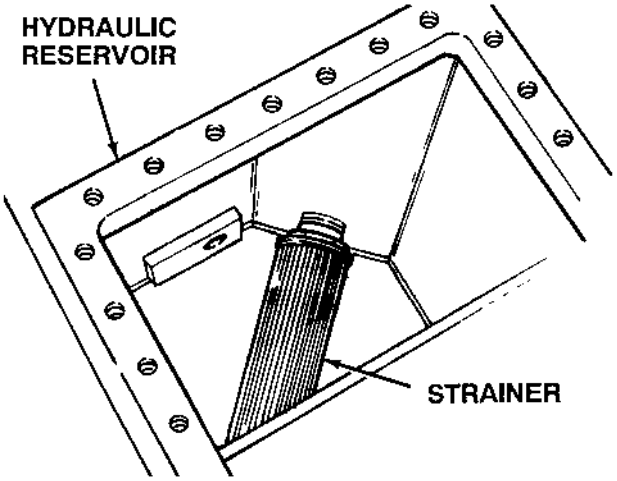
VISUAL INSPECTION

(1) Remove high pressure hydraulic filter (Para 20-6).
(2) Remove high pressure hydraulic filter head from truck (Para 20-7).
(3) Remove bypass valve from head (Para 20-8).
  (a) If filter is clogged, replace filter.
  (b) If bypass valve is clogged, clean or replace bypass valve.
  (c) If filter and bypass valve are not clogged, perform Steps (4) through (6) below and go to Step 5 of this Fault.
(4) Assemble high pressure filter head (Para 20-8).
(5) Install high pressure hydraulic filter head on truck (Para 20-7).
(6) Install high pressure filter (Para 20-6).

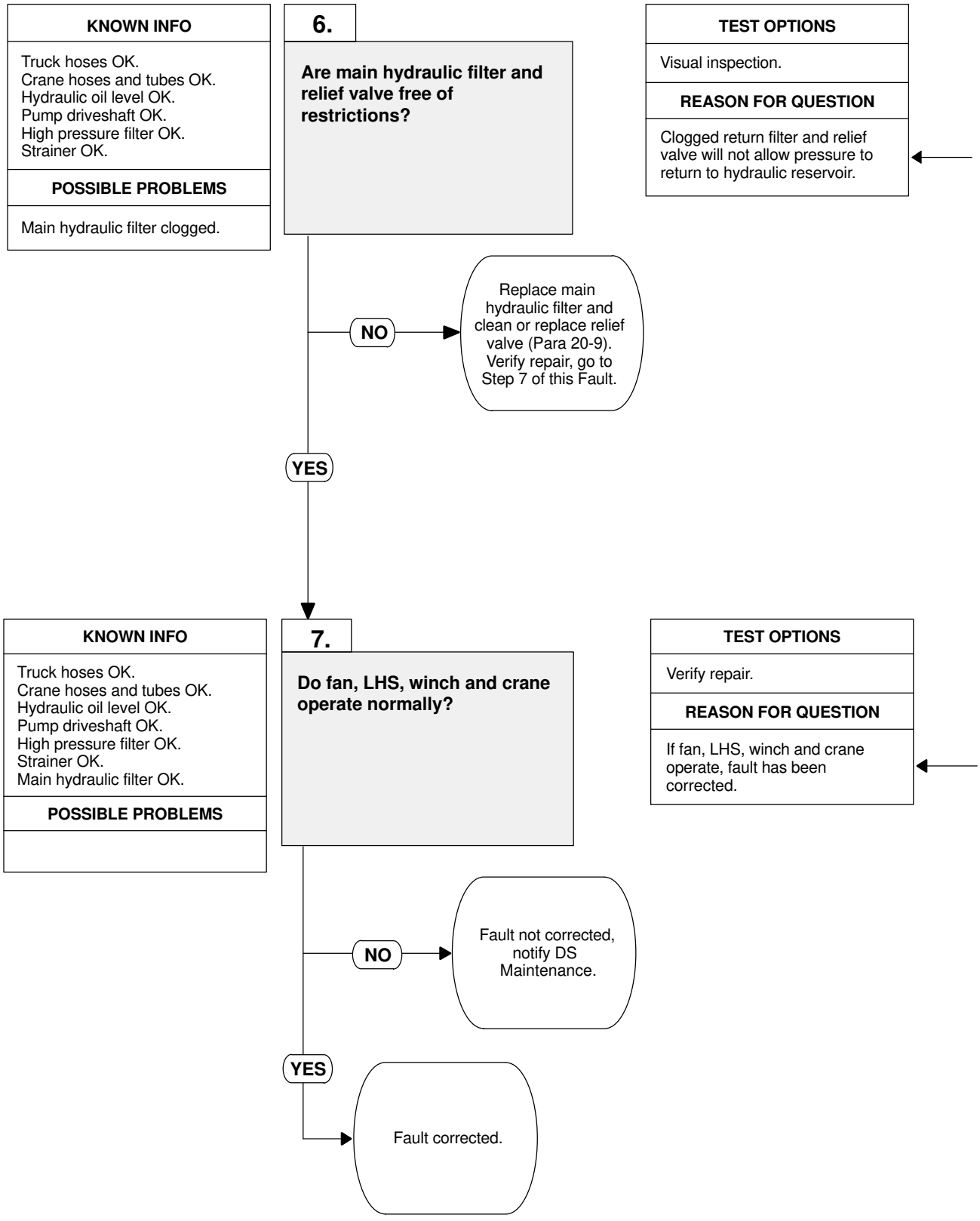


VISUAL INSPECTION

(1) Remove strainer from hydraulic reservoir (Para 20-13).
(2) Inspect strainer for contaminants clogging strainer.
  (a) If strainer is clogged, replace strainer (Para 20-13).
  (b) If strainer is not clogged, perform Step (3) below.
(3) Install strainer in hydraulic reservoir (Para 20-13).

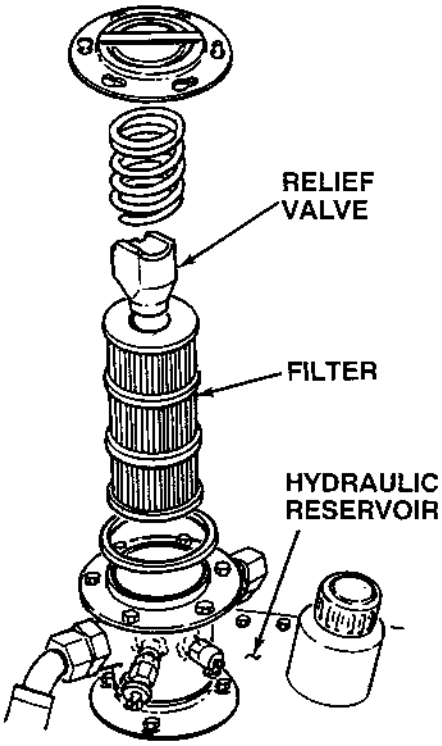


4. FAN, LHS, WINCH AND CRANE DO NOT OPERATE (CONT).



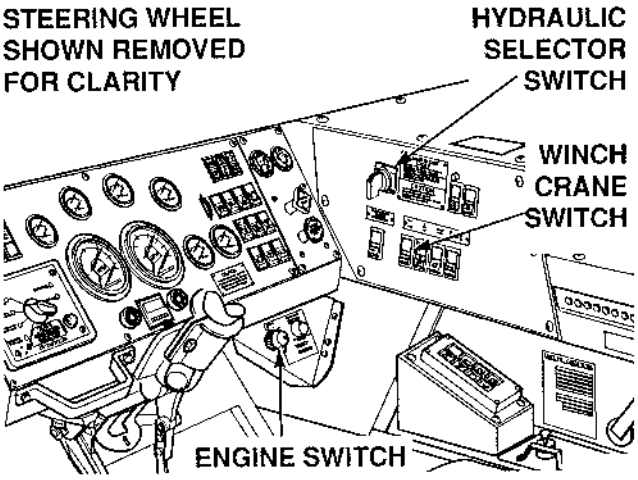
VISUAL INSPECTION

(1) Remove main hydraulic filter from hydraulic reservoir (Para 20-9).
(2) Inspect filter and relief valve for excessive contaminants clogging filter and relief valve.
  (a) If filter is clogged, replace filter.
  (b) If relief valve is clogged, clean or replace relief valve.
  (c) If filter and relief valve are not clogged with debris, perform Step (3) below.
(3) Install main hydraulic filter in hydraulic reservoir (Para 20-9).



VERIFY REPAIR

(1) Operate fan, LHS, winch and crane (TM 9-2320-364-10).
  (a) If fan, LHS, winch, and crane do not operate, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
  (b) If fan, LHS, winch and crane operate, fault has been corrected.
(2) Turn OFF ENGINE switch.



2-31. HYDRAULIC SYSTEM TROUBLESHOOTING (CONT).

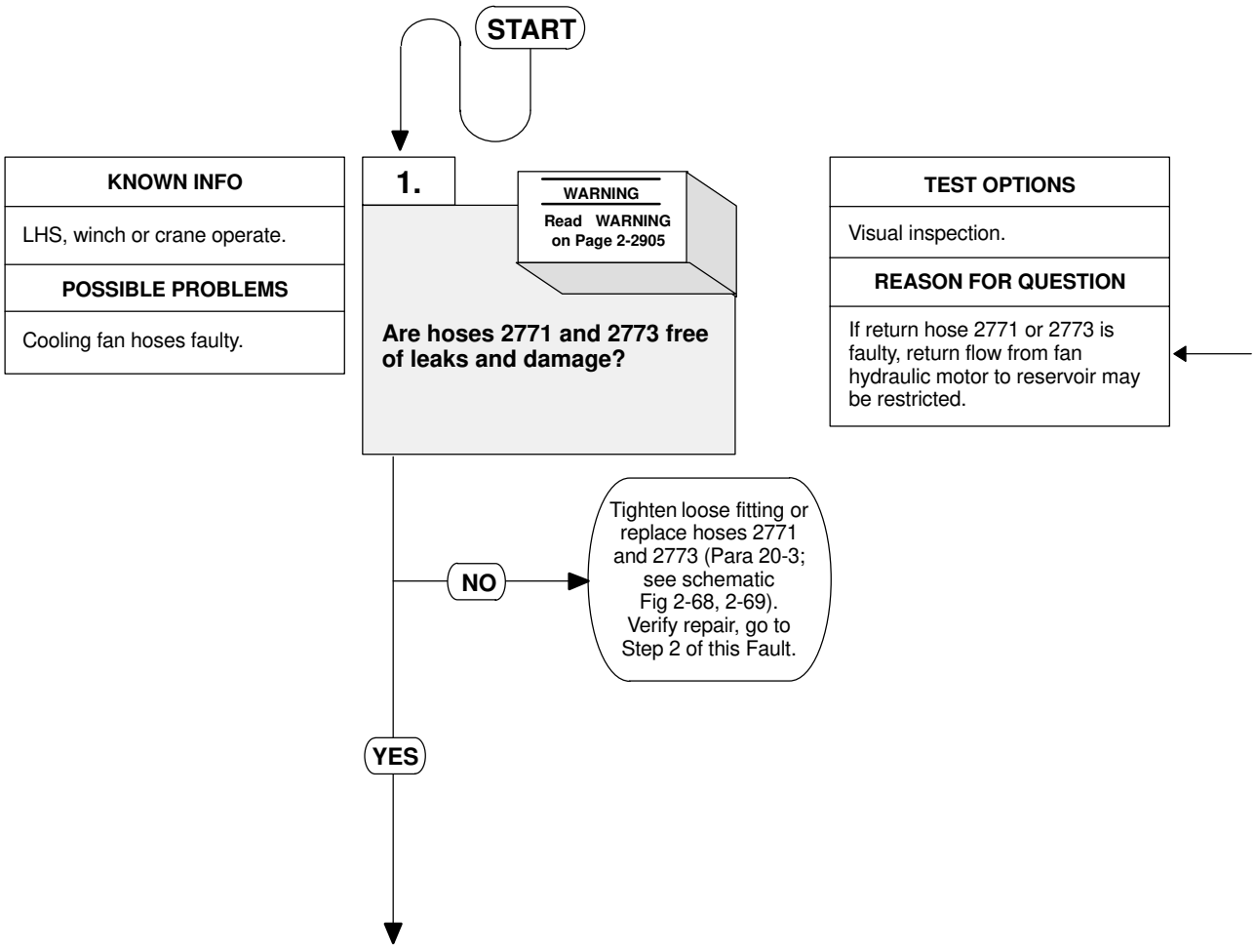
5. FAN DOES NOT OPERATE.

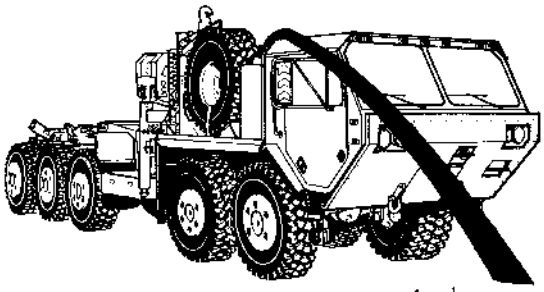
INITIAL SETUP

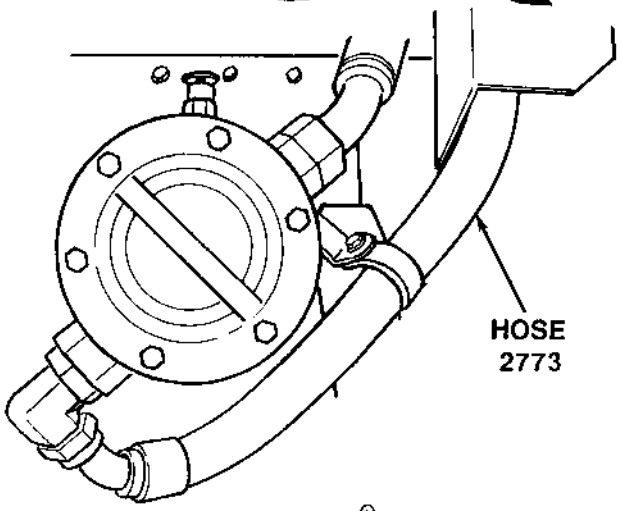
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

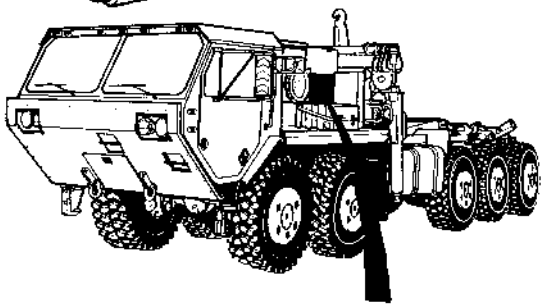
References
TM 9-2320-364-10

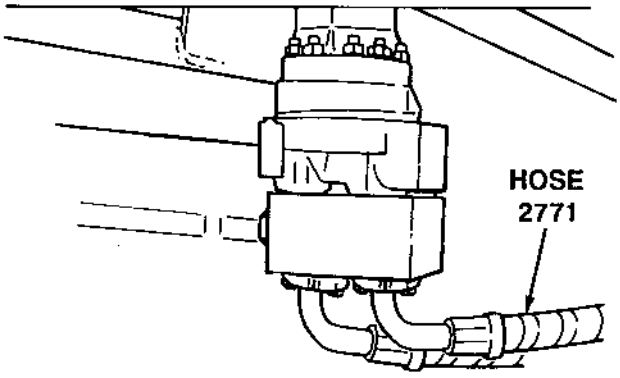
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right and left side noise panels removed, (Para 17-26 and 17-28)











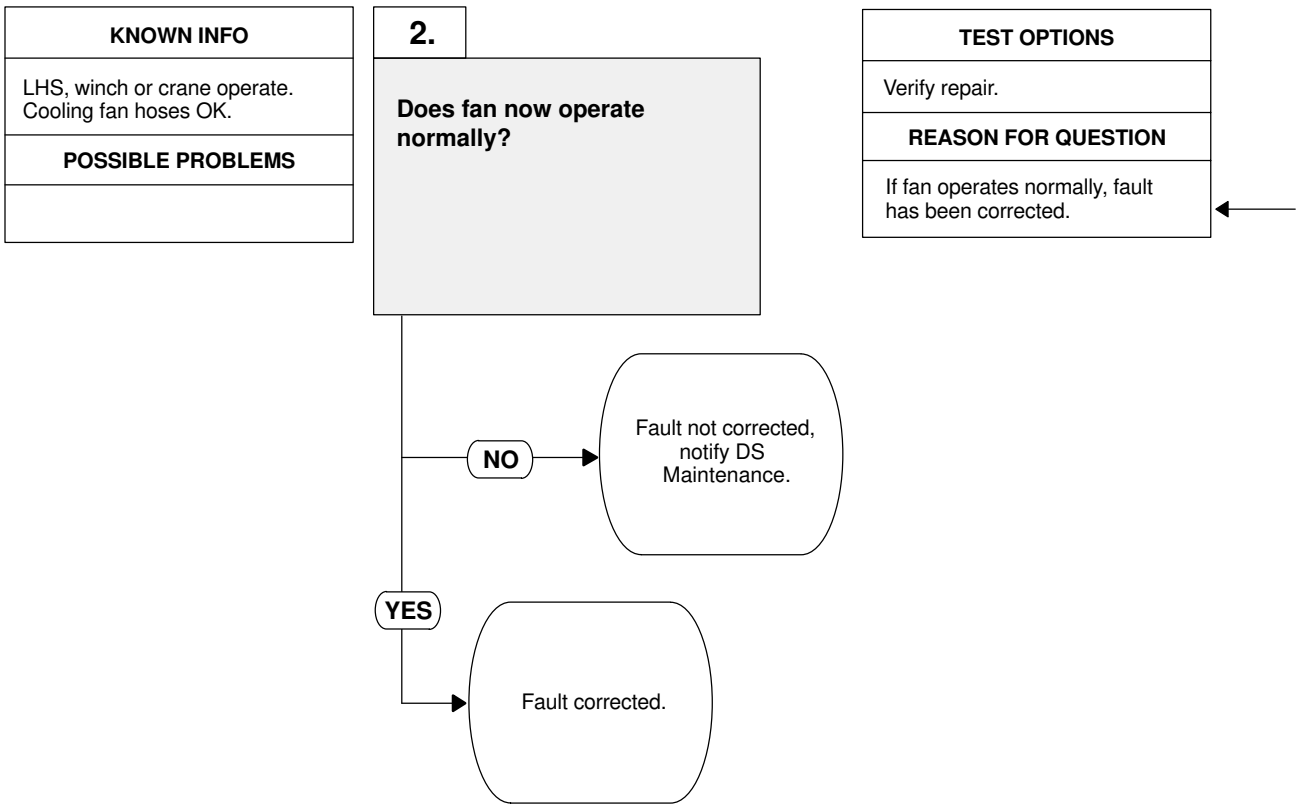
WARNING

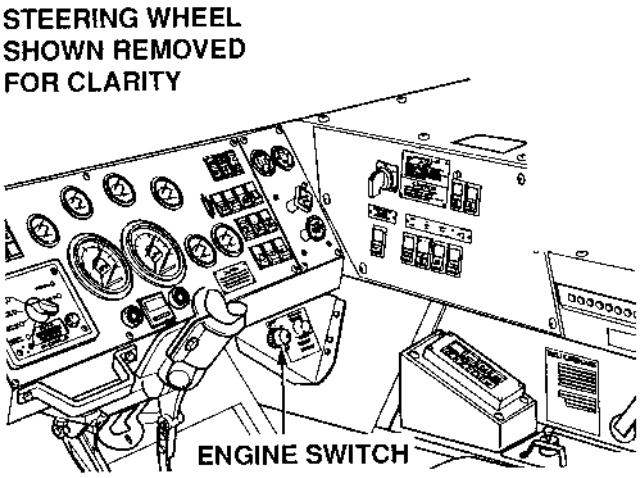
Keep hands and arms away from fan blade and drive while engine is running, or serious injury to personnel will result.

VISUAL INSPECTION

(1) Inspect hose 2771 from fan motor to cooler in cooling system module for leaks and damage.
   (a) If hose is leaking or damaged, tighten loose fittings or replace hose (Para 20-3; see schematic Fig 2-68, 2-69).
   (b) If hose is OK, go to Step (2) below.
(2) Inspect hose 2773 from cooling system module to hydraulic reservoir for leaks and damage.
   (a) If hose is leaking or damaged, tighten loose fittings or replace hose (Para 20-3; see schematic Fig 2-68 and 2-69).
   (b) If hose is OK, go to Step 2 of this Fault.
(3) Install left and right side noise panels (Para 17-26 and 17-28).

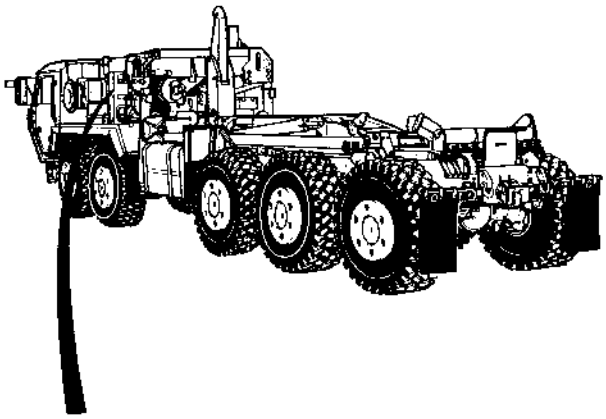
5. FAN DOES NOT OPERATE (CONT).

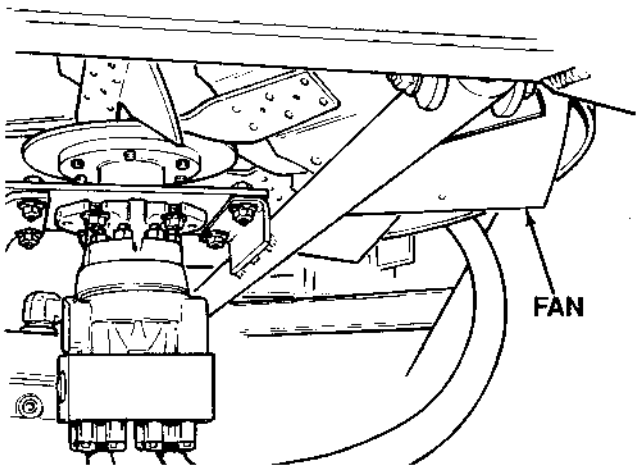




VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
  (a) If fan does not operate, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
  (b) If fan operates, fault has been corrected.
(2) Turn OFF ENGINE switch.





2-31. HYDRAULIC SYSTEM TROUBLESHOOTING (CONT).

6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED.

INITIAL SETUP

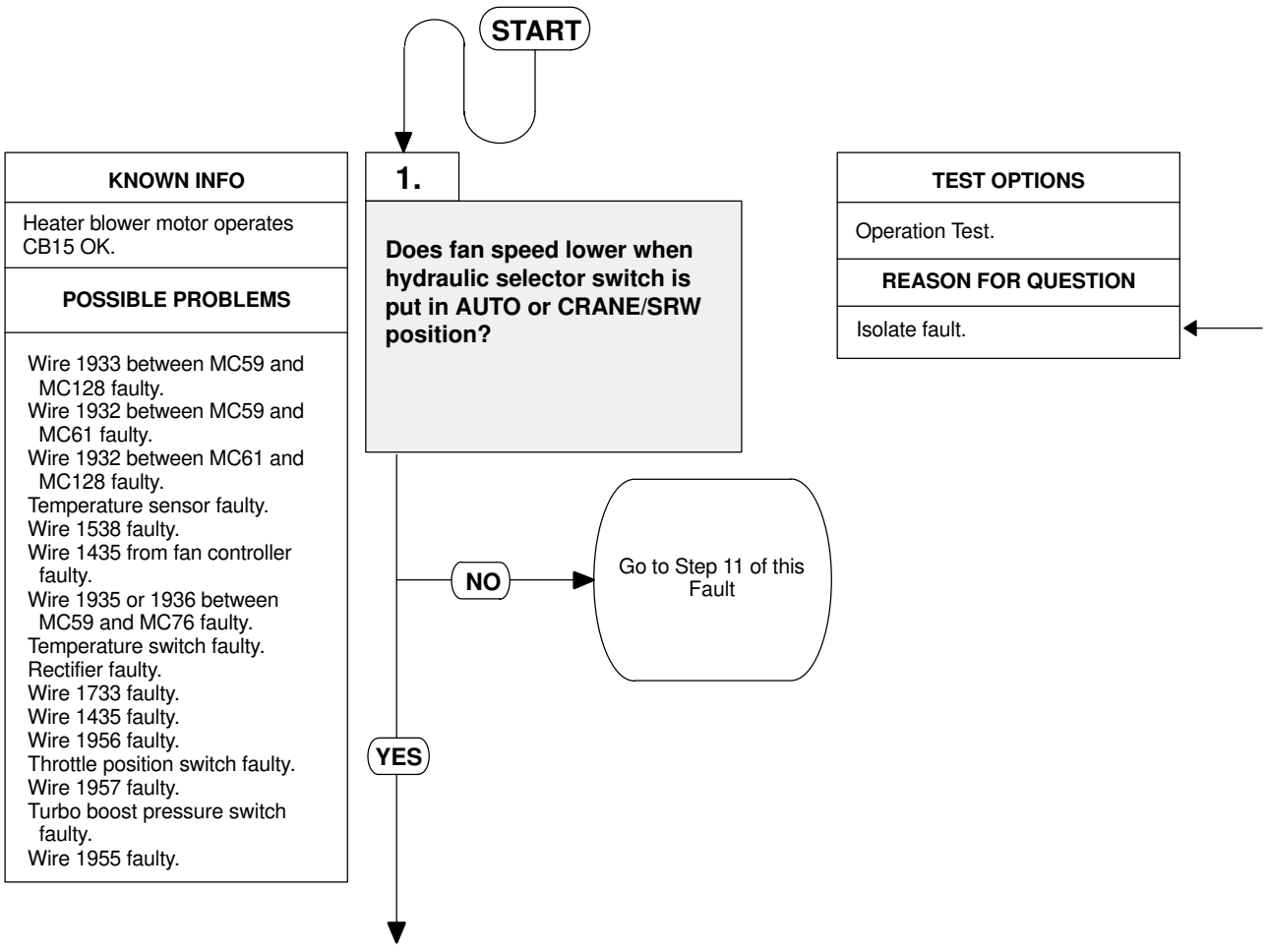
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
STE/ICE-R (optional) (Item 3, Appendix G)
Multimeter (Item 44, Appendix G)

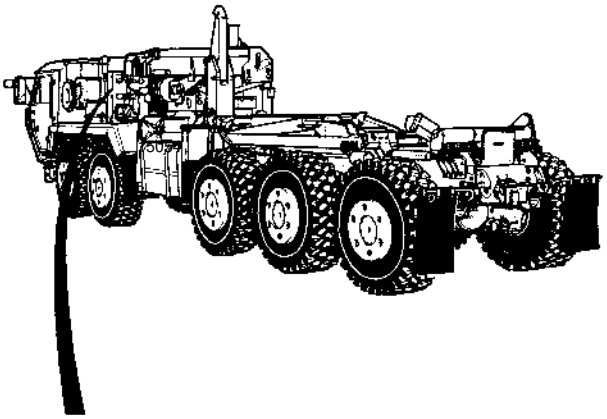
Materials/Parts
Adhesive (Item 8, Appendix C)
Lockwasher (22) (Item 157, Appendix F)

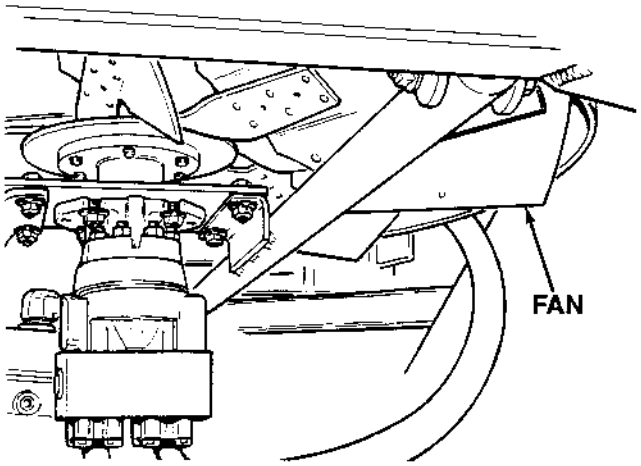
Personnel Required
Two

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)

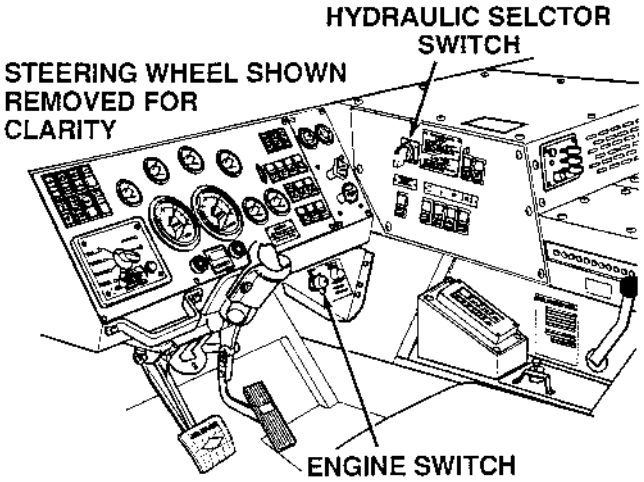




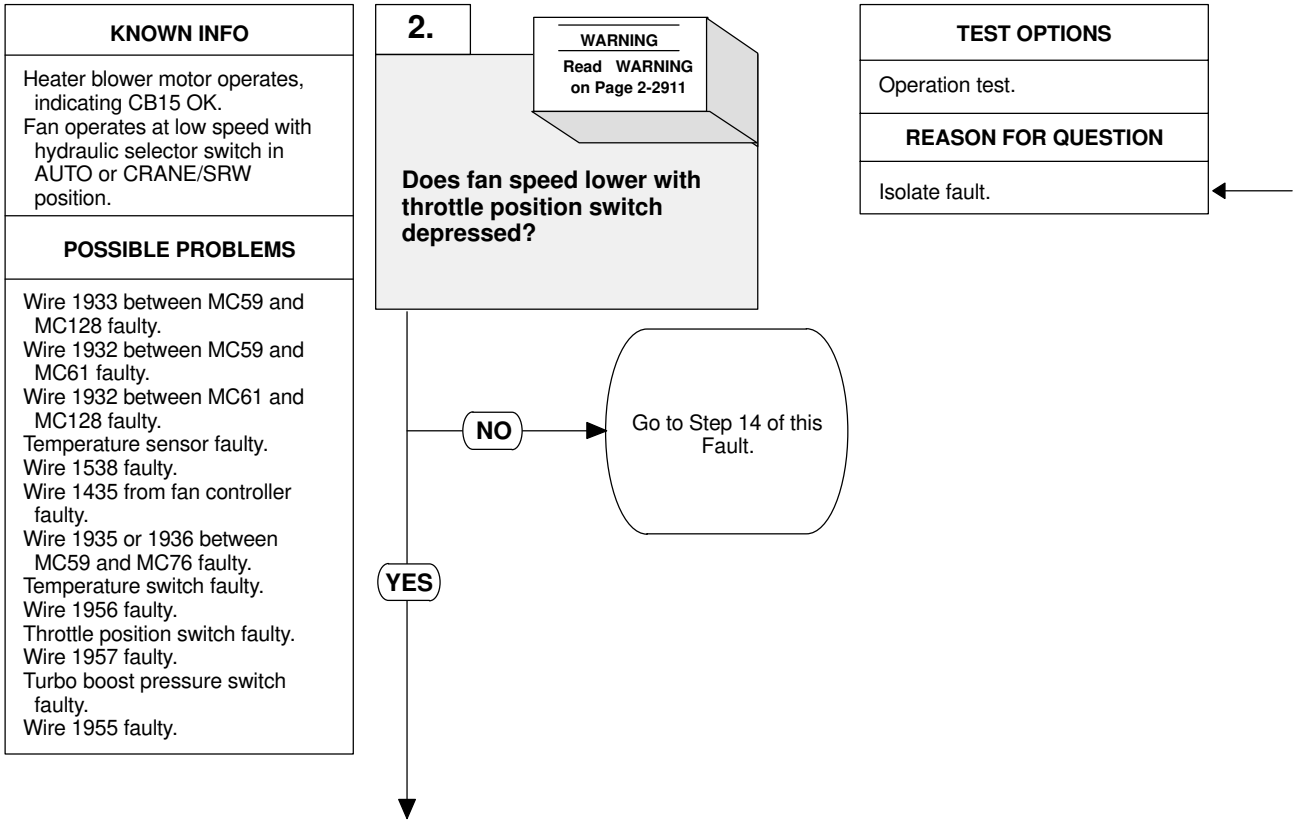


OPERATION TEST

(1) Start engine (TM 9-2320-364-10).
(2) With the aid of an assistant, observe fan operation while setting hydraulic selector switch to AUTO or CRANE/SRW position.
    (a) If fan does not slow, perform Steps (3) and (4) below and go to Step 11 of this Fault.
    (b) If fan speed does slow, perform Steps (3) and (4) below and go to Step 2 of this Fault.
(3) Set hydraulic selector switch to OFF position.
(4) Turn OFF ENGINE switch.

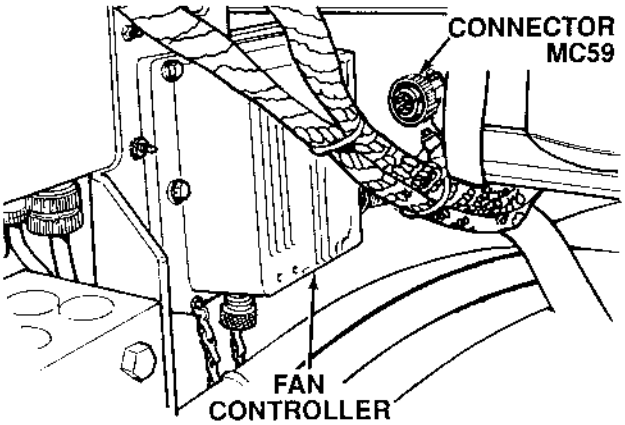


6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).



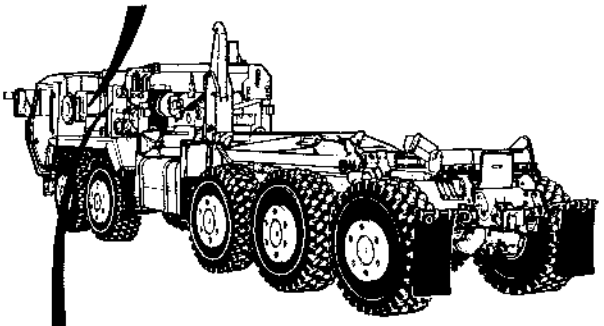
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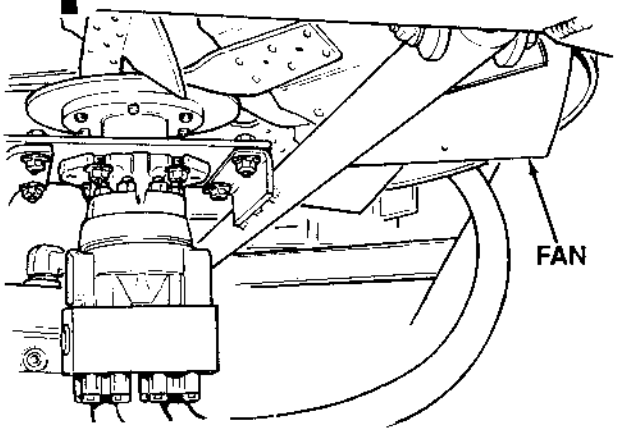
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

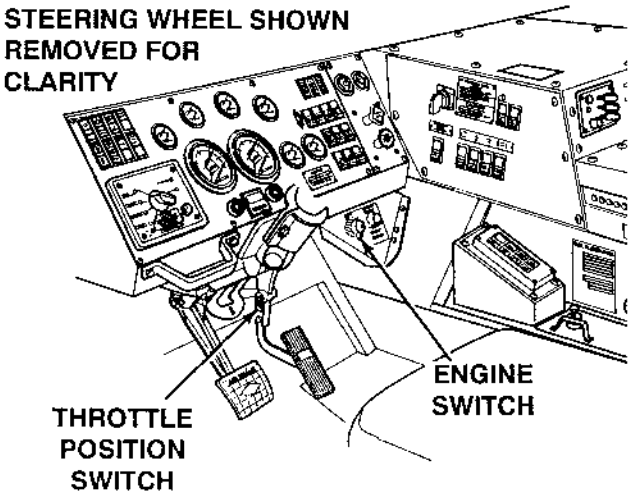


OPERATION TEST

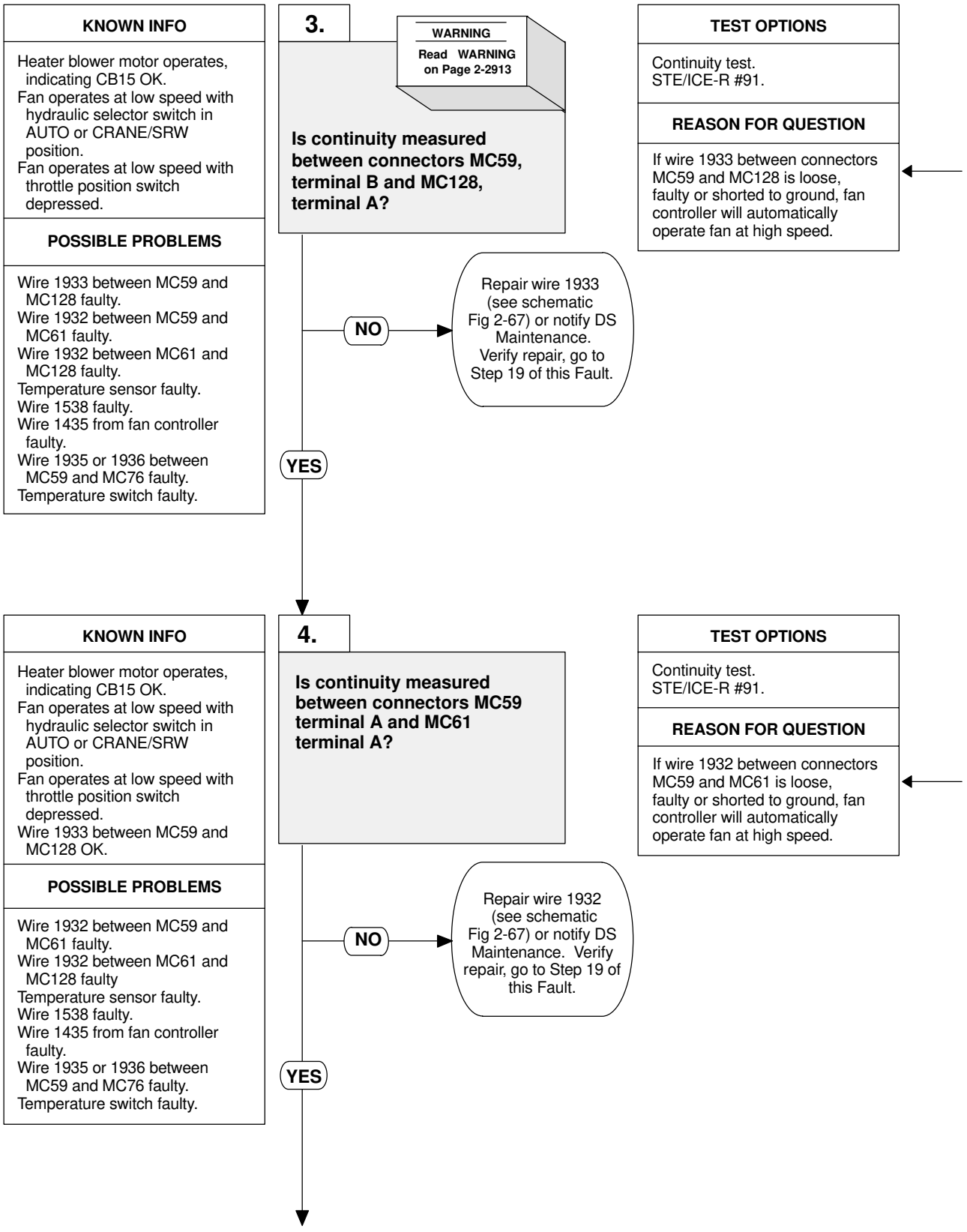
(1) Disconnect connector MC59 from fan controller.
(2) Start engine (TM 9-2320-364-10).
(3) Observe fan, it should be operating at high speed.
(4) Push in on throttle position switch.
  (a) If fan speed does not slow, perform Steps (5) and (6) below and go to Step 14 of this Fault.
  (b) If fan speed does slow, perform Step (5) below and go to Step 3 of this Fault.
(5) Turn OFF ENGINE switch.
(6) Connect connector MC59 to fan controller.







6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).



WARNING

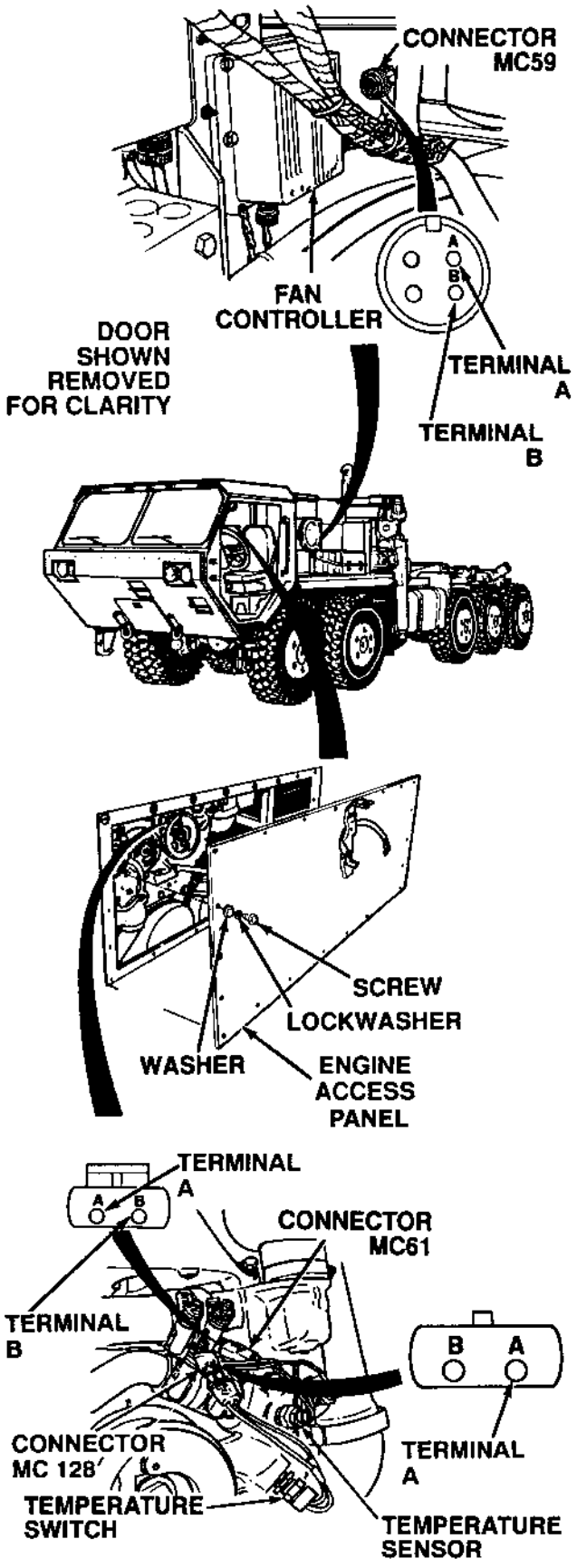
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may result.

CONTINUITY TEST

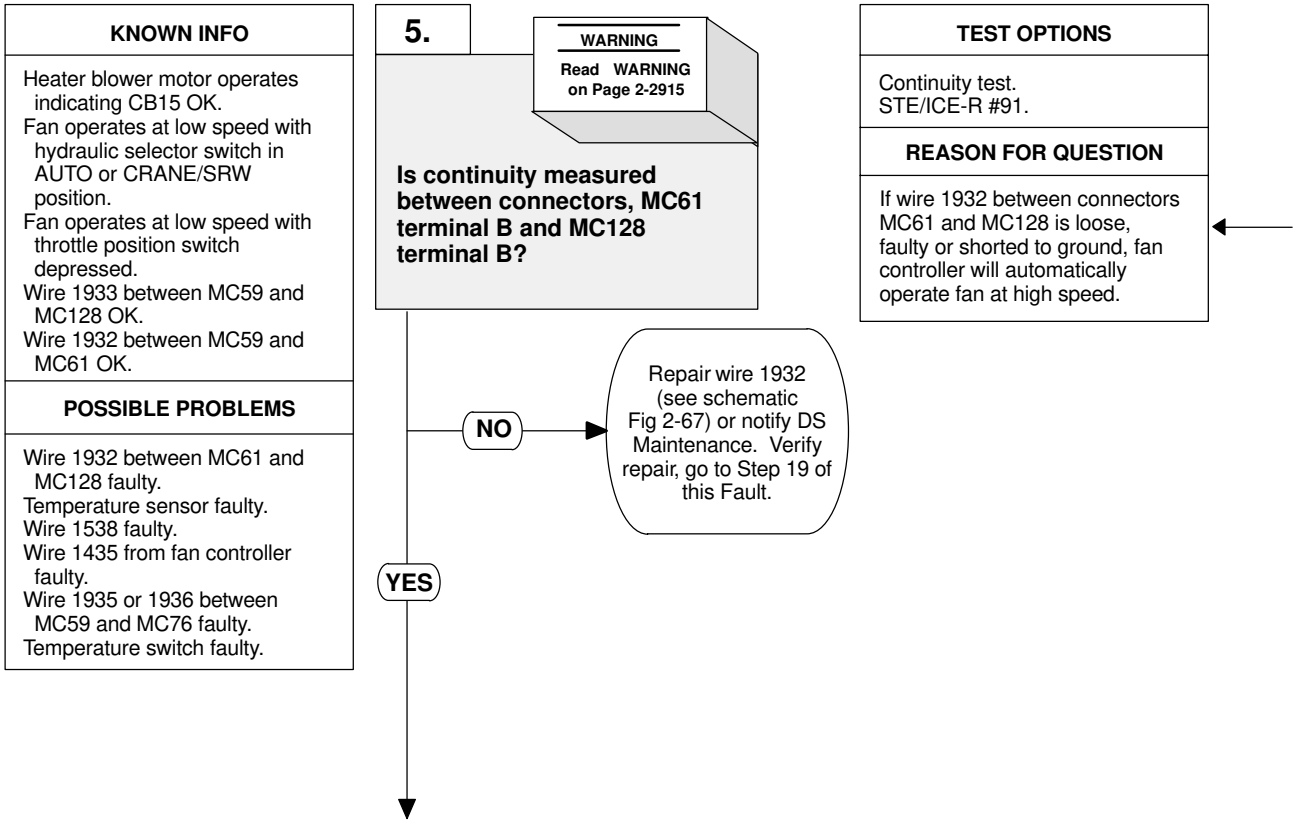
(1) Remove 22 screws, lockwashers, washers and engine access panel. Discard lockwashers.
(2) Disconnect connector MC128 from temperature switch.
(3) Set multimeter select switch to ohms.
(4) Is there continuity on wire 1933 between harness connector MC59, terminal B and connector MC128, terminal A?
  (a) If there is no continuity, repair wire 1933 (see schematic Fig 2-67) or notify DS Maintenance. Perform Steps (5) and (6) below.
  (b) If there is continuity, wire 1933 is OK. Go to Step 4 of this Fault.
(5) Connect connector MC128 to temperature switch.
(6) Connect connector MC59 to fan controller.

CONTINUITY TEST

(1) Disconnect connector MC61 from temperature sensor.
(2) Is there continuity on wire 1932 between harness connector MC59, terminal A and harness connector MC61, terminal A?
  (a) If there is no continuity, repair wire 1932 (see schematic Fig 2-67) or notify DS Maintenance. Perform Steps (3) and (4) below.
  (b) If there is continuity, perform Step (3) below and go to Step 5 of this Fault.
(3) Connect connector MC59 to fan controller.
(4) Connect connector MC61 to temperature sensor.



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).

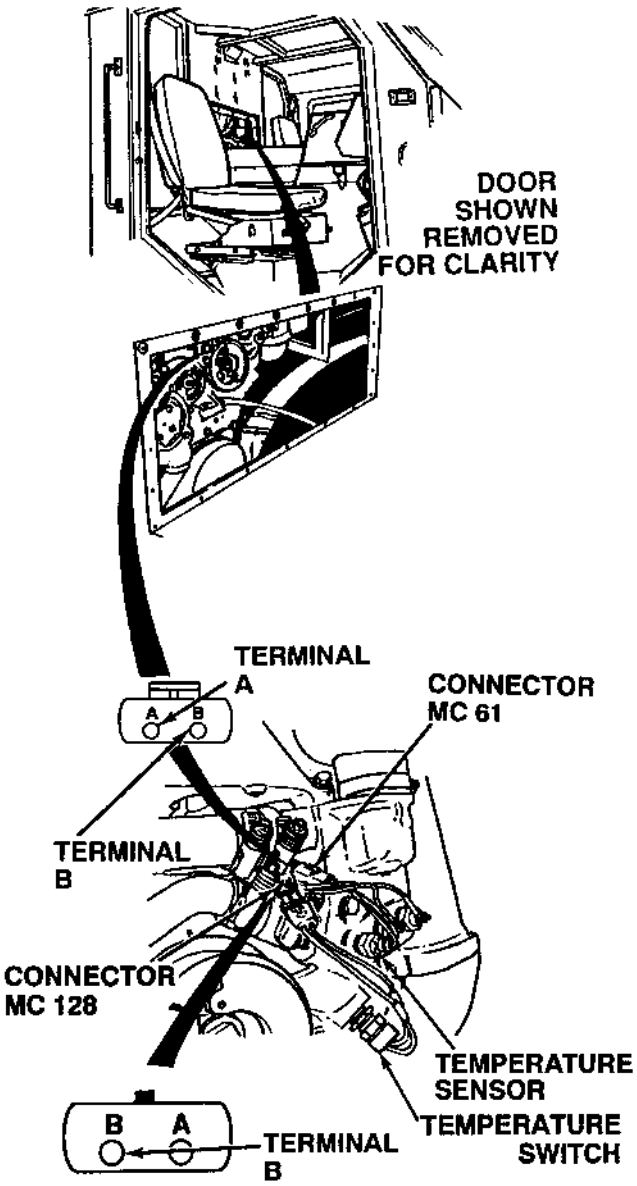


WARNING

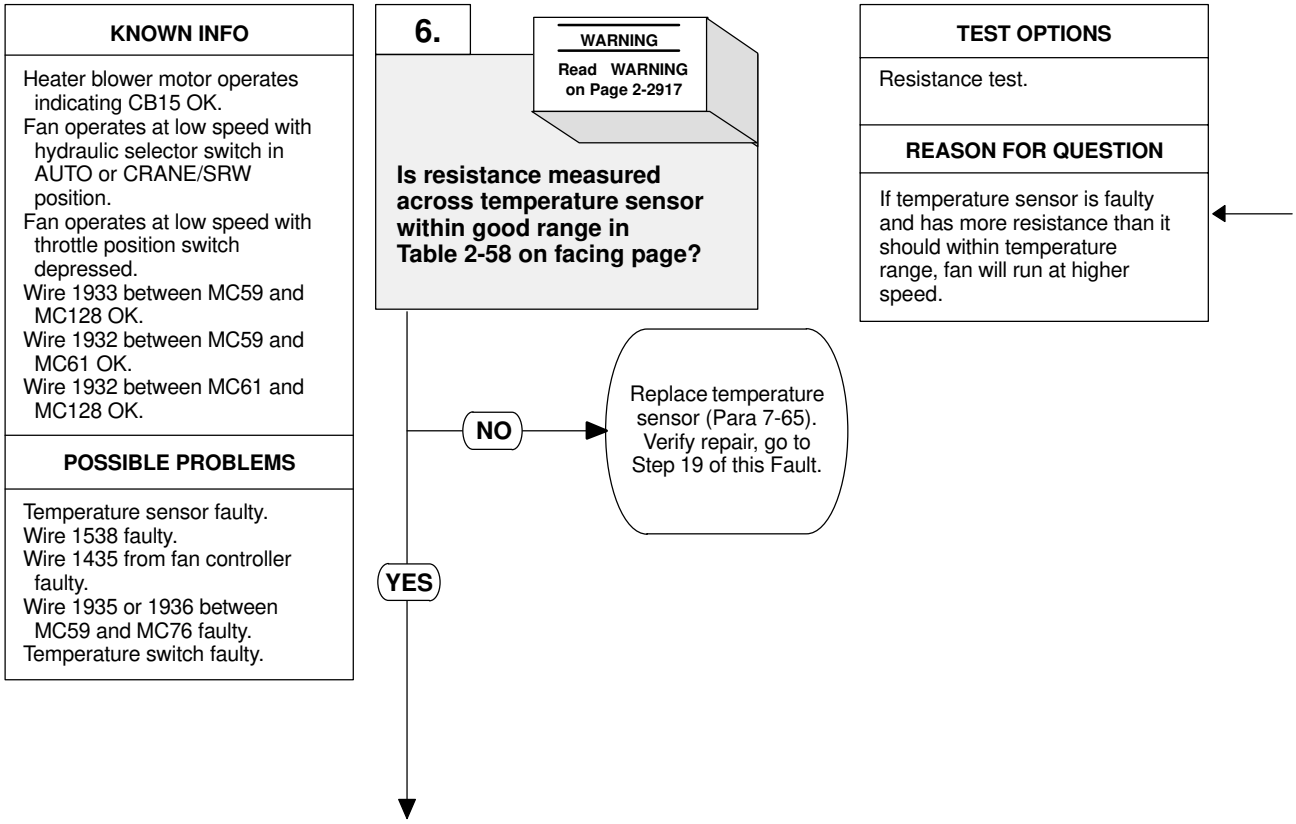
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may result.

CONTINUITY TEST

(1) Is there continuity on wire 1932 between harness connector MC128, terminal B and harness connector MC61, terminal B?
   (a) If there is no continuity, repair wire 1932 (see schematic Fig 2-67) or notify DS Maintenance. Perform Steps (2) and (3) below.
   (b) If there is continuity, perform Step (2) and (3) below and go to Step 6 of this fault.
(2) Connect connector MC128 to temperature switch.
(3) Connect connector MC61 to temperature sensor.

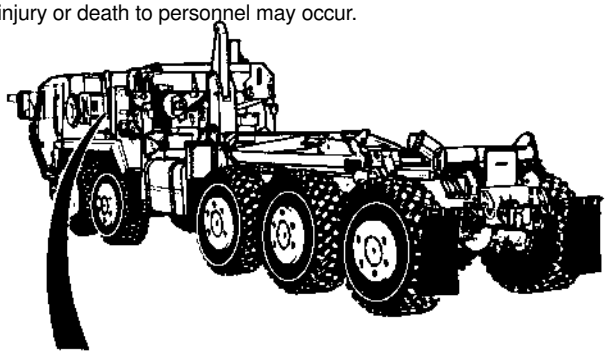


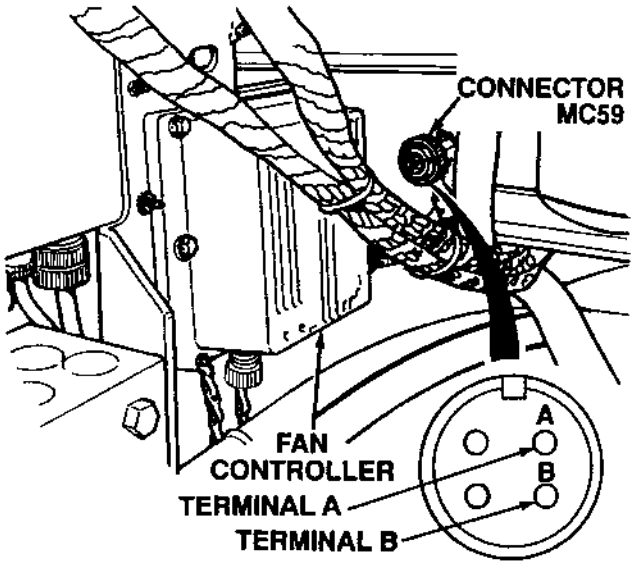
6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).



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.





RESISTANCE TEST

(1) Set multimeter select switch to ohms.
(2) START engine (TM 9-2320-364-10). Do not increase engine rpm over idle.
(3) Measure resistance between connector MC59, terminals A and B.
  (a) If resistance is not within range in Table 2-58, perform Steps (4) and (5) below and replace temperature sensor (Para 7-65).
  (b) If resistance is within range in Table 2-58, temperature sensor is OK.
(4) Turn OFF ENGINE switch.
(5) Connect connector MC59 to fan controller.

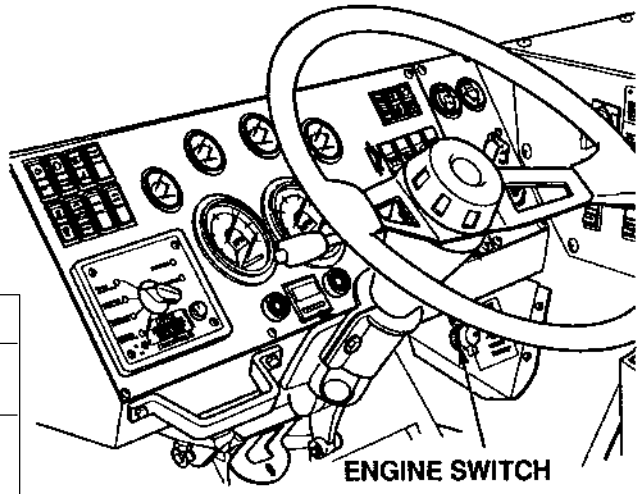


Table 2-58. Water Temperature Sensor Resistance

TEMPERATURE vs RESISTANCE CALIBRATION POINTS			
Temperature	Resistance (ohms)	Temperature	Resistance (ohms)
–40°C (–40°F)	684 ± 30	60°C (140°F)	1199 ± 30
–30°C (–22°F)	728 ± 30	70°C (158°F)	1259 ± 30
–20°C (–4°F)	774 ± 30	80°C (176°F)	1322 ± 30
–10°C (14°F)	821 ± 30	90°C (194°F)	1385 ± 30
0°C (32°F)	870 ± 30	100°C (212°F)	1451 ± 30
10°C (50°F)	921 ± 30	110°C (230°F)	1518 ± 30
20°C (68°F)	973 ± 30	120°C (248°F)	1587 ± 30
30°C (86°F)	1027 ± 30	130°C (266°F)	1657 ± 30
40°C (104°F)	1083 ± 30	140°C (284°F)	1729 ± 30
50°C (122°F)	1140 ± 30	150°C (302°F)	1803 ± 30

6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).

KNOWN INFO

Heater blower motor operates, indicating CB15 OK.
Fan operates at low speed with hydraulic selector switch in AUTO or CRANE/SRW position.
Fan operates at low speed with throttle position switch depressed.
Wire 1933 between MC59 and MC128 OK.
Wire 1932 between MC59 and MC61 OK.
Wire 1932 between MC61 and MC128 OK.
Temperature sensor OK.

POSSIBLE PROBLEMS

Wire 1538 faulty.
Wire 1435 from fan controller faulty.
Wire 1935 or 1936 between MC59 and MC76 faulty.
Temperature switch faulty.

7.

Are 22 to 28 vdc measured on wire 1538 at connector MC73, terminal A?

TEST OPTIONS

Voltage test.
STE/ICE-R #89.

REASON FOR QUESTION

If wire 1538 is loose, faulty, or shorted to ground, 22 to 28 vdc will not be input to fan controller from CB15.

NO → Repair wire 1538 (see schematic Fig 2-67) or notify DS Maintenance. Verify repair, go to Step 19 of this Fault.

YES

KNOWN INFO

Heater blower motor operates indicating CB15 OK.
Fan operates at low speed with hydraulic selector switch in AUTO or CRANE/SRW position.
Fan operates at low speed with throttle position switch depressed.
Wire 1933 between MC59 and MC128 OK.
Wire 1932 between MC59 and MC61 OK.
Wire 1932 between MC61 and MC128 OK.
Temperature sensor OK.
Wire 1538 OK.

POSSIBLE PROBLEMS

Wire 1435 from fan controller faulty.
Wire 1935 or 1936 between MC59 and MC76 faulty.
Temperature switch faulty.

8.

Is continuity measured on wire 1435 between connector MC73, terminal B and a known good ground?

TEST OPTIONS

Continuity test.
STE/ICE-R #91.

REASON FOR QUESTION

If wire 1435 is loose or faulty, fan controller will not be grounded.

NO → Repair wire 1435 (see schematic Fig 2-67) or notify DS Maintenance. Verify repair, go to Step 19 of this Fault.

YES

WARNING

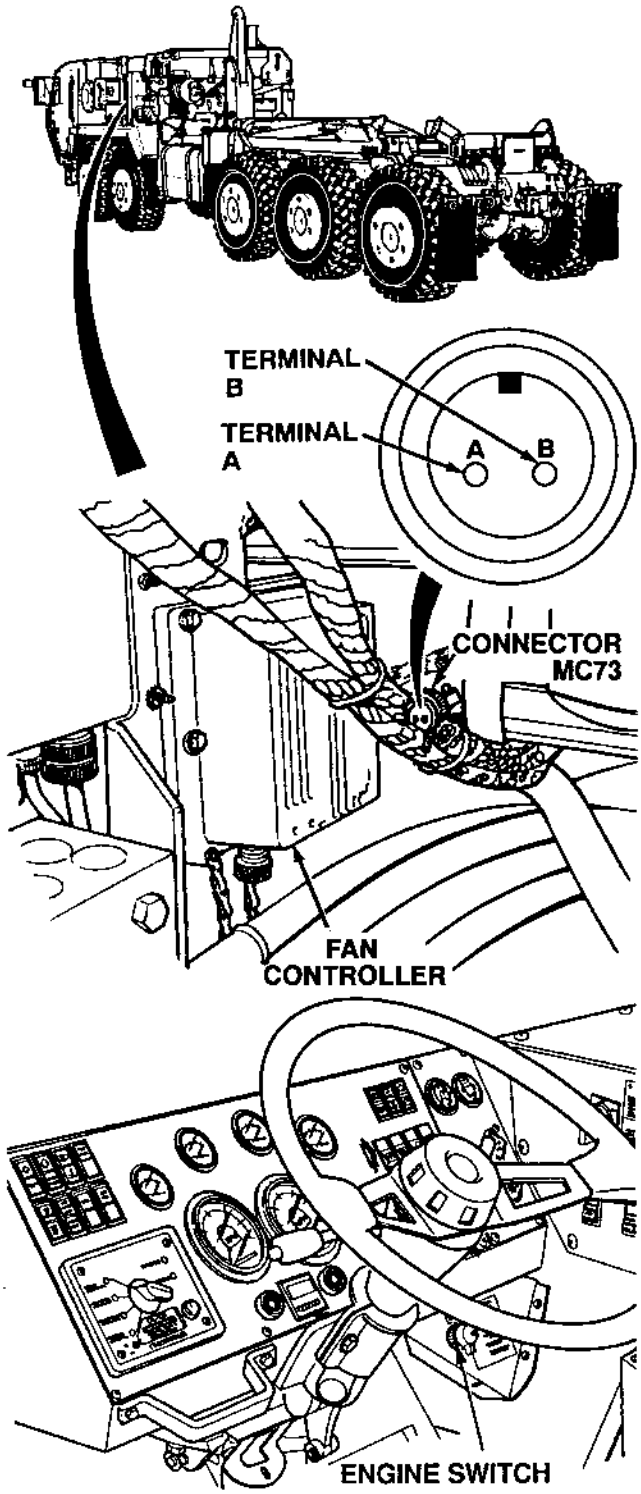
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

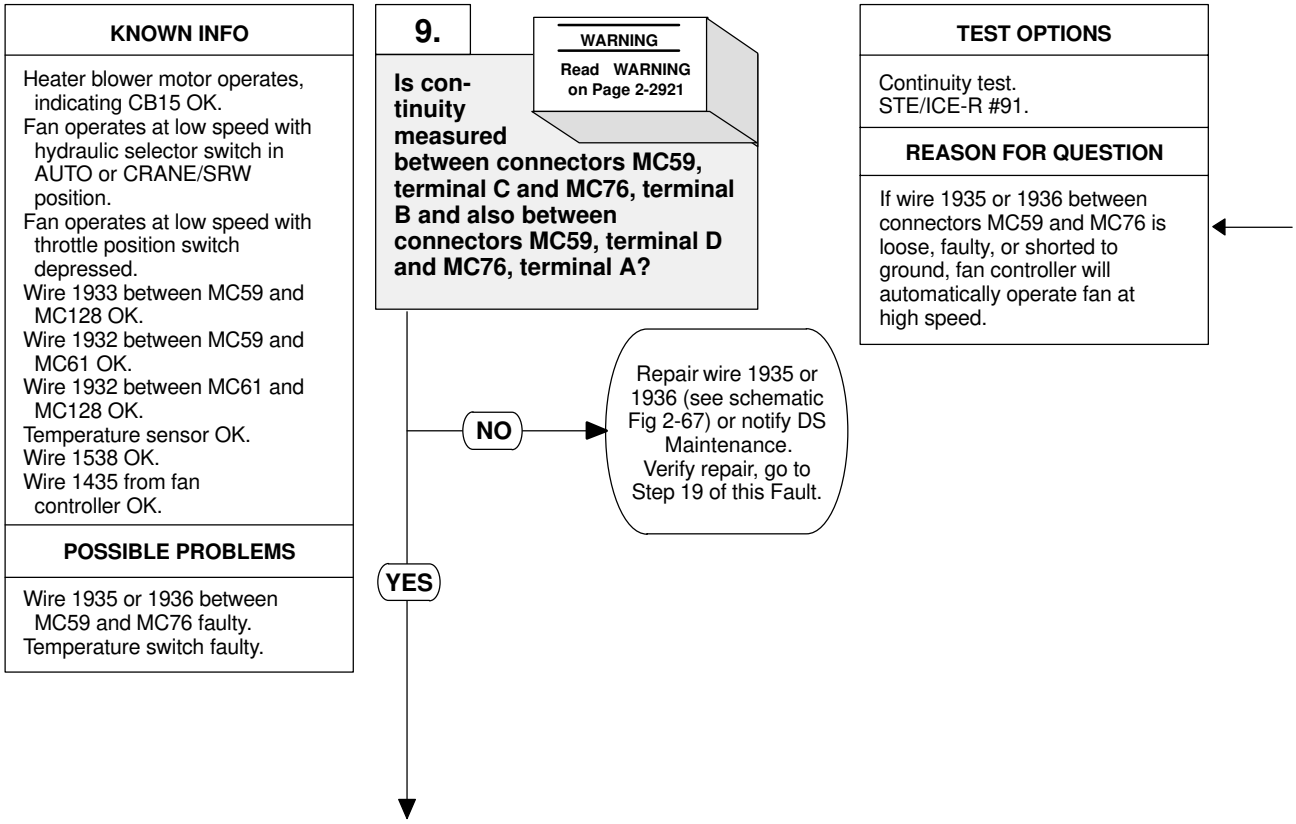
(1) Disconnect connector MC73 from fan controller.
(2) Set multimeter select switch to volts dc.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) Connect positive multimeter lead to connector MC73, terminal A.
(5) Connect negative (–) multimeter lead to a known good ground.
  (a) If 22 to 28 vdc are not present, perform Step (6) below and repair wire 1538 (see schematic Fig 2-67), or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, wire 1538 is OK.
(6) Turn OFF ENGINE switch.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between connector MC73, terminal B and a known good ground?
  (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-67) or notify DS Maintenance. Perform Step (3) below.
  (b) If there is continuity, wire 1435 is OK.
(3) Connect connector MC73 to fan controller.



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).

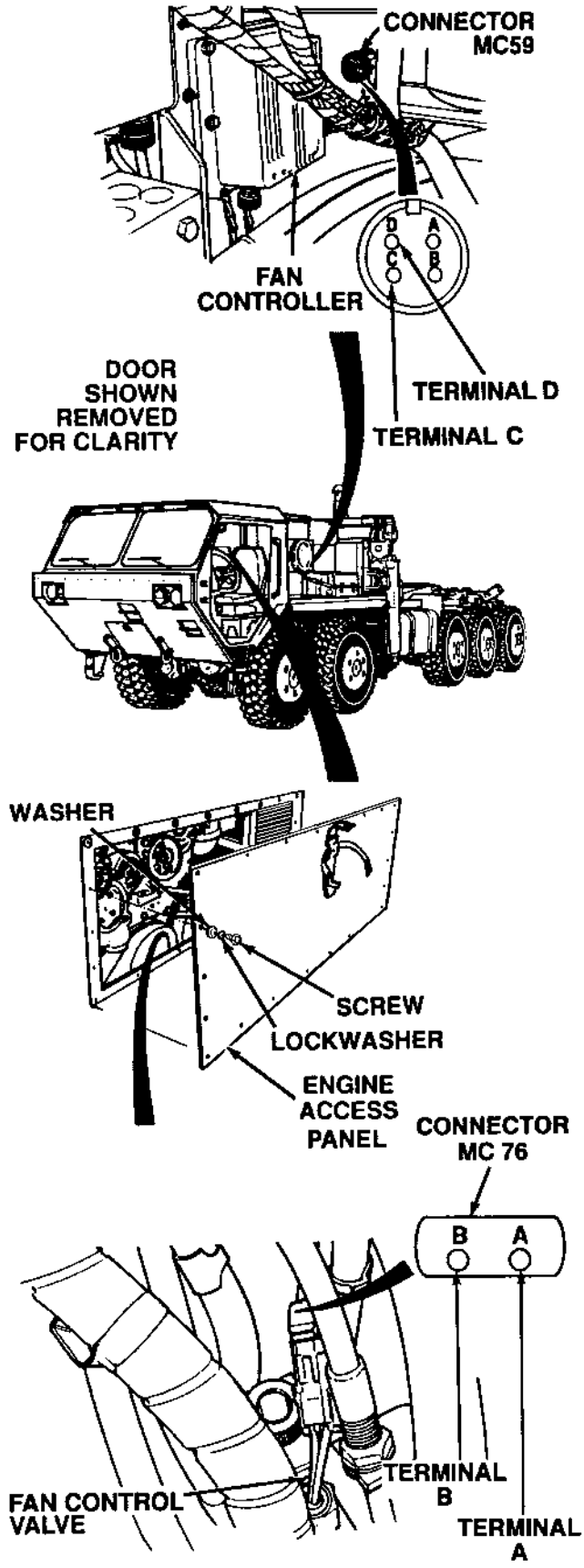


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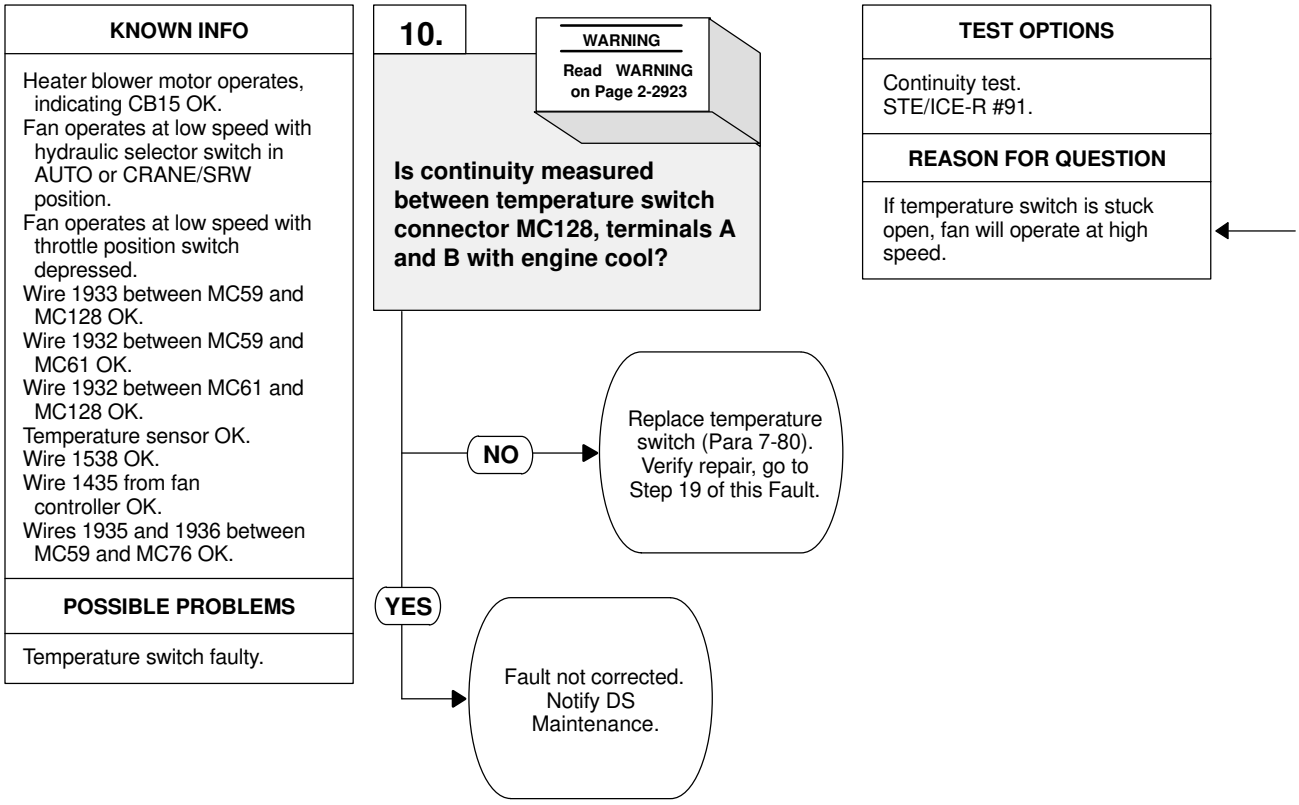
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may result.

CONTINUITY TEST

(1) Disconnect connector MC76 from fan control solenoid valve.
(2) Disconnect connector MC59 from fan controller.
(3) Is there continuity between connector MC76, terminal B and connector MC59, terminal C?
  (a) If there is no continuity, repair wire 1935 (see schematic Fig 2-67) or notify DS Maintenance. Perform Steps (6) and (7) below.
  (b) If there is continuity, go to Step (4) below.
(4) Is there continuity between connector MC76, terminal A and connector MC59, terminal D?
  (a) If there is no continuity, repair wire 1936 (see schematic Fig 2-67) or notify DS Maintenance. Perform Steps (5) through (7) below.
  (b) If there is continuity, wires 1935 and 1936 OK, perform Steps (5) and (6) below.
(5) Connect connector MC76 to fan control solenoid valve connector.
(6) Connect connector MC59 to fan controller.
(7) Install engine access panel with 22 washers, lockwashers and screws.



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).

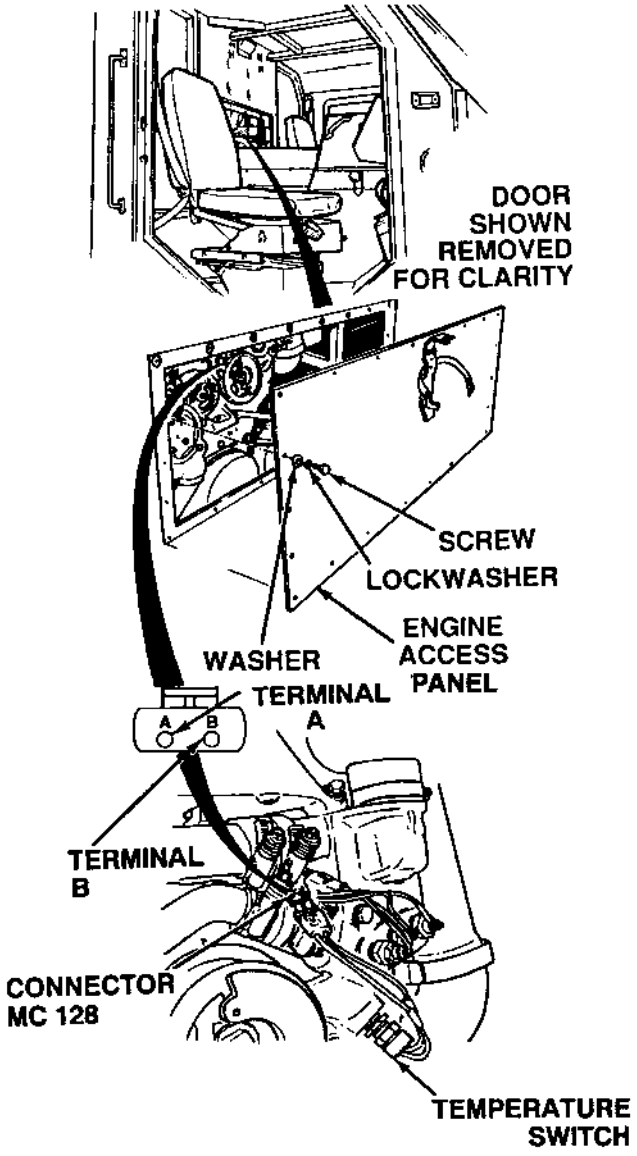


WARNING

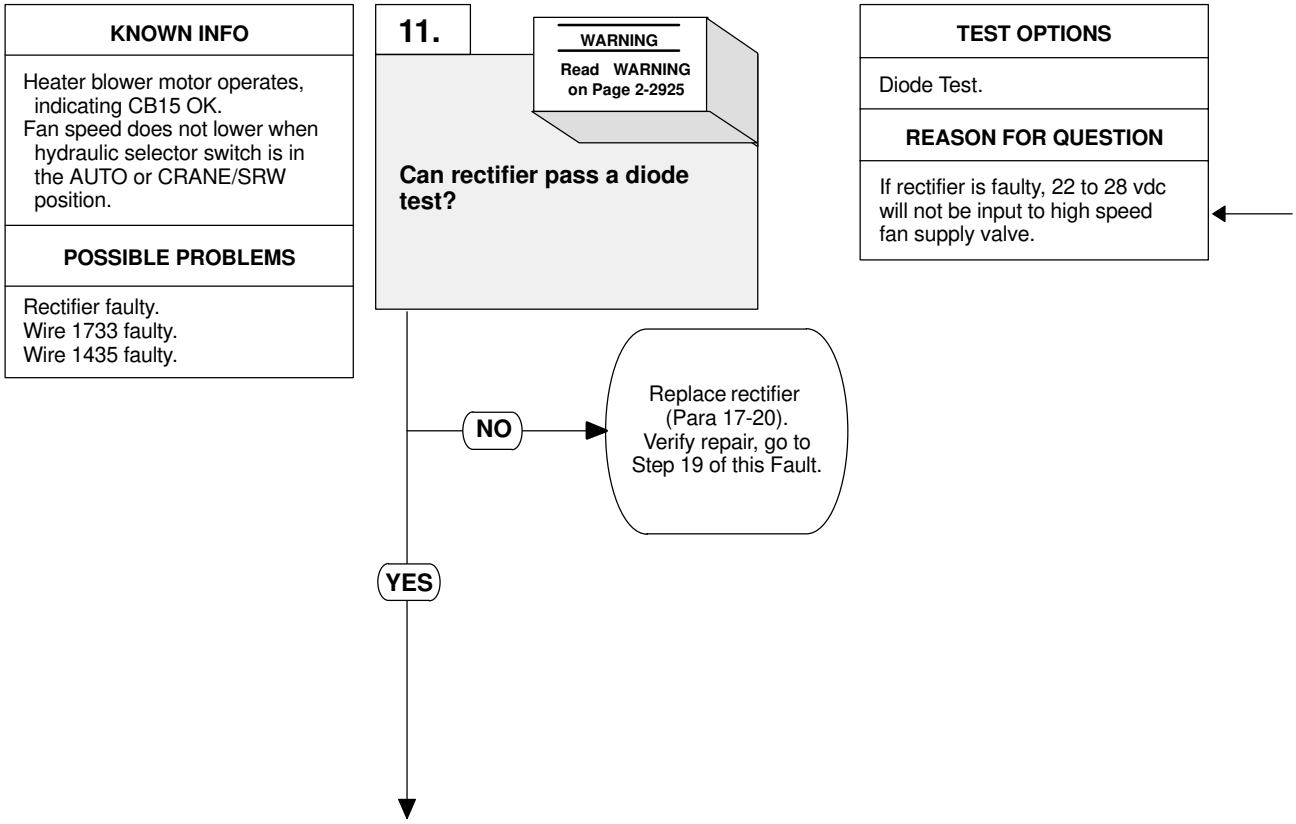
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

(1) Disconnect connector MC128 from temperature switch.
(2) Is there continuity between temperature switch terminals A and B?
  (a) If there is no continuity, replace temperature switch (Para 7-80).
  (b) If there is continuity, notify DS Maintenance. Perform Steps (3) and (4) below.
(3) Connect connector MC128 to temperature switch.
(4) Install engine access panel with 22 screws, lockwashers and washers.



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).

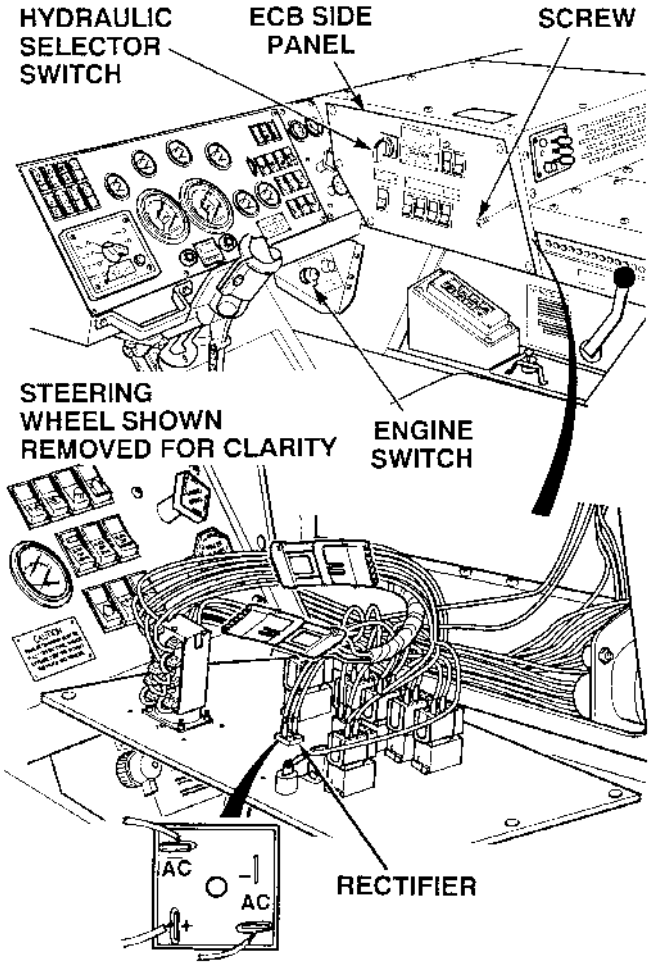


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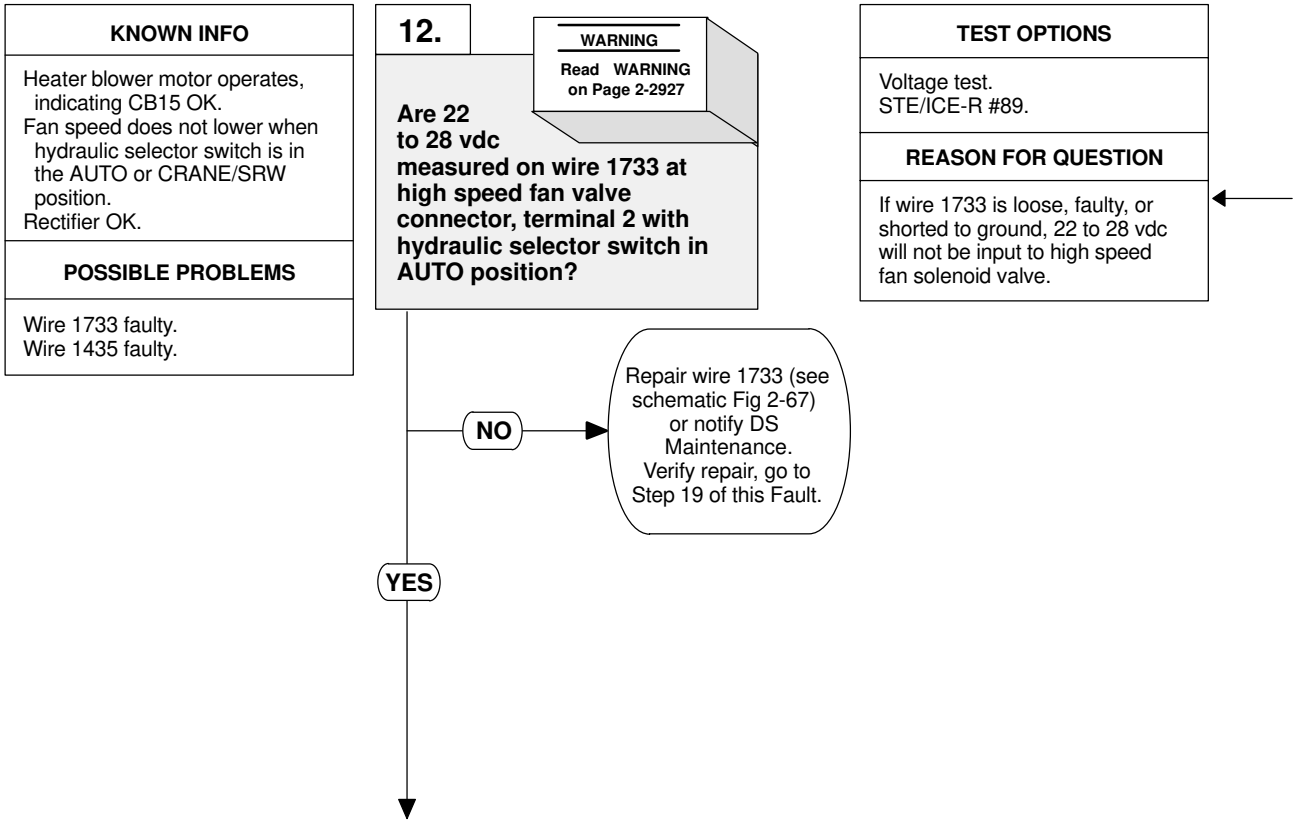
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

DIODE TEST

(1) Remove six screws and ECB side panel.
(2) Tag, mark and disconnect three wires from rectifier.
(3) Set multimeter to diode check.
(4) Connect positive (+) multimeter lead to negative (–) rectifier terminal.
(5) Connect negative (–) multimeter lead to each rectifier AC terminal one at a time.
  (a) If any VDC are not present at either AC terminal, replace rectifier.
  (b) If any VDC are present at both AC terminals, go to Step (6) below.
(6) Connect negative (–) multimeter lead to positive (+) rectifier terminal.
(7) Connect positive (+) multimeter lead to each rectifier AC terminal one at a time.
  (a) If any VDC are not present at either AC terminal, replace rectifier (Para 17-20).
  (b) If any VDC are present at both AC terminals, rectifier is OK.
(8) Connect three wires to rectifier.
(9) Install ECB side panel with six screws.



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).

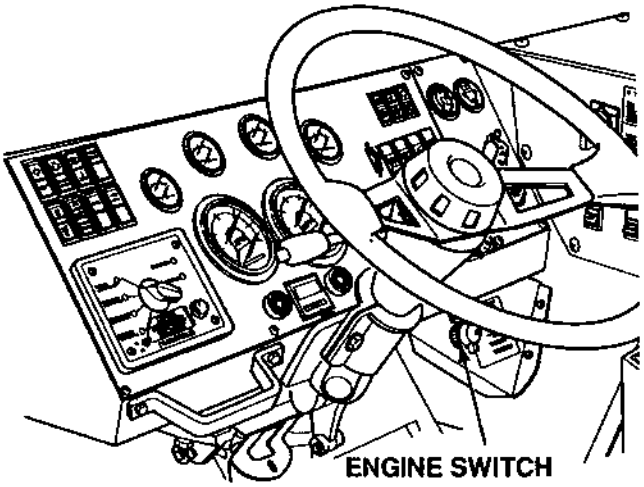


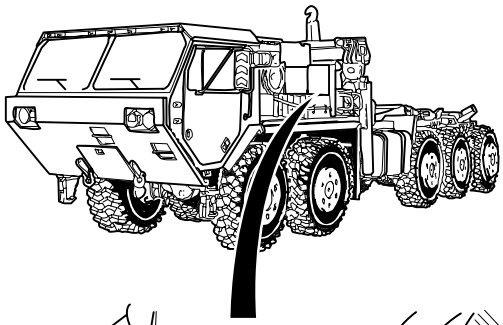
WARNING

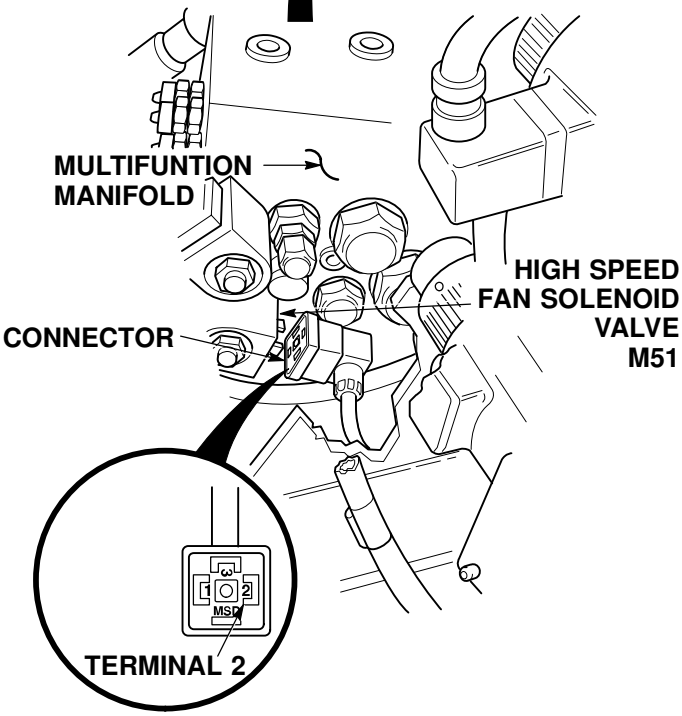
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

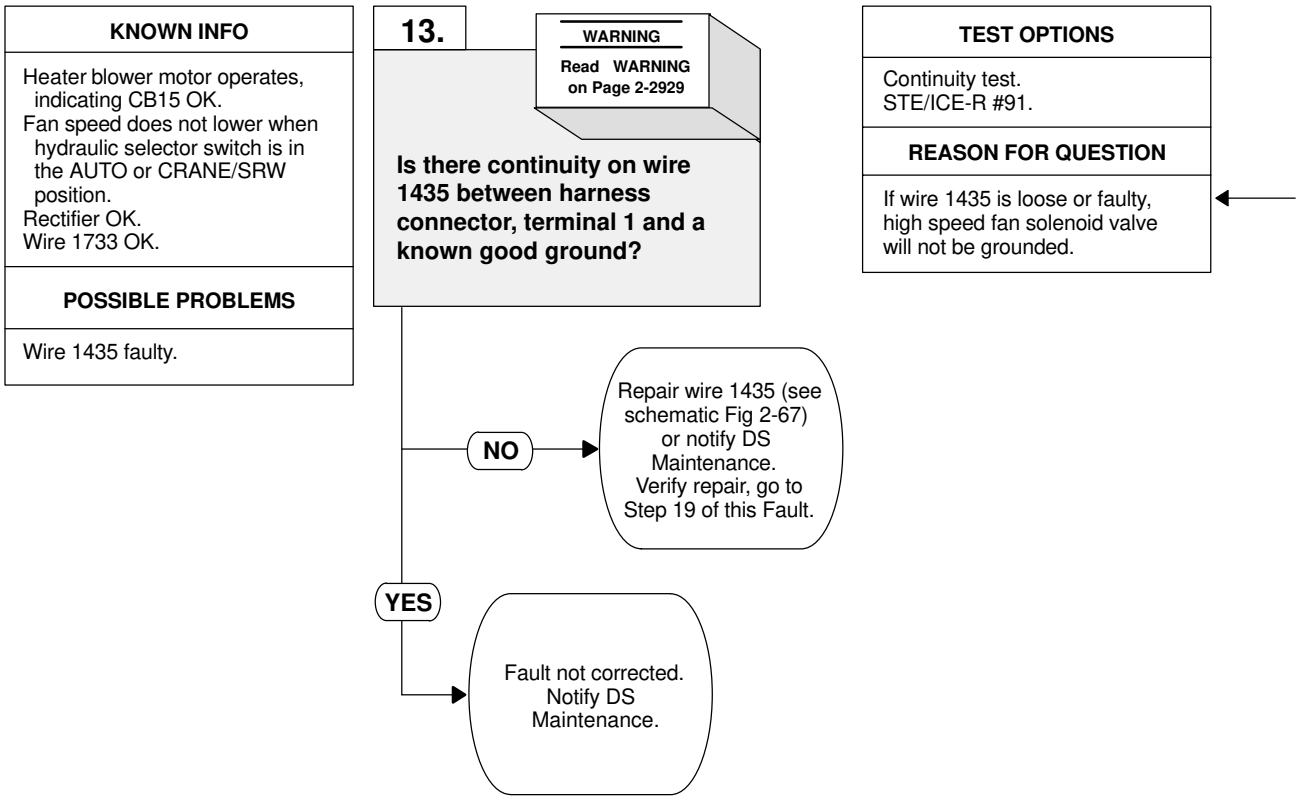
(1) Set multimeter select switch to volts dc.
(2) Loosen screw and disconnect connector from high speed fan solenoid valve M51.
(3) Connect positive (+) multimeter lead to wire 1733 at connector, terminal 2.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(6) Set hydraulic selector switch to AUTO position.
    (a) If 22 to 28 vdc are not present, perform Steps (7) and (8) below and repair wire 1733 (see schematic Fig 2-67) or notify DS Maintenance.
    (b) If 22 to 28 vdc are present, wire 1733 is OK.
(7) Turn OFF ENGINE switch.
(8) Set hydraulic selector switch to OFF position.







6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).

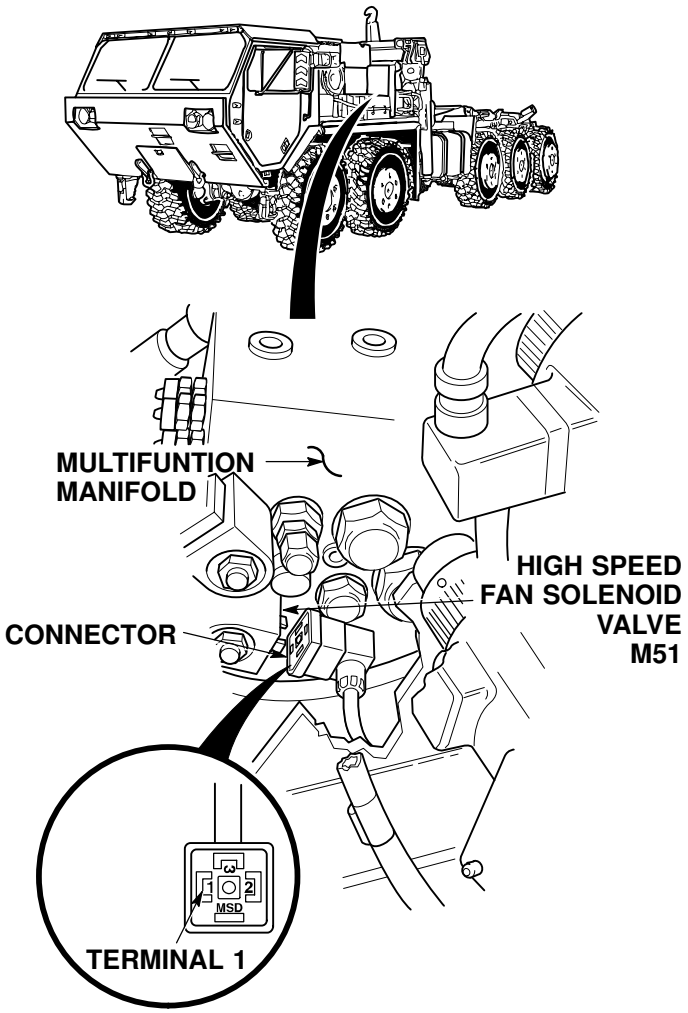


WARNING

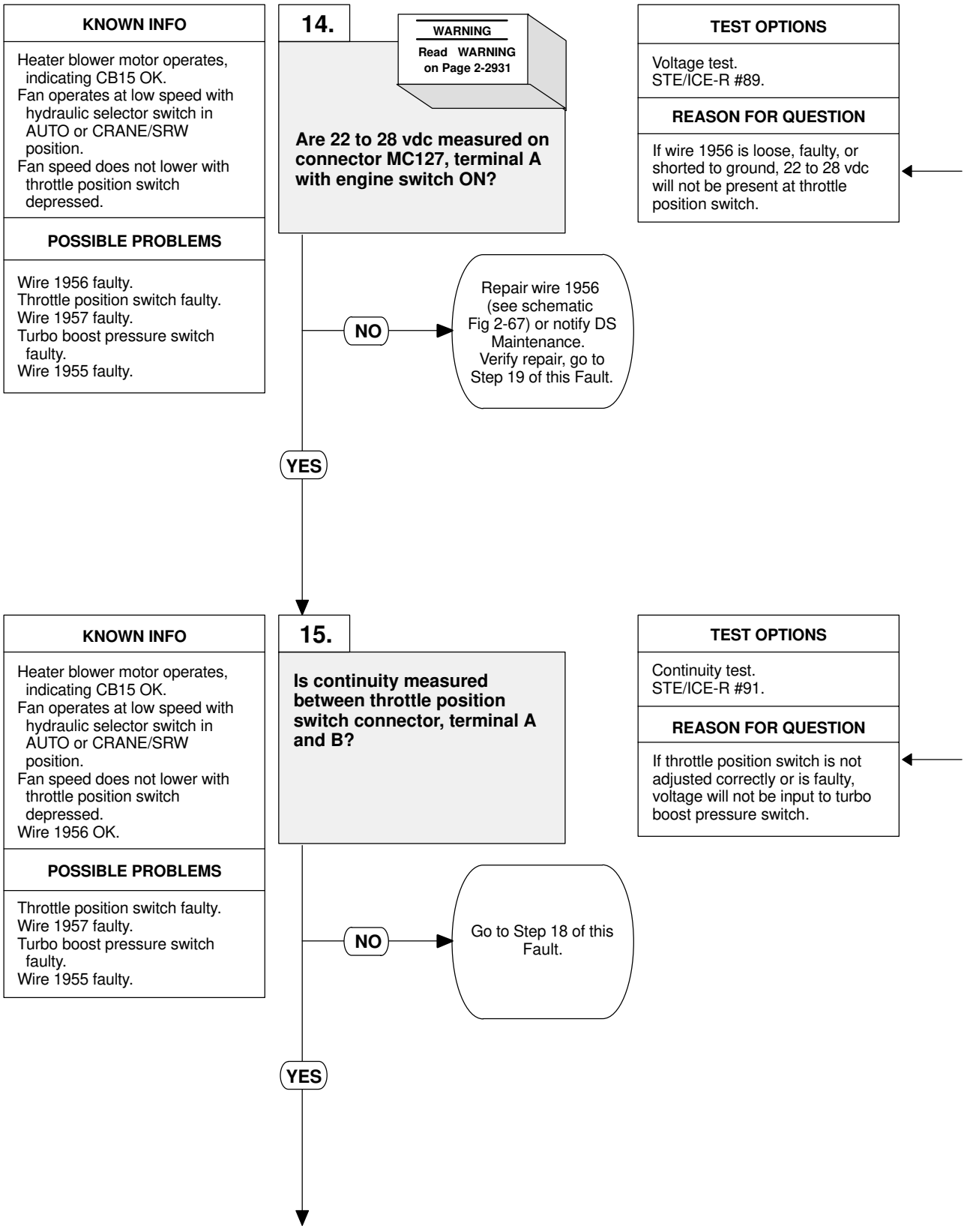
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with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

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity on wire 1435 between connector, terminal 1 and a known good ground?
   (a) If there is no continuity, perform Steps (3) and (4) below and repair wire 1435 (see schematic Fig 2-67), or notify DS Maintenance.
   (b) If there is continuity, fault not corrected, notify DS Maintenance.
(3) Connect connector to high speed solenoid valve M51.
(4) Tighten screw and coat head of screw with adhesive.



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).



WARNING

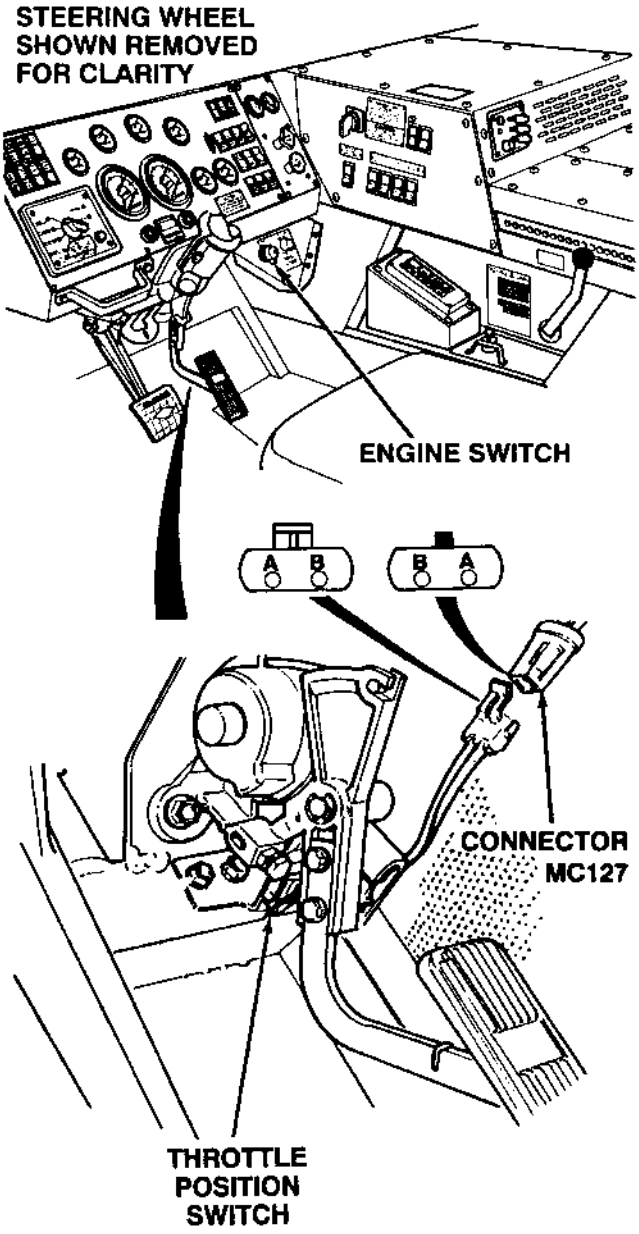
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

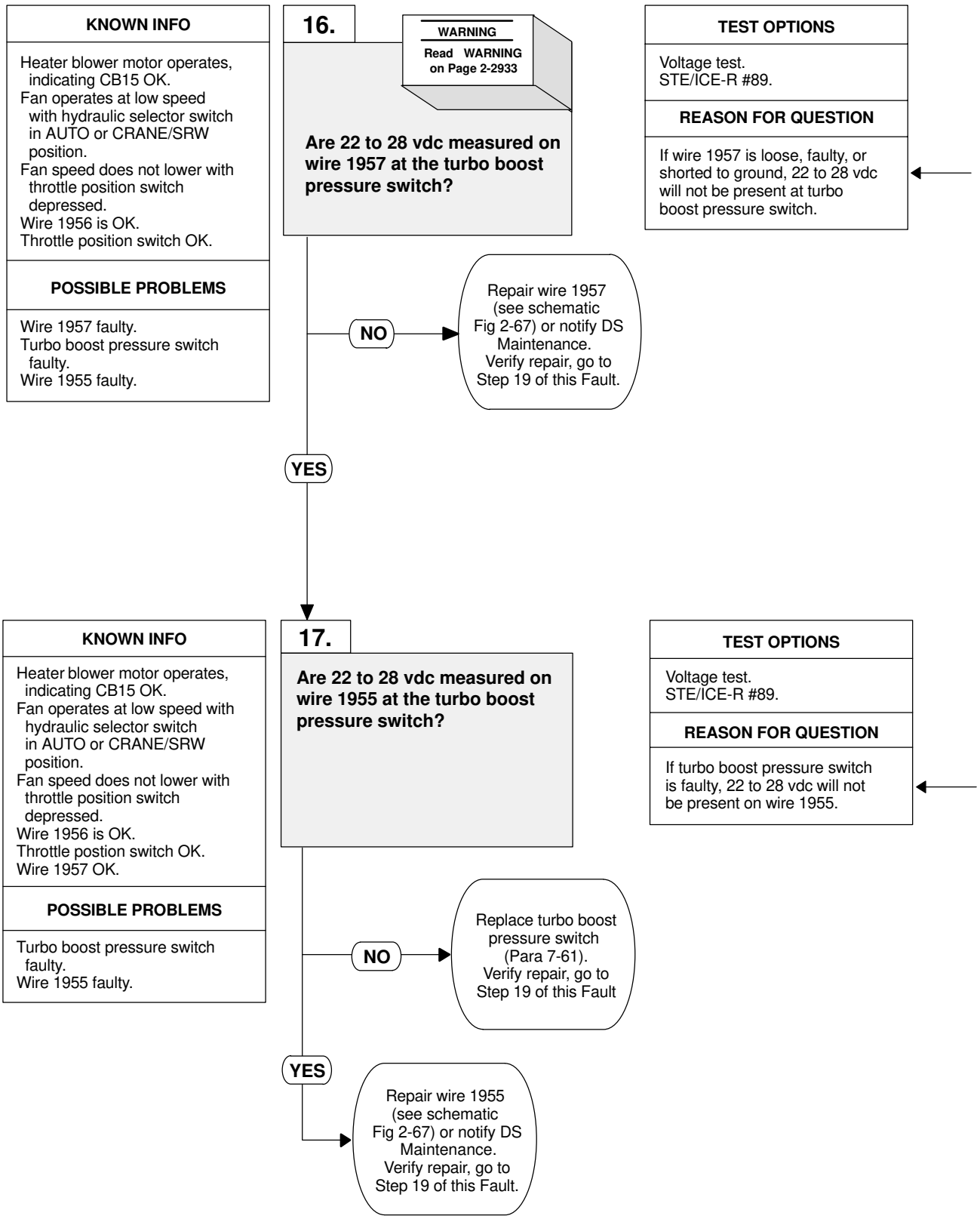
(1) Set multimeter select switch to volts dc.
(2) Disconnect connector MC127 from throttle position switch.
(3) Connect positive (+) multimeter lead to harness connector MC127, terminal A.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
  (a) If 22 to 28 vdc are not present, perform Steps (6) and (7) below and repair wire 1956 (see schematic Fig 2-67) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present, turn OFF ENGINE switch and go to Step 15 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect connector MC127 to throttle position switch.

CONTINUITY TEST

(1) Set multimeter select switch to ohms.
(2) Is there continuity between throttle position switch, terminals A and B with the throttle control pushed down completely?
  (a) If no continuity is measured, connect connector MC127 to throttle position switch and go to Step 18 of this Fault
  (b) If continuity is measured, connect connector MC127 to throttle position switch and go to Step 16 of this Fault.



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).



WARNING

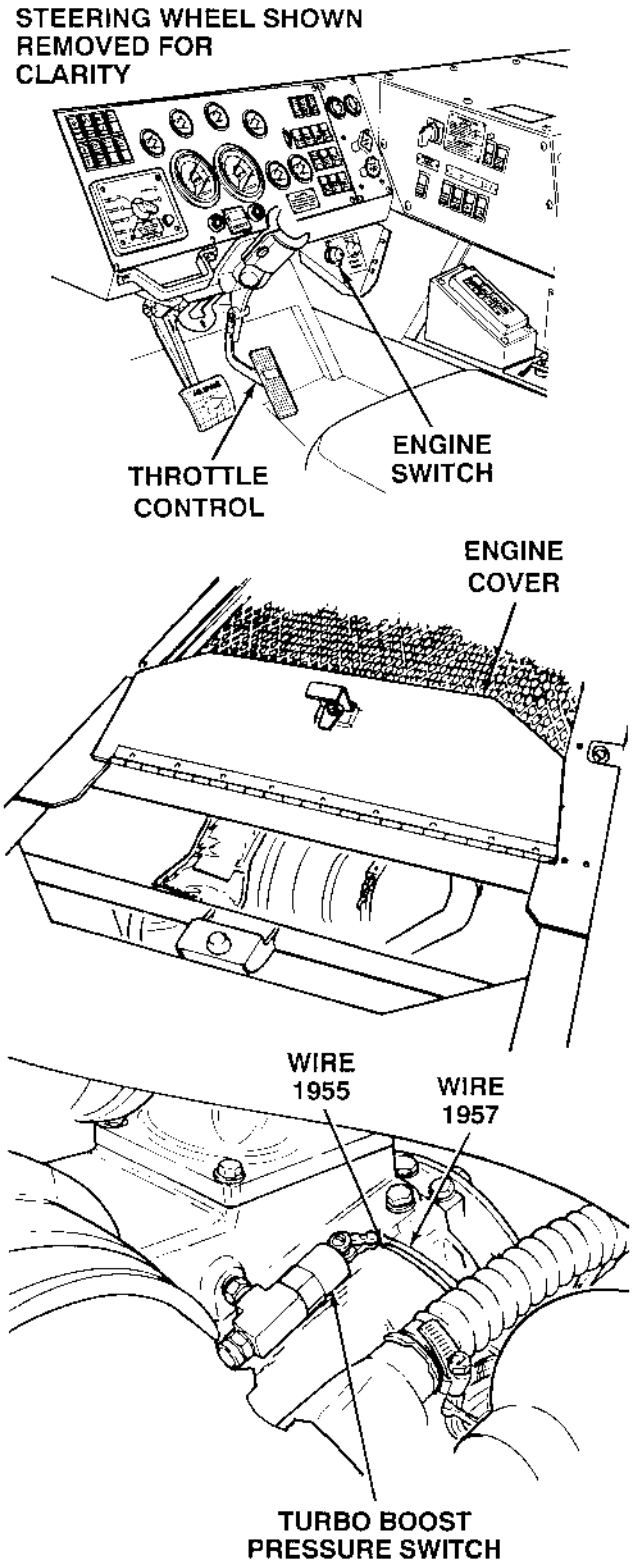
Allow engine to cool before performing trouble-shooting maintenance. If necessary use insulated pads and gloves. Hot engine components will burn and cause injury to personnel.

VOLTAGE TEST

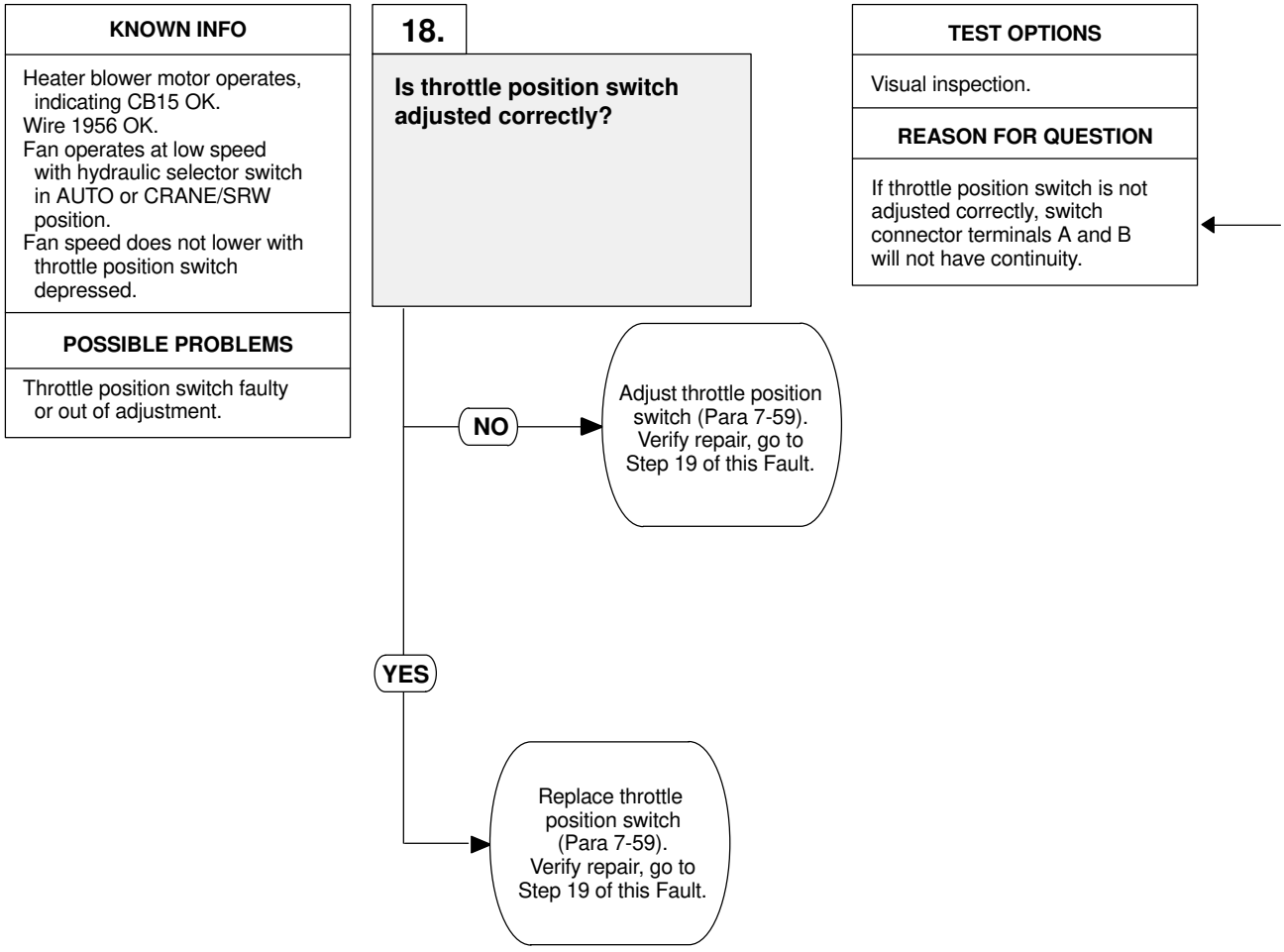
(1) Set multimeter select switch to volts dc.
(2) Open engine cover (TM 9-2320-364-10).
(3) Connect positive (+) multimeter lead to wire 1957 at the turbo boost pressure switch.
(4) Connect negative (–) multimeter lead to a known good ground.
(5) Turn ON ENGINE switch.
(6) With the aid of an assistant, observe multimeter while throttle control is pushed down completely.
  (a) If 22 to 28 vdc are not present, repair wire 1957 (see schematic Fig 2-67) or notify DS Maintenance.
  (b) If 22 to 28 vdc are present perform Step (7) below and go to Step 17 of this Fault.
(7) Turn OFF ENGINE switch.
(8) Close engine cover.

VOLTAGE TEST

(1) Connect positive (+) multimeter lead to wire 1955 at the turbo boost pressure switch.
(2) Connect negative (–) multimeter lead to a known good ground.
(3) Turn ON ENGINE switch (TM 9-2320-364-10).
(4) With the aid of an assistant, observe multimeter while throttle control is pushed down completely.
  (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace turbo boost pressure switch (Para 7-61).
  (b) If 22 to 28 vdc are present, perform Step (5) below and repair wire 1955 (see schematic Fig 2-67) or notify DS Maintenance.
(5) Turn OFF ENGINE switch.
(6) Close engine cover.



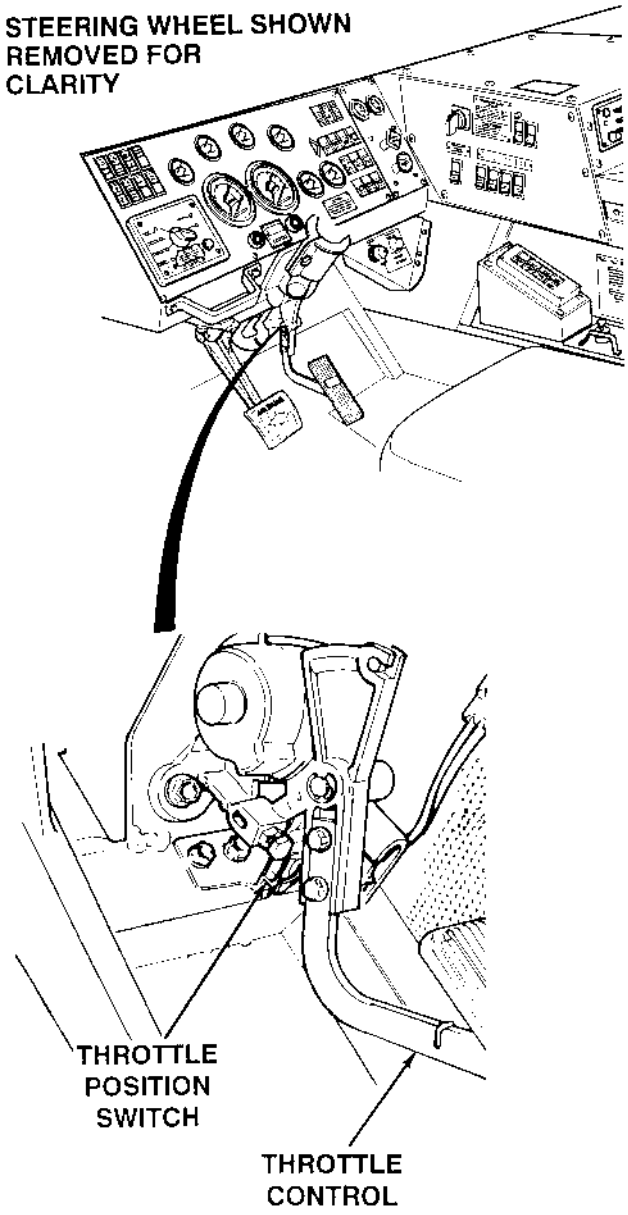
6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).



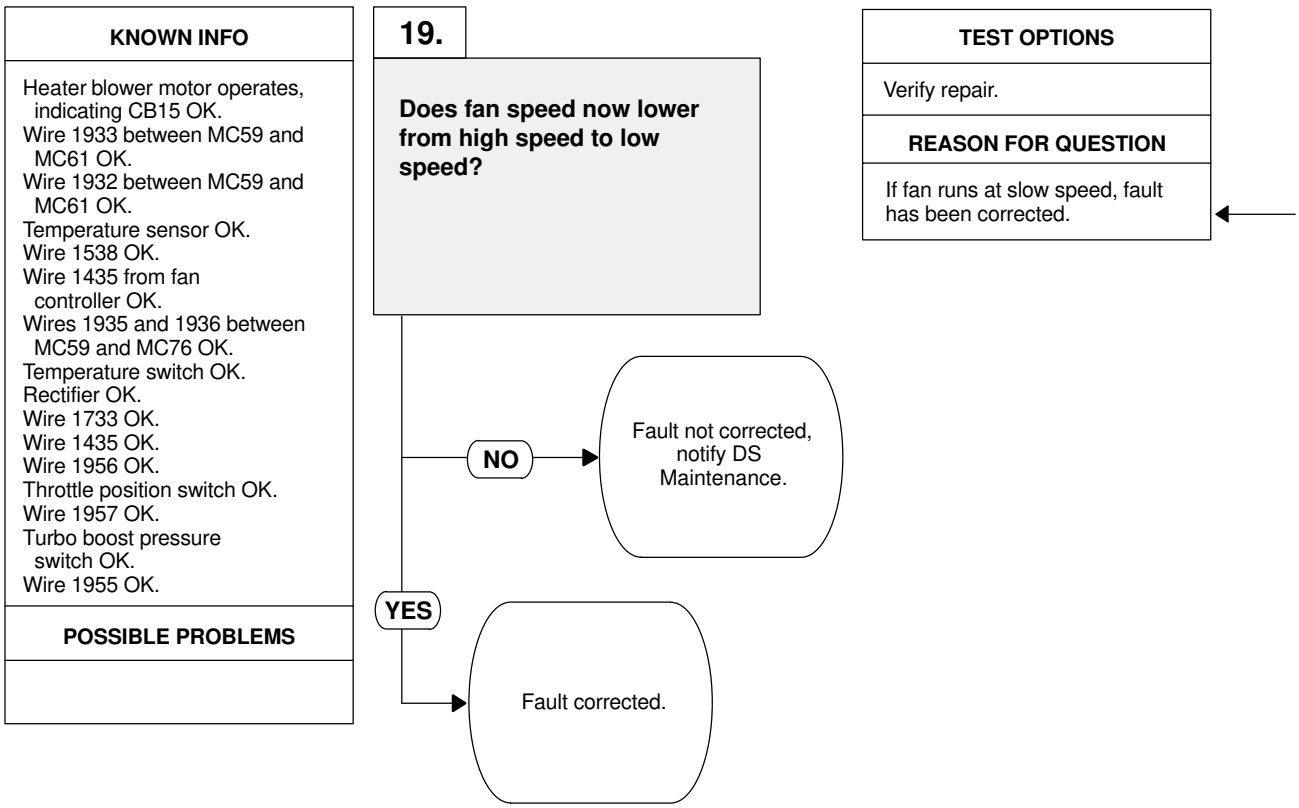
NOTE

Throttle control should contact throttle position switch 1/4 to 3/8 in. (6.35-9.5 mm) before throttle control is completely down.

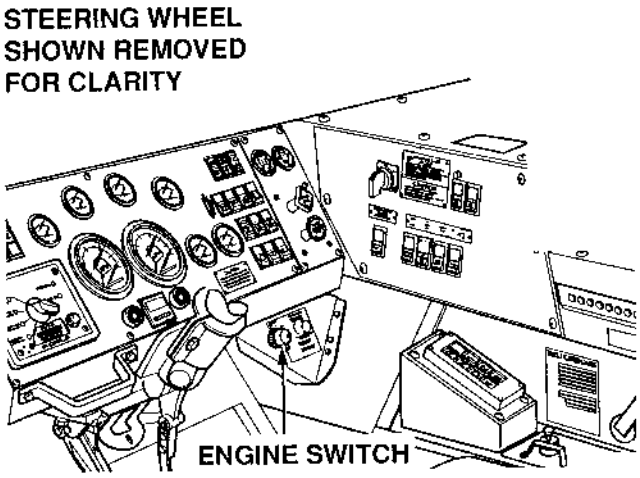
VISUAL INSPECTION
Observe throttle control when it contacts throttle position switch. (1) If throttle control does not contact throttle position switch 1/4 to 3/8 in. (6.35 to 9.5 mm) before throttle control is completely down, adjust throttle position switch (Para 7-59). (2) If throttle control does contact throttle position switch 1/4 to 3/8 in. (6.35 to 9.5 mm) before being completely down replace throttle position switch (Para 7-59).



6. FAN SPEED DOES NOT LOWER FROM HIGH SPEED TO LOW SPEED (CONT).



VERIFY REPAIR
(1) START engine (TM 9-2320-364-10). (2) Observe fan speed. (a) If fan speed does not slow, fault not corrected. Perform Step (3) below and notify DS Maintenance. (3) Turn OFF ENGINE switch.



2-32. STEERING SYSTEM TROUBLESHOOTING.

This paragraph covers Steering System Troubleshooting. The Steering System Fault Index, Table 2-59, lists faults for the steering system of the PLS truck. Refer to schematic Figure 2-53 when performing tests and corrective actions.

Table 2-59. Steering System Fault Index

Fault No.	Description	Page
1.	Truck Is Hard To Steer	2-2940
2.	Truck Wanders, Pulls To One Side, Or Shimmies	2-2952
3.	Excessive Play When Turning Steering Wheel	2-2962
4.	No Response When Turning Steering Wheel	2-2966
5.	No Response At Axle No. 5 When Turning Steering Wheel	2-2970

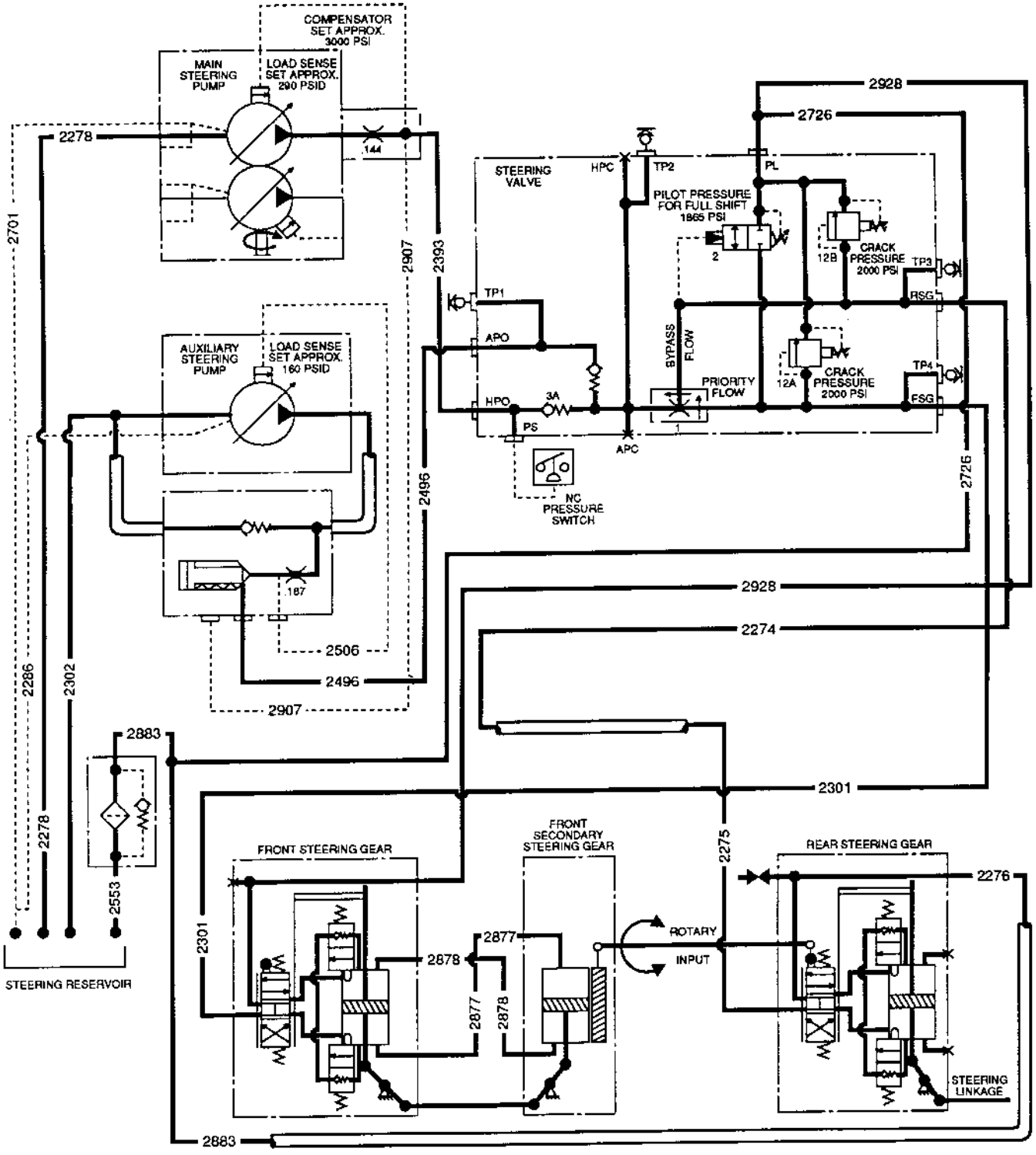


Figure 2-71. Steering Hydraulic Diagram

2-32. STEERING SYSTEM TROUBLESHOOTING (CONT).

1. TRUCK IS HARD TO STEER.

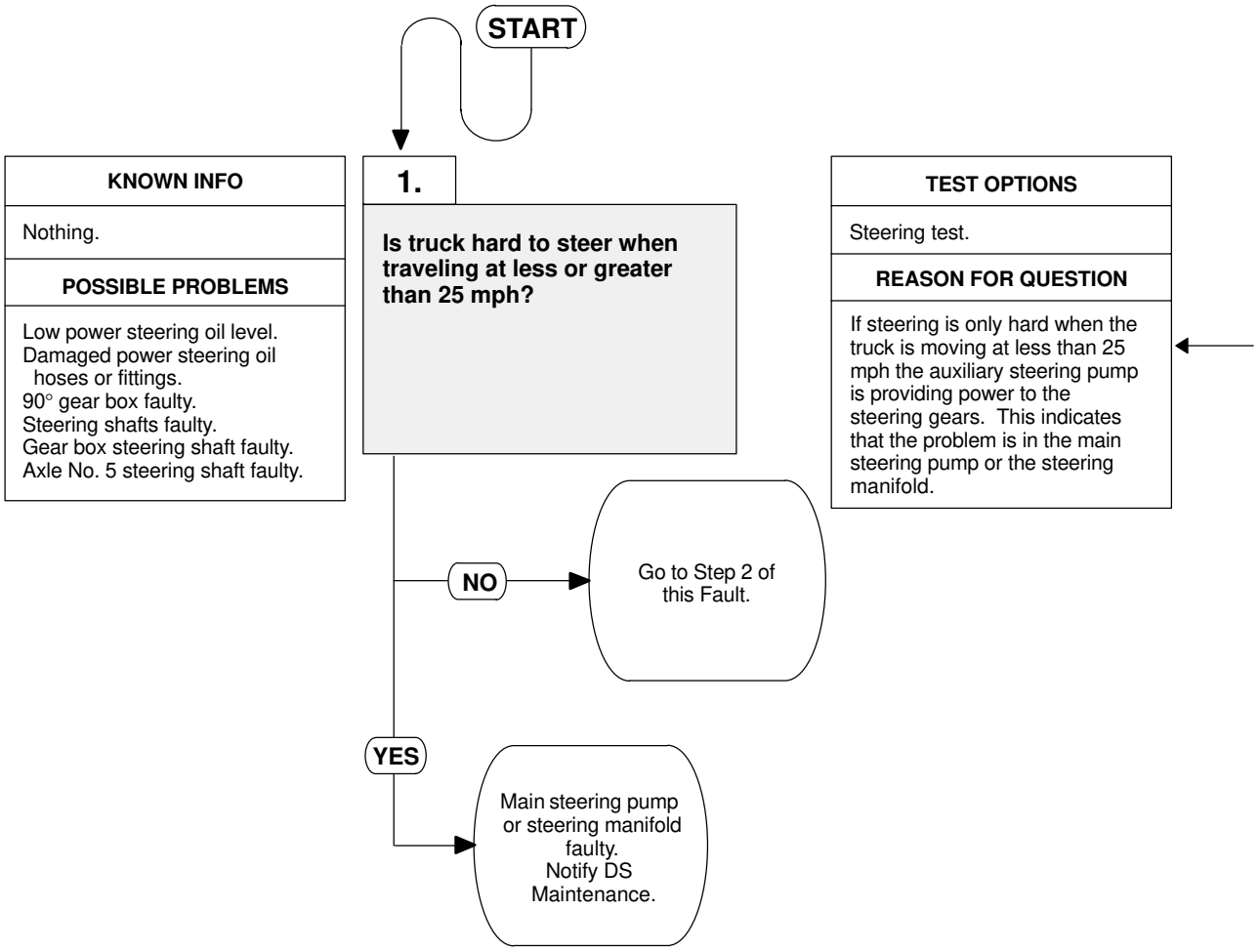
INITIAL SETUP

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

Personnel Required
Two

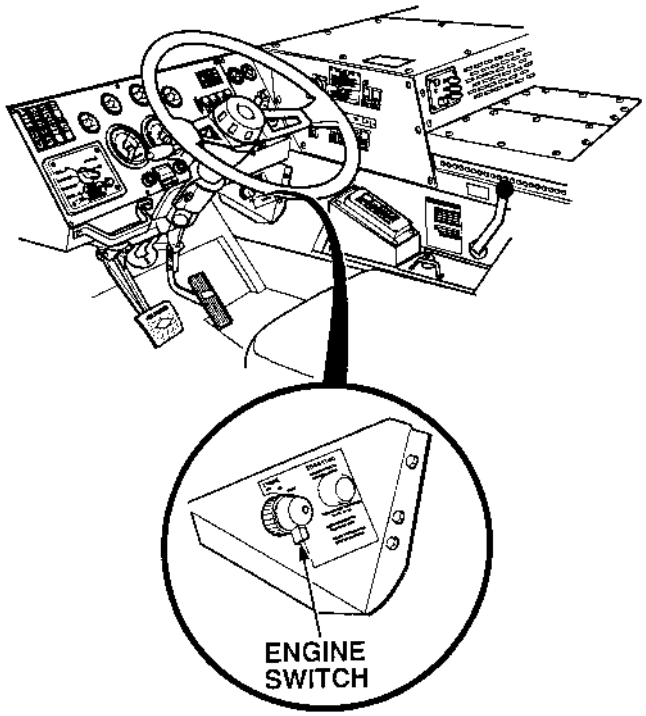
References
TM 9-2320-364-10

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

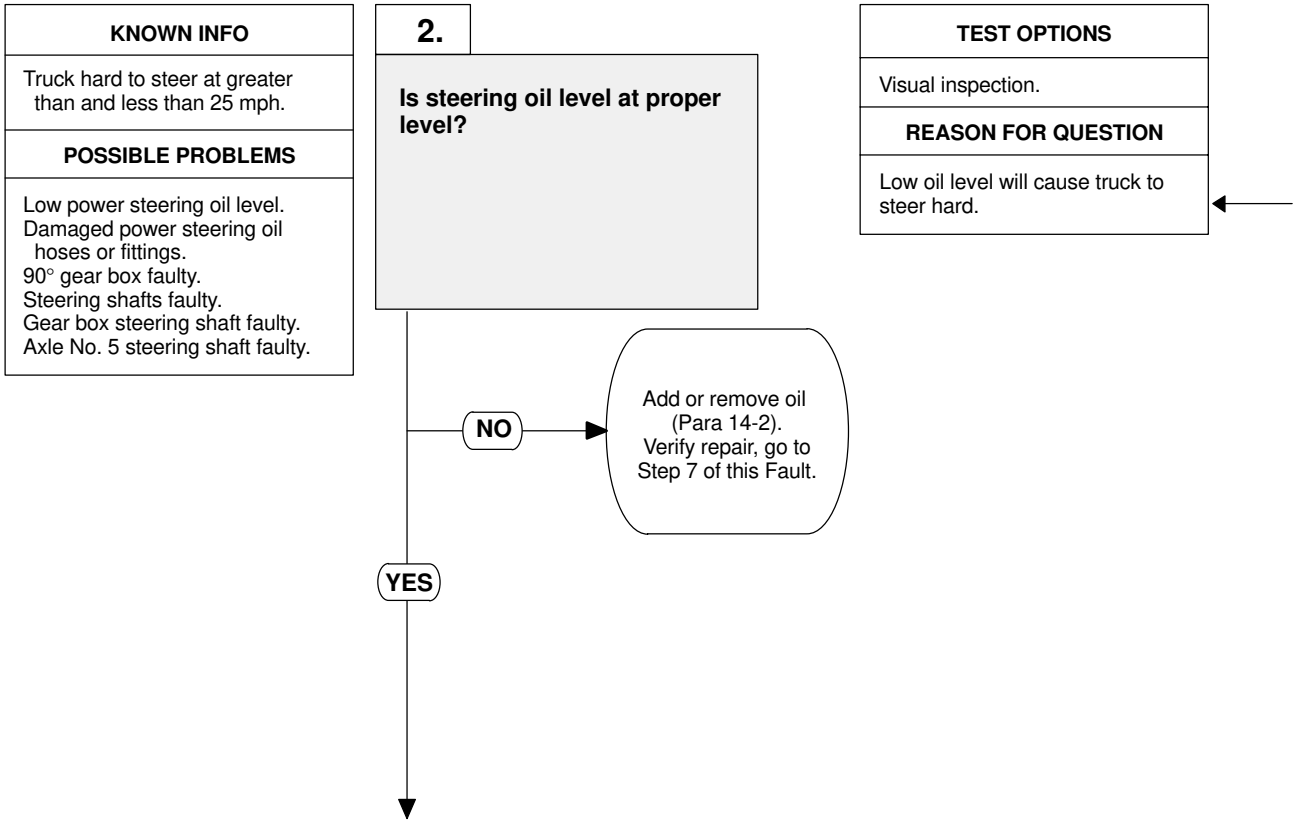


STEERING TEST

(1) Start engine and check steering while truck is moving at less than 25 mph (TM 9-2330-364-10).
(2) Check steering while truck is moving at greater than 25 mph.
    (a) If the truck is hard to steer above and below 25 mph, the problem is in the steering system; turn OFF ENGINE switch and go to Step 2 of this Fault.
    (b) If the truck is hard to steer at less than 25 mph only, the problem is in the steering hydraulic system. Turn OFF ENGINE switch and notify DS Maintenance.

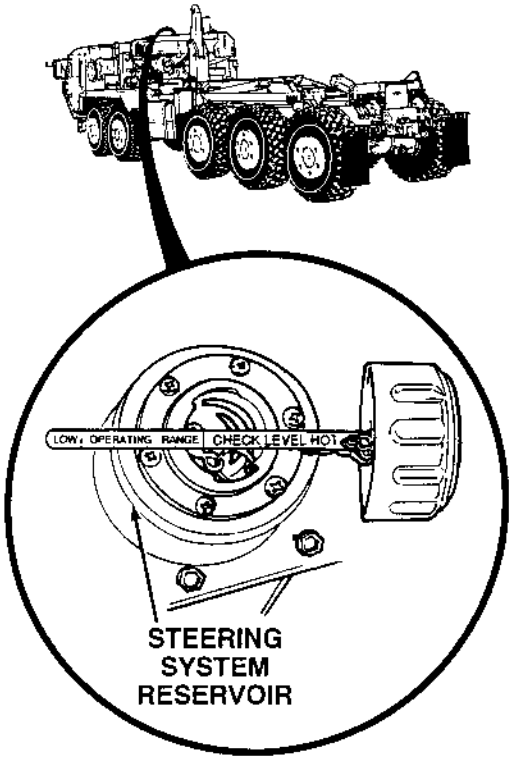


1. TRUCK IS HARD TO STEER (CONT).



VISUAL INSPECTION

(1) Check steering reservoir oil level (Para 14-2).
   (a) If oil is low, add oil and go to Step 7 of this Fault.
   (b) If oil level is too high, drain oil from oil sampling valve until proper level is reached (Para 14-2).
(2) If oil level is OK, go to Step 4 of this Fault.



1. TRUCK IS HARD TO STEER (CONT).

KNOWN INFO

Truck hard to steer at greater than and less than 25 mph.
Power steering oil level OK.

POSSIBLE PROBLEMS

Damaged power steering oil hoses or fittings.
90° gear box faulty.
Steering shafts faulty.
Gear box steering shaft faulty.
Axle No. 5 steering shaft faulty.

3.

WARNING

Read WARNING on Page 2-2945

Are power steering hoses and fittings free from leaks or damage?

NO → Replace damaged oil hose(s) and fitting(s) (Para 14-14 and schematic Fig 2-71). Verify repair, go to Step 7 of this Fault.

YES

TEST OPTIONS

Visual inspection.

REASON FOR QUESTION

Damaged or leaking hoses will cause a decrease in steering oil pressure and flow rate. This will cause hard steering.

WARNING

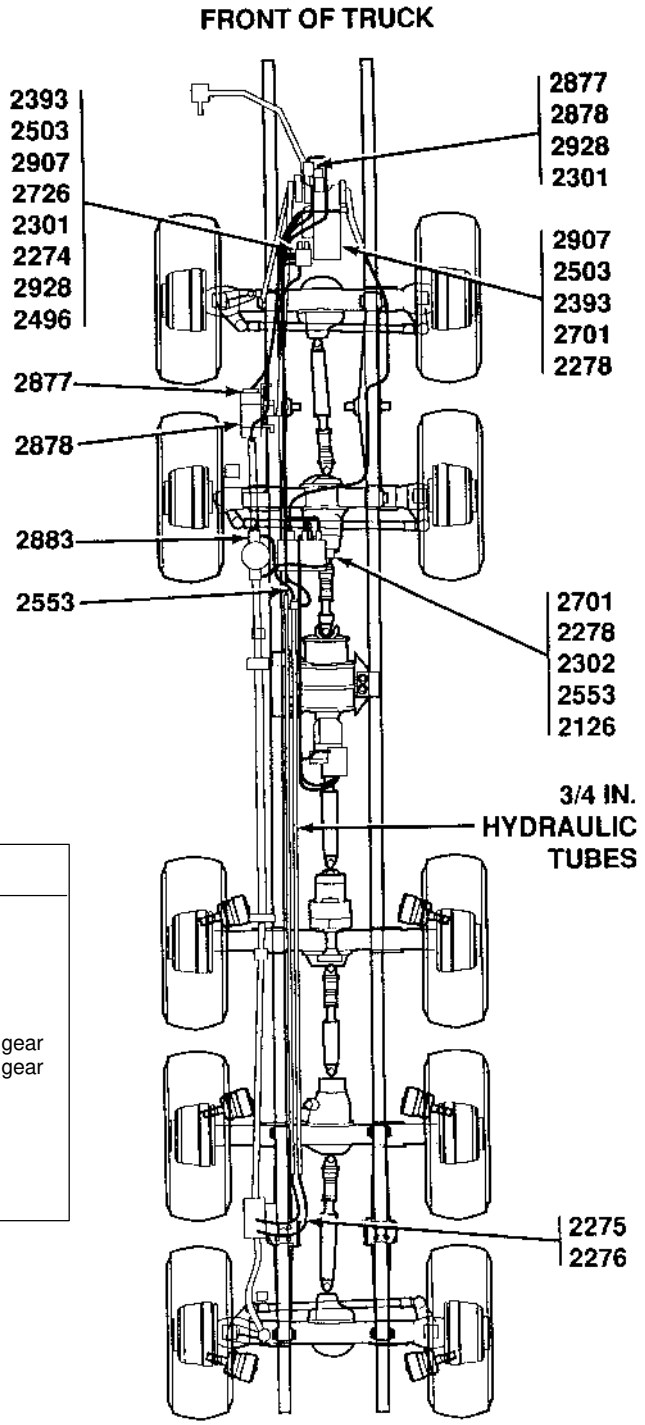
Maintain adequate distance from moving steering parts or serious injury to personnel may result.

VISUAL INSPECTION

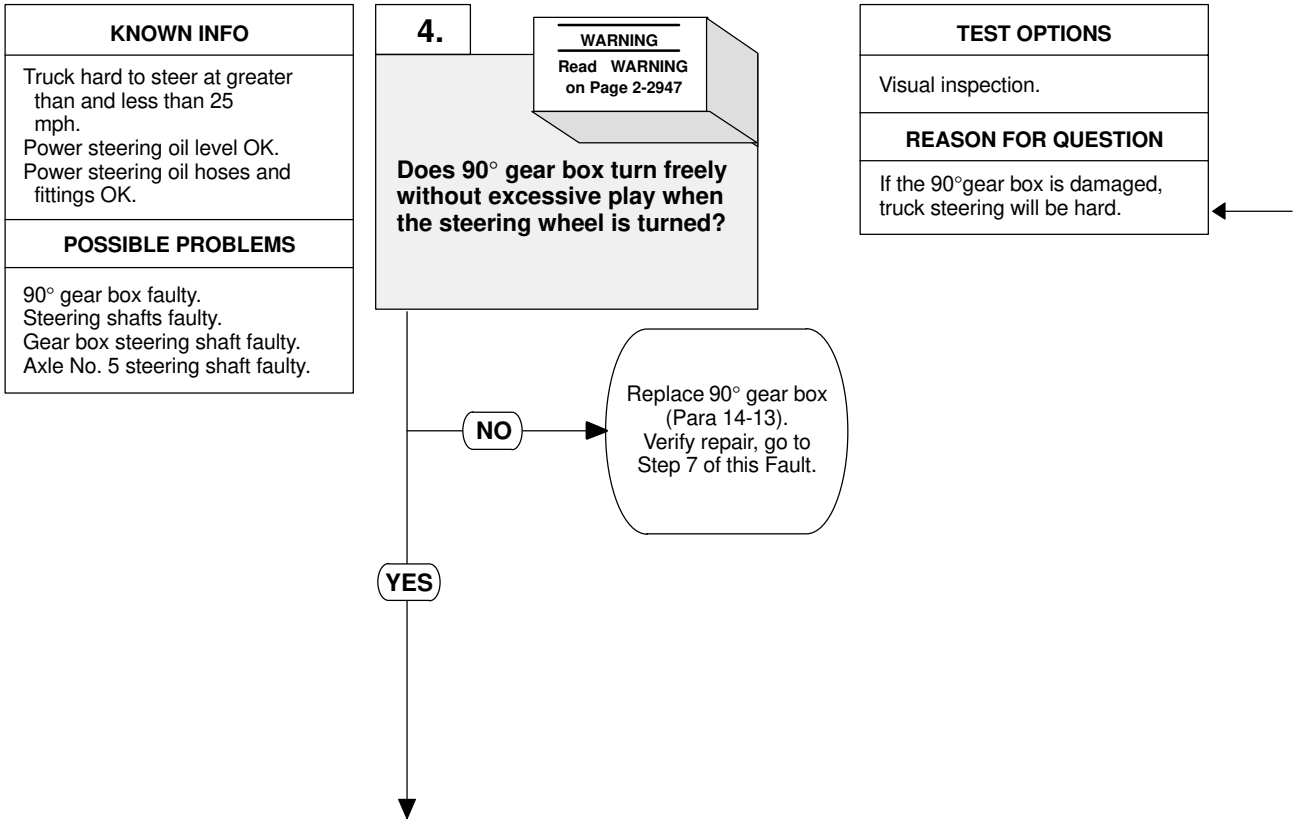
(1) Start engine (TM 9-2320-364-10).
(2) While assistant turns the steering wheel right and left, check power steering hoses and fittings listed in Table 2-60 for leaks and damage.
   (a) If hoses are leaking or damaged, tighten fittings, turn OFF ENGINE switch and replace hoses as necessary (Para 14-14 and schematic Fig 2-71).
   (b) If hoses are free of leaks and/or damage, components are OK.
(3) Turn OFF ENGINE switch.

Table 2-60. **Steering System Hoses**

HOSE NO.	FROM	TO
2278	Steering oil reservoir	Steering pump
2393	Steering pump	Steering manifold
2726	Hose 2928	Steering oil reservoir
2301	Steering manifold	Front steering gear
2928	Front steering gear	Hose 2726
2877	Front steering gear	Intermediate steering gear
2878	Front steering gear	Intermediate steering gear
2274	Steering manifold	Power steering tube
2275	Power steering tube	Rear steering gear
2276	Rear steering gear	Power steering tube
2883	Power steering tube	Steering oil filter
2553	Steering oil filter	Steering oil reservoir



1. TRUCK IS HARD TO STEER (CONT).

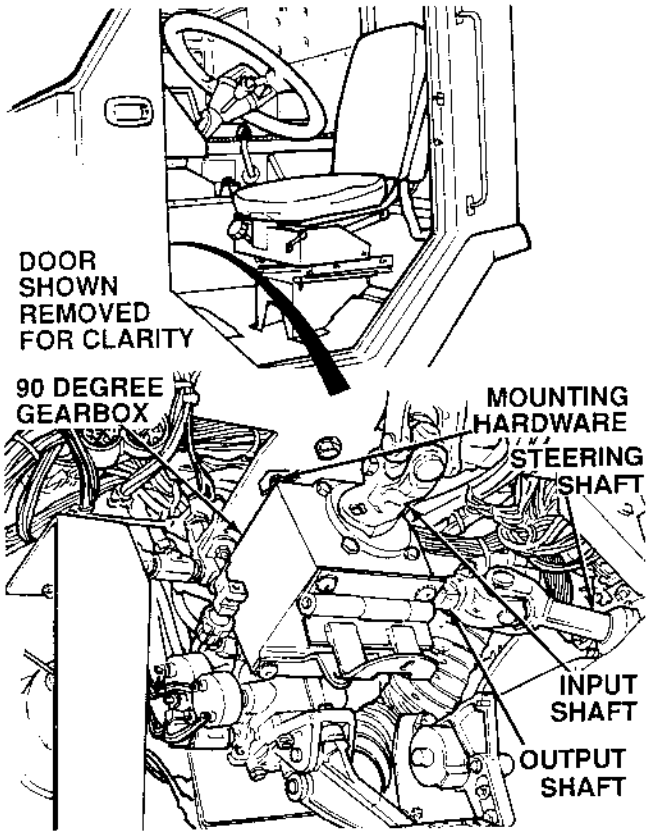


WARNING

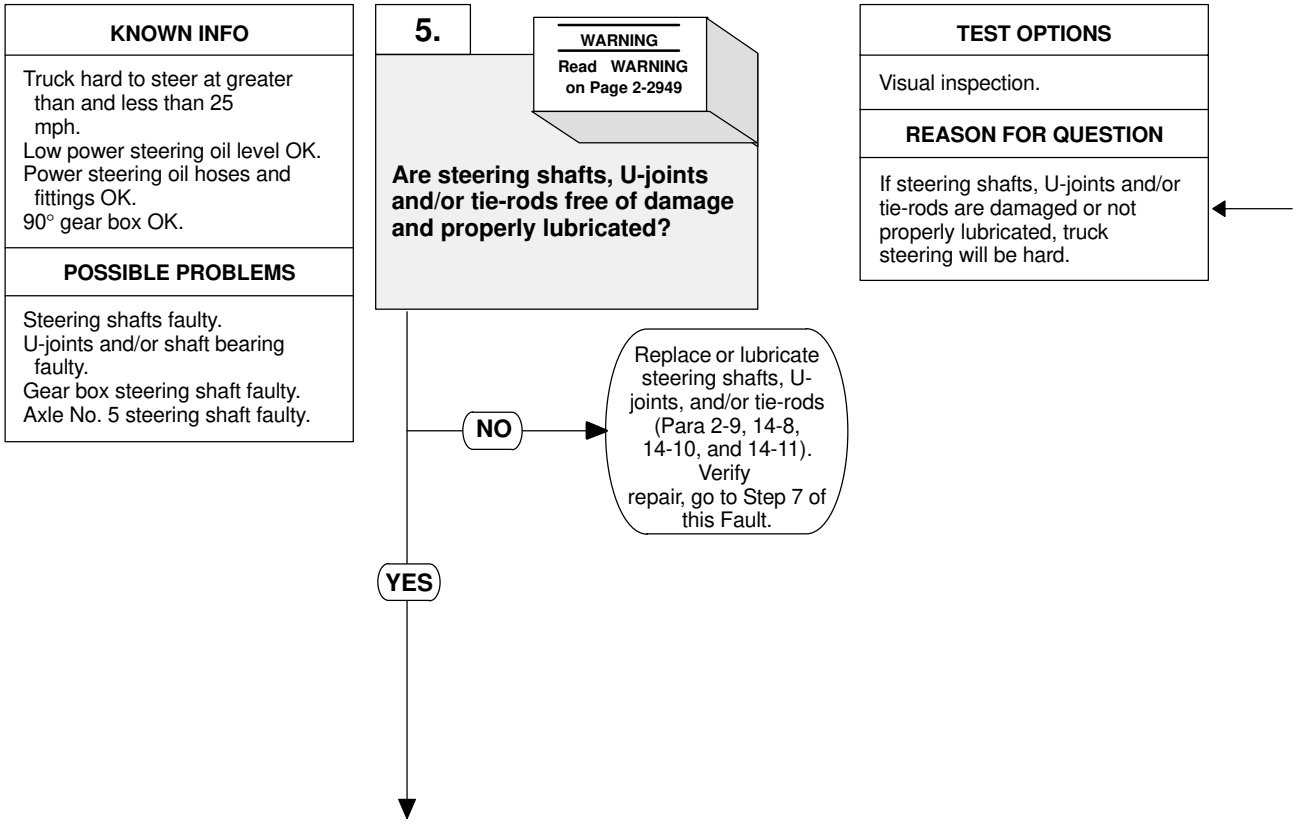
Maintain adequate distance from moving steering parts or serious injury to personnel may result.

VISUAL INSPECTION

(1) Check 90° gear box mounting hardware (Para 14-13).
   (a) If gear box is not securely mounted tighten or replace mounting hardware (Para 14-13).
   (b) If gear box mounting hardware is OK, go to Step (2) below.
(2) Disconnect steering shaft from output shaft of 90° gear box (Para 14-13).
(3) Turn steering wheel by hand while checking for binding or excessive play.
   (a) If binding or excessive play is present, replace gear box (Para 14-13).
   (b) If binding or excessive play is not present, gear box is OK.
(4) Reconnect steering shaft to output shaft of 90° gear box (Para 14-13).



1. TRUCK IS HARD TO STEER (CONT).



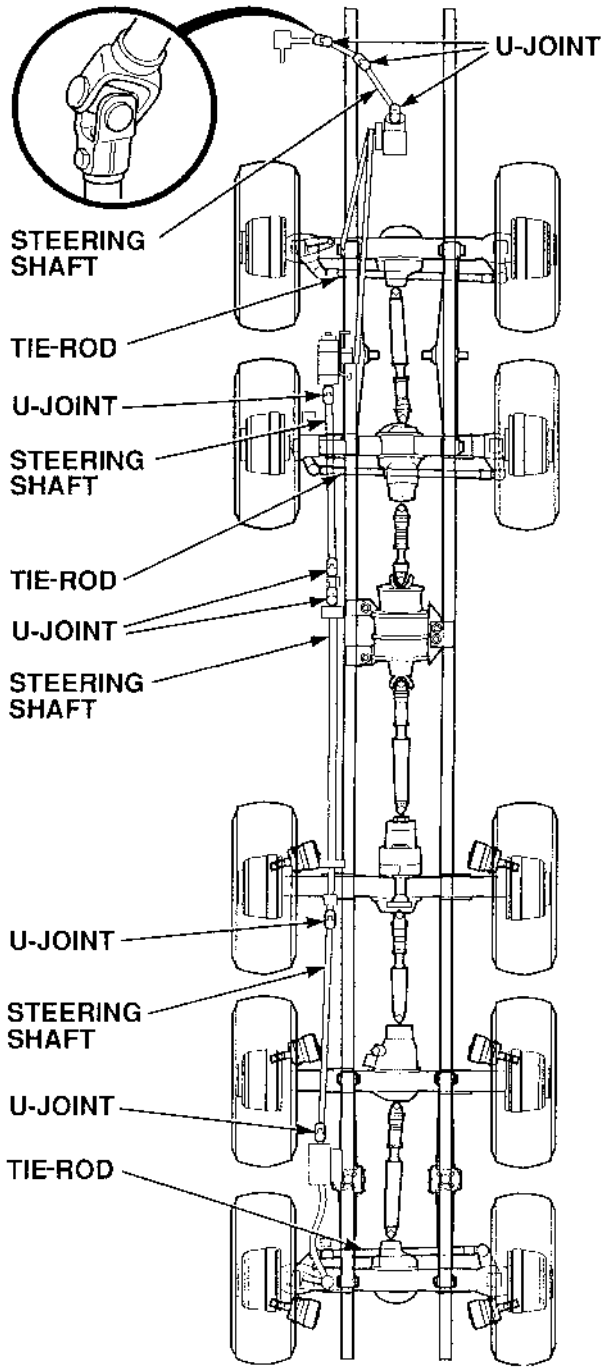
WARNING

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

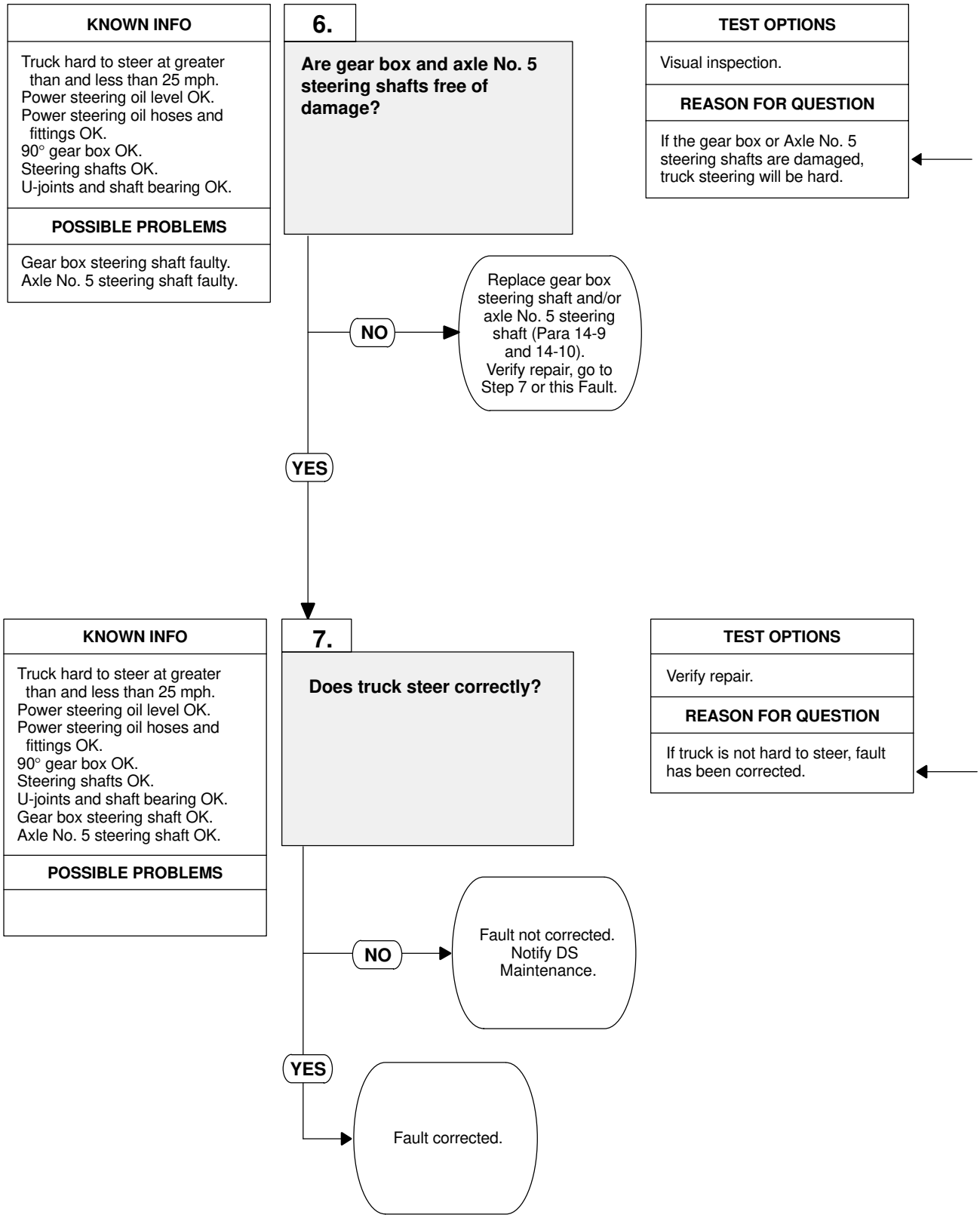
VISUAL INSPECTION

(1) While assistant starts engine (TM 9-2320-364-10) and turns steering wheel, observe steering shafts, tie-rods and U-joints.
   (a) If steering shafts, tie-rods, drag links and/or U-joints are loose, binding or damaged, turn OFF ENGINE switch and replace damaged parts (Para 14-8, 14-10 and/or 14-11).
   (b) If steering shafts, tie-rods, drag links and/or U-joints are OK, turn OFF ENGINE switch and go to Step (2) below.

(2) Inspect tie-rods, steering shafts and U-joints for correct lubrication.
   (a) If tie-rods and/or U-joints require lubrication, lubricate (Para 2-9).
   (b) If tie-rods and/or U-joints do not require lubrication, go to Step 6 of this Fault.

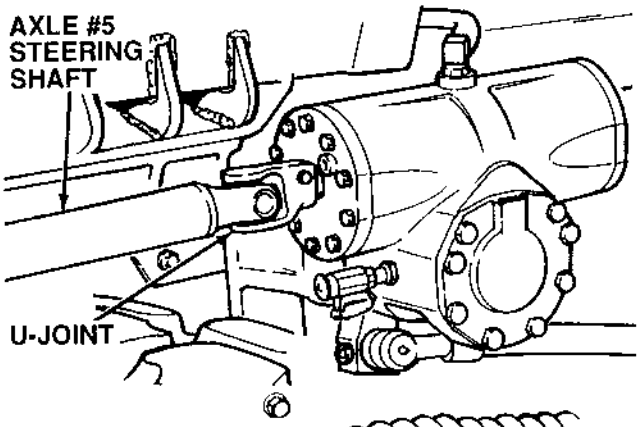


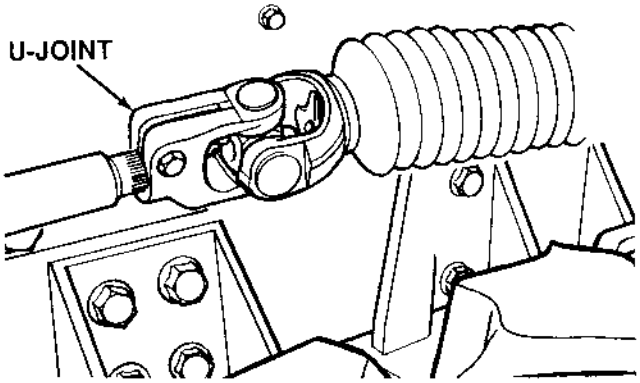
1. TRUCK IS HARD TO STEER (CONT).



VISUAL INSPECTION

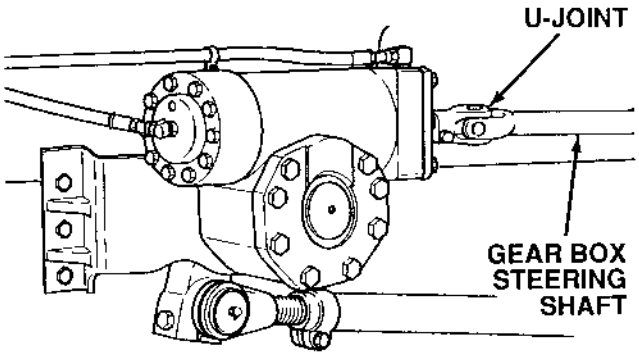
(1) Remove axle No. 5 steering shaft (Para 14-10).
(2) Remove gear box steering shaft (Para 14-9).
(3) Check steering shafts for damage.
  (a) If steering shafts and/or U-joints are damaged, replace the shafts and/or U-joints (Para 14-9 and 14-10).
  (b) If steering shafts and U-joints are free of damage, go to Step (4) below.
(4) Install axle No. 5 and gear box steering shafts (Para 14-9 and 14-10).

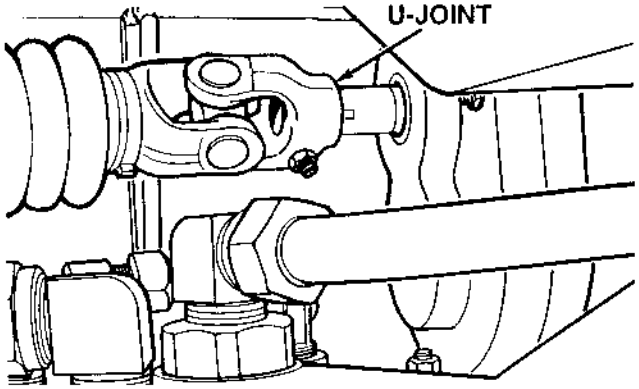




VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Check steering while truck is moving at greater than 25 mph.
  (a) If truck will not steer correctly, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
  (b) If truck is not hard to steer, fault has been corrected.
(3) Turn OFF ENGINE switch.





2-32. STEERING SYSTEM TROUBLESHOOTING (CONT).

2. TRUCK WANDERS, PULLS TO ONE SIDE, OR SHIMMIES.

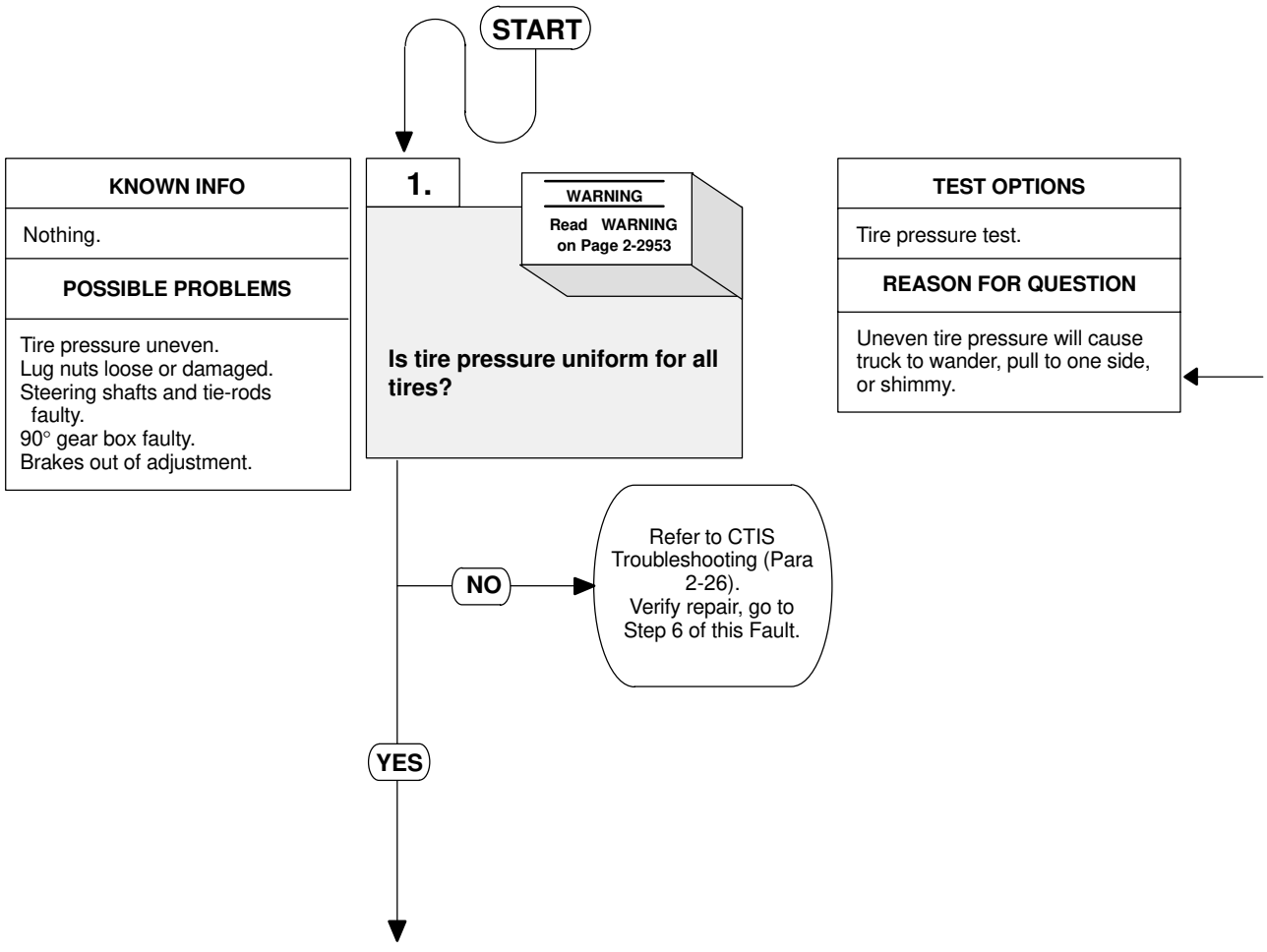
INITIAL SETUP

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

Personnel Required
Two

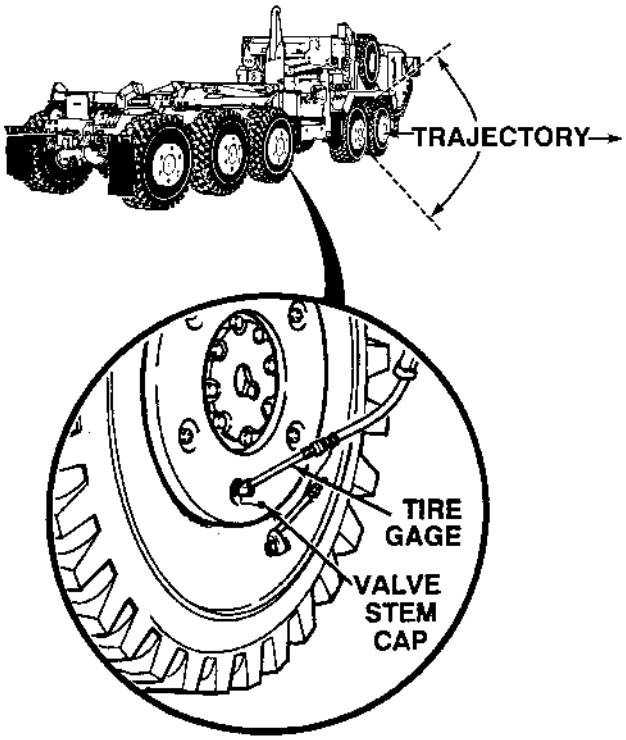
References
TM 9-2320-364-10

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



WARNING

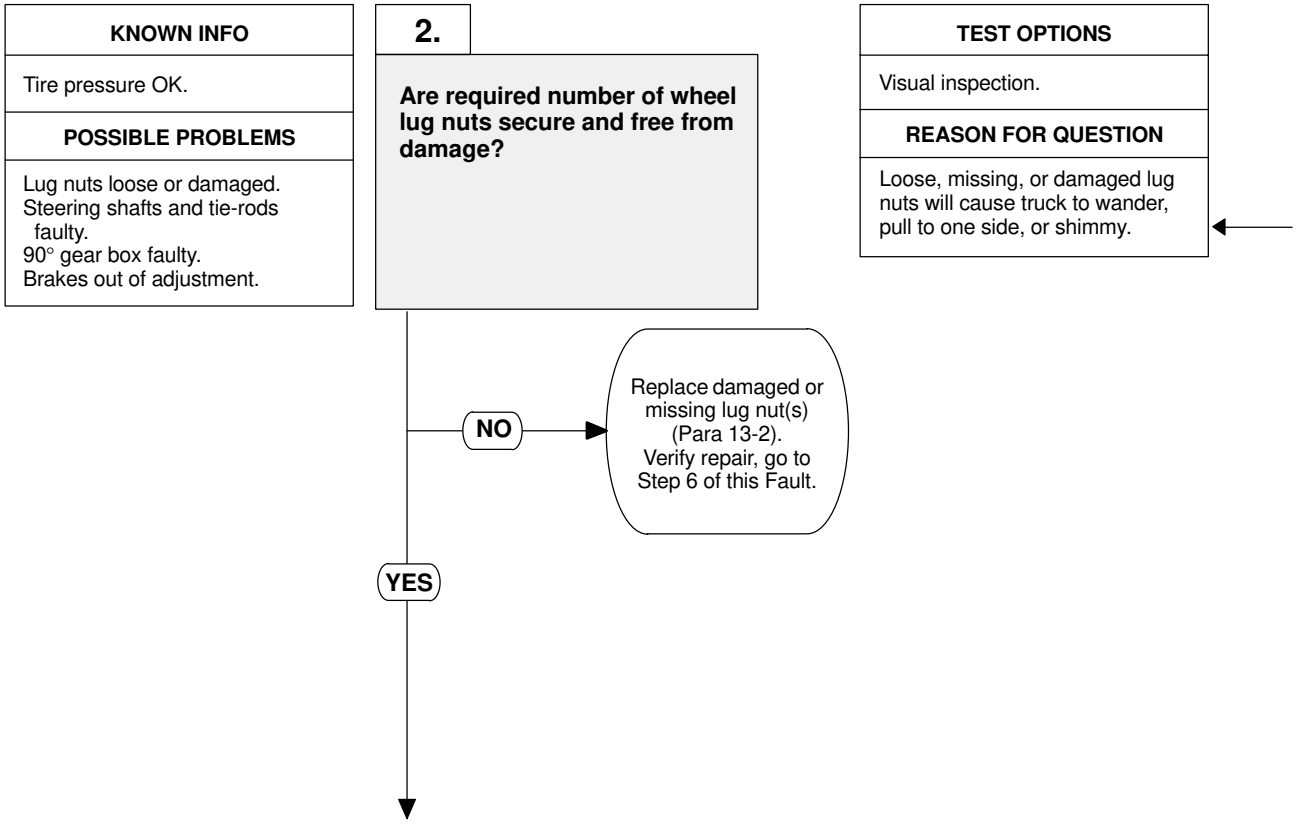
Before inflating or deflating, stand out of the trajectory area or personal injury or death may result.



TIRE PRESSURE TEST

Check tire pressure (TM 9-2320-364-10).
(1) If tire pressure is not correct, go to CTIS troubleshooting (Para 2-26).
(2) If tire pressure is correct, go to Step 2 of this Fault.

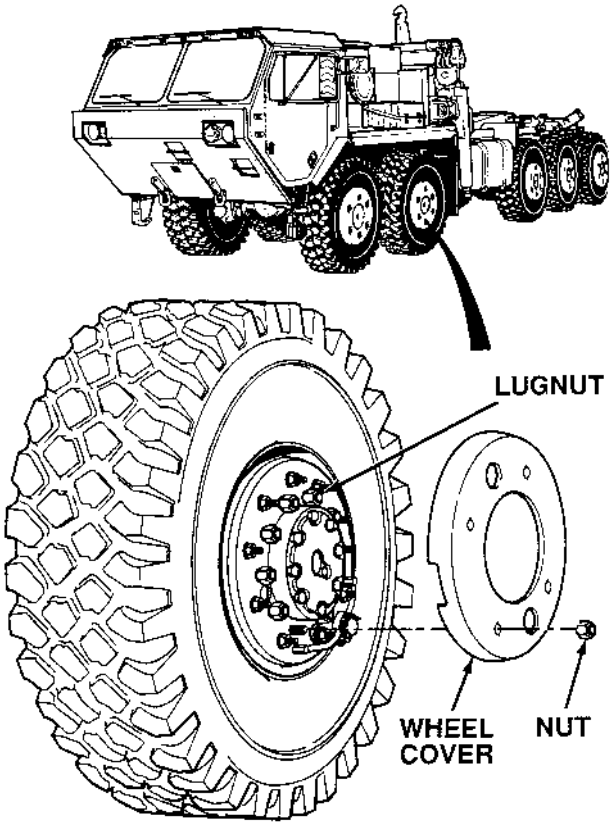
2. TRUCK WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT).



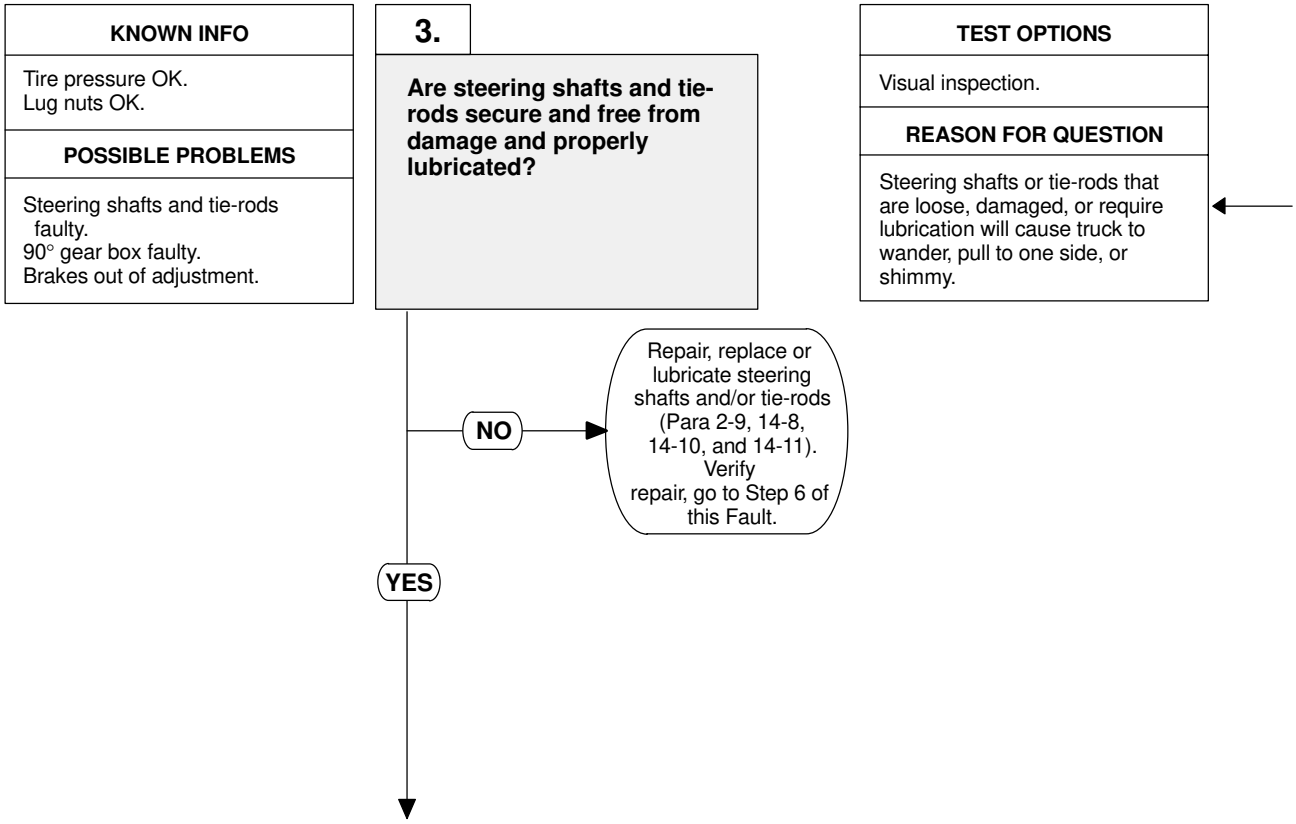
NOTE

All wheels on truck are the same. Axle No. 2 wheel shown.

VISUAL INSPECTION
(1) Remove four locknuts and wheel cover from tire assembly (TM 9-2320-364-10). (2) Check if any lug nuts are loose, missing, or damaged. (a) If lug nuts are loose or missing, tighten and/or replace lug nuts and perform Step (3) below. (b) If lug nuts are OK, perform Step (3) below and go to Step 3 of this Fault. (3) Install wheel cover and four locknuts.



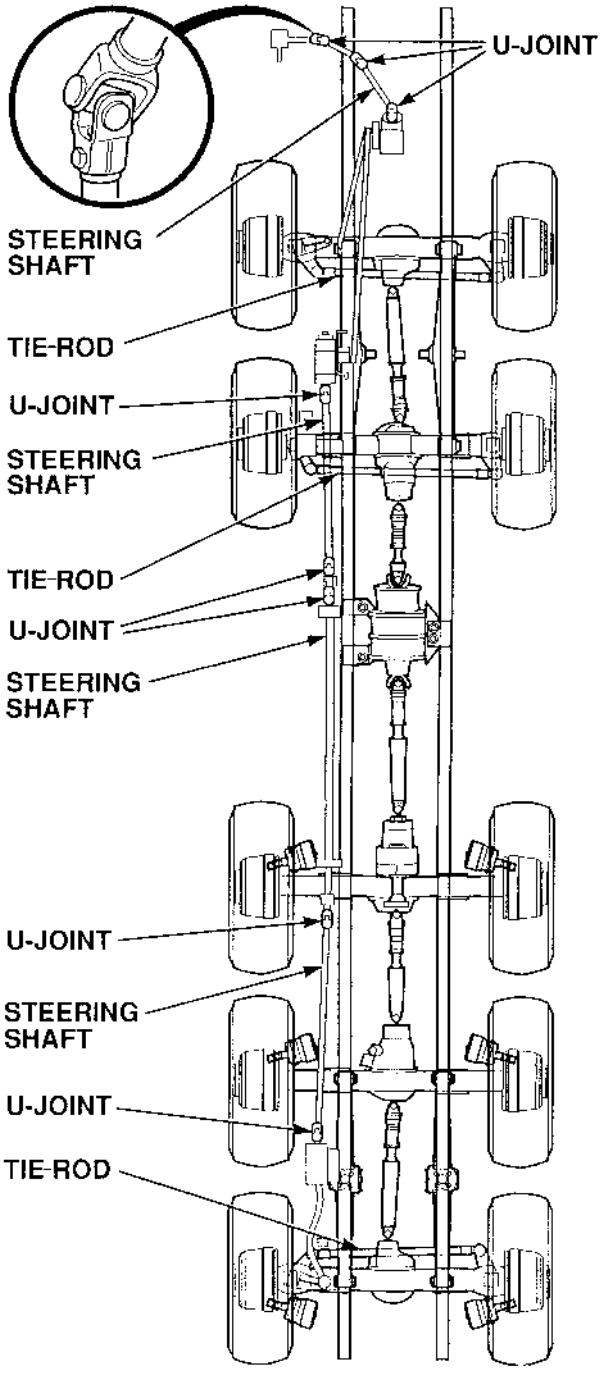
2. TRUCK WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT).



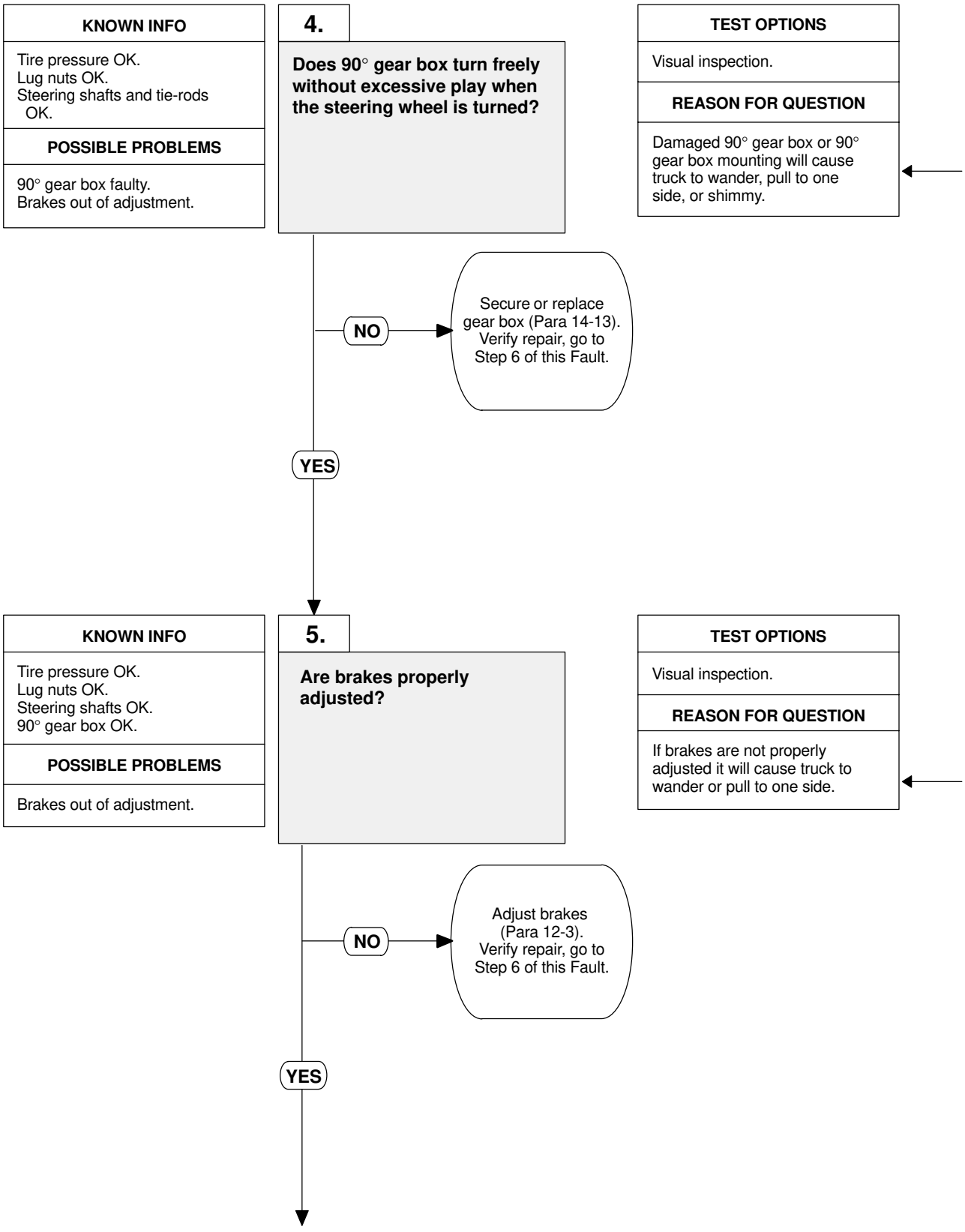
VISUAL INSPECTION

(1) While assistant starts engine (TM 9-2320-364-10) and turns steering wheel, observe steering shafts, tie-rods and U-joints.
   (a) Check for wear of tie-rod ends or drag link ends (Para 14-12).
   (b) If steering shafts, tie-rods, drag links, and/or U-joints are loose, binding or damaged, turn OFF ENGINE switch and replace damaged parts (Para 14-8, 14-10, and/or 14-11).
   (c) If steering shafts, tie-rods, drag links, and/or U-joints are OK, turn OFF ENGINE switch and go to Step (2) below.

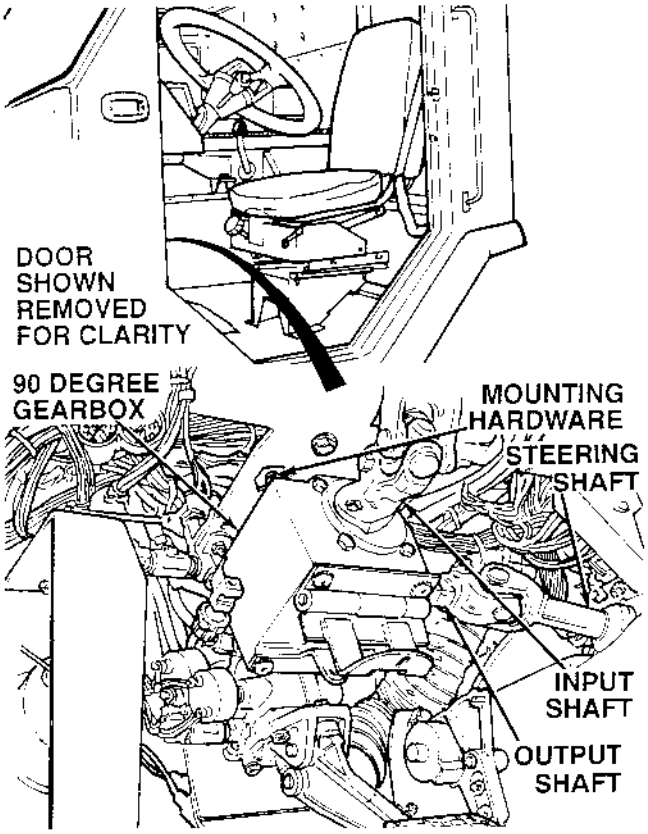
(2) Inspect tie-rods and steering shaft's U-joints for correct lubrication.
   (a) If tie-rods and/or U-joints require lubrication, lubricate (Para 2-9).
   (b) If tie-rods and/or U-joints do not require lubrication, go to Step 4 of this Fault.



2. TRUCK WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT).

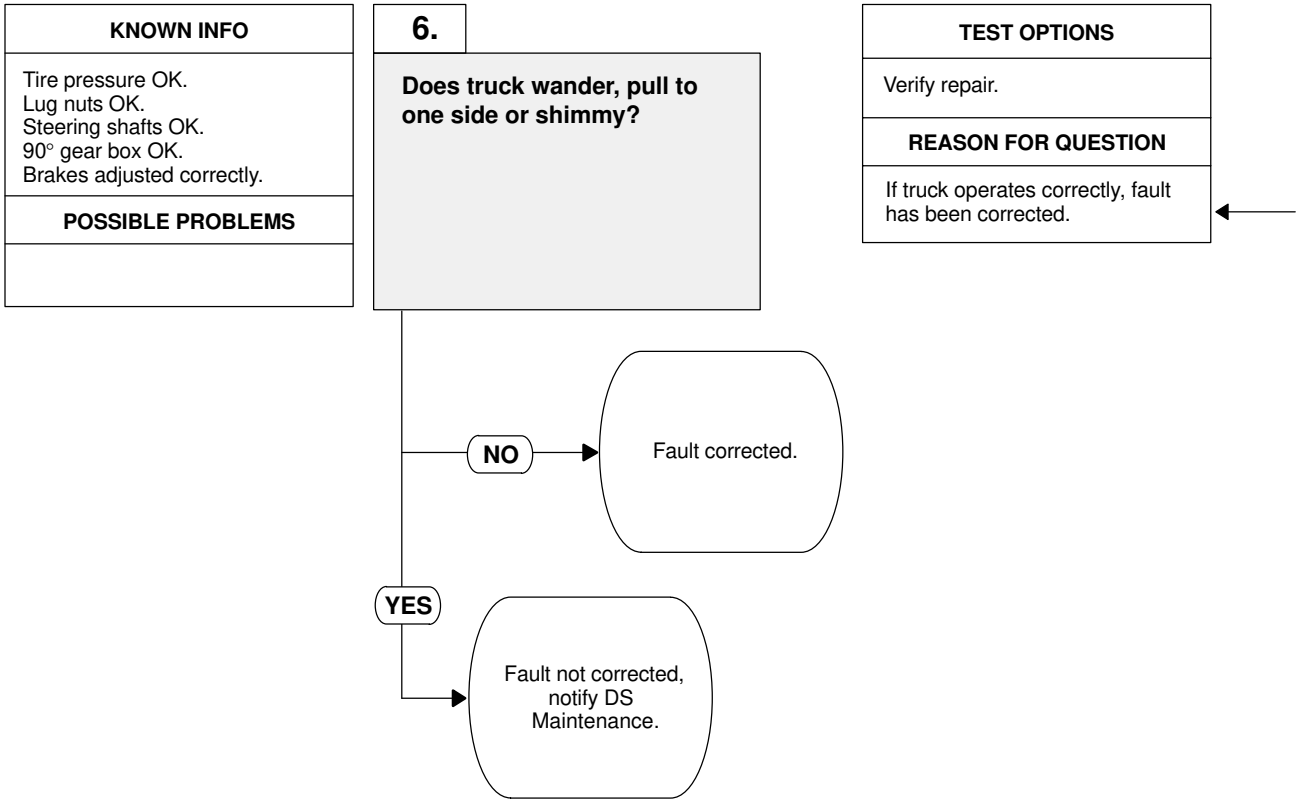


VISUAL INSPECTION
(1) Check 90° gear box mounting hardware (Para 14-13). (a) If gear box is not securely mounted tighten or replace mounting hardware (Para 14-13). (b) If gear box mounting hardware is OK, go to Step (2) below. (2) Disconnect steering shaft from output shaft of 90° gear box (Para 14-13). (3) Turn steering wheel by hand while checking for binding or excessive play. (a) If binding or excessive play is present, replace gear box (Para 14-13). (b) If binding or excessive play is not present, gear box is OK. (4) Reconnect steering shaft to output shaft of 90° gear box (Para 14-13).



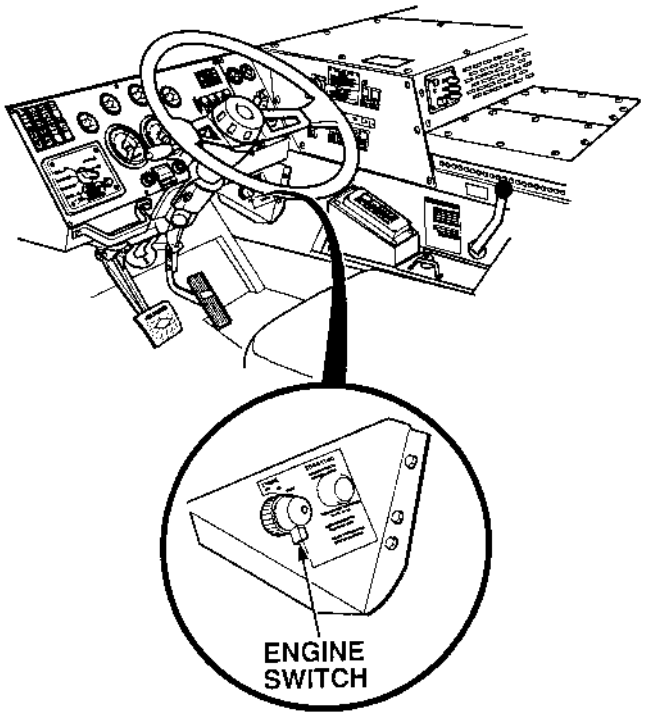
VISUAL INSPECTION
Check brake adjustment and adjust brakes as necessary (Para 12-3).

2. TRUCK WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Check steering while operating the truck.
    (a) If truck steers correctly, fault has been corrected, turn OFF ENGINE switch.
    (b) If truck wanders, pulls to one side or shimmies, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.



2-32. STEERING SYSTEM TROUBLESHOOTING (CONT).

3. EXCESSIVE PLAY WHEN TURNING STEERING WHEEL.

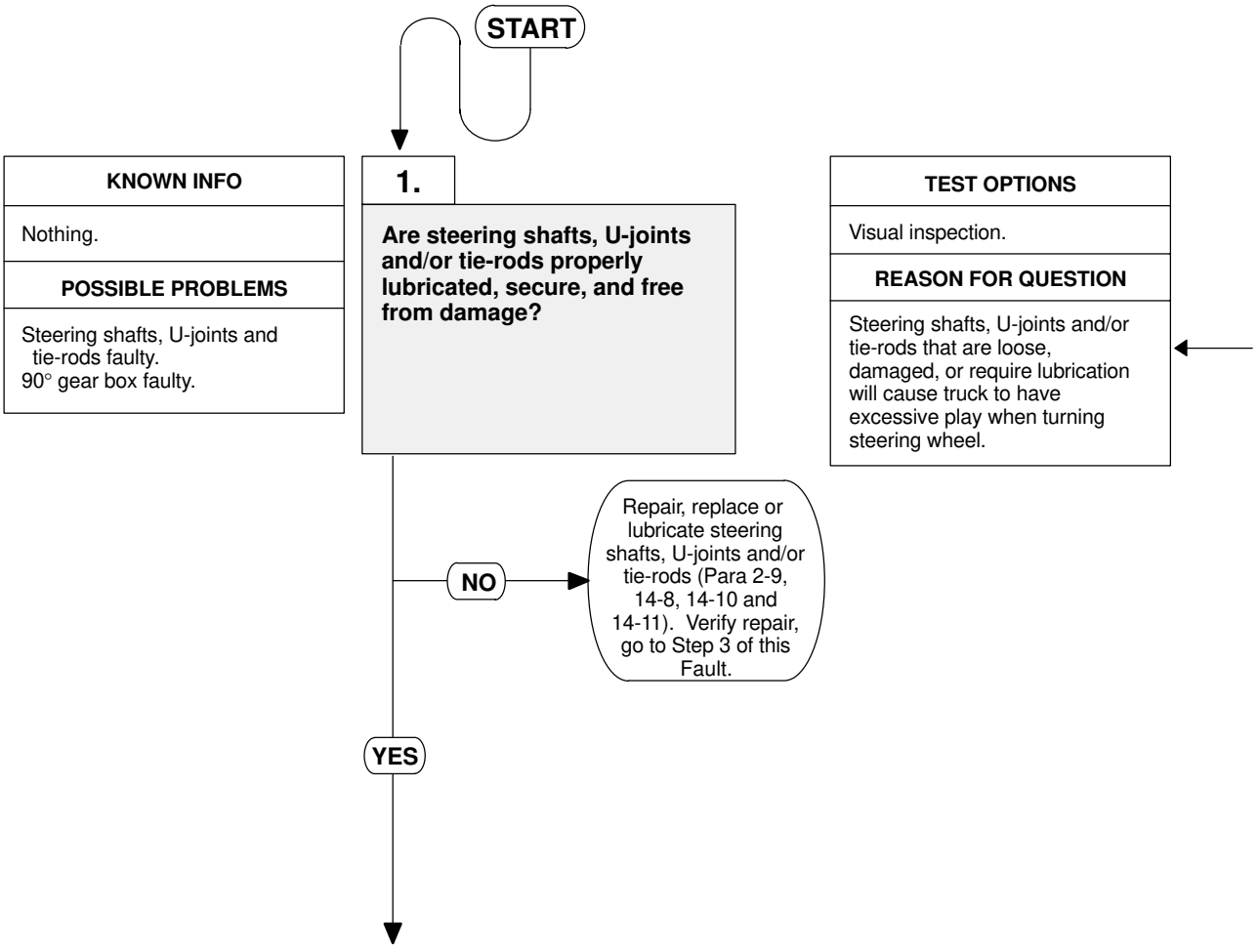
INITIAL SETUP

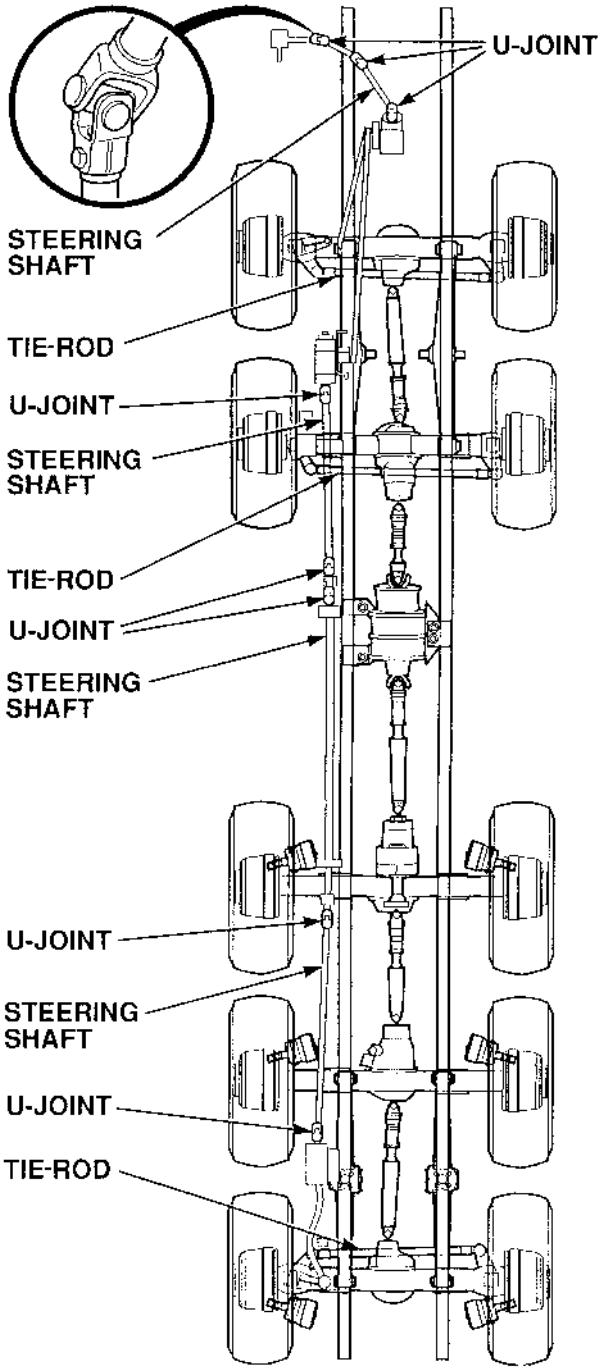
Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Personnel Required
Two

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)



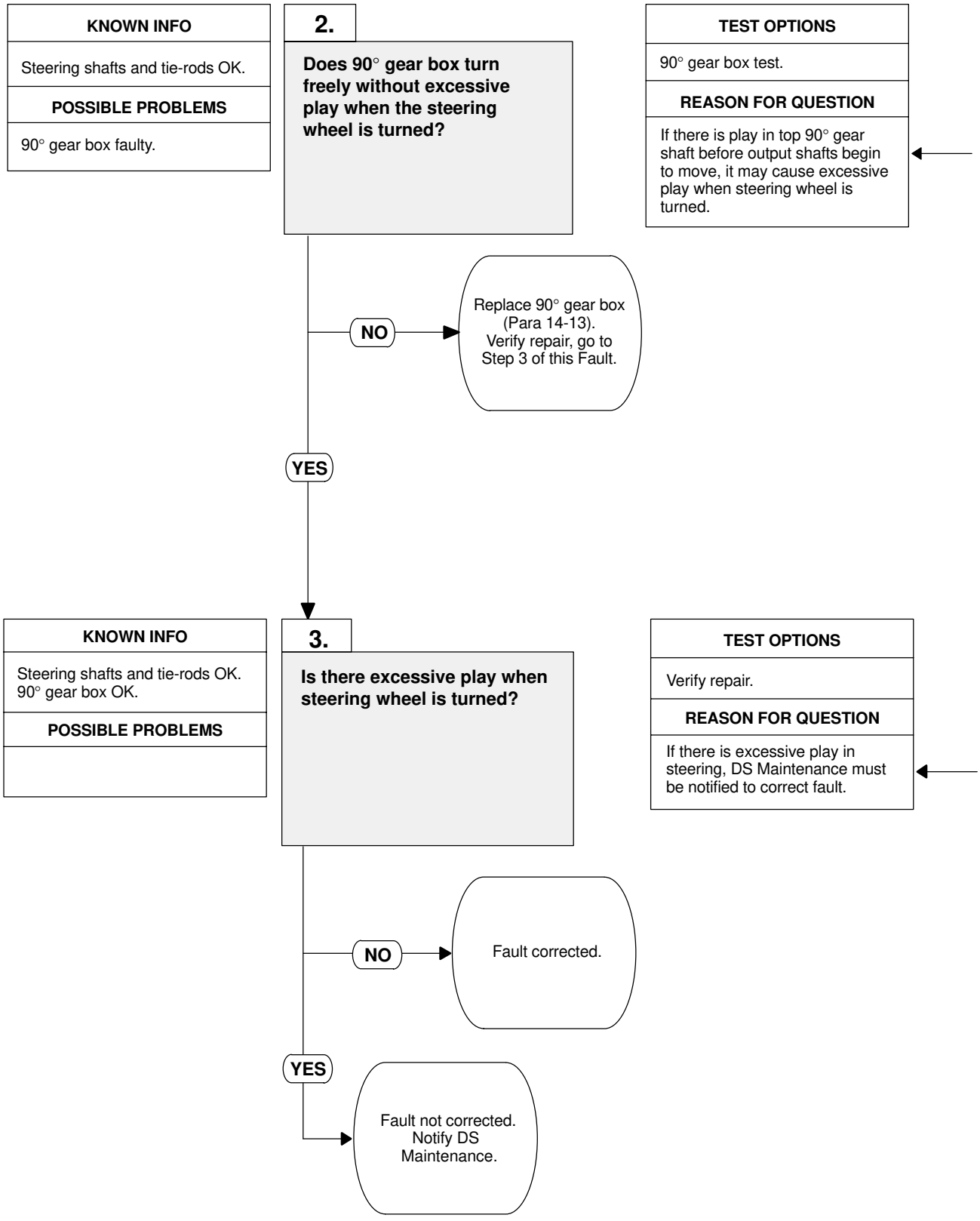


VISUAL INSPECTION

(1) While assistant starts engine (TM 9-2320-364-10) and turns steering wheel, observe steering shafts, tie-rods and U-joints.
   (a) Check for wear of tie-rod ends or drag link ends (Para 14-12).
   (b) If steering shafts, tie-rods, drag links, and/or U-joints are loose, binding or damaged, turn OFF ENGINE switch and replace damaged parts (Para 14-8, 14-10, and/or 14-11).
   (c) If steering shafts, tie-rods, drag links, and/or U-joints are OK, turn OFF ENGINE switch and go to Step (2) below.

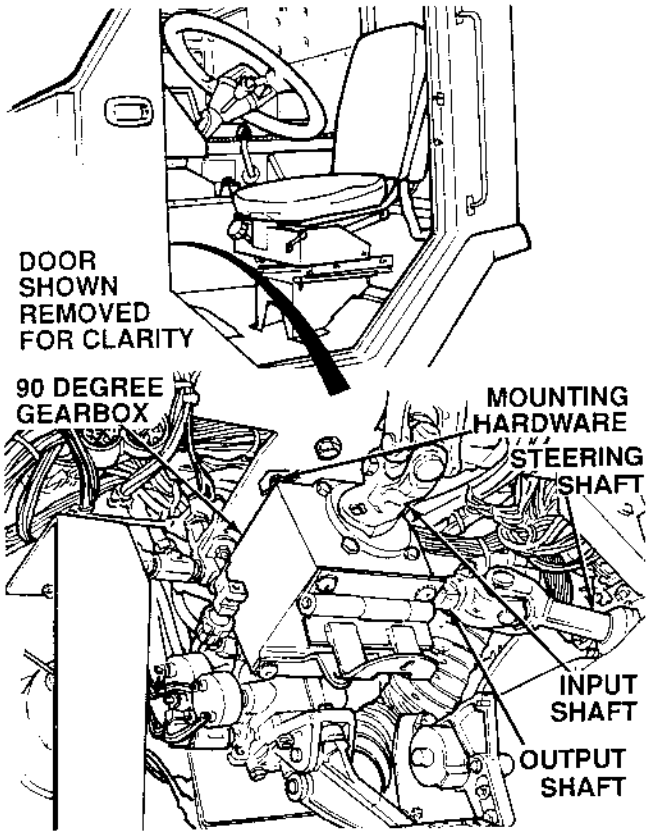
(2) Inspect tie-rods and steering shaft's U-joints for correct lubrication.
   (a) If tie-rods and/or U-joints require lubrication, lubricate (Para 2-9).
   (b) If tie-rods and/or U-joints do not require lubrication, go to Step 2 of this Fault.

3. EXCESSIVE PLAY WHEN TURNING STEERING WHEEL (CONT).



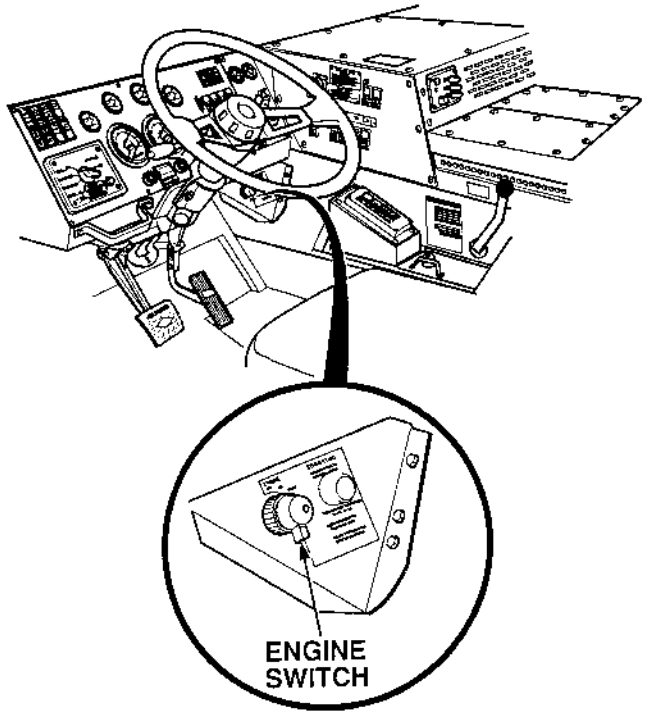
90° GEAR BOX TEST

(1) Check 90° gear box mounting hardware (Para 14-13).
  (a) If gear box is not securely mounted tighten or replace mounting hardware (Para 14-13).
  (b) If gear box mounting hardware is OK, go to Step (2) below.
(2) Disconnect steering shaft from output shaft of 90° gear box (Para 14-13).
(3) Turn steering wheel by hand while checking for binding or excessive play.
  (a) If binding or excessive play is present, replace gear box (Para 14-13).
  (b) If binding or excessive play is not present, gear box is OK.
(4) Connect steering shaft to output shaft of 90° gear box (Para 14-13).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Check steering while operating the truck.
  (a) If there is excessive play in steering, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
  (b) If there is no excessive play in steering, fault has been corrected.
(3) Turn OFF ENGINE switch.



2-32. STEERING SYSTEM TROUBLESHOOTING (CONT).

4. NO RESPONSE WHEN TURNING STEERING WHEEL.

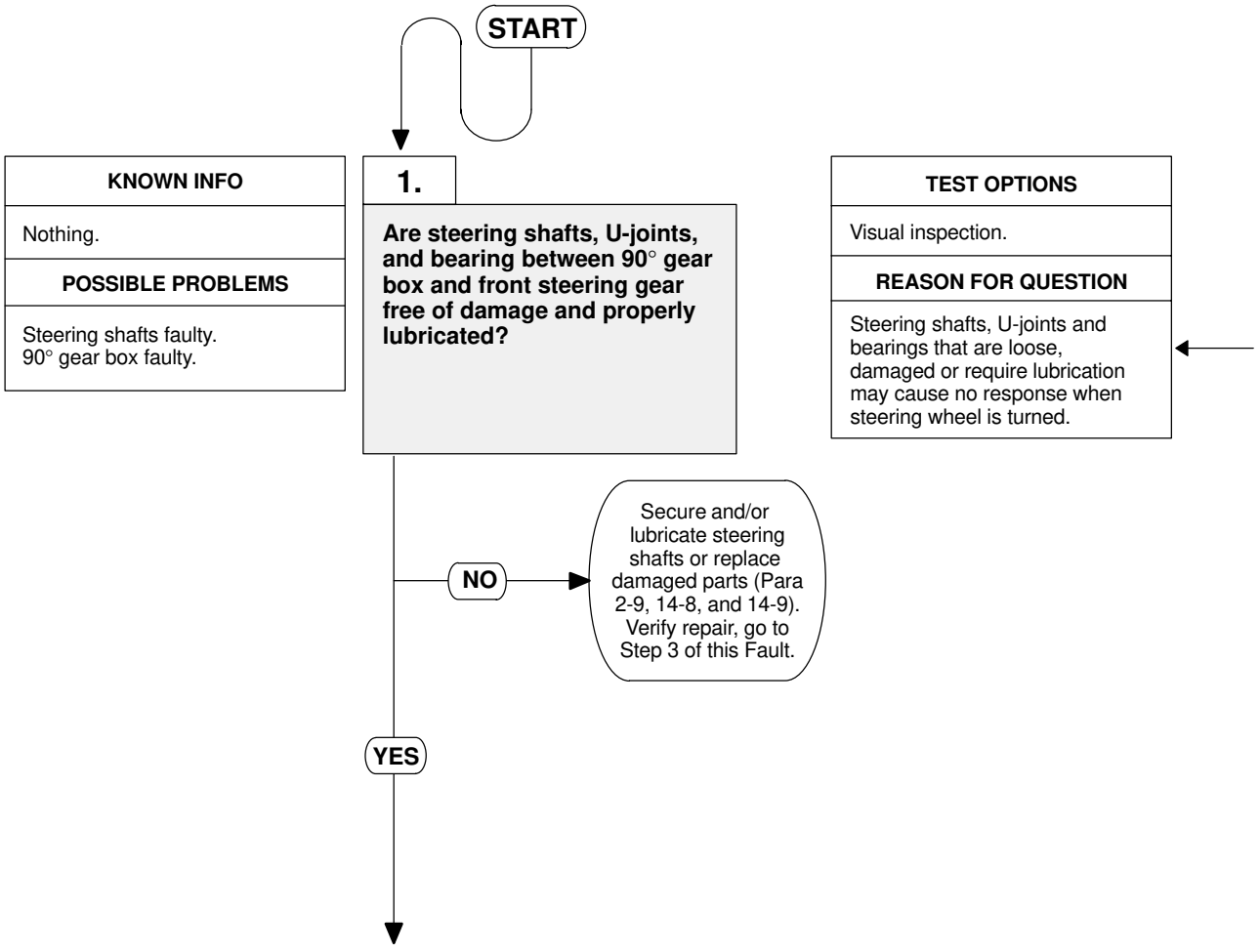
INITIAL SETUP

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

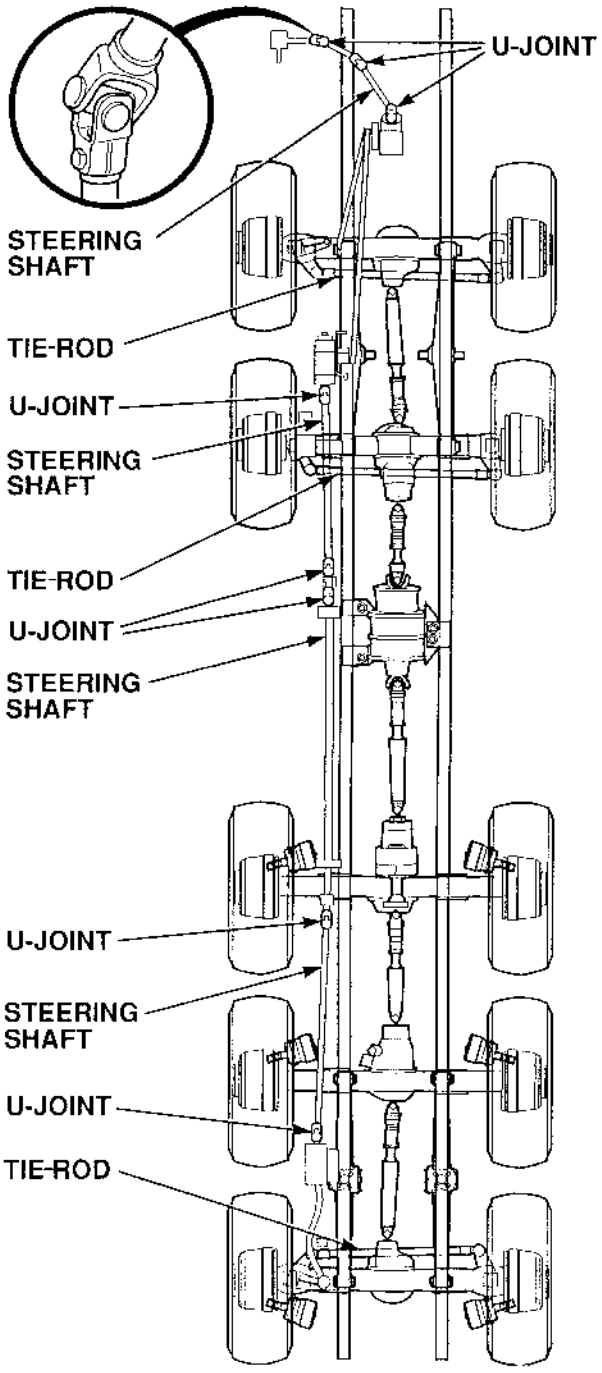
Personnel Required
Two

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) While assistant starts engine (TM 9-2320-364-10) and turns steering wheel, observe steering shafts, tie-rods and U-joints. (a) If steering shafts, tie-rods, drag links, and/or U-joints are loose, binding or damaged, turn OFF ENGINE switch and replace damaged parts (Para 14-8, 14-10, and/or 14-11). (b) If steering shafts, tie-rods, drag links, and/or U-joints are OK, turn OFF ENGINE switch and go to Step (2) below. (2) Inspect tie-rods and steering shaft's U-joints for correct lubrication. (a) If tie-rods and/or U-joints require lubrication, lubricate (Para 2-9). (b) If tie-rods and/or U-joints do not require lubrication, go to Step 2 of this Fault.



4. NO RESPONSE WHEN TURNING STEERING WHEEL (CONT).

KNOWN INFO
Top steering shafts OK.
POSSIBLE PROBLEMS
90° gear box faulty.

2.

Does 90° gear box shaft turn freely when input shaft is turned?

TEST OPTIONS
90° gear box test.
REASON FOR QUESTION
Faulty 90° gear box may cause no response when steering wheel is turned.

NO → Replace 90° gear box (Para 14-13). Verify repair, go to Step 3 of this Fault.

YES → Fault not corrected, notify DS Maintenance.

KNOWN INFO
Steering shafts OK. 90° gear box OK.
POSSIBLE PROBLEMS

3.

Does truck turn correctly when the steering wheel is turned?

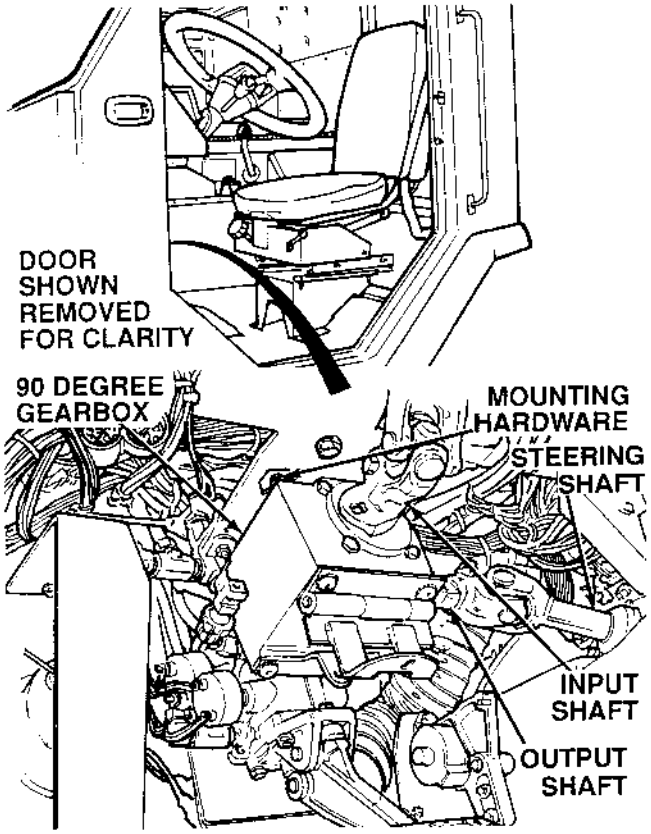
TEST OPTIONS
Verify repair.
REASON FOR QUESTION
If wheels turn when steering wheel is turned, fault is corrected.

NO → Fault not corrected, notify DS Maintenance.

YES → Fault corrected.

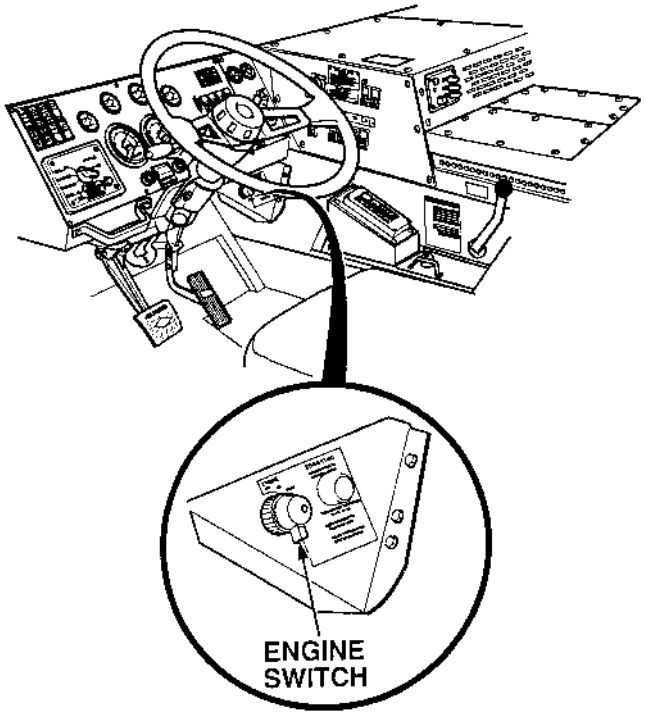
90° GEAR BOX TEST

(1) Check 90° gear box mounting hardware (Para 14-13).
  (a) If gear box is not securely mounted tighten or replace mounting hardware (Para 14-13)
  (b) If gear box mounting hardware is OK, go to Step (2) below.
(2) Disconnect steering shaft from output shaft of 90° gear box (Para 14-13).
(3) Turn steering wheel by hand while checking for binding or excessive play.
  (a) If binding or excessive play is present, replace gear box (Para 14-13).
  (b) If binding or excessive play is not present, gear box is OK.
(4) Connect steering shaft to output shaft of 90° gear box (Para 14-13).



VERIFY REPAIR

(1) Start engine (TM 9-2320-364-10).
(2) Turn steering wheel to ensure wheels turn.
  (a) If wheels do not respond to turning of steering wheel, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
  (b) If wheels do turn correctly when steering wheel is turned, fault has been corrected.
(3) Turn OFF ENGINE switch.



2-32. STEERING SYSTEM TROUBLESHOOTING (CONT).

5. NO RESPONSE AT AXLE NO. 5 WHEN TURNING STEERING WHEEL.

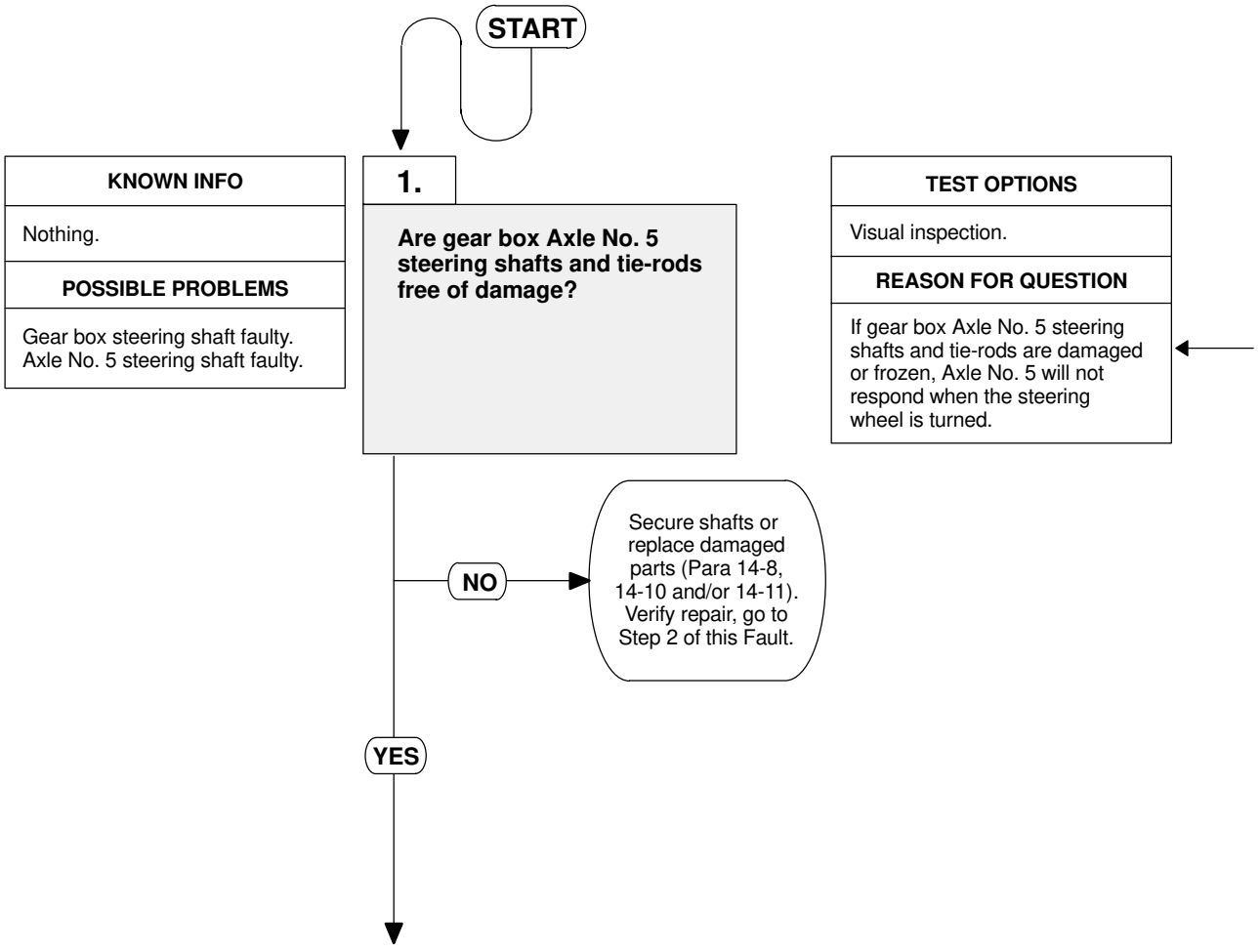
INITIAL SETUP

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

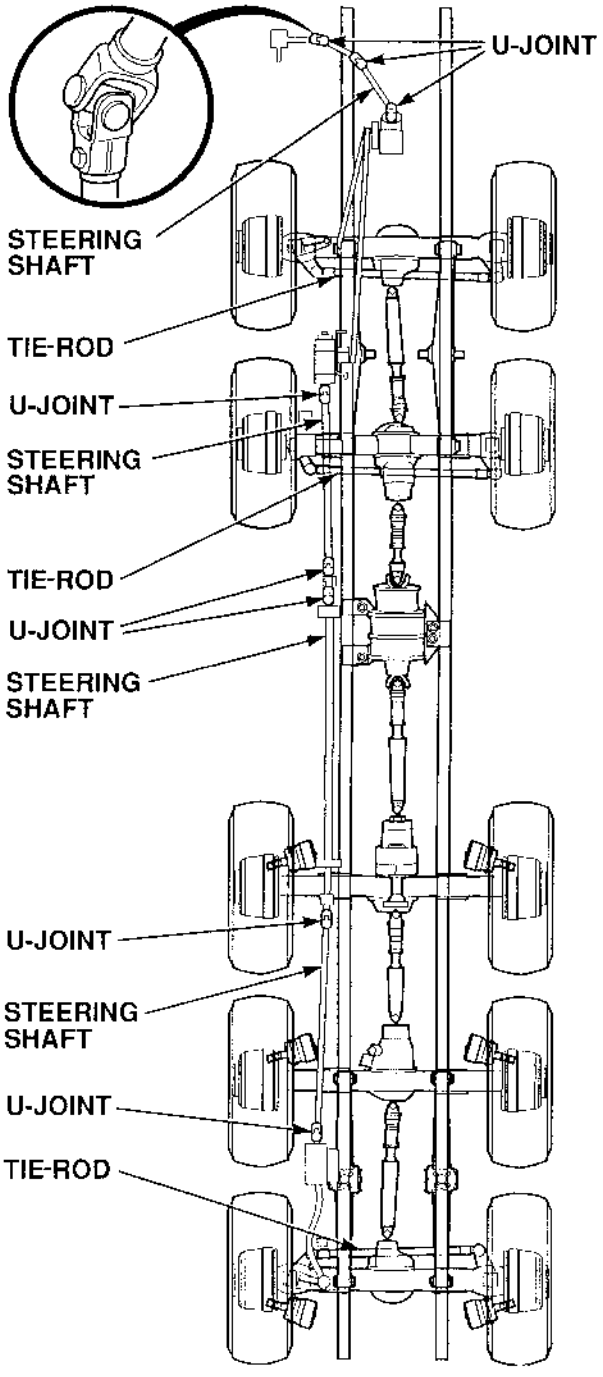
Personnel Required
Two

References
TM 9-2320-364-10

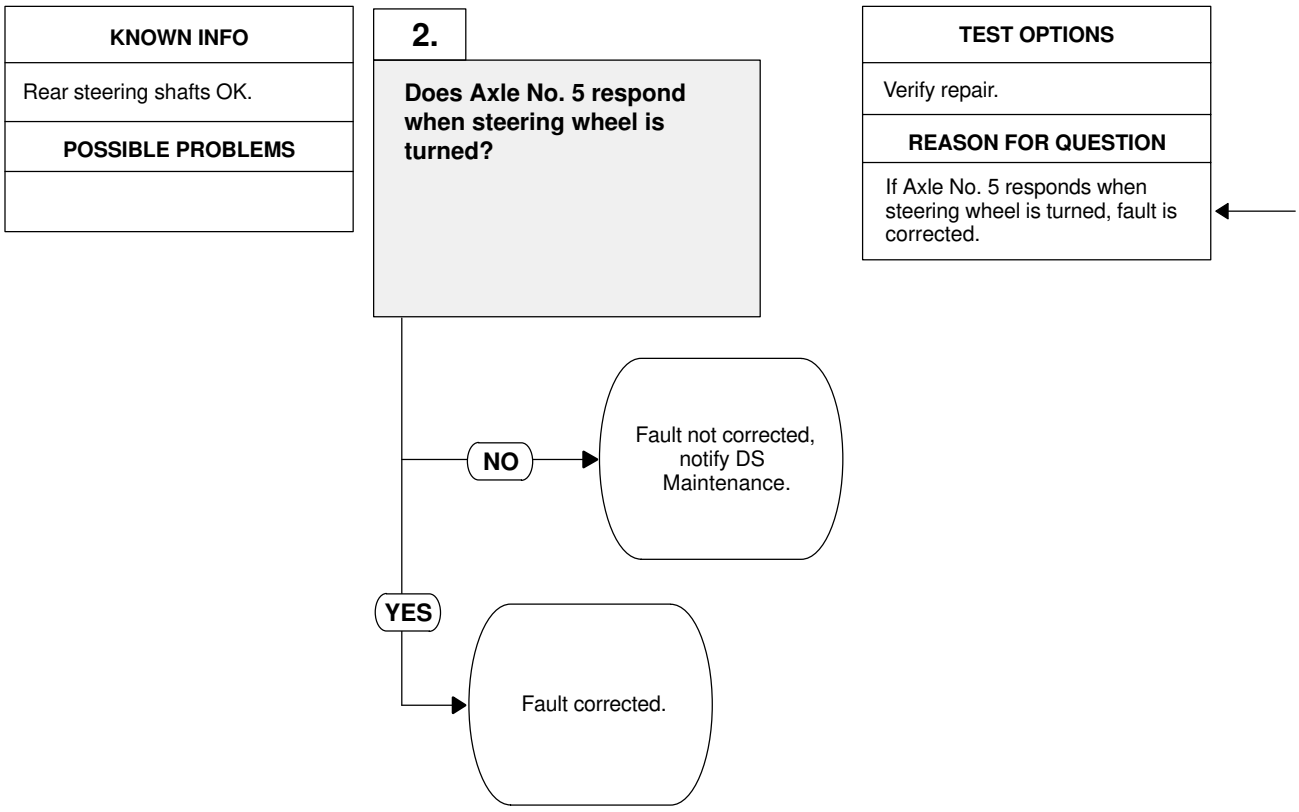
Equipment Condition
Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)



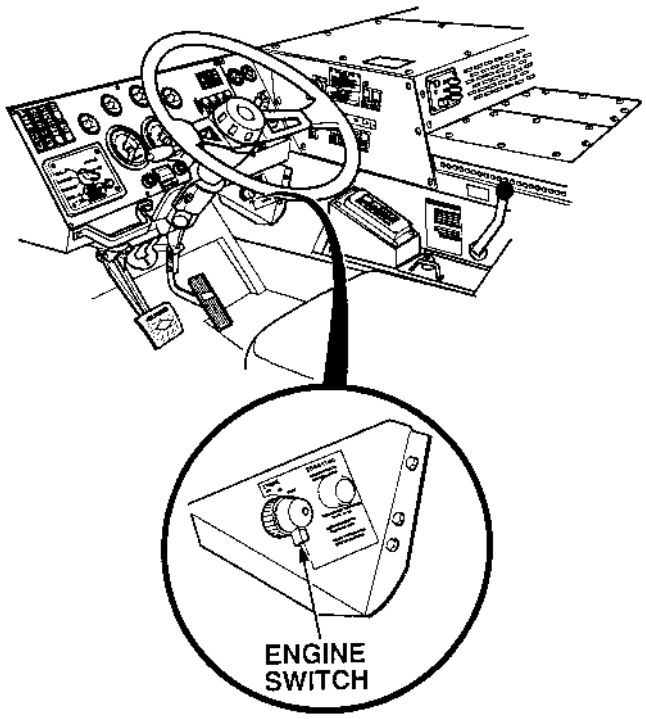
VISUAL INSPECTION
(1) While assistant starts engine (TM 9-2320-364-10) and turns steering wheel, observe steering shafts, tie-rods and U-joints. (a) If steering shafts, tie-rods and/or U-joints are loose, binding or damaged, turn OFF ENGINE switch and replace damaged parts (Para 14-8, 14-10, and/or 14-11). (b) If steering shafts, tie-rods and/or U-joints are OK, turn OFF ENGINE switch and go to Step 2 of this Fault. (2) Inspect tie-rods and steering shaft's U-joints for correct lubrication. (a) If tie-rods and/or U-joints require lubrication, lubricate (Para 2-9). (b) If tie-rods and/or U-joints do not require lubrication, go to Step 2 of this Fault.



5. NO RESPONSE AT AXLE NO. 5 WHEN TURNING STEERING WHEEL (CONT).



VERIFY REPAIR
(1) Start engine (TM 9-2320-364-10). (2) Turn steering wheel to ensure Axle No. 5 wheels turn. (a) If Axle No. 5 wheels do not turn fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance. (b) If Axle No. 5 turns correctly, fault has been corrected. (3) Turn OFF ENGINE switch.



By Order of the Secretary of the Army:

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

Official: 

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
9911812

DISTRIBUTION:

To be distributed in accordance with the initial distribution number (IDN) 380898, requirements for TM 9-2320-364-20-3.

★U.S. GOVERNMENT PRINTING OFFICE: 1997 545–010/60527

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

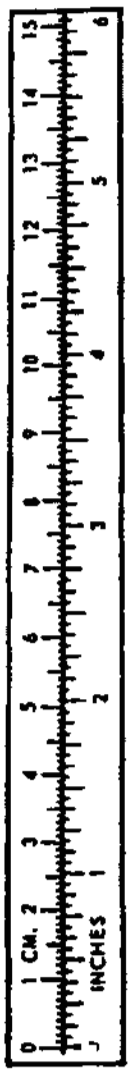
CUBIC MEASURE
1 Cu Centimeter=1000 Cu Millimeters=0.06 Cu Inches
1 Cu Meter=1,000,000 Cu Centimeters=35.31 Cu Feet

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



PIN: 072553-000