ARMY TM 9-2320-366-20-1
AIR FORCE T.O. 36A12-1C-1102-1

TECHNICAL MANUAL
MAINTENANCE INSTRUCTIONS
UNIT MAINTENANCE
M1083 SERIES, 5-TON, 6 X 6, MEDIUM TACTICAL VEHICLES (MTV)
VOLUME NO. 1 OF 5

MODEL	NSN	EIC
TRK, CAR., MTV, M1083		
W/WN	**2320-01-360-1895**	**BT3**
W/O WN	**2320-01-354-3386**	**BR2**
TRK, CAR., MTV, W/MATL HDLG EQPT (MHE), M1084	**2320-01-354-3387**	**BR3**
TRK, CAR., MTV, LWB, M1085		
W/WN	**2320-01-360-1897**	**BT5**
W/O WN	**2320-01-354-4530**	**BR7**
TRK, CAR., MTV, LWB, W/MATL HDLG EQPT (MHE), M1086	**2320-01-354-4531**	**BR8**
TRK, TRACTOR, MTV, M1088		
W/WN	**2320-01-360-1892**	**BTY**
W/O WN	**2320-01-355-4332**	**BTJ**
TRK, WKR, MTV, M1089	**2320-01-354-4528**	**BR4**
TRK, DUMP, MTV, M1090		
W/WN	**2320-01-360-1893**	**BTZ**
W/O WN	**2320-01-354-4529**	**BR5**
TRK, CHAS, MTV, M1092	**2320-01-354-3382**	**BRZ**
TRK, CAR., MTV, AIR DROP, M1093		
W/WN	**2320-01-360-1896**	**BT4**
W/O WN	**2320-01-355-3063**	**BR9**
TRK, DUMP, MTV, AIR DROP, M1094		
W/WN	**2320-01-360-1984**	**BT2**
W/O WN	**2320-01-355-3062**	**BTK**
TRK, CHAS, MTV, LWB, M1096	**2320-01-354-4527**	**BR6**

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

HEADQUARTERS, DEPARTMENTS OF THE ARMY AND THE AIR FORCES

SEPTEMBER 1998

WARNING SUMMARY

WARNING

EXHAUST GASES CAN KILL

1. **DO NOT** operate your vehicle engine in an enclosed area.
2. **DO NOT** idle vehicle engine with cab windows closed.
3. **DO NOT** drive vehicle with inspection plates or covers removed.
4. **BE ALERT** at all times for exhaust odors.
5. **BE ALERT** for exhaust poisoning symptoms, they are:

   Headache

   Dizziness

   Sleepiness

   Loss of Muscular Control

6. **IF YOU SEE** another person with exhaust poisoning symptoms:

   Remove person from area.

   Expose to open air.

   Keep person warm.

   Do not permit person to move.

   Administer cardiopulmonary resuscitation, if necessary.*

* For cardiopulmonary resuscitation, refer to FM 21-11.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection and rubber gloves when working with batteries. Failure to comply may result in injury to personnel.

WARNING

Do not work on fuel system when engine is hot; fuel can be ignited by a hot engine.

WARNING SUMMARY (CONT)

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. Failure to comply may result in injury to personnel.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. 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. Failure to comply may result in injury to personnel.

WARNING

Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in 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 I Dry Cleaning Solvent is 100°F (38°C) and for Type II is 130°F (50°C). Failure to comply may result in serious injury or death to personnel.

If personnel become dizzy while using Dry Cleaning Solvent, immediately get fresh air and medical help. If Dry Cleaning Solvent contacts skin or clothes, flush with cold water. If Dry Cleaning Solvent contacts eyes, immediately flush eyes with water and get immediate medical attention. Failure to comply may result in injury to personnel.

WARNING

Diesel fuel is flammable. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

WARNING

Diesel fuel is flammable. Do not fill fuel tank with engine running, while smoking, or when near an open flame. Never overfill the tank or spill fuel. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

WARNING

Use care when removing/installing springs. Springs are under tension and can act as projectiles when being removed. Failure to comply can cause injury to personnel.

WARNING

Adhesive sealant MIL-S-46163 can damage your eyes. Wear safety goggles/glasses when using; avoid contact with eyes. If sealant contacts eyes, flush eyes with water and get immediate medical attention. Failure to comply may result in injury to personnel.

WARNING

After Nuclear, Biological, or Chemical (NBC) exposure of vehicle, all air filters shall be handled with extreme caution. Unprotected personnel may experience serious injury or death if residual toxic agents or radioactive material are present. If vehicle 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. Failure to comply may result in serious injury or death to personnel.

WARNING

Ensure exhaust system is cool before performing maintenance. Failure to comply may result in injury to personnel.

WARNING

Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

WARNING

Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel, fuel lines or fuel tanks. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Do not operate vehicle with muffler removed. Toxic exhaust fumes may enter cab, resulting in serious injury or death to personnel.

WARNING SUMMARY (CONT)

WARNING

Exhaust pipe, transmission oil lines, and transmission scavenge pump hose may be hot to the touch. Extreme care should be taken when checking exhaust pipe, transmission oil lines, and transmission scavenge pump hose for leaks. Failure to comply may result in injury to personnel.

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

Wheel drum weighs approximately 90 lbs (41 kgs). Use the aid of an assistant to help remove wheel drum. Failure to comply may result in injury to personnel.

WARNING

Wheel drum weighs approximately 90 lbs (41 kgs). Use the aid of an assistant to help install wheel drum. 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 to personnel.

WARNING

Cage spring brake before air chamber is removed or severe injury to personnel will occur.

WARNING

Ensure air chamber is caged prior to installation. Failure to comply may result in injury to personnel.

WARNING

Ensure that tire is totally deflated before removing self-locking nuts. Failure to comply may result in serious injury or death to personnel.

WARNING

Spring brakes must be caged before attempting replacement of a rear axle wheel stud. Failure to comply may result in severe injury to personnel.

WARNING

Wear protective goggles to protect against possible injury from release of high pressure air. 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. Failure to comply may result in injury to personnel.

WARNING

Hydraulic fluid (MIL-H-5606) is TOXIC. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that come in contact with hydraulic oil should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

WARNING

Never let moving wire rope slide through hands, even when wearing gloves. A broken wire could cut through gloves and cut hands. Failure to comply may result in injury to personnel.

WARNING

Wear appropriate eye protection when removing rivets. Failure to comply may result in injury to personnel.

WARNING

Wear appropriate eye protection when drilling holes. Failure to comply may result in injury to personnel.

WARNING

Wear leather gloves at all times when handling winch cable. Do not allow cable to slide through hands even with gloves on. Broken wires may cause injury.

WARNING SUMMARY (CONT)

WARNING

Use extreme caution when working around moving cable. Failure to do so may result in serious injury to personnel.

WARNING

Caution must be exercised while cab is raised. Ensure that locking mechanism is functioning properly before proceeding. Failure to comply may result in death or serious injury to personnel and damage to equipment.

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may result in injury to personnel.

WARNING

Light Material Handling Crane (LMHC) weighs approximately 250 lbs (114 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel.

WARNING

Light Material Handling Crane (LMHC) mast weighs approximately 110 lbs (50 kgs). Attach a suitable lifting device prior to installation. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Light Material Handling Crane (LMHC) boom assembly weighs approximately 150 lbs (68 kgs). Use an assistant when removing boom assembly. Failure to comply may result in injury to personnel.

WARNING

Light Material Handling Crane (LMHC) boom weighs approximately 60 lbs (27 kgs). Attach a suitable lifting device prior to installation. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Machine gun ring assembly weighs approximately 350 pounds (159 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Ensure vehicle is on level ground prior to installation/removal of collapsible drums. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Ensure cargo bed is free of equipment and debris and not warped or damaged in any way. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Both collapsible drums weigh approximately 235 lbs (107 kgs) empty and 3800 lbs (1725 kgs) full. Attach a suitable lifting device prior to installation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

S-280 shelter weighs approximately 1500 lbs (680 kgs) empty. Attach a suitable lifting device prior to installation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Ensure vehicle is on level ground prior to installation or removal of tank and pump unit. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Tank weighs approximately 500 lbs (227 kgs) empty or 4000 lbs (1816 kgs) full. Attach a suitable lifting device prior to installation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING SUMMARY (CONT)

WARNING

Pump unit weighs approximately 870 lbs (395 kgs). Attach a suitable lifting device prior to installation. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Do not remove oil filter while engine is hot. Failure to comply may result in injury to personnel.

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. Failure to comply may cause serious injury or death to personnel.

WARNING

Tab of HAND THROTTLE lever must be positioned above throttle pivot bar. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Use extreme care when opening cab door with cab raised. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Do not operate vehicle with exhaust pipe removed. Toxic exhaust fumes may enter cab, resulting in serious injury or death to personnel.

WARNING

Radiator and charge air cooler assembly weigh approximately 160 lbs (73 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Cargo sling must be placed under charge air cooler inlet and outlet ports. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Alternator weighs approximately 50 lbs (23 kgs). The aid of an assistant is required to remove alternator. Failure to comply may result in injury to personnel.

WARNING

Starting motor weighs approximately 60 lbs (27 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Negative battery terminals must be connected last. Failure to comply may result in serious injury or death to personnel.

WARNING

Negative battery terminals and battery tester negative terminal lug must be disconnected first. Failure to comply may result in serious injury or death to personnel.

WARNING

Battery box weighs approximately 70 lbs (32 kgs). The aid of two assistants is required to remove battery box from vehicle frame. Failure to comply may result in injury to personnel.

WARNING

Battery box weighs approximately 70 lbs (32 kgs). The aid of two assistants is required to position battery box on vehicle frame. Failure to comply may result in injury to personnel.

WARNING

Ensure WTEC III cab transmission harness does not interfere with throttle linkage. Failure to comply may result in injury to personnel.

WARNING

Self-adjusting brakes will not self-adjust without applying brake pedal. Failure to comply may result in injury to personnel.

WARNING SUMMARY (CONT)

WARNING

Ensure air hoses are connected to correct fittings. Failure to comply may result in serious injury or death to personnel.

WARNING

Proper adjustment of load sensing valve may only be accomplished with vehicle unloaded. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Always use an inflation safety cage to inflate tires mounted on multipiece rims, and tire/rim assemblies not mounted on a tire changing machine that has a positive lock down device designed to hold the assembly during inflation (TM 9-2610-200-14). When using a tire changing machine, always follow manufacturer's mounting and safety instructions. Failure to comply may result in serious injury or death to personnel. Always inflate tires that are mounted on rims with demountable side ring flanges or lockrings in an inflation safety cage or serious injury or death may result.

WARNING

Tire weighs approximately 350 lbs (159 kgs). Use extreme care when handling tire. Failure to comply may result in injury to personnel.

WARNING

Wheel drum weighs approximately 92 lbs (42 kgs). Use the aid of an assistant to help remove wheel drum from axle. Failure to comply may result in injury to personnel.

WARNING

The sudden release of high pressure air can cause damage to eyes. Wear appropriate eye protection when working near pressurized air. Failure to comply may result in injury to personnel.

WARNING

Leave shackles installed in front bumper to support front bumper until ready to remove. Failure to comply may result in injury to personnel.

WARNING

Front bumper weighs approximately 100 lbs (45 kgs). Use the aid of an assistant to remove front bumper. Failure to comply may result in injury to personnel.

WARNING

Tractor platform weighs approximately 550 lbs (250 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Spare tire retainer weighs approximately 150 lbs (68 kgs). The aid of two assistants is required to remove spare tire retainer from vehicle. Failure to comply may result in injury to personnel.

WARNING

Rear stabilizer bar weighs approximately 50 lbs (22 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Cab roof weighs approximately 110 lbs (50 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel.

WARNING

Use care when removing/installing window. Do not force window, or window may shatter. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Tailgate assembly weighs approximately 130 lbs (59 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Tow bar weighs approximately 150 lbs (68 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING SUMMARY (CONT)

WARNING

Rear tool box weighs approximately 75 lbs (34 Kgs) empty. Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Cable can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling cable. Frayed or broken wires can injure hands. Failure to comply may result in injury to personnel.

WARNING

Remote control must be used to operate 30K winch while breaking in cables. Failure to comply may result in injury to personnel.

WARNING

Cab weighs approximately 3000 lbs (1362 kgs) attach a suitable lifting device prior to raising cab. Failure to comply may result in injury to personnel.

WARNING

Hydraulic tank weighs approximately 190 lbs (86 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Extreme care must be taken when lowering gravel deflector. Coolant hoses could be pulled loose. Failure to comply could result in serious eye injury.

WARNING

Retaining rings are under tension and can act as projectiles when released causing severe eye injury. Use care when installing retaining rings. Failure to comply may result in injury to personnel.

WARNING

Do not open coolant fill cap if temperature reads above 110 degrees F (43 degrees C). Steam or hot coolant is under pressure. Failure to comply may result in injury to personnel.

WARNING

Pressure in reservoir tank must be released before removing cap. Failure to comply may result in injury to personnel.

WARNING

200 amp alternator weighs approximately 72 lbs (33 kgs). The aid of an assistant is required to install 200 amp alternator. Failure to comply may result in injury to personnel.

WARNING

100 amp alternator weighs approximately 70 lbs (32 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel.

WARNING

Both collapsible drums weigh approximately 235 lbs (107 kgs) empty and 3800 lbs (1725 kgs) full each. Attach a suitable lifting device prior to removal. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Air dryer may contain air pressure. Loosen input air hose connector slowly to vent off air pressure. Failure to comply may result in injury to personnel.

WARNING

Radiator and charge air cooler assembly weigh approximately 160 lbs (73 Kgs). Attach a suitable lifting device prior to installation. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Tractor platform weighs approximately 550 lbs (250 kgs). Attach a suitable lifting device prior to installation. Failure to comply may result in injury to personnel or damage to equipment.

WARNING SUMMARY (CONT)

WARNING

Spare tire retainer weighs approximately 150 lbs (68 kgs). The aid of two assistants is required to install spare tire retainer on vehicle. Failure to comply may result in injury to personnel.

WARNING

Rear stabilizer bar weighs approximately 50 lbs (22 kgs). Attach a suitable lifting device prior to installation. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Cab roof weighs approximately 110 lbs (50 kgs). Attach a suitable lifting device prior to installation. Failure to comply may result in injury to personnel.

WARNING

Do not remove radiator cap when the engine is hot; steam and hot coolant can escape and burn skin. Failure to comply may result in injury to personnel.

WARNING

Wear appropriate eye protection when removing spring rings. Spring rings are under tension and can act as projectiles when being removed. Failure to comply may result in injury to personnel.

WARNING

Wear appropriate eye protection when installing spring rings. Spring rings are under tension and can act as projectiles when being installed. Failure to comply may result in injury to personnel.

CHANGE
NO. 2

HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, D.C., 20 August 2005

TECHNICAL MANUAL
MAINTENANCE INSTRUCTIONS
UNIT MAINTENANCE
M1083 SERIES, 5-TON, 6x6, MEDIUM TACTICAL VEHICLE (MTV)

VOLUME NO. 1 OF 5

TM 9-2320-366-20-1, 15 September 1998, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the out margin of the page.
3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.

Remove Pages	Insert Pages
e and f	e and f
A thru L	A thru L
none	M thru O/(P Blank)
vii and viii	vii and viii
2-21 and 2-22	2-21 and 2-22
2-137 thru 2-148	2-137 thru 2-148
2-155 and 2-156	2-155 and 2-156
2-335 thru 2-338	2-335 thru 2-338
none	2-338.1 and 2-338.2
2-339 thru 2-342	2-339 thru 2-342
2-380.3 and 2-380.4	2-380.3 and 2-380.4
2-380.5 thru 2-380.10	2-380.5 and 2-380.10
none	2-418.1 thru 2-418.16
2-419 and 2-420	2-419 and 2-420
B-5 thru B-8	B-5 thru B-8
B-27 thru B-29/ (B-30 Blank)	B-27 thru B-29/ (B-30 Blank)
C-1 thru C-4	C-1 thru C-4
D-1 thru D-6	D-1 thru D-6
G-1 thru G-12	G-1 thru G-12
H-1 thru H-32	H-1 thru H-32
K-1 thru K-4	K-1 thru K-4
INDEX-9 thru INDEX-16	INDEX-9 thru INDEX-16
INDEX-19 thru INDEX-22	INDEX-19 thru INDEX-22
INDEX-25 thru INDEX-36	INDEX-25 thru INDEX-36
INDEX-39 thru INDEX-54	INDEX-39 thru INDEX-54
FO-1 FP-69/(FP-70 Blank)	FO-1 FP-69/(FP-70 Blank)
Metric Conversion Chart /PIN	Metric Conversion Chart /PIN

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

By Order of the Secretary of the Army:

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ARMY TM 9-2320-366-20-1
AIR FORCE T.O. 36A12-1C-1102-1

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE

Washington, D.C., 1 July 2003

TECHNICAL MANUAL
MAINTENANCE INSTRUCTIONS
UNIT MAINTENANCE
M1083 SERIES, 5-TON, 6x6, MEDIUM TACTICAL VEHICLE (MTV)

VOLUME NO. 1 OF 5

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Remove Pages	Insert Pages
m and n	m and n
none	A thru L
i thru xii	i thru xii
none	xiii thru xiv
1-39 and 1-40	1-39 and 1-40
2-1 and 2-2	2-1 and 2-2
none	2-2.1/(2-2.2 Blank)
2-3 and 2-4	2-3 and 2-4
2-15 and 2-16	2-15 and 2-16
none	2-18.1/(2-18.2 Blank)
2-19 thru 2-22	2-19 thru 2-22
2-59 thru 2-76	2-59 thru 2-76
2-77 and 2-78	2-77/(2-78 Blank)
2-79 thru 2-80	(2-79 Blank)/2-80
2-81 and 2-82	2-81 and 2-82
2-107/(2-108 Blank)	2-107 and 2-108
none	2-108.1 thru 2-108.7/ (2-108.8 Blank)
2-109 thru 2-114	2-109 thru 2-114
none	2-114.1 thru 2-114.8
2-115 and 2-116	2-115 and 2-116
2-127 and 2-128	2-127 and 2-128
2-137 thru 2-152	2-137 thru 2-152
none	2-152.1 thru 2-152.4
2-153/(2-154 Blank)	2-153/(2-154 Blank)
2-155 and 2-156	2-155 and 2-156
none	2-156.1 and 2-156.2
(2-157 Blank)/2-158	2-157 and 2-158
2-159 thru 2-162	2-159 thru 2-162
none	2-162.1 thru 2-162.4
2-163 thru 2-266	2-163 thru 2-266
none	2-266.1 thru 2-266.34
2-267 thru 2-284	2-267 and 2-284

Remove Pages	Insert Pages
none	2-284.1 thru 2-284.24
2-285 and 2-286	2-285/(2-286 Blank)
2-287 thru 2-308	none
2-309 and 2-310	(2-309 Blank)/2-310
2-311 thru 2-316	2-311 thru 2-316
none	2-316.1 thru 2-316.4
2-317 and 2-322	2-317 and 2-322
none	2-322.1 and 2-322.2
2-323 thru 2-326	2-323 thru 2-326
none	2-326.1 thru 2-326.4
2-327 thru 2-330	2-327 thru 2-330
none	2-330.1 thru 2-330.8
2-331 thru 2-334	2-331 thru 2-334
none	2-334.1 thru 2-334.8
2-335 and 2-336	2-335 and 2-336
2-341 thru 2-354	2-341 thru 2-354
none	2-354.1 thru 2-354.6
2-355 and 2-356	2-355 and 2-356
none	2-356.1 thru 2-356.6
2-357 thru 2-366	2-357 thru 2-366
none	2-366.1 thru 2-366.8
2-367 thru 2-380	2-367 thru 2-380
none	2-380.1 thru 2-380.12
2-381 thru 2-386	2-381 thru 2-386
none	2-386.1 thru 2-386.14
2-387 thru 2-390	2-387 thru 2-390
none	2-390.1 thru 2-390.26
2-391 thru 2-394	2-391 thru 2-394
none	2-394.1 thru 2-394.6
2-395 and 2-396	2-395 and 2-396
2-399 thru 2-402	2-399 thru 2-402
none	2-402.1 thru 2-402.4
2-403 and 2-404	2-403 and 2-404

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

Remove Pages	Insert Pages
2-453 thru 2-470	2-453 thru 2-470
2-511 thru 2-516	2-511 thru 2-516
none	2-516.1 and 2-516.2
2-517 thru 2-522	2-517 thru 2-522
none	2-522.1 and 2-522.2
2-523 and 2-524	2-523 and 2-524
2-531 thru 2-538	2-531 thru 2-538
none	2-538.1 and 2-538.2
2-539 and 2-540	2-539 and 2-540
2-561 and 2-562	2-561 and 2-562
none	2-562.1 and 2-562.2
2-563 thru 2-566	2-563 thru 2-566
none	2-566.1 and 2-566.2
2-567 thru 2-570	2-567 thru 2-570
none	2-570.1 thru 2-570.6
2-571 and 2-572	2-571 and 2-572
none	2-572.1 and 2-572.2
2-573 thru 2-576	2-573 thru 2-576
none	2-576.1 and 2-576.2
2-577 thru 2-580	2-577 thru 2-580
none	2-580.1 thru 2-580.6
2-581 thru 2-586	2-581 thru 2-586
none	2-586.1 and 2-586.2
2-587 thru 2-600	2-587 thru 2-600
none	2-600.1 thru 2-600.12
2-601 thru 2-604	2-601 thru 2-604
none	2-604.1 thru 2-604.186
2-605 thru 2-612	2-605 thru 2-612
none	2-612.1 thru 2-612.40
2-613 thru 2-616	2-613 thru 2-616
2-635 thru 2-642	2-635 thru 2-641/(2-642 Blank)
2-643 and 2-644	(2-643 Blank)/2-644
2-645 and 2-646	2-645 and 2-646
2-669 thru 2-706	2-669 thru 2-705/(2-706 Blank)
2-707 and 2-708	(2-707 Blank)/2-708
2-709 thru 2-718	2-709 thru 2-717/(2-718 Blank)
2-719 and 2-720	(2-719 Blank)/2-720
2-721 and 2-722	2-721 and 2-722
2-741 thru 2-746	2-741 thru 2-746
none	2-746.1 and 2-746.2
2-747 and 2-748	2-747 and 2-748
none	2-748.1 and 2-748.2
2-749 and 2-750	2-749 and 2-750
none	2-750.1 and 2-750.2
2-751 thru 2-754	2-751 thru 2-754
none	2-754.1 and 2-754.2
2-755 thru 2-758	2-755 thru 2-758
none	2-758.1 and 2-758.2
2-759 thru 2-772	2-759 thru 2-772
2-785 thru 2-836	2-785 thru 2-836
2-839 thru 2-858	2-839 thru 2-858
A-1 thru A-4	A-1 thru A-4
B-3 and B-4	B-3 and B-4
B-23 thru B-30	B-23 thru B-29/(B-30 Blank)
C-1 thru C-4	C-1 thru C-4

Remove Pages	Insert Pages
D-1 thru D-5/(D-6 Blank)	D-1 thru D-6
None	D-7/(D-8 Blank)
E-1 thru E-6	E-1 thru E-6
E-15 and E-16	E-15 and E-16
none	E-27 thru E-31/(E-32 Blank)
G-1 thru G-11/(G12 Blank)	G-1 thru G-12
H-1 thru H-12	H-1 thru H-12
H-21 and H-22	H-21 and H-22
H-25 thru H-28	H-25 thru H-28
H-31 and H-32	H-31 and H-32
none	K-1 thru K-4
Index-1 thru Index-54	Index-1 thru Index-54
FO-1 FP-1/(FP-2 Blank) thru FP-21/FP-22 Blank)	FO-1 FP-1/(FP-2 Blank) thru FP-21/(FP-22 Blank)
FO-1 FP-25/(FP-26 Blank)	FO-1 FP-25/(FP-26 Blank)
FO-1 FP-29/(FP-30 Blank) thru FP-67/(FP-68 Blank)	FO-1 FP-29/(FP-30 Blank) thru FP-67/(FP-68 Blank)
FO-1 FP-75/(FP-76 Blank) thru FP-79/(FP-80 Blank)	FO-1 FP-75/(FP-76 Blank) thru FP-79/(FP-80 Blank)
DA FORM 2028-2 Sample	DA FORM 2028-2 Sample
DA FORM 2028-2	DA FORM 2028-2
DA FORM 2028-2	DA FORM 2028-2
DA FORM 2028-2	DA FORM 2028-2
Metric Conversion Chart	Metric Conversion Chart
Cover	Cover

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

By Order of the Secretary of the Army:

JOHN M. KEANE
General, United States Army
Chief of Staff

Official:

Joel B. Hudson
JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0110109

DISTRIBUTION: To be distributed in accordance with the Initial Distribution Number (IDN) 380940, requirements for TM 9-2320-366-20-1.

LIST OF EFFECTIVE PAGES

Insert latest changed pages. Destroy superseded pages.

NOTE: New or changed material is indicated by a vertical bar in the outer margin of the page.

Dates of issue for original and changed pages are:

Original .... 0..........15 September 1998
Change .... 1.....................1 July 2003
Change .... 2.....................20 August 2005

THE TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 7226, CONSISTING OF THE FOLLOWING:

Page No.	*Change No.
VOLUME 1	
Cover	1
Blank	0
a thru e	0
f	2
g thru l	0
m and n	1
A thru L	2
M thru O Added	2
P Blank Added	2
i	1
ii and iii	0
iv thru vi	1
vii	2
viii thru xii	1
xiii thru xiv Added	1
1-1 thru 1-39	0
1-40	1
1-41 thru 1-45	0
1-46 Blank	0
2-1 and 2-2	1
2-2.1 Added	1
2-2.2 Blank Added	1
2-3	0
2-4	1
2-5 thru 2-15	0
2-16	1
2-17 and 2-18	0
2-18.1 Added	1
2-18.2 Blank Added	1
2-19 and 2-20	1
2-21 and 2-22	2
2-23 thru 2-58	0
2-59	1
2-60	0
2-61 thru 2-77	1
2-78 Blank	1
2-79 Blank	1
2-80 and 2-81	1
2-82 thru 2-106	0
2-107 and 2-108	1
2-108.1 thru 2-108.7 Added	1
2-108.8 Blank Added	1
2-109 thru 2-114	1
2-114.1 thru 2-114.8 Added	1
2-115	1
2-116 thru 2-125	0
2-126 Blank	0
2-127	1
2-128 thru 2-135	0
2-136 Blank	0
2-137	1
2-138	2
2-139	1
2-140 thru 2-144	2
2-145	1
2-146 thru 2-148	2
2-149 thru 2-152	1
2-152.1 thru 2-152.4 Added	1
2-153	1
2-154 Blank	0
2-155	2
2-156	1
2-156.1 and 2-156.2 Added	1
2-157 thru 2-162	1
2-162.1 thru 2-162.4 Added	1
2-163 thru 2-266	1
2-266.1 thru 2-266.34 Added	1
2-267 thru 2-284	1
2-284.1 thru 2-284.24 Added	1
2-285	1
2-286 Blank	1
2-287 thru 2-308 Deleted	1
2-309 Blank	1
2-310 thru 2-316	1
2-316.1 thru 2-316.4 Added	1
2-317 thru 2-322	1
2-322.1 and 2-322.2 Added	1
2-323 thru 2-326	1
2-326.1 thru 2-326.4 Added	1
2-327 thru 2-330	1
2-330.1 thru 2-330.8 Added	1
2-331 thru 2-334	1
2-334.1 thru 2-334.8 Added	1
2-335	1
2-336 thru 2-338	2
2-338.1 and 2-338.2 Added	2
2-339 thru 2-341	2
2-342 thru 2-354	1
2-354.1 thru 2-354.6 Added	1
2-355 and 2-356	1
2-356.1 thru 2-356.6 Added	1
2-357 thru 2-366	1
2-366.1 thru 2-366.8 Added	1
2-367 thru 2-380	1
2-380.1 thru 2-380.3	1
2-380.4 and 2-380.5	2
2-380.6 thru 2-380.9 Deleted	2
2-380.10 thru 2-380.12 Added	1
2-381 thru 2-386	1
2-386.1 thru 2-386.14 Added	1
2-387 thru 2-390	1
2-390.1 thru 2-390.26 Added	1
2-391 thru 2-394	1
2-394.1 thru 2-394.6 Added	1
2-395	1
2-396 thru 2-399	0
2-400 thru 2-402	1
2-402.1 thru 2-402.4 Added	1
2-403	1
2-404 thru 2-418	0
2-418.1 thru 2-418.16	2
2-419	2
2-420 thru 2-453	0
2-454 thru 2-469	1
2-470 thru 2-511	0
2-512 thru 2-516	1
2-516.1 and 2-516.2 Added	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
2-517 thru 2-522	1
2-522.1 and 2-522.2 Added	1
2-523	1
2-524 thru 2-531	0
2-532 thru 2-538	1
2-538.1 and 2-538.2 Added	1
2-539	1
2-540 thru 2-561	0
2-562	1
2-562.1 and 2-562.2 Added	1
2-563 thru 2-566	1
2-566.1 and 2-566.2 Added	1
2-567 thru 2-570	1
2-570.1 thru 2-570.6 Added	1
2-571 and 2-572	1
2-572.1 and 2-572.2 Added	1
2-573 thru 2-576	1
2-576.1 and 2-576.2 Added	1
2-577 thru 2-580	1
2-580.1 thru 2-580.6 Added	1
2-581 thru 2-586	1
2-586.1 and 2-586.2 Added	1
2-587 thru 2-600	1
2-600.1 thru 2-600.12 Added	1
2-601 thru 2-604	1
2-604.1 thru 2-604.186 Added	1
2-605 thru 2-612	1
2-612.1 thru 2-612.40 Added	1
2-613 thru 2-615	1
2-616 thru 2-635	0
2-636 thru 2-641	1
2-642 Blank	1
2-643 Blank	1
2-644 and 2-645	1
2-646 thru 2-669	0
2-670 thru 2-705	1
2-706 Blank	1
2-707 Blank	1
2-708 thru 2-717	1
2-718 Blank	1
2-719 Blank	1
2-720 and 2-721	1
2-722 thru 2-741	0
2-742 thru 2-746	1
2-746.1 and 2-746.2 Added	1
2-747 and 2-748	1
2-748.1 and 2-748.2 Added	1
2-749 and 2-750	1
2-750.1 and 2-750.2 Added	1
2-751 thru 2-754	1
2-754.1 and 2-754.2 Added	1
2-755 thru 2-758	1
2-758.1 and 2-758.2 Added	1
2-759 thru 2-771	1
2-772 thru 2-785	0
2-786 thru 2-835	1
2-836 thru 2-839	0
2-840 thru 2-857	1
2-858 thru 2-941	0
2-942 Blank	0
A-1	0
A-2 and A-3	1
A-4	0
B-1 thru B-3	0
B-4	1
B-5	2
B-6 and B-7	0
B-8	2
B-9 thru B-23	0
B-24 thru B-26	1
B-27	2
B-28	1
B-29	2
B-30 Blank	1
C-1	0
C-2 thru C-4	2
D-1	1
D-2 and D-3	2
D-4 and D-5	1
D-6	2
D-7 Added	1
D-8 Blank Added	1
E-1	1
E-2 and E-3	0
E-4 and E-5	1
E-6 thru E-14	0
E-15	1
E-16 thru E-26	0
E-27 thru E-31 Added	1
E-32 Blank Added	1
F-1 thru F-8	0
G-1	2
G-2	1
G-3 thru G-6	2
G-7	1
G-8	2
G-9	1
G-10 thru G-12	2
H-1 thru H-6	2
H-7	0
H-8	2
H-9	0
H-10	2
H-11	1
H-12 thru H-14	2
H-15	0
H-16	2
H-17	0
H-18 thru H-20	2
H-21	1
H-22	2
H-23	0
H-24	2
H-25	0
H-26 thru H-28	2
H-29	0
H-30 thru H-32	2
J-1	0
J-2 Blank	0
K-1 Added	1
K-2 and K-3	2
K-4 Added	1
Index-1 thru Index-9	1
Index-10 thru Index-15	2
Index-16 thru Index-18	1
Index-19 thru Index-21	2
Index-22 thru Index-24	1
Index-25	2
Index-26 and Index-27	1
Index-28	2
Index-29	1
Index-30	2
Index-31	1
Index-32 and Index-33	2
Index-34	1
Index-35 and Index-36	2
Index-37 and Index-38	1
Index-39 thru Index-41	2
Index-42	1
Index-43	2
Index-44	1
Index-45 and Index-46	2
Index-47	1
Index-48 thru Index-50	2
Index-51	1
Index-52 and Index-53	2
Index-54	1
Glossary-1 and Glossary-2	0

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
FO-1 FP-1	1
FO-1 FP-2 Blank	0
FO-1 FP-3	1
FO-1 FP-4 Blank	0
FO-1 FP-5	1
FO-1 FP-6 Blank	0
FO-1 FP-7	1
FO-1 FP-8 Blank	0
FO-1 FP-9	1
FO-1 FP-10 Blank	0
FO-1 FP-11	1
FO-1 FP-12 Blank	0
FO-1 FP-13	1
FO-1 FP-14 Blank	0
FO-1 FP-15	1
FO-1 FP-16 Blank	0
FO-1 FP-17	1
FO-1 FP-18 Blank	0
FO-1 FP-19	1
FO-1 FP-20 Blank	0
FO-1 FP-21	1
FO-1 FP-22 Blank	0
FO-1 FP-23	0
FO-1 FP-24 Blank	0
FO-1 FP-25	1
FO-1 FP-26 Blank	0
FO-1 FP-27	0
FO-1 FP-28 Blank	0
FO-1 FP-29	1
FO-1 FP-30 Blank	0
FO-1 FP-31	1
FO-1 FP-32 Blank	0
FO-1 FP-33	1
FO-1 FP-34 Blank	0
FO-1 FP-35	1
FO-1 FP-36 Blank	0
FO-1 FP-37	1
FO-1 FP-38 Blank	0
FO-1 FP-39	1
FO-1 FP-40 Blank	0
FO-1 FP-41	1
FO-1 FP-42 Blank	0
FO-1 FP-43	1
FO-1 FP-44 Blank	0
FO-1 FP-45	1
FO-1 FP-46 Blank	0
FO-1 FP-47	1
FO-1 FP-48 Blank	0
FO-1 FP-49	1
FO-1 FP-50 Blank	0
FO-1 FP-51	1
FO-1 FP-52 Blank	0
FO-1 FP-53	1
FO-1 FP-54 Blank	0
FO-1 FP-55	1
FO-1 FP-56 Blank	0
FO-1 FP-57	1
FO-1 FP-58 Blank	0
FO-1 FP-59	1
FO-1 FP-60 Blank	0
FO-1 FP-61	1
FO-1 FP-62 Blank	0
FO-1 FP-63	1
FO-1 FP-64 Blank	0
FO-1 FP-65	1
FO-1 FP-66 Blank	0
FO-1 FP-67	1
FO-1 FP-68 Blank	0
FO-1 FP-69	2
FO-1 FP-70 Blank	0
FO-1 FP-71	0
FO-1 FP-72 Blank	0
FO-1 FP-73	0
FO-1 FP-74 Blank	0
FO-1 FP-75	1
FO-1 FP-76 Blank	0
FO-1 FP-77	1
FO-1 FP-78 Blank	0
FO-1 FP-79	1
FO-1 FP-80 Blank	0
FO-2 FP-1	0
FO-2 FP-2 Blank	0
FO-2 FP-3	0
FO-2 FP-4 Blank	0
FO-2 FP-5	0
FO-2 FP-6 Blank	0
FO-2 FP-7	0
FO-2 FP-8 Blank	0
FO-3 FP-1	0
FO-3 FP-2 Blank	0
FO-3 FP-3	0
FO-3 FP-4 Blank	0
FO-3 FP-5	0
FO-3 FP-6 Blank	0
FO-3 FP-7	0
FO-3 FP-8 Blank	0
FO-3 FP-9	0
FO-3 FP-10 Blank	0
FO-3 FP-11	0
FO-3 FP-12 Blank	0
FO-3 FP-13	0
FO-3 FP-14 Blank	0
FO-3 FP-15	0
FO-3 FP-16 Blank	0
FO-4 FP-1	0
FO-4 FP-2 Blank	0
FO-4 FP-3	0
FO-4 FP-4 Blank	0
FO-5 FP-1	0
FO-5 FP-2 Blank	0
FO-5 FP-3	0
FO-5 FP-4 Blank	0
FO-5 FP-5	0
FO-5 FP-6 Blank	0
VOLUME 2	
Cover	1
Blank	0
a thru e	0
f	2
g thru l	0
m and n	1
A and B	2
C Added	2
D Blank Added	2
i and ii	1
iii	2
iv	1
v and vi	1
2-942.1 Added	1
2-942.2 Blank Added	1
2-943	0
2-944 and 2-945	1
2-946 thru 2-958.6	2
2-958.7 thru 2-958.20 Added	2
2-959	2
2-960 thru 2-1049	0
2-1050 thru 2-1056	1
2-1056.1 thru 2-1056.10 Added	1
2-1057	1
2-1058 thru 2-1161	0
2-1162 thru 2-1169	2
2-1170 thru 2-1445	0
2-1446 thru 2-1446.3	2
2-1446.4 thru 2-1446.11 Deleted	2
2-1446.12 Added	1
2-1447 thru 2-1450	1
2-1450.1 thru 2-1450.28 Added	1
2-1451 thru 2-1456	1
2-1456.1 thru 2-1456.22 Added	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
2-1457	1
2-1458 thru 2-1467	0
2-1468 thru 2-1478	1
2-1478.1 and 2-1478.2 Added	1
2-1479	1
2-1480	2
2-1481	1
2-1482 thru 2-1484	2
2-1485	1
2-1486	2
2-1487	1
2-1488	2
2-1489	1
2-1490	2
2-1490.1 Added	1
2-1490.2	2
2-1490.3 Added	1
2-1490.4	2
2-1490.5 Added	1
2-1490.6	2
2-1491	1
2-1492	2
2-1493	1
2-1494 thru 2-1496	2
2-1497	1
2-1498	2
2-1499	1
2-1500	2
2-1501	1
2-1502	2
2-1502.1 Added	1
2-1502.2	2
2-1502.3 Added	1
2-1502.4	2
2-1502.5 Added	1
2-1502.6	2
2-1503	1
2-1504 thru 2-1539	0
2-1540 thru 2-1557	1
2-1558 thru 2-1579	0
2-1580 Blank	0
2-1581 and 2-1582	2
2-1583 Blank	0
2-1584 and 2-1585	0
2-1586 thru 2-1612	1
2-1612.1 and 2-1612.2 Added	1
2-1613 thru 2-1623	1
2-1624	2
2-1625	1
2-1626	2
2-1627 thru 2-1664	1
2-1665	2
2-1666 thru 2-1686	1
2-1686.1 and 2-1686.2 Added	1
2-1687 thru 2-1706	1
2-1706.1 thru 2-1706.42 Added	1
2-1707	1
2-1708 and 2-1709	0
2-1710	1
2-1710.1 thru 2-1710.4 Added	1
2-1711 thru 2-1734	1
2-1734.1 and 2-1734.2 Added	1
2-1735 thru 2-1747	1
2-1748 thru 2-1751	2
2-1752 thru 2-1794	1
2-1794.1 and 2-1794.2 Added	1
2-1795 thru 2-1819	1
2-1820 and 2-1821	0
2-1822	1
2-1822.1 thru 2-1822.29 Added	1
2-1822.30 Blank Added	1
2-1823 thru 2-1829	1
2-1830 Blank	0
2-1831 thru 2-1833	0
2-1834 Blank	0
2-1835	1
2-1836 thru 2-1877	0
2-1878	2
2-1879	1
2-1880	2
2-1881	1
2-1882	2
2-1883	1
2-1884	2
2-1885	1
2-1886	2
2-1887	1
2-1888	2
2-1889	1
2-1890	2
2-1891	1
2-1892	2
2-1893	1
2-1894	2
2-1895	1
2-1896	2
2-1897	1
2-1898	2
2-1899	1
2-1900 Blank	1
2-1901 and 2-1902 Deleted	1
2-1903 Blank	1
2-1904 thru 2-1931	1
2-1932 Blank	1
2-1933 Blank	1
2-1934	1
2-1935 thru 2-1944	0
2-1945 and 2-1946	1
2-1946.1 Added	1
2-1946.2 Blank Added	1
2-1947 thru 2-1963	1
2-1964 thru 2-1971	0
2-1972 thru 1976	1
2-1976.1 thru 2-1976.64 Added	1
2-1977 thru 2-1981	1
2-1982 thru 2-1987	0
2-1988	1
2-1988.1 thru 2-1988.7 Added	1
2-1988.8 Blank Added	1
2-1989 thru 2-1995	0
2-1996 Blank	0
2-1997 thru 2-2005	0
2-2006 Blank	0
A-1	0
A-2 and A-3	1
A-4	0
B-1 thru B-3	0
B-4	1
B-5	2
B-6 and B-7	0
B-8	2
B-9 thru B-23	0
B-24 thru B-26	1
B-27	2
B-28	1
B-29	2
B-30 Blank	1
C-1	0
C2- thru C-4	2
D-1	1
D-2 and D-3	2
D-4 and D-5	1
D-6	2
D-7 Added	1
D-8 Blank Added	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
E-1	1
E-2 and E-3	0
E-4 and E-5	1
E-6 thru E-14	0
E-15	1
E-16 thru E-26	0
E-27 thru E-31 Added	1
E-32 Blank Added	1
F-1 thru F-8	0
G-1	2
G-2	1
G-3 thru G-6	2
G-7	1
G-8	2
G-9	1
G-10 thru G12	2
H-1 thru H-6	2
H-7	0
H-8	2
H-9	0
H-10	2
H-11	1
H-12 thru H-14	2
H-15	0
H-16	2
H-17	0
H-18 thru H-20	2
H-21	1
H-22	2
H-23	0
H-24	2
H-25	0
H-26 thru H-28	2
H-29	0
H-30 thru H-32	2
J-1	0
J-2 Blank	0
K-1 Added	1
K-2 and K-3	2
K-4 Added	1
INDEX-1	1
INDEX-2 and INDEX-3	2
INDEX-4 thru INDEX-8	1
INDEX-9	2
INDEX-10	1
INDEX-11 and INDEX-12	2
INDEX-13 Added	1
INDEX-14 Blank Added	1
Glossary-1 and Glossary-2	0
FO-1 FP-1	1
FO-1 FP-2 Blank	0
FO-1 FP-3	1
FO-1 FP-4 Blank	0
FO-1 FP-5	1
FO-1 FP-6 Blank	0
FO-1 FP-7	1
FO-1 FP-8 Blank	0
FO-1 FP-9	1
FO-1 FP-10 Blank	0
FO-1 FP-11	1
FO-1 FP-12 Blank	0
FO-1 FP-13	1
FO-1 FP-14 Blank	0
FO-1 FP-15	1
FO-1 FP-16 Blank	0
FO-1 FP-17	1
FO-1 FP-18 Blank	0
FO-1 FP-19	1
FO-1 FP-20 Blank	0
FO-1 FP-21	1
FO-1 FP-22 Blank	0
FO-1 FP-23	0
FO-1 FP-24 Blank	0
FO-1 FP-25	1
FO-1 FP-26 Blank	0
FO-1 FP-27	0
FO-1 FP-28 Blank	0
FO-1 FP-29	1
FO-1 FP-30 Blank	0
FO-1 FP-31	1
FO-1 FP-32 Blank	0
FO-1 FP-33	1
FO-1 FP-34 Blank	0
FO-1 FP-35	1
FO-1 FP-36 Blank	0
FO-1 FP-37	1
FO-1 FP-38 Blank	0
FO-1 FP-39	1
FO-1 FP-40 Blank	0
FO-1 FP-41	1
FO-1 FP-42 Blank	0
FO-1 FP-43	1
FO-1 FP-44 Blank	0
FO-1 FP-45	1
FO-1 FP-46 Blank	0
FO-1 FP-47	1
FO-1 FP-48 Blank	0
FO-1 FP-49	1
FO-1 FP-50 Blank	0
FO-1 FP-51	1
FO-1 FP-52 Blank	0
FO-1 FP-53	1
FO-1 FP-54 Blank	0
FO-1 FP-55	1
FO-1 FP-56 Blank	0
FO-1 FP-57	1
FO-1 FP-58 Blank	0
FO-1 FP-59	1
FO-1 FP-60 Blank	0
FO-1 FP-61	1
FO-1 FP-62 Blank	0
FO-1 FP-63	1
FO-1 FP-64 Blank	0
FO-1 FP-65	1
FO-1 FP-66 Blank	0
FO-1 FP-67	1
FO-1 FP-68 Blank	0
FO-1 FP-69	2
FO-1 FP-70 Blank	0
FO-1 FP-71	0
FO-1 FP-72 Blank	0
FO-1 FP-73	0
FO-1 FP-74 Blank	0
FO-1 FP-75	1
FO-1 FP-76 Blank	0
FO-1 FP-77	1
FO-1 FP-78 Blank	0
FO-1 FP-79	1
FO-1 FP-80 Blank	0
FO-2 FP-1	0
FO-2 FP-2 Blank	0
FO-2 FP-3	0
FO-2 FP-4 Blank	0
FO-2 FP-5	0
FO-2 FP-6 Blank	0
FO-2 FP-7	0
FO-2 FP-8 Blank	0
FO-3 FP-1	0
FO-3 FP-2 Blank	0
FO-3 FP-3	0
FO-3 FP-4 Blank	0
FO-3 FP-5	0
FO-3 FP-6 Blank	0
FO-3 FP-7	0
FO-3 FP-8 Blank	0

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
FO-3 FP-9	0
FO-3 FP-10 Blank	0
FO-3 FP-11	0
FO-3 FP-12 Blank	0
FO-3 FP-13	0
FO-3 FP-14 Blank	0
FO-3 FP-15	0
FO-3 FP-16 Blank	0
FO-4 FP-1	0
FO-4 FP-2 Blank	0
FO-4 FP-3	0
FO-4 FP-4 Blank	0
FO-5 FP-1	0
FO-5 FP-2 Blank	0
FO-5 FP-3	0
FO-5 FP-4 Blank	0
FO-5 FP-5	0
FO-5 FP-6 Blank	0
VOLUME 3	
Cover	1
Blank	0
a thru e	0
f	2
g thru l	0
m and n	1
A thru D	2
i	1
ii	0
iii thru vi	1
2-2006.1 Added	1
2-2006.2 Blank Added	1
2-2007 thru 2-2009	1
2-2010 thru 2-2069	0
2-2070 thru 2-2074	2
2-2075	1
2-2076	2
2-2077	1
2-2078	2
2-2079	1
2-2080 Blank	1
2-2081 thru 2-2100 Deleted	1
2-2101 Blank	1
2-2102	2
2-2103	1
2-2104 thru 2-2109	0
2-2110 thru 2-2117	1
2-2118 Blank	1
2-2119 Blank	1
2-2120 and 2-2121	1
2-2122 thru 2-2141	0
2-2142 Blank	0
2-2143	0
2-2144 thru 2-2149	1
2-2150 Blank	0
2-2151 thru 2-2171	0
2-2172 Blank	0
2-2173 thru 2-2187	0
2-2188 Blank	0
2-2189 thru 2-2203	0
2-2204 Blank	0
2-2205 thru 2-2211	0
2-2212 Blank	0
2-2213 thru 2-2217	0
2-2218 Blank	0
2-2219 thru 2-2228	1
2-2228.1 thru 2-2228.18 Added	1
2-2229 and 2-2230	1
2-2230.1 thru 2-2230.14 Added	1
2-2231 thru 2-2234	1
2-2234.1 thru 2-2234.22 Added	1
2-2235	1
2-2236 Blank	0
2-2237 and 2238	2
2-2239 and 2-2240 Added	2
2-2240.1 thru 2-2240.6 Added	2
2-2241 Added	2
2-2242 Blank Added	2
2-2243 thru 2-2253	0
2-2254	2
2-2254.1 Added	1
2-2254.2	2
2-2255	1
2-2256 thru 2-2263	0
2-2264	2
2-2264.1 Added	1
2-2264.2	2
2-2265	1
2-2266 thru 2-2269	0
2-2270 Blank	0
2-2271 and 2-2272	2
2-2273 thru 2-2307 Added	2
2-2308 Blank Added	2
2-2309 thru 2-2370 Deleted	1
2-2371 Blank	1
2-2372	1
2-2373 thru 2-2407	0
2-2408 Blank	0
2-2409 thru 2-2411	0
2-2412 Blank	0
2-2413 and 2-2414	1
2-2414.1 Added	1
2-2414.2 Blank Added	1
2-2414.3 thru 2-2414.9 Added	1
2-2414.10 Blank Added	1
2-2414.11 and 2-2414.12 Added	1
2-2415 and 2-2416	1
2-2416.1 Added	1
2-2416.2 Blank Added	1
2-2416.3 thru 2-2416.7 Added	1
2-2416.8 Blank Added	1
2-2416.9 and 2-2416.10 Added	1
2-2417	1
2-2418 Blank	0
2-2419 thru 2-2426	1
2-2426.1 and 2-2426.2 Added	1
2-2427 and 2-2428	1
2-2428.1 thru 2-2428.8 Added	1
2-2429 and 2-2430	1
2-2430.1 and 2-2430.8 Added	1
2-2431 and 2-2432	1
2-2432.1 and 2-2432.2 Added	1
2-2433	1
2-2434 Blank	0
2-2435 thru 2-2439	0
2-2440 Blank	0
2-2441 thru 2-2446	0
2-2446.1 Added	1
2-2446.2 Blank Added	1
2-2447	1
2-2448 and 2-2449	0
2-2450 Blank	0
3-1	1
3-2 thru 3-9	0
3-10	2
3-11 thru 3-14	0
3-15 thru 3-17	1
3-18 and 3-19	0
3-20 and 3-21	1
3-22 Blank	0
4-1	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
4-2 thru 4-4	0
4-5	1
4-6 thru 4-8	0
4-9	1
4-10	0
4-10.1 and 4-10.2 Added	1
4-11	0
4-12 and 4-13	1
4-14	0
4-15	1
4-16 and 4-17	0
4-18	1
4-19 thru 4-41	0
4-42 and 4-43	1
4-44	0
4-45	1
4-46	0
4-47	1
4-48 thru 4-59	0
4-60	1
4-61 and 4-62	0
4-63	1
4-64 thru 4-68	0
4-69	1
4-70 thru 4-81	0
4-82 thru 4-84	1
4-85 thru 4-105	0
4-106 Blank	0
5-1	1
5-2 thru 5-6	0
5-7 and 5-8	1
5-9	0
5-10 and 5-11	1
5-12 and 5-13	0
5-14 and 5-15	1
5-16 Blank	0
6-1 thru 6-3	1
6-4	0
6-4.1 and 6-4.2 Added	1
6-5	1
6-6	0
6-7	1
6-8 and 6-9	0
6-10 thru 6-13	1
6-14	0
6-15 thru 6-18	1
6-19	0
6-20 thru 6-24	1
6-24.1 Added	1
6-24.2 Blank Added	1
6-25	1
6-26 and 6-27	0
6-28	1
6-29 thru 6-33	0
6-34	1
6-35 thru 6-38	0
6-39	1
6-40 thru 6-45	0
6-46	2
6-47 and 6-48	0
6-49	1
6-50 thru 6-52	0
6-53	1
6-54 thru 6-62	0
6-63	2
6-64 thru 6-66	0
6-67	1
6-68 and 6-69	0
6-70	2
6-71	1
6-72	0
6-72.1 Added	1
6-72.2 Blank Added	1
6-73 thru 6-78	1
7-1 thru 7-3	1
7-4 thru 7-6	2
7-7 and 7-8	0
7-9	2
7-10 and 7-11	1
7-12 thru 7-19	0
7-20	2
7-21	0
7-22	2
7-23 thru 7-26	0
7-27 thru 7-33	1
7-34	2
7-34.1 Added	2
7-34.2 Blank Added	2
7-35 thru 7-37	2
7-38	1
7-38.1 thru 7-38.4 Added	1
7-39 and 7-40	0
7-41	2
7-42	0
7-43	1
7-44 thru 7-47	0
7-48	1
7-49 thru 7-54	0
7-55	1
7-56 thru 7-59	0
7-60	1
7-61 and 7-62	2
7-63 thru 7-65	0
7-66	2
7-67	0
7-68	1
7-69 thru 7-72	0
7-73	1
7-74 thru 7-79	0
7-80	1
7-81 thru 7-83	0
7-84	1
7-85 and 7-86	2
7-87 thru 7-91	0
7-92 and 7-93	2
7-94	1
7-95 thru 7-108	0
7-109	2
7-110 thru 7-112	0
7-113	2
7-114 thru 7-123	0
7-124	1
7-125 thru 7-137	0
7-138	1
7-139 thru 7-145	0
7-146	1
7-146.1 Added	1
7-146.2 Blank Added	1
7-147 thru 7-150	0
7-150.1	2
7-150.2 Blank Added	1
7-151	1
7-152 thru 7-158	0
7-159	1
7-160 thru 7-166	0
7-166.1 Added	1
7-166.2 Blank Added	1
7-167	1
7-168 thru 7-171	0
7-172	2
7-172.1 Added	1
7-172.2 Blank Added	1
7-173 thru 7-189	0
7-190 thru 7-200	1
7-200.1 Added	1
7-200.2 Blank Added	1
7-201	1
7-202 thru 7-206	0
7-207	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
7-208 and 7-209	0
7-210 and 7-211	1
7-212	0
7-213 thru 7-215	1
7-216 thru 7-218	0
7-219 and 7-220	1
7-221	0
7-222 thru 7-230	1
7-231 thru 7-241	0
7-242	1
7-242.1 Added	1
7-242.2 Blank Added	1
7-243	1
7-244 and 7-245	2
7-246 and 7-247	1
7-248 thru 7-253	0
7-254	1
7-255	0
7-256	2
7-257 thru 7-268	0
7-269 and 7-270	2
7-271	0
7-272 and 7-273	2
7-274	0
7-275 and 7-276	1
7-277 and 7-278	0
7-279	1
7-280	0
7-281 thru 7-286	1
7-286.1 and 7-286.2 Added	1
7-287 thru 7-289	1
7-290 thru 7-295	0
7-296 thru 7-300	1
7-301 thru 7-305	0
7-306 thru 7-314	1
7-315	0
7-316	1
7-317 thru 7-319	0
7-320 and 7-321	1
7-322	0
7-323	1
7-324 thru 7-330	0
7-331 thru 7-333	2
7-334 and 7-335	0
7-336 and 7-337	1
7-338 thru 7-345	0
7-346	1
7-347 thru 7-351	0
7-352 and 7-353	1
7-354	0
7-355	1
7-356 thru 7-361	0
7-362 Blank	0
A-1	0
A-2 and A-3	1
A-4	0
B-1 thru B-3	0
B-4	1
B-5	2
B-6 and B-7	0
B-8	2
B-9 thru B-23	0
B-24 thru B-26	1
B-27	2
B-28	1
B-29	2
B-30 Blank	1
C-1	0
C-2 thru C-4	2
D-1	1
D-2 and D-3	2
D-4 and D-5	1
D-6	2
D-7 Added	1
D-8 Blank Added	1
E-1	1
E-2 and E-3	0
E-4 and E-5	1
E-6 thru E-14	0
E-15	1
E-16 thru E-26	0
E-27 thru E-31 Added	1
E-32 Blank Added	1
F-1 thru F-8	0
G-1	2
G-2	1
G-3 thru G-6	2
G-7	1
G-8	2
G-9	1
G-10 thru G-12	2
H-1 thru H-6	2
H-7	0
H-8	2
H-9	0
H-10	2
H-11	1
H-12 thru H-14	2
H-15	0
H-16	2
H-17	0
H-18 thru H-20	2
H-21	1
H-22	2
H-23	0
H-24	2
H-25	0
H-26 thru H-28	2
H-29	0
H-30 thru H-32	2
J-1	0
J-2 Blank	0
K-1 Added	1
K-2 and K-3	2
K-4 Added	1
INDEX-1 thru INDEX-3	1
INDEX-4 and INDEX-5	2
INDEX-6 and INDEX-7	1
INDEX-8 and INDEX-9	2
INDEX-10 and INDEX-11	1
INDEX-12	2
INDEX-13	1
INDEX-14 Blank	1
Glossary-1 and Glossary-2	0
FO-1 FP-1	1
FO-1 FP-2 Blank	0
FO-1 FP-3	1
FO-1 FP-4 Blank	0
FO-1 FP-5	1
FO-1 FP-6 Blank	0
FO-1 FP-7	1
FO-1 FP-8 Blank	0
FO-1 FP-9	1
FO-1 FP-10 Blank	0
FO-1 FP-11	1
FO-1 FP-12 Blank	0
FO-1 FP-13	1
FO-1 FP-14 Blank	0
FO-1 FP-15	1
FO-1 FP-16 Blank	0
FO-1 FP-17	1
FO-1 FP-18 Blank	0
FO-1 FP-19	1
FO-1 FP-20 Blank	0
FO-1 FP-21	1
FO-1 FP-22 Blank	0
FO-1 FP-23	0
FO-1 FP-24 Blank	0
FO-1 FP-25	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
FO-1 FP-26 Blank	0
FO-1 FP-27	0
FO-1 FP-28 Blank	0
FO-1 FP-29	1
FO-1 FP-30 Blank	0
FO-1 FP-31	1
FO-1 FP-32 Blank	0
FO-1 FP-33	1
FO-1 FP-34 Blank	0
FO-1 FP-35	1
FO-1 FP-36 Blank	0
FO-1 FP-37	1
FO-1 FP-38 Blank	0
FO-1 FP-39	1
FO-1 FP-40 Blank	0
FO-1 FP-41	1
FO-1 FP-42 Blank	0
FO-1 FP-43	1
FO-1 FP-44 Blank	0
FO-1 FP-45	1
FO-1 FP-46 Blank	0
FO-1 FP-47	1
FO-1 FP-48 Blank	0
FO-1 FP-49	1
FO-1 FP-50 Blank	0
FO-1 FP-51	1
FO-1 FP-52 Blank	0
FO-1 FP-53	1
FO-1 FP-54 Blank	0
FO-1 FP-55	1
FO-1 FP-56 Blank	0
FO-1 FP-57	1
FO-1 FP-58 Blank	0
FO-1 FP-59	1
FO-1 FP-60 Blank	0
FO-1 FP-61	1
FO-1 FP-62 Blank	0
FO-1 FP-63	1
FO-1 FP-64 Blank	0
FO-1 FP-65	1
FO-1 FP-66 Blank	0
FO-1 FP-67	1
FO-1 FP-68 Blank	0
FO-1 FP-69	2
FO-1 FP-70 Blank	0
FO-1 FP-71	0
FO-1 FP-72 Blank	0
FO-1 FP-73	0
FO-1 FP-74 Blank	0
FO-1 FP-75	1
FO-1 FP-76 Blank	0
FO-1 FP-77	1
FO-1 FP-78 Blank	0
FO-1 FP-79	1
FO-1 FP-80 Blank	0
FO-2 FP-1	0
FO-2 FP-2 Blank	0
FO-2 FP-3	0
FO-2 FP-4 Blank	0
FO-2 FP-5	0
FO-2 FP-6 Blank	0
FO-2 FP-7	0
FO-2 FP-8 Blank	0
FO-3 FP-1	0
FO-3 FP-2 Blank	0
FO-3 FP-3	0
FO-3 FP-4 Blank	0
FO-3 FP-5	0
FO-3 FP-6 Blank	0
FO-3 FP-7	0
FO-3 FP-8 Blank	0
FO-3 FP-9	0
FO-3 FP-10 Blank	0
FO-3 FP-11	0
FO-3 FP-12 Blank	0
FO-3 FP-13	0
FO-3 FP-14 Blank	0
FO-3 FP-15	0
FO-3 FP-16 Blank	0
FO-4 FP-1	0
FO-4 FP-2 Blank	0
FO-4 FP-3	0
FO-4 FP-4 Blank	0
FO-5 FP-1	0
FO-5 FP-2 Blank	0
FO-5 FP-3	0
FO-5 FP-4 Blank	0
FO-5 FP-5	0
FO-5 FP-6 Blank	0
VOLUME 4	
Cover	1
Blank	0
a thru e	0
f	2
g thru l	0
m and n	1
A thru D	2
E Added	2
F Blank Added	2
i	1
ii	0
iii thru vi	1
7-363	1
7-364 and 7-365	2
7-366 thru 7-368	0
7-369	2
7-370 and 7-371	0
7-372	2
7-373	0
7-374	1
7-375	0
7-376 and 7-377	1
7-378 thru 7-380	0
7-381	1
7-382 and 7-383	0
7-384	1
7-385 thru 7-388	0
7-389 thru 7-392	1
7-392.1 and 7-392.2 Added	1
7-393 thru 7-395	1
7-396 Blank	1
7-397 thru 7-421	1
7-422 Blank	1
7-423 thru 7-428 Deleted	1
7-429 Blank	1
7-430	1
7-431 thru 7-504	0
7-505 thru 7-527	1
7-528 Blank	1
7-529 thru 7-532 Deleted	1
7-533 Blank	1
7-534	1
7-535 thru 7-611	0
7-612 and 7-613	1
7-614 thru 7-616	0
7-617 and 7-618	1
7-619 thru 7-627	0
7-628 and 7-629	1
7-630	2
7-631 thru 7-642	0
7-643 thru 7-646	1
7-647 and 7-648	0
7-649 and 7-650	1
7-650.1 and 7-650.2 Added	1
7-651	1
7-652 and 7-653	0
7-654 thru 7-656	1
7-657	0
7-658 and 7-659	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
7-660	0
7-661	1
7-662	0
7-663	1
7-664	0
7-665 thru 7-669	1
7-670 thru 7-694	0
7-695 and 7-696	1
7-697 thru 7-742 Added	1
7-743 and 7-744	2
7-745 thru 7-747 Added	2
7-748 Blank Added	2
8-1	1
8-2 thru 8-6	0
8-7	1
8-8 thru 8-10	0
8-11	1
8-12	0
8-12.1	2
8-12.2 Blank Added	1
8-13	1
8-14 thru 8-16	0
8-16.1	2
8-16.2 Blank Added	1
8-17	1
8-18 thru 8-20	0
8-20.1 Added	2
8-20.2 Blank Added	2
8-21	2
8-22 thru 8-32	0
8-33	2
8-34	0
8-35	2
8-36	1
8-37	2
8-38 thru 8-46	1
8-46.1 and 8-46.2 Added	1
8-47 and 8-48	1
8-48.1 Added	1
8-48.2 Blank Added	1
8-49 thru 8-54	1
8-55	0
8-56 thru 8-64	1
8-65	0
8-66	1
8-67	0
8-68	1
8-69	0
8-70 thru 8-72	1
8-72.1 Added	1
8-72.2 Blank Added	1
8-73 thru 8-76	1
8-77	0
8-78	1
8-78.1 Added	1
8-78.2 Blank Added	1
8-79 thru 8-82	1
8-82.1 and 8-82.2 Added	1
8-83 thru 8-88	1
8-88.1 thru 8-88.4 Added	1
8-89 and 8-90	1
8-90.1 Added	1
8-90.2 Blank Added	1
8-91 thru 8-97	1
8-98 thru 8-107	0
8-108 thru 8-110	1
8-111 thru 8-150 Added	1
9-1	1
9-2	2
9-2.1	2
9-2.2 Added	1
9-2.3 and 9-2.4 Added	2
9-3 and 9-4	2
9-5	1
9-6 Blank	1
9-7 and 9-8 Deleted	1
10-1	2
10-2	0
10-3 and 10-4	1
10-5	0
10-6 and 10-7	1
10-8	0
10-9	1
10-10 and 10-11	0
10-12	2
10-13	0
10-14	1
10-15 and 10-16	0
10-17	2
10-18 and 10-19	1
10-20 thru 10-22	0
10-23 thru 10-30 Added	2
11-1	1
11-2 thru 11-8	0
11-9	1
11-10 and 11-11	0
11-12	1
11-13	0
11-14	1
11-15	0
11-16	1
11-17 thru 11-20	0
11-21	2
11-22 thru 11-29	0
11-30 thru 11-40	1
11-41 and 11-42	0
11-43	1
11-44 thru 11-46	0
11-47 thru 11-49	1
11-50	0
11-51 thru 11-58	1
11-59	0
11-60 thru 11-69	1
11-70	0
11-71 thru 11-75	1
11-76	0
11-77 thru 11-79	1
11-80	0
11-81 and 11-82	1
11-82.1 Added	1
11-82.2 Blank Added	1
11-83 thru 11-85	1
11-86 thru 11-89	0
11-90	1
11-91	0
11-92 and 11-93	1
11-94 and 11-95	0
11-96 thru 11-99	1
11-100 thru 11-106	0
11-107	1
11-108	0
11-108.1 Added	2
11-108.2 Blank Added	2
11-109 thru 11-112	2
11-113	1
11-114	0
11-115 and 11-116	1
11-117 and 11-118	0
11-119 thru 11-128	1
11-128.1 thru 11-128.3 Added	1
11-128.4 Blank Added	1
11-129 thru 11-136	1
11-136.1 Added	1
11-136.2 Blank Added	1
11-137 thru 11-139	0
11-140	1
11-140.1 Added	1
11-140.2 Blank Added	1
11-141	1
11-142 thru 11-144	0

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
11-145 and 11-146	1
11-146.1 Added	1
11-146.2 Blank Added	1
11-147 thru 11-150	0
11-151	1
11-152	0
11-153 and 11-154	1
11-155 thru 11-157	0
11-158	1
11-159	0
11-160 thru 11-164	1
11-165	0
11-166	1
11-167 and 11-168	0
11-169 and 11-170	1
11-171 thru 11-181	0
11-182	1
11-182.1 Added	1
11-182.2 Blank Added	1
11-183 thru 11-186	1
11-186.1 thru 11-186.4 Added	1
11-187 thru 11-189	1
11-190 thru 11-192	0
11-193	1
11-194 thru 11-204	0
11-205	1
11-206	0
12-1	2
12-2	0
12-3 and 12-4	2
12-5 thru 12-7	0
12-8	2
12-9 thru 12-13	0
12-14	2
12-15	0
12-16	1
12-16.1 Added	1
12-16.2 Blank Added	1
12-17 thru 12-19	1
12-20 and 12-21	0
12-22 and 12-23	1
12-24	0
12-25 Added	2
12-26 Blank Added	2
13-1	2
13-2 and 13-3	0
13-4	1
13-4.1 Added	1
13-4.2 Blank Added	1
13-5 thru 13-8	1
13-8.1 Added	1
13-8.2 Blank Added	1
13-9 and 13-10	0
13-11	2
13-12	0
13-13	2
13-14	0
13-15 thru 13-22	2
13-23	0
13-24 and 13-25	2
13-26	1
13-27 and 13-28	2
13-28.1 and 13-28.2 Added	2
13-29 thru 13-32	2
13-33 thru 13-36 Added	1
13-37 thru 13-39 Added	2
13-40 Blank Added	2
14-1	2
14-2 thru 14-8	1
14-9 and 14-10 deleted	1
14-11 Blank	1
14-12	1
14-13 and 14-14	0
14-15	2
14-16 thru 14-30	0
14-31 thru 14-42	1
14-42.1 Added	1
14-42.2 Blank Added	1
14-43 thru 14-48	1
14-49 thru 14-57	0
14-58	2
14-59	0
14-60	2
14-61	0
14-62	2
14-63 thru 14-92	0
14-93 and 14-94	2
14-95 and 14-96 Added	1
14-97 thru 14-106 Added	2
15-1	1
15-2	0
15-2.1 and 15-2.2 Added	2
15-3	2
15-4	1
15-5 thru 15-10	0
15-11 thru 15-15	1
15-16 Blank	1
16-1	2
16-2	1
16-2.1 Added	1
16-2.2 Blank Added	1
16-3 and 16-4	1
16-5 and 16-6	0
16-7	2
16-8	0
16-8.1 and 16-8.2 Added	1
16-9 and 16-10	1
16-11	2
16-12 and 16-13	0
16-14	1
16-15	0
16-16	1
16-17 thru 16-19	0
16-20	1
16-21	0
16-22 and 16-23	1
16-24 thru 16-28	0
16-29 and 16-30	1
16-31 thru 16-35	0
16-36	1
16-37	2
16-38	0
16-38.1	2
16-38.2 Blank Added	1
16-39	1
16-40	0
16-41 and 16-42	1
16-42.1 Added	1
16-42.2 Blank Added	1
16-43 thru 16-53	1
16-54	2
16-54.1 Added	2
16-54.2 Blank Added	2
16-55 and 16-56	2
16-57	0
16-58 thru 16-60	1
16-60.1 Added	1
16-60.2 Blank Added	1
16-61 thru 16-66	1
16-67	2
16-68 thru 16-70	1
16-71 and 16-72	2
16-72.1 Added	2
16-72.2 Blank Added	2
16-73 thru 16-75	1

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
16-76	2
16-77 thru 16-87	0
16-88	1
16-89 thru 16-92	0
16-93 thru 16-95	1
16-96 thru 16-125	0
16-126 thru 16-130	1
16-130.1 and 16-130.2 Added	1
16-131 and 16-132	1
16-133 thru 16-136	0
16-137 thru 16-140	1
16-141 thru 16-148	0
16-149	1
16-150 and 16-151	0
16-152 thru 16-154	2
16-155 thru 16-169	0
16-170 and 16-171	1
16-172 and 16-173	0
16-174	1
16-175 and 16-176	0
16-177	1
16-178	2
16-179 thru 16-183	0
16-184	1
16-185 thru 16-190	0
16-191	1
16-192	2
16-193	1
16-194	2
16-194.1 Added	2
16-194.2 Blank Added	2
16-195 and 16-196 Added	1
16-197 and 16-198	2
16-199 thru 16-202 Added	1
16-203 Added	2
16-204 Blank Added	2
A-1	0
A-2 and A-3	1
A-4	0
B-1 thru B-3	0
B-4	1
B-5	2
B-6 and B-7	0
B-8	2
B-9 thru B-23	0
B-24 thru B-26	1
B-27	2
B-28	1
B-29	2
B-30 Blank	1
C-1	0
C-2 thru C-4	2
D-1	1
D-2 and D-3	2
D-4 and D-5	1
D-6	2
D-7 Added	1
D-8 Blank Added	1
E-1	1
E-2 and E-3	0
E-4 and E-5	1
E-6 thru E-14	0
E-15	1
E-16 thru E-26	0
E-27 thru E-31 Added	1
E-32 Blank Added	1
F-1 thru F-8	0
G-1	2
G-2	1
G-3 thru G-6	2
G-7	1
G-8	2
G-9	1
G-10 thru G-12	2
H-1 thru H-6	2
H-7	0
H-8	2
H-9	0
H-10	2
H-11	1
H-12 thru H-14	2
H-15	0
H-16	2
H-17	0
H-18 thru H-20	2
H-21	1
H-22	2
H-23	0
H-24	2
H-25	0
H-26 thru H-28	2
H-29	0
H-30 thru H-32	2
J-1	0
J-2 Blank	0
K-1 Added	1
K-2 and K-3	2
K-4 Added	1
INDEX-1 thru INDEX-4	1
INDEX-5	2
INDEX-6	1
INDEX-7	2
INDEX-8 thru INDEX-10	1
INDEX-11 and INDEX-12	2
INDEX-13 thru INDEX-15	1
INDEX-16	2
INDEX-17 Added	1
INDEX-18 Blank Added	1
Glossary-1 and Glossary-2	0
FO-1 FP-1	1
FO-1 FP-2 Blank	0
FO-1 FP-3	1
FO-1 FP-4 Blank	0
FO-1 FP-5	1
FO-1 FP-6 Blank	0
FO-1 FP-7	1
FO-1 FP-8 Blank	0
FO-1 FP-9	1
FO-1 FP-10 Blank	0
FO-1 FP-11	1
FO-1 FP-12 Blank	0
FO-1 FP-13	1
FO-1 FP-14 Blank	0
FO-1 FP-15	1
FO-1 FP-16 Blank	0
FO-1 FP-17	1
FO-1 FP-18 Blank	0
FO-1 FP-19	1
FO-1 FP-20 Blank	0
FO-1 FP-21	1
FO-1 FP-22 Blank	0
FO-1 FP-23	0
FO-1 FP-24 Blank	0
FO-1 FP-25	1
FO-1 FP-26 Blank	0
FO-1 FP-27	0
FO-1 FP-28 Blank	0
FO-1 FP-29	1
FO-1 FP-30 Blank	0
FO-1 FP-31	1
FO-1 FP-32 Blank	0
FO-1 FP-33	1
FO-1 FP-34 Blank	0
FO-1 FP-35	1
FO-1 FP-36 Blank	0
FO-1 FP-37	1
FO-1 FP-38 Blank	0

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
FO-1 FP-39	1
FO-1 FP-40 Blank	0
FO-1 FP-41	1
FO-1 FP-42 Blank	0
FO-1 FP-43	1
FO-1 FP-44 Blank	0
FO-1 FP-45	1
FO-1 FP-46 Blank	0
FO-1 FP-47	1
FO-1 FP-48 Blank	0
FO-1 FP-49	1
FO-1 FP-50 Blank	0
FO-1 FP-51	1
FO-1 FP-52 Blank	0
FO-1 FP-53	1
FO-1 FP-54 Blank	0
FO-1 FP-55	1
FO-1 FP-56 Blank	0
FO-1 FP-57	1
FO-1 FP-58 Blank	0
FO-1 FP-59	1
FO-1 FP-60 Blank	0
FO-1 FP-61	1
FO-1 FP-62 Blank	0
FO-1 FP-63	1
FO-1 FP-64 Blank	0
FO-1 FP-65	1
FO-1 FP-66 Blank	0
FO-1 FP-67	1
FO-1 FP-68 Blank	0
FO-1 FP-69	2
FO-1 FP-70 Blank	0
FO-1 FP-71	0
FO-1 FP-72 Blank	0
FO-1 FP-73	0
FO-1 FP-74 Blank	0
FO-1 FP-75	1
FO-1 FP-76 Blank	0
FO-1 FP-77	1
FO-1 FP-78 Blank	0
FO-1 FP-79	1
FO-1 FP-80 Blank	0
FO-2 FP-1	0
FO-2 FP-2 Blank	0
FO-2 FP-3	0
FO-2 FP-4 Blank	0
FO-2 FP-5	0
FO-2 FP-6 Blank	0
FO-2 FP-7	0
FO-2 FP-8 Blank	0
FO-3 FP-1	0
FO-3 FP-2 Blank	0
FO-3 FP-3	0
FO-3 FP-4 Blank	0
FO-3 FP-5	0
FO-3 FP-6 Blank	0
FO-3 FP-7	0
FO-3 FP-8 Blank	0
FO-3 FP-9	0
FO-3 FP-10 Blank	0
FO-3 FP-11	0
FO-3 FP-12 Blank	0
FO-3 FP-13	0
FO-3 FP-14 Blank	0
FO-3 FP-15	0
FO-3 FP-16 Blank	0
FO-4 FP-1	0
FO-4 FP-2 Blank	0
FO-4 FP-3	0
FO-4 FP-4 Blank	0
FO-5 FP-1	0
FO-5 FP-2 Blank	0
FO-5 FP-3	0
FO-5 FP-4 Blank	0
FO-5 FP-5	0
FO-5 FP-6 Blank	0
VOLUME 5	
Cover	1
Blank	0
a thru e	1
f	2
g thru l	0
m and n	1
A thru C	2
D Blank Added	1
i	1
ii	0
iii thru vi	1
17-1	2
17-2 thru 17-6	0
17-7	2
17-8 and 17-9	0
17-10 and 17-11	2
17-12 thru 17-18	1
17-19	0
17-20 thru 17-29	2
17-30 thru 17-32	0
17-33 thru 17-35	2
17-36 thru 17-41	0
17-42	1
17-43 and 17-44	0
17-45	2
17-46 thru 17-49	0
17-50	2
17-50.1 Added	2
17-50.2 Blank Added	2
17-51	2
17-52 thru 17-78	0
17-78.1 thru 17-78.4 Added	2
17-79	0
17-80 and 17-81	2
17-82 thru 17-85	0
17-86	1
17-87 thru 17-90	0
17-91	1
17-92 thru 17-96	0
17-97 thru 19-99	1
17-100 thru 17-103	0
17-104 and 17-105	1
17-106 thru 17-109	0
17-110	2
17-110.1 thru 17-110.4 Added	2
17-111	2
17-112	0
17-113	2
17-114 thru 17-136	0
17-137	2
17-138 thru 17-143	1
17-144	2
17-145 and 17-146	1
17-147	2
17-148 thru 17-150	1
17-151 thru 17-163 Added	2
17-164 Blank Added	2
18-1	2
18-2 thru 18-5	0
18-6 thru 18-8	1
18-9 thru 18-22	0
18-23 and 18-24	2
18-24.1 thru 18-24.6 Added	2
18-25 and18-26	2
18-27 thru 18-29	0
18-30	1
18-31	0
18-32	1
18-33 thru 18-50	0
18-51	1
18-52 thru 18-55	0

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
18-56 and 18-57	1
18-58	2
18-59 thru 18-67	0
18-68 thru 18-70	2
18-71 Added	2
18-72 Blank Added	2
19-1	1
19-2 thru 19-4	0
19-5 thru 19-8	1
19-8.1 thru 19-8.10 Added	1
19-9 thru 19-20	1
19-20.1 thru 19-20.14 Added	1
19-21	1
19-22 thru 19-24	0
19-25	1
19-26 thru 19-31	0
19-32 and 19-33	1
19-34 thru 19-54	0
19-55	1
19-56 thru 19-58	0
19-59	2
19-60	1
19-61	0
19-62 thru 19-66	1
19-67 thru 19-91	0
19-92 thru 19-94	2
19-94.1 thru 19-94.3 Added	2
19-94.4 Blank Added	2
19-95	2
19-96	0
19-97 thru 19-107	0
19-108	1
19-109 thru 19-118	0
19-119 thru 19-121	2
19-122 Blank	2
20-1	1
20-2	2
20-3	1
20-4 Blank	1
20-5 thru 20-226 Deleted	1
20-227 thru 20-231	1
20-232 thru 20-239	0
20-240 thru 20-244	1
20-245 and 20-246	0
20-247	1
20-248 thru 20-256	0
20-257	1
20-258 thru 20-260	0
20-261 and 20-262	1
20-263 and 20-264	0
20-265 thru 20-267	1
20-268 thru 20-380	0
20-381 and 20-382	1
20-383 thru 20-426	0
20-427 thru 20-432	2
20-432.1 thru 20-432.5 Added	2
20-432.6 Blank Added	2
20-433 thru 20-440	2
20-440.1 thru 20-440.3 Added	2
20-440.4 Blank Added	2
20-441 and 20-442	2
20-443 thru 20-466	0
20-467	1
20-468	0
20-469 thru 20-480	1
20-481 thru 20-485	0
20-486 thru 20-489	1
20-490	2
20-491 thru 20-558 Added	2
21-1 thru 21-6	1
21-7	0
21-8	2
21-8.1 and 21-8.2 Added	2
21-9	2
21-10 and 21-11	1
21-12 and 21-13	0
21-14 Blank	0
22-1	1
22-2 thru 22-24	0
23-1	1
23-2	0
23-3 and 23-4	1
23-5 thru 23-9	0
23-10 and 23-11	1
23-12 thru 23-14	0
23-15 thru 23-19	1
23-20	0
23-21	1
23-22 thru 23-24	0
23-25	2
23-26 thru 23-33	0
23-34	2
23-35	1
23-36	0
23-37	1
23-38	0
23-39	1
23-40 and 23-41	0
23-42	1
23-43 and 23-44	0
23-45	1
23-46	0
23-47	1
23-48	0
23-49	2
23-50 thru 23-54	1
23-55 thru 23-57 Added	1
23-58 Blank Added	1
24-1	1
24-2	0
A-1	0
A-2 and A-3	1
A-4	0
B-1 thru B-3	0
B-4	1
B-5	2
B-6 and B-7	0
B-8	2
B-9 thru B-23	0
B-24 thru B-26	1
B-27	2
B-28	1
B-29	2
B-30 Blank	0
C-1	0
C-2 thru C-4	2
D-1	1
D-2 and D-3	2
D-4 and D-5	1
D-6	2
D-7 Added	1
D-8 Blank Added	1
E-1	1
E-2 and E-3	0
E-4 and E-5	1
E-6 thru E-14	0
E-15	1
E-16 thru E-26	0
E-27 thru E-31 Added	1
E-32 Blank Added	1
F-1 thru F-8	0
G-1	2
G-2	1
G-3 thru G-6	2
G-7	1
G-8	2
G-9	1
G-10 thru G-12	2
H-1 thru H-6	2
H-7	0

* Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES (CONT)

Insert latest changed pages. Destroy superseded pages.

Page No.	*Change No.
H-8	2
H-9	0
H-10	2
H-11	1
H-12 thru H-14	2
H-15	0
H-16	2
H-17	0
H-18 thru H-20	2
H-21	1
H-22	2
H-23	0
H-24	2
H-25	0
H-26 thru H-28	2
H-29	0
H-30 thru H-32	2
J-1	0
J-2 Blank	0
K-1 Added	1
K-2 and K-3	2
K-4 Added	1
INDEX-1 and INDEX-2	1
INDEX-3	2
INDEX-4	1
INDEX-5 and INDEX-6	2
INDEX-7	1
INDEX-8	2
INDEX-9	1
INDEX-10	2
INDEX-11 and INDEX-12 Deleted	1
Glossary-1 and Glossary-2	0
FO-1 FP-1	1
FO-1 FP-2 Blank	0
FO-1 FP-3	1
FO-1 FP-4 Blank	0
FO-1 FP-5	1
FO-1 FP-6 Blank	0
FO-1 FP-7	1
FO-1 FP-8 Blank	0
FO-1 FP-9	1
FO-1 FP-10 Blank	0
FO-1 FP-11	1
FO-1 FP-12 Blank	0
FO-1 FP-13	1
FO-1 FP-14 Blank	0
FO-1 FP-15	1
FO-1 FP-16 Blank	0
FO-1 FP-17	1
FO-1 FP-18 Blank	0
FO-1 FP-19	1
FO-1 FP-20 Blank	0
FO-1 FP-21	1
FO-1 FP-22 Blank	0
FO-1 FP-23	0
FO-1 FP-24 Blank	0
FO-1 FP-25	1
FO-1 FP-26 Blank	0
FO-1 FP-27	0
FO-1 FP-28 Blank	0
FO-1 FP-29	1
FO-1 FP-30 Blank	0
FO-1 FP-31	1
FO-1 FP-32 Blank	0
FO-1 FP-33	1
FO-1 FP-34 Blank	0
FO-1 FP-35	1
FO-1 FP-36 Blank	0
FO-1 FP-37	1
FO-1 FP-38 Blank	0
FO-1 FP-39	1
FO-1 FP-40 Blank	0
FO-1 FP-41	1
FO-1 FP-42 Blank	0
FO-1 FP-43	1
FO-1 FP-44 Blank	0
FO-1 FP-45	1
FO-1 FP-46 Blank	0
FO-1 FP-47	1
FO-1 FP-48 Blank	0
FO-1 FP-49	1
FO-1 FP-50 Blank	0
FO-1 FP-51	1
FO-1 FP-52 Blank	0
FO-1 FP-53	1
FO-1 FP-54 Blank	0
FO-1 FP-55	1
FO-1 FP-56 Blank	0
FO-1 FP-57	1
FO-1 FP-58 Blank	0
FO-1 FP-59	1
FO-1 FP-60 Blank	0
FO-1 FP-61	1
FO-1 FP-62 Blank	0
FO-1 FP-63	1
FO-1 FP-64 Blank	0
FO-1 FP-65	1
FO-1 FP-66 Blank	0
FO-1 FP-67	1
FO-1 FP-68 Blank	0
FO-1 FP-69	2
FO-1 FP-70 Blank	0
FO-1 FP-71	0
FO-1 FP-72 Blank	0
FO-1 FP-73	0
FO-1 FP-74 Blank	0
FO-1 FP-75	1
FO-1 FP-76 Blank	0
FO-1 FP-77	1
FO-1 FP-78 Blank	0
FO-1 FP-79	1
FO-1 FP-80 Blank	0
FO-2 FP-1	0
FO-2 FP-2 Blank	0
FO-2 FP-3	0
FO-2 FP-4 Blank	0
FO-2 FP-5	0
FO-2 FP-6 Blank	0
FO-2 FP-7	0
FO-2 FP-8 Blank	0
FO-3 FP-1	0
FO-3 FP-2 Blank	0
FO-3 FP-3	0
FO-3 FP-4 Blank	0
FO-3 FP-5	0
FO-3 FP-6 Blank	0
FO-3 FP-7	0
FO-3 FP-8 Blank	0
FO-3 FP-9	0
FO-3 FP-10 Blank	0
FO-3 FP-11	0
FO-3 FP-12 Blank	0
FO-3 FP-13	0
FO-3 FP-14 Blank	0
FO-3 FP-15	0
FO-3 FP-16 Blank	0
FO-4 FP-1	0
FO-4 FP-2 Blank	0
FO-4 FP-3	0
FO-4 FP-4 Blank	0
FO-5 FP-1	0
FO-5 FP-2 Blank	0
FO-5 FP-3	0
FO-5 FP-4 Blank	0
FO-5 FP-5	0
FO-5 FP-6 Blank	0

* Zero in this column indicates an original page.

ARMY TM 9-2320-366-20-1
AIR FORCE T.O. 36A12-1C-1102-1

TECHNICAL MANUAL
NO. 9-2320-366-20-1

TECHNICAL ORDER
NO. 36A12-1C-1102-1

HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE

Washington, D.C., 15 September 1998

Unit Maintenance Manual
M1083 SERIES, 5-TON, 6 x 6, MEDIUM TACTICAL VEHICLES (MTV)
VOLUME NO. 1 OF 5

MODEL	NSN	EIC
TRK, CAR., MTV, M1083		
W/WN	2320-01-360-1895	BT3
W/O WN	2320-01-354-3386	BR2
TRK, CAR., MTV, W/MATL HDLG EQPT (MHE), M1084	2320-01-354-3387	BR3
TRK, CAR., MTV, LWB, M1085		
W/WN	2320-01-360-1897	BT5
W/O WN	2320-01-354-4530	BR7
TRK, CAR., MTV, LWB, W/MATL HDLG EQPT (MHE), M1086	2320-01-354-4531	BR8
TRK, TRACTOR, MTV, M1088		
W/WN	2320-01-360-1892	BTY
W/O WN	2320-01-355-4332	BTJ
TRK, WKR, MTV, M1089	2320-01-354-4528	BR4
TRK, DUMP, MTV, M1090		
W/WN	2320-01-360-1893	BTZ
W/O WN	2320-01-354-4529	BR5
TRK, CHAS, MTV, M1092	2320-01-354-3382	BRZ
TRK, CAR., MTV, AIR DROP, M1093		
W/WN	2320-01-360-1896	BT4
W/O WN	2320-01-355-3063	BR9
TRK, DUMP, MTV, AIR DROP, M1094		
W/WN	2320-01-360-1984	BT2
W/O WN	2320-01-355-3062	BTK
TRK, CHAS, MTV, LWB, M1096	2320-01-354-4527	BR6

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HOW TO USE THIS MANUAL

OVERVIEW

This Technical Manual (TM) is provided to help you maintain the MTV at the Unit Maintenance level. Because of its size, it is divided into five volumes. Volumes 3, 4, and 5 contain information which will assist you in the performance of Unit Maintenance on the MTV. Volume 1 contains the following major sections in order of appearance:

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual.

- **TABLE OF CONTENTS.** Lists, for all volumes, the chapters, sections, appendixes, and indexes with page numbers in order of appearance.

- **CHAPTER 1, INTRODUCTION.** Describes the MTV and provides equipment data.

- **CHAPTER 2, VEHICLE MAINTENANCE.** This chapter contains information for finding tools; special tools; Test, Measurement, and Diagnostic Equipment (TMDE); and repair parts. It also contains the preventive maintenance checks and services (PMCS) and troubleshooting tables.

OVERVIEW (CONT)

- **APPENDIX A, REFERENCES.** Lists publications used with the MTV.
- **APPENDIX B, MAINTENANCE ALLOCATION CHART.** The maintenance allocation chart denotes the level of maintenance which performs specific maintenance tasks and the time required. It also lists tools and special tools required for each task.
- **APPENDIX C, TOOLS IDENTIFICATION LIST.** Lists equipment used in the performance of maintenance and references publications which contain information regarding the equipment.
- **APPENDIX D, EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST.** Lists expendable and durable items used in the performance of maintenance.
- **APPENDIX E, ILLUSTRATED LIST OF MANUFACTURED ITEMS.** Illustrates and describes items that must be fabricated from bulk materials for repair of the MTV.
- **APPENDIX F, TORQUE LIMITS.** Lists the standard torque values for specific attaching hardware.
- **APPENDIX G, MANDATORY REPLACEMENT PARTS.**
- **APPENDIX H, LUBRICATION ORDER.**
- **APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).**
- **APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.
- **SUBJECT INDEX.** Lists important subjects contained in volumes 1, 2, 3, 4, and 5 in alphabetical order and gives the associated paragraph number.

Volume 2 contains the following major sections in order of appearance:

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual.
- **CHAPTER 2, TROUBLESHOOTING (CONT)**
- **APPENDIX A, REFERENCES.** Lists publications used with the MTV.
- **APPENDIX B, MAINTENANCE ALLOCATION CHART.** The maintenance allocation chart denotes the level of maintenance which performs specific maintenance tasks and the time required. It also lists tools and special tools required for each task.
- **APPENDIX C, TOOLS IDENTIFICATION LIST.** Lists equipment used in the performance of maintenance and references publications which contain information regarding the equipment.
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- **APPENDIX G, MANDATORY REPLACEMENT PARTS.**

- **APPENDIX H, LUBRICATION ORDER.**

- **APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).**

- **APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.

- **SUBJECT INDEX.** Lists important subjects contained in volume 2 in alphabetical order and gives the associated paragraph number.

Volume 3 contains the following major sections in order of appearance:

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual.

- **CHAPTER 2, TROUBLESHOOTING (CONT)**

- **CHAPTER 3, ENGINE MAINTENANCE**

- **CHAPTER 4, FUEL SYSTEM MAINTENANCE**

- **CHAPTER 5, EXHAUST SYSTEM MAINTENANCE**

- **CHAPTER 6, COOLING SYSTEM MAINTENANCE**

- **CHAPTER 7, ELECTRICAL SYSTEM MAINTENANCE**

- **APPENDIX A, REFERENCES.** Lists publications used with the MTV.

- **APPENDIX B, MAINTENANCE ALLOCATION CHART.** The maintenance allocation chart denotes the level of maintenance which performs specific maintenance tasks and the time required. It also lists tools and special tools required for each task.

- **APPENDIX C, TOOLS IDENTIFICATION LIST.** Lists equipment used in the performance of maintenance and references publications which contain information regarding the equipment.

- **APPENDIX D, EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST.** Lists expendable and durable items used in the performance of maintenance.

- **APPENDIX E, ILLUSTRATED LIST OF MANUFACTURED ITEMS.** Illustrates and describes items that must be fabricated from bulk materials for repair of the MTV.

- **APPENDIX F, TORQUE LIMITS.** Lists the standard torque values for specific attaching hardware.

- **APPENDIX G, MANDATORY REPLACEMENT PARTS.**

- **APPENDIX H, LUBRICATION ORDER.**

- **APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).**

- **APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.

OVERVIEW (CONT)

- **SUBJECT INDEX.** Lists important subjects contained in volume 3 in alphabetical order and gives the associated paragraph number.

Volume 4 contains the following major sections in order of appearance:

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual.
- **CHAPTER 7, ELECTRICAL SYSTEM MAINTENANCE (CONT)**
- **CHAPTER 8, TRANSMISSION MAINTENANCE**
- **CHAPTER 9, PROPELLER SHAFT MAINTENANCE**
- **CHAPTER 10, FRONT, INTERMEDIATE, AND REAR AXLE MAINTENANCE**
- **CHAPTER 11, BRAKE SYSTEM MAINTENANCE**
- **CHAPTER 12, WHEEL, TIRES, AND HUBS MAINTENANCE**
- **CHAPTER 13, STEERING SYSTEM MAINTENANCE**
- **CHAPTER 14, FRAME, TOWING ATTACHMENTS, AND DRAWBARS MAINTENANCE**
- **CHAPTER 15, SUSPENSION SYSTEM MAINTENANCE**
- **CHAPTER 16, BODY AND CAB MAINTENANCE**
- **APPENDIX A, REFERENCES.** Lists publications used with the MTV.
- **APPENDIX B, MAINTENANCE ALLOCATION CHART.** The maintenance allocation chart denotes the level of maintenance which performs specific maintenance tasks and the time required. It also lists tools and special tools required for each task.
- **APPENDIX C, TOOLS IDENTIFICATION LIST.** Lists equipment used in the performance of maintenance and references publications which contain information regarding the equipment.
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- **APPENDIX H, LUBRICATION ORDER.**
- **APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).**
- **APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.

- **SUBJECT INDEX.** Lists important subjects contained in volume 4 in alphabetical order and gives the associated paragraph number.

Volume 5 contains the following major sections in order of appearance:

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual.
- **CHAPTER 17, MATERIAL HANDLING CRANES, 30K WINCHES, AND 15K SELF-RECOVERY WINCH (SRW) MAINTENANCE**
- **CHAPTER 18, BODY, CHASSIS, AND ACCESSORY ITEMS MAINTENANCE**
- **CHAPTER 19, HYDRAULIC SYSTEM MAINTENANCE**
- **CHAPTER 20, SPECIAL PURPOSE KITS MAINTENANCE**
- **CHAPTER 21, ARMAMENT/SIGHTING AND FIRE CONTROL MATERIEL MAINTENANCE**
- **CHAPTER 22, ELECTRICAL ILLUMINATING EQUIPMENT MAINTENANCE**
- **CHAPTER 23, AIR SYSTEM MAINTENANCE**
- **CHAPTER 24, GAGES (NON-ELECTRICAL) MAINTENANCE**
- **APPENDIX A, REFERENCES.** Lists publications used with the MTV.
- **APPENDIX B, MAINTENANCE ALLOCATION CHART.** The maintenance allocation chart denotes the level of maintenance which performs specific maintenance tasks and the time required. It also lists tools and special tools required for each task.
- **APPENDIX C, TOOLS IDENTIFICATION LIST.** Lists equipment used in the performance of maintenance and references publications which contain information regarding the equipment.
- **APPENDIX D, EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST.** Lists expendable and durable items used in the performance of maintenance.
- **APPENDIX E, ILLUSTRATED LIST OF MANUFACTURED ITEMS.** Illustrates and describes items that must be fabricated from bulk materials for repair of the MTV.
- **APPENDIX F, TORQUE LIMITS.** Lists the standard torque values for specific attaching hardware.
- **APPENDIX G, MANDATORY REPLACEMENT PARTS.**
- **APPENDIX H, LUBRICATION ORDER.**
- **APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).**
- **APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.
- **SUBJECT INDEX.** Lists important subjects contained in volume 5 in alphabetical order and gives the associated paragraph number.

FINDING INFORMATION

There are several ways to find the information you need in this manual. They are as follows:

- **FRONT COVER INDEX.** The front cover index contains a list of the most important topics contained in each volume. It features a black box at the right edge of the cover which corresponds with a black box on the page containing the topic. The topics listed on the front cover are highlighted in the table of contents with a box.

- **TABLE OF CONTENTS.** Lists chapters, sections, appendixes, and indexes with page numbers in order of appearance.

- **CHAPTER INDEXES.** List paragraphs contained in the individual chapters with paragraph and page numbers in order of appearance.

- **SYMPTOM INDEX.** Lists malfunctions contained in the troubleshooting table with page numbers in order of appearance.

TROUBLESHOOTING

Troubleshooting is contained in chapter 2. When a malfunction occurs, look at the symptom index for the vehicle troubleshooting table in chapter 2. Find the malfunction in the index. Turn to the page number listed for the malfunction in the troubleshooting table. Perform the steps required to correct the malfunction. If you can't find the malfunction, or the malfunction is not corrected, notify your supervisor.

MAINTENANCE

- **SCHEDULED MAINTENANCE.** Your scheduled maintenance is located in **Table 2-1. Preventive Maintenance Checks and Services**. These checks and services are mandatory at the intervals listed. Always follow the WARNINGS and CAUTIONS.

- **UNSCHEDULED MAINTENANCE.** Unscheduled maintenance is located in chapters 3 through 24. The PMCS and troubleshooting tables often reference you to these procedures. When you perform maintenance, look over the entire procedure before starting. Make sure you have the necessary tools and materials at hand. Always follow the WARNINGS and CAUTIONS.

FOLLOW THESE GUIDELINES WHEN USING THIS MANUAL:

- Become familiar with the entire maintenance procedure before beginning a maintenance task.

- Read all **WARNINGS** and **CAUTIONS** before performing any procedures.

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

This chapter provides general information, equipment description, and principles of operation for the M1083 series Medium Tactical Vehicle (MTV). The MTV will herein be referred to as the vehicle.

a. Type of Manual: Unit Maintenance Instructions, TM 9-2320-366-20-1.

b. Model Numbers and Equipment Names. The vehicle model numbers and names are listed below:

M1083	Truck, Cargo: 5-Ton, 6x6, Dropside (Figure 1-1).
M1084	Truck, Cargo: 5-Ton, 6x6, Dropside, W/MHC (Figure 1-2).
M1085	Truck, Cargo: 5-Ton, 6x6, Dropside, LWB (Figure 1-3).
M1086	Truck, Cargo: 5-Ton, 6x6, Dropside, LWB, W/MHC (Figure 1-4).
M1088	Truck, Tractor: 5-Ton, 6x6 (Figure 1-5).
M1089	Truck, Wrecker: 5-Ton, 6x6 (Figure 1-6).
M1090	Truck, Dump: 5-Ton, 6x6 (Figure 1-7).
M1092	Truck, Chassis: 5-Ton, 6x6 (Figure 1-8).
M1093	Truck, Cargo: 5-Ton, 6x6, Dropside, AIR DROP (Figure 1-9).
M1094	Truck, Dump: 5-Ton, 6x6, AIR DROP (Figure 1-10).
M1096	Truck, Chassis: 5-Ton, 6x6, LWB (Figure 1-11).

1-1. SCOPE (CONT)

c. Purpose of Equipment. The MTV series is a family of 6x6 wheeled vehicles. The purpose of these vehicles is as follows:

(1) M1083 - Cargo hauling vehicle; can be outfitted for troop transport when equipped with a troopseat kit.

(2) M1084 - Cargo hauling vehicle; equipped with a Material Handling Crane (MHC).

(3) M1085 - Long Wheelbase (LWB) cargo hauling vehicle; can be outfitted for troop transport when equipped with a troopseat kit.

(4) M1086 - Long Wheelbase (LWB) cargo hauling vehicle; equipped with a Material Handling Crane (MHC).

(5) M1088 - Tractor with fifth wheel; used to pull various types of fifth wheel trailers.

(6) M1089 - Wrecker with two winches, an underlift assembly, and a Material Handling Crane (MHC); used for recovering disabled vehicles.

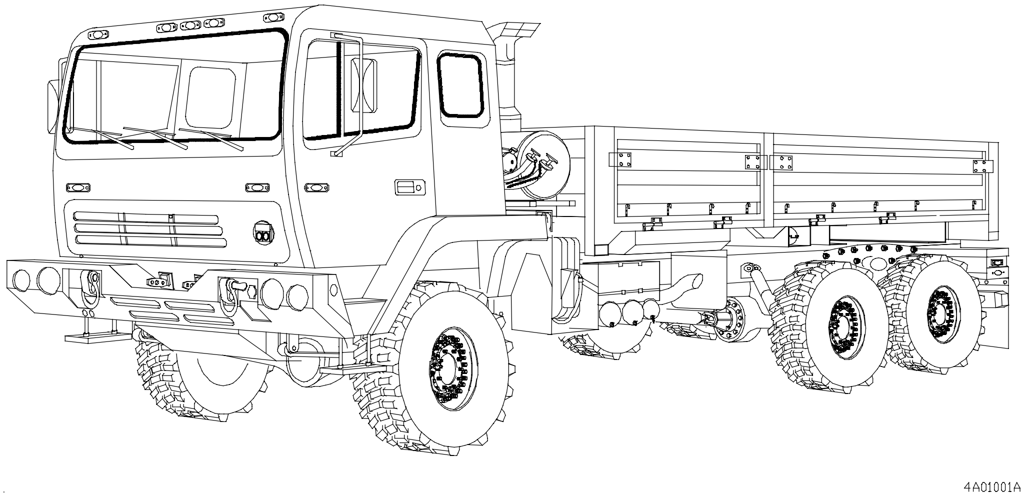
(7) M1090 - Dump truck; can be outfitted for troop transport when equipped with a troopseat kit.

(8) M1092 - Standard wheelbase vehicle chassis; this chassis will accept a standard cargo bed or may be modified for special missions.

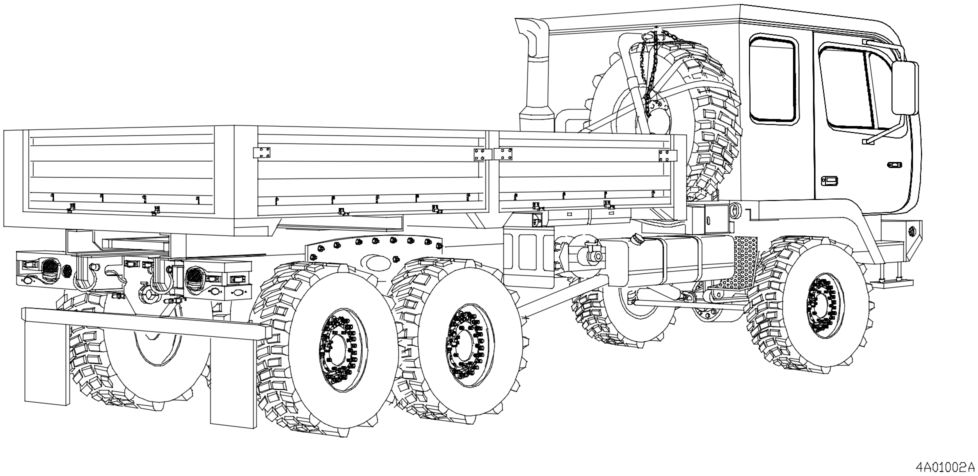
(9) M1093 - Cargo hauling vehicle; can be airdropped and outfitted for troop transport when equipped with a troopseat kit.

(10) M1094 - Dump truck; can be airdropped and outfitted for troop transport when equipped with a troopseat kit.

(11) M1096 - Long Wheelbase (LWB) vehicle chassis; this chassis will accept a long cargo bed or may be modified for special missions.



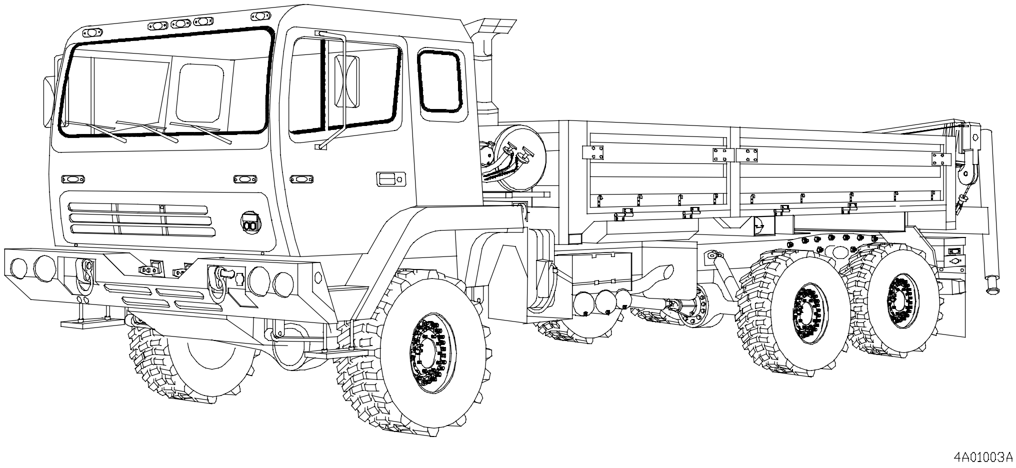
LEFT FRONT VIEW



RIGHT REAR VIEW

Figure 1-1. M1083 Truck, Cargo: 5-Ton, 6x6, Dropside

1-1. SCOPE (CONT)



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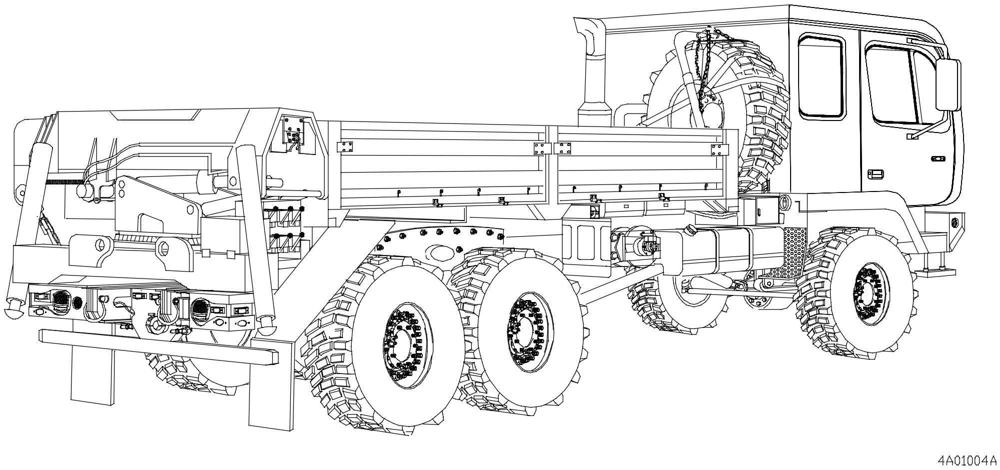
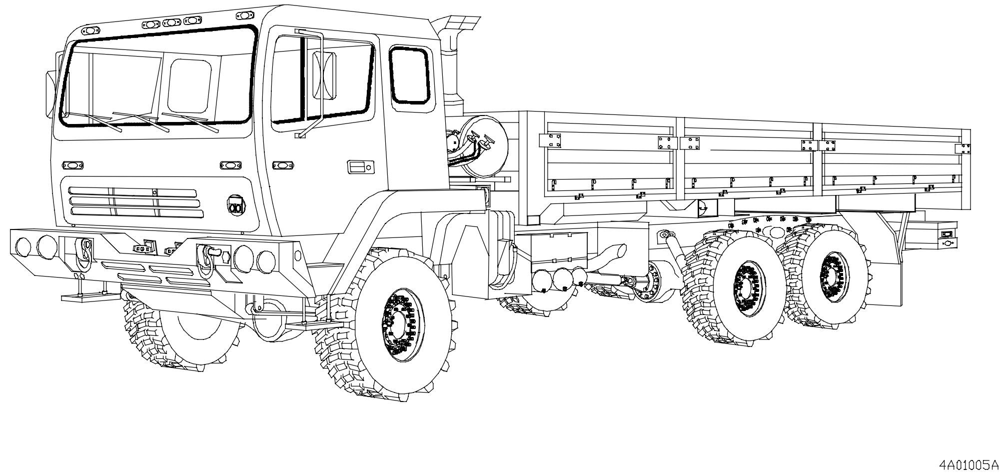
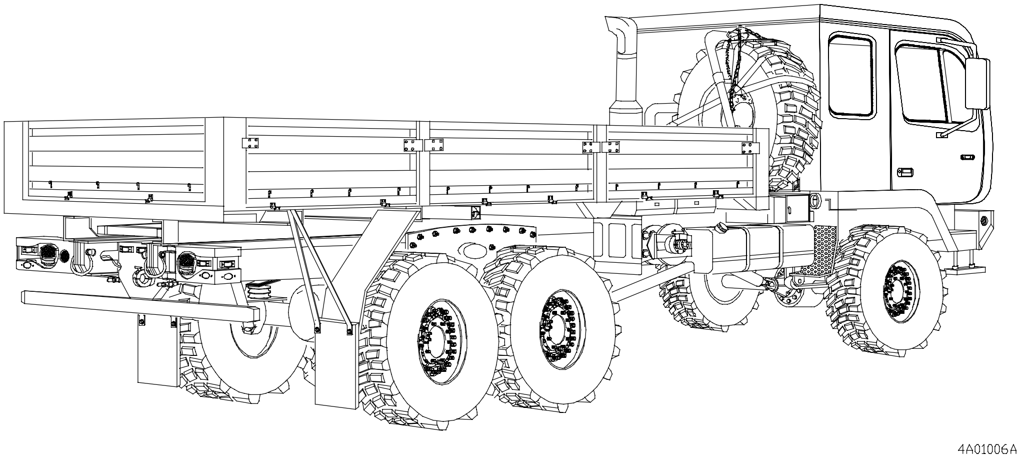


RIGHT REAR VIEW

Figure 1-2. M1084 Truck, Cargo: 5-Ton, 6x6, Dropside, W/MHC



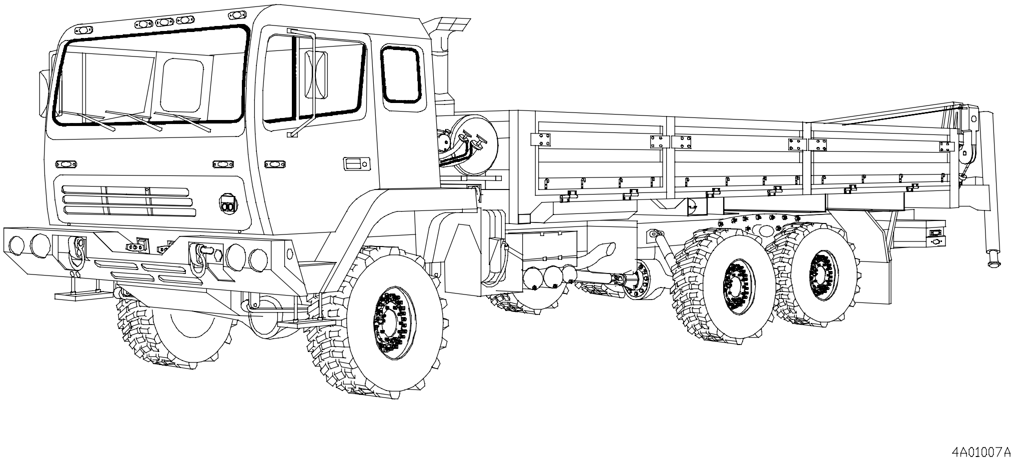
LEFT FRONT VIEW



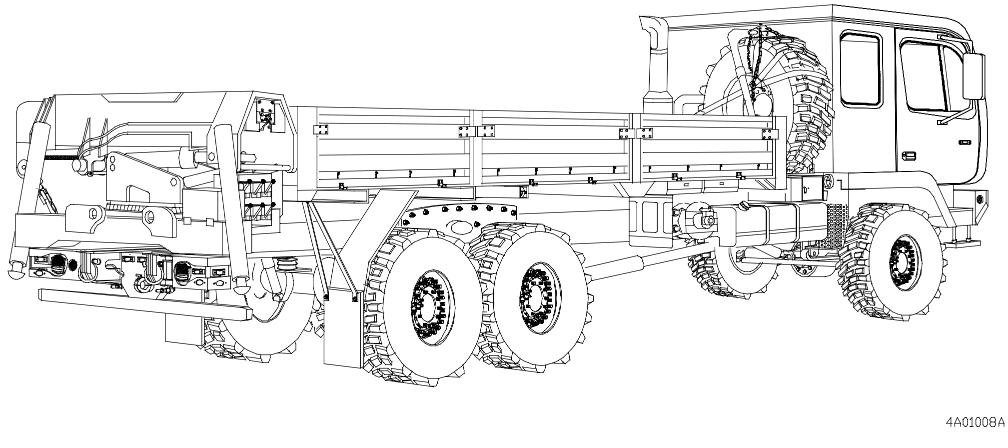
RIGHT REAR VIEW

Figure 1-3. M1085 Truck, Cargo: 5-Ton, 6x6, Dropside, LWB

1-1. SCOPE (CONT)

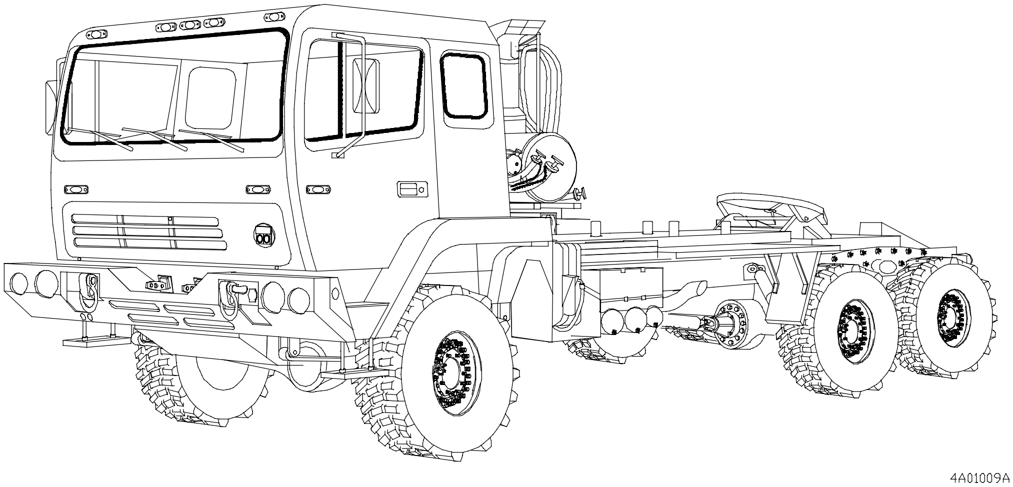


LEFT FRONT VIEW

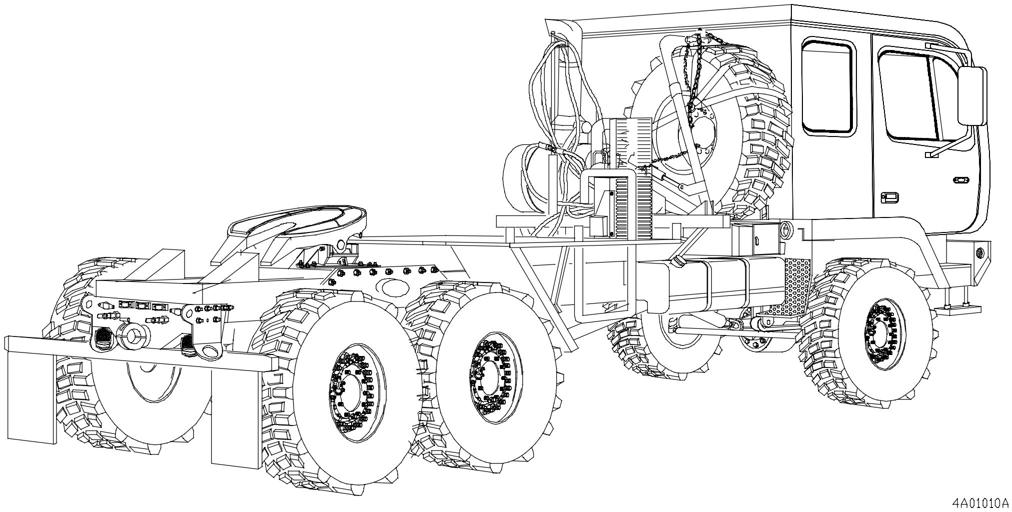


RIGHT REAR VIEW

Figure 1-4. M1086 Truck, Cargo: 5-Ton, 6x6, Dropside, LWB, W/MHC



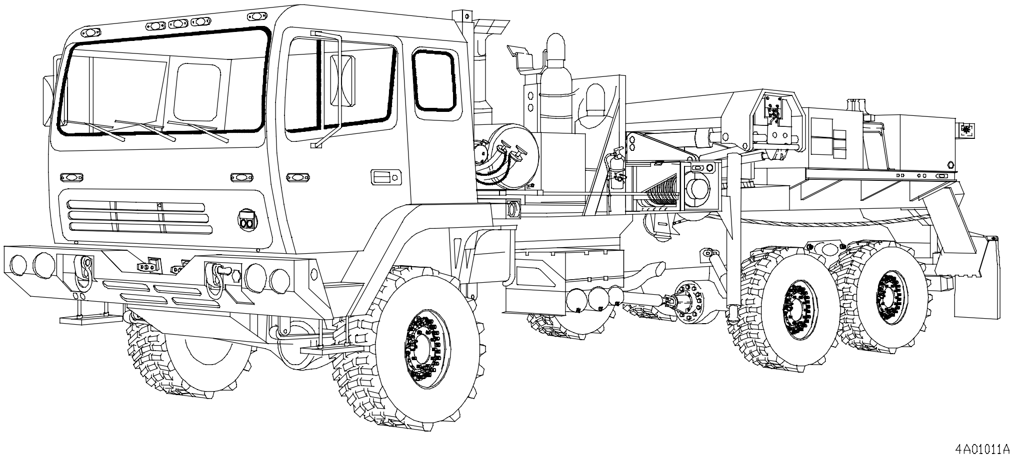
LEFT FRONT VIEW



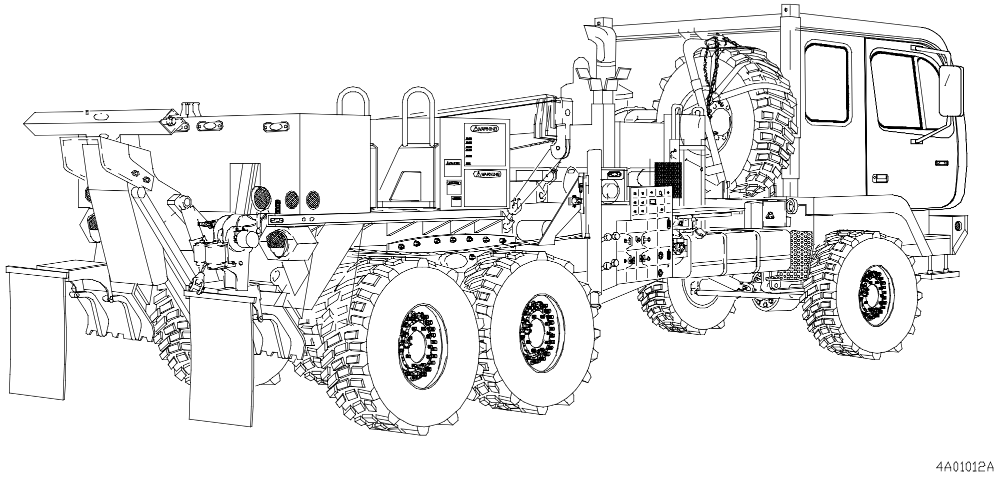
RIGHT REAR VIEW

Figure 1-5. M1088 Truck, Tractor: 5-Ton, 6x6

1-1. SCOPE (CONT)

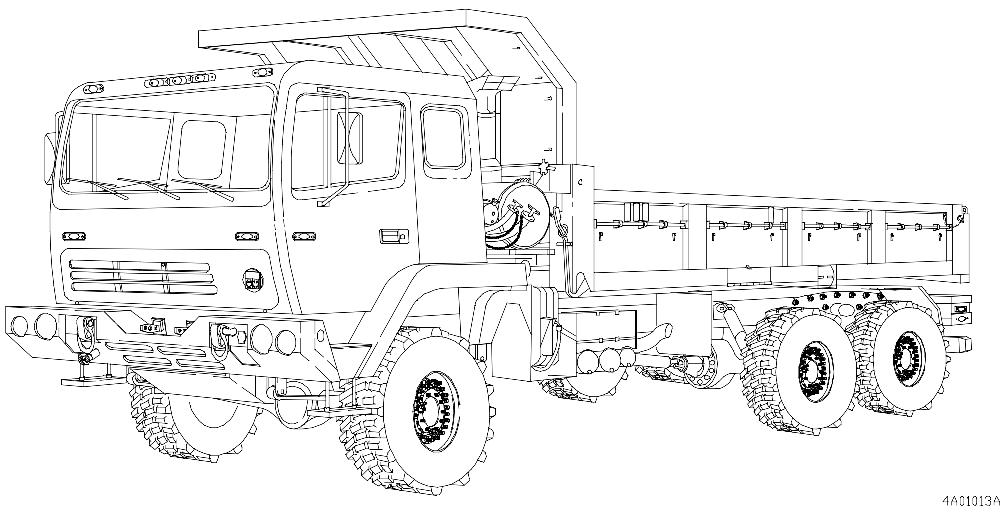


LEFT FRONT VIEW

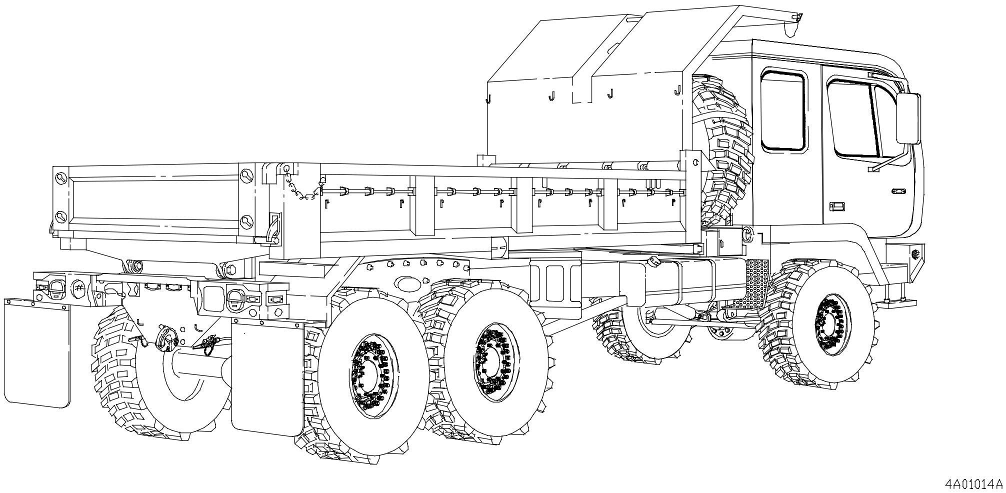


RIGHT REAR VIEW

Figure 1-6. M1089 Truck, Wrecker: 5-Ton, 6x6



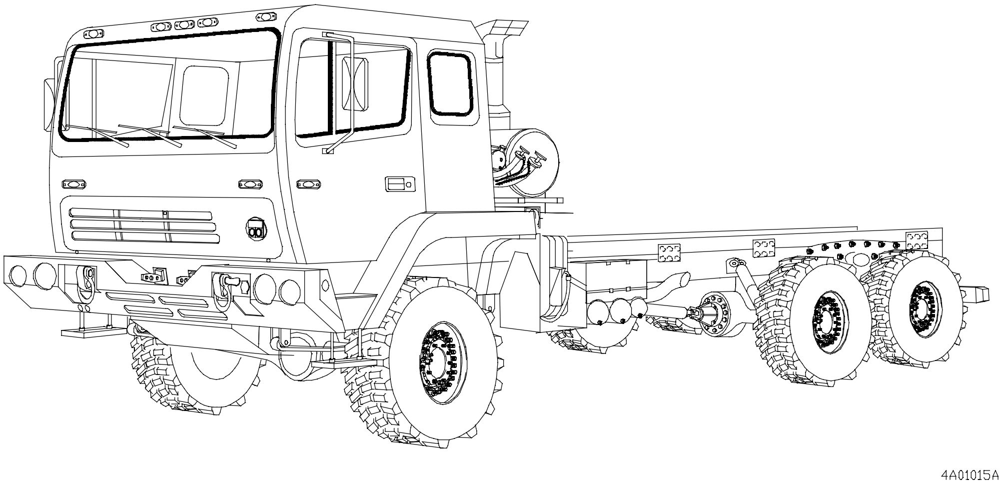
LEFT FRONT VIEW



RIGHT REAR VIEW

Figure 1-7. M1090 Truck, Dump: 5-Ton, 6x6

1-1. SCOPE (CONT)



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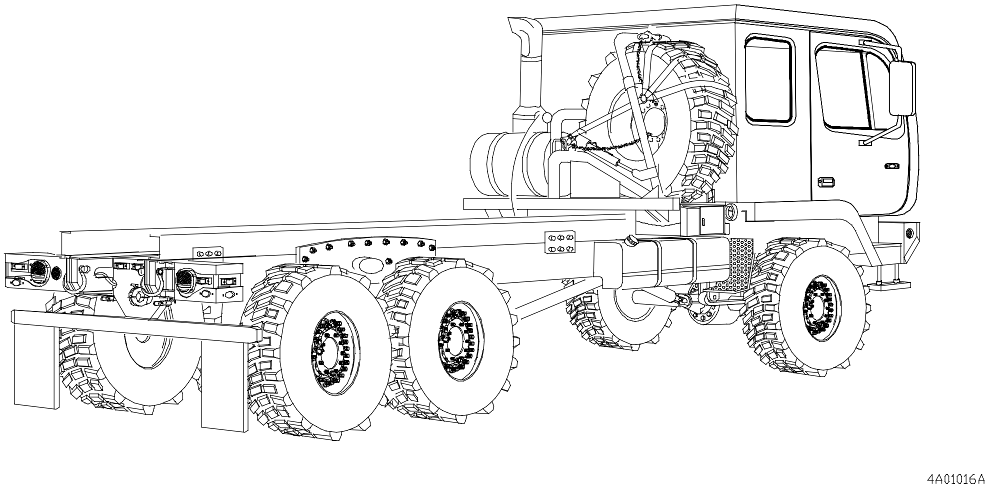
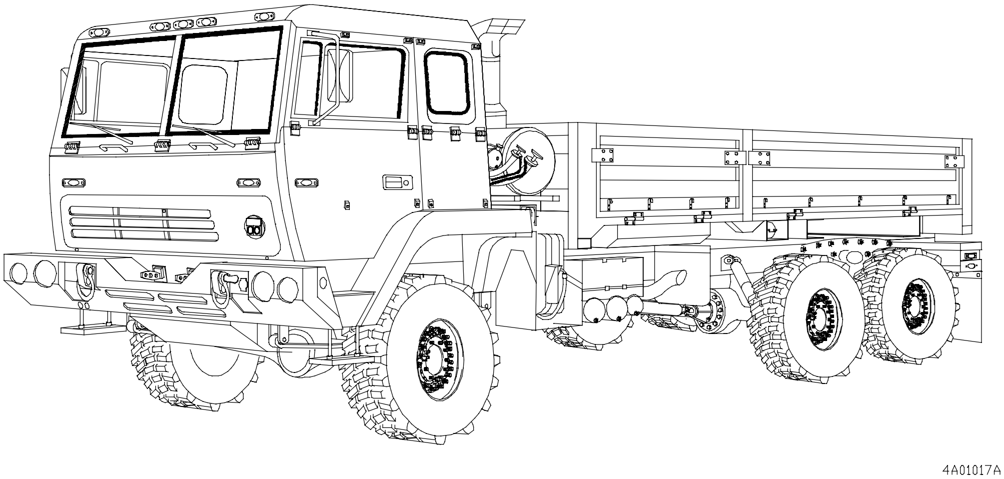
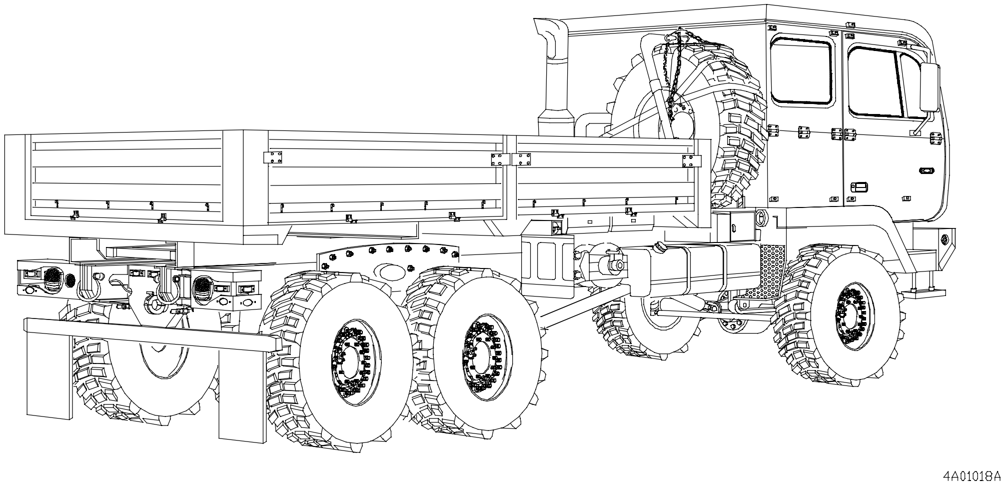


RIGHT REAR VIEW

Figure 1-8. M1092 Truck, Chassis: 5-Ton, 6x6



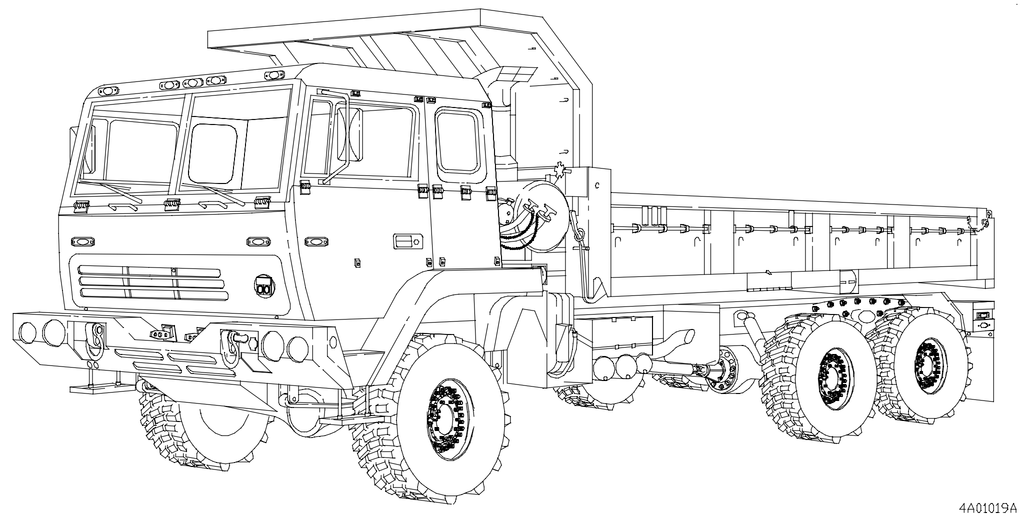
LEFT FRONT VIEW



RIGHT REAR VIEW

Figure 1-9. M1093 Truck, Cargo: 5-Ton, 6x6, Dropside, AIR DROP

1-1. SCOPE (CONT)



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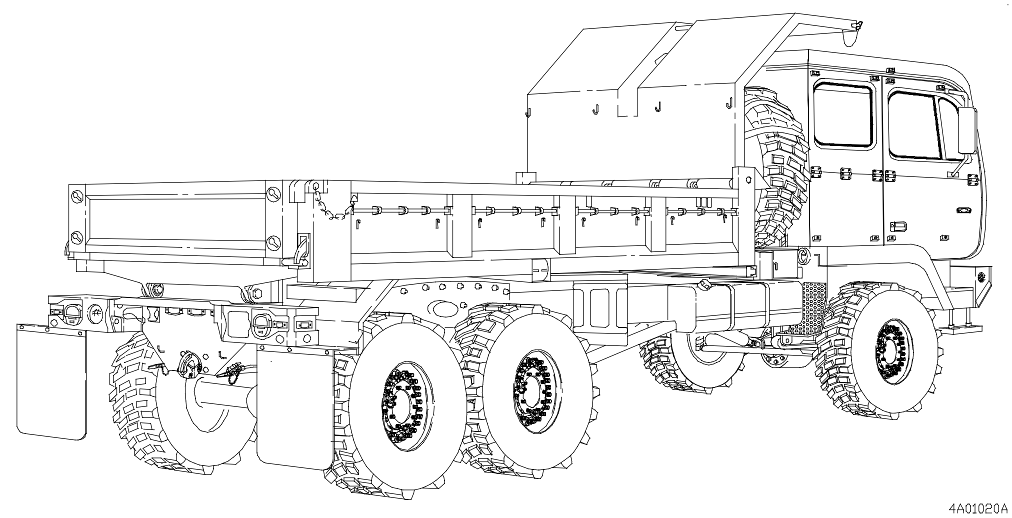
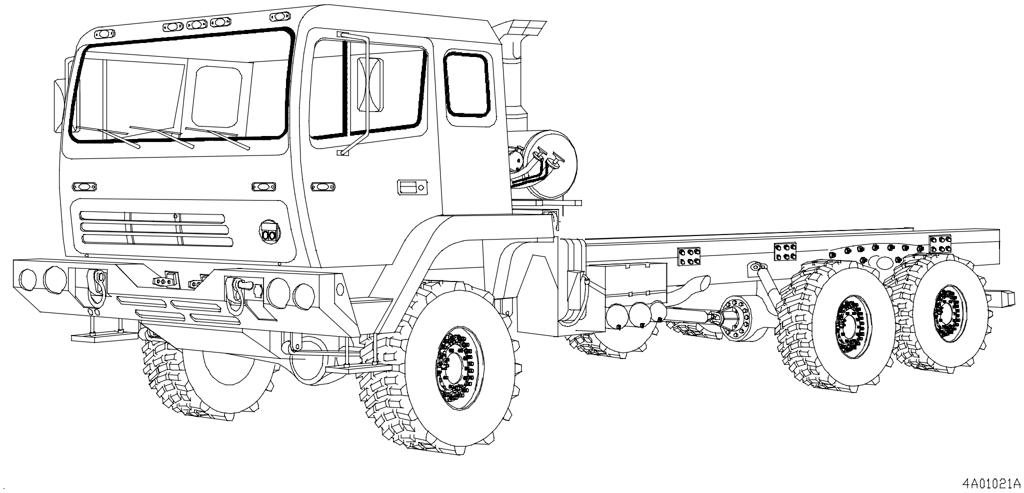
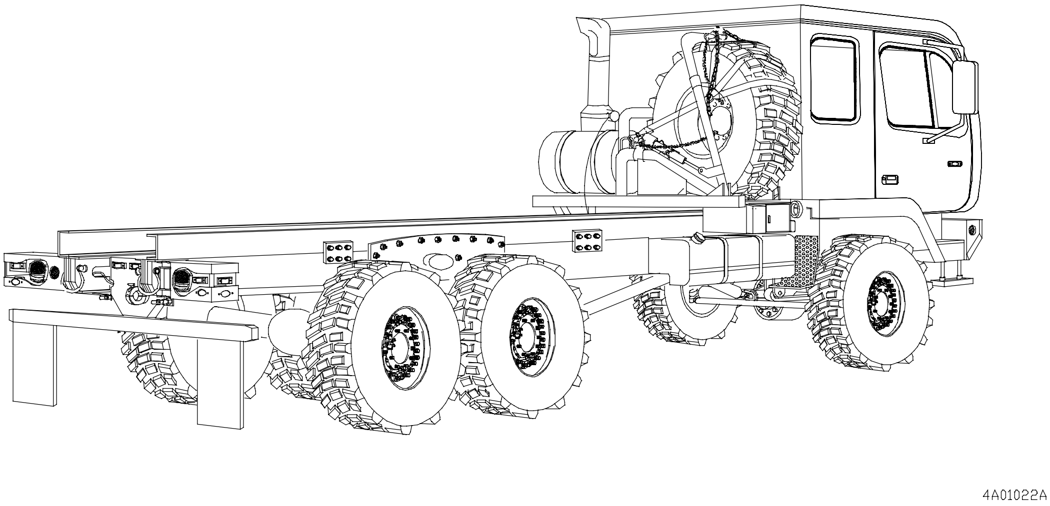


RIGHT REAR VIEW

Figure 1-10. M1094 Truck, Dump: 5-Ton, 6x6, AIR DROP



LEFT FRONT VIEW



RIGHT REAR VIEW

Figure 1-11. M1096 Truck, Chassis: 5-Ton, 6x6, LWB

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA Pam 738-750. The Army Maintenance Management Systems (TAMMS); DA Pam 738-751, Functional Users Manual for the Army Maintenance Management Systems; or AR 700-138. Army Logistics Readiness and Sustainability.

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

Command decision, according to the tactical situation, will determine when the destruction plan of the M1083 vehicles will be accomplished. A destruction plan will be prepared by the using organization unless one has been prepared by a higher authority. For general destruction procedures for this equipment, refer to TM 750-224-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-automotive and Armaments Command).

1-4. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS

Table 1-1 lists the nomenclature cross-reference used in this manual.

Table 1-1. Nomenclature Cross-Reference

Common Name	Official Nomenclature
Cold Start System	Ether Quick-Start System
Engine Coolant	Antifreeze, Ethylene, Glycol, Inhibited
Gladhand	Quick-Disconnect Coupling
Vehicle	Medium Tactical Vehicle (MTV)

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Medium Tactical Vehicle (MTV) needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don’t like about your equipment. Let us know why you don’t like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/MPA, Warren, MI 48397-5000. We’ll send you a reply.

1-6. WARRANTY INFORMATION

Refer to M1083 Series Warranty Program Technical Bulletin, TB 9-2300-366-15, for complete warranty information covering the vehicle. Warranty starts on the date found in block 23, DA Form 2408-9, in the logbook. Report all defects in material or workmanship to your supervisor, who will take appropriate action.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Refer to TM 9-2320-366-10-1 for equipment characteristics, capabilities, and features.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Refer to TM 9-2320-366-10-1 for location and description of major components.

1-9. DIFFERENCES BETWEEN MODELS

Refer to TM 9-2320-366-10-1 for differences between models.

Section III. PRINCIPLES OF OPERATION

1-10. POWERTRAIN

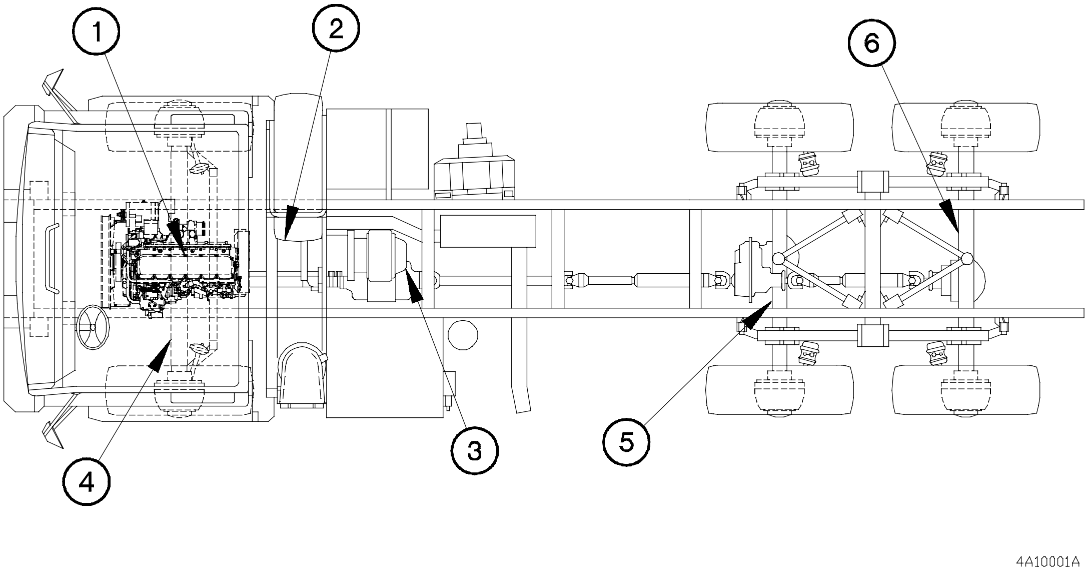


Figure 1-12. Powertrain

Power for the vehicle is provided by a diesel engine (1, Figure 1-12) which is coupled directly to an automatic transmission (2). Power from the automatic transmission is transferred to the transfer case (3) and on to the front steering and rear drive axles (4, 5, and 6) through a series of drive shafts and universal joints. The vehicle drive train is enhanced by the use of an electronically controlled seven-speed transmission. The primary components of the Allison MD3070PT transmission consist of either a WTEC II Transmission Electronic Control Unit (ECU) Pushbutton Shift Selector (WTEC II TEPSS) or a WTEC III Transmission Pushbutton Shift Selector (WTEC III TPSS) coupled with a WTEC III transmission ECU; a control module located directly beneath the transmission main housing; a Throttle Position Sensor (TPS) which detects the percentage of throttle being used; engine, turbine, and output speed sensors which, in combination with each other, send information to the ECU to provide the smoothest possible shifting and allow the ECU to monitor overall transmission performance.

1-10. POWERTRAIN (CONT)

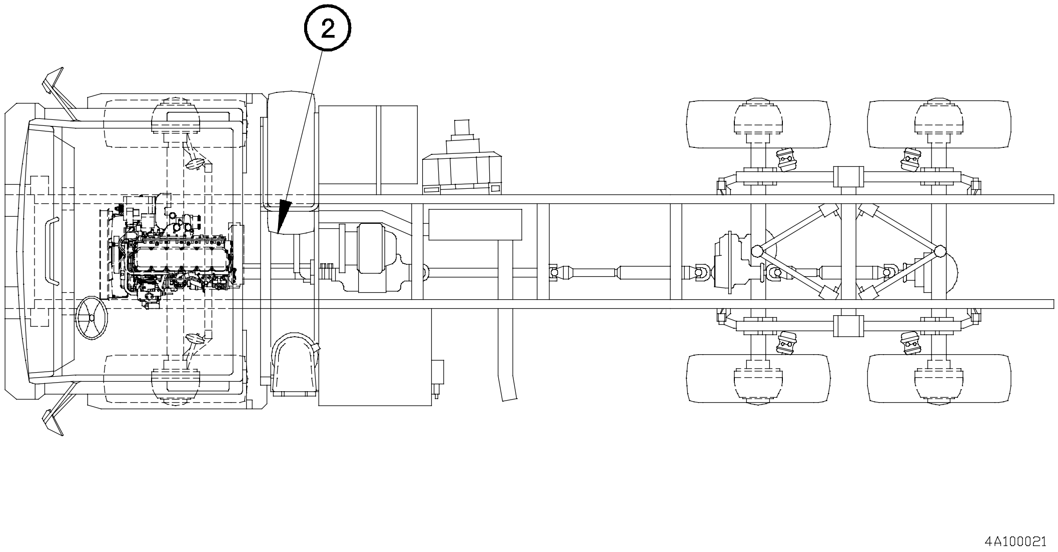


Figure 1-12. Powertrain (Cont)

a. Engine. The vehicle is equipped with a Caterpillar diesel engine, model 3116 ATAAC (Air-to-Air After Cooler) (1, Figure 1-12), rated at 290 HP.

b. Transmission. The vehicle is equipped with an Allison automatic transmission, model MD3070PT (2, Figure 1-12). It is a fully automatic electronically controlled seven-speed close-ratio transmission.

(1) The WTEC II TEPSS contains microprocessor based electronics, and is located in the instrument panel to the driver's left. The WTEC III TPSS is located in the instrument panel to the driver's left, while the WTEC III transmission ECU is located behind the kick panel. The ECU receives information, in the form of electrical signals from the various sensors, processes that information, then sends the appropriate signals to the solenoids which control transmission function. The ECU incorporates a diagnostic program which enables it to identify numerous actual and/or potential transmission problems. The WTEC II TEPSS and WTEC III TPSS are capable of displaying diagnostic codes in the Light Emitting Diode (LED) display on the pushbutton shift selector. These diagnostic codes are stored in the ECU for later retrieval. The pushbutton shift selector is used for selecting transmission range. The transmission defaults to Neutral (N) whenever electrical power is removed from the vehicle. The Drive (D) gear selection is used for normal driving conditions. The transmission will engage 2nd gear when D is selected and the vehicle is stopped. As the accelerator is depressed and speed increases, the transmission will automatically upshift through 3rd, 4th, 5th, 6th, and 7th gears. Low gear (1st gear), is available only by manual selection. Selecting a specific gear; for example, 3rd; will prevent the transmission upshifting past the selected gear. This is useful if road or load conditions require lower gear range operation. When road conditions improve or load is reduced, the shift selector can be returned to the normal (D) driving position. When electrical power is applied to the WTEC II TEPSS and a fault is detected in the transmission controls, the WTEC II TEPSS will emit an eight second series of beeps. When electrical power is applied to the WTEC III TPSS and a fault is detected in the transmission controls, "--" will appear in the WTEC III TPSS LED display. In either case, the transmission will not engage a range (forward or reverse) when D or Reverse (R) range is selected on the pushbutton shift selector. TM 9-2320-366-10-1 provides full operating instructions for the transmission.

(2) The transmission may include a Power Take-Off (PTO). The PTO powers a hydraulic pump which supplies hydraulic pressure for hydraulically operated components.

c. Transfer Case. The transfer case (3, Figure 1-12) provides the transmission (2) with the seventh gear (low gear, or 1st gear) and delivers power from the transmission to the front and rear driveshafts. In normal driving conditions, the transfer case splits the output torque of the transmission, providing 70 percent of the torque to the rear output drive yoke and 30 percent to the front output drive yoke. In low gear the output torque of the transmission is split evenly, with 50 percent going to the front output yoke and 50 percent going to the rear.

d. Suspension. The suspension system is designed to maintain tire/ground contact in all types of terrain. the vehicle is equipped with 395/85R20 tires. The tires have a tread pattern designed to maximize traction on all types of terrain.

e. Axles. Front, Intermediate and Rear axles (4, 5, and 6, Figure 1-12) feature wheel end planetary drives designed to allow the vehicle to carry heavy loads. When the vehicle is operated in MODE, all axles become driving axles. When the vehicle is operated in MODE, 7th gear is unavailable.

1-11. ENGINE AIR INTAKE SYSTEM

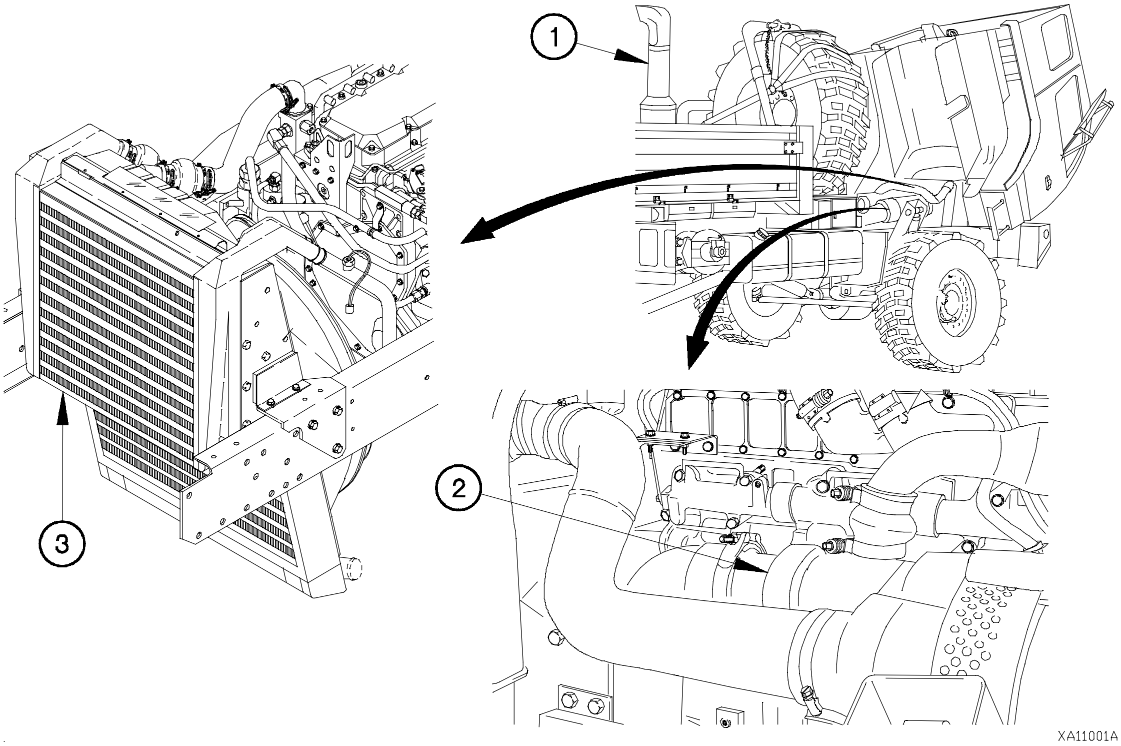


Figure 1-13. Engine Air Intake System

The engine air intake system consists of a dry-type air cleaner (1, Figure 1-13), turbocharger (2), and a charge air cooler (3). The turbocharger increases engine horsepower by delivering a higher volume of air to the engine. Engine exhaust gases flow through the turbocharger, causing a turbine wheel to spin. As the turbine wheel spins, a compressor wheel on the opposite end of the turbine wheel shaft spins and draws fresh air through the air cleaner. The compressor wheel compresses the air and delivers it to the charge air cooler. The air flows through the charge air cooler which cools the air before it is delivered to the engine cylinders. The charge air cooler allows a denser charge of air to be delivered to the engine, which also aids in increasing engine horsepower.

1-12. FUEL SYSTEM

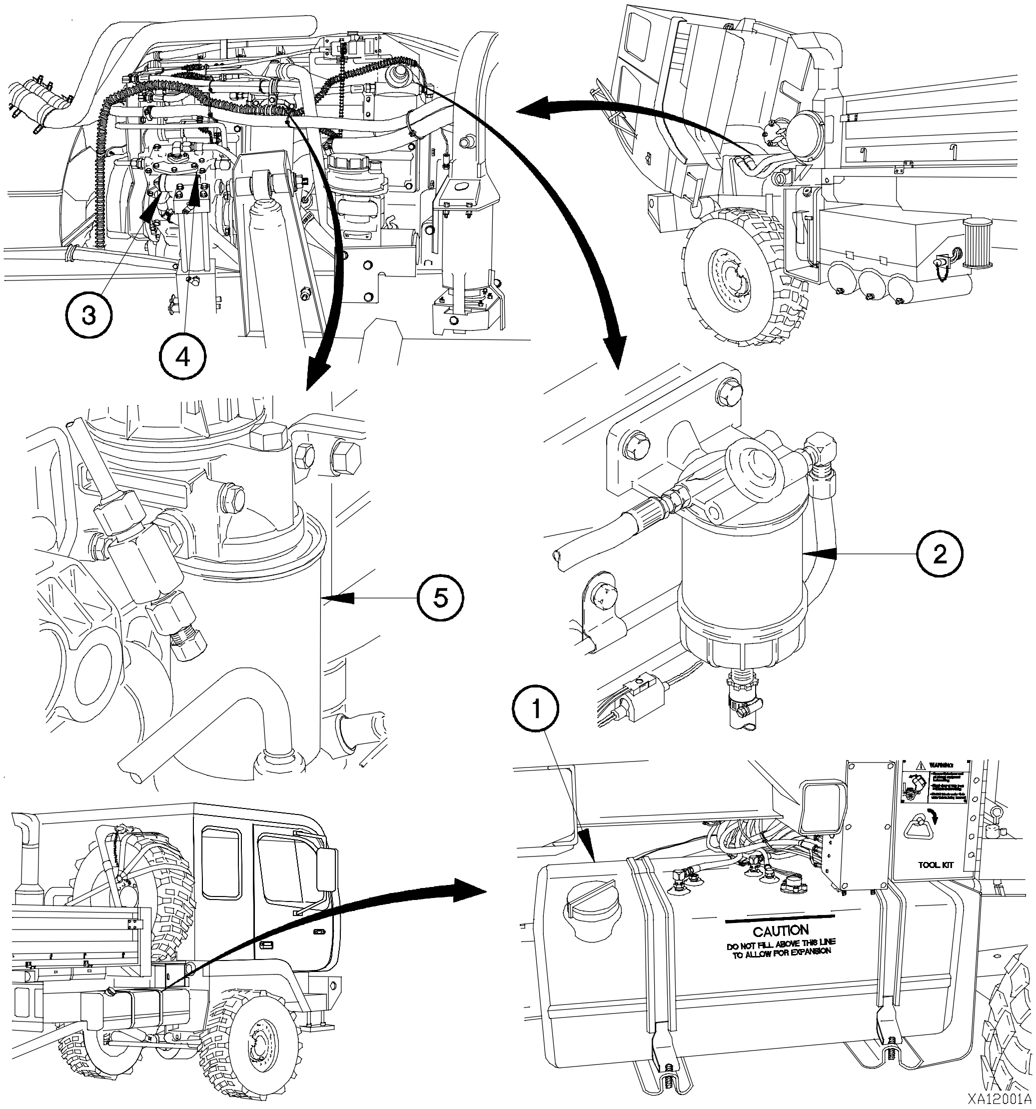


Figure 1-14. Fuel System

The primary components of the fuel system are the fuel tank (1, Figure 1-14), fuel priming pump and fuel/water separator (2), fuel shutoff solenoid (3), engine fuel governor (4), and secondary fuel filter (5). The mechanical fuel pump acts as an engine priming feature. The fuel/water separator removes water and large solid particles from the fuel before it is passed to the engine fuel governor. The fuel shutoff solenoid, when energized, frees the governor output shaft to move to the FUEL ON position. When electrical power is removed from the fuel shutoff solenoid, the governor output shaft is locked in the FUEL OFF position. The engine fuel governor contains a mechanical link to the fuel control linkage and fuel transfer pump. The engine fuel governor responds to input from the accelerator pedal and causes the fuel control rack to rotate, resulting in an increase or decrease in engine speed. The governor adjusts the amount of fuel delivered to the engine as engine speed changes. The secondary fuel filter removes finer particles from the fuel before it reaches the cylinder head. A fuel pressure regulator redirects excess fuel, through a fuel return hose, back to the fuel tank.

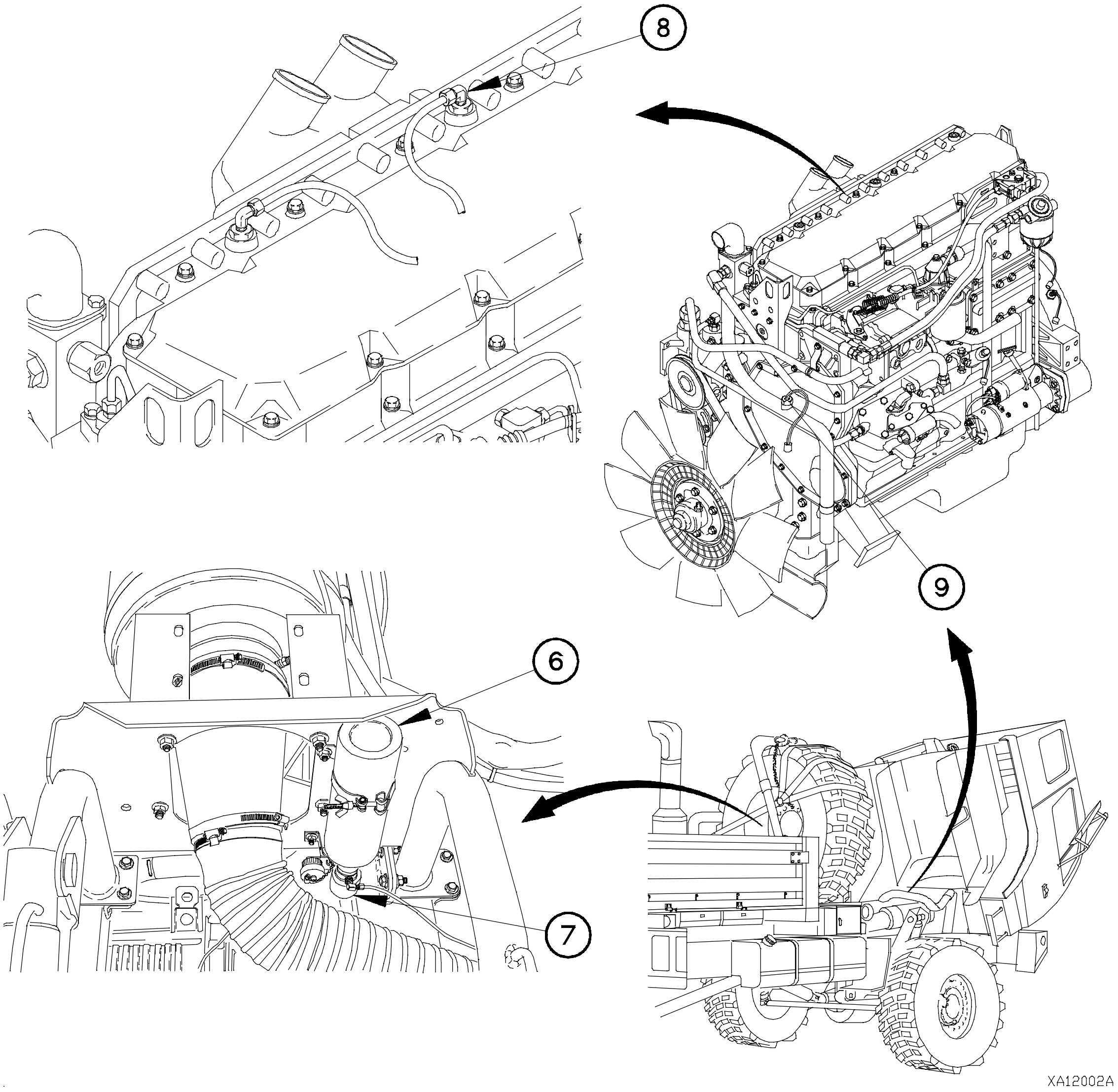


Figure 1-14. Fuel System (Cont)

Additionally, the vehicle is equipped with an ether quick start system designed for starting the engine when ambient temperatures are below 32°F (0°C). The ether quick start system is composed of an ether cylinder (6), ether valve (7), two ether nozzles (8), and an ether sensor switch (9). The ether sensor switch detects the temperature of the engine coolant and disables the ether valve above 32°F (0°C). The ether valve delivers a controlled charge of ether to the ether nozzles.

1-13. COOLING SYSTEM

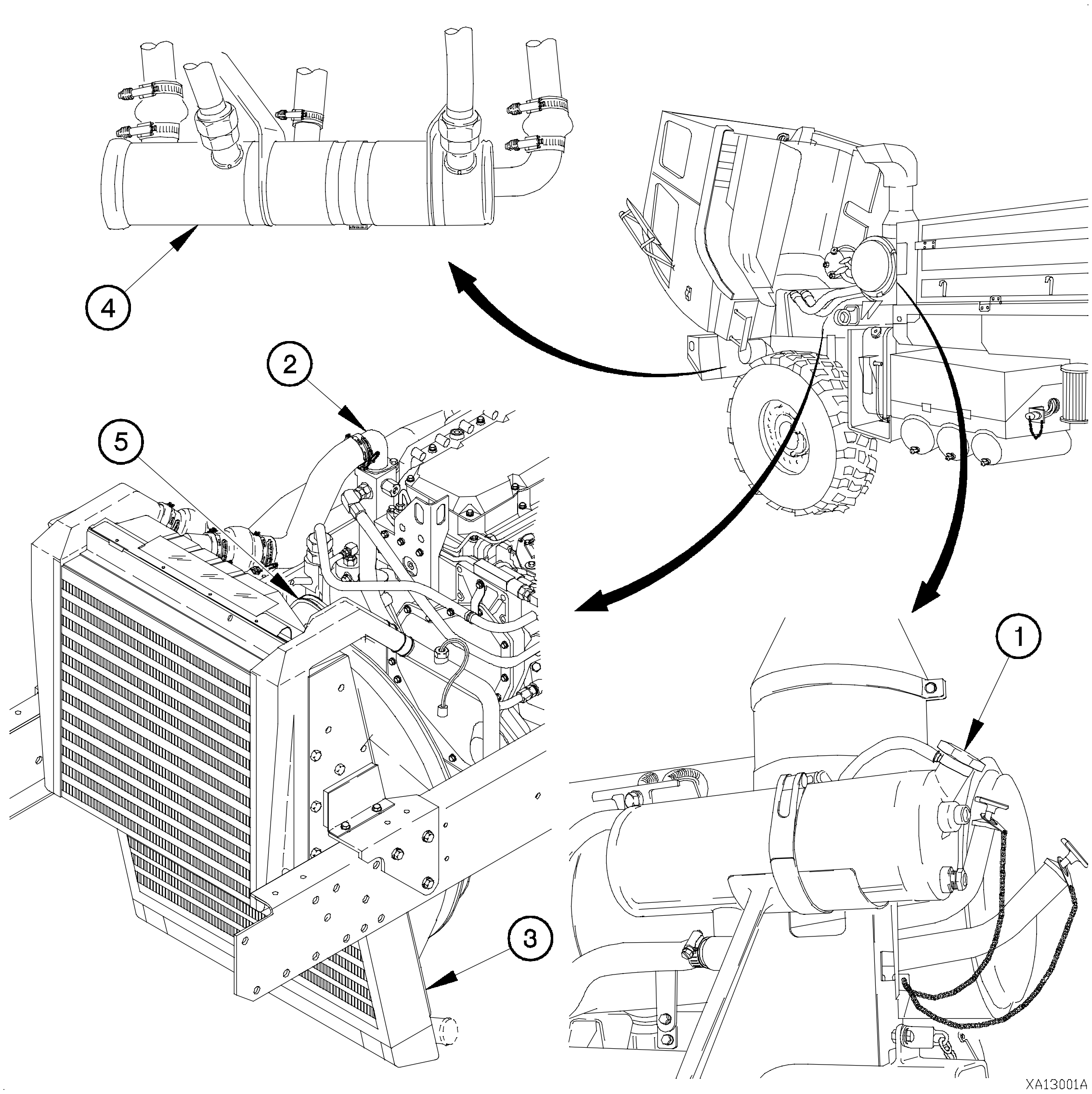


Figure 1-15. Cooling System

a. Cooling System. The pressurized cooling system protects the engine, transmission, and air compressor by providing a means of dissipating heat generated during operation of the vehicle. The radiator pressure cap (1, Figure 1-15), in combination with the ethylene glycol-based antifreeze, effectively raises the boiling point of the coolant to well above 212° F (100° C). The thermostat (2), located in a housing on the right side of the engine, helps the engine to warm up quickly by remaining closed until the coolant temperature reaches approximately 180° F (82° C). When the coolant reaches 199° F (93° C), the thermostat is fully open and coolant is circulated through the water jackets in the engine to maintain the correct operating temperature for the engine. Coolant is drawn from the radiator (3), through the transmission oil cooler (4), and circulated throughout the cooling system by the water pump (5). The water pump, located on the front of the engine toward the right side, is driven by two V-belts from the crankshaft pulley.

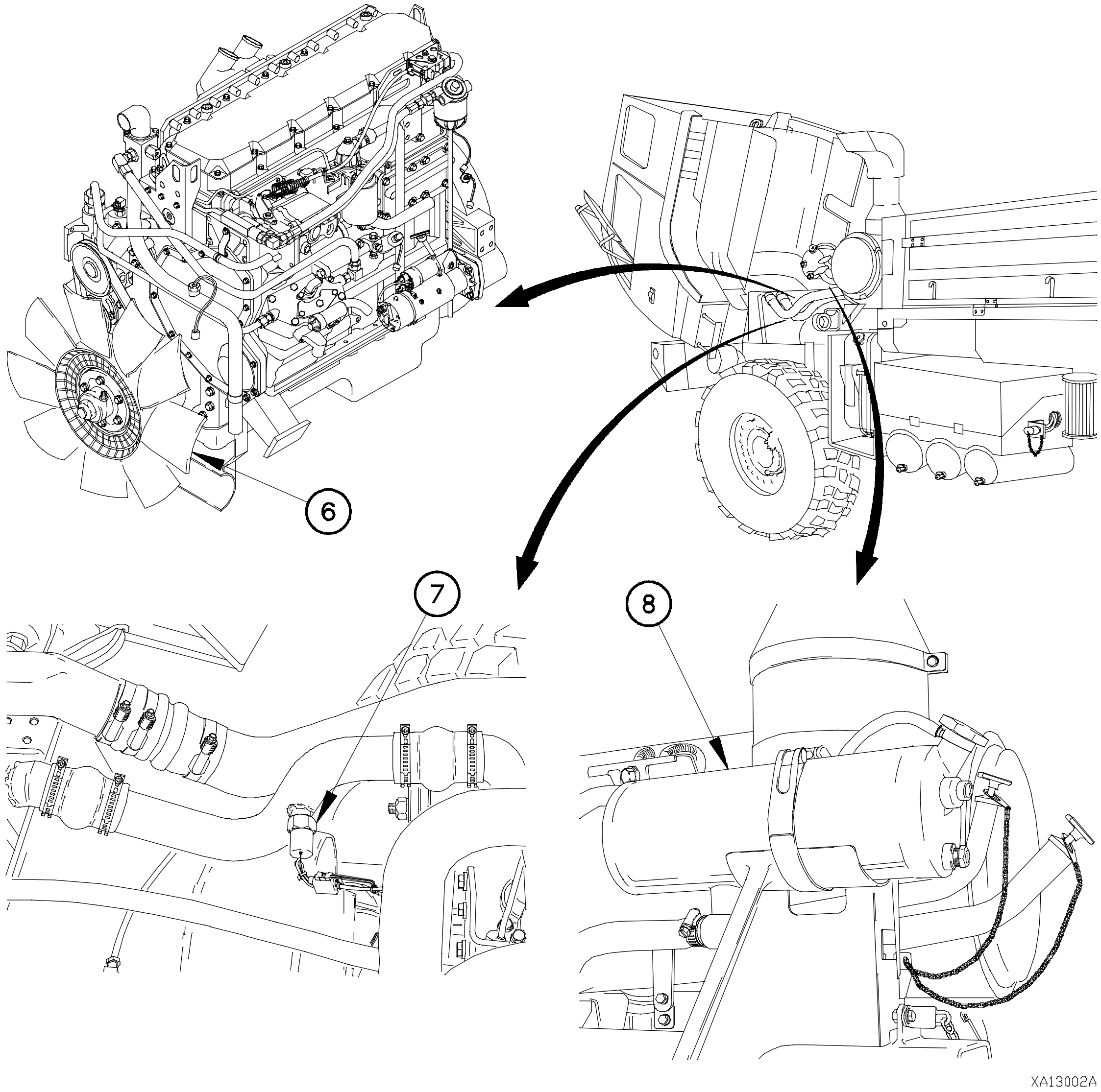


Figure 1-15. Cooling System (Cont)

An engine fan (6) with pneumatic clutch is activated by the water temperature switch (7). When this switch detects a high temperature condition, air pressure is removed from the fan clutch and the engine fan is engaged. Excess heat is drawn from the radiator by the flow of air created by the engine fan over the radiator cooling fins. A radiator overflow tank (8) is provided to allow for expansion of the coolant. The radiator overflow tank also serves as the point where new coolant is introduced into the cooling system.

1-13. COOLING SYSTEM (CONT)

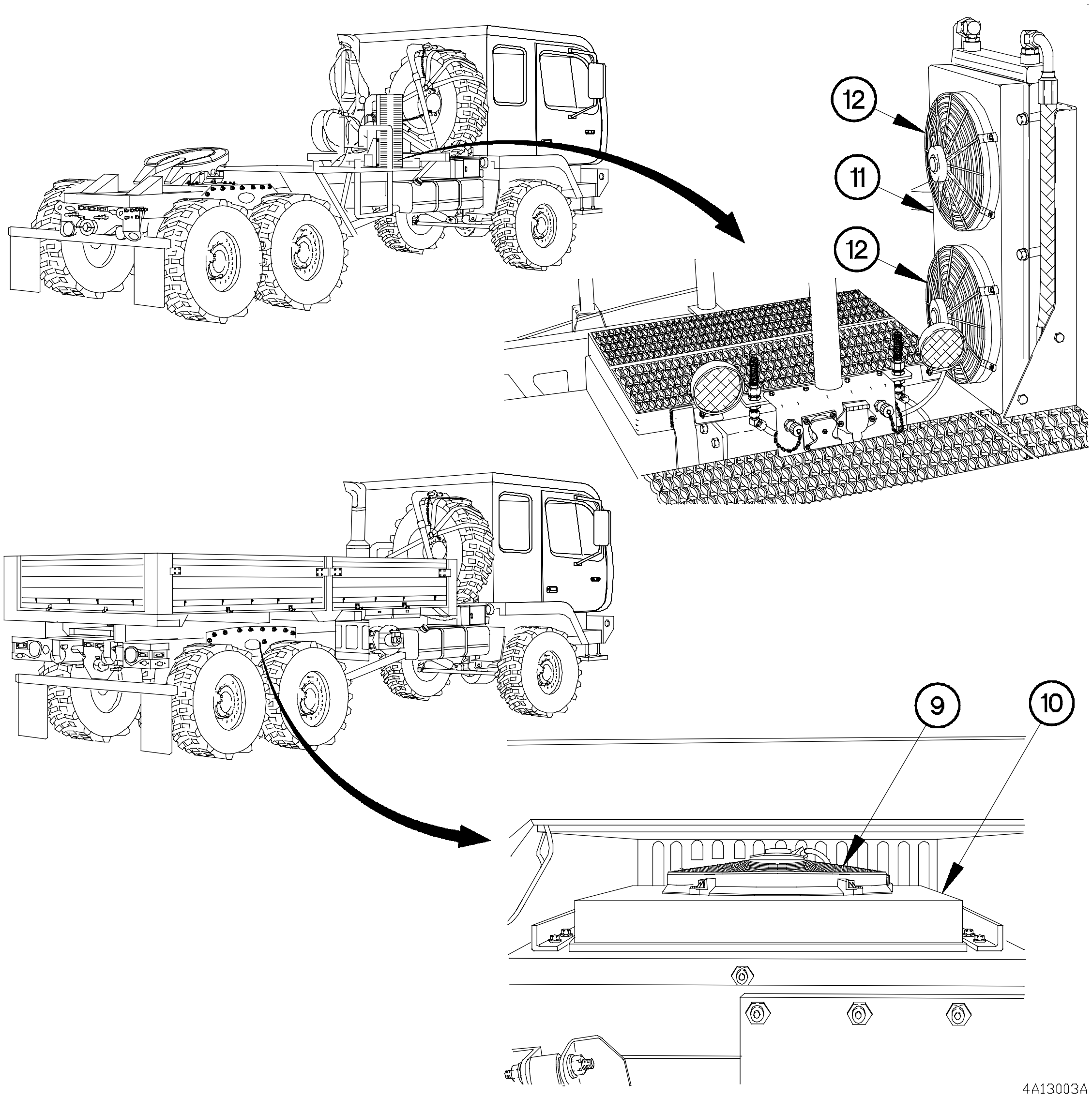


Figure 1-15. Cooling System (Cont)

Cooling capacity for the transmission is increased through the use of a transmission auxiliary oil cooler (9). All MTV vehicles, except M1088 and M1089, are supplied with a transmission auxiliary oil cooler equipped with a single electric fan (10) to draw air over the oil cooler core. The M1088 and M1089 vehicles are supplied with a larger transmission auxiliary oil cooler (11) equipped with dual electric fans (12) to provide even more air flow across the oil cooler core.

1-14. ELECTRICAL SYSTEM

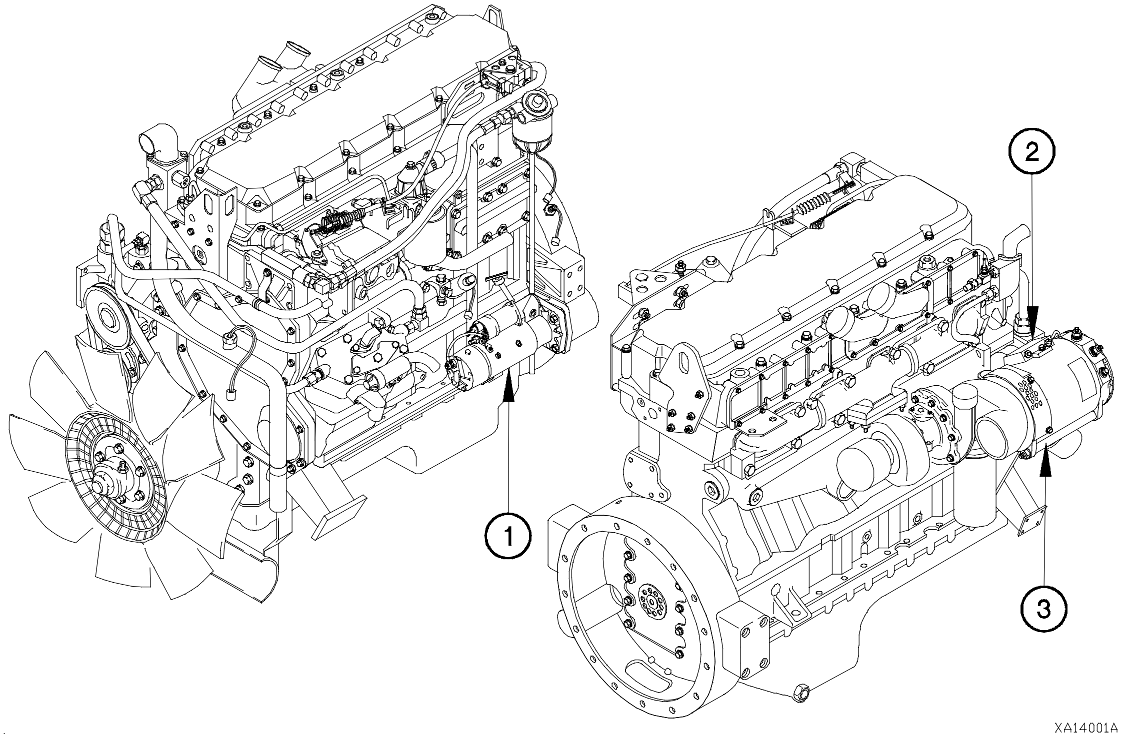


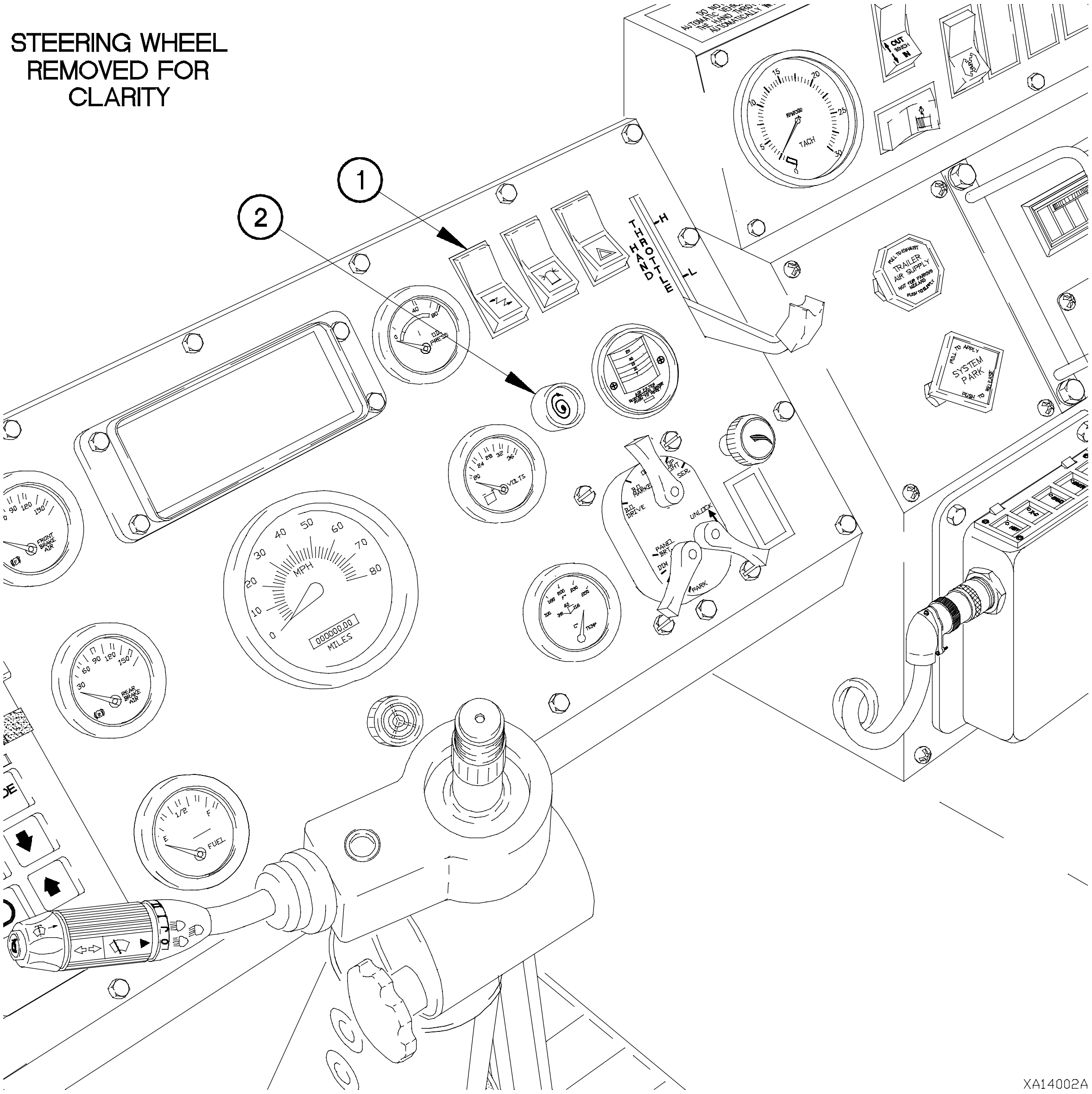
Figure 1-16. Electrical System

In the Electrical System, a heavy duty starting motor (1, Figure 1-16) is mounted on the engine flywheel housing and provides the cranking power necessary for starting the engine. The voltage regulator (2) maintains both a 14- and 28-volts level for proper battery charging. The alternator (3) provides sufficient amperage to operate all electrical components and charge the batteries during engine idling. Vehicle exterior lights are mounted in protective locations or are protected to prevent damage. Protection is provided for lights during cross country travel. Polycarbonate lenses are provided for all lights except the sealed beam headlights. The electrical system supplies all of the electrical power needed to operate the vehicle and trailer. The complete Electrical System is made up of the following subsystems:

- Power Storage and Generating
- Engine Starting and Stopping
- Service Lighting
- Blackout Lighting
- Accessory Lighting
- Instruments
- Indicator Lights and Alarm
- Material Handling Crane (MHC)
- Troubleshooting Aid
- M1089 Underlift

a. Power Storage and Generating. Power storage for the vehicle consists of four 12-volt batteries. The four batteries are divided into two sets. Two batteries in each set are wired in parallel to produce higher amperage. The two sets are then wired in series to produce 24 volts Direct Current (DC). While the batteries can power all of the systems for a limited time, their primary purpose is to supply power to the engine starting system. Once the engine is running, the generating system provides electrical power for all of the systems. The engine driven alternator generates Alternating Current (AC) which is passed through a set of rectifiers that change it into DC current. This DC current is used to charge the batteries and is distributed to the electrical sub-systems of the vehicle. The voltage regulator adjusts alternator output to fit the needs of the electrical system.

1-14. ELECTRICAL SYSTEM (CONT)



STEERING WHEEL
REMOVED FOR
CLARITY

Figure 1-17. Engine Starting System.

b. Engine Starting and Stopping. The Engine Starting System uses the stored electrical energy of the batteries to the turn the starting motor. When the master power switch (1, Figure 1-17) is positioned to on and the starter pushbutton switch (2) is depressed, electrical power passes through the starter pushbutton to the auxiliary starter solenoid. The auxiliary starter solenoid draws electrical power directly from the batteries and sends it to the starting motor solenoid. When the starting motor solenoid is energized, electrical power from the batteries is supplied to the starting motor and the engine begins cranking. Positioning the master power switch to off stops the engine.

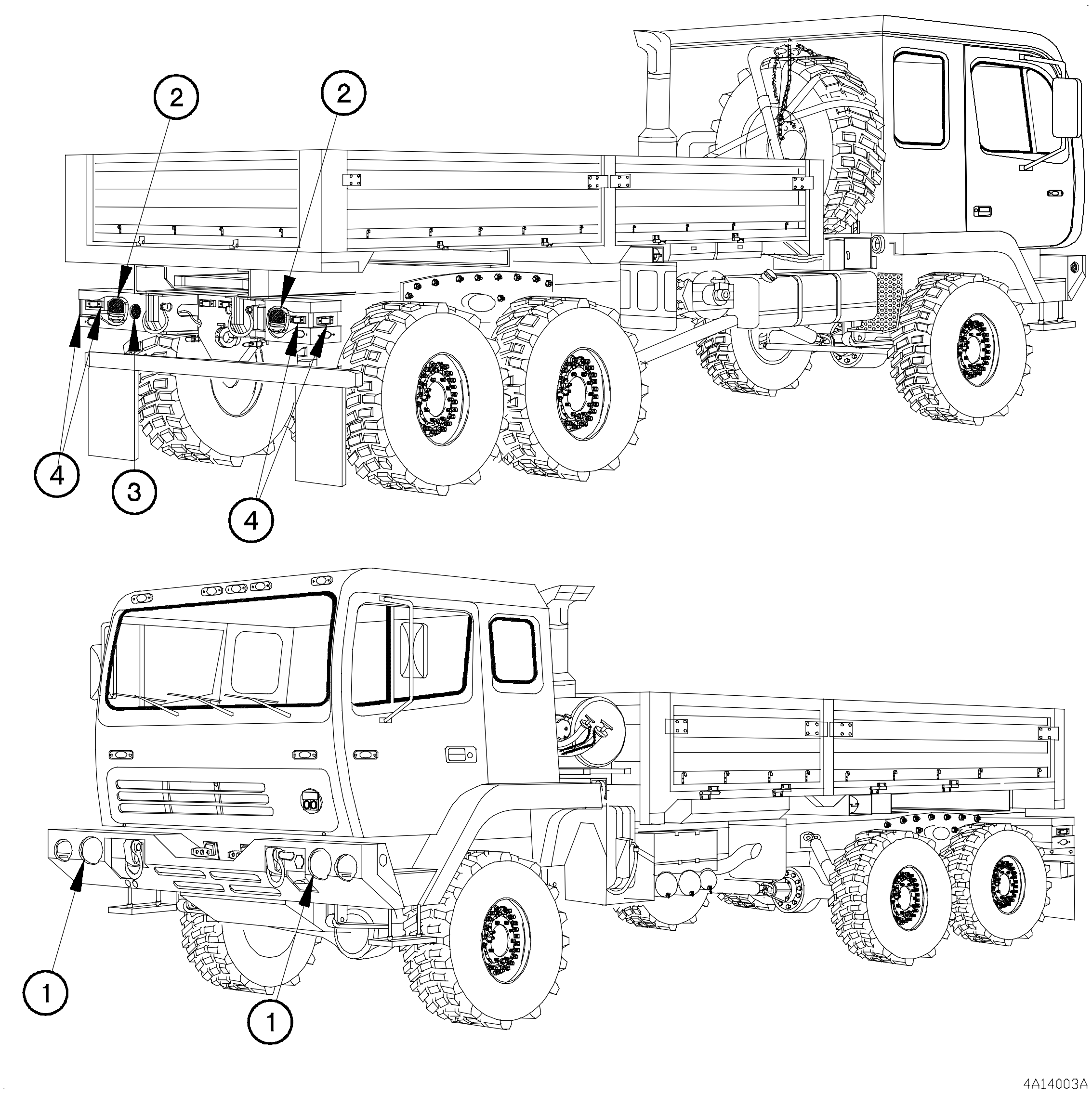


Figure 1-18. Service Lighting System

c. Service Lighting. The Service Lighting System includes the headlights (1, Figure 1-18), taillights (2), backup light (3), and clearance and marker lights (4). They are energized by positioning the main light switch to the appropriate position (TM 9-2320-366-10-1).

1-14. ELECTRICAL SYSTEM (CONT)

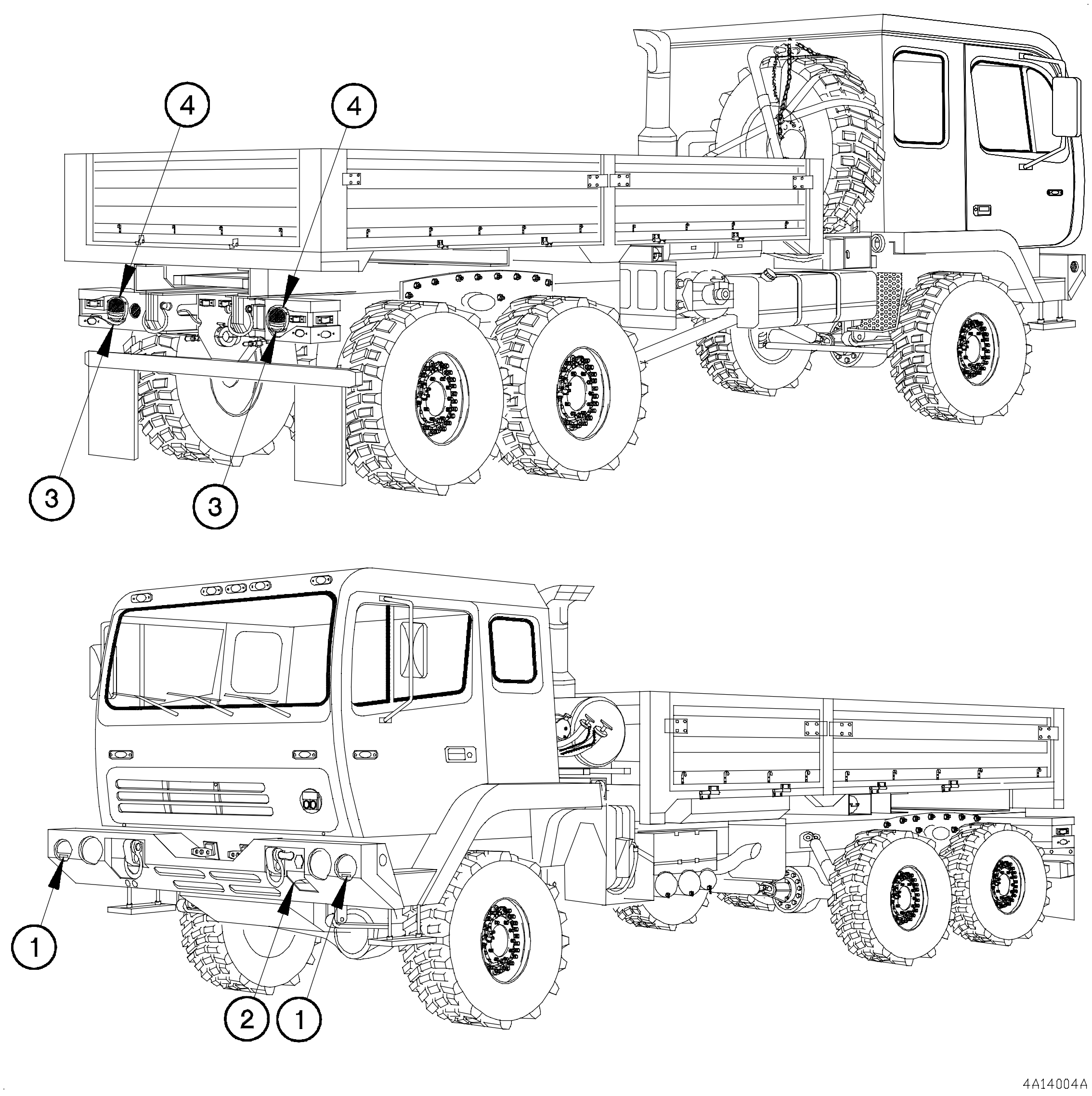


Figure 1-19. Blackout Lighting System

d. Blackout Lighting. The Blackout Lighting System includes the front blackout marker lights (1, Figure 1-19), blackout drive light (2), rear blackout marker lights (3), and blackout stop lights (4). These lights are energized by positioning the main light switch to the appropriate position (TM 9-2320-366-10-1).

e. Accessory Lighting. The accessory lights are the warning light and worklights. These circuits are energized by positioning the appropriate switch (TM 9-2320-366-10-1) to on. The worklights are then controlled by a separate switch on the worklight.

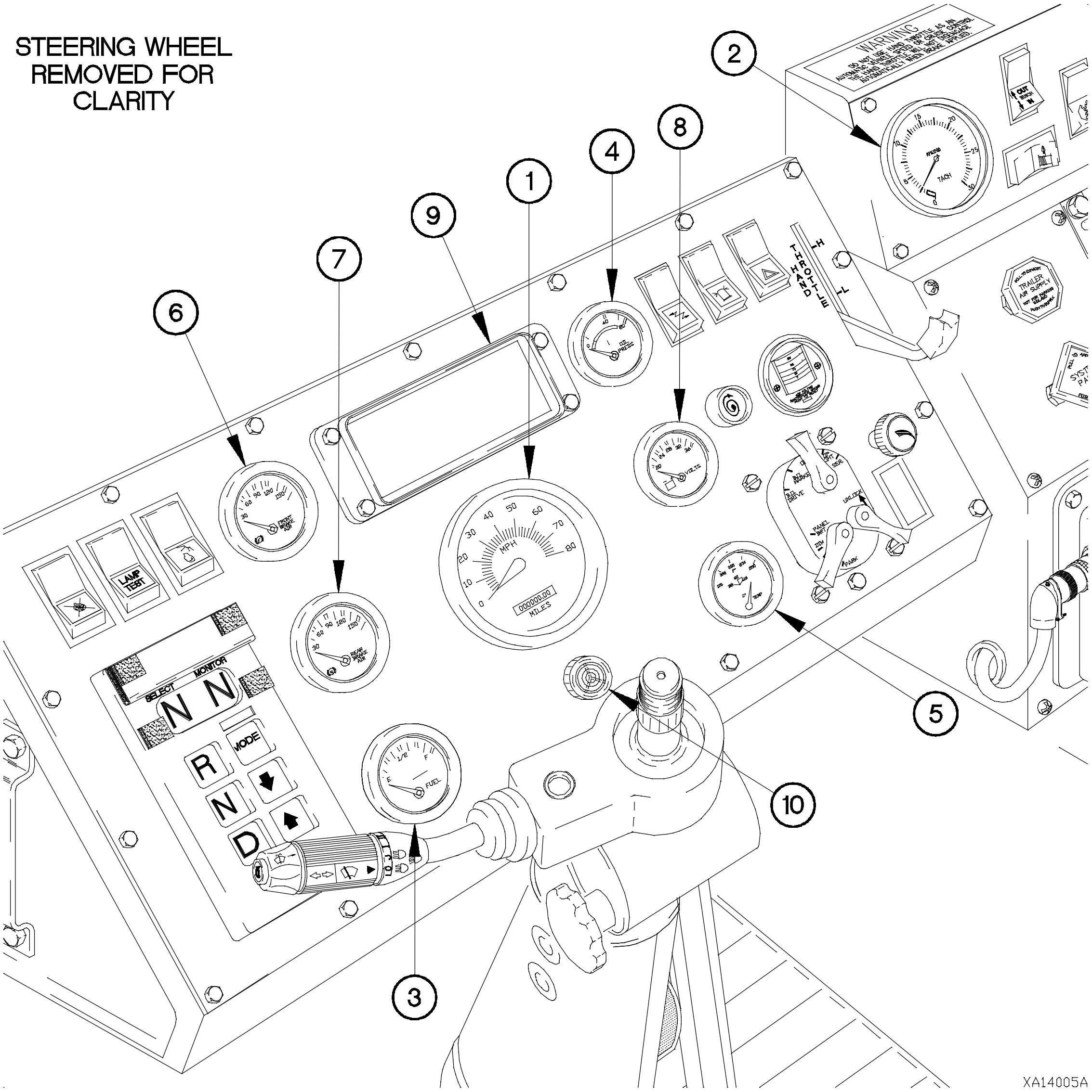


Figure 1-20. Instrument Panel

f. Instruments. The Instrument Panel includes all gages that provide the operator with information about vehicle condition and operating status. The speedometer (1, Figure 1-20) receives electrical input from the WTEC II Vehicle Interface Module (VIM) on vehicles equipped with WTEC II transmission controls. The speedometer receives electrical input from the WTEC III transmission ECU on vehicles equipped with WTEC III transmission controls. The WTEC II VIM and the WTEC III transmission ECU are both located behind the kick panel. Tachometer (2) input is provided by the engine speed sensor located on the engine flywheel housing. The fuel gage (3), oil pressure gage (4), water temperature gage (5), front brake air pressure gage (6), rear brake air pressure gage (7), and volts gage (8) receive electrical signals from sending units. The sending units respond to changes in fluid level, pressure, temperature, and DC currect and send this information to the gages.

g. Indicator Lights and Alarms. The lighted indicator display (9) and audible alarm (10), located on the instrument panel assembly, are activated by switches located in various systems. These include, but are not limited to; master stop, low engine oil pressure, low air pressure, high water temperature, engine fan off, and high transmission oil temperature. When any of these switches are activated, they energize the proper indicator and/or alarm, alerting the operator of a potential problem or condition which needs to be monitored.

1-14. ELECTRICAL SYSTEM (CONT)

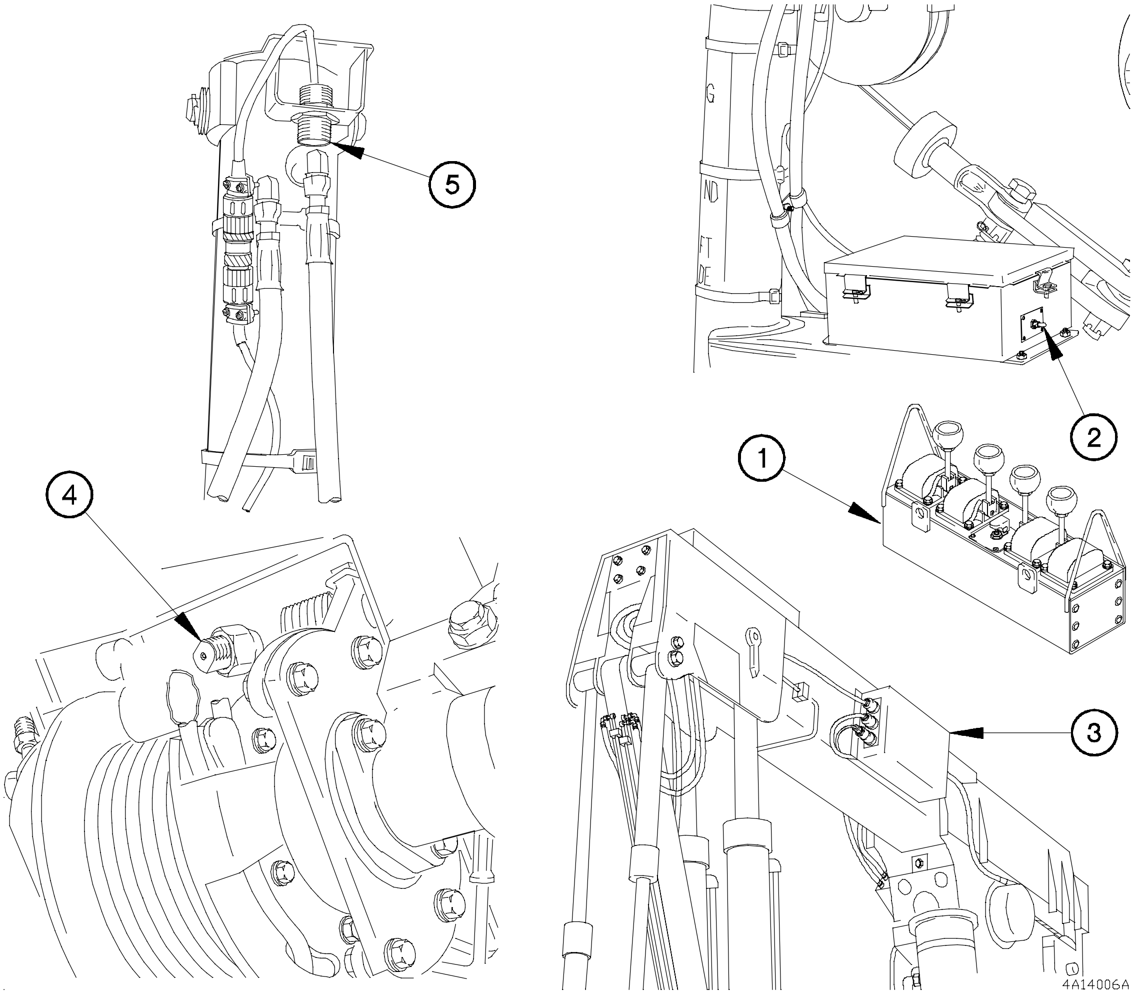


Figure 1-21. Material Handling Crane (MHC) System

h. Material Handling Crane (MHC). The primary electrical components of the MHC System are the remote control box (1, Figure 1-21), junction box (2), overload shutdown box (3), tension load cell (4), left and right side jack cylinder proximity sensors (5) and several function and lockout solenoids. When the operator selects an MHC function using the remote control box, electrical current is sent through the junction box and to the appropriate solenoid. When energized from the remote control box, the function solenoid controls hydraulic pressure to the function selected by the operator. When the function solenoid is de-energized, hydraulic pressure is removed and the function stops. The overload shutdown system controls the lockout solenoids. The lockout solenoids prevent operation of certain MHC functions when an overload condition is sensed. Overload conditions are sensed, in combination, by the tension load cell and a microprocessor inside the overload shutdown box which monitors boom angle and extension. When an overload condition is sensed, the boom up/boom down, hoist up, telescope out functions are locked out. The hoist down and telescope in functions will still operate and allow the operator to safely lower the load to the ground. When the power switch on the remote control box is used as an emergency shutdown, all crane functions are locked out. The left and right side jack cylinder proximity sensors prevent operation of the MHC until both jack cylinder outrigger pads are lowered fully to the ground.

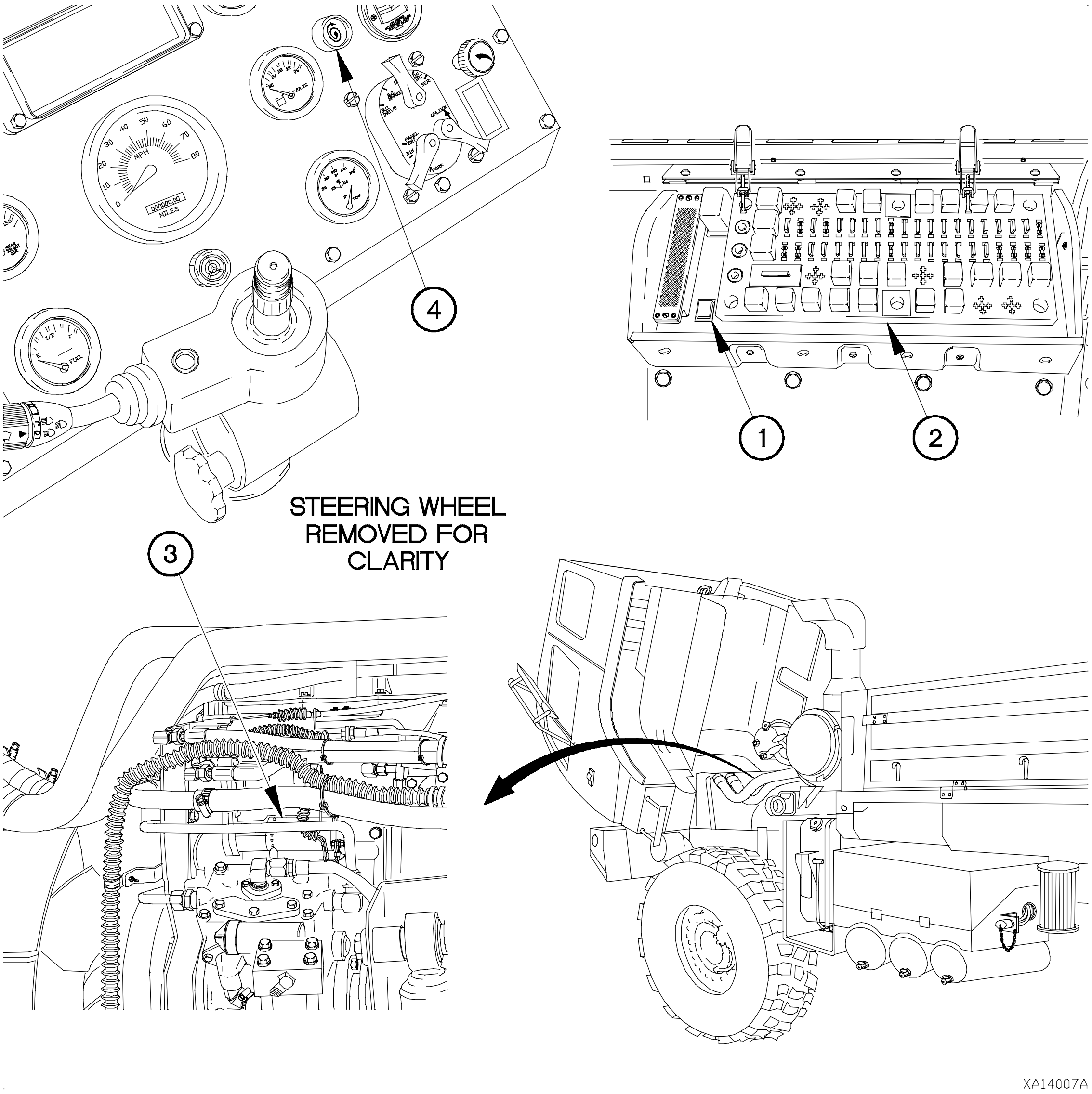


Figure 1-22. Troubleshooting Aid

i. Troubleshooting Aid. A start inhibit switch (1, Figure 1-22), located on the Power Distribution Panel (PDP) (2), is provided as a troubleshooting aid for the Unit and DS Maintenance levels and as a maintenance tool at the GS Maintenance level to stop fuel flow at the fuel shutoff solenoid (3). By pressing the start inhibit switch first, the starter pushbutton (4) can be pressed and the engine cranked without allowing the engine to be started. The start inhibit switch is reset when the master power switch is positioned to off and then to on again.

1-14. ELECTRICAL SYSTEM (CONT)

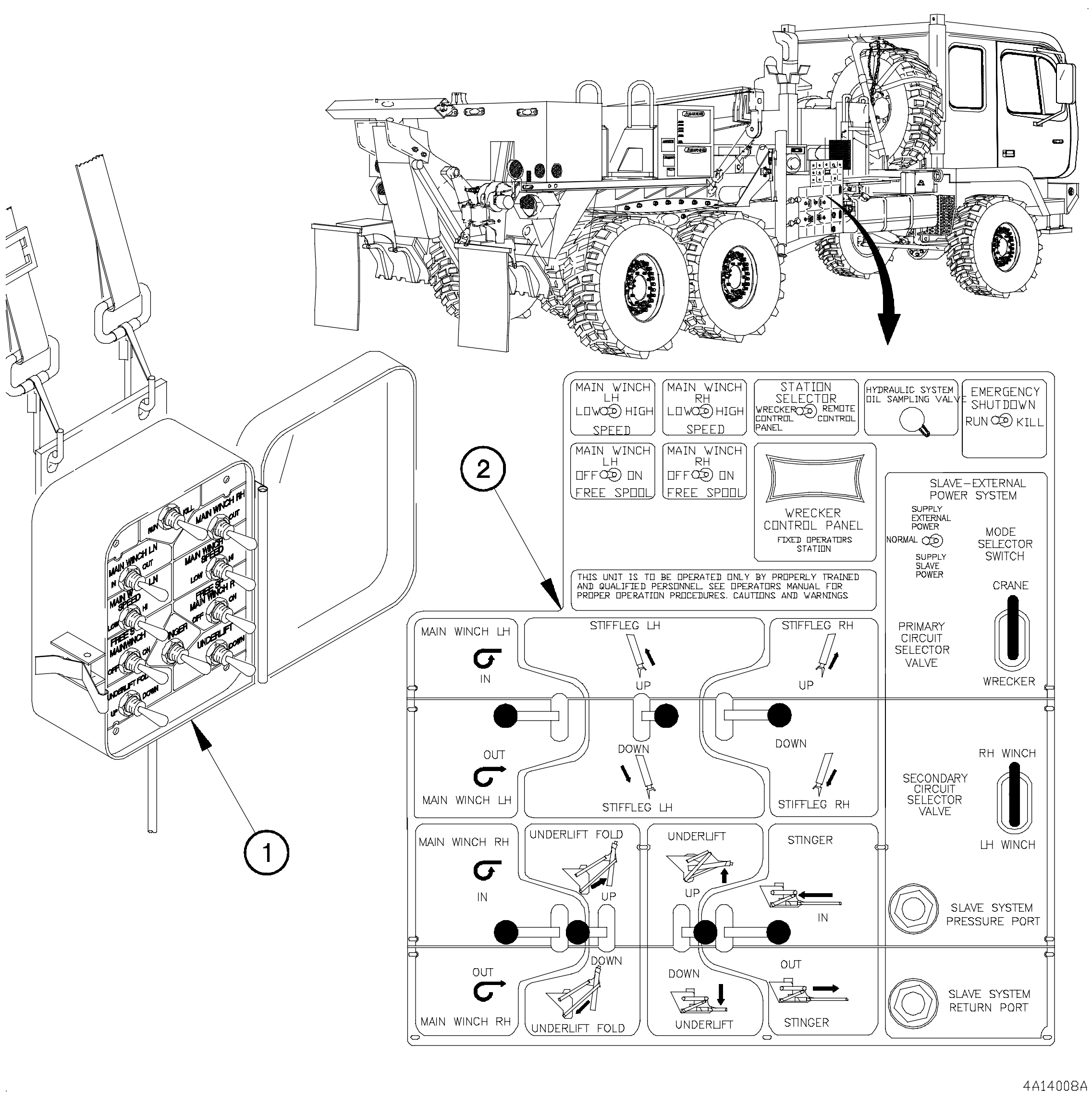


Figure 1-23. M1089 Underlift System

j. M1089 Underlift. The electrical portion of the M1089 Underlift consists of a remote control box (1, Figure 1-23) and solenoids attached to the function valves in the WRECKER CONTROL PANEL (2). When the operator selects an underlift function from the remote control box, electrical current is sent to the solenoid which controls the selected function. The solenoid is energized and hydraulic pressure is supplied to the selected component(s). When the solenoid is de-energized, hydraulic pressure is removed and the selected function stops.

1-15. BRAKE SYSTEM

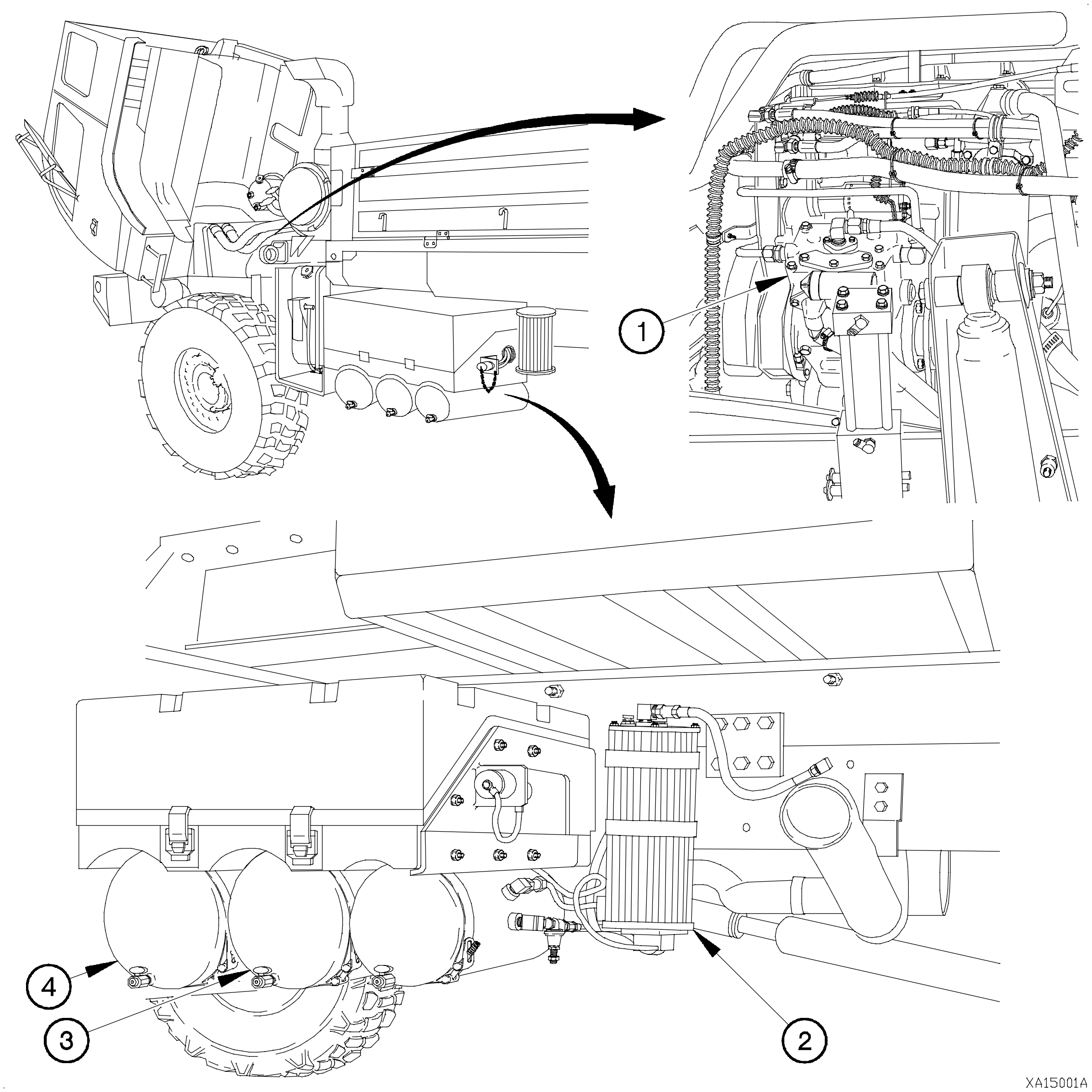


Figure 1-24. Brake System

The vehicle is equipped with an air brake system which complies with the Federal Motor Vehicle Safety Standard (FMVSS) 121. The brake system is made up of a number of components including an air compressor, air dryer, primary and secondary air tanks, and several valves which control the application and release of the brakes. The air compressor (1, Figure 1-24) supplies approximately 120 psi (827 kPa) to the air dryer (2). The air dryer contains a heating element and a desiccant cartridge to remove moisture from the air before it is delivered to the primary air tank (3) and secondary air tank (4).

1-15. BRAKE SYSTEM (CONT)

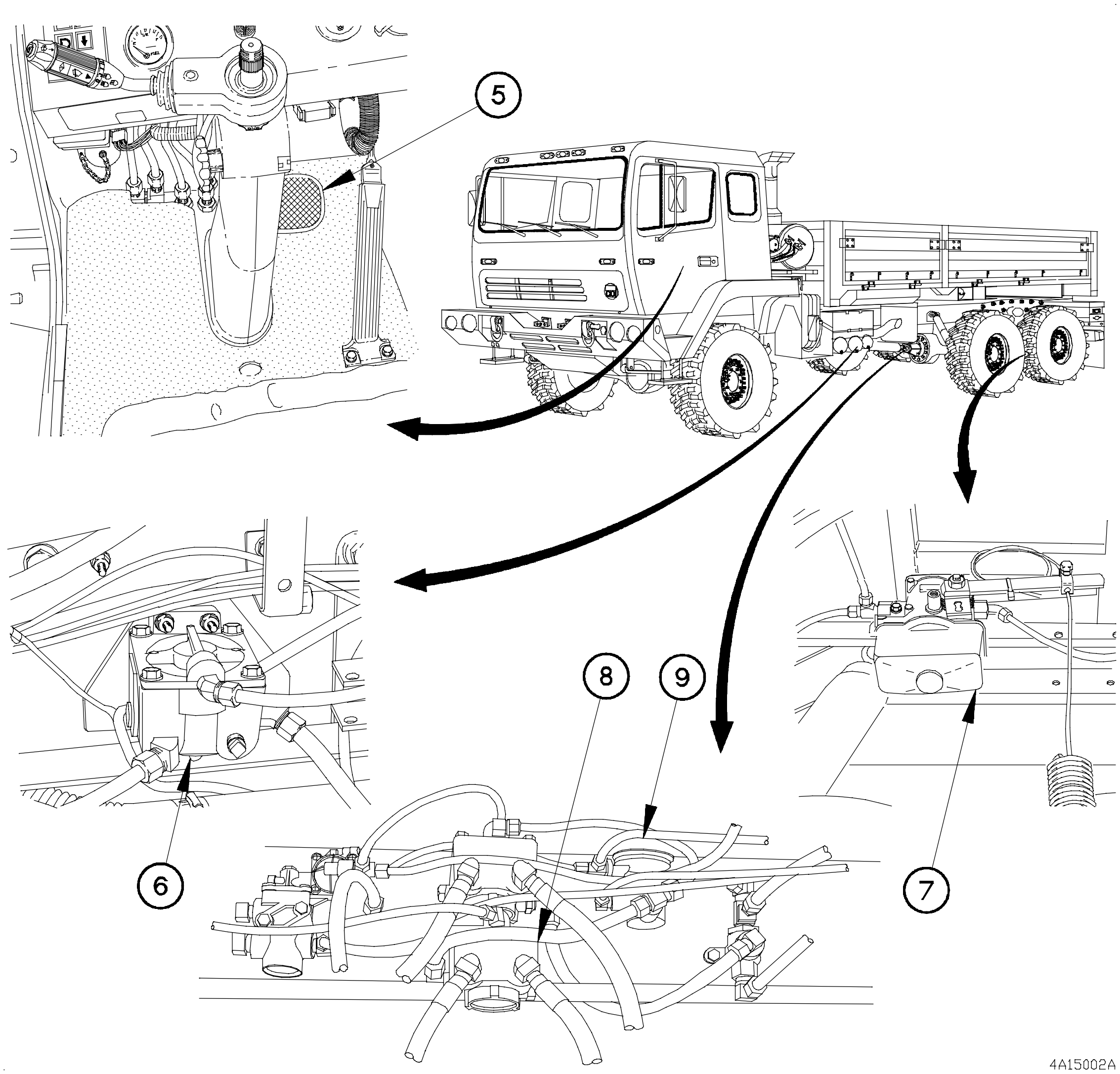


Figure 1-24. Brake System (Cont)

The foot control valve is operated by the brake pedal (5) and receives pressurized air from both the primary and secondary air tanks. The foot control valve is a dual activation design, with one set of ports supplying air to the front brakes from the secondary air tank and another set of ports supplying air to the rear brakes from the primary air tank. The plumbing between the primary and secondary air tanks is designed to allow controlled braking in the event of a failure in either the primary (rear brakes) or secondary (front brakes) brake circuit. A booster valve (6) is incorporated into the primary brake circuit to provide a more rapid braking response. Air from the booster valve is supplied to the load sensing valve (7) which, in turn, controls air delivery to the relay valve (8). The load sensing valve is mounted on a crossmember and connected, by a spring and cable, to the load averaging channel. This arrangement of the load sensing valve and load averaging channel provides a mechanical anti-lock feature to the rear brakes by sending less air to the rear brakes when the vehicle is not heavily loaded. The relay valve is used to provide the operator with quicker brake response. An inversion valve (9) redirects air from the secondary brake circuit to the primary brake circuit in case of loss of pressure in the primary brake circuit. This feature allows control of the spring brakes and prevents early rear brake lock-up.

1-16. STEERING SYSTEM

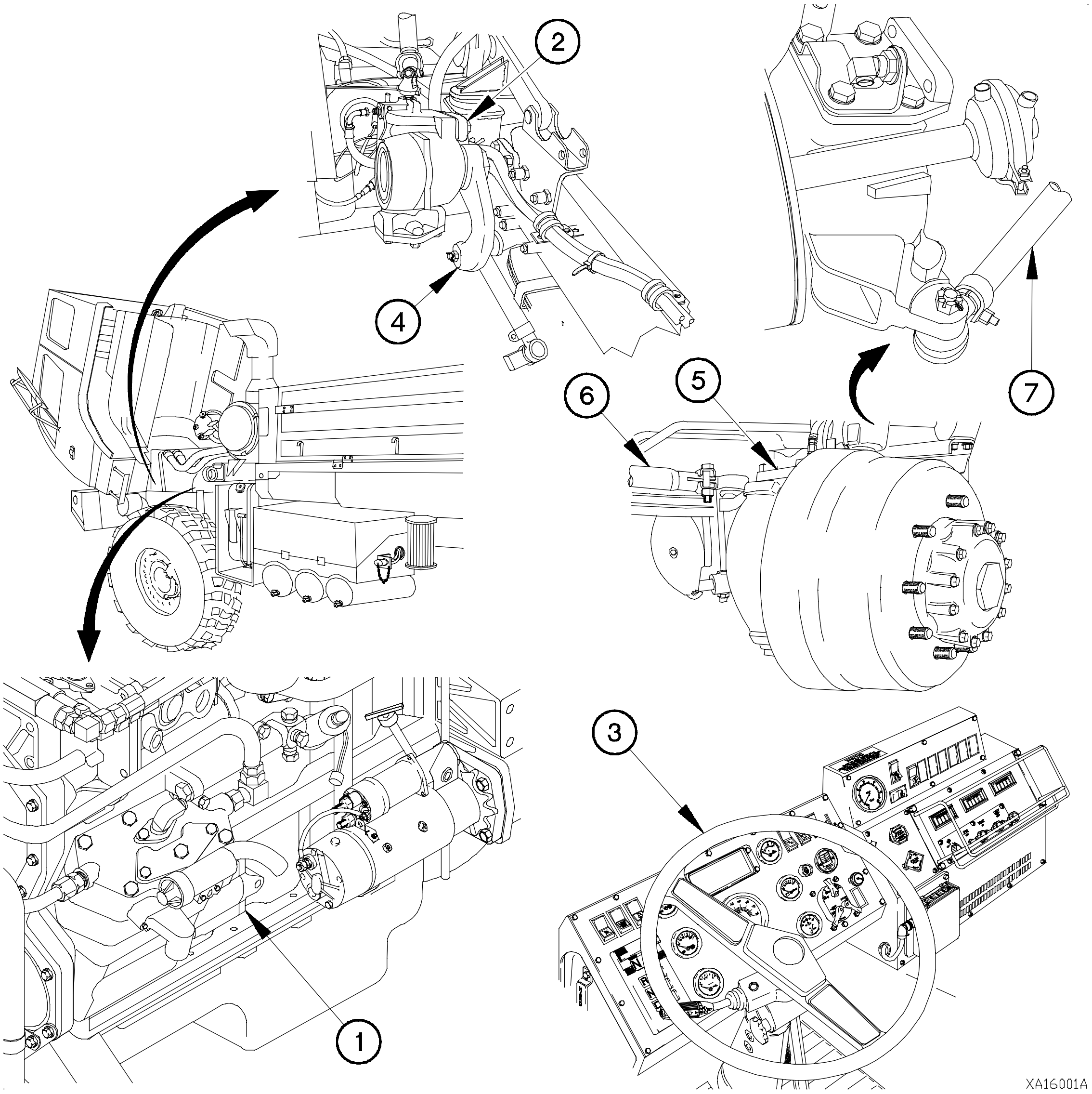


Figure 1-25. Steering System

The vehicle is equipped with hydraulically-assisted power steering. The power steering pump (1, Figure 1-25) is driven by a shaft at the rear of the air compressor. The steering gear box (2) is a recirculating ball design. The steering wheel (3) is linked to the steering gear box by a shaft and two universal joints. The power steering pump supplies constant hydraulic pressure to the steering gear box. The steering pitman arm (4) is attached to the left steering knuckle (5) by the drag link (6). The left and right steering knuckles are connected to each other by the tie-rod (7). Turning the steering wheel to the right causes the steering pitman arm to move toward the front of the vehicle and the front wheels to turn right. Turning the steering wheel to the left causes the steering pitman arm to move toward the rear of the vehicle and the front wheels to turn left. The tie-rod allows for front wheel toe-in adjustment.

1-17. 15K SELF-RECOVERY WINCH (SRW)

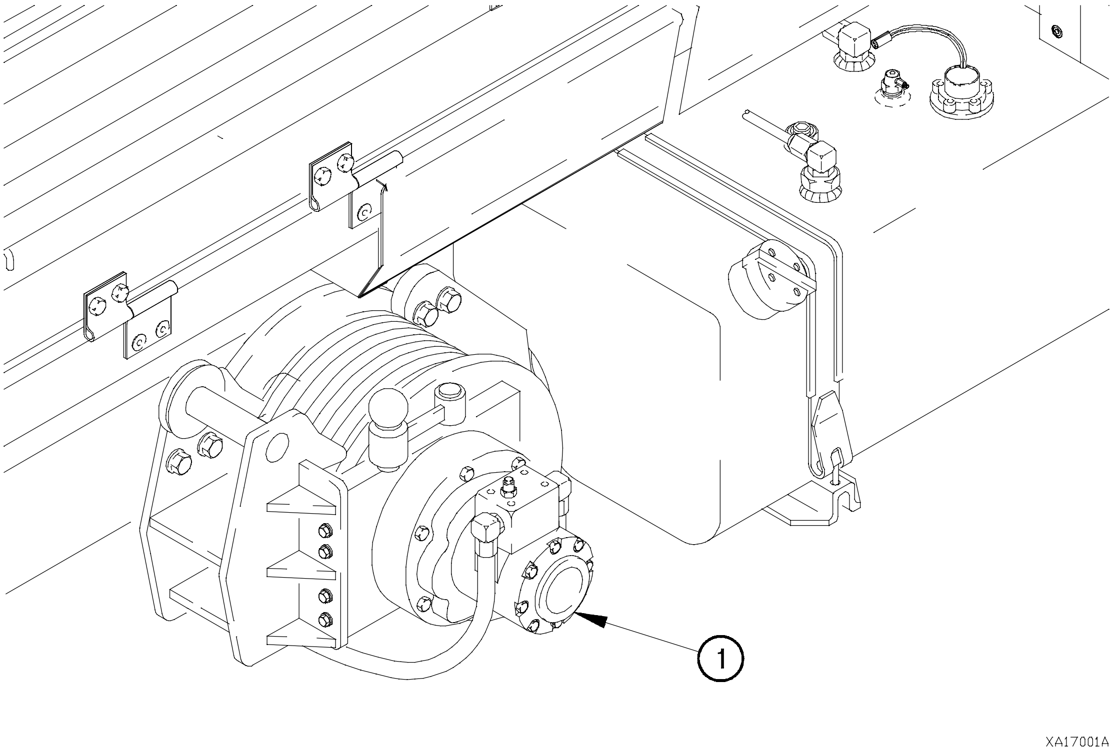


Figure 1-26. 15K Self-Recovery Winch (SRW)

When specified, any vehicle except models M1084 and M1086 may be equipped with a 15K Self-Recovery Winch (SRW) (1, Figure 1-26) mounted on the right hand frame rail. The SRW is rated for 15,500 lbs (68,944 N) pull when the winch drum has one full layer of cable. One full layer of cable is the minimum amount of cable that may be left on the drum when using the SRW. Pulling capacity is reduced with each layer of cable that is added to the winch drum. Pulling capacity with seven full layers of cable on the winch drum is 9,090 lbs (40,432 N). For recovery operations, the SRW cable may be routed to the front on all vehicles so equipped. The SRW cable may be routed to the rear of the vehicle on models M1083, M1085, M1090, M1093, and M1094. The SRW is equipped with a fail-safe brake which is spring applied and hydraulically released. The fail-safe brake is automatically applied when hydraulic pressure falls below 270 psi (1,862 kPa). The fail-safe brake will hold the load until hydraulic pressure is restored. The winch control valve functions as a throttling valve when cable is being payed out. The winch control valve controls the flow of fluid to the winch motor. When cable is being pulled in, the winch control valve acts as a free flow check valve. The winch control valve is preset at the factory and is not to be adjusted under any circumstances.

1-18. M1084/M1086 MATERIAL HANDLING CRANE (MHC)

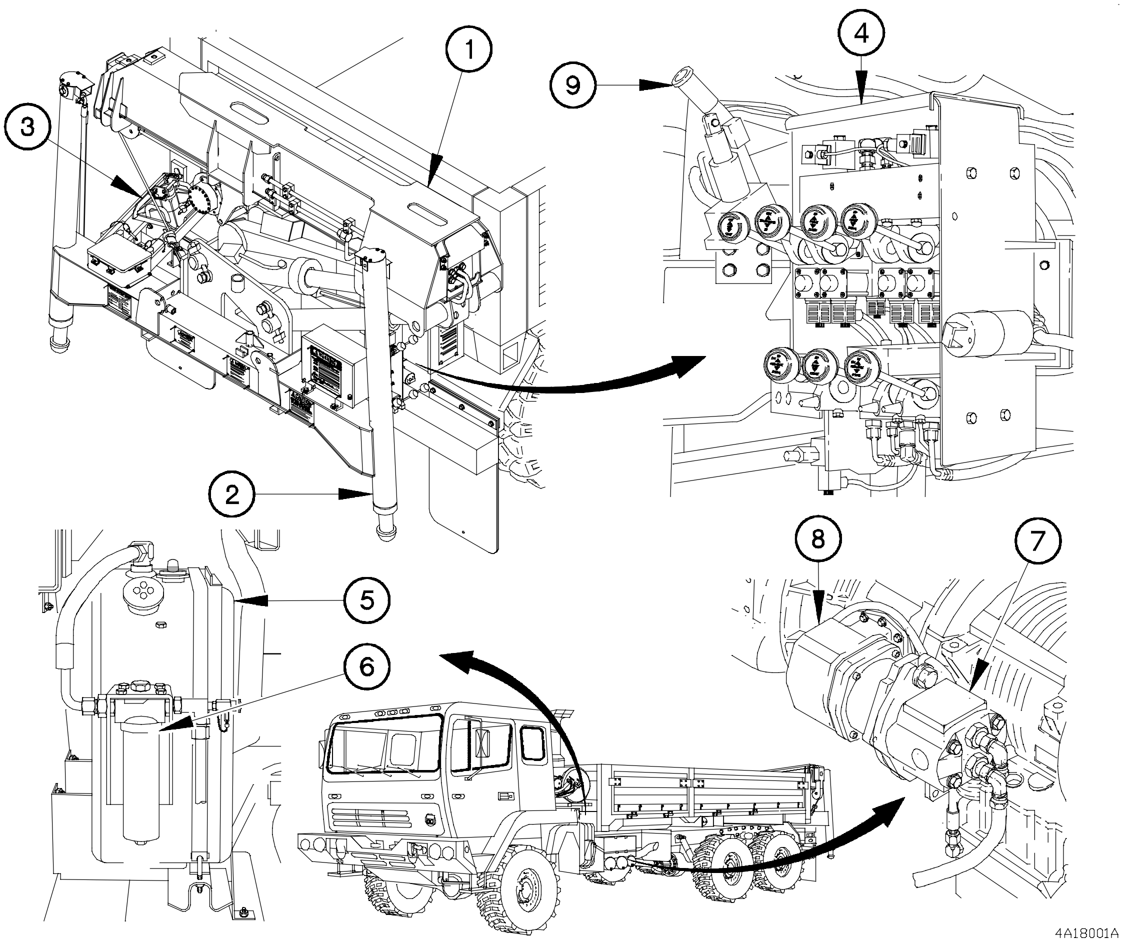


Figure 1-27. M1084/M1086 Material Handling Crane (MHC)

Vehicle models M1084 and M1086 are equipped with a Material Handling Crane (MHC) (1, Figure 1-27) mounted on the frame at the rear of the vehicle. The M1084/M1086 MHC has a lifting capacity of 5,000 lbs (2,270 kgs). The MHC contains an overload shutdown system which monitors boom angle, boom extension, and load weight. If the overload shutdown system senses an overload condition, certain crane functions become locked out. The vehicle is stabilized during crane operation by jack cylinders (2). Proximity sensors are attached to the jack cylinders to prevent operation of the crane unless the jack cylinders are extended to the ground. Outrigger pads (3) are provided and are attached to the bottom of the jack cylinders by quick release pins. All crane functions are hydraulically controlled by levers at the control station (4). All exposed hydraulic cylinder rods are hard chrome plated to resist corrosion and wear.

a. MHC Hydraulic System. The hydraulic reservoir (5) provides for 21 gal (79 L) of fluid. A fluid filter (6) is mounted on the hydraulic reservoir. The filter removes contaminants from the oil and is easily replaced. Hydraulic pressure for the MHC is supplied by a hydraulic pump (7) attched to the rear of the Power Take-Off (PTO) (8). The hydraulic cylinders contain cartridge-type holding valves which lock the cylinder in case of sudden hydraulic pressure loss. A hand operated back-up hydraulic pump (9) allows the operator to lower any load to the ground and stow the crane if the hydraulic pump fails.

1-18. M1084/M1086 MATERIAL HANDLING CRANE (MHC) (CONT)

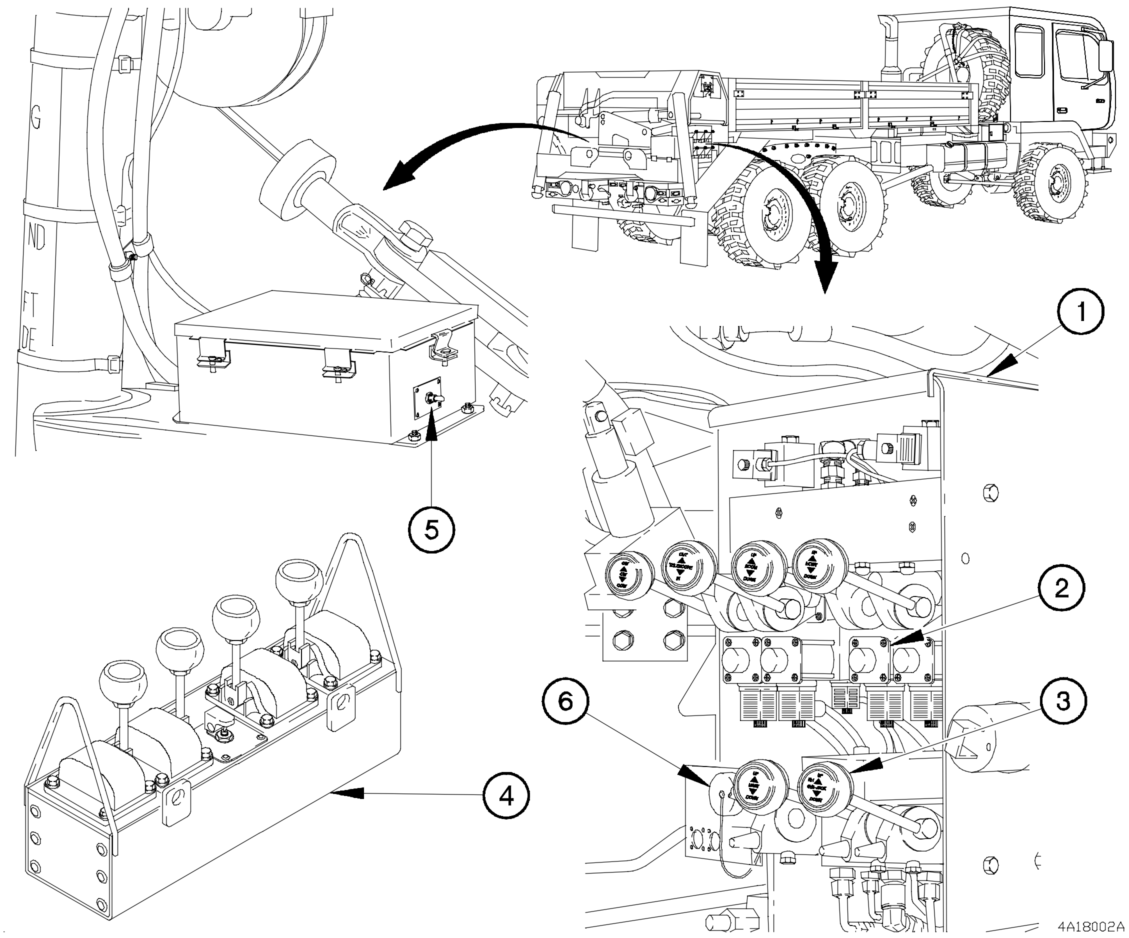


Figure 1-28. MHC Control Station and Remote Control

b. MHC Control Station. All crane functions can be controlled by the operator from the control station (1, Figure 1-28). A lever controlled valve (2) is provided for each control function. All control valves are spring-loaded and will return to the center, or neutral, position when they are released. The control valves are proportionately variable. A small movement from the neutral position results in a small change in the function which that valve controls. A larger movement from the neutral position results in a faster change. The function of each control lever is identified on the end of the control knob (3).

c. MHC Remote Control. The MHC remote control (4) permits operation of the crane from either side of the vehicle. This feature allows the operator to keep the load in sight at all times. A remote control switch (5) activates power to the remote control connector (6). The remote control is attached to the crane by an electrical cable. When the remote contro is active, solenoids on the control valves respond to input from the remote control. The levers on the remote control are proportionately variable. A small change in lever position results in a small change in the function controlled by that lever. A larger change in lever position results in a faster change in function. The levers on the remote control are also spring-loaded and will return to the neutral position when released. The remote control can be used to operate hoist up/down, boom up/down, telescope in/out, and swing clockwise/counterclockwise.

1-19. M1089 MATERIAL HANDLING CRANE (MHC), 30K WINCHES, AND UNDERLIFT

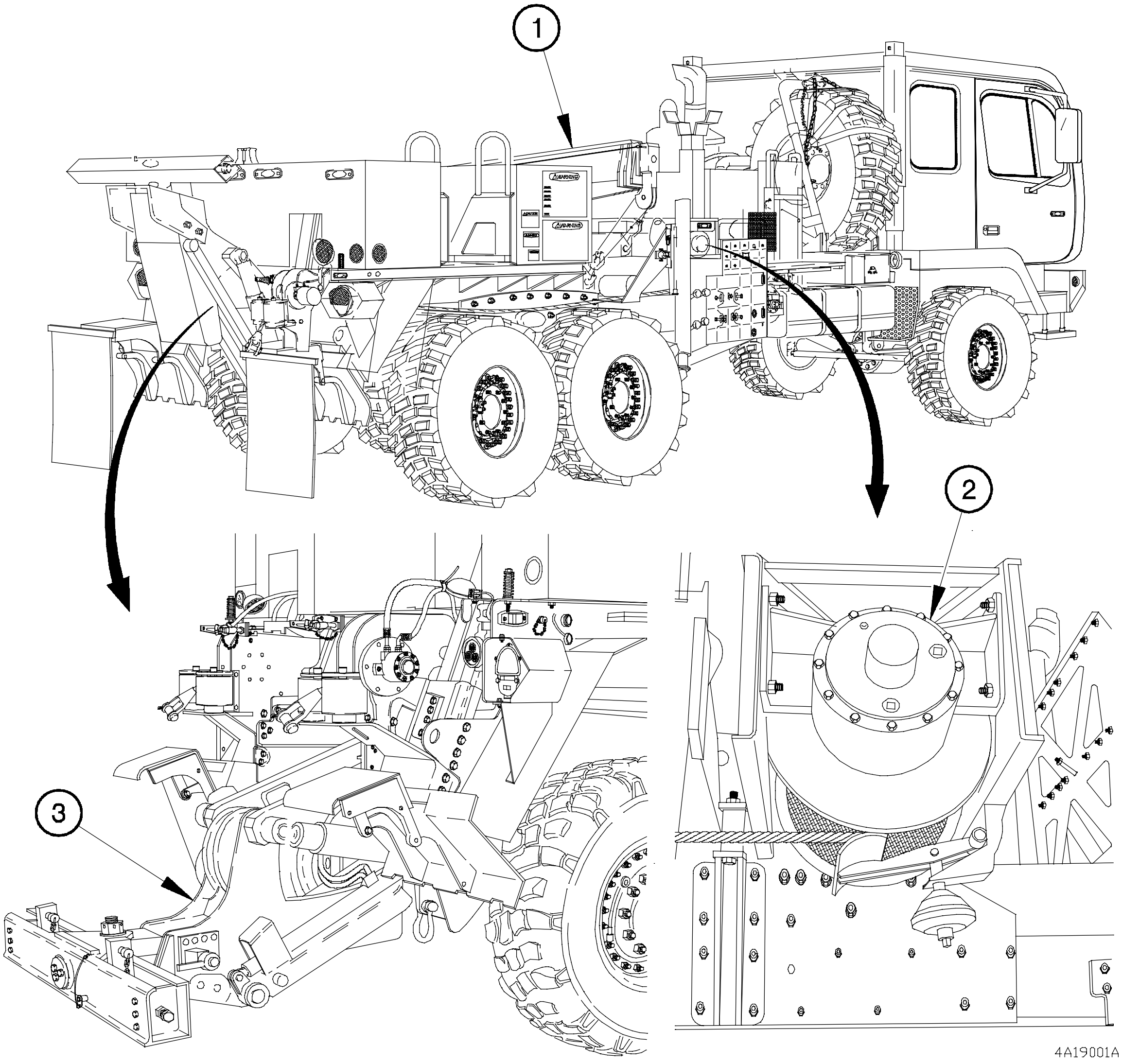
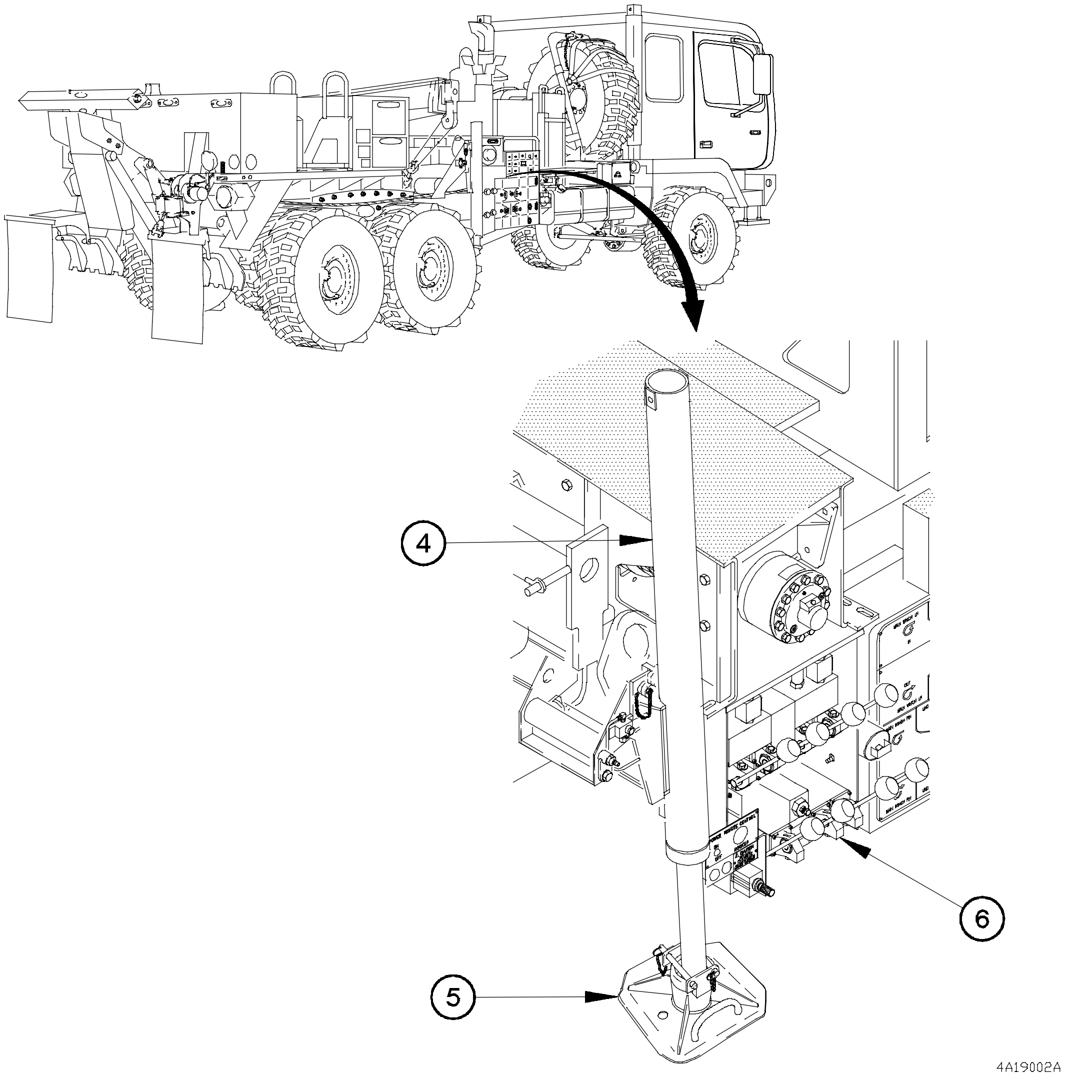


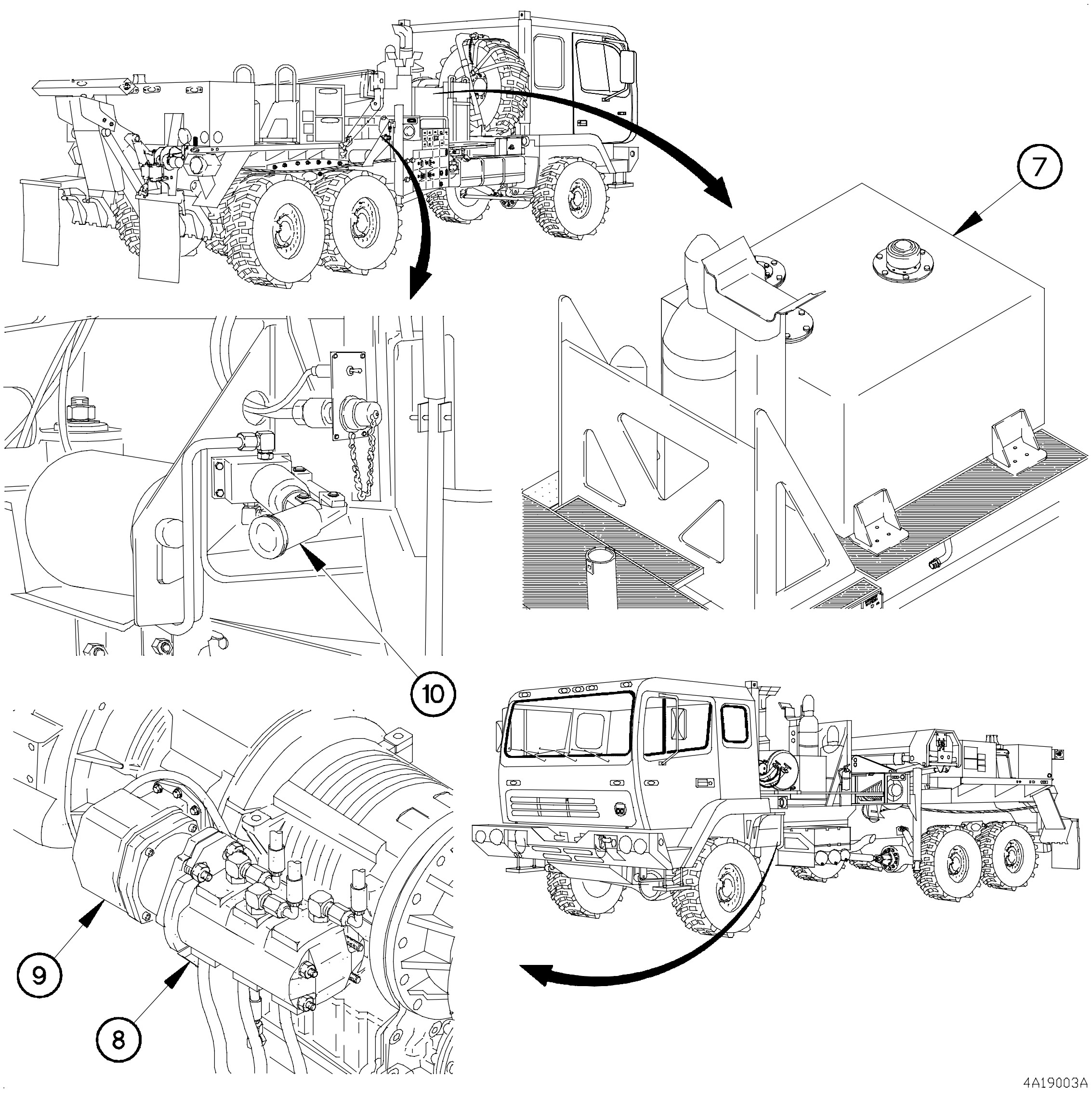
Figure 1-29. M1089 Material Handling Crane (MHC), 30K Winches, and Underlift

Vehicle model M1089 is equipped with a Material Handling Crane (MHC) (1, Figure 1-29) mounted on the frame near the middle of the vehicle; left and right 30K winches (2), located ahead of the MHC; and an underlift (3), attached to the rear of the vehicle.

1-19. M1089 MATERIAL HANDLING CRANE (MHC), 30K WINCHES, AND UNDERLIFT (CONT)



a. Material Handling Crane (MHC). The M1089 MHC has a lifting capacity of 11,000 lbs (4,994 kgs). The MHC contains an overload shutdown system which monitors boom angle, boom extension, and load weight. If the overload shutdown system senses an overload condition, certain crane functions become locked out. The vehicle is stabilized during crane operation by jack cylinders (4) attached to outrigger beams. Outrigger pads (5) are provided and are attached to the bottom of the jack cylinders by quick release pins. All crane functions are hydraulically controlled by levers at the control station (6). All exposed hydraulic cylinder rods are hard chrome plated to resist corrosion and wear.



b. Hydraulic System. All of the hydraulics on the M1089 are driven by a common power source and supply system. The M1089 is provided with a hydraulic tank (7) which has a capacity of 74 gal (280 L) of fluid. The hydraulic tank contains an internal fluid filter. The filter removes contaminants from the oil and is easily replaced. Hydraulic pressure for the MHC is supplied by a three stage hydraulic pump (8) attached to the rear of the Power Take-Off (PTO) (9). The hydraulic cylinders contain cartridge-type holding valves which lock the cylinder in case of sudden hydraulic pressure loss. A hand operated back-up hydraulic pump (10) allows the operator to lower any load to the ground and stow the crane if the hydraulic pump fails.

1-19. M1089 MATERIAL HANDLING CRANE (MHC), 30K WINCHES, AND UNDERLIFT (CONT)

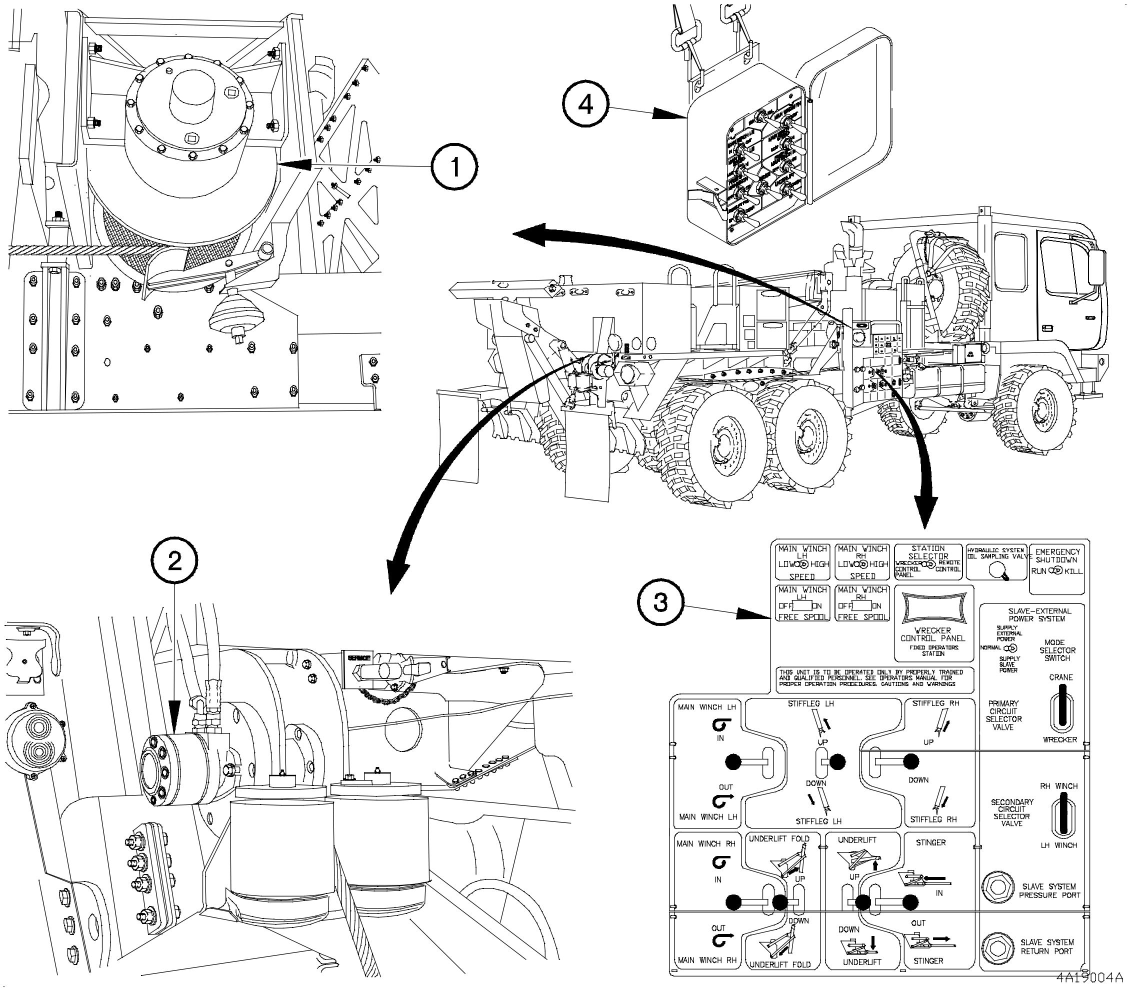


Figure 1-30. M1089 30K Winches

c. M1089 30K Winches. The left and right 30K winches (1, Figure 1-30) are designed to be used for recovering stranded vehicles from the rear of the M1089. The 30K winches are rated for a 30,000 lbs (13,620 kgs) pull with only one full layer of cable on the winch drum. Pulling capacity is reduced with each layer of cable that is added to the winch drum. Pulling capacity with a full drum of cable is 15,830 lbs (7,187 kgs). One full layer of cable is the minimum amount of cable that may be left on the drum when using the winch. The winch is equipped with a fail-safe brake which is spring applied and hydraulically released. The fail-safe brake is automatically applied when hydraulic pressure falls below 270 psi (1,862 kPa). The fail-safe brake will hold the load until hydraulic pressure is restored. The winch control valve functions as a throttling valve when cable is being payed out. The winch control valve controls the flow of fluid to the winch motor. When cable is being pulled in, the winch control valve acts as a free flow check valve. The winch control valve is preset at the factory and is not to be adjusted under any circumstances. The 30K winches are equipped with pay-in/reel out spoolers (2) to keep tension on the cable when cable is payed-in/reeled out. The 30K winches can be controlled from either the M1089 control panel (3) or from the remote control (4).

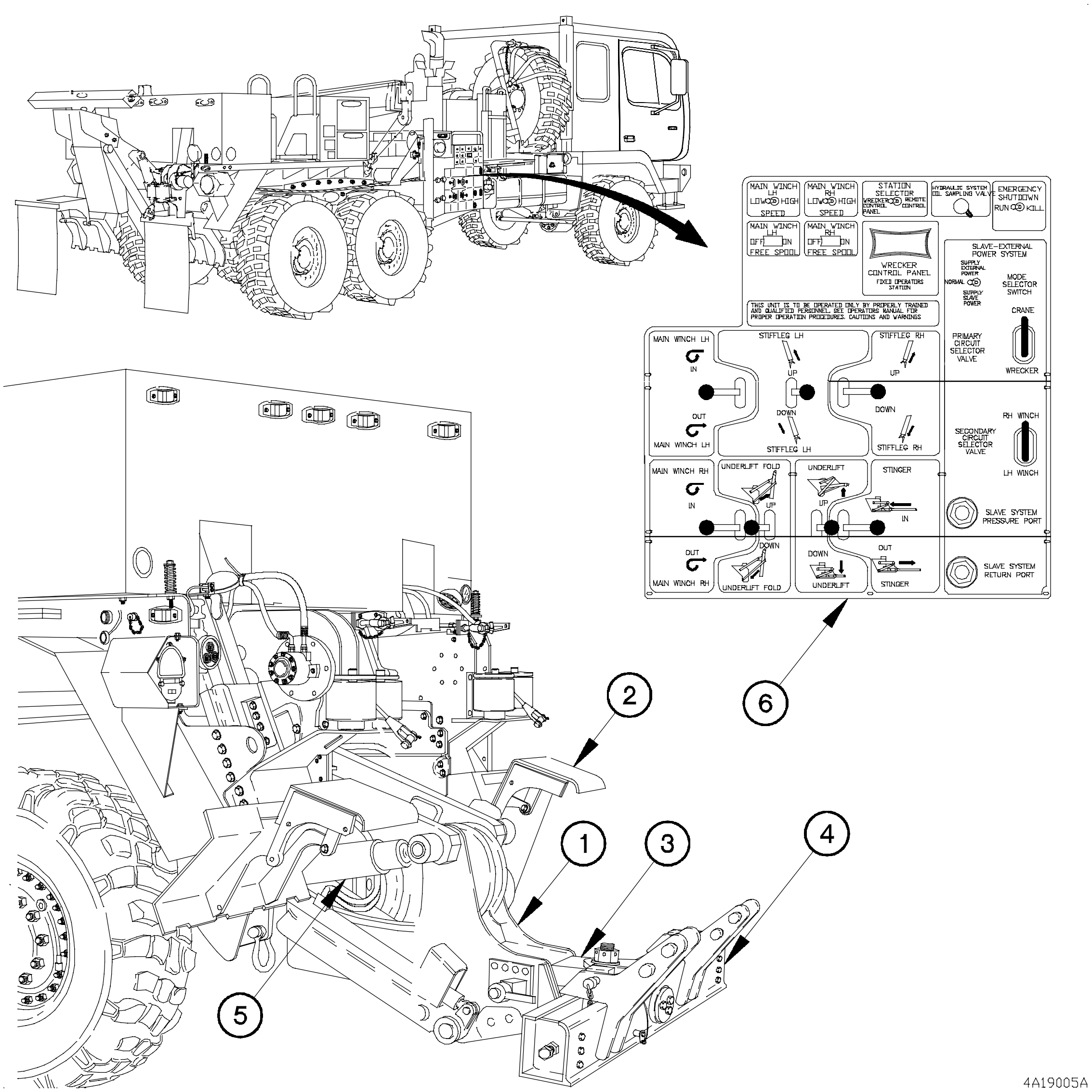


Figure 1-31. M1089 Underlift

d. M1089 Underlift. Vehicle model M1089 is equipped with a hydraulic underlift (1, Figure 1-31) component. The underlift is used for towing a disabled vehicle. Stifflegs (2) are used to keep the M1089 vehicle stable during recovery operations. The stinger (3) can be extended to position the crossbar (4) beneath the vehicle being recovered. The crossbar is equipped with adapters which make it suitable for towing a wide range of vehicles. Two underlift cylinders (5) control the height of the crossbar to allow the operator to tow a disabled vehicle with the front wheels off the ground. All underlift functions are hydraulically controlled from the wrecker control panel (6).

1-20. AIR TRANSPORTABILITY HYDRAULIC SYSTEM

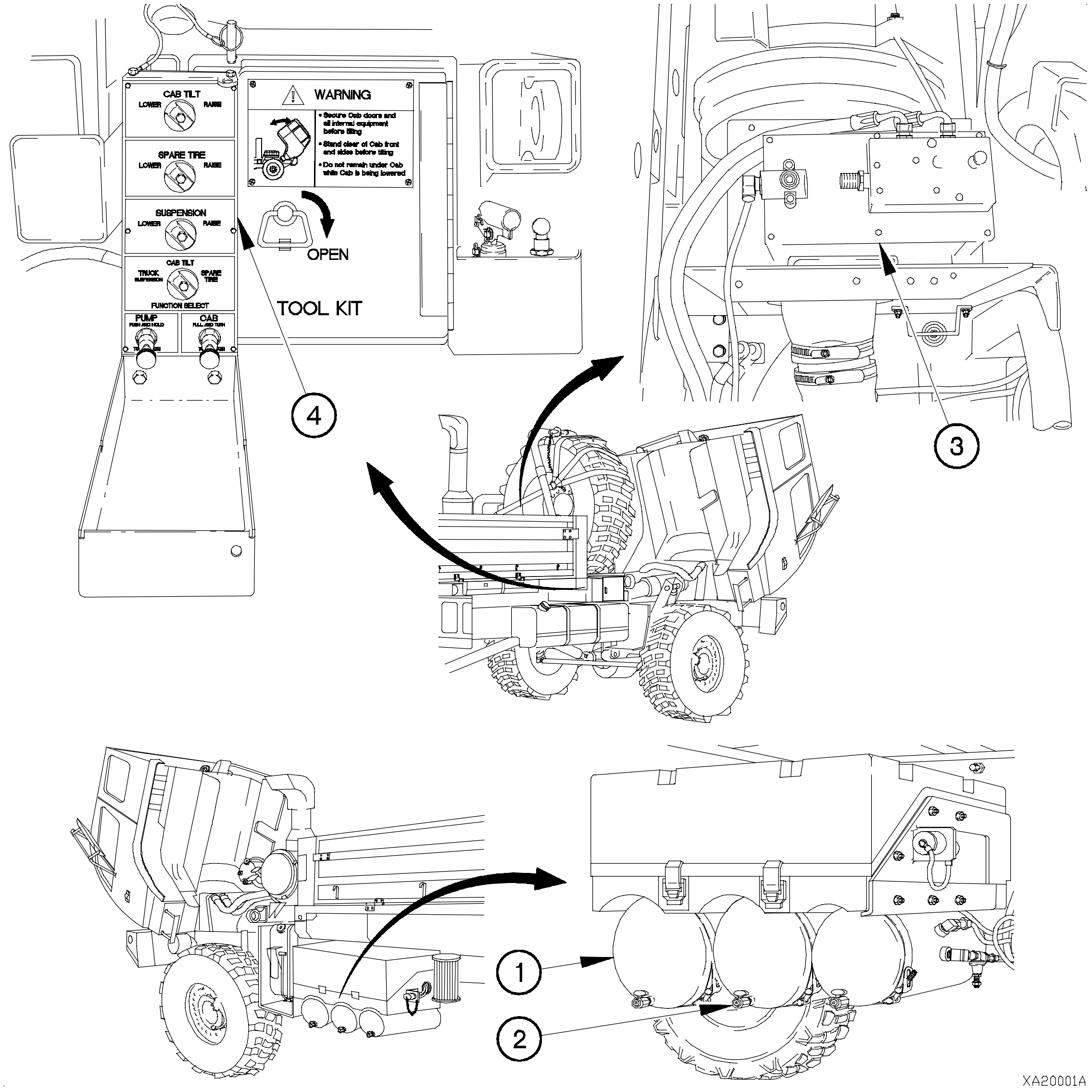


Figure 1-32. Air Transportability Hydraulic System

The entire series of M1083 vehicles is equipped with a hydraulic system which allows the vehicle to be prepared for internal air transport in a short time by a minimum number of personnel. Air from the secondary and primary air tanks (1 and 2, Figure 1-32) powers the air/hydraulic power unit (3). The air/hydraulic power unit supplies hydraulic power to the rest of the system. The system is controlled by valves in the hydraulic manifold (4).

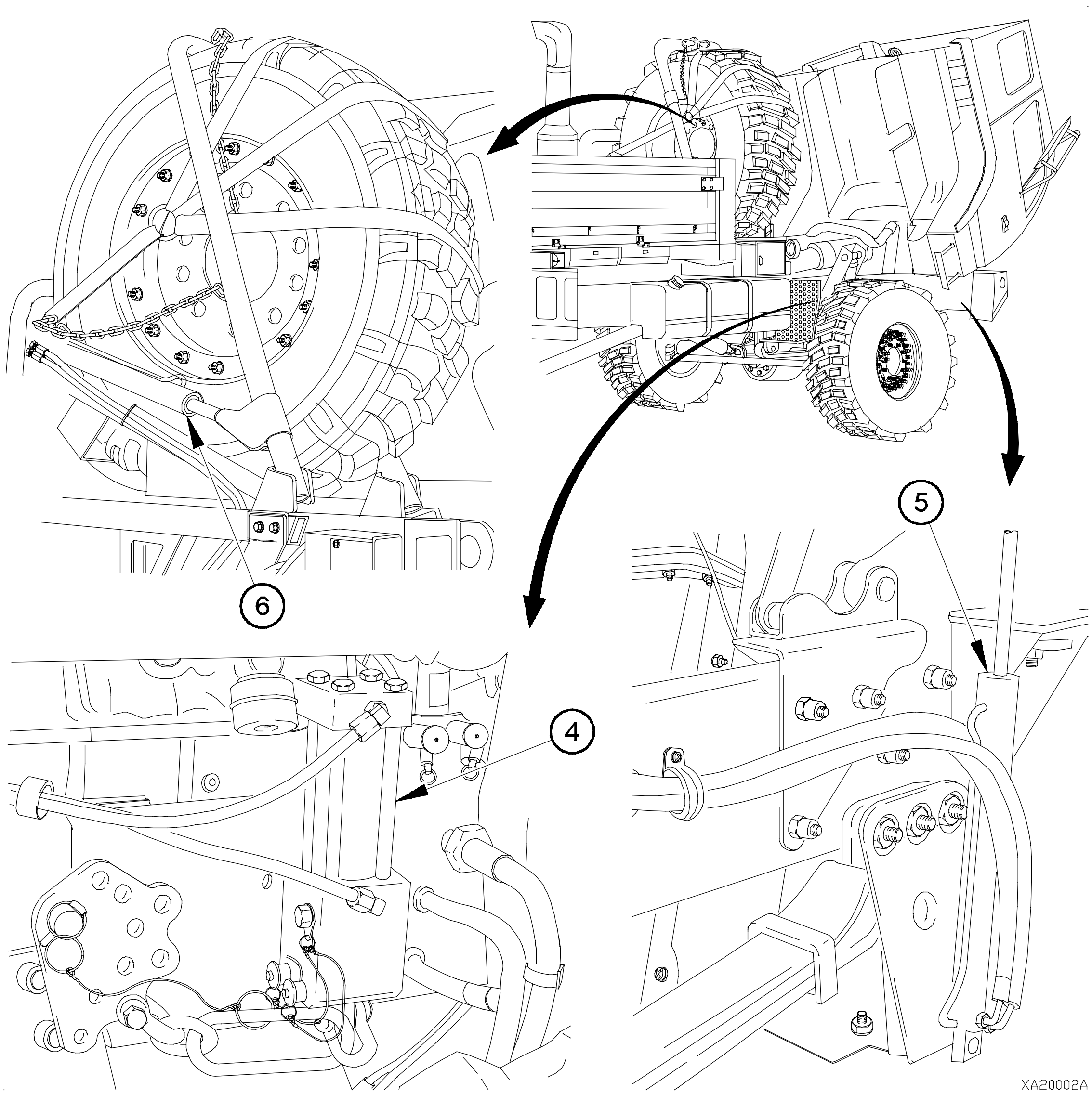


Figure 1-32. Air Transportability Hydraulic System (Cont)

Two suspension cylinders (4), mounted on the frame, are used to compress the suspension so that the vehicle can be loaded into an aircraft. Valves on the hydraulic manifold control pressure to the cab tilt cylinder (5); to raise and lower the cab, and the spare tire retainer cylinder (6); to lower and raise the spare tire.

1-21. AIR SYSTEM

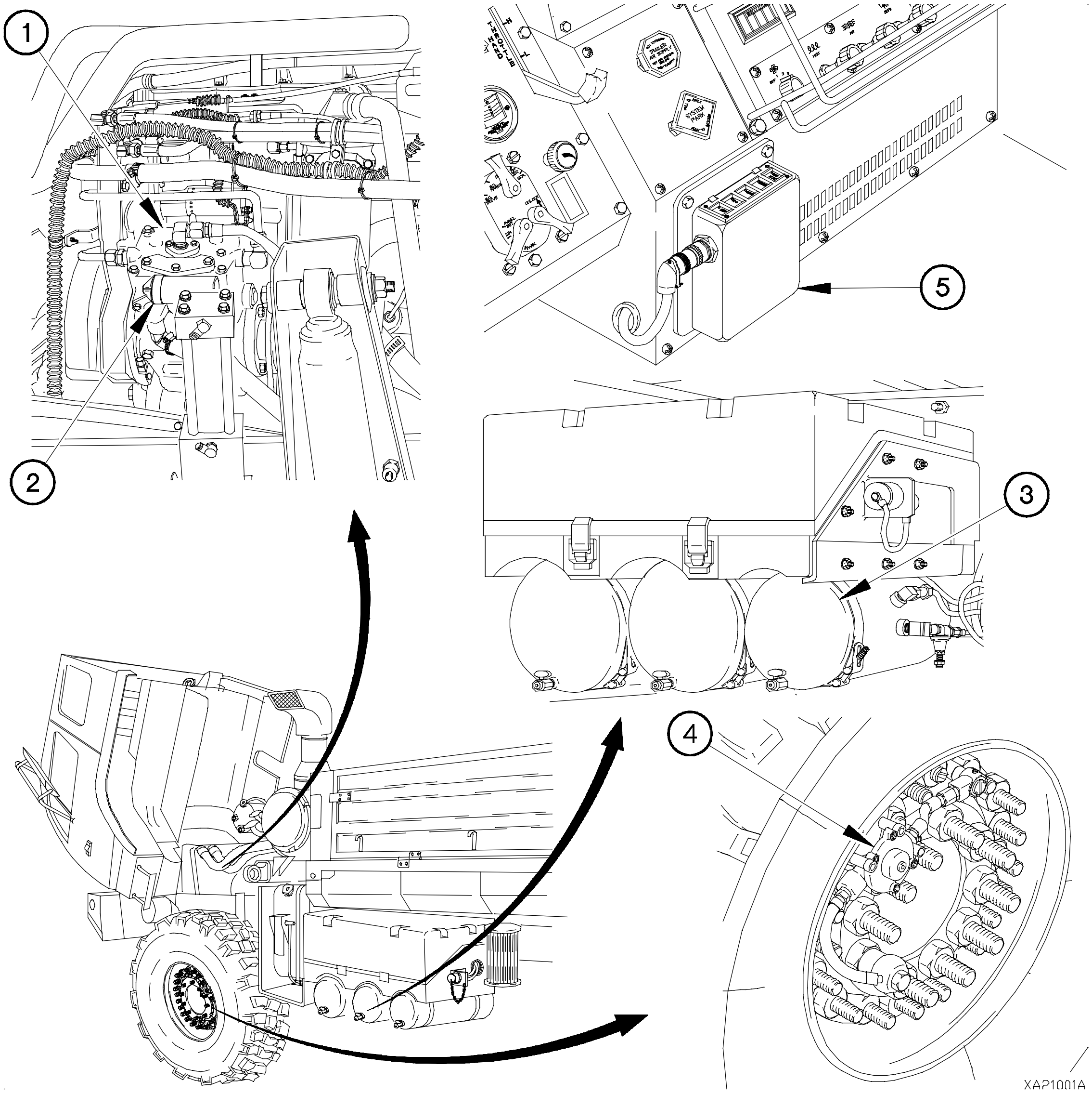


Figure 1-33. Air System

The air system provides clean, dry air for use in the air brake system and the Central Tire Inflation System (CTIS). The air system is pressurized by an engine driven air compressor (1, Figure 1-33) with a nominal output pressure of 125 psi (862 kPa). The system pressure is controlled by an unloading type pressure governor (2) which maintains the output pressure between 105 psi (724 kPa) and 125 psi (862 kPa). Air is supplied to the air brake portion of the air system from the primary and secondary air tanks. Air for the CTIS comes from the wet tank (3) and is supplied to the axles by the CTIS manifold valve (4). Air pressure in the tires is controlled by the CTIS Electronic Control Unit (ECU) (5). The CTIS ECU provides for four tire pressure settings.

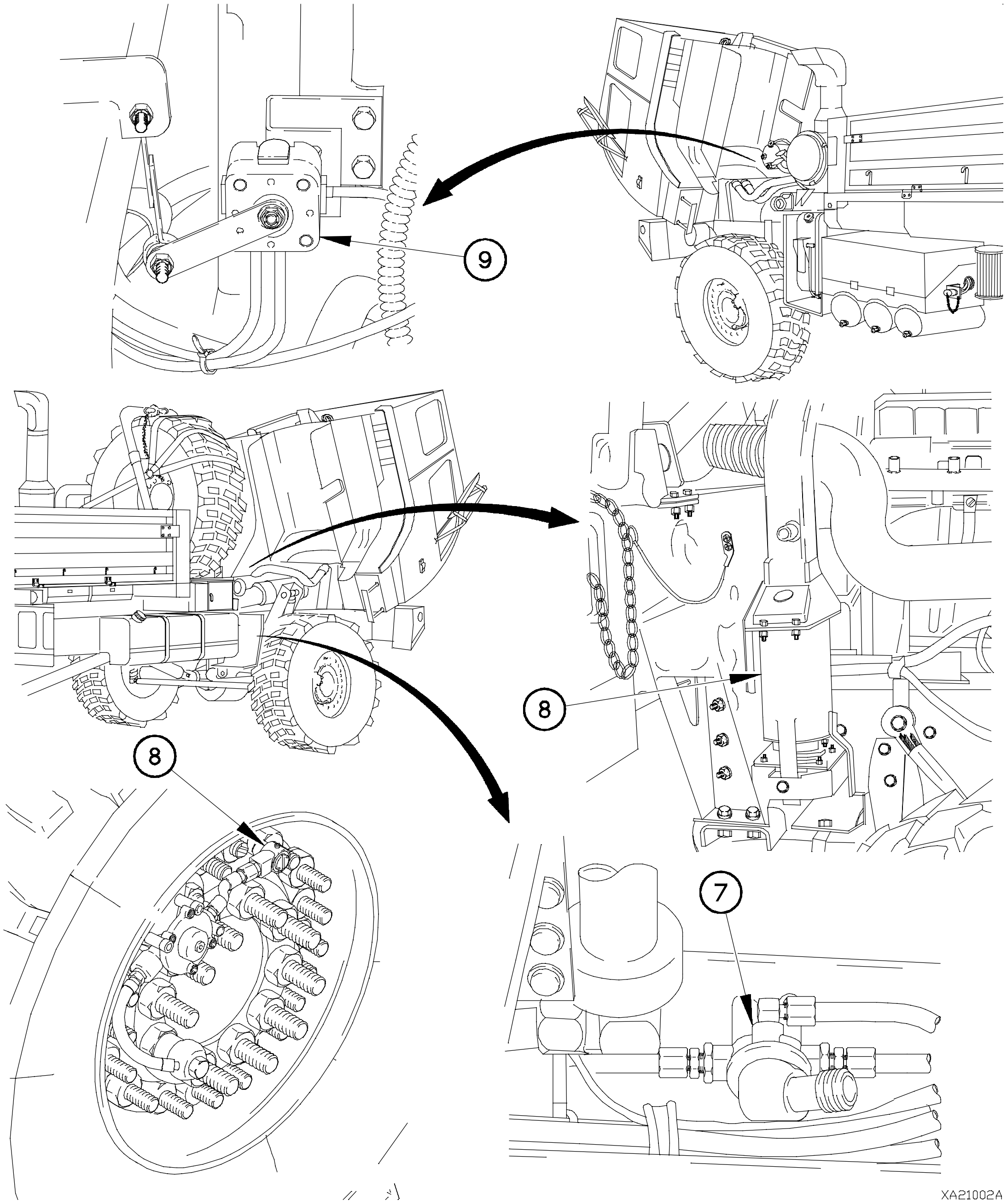


Figure 1-33. Air System (Cont)

Kneeling valves (6) on the front tires allow the front of the vehicle to be lowered for internal air transport. Quick release valves (7) are provided for each axle to exhaust air from the CTIS when the operator selects a mode which requires a lower pressure setting. Air pressure is also used to keep the cab level through the use of air springs (8), mounted below the rear cab support, and a cab leveling valve (9). The air system has enough reserve capacity to keep the vehicle operational in the event of a partial system failure.

CHAPTER 2
VEHICLE MAINTENANCE

Volume 2

Volume 3

CHAPTER 2
VEHICLE MAINTENANCE (CONT)

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

2-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100 as applicable to your unit.

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

For a listing of special tools, TMDE, and support equipment, refer to the Maintenance Allocation Chart (MAC), Appendix B, of this manual and to the Repair Parts and Special Tools List (RPSTL), TM 9-2320-366-24P.

2-3. REPAIR PARTS

Mandatory replacement parts are listed in Appendix G. Repair parts are listed and illustrated in the RPSTL, TM 9-2320-366-24P, covering Unit Maintenance repair parts and special tools for vehicle.

Section II. SERVICE UPON RECEIPT

2-4. UNPACKING AND DEPROCESSING

a. Unpacking. Upon receipt of a new vehicle, the receiving organization must see if it has been properly prepared for service and is in good condition. Inspect all assemblies, subassemblies, and accessories to be sure they are in proper working order (TM 9-2320-366-10-1). Secure, clean, and correctly adjust and/or lubricate as needed (Appendix H). Check all tools and equipment to be sure every item is accounted for (TM 9-2320-366-10-HR) in good condition, clean and properly mounted or stowed (TM 9-2320-366-10-1).

b. **Deprocessing.** Read "Processing and Deprocessing Record of Shipping, Storage and Issue of Vehicles and Spare Engines" tag, (DD Form 1397) and follow all precautions checked. This tag should be attached to the steering wheel or hand throttle lever.

2-5. HAND RECEIPT MANUAL AND INVENTORY OF EQUIPMENT

When a new vehicle is first received by the using organization, it is necessary to inventory the vehicle equipment. For detailed procedures, refer to Hand Receipt Manual, TM 9-2320-366-10-HR.

2-6. SERVICE BEFORE OPERATION

a. General.

(1) Refer to TM 9-2320-366-10-1 for operating instructions for the vehicle.

(2) Upon receipt of a new, used, or reconditioned vehicle, the receiving organization must see if it has been properly prepared for service and is in good condition (TM 9-2320-366-10-1). Inspect all assemblies, subassemblies, and accessories to be sure they are in proper working order. Secure, clean, correctly adjust, and/or lubricate (TM 9-2320-366-10-1 and Appendix H) as needed. Check all tools and equipment to be sure every item is there (TM 9-2320-366-10-HR), in good condition, clean and properly mounted or stowed (TM 9-2320-366-10-1).

(3) Follow general procedures for all services and inspections given in TM 9-2320-366-10-1.

b. Inspection and Servicing Equipment.

NOTE

If vehicle has been driven to the using organization, most or all of the following work should have been done.

(1) When vehicle is received, inspect all items for damage that may have occurred during shipping and unloading operations. Pay close attention to any loose or missing nuts, bolts, screws, access plates, drain plugs, draincocks, oil plugs, assemblies, subassemblies, or components that may be easily lost or broken in transit. Check Basic Issue Items (BII) against checklist to make sure all items are accounted for and are in good condition (TM 9-2320-366-10-HR). Carefully list all discrepancies.

WARNING

- **Dry Cleaning Solvent P-D-680 is TOXIC and flammable. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from open flame. Never smoke when using solvent; the flashpoint for Type I Dry Cleaning Solvent is 100°F (38°C) and for Type II is 130°F (50°C). Failure to comply may result in serious injury or death to personnel.**

- **If personnel become dizzy while using Dry 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. Failure to comply may result in injury to personnel.**

(2) Clean all exterior surfaces coated with rust-preventive compound with Dry Cleaning Solvent (Item 65, Appendix D).

(3) Perform the Semiannual Preventive Maintenance Checks and Services (PMCS), Table 2-1.

(4) Lubricate all points shown in Appendix H regardless of interval. Schedule services in accordance with DA Pam 738-750.

(5) Initial Service Intervals:
a. Initial 500 miles (805 km) of operation:
(1) Perform Front, Intermediate, and Rear Axle oil change.
(2) Perform Front Axle Wheel end Planetary Hub oil change.

2-6. SERVICE BEFORE OPERATION (CONT)

b. Initial 1000 miles (1609 km) of operation:
Tighten self-locking nuts on leaf spring U-bolt to 390-510 lb-ft (529-692 N·m), in 50 lb-ft (68 N·m) increments, in a crisscross pattern.

c. Initial 5000 miles (8045 km) of operation:
(1) Perform Engine oil and filter change.
(2) Perform Transmission oil and filter change.

(6) Activate battery if vehicle is delivered with dry-charged battery (TM 9-6140-200-14).

WARNING

Do not remove radiator cap when the engine is hot; steam and hot coolant can escape and burn skin. Failure to comply may result in injury to personnel.

(7) Check radiator coolant. Check if solution is adequate for expected climatic conditions. Refer to TB 750-651 for preparation of antifreeze solutions. Put tag near filler cap with type of antifreeze and degree of protection written on tag.

c. Special Service Instructions.

(1) Vehicle Body and Sheet Metal Inspection (TM 9-2320-366-10-1).

(a) Inspect body and sheet metal for evidence of damage during shipment.

(b) Check doors, latches, and hinges on compartments for proper operation.

(c) Check mounting hardware and tighten as necessary.

(2) Vehicle Cab Inspection (TM 9-2320-366-10-1).

(a) Inspect cab for evidence of damage during shipment.

(b) Inspect windshield and window glass for cracks or other damage.

(c) Check door latches, hinges, and windows for proper operation.

(d) Check seats and seatbelts mounting hardware to ensure they are securely installed and tighten as necessary.

(e) Check operator seat adjustments to ensure they are functioning properly.

(f) Unpin cab air springs, stow retaining pins, and inflate cab air spring (TM 9-2320-366-10-2, Preparation for Internal Air Transport).

(3) Engine Inspection (TM 9-2320-366-10-1).

(a) Examine intake air cleaner element for dirty or restricted condition.

(b) Remove any seals, plugs, or tape used to seal air inlets and ports on the engine during shipping.

(c) Check crankcase oil level with dipstick.

    (d) Inspect engine and coolant hose connections for evidence of leakage.

    (e) Check for obstructions of cooling air flow to radiator.

(4) Transmission Inspection (TM 9-2320-366-10-1).

    (a) Check fluid level with dipstick.

    (b) Check external tubes and hoses for evidence of leakage.

(5) Transfer Case Inspection (TM 9-2320-366-10-1).

    (a) Check level of lubricant at fill plug.

    (b) Inspect lubrication pump and external hoses for evidence of leakage.

    (c) Operate driveline control and observe drive power to front axle.

    (d) Inspect bolts on driveline U-joints.

(6) Electrical System Inspection (TM 9-2320-366-10-1).

    (a) Inspect battery cable connections and clean and tighten as necessary.

    (b) Check all lights for burned out lamps, loose connections, and dirty or broken lenses.

    (c) Check that alternator is charging batteries properly.

    (d) Check that all electrical equipment functions properly.

(7) Air System Inspection (TM 9-2320-366-10-1).

    (a) Drain any water from air tanks.

    (b) Inspect all accessible air hose and tubing connections for leakage.

(8) Steering System Inspection (TM 9-2320-366-10-1).

    (a) Check steering hydraulic reservoir for proper fluid level.

    (b) Examine steering linkage and steering gear for damage incurred during shipment.

    (c) Examine steering hoses and connections for evidence of leakage.

    (d) Check steering system for proper operation during road test.

(9) Chassis and Front, Intermediate, and Rear Axle Inspection (TM 9-2320-366-10-1).

    (a) Check all lubricant levels.

    (b) Check axle housing pressure vents to ensure freedom from foreign matter.

2-6. SERVICE BEFORE OPERATION (CONT)

(10) Tire Inspection.

(a) Check tire pressure (TM 9-2320-366-20-1).

(b) Inspect tires for serious cuts, bubbles, cracks, bruises, dry-rot, foreign objects, or exposure of internal cords. Remove any foreign objects lodged between treads (TM 9-2320-366-20-1).

(c) Check all wheel mounting nuts for proper torque (para 12-4).

(11) Fuel System Inspection (TM 9-2320-366-20-1).

(a) Check fuel level and replenish if necessary.

(b) Inspect fuel tubes, hoses, connections, and filters for evidence of leakage.

(12) Arctic Kit. If vehicle is equipped with an arctic kit, and is going to operate in non-arctic climates, remove arctic alternator belts and replace with standard belts (para 7-4).

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-7. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

This section contains Unit Maintenance Preventive Maintenance Checks and Services (PMCS) requirements for the vehicle. The PMCS table contains checks and services necessary to ensure the vehicle is ready for operation. Using the PMCS table, perform maintenance at the specified intervals. Perform PMCS in TM 9-2320-366-10-1 before doing the Unit Maintenance PMCS.

2-8. GENERAL MAINTENANCE PROCEDURES

WARNING

- **Dry Cleaning Solvent P-D-680 is TOXIC and flammable. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from open flame. Never smoke when using solvent; the flashpoint for Type I Dry Cleaning Solvent is 100°F (38°C) and for Type II is 130°F (50°C). Failure to comply may result in serious injury or death to personnel.**
- **If personnel become dizzy while using Dry 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. Failure to comply may result in injury to personnel.**

a. Cleanliness. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Use Dry Cleaning Solvent (Item 65, Appendix D) on metal surfaces and soapy water on rubber.

b. Bolts, Nuts, and Screws. Check bolts, nuts, and screws for obvious looseness, missing, bent, or broken condition and replace as necessary. If they cannot be checked with a tool, look for chipped paint, bare metal, or rust around bolt heads.

c. Welds. Look for loose or chipped paint, rust, or gaps where parts are welded together. If a bad weld is found, notify your supervisor.

d. Electric Wires and Connectors. Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and ensure wires are in good shape.

e. Fluid Lines and Fittings. Look for wear, damage, and leaks and make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can mean a leak. If connector or fitting is loose, tighten it. If something is broken or worn out, replace or repair using the applicable procedure.

f. Fluid Leakage. It is necessary to know how fluid leakage affects the status of fuel, oil, coolant and the hydraulic systems. The following are definitions of the type/classes of leakage necessary to know in order to determine the status of the vehicle. Learn, then be familiar with them and REMEMBER - WHEN IN DOUBT, NOTIFY THE SUPERVISOR!

CAUTION

Equipment operation is allowable with minor leakage (Class I or II). Consideration must be given to the fluid capacity in the item/system being checked/inspected. When in doubt, notify the supervisor. When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS. Class III leaks should be repaired using the applicable procedure.

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

(2) Class II. Leakage of fluid great enough to form drops but not enough to cause drops to fall from item being checked/inspected.

(3) Class III. Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

g. Air System Components. Look for worn, damaged, or leaking components. Make sure clamps and fittings are tight. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, replace or repair it.

h. Damage. Damage is defined as any condition that affects safety or would make the vehicle unserviceable for mission requirements.

2-9. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) TABLE

a. Do the SEMIANNUAL PREVENTIVE MAINTENANCE (Table 2-1) once every six months.

b. Refer to the specified technical manuals for preventive maintenance for special purpose kits.

c. Always perform the PREVENTIVE MAINTENANCE in the same order until it gets to be a habit. Once practiced, it will be easy to spot anything wrong in a hurry. Perform the checks and services listed in Table 2-1 in the order listed.

d. If something does not work, troubleshoot with instructions in Section IV.

e. If anything looks wrong and is too hard to fix, notify the supervisor.

f. When doing preventive maintenance, take along the tools and supplies needed to make all the checks, including a clean cloth or two.

2-9. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) TABLE (CONT)

g. The following is a breakdown of the PMCS table:

(1) Item number column. Checks and services are numbered in a logical order for moving around the vehicle. The item number column is used as a source of reference for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, for recording results of the PMCS.

(2) Items to be inspected. This column identifies the item to be inspected.

(3) Procedures column. This column contains all the information required to do the check/inspection. Art is integrated into the column to aid the user in identifying items. Whenever replacement parts or repair is recommended, reference is made to the applicable maintenance instructions.

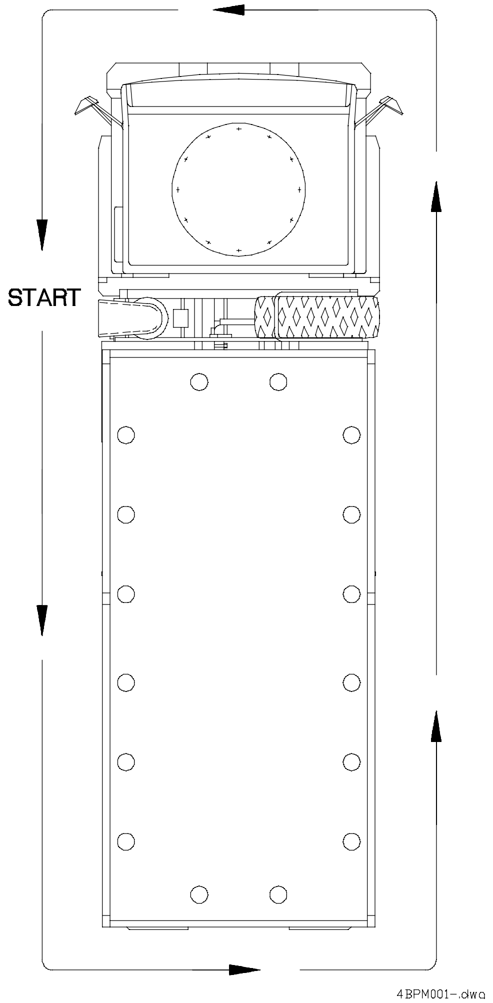


Table 2-1. Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
			ROAD TEST Maintenance personnel will be with vehicle operator during the road test. **NOTE** • Perform the following during road test. • For road test, vehicle will be driven at least five miles over different ground to give enough time to detect any malfunctions.	
1	Semiannual	**Preservice Checks**	**a.** Notice if starter engages smoothly and turns engine at normal cranking speed.	**a.** Starter inoperative or makes excessive grinding sound.
			b. Listen for unusual engine noise at idle, at operating speeds, and under acceleration. Be alert for excessive vibration and the smell of oil, fuel or exhaust.	**b.** Engine knocks, rattles or smokes excessively.
			c. Check for transmission response to shifting and for smoothness of operation in all speed ranges. Be alert for unusual noises and difficulty in shifting in any speed range.	**c.** Transmission shifts improperly, does not shift or makes excessive noises.
			d. Test for accelerator response. Observe for sticking pedal.	**d.** Pedal sticking or binding.
			e. With vehicle speed approximately 5 mph (8 kph) turn steering wheel to left, then right, to detect steering backlash, shimmy or freeplay of more than 1-1/2 in. (3.8 cm) in either direction. Vehicle should respond instantly. With vehicle moving on straight, level terrain, lightly hold steering wheel to check for pull and wandering.	**e.** Steering binds, grabs, wanders or freeplay is more than 1-1/2 in. (3.8 cm) in either direction.

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
1	Semiannual	**Preservice Checks (CONT)**	**NOTE** Do not turn tires when turning wheel to check for steering wheel free play.	
			f. Place a strip of tape around steering wheel at 12 O'clock position. Turn steering wheel right until resistance is felt. Place a ruler lightly against outer rim of steering wheel with end of ruler at one edge of tape. Turn steering wheel left until resistance is felt. Measure distance designated edge of tape has traveled. Maximum free play measured at outside rim of steering wheel is 2-1/2 in. (6.4 cm).	**f.** Steering wheel exceeds 2-1/2 in. (6.4 cm) free play.
			g. Apply brake pedal with steady force. Vehicle should slow down and stop without pulling to one side or jerking. Release brake pedal. The brakes should release immediately and without difficulty.	**g.** Brakes chatter, pull to one side, will not release, or do not work.
			h. Observe vehicle response to road shocks, side sway or continuous bouncing indicates a malfunction.	**h.** Handling is unstable.
			CAUTION Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result. Failure to comply may result in damage to equipment.	
			i. With vehicle stopped, turn steering wheel to extreme left, then to extreme right to check for binding or jerking.	**i.** Hard steering is evident.
			j. Check engine operation at all speeds. Ensure that engine does not go over engine governed speed - (55 mph or 2600 rpm).	**j.** Engine exceeds or fails to reach governed speed.

Table 2-1. Preventive Maintenance Checks and Services (Cont)

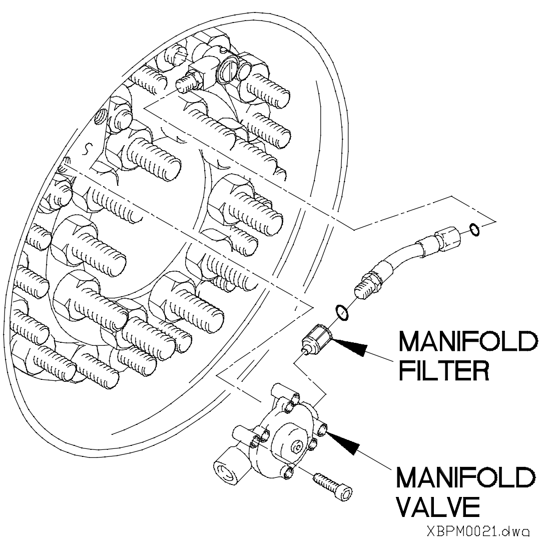
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
2	Semiannual	**WHEELS, HUBS, AND CTIS**	**WARNING** **Completely deflate tires before removing from axles only if there is obvious damage to wheel components. Removing damaged tires from axles without deflating tires may cause wheel components to separate. Failure to comply may result in serious injury or death to personnel.**	
			a. Check wheels for obvious cracks around lug holes. If cracks are found, repair wheel (para 12-2).	**a.** Cracks are found around lug holes.
			b. Replace any loose or damaged wheel studs (para 12-3). Tighten lugnuts (para 12-4).	**b.** More than one lugnut or wheel stud is damaged or missing.
			c. Check for oil leaks.	**c.** Class III leak is evident.
			d. Check and fill wheel end hub (Appendix H).	
			e. Check wheels for CTIS air leaks.	
			f. Remove manifold valve (para 12-5) and inspect manifold filter for damage. Clean any debris from manifold filter.	
				

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
3	Semiannual	**SERVICE BRAKES**	**WARNING** • **Brake shoes may be covered with dust. Breathing this dust may be harmful to your health. Do not used compressed air to clean brake shoes. Wear a filter mask approved for use against brake dust. Failure to comply may result in injury to personnel.** • **Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.** **a.** Shut down engine (TM 9-2320-366-10-1) and drain primary air tank. Rear service brakes should not apply. If rear service brakes apply, inversion valve is inoperative. Replace inversion valve (para 11-13). If rear brakes are not applied, depress brake pedal. Depressing brake pedal should apply front brakes and control rear spring brakes through inversion valve and modulation of relay valve.	**a.** Rear portion of brake system fails.

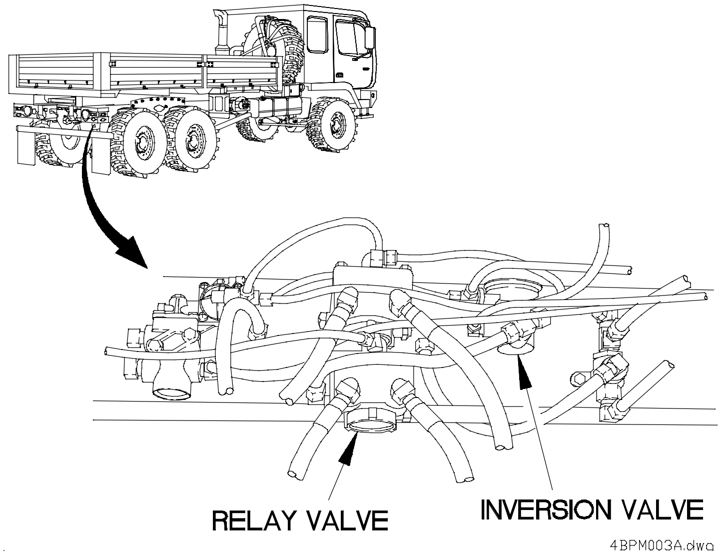


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
3	Semiannual	**SERVICE BRAKES (CONT)**	**b.** Inspect load sensing valve for signs of corrosion.	
			c. Check security of mounting hardware.	
			d. Check for air leaks around brake hose fittings.	**d.** Air leaks are found.
			e. Inspect control cable for corrosion and abrasions.	**e.** Control cable is damaged or missing.
			f. Check security of control cable upper and lower attaching hardware and adjust (para 11-10).	
			g. Inspect brake air chambers for obvious cracks and corrosion.	**g.** Brake air chamber leaks.

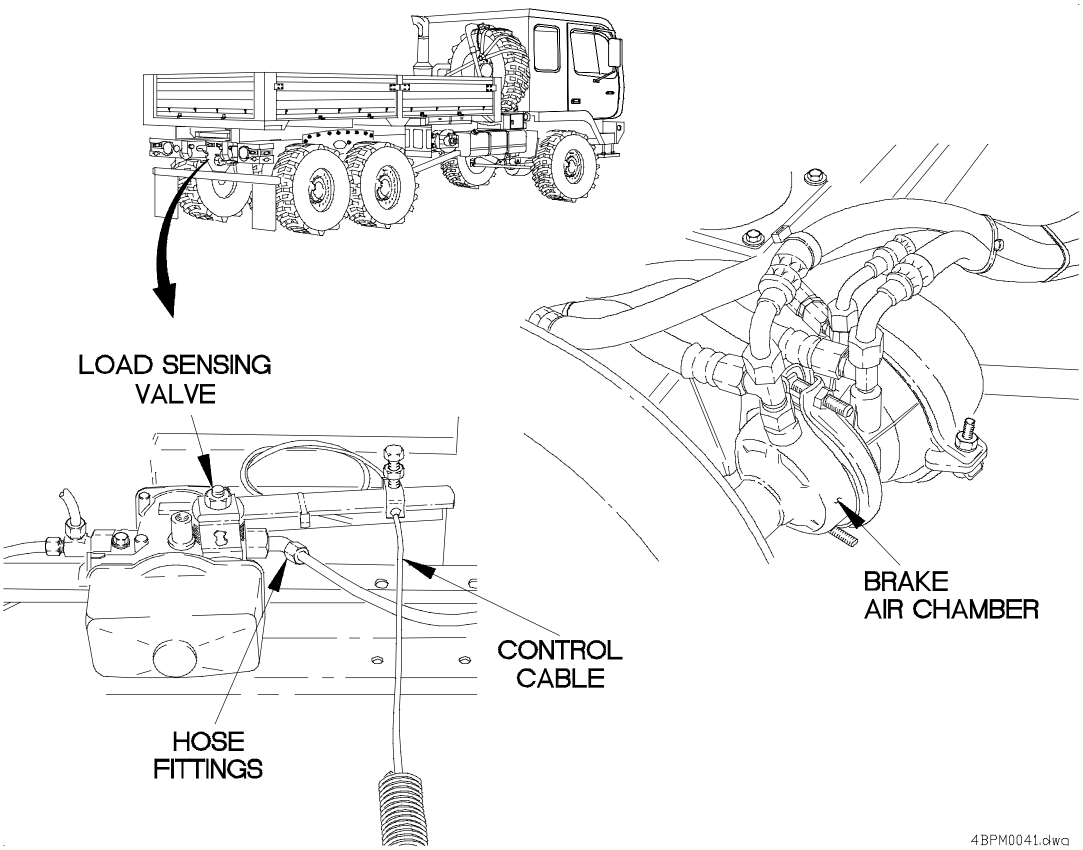


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
3	Semiannual	**SERVICE BRAKES (CONT)**	**WARNING** **Brake drums can become very hot during vehicle operations. Place hand near drum to check for excessive heat but do not touch drum. Failure to comply may result in injury to personnel.** **CAUTION** Brake drum clearance must be checked along centerline of brake shoe. Failure to comply may result in damage to equipment. **NOTE** Over time a ridge will form on the outer edge of the brake shoes. This is normal and does not affect brake shoe serviceability. **h.** Examine and compare each brake drum for evidence of overheating. Excessive heating of brake drums may indicate a dragging brake shoe. Cool brake drums could mean improper adjustment, defective or inoperative brakes, or rust on braking surfaces.	**h.** Brake drums are excessively hot, cool, or rusted.

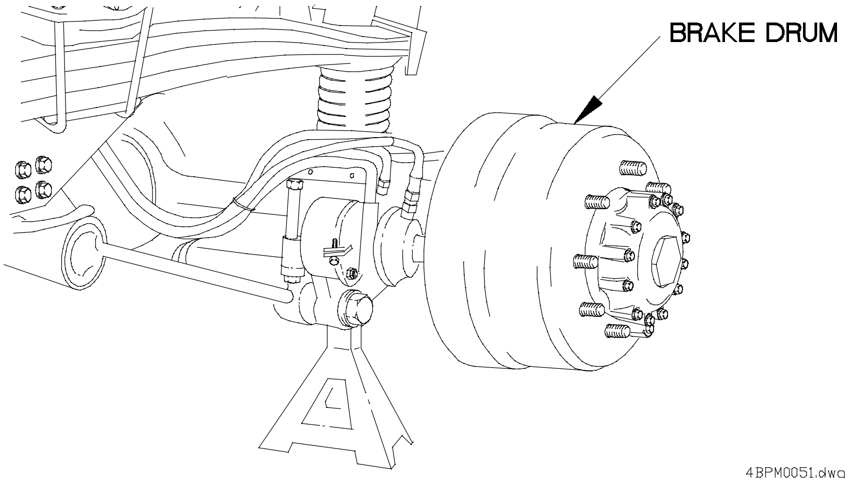
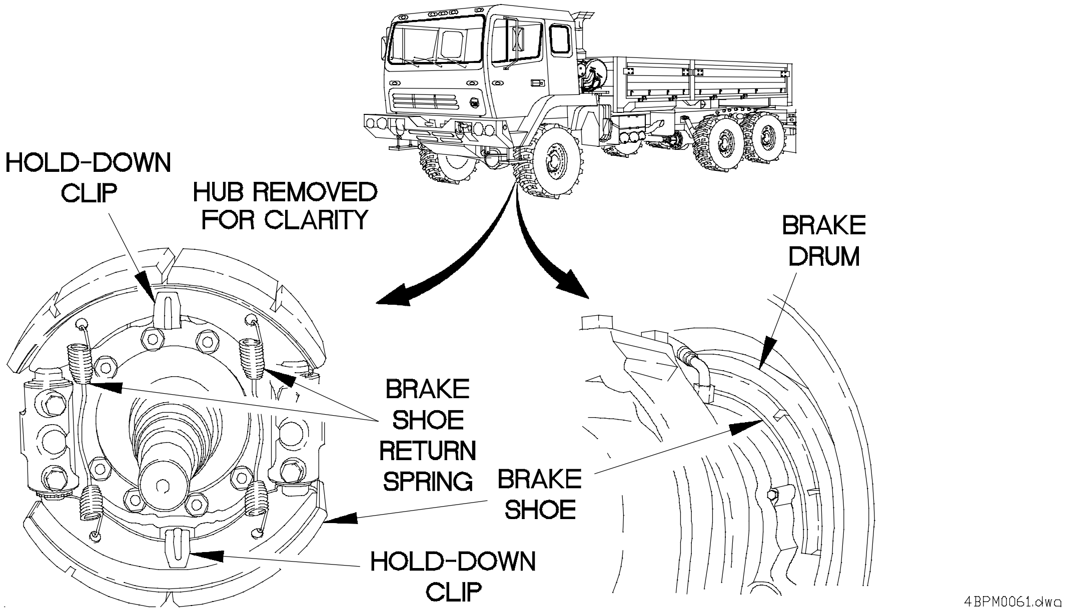
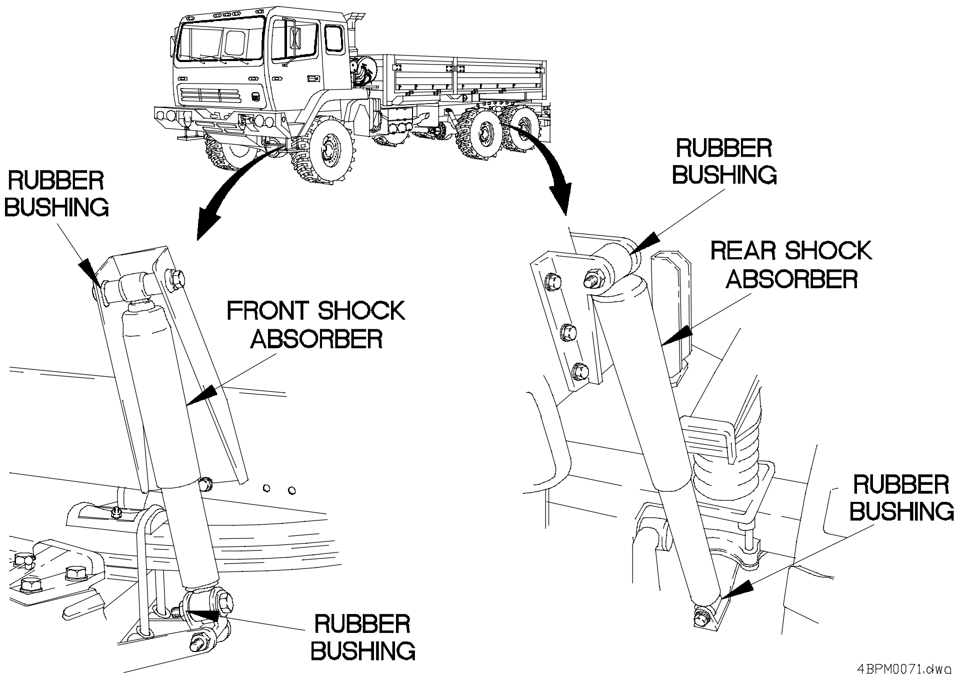


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
				
3	Semiannual	**SERVICE BRAKES (CONT)**	**i.** Check brake lining to brake drum clearance along centerline of shoe at scallop to ensure automatic adjusters are functioning properly. Clearance should be 0.020-0.040 in. (0.051-0.102 cm) maximum. **WARNING** **Do not allow grease or oil to contact brake linings. Linings can absorb grease and oil, causing early glazing and very poor braking action. Failure to comply may result in serious injury or death to personnel.**	**i.** Brake shoe adjustment is out of tolerance.
			j. Examine brake shoes for excessive brake lining wear and cracking (para 11-2 and 11-3).	**j.** Brake linings are cracked or excessively worn.
			k. Inspect brake shoe return springs and hold-down clips for cracks.	**k.** Springs or clips are cracked or broken.

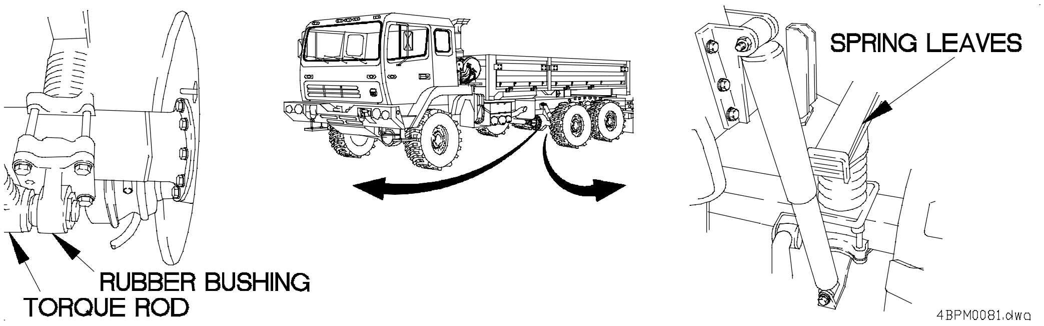
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
3	Semiannual	**SERVICE BRAKES (CONT)**	**l.** Inspect actuator plunger seals for cuts, tears, and leaks (para 11-4 and 11-5).	**l.** Plunger seals, adjusting pawl assembly, adjusting plunger or actuator are damaged.
4	Semiannual	**SHOCK ABSORBERS AND SPRINGS**	**a.** Inspect shock absorbers for oil leaks and damage.	**a.** Shock absorber is bent or leak greater than Class I is evident.



			b. Check shock absorber mounting hardware for security.	
			c. Check rubber bushings for looseness which may result in inner sleeve contacting eye ring of shock absorber.	**c.** Rubber bushings are loose or inner sleeve is contacting eye ring of shock absorber.

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
4	Semiannual	**SHOCK ABSORBERS AND SPRINGS (CONT)**	**d.** Inspect spring leaves, spring clips, saddles, saddle caps, and U-bolts for cracks or breaks.	**d.** Cracks or breaks are found.
			e. Check torque rods for cracks or bends. Inspect rubber bushings for damage or dry rot.	**e.** Any torque rod is cracked or bent.



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
5	Semiannual	**AXLES**	**WARNING** **Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.** Inspect axles for leaks around wheel end assemblies, pinion seal, drive yoke, and drain plug.	

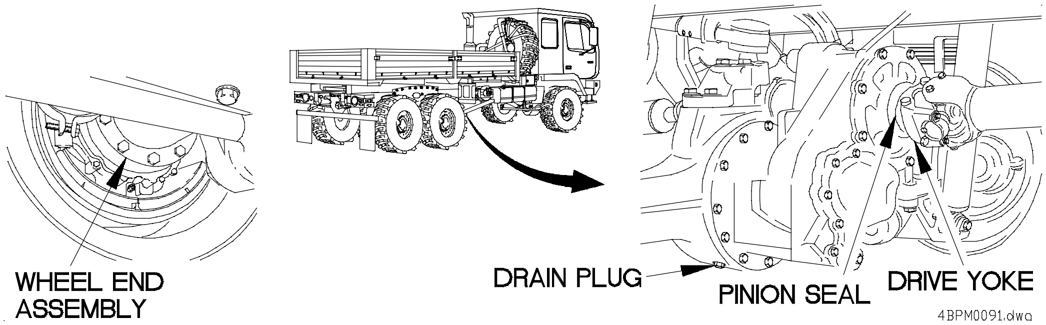


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
6	Semiannual	**AXLE BREATHER VALVES**	**a.** Inspect axle breather valves to ensure up and down movement.	

WARNING

- **Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in 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 I Dry Cleaning Solvent is 100°F (38°C) and for Type II is 130°F (50°C). Failure to comply may result in serious injury or death to personnel.**
- **If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If dry cleaning solvent contacts skin or clothes, flush with cold water. If dry cleaning solvent contacts eyes, immediately flush eyes with water and get immediate medical attention. Failure to comply may result in injury to personnel.**

			b. Remove axle breather valve from fitting. Wash breather in dry cleaning solvent (Item 65, Appendix D) and allow to air dry.	**b.** Axle breather valve missing.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. Keep away from open fire and use in well-ventilated area. If adhesive, solvents, or sealing compounds get on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury to personnel.

			c. Coat threads of axle breather valve with antiseize compound (Item 13, Appendix D) and install axle breather valve in fitting.	

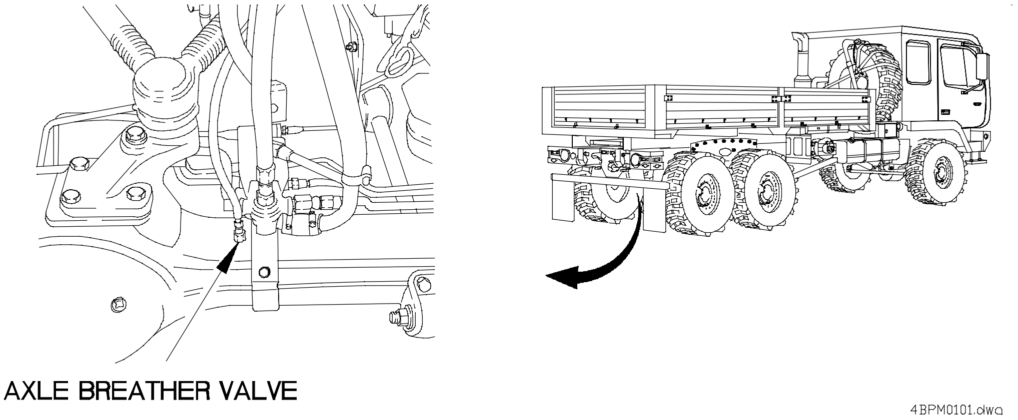


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
7	Semiannual	**DRIVE SHAFTS**	**WARNING** **Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.**	
			a. Inspect U-joints for play, broken and missing lubrication fittings (Appendix H).	**a.** Lubrication fittings, screws or lock tabs are broken or missing, or play is evident.
			b. Perform propeller shaft hinging inspection (para 9-3).	**b.** Hinging reading is greater than .02 in. (.5 mm).
			c. Inspect all drive shafts for damage or obvious spline movement.	**c.** Damage or obvious movement evident.

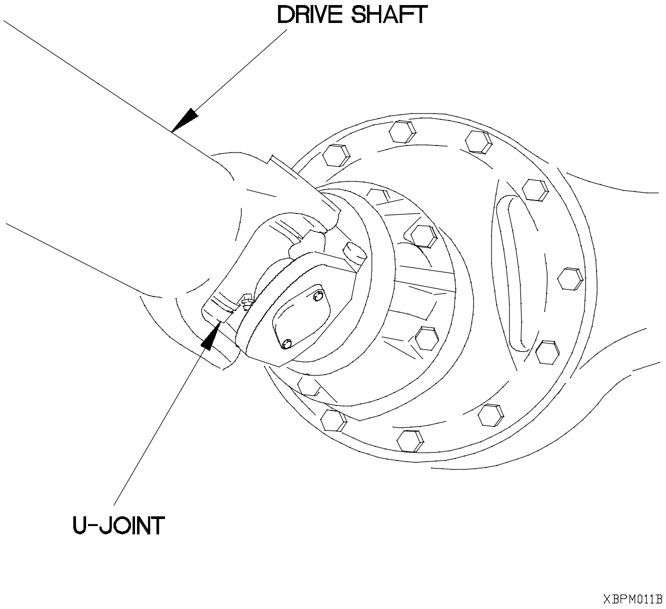


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
7a	Semiannual	**V-ROD CONTROL ARM**	**WARNING** **Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.**	
			a. Inspect U-bolts for play, cracks, or breaks.	**a.** Cracks or breaks are found or there is excessive play.
			b. Check V-rod control arms for cracks or bends.	**b.** Any V-rod control arm is cracked or bent.
			c. Check V-rod control arm mounting hardware for secure installation.	**c.** Bolts or nuts loose or missing.

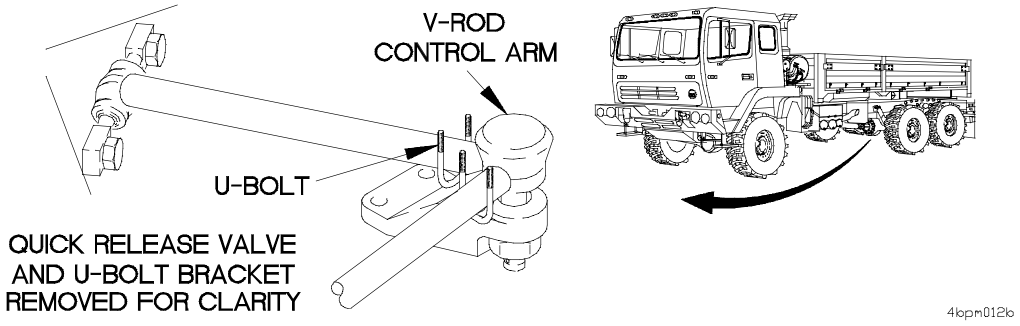


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
8	Semiannual	**TRANS-MISSION**	**WARNING** **Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.**	
			a. Check transmission for cracks, loose bolts, leaks, and damage.	**a.** Cracks, loose or missing bolts, or Class III leaks.
			b. Check that transmission oil pan bolts and drain plug are tight.	**b.** Oil pan bolts or drain plug are loose or missing.
			c. Inspect transmission output shaft seal for damage or leaks.	**c.** Damage or Class III leaks are evident.

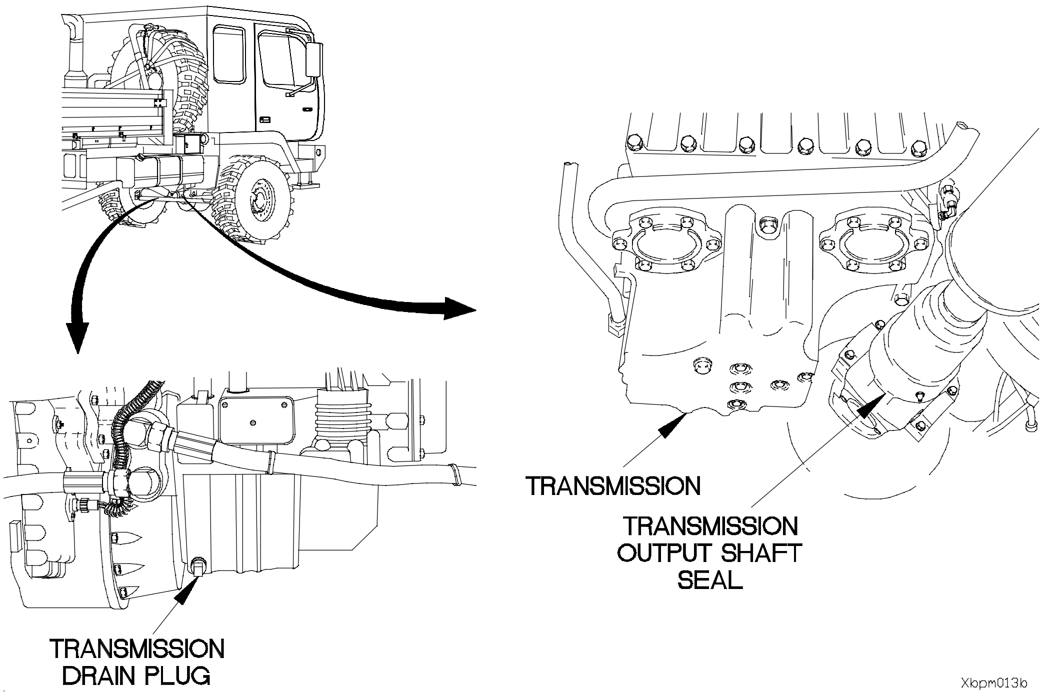
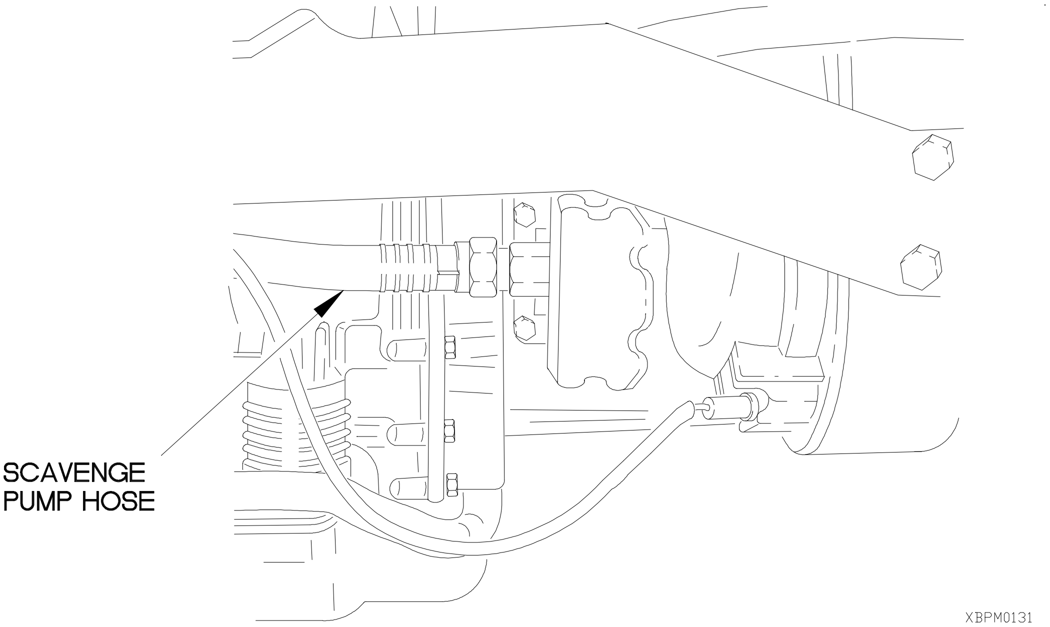


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
8	Semiannual	**TRANS-MISSION (Cont)**	**d.** Inspect transmission oil cooler tubes/hoses for leaks.	**d.** Class III leak is evident.
			e. Inspect scavenge pump hose for leaks.	**e.** Class III leak is evident.



9	Semiannual	**ENGINE MOUNTS**	**WARNING** **Ensure engine is cool before performing maintenance. Failure to comply may result in injury to personnel.** Check engine mounts for loose hardware or cracks.	Engine mounts are loose or damaged.
10	Semiannual	**ENGINE CRANK-CASE**	**CAUTION** Initial valve clearance adjustment on new engines, rebuilt engines, or remanufactured engines is required at initial 6,000 miles of engine operation. The adjustment is necessary due to the initial wear of the valve train components and seating of the valve train components. Notify DS Maintenance if initial valve clearance adjustment is required. Failure to comply may result in damage to equipment.	

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
10	Semiannual	**ENGINE CRANKCASE**	**NOTE** COLD TEMPERATURE OPERATION For operation of equipment in continuous temperatures below 0°F (-18°C), remove lubricants prescribed in the key for temperature above 0°F (-18°C). Relubricate with lubricant specified in the key for temperatures 0° to -50°F (-18° to -46°C). **a.** Start engine (TM 9-2320-366-10-1) and run for five minutes. **b.** Check for oil leaks around top of engine oil filter. **c.** Shut down engine (TM 9-2320-366-10-1). **d.** Check oil level on engine oil dipstick. **e.** Add engine oil, if required, to bring oil level to full mark on engine oil dipstick.	

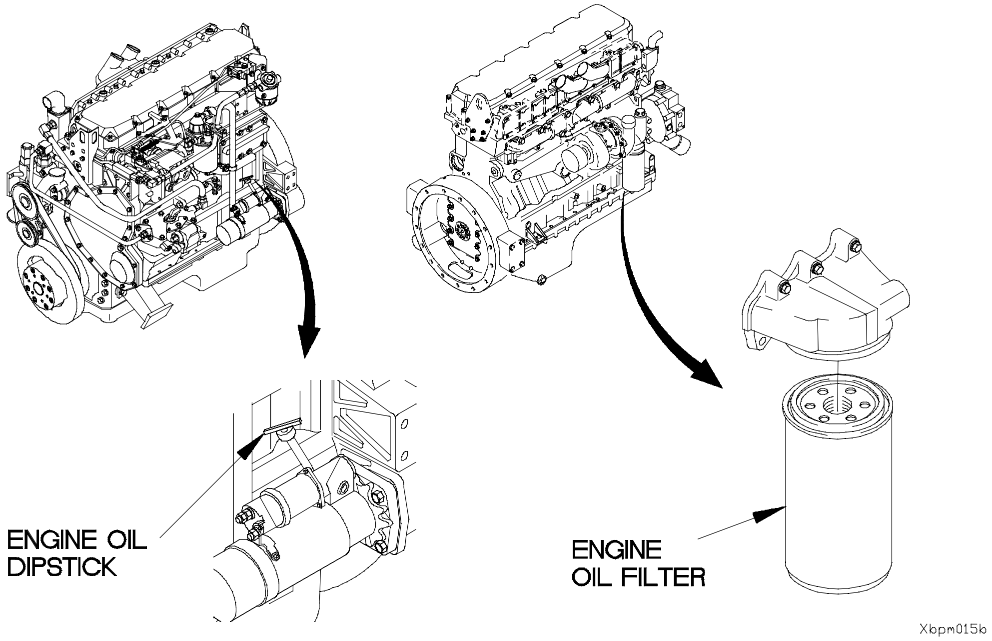
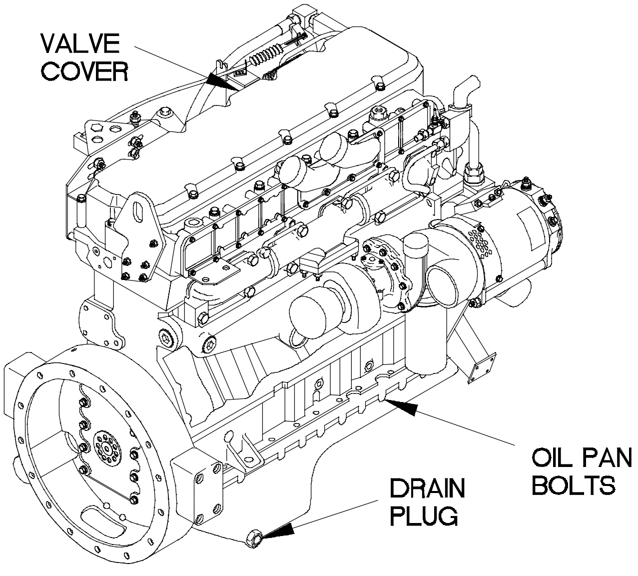


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
10	Semiannual	**ENGINE CRANK-CASE (Cont)**	**f.** Check oil pan bolts and oil pan drain plug for tightness.	**f.** Drain plug or oil pan bolts are loose or missing.
			g. Check valve cover for evidence of oil leaks.	**g.** Class III leak is evident.



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Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
11	Semiannual	**ENGINE WIRING**	Check all engine compartment wiring for frays, splits, missing insulation or poor connections.	Insulation missing. Frays, splits, poor connections evident.

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
12	Semiannual	**AIR SYSTEM**	**a.** Observe air dryer purge valve operation and ensure proper functioning. **b.** Inspect purge valve seal for cracks and leaks. **c.** Check wiring to heater portion of air dryer. Ensure there are no loose connections or frayed wires.	**c.** Loose connection cannot be tightened or frayed wires are evident.

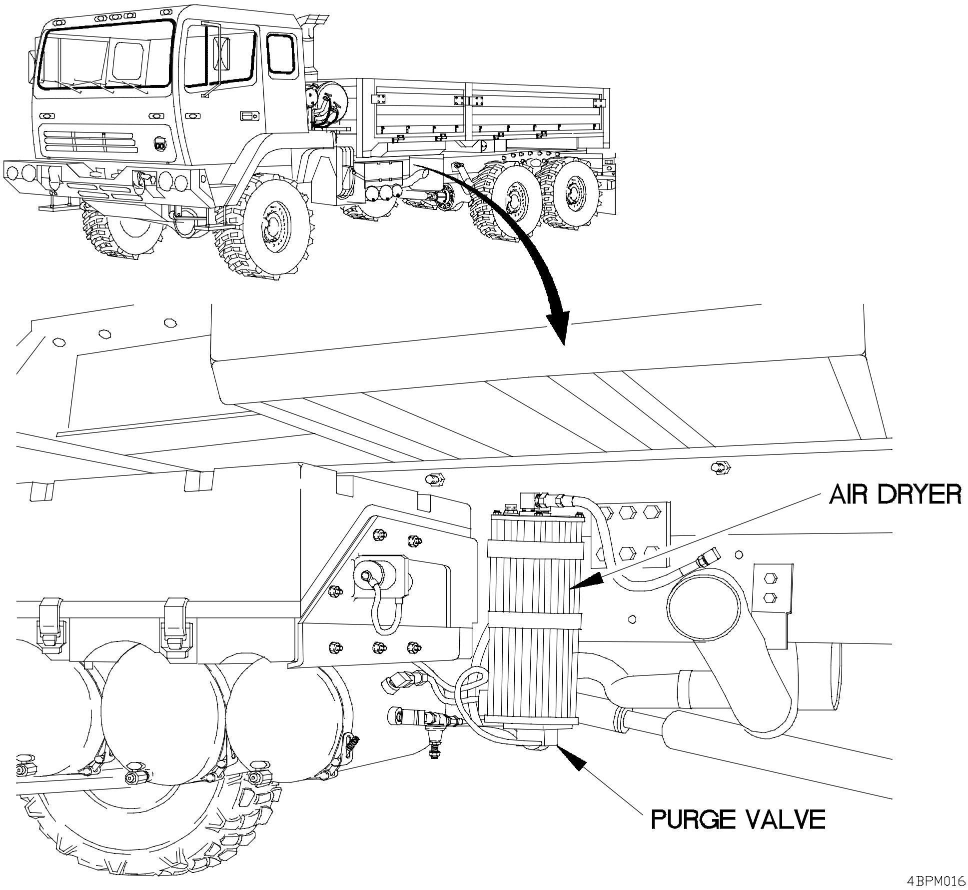


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
13	Semiannual	**EXHAUST SYSTEM**	**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 and muffler. Exhaust system parts can become hot enough to cause serious burns. Failure to comply may result in injury to personnel.** **a.** Inspect exhaust manifold, exhaust pipes, muffler, and tailpipe for corrosion, carbon deposits, loose clamps, or leaking gaskets.	

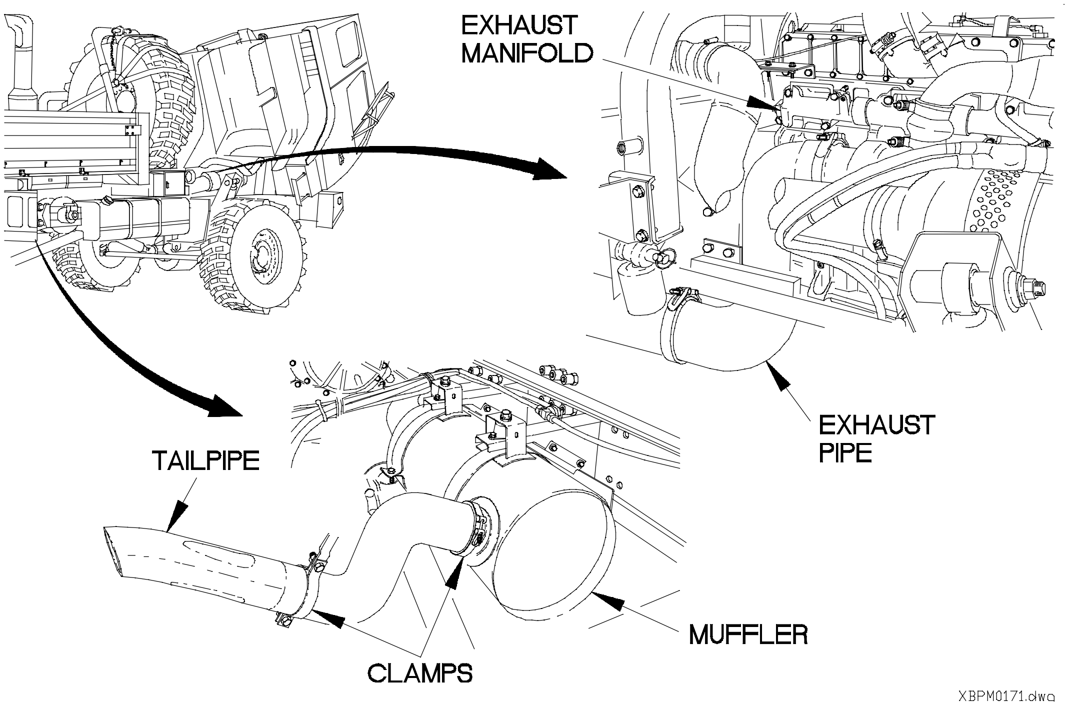


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	<u>Location</u> Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
14	Semiannual	**STABILIZER BAR (EXCEPT M1089)**	**a.** Check rear stabilizer bar for secure mounting. **b.** Inspect stabilizer rubber bushings for cracks and dry rot.	

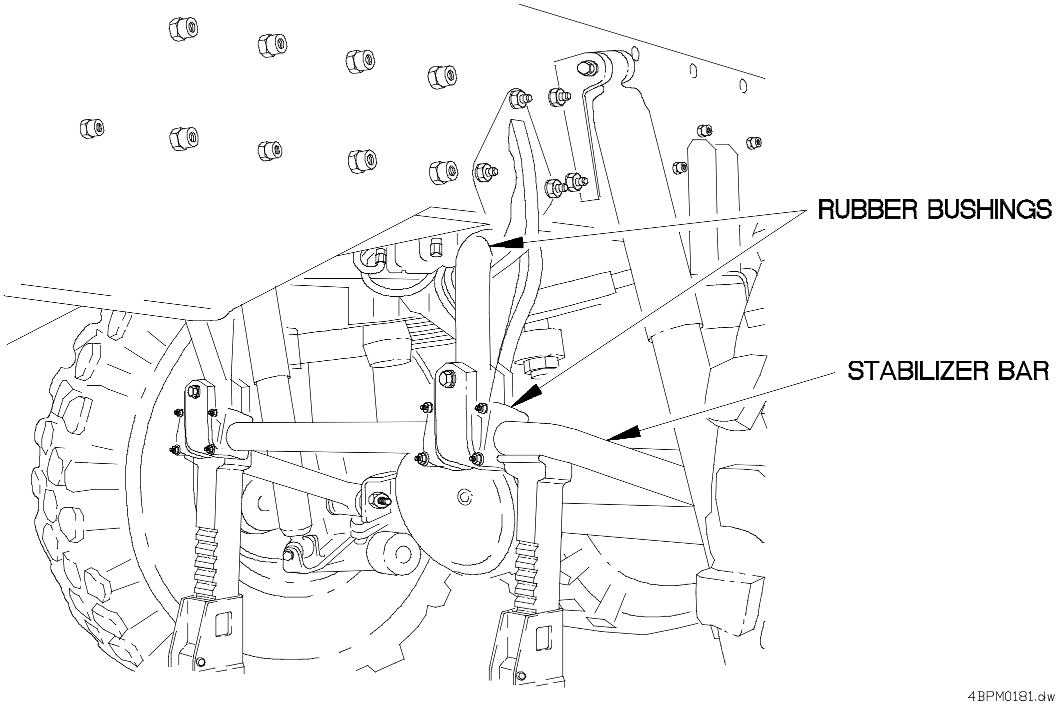


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	<u>Location</u> Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
15	Semiannual	**PINTLE TOWING HOOK**	**a.** Check for free rotation and operation of pintle towing hook. **b.** Inspect pintle towing hook and mounting plate for cracks or loose hardware. **c.** Inspect pintle cotter pin for presence.	

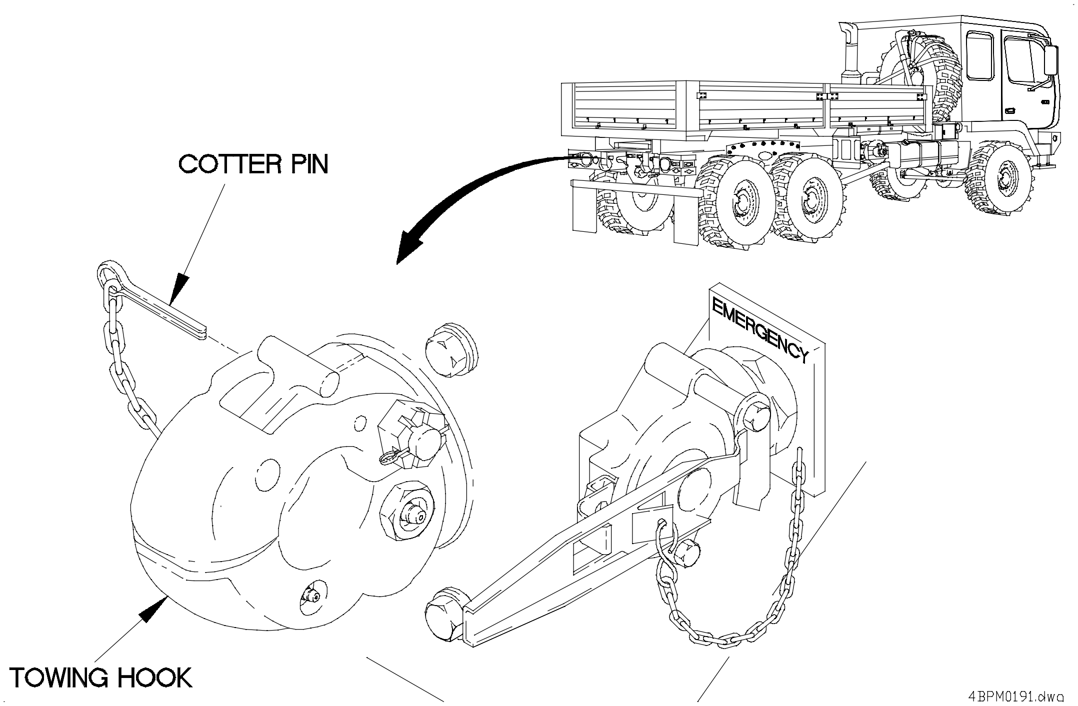


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	<u>Location</u> Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
16	Semiannual	**VEHICLE EXTERIOR**	Inspect vehicle exterior for evidence of corrosion damage such as surface color change, surface separation, seam separation, blistered paint, rust through, in accordance with TB 43-0213.	
17	Semiannual	**AIR CLEANER**	**a.** Remove air cleaner cover and examine air cleaner cover gasket for dry rot and/or missing sections.	**a.** Cover gasket is not intact or capable of making a good seal.

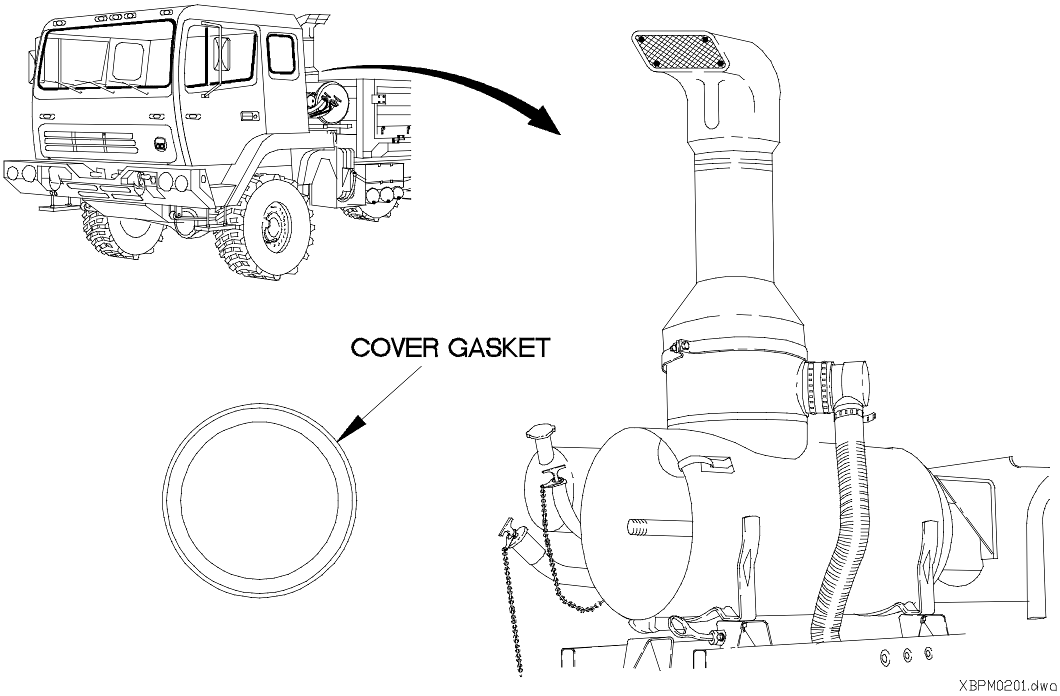


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
17	Semiannual	**AIR CLEANER (CONT)**	**b.** Inspect air shutter by loosening one hose clamp, removing cover, and ensuring air shutter moves freely without binding or resistance.	**b.** Air shutter binds or is stuck.
			c. Inspect air shutter gasket for cracking and dry rot.	**c.** Gasket is broken or dry rotted.
			d. Check security of clamps on particle extraction hose between air cleaner and tailpipe. Tighten if loose (35-45 lb-in. (4-5 N·m)), replace if broken. Examine particle extraction hose. Replace if excessively worn.	**d.** Particle extraction pathway between air cleaner and tailpipe is not intact.

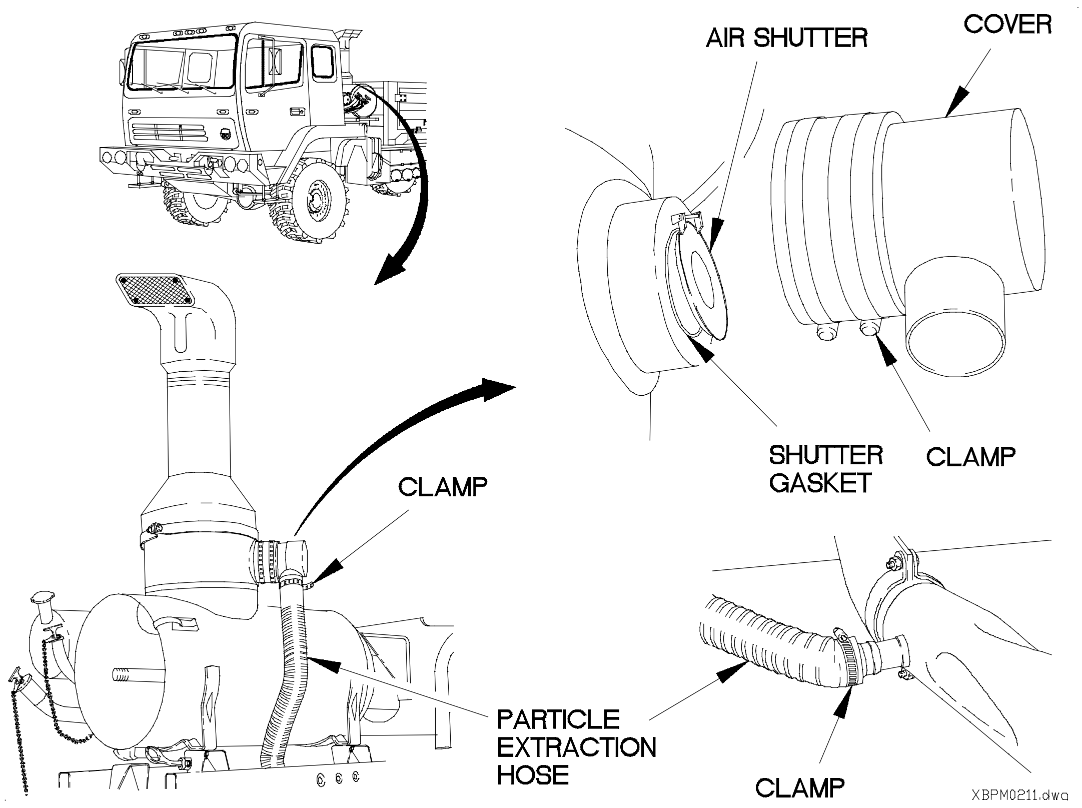


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
18	Semiannual	**BATTERIES AND BATTERY BOX**	**WARNING** • **Remove or disconnect batteries prior to performing maintenance in battery area or when working on electrical system. Failure to comply may result in severe electrical shock to personnel or damage to equipment.** • **Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry contacts battery terminal, a direct short may result in instant heating of tools, damage to equipment, and serious injury or death to personnel. Failure to comply may result in serious injury to personnel.** • **Wear safety glasses or goggles when checking batteries. Always check electrolyte level with engine shut down. Do not smoke or use exposed flame when checking battery; explosive gases are present and severe injury to personnel can result. Failure to comply may result in injury to personnel.** **a.** Inspect battery box for obvious signs of corrosion and for loose mounting hardware.	

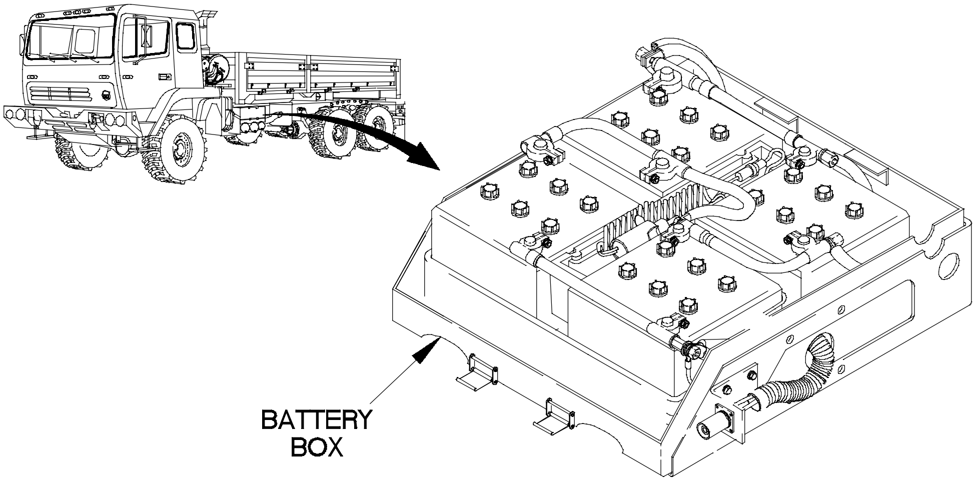


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	<u>Location</u> Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
18	Semiannual	**BATTERIES AND BATTERY BOX (CONT)**	**b.** Inspect external condition of batteries; check for cracks and loose or corroded terminal posts. **c.** Check and record specific gravity of each cell in all batteries.	**b.** Batteries cracked.
			d. Inspect battery cables for corrosion, frays, splits, chafing and secure attachment.	**d.** Battery cables are worn, frayed or corroded.

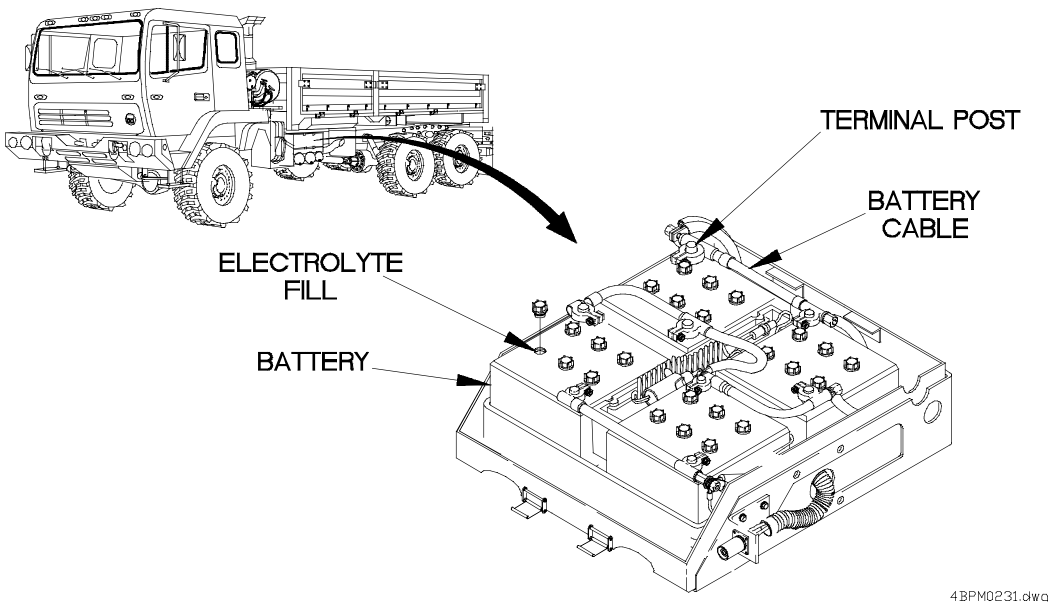
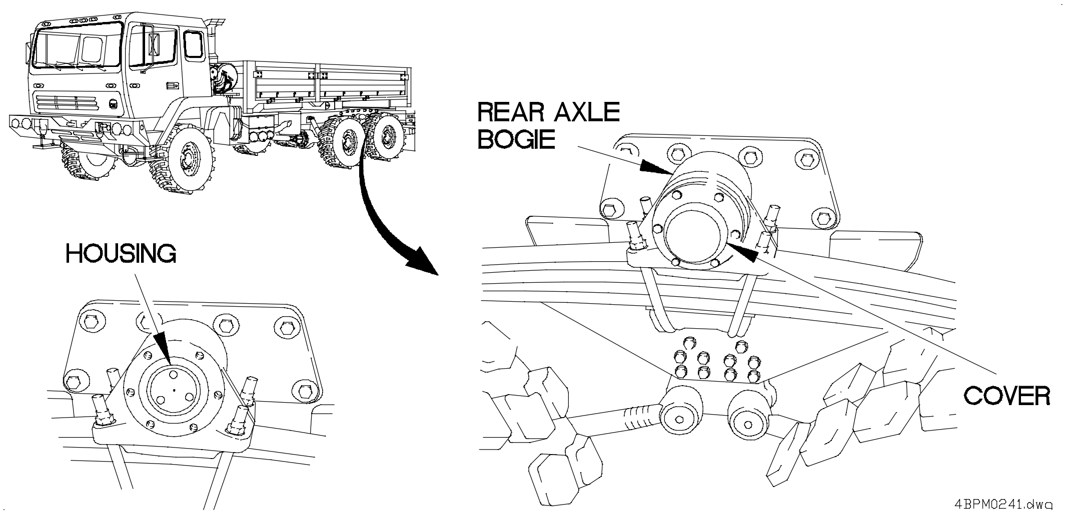


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
19	Semiannual	**BOGIE AXLE**	Inspect axle bogie for damage.	Damage to or excessive movement in axle bogie.



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
20	Semiannual	**SPARE TIRE RETAINER**	**a.** Inspect hydraulic hoses for cracks and abrasions. **b.** Inspect hydraulic cylinder for leaks around cylinder rod and fittings. Check cotter pins for presence.	**a.** Class III leak is evident. **b.** Class III leak is evident.

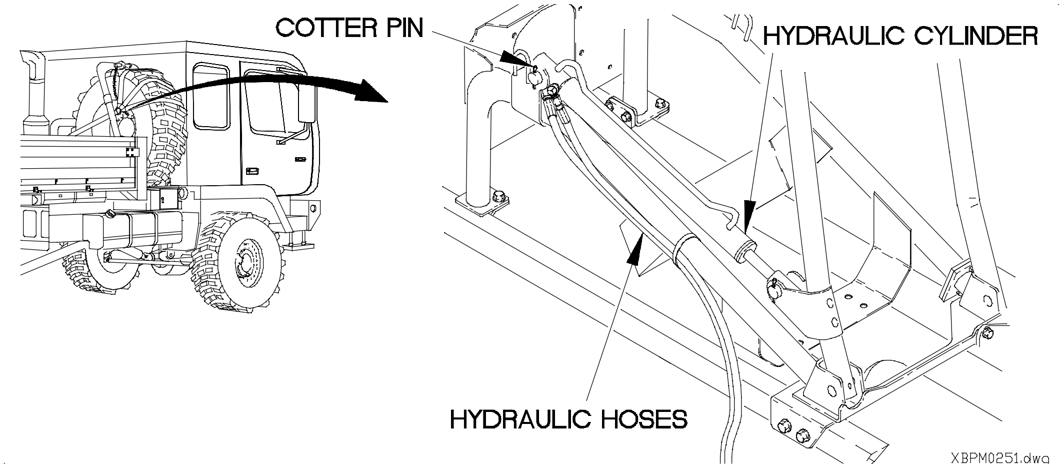
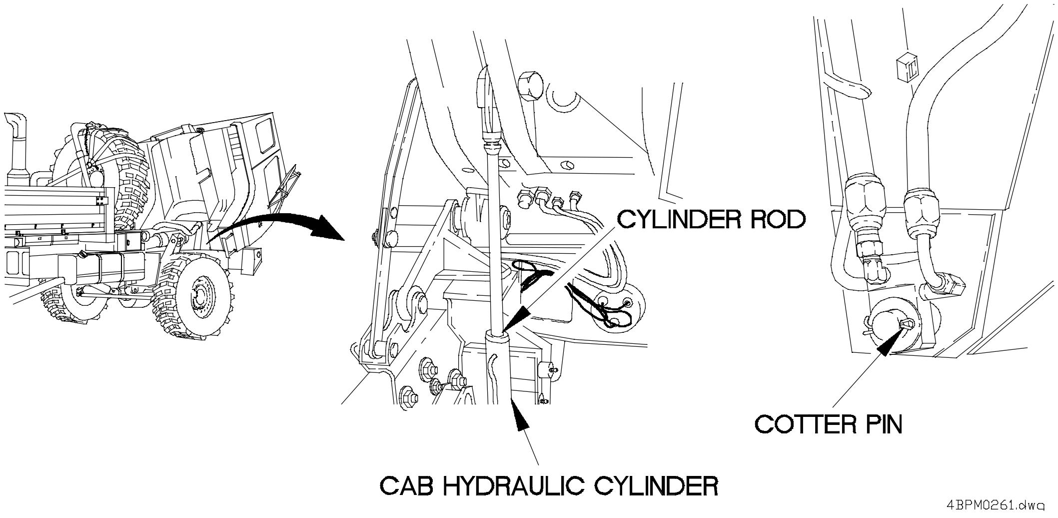


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
21	Semiannual	**CAB HYDRAULIC CYLINDER**	**a.** Inspect cab hydraulic cylinder for leakage around cylinder rod. **b.** Check security of attaching hardware at cylinder rod end and cotter pin for presence.	**a.** Class III leak is evident. **b.** Cab hydraulic cylinder is unsecured.



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
22	Semiannual	**CAB HYDRAULIC LATCH**	Check security of attaching hardware for hydraulic cab latch.	**a.** If cab will not securely latch. **b.** missing or loose hardware.

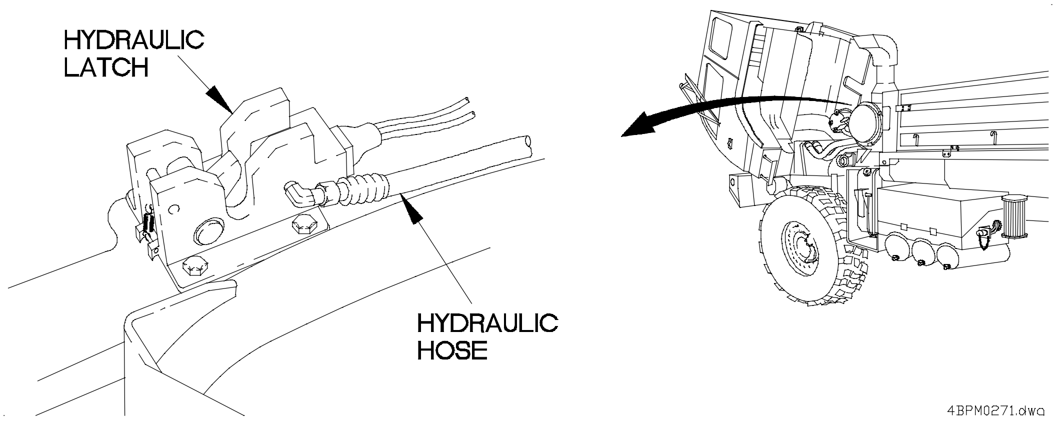
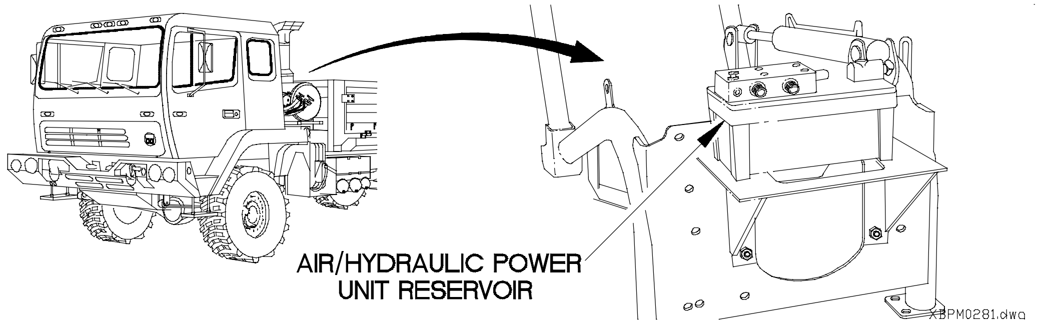


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
23	Semiannual	**AIR/HYDRAULIC POWER UNIT**	Check air/hydraulic power unit reservoir and refill in accordance with Appendix H.	



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
24	Semiannual	**SUSPENSION CYLINDER**	Check suspension cylinder for oil leaks and damage.	Class III leak is evident.

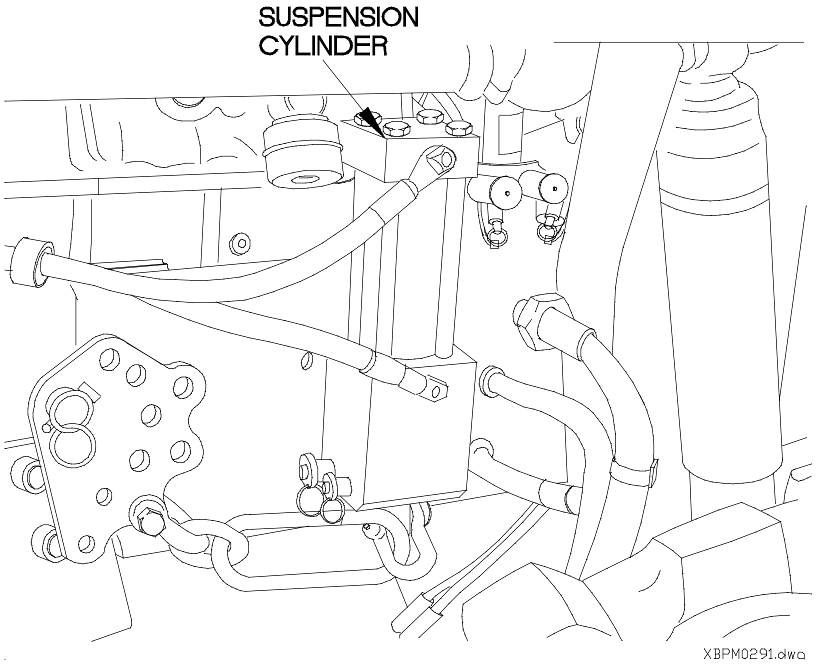


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
25	Semiannual	**STEERING SYSTEM**	**a.** Inspect steering column universal joint attachment hardware for security.	**a.** Universal joint is loose, broken, cracked, or hardware is missing.
			NOTE Wheels must be centered before performing step b.	
			b. Inspect staking of pitman arm attachment nut.	**b.** Pitman arm nut is loose.
			c. Inspect power steering hoses for leaks, cracks, and chafing.	**c.** Class III leak is evident. Chafing is severe or hoses cracked.
			d. Check steering gear mounting bolts for tightness.	**d.** Bolts loose or missing.
			e. Check steering column U-joint, steering knuckles, tie rod, drag link, pitman arm, and steering gear for tightness, breaks, cracks, rust, and serviceability.	**e.** Bolts are loose. Breaks or cracks are evident.

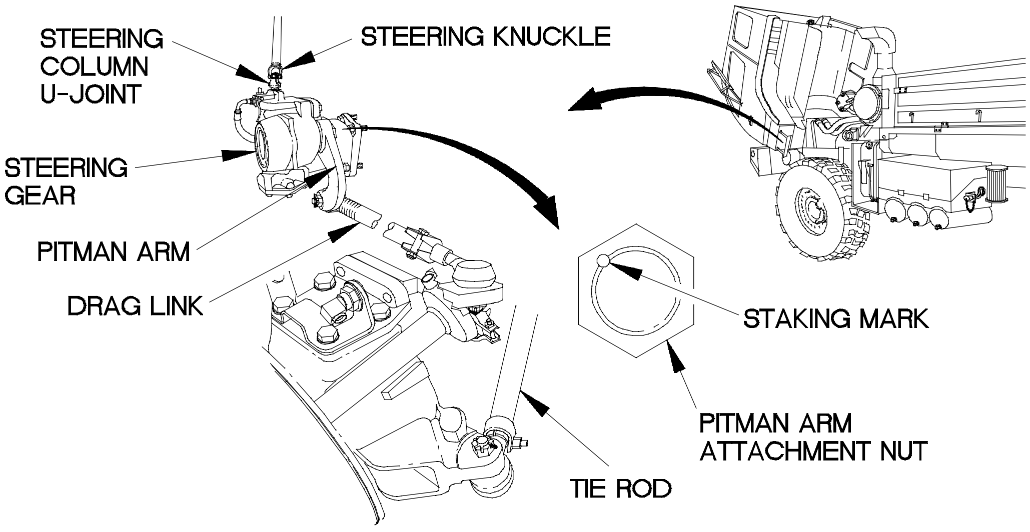


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
26	Semiannual	**PULLEY DAMPER**	Inspect pulley damper for dents.	Pulley damper is damaged.
27	Semiannual	**ALTERNATOR PULLEY**	Inspect alternator pulley for dents, nicks, and cuts in flanges.	Pulley is damaged to the point that it affects belt wear.
28	Semiannual	**ALTERNATOR BRACKETS**	**a.** Check for loose or cracked mounting hardware on alternator bracket and alternator pulley.	**a.** Alternator bracket or idler pulley is cracked or loose.
			b. Check idler pulley for dents, nicks, and cuts in flanges.	**b.** Pulley is damaged to the point that it affects belt wear.
29	Semiannual	**ALTERNATOR DRIVE BELTS**	Check alternator drive belts for cracks, frays, and shiny spots.	Any drive belt has more than one crack 1/8 in. (0.3 cm) in depth or 50 percent of belt thickness, any fray more than 2 in. (5.1 cm) long, or has excessive play.

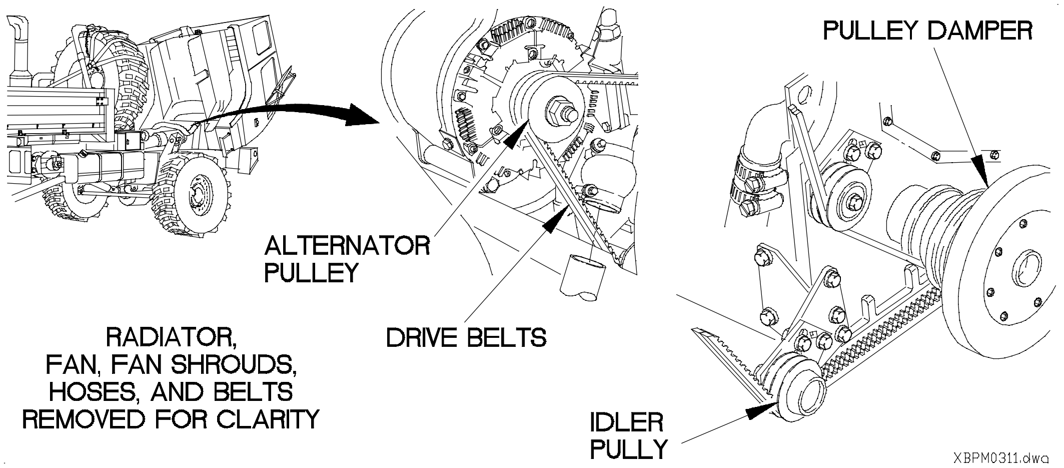


Table 2-1. Preventive Maintenance Checks and Services (Cont)

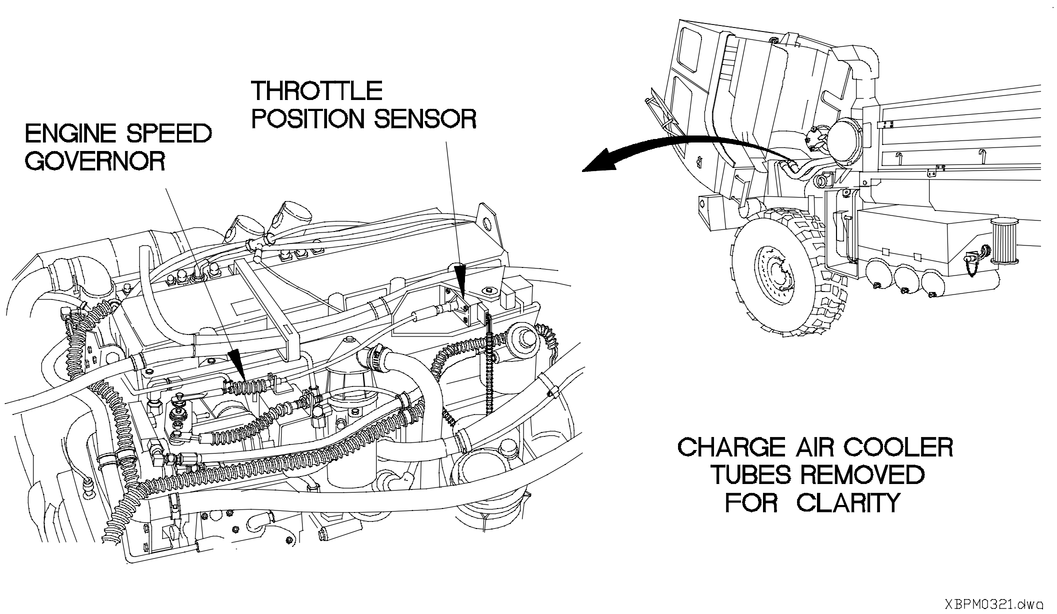
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
30	Semiannual	**THROTTLE POSITION SENSOR (TPS)**	Check TPS for secure mounting.	TPS is not firmly mounted or securely attached to throttle lever.
				
31	Semiannual	**ENGINE**	**a.** Inspect engine speed governor for loose mounting hardware.	**a.** Mounting hardware is loose or missing.
			b. Check for fuel leaks around fittings and for abrasion of fuel hoses.	**b.** Fuel leaks are evident.

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
31	Semiannual	**ENGINE (Cont)**	**c.** Check for oil leaks around fittings and for crimps in oil tubes.	**c.** Class III leak is evident.
			d. Check for secure attachment of throttle control cable.	**d.** Control cable is not securely attached.
32	Semiannual	**TURBO-CHARGER**	Check turbocharger oil tubes for leaks or crimping which would restrict oil flow.	Class III leak is evident.
33	Semiannual	**CHARGE AIR COOLER TUBES**	**a.** Inspect charge air cooler tube assembly for obvious signs of corrosion or cracking.	**a.** Charge air cooler tubing is cracked.

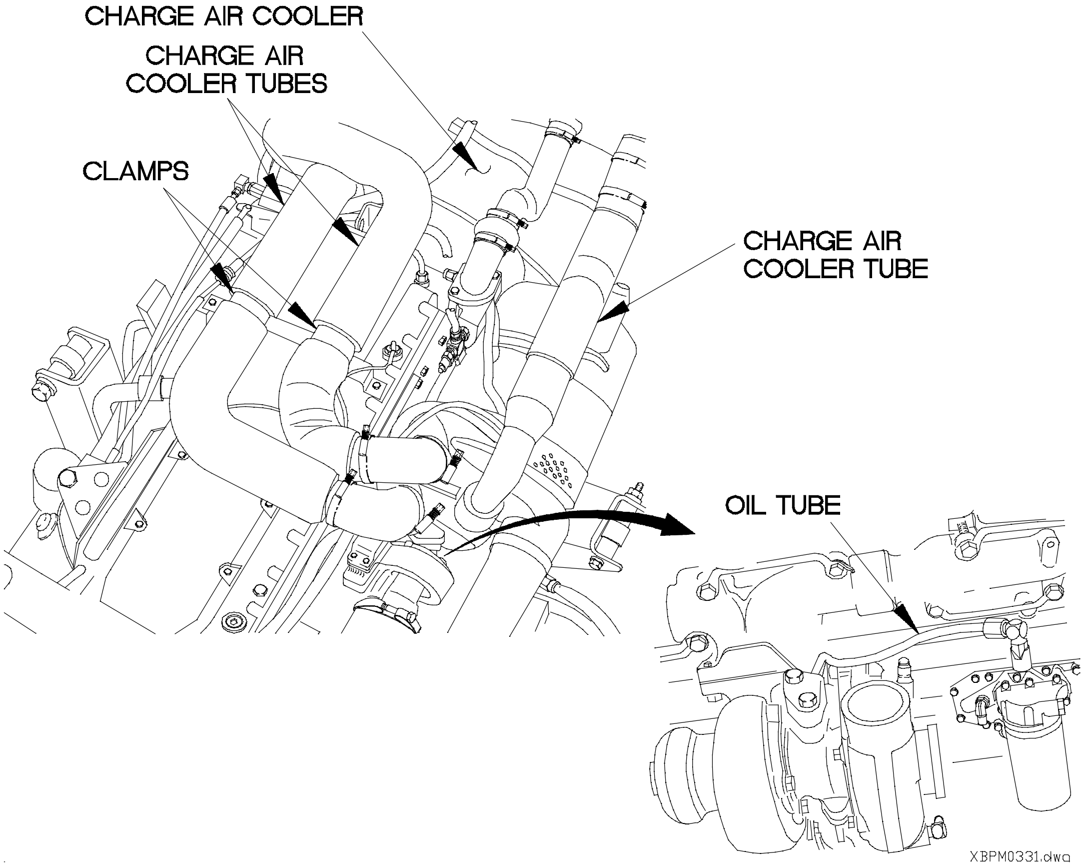


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
33	Semiannual	**CHARGE AIR COOLER TUBES (Cont)**	**b.** Check all hose clamps between turbocharger and intake manifold and verify that they are tight (90-100 lb-in. (10-11 N·m)).	
			c. Check turbocharger rubber charge air hoses for cracking and chafing.	**c.** Rubber hose(s) is damaged.
34	Semiannual	**CHARGE AIR COOLER**	**a.** Inspect charge air cooler for bent or clogged cooling fins.	**a.** Charge air cooler is damaged.
			b. Check charge air cooler mounting for security and tighten any loose hardware.	
			c. Inspect mounting brackets for cracks and damage.	

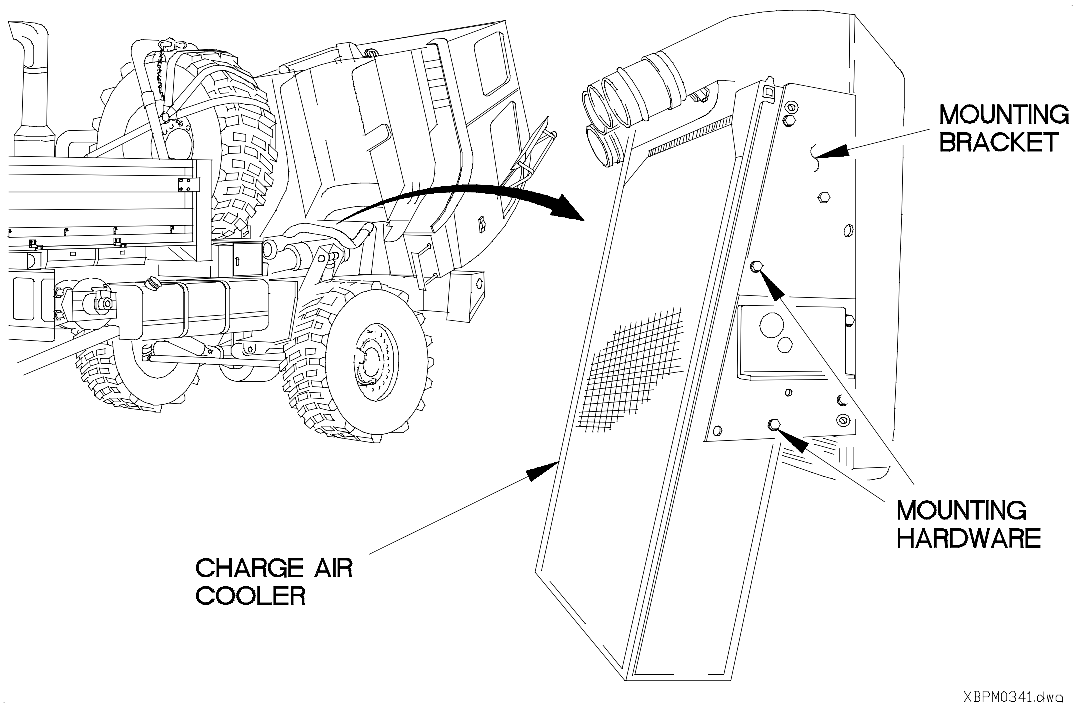
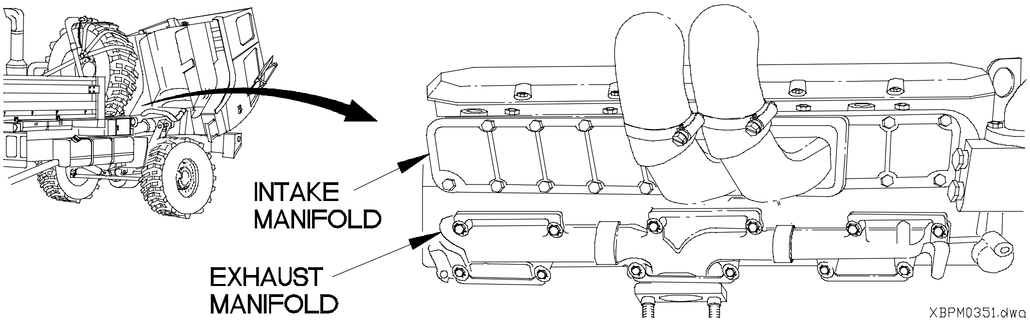


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
35	Semiannual	**EXHAUST AND INTAKE MANIFOLDS**	**a.** Check exhaust manifold for damage, loose mounting bolts and for exhaust leaks.	**a.** Exhaust manifold is damaged, exhaust leaks, or mounting hardware is loose.
			b. Check intake manifold for loose mounting bolts and damage.	**b.** Intake manifold is damaged. Mounting hardware is loose.



36	Semiannual	**ENGINE CRANKCASE BREATHER**	Inspect crankcase breather for oil leaks around breather base. Check security of mounting hardware.	Class III leak or loose or missing hardware are evident.

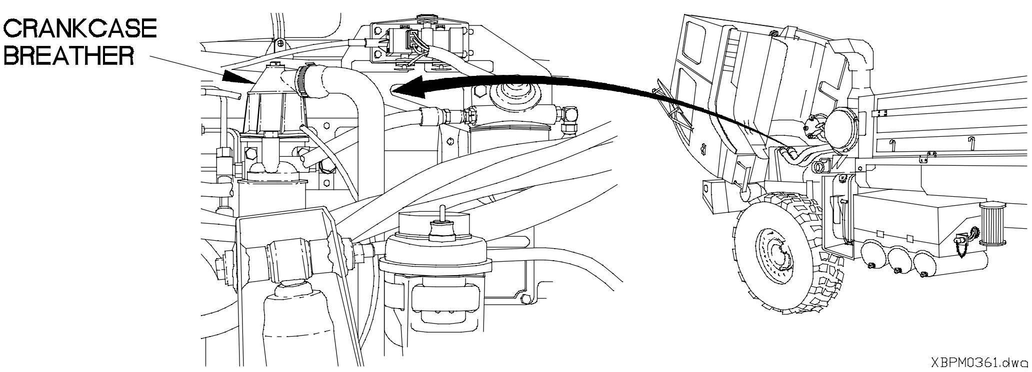


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
37	Semiannual	**ENGINE WIRING**	Check all engine wiring for signs of fraying, chafing, cracking, and burnt insulation.	Wiring is burned, cracked, frayed, or broken.
			a. Inspect air compressor and air compressor governor for leaks and loose hardware.	**a.** Class III leak is evident or hardware is missing or loose.
			b. Inspect air compressor oil tube for leaks and kinks/bends which would cause a restriction.	**b.** Class III leak, kinks or bends are evident.
38	Semiannual	**AIR COMPRESSOR AND GOVERNOR**	**c.** Check air compressor coolant tubes for leaks and kinks/bends.	**c.** Class III leak, kinks or bends are evident.

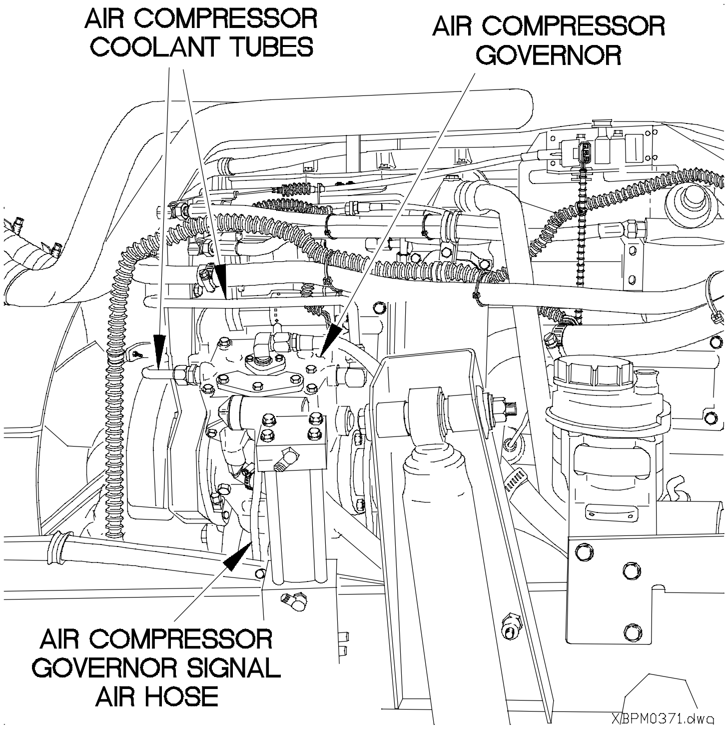


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
39	Semiannual	**COOLING SYSTEM**	**WARNING** **If vehicle has been operating, use extreme care to avoid being burned when removing radiator cap. Use heavy rags or gloves to protect hands. Turn radiator cap only one-quarter turn to the left and allow pressure to be relieved before fully removing cap. Failure to comply may result in injury to personnel.** **a.** Check coolant condition. Test coolant to see if draining is necessary (TB 750-651). **b.** Replace coolant if required (Appendix H).	

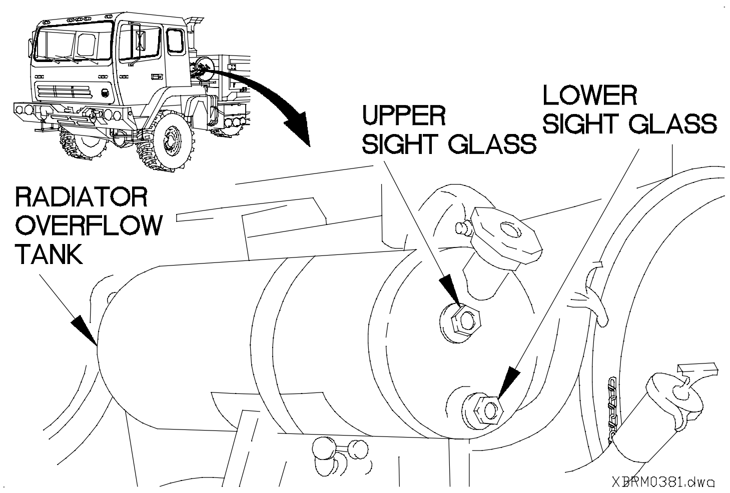


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	<u>Location</u> Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
40	Semiannual	**THERMOSTAT HOUSING**	**a.** Check thermostat housing for loose mounting bolts and leaks around base. Tighten loose mounting bolts.	**a.** Class III leak is evident.
			b. Inspect upper coolant tube for cracks and splits. Refer to para 6-9 if clamps are found to be loose.	**c.** Class III leak is evident.
			c. Check for leaks around water temperature transducer and coolant temperature switch.	

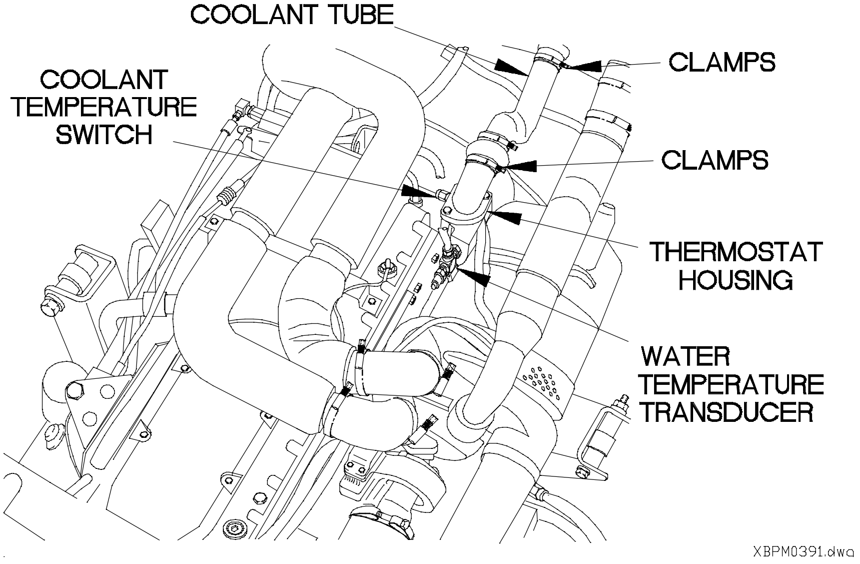
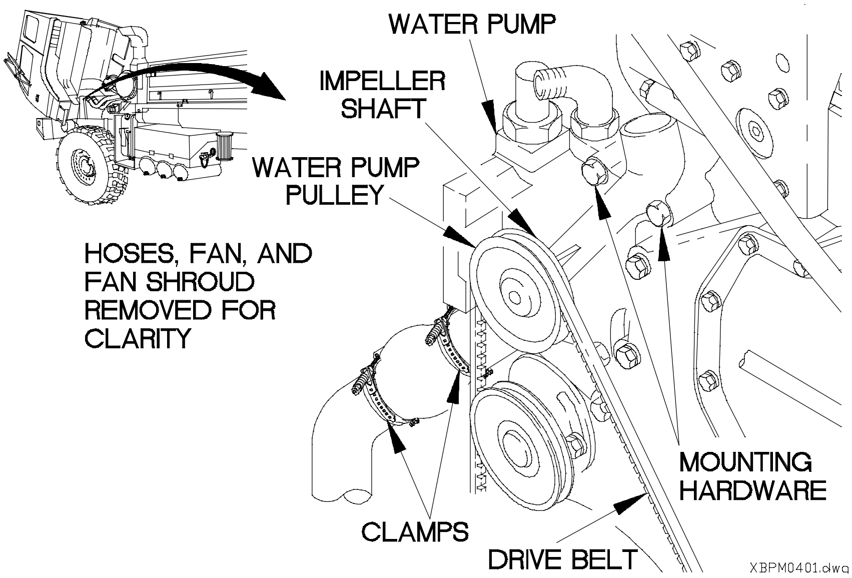


Table 2-1. Preventive Maintenance Checks and Services (Cont)

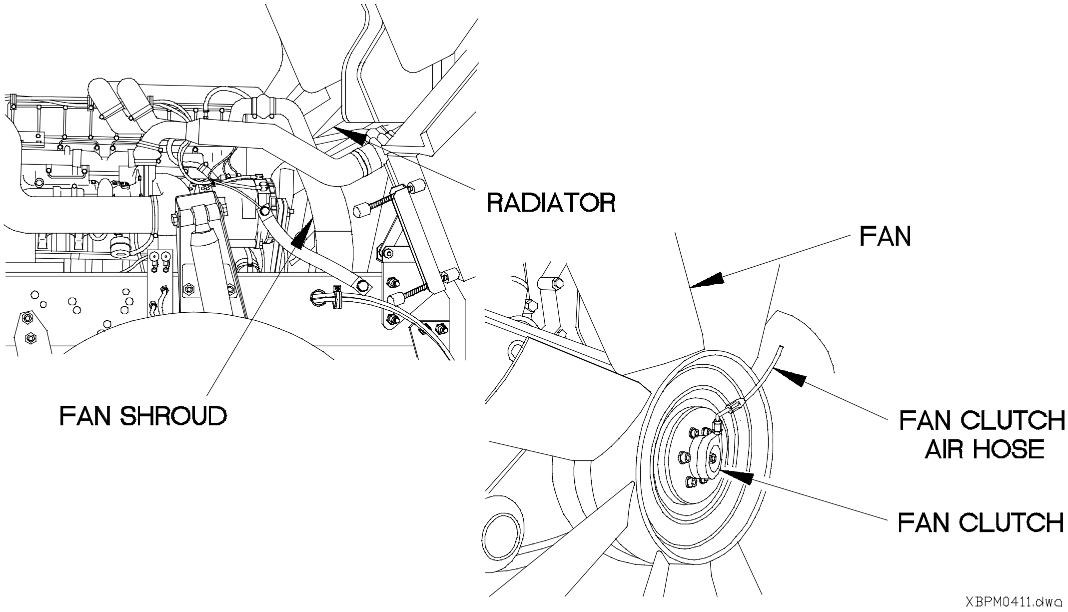
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
41	Semiannual	**WATER PUMP**	**a.** Check security of water pump attachment bolts and hose clamps. Refer to para 6-12 if clamps are found to be loose.	**a.** Bolts are stripped.
			b. Inspect water pump for leaks around impeller shaft.	**b.** Class III leak is evident.
			c. Inspect water pump pulley and idler pulley for damage.	**c.** Water pump pulley or idler pulley is damaged to the point that it affects belt wear.



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
			d. Check drive belt for cracks, frays, and shiny spots.	**d.** Drive belt has more than one crack 1/8 in. (0.3 cm) in depth or 50 percent of belt thickness, any fray more than 2 in. (5.1 cm) long, or has excessive play.

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
42	Semiannual	**FAN BLADE AND CLUTCH**	**a.** Inspect fan for chipping, cracking, and missing fan blades. **b.** Inspect fan clutch for loose bolts (para 6-14). **c.** Check fan clutch air hose and fitting for leaks.	**a.** Fan blades chipped, cracked, or missing. **b.** Loose or missing bolts.



43	Semiannual	**RADIATOR**	**a.** Check radiator for leaks and bent or clogged cooling fins. **b.** Check fan shroud for cracks and missing pieces.	**a.** Class III leak is evident.

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
44	Semiannual	**FUEL/ WATER SEPARATOR**	**a.** Inspect fuel/water separator assembly for dents and cracks that could cause leaks. **b.** Replace filter element every 6,000 miles (9,656 km) or every six months, whichever occurs first (para 4-13).	**a.** Any leak is evident.

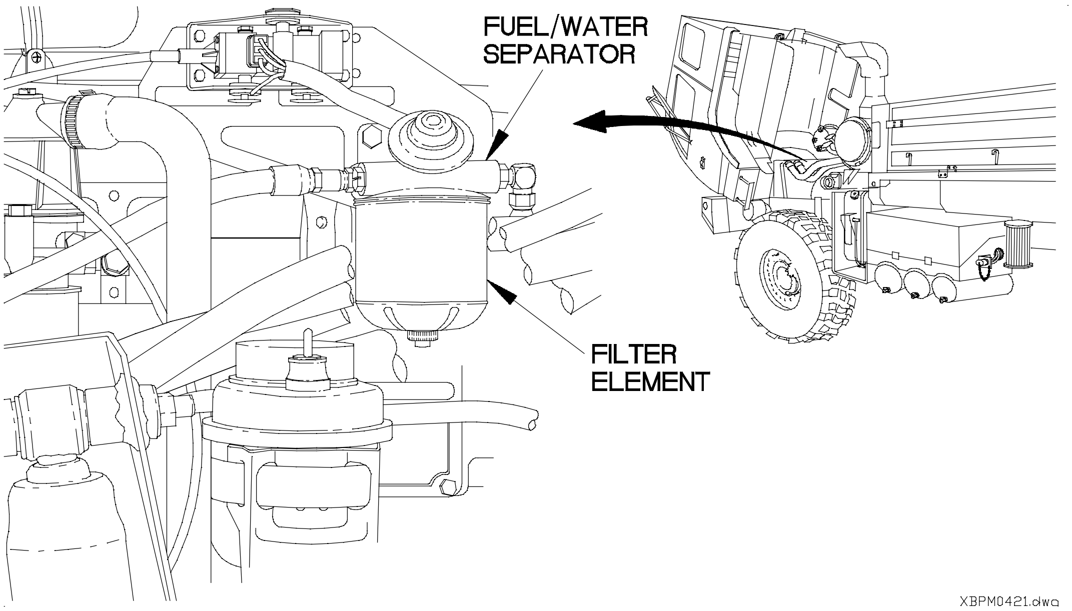


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
45	Semiannual	**FRONT WHEEL ALIGN-MENT**	Check front wheel alignment (para 13-5).	Front wheels cannot be aligned.
			NOTE Do not turn tires when turning wheel to check for steering wheel free play.	
			Place a strip of tape around steering wheel at 12 O'clock position. Turn steering wheel right until resistance is felt. Place a ruler lightly against outer rim of steering wheel with end of ruler at one edge of tape. Turn steering wheel left until resistance is felt. Measure distance designated edge of tape has traveled. Maximum free play measured at outside rim of steering wheel is 2-1/2 in. (6.4 cm).	Steering wheel exceeds 2-1/2 in. (6.4 cm) free play.

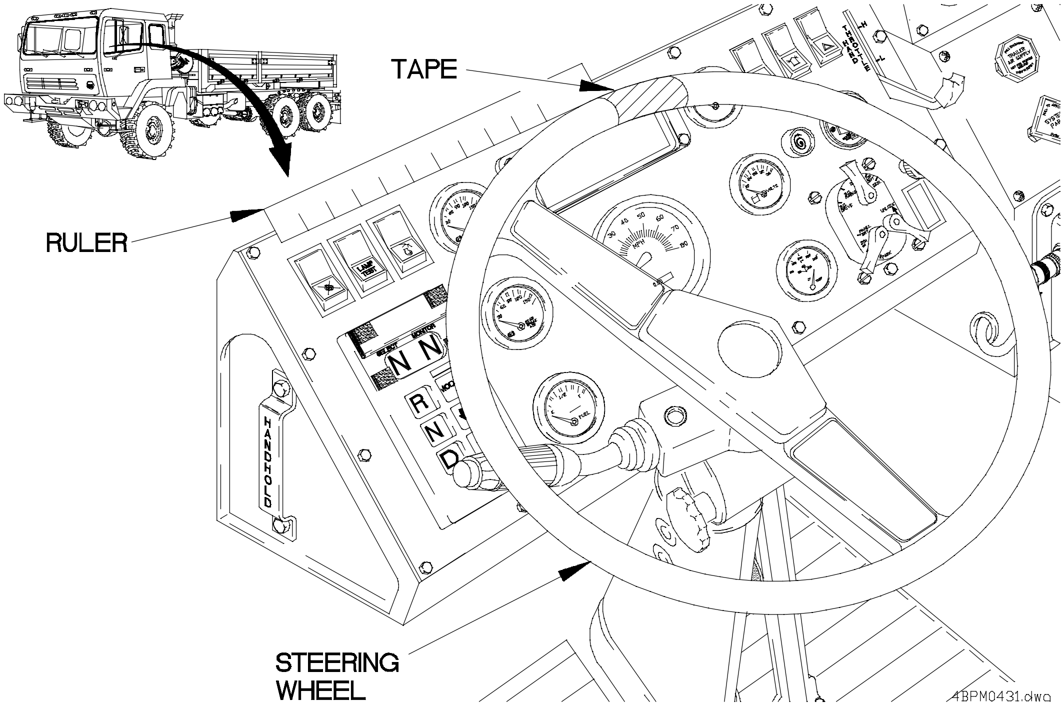
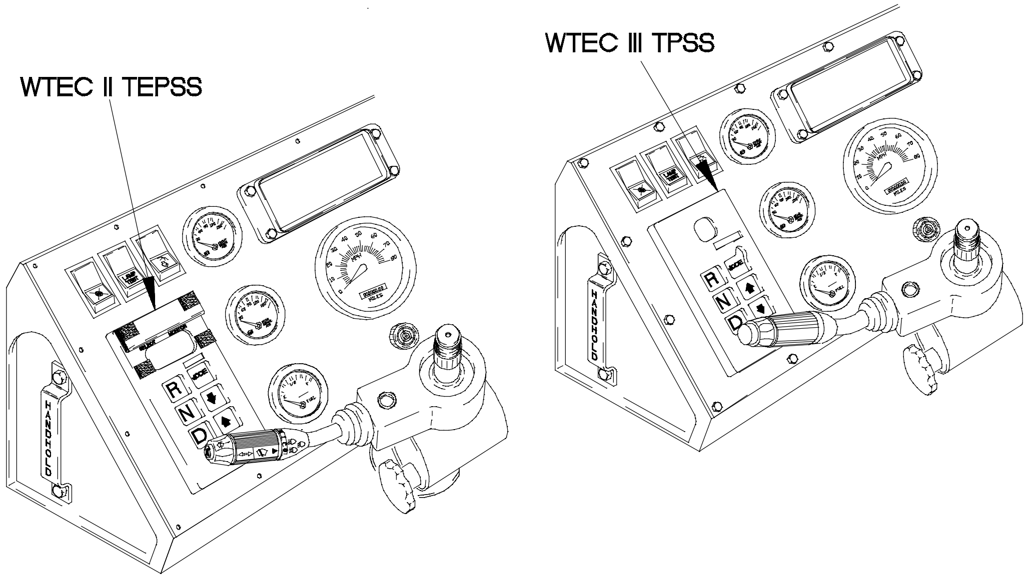


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
46	Semiannual	**TRANS-MISSION**	Check to see if any diagnostic codes are logged in WTEC II TEPSS (para 8-4) or WTEC III TPSS (para 8-5). **a.** Perform Transmission System Troubleshooting (para 2-17) for any diagnostic code(s) logged in WTEC II TEPSS or WTEC III TPSS. **b.** Clear diagnostic code(s) from WTEC II TEPSS (para 8-4) or WTEC III TPSS (para 8-5).	



STEERING WHEEL REMOVED FOR CLARITY

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Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
47	Semiannual	**HYDRAULIC TANK (M1089)**	**a.** Inspect hydraulic tank for leaks, cracks, or dents.	**a.** Class III leak is evident.
			b. Check valve and manifold beneath tank for leaks and cracks. **c.** Check operation of valve.	**b.** Class III leak is evident.

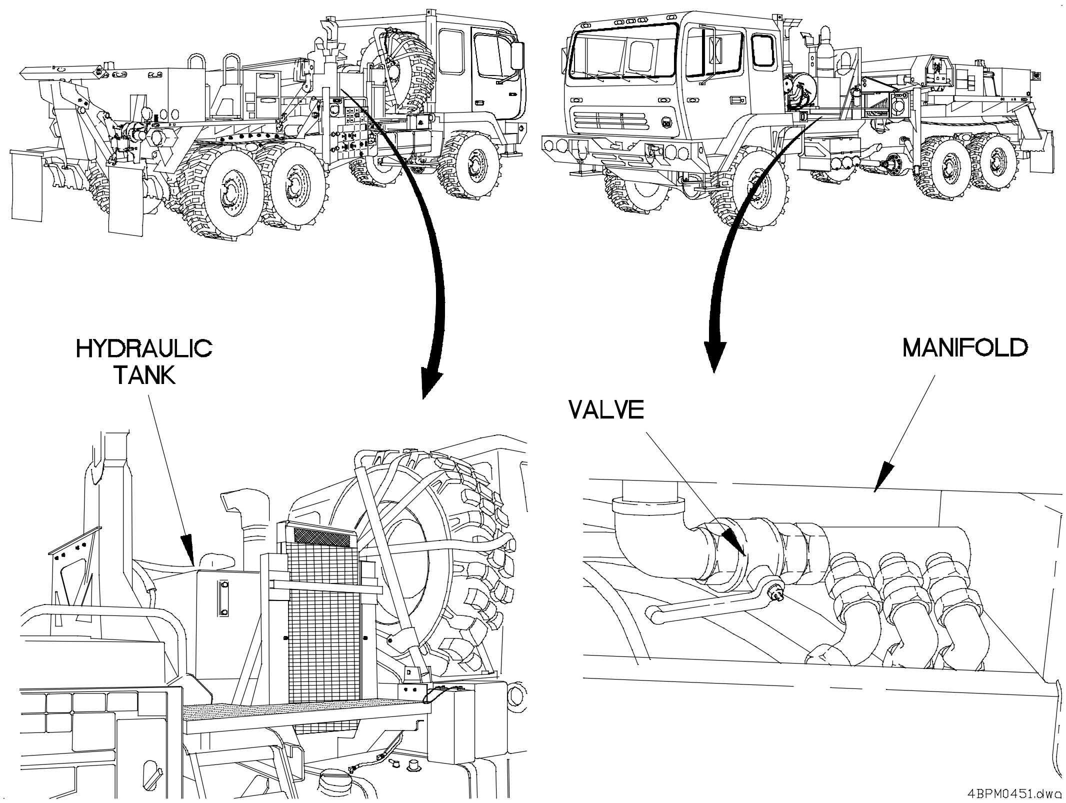


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
48	Semiannual	**HYDRAULIC RESERVOIR (If Equipped)**	Inspect hydraulic reservoir for leaks, cracks, or dents.	Class III is evident.

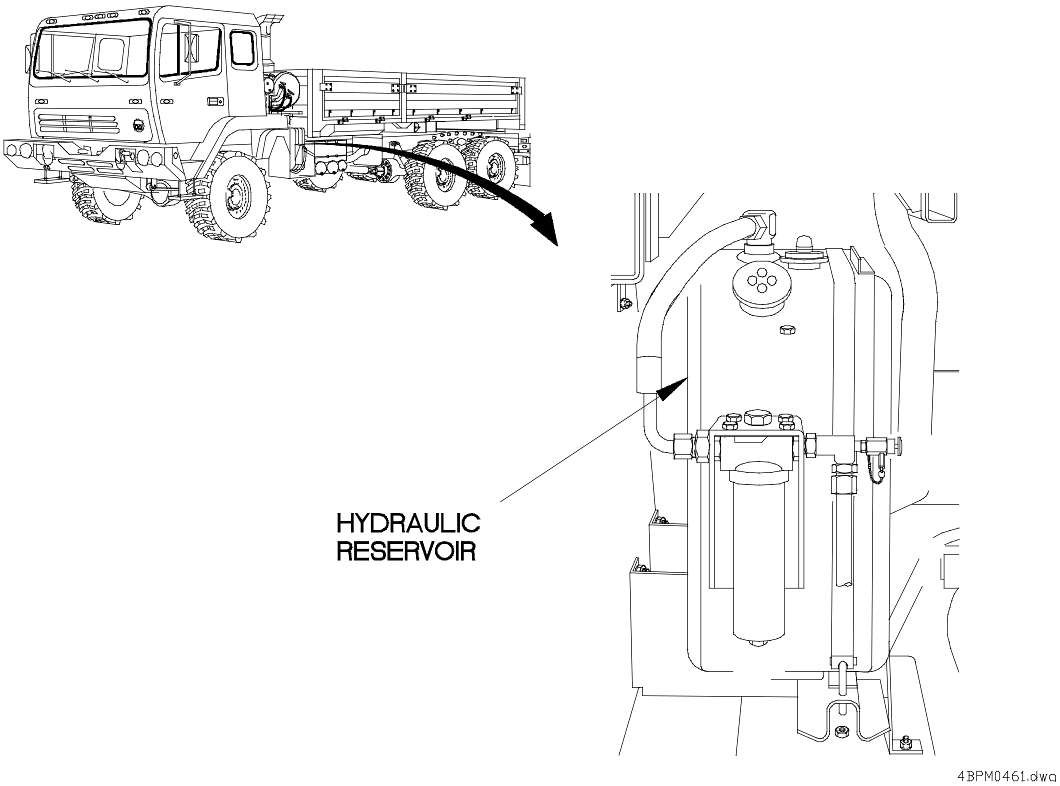
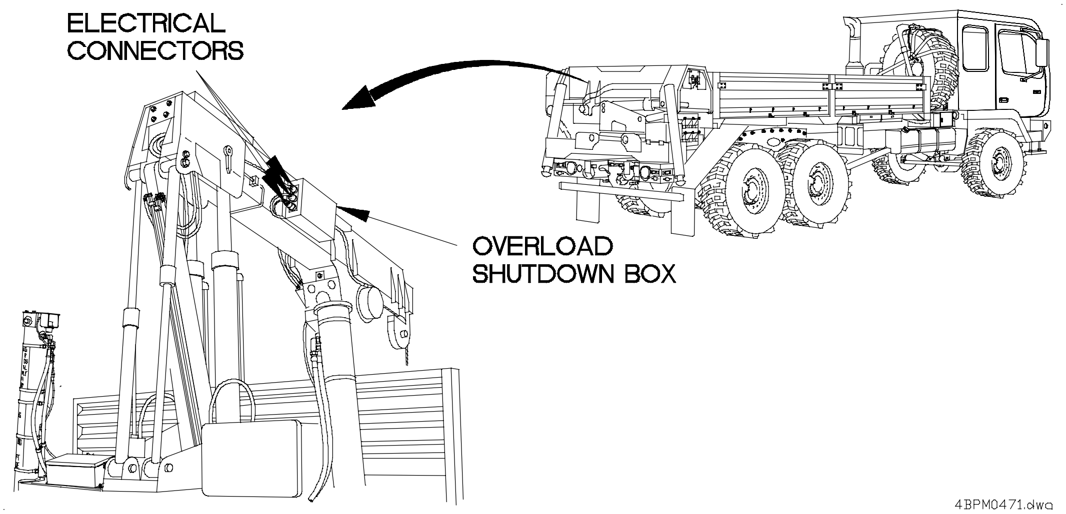


Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
49	Semiannual	**M1084/ M1086/ M1089 MHC**	**a.** Check crane for cracks and security of mounting hardware. **b.** Check security of electrical connectors on overload shutdown box.	**a.** Crane is damaged or not securely mounted.



			c. Inspect electrical cables for cracking, fraying, and chafing.	

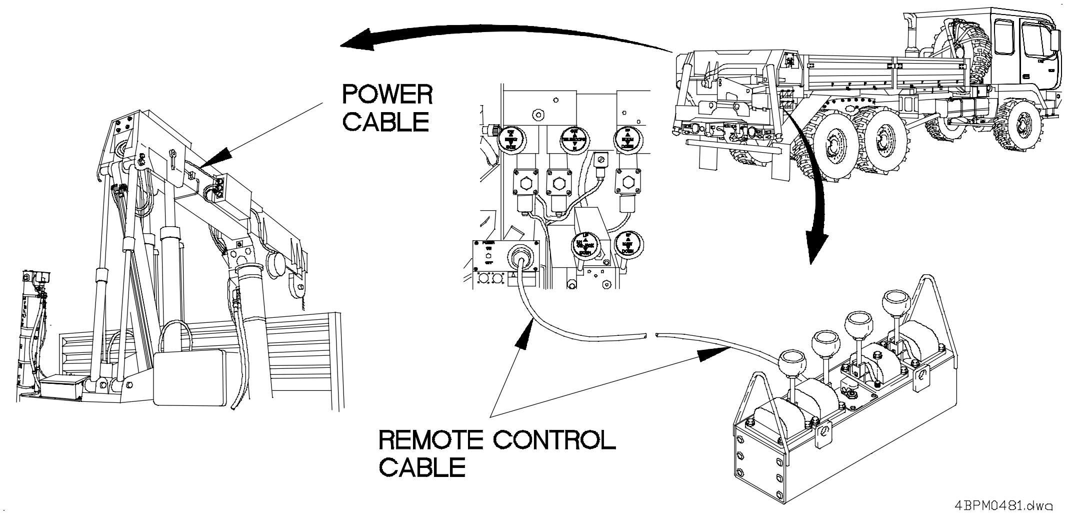


Table 2-1. Preventive Maintenance Checks and Services (Cont)

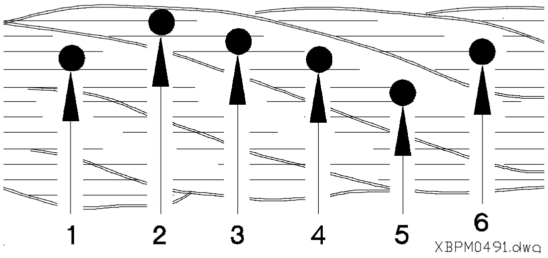
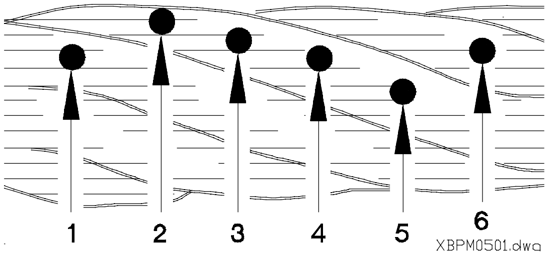
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
50	Semiannual	**M1084/ M1086/ M1089 MHC CABLE**	**WARNING** **Cable can become frayed or contain broken wires. Wear heavy leather gloves when handling cable. Frayed or broken wires can injure hands. Failure to comply may result in injury to personnel.**	
			a. Spool out hoist cable completely (TM 9-2320-366-20-1); and inspect for kinks, sharp bends, abrasions, and broken wires.	**a.** Hoist cable is damaged or excessively worn.
			b. Check that there are no more than six randomly distributed broken wires in any six-inch section of cable or three broken wires in one bundle (breaks 3,4,5) in a six-inch section.  	**b.** More than six broken wires in a six-inch section or three broken wires in one bundle in a six-inch section is evident.
			c. Kinking, crushing, or any other damage resulting in distortion of the cable structure.	

Table 2-1. Preventive Maintenance Checks and Services (Cont)

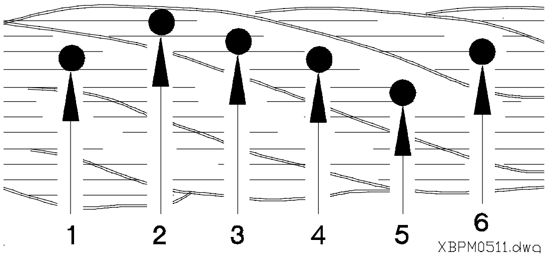
Item No.	Interval	<u>Location</u> Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
51	Semiannual	**30K WINCH CABLES (M1089)**	**WARNING** **Cable can become frayed or contain broken wires. Wear heavy leather gloves when handling cable. Frayed or broken wires can injure hands. Failure to comply may result in injury to personnel.**	
			a. Spool out main winch cables completely (TM 9-2320-366-20-1); and inspect for kinks, sharp bends, abrasions, and broken wires.	**a**. Winch cable is damaged or excessively worn.
			b. Check that there are no more than six randomly distributed broken wires in any six-inch section of cable or three broken wires in one bundle (breaks 3, 4, 5) in a six-inch section. result	**b**. More than six broken wires in a six-inch section or three broken wires in one bundle in a six-inch section is evident.



			c. Kinking, crushing, or any other damage resulting in distortion of the cable structure.	

Table 2-1. Preventive Maintenance Checks and Services (Cont)

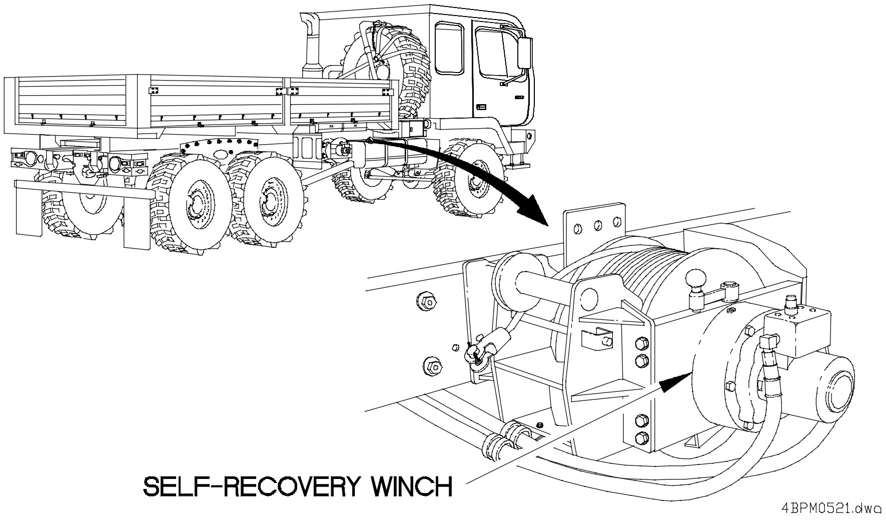
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
52	Semiannual	**15K SRW CABLE**	**WARNING** **Cable can become frayed or contain broken wires. Wear heavy leather gloves when handling cable. Frayed or broken wires can injure hands. Failure to comply may result in injury to personnel.** **a.** Spool out 15K SRW cable completely (TM 9-2320-366-20-2); and inspect for kinks, sharp bends, abrasions, and broken wires. **b.** Check that there are no more than six randomly distributed broken wires in any six-inch section of cable or three broken wires in one bundle (breaks 3, 4, 5) in a six-inch section. result	**b.** More than six broken wires in a six-inch section or three broken wires in one bundle in a six-inch section is evident.



			c. Kinking, crushing, or any other damage resulting in distortion of the cable structure.	

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
53	Semiannual	**15K SRW**	Check security of 15K SRW mounting hardware.	Mounting hardware broken or missing.



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
54	Semiannual	**CARGO BODY**	**a.** Check cargo body for corrosion and damage. **b.** Inspect ladder for damage and cracks.	

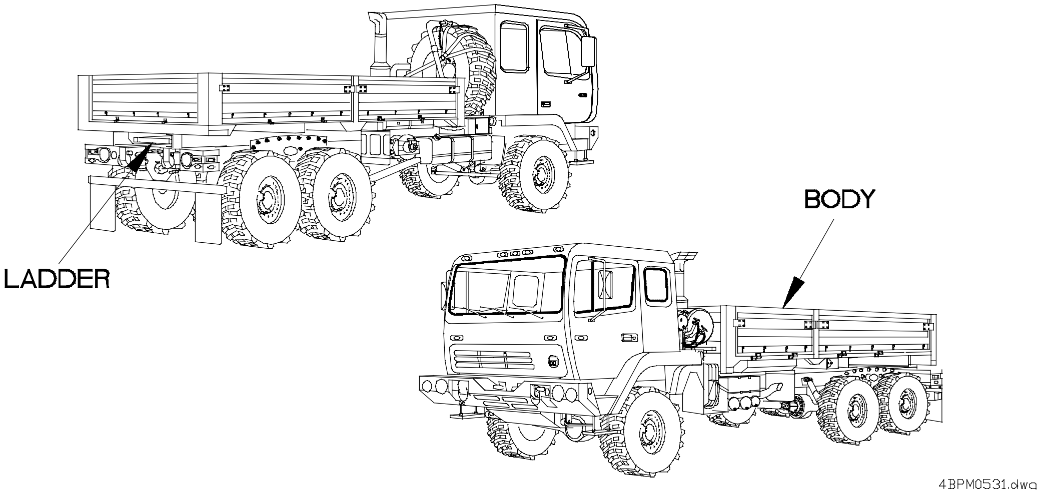
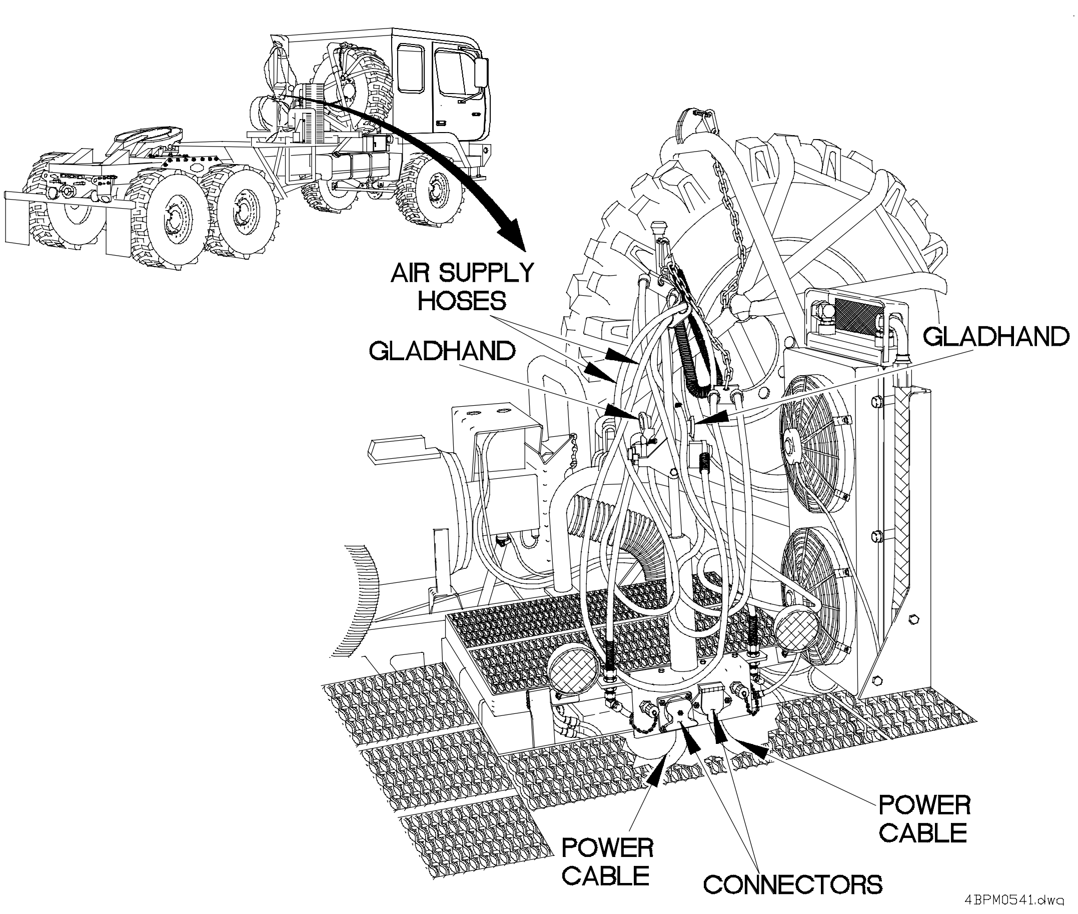


Table 2-1. Preventive Maintenance Checks and Services (Cont)

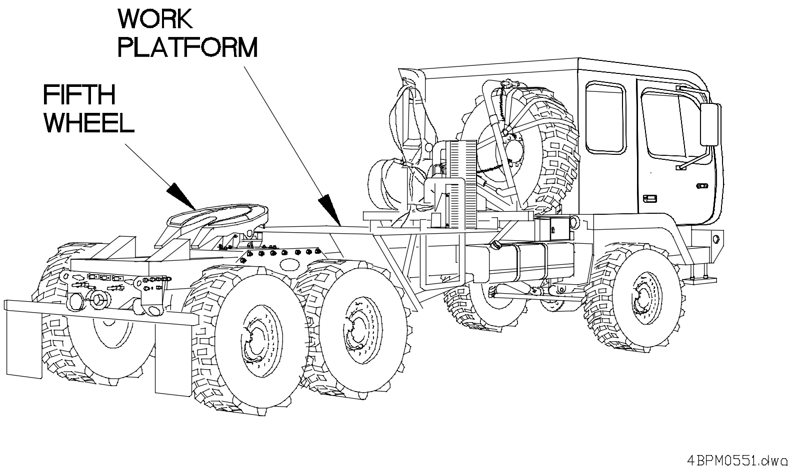
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
55	Semiannual	**TRAILER AIR HOSES (M1088)**	**a.** Check trailer air supply hoses for cracks and leaks.	**a.** Trailer air supply hoses damaged.
			b. Inspect gaskets in gladhands for cracking and dry rot.	**b.** Gladhands are damaged.



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
56	Semiannual	**TRAILER ELECTRICAL POWER**	**a.** Check trailer electrical power cables for cracking, chafing, and bare wires.	**a.** Tractor electrical power supply cables are damaged.
			b. Check electrical connectors for secure attachment to cables.	

Table 2-1. Preventive Maintenance Checks and Services (Cont)

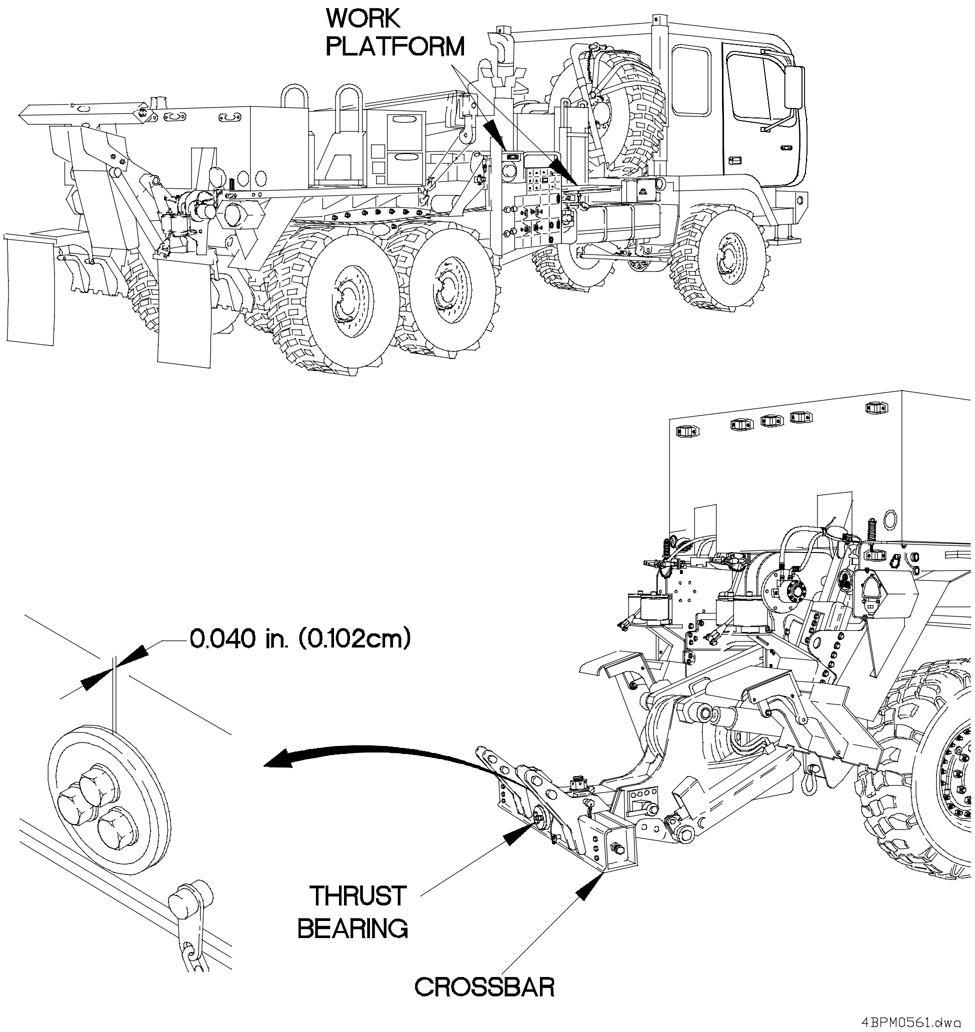
Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
57	Semiannual	**FIFTH WHEEL (M1088)**	Check fifth wheel for gouges and loose or missing mounting hardware.	Fifth wheel mounting hardware is loose or missing.



Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
58	Semiannual	**WORK PLATFORM (M1088)**	Inspect work platform for corrosion, damage, and cracks. Check security of platform mounting hardware.	

Table 2-1. Preventive Maintenance Checks and Services (Cont)

Item No.	Interval	Location Item to be Checked or Serviced	Procedure	Not Fully Mission Capable If:
59	Semiannual	**WORK PLATFORM (M1089)**	Inspect work platform for corrosion, damage, and cracks. Check security of platform mounting hardware.	
60	Semiannual	**CROSSBAR (M1089)**	**a.** Inspect crossbar thrust bearing for cracks and grooves. **b.** Inspect crossbar thrust bearing clearance between crossbar and thrust bearing maximum clearance 0.040 in. (0.101 cm).	**a.** Cracks or grooves are evident. **b.** More than 0.040 in. (0.101 cm) clearance is evident.



Section IV. TROUBLESHOOTING

2-10. INTRODUCTION TO LOGIC TREE TROUBLESHOOTING

This section contains step-by-step procedures for identifying, locating, isolating, and repairing equipment malfunctions.

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

2-11. TROUBLESHOOTING INSTRUCTIONS

a. Page Layout. Troubleshooting procedures are divided into logic tree pages and test pages.

(1) A logic tree page is always a left-hand page, facing the test page on the right. The logic tree page provides the sequence of steps required to isolate a fault to a failed component. All critical information for decision making is on the left-hand page. Each logic tree page contains the following information:

(a) **INITIAL SETUP** - This box is located only on the first logic tree page of a fault. INITIAL SETUP lists tools, materials, references, personnel, and equipment needed to troubleshoot the fault.

(b) **KNOWN INFO** - This box is located in the top left-hand column. KNOWN INFO lists conditions and information that will eliminate specific components as the cause of the fault.

(c) **POSSIBLE PROBLEMS** - This box is located directly below KNOWN INFO. All of the system components that could cause a fault are listed in the POSSIBLE PROBLEMS box. The first component listed in the POSSIBLE PROBLEMS box is the one that will be tested at that step in the logic sequence. When one of the components is tested and found to be operational, it is entered at the bottom of the KNOWN INFO box as OK.

(d) **QUESTION** - Each question, located in the middle column, refers to the first possible problem listed in POSSIBLE PROBLEMS. If the answer to the question is YES, proceed to the next step. If the answer is NO, follow the NO arrow to obtain directions for correcting the problem. If the step contains a WARNING or CAUTION message, a small shadow box is printed above the question. Text for WARNINGs or CAUTIONs is on the following right-hand page.

(e) **TEST OPTIONS** - This box is located in the top right-hand column. TEST OPTIONS lists tests available for testing parts suspected of failing. When the TEST OPTION is a VOLTAGE TEST, the voltage values listed are nominal values for a 12/24 VDC system. Some variation from these values should be expected. When the TEST OPTION is a CONTINUITY TEST, the expected reading is one of low resistance. If high resistance is noted, further testing should be performed to determine the cause.

(f) **REASON FOR QUESTION** - This box is located directly below TEST OPTIONS. It explains the purpose for the question in the middle column.

(2) A test page is always a right-hand page, facing the logic tree page on the left. The test provides detailed instructions for testing the first component listed in the POSSIBLE PROBLEMS box. This test will also provide an answer for the question in the middle column. Note the arrow connecting the test on the right-hand page to the REASON FOR QUESTION. When possible, illustrations are included to provide visual details. Notes contain additional information for testing.

2-11. TROUBLESHOOTING INSTRUCTIONS (CONT)

b. How to Begin Troubleshooting.

(1) Determine the symptom or condition that indicates a problem or failure. Troubleshooting is divided into symptoms peculiar to a vehicle system or component, for example: pneumatic system or engine. Refer to **Table 2-2. Vehicle Troubleshooting**.

(2) Go to the referenced page to begin troubleshooting. Open the manual flat so both the left-hand and right-hand pages are displayed before you. The information on both pages is important to resolve the problem or failure. However, the experienced technician can follow the left-hand page instructions and refer to the right-hand page when necessary.

(3) Follow the Diagnostic Procedure. Answer question No. 1 on the left-hand page and follow the YES or NO path to either the remedy or the next question. If necessary, look on the right-hand page for test instructions and illustrations.

(4) Observe warnings, cautions, and notes. The formatting and symbols used in this manual for warnings, cautions, and notes are as follows:

WARNING

This is the symbol for a warning statement. If you see the word WARNING above a question on the left-hand page, look on the right-hand page for the text of the message. WARNINGs describe a situation which could cause serious injury or death to personnel.

CAUTION

This is the symbol for a caution statement. If you see the word CAUTION above a question on the left-hand page, look on the right-hand page for the text of the message. CAUTIONs describe a situation which could cause damage to equipment.

NOTE

This is a symbol for a note. Notes are located directly above the test to which they refer. NOTEs provide additional information for performing a test.

c. Confidence Tests. Before performing any STE/ICE-R test, a confidence test must be run to ensure proper operation of the STE/ICE-R. In addition, a confidence test must be performed after each use to ensure the STE/ICE-R is performing properly. Refer to TM 9-4910-571-12&P.

d. Verifying Repair. When troubleshooting, there is an additional step that must be performed after taking any corrective action. This step will show that the malfunction has been corrected, or that additional troubleshooting is required, example follows:

On malfunction r1. Wanders, pulls to one side, or shimmies; the question is asked "Are front shock absorbers secure and free from damage?". If the question was answered NO, the damaged shock absorber(s) was replaced. After replacing the damaged shock absorber(s), the vehicle must be checked to determine if the original malfunction is still present. If corrected, troubleshooting is completed. If malfunction is still present, continue troubleshooting.

Table 2-2. Vehicle Troubleshooting

	Malfunction	Troubleshooting Procedure (Page)

a. ENGINE SYSTEM TROUBLESHOOTING

b. FUEL SYSTEM TROUBLESHOOTING

c. EXHAUST SYSTEM TROUBLESHOOTING

d. COOLING SYSTEM TROUBLESHOOTING

e. ELECTRICAL SYSTEM TROUBLESHOOTING

2-11. TROUBLESHOOTING INSTRUCTIONS (CONT)

Table 2-2. Vehicle Troubleshooting (Cont)

e. ELECTRICAL SYSTEM TROUBLESHOOTING (CONT)

Malfunction		Troubleshooting Procedure (Page)
e13.	VOLTS Gage Does Not Operate or Is Inaccurate	2-356
e14.	Tachometer Does Not Operate or Is Inaccurate	2-358
e15.	Audible Alarm Does Not Operate	2-368
e16.	Troop Transport Audible Alarm Does Not Operate	2-372
e16A.	Master Power Switch Does Not Operate	2-380.4
e16B.	Lamp Test Switch Does Not Illuminate	2-380.10
e17.	Radiator Fan Off Switch Does Not Illuminate	2-382
e17A.	Ether Start Switch Does Not Illuminate	2-386
e17B.	Hazard Lights Switch Does Not Illuminate	2-386.4
e17C.	Amber Warning Light Switch Does Not Illuminate	2-386.8
e17D.	Master Power Switch Does Not Illuminate	2-386.12
e18.	REAR BRAKE AIR Gage Does Not Illuminate	2-388
e18A.	FUEL Gage Does Not Illuminate	2-390.2
e18B.	FRONT BRAKE AIR Gage Does Not Illuminate	2-390.6
e18C.	Speedometer Does Not Illuminate	2-390.10
e18D.	VOLTS Gage Does Not Illuminate	2-390.14
e18E.	WATER TEMP Gage Does Not Illuminate	2-390.18
e19.	OIL PRESS Gage Does Not Illuminate	2-392
e20.	Auxiliary Panel, Personnel Heater, and Instrument Panel Do Not Illuminate	2-396
e21.	Tachometer Does Not Illuminate	2-400
e22.	Auxiliary Panel Switch Does Not Illuminate	2-404
e23.	Auxiliary Panel Does Not Illuminate	2-408
e24.	High Engine Temperature Indicator Does Not Operate	2-412
e25.	Central Tire Inflation System (CTIS) Overspeed Indicator Does Not Operate	2-420
e26.	Chemical Detector Indicator Does Not Operate	2-434
e27.	Left Turn Signal Indicator Does Not Operate	2-438
e28.	Right Turn Signal Indicator Does Not Operate	2-442
e29.	Turn Signal Indicators and High Beams On Indicator Do Not Operate	2-448
e30.	High Beams On Indicator Does Not Operate	2-450
e31.	Parking Brake Indicator and/or Emergency Brake Indicator Does Not Illuminate	2-454
e32.	Power Take-Off (PTO) Indicator Does Not Operate	2-470
e33.	Fan Off Indicator Does Not Operate	2-482
e34.	Dump Up Indicator Does Not Operate	2-488
e35.	WTEC II Transmission Temperature Indicator Does Not Operate	2-498
e36.	WTEC III Transmission Temperature Indicator Does Not Operate	2-506
e37.	Front Brake Air Indicator Does Not Illuminate When Air Pressure Is Below 65 PSI	2-512
e38.	Rear Brake Air Indicator Does Not Illuminate When Air Pressure Is Below 65 PSI	2-518
e39.	Engine Oil Pressure Indicator Does Not Operate	2-524
e40.	Master Stop Indicator Does Not Operate	2-530
e41.	One or Both Headlights (High and Low Beam) Do Not Illuminate	2-532
e42.	One or Both Headlight Low Beams Do Not Illuminate	2-540
e43.	One or Both Headlight High Beams Do Not Illuminate	2-546
e44.	Parking Lights Do Not Illuminate	2-554
e45.	LH Door and/or LH Front Marker Lights Do Not Illuminate	2-562

2-11. TROUBLESHOOTING INSTRUCTIONS (CONT)

Table 2-2. Vehicle Troubleshooting (Cont)

Troubleshooting
Procedure
Malfunction (Page)

e. ELECTRICAL SYSTEM TROUBLESHOOTING (CONT)

f. TRANSMISSION SYSTEM TROUBLESHOOTING

2-11. TROUBLESHOOTING INSTRUCTIONS (CONT)

Table 2-2. Vehicle Troubleshooting (Cont)

f. TRANSMISSION SYSTEM TROUBLESHOOTING (CONT)

	Malfunction	Troubleshooting Procedure (Page)
f3.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 15	2-1594
f4.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 16	2-1600
f5.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 24 and/or 33 and Any Sub Code	2-1606
f6.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 32 and Any Sub Code	2-1620
f7.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 41, 42, 44, 45, and/or 69 and Any Sub Code	2-1624
f8.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 43 and Any Sub Code	2-1628
f9.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 52 and Any Sub Code	2-1634
f10.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 57 and Any Sub Code	2-1640
f11.	Transmission Unusually Noisy When Operating	2-1644
f12.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 21 and Any Sub Code	2-1654
f13.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 51 Sub Code 10, 12, 21, 43, 45, or 65	2-1668
f14.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 25 and Any Sub Code	2-1672
f15.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 53 and Any Sub Code	2-1676
f16.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 54 Sub Code 01, 07, 10, 12, 17, 21, 23, 27, 32, 34, 43, 45, 54, 56, 65, 70, 71, 72, 80, 81, 82, 83, 85, 86, 92, 93, 95, 96, or 97	2-1680
f17.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 55 and Any Sub Code	2-1686
f18.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 56 and Any Sub Code	2-1692
f19.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 13 and Any Sub Code	2-1698
f19A.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 23 and Any Sub Code	2-1706.2
f19B.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Does Not Illuminate	2-1706.16
f20.	Metal Particles Found During Transmission Oil Change	2-1708
f21.	Transmission Does Not Shift or Is Slow to Shift When Cold	2-1710
f22.	WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 14	2-1712
f23.	WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 15	2-1718
f24.	WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 16	2-1722

Troubleshooting
Procedure
Malfunction (Page)

g. PROPELLER SHAFT TROUBLESHOOTING

h. POWER TAKE OFF (PTO) TROUBLESHOOTING

i. BRAKE SYSTEM TROUBLESHOOTING

2-11. TROUBLESHOOTING INSTRUCTIONS (CONT)

Table 2-2. Vehicle Troubleshooting (Cont)

	Malfunction	Troubleshooting Procedure (Page)
	j. AIR SYSTEM TROUBLESHOOTING	
j1.	Air System Loses Pressure During Operation/Slow, No, or Incorrect Air Pressure Buildup	2-1948
j2.	Large Quantity of Moisture Expelled From Air Reservoirs	2-1964
j3.	Air Dryer Purges Constantly	2-1968
j4.	No Air Pressure Present at Rear Gladhand(s) (All Models Except M1088)	2-1972
j4A.	No Air Pressure Present at All M1088 Rear and Fifth Wheel Gladhands	2-1976.36
j4B.	No Air Pressure Present at M1088 Rear and/or Fifth Wheel EMERGENCY Gladhands	2-1976.42
j4C.	No Air Pressure Present at M1088 Rear and/or Fifth Wheel SERVICE Gladhands	2-1976.48
j4D.	M1088 Trailer Handbrake Control Does Not Operate	2-1976.60
j5.	Air System Pressure Builds Up More Than 120 psi (827 kPa) (Compressor Fails to Unload)	2-1978
j6.	Noisy Air Compressor Operation	2-1982
j7.	M1088 Rear Gladhand(s) Leaks or Does Not Operate	2-1986
j8.	M1090/M1094 Tailgate Release Does Not Operate	2-1988
	k. WHEEL TROUBLESHOOTING	
k1.	Tires Wear Unevenly or Excessively	2-1990
k2.	Wheel Wobbles or Shimmies	2-1994
	l. HYDRAULIC SYSTEM TROUBLESHOOTING	
l1.	Loss of Hydraulic Pressure (Single Stage Pump)	2-1998
l2.	Loss of Hydraulic Pressure (Three Stage Pump)	2-2002
	m. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING	
m1.	Two Steady Mode Lights Illuminate on Central Tire Inflation System (CTIS) ECU	2-2008
m2.	Four CTIS ECU Indicator Lights Flashing	2-2042
m3.	Five Central Tire Inflation System (CTIS) ECU Indicator Lights Flashing	2-2070
m4.	CTIS Repeatedly Resumes Cycling 30 Seconds After Indicator Lights Stop Flashing	2-2104
m5.	Central Tire Inflation System (CTIS) ECU Indicates No Fault Code But System Fails to Inflate or Deflate	2-2110
m6.	No Overspeed Warning Light and/or Overspeed Pressure Change	2-2122
	n. AXLE TROUBLESHOOTING	
n1.	Axle Differential(s) Noisy	2-2144
	p. STEERING TROUBLESHOOTING	
p1.	Hard to Steer	2-2152
p2.	Wanders, Pulls to One Side, or Shimmies	2-2158
p3.	Excessive Play When Turning Steering Wheel	2-2164
p4.	No Response When Turning Steering Wheel	2-2168

q. FIFTH WHEEL TROUBLESHOOTING

r. SUSPENSION SYSTEM TROUBLESHOOTING

s. 15K SELF-RECOVERY WINCH (SRW) SYSTEM TROUBLESHOOTING

t. STEERING HYDRAULIC SYSTEM TROUBLESHOOTING

u. AIR TRANSPORT TROUBLESHOOTING

v. DUMP BODY HYDRAULIC SYSTEM TROUBLESHOOTING

w. WRECKER HYDRAULIC SYSTEM TROUBLESHOOTING

x. SPECIAL PURPOSE KIT TROUBLESHOOTING

Table 2-2. Vehicle Troubleshooting (Cont)

x. SPECIAL PURPOSE KIT TROUBLESHOOTING (Cont)

	Malfunction	Troubleshooting Procedure (Page)
x4.	Deleted	
x5.	Deleted	
x6.	Deleted	
x7.	Deleted	
x8.	Deleted	
x9.	Deleted	
x10.	Deleted	
x11.	Deleted	
x12.	Deleted	
x13.	Deleted	
x14.	Deleted	
x15.	Deleted	
x16.	Deleted	
x17.	Deleted	
x18.	Troop Transport Alarm Does Not Operate	2-2372
x19.	Light Material Handling Crane (LMHC) Does Not Operate	2-2382
x20.	Light Material Handling Crane (LMHC) Hoist In Does Not Operate	2-2400
x21.	Light Material Handling Crane (LMHC) Hoist Out Does Not Operate	2-2404

y. M1084/M1086 MATERIAL HANDLING CRANE (MHC) HYDRAULIC TROUBLESHOOTING

y1.	M1084/M1086 Material Handling Crane (MHC) Hand Pump Does Not Work	2-2410

z. CAB TILT AND SPARE TIRE RETAINER TROUBLESHOOTING

z1.	Cab Does Not Raise	2-2414
z2.	Cab Does Not Lower	2-2414.8
z3.	Spare Tire Retainer Does Not Raise	2-2416
z4.	Spare Tire Retainer Does Not Lower	2-2416.6

aa. M1089 AIR SYSTEM TROUBLESHOOTING

aa1.	M1089 LH or RH 30K Winch Does Not Pay-In	2-2420
aa2.	Main Winch LH FreeSpool Does Not Operate	2-2422
aa3.	Main Winch RH FreeSpool Does Not Operate	2-2426
aa4.	Main Winch LH and RH FreeSpool(s) Does Not Operate	2-2428
aa5.	M1089 LH or RH 30K Winch Cable Drum Tensioner Does Not Operate	2-2430
aa6.	One Wrecker Function Does Not Operate From Wrecker Remote Control	2-2432

ab. FRAME TROUBLESHOOTING

ab1.	Tires Continue to Wear After Front End Alignment and/or Vehicle Drives Sideways Down Road	2-2436

2-12. ENGINE SYSTEM TROUBLESHOOTING

This paragraph covers Engine System Troubleshooting. The Engine System Fault Index, Table 2-3, lists faults for the engine system of the vehicle.

Table 2-3. Engine System Fault Index

Fault No.	Description	Page
a1.	Engine Does Not Crank	2-72
a2.	Engine Cranks But Does Not Start	2-76
a3.	Low Engine Oil Pressure	2-80
a4.	Engine Stalls at Low RPM	2-82
a5.	Engine Overspeeds on Start	2-88
a6.	Too Much Engine Vibration	2-90
a7.	Coolant in Engine Lubrication Oil	2-92
a8.	Excessive Engine Oil Consumption	2-94
a9.	Engine Overheats	2-98
a10.	Excessive Black or Gray Exhaust Smoke	2-100
a11.	White Exhaust Smoke	2-104
a12.	Low Engine Power	2-108

a1. ENGINE DOES NOT CRANK.

INITIAL SETUP

Equipment Conditions
Engine shutdown (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-6140-200-14
TM 9-4910-571-12&P

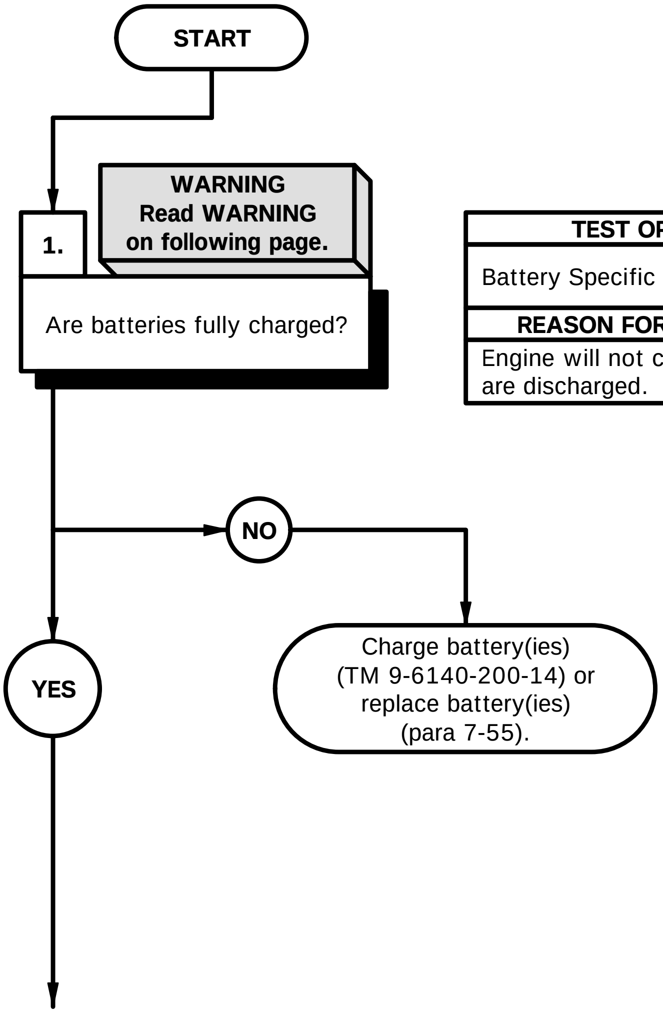
Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Apron, Rubber (Item 3, Appendix C)
Gloves, Rubber (Item 13, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Tester, Antifreeze and Battery (Item 42, Appendix C)

KNOWN INFO

Batteries electrolyte level OK.

POSSIBLE PROBLEMS

Faulty battery(ies).
Faulty electrical system.
Faulty air compressor.
Faulty engine assembly.



TEST OPTIONS

Battery Specific Gravity Test

REASON FOR QUESTION

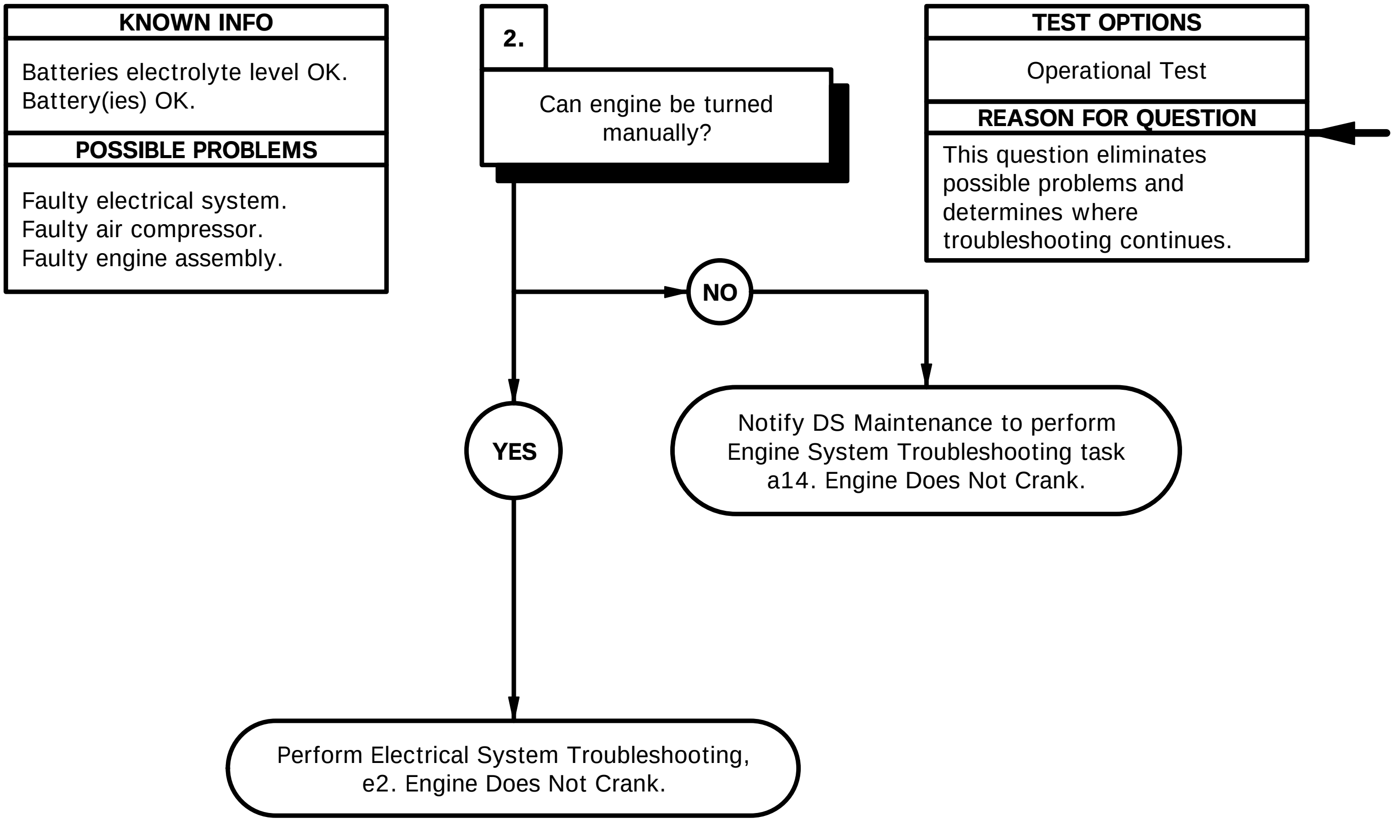
Engine will not crank if batteries are discharged.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection and rubber gloves when working with batteries.

Battery Specific Gravity Test
(1) Remove battery box cover from battery box (TM 9-2320-366-10-2). (2) Remove four batteries from battery box (para 7-55). (3) Test batteries for serviceability (TM 9-6140-200-14). (4) Charge battery(ies) if discharged (TM 9-6140-200-14). (5) Replace battery(ies) if unserviceable (TM 9-6140-200-14). (6) Install four batteries in battery box (para 7-55). (7) Install battery box cover on battery box (TM 9-2320-366-10-2).

a1. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Batteries electrolyte level OK.
Battery(ies) OK.

POSSIBLE PROBLEMS

Faulty electrical system.
Faulty air compressor.
Faulty engine assembly.

2.

Can engine be turned manually?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

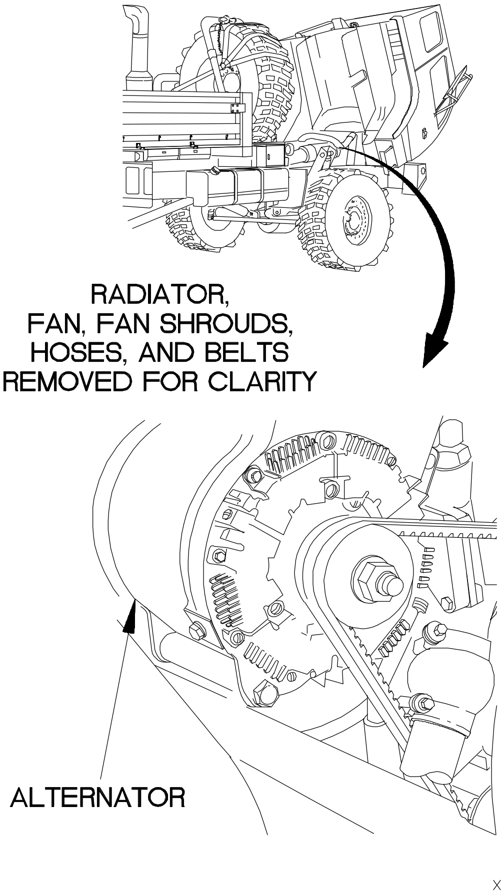
This question eliminates possible problems and determines where troubleshooting continues.

Notify DS Maintenance to perform Engine System Troubleshooting task a14. Engine Does Not Crank.

Perform Electrical System Troubleshooting, e2. Engine Does Not Crank.

OPERATIONAL TEST

(1) Raise cab (TM 9-2320-366-10-1).
(2) Attempt to rotate engine by turning alternator pulley.
(3) If engine can not be turned manually, notify DS Maintenance to perform Engine System Troubleshooting task a14. Engine Does Not Crank.
(4) If engine can be turned manually, perform Electrical System Troubleshooting, e2. Engine Does Not Crank.
(5) Lower cab (TM 9-2320-366-10-1).



a2. ENGINE CRANKS BUT DOES NOT START

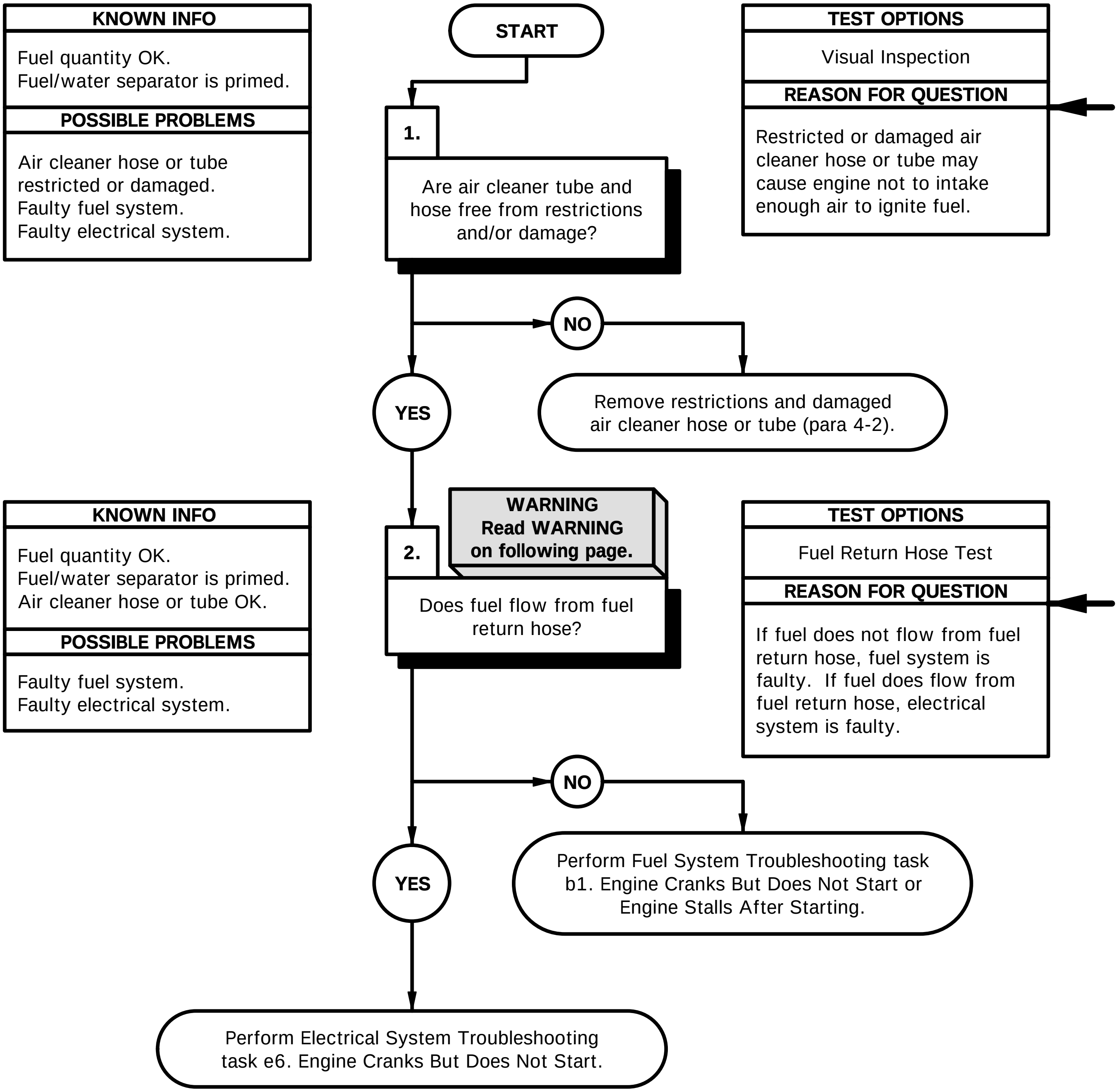
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Pan, Drain (Item 24, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Fuel quantity OK.
Fuel/water separator is primed.

POSSIBLE PROBLEMS
Air cleaner hose or tube restricted or damaged.
Faulty fuel system.
Faulty electrical system.

START

1. Are air cleaner tube and hose free from restrictions and/or damage?

TEST OPTIONS
Visual Inspection

REASON FOR QUESTION
Restricted or damaged air cleaner hose or tube may cause engine not to intake enough air to ignite fuel.

NO — Remove restrictions and damaged air cleaner hose or tube (para 4-2).

YES

KNOWN INFO
Fuel quantity OK.
Fuel/water separator is primed.
Air cleaner hose or tube OK.

POSSIBLE PROBLEMS
Faulty fuel system.
Faulty electrical system.

WARNING
Read WARNING on following page.

2. Does fuel flow from fuel return hose?

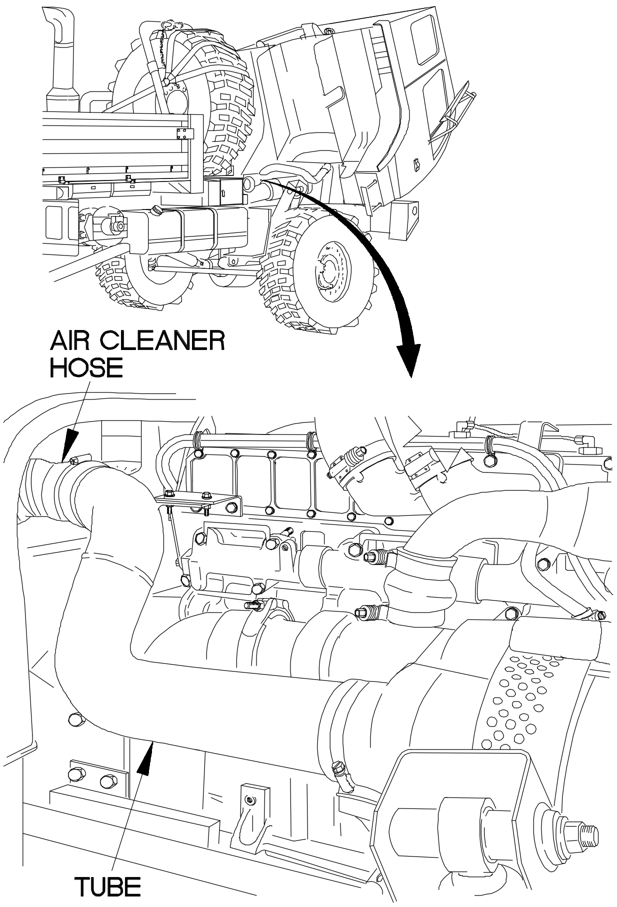
TEST OPTIONS
Fuel Return Hose Test

REASON FOR QUESTION
If fuel does not flow from fuel return hose, fuel system is faulty. If fuel does flow from fuel return hose, electrical system is faulty.

NO — Perform Fuel System Troubleshooting task b1. Engine Cranks But Does Not Start or Engine Stalls After Starting.

YES — Perform Electrical System Troubleshooting task e6. Engine Cranks But Does Not Start.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Remove air cleaner hose and tube and inspect for restrictions and damage which would cause a loss of intake air (para 4-2).
(3) Lower cab (TM 9-2320-366-10-1).



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. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF VEHICLE.

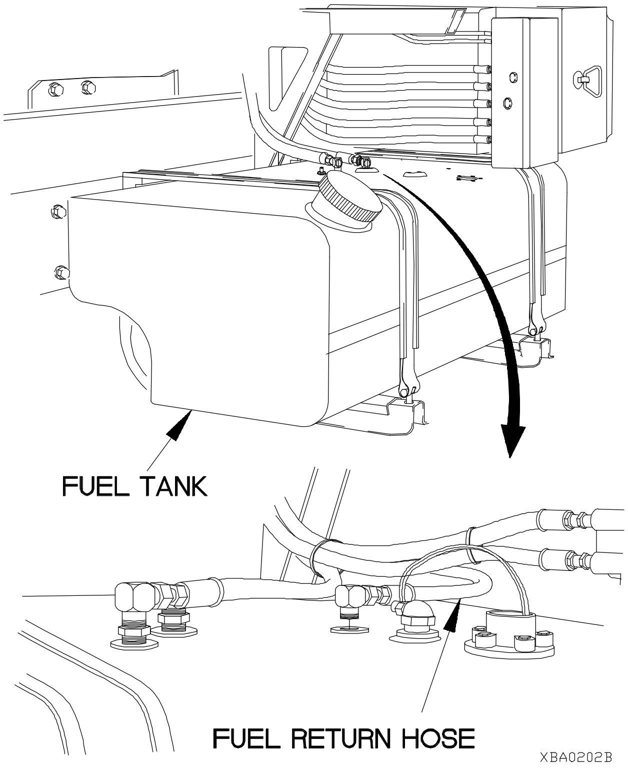
FUEL RETURN HOSE TEST

(1) Position drain pan under fuel tank.
(2) Remove fuel return hose from fuel tank.
(3) Place fuel hose in drain pan.

NOTE

Fuel should flow freely from fuel hose with no restriction.

(4) Attempt to start engine (TM 9-2320-366-10-1) and observe fuel flow from fuel return hose.
(5) If fuel does not flow from fuel return hose, perform Fuel System Troubleshooting task b1. Engine Cranks But Does Not Start or Engine Stalls After Starting.
(6) If fuel does flow from fuel return hose, perform Electrical System Troubleshooting task e6. Engine Cranks But Does Not Start.
(7) Install fuel return hose on fuel tank.



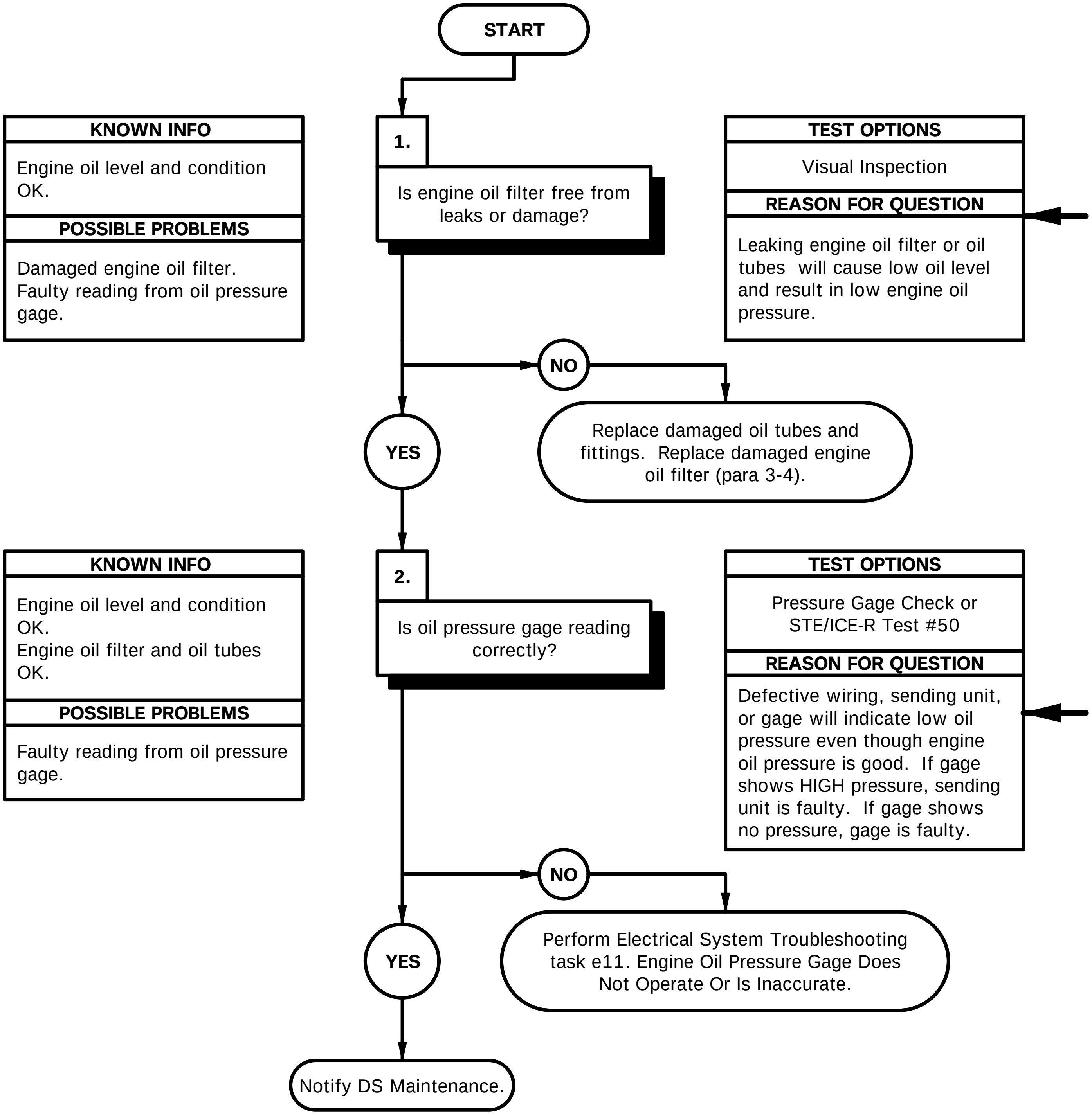
a3. LOW ENGINE OIL PRESSURE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)



KNOWN INFO

Engine oil level and condition OK.

POSSIBLE PROBLEMS

Damaged engine oil filter.
Faulty reading from oil pressure gage.

1. Is engine oil filter free from leaks or damage?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

Leaking engine oil filter or oil tubes will cause low oil level and result in low engine oil pressure.

NO: Replace damaged oil tubes and fittings. Replace damaged engine oil filter (para 3-4).

YES:

KNOWN INFO

Engine oil level and condition OK.
Engine oil filter and oil tubes OK.

POSSIBLE PROBLEMS

Faulty reading from oil pressure gage.

2. Is oil pressure gage reading correctly?

TEST OPTIONS

Pressure Gage Check or STE/ICE-R Test #50

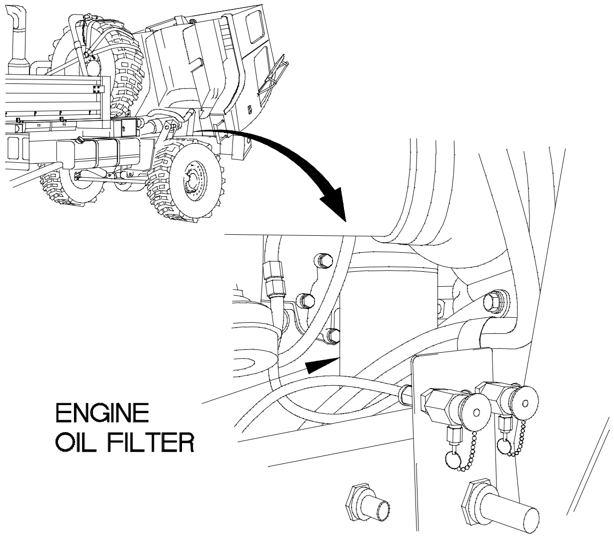
REASON FOR QUESTION

Defective wiring, sending unit, or gage will indicate low oil pressure even though engine oil pressure is good. If gage shows HIGH pressure, sending unit is faulty. If gage shows no pressure, gage is faulty.

NO: Perform Electrical System Troubleshooting task e11. Engine Oil Pressure Gage Does Not Operate Or Is Inaccurate.

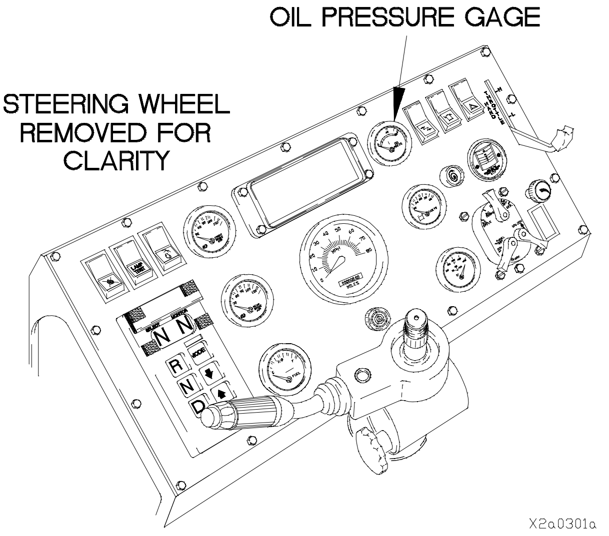
YES: Notify DS Maintenance.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check engine oil filter for leaks and damage.
(3) If engine oil filter is not free from leaks and damage, replace engine oil filter (para 3-4).



PRESSURE GAGE CHECK

(1) Lower cab (TM 9-2320-366-10-1).
(2) Start engine (TM 9-2320-366-10-1).
(3) Perform STE/ICE-R test #50.
(4) Oil pressure gage should read 15 PSI (100 kPa) at 750 RPM and maximum at full load condition of 88 PSI (600 kPa).
(5) If oil pressure gage does not read correctly, perform Electrical System Troubleshooting task e11. Engine Oil Pressure Gage Does Not Operate Or Is Inaccurate.
(6) If oil pressure gage reads correctly, notify DS Maintenance.
(7) Shut down engine (TM 9-2320-366-10-1).

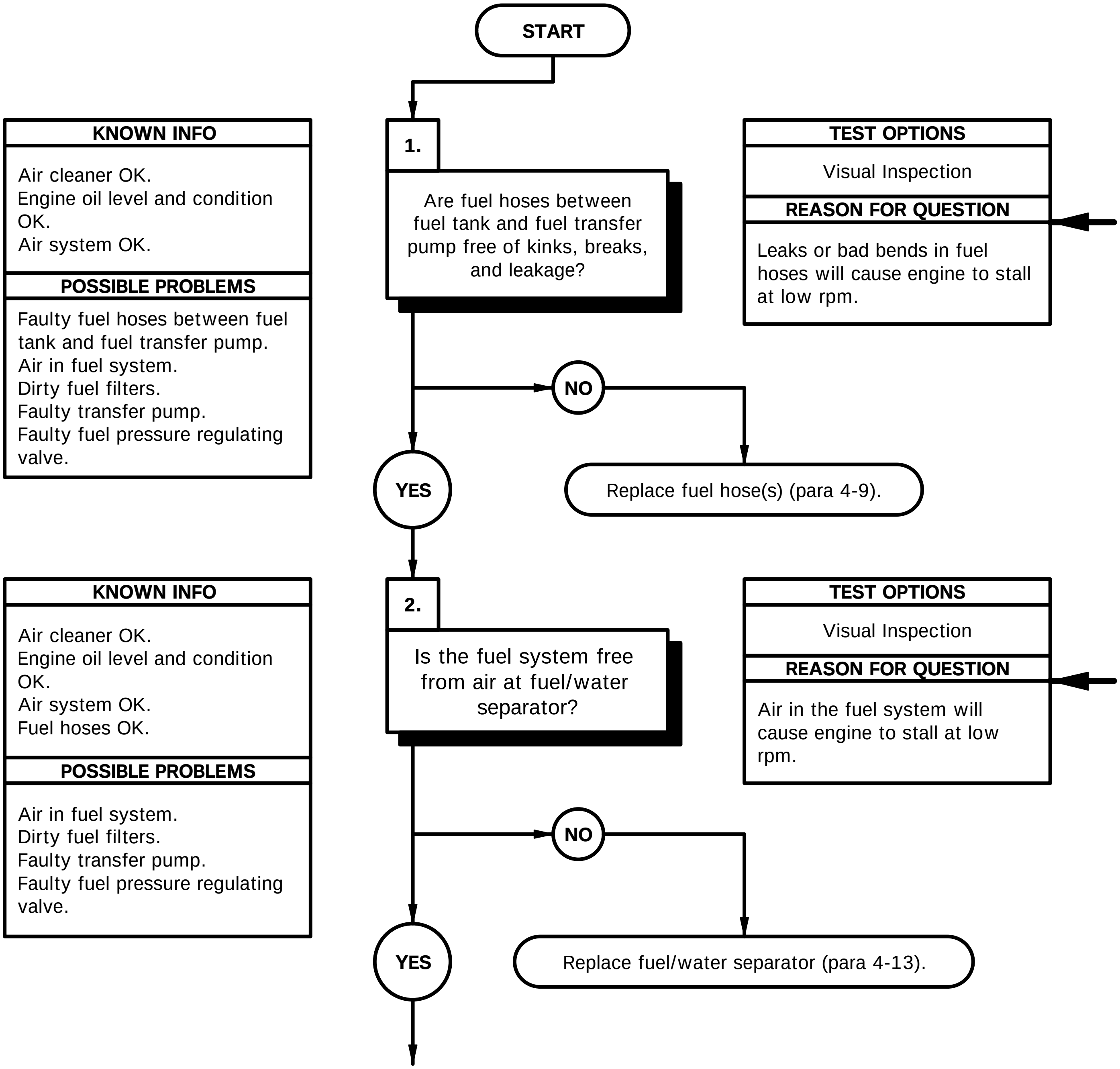


a4. ENGINE STALLS AT LOW RPM

INITIAL SETUP

Equipment Conditions	**Tools and Special Tools**
Engine shut down (TM 9-2320-366-10-1).	Tool Kit, Genl Mech (Item 46, Appendix C) STE/ICE-R (Item 41, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO

Air cleaner OK.
Engine oil level and condition OK.
Air system OK.

POSSIBLE PROBLEMS

Faulty fuel hoses between fuel tank and fuel transfer pump.
Air in fuel system.
Dirty fuel filters.
Faulty transfer pump.
Faulty fuel pressure regulating valve.

1. Are fuel hoses between fuel tank and fuel transfer pump free of kinks, breaks, and leakage?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

Leaks or bad bends in fuel hoses will cause engine to stall at low rpm.

NO: Replace fuel hose(s) (para 4-9).

KNOWN INFO

Air cleaner OK.
Engine oil level and condition OK.
Air system OK.
Fuel hoses OK.

POSSIBLE PROBLEMS

Air in fuel system.
Dirty fuel filters.
Faulty transfer pump.
Faulty fuel pressure regulating valve.

2. Is the fuel system free from air at fuel/water separator?

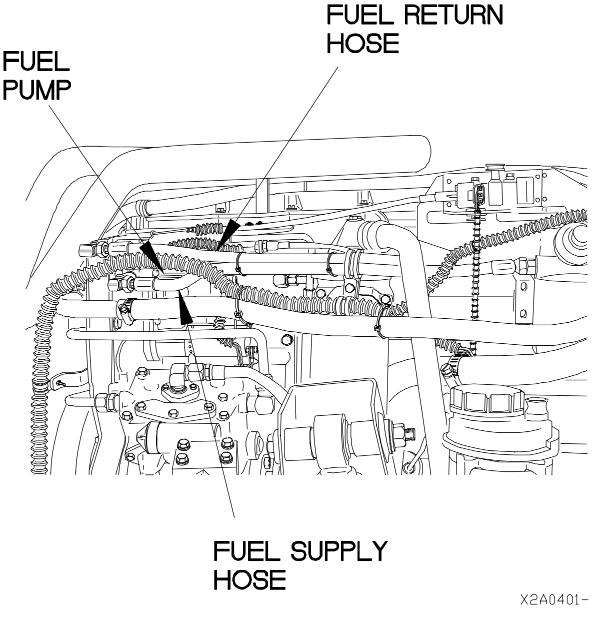
TEST OPTIONS

Visual Inspection

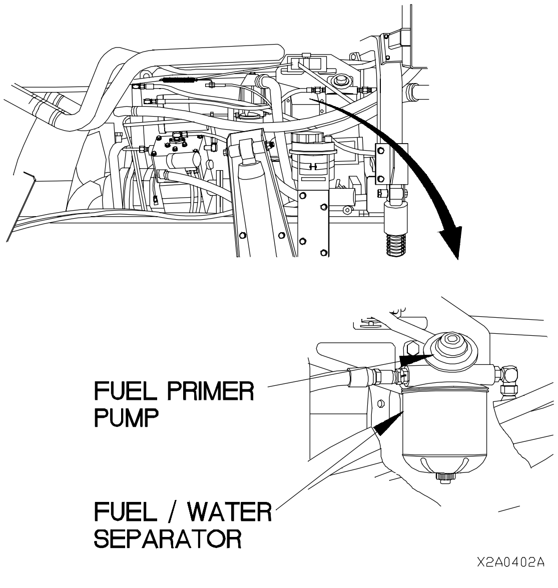
REASON FOR QUESTION

Air in the fuel system will cause engine to stall at low rpm.

NO: Replace fuel/water separator (para 4-13).

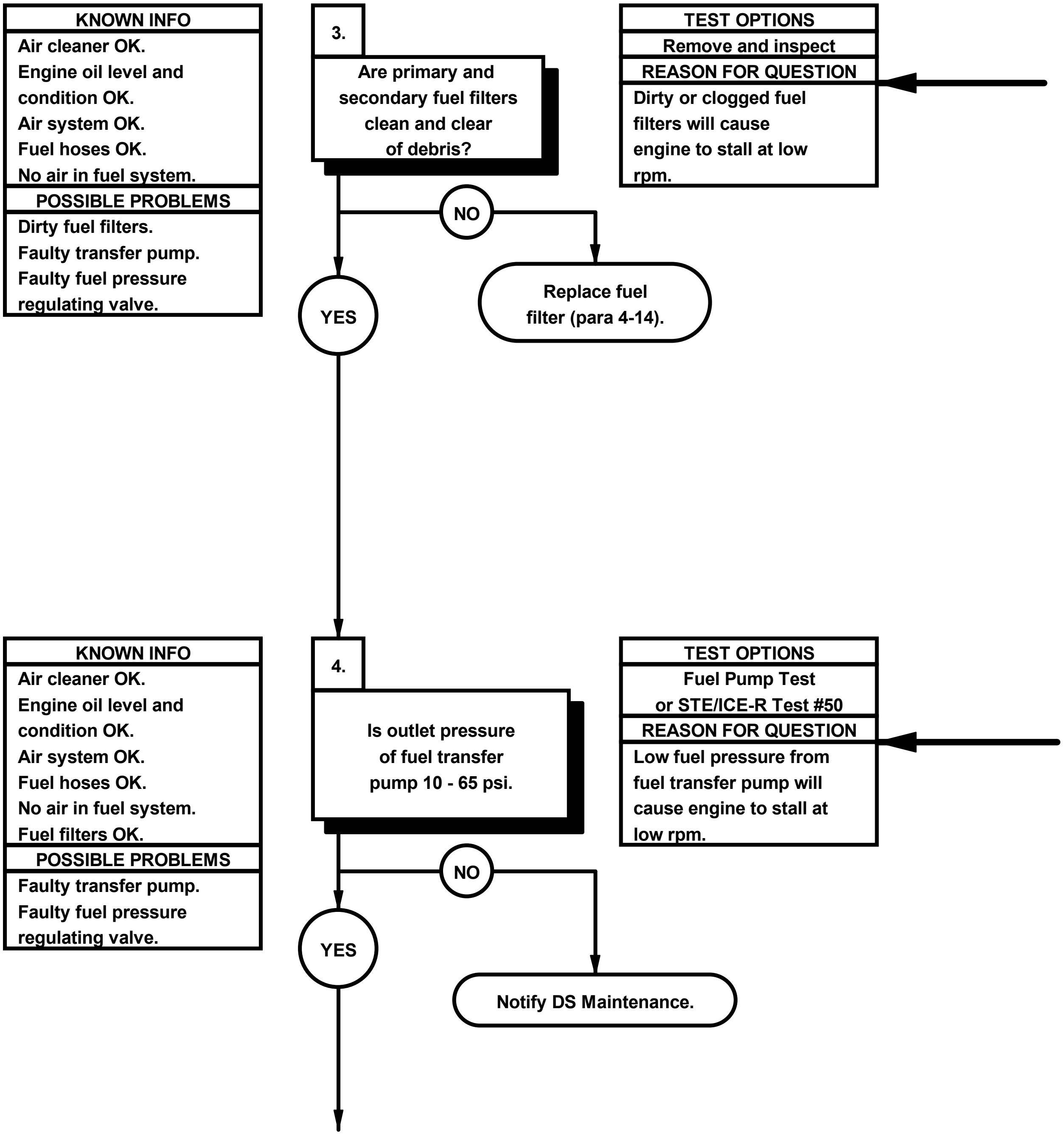


(1) Raise cab (TM 9-2320-366-10-1).
(2) Check fuel tank and fuel transfer pump hoses for kinks, looseness, and leakage.
(3) If fuel hoses are not free from kinks or leaks, replace fuel hose(s) (para 4-9).



(1) Push in fuel primer pump on fuel/water separator.
(2) Pump fuel primer pump until resistance is felt to purge air from fuel system.
(3) If no resistance is felt, replace fuel/water separator (para 4-13).

a4. ENGINE STALLS AT LOW RPM (CONT)



KNOWN INFO

Air cleaner OK.
Engine oil level and condition OK.
Air system OK.
Fuel hoses OK.
No air in fuel system.

POSSIBLE PROBLEMS

Dirty fuel filters.
Faulty transfer pump.
Faulty fuel pressure regulating valve.

3. Are primary and secondary fuel filters clean and clear of debris?

TEST OPTIONS

Remove and inspect

REASON FOR QUESTION

Dirty or clogged fuel filters will cause engine to stall at low rpm.

NO: Replace fuel filter (para 4-14).

YES

KNOWN INFO

Air cleaner OK.
Engine oil level and condition OK.
Air system OK.
Fuel hoses OK.
No air in fuel system.
Fuel filters OK.

POSSIBLE PROBLEMS

Faulty transfer pump.
Faulty fuel pressure regulating valve.

4. Is outlet pressure of fuel transfer pump 10 - 65 psi.

TEST OPTIONS

Fuel Pump Test or STE/ICE-R Test #50

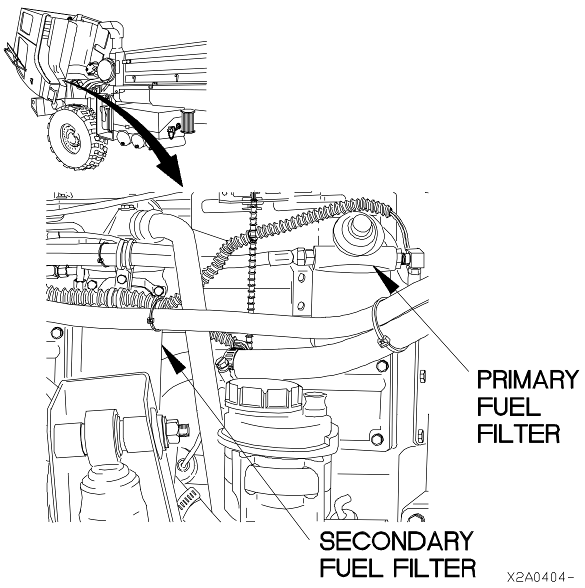
REASON FOR QUESTION

Low fuel pressure from fuel transfer pump will cause engine to stall at low rpm.

NO: Notify DS Maintenance.

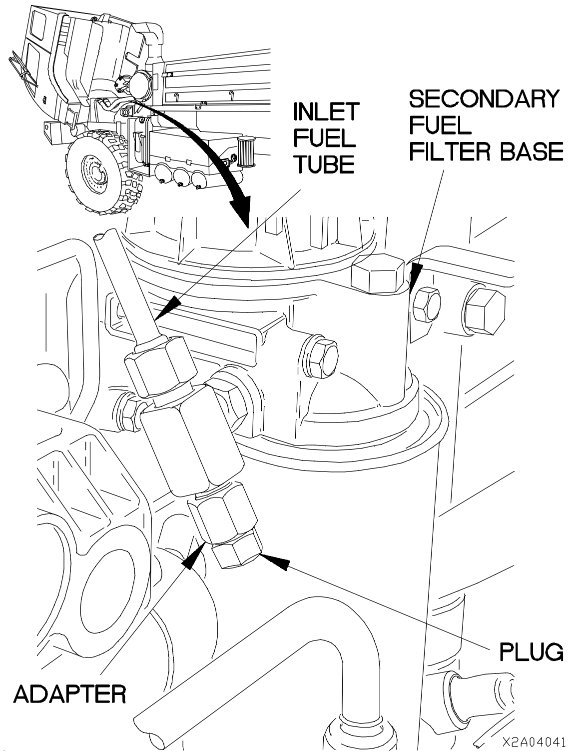
YES

(1) Check primary and secondary fuel filters for dirt and contamination.
(2) Position drain pan under filter.
(3) Remove filter element from base.
(4) Inspect for clogs and debris.
(5) If filter is clogged, replace filter (para 4-14).

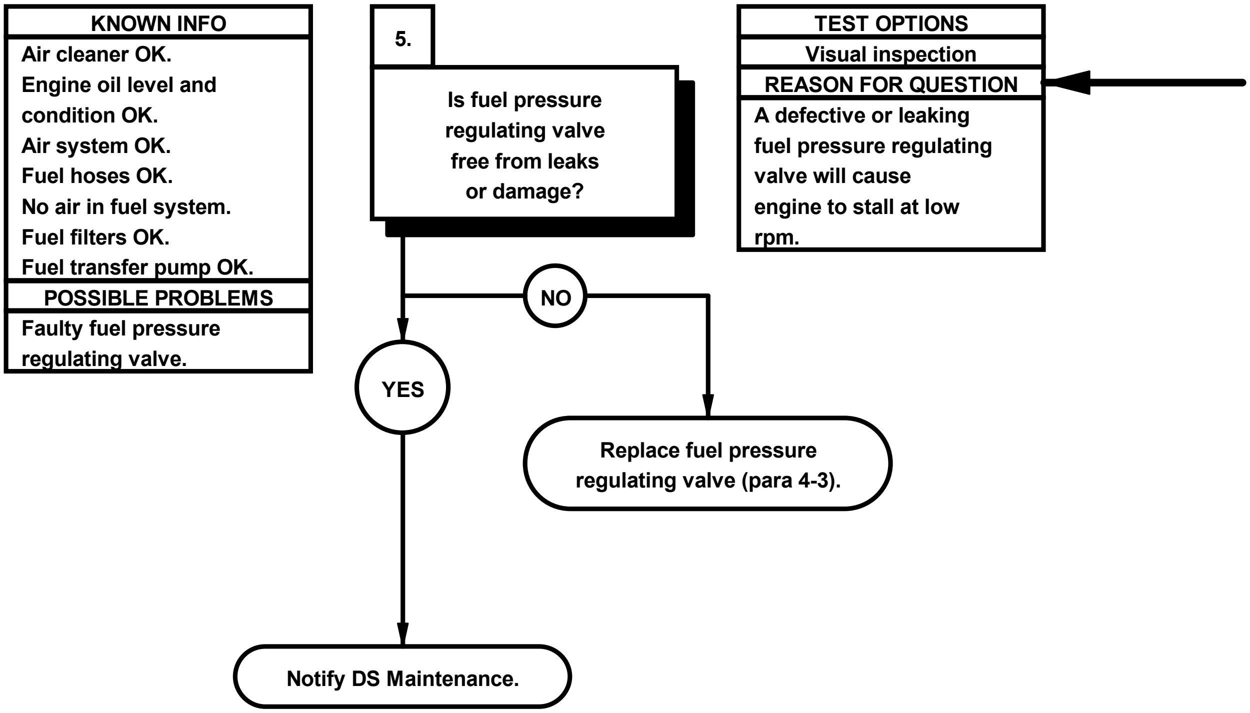


FUEL PUMP TEST

(1) Remove inlet fuel tube from secondary fuel filter base.
(2) Position drain pan under inlet fuel tube.
(3) Attempt to start engine (TM 9-2320-366-10-1).
(4) Check for fuel flow from inlet fuel tube while attempting to start engine.
(5) If fuel does not flow from inlet fuel tube, notify DS Maintenance.
(6) Install inlet fuel tube on secondary fuel filter base.



a4. ENGINE STALLS AT LOW RPM (CONT)



KNOWN INFO

Air cleaner OK.
Engine oil level and condition OK.
Air system OK.
Fuel hoses OK.
No air in fuel system.
Fuel filters OK.
Fuel transfer pump OK.

POSSIBLE PROBLEMS

Faulty fuel pressure regulating valve.

5.

Is fuel pressure regulating valve free from leaks or damage?

TEST OPTIONS

Visual inspection

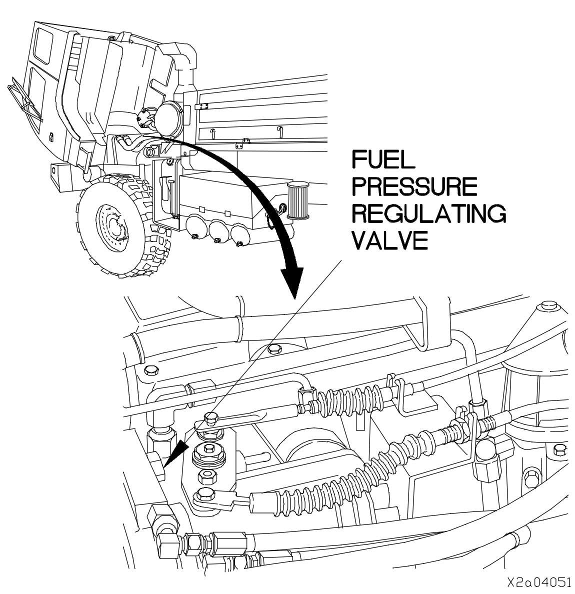
REASON FOR QUESTION

A defective or leaking fuel pressure regulating valve will cause engine to stall at low rpm.

Replace fuel pressure regulating valve (para 4-3).

Notify DS Maintenance.

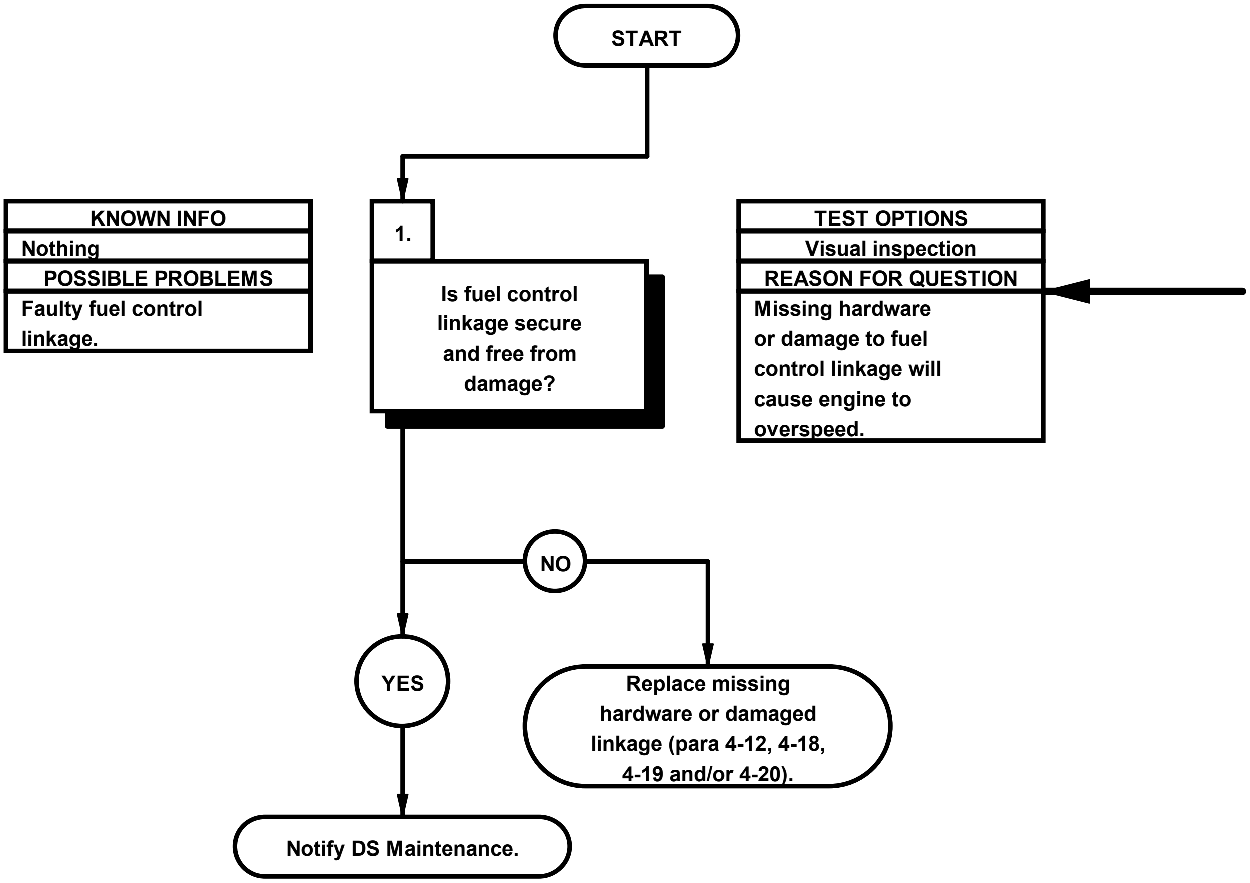
(1) Check fuel pressure regulating valve for leaks or damage.
(2) If fuel pressure regulating valve is damaged, replace fuel pressure regulating valve (para 4-3).
(3) If fuel pressure regulating valve is free from leaks and damage, notify DS Maintenance.
(4) Lower cab (TM 9-2320-366-10-1).



a5. ENGINE OVERSPEEDS ON START

INITIAL SETUP

Equipment Conditions	Tools and Special Tools
Engine shut down (TM 9-2320-366-10-1).	Tool Kit, Genl Mech (Item 46, Appendix C)



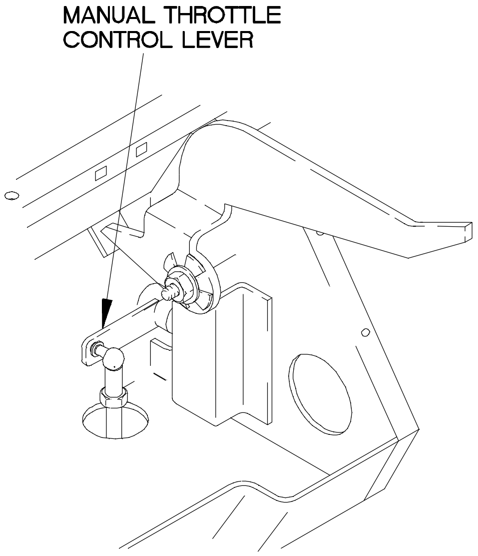
Is fuel control linkage secure and free from damage?

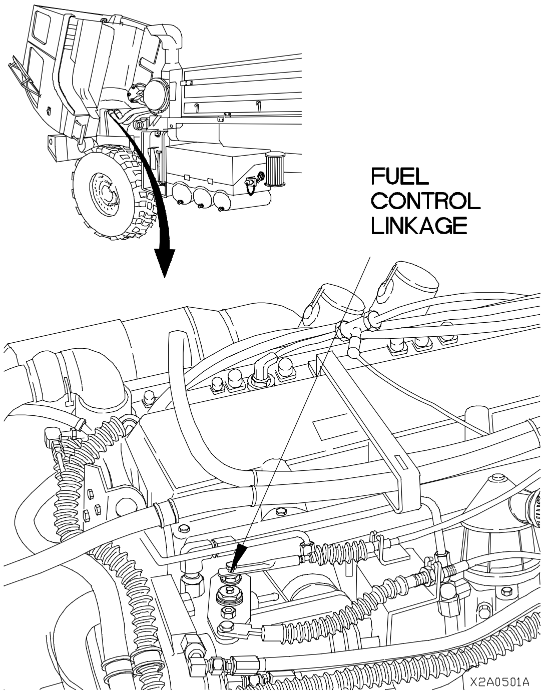
Missing hardware or damage to fuel control linkage will cause engine to overspeed.

Replace missing hardware or damaged linkage (para 4-12, 4-18, 4-19 and/or 4-20).

Notify DS Maintenance.

(1) Remove instrument panel assembly (para 7-15).
(2) Check fuel control linkage for improper assembly, missing hardware, and damaged parts.
(3) Install instrument panel assembly (para 7-15).
(4) Raise cab (TM 9-2320-366-10-1).
(5) Check fuel control linkage for improper assembly, missing hardware, and damaged parts.
(6) Lower cab (TM 9-2320-366-10-1).



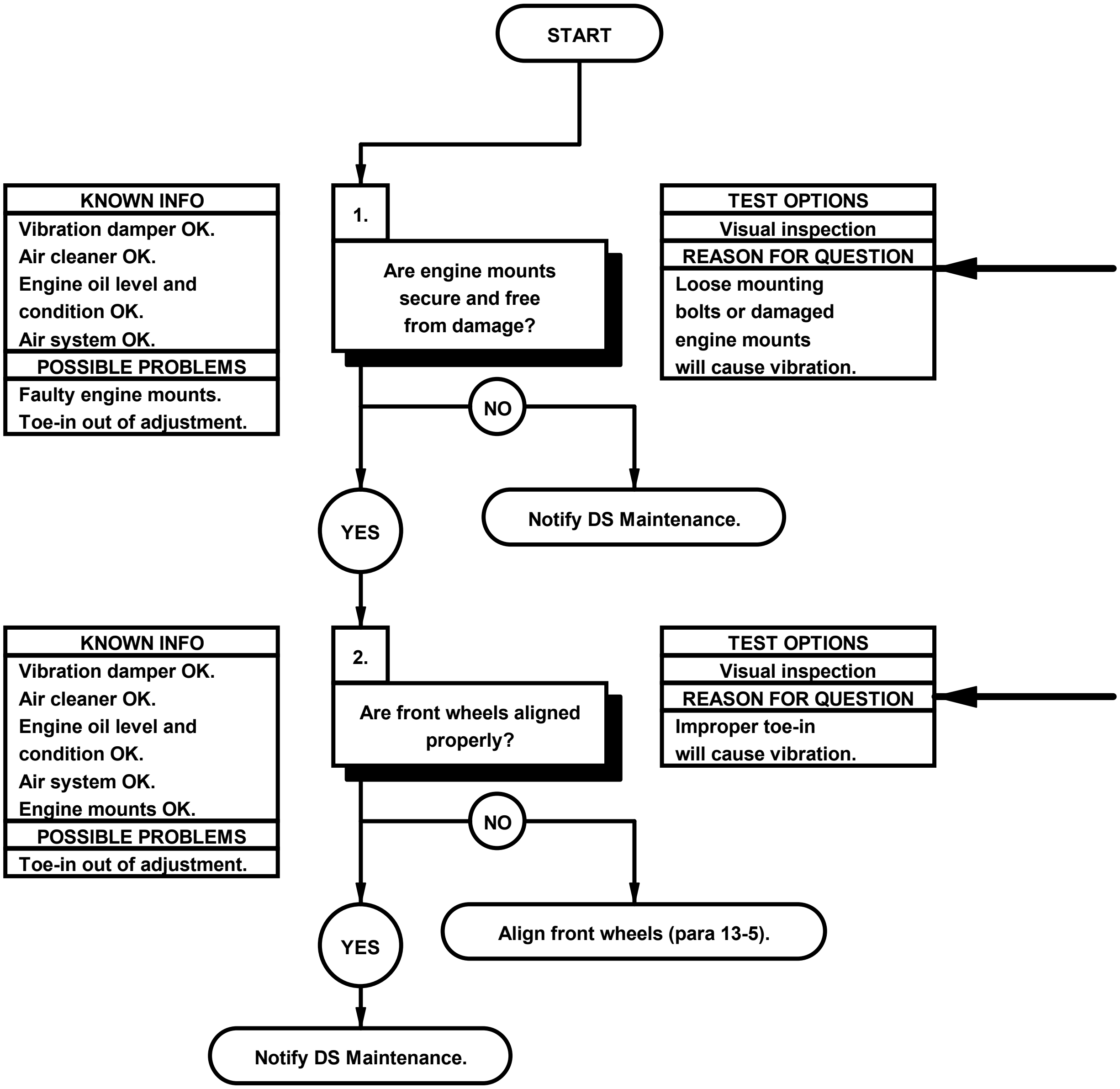


a6. TOO MUCH ENGINE VIBRATION

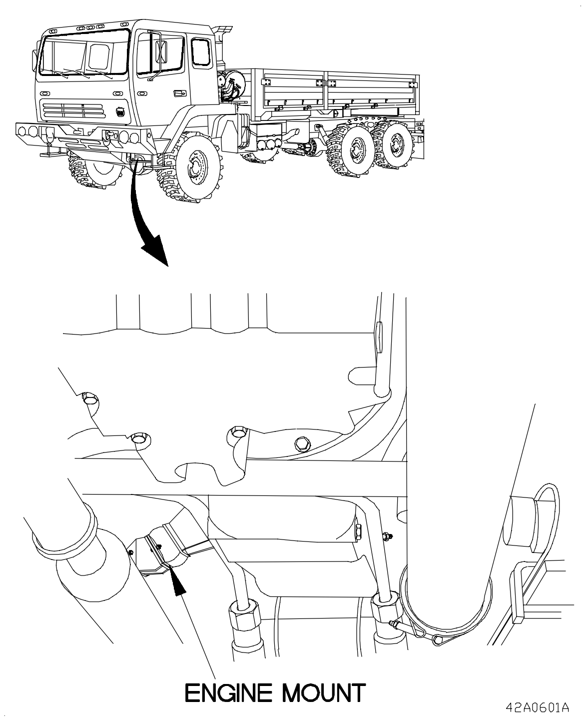
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

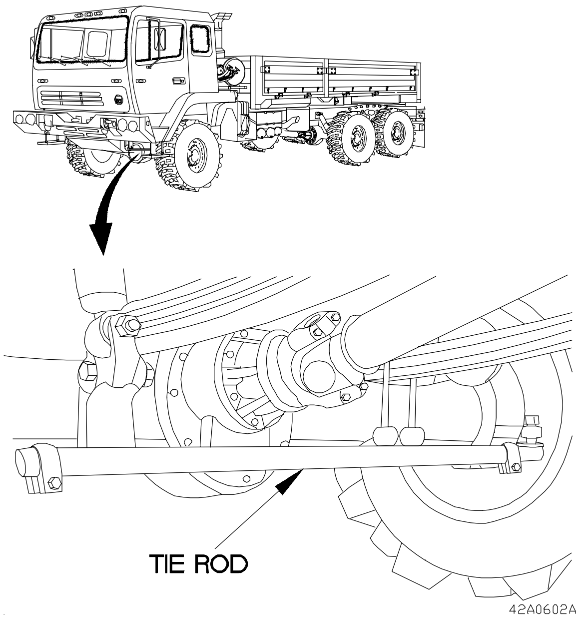
Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)



(1) Check engine mounts for loose mounting hardware and damage.
(2) If engine mounts are damaged or mounting hardware is loose, notify DS Maintenance.



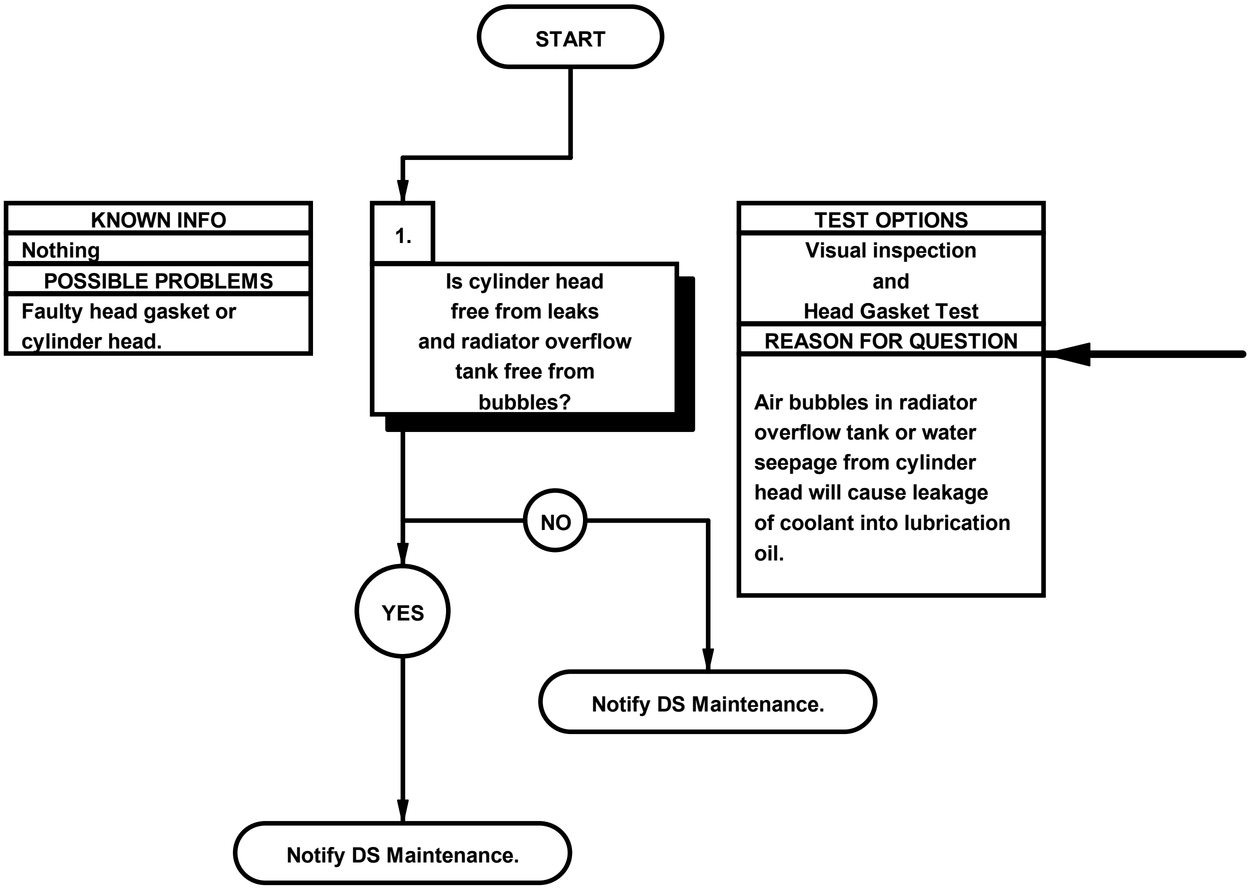
(1) Check tires for uneven tire wear.
(2) If uneven tire wear is found, align front wheels (para 13-5).
(3) If front tires do not have uneven wear, notify DS Maintenance.



a7. COOLANT IN ENGINE LUBRICATION OIL

INITIAL SETUP

Equipment Conditions	Tools and Special Tools
Engine shut down (TM 9-2320-366-10-1).	Tool Kit, Genl Mech (Item 46, Appendix C)



KNOWN INFO

Nothing

POSSIBLE PROBLEMS

Faulty head gasket or cylinder head.

1. Is cylinder head free from leaks and radiator overflow tank free from bubbles?

TEST OPTIONS

Visual inspection and Head Gasket Test

REASON FOR QUESTION

Air bubbles in radiator overflow tank or water seepage from cylinder head will cause leakage of coolant into lubrication oil.

YES: Notify DS Maintenance.

NO: Notify DS Maintenance.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check sides of engine block at cylinder head for obvious signs of water leakage.
(3) Lower cab (TM 9-2320-366-10-1).

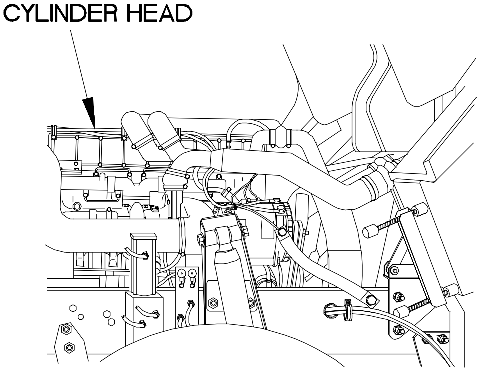
HEAD GASKET TEST

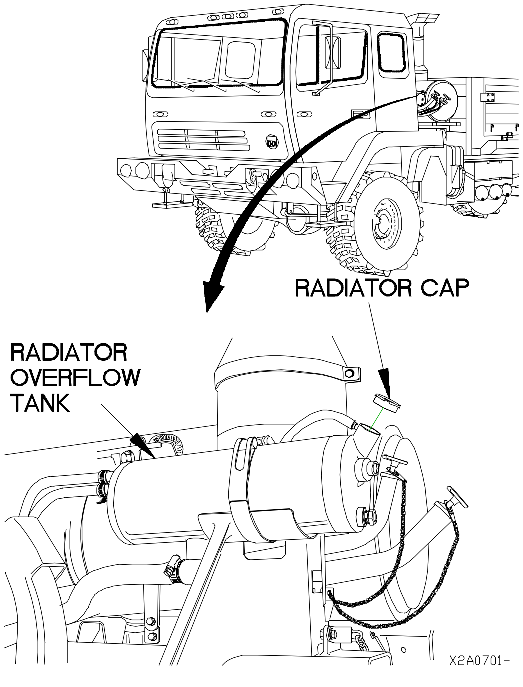
(1) Remove radiator cap.
(2) Start engine (TM 9-2320-366-10-1).

NOTE

Air bubbles in the coolant are a sign of probable leakage at the head gasket.

(3) Look for air bubbles in coolant.
(4) Install radiator cap.
(5) Shut down engine (TM 9-2320-366-10-1).

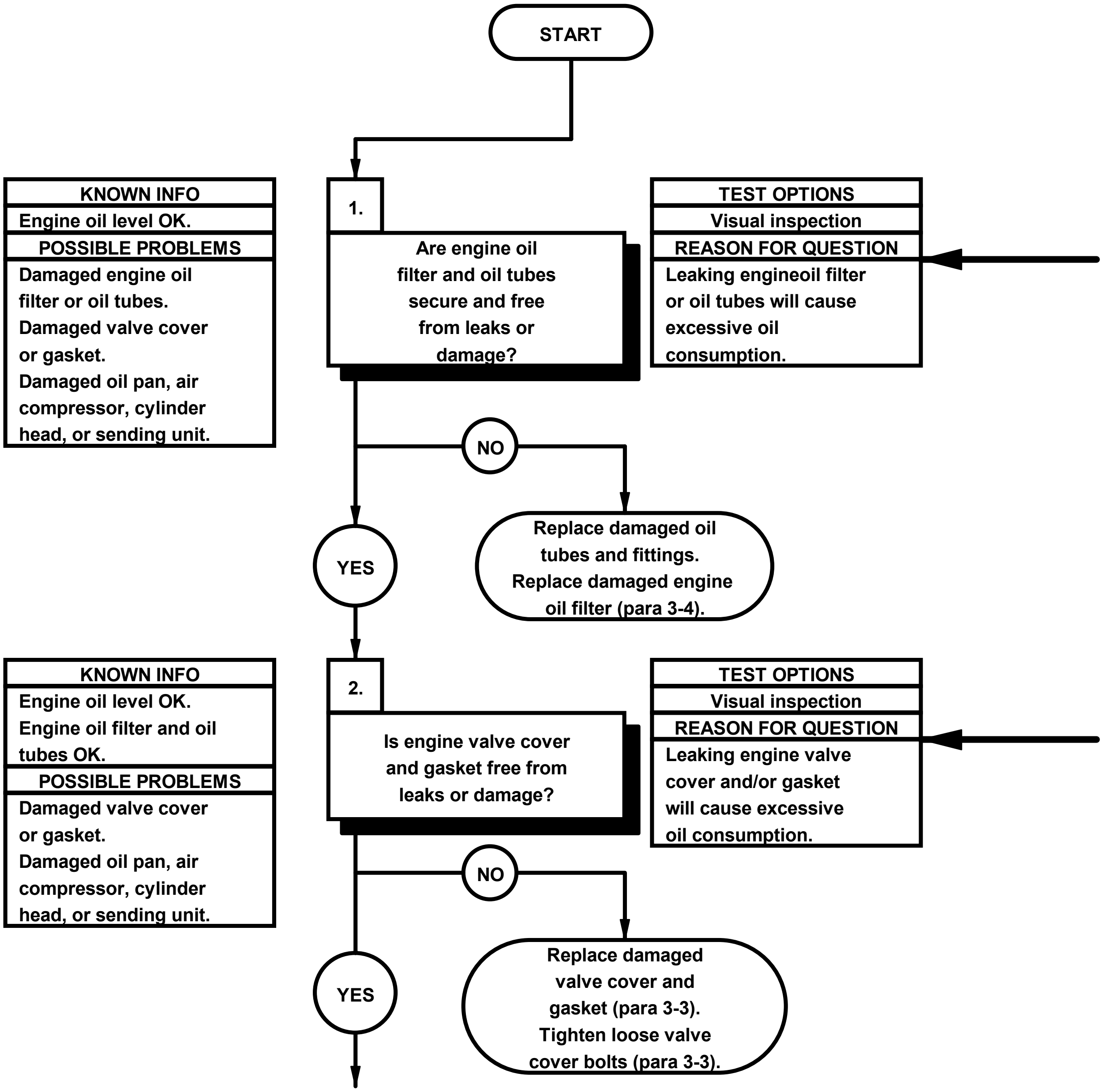




a8. EXCESSIVE ENGINE OIL CONSUMPTION

INITIAL SETUP

Equipment Conditions	Tools and Special Tools
Engine shut down (TM 9-2320-366-10-1).	Tool Kit, Genl Mech (Item 46, Appendix C)



START

KNOWN INFO
Engine oil level OK.

POSSIBLE PROBLEMS
Damaged engine oil filter or oil tubes.
Damaged valve cover or gasket.
Damaged oil pan, air compressor, cylinder head, or sending unit.

1. Are engine oil filter and oil tubes secure and free from leaks or damage?

TEST OPTIONS
Visual inspection

REASON FOR QUESTION
Leaking engineoil filter or oil tubes will cause excessive oil consumption.

NO: Replace damaged oil tubes and fittings. Replace damaged engine oil filter (para 3-4).

YES

KNOWN INFO
Engine oil level OK.
Engine oil filter and oil tubes OK.

POSSIBLE PROBLEMS
Damaged valve cover or gasket.
Damaged oil pan, air compressor, cylinder head, or sending unit.

2. Is engine valve cover and gasket free from leaks or damage?

TEST OPTIONS
Visual inspection

REASON FOR QUESTION
Leaking engine valve cover and/or gasket will cause excessive oil consumption.

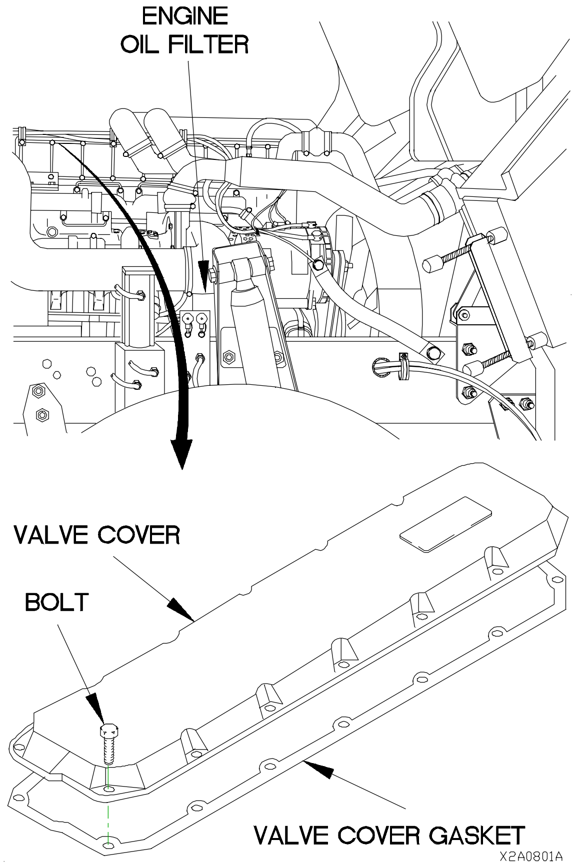
NO: Replace damaged valve cover and gasket (para 3-3). Tighten loose valve cover bolts (para 3-3).

YES

NOTE

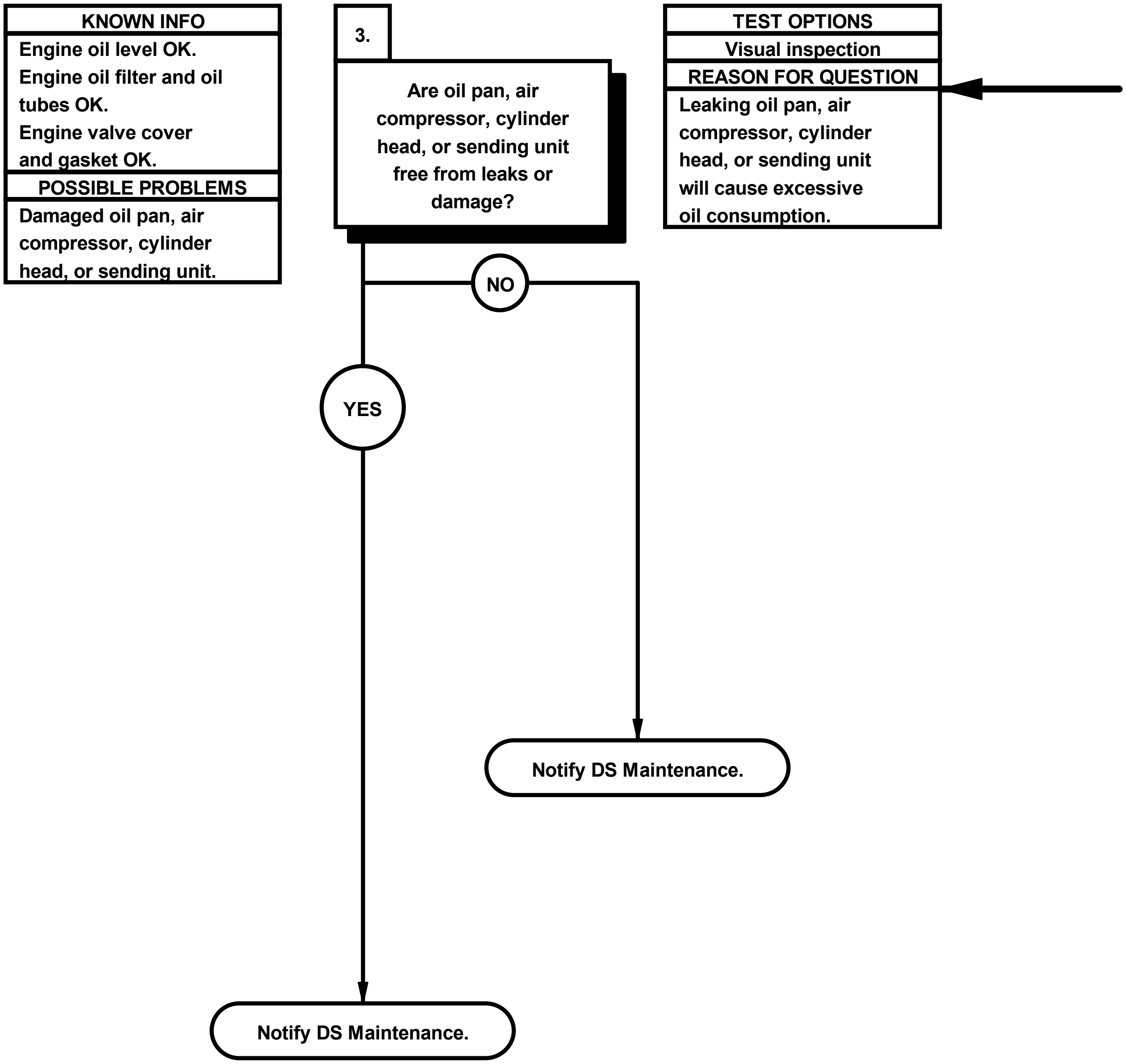
Oil consumption is considered normal up to 12,000 mi (19,308 km) at a rate of one qt (one L) of oil per 45 gal (170 L) of fuel. After 12,000 mi (19,308 km), oil consumption is considered normal at a rate of one qt (one L) of oil per 60 gal (227 L) of fuel.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check engine oil filter and oil tubes for leakage or damage.
(3) If engine oil filter is damaged, replace engine oil filter (para 3-4).



(1) Check engine valve cover and gasket for leaks and damage.
(2) If engine valve cover or gasket leaks, tighten loose valve cover bolts (para 3-3).
(3) If engine valve cover or gasket is damaged, replace valve cover and gasket (para 3-3).

a8. EXCESSIVE ENGINE OIL CONSUMPTION (CONT)



KNOWN INFO

Engine oil level OK.
Engine oil filter and oil tubes OK.
Engine valve cover and gasket OK.

POSSIBLE PROBLEMS

Damaged oil pan, air compressor, cylinder head, or sending unit.

3.

Are oil pan, air compressor, cylinder head, or sending unit free from leaks or damage?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

Leaking oil pan, air compressor, cylinder head, or sending unit will cause excessive oil consumption.

NO: Notify DS Maintenance.

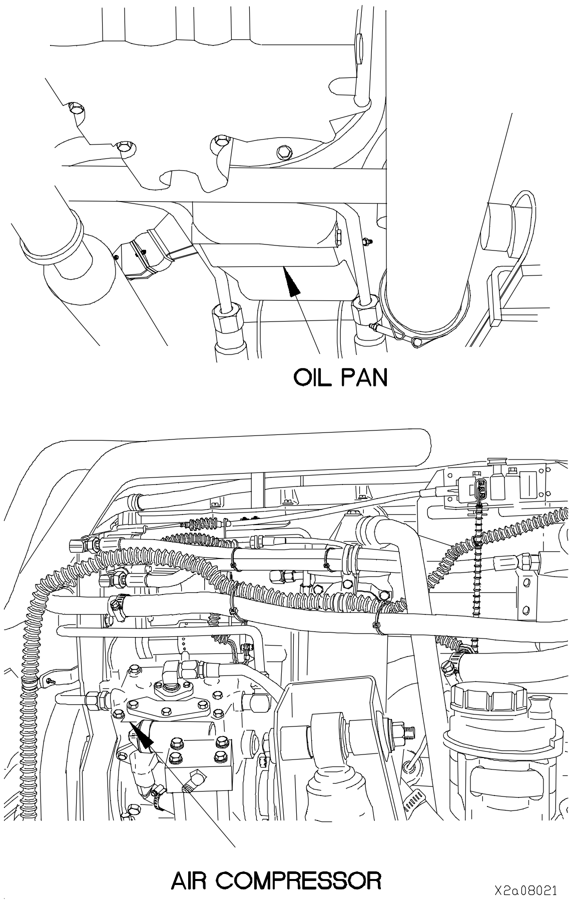
YES: Notify DS Maintenance.

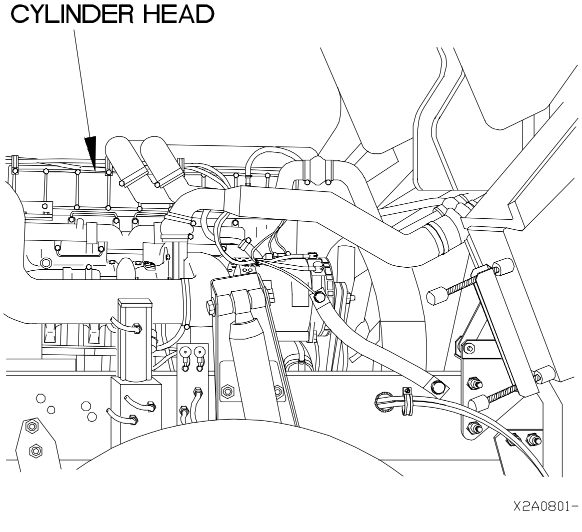
(1) Check oil pan, air compressor, cylinder head, and sending unit for leakage or damage.

(2) If oil pan, air compressor, cylinder head, or sending unit is leaking or damaged, notify DS Maintenance.

(3) If oil pan, air compressor, cylinder head and sending unit are free from leaks and damage, notify DS Maintenance.

(4) Lower cab (TM 9-2320-366-10-1).





a9. ENGINE OVERHEATS

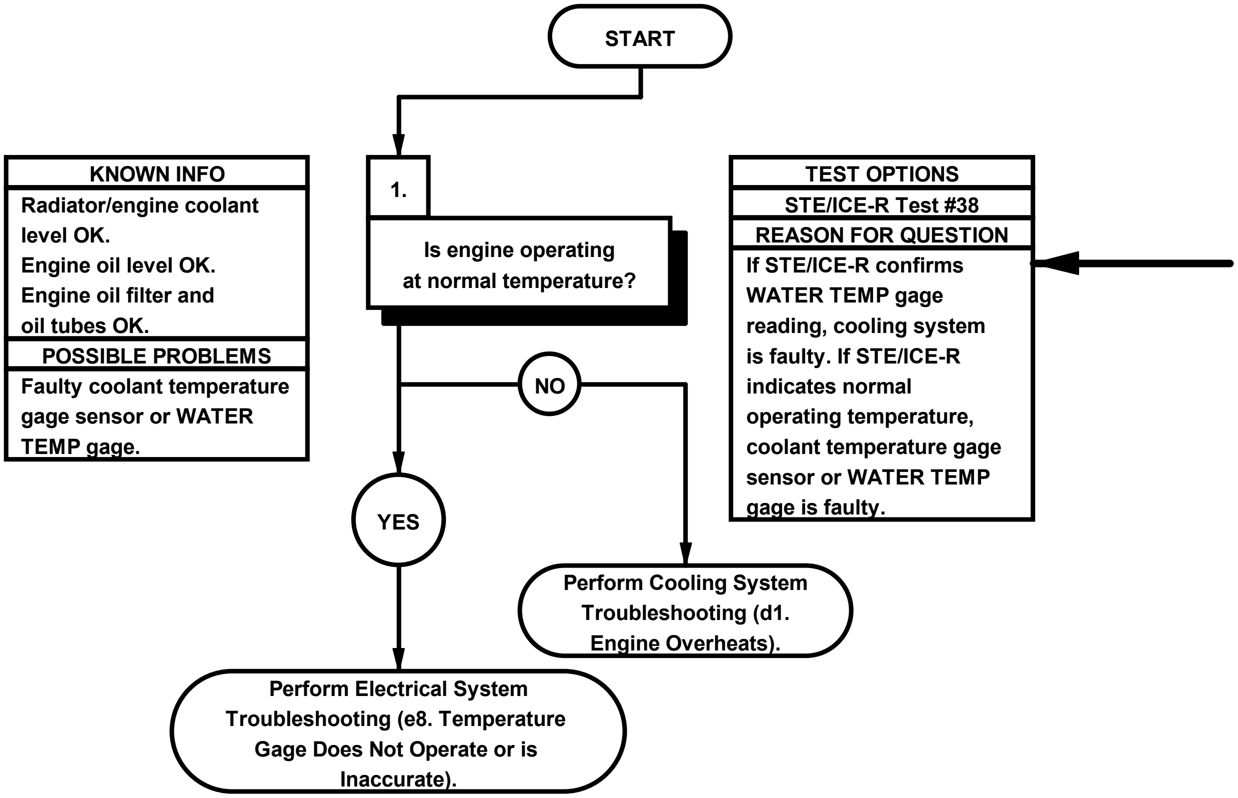
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO

Radiator/engine coolant level OK.
Engine oil level OK.
Engine oil filter and oil tubes OK.

POSSIBLE PROBLEMS

Faulty coolant temperature gage sensor or WATER TEMP gage.

1. Is engine operating at normal temperature?

TEST OPTIONS

STE/ICE-R Test #38

REASON FOR QUESTION

If STE/ICE-R confirms WATER TEMP gage reading, cooling system is faulty. If STE/ICE-R indicates normal operating temperature, coolant temperature gage sensor or WATER TEMP gage is faulty.

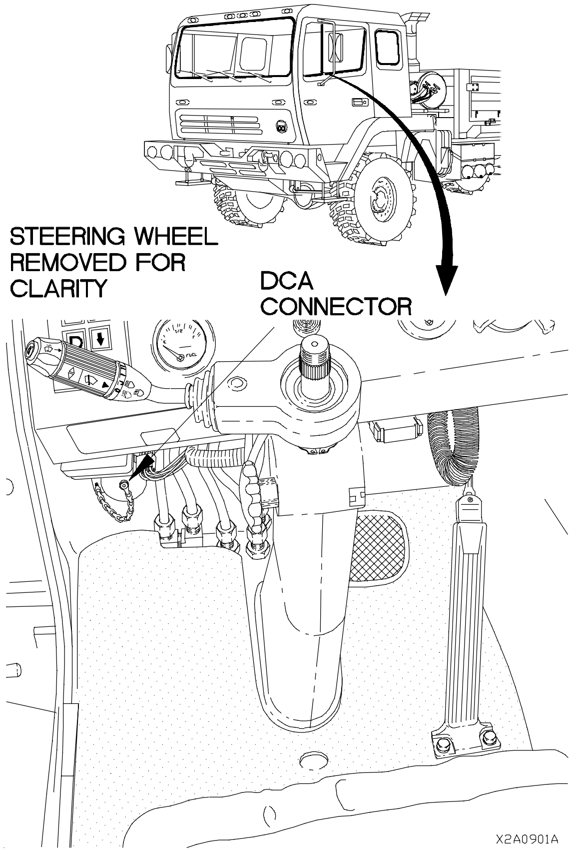
YES: Perform Electrical System Troubleshooting (e8. Temperature Gage Does Not Operate or is Inaccurate).

NO: Perform Cooling System Troubleshooting (d1. Engine Overheats).

NOTE

STE/ICE-R Test #38 measures engine coolant temperature.

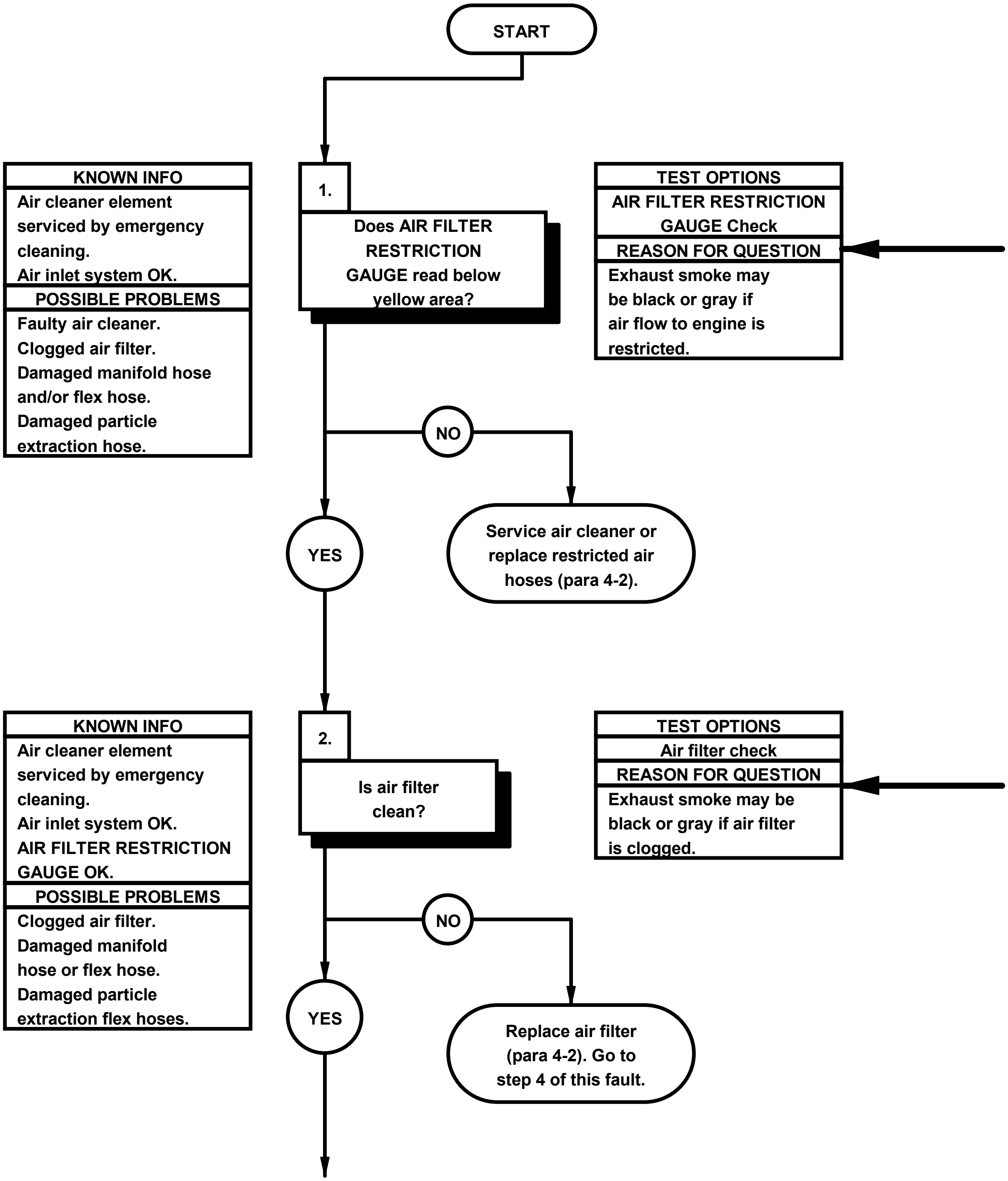
STE/ICE-R TEST #38
(1) Hook up STE/ICE-R to DCA.
(2) Press and hold the TEST button on the STE/ICE-R until -45 to +45 appears in the display. This will ensure that the test results are accurate.
(3) Start engine (TM 9-2320-366-10-1) and raise engine idle until engine is at normal operating temperature, 180-205°F (82-96°C).
(4) Coolant temperature should read between 160-210°F (71-99°C).
(5) Record test results.
(6) If coolant temperature is not 160-210°F (71-99°C), perform Cooling System Troubleshooting (d1. Engine Overheats).
(7) If coolant temperature is 160-210°F (71-99°C), perform Electrical System Troubleshooting (e8. Temperature Gage Does Not Operate or is Inaccurate).
(8) Shut down engine (TM 9-2320-366-10-1).
(9) Remove STE/ICE-R from DCA.



a10. EXCESSIVE BLACK OR GRAY EXHAUST SMOKE

INITIAL SETUP

Equipment Conditions	Tools and Special Tools
Engine shut down (TM 9-2320-366-10-1).	Tool Kit, Genl Mech (Item 46, Appendix C)



KNOWN INFO

Air cleaner element serviced by emergency cleaning.
Air inlet system OK.

POSSIBLE PROBLEMS

Faulty air cleaner.
Clogged air filter.
Damaged manifold hose and/or flex hose.
Damaged particle extraction hose.

1. Does AIR FILTER RESTRICTION GAUGE read below yellow area?

TEST OPTIONS

AIR FILTER RESTRICTION GAUGE Check

REASON FOR QUESTION

Exhaust smoke may be black or gray if air flow to engine is restricted.

NO: Service air cleaner or replace restricted air hoses (para 4-2).

KNOWN INFO

Air cleaner element serviced by emergency cleaning.
Air inlet system OK.
AIR FILTER RESTRICTION GAUGE OK.

POSSIBLE PROBLEMS

Clogged air filter.
Damaged manifold hose or flex hose.
Damaged particle extraction flex hoses.

2. Is air filter clean?

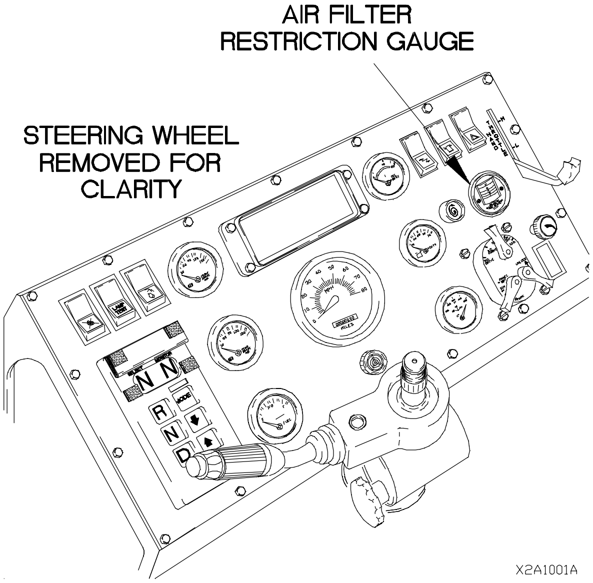
TEST OPTIONS

Air filter check

REASON FOR QUESTION

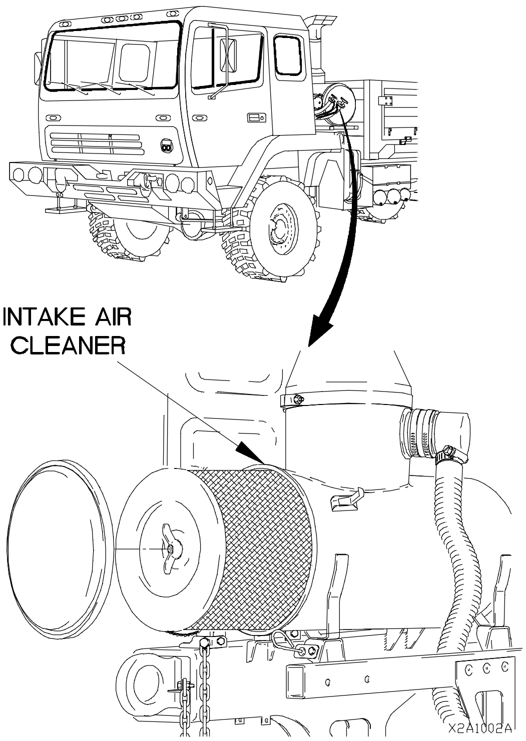
Exhaust smoke may be black or gray if air filter is clogged.

NO: Replace air filter (para 4-2). Go to step 4 of this fault.



AIR FILTER RESTRICTION GAUGE CHECK

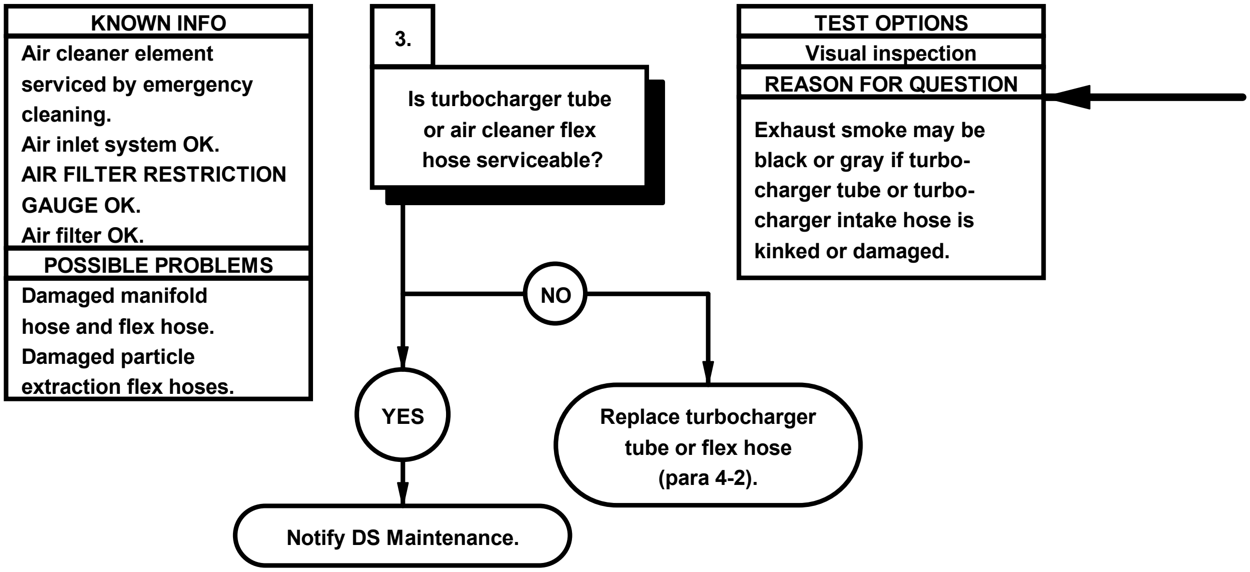
(1) Check reading on AIR FILTER RESTRICTION GAUGE.
(2) Press RESET button on AIR FILTER RESTRICTION GAUGE if reading is between 15 and 20 (in yellow area) or above 20 (in red area).
(3) Start engine (TM 9-2320-366-10-1) and check AIR FILTER RESTRICTION GAUGE again.
(4) Shut down engine (TM 9-2320-366-10-1).



AIR FILTER CHECK

(1) Release three spring latches on intake air cleaner cover.
(2) Remove intake air cleaner cover.
(3) Remove air filter. Replace air filter if clogged (para 4-2).
(4) Install air filter.
(5) Install intake air cleaner cover.
(6) Install three spring latches on intake air cleaner cover.

a10. EXCESSIVE BLACK OR GRAY EXHAUST SMOKE (CONT)



KNOWN INFO

Air cleaner element serviced by emergency cleaning.
Air inlet system OK.
AIR FILTER RESTRICTION GAUGE OK.
Air filter OK.

POSSIBLE PROBLEMS

Damaged manifold hose and flex hose.
Damaged particle extraction flex hoses.

3. Is turbocharger tube or air cleaner flex hose serviceable?

TEST OPTIONS

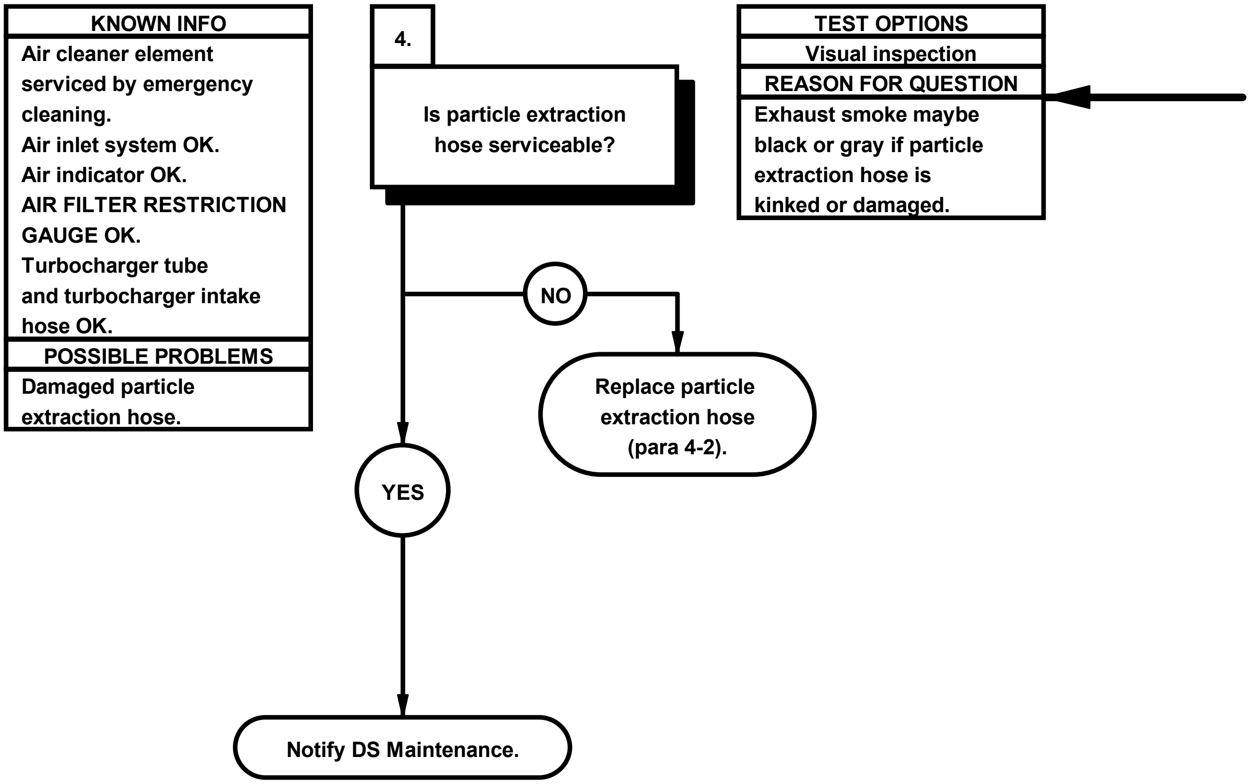
Visual inspection

REASON FOR QUESTION

Exhaust smoke may be black or gray if turbocharger tube or turbocharger intake hose is kinked or damaged.

Replace turbocharger tube or flex hose (para 4-2).

Notify DS Maintenance.



KNOWN INFO

Air cleaner element serviced by emergency cleaning.
Air inlet system OK.
Air indicator OK.
AIR FILTER RESTRICTION GAUGE OK.
Turbocharger tube and turbocharger intake hose OK.

POSSIBLE PROBLEMS

Damaged particle extraction hose.

4. Is particle extraction hose serviceable?

TEST OPTIONS

Visual inspection

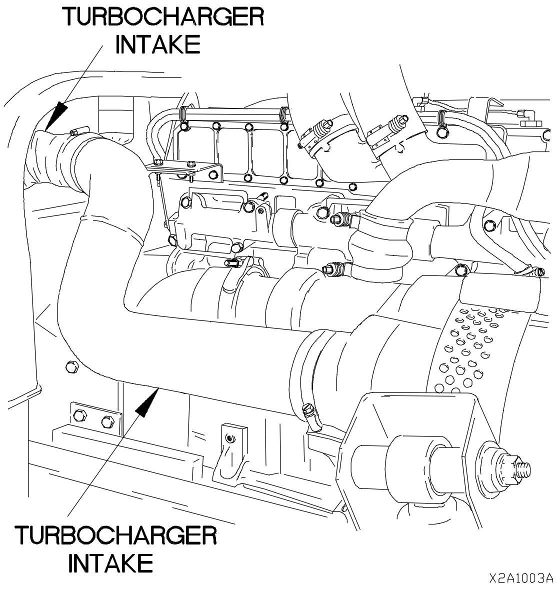
REASON FOR QUESTION

Exhaust smoke maybe black or gray if particle extraction hose is kinked or damaged.

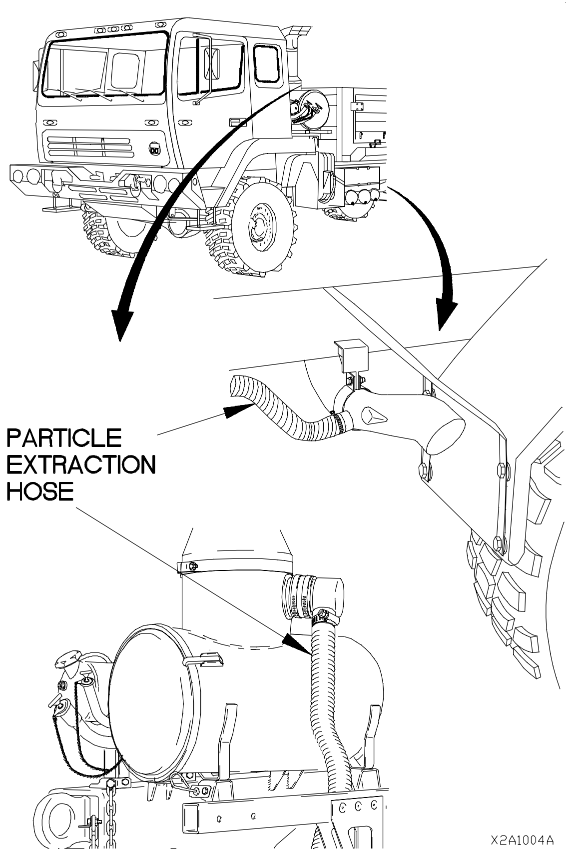
Replace particle extraction hose (para 4-2).

Notify DS Maintenance.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check turbocharger tube and turbocharger hose for kinks and damage.
(3) If turbocharger tube or turbocharger hose is damaged, replace turbocharger tube or turbocharger hose (para 4-2).
(4) If turbocharger tube and turbocharger hose are free from kinks and damage, notify DS Maintenance.
(5) Lower cab (TM 9-2320-366-10-1).



(1) Check particle extraction hose for kinks and damage.
(2) If particle extraction hose is damaged, replace particle extraction hose (para 4-2).
(3) If particle extraction hose is OK, notify DS Maintenance.

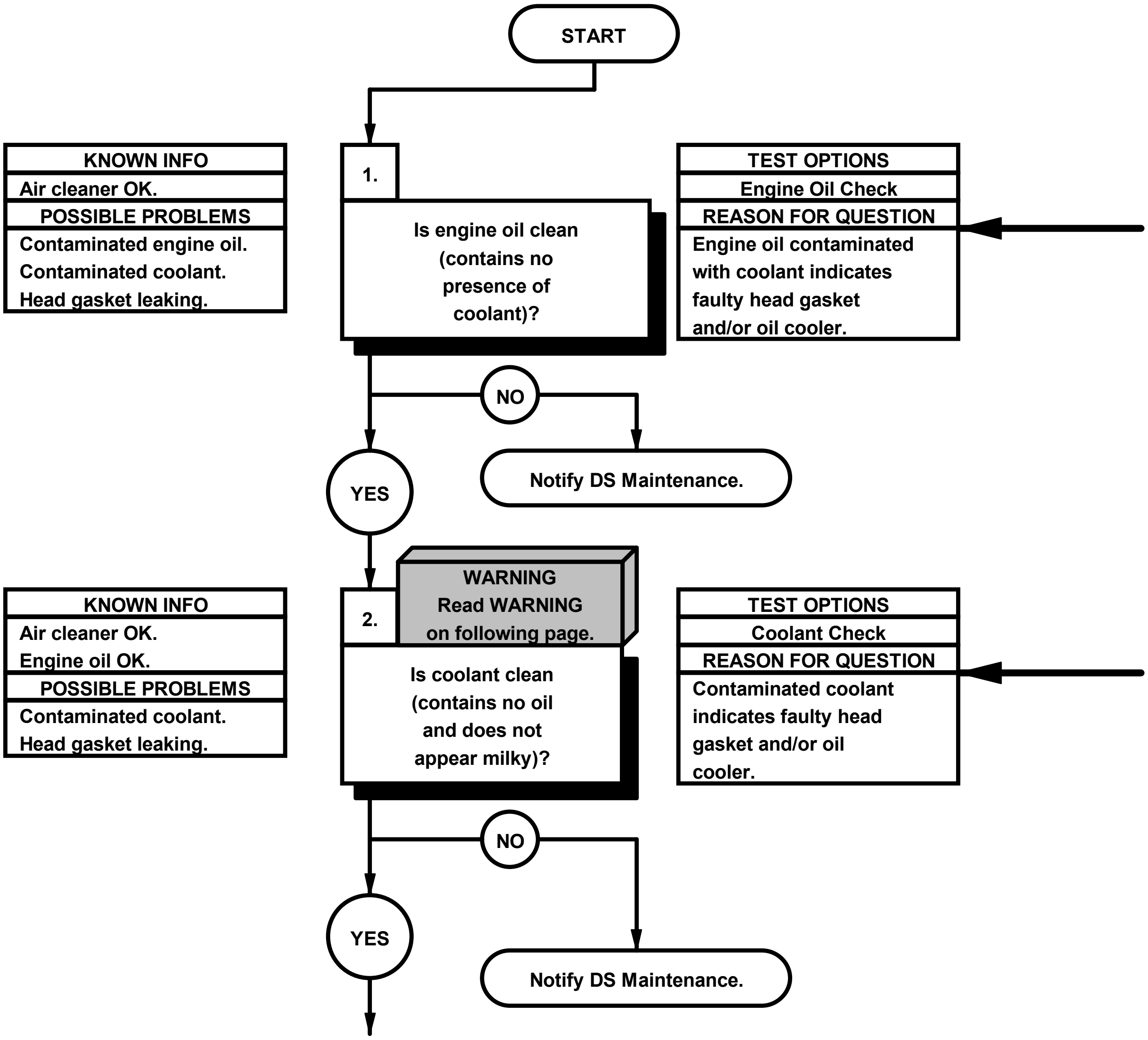


a11. WHITE EXHAUST SMOKE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
Container (Capacity 40 qt (38L))
Goggles, Industrial (Item 15, Appendix C)



START

KNOWN INFO
Air cleaner OK.

POSSIBLE PROBLEMS
Contaminated engine oil.
Contaminated coolant.
Head gasket leaking.

1. Is engine oil clean (contains no presence of coolant)?

TEST OPTIONS
Engine Oil Check

REASON FOR QUESTION
Engine oil contaminated with coolant indicates faulty head gasket and/or oil cooler.

NO: Notify DS Maintenance.

YES

KNOWN INFO
Air cleaner OK.
Engine oil OK.

POSSIBLE PROBLEMS
Contaminated coolant.
Head gasket leaking.

WARNING
Read WARNING on following page.

2. Is coolant clean (contains no oil and does not appear milky)?

TEST OPTIONS
Coolant Check

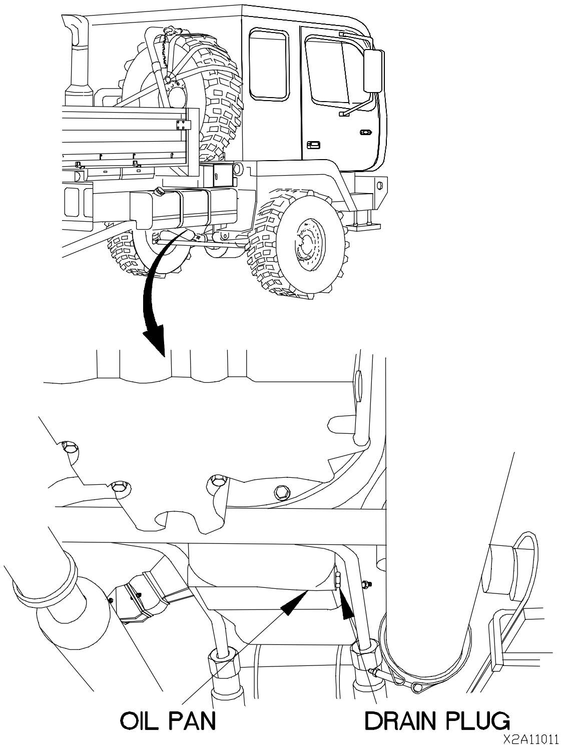
REASON FOR QUESTION
Contaminated coolant indicates faulty head gasket and/or oil cooler.

NO: Notify DS Maintenance.

YES

ENGINE OIL CHECK

(1) Position container under engine oil pan.
(2) Remove drain plug from engine oil pan and drain engine oil.
(3) Observe condition of engine oil.
(4) If engine oil is not clean, notify DS Maintenance.
(5) Install drain plug in engine oil pan.
(6) Refill engine with oil (Appendix H).

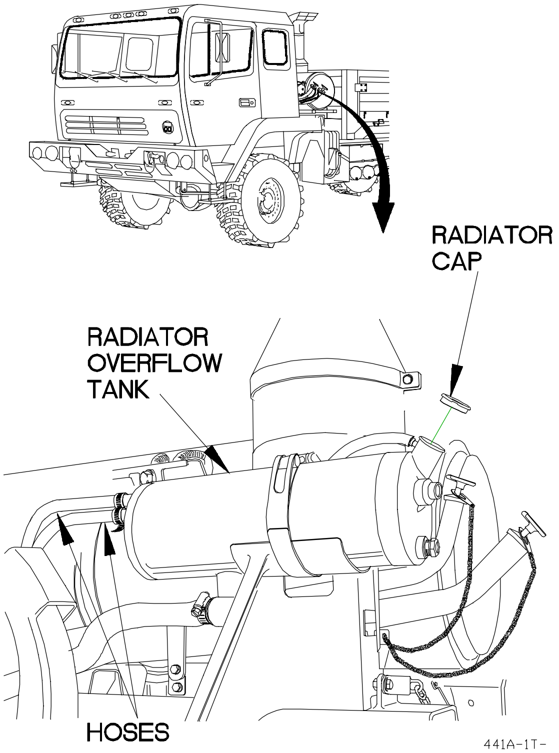


COOLANT CHECK

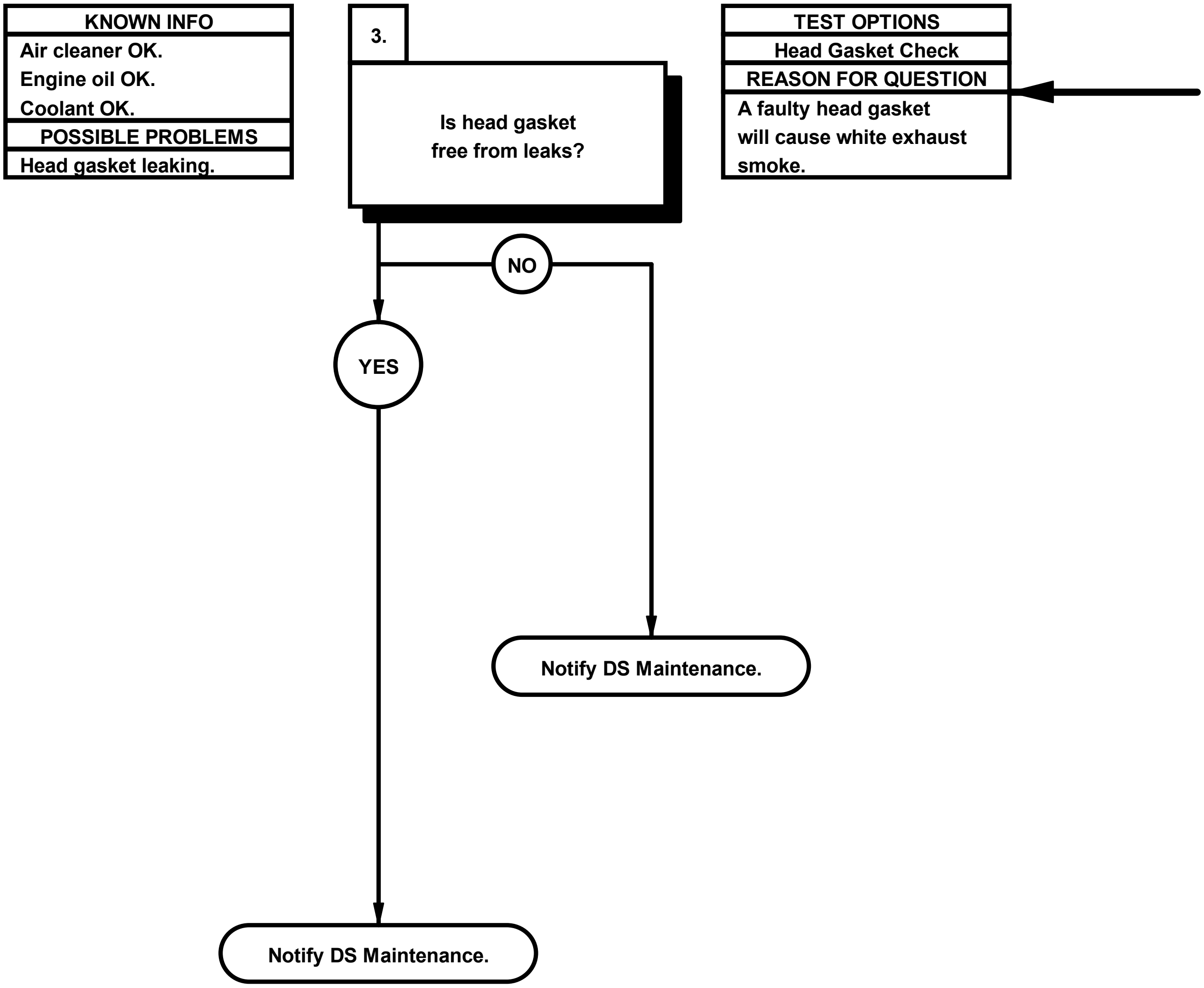
WARNING

Do not remove radiator cap when engine is warm. Coolant may be very hot and under pressure. Failure to comply may result in injury to personnel.

(1) Remove radiator cap from radiator overflow tank.
(2) Observe condition of coolant inside radiator overflow tank.
(3) If coolant is not clean, notify DS Maintenance.
(4) Install radiator cap on radiator overflow tank.



a11. WHITE EXHAUST SMOKE (CONT)



KNOWN INFO

Air cleaner OK.
Engine oil OK.
Coolant OK.

POSSIBLE PROBLEMS

Head gasket leaking.

TEST OPTIONS

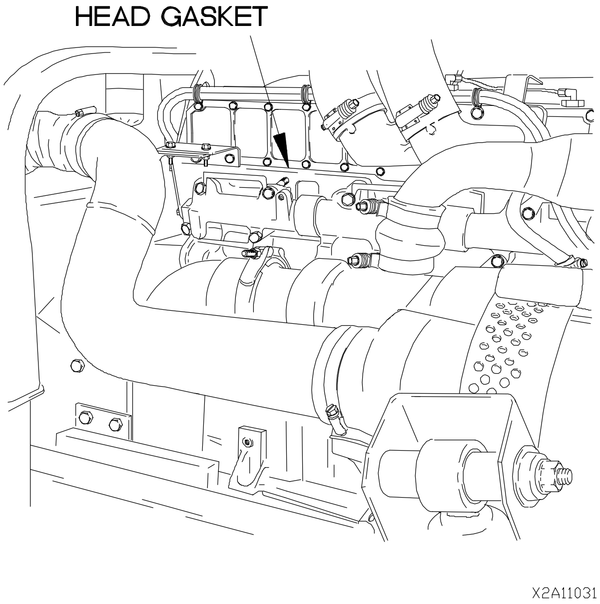
Head Gasket Check

REASON FOR QUESTION

A faulty head gasket will cause white exhaust smoke.

HEAD GASKET CHECK

(1) Start engine (TM 9-2320-366-10-1).
(2) Raise cab (TM 9-2320-366-10-1).
(3) Check head gasket for leaks.
(4) If head gasket is leaking, notify DS Maintenance.
(5) If head gasket is not leaking and white exhaust smoke still exists, notify DS Maintenance.
(6) Lower cab (TM 9-2320-366-10-1).
(7) Shut down engine (TM 9-2320-366-10-1).



a12. LOW ENGINE POWER

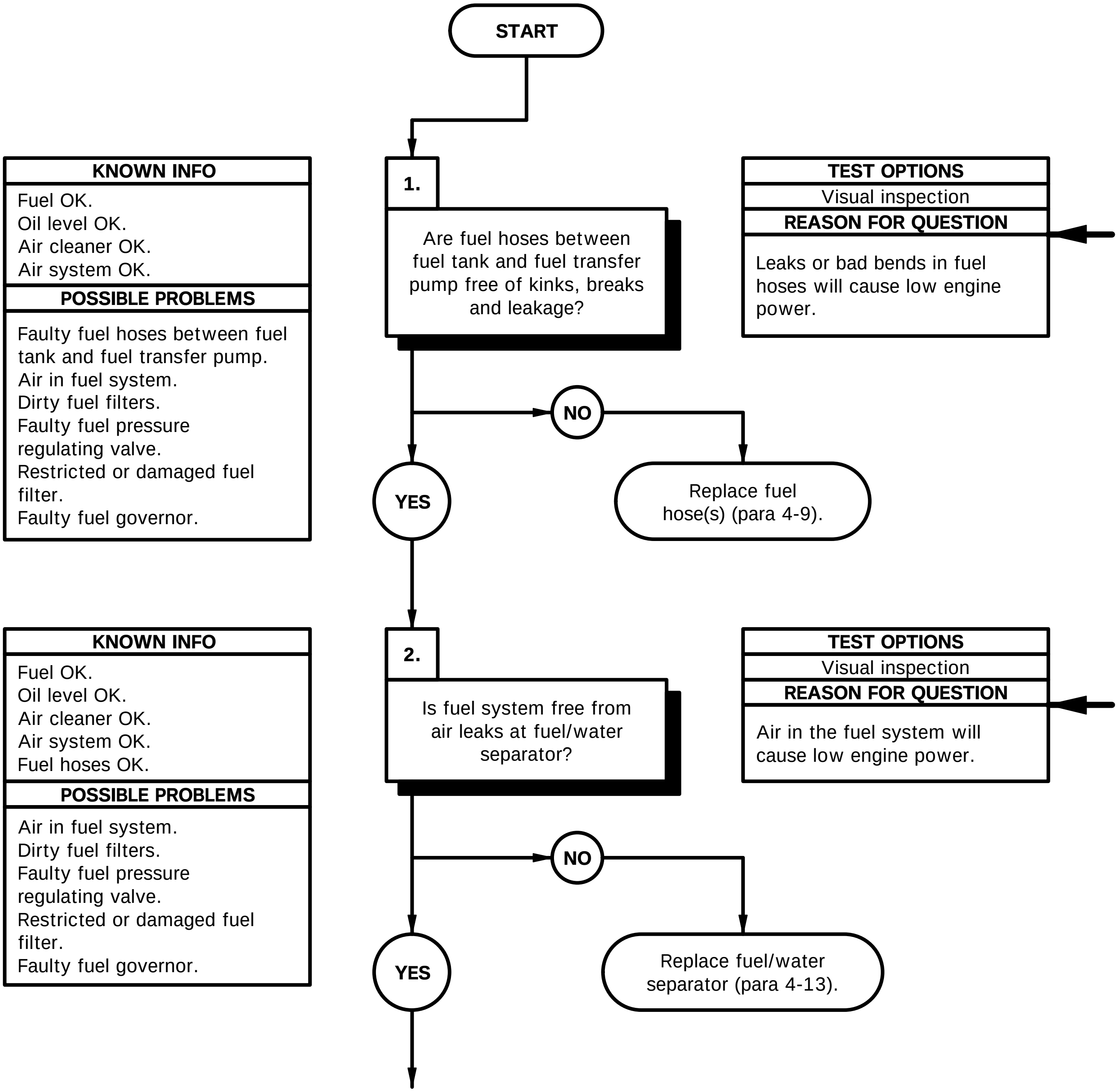
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)

Materials/Parts
Packing, Preformed (2) (Item 203, Appendix G)

References
TM 9-4910-571-12&P



KNOWN INFO
Fuel OK.
Oil level OK.
Air cleaner OK.
Air system OK.

POSSIBLE PROBLEMS
Faulty fuel hoses between fuel tank and fuel transfer pump.
Air in fuel system.
Dirty fuel filters.
Faulty fuel pressure regulating valve.
Restricted or damaged fuel filter.
Faulty fuel governor.

1. Are fuel hoses between fuel tank and fuel transfer pump free of kinks, breaks and leakage?

TEST OPTIONS
Visual inspection

REASON FOR QUESTION
Leaks or bad bends in fuel hoses will cause low engine power.

NO: Replace fuel hose(s) (para 4-9).

KNOWN INFO
Fuel OK.
Oil level OK.
Air cleaner OK.
Air system OK.
Fuel hoses OK.

POSSIBLE PROBLEMS
Air in fuel system.
Dirty fuel filters.
Faulty fuel pressure regulating valve.
Restricted or damaged fuel filter.
Faulty fuel governor.

2. Is fuel system free from air leaks at fuel/water separator?

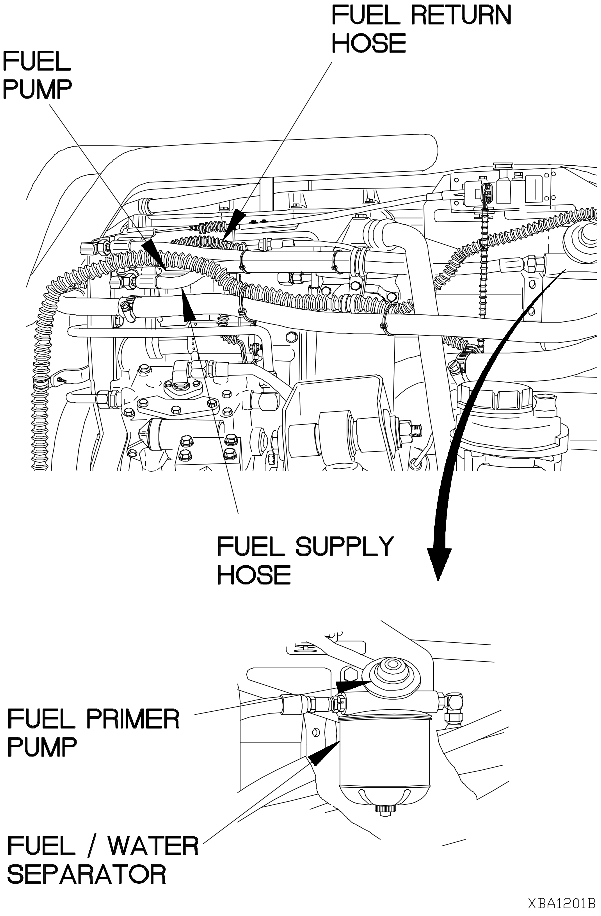
TEST OPTIONS
Visual inspection

REASON FOR QUESTION
Air in the fuel system will cause low engine power.

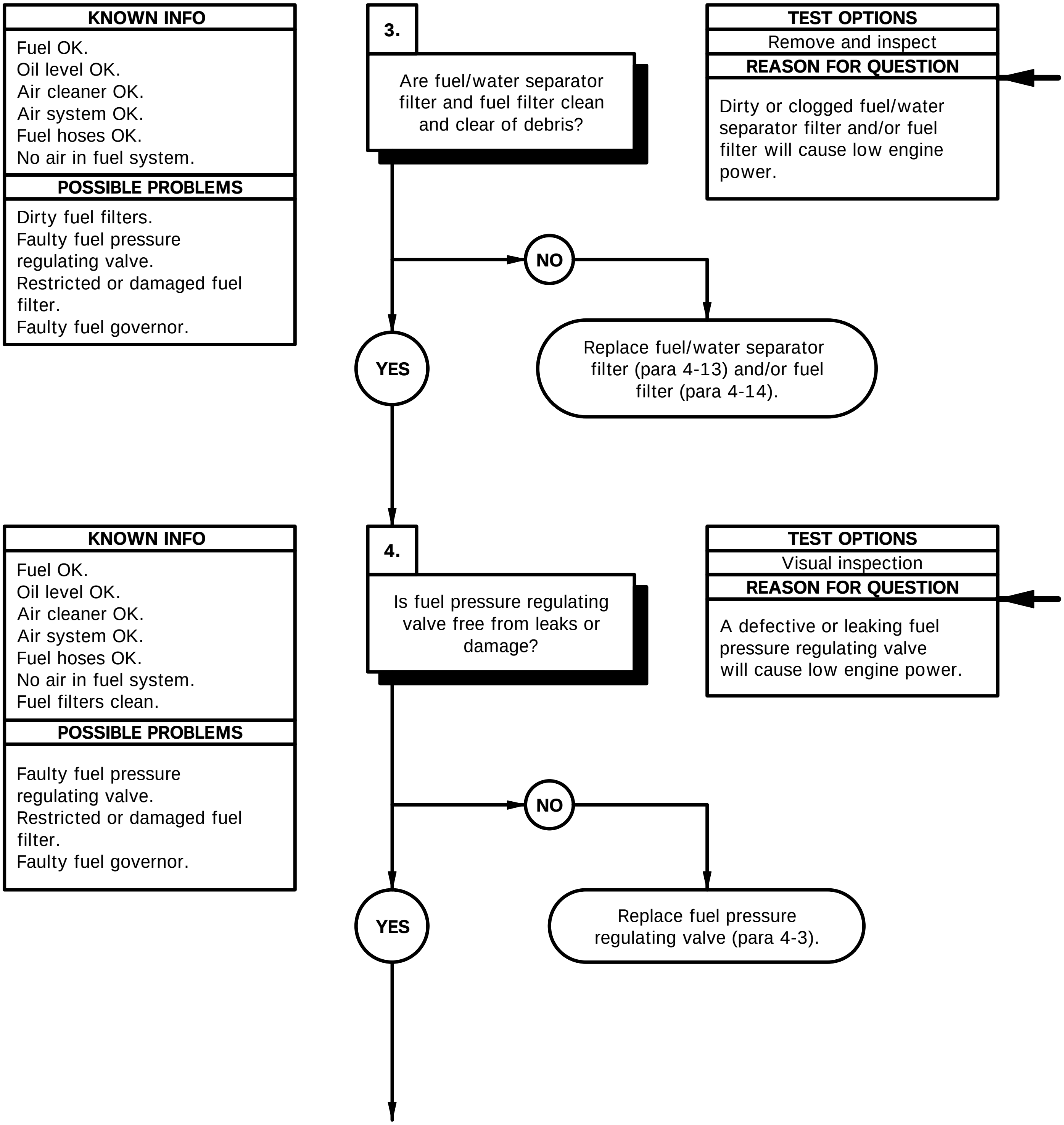
NO: Replace fuel/water separator (para 4-13).

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check fuel tank and fuel transfer pump hoses for kinks, looseness, and leakage.
(3) If fuel hoses are not free from kinks or leaks, replace fuel hose(s) (para 4-9).

(1) Push in fuel primer pump on fuel/water separator.
(2) Pump fuel primer pump until resistance is felt to purge air from fuel system.
(3) If no resistance is felt, replace fuel/water separator (para 4-13).



a12. LOW ENGINE POWER (CONT)



KNOWN INFO

Fuel OK.
Oil level OK.
Air cleaner OK.
Air system OK.
Fuel hoses OK.
No air in fuel system.

POSSIBLE PROBLEMS

Dirty fuel filters.
Faulty fuel pressure regulating valve.
Restricted or damaged fuel filter.
Faulty fuel governor.

3. Are fuel/water separator filter and fuel filter clean and clear of debris?

TEST OPTIONS

Remove and inspect

REASON FOR QUESTION

Dirty or clogged fuel/water separator filter and/or fuel filter will cause low engine power.

NO — Replace fuel/water separator filter (para 4-13) and/or fuel filter (para 4-14).

YES

KNOWN INFO

Fuel OK.
Oil level OK.
Air cleaner OK.
Air system OK.
Fuel hoses OK.
No air in fuel system.
Fuel filters clean.

POSSIBLE PROBLEMS

Faulty fuel pressure regulating valve.
Restricted or damaged fuel filter.
Faulty fuel governor.

4. Is fuel pressure regulating valve free from leaks or damage?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

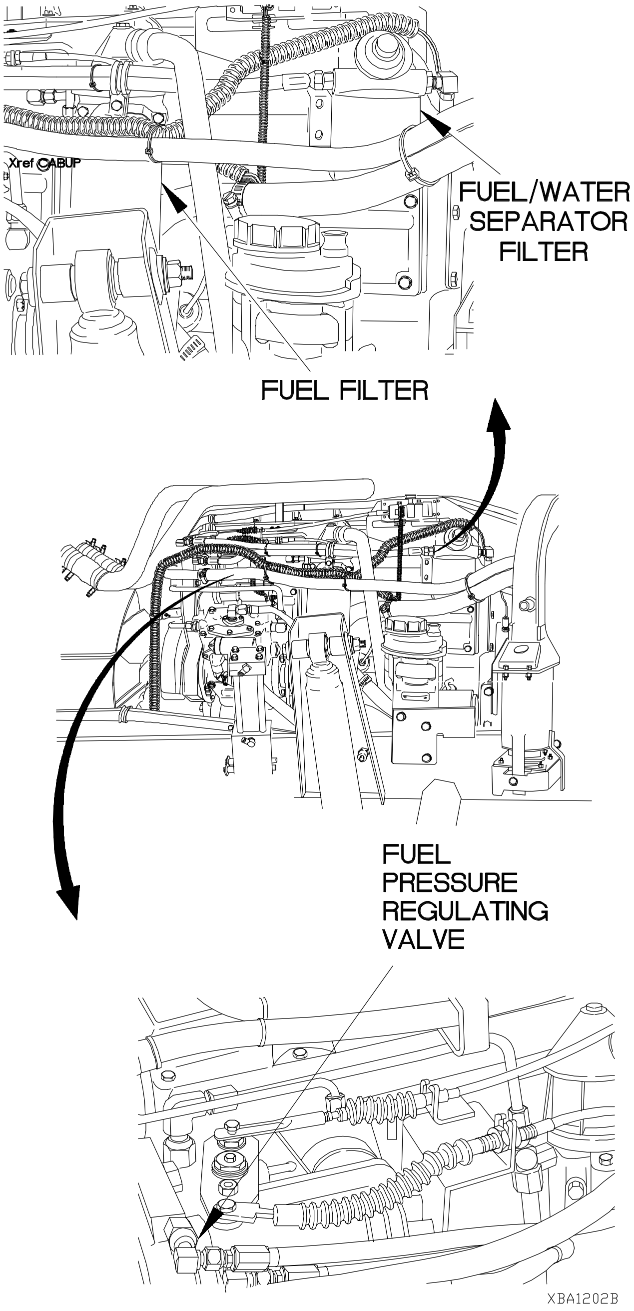
A defective or leaking fuel pressure regulating valve will cause low engine power.

NO — Replace fuel pressure regulating valve (para 4-3).

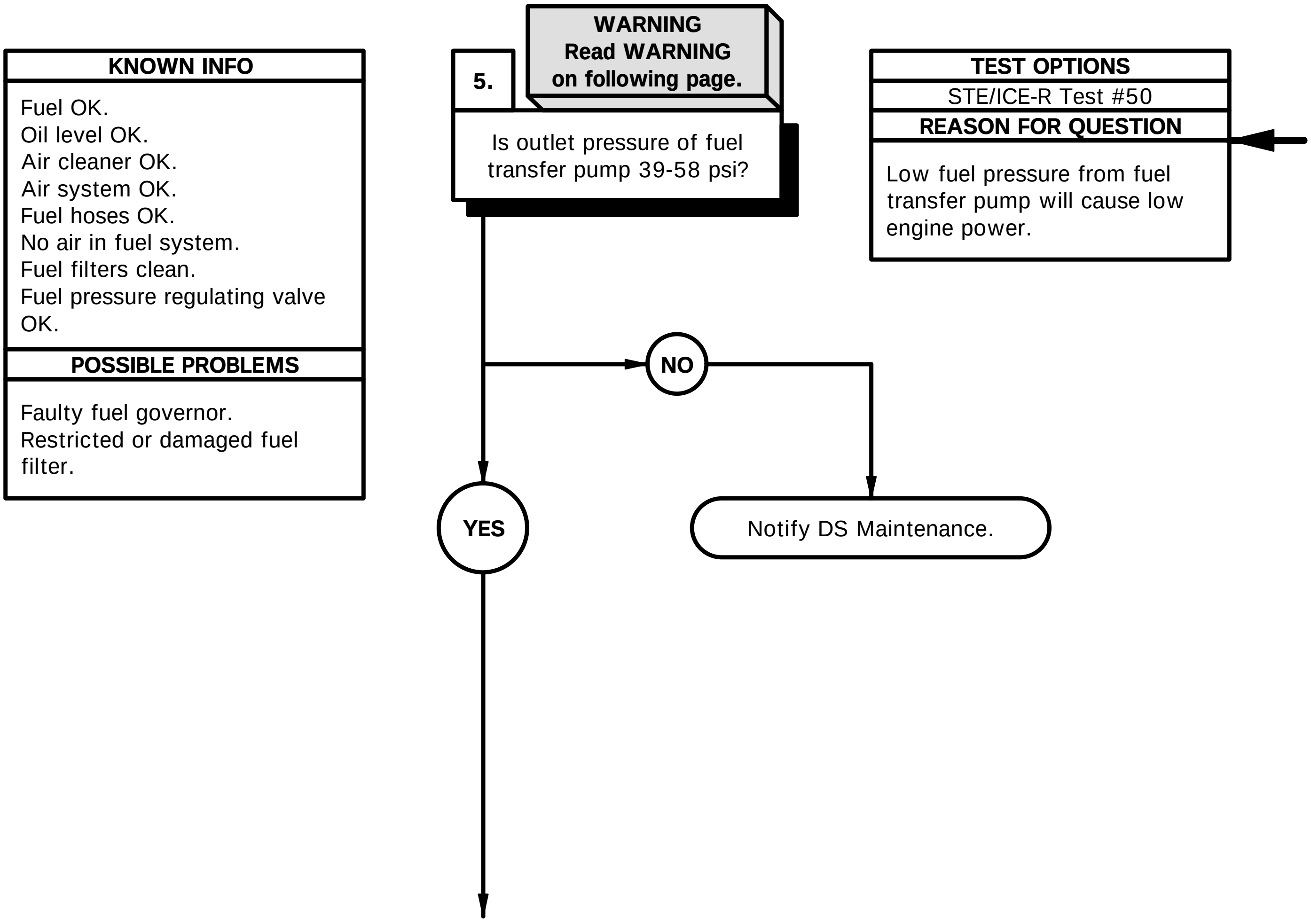
YES

(1) Check fuel/water separator filter and fuel filter for dirt and contamination.
(2) Position drain pan under filter.
(3) Remove filter element from base.
(4) Inspect for clogs and debris.
(5) If fuel water separator filter and/or fuel filter is clogged, replace fuel/water separator filter (para 4-13) and/or fuel filter (para 4-14).

(1) Check fuel pressure regulating valve for leaks or damage.
(2) If fuel pressure regulating valve is damaged, replace fuel pressure regulating valve (para 4-3).



a12. LOW ENGINE POWER (CONT)



KNOWN INFO

Fuel OK.
Oil level OK.
Air cleaner OK.
Air system OK.
Fuel hoses OK.
No air in fuel system.
Fuel filters clean.
Fuel pressure regulating valve OK.

POSSIBLE PROBLEMS

Faulty fuel governor.
Restricted or damaged fuel filter.

WARNING
Read WARNING on following page.

5. Is outlet pressure of fuel transfer pump 39-58 psi?

TEST OPTIONS

STE/ICE-R Test #50

REASON FOR QUESTION

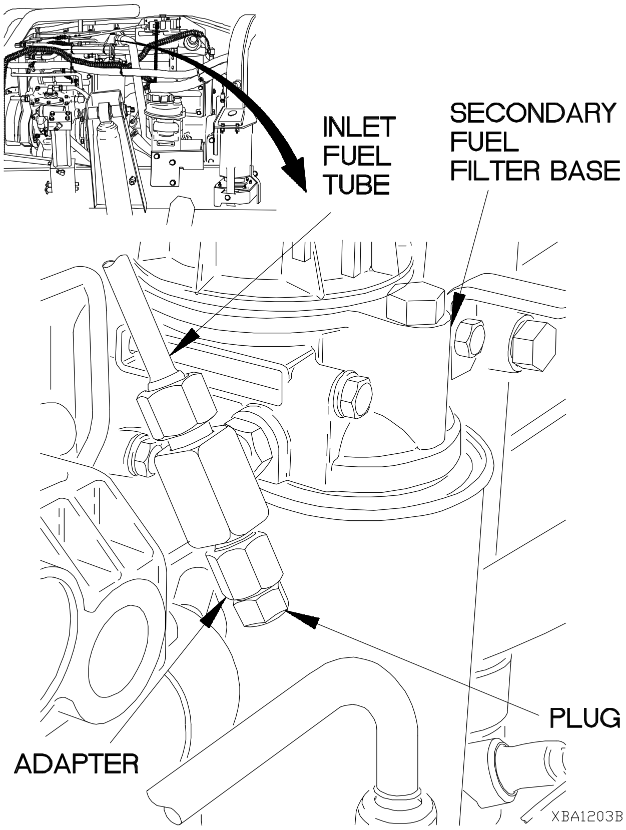
Low fuel pressure from fuel transfer pump will cause low engine power.

Notify DS Maintenance.

WARNING

Diesel fuel is flammable. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

STE/ICE-R TEST #50
(1) Remove plug from adapter fitting on inlet side of fuel filter base. (2) Prepare STE/ICE-R Test #50 (TM 9-4910-571-12&P) to adapter fitting. (3) Start engine (TM 9-2320-366-10-1). (4) Perform STE/ICE-R Test #50 (TM 9-4910-571-12&P). (5) Raise idle speed to 2000 rpm for 10 seconds. (6) Pressure should read between 39 psi and 58 psi. (7) Record test results. (8) Shut down engine (TM 9-2320-366-10-1). (9) If pressure is below 39 psi, notify DS Maintenance.



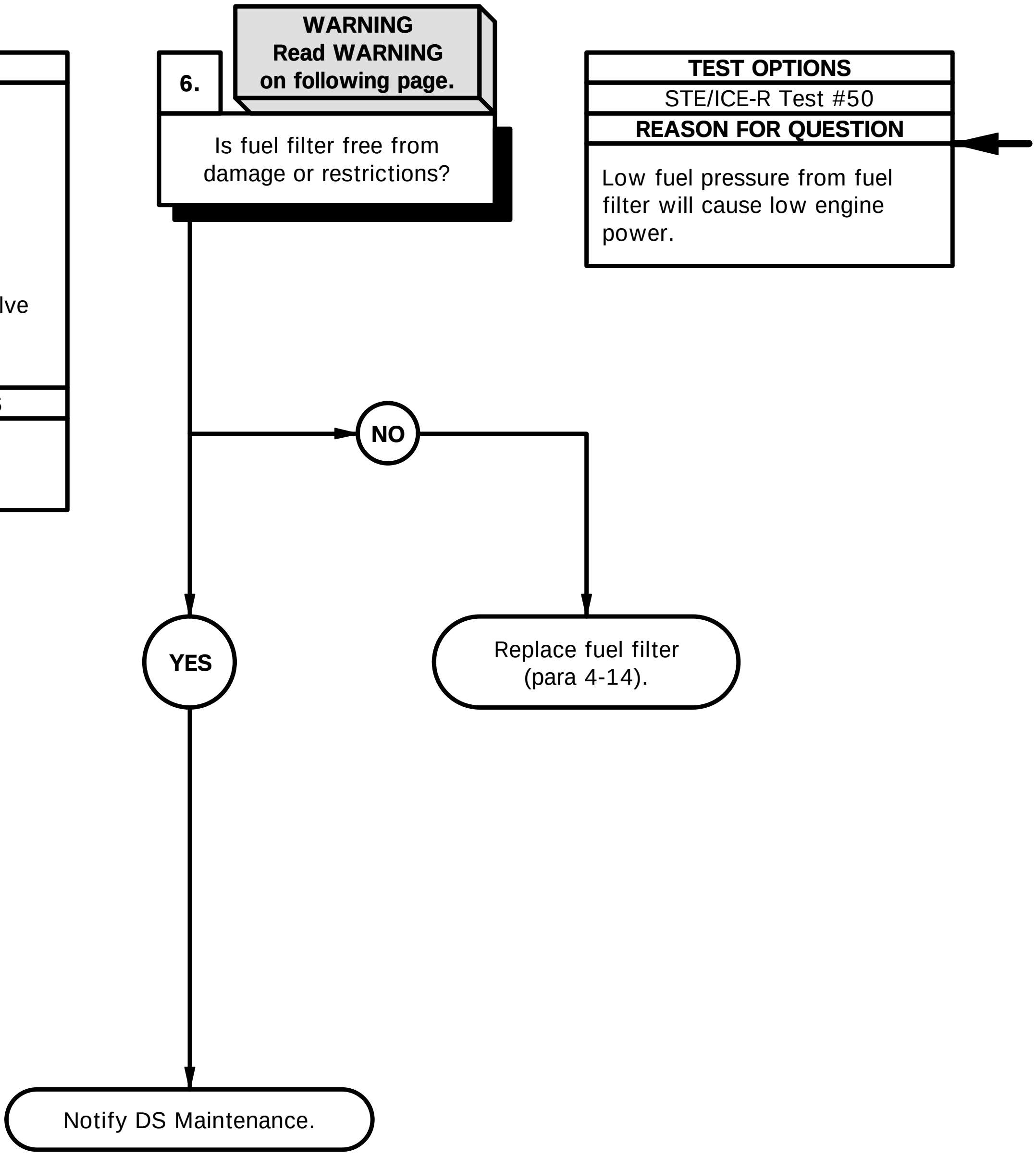
a12. LOW ENGINE POWER (CONT)

KNOWN INFO

Fuel OK.
Oil level OK.
Air cleaner OK.
Air system OK.
Fuel hoses OK.
No air in fuel system.
Fuel filters OK.
Fuel pressure regulating valve OK.
Fuel governor OK.

POSSIBLE PROBLEMS

Restricted or damaged fuel filter.



WARNING
Read WARNING on following page.

Is fuel filter free from damage or restrictions?

TEST OPTIONS

STE/ICE-R Test #50

REASON FOR QUESTION

Low fuel pressure from fuel filter will cause low engine power.

Replace fuel filter (para 4-14).

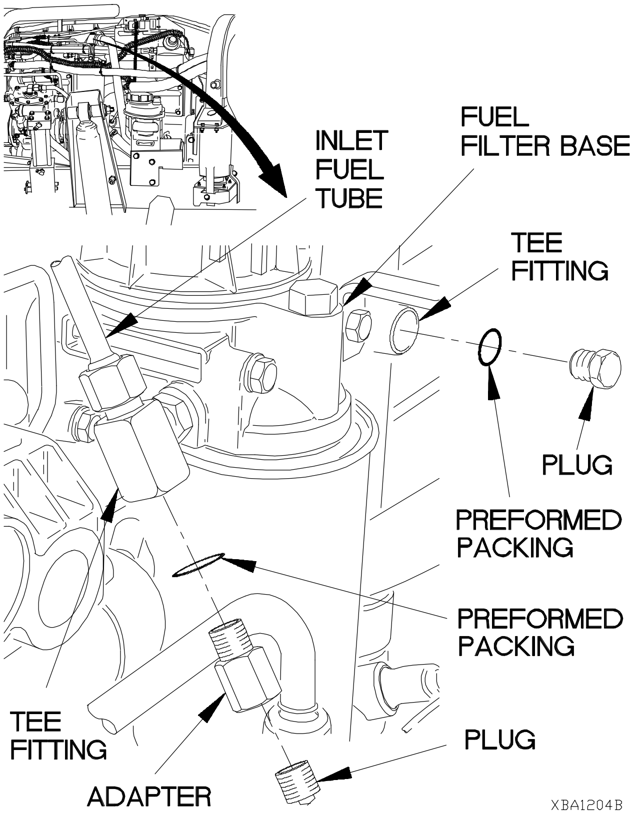
Notify DS Maintenance.

WARNING

Diesel fuel is flammable. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

STE/ICE-R TEST #50

(1) Remove plug from tee fitting on outlet side of fuel filter base.
(2) Remove adapter fitting from tee fitting on inlet side of fuel filter base.
(3) Install plug in tee fitting on inlet side of fuel filter base.
(4) Install adapter fitting in tee fitting on outlet side of fuel filter base.
(5) Prepare STE/ICE-R Test #50 (TM 9-4910-571-12&P) to adapter fitting.
(6) Start engine (TM 9-2320-366-10-1).
(7) Perform STE/ICE-R Test #50 (TM 9-4910-571-12&P).
(8) Raise idle speed to 2000 rpm for 10 seconds.
(9) Pressure should read between 39 psi and 58 psi.
(10) Record test results.
(11) Shut down engine (TM 9-2320-366-10-1).
(12) If test results indicate more than 10 psi pressure difference from results of step 5 of this fault, replace fuel filter (para 4-14).
(13) Disconnect STE/ICE-R from adapter fitting.
(14) Remove adapter fitting and preformed packing from tee fitting. Discard preformed packing.
(15) Remove plug and preformed packing from tee fitting on inlet side of fuel filter base. Discard preformed packing.
(16) Install preformed packing, adapter fitting, and plug in tee fitting on inlet side of fuel filter base.
(17) Install preformed packing and plug in tee fitting on outlet side of fuel filter base.
(18) Lower cab (TM 9-2320-366-10-1).



2-13. FUEL SYSTEM TROUBLESHOOTING

This paragraph covers Fuel System Troubleshooting. The Fuel System Fault Index, Table 2-4, lists faults for the fuel system of the vehicle.

Table 2-4. Fuel System Fault Index

Fault No.	Description	Page
b1.	Engine Cranks But Does Not Start or Engine Stalls After Starting	2-110
b2.	Ether Starting Aid Does Not Operate	2-116
b3.	Fuel Consumption Too High	2-120
b4.	Accelerator Pedal Sticks	2-122

b1. ENGINE CRANKS BUT DOES NOT START OR ENGINE STALLS AFTER STARTING

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).
Cab Raised (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
Pan, Drain (Item 24, Appendix C)

Materials/Parts
Ties, Cable, Plastic (Item 69, Appendix D)
Packing, Preformed (Item 178, Appendix G)
Packing, Preformed (2) (Item 203, Appendix G)

NOTE

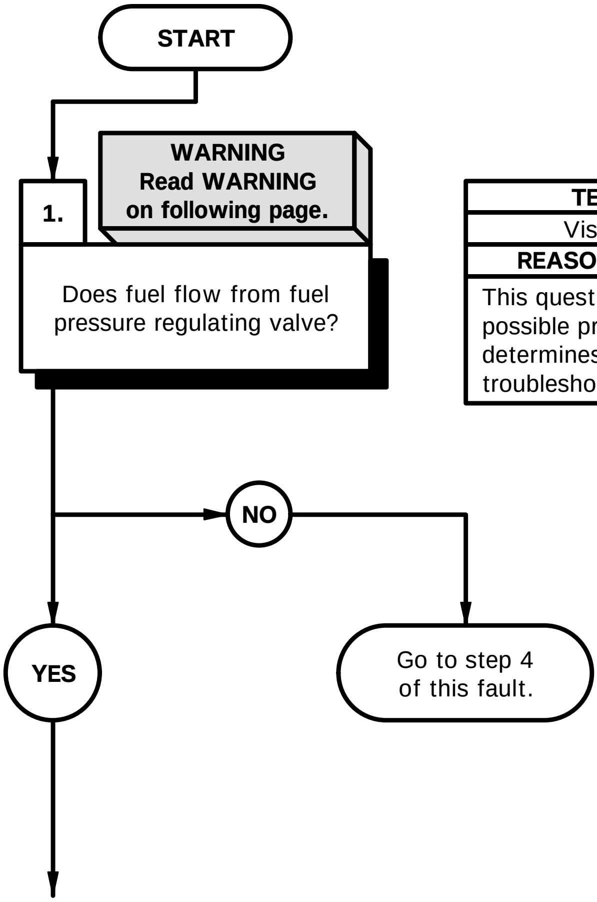
If engine cranks but does not start perform Engine Troubleshooting (a2. Engine Cranks But Does Not Start) prior to beginning this task.

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.

POSSIBLE PROBLEMS

Fuel contaminated.
Faulty fuel return hose.
Faulty fuel transfer hose.
Faulty fuel transfer pump.
Faulty fuel tubes.
Faulty fuel filter.
Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty fuel supply hose.
Faulty fuel tank.
Faulty fuel/water separator.
Faulty cylinder head.



TEST OPTIONS

Visual inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

WARNING

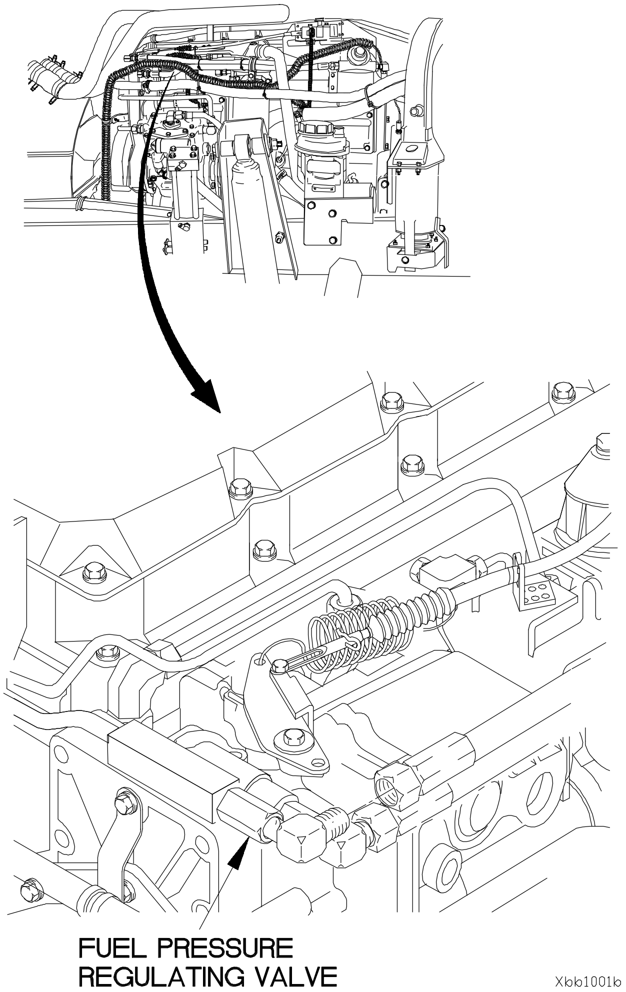
Post signs that read "NO SMOKING WITHIN 50 FEET" when working with open fuel, fuel lines, or open fuel tanks. failure to comply may result in injury to personnel or damage to equipment.

Diesel fuel is flammable. if fuel is spilled, clean up immediately. Failure to comply may result in serious injury or death to personnel.

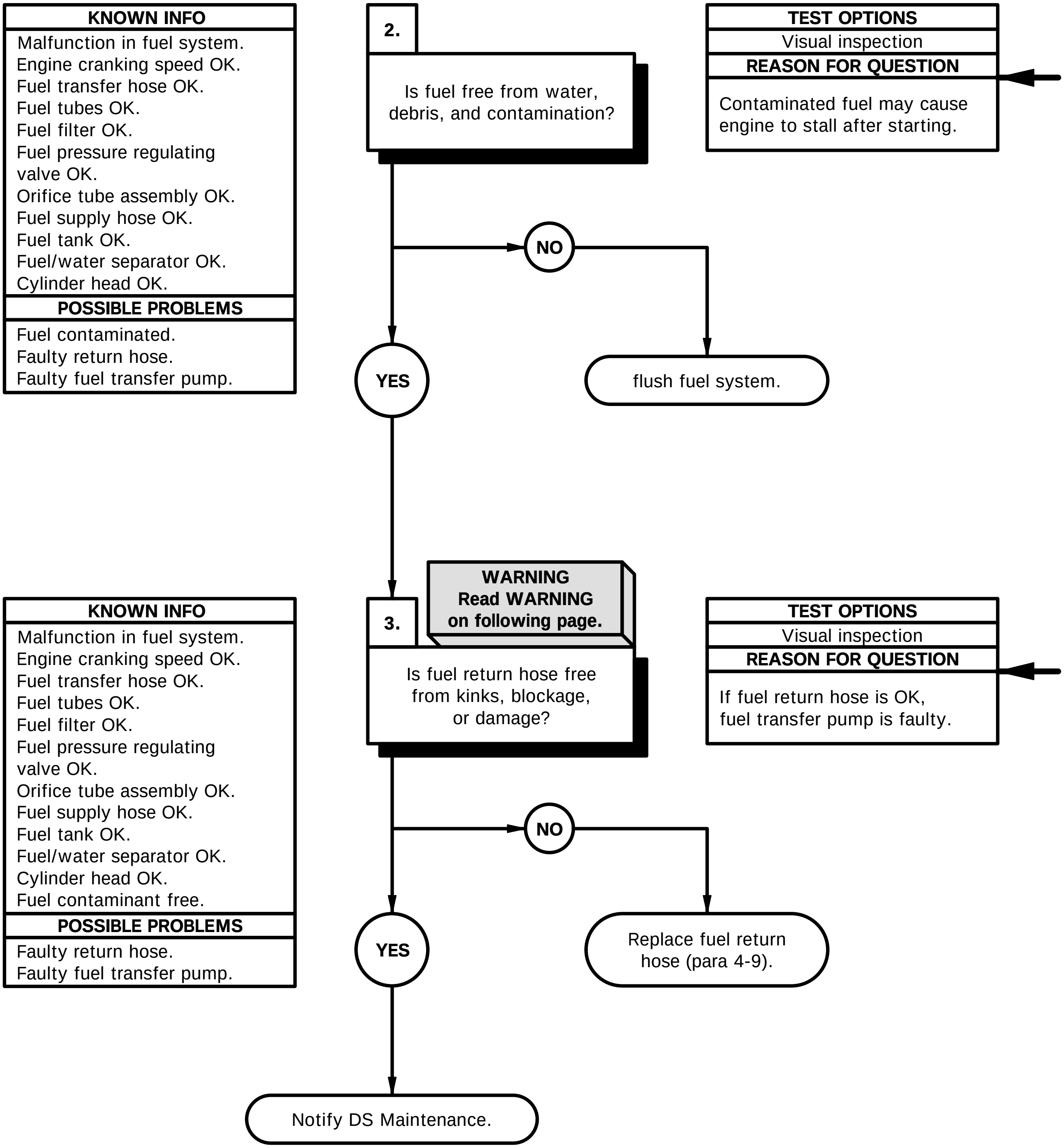
NOTE

Remove plastic cable ties as required.

(1) Perform Fuel System Bleeding (para 4-11).
(2) If fuel flow is not present from fuel pressure regulating valve, go to step 4 of this fault.
(3) If fuel flow is present, collect fuel sample.



b1. ENGINE CRANKS BUT DOES NOT START OR ENGINE STALLS AFTER STARTING (CONT)



KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel transfer hose OK.
Fuel tubes OK.
Fuel filter OK.
Fuel pressure regulating valve OK.
Orifice tube assembly OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Cylinder head OK.

POSSIBLE PROBLEMS

Fuel contaminated.
Faulty return hose.
Faulty fuel transfer pump.

2. Is fuel free from water, debris, and contamination?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

Contaminated fuel may cause engine to stall after starting.

NO — flush fuel system.

YES

WARNING
Read WARNING on following page.

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel transfer hose OK.
Fuel tubes OK.
Fuel filter OK.
Fuel pressure regulating valve OK.
Orifice tube assembly OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Cylinder head OK.
Fuel contaminant free.

POSSIBLE PROBLEMS

Faulty return hose.
Faulty fuel transfer pump.

3. Is fuel return hose free from kinks, blockage, or damage?

TEST OPTIONS

Visual inspection

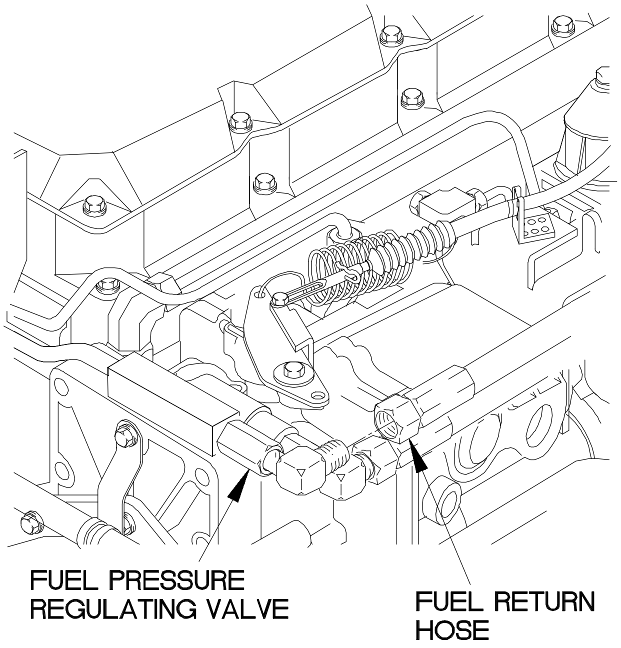
REASON FOR QUESTION

If fuel return hose is OK, fuel transfer pump is faulty.

NO — Replace fuel return hose (para 4-9).

YES — Notify DS Maintenance.

(1) Check fuel sample from step 1 for water, debris, and contamination.
(2) If fuel is not free from contamination, flush fuel tank, fuel hoses, and replace fuel filters.

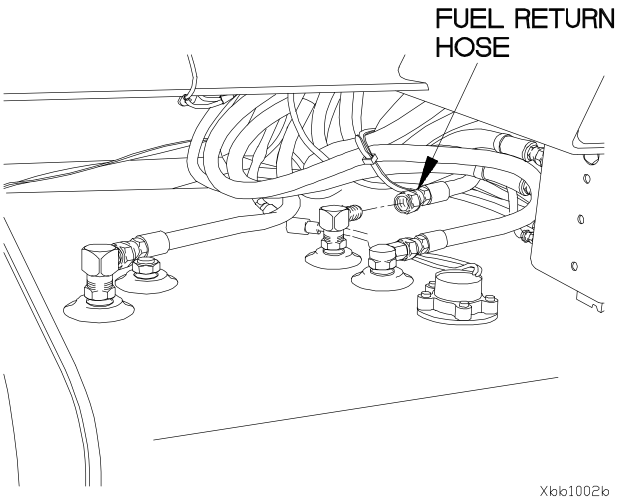


WARNING

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.

Diesel fuel is flammable. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

(1) Disconnect fuel return hose from fuel pressure regulating valve.
(2) Disconnect fuel return hose from fuel tank.
(3) Apply compressed air to one end of fuel return hose.
(4) If compressed air does not flow freely through fuel return hose, replace fuel return hose (para 4-9).
(5) If compressed air flows freely through fuel return hose, notify DS Maintenance.
(6) Connect fuel return hose to fuel pressure regulating valve.
(7) Connect fuel return hose to fuel tank.



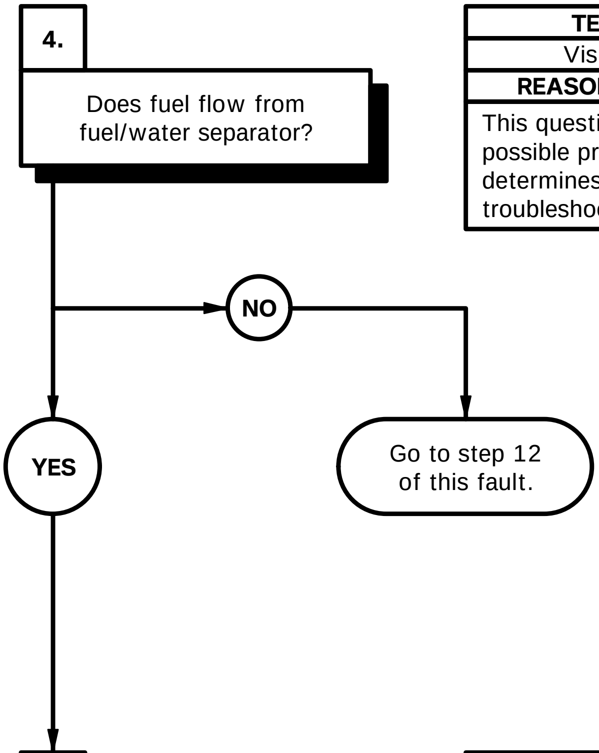
b1. ENGINE CRANKS BUT DOES NOT START OR ENGINE STALLS AFTER STARTING (CONT)

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.

POSSIBLE PROBLEMS

Faulty fuel transfer hose.
Faulty fuel transfer pump.
Faulty fuel tubes.
Faulty fuel filter.
Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty fuel supply hose.
Faulty fuel tank.
Faulty fuel/water separator.
Faulty cylinder head.



TEST OPTIONS

Visual inspection

REASON FOR QUESTION

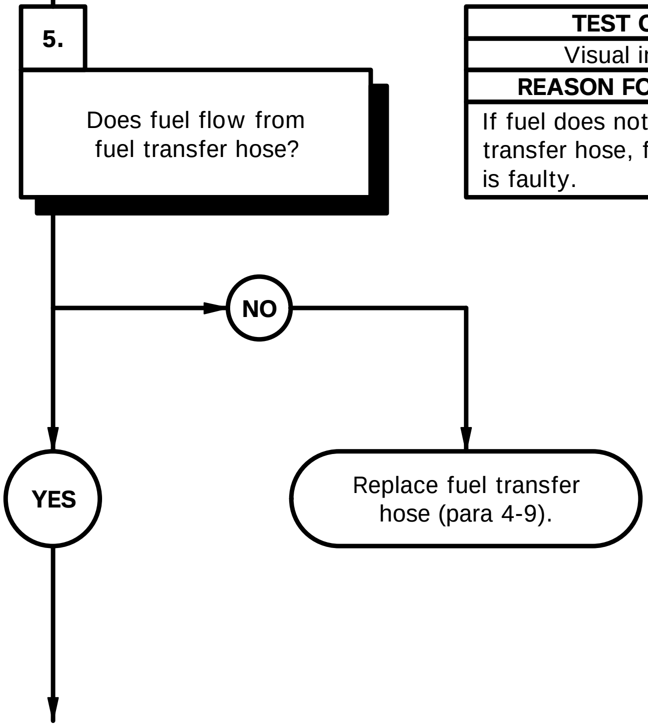
This question eliminates possible problems and determines where troubleshooting continues.

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.

POSSIBLE PROBLEMS

Faulty fuel transfer hose.
Faulty fuel transfer pump.
Faulty fuel tubes.
Faulty fuel filter.
Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty cylinder head.



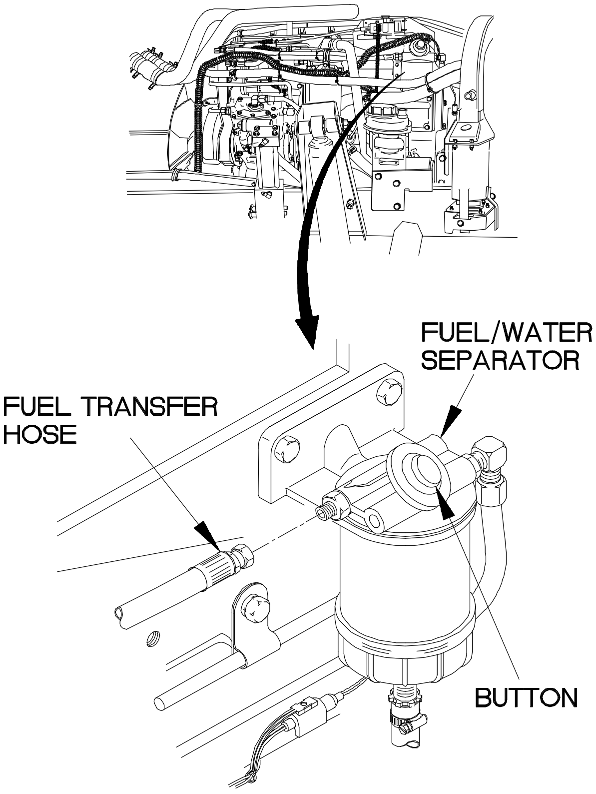
TEST OPTIONS

Visual inspection

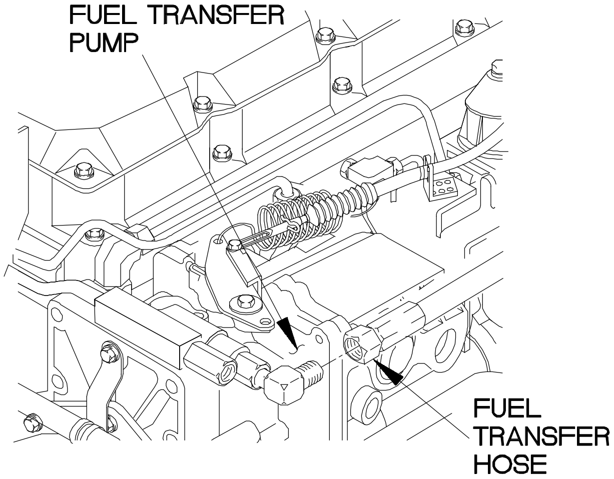
REASON FOR QUESTION

If fuel does not flow from fuel transfer hose, fuel transfer hose is faulty.

(1) Disconnect fuel transfer hose from fuel/water separator.
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow from fuel/water separator, go to step 12 of this fault.
(4) Connect fuel transfer hose to fuel/water separator.



(1) Disconnect fuel transfer hose from fuel transfer pump.
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow from fuel transfer hose, replace fuel transfer hose (para 4-9).
(4) Connect fuel transfer hose to fuel transfer pump.



FUEL RETURN HOSE AND FITTING REMOVED FOR CLARITY

Xbb1003b

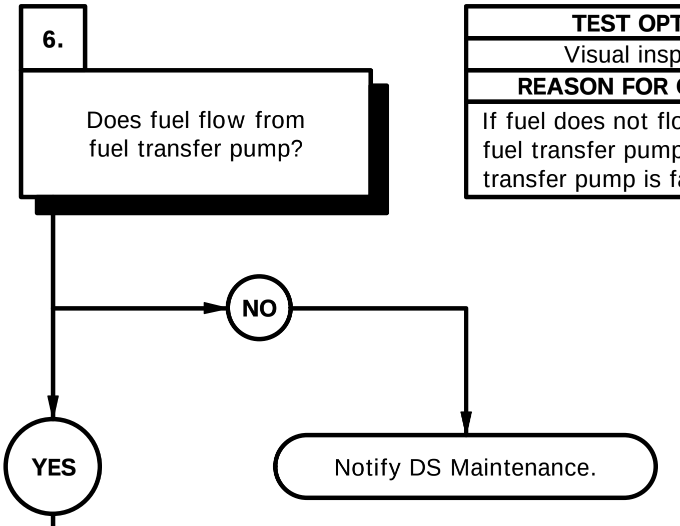
b1. ENGINE CRANKS BUT DOES NOT START OR ENGINE STALLS AFTER STARTING (CONT)

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Fuel transfer hose OK.

POSSIBLE PROBLEMS

Faulty fuel transfer pump.
Faulty fuel tubes.
Faulty fuel filter.
Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty cylinder head.



6. Does fuel flow from fuel transfer pump?

NO: Notify DS Maintenance.

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

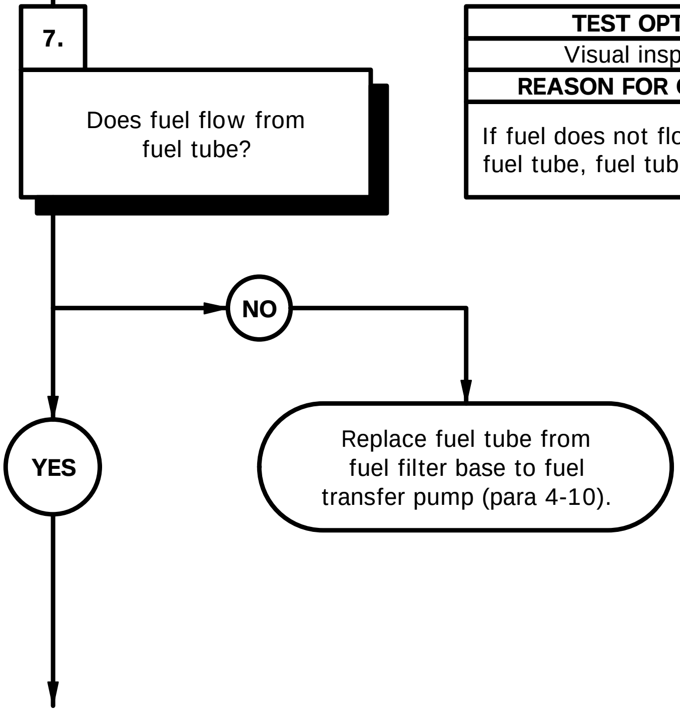
If fuel does not flow from fuel transfer pump, fuel transfer pump is faulty.

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Fuel transfer hose OK.
Fuel transfer pump OK.

POSSIBLE PROBLEMS

Faulty fuel tubes.
Faulty fuel filter.
Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty cylinder head.



7. Does fuel flow from fuel tube?

NO: Replace fuel tube from fuel filter base to fuel transfer pump (para 4-10).

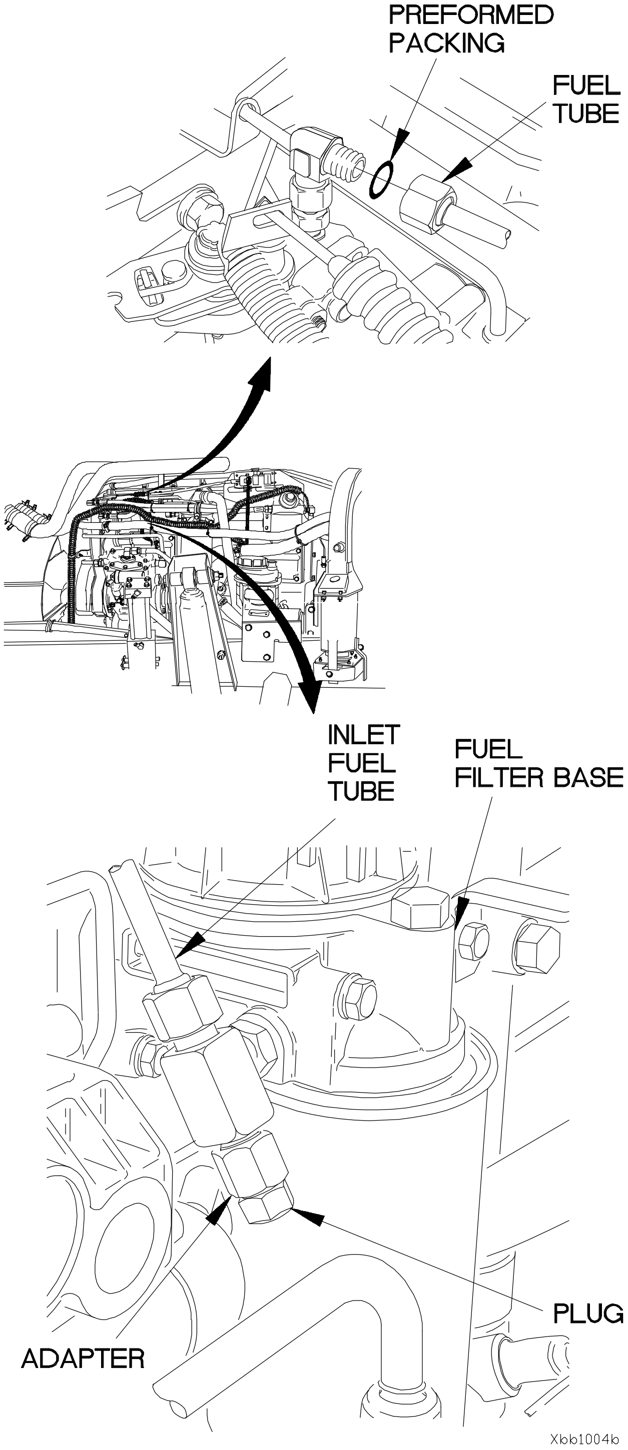
TEST OPTIONS

Visual inspection

REASON FOR QUESTION

If fuel does not flow from fuel tube, fuel tube is faulty.

(1) Disconnect fuel tube from fuel transfer pump. discard preformed packing.
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow from fuel transfer pump, notify DS Maintenance.
(4) Install preformed packing and fuel tube on fuel transfer pump.



(1) Remove plug from adapter fitting on inlet side of fuel filter base.
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow from fuel tube, replace fuel tube from fuel filter base to fuel transfer pump (para 4-10).
(4) Install plug in adapter fitting on inlet side of fuel filter base.

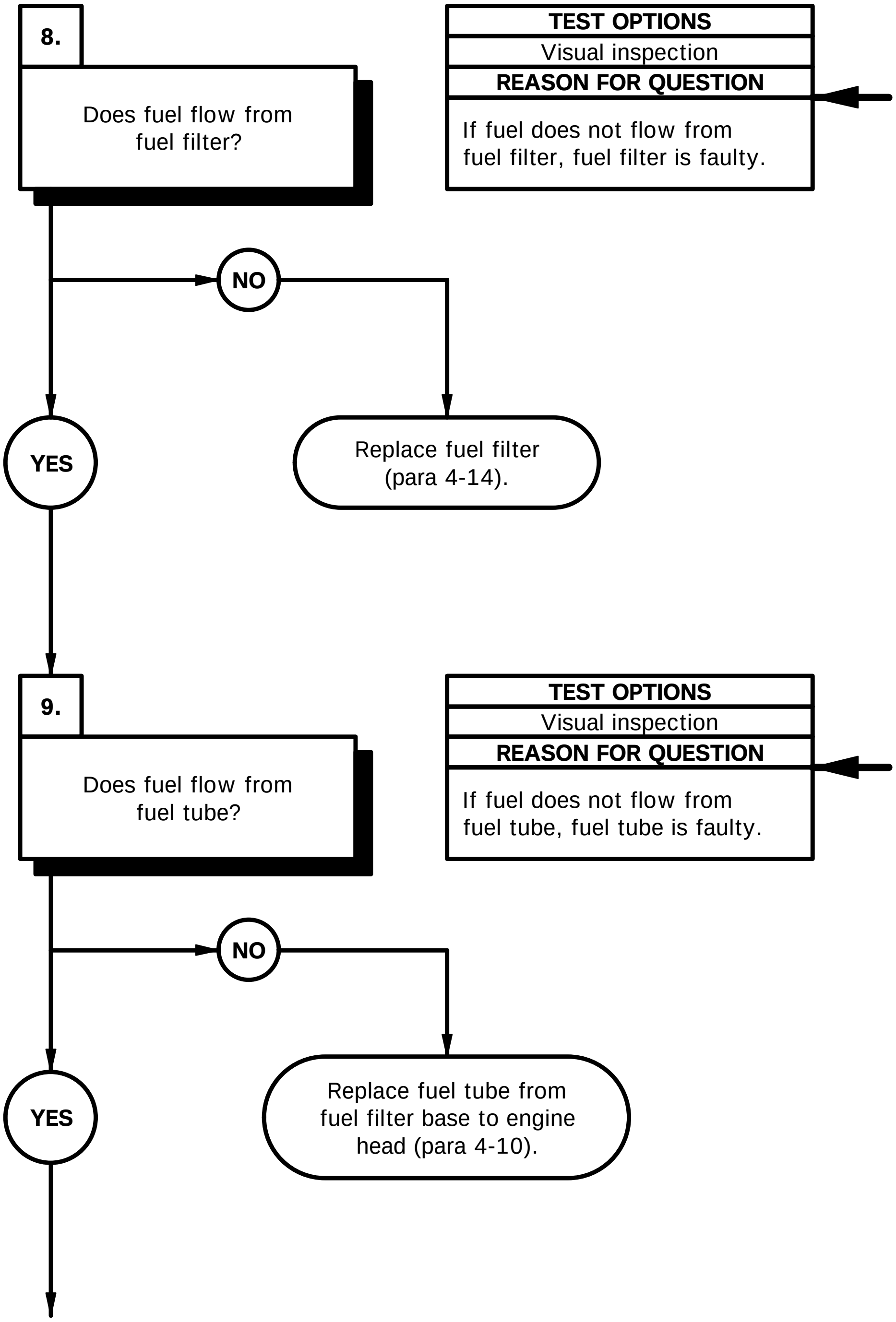
b1. ENGINE CRANKS BUT DOES NOT START OR ENGINE STALLS AFTER STARTING (CONT)

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Fuel transfer pump OK.
Fuel transfer hose OK.

POSSIBLE PROBLEMS

Faulty fuel filter.
Faulty fuel tube.
Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty cylinder head.



8.

Does fuel flow from fuel filter?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

If fuel does not flow from fuel filter, fuel filter is faulty.

Replace fuel filter (para 4-14).

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Fuel transfer hose OK.
Fuel transfer pump OK.
Fuel filter OK.

POSSIBLE PROBLEMS

Faulty fuel tube.
Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty cylinder head.

9.

Does fuel flow from fuel tube?

TEST OPTIONS

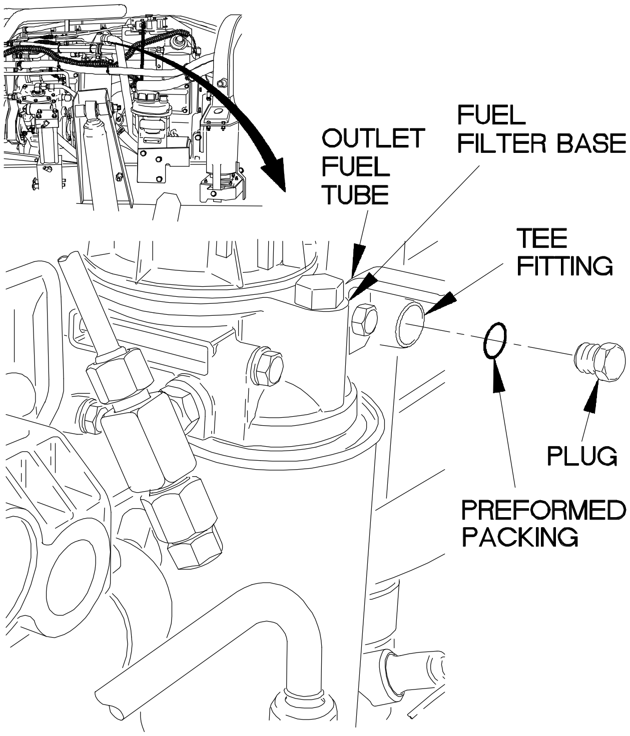
Visual inspection

REASON FOR QUESTION

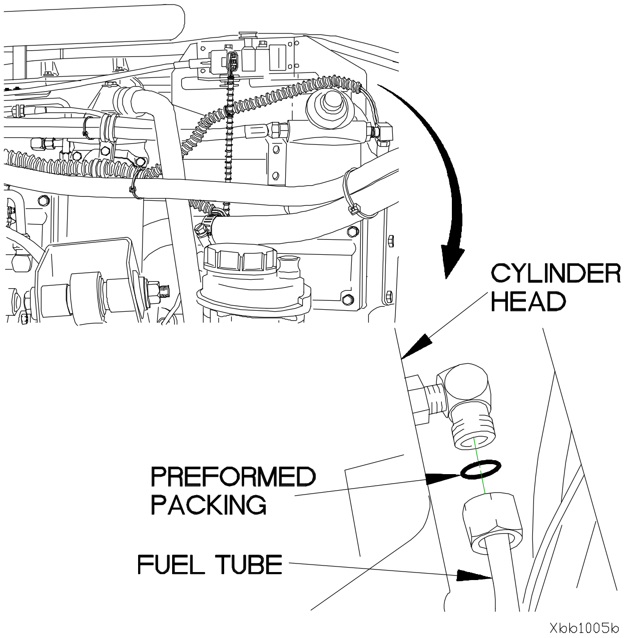
If fuel does not flow from fuel tube, fuel tube is faulty.

Replace fuel tube from fuel filter base to engine head (para 4-10).

(1) Remove plug and preformed packing from tee fitting on outlet side of fuel filter base. discard preformed packing.
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow from fuel filter, replace fuel filter (para 4-14).
(4) Install preformed packing and plug in tee fitting on outlet side of fuel filter base.



(1) Disconnect fuel tube from cylinder head. Discard preformed packing.
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow from fuel tube, replace fuel tube from fuel filter base to cylinder head (para 4-10).
(4) Install preformed packing and fuel tube on cylinder head.



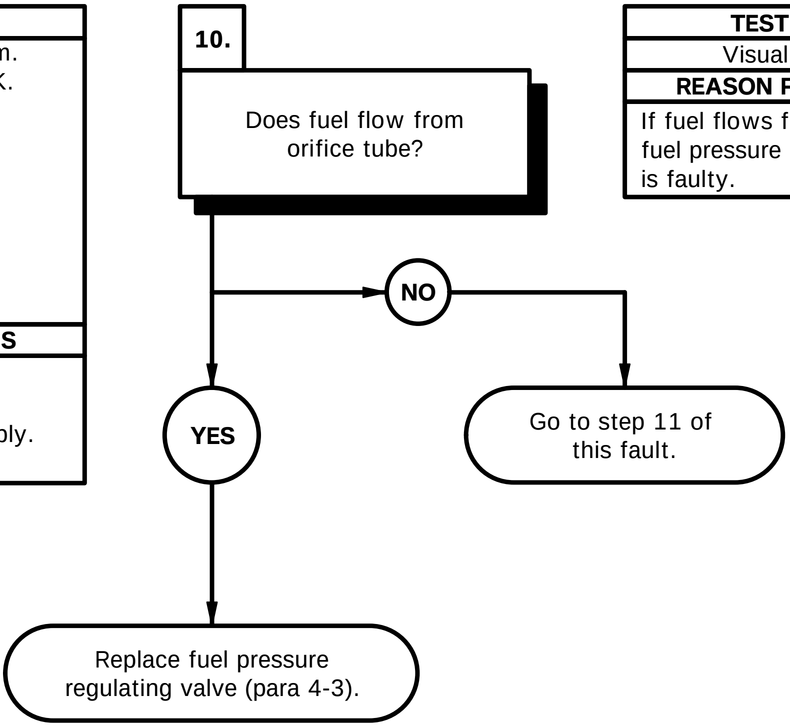
b1. ENGINE CRANKS BUT DOES NOT START OR ENGINE STALLS AFTER STARTING (CONT)

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Fuel transfer pump OK.
Fuel transfer hose OK.
Fuel filter OK.
Fuel tube OK.

POSSIBLE PROBLEMS

Faulty fuel pressure regulating valve.
Faulty orifice tube assembly.
Faulty cylinder head.



TEST OPTIONS

Visual inspection

REASON FOR QUESTION

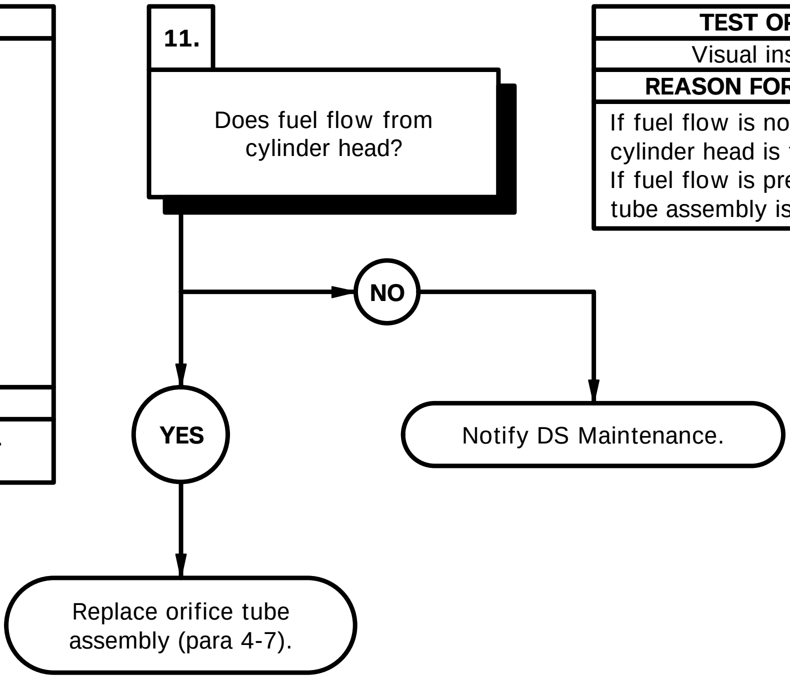
If fuel flows from orifice tube, fuel pressure regulating valve is faulty.

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel supply hose OK.
Fuel tank OK.
Fuel/water separator OK.
Fuel transfer pump OK.
Fuel transfer hose OK.
Fuel filter OK.
Fuel tube OK.
Fuel pressure regulating valve OK.

POSSIBLE PROBLEMS

Faulty orifice tube assembly.
Faulty cylinder head.



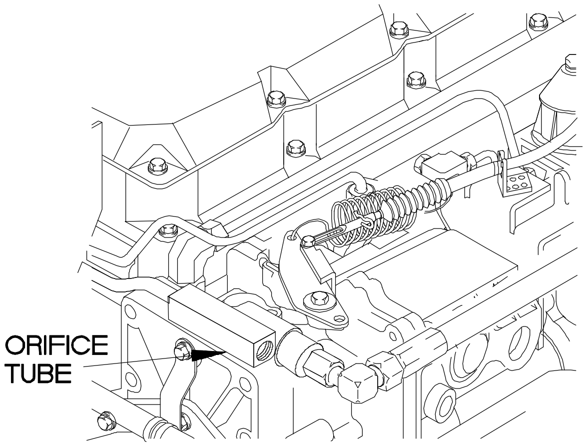
TEST OPTIONS

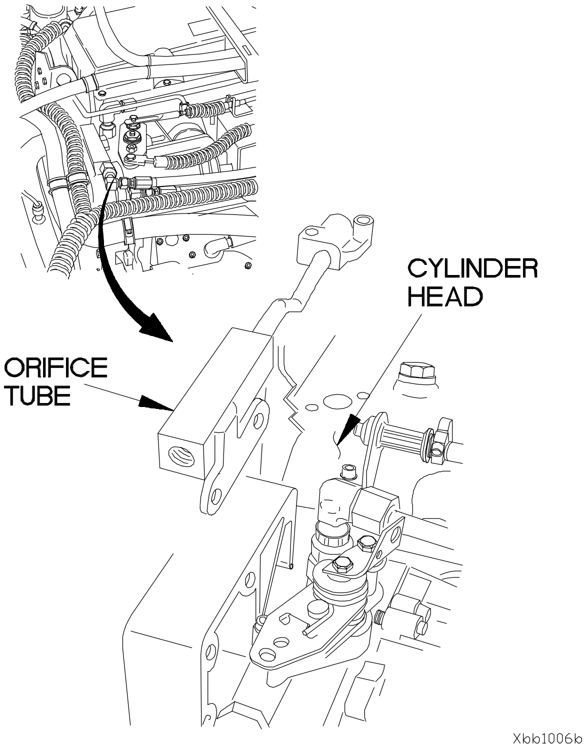
Visual inspection

REASON FOR QUESTION

If fuel flow is not present, cylinder head is faulty.
If fuel flow is present, orifice tube assembly is faulty.

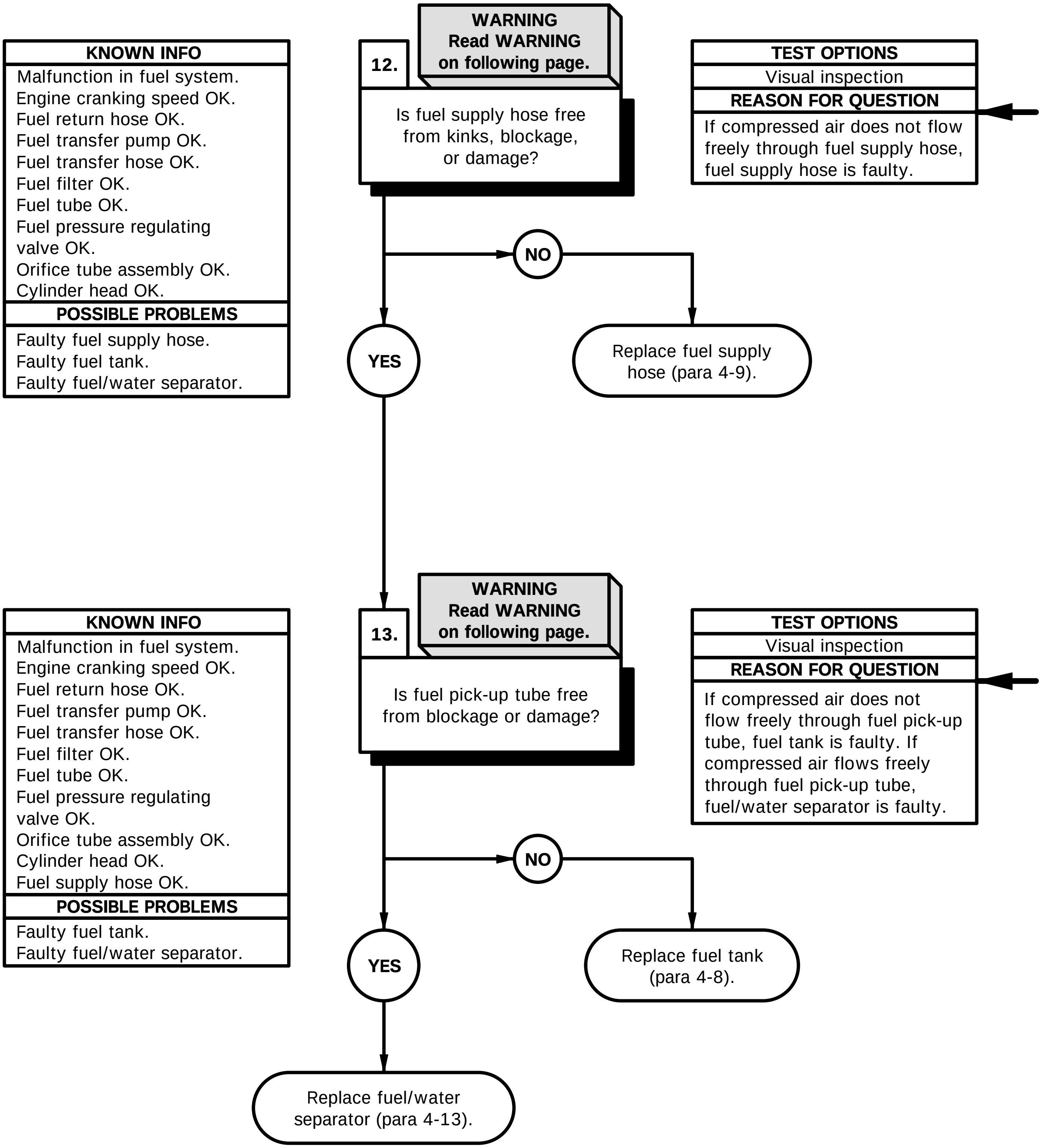
(1) Remove fuel pressure regulating valve (para 4-3).
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow form orifice tube, go to step 11 of this fault.
(4) If fuel flow is present, replace fuel pressure regulating valve (para 4-3).





(1) Remove orifice tube assembly (para 4-7).
(2) Depress button on fuel/water separator as many times as necessary to get a steady stream of clear fuel.
(3) If fuel does not flow from cylinder head, notify DS Maintenance.
(4) If fuel flow is present, replace orifice tube assembly (para 4-7).
(5) Install orifice tube assembly (para 4-7).
(6) Install fuel pressure regulating valve (para 4-3).

b1. ENGINE CRANKS BUT DOES NOT START OR ENGINE STALLS AFTER STARTING (CONT)



KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel transfer pump OK.
Fuel transfer hose OK.
Fuel filter OK.
Fuel tube OK.
Fuel pressure regulating valve OK.
Orifice tube assembly OK.
Cylinder head OK.

POSSIBLE PROBLEMS

Faulty fuel supply hose.
Faulty fuel tank.
Faulty fuel/water separator.

WARNING
Read WARNING on following page.

12. Is fuel supply hose free from kinks, blockage, or damage?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

If compressed air does not flow freely through fuel supply hose, fuel supply hose is faulty.

Replace fuel supply hose (para 4-9).

KNOWN INFO

Malfunction in fuel system.
Engine cranking speed OK.
Fuel return hose OK.
Fuel transfer pump OK.
Fuel transfer hose OK.
Fuel filter OK.
Fuel tube OK.
Fuel pressure regulating valve OK.
Orifice tube assembly OK.
Cylinder head OK.
Fuel supply hose OK.

POSSIBLE PROBLEMS

Faulty fuel tank.
Faulty fuel/water separator.

WARNING
Read WARNING on following page.

13. Is fuel pick-up tube free from blockage or damage?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

If compressed air does not flow freely through fuel pick-up tube, fuel tank is faulty. If compressed air flows freely through fuel pick-up tube, fuel/water separator is faulty.

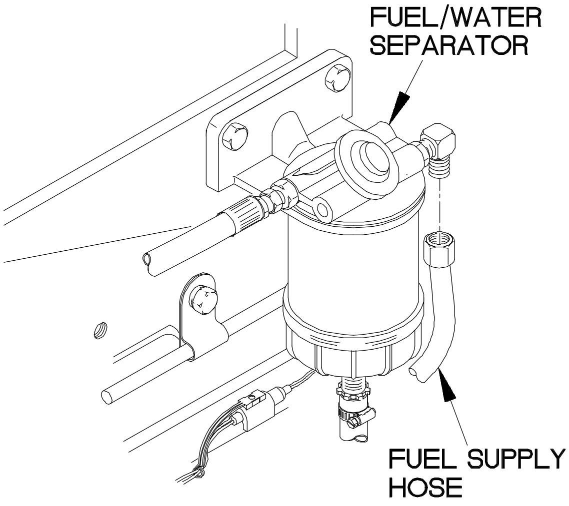
Replace fuel tank (para 4-8).

Replace fuel/water separator (para 4-13).

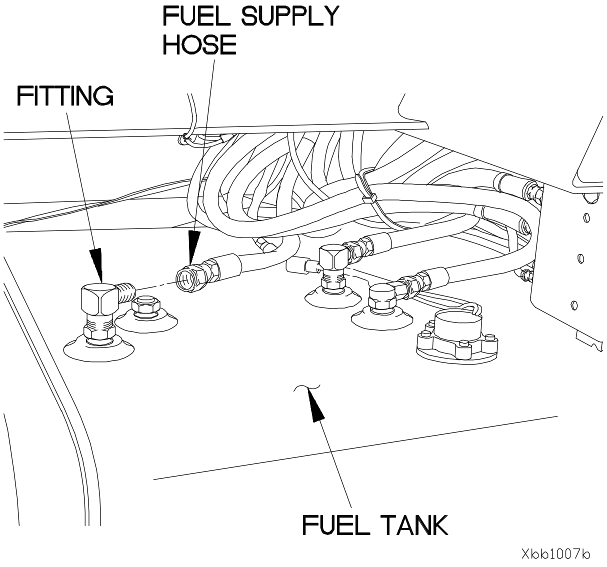
WARNING

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.

(1) Disconnect fuel supply hose from fuel/water separator.
(2) Disconnect fuel supply hose from fuel tank.
(3) Apply compressed air to one end of fuel supply hose.
(4) If compressed air does not flow freely through fuel supply hose, replace fuel supply hose (para 4-9).
(5) Connect fuel supply hose to fuel/water separator.



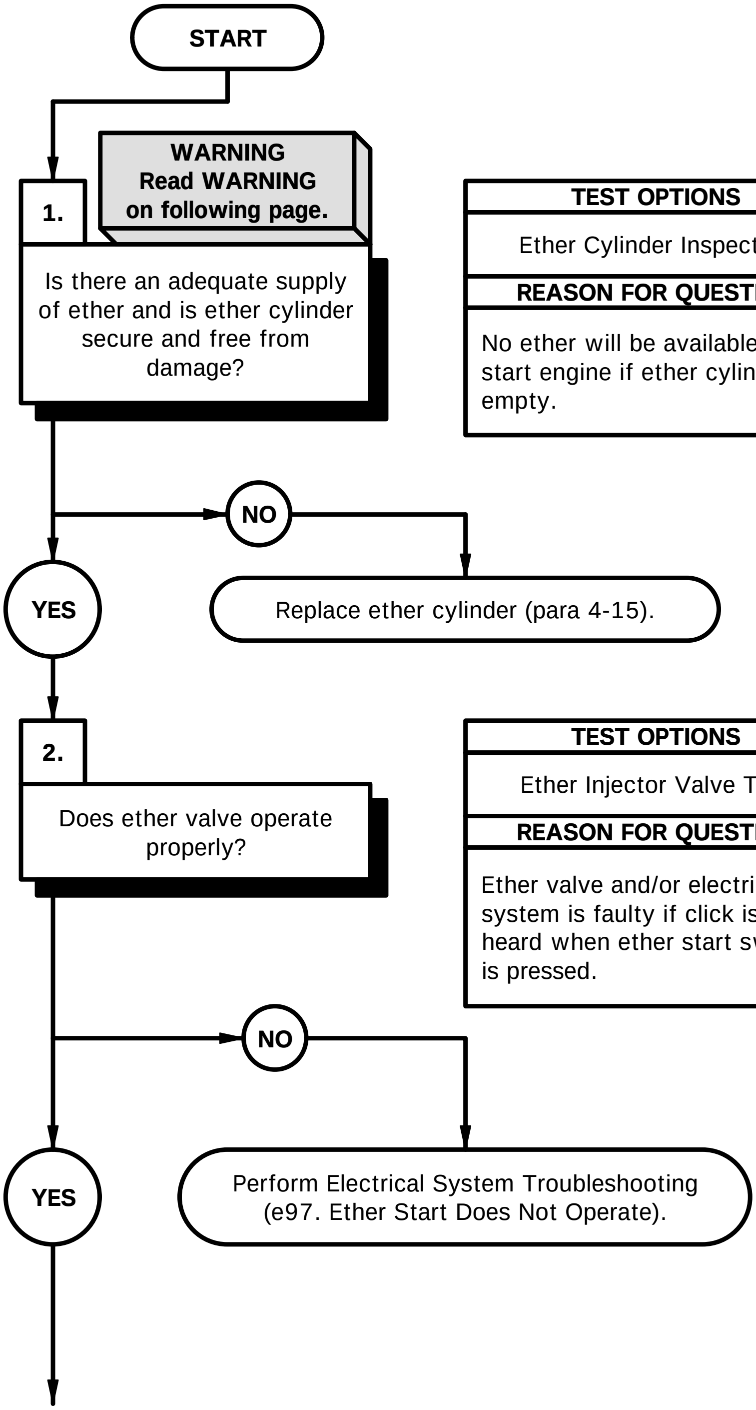
(1) Remove fuel cap from fuel tank.
(2) Apply compressed air to 90° degree fitting on fuel tank and listen for air bubbles in fuel tank.
(3) If air flow is not present, replace fuel tank (para 4-8).
(4) If air flow is present, replace fuel/water separator (para 4-13).
(5) Connect fuel supply hose to fuel tank.
(6) Install fuel cap on fuel tank.



b2. ETHER STARTING AID DOES NOT OPERATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).
Spare tire lowered (TM 9-2320-366-10-2).



WARNING
Read WARNING on following page.

KNOWN INFO
Nothing
POSSIBLE PROBLEMS
Empty, leaking, or damaged ether cylinder. Faulty ether valve. Ether hose loose.

1. Is there an adequate supply of ether and is ether cylinder secure and free from damage?

TEST OPTIONS
Ether Cylinder Inspection
REASON FOR QUESTION
No ether will be available to start engine if ether cylinder is empty.

NO: Replace ether cylinder (para 4-15).

KNOWN INFO
Ether cylinder OK.
POSSIBLE PROBLEMS
Faulty ether valve. Ether hose loose.

2. Does ether valve operate properly?

TEST OPTIONS
Ether Injector Valve Test
REASON FOR QUESTION
Ether valve and/or electrical system is faulty if click is not heard when ether start switch is pressed.

NO: Perform Electrical System Troubleshooting (e97. Ether Start Does Not Operate).

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. Failure to comply may result in injury to personnel.

NOTE

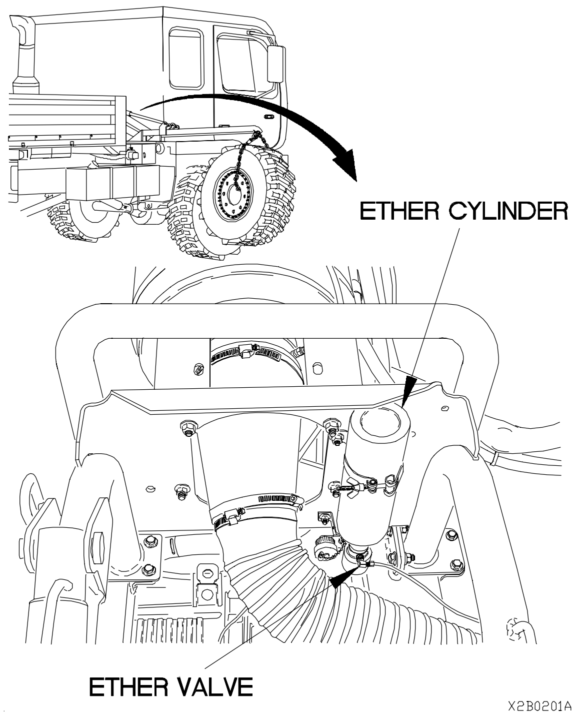
Temperature at engine block must be below 100° F (38° C) before ether starting aid will work.

ETHER CYLINDER INSPECTION

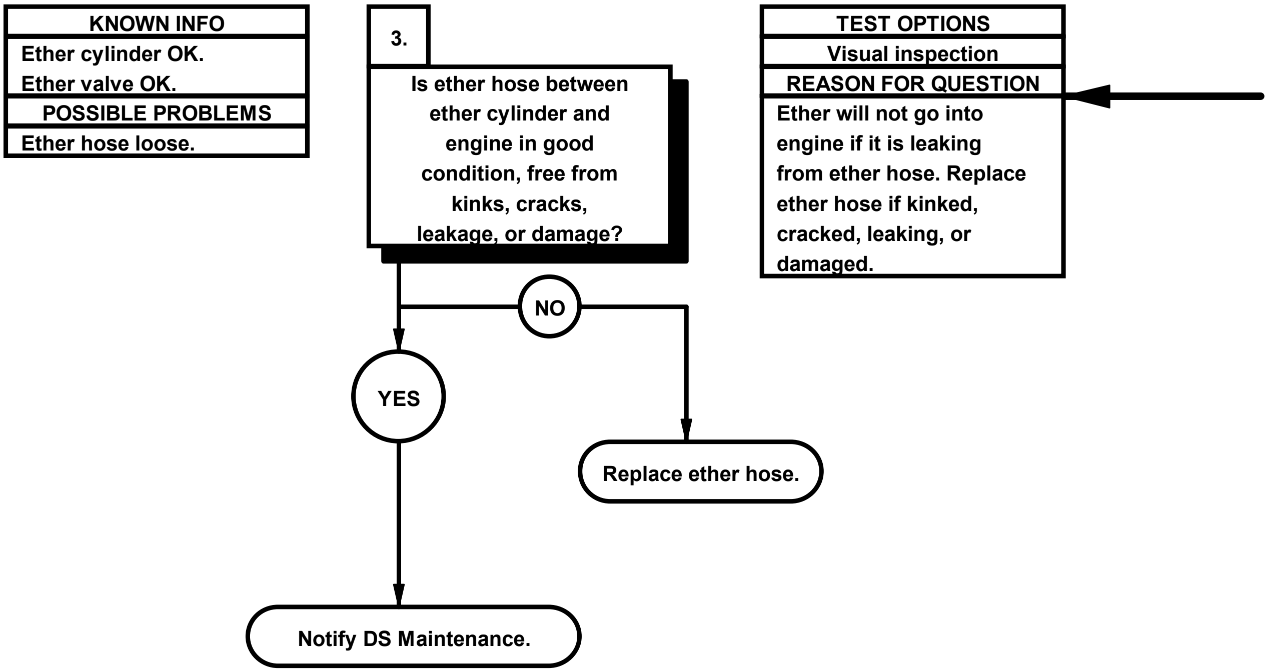
(1) Remove ether cylinder (para 4-13).
(2) Shake ether cylinder to determine if ether is present.
(3) Check ether cylinder for damage.
(4) Install ether cylinder (para 4-13).

ETHER VALVE TEST

(1) Position master power switch to on (TM 9-2320-366-10-1).
(2) Press ether start switch (TM 9-2320-366-10-1) and listen for ether valve to click.
(3) Position master power switch to off (TM 9-2320-366-10-1).



b2. ETHER STARTING AID DOES NOT OPERATE (CONT)



KNOWN INFO

Ether cylinder OK.
Ether valve OK.

POSSIBLE PROBLEMS

Ether hose loose.

3. Is ether hose between ether cylinder and engine in good condition, free from kinks, cracks, leakage, or damage?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

Ether will not go into engine if it is leaking from ether hose. Replace ether hose if kinked, cracked, leaking, or damaged.

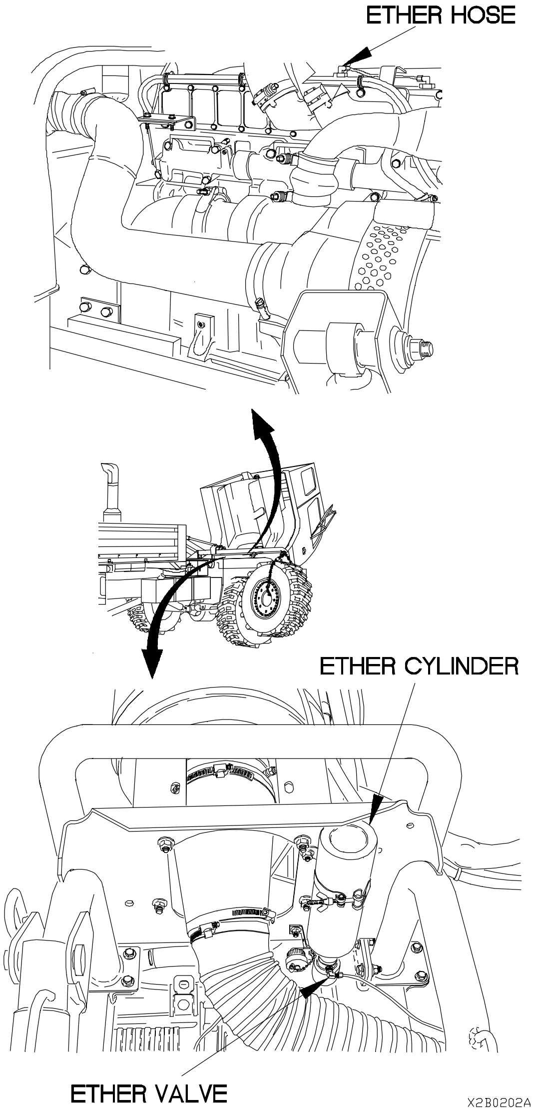
Replace ether hose.

Notify DS Maintenance.

(1) Raise cab (TM 9-2320-366-10-1).

(2) Check ether hose between ether cylinder and engine for leaks and damage.

(3) Lower cab (TM 9-2320-366-10-1).

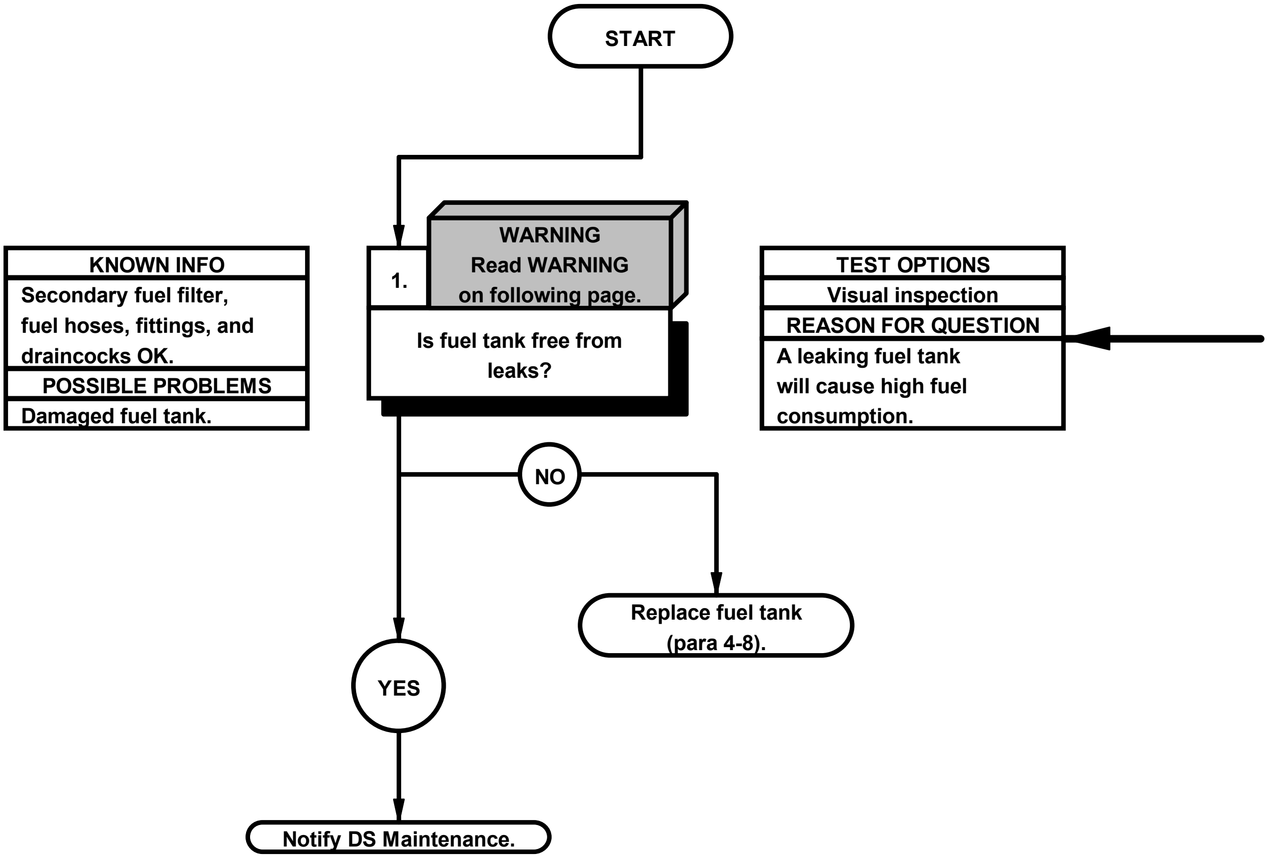


b3. FUEL CONSUMPTION TOO HIGH

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-366-10-1).

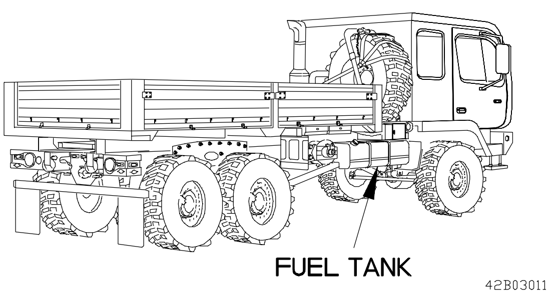


WARNING

Diesel fuel is flammable. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

(1) Check fuel tank for damage, and for loose or missing mounting hardware.

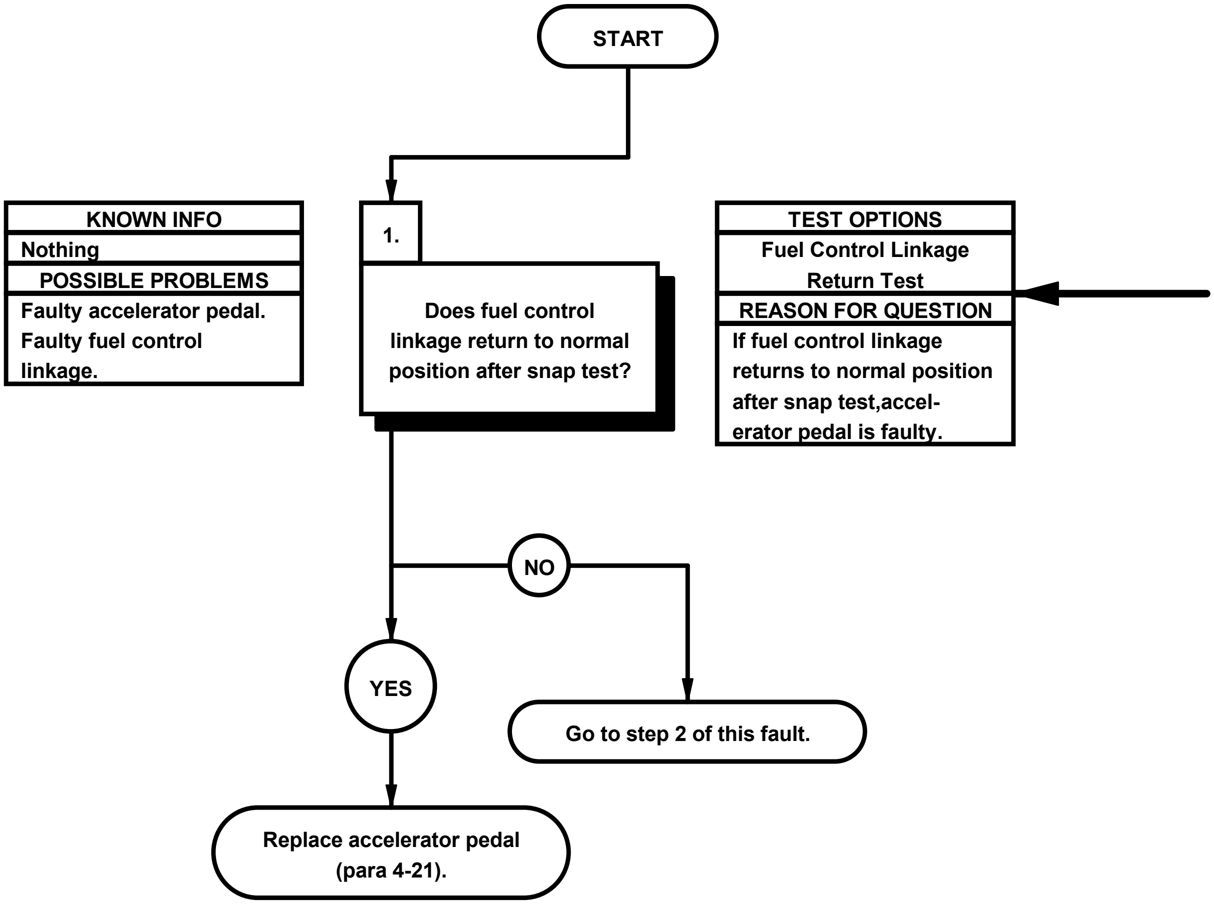
(2) If fuel tank is damaged, replace fuel tank (para 4-8).



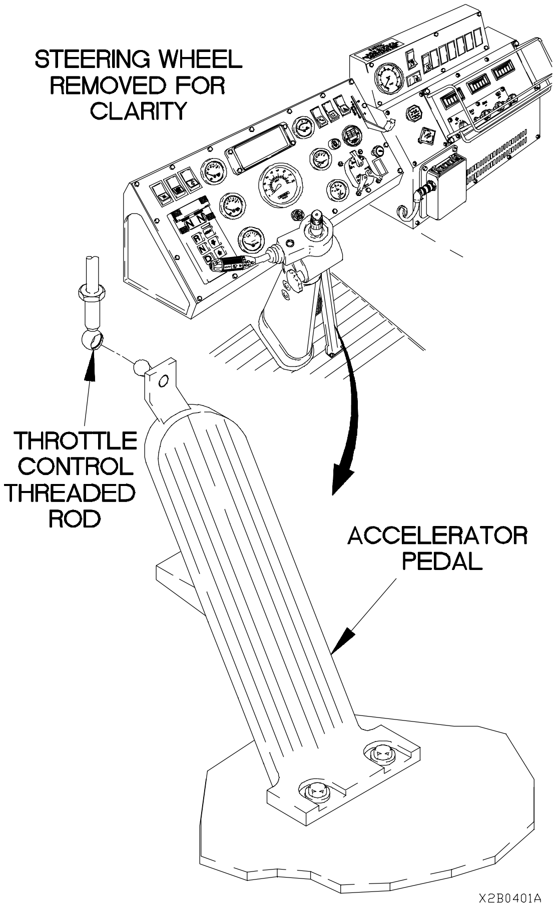
b4. ACCELERATOR PEDAL STICKS

INITIAL SETUP

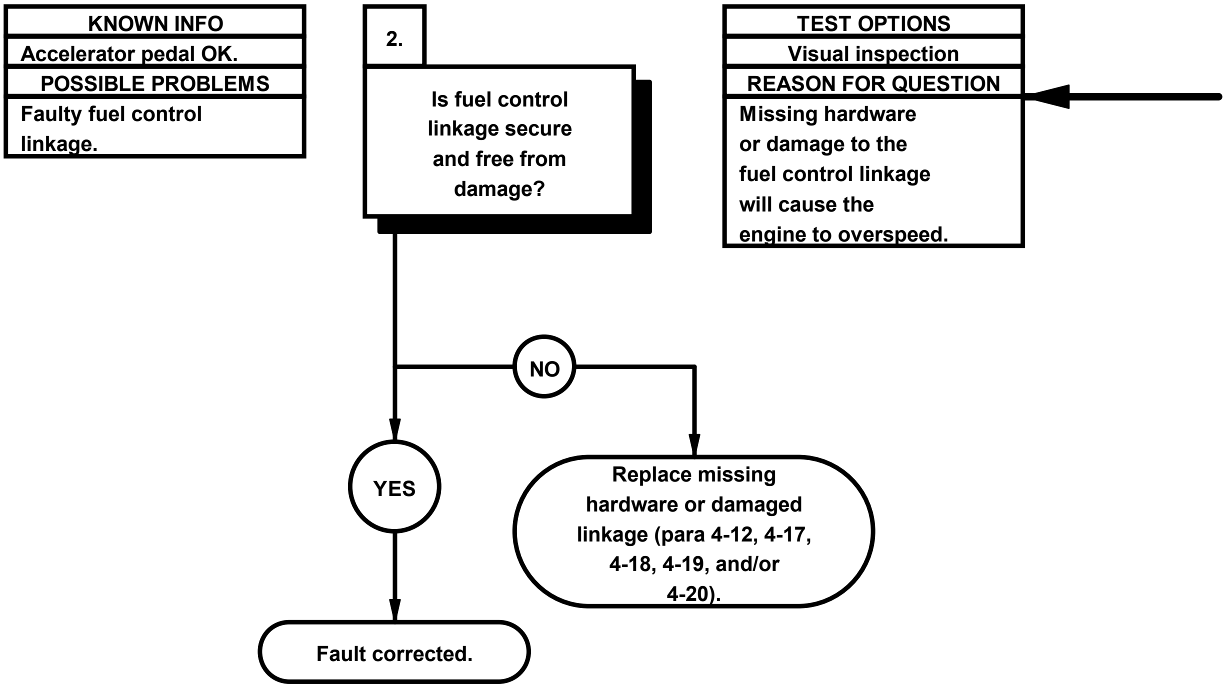
Equipment Conditions	**Tools and Special Tools**
Engine shut down (TM 9-2320-366-10-1).	Tool Kit, Genl Mech (Item 46, Appendix C)



FUEL CONTROL LINKAGE RETURN TEST
(1) Disconnect accelerator pedal from throttle control threaded rod (para 4-21). (2) Pull down throttle control threaded rod and release. (3) If throttle control threaded rod snapped back to normal position, replace accelerator pedal (para 4-21). (4) If throttle control threaded rod did not snap back to normal position, go to step 2 of this fault. (5) Connect accelerator pedal to throttle control threaded rod (para 4-21).



b4. ACCELERATOR PEDAL STICKS (CONT)



KNOWN INFO

Accelerator pedal OK.

POSSIBLE PROBLEMS

Faulty fuel control linkage.

2\. Is fuel control linkage secure and free from damage?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

Missing hardware or damage to the fuel control linkage will cause the engine to overspeed.

YES: Fault corrected.

NO: Replace missing hardware or damaged linkage (para 4-12, 4-17, 4-18, 4-19, and/or 4-20).

(1) Remove instrument panel assembly (para 7-15).
(2) Check fuel control linkage for improper assembly, missing hardware, damaged parts, and proper lubrication (para 4-17, 4-19, and 4-20).
(3) Install instrument panel assembly (para 7-15).
(4) Raise cab (TM 9-2320-366-10-1).
(5) Check fuel control linkage for improper assembly, missing hardware, and damaged parts (para 4-16, 4-12, and 4-18).
(6) Lower cab (TM 9-2320-366-10-1).

2-14. EXHAUST SYSTEM TROUBLESHOOTING

This paragraph covers Exhaust System Troubleshooting. The Exhaust System Fault Index, Table 2-5, lists faults for the exhaust system of the vehicle.

Table 2-5. Exhaust System Fault Index

Fault No.	Description	Page
c1.	Exhaust System Unusually Noisy or Vibrates Excessively During Engine Operation	2-128
c2.	Exhaust Fumes in Cab	2-132

c1. EXHAUST SYSTEM UNUSUALLY NOISY OR VIBRATES EXCESSIVELY DURING ENGINE OPERATION

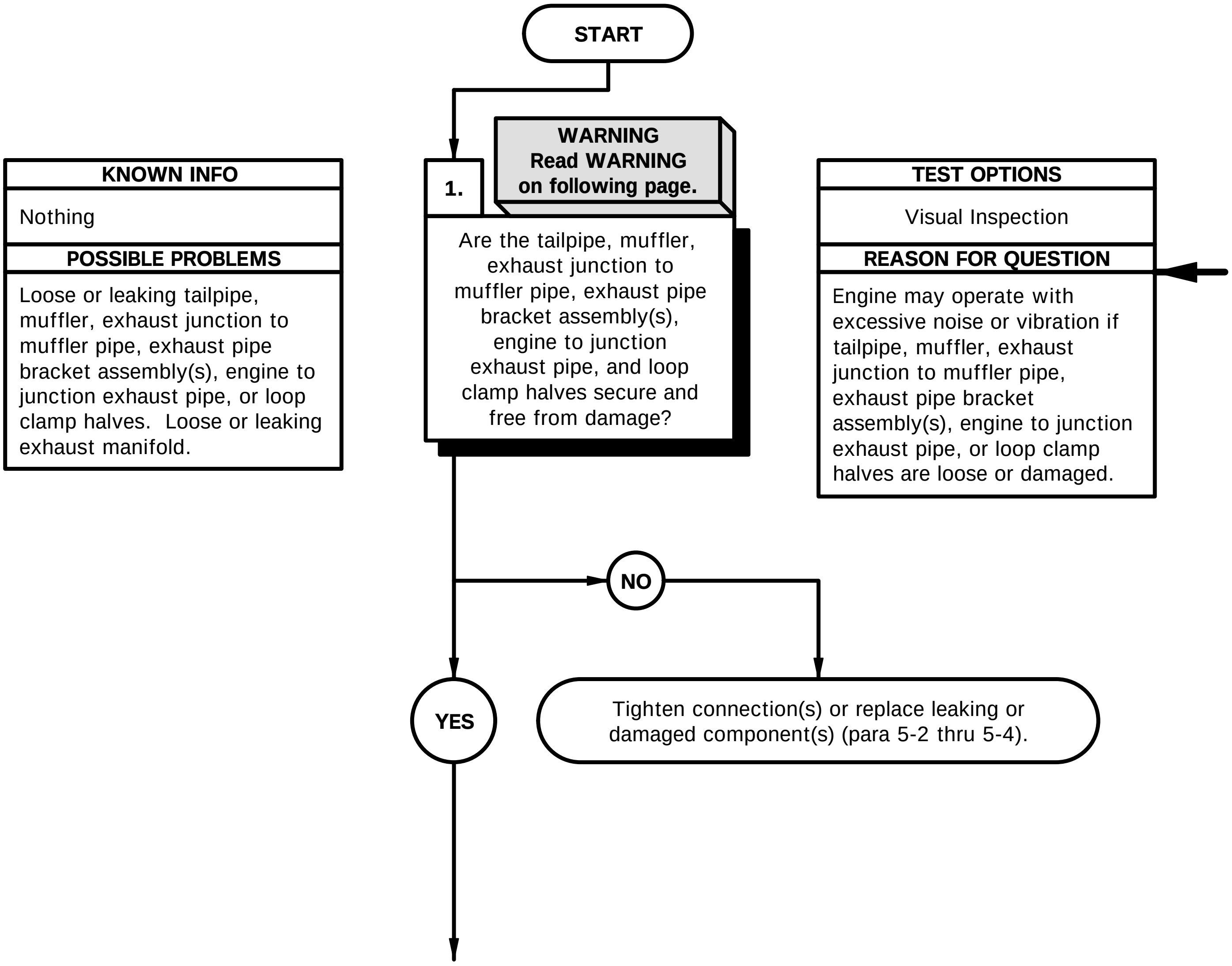
INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-366-10-1).
Cab raised (TM 9-2320-366-10-1).

Tools and Special Tools

Tool Kit, Genl Mech (Item 46, Appendix C)
Goggles, Industrial (Item 15, Appendix C)



KNOWN INFO

Nothing

POSSIBLE PROBLEMS

Loose or leaking tailpipe, muffler, exhaust junction to muffler pipe, exhaust pipe bracket assembly(s), engine to junction exhaust pipe, or loop clamp halves. Loose or leaking exhaust manifold.

1. Are the tailpipe, muffler, exhaust junction to muffler pipe, exhaust pipe bracket assembly(s), engine to junction exhaust pipe, and loop clamp halves secure and free from damage?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

Engine may operate with excessive noise or vibration if tailpipe, muffler, exhaust junction to muffler pipe, exhaust pipe bracket assembly(s), engine to junction exhaust pipe, or loop clamp halves are loose or damaged.

Tighten connection(s) or replace leaking or damaged component(s) (para 5-2 thru 5-4).

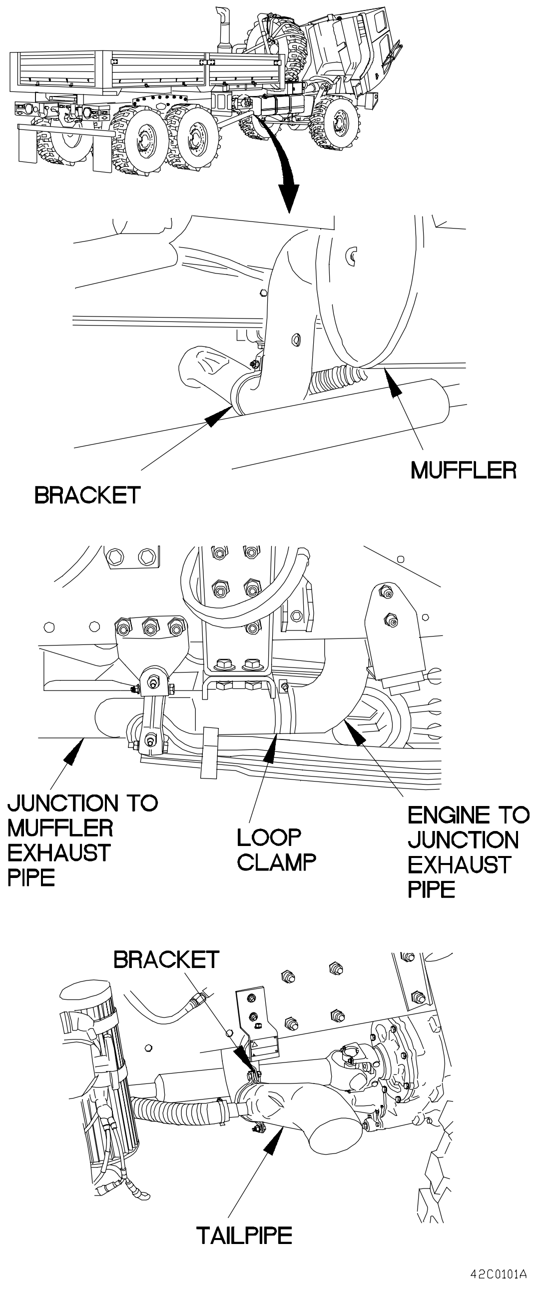
WARNING

Ensure exhaust system is cool before performing maintenance. Failure to comply may result in injury to personnel.

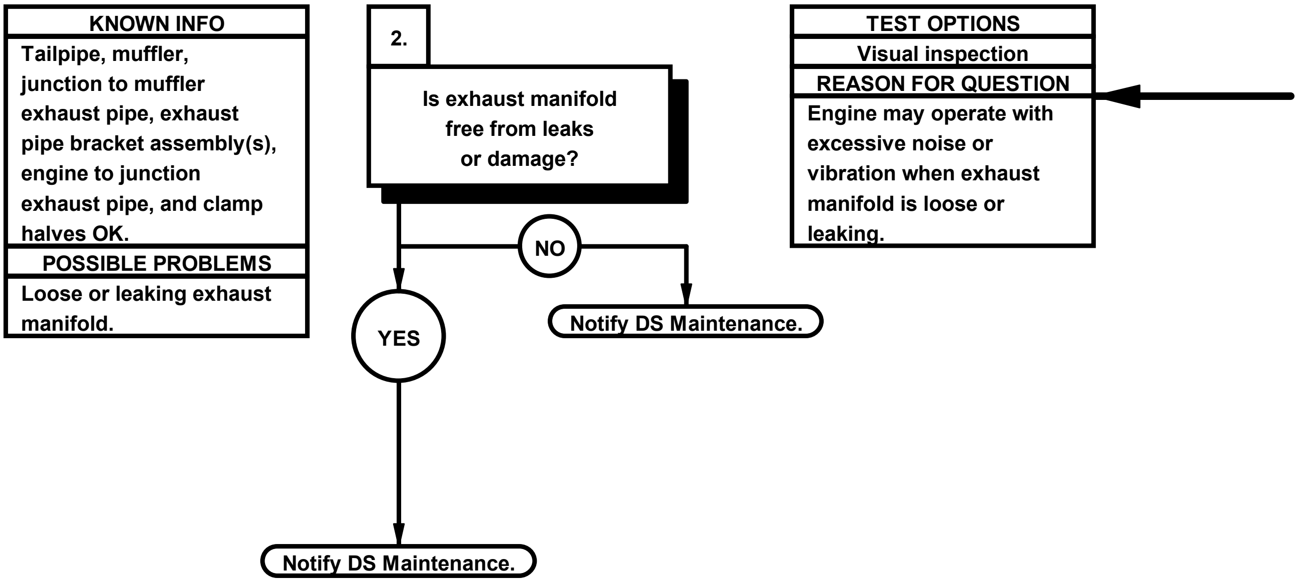
NOTE

Exhaust system component hardware has to be torqued. Refer to para 5-2 thru 5-4.

Check tailpipe, muffler, and exhaust pipes for loose connections and damage.



c1. EXHAUST SYSTEM UNUSUALLY NOISY OR VIBRATES EXCESSIVELY DURING ENGINE OPERATION (CONT)



KNOWN INFO

Tailpipe, muffler, junction to muffler exhaust pipe, exhaust pipe bracket assembly(s), engine to junction exhaust pipe, and clamp halves OK.

POSSIBLE PROBLEMS

Loose or leaking exhaust manifold.

2\. Is exhaust manifold free from leaks or damage?

TEST OPTIONS

Visual inspection

REASON FOR QUESTION

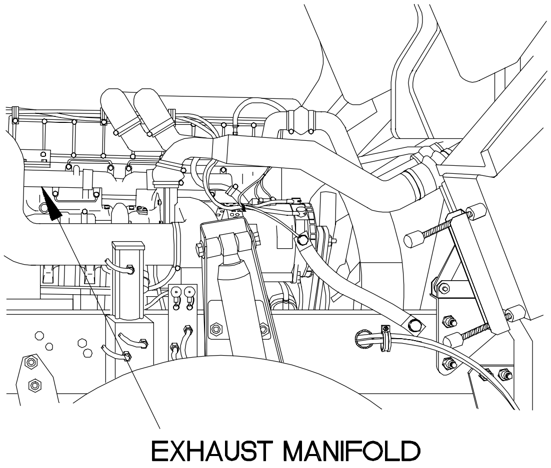
Engine may operate with excessive noise or vibration when exhaust manifold is loose or leaking.

(1) Start engine (TM 9-2320-366-10-1).

(2) Check exhaust manifold for looseness or evidence of exhaust leakage.

(3) Shut down engine (TM 9-2320-366-10-1).

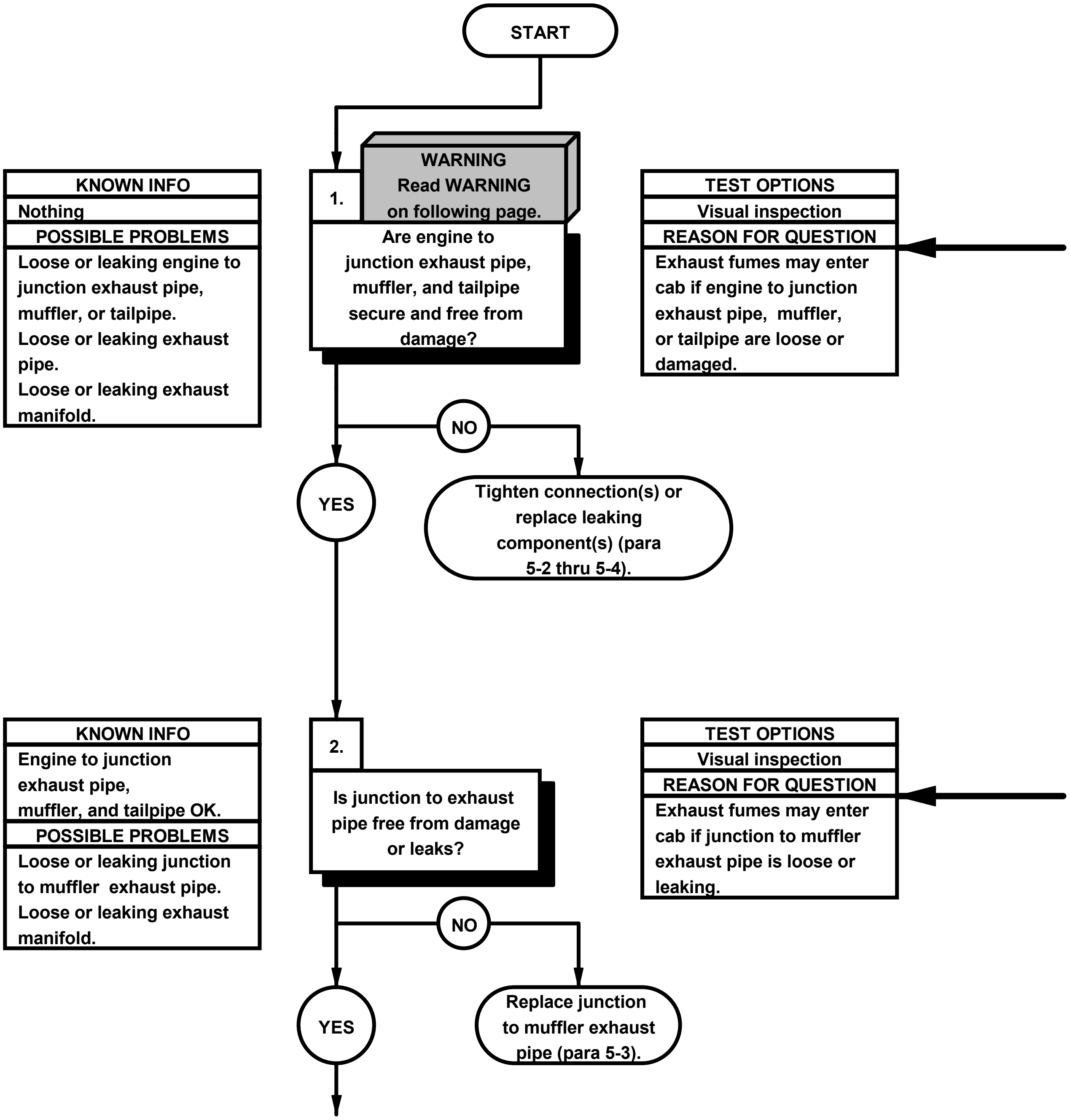
(4) Lower cab (TM 9-2320-366-10-1).



c2. EXHAUST FUMES IN CAB

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).



KNOWN INFO
Nothing

POSSIBLE PROBLEMS
Loose or leaking engine to junction exhaust pipe, muffler, or tailpipe.
Loose or leaking exhaust pipe.
Loose or leaking exhaust manifold.

1. **WARNING** Read WARNING on following page.

Are engine to junction exhaust pipe, muffler, and tailpipe secure and free from damage?

TEST OPTIONS
Visual inspection

REASON FOR QUESTION
Exhaust fumes may enter cab if engine to junction exhaust pipe, muffler, or tailpipe are loose or damaged.

NO: Tighten connection(s) or replace leaking component(s) (para 5-2 thru 5-4).

KNOWN INFO
Engine to junction exhaust pipe, muffler, and tailpipe OK.

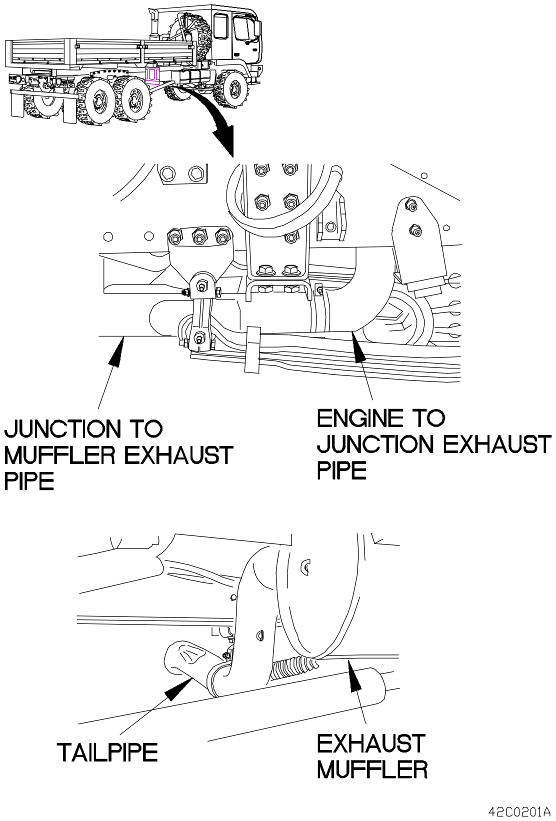
POSSIBLE PROBLEMS
Loose or leaking junction to muffler exhaust pipe.
Loose or leaking exhaust manifold.

2. Is junction to exhaust pipe free from damage or leaks?

TEST OPTIONS
Visual inspection

REASON FOR QUESTION
Exhaust fumes may enter cab if junction to muffler exhaust pipe is loose or leaking.

NO: Replace junction to muffler exhaust pipe (para 5-3).



WARNING

Ensure exhaust system is cool before performing maintenance. Failure to comply may result in injury to personnel.

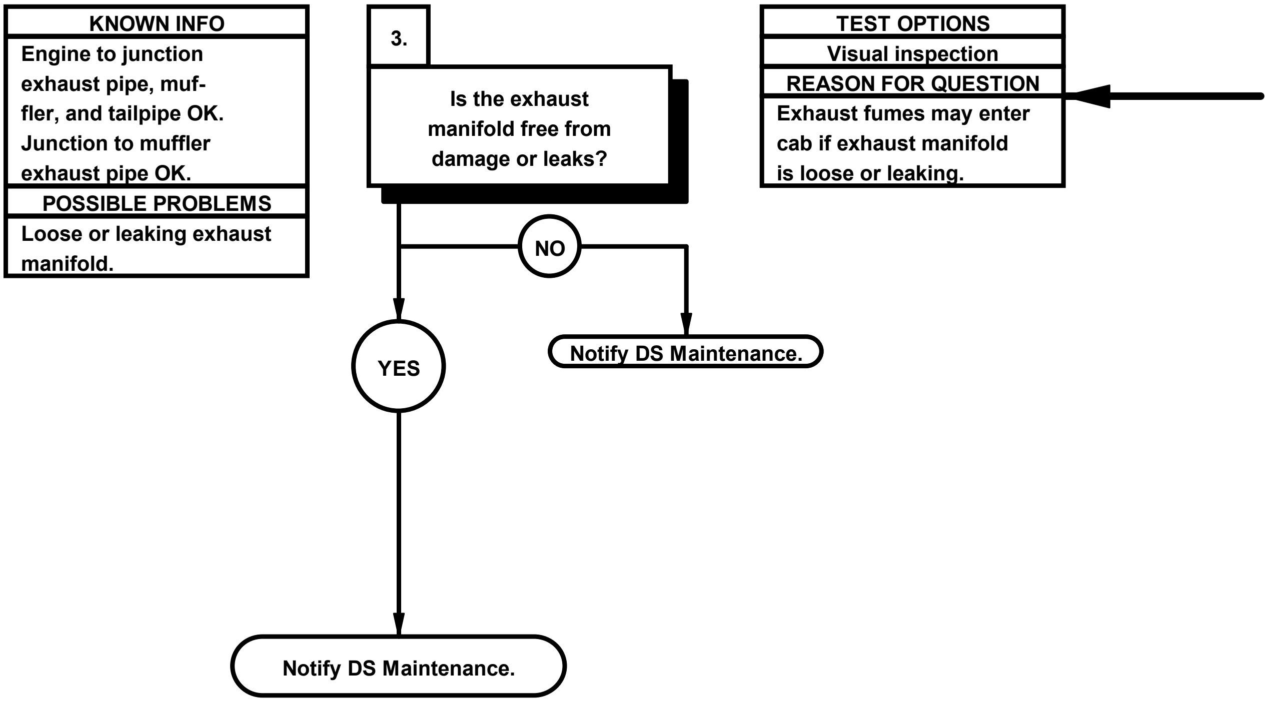
NOTE

Exhaust system component hardware has to be torqued. Refer to para 5-2 thru 5-4.

Check junction to muffler exhaust pipe, muffler, and tailpipe for loose connections and leaks.

Check engine to junction exhaust pipe for loose connections or leaks.

c2. EXHAUST FUMES IN CAB (CONT)



KNOWN INFO

Engine to junction exhaust pipe, muffler, and tailpipe OK. Junction to muffler exhaust pipe OK.

POSSIBLE PROBLEMS

Loose or leaking exhaust manifold.

3\. Is the exhaust manifold free from damage or leaks?

TEST OPTIONS

Visual inspection

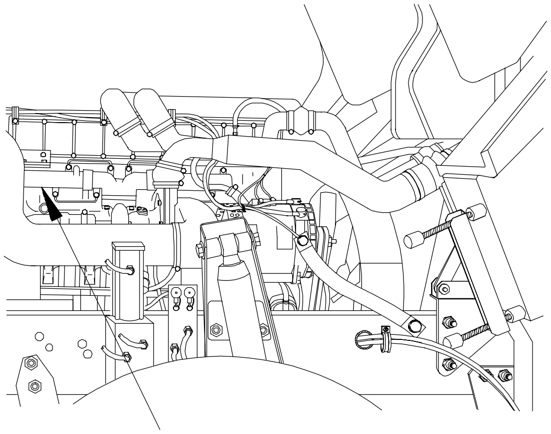
REASON FOR QUESTION

Exhaust fumes may enter cab if exhaust manifold is loose or leaking.

NO: Notify DS Maintenance.

YES: Notify DS Maintenance.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Start engine (TM 9-2320-366-10-1).
(3) Check exhaust manifold for looseness or leaks.
(4) Shut down engine (TM 9-2320-366-10-1).
(5) Lower cab (TM 9-2320-366-10-1).



2-15. COOLING SYSTEM TROUBLESHOOTING

This paragraph covers Cooling System Troubleshooting. The Cooling System Fault Index, Table 2-6, lists faults for the cooling system of the vehicle.

Table 2-6. Cooling System Fault Index

Fault No.	Description	Page
d1.	Engine Overheats	2-138
d2.	Oil in Cooling System	2-150
d3.	Loss of Coolant	2-152

d1. ENGINE OVERHEATS

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
Test Kit, Radiator (Item 41.1, Appendix C)
Pressure Tester, Radiator (Item 26, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)

NOTE

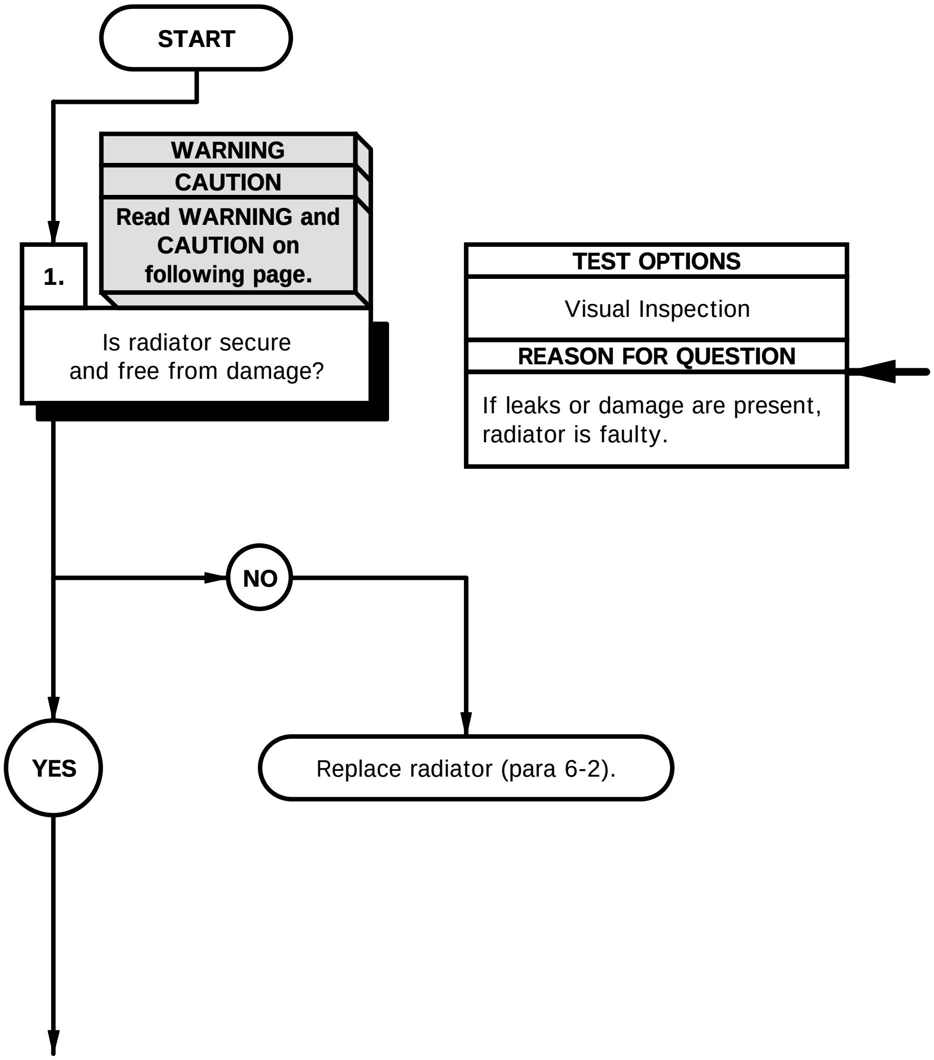
Perform engine troubleshooting a9. ENGINE OVERHEATS prior to beginning this task.

KNOWN INFO

Coolant level OK.
Radiator core free of debris.
WATER TEMP gage OK.

POSSIBLE PROBLEMS

Faulty radiator.
Faulty upper and lower coolant hoses.
Faulty radiator cap.
Faulty radiator overflow tank and hoses.
Loss of pressure in cooling system.
Faulty radiator fan shroud.
Faulty water pump.
Faulty thermostat.
Faulty fan clutch.



1. Is radiator secure and free from damage?

Replace radiator (para 6-2).

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If leaks or damage are present, radiator is faulty.

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing troubleshooting. Failure to comply may result in injury to personnel.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check radiator for leaks and damage.
(3) Remove radiator cap from radiator overflow tank.
(4) Install test kit on radiator overflow tank.
(5) Install radiator tester on test kit.

CAUTION

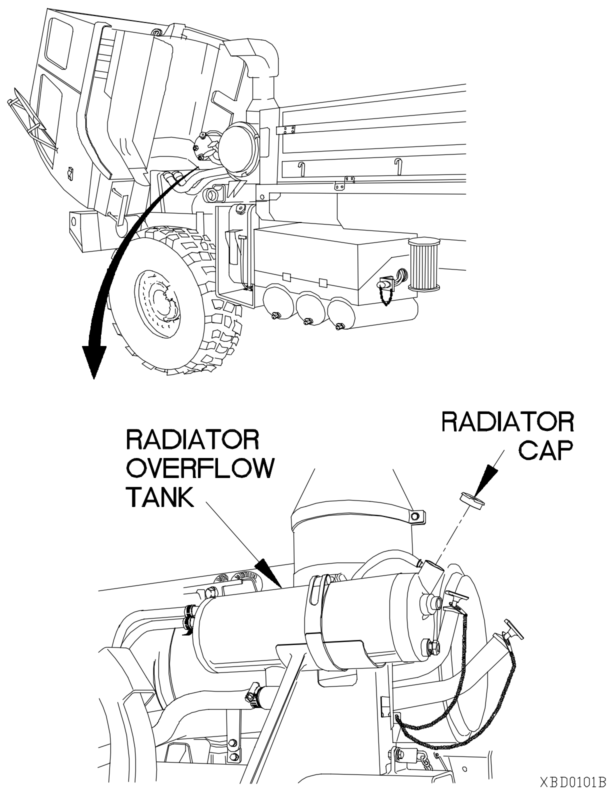
Do not pressurize over 16 psi (110 kPa). Failure to comply may result in damage to cooling system.

(6) Pressurize radiator overflow tank, using tester, to 15 psi (103 kPa).
(7) Observe radiator for coolant leaks.

NOTE

Pressure loss without external leaks indicates engine internal coolant leaks.

(8) Observe radiator tester for loss of pressure.
(9) If leaks or damage are present, replace radiator (para 6-2).



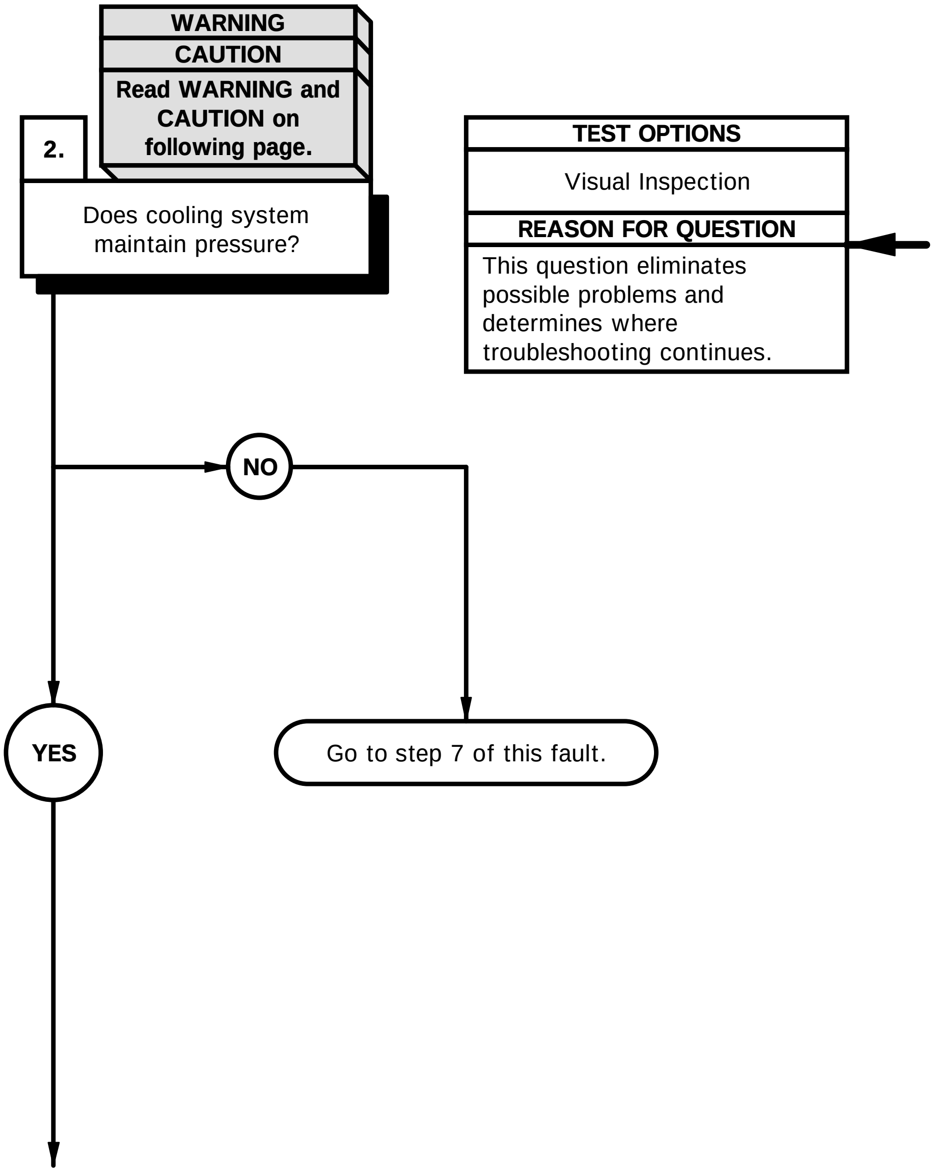
d1. ENGINE OVERHEATS (CONT)

KNOWN INFO

Coolant level OK.
Radiator core free of debris.
WATER TEMP gage OK.
Radiator OK.

POSSIBLE PROBLEMS

Faulty upper and lower coolant hoses.
Faulty radiator cap.
Faulty radiator overflow tank and hoses.
Loss of pressure in cooling system.
Faulty radiator fan shroud.
Faulty water pump.
Faulty thermostat.
Faulty fan clutch.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

2. Does cooling system maintain pressure?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 7 of this fault.

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing troubleshooting. Failure to comply may result in injury to personnel.

CAUTION

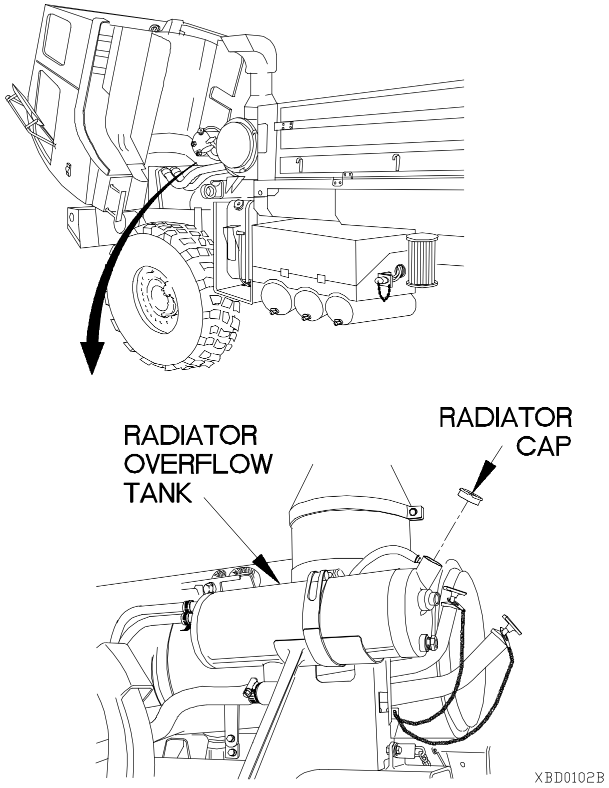
Do not pressurize over 16 psi (110 kPa). Failure to comply may result in damage to cooling system.

(1) Pressurize radiator overflow tank, using tester, to 15 psi (103 kPa).
(2) Observe radiator overflow tank for coolant leaks.

NOTE

Pressure loss without external leaks indicates engine internal coolant leaks.

(3) Observe radiator tester for loss of pressure.
(4) If cooling system does not maintain pressure, go to step 7 of this fault.
(5) Remove tester and test kit from radiator overflow tank.
(6) Install radiator cap on radiator overflow tank.



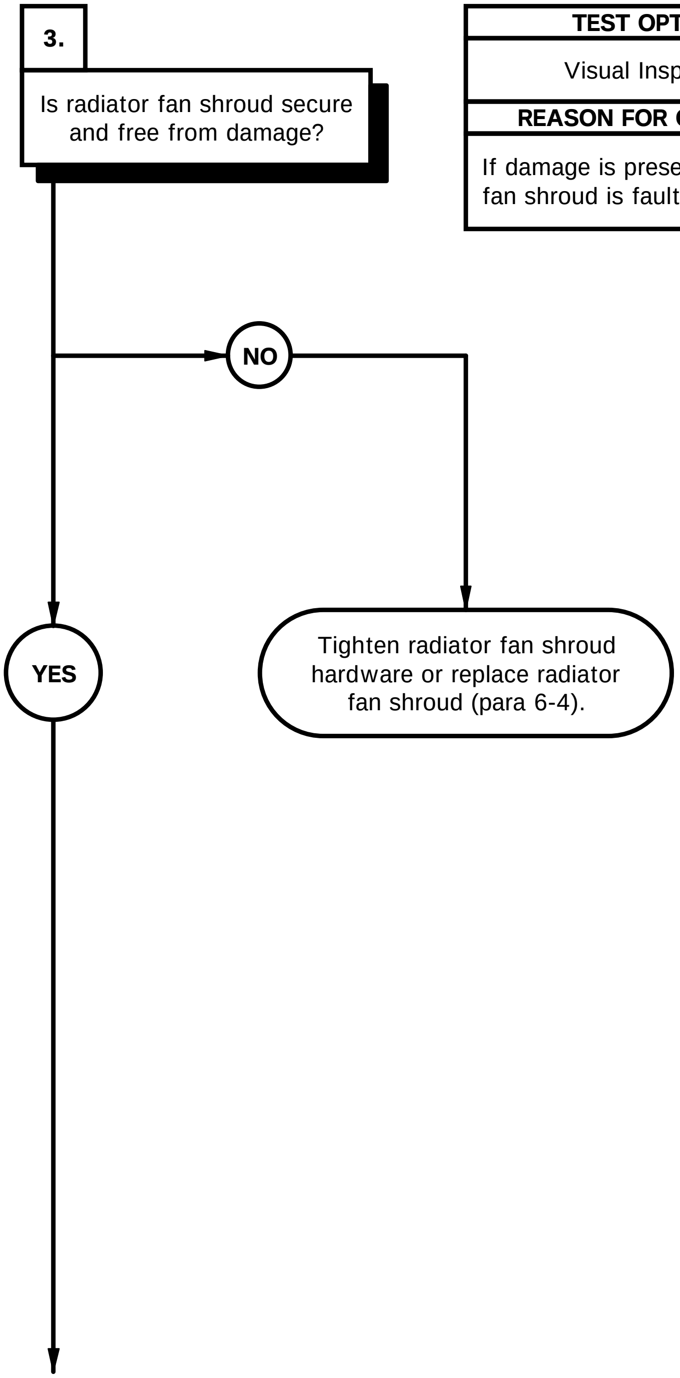
d1. ENGINE OVERHEATS (CONT)

KNOWN INFO

Coolant level OK.
Radiator core free of debris.
WATER TEMP gage OK.
Radiator OK.
Upper and lower coolant hoses OK.
Radiator cap OK.
Radiator overflow tank and hoses OK.
Cooling system pressure OK.

POSSIBLE PROBLEMS

Faulty radiator fan shroud.
Faulty water pump.
Faulty thermostat.
Faulty fan clutch.



3.

Is radiator fan shroud secure and free from damage?

Tighten radiator fan shroud hardware or replace radiator fan shroud (para 6-4).

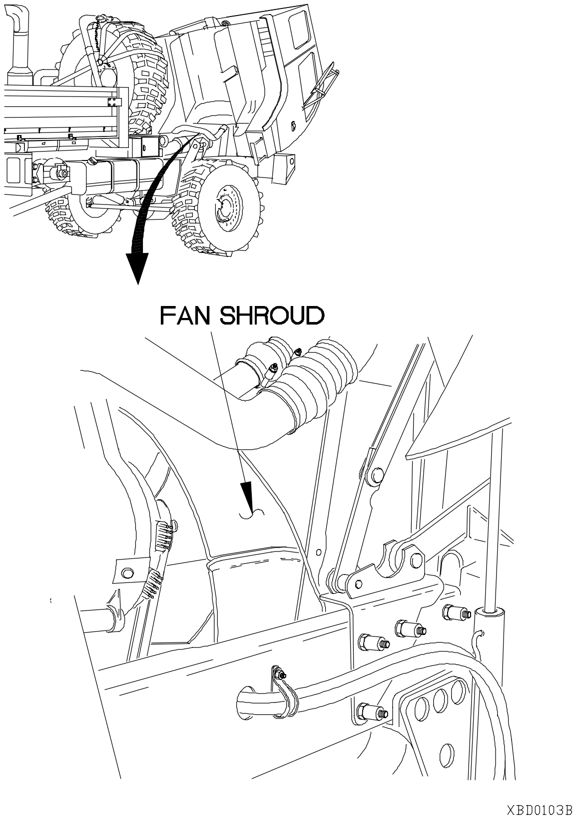
TEST OPTIONS

Visual Inspection

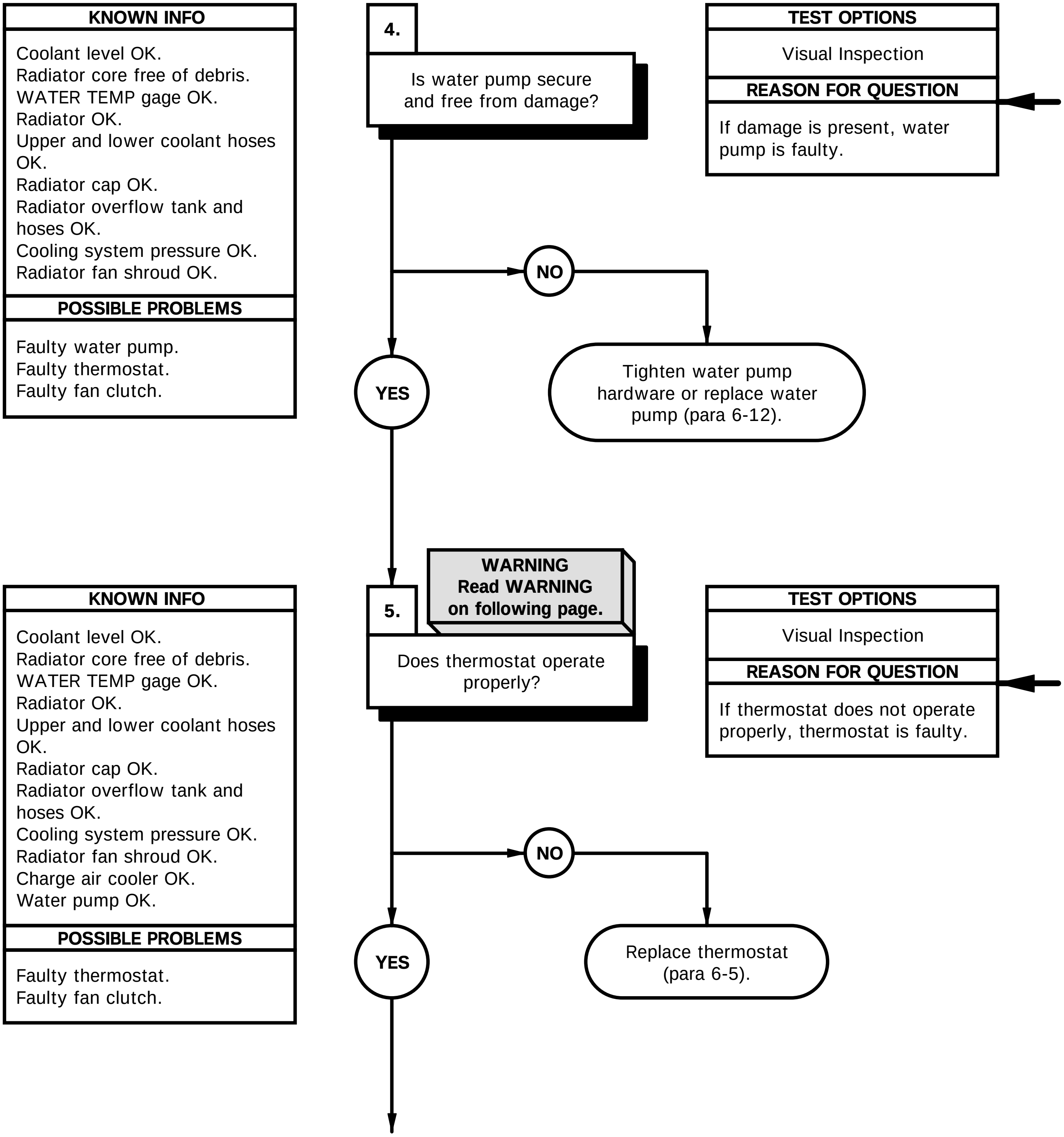
REASON FOR QUESTION

If damage is present, radiator fan shroud is faulty.

(1) Check radiator fan shroud for loose hardware and damage.
(2) If radiator fan shroud hardware is loose, tighten hardware.
(3) If radiator fan shroud is damaged, replace radiator fan shroud (para 6-4).



d1. ENGINE OVERHEATS (CONT)



KNOWN INFO

Coolant level OK.
Radiator core free of debris.
WATER TEMP gage OK.
Radiator OK.
Upper and lower coolant hoses OK.
Radiator cap OK.
Radiator overflow tank and hoses OK.
Cooling system pressure OK.
Radiator fan shroud OK.

POSSIBLE PROBLEMS

Faulty water pump.
Faulty thermostat.
Faulty fan clutch.

4. Is water pump secure and free from damage?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If damage is present, water pump is faulty.

NO — Tighten water pump hardware or replace water pump (para 6-12).

YES

WARNING
Read WARNING on following page.

KNOWN INFO

Coolant level OK.
Radiator core free of debris.
WATER TEMP gage OK.
Radiator OK.
Upper and lower coolant hoses OK.
Radiator cap OK.
Radiator overflow tank and hoses OK.
Cooling system pressure OK.
Radiator fan shroud OK.
Charge air cooler OK.
Water pump OK.

POSSIBLE PROBLEMS

Faulty thermostat.
Faulty fan clutch.

5. Does thermostat operate properly?

TEST OPTIONS

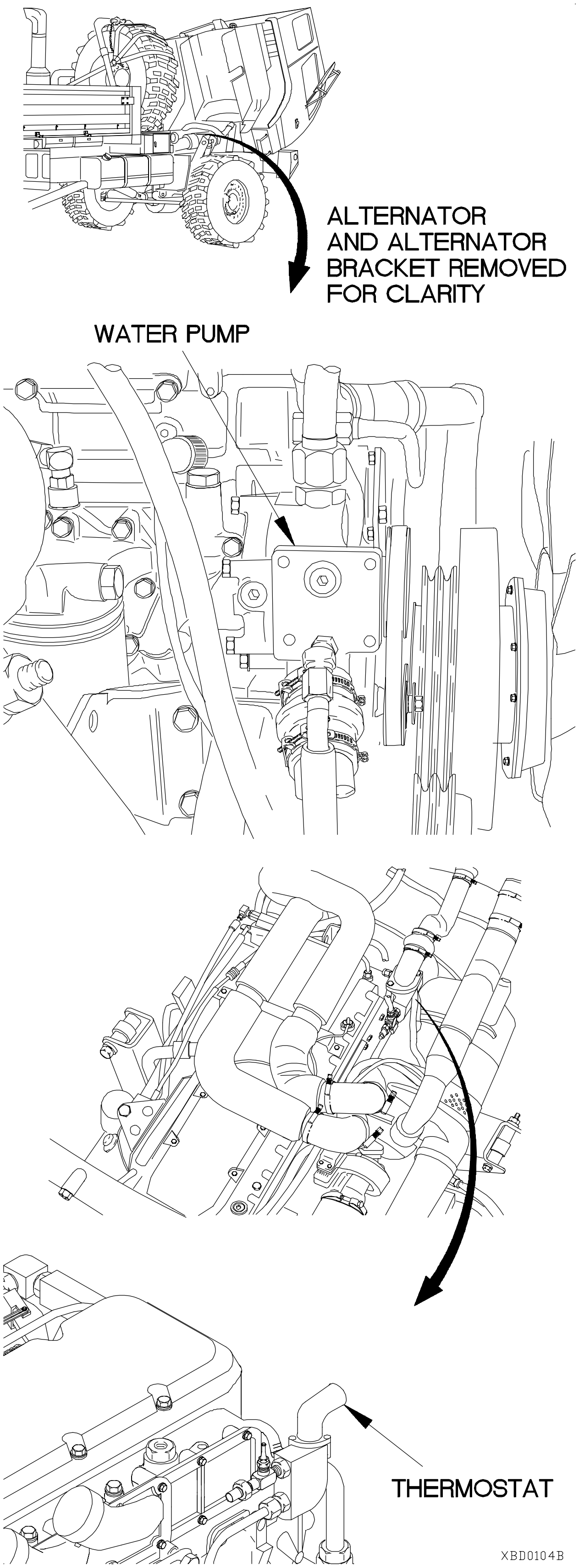
Visual Inspection

REASON FOR QUESTION

If thermostat does not operate properly, thermostat is faulty.

NO — Replace thermostat (para 6-5).

YES



(1) Check water pump for loose hardware and damage.
(2) If water pump hardware is loose, tighten hardware.
(3) If water pump is damaged, replace water pump (para 6-12).

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing troubleshooting. Failure to comply may result in injury to personnel.

(1) Remove coolant hose from overflow tank to radiator (para 6-3).
(2) Place coolant hose in drain pan.
(3) Start engine (TM 9-2320-366-10-1).

WARNING

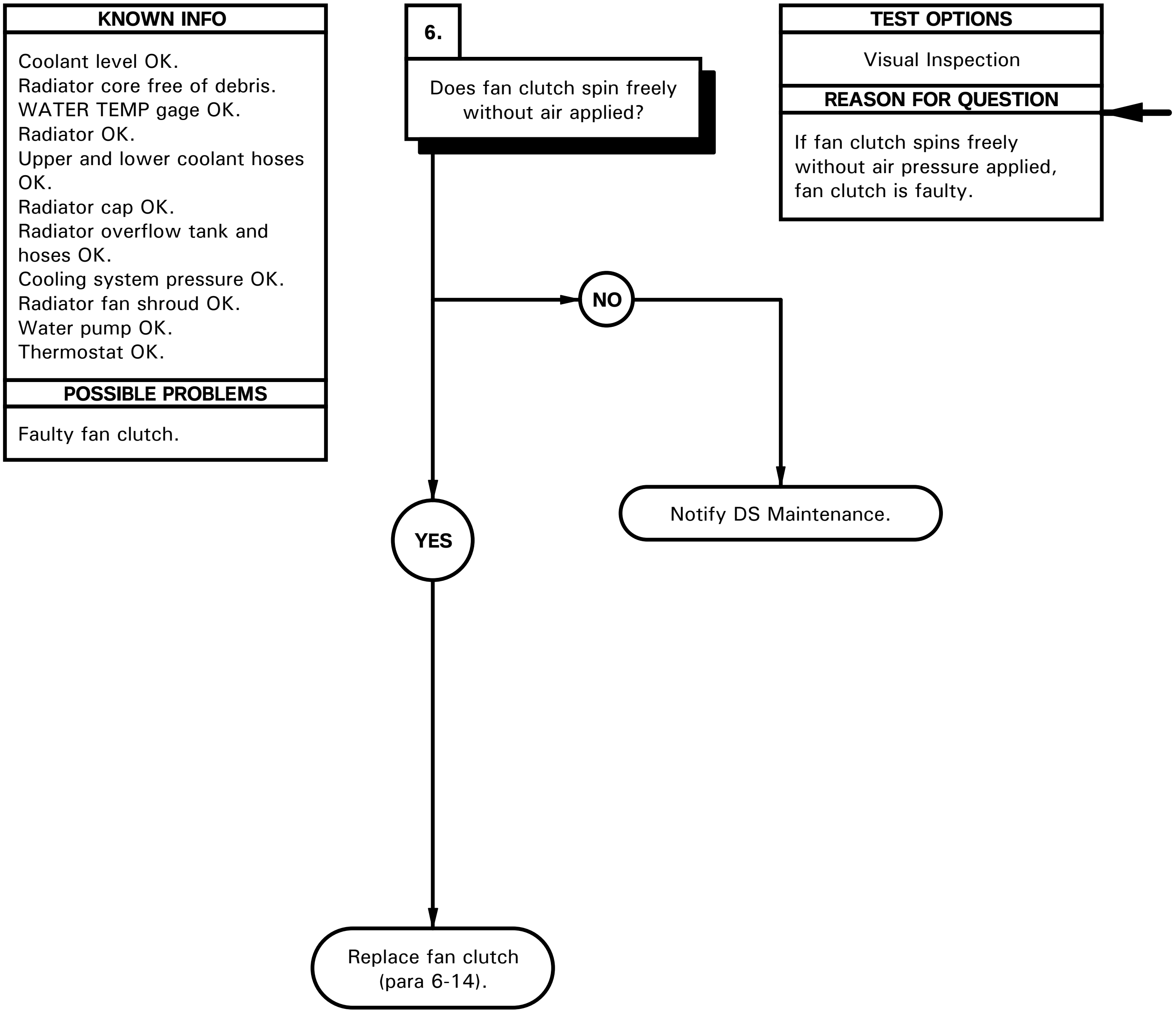
Use care when opening door with cab raised. Failure to comply may result in injury to personnel and damage to equipment.

NOTE

Coolant flowing constantly through return hose indicates closed thermostat.

(4) Observe flow of coolant from coolant hose.
(5) If thermostat does not operate properly, replace thermostat (para 6-5).
(6) Shut down engine (TM 9-2320-366-10-1).
(7) Install coolant hose on overflow tank and radiator (para 6-3).
(8) Refill overflow tank to proper level (TM 9-2320-366-10-1).
(9) Lower cab (TM 9-2320-366-10-1).

d1. ENGINE OVERHEATS (CONT)



KNOWN INFO

Coolant level OK.
Radiator core free of debris.
WATER TEMP gage OK.
Radiator OK.
Upper and lower coolant hoses OK.
Radiator cap OK.
Radiator overflow tank and hoses OK.
Cooling system pressure OK.
Radiator fan shroud OK.
Water pump OK.
Thermostat OK.

POSSIBLE PROBLEMS

Faulty fan clutch.

6. Does fan clutch spin freely without air applied?

TEST OPTIONS

Visual Inspection

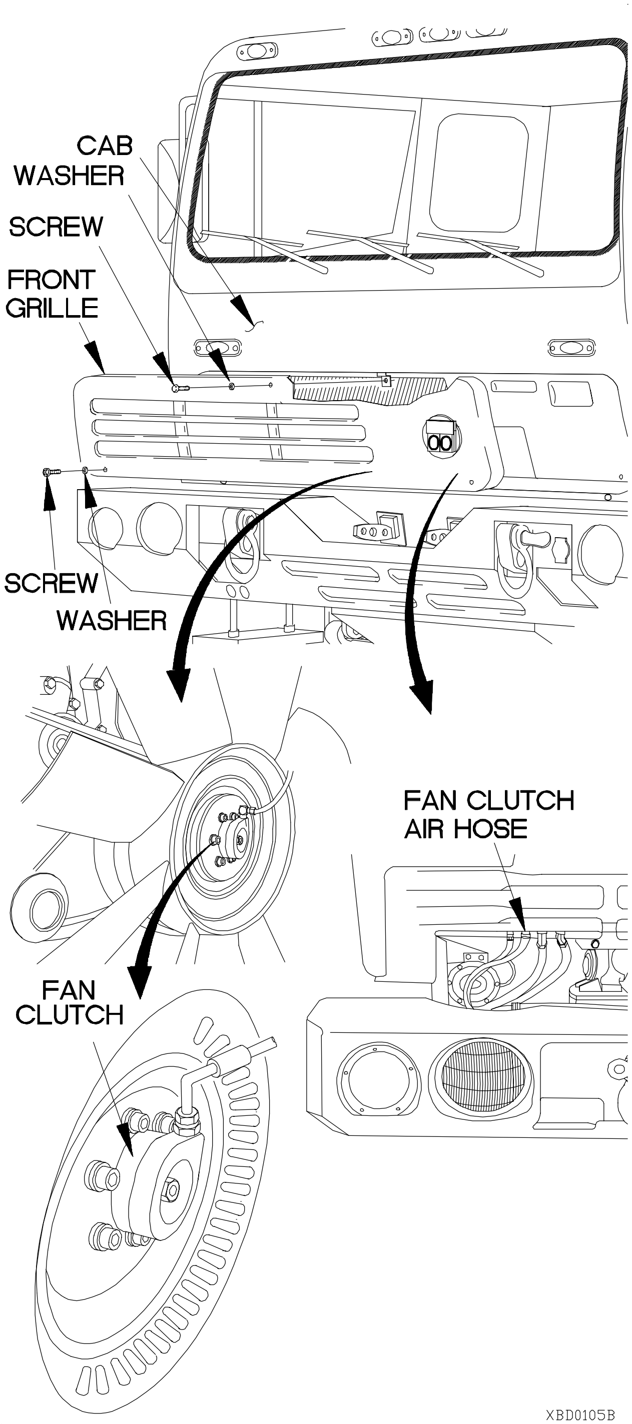
REASON FOR QUESTION

If fan clutch spins freely without air pressure applied, fan clutch is faulty.

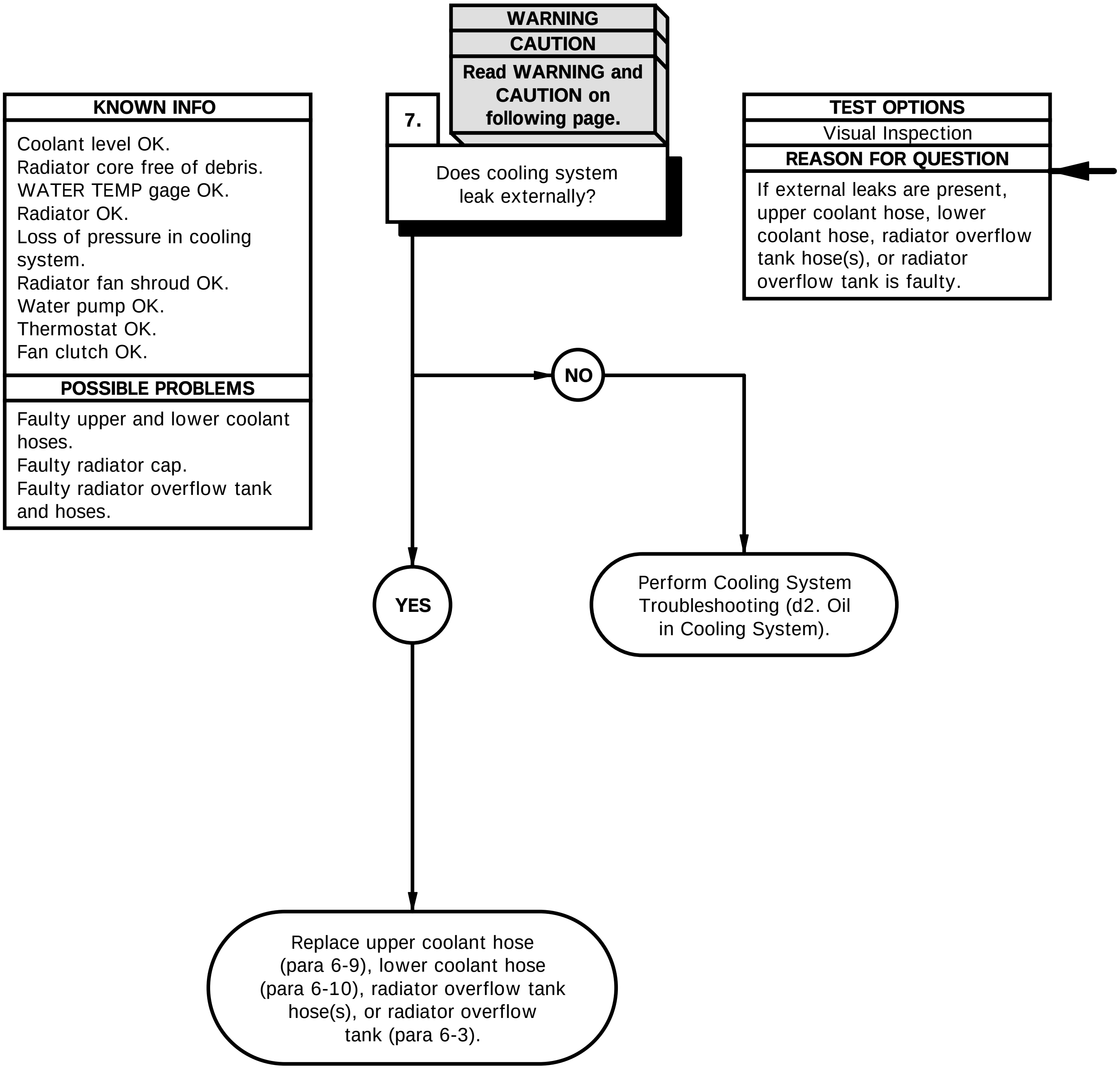
NO — Notify DS Maintenance.

YES — Replace fan clutch (para 6-14).

(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect air hose from fan clutch.
(5) Check to see if fan clutch turns freely.
(6) If fan clutch turns freely without air applied, replace fan clutch (para 6-14).
(7) Connect air hose to fan clutch.
(8) Position front grille on cab with washer and screw.
(9) Position two washers and screws in front grille.
(10) Tighten screw to 48-60 lb-in. (5-7 N·m).
(11) Tighten two screws to 24 lb-in. (3 N·m).



d1. ENGINE OVERHEATS (CONT)



KNOWN INFO

Coolant level OK.
Radiator core free of debris.
WATER TEMP gage OK.
Radiator OK.
Loss of pressure in cooling system.
Radiator fan shroud OK.
Water pump OK.
Thermostat OK.
Fan clutch OK.

POSSIBLE PROBLEMS

Faulty upper and lower coolant hoses.
Faulty radiator cap.
Faulty radiator overflow tank and hoses.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

7. Does cooling system leak externally?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If external leaks are present, upper coolant hose, lower coolant hose, radiator overflow tank hose(s), or radiator overflow tank is faulty.

NO

Perform Cooling System Troubleshooting (d2. Oil in Cooling System).

YES

Replace upper coolant hose (para 6-9), lower coolant hose (para 6-10), radiator overflow tank hose(s), or radiator overflow tank (para 6-3).

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing troubleshooting. Failure to comply may result in injury to personnel.

CAUTION

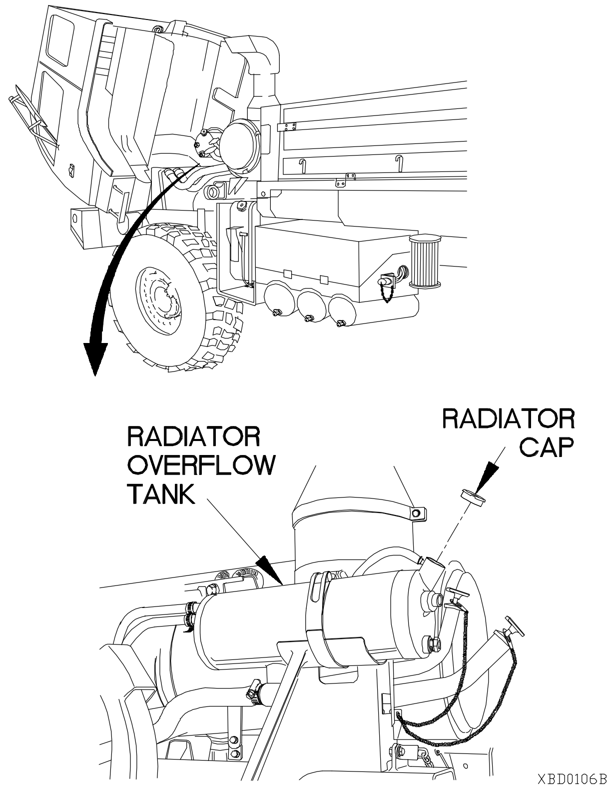
Do not pressurize over 16 psi (110 kPa). Failure to comply may result in damage to cooling system.

(1) Pressurize radiator overflow tank, using tester, to 15 psi (103 kPa).
(2) Observe hoses for coolant leaks.

NOTE

Pressure loss without external leaks indicates engine internal coolant leaks.

(3) Observe radiator tester for loss of pressure.
(4) If no external leaks are present, perform Cooling System Troubleshooting (d2. Oil in Cooling System).
(5) If external leaks are present, replace upper coolant hose (para 6-10), radiator overflow tank hose(s), or radiator overflow tank (para 6-3).
(6) Remove tester and test kit from radiator overflow tank.
(7) Install radiator cap on radiator overflow tank.

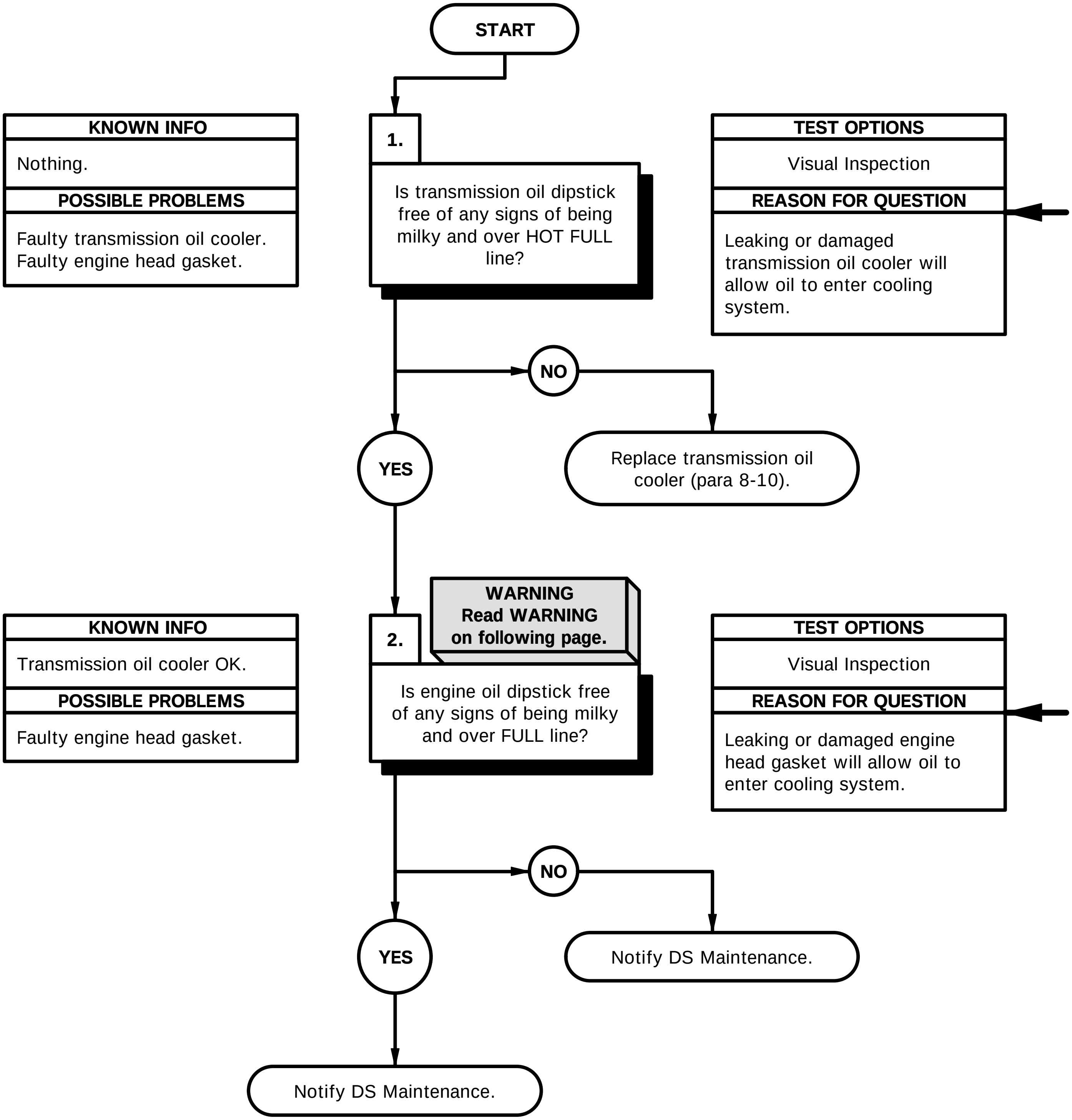


d2. OIL IN COOLING SYSTEM

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)



KNOWN INFO
Nothing.

POSSIBLE PROBLEMS
Faulty transmission oil cooler.
Faulty engine head gasket.

1. Is transmission oil dipstick free of any signs of being milky and over HOT FULL line?

TEST OPTIONS
Visual Inspection

REASON FOR QUESTION
Leaking or damaged transmission oil cooler will allow oil to enter cooling system.

Replace transmission oil cooler (para 8-10).

KNOWN INFO
Transmission oil cooler OK.

POSSIBLE PROBLEMS
Faulty engine head gasket.

WARNING
Read WARNING on following page.

2. Is engine oil dipstick free of any signs of being milky and over FULL line?

TEST OPTIONS
Visual Inspection

REASON FOR QUESTION
Leaking or damaged engine head gasket will allow oil to enter cooling system.

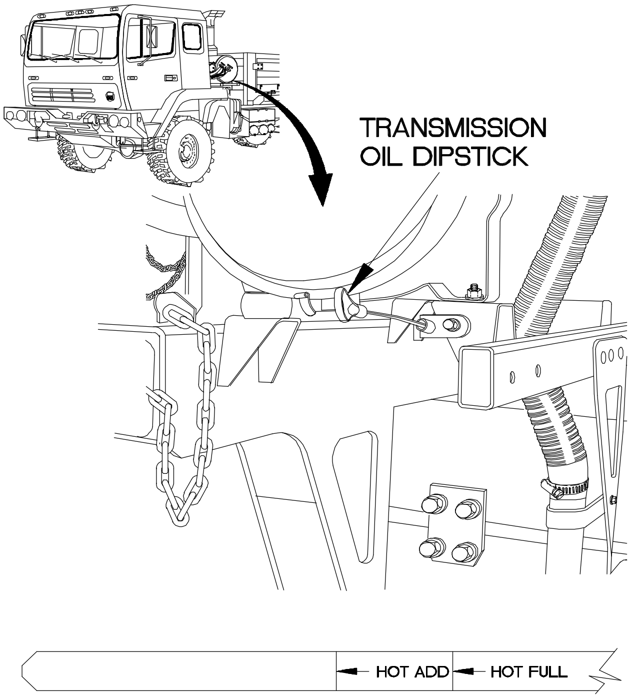
Notify DS Maintenance.

Notify DS Maintenance.

NOTE

Perform transmission oil check when engine is at normal operating temperature (160°F-230°F (71°C-110°C)).

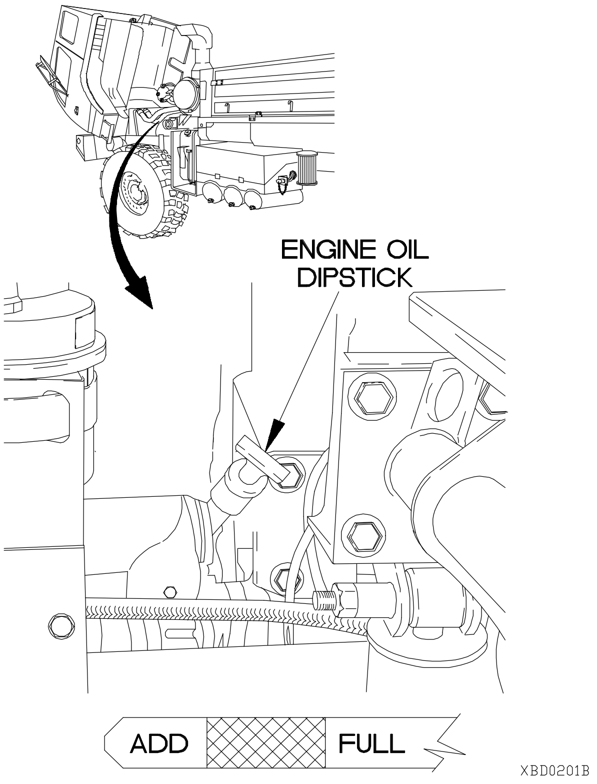
(1) Start engine (TM 9-2320-366-10-1).
(2) Check transmission oil dipstick for signs of oil being milky and over HOT FULL line.
(3) If transmission oil dipstick shows oil level over HOT FULL line and milky, replace transmission oil cooler (para 8-10).
(4) Shut down engine (TM 9-2320-366-10-1).



WARNING

Engine oil dipstick is located close to starter solenoid connections which are 24 VDC and high amperage. Use caution removing/installing engine oil dipstick to prevent shorting across starter solenoid connections. Failure to comply may result in serious injury or death to personnel or damage to equipment.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check engine oil dipstick for signs of being milky and over FULL line.
(3) If engine oil dipstick shows engine oil to be milky and over FULL line, notify DS Maintenance.
(4) If engine oil dipstick shows engine oil appears normal and not over FULL line, notify DS Maintenance.
(5) Lower cab (TM 9-2320-366-10-1).



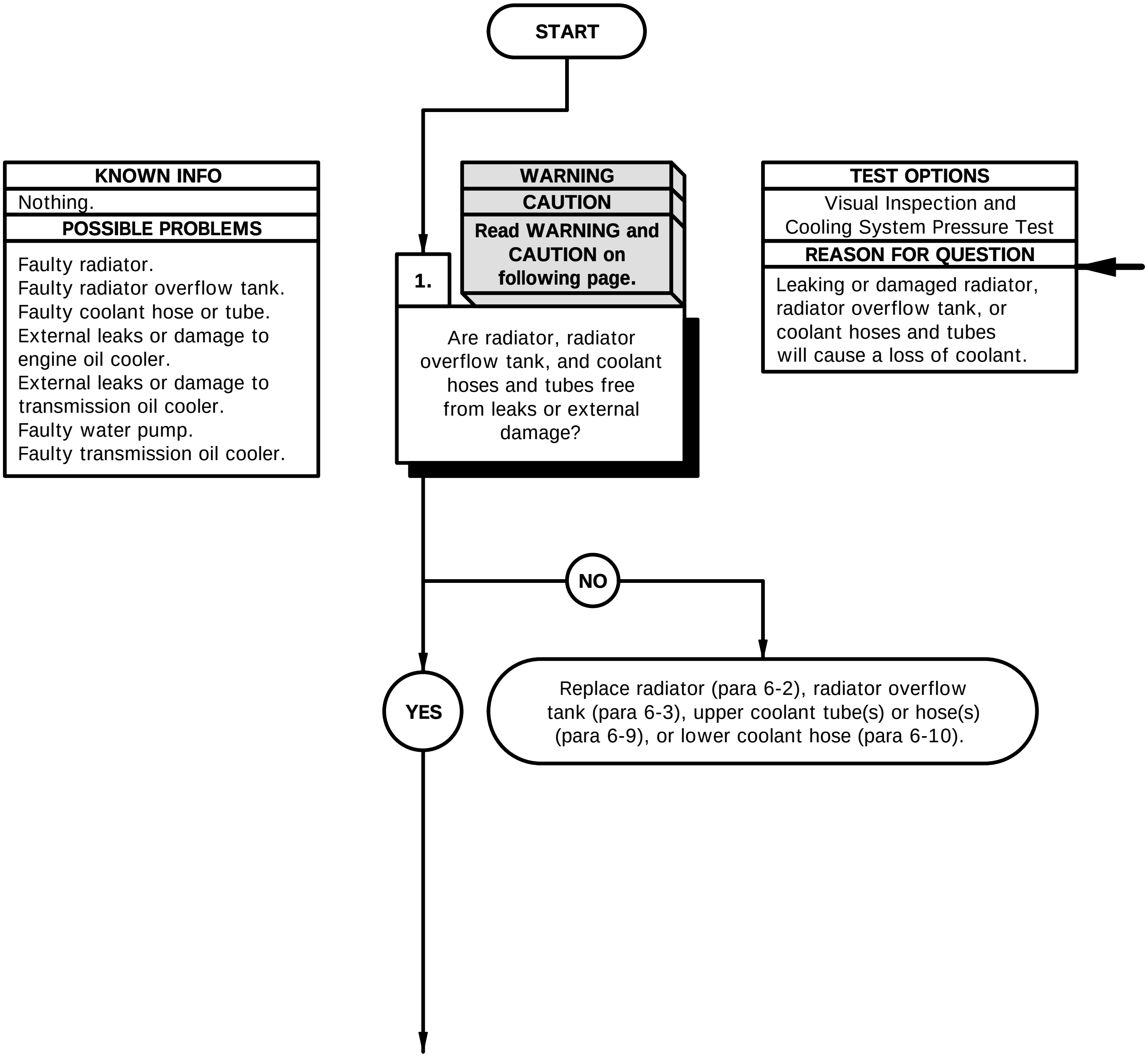
d3. LOSS OF COOLANT

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
Test Kit, Radiator (P/N 4910-00-728-8227)
Pressure Tester, Radiator (Item 26, Appendix C)
Goggles, Industrial (Item 15, Appendix C)



KNOWN INFO

Nothing.

POSSIBLE PROBLEMS

Faulty radiator.
Faulty radiator overflow tank.
Faulty coolant hose or tube.
External leaks or damage to engine oil cooler.
External leaks or damage to transmission oil cooler.
Faulty water pump.
Faulty transmission oil cooler.

WARNING
CAUTION
Read WARNING and CAUTION on following page.

1\. Are radiator, radiator overflow tank, and coolant hoses and tubes free from leaks or external damage?

TEST OPTIONS

Visual Inspection and Cooling System Pressure Test

REASON FOR QUESTION

Leaking or damaged radiator, radiator overflow tank, or coolant hoses and tubes will cause a loss of coolant.

Replace radiator (para 6-2), radiator overflow tank (para 6-3), upper coolant tube(s) or hose(s) (para 6-9), or lower coolant hose (para 6-10).

WARNING

Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may result in injury to personnel.

(1) Raise cab (TM 9-2320-366-10-1).
(2) Check radiator, radiator overflow tank, and coolant hoses and tubes for leaks and damage.

COOLING SYSTEM PRESSURE TEST

(1) Remove radiator cap from radiator overflow tank.
(2) Install test kit on radiator overflow tank.
(3) Install pressure tester on test kit.

CAUTION

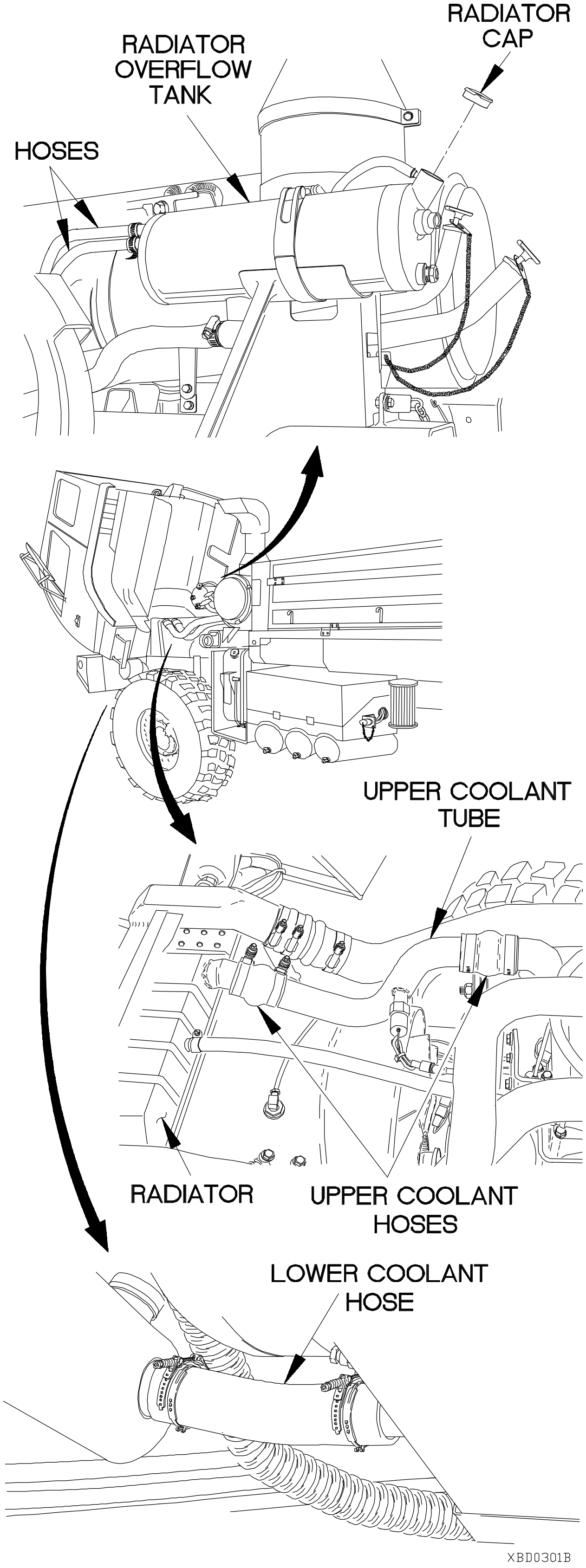
Do not pressurize over 16 psi (110 kPa). Failure to comply may result in damage to cooling system.

(4) Pressurize radiator overflow tank, using tester, to 15 psi (103 kPa).
(5) Observe radiator and radiator overflow tank for coolant leaks.

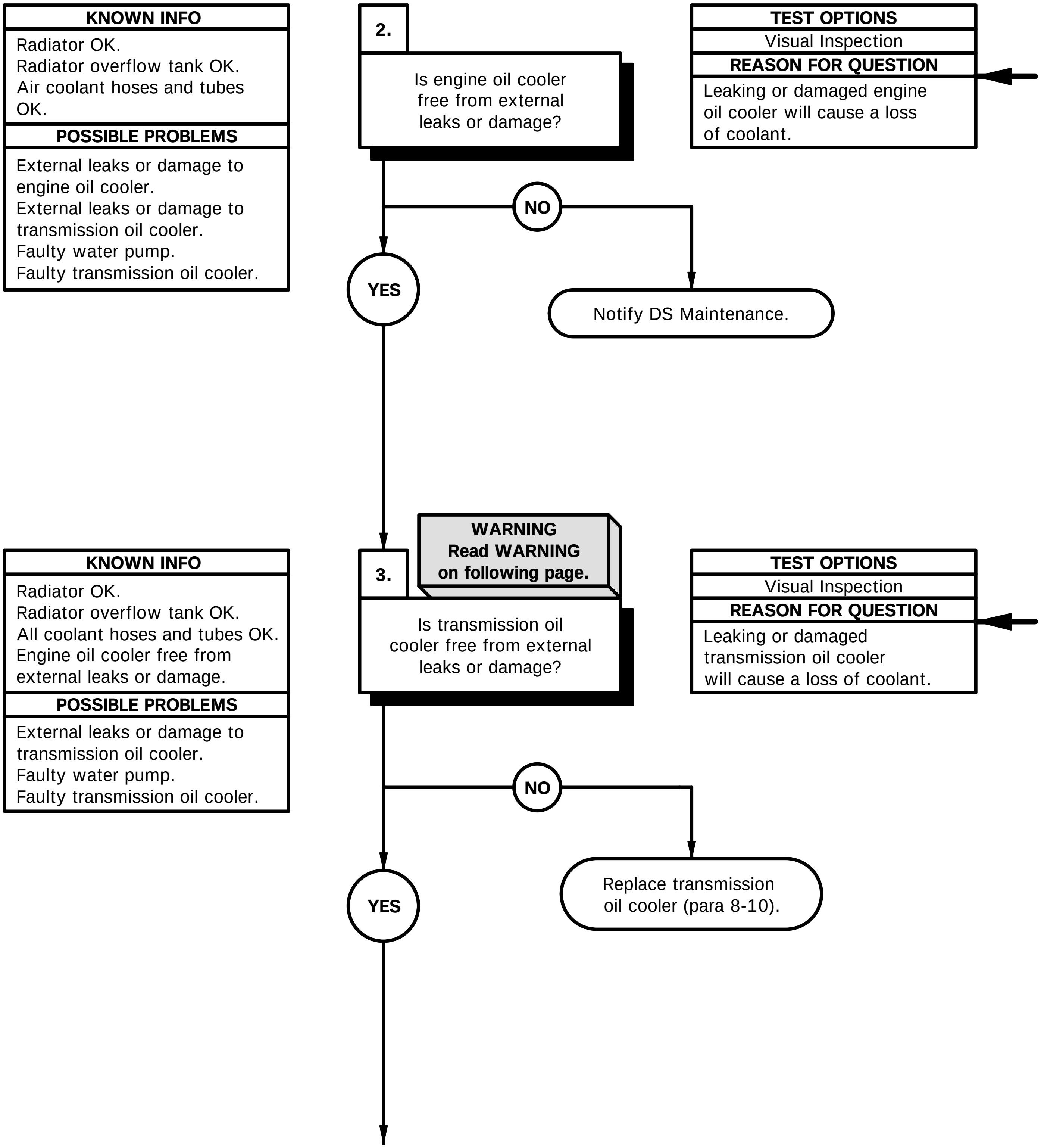
NOTE

Pressure loss without external leaks indicates internal coolant leaks.

(6) Observe radiator tester for loss of pressure.
(7) Remove pressure tester and test kit from radiator overflow tank.
(8) Install radiator cap on radiator overflow tank.



d3. LOSS OF COOLANT (CONT)



KNOWN INFO

Radiator OK.
Radiator overflow tank OK.
Air coolant hoses and tubes OK.

POSSIBLE PROBLEMS

External leaks or damage to engine oil cooler.
External leaks or damage to transmission oil cooler.
Faulty water pump.
Faulty transmission oil cooler.

2\. Is engine oil cooler free from external leaks or damage?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

Leaking or damaged engine oil cooler will cause a loss of coolant.

NO: Notify DS Maintenance.

KNOWN INFO

Radiator OK.
Radiator overflow tank OK.
All coolant hoses and tubes OK.
Engine oil cooler free from external leaks or damage.

POSSIBLE PROBLEMS

External leaks or damage to transmission oil cooler.
Faulty water pump.
Faulty transmission oil cooler.

WARNING
Read WARNING on following page.

3\. Is transmission oil cooler free from external leaks or damage?

TEST OPTIONS

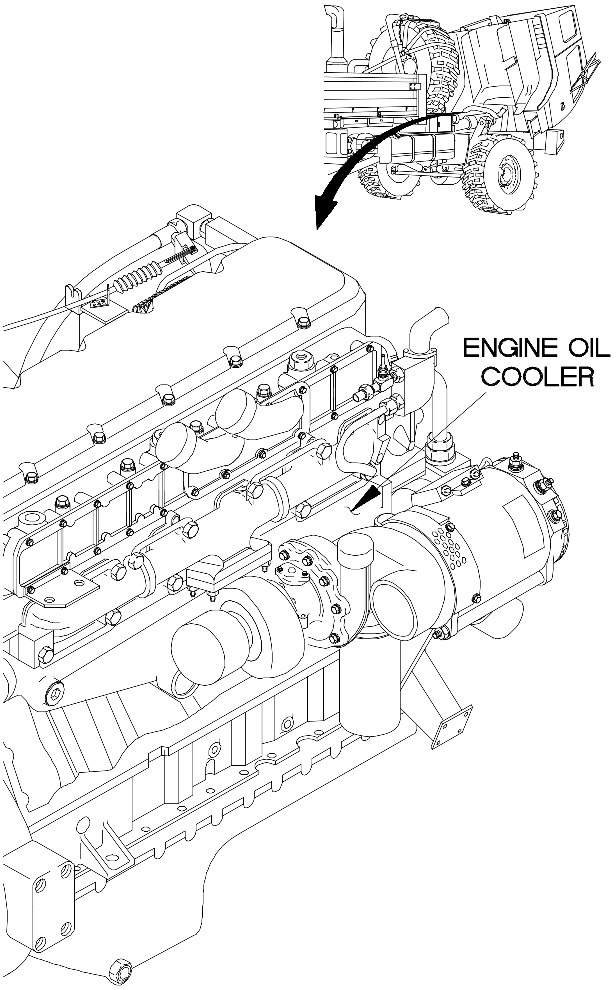
Visual Inspection

REASON FOR QUESTION

Leaking or damaged transmission oil cooler will cause a loss of coolant.

NO: Replace transmission oil cooler (para 8-10).

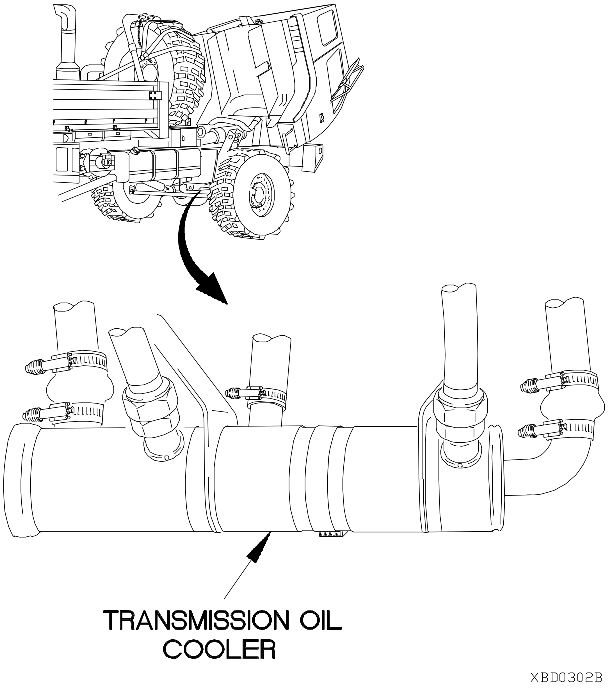
(1) Check engine oil cooler for leaks and obvious signs of damage.
(2) If leaks or damage are noted, notify DS Maintenance.



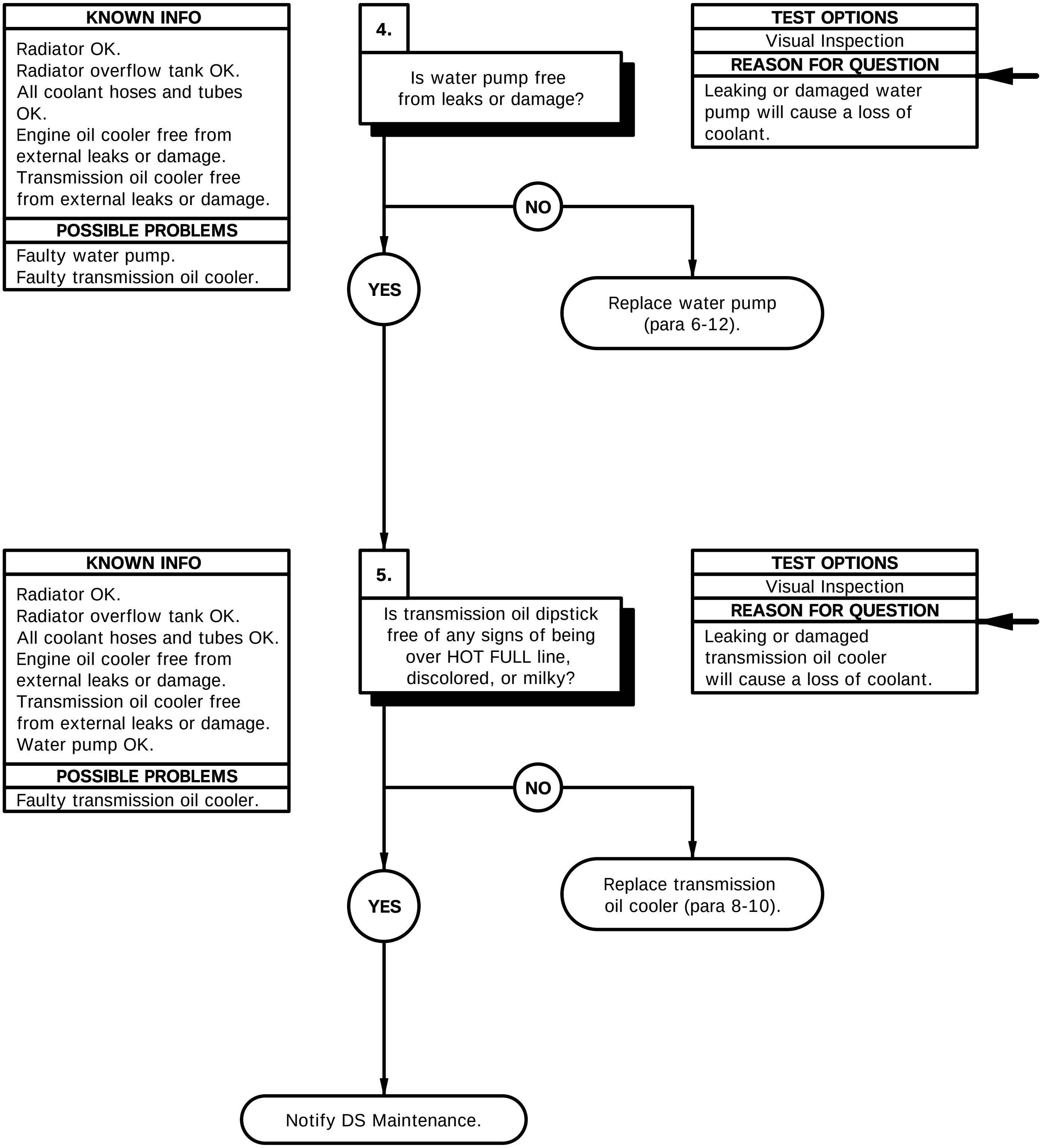
WARNING

Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

(1) Check transmission oil cooler for obvious signs of damage and leakage.
(2) If leaks or damage are noted, replace transmission oil cooler (para 8-10).
(3) Lower cab (TM 9-2320-366-10-1).



d3. LOSS OF COOLANT (CONT)



KNOWN INFO

Radiator OK.
Radiator overflow tank OK.
All coolant hoses and tubes OK.
Engine oil cooler free from external leaks or damage.
Transmission oil cooler free from external leaks or damage.

POSSIBLE PROBLEMS

Faulty water pump.
Faulty transmission oil cooler.

4. Is water pump free from leaks or damage?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

Leaking or damaged water pump will cause a loss of coolant.

NO — Replace water pump (para 6-12).

YES

KNOWN INFO

Radiator OK.
Radiator overflow tank OK.
All coolant hoses and tubes OK.
Engine oil cooler free from external leaks or damage.
Transmission oil cooler free from external leaks or damage.
Water pump OK.

POSSIBLE PROBLEMS

Faulty transmission oil cooler.

5. Is transmission oil dipstick free of any signs of being over HOT FULL line, discolored, or milky?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

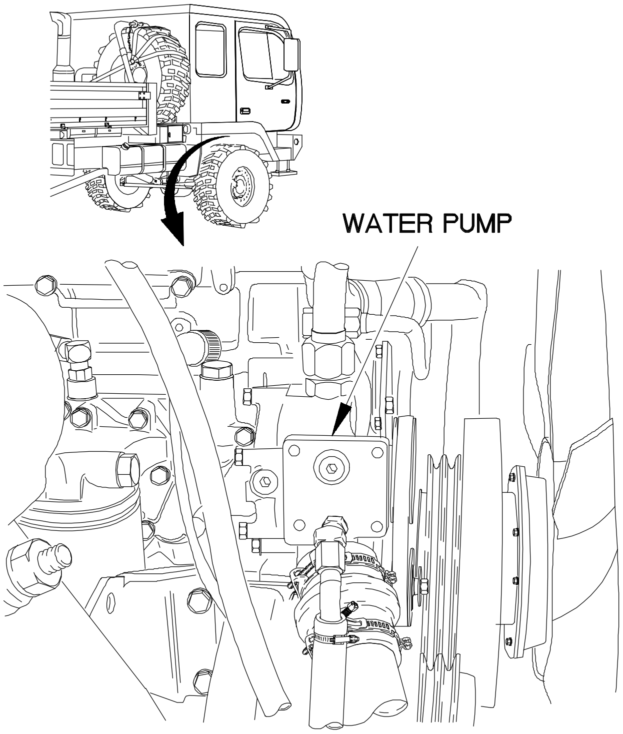
Leaking or damaged transmission oil cooler will cause a loss of coolant.

NO — Replace transmission oil cooler (para 8-10).

YES

Notify DS Maintenance.

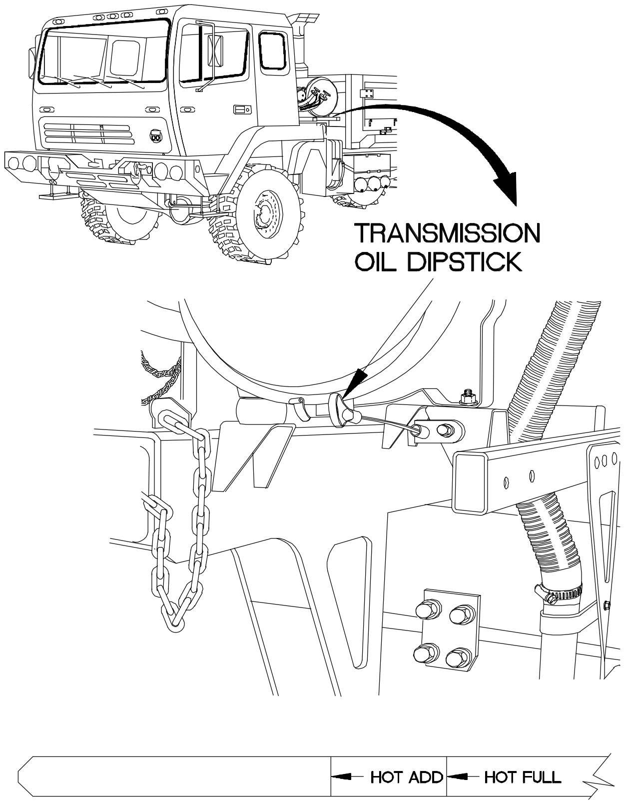
(1) Start engine (TM 9-2320-366-10-1).
(2) Check water pump for obvious signs of damage and leakage.
(3) If leaks or damage are found, replace water pump (para 6-12).
(4) Shut down engine (TM 9-2320-366-10-1).



NOTE

Perform transmission oil check when engine is at normal operating temperature (160°F-230°F (71°C-110°C)).

(1) Start engine (TM 9-2320-366-10-1).
(2) Check transmission oil dipstick for signs of being over HOT FULL line, discolored, or milky.
(3) If signs of being over HOT FULL line, discolored, or milky are found, replace transmission oil cooler (para 8-10).
(4) If no signs of being over HOT FULL line, discolored, or milky are found, notify DS Maintenance.
(5) Shut down engine (TM 9-2320-366-10-1).



2-16. ELECTRICAL SYSTEM TROUBLESHOOTING

This paragraph covers Electrical System Troubleshooting. The Electrical System Fault Index, Table 2-7, lists faults for the electrical system of the vehicle.

Table 2-7. Electrical System Fault Index

Fault No.	Description	Page
e1.	Circuit Breaker Does Not Operate	2-158
e2.	Engine Does Not Crank	2-164
e3.	12 VDC and 24 VDC Circuits Do Not Operate	2-264
e4.	24 VDC Circuits Do Not Operate	2-268
e5.	Deleted	2-286
e6.	Engine Cranks But Does Not Start	2-310
e7.	FUEL Gage Does Not Operate or Is Inaccurate	2-318
e8.	WATER TEMP Gage Does Not Operate or Is Inaccurate	2-324
e9.	REAR BRAKE AIR Pressure Gage Does Not Operate or Is Inaccurate	2-328
e10.	FRONT BRAKE AIR Pressure Gage Does Not Operate or Is Inaccurate	2-332
e11.	Engine Oil Pressure Gage Does Not Operate or Is Inaccurate	2-336
e12.	Speedometer Does Not Operate or Is Inaccurate	2-342
e13.	VOLTS Gage Does Not Operate or Is Inaccurate	2-356
e14.	Tachometer Does Not Operate or Is Inaccurate	2-358
e15.	Audible Alarm Does Not Operate	2-368
e16.	Troop Transport Audible Alarm Does Not Operate	2-372
e16A.	Master Power Switch Does Not Shut Down Engine	2-380.4
e16B.	Lamp Test Switch Does Not Illuminate	2-380.10
e17.	Radiaotr Fan Off Switch Does Not Illuminate	2-382
e17A.	Ether Start Switch Does Not Illuminate	2-386
e17B.	Hazard Lights Switch Does Not Illuminate	2-386.4
e17C.	Amber Warning Light Switch Does Not Illuminate	2-386.8
e17D.	Master Power Switch Does Not Illuminate	2-386.12
e18.	REAR BRAKE AIR Gage Does Not Illuminate	2-388
e18A.	FUEL Gage Does Not Illumiante	2-390.2
e18B.	FRONT BRAKE AIR Gage Does Not Illuminate	2-390.6
e18C.	Speedometer Does Not Illuminate	2-390.10
e18D.	VOLTS Gage Does Not Illuminate	2-390.14
e18E.	WATER TEMP Gage Does Not Illuminate	2-390.18
e19.	OIL PRESS Gage Does Not Illuminate	2-392
e20.	Auxiliary Instrument Panel, Personnel Heater, and Instrument Panel Do Not Illuminate	2-396
e21.	Tachometer Does Not Illuminate	2-400
e22.	Auxiliary Panel Switch Does Not Illuminate	2-404
e23.	Auxiliary Panel Does Not Illuminate	2-408
e24.	High Engine Temperature Indicator Does Not Operate	2-412
e24A.	High Engine Temperature Indicator Illuminates	2-418.2
e25.	Central Tire Inflation System (CTIS) Overspeed Indicator Does Not Operate	2-420
e26.	Chemical Detector Indicator Does Not Operate	2-434
e27.	Left Turn Signal Indicator Does Not Operate	2-438
e28.	Right Turn Signal Indicator Does Not Operate	2-442
e29.	Turn Signal Indicators and High Beams On Indicator Do Not Operate	2-448
e30.	High Beams On Indicator Does Not Operate	2-450
e31.	Parking Brake Indicator and/or Emergency Brake Indicator Does Not Illuminate	2-454

2-16. ELECTRICAL SYSTEM TROUBLESHOOTING (CONT)

Table 2-7. Electrical System Fault Index (Cont)

Fault No.	Description	Page
e32.	Power Take-Off (PTO) Indicator Does Not Operate	2-470
e33.	Fan Off Indicator Does Not Operate	2-482
e34.	Dump Up Indicator Does Not Operate	2-488
e35.	WTEC II Transmission Temperature Indicator Does Not Operate	2-498
e36.	WTEC III Transmission Temperature Indicator Does Not Operate	2-506
e37.	Front Brake Air Indicator Does Not Illuminate When Air Pressure is Below 65 PSI	2-512
e38.	Rear Brake Air Indicator Does Not Illuminate When Air Pressure is Below 65 PSI	2-518
e39.	Engine Oil Pressure Indicator Does Not Operate	2-524
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e42.	One or Both Headlight Low Beams Do Not Illuminate	2-540
e43.	One or Both Headlight High Beams Do Not Illuminate	2-546
e44.	Parking Lights Do Not Illuminate	2-554
e45.	LH Door and/or LH Front Marker Lights Do Not Illuminate	2-562
e46.	RH Door and/or RH Front Marker Lights Do Not Illuminate	2-572
e47.	One or More Cab Top Marker Lights Do Not Illuminate	2-582
e48.	M1083/M1084/M1090/M1092/M1093/M1094 Side and/or Rear Marker Lights Do Not Illuminate	2-596
e48A.	All Marker Lights Do Not Illuminate in Normal Mode	2-604.56
e48B.	M1085/M1086/M1089/M1096 Intermediate, Side, and/or Rear Marker Light(s) Do Not Illuminate	2-604.70
e48C.	M1088 Rear Marker Light(s) Do Not Illuminate	2-604.164
e49.	One or Both Composite Taillights Do Not Illuminate	2-606
e50.	One or Both Front Blackout Marker Lights Do Not Illuminate	2-616
e51.	Blackout Drive Light Does Not Illuminate	2-626
e52.	One or Both Rear Blackout Marker Lights Do Not Illuminate	2-636
e53.	Amber Warning Light Does Not Illuminate (All Models Except M1089)	2-646
e54.	M1089 Amber Warning Light Does Not Illuminate	2-658
e55.	Backup Light Does Not Illuminate	2-670
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e56A.	Front Hazard Lights Do Not Illuminate	2-710
e57.	Rear Hazard Lights Do Not Illuminate	2-712
e58.	Front and Rear Hazard Lights Do Not Illuminate	2-714
e59.	Front and Rear Turn Signals Do Not Operate	2-722
e60.	Left or Right Front Turn Signal Does Not Operate	2-734
e61.	One or Both Stoplights Do Not Illuminate	2-742
e62.	One or Both Blackout Stoplights Do Not Illuminate	2-760
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e64.	Stoplights Do Not Operate When M1088 Trailer Brakes Are Applied	2-782
e65.	Trailer Marker/Taillights Do Not Illuminate	2-786
e66.	Trailer Right Stop/Turn Light Does Not Illuminate	2-796
e67.	Trailer Left Stop/Turn Light Does Not Illuminate	2-806
e68.	Trailer Blackout Marker Lights Do Not Illuminate	2-816
e69.	Trailer Blackout Stoplights Do Not Illuminate	2-826
e70.	Intervehicle Clearance Lights Do Not Operate	2-836
e71.	Intervehicle Left Turn Signal Does Not Illuminate	2-840

Table 2-7. Electrical System Fault Index (Cont)

Volume 2

2-16. ELECTRICAL SYSTEM TROUBLESHOOTING (CONT)

Table 2-7. Electrical System Fault Index (Cont)

Table 2-7. Electrical System Fault Index (Cont)

Fault No.	Description	Page
e139.	Main Winch LH or RH Speed Switch Does Not Operate From Wrecker Control Panel	2-1446.12
e140.	Main Winch LH or RH Freespool Switch Does Not Operate From Wrecker Control Panel	2-1452
e141.	One Wrecker Function Does Not Operate From Wrecker Remote Control	2-1458
e142.	M1090/M1094 Tailgate Release Does Not Operate	2-1468
e143.	M1090/M1094 Dump Body Does Not Raise	2-1480
e144.	M1090/M1094 Dump Body Does Not Lower	2-1492
e145.	Transmission Auxiliary Oil Cooler Fan(s) Runs Constantly	2-1504
e146.	Transmission Auxiliary Oil Cooler Fan Does Not Operate (All Models Except M1088/M1089)	2-1508
e147.	M1088/M1089 Transmission Auxiliary Oil Cooler Fan Does Not Operate	2-1526
e148.	M1088/M1089 Worklights Do Not Illuminate	2-1540
e149.	M1088/M1089 (LH) Worklights Do Not Illuminate	2-1558
e150.	M1088/M1089 (RH) Worklights Do Not Illuminate	2-1562
e151.	M1088/M1089 Worklights Do Not Illuminate In Blackout Mode With Blackout Override Switch On	2-1566
e152.	M1084/M1086 Worklights Do Not Illuminate	2-1576

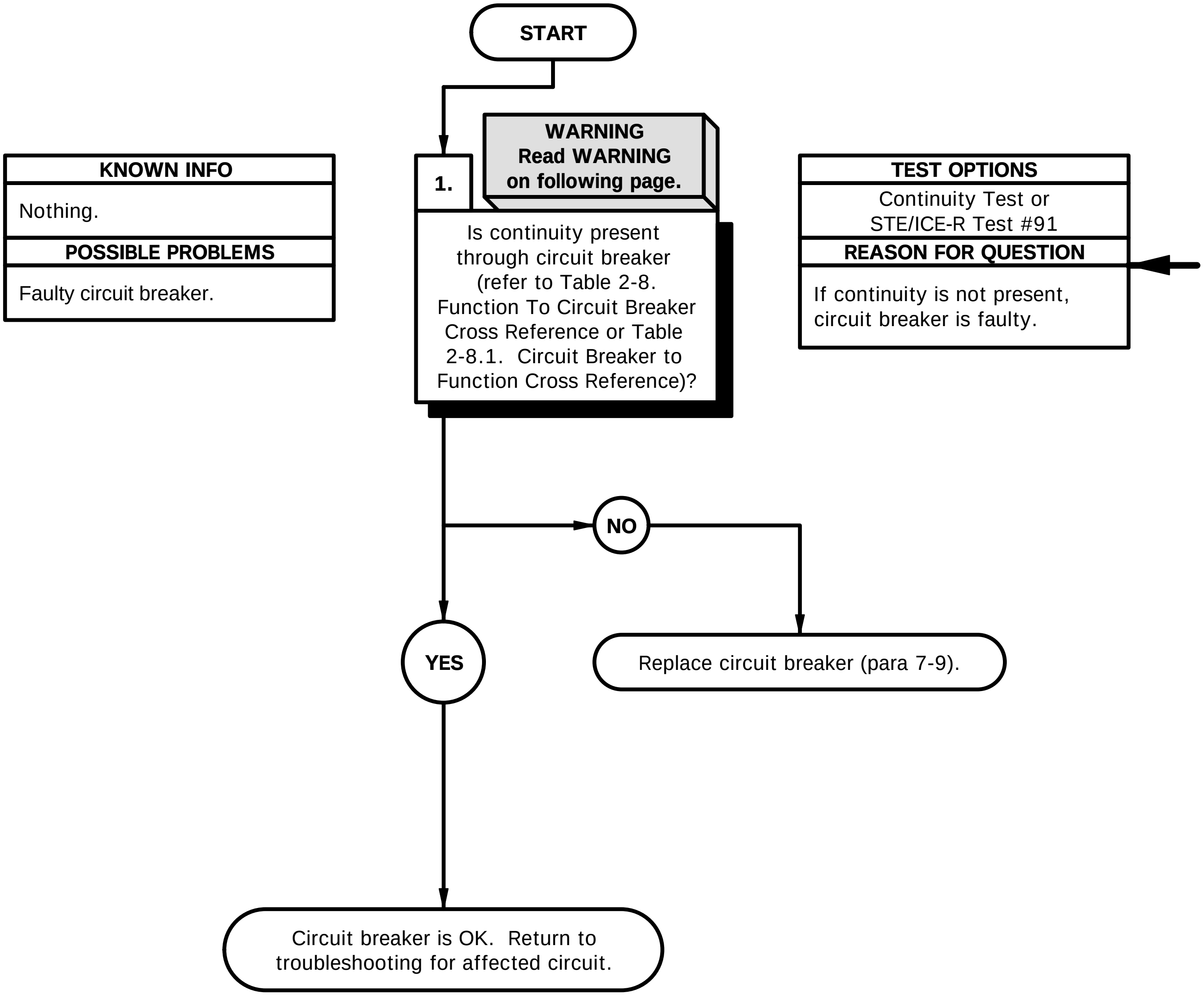
e1. CIRCUIT BREAKER DOES NOT OPERATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)



WARNING
Read WARNING on following page.

KNOWN INFO

Nothing.

POSSIBLE PROBLEMS

Faulty circuit breaker.

Is continuity present through circuit breaker (refer to Table 2-8. Function To Circuit Breaker Cross Reference or Table 2-8.1. Circuit Breaker to Function Cross Reference)?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, circuit breaker is faulty.

Replace circuit breaker (para 7-9).

Circuit breaker is OK. Return to troubleshooting for affected circuit.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CONTINUITY TEST

(1) Remove Power Distribution Panel (PDP) cover (para 16-2).
(2) Locate circuit breaker to be tested on PDP (refer to Figure 2-1. Circuit Breaker Locations and Table 2-8. Function to Circuit Breaker Cross Reference or Table 2-8.1. Circuit Breaker to Function Cross Reference).
(3) Check reset button on circuit breaker. If button is up (circuit breaker tripped), press button to reset.
(4) Remove circuit breaker to be tested from PDP.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to one circuit breaker terminal.
(7) Connect negative (-) probe of multimeter to other circuit breaker terminal and note reading on multimeter.
(8) If continuity is not present, replace circuit breaker (para 7-9).
(9) If continuity is present, circuit breaker is OK. Return to troubleshooting affected circuit.
(10) Install tested circuit breaker in PDP.
(11) Install PDP cover (para 16-2).

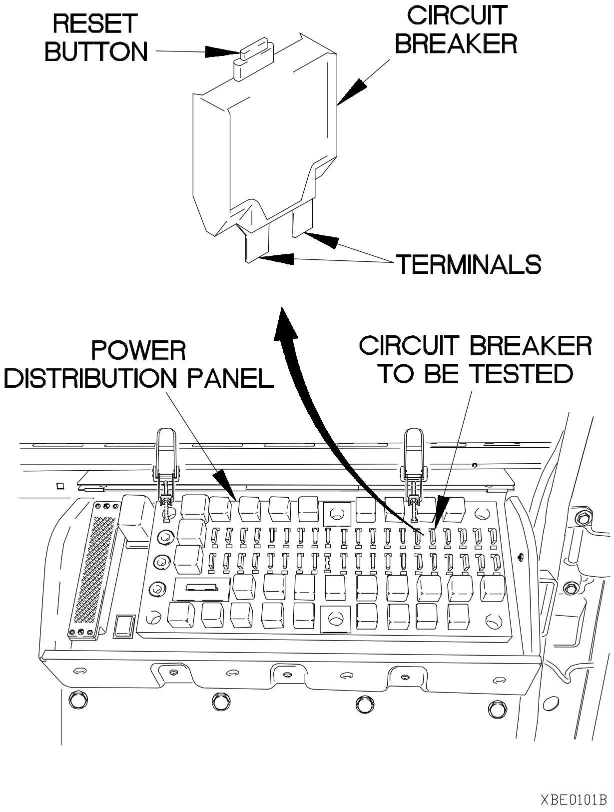
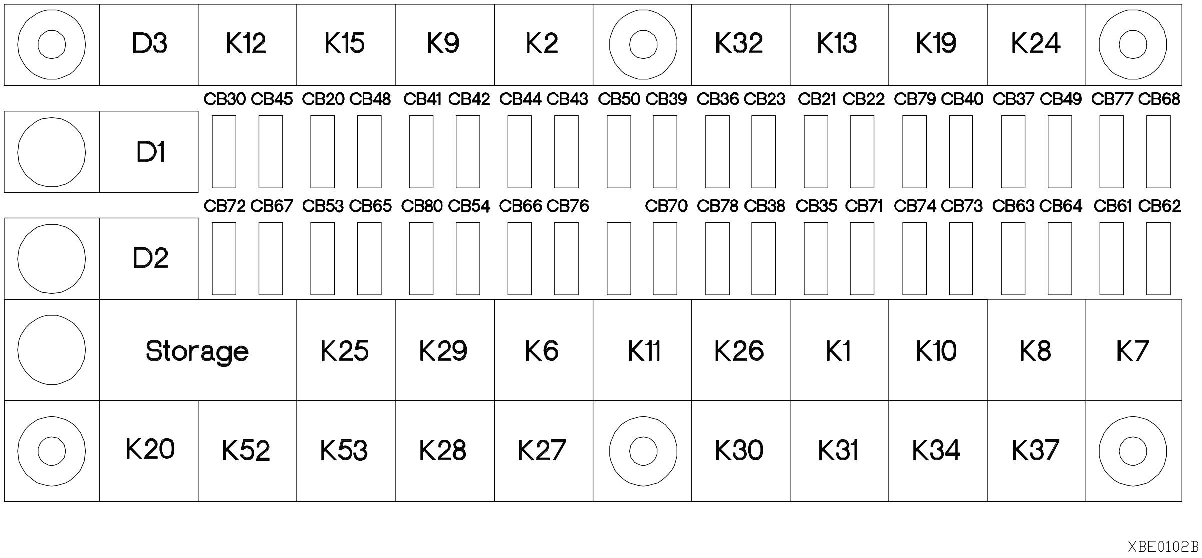


Figure 2-1. Circuit Breaker Locations



e1. CIRCUIT BREAKER DOES NOT OPERATE (CONT)

Table 2-8. Function to Circuit Breaker Cross Reference

Function	Circuit Breaker / AMP
10 AMP Fuse WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS)	CB79 / 15
12 VDC Intervehicular Left Turn Signal	CB76 / 15
12 VDC Intervehicular Marker Lights	CB67 / 25
12 VDC Intervehicular Right Turn Signal	CB76 / 15
12 VDC Intervehicular Stoplight	CB76 / 15
12 VDC Intervehicular Taillights	CB80 / 25
24 VDC Intervehicular Auxiliary	CB76 / 15
24 VDC Intervehicular Blackout Clearance	CB42 / 10
24 VDC Intervehicular Blackout Stoplight	CB39 / 10
24 VDC Intervehicular Clearance and Rear Light	CB41 / 15
24 VDC Intervehicular Left Blackout Marker	CB42 / 10
24 VDC Intervehicular Left and Right Turn Signals and Stoplights (WTEC III)	CB44 / 15
24 VDC Intervehicular Left Turn Signal and Stoplight (WTEC II)	CB43 / 15
24 VDC Intervehicular Right Blackout Marker	CB42 / 10
24 VDC Intervehicular Right Turn Signal and Stoplight (WTEC II)	CB44 / 15
Air Dryer	CB21 / 15

Table 2-8. Function to Circuit Breaker Cross Reference (Cont)

Function	Circuit Breaker / AMP
All Marker Lights	CB67 / 25
Audible Alarm	CB77 / 10
Auxiliary Oil Coolers Fan Motors (except M1088 and M1089)	CB68 / 20
Auxiliary Oil Coolers Fan Motors (M1088 and M1089)	CB68 / 25
Backup Light	CB73 / 8
Blackout Drive Light	CB54 / 8
Blackout Override Switch	CB72 / 15
Blackout Override Switch Light	CB70 / 20
Cab Radio	CB20 / 25
Central Tire Inflation System (CTIS)	CB40 / 10
Central Tire Inflation System (CTIS) Air Pressure Switch	CB40 / 10
Central Tire Inflation System (CTIS) Overspeed Indicator Light	CB40 / 10
Chemical Alarm	CB30 / 10
Chemical Detector	CB30 / 10
Chemical Detector Indicator Light	CB30 / 10
Circuit Breaker CB54	CB70 / 20
Circuit Breaker CB65	CB70 / 20
Circuit Breaker CB66	CB70 / 20
Circuit Breaker CB74	CB70 / 20
Circuit Breaker CB76	CB70 / 20

Table 2-8. Function to Circuit Breaker Cross Reference (Cont)

Function	Circuit Breaker / AMP
Dimmer Module	CB70 / 20
Dump Down Solenoid	CB50 / 15
Dump Up Indicator Light	CB21 / 15
Dump Up Indicator Switch	CB21 / 15
Dump Up Solenoid	CB50 / 15
Dump Up/Down Switch	CB50 / 15
Dump Up/Down Switch Light	CB70 / 20
Emergency Brake Indicator Light	CB77 / 10
Engine Fan Off Indicator Light	CB77 / 10
Engine Fan Off Switch (Fan)	CB22 / 10
Engine Fan Off Switch (Indicator Light)	CB77 / 10
Engine Fan Off Switch Light	CB70 / 20
Engine Fan Solenoid	CB22 / 10
Engine Oil Pressure Gage	CB77 / 10
Engine Oil Pressure Gage Light	CB70 / 20
Engine Oil Pressure Indicator Light	CB77 / 10
Engine Oil Pressure Sensor	CB77 / 10
Engine Oil Pressure Switch	CB77 / 10
Ether Sensor	CB22 / 10
Ether Start Solenoid	CB22 / 10
Ether Start Switch	CB22 / 10
Ether Start Switch Light	CB70 / 20
Frequency Divider	CB21 / 15
Front Brake Air Indicator Light	CB77 / 10

Table 2-8. Function to Circuit Breaker Cross Reference (Cont)

Function	Circuit Breaker / AMP
Front Brake Air Indicator Light Switch	CB77 / 10
Front Brake Air Pressure Gage	CB77 / 10
Front Brake Air Pressure Gage Light	CB70 / 20
Front Brake Air Pressure Transmitter	CB77 / 10
Front Left Blackout Marker	CB66 / 8
Front Left Parking Light	CB65 / 8
Front Left Turn Signal	CB76 / 15
Front Right Blackout Marker	CB66 / 8
Front Right Parking Light	CB65 / 8
Front Right Turn Signal	CB76 / 15
Fuel Gage	CB77 / 10
Fuel Gage Light	CB70 / 20
Fuel Level Sensor	CB77 / 10
Fuel Solenoid	CB79 / 15
Fuel Water Solenoid	CB49 / 15
Hazard Warning Switch	CB71 / 15
Hazard Warning Switch	CB76 / 15
Hazard Warning Switch Light	CB70 / 20
Headlight Dimmer Switch	CB70 / 20
Headlight HI Beam Indicator Light	CB78 / 15
Horn	CB36 / 20
Interaxle Differential Solenoid	CB21 / 15
Lamp Test Switch Light	CB70 / 20

e1. CIRCUIT BREAKER DOES NOT OPERATE (CONT)

Table 2-8. Function to Circuit Breaker Cross Reference (Cont)

Function	Circuit Breaker / AMP
Left Blackout Stoplight	CB76 / 15
Left Headlight	CB78 / 15
Left Rear Composite Lamp Taillight	CB80 / 25
Left Turn Signal Indicator Light	CB76 / 15
Magnetic Pickup	CB77 / 10
Main Light Switch	CB70 / 20
Master Power Switch	CB70 / 20
Master Power Switch Light	CB70 / 20
Master Stop Indicator Light	CB77 / 10
Material Handling Crane	CB53 / 15
Parking Brake Indicator Light	CB77 / 10
Parking Brake Switch	CB77 / 10
Personnel Heater	CB23 / 15
Personnel Heater Lights	CB70 / 20
Power Take-Off (PTO) Indicator Light	CB77 / 10
Power Take-Off (PTO) Pressure Switch	CB77 / 10
Power Take-Off (PTO) Solenoid	CB49 / 15
Power Take-Off (PTO) Switch	CB49 / 15
Power Take-Off (PTO) Switch Light	CB70 / 20
Rear Brake Air Indicator Light	CB77 / 10

Table 2-8. Function to Circuit Breaker Cross Reference (Cont)

Function	Circuit Breaker / AMP
Rear Brake Air Indicator Light Switch	CB77 / 10
Rear Brake Air Pressure Gage	CB77 / 10
Rear Brake Air Pressure Gage Light	CB70 / 20
Rear Brake Air Pressure Transmitter	CB77 / 10
Rear Left Composite Lamp Turn Signal	CB76 / 15
Rear LH Blackout Marker	CB66 / 8
Rear RH Blackout Marker	CB66 / 8
Rear Right Composite Lamp Turn Signal	CB76 / 15
Right Blackout Stoplight	CB76 / 15
Right Headlight	CB78 / 15
Right Rear Composite Lamp Taillight	CB80 / 25
Right Turn Signal Indicator Light	CB76 / 15
Rotating Warning Light(s)	CB38 / 20
Rotating Warning Light Switch	CB70 / 20
Rotating Warning Light Switch Light	CB70 / 20
Speedometer	CB77 / 10
Speedometer Light	CB70 / 20
Start Inhibit Pushbutton Switch	CB79 / 15
Starter Pushbutton Switch	CB21 / 15
Stoplight Switches	CB76 / 15

Table 2-8. Function to Circuit Breaker Cross Reference (Cont)

Function	Circuit Breaker / AMP
Tachometer	CB77 / 10
Tachometer Light	CB70 / 20
Tailgate Release Solenoid	CB50 / 15
Tailgate Release Switch	CB50 / 15
Tailgate Release Switch Light	CB70 / 20
Tractor Stoplight Switch	CB76 / 15
Transmission Temperature Indicator Light	CB77 / 10
Troop Transport Alarm Switch	CB77 / 10
Turn Signal Flasher ECU	CB71 / 15
Turn Signal Flasher ECU	CB74 / 10
Voltmeter	CB77 / 10
Voltmeter Light	CB70 / 20
Water Temperature Gage	CB77 / 10
Water Temperature Gage Light	CB70 / 20
Water Temperature Indicator Light	CB77 / 10
Water Temperature Sensor	CB77 / 10
Water Temperature Switch	CB77 / 10
Water Temperature Switch (Fan)	CB22 / 10
Winch In Solenoid	CB49 / 15
Winch In/Out Switch	CB49 / 15
Winch In/Out Switch Light	CB70 / 20
Winch Out Solenoid	CB49 / 15
Winch Switch	CB49 / 15
Winch Switch Light	CB70 / 20
Windshield Wiper ECU	CB37 / 20
Wiper Motor	CB37 / 20
Work Lights	CB72 / 15
Work Light Switch	CB71 / 15
Work Light Switch Light	CB70 / 20
Wrecker Control Panel	CB50 / 15
Wrecker Remote Control	CB50 / 15
Wrecker Remote Engine Kill Switch	CB79 / 15
WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS)	CB35 / 15
WTEC II Vehicle Interface Module (VIM)	CB35 / 15
WTEC II / WTEC III Transmission Pushbutton Shift Selector (TPSS) Dimmer Module	CB66 / 8
WTEC III Transmission ECU	CB79 / 15
WTEC III Transmission ECU	CB43 / 15

e1. CIRCUIT BREAKER DOES NOT OPERATE (CONT)

Table 2-8.1. Circuit Breaker to Function Cross Reference

Circuit Breaker / AMP	Function
CB20 / 25	Cab Radio
CB21 / 15	Air Dryer
CB21 / 15	Dump Up Indicator Light
CB21 / 15	Dump Up Indicator Switch
CB21 / 15	Frequency Divider
CB21 / 15	Interaxle Differential Solenoid
CB21 / 15	Starter Pushbutton Switch
CB22 / 10	Engine Fan Off Switch (Fan)
CB22 / 10	Engine Fan Solenoid
CB22 / 10	Ether Sensor
CB22 / 10	Ether Start Solenoid
CB22 / 10	Ether Start Switch
CB22 / 10	Water Temperature Switch (Fan)
CB23 / 15	Personnel Heater
CB30 / 10	Chemical Alarm
CB30 / 10	Chemical Detector
CB30 / 10	Chemical Detector Indicator Light
CB35 / 15	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS)
CB35 / 15	WTEC II Vehicle Interface Module (VIM)
CB36 / 20	Horn
CB37 / 20	Windshield Wiper ECU
CB37 / 20	Wiper Motor

Table 2-8.1. Circuit Breaker to Function Cross Reference (Cont)

Circuit Breaker / AMP	Function
CB38 / 20	Rotating Warning Light(s)
CB39 / 10	24 VDC Intervehicular Blackout Stoplight
CB40 / 10	Central Tire Inflation System (CTIS)
CB40 / 10	Central Tire Inflation System (CTIS) Air Pressure Switch
CB40 / 10	Central Tire Inflation System (CTIS) Overspeed Indicator Light
CB41 / 15	24 VDC Intervehicular Clearance and Rear Light
CB42 / 10	24 VDC Intervehicular Blackout Clearance
CB42 / 10	24 VDC Intervehicular Left Blackout Marker
CB42 / 10	24 VDC Intervehicular Right Blackout Marker
CB43 / 15	24 VDC Intervehicular Left Turn Signal and Stoplight (WTEC II)
CB43 / 15	WTEC III Transmission ECU
CB44 / 15	24 VDC Intervehicular Right Turn Signal and Stoplight (WTEC II)
CB44 / 15	24 VDC Intervehicular Right and Left Turn Signals and Stoplights (WTEC III)
CB49 / 15	Fuel Water Solenoid
CB49 / 15	Power Take-Off (PTO) Solenoid
CB49 / 15	Power Take-Off (PTO) Switch
CB49 / 15	Winch In Solenoid

Table 2-8.1. Circuit Breaker to Function Cross Reference (Cont)

Circuit Breaker / AMP	Function
CB49 / 15	Winch In/Out Switch
CB49 / 15	Winch Out Solenoid
CB49 / 15	Winch Switch
CB50 / 15	Dump Down Solenoid
CB50 / 15	Dump Up Solenoid
CB50 / 15	Dump Up/Down Switch
CB50 / 15	Tailgate Release Solenoid
CB50 / 15	Tailgate Release Switch
CB50 / 15	Wrecker Control Panel
CB50 / 15	Wrecker Remote Control
CB53 / 15	Material Handling Crane
CB54 / 8	Blackout Drive Light
CB65 / 8	Front Left Parking Light
CB65 / 8	Front Right Parking Light
CB66 / 8	Front Left Blackout Marker
CB66 / 8	Front Right Blackout Marker
CB66 / 8	Rear LH Blackout Marker
CB66 / 8	Rear RH Blackout Marker
CB66 / 8	WTEC II / WTEC III Transmission Pushbutton Shift Selector (TPSS) Dimmer Module
CB67 / 25	12 VDC Intervehicular Marker Lights
CB67 / 25	All Marker Lights
CB68 / 20	Auxiliary Oil Coolers Fan Motors (except M1088 and M1089)

Table 2-8.1. Circuit Breaker to Function Cross Reference (Cont)

Circuit Breaker / AMP	Function
CB68 / 25	Auxiliary Oil Coolers Fan Motors (M1088 and M1089)
CB70 / 20	Blackout Override Switch Light
CB70 / 20	Circuit Breaker CB54
CB70 / 20	Circuit Breaker CB65
CB70 / 20	Ether Start Switch Light
CB70 / 20	Front Brake Air Pressure Gage Light
CB70 / 20	Circuit Breaker CB66
CB70 / 20	Circuit Breaker CB74
CB70 / 20	Circuit Breaker CB76
CB70 / 20	Dimmer Module
CB70 / 20	Dump Up/Down Switch Light
CB70 / 20	Engine Fan Off Switch Light
CB70 / 20	Engine Oil Pressure Gage Light
CB70 / 20	Fuel Gage Light
CB70 / 20	Hazard Warning Switch Light
CB70 / 20	Headlight Dimmer Switch
CB70 / 20	Lamp Test Switch Light
CB70 / 20	Main Light Switch
CB70 / 20	Master Power Switch
CB70 / 20	Master Power Switch Light
CB70 / 20	Personnel Heater Lights
CB70 / 20	Power Take-Off (PTO) Switch Light
CB70 / 20	Rear Brake Air Pressure Gage Light

e1. CIRCUIT BREAKER DOES NOT OPERATE (CONT)

Table 2-8.1. Circuit Breaker to Function Cross Reference (Cont)

Circuit Breaker / AMP	Function
CB70 / 20	Rotating Warning Light Switch
CB70 / 20	Rotating Warning Light Switch Light
CB70 / 20	Speedometer Light
CB70 / 20	Tachometer Light
CB70 / 20	Tailgate Release Switch Light
CB70 / 20	Voltmeter Light
CB70 / 20	Water Temperature Gage Light
CB70 / 20	Winch In/Out Switch Light
CB70 / 20	Winch Switch Light
CB70 / 20	Work Light Switch Light
CB71 / 15	Hazard Warning Switch
CB71 / 15	Turn Signal Flasher ECU
CB71 / 15	Work Light Switch
CB72 / 15	Blackout Override Switch
CB72 / 15	Work Lights
CB73 / 8	Backup Light
CB74 / 10	Turn Signal Flasher ECU
CB76 / 15	12 VDC Intervehicular Left Turn Signal
CB76 / 15	12 VDC Intervehicular Right Turn Signal
CB76 / 15	12 VDC Intervehicular Stoplight
CB76 / 15	24 VDC Intervehicular Auxiliary

Table 2-8.1. Circuit Breaker to Function Cross Reference (Cont)

Circuit Breaker / AMP	Function
CB76 / 15	Front Left Turn Signal
CB76 / 15	Front Right Turn Signal
CB76 / 15	Hazard Warning Switch
CB76 / 15	Left Blackout Stoplight
CB76 / 15	Left Turn Signal Indicator Light
CB76 / 15	Rear Left Composite Lamp Turn Signal
CB76 / 15	Rear Right Composite Lamp Turn Signal
CB76 / 15	Right Blackout Stoplight
CB76 / 15	Right Turn Signal Indicator Light
CB76 / 15	Stoplight Switches
CB76 / 15	Tractor Stoplight Switch
CB77 / 10	Audible Alarm
CB77 / 10	Emergency Brake Indicator Light
CB77 / 10	Engine Fan Off Indicator Light
CB77 / 10	Engine Fan Off Switch (Indicator Light)
CB77 / 10	Engine Oil Pressure Gage
CB77 / 10	Engine Oil Pressure Indicator Light
CB77 / 10	Engine Oil Pressure Sensor
CB77 / 10	Engine Oil Pressure Switch
CB77 / 10	Front Brake Air Indicator Light
CB77 / 10	Front Brake Air Indicator Light Switch

Table 2-8.1. Circuit Breaker to Function Cross Reference (Cont)

Circuit Breaker / AMP	Function
CB77 / 10	Front Brake Air Pressure Gage
CB77 / 10	Front Brake Air Pressure Transmitter
CB77 / 10	Fuel Gage
CB77 / 10	Fuel Level Sensor
CB77 / 10	Magnetic Pickup
CB77 / 10	Master Stop Indicator Light
CB77 / 10	Parking Brake Indicator Light
CB77 / 10	Parking Brake Switch
CB77 / 10	Power Take-Off (PTO) Indicator Light
CB77 / 10	Power Take-Off (PTO) Pressure Switch
CB77 / 10	Rear Brake Air Indicator Light
CB77 / 10	Rear Brake Air Indicator Light Switch
CB77 / 10	Rear Brake Air Pressure Gage
CB77 / 10	Rear Brake Air Pressure Transmitter
CB77 / 10	Speedometer
CB77 / 10	Tachometer
CB77 / 10	Transmission Temperature Indicator Light
CB77 / 10	Troop Transport Alarm Switch
CB77 / 10	Voltmeter
CB77 / 10	Water Temperature Gage
CB77 / 10	Water Temperature Indicator Light

Table 2-8.1. Circuit Breaker to Function Cross Reference (Cont)

Circuit Breaker / AMP	Function
CB77 / 10	Water Temperature Sensor
CB77 / 10	Water Temperature Switch
CB78 / 15	Headlight HI Beam Indicator Light
CB78 / 15	Left Headlight
CB78 / 15	Right Headlight
CB79 / 15	10 AMP Fuse WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS)
CB79 / 15	Fuel Solenoid
CB79 / 15	Start Inhibit Pushbutton Switch
CB79 / 15	Wrecker Remote Engine Kill Switch
CB79 / 15	WTEC III Transmission ECU
CB80 / 25	12 VDC Intervehicular Taillights
CB80 / 25	Left Rear Composite Lamp Taillight
CB80 / 25	Right Rear Composite Lamp Taillight

e2. ENGINE DOES NOT CRANK

INTIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).
Cab raised (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wire, Elect, 50 ft (Item 71, Appendix D)
Wire, Relay Test (Item 9, Appendix E)

Materials/Parts
Ties, Cable, Plastic (Item 69, Appendix D)
Adhesive (Item 8, Appendix D)
Dispenser, Pressure Sensitive Adhesive Tape (Item 20, Appendix D)
Seal Ring, Metal (Item 268, Appendix G)

Personnel Required
(2)

References
TM 9-4910-571-12&P

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.

POSSIBLE PROBLEMS

Faulty starting motor.
Faulty auxiliary starter solenoid.
Faulty battery to starter cable assembly.
Faulty oil pressure switch.
Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II Vehicle Interface Module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).

NOTE

Perform Engine System Troubleshooting a1. Engine Does Not Crank and Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breakers CB21 and CB77 prior to beginning this task.

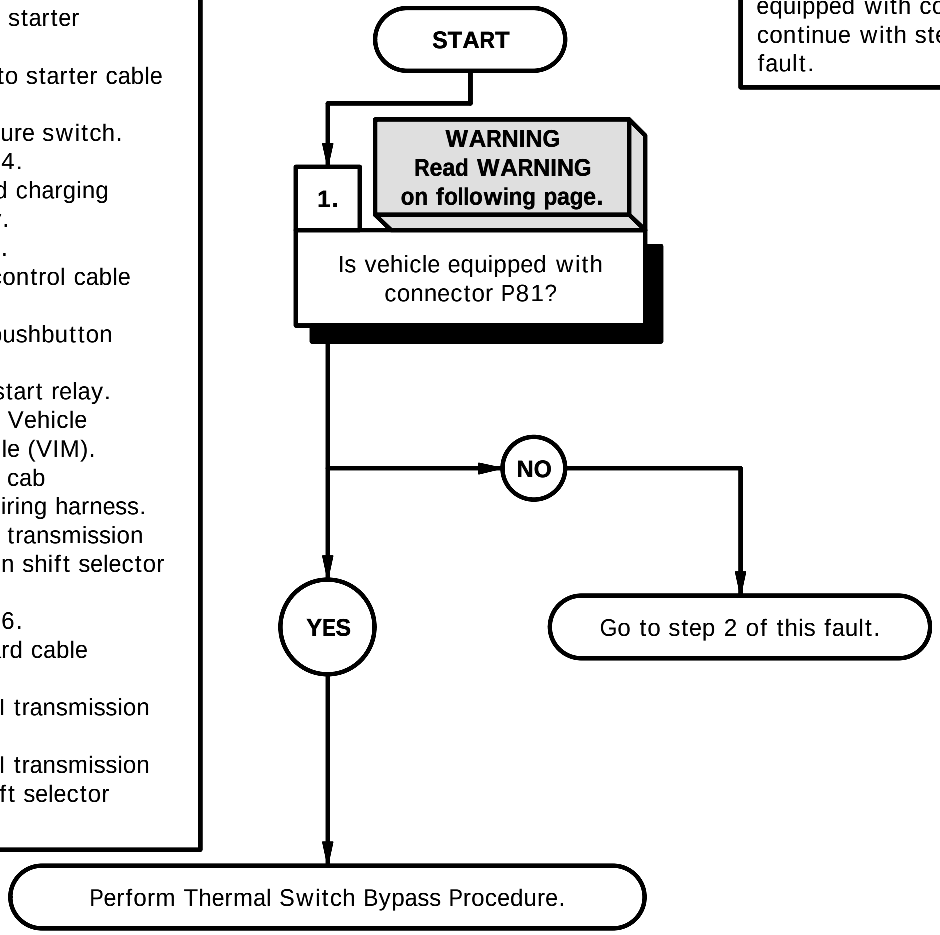
Remove and install plastic cable ties as required.

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If vehicle is equipped with connector P81, perform Thermal Switch Bypass procedure. If vehicle is not equipped with connector P81, continue with step 2 of this fault.



Is vehicle equipped with connector P81?

Go to step 2 of this fault.

Perform Thermal Switch Bypass Procedure.

WARNING

Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

(1) If vehicle is not equipped with connector P81 continue with step 2 of this fault.
(2) If vehicle is equipped with connector P81 perform Thermal Switch Bypass Procedure, see below.
(3) After performing Thermal Switch Bypass Procedure, attempt to start engine (TM 9-2320-366-10-1).
(4) If engine still does not crank, continue with step 2 of this fault.

THERMAL SWITCH BYPASS PROCEDURE

NOTE

The tools and materials are required to perform the thermal switch bypass:
Heater, Gun type, Electrical (Appendix B, Item 24)
Tape, Insulation, Electrical (Appendix D, Item 68)
Splice, Conductor (Item 261, Appendix G)
Insulation Sleeving, Electrical (1.5 in. or 3.8 cm) (Item 28.1, Appendix D)

(1) Disconnect batteries (para 7-57).
(2) Disconnect connector P81 from thermal switch connector.
(3) Cut connector P81 from branch of start and charging cable assembly.
(4) Remove band marker from branch of start and charging cable assembly.

NOTE

Remove electrical tape as required.

(5) Remove insulation sleeving from convoluted tubing to body of start and charging cable assembly.
(6) Remove insulation sleeving from two wires to body of start and charging cable assembly.

NOTE

Measure wires from body of start and charging cable assembly.

(7) Cut one wire 3 in. (7.6 cm).
(8) Cut other wire 4 in. (10.2 cm).
(9) Remove 0.38 in. (1 cm) of insulation from two wires.

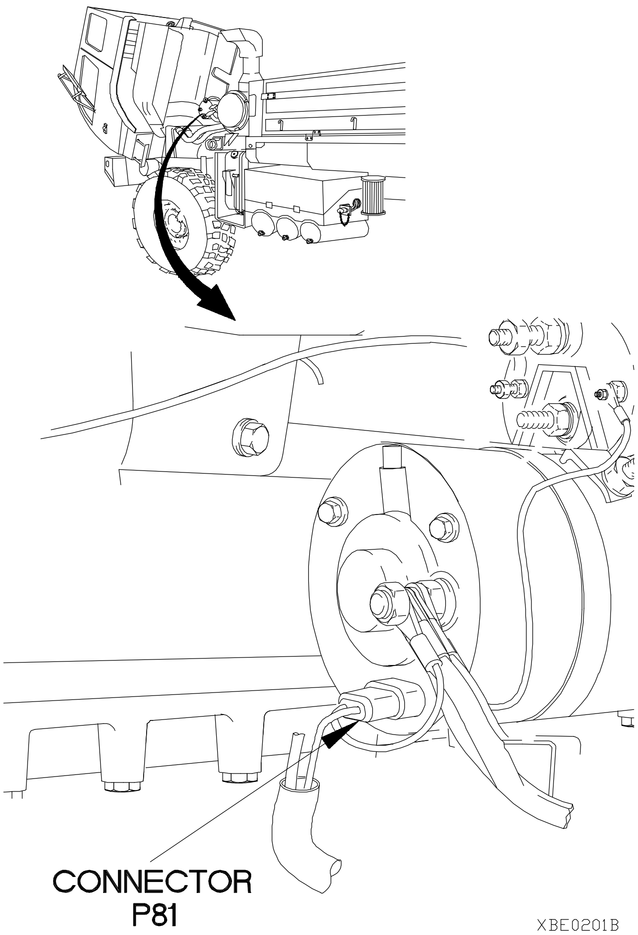
THERMAL SWITCH BYPASS PROCEDURE (Cont)

(10) Cut insulation sleeving 1.5 in. (3.8 cm).
(11) Position insulation sleeving on 4 in. (10.2 cm) wire.
(12) Install conductor splice on two wires.
(13) Install insulation sleeving on conductor splice.

NOTE

Install electrical tape as required.

(14) Install conductor splice in convoluted tubing.
(15) Lower cab (TM 9-2320-366-10-1).
(16) Connect batteries (para 7-57).



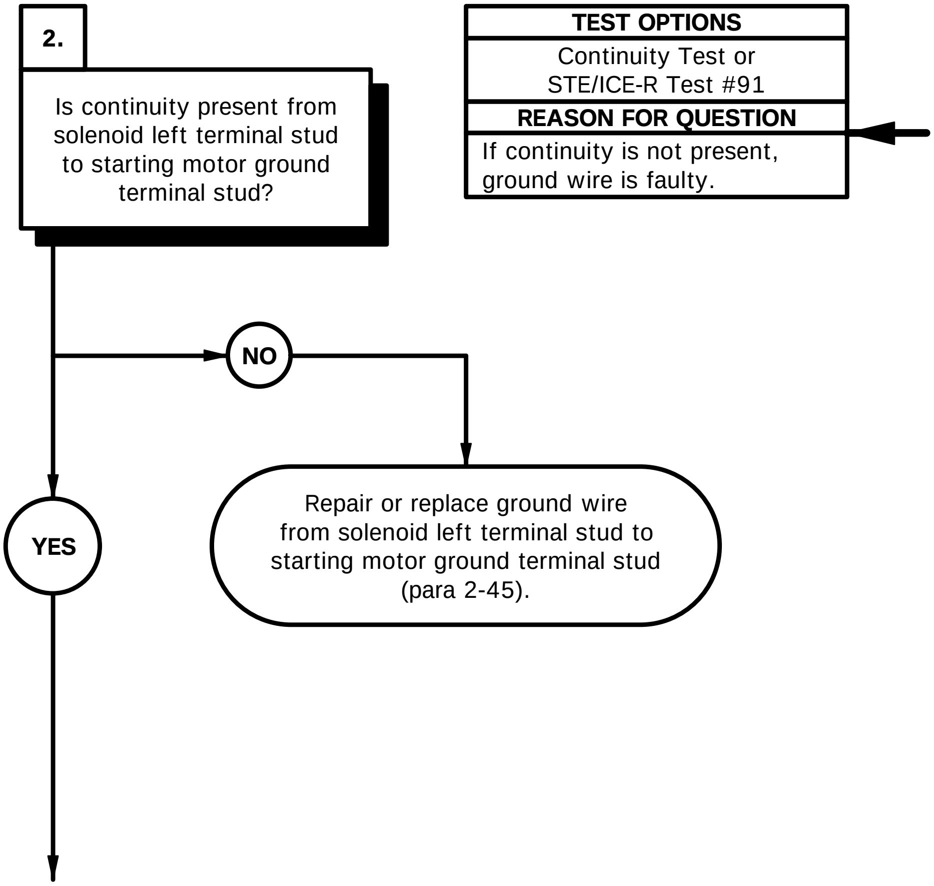
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.

POSSIBLE PROBLEMS

Faulty starting motor.
Faulty auxiliary starter solenoid.
Faulty battery to starter cable assembly.
Faulty oil pressure switch.
Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



2.

Is continuity present from solenoid left terminal stud to starting motor ground terminal stud?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

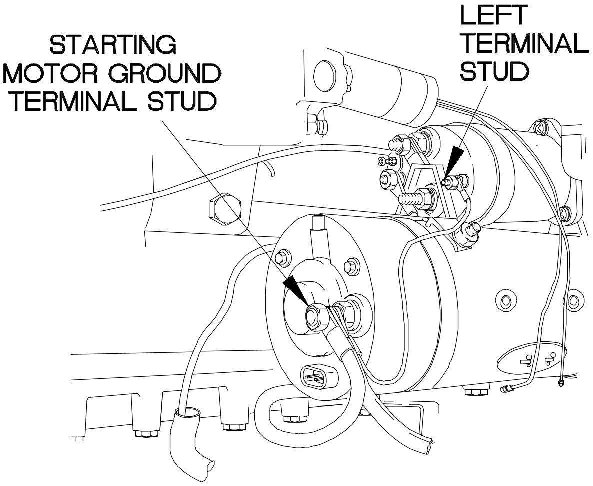
REASON FOR QUESTION

If continuity is not present, ground wire is faulty.

Repair or replace ground wire from solenoid left terminal stud to starting motor ground terminal stud (para 2-45).

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to solenoid left terminal stud.
(4) Connect negative (-) probe of multimeter to starting motor ground terminal stud and note reading on multimeter.
(5) If continuity is not present repair or replace ground wire from solenoid left terminal stud to starting motor ground terminal stud (para 2-45).



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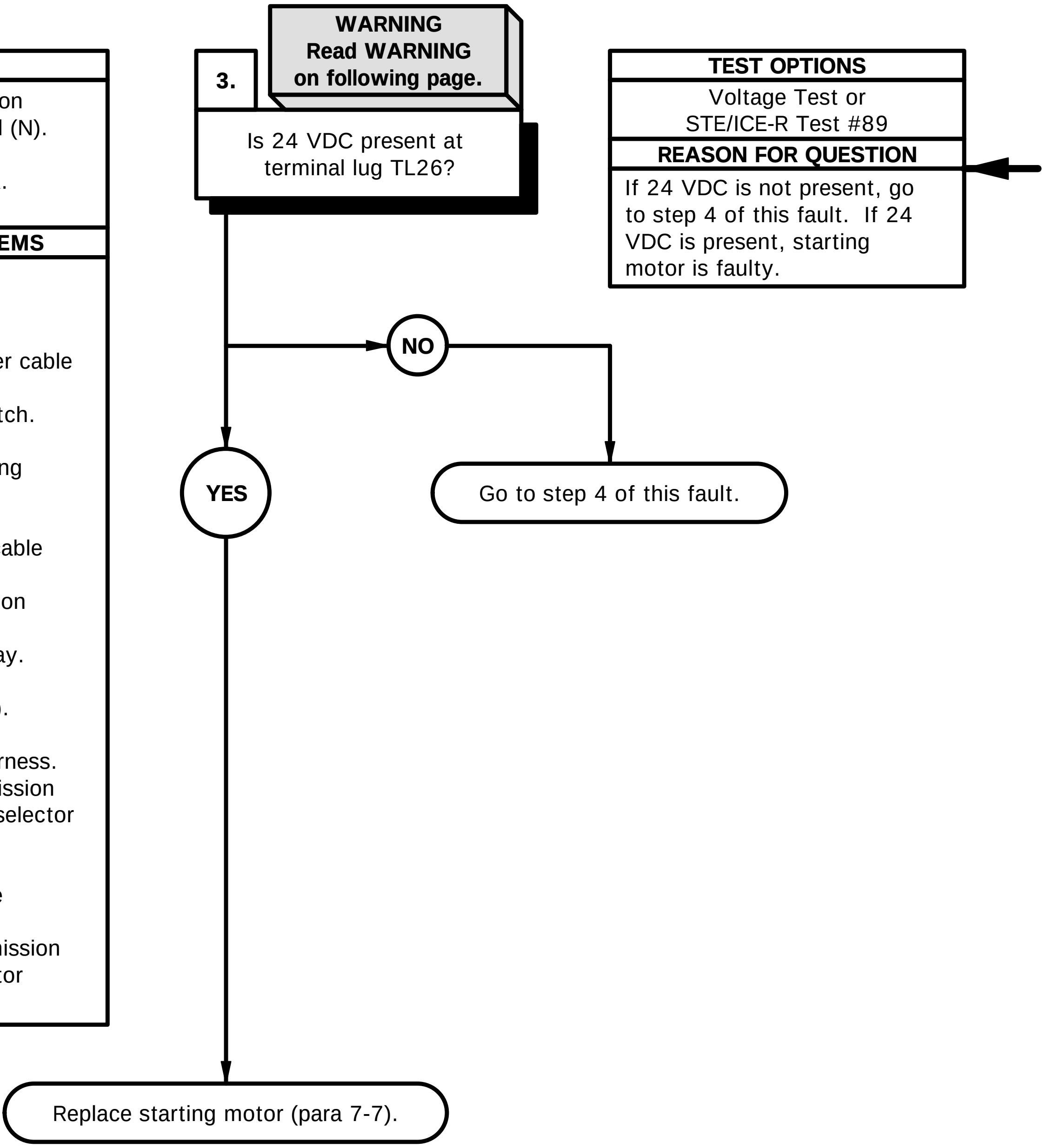
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.

POSSIBLE PROBLEMS

Faulty starting motor.
Faulty auxiliary starter solenoid.
Faulty battery to starter cable assembly.
Faulty oil pressure switch.
Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



WARNING
Read WARNING on following page.

3. Is 24 VDC present at terminal lug TL26?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, go to step 4 of this fault. If 24 VDC is present, starting motor is faulty.

NO

Go to step 4 of this fault.

YES

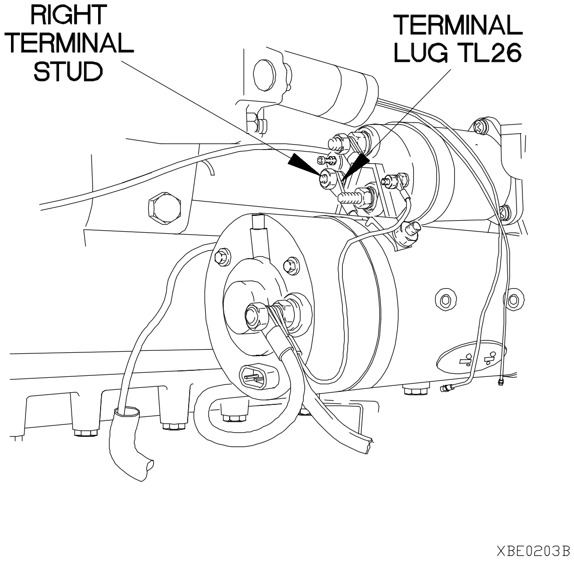
Replace starting motor (para 7-7).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove adhesive from solenoid right terminal stud.
(2) Connect batteries (para 7-57).
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to terminal lug TL26.
(5) Connect negative (-) probe of multimeter to ground.
(6) Lower cab (TM 9-2320-366-10-1).
(7) Position master power switch to on (TM 9-2320-366-10-1).
(8) Press starter pushbutton (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 24 VDC is not present, go to 4 of this fault.
(10) If 24 VDC is present, replace starting motor (para 7-7).
(11) Position master power switch to off (TM 9-2320-366-10-1).



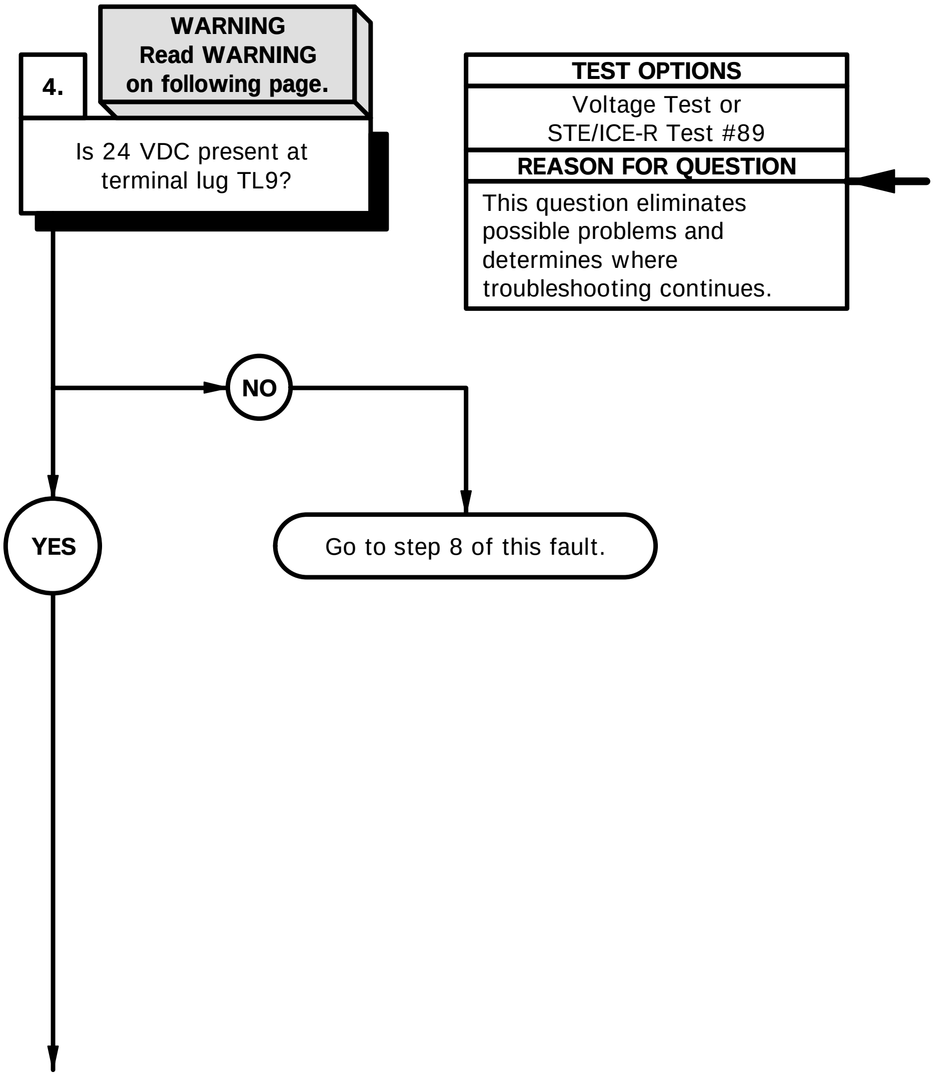
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.

POSSIBLE PROBLEMS

Faulty auxiliary starter solenoid.
Faulty battery to starter cable assembly.
Faulty oil pressure switch.
Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



WARNING
Read WARNING on following page.

4. Is 24 VDC present at terminal lug TL9?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

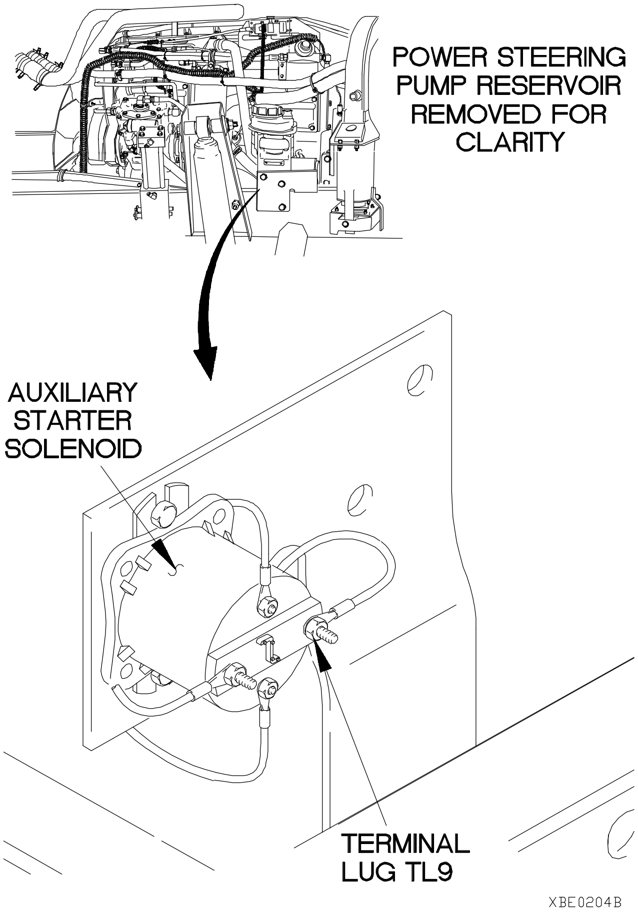
This question eliminates possible problems and determines where troubleshooting continues.

Go to step 8 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Raise cab (TM 9-2320-366-10-1). (2) Disconnect batteries (para 7-57). (3) Remove adhesive from auxiliary starter solenoid. (4) Connect batteries (para 7-57). (5) Set multimeter to volts DC. (6) Connect positive (+) probe of multimeter to terminal lug TL9. (7) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (8) If 24 VDC is not present, go to step 8 of this fault.



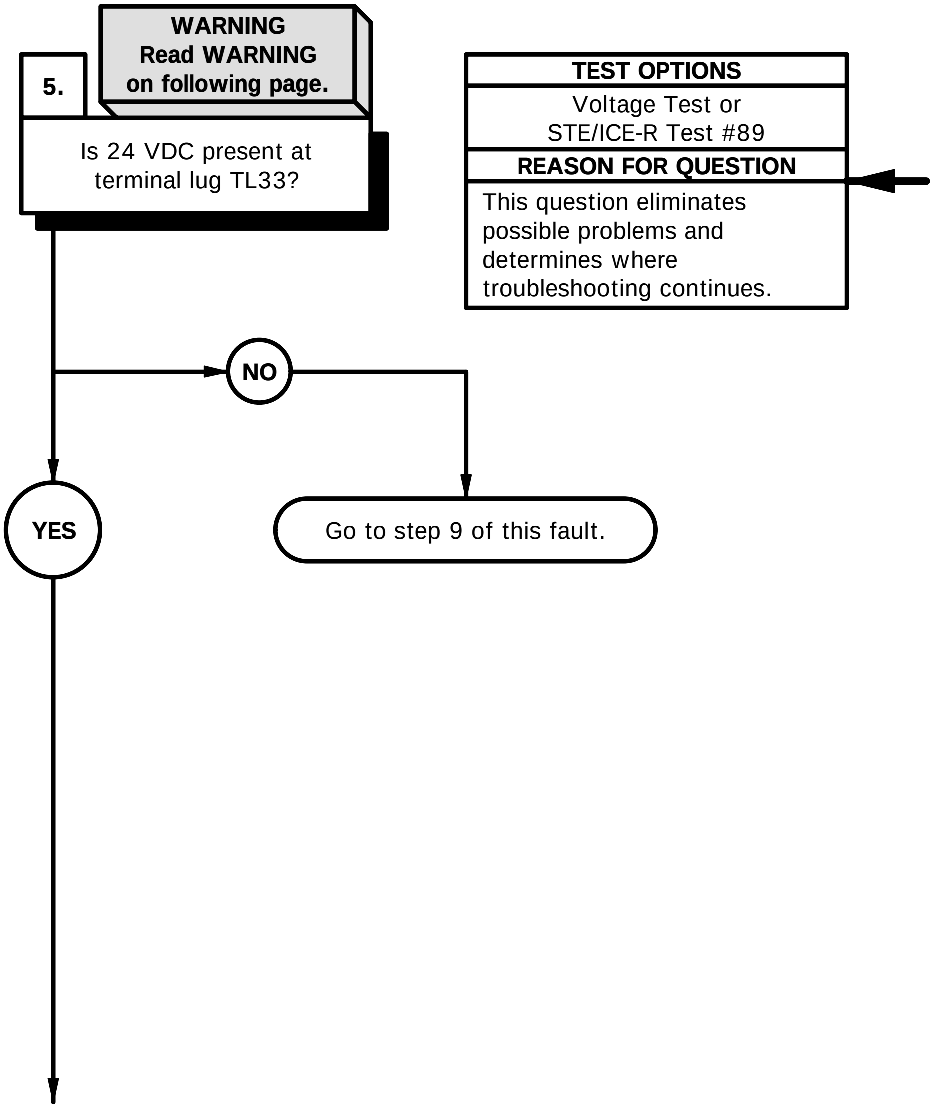
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.

POSSIBLE PROBLEMS

Faulty auxiliary starter solenoid.
Faulty oil pressure switch.
Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



WARNING
Read WARNING on following page.

5. Is 24 VDC present at terminal lug TL33?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

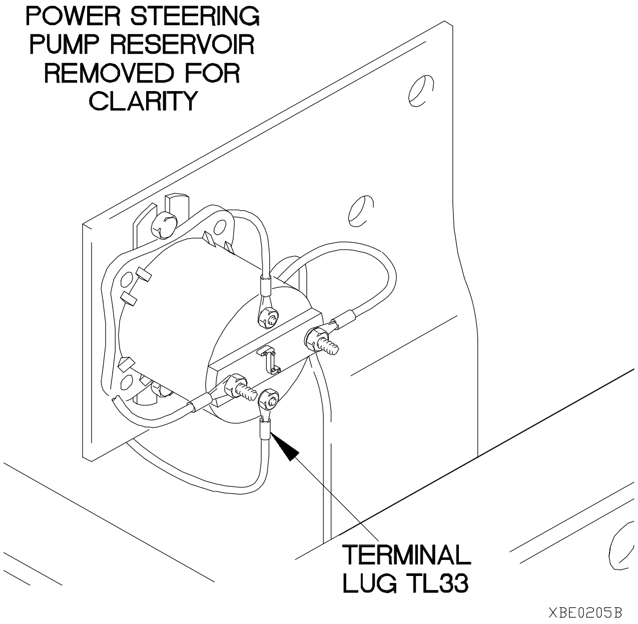
This question eliminates possible problems and determines where troubleshooting continues.

Go to step 9 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to terminal lug TL33. (3) Connect negative (-) probe of multimeter to ground. (4) Lower cab (TM 9-2320-366-10-1). (5) Position master power switch to on (TM 9-2320-366-10-1). (6) Press starter pushbutton (TM 9-2320-366-10-1) and note reading on multimeter. (7) If 24 VDC is not present, go to step 9 of this fault. (8) Position master power switch to off (TM 9-2320-366-10-1). (9) Raise cab (TM 9-2320-366-10-1).



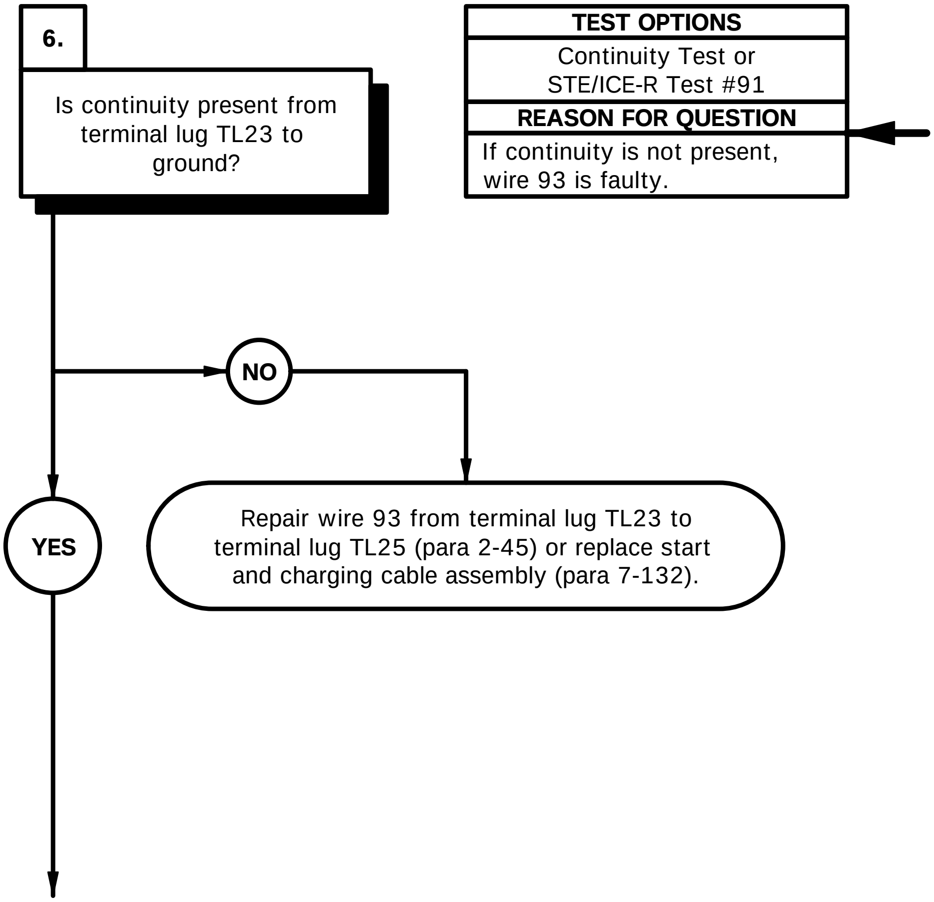
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Relay K24 OK.
Relay K1 OK.
Engine control cable assembly OK.
Starter pushbutton switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty auxiliary starter solenoid.
Faulty start and charging cable assembly.



6.

Is continuity present from terminal lug TL23 to ground?

TEST OPTIONS

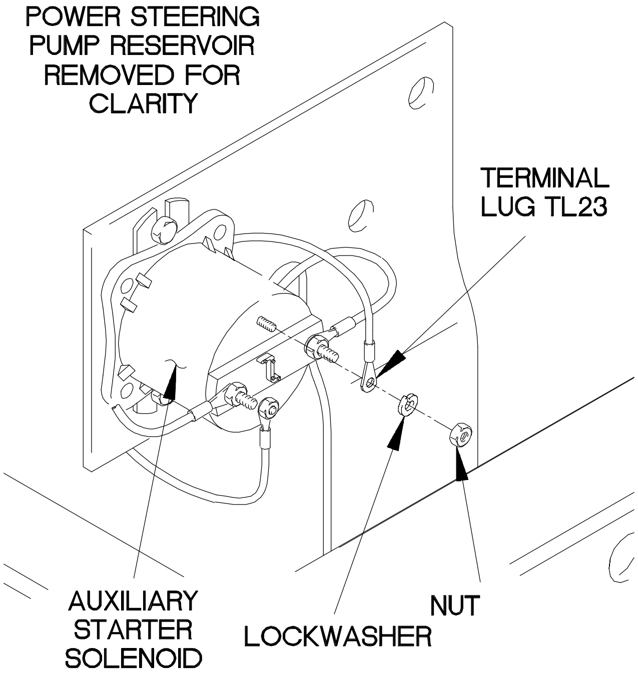
Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 93 is faulty.

Repair wire 93 from terminal lug TL23 to terminal lug TL25 (para 2-45) or replace start and charging cable assembly (para 7-132).

CONTINUITY TEST
(1) Disconnect batteries (para 7-57). (2) Remove nut, lockwasher, and terminal lug TL23 from auxiliary starter solenoid. Discard lockwasher. (3) Set multimeter to ohms. (4) Connect positive (+) probe of multimeter to terminal lug TL23. (5) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (6) If continuity is not present, repair wire 93 from terminal lug TL23 to terminal lug TL25 (para 2-45) or replace start and charging cable assembly (para 7-132). (7) Install terminal lug TL23 on auxiliary starter solenoid with lockwasher and nut.



XBE0206B

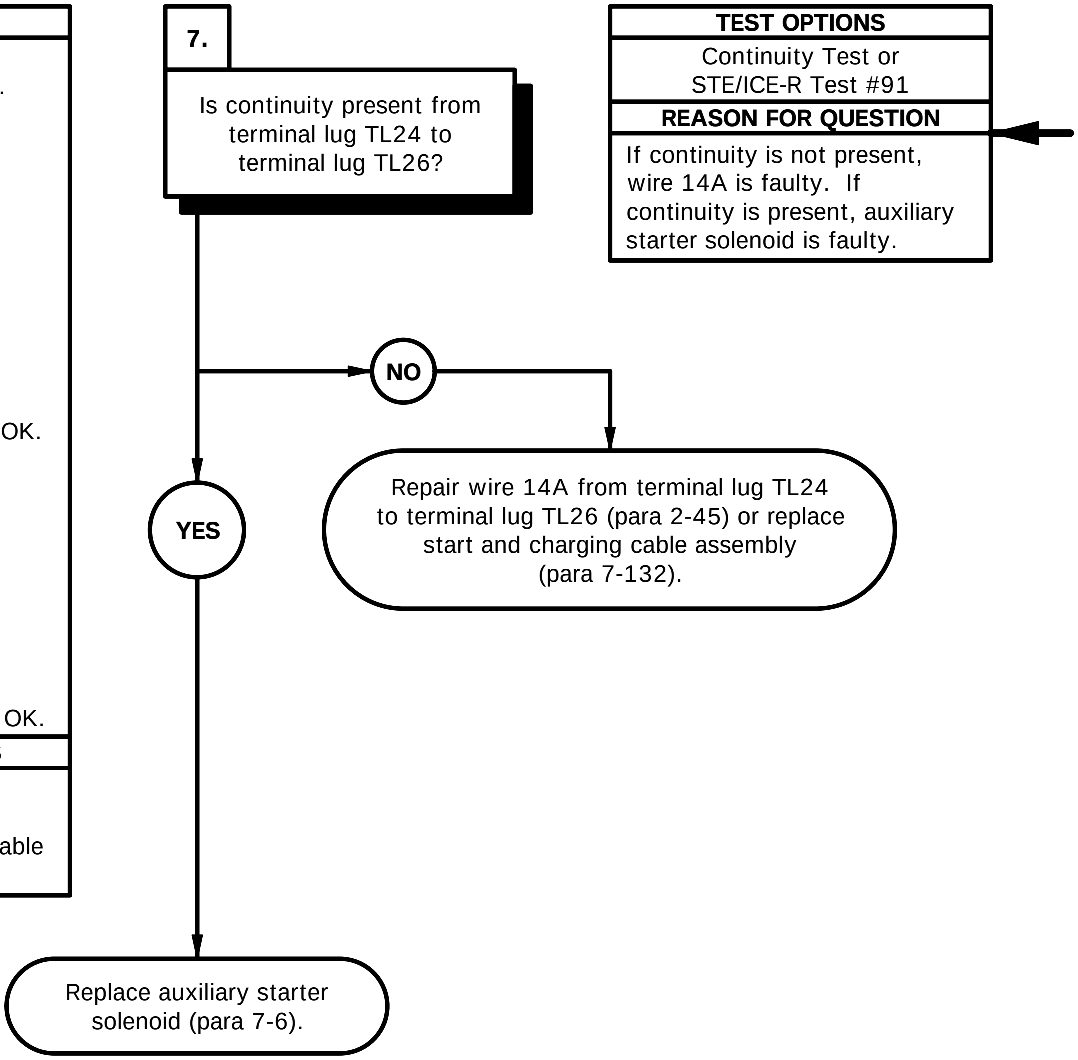
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Relay K24 OK.
Relay K1 OK.
Engine control cable assembly OK.
Starter pushbutton switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty auxiliary starter solenoid.
Faulty start and charging cable assembly.



7.

Is continuity present from terminal lug TL24 to terminal lug TL26?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

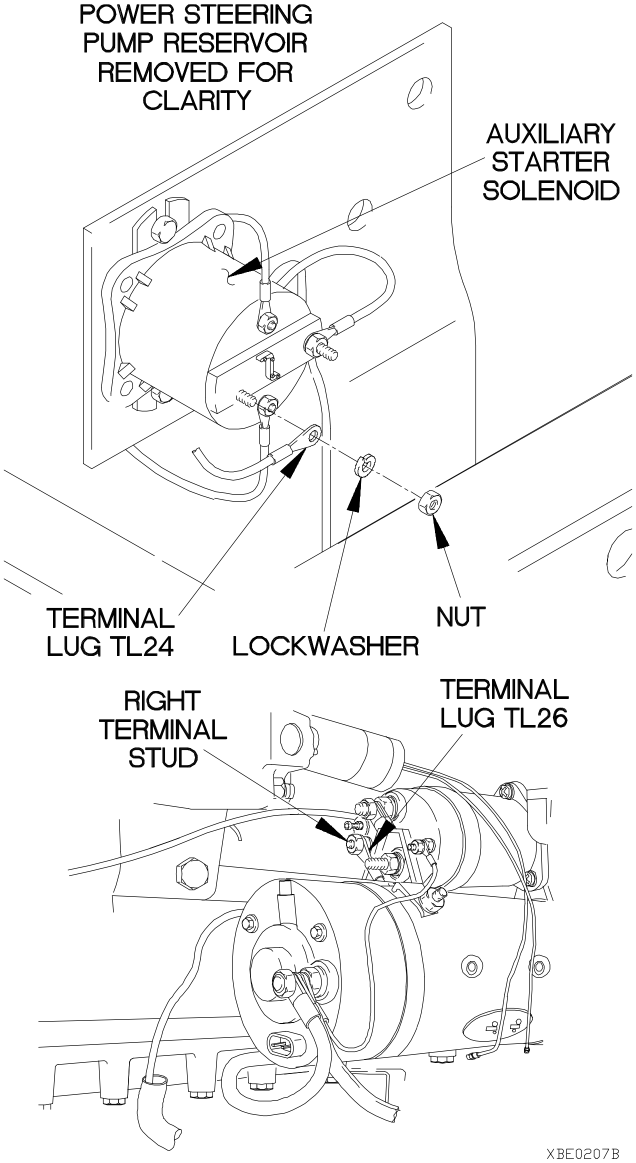
If continuity is not present, wire 14A is faulty. If continuity is present, auxiliary starter solenoid is faulty.

Repair wire 14A from terminal lug TL24 to terminal lug TL26 (para 2-45) or replace start and charging cable assembly (para 7-132).

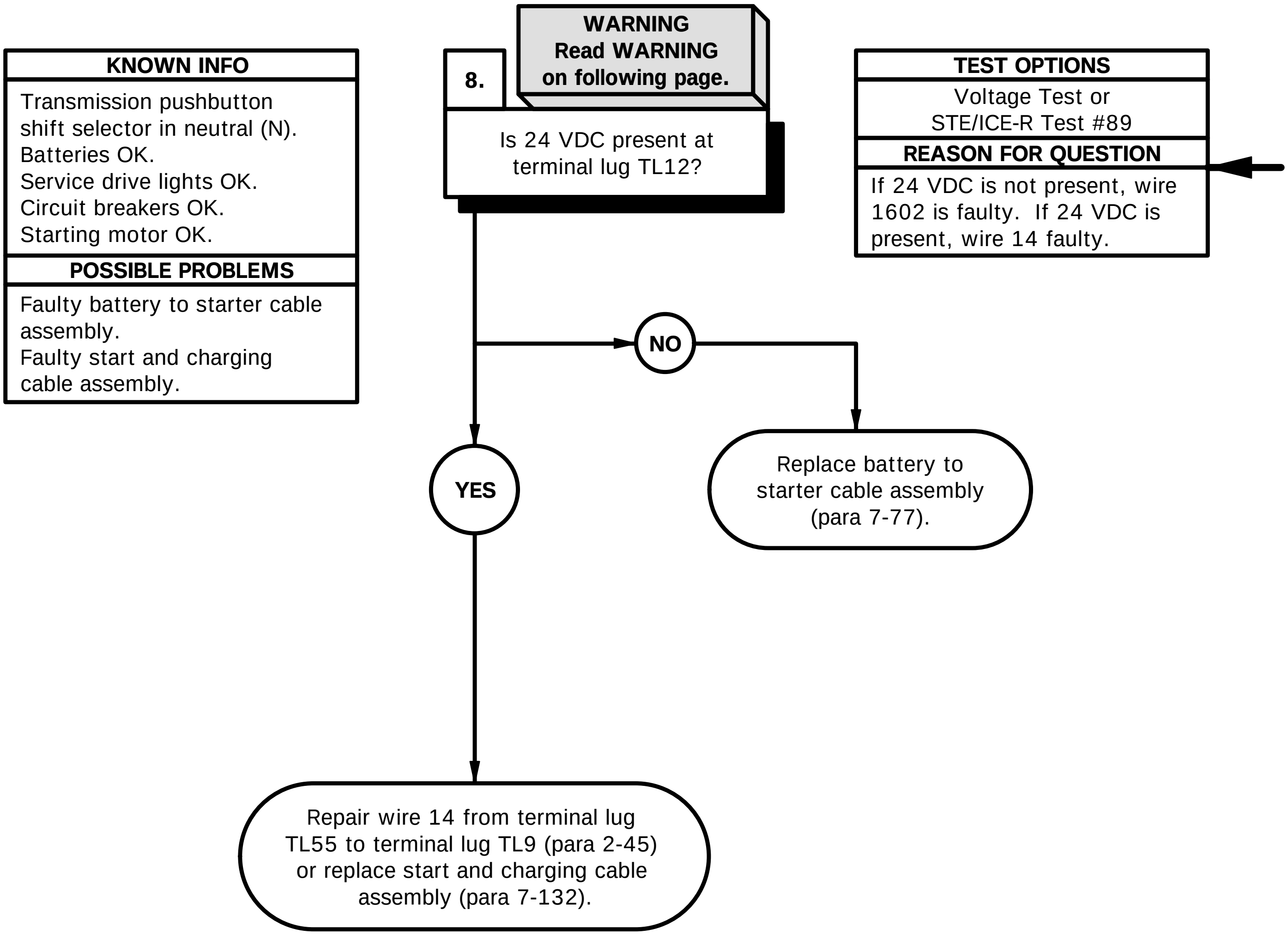
Replace auxiliary starter solenoid (para 7-6).

CONTINUITY TEST

(1) Remove nut, lockwasher, and terminal lug TL24 from auxiliary starter solenoid. Discard lockwasher.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL24.
(4) Connect negative (-) probe of multimeter to terminal lug TL26 and note reading on multimeter.
(5) If continuity is not present, repair wire 14A from terminal lug TL24 to terminal lug TL26 (para 2-45) or replace start and charging cable assembly (para 7-132).
(6) If continuity is present, replace auxiliary starter solenoid (para 7-6).
(7) Install terminal lug TL24 on auxiliary starter solenoid with lockwasher and nut.
(8) Apply adhesive to auxiliary starter solenoid.
(9) Apply adhesive to solenoid right terminal stud.
(10) Lower cab (TM 9-2320-366-10-1).
(11) Connect batteries (para 7-57).



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.

POSSIBLE PROBLEMS

Faulty battery to starter cable assembly.
Faulty start and charging cable assembly.

WARNING
Read WARNING on following page.

8. Is 24 VDC present at terminal lug TL12?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1602 is faulty. If 24 VDC is present, wire 14 faulty.

NO

Replace battery to starter cable assembly (para 7-77).

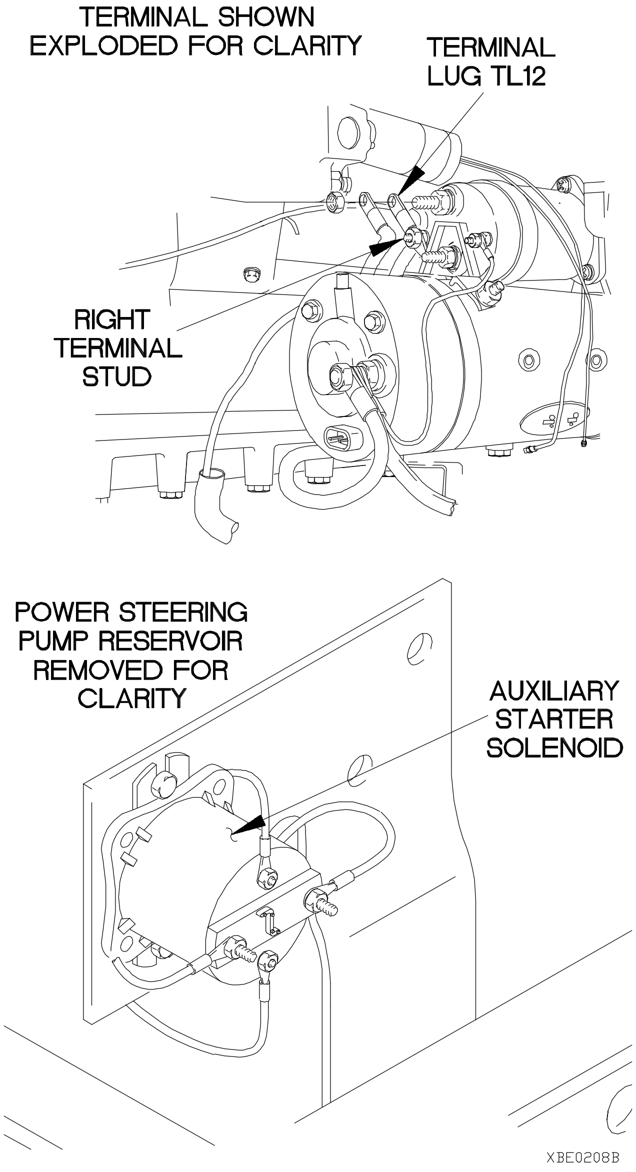
YES

Repair wire 14 from terminal lug TL55 to terminal lug TL9 (para 2-45) or replace start and charging cable assembly (para 7-132).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to terminal lug TL12. (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (4) If 24 VDC is not present, replace battery to starter cable assembly (para 7-77). (5) If 24 VDC is present, repair wire 14 from terminal lug TL55 to terminal lug TL9 (para 2-45) or replace start and charging cable assembly (para 7-132). (6) Disconnect batteries (para 7-57). (7) Apply adhesive to auxiliary starter solenoid. (8) Apply adhesive to solenoid right terminal stud. (9) Connect batteries (para 7-57). (10) Lower cab (TM 9-2320-366-10-1).



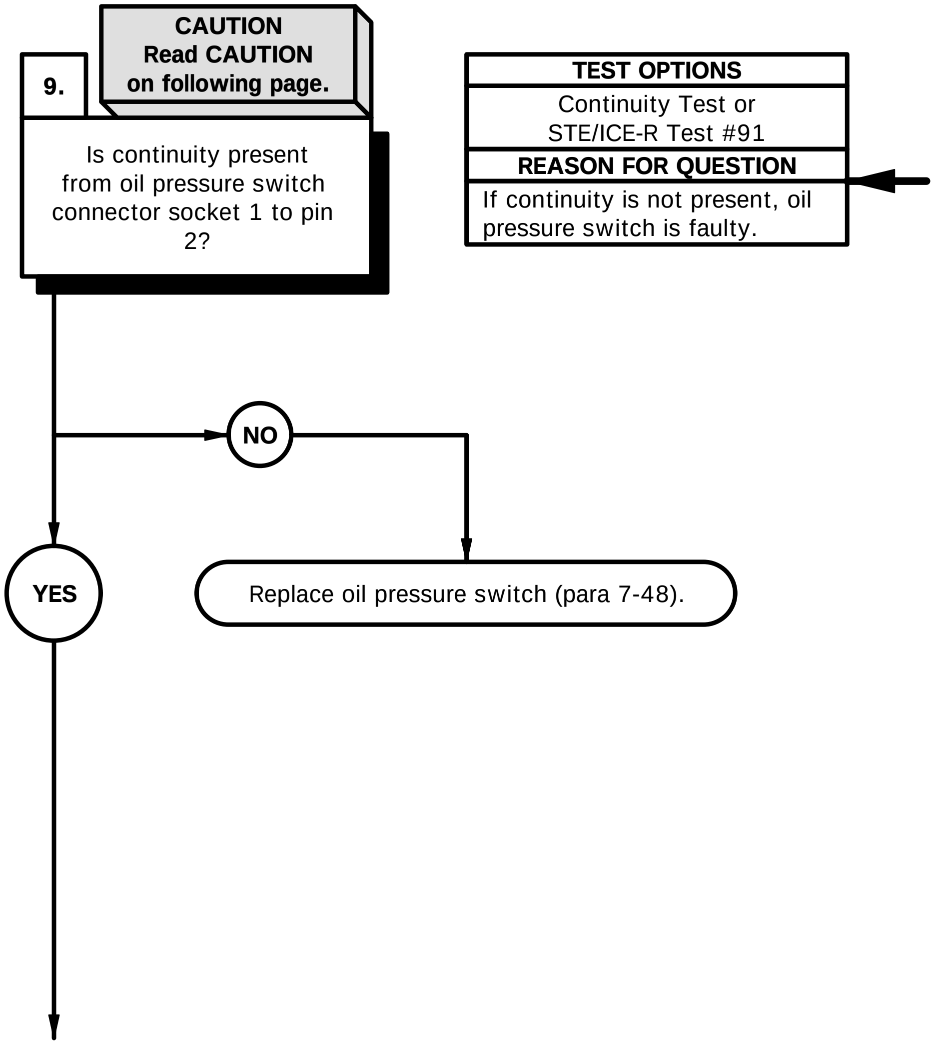
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.

POSSIBLE PROBLEMS

Faulty oil pressure switch.
Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



CAUTION
Read CAUTION on following page.

9. Is continuity present from oil pressure switch connector socket 1 to pin 2?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, oil pressure switch is faulty.

Replace oil pressure switch (para 7-48).

CAUTION

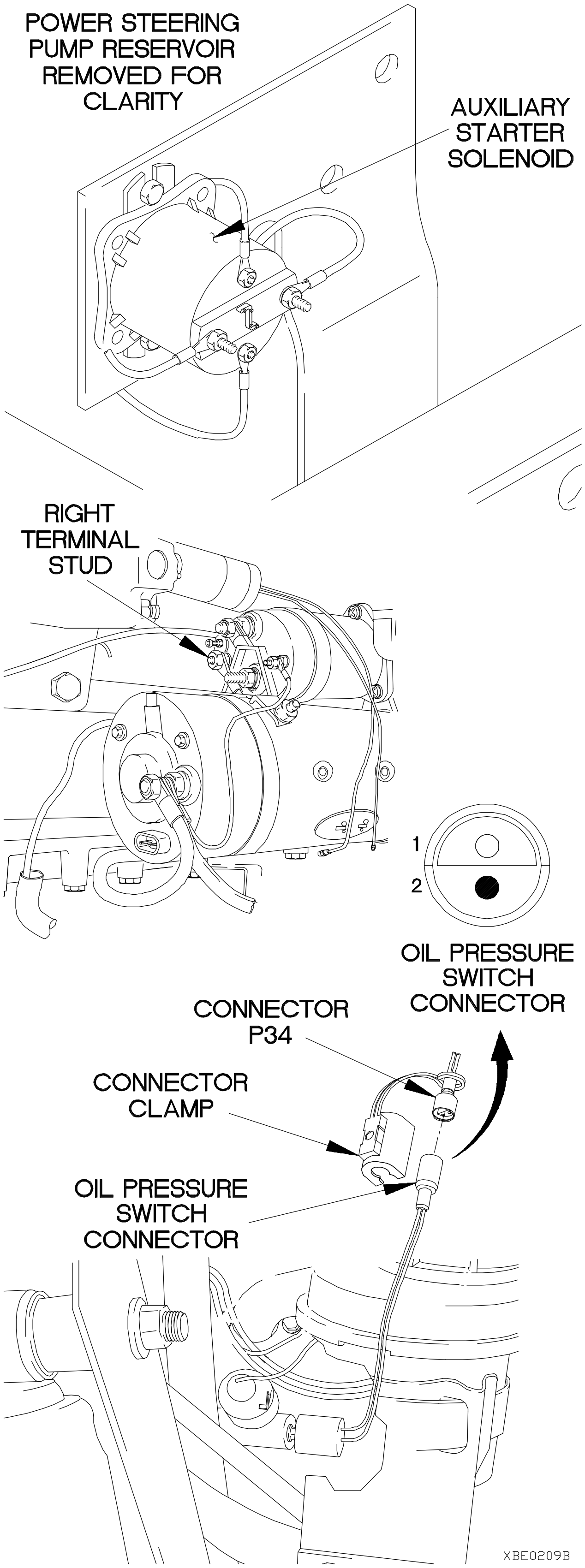
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Apply adhesive to auxiliary starter solenoid.
(3) Apply adhesive to solenoid right terminal stud.
(4) Disconnect connector clamp from oil pressure switch connector.
(5) Disconnect connector P34 from oil pressure switch connector.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to oil pressure switch connector socket 1.
(8) Connect negative (-) probe of multimeter to oil pressure switch connector pin 2 and note reading on multimeter.
(9) If continuity is not present, replace oil pressure switch (para 7-48).



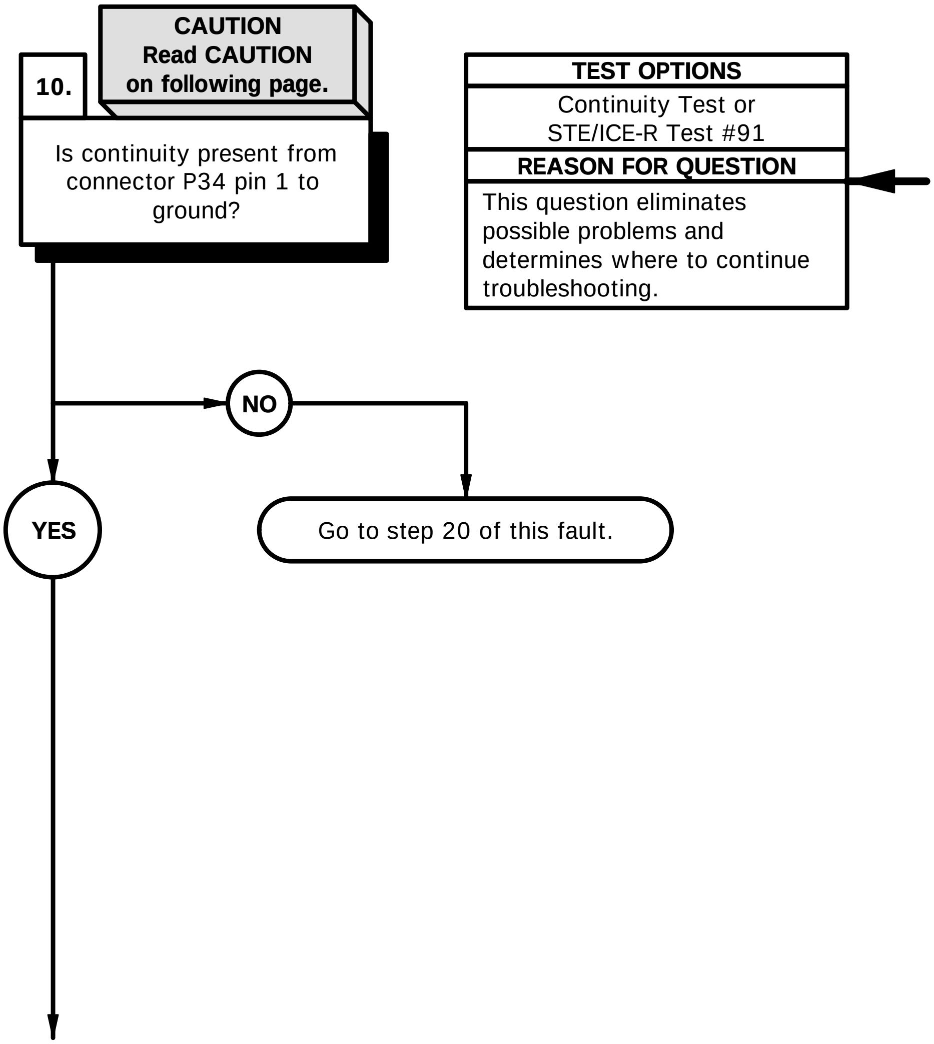
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



CAUTION
Read CAUTION on following page.

10. Is continuity present from connector P34 pin 1 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

Go to step 20 of this fault.

CAUTION

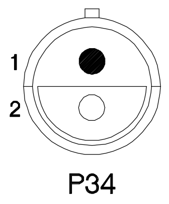
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P34 pin 1.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 20 of this fault.



XBE0210B

e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission pushbutton shift selector (TPSS).

WARNING
Read WARNING on following page.

11. Is 24 VDC present at relay K24 socket 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

NO

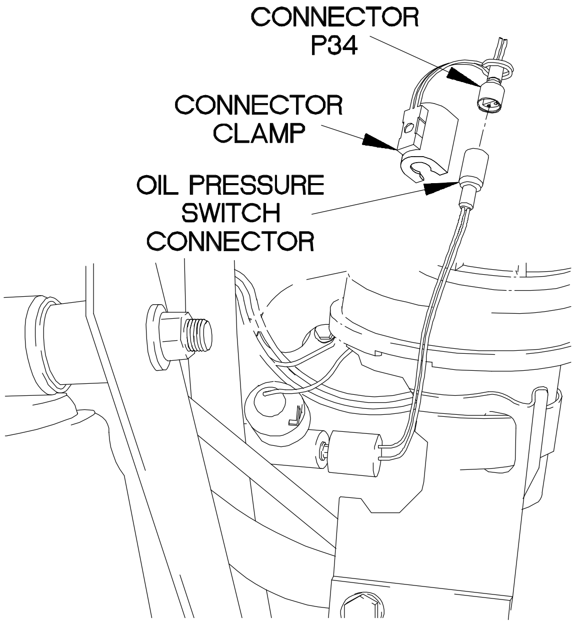
Got step 21 of this fault.

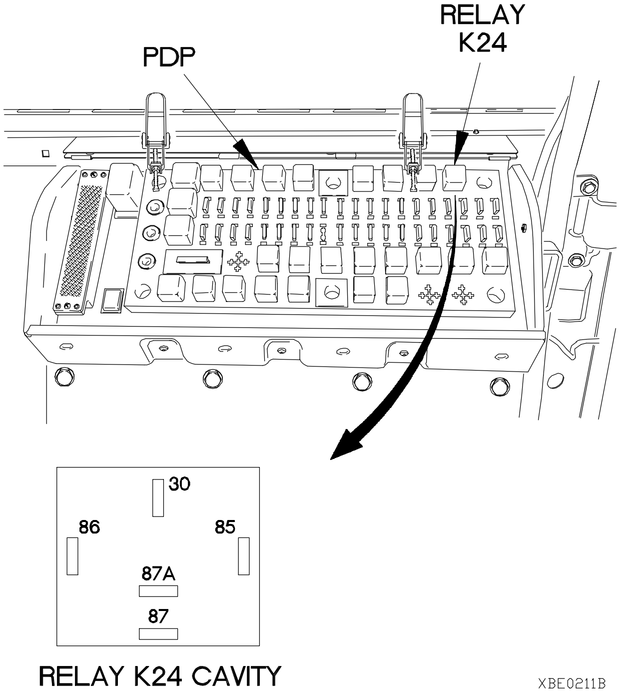
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Connect connector P34 to oil pressure switch connector. (2) Connect connector clamp to oil pressure switch connector. (3) Lower cab (TM 9-2320-366-10-1). (4) Connect batteries (para 7-57). (5) Remove power distribution panel (PDP) cover (para 16-2). **NOTE** Tag relays and connection points prior to removal. (6) Remove relay K24 from PDP. (7) Set multimeter to volts DC. (8) Connect positive (+) probe of multimeter to relay K24 socket 30 on PDP. (9) Connect negative (-) probe of multimeter to ground. (10) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter. (11) If 24 VDC is not present, go to step 21 of this fault. (12) Position master power switch to off (TM 9-2320-366-10-1).





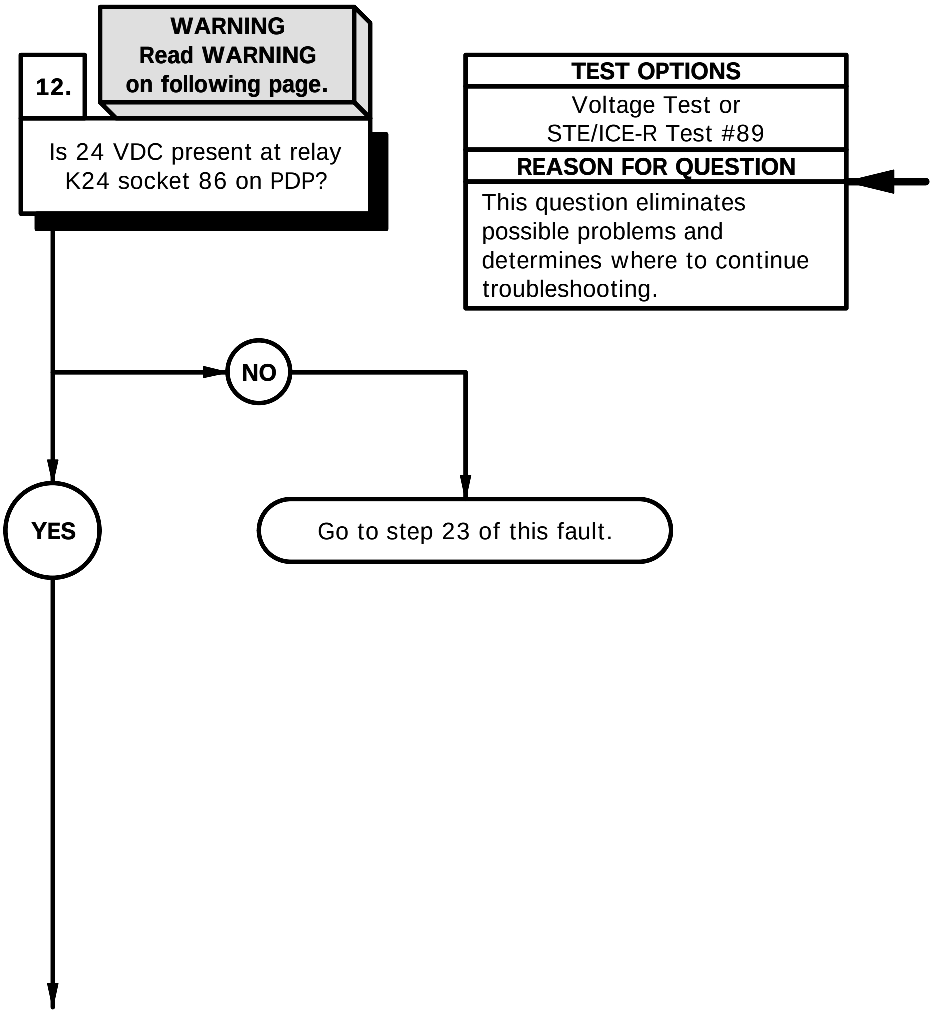
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



12.

WARNING
Read WARNING on following page.

Is 24 VDC present at relay K24 socket 86 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

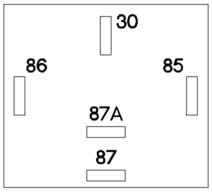
Go to step 23 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K24 socket 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, go to step 23 of this fault.
(6) Position master power switch to off (TM 9-2320-366-10-1).



RELAY K24 CAVITY

XBE0212B

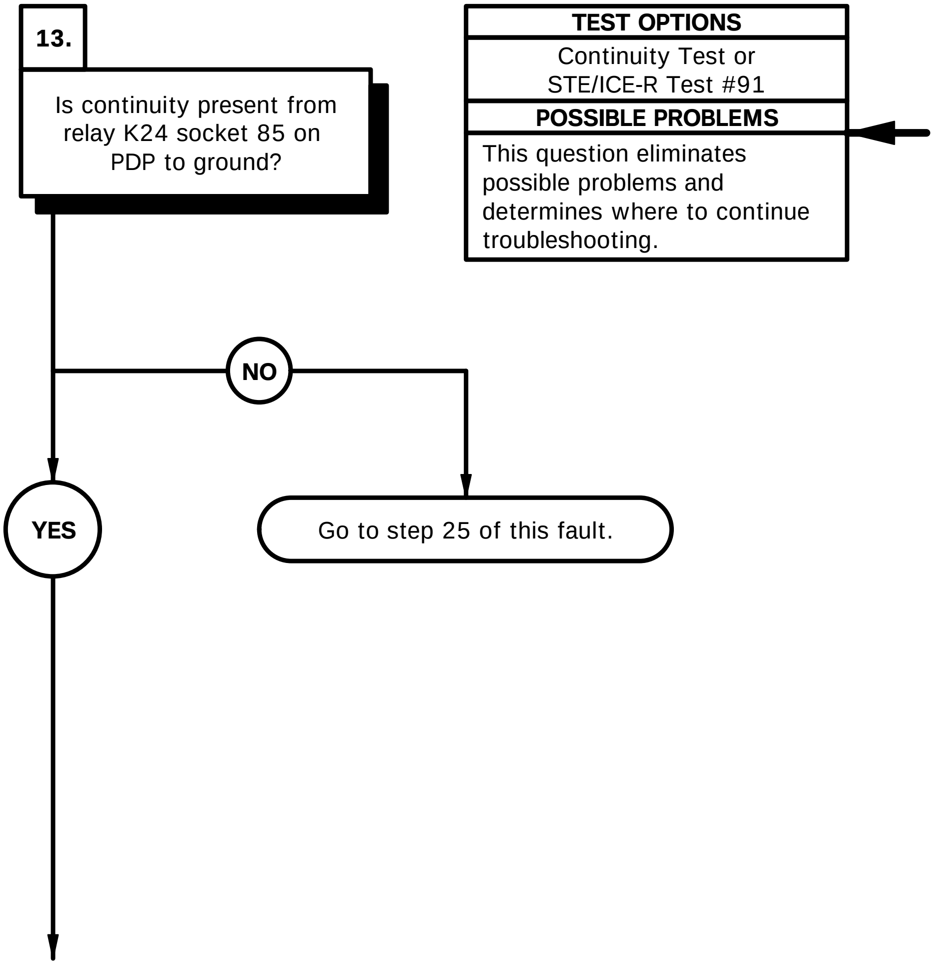
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty engine control cable assembly.
Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



13.

Is continuity present from relay K24 socket 85 on PDP to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

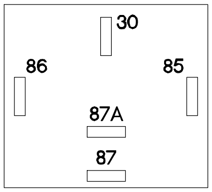
POSSIBLE PROBLEMS

This question eliminates possible problems and determines where to continue troubleshooting.

Go to step 25 of this fault.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to relay K24 socket 85 on PDP.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, go to step 25 of this fault.



RELAY K24 CAVITY

XBE0213B

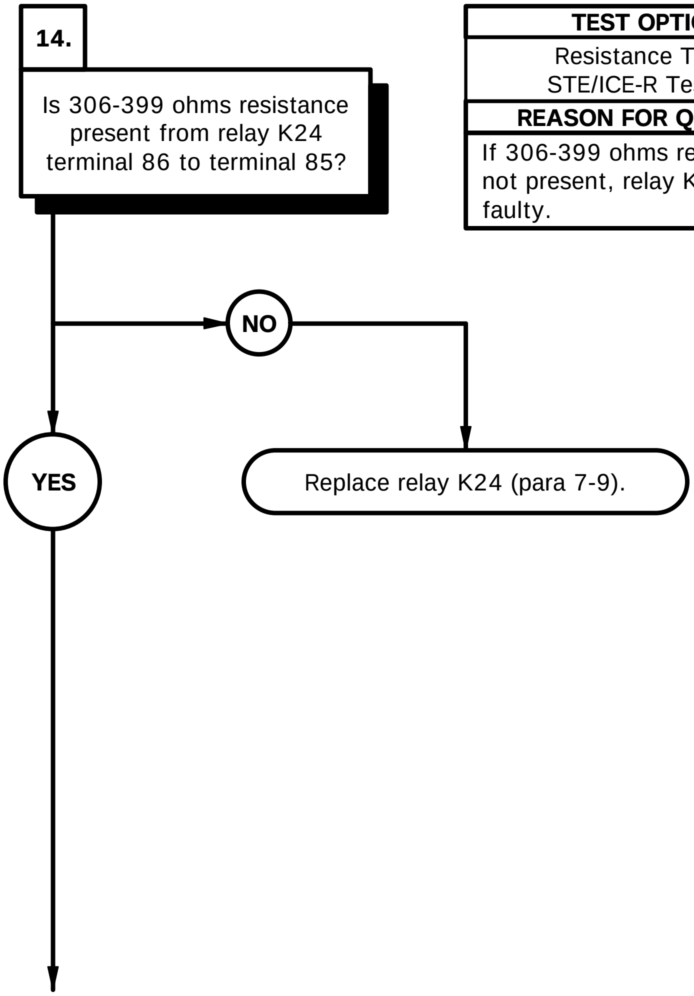
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.
Engine control cable assembly OK.

POSSIBLE PROBLEMS

Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



14.

Is 306-399 ohms resistance present from relay K24 terminal 86 to terminal 85?

NO

Replace relay K24 (para 7-9).

YES

TEST OPTIONS

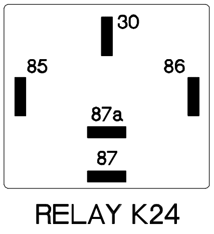
Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If 306-399 ohms resistance is not present, relay K24 is faulty.

RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K24 terminal 86.
(3) Connect negative (-) probe of multimeter to relay K24 terminal 85 and note reading on multimeter.
(4) If 306-399 ohms resistance is not present, replace relay K24 (para 7-9).
(5) Connect batteries (para 7-57).



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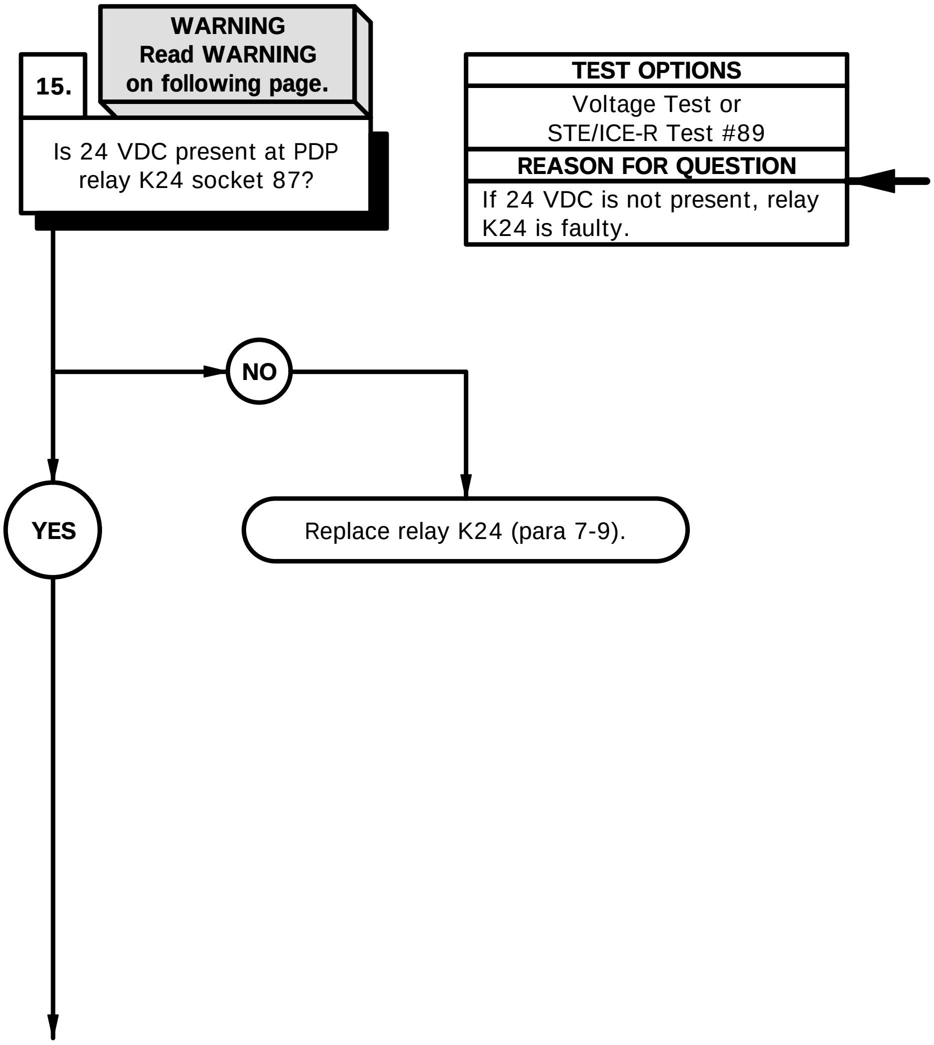
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.
Engine control cable assembly OK.

POSSIBLE PROBLEMS

Faulty relay K24.
Faulty start and charging cable assembly.
Faulty relay K1.
Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



15.

WARNING
Read WARNING on following page.

Is 24 VDC present at PDP relay K24 socket 87?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, relay K24 is faulty.

NO

Replace relay K24 (para 7-9).

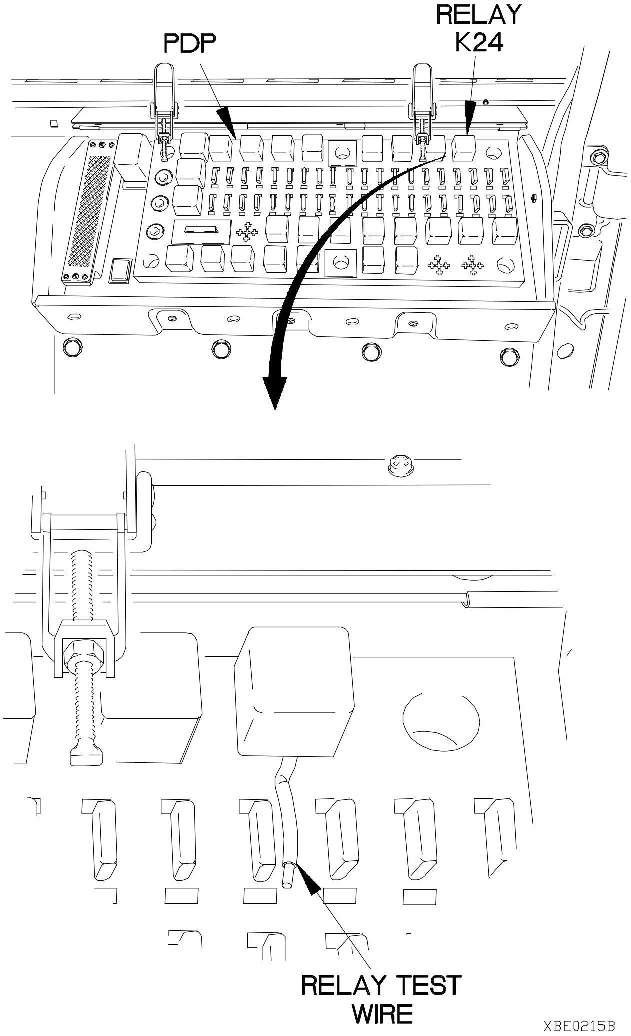
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay test wire in relay K24 socket 87 on PDP.
(2) Install relay K24 in PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to relay test wire.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 VDC is not present, replace relay K24 (para 7-9).
(8) Position master power switch to off (TM 9-2320-366-10-1).
(9) Remove relay K24 from PDP.
(10) Remove relay test wire from relay K24 socket 87 on PDP.
(11) Install relay K24 in PDP.



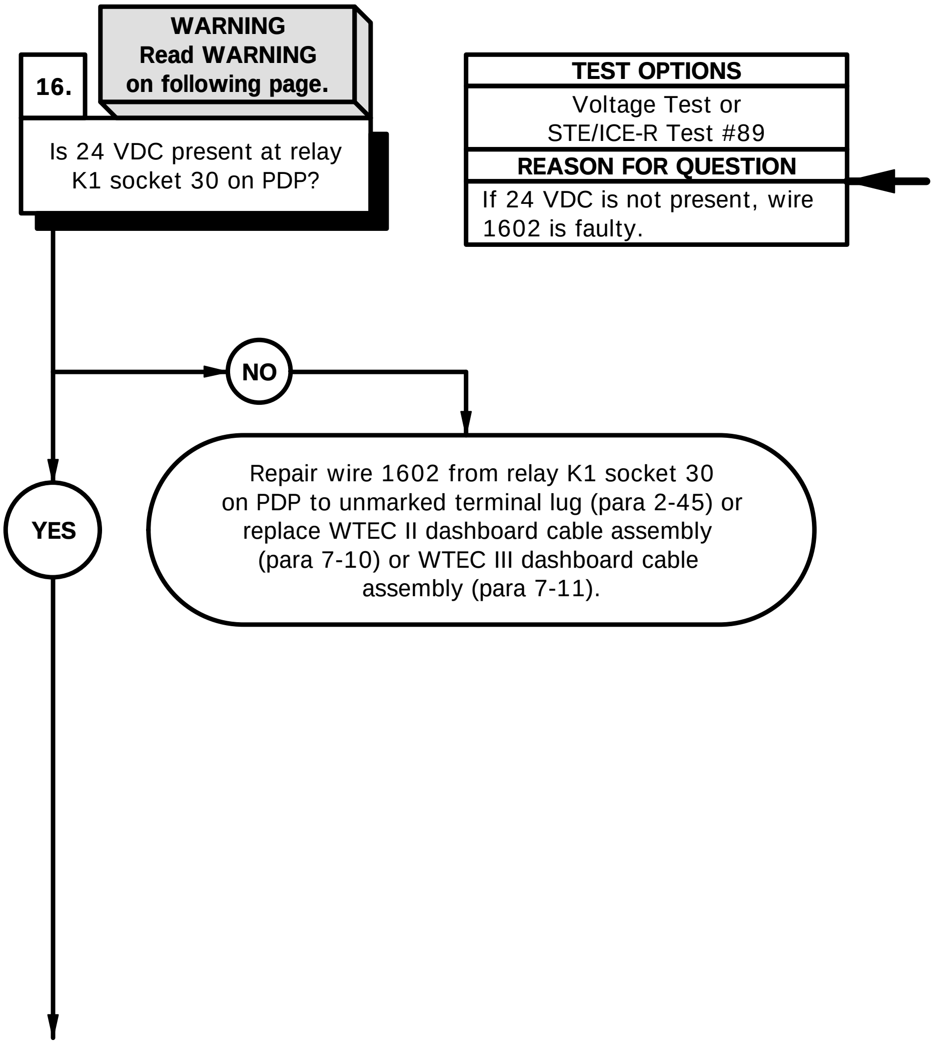
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.
Engine control cable assembly OK.
Relay K24 OK.

POSSIBLE PROBLEMS

Faulty start and charging cable assembly.
Faulty relay K1.
Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



16.

WARNING
Read WARNING on following page.

Is 24 VDC present at relay K1 socket 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1602 is faulty.

NO

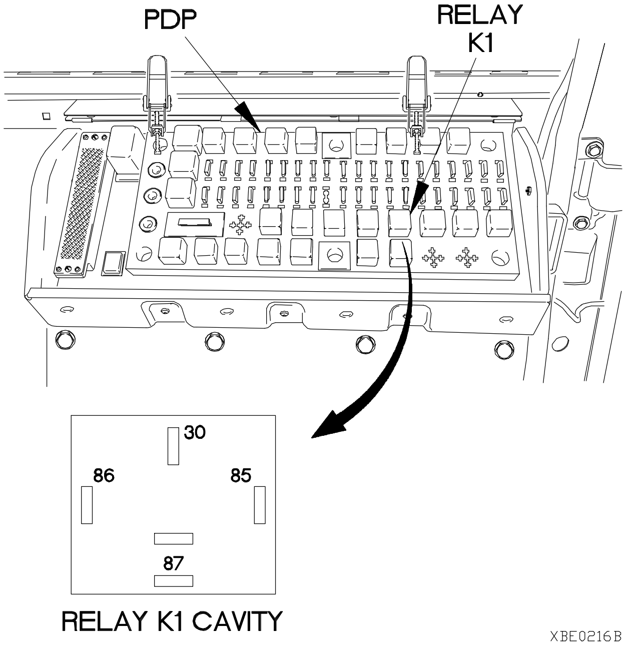
Repair wire 1602 from relay K1 socket 30 on PDP to unmarked terminal lug (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Disconnect batteries (para 7-57). (2) Remove relay K1 from PDP. (3) Connect batteries (para 7-57). (4) Set multimeter to volts DC. (5) Connect positive (+) probe of multimeter to PDP relay K1 socket 30. (6) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (7) If 24 VDC is not present, repair wire 1602 from relay K1 socket 30 on PDP to unmarked terminal lug (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



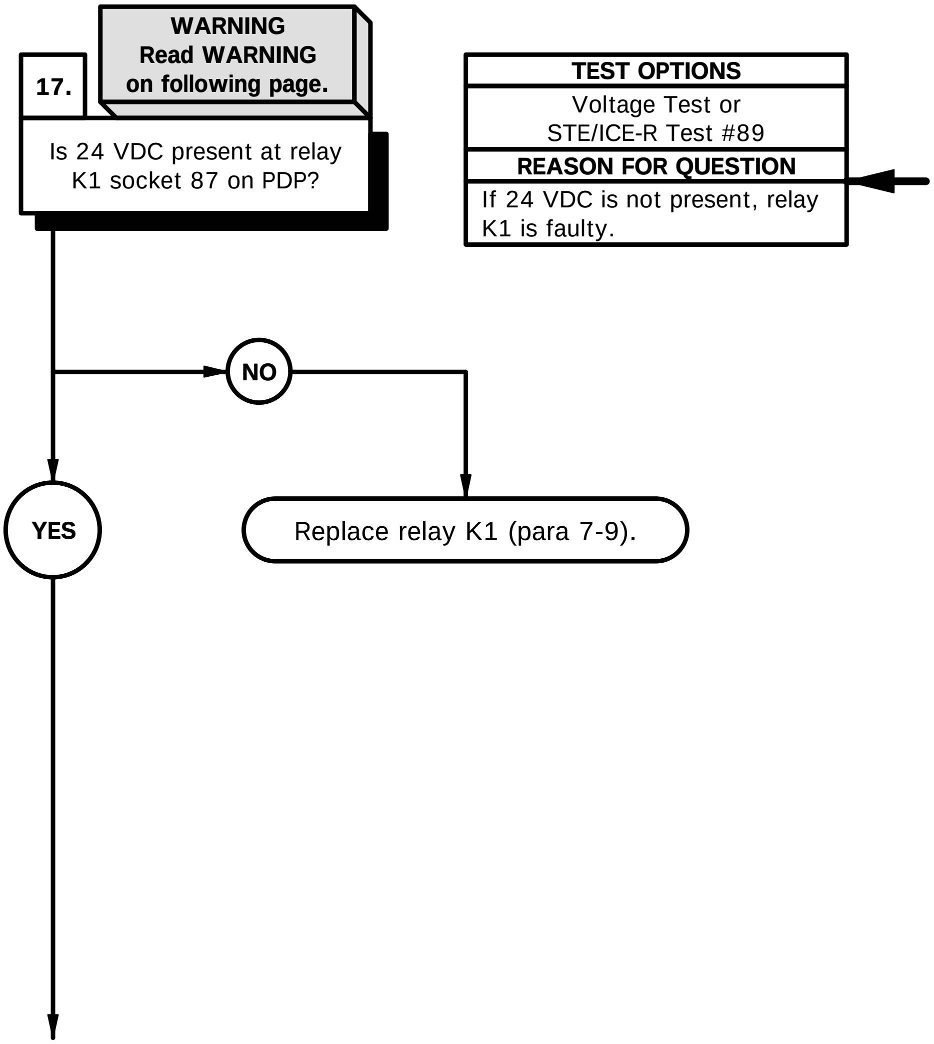
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.
Engine control cable assembly OK.
Relay K24 OK.

POSSIBLE PROBLEMS

Faulty start and charging cable assembly.
Faulty relay K1.
Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



WARNING
Read WARNING on following page.

17. Is 24 VDC present at relay K1 socket 87 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, relay K1 is faulty.

NO

Replace relay K1 (para 7-9).

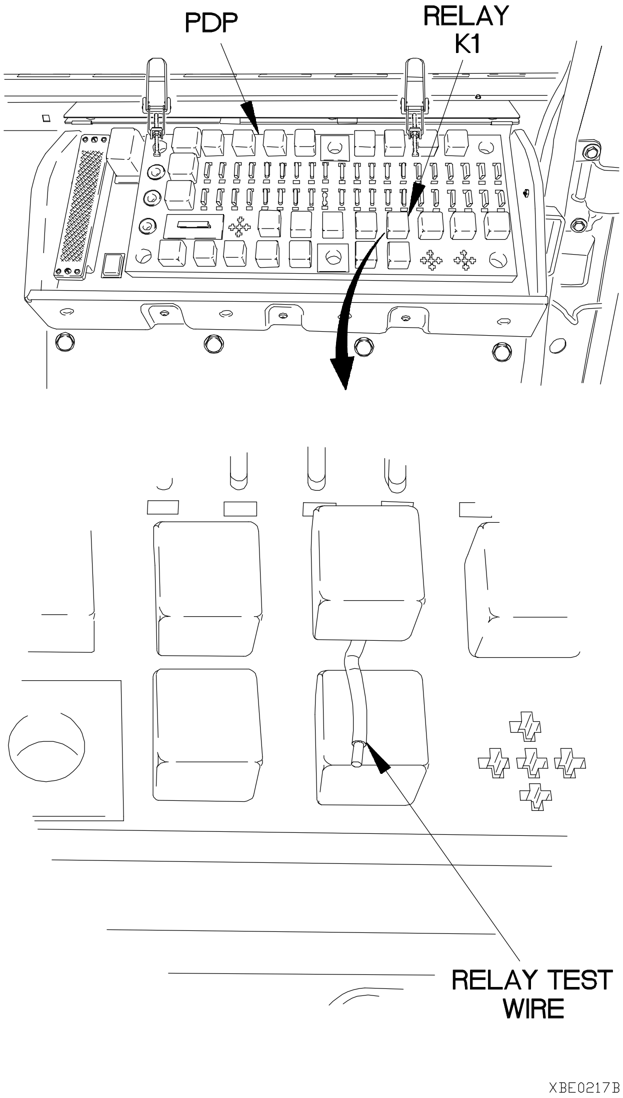
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect batteries (para 7-57).
(2) Install relay test wire in relay K1 socket 87 on PDP.
(3) Install relay K1 in PDP.
(4) Connect batteries (para 7-57).
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to relay test wire.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1).
(9) Press starter pushbutton (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If 24 VDC is not present, replace relay K1 (para 7-9).
(11) Position master power switch to off (TM 9-2320-366-10-1).
(12) Disconnect batteries (para 7-57).
(13) Remove relay K1 from PDP.
(14) Remove relay test wire from relay K1 socket 87 on PDP.
(15) Install relay K1 in PDP.



e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.
Engine control cable assembly OK.
Relay K24 OK.
Relay K1 OK.

POSSIBLE PROBLEMS

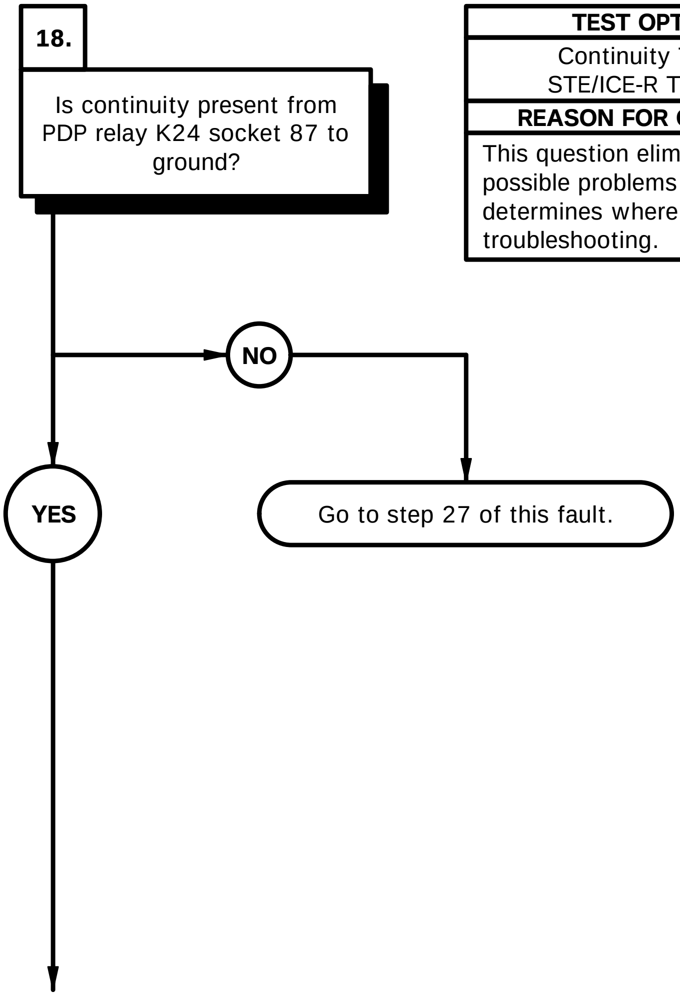
Faulty start and charging cable assembly.
Faulty starter pushbutton switch.
Faulty dashboard cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

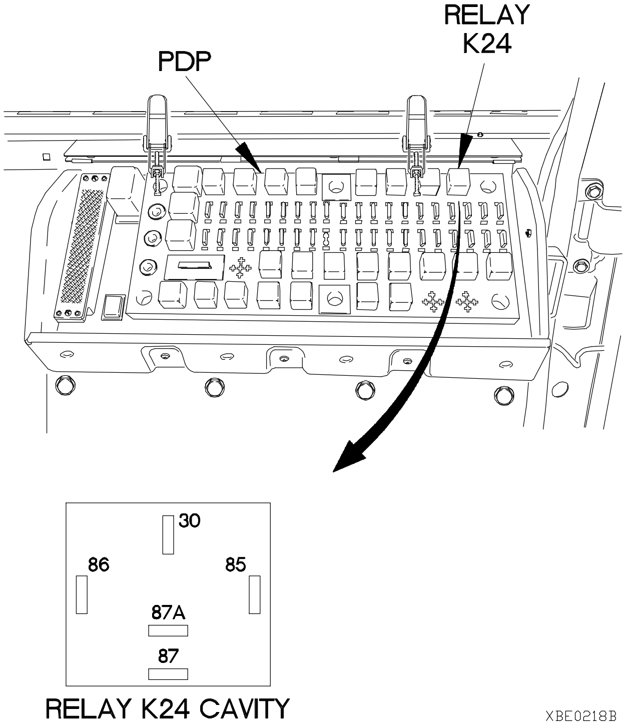
This question eliminates possible problems and determines where to continue troubleshooting.



18.

Is continuity present from PDP relay K24 socket 87 to ground?

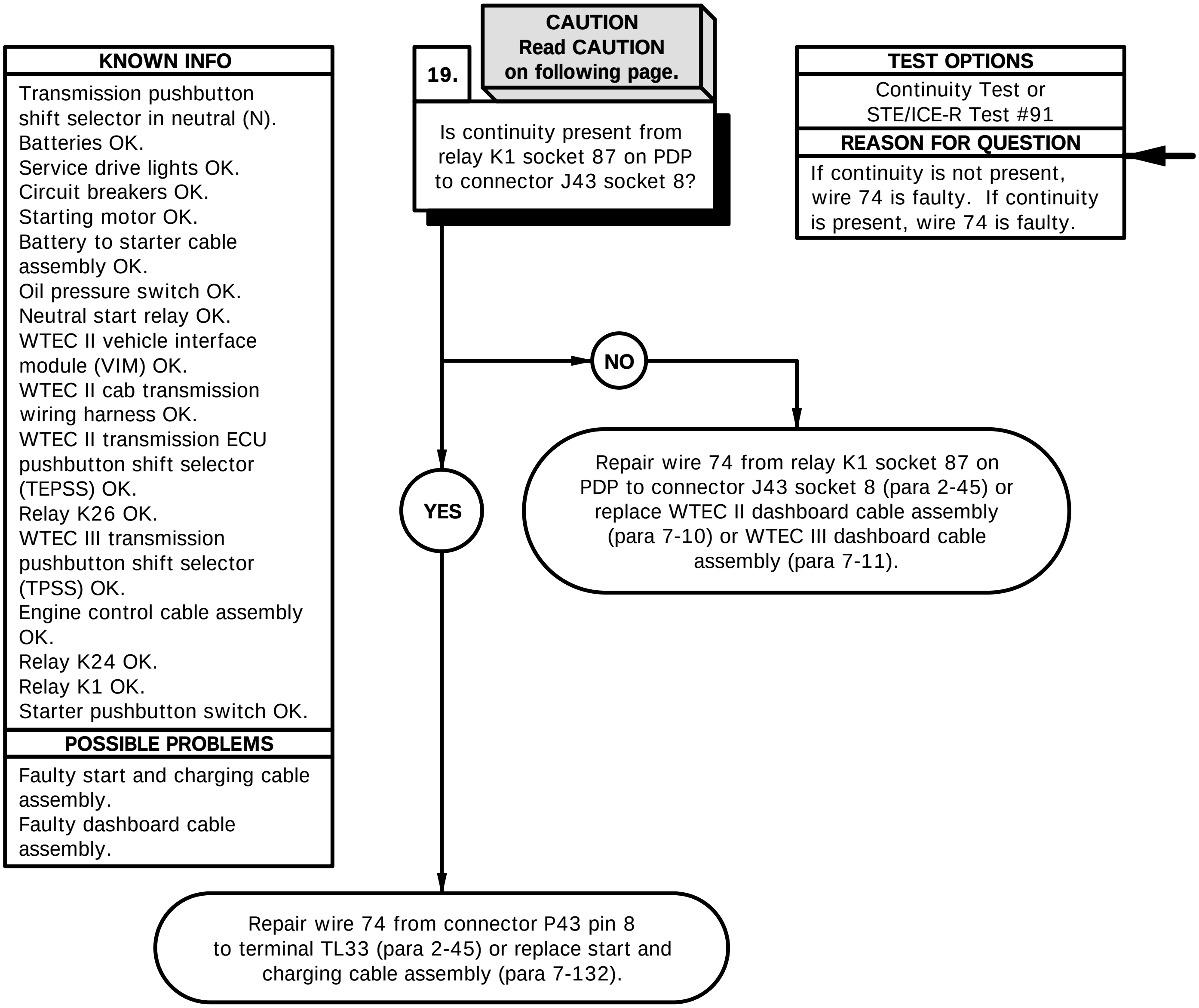
Go to step 27 of this fault.



CONTINUITY TEST

(1) Remove relay K24 from PDP.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to relay K24 socket 87 on PDP.
(4) Connect negative (-) probe of multimeter to ground.
(5) Press starter pushbutton (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If continuity is not present, go to step 27 of this fault.

e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.
Engine control cable assembly OK.
Relay K24 OK.
Relay K1 OK.
Starter pushbutton switch OK.

POSSIBLE PROBLEMS

Faulty start and charging cable assembly.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

19. Is continuity present from relay K1 socket 87 on PDP to connector J43 socket 8?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 74 is faulty. If continuity is present, wire 74 is faulty.

NO: Repair wire 74 from relay K1 socket 87 on PDP to connector J43 socket 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Repair wire 74 from connector P43 pin 8 to terminal TL33 (para 2-45) or replace start and charging cable assembly (para 7-132).

CAUTION

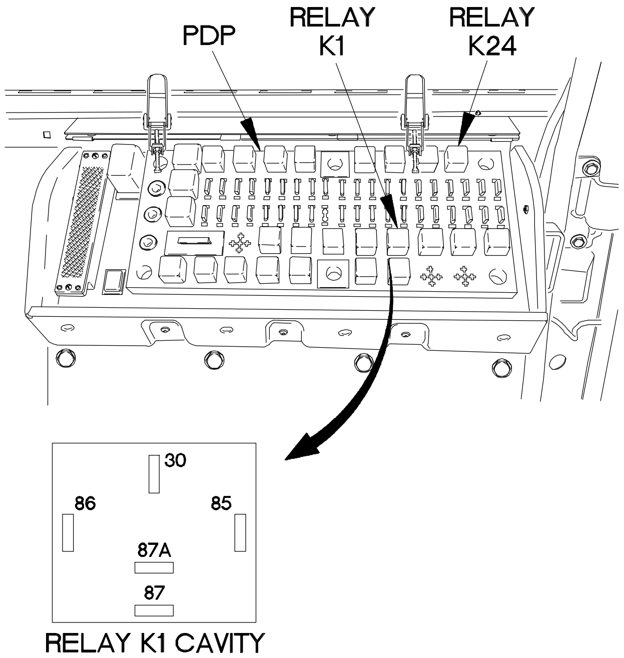
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

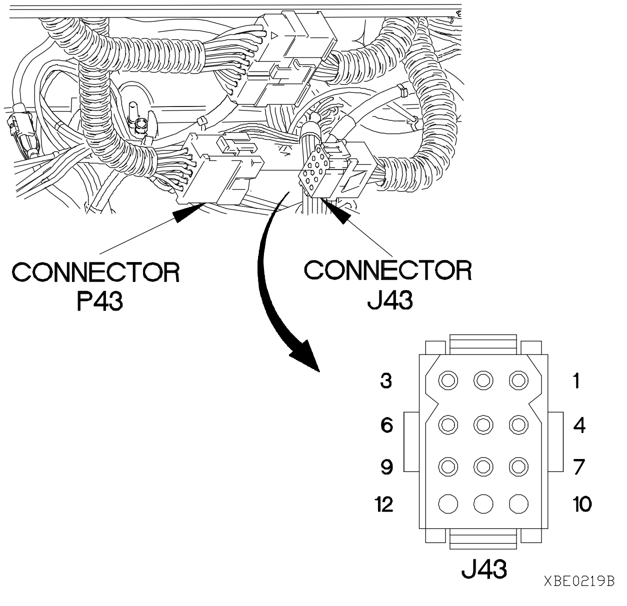
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

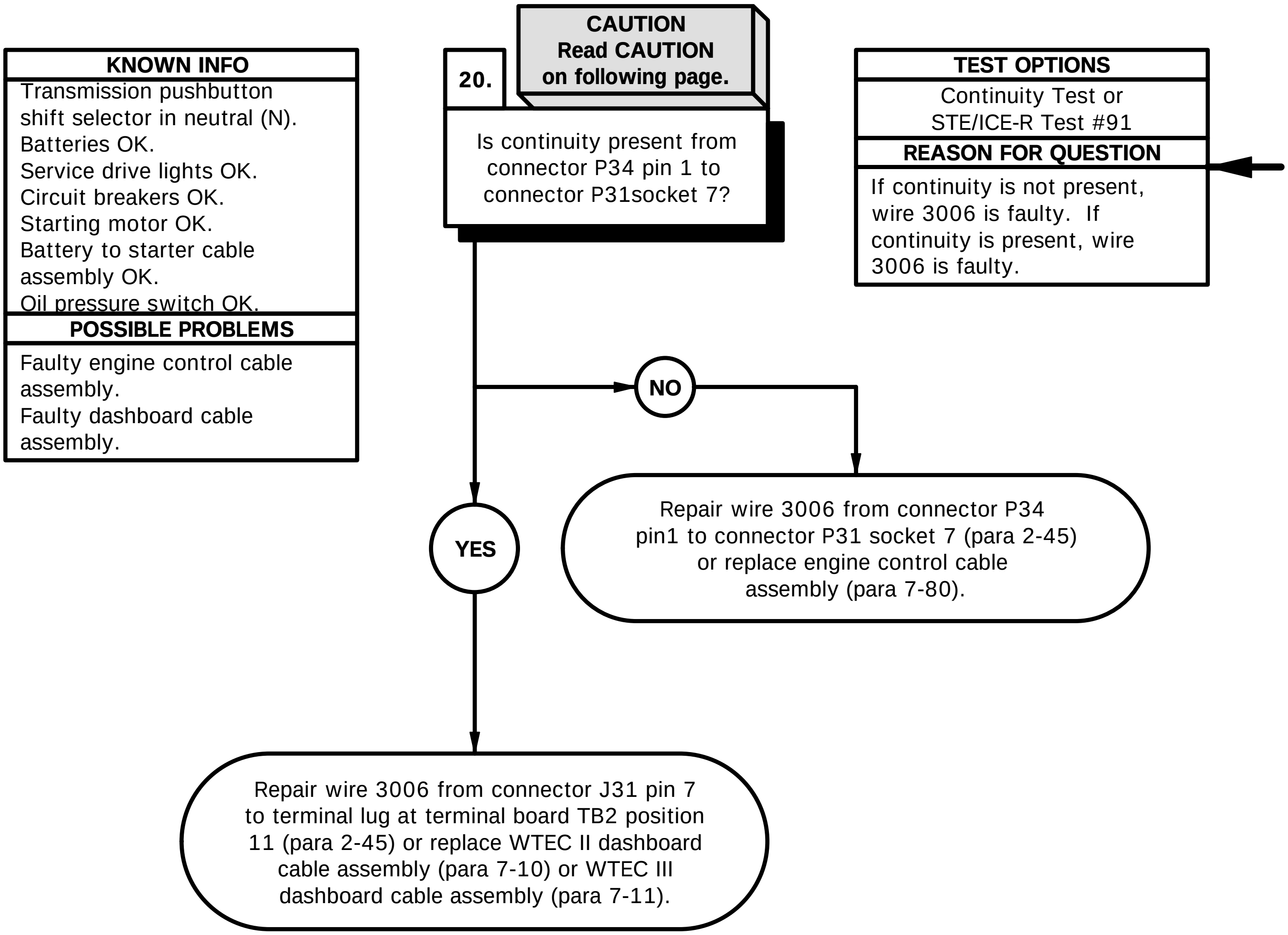
CONTINUITY TEST

(1) Install relay K24 in PDP.
(2) Remove relay K1 from PDP.
(3) Remove instrument panel for access (para 7-15).
(4) Disconnect connector J43 from connector P43.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector J43 socket 8.
(7) Connect negative (-) probe of multimeter to relay K1 socket 87 on PDP and note reading on multimeter.
(8) If continuity is not present, repair wire 74 from relay K1 socket 87 on PDP and connector J43 socket 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If continuity is present, repair wire 74 from connector P43 pin 8 to terminal TL33 (para 2-45) or replace start and charging cable assembly (para 7-132).
(10) Connect connector J43 to connector P43.
(11) Install instrument panel (para 7-15).
(12) Install relay K1 in PDP.
(13) Install power distribution panel (PDP) cover (para 16-2).
(14) Connect batteries (para 7-57).





e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

20. Is continuity present from connector P34 pin 1 to connector P31socket 7?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3006 is faulty. If continuity is present, wire 3006 is faulty.

NO

Repair wire 3006 from connector P34 pin1 to connector P31 socket 7 (para 2-45) or replace engine control cable assembly (para 7-80).

YES

Repair wire 3006 from connector J31 pin 7 to terminal lug at terminal board TB2 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

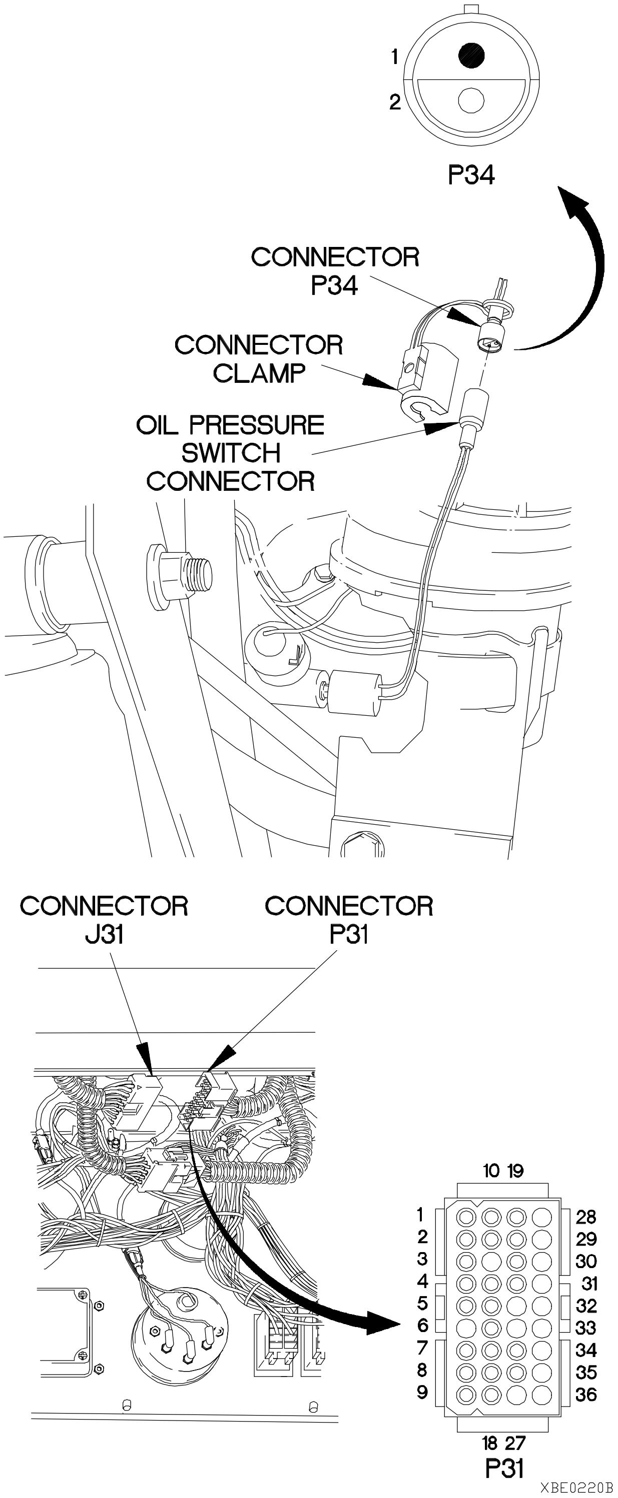
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P34 pin 1.
(3) Lower cab (TM 9-2320-366-10-1).
(4) Remove instrument panel for access (para 7-15).
(5) Disconnect connector J31 from connector P31.
(6) Connect negative (-) probe of multimeter to connector P31 socket 7 and note reading on multimeter.
(7) If continuity is not present, repair wire 3006 from connector P34 pin 1 to connector P31 socket 7 (para 2-45) or replace engine control cable assembly (para 7-80).
(8) If continuity is present, repair wire 3006 from connector J31 pin 7 to terminal lug at terminal board TB2 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Connect connector P31 to connector J31.
(10) Install instrument panel (para 7-15).
(11) Raise cab (TM 9-2320-366-10-1).
(12) Connect connector P34 to oil pressure swtich connector.
(13) Connect connector clamp on oil pressure switch connector.
(14) Connect batteries (para 7-57).
(15) Lower cab (TM 9-2320-366-10-1).



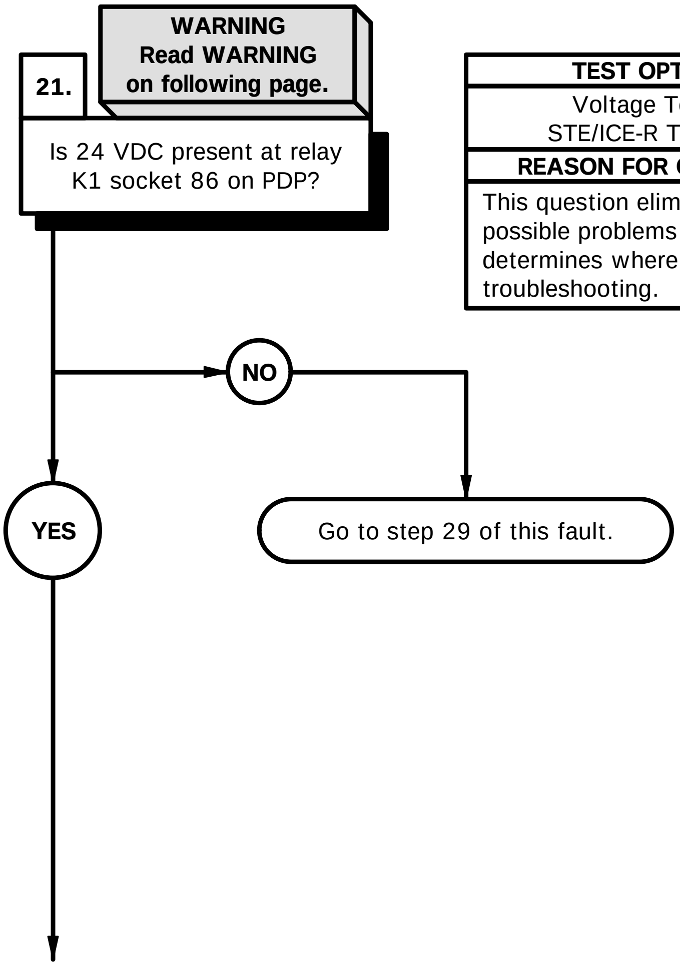
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty relay K1.
Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



WARNING
Read WARNING on following page.

21. Is 24 VDC present at relay K1 socket 86 on PDP?

NO → Go to step 29 of this fault.

YES ↓

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

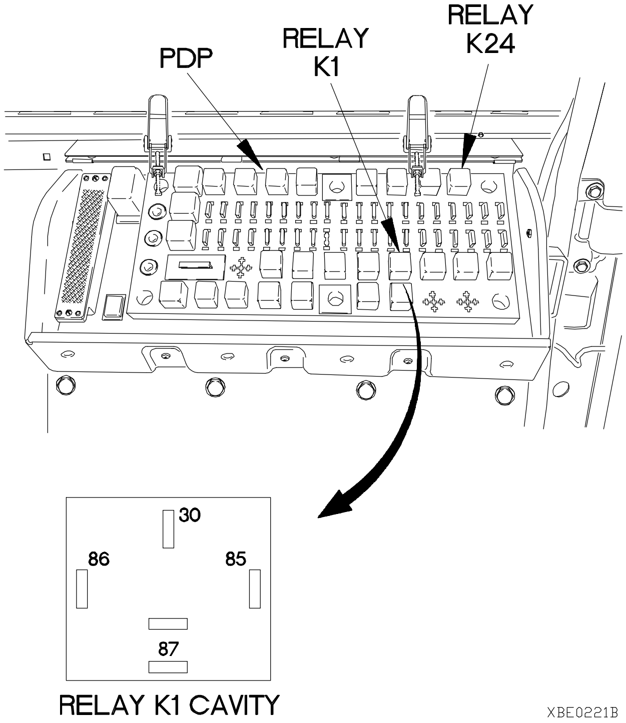
This question eliminates possible problems and determines where to continue troubleshooting.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay K24 in PDP.
(2) Disconnect batteries (para 7-57).
(3) Remove relay K1 from PDP.
(4) Connect batteries (para 7-57).
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to relay K1 socket 86 on PDP.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 24 VDC is not present, go to step 29 of this fault.
(10) Position master power switch to off (TM 9-2320-366-10-1).



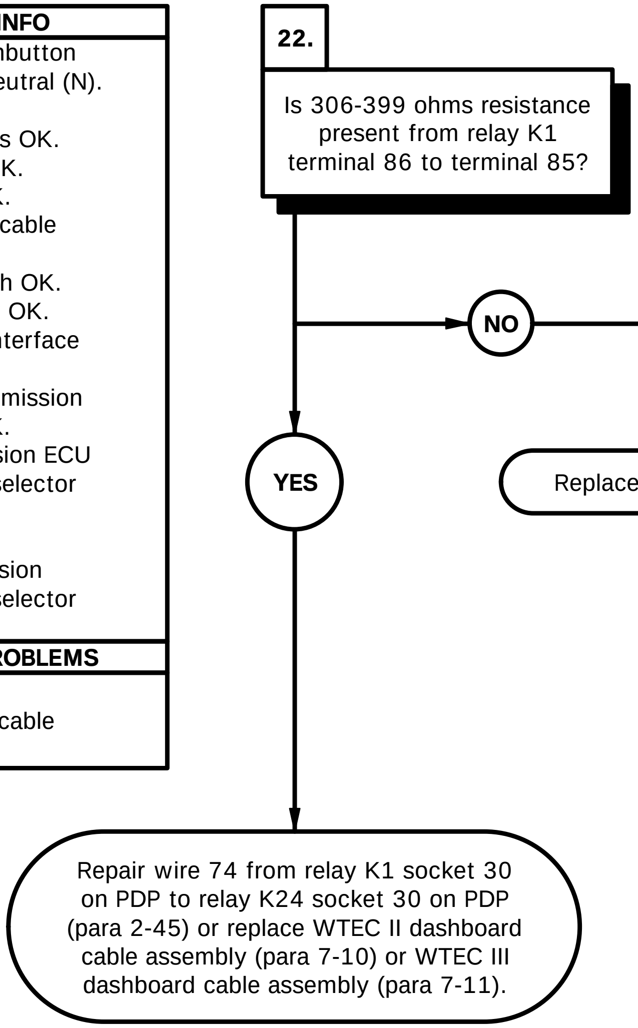
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty relay K1.
Faulty dashboard cable assembly.



22.

Is 306-399 ohms resistance present from relay K1 terminal 86 to terminal 85?

Replace relay K1 (para 7-9).

Repair wire 74 from relay K1 socket 30 on PDP to relay K24 socket 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

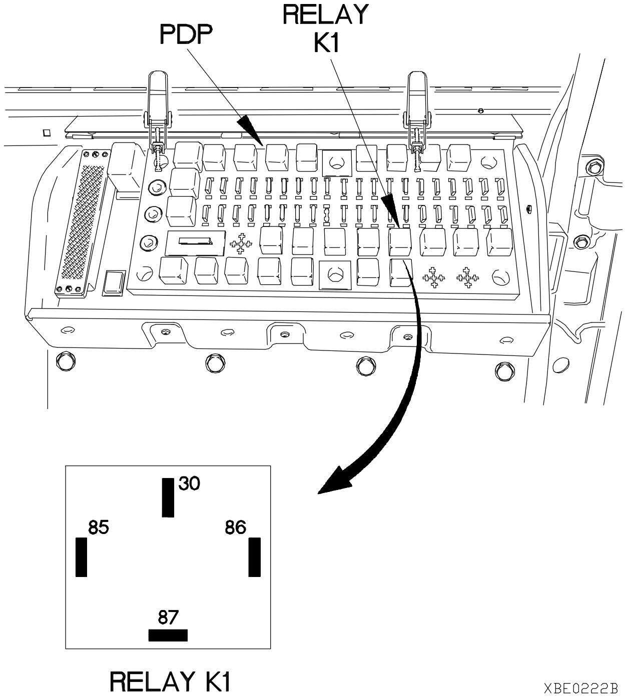
TEST OPTIONS

Resistance Test or
STE/ICE-R Test #91

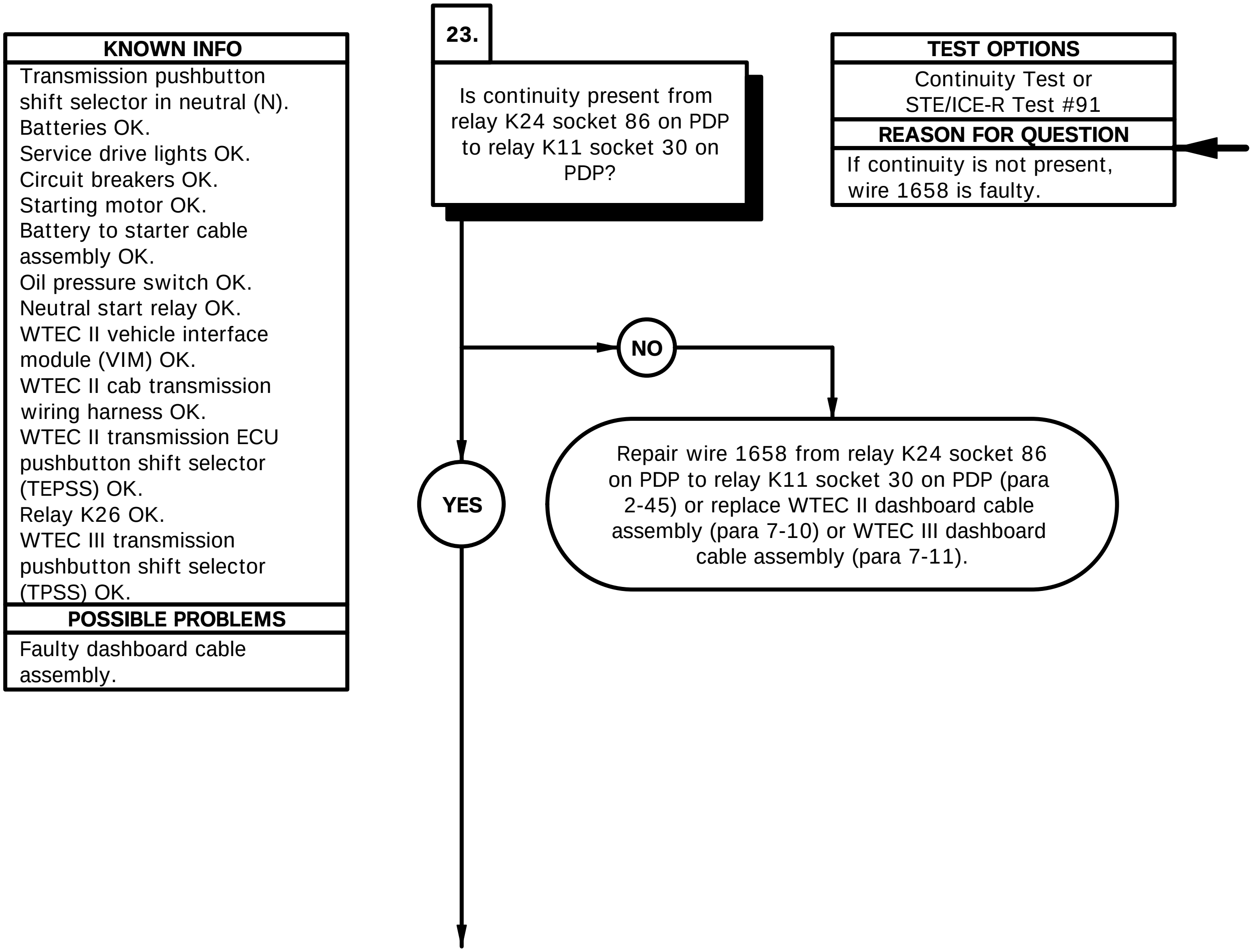
REASON FOR QUESTION

If 306-399 ohms resistance is not present, relay K1 is faulty. If 306-399 ohms resistance is present, wire 74 is faulty.

RESISTANCE TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to relay K1 terminal 86. (3) Connect negative (-) probe of multimeter to relay K1 terminal 85 and note reading on multimeter. (4) If 306-399 ohms resistance is not present, replace relay K1 (para 7-9). (5) If 306-399 ohms resistance is present, repair wire 74 from relay K1 socket 30 on PDP to relay K24 socket 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (6) Disconnect batteries (para 7-57). (7) Install relay K1 in PDP. (8) Install PDP cover (para 16-2). (9) Connect batteries (para 7-57).



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

23.

Is continuity present from relay K24 socket 86 on PDP to relay K11 socket 30 on PDP?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

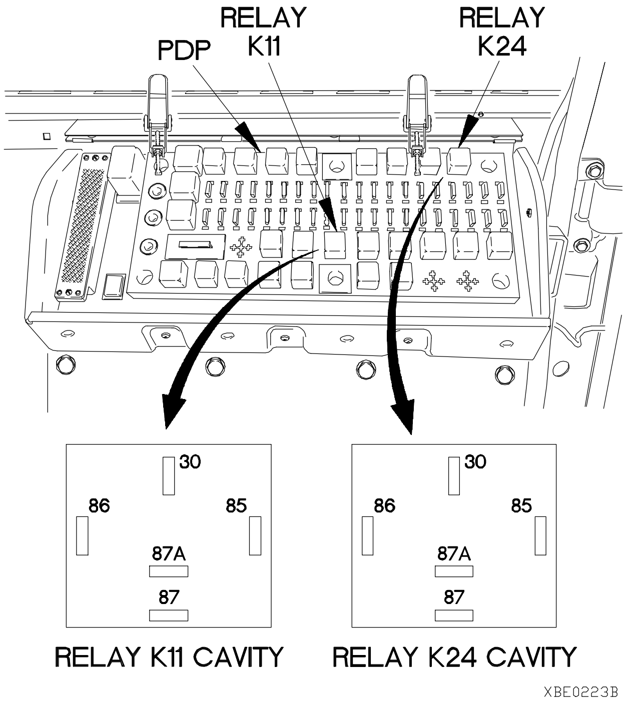
REASON FOR QUESTION

If continuity is not present, wire 1658 is faulty.

Repair wire 1658 from relay K24 socket 86 on PDP to relay K11 socket 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove relay K11 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to relay K24 socket 86 on PDP.
(5) Connect negative (-) probe of multimeter to relay K11 socket 30 and note reading on multimeter.
(6) If continuity is not present, repair wire 1658 from relay K24 socket 86 on PDP to relay K30 socket 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Install relay K24 in PDP.



e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

24.

Is continuity present from relay K11 socket 30 on PDP to terminal board TB1 position 64 on PDP?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1658 is faulty. If continuity is present, wire 1929 is faulty.

NO

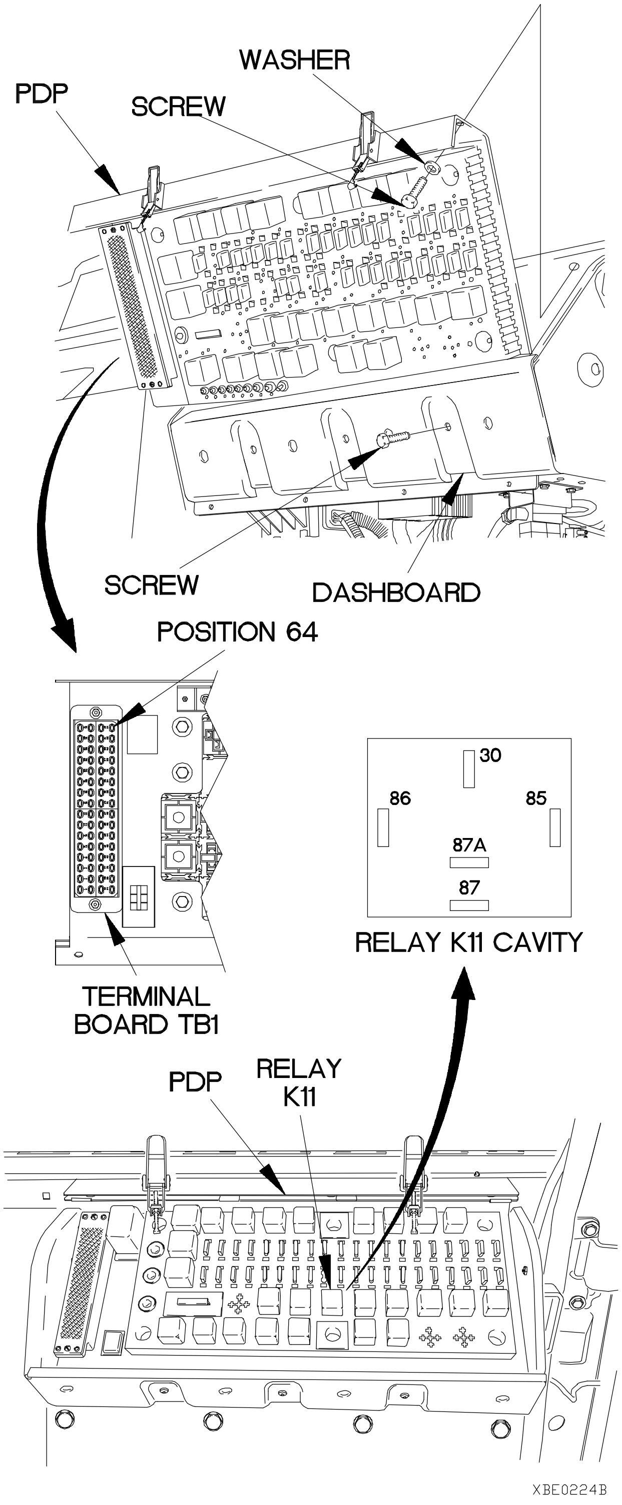
Repair wire 1658 from relay K11 socket 30 on PDP to terminal board TB1 position 64 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 1929 from terminal board TB1 position 64 to circuit breaker CB77 socket 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to relay K11 socket 30 on PDP.
(6) Connect negative (-) probe of multimeter to terminal board TB1 position 64 on PDP and note reading on multimeter.
(7) If continuity is not present, repair wire 1658 from relay K11 socket 30 on PDP to terminal board TB1 position 64 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, repair wire 1929 from circuit breaker CB77 socket 5 on PDP to terminal board TB1 position 64 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Install relay K11 in PDP.
(12) Install PDP cover (para 16-2).
(13) Connect batteries (para 7-57).



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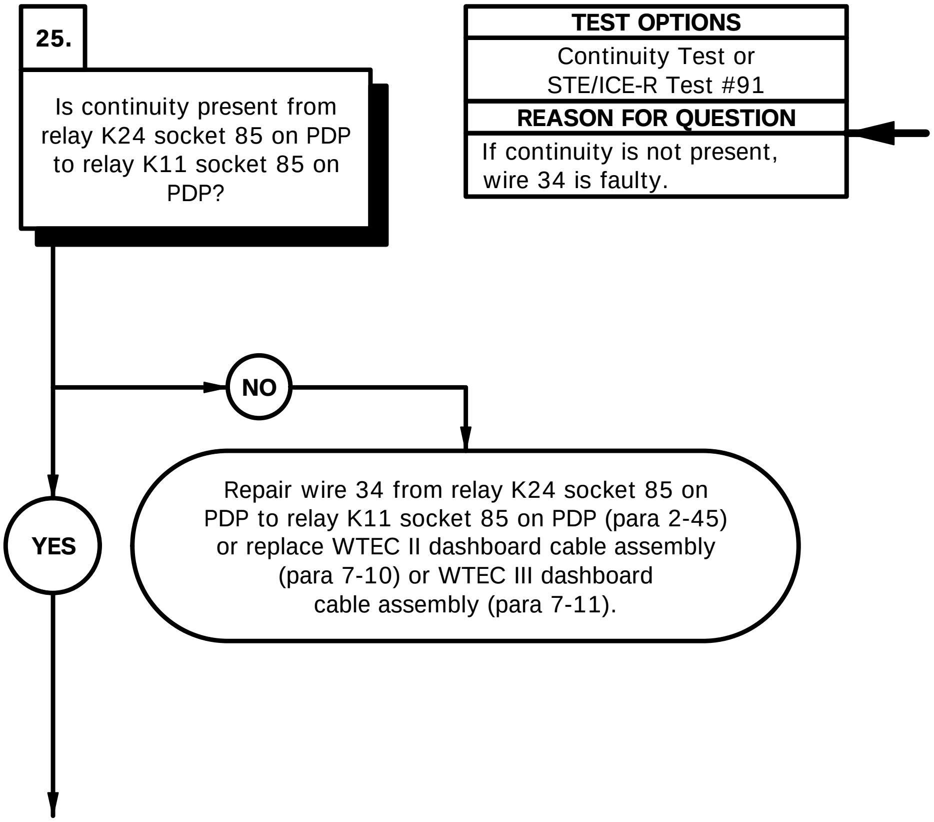
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty dashboard cable assembly.



25.

Is continuity present from relay K24 socket 85 on PDP to relay K11 socket 85 on PDP?

TEST OPTIONS

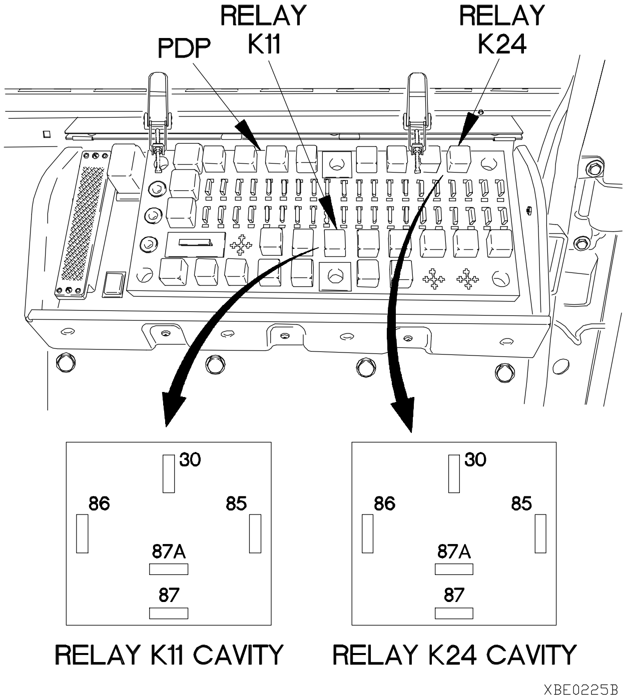
Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 34 is faulty.

Repair wire 34 from relay K24 socket 85 on PDP to relay K11 socket 85 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST
(1) Remove relay K11 from PDP. (2) Set multimeter to ohms. (3) Connect positive (+) probe of multimeter to relay K24 socket 85 on PDP. (4) Connect negative (-) probe of multimeter to relay K11 socket 85 on PDP and note reading on multimeter. (5) If continuity is not present, repair wire 34 from relay K24 socket 85 on PDP to relay K11 socket 85 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (6) Install relay K24 in PDP.



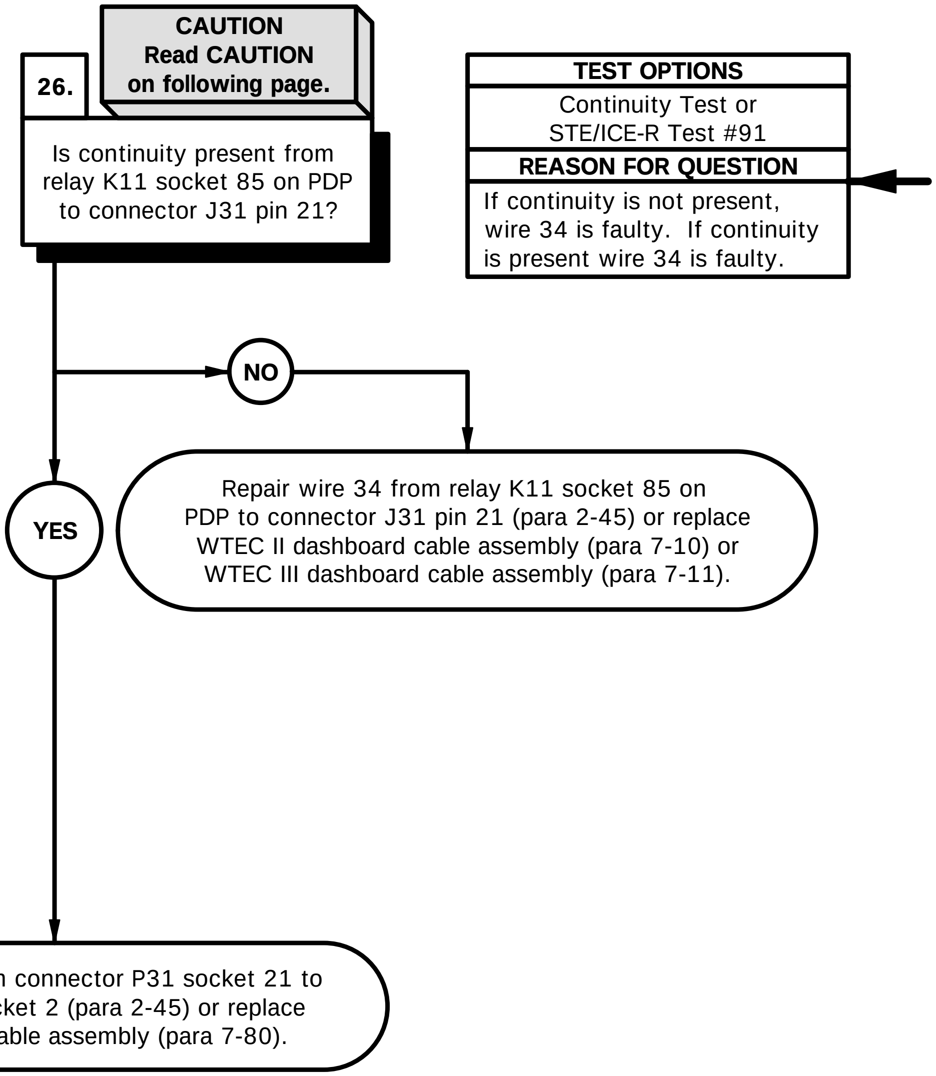
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty dashboard cable assembly.



26.

CAUTION
Read CAUTION on following page.

Is continuity present from relay K11 socket 85 on PDP to connector J31 pin 21?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 34 is faulty. If continuity is present wire 34 is faulty.

NO

Repair wire 34 from relay K11 socket 85 on PDP to connector J31 pin 21 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 34 from connector P31 socket 21 to connector P34 socket 2 (para 2-45) or replace engine control cable assembly (para 7-80).

CAUTION

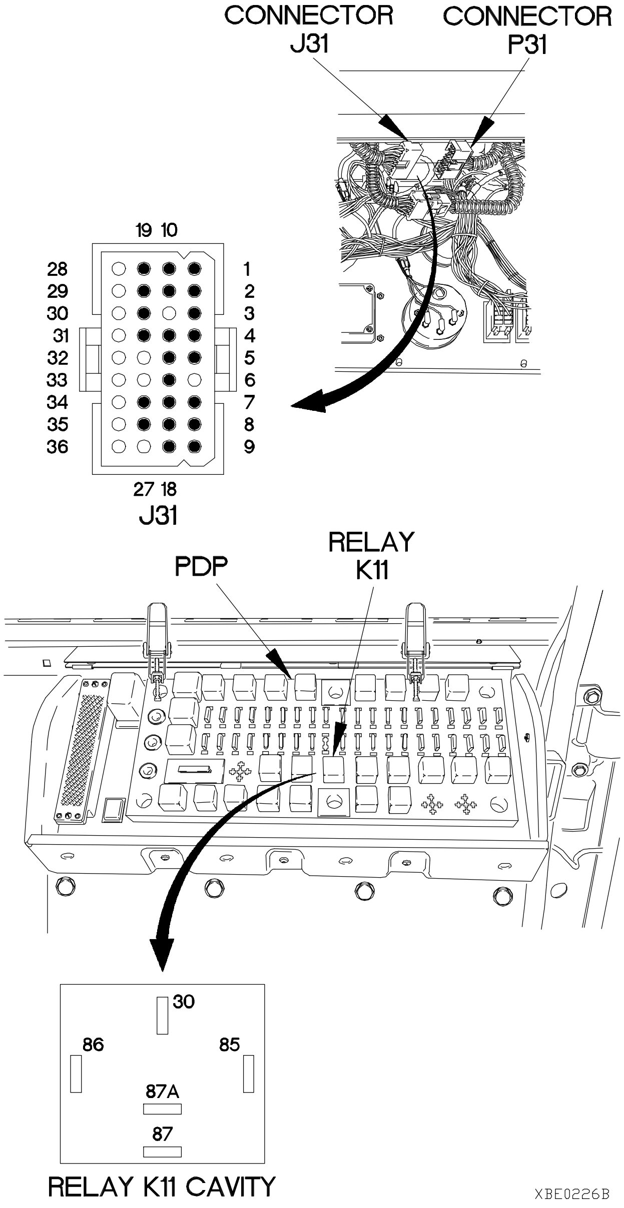
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector J31 from connector P31.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J31 pin 21.
(5) Connect negative (-) probe of multimeter to relay K11 socket 85 on PDP and note reading on multimeter.
(6) If continuity is not present, repair wire 34 from relay K11 socket 85 on PDP to connector J31 pin 21 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If continuity is present, repair wire 34 from connector P31 socket 21 to connector P34 socket 2 (para 2-45) or replace engine control cable assembly (para 7-80).
(8) Connect connector J31 to connector P31.
(9) Install instrument panel (para 7-15).
(10) Install relay K11 in PDP.
(11) Install power distribution panel (PDP) cover (para 16-2).
(12) Connect batteries (para 7-57).



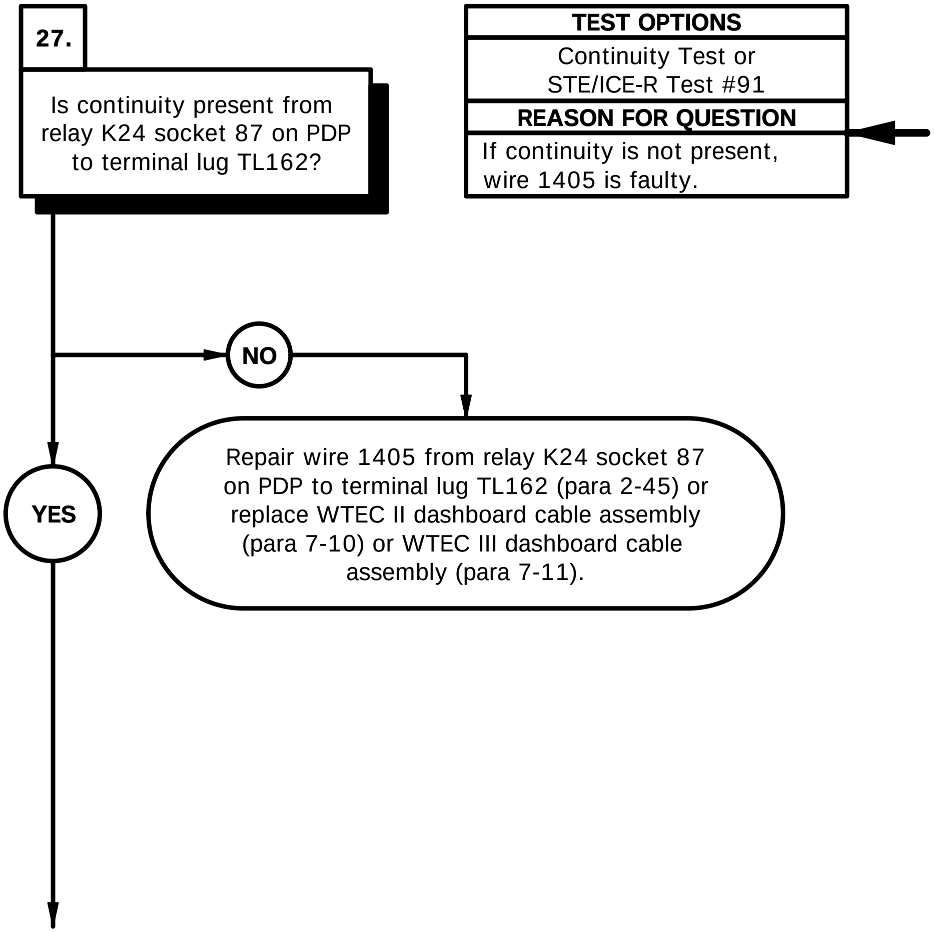
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Relay K26 OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.
Engine control cable assembly OK.
Relay K24 OK.
Relay K1 OK.

POSSIBLE PROBLEMS

Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



27.

Is continuity present from relay K24 socket 87 on PDP to terminal lug TL162?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

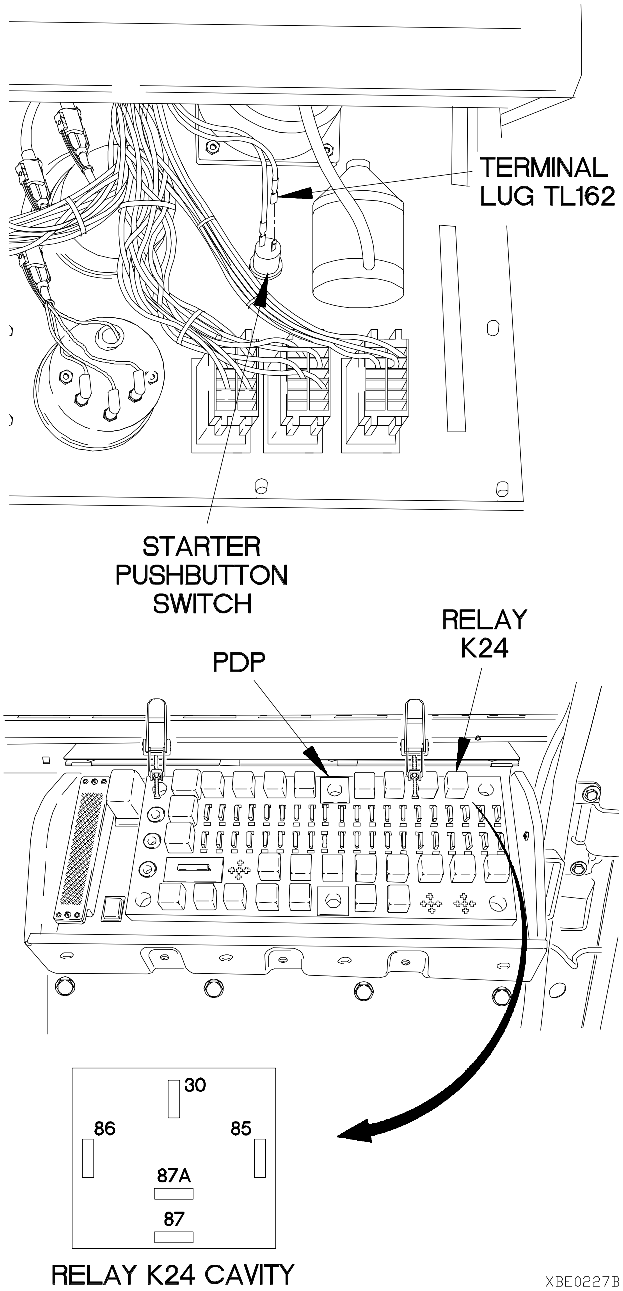
REASON FOR QUESTION

If continuity is not present, wire 1405 is faulty.

Repair wire 1405 from relay K24 socket 87 on PDP to terminal lug TL162 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect terminal lug TL162 from starter pushbutton switch.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL162.
(5) Connect negative (-) probe of multimeter to relay K24 socket 87 on PDP and note reading on multimeter.
(6) If continuity is not present, repair wire 1405 from relay K24 socket 87 on PDP to terminal lug TL162 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Install relay K24 in PDP.
(8) Connect terminal lug TL162 to starter pushbutton switch.



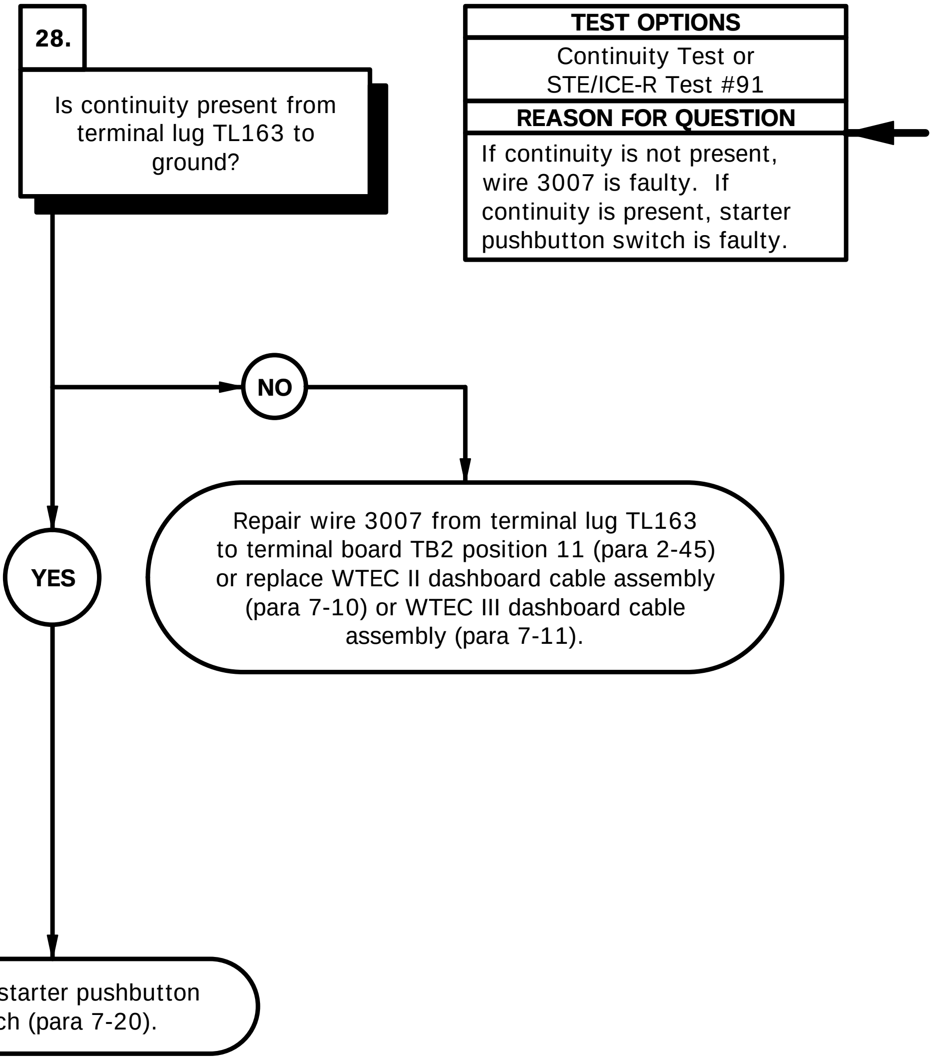
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Neutral start relay OK.
WTEC II vehicle interface module (VIM) OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Faulty relay K26.
Faulty WTEC III transmission pushbutton shift selector (TPSS).
Engine control cable assembly OK.
Relay K24 OK.
Relay K1 OK.

POSSIBLE PROBLEMS

Faulty starter pushbutton switch.
Faulty dashboard cable assembly.



28.

Is continuity present from terminal lug TL163 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

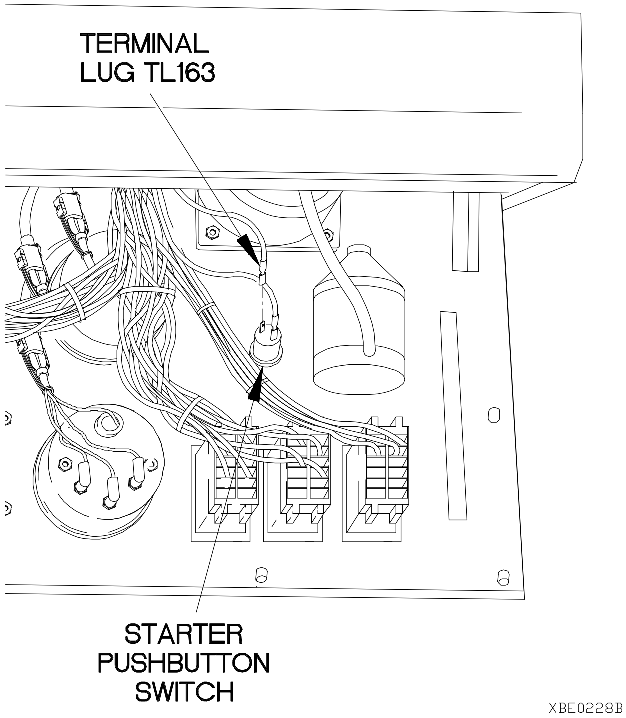
If continuity is not present, wire 3007 is faulty. If continuity is present, starter pushbutton switch is faulty.

Repair wire 3007 from terminal lug TL163 to terminal board TB2 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace starter pushbutton switch (para 7-20).

CONTINUITY TEST

(1) Disconnect terminal lug TL163 from starter pushbutton switch.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL163.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3007 from terminal TL163 to terminal board TB2 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace starter pushbutton switch (para 7-20).
(7) Connect terminal lug TL163 to starter pushbutton.
(8) Install instrument panel (para 7-15).
(9) Install power distribution panel (PDP) cover (para 16-2).
(10) Connect batteries (para 7-57).



e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).

29.

Is the vehicle equipped with WTEC II transmission ECU pushbutton shift selector (TEPSS)?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

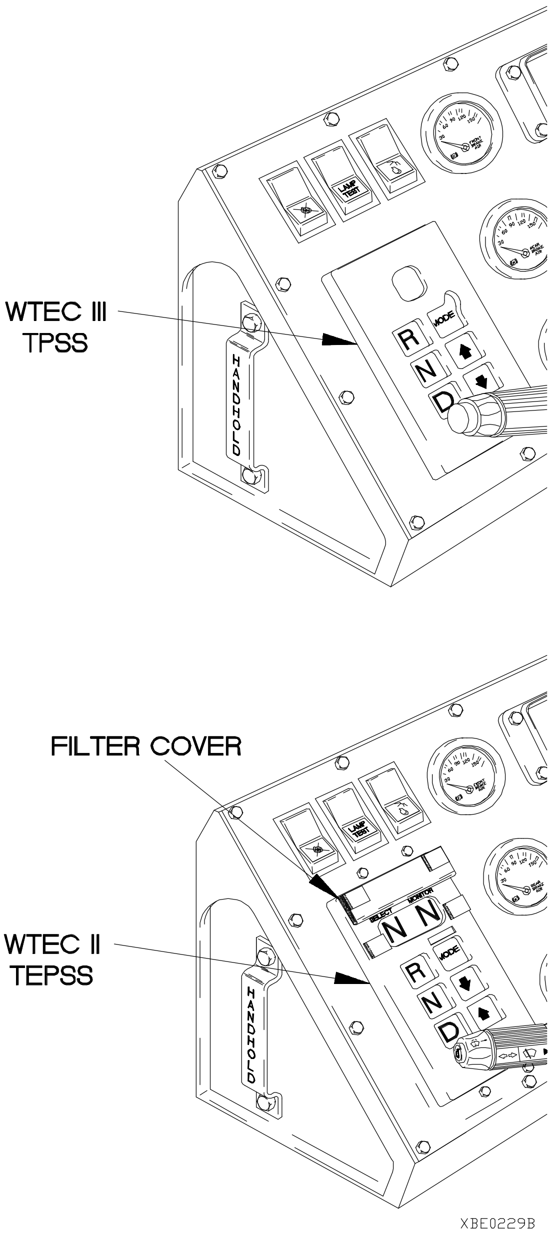
NO

Go to step 36 of this fault.

YES

(1) Check if vehicle is equipped with WTEC II transmission ECU pushbutton shift selector (TEPSS).

(2) If TEPSS is not equipped with a filter cover, go to step 36 of this fault.



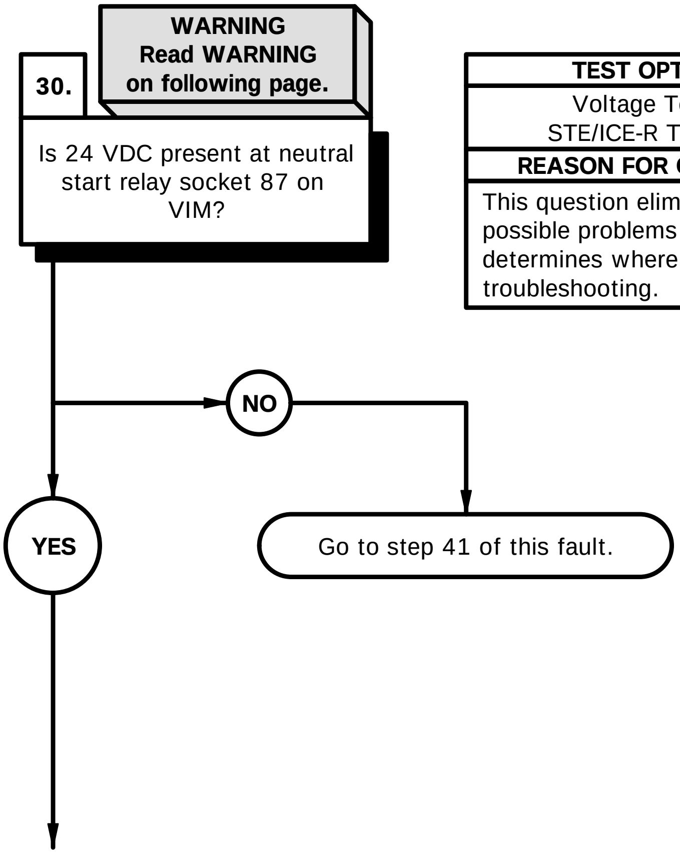
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty dashboard cable assembly.



WARNING
Read WARNING on following page.

30. Is 24 VDC present at neutral start relay socket 87 on VIM?

Go to step 41 of this fault.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

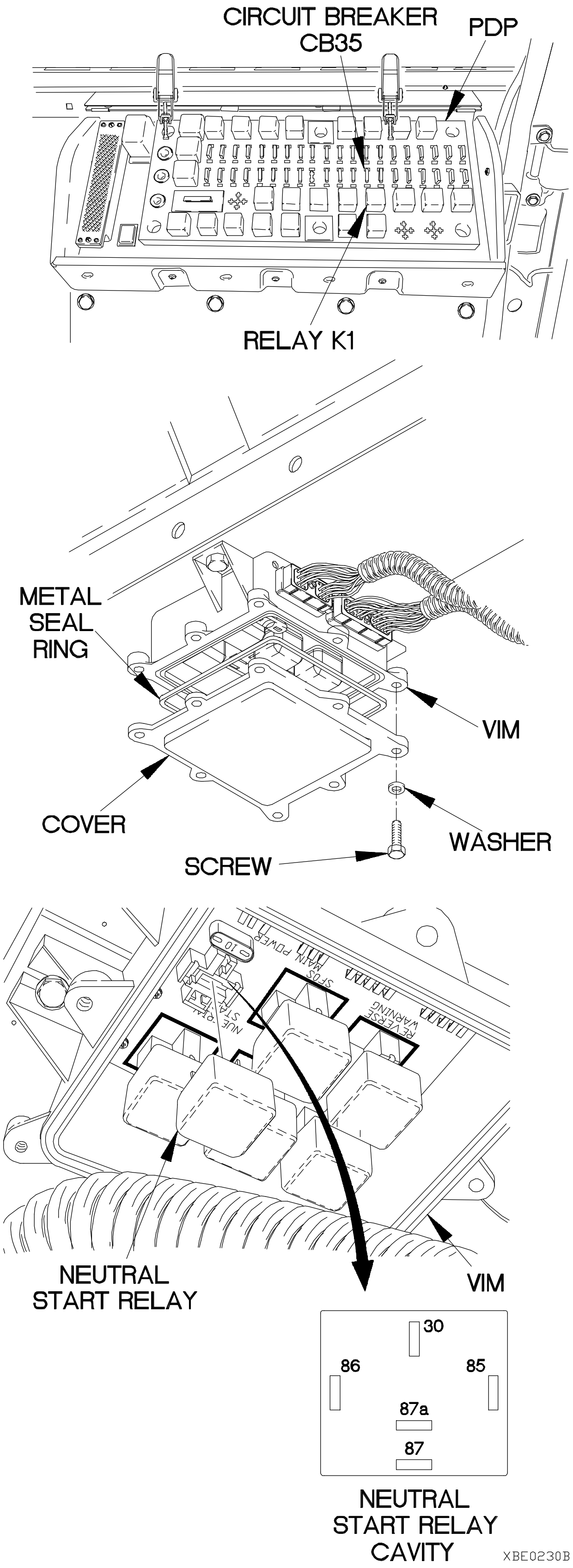
This question eliminates possible problems and determines where to continue troubleshooting.

WARNING

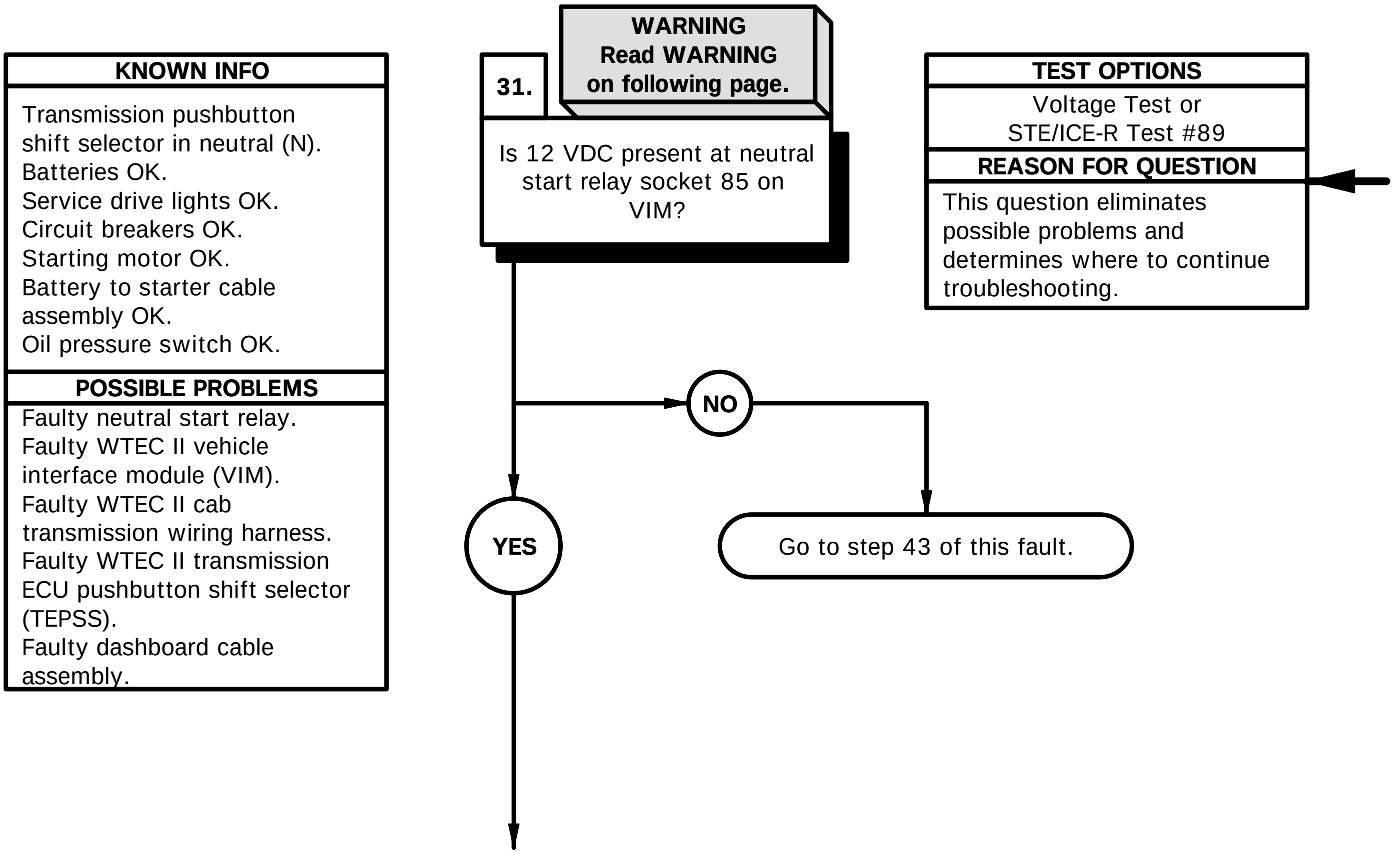
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay K1 in PDP.
(2) Remove kick panel (para 16-3).
(3) Remove circuit breaker CB35 from PDP.
(4) Remove eight screws, washers, cover, and metal seal ring from VIM. Discard metal seal ring.
(5) Remove neutral start relay from VIM.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to neutral start relay socket 87 on VIM.
(8) Connect negative (-) probe of multimeter to ground.
(9) Install circuit breaker CB35 in PDP and note reading on multimeter.
(10) If 24 VDC is not present, go to step 41 of this fault.
(11) Remove circuit breaker CB35 from PDP.



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty dashboard cable assembly.

31.

WARNING
Read WARNING on following page.

Is 12 VDC present at neutral start relay socket 85 on VIM?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

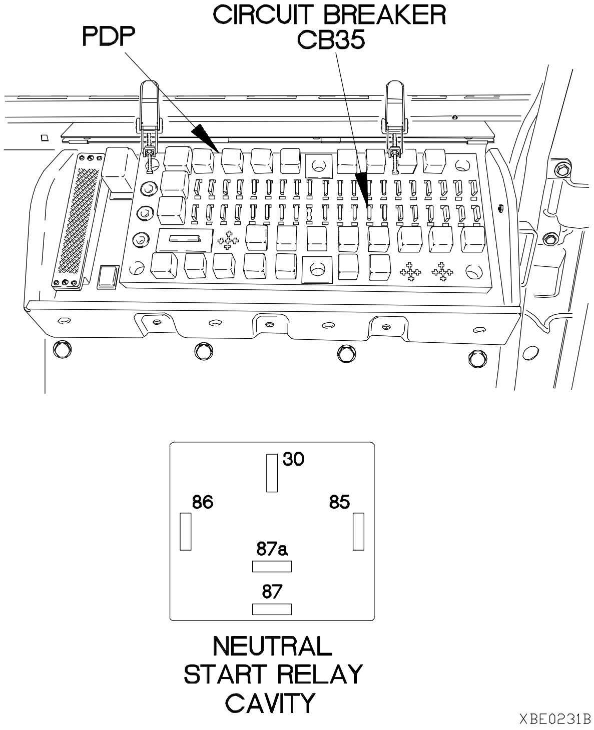
This question eliminates possible problems and determines where to continue troubleshooting.

Go to step 43 of this fault.

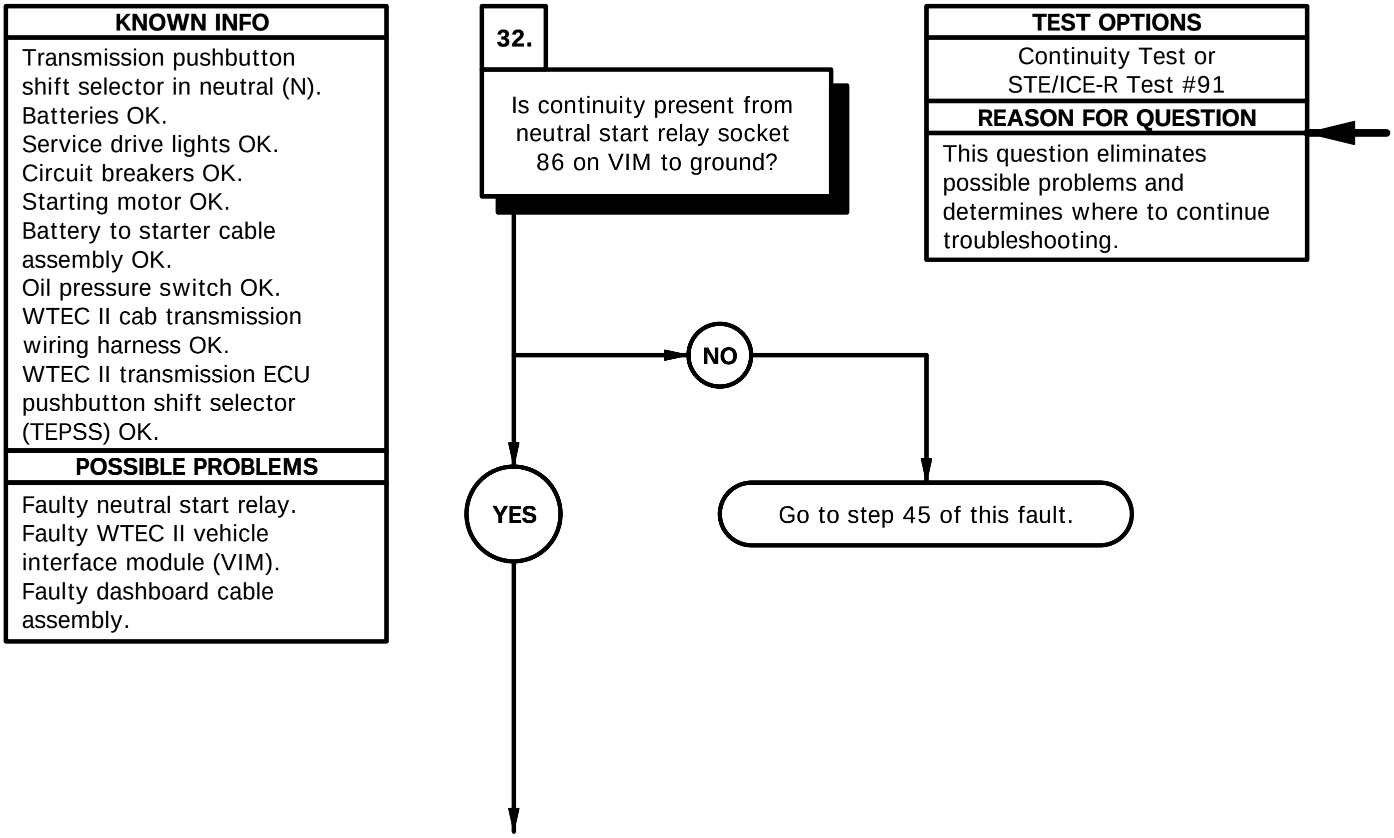
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to neutral start relay socket 85 on VIM. (3) Connect negative (-) probe of multimeter to ground. (4) Install circuit breaker CB35 in PDP and note reading on multimeter. (5) If 12 VDC is not present, go to step 43 of this fault. (6) Remove circuit breaker CB35 from PDP.



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.

POSSIBLE PROBLEMS

Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty dashboard cable assembly.

32.

Is continuity present from neutral start relay socket 86 on VIM to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

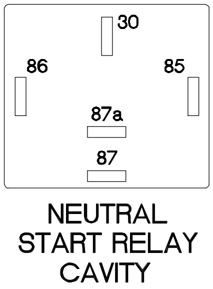
REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

Go to step 45 of this fault.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to neutral start relay socket 86 on VIM.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 45 of this fault.



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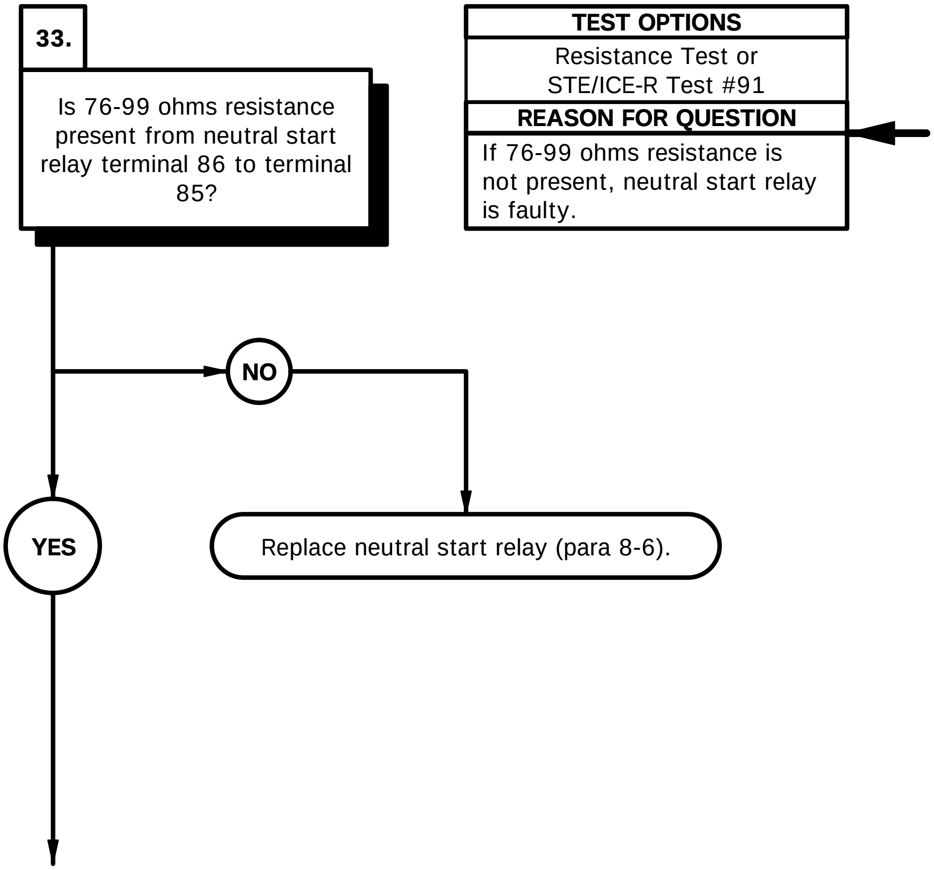
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.

POSSIBLE PROBLEMS

Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty dashboard cable assembly.



33.

Is 76-99 ohms resistance present from neutral start relay terminal 86 to terminal 85?

TEST OPTIONS

Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If 76-99 ohms resistance is not present, neutral start relay is faulty.

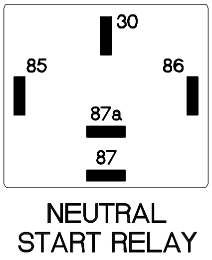
NO

Replace neutral start relay (para 8-6).

YES

RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to neutral start relay terminal 85.
(3) Connect negative (-) probe of multimeter to neutral start relay terminal 86 and note reading on multimeter.
(4) If 76-99 ohms resistance is not present, replace neutral start relay (para 8-6).



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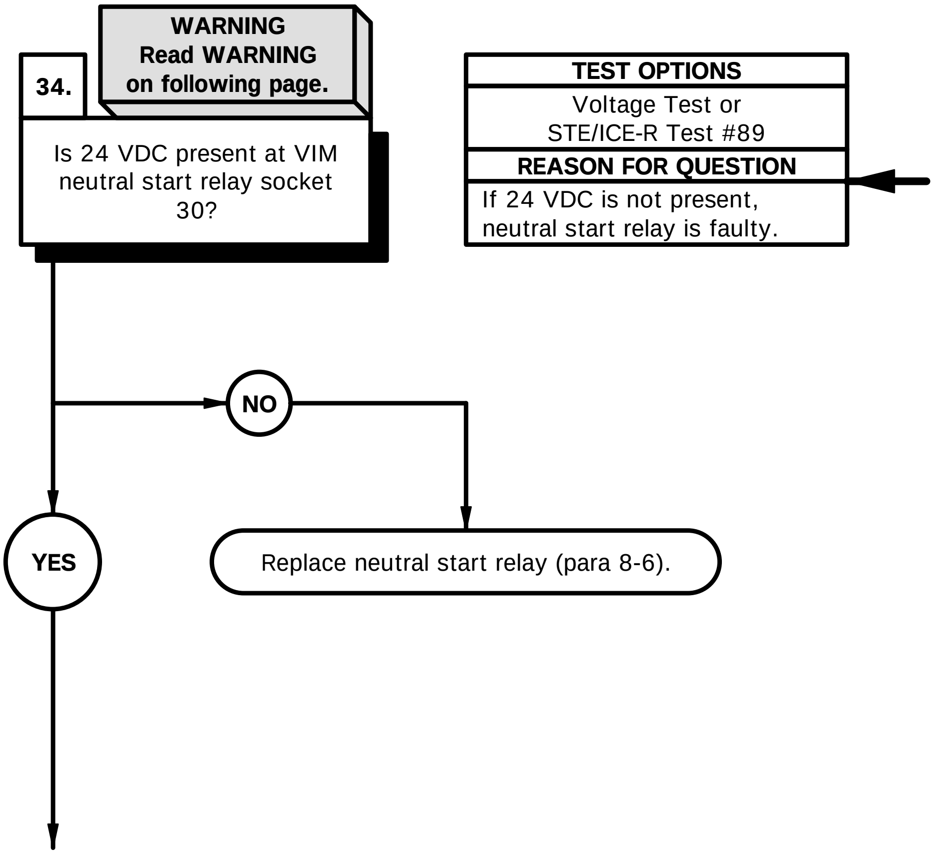
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.

POSSIBLE PROBLEMS

Faulty neutral start relay.
Faulty WTEC II vehicle interface module (VIM).
Faulty dashboard cable assembly.



WARNING
Read WARNING on following page.

34. Is 24 VDC present at VIM neutral start relay socket 30?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, neutral start relay is faulty.

NO

Replace neutral start relay (para 8-6).

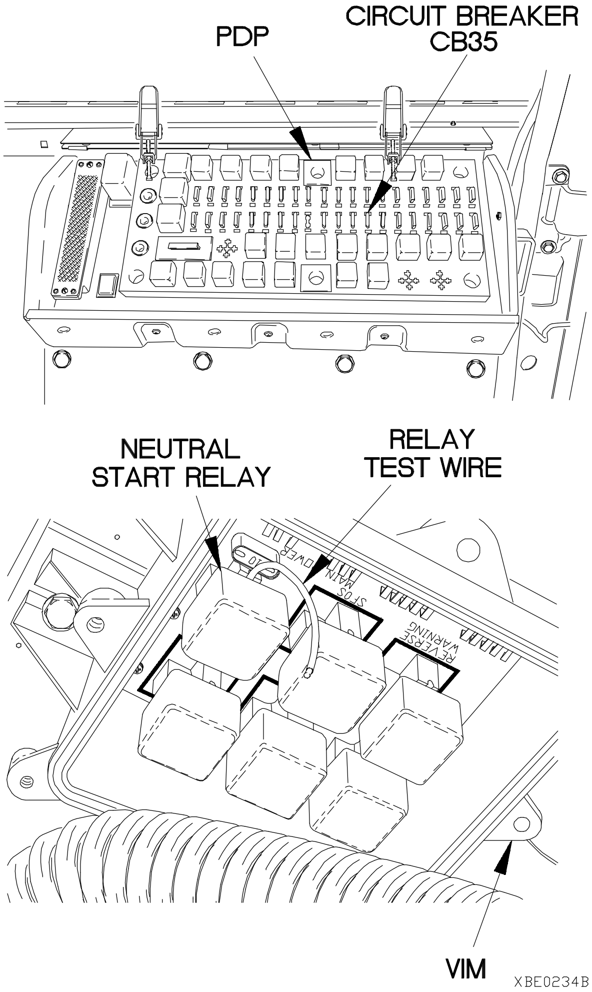
YES

WARNING

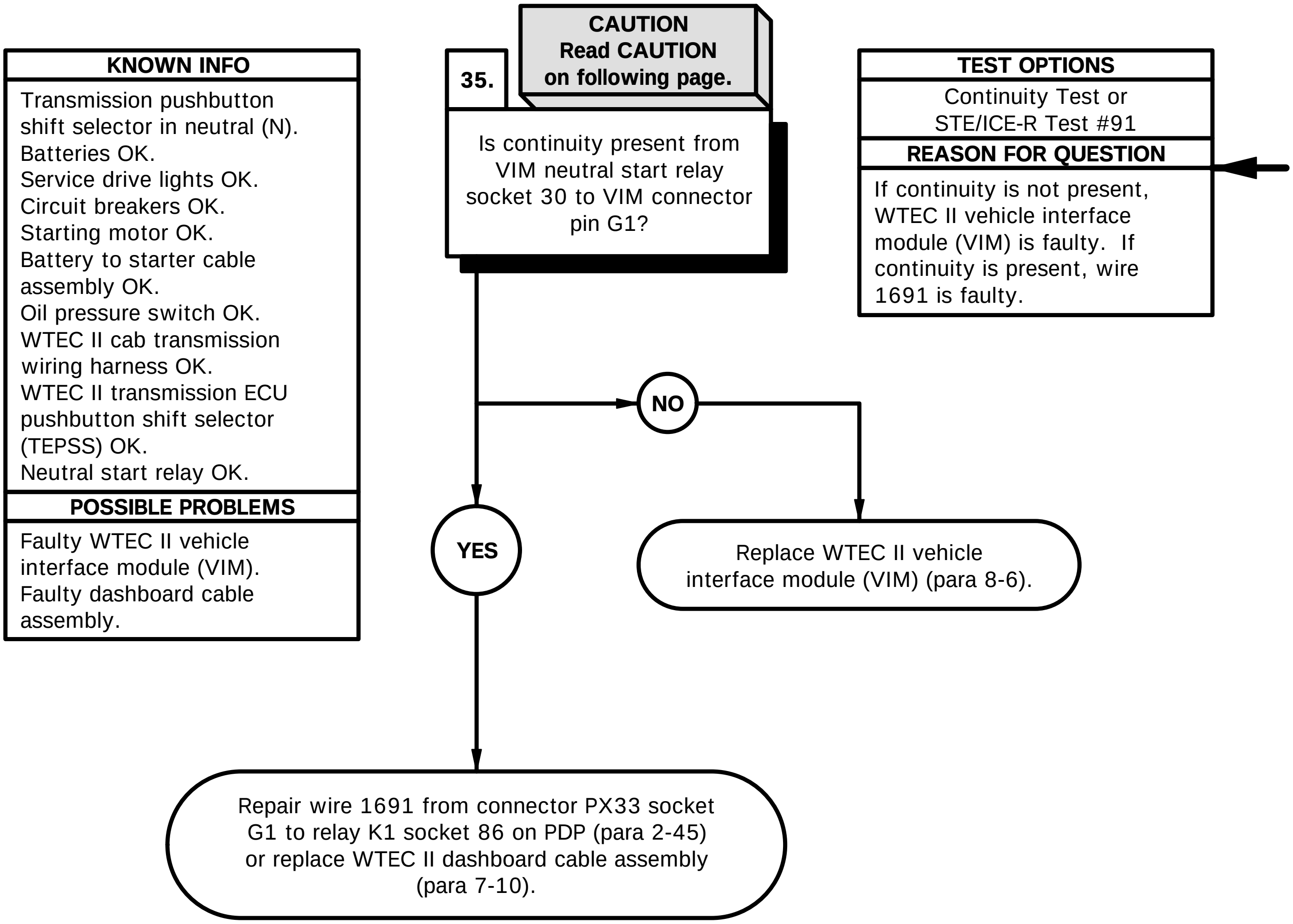
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay test wire in neutral start relay socket 30 on VIM.
(2) Install neutral start relay in VIM.
(3) Install circuit breaker CB35 in PDP.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to relay test wire.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 VDC is not present, replace neutral start relay (para 8-6).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Remove circuit breaker CB35 from PDP.
(11) Remove neutral start relay from VIM.
(12) Remove relay test wire from neutral start relay socket 30 on VIM.



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.
Neutral start relay OK.

POSSIBLE PROBLEMS

Faulty WTEC II vehicle interface module (VIM).
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

35. Is continuity present from VIM neutral start relay socket 30 to VIM connector pin G1?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II vehicle interface module (VIM) is faulty. If continuity is present, wire 1691 is faulty.

Replace WTEC II vehicle interface module (VIM) (para 8-6).

Repair wire 1691 from connector PX33 socket G1 to relay K1 socket 86 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

CAUTION

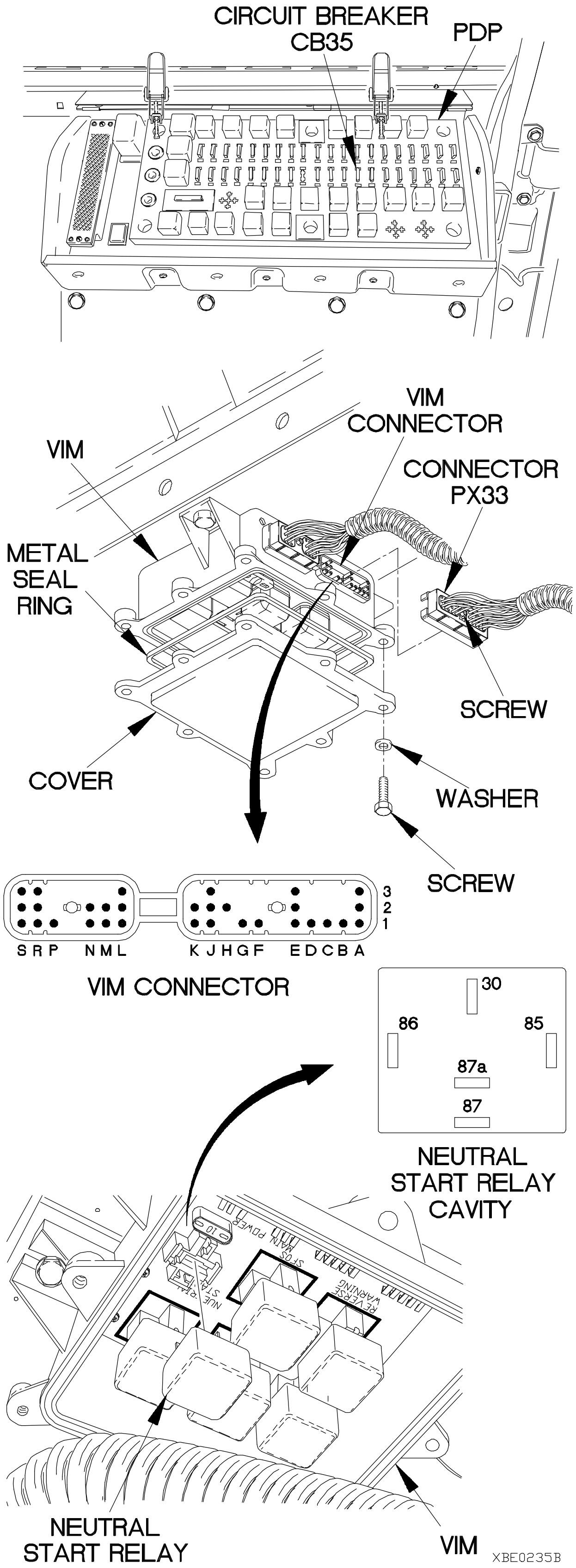
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Loosen screw in connector PX33.
(3) Disconnect connector PX33 from VIM connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to neutral start relay socket 30 on VIM.
(6) Connect negative (-) probe of multimeter to VIM connector pin G1 and note reading on multimeter.
(7) If continuity is not present, replace WTEC II vehicle interface module (VIM) (para 8-6).
(8) If continuity is present, repair wire 1691 from connector PX33 socket G1 to relay K1 socket 86 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).
(9) Connect connector PX33 to VIM connector.
(10) Tighten screw in connector PX33.
(11) Install neutral start relay in VIM.
(12) Install cover on VIM with metal seal ring, eight washers, and screws.
(13) Install circuit breaker CB35 in PDP.
(14) Install kick panel (para 16-3).
(15) Connect batteries (para 7-57).



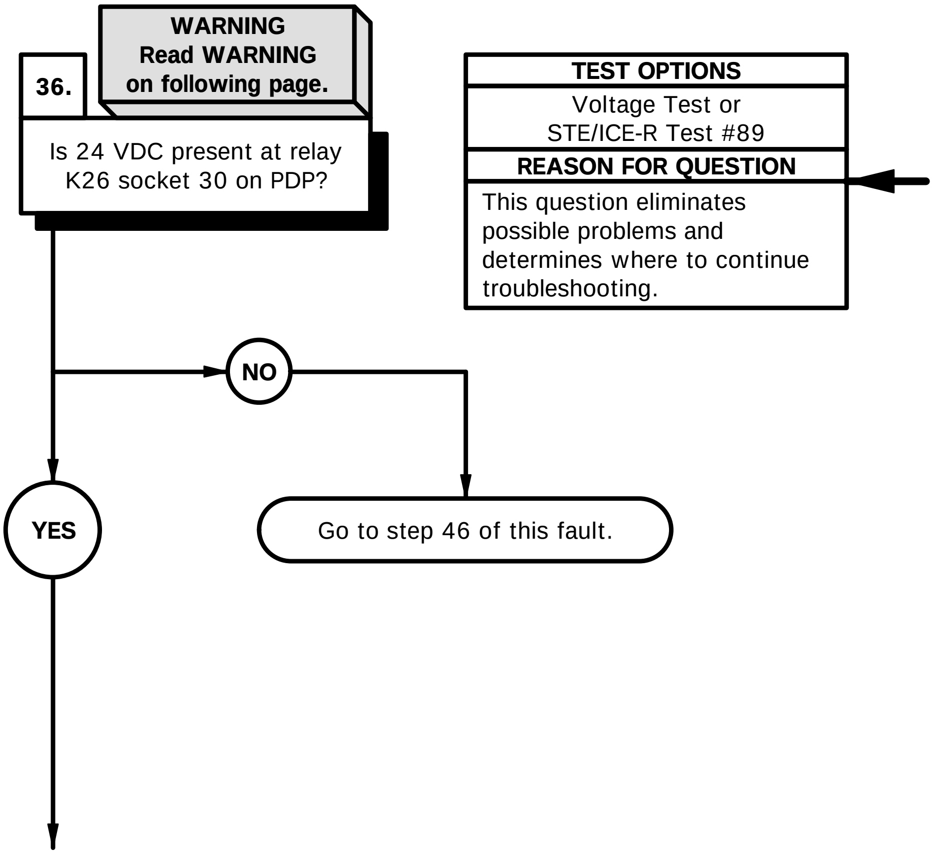
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



WARNING
Read WARNING on following page.

36. Is 24 VDC present at relay K26 socket 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

NO — Go to step 46 of this fault.

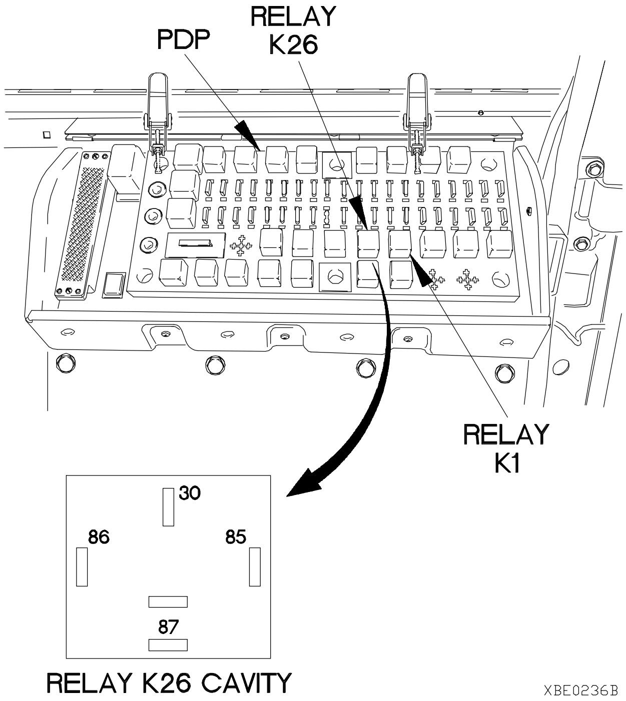
YES

WARNING

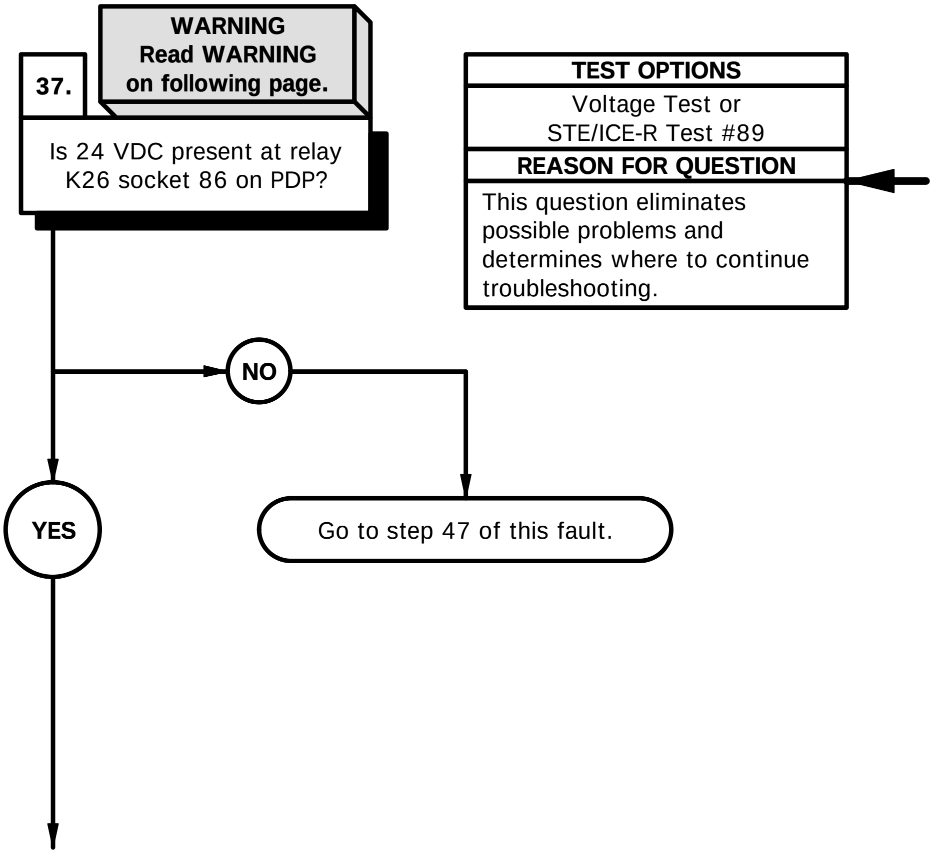
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay K1 in PDP.
(2) Remove relay K26 from PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to relay K26 socket 30 on PDP.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 VDC is not present, go to step 46 of this fault.
(8) Position master power switch to off (TM 9-2320-366-10-1).



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty relay K26.
Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).

37.

WARNING
Read WARNING on following page.

Is 24 VDC present at relay K26 socket 86 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

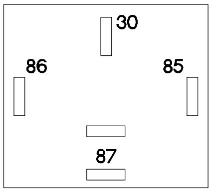
This question eliminates possible problems and determines where to continue troubleshooting.

Go to step 47 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to relay K26 socket 86 on PDP. (3) Connect negative (-) probe of multimeter to ground. (4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter. (5) If 24 VDC is not present, go to step 47 of this fault. (6) Position master power switch to off (TM 9-2320-366-10-1).



RELAY K26 CAVITY

XBE0237B

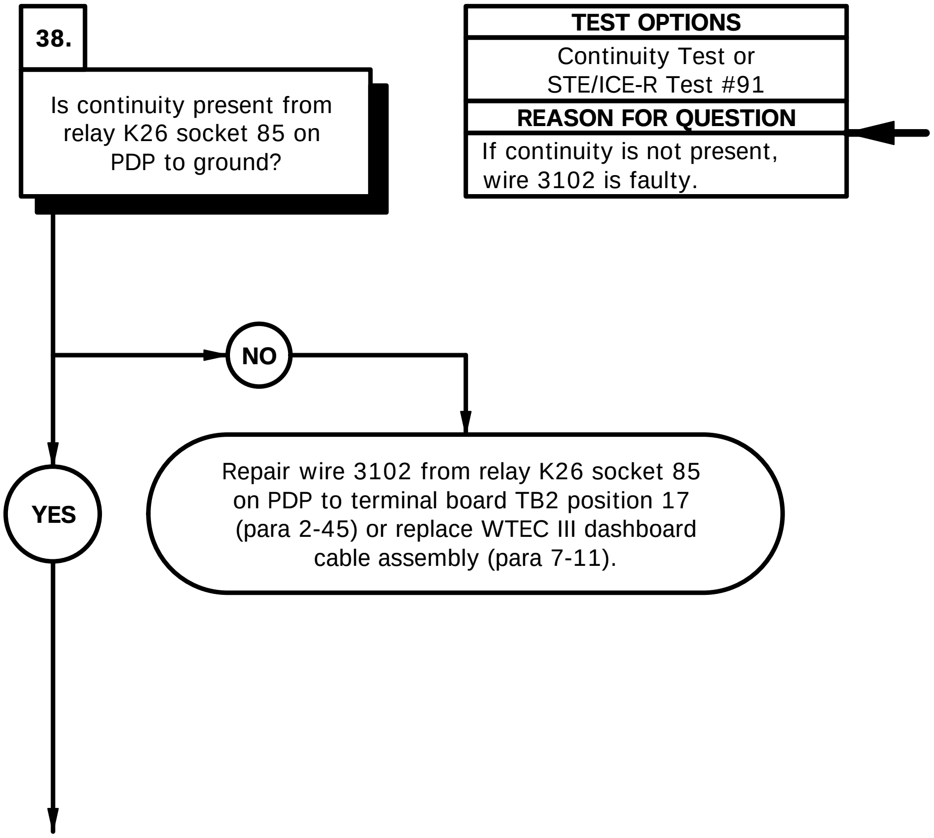
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty relay K26.
Faulty dashboard cable assembly.



38.

Is continuity present from relay K26 socket 85 on PDP to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

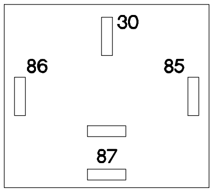
REASON FOR QUESTION

If continuity is not present, wire 3102 is faulty.

Repair wire 3102 from relay K26 socket 85 on PDP to terminal board TB2 position 17 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K26 socket 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3102 from relay K26 socket 85 on PDP to terminal board TB2 position 17 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).



RELAY K26 CAVITY

XBE0238B

e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty relay K26.
Faulty dashboard cable assembly.

39.

Is 306-399 ohms resistance present from relay K26 terminal 85 to terminal 86?

TEST OPTIONS

Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If 306-399 ohms resistance is not present, relay K26 is faulty.

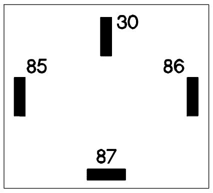
NO

Replace relay K26 (para 7-9).

YES

RESISTANCE TEST

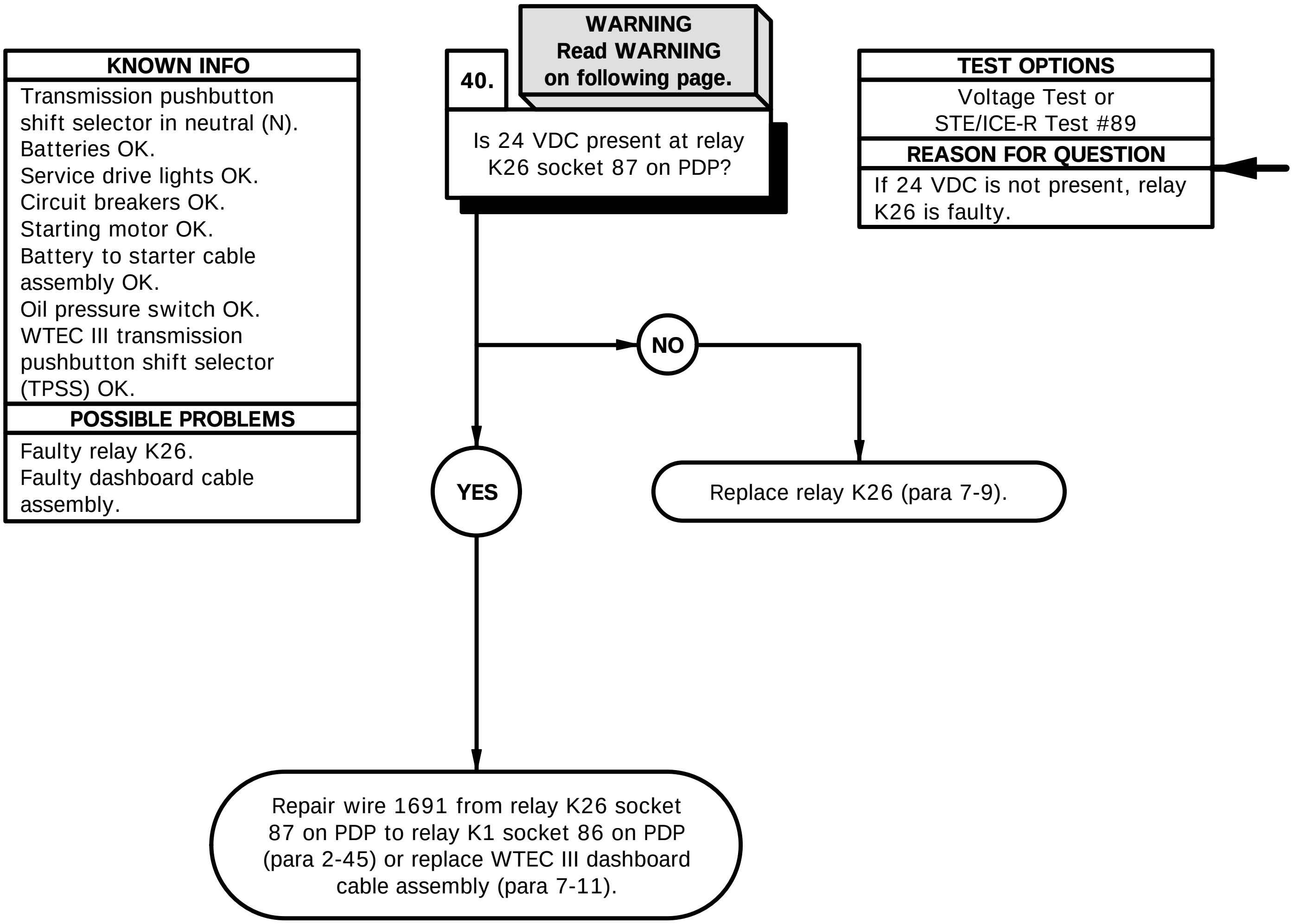
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K26 terminal 85.
(3) Connect negative (-) probe of multimeter to relay K26 terminal 86 and note reading on multimeter.
(4) If 306-399 ohms resistance is not present, replace relay K26 (para 7-9).



RELAY K26

XBE0239B

e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC III transmission pushbutton shift selector (TPSS) OK.

POSSIBLE PROBLEMS

Faulty relay K26.
Faulty dashboard cable assembly.

40.

WARNING
Read WARNING on following page.

Is 24 VDC present at relay K26 socket 87 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, relay K26 is faulty.

NO

Replace relay K26 (para 7-9).

YES

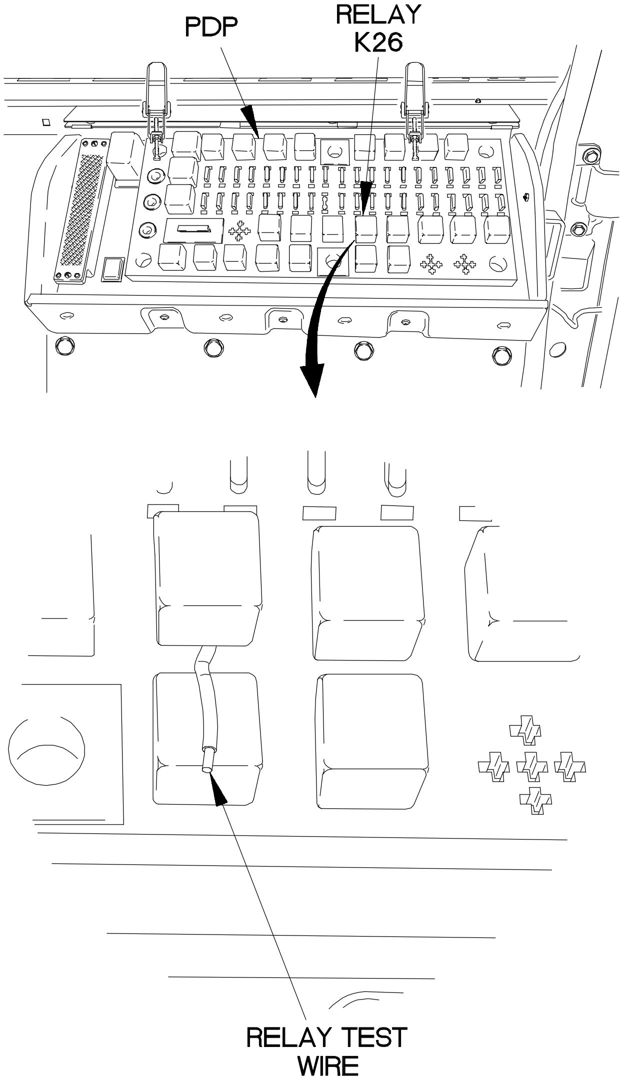
Repair wire 1691 from relay K26 socket 87 on PDP to relay K1 socket 86 on PDP (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

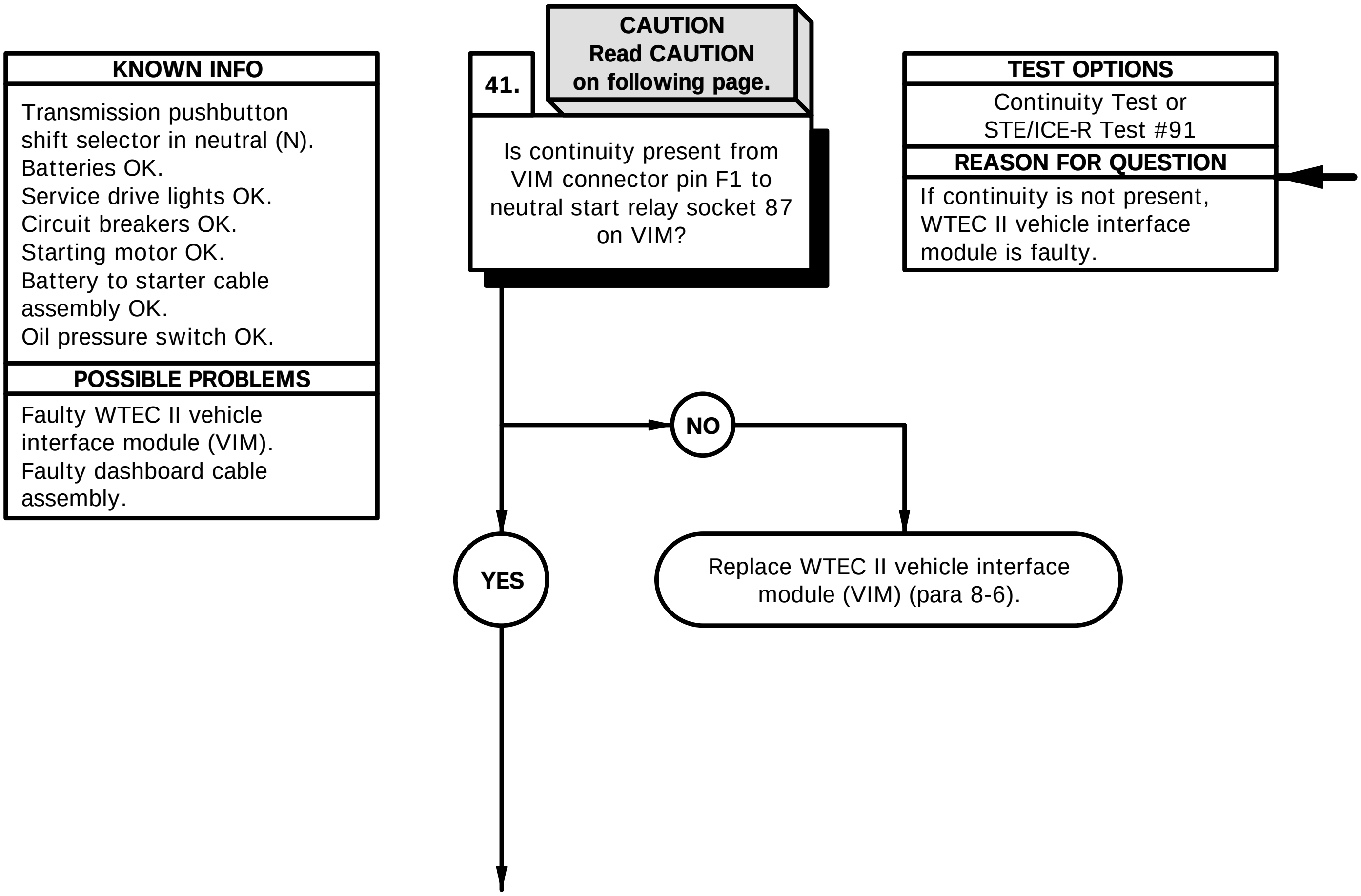
VOLTAGE TEST

(1) Install relay test wire in relay K26 socket 87 on PDP.
(2) Install relay K26 in PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to relay test wire.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 VDC is not present, replace relay K26 (para 7-9).
(8) If 24 VDC is present, repair wire 1691 from relay 26 socket 87 on PDP to relay K1 socket 86 on PDP (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Remove relay K26 from PDP.
(11) Remove relay test wire from relay K26 socket 87 on PDP.
(12) Install relay K26 in PDP.
(13) Install power distribution panel (PDP) cover (para 16-2).



XBE0240B

e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty WTEC II vehicle interface module (VIM).
Faulty dashboard cable assembly.

CAUTION
Read CAUTION
on following page.

41. Is continuity present from VIM connector pin F1 to neutral start relay socket 87 on VIM?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II vehicle interface module is faulty.

Replace WTEC II vehicle interface module (VIM) (para 8-6).

CAUTION

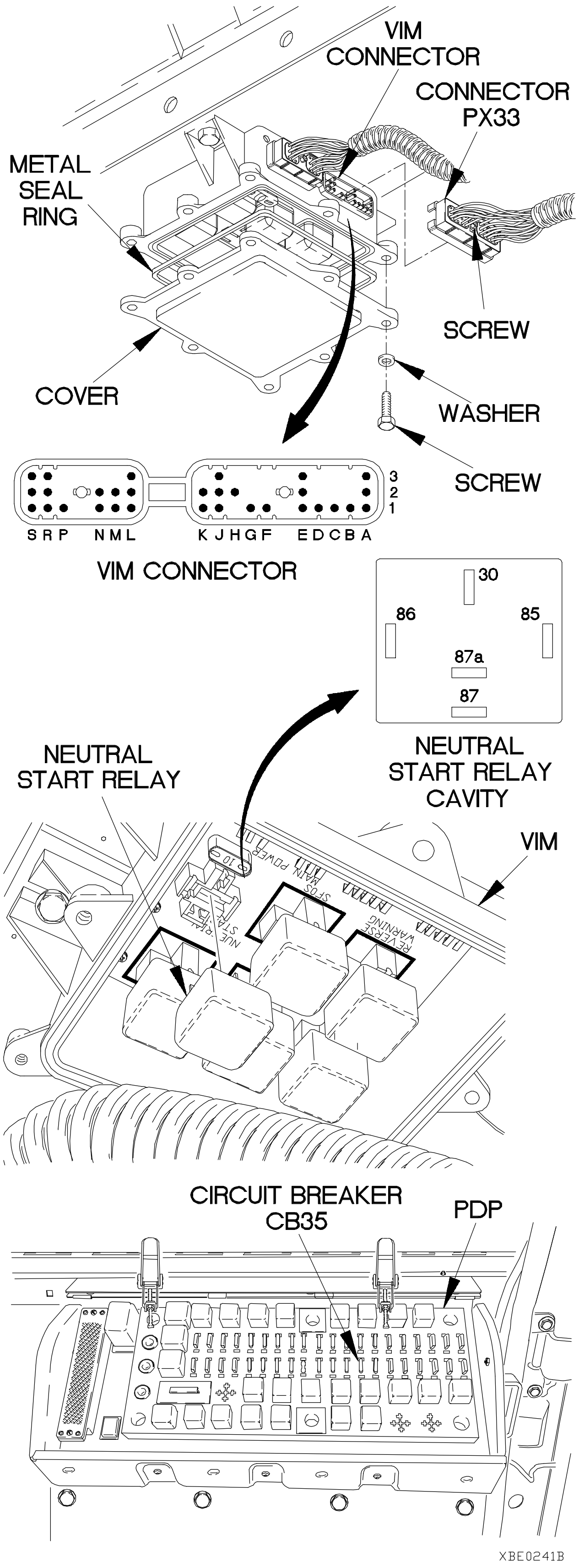
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

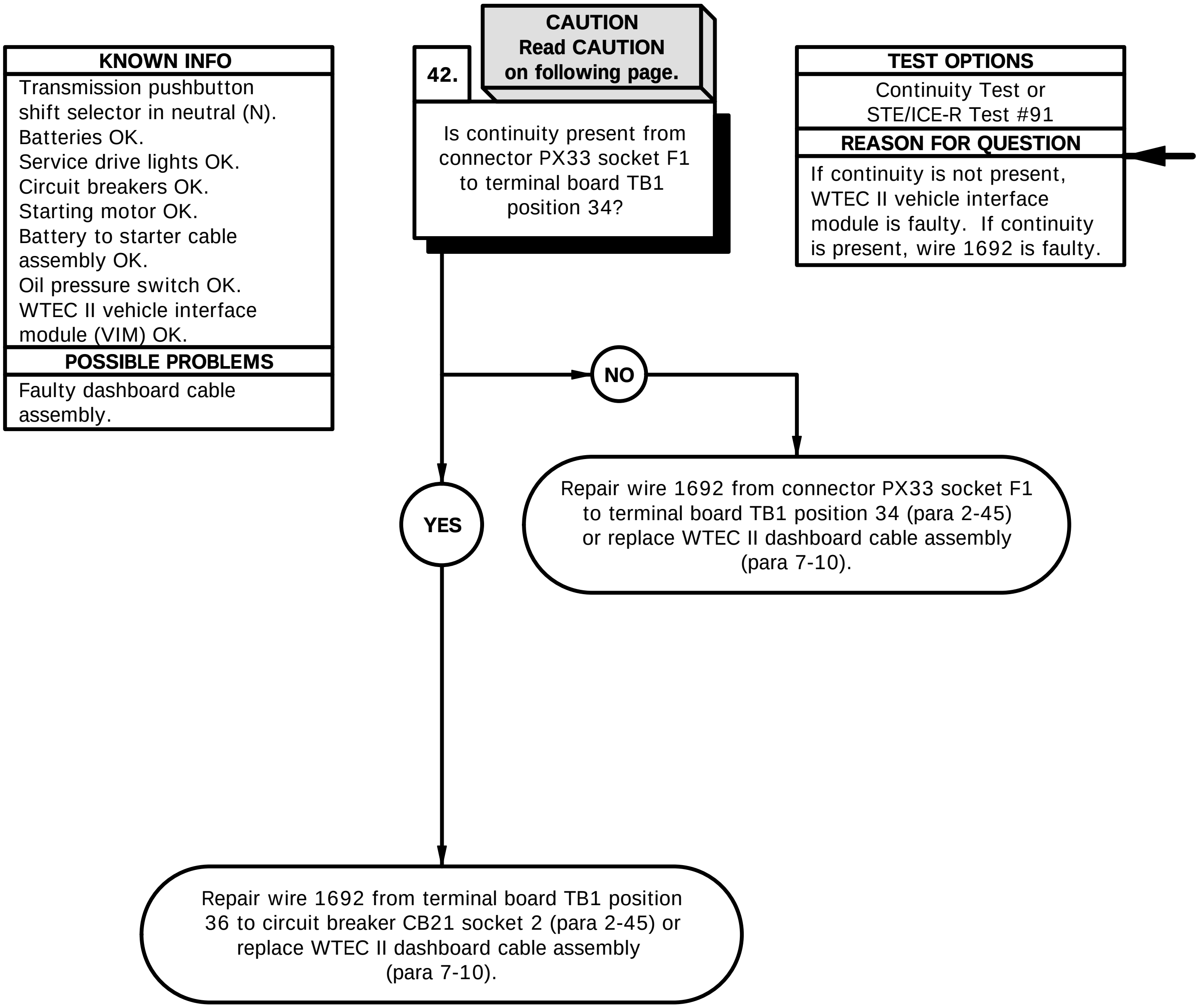
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Loosen screw in connector PX33.
(3) Disconnect connector PX33 from VIM connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to neutral start relay socket 87 on VIM.
(6) Connect negative (-) probe of multimeter to VIM connector PX33 pin F1 and note reading on multimeter.
(7) If continuity is not present, replace WTEC II vehicle interface module (VIM) (para 8-6).
(8) Install neutral start relay in VIM.
(9) Install cover on VIM with metal seal ring, eight washers, and screws.
(10) Install circuit breaker CB35 in PDP.



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC II vehicle interface module (VIM) OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

42. Is continuity present from connector PX33 socket F1 to terminal board TB1 position 34?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II vehicle interface module is faulty. If continuity is present, wire 1692 is faulty.

Repair wire 1692 from connector PX33 socket F1 to terminal board TB1 position 34 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

Repair wire 1692 from terminal board TB1 position 36 to circuit breaker CB21 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

CAUTION

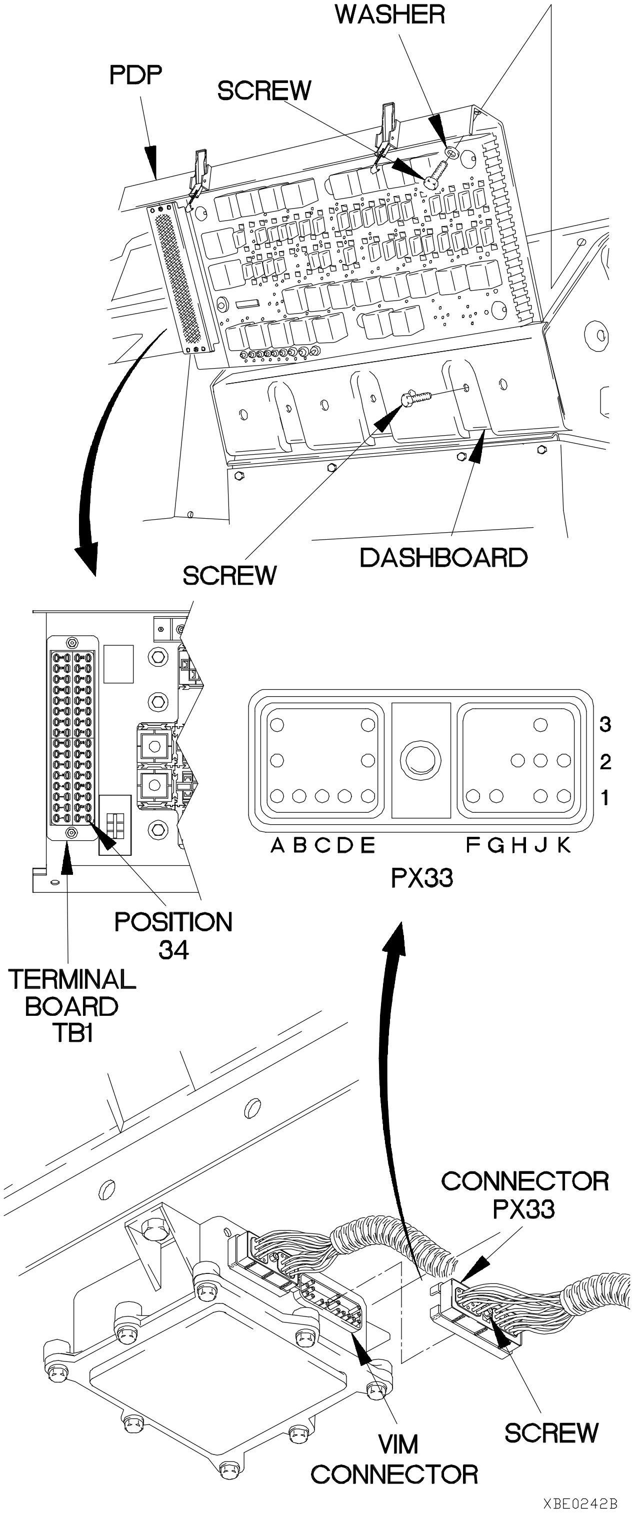
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

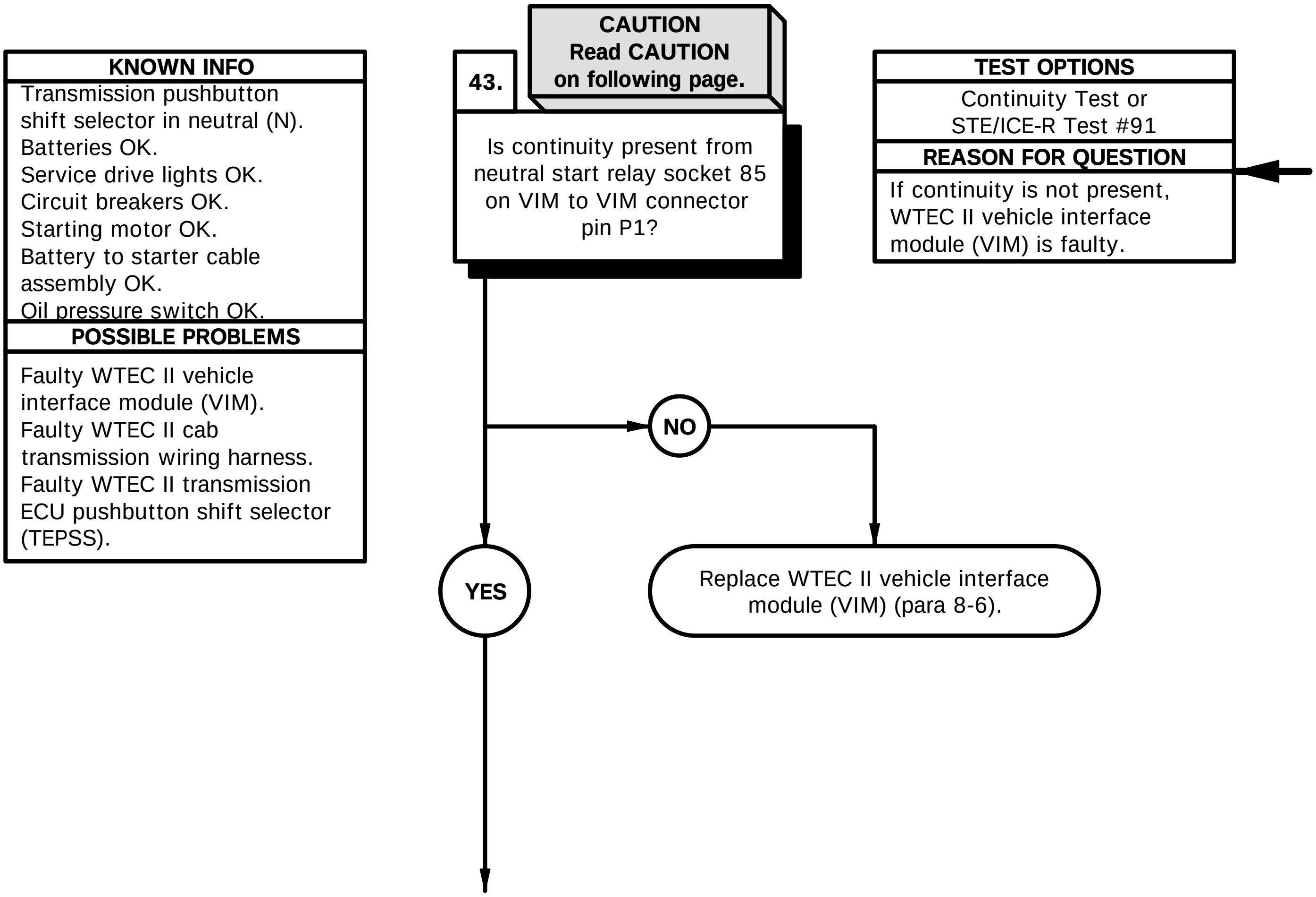
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to terminal board TB1 position 34.
(6) Connect negative (-) probe of multimeter connector PX33 socket F1 and note reading on multimeter.
(7) If continuity is not present, repair wire 1692 from connector PX33 socket F1 to terminal board TB1 position 34 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).
(8) If continuity is present, repair wire 1692 from terminal board TB1 position 36 and circuit breaker CB21 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Connect connector PX33 to VIM connector.
(12) Tighten screw in connector PX33.
(13) Install kick panel (para 16-3).
(14) Connect batteries (para 7-57).



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).

CAUTION
Read CAUTION on following page.

43. Is continuity present from neutral start relay socket 85 on VIM to VIM connector pin P1?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II vehicle interface module (VIM) is faulty.

NO: Replace WTEC II vehicle interface module (VIM) (para 8-6).

CAUTION

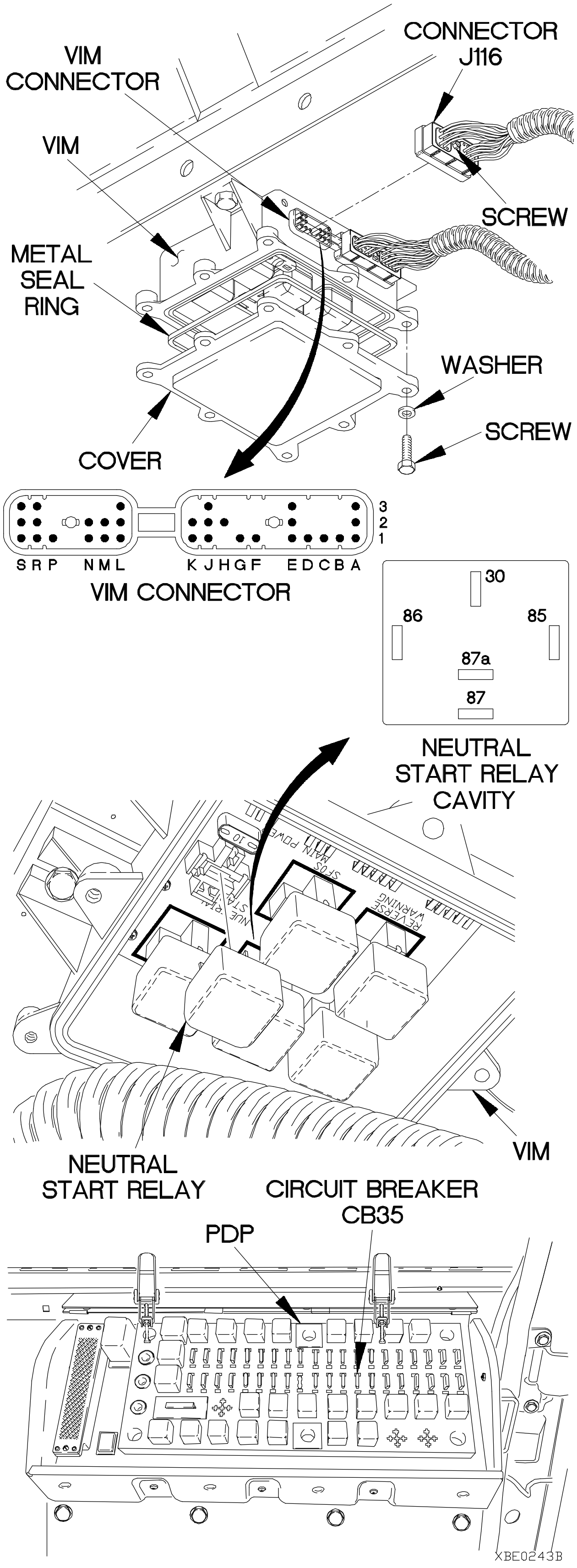
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

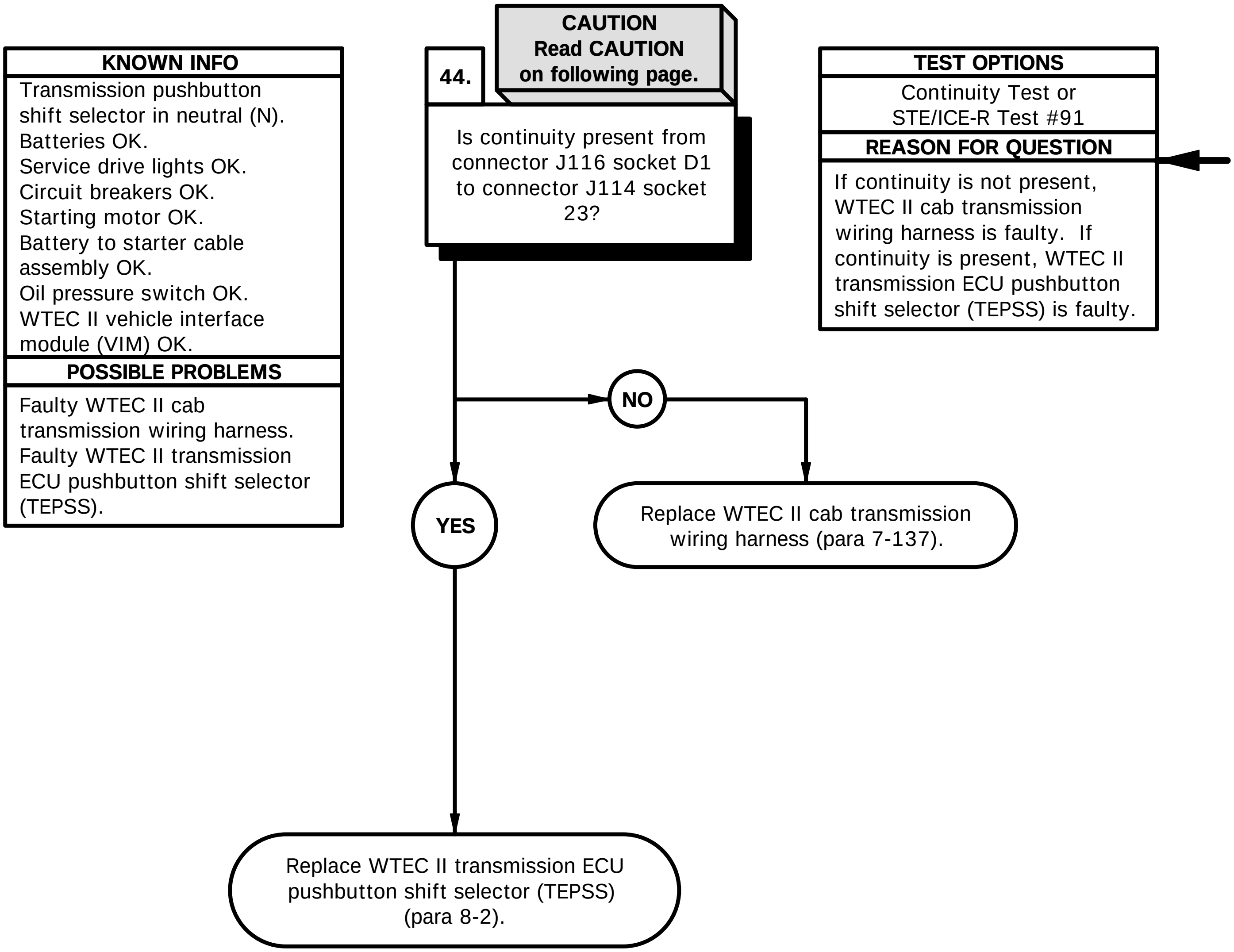
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Loosen screw on connector J116.
(3) Disconnect connector J116 from VIM connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to neutral start relay socket 85 on VIM.
(6) Connect negative (-) probe of multimeter to VIM connector pin P1 and note reading on multimeter.
(7) If continuity is not present, replace WTEC II vehicle interface module (VIM) (para 8-6).
(8) Install neutral start relay in VIM.
(9) Install cover on VIM with metal seal ring, eight washers, and screws.
(10) Install circuit breaker CB35 in PDP.



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC II vehicle interface module (VIM) OK.

POSSIBLE PROBLEMS

Faulty WTEC II cab transmission wiring harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).

CAUTION
Read CAUTION on following page.

44. Is continuity present from connector J116 socket D1 to connector J114 socket 23?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II cab transmission wiring harness is faulty. If continuity is present, WTEC II transmission ECU pushbutton shift selector (TEPSS) is faulty.

NO

Replace WTEC II cab transmission wiring harness (para 7-137).

YES

Replace WTEC II transmission ECU pushbutton shift selector (TEPSS) (para 8-2).

CAUTION

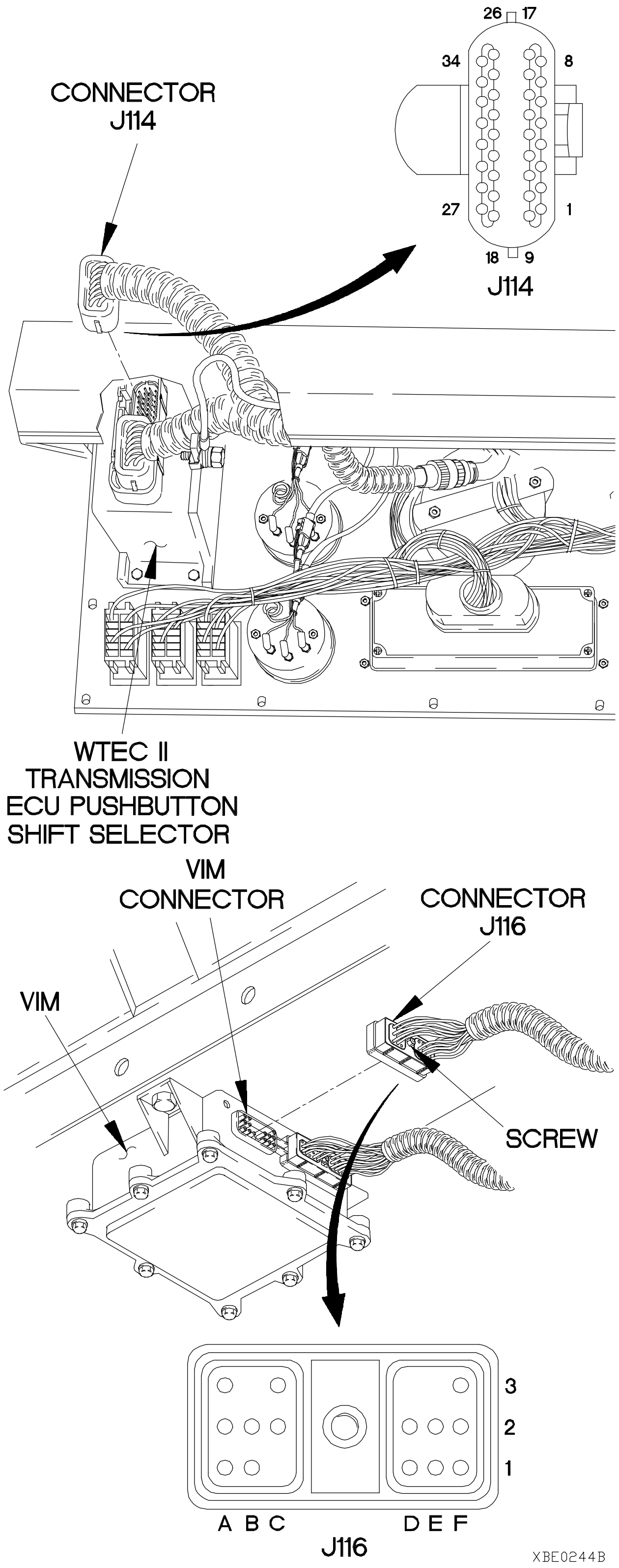
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

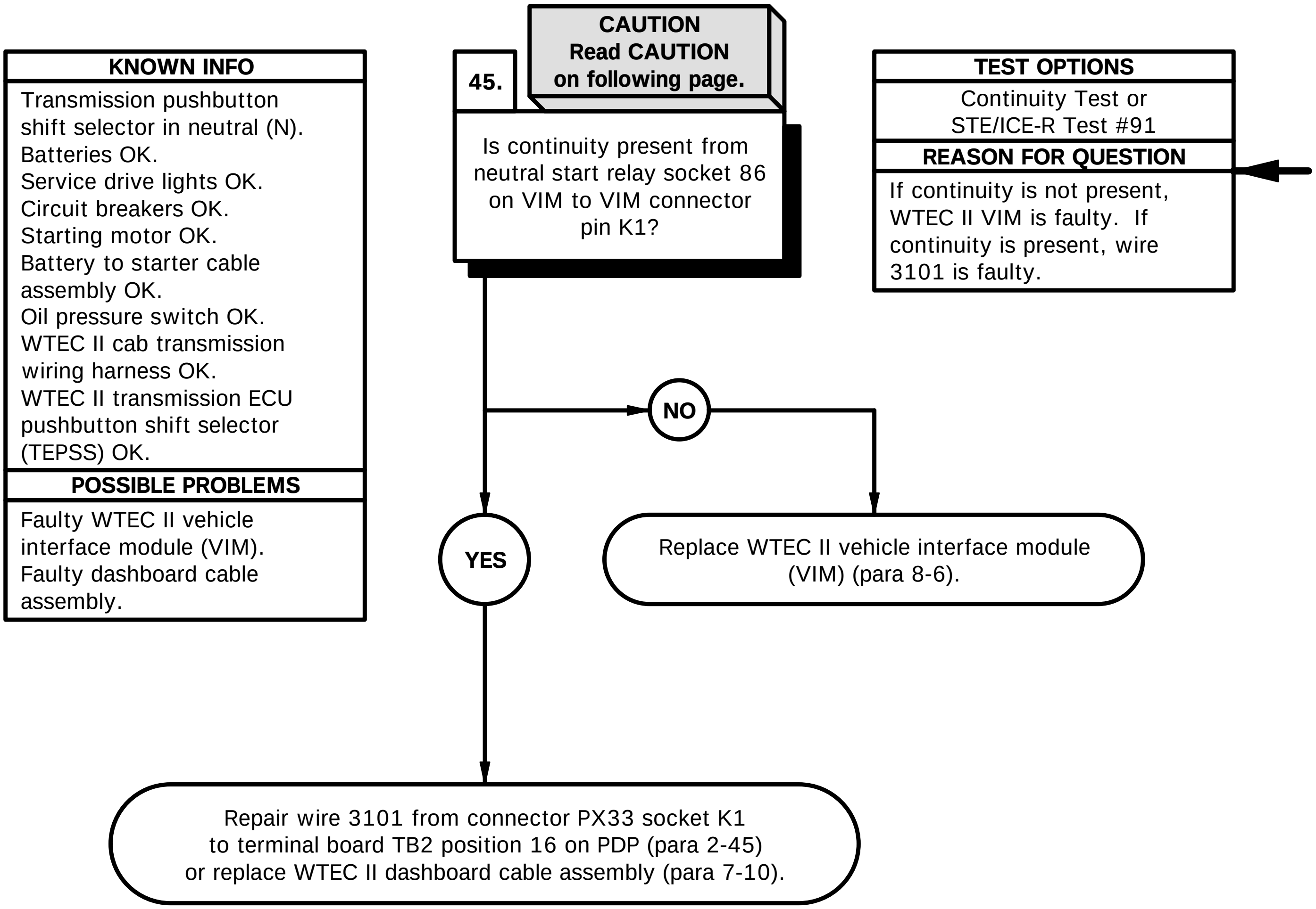
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector J114 from WTEC II transmission ECU pushbutton shift selector (TEPSS).
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J114 socket 23.
(5) Connect negative (-) probe of multimeter to connector J116 socket D1 and note reading on multimeter.
(6) If continuity is not present, replace WTEC II cab transmission wiring harness (para 7-137).
(7) If continuity is present, replace WTEC II transmission ECU pushbutton shift selector (TEPSS) (para 8-2).
(8) Connect connector J114 to WTEC II transmission ECU pushbutton shift selector (TEPSS).
(9) Install instrument panel (para 7-15).
(10) Connect connector J116 to VIM connector.
(11) Tighten screw on connector J116.
(12) Install kick panel (para 16-3).
(13) Connect batteries (para 7-57).



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
WTEC II cab transmission wiring harness OK.
WTEC II transmission ECU pushbutton shift selector (TEPSS) OK.

POSSIBLE PROBLEMS

Faulty WTEC II vehicle interface module (VIM).
Faulty dashboard cable assembly.

45.

CAUTION
Read CAUTION on following page.

Is continuity present from neutral start relay socket 86 on VIM to VIM connector pin K1?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II VIM is faulty. If continuity is present, wire 3101 is faulty.

Replace WTEC II vehicle interface module (VIM) (para 8-6).

Repair wire 3101 from connector PX33 socket K1 to terminal board TB2 position 16 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

CAUTION

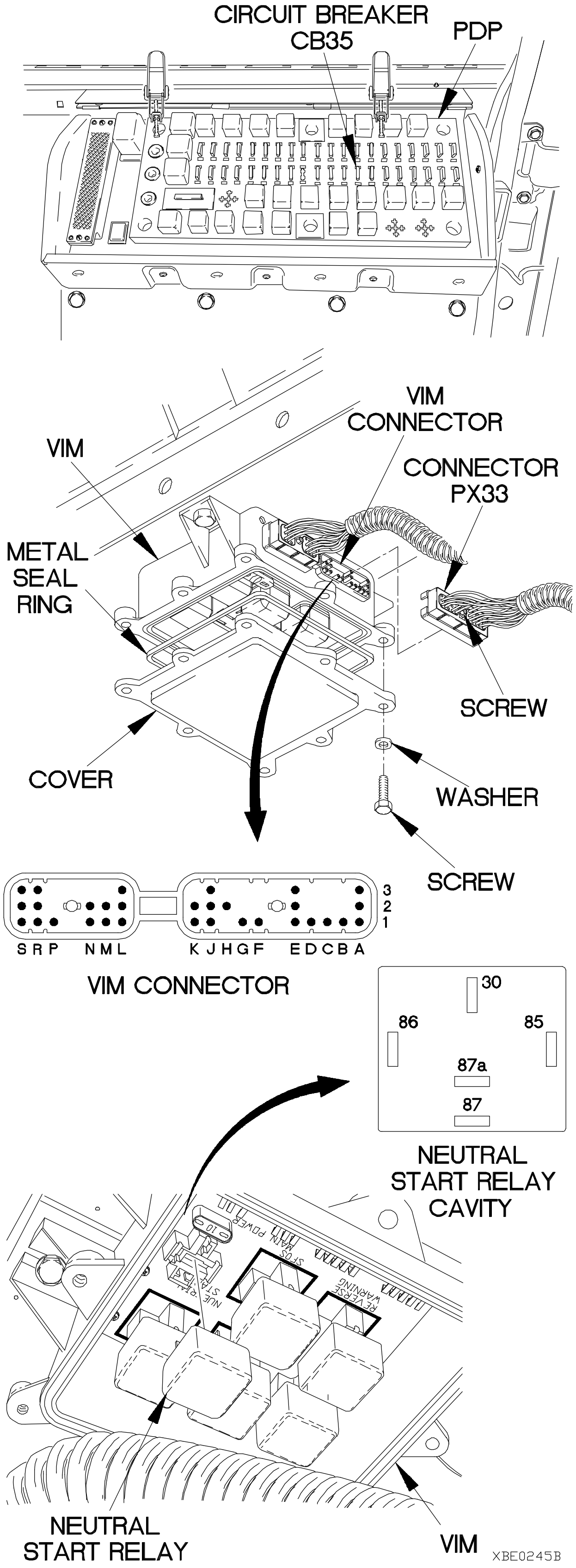
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

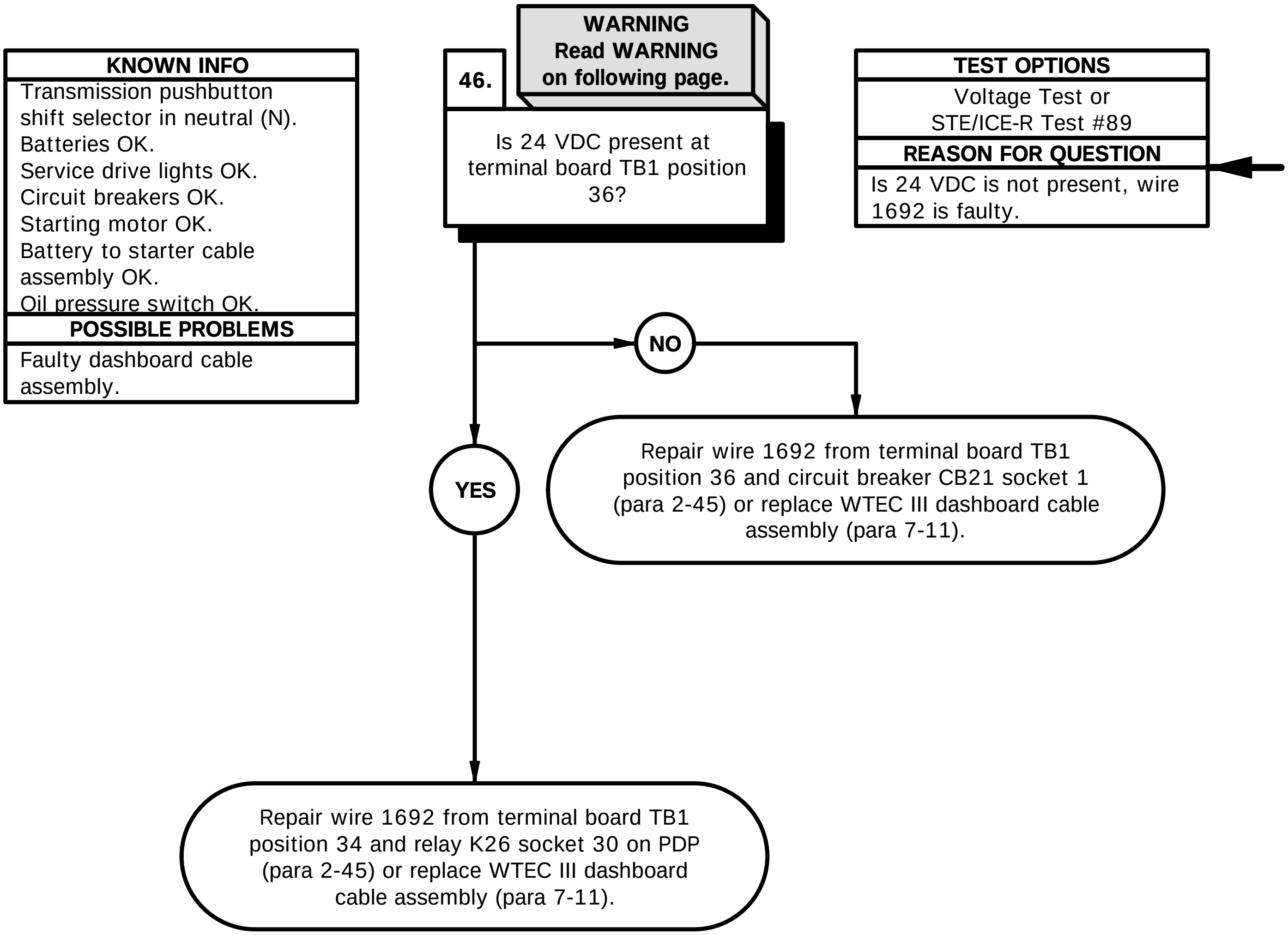
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to neutral start relay socket 86 on VIM.
(3) Connect negative (-) probe of multimeter to VIM connector pin K1 and note reading on multimeter.
(4) If continuity is not present, replace WTEC II vehicle interface module (VIM) (para 8-6).
(5) If continuity is present, repair wire 3101 from connector PX33 socket K1 to terminal board TB2 position 16 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).
(6) Install neutral start relay in VIM.
(7) Install cover on VIM with metal seal ring, eight washers, and screws.
(8) Connect connector PX33 to VIM connector.
(9) Tighten screw in connector PX33.
(10) Install circuit breaker CB35 in PDP.
(11) Install kick panel (para 16-3).



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

46.

WARNING
Read WARNING on following page.

Is 24 VDC present at terminal board TB1 position 36?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

Is 24 VDC is not present, wire 1692 is faulty.

NO

Repair wire 1692 from terminal board TB1 position 36 and circuit breaker CB21 socket 1 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

YES

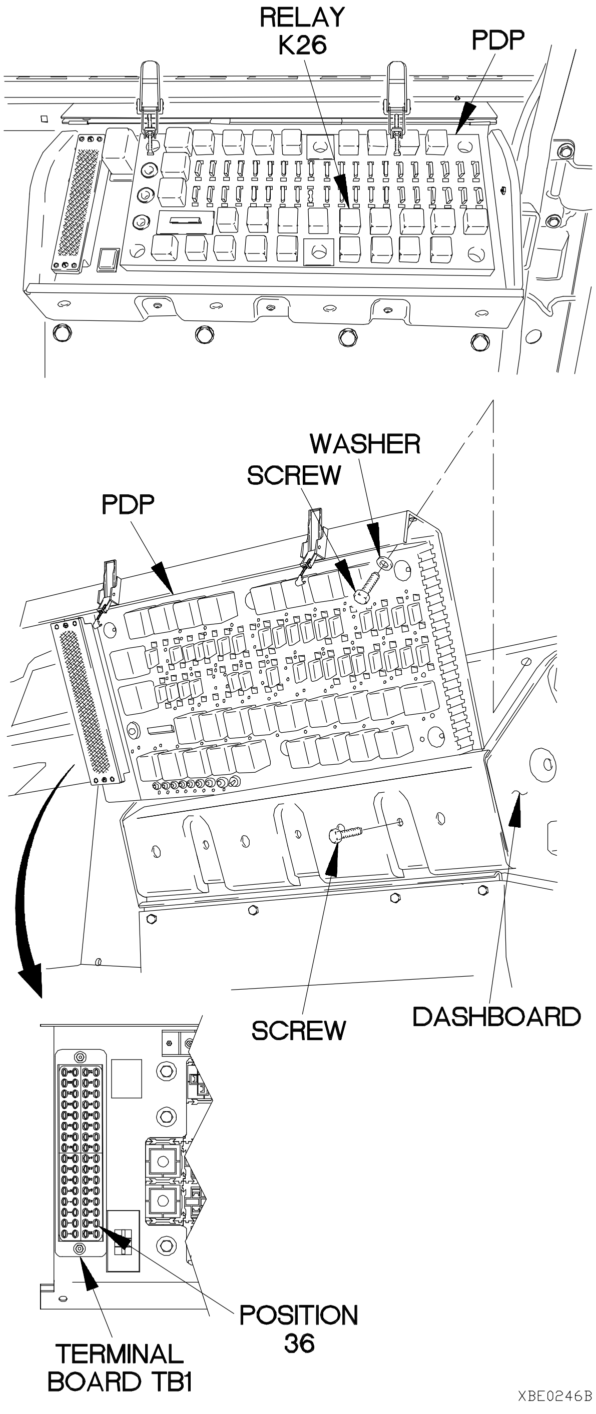
Repair wire 1692 from terminal board TB1 position 34 and relay K26 socket 30 on PDP (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay K26 in PDP.
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to terminal board TB1 position 36.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 24 VDC is not present, repair wire 1692 from terminal board TB1 position 36 to circuit breaker CB21 socket 1 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(10) If 24 VDC is present, repair wire 1692 from terminal board TB1 position 34 to relay K26 socket 30 on PDP (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(11) Position master power switch to off (TM 9-2320-366-10-1).
(12) Install PDP on dashboard with three screws.
(13) Install three washers and screws in PDP.
(14) Install PDP cover (para 16-2).



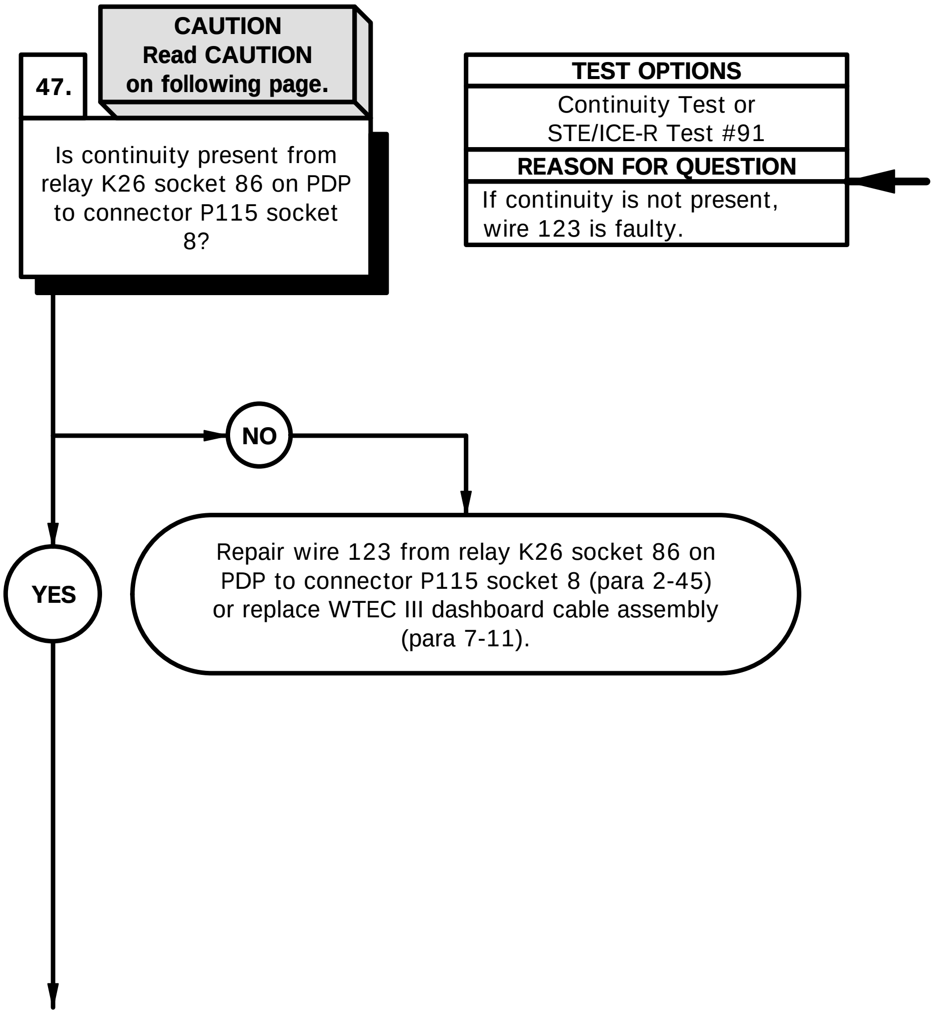
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



CAUTION
Read CAUTION on following page.

47. Is continuity present from relay K26 socket 86 on PDP to connector P115 socket 8?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 123 is faulty.

NO

Repair wire 123 from relay K26 socket 86 on PDP to connector P115 socket 8 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

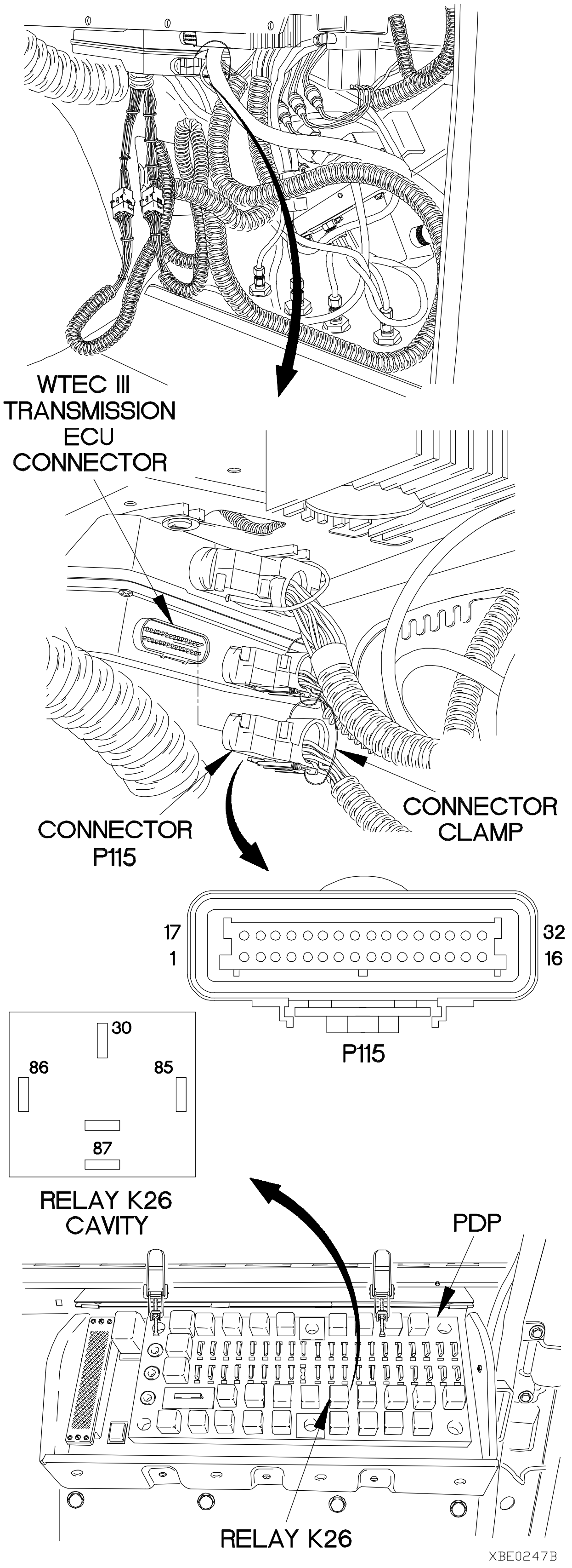
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove kick panel (para 16-3).
(3) Disconnect connector clamp from connector P115.
(4) Disconnect connector P115 from WTEC III transmission ECU connector.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to relay K26 socket 86.
(7) Connect negative (-) probe of multimeter to connector P115 socket 8 and note reading on multimeter.
(8) If continuity is not present, repair wire 123 from relay K26 socket 86 to connector P115 socket 8 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(9) Connect connector P115 to WTEC III transmission ECU connector.
(10) Connect connector clamp to connector P115.
(11) Install relay K26 in PDP.



e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).

CAUTION
Read CAUTION on following page.

48. Is continuity present from connector PX33 socket (refer to Table 2-8.2. Connector PX33 Ground Continuity Test) to terminal board TB2 position (refer to Table 2-8.2. Connector PX33 Ground Continuity Test)?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire (refer to Table 2-8.2. Connector PX33 Ground Continuity Test) is faulty.

NO

Repair wire (refer to Table 2-8.2. Connector PX33 Ground Continuity Test (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

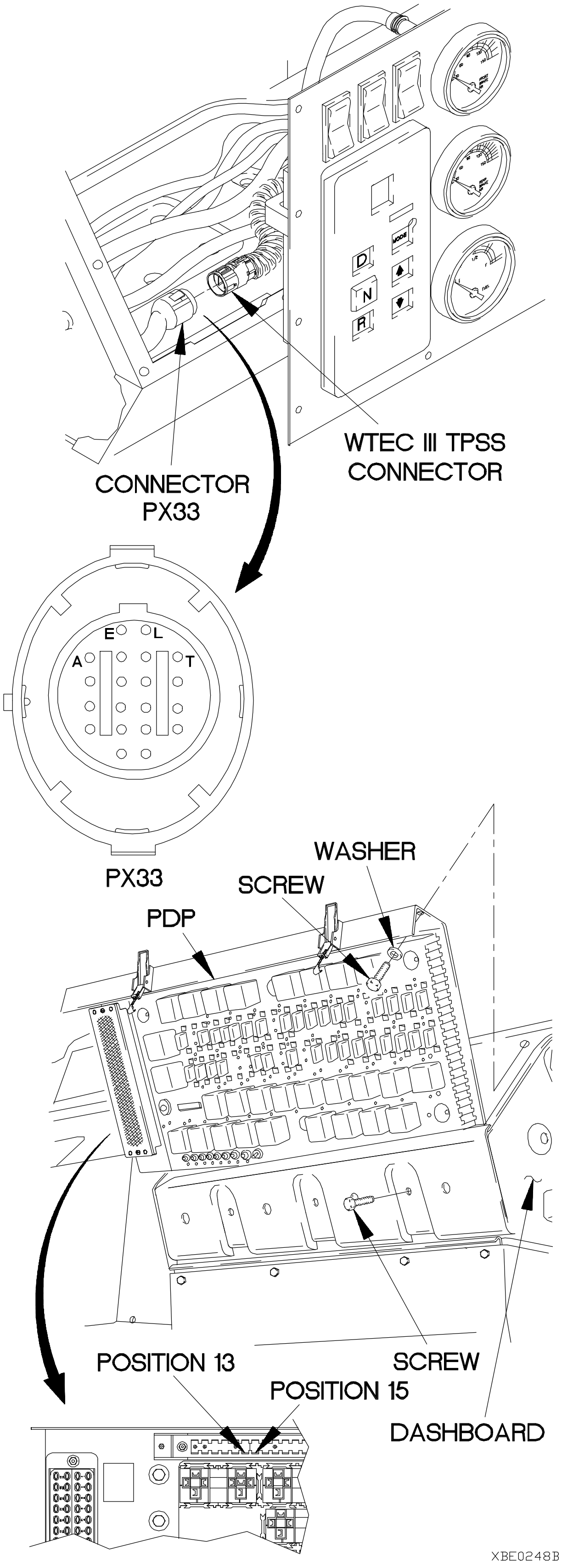
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

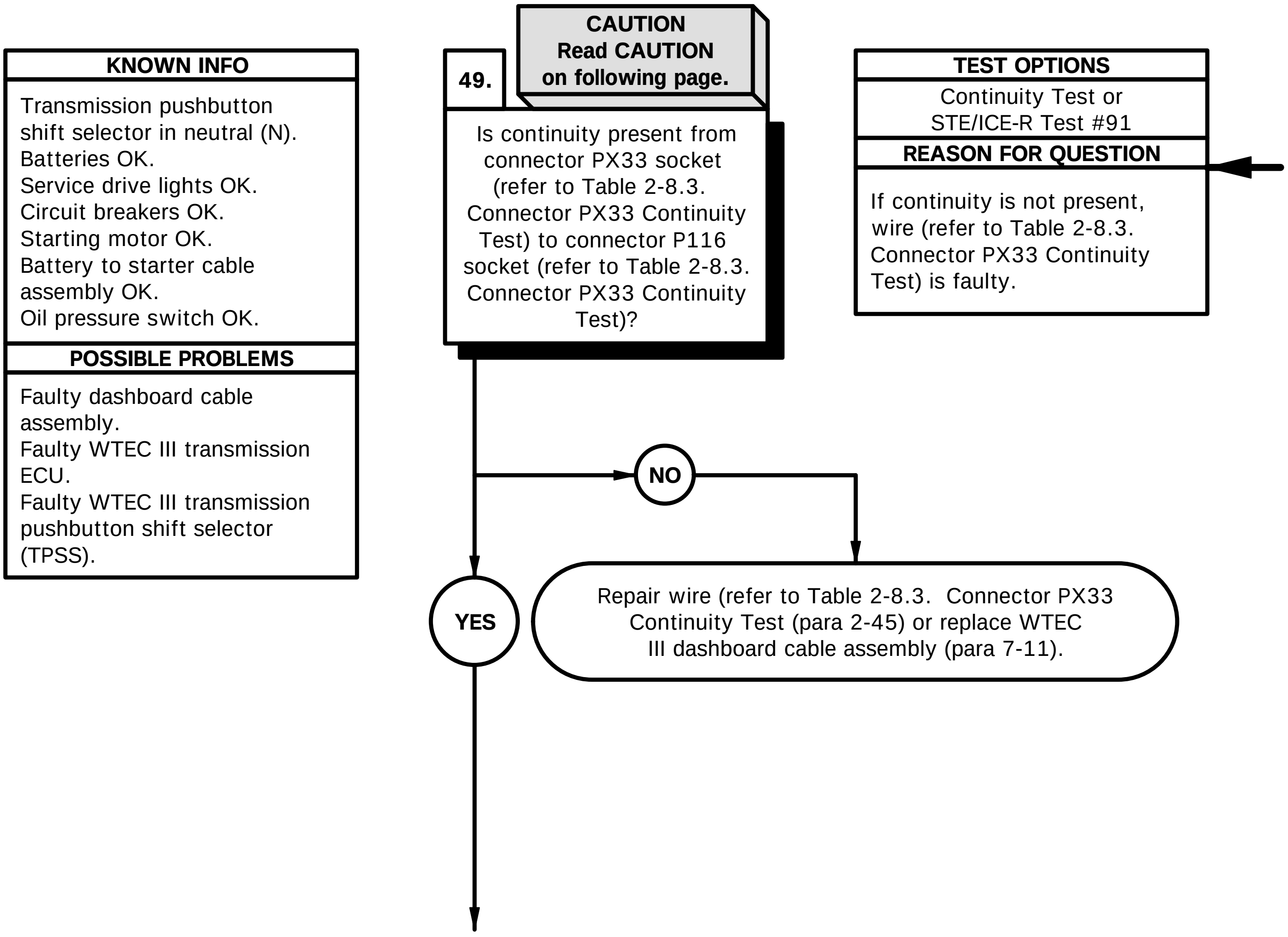
(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector PX33 from WTEC III TPSS connector.
(3) Remove three screws and washers from PDP.
(4) Remove three screws from PDP.
(5) Lift PDP outward to gain access.
(6) Set multimeter to ohms.
(7) For each line of Table 2-8.2. Connector PX33 Ground Continuity Test perform the following:
  (a) Connect positive (+) probe of multimeter to connector PX33 socket.
  (b) Connect negative (-) probe of multimeter to terminal board TB2 position and not reading on multimeter.
(8) If continuity is not present on either wire in Table 2-8.2. Connector PX33 Ground Continuity Test repair wire (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.

Table 2-8.2. Connector PX33 Ground Continuity Test

Connector PX33 Socket	Terminal Board TB2 Position	Wire
T	15	186
V	13	188



e2. ENGINE DOES NOT CRANK (CONT)



KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).

CAUTION
Read CAUTION on following page.

49. Is continuity present from connector PX33 socket (refer to Table 2-8.3. Connector PX33 Continuity Test) to connector P116 socket (refer to Table 2-8.3. Connector PX33 Continuity Test)?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire (refer to Table 2-8.3. Connector PX33 Continuity Test) is faulty.

Repair wire (refer to Table 2-8.3. Connector PX33 Continuity Test (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector clamp from connector P116.
(2) Disconnect connector P116 from WTEC III transmission ECU connector.
(3) Set multimeter to ohms.
(4) For each line of Table 2-8.3. Connector PX33 Ground Continuity Test perform the following:
  (a) Connect positive (+) probe of multimeter to connector PX33 socket.
  (b) Connect negative (-) probe of multimeter to connector P116 position and not reading on multimeter.
(5) If continuity is not present on either wire in Table 2-8.3. Connector PX33 Continuity Test repair wire (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(6) Install PDP on dashboard with three screws.
(7) Connect connector P116 to WTEC III transmission ECU connector.
(8) Connect connector clamp to connector P116.

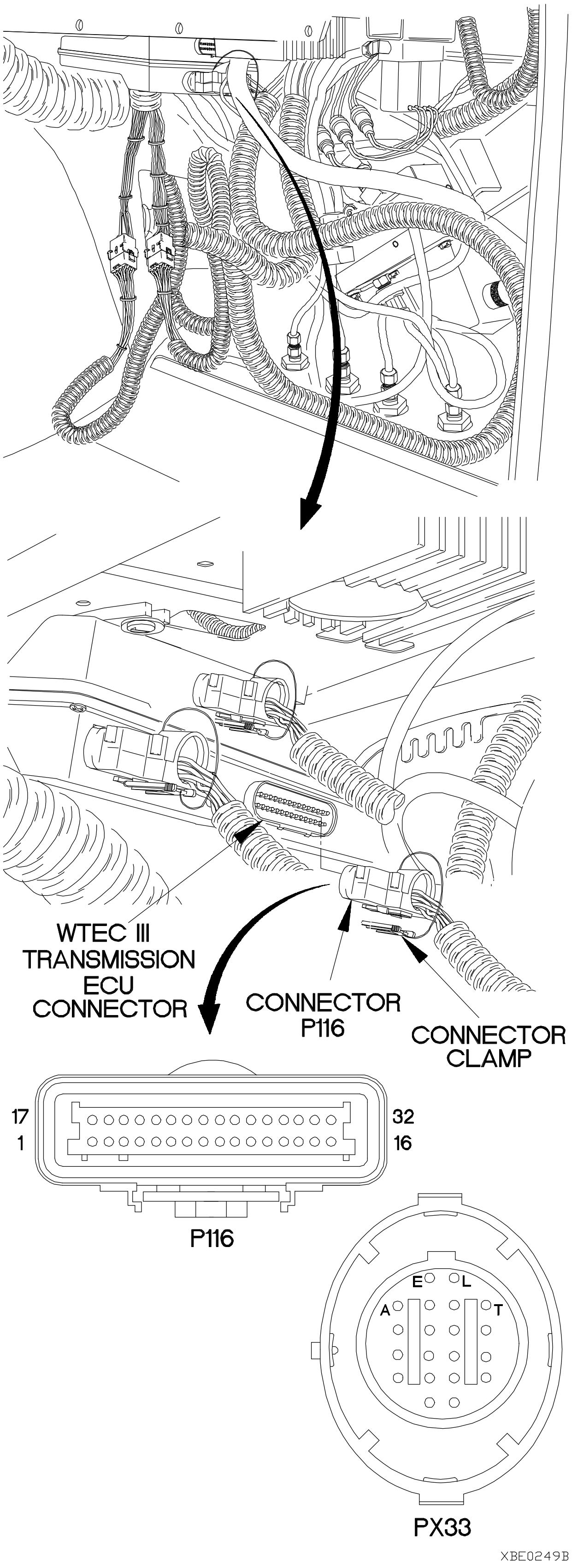


Table 2-8.3. Connector PX33 Continuity Test

Connector PX33 Socket	Connector P116 Socket	Wire
P	32	143
L	15	176
A	5	170
B	6	171
C	7	172
D	8	173
E	9	174
S	14	180
M	10	175
N	3	124
R	16	136

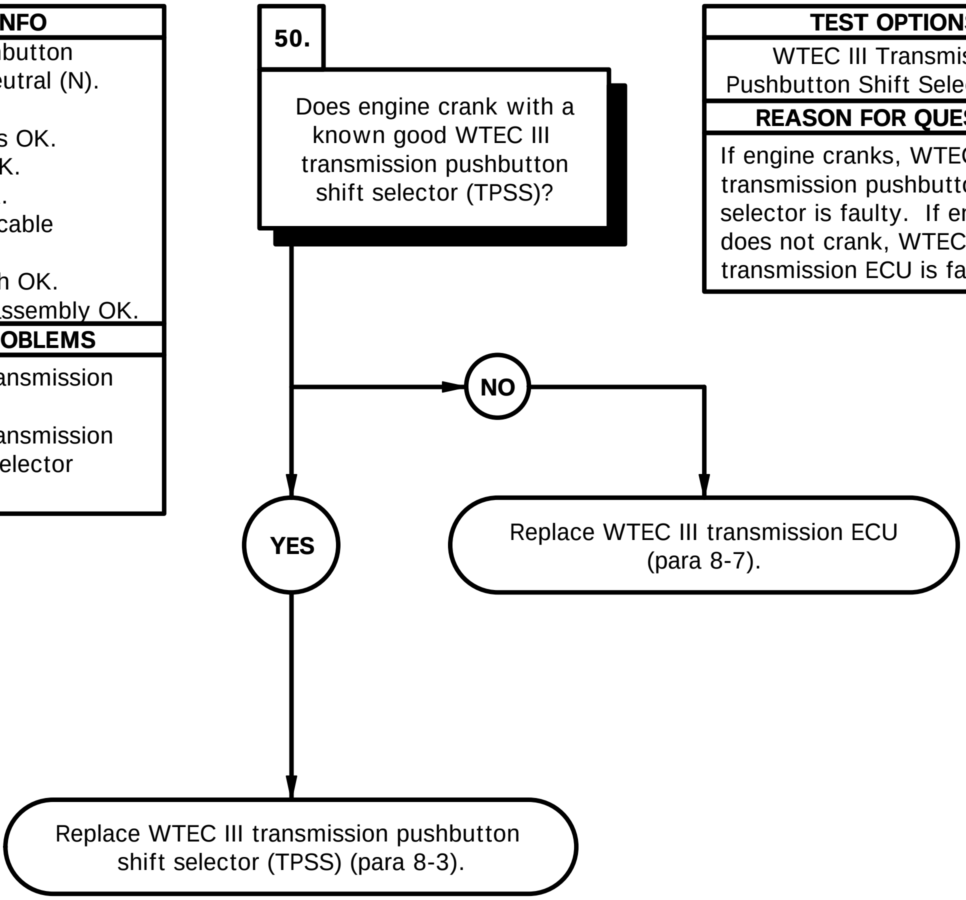
e2. ENGINE DOES NOT CRANK (CONT)

KNOWN INFO

Transmission pushbutton shift selector in neutral (N).
Batteries OK.
Service drive lights OK.
Circuit breakers OK.
Starting motor OK.
Battery to starter cable assembly OK.
Oil pressure switch OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty WTEC III transmission ECU.
Faulty WTEC III transmission pushbutton shift selector (TPSS).



50.

Does engine crank with a known good WTEC III transmission pushbutton shift selector (TPSS)?

Replace WTEC III transmission ECU (para 8-7).

Replace WTEC III transmission pushbutton shift selector (TPSS) (para 8-3).

TEST OPTIONS

WTEC III Transmission Pushbutton Shift Selector Test

REASON FOR QUESTION

If engine cranks, WTEC III transmission pushbutton shift selector is faulty. If engine does not crank, WTEC III transmission ECU is faulty.

WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR TEST (TPSS)

(1) Replace WTEC III TPSS (para 8-3).
(2) Connect batteries (para 7-57).
(3) Attempt to start engine (TM 9-2320-366-10-1).
(4) If engine does not crank, replace WTEC III transmission ECU (para 8-7).
(5) If engine does crank, replace WTEC III TPSS (para 8-3).
(6) Install instrument panel (para 7-15).
(7) Install kick panel (para 16-3).

e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-366-10-1).

Materials/Parts

- Dispenser, Pressure Sensitive Adhesive Tape (Item 20, Appendix D)
- Lockwasher (Item 75, Appendix G)
- Lockwasher (Item 83, Appendix G)
- Lockwasher (Item 86, Appendix G)
- Lockwasher (Item 87, Appendix G)
- Lockwasher (4) (Item 96, Appendix G)
- Lockwasher (2) (Item 72, Appendix G)
- Self-locking Nut (Item 167, Appendix G)
- Ties, Cable, Plastic (Item 69 Appendix D)
- Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required

(2)

Tools and Special Tools

- Tool Kit, Genl Mech (Item 46, Appendix C)
- STE/ICE-R (Item 41, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)
- Apron, Rubber (Item 3, Appendix C)
- Goggles, Industrial (Item 15, Appendix C)
- Gloves, Rubber (Item 13, Appendix C)
- Socket Set, Socket Wrench (Item 36, Appendix C)
- Tester, Antifreeze and Battery (Item 42, Appendix C)
- Wire, Relay Test (Item 9, Appendix E)
- Wrench, Torque, 0-175 lb-ft. (Item 58, Appendix C)
- Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)

References

TM 9-6140-200-14
TM 9-4910-571-12&P

KNOWN INFO

Circuit breaker CB70 OK.

POSSIBLE PROBLEMS

- Faulty battery(ies).
- Faulty cab to chassis ground strap.
- Faulty PDP to cab ground cable.
- Faulty dashboard cable assembly.
- Faulty shunt.
- Faulty starter to shunt 24 VDC cable.
- Faulty battery to shunt cable assembly.
- Faulty starter to chassis ground cable.
- Faulty 100 AMP reverse polarity relay.
- Faulty battery to 100 AMP reverse polarity relay 12 VDC cable.
- Faulty 100 AMP reverse polarity relay to PDP 12 VDC cable.
- Faulty 200 AMP reverse polarity relay.
- Faulty 200 AMP terminal block.
- Faulty 200 AMP terminal block to PDP 12 VDC cable.
- Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
- Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
- Faulty battery to 200 AMP terminal block 12 VDC cable assembly.

NOTE

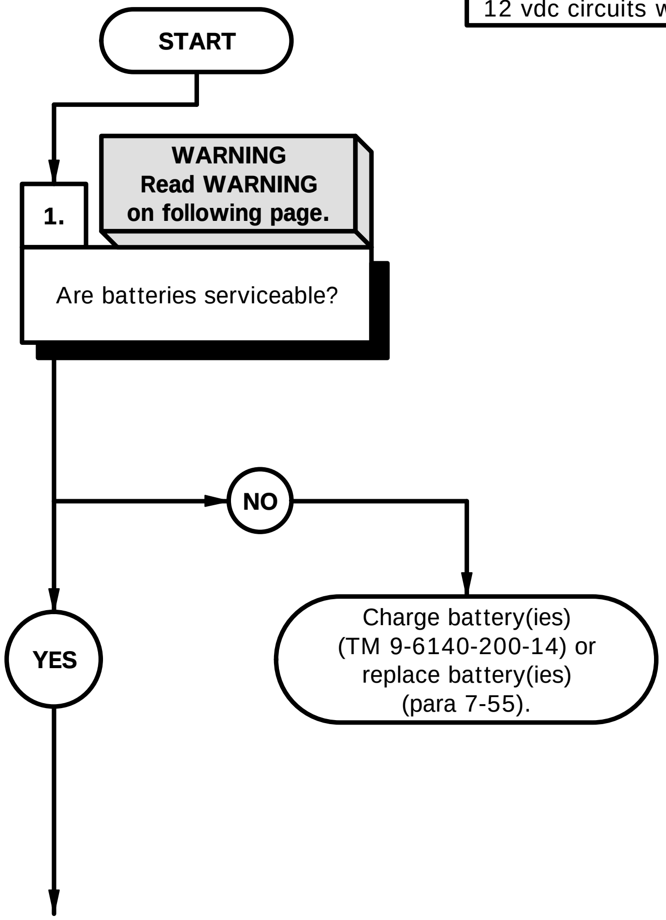
Perform electrical troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB70 prior to beginning this task.

TEST OPTIONS

Battery Specific Gravity Test

REASON FOR QUESTION

If battery(ies) is unserviceable, 12 vdc circuits will not operate.



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection and rubber gloves when working with batteries.

Battery Specific Gravity Test
(1) Remove four batteries from battery box (para 7-55). (2) Test batteries for serviceability (TM 9-6140-200-14). (3) Replace battery(ies) if unserviceable (TM 9-6140-200-14). (4) Install four batteries in battery box (para 7-55).

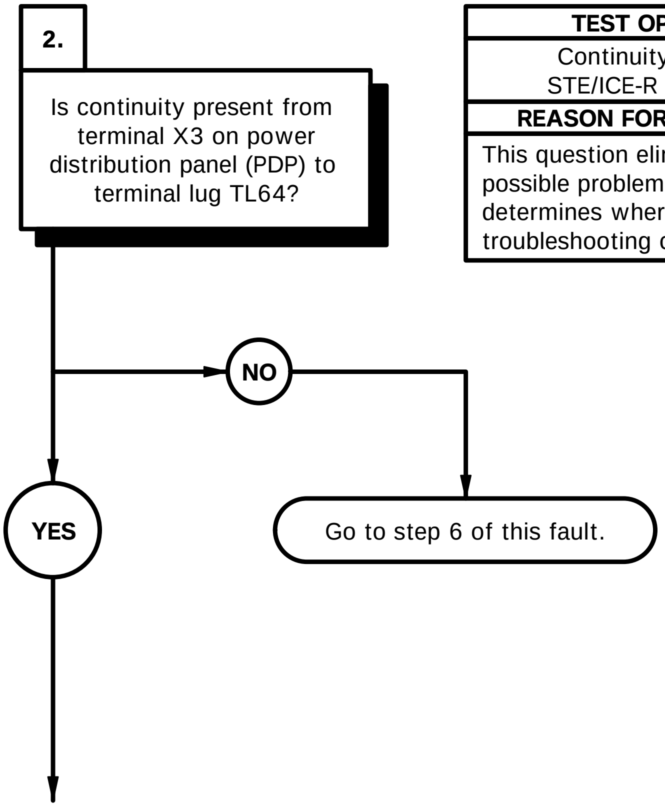
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breakers CB70 OK.
Battery(ies) OK.

POSSIBLE PROBLEMS

Faulty cab to chassis ground strap.
Faulty PDP to cab ground cable.
Faulty dashboard cable assembly.
Faulty shunt.
Faulty starter to shunt 24 VDC cable.
Faulty battery to shunt cable assembly.
Faulty starter to chassis ground cable.
Faulty 100 AMP reverse polarity relay.
Faulty battery to 100 AMP reverse polarity relay 12 VDC cable.
Faulty 100 AMP reverse polarity relay to PDP 12 VDC cable.
Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty 200 AMP terminal block to PDP 12 VDC cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



2.

Is continuity present from terminal X3 on power distribution panel (PDP) to terminal lug TL64?

Go to step 6 of this fault.

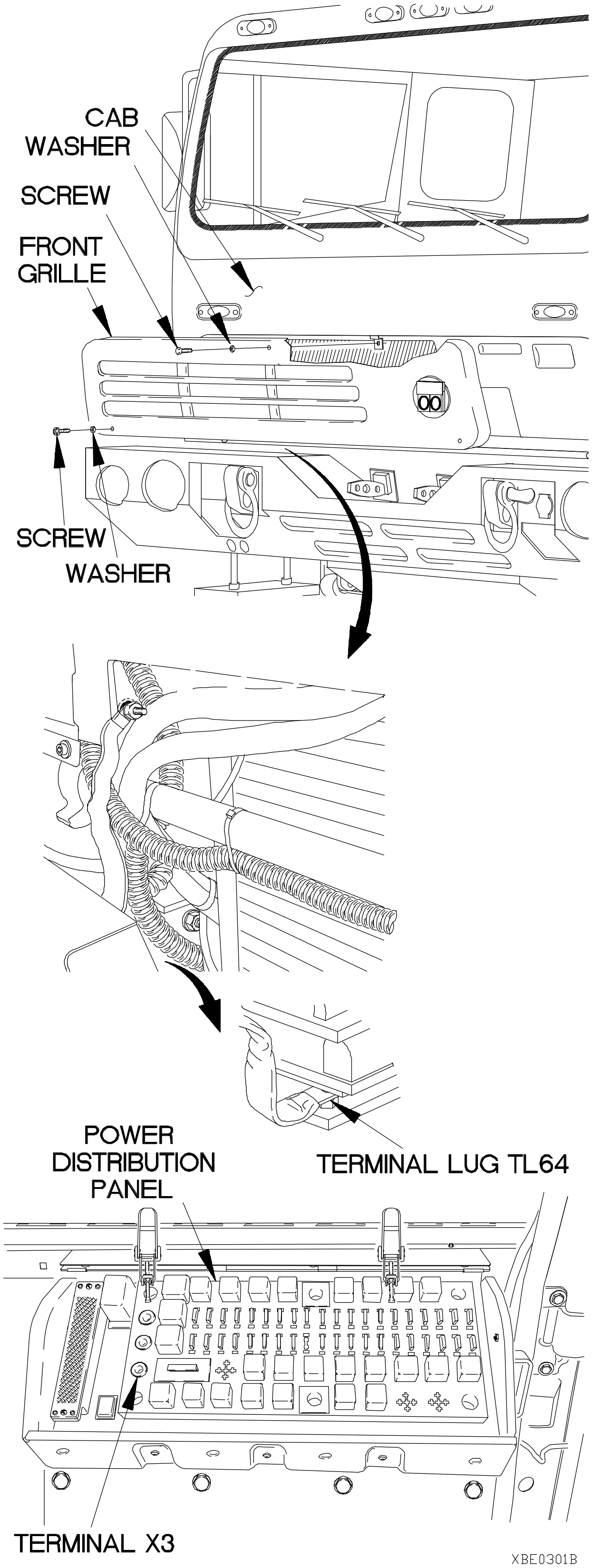
TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

CONTINUITY TEST
(1) Disconnect batteries (para 7-57). **NOTE** Remove plastic cable ties as required. (2) Remove two screws and washers from front grille. (3) Remove screw, washer, and front grille from cab. (4) Remove power distribution panel (PDP) cover (para 16-2). (5) Set multimeter to ohms. (6) Connect positive (+) probe of multimeter to terminal X3 on power distribution panel (PDP). (7) Connect negative (-) probe of multimeter to terminal lug TL64 and note reading on multimeter. (8) If continuity is not present, go to step 6 of this fault.



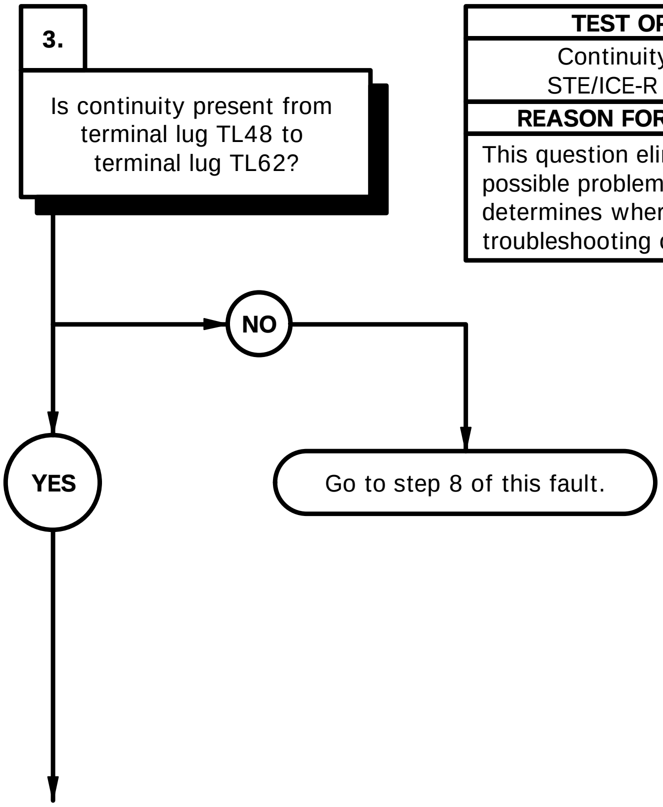
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty shunt.
Faulty starter to shunt 24 VDC cable.
Faulty battery to shunt cable assembly.
Faulty starter to chassis ground cable.
Faulty 100 AMP reverse polarity relay.
Faulty battery to 100 AMP reverse polarity relay 12 VDC cable.
Faulty 100 AMP reverse polarity relay to PDP 12 VDC cable.
Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty 200 AMP terminal block to PDP 12 VDC cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



3.

Is continuity present from terminal lug TL48 to terminal lug TL62?

Go to step 8 of this fault.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

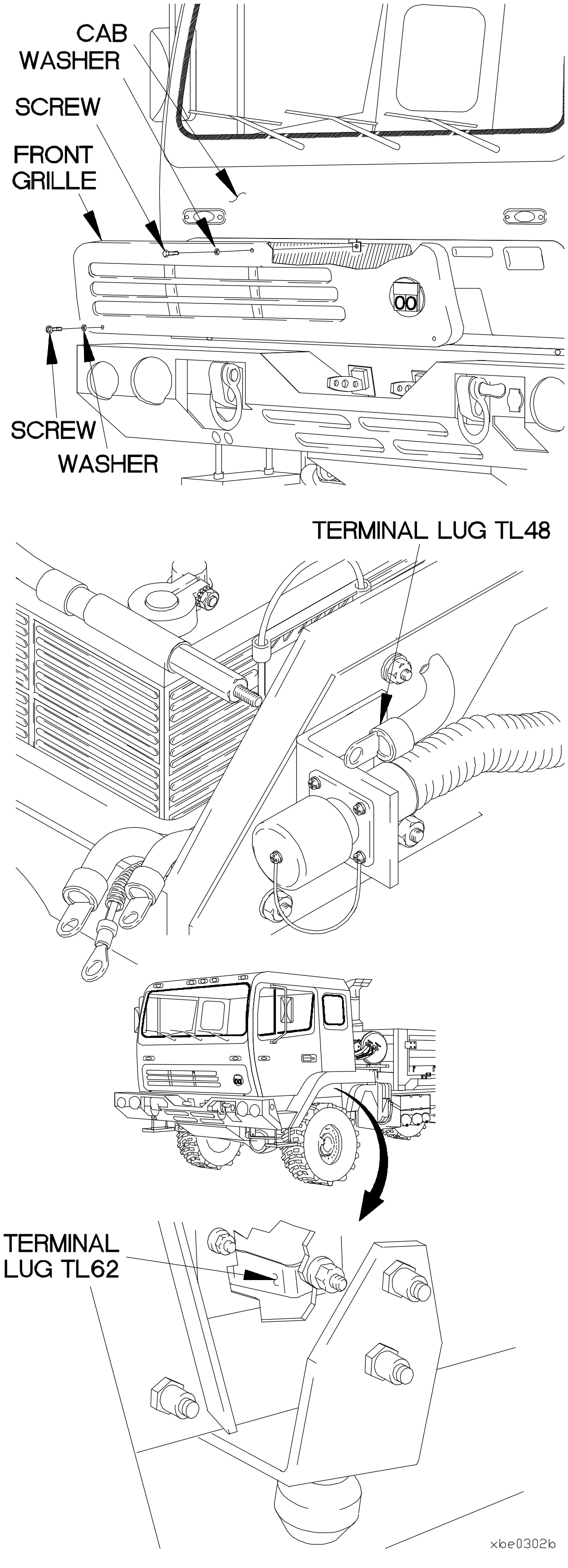
This question eliminates possible problems and determines where troubleshooting continues.

CONTINUITY TEST

NOTE

Install plastic cable ties as required.

(1) Position front grille on cab with washer and screw.
(2) Position two washers and screws in front grille.
(3) Tighten screw to 48-60 lb-in. (5-7 N.m).
(4) Tighten two screws to 24 lb-in. (3 N.m).
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to terminal lug TL48.
(7) Connect negative (-) probe of multimeter to terminal lug TL62 and note reading on multimeter.
(8) If continuity is not present, go to step 8 of this fault.



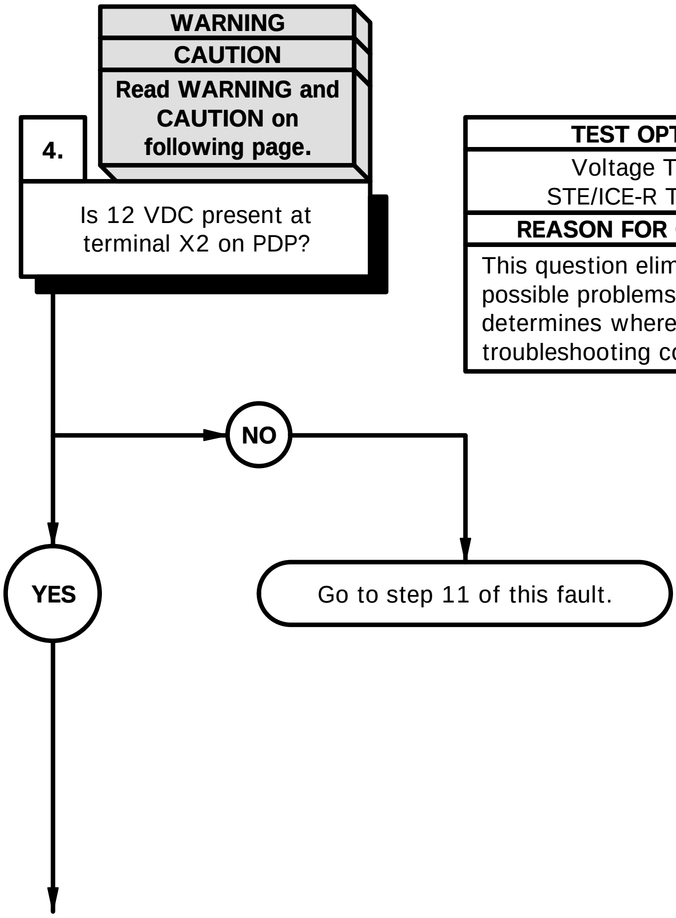
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty 100 AMP reverse polarity relay.
Faulty battery to 100 AMP reverse polarity relay 12 VDC cable.
Faulty 100 AMP reverse polarity relay to PDP 12 VDC cable.
Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty 200 AMP terminal block to PDP 12 VDC cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

4. Is 12 VDC present at terminal X2 on PDP?

Go to step 11 of this fault.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

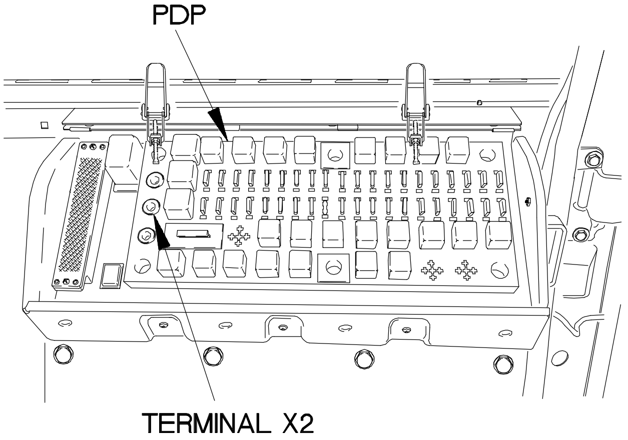
VOLTAGE TEST

(1) Connect batteries (para 7-57).
(2) Set multimeter to volts DC.

CAUTION

When testing to terminal X2 on PDP, ensure that multimeter probes come in contact with the outside metal ring. Failure to comply may result in false troubleshooting test results.

(3) Connect positive (+) probe of multimeter to terminal X2 on PDP
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If 12 VDC is not present, go to step 11 of this fault.



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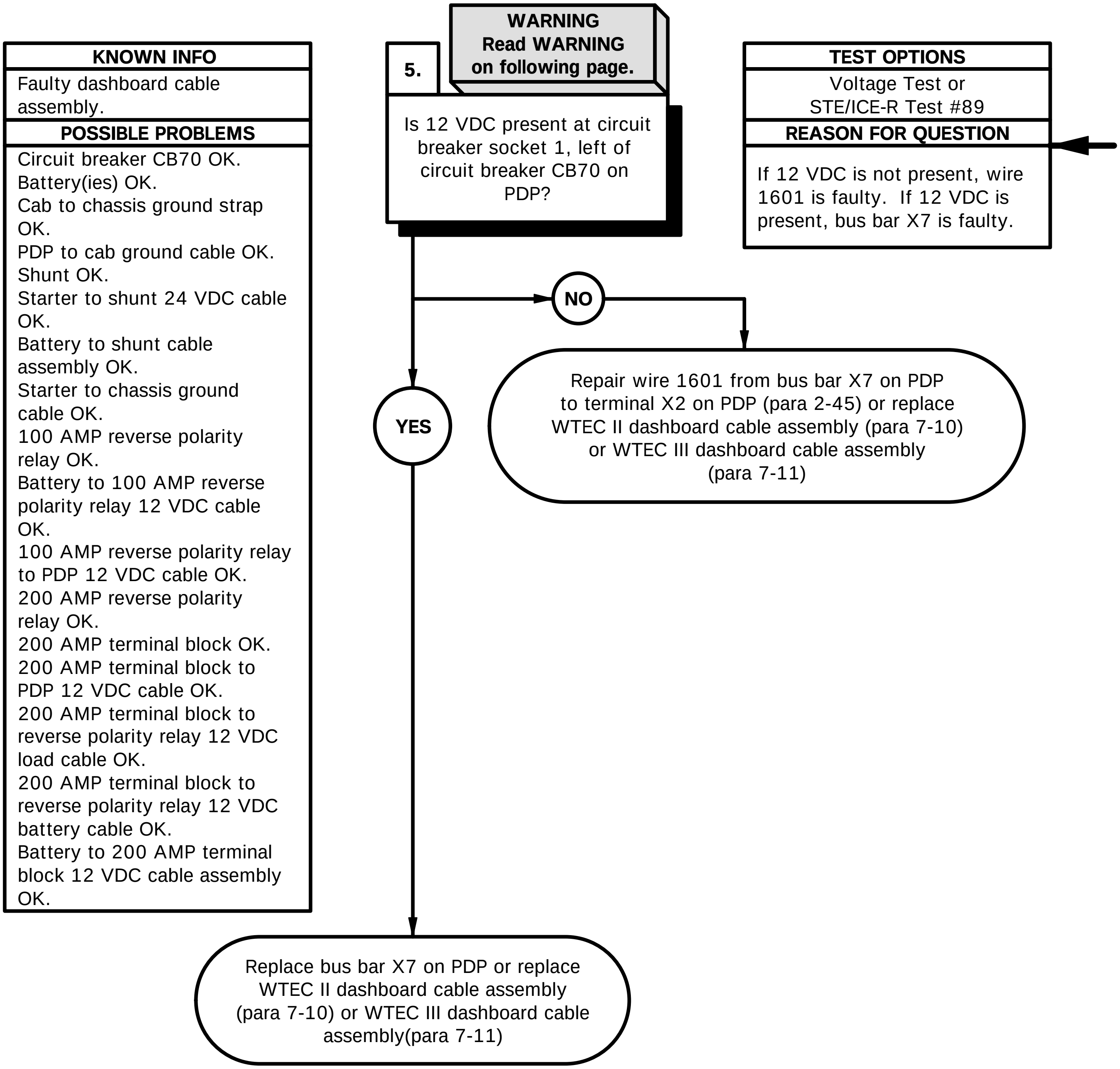
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)



KNOWN INFO

Faulty dashboard cable assembly.

POSSIBLE PROBLEMS

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.
100 AMP reverse polarity relay OK.
Battery to 100 AMP reverse polarity relay 12 VDC cable OK.
100 AMP reverse polarity relay to PDP 12 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
200 AMP terminal block to PDP 12 VDC cable OK.
200 AMP terminal block to reverse polarity relay 12 VDC load cable OK.
200 AMP terminal block to reverse polarity relay 12 VDC battery cable OK.
Battery to 200 AMP terminal block 12 VDC cable assembly OK.

WARNING
Read WARNING on following page.

5. Is 12 VDC present at circuit breaker socket 1, left of circuit breaker CB70 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1601 is faulty. If 12 VDC is present, bus bar X7 is faulty.

NO

Repair wire 1601 from bus bar X7 on PDP to terminal X2 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11)

YES

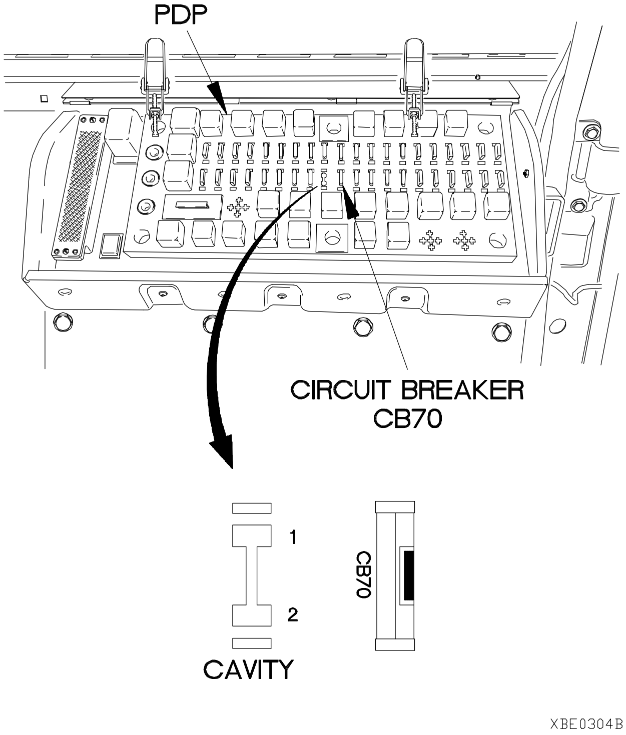
Replace bus bar X7 on PDP or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly(para 7-11)

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Position master power switch to on (TM 9-2320-366-10-1).
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to circuit breaker socket 1, left of circuit breaker CB70 on PDP.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If 12 VDC is not present, repair wire 1601 from bus bar X7 on PDP to terminal X2 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If 12 VDC is present, replace bus bar X7 on PDP or WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Position master power switch to off (TM 9-2320-366-10-1).
(8) Install PDP cover (para 16-2).



e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breakers CB70 OK.
Battery(ies) OK.

POSSIBLE PROBLEMS

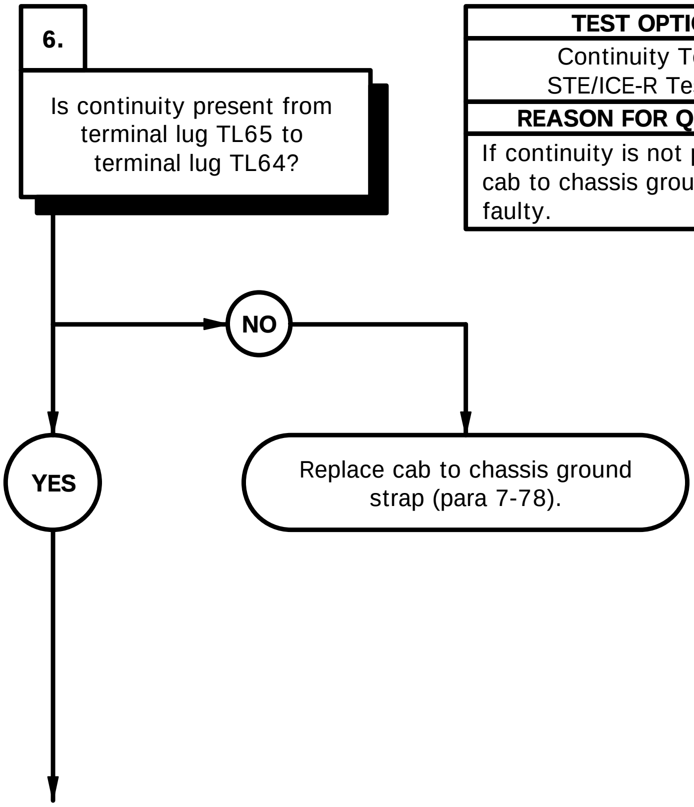
Faulty cab to chassis ground strap.
Faulty PDP to cab ground cable.
Faulty dashboard cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, cab to chassis ground strap is faulty.



6.

Is continuity present from terminal lug TL65 to terminal lug TL64?

Replace cab to chassis ground strap (para 7-78).

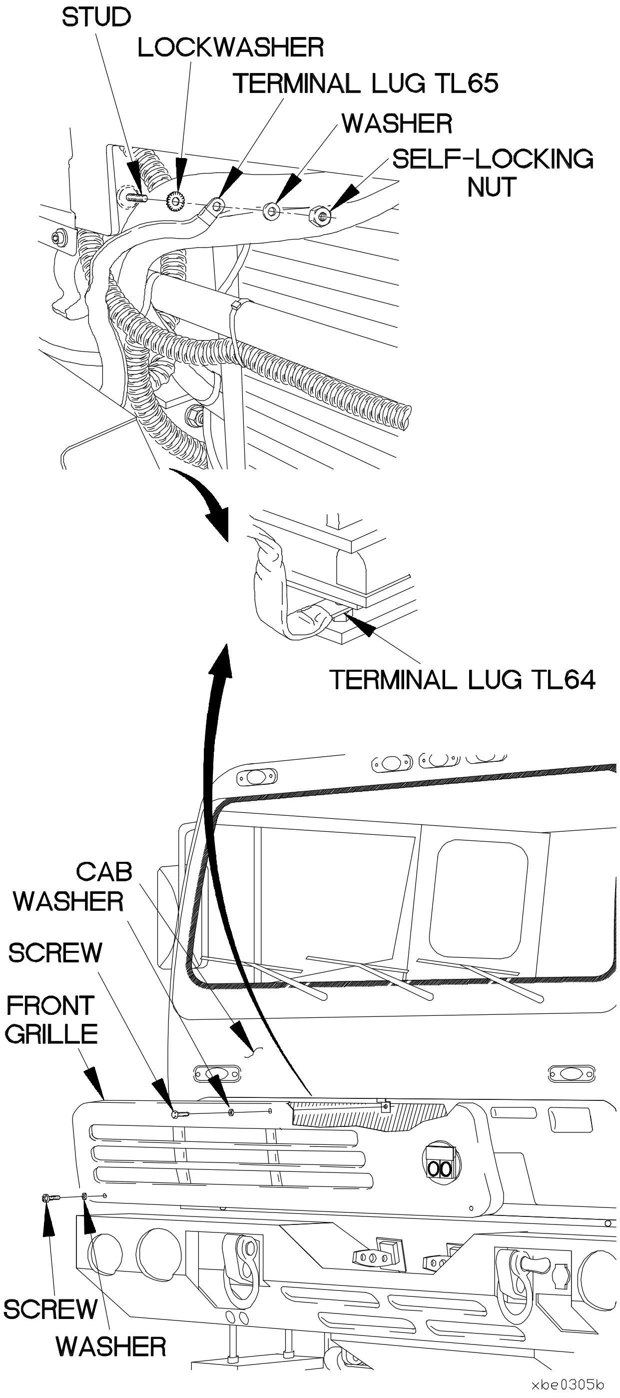
CONTINUITY TEST

(1) Remove self-locking nut, washer, terminal lug TL65, and lockwasher from stud. Discard self-locking nut and lockwasher.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL65.
(4) Connect negative (-) probe of multimeter to terminal lug TL64 and note reading on multimeter.
(5) If continuity is not present, replace cab to chassis ground strap (para 7-78).
(6) Install lockwasher and terminal lug TL65 on stud with washer and self-locking nut.

NOTE

Install plastic cable ties as required.

(7) Position front grille on cab with washer and screw.
(8) Position two washers and screws in front grille.
(9) Tighten screw to 48-60 lb-in. (5-7 N.m).
(10) Tighten two screws to 24 lb-in. (3 N.m).



e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breakers CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.

POSSIBLE PROBLEMS

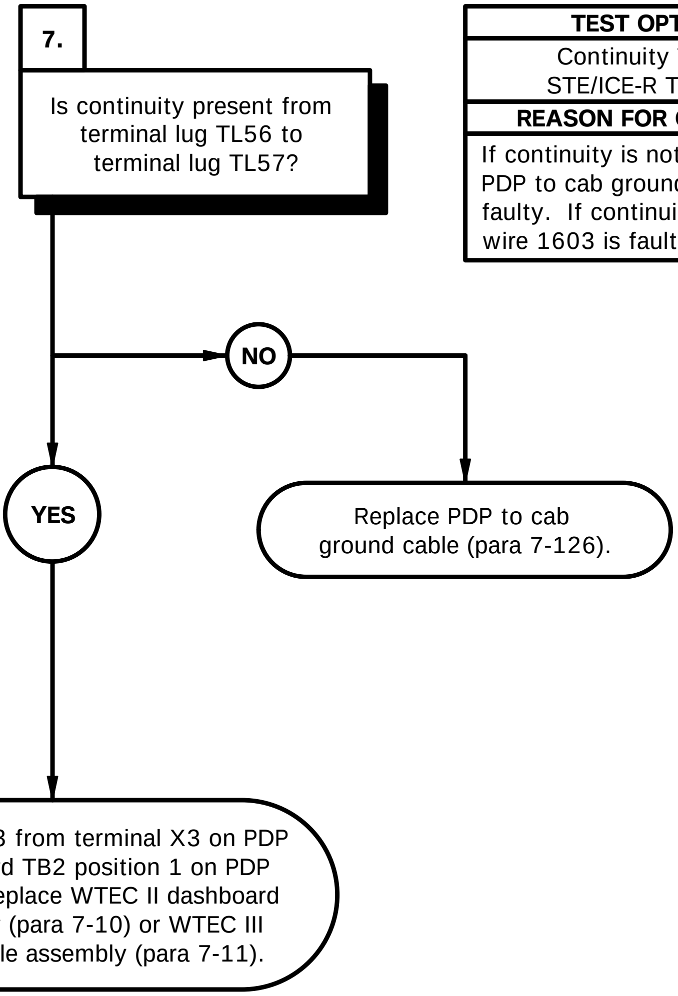
Faulty PDP to cab ground cable.
Faulty dashboard cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, PDP to cab ground cable is faulty. If continuity is present, wire 1603 is faulty.



7.

Is continuity present from terminal lug TL56 to terminal lug TL57?

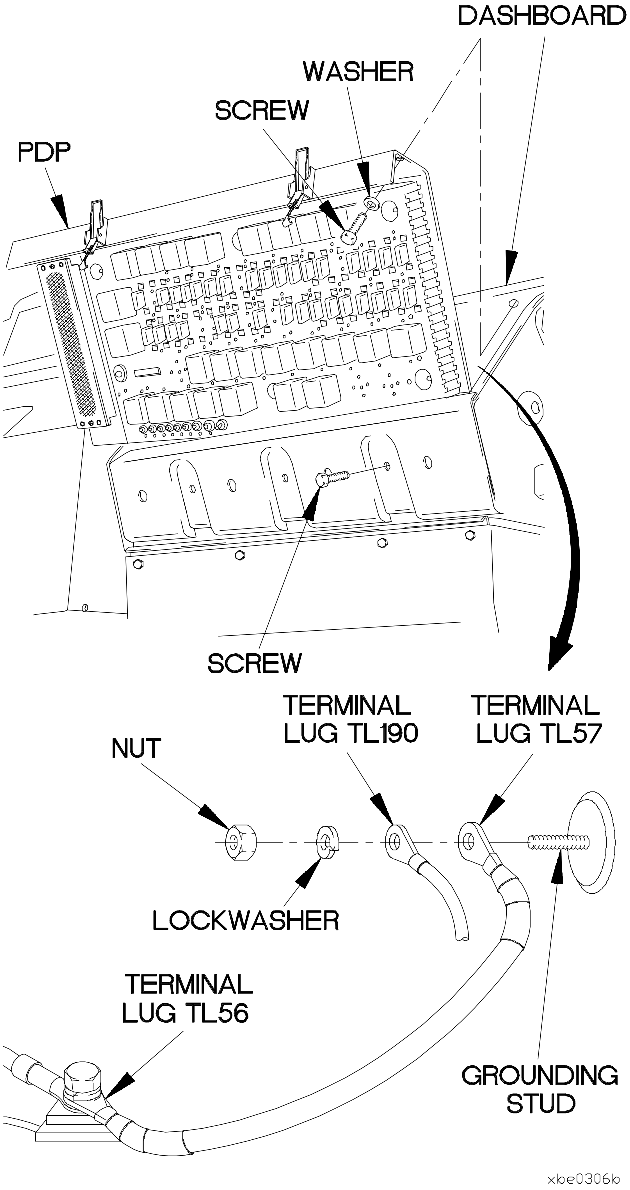
NO

Replace PDP to cab ground cable (para 7-126).

YES

Repair wire 1603 from terminal X3 on PDP to terminal board TB2 position 1 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST
(1) Remove three screws and washers from PDP. (2) Remove three screws from PDP. (3) Lift outward to gain access. (4) Remove nut, lockwasher, terminal lug TL190, and terminal lug TL57 from grounding stud. Discard lockwasher. (5) Set multimeter to ohms. (6) Connect positive (+) probe of multimeter to terminal lug TL57. (7) Connect negative (-) probe of multimeter to terminal lug TL56 and note reading on multimeter. (8) If continuity is not present, replace PDP to cab ground cable (para 7-126). (9) If continuity is present, repair wire 1603 from terminal X3 on PDP to terminal board TB2 position 1 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (10) Install terminal lug TL190 and terminal lug TL57 on grounding stud with lockwasher and nut. (11) Install PDP on dashboard with three screws. (12) Install three washers and screws in PDP. (13) Install PDP cover (para 16-2). (14) Connect batteries (para 7-57).



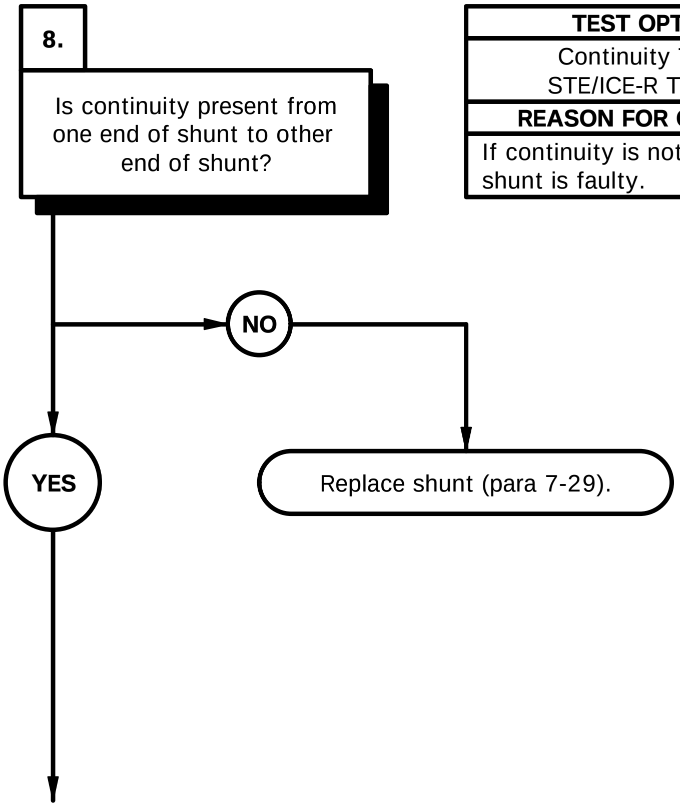
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.

POSSIBLE PROBLEMS

Faulty shunt.
Faulty starter to shunt 24 VDC cable.
Faulty battery to shunt cable assembly.
Faulty starter to chassis ground cable.



8. Is continuity present from one end of shunt to other end of shunt?

Replace shunt (para 7-29).

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, shunt is faulty.

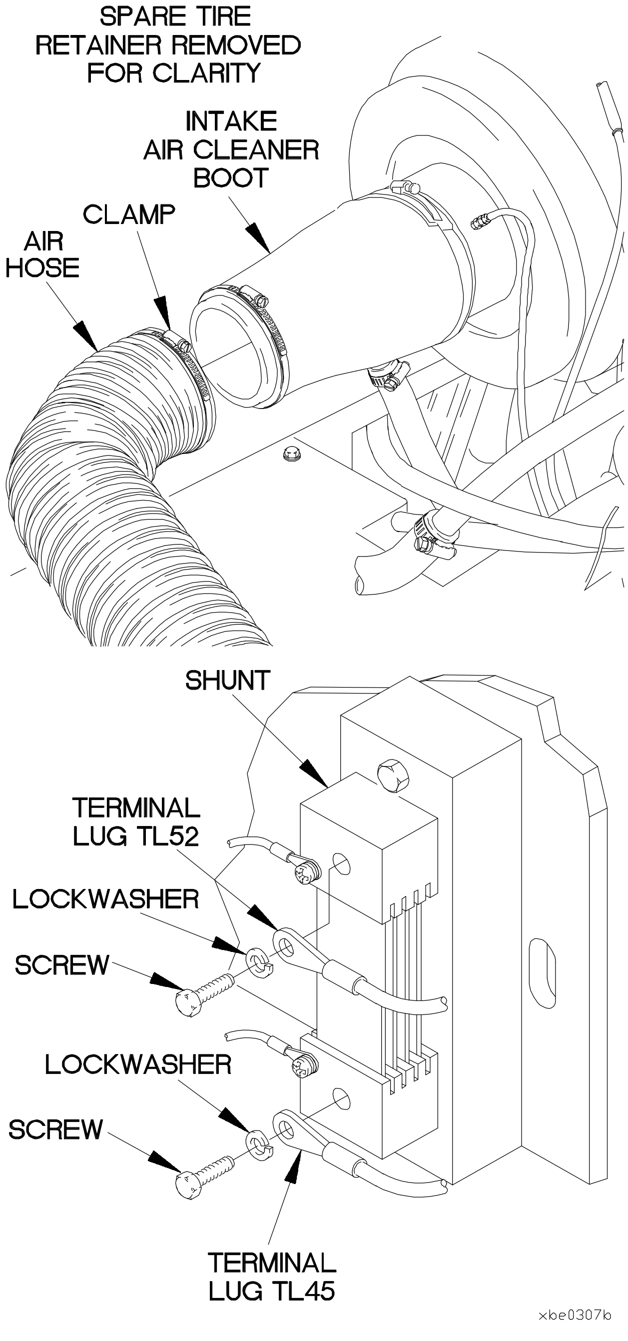
CONTINUITY TEST

(1) Raise cab (TM 9-2320-366-10-1).
(2) Lower spare tire (TM 9-2320-366-10-2).
(3) Install PDP cover (para 16-2).
(4) Loosen clamp on air hose.
(5) Remove air hose from intake air cleaner boot.

NOTE

Tag wires and connection points prior to disconnecting.

(6) Remove screw, lockwasher, and terminal lug TL52 from shunt. Discard lockwasher.
(7) Remove screw, lockwasher, and terminal lug TL45 from shunt. Discard lockwasher.
(8) Set multimeter to ohms.
(9) Connect positive (+) probe of multimeter to one end of shunt.
(10) Connect negative (-) probe of multimeter to other end of shunt and note reading of multimeter.
(11) If continuity is not present, replace shunt (para 7-29).



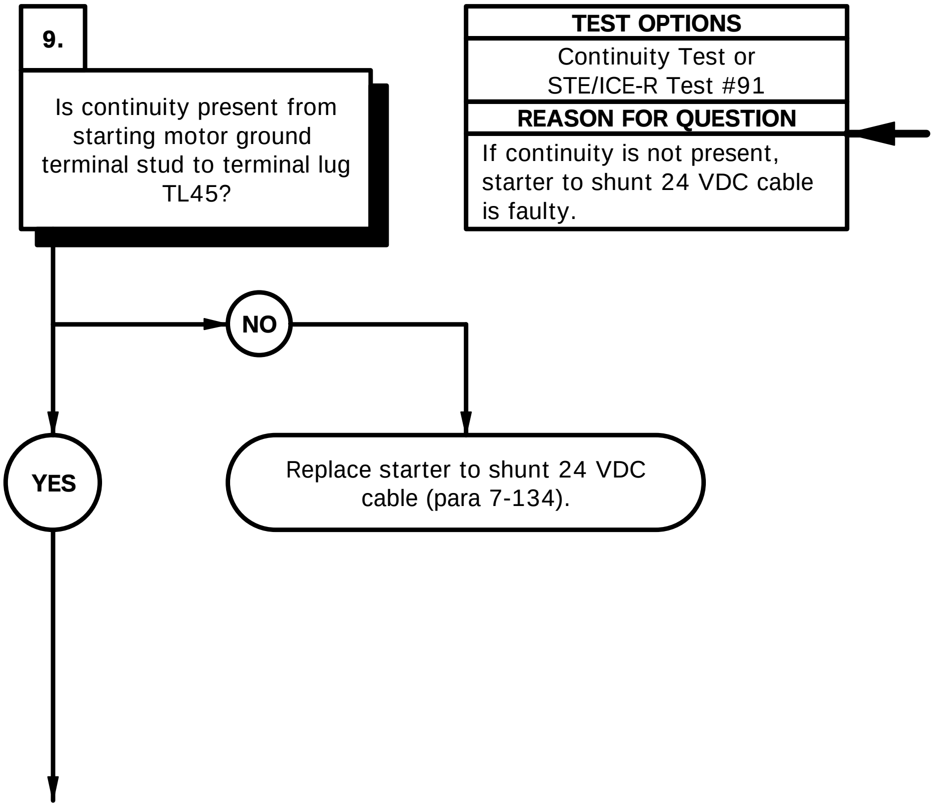
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.

POSSIBLE PROBLEMS

Faulty starter to shunt 24 VDC cable.
Faulty battery to shunt cable assembly.
Faulty starter to chassis ground cable.



9.

Is continuity present from starting motor ground terminal stud to terminal lug TL45?

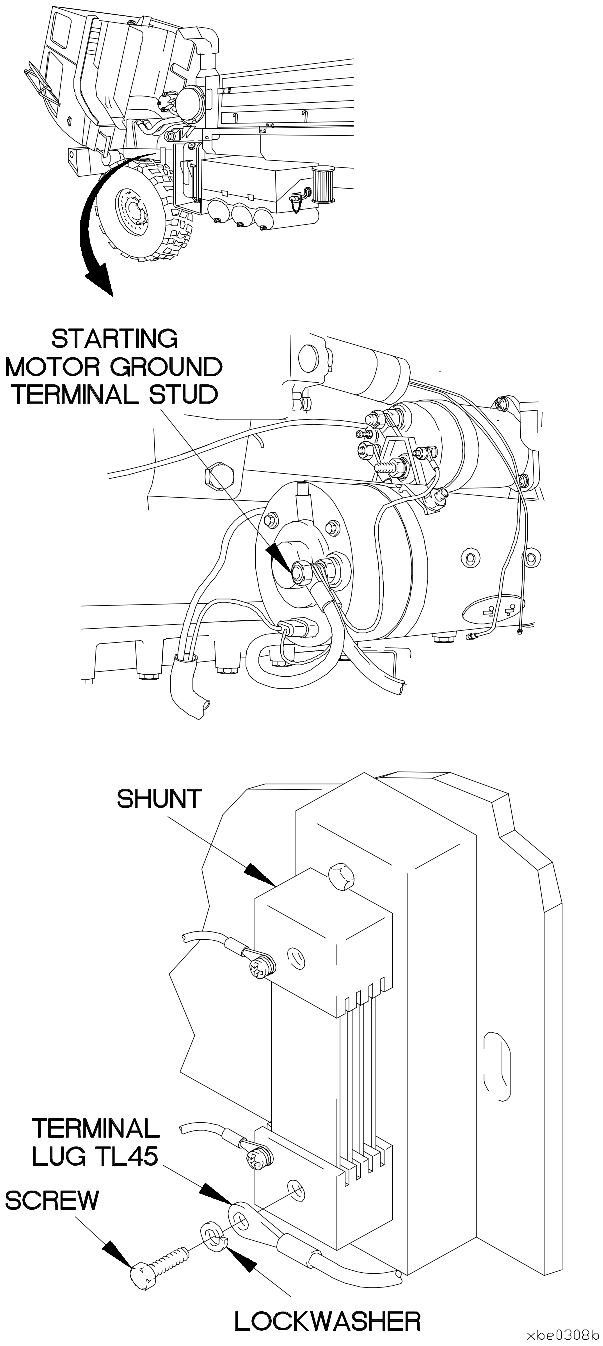
TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, starter to shunt 24 VDC cable is faulty.

Replace starter to shunt 24 VDC cable (para 7-134).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to starting motor ground terminal stud.
(3) Connect negative (-) probe of multimeter to terminal lug TL45 and note reading on multimeter.
(4) If continuity is not present, replace starter to shunt 24 VDC cable (para 7-134).
(5) Lower cab (TM 9-2320-366-10-1).
(6) Install terminal lug TL45 on shunt with lockwasher and screw.

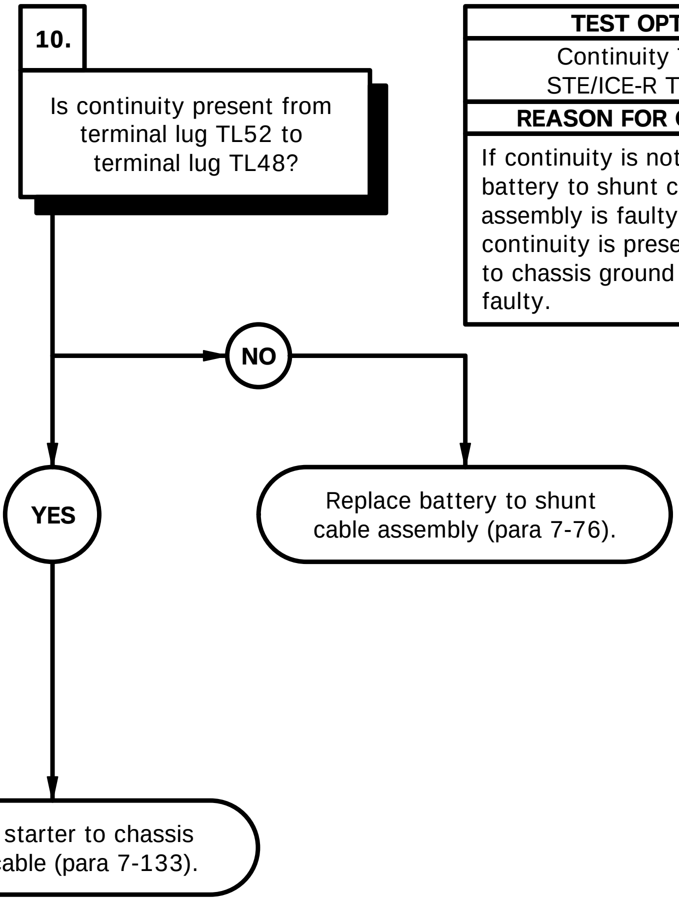
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.

POSSIBLE PROBLEMS

Faulty battery to shunt cable assembly.
Faulty starter to chassis ground cable.



10.

Is continuity present from terminal lug TL52 to terminal lug TL48?

NO

Replace battery to shunt cable assembly (para 7-76).

YES

Replace starter to chassis ground cable (para 7-133).

TEST OPTIONS

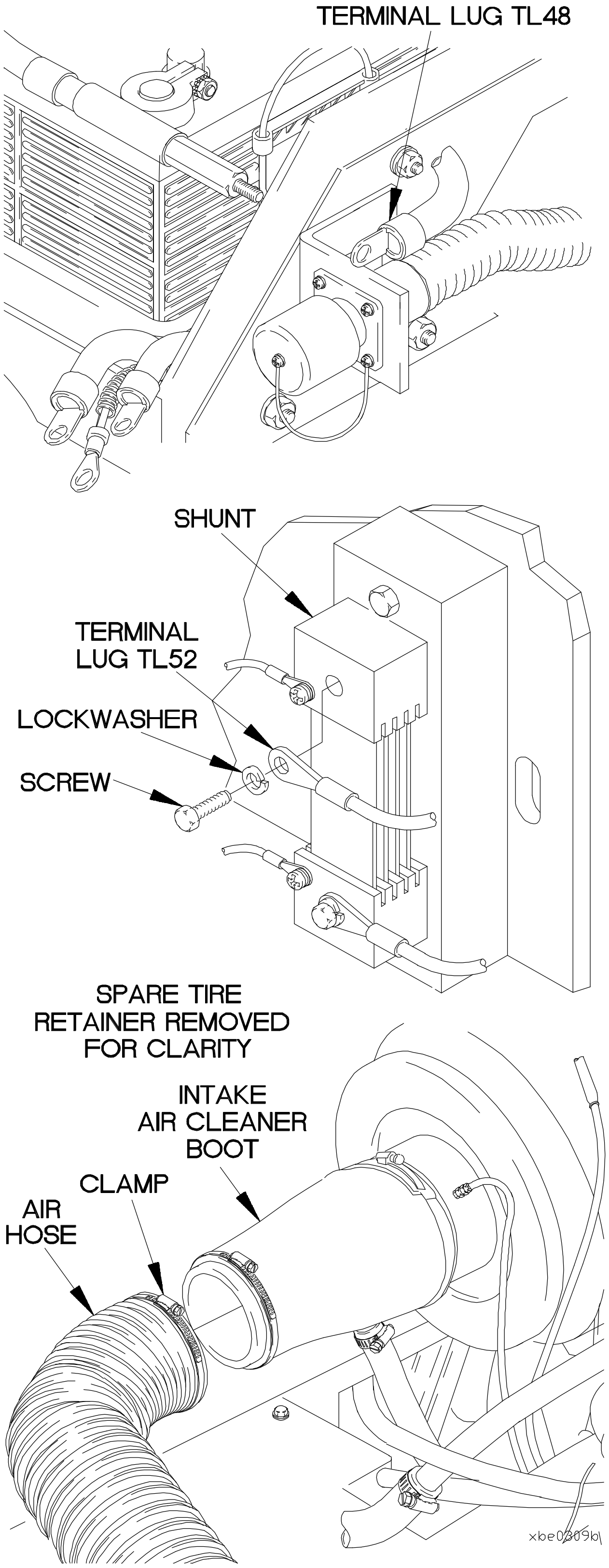
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, battery to shunt cable assembly is faulty. If continuity is present starter to chassis ground cable is faulty.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL52.
(3) Connect negative (-) probe of multimeter to terminal lug TL48 and note reading on multimeter.
(4) If continuity is not present, replace battery to shunt cable assembly (para 7-76) .
(5) If continuity is present, replace starter to chassis ground cable (para 7-133).
(6) Install terminal lug TL52 on shunt with lockwasher and screw.
(7) Position air hose on intake air cleaner boot with clamp.
(8) Tighten clamp to 36-48 lb-in. (4-5 N.m).
(9) Raise spare tire (TM 9-2320-366-10-1).
(10) Connect batteries (para 7-57).



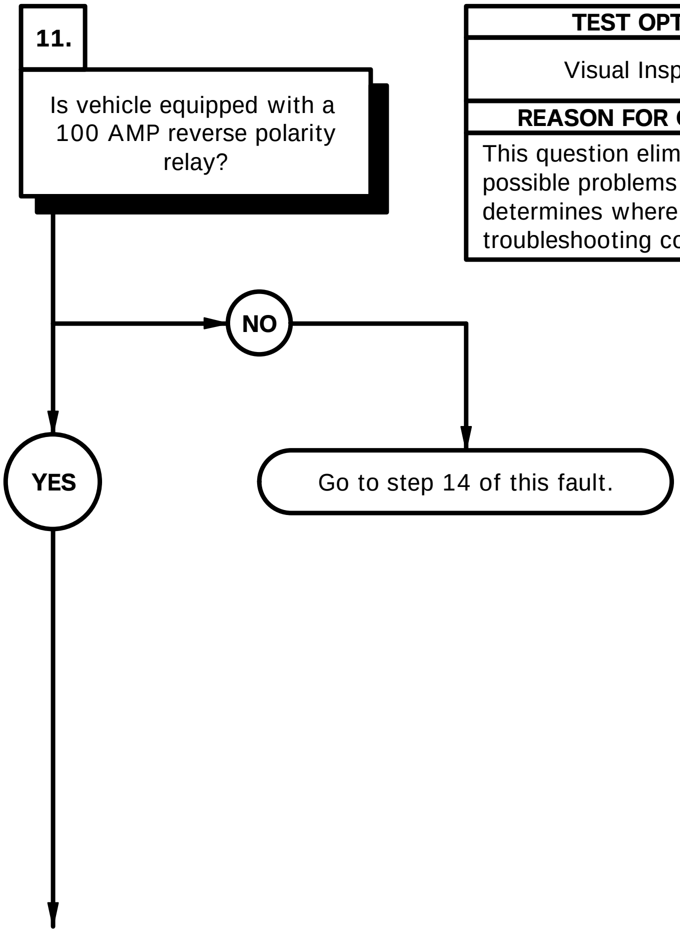
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.

POSSIBLE PROBLEMS

Faulty 100 AMP reverse polarity relay.
Faulty battery to 100 AMP reverse polarity relay 12 VDC cable.
Faulty 100 AMP reverse polarity relay to PDP 12 VDC cable.
Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty 200 AMP terminal block to PDP 12 VDC cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



11.

Is vehicle equipped with a 100 AMP reverse polarity relay?

Go to step 14 of this fault.

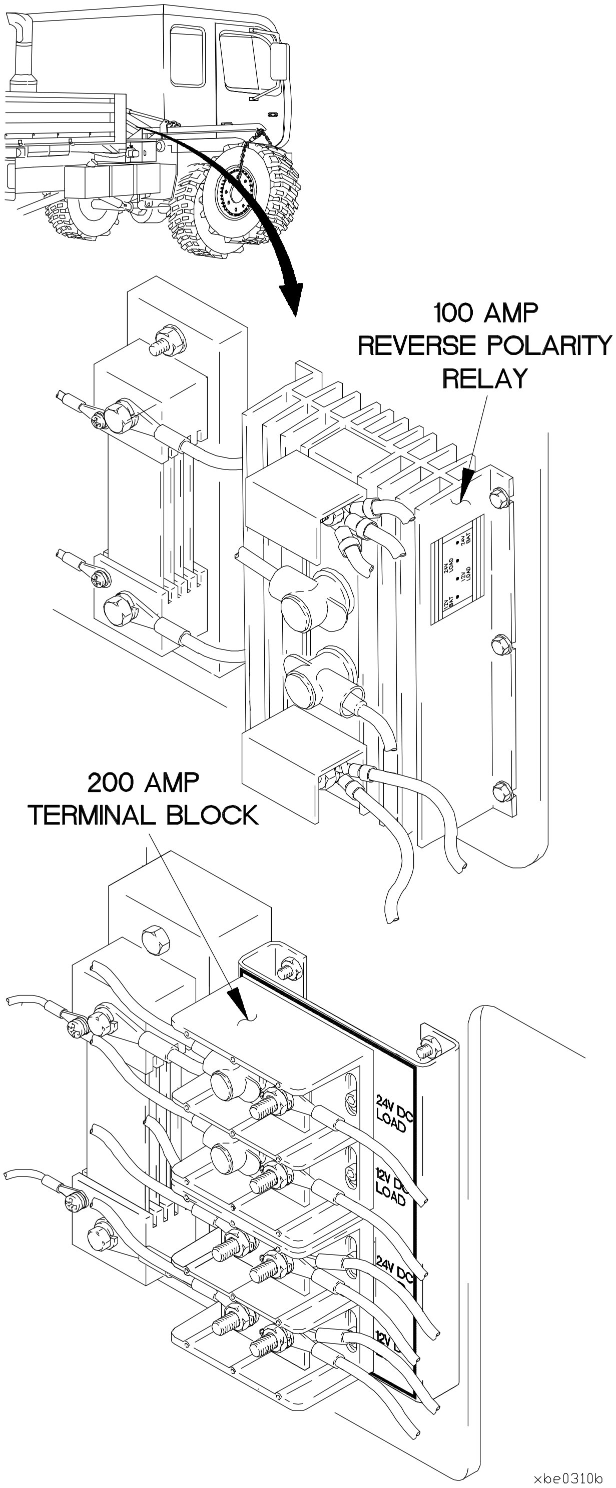
TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

(1) Lower spare tire (TM 9-2320-366-10-2).
(2) Check if vehicle is equipped with 100 AMP reverse polarity relay.
(3) If vehicle is not equipped with 100 AMP reverse polarity relay, go to step 14 of this fault.



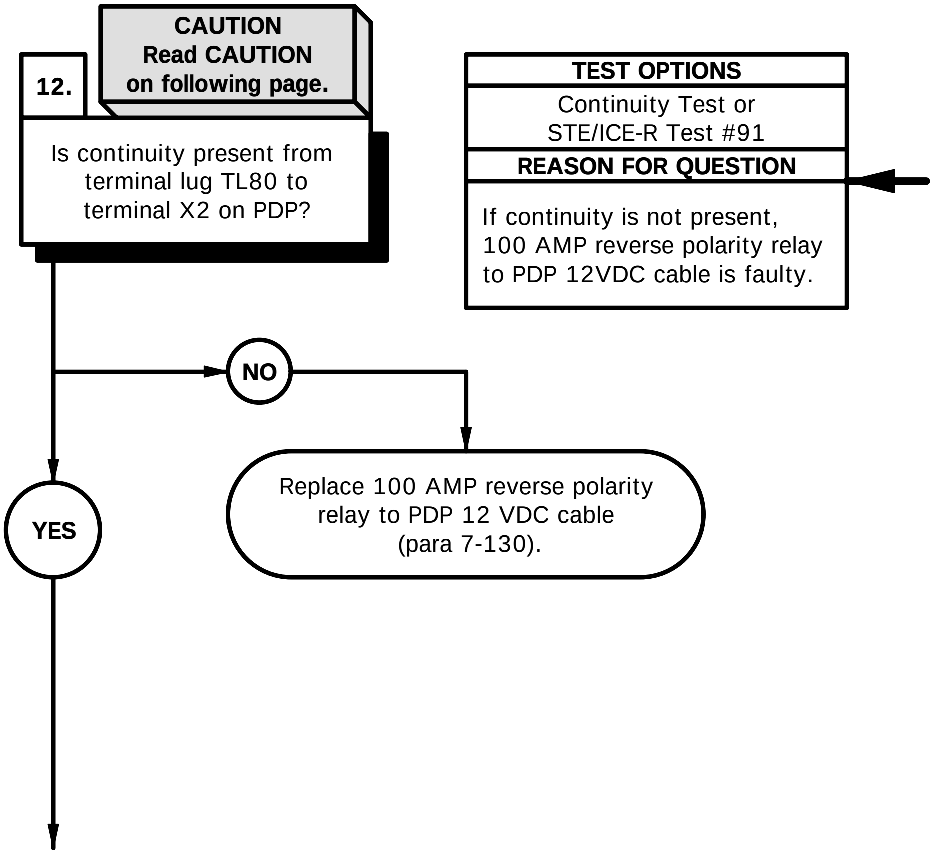
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.

POSSIBLE PROBLEMS

Faulty 100 AMP reverse polarity relay.
Faulty battery to 100 AMP reverse polarity relay 12 VDC cable.
Faulty 100 AMP reverse polarity relay to PDP 12 VDC cable.



CAUTION
Read CAUTION on following page.

12. Is continuity present from terminal lug TL80 to terminal X2 on PDP?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 100 AMP reverse polarity relay to PDP 12VDC cable is faulty.

Replace 100 AMP reverse polarity relay to PDP 12 VDC cable (para 7-130).

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Loosen clamp on air hose.
(3) Remove air hose from intake air cleaner boot.
(4) Lift dust boot on 12V LOAD terminal stud on 100 AMP reverse polarity relay.

NOTE

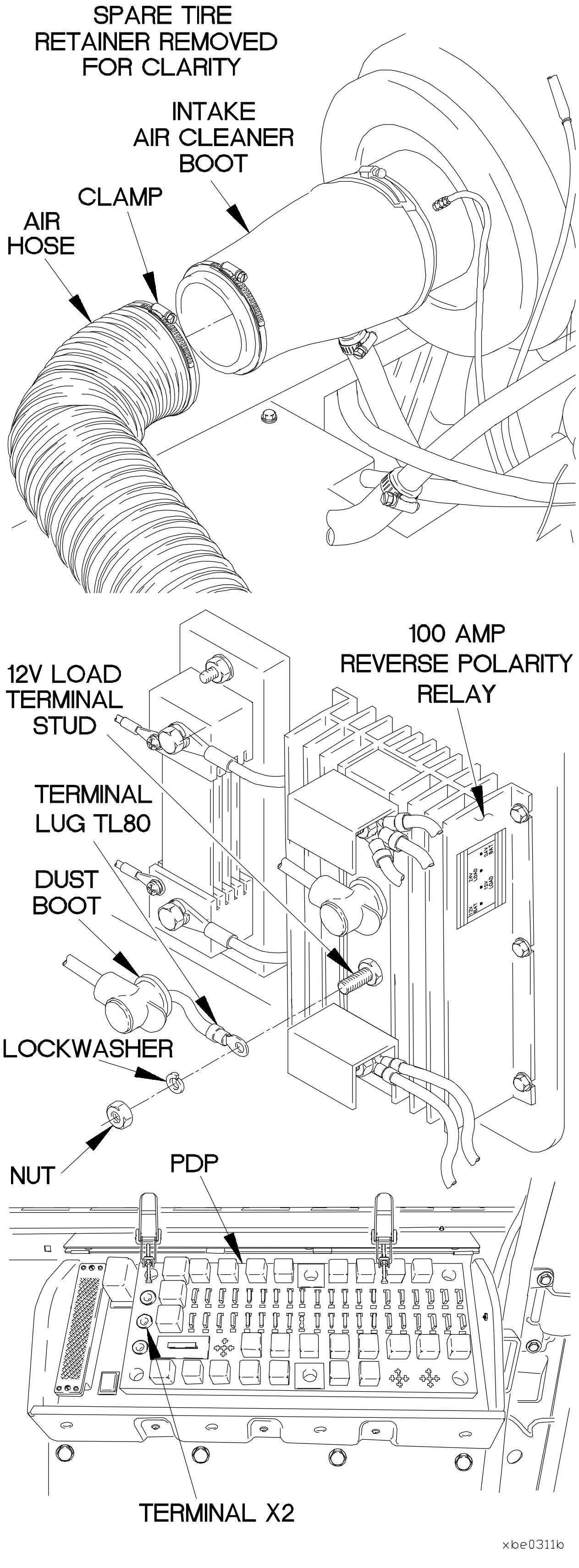
Tag all terminal lugs and connection points prior to disconnecting.

(5) Remove nut, lockwasher, and terminal lug TL80 from 12V LOAD terminal stud on 100 AMP reverse polarity relay.
(6) Set multimeter to ohms.

CAUTION

When testing to terminal X2 on PDP, ensure that multimeter probes come in contact with the outside metal ring. Failure to comply may result in false troubleshooting test results.

(7) Connect positive probe (+) of multimeter to terminal X2 on PDP.
(8) Connect negative probe (-) of multimeter to terminal lug TL80 and note reading on multimeter.
(9) If continuity is not present, replace 100 AMP reverse polarity relay to PDP 12 VDC cable (para 7-130).
(10) Position terminal lug TL80 on 12V LOAD terminal stud on 100 AMP reverse polarity relay with lockwasher and nut.
(11) Tighten nut to 120-144 lb-in. (14-16 N.m).
(12) Position dust boot on 12V LOAD terminal stud on 100 AMP reverse polarity relay.
(13) Install PDP cover (para 16-2).



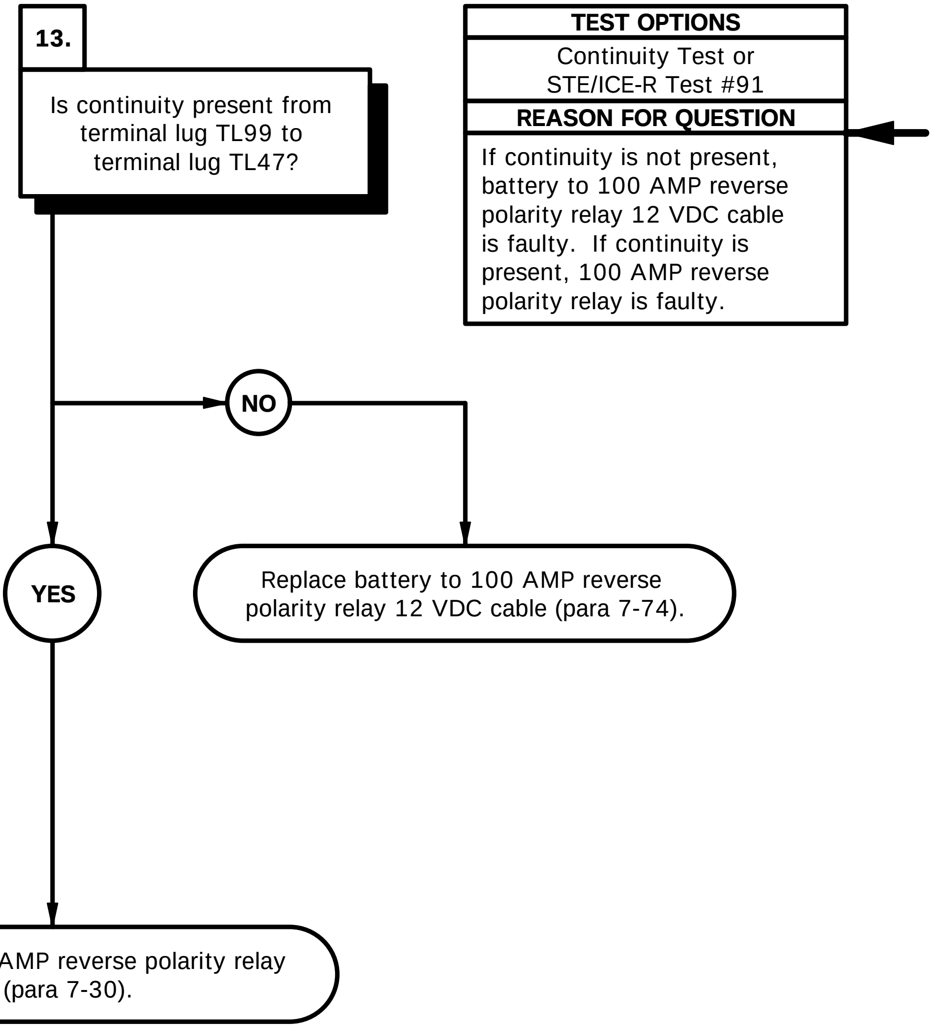
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.
100 AMP reverse polarity relay to PDP 12 VDC cable OK.

POSSIBLE PROBLEMS

Faulty 100 AMP reverse polarity relay.
Faulty battery to 100 AMP reverse polarity relay 12 VDC cable.



13.

Is continuity present from terminal lug TL99 to terminal lug TL47?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

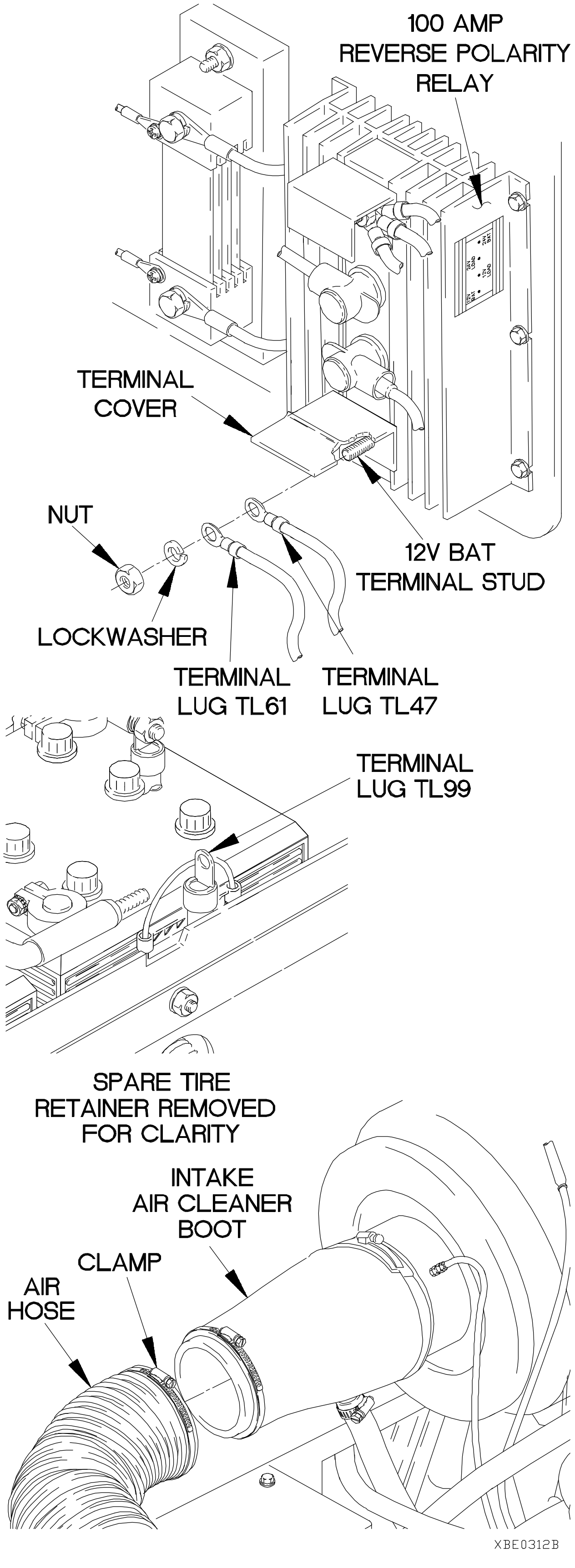
If continuity is not present, battery to 100 AMP reverse polarity relay 12 VDC cable is faulty. If continuity is present, 100 AMP reverse polarity relay is faulty.

Replace battery to 100 AMP reverse polarity relay 12 VDC cable (para 7-74).

Replace 100 AMP reverse polarity relay (para 7-30).

CONTINUITY TEST

(1) Lift terminal cover on 12V BAT terminal stud on 100 AMP reverse polarity relay.
(2) Remove nut, lockwasher, terminal lug TL61, and terminal lug TL47 from 12V BAT terminal stud on 100 AMP reverse polarity relay. Discard lockwasher.
(3) Set multimeter to ohms.
(4) Connect positive probe (+) of multimeter to terminal lug TL99.
(5) Connect negative probe (-) of multimeter to terminal lug TL47 and note reading on multimeter.
(6) If continuity is not present, replace battery to 100 AMP reverse polarity relay 12 VDC cable (para 7-74).
(7) If continuity is present, replace 100 AMP reverse polarity relay (para 7-30).
(8) Lift terminal cover on 12V BAT terminal stud on 100 AMP reverse polarity relay.
(9) Position terminal lugs TL47 and TL61 on 12V BAT terminal stud on 100 AMP reverse polarity relay with lockwasher and nut.
(10) Tighten nut to 120-144 lb-in. (14-16 N.m).
(11) Position air hose on intake air cleaner boot with clamp.
(12) Tighten clamp to 36-48 lb-in. (4-5 N.m).
(13) Connect batteries (para 7-57).
(14) Raise spare tire (TM 9-2320-366-10-2).



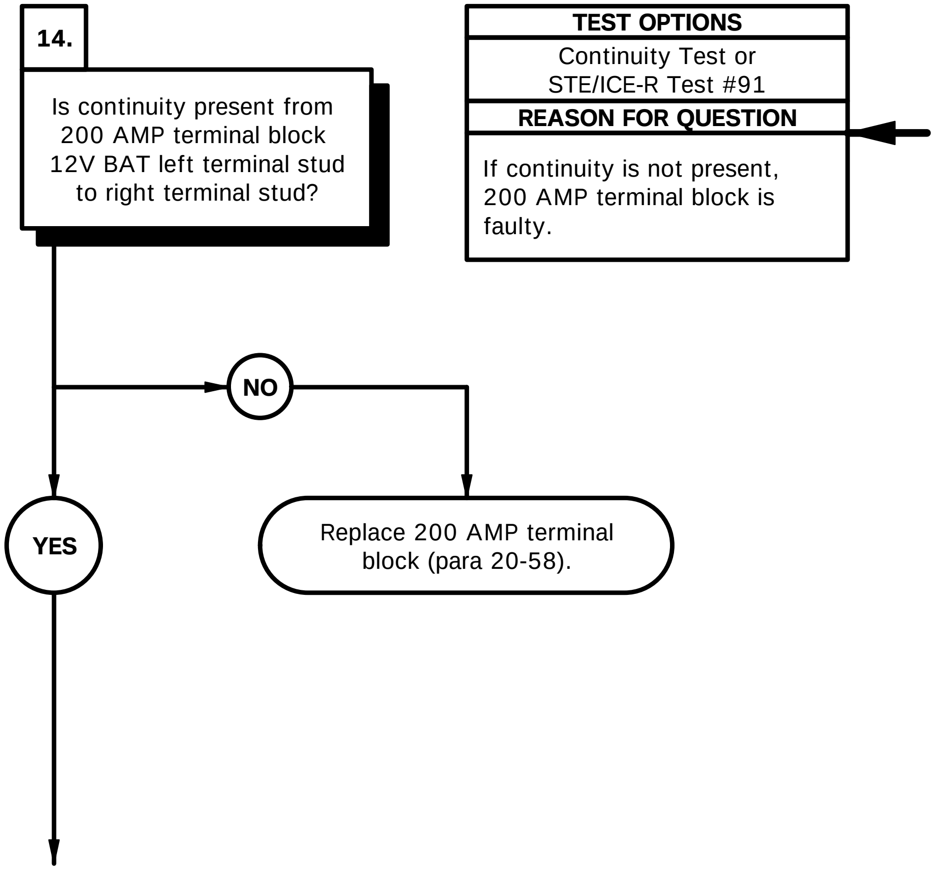
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty 200 AMP terminal block to PDP 12 VDC cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



14.

Is continuity present from 200 AMP terminal block 12V BAT left terminal stud to right terminal stud?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block is faulty.

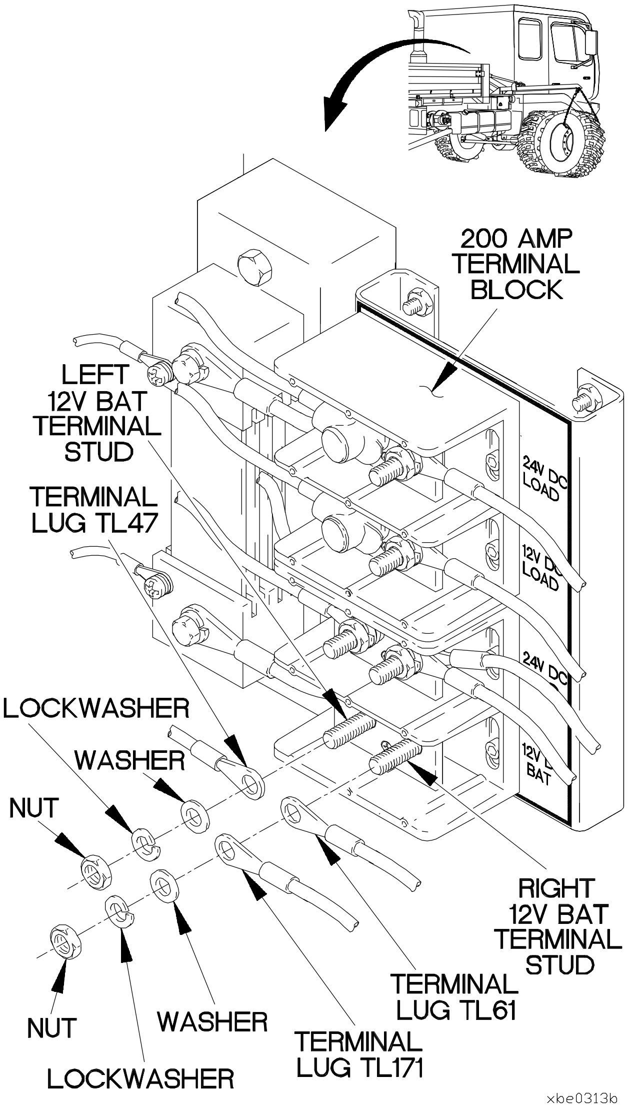
NO

Replace 200 AMP terminal block (para 20-58).

YES

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove nut, lockwasher, washer, and terminal lug TL47 from left 12V BAT terminal stud on 200 AMP terminal block. Discard lockwasher.
(3) Remove nut, lockwasher, washer, and terminal lugs TL171 and TL61 from right 12V BAT terminal stud on 200 AMP terminal block. Discard lockwasher.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to left 12V BAT terminal stud on 200 AMP terminal block.
(6) Connect negative (-) probe of multimeter to right 12V BAT terminal stud on 200 AMP terminal block and note reading on multimeter.
(7) If continuity is not present, replace 200 AMP terminal block (para 20-58).
(8) Position terminal lug TL47 on left 12V BAT terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(9) Tighten nut to 15-19 lb-ft (21-25 N.m).



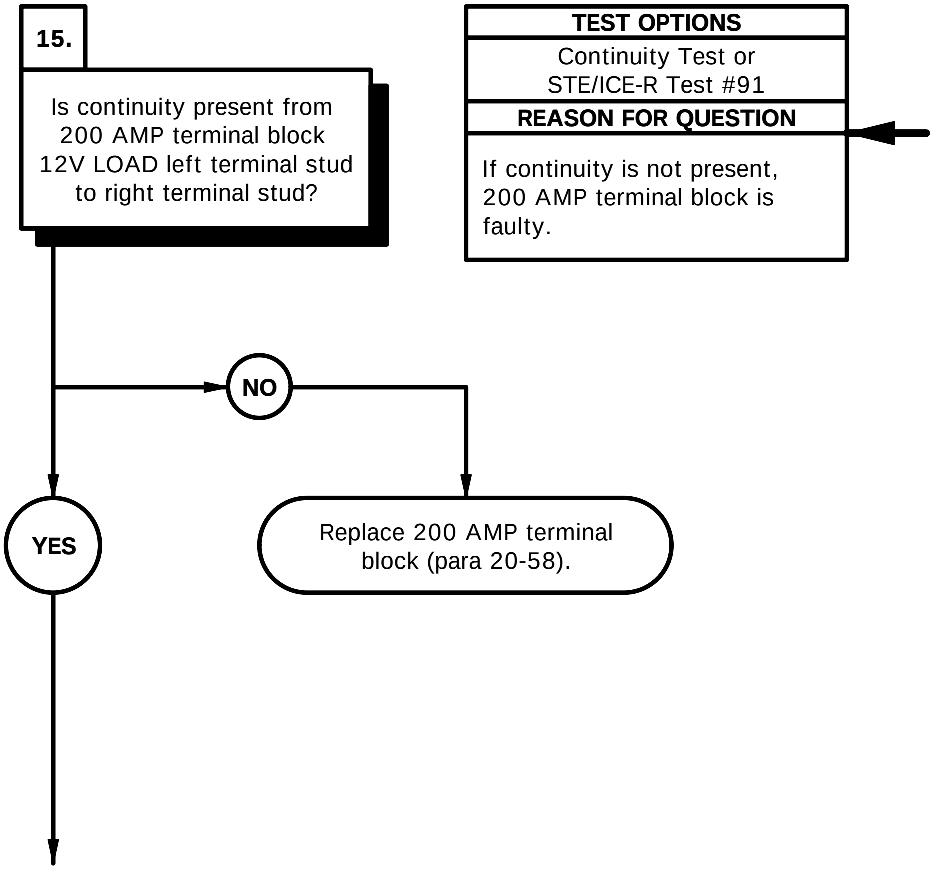
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty 200 AMP terminal block to PDP 12 VDC cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



15. Is continuity present from 200 AMP terminal block 12V LOAD left terminal stud to right terminal stud?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

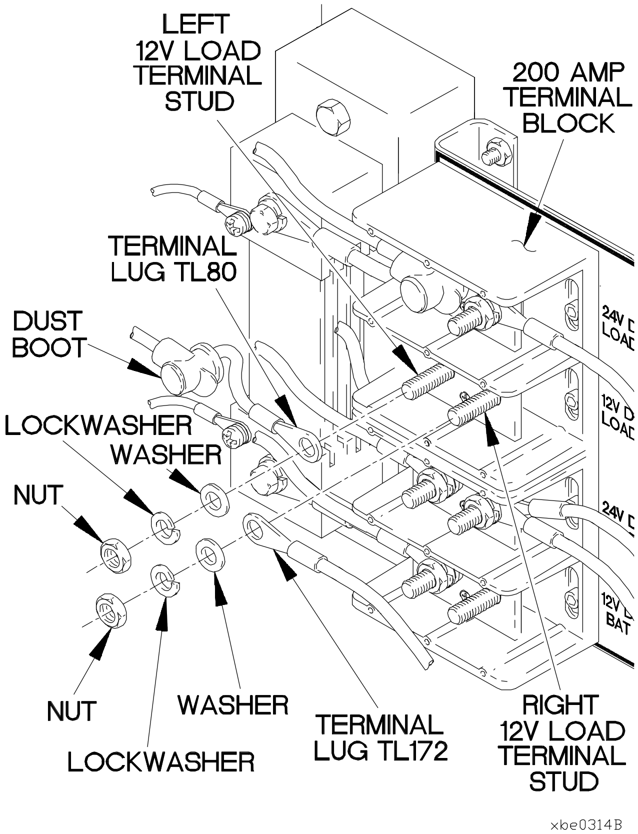
REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block is faulty.

Replace 200 AMP terminal block (para 20-58).

CONTINUITY TEST

(1) Lift dust boot on left 12V LOAD terminal stud on 200 AMP terminal block.
(2) Remove nut, lockwasher, washer, and terminal lug TL80 from left 12V LOAD terminal stud on 200 AMP terminal block. Discard lockwasher.
(3) Remove nut, lockwasher, washer, and terminal lug TL172 from right 12V LOAD terminal stud on 200 AMP terminal block. Discard lockwasher.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to left 12V LOAD terminal stud on 200 AMP terminal block.
(6) Connect negative (-) probe of multimeter to right 12V LOAD terminal stud on 200 AMP terminal block and note reading on multimeter.
(7) If continuity is not present, replace 200 AMP terminal block (para 20-58).



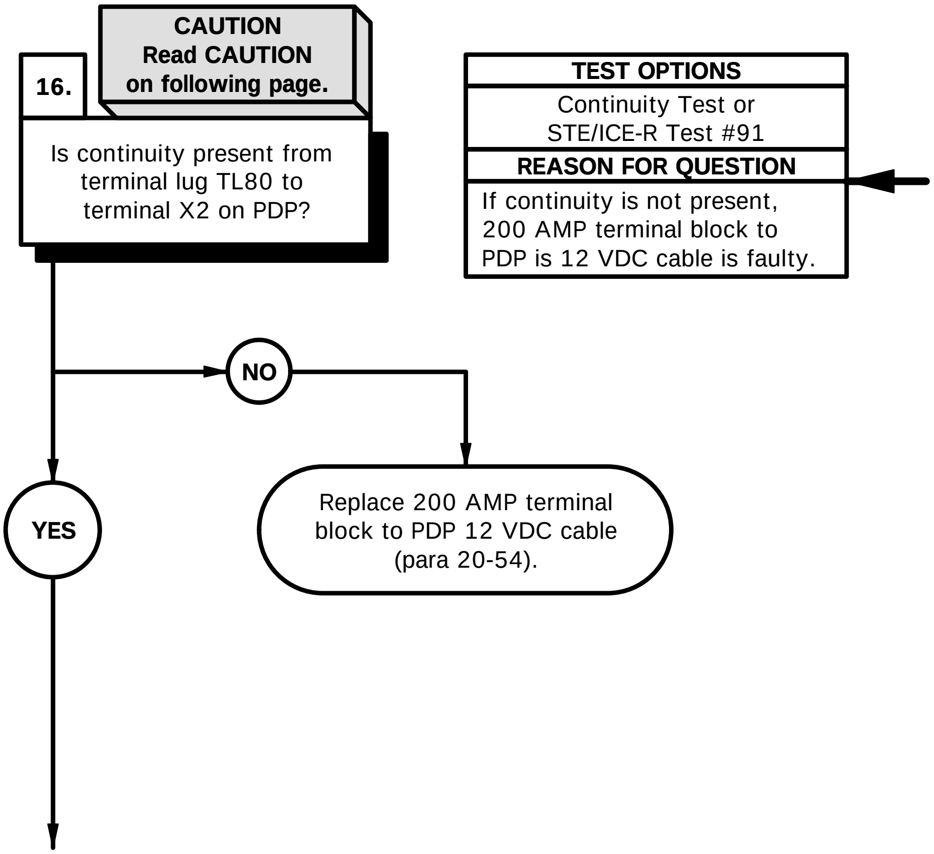
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.
200 AMP terminal block OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block to PDP 12 VDC cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



CAUTION
Read CAUTION on following page.

16. Is continuity present from terminal lug TL80 to terminal X2 on PDP?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block to PDP is 12 VDC cable is faulty.

NO — Replace 200 AMP terminal block to PDP 12 VDC cable (para 20-54).

YES

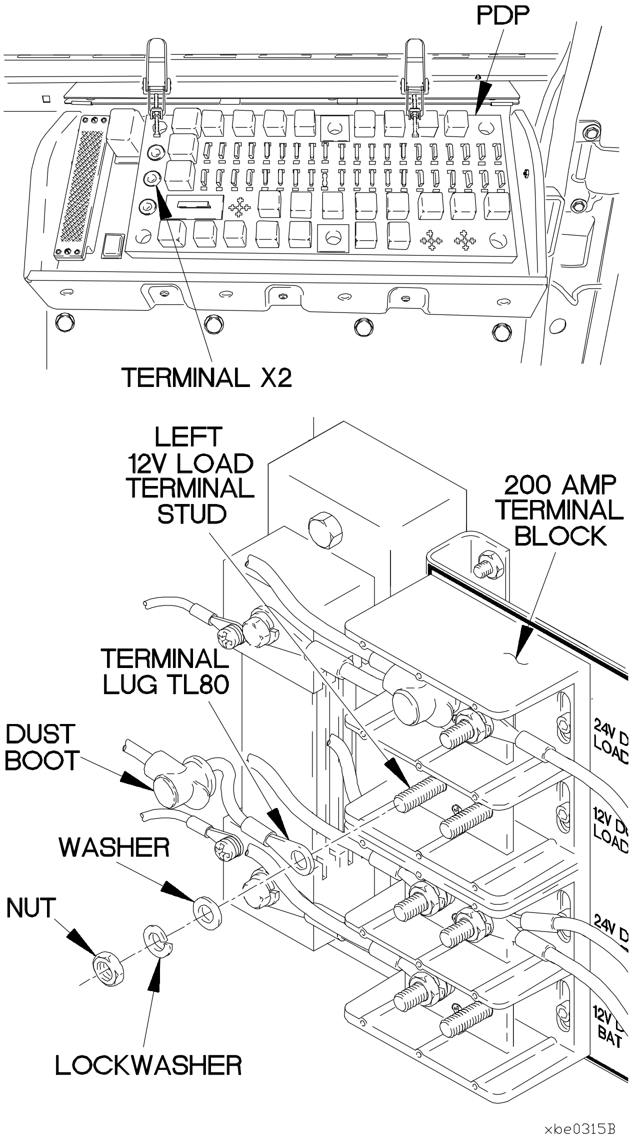
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL80.

CAUTION

When testing to terminal X2 on PDP, ensure that multimeter probes come in contact with the outside metal ring. Failure to comply may result in false troubleshooting test results.

(3) Connect negative (-) probe of multimeter to terminal block X2 on PDP and note reading on multimeter.
(4) If continuity is not present, replace 200 AMP terminal block to PDP 12 VDC cable (para 20-54).
(5) Position terminal lug TL80 on left 12V LOAD terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(6) Tighten nut to 15-19 lb-ft (21-25 N.m).
(7) Position dust boot on left 12V LOAD terminal stud on 200 AMP terminal block.



e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.
200 AMP terminal block OK.
200 AMP terminal block to PDP 12 VDC cable OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC load cable.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.

17.

Is continuity present from terminal lug TL172 to terminal lug TL174?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block to reverse polarity relay 12 VDC load cable is faulty.

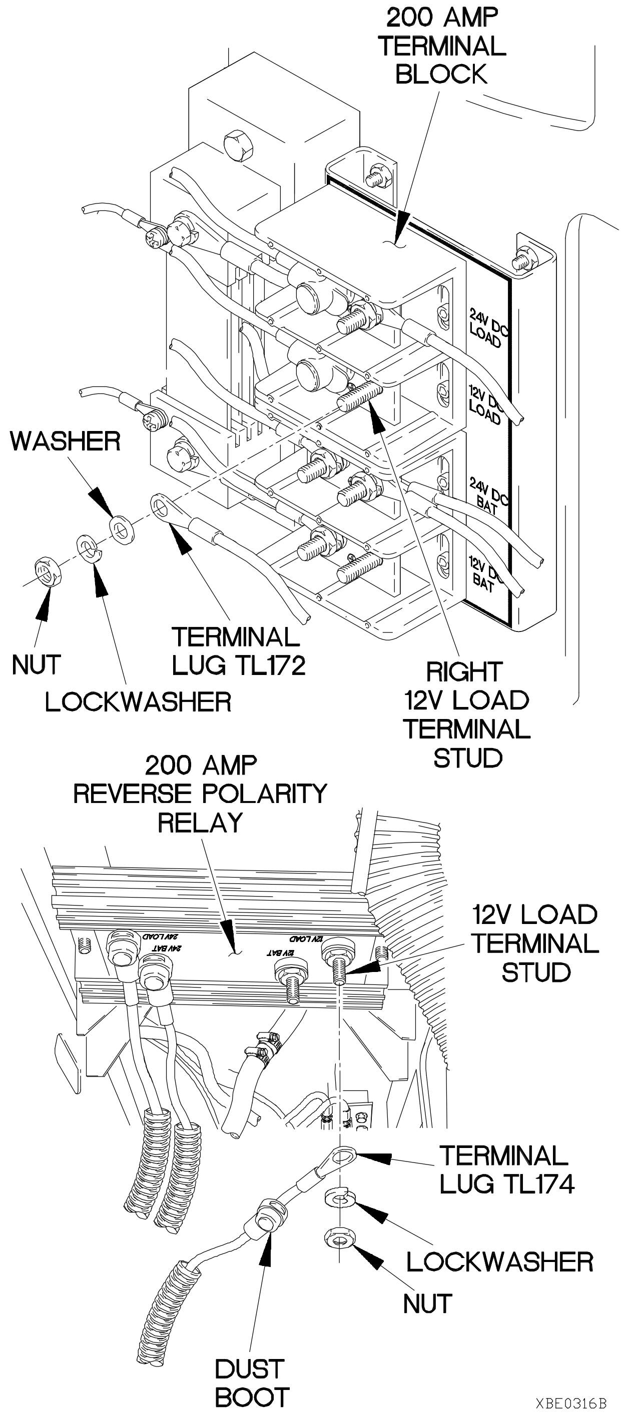
NO

Replace 200 AMP terminal block to reverse polarity relay 12 VDC load cable (para 20-49).

YES

CONTINUITY TEST

(1) Lift dust boot on 12V LOAD terminal stud on 200 AMP reverse polarity relay.
(2) Remove nut, lockwasher, and terminal lug TL174 from 12V LOAD terminal stud on 200 AMP reverse polarity relay. Discard lockwasher.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL172.
(5) Connect negative (-) probe of multimeter to terminal lug TL174 and note reading on multimeter.
(6) If continuity is not present, replace 200 AMP terminal block to reverse polarity relay 12 VDC load cable (para 20-49).
(7) Position terminal lug TL172 on right 12V LOAD terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(8) Tighten nut to 15-19 lb-ft (21-25 N.m).
(9) Position terminal lug TL174 on 12V LOAD terminal stud on 200 AMP reverse polarity relay with lockwasher and nut.
(10) Tighten nut to 108-132 lb-in. (12-15 N.m).
(11) Position dust boot on 12V LOAD terminal stud on 200 AMP reverse polarity relay.



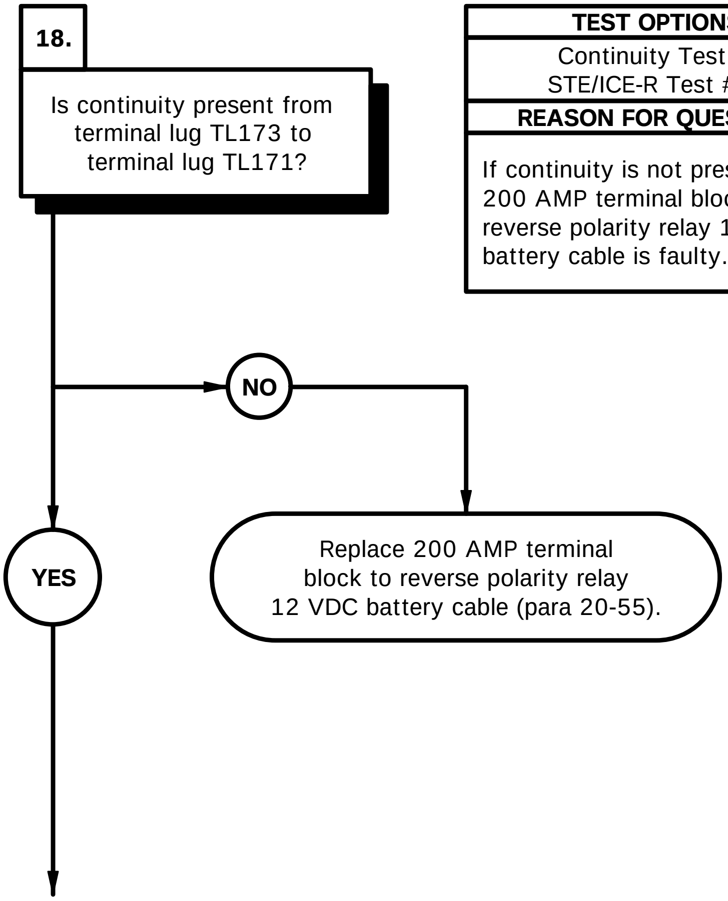
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.
200 AMP terminal block OK.
200 AMP terminal block to PDP 12 VDC cable OK.
200 AMP terminal block to reverse polarity relay 12 VDC load cable OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block to reverse polarity relay 12 VDC battery cable.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



18.

Is continuity present from terminal lug TL173 to terminal lug TL171?

Replace 200 AMP terminal block to reverse polarity relay 12 VDC battery cable (para 20-55).

TEST OPTIONS

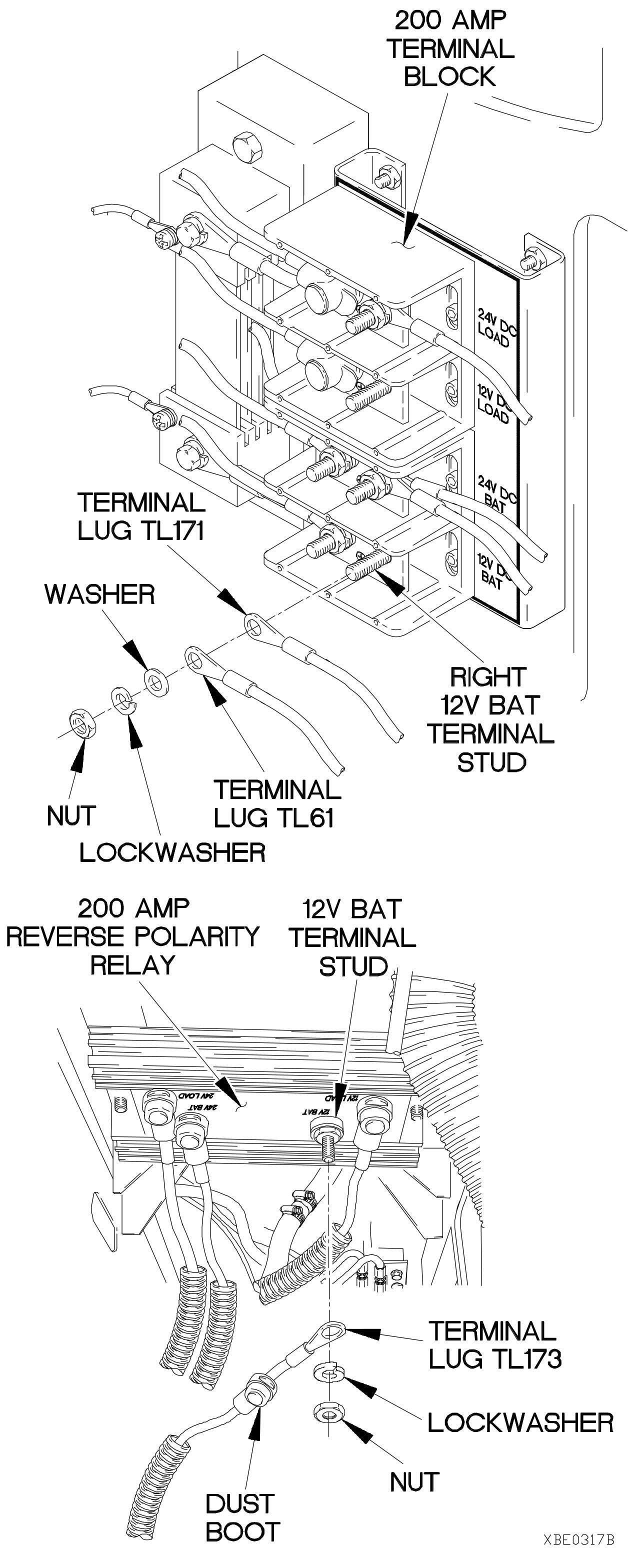
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block to reverse polarity relay 12 VDC battery cable is faulty.

CONTINUITY TEST

(1) Lift dust boot on 12V BAT terminal stud on 200 AMP reverse polarity relay.
(2) Remove nut, lockwasher, and terminal lug TL173 from 12V BAT terminal stud on 200 AMP reverse polarity relay. Discard lockwasher.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL173.
(5) Connect negative (-) probe of multimeter to terminal lug TL171 and note reading on multimeter.
(6) If continuity is not present, replace 200 AMP terminal block to reverse polarity relay 12 VDC battery cable (para 20-55).
(7) Position terminal lugs TL171 and TL61 on right 12V BAT terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(8) Tighten nuts to 15-19 lb-ft (21-25 N.m).
(9) Position terminal lug TL173 on 12V BAT terminal stud on 200 AMP reverse polarity relay with lockwasher and nut.
(10) Tighten nut to 108-132 lb-in. (12-15 N.m).
(11) Position dust boot on 12V BAT terminal stud on 200 AMP reverse polarity relay.



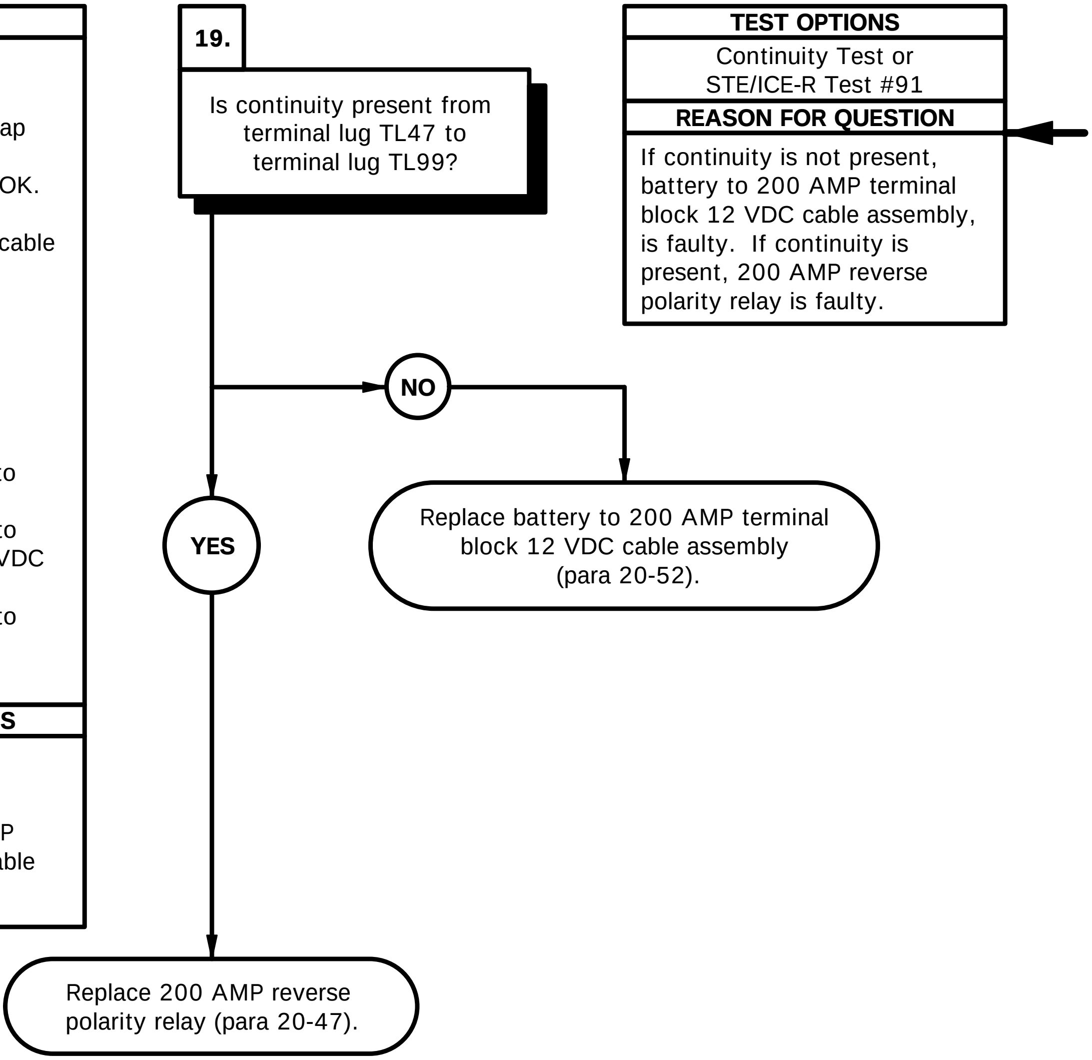
e3. 12 VDC AND 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Battery(ies) OK.
Cab to chassis ground strap OK.
PDP to cab ground cable OK.
Shunt OK.
Starter to shunt 24 VDC cable OK.
Battery to shunt cable assembly OK.
Starter to chassis ground cable OK.
200 AMP terminal block OK.
200 AMP terminal block to PDP 12 VDC cable OK.
200 AMP terminal block to reverse polarity relay 12 VDC load cable OK.
200 AMP terminal block to reverse polarity relay 12 VDC battery cable OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty battery to 200 AMP terminal block 12 VDC cable assembly.



19.

Is continuity present from terminal lug TL47 to terminal lug TL99?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, battery to 200 AMP terminal block 12 VDC cable assembly, is faulty. If continuity is present, 200 AMP reverse polarity relay is faulty.

NO

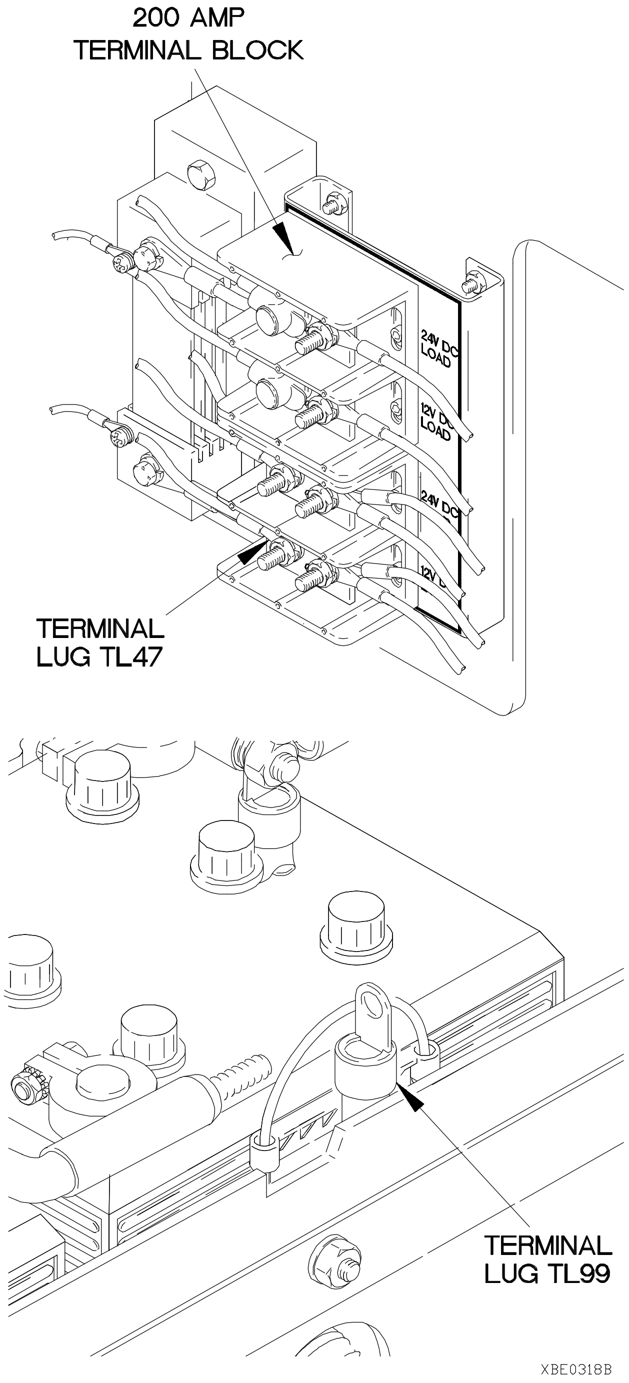
Replace battery to 200 AMP terminal block 12 VDC cable assembly (para 20-52).

YES

Replace 200 AMP reverse polarity relay (para 20-47).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL47.
(3) Connect negative (-) probe of multimeter to terminal lug TL99 and note reading on multimeter.
(4) If continuity is not present, replace battery to 200 AMP terminal block 12 VDC cable assembly (para 20-52).
(5) If continuity is present, replace 200 AMP reverse polarity relay (para 20-47).
(6) Install PDP cover (para 16-2).
(7) Connect batteries (para 7-57).
(8) Raise spare tire (TM 9-2320-366-10-2).



e4. 24 VDC CIRCUITS DO NOT OPERATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Tester, Antifreeze and Battery (Item 42, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Gloves, Rubber (Item 13, Appendix C)
Apron, Rubber (Item 3, Appendix C)
Socket Set, Socket Wrench (Item 34, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)
Wrench, Torque, 0-175 lb-ft (Item 58, Appendix C)
Wire, Relay Test (Item 9, Appendix E)

Materials/Parts
Ties, Cable, Plastic (Item 69, Appendix D)
Dispenser, Pressure Sensitive Tape (Item 20, Appendix D)
Wire, Elect, 50 ft (Item 77, Appendix D)
Lockwasher (2) (Item 95, Appendix G) (100 AMP)
Lockwasher (2) (Item 73, Appendix G) (200 AMP)
Lockwasher (4) (Item 96, Appendix G) (200 AMP)

Personnel Required
(2)

References
TM 9-6140-200-14
TM 9-4910-571-12&P

NOTE

Perform electrical troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB70 prior to beginning this task.

Remove and install plastic cable ties as required.

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.

POSSIBLE PROBLEMS

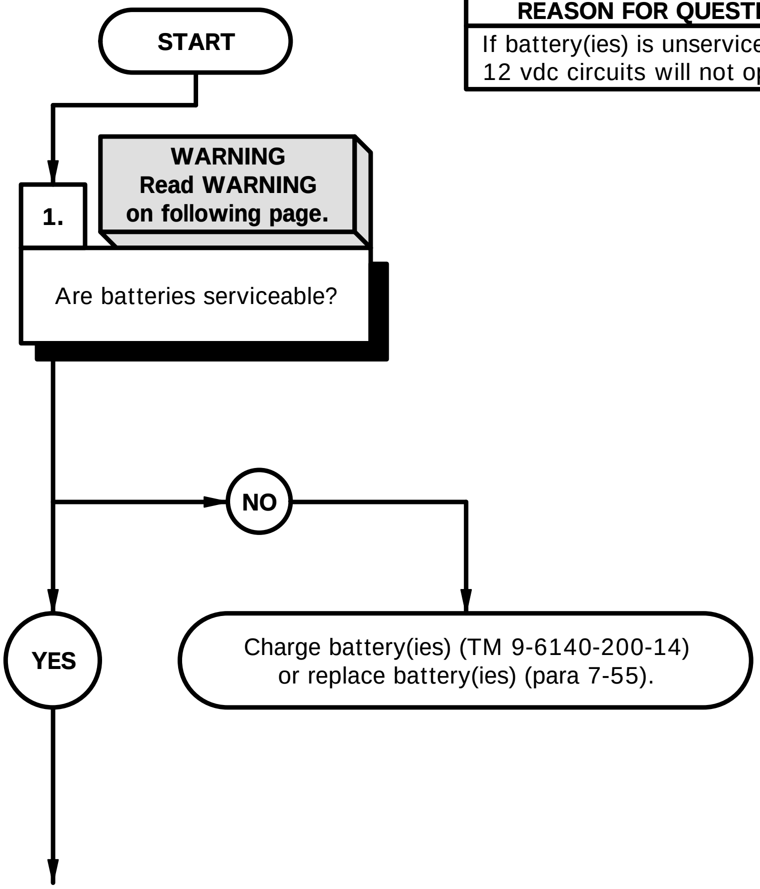
Faulty relay K2.
Faulty master power switch.
Faulty dashboard cable assembly.
Faulty 100 AMP reverse polarity relay.
Faulty 100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable.
Faulty battery to 100 AMP reverse polarity relay 24 VDC cable.
Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty battery to 200 AMP terminal block 24 VDC cable asssembly.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC battery cable.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.

TEST OPTIONS

Battery Specific Gravity Test

REASON FOR QUESTION

If battery(ies) is unserviceable, 12 vdc circuits will not operate.



1. Are batteries serviceable?

NO: Charge battery(ies) (TM 9-6140-200-14) or replace battery(ies) (para 7-55).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection and rubber gloves when working with batteries.

BATTERY SPECIFIC GRAVITY TEST

(1) Remove four batteries from battery box (para 7-55).
(2) Test batteries for serviceability (TM 9-6140-200-14).
(3) Charge battery(ies) if discharged but serviceable (TM 9-6140-200-14).
(4) Replace battery(ies) if unserviceable (para 7-55).
(5) Install four batteries in battery box (para 7-55).

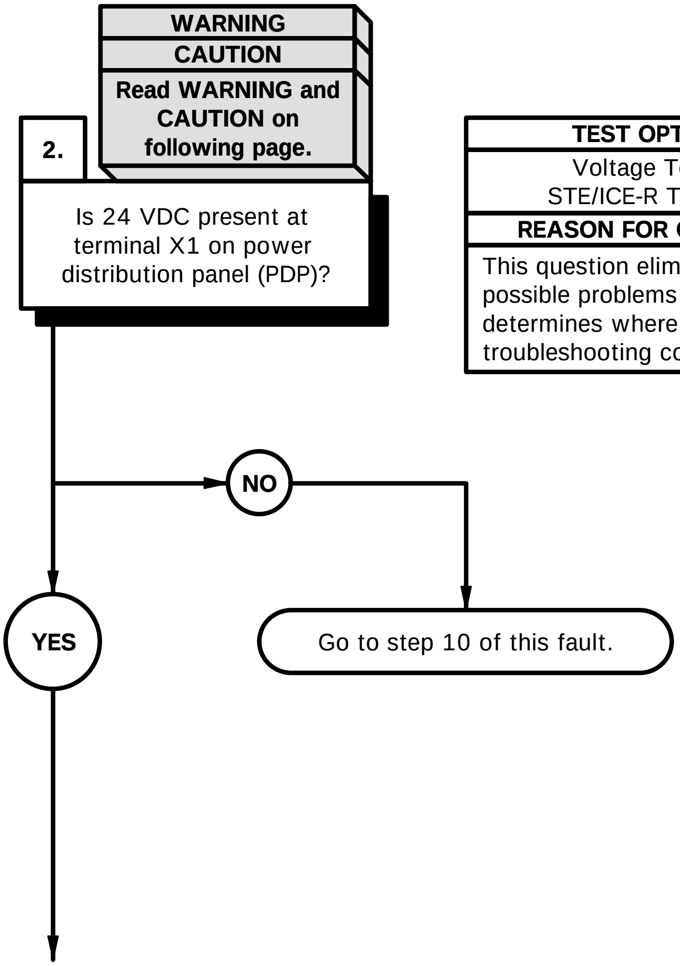
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.

POSSIBLE PROBLEMS

Faulty relay K2.
Faulty master power switch.
Faulty dashboard cable assembly.
Faulty 100 AMP reverse polarity relay.
Faulty 100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable.
Faulty battery to 100 AMP reverse polarity relay 24 VDC cable.
Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty battery to 200 AMP terminal block 24 VDC cable assembly.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC battery cable.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.



TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

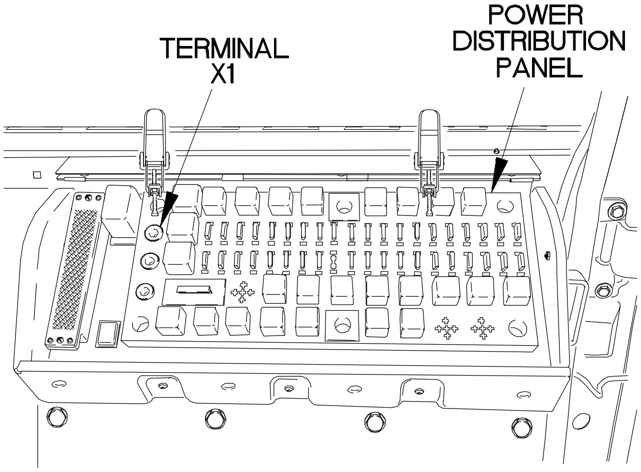
VOLTAGE TEST

(1) Remove power distribution panel (PDP) cover (para 16-2).
(2) Set multimeter to volts DC.

CAUTION

When testing to terminal X1 on PDP, ensure that multimeter probes come in contact with the outside metal ring. Failure to comply may result in false troubleshooting test results.

(3) Connect positive (+) probe of multimeter to terminal X1 on power distribution panel (PDP).
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If 24 VDC is not present, go to step 10 of this fault.



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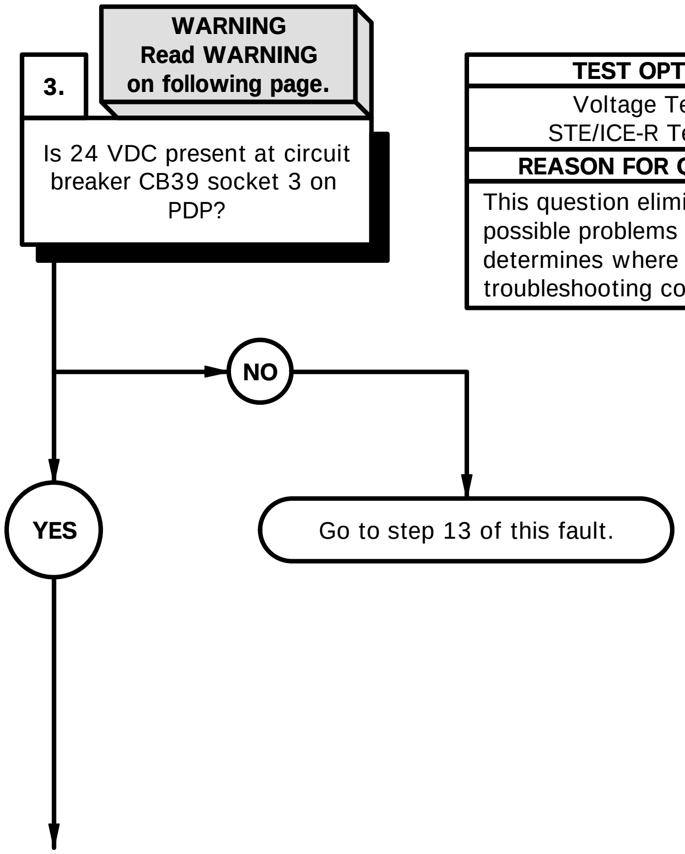
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.

POSSIBLE PROBLEMS

Faulty relay K2.
Faulty master power switch.
Faulty dashboard cable assembly.



WARNING
Read WARNING
on following page.

3.

Is 24 VDC present at circuit breaker CB39 socket 3 on PDP?

Go to step 13 of this fault.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

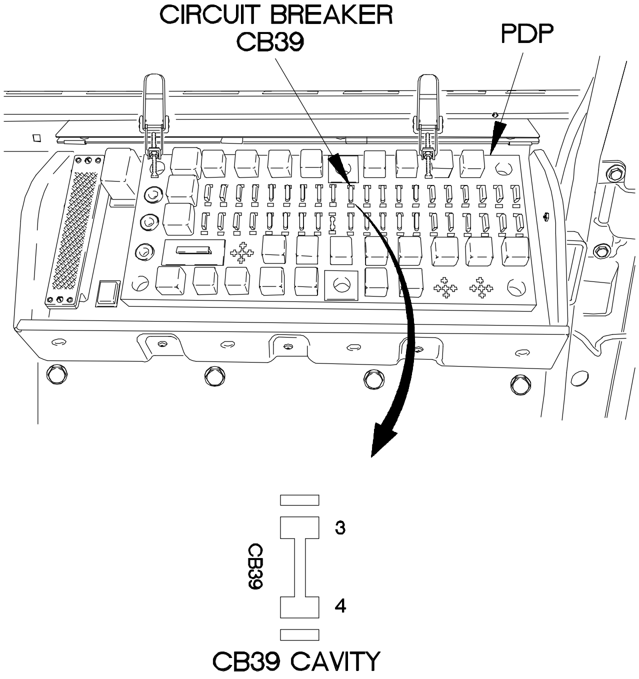
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Remove circuit breaker CB39 from PDP. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to circuit breaker CB39 socket 3 on PDP. (4) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (5) If 24 VDC is not present, go to step 13 of this fault. (6) Install circuit breaker CB39 in PDP.



XBE0402B

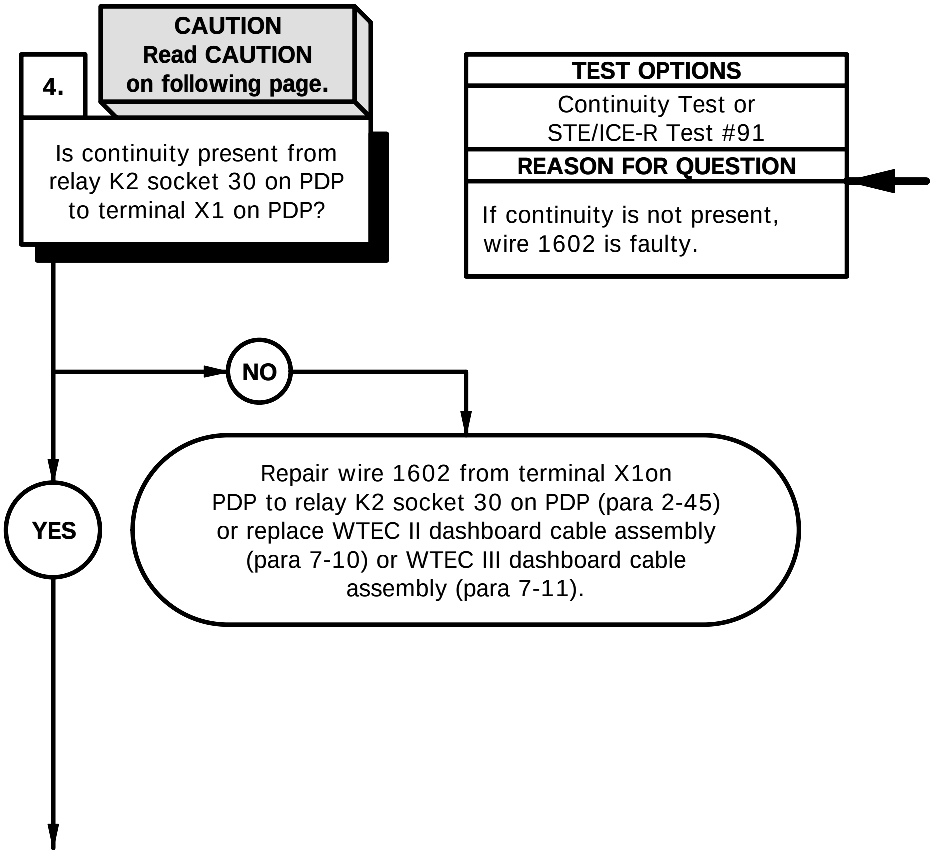
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.

POSSIBLE PROBLEMS

Faulty relay K2.
Faulty master power switch.
Faulty dashboard cable assembly.



CAUTION
Read CAUTION on following page.

4.

Is continuity present from relay K2 socket 30 on PDP to terminal X1 on PDP?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1602 is faulty.

NO

Repair wire 1602 from terminal X1on PDP to relay K2 socket 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

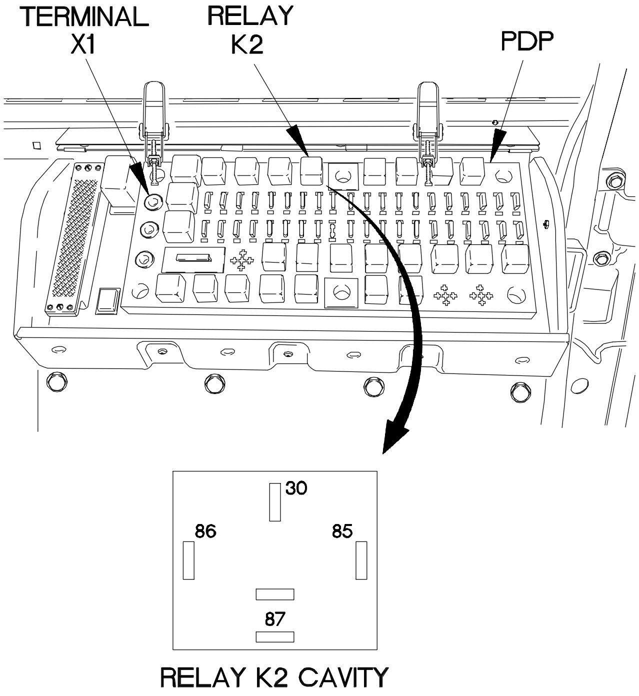
CONTINUITY TEST

(1) Disconnect batteries (para 7-57)
(2) Remove relay K2 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to relay K2 socket 30 on PDP.

CAUTION

When testing to terminal X1 on PDP, ensure that multimeter probes come in contact with the outside metal ring. Failure to comply may result in false troubleshooting test results.

(5) Connect negative (-) probe of multimeter to terminal X1 on PDP and note reading on multimeter.
(6) If continuity is not present, repair wire 1602 from terminal X1 on PDP to relay K2 socket 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



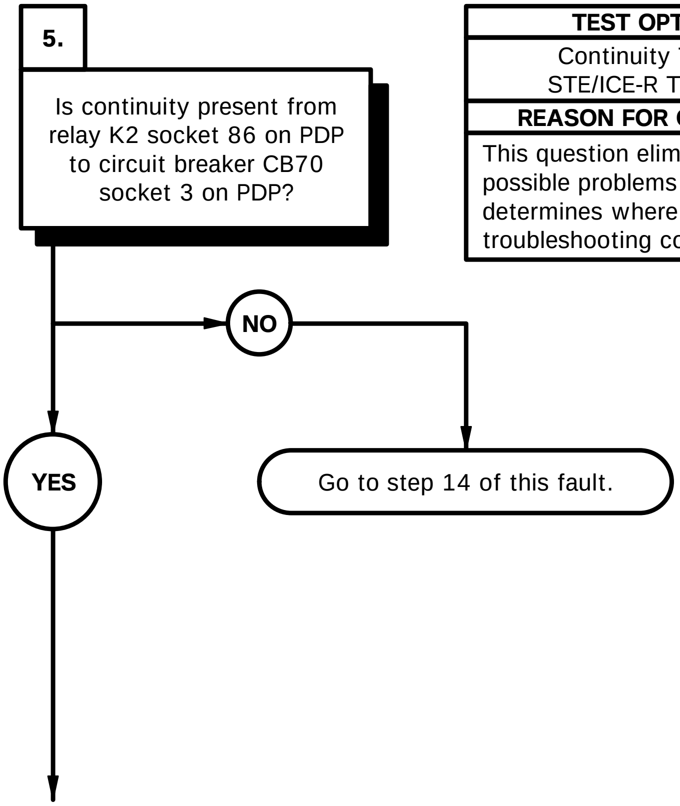
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.

POSSIBLE PROBLEMS

Faulty relay K2.
Faulty master power switch.
Faulty dashboard cable assembly.



5.

Is continuity present from relay K2 socket 86 on PDP to circuit breaker CB70 socket 3 on PDP?

Go to step 14 of this fault.

TEST OPTIONS

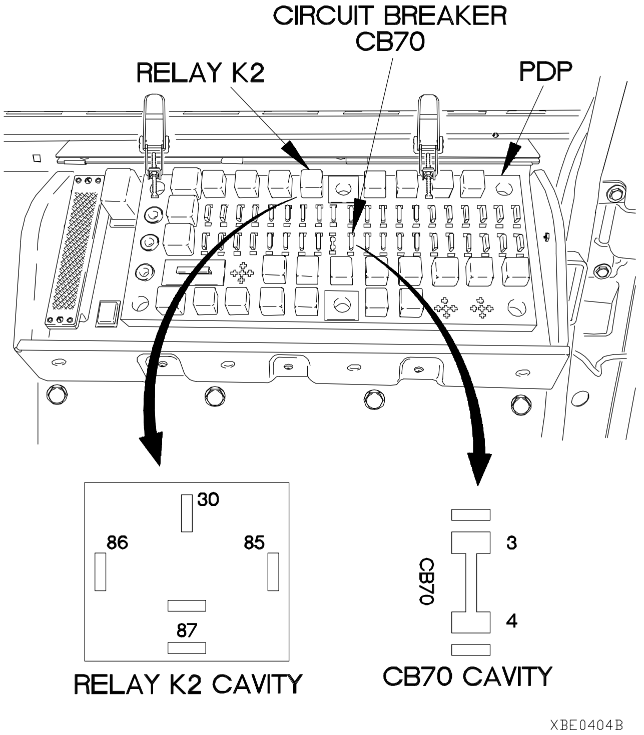
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

CONTINUITY TEST

(1) Remove circuit breaker CB70 from PDP.
(2) Position master power switch to on (TM 9-2320-366-10-1).
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to relay K2 socket 86 on PDP.
(5) Connect negative (-) probe of multimeter to circuit breaker CB70 socket 4 on PDP and note reading on multimeter.
(6) If continuity is not present, go to step 14 of this fault.
(7) Position master power switch to off (TM 9-2320-366-10-1).
(8) Install circuit breaker CB70 in PDP.



e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.
Master power switch OK.

POSSIBLE PROBLEMS

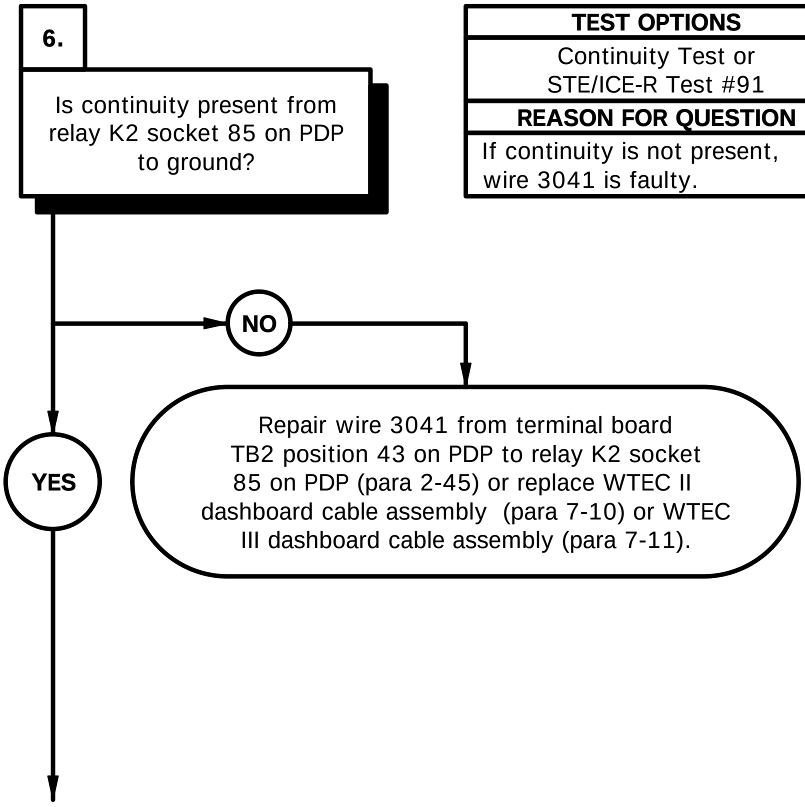
Faulty relay K2.
Faulty dashboard cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3041 is faulty.



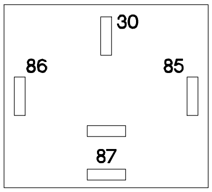
6.

Is continuity present from relay K2 socket 85 on PDP to ground?

Repair wire 3041 from terminal board TB2 position 43 on PDP to relay K2 socket 85 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K2 socket 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3041 from terminal board TB2 position 43 on PDP to relay K2 socket 85 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



RELAY K2 CAVITY

XBE0405B

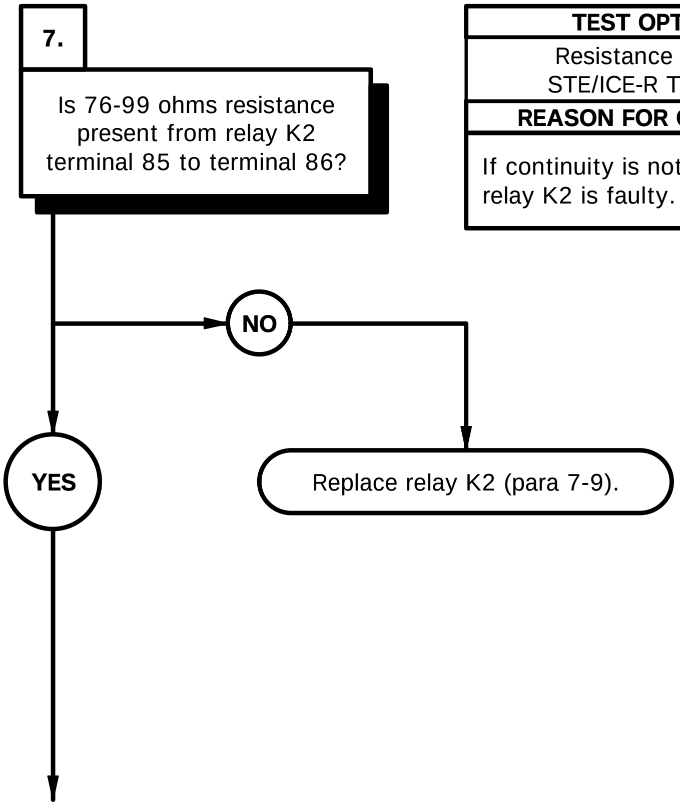
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.
Master power switch OK.

POSSIBLE PROBLEMS

Faulty relay K2.
Faulty dashboard cable assembly.



7.

Is 76-99 ohms resistance present from relay K2 terminal 85 to terminal 86?

Replace relay K2 (para 7-9).

TEST OPTIONS

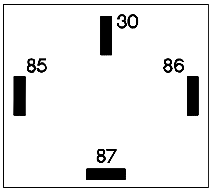
Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, relay K2 is faulty.

RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K2 terminal 85.
(3) Connect negative (-) probe of multimeter to relay K2 terminal 86 and note reading on multimeter.
(4) If 76-99 ohms resistance is not present, replace relay K2 (para 7-9).



RELAY K2

XBE0406B

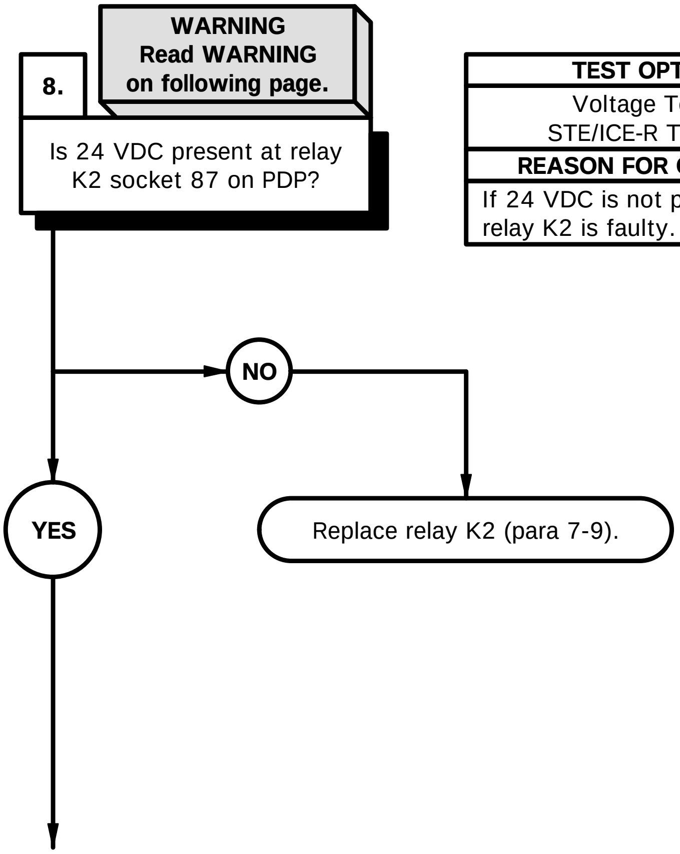
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.
Master power switch OK.

POSSIBLE PROBLEMS

Faulty relay K2.
Faulty dashboard cable assembly.



WARNING
Read WARNING on following page.

8.

Is 24 VDC present at relay K2 socket 87 on PDP?

Replace relay K2 (para 7-9).

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

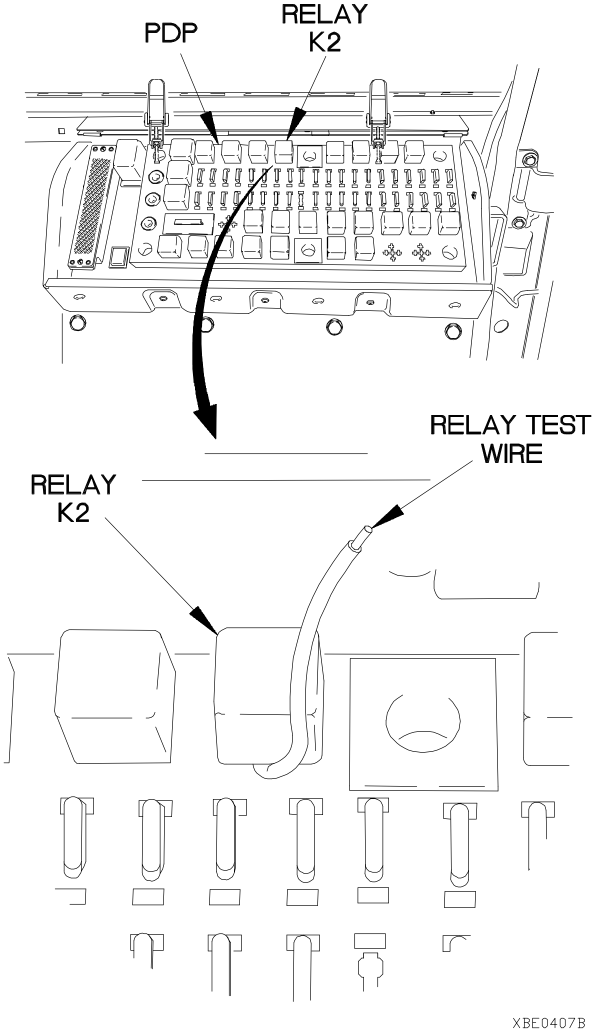
If 24 VDC is not present, relay K2 is faulty.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay test wire in relay K2 socket 87 on PDP.
(2) Install relay K2 in PDP.
(3) Connect batteries (para 7-57).
(4) Position master power switch to on (TM 9-2320-366-10-1).
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to relay test wire.
(7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(8) If 24 VDC is not present, replace relay K2 (para 7-9).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Disconnect batteries (para 7-57).
(11) Remove relay K2 from PDP.
(12) Remove relay test wire from PDP relay K2 socket 87.



e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.
Master power switch OK.
Relay K2 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

9.

Is continuity present from relay K2 socket 87 on PDP to circuit breaker CB36 socket 6 on PDP?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1604 is faulty. If continuity is present, bus bar X6 is faulty.

NO

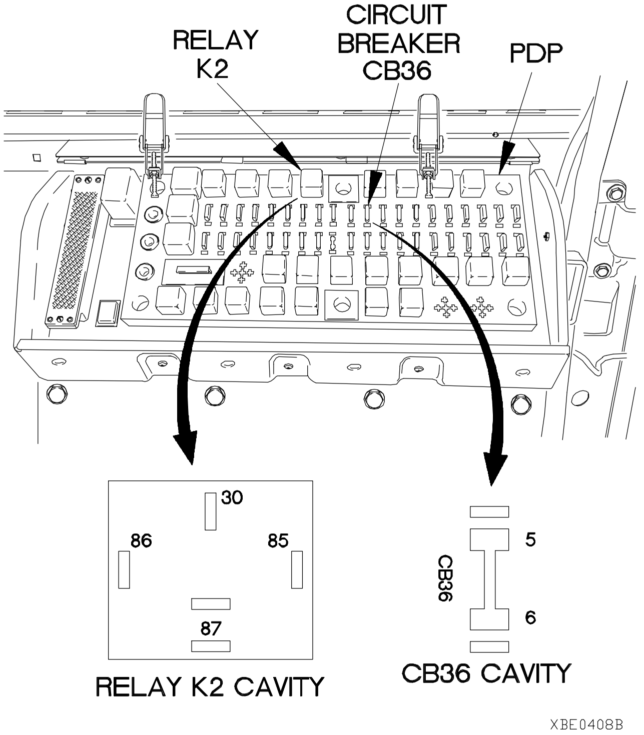
Repair wire 1604 from relay K2 socket 87 on PDP to bus bar X6 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace bus bar X6 on PDP or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove circuit breaker CB36 from PDP.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to relay K2 socket 87 on PDP.
(4) Connect negative (-) probe of multimeter to circuit breaker CB36 socket 6 on PDP and note reading on multimeter.
(5) If continuity is not present, repair wire 1604 from relay K2 socket 87 on PDP to bus bar X6 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace bus bar X6 on PDP or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Install circuit breaker CB36 in PDP.
(8) Install relay K2 in PDP.
(9) Install power distribution panel (PDP) cover (para 16-2).
(10) Connect batteries (para 7-57).



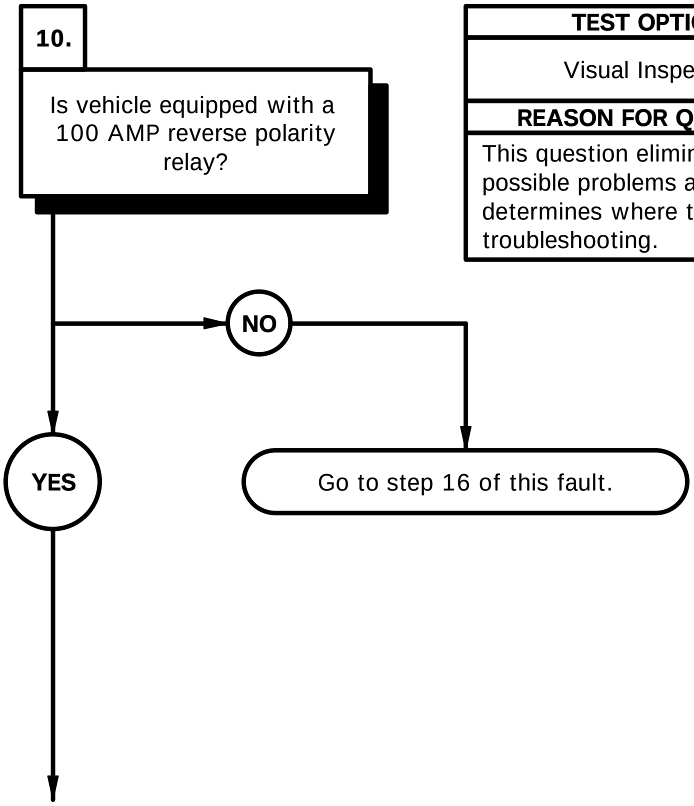
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.

POSSIBLE PROBLEMS

Faulty 100 AMP reverse polarity relay.
Faulty 100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable.
Faulty battery to 100 AMP reverse polarity relay 24 VDC cable.
Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty battery to 200 AMP terminal block 24 VDC cable assembly.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC battery cable.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.



10.

Is vehicle equipped with a 100 AMP reverse polarity relay?

Go to step 16 of this fault.

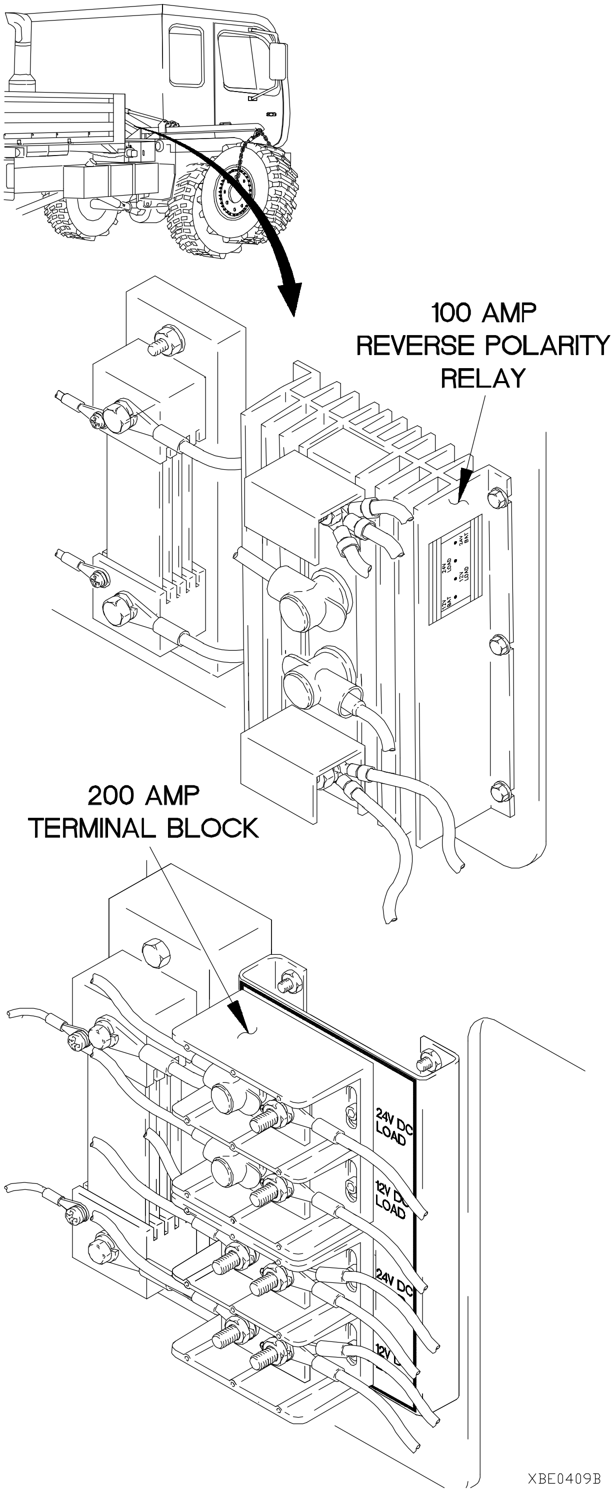
TEST OPTIONS

Visual Inspection

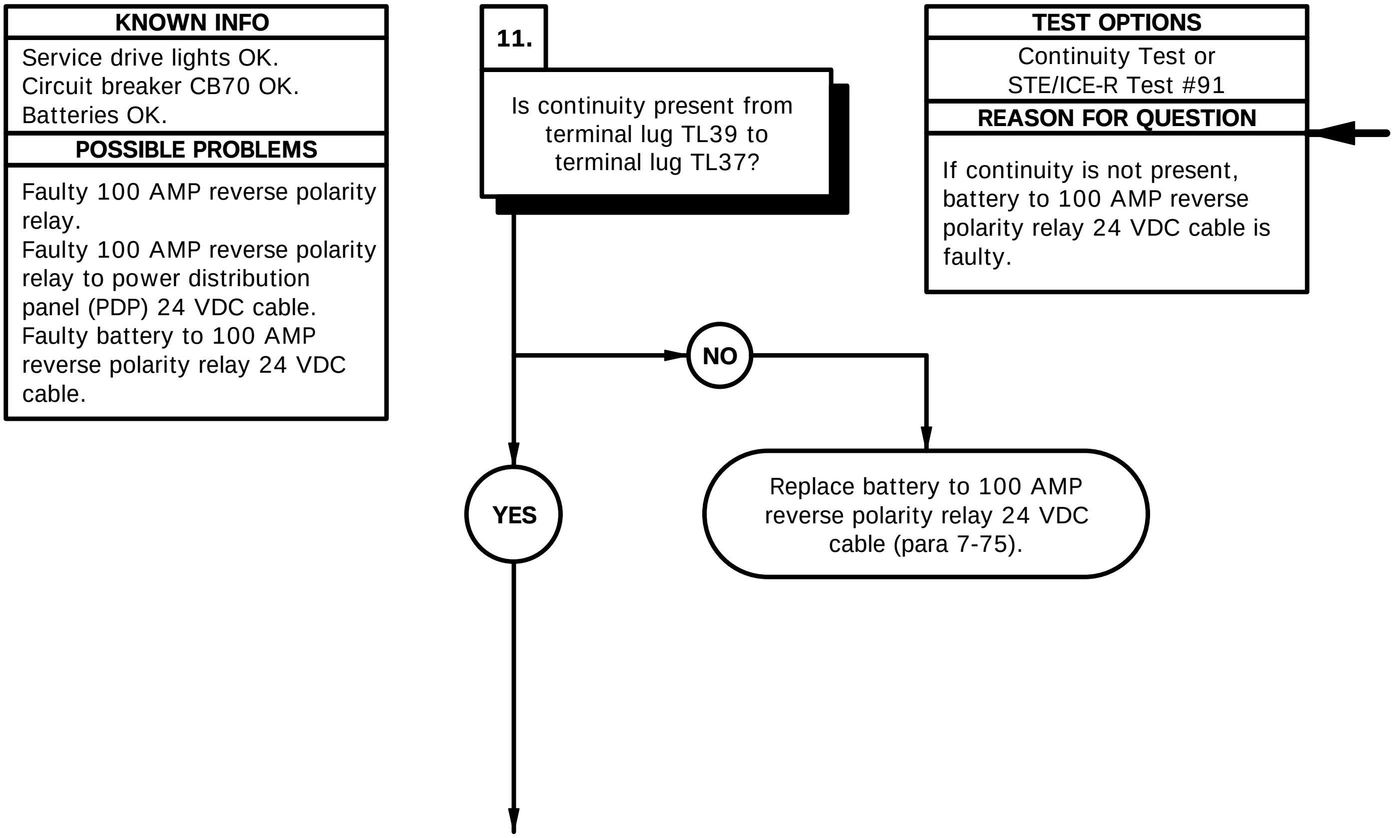
REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

(1) Lower spare tire (TM 9-2320-366-10-2).
(2) Check if vehicle is equipped with 100 AMP reverse polarity relay.
(3) If vehicle is not equipped with 100 AMP reverse polarity relay, go to step 16 of this fault.



e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)



KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.

POSSIBLE PROBLEMS

Faulty 100 AMP reverse polarity relay.
Faulty 100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable.
Faulty battery to 100 AMP reverse polarity relay 24 VDC cable.

11.

Is continuity present from terminal lug TL39 to terminal lug TL37?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, battery to 100 AMP reverse polarity relay 24 VDC cable is faulty.

NO

Replace battery to 100 AMP reverse polarity relay 24 VDC cable (para 7-75).

YES

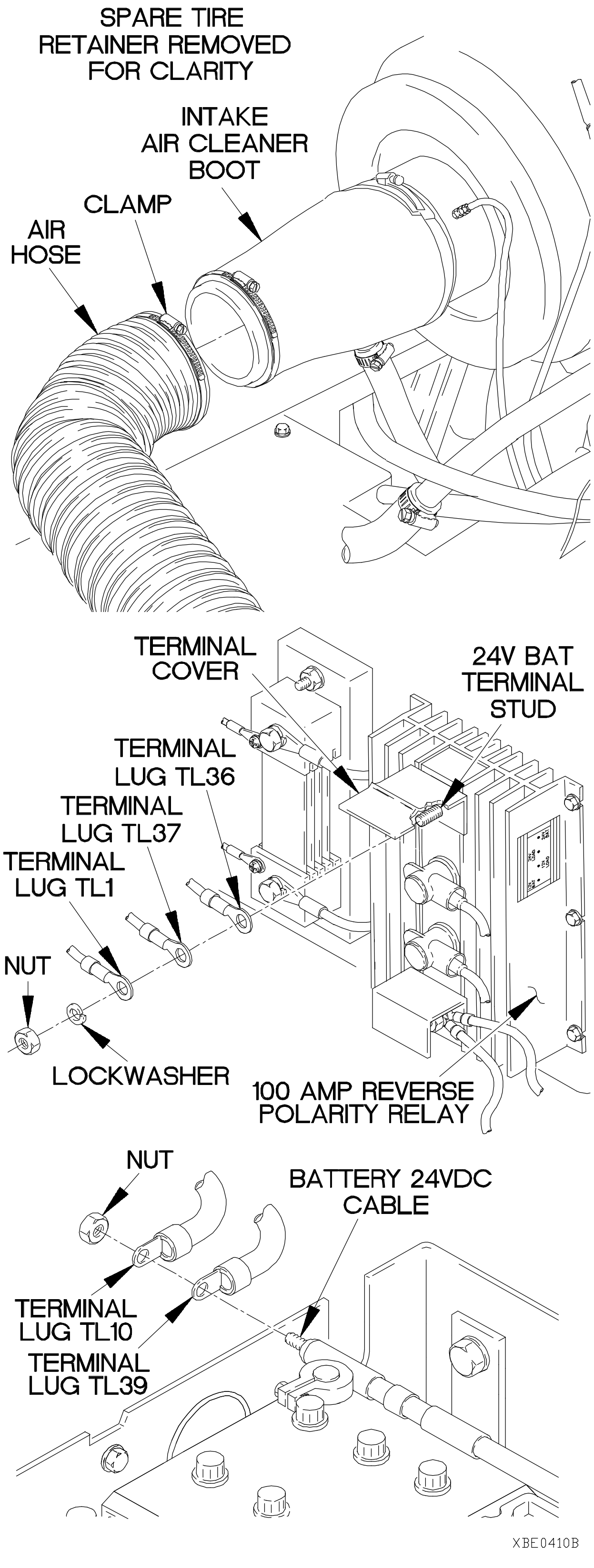
CONTINUITY TEST

(1) Disconnect batteries (para 7-57)
(2) Remove nut, terminal lug TL10, and terminal lug TL39 from battery 24 VDC cable.
(3) Loosen clamp on air hose.
(4) Remove air hose from intake air cleaner boot.

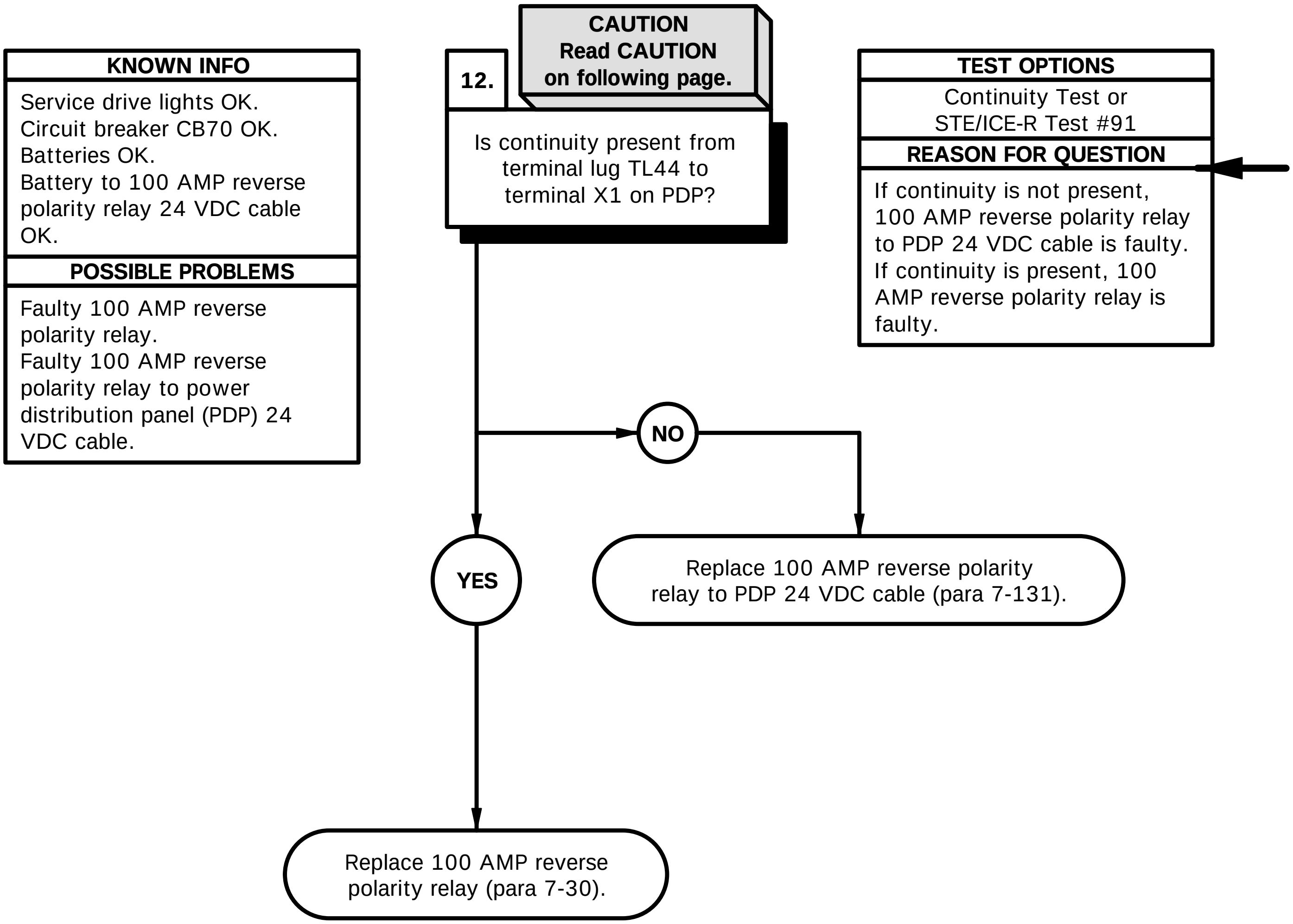
NOTE

Tag all terminal lug and connection points prior to disconnecting.

(5) Lift terminal cover on 24V BAT terminal stud on 100 AMP reverse polarity relay.
(6) Remove nut, lockwasher, and terminal lugs TL1, TL37, and TL36 from 24V BAT terminal stud on 100 AMP reverse polarity relay. Discard lockwasher.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to terminal lug TL37.
(9) Connect negative (-) probe of multimeter to terminal lug TL39 and note reading on multimeter.
(10) If continuity is not present, replace battery to 100 AMP reverse polarity relay 24 VDC cable (para 7-75).
(11) Lift terminal cover on 24V BAT terminal stud on 100 AMP reverse polarity relay.
(12) Position terminal lugs TL36, TL37, and TL1 on 24V BAT terminal stud on 100 AMP reverse polarity relay with lockwasher and nut.
(13) Tighten nut to 120-144 lb-in. (14-16 N.m).
(14) Install terminal lug TL39 and terminal lug TL10 on battery 24 VDC cable with nut.



e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)



KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.

POSSIBLE PROBLEMS

Faulty 100 AMP reverse polarity relay.
Faulty 100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable.

CAUTION
Read CAUTION on following page.

12. Is continuity present from terminal lug TL44 to terminal X1 on PDP?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 100 AMP reverse polarity relay to PDP 24 VDC cable is faulty. If continuity is present, 100 AMP reverse polarity relay is faulty.

Replace 100 AMP reverse polarity relay to PDP 24 VDC cable (para 7-131).

Replace 100 AMP reverse polarity relay (para 7-30).

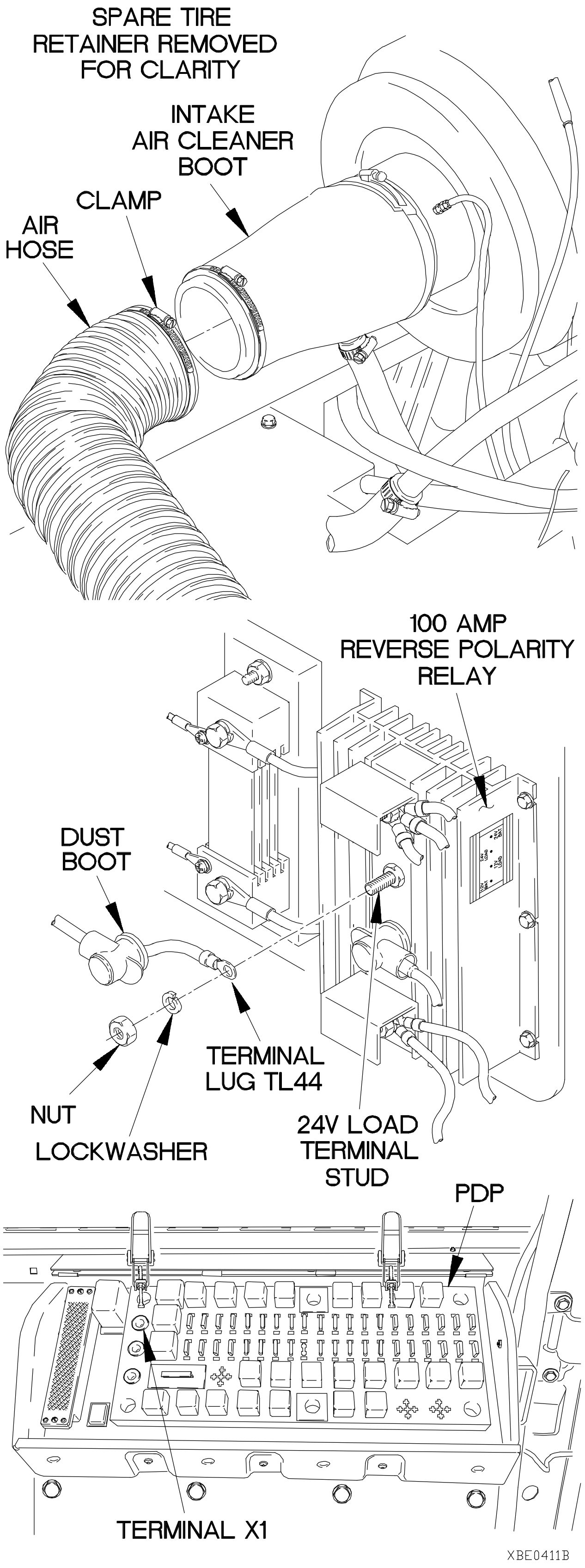
CONTINUITY TEST

(1) Lift dust boot on 24V LOAD terminal stud on 100 AMP reverse polarity relay.
(2) Remove nut, lockwasher, and terminal lug TL44 from 24V LOAD terminal stud on 100 AMP reverse polarity relay. Discard lockwasher.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL44.

CAUTION

When testing to terminal X1 on PDP, ensure that multimeter probes come in contact with the outside metal ring. Failure to comply may result in false troubleshooting test results.

(5) Connect negative (-) probe of multimeter to terminal X1 on PDP and note reading on multimeter.
(6) If continuity is not present, replace 100 AMP reverse polarity relay to PDP 24 VDC cable (para 7-131).
(7) If continuity is present, replace 100 AMP reverse polarity relay (para 7-30).
(8) Install PDP cover (para 16-2).
(9) Position terminal lug TL44 on 24V LOAD terminal stud on 100 AMP reverse polarity relay with lockwasher and nut.
(10) Tighten nut to 120-144 lb-in. (14-16 N.m).
(11) Position dust boot on 24V LOAD terminal stud on 100 AMP reverse polarity relay.
(12) Position air hose on intake air cleaner boot with clamp.
(13) Tighten clamp to 36-48 lb-in. (4-5 N.m).
(14) Connect batteries (para 7-57)
(15) Raise spare tire (TM 9-2320-365-10).



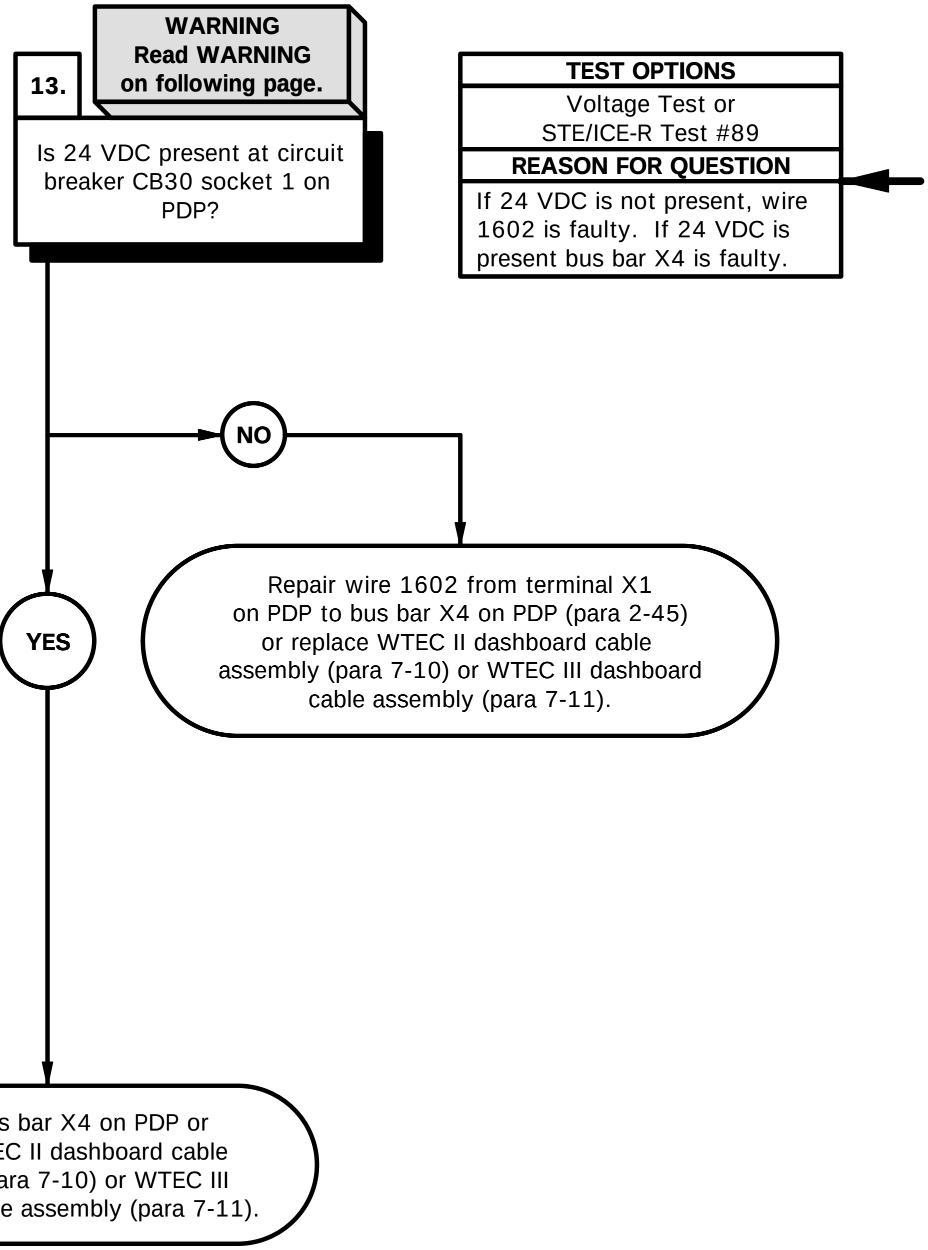
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.



WARNING
Read WARNING on following page.

13. Is 24 VDC present at circuit breaker CB30 socket 1 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1602 is faulty. If 24 VDC is present bus bar X4 is faulty.

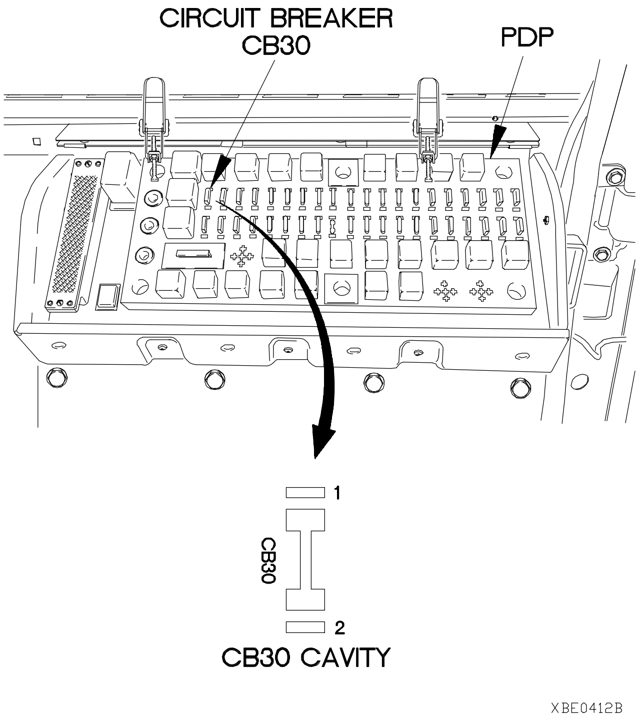
Repair wire 1602 from terminal X1 on PDP to bus bar X4 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace bus bar X4 on PDP or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Remove circuit breaker CB30 from PDP. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to circuit breaker CB30 socket 1 on PDP. (4) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (5) If 24 VDC is not present, Repair wire 1602 from terminal X1on PDP to bus bar X4 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (6) If 24 VDC is present, replace bus bar X4 on PDP or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (7) Install circuit breaker CB30 in PDP. (8) Install PDP cover (para 16-2).



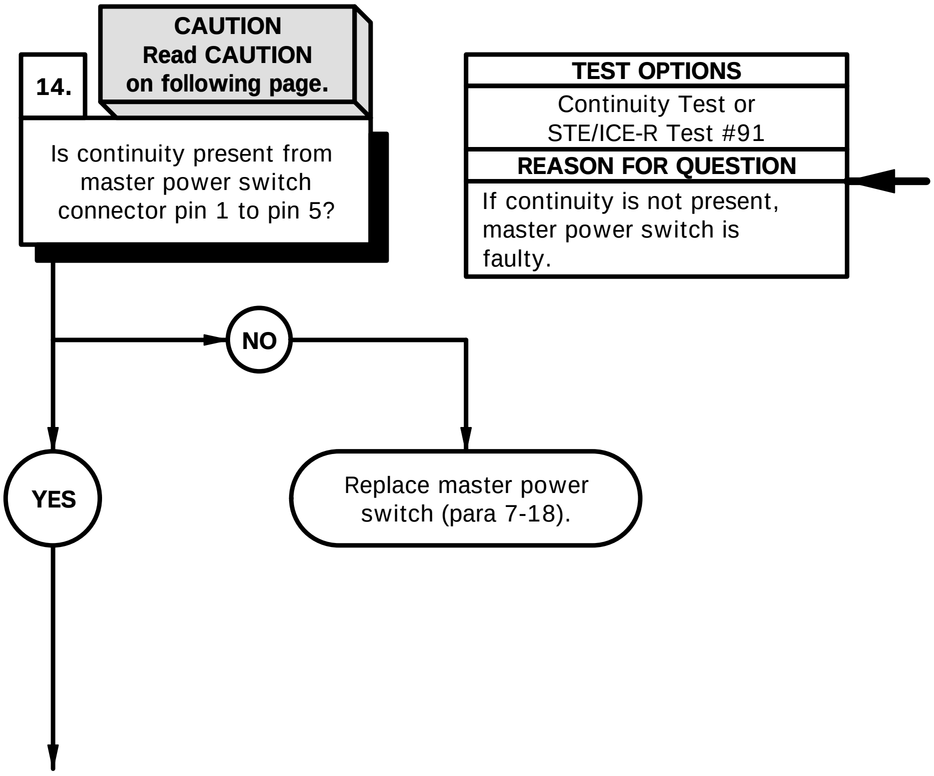
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.

POSSIBLE PROBLEMS

Faulty master power switch.
Faulty dashboard cable assembly.



CAUTION
Read CAUTION on following page.

14. Is continuity present from master power switch connector pin 1 to pin 5?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, master power switch is faulty.

Replace master power switch (para 7-18).

CAUTION

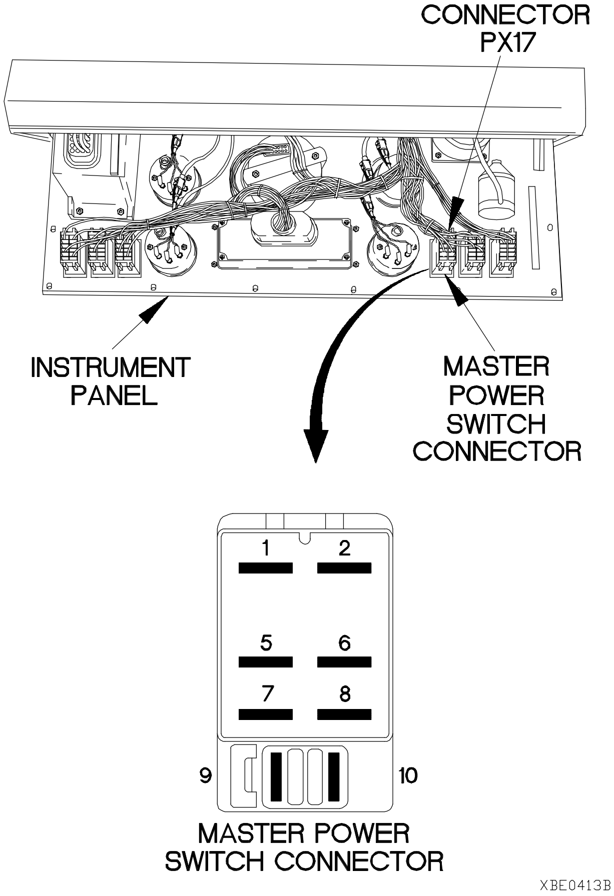
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector PX17 from master power switch connector.
(3) Position master power switch to on.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to master power switch connector pin 1.
(6) Connect negative (-) probe of multimeter to master power switch connector pin 5 and note reading on multimeter.
(7) If continuity is not present, replace master power switch (para 7-18).
(8) Position master power switch to off.



e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
100 AMP reverse polarity relay OK.
100 AMP reverse polarity relay to power distribution panel (PDP) 24 VDC cable OK.
Battery to 100 AMP reverse polarity relay 24 VDC cable OK.
200 AMP reverse polarity relay OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
200 AMP terminal block to reverse polarity relay 24 VDC load cable OK.
200 AMP terminal block to power distribution panel (PDP) 24 VDC cable OK.
Master power switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

15. Is continuity present from relay K2 socket 86 on PDP to connector PX17 socket 1?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1548 is faulty. If continuity is present wire 1586 is faulty.

NO

Repair wire 1548 from connector PX17 socket 1 to relay K2 socket 86 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

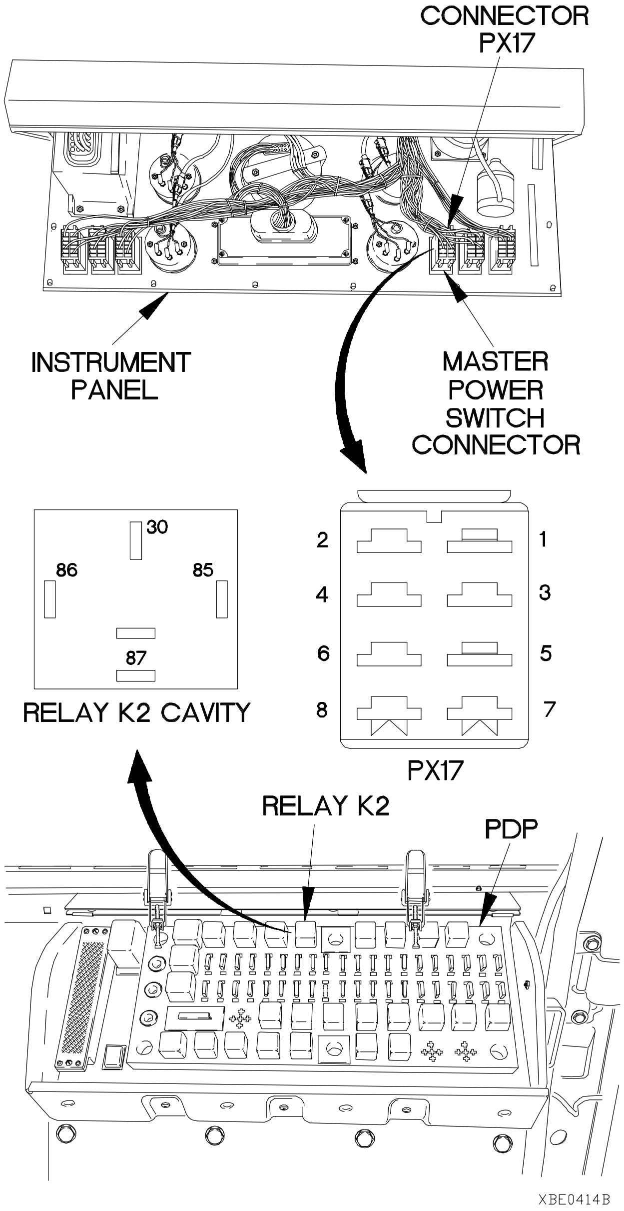
Repair wire 1586 from connector PX17 socket 5 to circuit breaker CB70 socket 4 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX17 socket 1.
(3) Connect negative (-) probe of multimeter to relay K2 socket 86 on PDP and note reading on multimeter.
(4) If continuity is not present, repair wire 1548 from connector PX17 socket 1 to relay K2 socket 86 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 1586 from connector PX17 socket 5 to circuit breaker CB70 socket 4 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX17 to master power switch connector.
(7) Install instrument panel (para 7-15).
(8) Install relay K2 in PDP.
(9) Install PDP cover (para 16-2).
(10) Connect batteries (para 7-57).

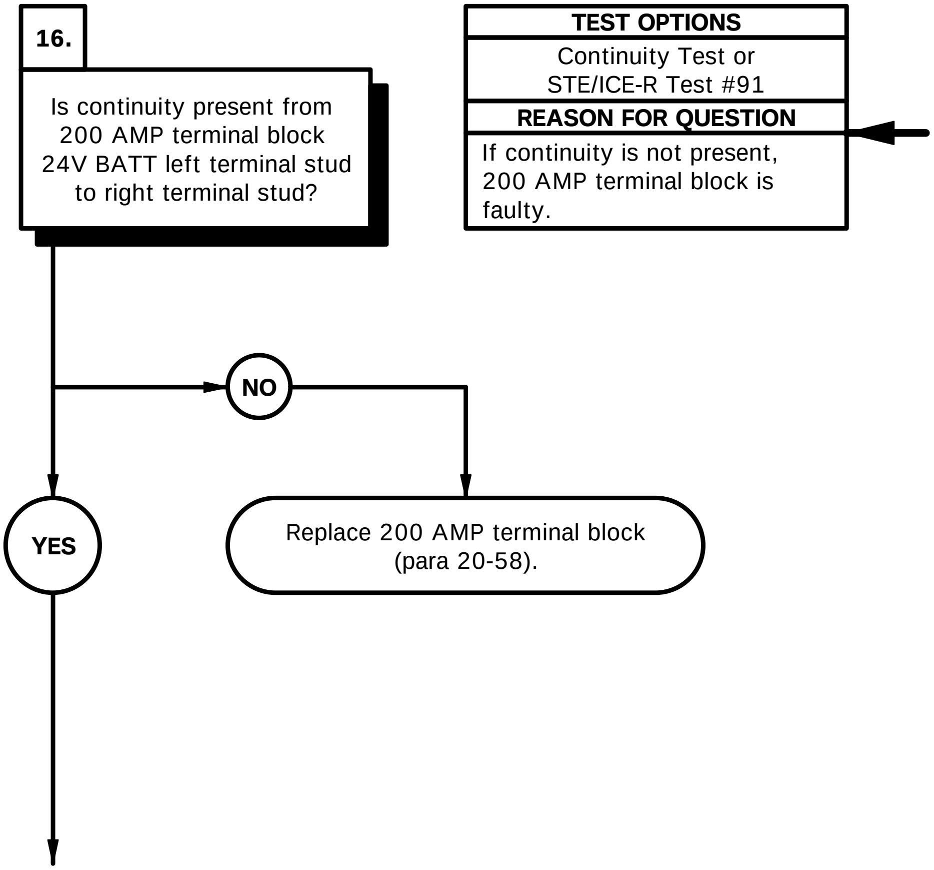
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty battery to 200 AMP terminal block 24 VDC cable assembly.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC battery cable.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.



16.

Is continuity present from 200 AMP terminal block 24V BATT left terminal stud to right terminal stud?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block is faulty.

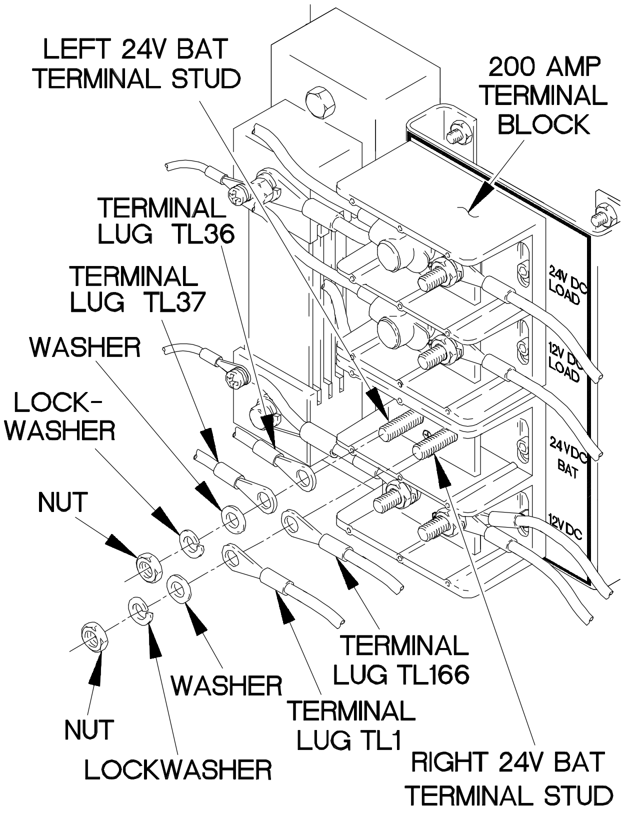
Replace 200 AMP terminal block (para 20-58).

CONTINUITY TEST

NOTE

Tag terminal lugs and connection points prior to disconnecting.

(1) Disconnect batteries (para 7-57).
(2) Remove nut, lockwasher, washer, and terminal lugs TL37 and TL36 from left 24V BAT terminal stud on 200 AMP terminal block. Discard lockwasher.
(3) Remove nut, lockwasher, washer, and terminal lugs TL1 and TL166 from right 24V BAT terminal stud on 200 AMP terminal block. Discard lockwasher.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to left 24V BAT terminal stud on 200 AMP terminal block.
(6) Connect negative (-) probe of multimeter to right 24V BAT terminal stud on 200 AMP terminal block and note reading on multimeter.
(7) If continuity is not present, replace 200 AMP terminal block (para 20-58).



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e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block.
Faulty battery to 200 AMP terminal block 24 VDC cable assembly.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC battery cable.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.

17.

Is continuity present from 200 AMP terminal block 24V LOAD left terminal stud to right terminal stud?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block is faulty.

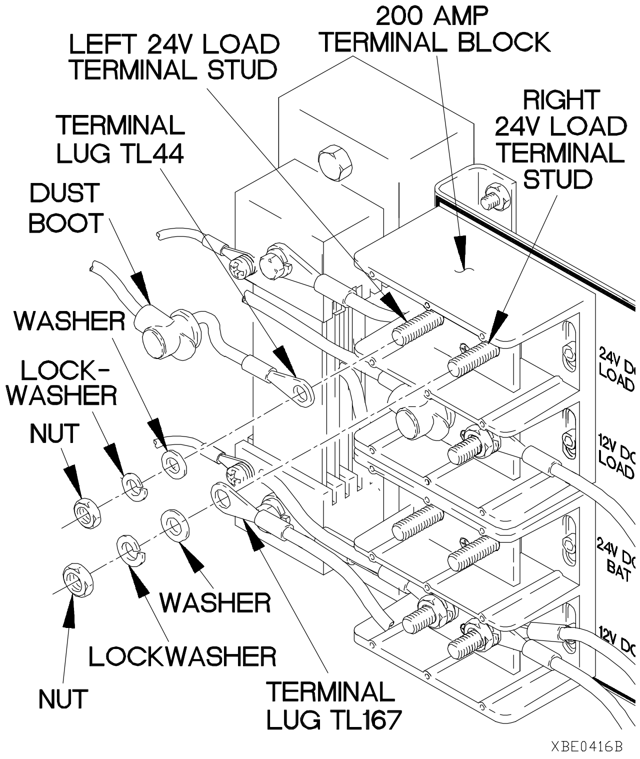
NO

Replace 200 AMP terminal block (para 20-58).

YES

CONTINUITY TEST

(1) Lift dust boot from left 24V LOAD terminal stud on 200 AMP terminal block.
(2) Remove nut, lockwasher, washer, and terminal lug TL44 from left 24V LOAD terminal stud on 200 AMP terminal block. Discard lockwasher.
(3) Remove nut, lockwasher, washer, and terminal lug TL167 from right 24V LOAD terminal stud on 200 AMP terminal block. Discard lockwasher.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to left 24V LOAD terminal stud on 200 AMP terminal block.
(6) Connect negative (-) probe of multimeter to right 24V LOAD terminal stud on 200 AMP terminal block and note reading on multimeter.
(7) If continuity is not present, replace 200 AMP terminal block (para 20-58).



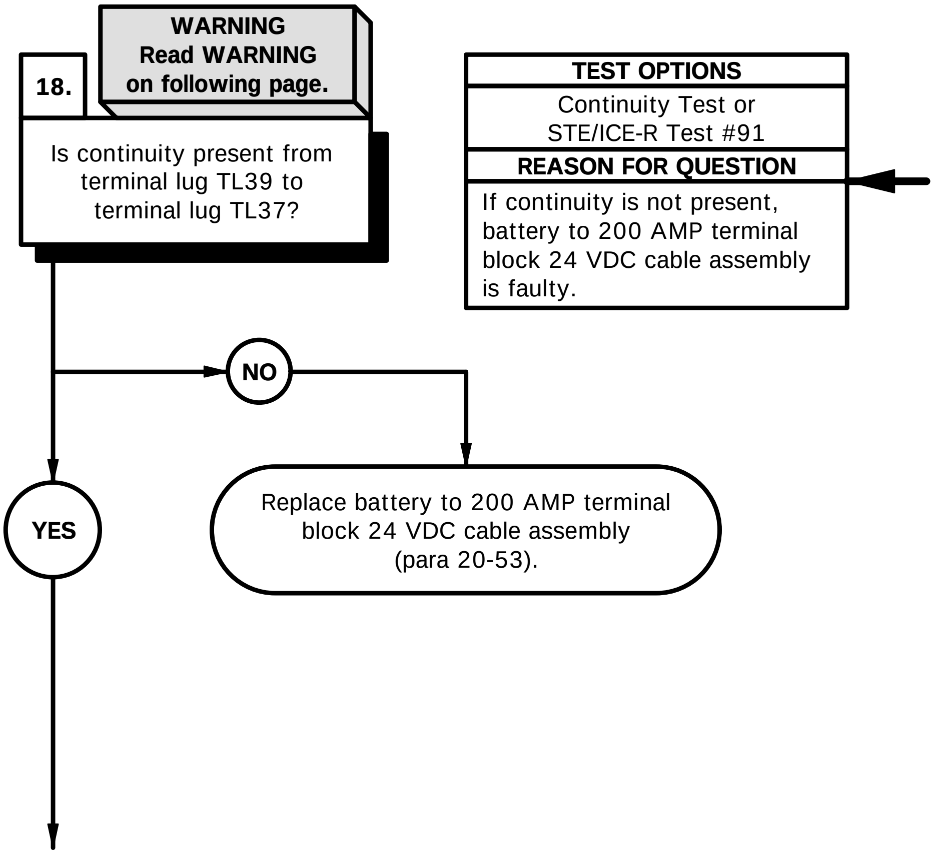
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
200 AMP terminal block OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay OK.
Faulty battery to 200 AMP terminal block 24 VDC cable assembly.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC battery cable.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.



WARNING
Read WARNING on following page.

18. Is continuity present from terminal lug TL39 to terminal lug TL37?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, battery to 200 AMP terminal block 24 VDC cable assembly is faulty.

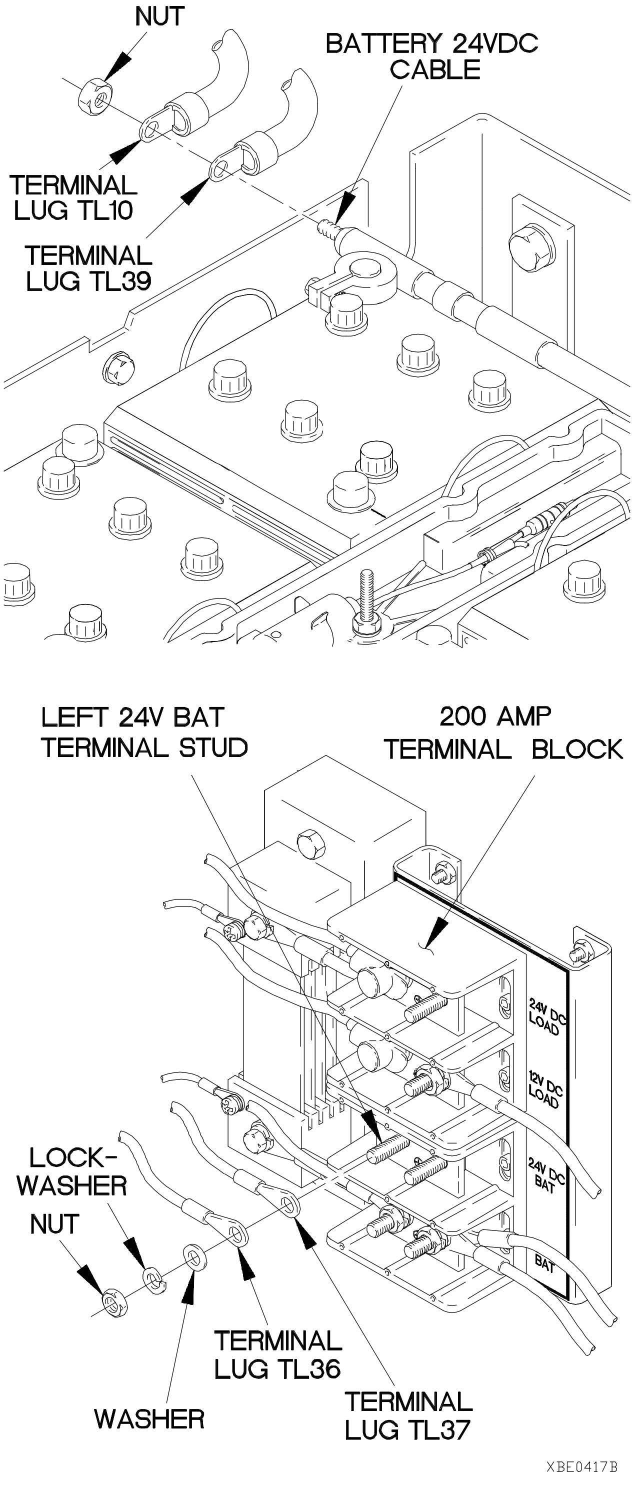
Replace battery to 200 AMP terminal block 24 VDC cable assembly (para 20-53).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CONTINUITY TEST

(1) Remove nut and terminal lugs TL39 and TL10 from battery 24 VDC cable.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL39.
(4) Connect negative (-) probe of multimeter to terminal lug TL37 and note reading on multimeter.
(5) If continuity is not present, replace battery to 200 AMP terminal block 24 VDC cable assembly (para 20-53).
(6) Position terminal lugs TL36 and TL37 on left 24V BAT terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(7) Tighten nut to 15-19 lb-ft (21-25 N.m).
(8) Install terminal lugs TL10 and TL39 on battery 24 VDC cable with nut.



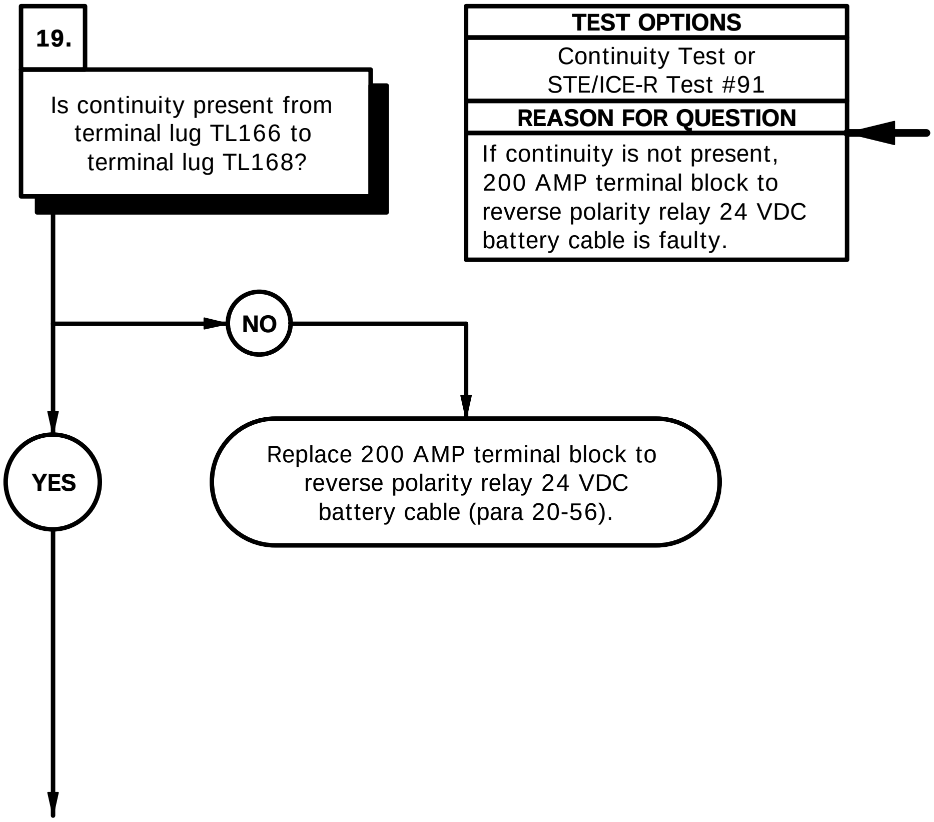
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC battery cable.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.



19.

Is continuity present from terminal lug TL166 to terminal lug TL168?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block to reverse polarity relay 24 VDC battery cable is faulty.

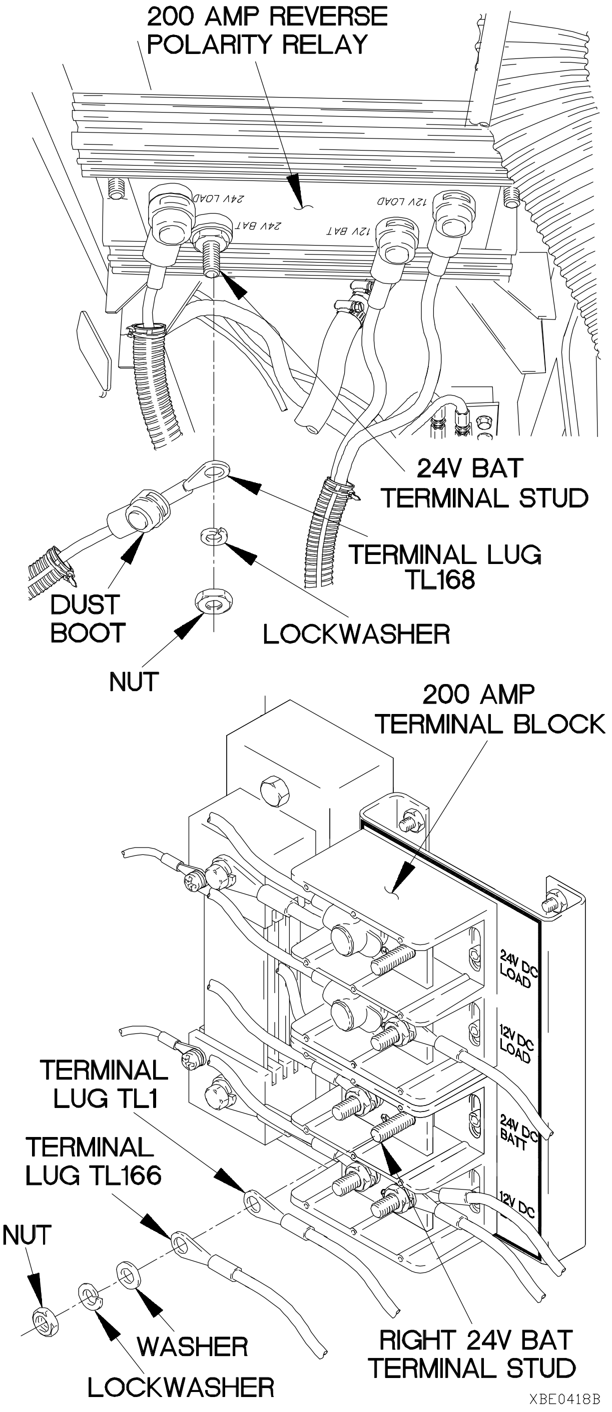
NO

Replace 200 AMP terminal block to reverse polarity relay 24 VDC battery cable (para 20-56).

YES

CONTINUITY TEST

(1) Lift dust boot on 24V BAT terminal stud on 200 AMP reverse polarity relay.
(2) Remove nut, lockwasher, terminal lug TL168 from 24V BAT terminal stud on 200 AMP reverse polarity relay. Discard lockwasher.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL166.
(5) Connect negative (-) probe of multimeter to terminal lug TL168 and note reading on multimeter.
(6) If continuity is not present, replace 200 AMP terminal block to reverse polarity relay 24 VDC battery cable (para 20-56).
(7) Position terminal lug TL168 on 24V BAT terminal stud on 200 AMP reverse polarity relay with lockwasher and nut.
(8) Tighten nut to 27-33 lb-ft (37-45 N.m).
(9) Position dust boot on 24 V BAT terminal stud on 200 AMP reverse polarity relay.
(10) Position terminal lugs TL166 and TL1 on right 24 VDC BAT terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(11) Tighten nut to 15-19 lb-ft (21-25 N.m).



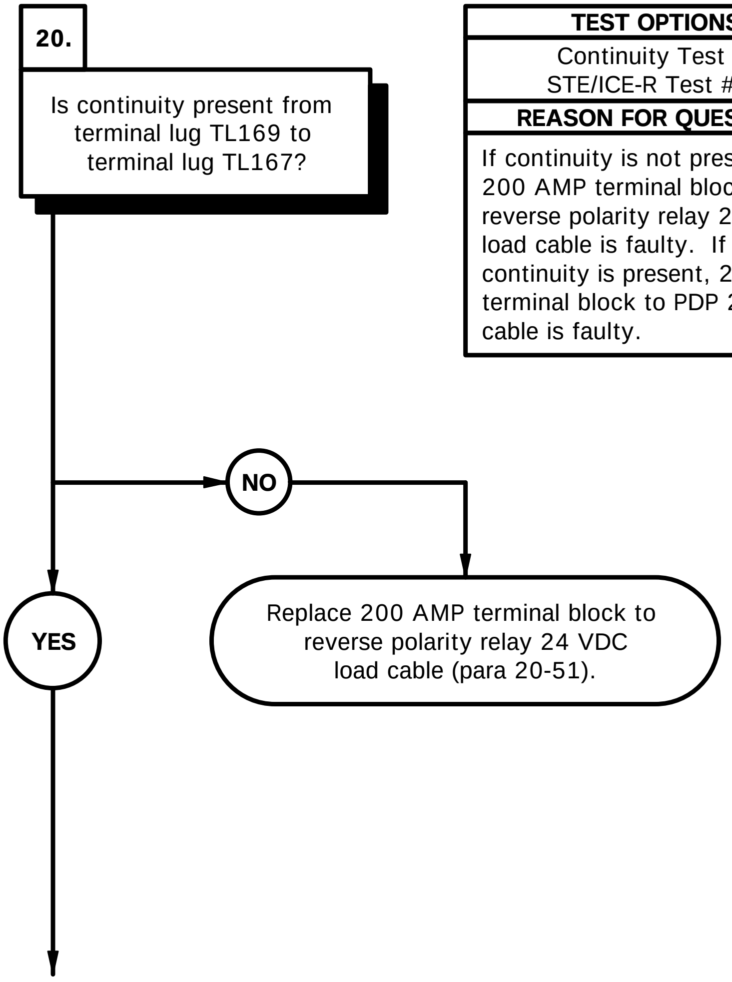
e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)

KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.



20.

Is continuity present from terminal lug TL169 to terminal lug TL167?

Replace 200 AMP terminal block to reverse polarity relay 24 VDC load cable (para 20-51).

TEST OPTIONS

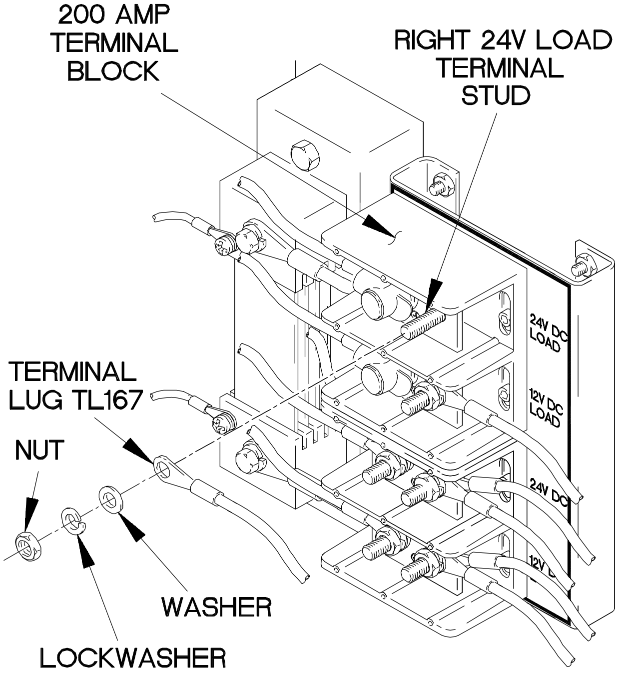
Continuity Test or
STE/ICE-R Test #91

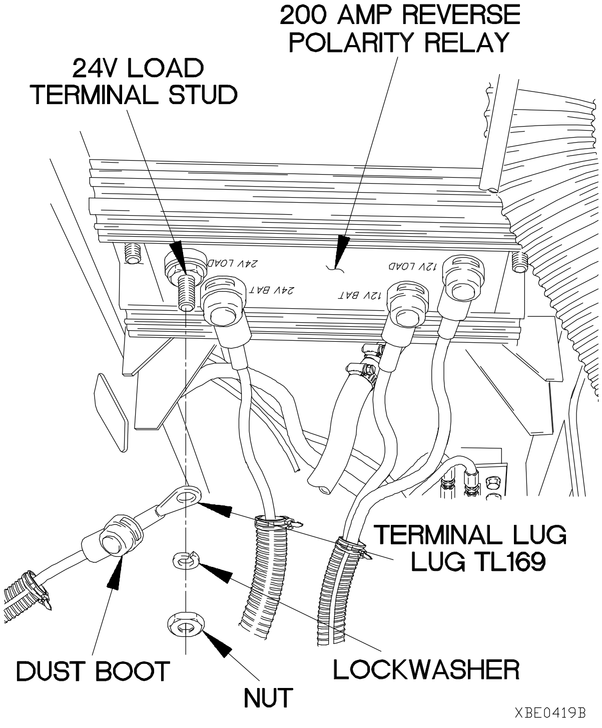
REASON FOR QUESTION

If continuity is not present, 200 AMP terminal block to reverse polarity relay 24 VDC load cable is faulty. If continuity is present, 200 AMP terminal block to PDP 24 VDC cable is faulty.

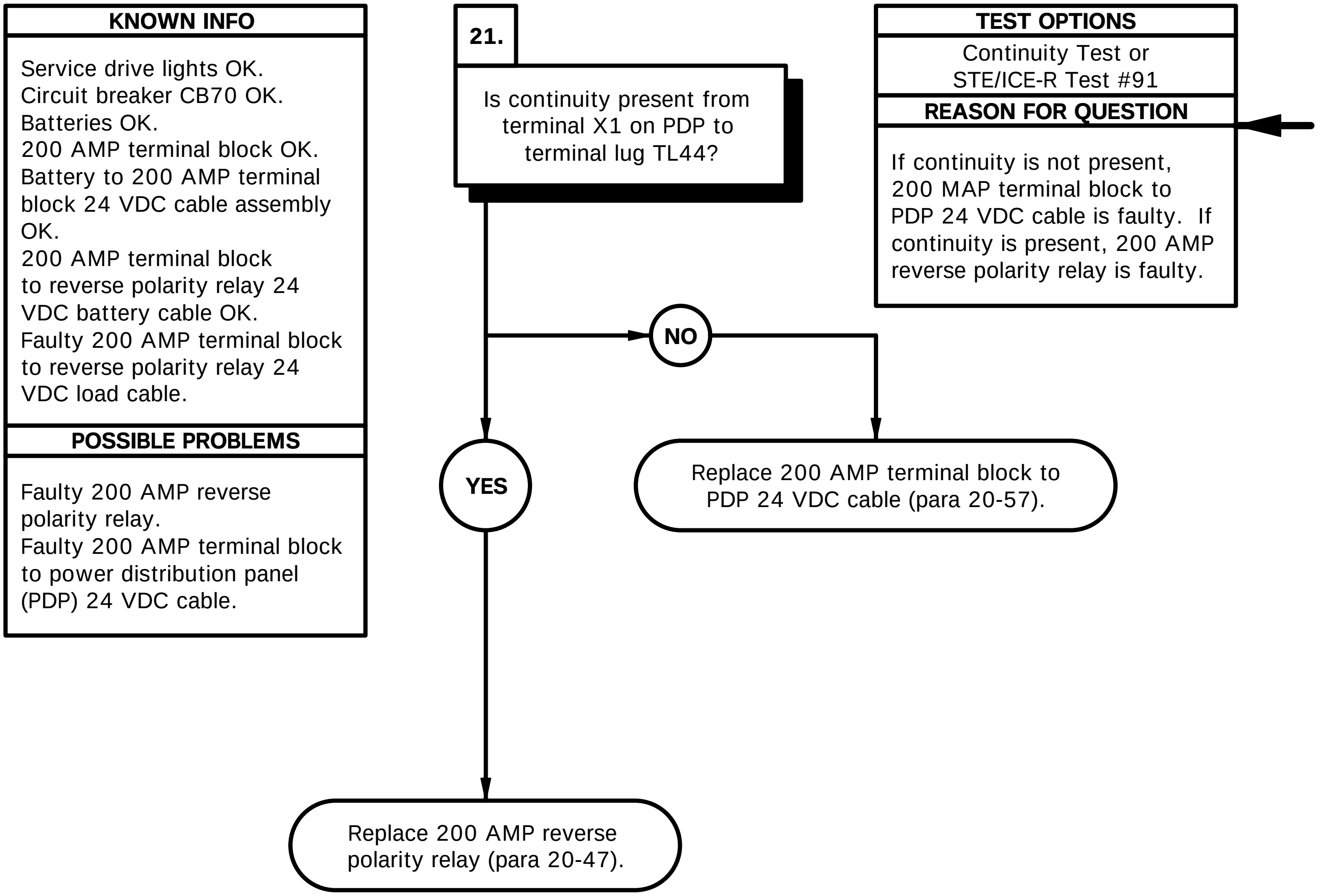
CONTINUITY TEST

(1) Lift dust boot on 24V LOAD terminal stud on 200 AMP reverse polarity relay.
(2) Remove nut, lockwasher, and terminal lug TL169 from 24V LOAD terminal stud on 200 AMP reverse polarity relay. Discard lockwasher.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL169.
(5) Connect negative (-) probe of multimeter to terminal lug TL167 and note reading on multimeter.
(6) If continuity is not present, replace 200 AMP terminal block to reverse polarity relay 24 VDC load cable (para 20-62).
(7) If continuity is present, replace 200 AMP terminal block to PDP 24 VDC cable (para 20-51).
(8) Position terminal lug TL167 on right 24V LOAD terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(9) Tighten nut to 15-19 lb-ft (21-25 N.m).
(10) Position terminal lug TL169 on 24V LOAD terminal stud on 200 AMP reverse polarity relay with lockwasher and nut.
(11) Tighten nut to 27-33 lb-ft (37-45 N.m).
(12) Position dust boot on 24V LOAD terminal stud on 200 AMP reverse polarity relay.





e4. 24 VDC CIRCUITS DO NOT OPERATE (CONT)



KNOWN INFO

Service drive lights OK.
Circuit breaker CB70 OK.
Batteries OK.
200 AMP terminal block OK.
Battery to 200 AMP terminal block 24 VDC cable assembly OK.
200 AMP terminal block to reverse polarity relay 24 VDC battery cable OK.
Faulty 200 AMP terminal block to reverse polarity relay 24 VDC load cable.

POSSIBLE PROBLEMS

Faulty 200 AMP reverse polarity relay.
Faulty 200 AMP terminal block to power distribution panel (PDP) 24 VDC cable.

21.

Is continuity present from terminal X1 on PDP to terminal lug TL44?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 200 MAP terminal block to PDP 24 VDC cable is faulty. If continuity is present, 200 AMP reverse polarity relay is faulty.

Replace 200 AMP terminal block to PDP 24 VDC cable (para 20-57).

Replace 200 AMP reverse polarity relay (para 20-47).

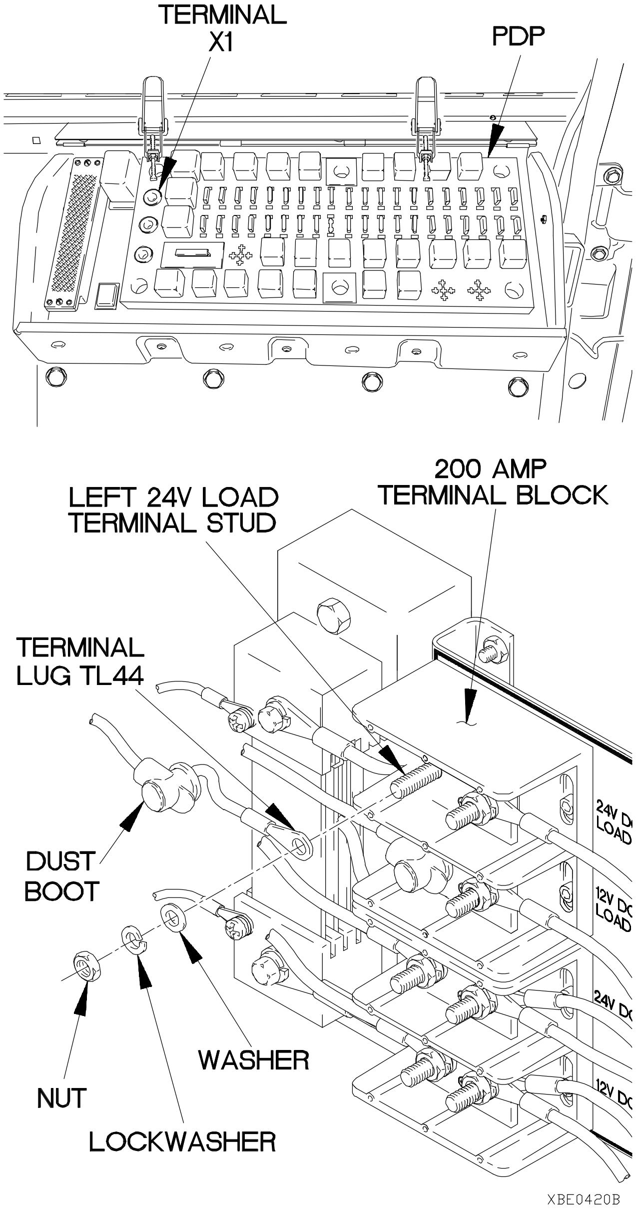
CONTINUITY TEST

(1) Set multimeter to ohms.

CAUTION

When testing to terminal X1 on PDP, ensure that multimeter probes come in contact with the outside metal ring. Failure to comply may result in false troubleshooting test results.

(2) Connect positive (+) probe of multimeter to terminal X1 on PDP.
(3) Connect negative (-) probe of multimeter to terminal lug TL44 and note reading on multimeter.
(4) If continuity is not present, replace 200 AMP terminal block to PDP 24 VDC cable (para 20-57).
(5) If continuity is present, replace 200 AMP reverse polarity relay (para 20-47).
(6) Position terminal lug TL44 on left 24V LOAD terminal stud on 200 AMP terminal block with washer, lockwasher, and nut.
(7) Tighten nut to 15-19 lb-ft (21-25 N.m)
(8) Position dust boot on left 24V LOAD terminal stud on 200 AMP terminal block.
(9) Install PDP cover (para 16-2).
(10) Connect batteries (para 7-57).
(11) Raise spare tire (TM 9-2320-366-10-2).



All data on pages 286 through 309, including pages 287 through 308 deleted.

e6. ENGINE CRANKS BUT DOES NOT START

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Cab raised (TM 9-2320-366-10-1).

Personnel Required
(2)

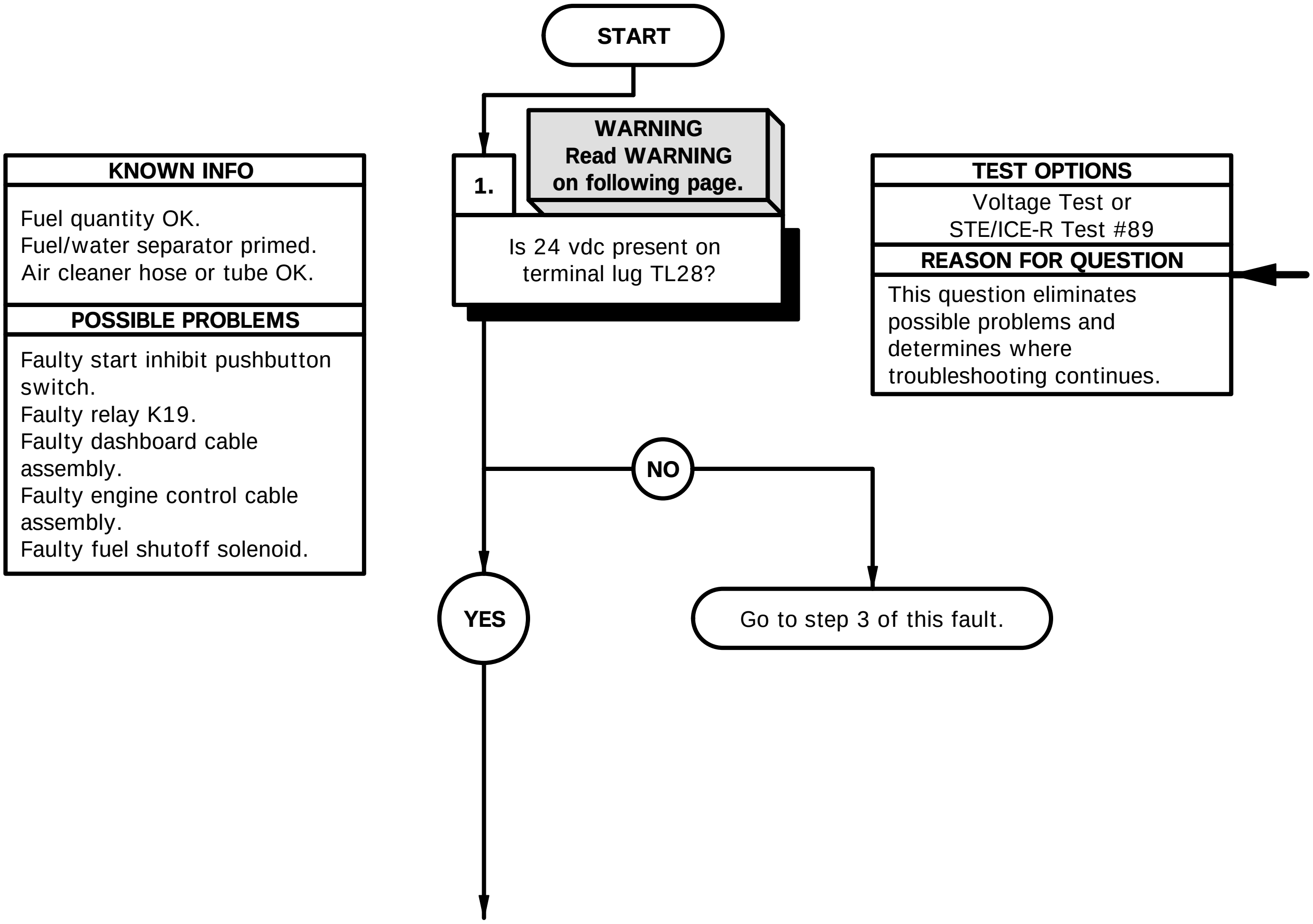
Materials/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P

NOTE

Perform Engine System Troubleshooting a2. Engine Cranks But Does Not Start prior to beginning this task.



KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.

POSSIBLE PROBLEMS

Faulty start inhibit pushbutton switch.
Faulty relay K19.
Faulty dashboard cable assembly.
Faulty engine control cable assembly.
Faulty fuel shutoff solenoid.

WARNING
Read WARNING on following page.

1. Is 24 vdc present on terminal lug TL28?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

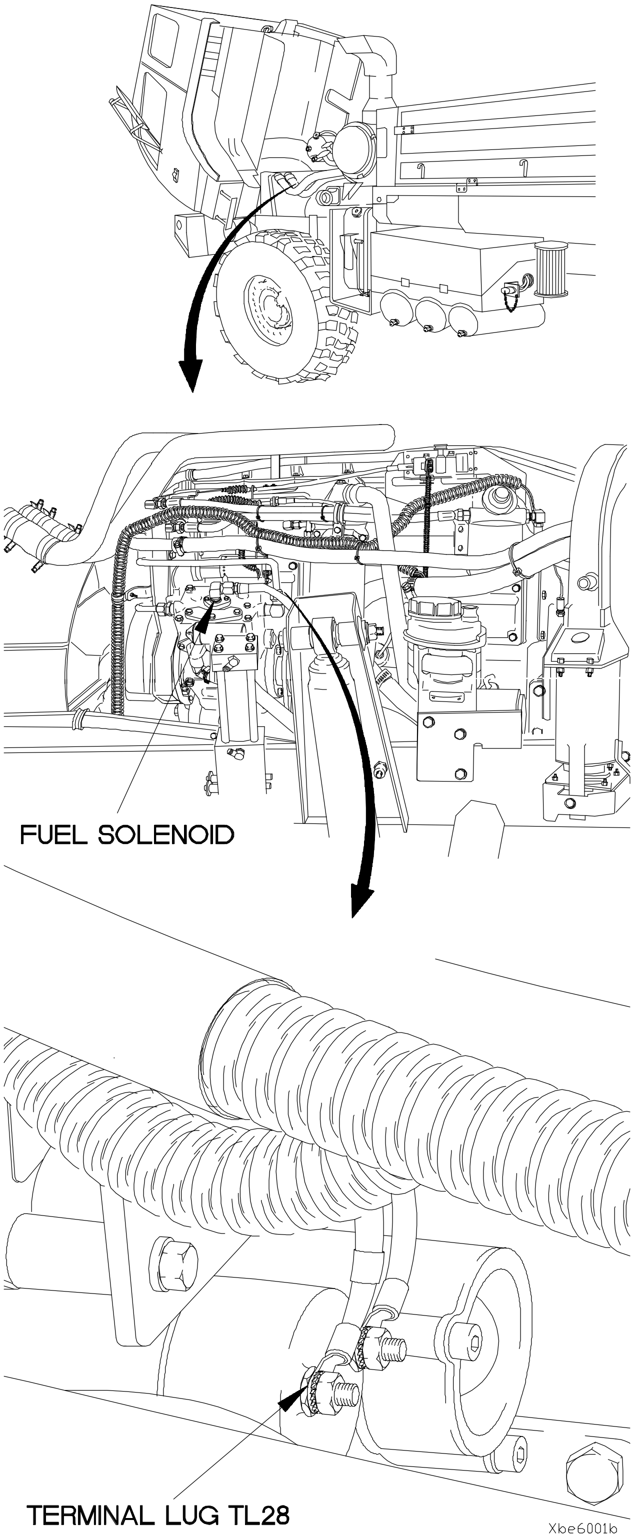
Go to step 3 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to terminal lug TL28 on fuel solenoid.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 vdc is not present, go to step 3 of this fault.
(6) Position master power switch to off (TM 9-2320-366-10-1).



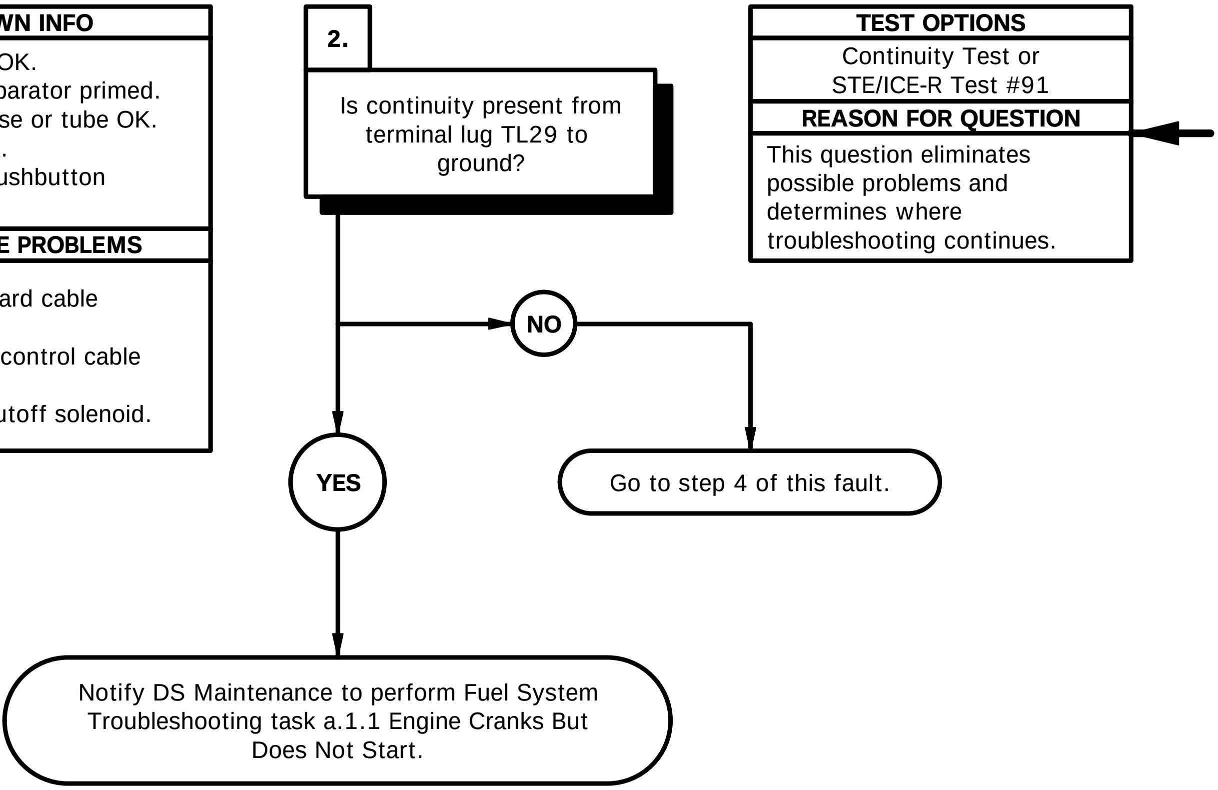
e6. ENGINE CRANKS BUT DOES NOT START (CONT)

KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.
Relay K19 OK.
Start inhibit pushbutton switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.
Faulty fuel shutoff solenoid.



2. Is continuity present from terminal lug TL29 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 4 of this fault.

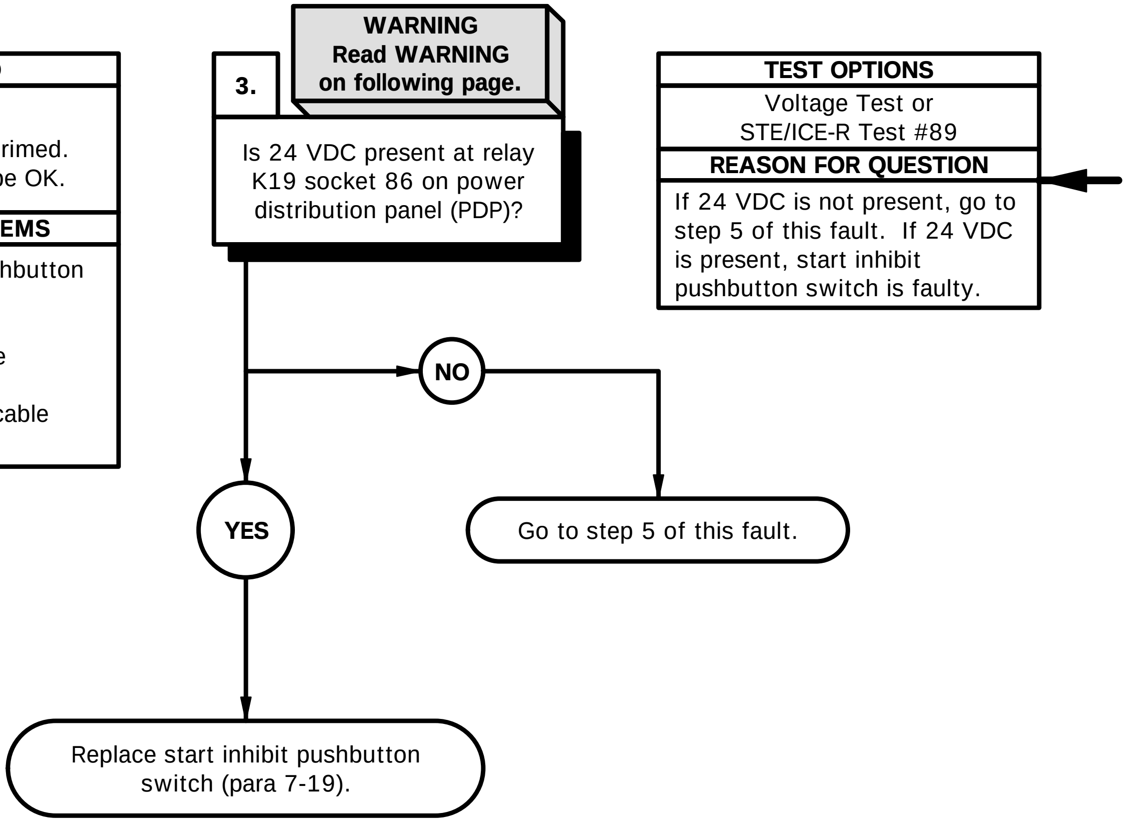
Notify DS Maintenance to perform Fuel System Troubleshooting task a.1.1 Engine Cranks But Does Not Start.

KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.

POSSIBLE PROBLEMS

Faulty start inhibit pushbutton switch.
Faulty relay K19.
Faulty dashboard cable assembly.
Faulty engine control cable assembly.



WARNING
Read WARNING on following page.

3. Is 24 VDC present at relay K19 socket 86 on power distribution panel (PDP)?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

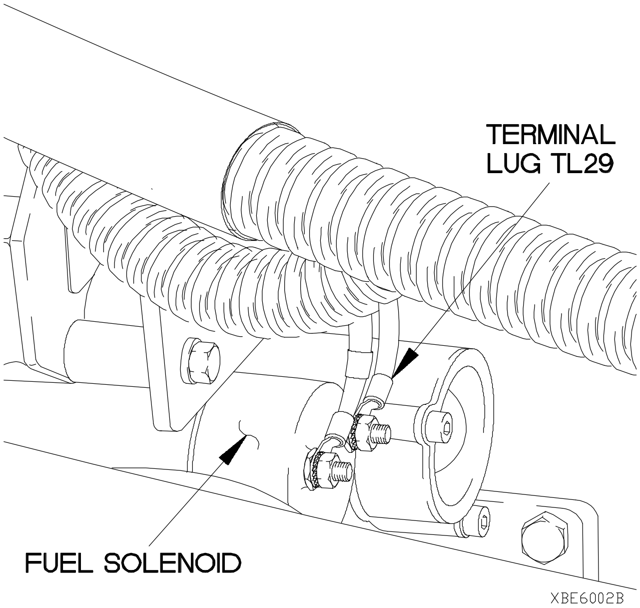
If 24 VDC is not present, go to step 5 of this fault. If 24 VDC is present, start inhibit pushbutton switch is faulty.

Go to step 5 of this fault.

Replace start inhibit pushbutton switch (para 7-19).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL29 on fuel solenoid.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 4 of this fault.
(5) If continuity is present, fuel solenoid is faulty, notify DS Maintenance.
(6) Lower cab (TM 9-2320-366-10-1).

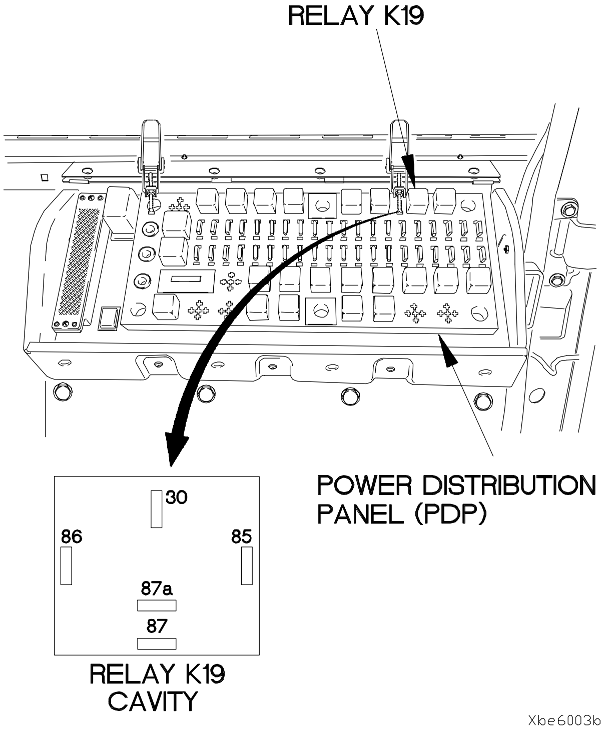


WARNING

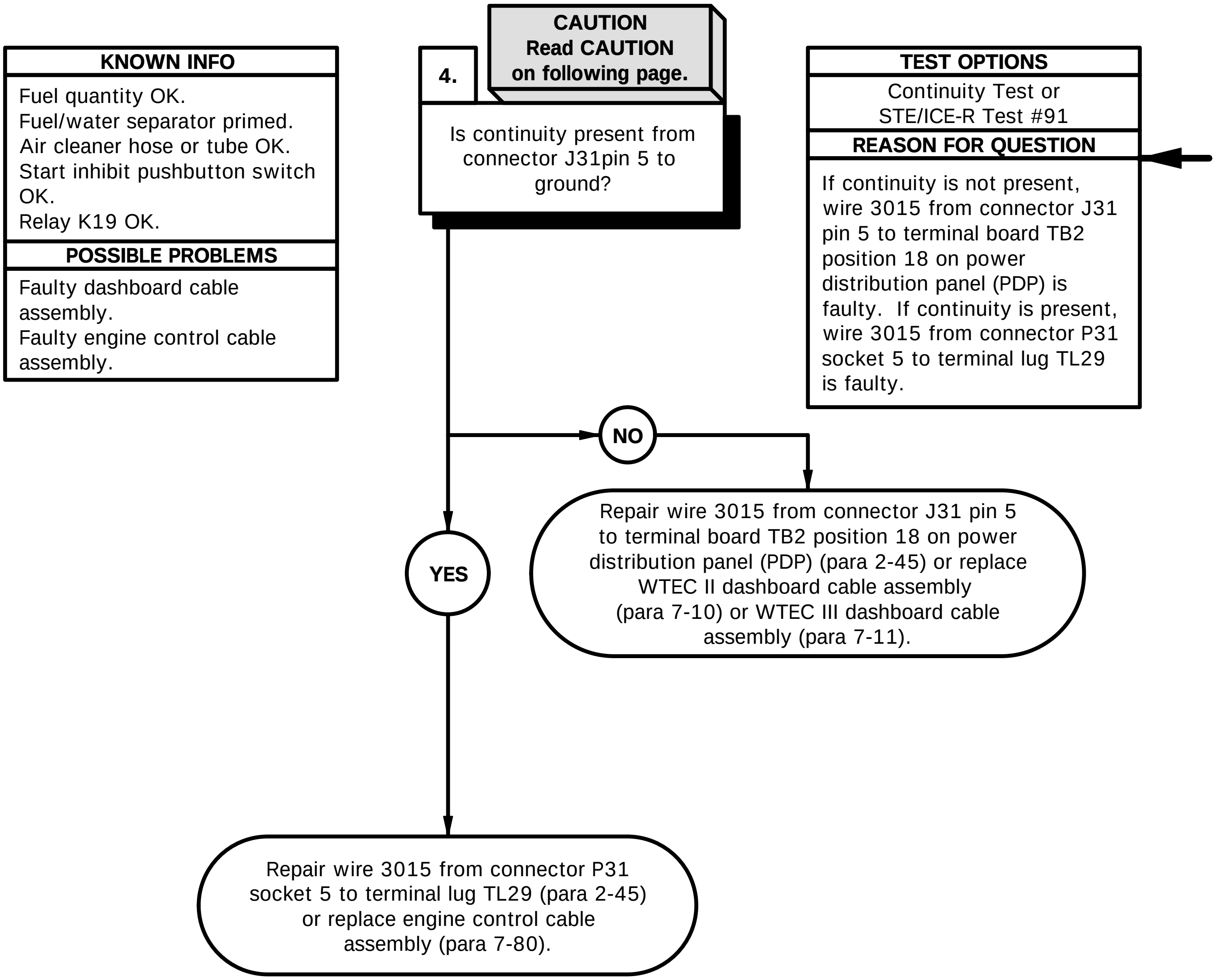
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Lower cab (TM 9-2320-366-10-1).
(2) Remove power distribution panel (PDP) cover (para 16-2).
(3) Remove relay K19 from power distribution panel (PDP).
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to relay K19 socket 86 on power distribution panel (PDP).
(6) Connect negative (-) probe of multimeter to ground
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 VDC is not present, go to step 5 of this fault.
(9) If 24 VDC is present, replace start inhibit pushbutton switch (para 7-19).
(10) Position master power switch to off (TM 9- 2320-366-10-1).



e6. ENGINE CRANKS BUT DOES NOT START (CONT)



KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.
Start inhibit pushbutton switch OK.
Relay K19 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.

CAUTION
Read CAUTION on following page.

4. Is continuity present from connector J31pin 5 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3015 from connector J31 pin 5 to terminal board TB2 position 18 on power distribution panel (PDP) is faulty. If continuity is present, wire 3015 from connector P31 socket 5 to terminal lug TL29 is faulty.

NO

Repair wire 3015 from connector J31 pin 5 to terminal board TB2 position 18 on power distribution panel (PDP) (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

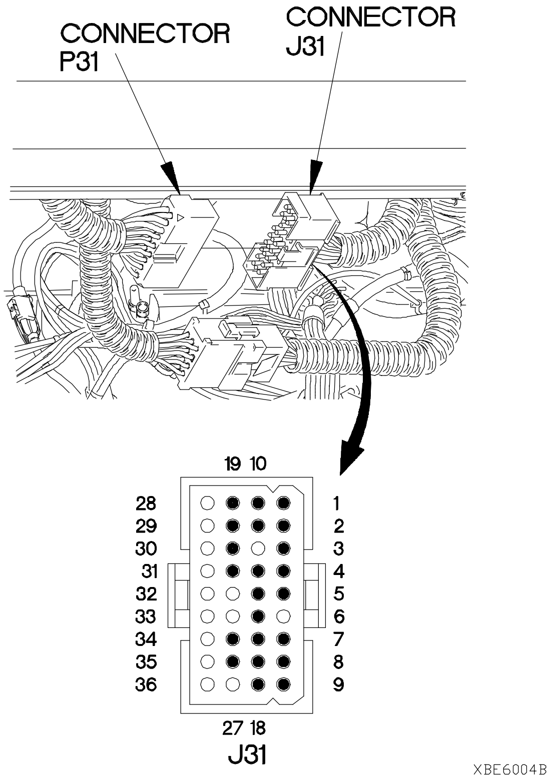
Repair wire 3015 from connector P31 socket 5 to terminal lug TL29 (para 2-45) or replace engine control cable assembly (para 7-80).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove instrument panel assembly for access (para 7-15).
(3) Disconnect connector J31 from connector P31.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector J31pin 5.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present, repair wire 3015 from connector J31 pin 5 to terminal board TB2 position 18 on power distribution panel (PDP) (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, repair wire 3015 from connector P31 socket 5 to terminal lug TL29 (para 2-45) or replace engine control cable assembly (para 7-80).
(9) Connect connector J31 to connector P31.
(10) Install instrument panel assembly (para 7-15).
(11) Connect batteries (para 7-57).



e6. ENGINE CRANKS BUT DOES NOT START (CONT)

KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.
Start inhibit pushbutton switch OK.

POSSIBLE PROBLEMS

Faulty relay K19.
Faulty dashboard cable assembly.
Faulty engine control cable assembly.

5.

Is continuity present from relay K19 terminals 30 to 87A?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, relay K19 is faulty.

NO

Replace relay K19 (para 7-9).

YES

KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.
Start inhibit pushbutton switch OK.
Relay K19 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.

WARNING
Read WARNING on following page.

6.

Is 24 VDC present from relay K19 socket 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

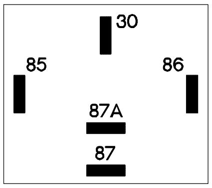
NO

Go to step 8 of this fault.

YES

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K19 terminal 87a.
(3) Connect negative (-) probe of multimeter to relay K19 terminal 30 and note reading on multimeter.
(4) If continuity is not present, replace relay K19 (para 7-9).



RELAY K19

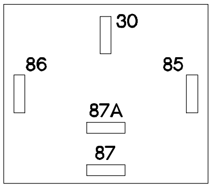
Xbe6005b

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) of multimeter to relay K19 socket 30 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, go to step 8 of this fault.
(6) Position master power switch to off (TM 9-2320-366-10-1).



RELAY K19
CAVITY

Xbe6006b

e6. ENGINE CRANKS BUT DOES NOT START (CONT)

KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.
Start inhibit pushbutton switch OK.
Relay K19 OK.

POSSIBLE PROBLEMS

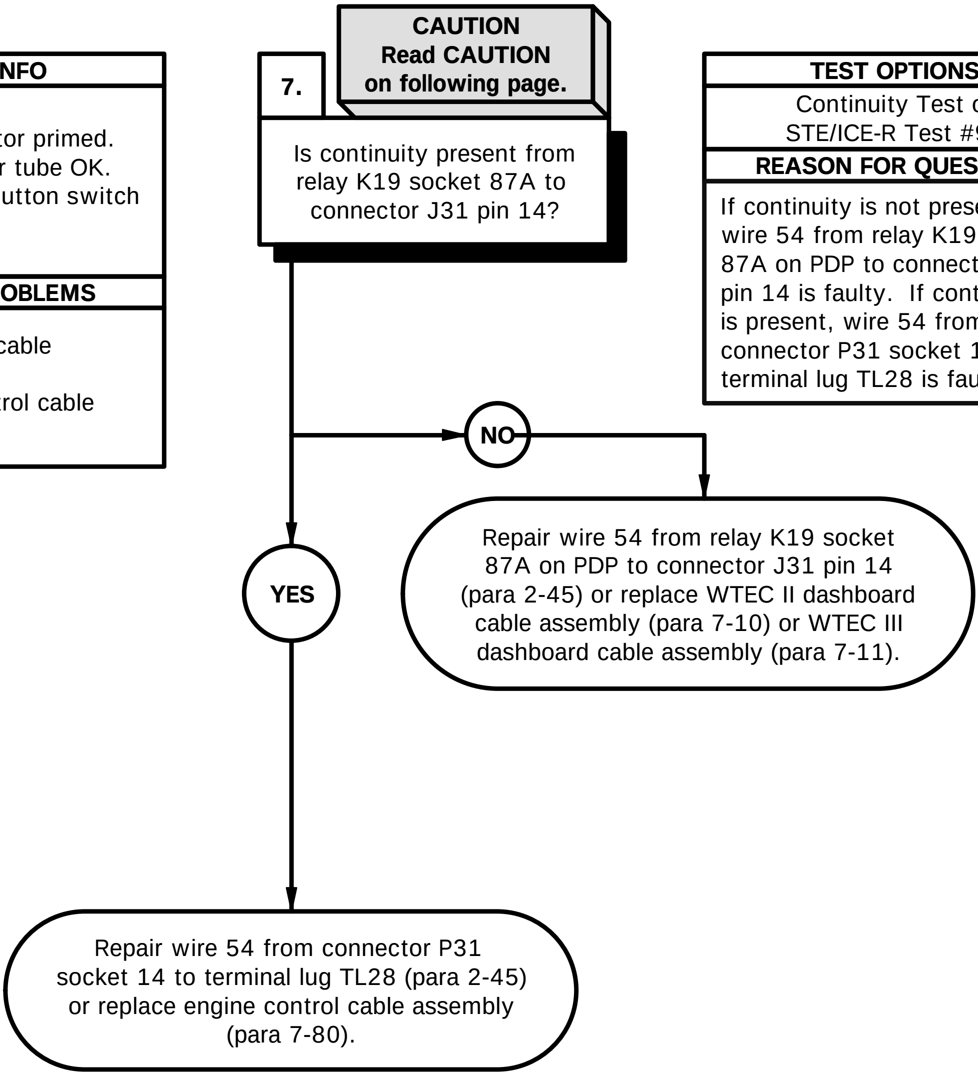
Faulty dashboard cable assembly.
Faulty engine control cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 54 from relay K19 socket 87A on PDP to connector J31 pin 14 is faulty. If continuity is present, wire 54 from connector P31 socket 14 to terminal lug TL28 is faulty.



CAUTION
Read CAUTION on following page.

7. Is continuity present from relay K19 socket 87A to connector J31 pin 14?

NO

Repair wire 54 from relay K19 socket 87A on PDP to connector J31 pin 14 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

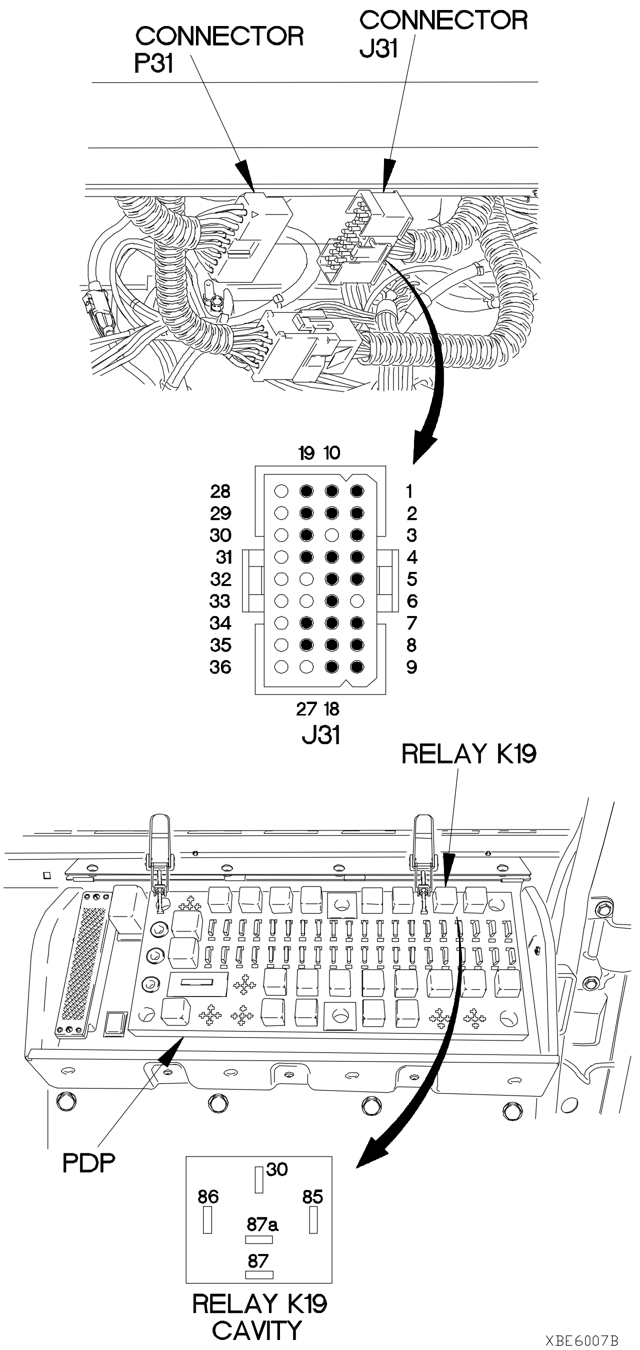
Repair wire 54 from connector P31 socket 14 to terminal lug TL28 (para 2-45) or replace engine control cable assembly (para 7-80).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove instrument panel for access (para 7-15).
(3) Disconnect connector J31 from connector P31.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to relay K19 socket 87A on PDP.
(6) Connect negative (-) probe of multimeter to connector J31 pin 14 and note reading on multimeter.
(7) If continuity is not present, repair wire 54 from connector J31 pin 14 to relay K19 socket 87A on PDP (para 2-45) or replace WTEC II dashboard cable assembly (7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, repair wire 54 from connector P31 socket 14 to terminal lug TL 28 (para 2-45) or replace engine control cable assembly (para 7-80).
(9) Connect connector J31 to connector P31.
(10) Install instrument panel (para 7-15).
(11) Install relay K19 in PDP.
(12) Install PDP cover (para 16-2).
(13) Connect batteries (para 7-57).



e6. ENGINE CRANKS BUT DOES NOT START (CONT)

KNOWN INFO

Fuel quantity OK.
Fuel/water separator primed.
Air cleaner hose or tube OK.
Start inhibit pushbutton switch OK.
Relay K19 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.

8.

WARNING
Read WARNING on following page.

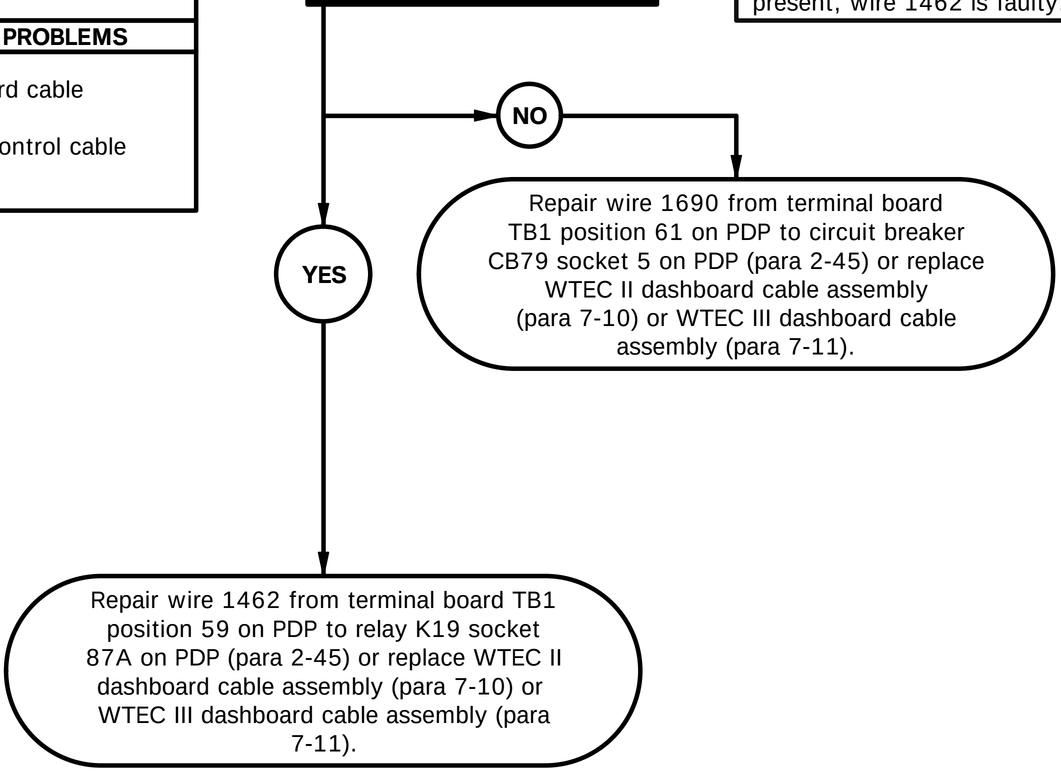
Is 24 VDC present at terminal board TB1 position 59?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1690 is faulty. If 24 VDC is present, wire 1462 is faulty.



NO: Repair wire 1690 from terminal board TB1 position 61 on PDP to circuit breaker CB79 socket 5 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

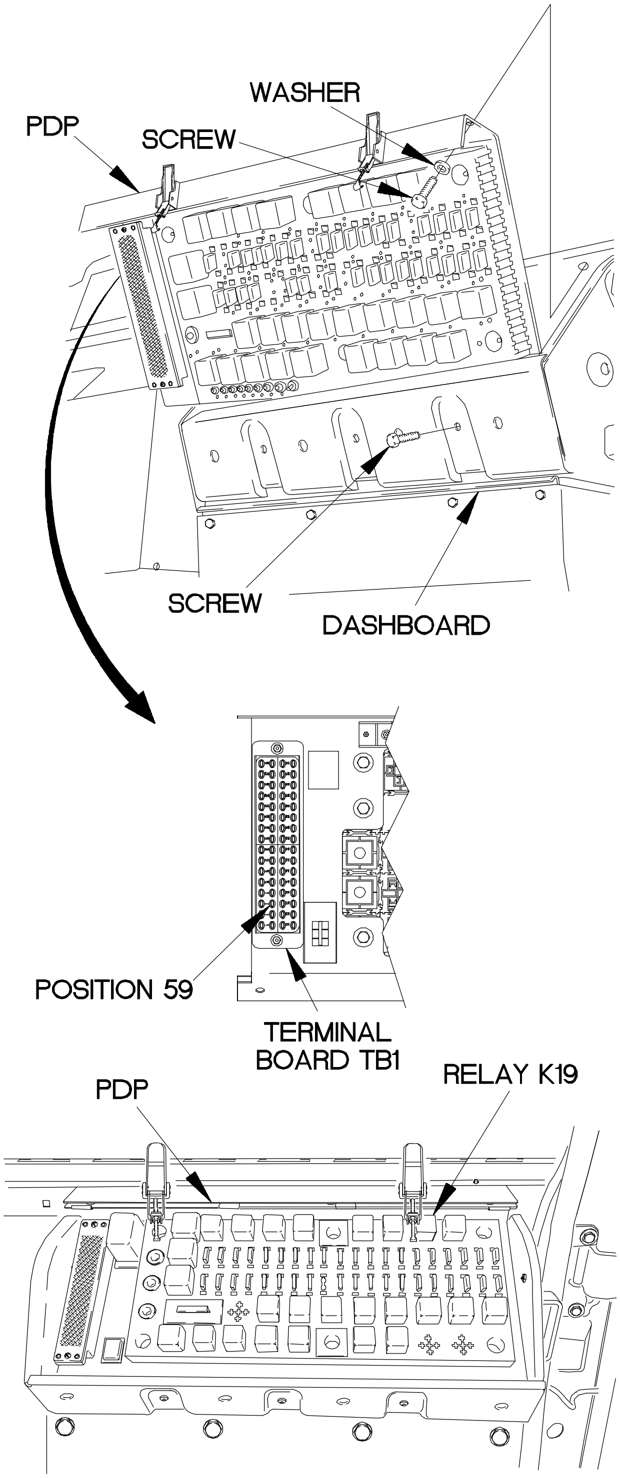
YES: Repair wire 1462 from terminal board TB1 position 59 on PDP to relay K19 socket 87A on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Install relay K19 in PDP.
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to terminal board TB1 position 59 on PDP.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 VDC is not present, repair wire 1690 from terminal board TB1 position 61 on PDP to circuit breaker CB79 socket 5 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If 24 VDC is present, repair wire 1462 from terminal board TB1 position 59 on PDP to relay K19 socket 87A on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) Install PDP on dashboard with three washers and screws.
(11) Install three screws in PDP.
(12) Install PDP cover (para 16-2).



e7. FUEL GAGE DOES NOT OPERATE OR IS INACCURATE

INITIAL SETUP

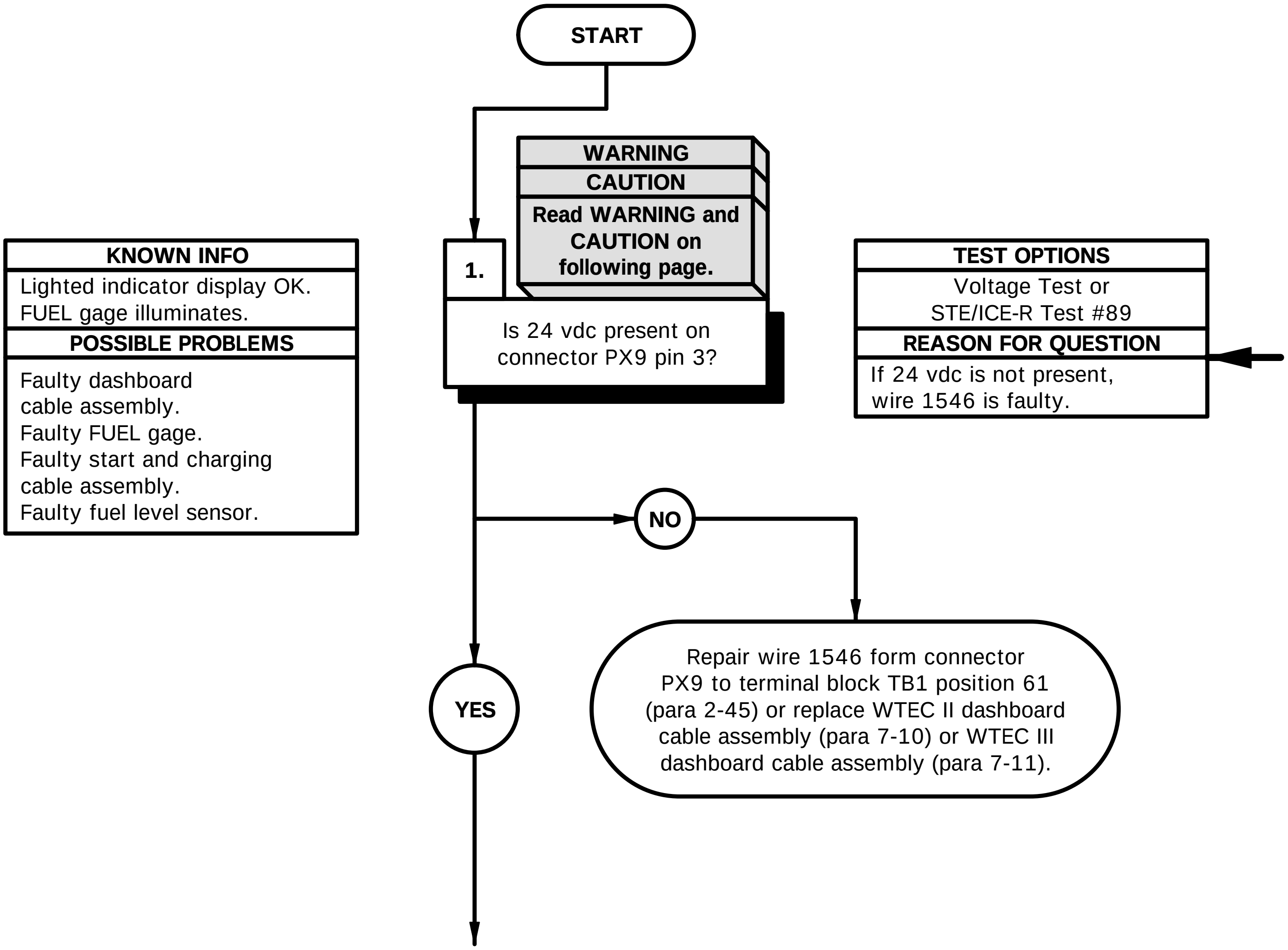
Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)



Read WARNING and CAUTION on following page.

KNOWN INFO
Lighted indicator display OK.
FUEL gage illuminates.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty FUEL gage.
Faulty start and charging cable assembly.
Faulty fuel level sensor.

1. Is 24 vdc present on connector PX9 pin 3?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If 24 vdc is not present, wire 1546 is faulty.

NO: Repair wire 1546 form connector PX9 to terminal block TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

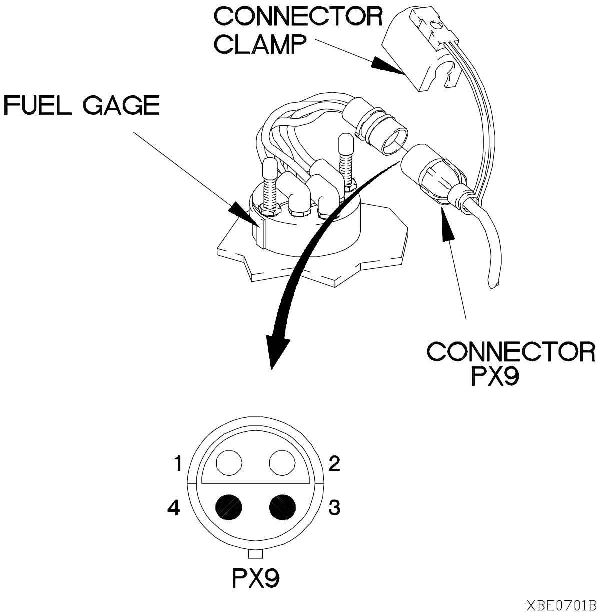
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

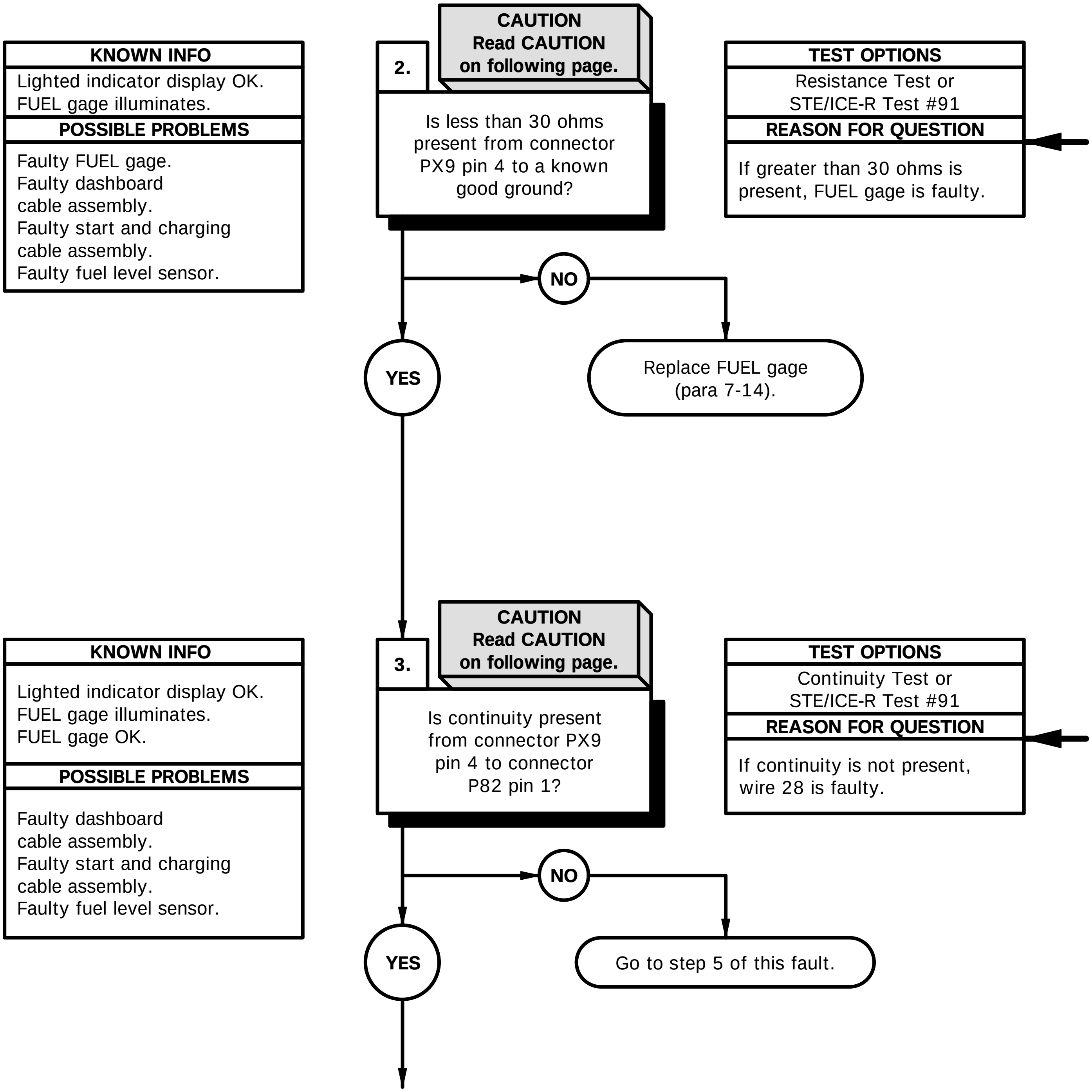
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from fuel gage connector.
(3) Disconnect connector PX9 from fuel gage connector.
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to connector PX9-3.
(6) Connect negative (-) probe of multimeter to a known good ground.
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on digital multimeter.
(8) If 24 vdc is not present, repair wire 1546 from connector PX9 pin 3 to terminal board TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e7. FUEL GAGE DOES NOT OPERATE OR IS INACCURATE



KNOWN INFO

Lighted indicator display OK.
FUEL gage illuminates.

POSSIBLE PROBLEMS

Faulty FUEL gage.
Faulty dashboard cable assembly.
Faulty start and charging cable assembly.
Faulty fuel level sensor.

CAUTION
Read CAUTION on following page.

2. Is less than 30 ohms present from connector PX9 pin 4 to a known good ground?

TEST OPTIONS

Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If greater than 30 ohms is present, FUEL gage is faulty.

NO — Replace FUEL gage (para 7-14).

YES

KNOWN INFO

Lighted indicator display OK.
FUEL gage illuminates.
FUEL gage OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty start and charging cable assembly.
Faulty fuel level sensor.

CAUTION
Read CAUTION on following page.

3. Is continuity present from connector PX9 pin 4 to connector P82 pin 1?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 28 is faulty.

NO — Go to step 5 of this fault.

YES

CAUTION

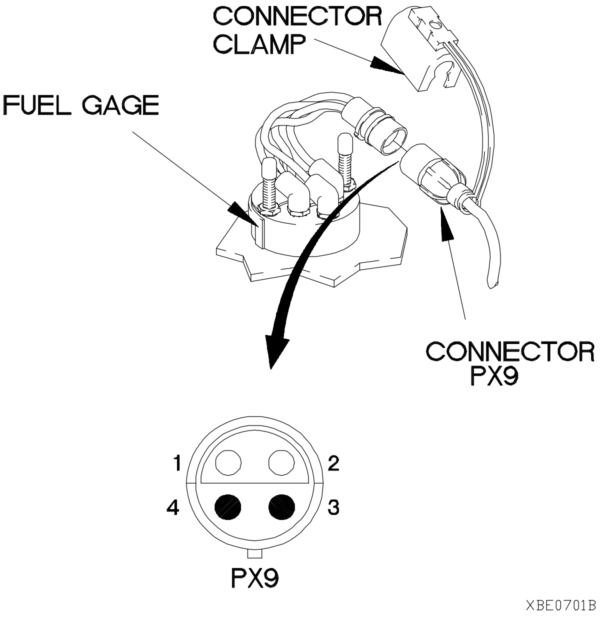
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

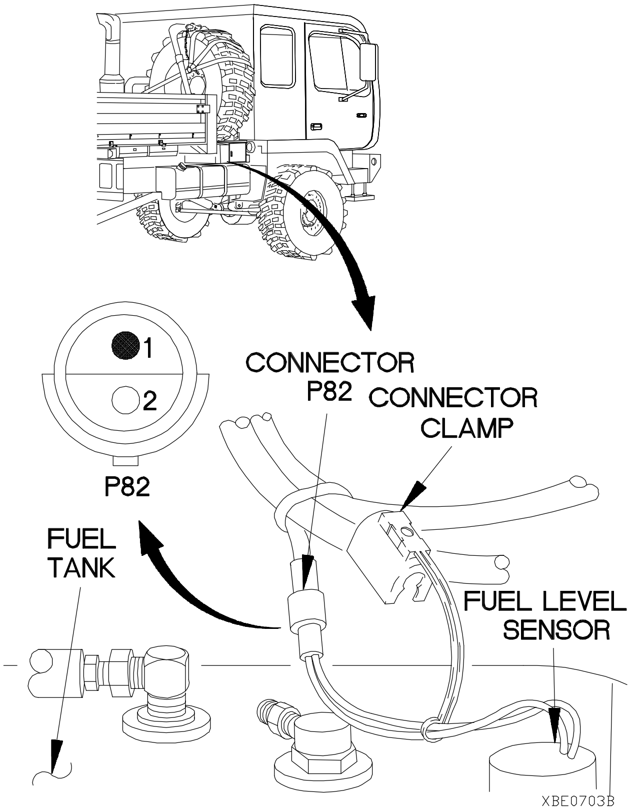
RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX9 pin 4.
(3) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
(4) If greater than 30 ohms is present, replace FUEL gage (para 7-14).

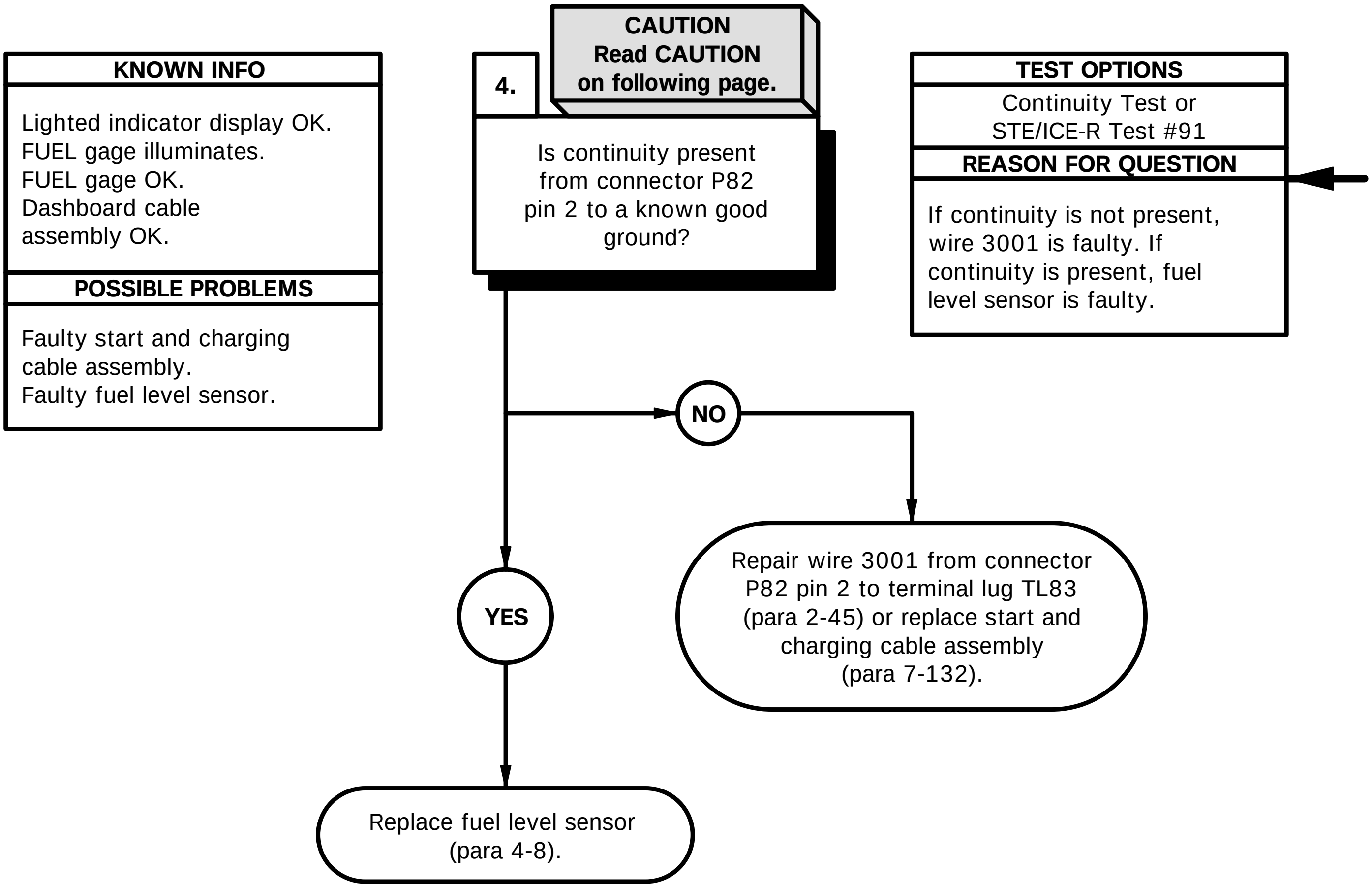


CONTINUITY TEST

(1) Disconnect connector clamp from fuel level sensor.
(2) Disconnect connector P82 from fuel level sensor.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector PX9 pin 4.
(5) Connect negative (-) probe of multimeter to connector P82 pin 1 and note reading on multimeter.
(6) If continuity is not present, go to step 5 of this fault.



e7. FUEL GAGE DOES NOT OPERATE OR IS INACCURATE



KNOWN INFO

Lighted indicator display OK.
FUEL gage illuminates.
FUEL gage OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty start and charging cable assembly.
Faulty fuel level sensor.

CAUTION
Read CAUTION on following page.

4. Is continuity present from connector P82 pin 2 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3001 is faulty. If continuity is present, fuel level sensor is faulty.

Repair wire 3001 from connector P82 pin 2 to terminal lug TL83 (para 2-45) or replace start and charging cable assembly (para 7-132).

Replace fuel level sensor (para 4-8).

CAUTION

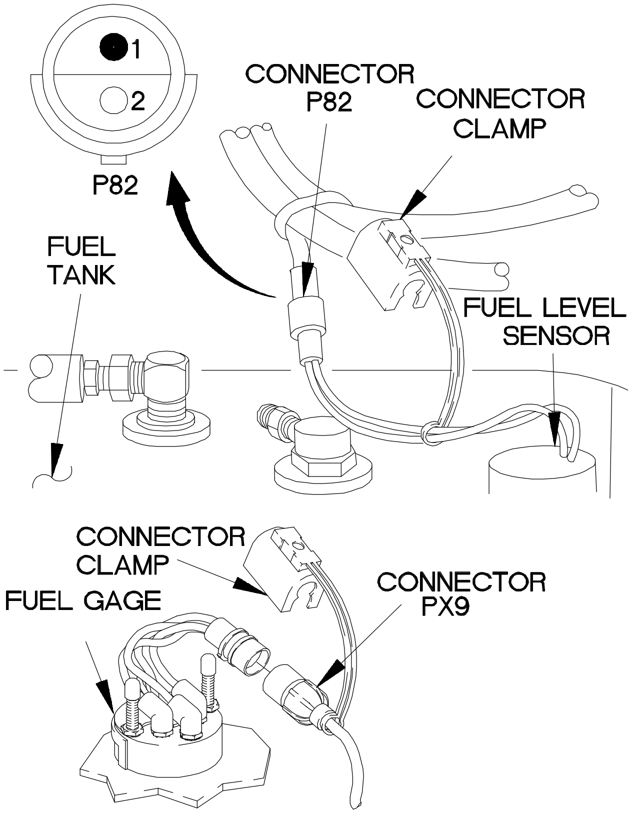
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Connect connector PX9 to fuel gage connector.
(2) Connect connector clamp on fuel gage connector.
(3) Install instrument panel assembly (para 7-15).
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector P82 socket 2.
(6) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
(7) If continuity is not present, repair wire 3001 from connector P82 socket 2 to terminal lug TL83 (para 2-45) or replace start and charging cable assembly (para 7-132).
(8) If continuity is present, replace fuel level sensor (para 4-8).
(9) Connect connector P82 to fuel level sensor.
(10) Connect connector clamp on fuel level sensor.



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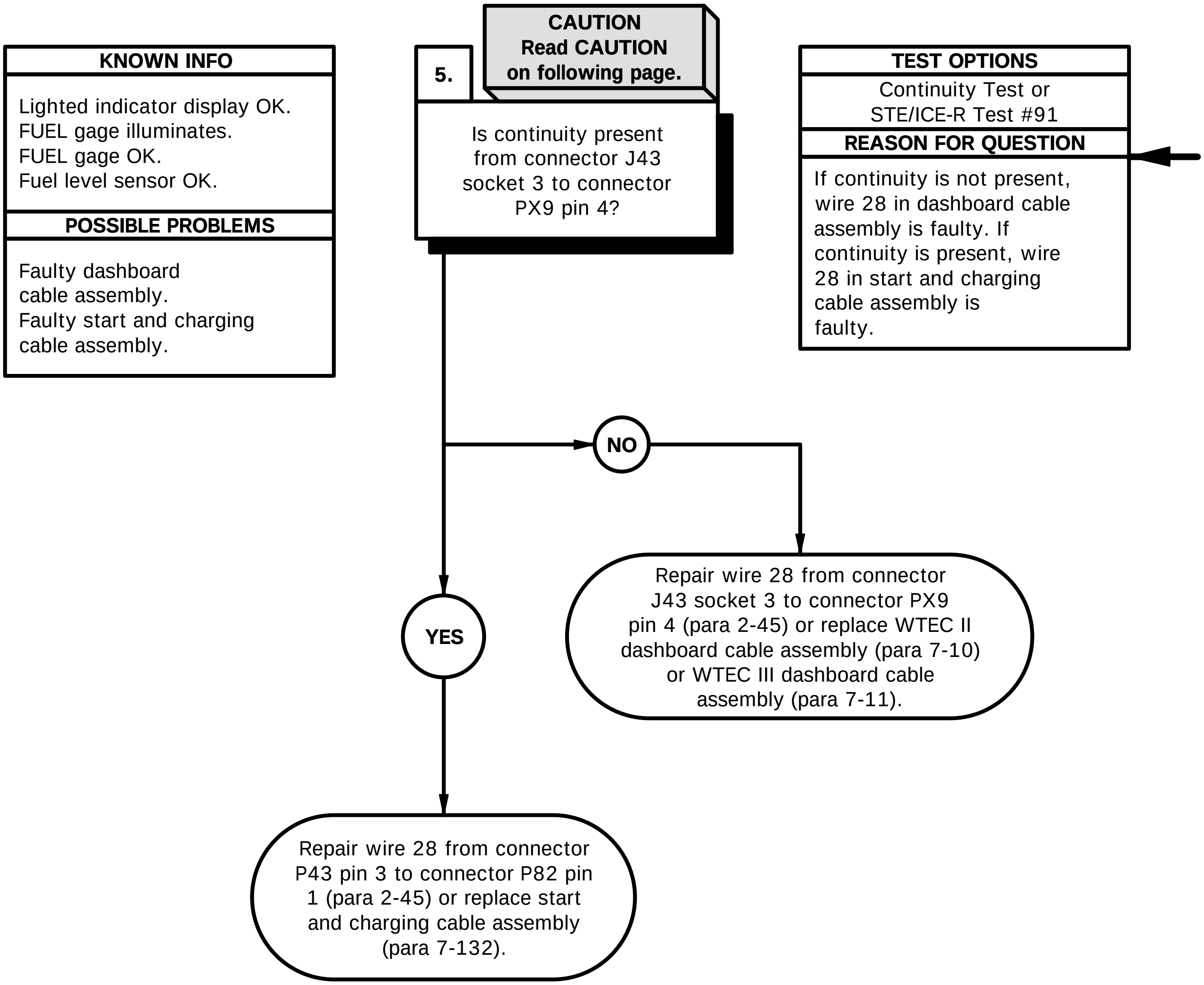
e7. FUEL GAGE DOES NOT OPERATE OR IS INACCURATE



KNOWN INFO

Lighted indicator display OK.
FUEL gage illuminates.
FUEL gage OK.
Fuel level sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty start and charging cable assembly.

5.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J43 socket 3 to connector PX9 pin 4?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 28 in dashboard cable assembly is faulty. If continuity is present, wire 28 in start and charging cable assembly is faulty.

NO

Repair wire 28 from connector J43 socket 3 to connector PX9 pin 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 28 from connector P43 pin 3 to connector P82 pin 1 (para 2-45) or replace start and charging cable assembly (para 7-132).

CAUTION

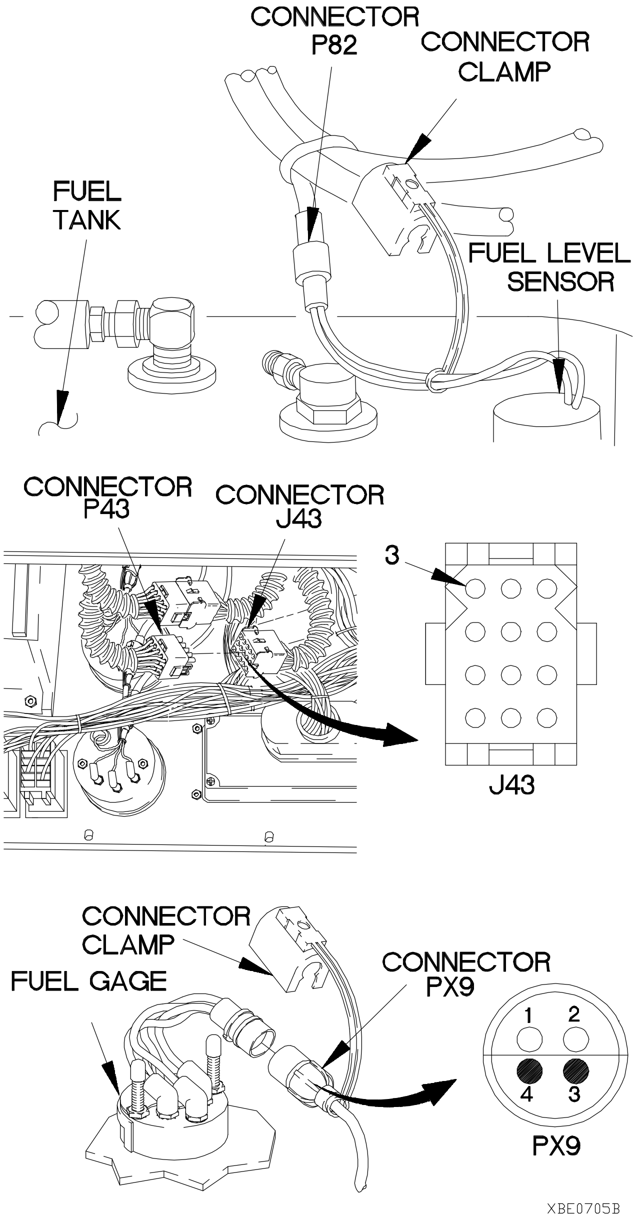
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Connect connector P82 to fuel level sensor.
(2) Connect connector clamp on fuel level sensor.
(3) Disconnect connector J43 from connector P43.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector J43 socket 3.
(6) Connect negative (-) probe of multimeter to PX9 pin 4 and note reading on multimeter.
(7) If continuity is not present, repair wire 28 from connector PX9 pin 4 to connector J43 socket 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, repair wire 28 from connector P43 pin 3 to connector P82 pin 1(para 2-45) or replace start and charging cable assembly (para 7-132).
(9) Connect connector J43 to connector P43.
(10) Connect connector PX9 to fuel gage connector.
(11) Connect connector clamp on fuel gage connector.
(12) Install instrument panel assembly (para 7-15).



e8. WATER TEMP GAGE DOES NOT OPERATE OR IS INACCURATE

INITIAL SETUP

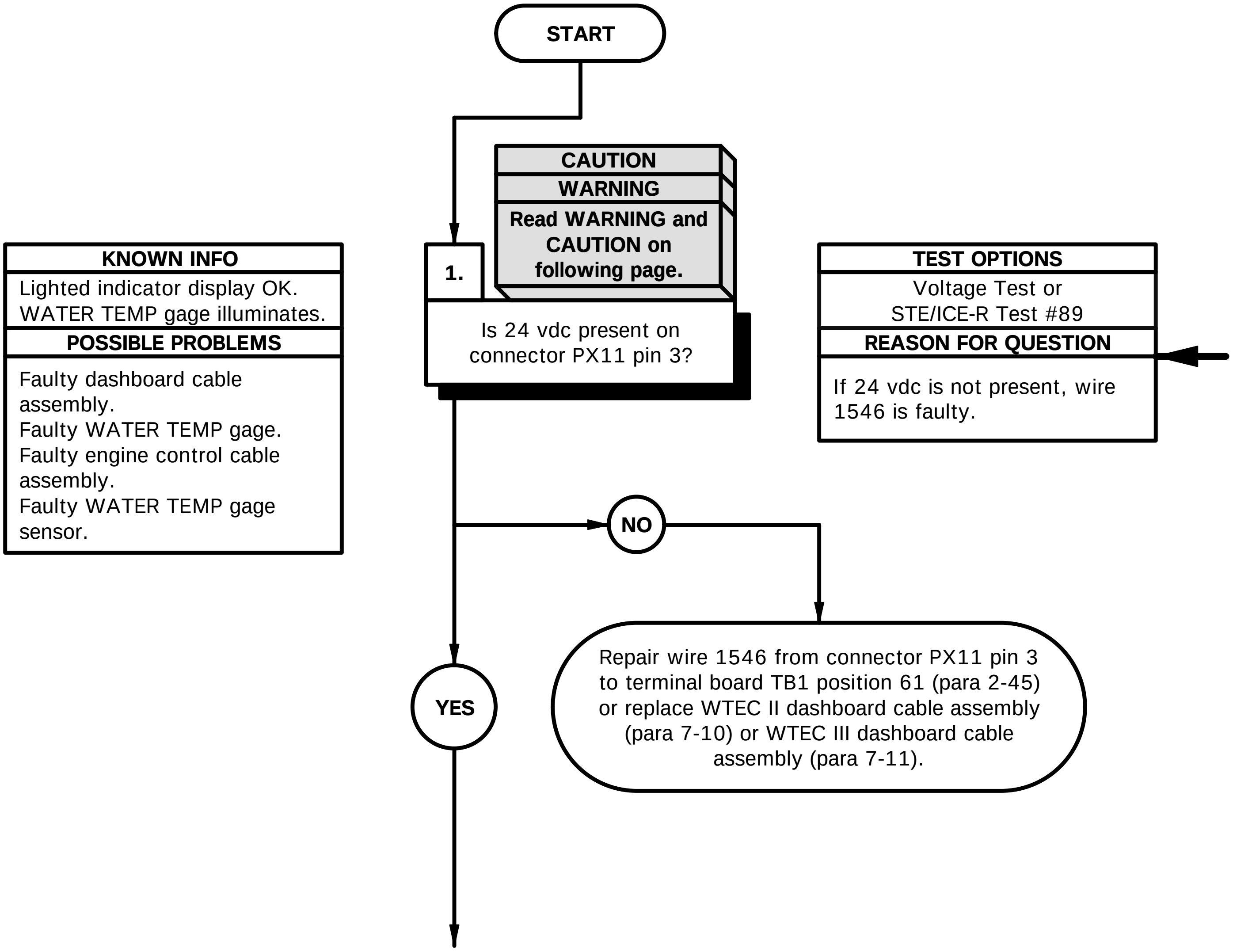
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)



KNOWN INFO

Lighted indicator display OK.
WATER TEMP gage illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WATER TEMP gage.
Faulty engine control cable assembly.
Faulty WATER TEMP gage sensor.

Read WARNING and CAUTION on following page.

1. Is 24 vdc present on connector PX11 pin 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 vdc is not present, wire 1546 is faulty.

Repair wire 1546 from connector PX11 pin 3 to terminal board TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

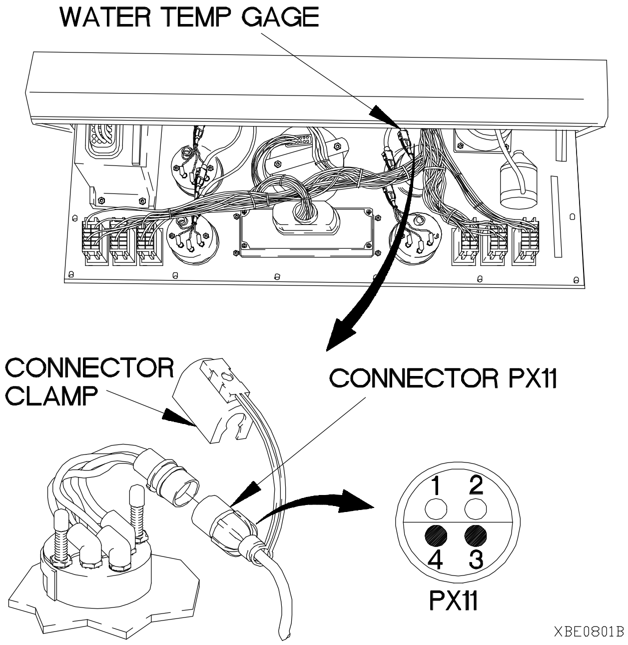
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

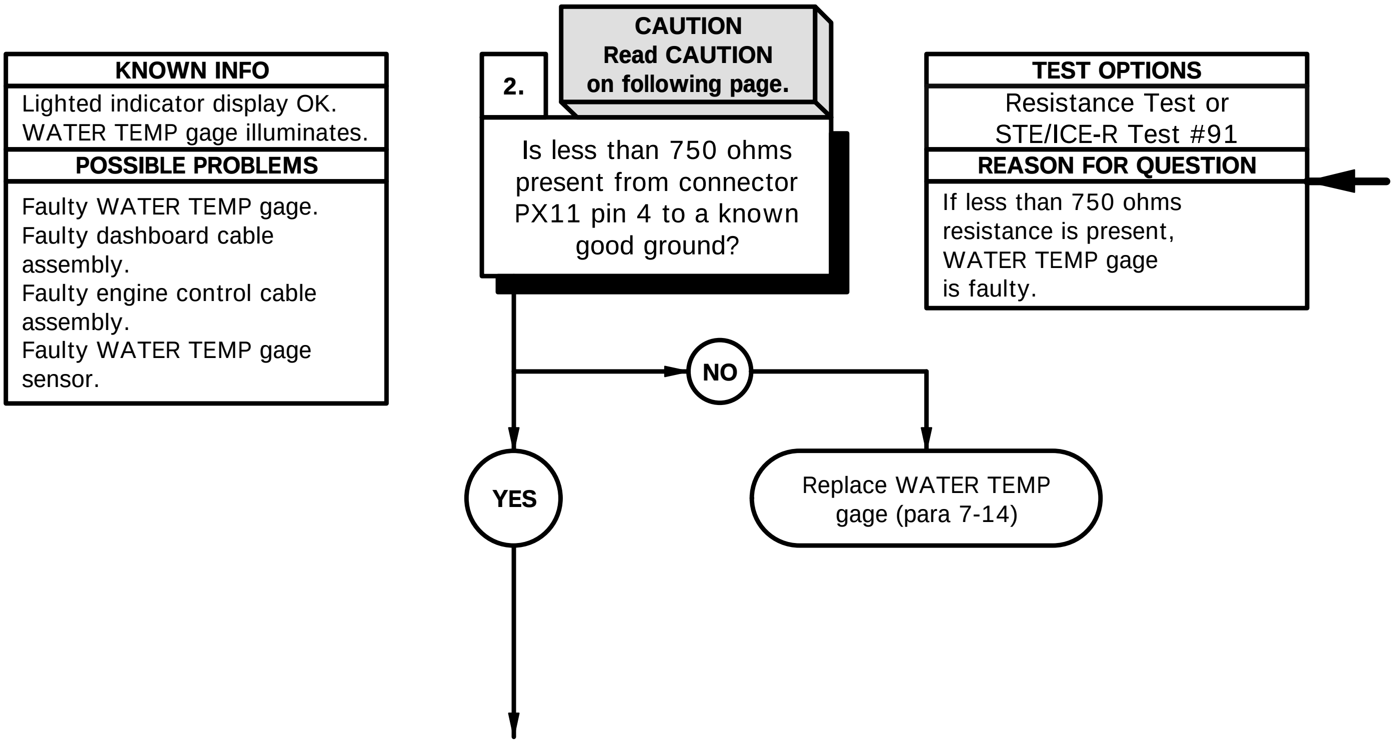
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from WATER TEMP gage connector.
(3) Disconnect connector PX11 from WATER TEMP gage connector.
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to connector PX11 pin 3.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 vdc is not present, repair wire 1546 from connector PX11 pin 3 to terminal board TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e8. WATER TEMP GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Lighted indicator display OK.
WATER TEMP gage illuminates.

POSSIBLE PROBLEMS

Faulty WATER TEMP gage.
Faulty dashboard cable assembly.
Faulty engine control cable assembly.
Faulty WATER TEMP gage sensor.

CAUTION
Read CAUTION on following page.

2. Is less than 750 ohms present from connector PX11 pin 4 to a known good ground?

TEST OPTIONS

Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If less than 750 ohms resistance is present, WATER TEMP gage is faulty.

Replace WATER TEMP gage (para 7-14)

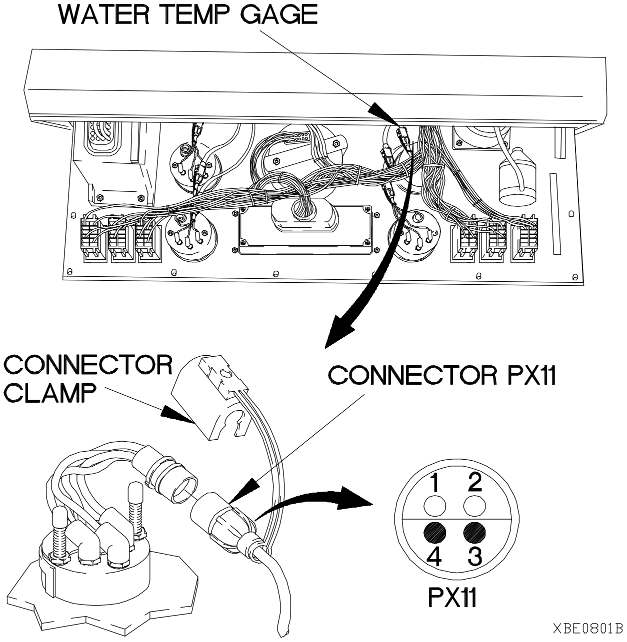
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

RESISTANCE TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to connector PX11 pin 4. (3) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter. (4) If less than 750 ohms is present, go to step 3 of this fault. (5) If greater than 750 ohms is present, replace WATER TEMP gage (para 7-14).



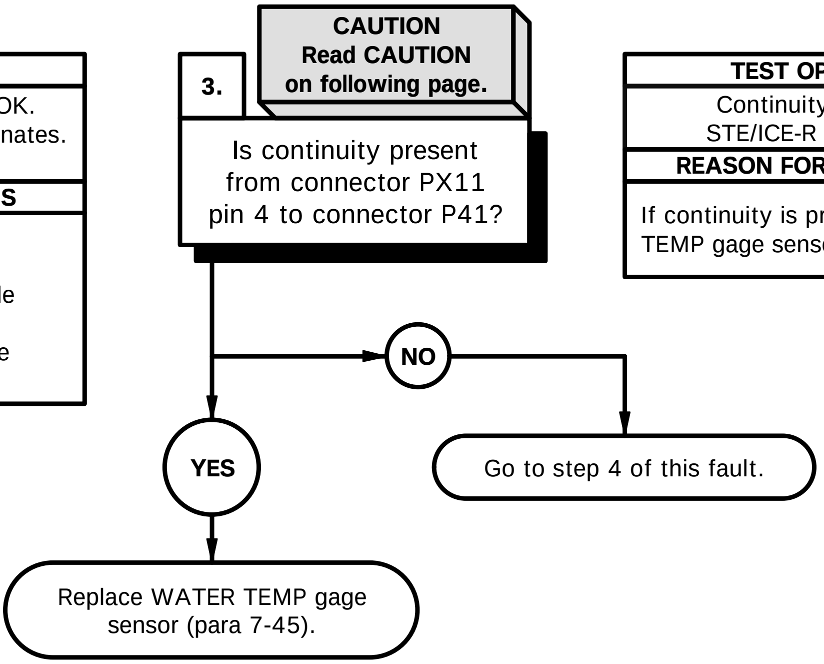
e8. WATER TEMP GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

Lighted indicator display OK.
WATER TEMP gage illuminates.
WATER TEMP gage OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.
Faulty WATER TEMP gage sensor.



CAUTION
Read CAUTION on following page.

Is continuity present from connector PX11 pin 4 to connector P41?

Replace WATER TEMP gage sensor (para 7-45).

Go to step 4 of this fault.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, WATER TEMP gage sensor is faulty.

CAUTION

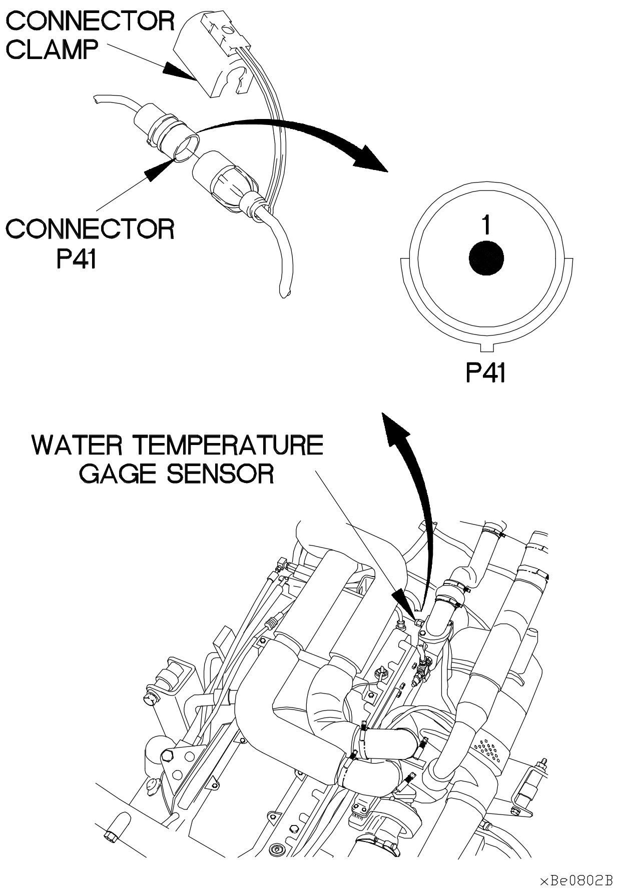
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

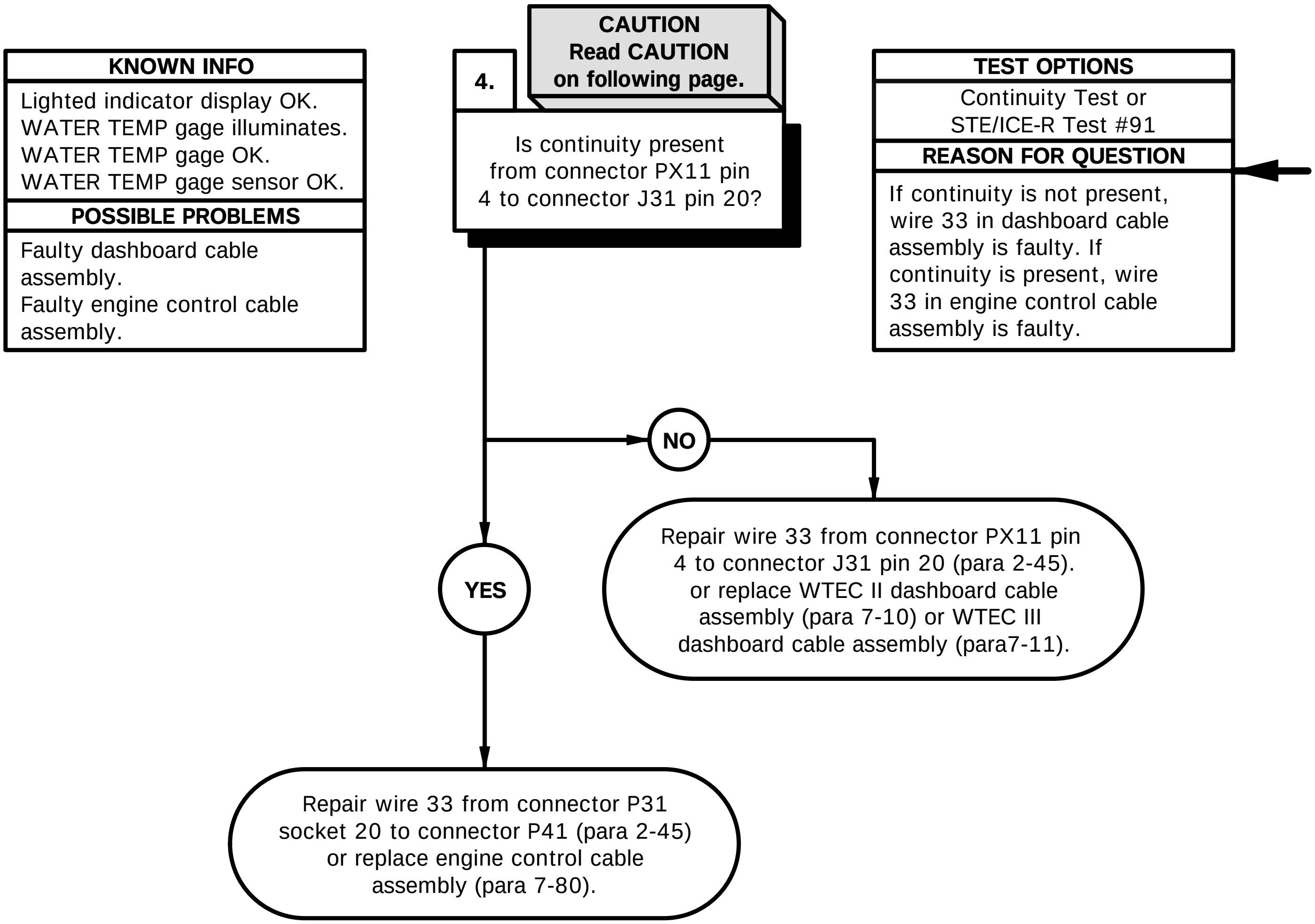
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Raise cab (TM 9-2320-366-10-1).
(2) Disconnect connector clamp from WATER TEMP gage sensor connector, if equipped.
(3) Disconnect connector P41 from WATER TEMP gage sensor connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX11 pin 4.
(6) Connect negative (-) probe of multimeter to connector P41 and note reading on multimeter.
(7) If continuity is not present, go to step 4 of this fault.
(8) If continuity is present, replace WATER TEMP gage sensor (para 7-45).
(9) Connect connector P41 to WATER TEMP gage sensor connector.
(10) Connect connector clamp to WATER TEMP gage sensor connector, if equipped.
(11) Lower cab (TM 9-2320-366-10-1).



e8. WATER TEMP GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Lighted indicator display OK.
WATER TEMP gage illuminates.
WATER TEMP gage OK.
WATER TEMP gage sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.

CAUTION
Read CAUTION on following page.

4.

Is continuity present from connector PX11 pin 4 to connector J31 pin 20?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 33 in dashboard cable assembly is faulty. If continuity is present, wire 33 in engine control cable assembly is faulty.

NO

Repair wire 33 from connector PX11 pin 4 to connector J31 pin 20 (para 2-45). or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para7-11).

YES

Repair wire 33 from connector P31 socket 20 to connector P41 (para 2-45) or replace engine control cable assembly (para 7-80).

CAUTION

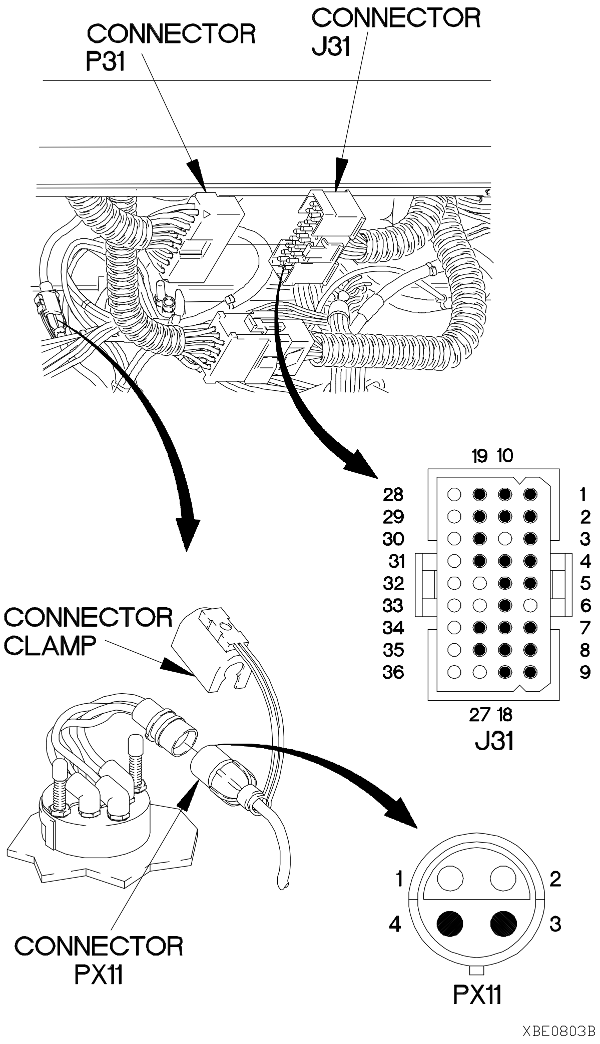
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector J31 from connector P31.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX11 pin 4.
(4) Connect negative (-) probe of multimeter to connector J31 pin 20 and note reading on multimeter.
(5) If continuity is not present, repair wire 33 from connector PX11 pin 4 to connector J31 pin 20 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, repair wire 33 from connector P31 socket 20 to connector P41 (para 2-45) or replace engine control cable assembly (para 7-80).
(7) Connect connector J31 to connector P31.
(8) Connect connector PX11 to WATER TEMP gage connector.
(9) Connect connector clamp on WATER TEMP gage connector.
(10) Install instrument panel assembly (para 7-15).



e9. REAR BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE

INITIAL SETUP

Equipment Condition

Engine shut down (TM 9-2320-366-10-1).
Air tanks drained (TM9-2320-366-10-1)

Personnel Required

(2)

Materials/Parts

Nut, Self-Locking (Item 167, Appendix G)
Antiseize Compound (Item 13, Appendix D)
Ties, Cable, Plastic (Item 69, Appendix D)

Tools and Special Tools

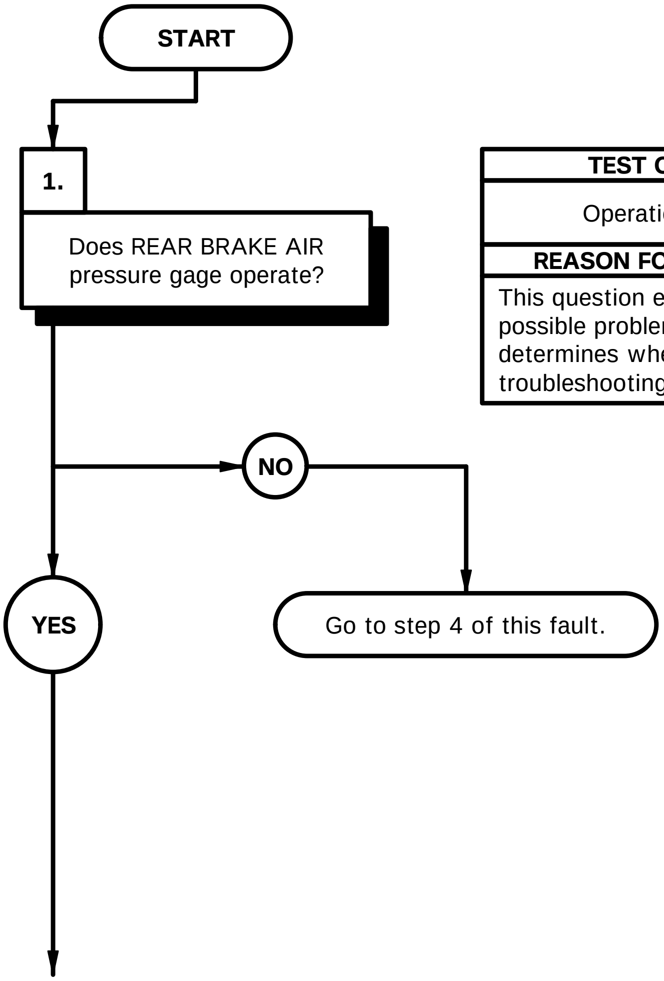
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-300 lb-in. (Item 59.1, Appendix C)

References

TM 9-4910-571-12&P

KNOWN INFO
FRONT BRAKE AIR pressure gage OK.

POSSIBLE PROBLEMS
Faulty rear brake air pressure transmitter. Faulty REAR BRAKE AIR pressure gage. Faulty dashboard cable assembly.

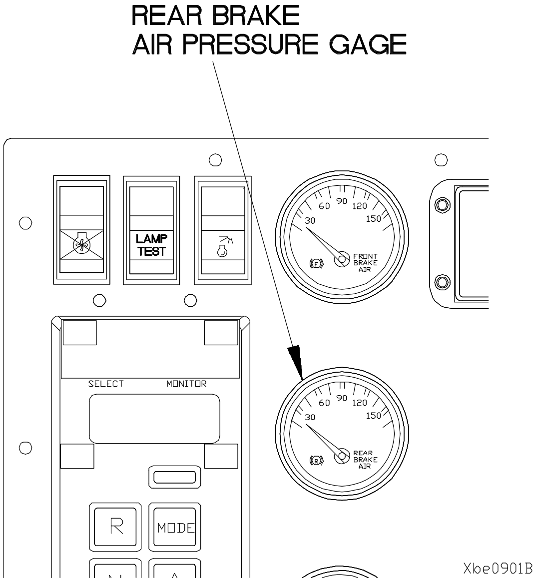


TEST OPTIONS
Operational Test

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

OPERATIONAL TEST

(1) Start engine (TM 9-2320-366-10-1).
(2) Allow vehicle to build air pressure.
(3) Note reading on REAR BRAKE AIR pressure gage.
(4) If REAR BRAKE AIR pressure gage reads 0 PSI, go to step 4 of this fault.
(5) Shut down engine (TM 9-2320-366-10-1).



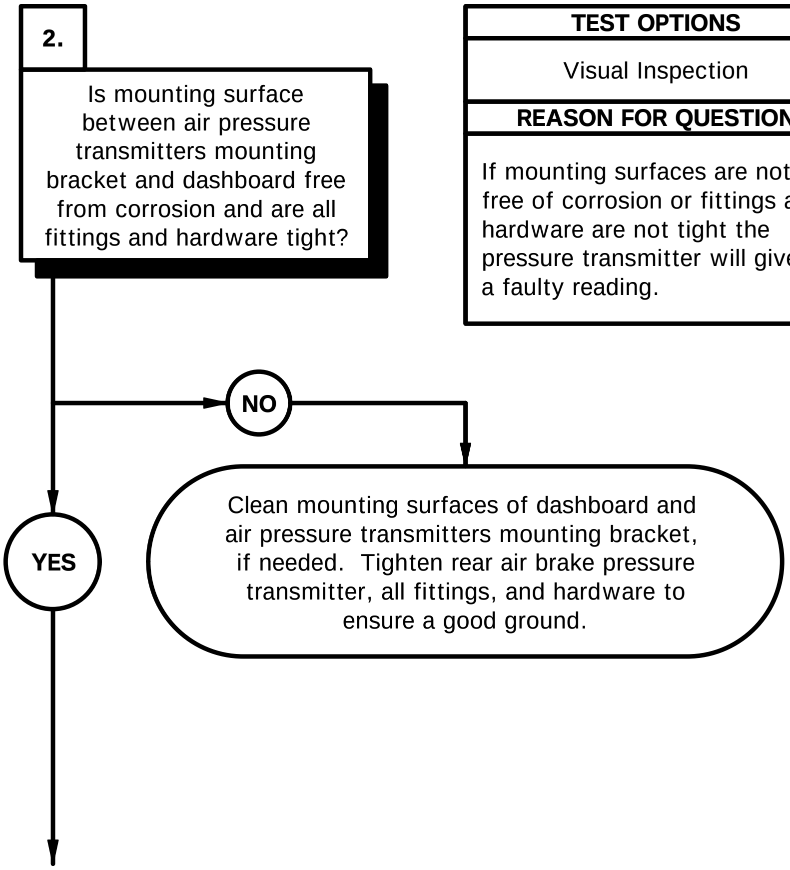
e9. REAR BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

FRONT BRAKE AIR pressure gage OK.

POSSIBLE PROBLEMS

Faulty rear brake air pressure transmitter.
Faulty REAR BRAKE AIR pressure gage.



Is mounting surface between air pressure transmitters mounting bracket and dashboard free from corrosion and are all fittings and hardware tight?

Clean mounting surfaces of dashboard and air pressure transmitters mounting bracket, if needed. Tighten rear air brake pressure transmitter, all fittings, and hardware to ensure a good ground.

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If mounting surfaces are not free of corrosion or fittings and hardware are not tight the pressure transmitter will give a faulty reading.

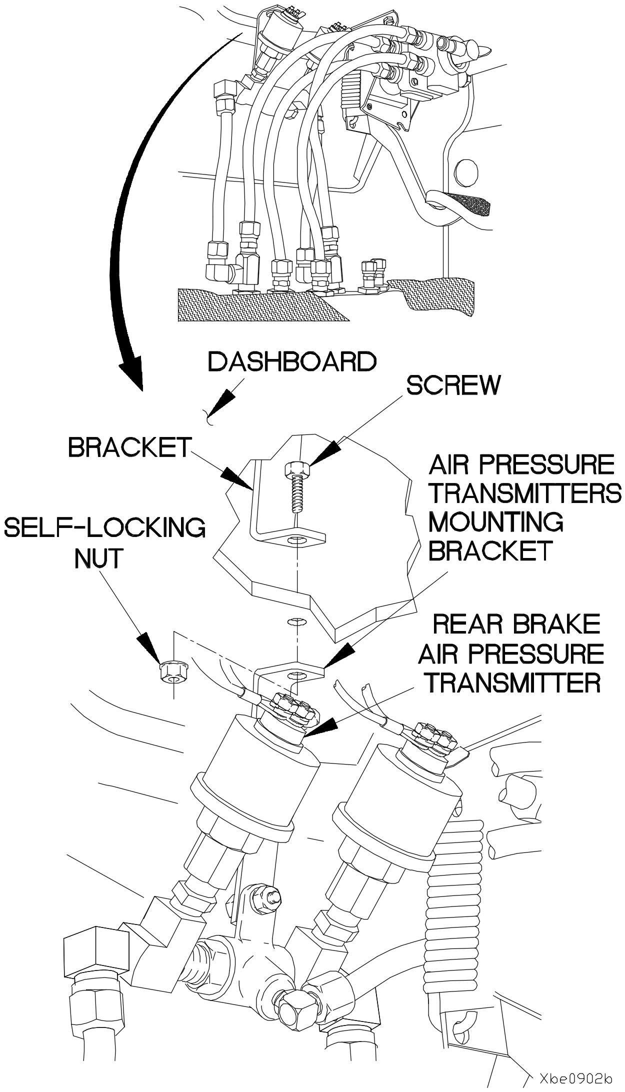
OPERATIONAL TEST

(1) Remove instrument panel assembly for access (para 7-15).

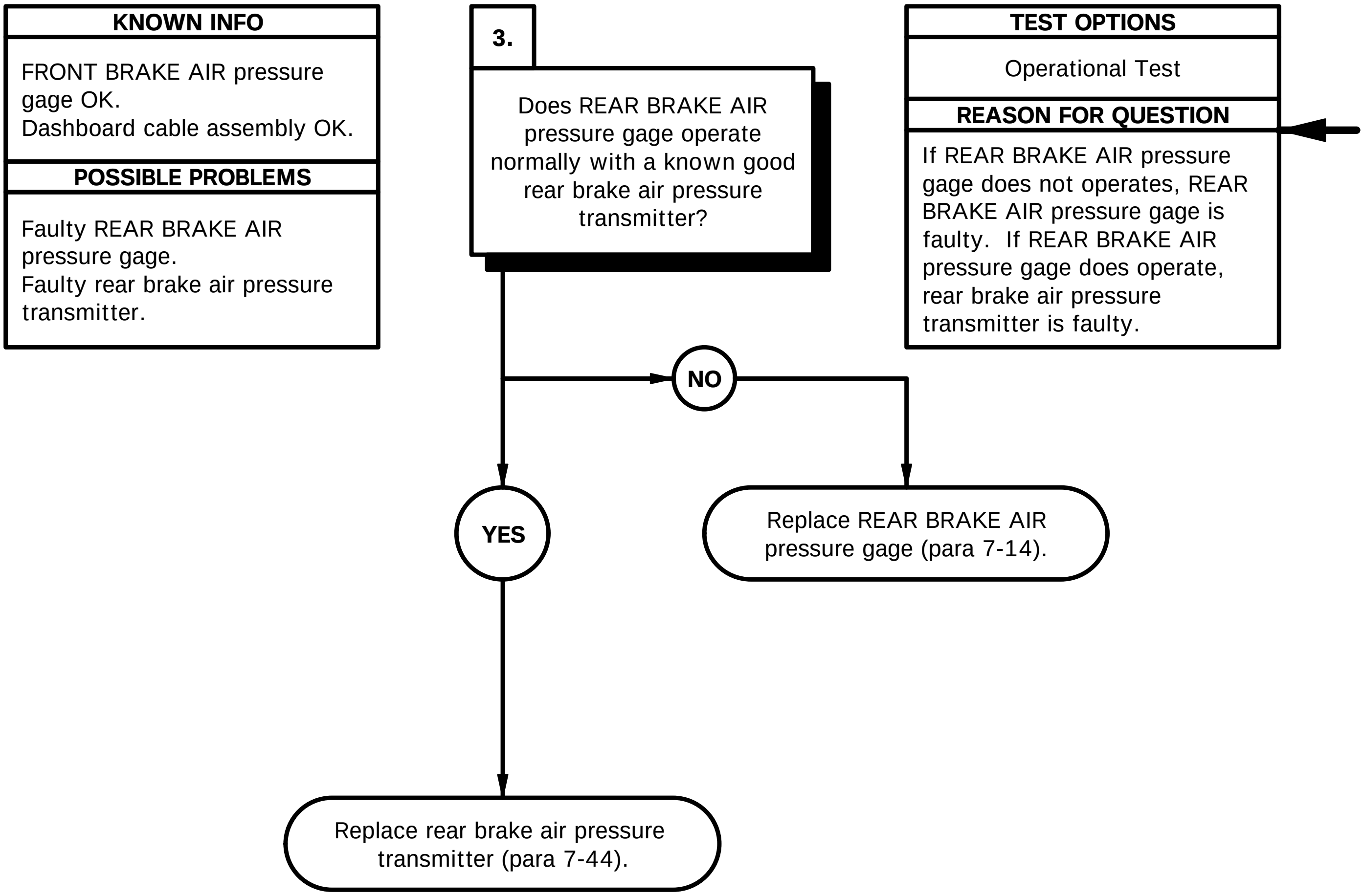
NOTE

Note orientation of brackets on dashboard prior to removing.

(2) Remove self-locking nut, air pressure transmitters mounting bracket, screw and bracket from dashboard. Discard self-locking nut.
(3) Inspect dashboard and air pressure transmitters mounting bracket mounting surfaces for corrosion.
(4) If mounting surfaces between air pressure transmitters mounting bracket and dashboard are not free of corrosion or all fittings and hardware are not tight, clean mounting surfaces if needed. Tighten rear brake air pressure transmitter, all fittings, and hardware to ensure a good ground.
(5) Position bracket, screw, air pressure transmitters mounting bracket, and self-locking nut on dashboard.
(6) Tighten self-locking nut to 168-192 lb-in. (19-21 N.m).
(7) Install instrument panel assembly (para 7-15).



e9. REAR BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FRONT BRAKE AIR pressure gage OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty REAR BRAKE AIR pressure gage.
Faulty rear brake air pressure transmitter.

3.

Does REAR BRAKE AIR pressure gage operate normally with a known good rear brake air pressure transmitter?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

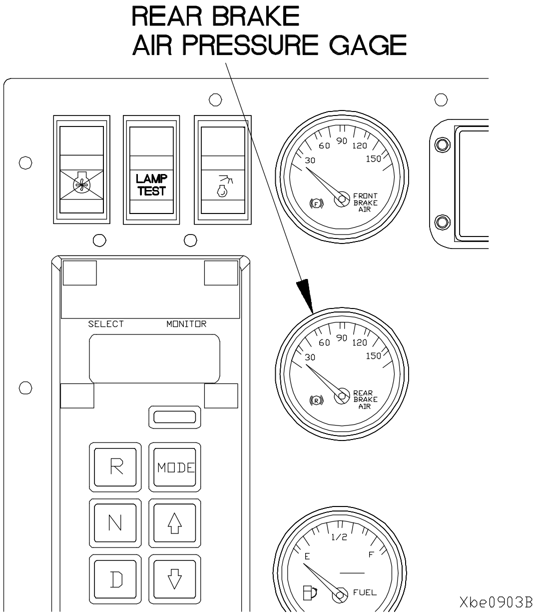
If REAR BRAKE AIR pressure gage does not operates, REAR BRAKE AIR pressure gage is faulty. If REAR BRAKE AIR pressure gage does operate, rear brake air pressure transmitter is faulty.

Replace REAR BRAKE AIR pressure gage (para 7-14).

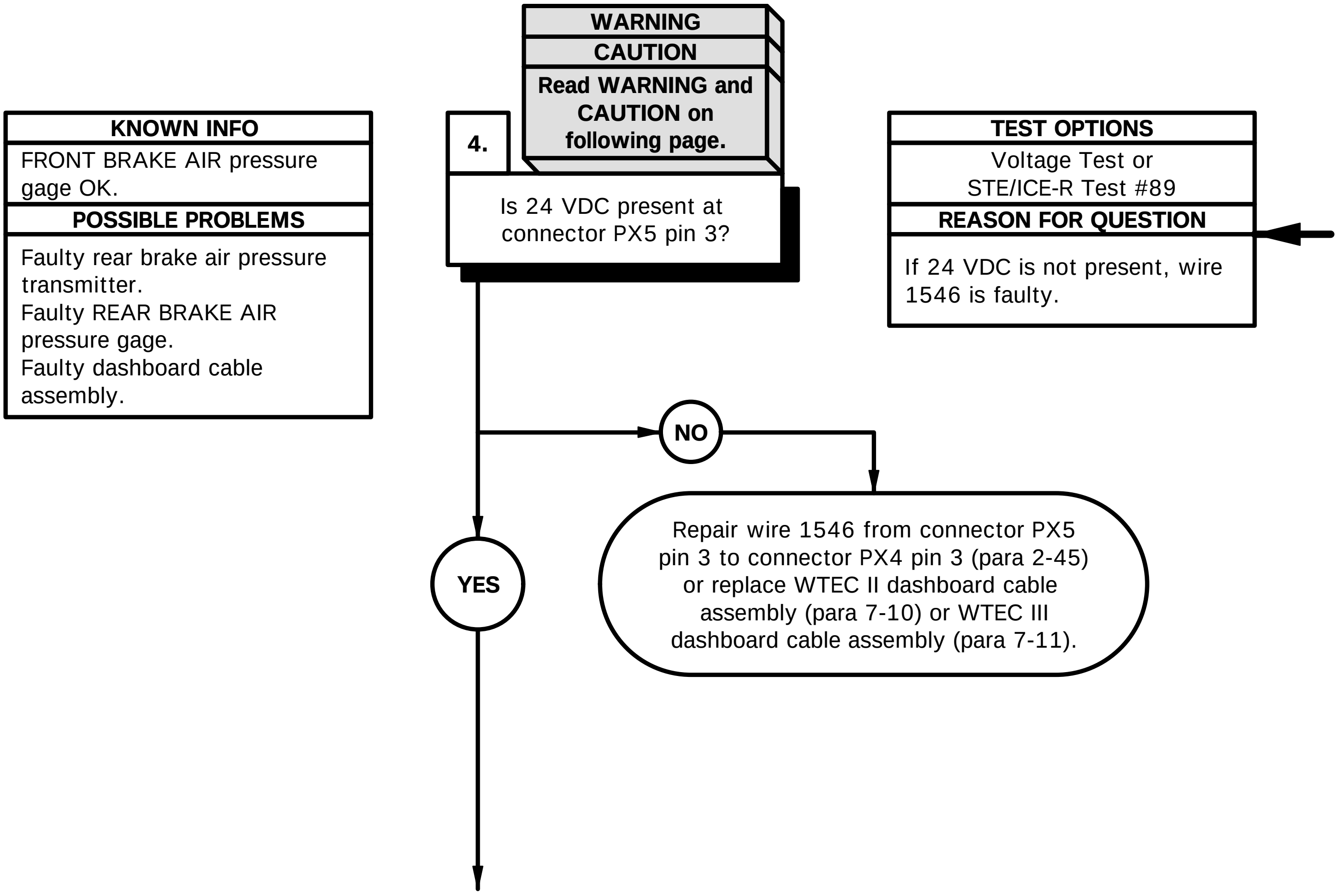
Replace rear brake air pressure transmitter (para 7-44).

CONTINUITY TEST

(1) Replace rear brake air pressure transmitter (para 7-44).
(2) Start engine (TM 9-2320-366-10-1).
(3) Observe REAR BRAKE AIR pressure gage and allow vehicle to build air pressure.
(4) If REAR BRAKE AIR pressure gage does not operate normally, replace REAR BRAKE AIR pressure gage (para 7-14).
(5) If REAR BRAKE AIR pressure gage does operate normally, replace rear brake air pressure transmitter (para 7-44).
(6) Shut down engine (TM 9-2320-366-10-1).



e9. REAR BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FRONT BRAKE AIR pressure gage OK.

POSSIBLE PROBLEMS

Faulty rear brake air pressure transmitter.

Faulty REAR BRAKE AIR pressure gage.

Faulty dashboard cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

4. Is 24 VDC present at connector PX5 pin 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1546 is faulty.

NO

Repair wire 1546 from connector PX5 pin 3 to connector PX4 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

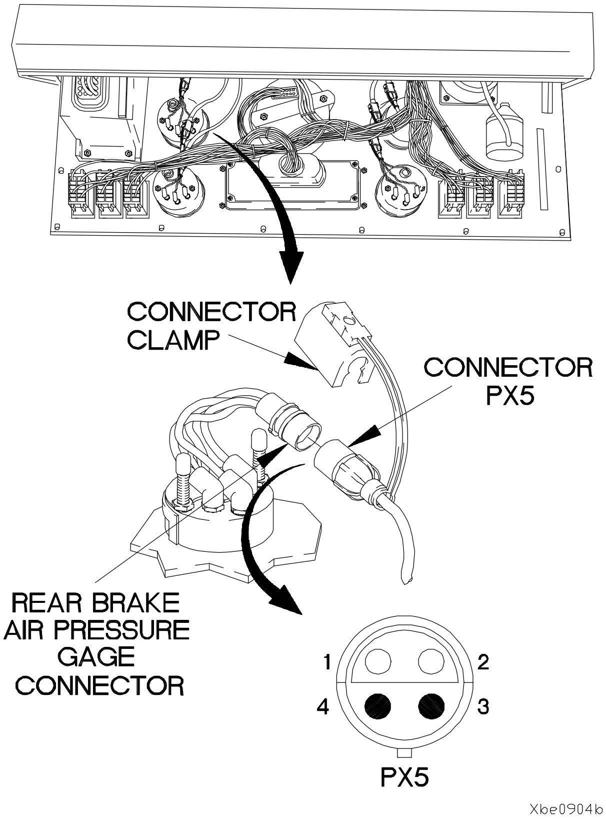
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector clamp from REAR BRAKE AIR pressure gage connector.
(3) Disconnect connector PX5 from REAR BRAKE AIR pressure gage connector.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to connector PX5 pin 3.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1).
(8) If 24 VDC is not present, repair wire 1546 from connector PX5 pin 3 to connector PX4 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e9. REAR BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

FRONT BRAKE AIR pressure gage OK.

POSSIBLE PROBLEMS

Faulty rear brake air pressure transmitter.
Faulty REAR BRAKE AIR pressure gage.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

5. Is continuity present from connector PX5 pin 4 to terminal lug TL151?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1792 is faulty.

NO

Replace wire 1792 from connector PX5 pin 4 to terminal lug TL151 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

FRONT BRAKE AIR pressure gage OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty REAR BRAKE AIR pressure gage.
Faulty rear brake air pressure transmitter.

6. Is continuity present from rear brake air pressure transmitter housing to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, ground is faulty.

NO

Tighten rear brake air pressure transmitter and fittings to ensure a good ground.

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

NOTE

Remove plastic cable ties as required.

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX5 pin 4.
(3) Connect negative (-) probe of multimeter to terminal lug TL151 and note reading on multimeter.
(4) If continuity is not present, replace wire 1792 from connector PX5 pin 4 to terminal lug TL151 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

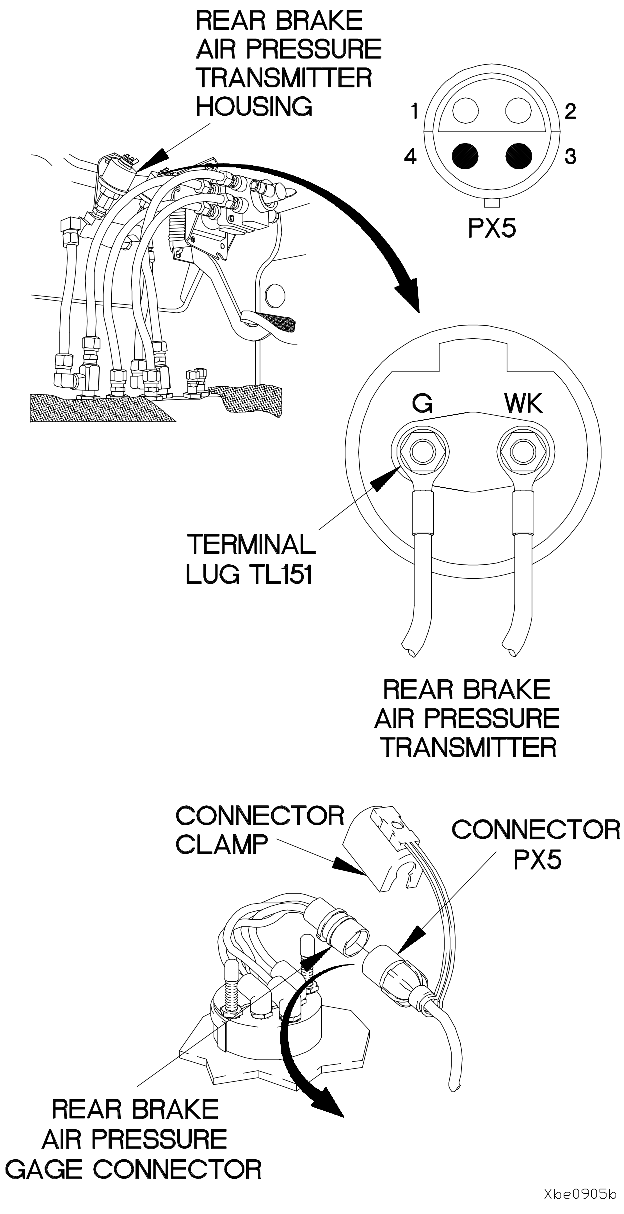
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to rear air brake pressure transmitter housing.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, tighten rear brake air pressure transmitter and fittings to ensure a good ground.
(5) Connect connector PX5 to REAR BRAKE AIR pressure gage connector.
(6) Connect connector clamp to REAR BRAKE AIR pressure gage connector.

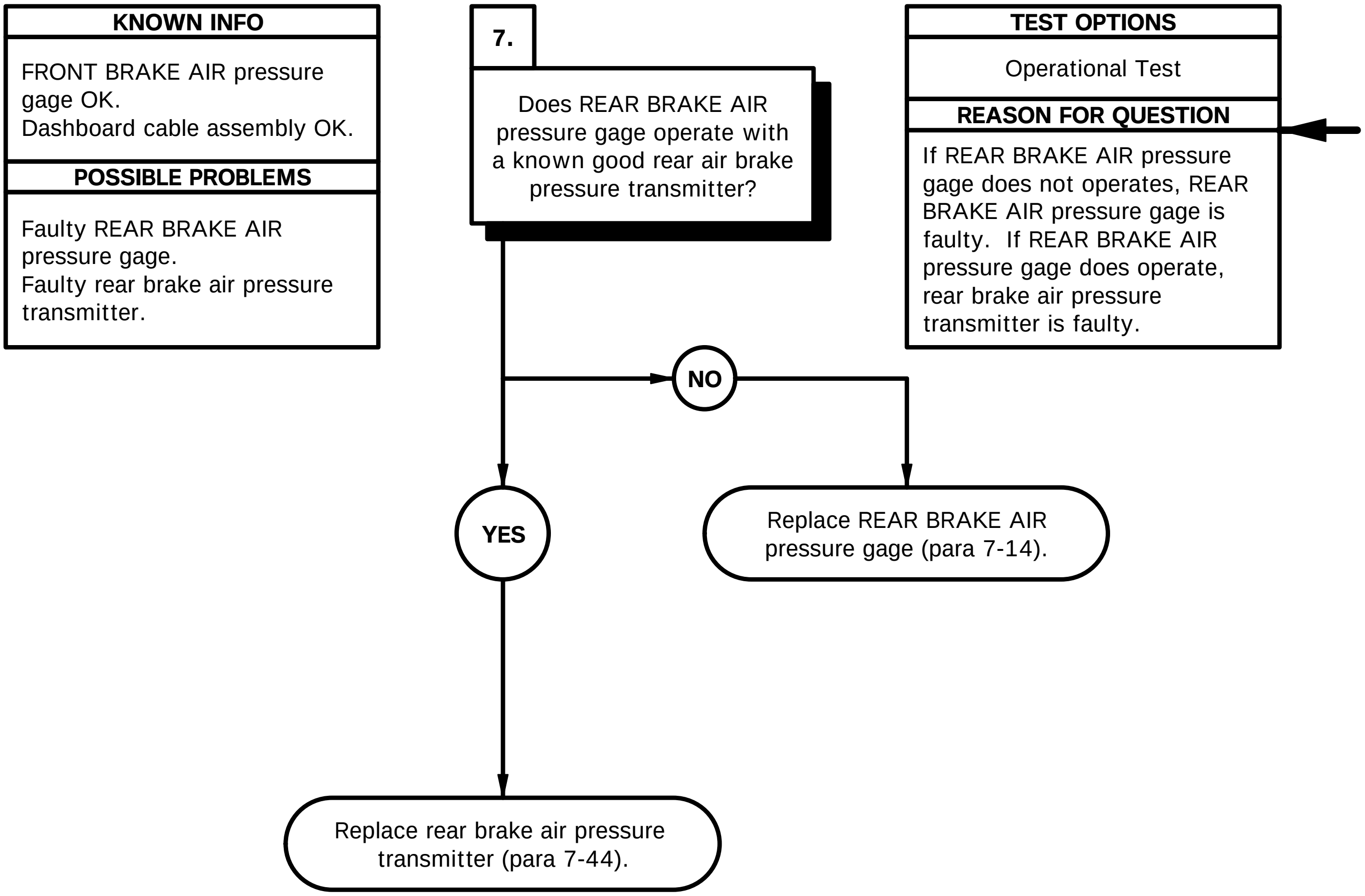
NOTE

Install plastic cable ties as required.

(7) Install instrument panel assembly (para 7-15).



e9. REAR BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FRONT BRAKE AIR pressure gage OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty REAR BRAKE AIR pressure gage.
Faulty rear brake air pressure transmitter.

7.

Does REAR BRAKE AIR pressure gage operate with a known good rear air brake pressure transmitter?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

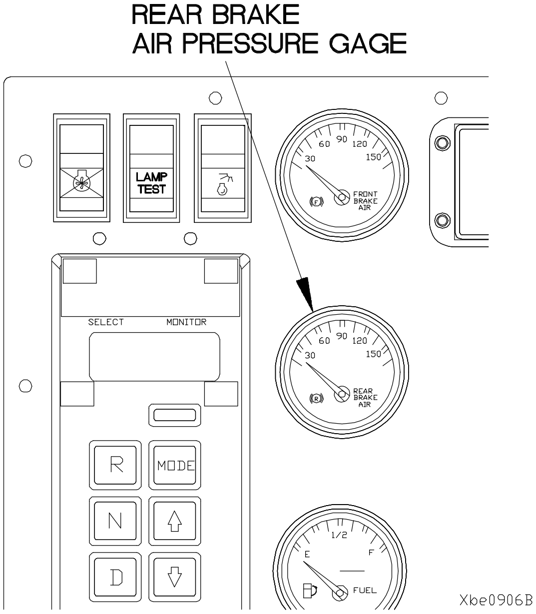
If REAR BRAKE AIR pressure gage does not operates, REAR BRAKE AIR pressure gage is faulty. If REAR BRAKE AIR pressure gage does operate, rear brake air pressure transmitter is faulty.

Replace REAR BRAKE AIR pressure gage (para 7-14).

Replace rear brake air pressure transmitter (para 7-44).

CONTINUITY TEST

(1) Replace rear brake air pressure transmitter (para 7-44).
(2) Start engine (TM 9-2320-366-10-1).
(3) Allow vehicle to build air pressure.
(4) Note reading on REAR BRAKE AIR pressure gage.
(5) If REAR BRAKE AIR pressure gage does not operate, replace REAR BRAKE AIR pressure gage (para 7-14).
(6) If REAR BRAKE AIR pressure gage does operate, replace rear brake air pressure transmitter (para 7-44).
(7) Shut down engine (TM 9-2320-366-10-1).



e10. FRONT BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Air tanks drained (TM9-2320-366-10-1)

Personnel Required
(2)

Materials/Parts
Nut, Self-Locking (Item 167, Appendix G)
Antiseize Compound (Item 13, Appendix D)
Ties, Cable, Plastic (Item 69, Appendix D)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-300 lb-in. (Item 59.1, Appendix C)

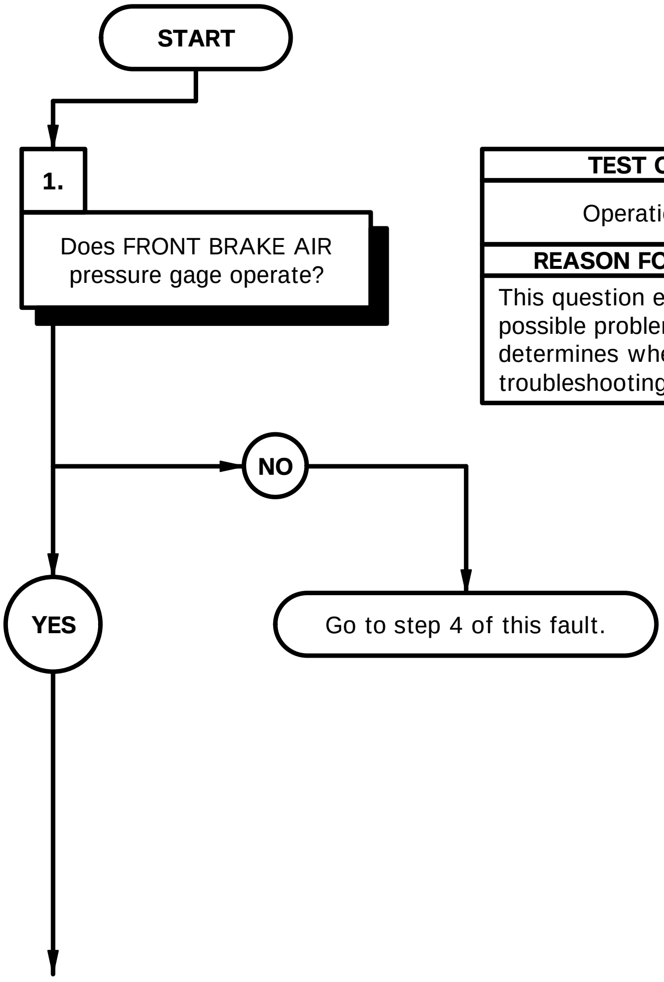
References
TM 9-4910-571-12&P

KNOWN INFO

FUEL gage OK.

POSSIBLE PROBLEMS

Faulty front brake air pressure transmitter.
Faulty FRONT BRAKE AIR pressure gage.
Faulty dashboard cable assembly.



Does FRONT BRAKE AIR pressure gage operate?

Go to step 4 of this fault.

TEST OPTIONS

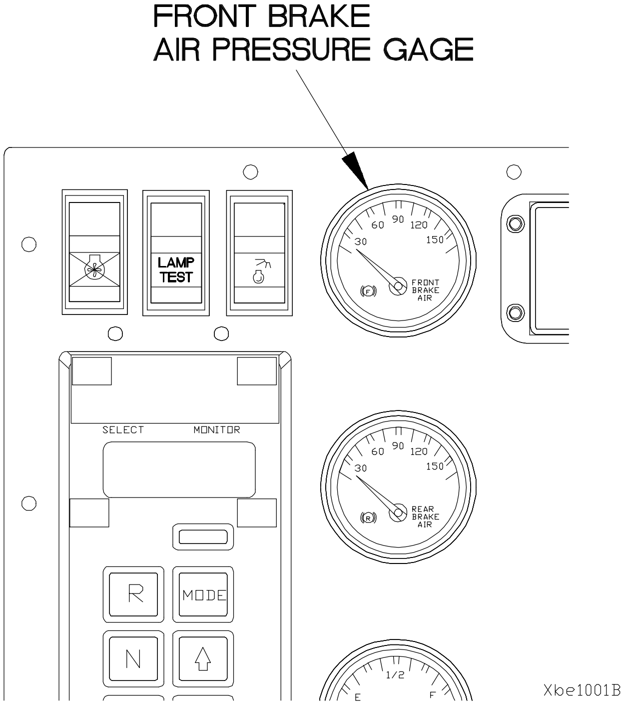
Operational Test

REASON FOR QUESTION

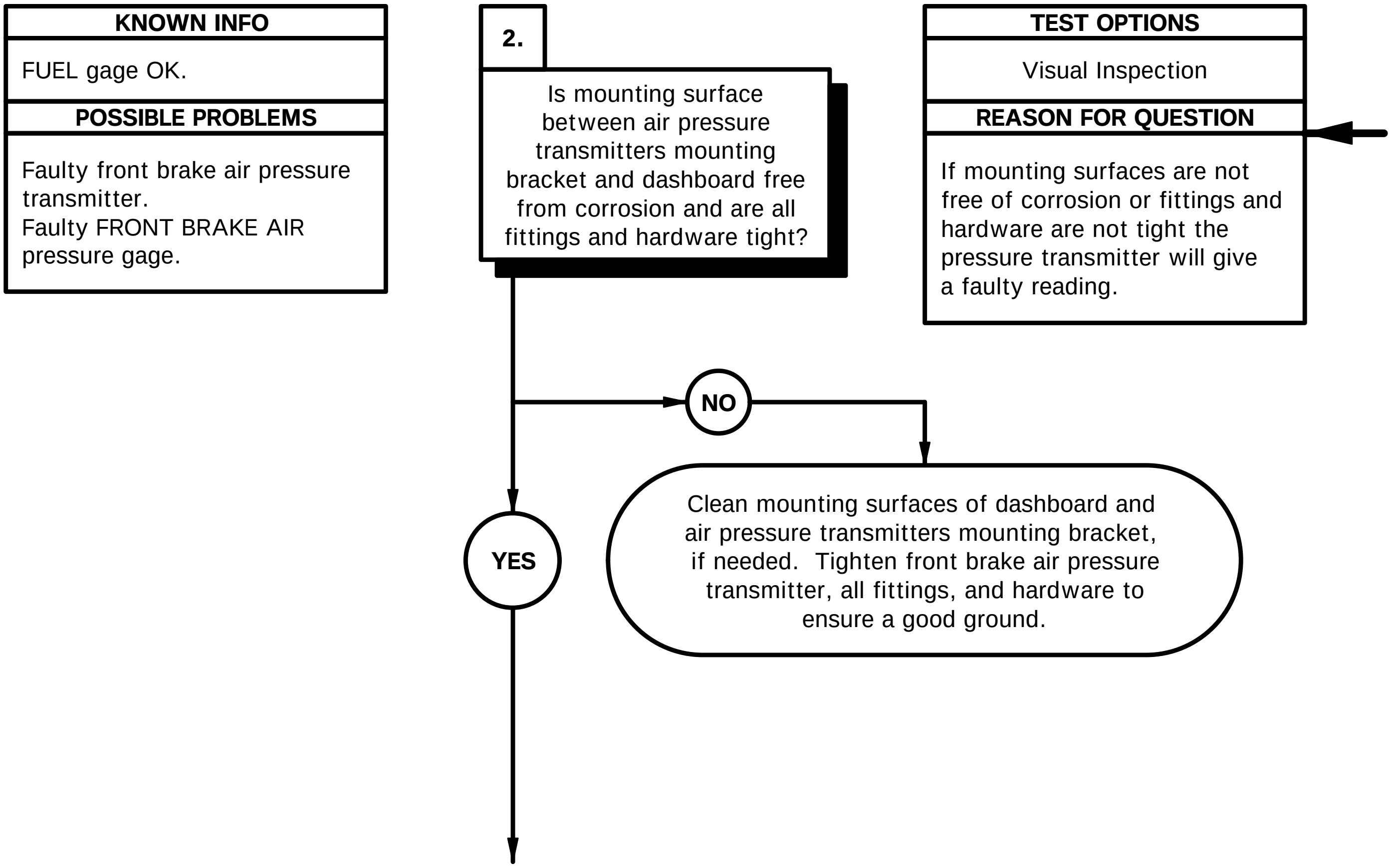
This question eliminates possible problems and determines where troubleshooting continues.

OPERATIONAL TEST

(1) Start engine (TM 9-2320-366-10-1).
(2) Allow vehicle to build air pressure.
(3) Note reading on FRONT BRAKE AIR pressure gage.
(4) If FRONT BRAKE AIR pressure gage reads 0 PSI, go to step 4 of this fault.
(5) Shut down engine (TM 9-2320-366-10-1).



e10. FRONT BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FUEL gage OK.

POSSIBLE PROBLEMS

Faulty front brake air pressure transmitter.
Faulty FRONT BRAKE AIR pressure gage.

2.

Is mounting surface between air pressure transmitters mounting bracket and dashboard free from corrosion and are all fittings and hardware tight?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If mounting surfaces are not free of corrosion or fittings and hardware are not tight the pressure transmitter will give a faulty reading.

NO

Clean mounting surfaces of dashboard and air pressure transmitters mounting bracket, if needed. Tighten front brake air pressure transmitter, all fittings, and hardware to ensure a good ground.

YES

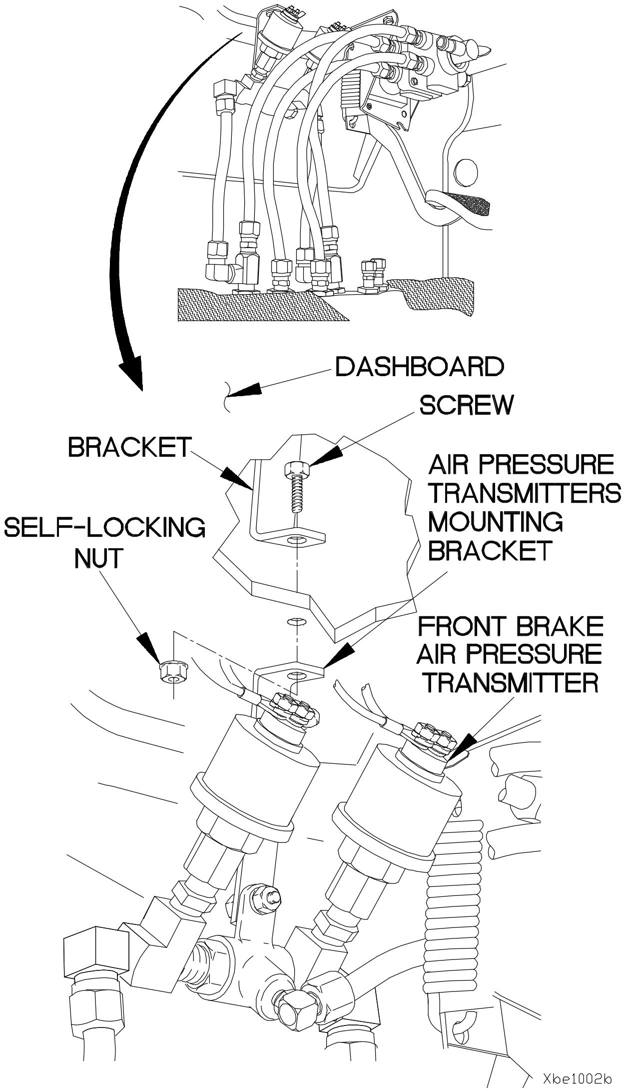
OPERATIONAL TEST

(1) Remove instrument panel assembly for access (para 7-15).

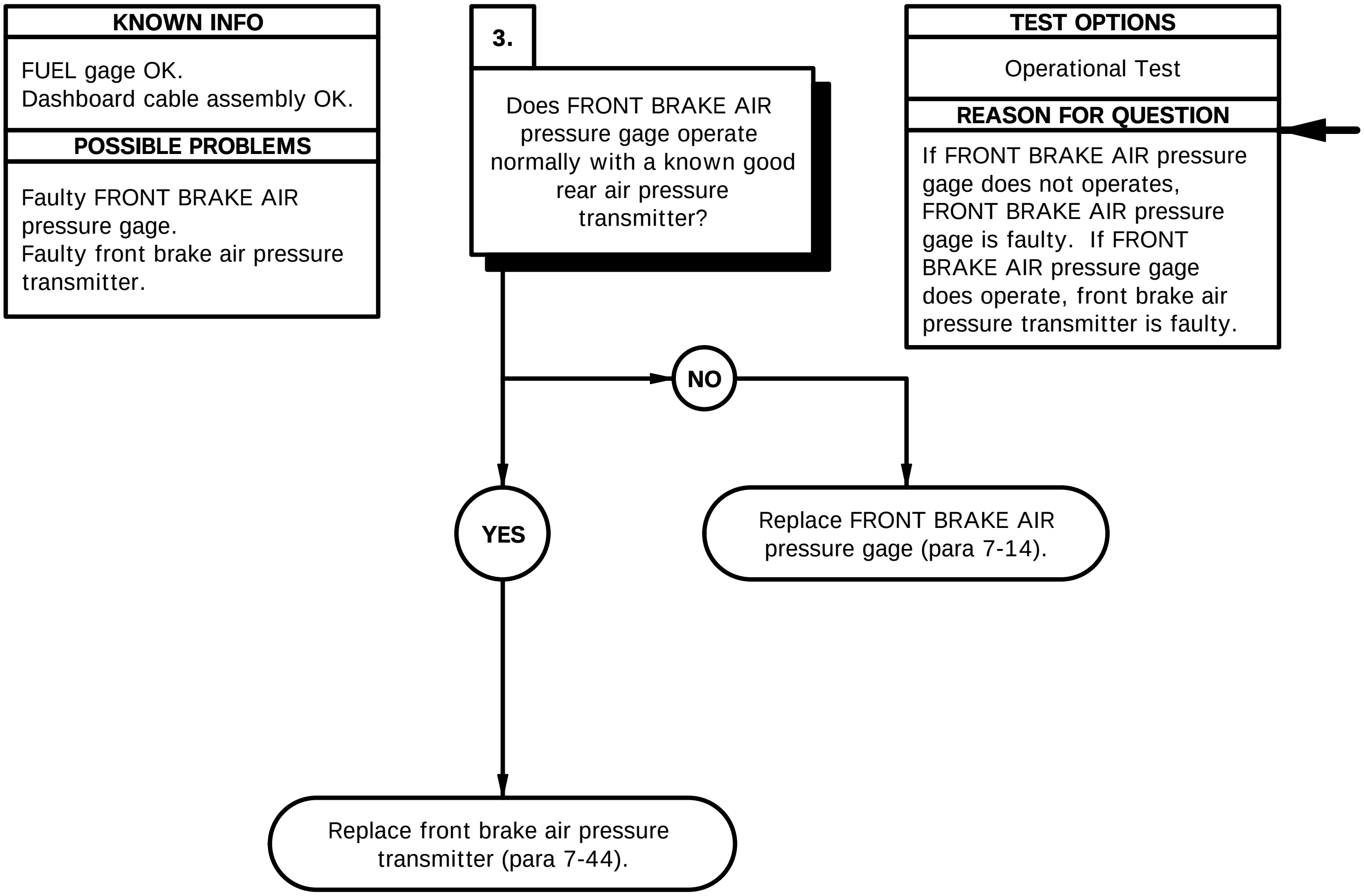
NOTE

Note orientation of brackets on dashboard prior to removing.

(2) Remove self-locking nut, air pressure transmitters mounting bracket, screw and bracket from dashboard. Discard self-locking nut.
(3) Inspect dashboard and air pressure transmitters mounting bracket mounting surfaces for corrosion.
(4) If mounting surfaces between air pressure transmitters mounting bracket and dashboard are not free of corrosion or all fittings and hardware are not tight, clean mounting surfaces if needed. Tighten front brake air pressure transmitter, all fittings, and hardware to ensure a good ground.
(5) Position bracket, screw, air pressure transmitters mounting bracket, and self-locking nut on dashboard.
(6) Tighten self-locking nut to 168-192 lb-in. (19-21 N.m).
(7) Install instrument panel assembly (para 7-15).



e10. FRONT BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FUEL gage OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty FRONT BRAKE AIR pressure gage.
Faulty front brake air pressure transmitter.

3.

Does FRONT BRAKE AIR pressure gage operate normally with a known good rear air pressure transmitter?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

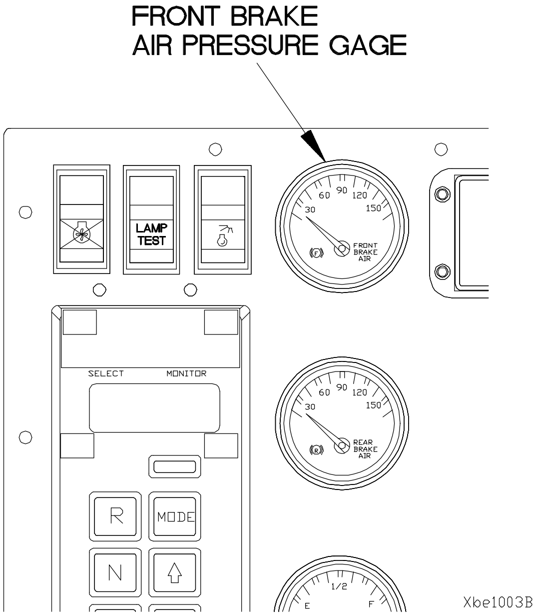
If FRONT BRAKE AIR pressure gage does not operates, FRONT BRAKE AIR pressure gage is faulty. If FRONT BRAKE AIR pressure gage does operate, front brake air pressure transmitter is faulty.

Replace FRONT BRAKE AIR pressure gage (para 7-14).

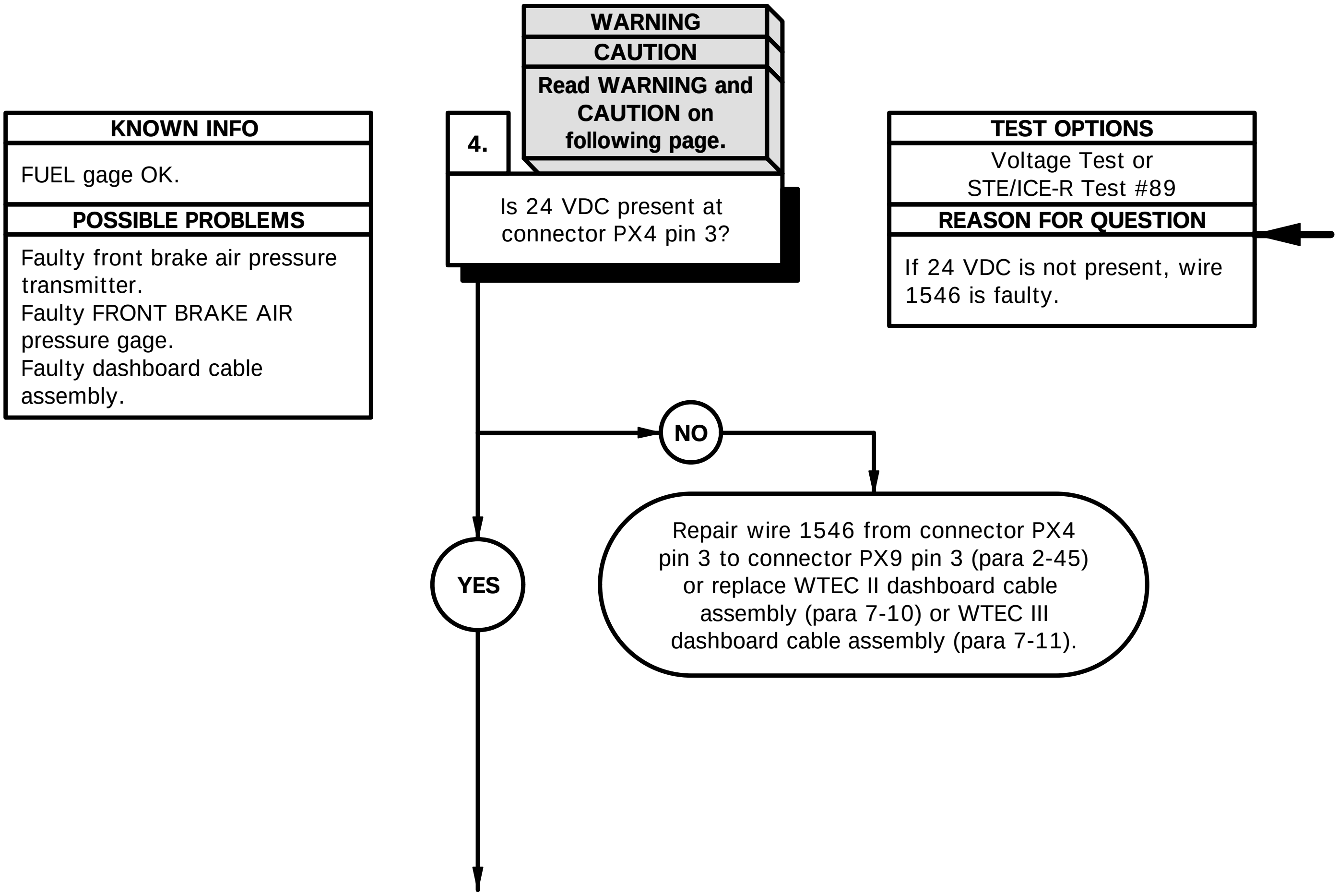
Replace front brake air pressure transmitter (para 7-44).

CONTINUITY TEST

(1) Replace front brake air pressure transmitter (para 7-44).
(2) Start engine (TM 9-2320-366-10-1).
(3) Observe FRONT BRAKE AIR pressure gage and allow vehicle to build air pressure.
(4) If FRONT BRAKE AIR pressure gage does not operate normally, replace FRONT BRAKE AIR pressure gage (para 7-14).
(5) If FRONT BRAKE AIR pressure gage does operate normally, replace front brake air pressure transmitter (para 7-44).
(6) Shut down engine (TM 9-2320-366-10-1).



e10. FRONT BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FUEL gage OK.

POSSIBLE PROBLEMS

Faulty front brake air pressure transmitter.
Faulty FRONT BRAKE AIR pressure gage.
Faulty dashboard cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

4.

Is 24 VDC present at connector PX4 pin 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1546 is faulty.

NO

Repair wire 1546 from connector PX4 pin 3 to connector PX9 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

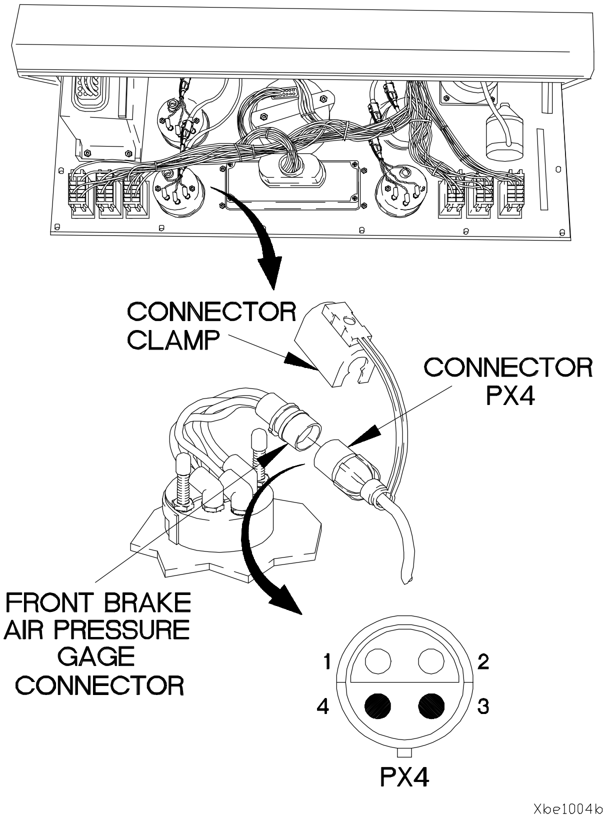
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

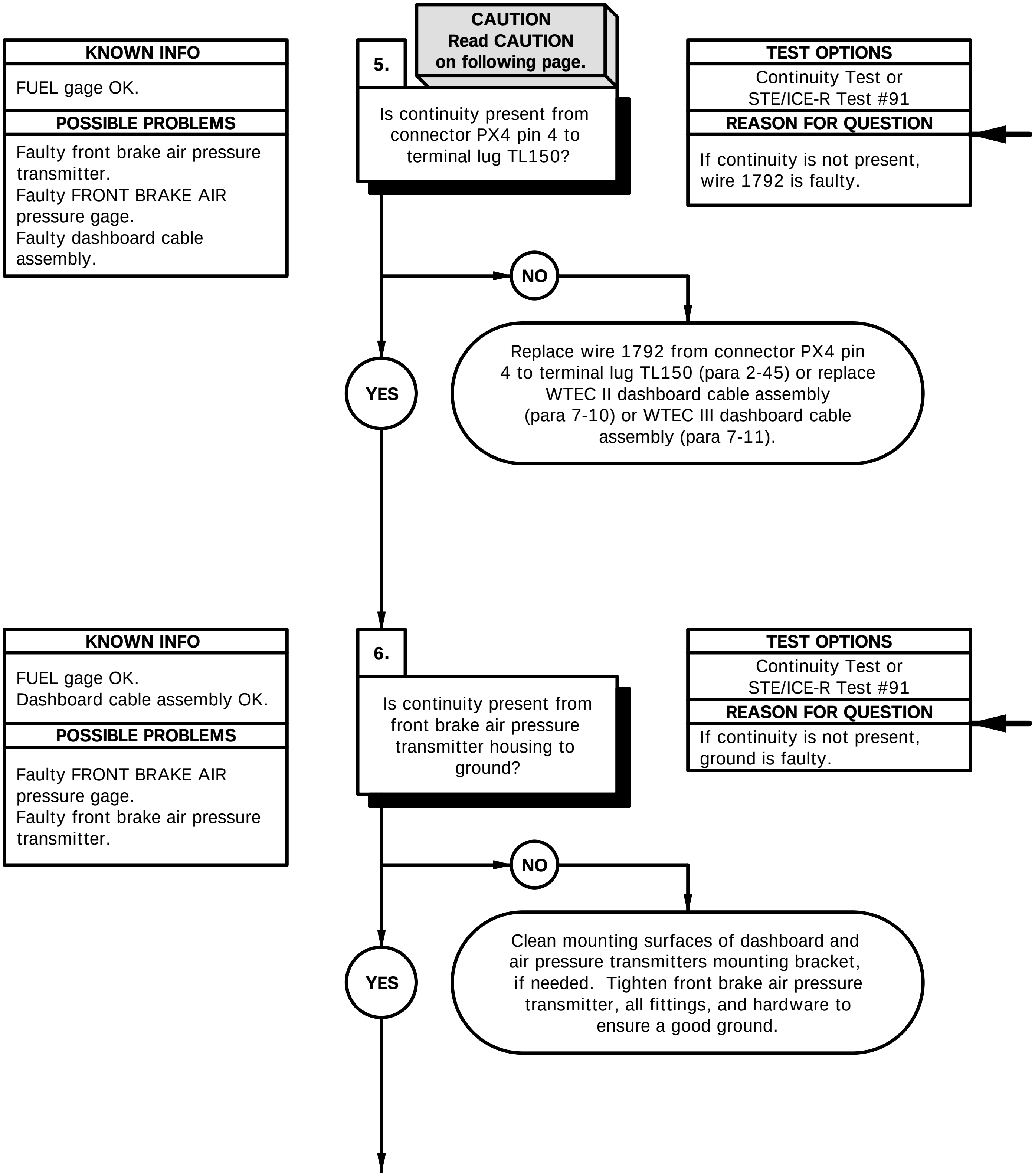
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector clamp from FRONT BRAKE AIR pressure gage connector.
(3) Disconnect connector PX4 from FRONT BRAKE AIR pressure gage connector.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to connector PX4 pin 3.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1).
(8) If 24 VDC is not present, repair wire 1546 from connector PX4 pin 3 to connector PX9 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e10. FRONT BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FUEL gage OK.

POSSIBLE PROBLEMS

Faulty front brake air pressure transmitter.
Faulty FRONT BRAKE AIR pressure gage.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

5. Is continuity present from connector PX4 pin 4 to terminal lug TL150?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1792 is faulty.

NO

Replace wire 1792 from connector PX4 pin 4 to terminal lug TL150 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

FUEL gage OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty FRONT BRAKE AIR pressure gage.
Faulty front brake air pressure transmitter.

6. Is continuity present from front brake air pressure transmitter housing to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, ground is faulty.

NO

Clean mounting surfaces of dashboard and air pressure transmitters mounting bracket, if needed. Tighten front brake air pressure transmitter, all fittings, and hardware to ensure a good ground.

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

NOTE

Remove plastic cable ties as required.

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX4 pin 4.
(3) Connect negative (-) probe of multimeter to terminal lug TL150 and note reading on multimeter.
(4) If continuity is not present, replace wire 1792 from connector PX4 pin 4 to terminal lug TL150 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to front brake air pressure transmitter housing.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, perform steps (5) through (12).
(5) Remove self-locking nut, air pressure transmitters mounting bracket, screw, and bracket from dashboard. Discard self-locking nut.
(6) Inspect dashboard and air pressure transmitters mounting bracket for corrosion.
(7) If mounting surface is corroded or fittings and hardware are not tight, clean mounting surface if needed. Tighten front brake air pressure transmitter, all fittings, and hardware to ensure a good ground.
(8) Position bracket, screw, air pressure transmitters mounting bracket, and self-locking nut on dashboard.
(9) Tighten self-locking nut to 168-192 lb-in. (19-21 N.m).

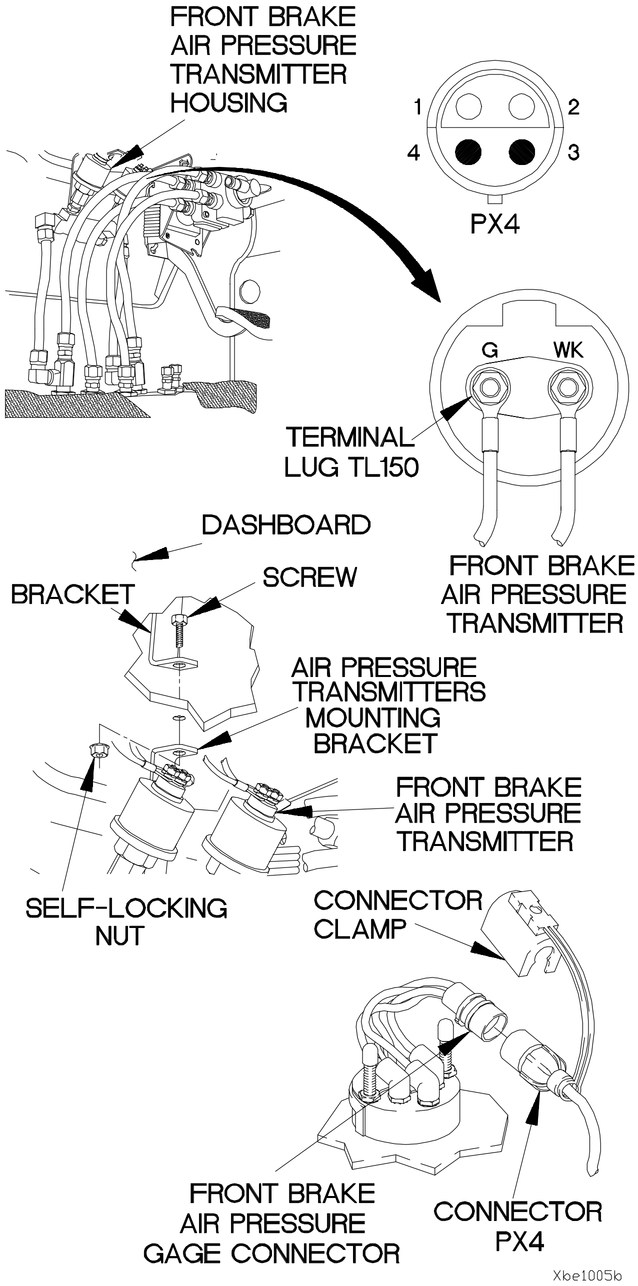
CONTINUITY TEST (Cont)

(10) Connect connector PX4 to FRONT BRAKE AIR pressure gage connector.
(11) Connect connector clamp to FRONT BRAKE AIR pressure gage.

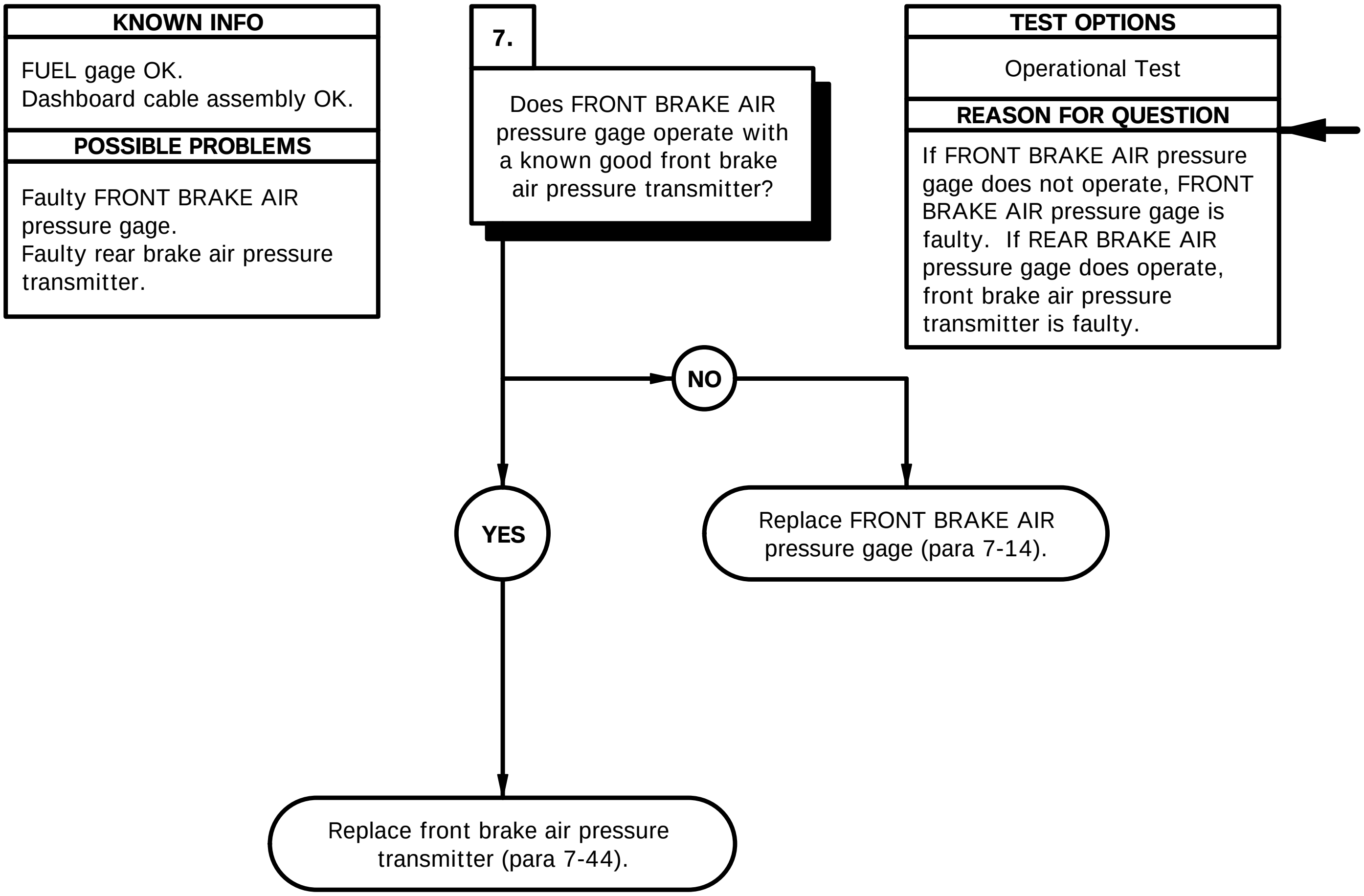
NOTE

Install plastic cable ties as required

(12) Install instrument panel assembly (para 7-15).



e10. FRONT BRAKE AIR PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

FUEL gage OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty FRONT BRAKE AIR pressure gage.
Faulty rear brake air pressure transmitter.

7.

Does FRONT BRAKE AIR pressure gage operate with a known good front brake air pressure transmitter?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

If FRONT BRAKE AIR pressure gage does not operate, FRONT BRAKE AIR pressure gage is faulty. If REAR BRAKE AIR pressure gage does operate, front brake air pressure transmitter is faulty.

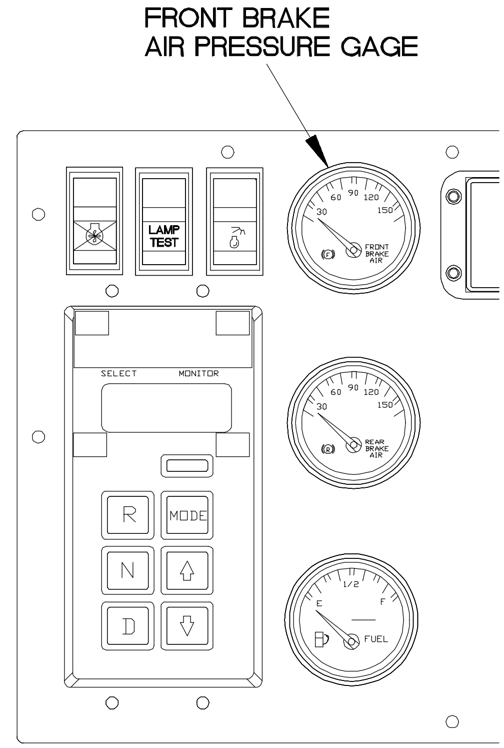
NO

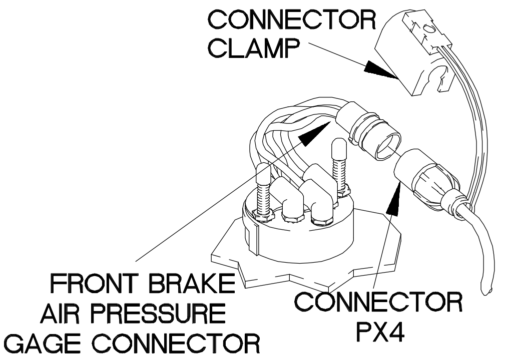
Replace FRONT BRAKE AIR pressure gage (para 7-14).

YES

Replace front brake air pressure transmitter (para 7-44).

CONTINUITY TEST
(1) Connect connector PX4 to FRONT BRAKE AIR pressure gage connector. (2) Connect connector clamp to FRONT BRAKE AIR pressure gage. (3) Install instrument panel assembly (para 7-15). (4) Replace front brake air pressure transmitter (para 7-44). (5) Start engine (TM 9-2320-366-10-1). (6) Allow vehicle to build air pressure. (7) Note reading on FRONT BRAKE AIR pressure gage. (8) If FRONT BRAKE AIR pressure gage does not operate, replace FRONT BRAKE AIR pressure gage (para 7-14). (9) If FRONT BRAKE AIR pressure gage does operate, replace front brake air pressure transmitter (para 7-44). (10) Shut down engine (TM 9-2320-366-10-1).





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e11. ENGINE OIL PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE

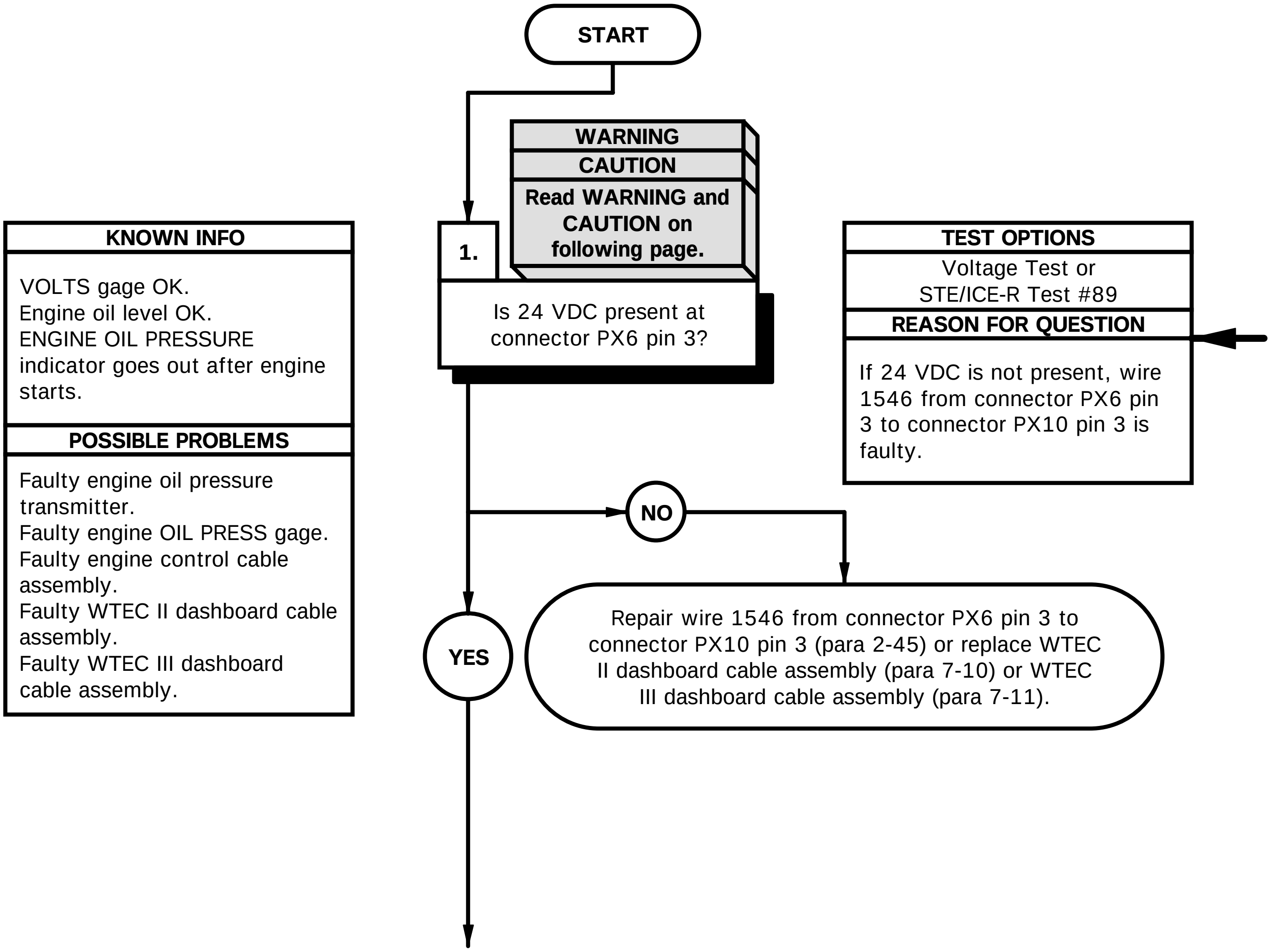
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



WARNING
CAUTION
Read WARNING and CAUTION on following page.

KNOWN INFO

VOLTS gage OK.
Engine oil level OK.
ENGINE OIL PRESSURE indicator goes out after engine starts.

POSSIBLE PROBLEMS

Faulty engine oil pressure transmitter.
Faulty engine OIL PRESS gage.
Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

1. Is 24 VDC present at connector PX6 pin 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1546 from connector PX6 pin 3 to connector PX10 pin 3 is faulty.

NO: Repair wire 1546 from connector PX6 pin 3 to connector PX10 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

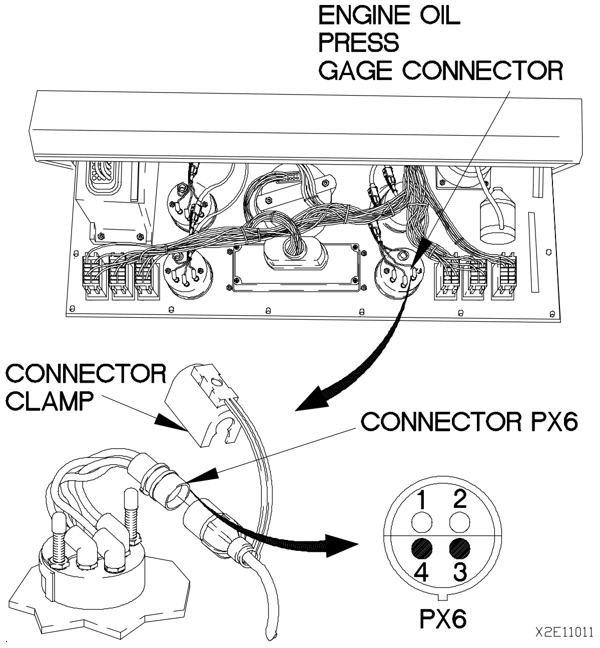
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

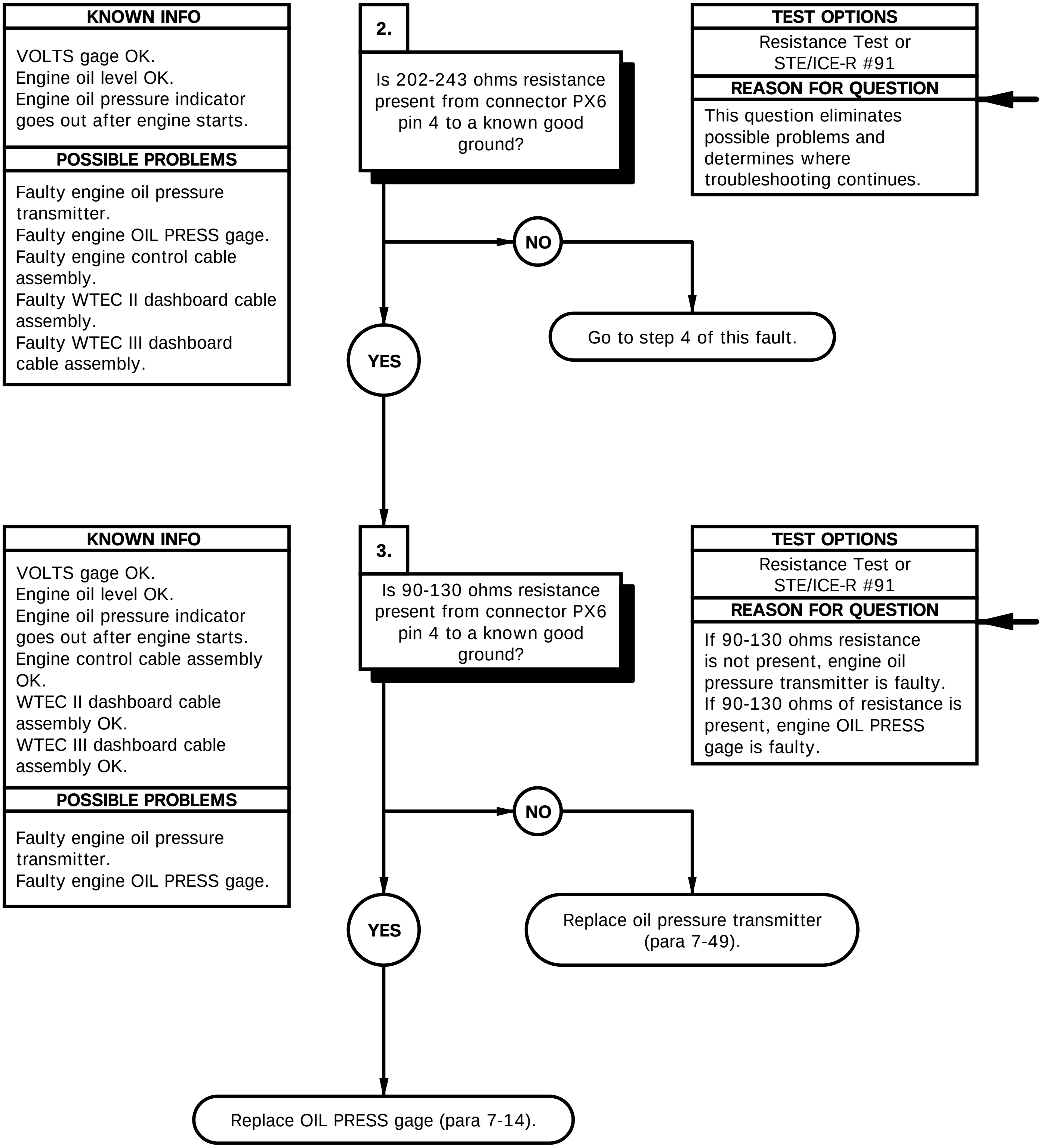
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from engine OIL PRESS gage connector.
(3) Disconnect connector PX6 from engine OIL PRESS gage connector.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to connector PX6 pin 3.
(6) Connect negative (-) probe of multimeter to known good ground.
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 VDC is not present, repair wire 1546 from connector PX6 pin 3 to connector PX10 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e11. ENGINE OIL PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

VOLTS gage OK.
Engine oil level OK.
Engine oil pressure indicator goes out after engine starts.

POSSIBLE PROBLEMS

Faulty engine oil pressure transmitter.
Faulty engine OIL PRESS gage.
Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

2.

Is 202-243 ohms resistance present from connector PX6 pin 4 to a known good ground?

TEST OPTIONS

Resistance Test or STE/ICE-R #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 4 of this fault.

YES

KNOWN INFO

VOLTS gage OK.
Engine oil level OK.
Engine oil pressure indicator goes out after engine starts.
Engine control cable assembly OK.
WTEC II dashboard cable assembly OK.
WTEC III dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty engine oil pressure transmitter.
Faulty engine OIL PRESS gage.

3.

Is 90-130 ohms resistance present from connector PX6 pin 4 to a known good ground?

TEST OPTIONS

Resistance Test or STE/ICE-R #91

REASON FOR QUESTION

If 90-130 ohms resistance is not present, engine oil pressure transmitter is faulty.
If 90-130 ohms of resistance is present, engine OIL PRESS gage is faulty.

NO

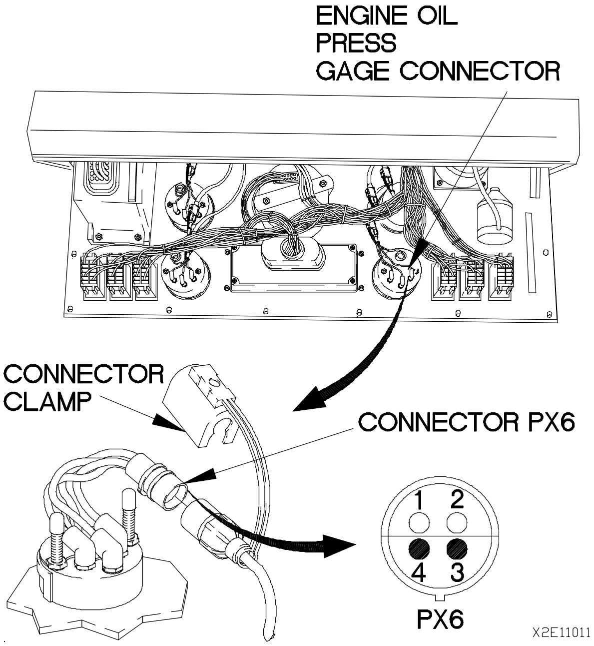
Replace oil pressure transmitter (para 7-49).

YES

Replace OIL PRESS gage (para 7-14).

RESISTANCE TEST

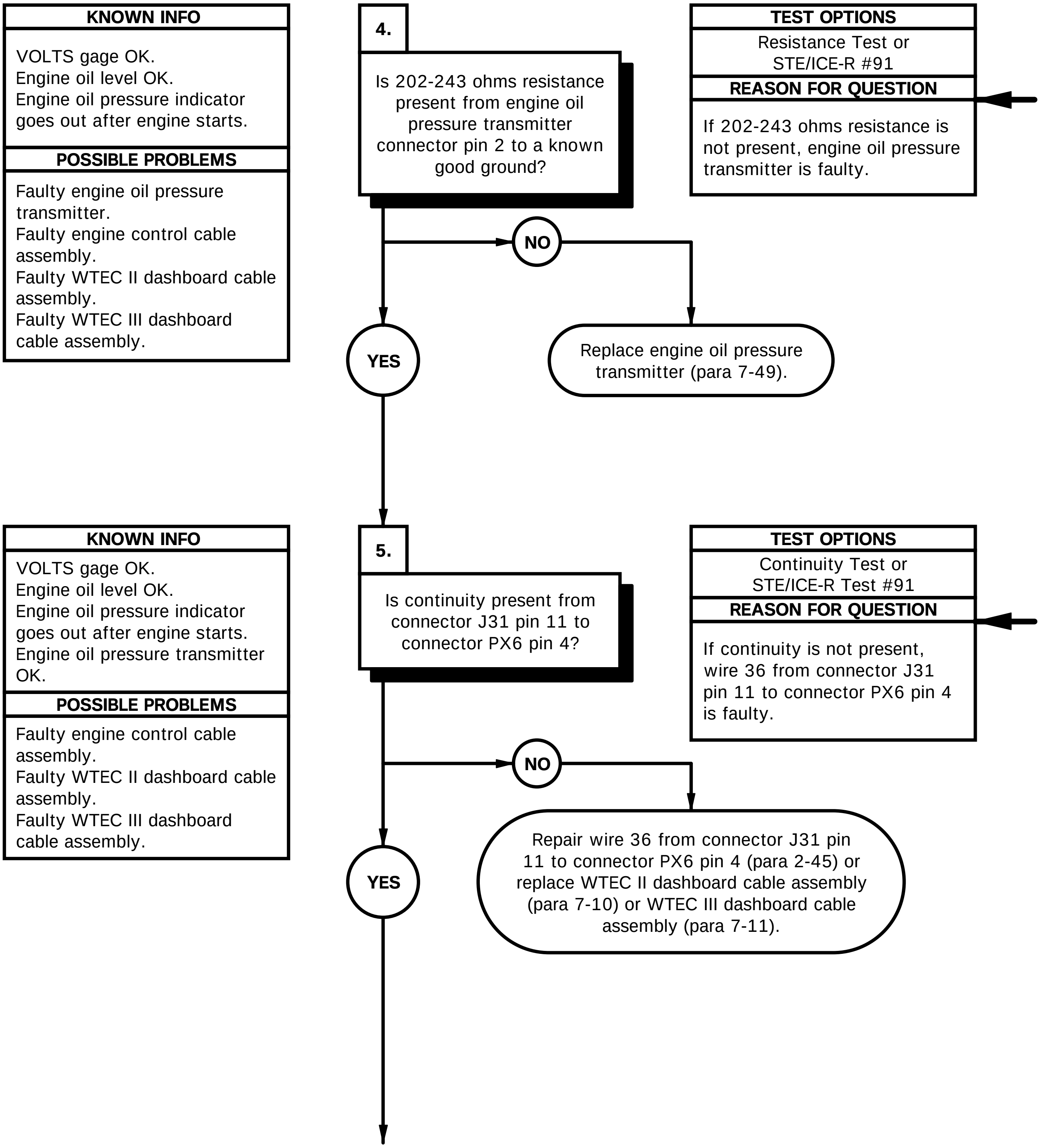
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX6 pin 4.
(3) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
(4) If 202-243 ohms resistance is not present, go to step 4 of this fault.



RESISTANCE TEST

(1) Start engine (TM 9-2320-366-10-1).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX6 pin 4.
(4) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
(5) If 90-130 ohms resistance is not present, replace engine oil pressure transmitter (para 7-49).
(6) If 90-130 ohms resistance is present, replace engine OIL PRESS gage (para 7-14).
(7) Shut down engine (TM 9-2320-366-10-1).
(8) Connect connector PX6 to engine OIL PRESS gage connector.
(9) Connect connector clamp to engine OIL PRESS gage connector.
(10) Install instrument panel assembly (para 7-15).

e11. ENGINE OIL PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

VOLTS gage OK.
Engine oil level OK.
Engine oil pressure indicator goes out after engine starts.

POSSIBLE PROBLEMS

Faulty engine oil pressure transmitter.
Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

4.

Is 202-243 ohms resistance present from engine oil pressure transmitter connector pin 2 to a known good ground?

TEST OPTIONS

Resistance Test or STE/ICE-R #91

REASON FOR QUESTION

If 202-243 ohms resistance is not present, engine oil pressure transmitter is faulty.

NO: Replace engine oil pressure transmitter (para 7-49).

KNOWN INFO

VOLTS gage OK.
Engine oil level OK.
Engine oil pressure indicator goes out after engine starts.
Engine oil pressure transmitter OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

5.

Is continuity present from connector J31 pin 11 to connector PX6 pin 4?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 36 from connector J31 pin 11 to connector PX6 pin 4 is faulty.

NO: Repair wire 36 from connector J31 pin 11 to connector PX6 pin 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

RESISTANCE TEST

(1) Raise cab (TM 9-2320-366-10-1)
(2) Set multimeter to ohms.
(3) Disconnect connector P32 from engine oil pressure transmitter connector.
(4) Connect positive (+) probe of multimeter to engine oil pressure transmitter pin 2.
(5) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
(6) If 202-243 ohms resistance is not present, replace engine oil pressure transmitter (para 7-49).

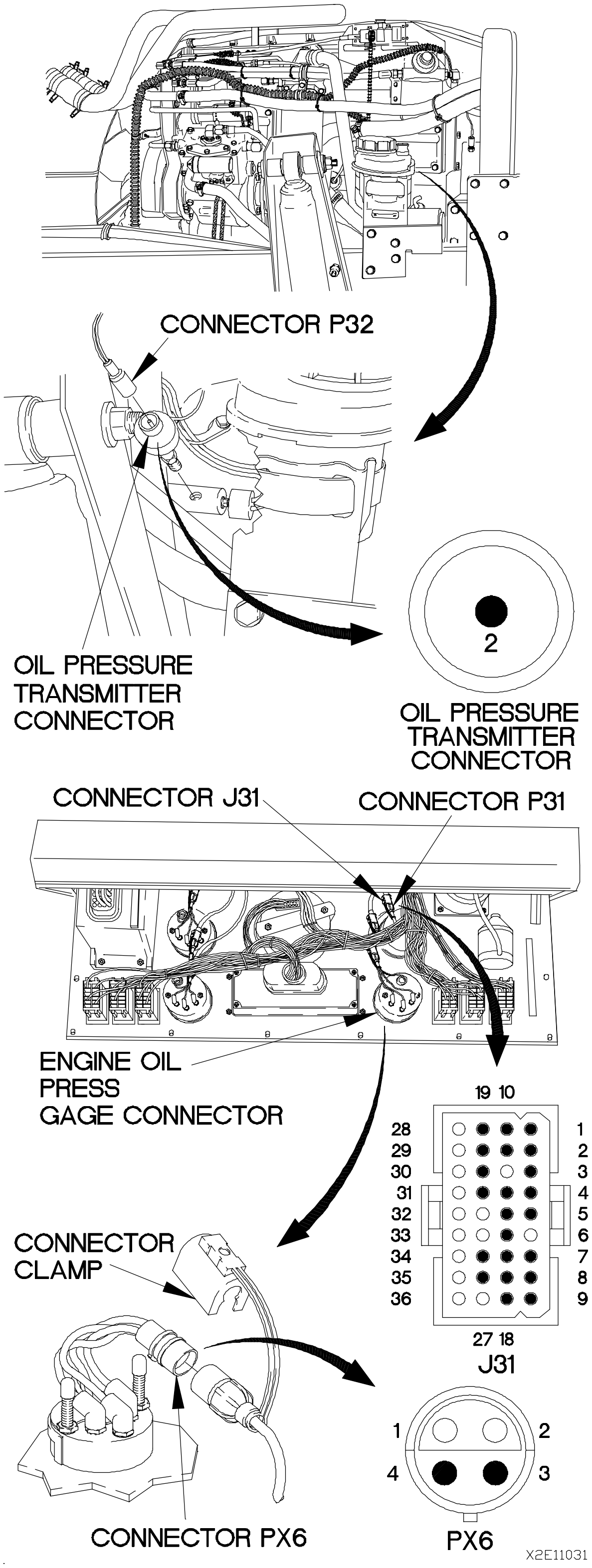
NOTE

Perform steps (7) through (9) if 202-243 ohms resistance is not present.

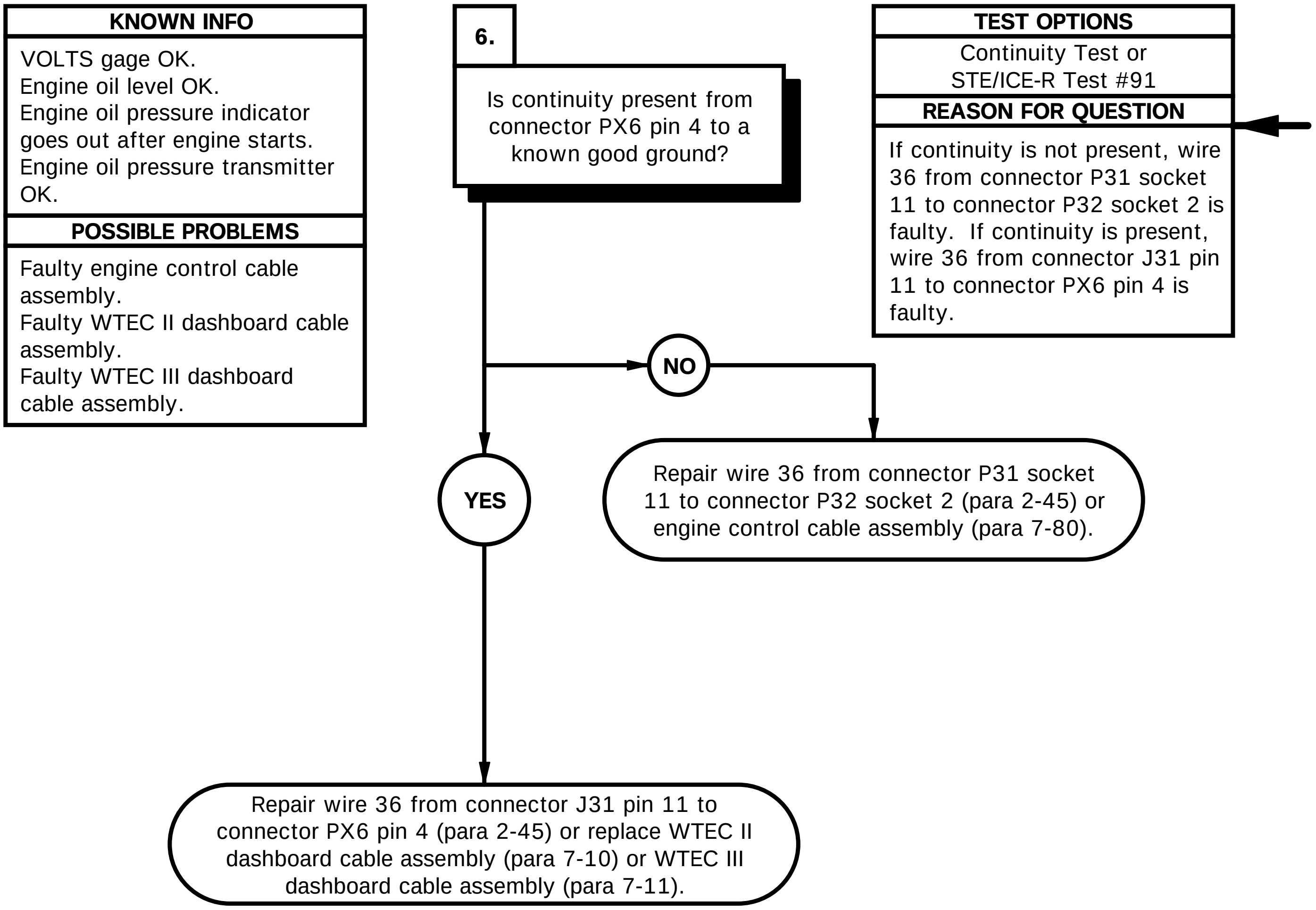
(7) Connect connector PX6 to engine OIL PRESS gage connector.
(8) Connect connector clamp to engine OIL PRESS gage connector.
(9) Install instrument panel assembly (para 7-15).

CONTINUITY TEST

(1) Connect connector P32 to engine oil pressure transmitter connector.
(2) Lower cab (TM 9-2320-366-10-1).
(3) Disconnect connector J31 from connector P31.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX6 pin 4.
(6) Connect negative (-) probe of multimeter to connector J31 pin 11 and note reading on multimeter.
(7) If continuity is not present, repair wire 36 from connector PX6 pin 4 to connector J31 pin 11(para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e11. ENGINE OIL PRESSURE GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

VOLTS gage OK.
Engine oil level OK.
Engine oil pressure indicator goes out after engine starts.
Engine oil pressure transmitter OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

6.

Is continuity present from connector PX6 pin 4 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

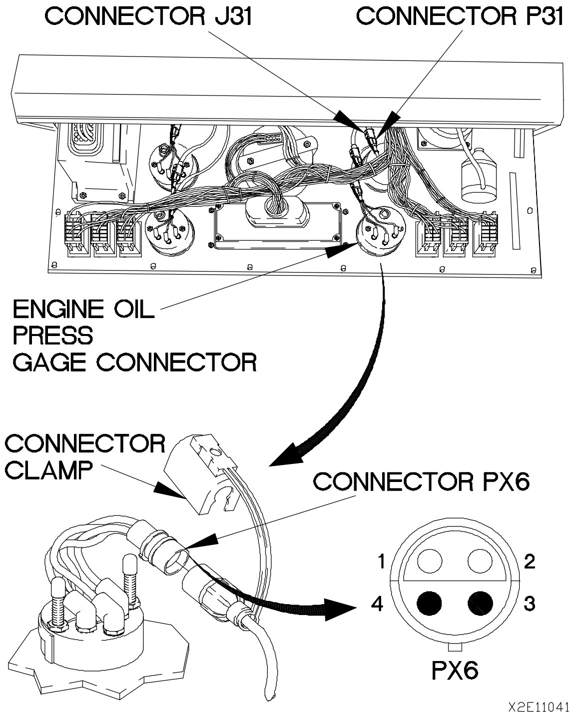
If continuity is not present, wire 36 from connector P31 socket 11 to connector P32 socket 2 is faulty. If continuity is present, wire 36 from connector J31 pin 11 to connector PX6 pin 4 is faulty.

Repair wire 36 from connector P31 socket 11 to connector P32 socket 2 (para 2-45) or engine control cable assembly (para 7-80).

Repair wire 36 from connector J31 pin 11 to connector PX6 pin 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX6 pin 4.
(3) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
(4) If continuity is not present, repair wire 36 from connector P31 socket 11 to connector P32 socket 2 (para 2-45) or engine control cable assembly (para 7-80).
(5) If continuity is present, repair wire 36 from connector J31 pin 11 to connector PX6 pin 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector J31 to connector P31.
(7) Connect connector PX6 to engine OIL PRESS gage connector.
(8) Connect connector clamp to engine OIL PRESS gage connector.
(9) Install instrument panel assembly (para 7-15).



e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE

INITIAL SETUP

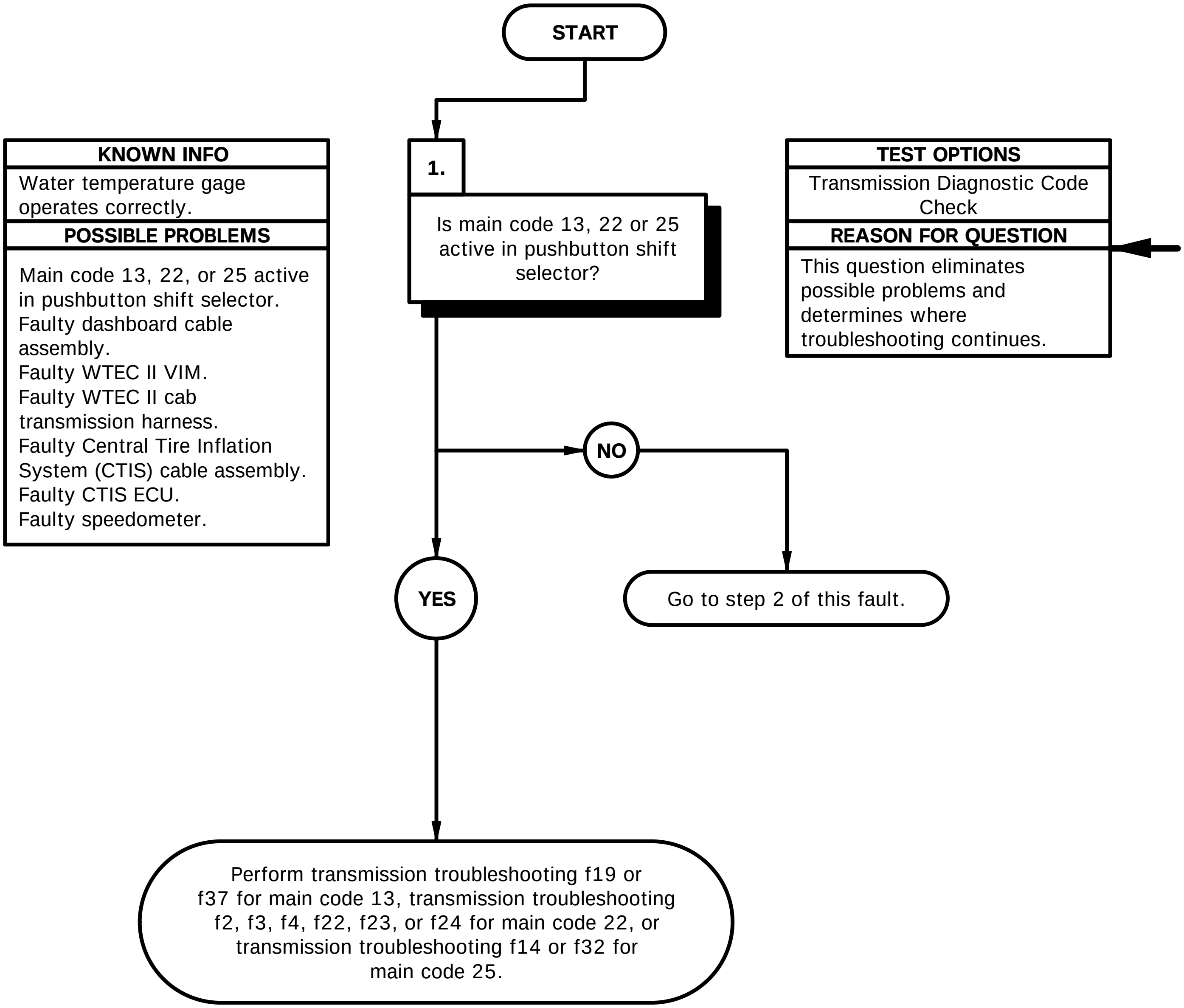
Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

Materials/Parts
Nut, Self-Locking (2) (Item 133, Appendix G)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Water temperature gage operates correctly.

POSSIBLE PROBLEMS

Main code 13, 22, or 25 active in pushbutton shift selector.
Faulty dashboard cable assembly.
Faulty WTEC II VIM.
Faulty WTEC II cab transmission harness.
Faulty Central Tire Inflation System (CTIS) cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

1. Is main code 13, 22 or 25 active in pushbutton shift selector?

TEST OPTIONS

Transmission Diagnostic Code Check

REASON FOR QUESTION

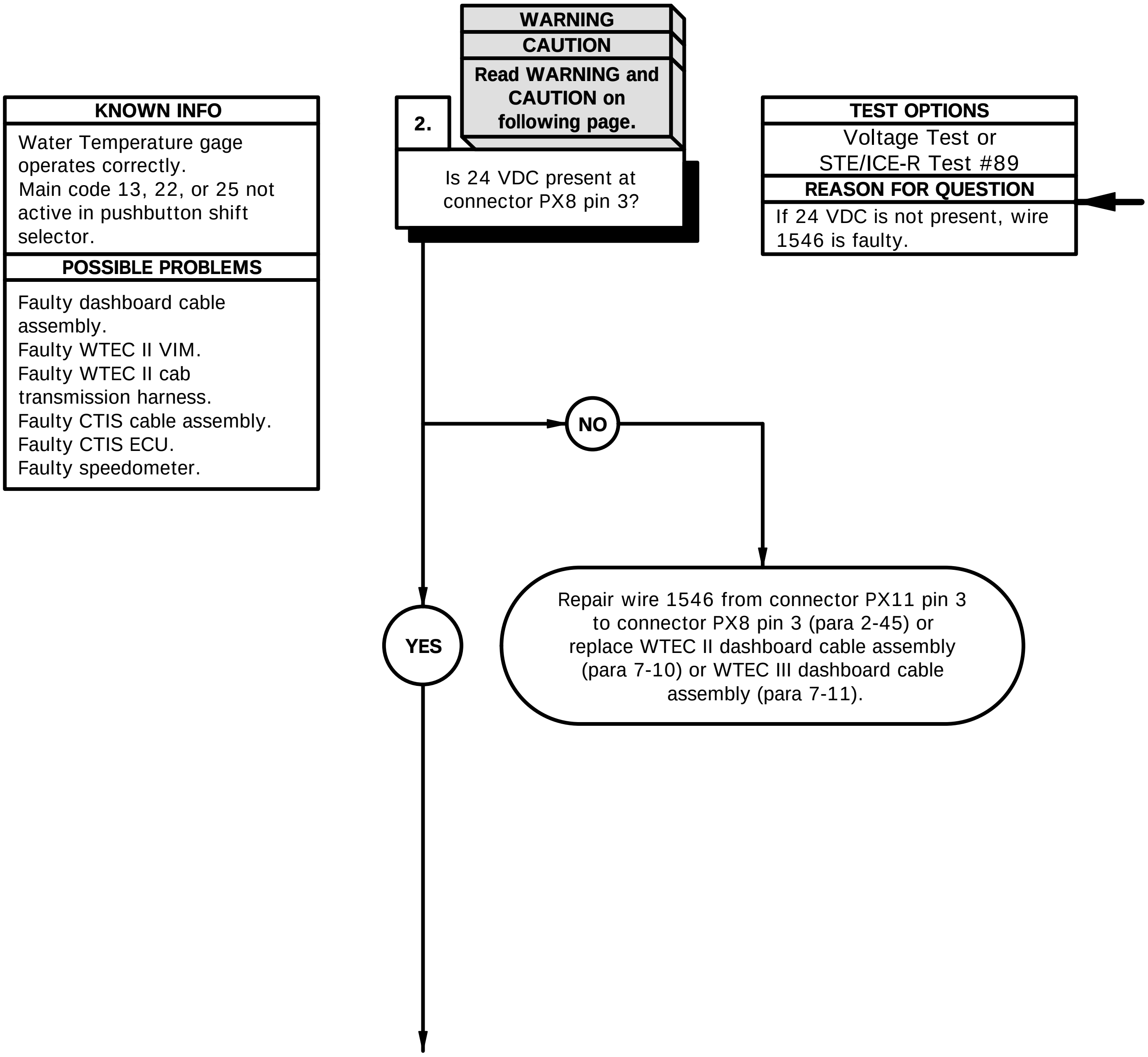
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 2 of this fault.

YES: Perform transmission troubleshooting f19 or f37 for main code 13, transmission troubleshooting f2, f3, f4, f22, f23, or f24 for main code 22, or transmission troubleshooting f14 or f32 for main code 25.

(1) Check for active transmission diagnostic codes (para 8-4 or 8-5).
(2) If main code 13 is active in pushbutton shift selector, perform transmission troubleshooting f19 or f37.
(3) If main code 22 is active in pushbutton shift selector, perform transmission troubleshooting f2, f3, f4, f22, f23, or f24.
(4) If main code 25 is active in pushbutton shift selector, perform transmission troubleshooting f14 or f32.

e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Water Temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II VIM.
Faulty WTEC II cab transmission harness.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2. Is 24 VDC present at connector PX8 pin 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1546 is faulty.

Repair wire 1546 from connector PX11 pin 3 to connector PX8 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

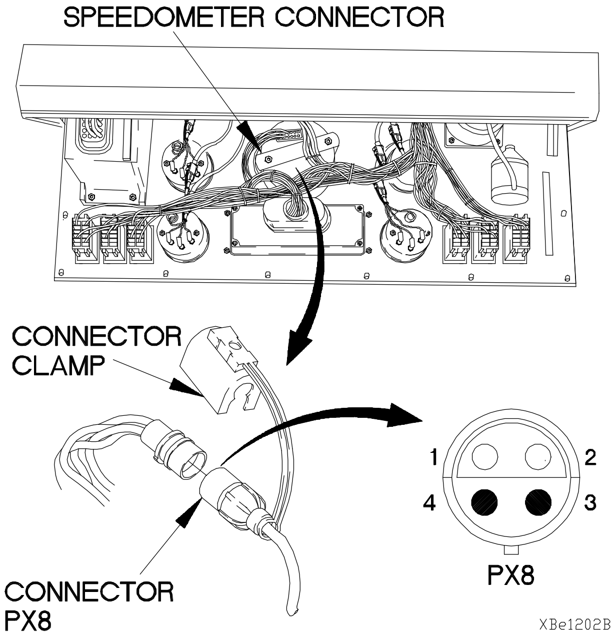
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from speedometer connector.
(3) Disconnect connector PX8 from speedometer connector.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to connector PX8 pin 3.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 VDC is not present, repair wire 1546 from connector PX11 pin 3 to connector PX8 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II VIM.
Faulty WTEC II cab transmission harness.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

3.

Does VOLTS gage operate correctly?

TEST OPTIONS

Visual Check

REASON FOR QUESTION

If VOLTS gage does not operate, wire 3020 from connector PX8 pin 1 to connector PX10 pin 1 is faulty.

NO

Repair wire 3020 from connector PX8 pin 1 to connector PX10 pin 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II VIM.
Faulty WTEC II cab transmission harness.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

4.

Is vehicle equipped with WTEC II transmission controls?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

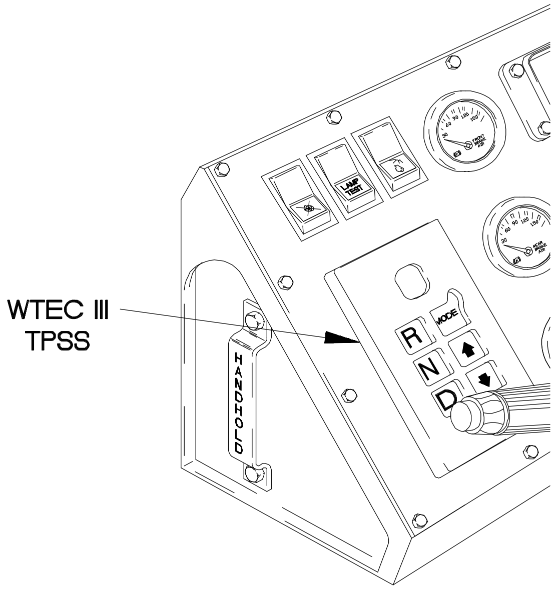
This question eliminates possible problems and determines where troubleshooting continues.

NO

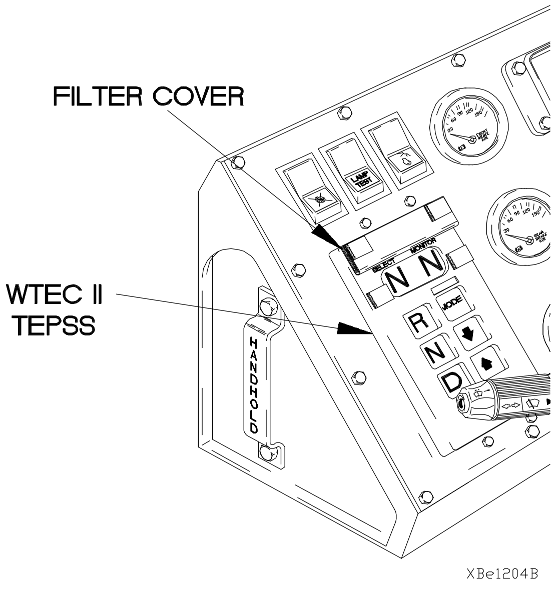
Go to step 12 of this fault.

YES

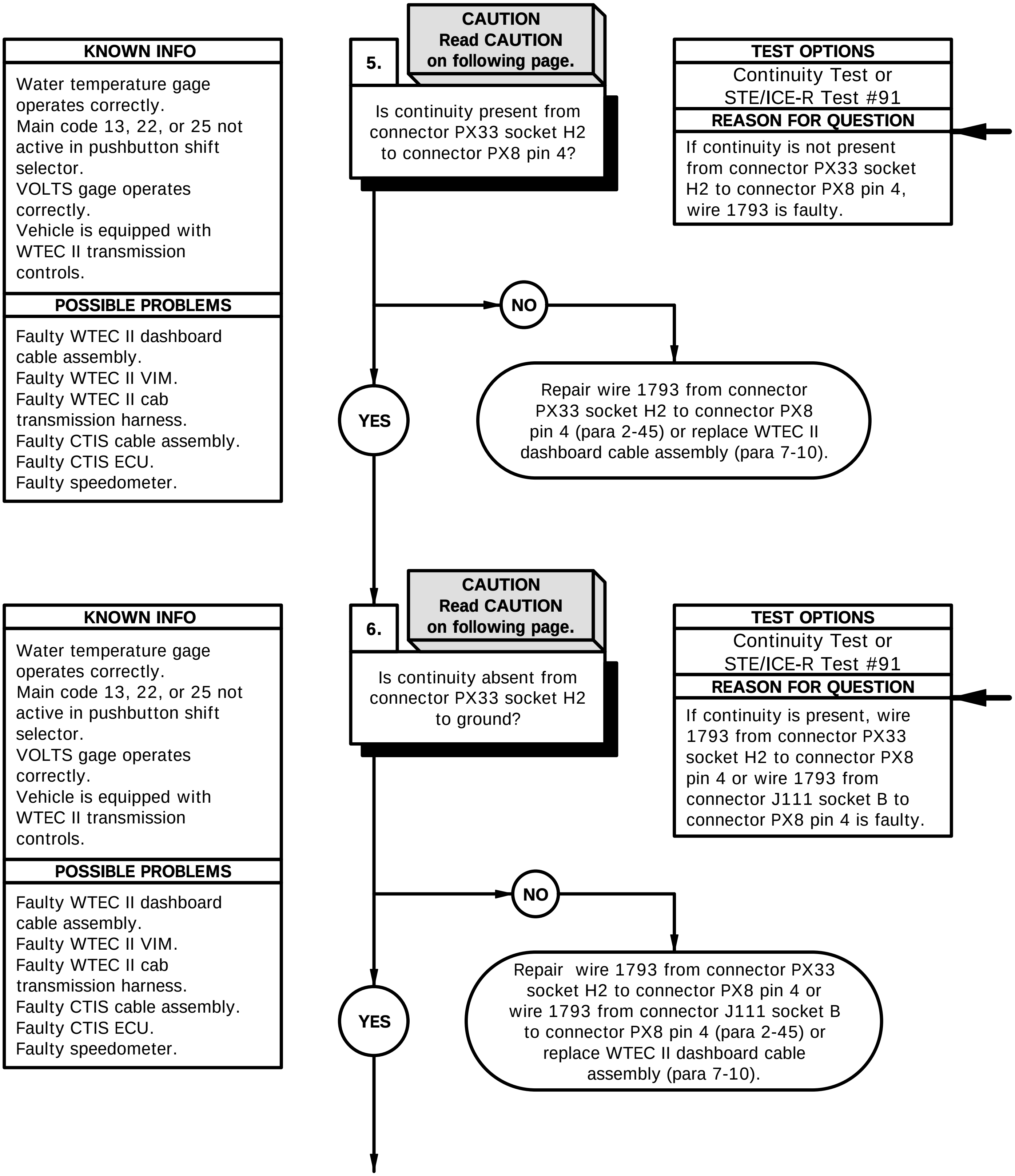
(1) Position master power switch to on (TM 9-2320-366-10-1).
(2) Observe if VOLTS gage indicator needle moves (TM 9-2320-366-10-1).
(3) If VOLTS gage indicator needle does not move, repair wire 3020 from connector PX8 pin 1 to connector PX10 pin 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(4) Position master power switch to off (TM 9-2320-366-10-1).



(1) Check if vehicle is equipped with WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS).
(2) If pushbutton shift selector is not mounted with four screws and is not equipped with a filter cover, go to step 12 of this fault.



e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC II transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC II dashboard cable assembly.
Faulty WTEC II VIM.
Faulty WTEC II cab transmission harness.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

5.

CAUTION
Read CAUTION on following page.

Is continuity present from connector PX33 socket H2 to connector PX8 pin 4?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present from connector PX33 socket H2 to connector PX8 pin 4, wire 1793 is faulty.

NO — Repair wire 1793 from connector PX33 socket H2 to connector PX8 pin 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

YES

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC II transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC II dashboard cable assembly.
Faulty WTEC II VIM.
Faulty WTEC II cab transmission harness.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

6.

CAUTION
Read CAUTION on following page.

Is continuity absent from connector PX33 socket H2 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, wire 1793 from connector PX33 socket H2 to connector PX8 pin 4 or wire 1793 from connector J111 socket B to connector PX8 pin 4 is faulty.

NO — Repair wire 1793 from connector PX33 socket H2 to connector PX8 pin 4 or wire 1793 from connector J111 socket B to connector PX8 pin 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

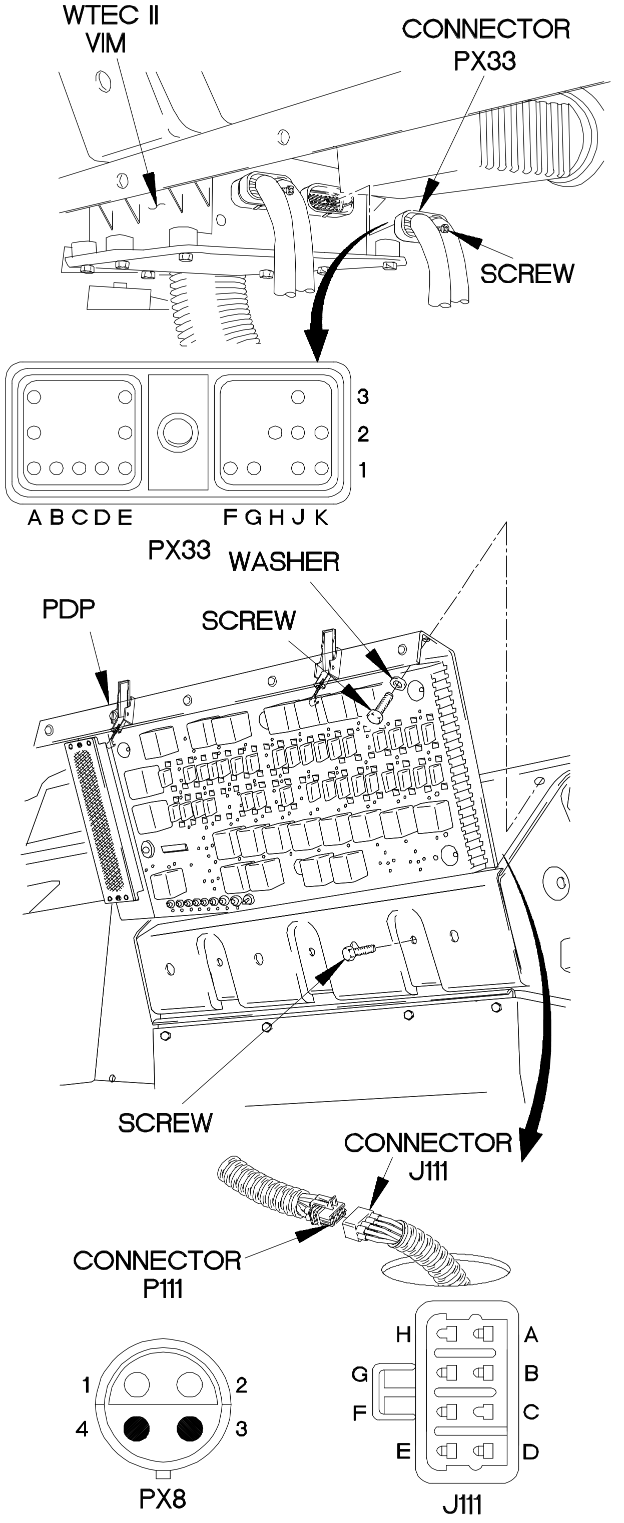
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Remove kick panel (para 16-3).
(2) Loosen screw in connector PX33.
(3) Disconnect connector PX33 from WTEC II VIM.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX33 socket H2.
(6) Connect negative (-) probe of multimeter to connector PX8 pin 4 and note reading on multimeter.
(7) If continuity is not present, repair wire 1793 from connector PX33 socket H2 to connector PX8 pin 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

CONTINUITY TEST

(1) Remove PDP cover (TM 9-2320-366-10-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector P111 from connector J111.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector PX33 socket H2.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) If continuity is present, remove plastic cable ties as required and perform visual inspection of wire 1793 from connector PX33 socket H2 to connector PX8 pin 4 and wire 1793 from connector PX8 pin 4 to connector J111 socket B to determine which wire is faulty. Repair wire 1793 para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).
(10) Connect connector PX33 to WTEC II VIM.
(11) Tighten screw in connector PX33.
(12) Install kick panel (para 16-3).



e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC II transmission controls.
WTEC II dashboard cable assembly OK.

POSSIBLE PROBLEMS

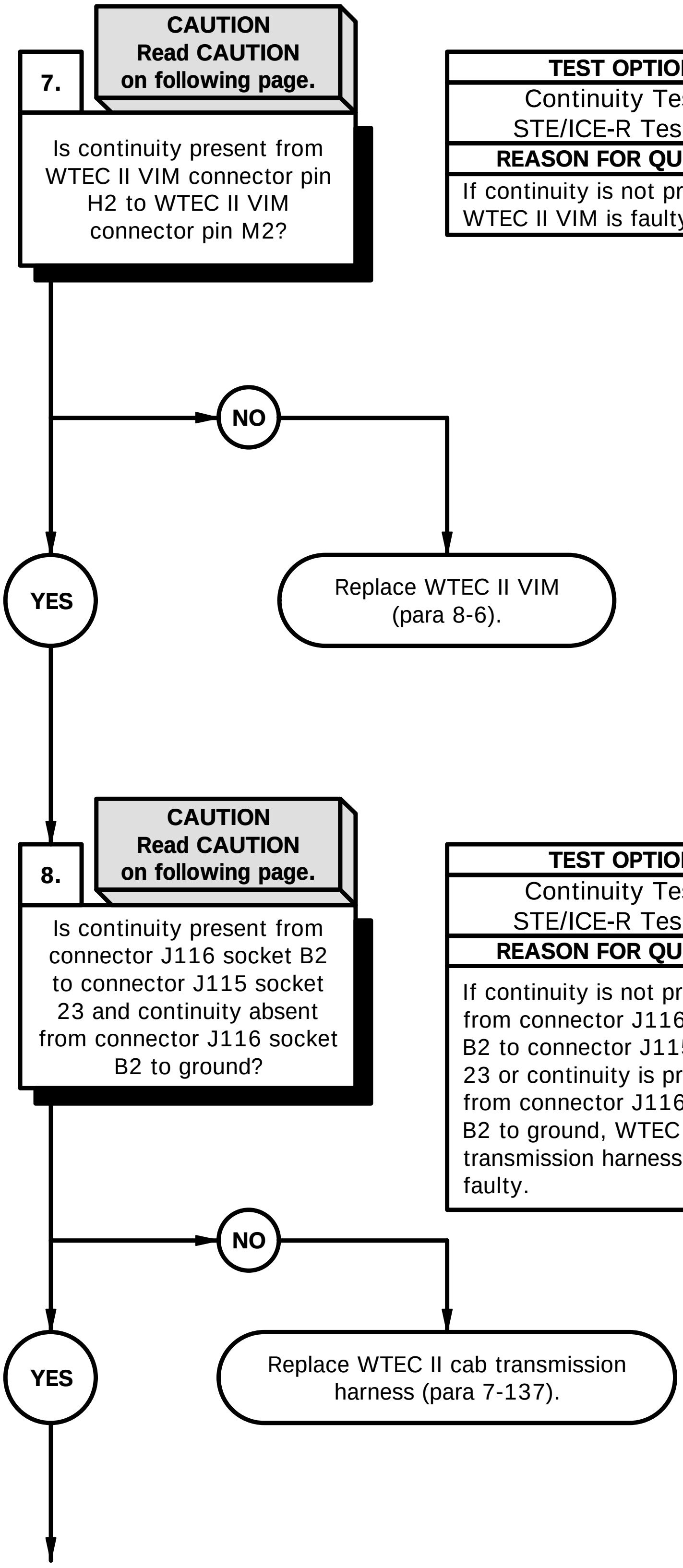
Faulty WTEC II VIM.
Faulty WTEC II cab transmission harness.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II VIM is faulty.



KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC II transmission controls.
WTEC II dashboard cable assembly OK.
WTEC II VIM OK.

POSSIBLE PROBLEMS

Faulty WTEC II cab transmission harness.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present from connector J116 socket B2 to connector J115 socket 23 or continuity is present from connector J116 socket B2 to ground, WTEC II cab transmission harness is faulty.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

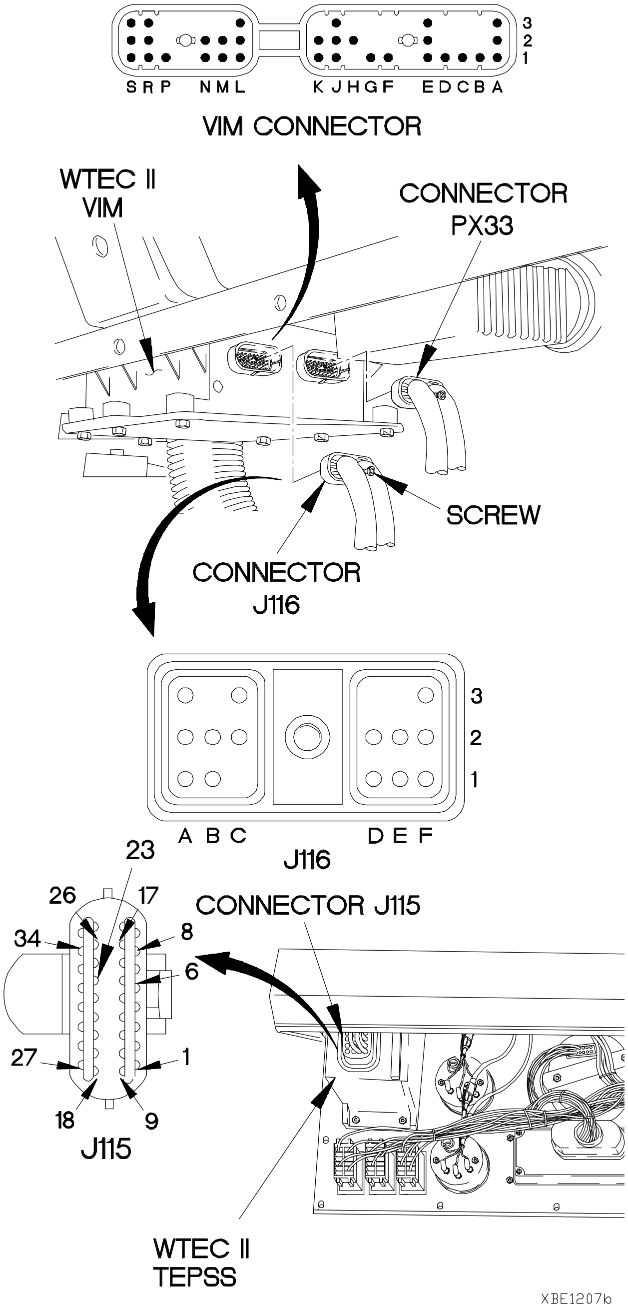
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

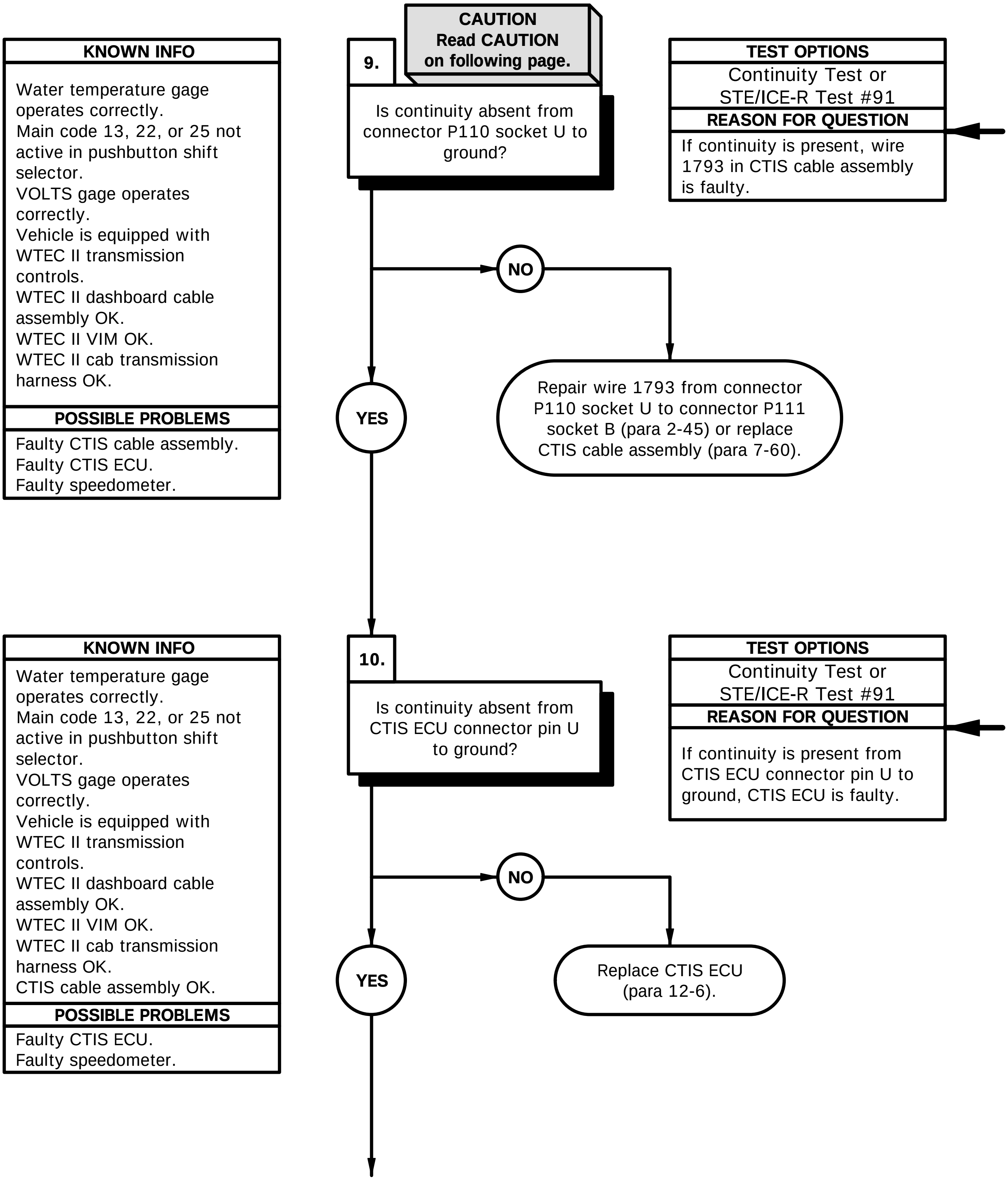
(1) Loosen screw in connector J116.
(2) Disconnect connector J116 from WTEC II VIM.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to WTEC II VIM connector pin H2.
(5) Connect negative (-) probe of multimeter to WTEC II VIM connector pin M2 and note reading on multimeter.
(6) If continuity is not present, replace WTEC II VIM (para 8-6).
(7) Connect connector PX33 to WTEC II VIM.
(8) Tighten screw in connector PX33.

CONTINUITY TEST

(1) Disconnect connector J115 from WTEC II TEPSS.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector J116 socket B2.
(4) Connect negative (-) probe of multimeter to connector J115 socket 23 and note reading on multimeter.
(5) If continuity is not present, replace WTEC II cab transmission harness (par 7-137).
(6) Connect positive (+) probe of multimeter to connector J116 socket B2.
(7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(8) If continuity is present, replace WTEC II cab transmission harness (para 7-137).
(9) Connect connector J115 to WTEC II TEPSS.
(10) Connect connector J116 to WTEC II VIM.
(11) Tighten screw in connector J116.



e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC II transmission controls.
WTEC II dashboard cable assembly OK.
WTEC II VIM OK.
WTEC II cab transmission harness OK.

POSSIBLE PROBLEMS

Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

CAUTION
Read CAUTION on following page.

9. Is continuity absent from connector P110 socket U to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, wire 1793 in CTIS cable assembly is faulty.

NO — Repair wire 1793 from connector P110 socket U to connector P111 socket B (para 2-45) or replace CTIS cable assembly (para 7-60).

YES

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC II transmission controls.
WTEC II dashboard cable assembly OK.
WTEC II VIM OK.
WTEC II cab transmission harness OK.
CTIS cable assembly OK.

POSSIBLE PROBLEMS

Faulty CTIS ECU.
Faulty speedometer.

10. Is continuity absent from CTIS ECU connector pin U to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present from CTIS ECU connector pin U to ground, CTIS ECU is faulty.

NO — Replace CTIS ECU (para 12-6).

YES

CAUTION

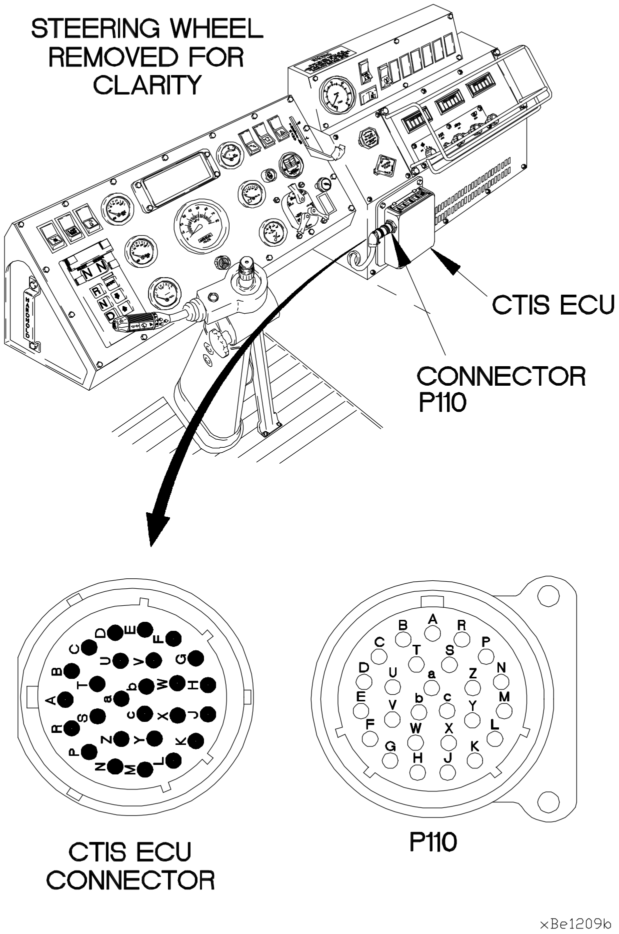
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P110 from CTIS ECU.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P110 socket U.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is present, repair wire 1793 from connector P110 socket U to connector P111 socket B (para 2-45) or replace CTIS cable assembly (para 7-60).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to CTIS ECU connector pin U.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is present, replace CTIS ECU (para 12-6).
(5) Connect connector P110 to CTIS ECU.

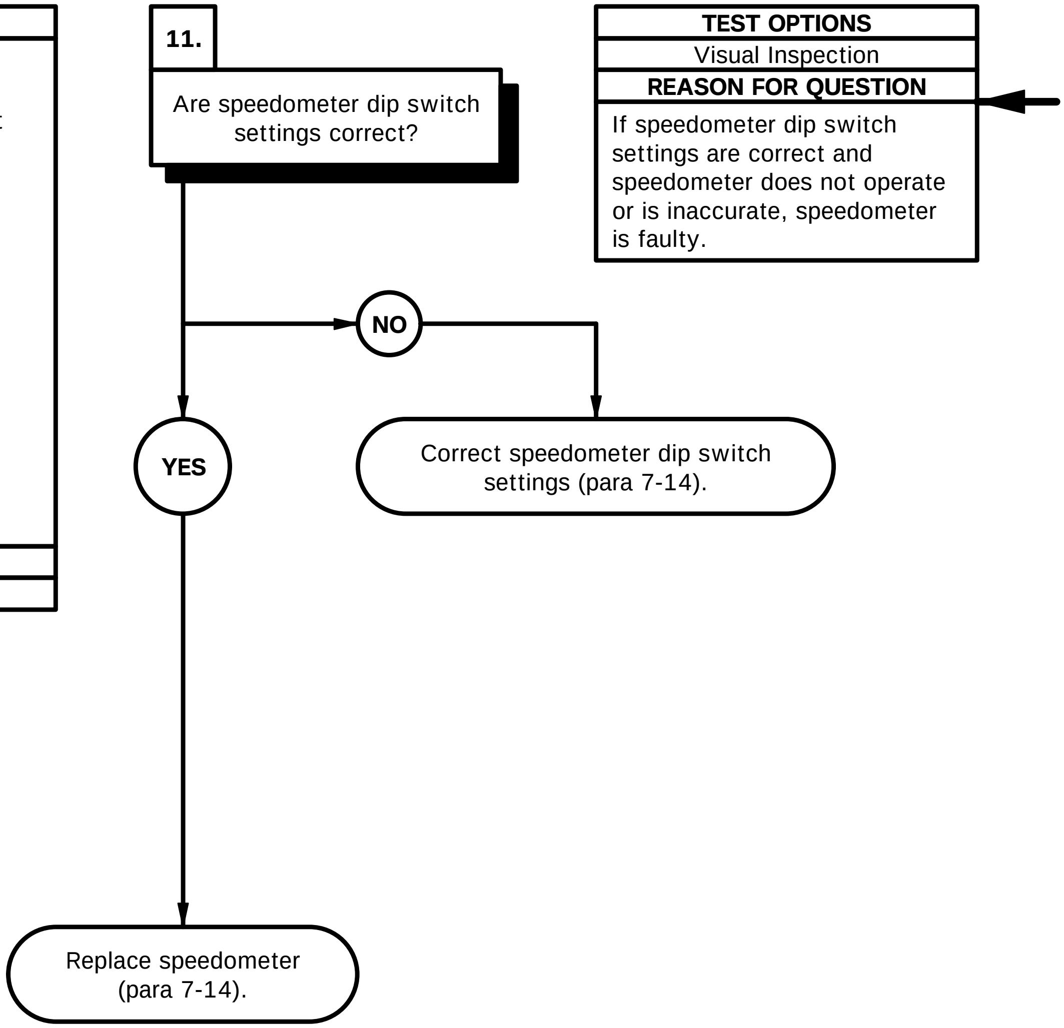
e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC II transmission controls.
WTEC II dashboard cable assembly OK.
WTEC II VIM OK.
WTEC II cab transmission harness OK.
CTIS cable assembly OK.
CTIS ECU OK.

POSSIBLE PROBLEMS

Faulty speedometer.



11.

Are speedometer dip switch settings correct?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If speedometer dip switch settings are correct and speedometer does not operate or is inaccurate, speedometer is faulty.

NO

Correct speedometer dip switch settings (para 7-14).

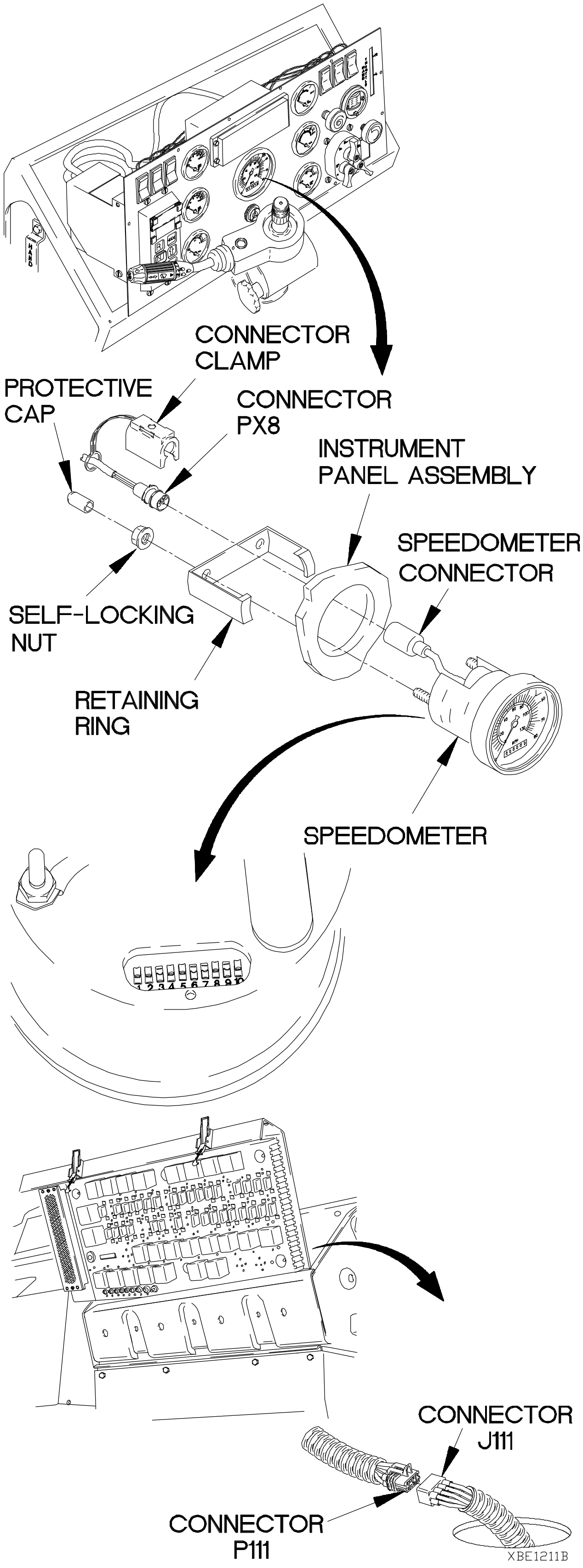
YES

Replace speedometer (para 7-14).

(1) Remove two protective caps, self-locking nuts, retaining ring, and speedometer from instrument panel assembly. Discard self-locking nuts.
(2) Note position of speedometer dip switches. Refer to Table 2-8.4. Speedometer Dip Switch Settings.
(3) If speedometer dip switch setting(s) are incorrect, correct speedometer dip switch setting(s) (para 7-14).
(4) If speedometer dip switch settings are correct, replace speedometer (para 7-14).
(5) Position speedometer in instrument panel assembly with retaining ring and two self-locking nuts.
(6) Tighten two self-locking nuts to 9 lb-in. (1 N·m).
(7) Install two protective caps on speedometer.
(8) Connect connector PX8 to speedometer connector.
(9) Connect connector clamp on speedometer connector.
(10) Install instrument panel assembly (para 7-10).
(11) Connect connector P111 to connector J111.
(12) Install PDP on dashboard with three washers and screws.
(13) Install three screws in PDP.
(14) Install PDP cover (TM 9-2320-366-10-2).

Table 2-8.4. Speedometer Dip Switch Settings

Switch Number	Switch Setting
1	Up
2	Up
3	Down
4	Up
5	Up
6	Down
7	Down
8	Up
9	Down
10	Up



e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC III transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC III dashboard cable assembly.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

12.

CAUTION
Read CAUTION
on following page.

Is continuity present from connector P116 socket 30 to connector PX8 pin 4?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present from connector P116 socket 30 to connector PX8 pin 4, wire 157 is faulty.

NO

Repair wire 157 from connector P116 socket 30 to connector PX8 pin 4 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC III transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC III dashboard cable assembly.
Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

13.

CAUTION
Read CAUTION
on following page.

Is continuity absent from connector P116 socket 30 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, wire 157 from connector P116 socket 30 to connector PX8 pin 4 or wire 1793 from connector PX8 pin 4 to connector J111 socket B is faulty.

NO

Repair wire 157 from connector P116 socket 30 to connector PX8 pin 4 or wire 1793 from connector PX8 pin 4 to connector J111 socket B (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

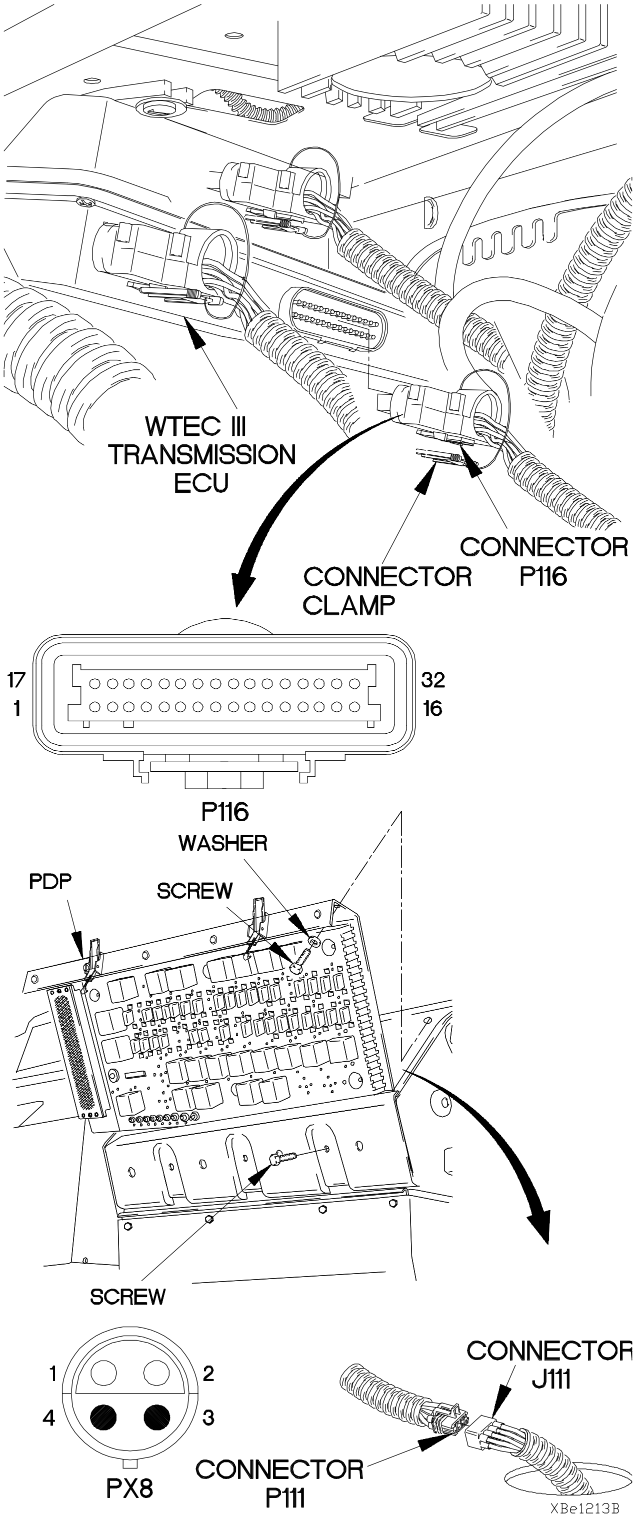
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

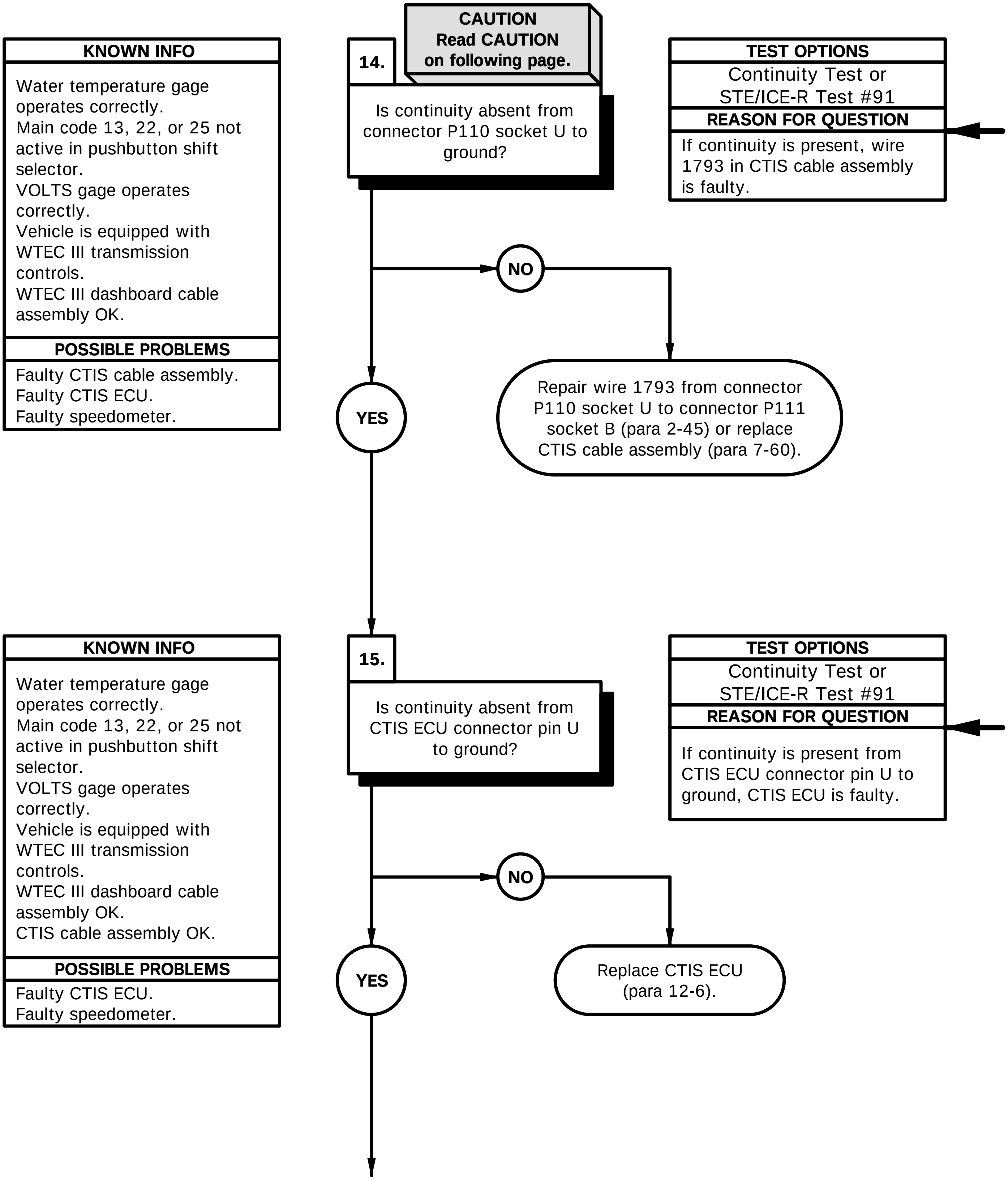
(1) Remove kick panel (para 16-3).
(2) Disconnect connector clamp from connector P116.
(3) Disconnect connector P116 from WTEC III transmission ECU.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector P116 socket 30.
(6) Connect negative (-) probe of multimeter to connector PX8 pin 4 and note reading on multimeter.
(7) If continuity is not present, repair wire 157 from connector P116 socket 30 to connector PX8 pin 4 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove PDP cover (TM 9-2320-366-10-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector P111 from connector J111.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector P116 socket 30.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) If continuity is present, remove plastic cable ties as required and perform visual inspection of wire 157 from connector P116 socket 30 to connector PX8 pin 4 and wire 1793 from connector PX8 pin 4 to connector J111 socket B to determine which wire is faulty. Repair wire 157 or 1793 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(10) Connect connector P116 to WTEC III transmission ECU.
(11) Connect connector clamp on connector P116.
(12) Install kick panel (para 16-3).



e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC III transmission controls.
WTEC III dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty CTIS cable assembly.
Faulty CTIS ECU.
Faulty speedometer.

CAUTION
Read CAUTION on following page.

14. Is continuity absent from connector P110 socket U to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, wire 1793 in CTIS cable assembly is faulty.

NO — Repair wire 1793 from connector P110 socket U to connector P111 socket B (para 2-45) or replace CTIS cable assembly (para 7-60).

YES

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC III transmission controls.
WTEC III dashboard cable assembly OK.
CTIS cable assembly OK.

POSSIBLE PROBLEMS

Faulty CTIS ECU.
Faulty speedometer.

15. Is continuity absent from CTIS ECU connector pin U to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present from CTIS ECU connector pin U to ground, CTIS ECU is faulty.

NO — Replace CTIS ECU (para 12-6).

YES

CAUTION

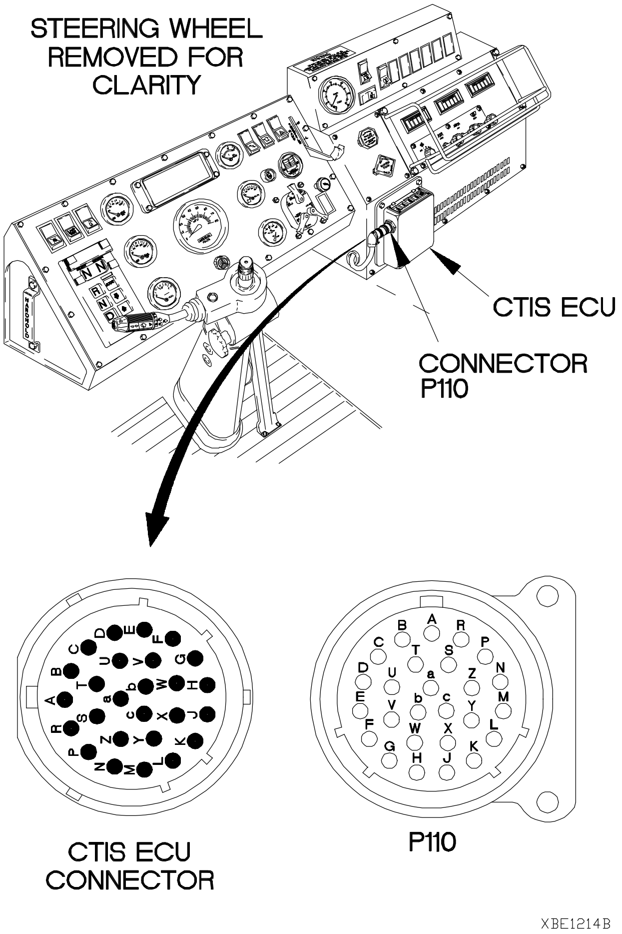
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

1. Disconnect connector P110 from CTIS ECU.
2. Set multimeter to ohms.
3. Connect positive (+) probe of multimeter to connector P110 socket U.
4. Connect negative (-) probe of multimeter to ground and note reading on multimeter.
5. If continuity is present, repair wire 1793 from connector P110 socket U to connector P111 socket B (para 2-45) or replace CTIS cable assembly (para 7-60).



CONTINUITY TEST

1. Set multimeter to ohms.
2. Connect positive (+) probe of multimeter to CTIS ECU connector pin U.
3. Connect negative (-) probe of multimeter to ground and note reading on multimeter.
4. If continuity is present, replace CTIS ECU (para 12-6).
5. Connect connector P110 to CTIS ECU.

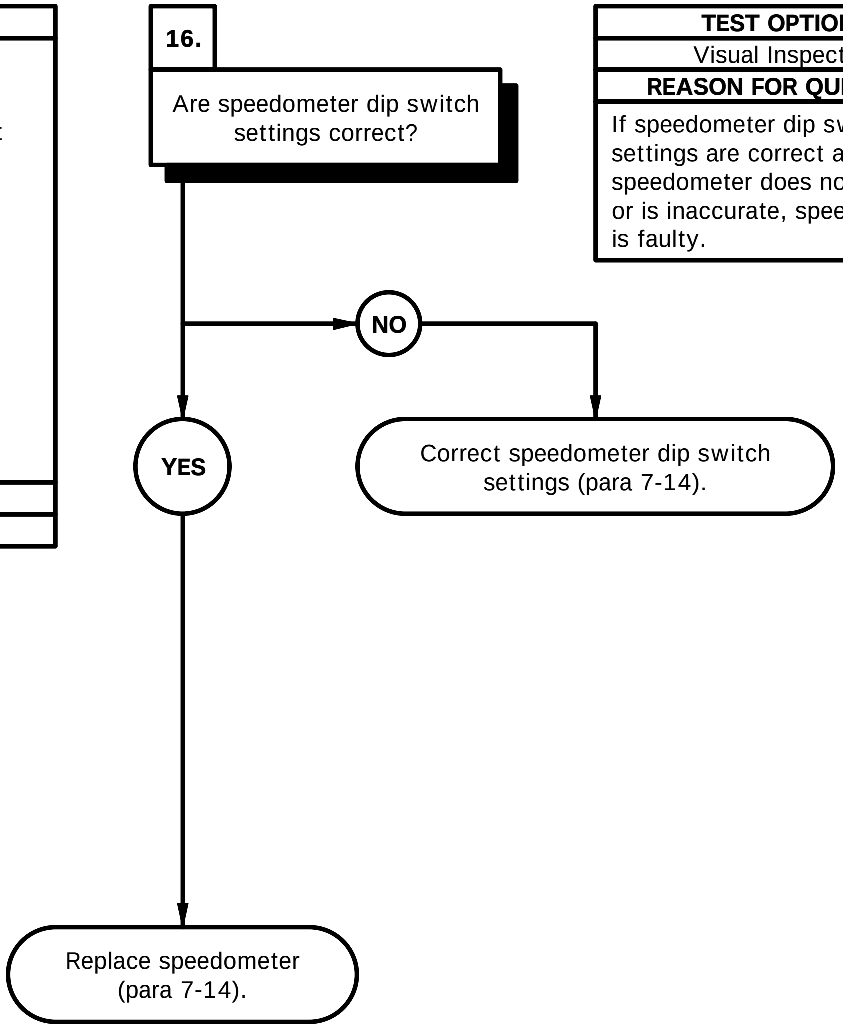
e12. SPEEDOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)

KNOWN INFO

Water temperature gage operates correctly.
Main code 13, 22, or 25 not active in pushbutton shift selector.
VOLTS gage operates correctly.
Vehicle is equipped with WTEC III transmission controls.
WTEC III dashboard cable assembly OK.
CTIS cable assembly OK.
CTIS ECU OK.

POSSIBLE PROBLEMS

Faulty speedometer.



TEST OPTIONS

Visual Inspection

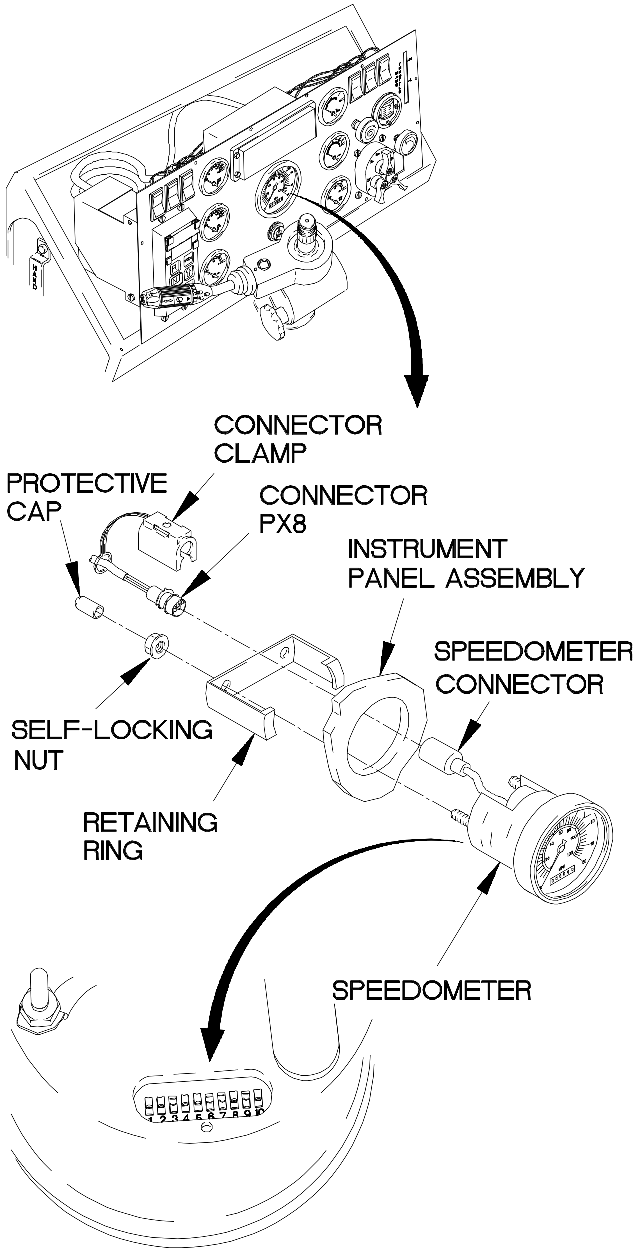
REASON FOR QUESTION

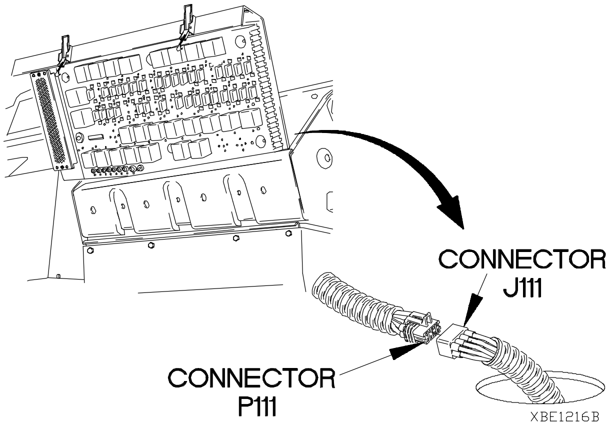
If speedometer dip switch settings are correct and speedometer does not operate or is inaccurate, speedometer is faulty.

(1) Remove two protective caps, self-locking nuts, retaining ring, and speedometer from instrument panel assembly. Discard self-locking nuts.
(2) Note position of speedometer dip switches. Refer to Table 2-8.5. Speedometer Dip Switch Settings.
(3) If speedometer dip switch setting(s) are incorrect, correct speedometer dip switch setting(s) (para 7-14).
(4) If speedometer dip switch settings are correct, replace speedometer (para 7-14).
(5) Position speedometer in instrument panel assembly with retaining ring and two self-locking nuts.
(6) Tighten two self-locking nuts to 9 lb-in. (1 N·m).
(7) Install two protective caps on speedometer.
(8) Connect connector PX8 to speedometer connector.
(9) Connect connector clamp on speedometer connector.
(10) Install instrument panel assembly (para 7-10).
(11) Connect connector P111 to connector J111.
(12) Install PDP on dashboard with three washers and screws.
(13) Install three screws in PDP.
(14) Install PDP cover (TM 9-2320-366-10-2).

Table 2-8.5. Speedometer Dip Switch Settings

Switch Number	Switch Setting
1	Up
2	Up
3	Down
4	Up
5	Up
6	Down
7	Down
8	Up
9	Down
10	Up





e13. VOLTS GAGE DOES NOT OPERATE OR IS INACCURATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

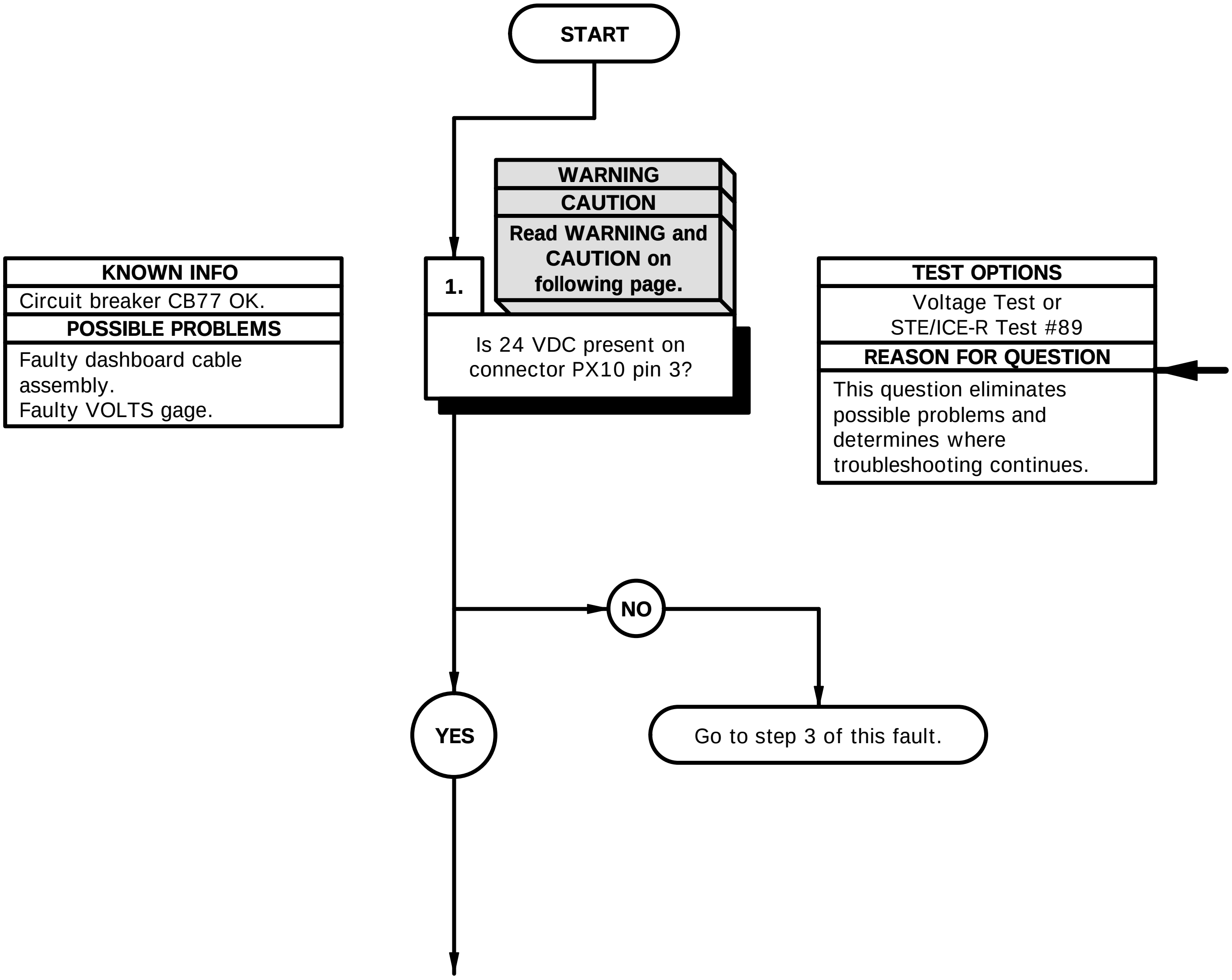
Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform electrical troubleshooting e1. CIRCUIT BREAKER DOES NOT OPERATE on circuit breaker CB77 prior to beginning this task.



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

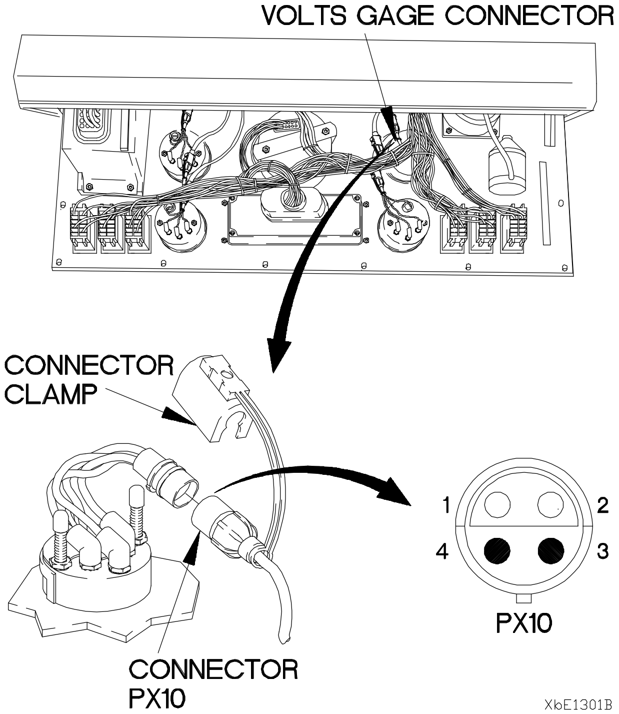
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

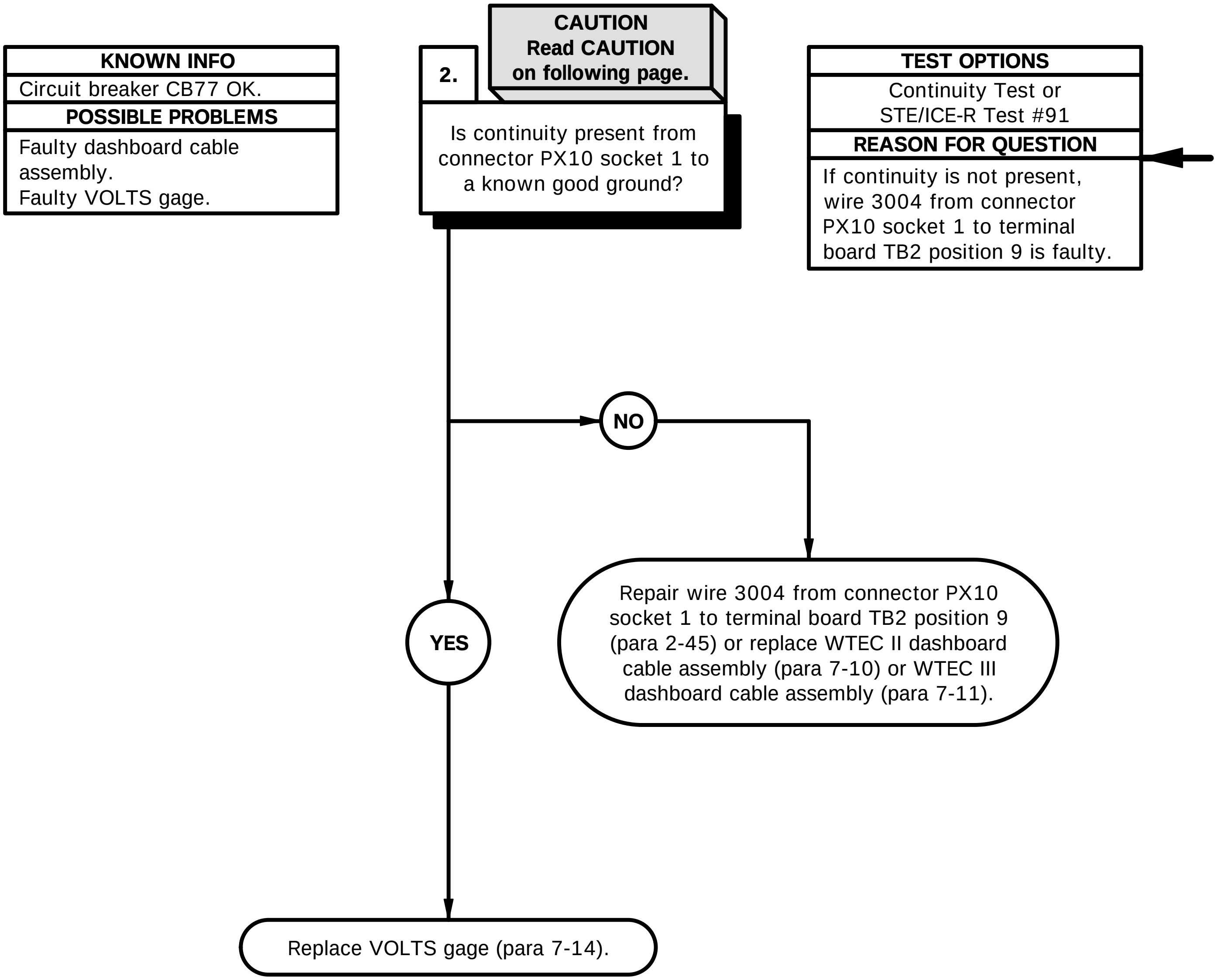
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST
(1) Remove instrument panel assembly for access (para 7-15). (2) Disconnect connector clamp from VOLTS gage connector. (3) Disconnect connector PX10 from VOLTS gage connector. (4) Set multimeter to volts DC. (5) Connect positive (+) probe of multimeter to connector PX10 pin 3. (6) Connect negative (-) probe of multimeter to ground. (7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter. (8) If 24 VDC is not present, go to step 3 of this task. (9) Position master power switch to off (TM 9-2320-366-10-1).



e13. VOLTS GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Circuit breaker CB77 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty VOLTS gage.

2.

CAUTION
Read CAUTION on following page.

Is continuity present from connector PX10 socket 1 to a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3004 from connector PX10 socket 1 to terminal board TB2 position 9 is faulty.

NO

Repair wire 3004 from connector PX10 socket 1 to terminal board TB2 position 9 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace VOLTS gage (para 7-14).

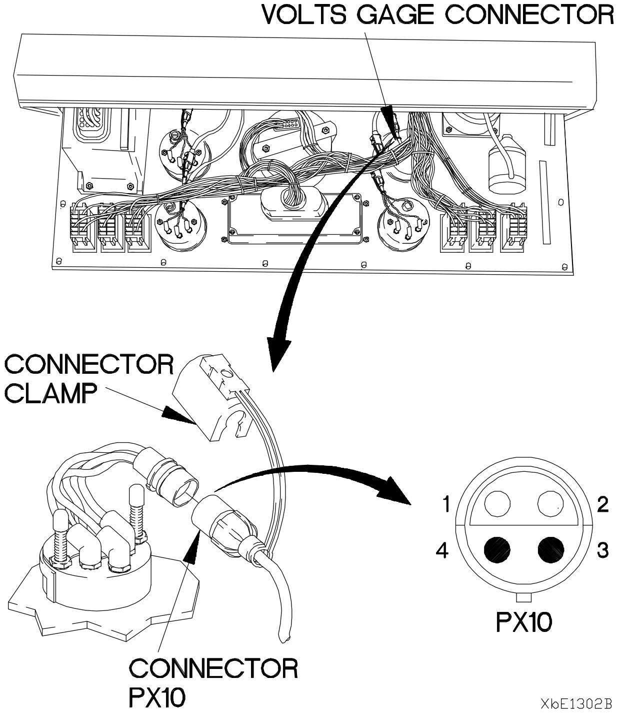
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

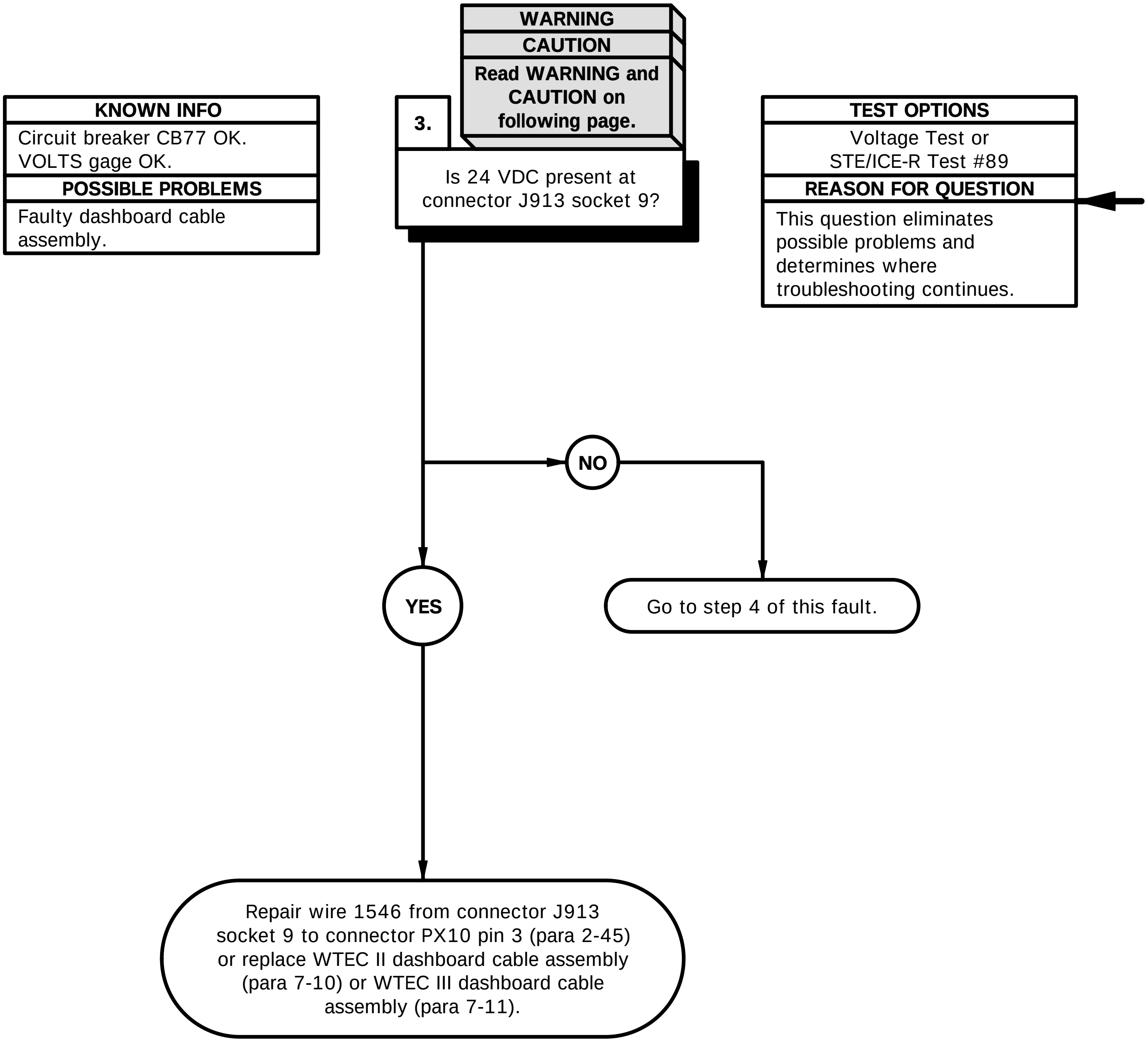
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to connector PX10 socket 1. (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (4) If continuity is not present, repair wire 3004 from connector PX10 socket 1 to terminal board TB2 position 9 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (5) If continuity is present, replace VOLTS gage (para 7-14). (6) Connect connector PX10 to VOLTS gage connector. (7) Connect connector clamp on VOLTS gage connector. (8) Install instrument panel assembly (para 7-15).



e13. VOLTS GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Circuit breaker CB77 OK.
VOLTS gage OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 24 VDC present at connector J913 socket 9?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 4 of this fault.

YES

Repair wire 1546 from connector J913 socket 9 to connector PX10 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

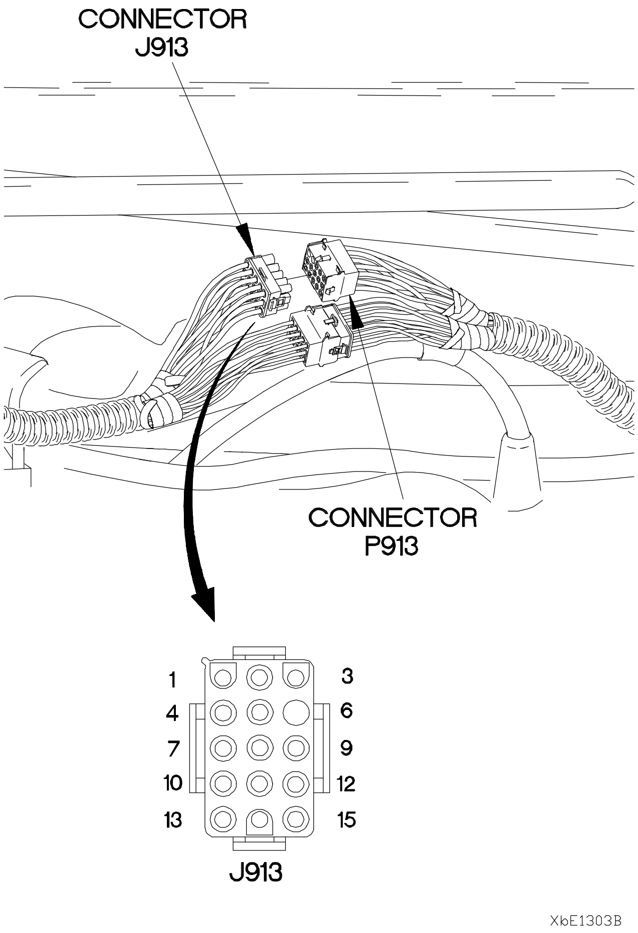
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

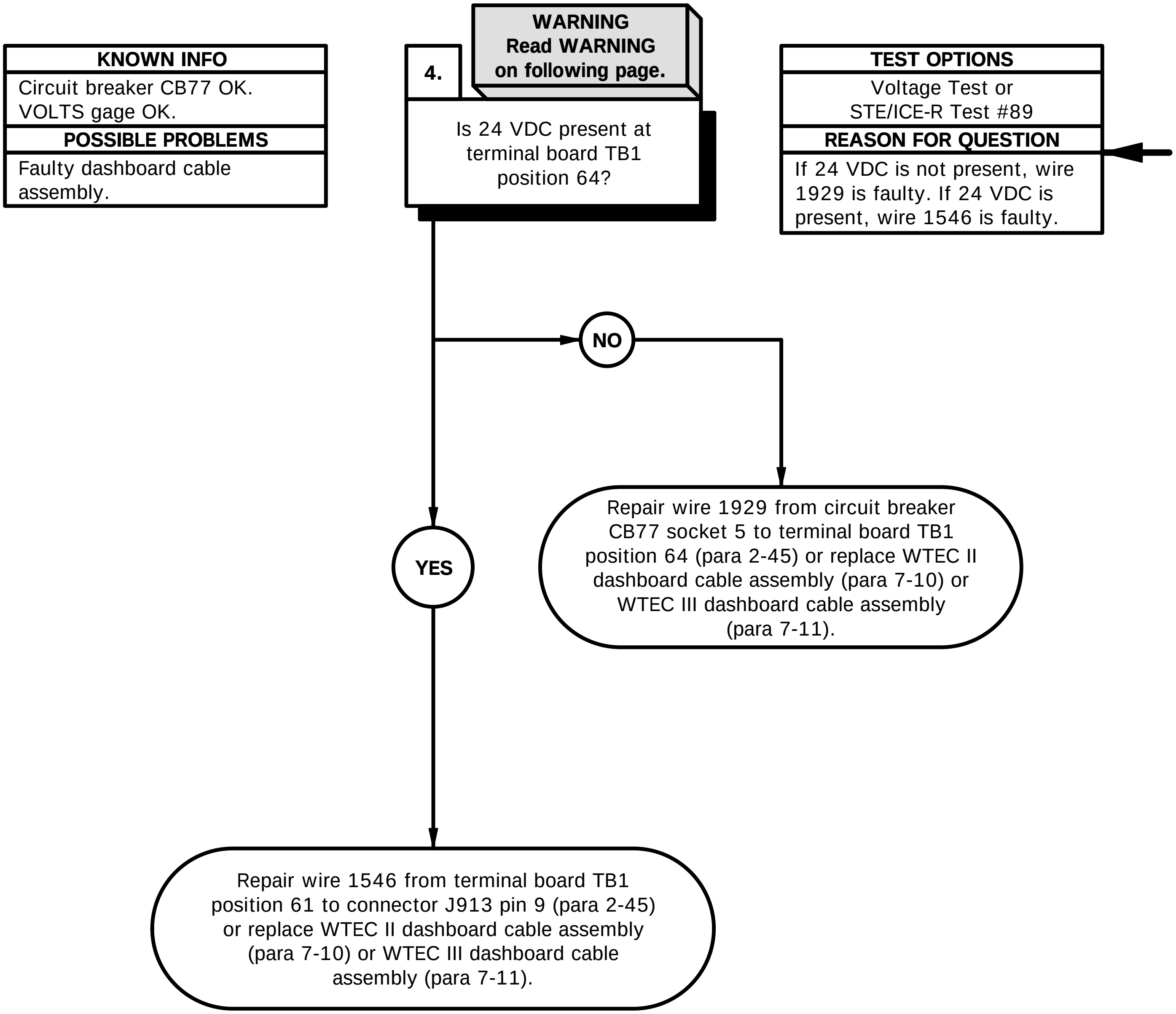
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST

(1) Remove personnel heater for access (para 18-9).
(2) Disconnect connector P913 from connector J913, if required.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to connector J913 socket 9.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1) and not reading on multimeter.
(7) If 24 VDC is not present, go to step 4 of this fault.
(8) If 24 VDC is present, repair wire 1546 from connector J913 socket 9 to connector PX10 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Connect connector PX10 to VOLTS gage connector.
(11) Connect connector clamp on VOLTS gage connector.
(12) Connect connector P913 to connector J913, if required.
(13) Install personnel heater assembly (para 18-9).
(14) Install instrument panel assembly (para 7-15).



e13. VOLTS GAGE DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Circuit breaker CB77 OK.
VOLTS gage OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

4.

WARNING
Read WARNING on following page.

Is 24 VDC present at terminal board TB1 position 64?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1929 is faulty. If 24 VDC is present, wire 1546 is faulty.

NO

Repair wire 1929 from circuit breaker CB77 socket 5 to terminal board TB1 position 64 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

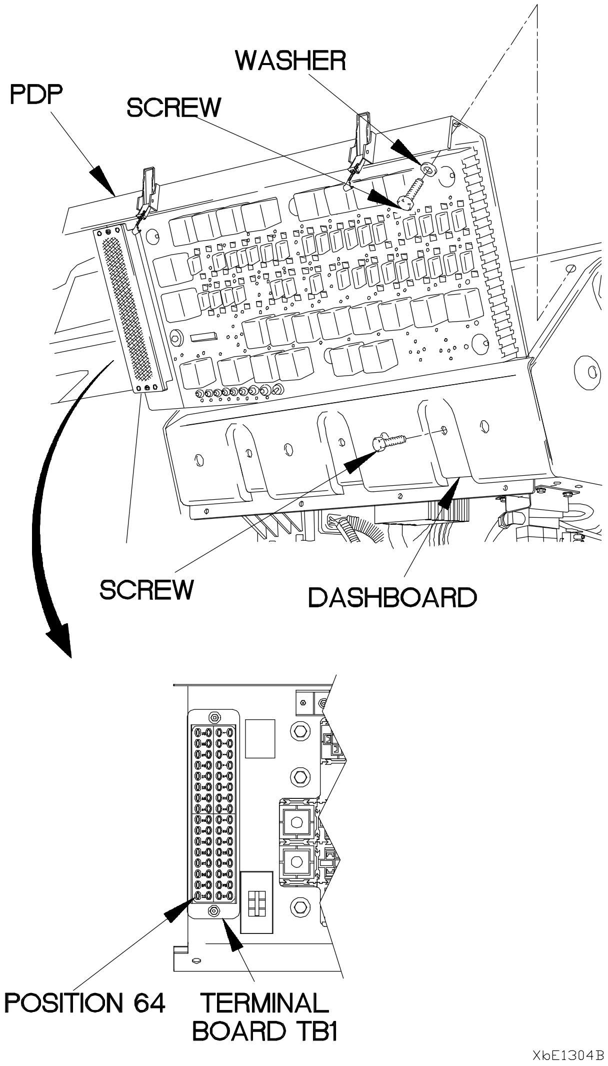
Repair wire 1546 from terminal board TB1 position 61 to connector J913 pin 9 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (TM 9-2320-366-10-1).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to terminal board TB1 position 64.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 24 VDC is not present, repair wire 1929 from circuit breaker CB77 socket 5 to terminal board TB1 position 64 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) If 24 VDC is present, repair wire 1546 from terminal board TB1 position 61 to connector J913 socket 9 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(12) Position master power switch to off (TM 9-2320-366-10-1).
(13) Install PDP on dashboard with three screws.
(14) Install three washers and screws in PDP.



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

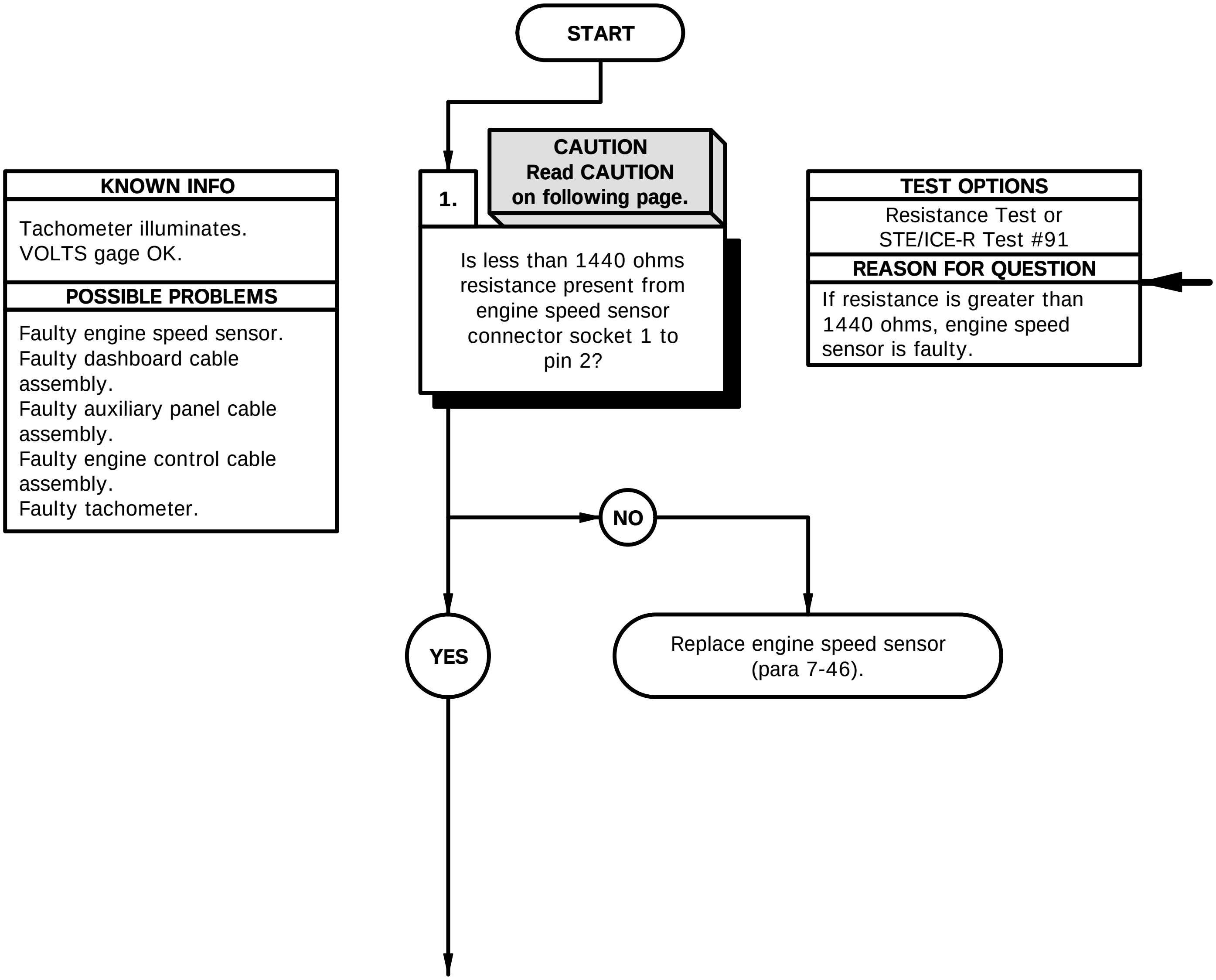
Materials/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

If tachometer does not illuminate, perform Electrical System Troubleshooting e21. Tachometer Does Not Illuminate prior to beginning this task.



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.

POSSIBLE PROBLEMS

Faulty engine speed sensor.
Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty engine control cable assembly.
Faulty tachometer.

1. Is less than 1440 ohms resistance present from engine speed sensor connector socket 1 to pin 2?

TEST OPTIONS

Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If resistance is greater than 1440 ohms, engine speed sensor is faulty.

NO: Replace engine speed sensor (para 7-46).

CAUTION

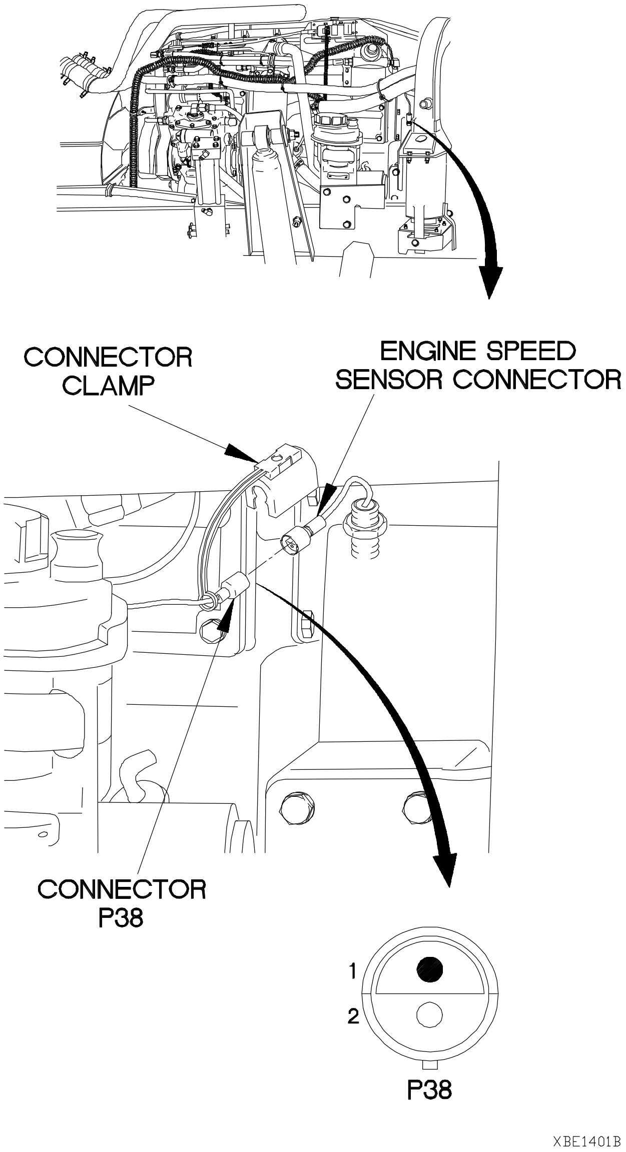
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

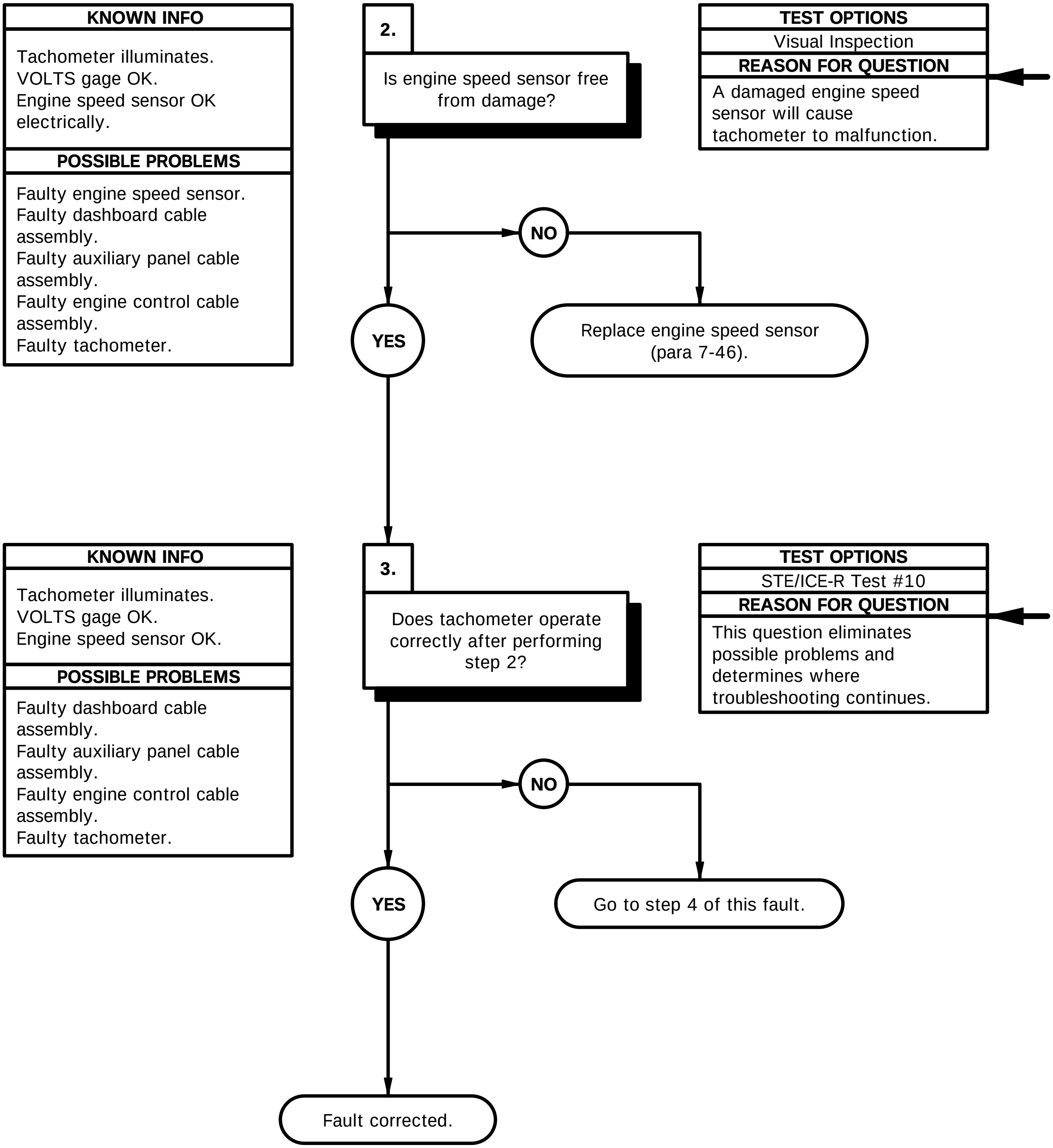
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Raise cab (TM 9-2320-366-10-1).
(2) Disconnect connector clamp from engine speed sensor connector.
(3) Disconnect connector P38 from engine speed sensor connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to socket 1 of engine speed sensor connector.
(6) Connect negative (-) probe of multimeter to pin 2 of engine speed sensor connector and note reading on multimeter.
(7) If greater than 1440 ohms resistance is present, replace engine speed sensor (para 7-46).



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK electrically.

POSSIBLE PROBLEMS

Faulty engine speed sensor.
Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty engine control cable assembly.
Faulty tachometer.

2.

Is engine speed sensor free from damage?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

A damaged engine speed sensor will cause tachometer to malfunction.

NO

Replace engine speed sensor (para 7-46).

YES

KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty engine control cable assembly.
Faulty tachometer.

3.

Does tachometer operate correctly after performing step 2?

TEST OPTIONS

STE/ICE-R Test #10

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 4 of this fault.

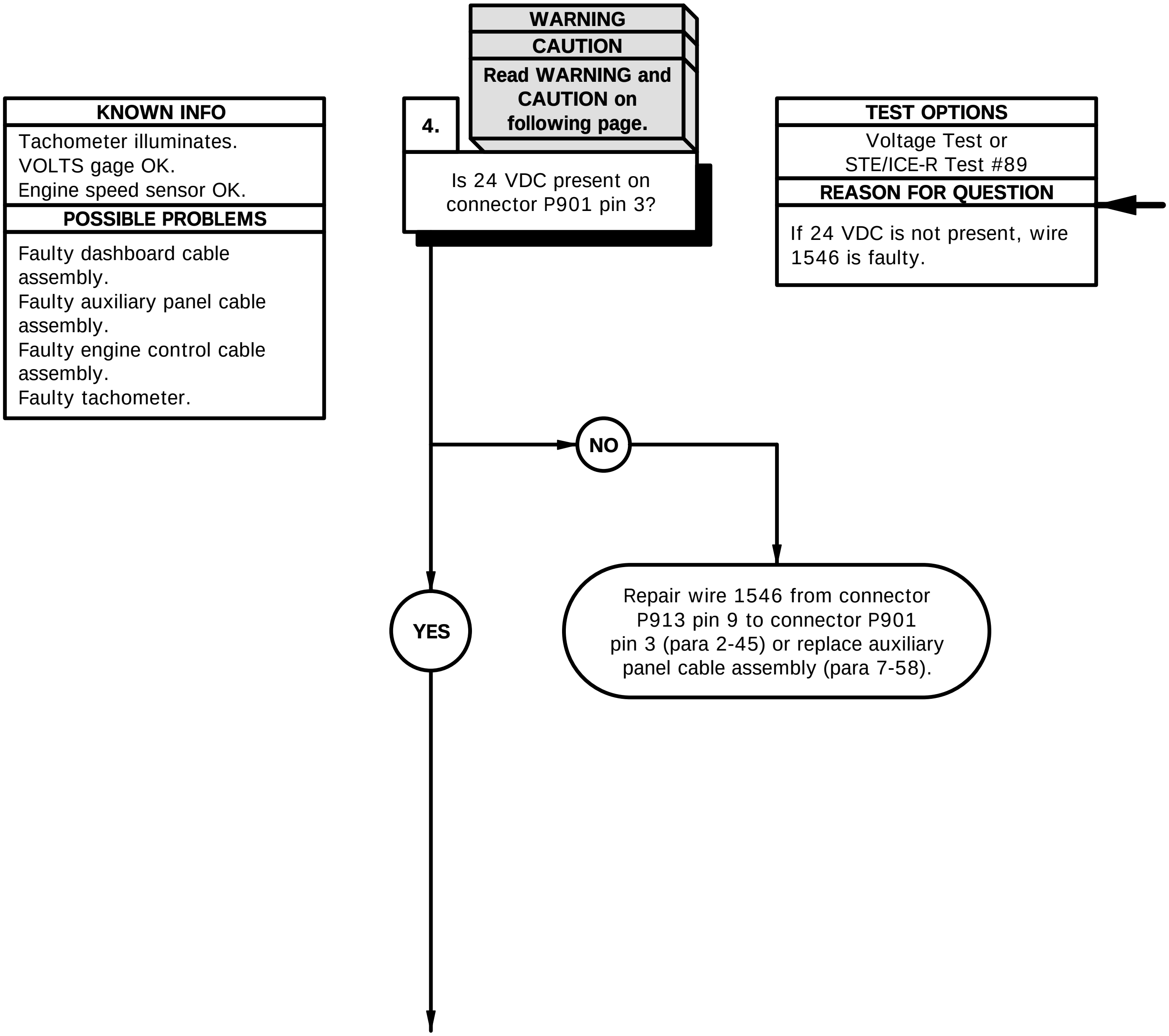
YES

Fault corrected.

(1) Remove engine speed sensor (para 7-46).
(2) Observe lower end of engine speed sensor for damage caused by contact with engine ring gear.
(3) If engine speed sensor is damaged, replace engine speed sensor (para 7-46).
(4) Install engine speed sensor (para 7-46).
(5) Adjust engine speed sensor (para 7-46).

(1) Perform STE/ICE-R test #10.
(2) Position PTO switch to on (TM 9-2320-366-10-1).
(3) Observe if STE/ICE-R test #10 results and tachometer reading are in agreement.
(4) Position PTO switch to off (TM 9-2320-366-10-1).
(5) Shut down engine (TM 9-2320-366-10-1).
(6) If STE/ICE-R test #10 and tachometer reading are not in agreement, go to step 4 of this fault.

e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty engine control cable assembly.
Faulty tachometer.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

4. Is 24 VDC present on connector P901 pin 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1546 is faulty.

Repair wire 1546 from connector P913 pin 9 to connector P901 pin 3 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

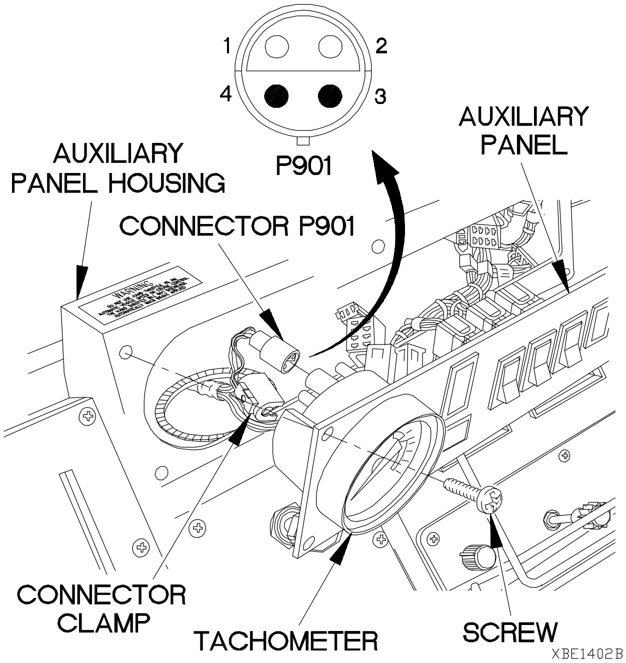
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

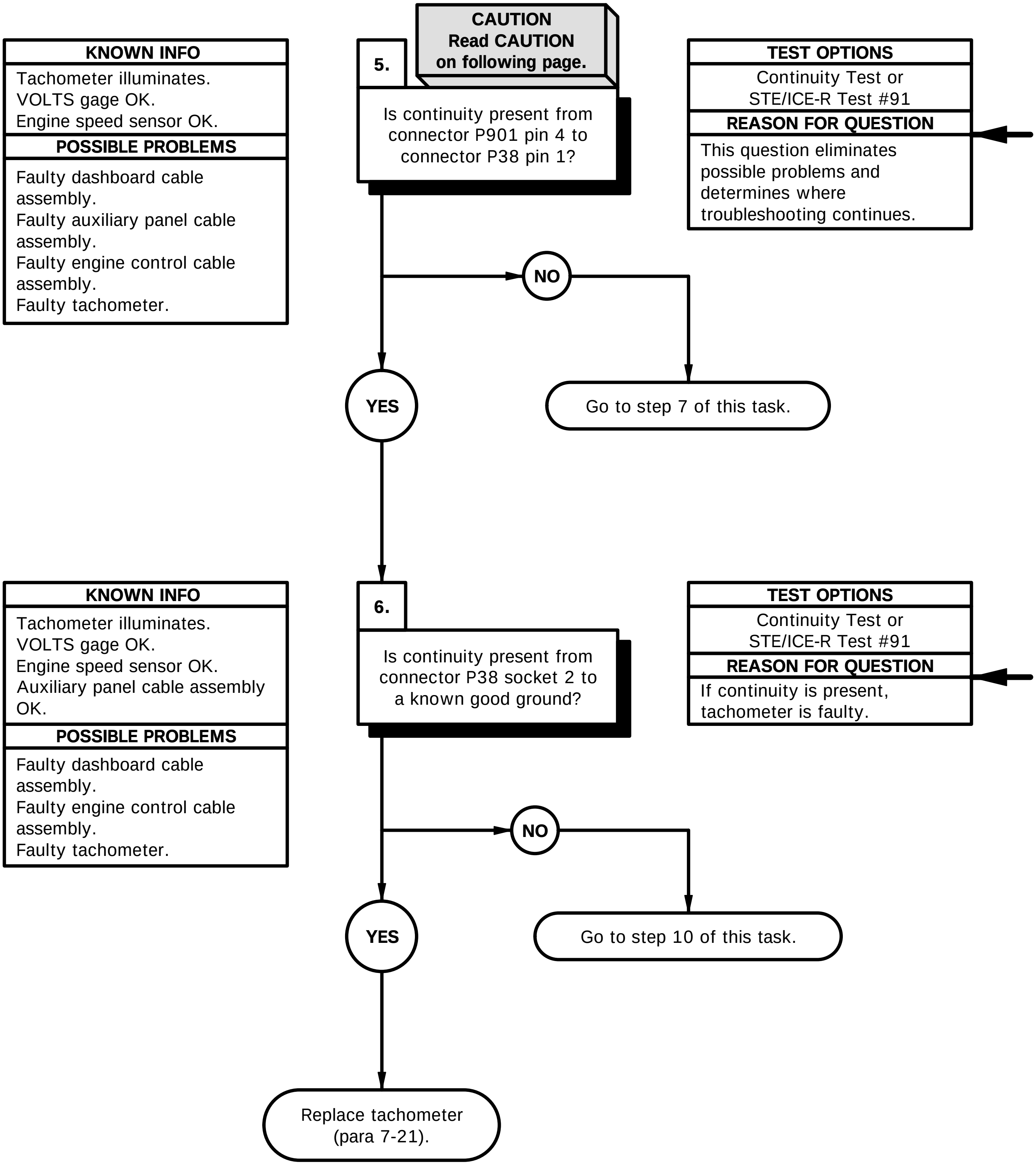
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove six screws from auxiliary panel.
(2) Lift auxiliary panel from auxiliary panel housing to gain access.
(3) Disconnect connector clamp from tachometer connector.
(4) Disconnect connector P901 from tachometer connector.
(5) Set multimeter to VDC.
(6) Connect positive (+) probe of multimeter to connector P901 pin 3.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 24 VDC is not present, repair wire 1546 from connector P913 pin 9 to connector P901 pin 3 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(10) Position master power switch to off (TM 9-2320-366-10-1).



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty engine control cable assembly.
Faulty tachometer.

CAUTION
Read CAUTION on following page.

5. Is continuity present from connector P901 pin 4 to connector P38 pin 1?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 7 of this task.

YES — Go to step 6.

KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.
Auxiliary panel cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.
Faulty tachometer.

6. Is continuity present from connector P38 socket 2 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, tachometer is faulty.

NO — Go to step 10 of this task.

YES — Replace tachometer (para 7-21).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

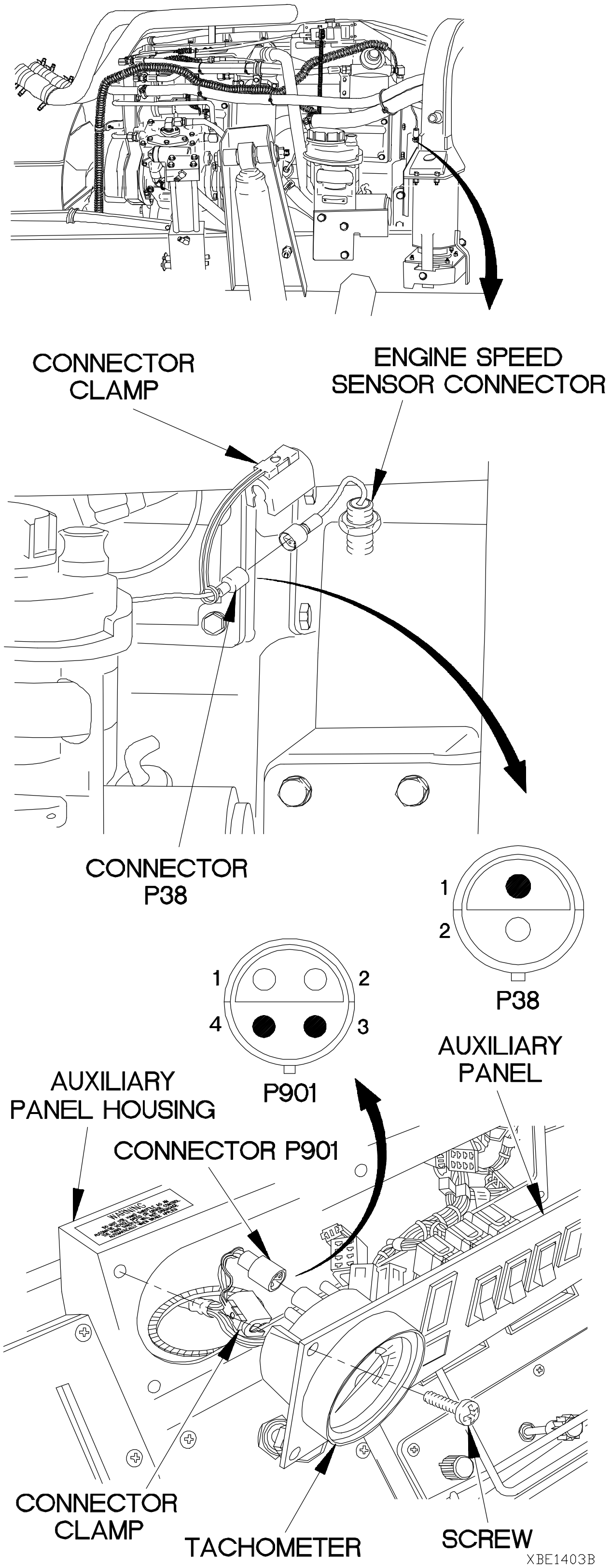
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

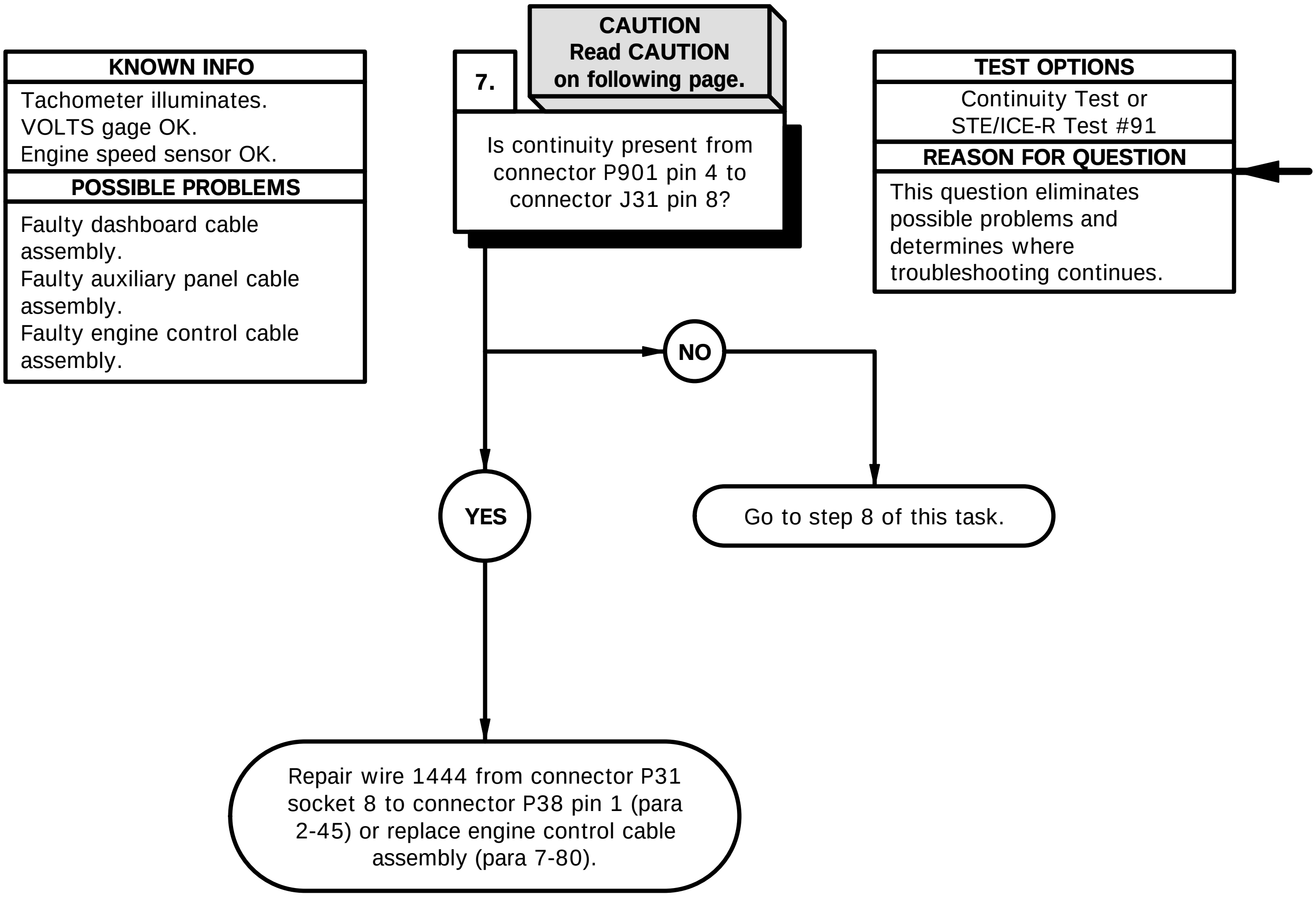
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P901 pin 4.
(3) Raise cab (TM 9-2320-366-10-1).
(4) Disconnect connector clamp from engine speed sensor connector.
(5) Disconnect connector P38 from engine speed sensor connector.
(7) Connect negative (-) probe of multimeter to connector P38 pin 1 and note reading on multimeter.
(8) If continuity is not present, go to step 7 of this task.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P38 socket 2.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 10 of this task.
(5) If continuity is present, replace tachometer (para 7-21).
(6) Connect connector P38 to engine speed sensor connector.
(7) Connect connector clamp on engine speed sensor connector.
(8) Lower cab (TM 9-2320-366-10-1).
(9) Connect connector P901 to tachometer connector.
(10) Connect connector clamp on tachometer connector.
(11) Position auxiliary panel on auxiliary panel housing with six screws.
(12) Tighten six screws to 18 lb-in. (2 N·m).



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty engine control cable assembly.

CAUTION
Read CAUTION on following page.

7. Is continuity present from connector P901 pin 4 to connector J31 pin 8?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 8 of this task.

Repair wire 1444 from connector P31 socket 8 to connector P38 pin 1 (para 2-45) or replace engine control cable assembly (para 7-80).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

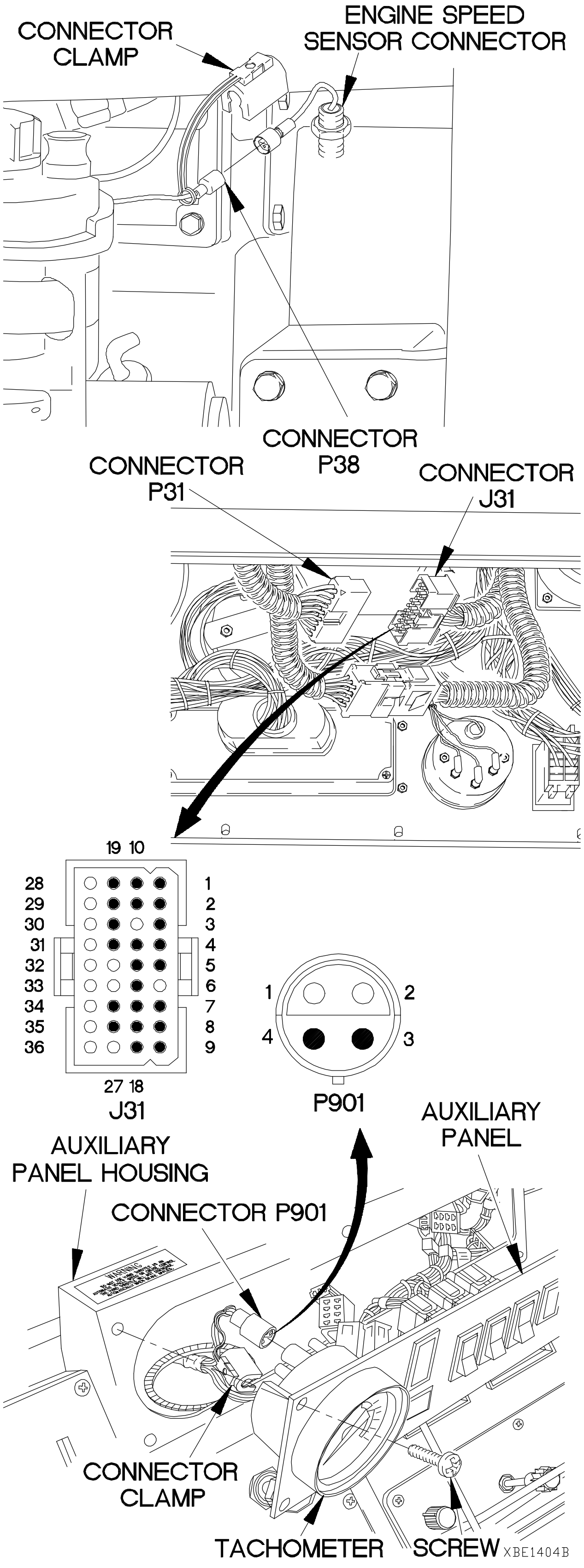
CONTINUITY TEST

(1) Connect connector P38 to engine speed sensor connector.
(2) Connect connector clamp on engine speed sensor connector.
(3) Lower cab (TM 9-2320-366-10-1).
(4) Remove instrument panel assembly for access (para 7-15).
(5) Disconnect connector P31 from connector J31.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector P901 pin 4.
(8) Connect negative (-) probe of multimeter to connector J31 pin 8 and note reading on multimeter.
(9) If continuity is not present, go to step 8 of this task.
(10) If continuity is present, repair wire 1444 from connector P31 socket 8 to connector P38 pin 1 (para 2-45) or replace engine control cable assembly (para 7-80).
(11) Connect connector P31 to connector J31.
(12) Install instrument panel assembly (para 7-15).

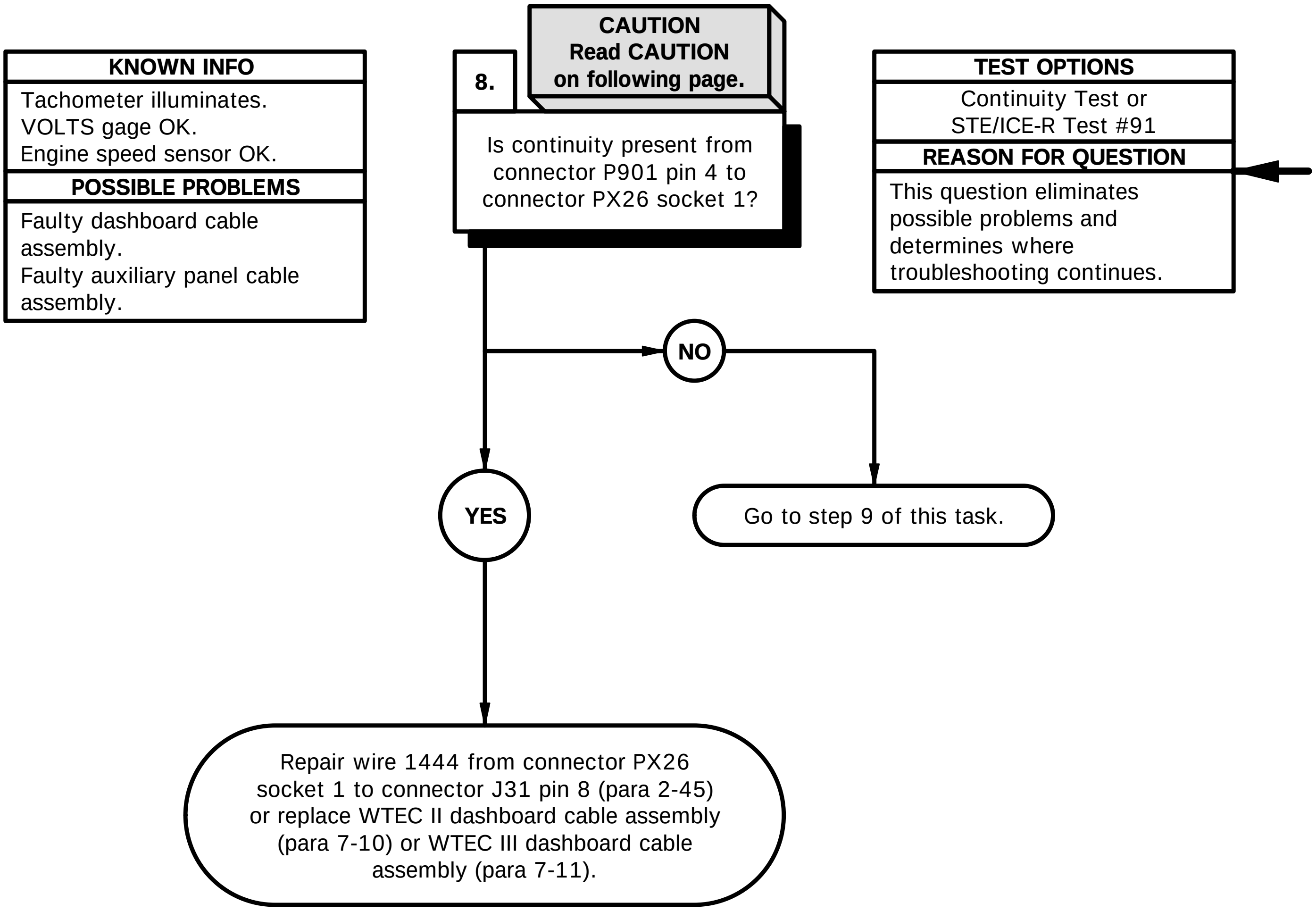
NOTE

Perform steps (13) through (16) if continuity is present.

(13) Connect connector P901 to tachometer connector.
(14) Connect connector clamp on tachometer connector.
(15) Position auxiliary panel on auxiliary panel housing with six screws.
(16) Tighten six screws to 18 lb-in. (2 N·m).



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.

CAUTION
Read CAUTION on following page.

8.

Is continuity present from connector P901 pin 4 to connector PX26 socket 1?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 9 of this task.

YES

Repair wire 1444 from connector PX26 socket 1 to connector J31 pin 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

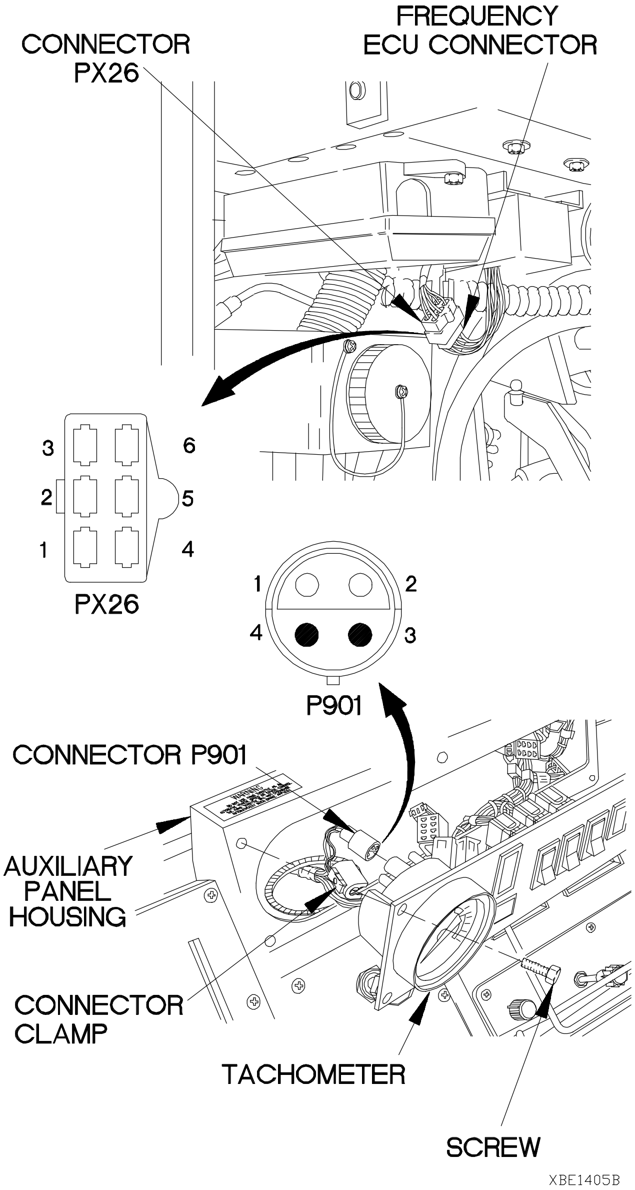
CONTINUITY TEST

(1) Disconnect connector PX26 from frequency ECU connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P901 pin 4.
(4) Connect negative (-) probe of multimeter to connector PX26 socket 1 and note reading on multimeter.
(5) If continuity is not present, go to step 9 of this task.
(6) If continuity is present, repair wire 1444 from connector PX26 socket 1 to connector J31 pin 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para7-11).
(7) Connect connector PX26 to frequency ECU connector.

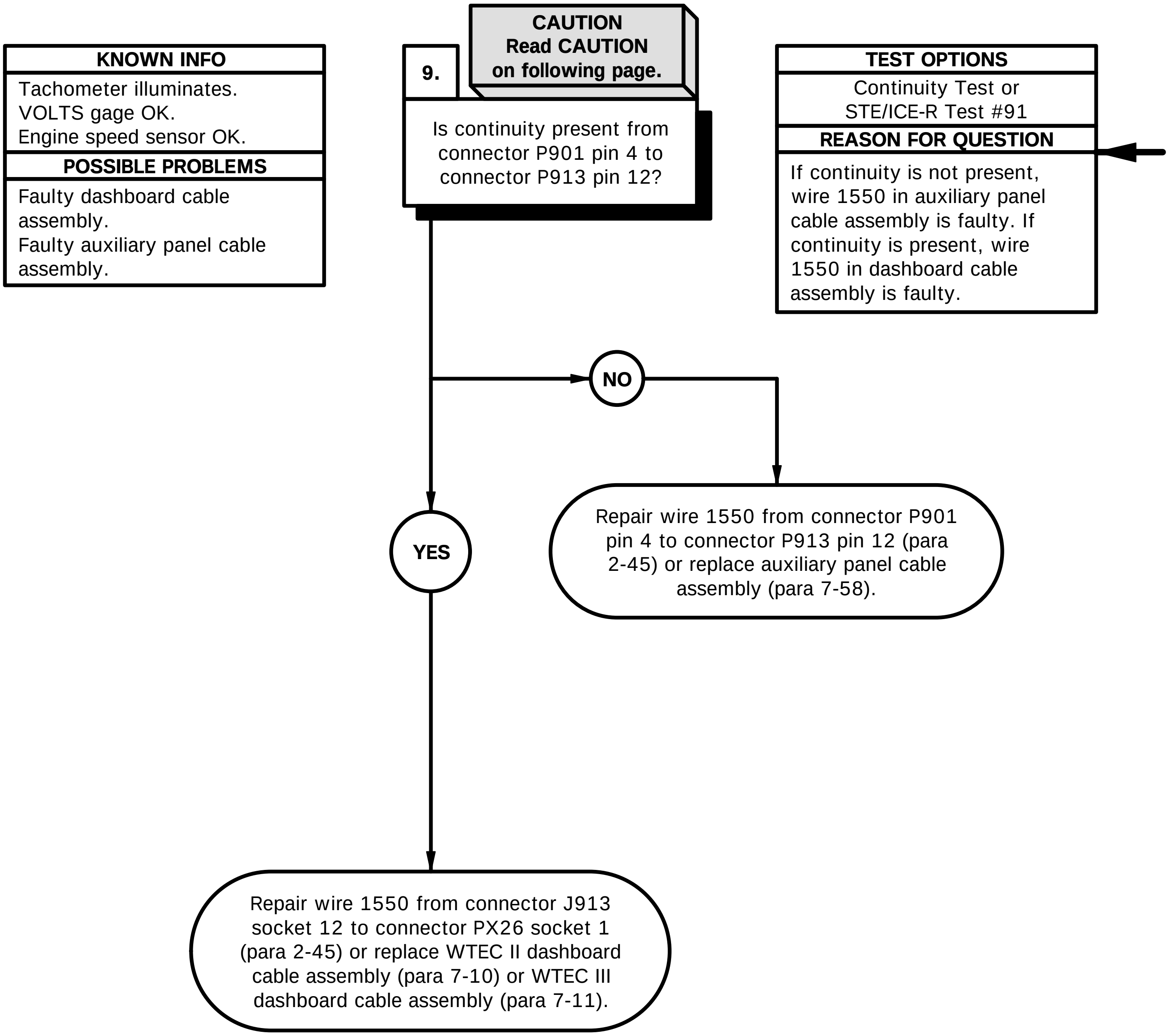
NOTE

Perform steps (8) through (11) if continuity is present.

(8) Connect connector P901 to tachometer connector.
(9) Connect connector clamp on tachometer connector.
(10) Position auxiliary panel on auxiliary panel housing with six screws.
(11) Tighten six screws to 18 lb-in. (2 N·m).



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.

CAUTION
Read CAUTION on following page.

9. Is continuity present from connector P901 pin 4 to connector P913 pin 12?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1550 in auxiliary panel cable assembly is faulty. If continuity is present, wire 1550 in dashboard cable assembly is faulty.

NO

Repair wire 1550 from connector P901 pin 4 to connector P913 pin 12 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

YES

Repair wire 1550 from connector J913 socket 12 to connector PX26 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

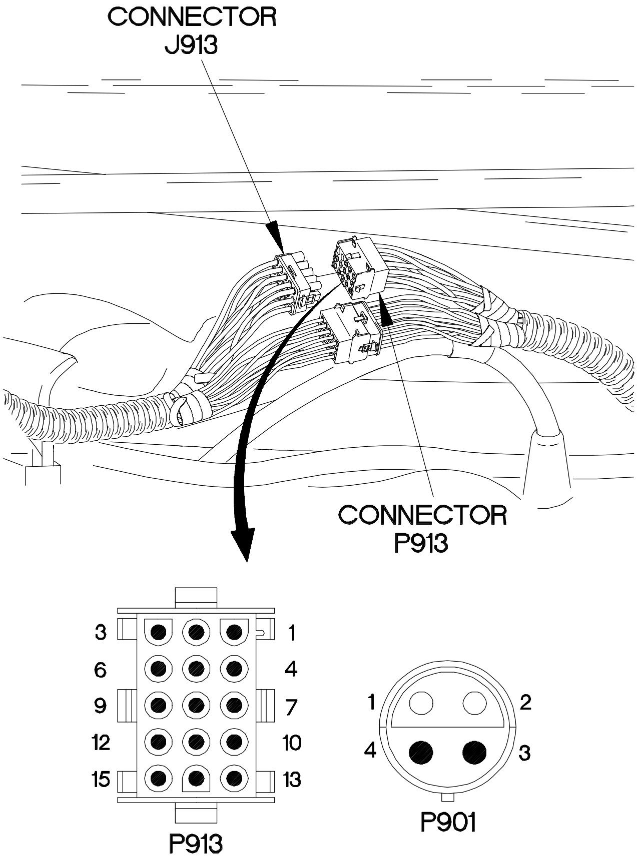
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

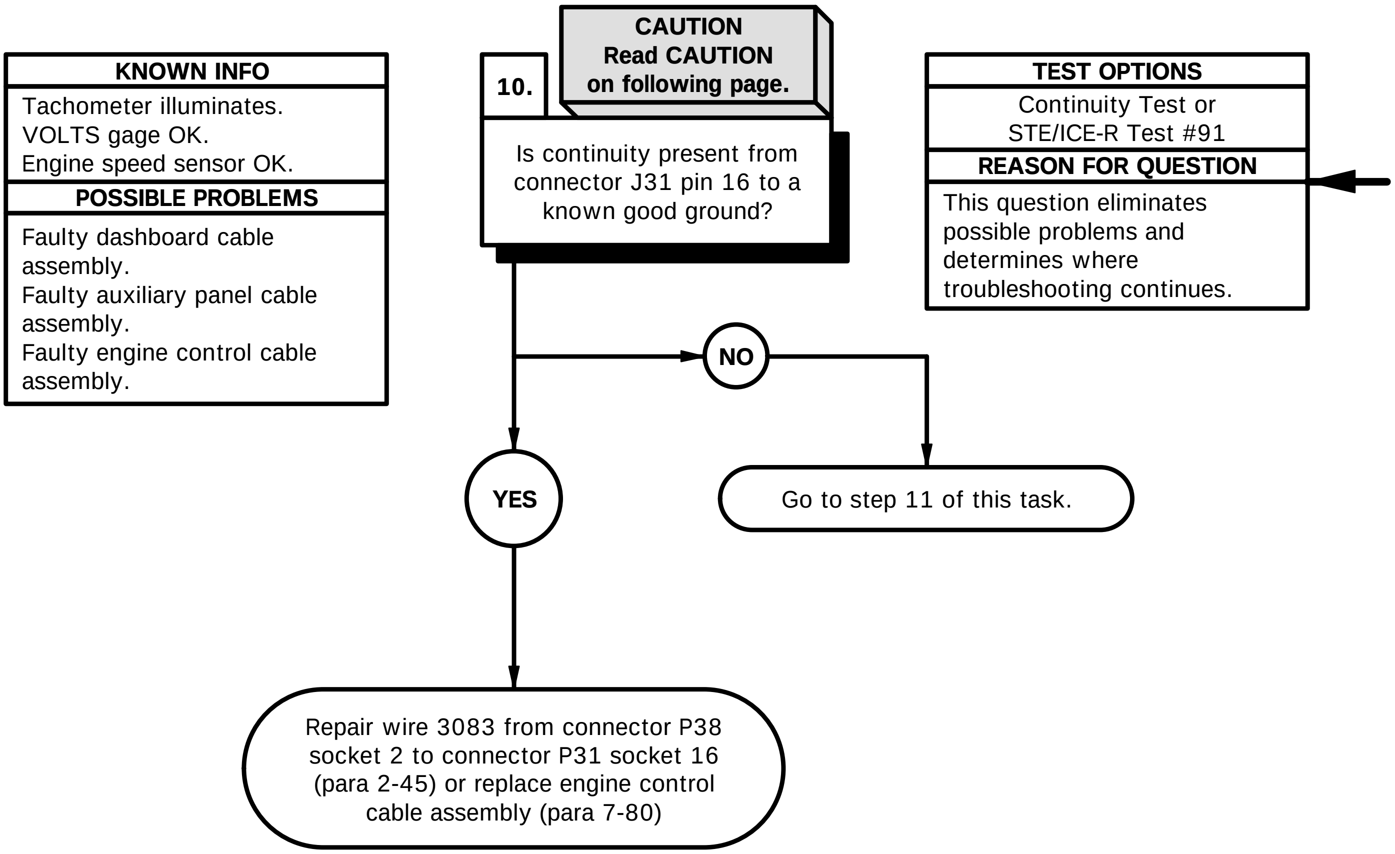
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Remove personnel heater assembly for access (para 18-9). (2) Disconnect connector P913 from connector J913. (3) Set multimeter to ohms. (4) Connect positive (+) probe of multimeter to connector P901 pin 4. (5) Connect negative (-) probe of multimeter to connector P913 pin 12 and note reading on multimeter. (6) If continuity is not present, repair wire 1550 from connector P901 pin 4 to connector P913 pin 12 (para 2-45) or replace auxiliary panel cable assembly (para 7-58). (7) If continuity is present, repair wire 1550 from connector J913 socket 12 to connector PX26 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (8) Connect connector P913 to connector J913. (9) Install personnel heater assembly (para 18-9).



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty engine control cable assembly.

10.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J31 pin 16 to a known good ground?

TEST OPTIONS

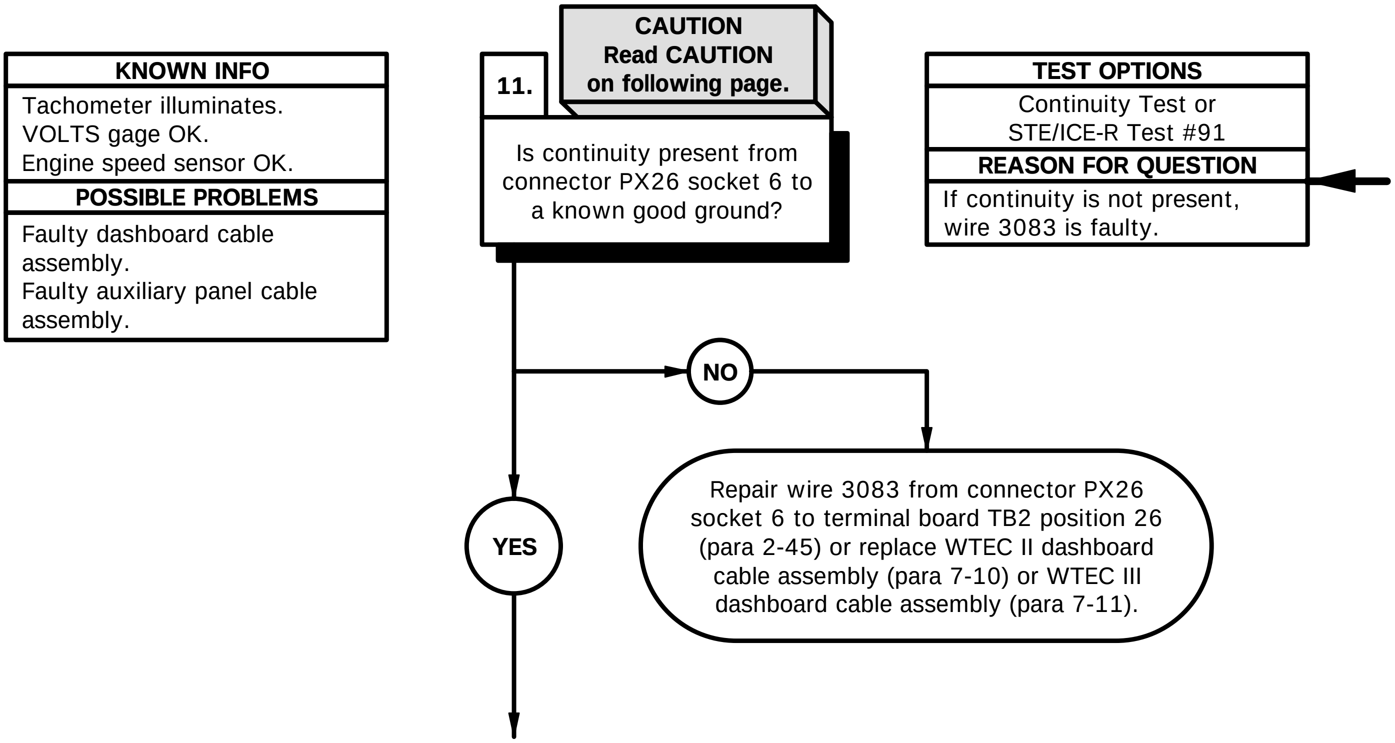
Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 11 of this task.

Repair wire 3083 from connector P38 socket 2 to connector P31 socket 16 (para 2-45) or replace engine control cable assembly (para 7-80)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.

11.

CAUTION
Read CAUTION on following page.

Is continuity present from connector PX26 socket 6 to a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3083 is faulty.

Repair wire 3083 from connector PX26 socket 6 to terminal board TB2 position 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

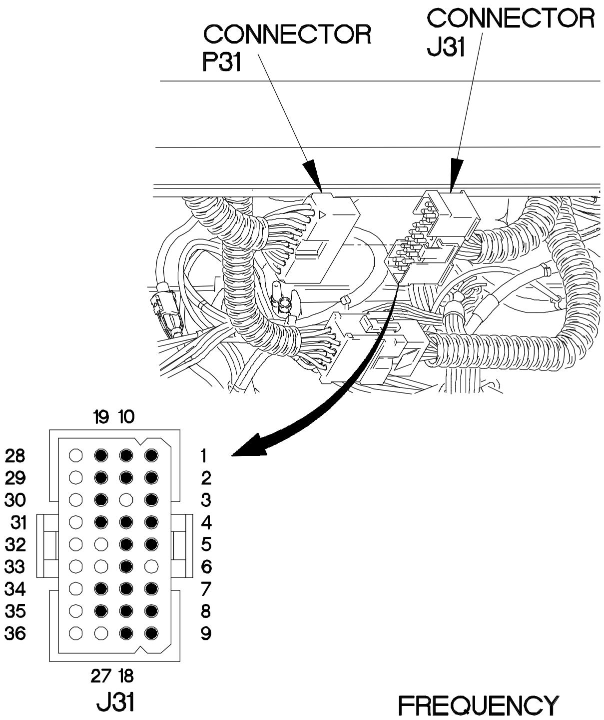
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

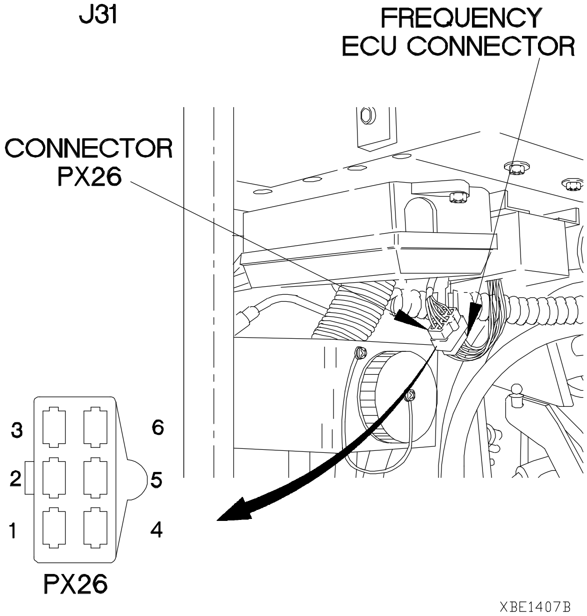
CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector P31 from connector J31.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J31 pin 16.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present, go to step 11 of this task.
(7) If continuity is present, repair wire 3083 from connector P38 socket 2 to connector P31 socket 16 (para 2-45) or replace engine control cable assembly (para 7-80).
(8) Connect connector P31 to connector J31.
(9) Install instrument panel assembly (para 7-15).

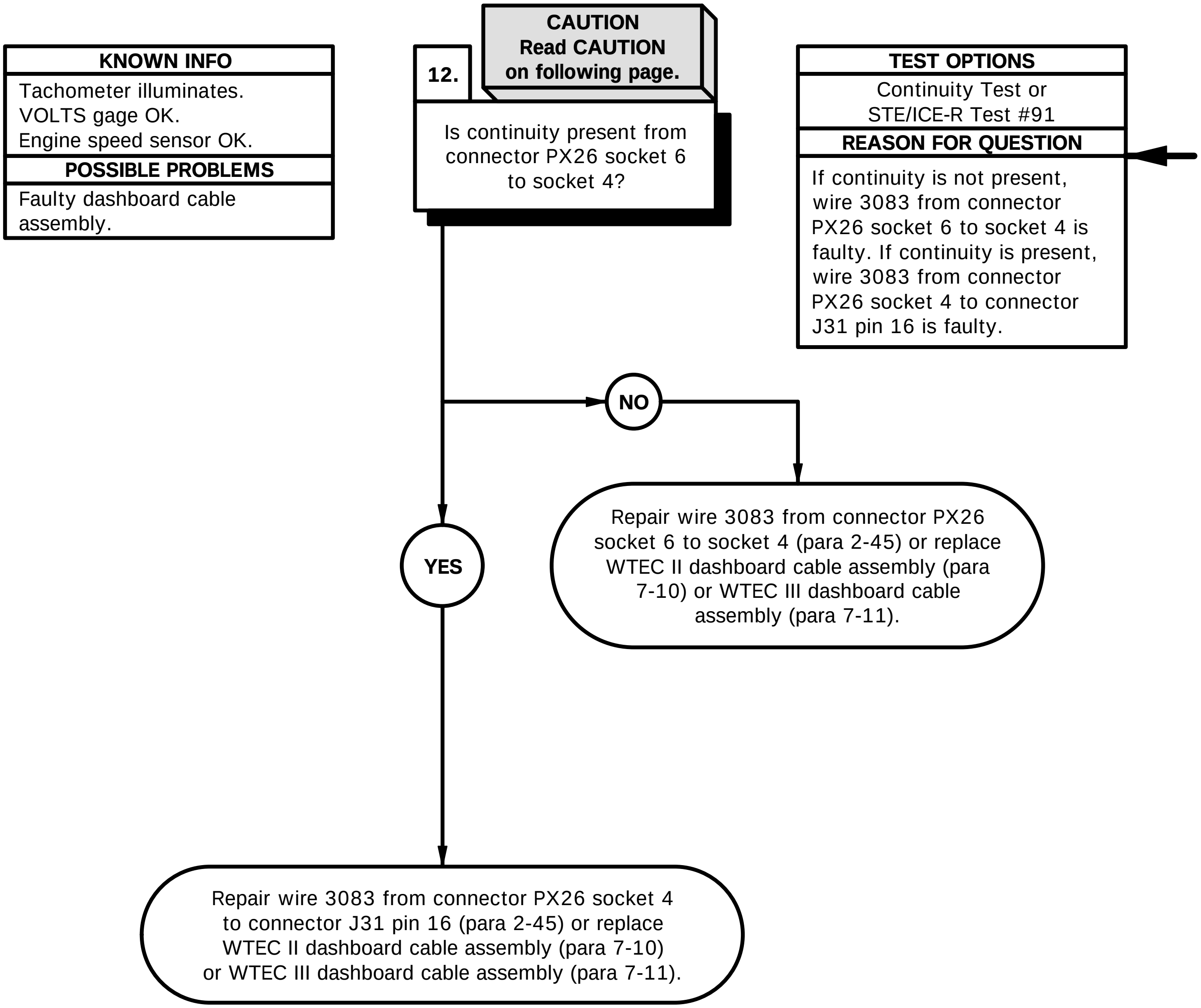


CONTINUITY TEST

(1) Disconnect connector PX26 from frequency ECU connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX26 socket 6.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3083 from connector PX26 socket 6 to terminal board TB2 position 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e14. TACHOMETER DOES NOT OPERATE OR IS INACCURATE (CONT)



KNOWN INFO

Tachometer illuminates.
VOLTS gage OK.
Engine speed sensor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

12. Is continuity present from connector PX26 socket 6 to socket 4?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3083 from connector PX26 socket 6 to socket 4 is faulty. If continuity is present, wire 3083 from connector PX26 socket 4 to connector J31 pin 16 is faulty.

NO

Repair wire 3083 from connector PX26 socket 6 to socket 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 3083 from connector PX26 socket 4 to connector J31 pin 16 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

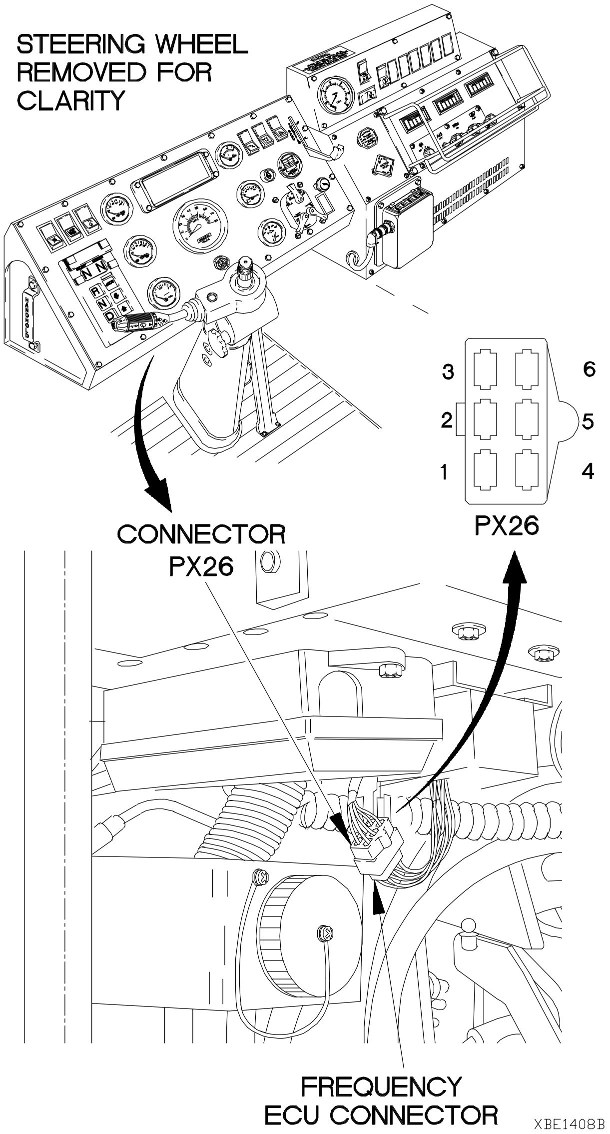
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX26 socket 6.
(3) Connect negative (-) probe of multimeter to connector PX26 socket 4 and note reading on multimeter.
(4) If continuity is not present, repair wire 3083 from connector PX26 socket 6 to socket 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 3083 connector PX26 socket 4 to connector J31 pin 16 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX26 to frequency ECU connector.



e15. AUDIBLE ALARM DOES NOT OPERATE

INITIAL SETUP

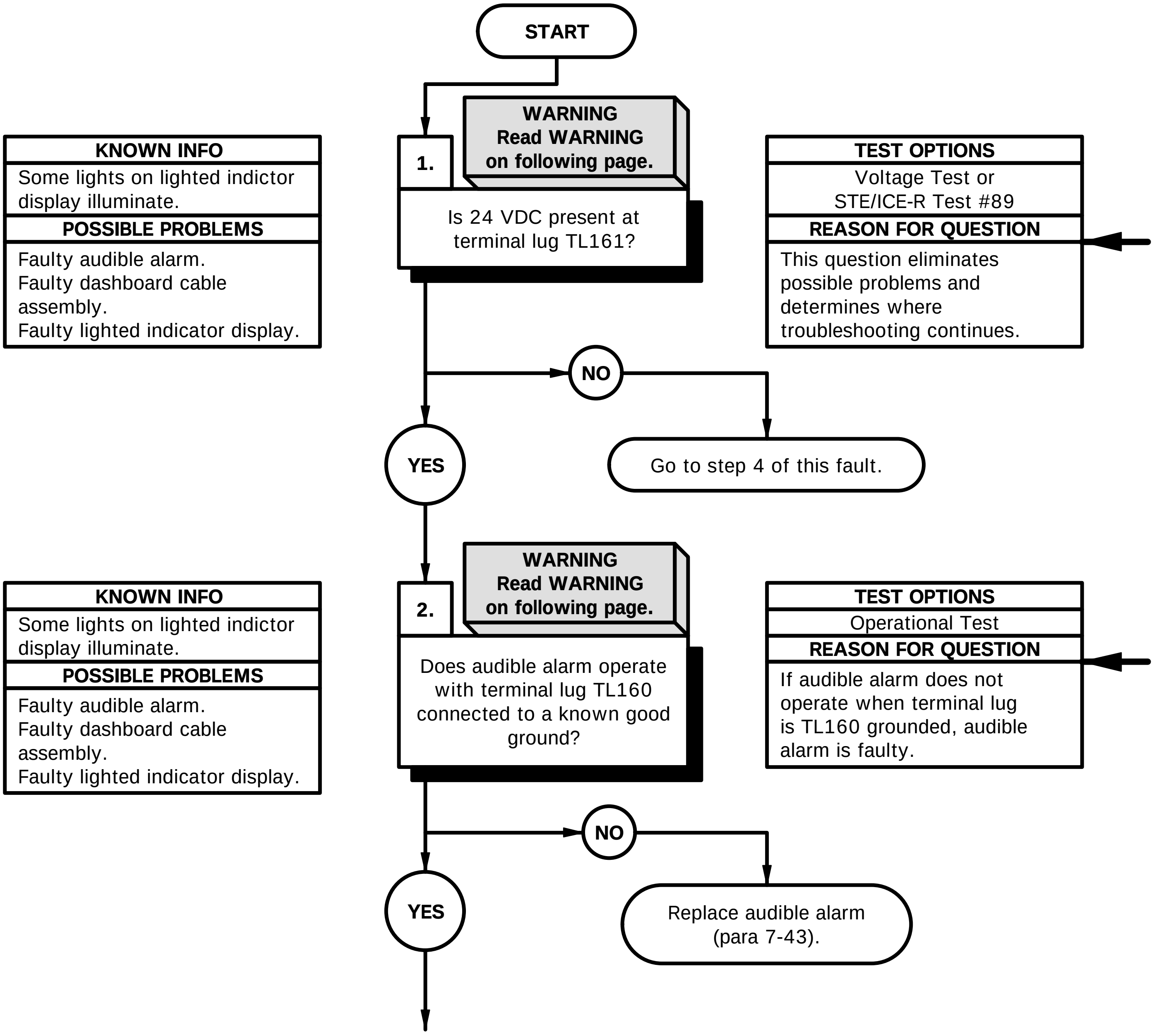
Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).
Air tanks drained (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P



START

KNOWN INFO
Some lights on lighted indictor display illuminate.

POSSIBLE PROBLEMS
Faulty audible alarm.
Faulty dashboard cable assembly.
Faulty lighted indicator display.

1. **WARNING Read WARNING on following page.**

Is 24 VDC present at terminal lug TL161?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 4 of this fault.

YES

KNOWN INFO
Some lights on lighted indictor display illuminate.

POSSIBLE PROBLEMS
Faulty audible alarm.
Faulty dashboard cable assembly.
Faulty lighted indicator display.

2. **WARNING Read WARNING on following page.**

Does audible alarm operate with terminal lug TL160 connected to a known good ground?

TEST OPTIONS
Operational Test

REASON FOR QUESTION
If audible alarm does not operate when terminal lug is TL160 grounded, audible alarm is faulty.

NO — Replace audible alarm (para 7-43).

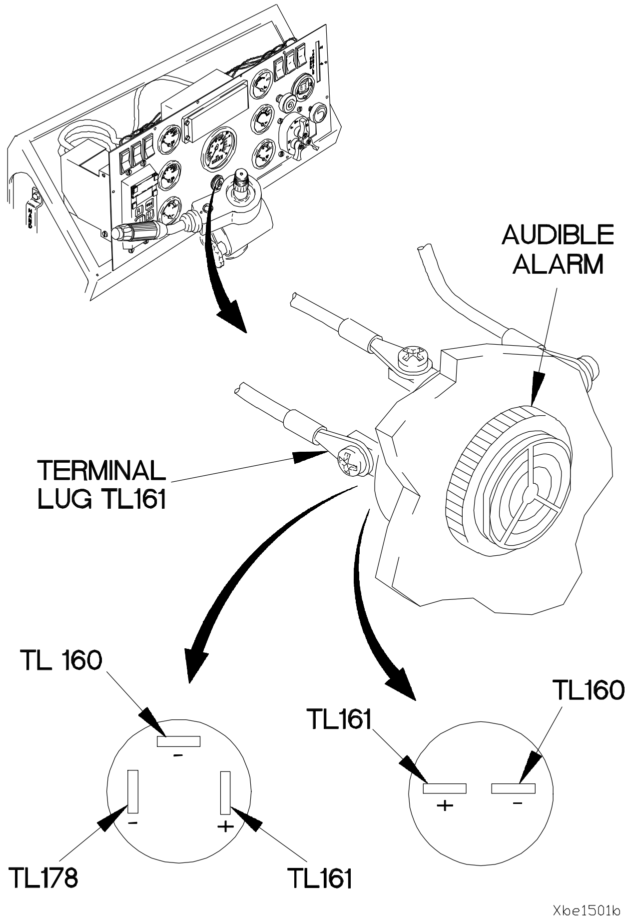
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

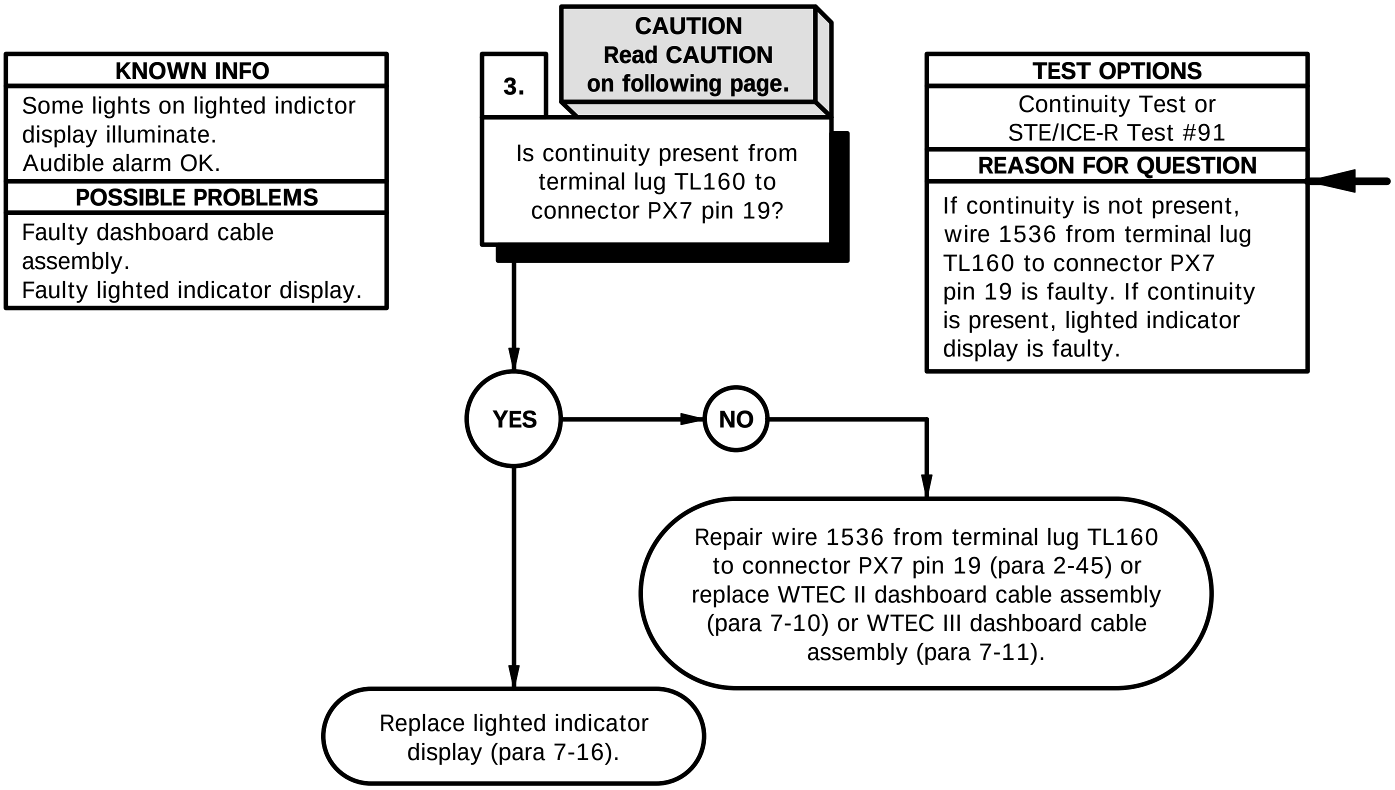
(1) Remove instrument panel assembly for access (para 7-15).
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to terminal lug TL161.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 24 VDC is not present, go to step 4 of this fault.
(7) Position master power switch to off (TM 9-2320-366-10-1).



OPERATIONAL TEST

(1) Connect one end of electrical wire to terminal lug TL160.
(2) Connect opposite end of electrical wire to ground.
(3) Position master power switch to on (TM 9-2320-366-10-1).
(4) If audible alarm does not operate, replace audible alarm (para 7-43).
(5) Position master power switch to off (TM 9-2320-366-10-1).

e15. AUDIBLE ALARM DOES NOT OPERATE (CONT)



KNOWN INFO

Some lights on lighted indictor display illuminate.
Audible alarm OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty lighted indicator display.

CAUTION
Read CAUTION on following page.

3. Is continuity present from terminal lug TL160 to connector PX7 pin 19?

TEST OPTIONS

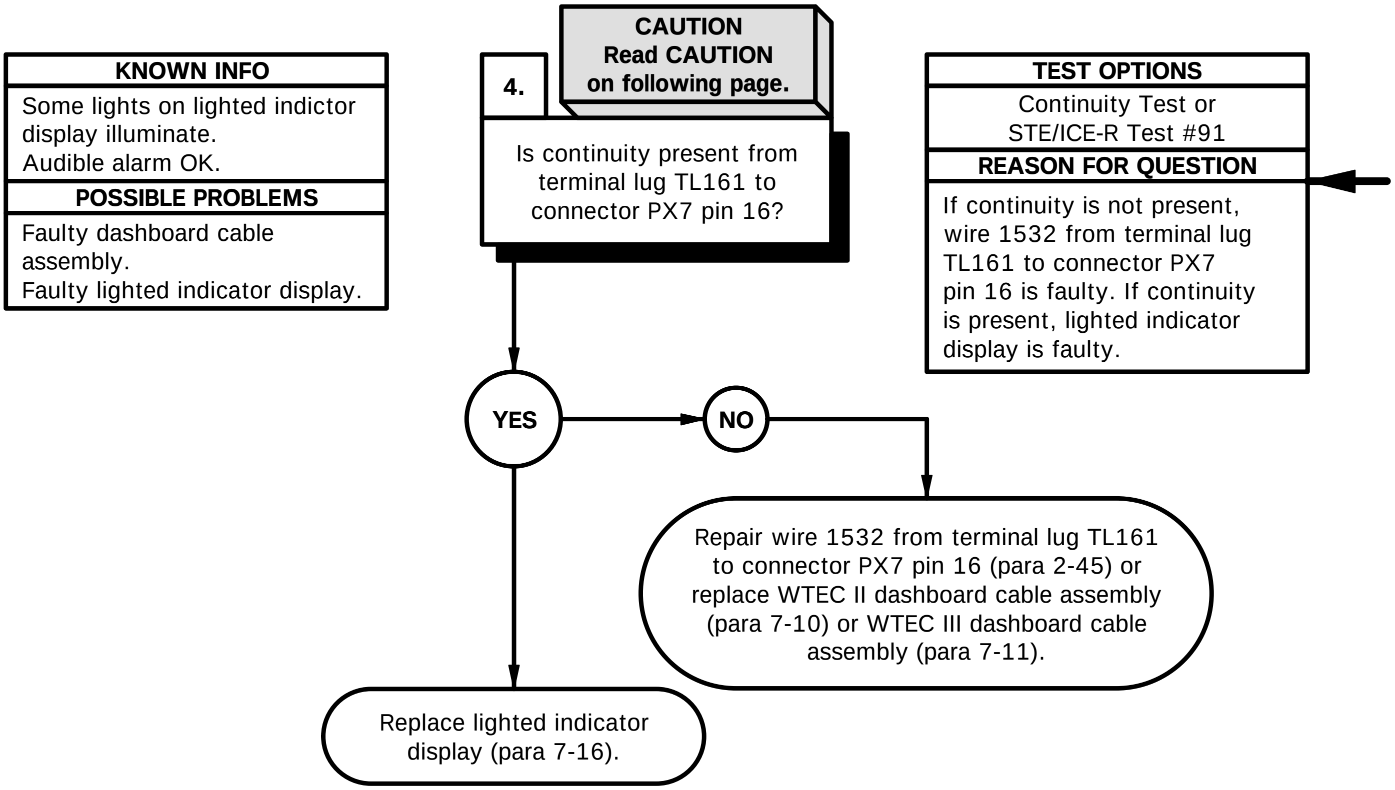
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1536 from terminal lug TL160 to connector PX7 pin 19 is faulty. If continuity is present, lighted indicator display is faulty.

YES: Replace lighted indicator display (para 7-16).

NO: Repair wire 1536 from terminal lug TL160 to connector PX7 pin 19 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



KNOWN INFO

Some lights on lighted indictor display illuminate.
Audible alarm OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty lighted indicator display.

CAUTION
Read CAUTION on following page.

4. Is continuity present from terminal lug TL161 to connector PX7 pin 16?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1532 from terminal lug TL161 to connector PX7 pin 16 is faulty. If continuity is present, lighted indicator display is faulty.

YES: Replace lighted indicator display (para 7-16).

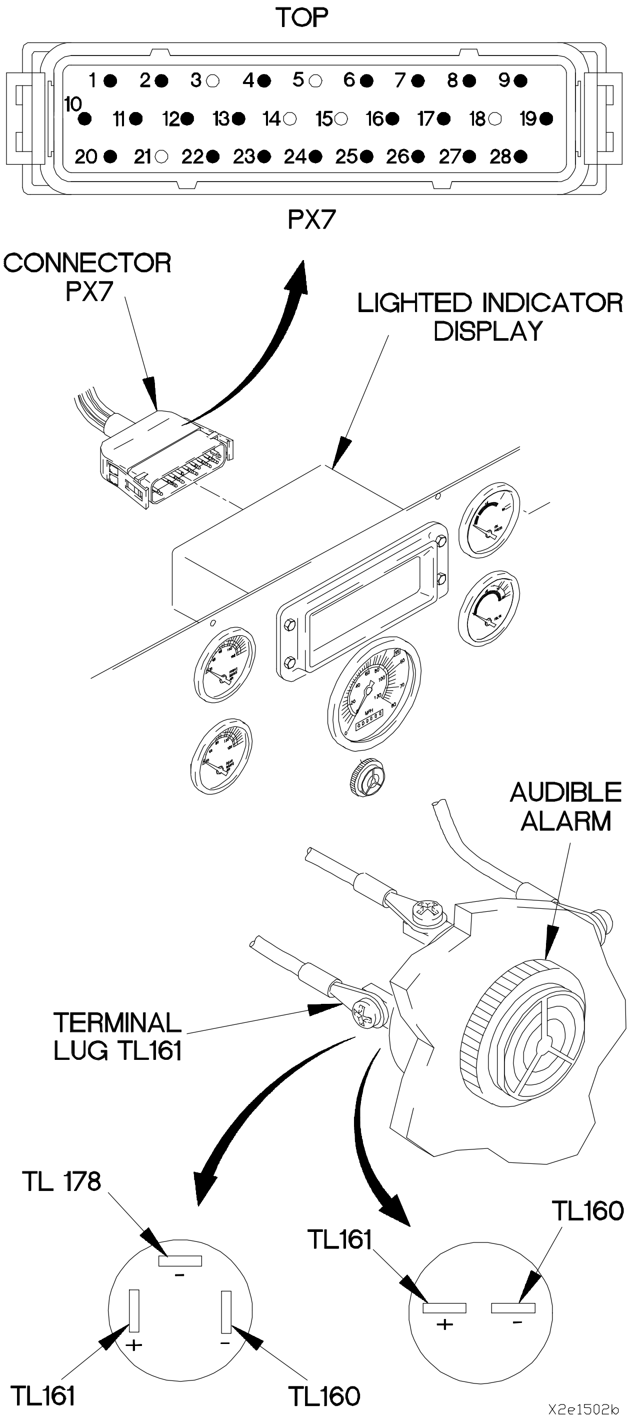
NO: Repair wire 1532 from terminal lug TL161 to connector PX7 pin 16 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.



CONTINUITY TEST

(1) Disconnect connector PX7 from lighted indicator display.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL160.
(4) Connect negative (-) probe of multimeter to connector PX7 pin 19 and note reading on multimeter.
(5) If continuity is not present, repair wire 1536 from terminal lug TL160 to connector PX7 pin 19 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace lighted indicator display (para 7-16).
(7) Connect connector PX7 to lighted indicator display.
(8) Install instrument panel assembly (para 7-15).

CONTINUITY TEST

(1) Disconnect connector PX7 from lighted indicator display.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL161.
(4) Connect negative (-) probe of multimeter to connector PX7 pin 16 and note reading on multimeter.
(5) If continuity is not present, repair wire 1532 from terminal lug TL161 to connector PX7 pin 16 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace lighted indicator display (para 7-16).
(7) Connect connector PX7 to lighted indicator display.
(8) Install instrument panel assembly (para 7-15).

e16. TROOP TRANSPORT AUDIBLE ALARM DOES NOT OPERATE

INITIAL SETUP

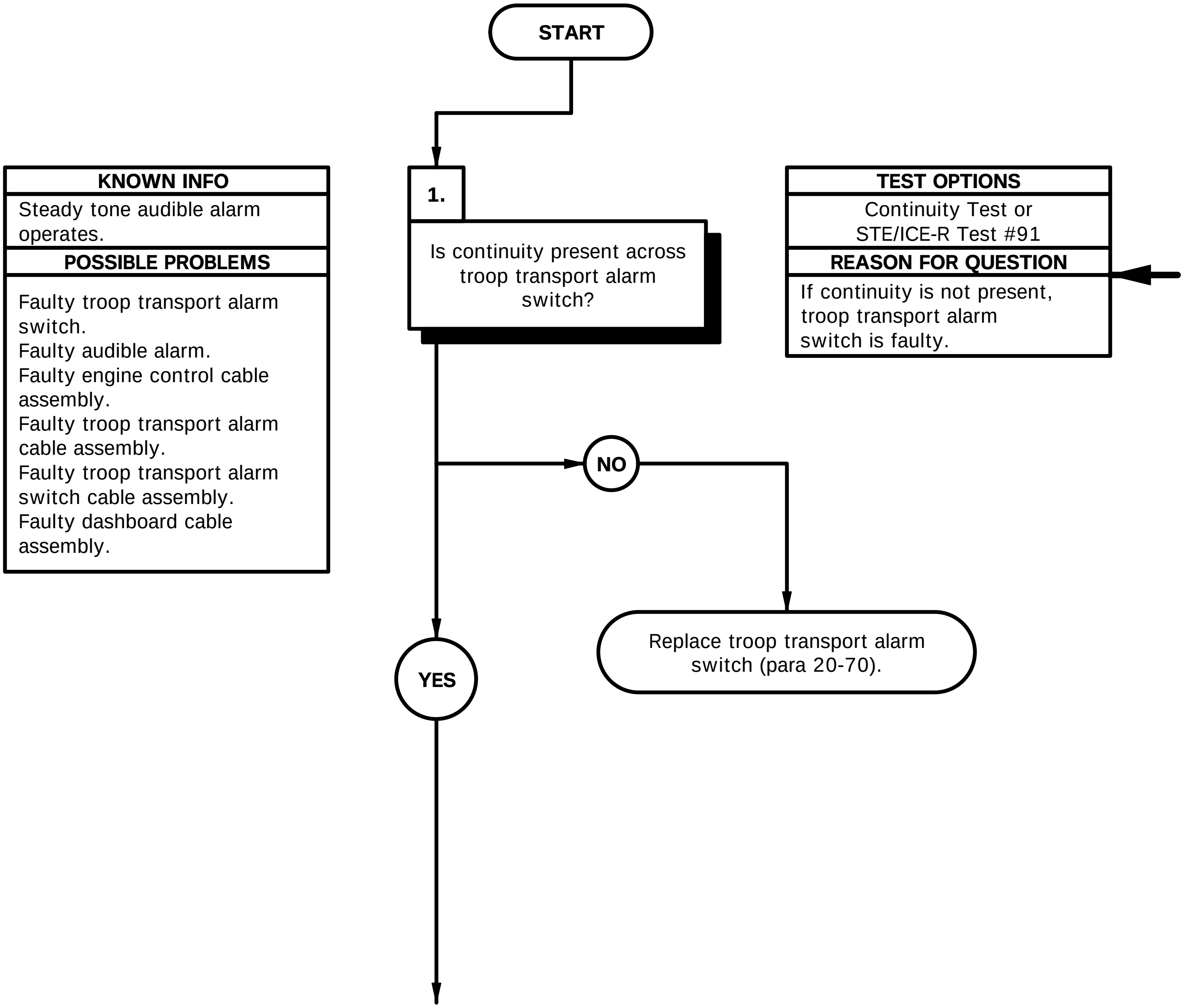
Equipment Conditions
Engine shut down (TM 9-2320-366-10-1)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

Materials/Parts
Lockwasher (2) (Item 82, Appendix G)
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Steady tone audible alarm operates.

POSSIBLE PROBLEMS

Faulty troop transport alarm switch.
Faulty audible alarm.
Faulty engine control cable assembly.
Faulty troop transport alarm cable assembly.
Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.

1.

Is continuity present across troop transport alarm switch?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

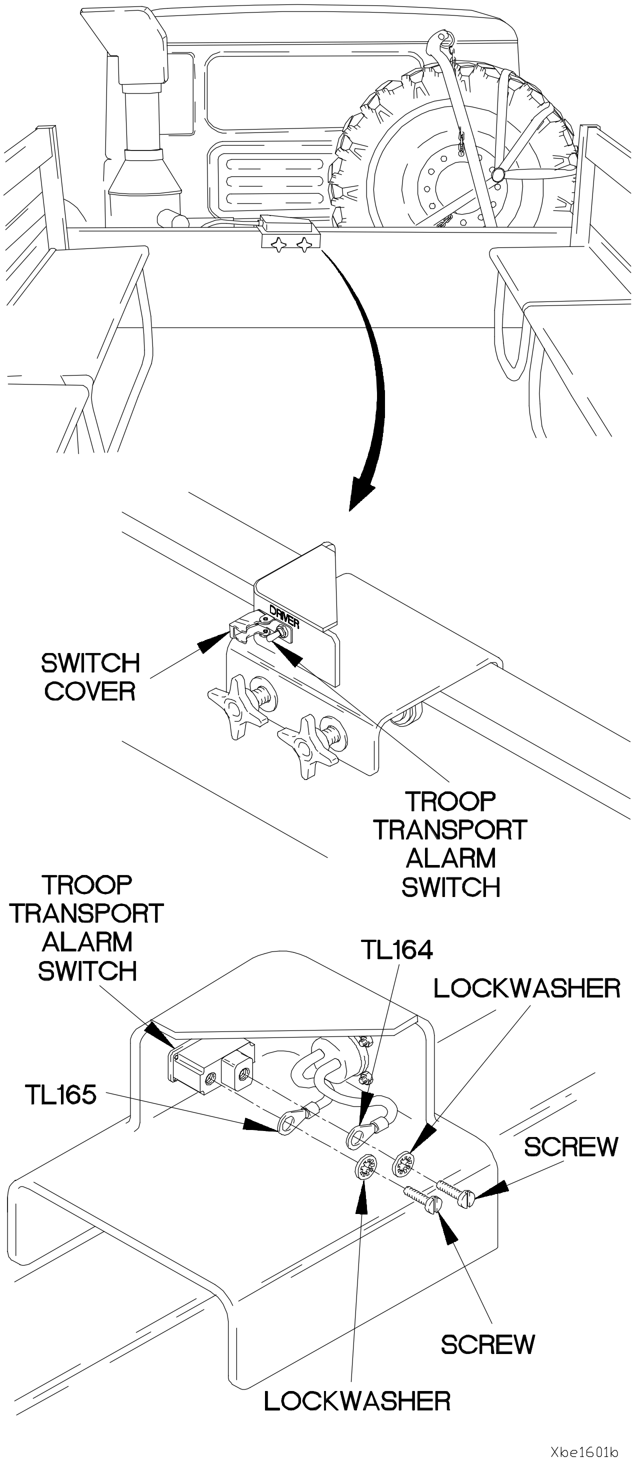
REASON FOR QUESTION

If continuity is not present, troop transport alarm switch is faulty.

Replace troop transport alarm switch (para 20-70).

CONTINUITY TEST

(1) Remove two screws, lockwashers, and terminal lugs TL164 and TL165 from troop transport alarm switch. Discard lockwashers.
(2) Lift switch cover on troop transport alarm switch.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to one terminal of troop transport alarm switch.
(5) Connect negative (-) probe of multimeter to second terminal of troop transport alarm switch.
(6) Position troop transport alarm switch to on and note reading on multimeter.
(7) If continuity is not present, replace troop transport alarm switch (para 20-70).
(8) Install terminal lugs TL165 and TL164 on troop transport alarm switch with two lockwashers and screws.
(9) Close switch cover on troop transport alarm switch.



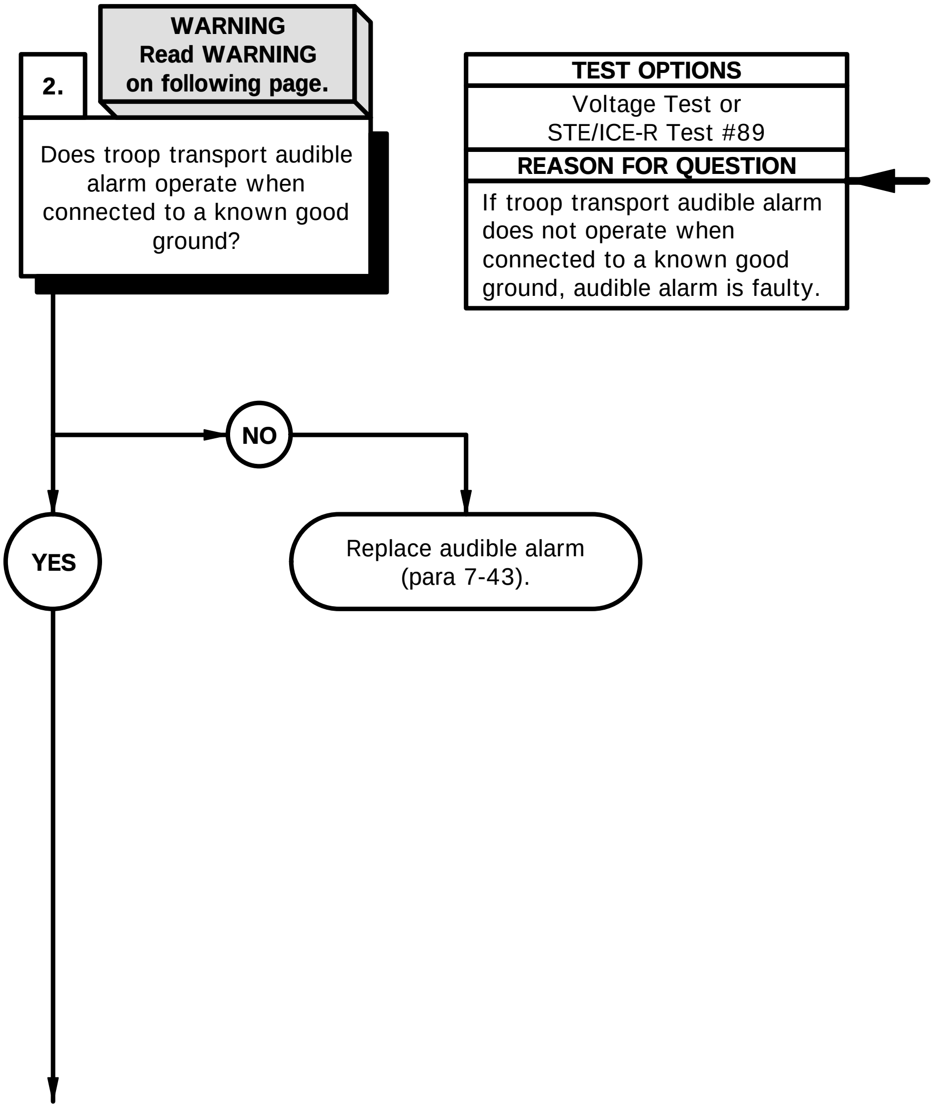
e16. TROOP TRANSPORT AUDIBLE ALARM DOES NOT OPERATE (CONT)

KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.

POSSIBLE PROBLEMS

Faulty audible alarm.
Faulty engine control cable assembly.
Faulty troop transport alarm cable assembly.
Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.



WARNING
Read WARNING on following page.

2.

Does troop transport audible alarm operate when connected to a known good ground?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If troop transport audible alarm does not operate when connected to a known good ground, audible alarm is faulty.

NO

Replace audible alarm (para 7-43).

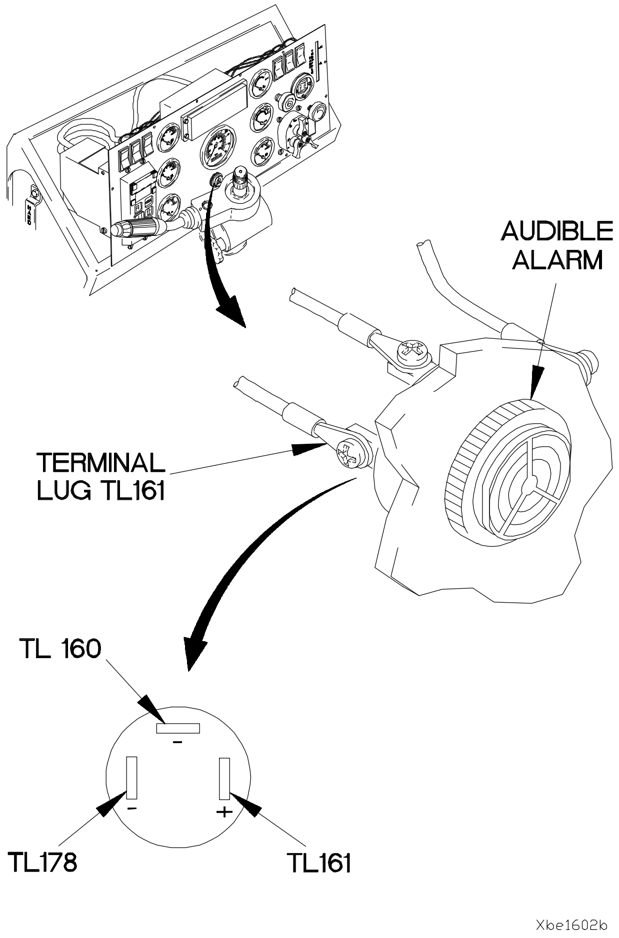
YES

WARNING

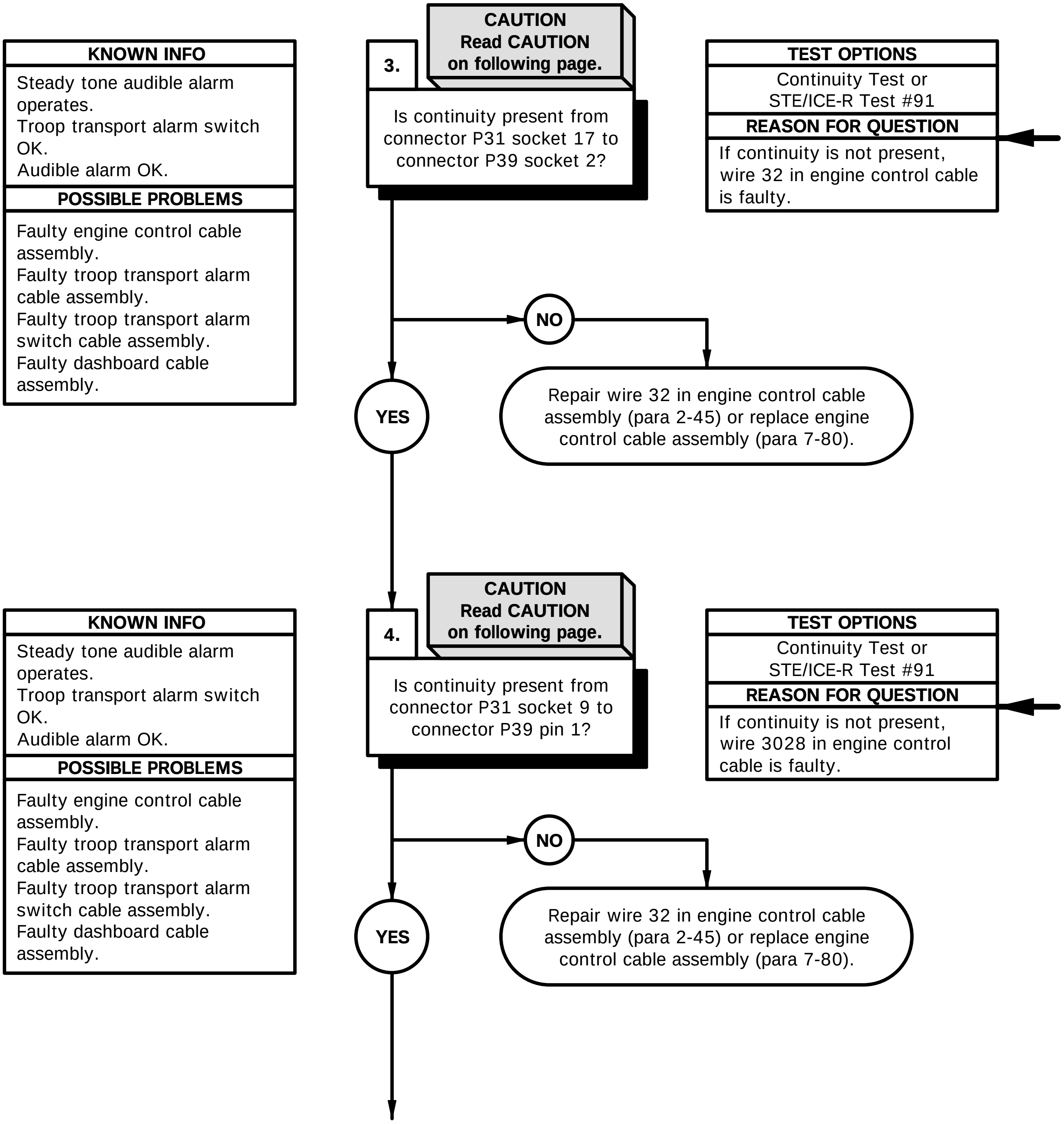
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Start engine (TM 9-2320-366-10-1) and allow enough pressure to build in air tanks to cause steady tone audible alarm to cease.
(2) Shut down engine (TM 9-2320-366-10-1).
(3) Remove PDP cover (TM 9-2320-366-10-2).
(4) Remove circuit breaker CB77 from PDP (para 7-9).
(5) Remove instrument panel assembly for access (para 7-15).
(6) Install circuit breaker CB77 on PDP (para 7-9).
(7) Connect one end of electrical wire to terminal lug TL178.
(8) Connect opposite end of electrical wire to ground.
(9) Position master power switch to on (TM 9-2320-366-10-1).
(10) If troop transport audible alarm does not operate, replace audible alarm (para 7-43).
(11) Position master power switch to off (TM 9-2320-366-10-1).
(12) Install PDP cover (TM 9-2320-366-10-2).



e16. TROOP TRANSPORT AUDIBLE ALARM DOES NOT OPERATE (CONT)



KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.
Audible alarm OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty troop transport alarm cable assembly.
Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.

3.

CAUTION
Read CAUTION on following page.

Is continuity present from connector P31 socket 17 to connector P39 socket 2?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 32 in engine control cable is faulty.

NO

Repair wire 32 in engine control cable assembly (para 2-45) or replace engine control cable assembly (para 7-80).

YES

KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.
Audible alarm OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty troop transport alarm cable assembly.
Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.

4.

CAUTION
Read CAUTION on following page.

Is continuity present from connector P31 socket 9 to connector P39 pin 1?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3028 in engine control cable is faulty.

NO

Repair wire 32 in engine control cable assembly (para 2-45) or replace engine control cable assembly (para 7-80).

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

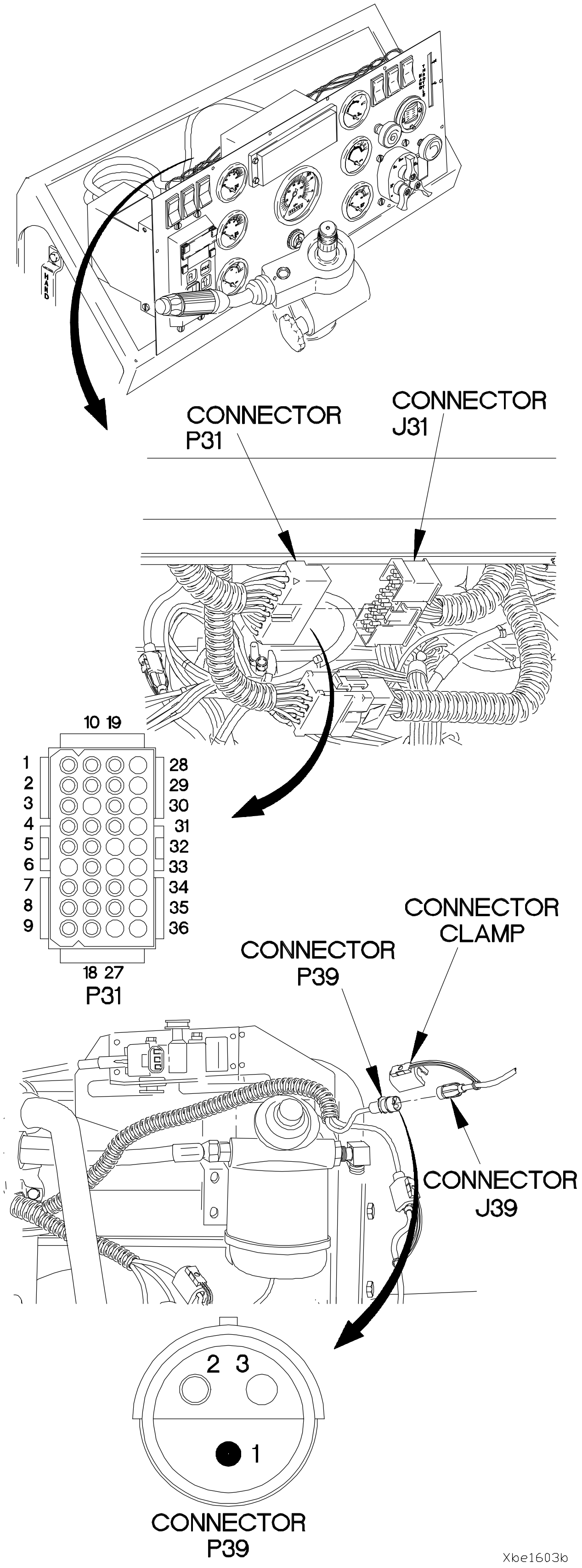
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

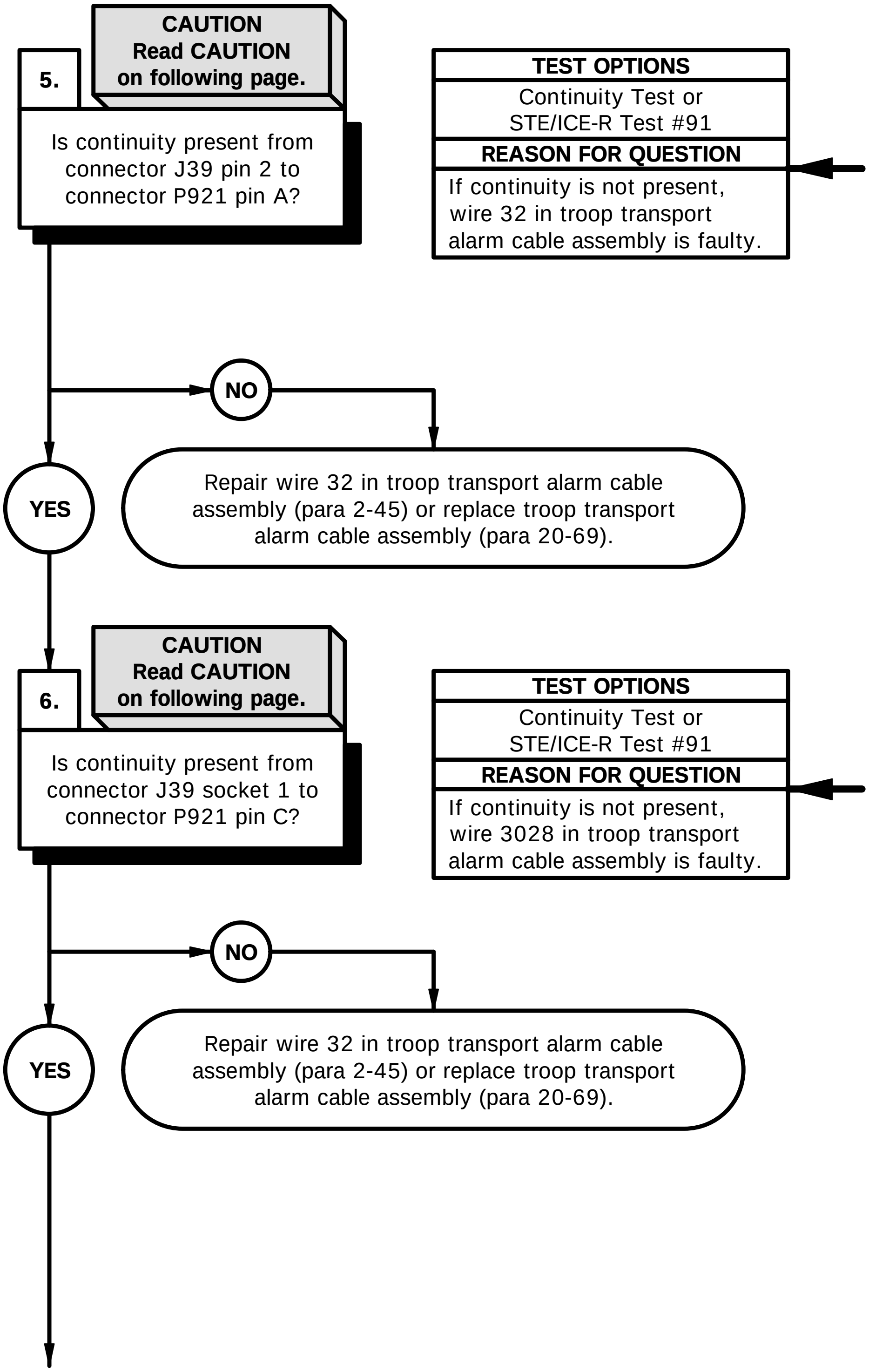
(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector P31 from connector J31.
(3) Raise cab (TM 9-2320-366-10-1).
(4) Disconnect connector clamp from connector P39.
(5) Disconnect connector P39 from connector J39.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector P39 socket 2.
(8) Connect negative (-) probe of multimeter to connector P31 socket 17 and note reading on multimeter.
(9) If continuity is not present, repair wire 32 in engine control cable (para 2-45) or replace engine control cable assembly (para 7-80).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P39 pin 1.
(3) Connect negative (-) probe of multimeter to connector P31 socket 9 and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 in engine control cable (para 2-45) or replace engine control cable assembly (para 7-80).



e16. TROOP TRANSPORT AUDIBLE ALARM DOES NOT OPERATE (CONT)



KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.
Audible alarm OK.
Engine control cable assembly OK.

POSSIBLE PROBLEMS

Faulty troop transport alarm cable assembly.
Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.

5.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J39 pin 2 to connector P921 pin A?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 32 in troop transport alarm cable assembly is faulty.

NO

Repair wire 32 in troop transport alarm cable assembly (para 2-45) or replace troop transport alarm cable assembly (para 20-69).

YES

KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.
Audible alarm OK.
Engine control cable assembly OK.

POSSIBLE PROBLEMS

Faulty troop transport alarm cable assembly.
Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.

6.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J39 socket 1 to connector P921 pin C?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3028 in troop transport alarm cable assembly is faulty.

NO

Repair wire 32 in troop transport alarm cable assembly (para 2-45) or replace troop transport alarm cable assembly (para 20-69).

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

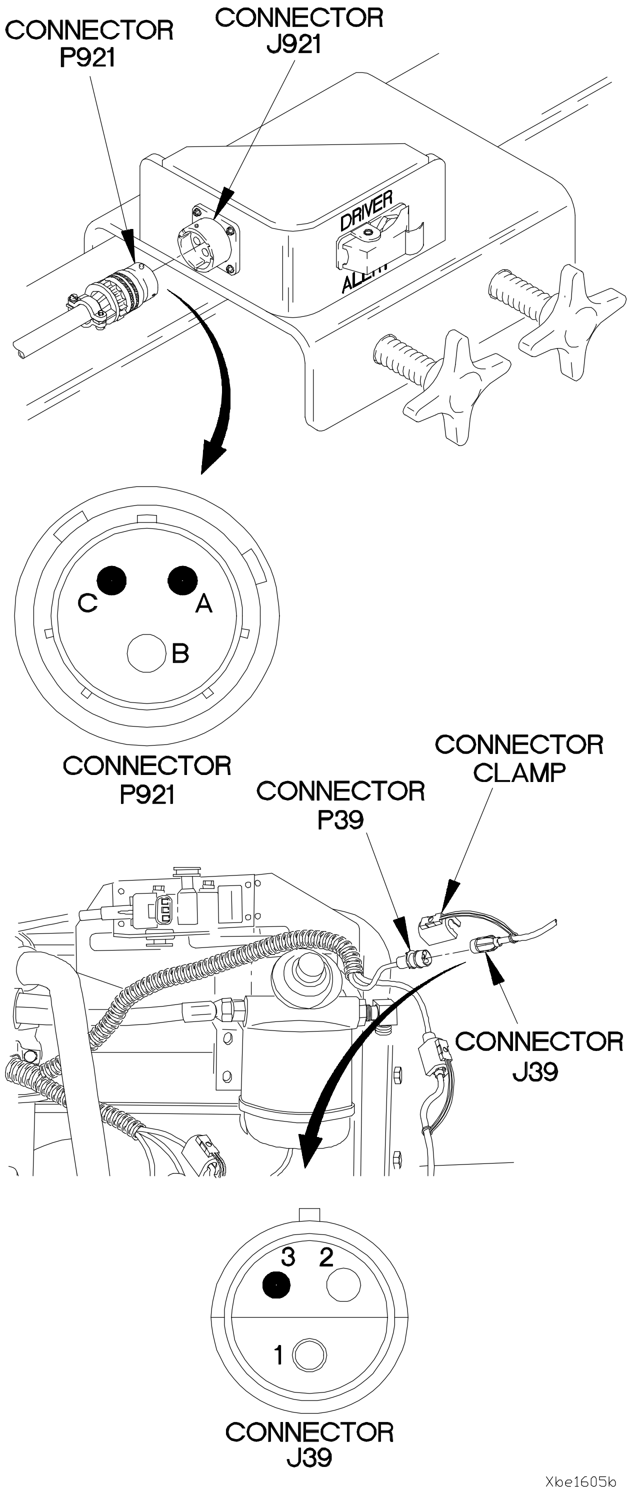
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

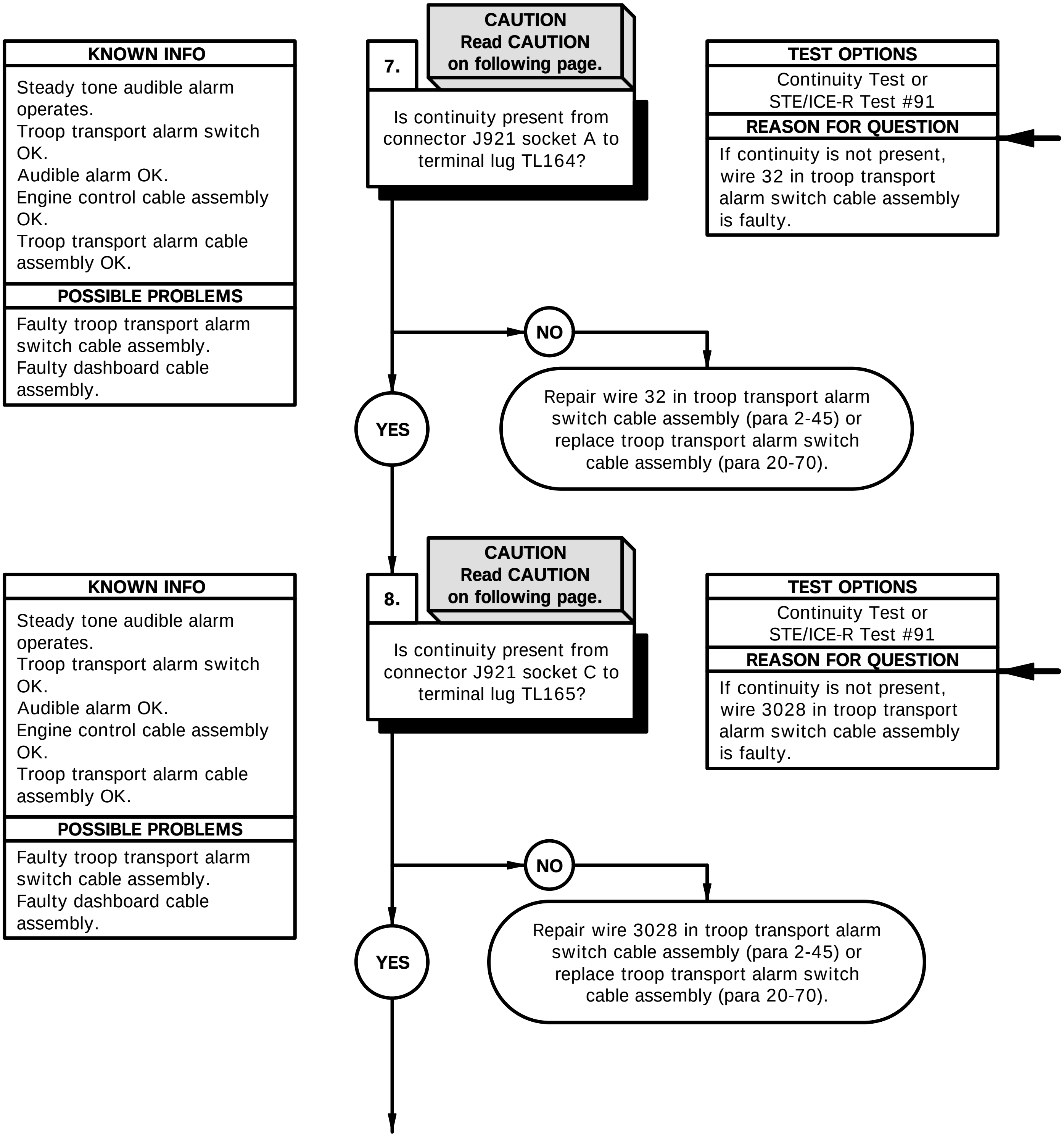
(1) Disconnect connector P921 from connector J921.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P921 pin A.
(4) Connect negative (-) probe of multimeter to connector J39 pin 2 and note reading on multimeter.
(5) If continuity is not present, repair wire 3028 in troop transport alarm cable assembly (para 2-45) or replace troop transport alarm cable assembly (para 20-69).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J39 socket 1.
(3) Connect negative (-) probe of multimeter to connector P921 pin C and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 in troop transport alarm cable assembly (para 2-45) or replace troop transport alarm cable assembly (para 20-69).
(5) Connect connector P39 to connector J39.
(6) Connect connector clamp on connector P39.
(7) Lower cab (TM 9-2320-366-10-1).



e16. TROOP TRANSPORT AUDIBLE ALARM DOES NOT OPERATE (CONT)



KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.
Audible alarm OK.
Engine control cable assembly OK.
Troop transport alarm cable assembly OK.

POSSIBLE PROBLEMS

Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

7. Is continuity present from connector J921 socket A to terminal lug TL164?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 32 in troop transport alarm switch cable assembly is faulty.

NO — Repair wire 32 in troop transport alarm switch cable assembly (para 2-45) or replace troop transport alarm switch cable assembly (para 20-70).

YES

KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.
Audible alarm OK.
Engine control cable assembly OK.
Troop transport alarm cable assembly OK.

POSSIBLE PROBLEMS

Faulty troop transport alarm switch cable assembly.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

8. Is continuity present from connector J921 socket C to terminal lug TL165?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3028 in troop transport alarm switch cable assembly is faulty.

NO — Repair wire 3028 in troop transport alarm switch cable assembly (para 2-45) or replace troop transport alarm switch cable assembly (para 20-70).

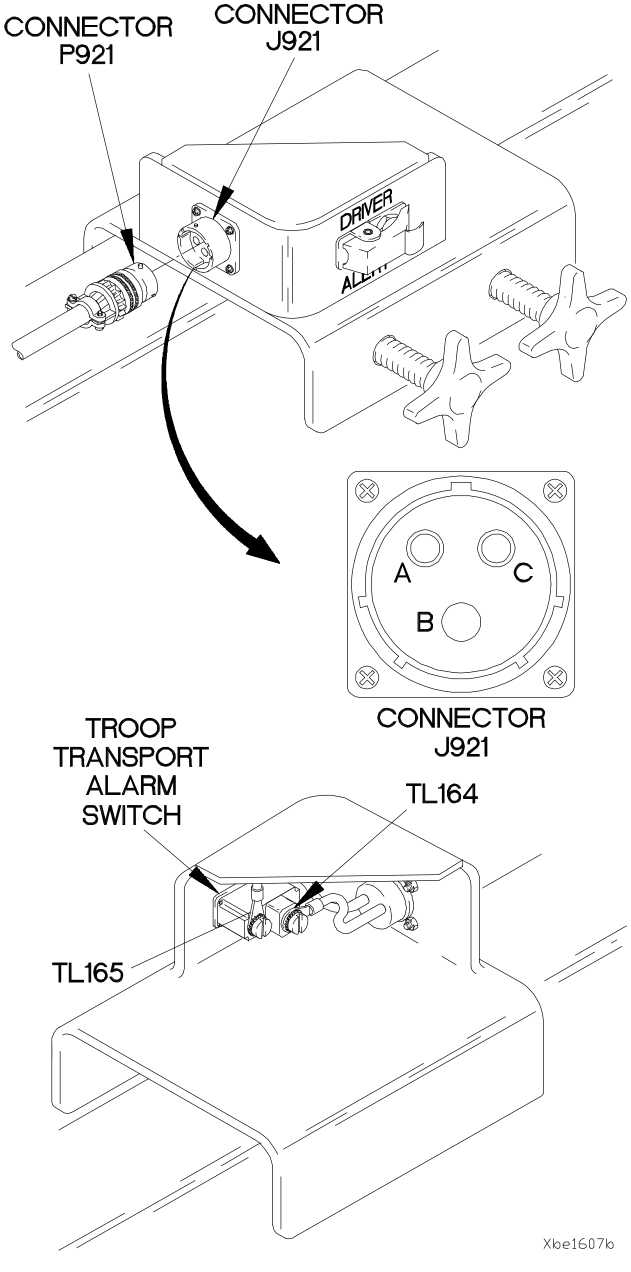
YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.



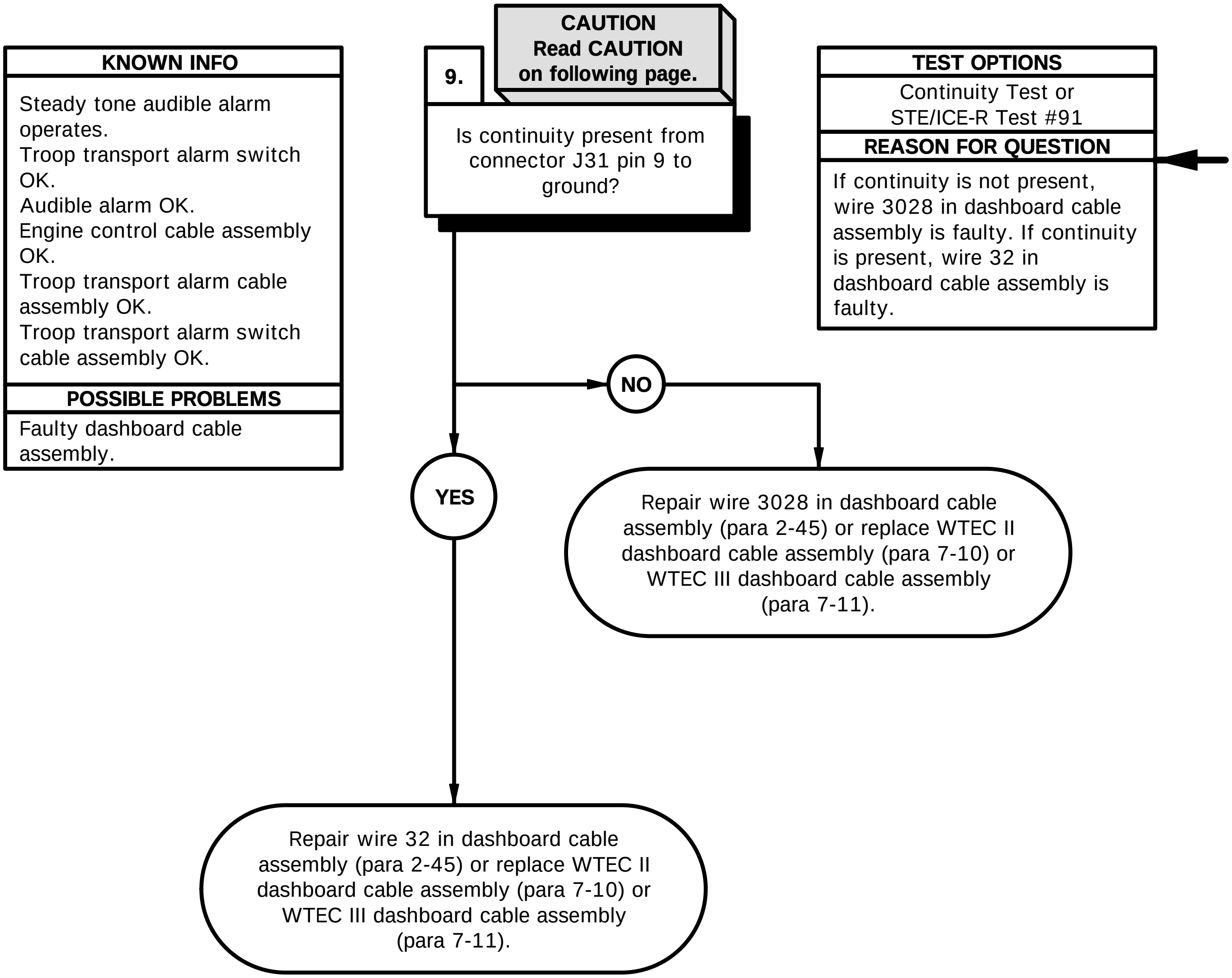
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J921socket A.
(3) Connect negative (-) probe of multimeter to terminal lug TL164 and note reading on multimeter.
(4) If continuity is not present, repair wire 32 in troop transport alarm switch cable assembly (para 2-45) or replace troop transport alarm switch cable assembly (para 20-70).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J921 socket C.
(3) Connect negative (-) probe of multimeter to terminal lug TL165 and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 in troop transport alarm switch cable assembly (para 2-45) or replace troop transport alarm switch cable assembly (para 20-70).
(5) Connect connector P921 to connector J921.

e16. TROOP TRANSPORT AUDIBLE ALARM DOES NOT OPERATE (CONT)



KNOWN INFO

Steady tone audible alarm operates.
Troop transport alarm switch OK.
Audible alarm OK.
Engine control cable assembly OK.
Troop transport alarm cable assembly OK.
Troop transport alarm switch cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

9.

Is continuity present from connector J31 pin 9 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3028 in dashboard cable assembly is faulty. If continuity is present, wire 32 in dashboard cable assembly is faulty.

NO

Repair wire 3028 in dashboard cable assembly (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 32 in dashboard cable assembly (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

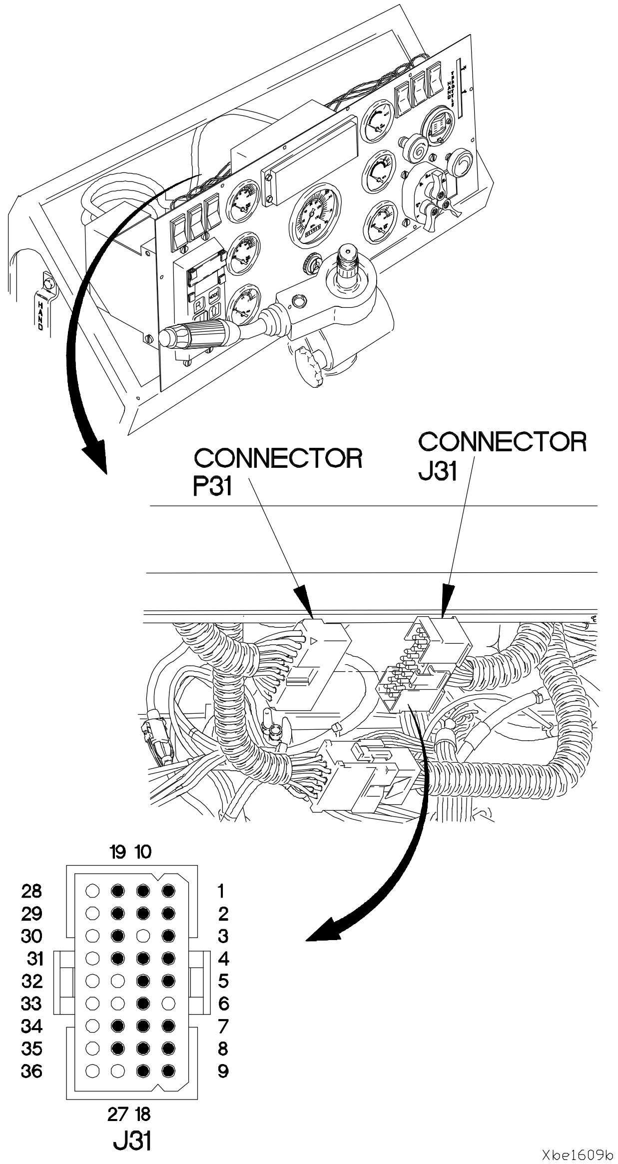
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J31 pin 9.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 in dashboard cable assembly (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 32 in dashboard cable assembly (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector P31 to connector J31.
(7) Install instrument panel (para 7-15).



e16A. MASTER POWER SWITCH DOES NOT SHUT DOWN ENGINE

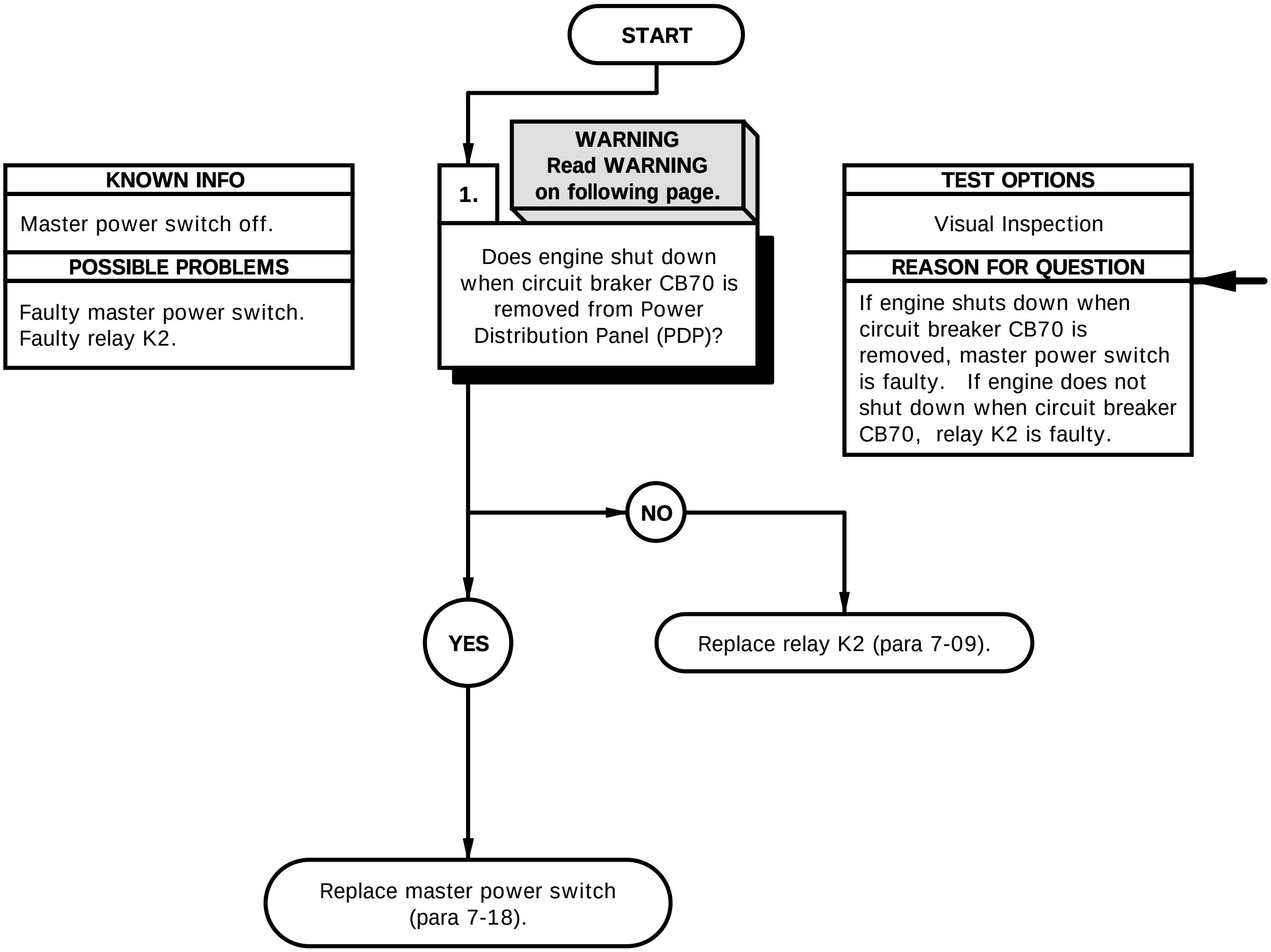
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Master power switch off.

POSSIBLE PROBLEMS

Faulty master power switch.
Faulty relay K2.

WARNING
Read WARNING
on following page.

Does engine shut down when circuit braker CB70 is removed from Power Distribution Panel (PDP)?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If engine shuts down when circuit breaker CB70 is removed, master power switch is faulty. If engine does not shut down when circuit breaker CB70, relay K2 is faulty.

Replace relay K2 (para 7-09).

Replace master power switch (para 7-18).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

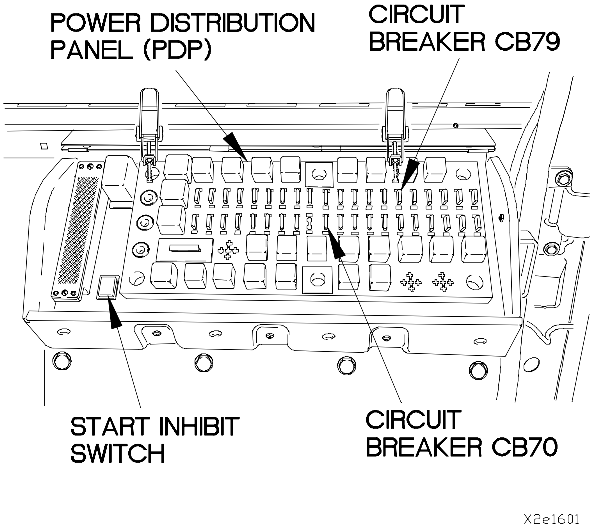
VISUAL INSPECTION

(1) Remove Power Distribution Panel (PDP) cover (para 16-2).
(2) Remove circuit breaker CB79 from Power Distribution Panel (PDP).
(3) Install circuit breaker CB79 in Power Distrubution Panel (PDP).
(4) Start enigne (TM 9-2320-366-10-1).
(5) Position master power switch to off (TM 9-2320-366-10-1).
(6) Remove circuit breaker CB70 from Power Distribution Panl (PDP).
(7) If engine does not shut down when circuit breaker CB70 is removed, replace relay K2 (para 7-9).
(8) If engine shuts down when circuit breaker CB70, replace master power switch (para 7-18).

NOTE

Perform step (9) if engine does not shut down.

(9) Press start inhibit switch.
(10) Install circuit breaker CB70 in Power Distribution Panel (PDP).
(11) Install Power Distribution Panel (PDP) cover (para 16-2).



e16B. LAMP TEST SWITCH DOES NOT ILLUMINATE

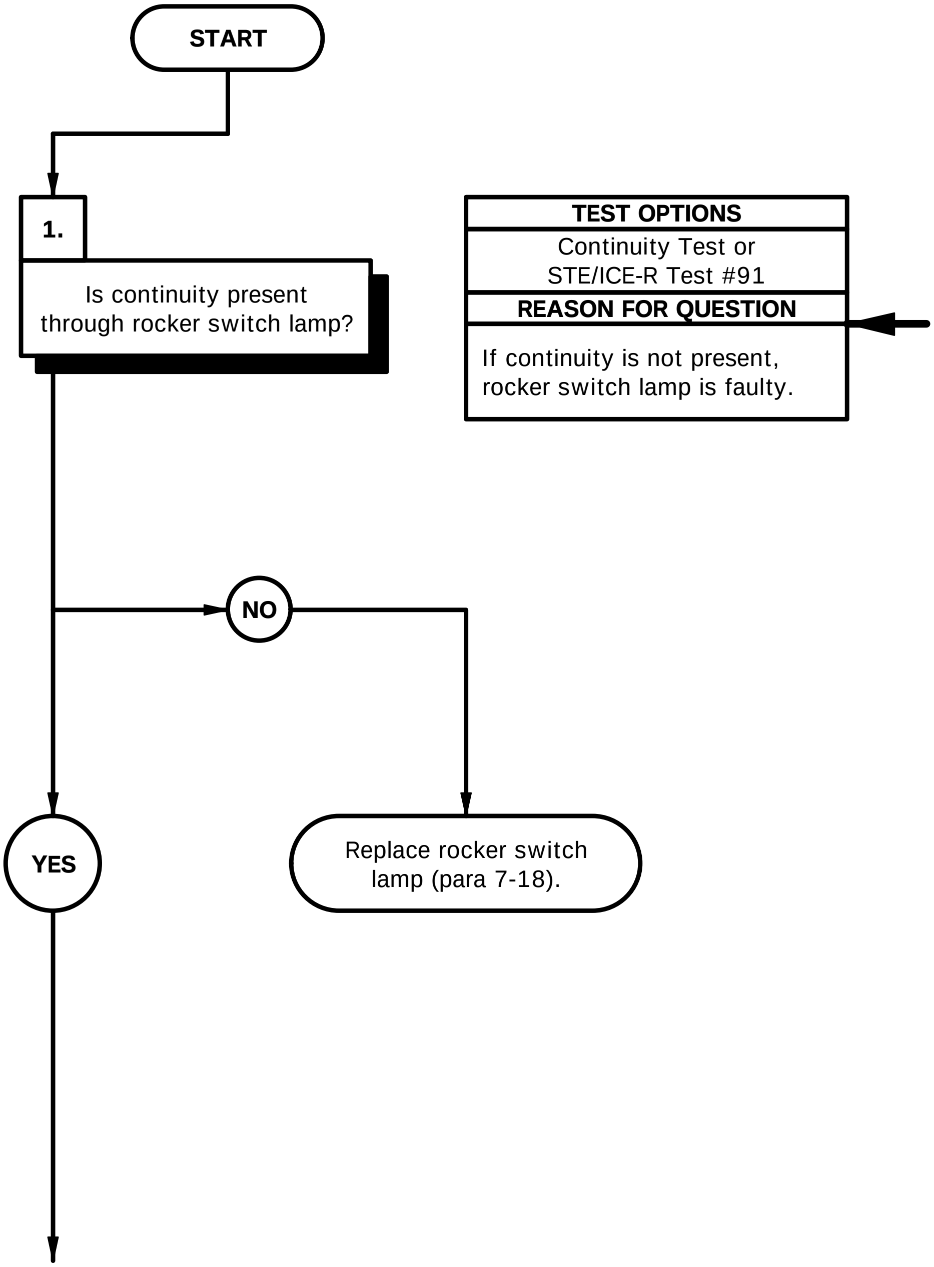
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Radiator fan off switch illuminates.

POSSIBLE PROBLEMS

Faulty rocker switch lamp.
Faulty dashboard cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

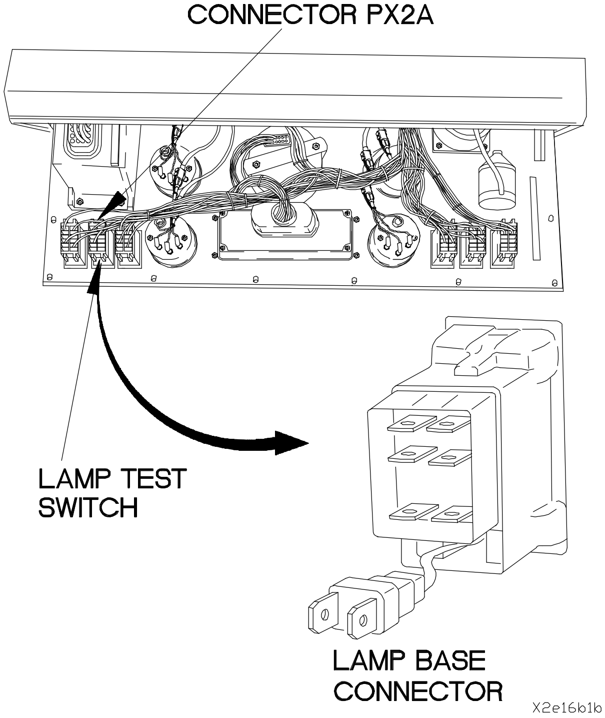
If continuity is not present, rocker switch lamp is faulty.

NOTE

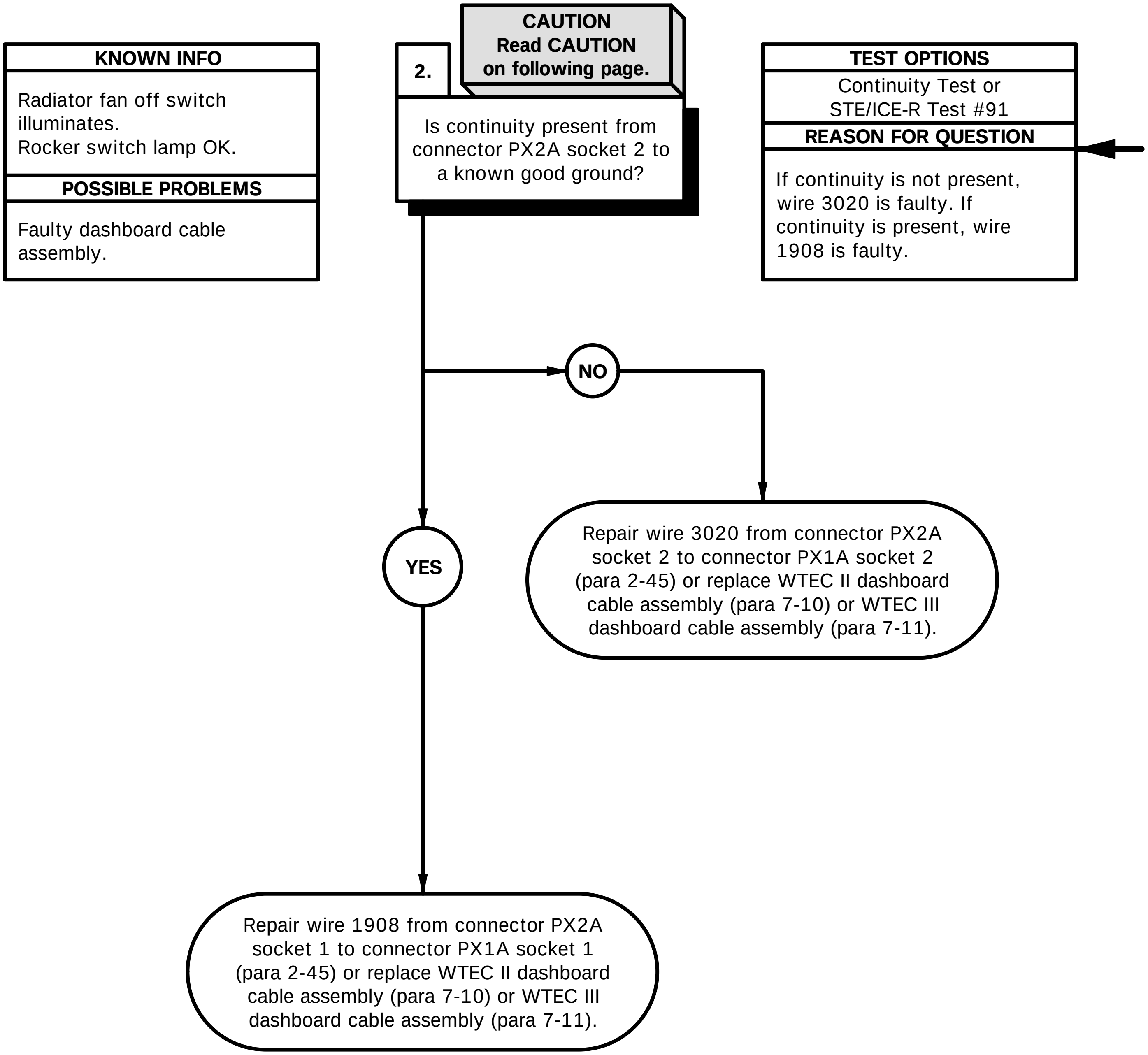
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector PX2A from lamp test switch lamp base connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to one terminal of lamp base connector.
(5) Connect negative (-) probe of multimeter to second terminal of lamp base connector and note reading on multimeter.
(6) If continuity is not present, replace rocker switch lamp (para 7-18).



e16B. LAMP TEST SWITCH DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Radiator fan off switch illuminates.
Rocker switch lamp OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

2.

Is continuity present from connector PX2A socket 2 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, wire 1908 is faulty.

NO

Repair wire 3020 from connector PX2A socket 2 to connector PX1A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

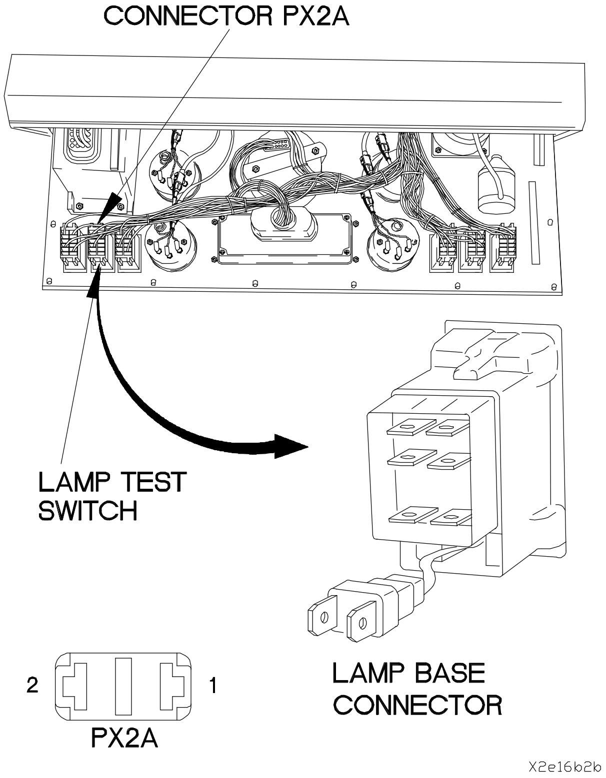
Repair wire 1908 from connector PX2A socket 1 to connector PX1A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX2A socket 2.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3020 from connector PX2A socket 2 to connector PX1A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 1908 from connector PX2A socket 1 to connector PX1A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX2A to lamp test switch lamp base connector.
(7) Install instrument panel assembly (para 7-15).



e17. RADIATOR FAN OFF SWITCH DOES NOT ILLUMINATE

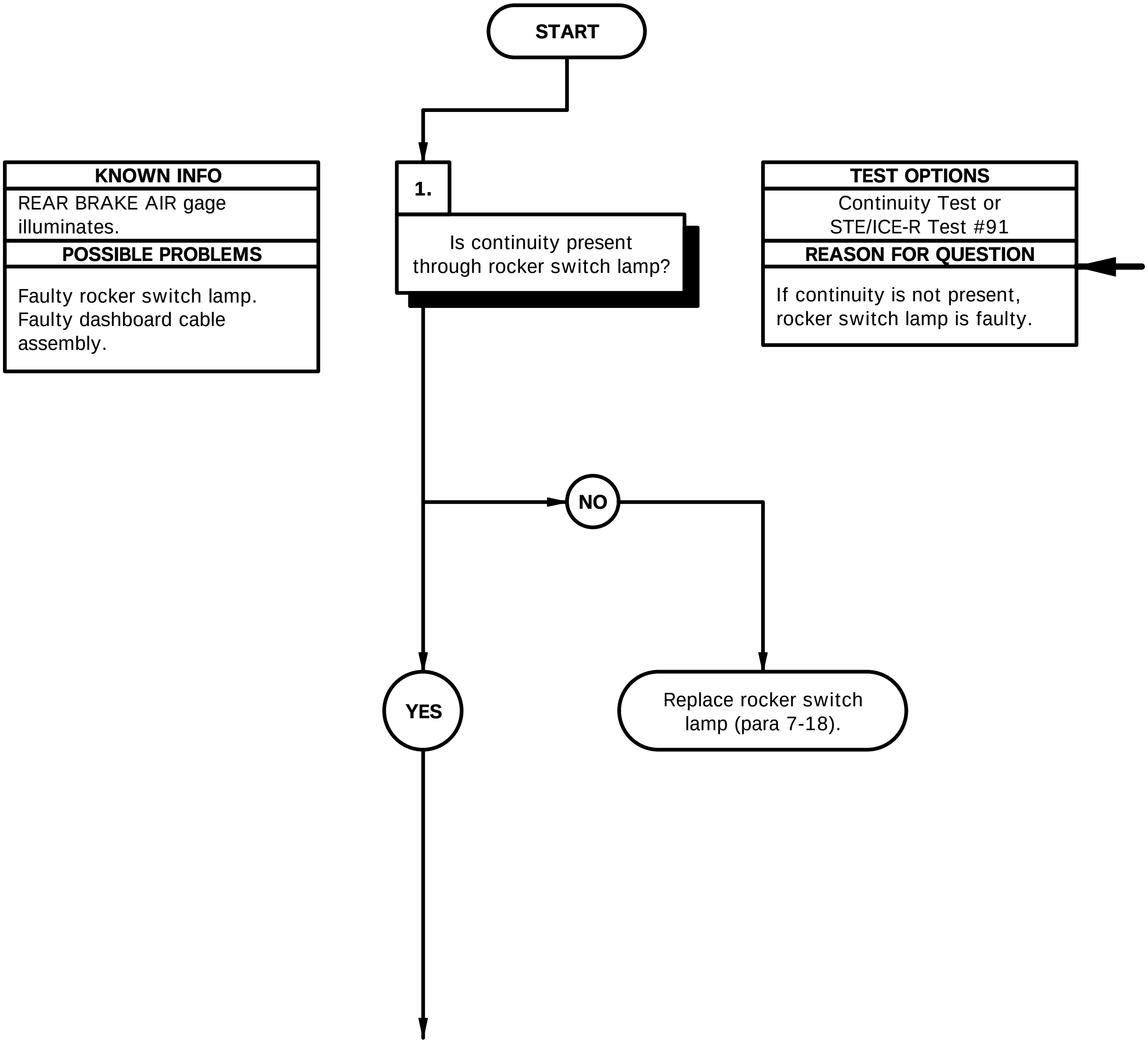
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO
REAR BRAKE AIR gage illuminates.

POSSIBLE PROBLEMS
Faulty rocker switch lamp.
Faulty dashboard cable assembly.

1. Is continuity present through rocker switch lamp?

TEST OPTIONS
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION
If continuity is not present, rocker switch lamp is faulty.

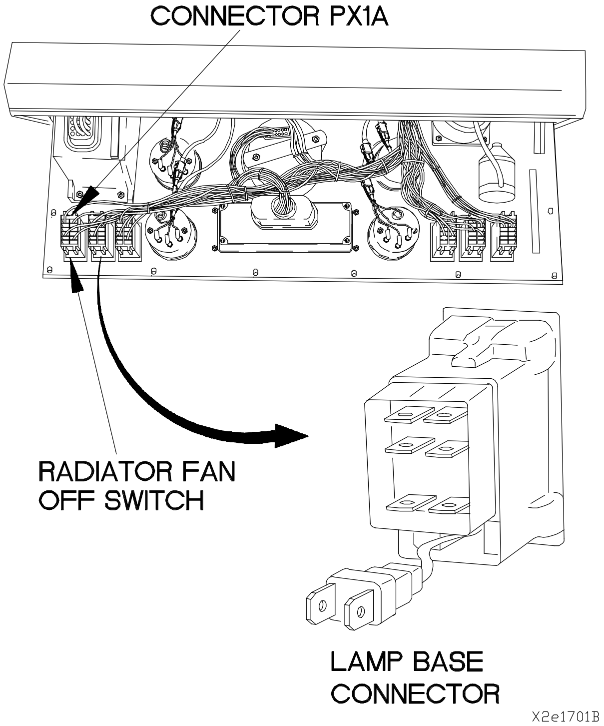
NO: Replace rocker switch lamp (para 7-18).

NOTE

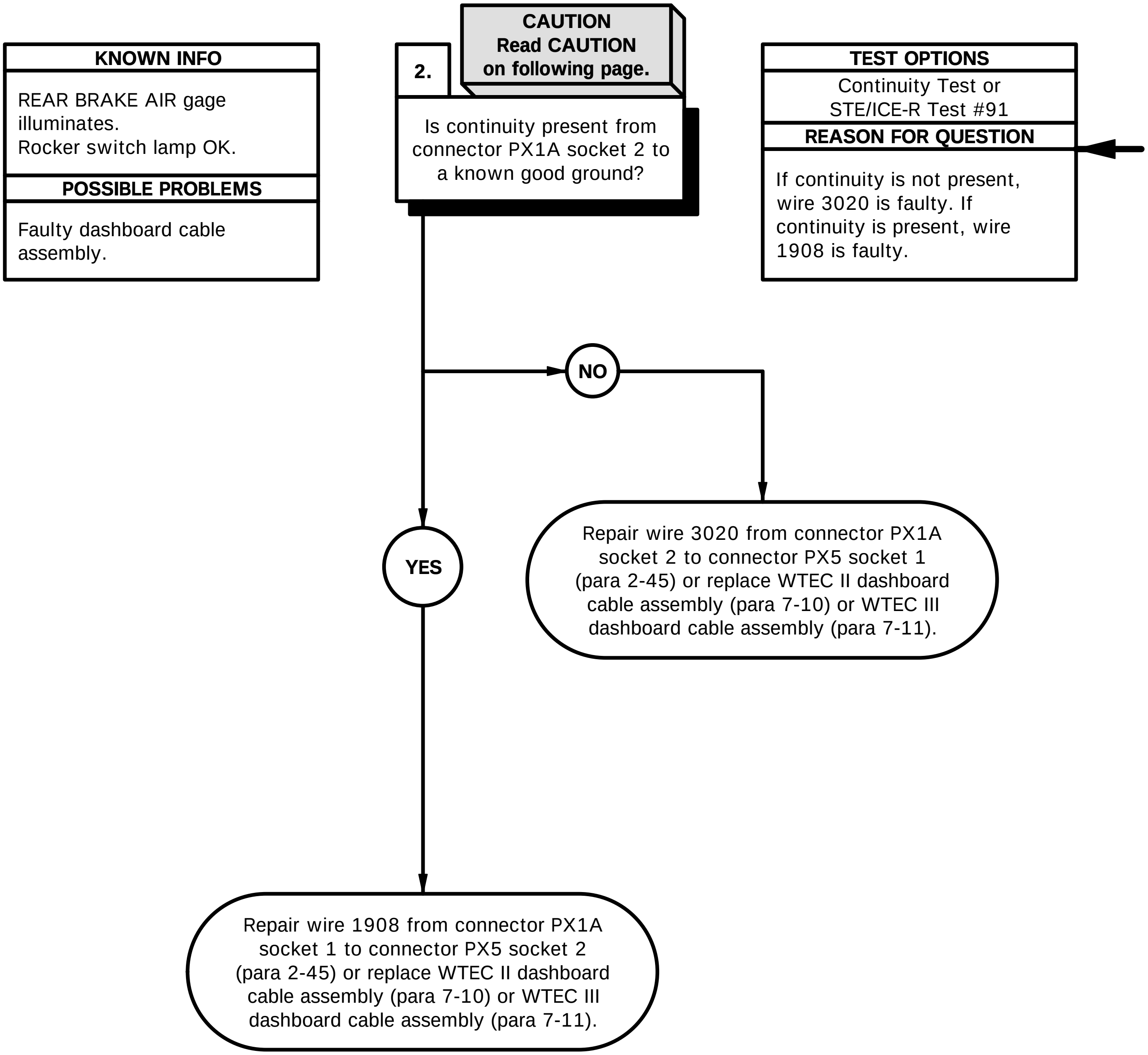
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector PX1A from radiator fan off switch lamp base connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to one terminal of lamp base connector.
(5) Connect negative (-) probe of multimeter to second terminal of lamp base connector and note reading on multimeter.
(6) If continuity is not present, replace rocker switch lamp (para 7-18).



e17. RADIATOR FAN OFF SWITCH DOES NOT ILLUMINATE (CONT)



KNOWN INFO

REAR BRAKE AIR gage illuminates.
Rocker switch lamp OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector PX1A socket 2 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, wire 1908 is faulty.

NO

Repair wire 3020 from connector PX1A socket 2 to connector PX5 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

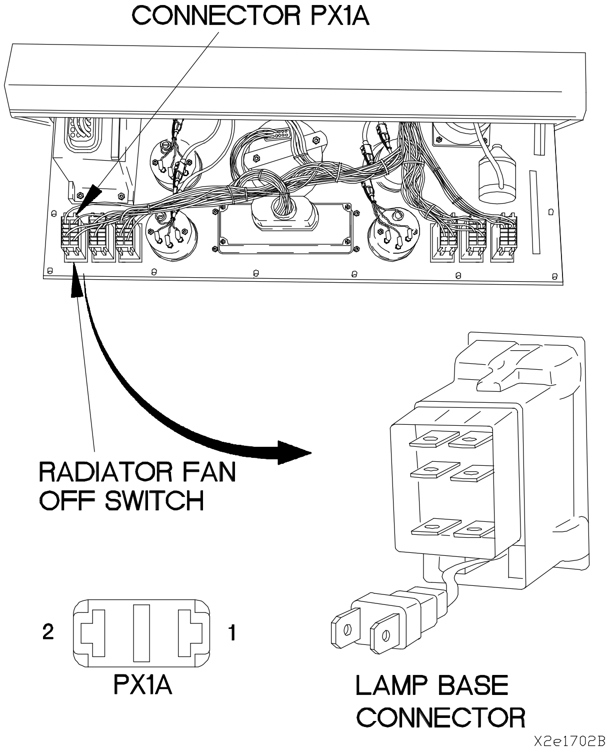
Repair wire 1908 from connector PX1A socket 1 to connector PX5 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX1A socket 2.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3020 from connector PX1A socket 2 to connector PX5 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 1908 from connector PX1A socket 1 to connector PX5 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX1A to radiator fan off switch lamp base connector.
(7) Install instrument panel assembly (para 7-15).



e17A. ETHER START SWITCH DOES NOT ILLUMINATE

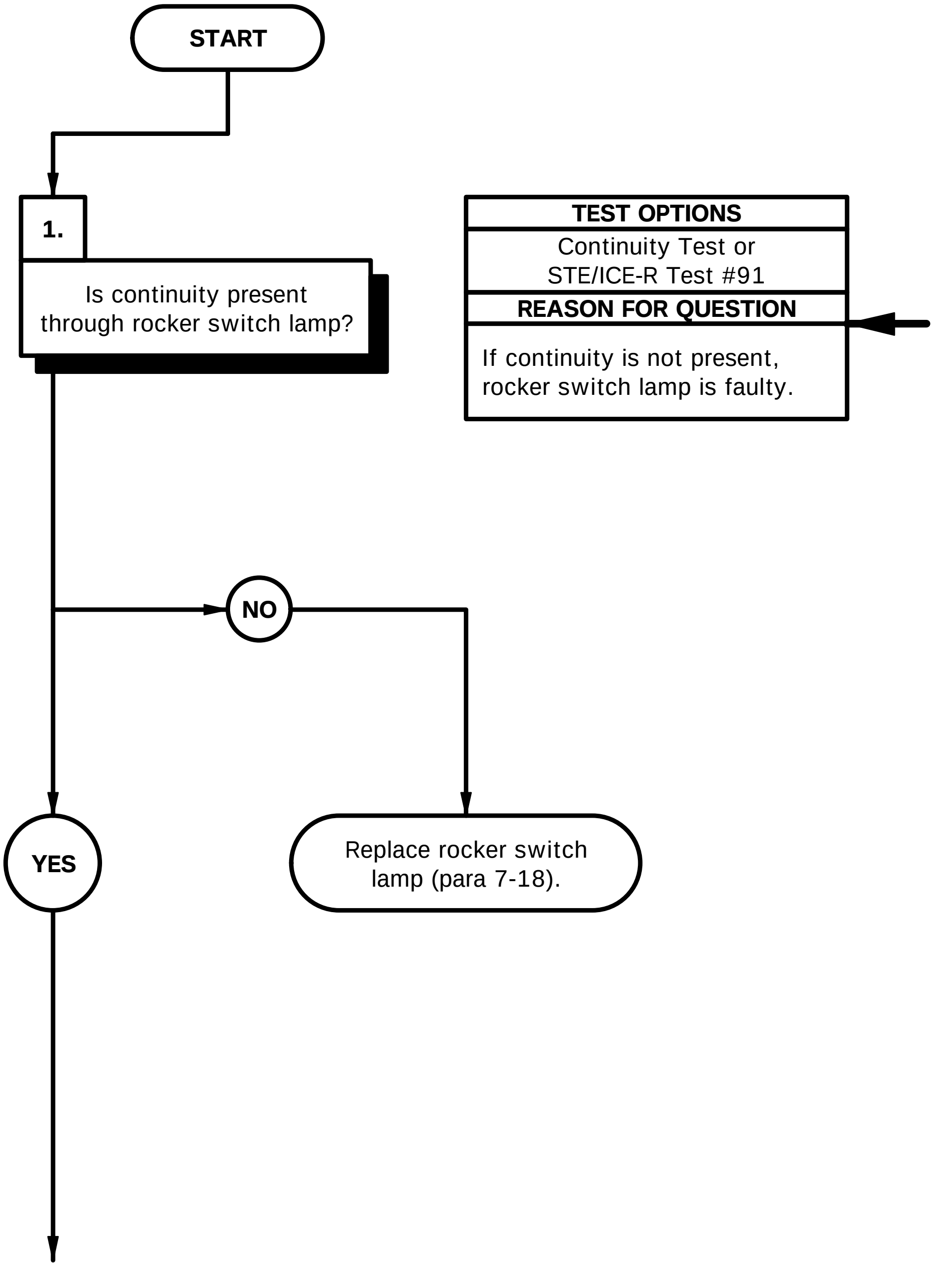
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

FUEL gage illuminates.

POSSIBLE PROBLEMS

Faulty rocker switch lamp.
Faulty dashboard cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

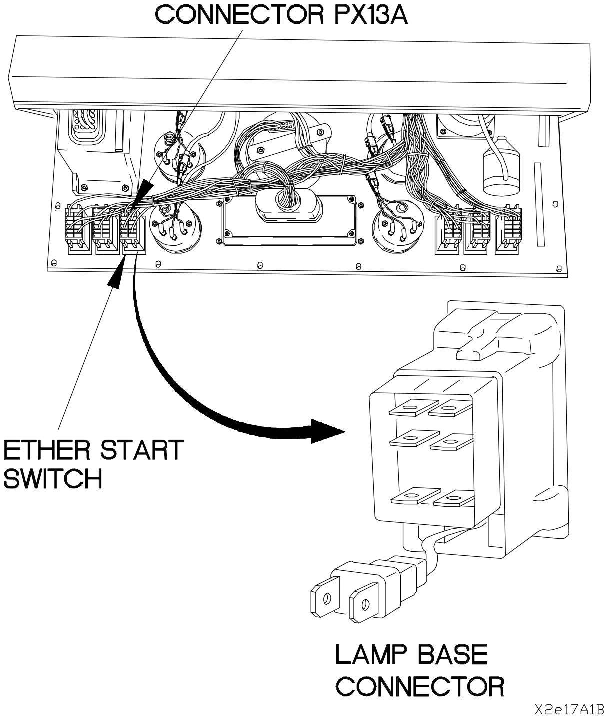
If continuity is not present, rocker switch lamp is faulty.

NOTE

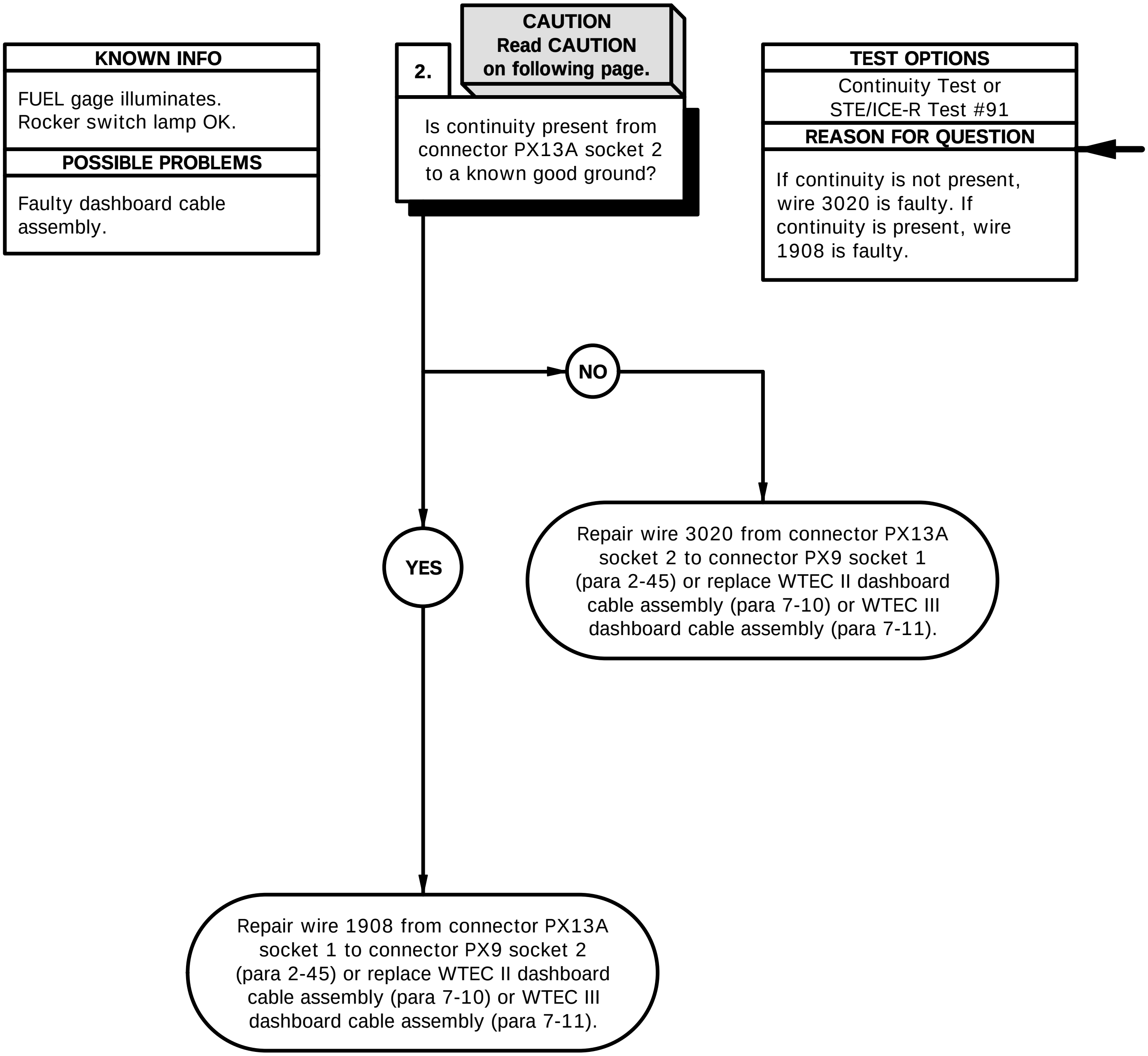
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector PX13A from ether start switch lamp base connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to one terminal of lamp base connector.
(5) Connect negative (-) probe of multimeter to second terminal of lamp base connector and note reading on multimeter.
(6) If continuity is not present, replace rocker switch lamp (para 7-18).



e17A. ETHER START SWITCH DOES NOT ILLUMINATE (CONT)



KNOWN INFO

FUEL gage illuminates.
Rocker switch lamp OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector PX13A socket 2 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, wire 1908 is faulty.

NO

Repair wire 3020 from connector PX13A socket 2 to connector PX9 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

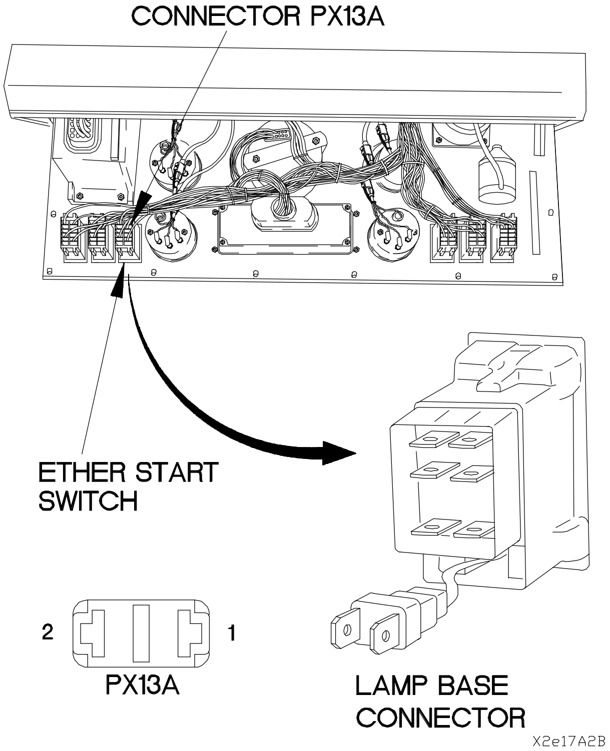
Repair wire 1908 from connector PX13A socket 1 to connector PX9 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX13A socket 2.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3020 from connector PX13A socket 2 to connector PX9 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 1908 from connector PX13A socket 1 to connector PX9 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX13A to ether start switch lamp base connector.
(7) Install instrument panel assembly (para 7-15).



e17B. HAZARD LIGHTS SWITCH DOES NOT ILLUMINATE

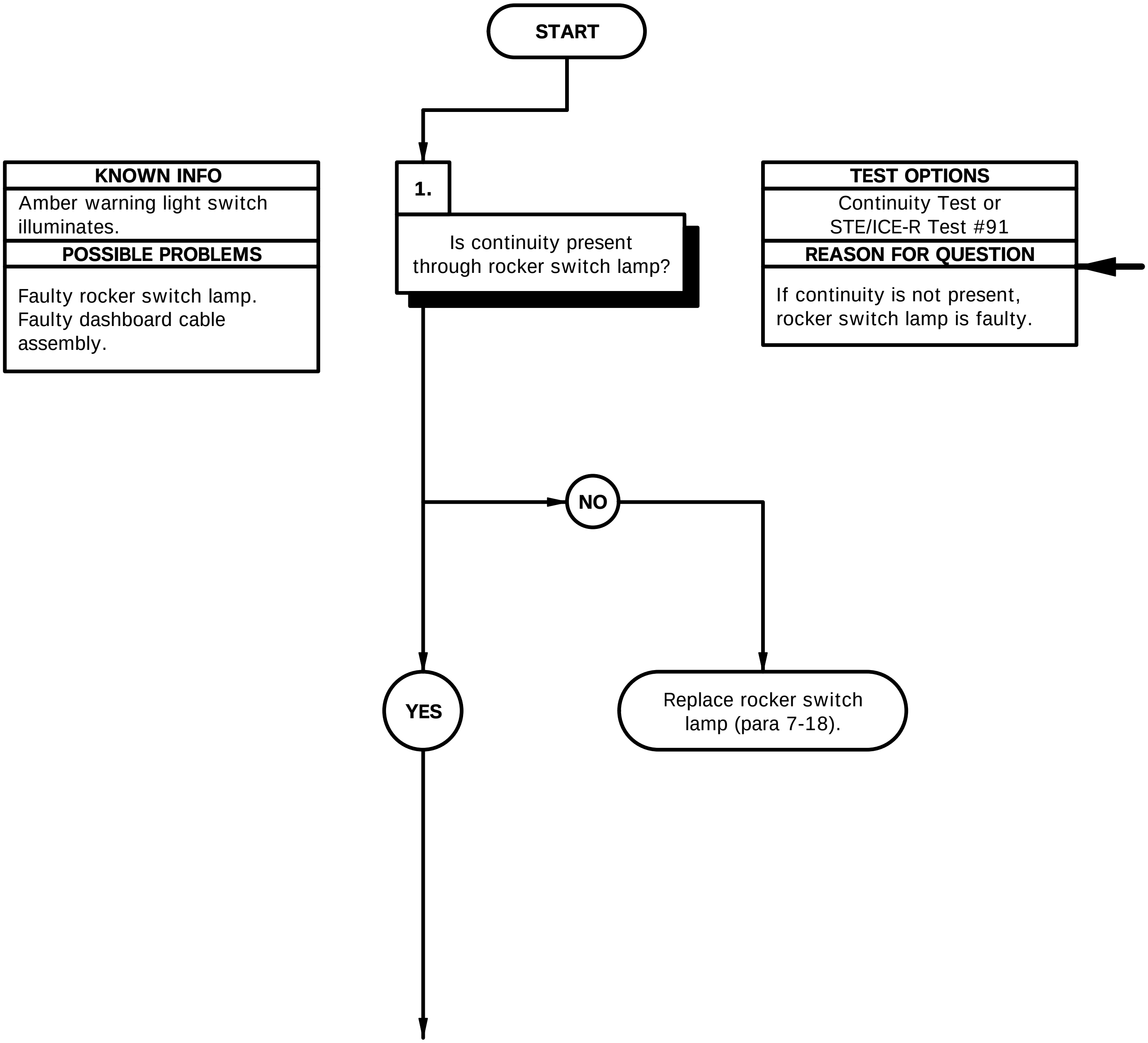
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Amber warning light switch illuminates.

POSSIBLE PROBLEMS

Faulty rocker switch lamp.
Faulty dashboard cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

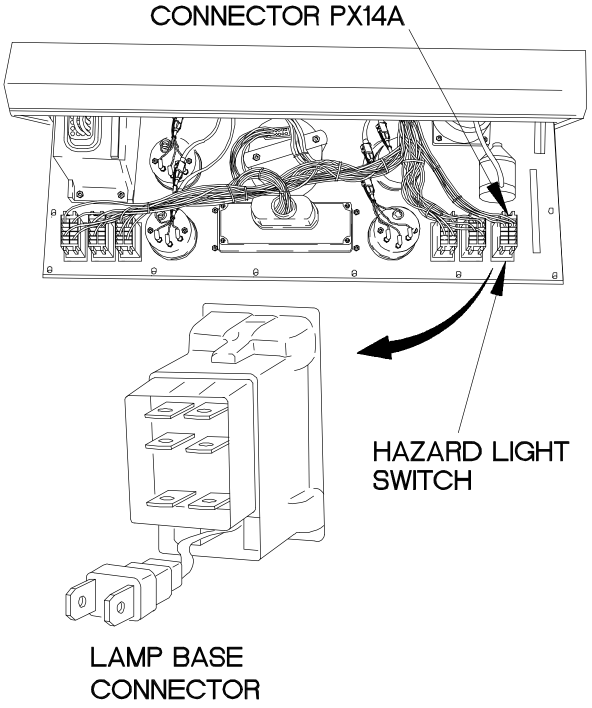
REASON FOR QUESTION

If continuity is not present, rocker switch lamp is faulty.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Remove instrument panel for access (para 7-15). (2) Disconnect connector PX14A from hazard lights switch lamp base connector. (3) Set multimeter to ohms. (4) Connect positive (+) probe of multimeter to one terminal of lamp base connector. (5) Connect negative (-) probe of multimeter to second terminal of lamp base connector and note reading on multimeter. (6) If continuity is not present, replace rocker switch lamp (para 7-18).



X2e17B1B

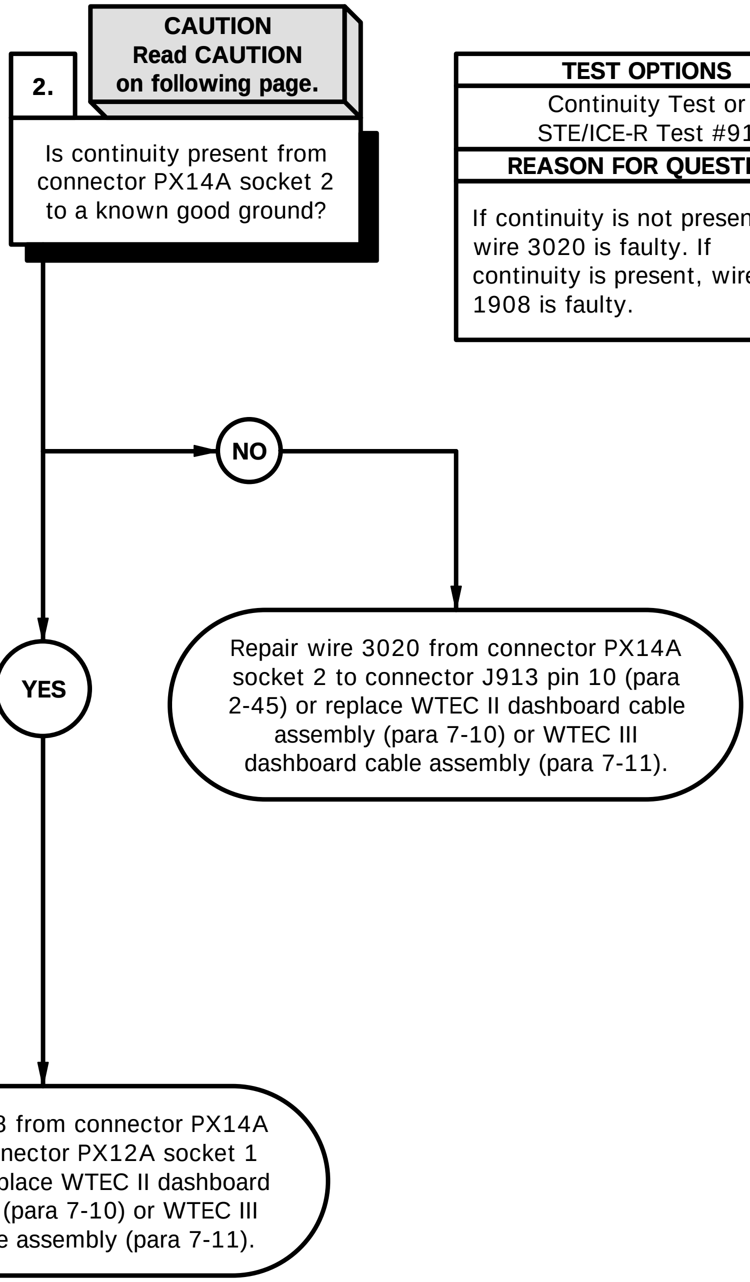
e17B. HAZARD LIGHTS SWITCH DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Amber warning light switch illuminates.
Rocker switch lamp OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.



CAUTION
Read CAUTION on following page.

2.

Is continuity present from connector PX14A socket 2 to a known good ground?

NO

Repair wire 3020 from connector PX14A socket 2 to connector J913 pin 10 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 1908 from connector PX14A socket 1 to connector PX12A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

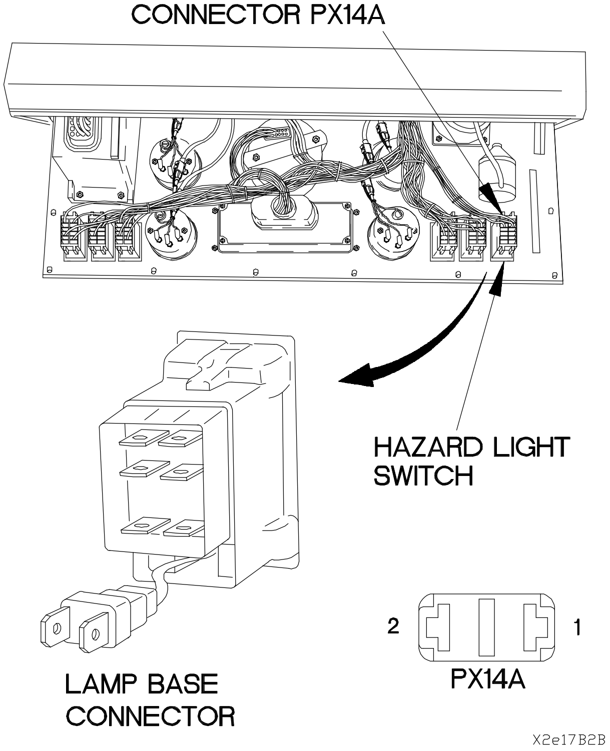
REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, wire 1908 is faulty.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to connector PX14A socket 2. (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (4) If continuity is not present, repair wire 3020 from connector PX14A socket 2 to connector J913 pin 10 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (5) If continuity is present, repair wire 1908 from connector PX14A socket 1 to connector PX12A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (6) Connect connector PX14A to hazard lights switch lamp base connector. (7) Install instrument panel assembly (para 7-15).



e17C. AMBER WARNING LIGHT SWITCH DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

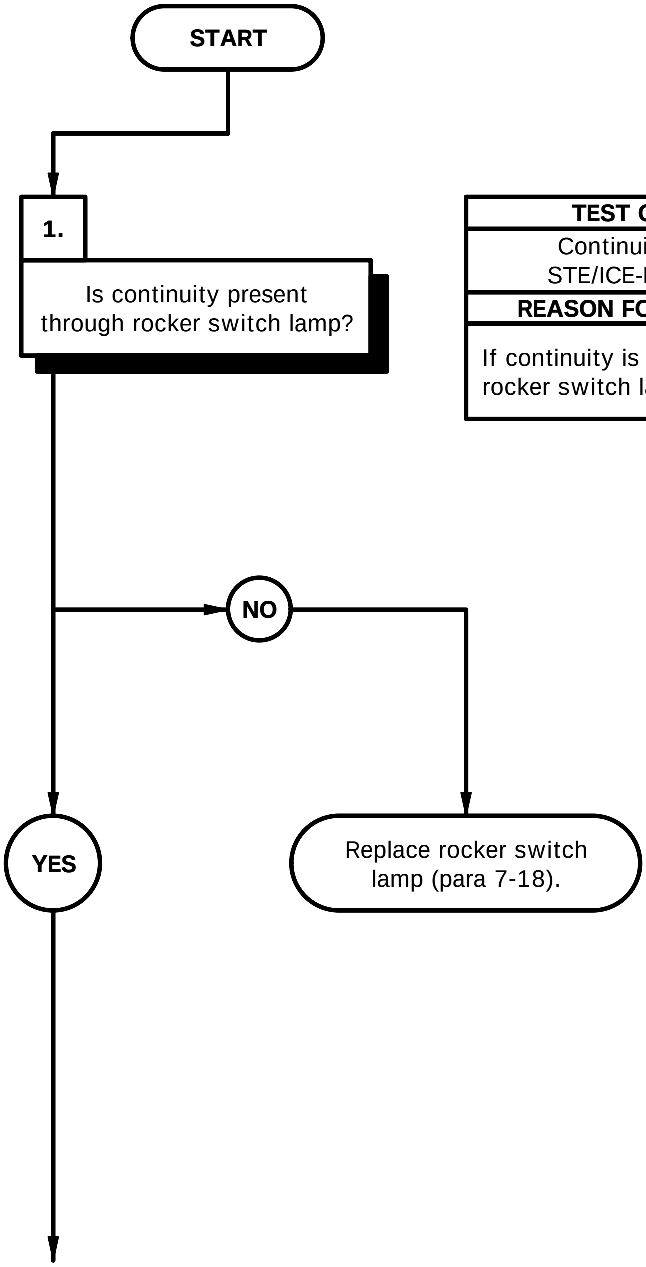
References
TM 9-4910-571-12&P

KNOWN INFO

Master power switch illuminates.

POSSIBLE PROBLEMS

Faulty rocker switch lamp.
Faulty dashboard cable assembly.



Is continuity present through rocker switch lamp?

Replace rocker switch lamp (para 7-18).

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

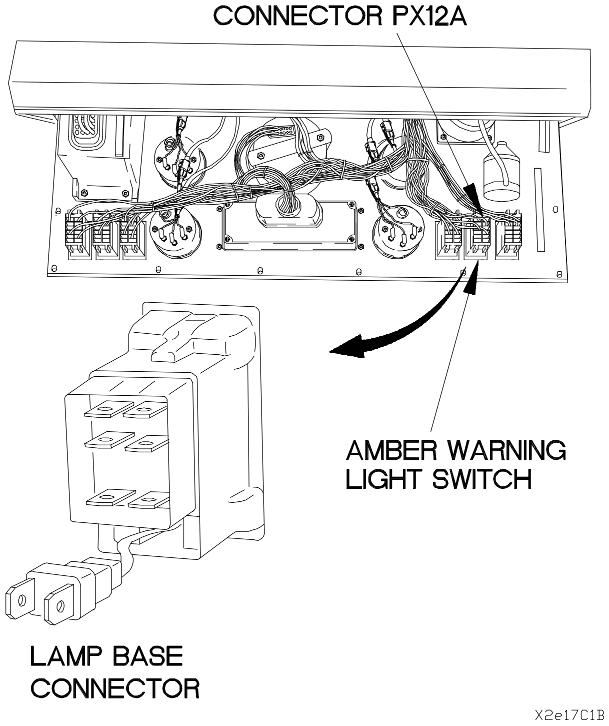
REASON FOR QUESTION

If continuity is not present, rocker switch lamp is faulty.

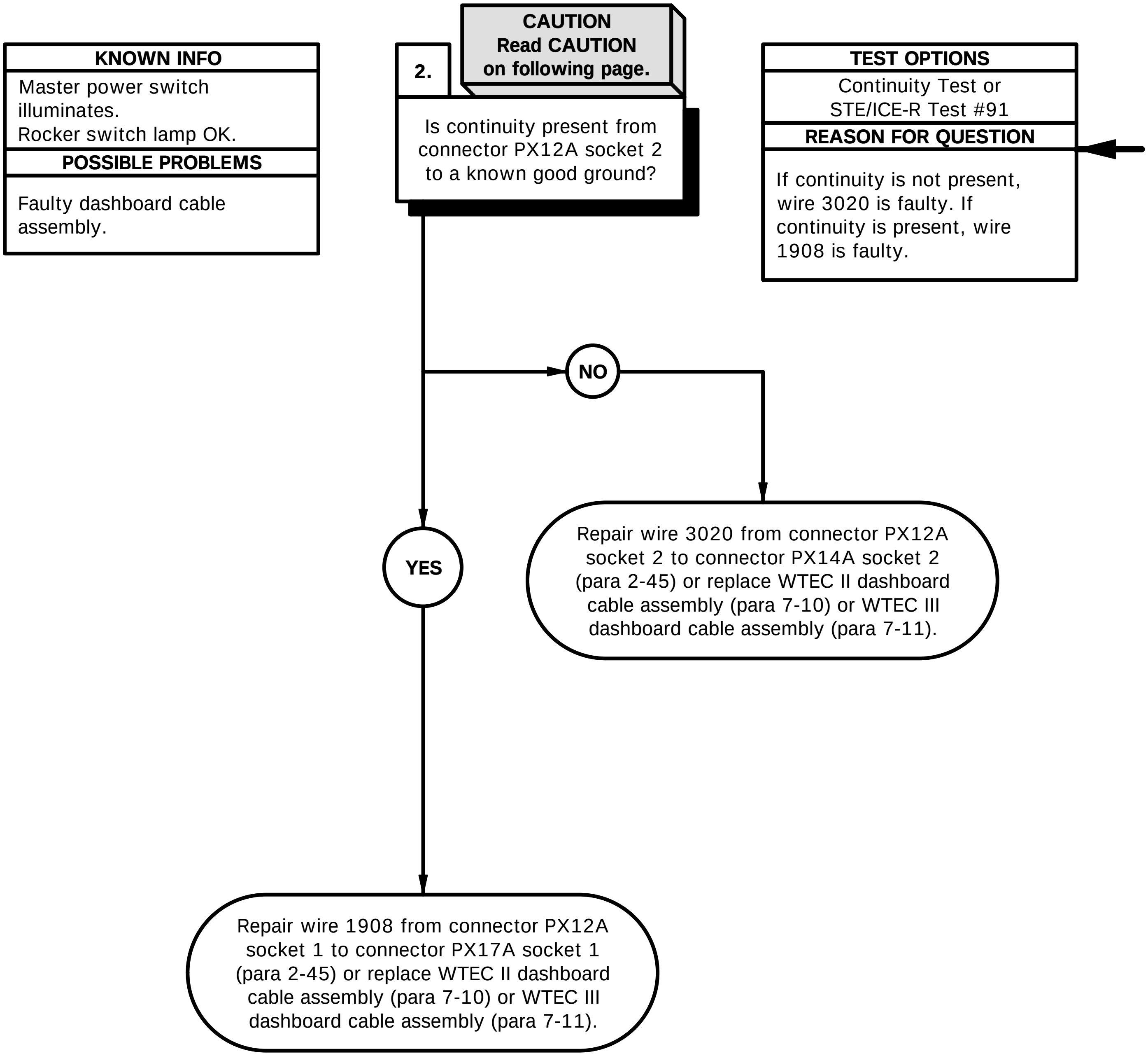
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Remove instrument panel for access (para 7-15). (2) Disconnect connector PX12A from amber warning light switch lamp base connector. (3) Set multimeter to ohms. (4) Connect positive (+) probe of multimeter to one terminal of lamp base connector. (5) Connect negative (-) probe of multimeter to second terminal of lamp base connector and note reading on multimeter. (6) If continuity is not present, replace rocker switch lamp (para 7-18).



e17C. AMBER WARNING LIGHT SWITCH DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Master power switch illuminates.
Rocker switch lamp OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector PX12A socket 2 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, wire 1908 is faulty.

NO

Repair wire 3020 from connector PX12A socket 2 to connector PX14A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

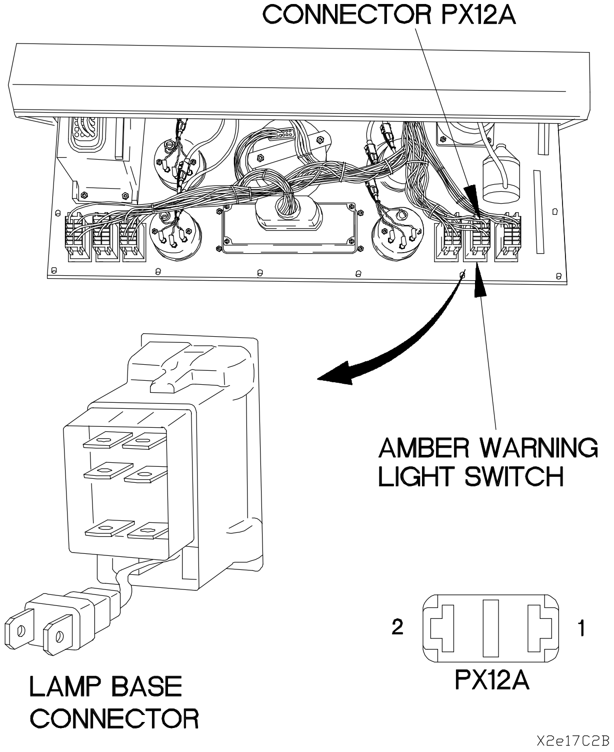
YES

Repair wire 1908 from connector PX12A socket 1 to connector PX17A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to connector PX12A socket 2. (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (4) If continuity is not present, repair wire 3020 from connector PX12A socket 2 to connector PX14A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (5) If continuity is present, repair wire 1908 from connector PX12A socket 1 to connector PX17A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (6) Connect connector PX12A to amber warning light switch lamp base connector. (7) Install instrument panel assembly (para 7-15).



e17D. MASTER POWER SWITCH DOES NOT ILLUMINATE

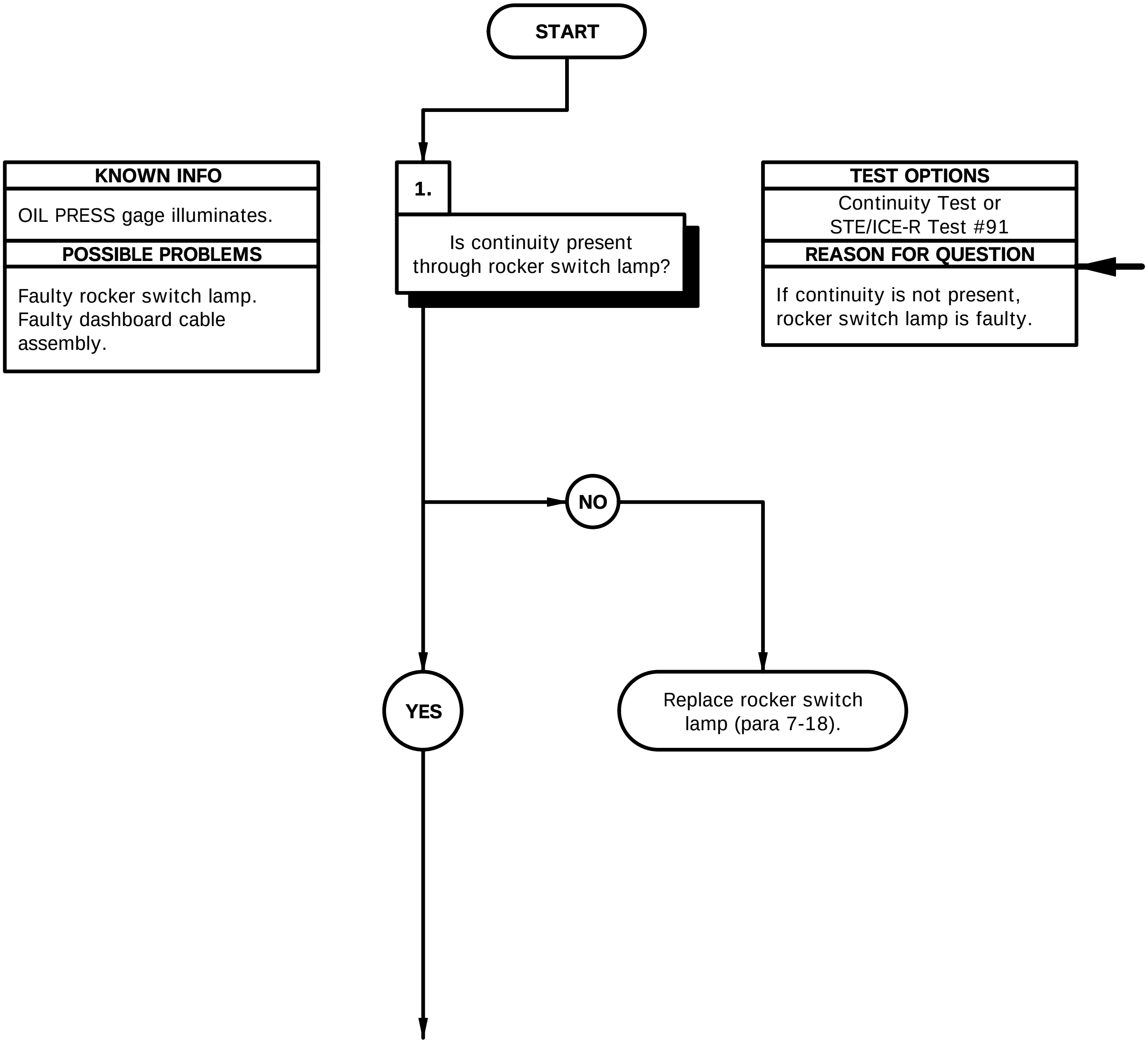
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

OIL PRESS gage illuminates.

POSSIBLE PROBLEMS

Faulty rocker switch lamp.
Faulty dashboard cable assembly.

1. Is continuity present through rocker switch lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, rocker switch lamp is faulty.

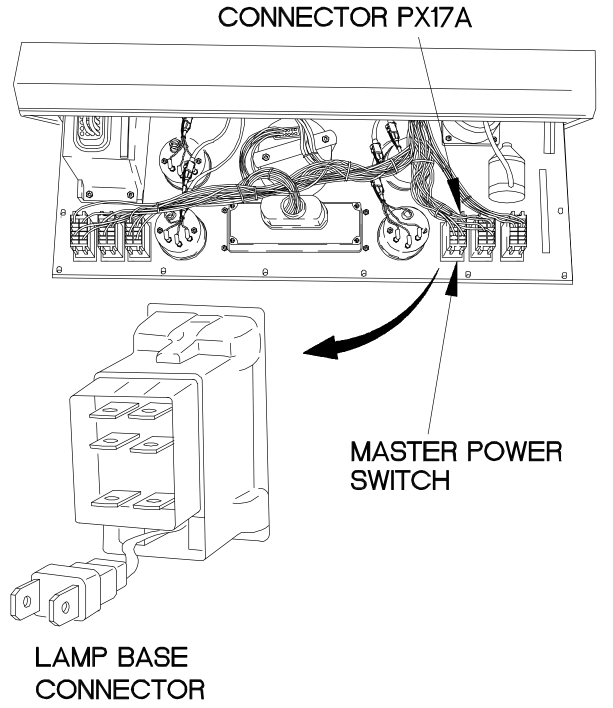
NO: Replace rocker switch lamp (para 7-18).

NOTE

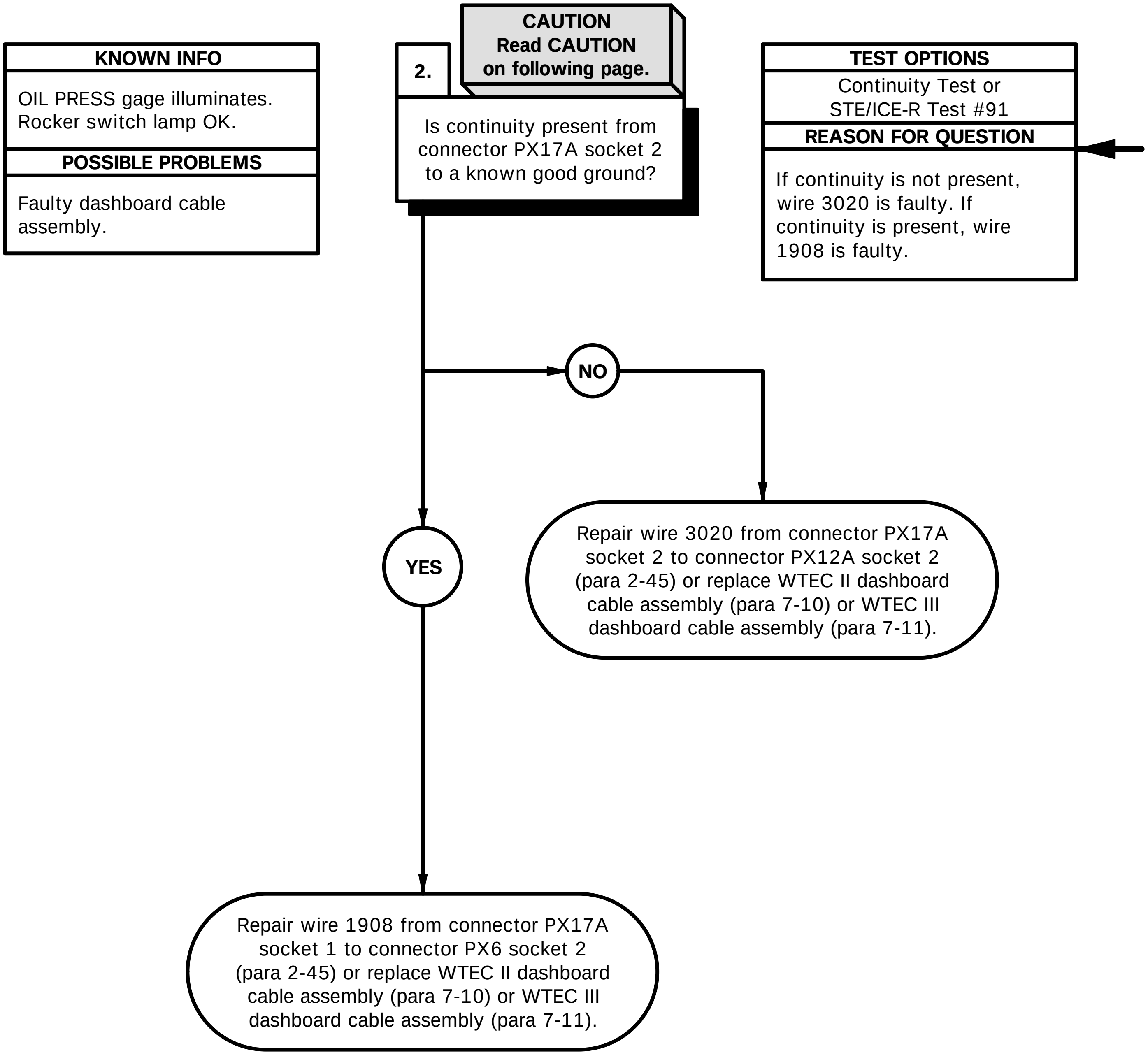
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel for access (para 7-15).
(2) Disconnect connector PX17A from master power switch lamp base connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to one terminal of lamp base connector.
(5) Connect negative (-) probe of multimeter to second terminal of lamp base connector and note reading on multimeter.
(6) If continuity is not present, replace rocker switch lamp (para 7-18).



e17D. MASTER POWER SWITCH DOES NOT ILLUMINATE (CONT)



KNOWN INFO

OIL PRESS gage illuminates. Rocker switch lamp OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

2.

Is continuity present from connector PX17A socket 2 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, wire 1908 is faulty.

NO

Repair wire 3020 from connector PX17A socket 2 to connector PX12A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

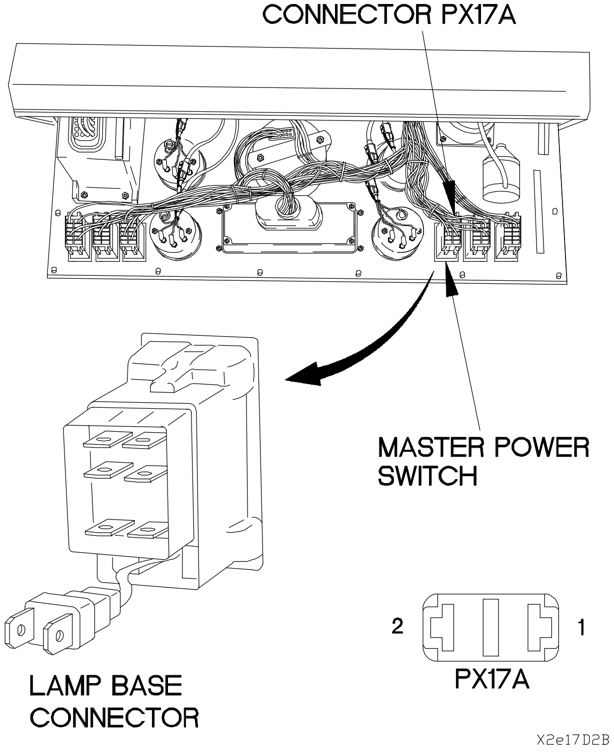
Repair wire 1908 from connector PX17A socket 1 to connector PX6 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX17A socket 2.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3020 from connector PX17A socket 2 to connector PX12A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 1908 from connector PX17A socket 1 to connector PX6 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX17A to master power switch lamp base connector.
(7) Install instrument panel assembly (para 7-15).



e18. REAR BRAKE AIR GAGE DOES NOT ILLUMINATE

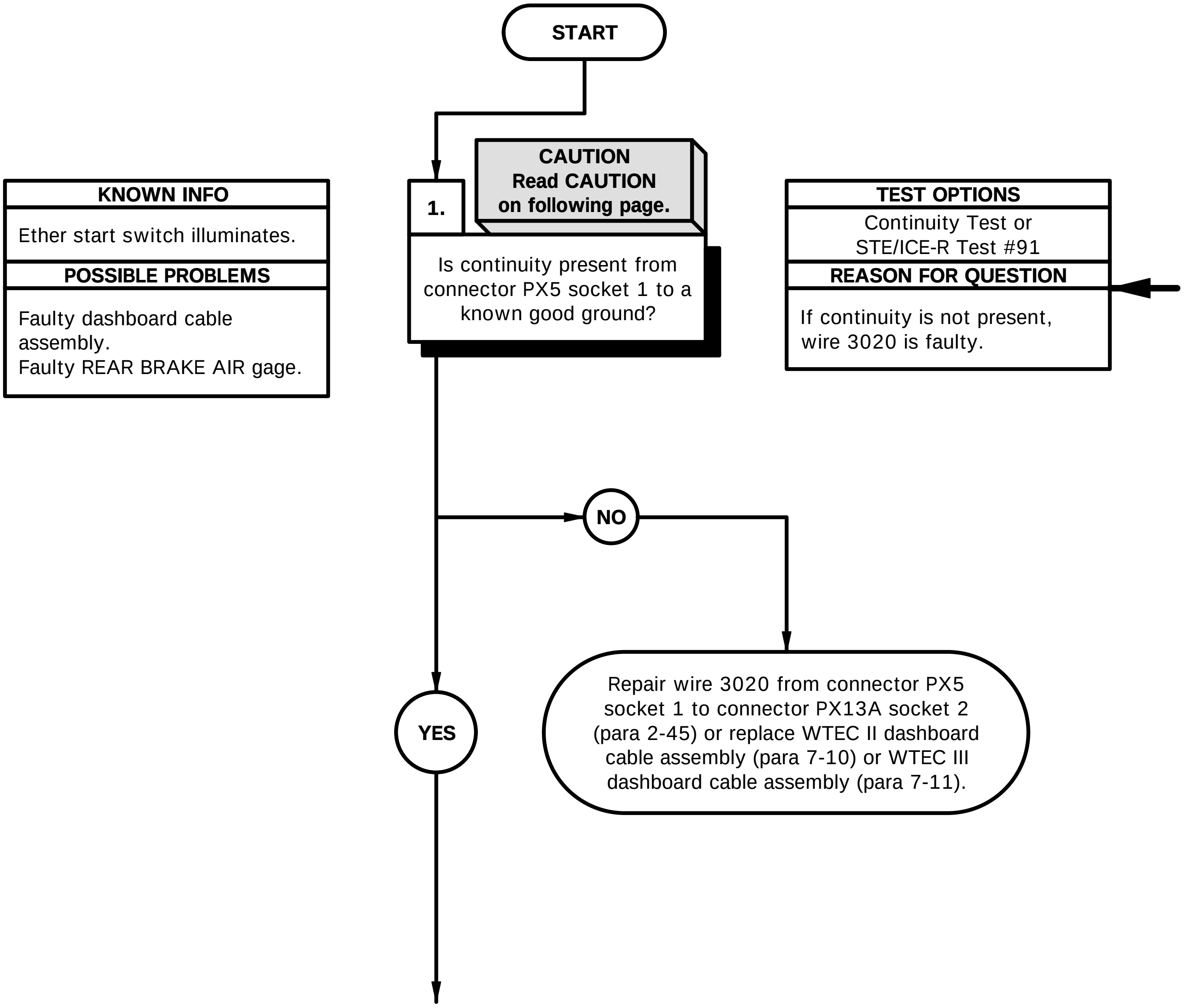
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Ether start switch illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty REAR BRAKE AIR gage.

1.

CAUTION
Read CAUTION on following page.

Is continuity present from connector PX5 socket 1 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty.

Repair wire 3020 from connector PX5 socket 1 to connector PX13A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

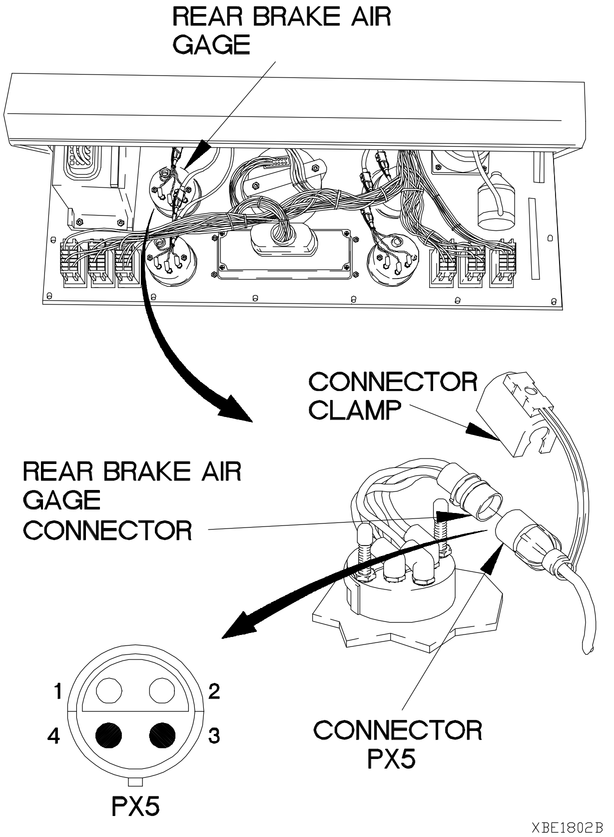
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Remove instrument panel assembly for access (para 7-15). (2) Disconnect connector clamp from REAR BRAKE AIR gage connector. (3) Disconnect connector PX5 from REAR BRAKE AIR gage connector. (4) Set multimeter to ohms. (5) Connect positive (+) probe of multimeter to connector PX5 socket 1. (6) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (7) If continuity is not present, repair wire 3020 from connector PX5 socket 1 to connector PX13A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e18. REAR BRAKE AIR GAGE DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Ether start switch illuminates.

POSSIBLE PROBLEMS

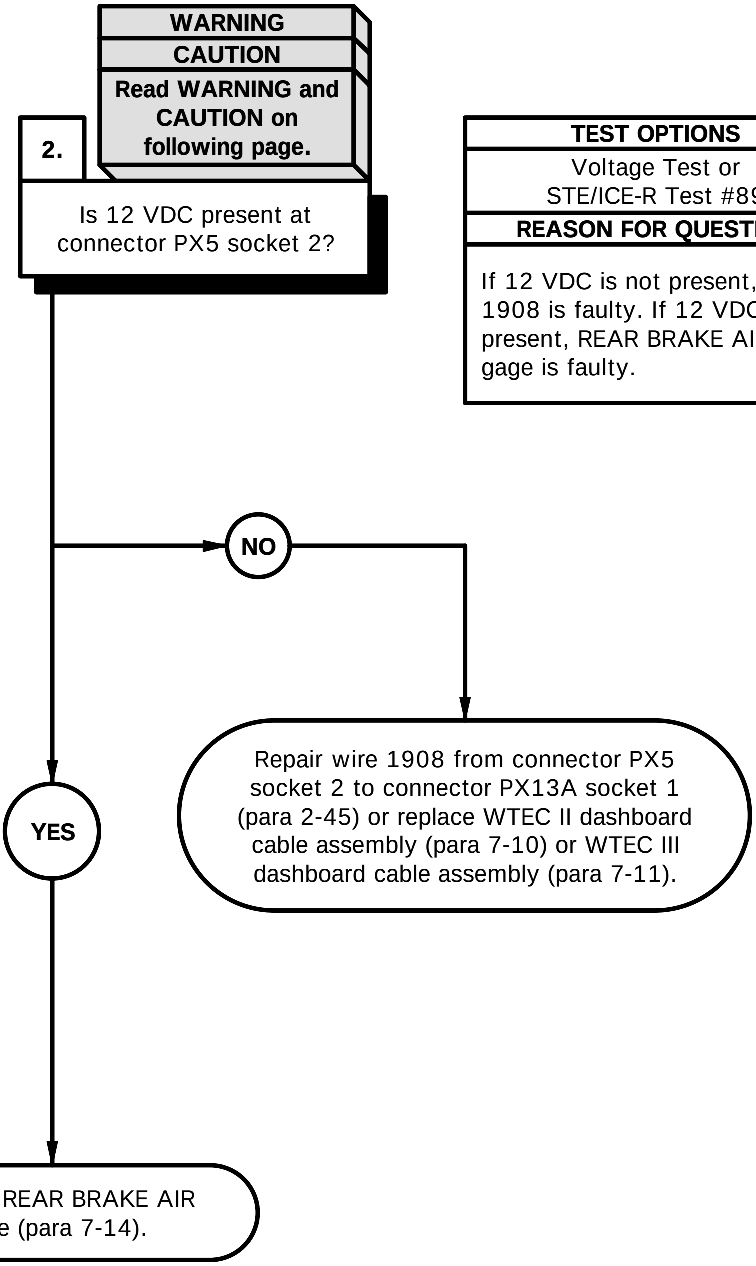
Faulty dashboard cable assembly.
Faulty REAR BRAKE AIR gage.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1908 is faulty. If 12 VDC is present, REAR BRAKE AIR gage is faulty.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

2. Is 12 VDC present at connector PX5 socket 2?

NO

Repair wire 1908 from connector PX5 socket 2 to connector PX13A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace REAR BRAKE AIR gage (para 7-14).

WARNING

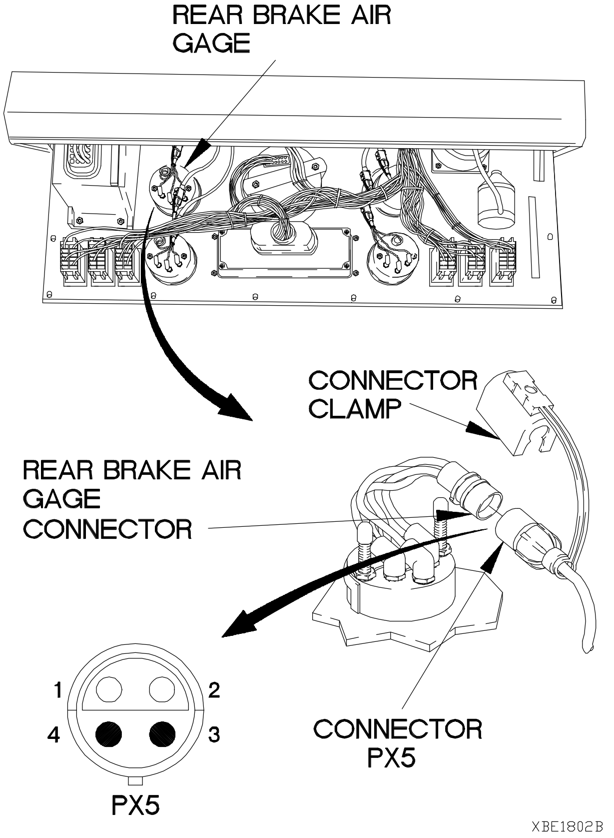
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX5 socket 2.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1).
(5) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1).
(6) Position dimmer switch for maximum brightness (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1908 from connector PX5 socket 2 to connector PX13A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 12 VDC is present, replace REAR BRAKE AIR gage (para 7-14).
(9) Position main light switch to auxiliary lever to OFF (TM 9-2320-366-10-1).
(10) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(11) Connect connector PX5 to REAR BRAKE AIR gage connector.
(12) Connect connector clamp on REAR BRAKE AIR gage connector.
(13) Install instrument panel (para 7-15).



e18A. FUEL GAGE DOES NOT ILLUMINATE

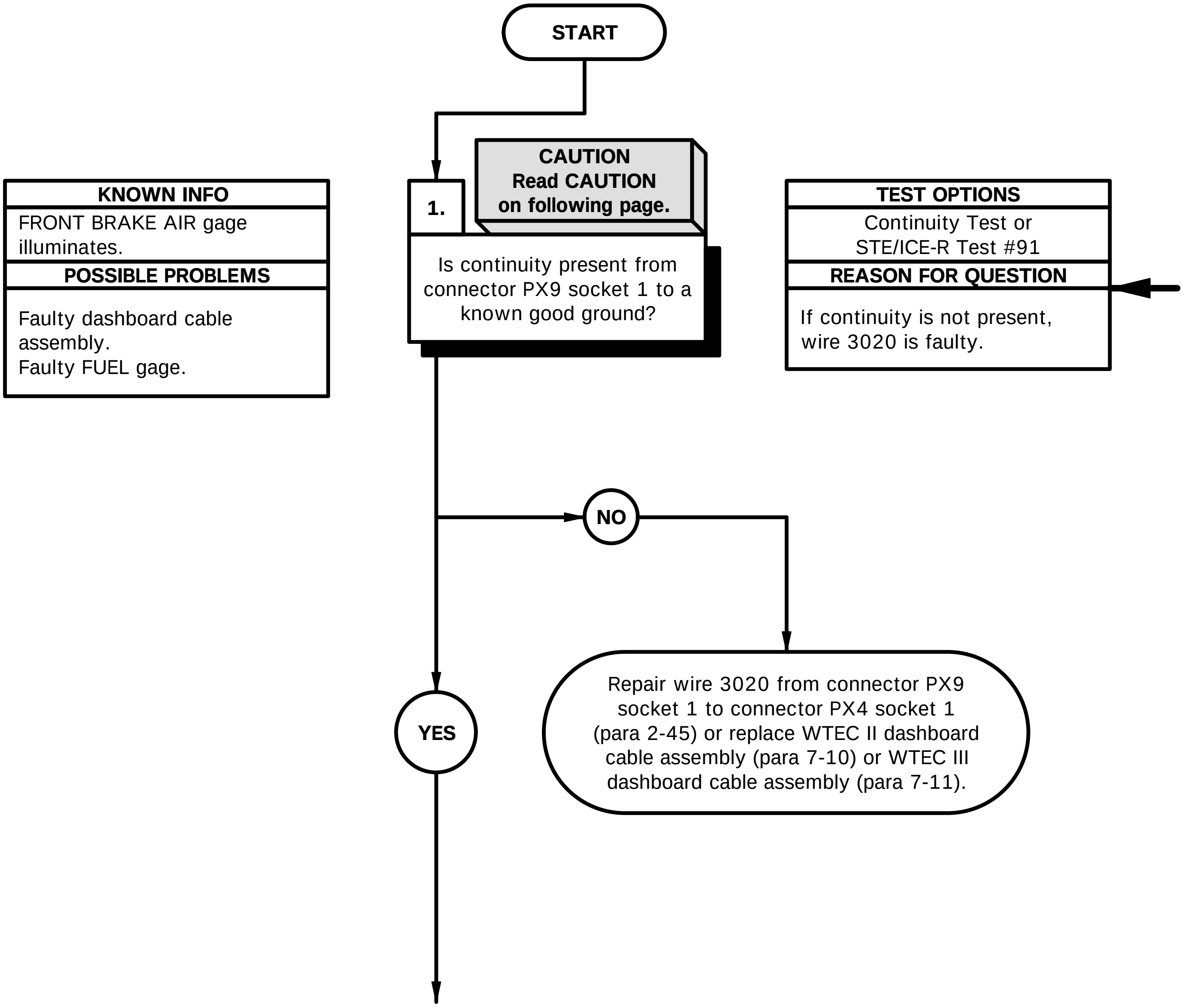
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



CAUTION
Read CAUTION on following page.

KNOWN INFO
FRONT BRAKE AIR gage illuminates.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty FUEL gage.

1. Is continuity present from connector PX9 socket 1 to a known good ground?

TEST OPTIONS
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION
If continuity is not present, wire 3020 is faulty.

NO: Repair wire 3020 from connector PX9 socket 1 to connector PX4 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

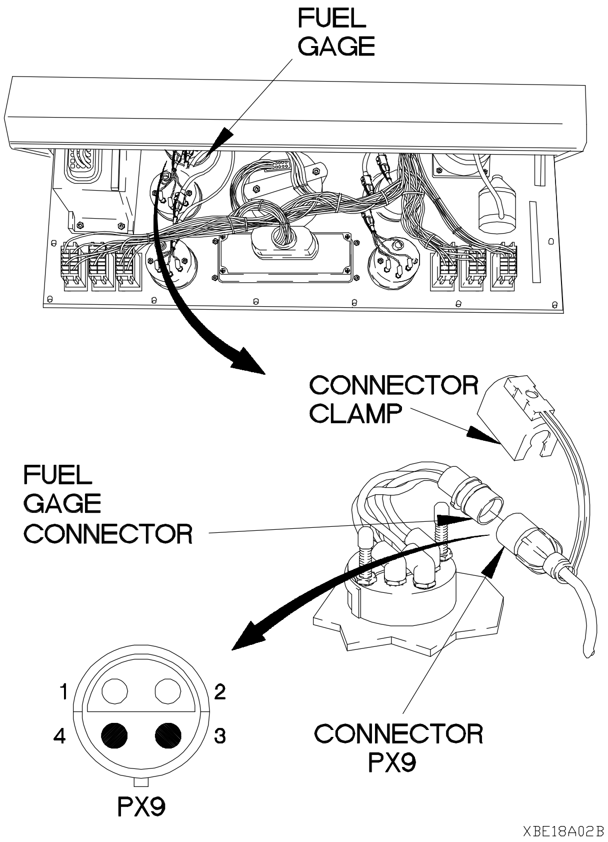
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

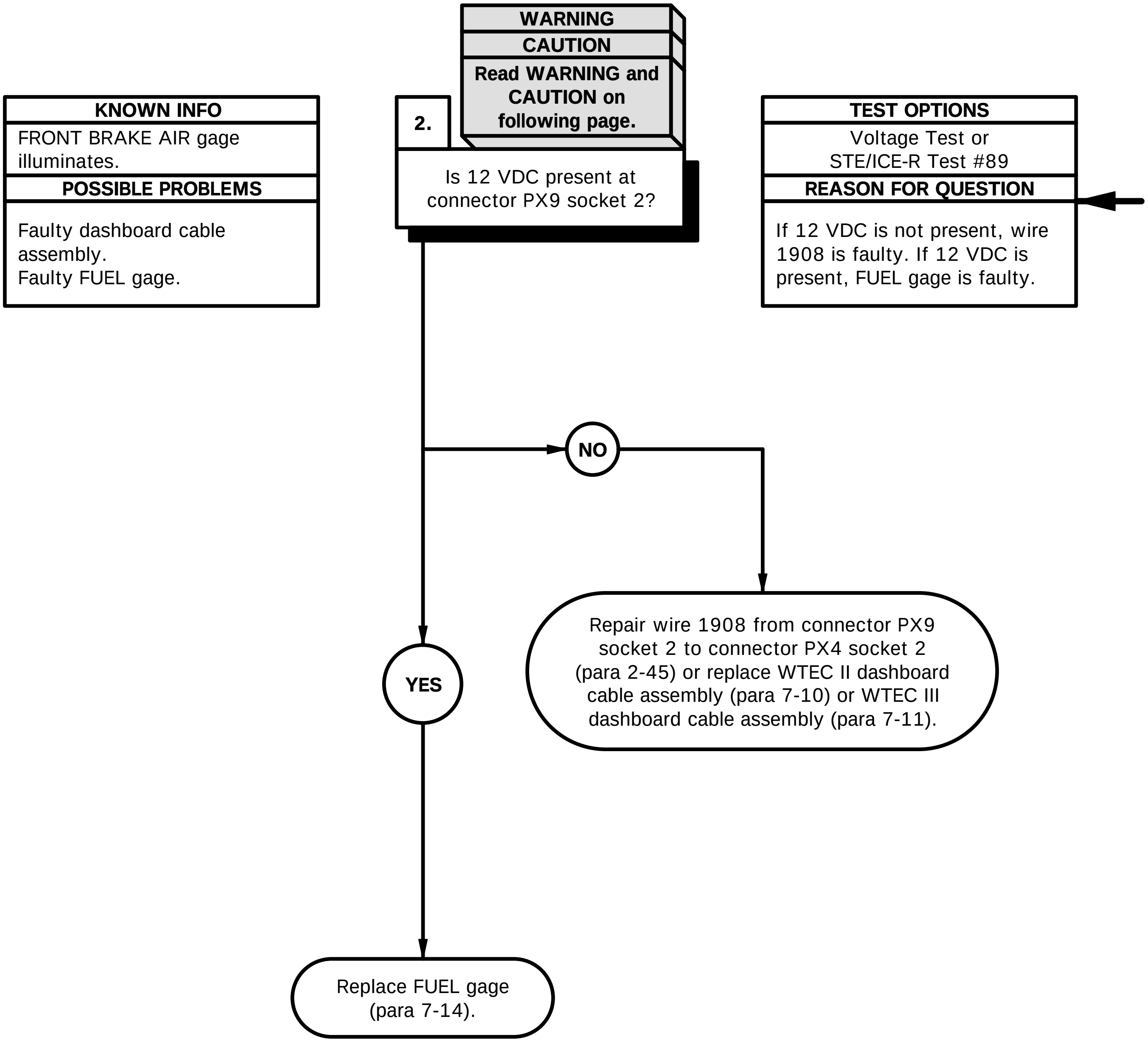
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from FUEL gage connector.
(3) Disconnect connector PX9 from FUEL gage connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX9 socket 1.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present, repair wire 3020 from connector PX9 socket 1 to connector PX4 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e18A. FUEL GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

FRONT BRAKE AIR gage illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty FUEL gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2.

Is 12 VDC present at connector PX9 socket 2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1908 is faulty. If 12 VDC is present, FUEL gage is faulty.

NO

Repair wire 1908 from connector PX9 socket 2 to connector PX4 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace FUEL gage (para 7-14).

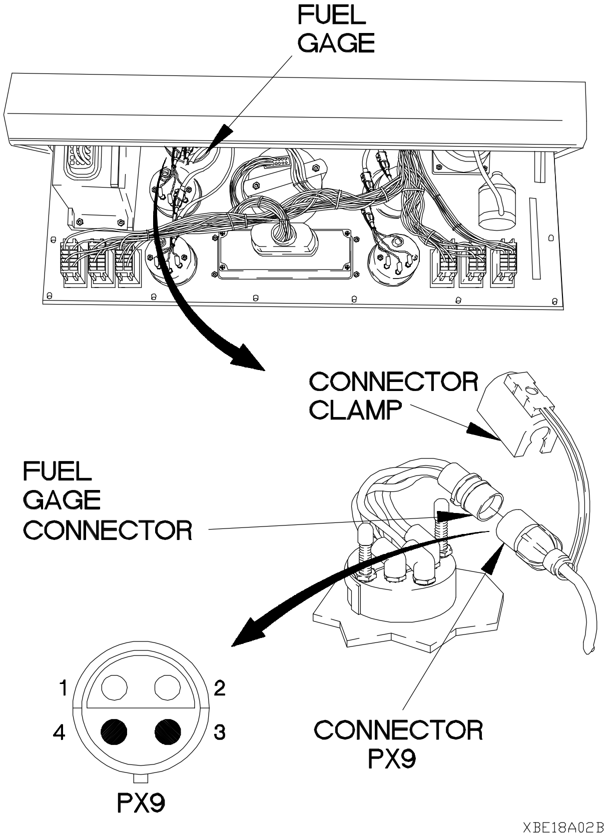
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to connector PX9 socket 2. (3) Connect negative (-) probe of multimeter to ground. (4) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1). (5) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1). (6) Position dimmer switch for maximum brightness (TM 9-2320-366-10-1) and note reading on multimeter. (7) If 12 VDC is not present, repair wire 1908 from connector PX9 socket 2 to connector PX4 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (8) If 12 VDC is present, replace FUEL gage (para 7-14). (9) Position main light switch to auxiliary lever to OFF (TM 9-2320-366-10-1). (10) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1). (11) Connect connector PX9 to FUEL gage connector. (12) Connect connector clamp on FUEL gage connector. (13) Install instrument panel (para 7-15).



e18B. FRONT BRAKE AIR GAGE DOES NOT ILLUMINATE

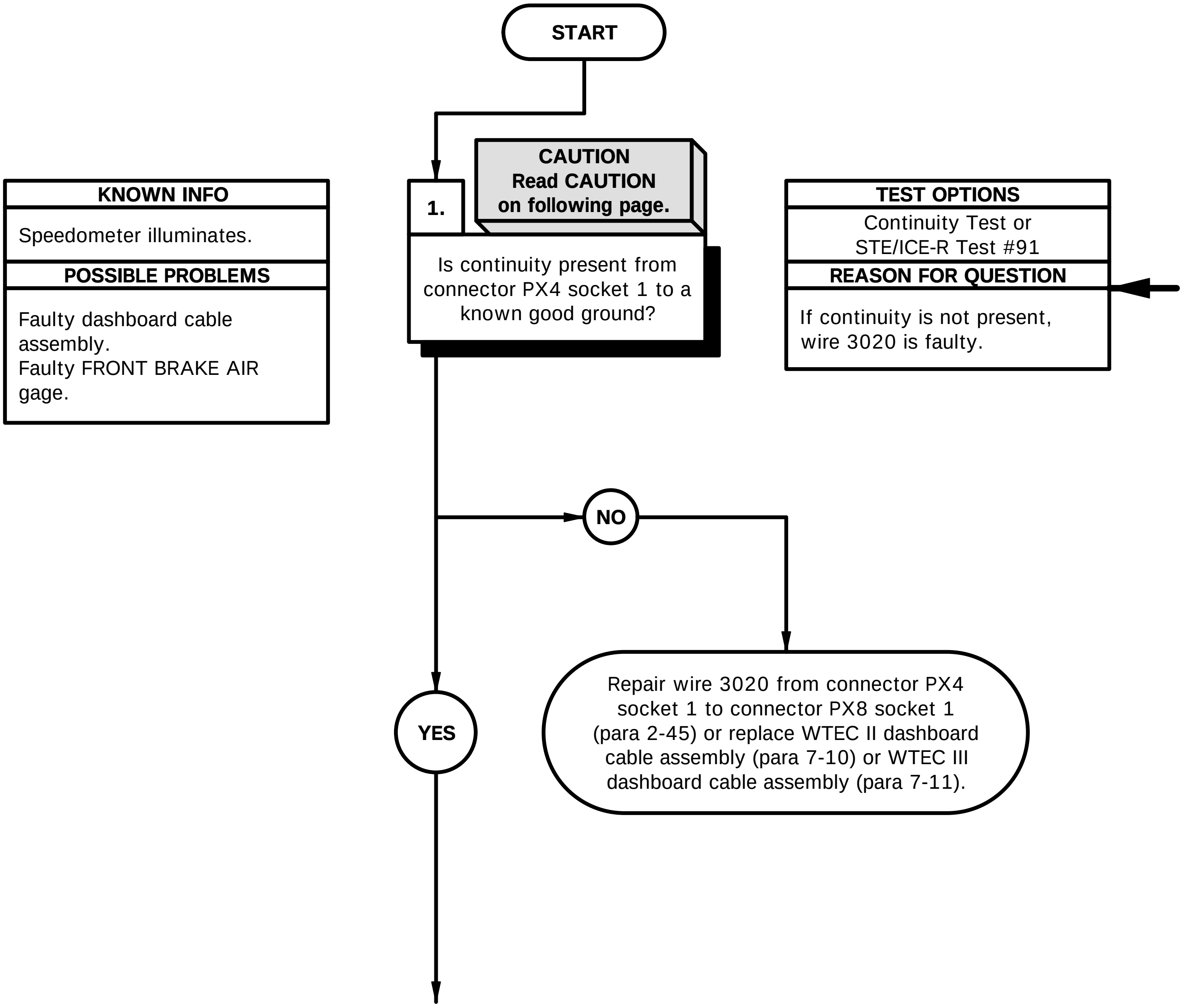
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



CAUTION
Read CAUTION on following page.

KNOWN INFO

Speedometer illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty FRONT BRAKE AIR gage.

1. Is continuity present from connector PX4 socket 1 to a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty.

NO: Repair wire 3020 from connector PX4 socket 1 to connector PX8 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

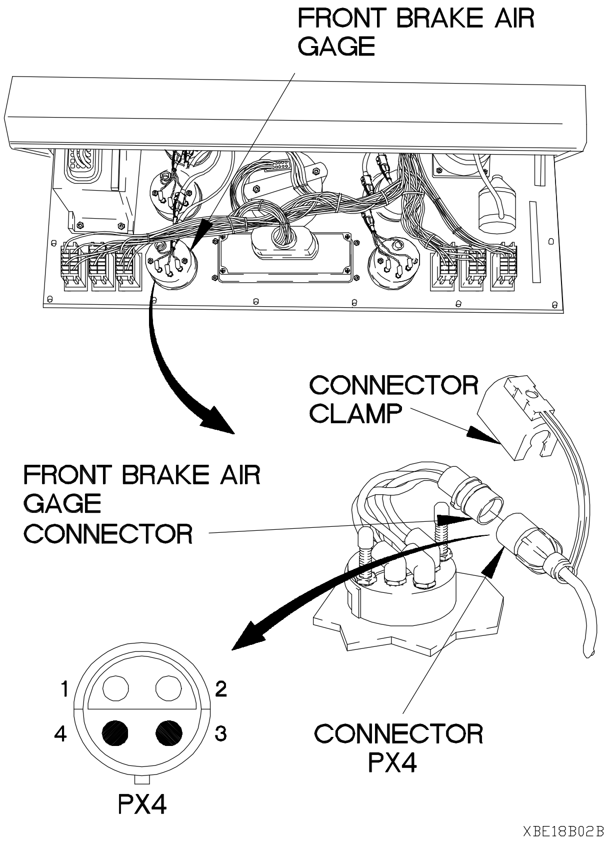
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

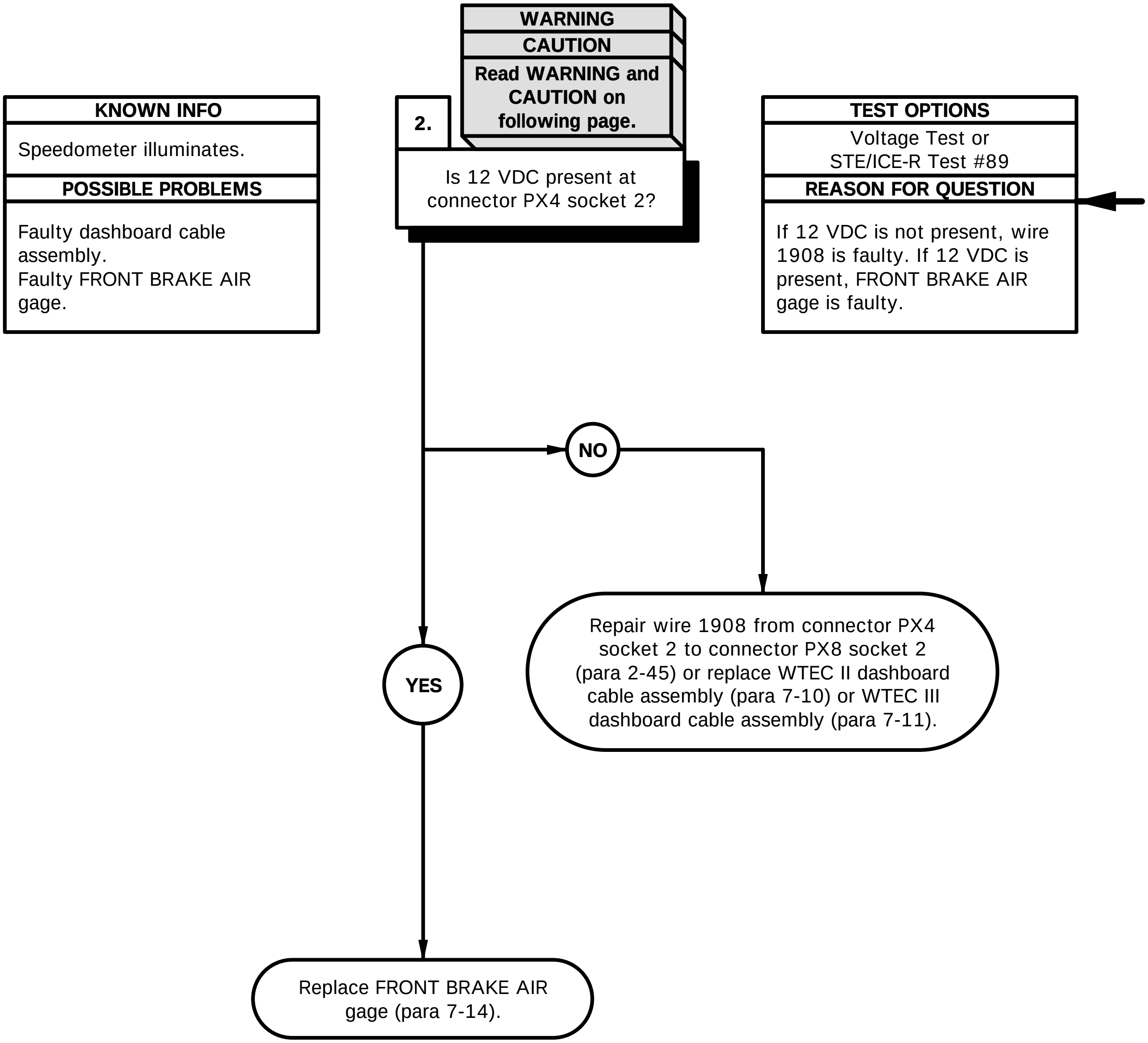
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from FRONT BRAKE AIR gage connector.
(3) Disconnect connector PX4 from FRONT BRAKE AIR gage connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX4 socket 1.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present, repair wire 3020 from connector PX4 socket 1 to connector PX8 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e18B. FRONT BRAKE AIR GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Speedometer illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty FRONT BRAKE AIR gage.

2.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

Is 12 VDC present at connector PX4 socket 2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1908 is faulty. If 12 VDC is present, FRONT BRAKE AIR gage is faulty.

NO

Repair wire 1908 from connector PX4 socket 2 to connector PX8 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace FRONT BRAKE AIR gage (para 7-14).

WARNING

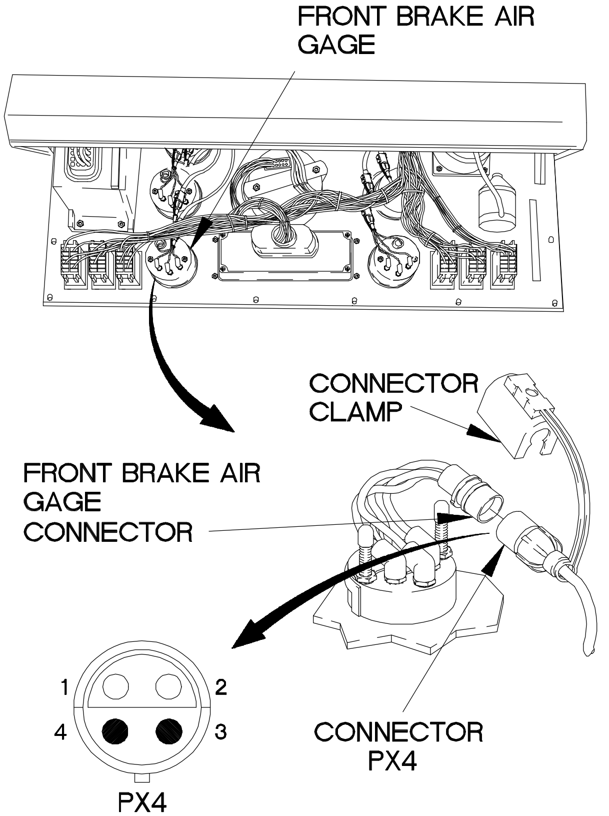
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX4 socket 2.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1).
(5) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1).
(6) Position dimmer switch for maximum brightness (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1908 from connector PX4 socket 2 to connector PX8 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 12 VDC is present, replace FRONT BRAKE AIR gage (para 7-14).
(9) Position main light switch to auxiliary lever to OFF (TM 9-2320-366-10-1).
(10) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(11) Connect connector PX4 to FRONT BRAKE AIR gage connector.
(12) Connect connector clamp on FRONT BRAKE AIR gage connector.
(13) Install instrument panel (para 7-15).



e18C. SPEEDOMETER DOES NOT ILLUMINATE

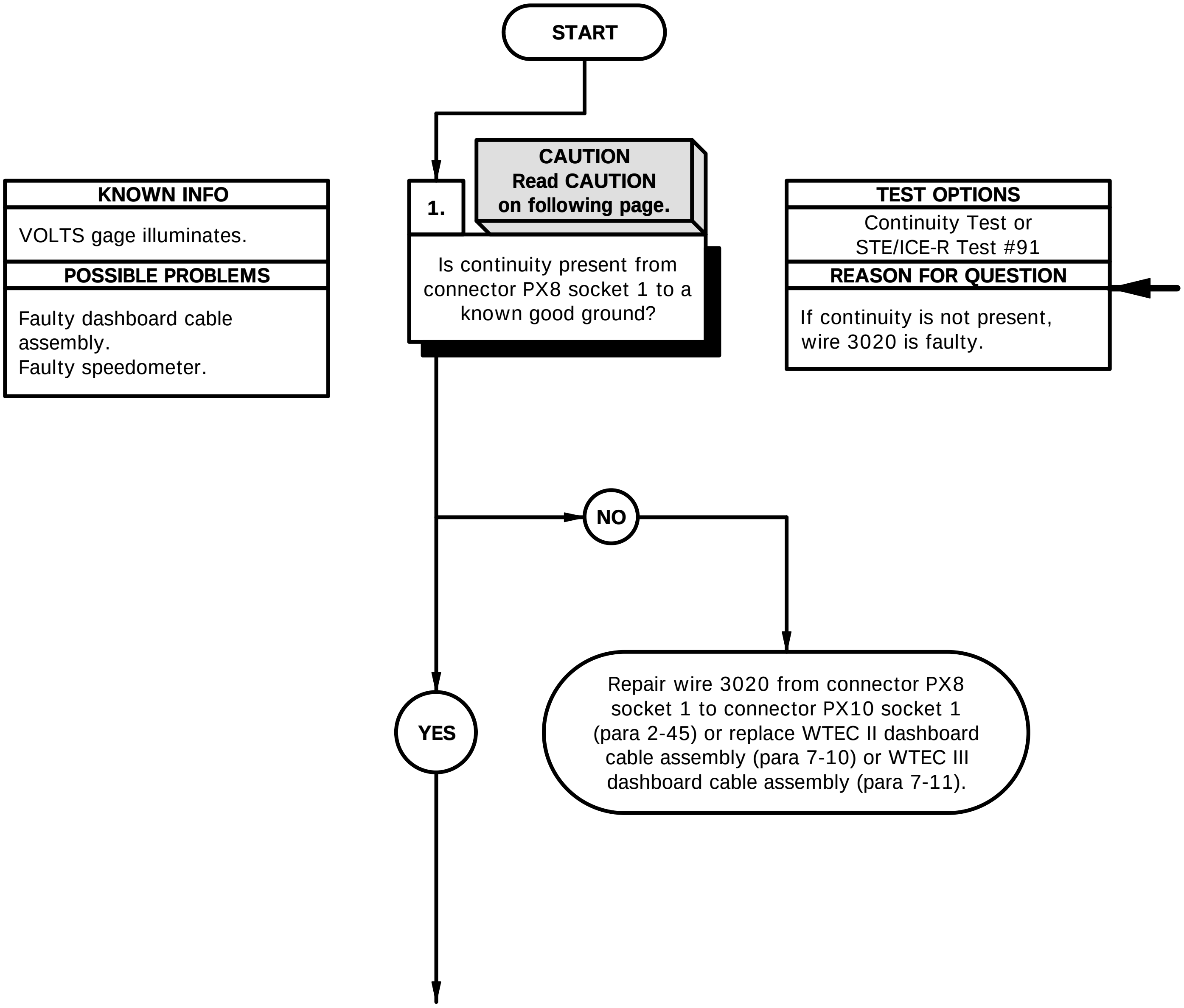
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

VOLTS gage illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty speedometer.

START

CAUTION
Read CAUTION on following page.

1. Is continuity present from connector PX8 socket 1 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty.

NO

Repair wire 3020 from connector PX8 socket 1 to connector PX10 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

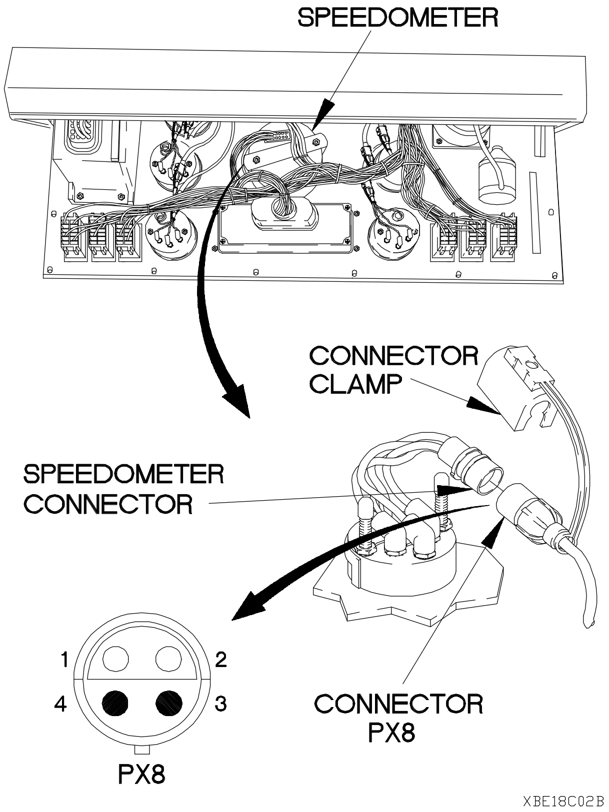
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

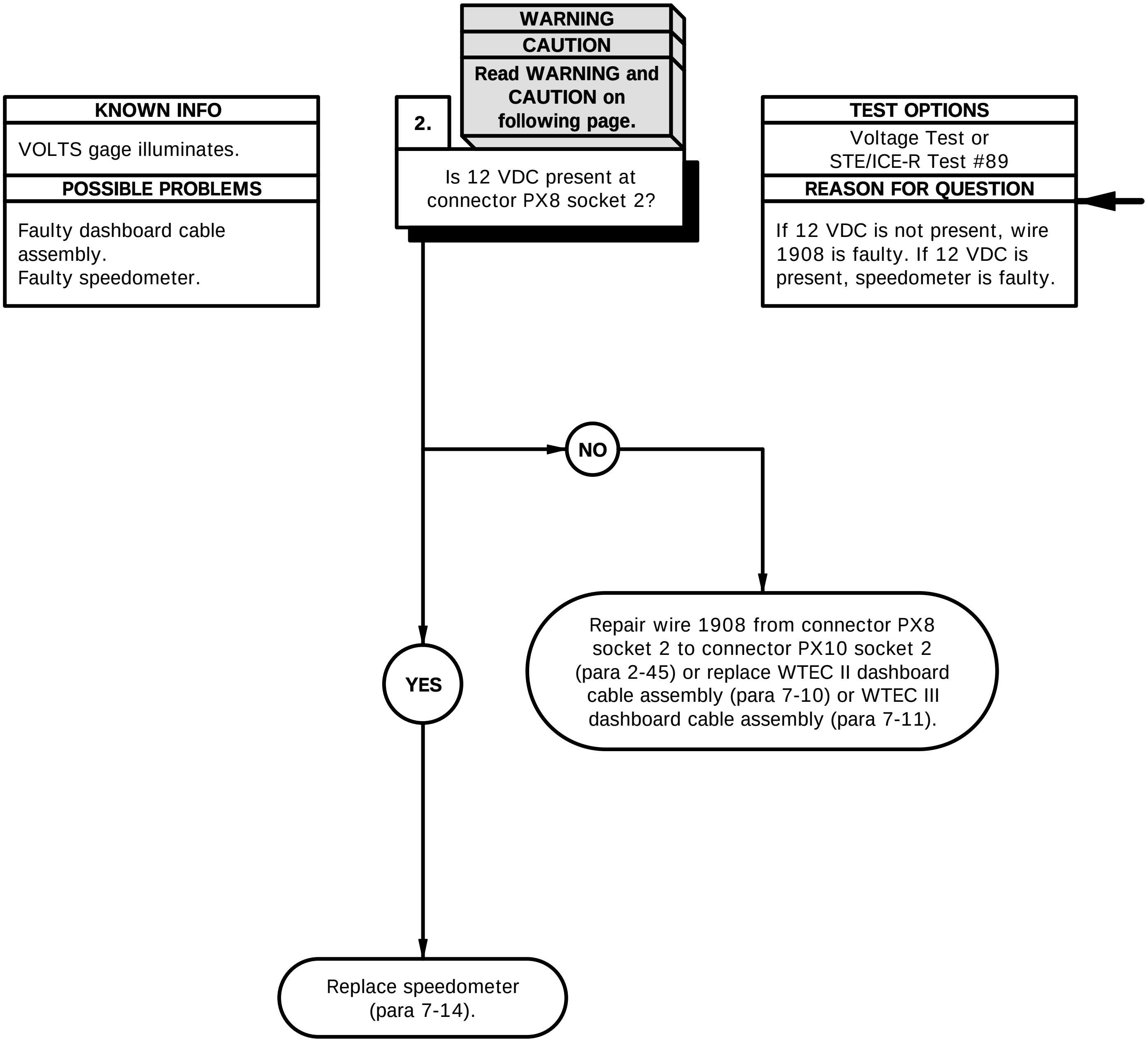
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Remove instrument panel assembly for access (para 7-15). (2) Disconnect connector clamp from speedometer connector. (3) Disconnect connector PX8 from speedometer connector. (4) Set multimeter to ohms. (5) Connect positive (+) probe of multimeter to connector PX8 socket 1. (6) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (7) If continuity is not present, repair wire 3020 from connector PX8 socket 1 to connector PX10 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e18C. SPEEDOMETER DOES NOT ILLUMINATE (CONT)



WARNING

CAUTION

Read WARNING and CAUTION on following page.

KNOWN INFO

VOLTS gage illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty speedometer.

2.

Is 12 VDC present at connector PX8 socket 2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1908 is faulty. If 12 VDC is present, speedometer is faulty.

Repair wire 1908 from connector PX8 socket 2 to connector PX10 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace speedometer (para 7-14).

WARNING

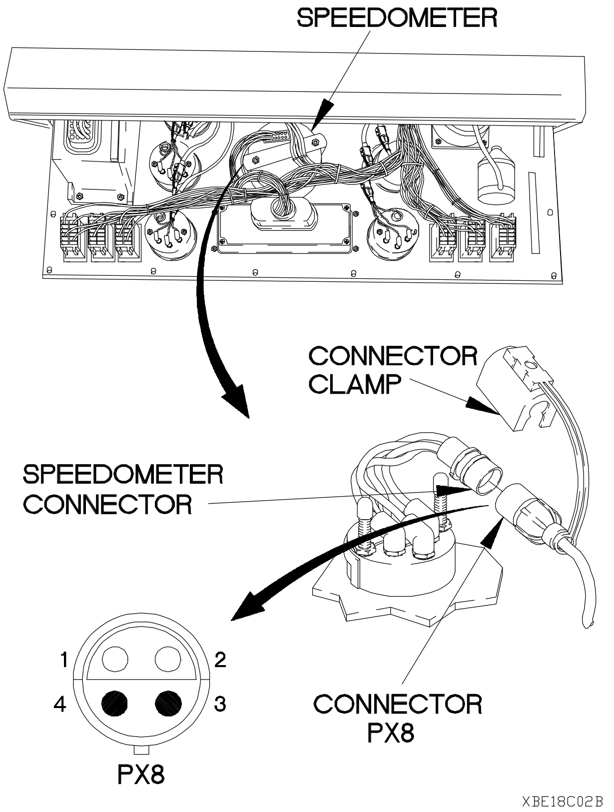
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX8 socket 2.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1).
(5) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1).
(6) Position dimmer switch for maximum brightness (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1908 from connector PX8 socket 2 to connector PX10 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 12 VDC is present, replace speedometer (para 7-14).
(9) Position main light switch to auxiliary lever to OFF (TM 9-2320-366-10-1).
(10) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(11) Connect connector PX8 to speedometer connector.
(12) Connect connector clamp on speedometer connector.
(13) Install instrument panel (para 7-15).



e18D. VOLTS GAGE DOES NOT ILLUMINATE

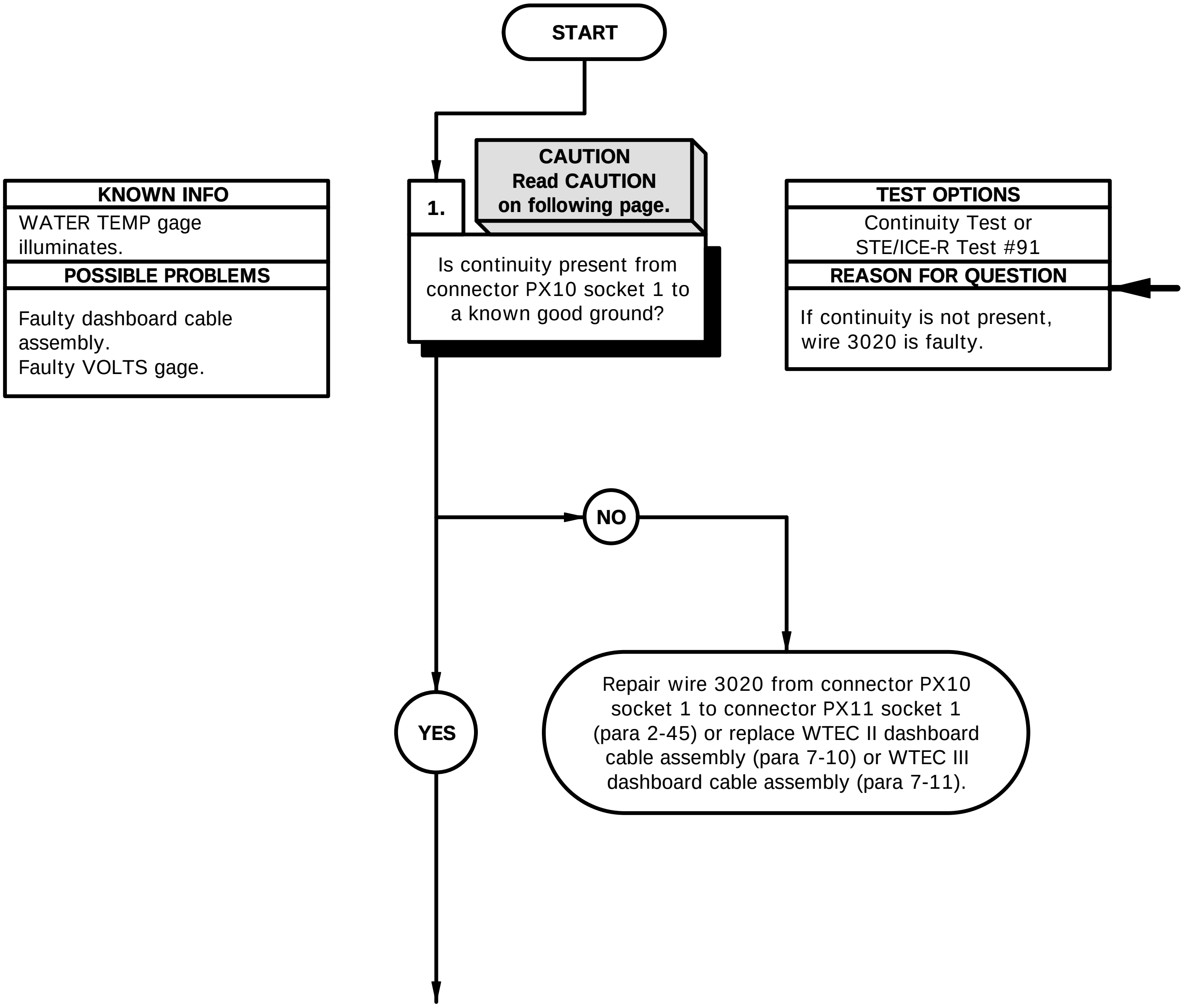
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



CAUTION
Read CAUTION on following page.

KNOWN INFO
WATER TEMP gage illuminates.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty VOLTS gage.

Is continuity present from connector PX10 socket 1 to a known good ground?

TEST OPTIONS
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION
If continuity is not present, wire 3020 is faulty.

Repair wire 3020 from connector PX10 socket 1 to connector PX11 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

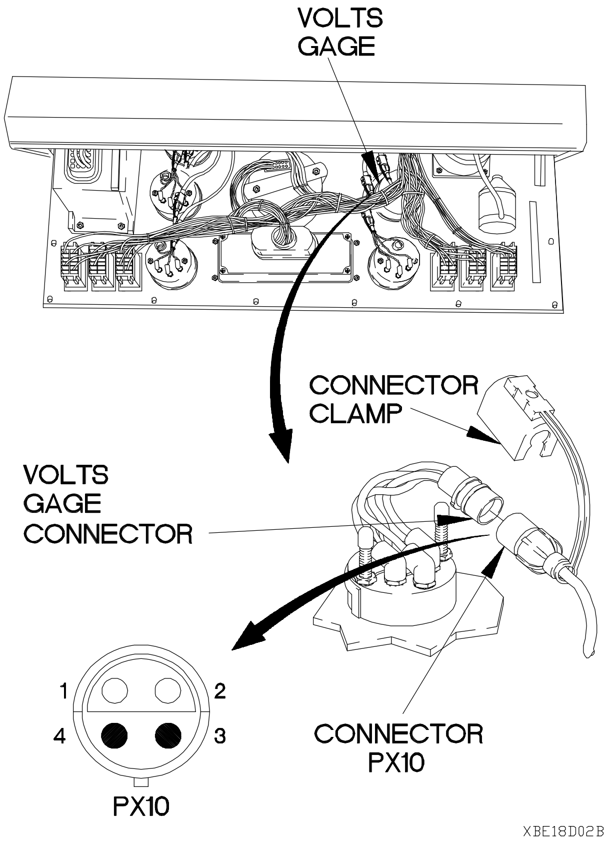
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

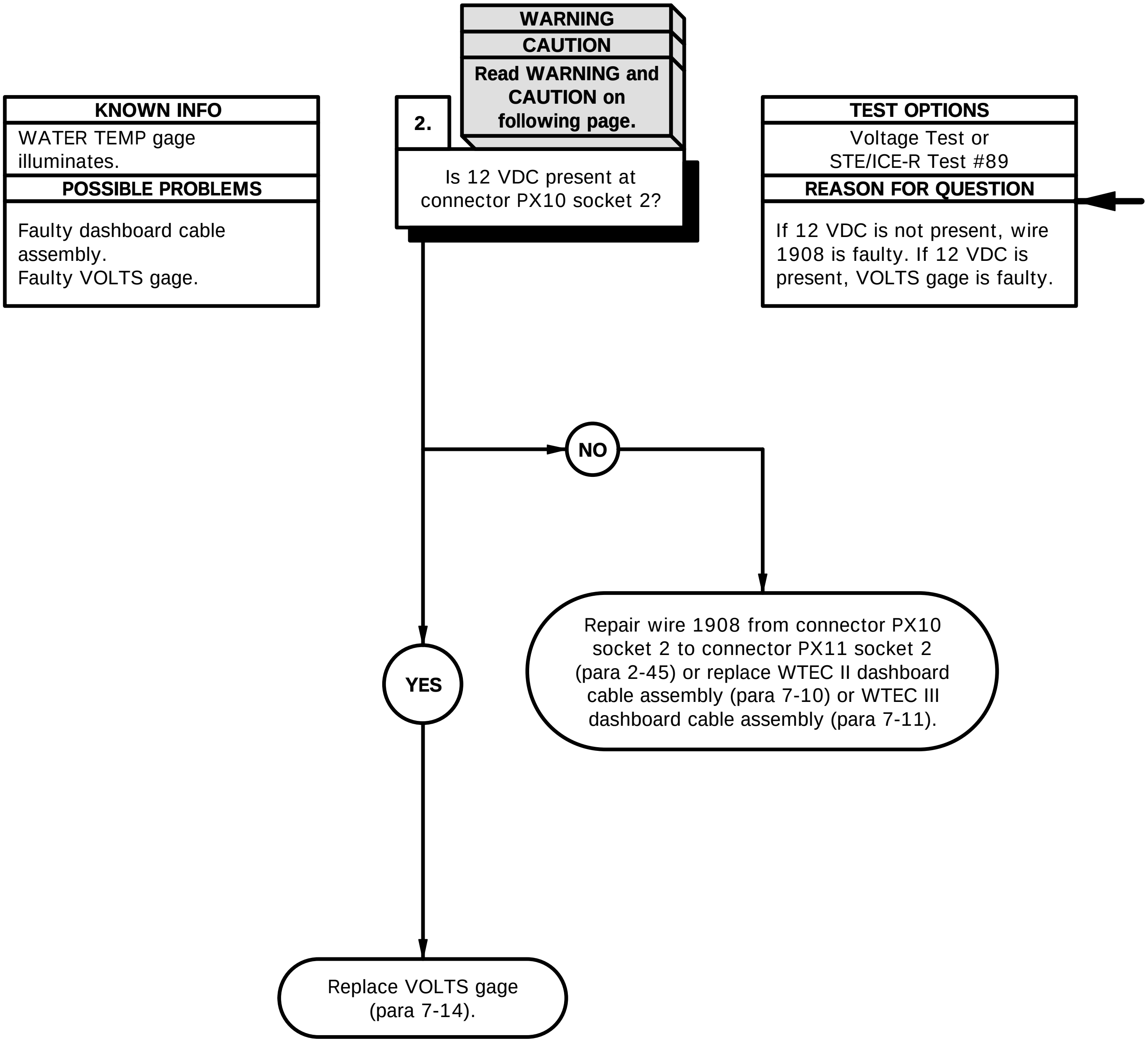
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from VOLTS gage connector.
(3) Disconnect connector PX10 from VOLTS gage connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX10 socket 1.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present, repair wire 3020 from connector PX10 socket 1 to connector PX11 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e18D. VOLTS GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

WATER TEMP gage illuminates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty VOLTS gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2.

Is 12 VDC present at connector PX10 socket 2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1908 is faulty. If 12 VDC is present, VOLTS gage is faulty.

NO

Repair wire 1908 from connector PX10 socket 2 to connector PX11 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace VOLTS gage (para 7-14).

WARNING

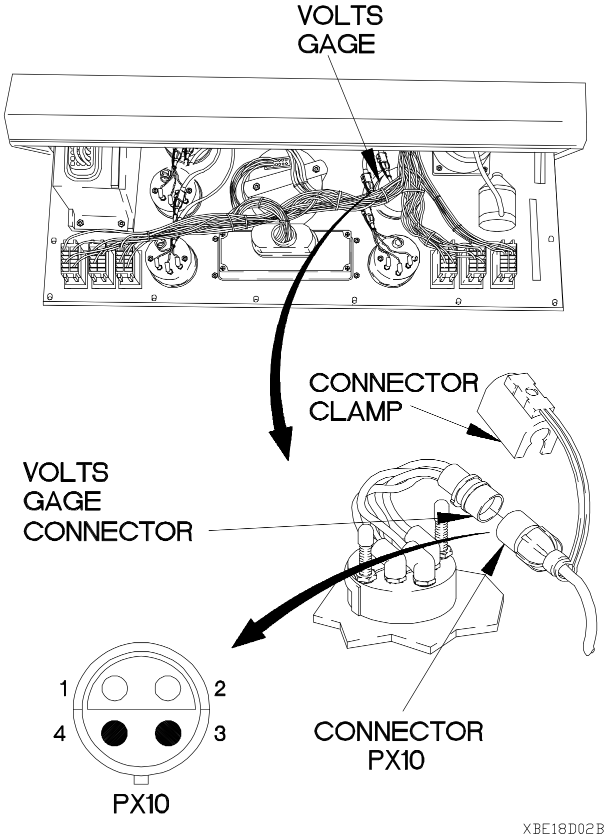
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX10 socket 2.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1).
(5) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1).
(6) Position dimmer switch for maximum brightness (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1908 from connector PX10 socket 2 to connector PX11 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 12 VDC is present, replace VOLTS gage (para 7-14).
(9) Position main light switch to auxiliary lever to OFF (TM 9-2320-366-10-1).
(10) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(11) Connect connector PX10 to VOLTS gage connector.
(12) Connect connector clamp on VOLTS gage connector.
(13) Install instrument panel (para 7-15).



e18E. WATER TEMP GAGE DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Dimmer Switch Test Wire (Item 20, Appendix E)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

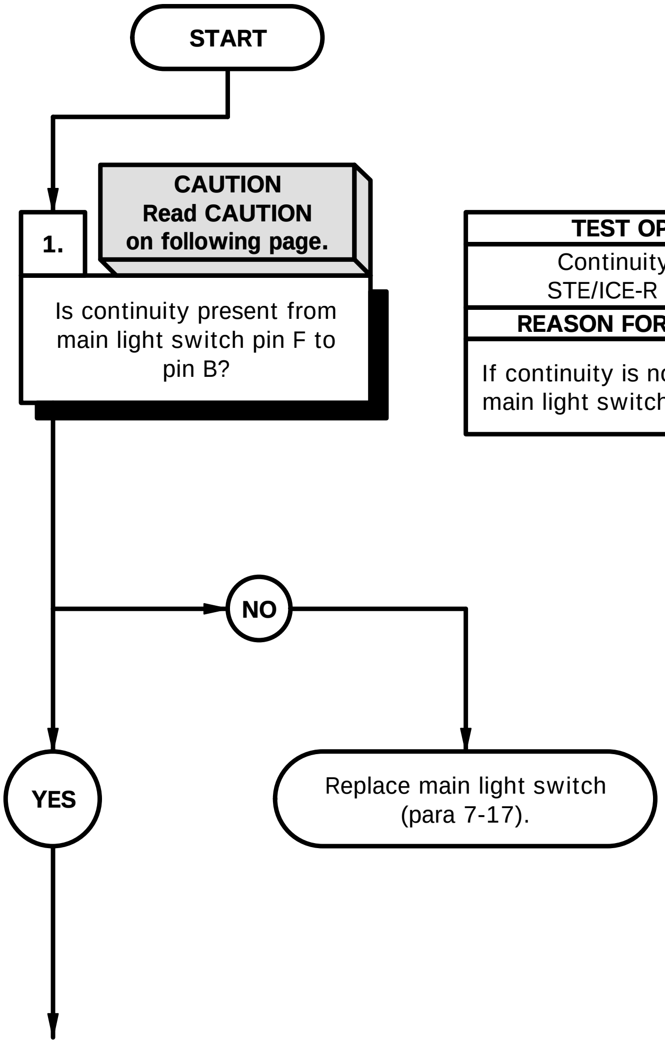
Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB70 prior to beginning this task.

KNOWN INFO

Circuit breaker CB70 OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dimmer switch.
Faulty dashboard cable assembly.
Faulty WATER TEMP gage.



TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, main light switch is faulty.

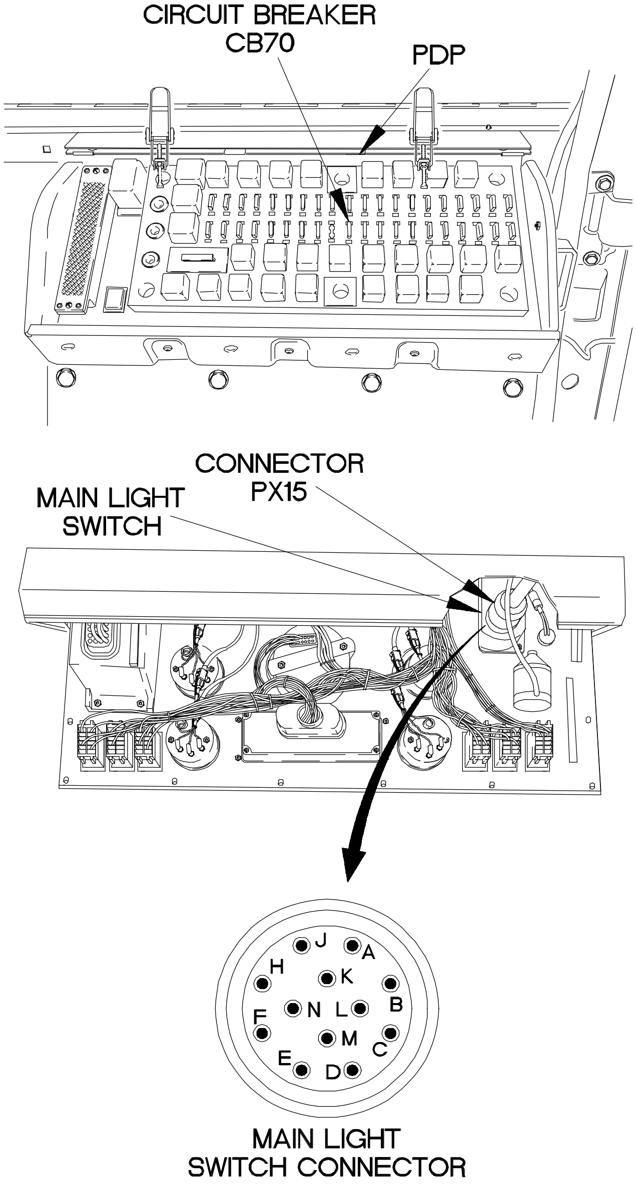
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

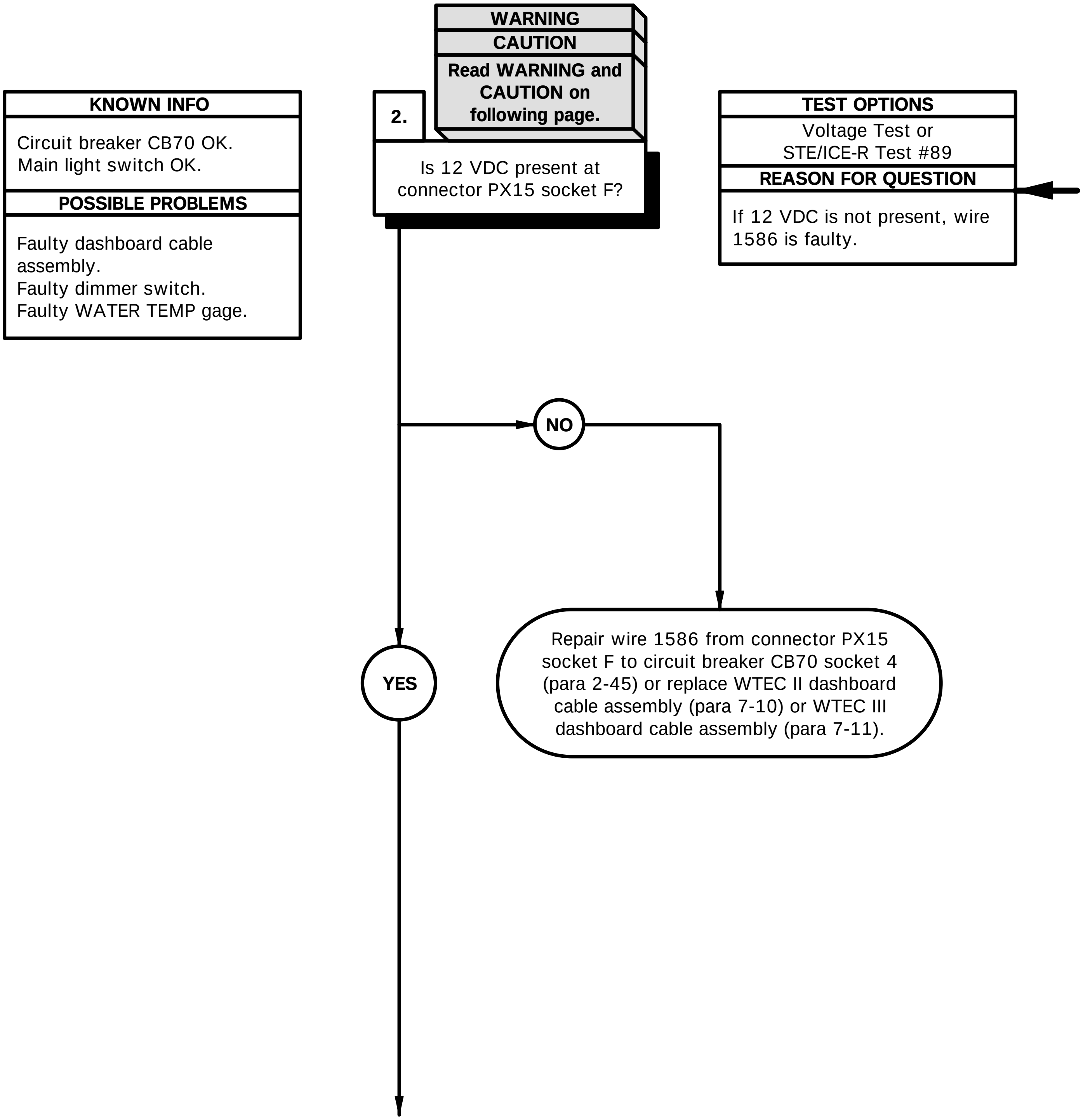
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Remove PDP cover (TM 9-2320-366-10-2). (2) Remove circuit breaker CB70 from PDP. (3) Remove instrument panel assembly for access (para 7-15). (4) Disconnect connector PX15 from main light switch connector. (5) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1). (6) Position main light switch auxiliary selector lever to PNL BRT (TM 9-2320-366-10-1). (7) Set multimeter to ohms. (8) Connect positive (+) probe of multimeter to main light switch connector pin F. (9) Connect negative (-) probe of multimeter to main light switch connector pin B and note reading on multimeter. (10) If continuity is not present, replace main light switch (para 7-17). (11) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1). (12) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).



e18E. WATER TEMP GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty dimmer switch.
Faulty WATER TEMP gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2. Is 12 VDC present at connector PX15 socket F?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1586 is faulty.

Repair wire 1586 from connector PX15 socket F to circuit breaker CB70 socket 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

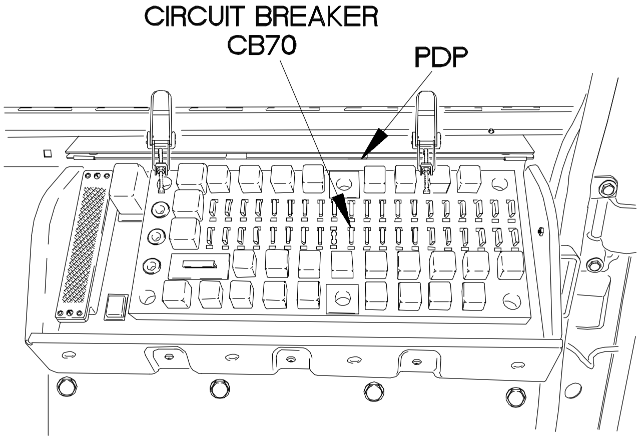
WARNING

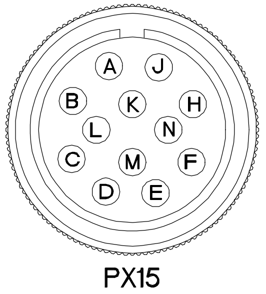
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

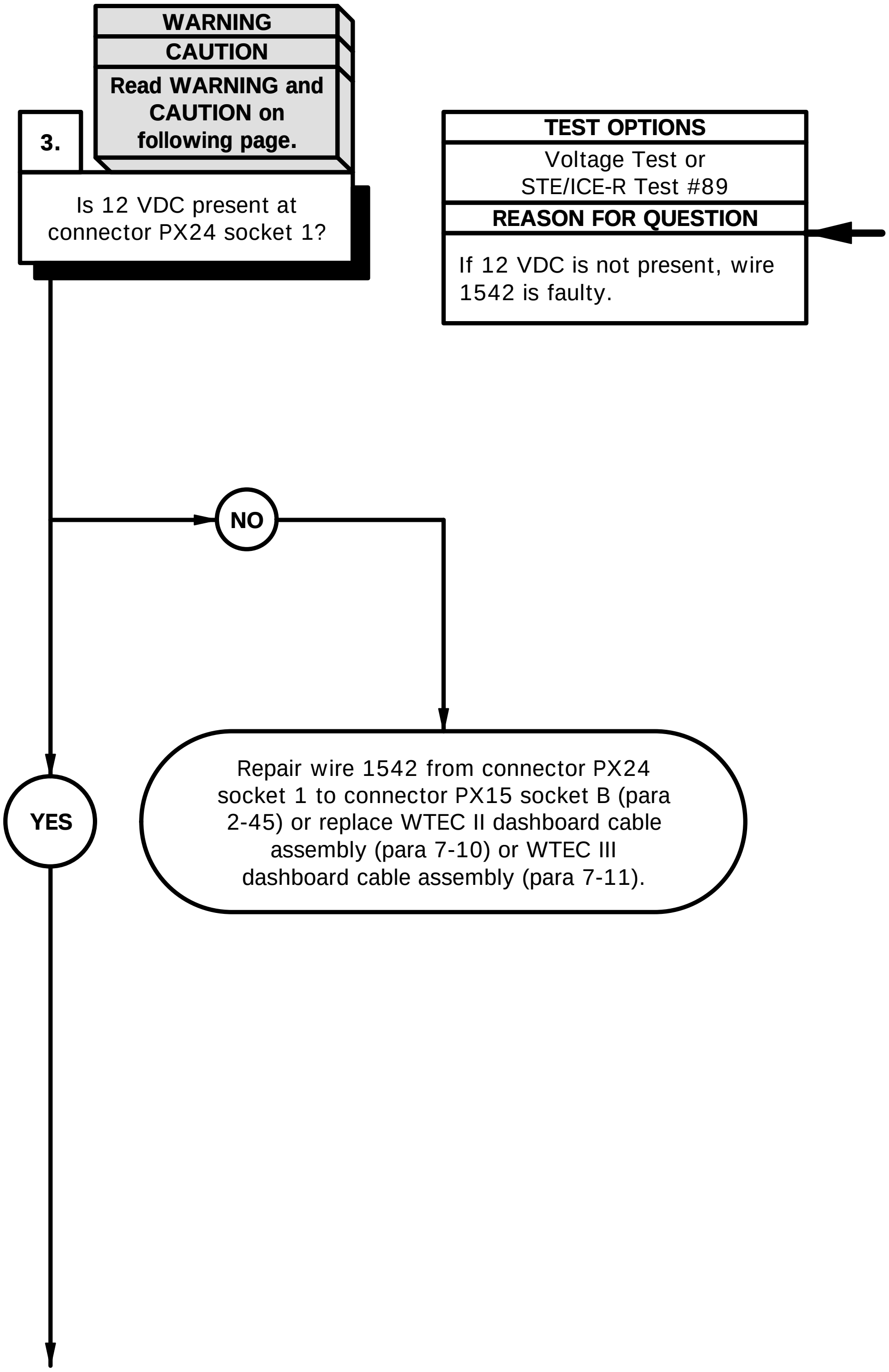
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST
(1) Install circuit breaker CB70 on PDP. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to connector PX15 socket F. (4) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (5) If 12 VDC is not present, repair wire 1586 from connector PX15 socket F to circuit breaker CB70 socket 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).





e18E. WATER TEMP GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty dimmer switch.
Faulty WATER TEMP gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 12 VDC present at connector PX24 socket 1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1542 is faulty.

NO: Repair wire 1542 from connector PX24 socket 1 to connector PX15 socket B (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

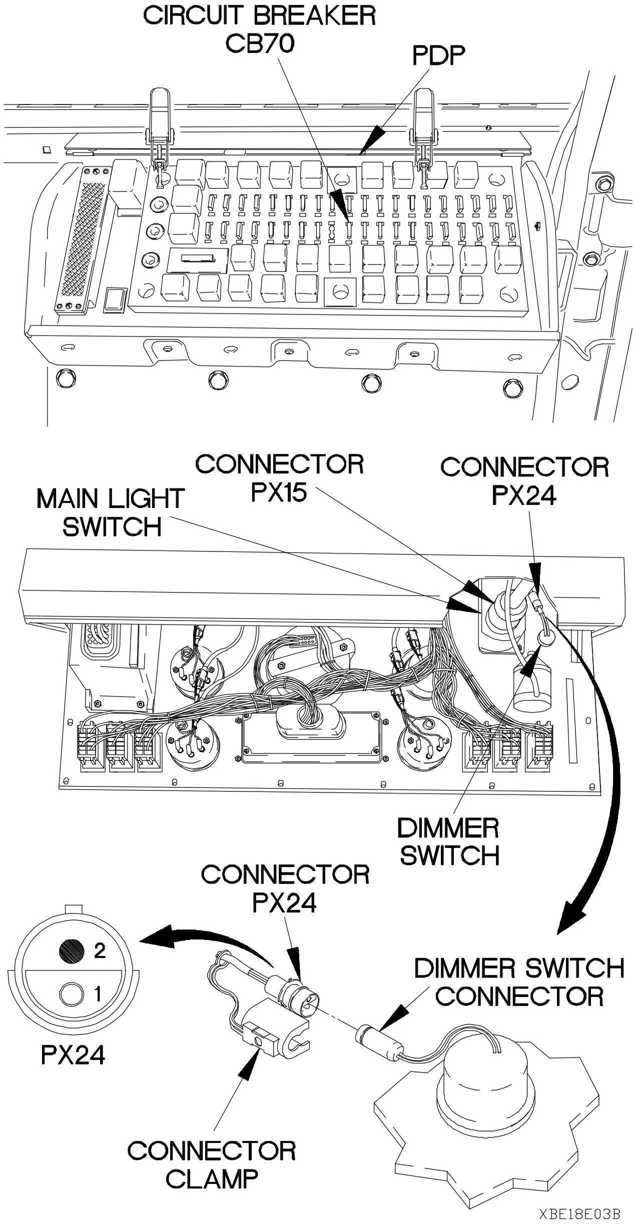
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

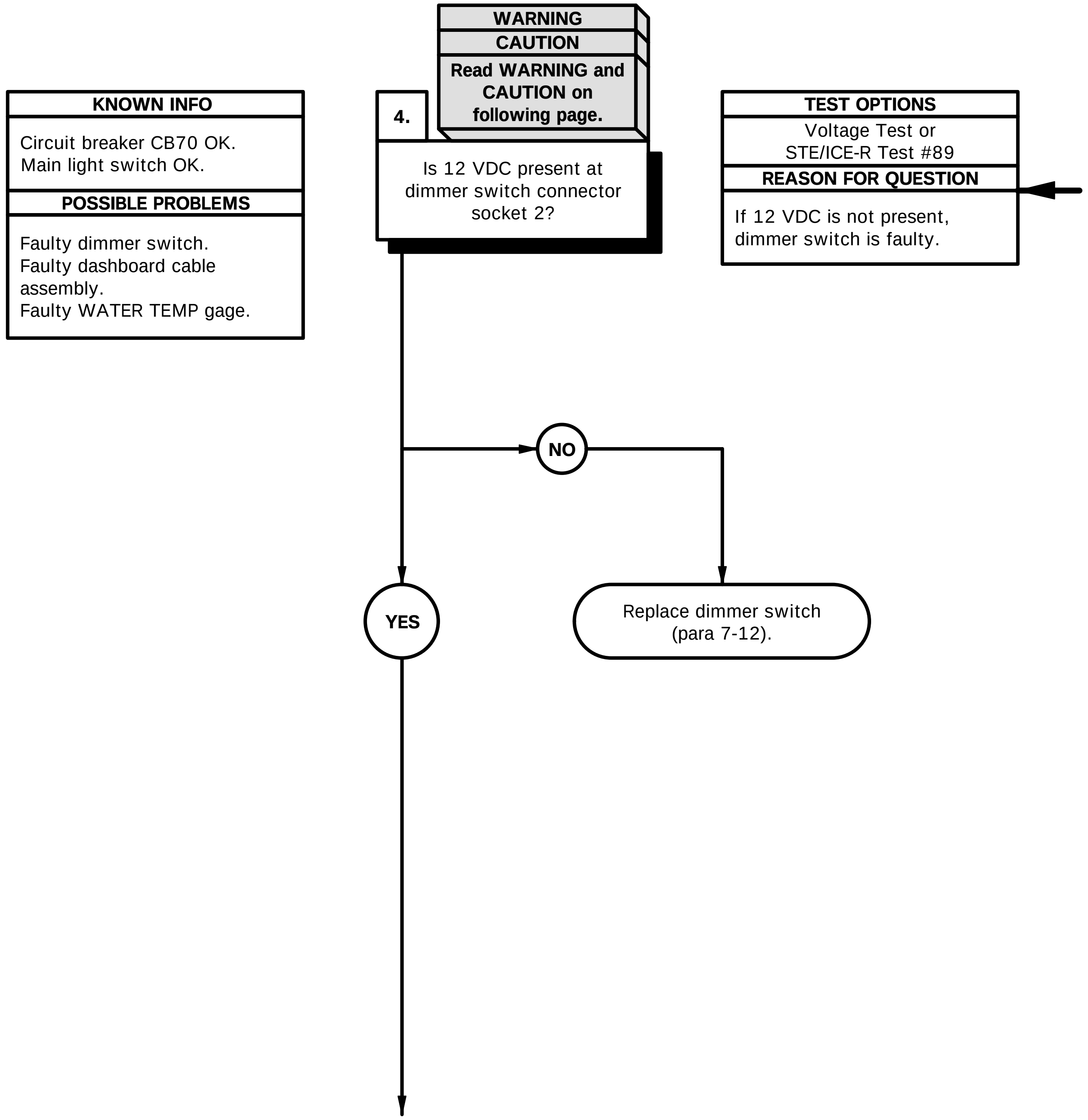
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Remove circuit breaker CB70 from PDP.
(2) Connect connector PX15 to main light switch connector.
(3) Install circuit breaker CB70 on PDP.
(4) Disconnect connector clamp from dimmer switch connector.
(5) Disconnect connector PX24 from dimmer switch connector.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to connector PX24 socket 1.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1).
(10) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 12 VDC is not present, repair wire 1542 from connector PX24 pin 1 to connector PX15 socket B (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(12) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1).
(13) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(14) Install PDP cover (TM 9-2320-366-10-1).



e18E. WATER TEMP GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dimmer switch.
Faulty dashboard cable assembly.
Faulty WATER TEMP gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

4. Is 12 VDC present at dimmer switch connector socket 2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, dimmer switch is faulty.

Replace dimmer switch (para 7-12).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

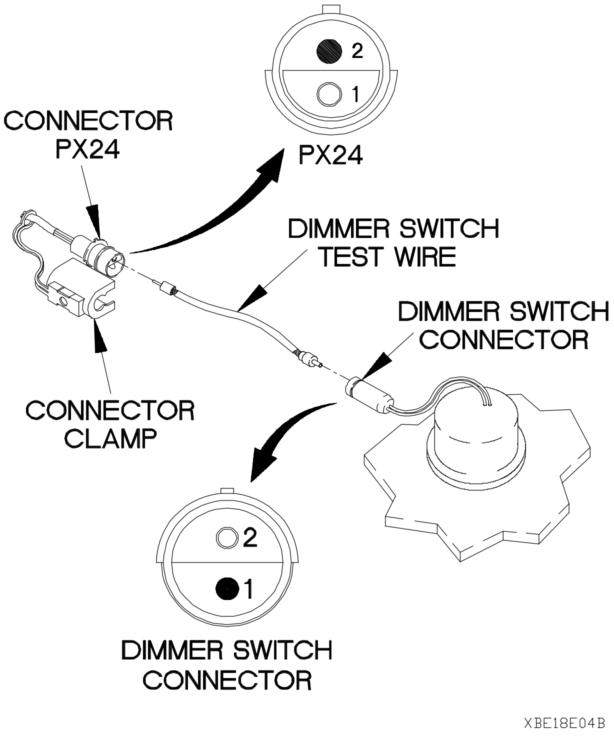
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

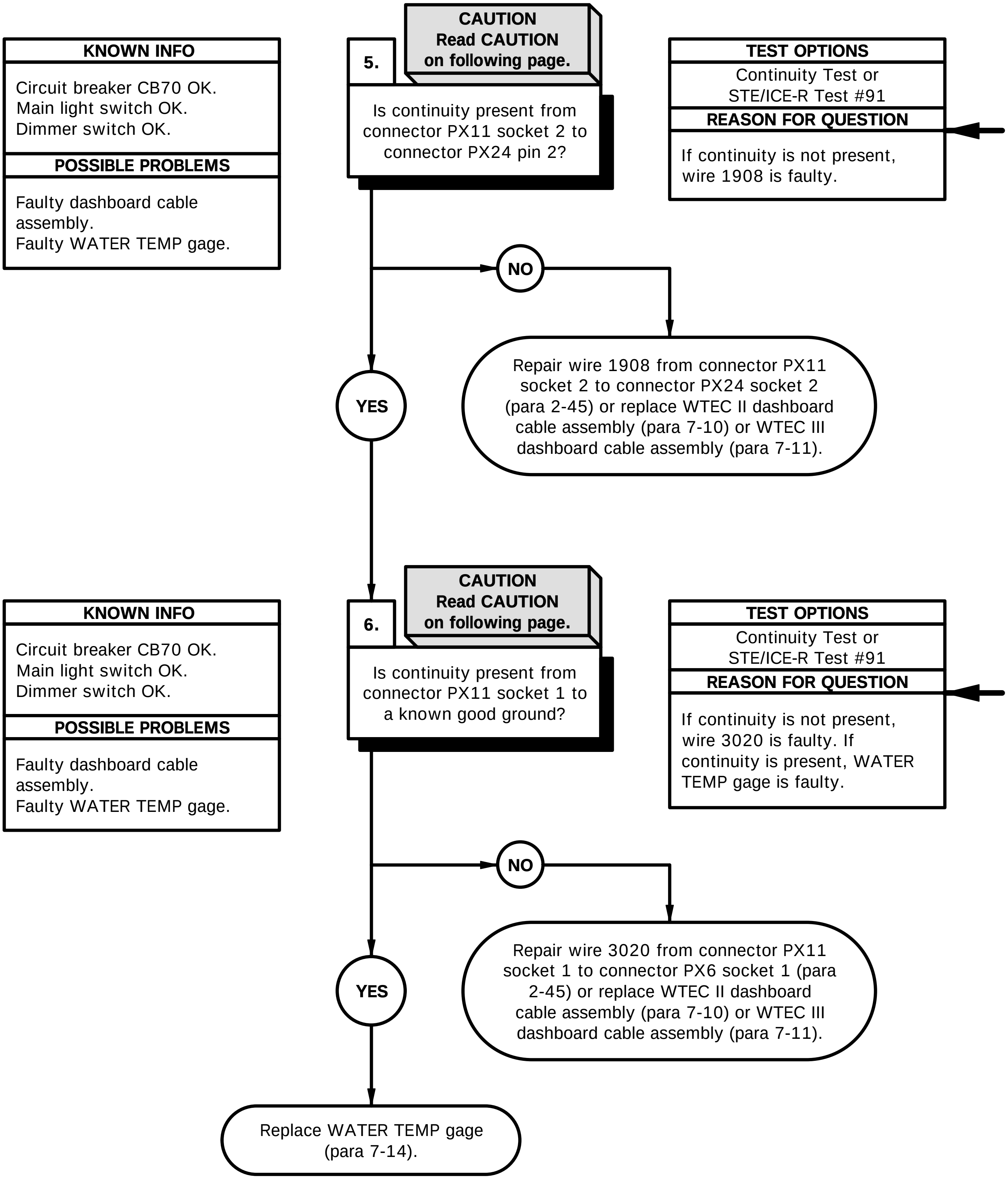
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Position dimmer switch for maximum brightness (TM 9-2320-366-10-1). (2) Install dimmer switch test wire pin in connector PX24 socket 1. (3) Install dimmer switch test wire socket on dimmer switch connector pin 1. (4) Set multimeter to volts DC. (5) Connect positive (+) probe of multimeter to dimmer switch connector socket 2. (6) Connect negative (-) probe of multimeter to ground. (7) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1). (8) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1) and note reading on multimeter. (9) If 12 VDC is not present, replace dimmer switch (para 7-12). (10) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1). (11) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1). (12) Disconnect dimmer switch test wire from dimmer switch connector. (13) Disconnect dimmer switch test wire from connector PX24.



e18E. WATER TEMP GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.
Dimmer switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WATER TEMP gage.

CAUTION
Read CAUTION on following page.

5. Is continuity present from connector PX11 socket 2 to connector PX24 pin 2?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1908 is faulty.

NO

Repair wire 1908 from connector PX11 socket 2 to connector PX24 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.
Dimmer switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WATER TEMP gage.

CAUTION
Read CAUTION on following page.

6. Is continuity present from connector PX11 socket 1 to a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, WATER TEMP gage is faulty.

NO

Repair wire 3020 from connector PX11 socket 1 to connector PX6 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace WATER TEMP gage (para 7-14).

CAUTION

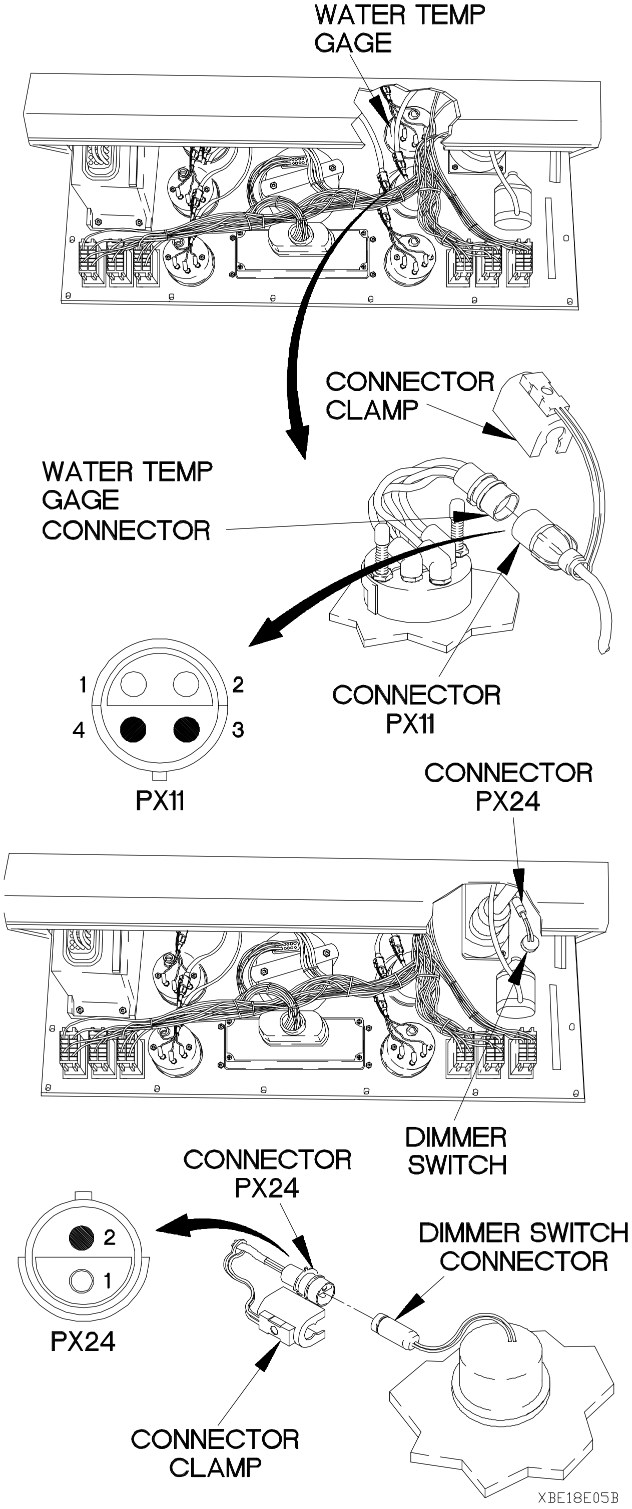
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Disconnect connector clamp from WATER TEMP gage connector.
(2) Disconnect connector PX11 from WATER TEMP gage connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector PX11 socket 2.
(5) Connect negative (-) probe of multimeter to connector PX24 pin 2 and note reading on multimeter.
(6) If continuity is not present, repair wire 1908 from connector PX11 socket 2 to connector PX24 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX11 socket 1.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3020 from connector PX11 socket 1 to connector PX6 socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace WATER TEMP gage (para 7-14).
(6) Connect connector PX24 to dimmer switch connector.
(7) Connect connector clamp on dimmer switch connector.
(8) Connect connector PX11 to WATER TEMP gage connector.
(9) Connect connector clamp on WATER TEMP gage connector.
(10) Install instrument panel assembly (para 7-15).



e19. OIL PRESS GAGE DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Dimmer Switch Test Wire (Item 20, Appendix E)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

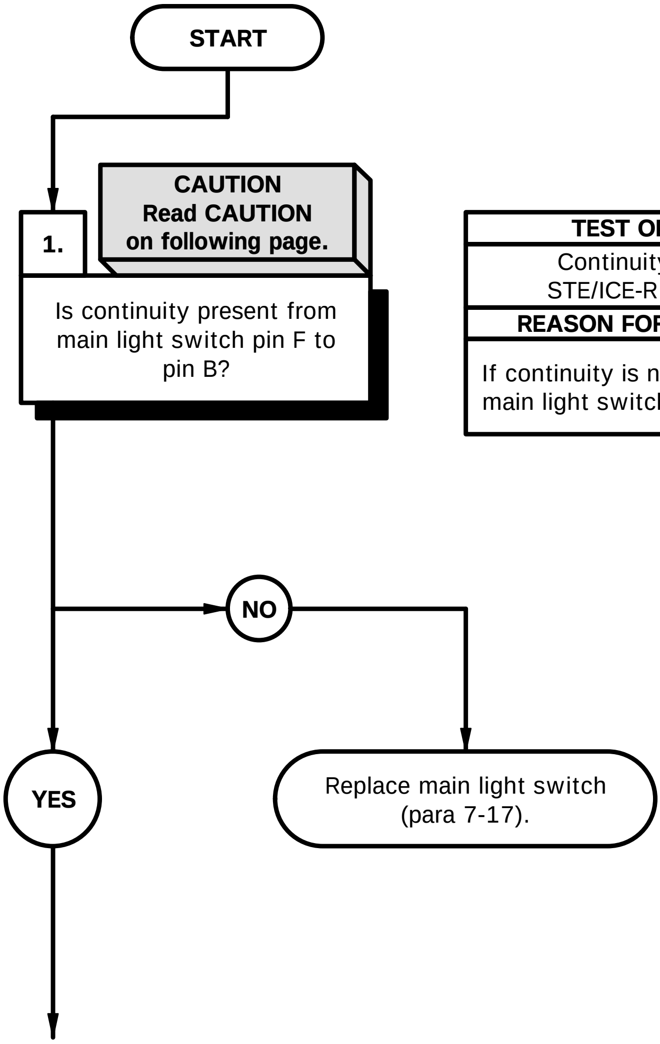
Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB70 prior to beginning this task.

KNOWN INFO

Circuit breaker CB70 OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dimmer switch.
Faulty dashboard cable assembly.
Faulty OIL PRESS gage.



START

1.

CAUTION
Read CAUTION
on following page.

Is continuity present from main light switch pin F to pin B?

NO

Replace main light switch (para 7-17).

YES

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, main light switch is faulty.

CAUTION

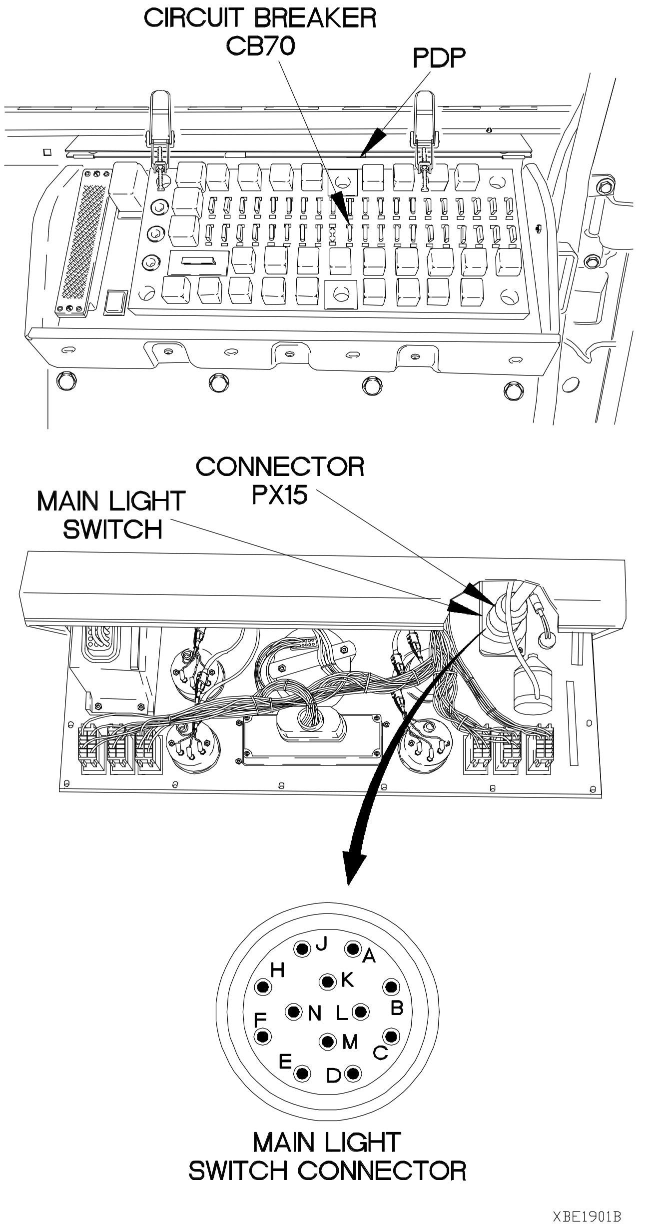
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

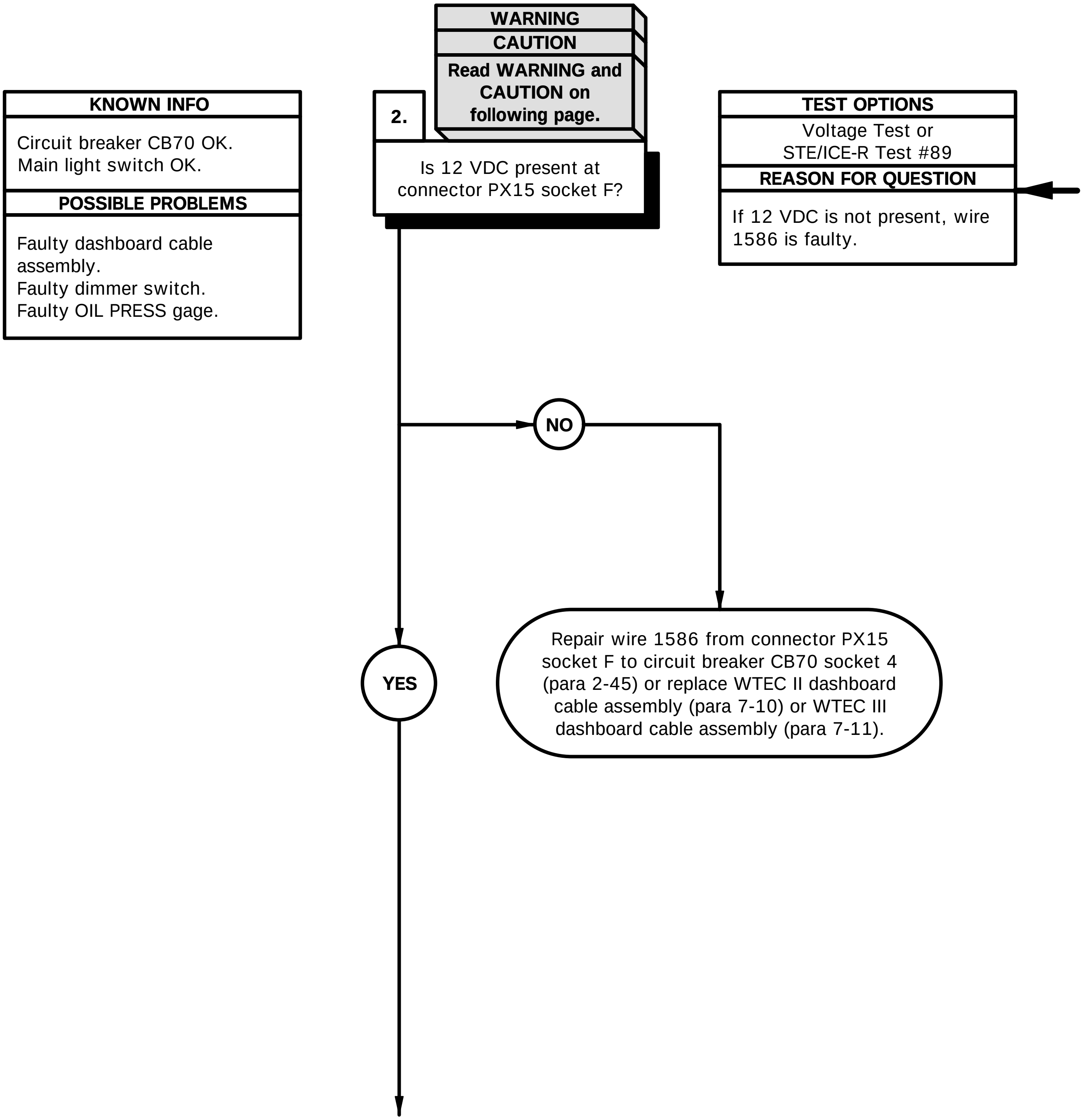
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove PDP cover (TM 9-2320-366-10-2).
(2) Remove circuit breaker CB70 from PDP.
(3) Remove instrument panel assembly for access (para 7-15).
(4) Disconnect connector PX15 from main light switch connector.
(5) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1).
(6) Position main light switch auxiliary selector lever to PNL BRT (TM 9-2320-366-10-1).
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to main light switch connector pin F.
(9) Connect negative (-) probe of multimeter to main light switch connector pin B and note reading on multimeter.
(10) If continuity is not present, replace main light switch (para 7-17).
(11) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1).
(12) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).



e19. OIL PRESS GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty dimmer switch.
Faulty OIL PRESS gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2. Is 12 VDC present at connector PX15 socket F?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1586 is faulty.

Repair wire 1586 from connector PX15 socket F to circuit breaker CB70 socket 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

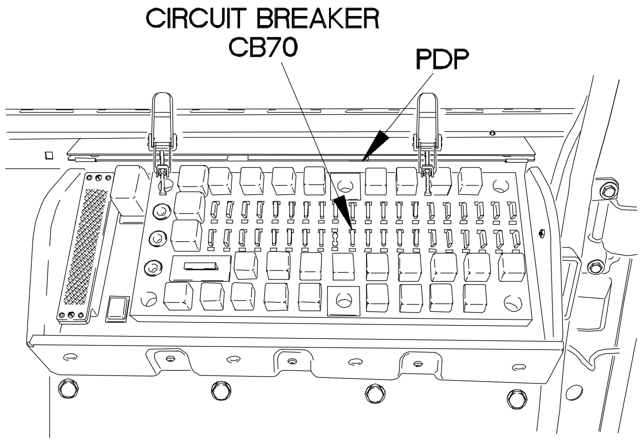
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

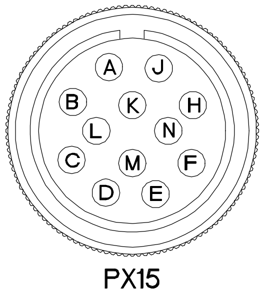
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Install circuit breaker CB70 on PDP.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector PX15 socket F.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If 12 VDC is not present, repair wire 1586 from connector PX15 socket F to circuit breaker CB70 socket 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).





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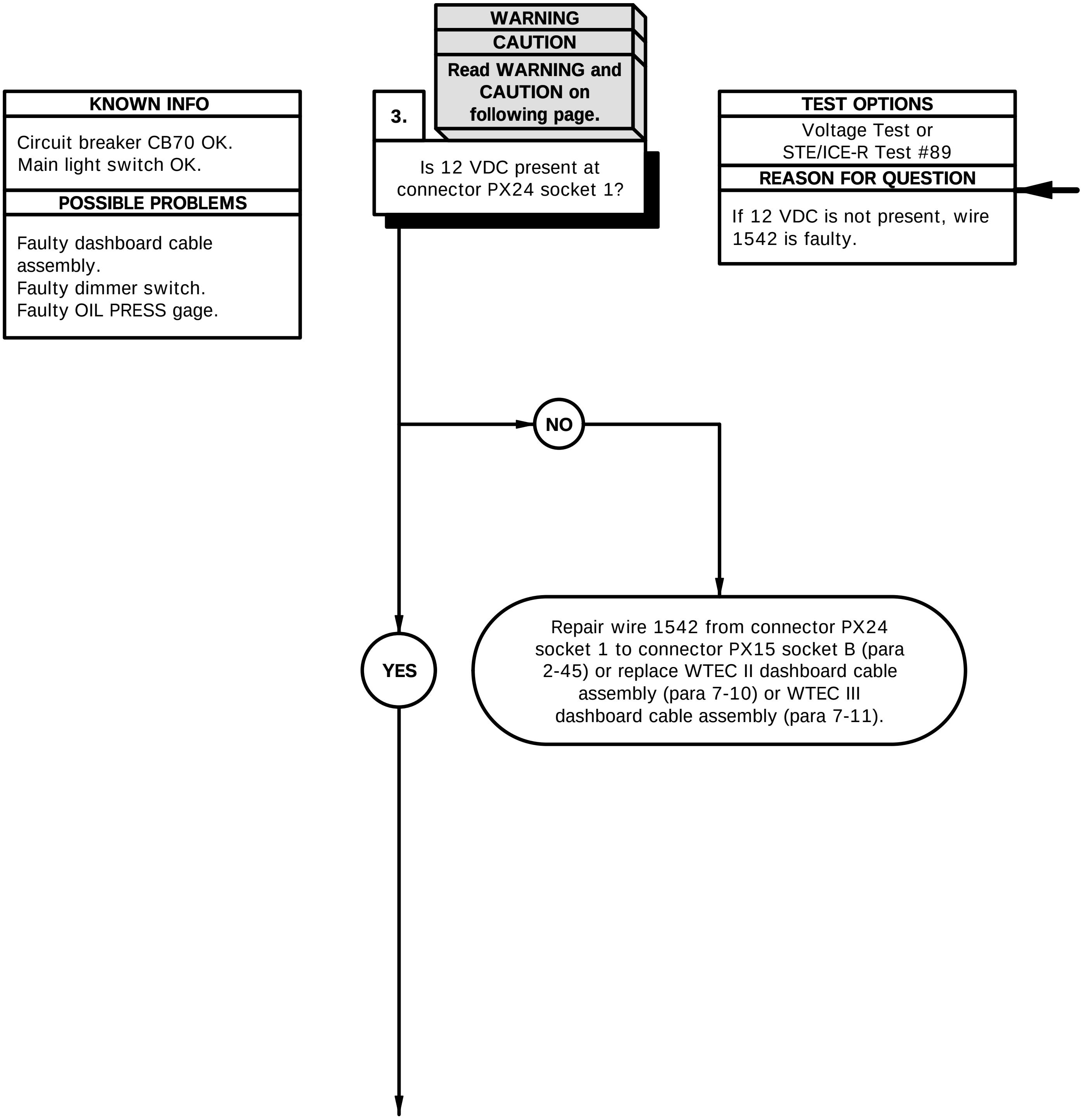
e19. OIL PRESS GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty dimmer switch.
Faulty OIL PRESS gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 12 VDC present at connector PX24 socket 1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1542 is faulty.

NO

Repair wire 1542 from connector PX24 socket 1 to connector PX15 socket B (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

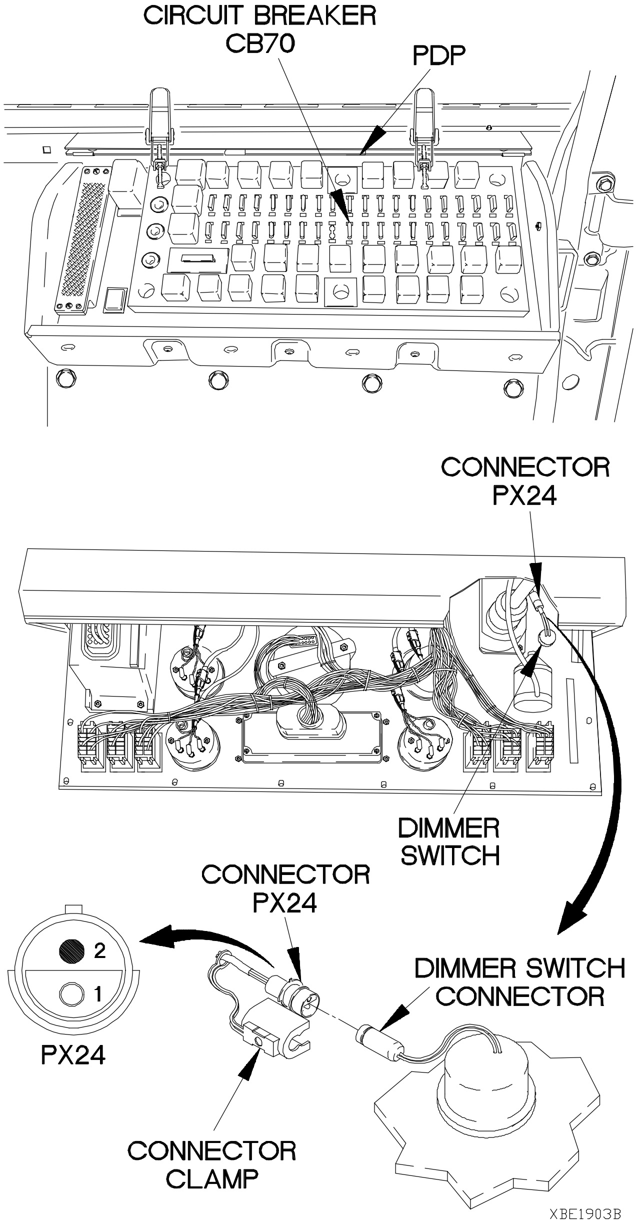
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

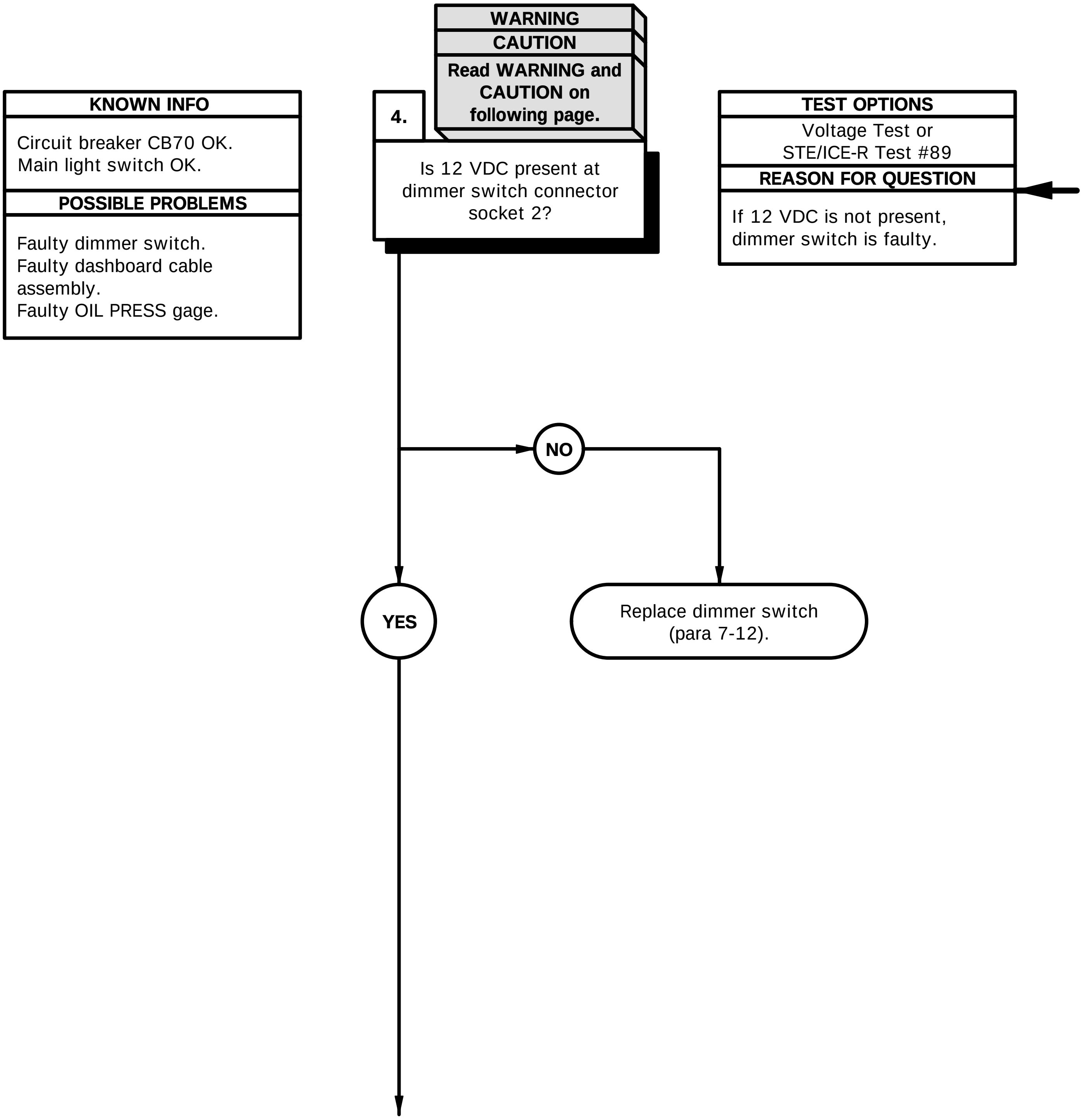
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Remove circuit breaker CB70 from PDP.
(2) Connect connector PX15 to main light switch connector.
(3) Install circuit breaker CB70 on PDP.
(4) Disconnect connector clamp from dimmer switch connector.
(5) Disconnect connector PX24 from dimmer switch connector.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to connector PX24 socket 1.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10 -1).
(10) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 12 VDC is not present, repair wire 1542 from connector PX24 pin 1 to connector PX15 socket B (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(12) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1).
(13) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(14) Install PDP cover (TM 9-2320-366-10-2).



e19. OIL PRESS GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dimmer switch.
Faulty dashboard cable assembly.
Faulty OIL PRESS gage.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

4. Is 12 VDC present at dimmer switch connector socket 2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, dimmer switch is faulty.

Replace dimmer switch (para 7-12).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

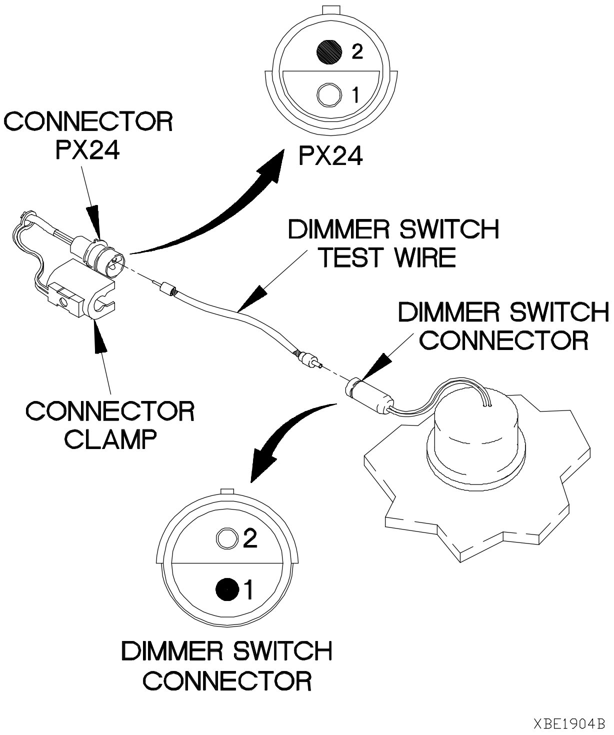
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

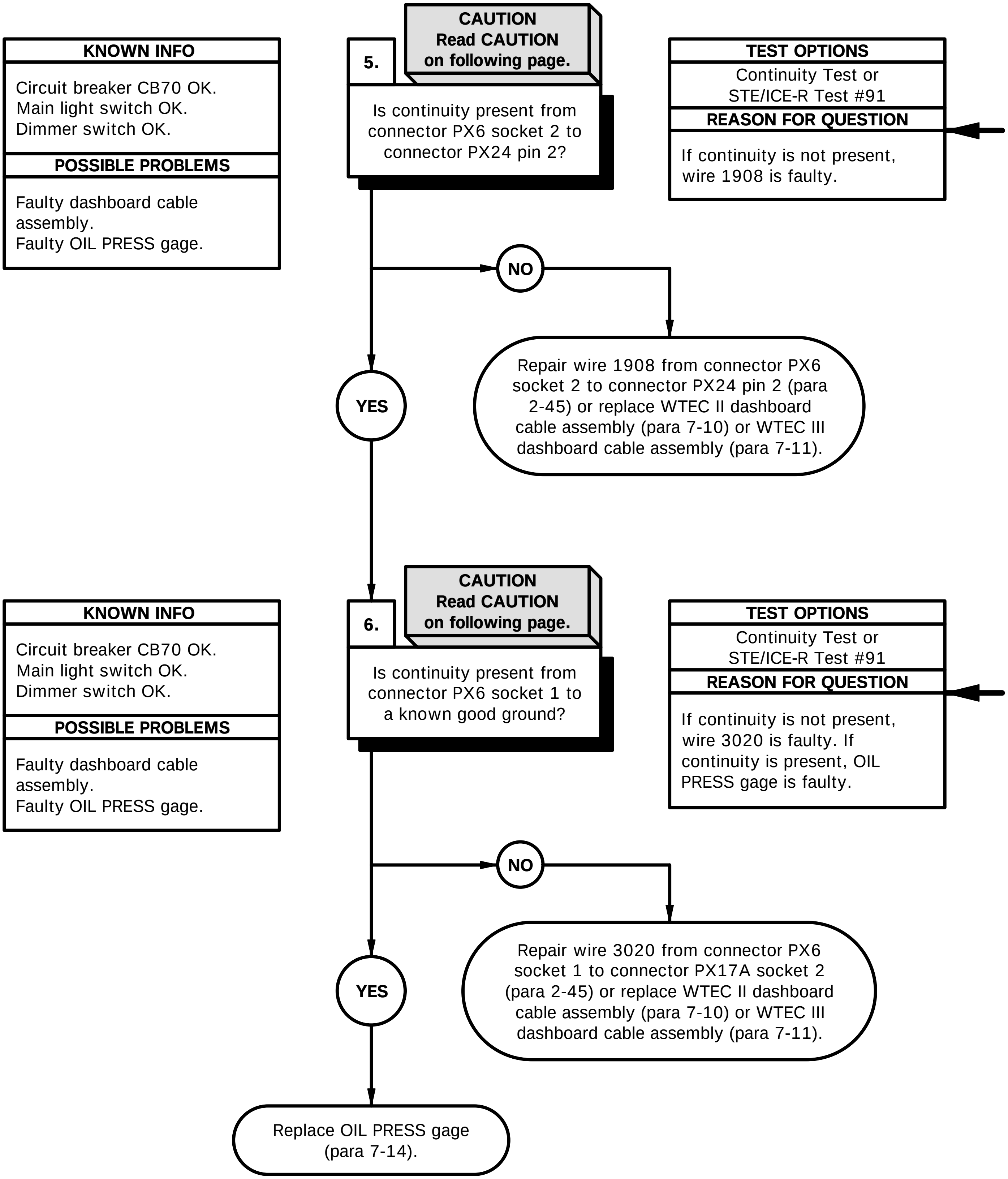
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Position dimmer switch for maximum brightness (TM 9-2320-366-10-1).
(2) Install dimmer switch test wire pin in connector PX24 socket 1.
(3) Install dimmer switch test wire socket on dimmer switch connector pin 1.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to dimmer switch connector socket 2.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10 -1).
(8) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 VDC is not present, replace dimmer switch (para 7-12).
(10) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1).
(11) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(12) Disconnect dimmer switch test wire from dimmer switch connector.
(13) Disconnect dimmer switch test wire from connector PX24.



e19. OIL PRESS GAGE DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.
Dimmer switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty OIL PRESS gage.

CAUTION
Read CAUTION on following page.

5. Is continuity present from connector PX6 socket 2 to connector PX24 pin 2?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1908 is faulty.

NO: Repair wire 1908 from connector PX6 socket 2 to connector PX24 pin 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker CB70 OK.
Main light switch OK.
Dimmer switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty OIL PRESS gage.

CAUTION
Read CAUTION on following page.

6. Is continuity present from connector PX6 socket 1 to a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty. If continuity is present, OIL PRESS gage is faulty.

NO: Repair wire 3020 from connector PX6 socket 1 to connector PX17A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace OIL PRESS gage (para 7-14).

CAUTION

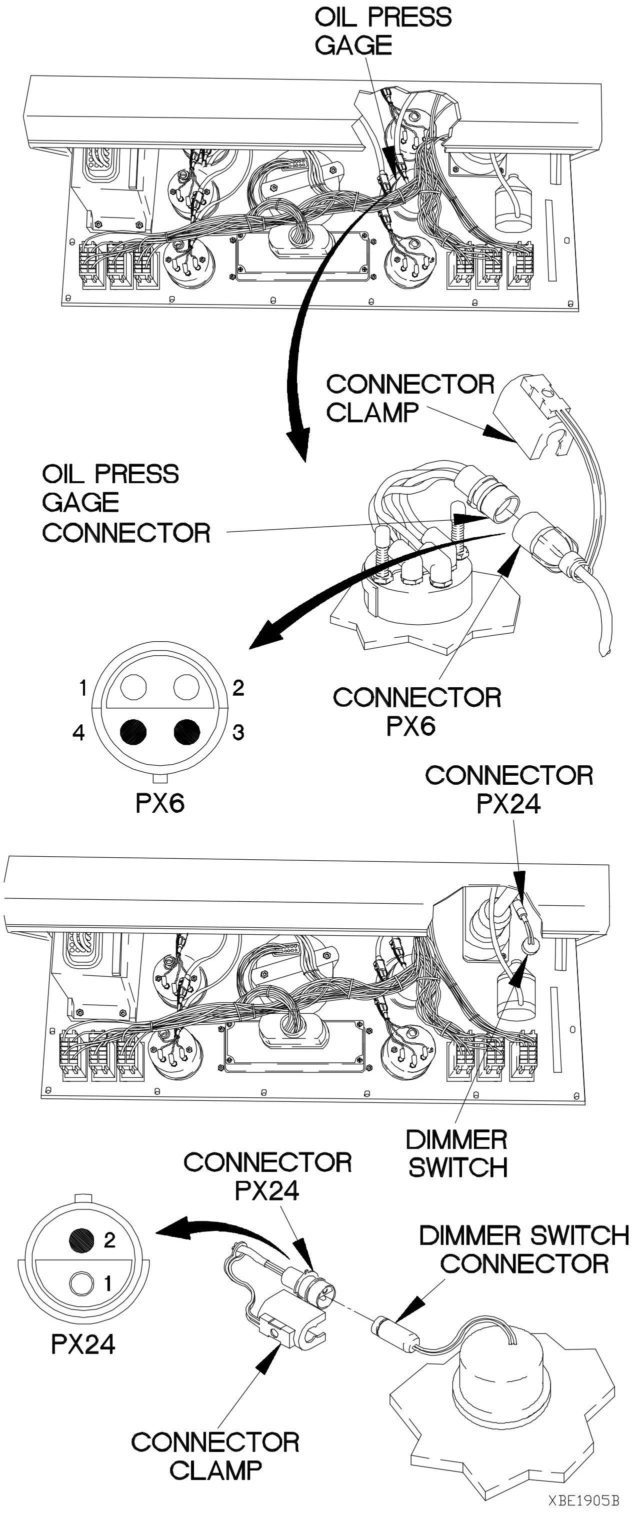
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Disconnect connector clamp from OIL PRESS gage connector.
(2) Disconnect connector PX6 from OIL PRESS gage connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector PX6 socket 2.
(5) Connect negative (-) probe of multimeter to connector PX24 pin 2 and note reading on multimeter.
(6) If continuity is not present, repair wire 1908 from connector PX6 socket 2 to connector PX24 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX6 socket 1.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3020 from connector PX6 socket 1 to connector PX17A socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace OIL PRESS gage (para 7-14).
(6) Connect connector PX24 to dimmer switch connector.
(7) Connect connector clamp on dimmer switch connector.
(8) Connect connector PX6 to OIL PRESS gage connector.
(9) Connect connector clamp on OIL PRESS gage connector.
(10) Install instrument panel assembly (para 7-15).



e20. AUXILIARY PANEL, PERSONNEL HEATER, AND INSTRUMENT PANEL DO NOT ILLUMINATE

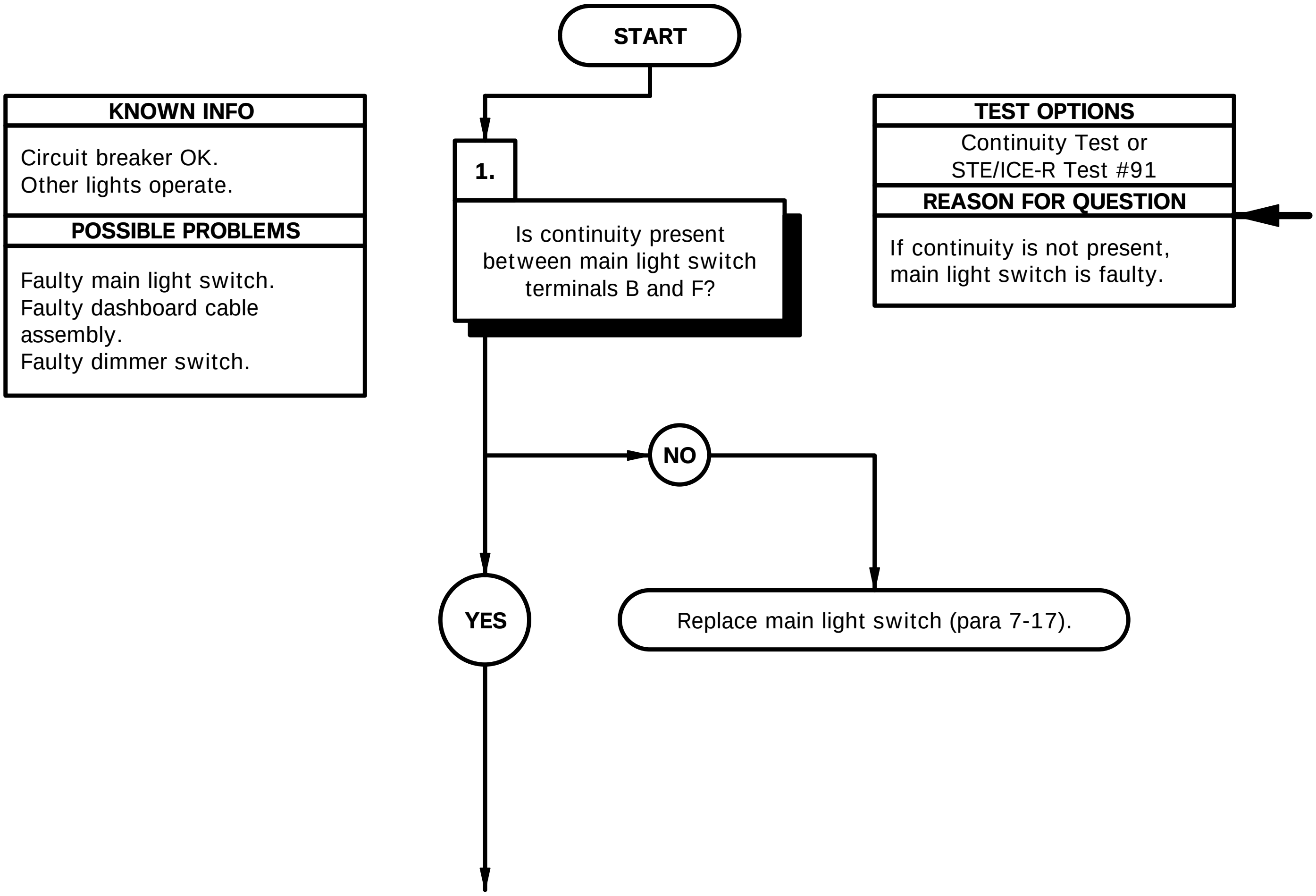
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO

Circuit breaker OK.
Other lights operate.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dashboard cable assembly.
Faulty dimmer switch.

1. Is continuity present between main light switch terminals B and F?

TEST OPTIONS

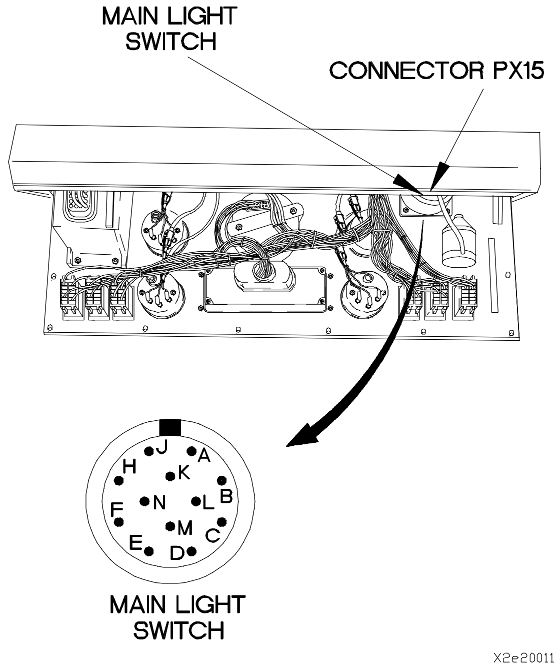
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

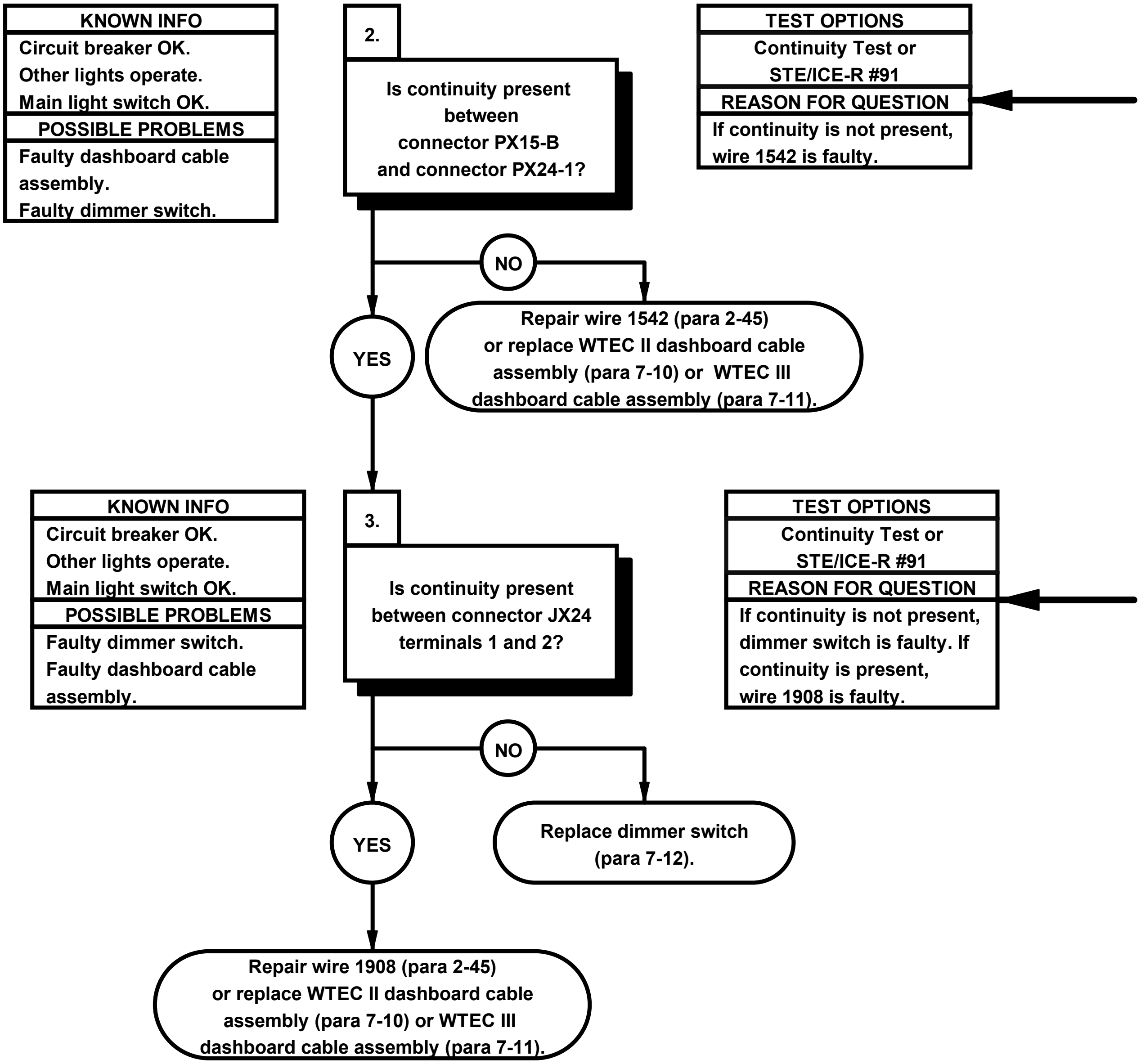
If continuity is not present, main light switch is faulty.

NO: Replace main light switch (para 7-17).

CONTINUITY TEST
(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX15 from main light switch.
(3) Set multimeter to ohms.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(5) Position main light switch auxiliary lever to PANEL BRT (TM 9-2320-366-10-1).
(6) Connect positive (+) probe of multimeter to main light switch terminal F.
(7) Connect negative (-) probe of multimeter to main light switch terminal B and note reading on multimeter.
(8) If continuity is not present, replace main light switch (para 7-17).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).



e20. AUXILIARY PANEL, PERSONNEL HEATER, AND INSTRUMENT PANEL DO NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Other lights operate.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty dimmer switch.

2.

Is continuity present between connector PX15-B and connector PX24-1?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1542 is faulty.

NO

Repair wire 1542 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker OK.
Other lights operate.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dimmer switch.
Faulty dashboard cable assembly.

3.

Is continuity present between connector JX24 terminals 1 and 2?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, dimmer switch is faulty. If continuity is present, wire 1908 is faulty.

NO

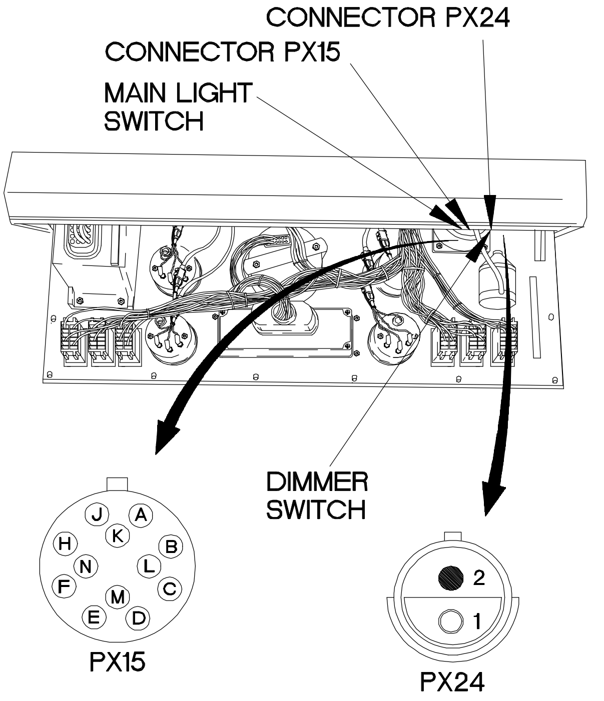
Replace dimmer switch (para 7-12).

YES

Repair wire 1908 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Disconnect connector PX24 from dimmer switch.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX15-B.
(4) Connect negative (-) probe of multimeter to connector PX24-1 and note reading on multimeter.
(5) If continuity is not present, repair wire 1542 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX15 to main light switch.



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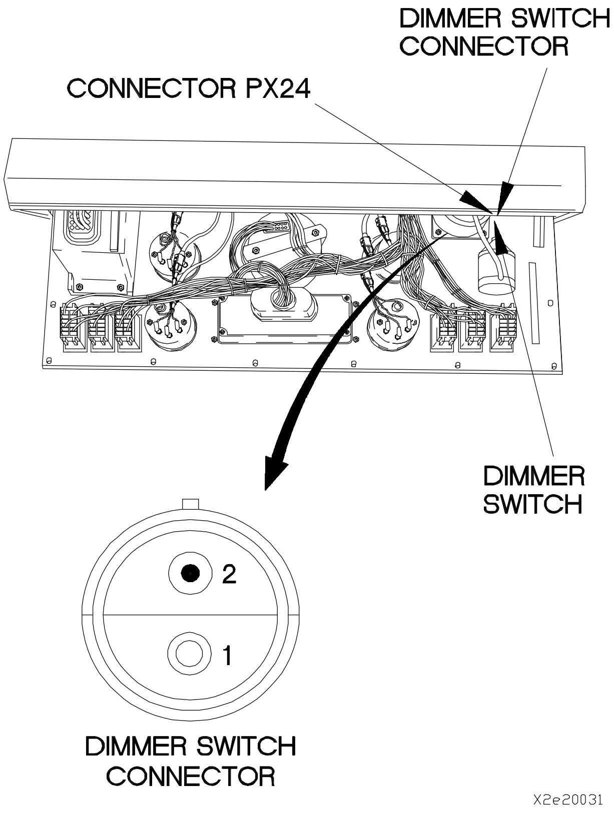
CONTINUITY TEST

(1) Position dimmer switch to maximum illumination (TM 9-2320-366-10-1).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to dimmer switch connector terminal 1.
(4) Connect negative (-) probe of multimeter to dimmer switch connector terminal 2 and note reading on multimeter.
(5) If continuity is not present, replace dimmer switch (para 7-12).
(6) If continuity is present, repair wire 1908 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Connect connector PX24 to dimmer switch.
(8) Install instrument panel assembly (para 7-15).



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e21. TACHOMETER DOES NOT ILLUMINATE

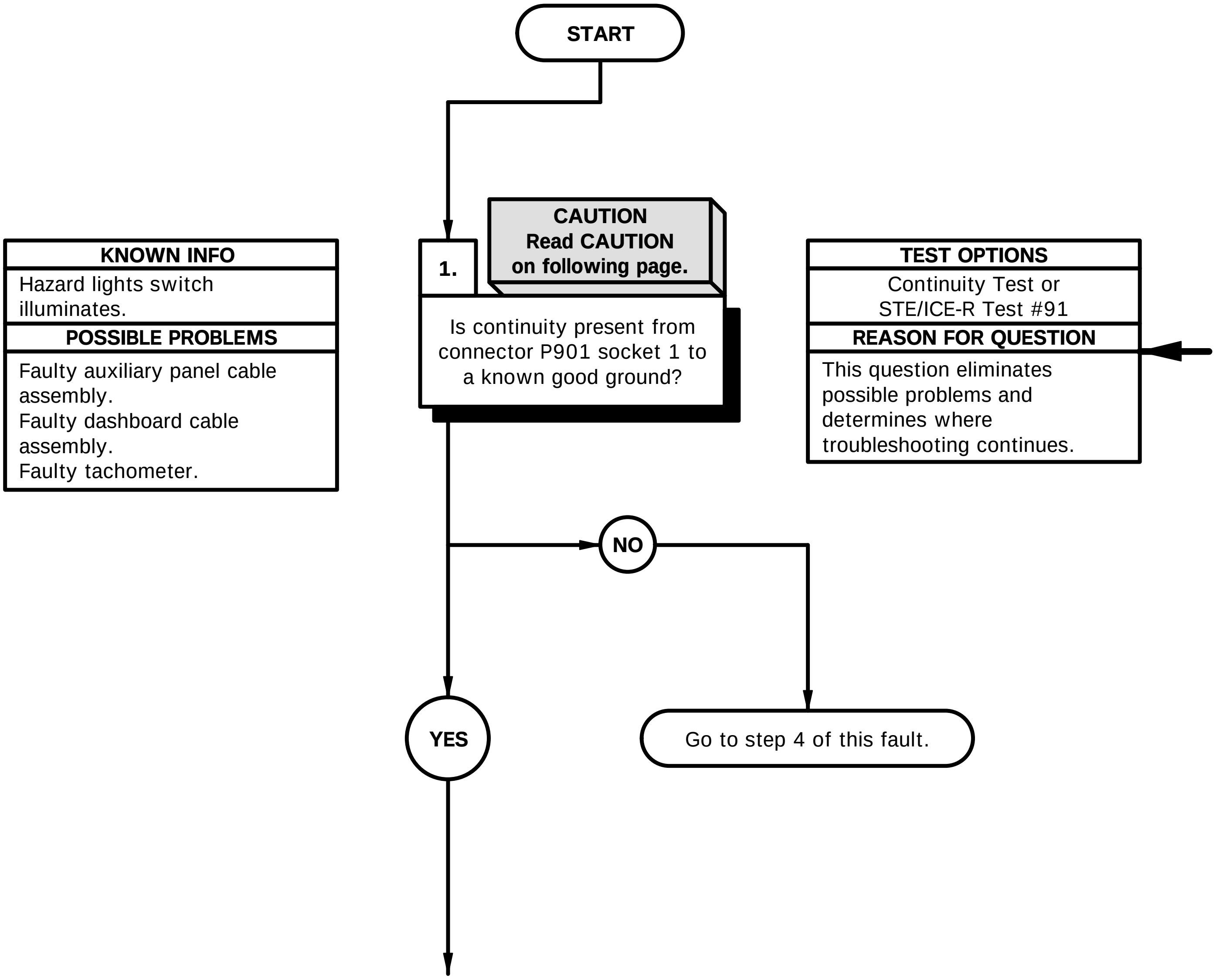
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



CAUTION
Read CAUTION on following page.

KNOWN INFO

Hazard lights switch illuminates.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.
Faulty dashboard cable assembly.
Faulty tachometer.

1. Is continuity present from connector P901 socket 1 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 4 of this fault.

CAUTION

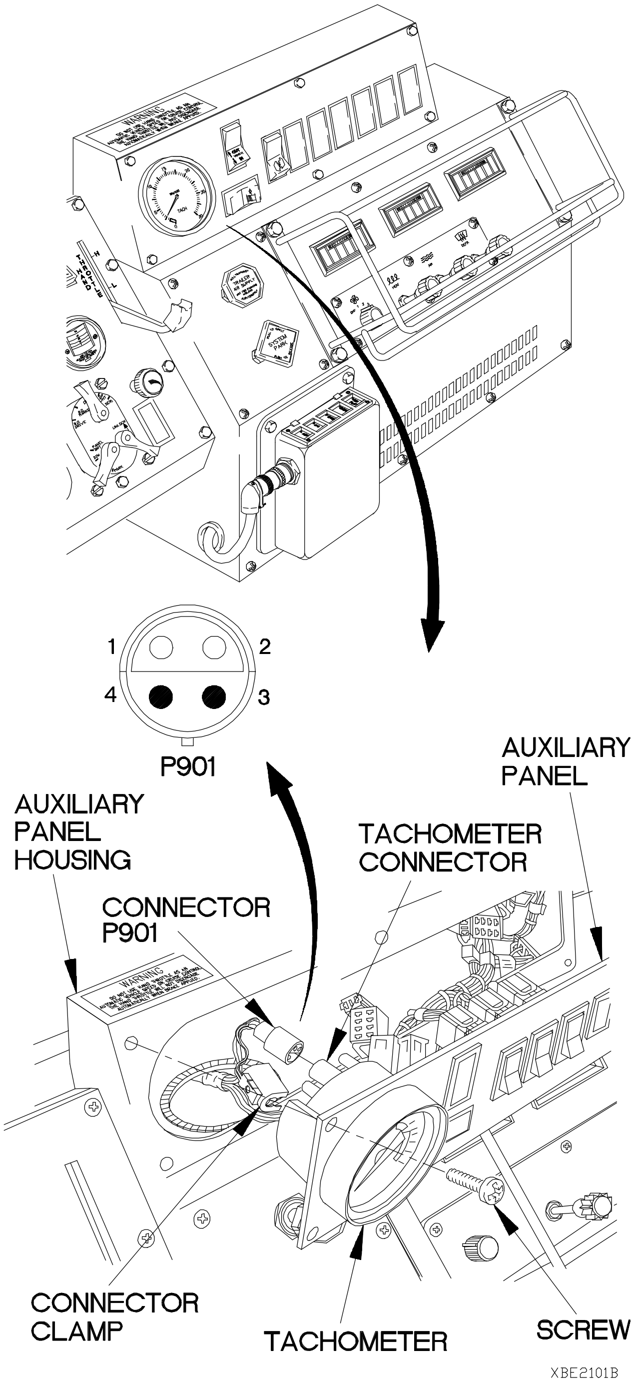
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

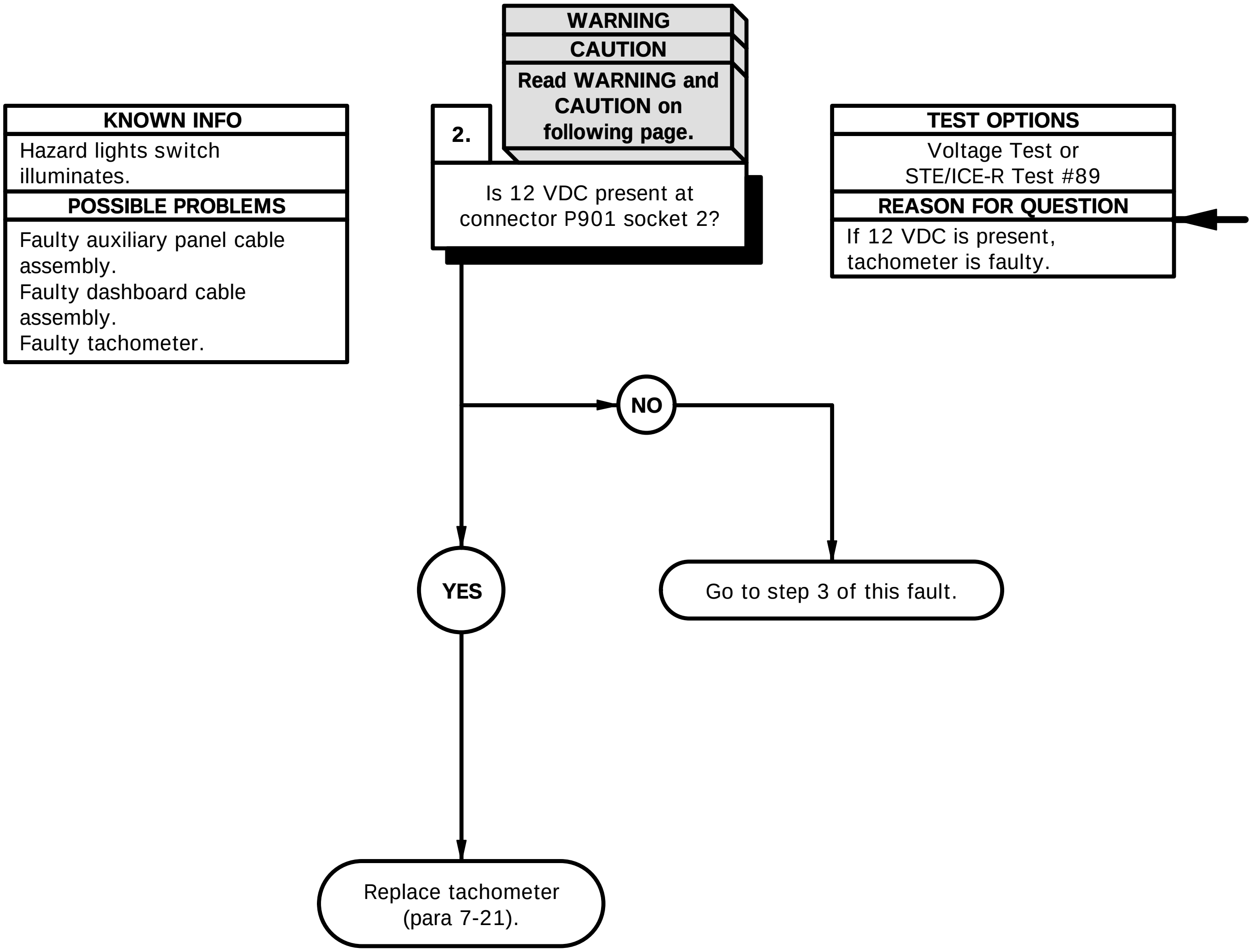
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove six screws from auxiliary panel.
(2) Lift auxiliary panel from auxiliary panel housing to gain access.
(3) Disconnect connector clamp from tachometer connector.
(4) Disconnect connector P901 from tachometer connector.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P901 socket 1.
(7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(8) If continuity is not present, go to step 4 of this fault.



e21. TACHOMETER DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Hazard lights switch illuminates.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.
Faulty dashboard cable assembly.
Faulty tachometer.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2. Is 12 VDC present at connector P901 socket 2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is present, tachometer is faulty.

Go to step 3 of this fault.

Replace tachometer (para 7-21).

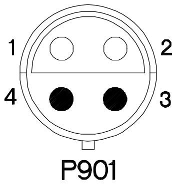
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to connector P901 socket 2. (3) Connect negative (-) probe of multimeter to ground. (4) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1). (5) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1) and note reading on multimeter. (6) If 12 VDC is not present, go to step 3 of this fault. (7) If 12 VDC is present, replace tachometer (para 7-21). (8) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1). (9) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).



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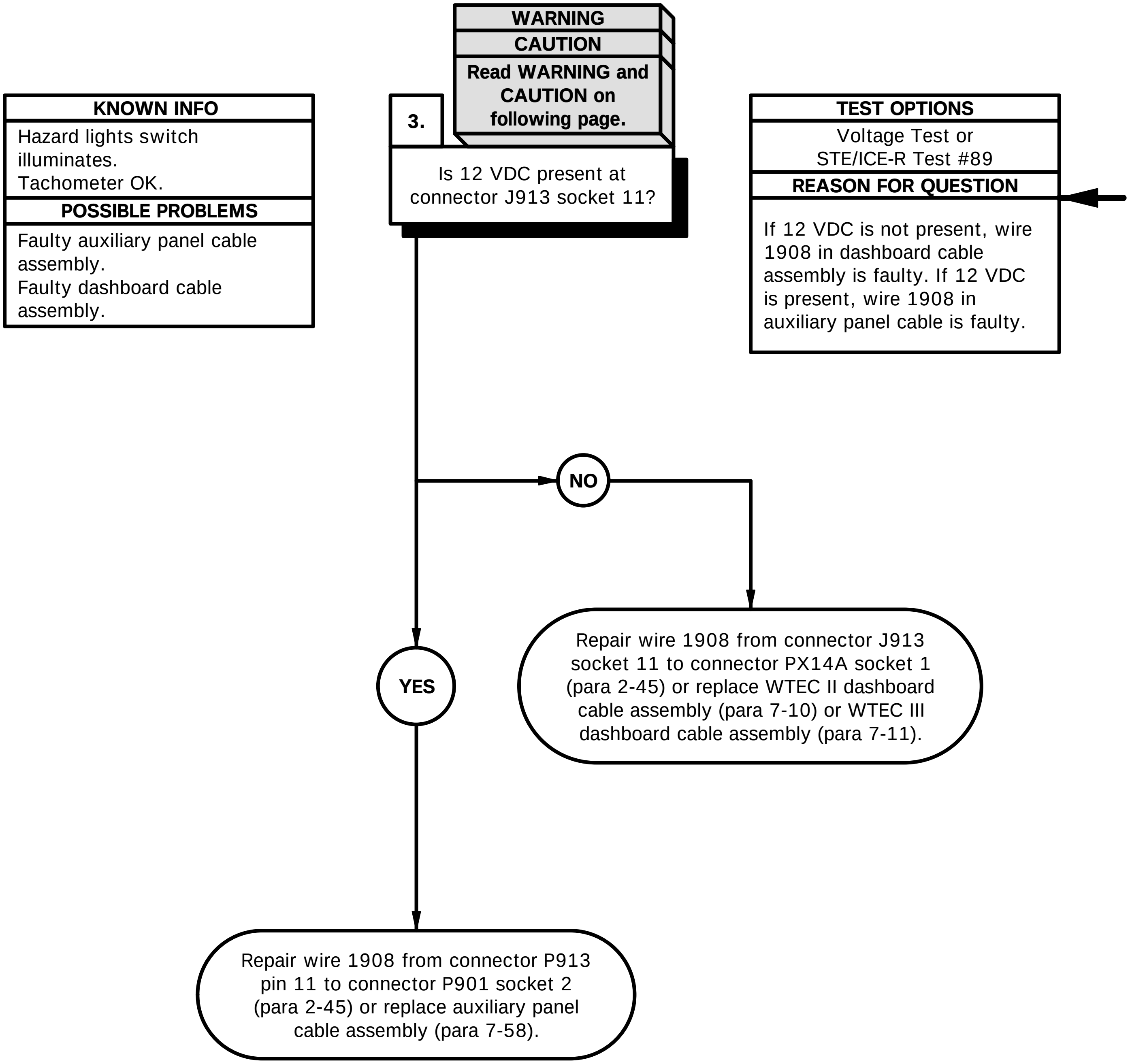
e21. TACHOMETER DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Hazard lights switch illuminates.
Tachometer OK.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.
Faulty dashboard cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 12 VDC present at connector J913 socket 11?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1908 in dashboard cable assembly is faulty. If 12 VDC is present, wire 1908 in auxiliary panel cable is faulty.

NO

Repair wire 1908 from connector J913 socket 11 to connector PX14A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 1908 from connector P913 pin 11 to connector P901 socket 2 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

WARNING

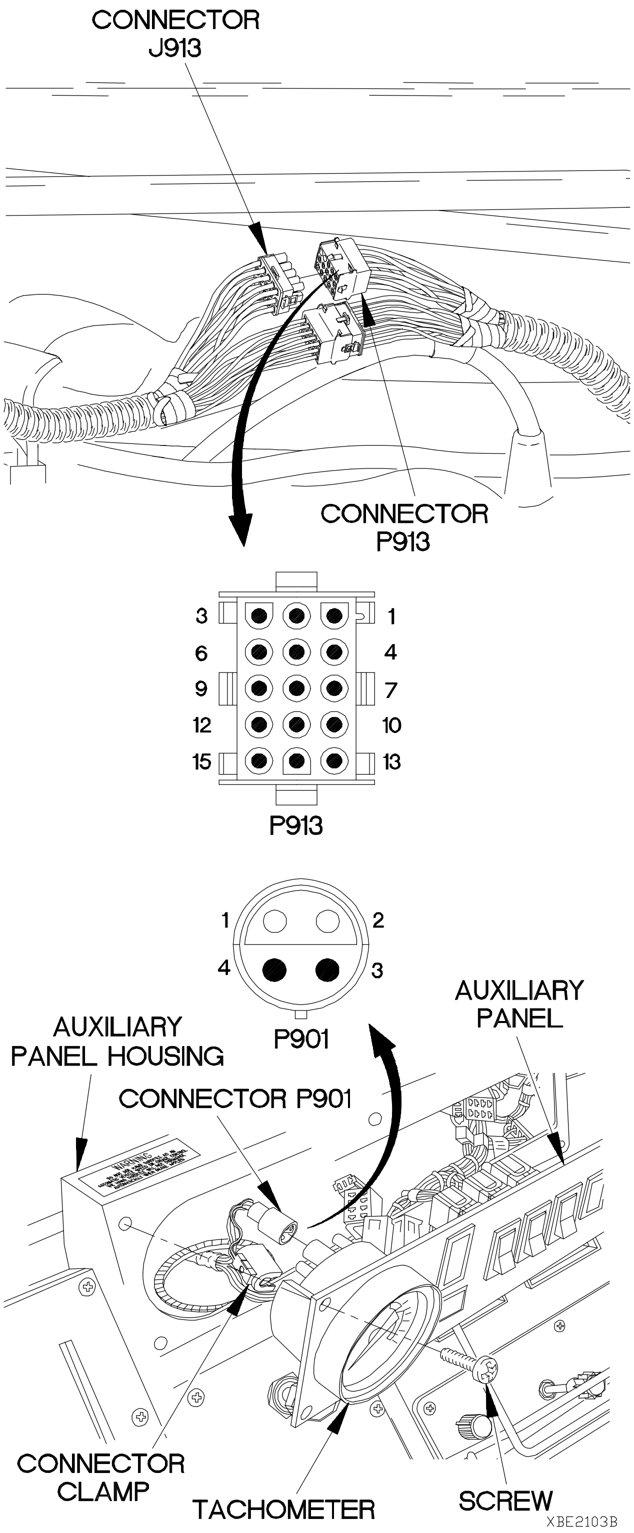
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

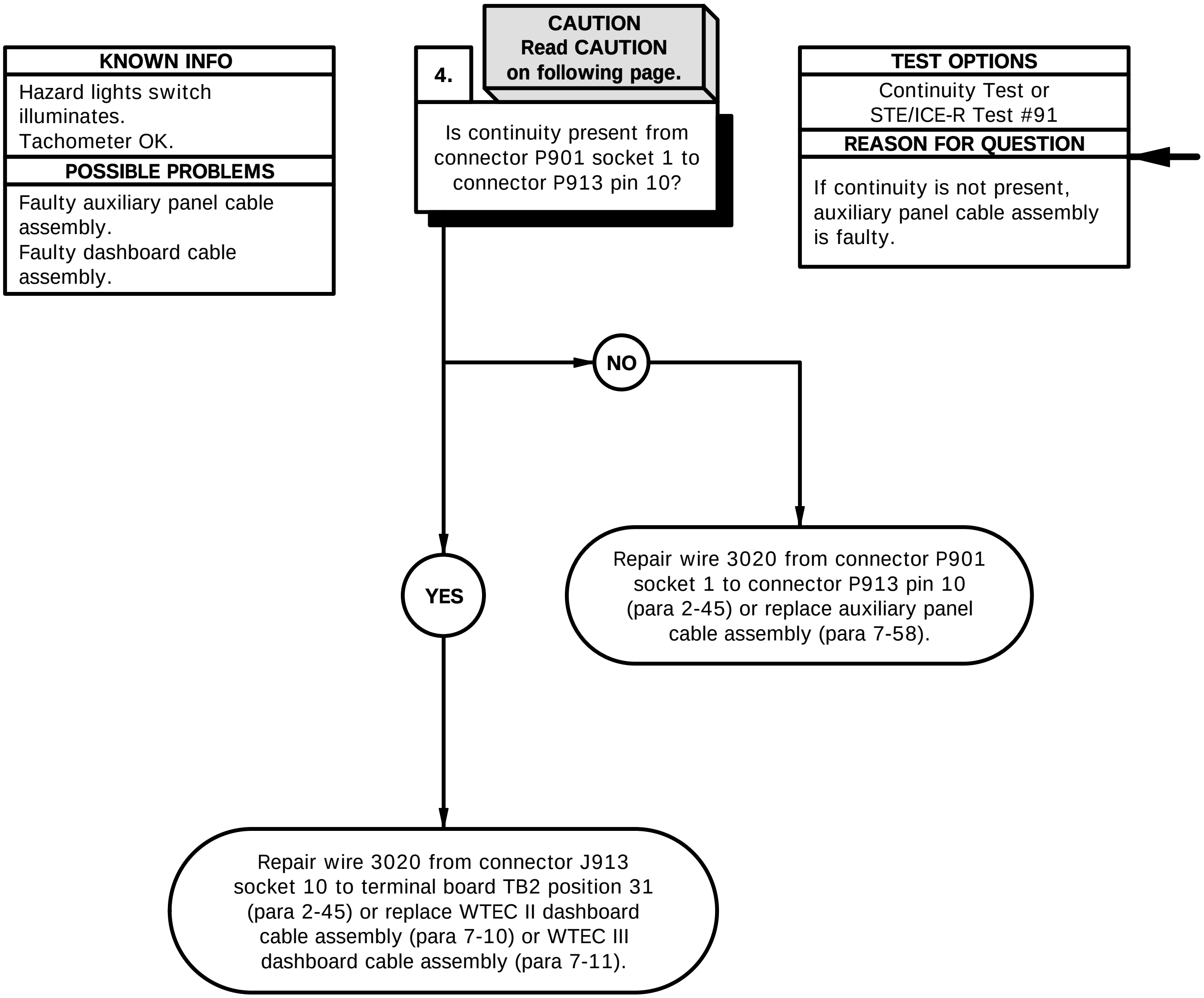
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

VOLTAGE TEST

(1) Remove personnel heater for access (para 18-9).
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector J913 socket 11.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch main selector lever to SER DRIVE (TM 9-2320-366-10-1).
(6) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1908 from connector J913 socket 11 to connector PX14A socket 1 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 12 VDC is present, repair wire 1908 from connector P913 pin 11 to connector P901 socket 2 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(9) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1).
(10) Position main light switch main selector lever to OFF (TM 9-2320-366-10-1).
(11) Install personnel heater assembly (para 18-9).



e21. TACHOMETER DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Hazard lights switch illuminates.
Tachometer OK.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

4. Is continuity present from connector P901 socket 1 to connector P913 pin 10?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, auxiliary panel cable assembly is faulty.

NO

Repair wire 3020 from connector P901 socket 1 to connector P913 pin 10 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

YES

Repair wire 3020 from connector J913 socket 10 to terminal board TB2 position 31 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

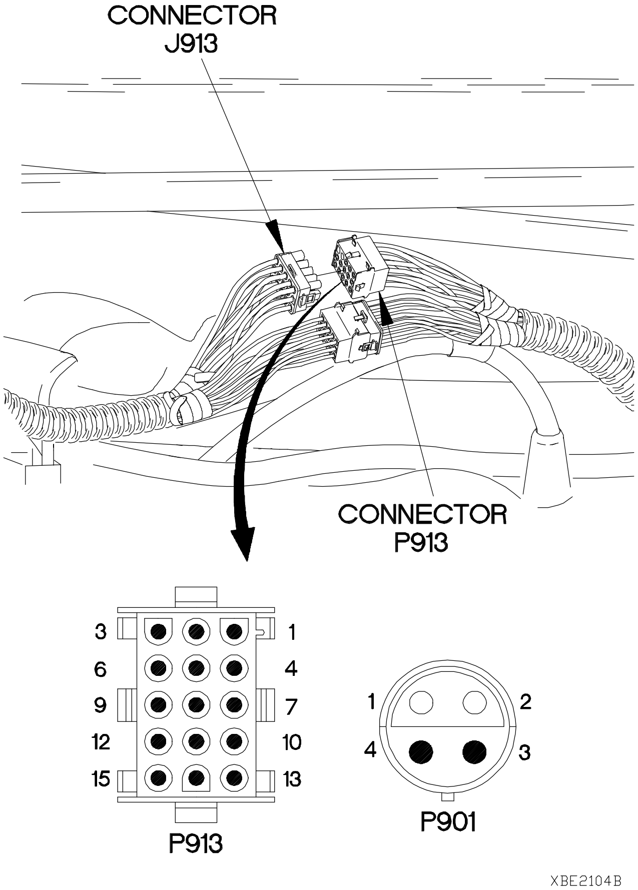
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove personnel heater assembly for access (para 18-9).
(2) Disconnect connector P913 from connector J913.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P901 socket 1.
(5) Connect negative (-) probe of multimeter to connector P913 pin 10 and note reading on multimeter.
(6) If continuity is not present, repair wire 3020 from connector P901 socket 1 to connector P913 pin 10 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(7) If continuity is present, repair wire 3020 from connector J913 socket 10 to terminal board TB2 position 31 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Install personnel heater assembly (para 18-9).



e22. AUXILIARY PANEL SWITCH DOES NOT ILLUMINATE

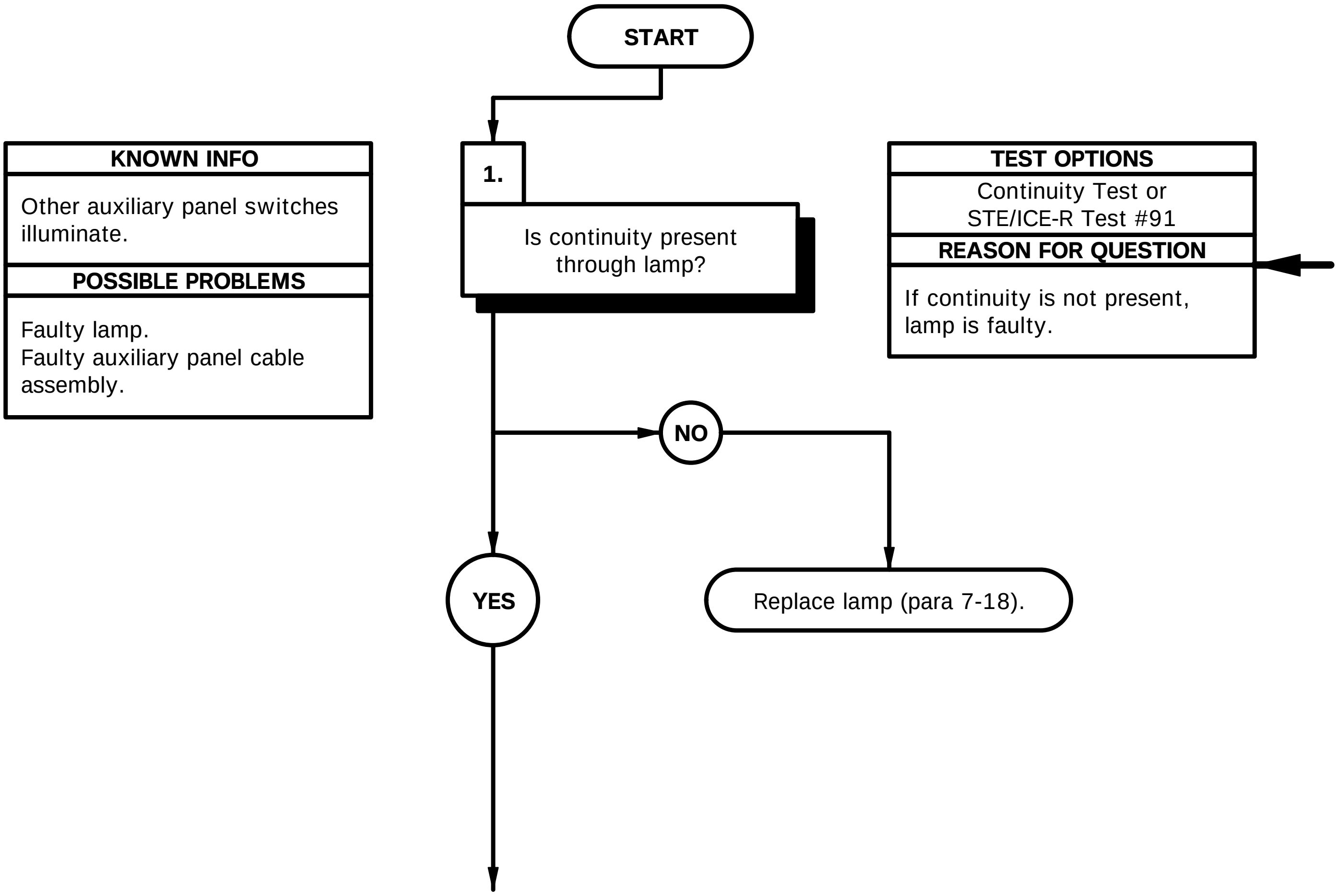
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)



KNOWN INFO

Other auxiliary panel switches illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty auxiliary panel cable assembly.

Is continuity present through lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, lamp is faulty.

Replace lamp (para 7-18).

NOTE

All auxiliary panel switch illumination faults are traced the same way. Power Take-Off (PTO) switch shown.

CONTINUITY TEST

(1) Remove six screws from auxiliary panel.

(2) Lift auxiliary panel from auxiliary panel housing to gain access.

NOTE

Main connector and "A" connector will come off as a unit.

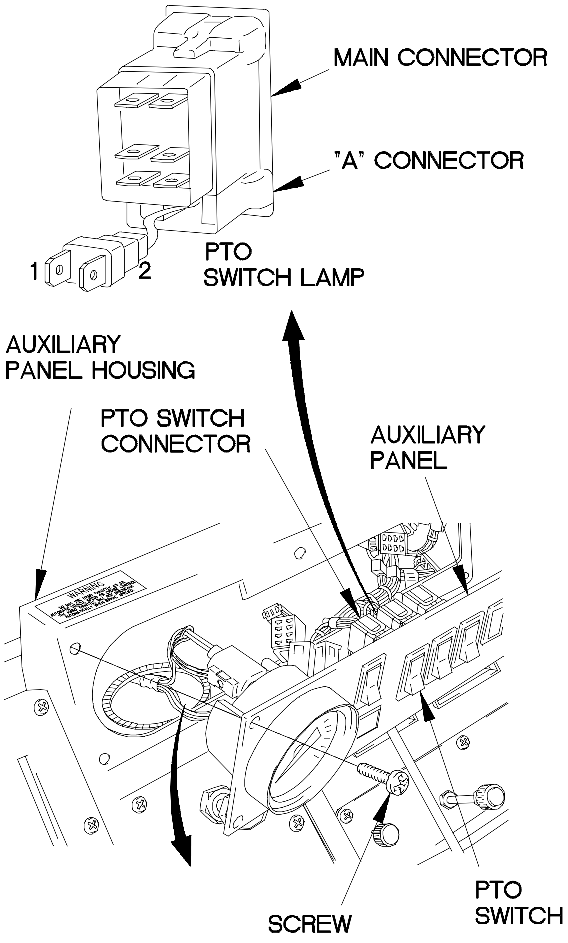
(3) Disconnect PTO switch connector from PTO switch.

(4) Set multimeter to ohms.

(5) Connect positive (+) probe of multimeter to PTO switch lamp terminal 1.

(6) Connect negative (-) probe of multimeter to PTO switch lamp terminal 2 and note reading on multimeter.

(7) If continuity is not present, replace lamp (para 7-18).



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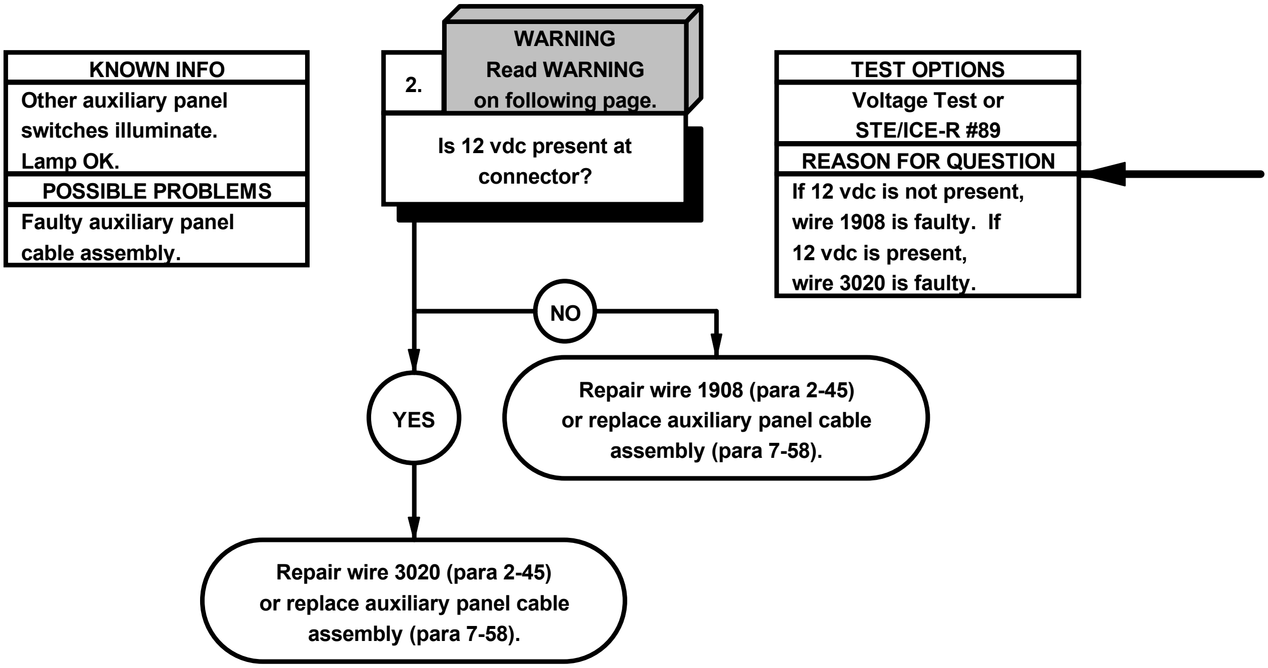
e22. AUXILIARY PANEL SWITCH DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Other auxiliary panel switches illuminate. Lamp OK.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.

WARNING

Read WARNING on following page.

Is 12 vdc present at connector?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 1908 is faulty. If 12 vdc is present, wire 3020 is faulty.

Repair wire 1908 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

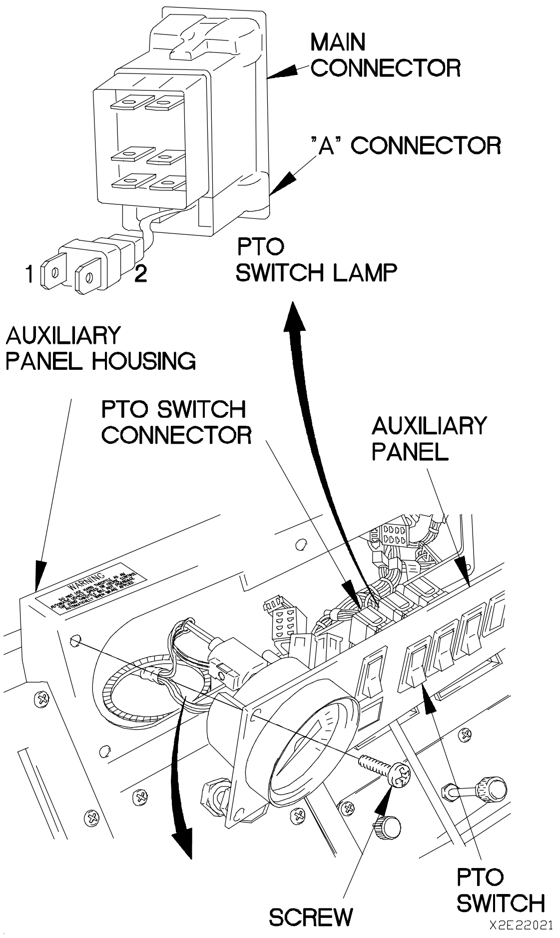
Repair wire 3020 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to "A" switch connector terminal 1.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch auxiliary lever to PANEL BRT (TM 9-2320-366-10-1).
(5) Position dimmer switch to maximum brightness (TM 9-2320-366-10-1).
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, repair wire 1908 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(8) If 12 vdc is present, repair wire 3020 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).
(10) Connect PTO switch connector to PTO switch.
(11) Position auxiliary panel on auxiliary panel housing with six screws.
(12) Tighten six screws to 24 lb-in. (3 N·m).



e23. AUXILIARY PANEL DOES NOT ILLUMINATE

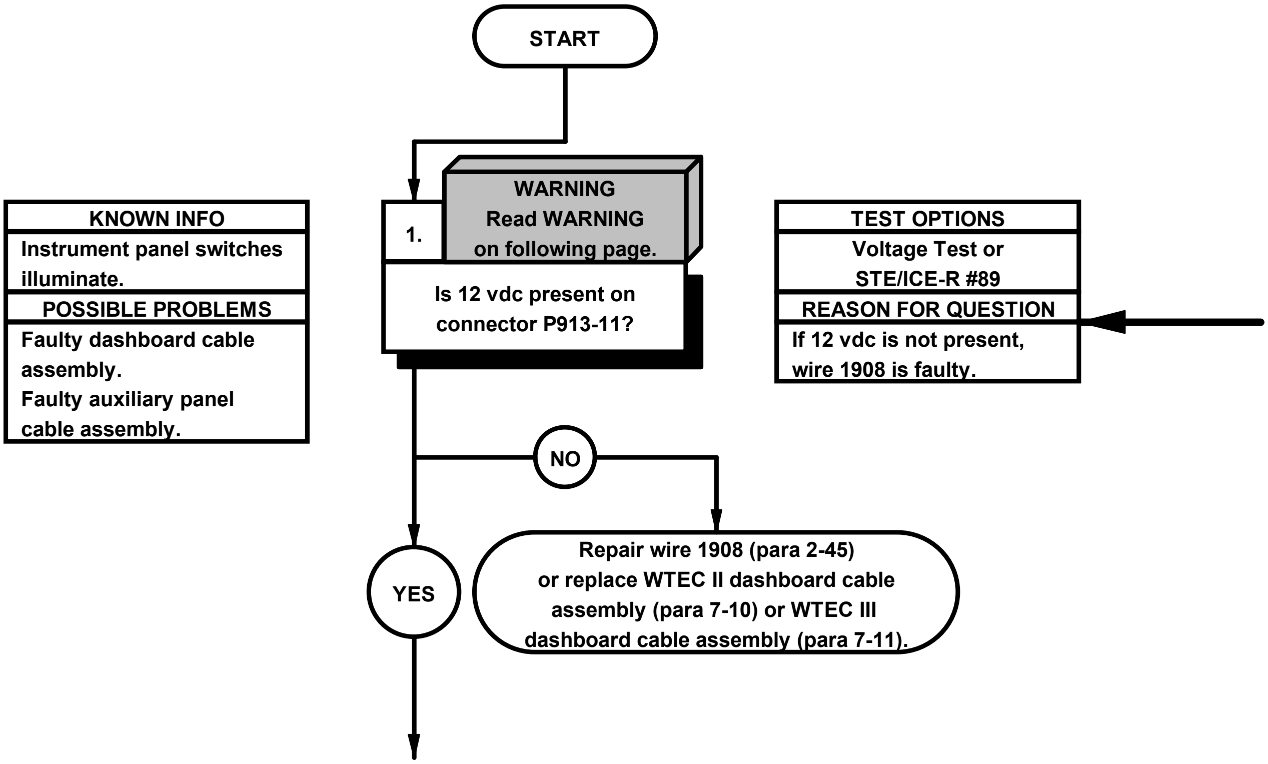
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove personnel heater for access (para 18-9).

(2) Disconnect connector J913 from connector P913.

(3) Set multimeter to volts dc.

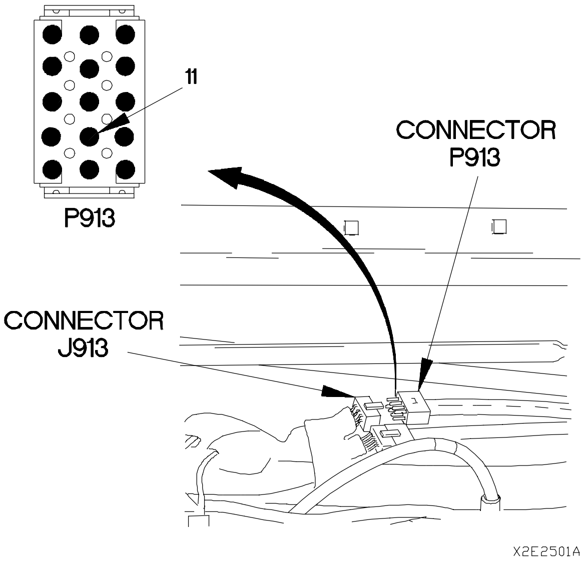
(4) Connect positive (+) probe of multimeter to connector P913-11.

(5) Connect negative (-) probe of multimeter to ground.

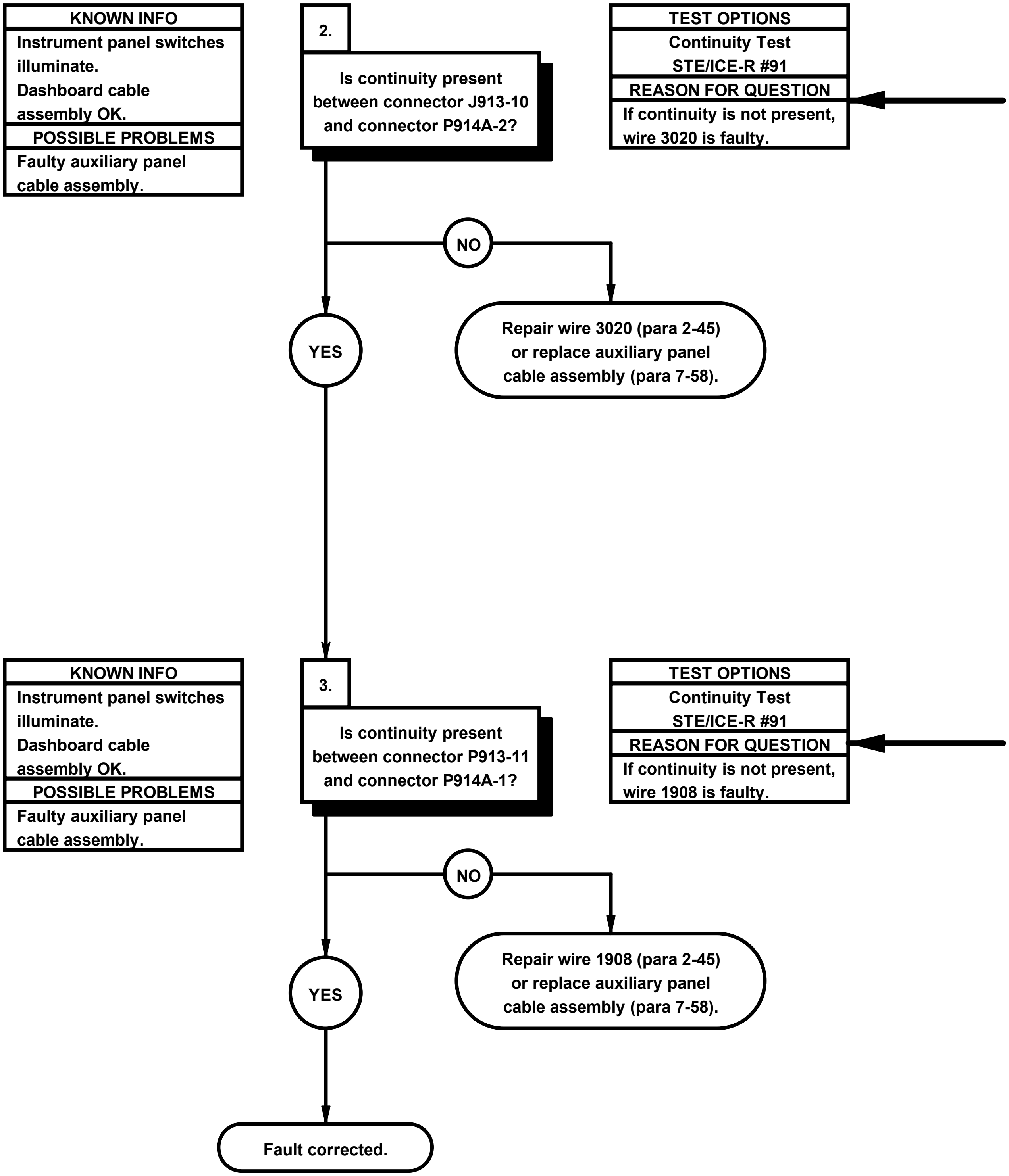
(6) Position main light switch to STOP LIGHT and PANEL BRIGHT (TM 9-2320-366-10-1) and note reading on multimeter.

(7) If 12 vdc is not present, repair wire 1908 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

(8) Position main light switch to OFF (TM 9-2320-366-10-1).



e23. AUXILIARY PANEL DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Instrument panel switches illuminate.

Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.

2. Is continuity present between connector J913-10 and connector P914A-2?

TEST OPTIONS

Continuity Test

STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3020 is faulty.

Repair wire 3020 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

KNOWN INFO

Instrument panel switches illuminate.

Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.

3. Is continuity present between connector P913-11 and connector P914A-1?

TEST OPTIONS

Continuity Test

STE/ICE-R #91

REASON FOR QUESTION

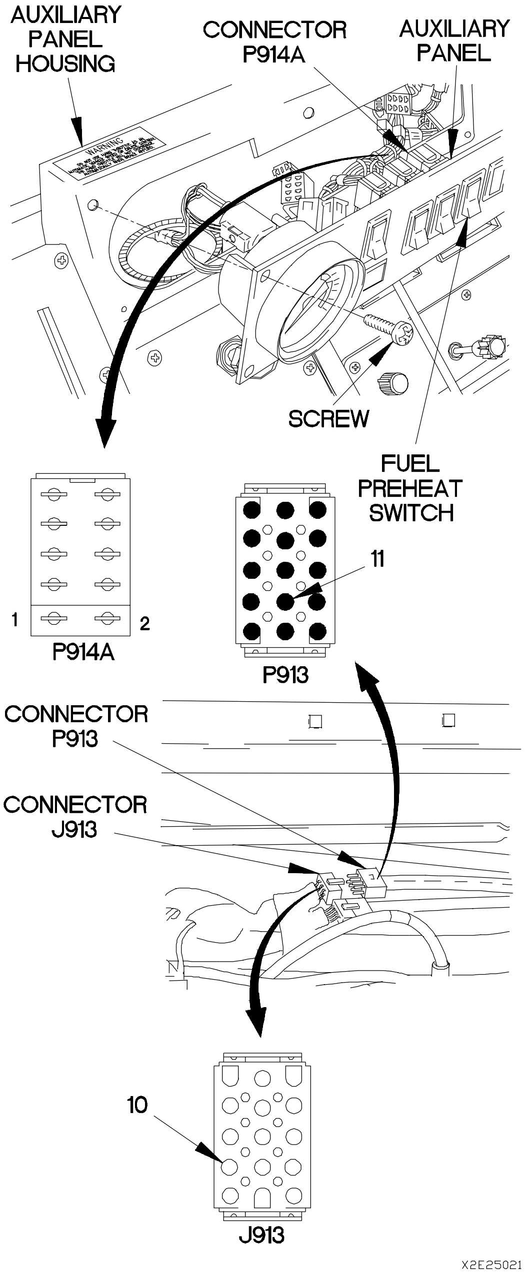
If continuity is not present, wire 1908 is faulty.

Repair wire 1908 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

Fault corrected.

CONTINUITY TEST

(1) Remove six screws from auxiliary panel.
(2) Lift auxiliary panel from auxiliary panel housing to gain access.
(3) Disconnect connector P914A from fuel preheat switch, if equipped.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector J913-10.
(6) Connect negative (-) probe of multimeter to connector P914A-2 and note reading on multimeter.
(7) If continuity is not present, repair wire 3020 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P913-11.
(3) Connect negative (-) probe of multimeter to connector P914A-1 and note reading on multimeter.
(4) If continuity is not present, repair wire 1908 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(5) Connect connector P914A to fuel preheat switch, if equipped.
(6) Position auxiliary panel housing on auxiliary panel with six screws.
(7) Tighten six screws to 24 lb-in. (3 N·m).
(8) Connect connector P913 to connector J913.
(9) Install personnel heater (para 18-9).

e24. HIGH ENGINE TEMPERATURE INDICATOR DOES NOT OPERATE

INITIAL SETUP

Equipment Condition

Engine shut down (TM 9-2320-366-10-1).

Batteries disconnected (para 7-57).

Personnel Required

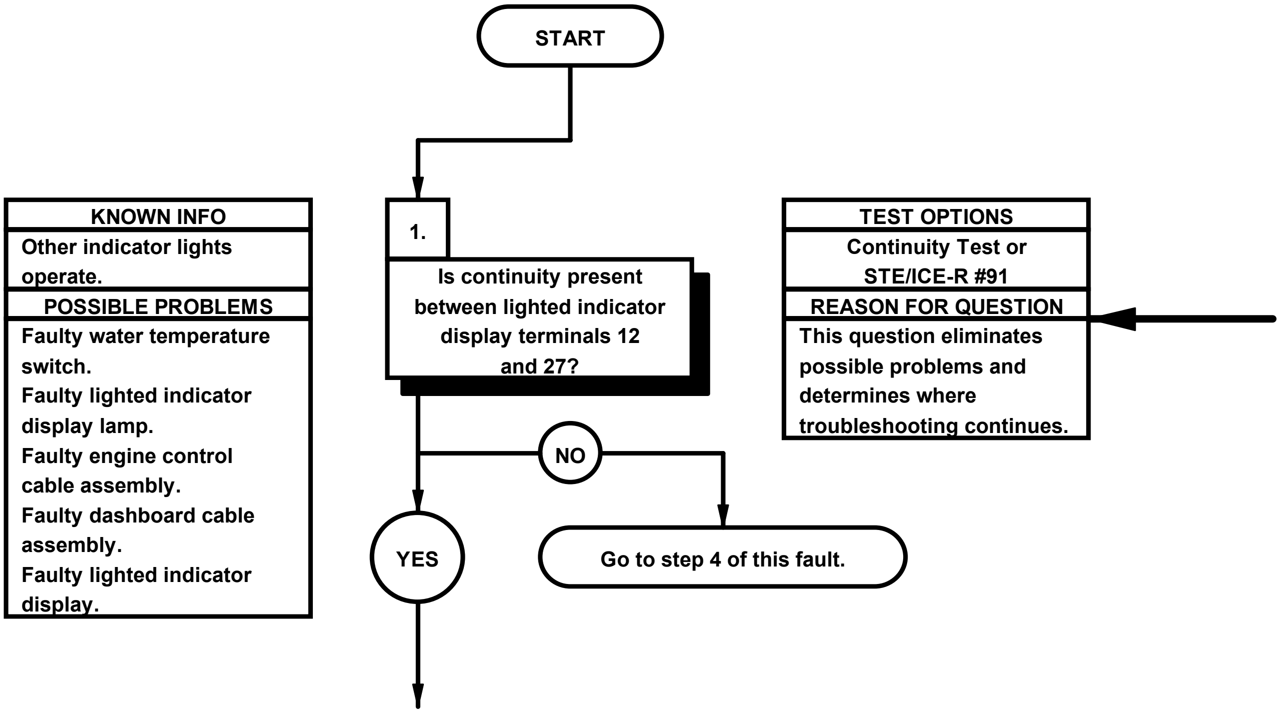
(2)

Tools and Special Tools

- Tool Kit, Genl Mech (Item 46, Appendix C)
- STE/ICE-R (Item 41, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)
- Wrench, Torque, 0-75 lb-in. (Item 60, Appendix B)

References

TM 9-4910-571-12&P



KNOWN INFO

Other indicator lights operate.

POSSIBLE PROBLEMS

Faulty water temperature switch.
Faulty lighted indicator display lamp.
Faulty engine control cable assembly.
Faulty dashboard cable assembly.
Faulty lighted indicator display.

1. Is continuity present between lighted indicator display terminals 12 and 27?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 4 of this fault.

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.

(2) Remove lighted indicator display from instrument panel assembly.

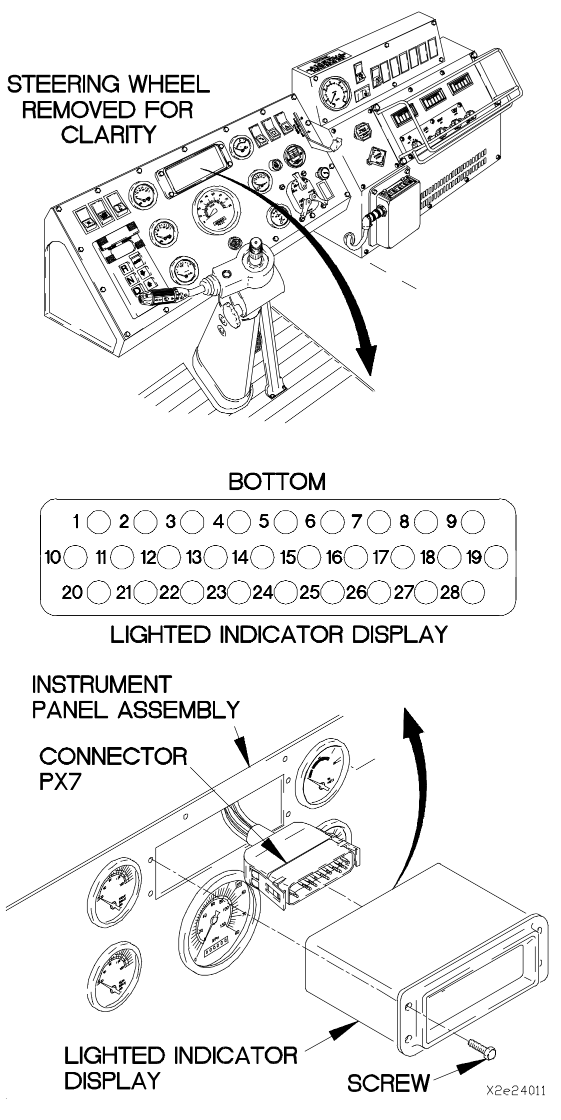
(3) Disconnect connector PX7 from lighted indicator display.

(4) Set multimeter to ohms.

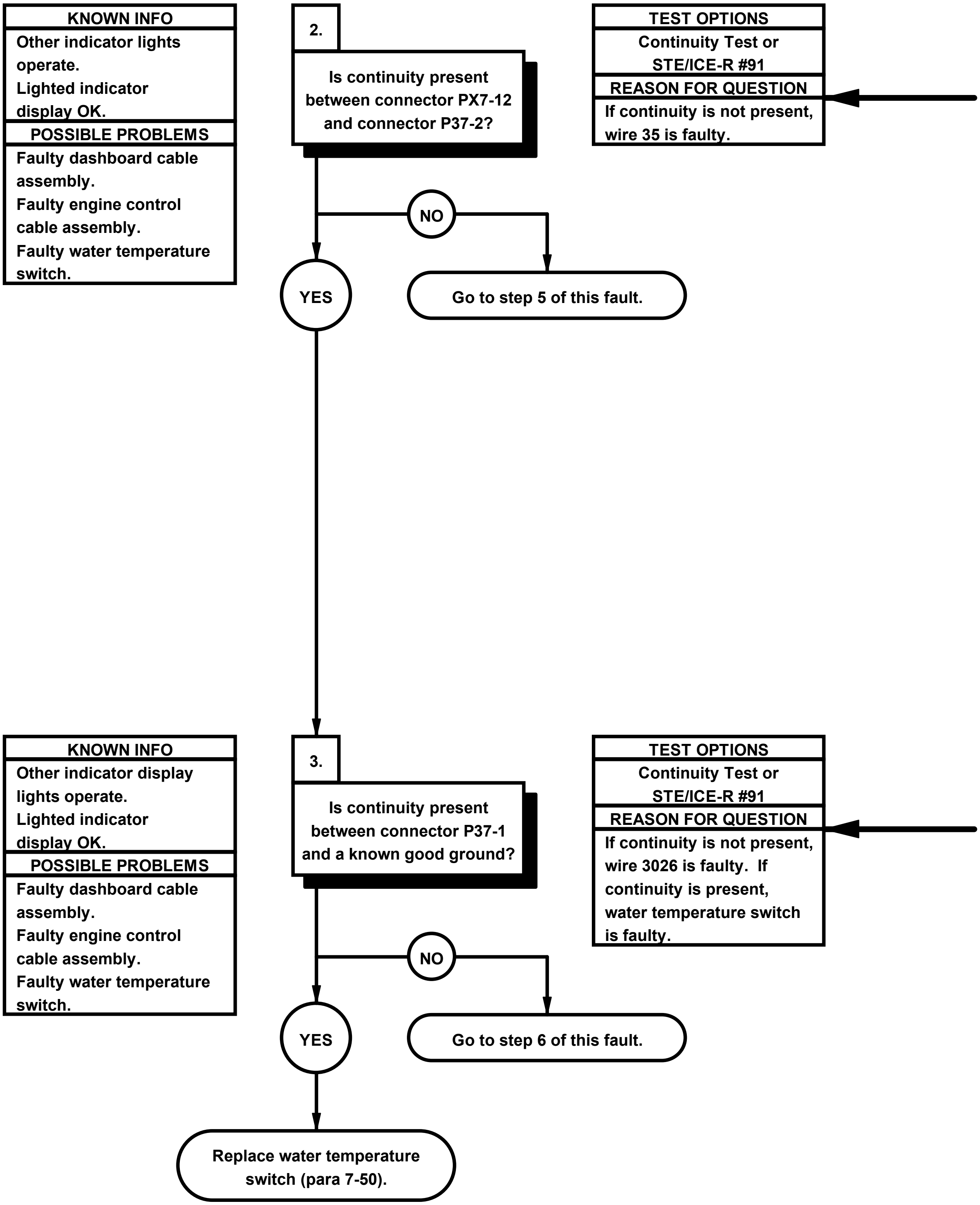
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 27.

(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 12 and note reading on multimeter.

(7) If continuity is not present, go to step 4 of this fault.



e24. HIGH ENGINE TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.
Faulty water temperature switch.

2. Is continuity present between connector PX7-12 and connector P37-2?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 35 is faulty.

Go to step 5 of this fault.

KNOWN INFO

Other indicator display lights operate.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.
Faulty water temperature switch.

3. Is continuity present between connector P37-1 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

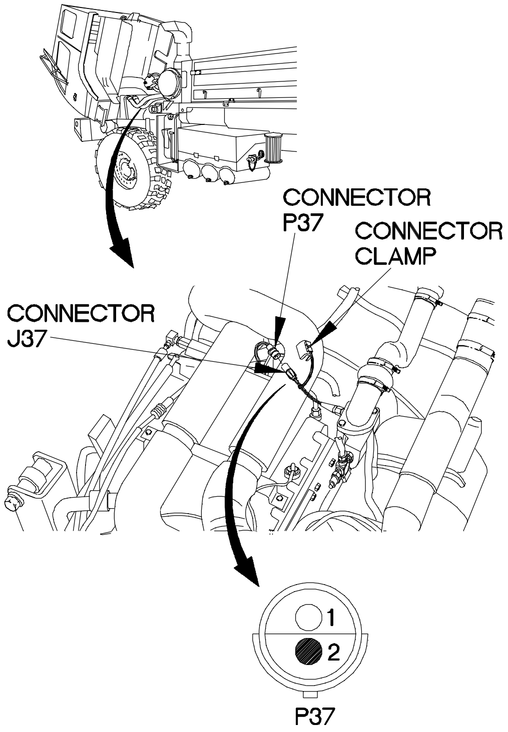
If continuity is not present, wire 3026 is faulty. If continuity is present, water temperature switch is faulty.

Go to step 6 of this fault.

Replace water temperature switch (para 7-50).

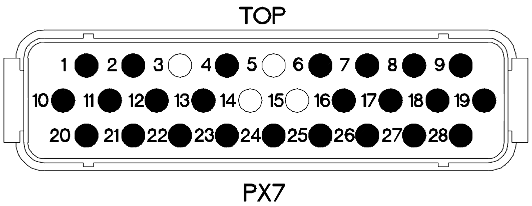
CONTINUITY TEST

(1) Raise cab (TM 9-2320-366-10-1).
(2) Set multimeter to ohms.
(3) Disconnect connector clamp from connector J37.
(4) Disconnect connector P37 from connector J37.
(5) Connect positive (+) probe of multimeter to connector P37-2.
(6) Connect negative (-) probe of multimeter to connector PX7-12 and note reading on multimeter.
(7) If continuity is not present, go to step 5 of this fault.



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P37-1.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 6 of this fault.
(5) If continuity is present, replace water temperature switch (para 7-50).
(6) Connect connector P37 to connector J37.
(7) Connect connector clamp on connector J37.
(8) Lower cab (TM 9-2320-366-10-1).



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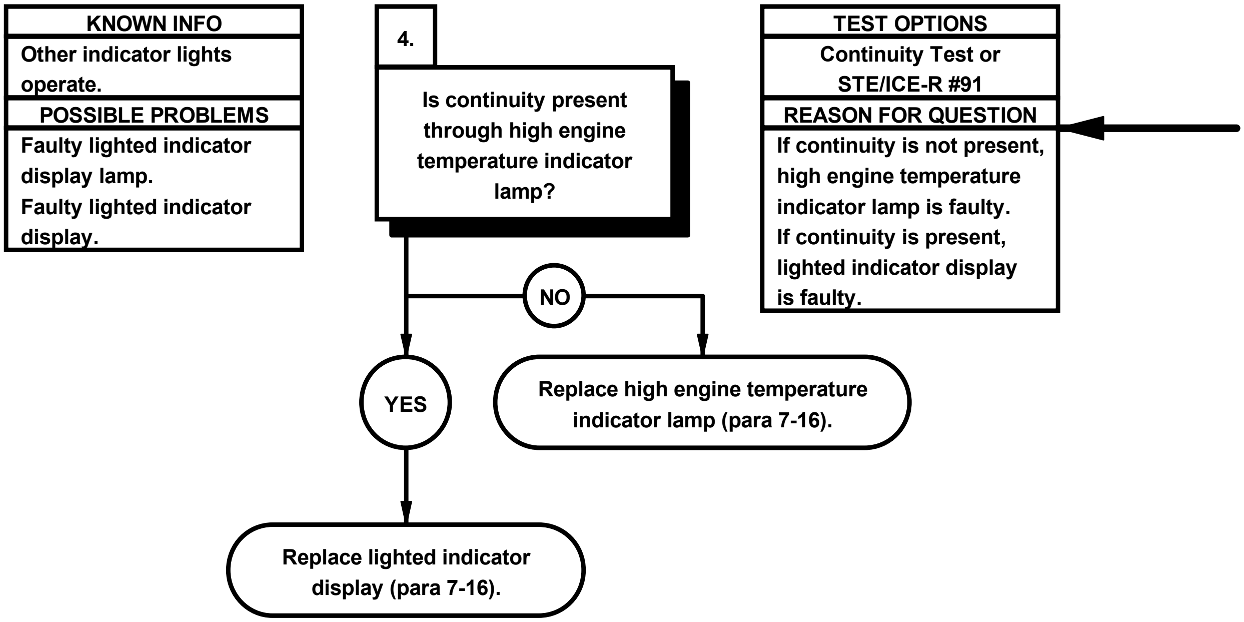
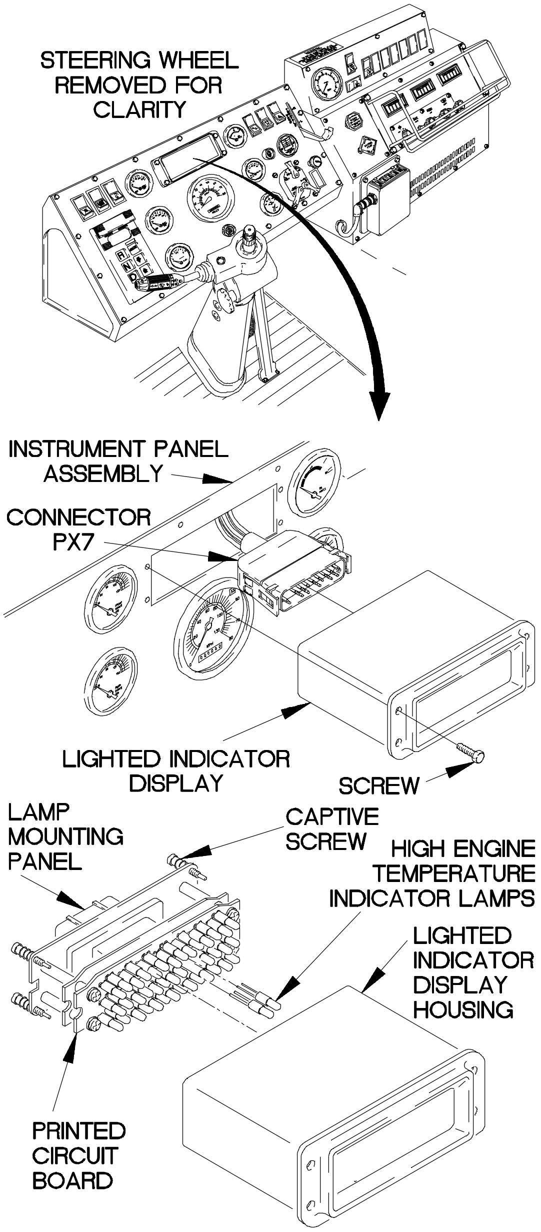
e24. HIGH ENGINE TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove high engine temperature lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each high engine temperature indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace lamp (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install high engine temperature lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



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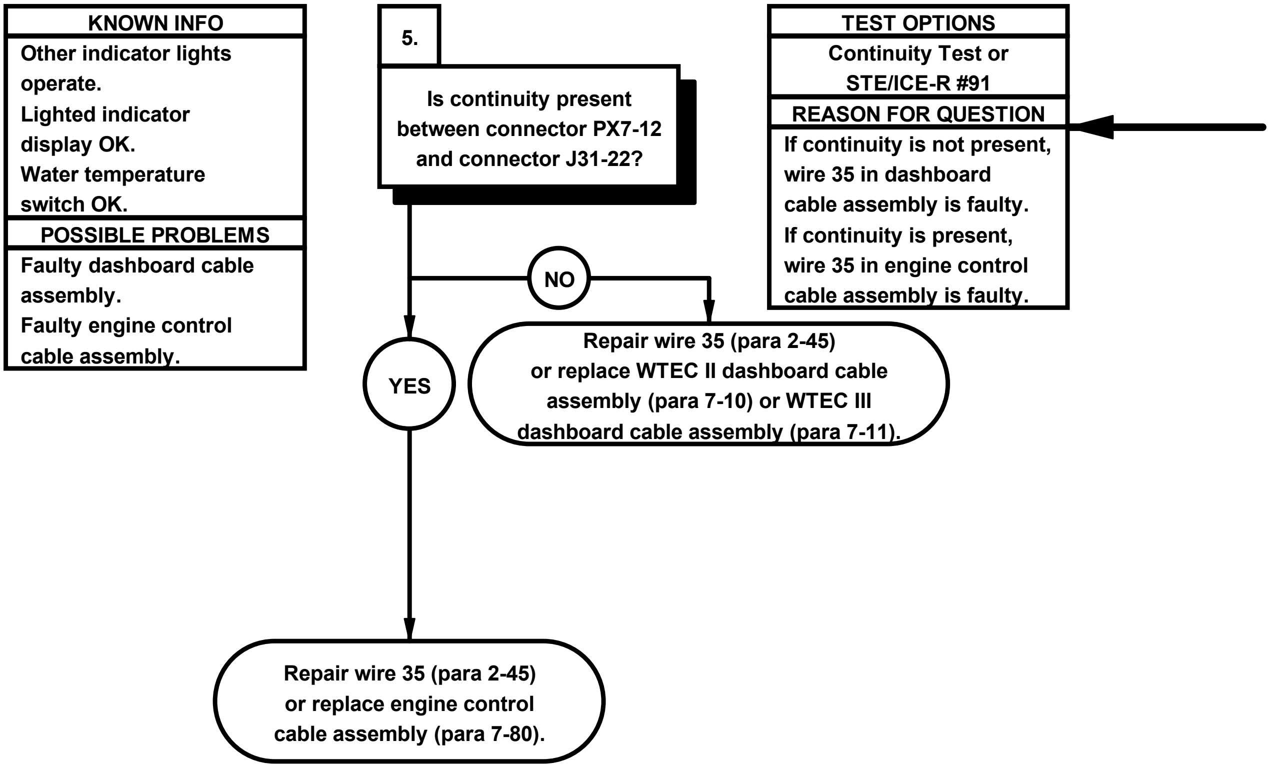
e24. HIGH ENGINE TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.
Water temperature switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.

5. Is continuity present between connector PX7-12 and connector J31-22?

TEST OPTIONS

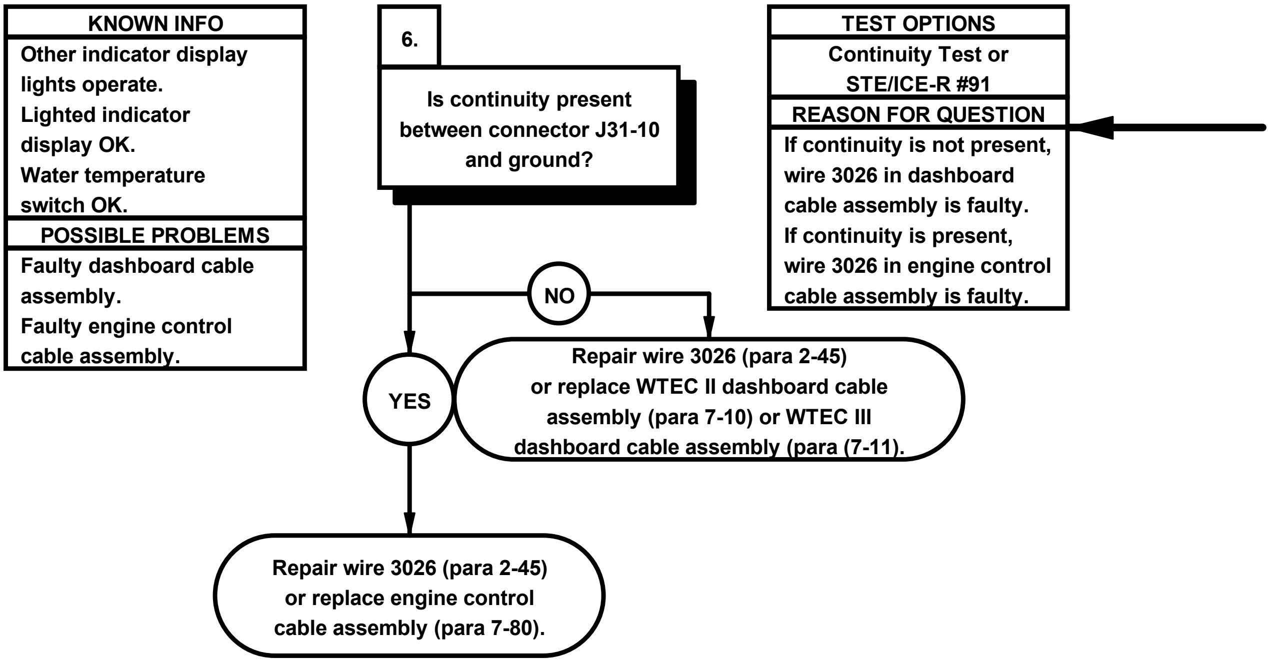
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 35 in dashboard cable assembly is faulty.
If continuity is present, wire 35 in engine control cable assembly is faulty.

NO: Repair wire 35 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Repair wire 35 (para 2-45) or replace engine control cable assembly (para 7-80).



KNOWN INFO

Other indicator display lights operate.
Lighted indicator display OK.
Water temperature switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty engine control cable assembly.

6. Is continuity present between connector J31-10 and ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3026 in dashboard cable assembly is faulty.
If continuity is present, wire 3026 in engine control cable assembly is faulty.

NO: Repair wire 3026 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para (7-11).

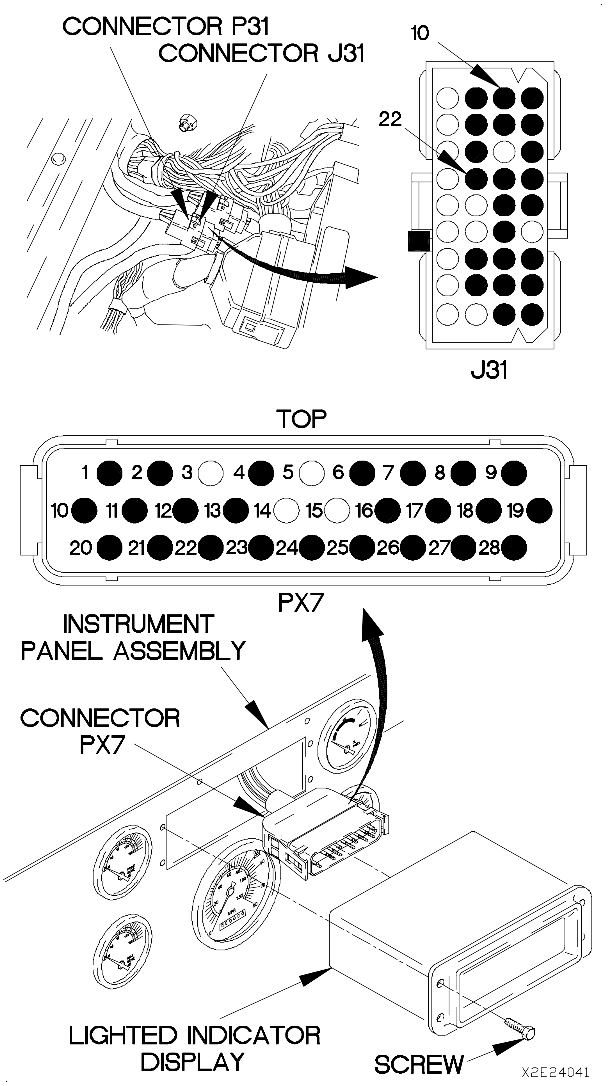
YES: Repair wire 3026 (para 2-45) or replace engine control cable assembly (para 7-80).

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Set multimeter to ohms.
(3) Disconnect connector J31 from connector P31.
(4) Connect positive (+) probe of multimeter to connector PX7-12.
(5) Connect negative (-) probe of multimeter to connector J31-22 and note reading on multimeter.
(6) If continuity is not present, repair wire 35 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para (7-11).
(7) If continuity is present, repair wire 35 (para 2-45) or replace engine control cable assembly (para 7-80).
(8) Connect connector J31 to connector P31.
(9) Install instrument panel assembly (para 7-15).
(10) Connect lighted indicator display to connector PX7.
(11) Position lighted indicator display in instrument panel assembly with four screws.
(12) Tighten four screws to 6-10 lb-in. (1 N·m).
(13) Connect batteries (para 7-57).

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Set multimeter to ohms.
(3) Disconnect connector J31 from connector P31.
(4) Connect positive (+) probe of multimeter to connector J31-10.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present, repair wire 3026 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If continuity is present, repair wire 3026 (para 2-45) or replace engine control cable assembly (para 7-80).
(8) Connect connector J31 to connector P31.
(9) Install instrument panel assembly (para 7-15).
(10) Connect lighted indicator display to connector PX7.
(11) Position lighted indicator display in instrument panel assembly with four screws.
(12) Tighten four screws to 6-10 lb-in. (1 N·m).
(13) Connect batteries (para 7-57).



e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES

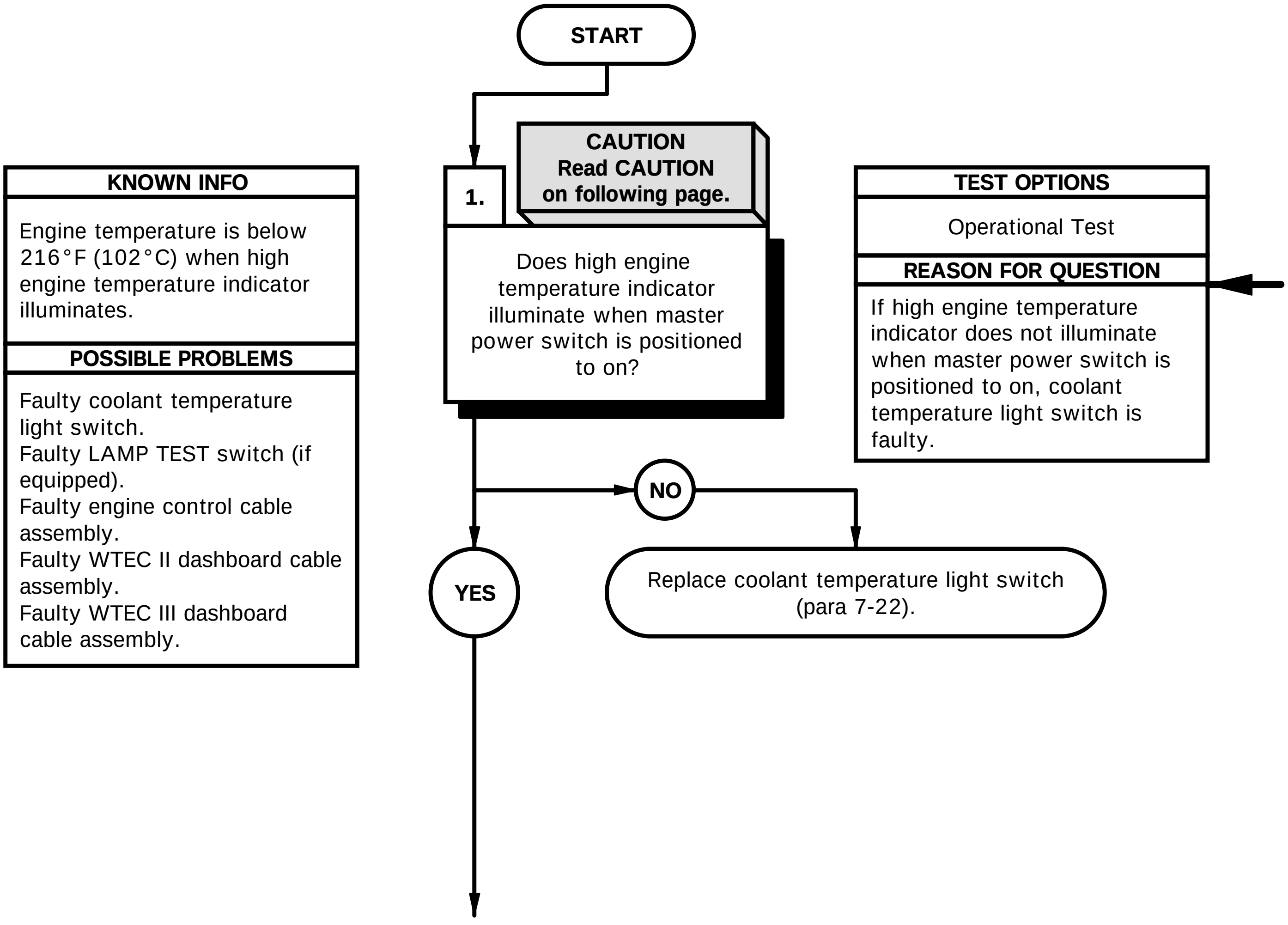
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



START

CAUTION
Read CAUTION on following page.

KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.

POSSIBLE PROBLEMS

Faulty coolant temperature light switch.
Faulty LAMP TEST switch (if equipped).
Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

1. Does high engine temperature indicator illuminate when master power switch is positioned to on?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

If high engine temperature indicator does not illuminate when master power switch is positioned to on, coolant temperature light switch is faulty.

NO

Replace coolant temperature light switch (para 7-22).

YES

CAUTION

Ensure engine has cooled before performing this troubleshooting task. Failure to comply may result in incorrect test results.

OPERATIONAL TEST
(1) Position master power switch to on (TM 9-2320-366-10-1). (2) Check to see if high engine temperature indicator illuminates (TM 9-2320-366-10-1). (3) If high engine temperature indicator illuminates, replace coolant temperature light switch (para 7-22). (4) Position master power switch to off (TM 9-2320-366-10-1).

e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES (CONT)

KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.

High engine temperature indicator illuminates when master power switch is positioned to on.

POSSIBLE PROBLEMS

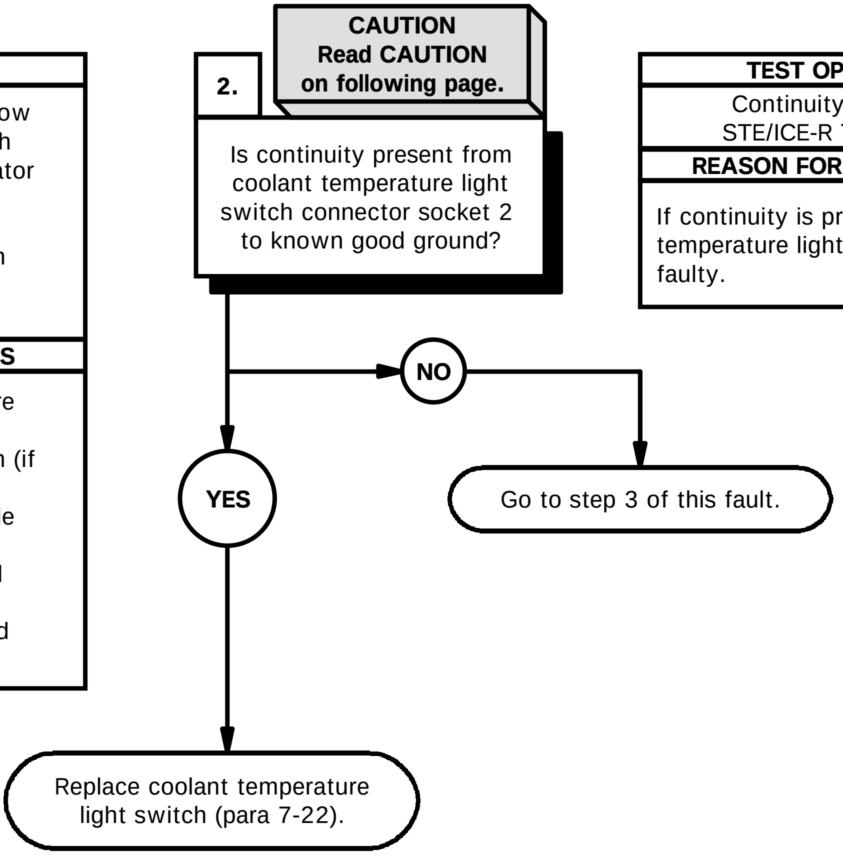
Faulty coolant temperature light switch.

Faulty LAMP TEST switch (if equipped).

Faulty engine control cable assembly.

Faulty WTEC II dashboard cable assembly.

Faulty WTEC III dashboard cable assembly.



TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, coolant temperature light switch is faulty.

CAUTION

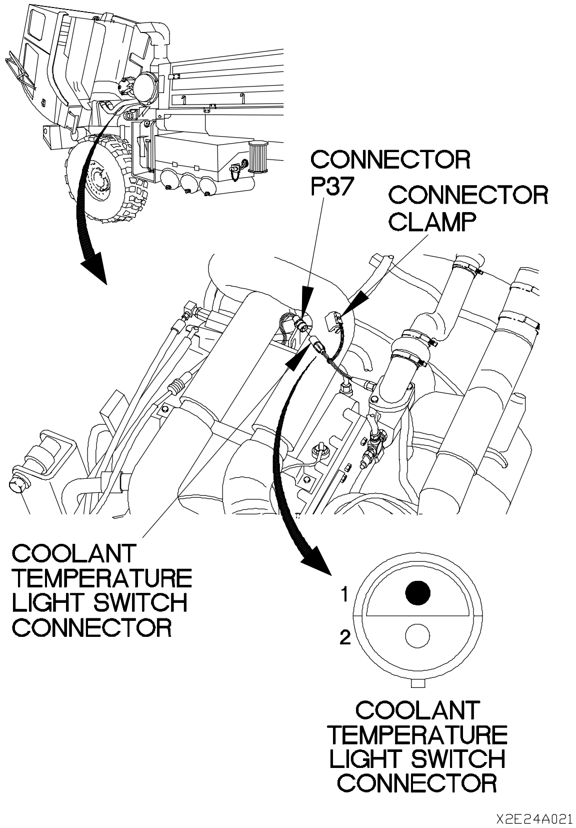
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

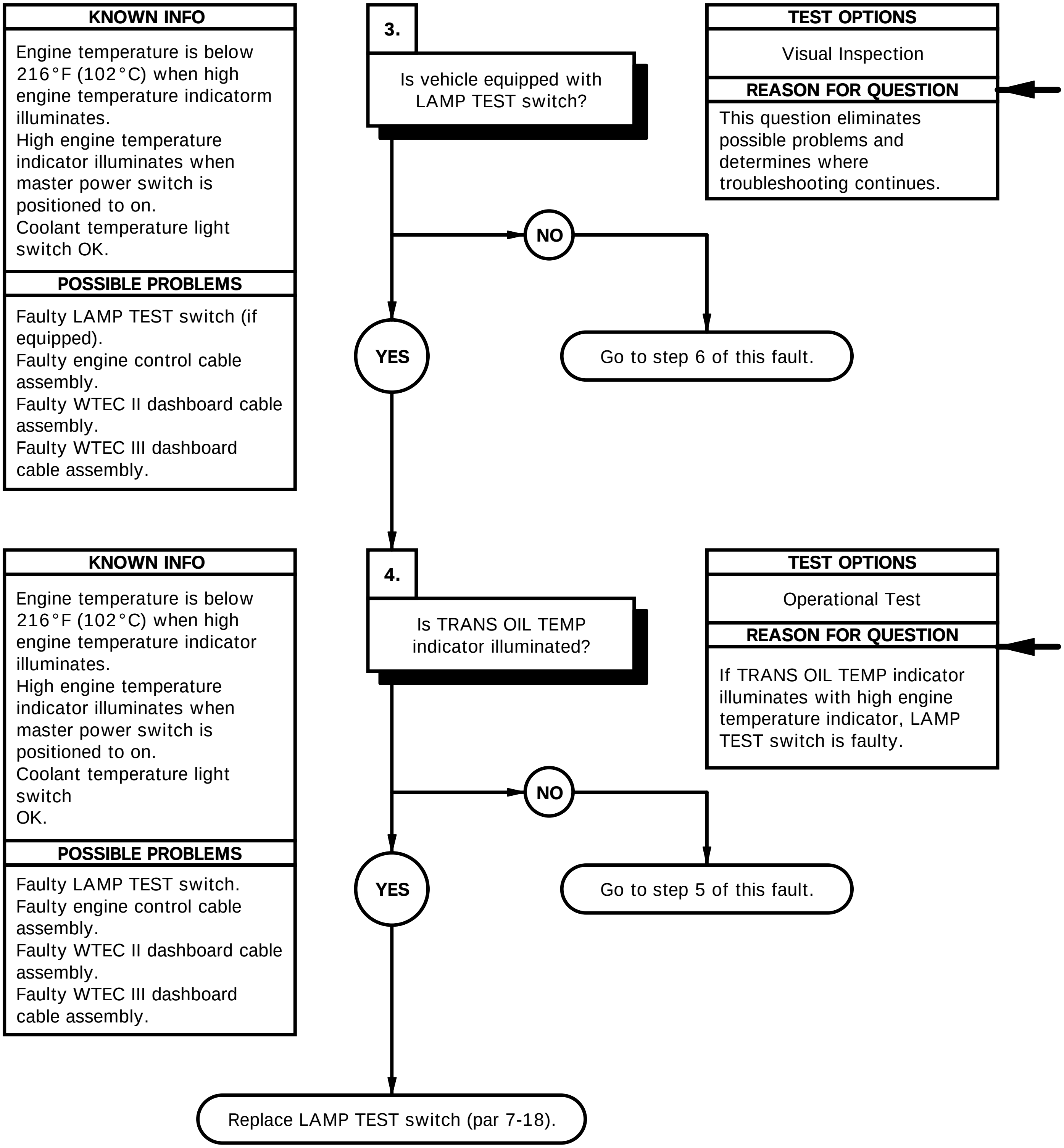
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Raise cab (TM 9-2320-366-10-1).
(2) Disconnect connector clamp from coolant temperature light switch connector,
(3) Disconnect connector P37 from coolant temperature light switch.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to coolant temperature light switch connector socket 2.
(6) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
(7) If continuity is not present, go to step 3 of this fault.
(8) If continuity is present, replace coolant temperature light switch (para 7-22).
(9) Connect connector P37 to coolant temperature light switch.
(10) Connect connector clamp to coolant temperature light switch connector.
(11) Lower cab (TM 9-2320-366-10-1).



e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES (CONT)



KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicatorm illuminates.
High engine temperature indicator illuminates when master power switch is positioned to on.
Coolant temperature light switch OK.

POSSIBLE PROBLEMS

Faulty LAMP TEST switch (if equipped).
Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

3. Is vehicle equipped with LAMP TEST switch?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 6 of this fault.

YES

KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.
High engine temperature indicator illuminates when master power switch is positioned to on.
Coolant temperature light switch
OK.

POSSIBLE PROBLEMS

Faulty LAMP TEST switch.
Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

4. Is TRANS OIL TEMP indicator illuminated?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

If TRANS OIL TEMP indicator illuminates with high engine temperature indicator, LAMP TEST switch is faulty.

NO — Go to step 5 of this fault.

YES

Replace LAMP TEST switch (par 7-18).

(1) Check to see if vehicle is equipped with LAMP TEST switch (TM 9-2320-366-10-1).
(2) If vehicle is not equipped with LAMP TEST switch go to step 6 of this fault.

OPERATIONAL TEST

(1) Position master power switch to on (TM 9-2320-366-10-1).
(2) Check to see if TRANS OIL TEMP indicator illuminates (TM 9-2320-366-10-1).
(3) If TRANS OIL TEMP indicator does not illuminate, go to step 5 of this fault.
(4) If TRANS OIL TEMP indicator illuminates, replace LAMP TEST switch (para 7-18).
(5) Position master power switch to off (TM 9-2320-366-10-1).

e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES (CONT)

KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.

High engine temperature indicator illuminates when master power switch is positioned to on.

Coolant temperature light switch OK.

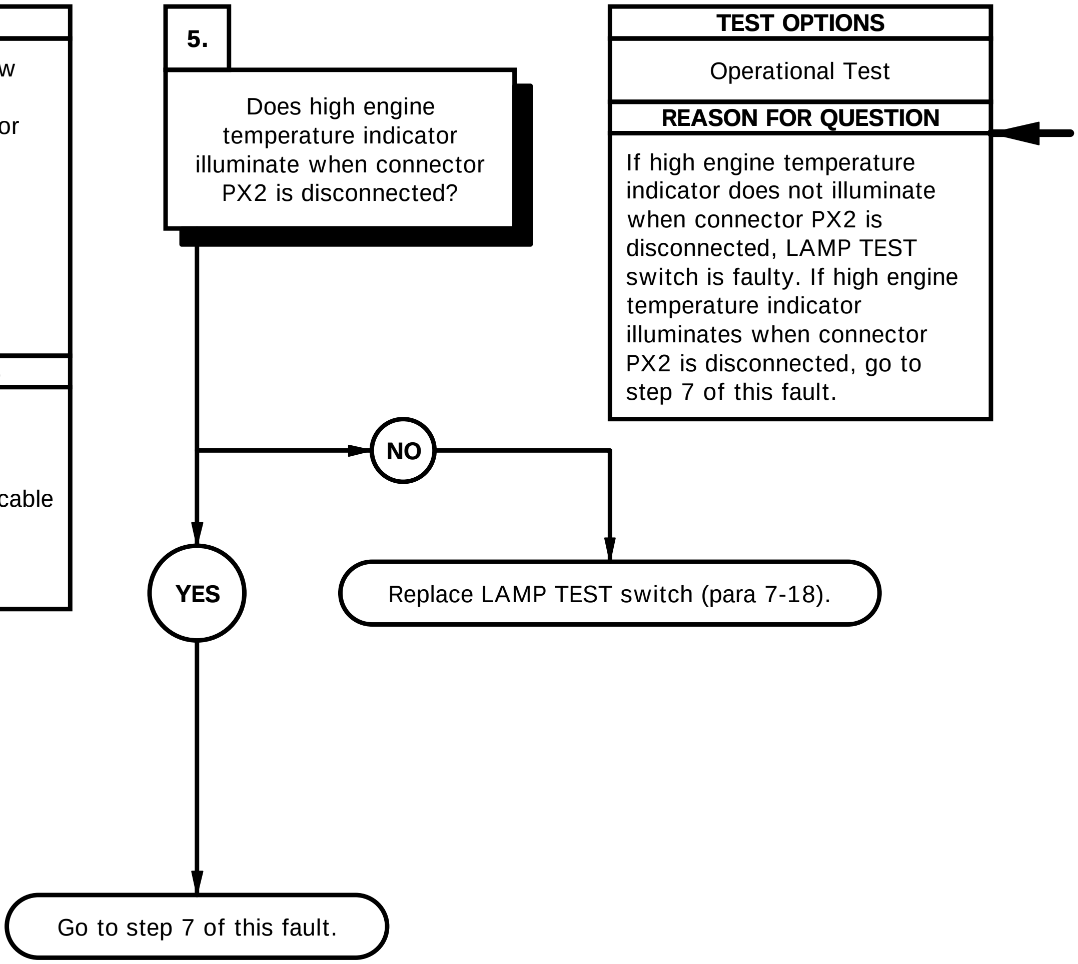
POSSIBLE PROBLEMS

Faulty LAMP TEST switch.

Faulty engine control cable assembly.

Faulty WTEC II dashboard cable assembly.

Faulty WTEC III dashboard cable assembly.



5. Does high engine temperature indicator illuminate when connector PX2 is disconnected?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

If high engine temperature indicator does not illuminate when connector PX2 is disconnected, LAMP TEST switch is faulty. If high engine temperature indicator illuminates when connector PX2 is disconnected, go to step 7 of this fault.

NO: Replace LAMP TEST switch (para 7-18).

YES: Go to step 7 of this fault.

OPERATIONAL TEST

(1) Remove instrument panel for access (para 7-15).

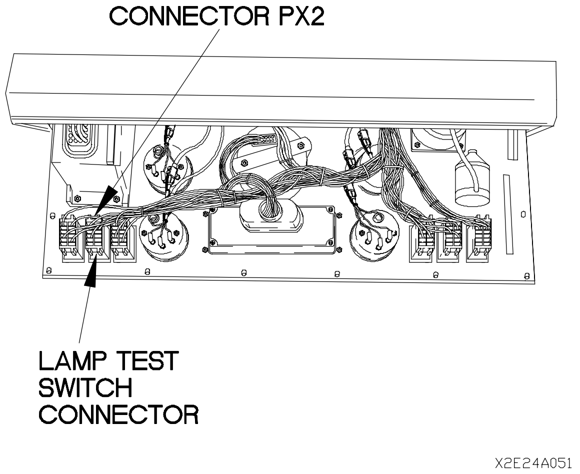
(2) Disconnect connector PX2 from LAMP TEST switch connector.

(3) Position master power switch to on (TM 9-2320-366-10-1).

(4) Check to see if high engine temperature indicator illuminates (TM 9-2320-366-10-1).

(5) If high engine temperature indicator does not illuminate, replace LAMP TEST switch (para 7-18).

(6) If high engine temperature indicator illuminates, go to step 7 of this fault.



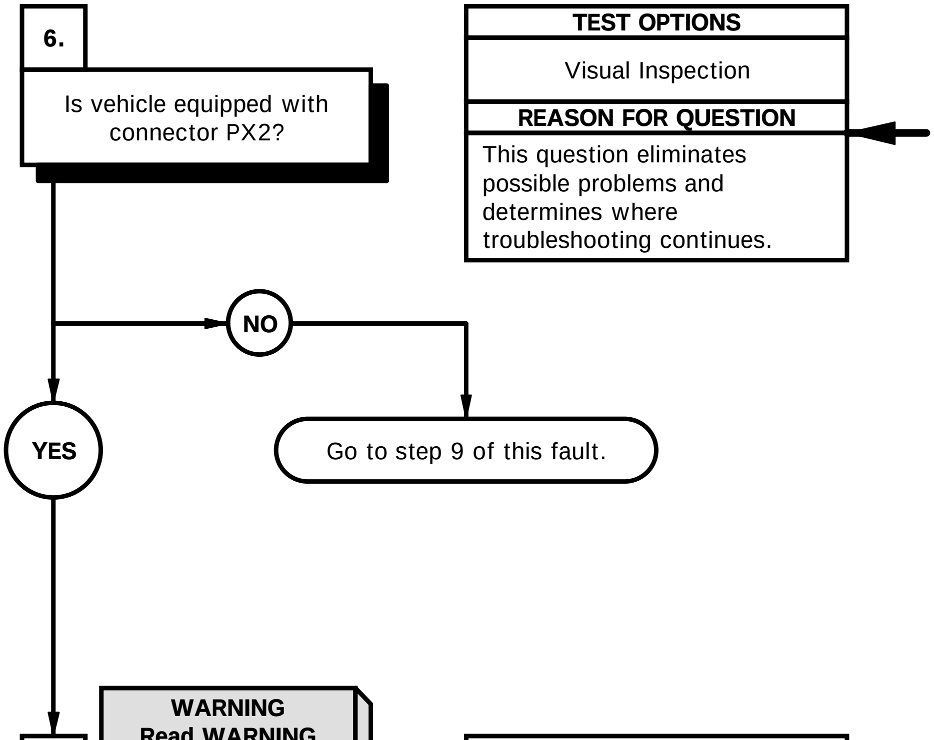
e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES (CONT)

KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.
High engine temperature indicator illuminates when master power switch is positioned to on.
Coolant temperature light switch OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.



6. Is vehicle equipped with connector PX2?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

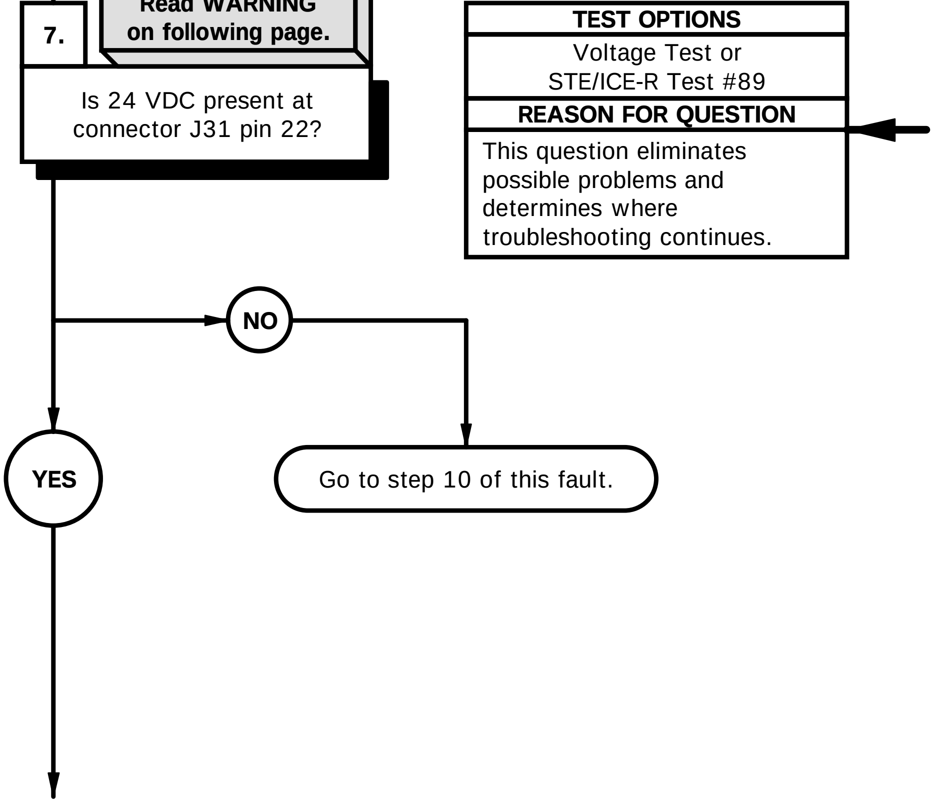
NO: Go to step 9 of this fault.

KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.
High engine temperature indicator illuminates when master power switch is positioned to on.
Coolant temperature light switch OK.
LAMP TEST switch OK (if equipped).

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.



WARNING
Read WARNING on following page.

7. Is 24 VDC present at connector J31 pin 22?

TEST OPTIONS

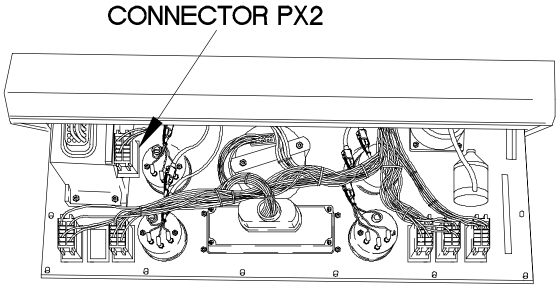
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 10 of this fault.

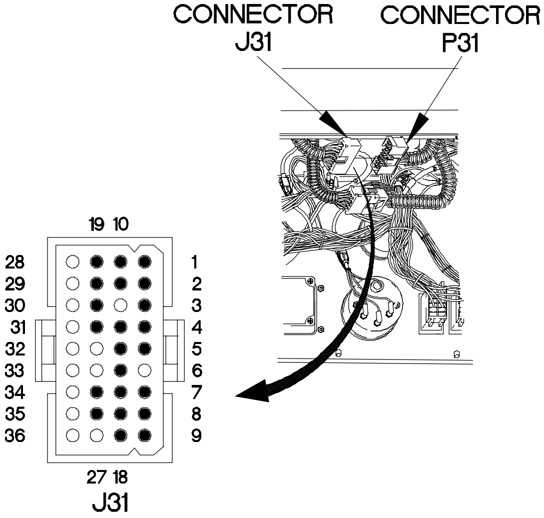
(1) Remove instrument panel assembly for access (para 7-15).
(2) Check to see if connector PX2 is in dashboard.
(3) If vehicle is not equipped with connector PX2, go step 9 of this fault.



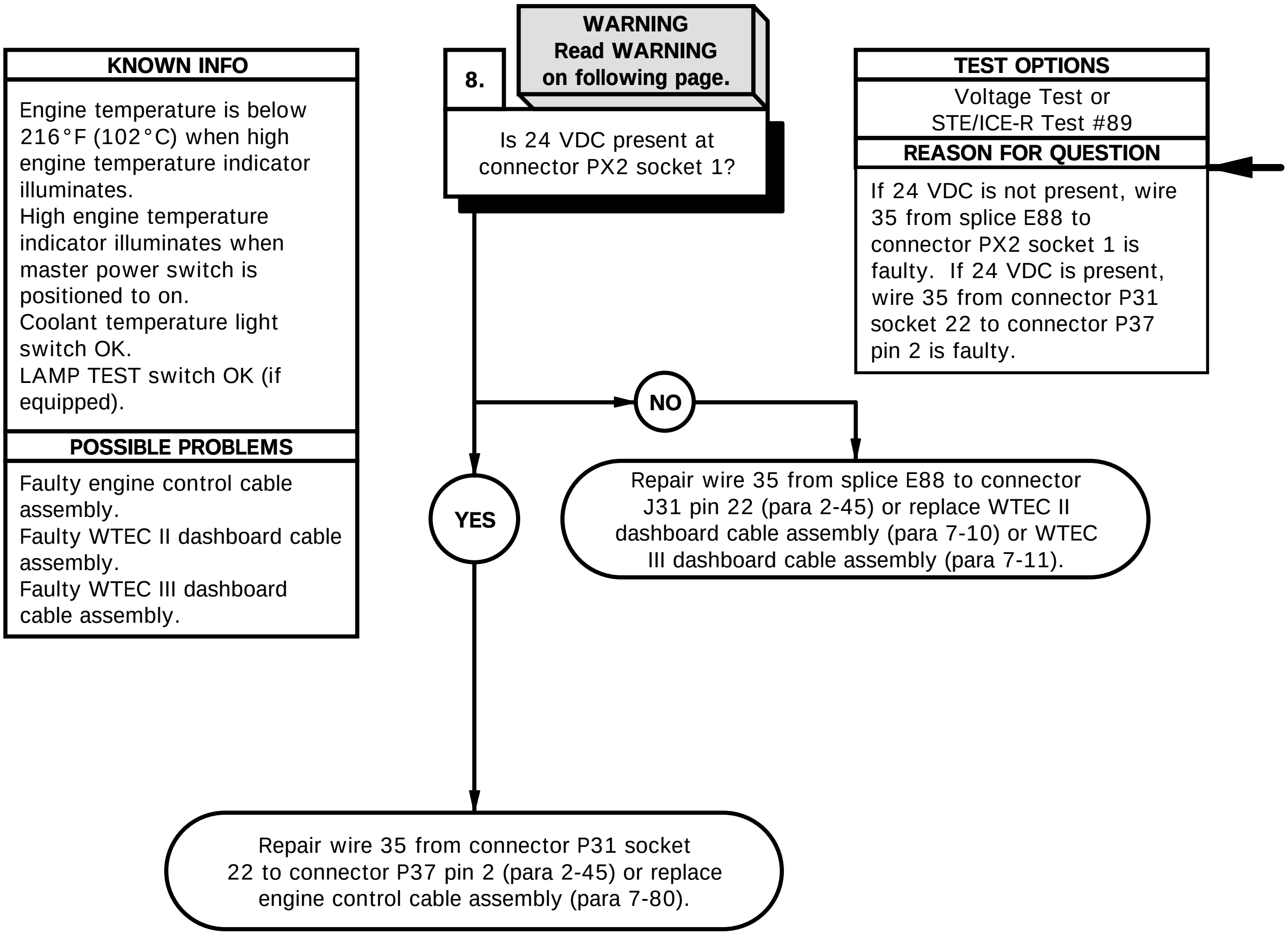
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Disconnect batteries (para 7-57). (2) Disconnect connector J31 form connector P31. (3) Connect batteries (para 7-57) (4) Set multimeter to volts DC. (5) Connect positive (+) probe of multimeter to connector J31 pin 22. (6) Connect negative probe of multimeter to known good ground. (7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter. (8) If 24 VDC is not present, go to step 10 of this fault. (9) Position master power switch to off (TM 9-2320-366-10-1).



e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES (CONT)



KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.
High engine temperature indicator illuminates when master power switch is positioned to on.
Coolant temperature light switch OK.
LAMP TEST switch OK (if equipped).

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

8.

WARNING
Read WARNING on following page.

Is 24 VDC present at connector PX2 socket 1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 35 from splice E88 to connector PX2 socket 1 is faulty. If 24 VDC is present, wire 35 from connector P31 socket 22 to connector P37 pin 2 is faulty.

NO

Repair wire 35 from splice E88 to connector J31 pin 22 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 35 from connector P31 socket 22 to connector P37 pin 2 (para 2-45) or replace engine control cable assembly (para 7-80).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

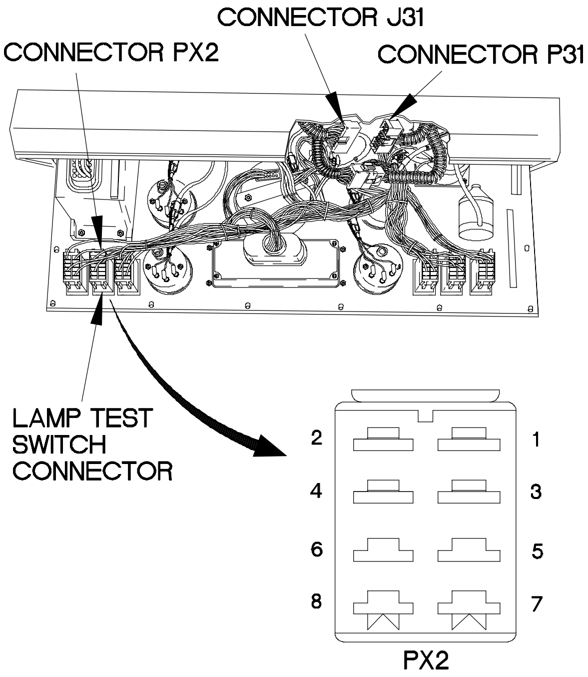
VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX2 socket 1.
(3) Connect negative (-) probe of multimeter to known good ground.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, repair wire 35 from splice E88 to connector J31 pin 22 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If 24 VDC is present, repair wire 35 from connector P31 socket 22 to connector P37 pin 2 (para 2-45) or replace engine control cable assembly (para 7-80).
(7) Position master power switch to off (TM 9-2320-366-10-1).
(8) Disconnect batteries (para 7-57)
(9) Connect connector P31 to connector J31.

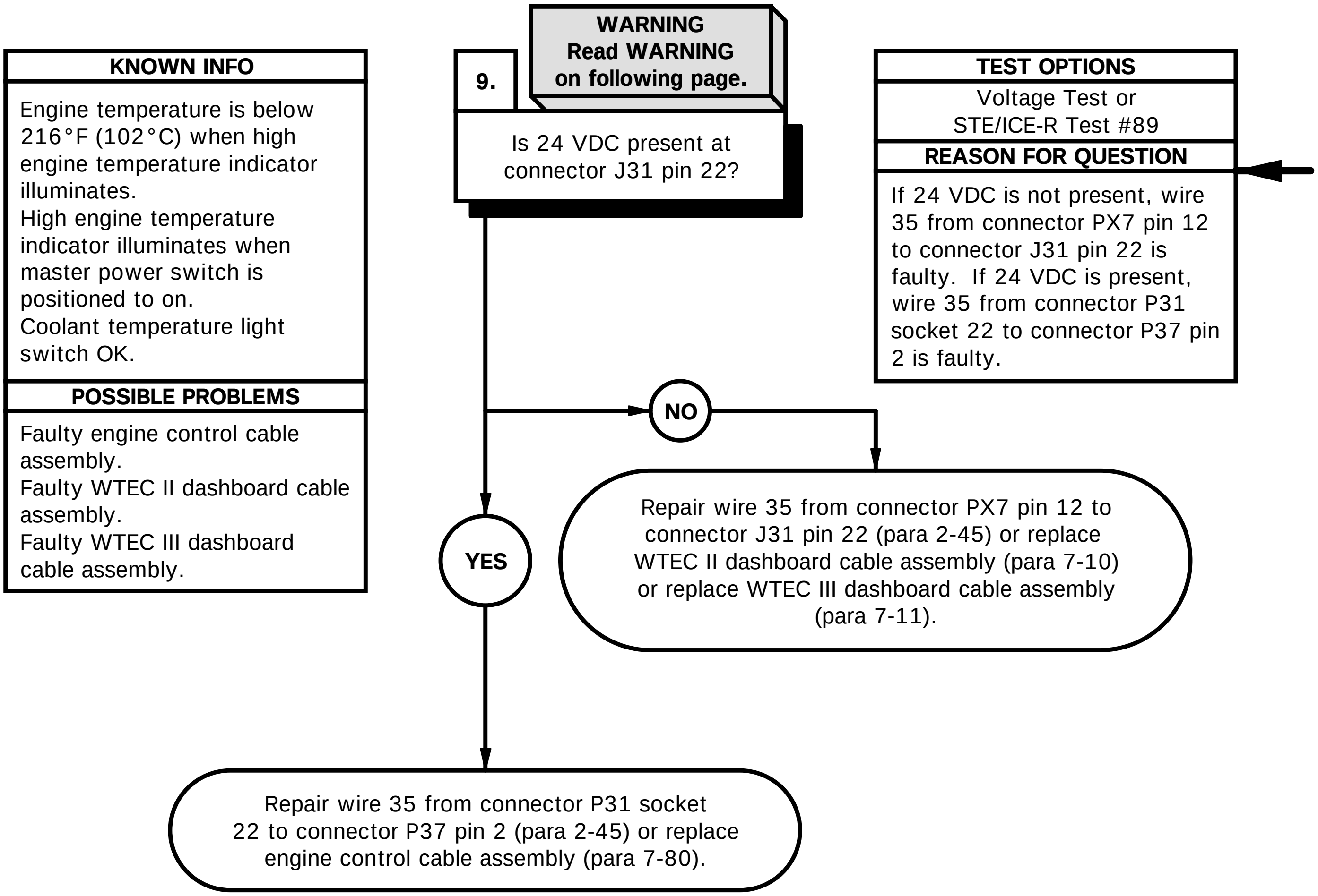
NOTE

Perform step (10) if vehicle is equipped with LAMP TEST switch.

(10) Connect connector PX2 to LAMP TEST switch connector.
(11) Install instrument panel assembly (para 7-15).
(12) Connect batteries (para 7-57).



e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES (CONT)



KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.
High engine temperature indicator illuminates when master power switch is positioned to on.
Coolant temperature light switch OK.

POSSIBLE PROBLEMS

Faulty engine control cable assembly.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

9.

WARNING
Read WARNING on following page.

Is 24 VDC present at connector J31 pin 22?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 35 from connector PX7 pin 12 to connector J31 pin 22 is faulty. If 24 VDC is present, wire 35 from connector P31 socket 22 to connector P37 pin 2 is faulty.

NO

Repair wire 35 from connector PX7 pin 12 to connector J31 pin 22 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or replace WTEC III dashboard cable assembly (para 7-11).

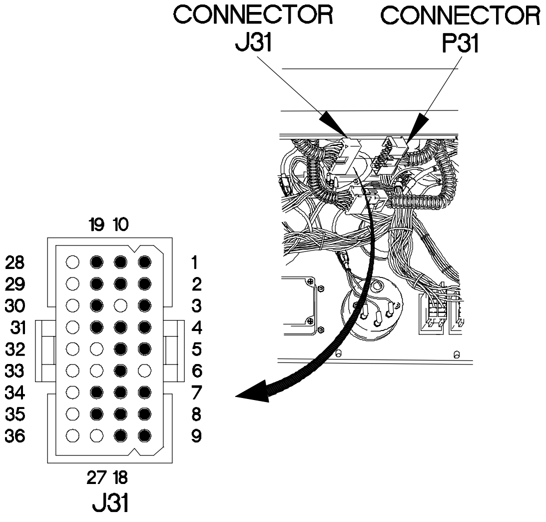
YES

Repair wire 35 from connector P31 socket 22 to connector P37 pin 2 (para 2-45) or replace engine control cable assembly (para 7-80).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Disconnect batteries (para 7-57). (2) Disconnect connector J31 from connector P31. (3) Connect batteries (para 7-57). (4) Set multimeter to volts DC. (5) Connect positive (+) probe of multimeter to connector J31 pin 22. (6) Connect negative (-) probe of multimeter to known good ground. (7) Position master power switch to on and note reading on multimeter. (8) Is 24 VDC is not present, repair wire 35 from connector PX7 pin 12 to connector J31 pin 22 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or replace WTEC III dashboard cable assembly (para 7-11). (9) If 24 VDC is present, repair wire 35 from connector P31 socket 22 to connector P37 pin 2 (para 2-45) or replace engine control cable assembly (para 7-80). (10) Position master power switch to off (TM 9-2320-366-10-1). (11) Disconnect batteries (para 7-57). (12) Connect connect P31 to connector J31. (13) Install instrument panel assembly (para 7-15). (14) Connect batteries (para 7-57).



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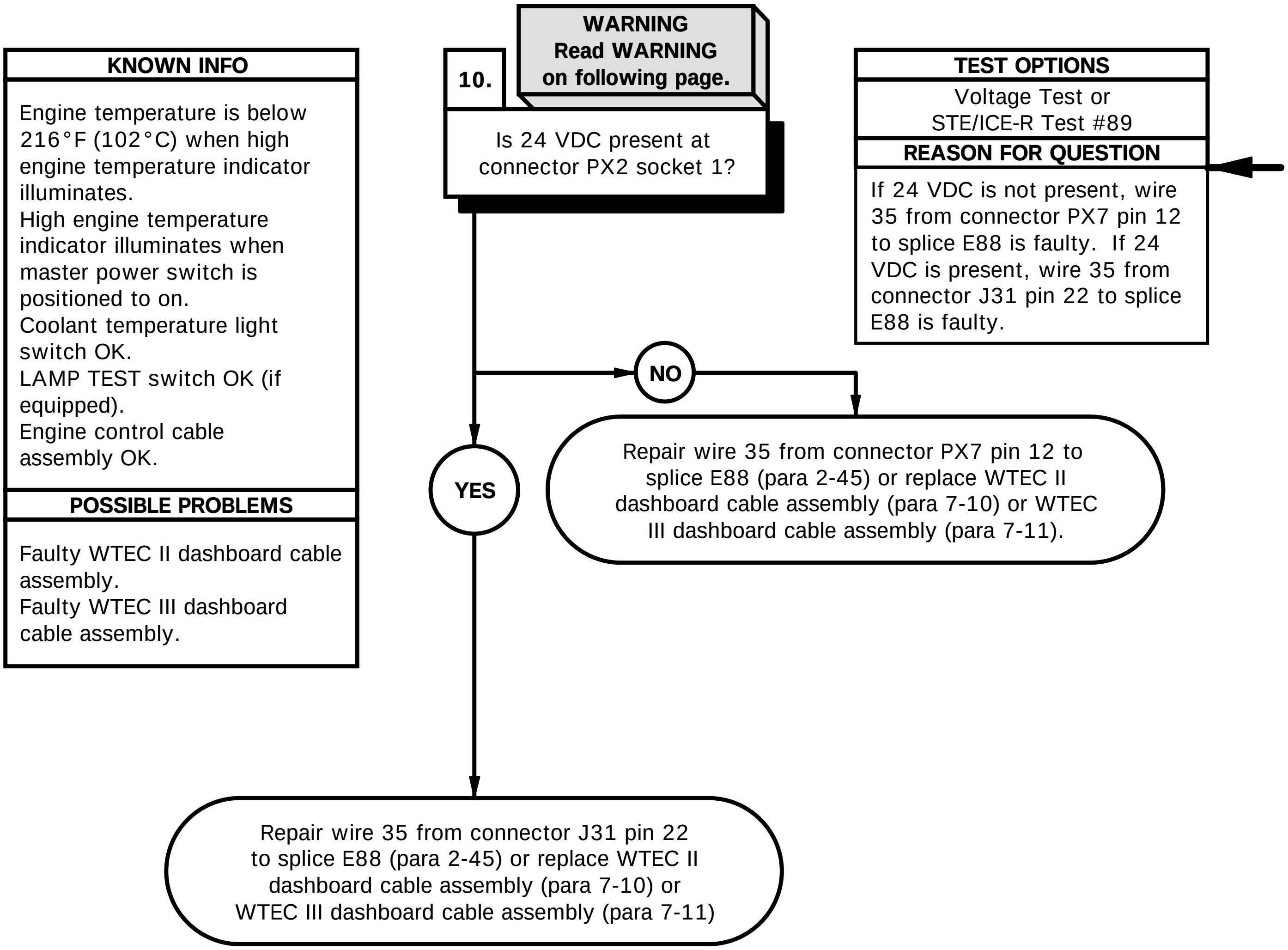
e24A. HIGH ENGINE TEMPERATURE INDICATOR ILLUMINATES (CONT)



KNOWN INFO

Engine temperature is below 216°F (102°C) when high engine temperature indicator illuminates.
High engine temperature indicator illuminates when master power switch is positioned to on.
Coolant temperature light switch OK.
LAMP TEST switch OK (if equipped).
Engine control cable assembly OK.

POSSIBLE PROBLEMS

Faulty WTEC II dashboard cable assembly.
Faulty WTEC III dashboard cable assembly.

WARNING
Read WARNING on following page.

10. Is 24 VDC present at connector PX2 socket 1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 35 from connector PX7 pin 12 to splice E88 is faulty. If 24 VDC is present, wire 35 from connector J31 pin 22 to splice E88 is faulty.

NO

Repair wire 35 from connector PX7 pin 12 to splice E88 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 35 from connector J31 pin 22 to splice E88 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11)

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

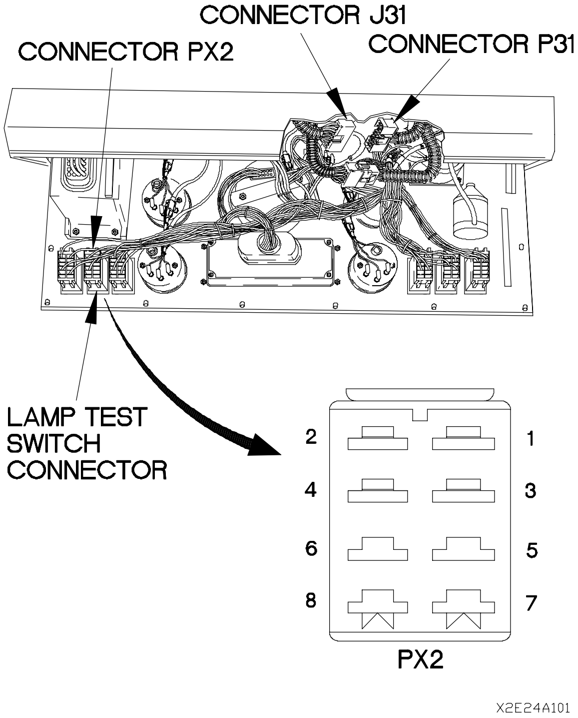
VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX2 socket 1.
(3) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, repair wire 35 from connector PX7 pin 12 to splice E88 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If 24 VDC is present, repair wire 35 from connector J31 pin 22 to splice E88 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11)
(7) Position master power switch to off (TM 9-2320-366-10-1).
(8) Disconnect batteries (para 7-57)
(9) Connect connector P31 to connector J31.

NOTE

Perform step (10) if vehicle is equipped with LAMP TEST switch.

(10) Connect connector PX2 to LAMP TEST switch connector.
(11) Install instrument panel asssembly (para 7-15).
(12) Connect batteries (para 7-57).



e25. CENTRAL TIRE INFLATION SYSTEM (CTIS) OVERSPEED INDICATOR DOES NOT OPERATE

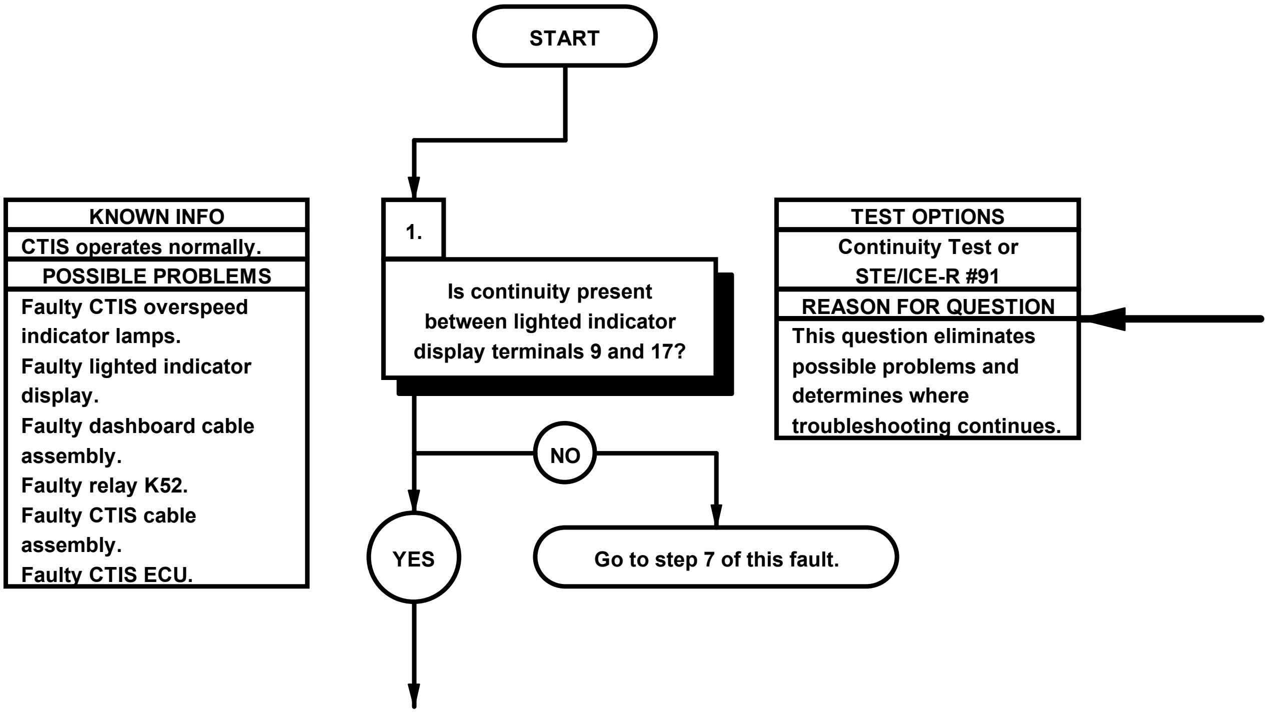
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



KNOWN INFO

CTIS operates normally.

POSSIBLE PROBLEMS

Faulty CTIS overspeed indicator lamps.
Faulty lighted indicator display.
Faulty dashboard cable assembly.
Faulty relay K52.
Faulty CTIS cable assembly.
Faulty CTIS ECU.

1. Is continuity present between lighted indicator display terminals 9 and 17?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

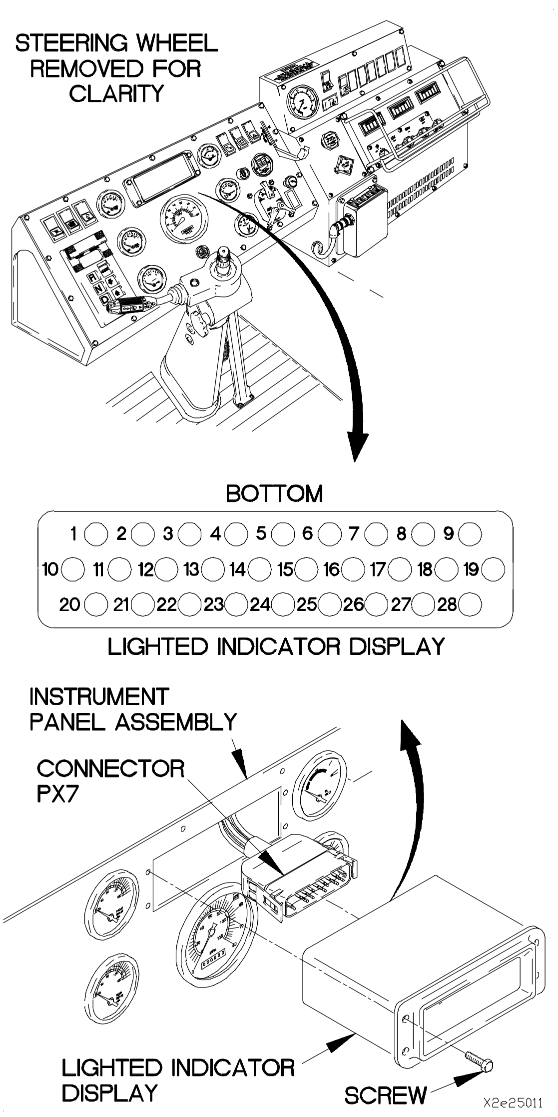
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

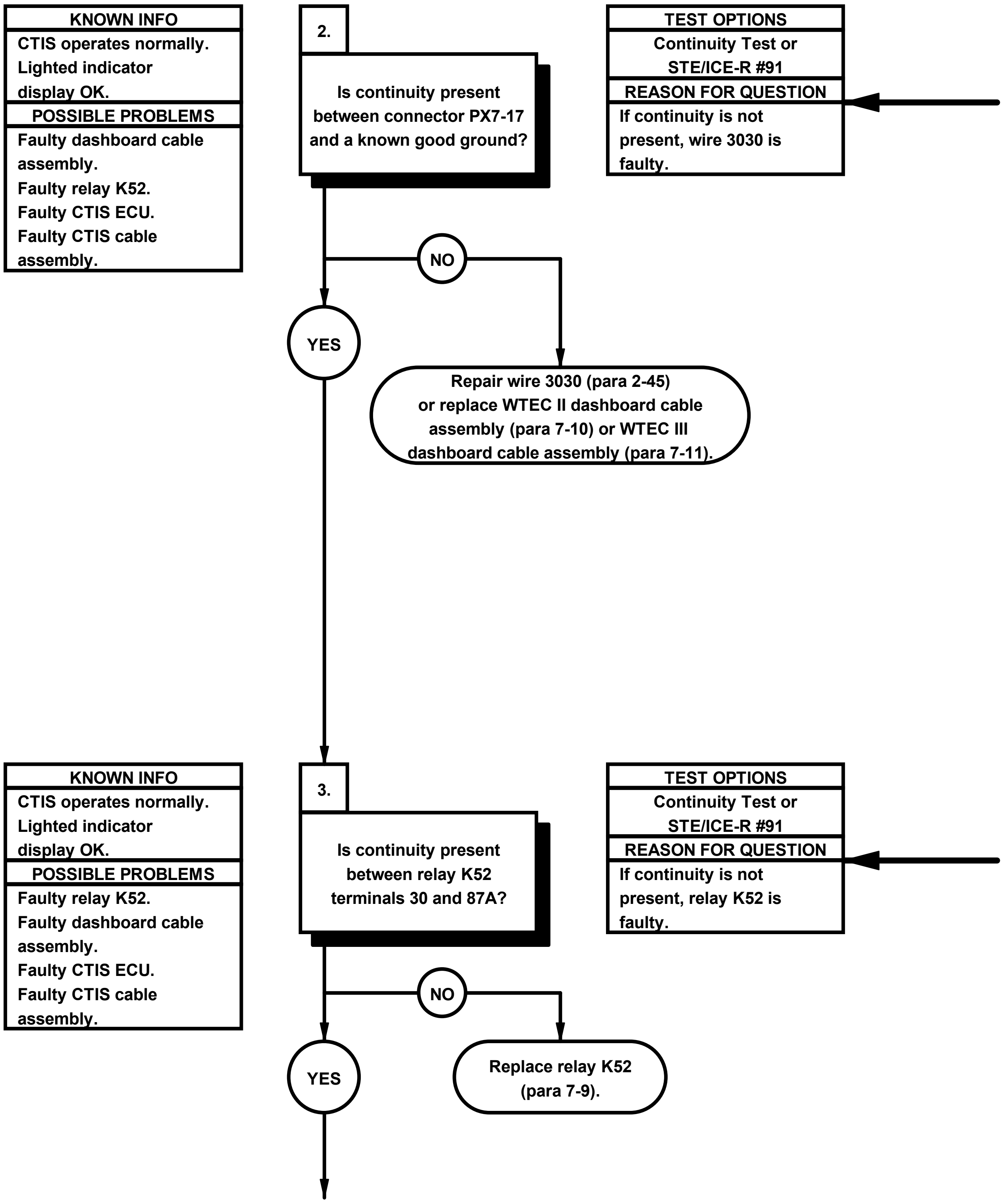
NO: Go to step 7 of this fault.

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 9.
(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 17 and note reading on multimeter.
(7) If continuity is not present, go to step 7 of this fault.



e25. CENTRAL TIRE INFLATION SYSTEM (CTIS) OVERSPEED INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

CTIS operates normally. Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K52.
Faulty CTIS ECU.
Faulty CTIS cable assembly.

2.

Is continuity present between connector PX7-17 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3030 is faulty.

Repair wire 3030 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO

CTIS operates normally. Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty relay K52.
Faulty dashboard cable assembly.
Faulty CTIS ECU.
Faulty CTIS cable assembly.

3.

Is continuity present between relay K52 terminals 30 and 87A?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, relay K52 is faulty.

Replace relay K52 (para 7-9).

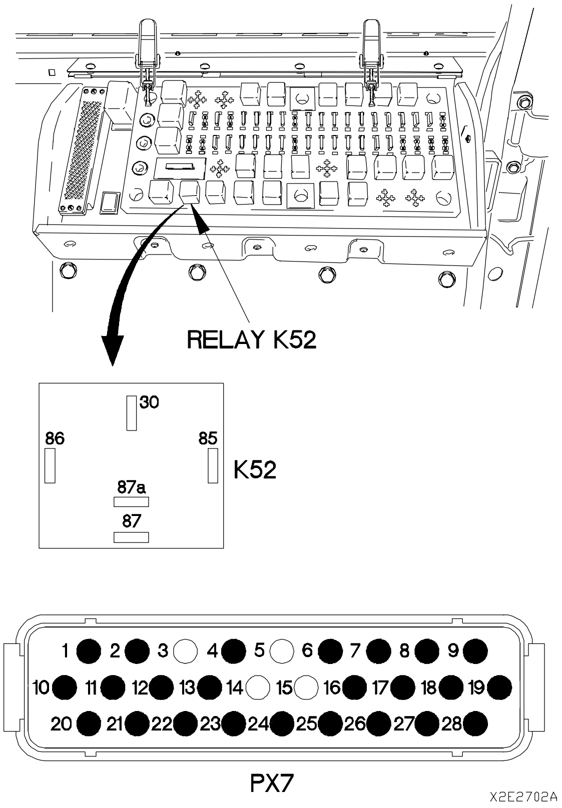
CONTINUITY TEST

(1) Set multimeter to ohms.

(2) Connect positive (+) probe of multimeter to connector PX7-17.

(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.

(4) If continuity is not present, repair wire 3030 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



CONTINUITY TEST

(1) Remove PDP cover (para 16-2).

(2) Remove relay K52 from PDP.

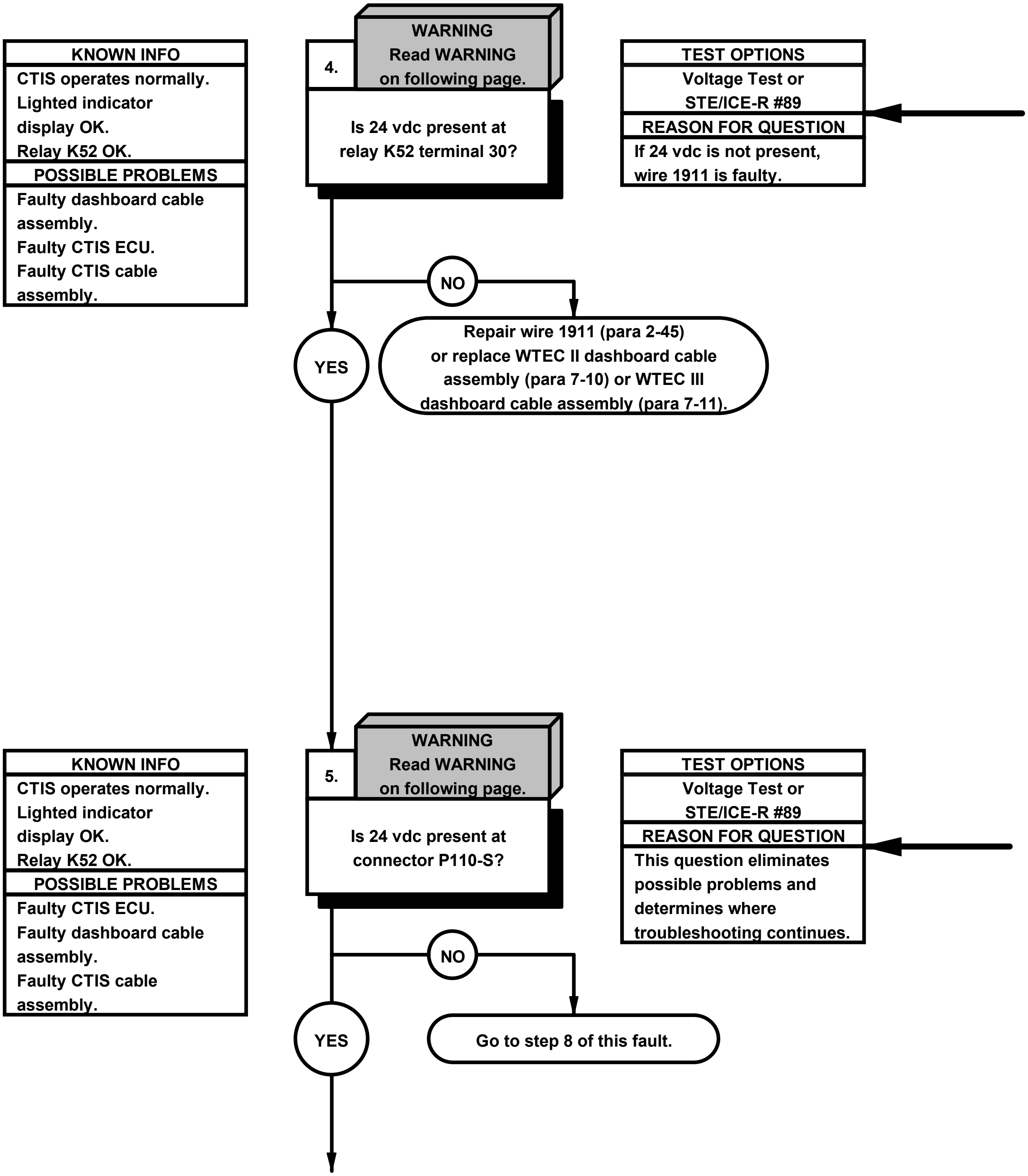
(3) Set multimeter to ohms.

(4) Connect positive (+) probe of multimeter to relay K52 terminal 30.

(5) Connect negative (-) probe of multimeter to relay K52 terminal 87A and note reading on multimeter.

(6) If continuity is not present, replace relay K52 (para 7-9).

e25. CENTRAL TIRE INFLATION SYSTEM (CTIS) OVERSPEED INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO
CTIS operates normally.
Lighted indicator display OK.
Relay K52 OK.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty CTIS ECU.
Faulty CTIS cable assembly.

4. **WARNING** Read WARNING on following page.

Is 24 vdc present at relay K52 terminal 30?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If 24 vdc is not present, wire 1911 is faulty.

NO: Repair wire 1911 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO
CTIS operates normally.
Lighted indicator display OK.
Relay K52 OK.

POSSIBLE PROBLEMS
Faulty CTIS ECU.
Faulty dashboard cable assembly.
Faulty CTIS cable assembly.

5. **WARNING** Read WARNING on following page.

Is 24 vdc present at connector P110-S?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 8 of this fault.

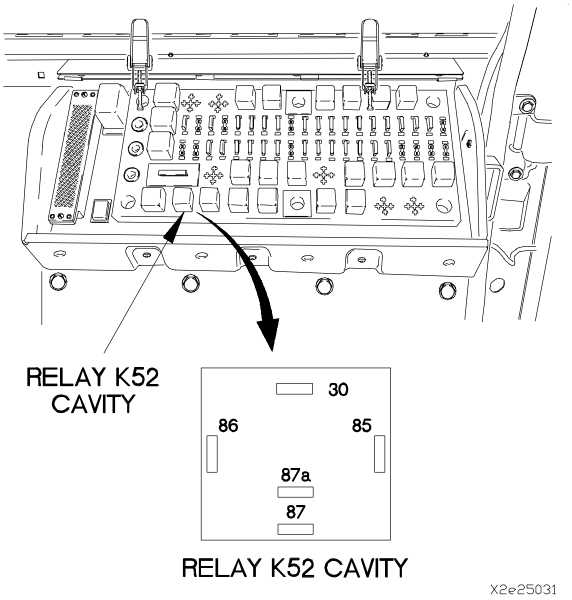
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Connect batteries (para 7-57).
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to PDP, terminal 30, where relay K52 was removed.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 24 vdc is not present, repair wire 1911 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Position master power switch to off (TM 9-2320-366-10-1).
(8) Install relay K52 in PDP.
(9) Install PDP cover (para 16-2).

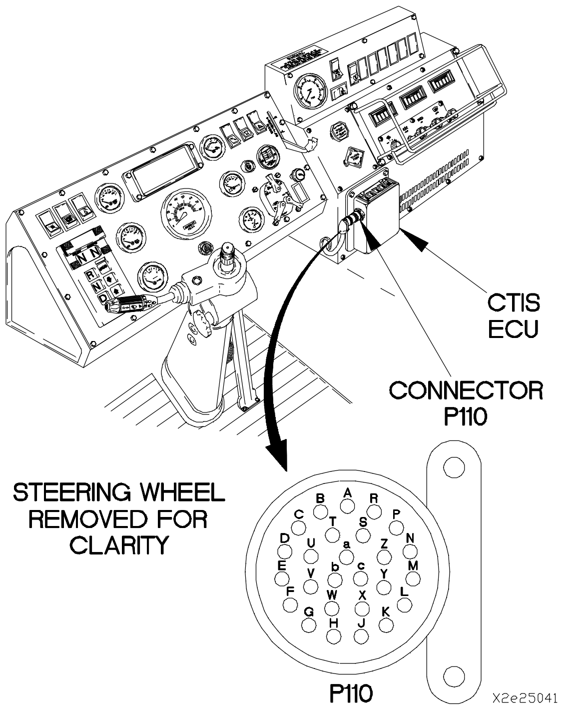


WARNING

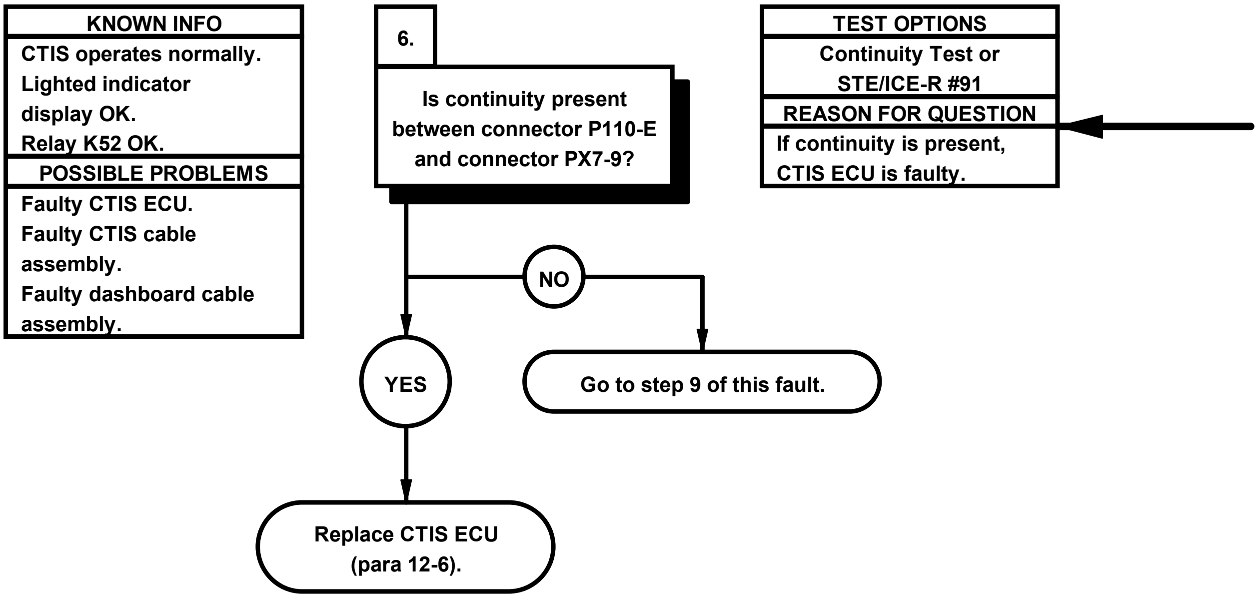
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector P110 from CTIS ECU.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector P110-S.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 24 vdc is not present, go to step 8 of this fault.
(7) Position master power switch to off (TM 9-2320-366-10-1).



e25. CENTRAL TIRE INFLATION SYSTEM (CTIS) OVERSPEED INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

CTIS operates normally.
Lighted indicator display OK.
Relay K52 OK.

POSSIBLE PROBLEMS

Faulty CTIS ECU.
Faulty CTIS cable assembly.
Faulty dashboard cable assembly.

6.

Is continuity present between connector P110-E and connector PX7-9?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

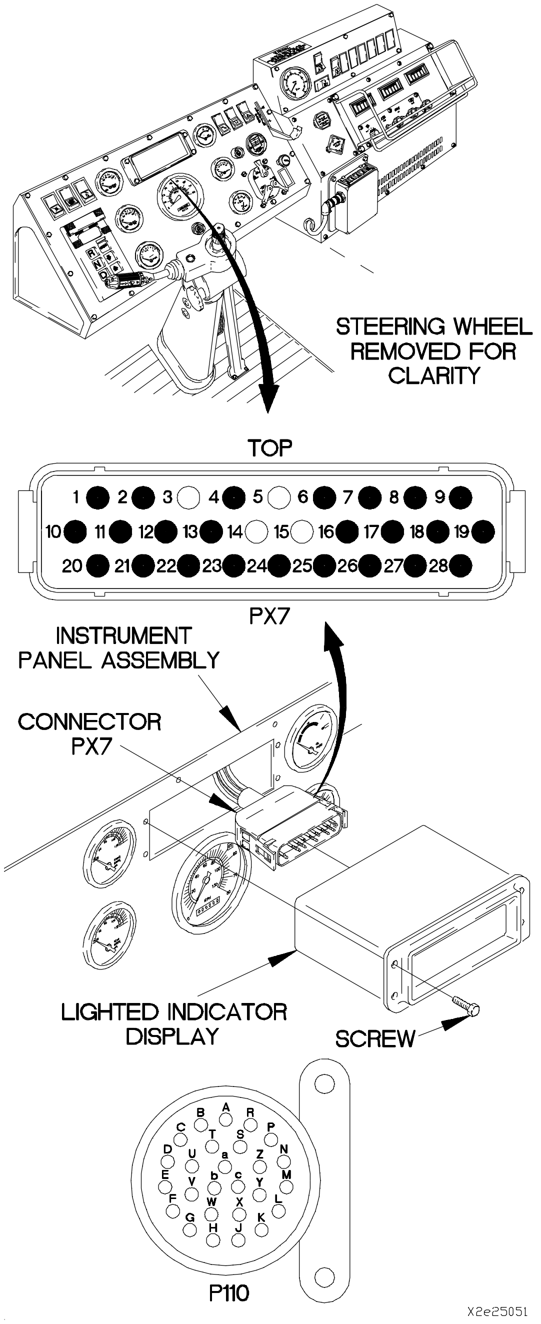
REASON FOR QUESTION

If continuity is present, CTIS ECU is faulty.

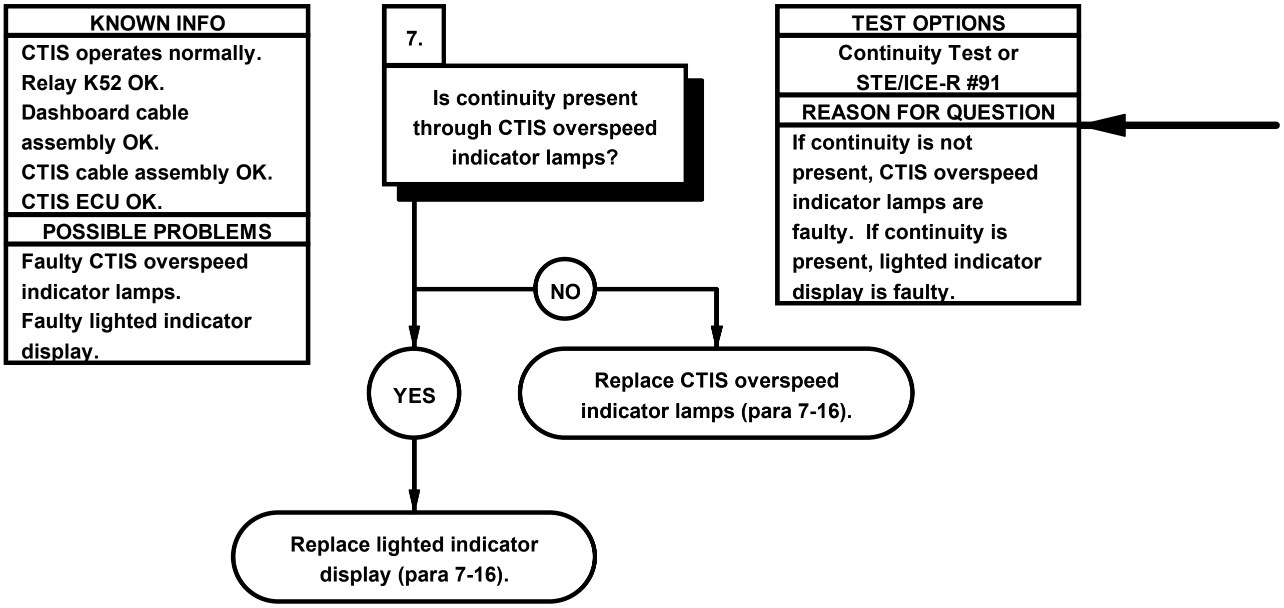
Go to step 9 of this fault.

Replace CTIS ECU (para 12-6).

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P110-E.
(3) Connect negative (-) probe of multimeter to connector PX7-9 and note reading on multimeter.
(4) If continuity is not present, go to step 9 of this fault.
(5) If continuity is present, replace CTIS ECU (para 12-6).
(6) Connect lighted indicator display to connector PX7.
(7) Position lighted indicator display in instrument panel assembly with four screws.
(8) Tighten four screws to 6-10 lb-in. (1 N·m).
(9) Connect batteries (para 7-57).



e25. CENTRAL TIRE INFLATION SYSTEM (CTIS) OVERSPEED INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

CTIS operates normally.
Relay K52 OK.
Dashboard cable assembly OK.
CTIS cable assembly OK.
CTIS ECU OK.

POSSIBLE PROBLEMS

Faulty CTIS overspeed indicator lamps.
Faulty lighted indicator display.

Is continuity present through CTIS overspeed indicator lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

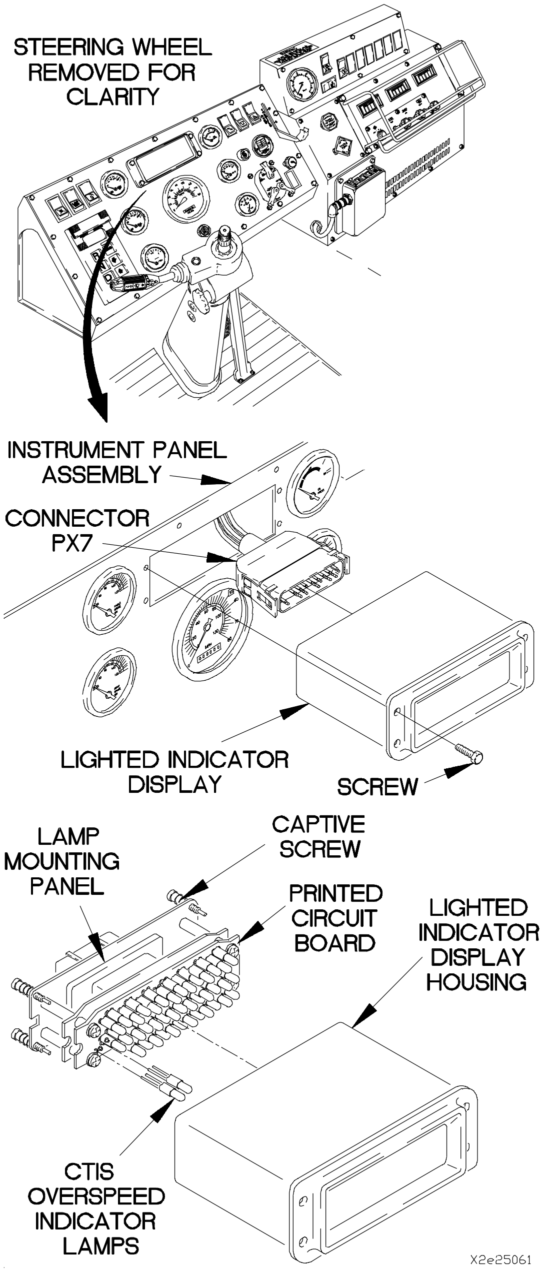
If continuity is not present, CTIS overspeed indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

Replace CTIS overspeed indicator lamps (para 7-16).

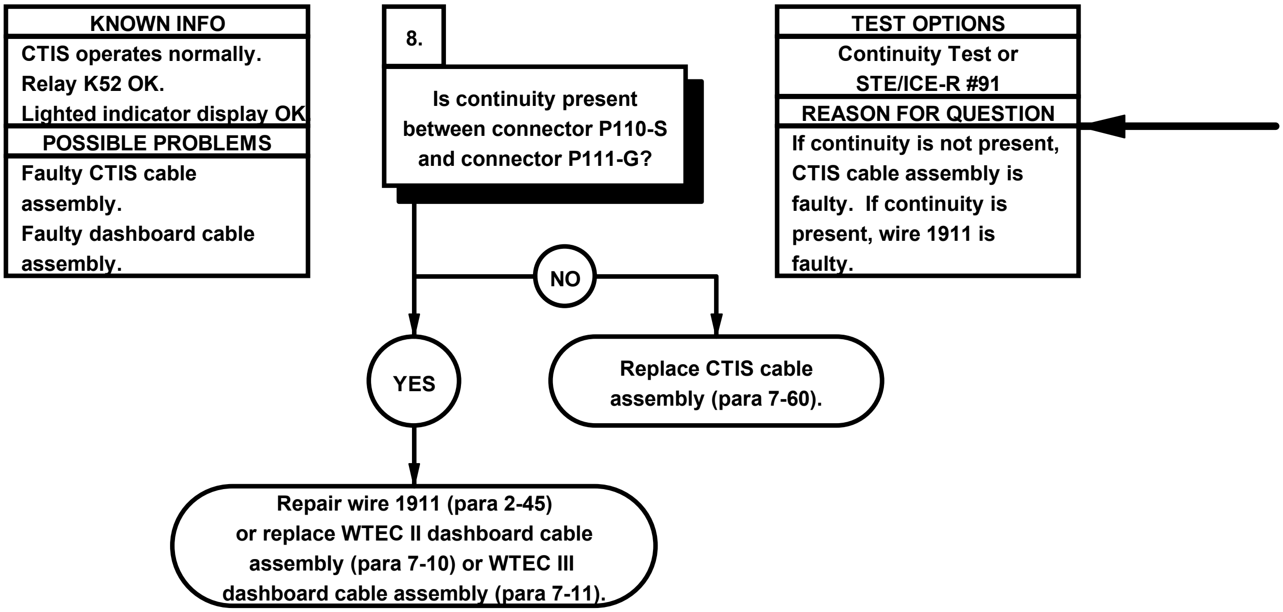
Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove CTIS overspeed indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each CTIS overspeed indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install CTIS overspeed indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).

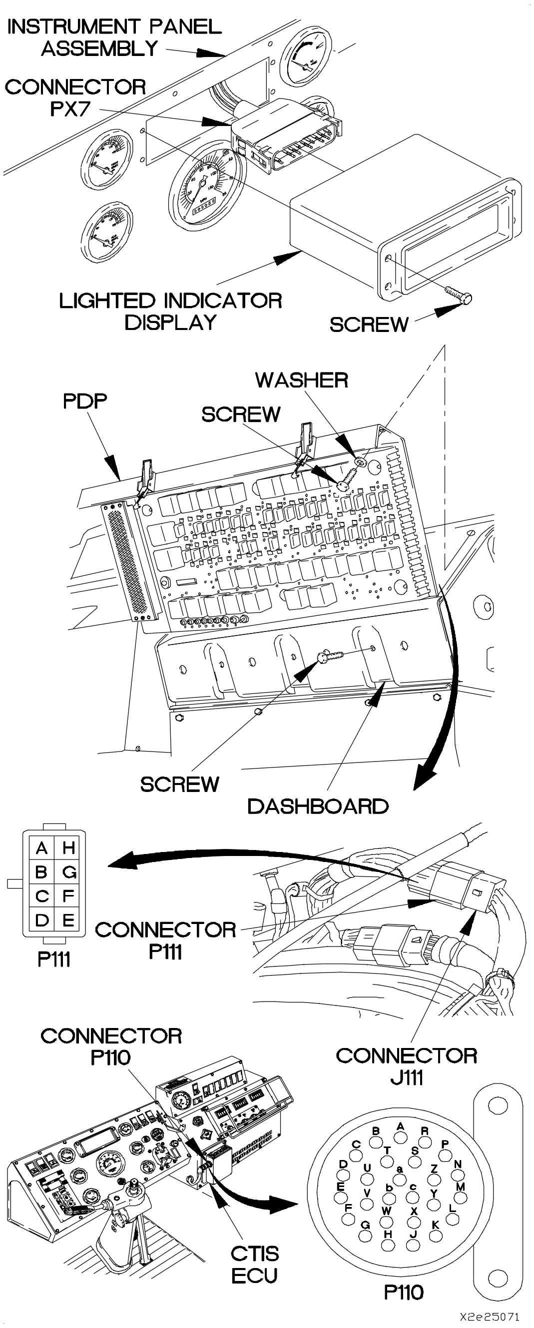


e25. CENTRAL TIRE INFLATION SYSTEM (CTIS) OVERSPEED INDICATOR DOES NOT OPERATE (CONT)

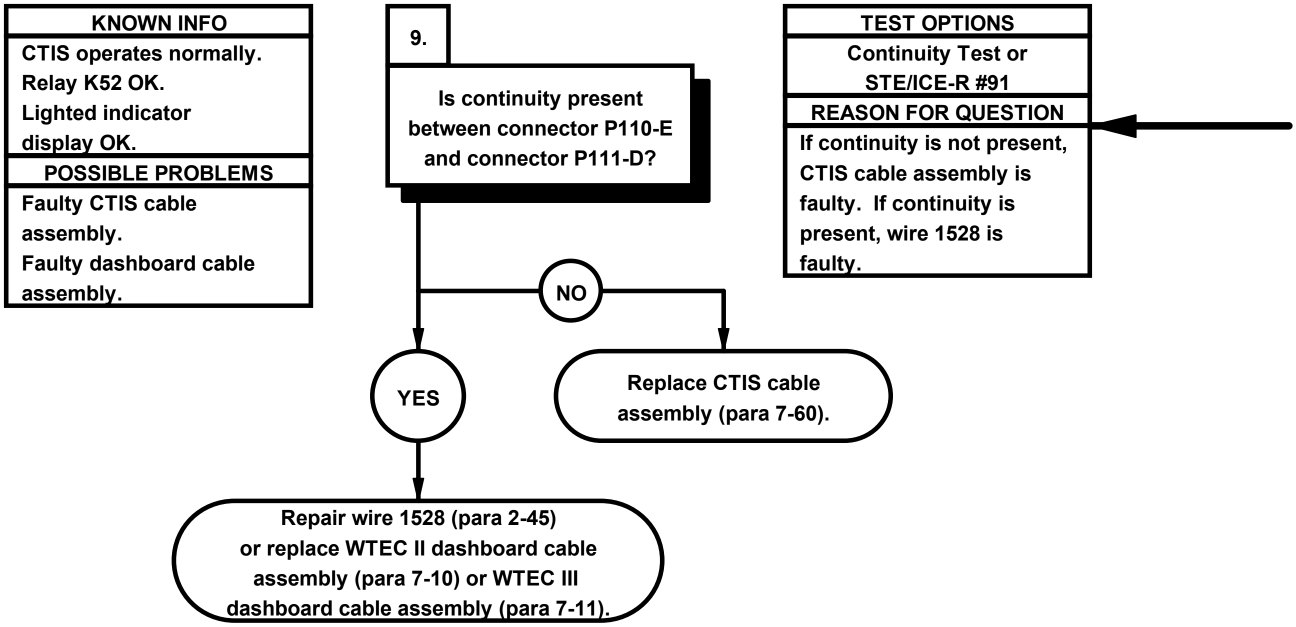


CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector P111 from connector J111.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector P110-S.
(8) Connect negative (-) probe of multimeter to connector P111-G and note reading on multimeter.
(9) If continuity is not present, replace CTIS cable assembly (para 7-60).
(10) If continuity is present, repair wire 1911 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) Connect connector P111 to connector J111.
(12) Install PDP on dashboard with three screws.
(13) Install three washers and screws in PDP.
(14) Install PDP cover (para 16-2).
(15) Connect lighted indicator display to connector PX7.
(16) Position lighted indicator display in instrument panel assembly with four screws.
(17) Tighten four screws to 6-10 lb-in. (1 N·m).



e25. CENTRAL TIRE INFLATION SYSTEM (CTIS) OVERSPEED INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

CTIS operates normally.
Relay K52 OK.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty CTIS cable assembly.
Faulty dashboard cable assembly.

9.

Is continuity present between connector P110-E and connector P111-D?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, CTIS cable assembly is faulty. If continuity is present, wire 1528 is faulty.

NO

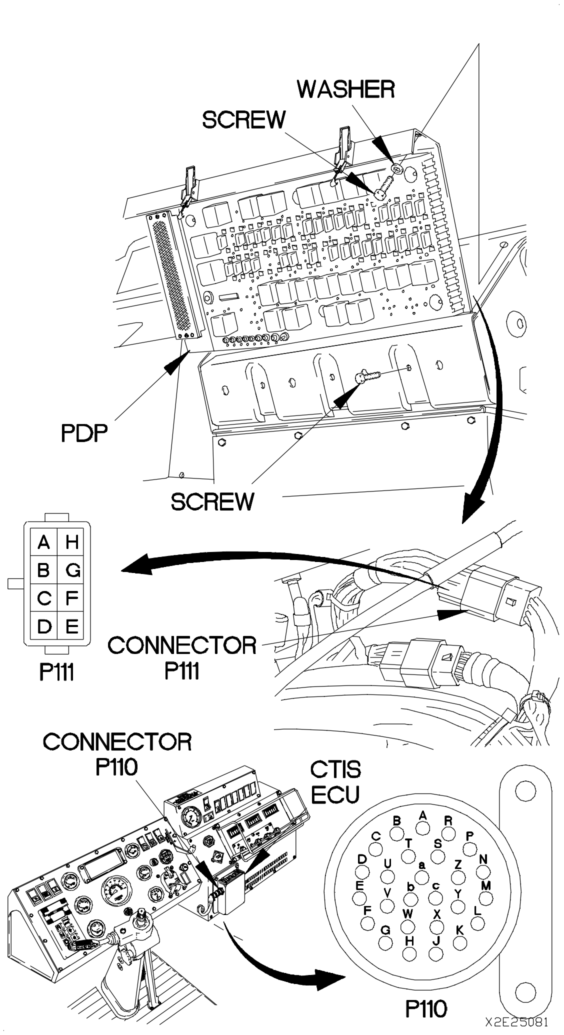
Replace CTIS cable assembly (para 7-60).

YES

Repair wire 1528 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector P111 from connector J111.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector P110-E.
(8) Connect negative (-) probe of multimeter to connector P111-D and note reading on multimeter.
(9) If continuity is not present, replace CTIS cable assembly (para 7-60).
(10) If continuity is present, repair wire 1528 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) Connect connector P111 to connector J111.
(12) Install PDP on dashboard with three screws.
(13) Install three washers and screws in PDP.
(14) Install PDP cover (para 16-2).
(15) Connect connector P110 to CTIS ECU.



e26. CHEMICAL DETECTOR INDICATOR DOES NOT OPERATE

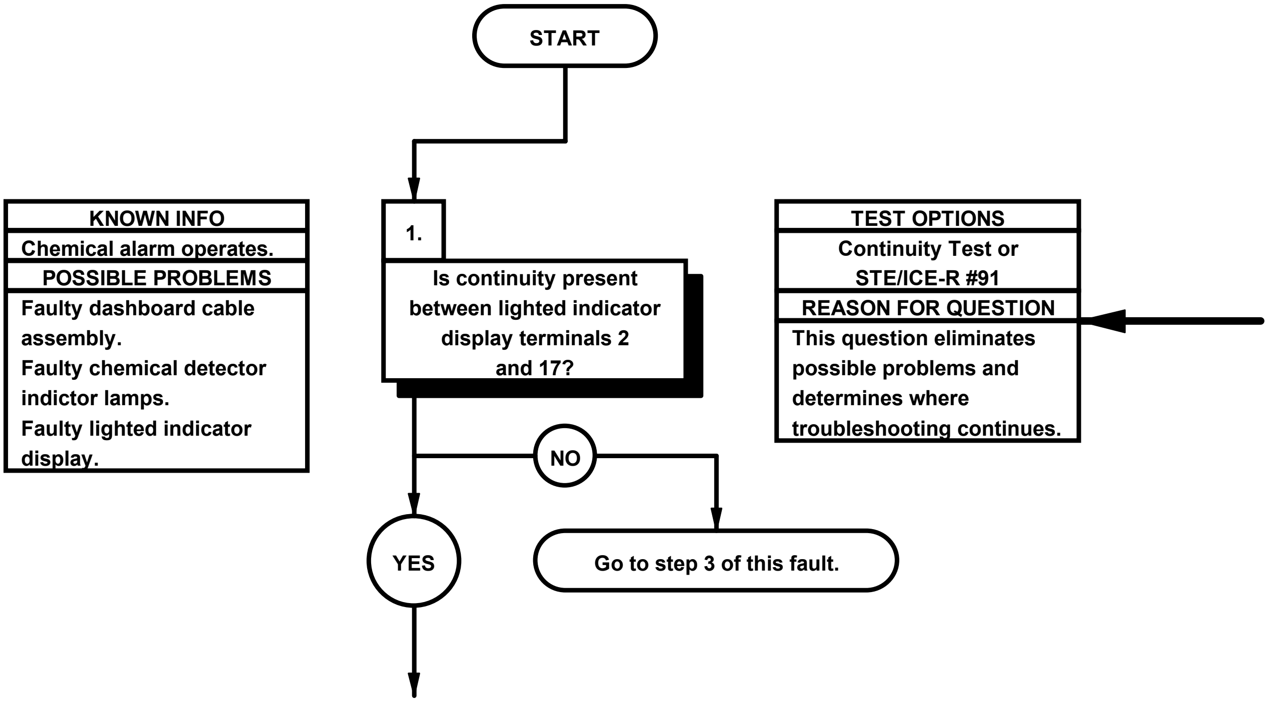
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



START

1. Is continuity present between lighted indicator display terminals 2 and 17?

KNOWN INFO
Chemical alarm operates.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty chemical detector indictor lamps.
Faulty lighted indicator display.

TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 3 of this fault.

YES

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.

(2) Remove lighted indicator display from instrument panel assembly.

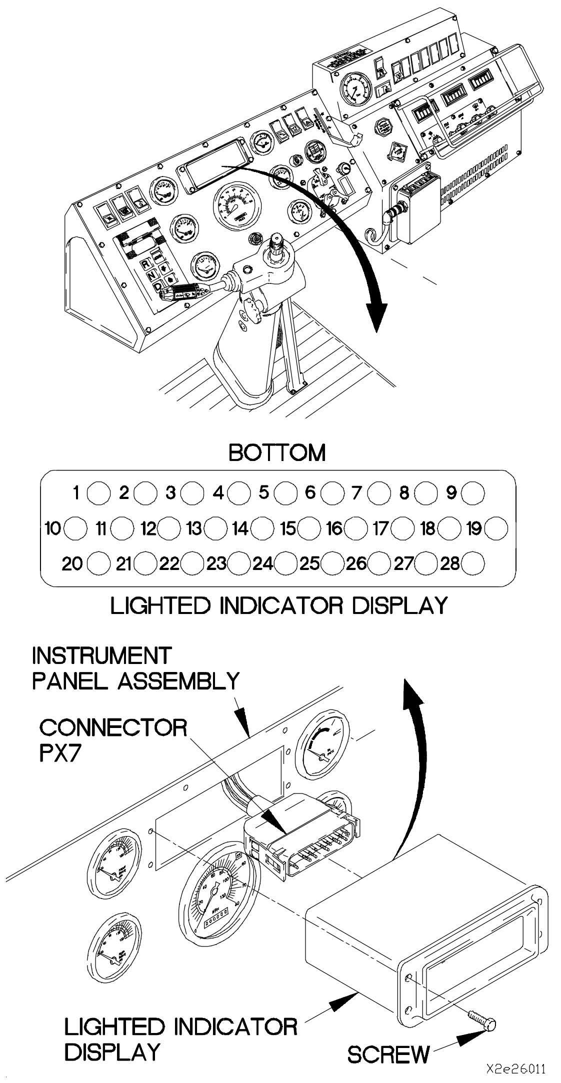
(3) Disconnect connector PX7 from lighted indicator display.

(4) Set multimeter to ohms.

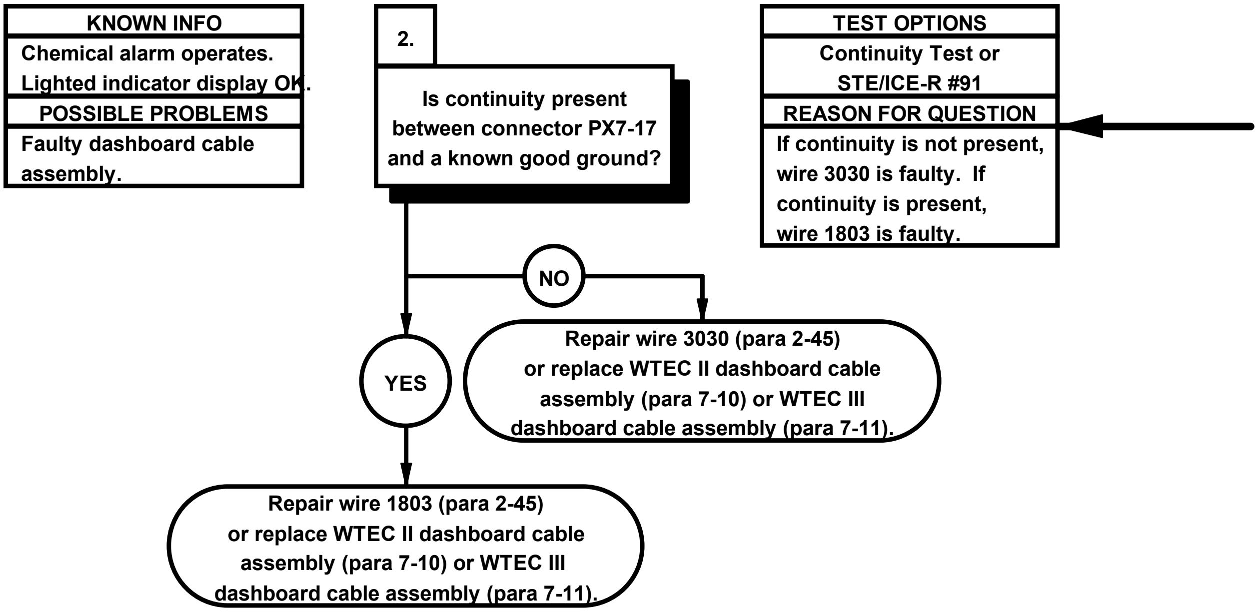
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 2.

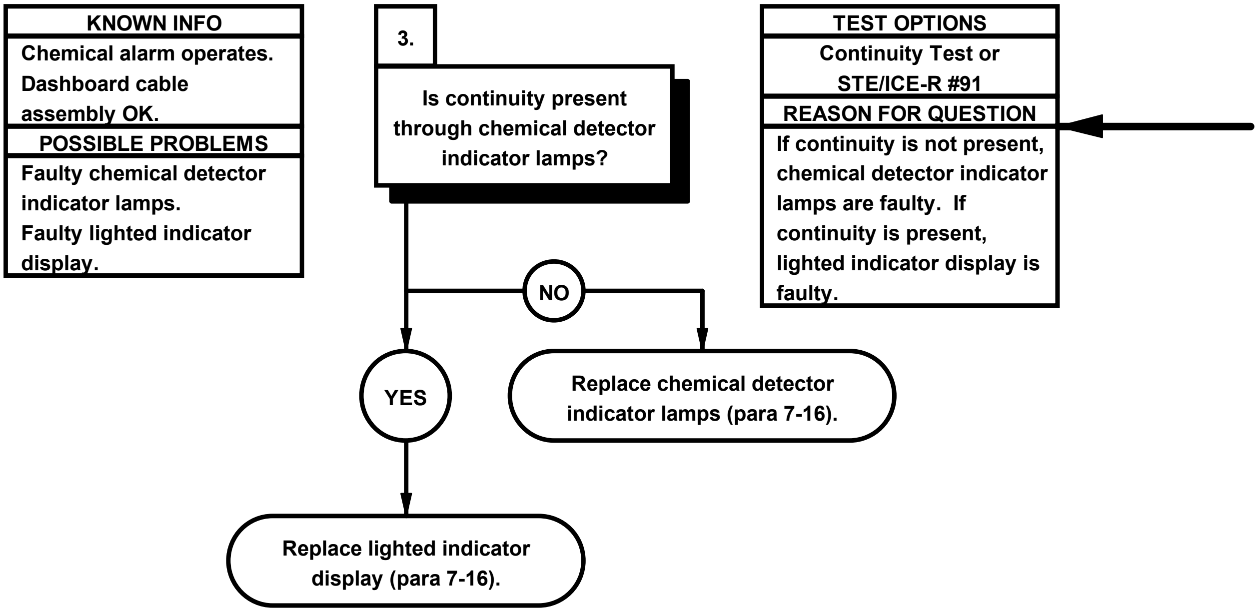
(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 17 and note reading on multimeter.

(7) If continuity is not present, go to step 3 of this fault.



e26. CHEMICAL DETECTOR INDICATOR DOES NOT OPERATE (CONT)



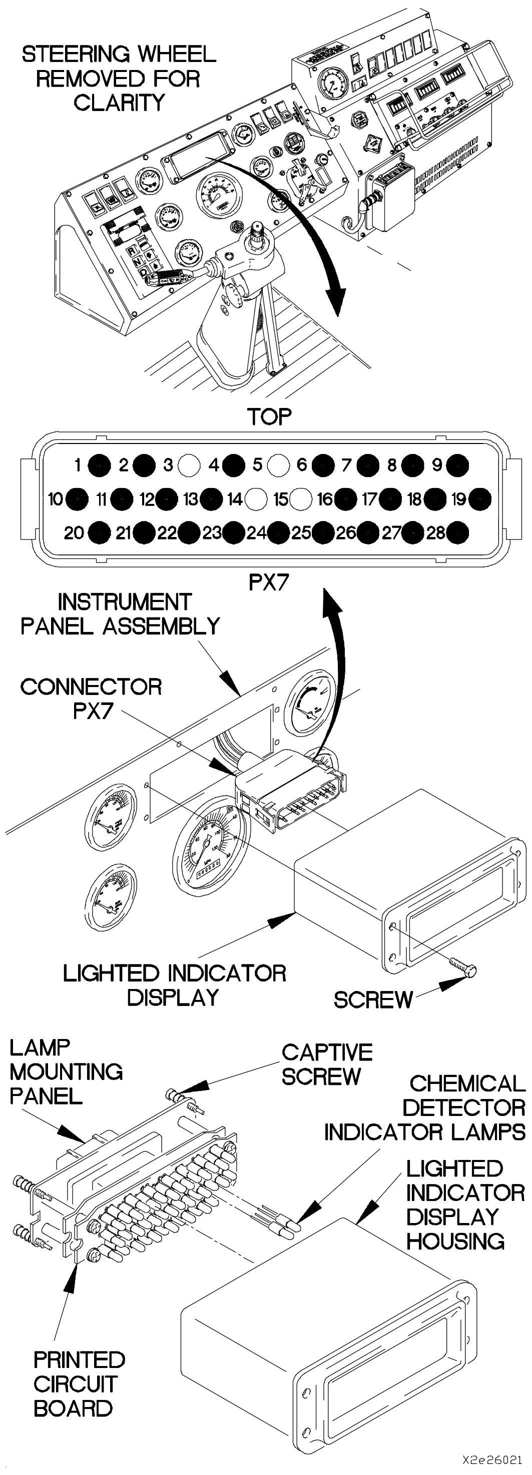


CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX7-17.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3030 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, repair wire 1803 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect lighted indicator display to connector PX7.
(7) Position lighted indicator display in instrument panel assembly with four screws.
(8) Tighten four screws to 6-10 lb-in. (1 N·m).
(9) Connect batteries (para 7-57).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove chemical detector indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each chemical detector indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install chemical detector indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e27. LEFT TURN SIGNAL INDICATOR DOES NOT OPERATE

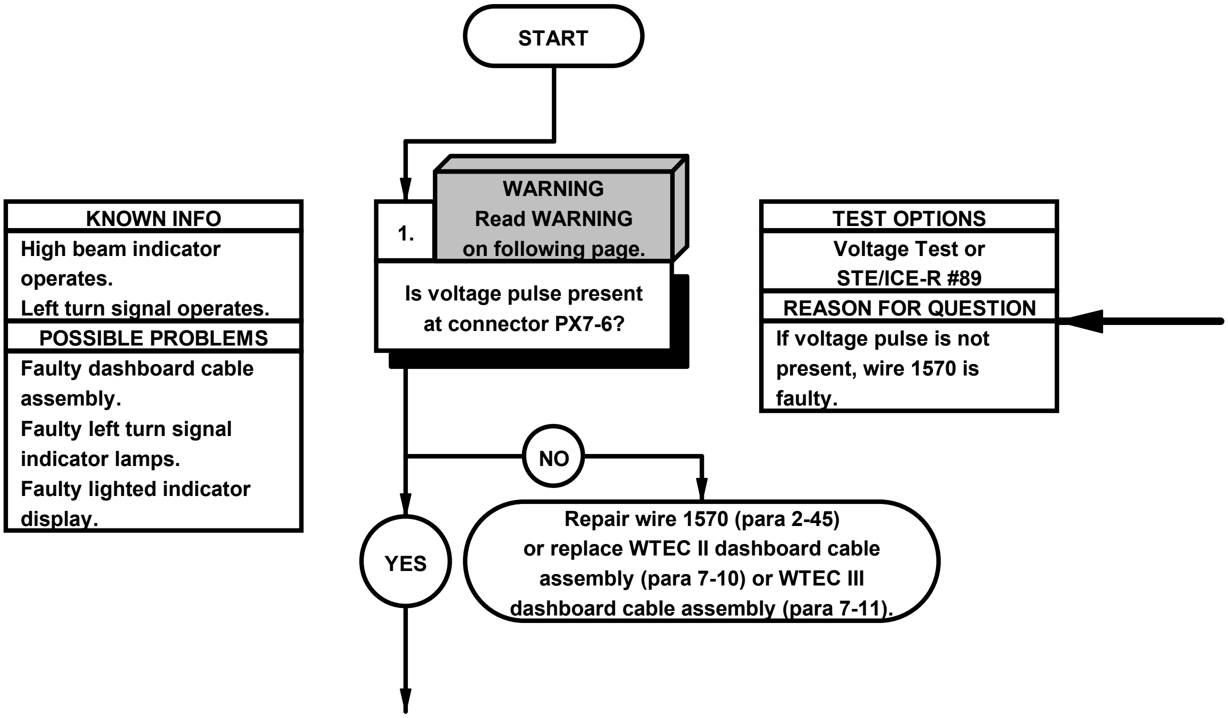
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



KNOWN INFO
High beam indicator operates.
Left turn signal operates.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty left turn signal indicator lamps.
Faulty lighted indicator display.

WARNING
Read WARNING on following page.

1. Is voltage pulse present at connector PX7-6?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If voltage pulse is not present, wire 1570 is faulty.

NO: Repair wire 1570 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove four screws from lighted indicator display.

(2) Remove lighted indicator display from instrument panel assembly.

(3) Disconnect connector PX7 from lighted indicator display.

(4) Connect batteries (para 7-57).

(5) Set multimeter to volts dc.

(6) Connect positive (+) probe of multimeter to connector PX7-6.

(7) Connect negative (-) probe of multimeter to ground.

(8) Position master power switch to on (TM 9-2320-366-10-1).

(9) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).

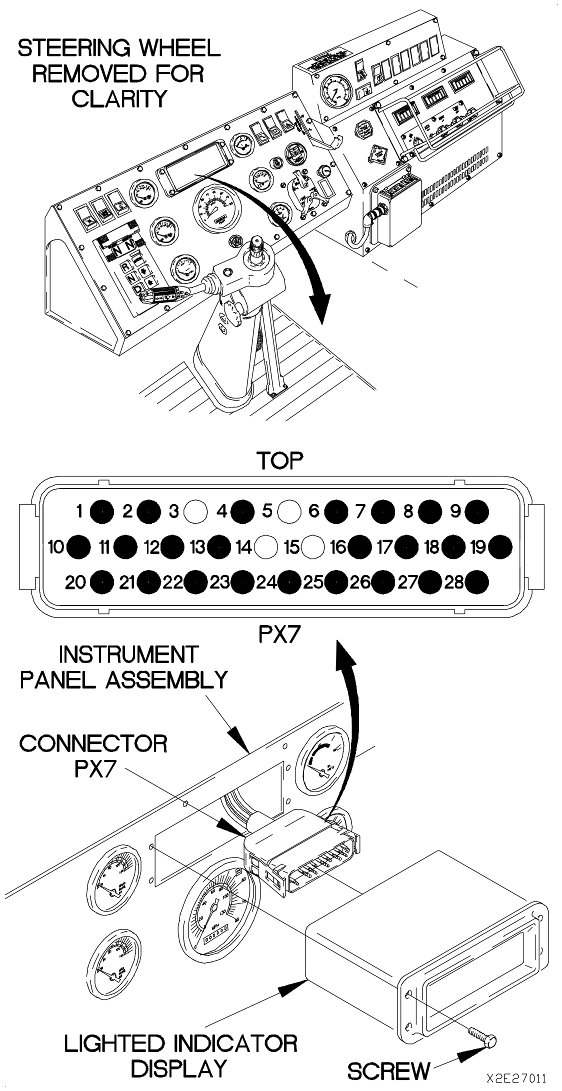
(10) Position turn signal to left turn signal position (TM 9-2320-366-10-1) and note reading on multimeter.

(11) If voltage pulse is not present, repair wire 1570 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

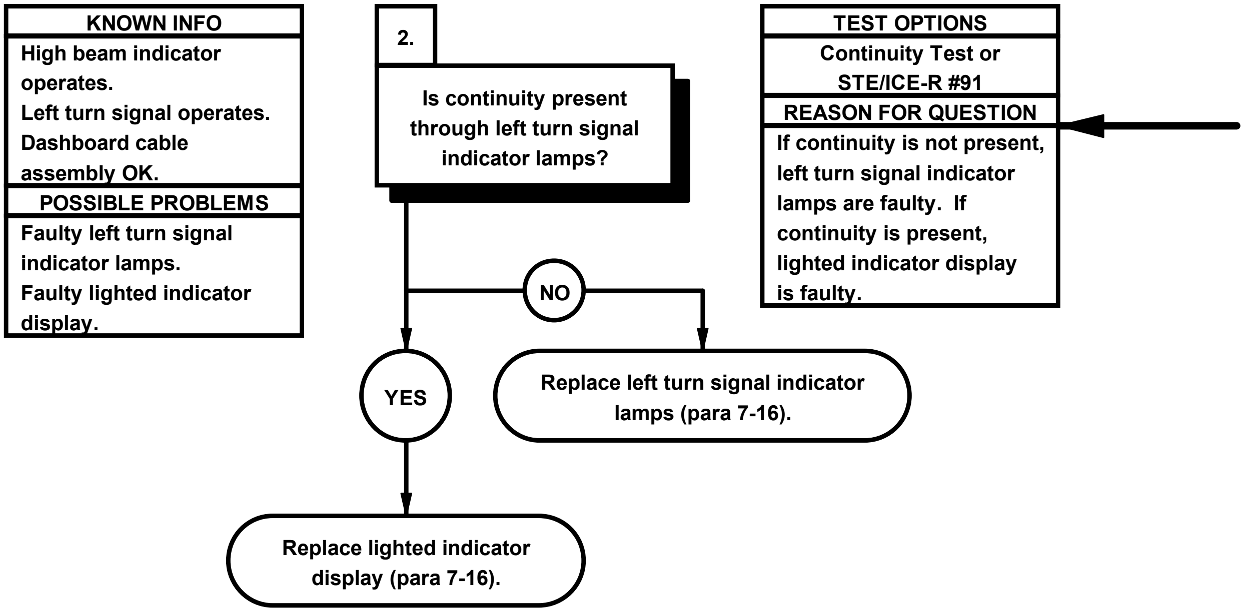
(12) Position master power switch to off (TM 9-2320-366-10-1).

(13) Position main light switch to OFF (TM 9-2320-366-10-1).

(14) Position turn signal switch to middle position (TM 9-2320-366-10-1).



e27. LEFT TURN SIGNAL INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

High beam indicator operates.
Left turn signal operates.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty left turn signal indicator lamps.
Faulty lighted indicator display.

2.

Is continuity present through left turn signal indicator lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, left turn signal indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

NO

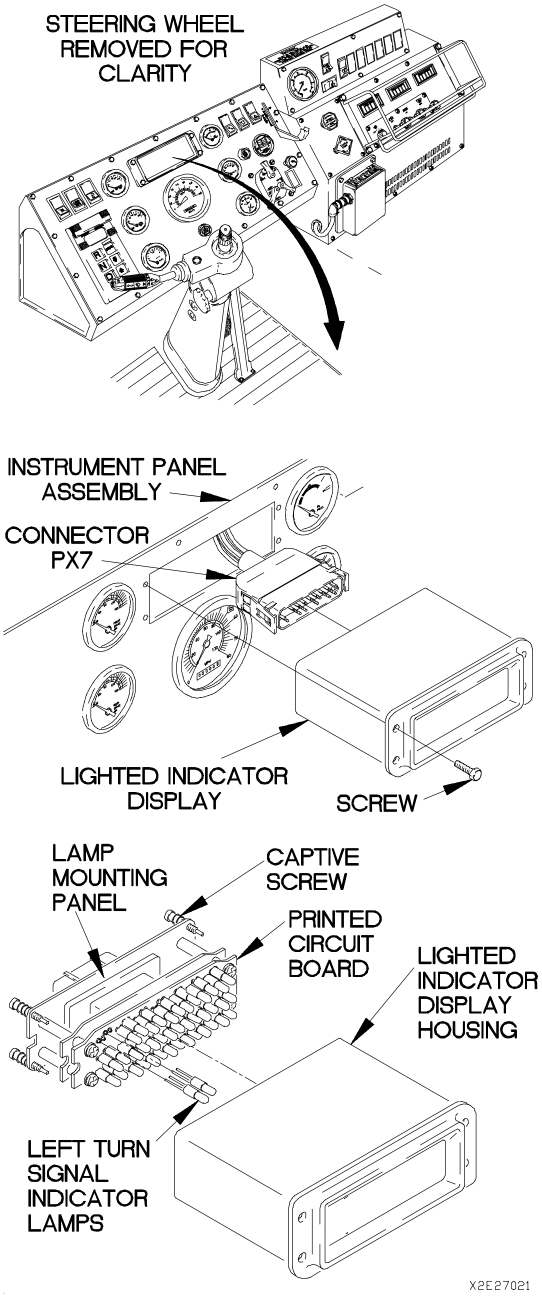
Replace left turn signal indicator lamps (para 7-16).

YES

Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove left turn signal indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each left turn signal indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install left turn signal indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Disconnect batteries (para 7-57).
(12) Connect lighted indicator display to connector PX7.
(13) Position lighted indicator display in instrument panel assembly with four screws.
(14) Tighten four screws to 6-10 lb-in. (1 N·m).



e28. RIGHT TURN SIGNAL INDICATOR DOES NOT OPERATE

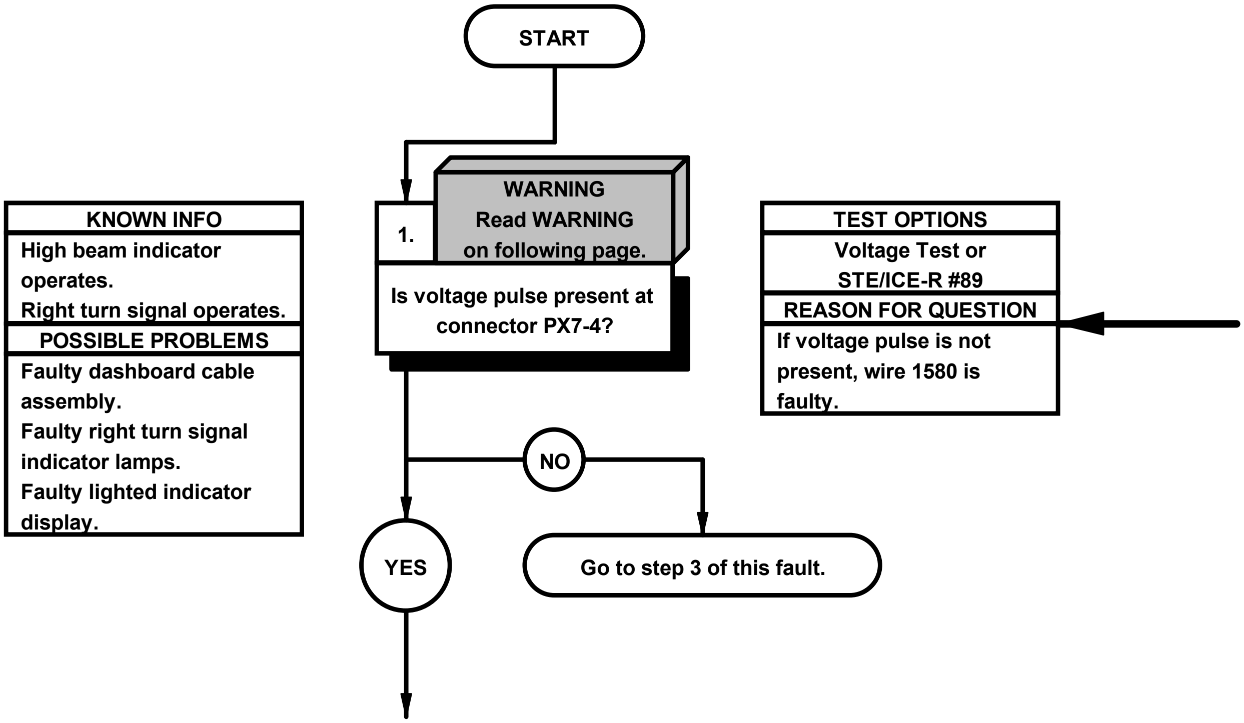
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



KNOWN INFO
High beam indicator operates.
Right turn signal operates.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty right turn signal indicator lamps.
Faulty lighted indicator display.

WARNING
Read WARNING on following page.

1\. Is voltage pulse present at connector PX7-4?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If voltage pulse is not present, wire 1580 is faulty.

Go to step 3 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove four screws from lighted indicator display.

(2) Remove lighted indicator display from instrument panel assembly.

(3) Disconnect connector PX7 from lighted indicator display.

(4) Connect batteries (para 7-57).

(5) Set multimeter to volts dc.

(6) Connect positive (+) probe of multimeter to connector PX7-4.

(7) Connect negative (-) probe of multimeter to ground.

(8) Position master power switch to on (TM 9-2320-366-10-1).

(9) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).

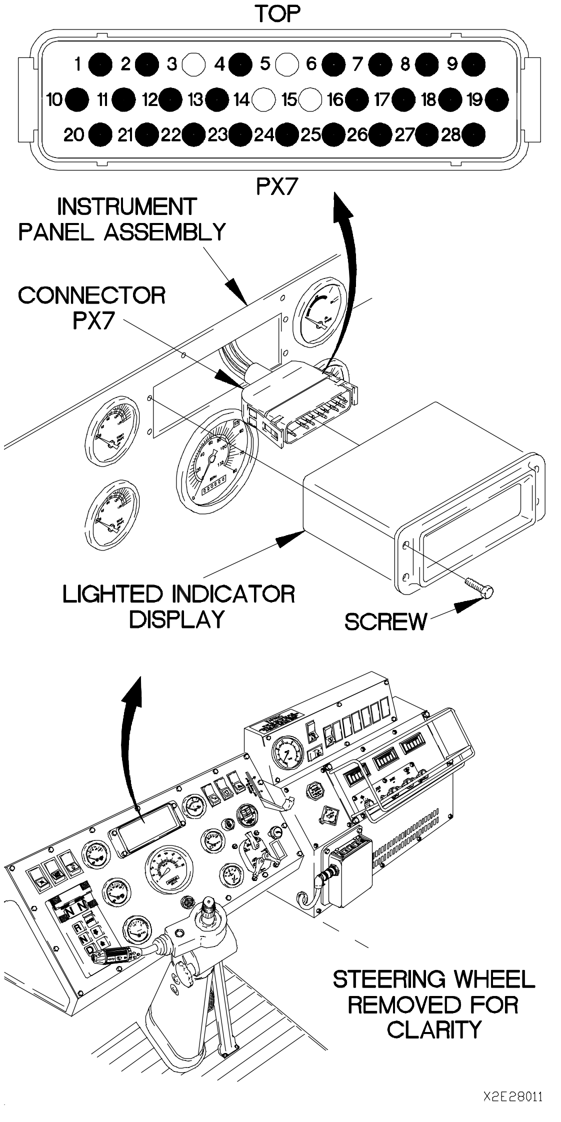
(10) Position right signal to right turn signal position (TM 9-2320-366-10-1) and note reading on multimeter.

(11) If voltage pulse is not present, go to step 3 of this fault.

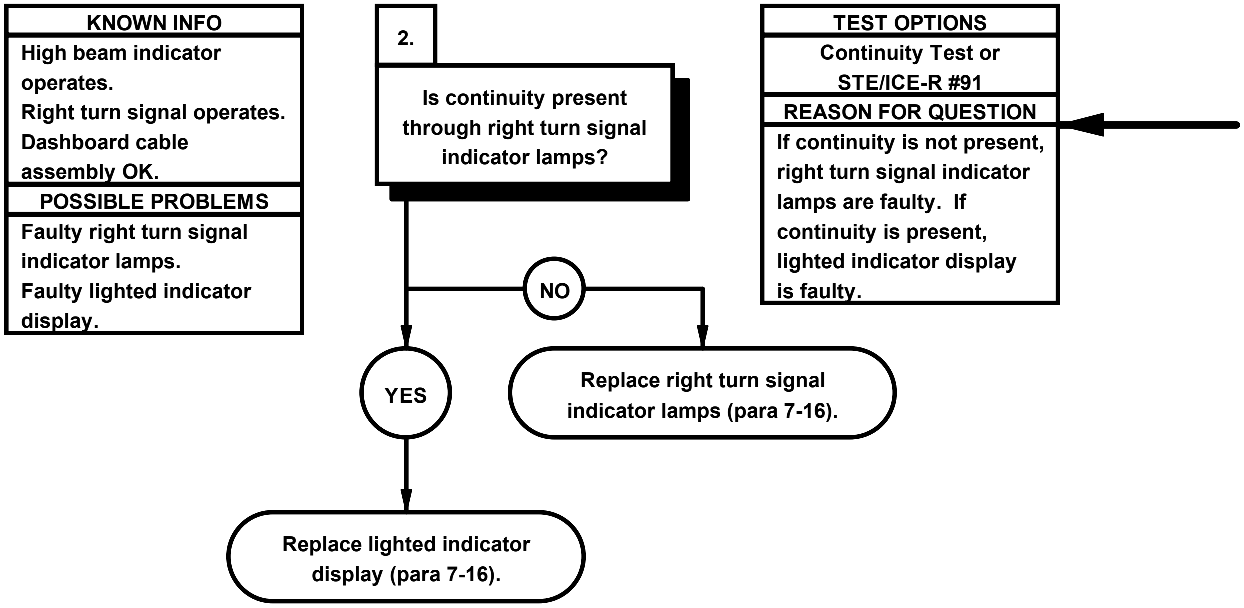
(12) Position master power switch to off (TM 9-2320-366-10-1).

(13) Position main light switch to OFF (TM 9-2320-366-10-1).

(14) Position turn signal control to middle position (TM 9-2320-366-10-1).



e28. RIGHT TURN SIGNAL INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

High beam indicator operates.
Right turn signal operates.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty right turn signal indicator lamps.
Faulty lighted indicator display.

2.

Is continuity present through right turn signal indicator lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

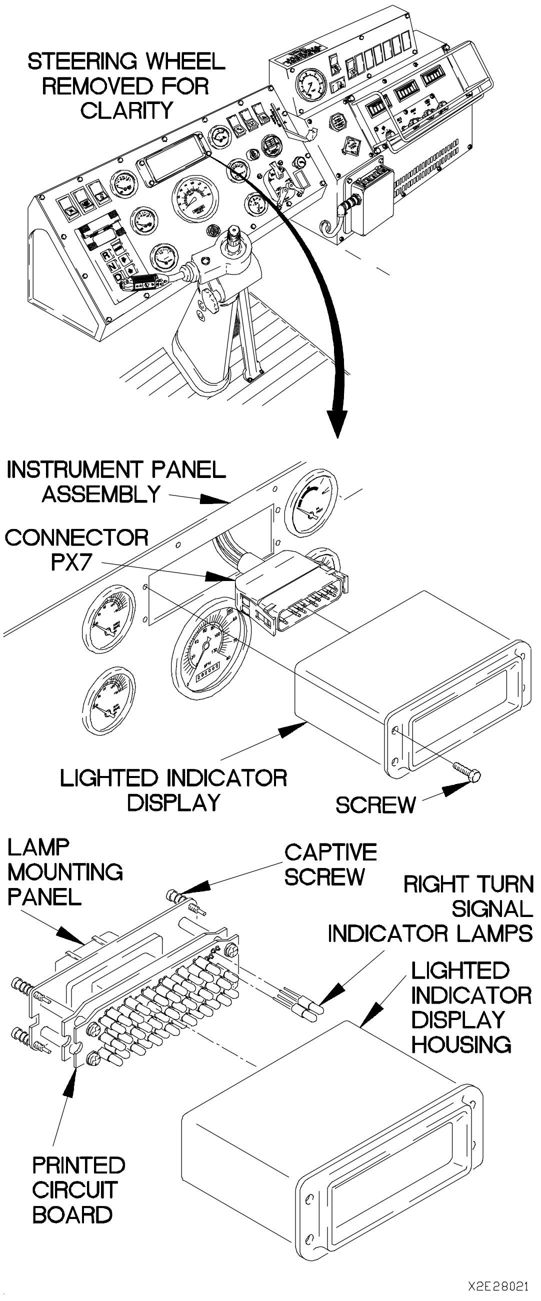
If continuity is not present, right turn signal indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

Replace right turn signal indicator lamps (para 7-16).

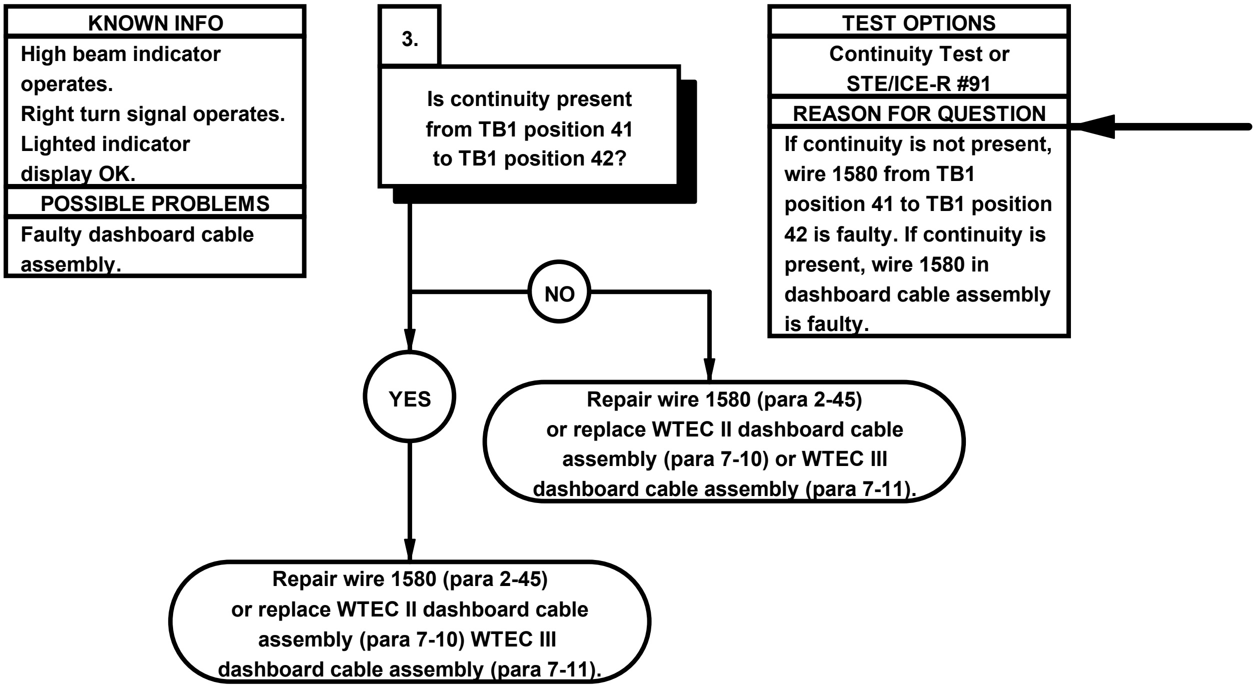
Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove right turn signal indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each right turn signal indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install right turn signal indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Disconnect batteries (para 7-57).
(12) Connect lighted indicator display to connector PX7.
(13) Position lighted indicator display in instrument panel assembly with four screws.
(14) Tighten four screws to 6-10 lb-in. (1 N·m).
(15) Connect batteries (para 7-57).



e28. RIGHT TURN SIGNAL INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

High beam indicator operates.
Right turn signal operates.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

3.

Is continuity present from TB1 position 41 to TB1 position 42?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1580 from TB1 position 41 to TB1 position 42 is faulty. If continuity is present, wire 1580 in dashboard cable assembly is faulty.

NO

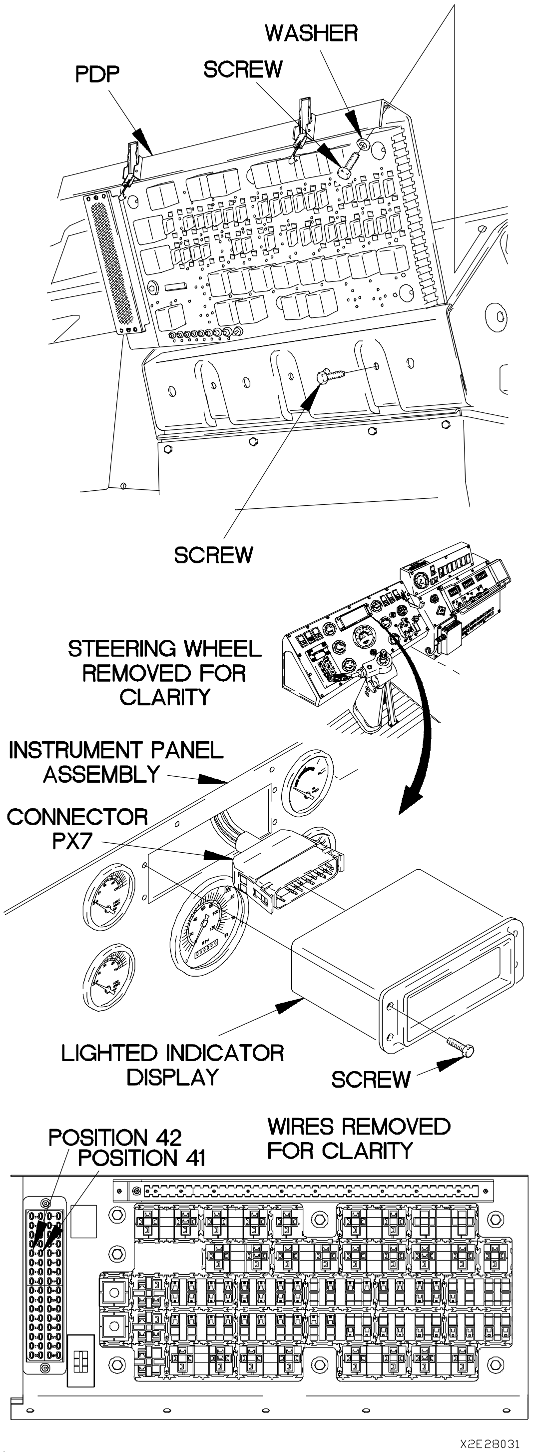
Repair wire 1580 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 1580 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove PDP cover (para 16-2).
(3) Remove three screws and washers from PDP.
(4) Remove three screws from PDP.
(5) Lift PDP outward to gain access.
(6) Connect positive (+) probe of multimeter to terminal board TB1, position 41.
(7) Connect negative (-) probe of multimeter to terminal board TB1, position 42 and note reading on multimeter.
(8) If continuity is not present, repair wire 1580 from terminal board TB1, position 41 to terminal TB1, position 42 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If continuity is present, repair wire 1580 in dashboard cable assembly (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) Install PDP on dashboard with three screws.
(11) Install three washers and screws in PDP.
(12) Install PDP cover (para 16-2).
(13) Connect lighted indicator display to connector PX7.
(14) Position lighted indicator display in instrument panel assembly with four screws.
(15) Tighten four screws to 6-10 lb-in. (1 N·m).
(16) Connect batteries (para 7-57).



e29. TURN SIGNAL INDICATORS AND HIGH BEAMS ON INDICATOR DO NOT OPERATE

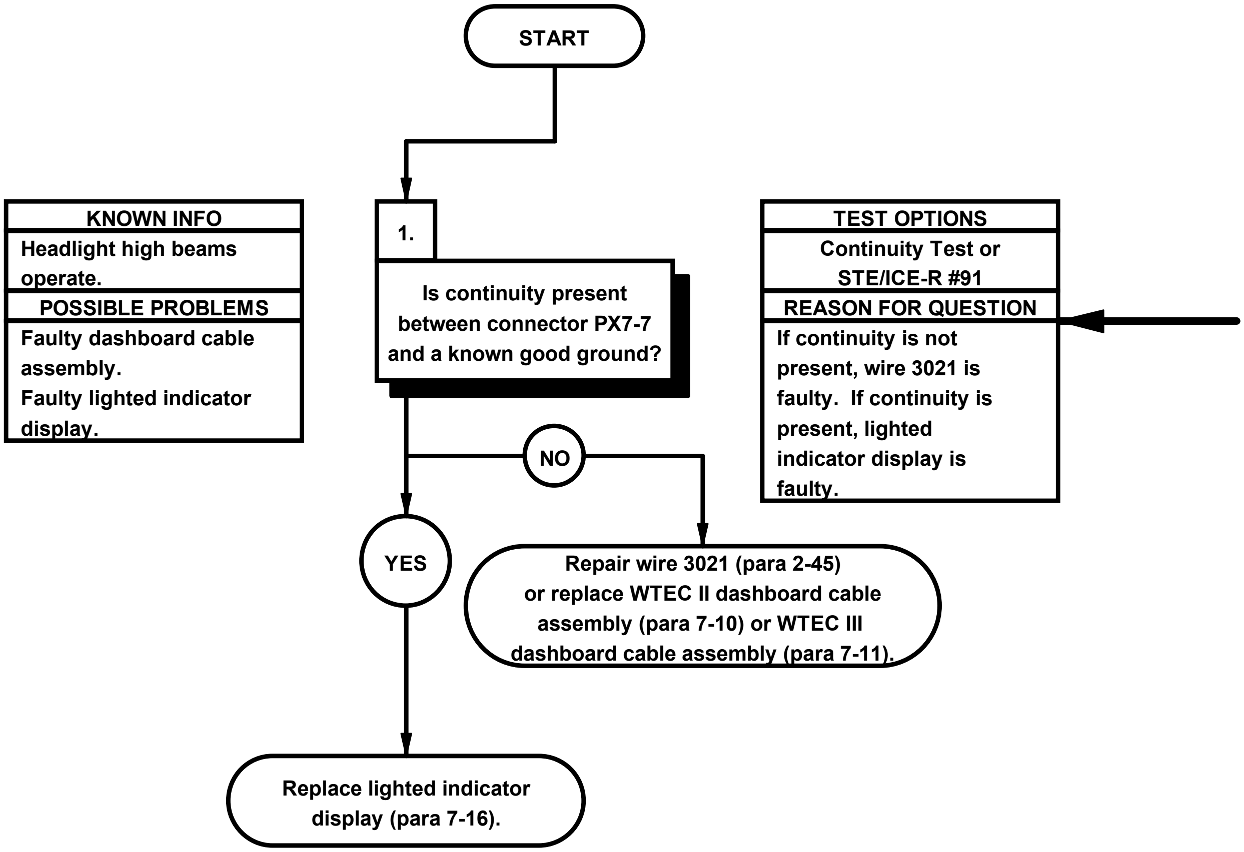
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



START

KNOWN INFO
Headlight high beams operate.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty lighted indicator display.

1\. Is continuity present between connector PX7-7 and a known good ground?

TEST OPTIONS
Continuity Test or STE/ICE-R #91

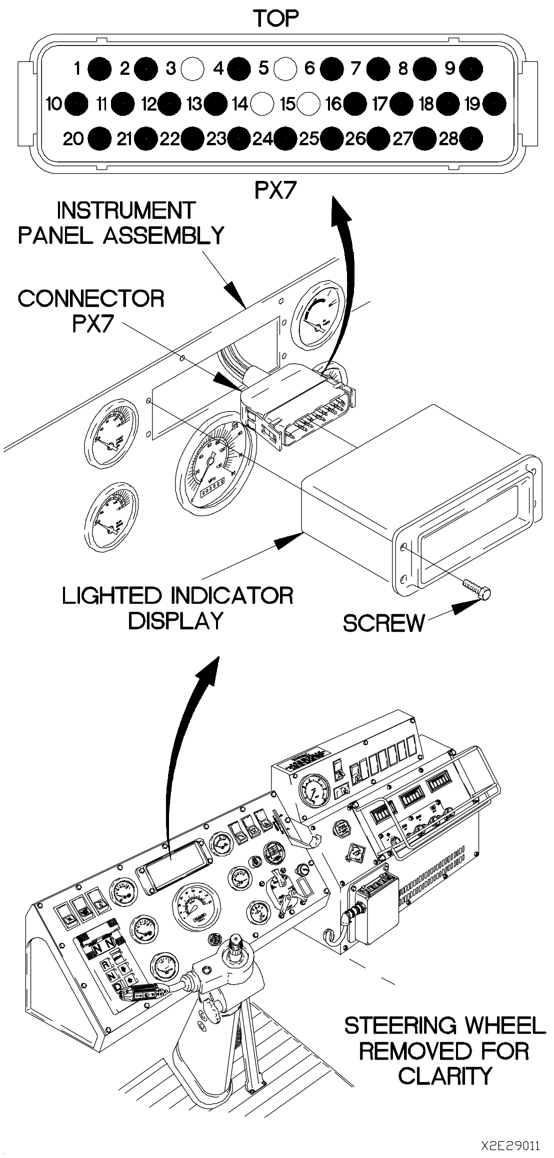
REASON FOR QUESTION
If continuity is not present, wire 3021 is faulty. If continuity is present, lighted indicator display is faulty.

NO: Repair wire 3021 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX7-7.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present, repair wire 3021 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, replace lighted indicator display (para 7-16).
(9) Connect lighted indicator display to connector PX7.
(10) Position lighted indicator display in instrument panel assembly with four screws.
(11) Tighten four screws to 6-10 lb-in. (1 N·m).
(12) Connect batteries (para 7-57).



e30. HIGH BEAMS ON INDICATOR DOES NOT OPERATE

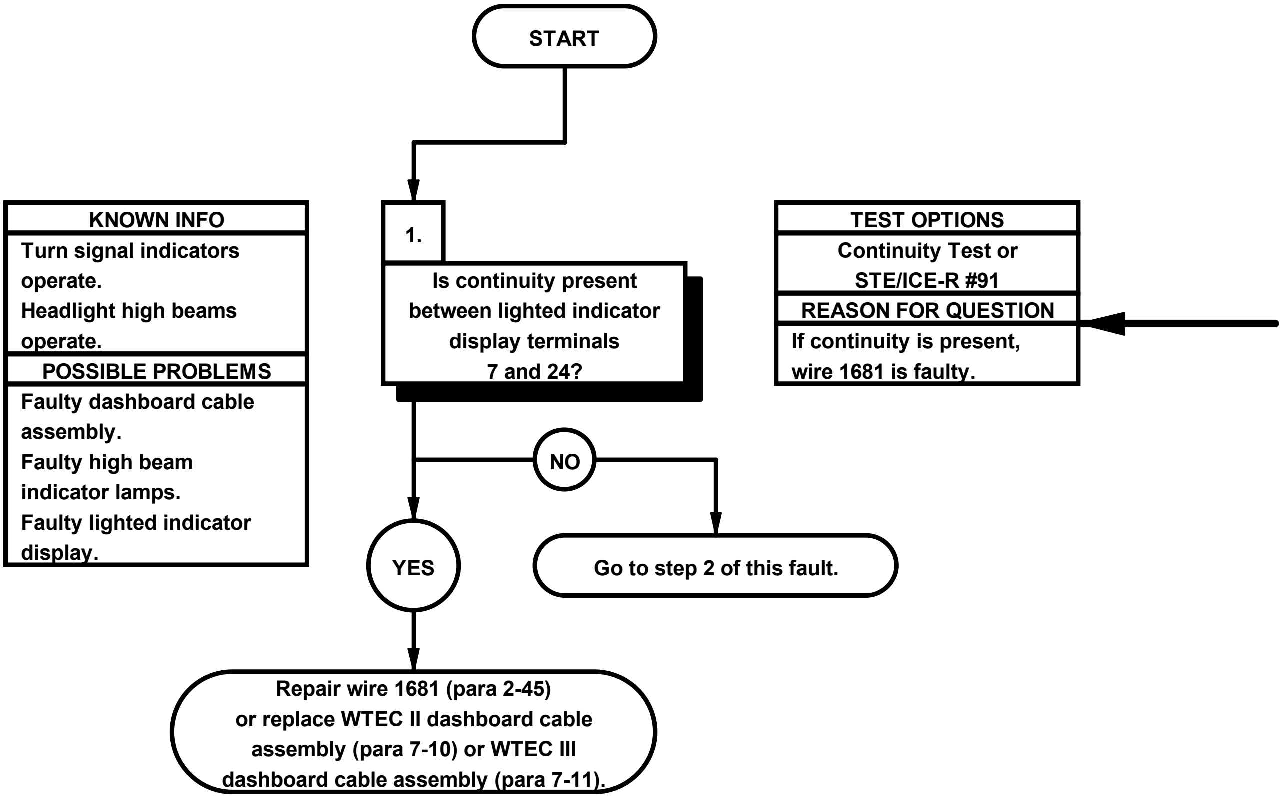
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



START

KNOWN INFO
Turn signal indicators operate.
Headlight high beams operate.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty high beam indicator lamps.
Faulty lighted indicator display.

1. Is continuity present between lighted indicator display terminals 7 and 24?

TEST OPTIONS
Continuity Test or STE/ICE-R #91

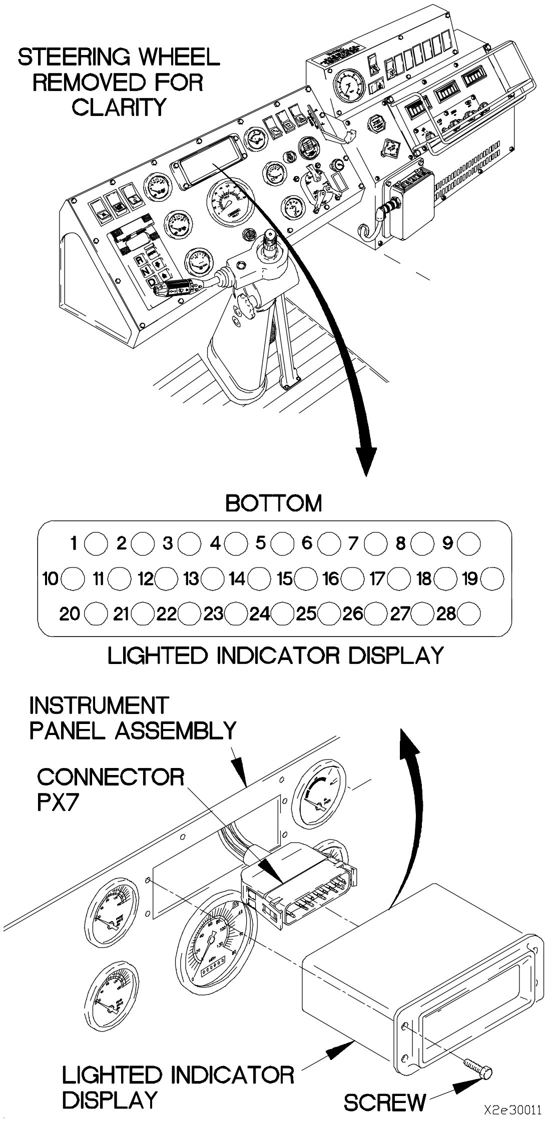
REASON FOR QUESTION
If continuity is present, wire 1681 is faulty.

NO: Go to step 2 of this fault.

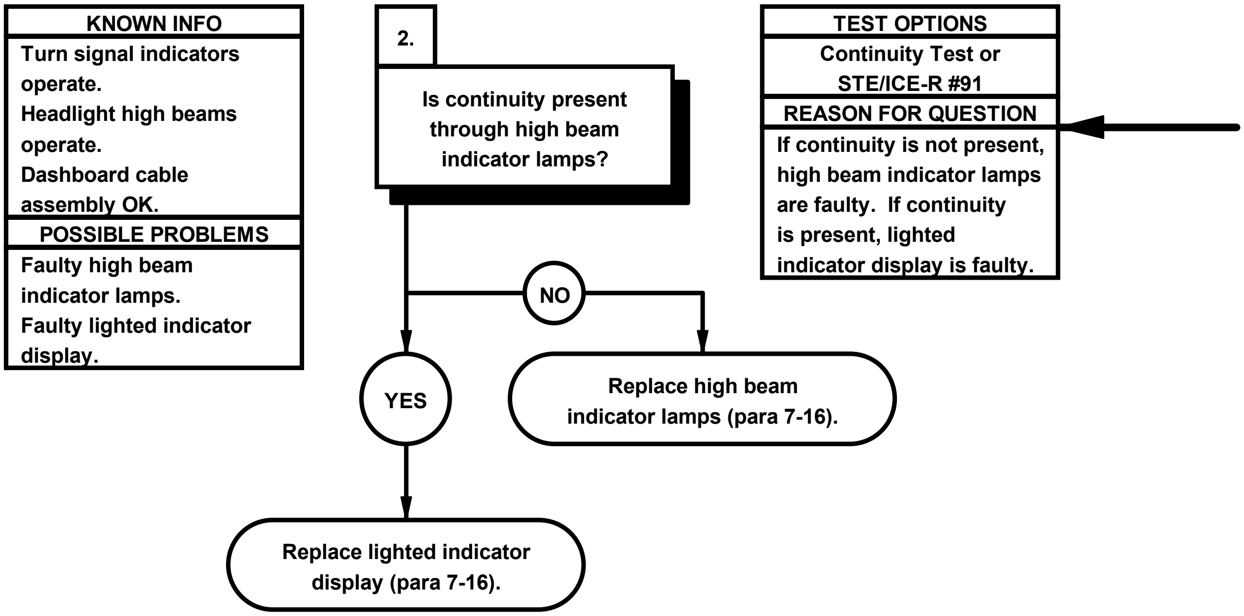
YES: Repair wire 1681 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 7.
(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 24 and note reading on multimeter.
(7) If continuity is present, repair wire 1681 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e30. HIGH BEAMS ON INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Turn signal indicators operate.
Headlight high beams operate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty high beam indicator lamps.
Faulty lighted indicator display.

2.

Is continuity present through high beam indicator lamps?

TEST OPTIONS

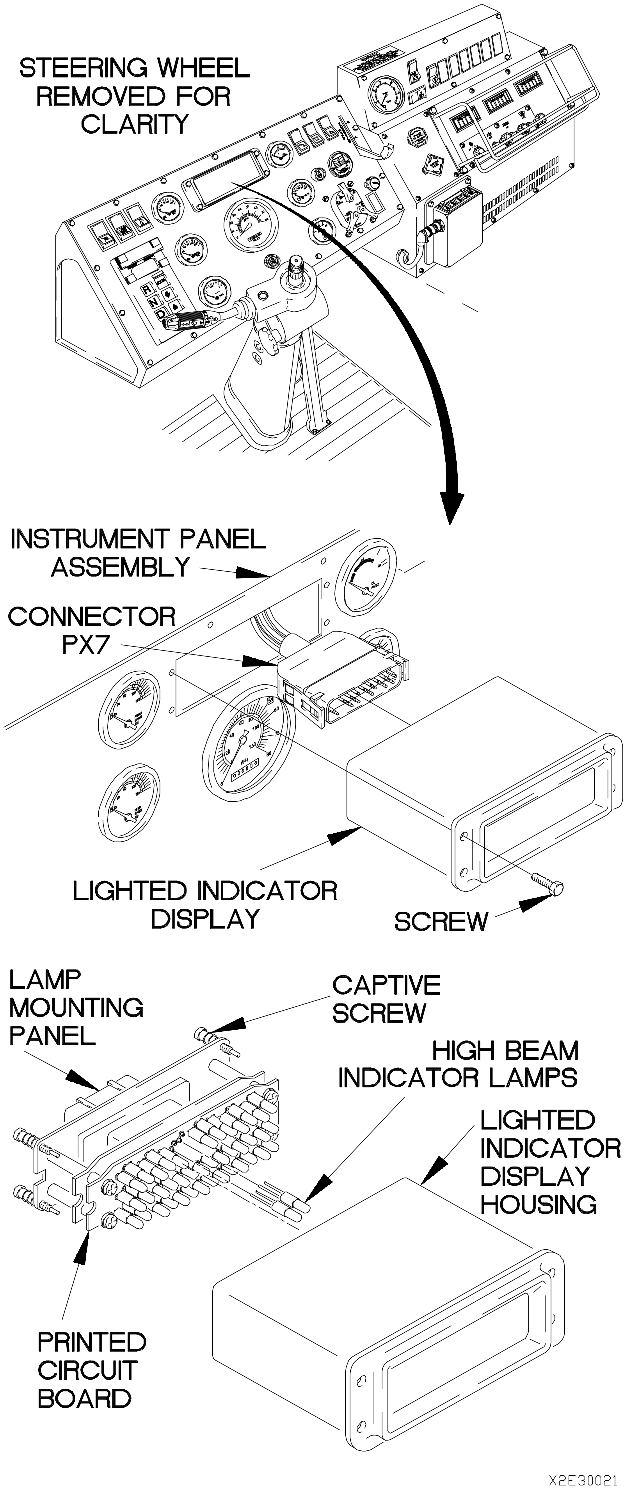
Continuity Test or
STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, high beam indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

Replace lighted indicator display (para 7-16).

Replace high beam indicator lamps (para 7-16).



CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove high beam indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each high beam indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install high beam indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).

e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

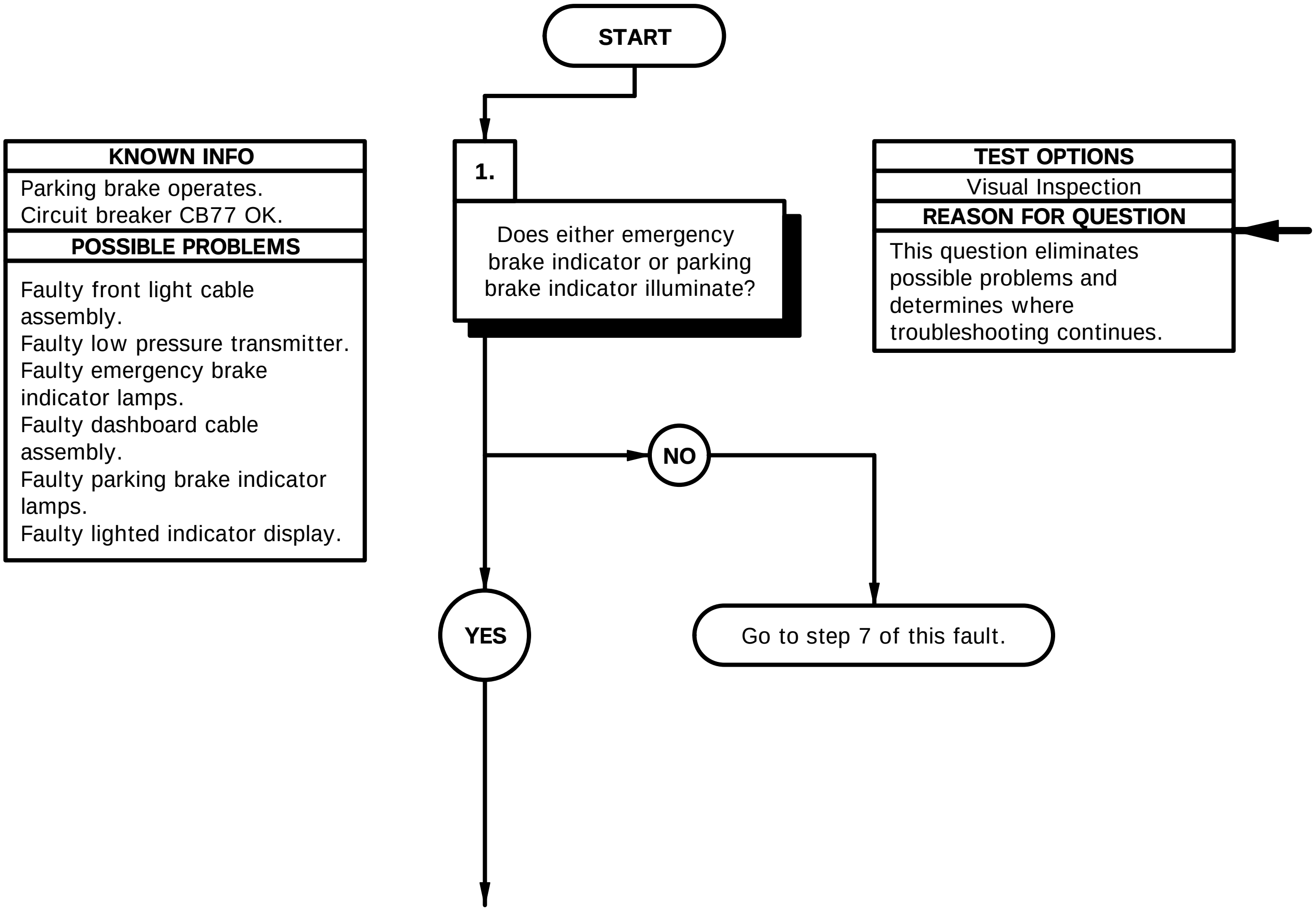
Materials/Parts
Wire, Elect., 50 ft (Item 71, Appendix D)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICR-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB77 prior to beginning this task.



KNOWN INFO
Parking brake operates.
Circuit breaker CB77 OK.

POSSIBLE PROBLEMS
Faulty front light cable assembly.
Faulty low pressure transmitter.
Faulty emergency brake indicator lamps.
Faulty dashboard cable assembly.
Faulty parking brake indicator lamps.
Faulty lighted indicator display.

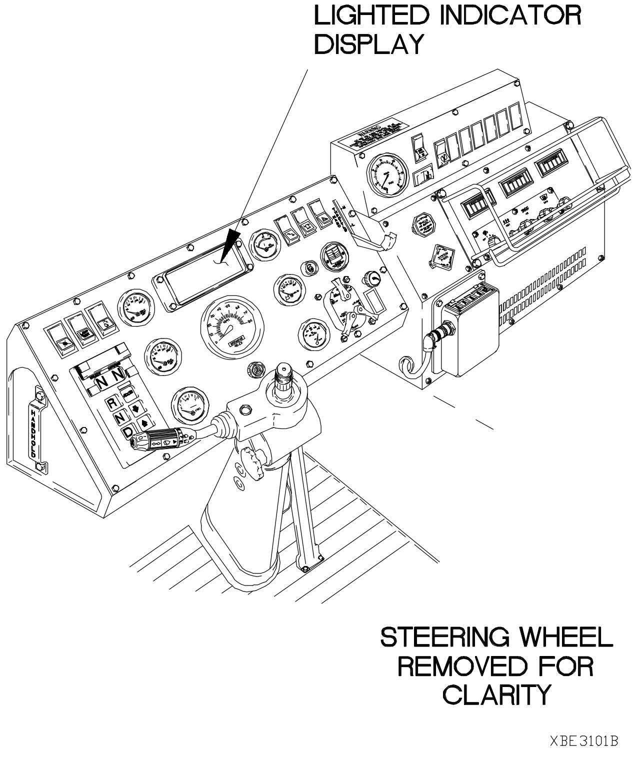
1. Does either emergency brake indicator or parking brake indicator illuminate?

TEST OPTIONS
Visual Inspection

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 7 of this fault.

(1) Start engine (TM 9-2320-366-10-1).
(2) Visually check lighted indicator display.
(3) If emergency brake and parking brake indicator lights both do not illuminate, go to step 7 of this fault.



e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Front lights cable assembly OK.
Low pressure transmitter OK.

POSSIBLE PROBLEMS

Faulty emergency brake indicator lamps.
Faulty dashboard cable assembly.
Faulty parking brake indicator lamps.
Faulty lighted indicator display.

2.

Does emergency brake indicator illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 5 of this fault.

YES

CAUTION
Read CAUTION on following page.

KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Front lights cable assembly OK.
Low pressure transmitter OK.
Emergency brake indicator lamps OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty parking brake indicator lamps.
Faulty lighted indicator display.

3.

Is continuity present from lighted indicator display socket 27 to socket 22?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, wire 1616 is faulty.

NO

Go to step 4 of this fault.

YES

Repair wire 1616 from connector PX7 pin 22 to splice E2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

(1) Visually check lighted indicator display.
(2) If emergency brake indicator does not illuminate, go to step 5 of this fault.
(3) Shut down engine (TM 9-2320-366-10-1).

CAUTION

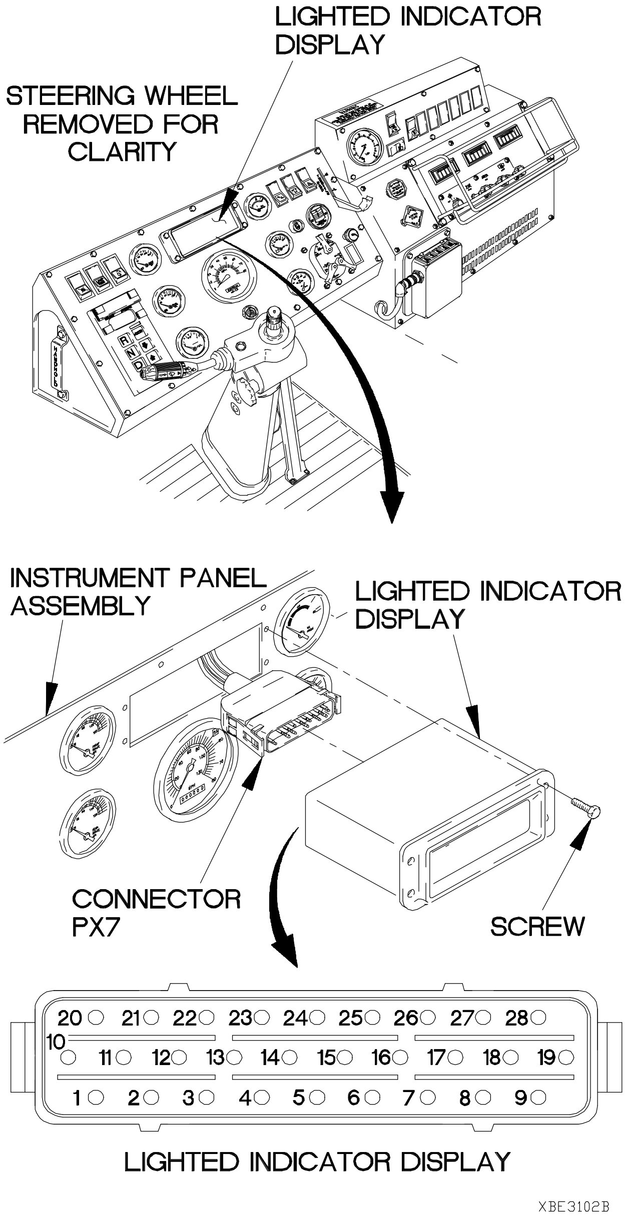
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove four screws from lighted indicator display.
(3) Remove lighted indicator display from instrument panel assembly.
(4) Disconnect connector PX7 from lighted indicator display.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to lighted indicator display socket 27.
(7) Connect negative (-) probe of multimeter to lighted indicator display socket 22 and note reading on multimeter.
(8) If continuity is not present, go to step 4 of this faulty.
(9) If continuity is present, repair wire 1616 from connector PX7 pin 22 to splice E2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



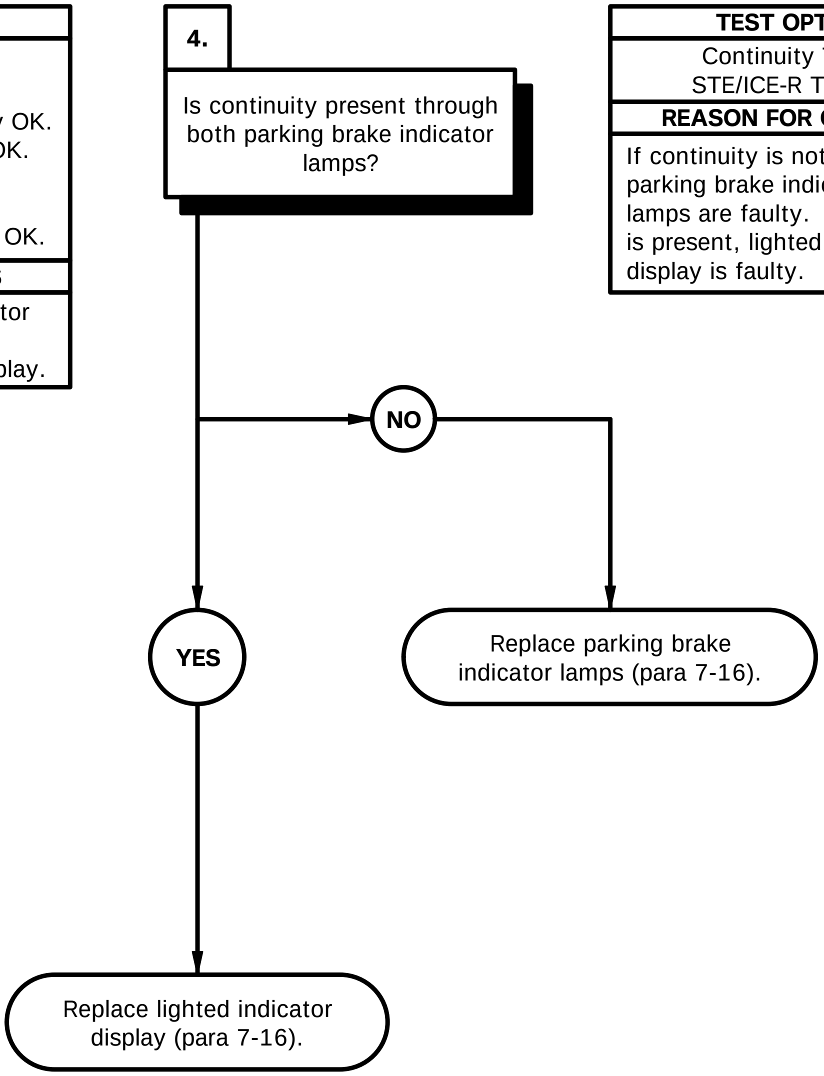
e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Front lights cable assembly OK.
Low pressure transmitter OK.
Emergency brake indicator lamps OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty parking brake indicator lamps.
Faulty lighted indicator display.



4.

Is continuity present through both parking brake indicator lamps?

Replace parking brake indicator lamps (para 7-16).

Replace lighted indicator display (para 7-16).

TEST OPTIONS

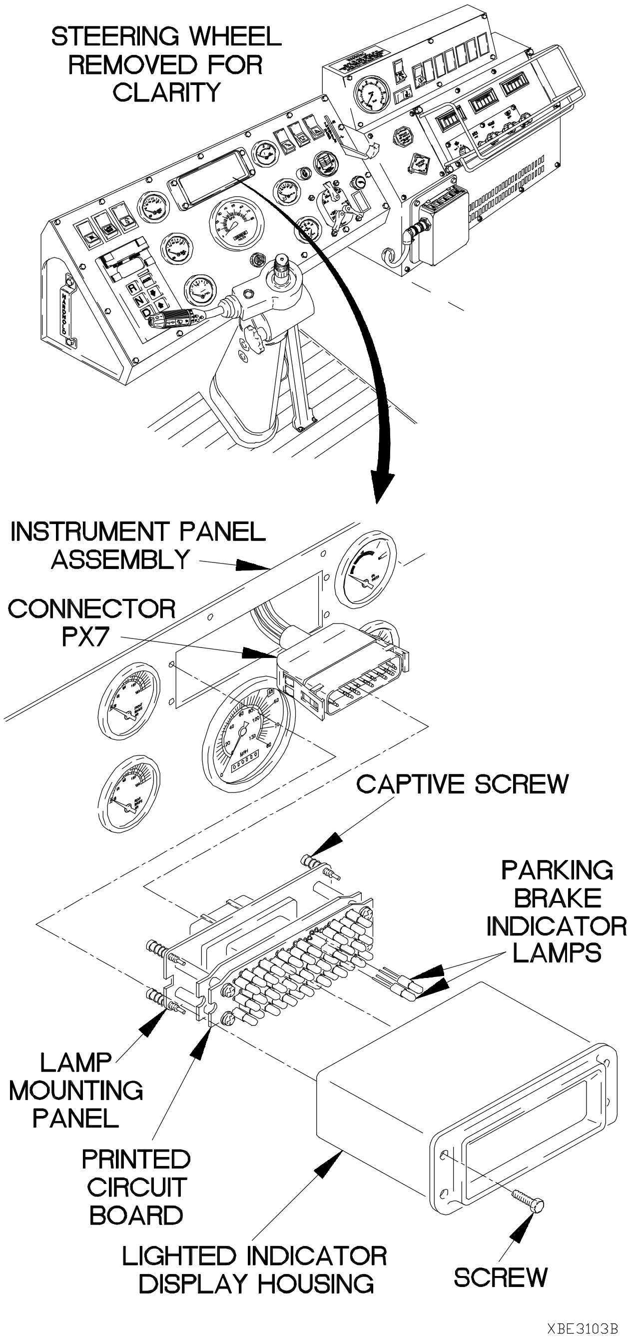
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, parking brake indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove parking brake indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each parking brake indicator lamp and note reading on multimeter.
(6) If continuity is not present in both lamps, replace lamps (para 7-16).
(7) If continuity is present in either lamp, replace lighted indicator display (para 7-16).
(8) Install parking brake indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



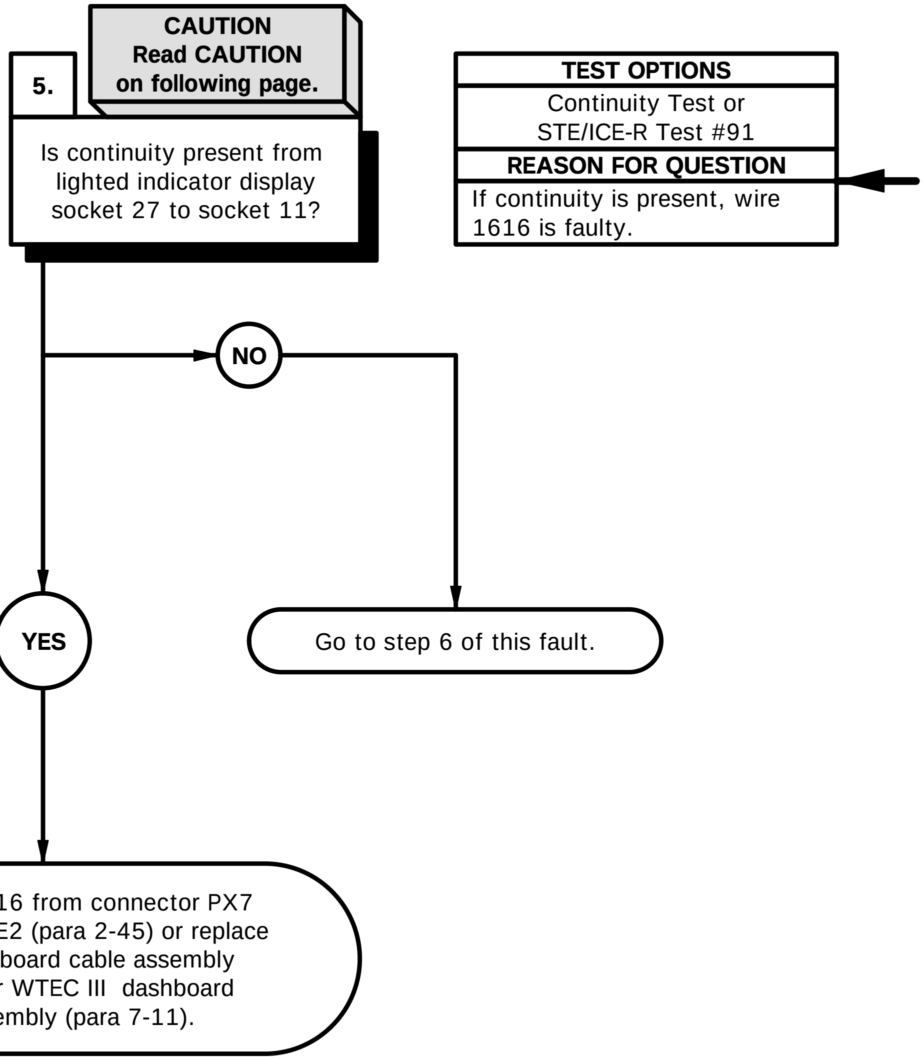
e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Front lights cable assembly OK.
Low pressure transmitter OK.
Parking brake indicator lamps OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty emergency brake indicator lamps.
Faulty lighted indicator display.



CAUTION
Read CAUTION on following page.

5. Is continuity present from lighted indicator display socket 27 to socket 11?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, wire 1616 is faulty.

NO — Go to step 6 of this fault.

YES — Repair wire 1616 from connector PX7 pin 11 to splice E2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

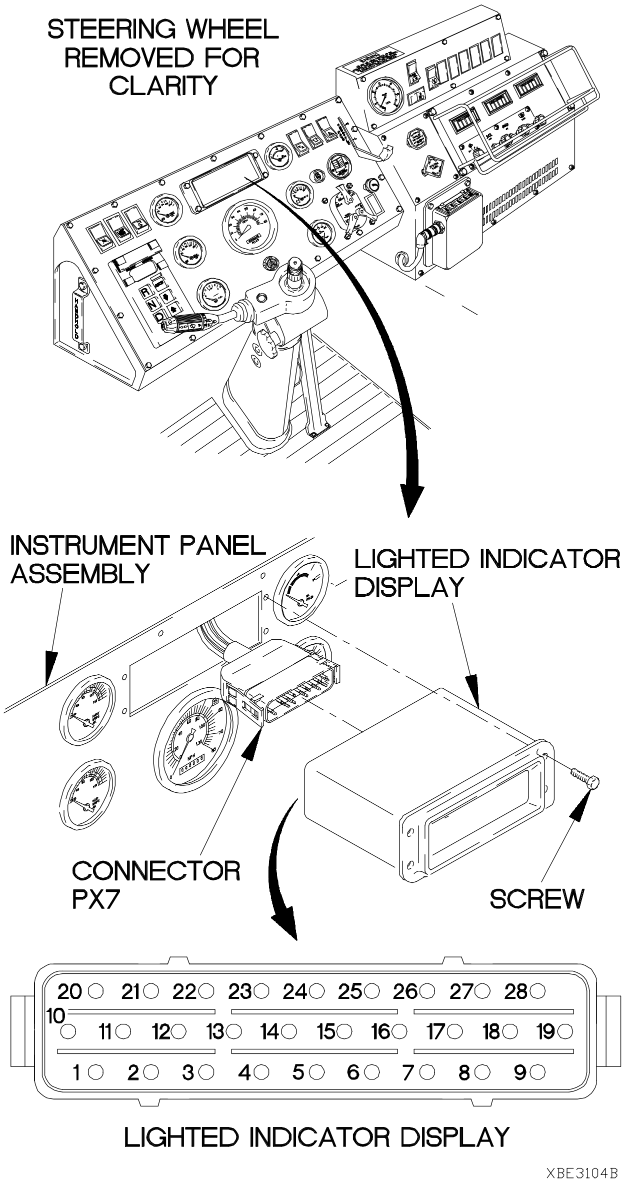
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

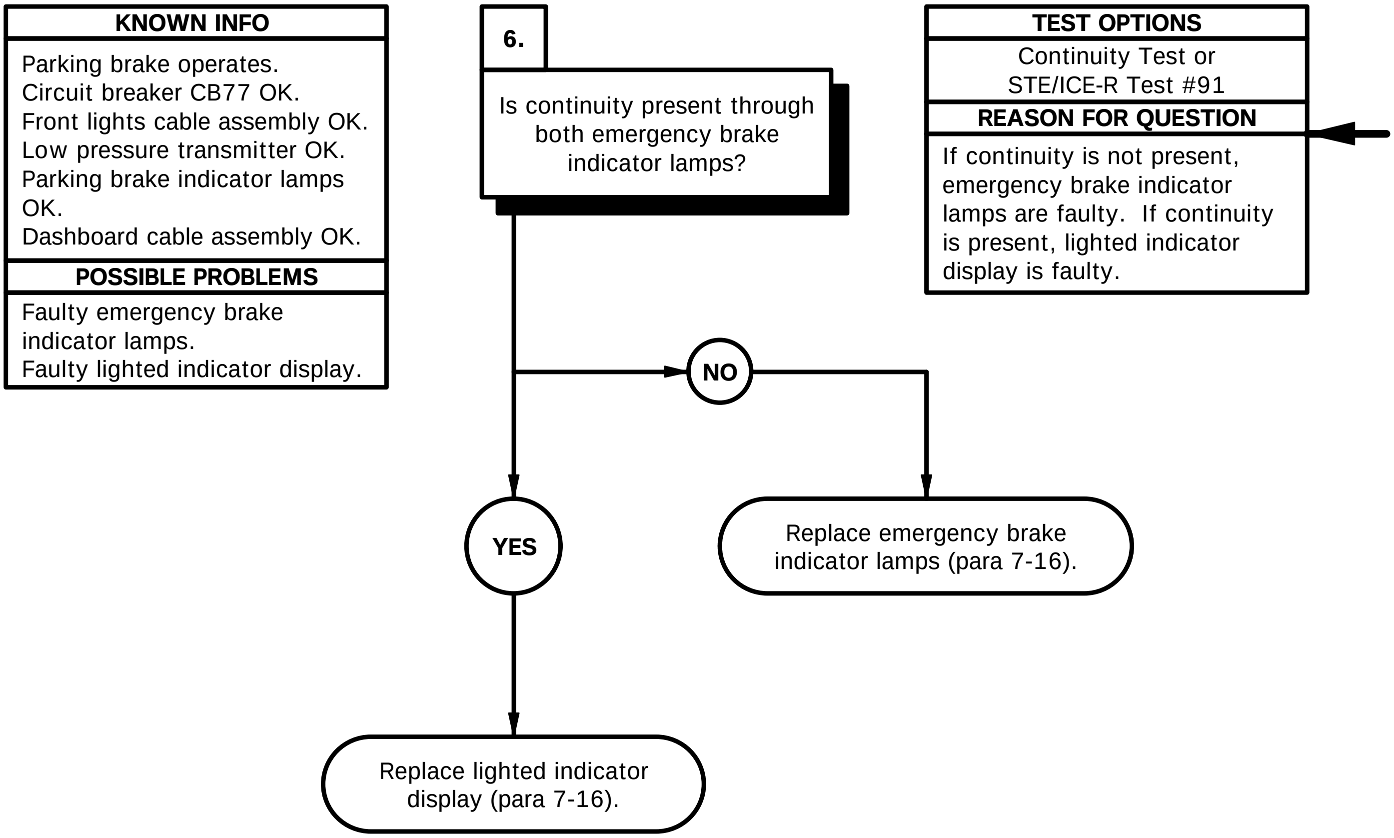
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove four screws from lighted indicator display.
(3) Remove lighted indicator display from instrument panel assembly.
(4) Disconnect connector PX7 from lighted indicator display.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to lighted indicator display socket 27.
(7) Connect negative (-) probe of multimeter to lighted indicator display socket 11 and note reading on multimeter.
(8) If continuity is not present, go to step 6 of this faulty.
(9) If continuity is present, repair wire 1616 from connector PX7 pin 11 to splice E2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Front lights cable assembly OK.
Low pressure transmitter OK.
Parking brake indicator lamps OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty emergency brake indicator lamps.
Faulty lighted indicator display.

6.

Is continuity present through both emergency brake indicator lamps?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, emergency brake indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

NO

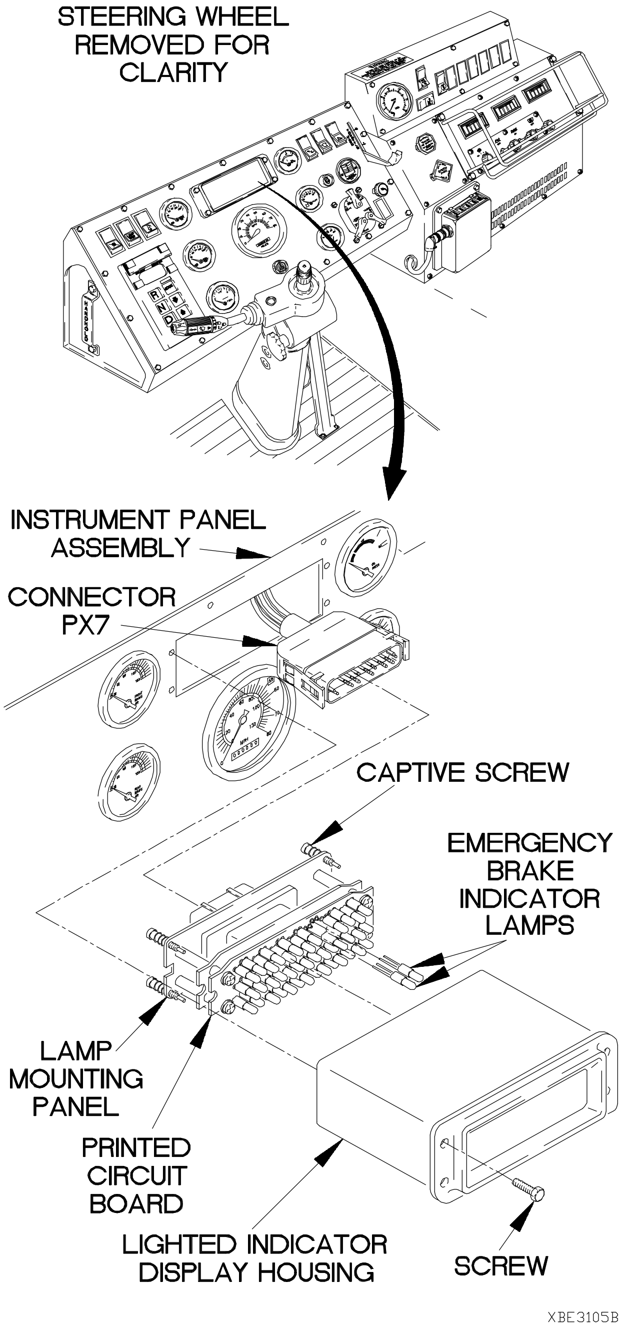
Replace emergency brake indicator lamps (para 7-16).

YES

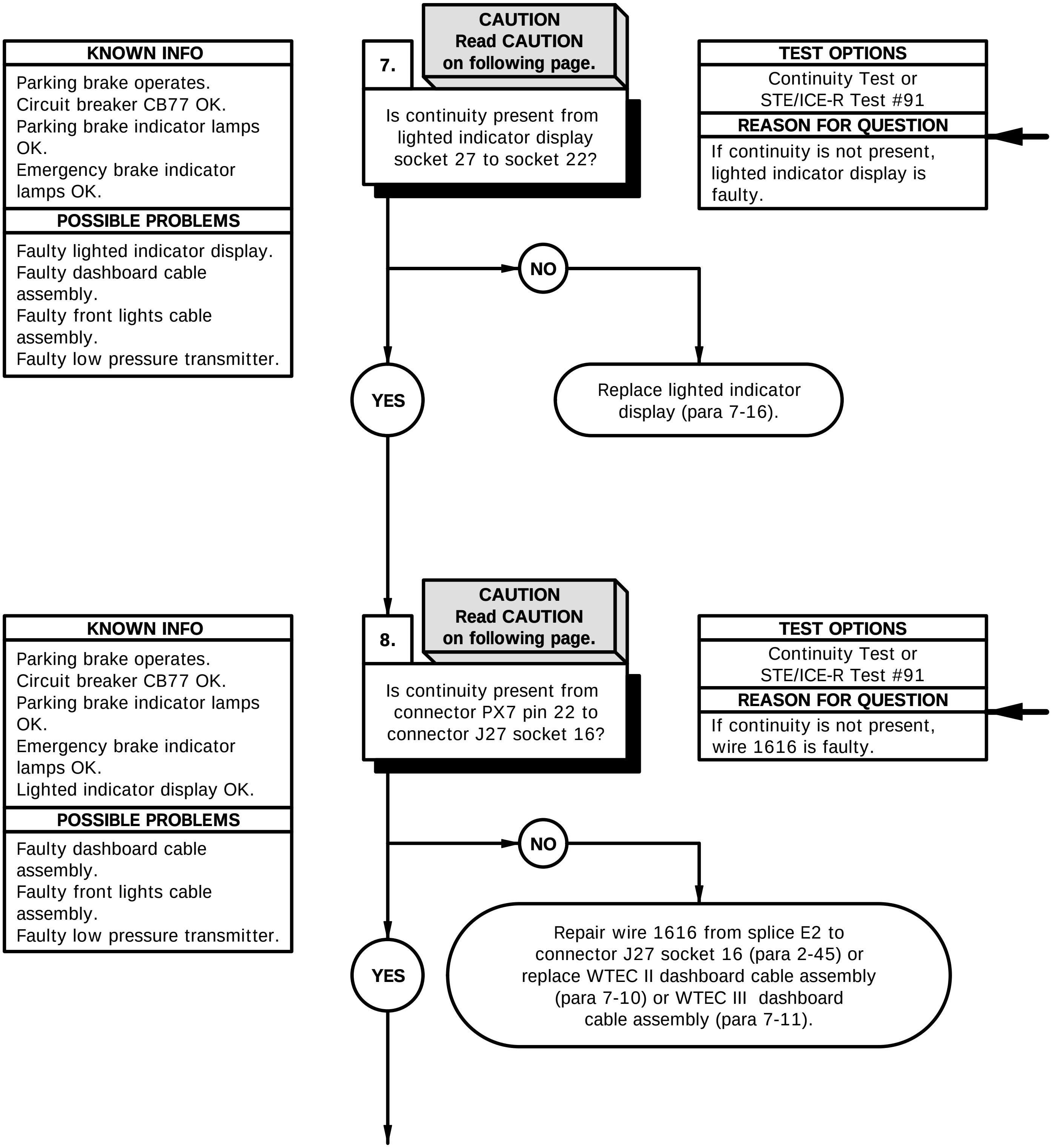
Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove emergency brake indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each emergency brake indicator lamp and note reading on multimeter.
(6) If continuity is not present in both lamps, replace lamps (para 7-16).
(7) If continuity is present in either lamp, replace lighted indicator display (para 7-16).
(8) Install emergency brake indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Parking brake indicator lamps OK.
Emergency brake indicator lamps OK.

POSSIBLE PROBLEMS

Faulty lighted indicator display.
Faulty dashboard cable assembly.
Faulty front lights cable assembly.
Faulty low pressure transmitter.

7.

CAUTION
Read CAUTION on following page.

Is continuity present from lighted indicator display socket 27 to socket 22?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, lighted indicator display is faulty.

NO

Replace lighted indicator display (para 7-16).

YES

KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Parking brake indicator lamps OK.
Emergency brake indicator lamps OK.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty front lights cable assembly.
Faulty low pressure transmitter.

8.

CAUTION
Read CAUTION on following page.

Is continuity present from connector PX7 pin 22 to connector J27 socket 16?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1616 is faulty.

NO

Repair wire 1616 from splice E2 to connector J27 socket 16 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

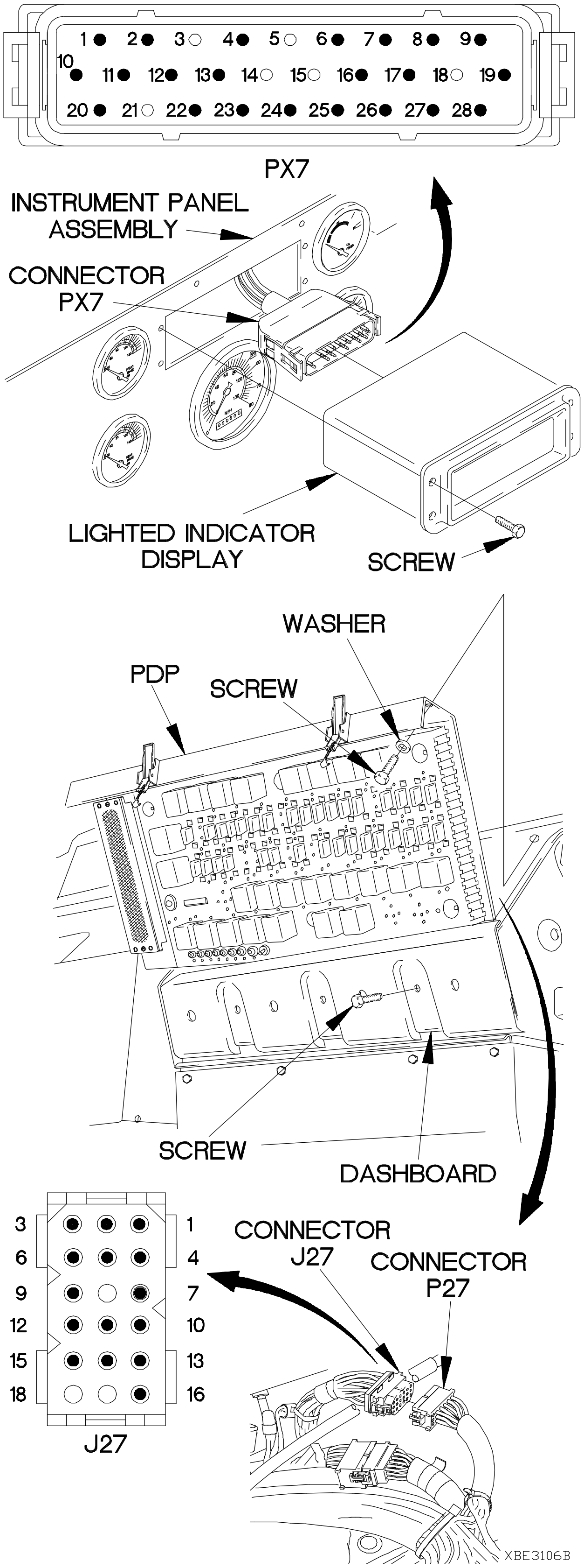
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove four screws from lighted indicator display.
(3) Remove lighted indicator display from instrument panel assembly.
(4) Disconnect connector PX7 from lighted indicator display.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to lighted indicator display socket 27.
(7) Connect negative (-) probe of multimeter to lighted indicator display socket 22 and note reading on multimeter.
(8) If continuity is not present, go to step 4 of this faulty.
(9) If continuity is not present, replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J27 from connector P27.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector PX7 pin 22.
(8) Connect negative (-) probe of multimeter to connector J27 socket 16 and note reading on multimeter.
(9) If continuity is not present, repair wire 1616 from splice E2 to connector J27 socket 16 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Parking brake indicator lamps OK.
Emergency brake indicator lamps OK.
Lighted indicator display OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty low pressure transmitter.

9.

CAUTION
Read CAUTION on following page.

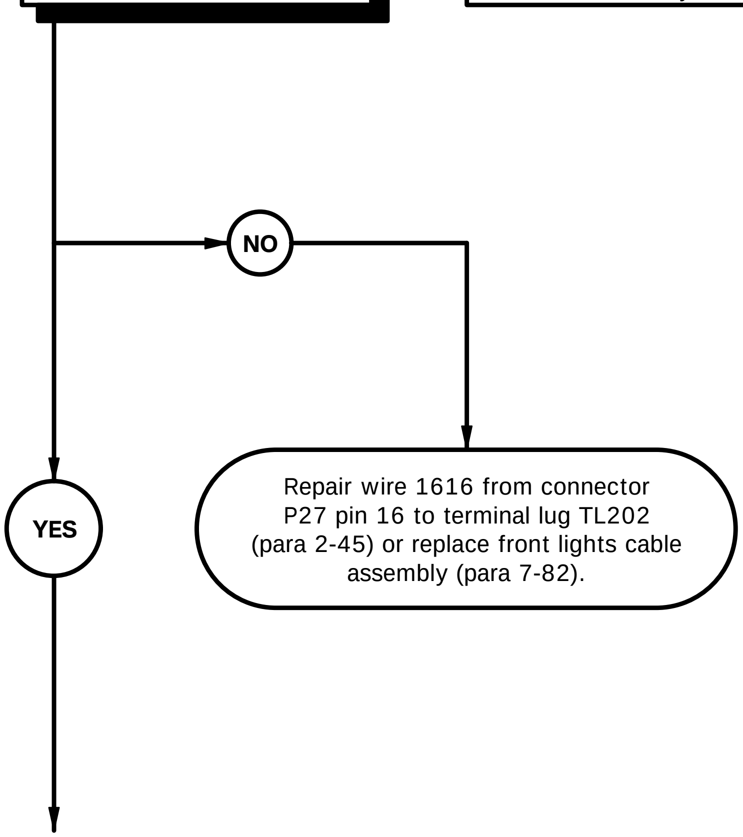
Is continuity present from connector P27 pin 16 to terminal lug TL202?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1616 is faulty.



Repair wire 1616 from connector P27 pin 16 to terminal lug TL202 (para 2-45) or replace front lights cable assembly (para 7-82).

CAUTION

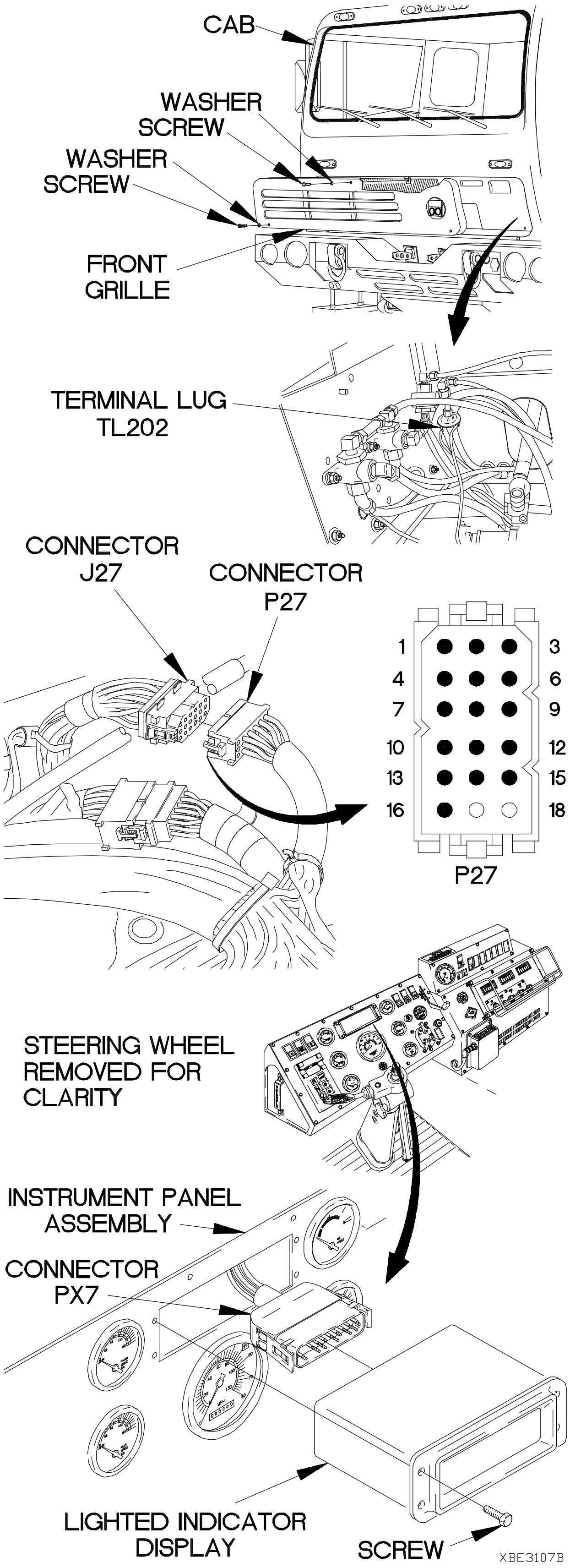
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

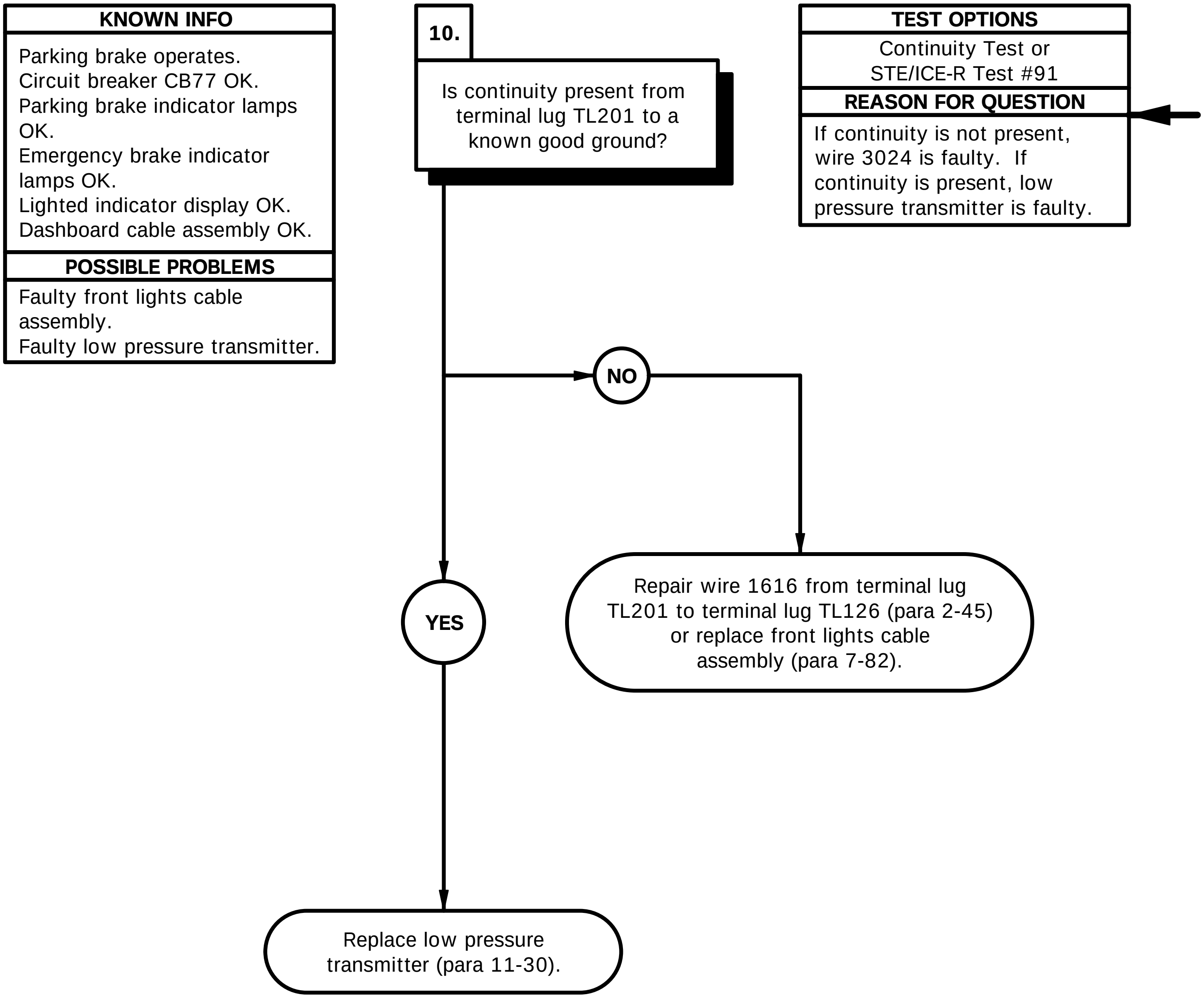
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector P27 pin 16.
(6) Connect negative (-) probe of multimeter to terminal lug TL202 and note reading on multimeter.
(7) If continuity is not present, repair wire 1616 from connector P27 pin 16 to terminal lug TL202 (para 2-45) or replace front lights cable assembly (para 7-82).
(8) Connect connector P27 to connector J27.
(9) Connect lighted indicator display to connector PX7.
(10) Position lighted indicator display in instrument panel assembly with four screws.
(11) Tighten four screws to 6-10 lb-in. (1 N·m).
(12) Connect batteries (para 7-57).



e31. PARKING BRAKE INDICATOR AND/OR EMERGENCY BRAKE INDICATOR DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Parking brake operates.
Circuit breaker CB77 OK.
Parking brake indicator lamps OK.
Emergency brake indicator lamps OK.
Lighted indicator display OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty low pressure transmitter.

10.

Is continuity present from terminal lug TL201 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3024 is faulty. If continuity is present, low pressure transmitter is faulty.

NO

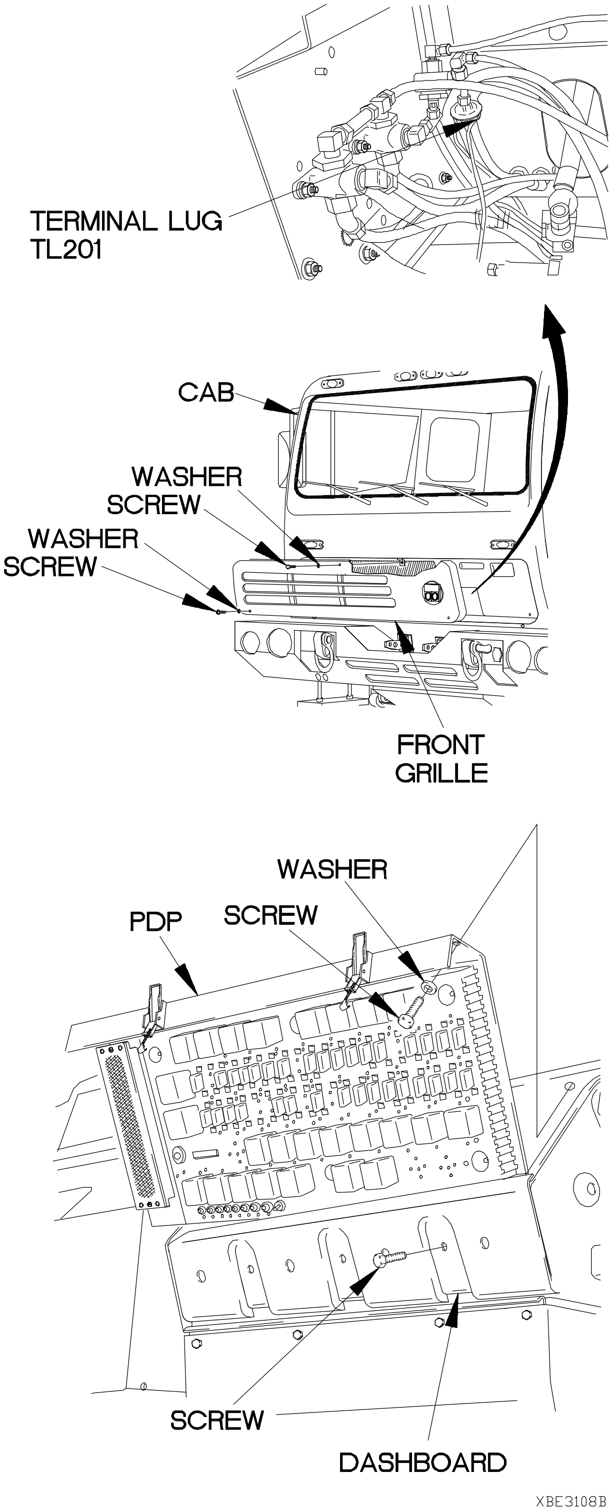
Repair wire 1616 from terminal lug TL201 to terminal lug TL126 (para 2-45) or replace front lights cable assembly (para 7-82).

YES

Replace low pressure transmitter (para 11-30).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL201.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3024 from terminal lug TL201 to terminal lug TL126 (para 2-45) or replace front lights cable assembly (para 7-82).
(5) If continuity is present, replace low pressure transmitter (para 11-30).
(6) Position front grille on cab with washer and screw.
(7) Position two washers and screws in front grille.
(8) Tighten screw to 48-60 lb-in. (5-7 N·m).
(9) Tighten two screws to 24 lb-in. (3 N·m).
(10) Install PDP in dashboard with three screws.
(11) Install three washers and screws in PDP.
(12) Install PDP cover (para 16-2).



e32. POWER TAKE-OFF (PTO) INDICATOR DOES NOT OPERATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

References
TM 9-4910-571-12&P

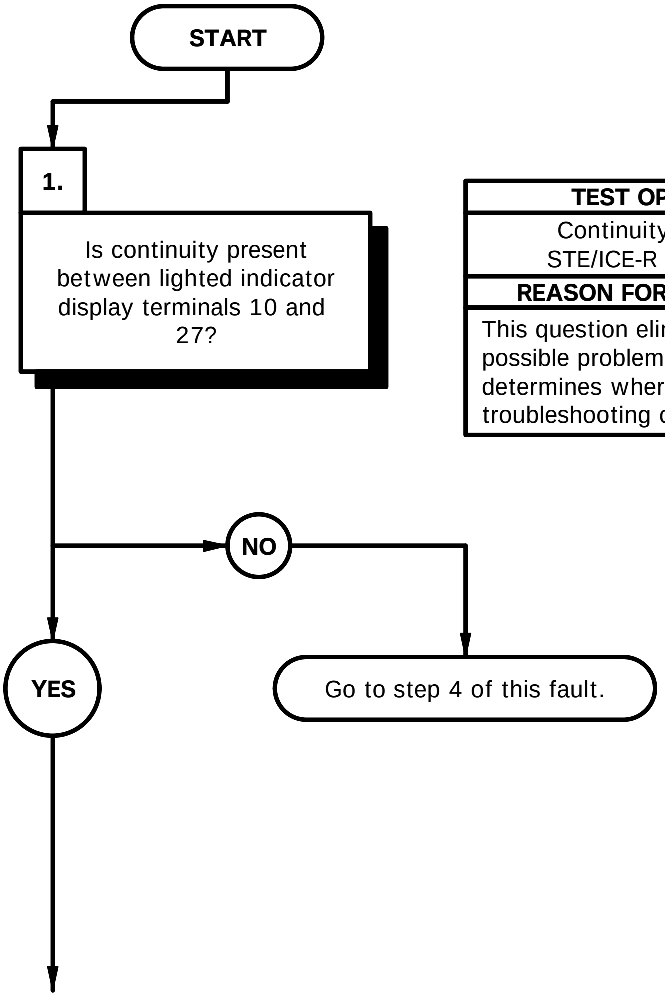
Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

KNOWN INFO

Other indicator lamps operate.
Hydraulic components operate normally.

POSSIBLE PROBLEMS

Faulty lighted indicator display.
Faulty lamps.
Faulty dashboard cable assembly.
Faulty PTO.
Faulty auxiliary panel cable assembly.
Faulty PTO cable assembly.



START

1. Is continuity present between lighted indicator display terminals 10 and 27?

Go to step 4 of this fault.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.

(2) Remove lighted indicator display from instrument panel assembly.

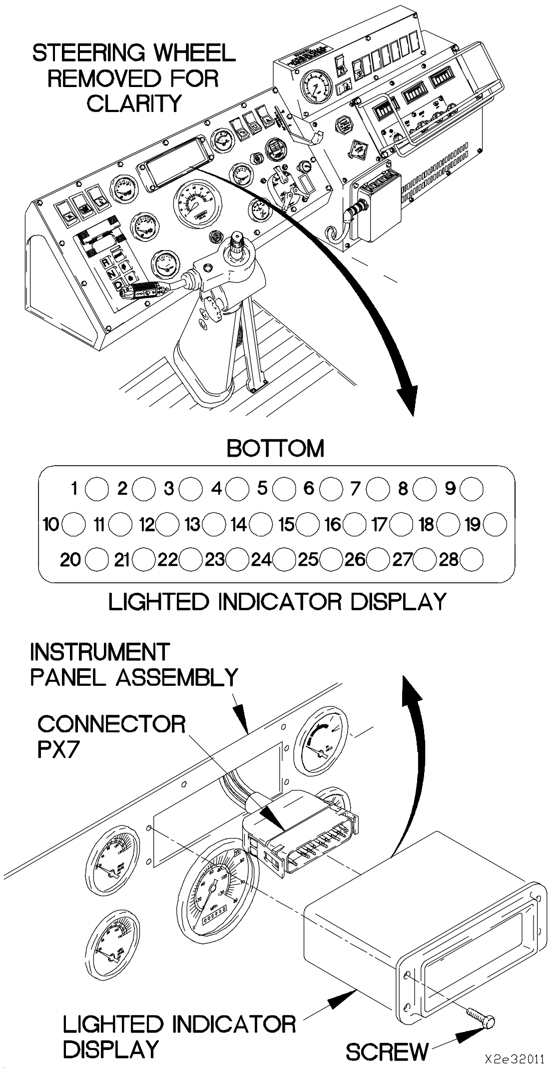
(3) Disconnect connector PX7 from lighted indicator display.

(4) Set multimeter to ohms.

(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 27.

(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 10 and note reading on multimeter.

(7) If continuity is not present, go to step 4 of this fault.



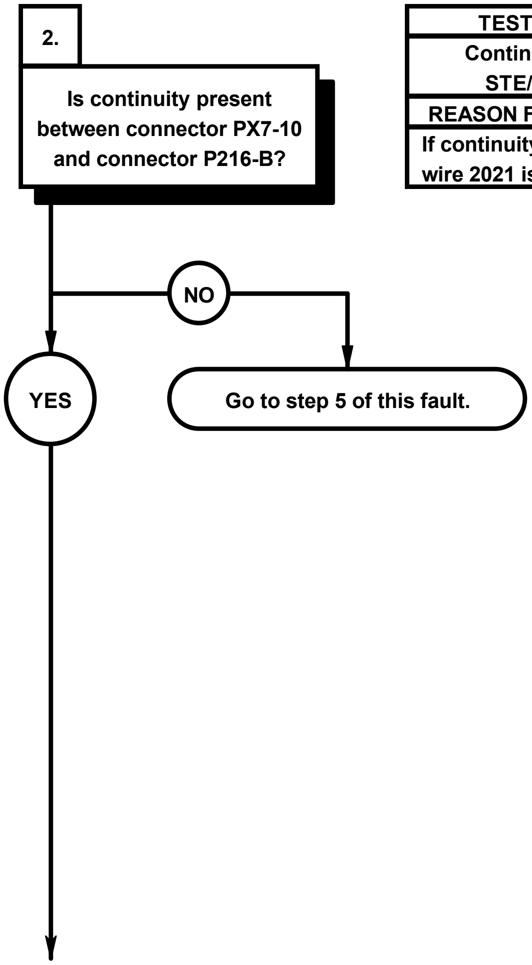
e32. POWER TAKE-OFF (PTO) INDICATOR DOES NOT OPERATE (CONT)

KNOWN INFO

Other indicator lights operate.
Hydraulic components operate normally.
Lighted indicator display OK.
Lamps OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty PTO.
Faulty auxiliary panel cable assembly.
Faulty PTO cable assembly.



TEST OPTIONS

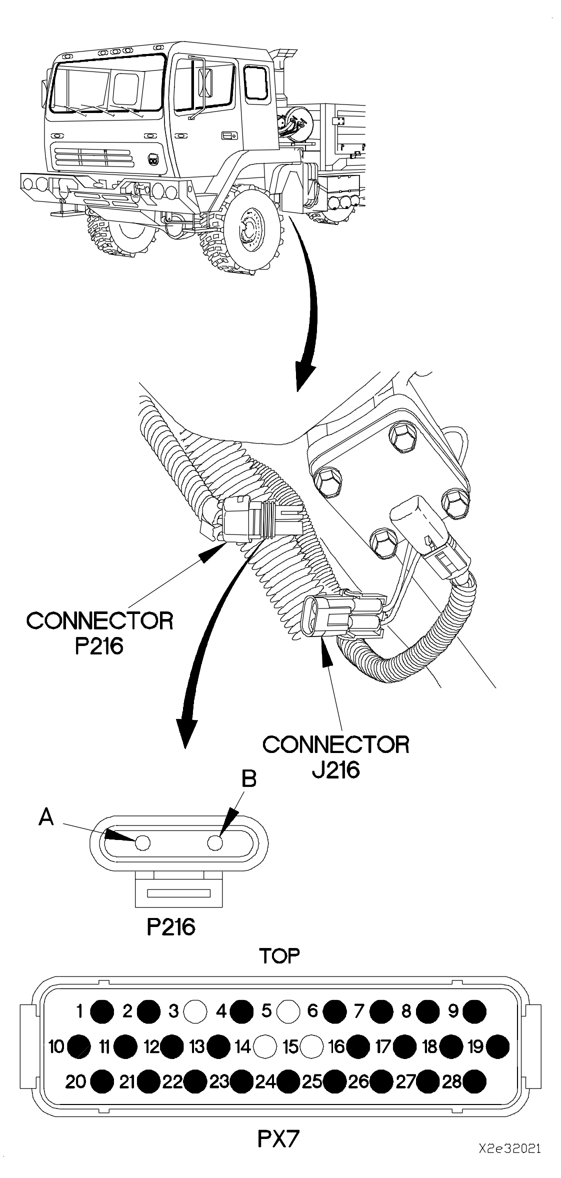
Continuity Test or STE/ICE-R#91

REASON FOR QUESTION

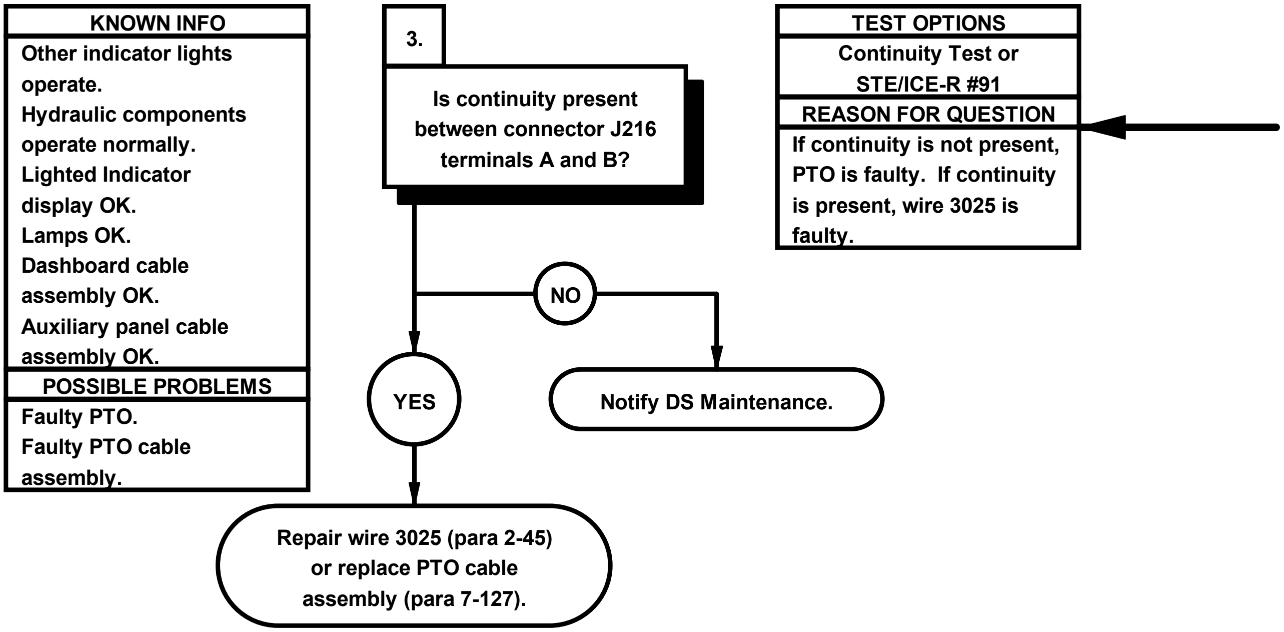
If continuity is not present, wire 2021 is faulty.

CONTINUITY TEST

(1) Disconnect connector P216 from connector J216.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX7-10.
(4) Connect negative (-) probe of multimeter to connector P216-B and note reading on multimeter.
(5) If continuity is not present, go to step 5 of this fault.



e32. POWER TAKE-OFF (PTO) INDICATOR DOES NOT OPERATE (CONT)e



KNOWN INFO

Other indicator lights operate.
Hydraulic components operate normally.
Lighted Indicator display OK.
Lamps OK.
Dashboard cable assembly OK.
Auxiliary panel cable assembly OK.

POSSIBLE PROBLEMS

Faulty PTO.
Faulty PTO cable assembly.

3\.

Is continuity present between connector J216 terminals A and B?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

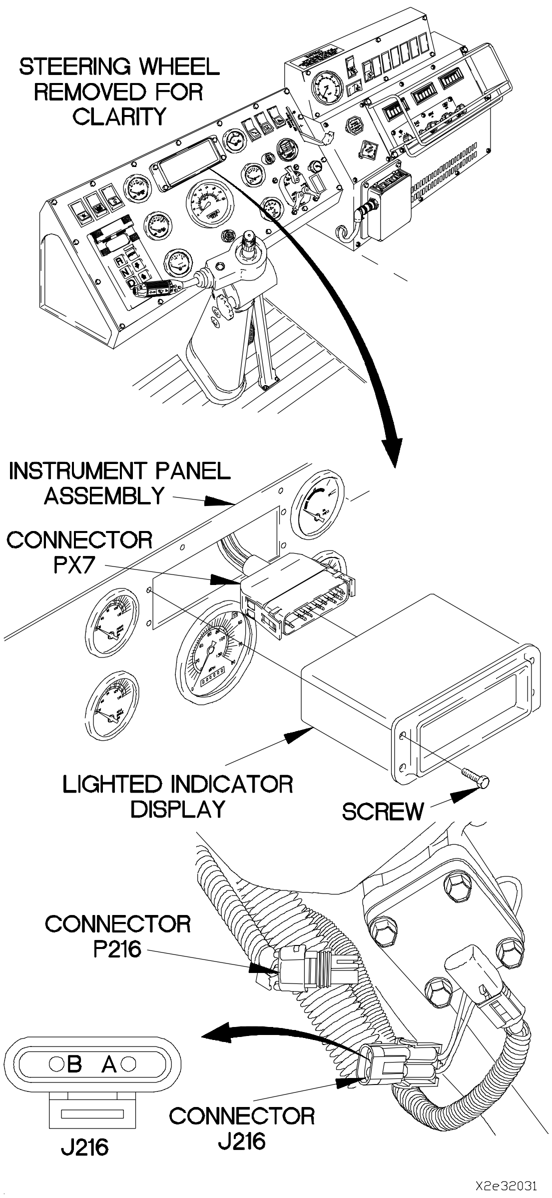
REASON FOR QUESTION

If continuity is not present, PTO is faulty. If continuity is present, wire 3025 is faulty.

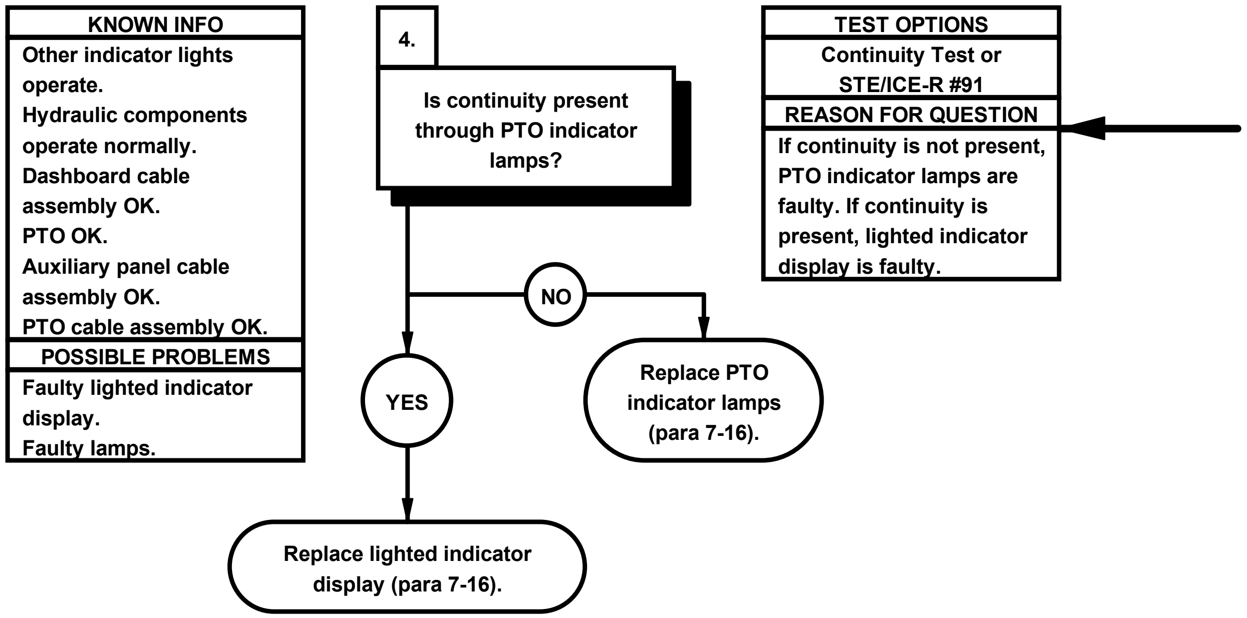
Notify DS Maintenance.

Repair wire 3025 (para 2-45) or replace PTO cable assembly (para 7-127).

CONTINUITY TEST
(1) Connect lighted indicator display to connector PX7.
(2) Position lighted indicator display in instrument panel assembly with four screws.
(3) Tighten four screws to 6-10 lb-in. (1 N·m).
(4) Connect batteries (para 7-57).
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector J216-B.
(7) Connect negative (-) probe of multimeter to connector J216-A.
(8) Start engine (TM 9-2320-366-10-1).
(9) Position PTO switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If continuity is not present, notify DS Maintenance.
(11) If continuity is present, repair wire 3025 (para 2-45) or replace PTO cable assembly (para 7-127).
(12) Position PTO switch to off (TM 9-2320-366-10-1).
(13) Shut down engine (TM 9-2320-366-10-1).
(14) Connect connector P216 to connector J216.



e32. POWER TAKE-OFF (PTO) INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Hydraulic components operate normally.
Dashboard cable assembly OK.
PTO OK.
Auxiliary panel cable assembly OK.
PTO cable assembly OK.

POSSIBLE PROBLEMS

Faulty lighted indicator display.
Faulty lamps.

4\. Is continuity present through PTO indicator lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, PTO indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

YES: Replace lighted indicator display (para 7-16).

NO: Replace PTO indicator lamps (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.

(2) Remove lamp mounting panel from lighted indicator display housing.

(3) Remove PTO indicator lamps from printed circuit board.

(4) Set multimeter to ohms.

(5) Check continuity through each indicator lamp and note reading on multimeter.

(6) If continuity is not present, replace PTO indicator lamps (para 7-16).

(7) If continuity is present, replace lighted indicator display (para 7-16).

(8) Install PTO indicator lamps in printed circuit board.

(9) Install lamp mounting panel in lighted indicator display housing.

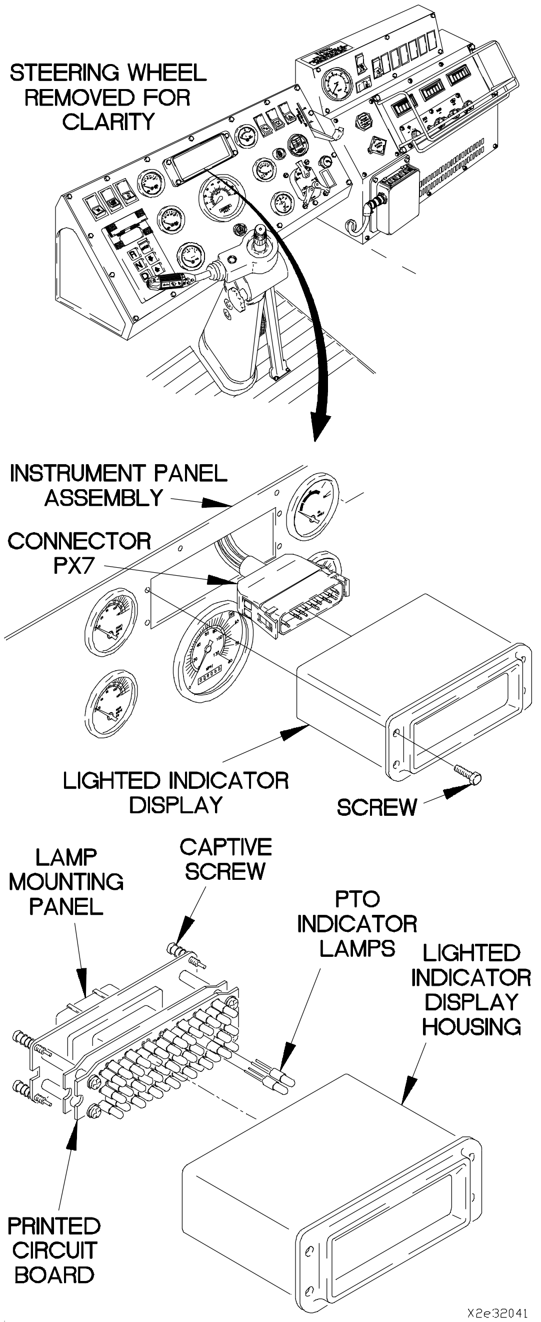
(10) Tighten four captive screws in lamp mounting panel.

(11) Connect lighted indicator display to connector PX7.

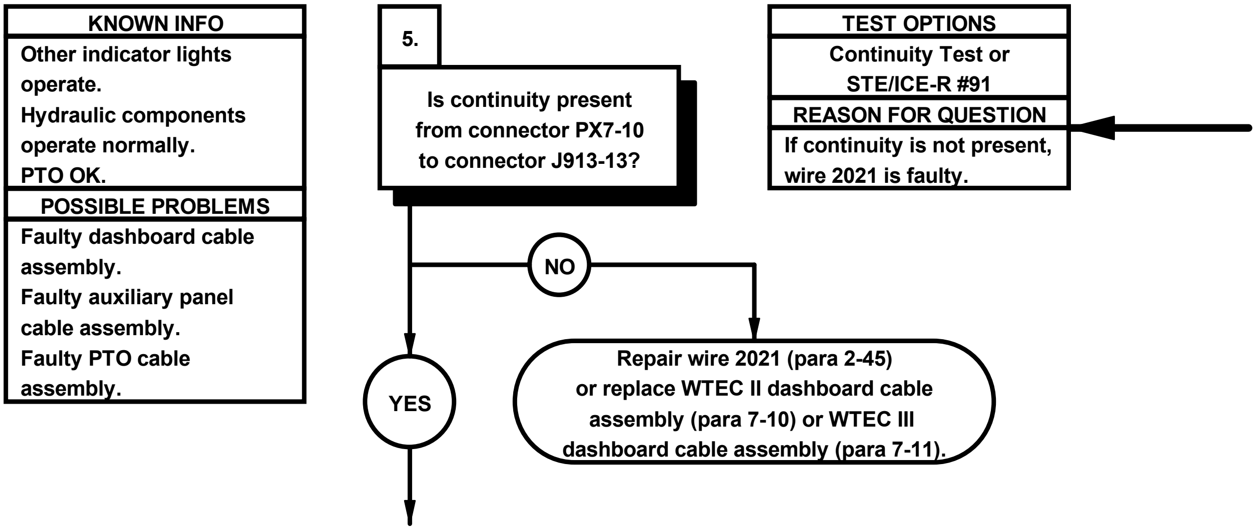
(12) Position lighted indicator display in instrument panel assembly with four screws.

(13) Tighten four screws to 6-10 lb-in. (1 N·m).

(14) Connect batteries (para 7-57).



e32. POWER TAKE-OFF (PTO) INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Hydraulic components operate normally.
PTO OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty auxiliary panel cable assembly.
Faulty PTO cable assembly.

5.

Is continuity present from connector PX7-10 to connector J913-13?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

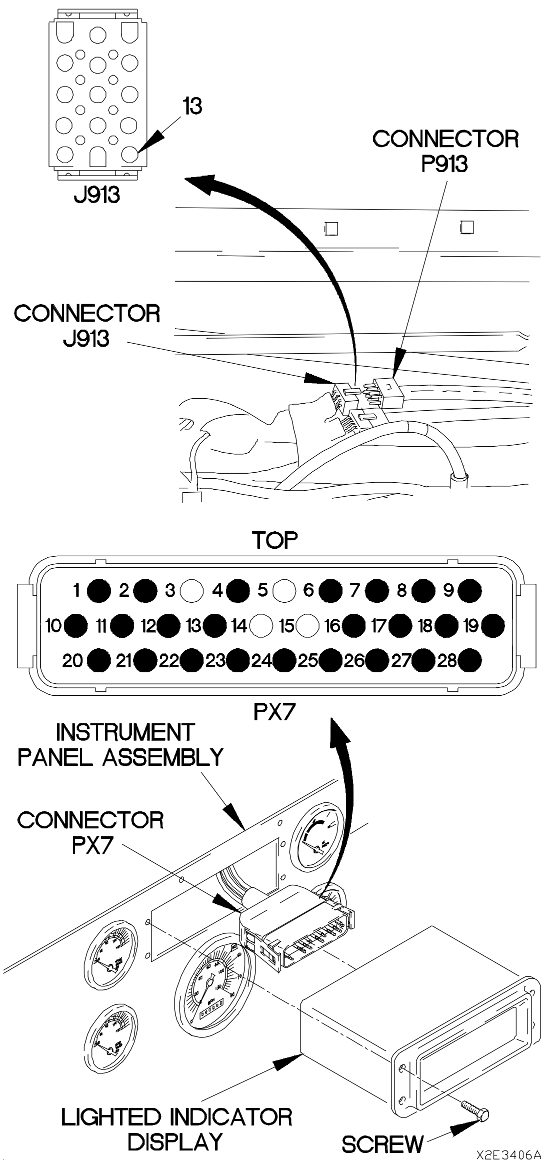
REASON FOR QUESTION

If continuity is not present, wire 2021 is faulty.

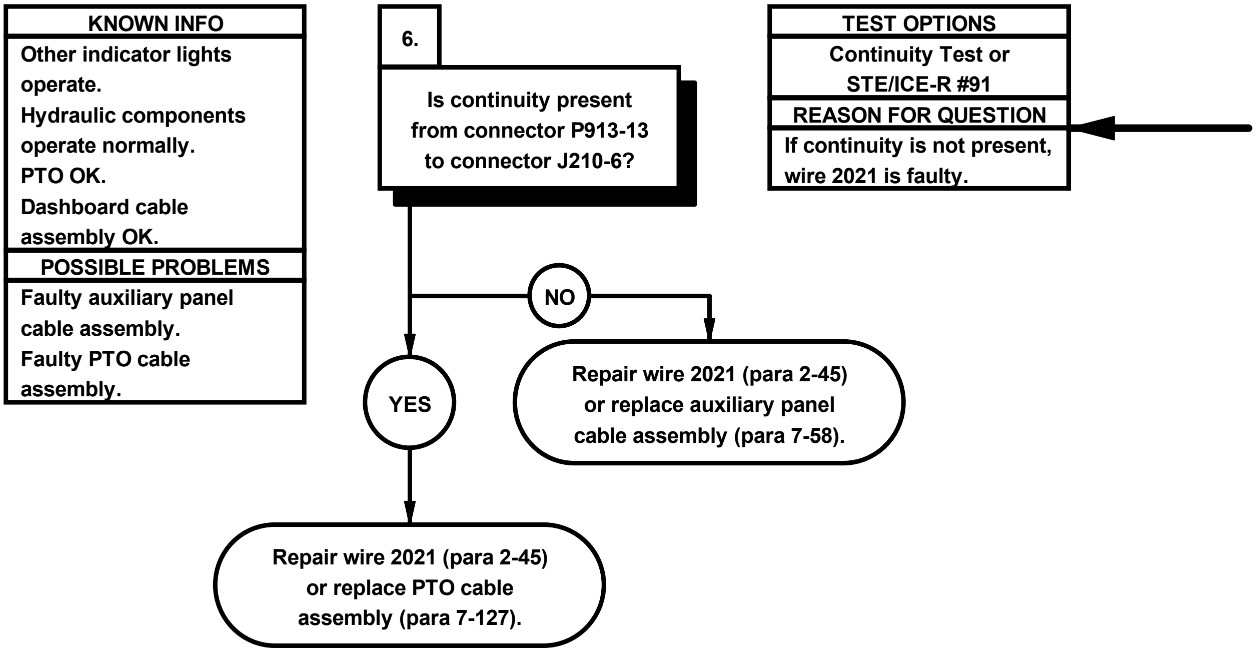
Repair wire 2021 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove personnel heater for access (para 18-9).
(2) Disconnect connector P913 from connector J913.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to PX7-10.
(5) Connect negative (-) probe of multimeter to J913-13 and note reading on multimeter.
(6) If continuity is not present, repair wire 2021 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Connect lighted indicator display to connector PX7.
(8) Position lighted indicator display in instrument panel assembly with four screws.
(9) Tighten four screws to 6-10 lb-in. (1 N·m).
(10) Connect batteries (para 7-57).



e32. POWER TAKE-OFF (PTO) INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Hydraulic components operate normally.
PTO OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty auxiliary panel cable assembly.
Faulty PTO cable assembly.

6. Is continuity present from connector P913-13 to connector J210-6?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

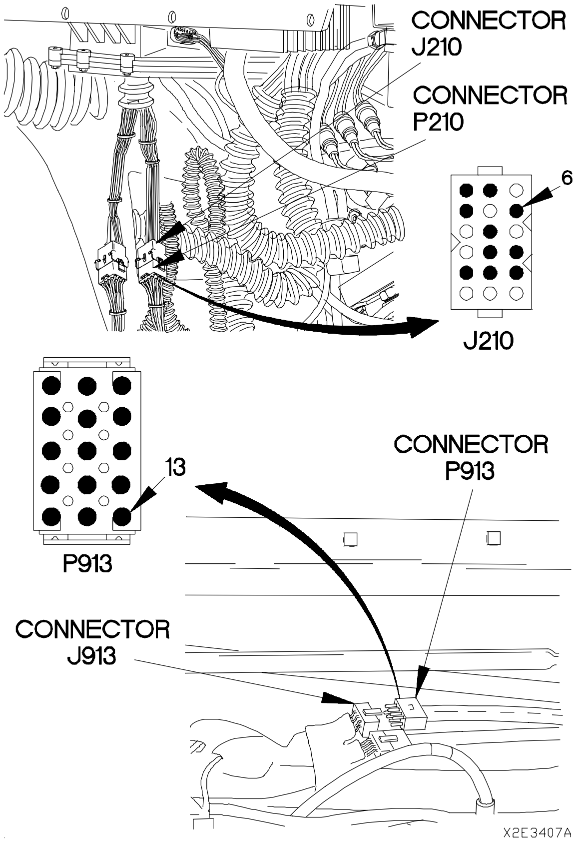
If continuity is not present, wire 2021 is faulty.

NO: Repair wire 2021 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

YES: Repair wire 2021 (para 2-45) or replace PTO cable assembly (para 7-127).

CONTINUITY TEST

(1) Disconnect connector P210 from connector J210.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to J210-6.
(4) Connect negative (-) probe of multimeter to P913-13 and note reading on multimeter.
(5) If continuity is not present, repair wire 2021 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(6) If continuity is present, repair wire 2021 (para 2-45) or replace PTO cable assembly (para 7-127).
(7) Connect connector J210 to connector P210.
(8) Connect connector P913 to connector J913.
(9) Install personnel heater (para 18-9).



e33. FAN OFF INDICATOR DOES NOT OPERATE

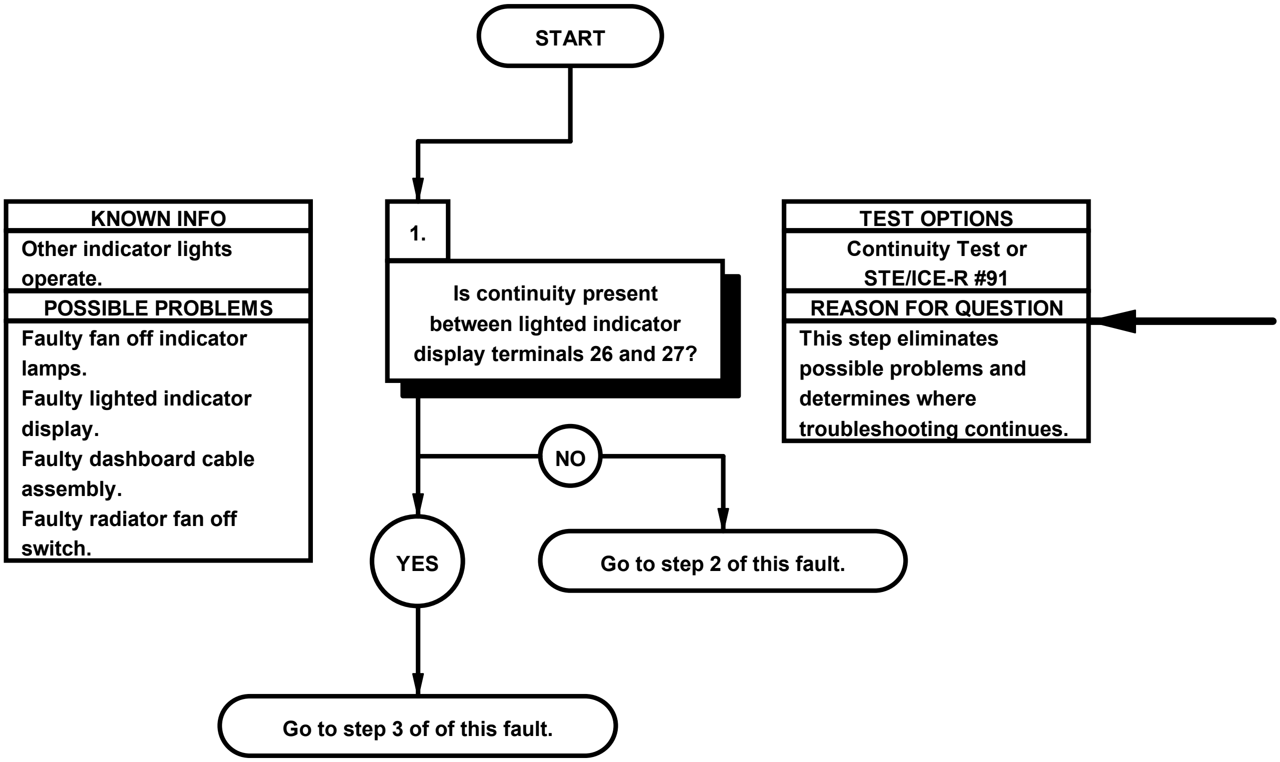
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

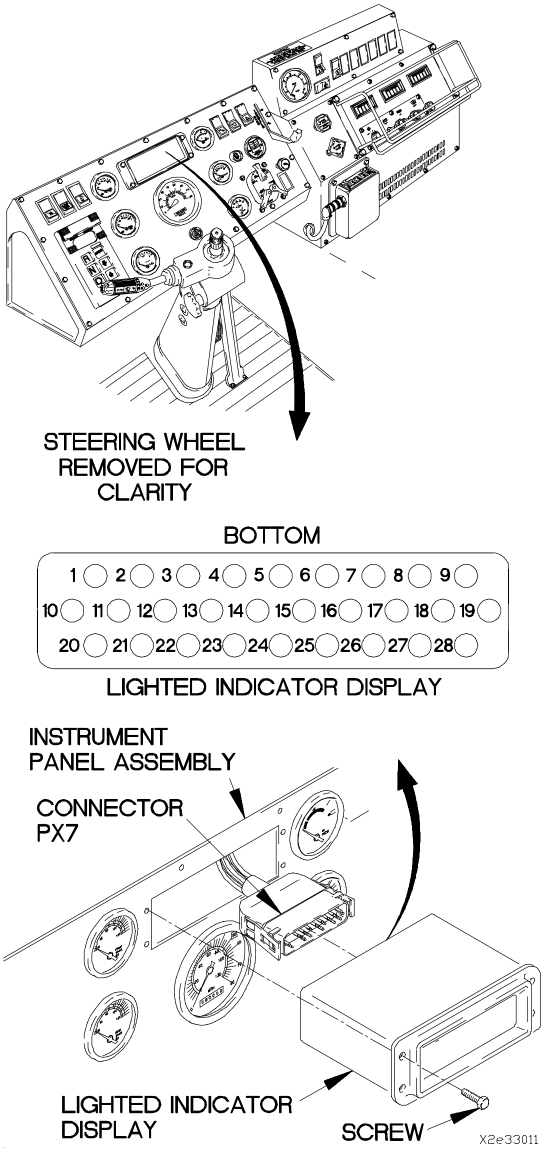
Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

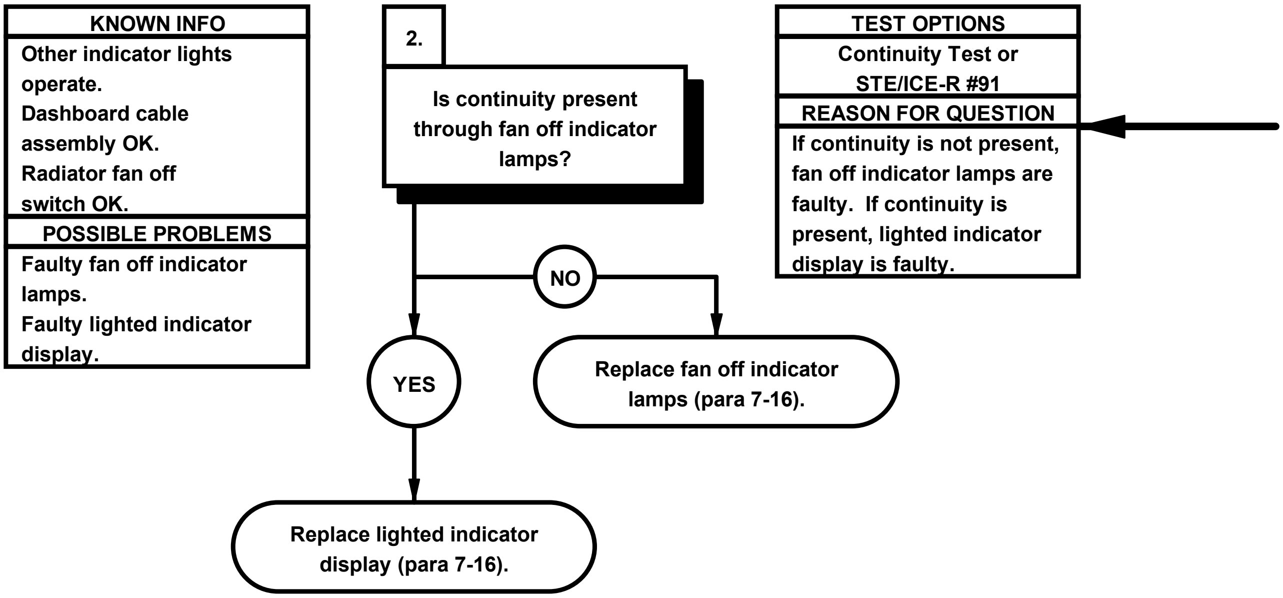
References
TM 9-4910-571-12&P



CONTINUITY TEST
(1) Remove four screws from lighted indicator display. (2) Remove lighted indicator display from instrument panel assembly. (3) Disconnect connector PX7 from lighted indicator display. (4) Set multimeter to ohms. (5) Connect positive (+) probe of multimeter to lighted indicator display terminal 27. (6) Connect negative (-) probe of multimeter to lighted indicator display terminal 26 and note reading on multimeter. (7) If continuity is not present, go to step 2 of this fault. (8) If continuity is present, go to step 3 of this fault.



e33. FAN OFF INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Dashboard cable assembly OK.
Radiator fan off switch OK.

POSSIBLE PROBLEMS

Faulty fan off indicator lamps.
Faulty lighted indicator display.

2.

Is continuity present through fan off indicator lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

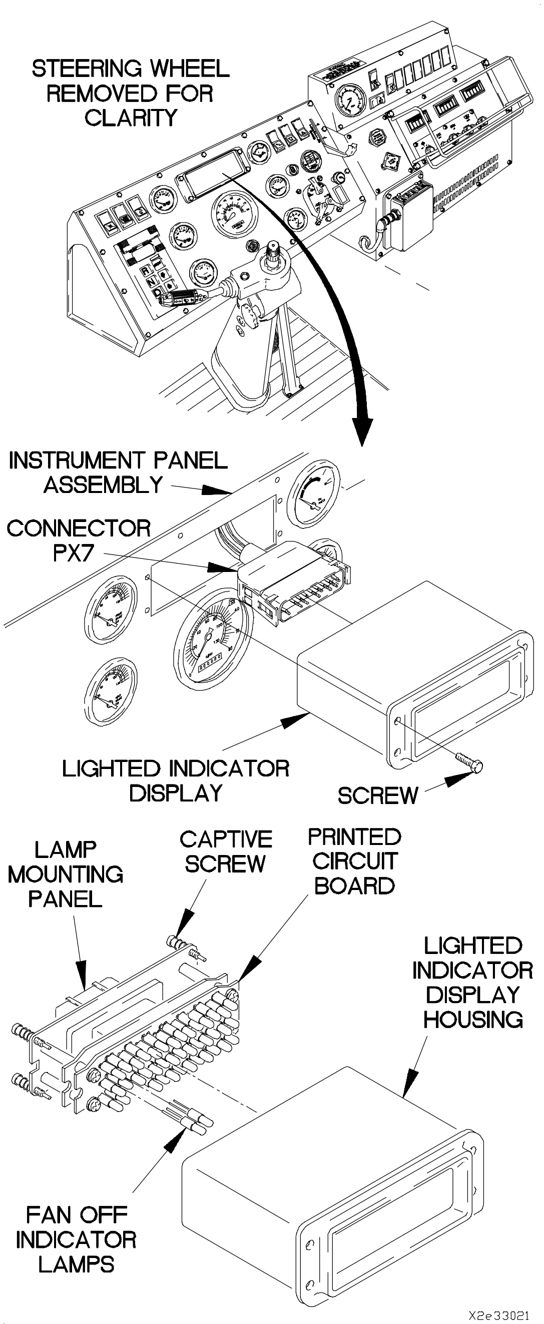
If continuity is not present, fan off indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

Replace fan off indicator lamps (para 7-16).

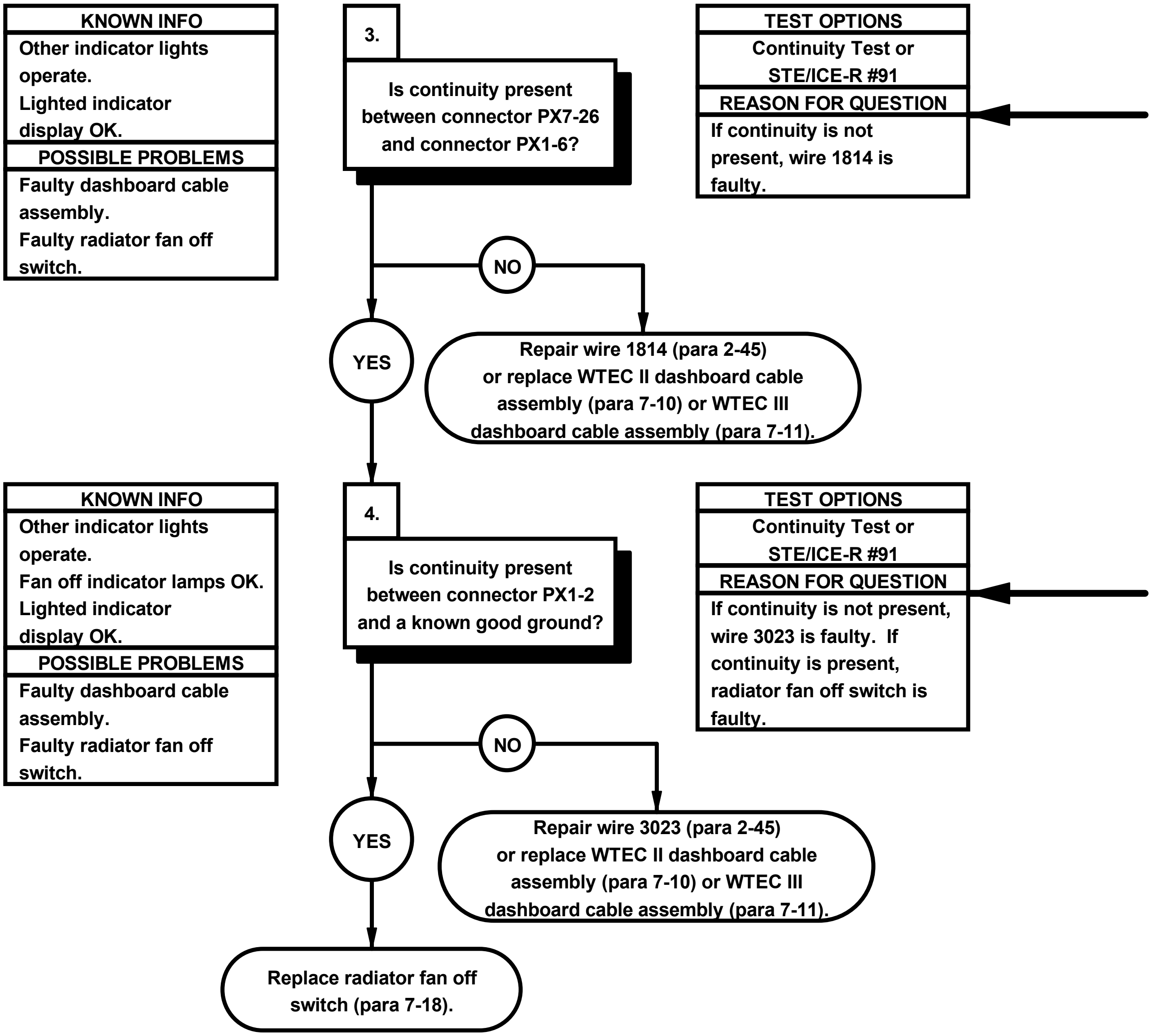
Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove fan off indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each fan off indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace fan off indicator lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install fan off indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e33. FAN OFF INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.

Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

Faulty radiator fan off switch.

3\. Is continuity present between connector PX7-26 and connector PX1-6?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1814 is faulty.

NO: Repair wire 1814 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Other indicator lights operate.

Fan off indicator lamps OK.

Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

Faulty radiator fan off switch.

4\. Is continuity present between connector PX1-2 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3023 is faulty. If continuity is present, radiator fan off switch is faulty.

NO: Repair wire 3023 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

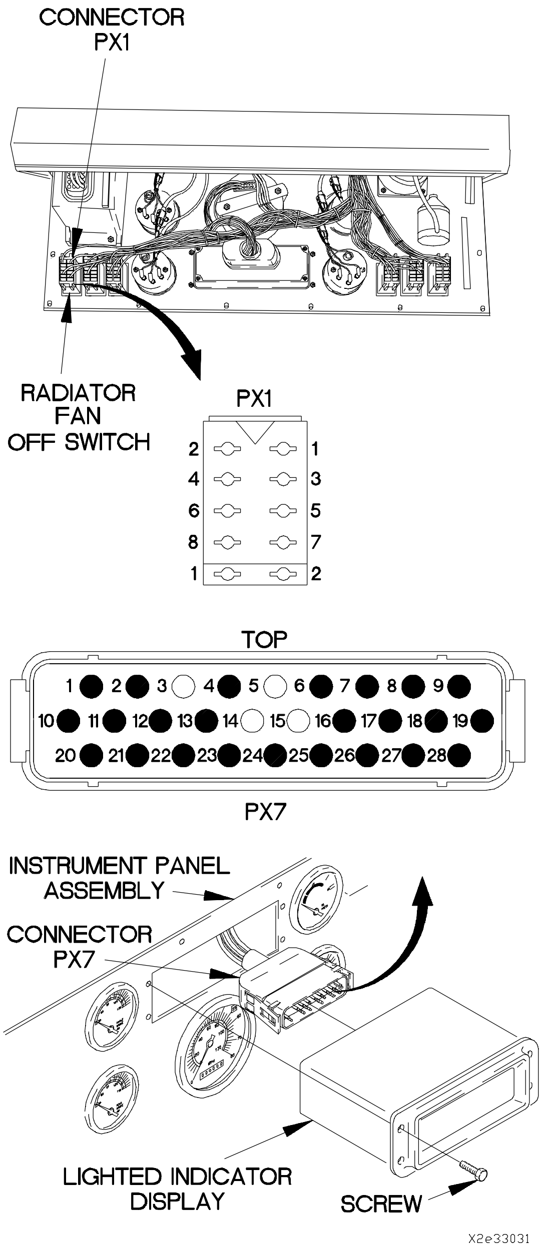
YES: Replace radiator fan off switch (para 7-18).

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX1 from radiator fan off switch.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector PX7-26.
(5) Connect negative (-) probe of multimeter to connector PX1-6 and note reading on multimeter.
(6) If continuity is not present, repair wire 1814 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX1-2.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3023 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace radiator fan off switch (para 7-18).
(6) Connect connector PX1 to radiator fan off switch.
(7) Install instrument panel assembly (para 7-15).
(8) Connect lighted indicator display to connector PX7.
(9) Position lighted indicator display in instrument panel assembly with four screws.
(10) Tighten four screws to 6-10 lb-in. (1 N·m).
(11) Connect batteries (para 7-57).



e34. DUMP UP INDICATOR DOES NOT OPERATE

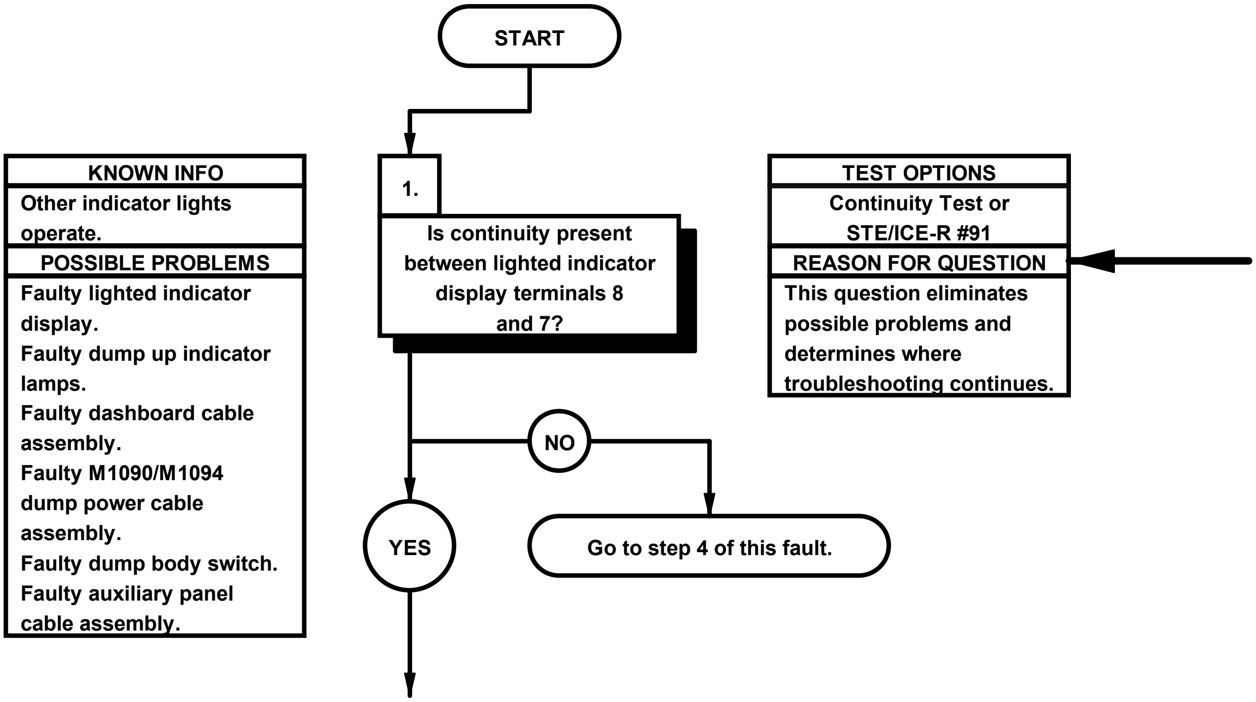
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



START

KNOWN INFO
Other indicator lights operate.

POSSIBLE PROBLEMS
Faulty lighted indicator display.
Faulty dump up indicator lamps.
Faulty dashboard cable assembly.
Faulty M1090/M1094 dump power cable assembly.
Faulty dump body switch.
Faulty auxiliary panel cable assembly.

1\. Is continuity present between lighted indicator display terminals 8 and 7?

TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 4 of this fault.

YES

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.

(2) Remove lighted indicator display from instrument panel assembly.

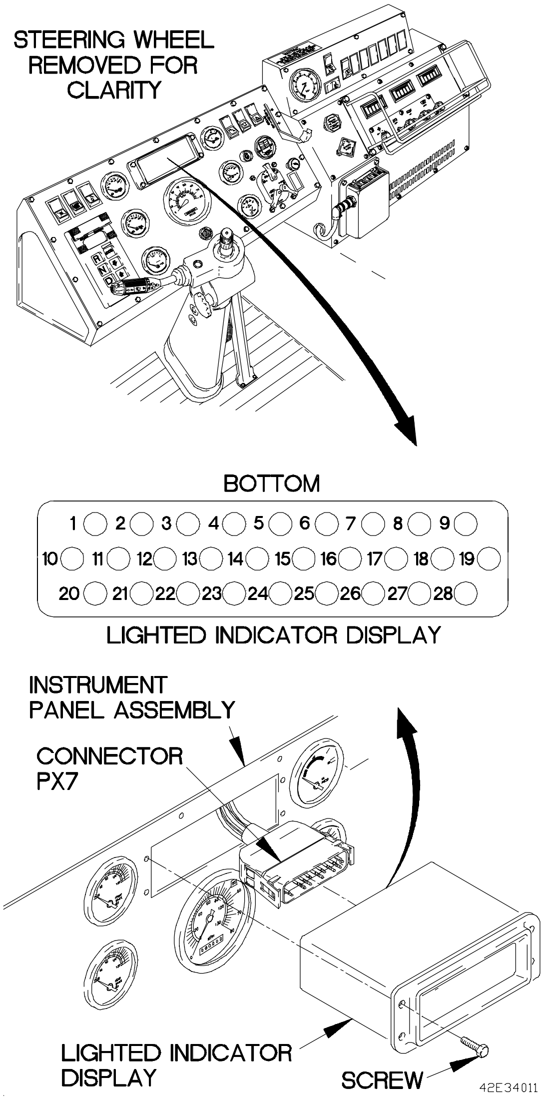
(3) Disconnect connector PX7 from lighted indicator display.

(4) Set multimeter to ohms.

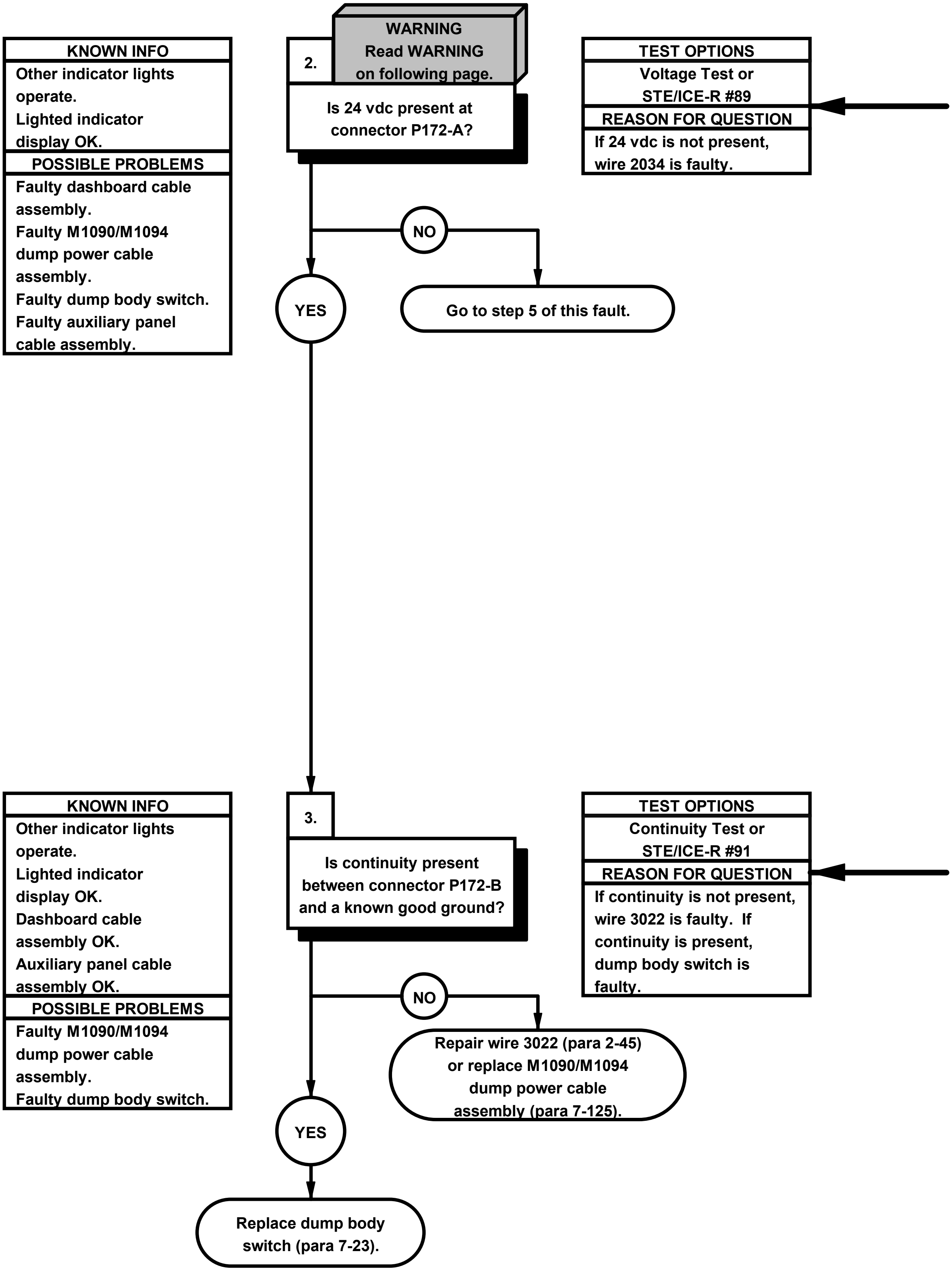
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 8.

(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 7 and note reading on multimeter.

(7) If continuity is not present, go to step 4 of this fault.



e34. DUMP UP INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty M1090/M1094 dump power cable assembly.
Faulty dump body switch.
Faulty auxiliary panel cable assembly.

WARNING

Read WARNING on following page.

2. Is 24 vdc present at connector P172-A?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 2034 is faulty.

NO: Go to step 5 of this fault.

YES:

KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.
Dashboard cable assembly OK.
Auxiliary panel cable assembly OK.

POSSIBLE PROBLEMS

Faulty M1090/M1094 dump power cable assembly.
Faulty dump body switch.

3. Is continuity present between connector P172-B and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3022 is faulty. If continuity is present, dump body switch is faulty.

NO: Repair wire 3022 (para 2-45) or replace M1090/M1094 dump power cable assembly (para 7-125).

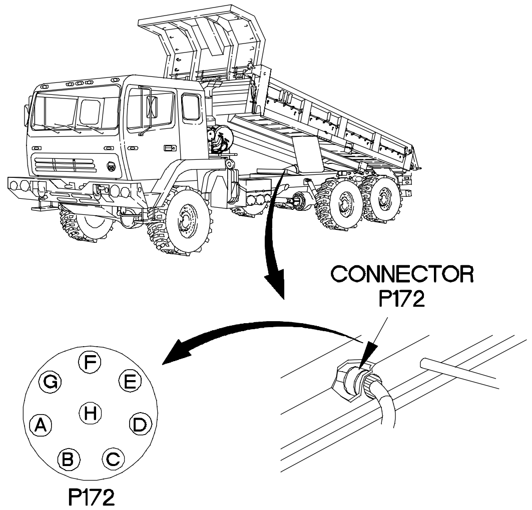
YES: Replace dump body switch (para 7-23).

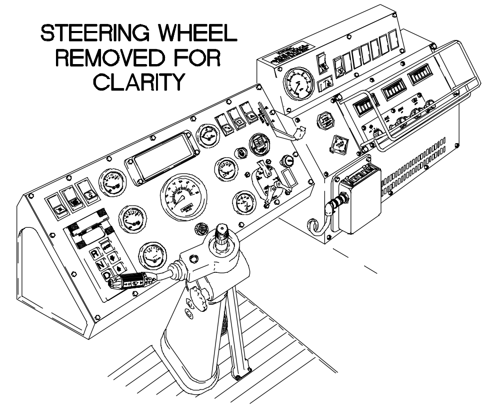
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

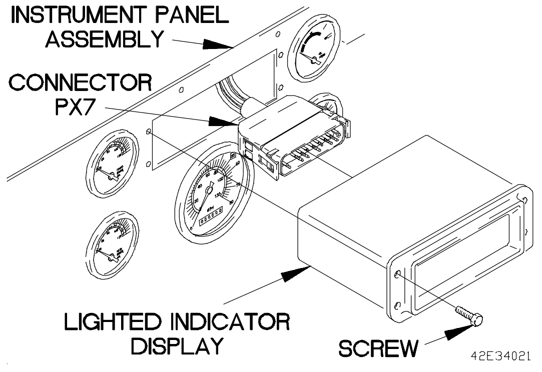
(1) Connect batteries (para 7-57).
(2) Raise dump bed (TM 9-2320-366-10-1).
(3) Disconnect connector P172 from connector J172.
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to connector P172-B.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 vdc is not present, go to step 5 of this fault.
(9) Position master power switch to off (TM 9-2320-366-10-1).





CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P172-B.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3022 (para 2-45) or replace M1090/M1094 dump power cable assembly (para 7-125).
(6) If continuity is present, replace M1090/M1094 dump body switch (para 7-23).
(7) Connect connector P172 to connector J172.
(8) Lower dump bed (TM 9-2320-366-10-1).
(9) Connect lighted indicator display to connector PX7.
(10) Position lighted indicator display in instrument panel assembly with four screws.
(11) Tighten four screws to 6-10 lb-in. (1 N·m).
(12) Connect batteries (para 7-57).



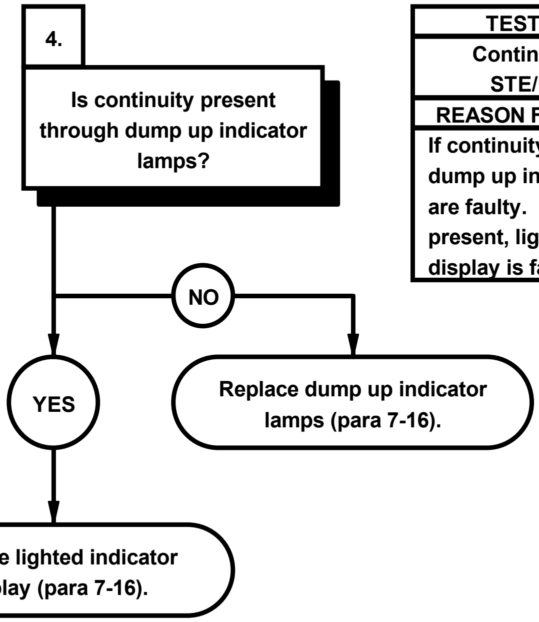
e34. DUMP UP INDICATOR DOES NOT OPERATE (CONT)

KNOWN INFO

Other indicator lights operate.
Dashboard cable assembly OK.
Auxiliary panel cable assembly OK.
M1090/M1094 dump power cable assembly OK.
Dump body switch OK.

POSSIBLE PROBLEMS

Faulty dump up indicator lamps.
Faulty lighted indicator display.



TEST OPTIONS

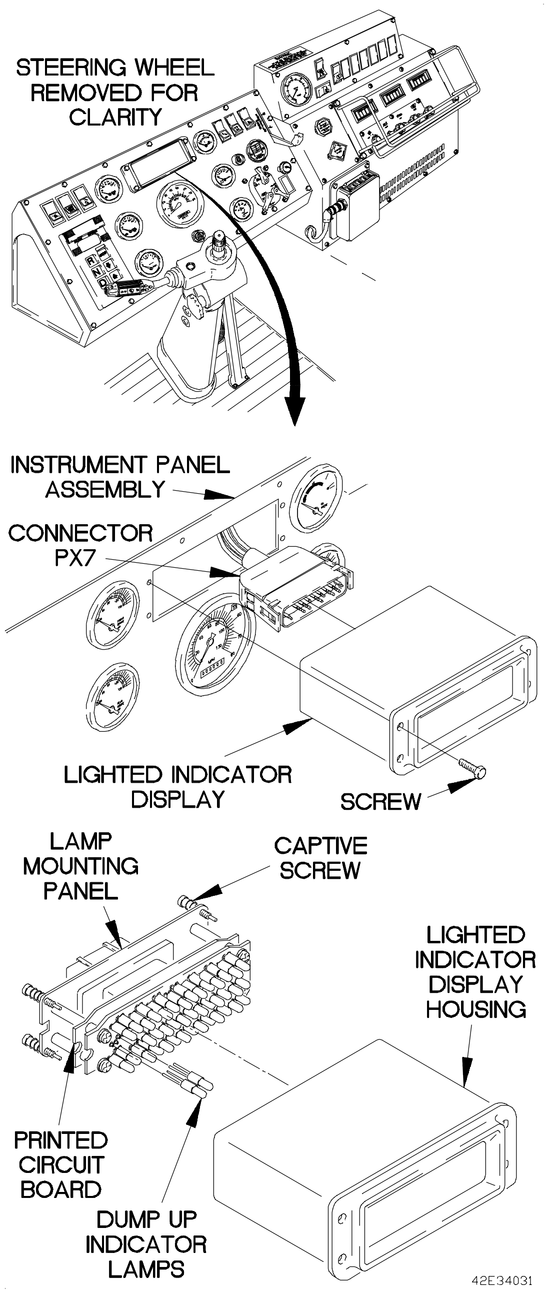
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

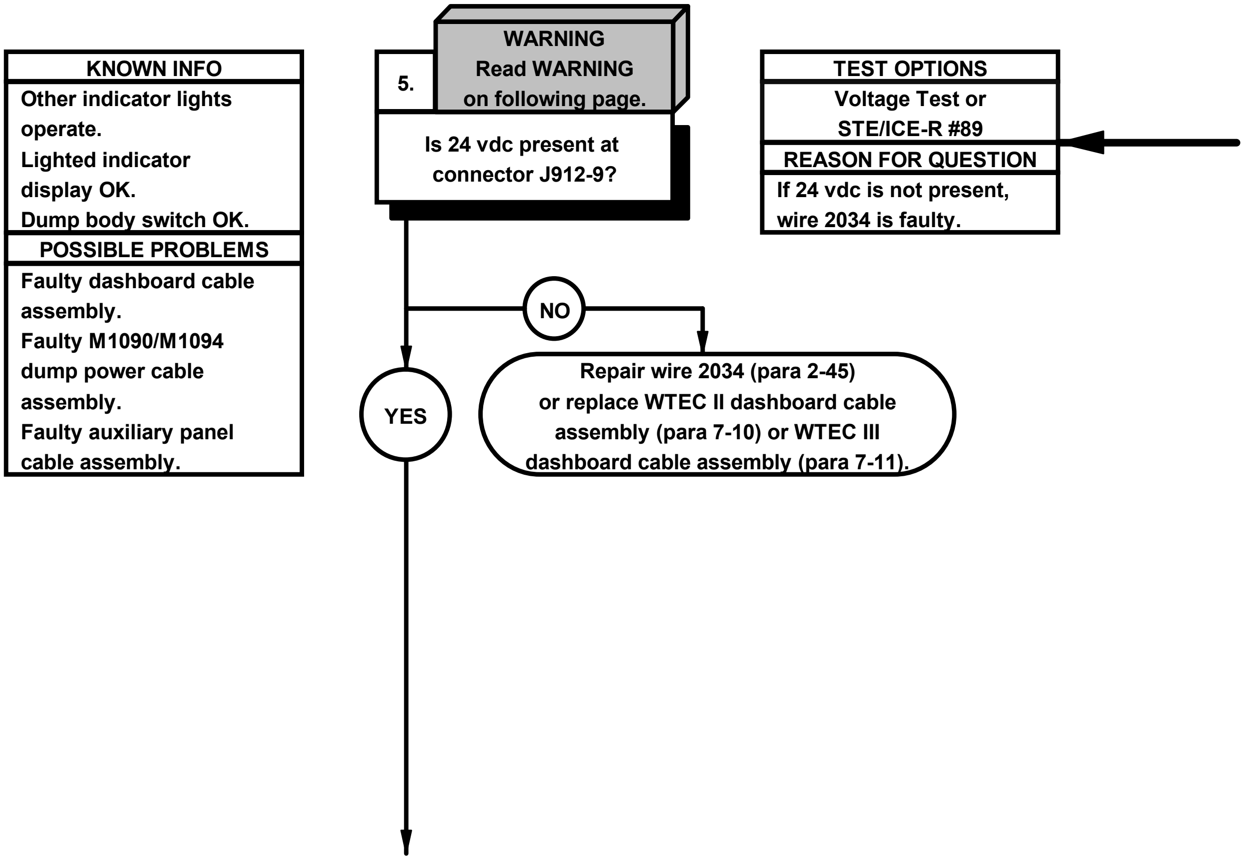
If continuity is not present, dump up indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove dump up indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each dump up indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace dump up indicator lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install dump up indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e34. DUMP UP INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.

Lighted indicator display OK.

Dump body switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

Faulty M1090/M1094 dump power cable assembly.

Faulty auxiliary panel cable assembly.

5\.

WARNING

Read WARNING on following page.

Is 24 vdc present at connector J912-9?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 2034 is faulty.

Repair wire 2034 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

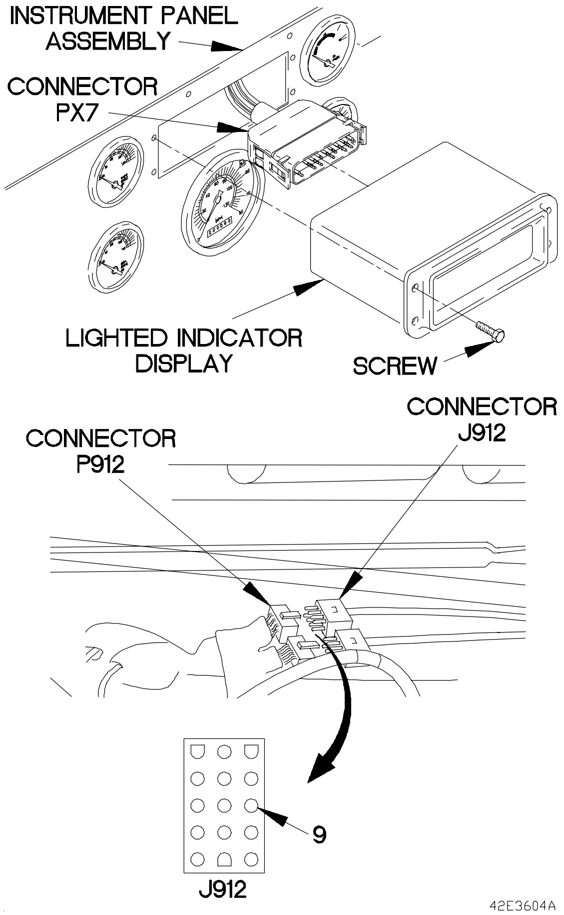
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

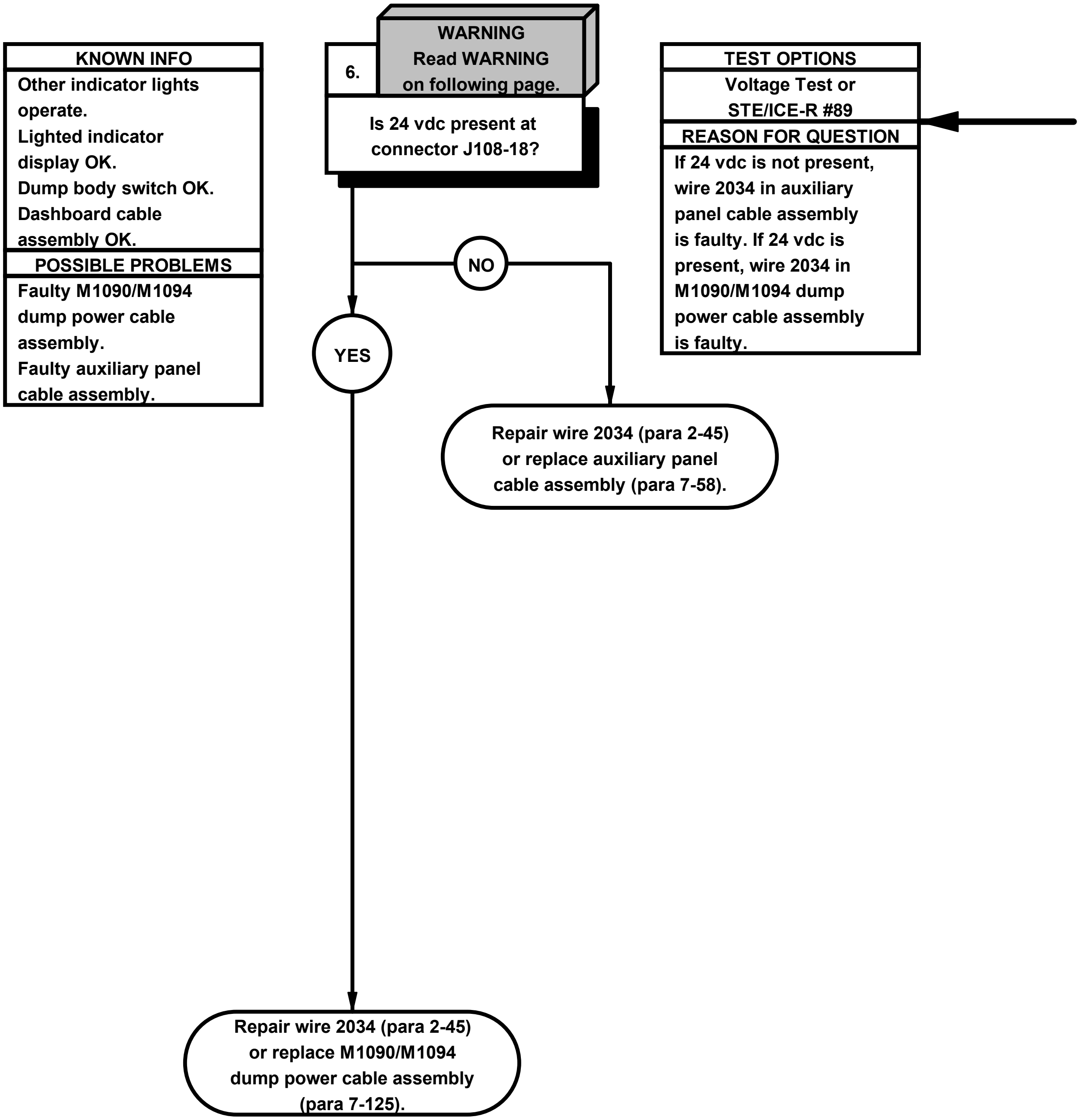
VOLTAGE TEST

(1) Connect lighted indicator display to connector PX7.
(2) Position lighted indicator display in instrument panel assembly with four screws.
(3) Tighten four screws to 6-10 lb-in. (1 N·m).
(4) Connect batteries (para 7-57).

(5) Remove personnel heater for access (para 18-9).
(6) Disconnect connector J912 from connector P912.
(7) Set multimeter to volts dc.
(8) Connect positive (+) probe of multimeter to connector J912-9.
(9) Connect negative (-) probe of multimeter to ground.
(10) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 24 vdc is not present, repair wire 2034 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(12) Position master power switch to off (TM 9-2320-366-10-1).
(13) Connect connector P912 to connector J912.



e34. DUMP UP INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.
Dump body switch OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty M1090/M1094 dump power cable assembly.
Faulty auxiliary panel cable assembly.

WARNING

Read WARNING on following page.

6. Is 24 vdc present at connector J108-18?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 2034 in auxiliary panel cable assembly is faulty. If 24 vdc is present, wire 2034 in M1090/M1094 dump power cable assembly is faulty.

Repair wire 2034 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).

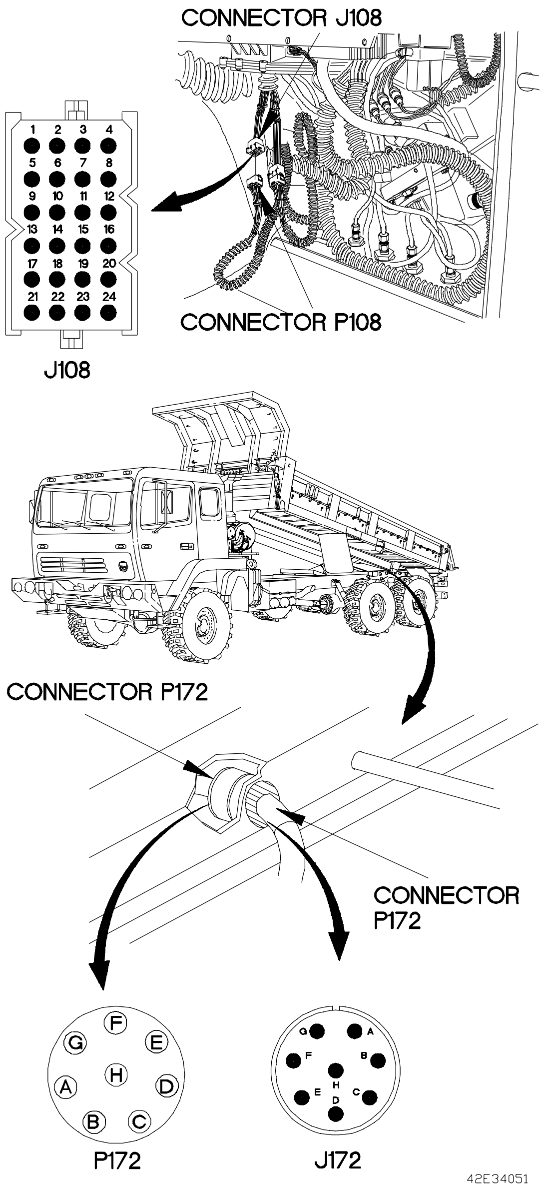
Repair wire 2034 (para 2-45) or replace M1090/M1094 dump power cable assembly (para 7-125).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector J108 from connector P108.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J108-18.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 24 vdc is not present, repair wire 2034 (para 2-45) or replace auxiliary panel cable assembly (para 7-58).
(7) If 24 vdc is present, repair wire 2034 (para 2-45) or replace M1090/M1094 dump power cable assembly (para 7-125).
(8) Position master power switch to off (TM 9-2320-366-10-1).
(9) Connect connector P108 to connector J108.
(10) Connect connector P172 to connector J172.
(11) Lower dump bed (TM 9-2320-366-10-1).
(12) Install personnel heater (para 18-9).



e35. WTEC II TRANSMISSION TEMPERATURE INDICATOR DOES NOT OPERATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Materials/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

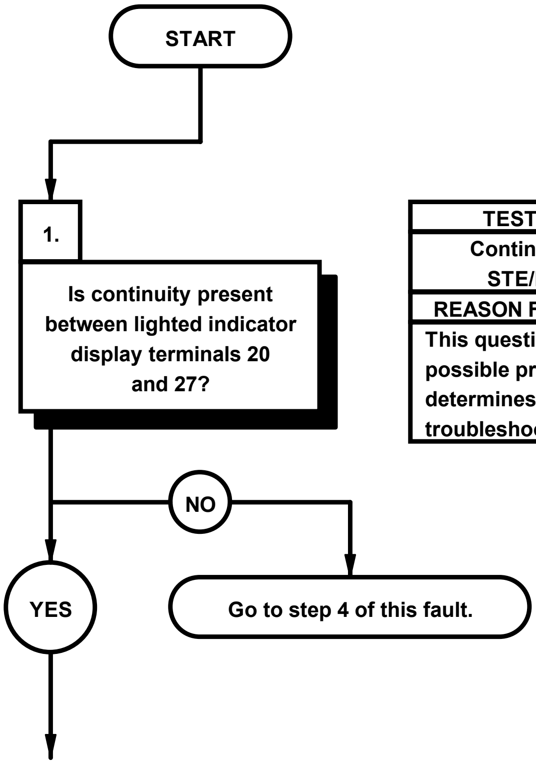
References
TM 9-4910-571-12&P

KNOWN INFO

Other indicator lights operate.

POSSIBLE PROBLEMS

Faulty lighted indicator display.
Faulty WTEC II dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty WTEC II transmission ECU pushbutton shift selector (TEPSS).
Faulty transmission temperature indicator lamps.



Is continuity present between lighted indicator display terminals 20 and 27?

Go to step 4 of this fault.

TEST OPTIONS

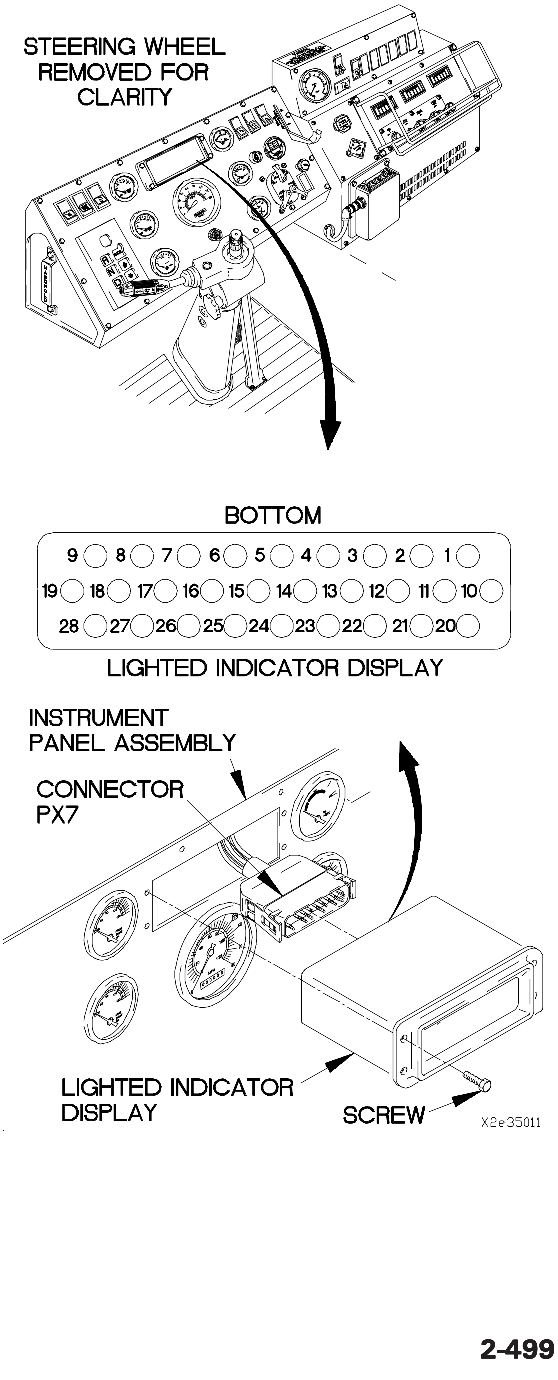
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

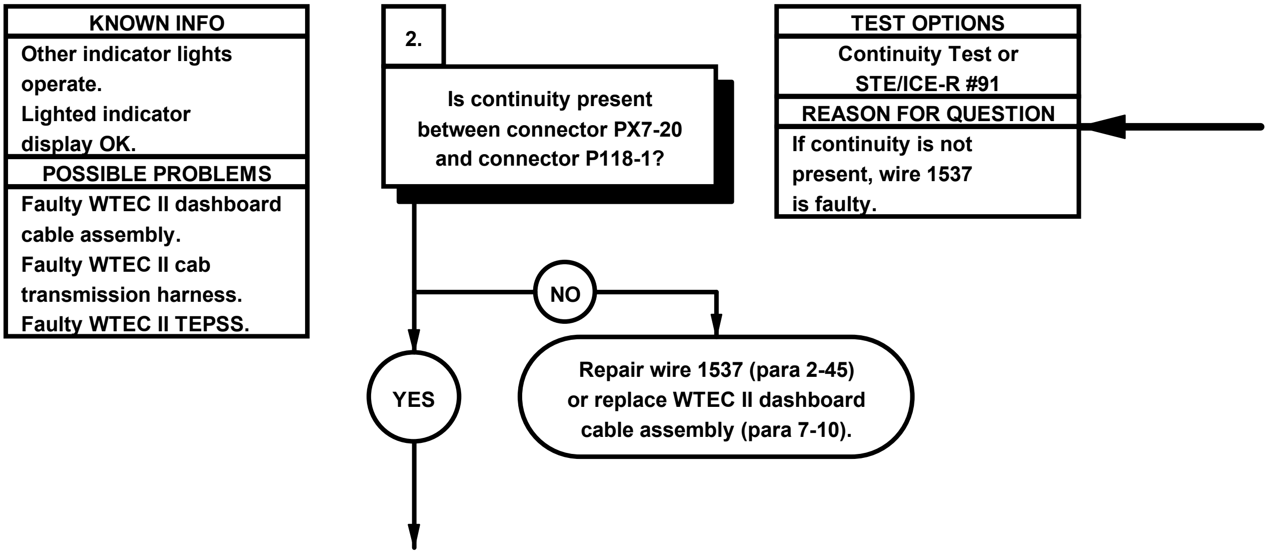
This question eliminates possible problems and determines where troubleshooting continues.

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 27.
(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 20 and note reading on multimeter.
(7) If continuity is not present, go to step 4 of this fault.



e35. WTEC II TRANSMISSION TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty WTEC II dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty WTEC II TEPSS.

2\. Is continuity present between connector PX7-20 and connector P118-1?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1537 is faulty.

Repair wire 1537 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).

(2) Disconnect connector PX17 from master power switch.

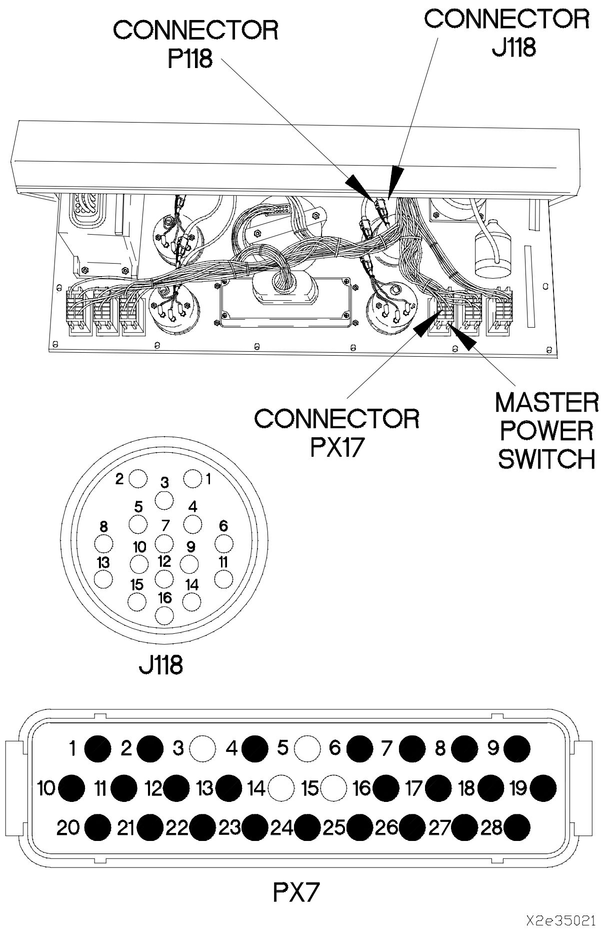
(3) Disconnect connector J118 from connector P118.

(4) Set multimeter to ohms.

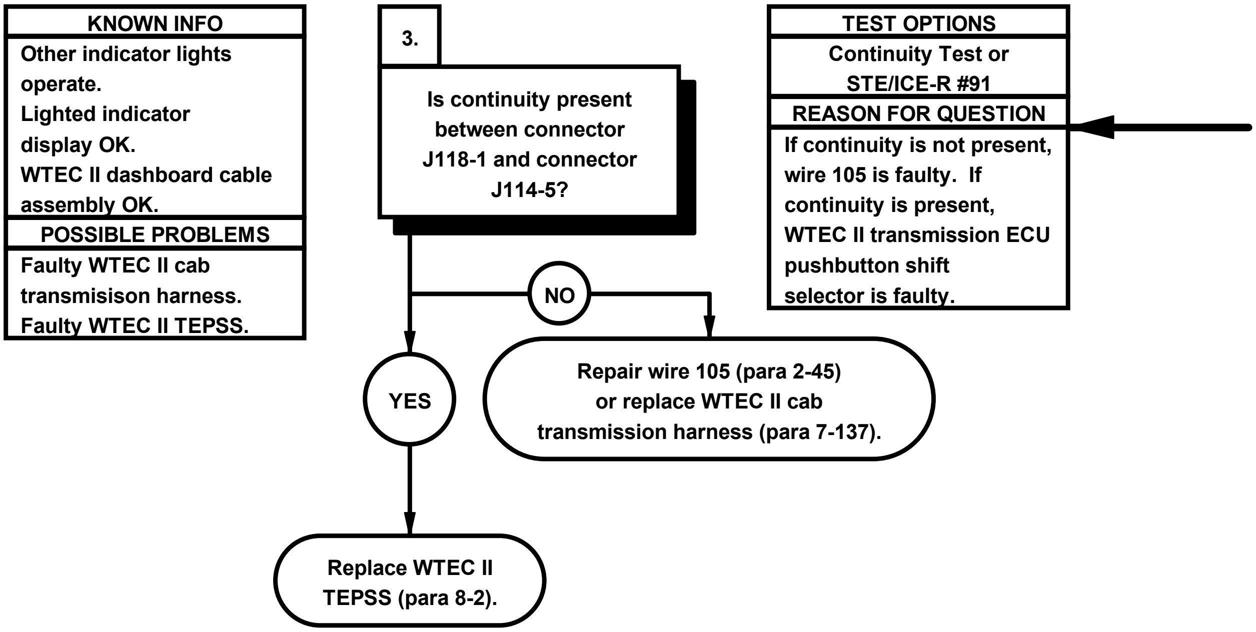
(5) Connect positive (+) probe of multimeter to connector PX7-20.

(6) Connect negative (-) probe of multimeter to connector P118-1 and note reading on multimeter.

(7) If continuity is not present, repair wire 1537 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).



e35. WTEC II TRANSMISSION TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.
WTEC II dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty WTEC II cab transmisison harness.
Faulty WTEC II TEPSS.

3.

Is continuity present between connector J118-1 and connector J114-5?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 105 is faulty. If continuity is present, WTEC II transmission ECU pushbutton shift selector is faulty.

NO

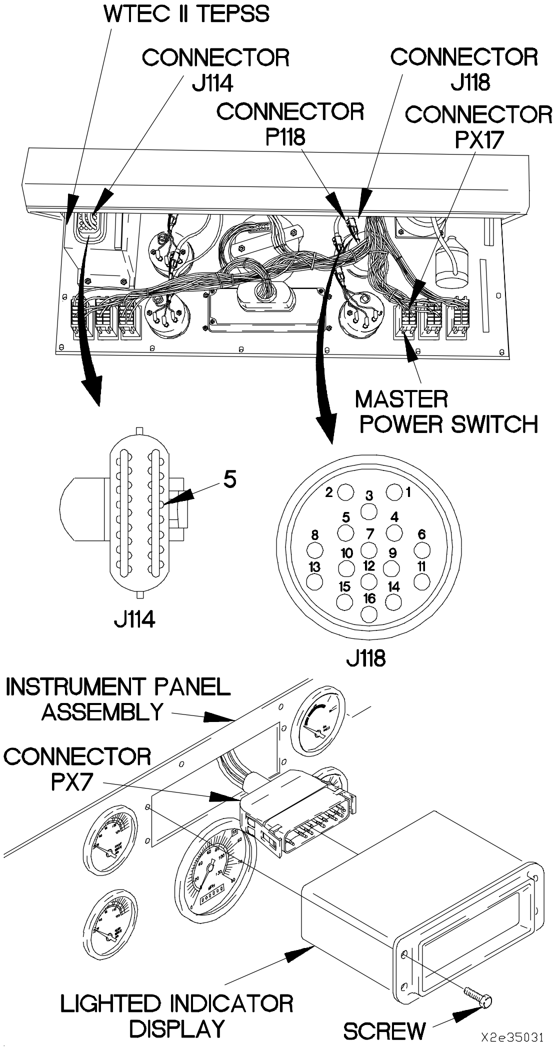
Repair wire 105 (para 2-45) or replace WTEC II cab transmission harness (para 7-137).

YES

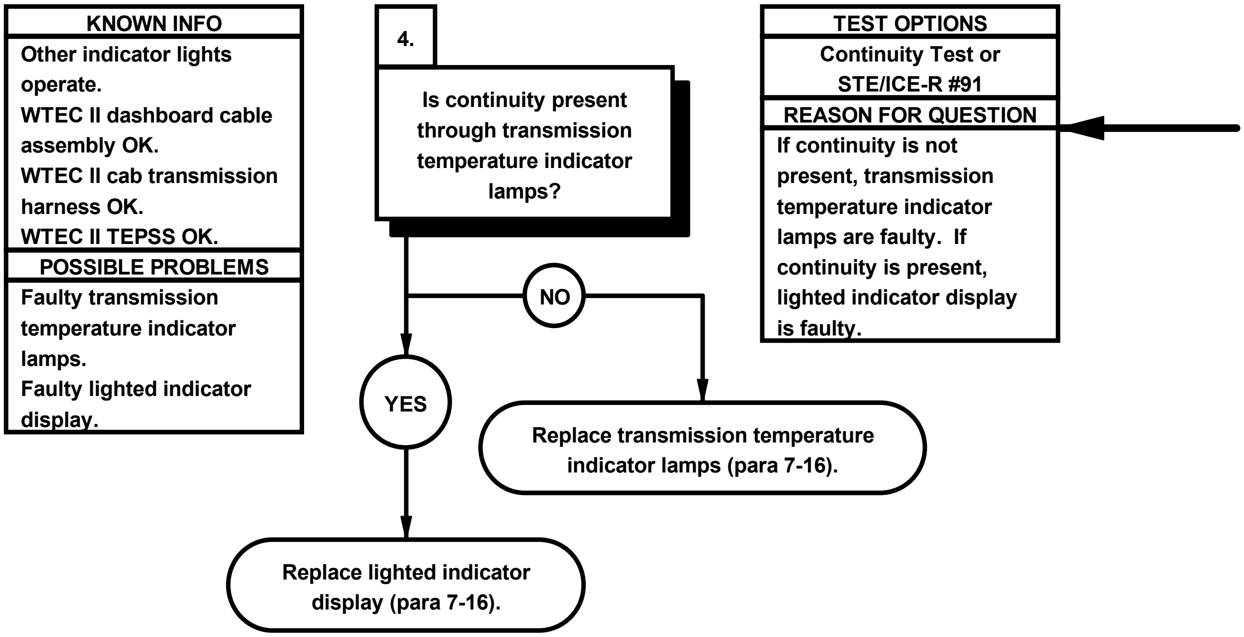
Replace WTEC II TEPSS (para 8-2).

CONTINUITY TEST

(1) Disconnect connector J114 (bottom connector) from WTEC II TEPSS.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector J114-5.
(4) Connect negative (-) probe of multimeter to connector J118-1 and note reading on multimeter.
(5) If continuity is not present, repair wire 105 (para 2-45) or replace WTEC II cab transmission harness (para 7-137).
(6) If continuity is present, replace WTEC II TEPSS (para 8-2).
(7) Connect connector J114 to WTEC II TEPSS.
(8) Connect connector J118 to connector P118.
(9) Install instrument panel assembly (para 7-15).
(10) Connect lighted indicator display to connector PX7.
(11) Position lighted indicator display in instrument panel assembly with four screws.
(12) Tighten four screws to 6-10 lb-in. (1 N·m).
(13) Connect batteries (para 7-57).



e35. WTEC II TRANSMISSION TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
WTEC II dashboard cable assembly OK.
WTEC II cab transmission harness OK.
WTEC II TEPSS OK.

POSSIBLE PROBLEMS

Faulty transmission temperature indicator lamps.
Faulty lighted indicator display.

4\.

Is continuity present through transmission temperature indicator lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, transmission temperature indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

NO

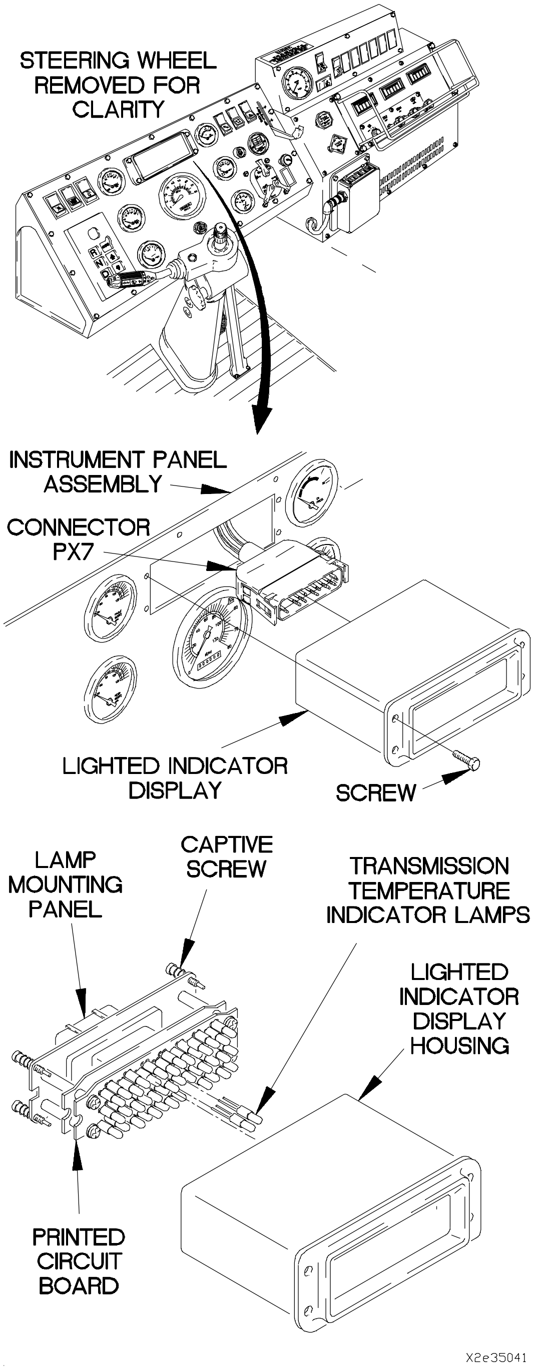
Replace transmission temperature indicator lamps (para 7-16).

YES

Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove transmission temperature indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each transmission temperature indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace transmission temperature indicator lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install transmission temperature indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e36. WTEC III TRANSMISSION TEMPERATURE INDICATOR DOES NOT OPERATE

INITIAL SETUP

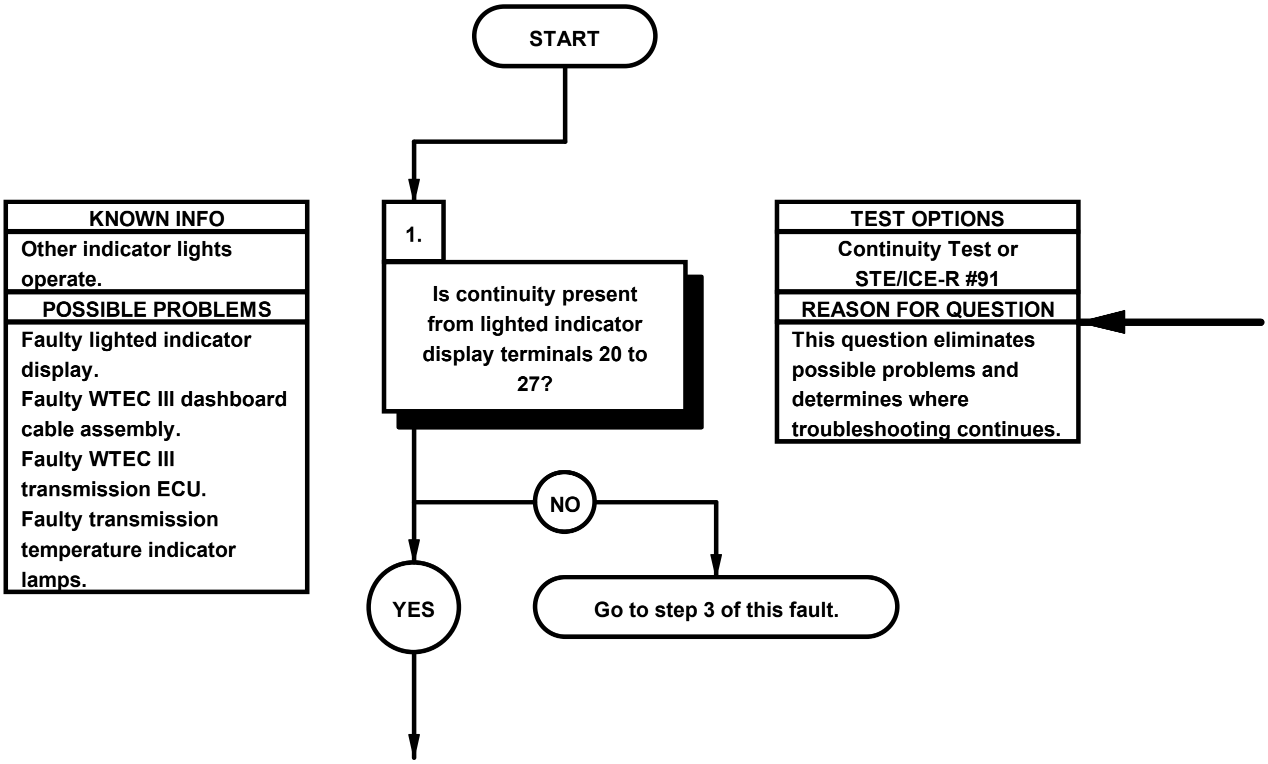
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Materials/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



KNOWN INFO

Other indicator lights operate.

POSSIBLE PROBLEMS

Faulty lighted indicator display.
Faulty WTEC III dashboard cable assembly.
Faulty WTEC III transmission ECU.
Faulty transmission temperature indicator lamps.

1. Is continuity present from lighted indicator display terminals 20 to 27?

NO: Go to step 3 of this fault.

TEST OPTIONS

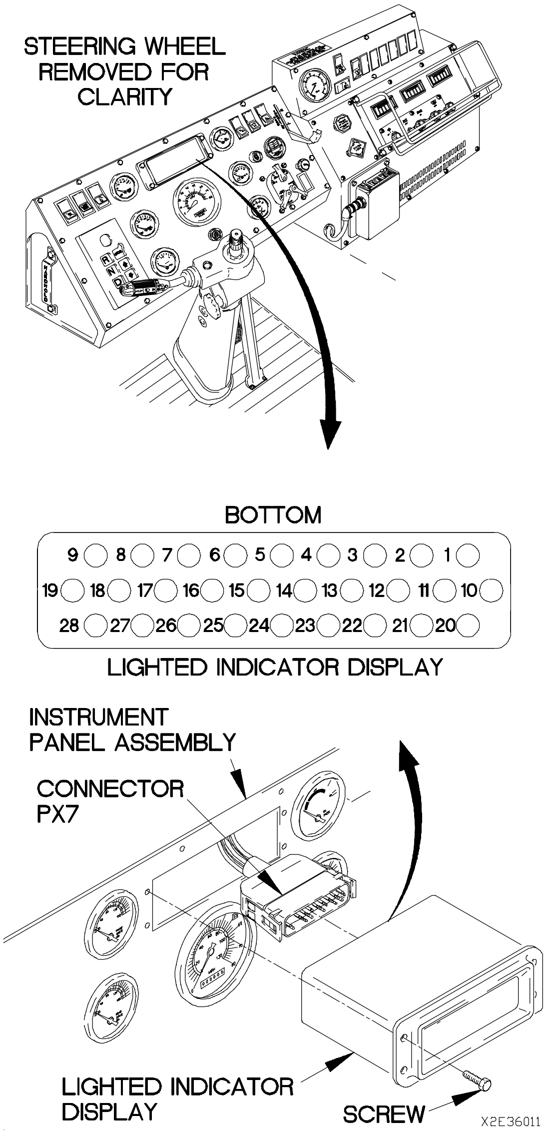
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

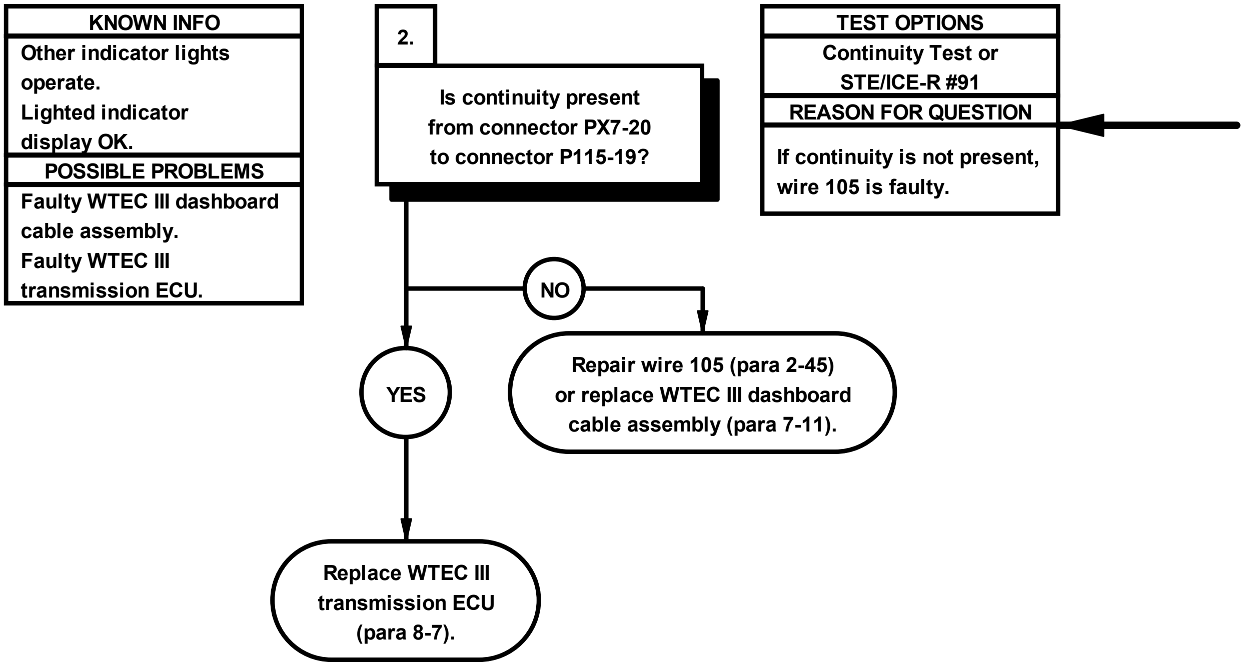
This question eliminates possible problems and determines where troubleshooting continues.

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 27.
(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 20 and note reading on multimeter.
(7) If continuity is not present, go to step 3 of this fault.



e36. WTEC III TRANSMISSION TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty WTEC III dashboard cable assembly.
Faulty WTEC III transmission ECU.

2.

Is continuity present from connector PX7-20 to connector P115-19?

TEST OPTIONS

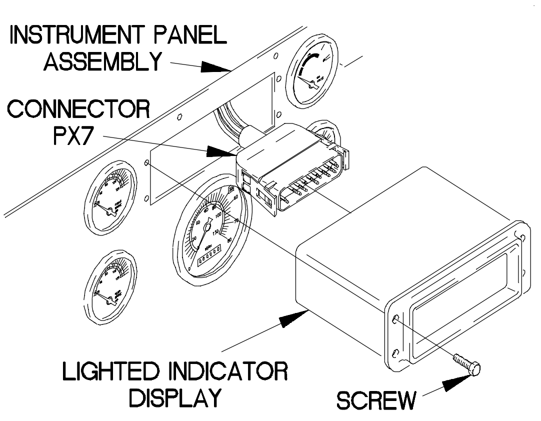
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 105 is faulty.

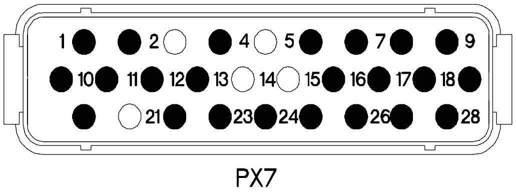
Repair wire 105 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

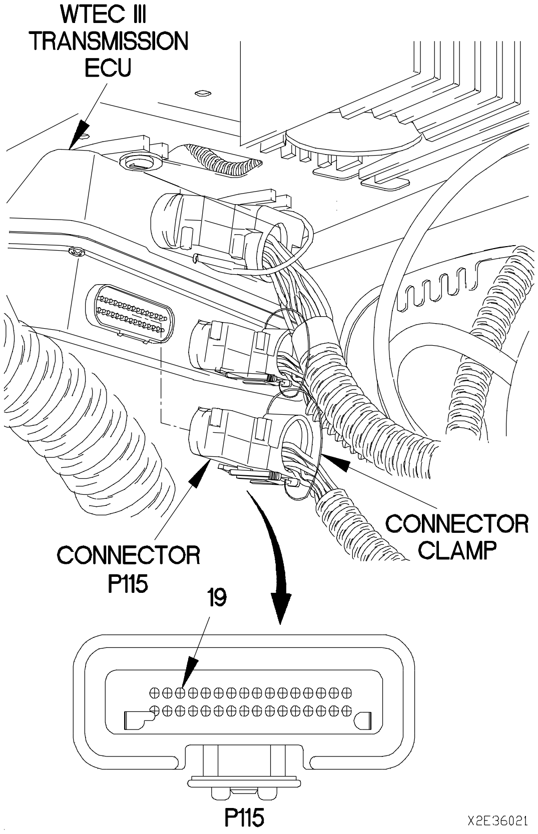
Replace WTEC III transmission ECU (para 8-7).



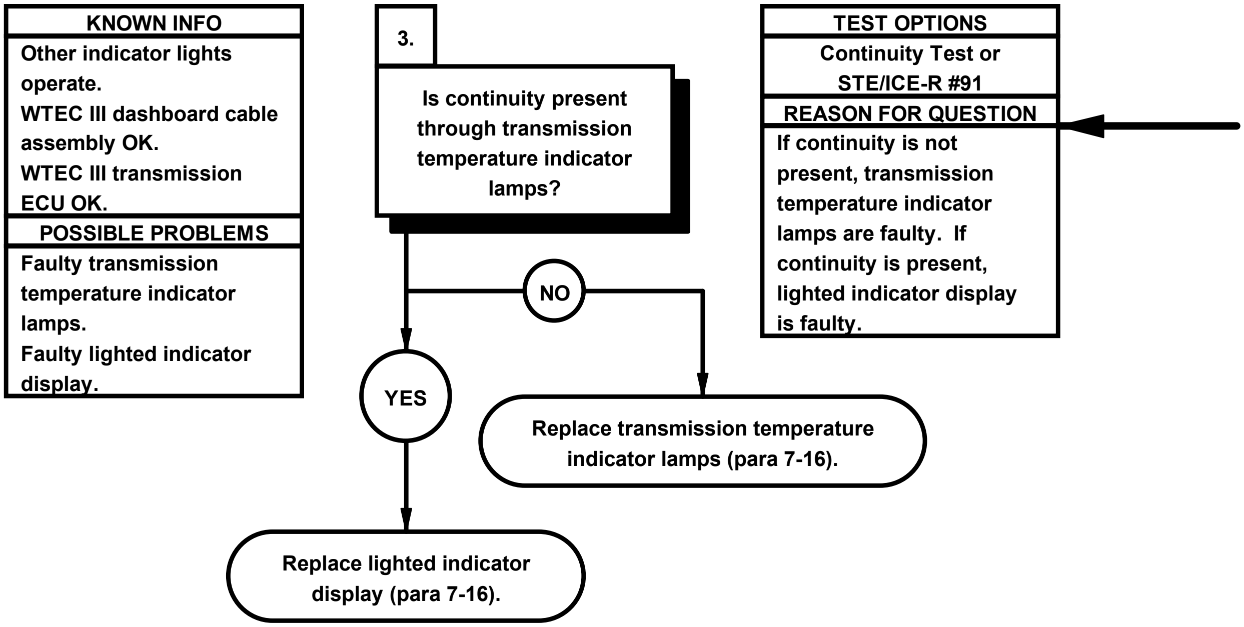
CONTINUITY TEST

(1) Remove kick panel (para 16-3).
(2) Disconnect connector clamp from connector P115.
(3) Disconnect connector P115 from WTEC III transmission ECU.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX7-20.
(6) Connect negative (-) probe of multimeter to connector P115-19 and note reading on multimeter.
(7) If continuity is not present, repair wire 105 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, replace WTEC III transmission ECU (para 8-7).
(9) Connect connector P115 to WTEC III transmission ECU.
(10) Connect connector clamp to connector P115.
(11) Install kick panel (para 16-3).
(12) Connect lighted indicator display to connector PX7.
(13) Position lighted indicator display in instrument panel assembly with four screws.
(14) Tighten four screws to 6-10 lb-in. (1 N·m).
(15) Connect batteries (para 7-57).





e36. WTEC III TRANSMISSION TEMPERATURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
WTEC III dashboard cable assembly OK.
WTEC III transmission ECU OK.

POSSIBLE PROBLEMS

Faulty transmission temperature indicator lamps.
Faulty lighted indicator display.

3\. Is continuity present through transmission temperature indicator lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

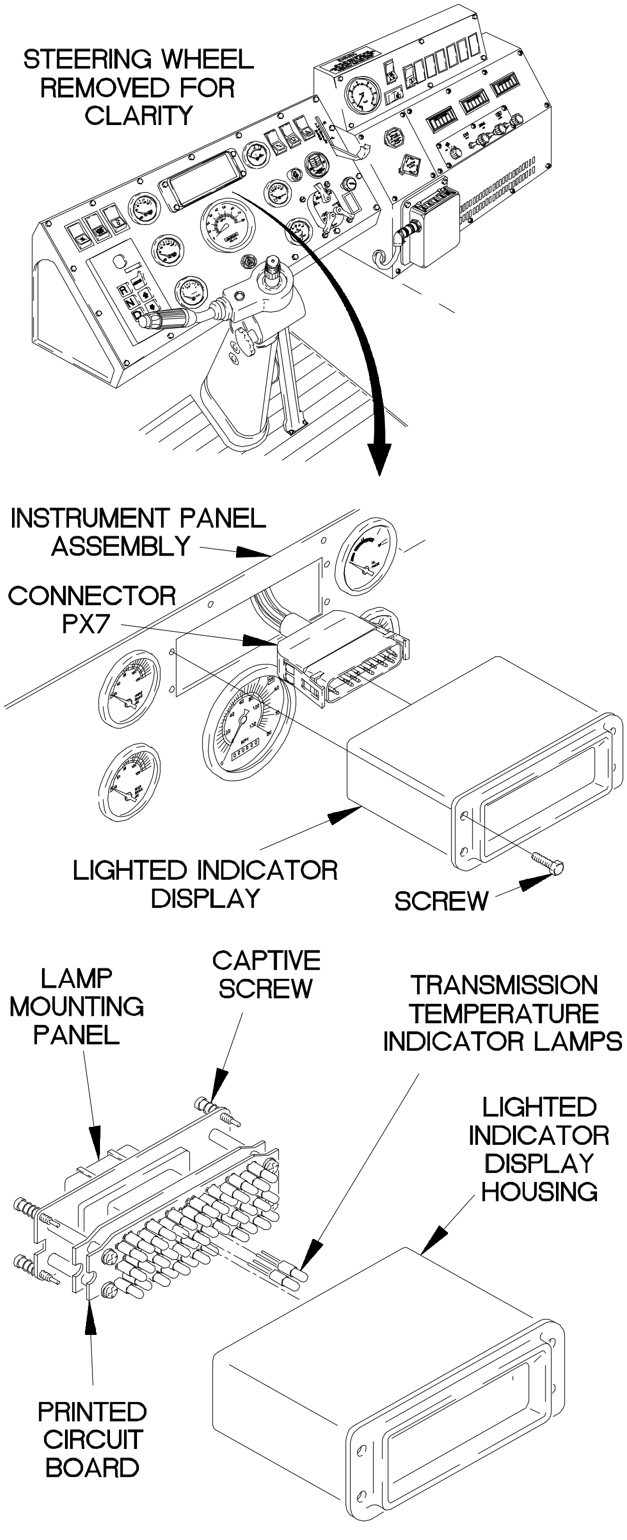
If continuity is not present, transmission temperature indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

Replace transmission temperature indicator lamps (para 7-16).

Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Loosen four captive screws in lamp mounting panel.
(5) Remove lamp mounting panel from lighted indicator display housing.
(6) Remove transmission temperature indicator lamps from printed circuit board.
(7) Set multimeter to ohms.
(8) Check continuity through each transmission temperature indicator lamp and note reading on multimeter.
(9) If continuity is not present, replace transmission temperature indicator lamps (para 7-16).
(10) If continuity is present, replace lighted indicator display (para 7-16).
(11) Install transmission temperature indicator lamps in printed circuit board.
(12) Install lamp mounting panel in lighted indicator display housing.
(13) Tighten four captive screws in lamp mounting panel.
(14) Connect lighted indicator display to connector PX7.
(15) Position lighted indicator display in instrument panel assembly with four screws.
(16) Tighten four screws to 6-10 lb-in. (1 N·m).
(17) Connect batteries (para 7-57).



e37. FRONT BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI

INITIAL SETUP

Equipment Condition

Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).
Air tanks drained (TM 9-2320-366-10-1).

Personnel Required

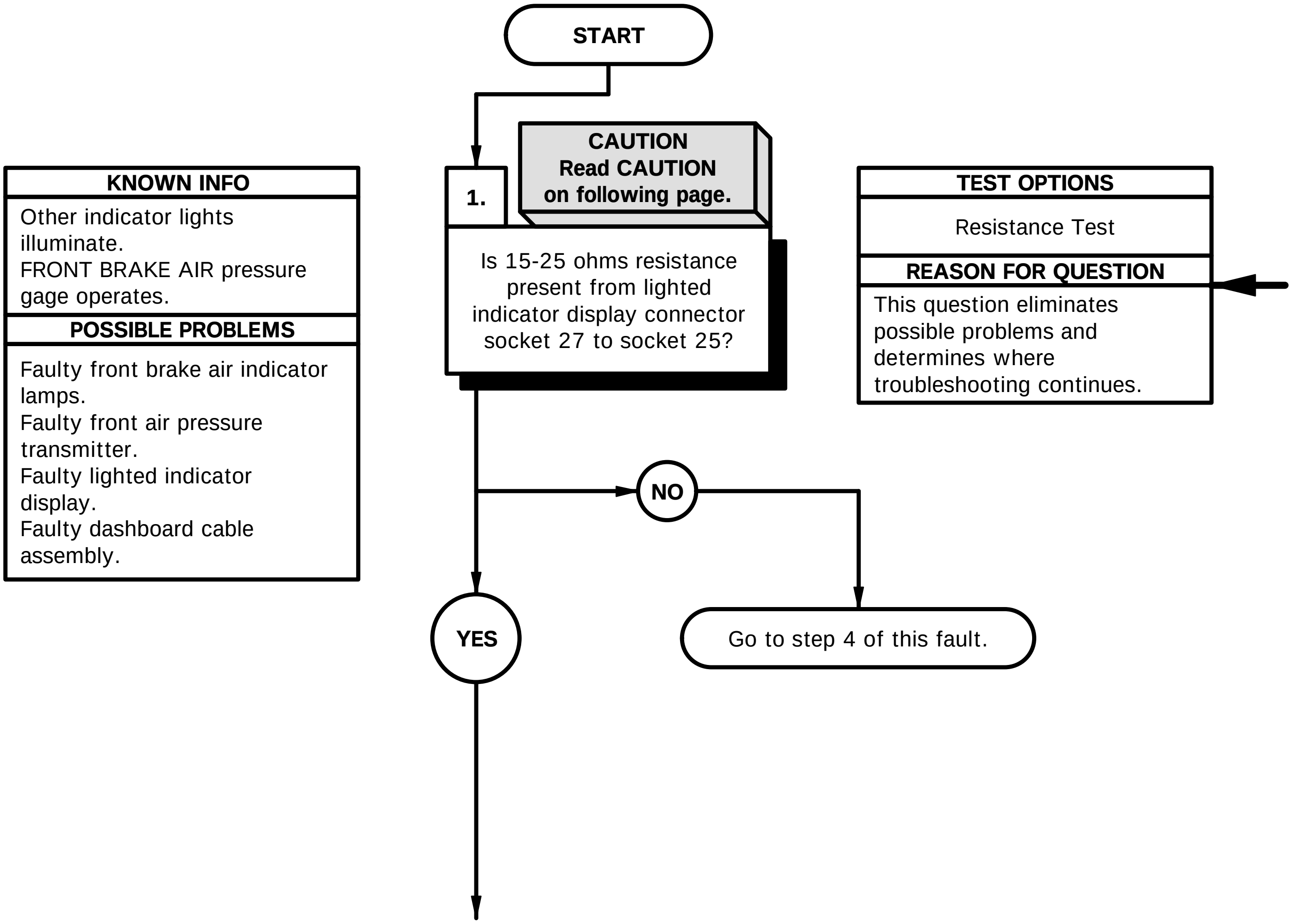
(2)

Tools and Special Tools

Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References

TM 9-4910-571-12&P



KNOWN INFO

Other indicator lights illuminate.
FRONT BRAKE AIR pressure gage operates.

POSSIBLE PROBLEMS

Faulty front brake air indicator lamps.
Faulty front air pressure transmitter.
Faulty lighted indicator display.
Faulty dashboard cable assembly.

START

CAUTION
Read CAUTION on following page.

1. Is 15-25 ohms resistance present from lighted indicator display connector socket 27 to socket 25?

TEST OPTIONS

Resistance Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 4 of this fault.

CAUTION

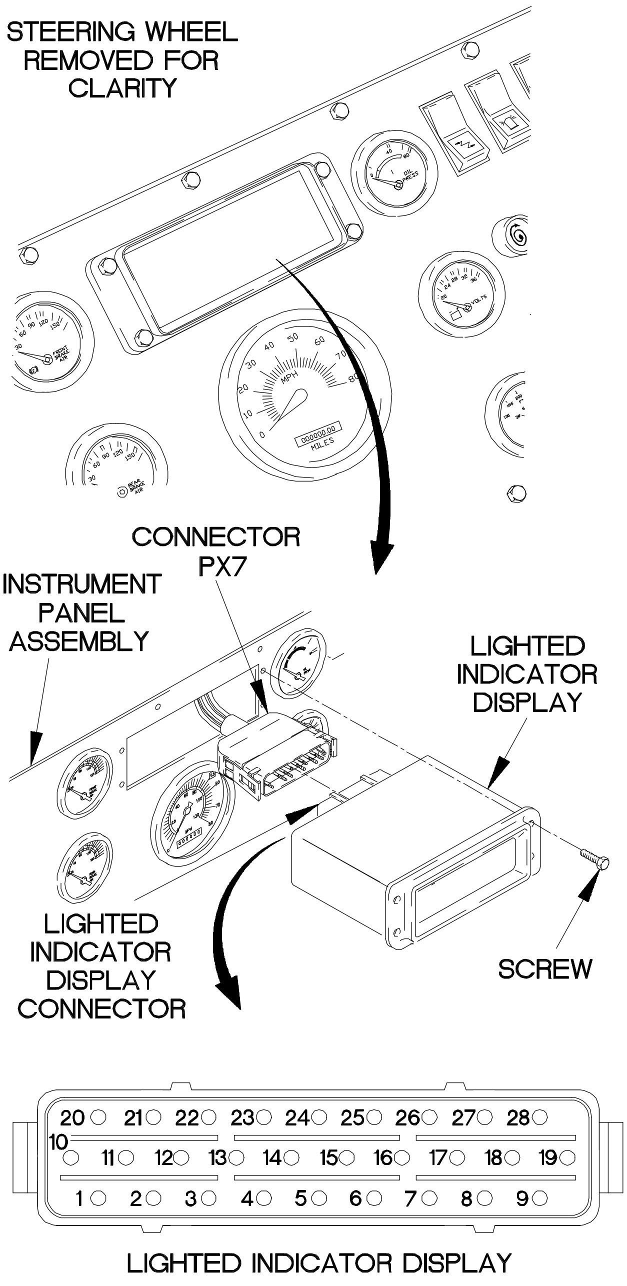
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

RESISTANCE TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display connector socket 27.
(6) Connect negative (-) probe of multimeter to lighted indicator display connector socket 25 and note reading on multimeter.
(7) If 15-25 ohms resistance is not present, go to step 4 of this fault.



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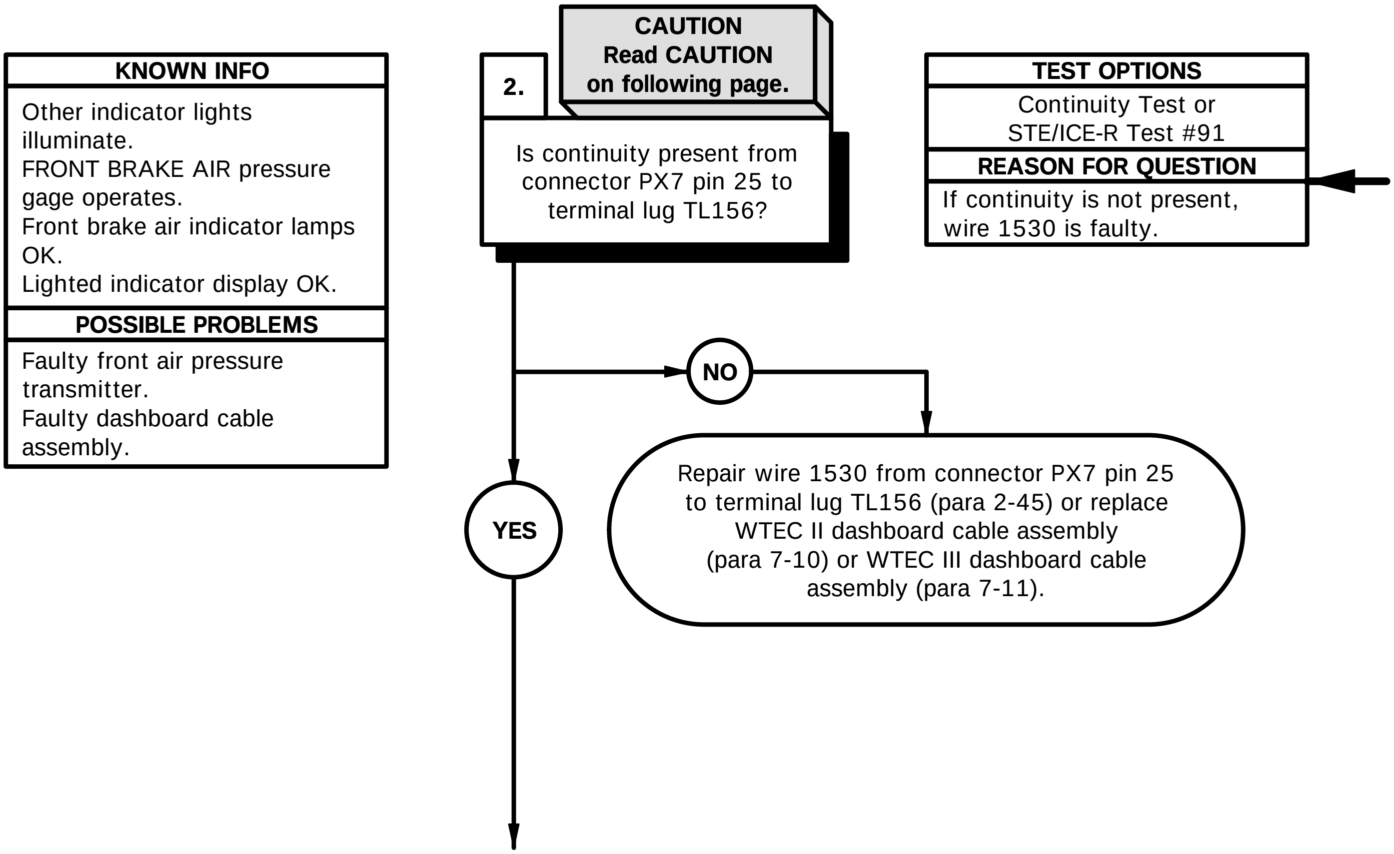
e37. FRONT BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI (CONT)



KNOWN INFO

Other indicator lights illuminate.
FRONT BRAKE AIR pressure gage operates.
Front brake air indicator lamps OK.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty front air pressure transmitter.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector PX7 pin 25 to terminal lug TL156?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1530 is faulty.

NO: Repair wire 1530 from connector PX7 pin 25 to terminal lug TL156 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

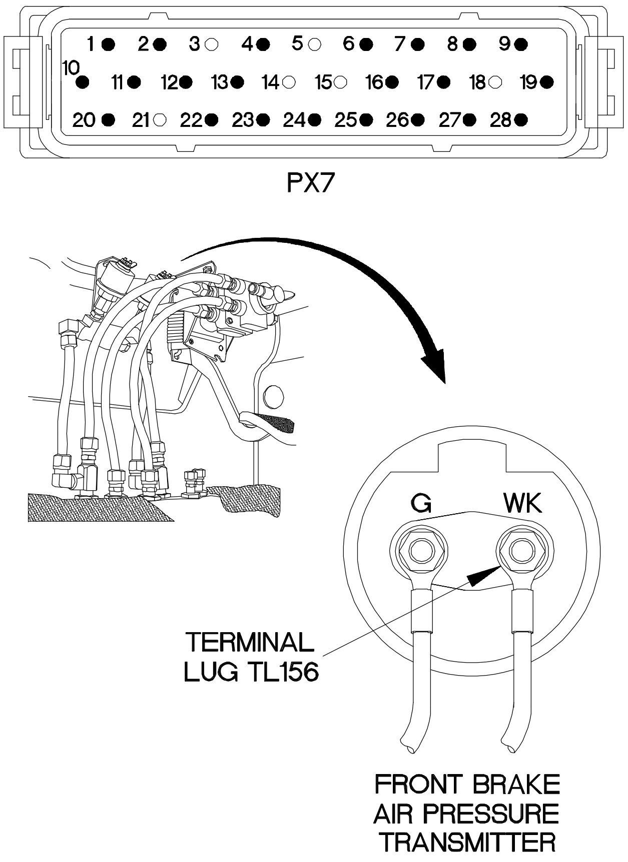
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX7 pin 25.
(3) Connect negative (-) probe of multimeter to terminal lug TL156 and note reading on multimeter.
(4) If continuity is not present, repair wire 1530 from connector PX7 pin 25 to terminal lug TL156 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



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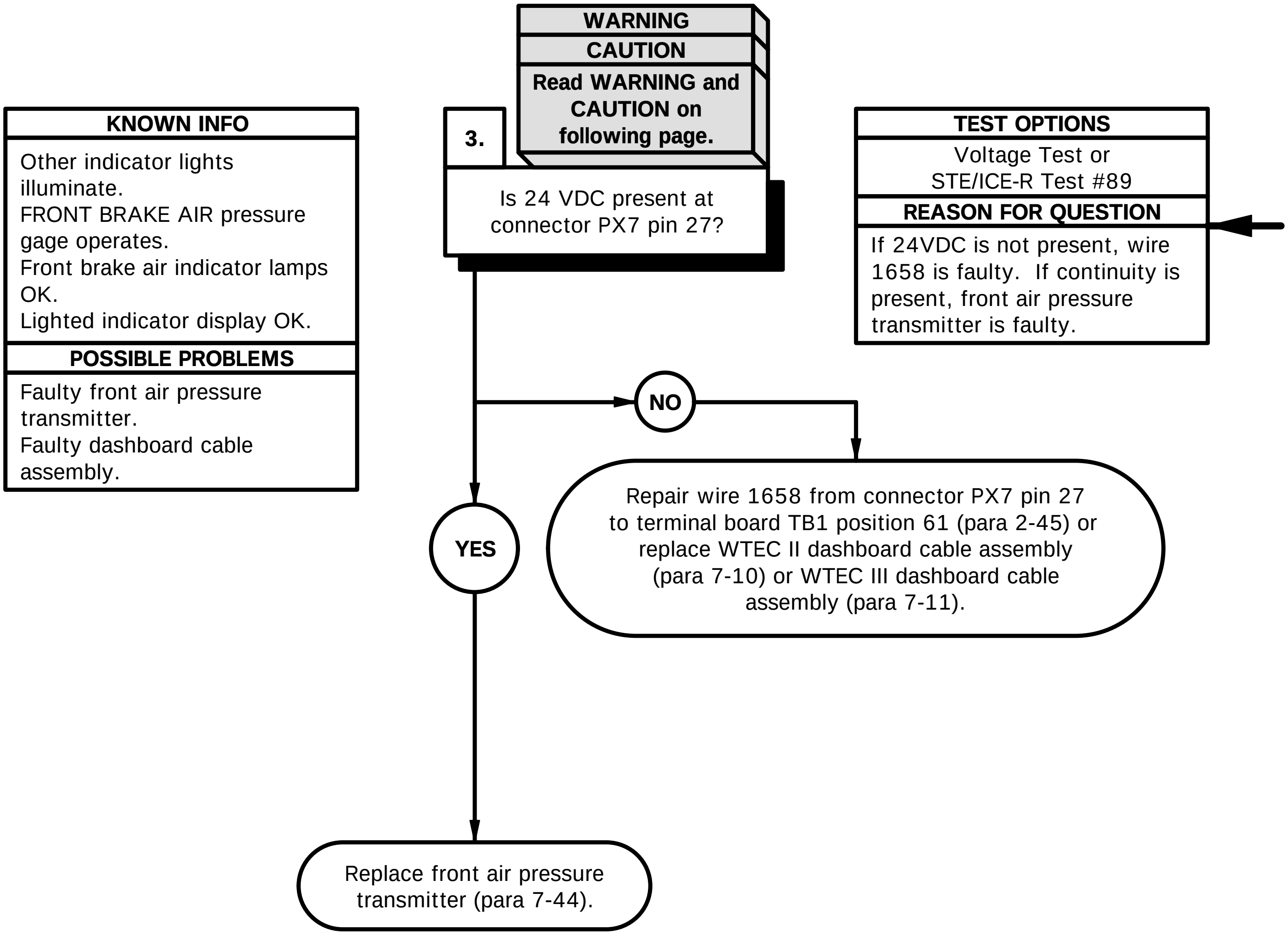
e37. FRONT BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI (CONT)



KNOWN INFO

Other indicator lights illuminate.
FRONT BRAKE AIR pressure gage operates.
Front brake air indicator lamps OK.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty front air pressure transmitter.
Faulty dashboard cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 24 VDC present at connector PX7 pin 27?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24VDC is not present, wire 1658 is faulty. If continuity is present, front air pressure transmitter is faulty.

NO

Repair wire 1658 from connector PX7 pin 27 to terminal board TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace front air pressure transmitter (para 7-44).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

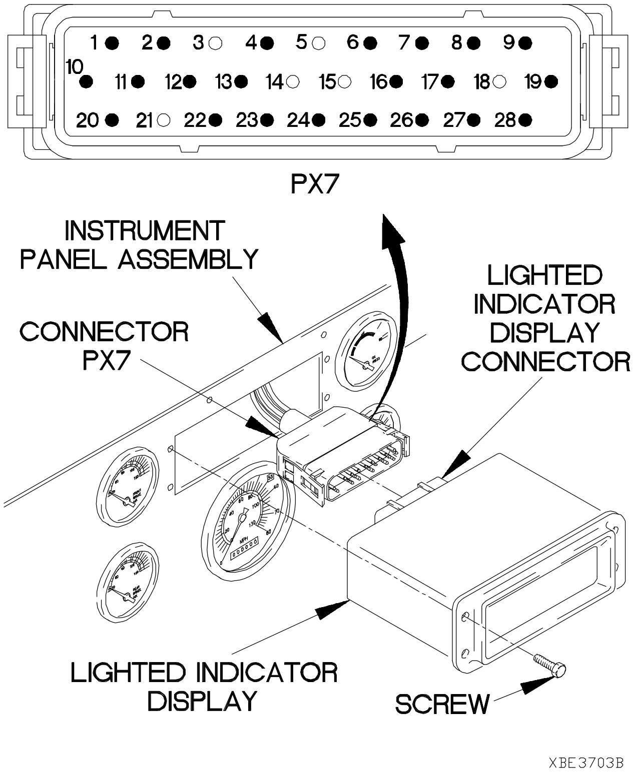
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX7 pin 27.
(3) Connect negative (-) probe of multimeter to ground.
(4) Connect batteries (para 7-57).
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position master power switch to off (TM 9-2320-366-10-1).
(7) Disconnect batteries (para 7-57).
(8) If 24 VDC is not present, repair wire 1658 from connector PX7 pin 27 to terminal board TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If continuity is present, replace front air pressure transmitter (para 7-44).
(10) Connect lighted indicator display connector to connector PX7.
(11) Position lighted indicator display in instrument panel assembly with four screws.
(12) Tighten four screws to 6-10 lb-in. (1 N·m).
(13) Connect batteries (para 7-57).



e37. FRONT BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI (CONT)

KNOWN INFO

Other indicator lights illuminate.
FRONT BRAKE AIR pressure gage operates.

POSSIBLE PROBLEMS

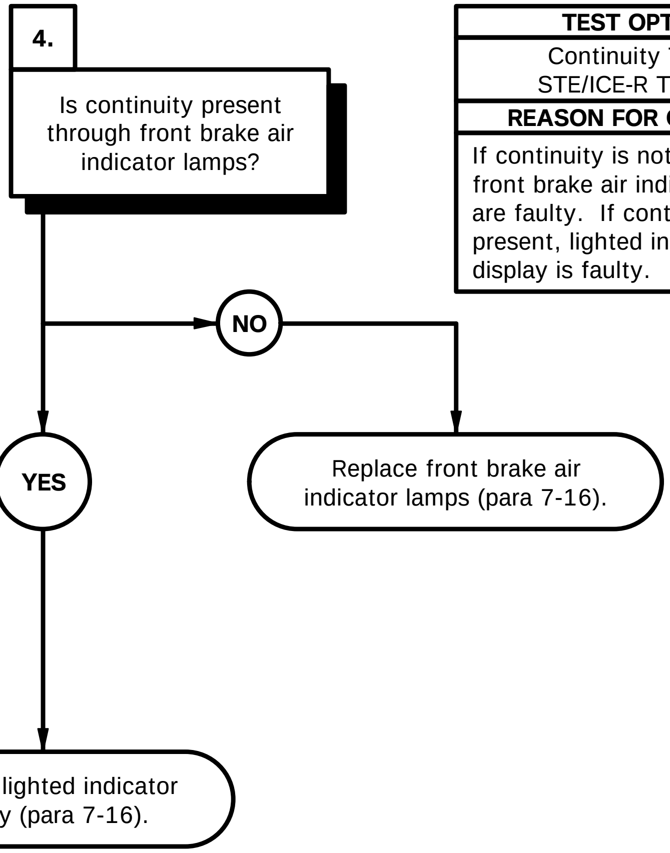
Faulty front brake air indicator lamps.
Faulty lighted indicator display.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, front brake air indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.



4.

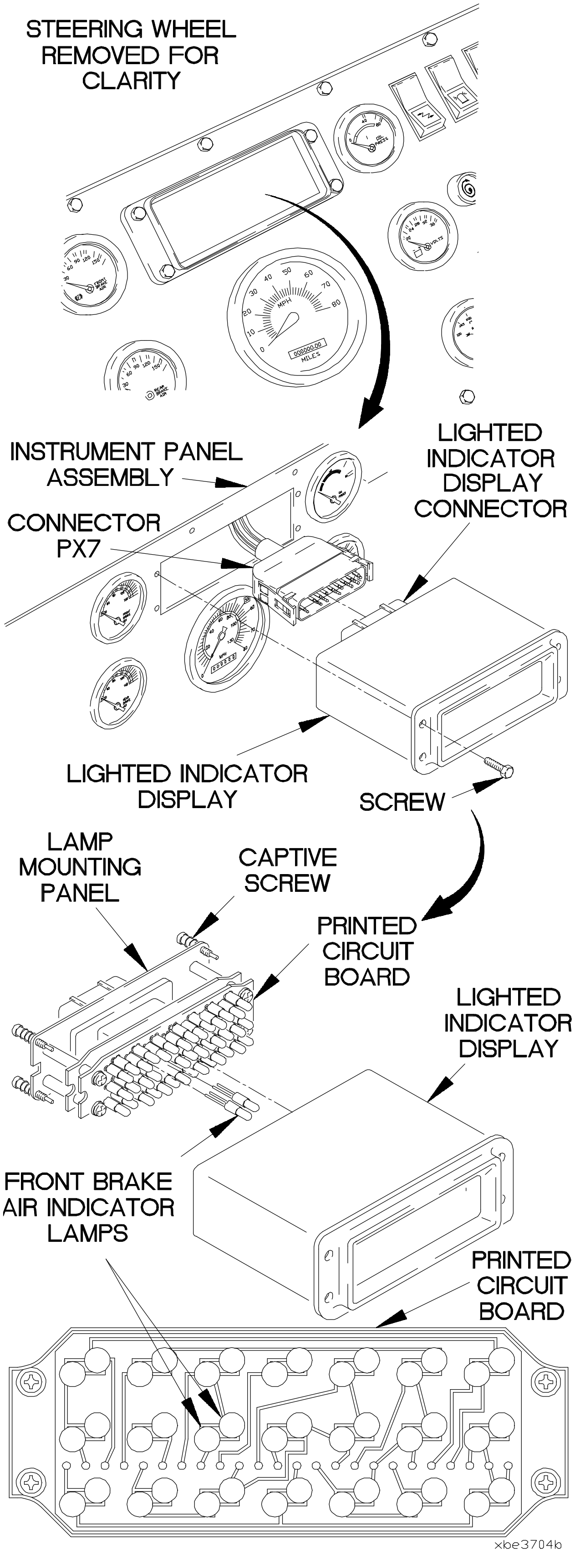
Is continuity present through front brake air indicator lamps?

Replace front brake air indicator lamps (para 7-16).

Replace lighted indicator display (para 7-16).

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display.
(3) Remove two front brake air indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each front brake air indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace front brake air indicator lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install two front brake air indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display connector to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e38. REAR BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI

INITIAL SETUP

Equipment Condition

Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).
Air tanks drained (TM 9-2320-366-10-1).

Personnel Required

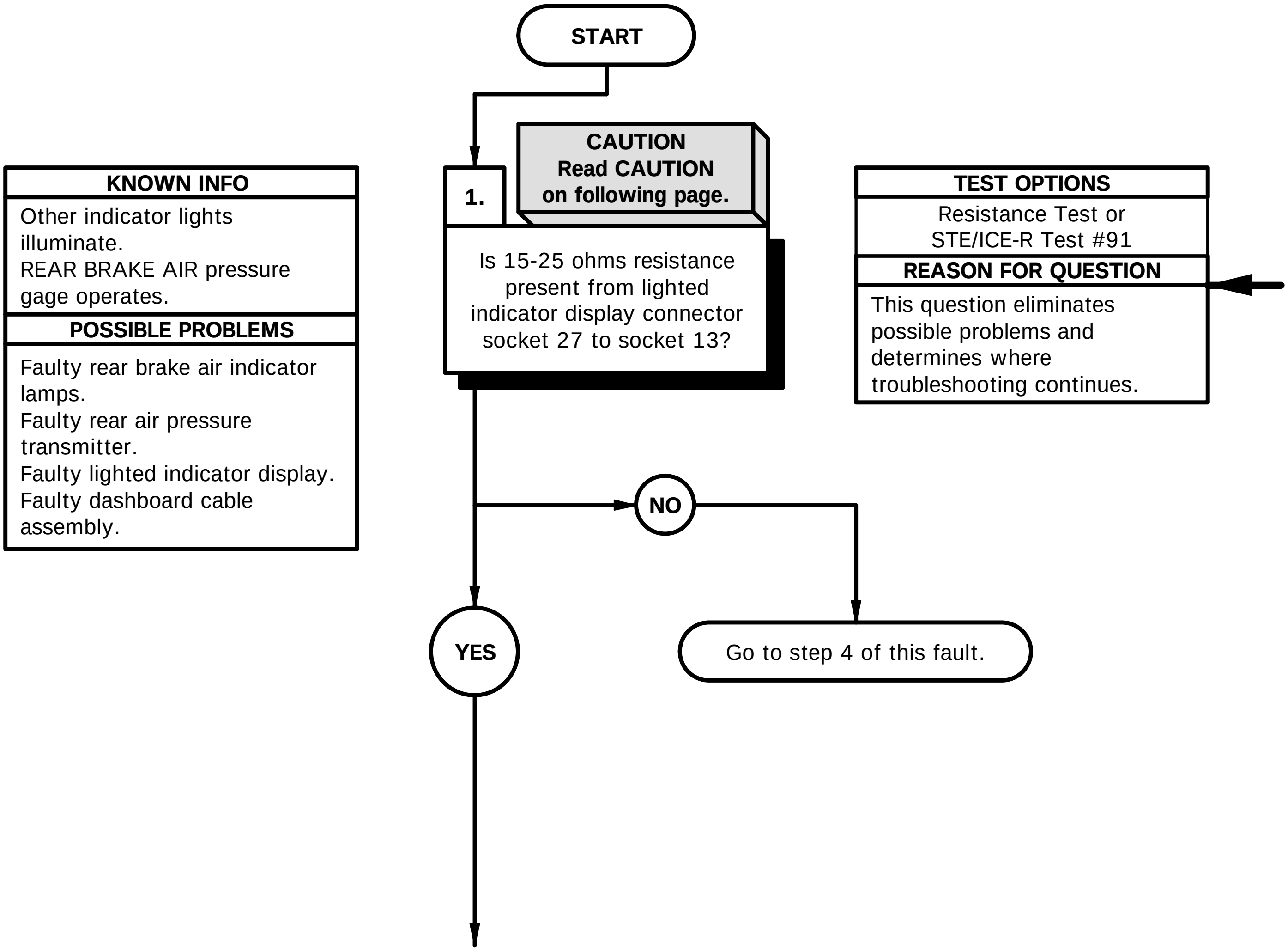
(2)

Tools and Special Tools

Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References

TM 9-4910-571-12&P



KNOWN INFO

Other indicator lights illuminate.
REAR BRAKE AIR pressure gage operates.

POSSIBLE PROBLEMS

Faulty rear brake air indicator lamps.
Faulty rear air pressure transmitter.
Faulty lighted indicator display.
Faulty dashboard cable assembly.

START

CAUTION
Read CAUTION on following page.

1. Is 15-25 ohms resistance present from lighted indicator display connector socket 27 to socket 13?

TEST OPTIONS

Resistance Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 4 of this fault.

CAUTION

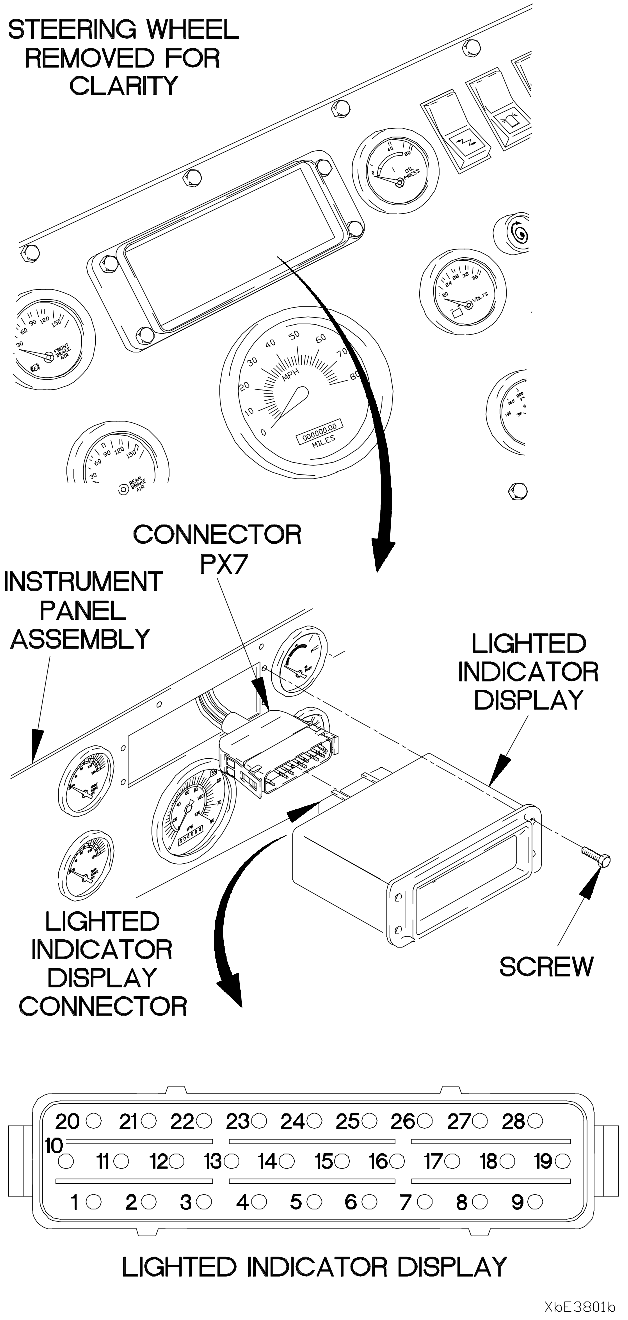
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

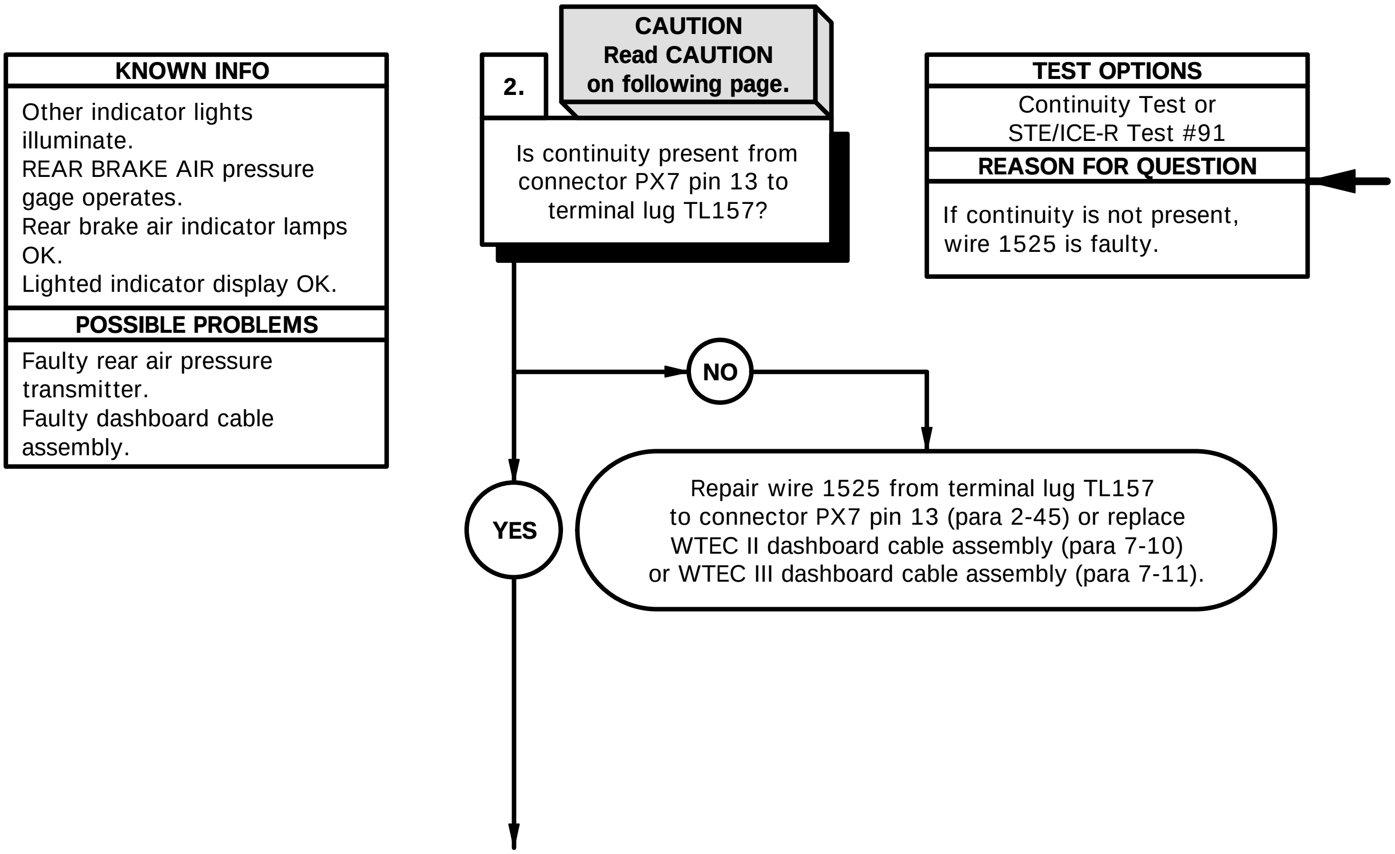
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

RESISTANCE TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display connector.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display connector socket 27.
(6) Connect negative (-) probe of multimeter to lighted indicator display connector socket 13 and note reading on multimeter.
(7) If 15-25 ohms resistance is not present, go to step 4 of this fault.



e38. REAR BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI (CONT)



KNOWN INFO

Other indicator lights illuminate.
REAR BRAKE AIR pressure gage operates.
Rear brake air indicator lamps OK.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty rear air pressure transmitter.
Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector PX7 pin 13 to terminal lug TL157?

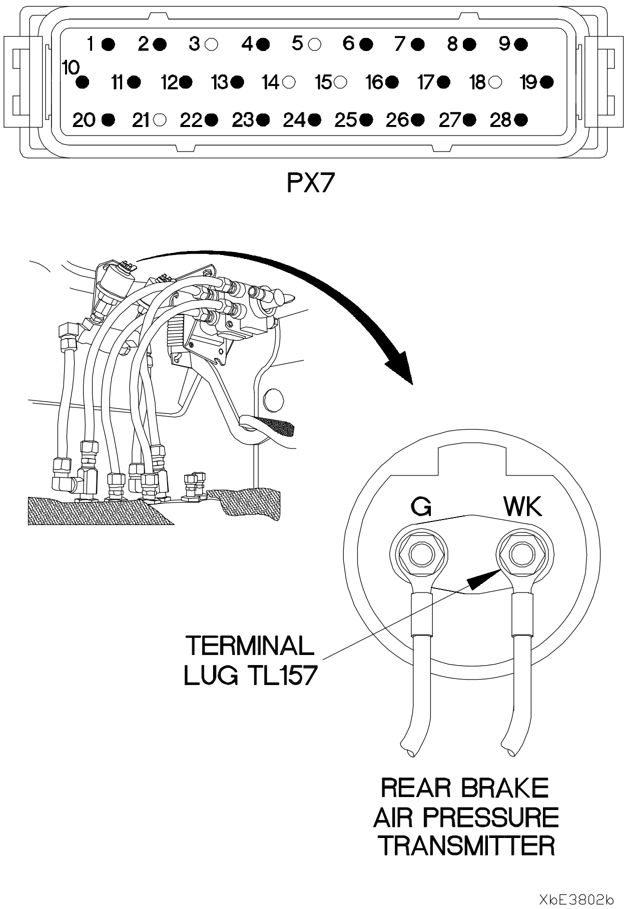
TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1525 is faulty.

Repair wire 1525 from terminal lug TL157 to connector PX7 pin 13 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX7 pin 13.
(3) Connect negative (-) probe of multimeter to terminal lug TL157 and note reading on multimeter.
(4) If continuity is not present, repair wire 1525 from terminal lug TL157 to connector PX7 pin 13 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

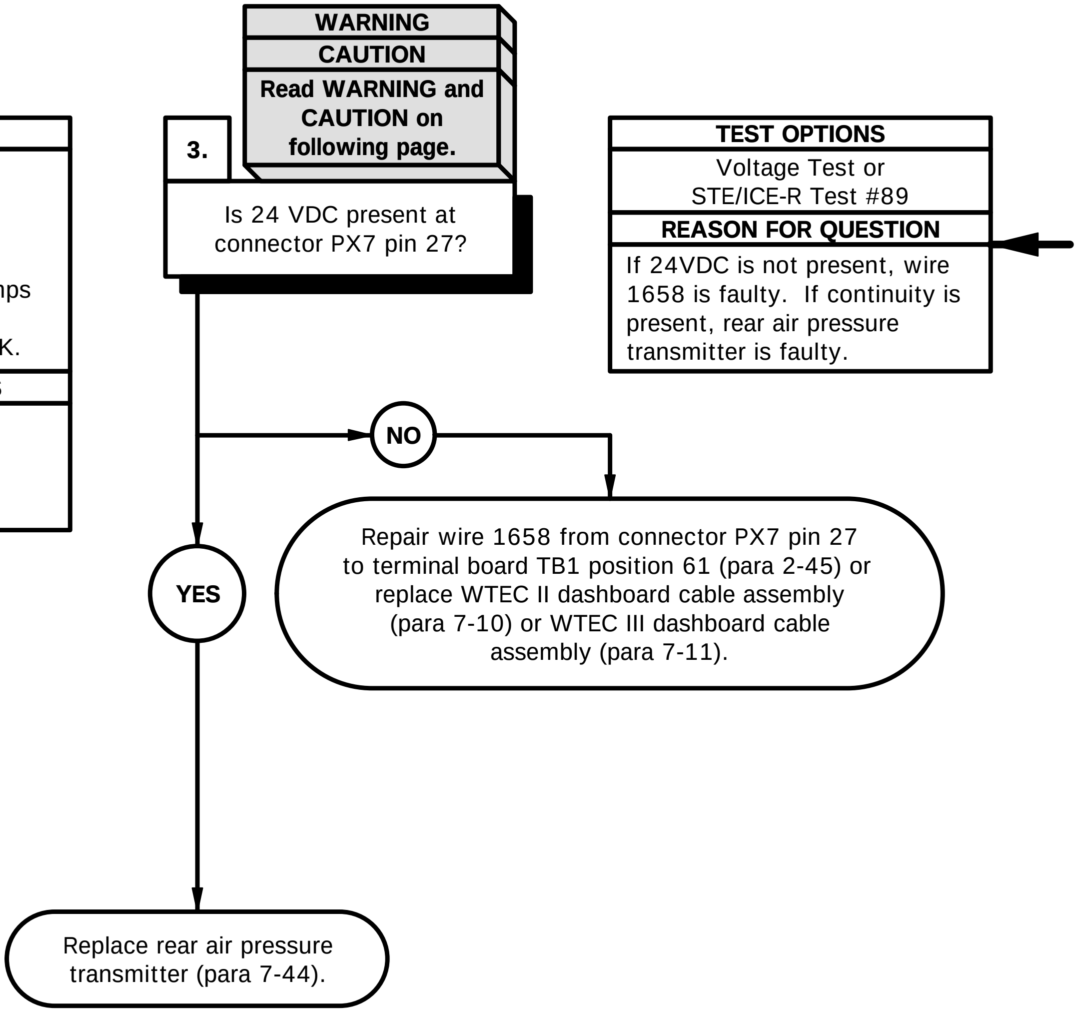
e38. REAR BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI (CONT)

KNOWN INFO

Other indicator lights illuminate.
REAR BRAKE AIR pressure gage operates.
Rear brake air indicator lamps OK.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty rear air pressure transmitter.
Faulty dashboard cable assembly.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 24 VDC present at connector PX7 pin 27?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24VDC is not present, wire 1658 is faulty. If continuity is present, rear air pressure transmitter is faulty.

NO — Repair wire 1658 from connector PX7 pin 27 to terminal board TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES — Replace rear air pressure transmitter (para 7-44).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

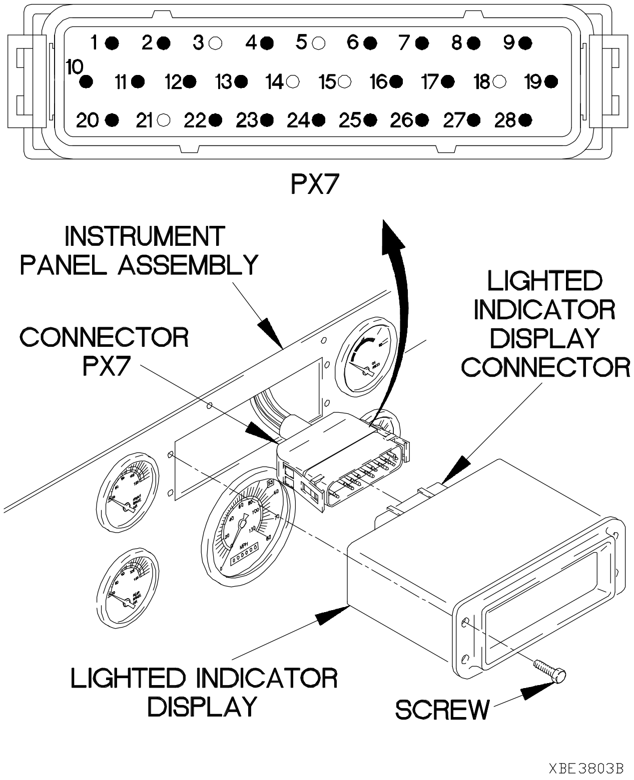
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector PX7 pin 27.
(3) Connect negative (-) probe of multimeter to ground.
(4) Connect batteries (para 7-57).
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position master power switch to off (TM 9-2320-366-10-1).
(7) Disconnect batteries (para 7-57).
(8) If 24 VDC is not present, repair wire 1658 from connector PX7 pin 27 to terminal board TB1 position 61 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If continuity is present, replace rear air pressure transmitter (para 7-44).
(10) Connect lighted indicator display connector to connector PX7.
(11) Position lighted indicator display in instrument panel assembly with four screws.
(12) Tighten four screws to 6-10 lb-in. (1 N·m).
(13) Connect batteries (para 7-57).



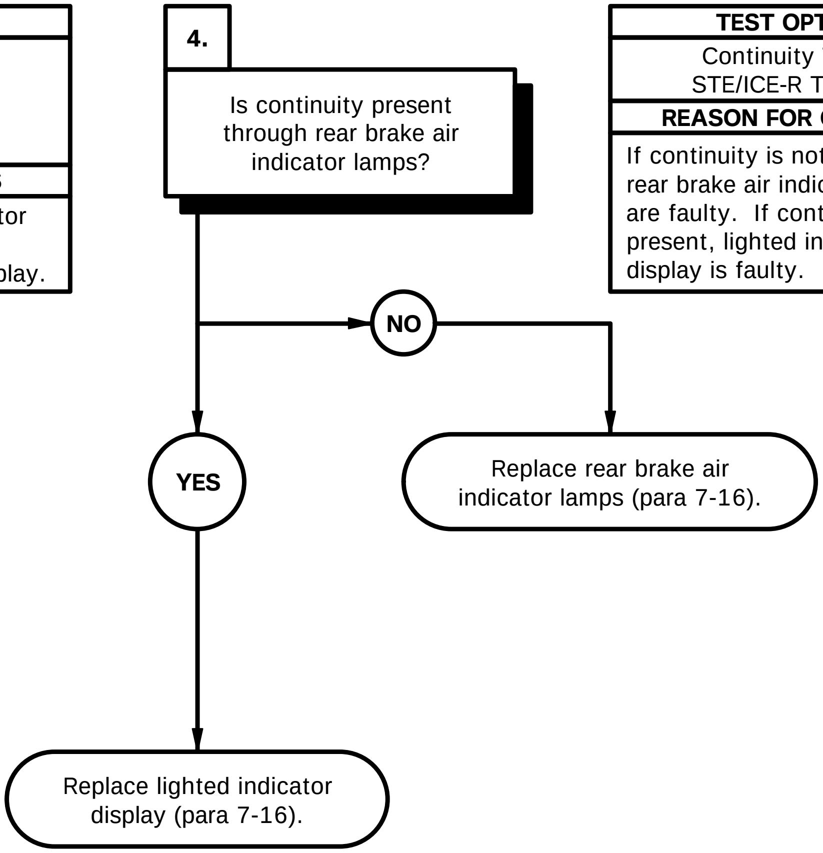
e38. REAR BRAKE AIR INDICATOR DOES NOT ILLUMINATE WHEN AIR PRESSURE IS BELOW 65 PSI (CONT)

KNOWN INFO

Other indicator lights illuminate.
REAR BRAKE AIR pressure gage operates.

POSSIBLE PROBLEMS

Faulty rear brake air indicator lamps.
Faulty lighted indicator display.



TEST OPTIONS

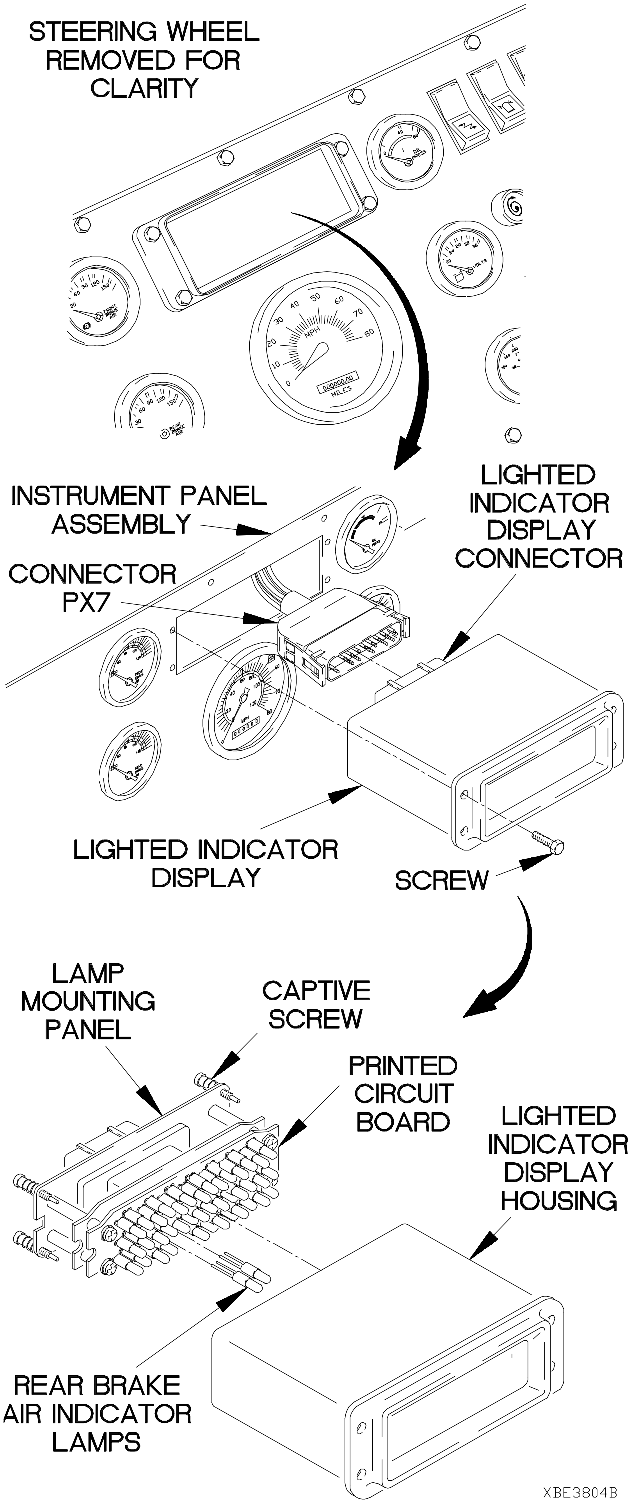
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, rear brake air indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove two rear brake air indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each rear brake air indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace rear brake air indicator lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install two rear brake air indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display connector to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e39. ENGINE OIL PRESSURE INDICATOR DOES NOT OPERATE

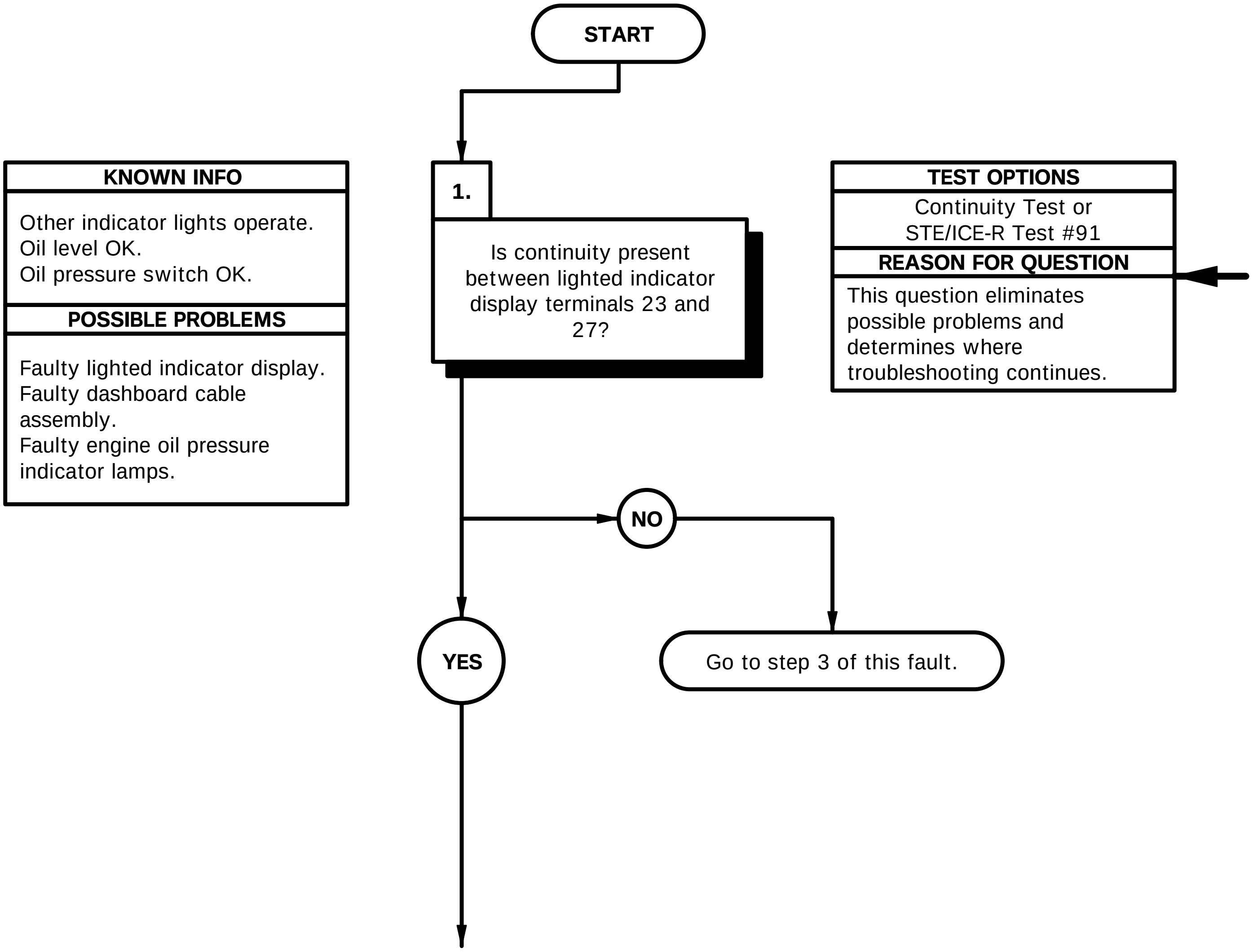
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



KNOWN INFO

Other indicator lights operate.
Oil level OK.
Oil pressure switch OK.

POSSIBLE PROBLEMS

Faulty lighted indicator display.
Faulty dashboard cable assembly.
Faulty engine oil pressure indicator lamps.

1. Is continuity present between lighted indicator display terminals 23 and 27?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

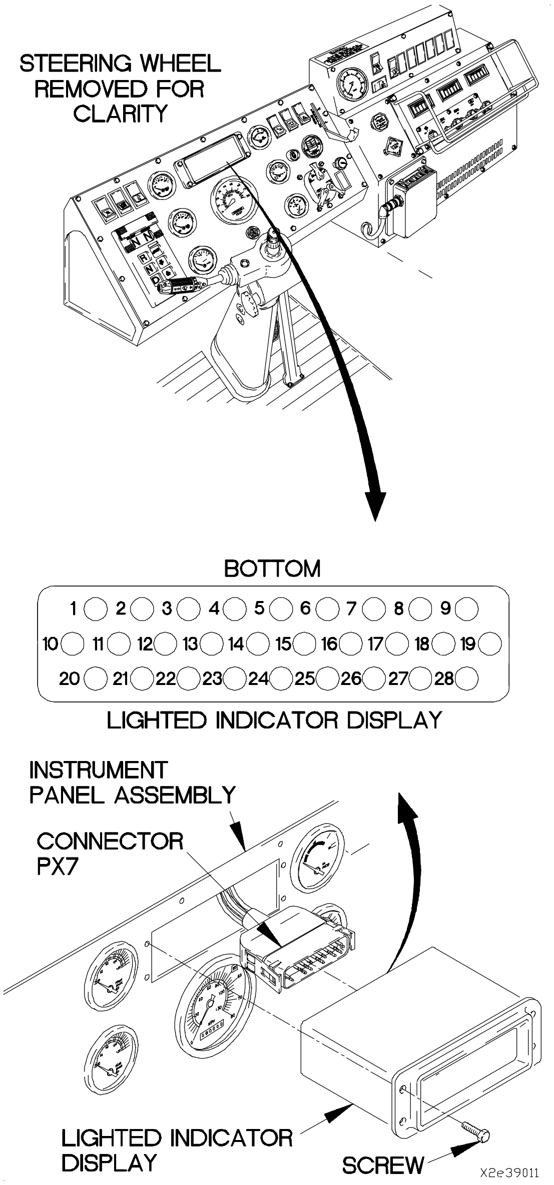
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

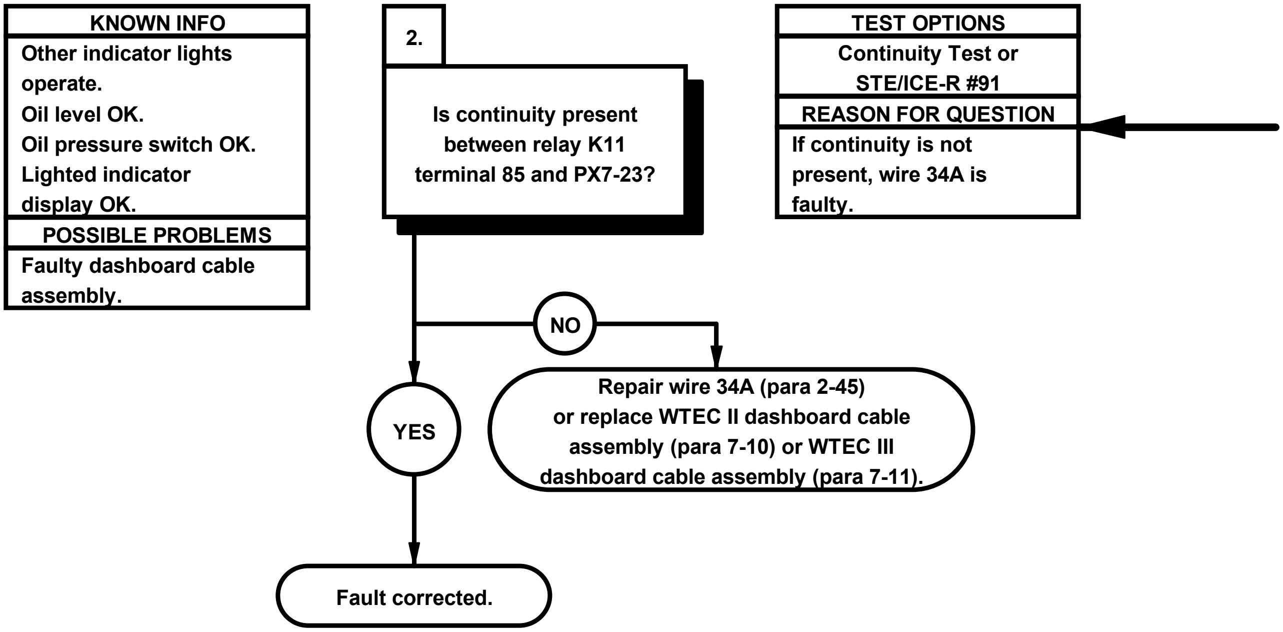
Go to step 3 of this fault.

CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 27.
(6) Connect negative (-) probe of multimeter to lighted indicator display terminal 23 and note reading on multimeter.
(7) If continuity is not present, go to step 3 of this fault.



e39. ENGINE OIL PRESSURE INDICATOR DOES NOT OPERATE (CONT)



KNOWN INFO

Other indicator lights operate.
Oil level OK.
Oil pressure switch OK.
Lighted indicator display OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

2.

Is continuity present between relay K11 terminal 85 and PX7-23?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

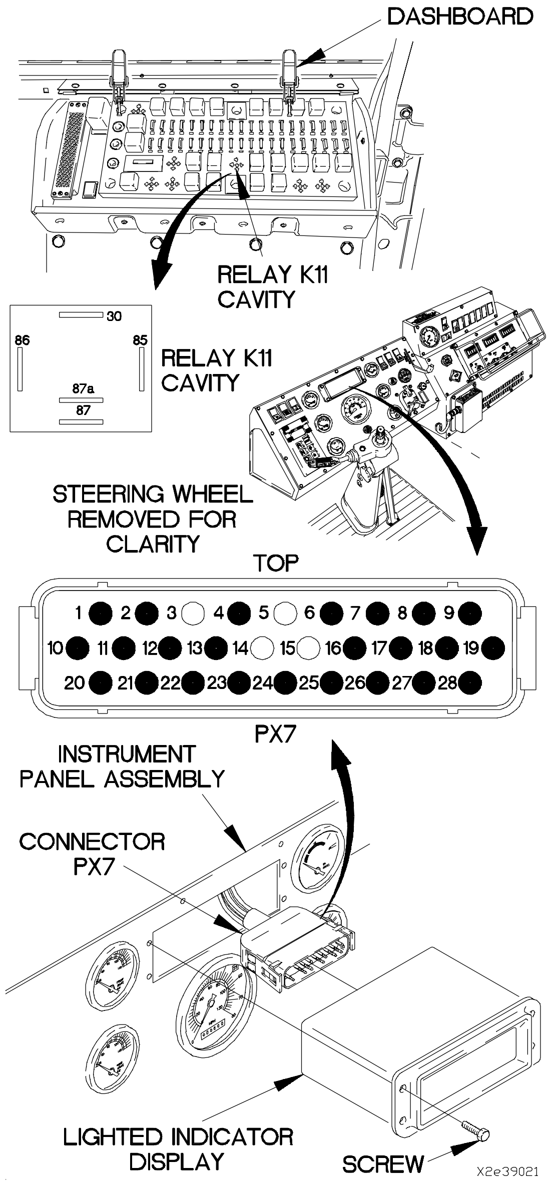
If continuity is not present, wire 34A is faulty.

Repair wire 34A (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

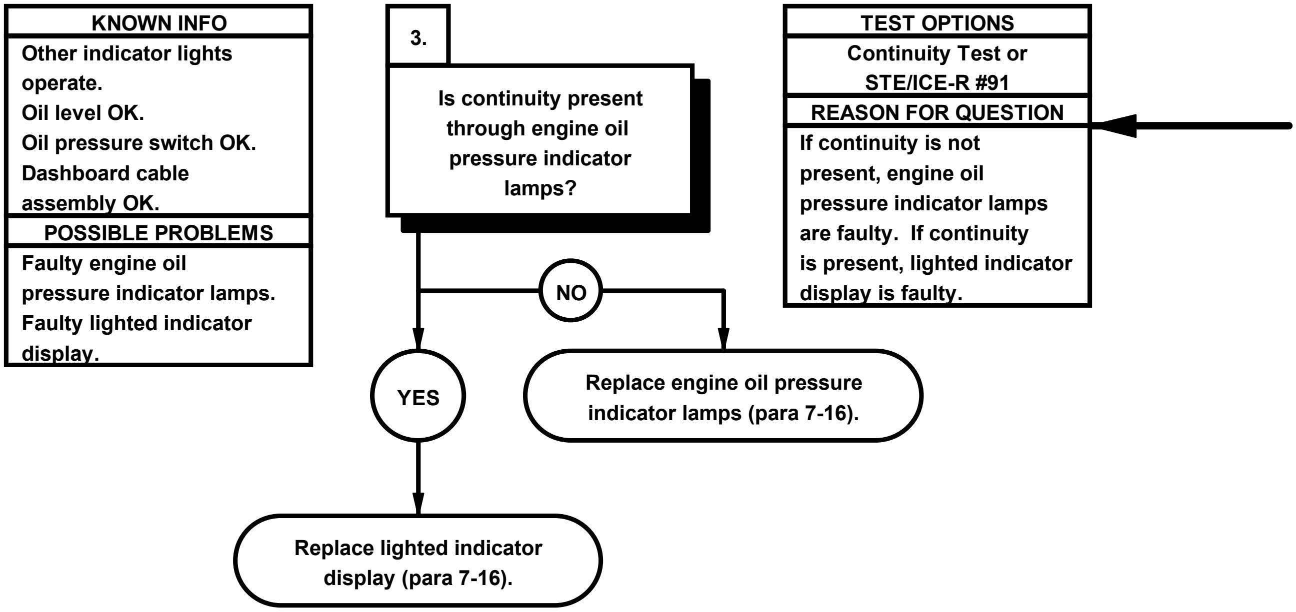
Fault corrected.

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K11 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to PDP, terminal 85, where relay K11 was removed.
(5) Connect negative (-) probe of multimeter to PX7-23 and note reading on multimeter.
(6) If continuity is not present, repair wire 34A (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Install relay K11 in PDP.
(8) Install PDP cover (para 16-2).
(9) Connect lighted indicator display to connector PX7.
(10) Position lighted indicator display in instrument panel assembly with four screws.
(11) Tighten four screws to 6-10 lb-in. (1 N·m).
(12) Connect batteries (para 7-57).

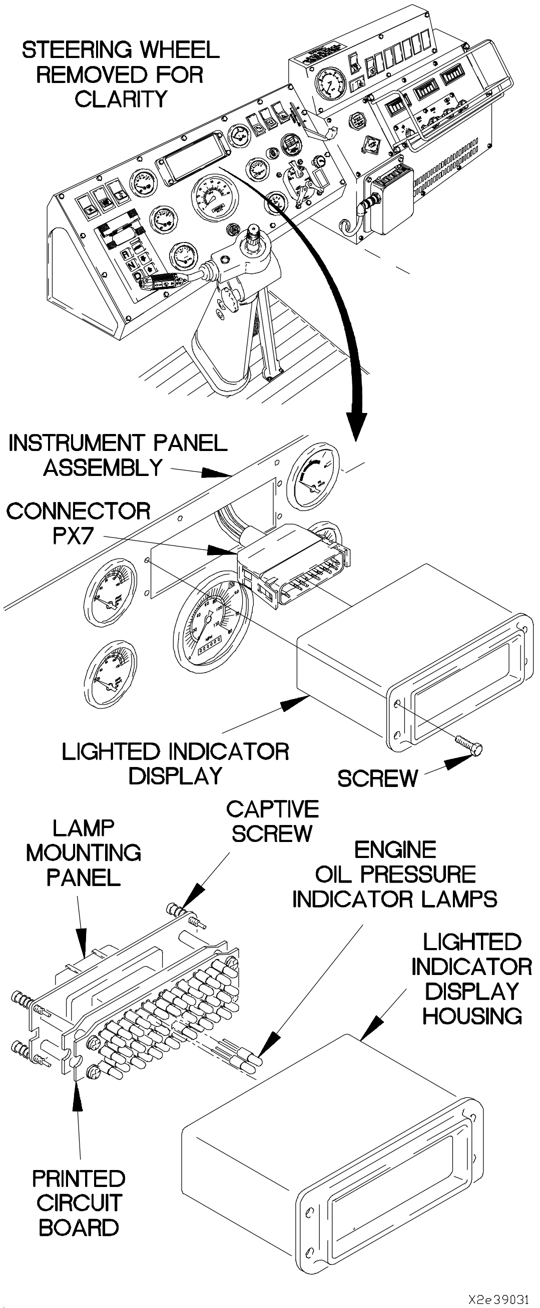


e39. ENGINE OIL PRESSURE INDICATOR DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Loosen four captive screws in lamp mounting panel.
(2) Remove lamp mounting panel from lighted indicator display housing.
(3) Remove engine oil pressure indicator lamps from printed circuit board.
(4) Set multimeter to ohms.
(5) Check continuity through each engine oil pressure indicator lamp and note reading on multimeter.
(6) If continuity is not present, replace engine oil pressure indicator lamps (para 7-16).
(7) If continuity is present, replace lighted indicator display (para 7-16).
(8) Install engine oil pressure indicator lamps in printed circuit board.
(9) Install lamp mounting panel in lighted indicator display housing.
(10) Tighten four captive screws in lamp mounting panel.
(11) Connect lighted indicator display to connector PX7.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).
(14) Connect batteries (para 7-57).



e40. MASTER STOP INDICATOR DOES NOT OPERATE

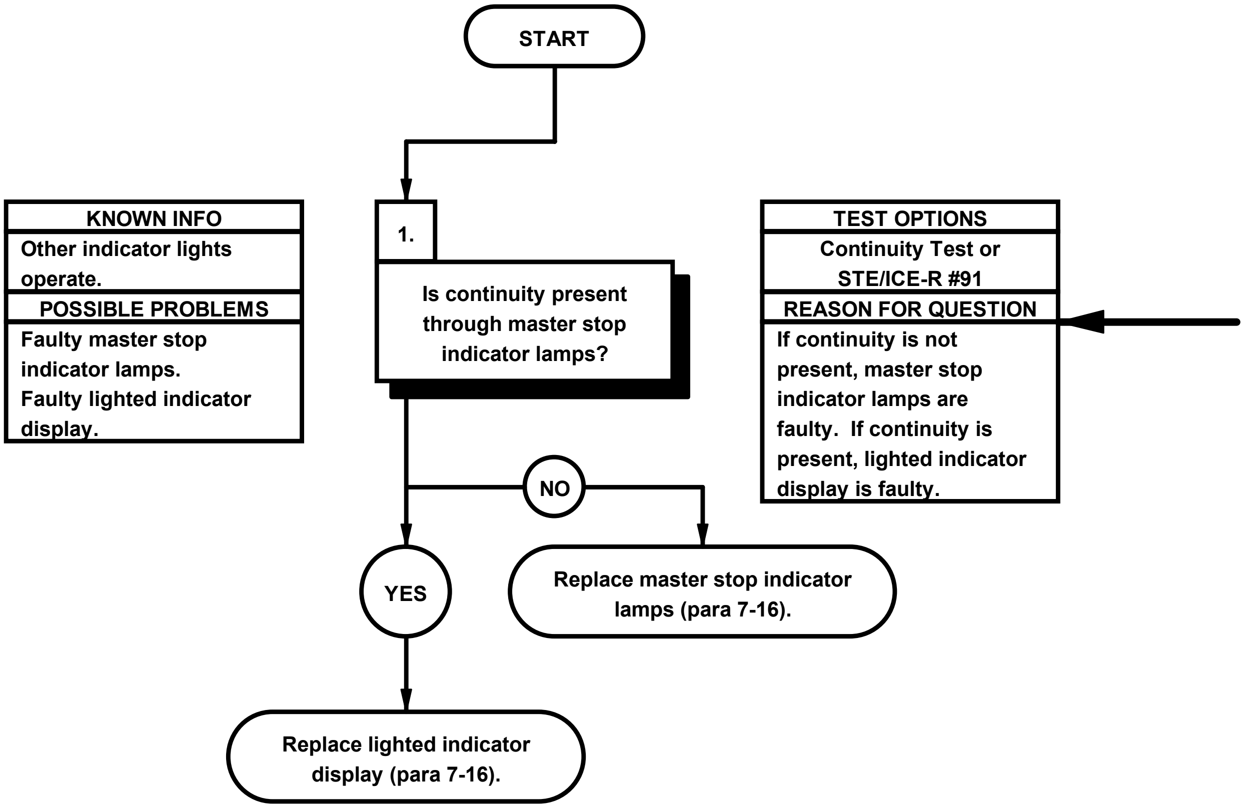
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).
Batteries disconnected (para 7-57).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



KNOWN INFO
Other indicator lights operate.

POSSIBLE PROBLEMS
Faulty master stop indicator lamps.
Faulty lighted indicator display.

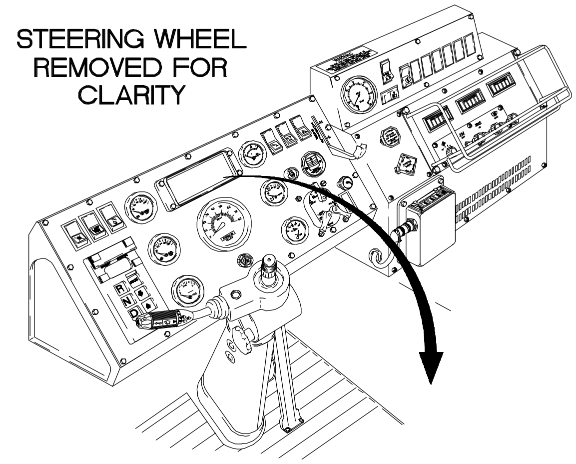
1. Is continuity present through master stop indicator lamps?

TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
If continuity is not present, master stop indicator lamps are faulty. If continuity is present, lighted indicator display is faulty.

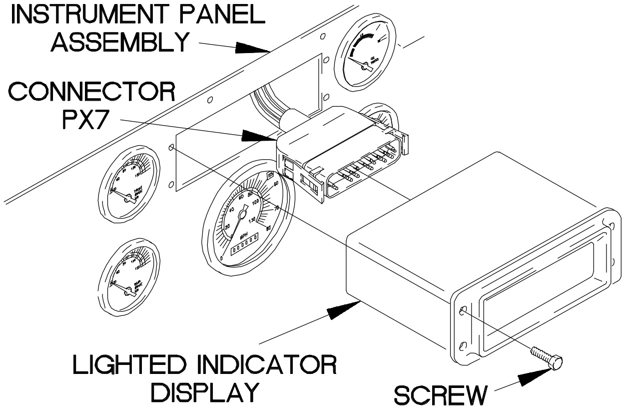
NO: Replace master stop indicator lamps (para 7-16).

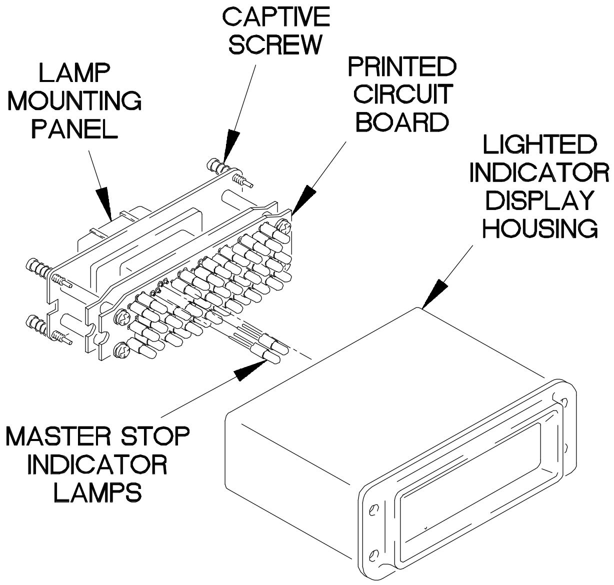
YES: Replace lighted indicator display (para 7-16).



CONTINUITY TEST

(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Loosen four captive screws in lamp mounting panel.
(5) Remove lamp mounting panel from lighted indicator display housing.
(6) Remove master stop indicator lamps from printed circuit board.
(7) Set multimeter to ohms.
(8) Check continuity through each master stop indicator lamp and note reading on multimeter.
(9) If continuity is not present, replace master stop indicator lamps (para 7-16).
(10) If continuity is present, replace lighted indicator display (para 7-16).
(11) Install master stop indicator lamps in printed circuit board.
(12) Install lamp mounting panel in lighted indicator display housing.
(13) Tighten four captive screws in lamp mounting panel.
(14) Connect lighted indicator display to connector PX7.
(15) Position lighted indicator display in instrument panel assembly with four screws.
(16) Tighten four screws to 6-10 lb-in. (1 N·m).
(17) Connect batteries (para 7-57).





e41. ONE OR BOTH HEADLIGHTS (HIGH AND LOW BEAM) DO NOT ILLUMINATE

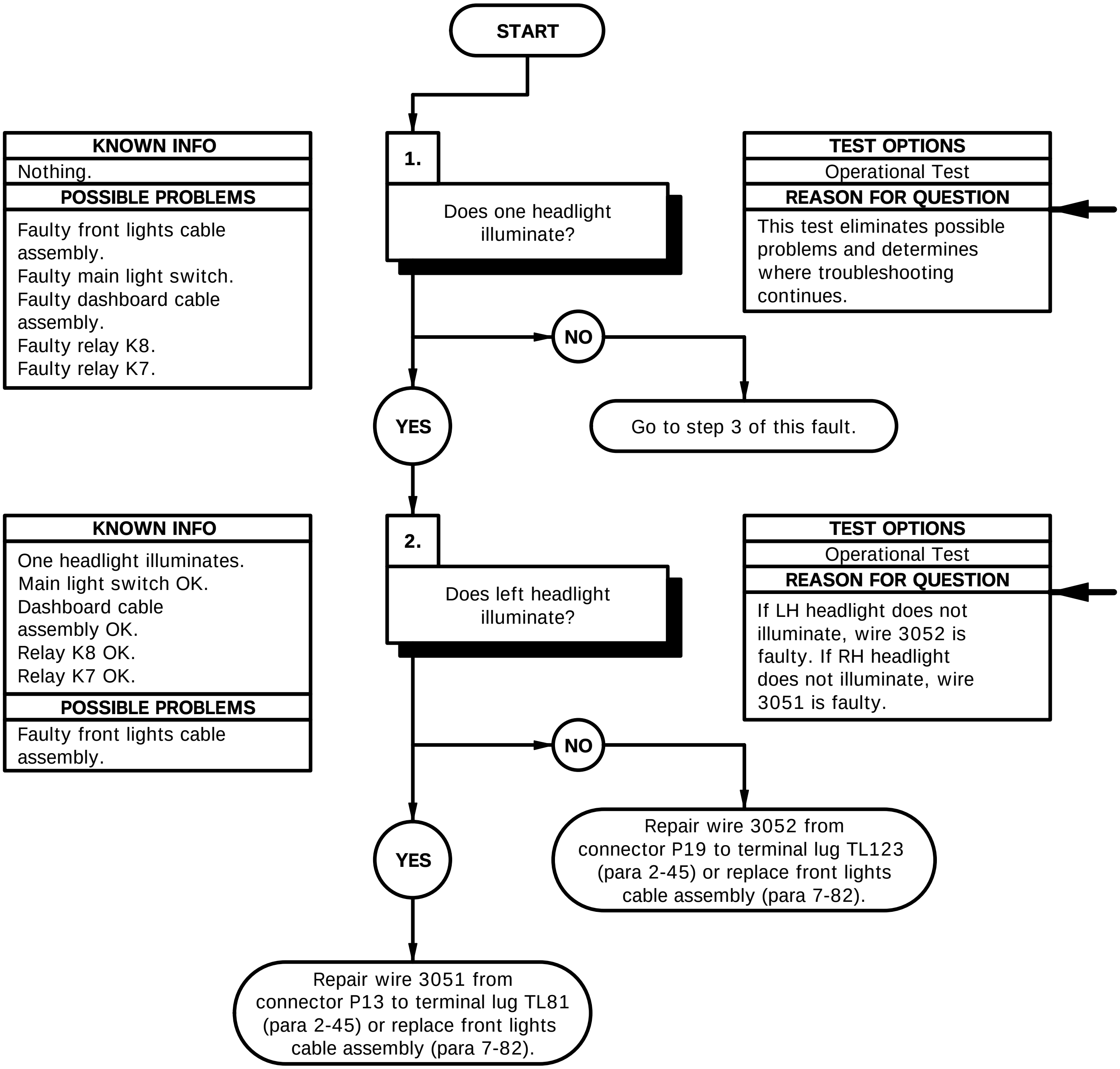
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Nothing.

POSSIBLE PROBLEMS
Faulty front lights cable assembly. Faulty main light switch. Faulty dashboard cable assembly. Faulty relay K8. Faulty relay K7.

1. Does one headlight illuminate?

TEST OPTIONS
Operational Test

REASON FOR QUESTION
This test eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 3 of this fault.

KNOWN INFO
One headlight illuminates. Main light switch OK. Dashboard cable assembly OK. Relay K8 OK. Relay K7 OK.

POSSIBLE PROBLEMS
Faulty front lights cable assembly.

2. Does left headlight illuminate?

TEST OPTIONS
Operational Test

REASON FOR QUESTION
If LH headlight does not illuminate, wire 3052 is faulty. If RH headlight does not illuminate, wire 3051 is faulty.

NO: Repair wire 3052 from connector P19 to terminal lug TL123 (para 2-45) or replace front lights cable assembly (para 7-82).

YES: Repair wire 3051 from connector P13 to terminal lug TL81 (para 2-45) or replace front lights cable assembly (para 7-82).

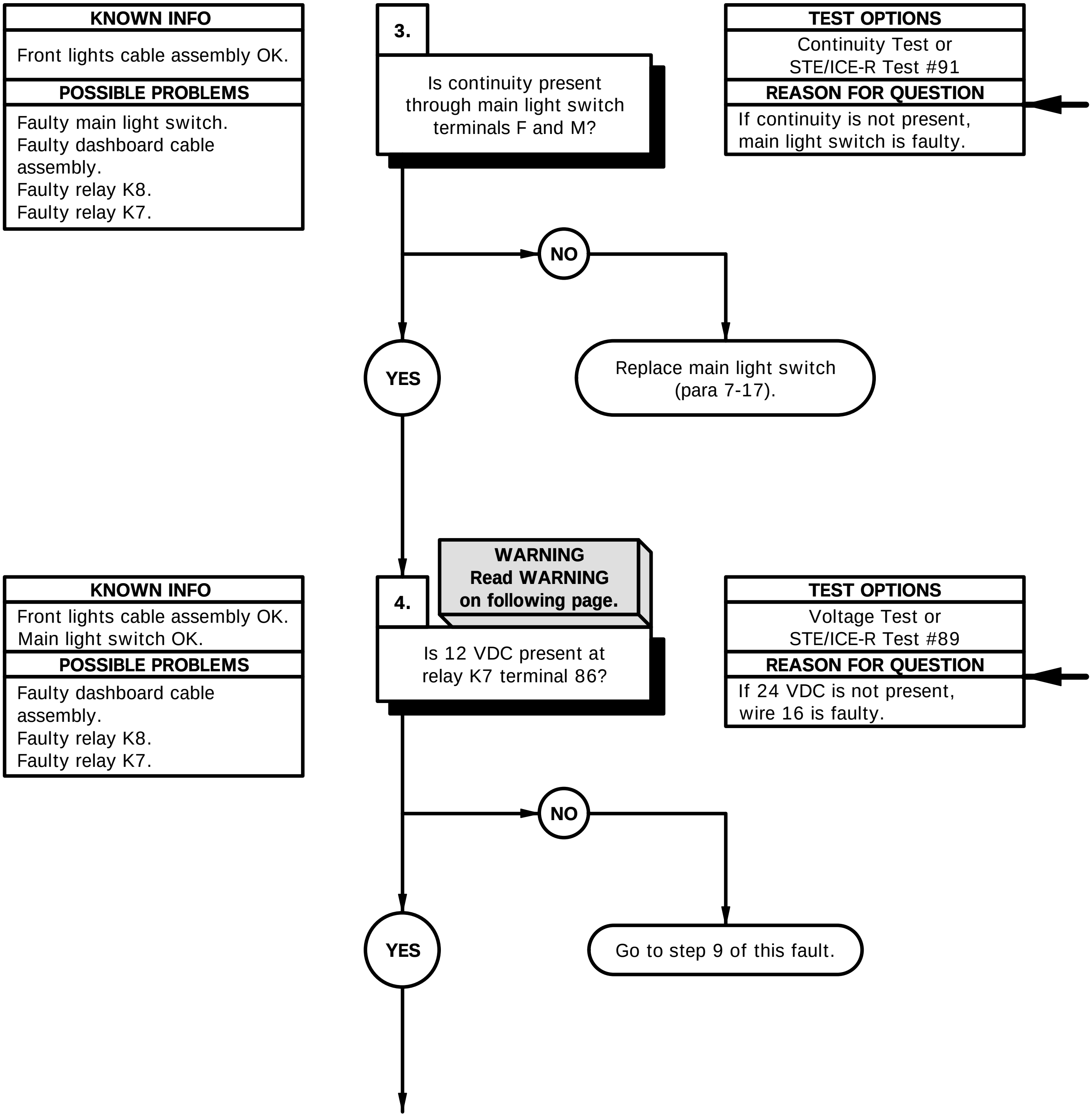
OPERATIONAL TEST

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) If both headlights do not operate, go to step 3 of this fault.
(3) Position main light switch to OFF (TM 9-2320-366-10-1).

OPERATIONAL TEST

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Observe which headlight illuminates.
(3) If LH headlight illuminates, repair wire 3051 from connector P13 to terminal lug TL81 (para 2-45) or replace front lights cable assembly (para 7-82).
(4) If RH headlight illuminates, repair wire 3052 from connector P19 to terminal lug TL123 (para 2-45) or replace front lights cable assembly (para 7-82).
(5) Position main light switch to OFF (TM 9-2320-366-10-1).

e41. ONE OR BOTH HEADLIGHTS (HIGH AND LOW BEAM) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Front lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dashboard cable assembly.
Faulty relay K8.
Faulty relay K7.

3.

Is continuity present through main light switch terminals F and M?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, main light switch is faulty.

NO

Replace main light switch (para 7-17).

YES

KNOWN INFO

Front lights cable assembly OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K8.
Faulty relay K7.

WARNING
Read WARNING on following page.

4.

Is 12 VDC present at relay K7 terminal 86?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 16 is faulty.

NO

Go to step 9 of this fault.

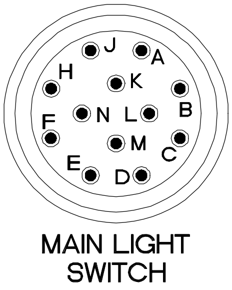
YES

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove main light switch (para 7-17).
(2) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to main light switch terminal M.
(5) Connect negative (-) probe of multimeter to main light switch terminal F and note reading on multimeter.
(6) If continuity is not present replace main light switch (para 7-17).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Install main light switch (para 7-17).



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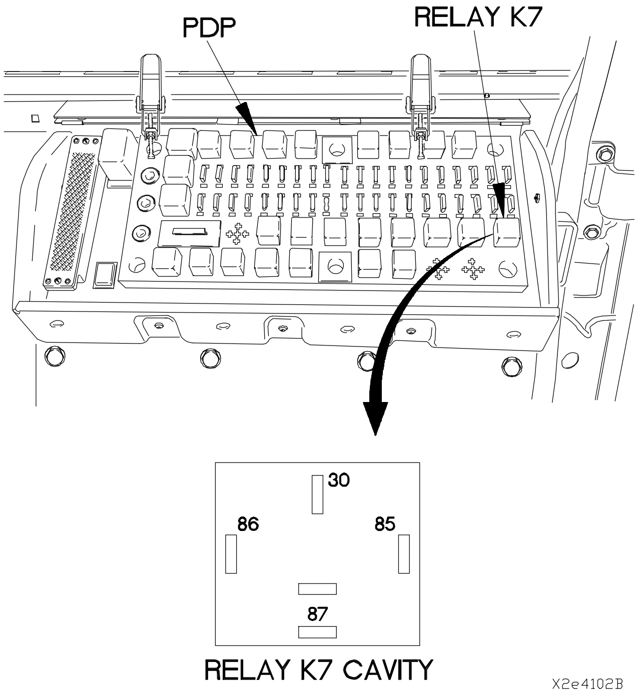
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K7 form PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to PDP terminal 86, where relay K7 was removed.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, go to step 9 of this fault.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



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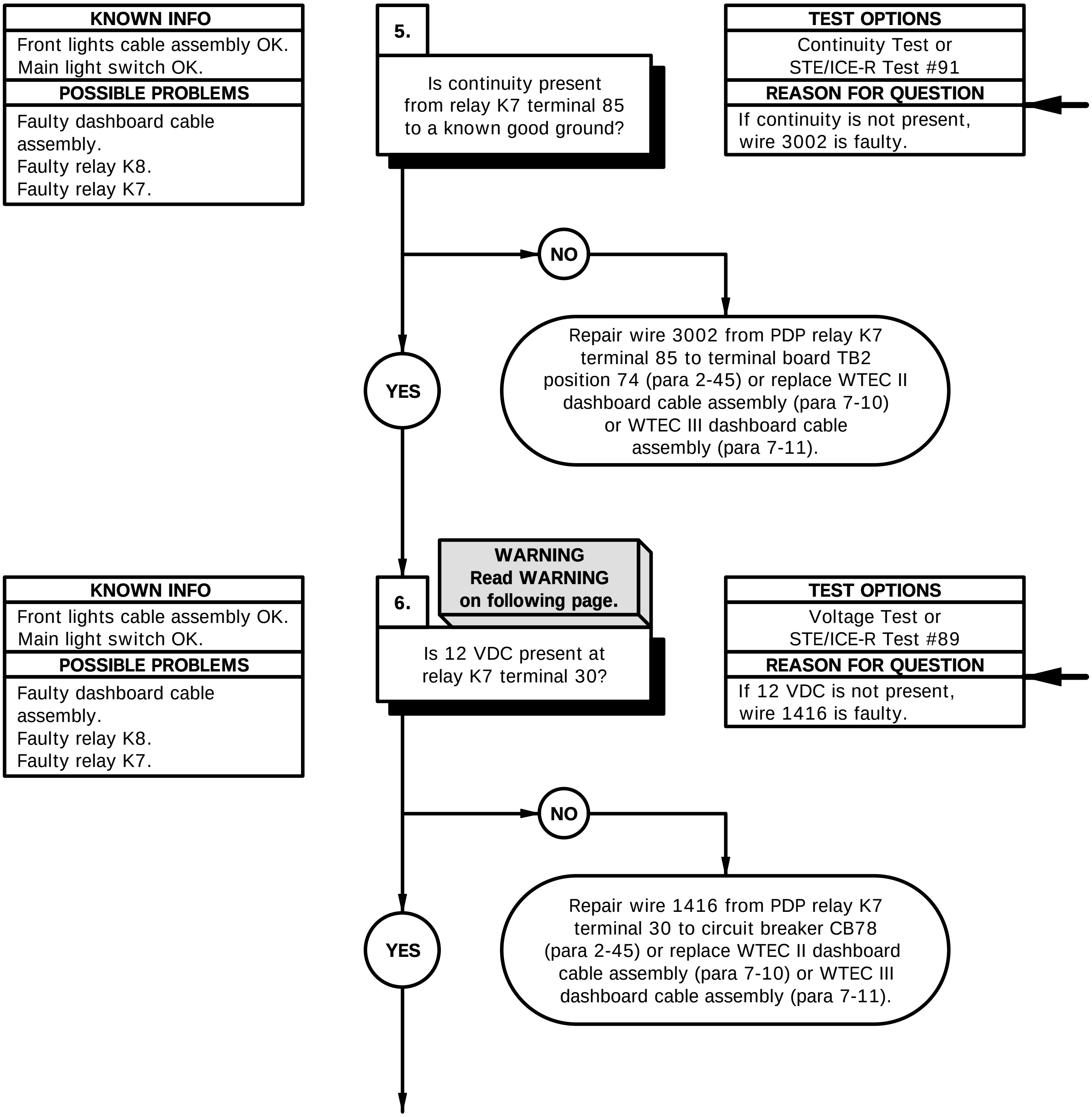
e41. ONE OR BOTH HEADLIGHTS (HIGH AND LOW BEAM) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Front lights cable assembly OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K8.
Faulty relay K7.

5. Is continuity present from relay K7 terminal 85 to a known good ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3002 is faulty.

NO — Repair wire 3002 from PDP relay K7 terminal 85 to terminal board TB2 position 74 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Front lights cable assembly OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K8.
Faulty relay K7.

WARNING
Read WARNING on following page.

6. Is 12 VDC present at relay K7 terminal 30?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

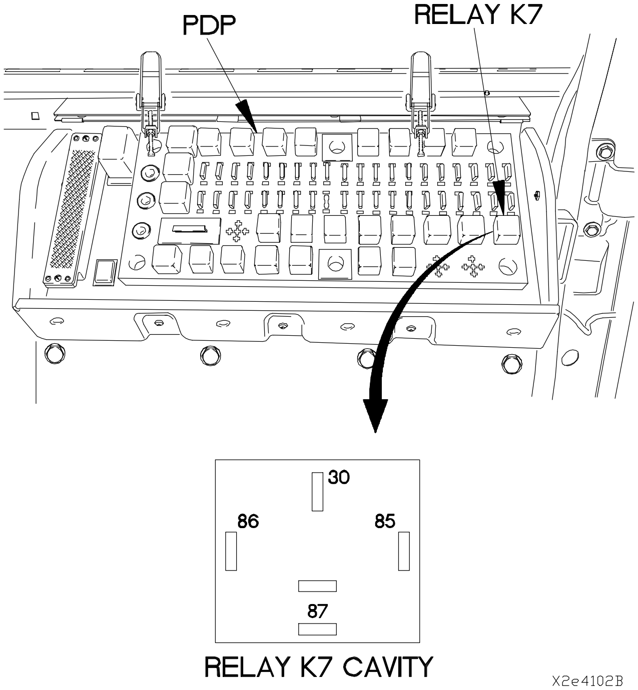
If 12 VDC is not present, wire 1416 is faulty.

NO — Repair wire 1416 from PDP relay K7 terminal 30 to circuit breaker CB78 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP terminal 85, where relay K7 was removed.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3002 from PDP relay K7 terminal 85 to terminal board TB2 position 74 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



RELAY K7 CAVITY

X2e4102B

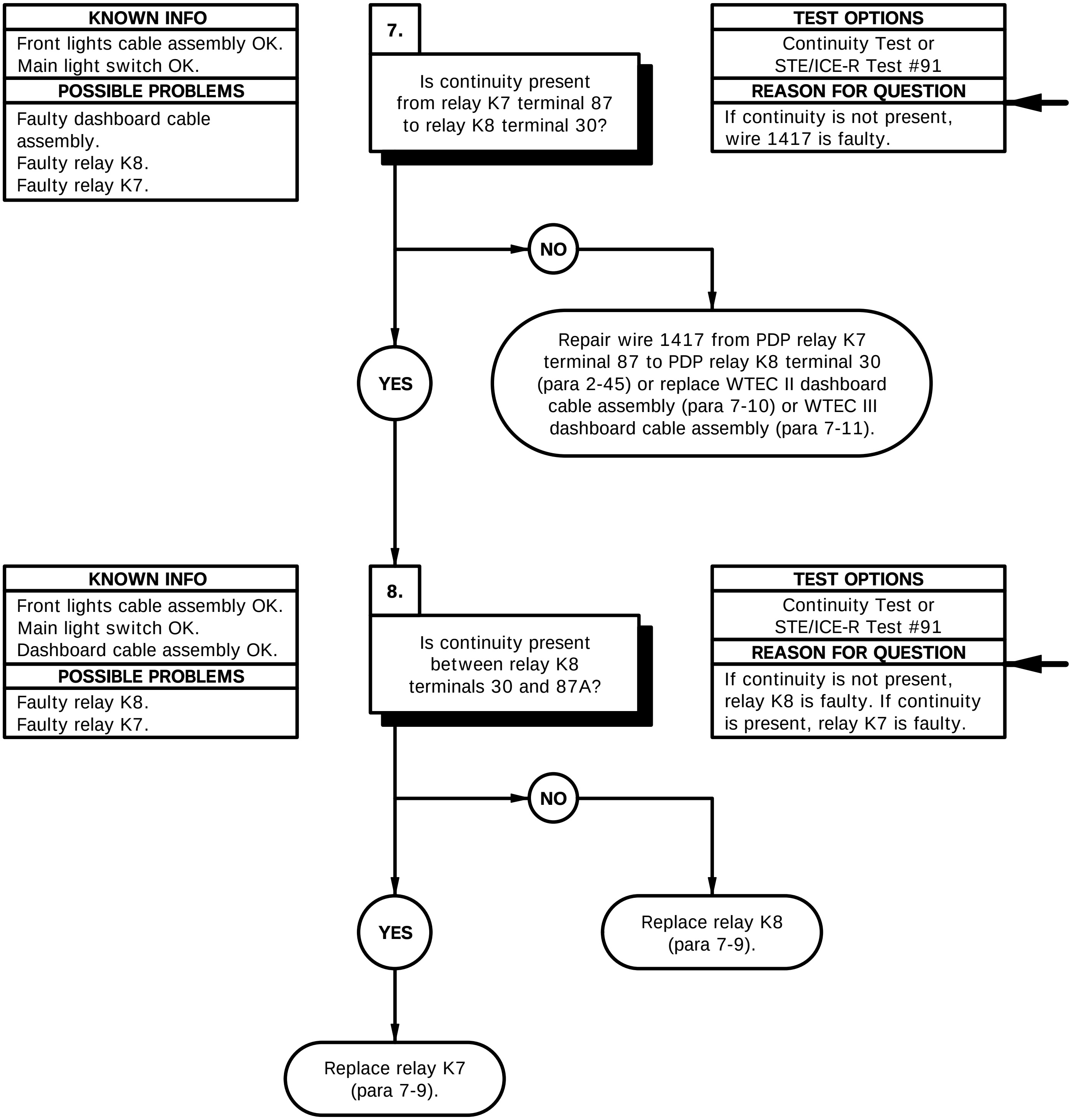
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to PDP terminal 30, where relay K7 was removed.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 VDC is not present, Repair wire 1416 from PDP relay K7 terminal 30 to circuit breaker CB78 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

e41. ONE OR BOTH HEADLIGHTS (HIGH AND LOW BEAM) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Front lights cable assembly OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K8.
Faulty relay K7.

7. Is continuity present from relay K7 terminal 87 to relay K8 terminal 30?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1417 is faulty.

Repair wire 1417 from PDP relay K7 terminal 87 to PDP relay K8 terminal 30 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO

Front lights cable assembly OK.
Main light switch OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty relay K8.
Faulty relay K7.

8. Is continuity present between relay K8 terminals 30 and 87A?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

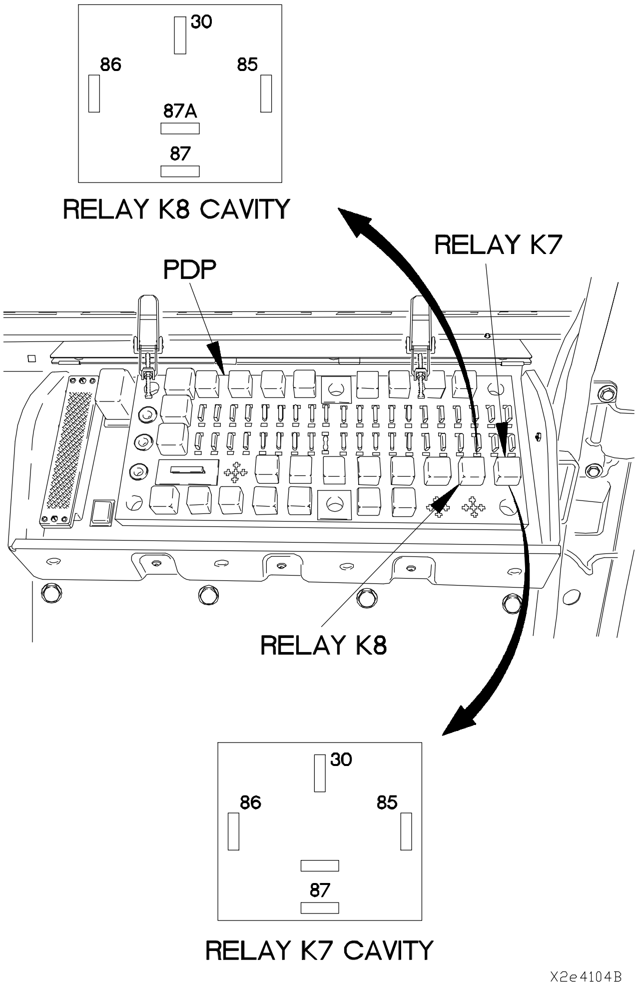
If continuity is not present, relay K8 is faulty. If continuity is present, relay K7 is faulty.

Replace relay K8 (para 7-9).

Replace relay K7 (para 7-9).

CONTINUITY TEST

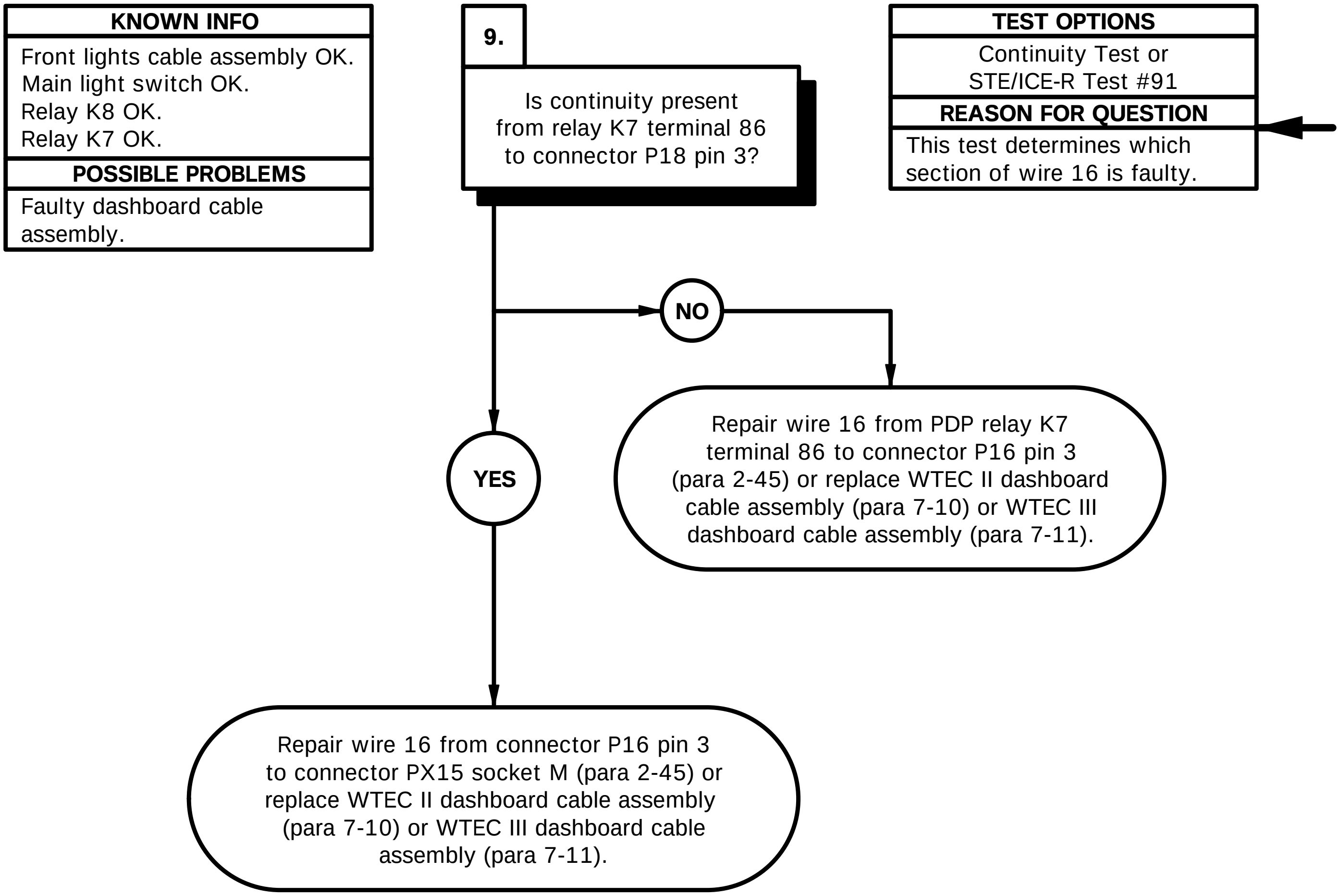
(1) Remove relay K8 from PDP.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to PDP terminal 87, where relay K7 was removed.
(4) Connect negative (-) probe of multimeter to PDP terminal 30, where relay K8 was removed and note reading on multimeter.
(5) If continuity is not present, repair wire 1417 from PDP relay K7 terminal 87 to PDP relay K8 terminal 30 (para 2-45) or or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Install relay K7 in PDP.



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K8 terminal 87A.
(3) Connect negative (-) probe of multimeter to relay K8 terminal 30 and note reading on multimeter.
(4) If continuity is not present, replace relay K8 (para 7-9).
(5) If continuity is present, replace relay K7 (para 7-9).
(6) Install relay K8 in PDP.
(7) Install PDP cover (para 16-2).

e41. ONE OR BOTH HEADLIGHTS (HIGH AND LOW BEAM) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Front lights cable assembly OK.
Main light switch OK.
Relay K8 OK.
Relay K7 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

9.

Is continuity present from relay K7 terminal 86 to connector P18 pin 3?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This test determines which section of wire 16 is faulty.

NO

Repair wire 16 from PDP relay K7 terminal 86 to connector P16 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 16 from connector P16 pin 3 to connector PX15 socket M (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

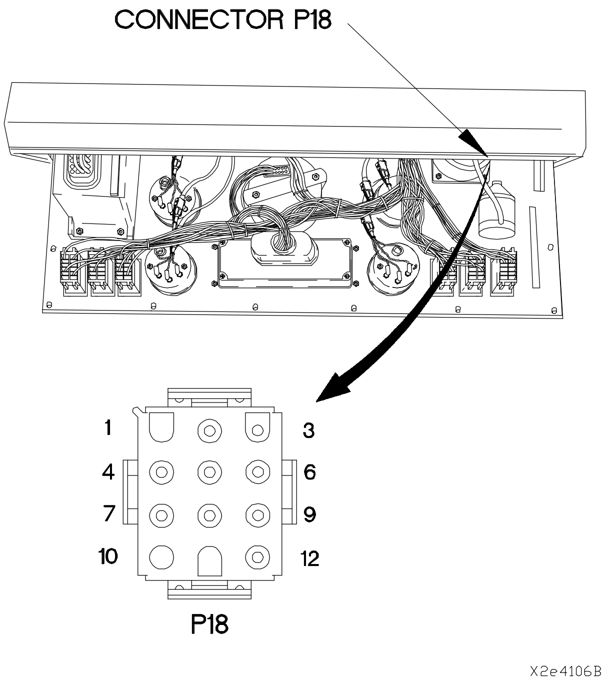
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

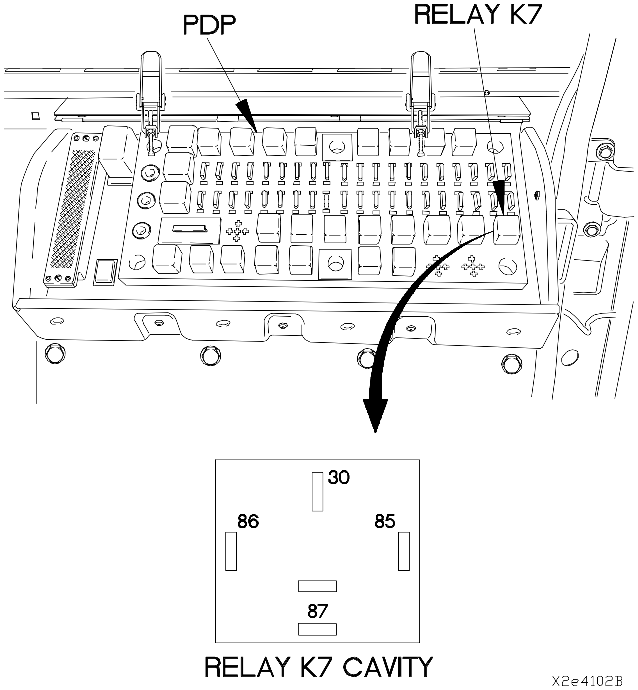
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector P18 from connector J18.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to PDP terminal 86, where relay K7 was removed.
(5) Connect negative (-) probe of multimeter to connector P18 pin 3 and note reading on multimeter.
(6) If continuity is not present, repair wire 16 from PDP relay K7 terminal 86 to connector P18 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If continuity is present, repair wire 16 from connector P16 pin 3 to connector PX15 socket M (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Install relay K7 in PDP.
(9) Install PDP cover (para 16-2).
(10) Connect connector P18 to connector J18.
(11) Install instrument panel assembly (para 7-15).





e42. ONE OR BOTH HEADLIGHT LOW BEAMS DO NOT ILLUMINATE

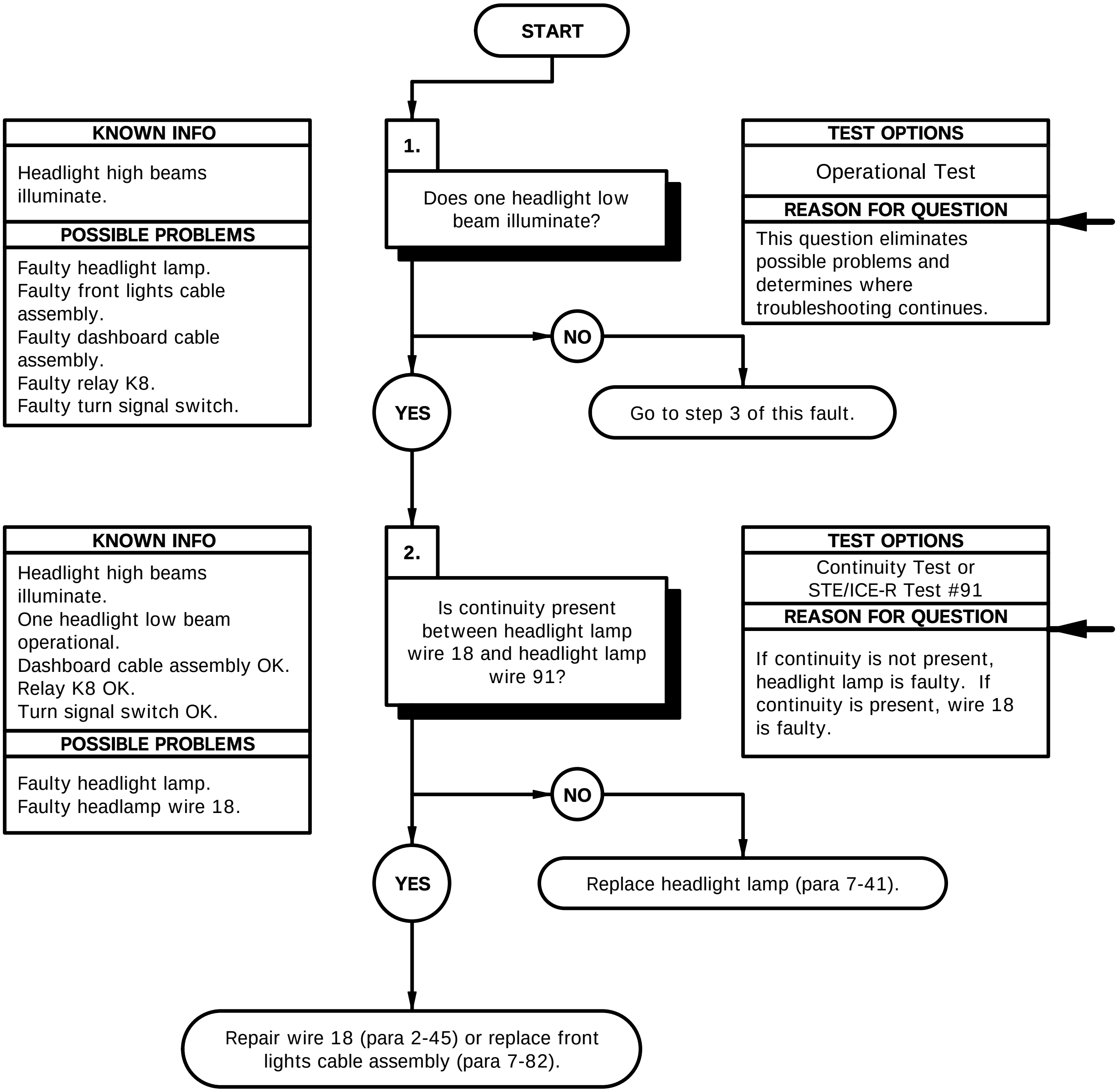
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



START

KNOWN INFO

Headlight high beams illuminate.

POSSIBLE PROBLEMS

Faulty headlight lamp.
Faulty front lights cable assembly.
Faulty dashboard cable assembly.
Faulty relay K8.
Faulty turn signal switch.

1. Does one headlight low beam illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 3 of this fault.

YES

KNOWN INFO

Headlight high beams illuminate.
One headlight low beam operational.
Dashboard cable assembly OK.
Relay K8 OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty headlight lamp.
Faulty headlamp wire 18.

2. Is continuity present between headlight lamp wire 18 and headlight lamp wire 91?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, headlight lamp is faulty. If continuity is present, wire 18 is faulty.

NO — Replace headlight lamp (para 7-41).

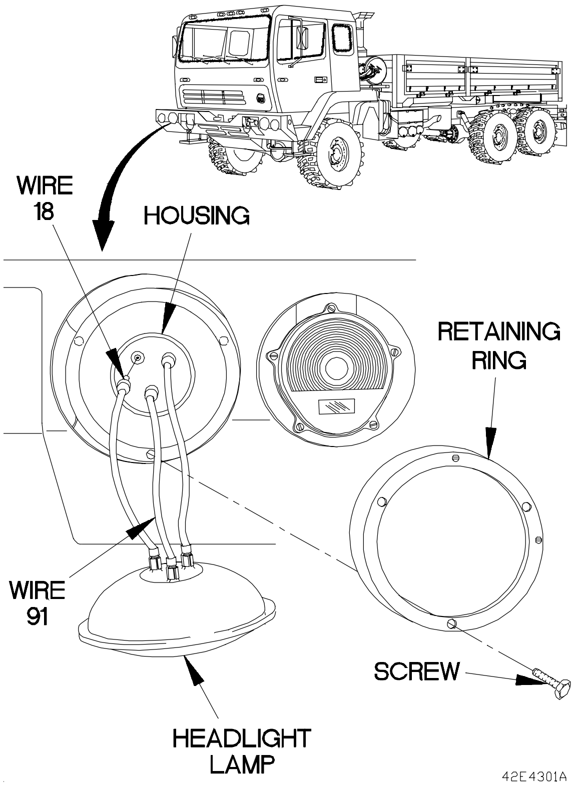
YES — Repair wire 18 (para 2-45) or replace front lights cable assembly (para 7-82).

OPERATIONAL TEST

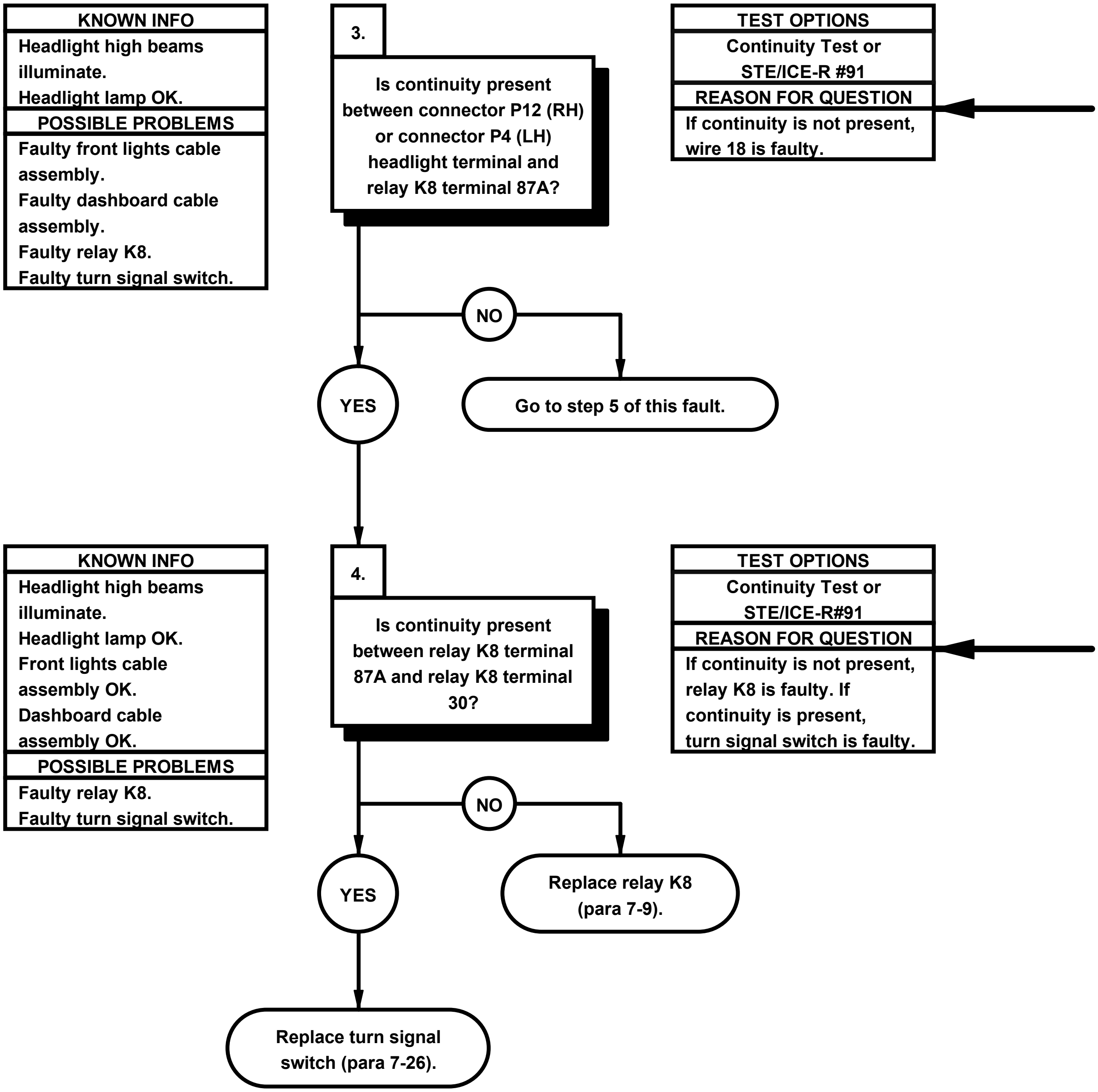
(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Position headlight low beams to on (TM 9-2320-366-10-1).
(3) If both headlight low beams do not illuminate, go to step 3 of this fault.
(4) Position main light switch to OFF (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Remove three screws and retaining ring from housing.
(2) Remove lamp from housing.
(3) Disconnect headlight lamp wire 18 from housing.
(4) Disconnect headlight lamp wire 91 from housing.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to headlight lamp wire 18.
(7) Connect negative (-) probe of multimeter to headlight lamp wire 91 and note reading on multimeter.
(8) If continuity is not present, replace headlight lamp (para 7-41).
(9) If continuity is present, repair wire 18 (para 2-45) or replace front lights cable assembly (para 7-82).
(10) Connect headlight lamp wire 18 to housing.
(11) Connect headlight lamp wire 91 to housing.
(12) Install lamp in housing.
(13) Install retaining ring on housing with three screws.



e42. ONE OR BOTH HEADLIGHT LOW BEAMS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Headlight high beams illuminate.
Headlight lamp OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty dashboard cable assembly.
Faulty relay K8.
Faulty turn signal switch.

3. Is continuity present between connector P12 (RH) or connector P4 (LH) headlight terminal and relay K8 terminal 87A?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 18 is faulty.

NO: Go to step 5 of this fault.

KNOWN INFO

Headlight high beams illuminate.
Headlight lamp OK.
Front lights cable assembly OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty relay K8.
Faulty turn signal switch.

4. Is continuity present between relay K8 terminal 87A and relay K8 terminal 30?

TEST OPTIONS

Continuity Test or STE/ICE-R#91

REASON FOR QUESTION

If continuity is not present, relay K8 is faulty. If continuity is present, turn signal switch is faulty.

NO: Replace relay K8 (para 7-9).

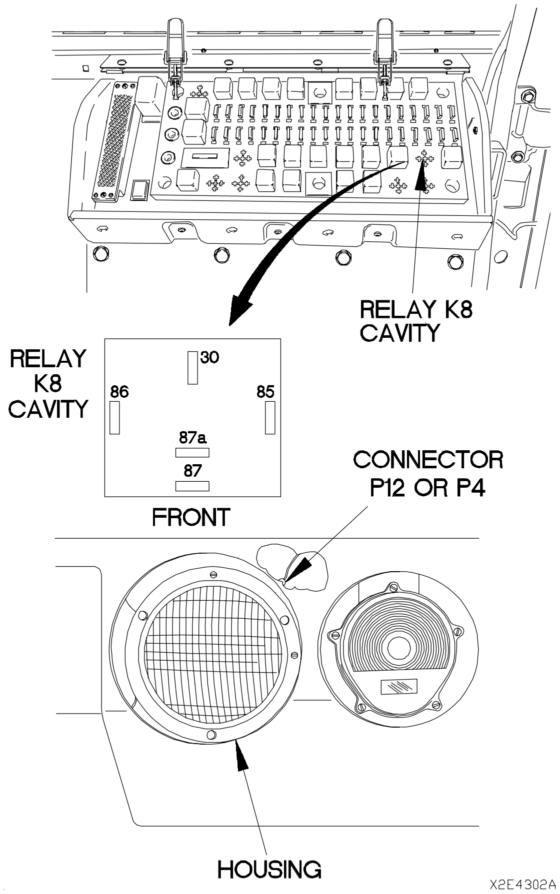
YES: Replace turn signal switch (para 7-26).

CONTINUITY TEST

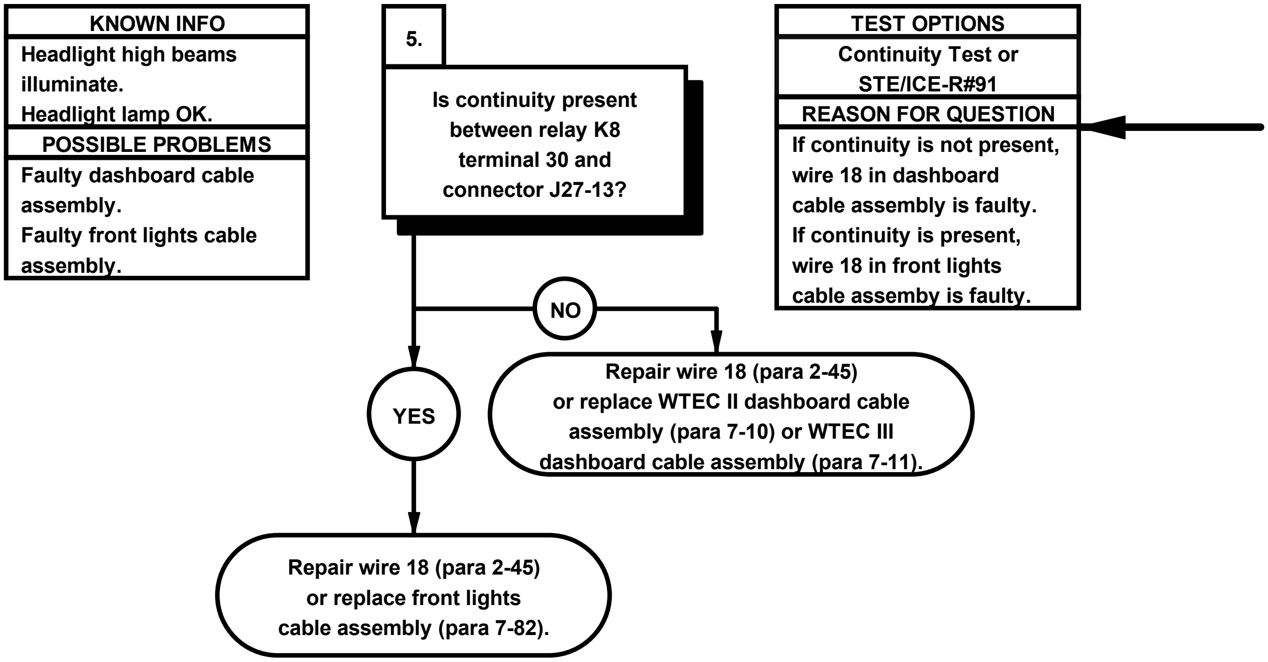
(1) Remove PDP cover (para 16-2).
(2) Remove relay K8 from PDP.
(3) Disconnect connector P12 (RH) or connector P4 (LH) from housing.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector P12 (RH) or connector P4 (LH).
(6) Connect negative (-) probe of multimeter to PDP, terminal 87A, where relay K8 was removed and note reading on multimeter.
(7) If continuity is not present, go to step 5 of this fault.
(8) Connect connector P12 (RH) or connector P5 (LH) to housing.

CONTINUITY TEST

(1) Set multimeter to ohms
(2) Connect positive (+) probe of multimeter to relay K8 terminal 87A.
(3) Connect negative (-) probe of multimeter to relay K8 terminal 30 and note reading on multimeter.
(4) If continuity is not present, replace relay K8 (para 7-9).
(5) If continuity is present, replace turn signal switch (para 7-26).
(6) Install relay K8 in PDP.
(7) Install PDP cover (para 16-2).



e42. ONE OR BOTH HEADLIGHT LOW BEAMS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Headlight high beams illuminate.

Headlight lamp OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

Faulty front lights cable assembly.

5\.

Is continuity present between relay K8 terminal 30 and connector J27-13?

TEST OPTIONS

Continuity Test or STE/ICE-R#91

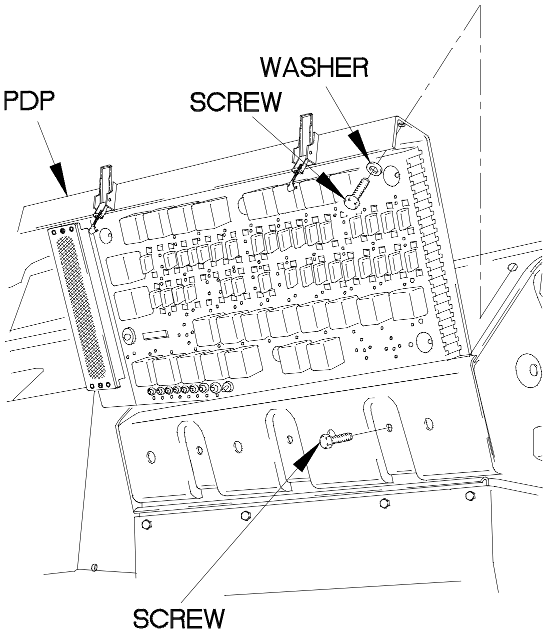
REASON FOR QUESTION

If continuity is not present, wire 18 in dashboard cable assembly is faulty.

If continuity is present, wire 18 in front lights cable assemby is faulty.

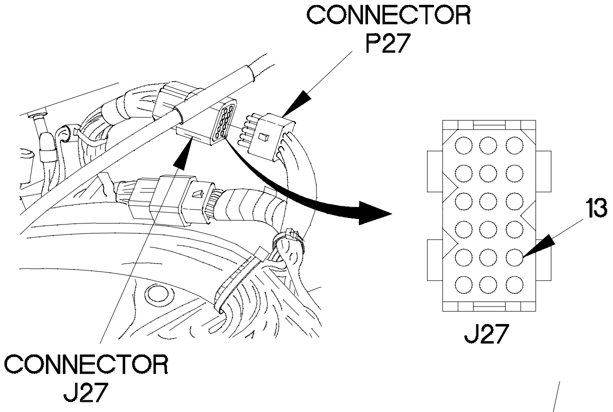
Repair wire 18 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

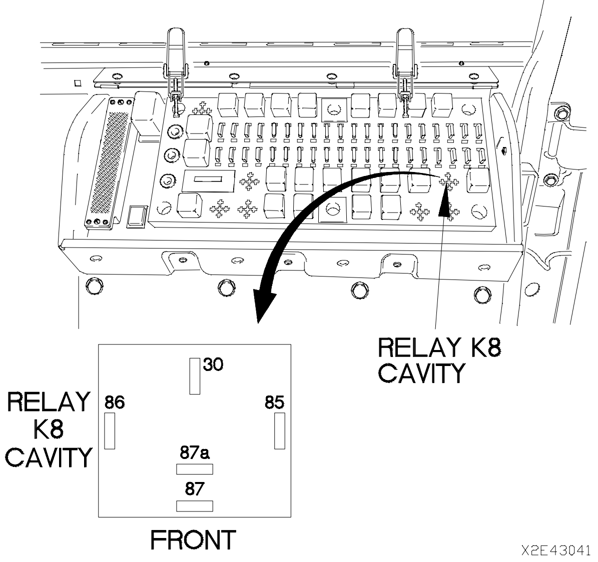
Repair wire 18 (para 2-45) or replace front lights cable assembly (para 7-82).



CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J27 from connector P27.
(5) Set multimeter to ohms
(6) Connect positive (+) probe of multimeter to PDP, relay K8 terminal 87A, where relay K8 was removed.
(7) Connect negative (-) probe of multimeter to connector J27-13 and note reading on multimeter.
(8) If continuity is not present, repair wire 18 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If continuity is present, repair wire 18 (para 2-45) or replace front lights cable assembly (para 7-82).
(10) Connect connector P27 to connector J27.
(11) Install PDP in dashboard with three screws.
(12) Install three washers and screws in PDP.
(13) Install relay K8 in PDP.
(14) Install PDP cover (para 16-2).





e43. ONE OR BOTH HEADLIGHT HIGH BEAMS DO NOT ILLUMINATE

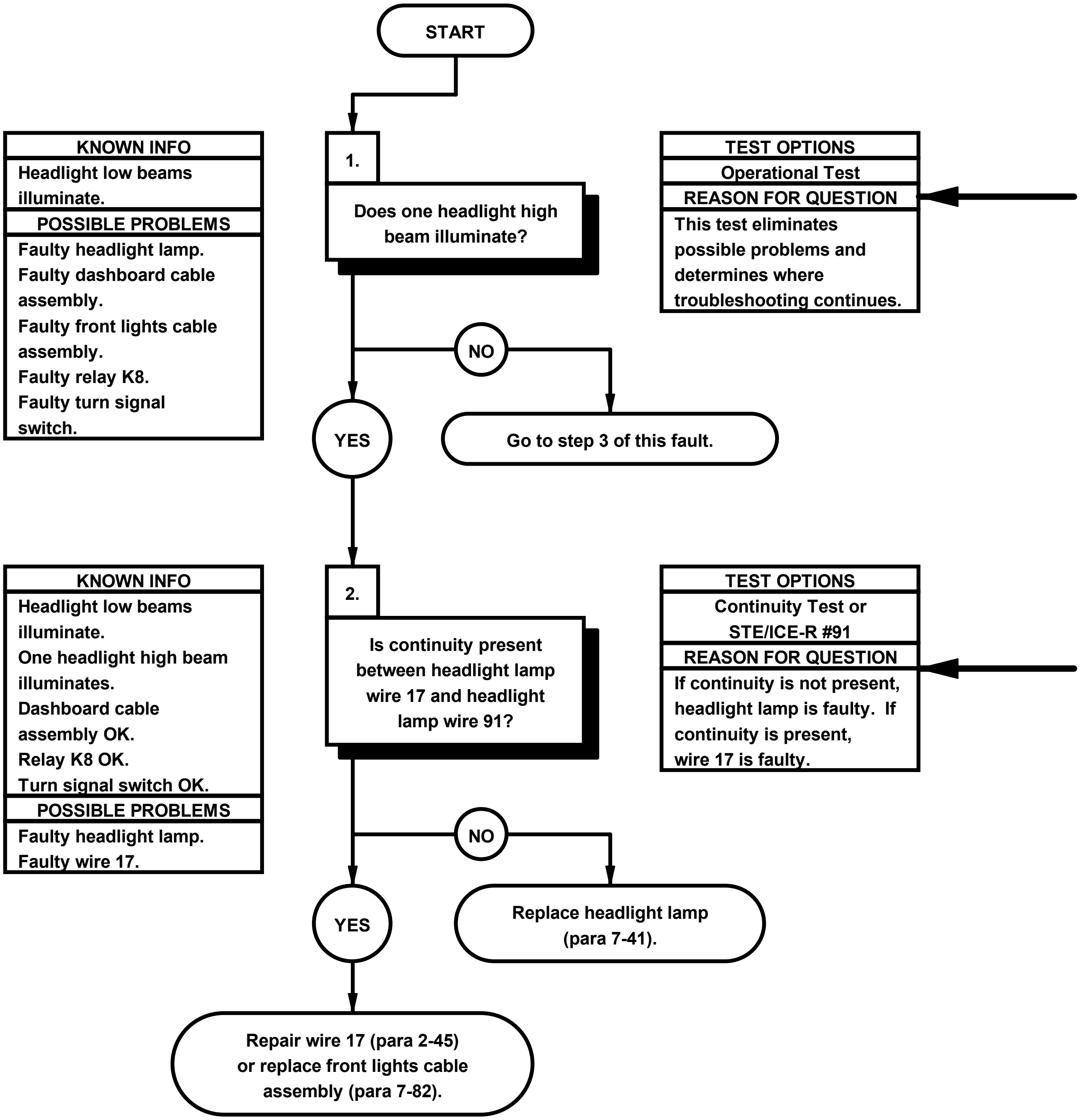
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Headlight low beams illuminate.

POSSIBLE PROBLEMS
Faulty headlight lamp.
Faulty dashboard cable assembly.
Faulty front lights cable assembly.
Faulty relay K8.
Faulty turn signal switch.

1. Does one headlight high beam illuminate?

TEST OPTIONS
Operational Test

REASON FOR QUESTION
This test eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 3 of this fault.

YES: Go to step 2.

KNOWN INFO
Headlight low beams illuminate.
One headlight high beam illuminates.
Dashboard cable assembly OK.
Relay K8 OK.
Turn signal switch OK.

POSSIBLE PROBLEMS
Faulty headlight lamp.
Faulty wire 17.

2. Is continuity present between headlight lamp wire 17 and headlight lamp wire 91?

TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
If continuity is not present, headlight lamp is faulty. If continuity is present, wire 17 is faulty.

NO: Replace headlight lamp (para 7-41).

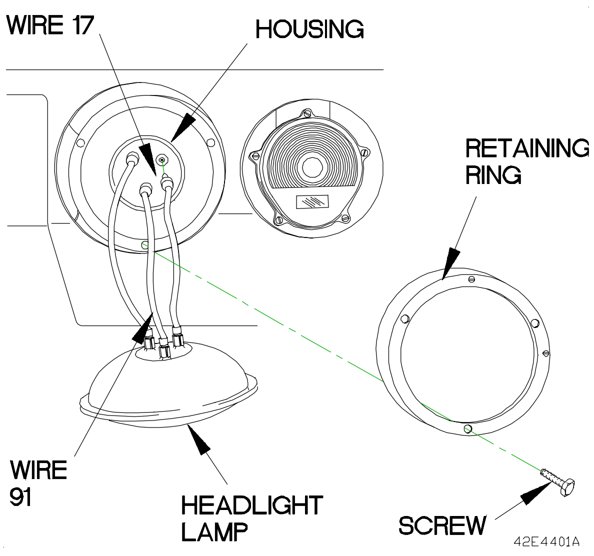
YES: Repair wire 17 (para 2-45) or replace front lights cable assembly (para 7-82).

OPERATIONAL TEST

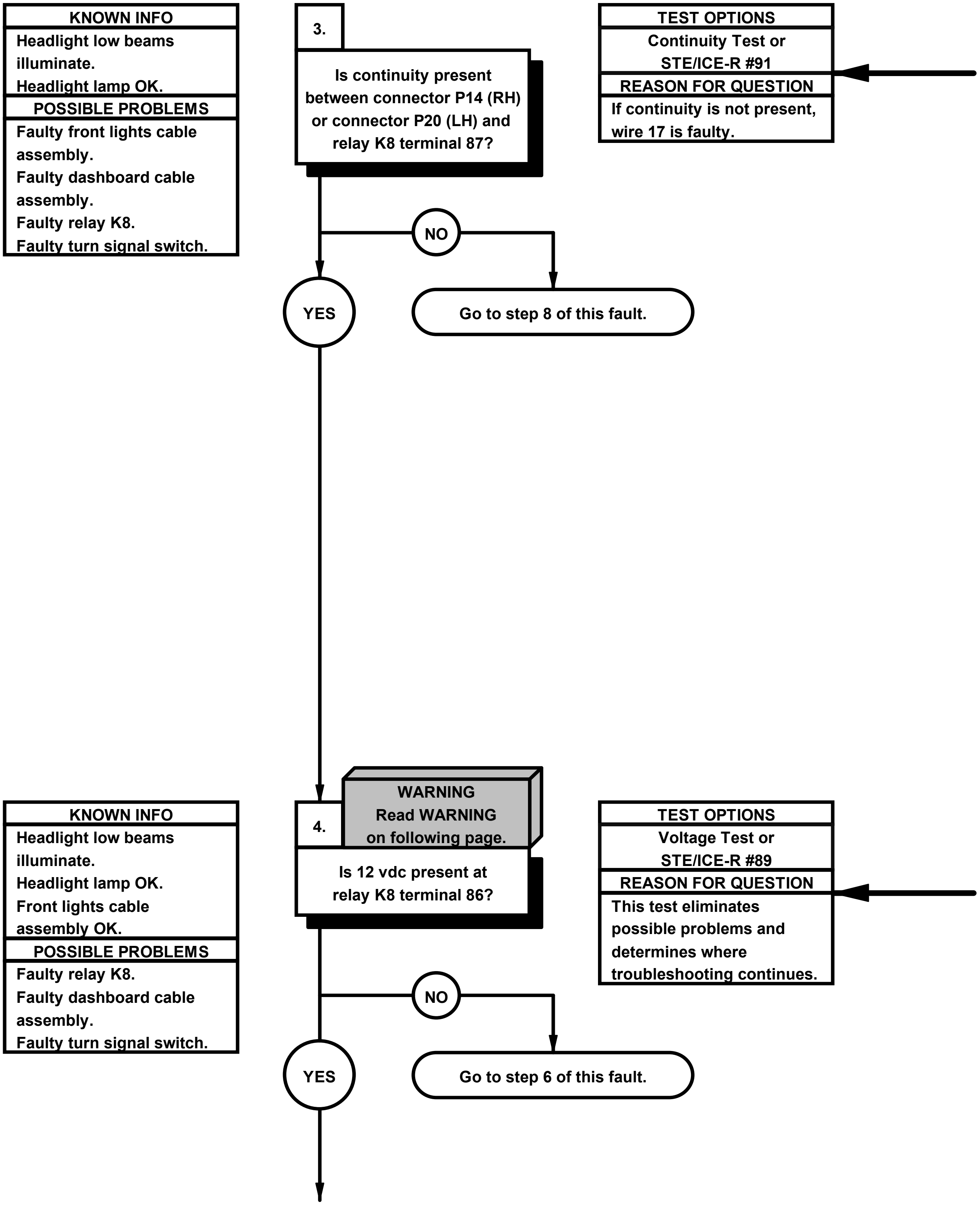
(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Position headlight high beams on (TM 9-2320-366-10-1).
(3) If both headlights high beams do not illuminate, and go to step 3 of this fault.
(4) Position main light switch to OFF (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Remove three screws and retaining ring from housing.
(2) Remove headlight lamp from housing.
(3) Disconnect headlight lamp wire 17 from housing.
(4) Disconnect headlight lamp wire 91 from housing.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to headlight lamp wire 17.
(7) Connect negative (-) probe of multimeter to headlight lamp wire 91 and note reading on multimeter.
(8) If continuity is not present, replace headlight lamp (para 7-41).
(9) If continuity is present, repair wire 17 (para 2-45) or replace front lights cable assembly (para 7-82).
(10) Connect headlight lamp wire 17 to housing.
(11) Connect headlight lamp wire 91 to housing.
(12) Install headlight lamp in housing.
(13) Install retaining ring on housing with three screws.



e43. ONE OR BOTH HEADLIGHT HIGH BEAMS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Headlight low beams illuminate.
Headlight lamp OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty dashboard cable assembly.
Faulty relay K8.
Faulty turn signal switch.

3.

Is continuity present between connector P14 (RH) or connector P20 (LH) and relay K8 terminal 87?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 17 is faulty.

Go to step 8 of this fault.

KNOWN INFO

Headlight low beams illuminate.
Headlight lamp OK.
Front lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty relay K8.
Faulty dashboard cable assembly.
Faulty turn signal switch.

4.

WARNING
Read WARNING on following page.

Is 12 vdc present at relay K8 terminal 86?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

This test eliminates possible problems and determines where troubleshooting continues.

Go to step 6 of this fault.

CONTINUITY TEST

(1) Remove PDP cover (para para 16-2).

(2) Remove relay K8 from PDP.

(3) Disconnect connector P14 (RH) or connector P20 (LH) from housing.

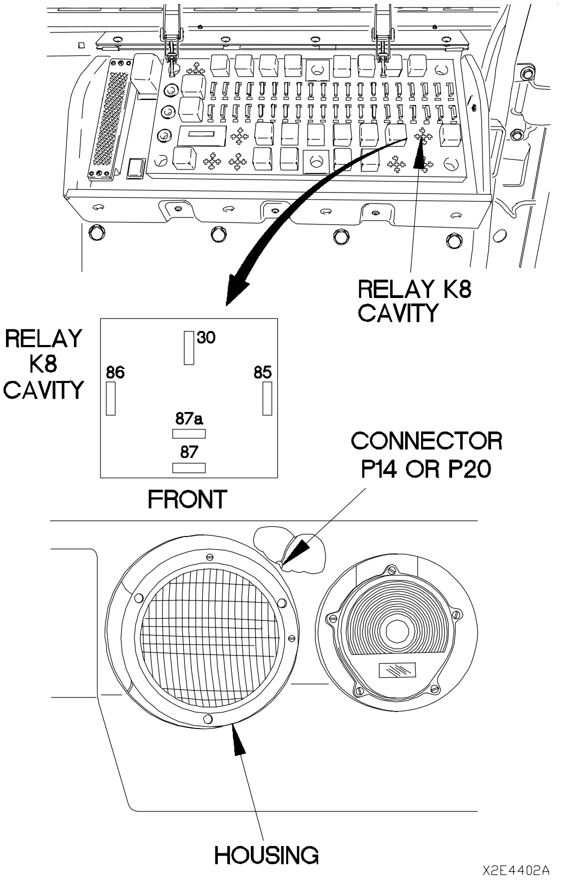
(4) Set multimeter to ohms.

(5) Connect positive (+) probe of multimeter to PDP, terminal 87A, where relay K8 was removed.

(6) Connect negative (-) probe of multimeter to connector P14 (RH) or connector P20 (LH) and note reading on multimeter.

(7) If continuity is not present, go to step 8 of this fault.

(8) Connect connector P14 (RH) or connector P20 (LH) to housing.



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.

(2) Connect positive (+) probe of multimeter to PDP, terminal 86, where relay K8 was removed.

(3) Connect negative (-) probe of multimeter to ground.

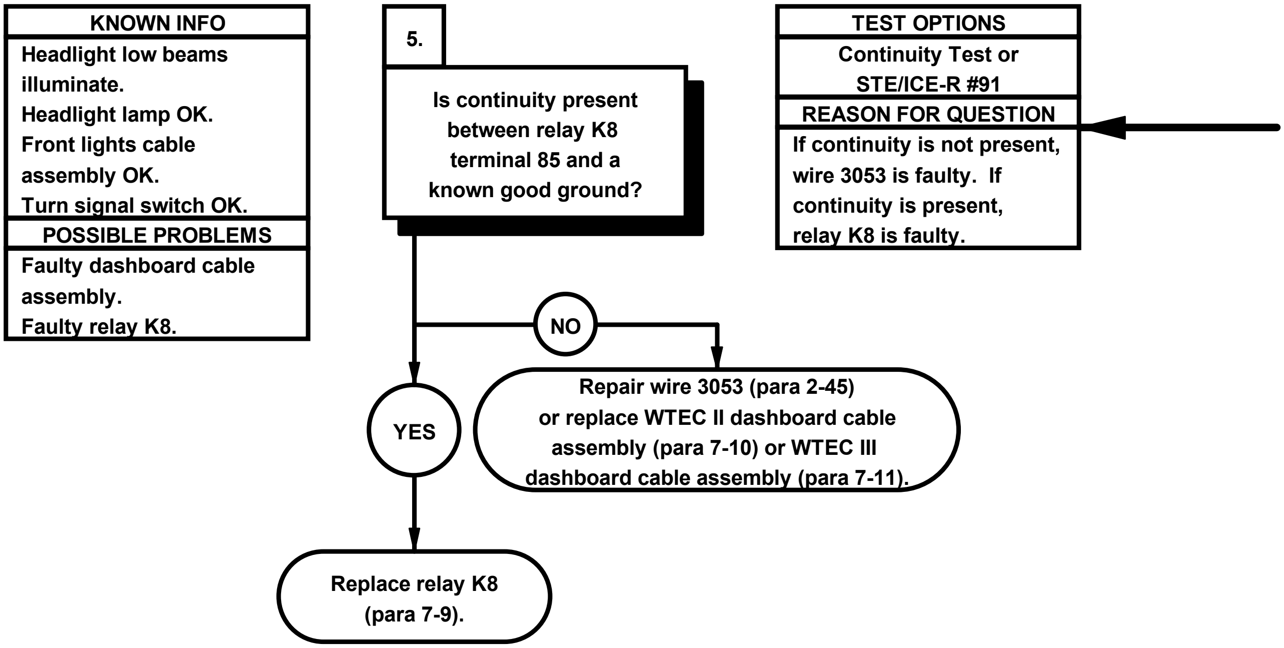
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).

(5) Position headlight high beams to on (TM 9-2320-366-10-1) and note reading on multimeter.

(6) If 12 vdc is not present, go to step 6 of this fault.

(7) Position main light switch to OFF (TM 9-2320-366-10-1).

e43. ONE OR BOTH HEADLIGHT HIGH BEAMS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Headlight low beams illuminate.
Headlight lamp OK.
Front lights cable assembly OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K8.

5.

Is continuity present between relay K8 terminal 85 and a known good ground?

TEST OPTIONS

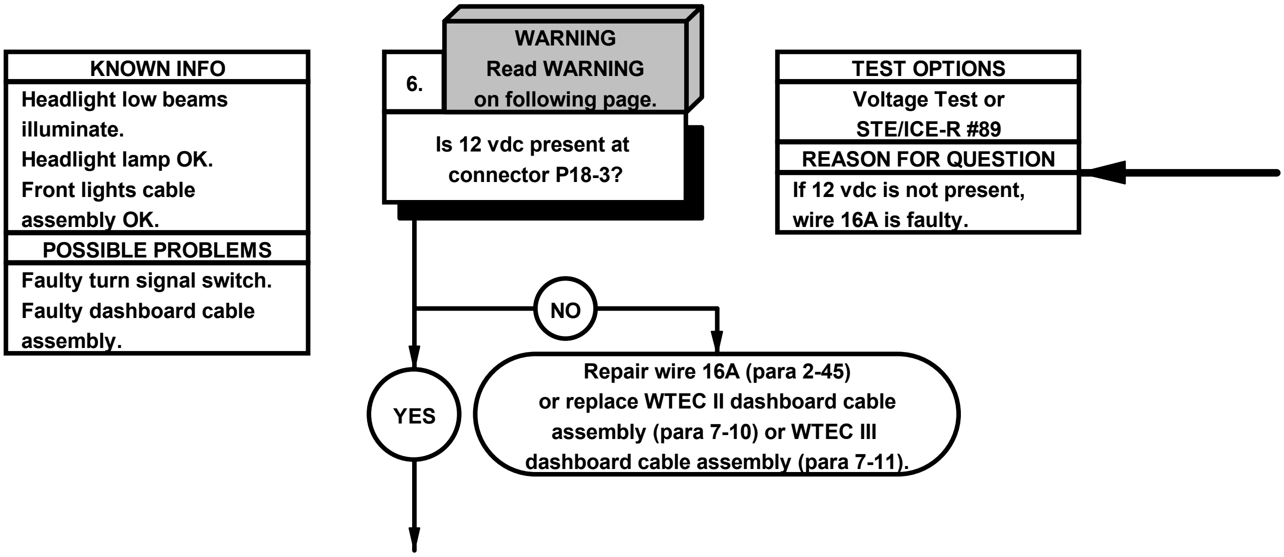
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3053 is faulty. If continuity is present, relay K8 is faulty.

NO: Repair wire 3053 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace relay K8 (para 7-9).



KNOWN INFO

Headlight low beams illuminate.
Headlight lamp OK.
Front lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty turn signal switch.
Faulty dashboard cable assembly.

WARNING
Read WARNING on following page.

6.

Is 12 vdc present at connector P18-3?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

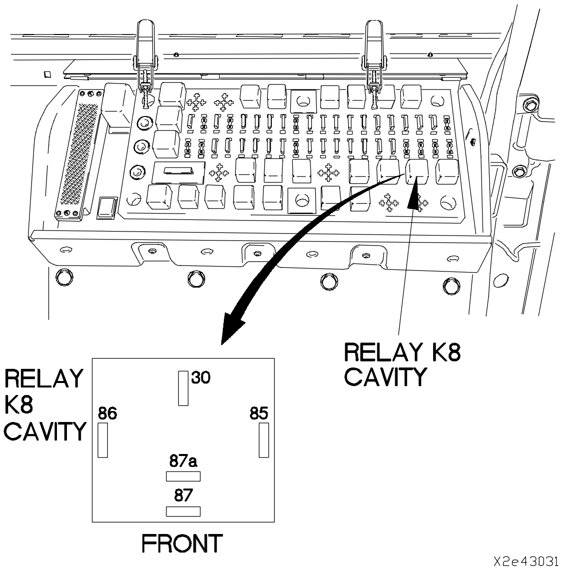
If 12 vdc is not present, wire 16A is faulty.

NO: Repair wire 16A (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP, terminal 85, where relay K8 was removed.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3053 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K8 (para 7-9).
(6) Install relay K8 in PDP.
(7) Install PDP cover (para 16-2).

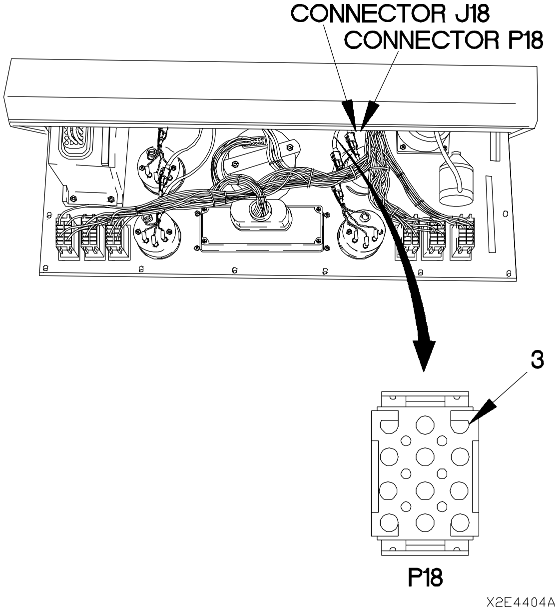


WARNING

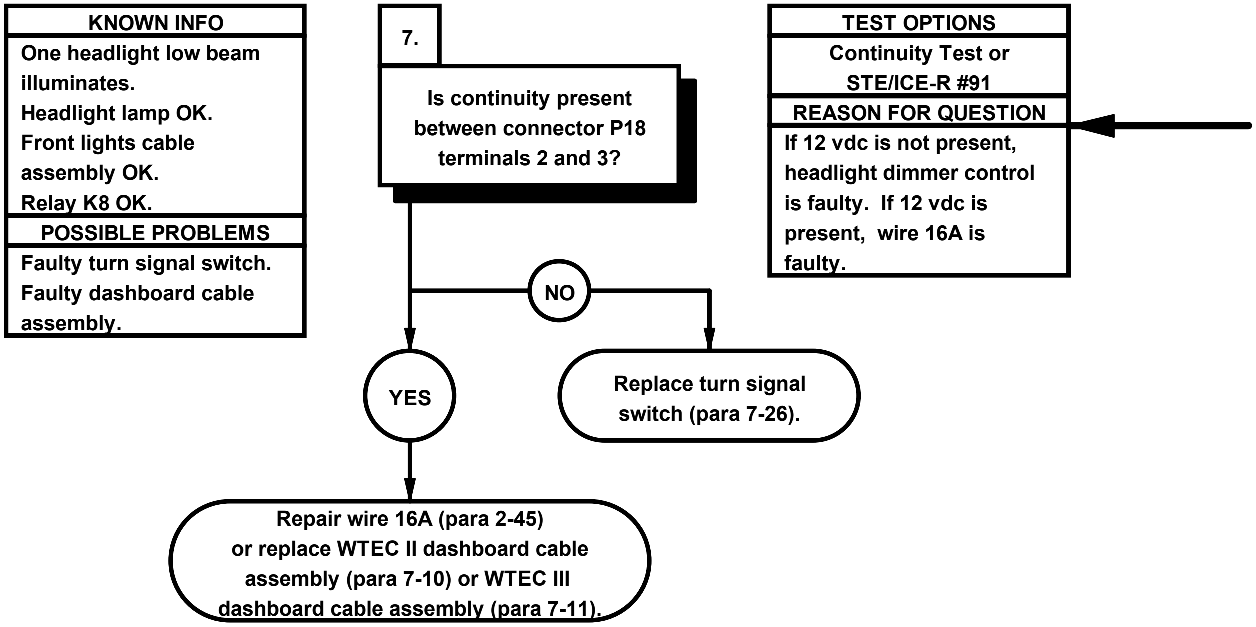
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector P18 from connector J18.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector P18-3.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, repair wire 16A (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



e43. ONE OR BOTH HEADLIGHT HIGH BEAMS DO NOT ILLUMINATE (CONT)



KNOWN INFO

One headlight low beam illuminates.
Headlight lamp OK.
Front lights cable assembly OK.
Relay K8 OK.

POSSIBLE PROBLEMS

Faulty turn signal switch.
Faulty dashboard cable assembly.

7. Is continuity present between connector P18 terminals 2 and 3?

TEST OPTIONS

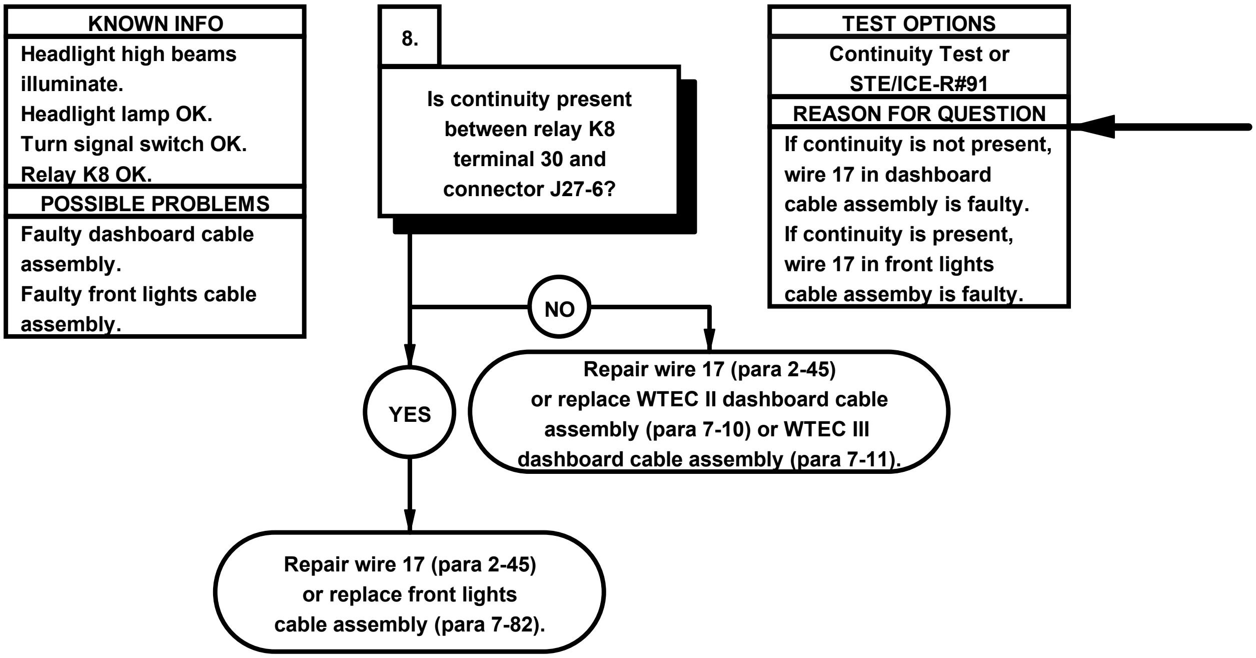
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If 12 vdc is not present, headlight dimmer control is faulty. If 12 vdc is present, wire 16A is faulty.

NO: Replace turn signal switch (para 7-26).

YES: Repair wire 16A (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



KNOWN INFO

Headlight high beams illuminate.
Headlight lamp OK.
Turn signal switch OK.
Relay K8 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty front lights cable assembly.

8. Is continuity present between relay K8 terminal 30 and connector J27-6?

TEST OPTIONS

Continuity Test or STE/ICE-R#91

REASON FOR QUESTION

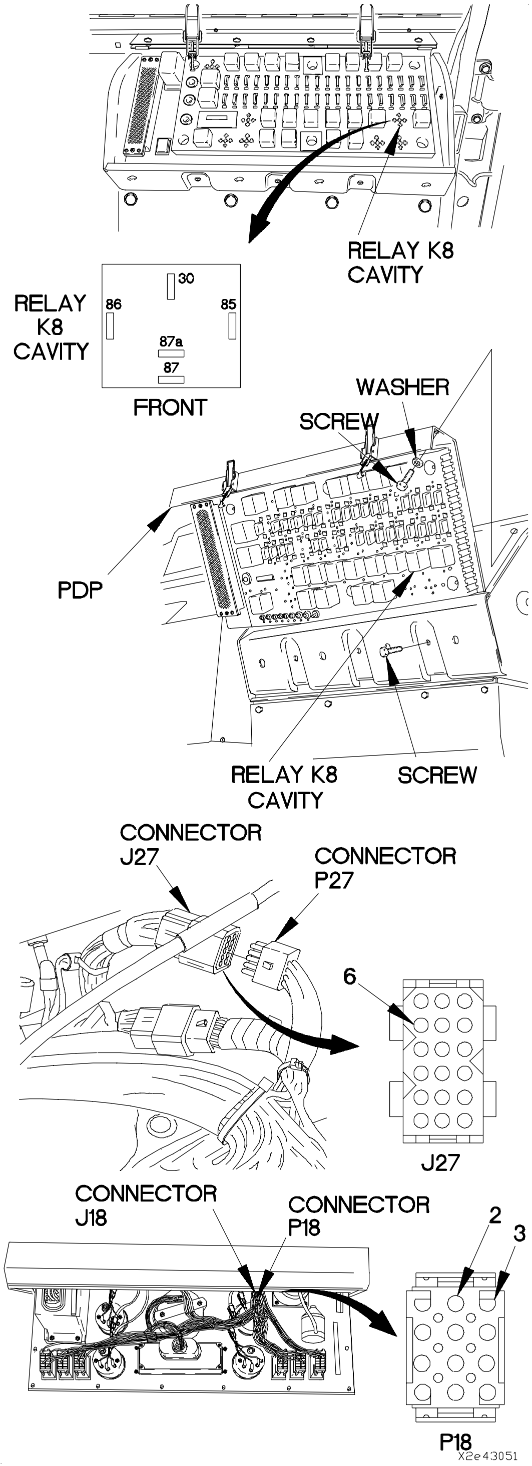
If continuity is not present, wire 17 in dashboard cable assembly is faulty. If continuity is present, wire 17 in front lights cable assemby is faulty.

NO: Repair wire 17 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Repair wire 17 (para 2-45) or replace front lights cable assembly (para 7-82).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P18-3.
(3) Connect negative (-) probe of multimeter to connector P18-2.
(4) If continuity is not present, replace turn signal switch (para 7-26).
(5) If continuity is present, repair wire 16A (para 2-45) or replace WETC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector P18 to connector J18.
(7) Install instrument panel assembly (para 7-15).
(8) Install relay K8 in PDP.
(9) Install PDP cover (para 16-2).



CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J27 from connector P27.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to PDP, relay K8 terminal 30, where relay K8 was removed.
(7) Connect negative (-) probe of multimeter to connector J27-6 and note reading on multimeter.
(8) If continuity is not present, repair wire 17 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If continuity is present, repair wire 17 (para 2-45) or replace front lights cable assembly (para 7-82).
(10) Connect connector P27 to connector J27.
(11) Install PDP in dashboard with three screws.
(12) Install three washers and screws in PDP.
(13) Install relay K8 in PDP.
(14) Install PDP cover (para 16-2).

e44. PARKING LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Materials/Parts
Packing, Preformed (Item 191, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

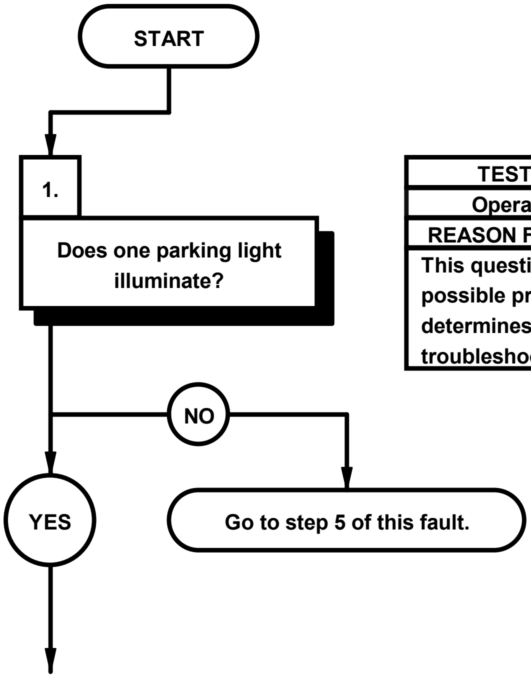
References
TM 9-4910-571-12&P

KNOWN INFO

Circuit breaker OK.
Turn signals operate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty composite front light assembly.
Faulty front lights cable assembly.
Faulty main light switch.
Faulty dashboard cable assembly.



TEST OPTIONS

Operational Test

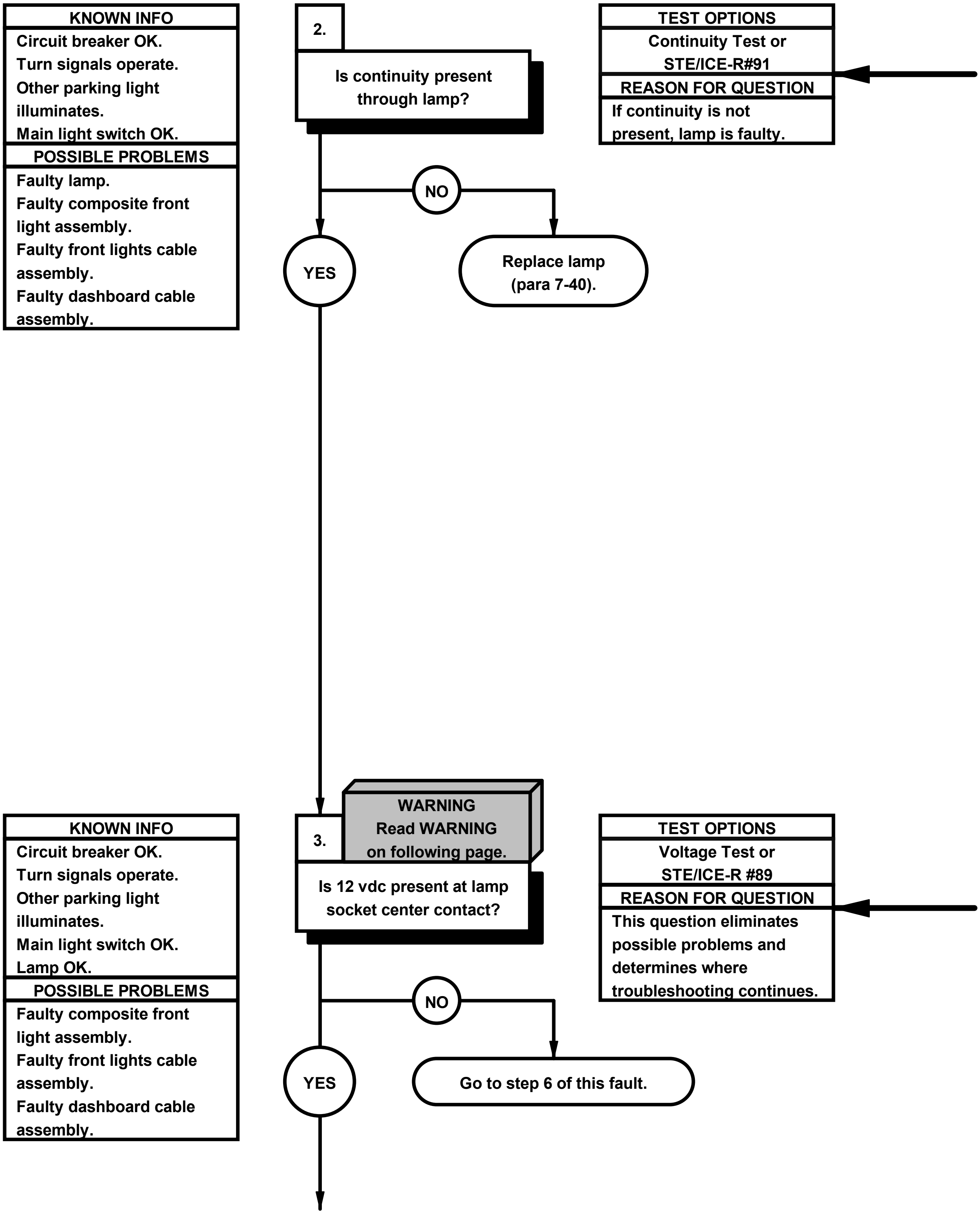
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

OPERATIONAL TEST

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Position main light switch auxiliary lever to PARK (TM 9-2320-366-10-1).
(3) If no parking lights illuminate, go to step 5 of this fault.
(4) Position main light switch to OFF (TM 9-2320-366-10-1).

e44. PARKING LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Turn signals operate.
Other parking light illuminates.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty composite front light assembly.
Faulty front lights cable assembly.
Faulty dashboard cable assembly.

2\. Is continuity present through lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R#91

REASON FOR QUESTION

If continuity is not present, lamp is faulty.

NO: Replace lamp (para 7-40).

YES

KNOWN INFO

Circuit breaker OK.
Turn signals operate.
Other parking light illuminates.
Main light switch OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty composite front light assembly.
Faulty front lights cable assembly.
Faulty dashboard cable assembly.

WARNING

Read WARNING on following page.

3\. Is 12 vdc present at lamp socket center contact?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

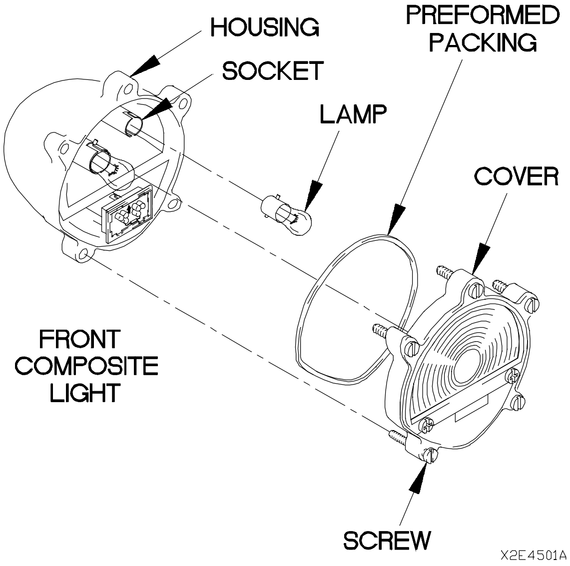
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 6 of this fault.

YES

CONTINUITY TEST

(1) Loosen five screws on cover.
(2) Remove cover and preformed packing from housing. Discard preformed packing.
(3) Remove lamp from socket.
(4) Set multimeter to ohms.
(5) Check continuity through lamp and note reading on multimeter.
(6) If continuity is not present, replace lamp (para 7-40).



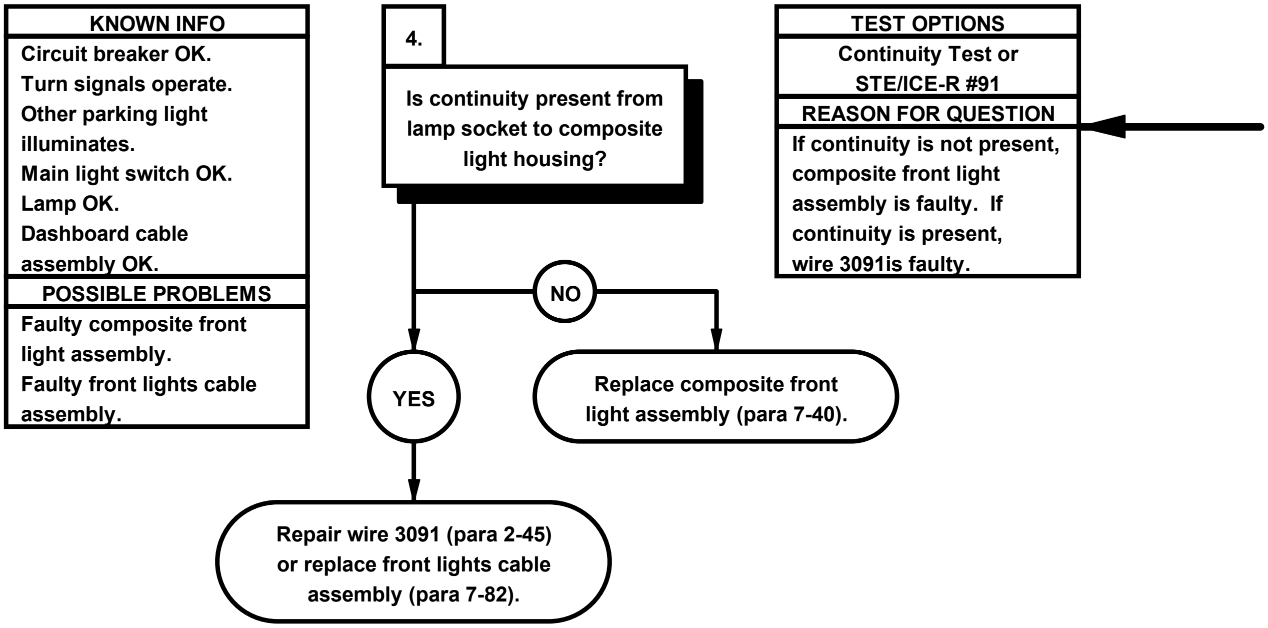
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to center contact of lamp socket.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(5) Position main light switch auxiliary lever to PARK (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 vdc is not present, go to step 6 of this fault.
(7) Position main light switch to OFF (TM 9-2320-366-10-1).

e44. PARKING LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Turn signals operate.
Other parking light illuminates.
Main light switch OK.
Lamp OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty composite front light assembly.
Faulty front lights cable assembly.

4.

Is continuity present from lamp socket to composite light housing?

TEST OPTIONS

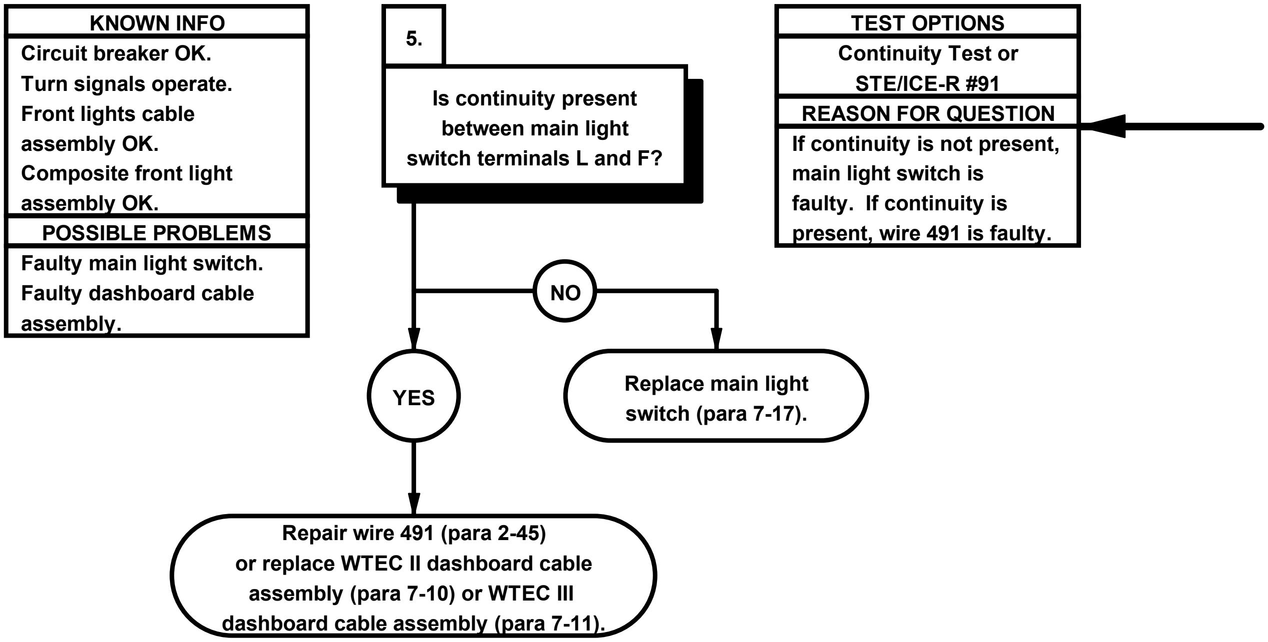
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, composite front light assembly is faulty. If continuity is present, wire 3091is faulty.

Replace composite front light assembly (para 7-40).

Repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82).



KNOWN INFO

Circuit breaker OK.
Turn signals operate.
Front lights cable assembly OK.
Composite front light assembly OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dashboard cable assembly.

5.

Is continuity present between main light switch terminals L and F?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

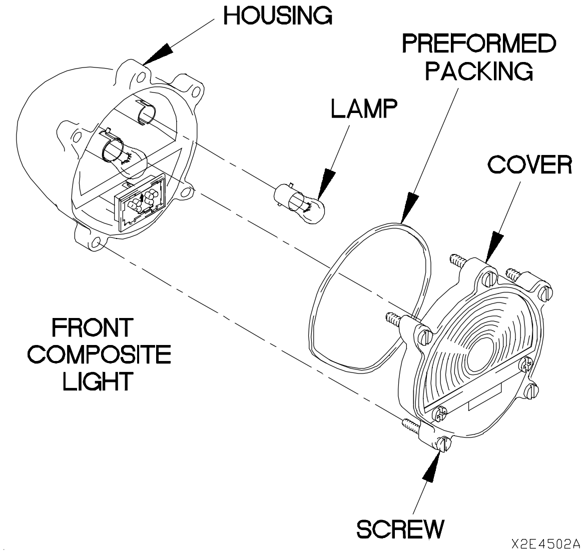
If continuity is not present, main light switch is faulty. If continuity is present, wire 491 is faulty.

Replace main light switch (para 7-17).

Repair wire 491 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

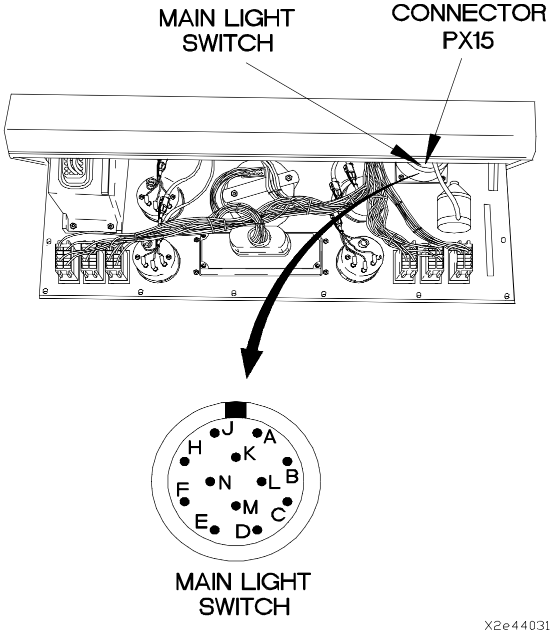
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to lamp socket.
(3) Connect negative (-) probe of multimeter to composite front light housing and note reading on multimeter.
(4) If continuity is not present, replace composite front light assembly (para 7-40).
(5) If continuity is present, repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82).
(6) Install lamp in socket.
(7) Install preformed packing and cover on housing with five screws.

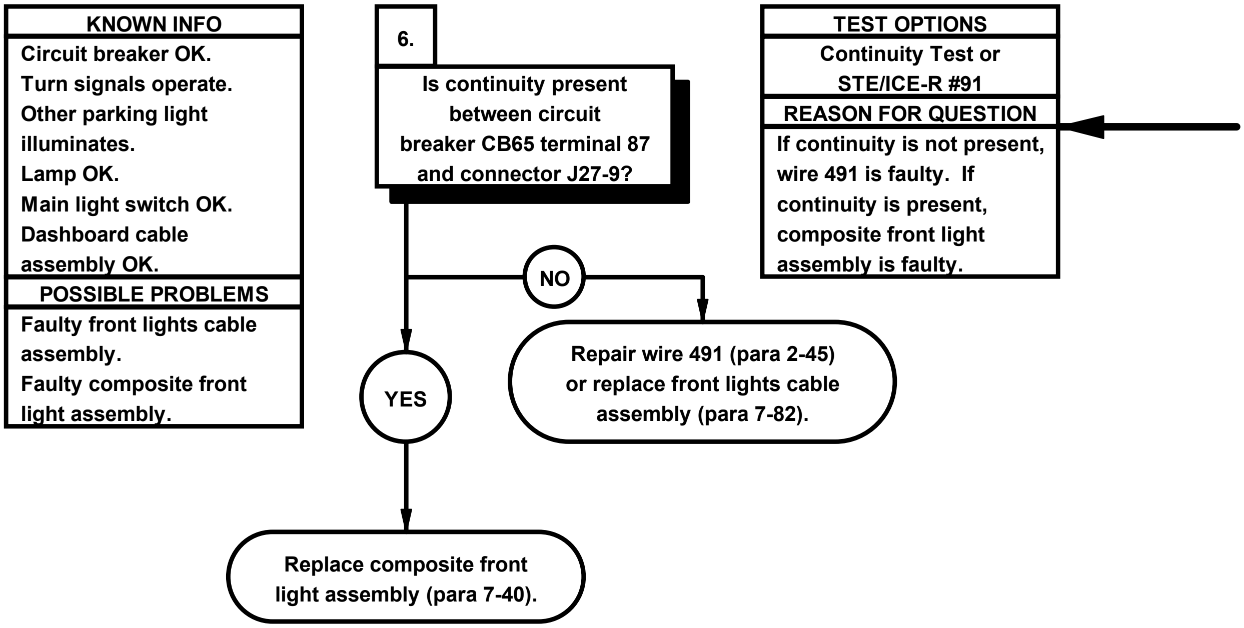


CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX15 from main light switch.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to main light switch terminal L.
(5) Connect negative (-) probe of multimeter to main light switch terminal F.
(6) Position main light switch auxiliary lever to PARK (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace main light switch (para 7-17).
(8) If continuity is present, repair wire 491 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Connect connector PX15 to main light switch.
(10) Install instrument panel assembly (para 7-15).



e44. PARKING LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Turn signals operate.
Other parking light illuminates.
Lamp OK.
Main light switch OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty composite front light assembly.

6\. Is continuity present between circuit breaker CB65 terminal 87 and connector J27-9?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

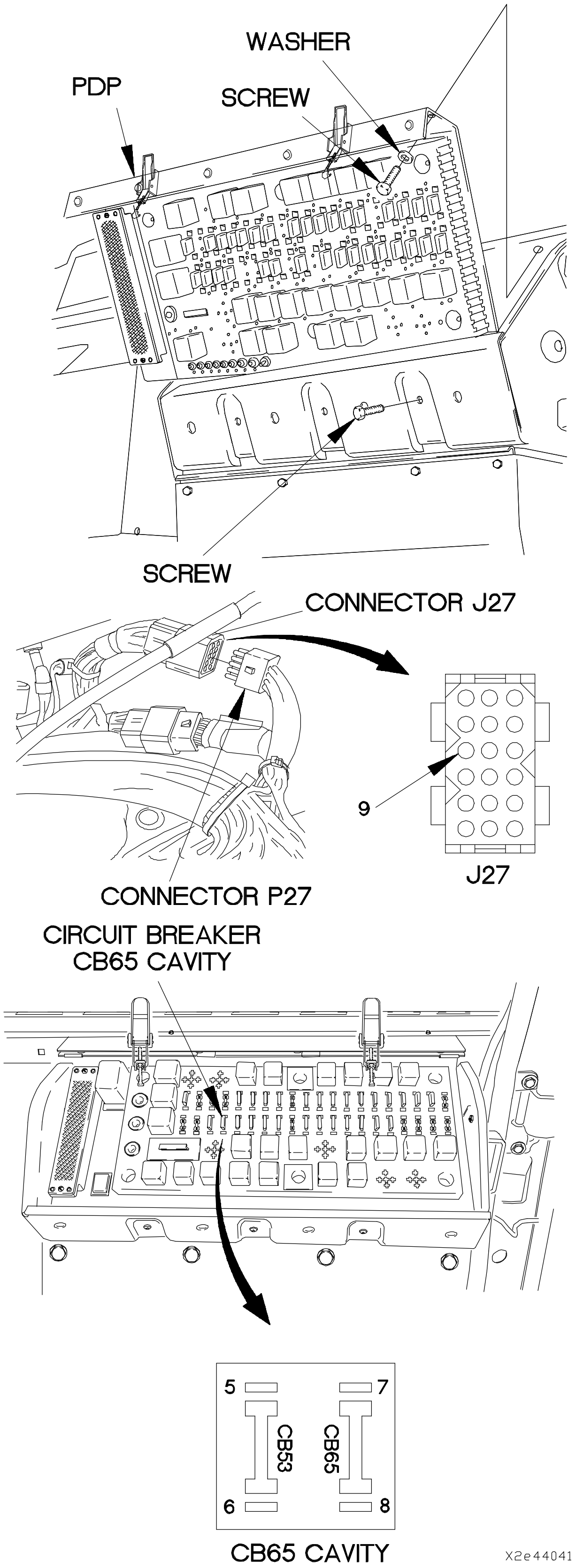
If continuity is not present, wire 491 is faulty. If continuity is present, composite front light assembly is faulty.

Repair wire 491 (para 2-45) or replace front lights cable assembly (para 7-82).

Replace composite front light assembly (para 7-40).

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J27 from connector P27.
(6) Remove circuit breaker CB65 from PDP.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to PDP, terminal 8, where CB65 was removed.
(9) Connect negative (-) probe of multimeter to connector J27-9 and note reading on multimeter.
(10) If continuity is not present, repair wire 491(para 2-45) or replace front lights cable assembly (para 7-82).
(11) If continuity is present, replace composite front light assembly (para 7-40).
(12) Install lamp in socket.
(13) Install preformed packing and cover on housing with five screws.
(14) Connect connector J27 to connector P27.
(15) Install PDP on dashboard with three screws.
(16) Install three washers and screws in PDP.
(17) Install circuit breaker CB65 in PDP.
(18) Install PDP cover (para 16-2).



e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

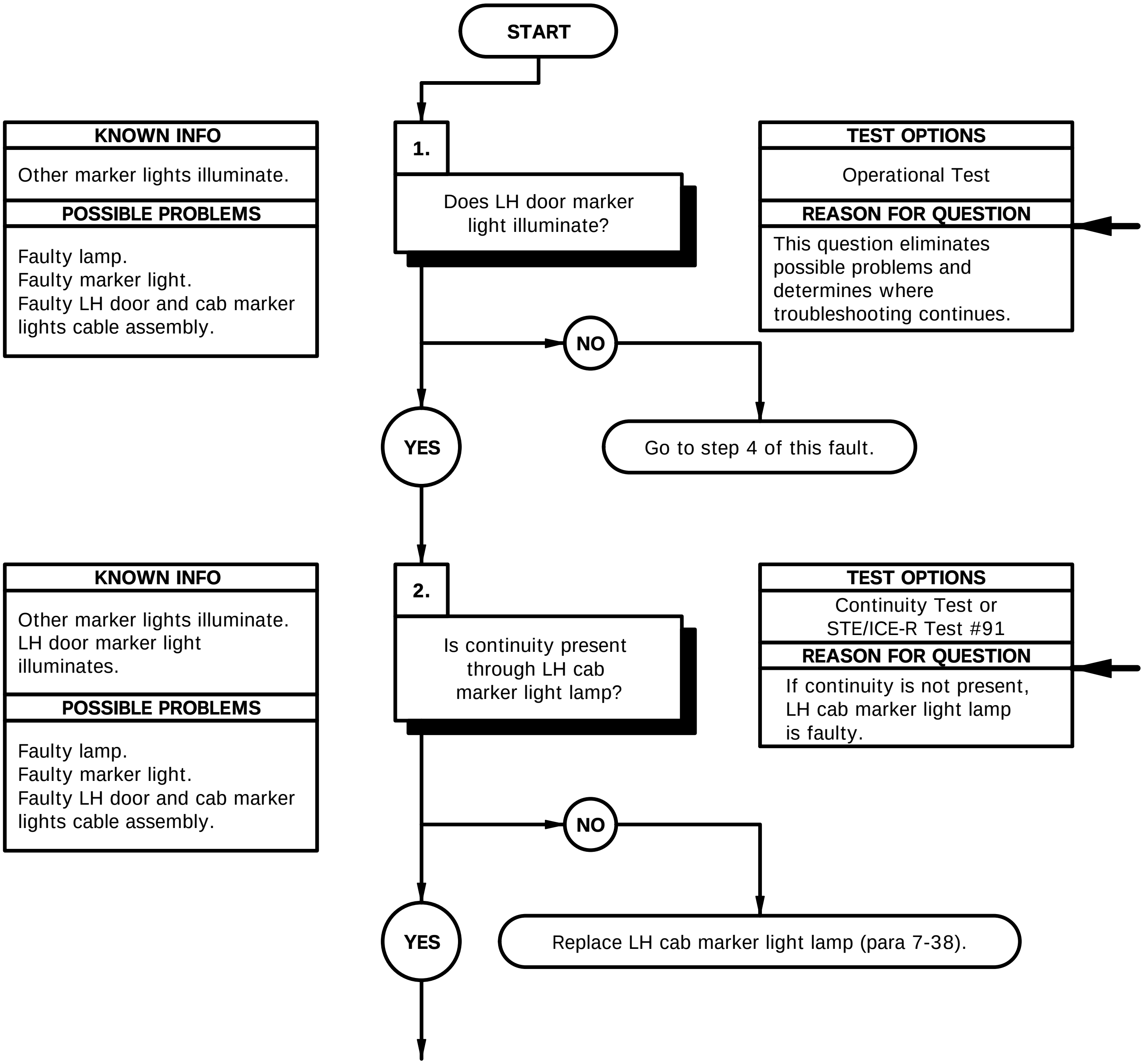
Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (4) (Item 82, Appendix G)
Gasket (2) (P/N 12421469)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Other marker lights illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

1. Does LH door marker light illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 4 of this fault.

YES:

KNOWN INFO

Other marker lights illuminate.
LH door marker light illuminates.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

2. Is continuity present through LH cab marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH cab marker light lamp is faulty.

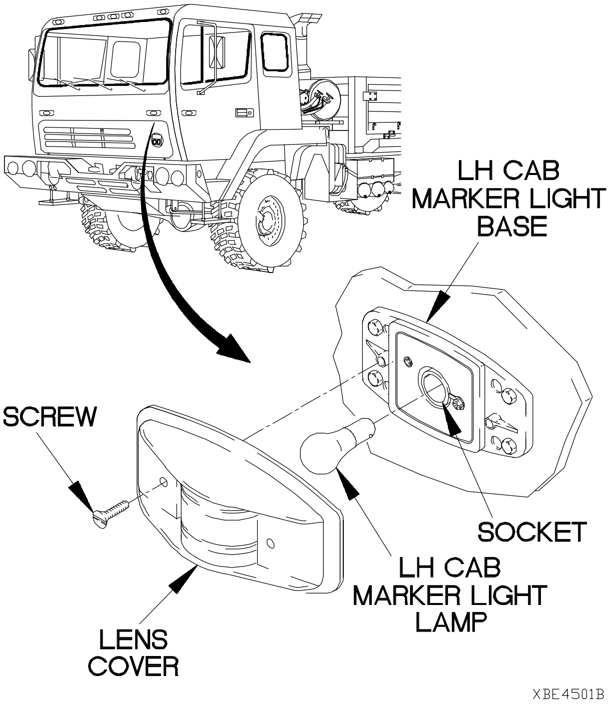
NO: Replace LH cab marker light lamp (para 7-38).

YES:

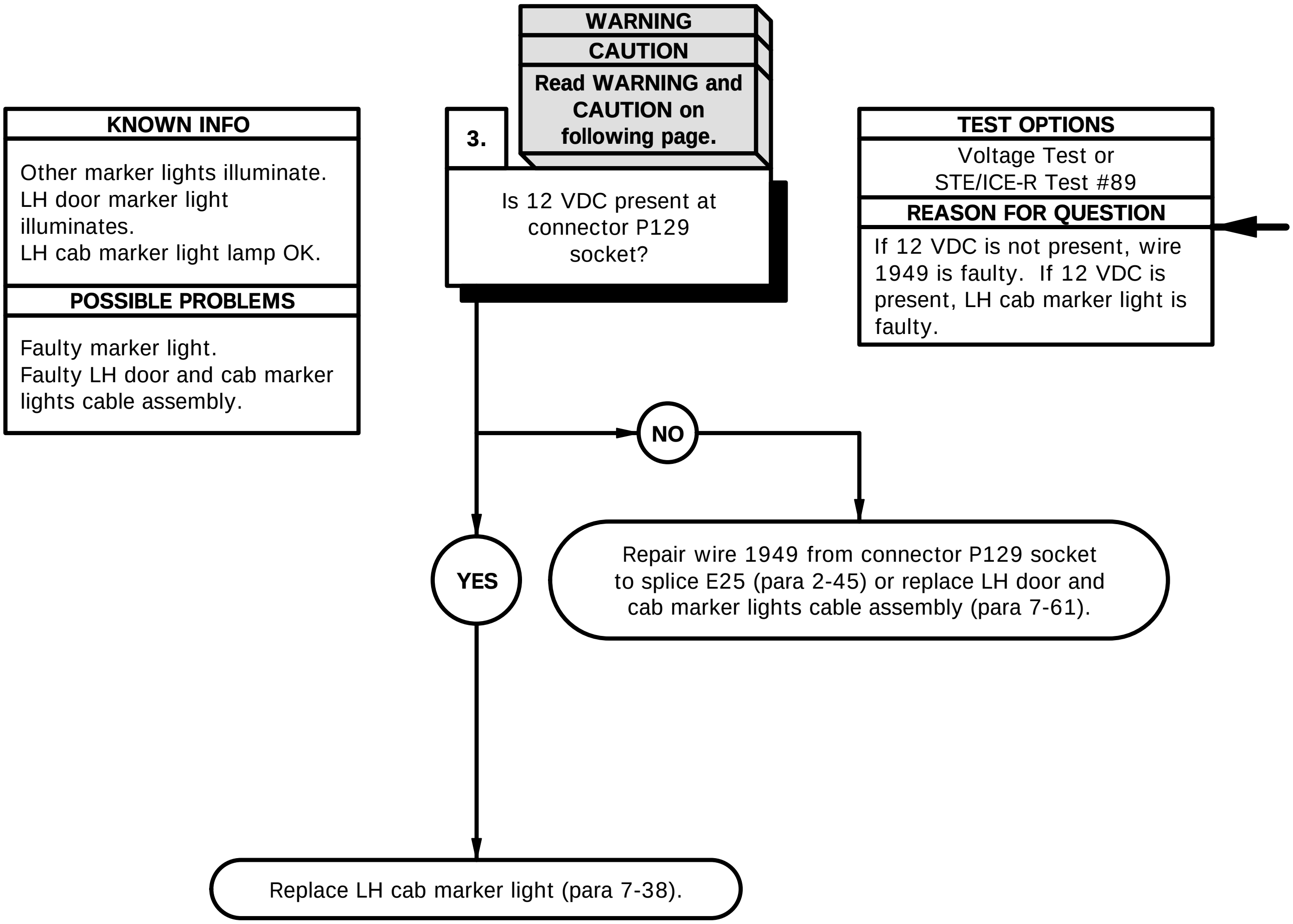
(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) If LH door marker light lamp does not illuminate, go to step 4 of this fault.
(3) Position main light switch to OFF (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Remove two screws and lens cover from LH cab marker light base.
(2) Remove LH marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH marker light lamp (para 7-38).



e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
LH door marker light illuminates.
LH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 12 VDC present at connector P129 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1949 is faulty. If 12 VDC is present, LH cab marker light is faulty.

Repair wire 1949 from connector P129 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).

Replace LH cab marker light (para 7-38).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove four screws from LH cab marker light base.

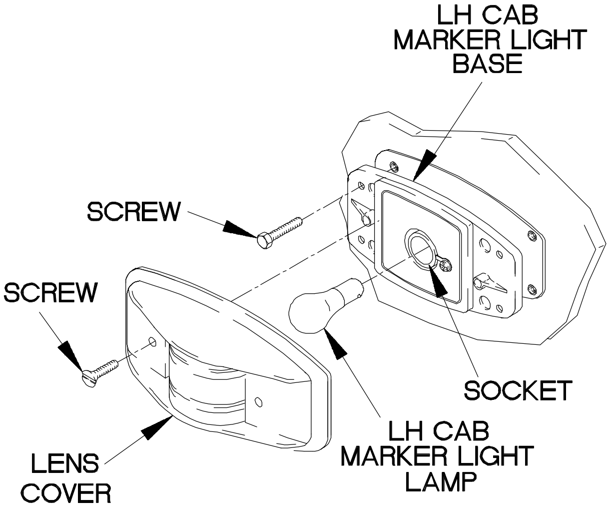
NOTE

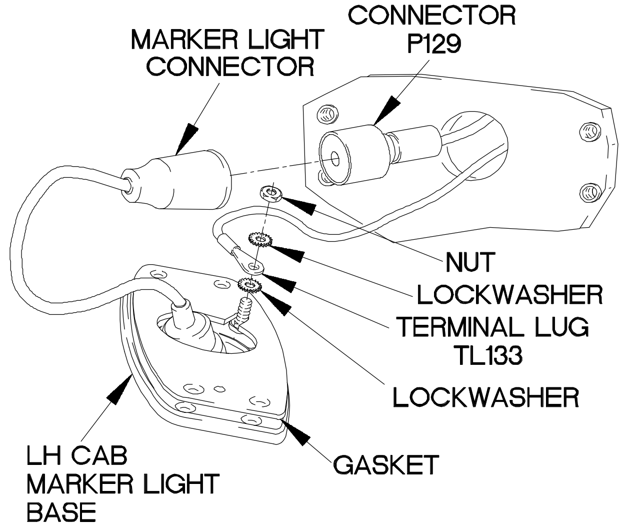
Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug TL133, and lockwasher from LH cab marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P129 from marker light connector.
(4) Remove gasket from LH door marker light base. Discard gasket.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector P129 socket.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 VDC is not present, repair wire 1949 from connector P129 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).
(10) If 12 VDC is present, replace LH cab marker light (para 7-38).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).

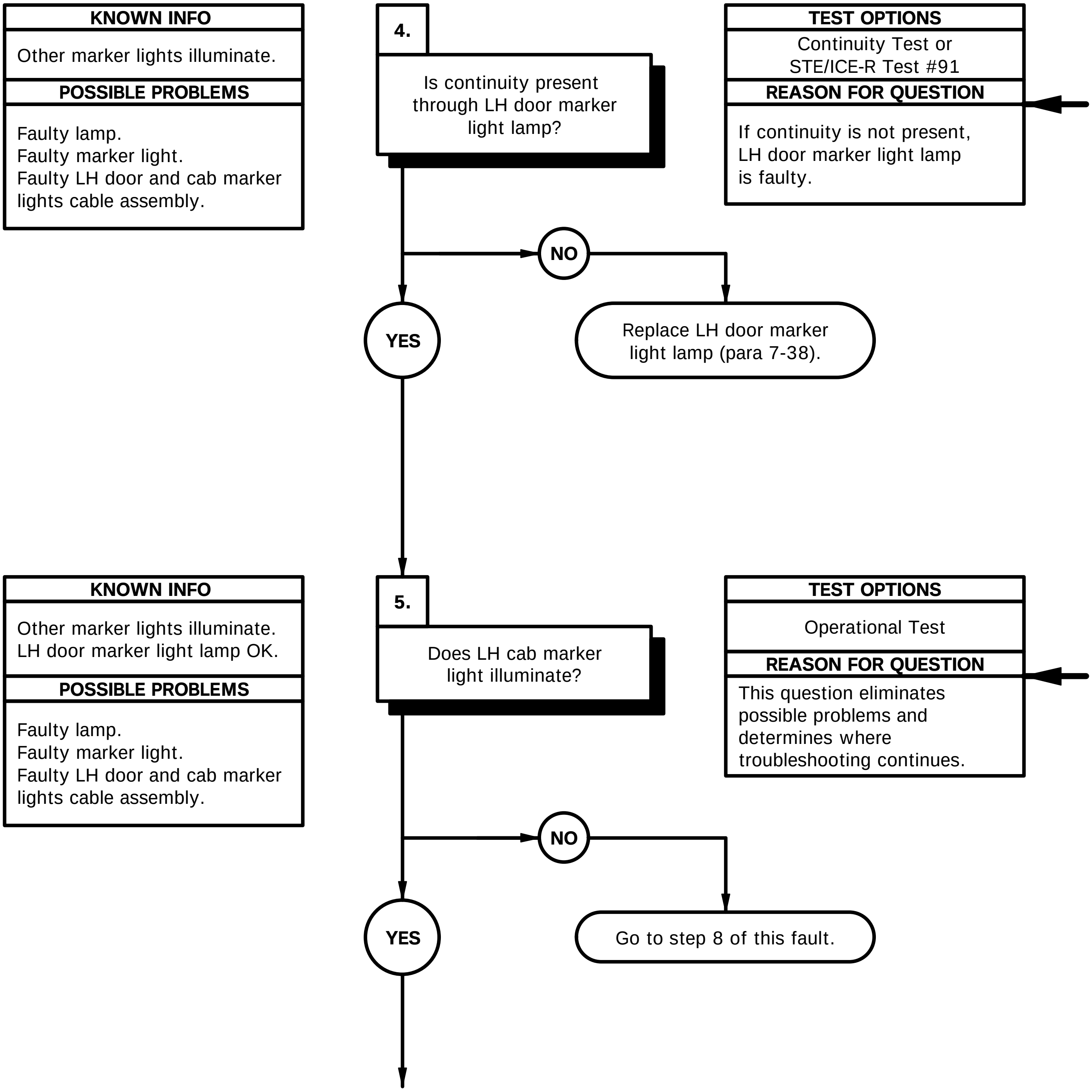
VOLTAGE TEST (CONT)

(12) Install gasket on LH cab marker light base.
(13) Connect marker light connector to connector P129.
(14) Install lockwasher, terminal lug TL133, lockwasher, and nut on back of LH cab marker light base.
(15) Install LH cab marker light base on vehicle with four screws.
(16) Install LH cab marker light lamp in socket.
(17) Install lens cover on base with two screws.





e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

4. Is continuity present through LH door marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH door marker light lamp is faulty.

Replace LH door marker light lamp (para 7-38).

KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

5. Does LH cab marker light illuminate?

TEST OPTIONS

Operational Test

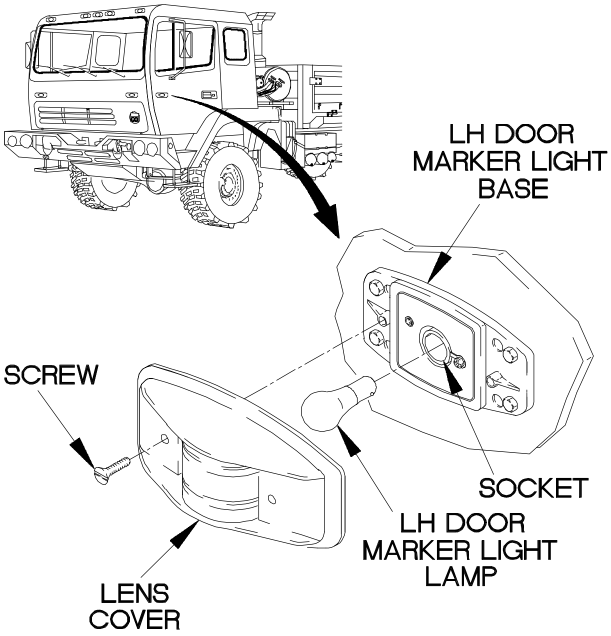
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 8 of this fault.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH door marker light base.
(2) Remove LH door marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH door marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH door marker light lamp (para 7-38).



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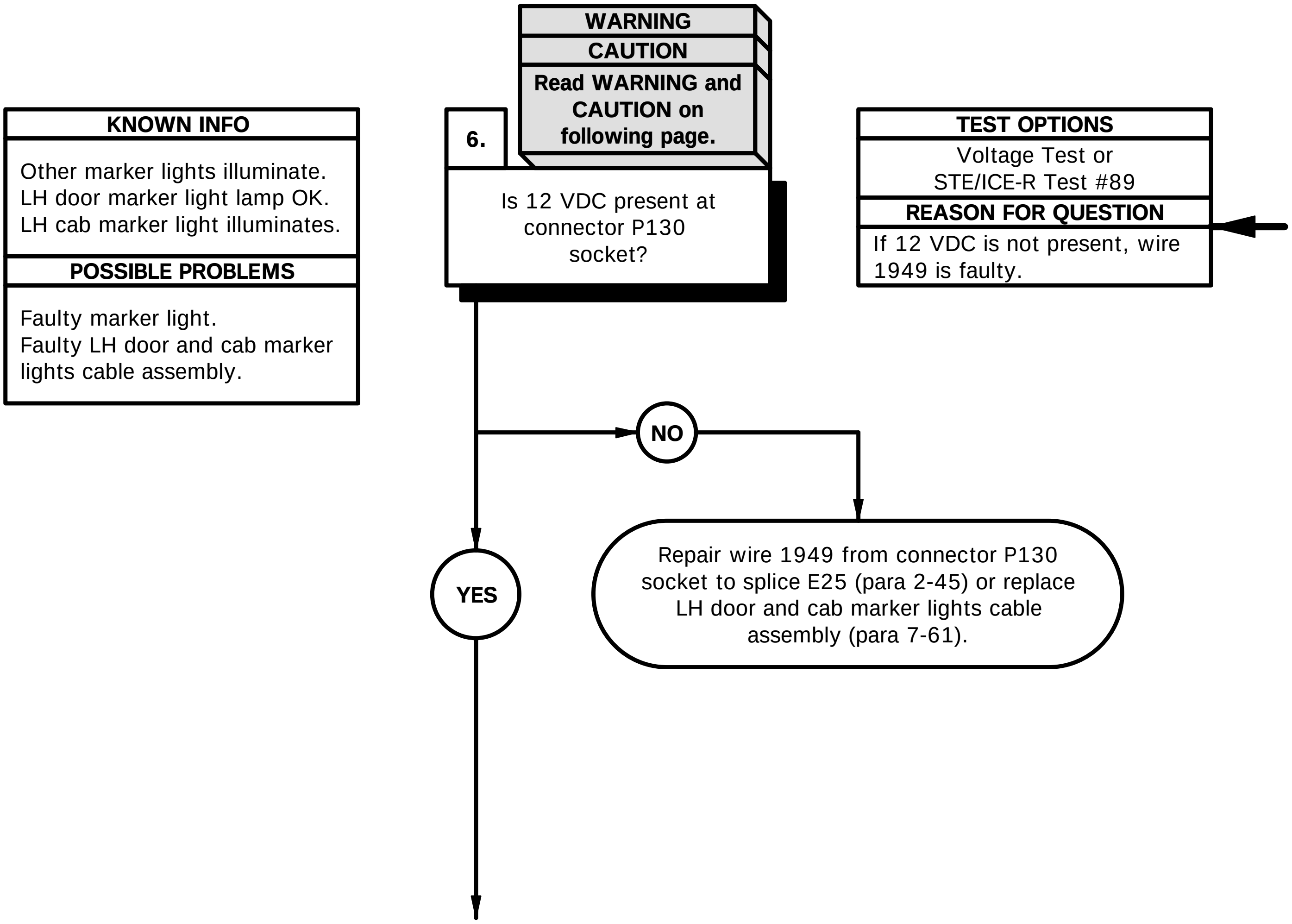
(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) If LH cab marker light lamp does not illuminate, go to step 8 of this fault.
(3) Position main light switch to OFF (TM 9-2320-366-10-1).

e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.
LH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

6. Is 12 VDC present at connector P130 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1949 is faulty.

Repair wire 1949 from connector P130 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

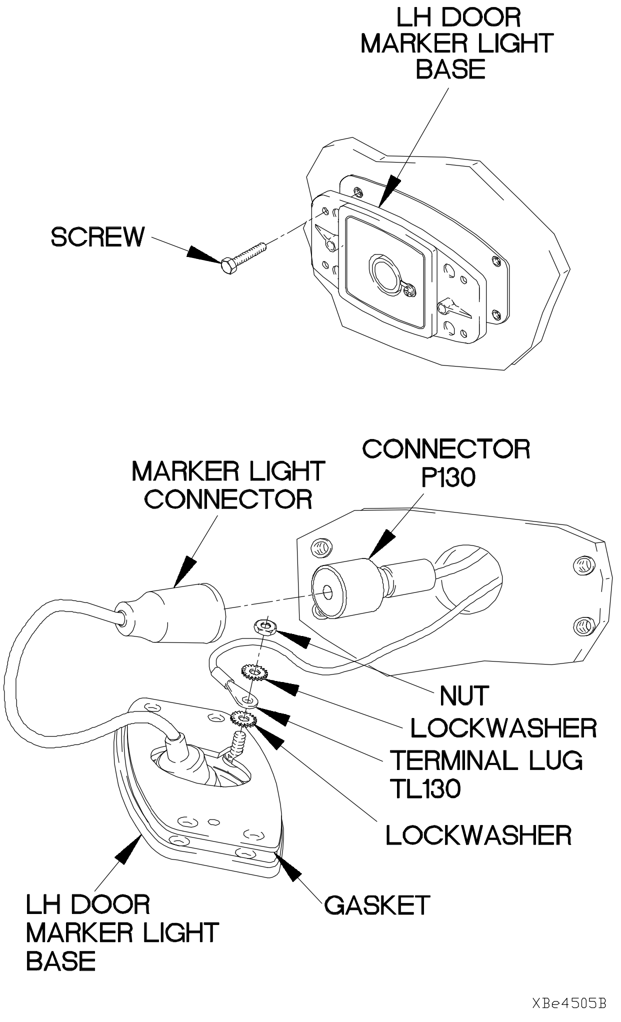
VOLTAGE TEST

(1) Remove four screws from LH door marker light base.

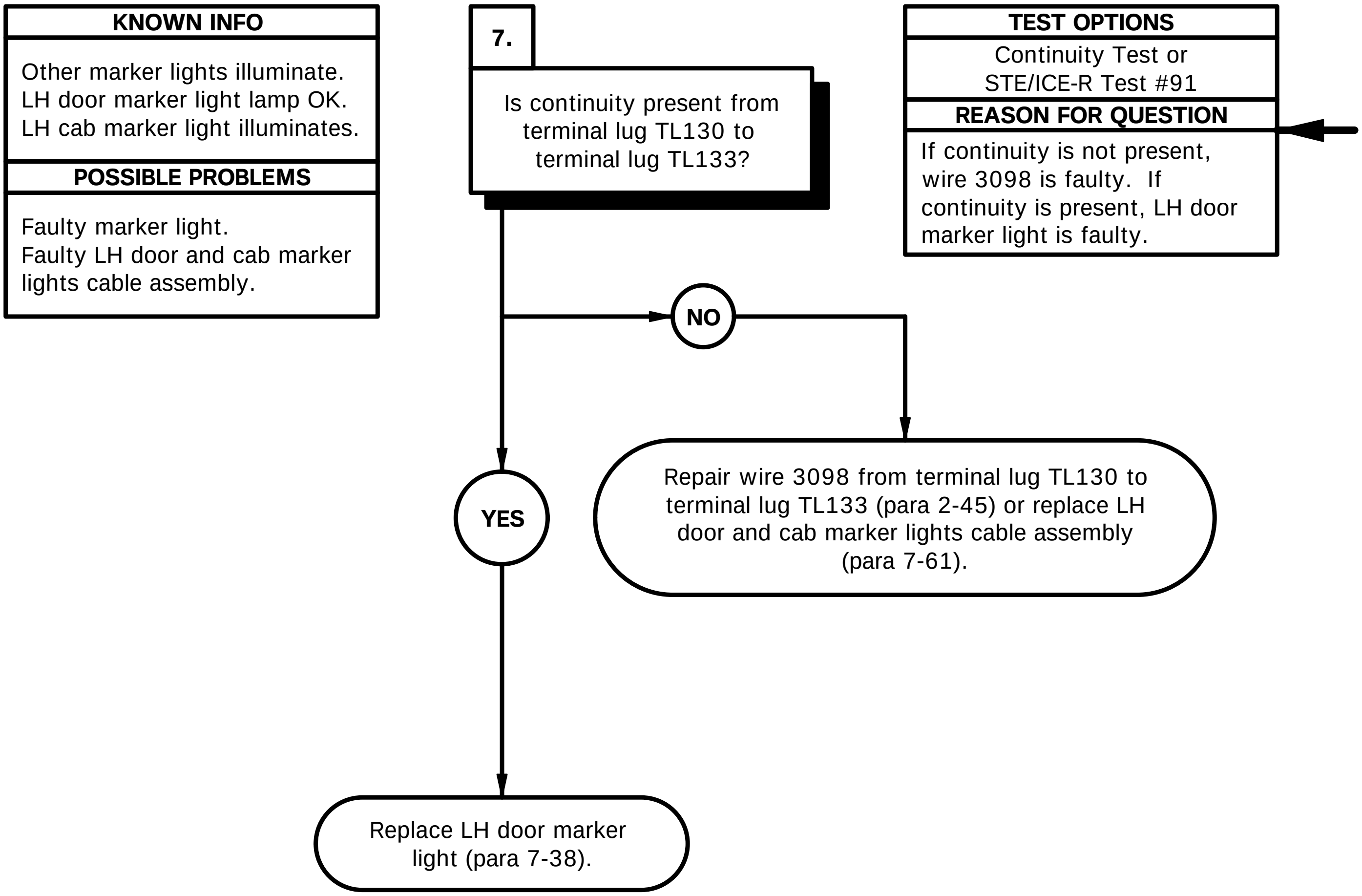
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug TL130, and lockwasher from LH door marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P130 from marker light connector.
(4) Remove gasket from LH door marker light base. Discard gasket.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector P130 socket.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 VDC is not present, repair wire 1949 from connector P130 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).



e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.
LH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

7.

Is continuity present from terminal lug TL130 to terminal lug TL133?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3098 is faulty. If continuity is present, LH door marker light is faulty.

Repair wire 3098 from terminal lug TL130 to terminal lug TL133 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).

Replace LH door marker light (para 7-38).

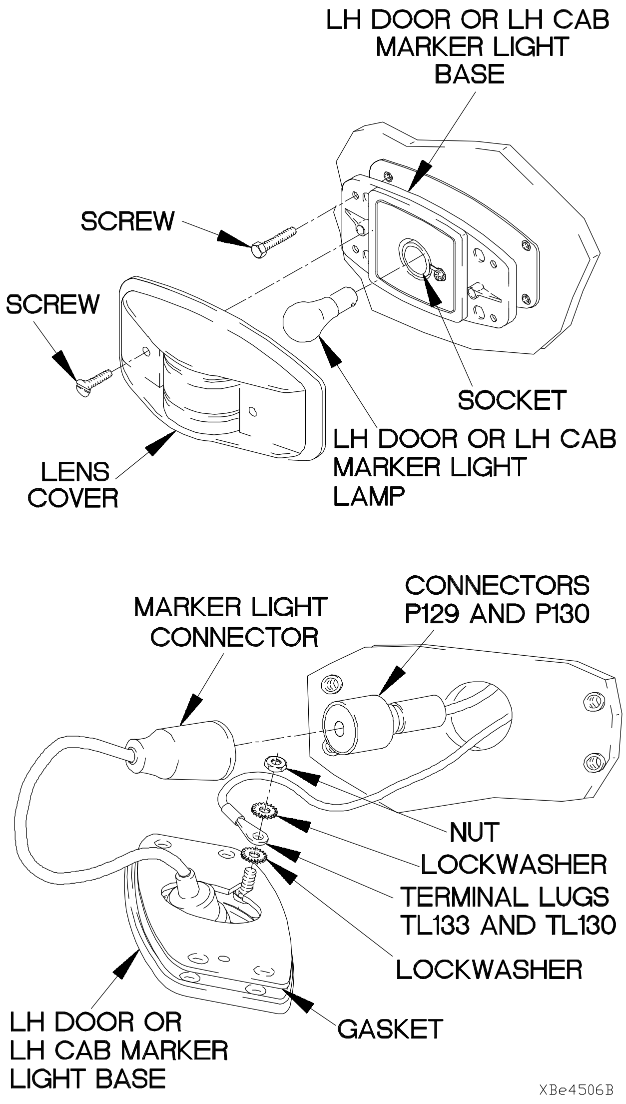
CONTINUITY TEST

(1) Remove two screws and lens cover from LH cab marker light base.
(2) Remove LH cab marker light lamp from socket.
(3) Remove four screws from LH cab marker light base.

NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(4) Remove nut, lockwasher, terminal lug TL133, and lockwasher from LH cab marker light base. Discard lockwashers.
(5) Extend base and disconnect connector P129 from marker light connector.
(6) Remove gasket from LH cab marker light base. Discard gasket.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to terminal lug TL130.
(9) Connect negative (-) probe of multimeter to terminal lug TL133 and note reading on multimeter.
(10) If continuity is not present, repair wire 3098 from terminal lug TL130 to terminal lug TL133 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).
(11) If continuity is present, replace LH door marker light (para 7-38).
(12) Install gasket on LH cab marker light base.
(13) Connect marker light connector to connector P129.
(14) Install lockwasher, terminal lug TL133, lockwasher, and nut on back of LH cab marker light base.
(15) Install LH cab marker light base on vehicle with four screws.
(16) Install LH cab marker light lamp in socket.
(17) Install lens cover on base with two screws.
(18) Install gasket on LH door marker light base.
(19) Connect marker light connector to connector P130.
(20) Install lockwasher, terminal lug TL130, lockwasher, and nut on back of base.
(21) Install LH door marker light base on vehicle with four screws.
(22) Install LH door marker light lamp in socket.
(23) Install lens cover on base with two screws.



e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.

POSSIBLE PROBLEMS

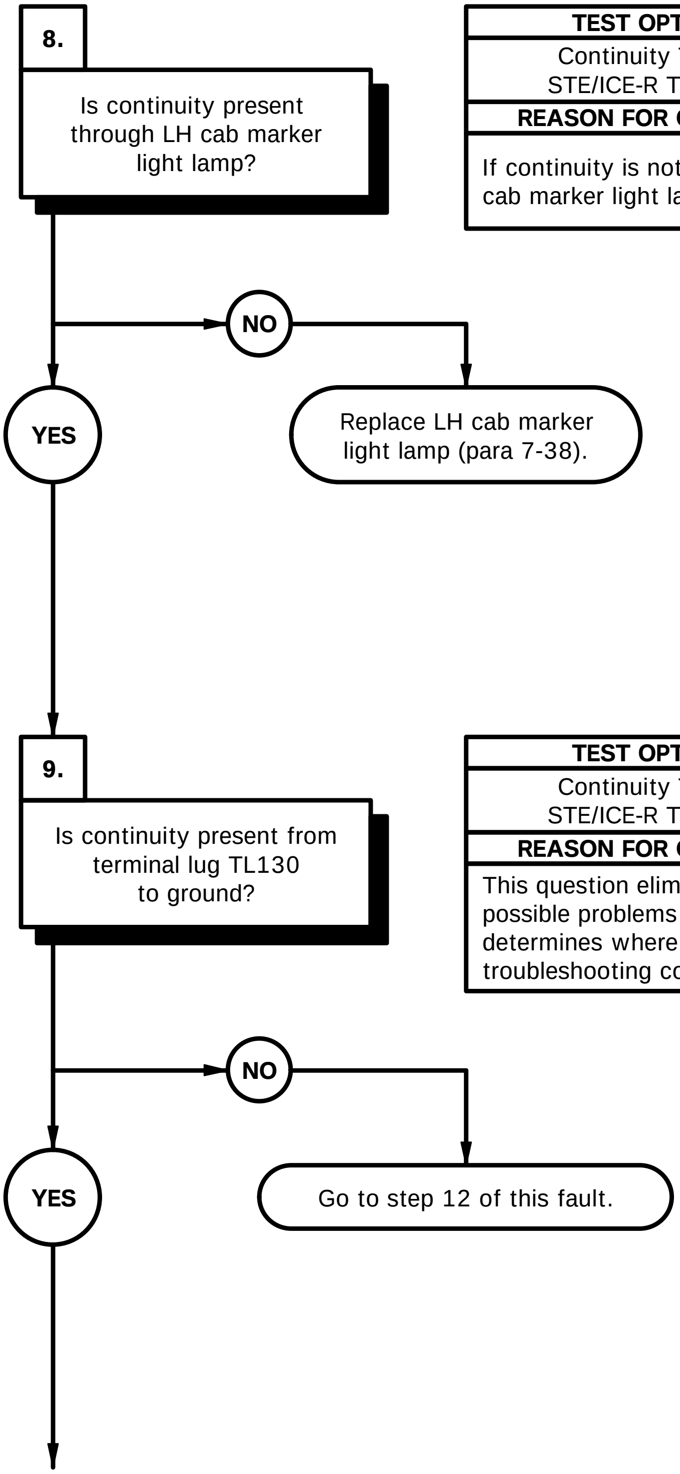
Faulty lamp.
Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH cab marker light lamp is faulty.



8. Is continuity present through LH cab marker light lamp?

NO: Replace LH cab marker light lamp (para 7-38).

YES: go to step 9.

KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.
LH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

9. Is continuity present from terminal lug TL130 to ground?

NO: Go to step 12 of this fault.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH cab marker light base.
(2) Remove LH cab marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH cab marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH cab marker light lamp (para 7-38).

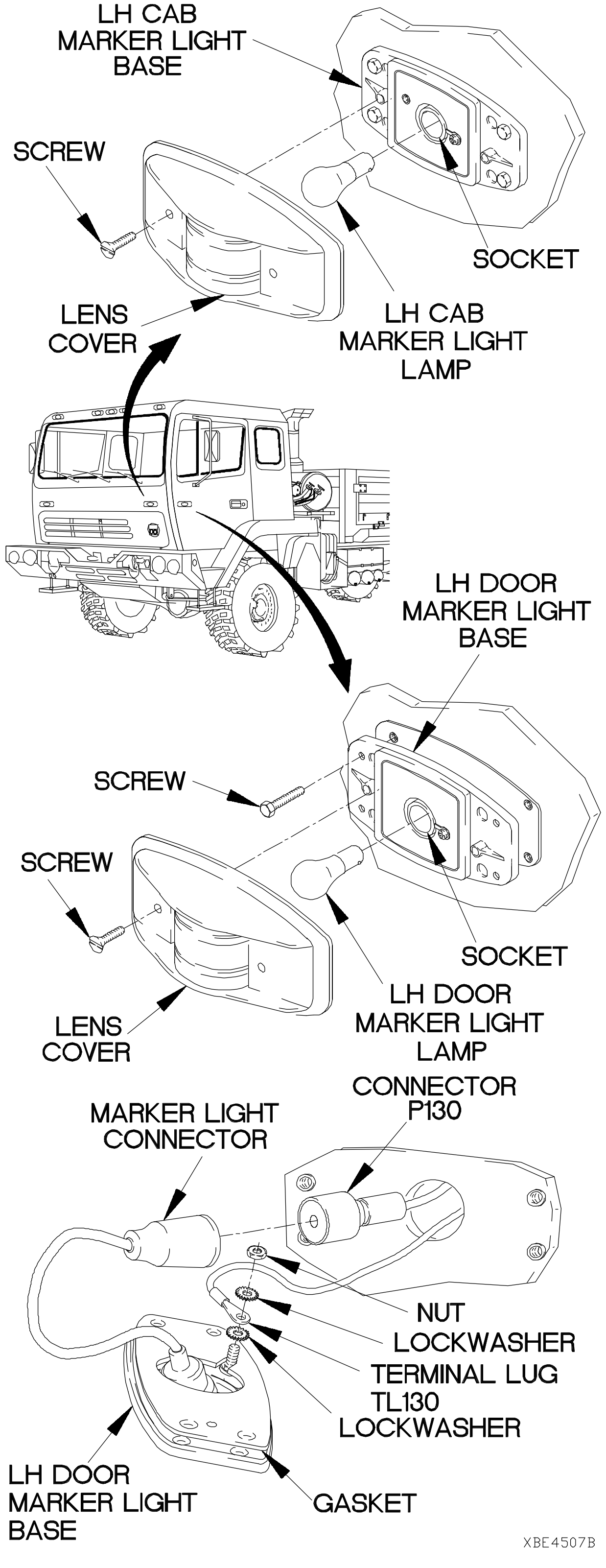
CONTINUITY TEST

(1) Remove two screws and lens cover from LH door marker light base.
(2) Remove LH door marker light lamp from socket.
(3) Remove four screws from LH door marker light.

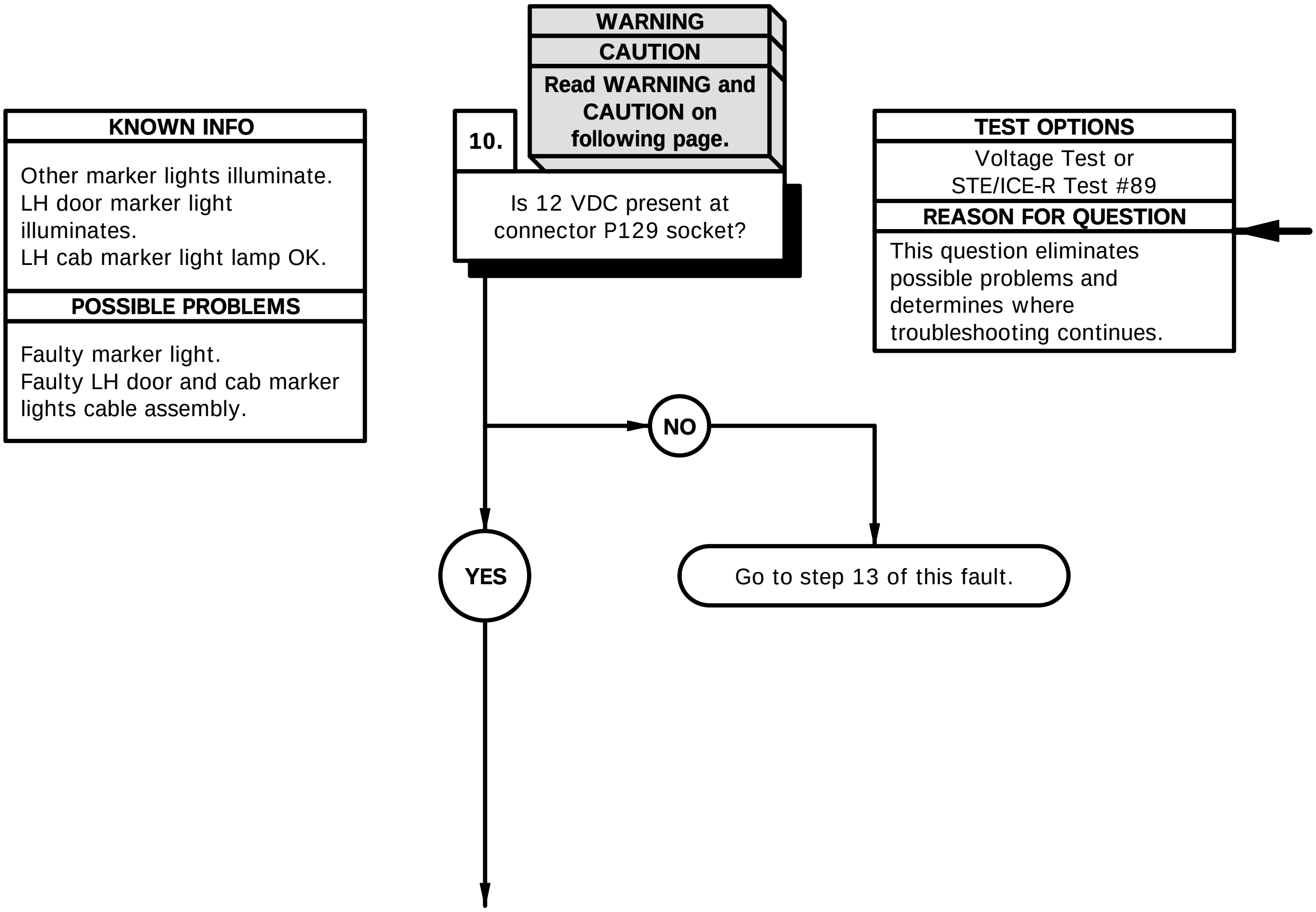
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(4) Remove nut, lockwasher, terminal lug TL130, and lockwasher from LH door marker light base. Discard lockwashers.
(5) Extend base and disconnect connector P130 from marker light connector.
(6) Remove gasket from LH door marker light base. Discard gasket.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to terminal lug TL130.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) If continuity is not present from terminal lug TL130 to ground, go to step 12 of this fault.



e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
LH door marker light illuminates.
LH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

10. Is 12 VDC present at connector P129 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 13 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

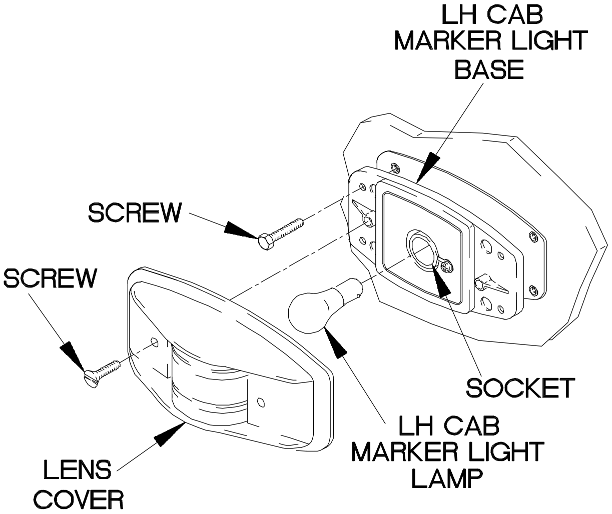
VOLTAGE TEST

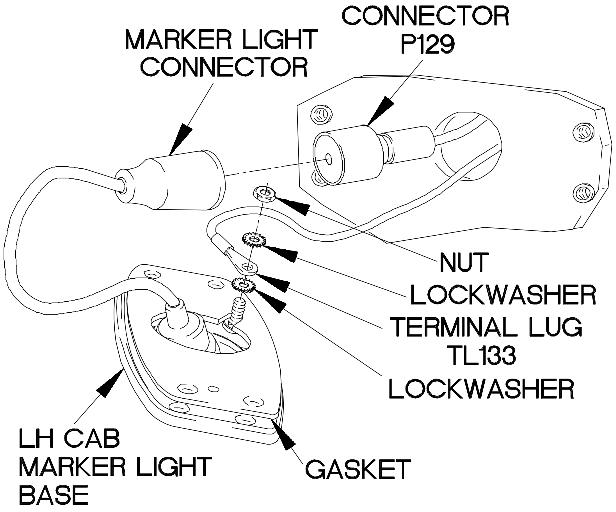
(1) Remove four screws from LH cab marker light base.

NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug TL133, and lockwasher from LH cab marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P129 from marker light connector.
(4) Remove gasket from LH cab marker light base. Discard gasket.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector P129 socket.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 VDC is not present, go to step 13 of this fault.
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Install gasket on LH cab marker light base.
(12) Connect marker light connector to connector P129.
(13) Install lockwasher, terminal lug TL133, lockwasher, and nut on back of LH cab marker light base.
(14) Install LH cab marker light base on vehicle with four screws.
(15) Install LH cab marker light lamp in socket.
(16) Install lens cover on base with two screws.





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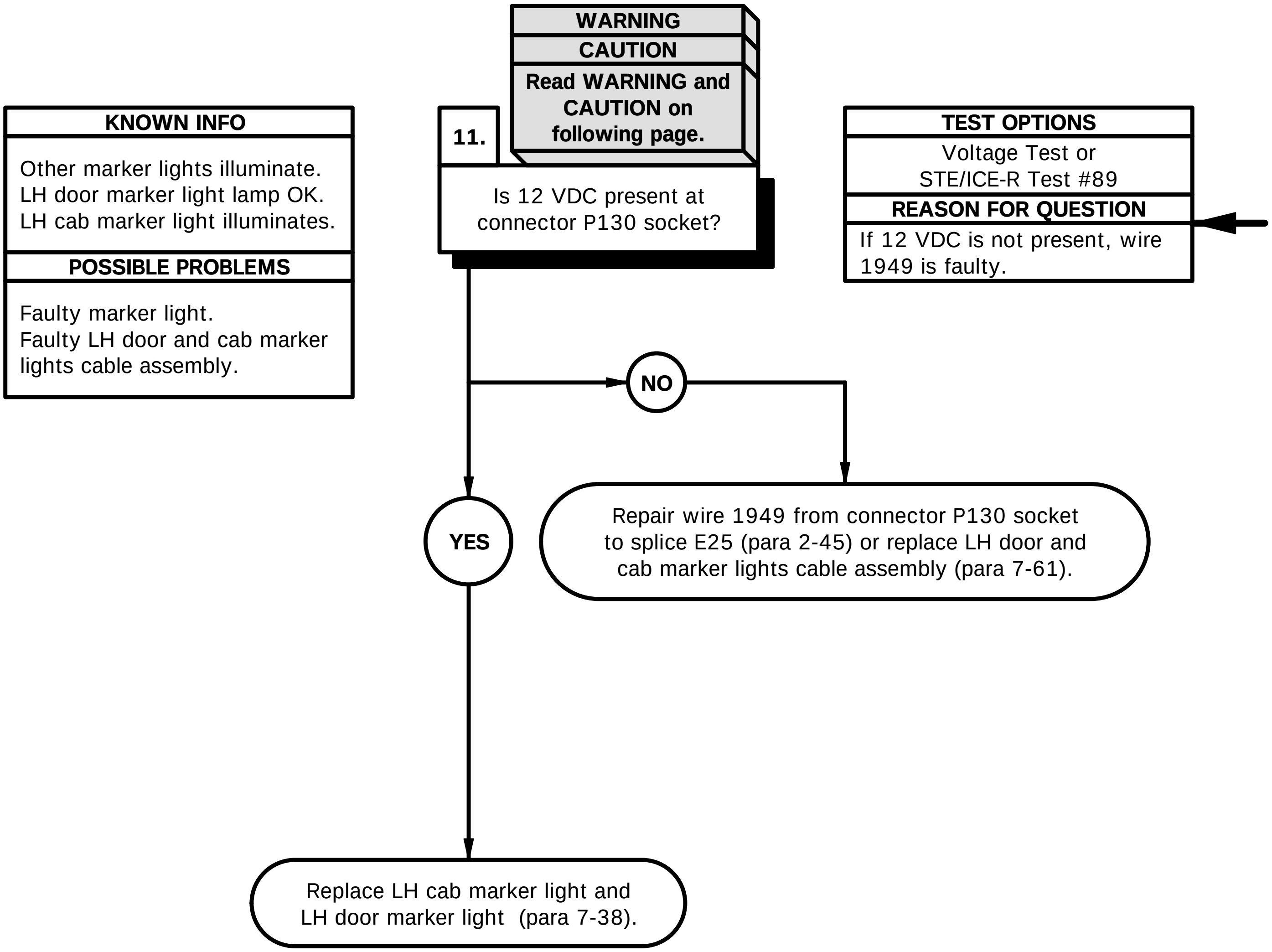
e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.
LH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

11.

Is 12 VDC present at connector P130 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1949 is faulty.

NO

Repair wire 1949 from connector P130 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).

YES

Replace LH cab marker light and LH door marker light (para 7-38).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

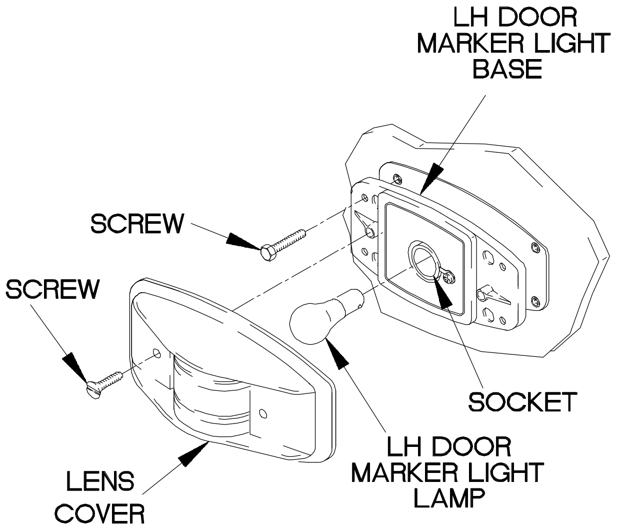
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

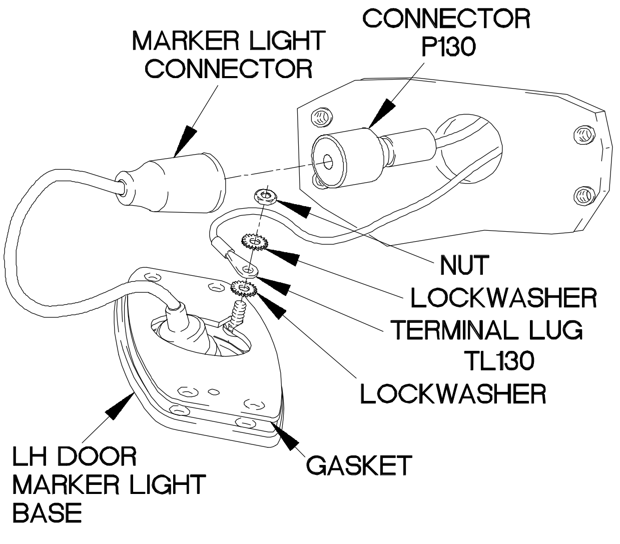
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector P130 socket.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 VDC is not present, repair wire 1949 from connector P130 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).
(6) If 12 VDC is present, replace LH cab marker light and LH door marker light (para 7-38).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Install gasket on LH door marker light base.
(9) Connect marker light connector to connector P130.
(10) Install lockwasher, terminal lug TL130, lockwasher, and nut on back of LH door marker light base.
(11) Install LH door marker light base on vehicle with four screws.
(12) Install LH door marker light lamp in socket.
(13) Install lens cover on base with two screws.





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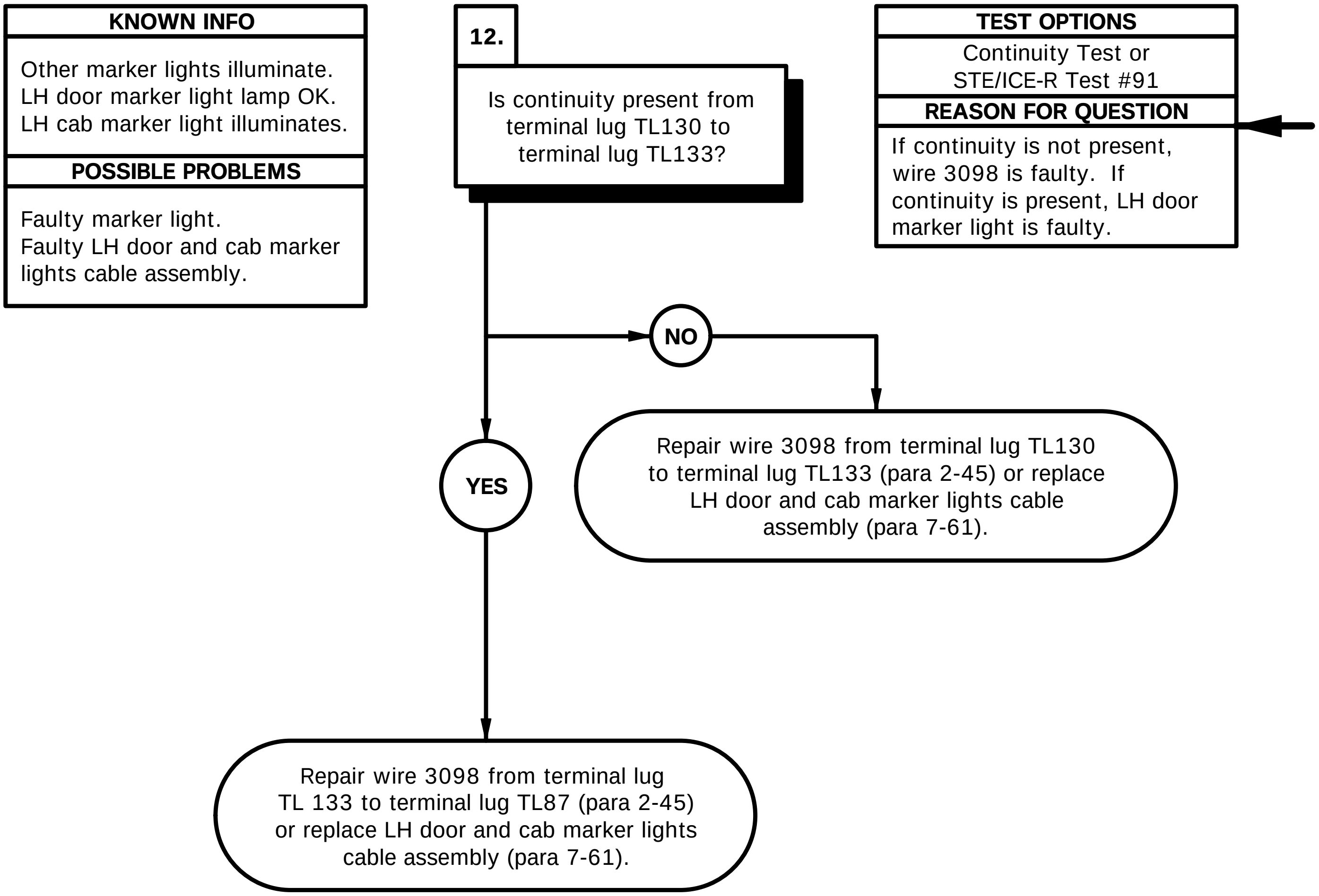
e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.
LH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

12.

Is continuity present from terminal lug TL130 to terminal lug TL133?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3098 is faulty. If continuity is present, LH door marker light is faulty.

NO

Repair wire 3098 from terminal lug TL130 to terminal lug TL133 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).

YES

Repair wire 3098 from terminal lug TL 133 to terminal lug TL87 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).

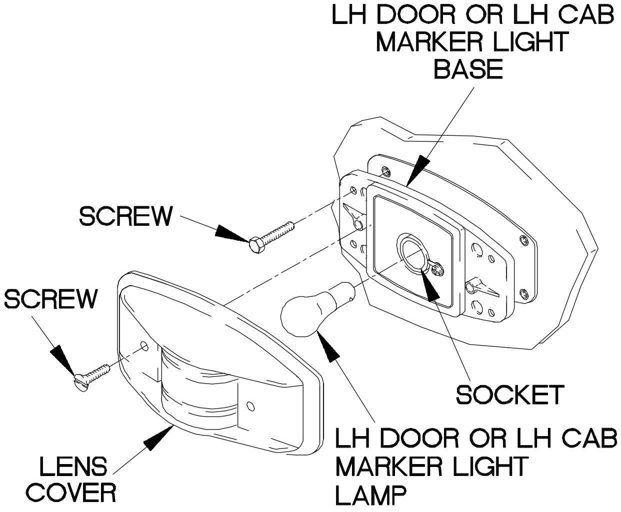
CONTINUITY TEST

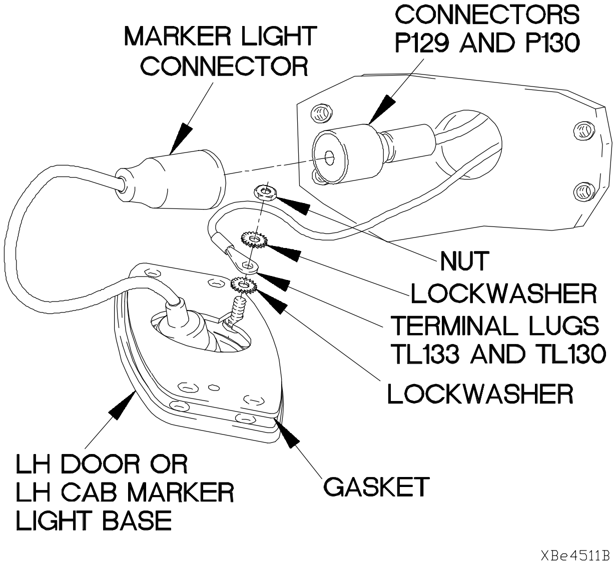
(1) Remove four screws from LH cab marker light base.

NOTE

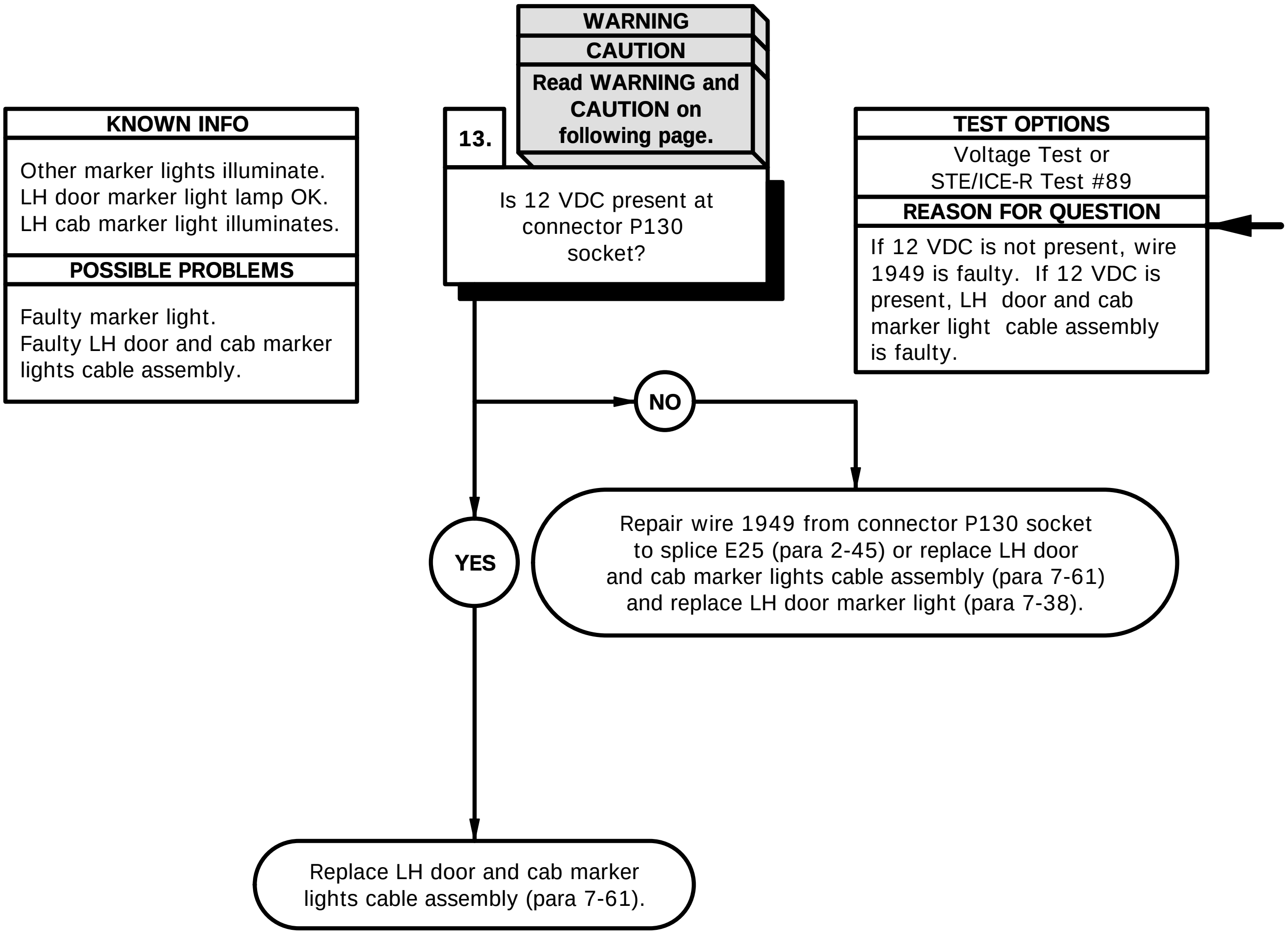
Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug TL133, and lockwasher from LH cab marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P129 from marker light connector.
(4) Remove gasket from LH cab marker light base. Discard gasket.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to terminal lug TL130.
(7) Connect negative (-) probe of multimeter to terminal lug TL133 and note reading on multimeter.
(8) If continuity is not present, repair wire 3098 from terminal lug TL130 to terminal lug TL133 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61).
(9) If continuity is present, replace LH door marker light (para 7-38).
(10) Install gasket on LH cab marker light base.
(11) Connect marker light connector to connector P129.
(12) Install lockwasher, terminal lug TL133, lockwasher, and nut on back of LH cab marker light base.
(13) Install LH cab marker light base on vehicle with four screws.
(14) Install LH cab marker light lamp in socket.
(15) Install lens cover on base with two screws.
(16) Install gasket on LH door marker light base.
(17) Connect marker light connector to connector P130.
(18) Install lockwasher, terminal lug TL130, lockwasher, and nut on back of LH door marker light base.
(19) Install LH door marker light base on vehicle with four screws.
(20) Install LH door marker light lamp in socket.
(21) Install lens cover on base with two screws.





e45. LH DOOR AND/OR LH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
LH door marker light lamp OK.
LH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty LH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

13. Is 12 VDC present at connector P130 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1949 is faulty. If 12 VDC is present, LH door and cab marker light cable assembly is faulty.

Repair wire 1949 from connector P130 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61) and replace LH door marker light (para 7-38).

Replace LH door and cab marker lights cable assembly (para 7-61).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

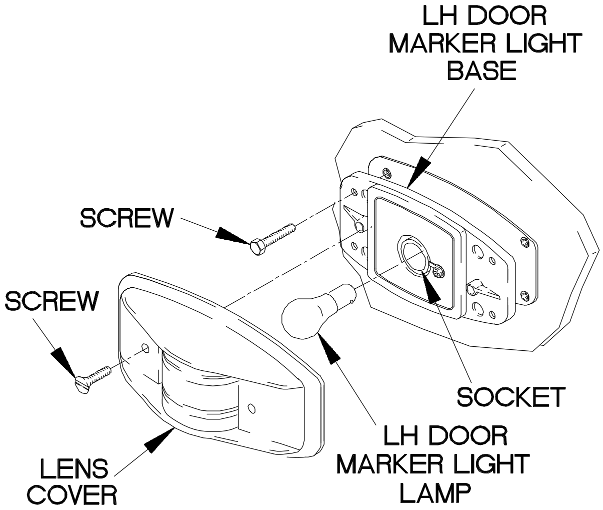
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

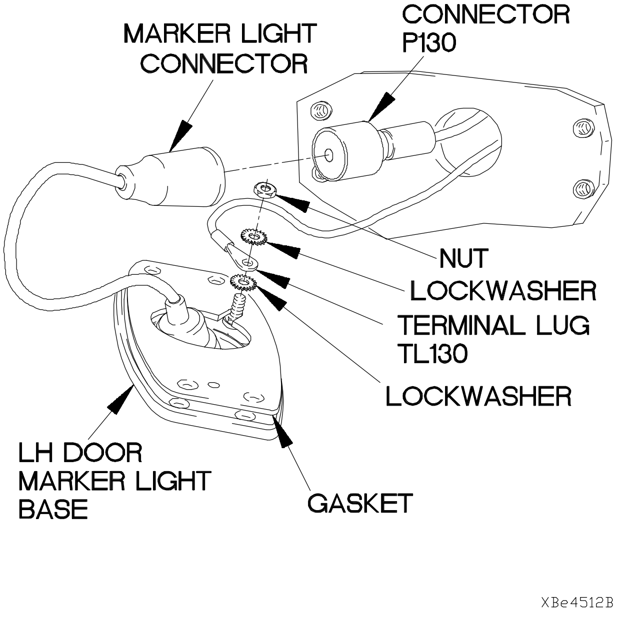
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to connector P130 socket.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 VDC is not present, repair wire 1949 from connector P130 socket to splice E25 (para 2-45) or replace LH door and cab marker lights cable assembly (para 7-61) and replace LH door marker light (para 7-38).
(6) If 12 VDC is present, replace LH door and cab marker light cable assembly (para 7-61).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Install gasket on LH door marker light base.
(9) Connect marker light connector to connector P130.
(10) Install lockwasher, terminal lug TL130, lockwasher, and nut on back of LH door marker light base.
(11) Install LH door marker light base on vehicle with four screws.
(12) Install LH door marker light lamp in socket.
(13) Install lens cover on base with two screws.





e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

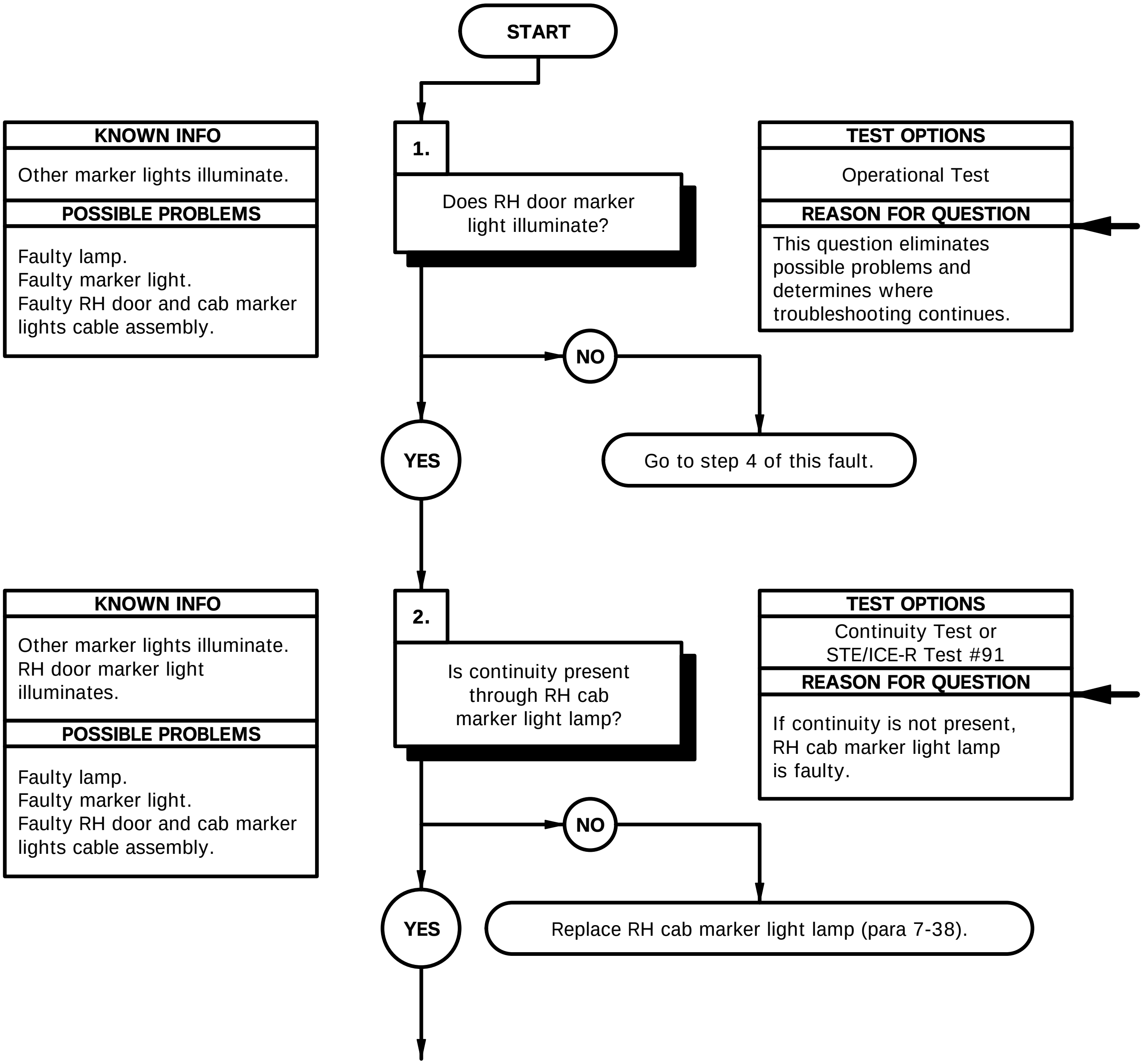
Equipment Conditions
Engine shut down (TM 9-23230-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICR-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (4) (Item 82, Appendix G)
Gasket (2) (Item 24, Appendix G)

Personnel Required
(2)

References
TM 9-4910-571-12&P



START

KNOWN INFO

Other marker lights illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

1. Does RH door marker light illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 4 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
RH door marker light illuminates.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

2. Is continuity present through RH cab marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

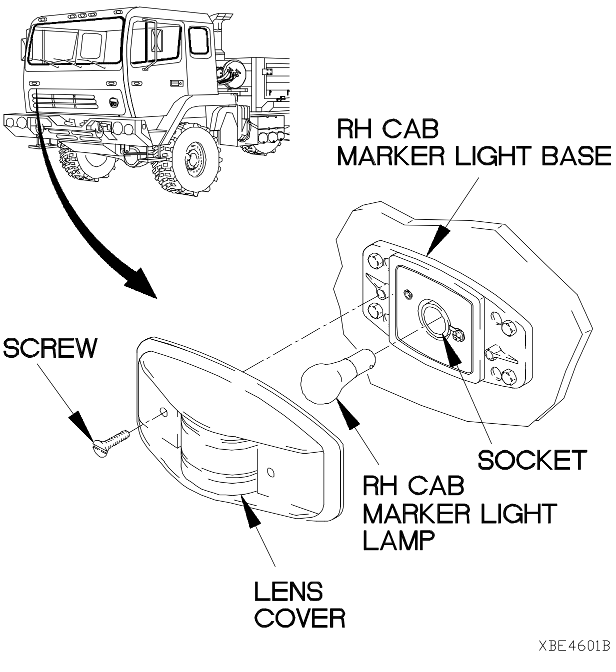
REASON FOR QUESTION

If continuity is not present, RH cab marker light lamp is faulty.

NO — Replace RH cab marker light lamp (para 7-38).

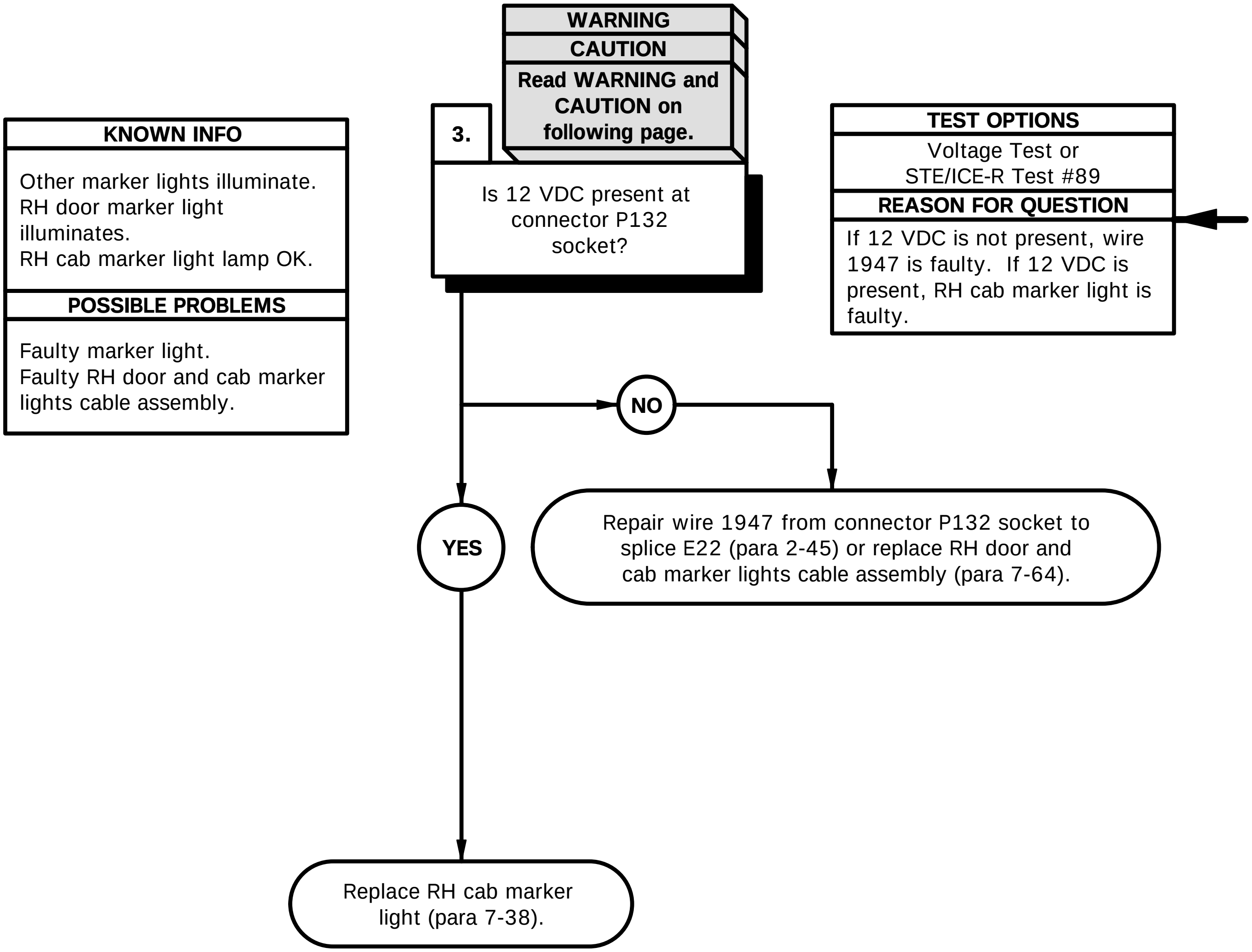
YES

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) If RH door marker light lamp does not illuminate, go to step 4 of this fault.
(3) Position main light switch to OFF (TM 9-2320-366-10-1).



CONTINUITY TEST
(1) Remove two screws and lens cover from RH cab marker light base. (2) Remove RH marker light lamp from socket. (3) Set multimeter to ohms. (4) Check continuity through RH marker light lamp and note reading on multimeter. (5) If continuity is not present, replace RH marker light lamp (para 7-38).

e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
RH door marker light illuminates.
RH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

WARNING
CAUTION
Read WARNING and CAUTION on following page.

3. Is 12 VDC present at connector P132 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1947 is faulty. If 12 VDC is present, RH cab marker light is faulty.

Repair wire 1947 from connector P132 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).

Replace RH cab marker light (para 7-38).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove four screws from RH cab marker light base.

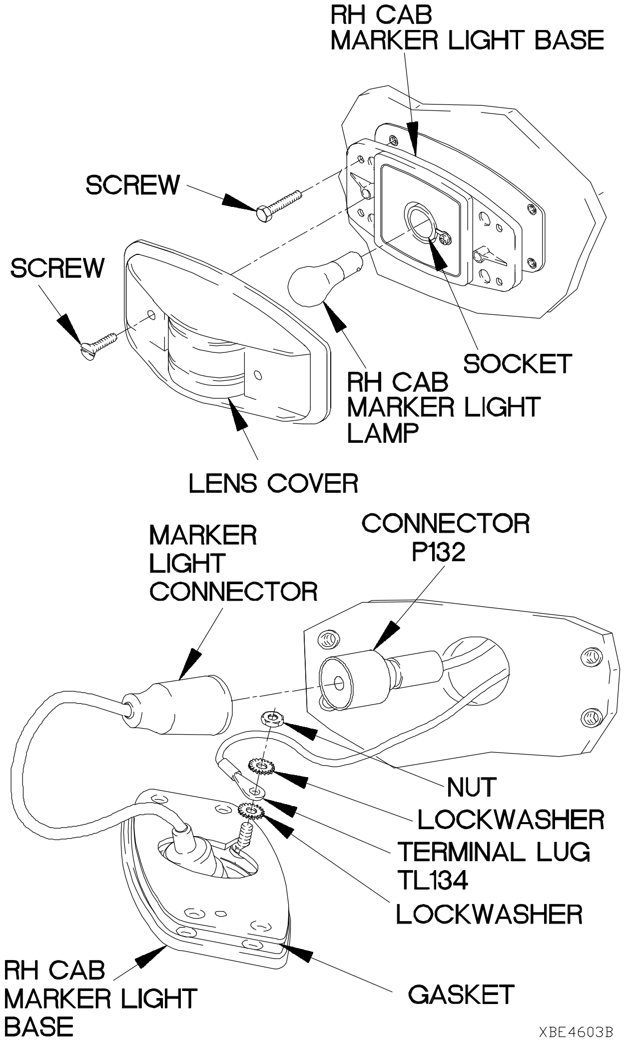
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

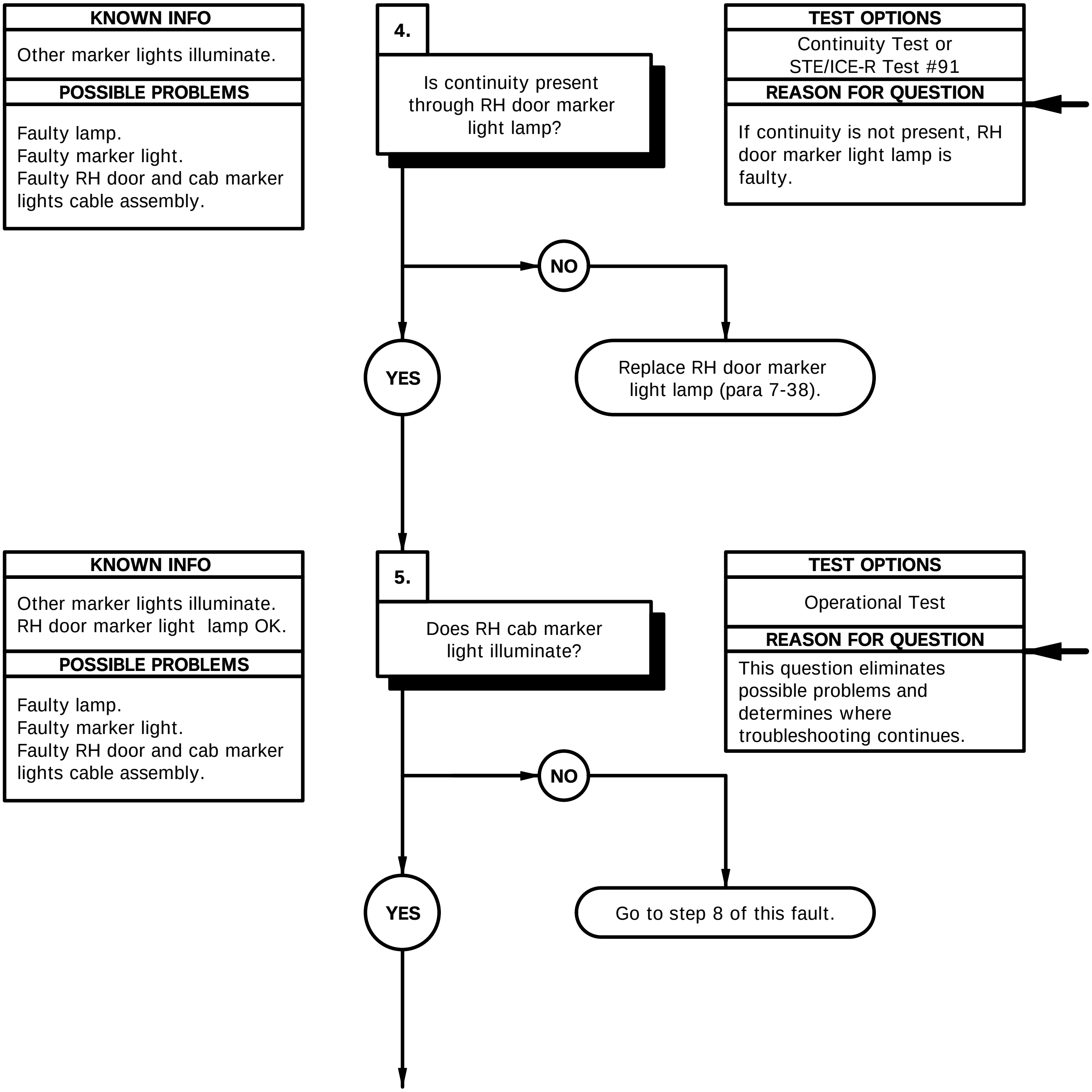
(2) Remove nut, lockwasher, terminal lug TL134, and lockwasher from RH cab marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P132 from marker light connector.
(4) Remove gasket from RH cab marker light base. Discard gasket.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector P132 socket.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 VDC is not present, repair wire 1947 from connector P132 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).
(10) If 12 VDC is present, replace RH cab marker light (para 7-38).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Install gasket on RH cab marker light base.
(13) Connect marker light connector to connector P132.

VOLTAGE TEST (CONT)

(14) Install lockwasher, terminal lug TL134, lockwasher, and nut on back of RH cab marker light base.
(15) Install RH cab marker light base on vehicle with four screws.
(16) Install RH cab marker light lamp in socket.
(17) Install lens cover on base with two screws.



e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

4.

Is continuity present through RH door marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH door marker light lamp is faulty.

NO: Replace RH door marker light lamp (para 7-38).

KNOWN INFO

Other marker lights illuminate.
RH door marker light lamp OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

5.

Does RH cab marker light illuminate?

TEST OPTIONS

Operational Test

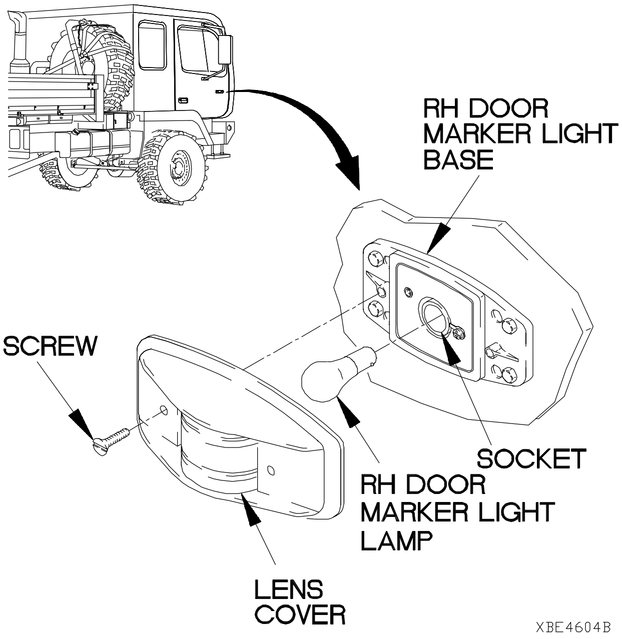
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 8 of this fault.

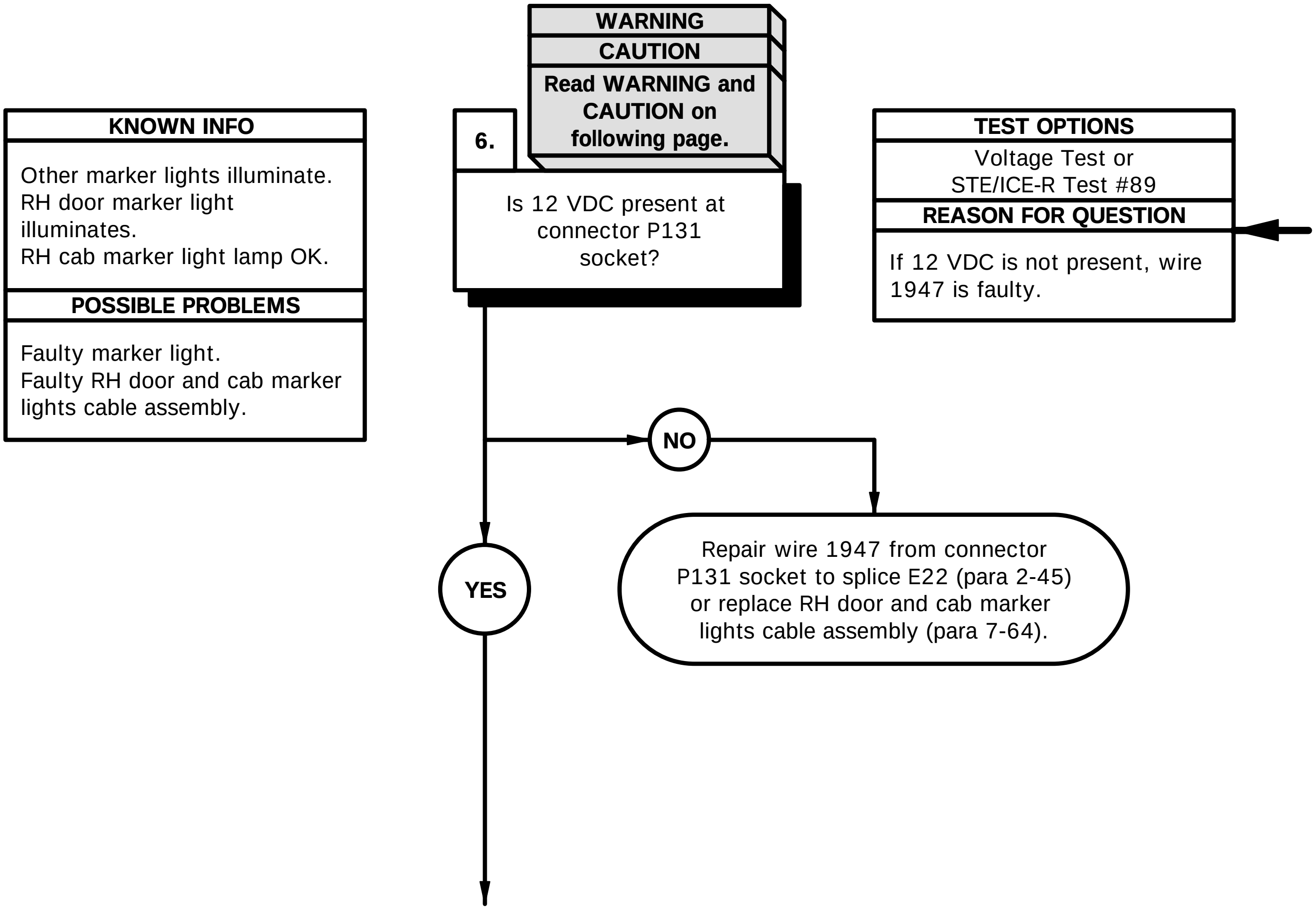
CONTINUITY TEST

(1) Remove two screws and lens cover from RH door marker light base.
(2) Remove RH door marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH door marker light lamp and note reading on multimeter.
(5) If continuity is present, replace RH door marker light lamp (para 7-38).



(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) If RH cab marker light lamp does not illuminate, go to step 8 of fault.
(3) Position main light switch to OFF (TM 9-2320-366-10-1).

e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
RH door marker light illuminates.
RH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

6.

Is 12 VDC present at connector P131 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1947 is faulty.

NO

Repair wire 1947 from connector P131 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

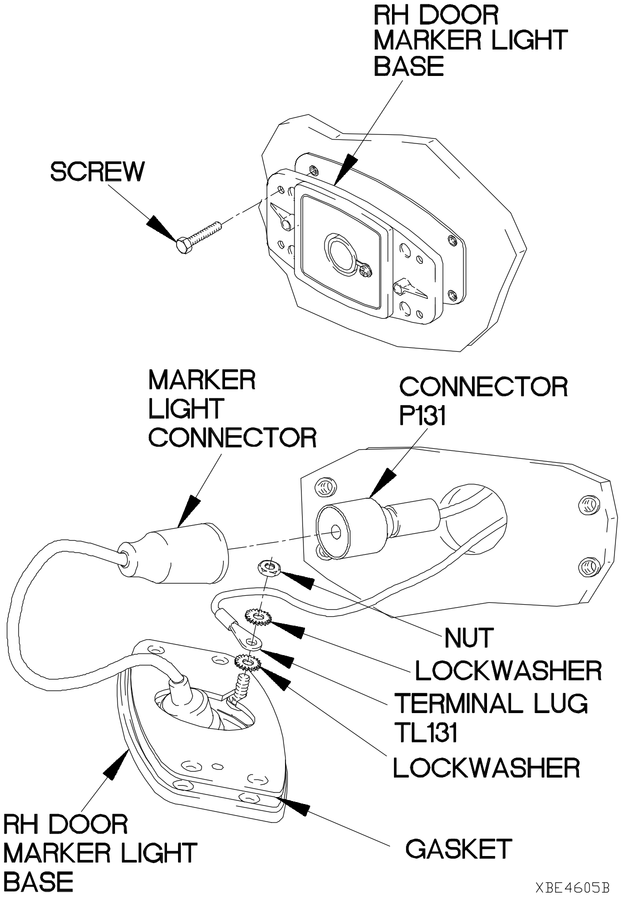
VOLTAGE TEST

(1) Remove four screws from RH door marker light base.

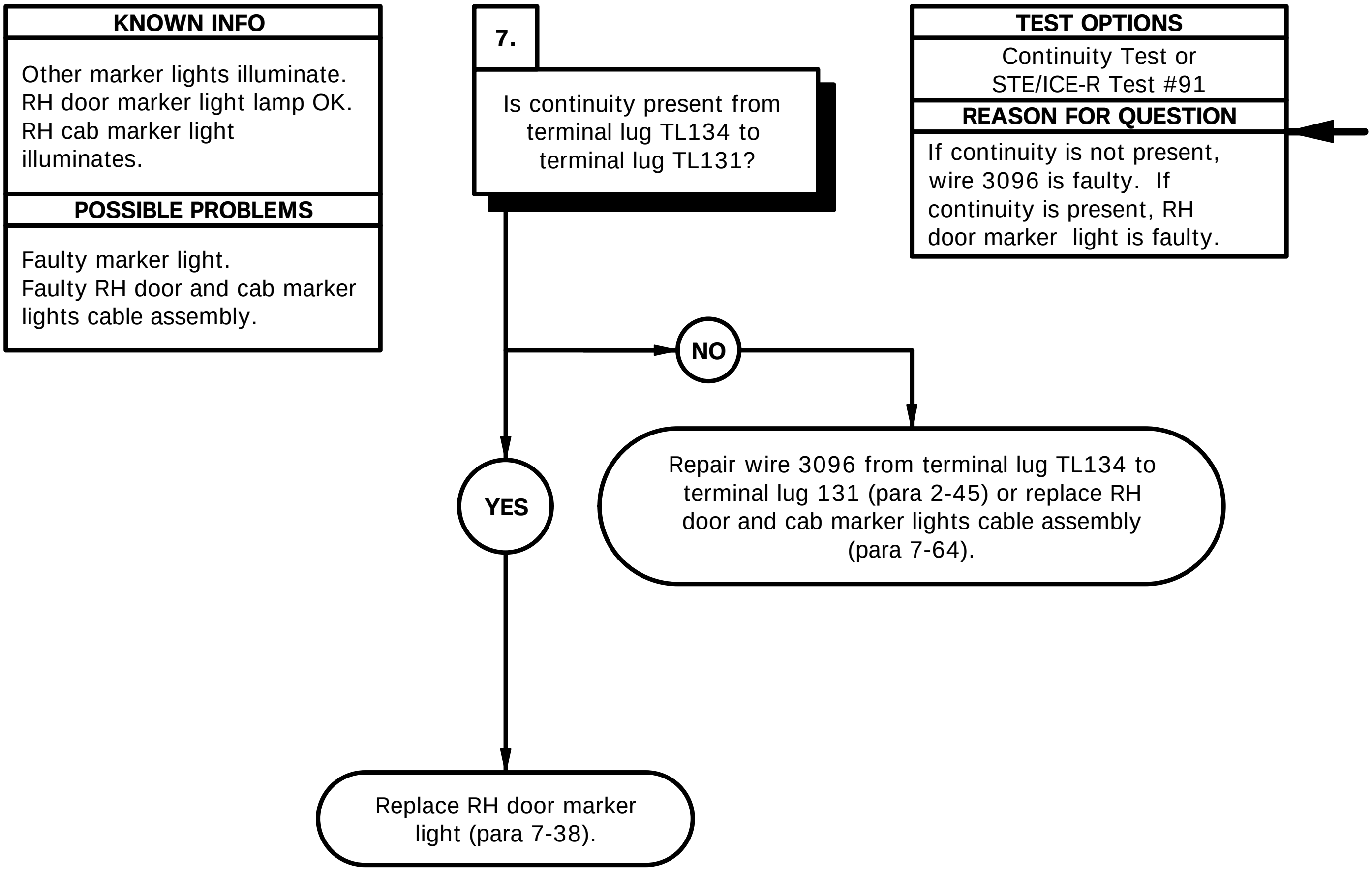
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug TL131, and lockwasher from RH door marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P131from marker light connector.
(4) Remove gasket from RH door marker light base. Discard gasket.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector P131 socket.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 VDC is not present, repair wire 1947 from connector P131 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).



e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
RH door marker light lamp OK.
RH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

7.

Is continuity present from terminal lug TL134 to terminal lug TL131?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3096 is faulty. If continuity is present, RH door marker light is faulty.

NO

Repair wire 3096 from terminal lug TL134 to terminal lug 131 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).

YES

Replace RH door marker light (para 7-38).

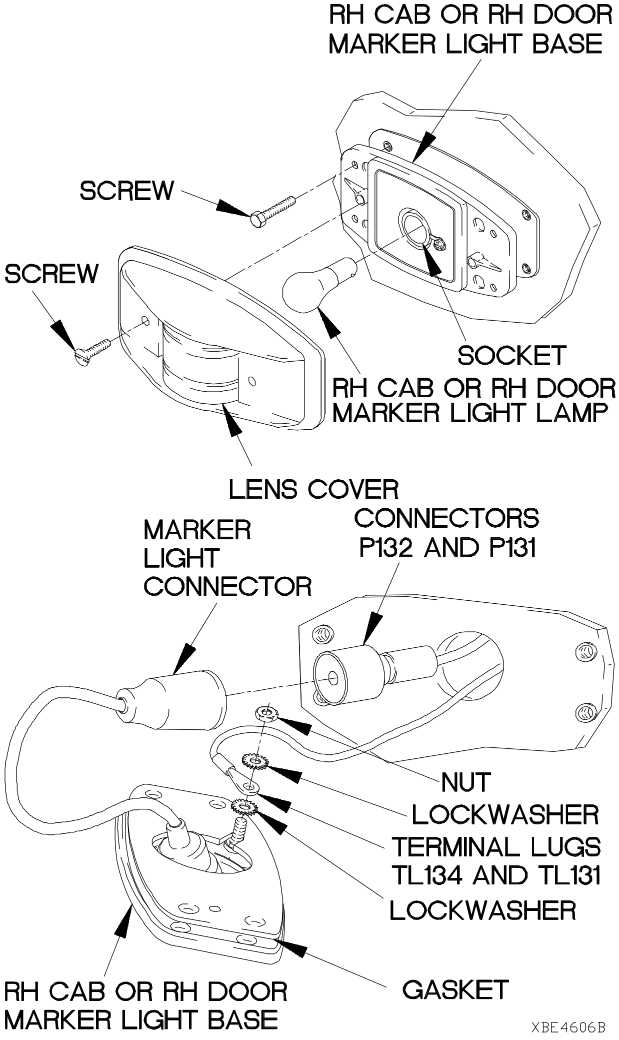
CONTINUITY TEST

(1) Remove two screws and lens cover from RH cab marker light base.
(2) Remove RH cab marker light lamp from socket.
(3) Remove four screws from RH cab marker light base.

NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(4) Remove nut, lockwasher, terminal lug TL134, and lockwasher from RH cab marker light base. Discard lockwashers.
(5) Extend base and disconnect connector P132 from marker light connector.
(6) Remove gasket from RH cab marker light base. Discard gasket.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to terminal lug TL131.
(9) Connect negative (-) probe of multimeter to terminal lug TL134 and note reading on multimeter.
(10) If continuity is not present, repair wire 3096 from terminal lug TL131 to terminal lug TL134 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).
(11) If continuity is present, replace RH door marker light (para 7-38).
(12) Install gasket on RH cab marker light base.
(13) Connect marker light connector to connector P132.
(14) Install lockwasher, terminal lug TL134, lockwasher, and nut on back of RH cab marker light base.
(15) Install RH cab marker light base on vehicle with four screws.
(16) Install RH cab marker light lamp in socket.
(17) Install lens cover on base with two screws.
(18) Install gasket on RH cab marker light base.
(19) Connect marker light connector to connector P131.
(20) Install lockwasher, terminal lug TL131, lockwasher, and nut on back of base.
(21) Install RH door marker light base on vehicle with four screws.
(22) Install RH door marker light lamp in socket.
(23) Install lens cover on base with two screws.



e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
RH door marker light lamp OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

8.

Is continuity present through RH cab marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH cab marker light lamp is faulty.

NO

Replace RH cab marker light lamp (para 7-38).

YES

KNOWN INFO

Other marker lights illuminate.
RH door marker light lamp OK.
RH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

9.

Is continuity present from terminal lug TL131 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 12 of this fault.

YES

CONTINUITY TEST

(1) Remove two screws and lens cover from RH cab marker light base.
(2) Remove RH cab marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH cab marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH cab marker light lamp (para 7-38).

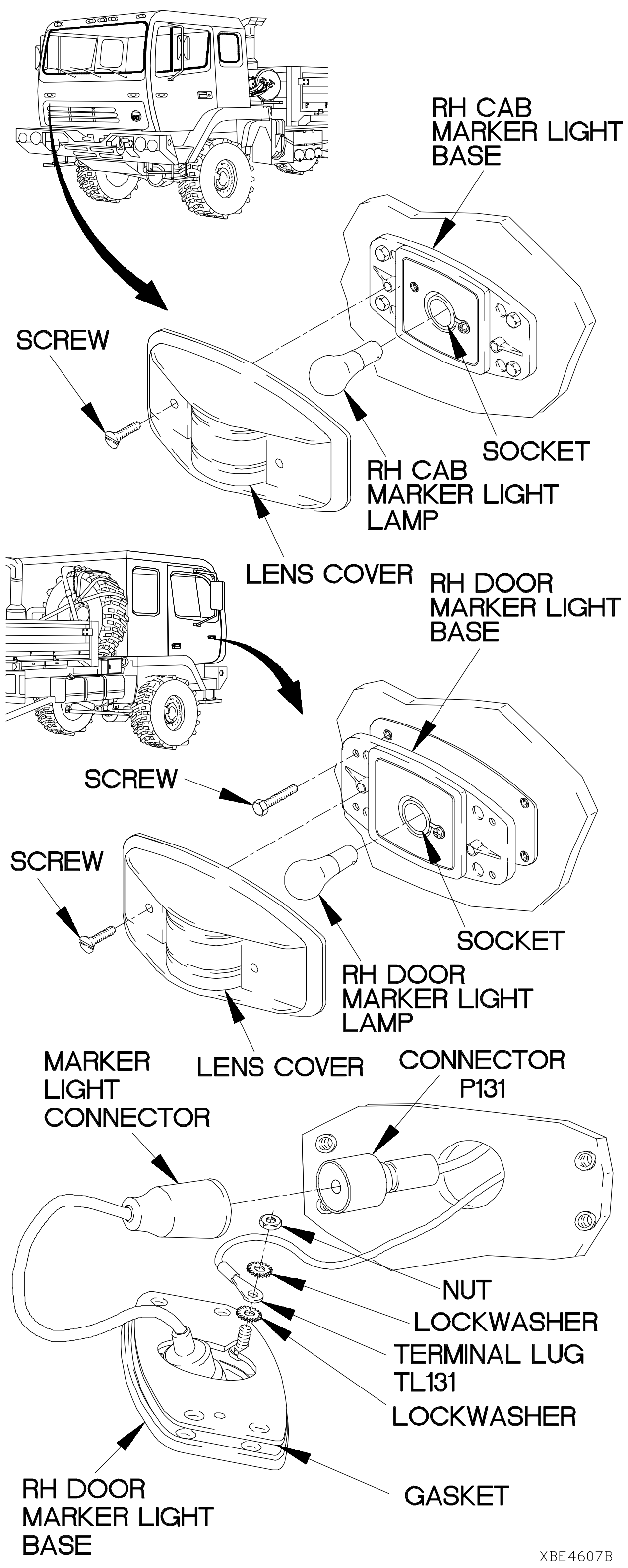
CONTINUITY TEST

(1) Remove two screws and lens cover from RH door marker light base.
(2) Remove RH door marker light lamp from socket.
(3) Remove four screws from RH door marker light.

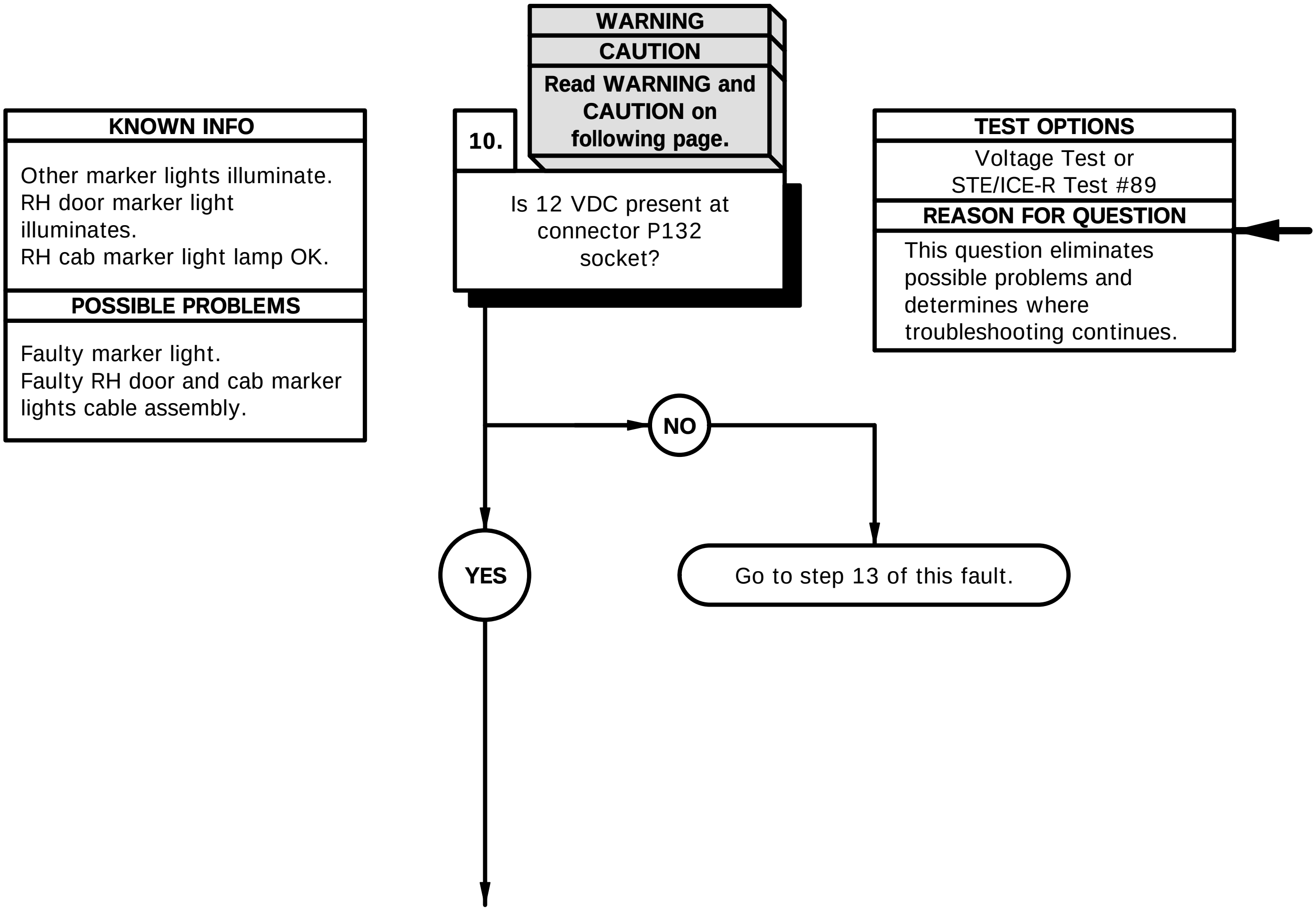
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(4) Remove nut, lockwasher, terminal lug TL131, and lockwasher from RH door marker light base. Discard lockwashers.
(5) Extend base and disconnect connector P131 from marker light connector.
(6) Remove gasket from RH door marker light base. Discard gasket.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to terminal lug TL131.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) If continuity is not present from terminal lug TL131 to ground, go to step 12 of this fault.



e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
RH door marker light illuminates.
RH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

10. Is 12 VDC present at connector P132 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 13 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

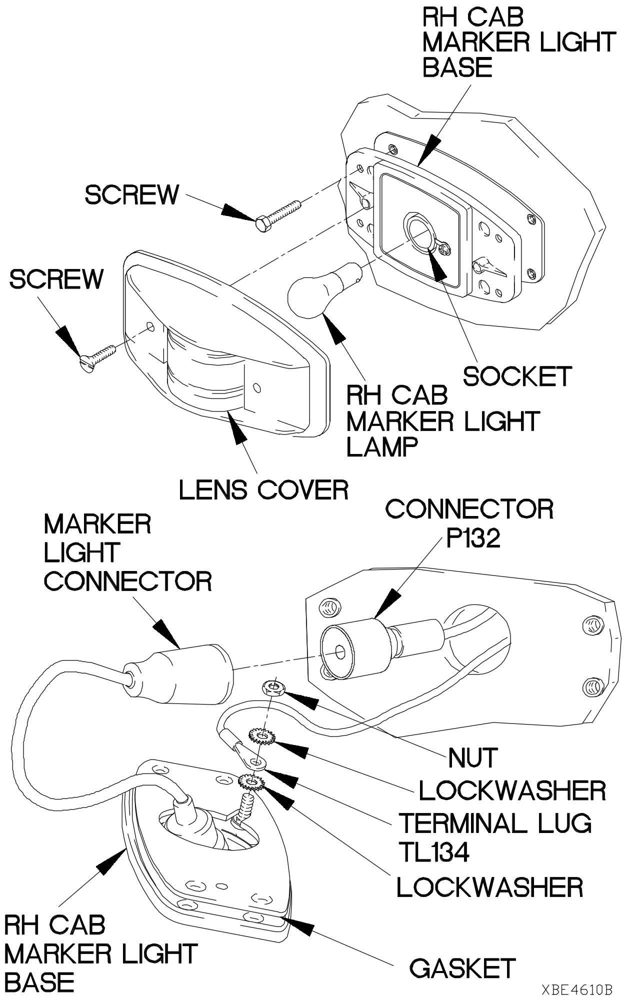
VOLTAGE TEST

(1) Remove four screws from RH cab marker light base.

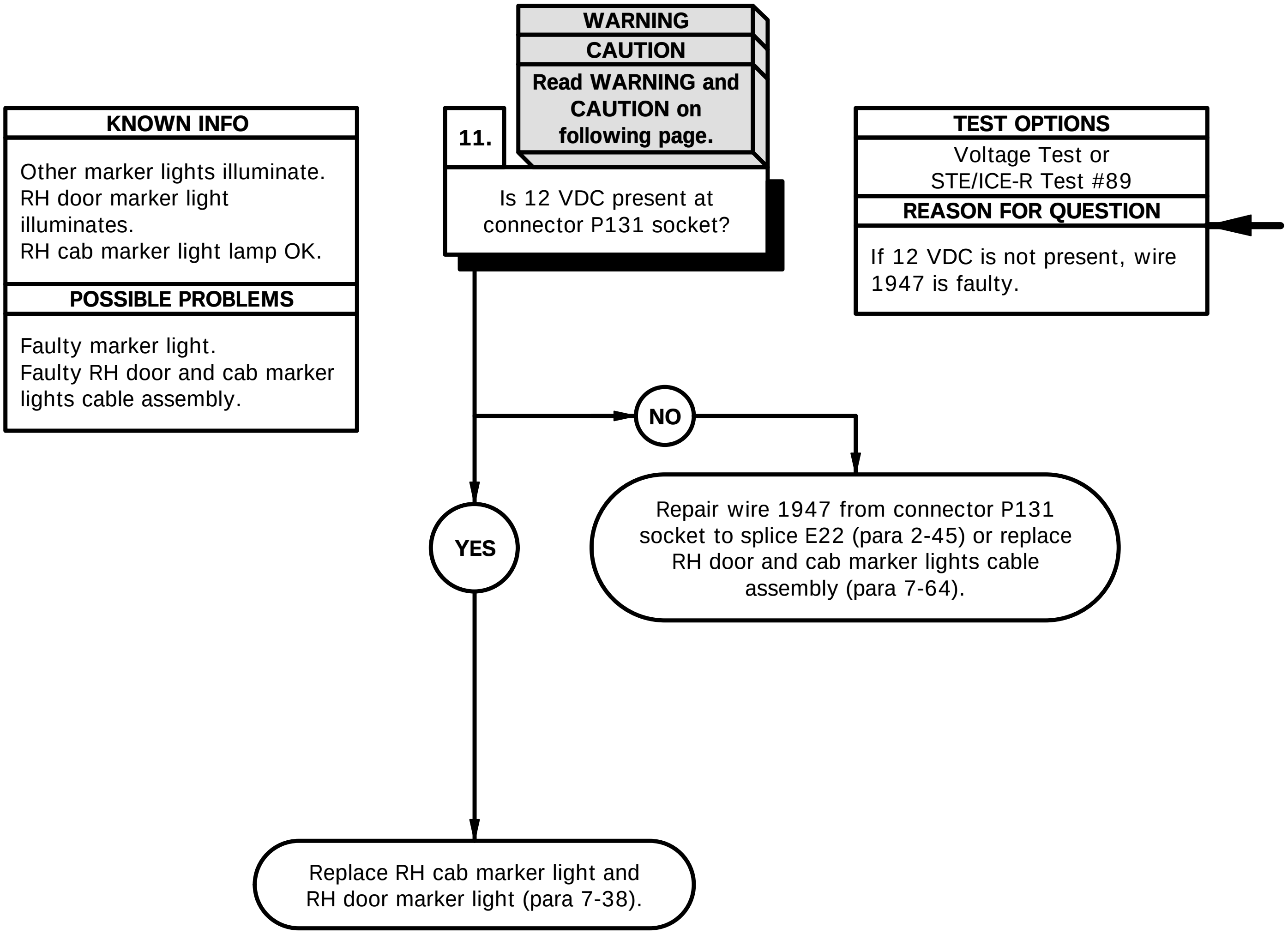
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug TL134, and lockwasher from RH cab marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P132 from marker light connector.
(4) Remove gasket from RH cab marker light base. Discard gasket.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector P132 socket.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 VDC is not present, go to step 13 of this fault.
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Install gasket on RH cab marker light base.
(12) Connect marker light connector to connector P132.
(13) Install lockwasher, terminal lug TL134, lockwasher, and nut on back of RH cab marker light base.
(14) Install RH cab marker light base on vehicle with four screws.
(15) Install RH cab marker light lamp in socket.
(16) Install lens cover on base with two screws.



e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
RH door marker light illuminates.
RH cab marker light lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

11. Is 12 VDC present at connector P131 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1947 is faulty.

NO

Repair wire 1947 from connector P131 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).

YES

Replace RH cab marker light and RH door marker light (para 7-38).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

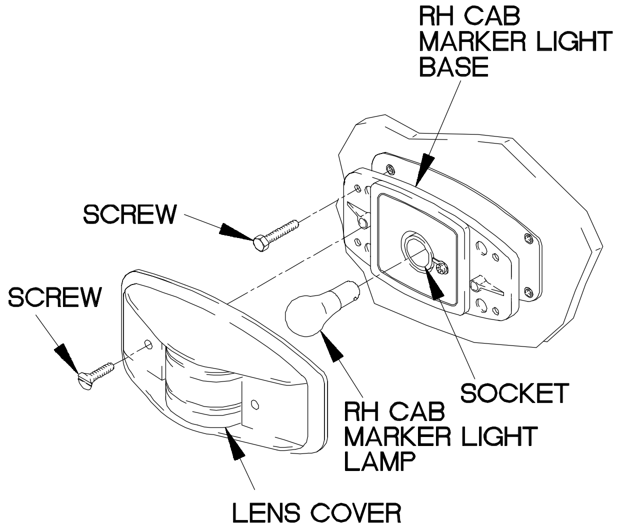
CAUTION

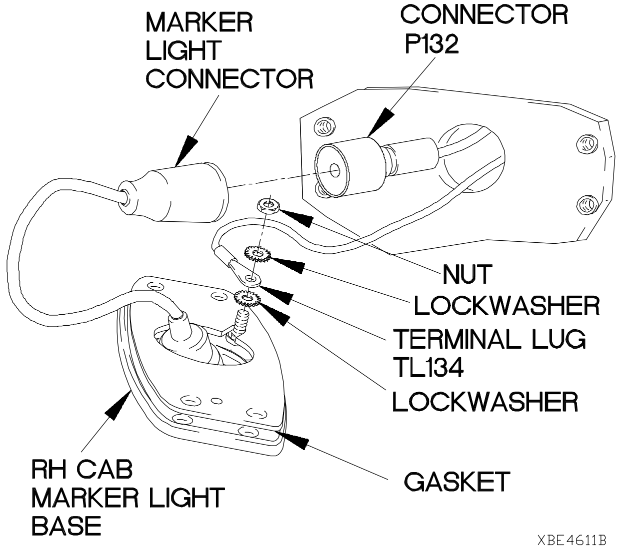
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

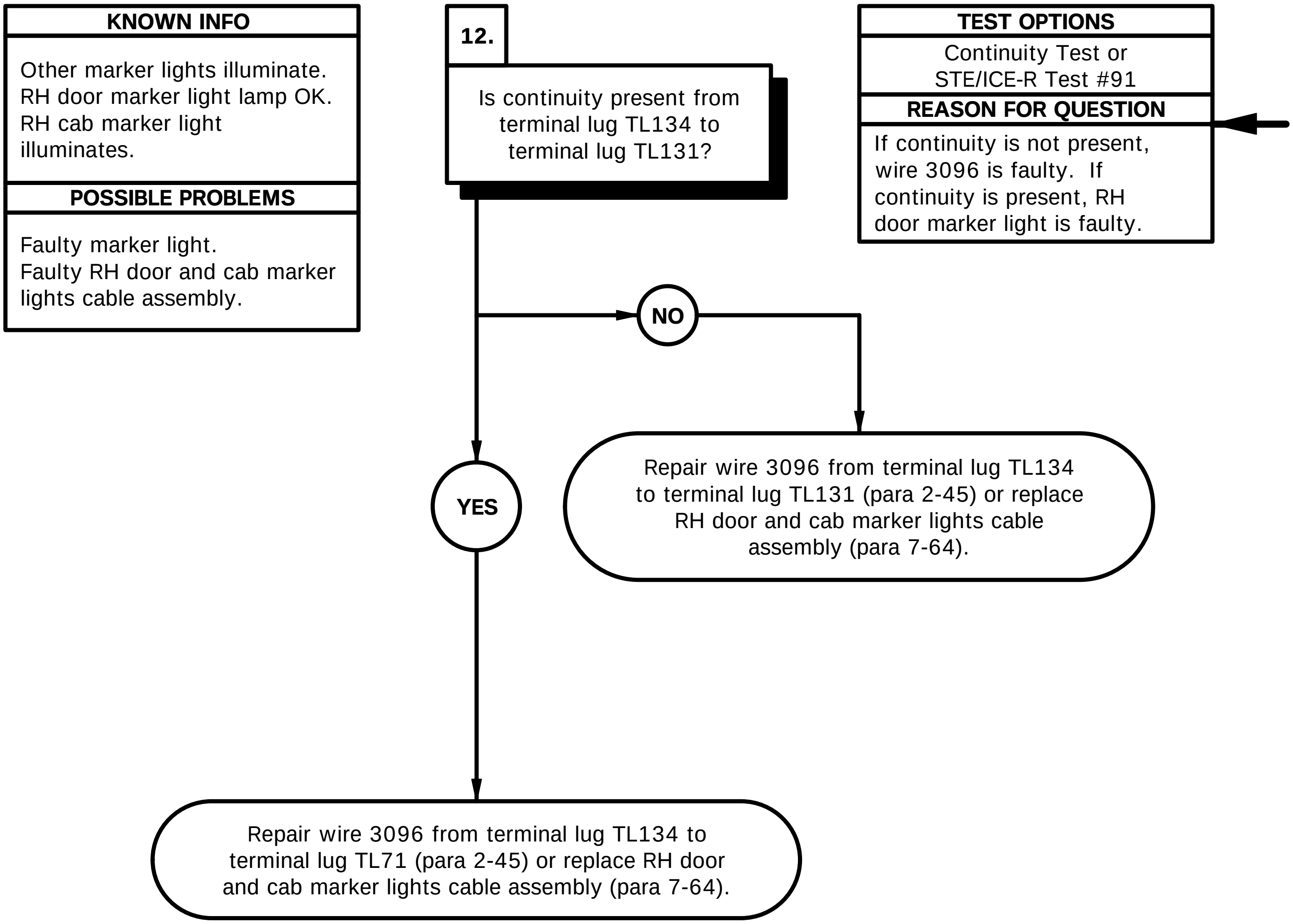
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to connector P132 socket. (3) Connect negative (-) probe of multimeter to ground. (4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (5) If 12 VDC is not present, repair wire 1947 from connector P132 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64). (6) If 12 VDC is present, replace RH cab marker light and RH door marker light (para 7-38). (7) Position main light switch to OFF (TM 9-2320-366-10-1). (8) Install gasket on RH door marker light base. (9) Connect marker light connector to connector P132. (10) Install lockwasher, terminal lug TL134, lockwasher, and nut on back of RH door marker light base. (11) Install RH door marker light base on vehicle with four screws. (12) Install RH door marker light lamp in socket. (13) Install lens cover on base with two screws.





e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
RH door marker light lamp OK.
RH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

12.

Is continuity present from terminal lug TL134 to terminal lug TL131?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3096 is faulty. If continuity is present, RH door marker light is faulty.

Repair wire 3096 from terminal lug TL134 to terminal lug TL131 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).

Repair wire 3096 from terminal lug TL134 to terminal lug TL71 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).

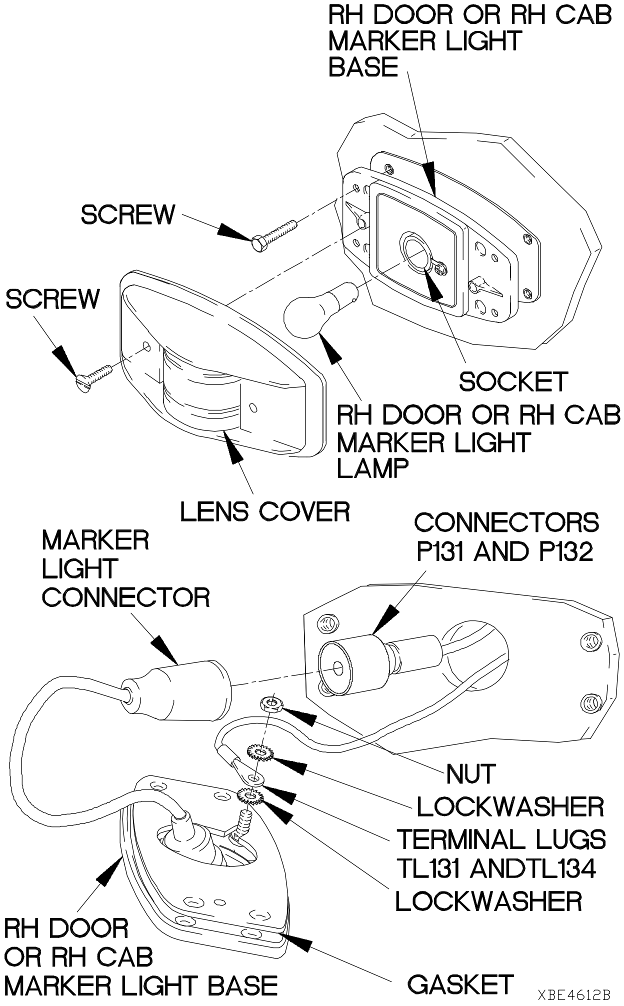
CONTINUITY TEST

(1) Remove four screws from RH cab marker light base.

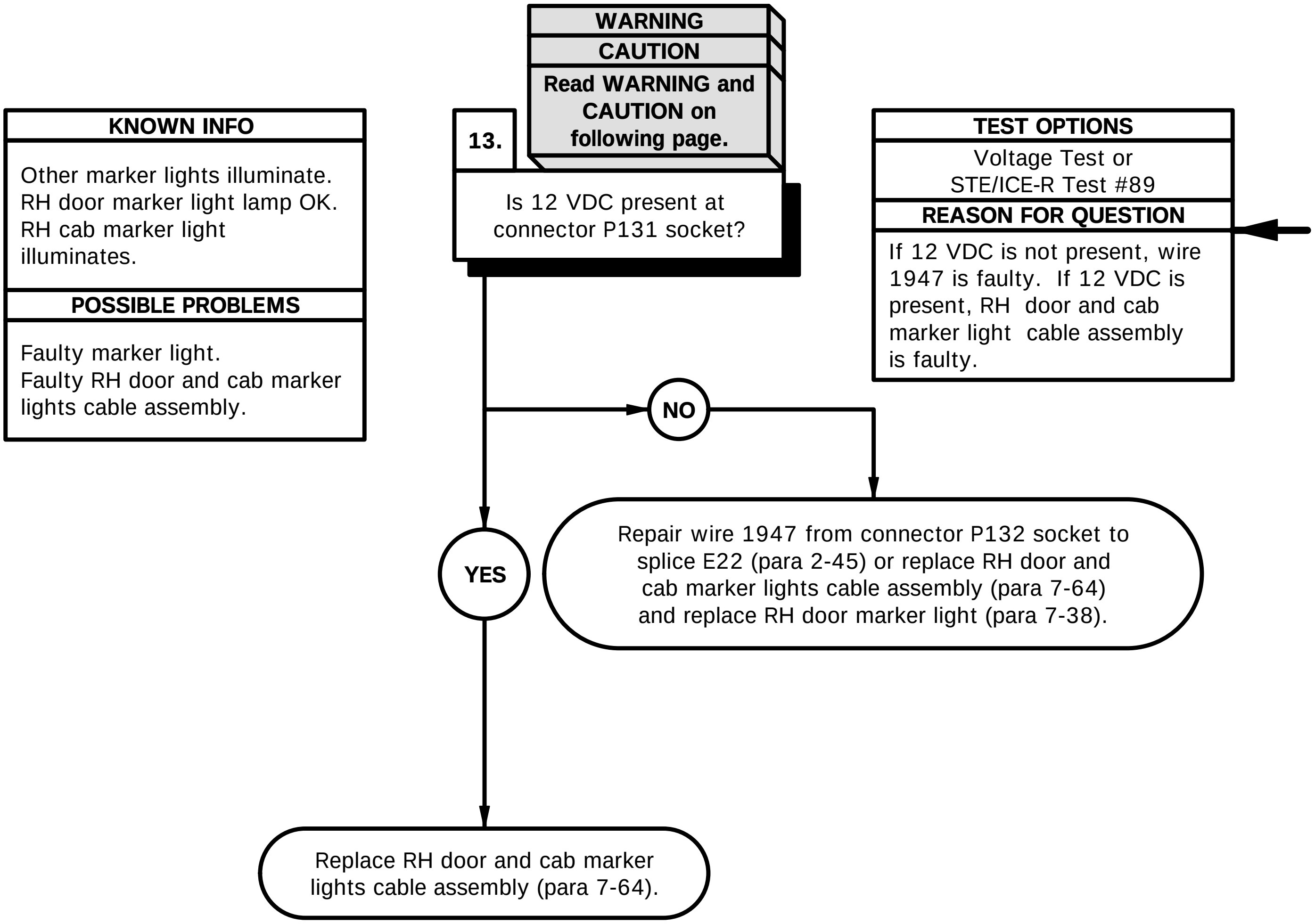
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug TL134, and lockwasher from RH cab marker light base. Discard lockwashers.
(3) Extend base and disconnect connector P132 from marker light connector.
(4) Remove gasket from RH cab marker light base. Discard gasket.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to terminal lug TL131.
(7) Connect negative (-) probe of multimeter to terminal lug TL134 and note reading on multimeter.
(8) If continuity is not present, repair wire 3096 from terminal lug TL134 to terminal lug TL131 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64).
(9) If continuity is present, replace RH door marker light (para 7-38).
(10) Install gasket on RH cab marker light base.
(11) Connect marker light connector to connector P132.
(12) Install lockwasher, terminal lug TL134, lockwasher, and nut on back of RH cab marker light base.
(13) Install RH cab marker light base on vehicle with four screws.
(14) Install RH cab marker light lamp in socket.
(15) Install lens cover on base with two screws.
(16) Install gasket on RH door marker light base.
(17) Connect marker light connector to connector P131.
(18) Install lockwasher, terminal lug TL131, lockwasher, and nut on back of RH door marker light base.
(19) Install RH door marker light base on vehicle with four screws.
(20) Install RH door marker light lamp in socket.
(21) Install lens cover on base with two screws.



e46. RH DOOR AND/OR RH FRONT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
RH door marker light lamp OK.
RH cab marker light illuminates.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

13.

Is 12 VDC present at connector P131 socket?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1947 is faulty. If 12 VDC is present, RH door and cab marker light cable assembly is faulty.

Repair wire 1947 from connector P132 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64) and replace RH door marker light (para 7-38).

Replace RH door and cab marker lights cable assembly (para 7-64).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

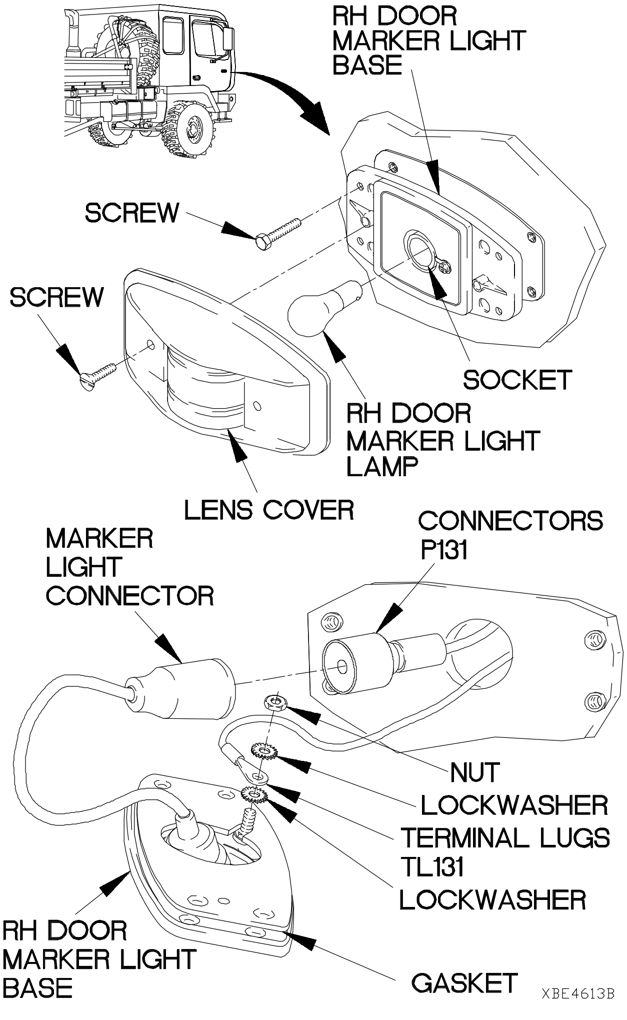
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to connector P131 socket. (3) Connect negative (-) probe of multimeter to ground. (4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (5) If 12 VDC is not present, repair wire 1947 from connector P131 socket to splice E22 (para 2-45) or replace RH door and cab marker lights cable assembly (para 7-64). (6) If 12 VDC is present, replace RH door and cab marker light cable assembly (para 7-64). (7) Position main light switch to OFF (TM 9-2320-366-10-1). (8) Install gasket on RH door marker light base. (9) Connect marker light connector to connector P131. (10) Install lockwasher, terminal lug TL131, lockwasher, and nut on back of RH door marker light base. (11) Install RH door marker light base on vehicle with four screws. (12) Install RH door marker light lamp in socket. (13) Install lens cover on base with two screws.



e47. ONE OR MORE CAB TOP MARKER LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

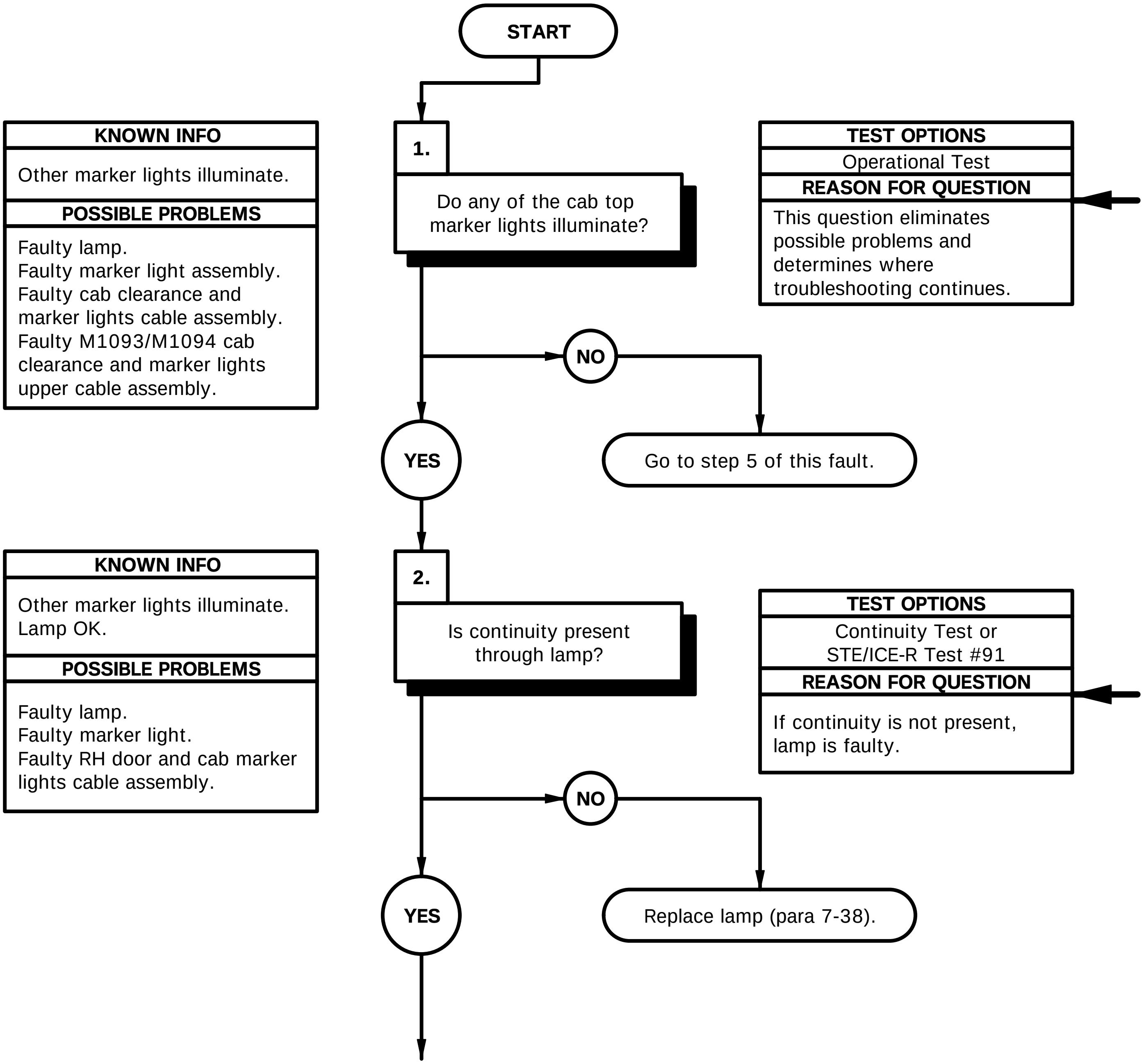
Equipment Conditions
Engine shut down (TM 9-23230-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICR-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (4) (Item 82, Appendix G)
Gasket (2) (Item 29.2, Appendix G)
Wire, Elec, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO

Other marker lights illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light assembly.
Faulty cab clearance and marker lights cable assembly.
Faulty M1093/M1094 cab clearance and marker lights upper cable assembly.

1. Do any of the cab top marker lights illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 5 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Lamp OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty RH door and cab marker lights cable assembly.

2. Is continuity present through lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

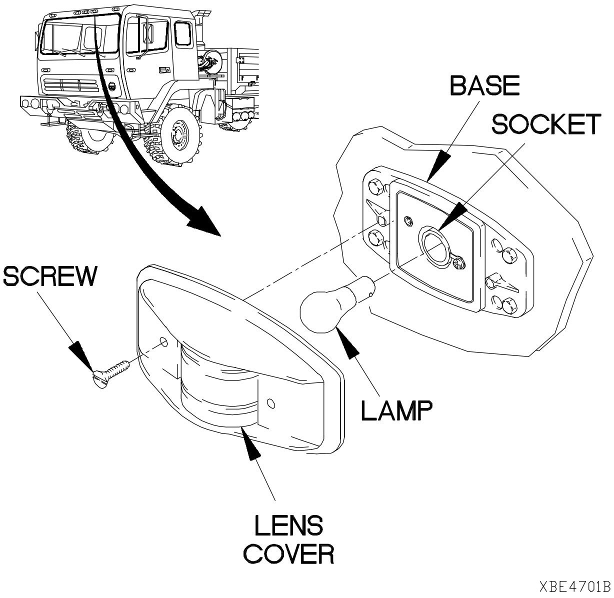
REASON FOR QUESTION

If continuity is not present, lamp is faulty.

NO — Replace lamp (para 7-38).

YES

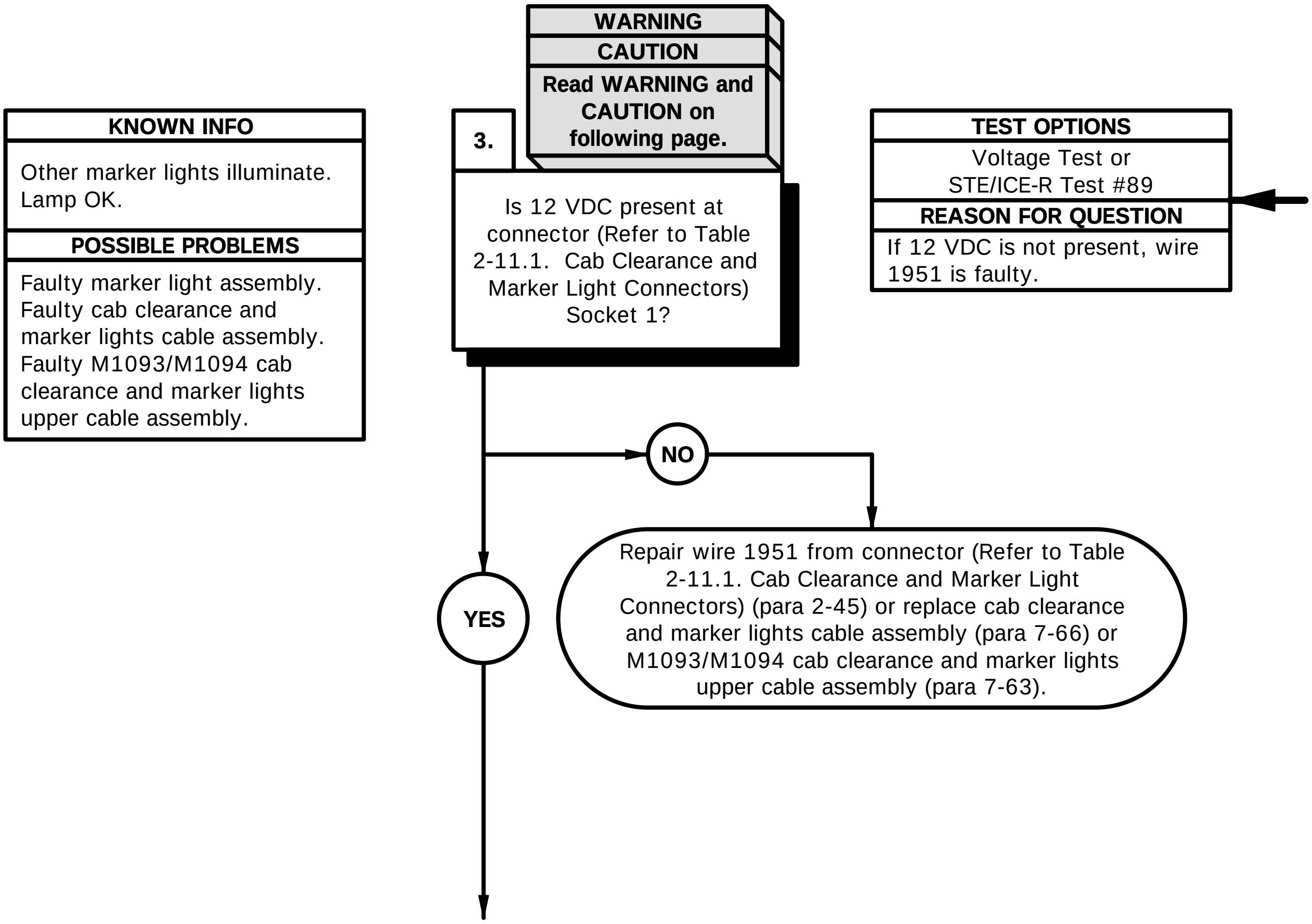
(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) If no cab top marker lights illuminate, go to step 5 of this fault.
(3) Position main light switch to OFF (TM 9-2320-366-10-1).



CONTINUITY TEST

(1) Remove two screws and lens cover from marker light base.
(2) Remove marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace marker light lamp (para 7-38).

e47. ONE OR MORE CAB TOP MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light assembly.
Faulty cab clearance and marker lights cable assembly.
Faulty M1093/M1094 cab clearance and marker lights upper cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3.

Is 12 VDC present at connector (Refer to Table 2-11.1. Cab Clearance and Marker Light Connectors) Socket 1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1951 is faulty.

NO

Repair wire 1951 from connector (Refer to Table 2-11.1. Cab Clearance and Marker Light Connectors) (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-66) or M1093/M1094 cab clearance and marker lights upper cable assembly (para 7-63).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove four screws from marker light base.

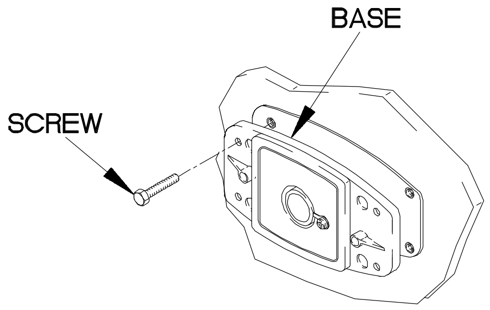
NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(2) Remove nut, lockwasher, terminal lug, and lockwasher from marker light base. Discard lockwashers.
(3) Extend base and disconnect connector (Refer to Table 2-11.1. Cab Clearance and Marker Light Connectors) from marker light connector.
(4) Remove gasket from marker light base. Discard gasket.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector (Refer to Table 2-11.1. Cab Clearance and Marker Light Connectors).
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.

VOLTAGE TEST (CONT)

(9) If 12 VDC is not present, repair wire 1951 from connector (Refer to Table 2-11.1. Cab Clearance and Marker Light Connectors) (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-66) or M1081 cab clearance and marker lights upper cable assembly (para 7-63).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).



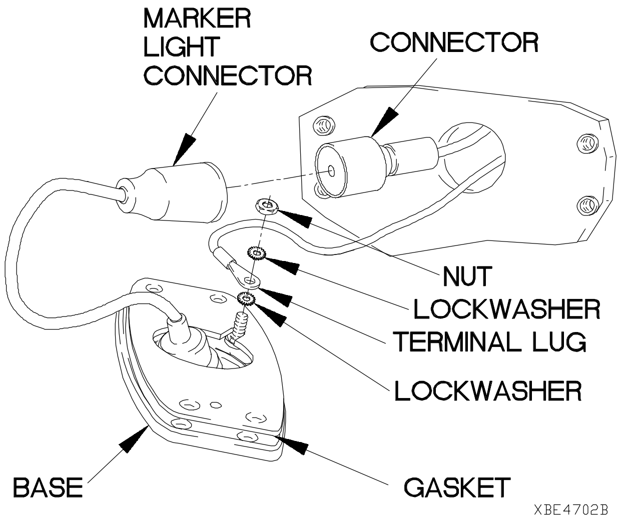
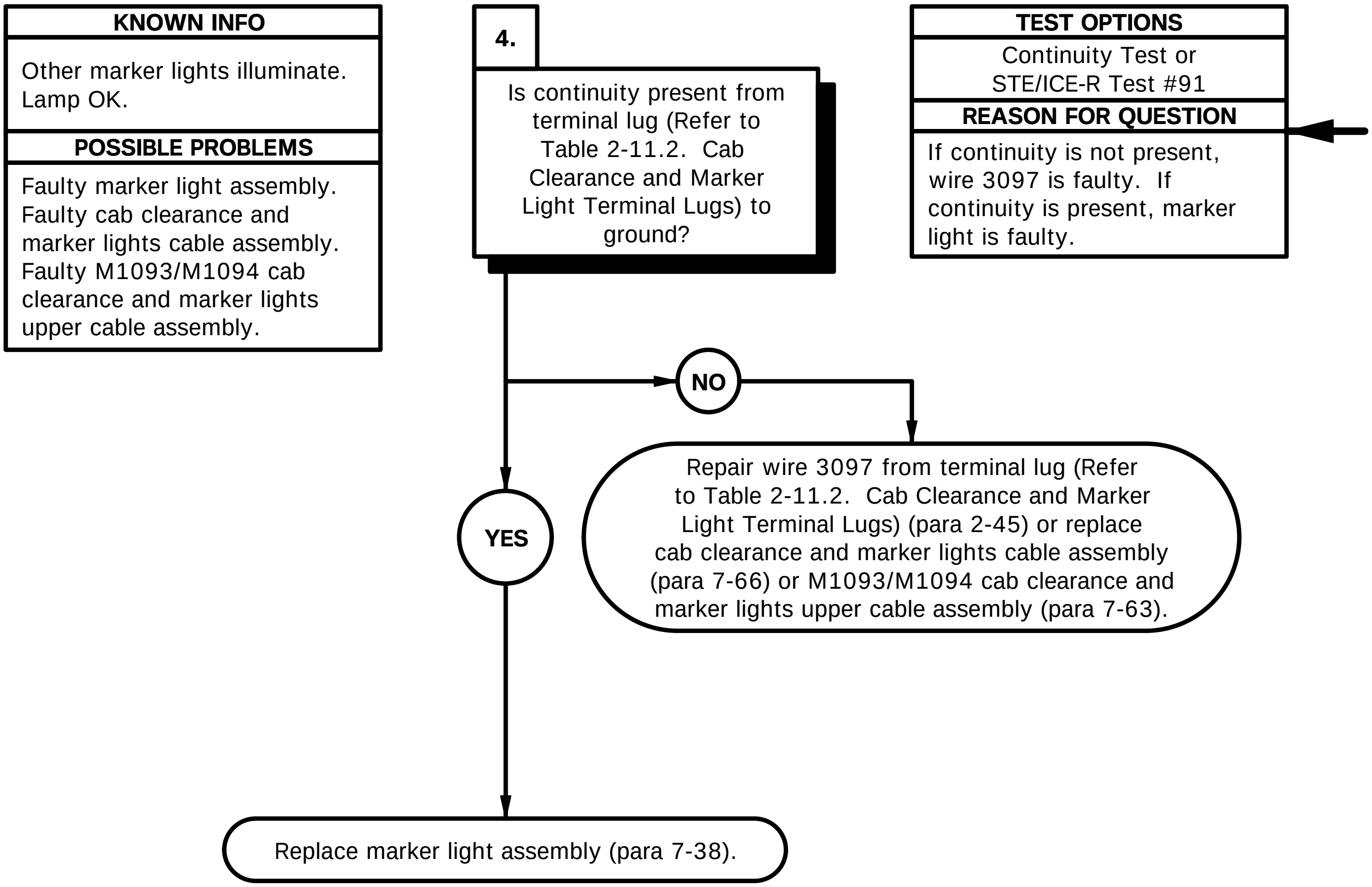


Table 2-11.1. Cab Clearance and Marker Light Connectors

Marker/ID Light	Connector	Wire Segment
RH Cab Top Marker Light	P55	P55 to splice E23
RH Cab Top ID Light	P59	P59 to splice E23
Middle Cab Top ID Light	P60	P60 to splice E23
LH Cab Top ID Light	P57	P57 to splice E23
LH Cab Top Marker Light	P50	P50 to splice E23

e47. ONE OR MORE TOP CAB MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate. Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light assembly. Faulty cab clearance and marker lights cable assembly. Faulty M1093/M1094 cab clearance and marker lights upper cable assembly.

4.

Is continuity present from terminal lug (Refer to Table 2-11.2. Cab Clearance and Marker Light Terminal Lugs) to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3097 is faulty. If continuity is present, marker light is faulty.

Repair wire 3097 from terminal lug (Refer to Table 2-11.2. Cab Clearance and Marker Light Terminal Lugs) (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-66) or M1093/M1094 cab clearance and marker lights upper cable assembly (para 7-63).

Replace marker light assembly (para 7-38).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug (Refer to Table 2-11.2. Cab Clearance and Marker Light Terminal Lugs).
(3) Connect negative (-) probe of multimeter to to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3097 (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-66) or M1093/M1094 cab clearance and marker lights upper cable assembly (para 7-63).
(5) If continuity is present, replace marker light assembly (para 7-38).
(6) Install gasket on marker light base.
(7) Connect connector (Refer to Table 2-11.2. Cab Clearance and Marker Light Connectors) to marker light connector.
(8) Install lockwasher, terminal lug (Refer to Table 2-11.2. Cab Clearance and Marker Light Terminal Lugs), lockwasher, and nut on back of base.
(9) Install marker light base on vehicle with four screws.
(10) Install marker light lamp in socket.
(11) Install lens cover on base with two screws.

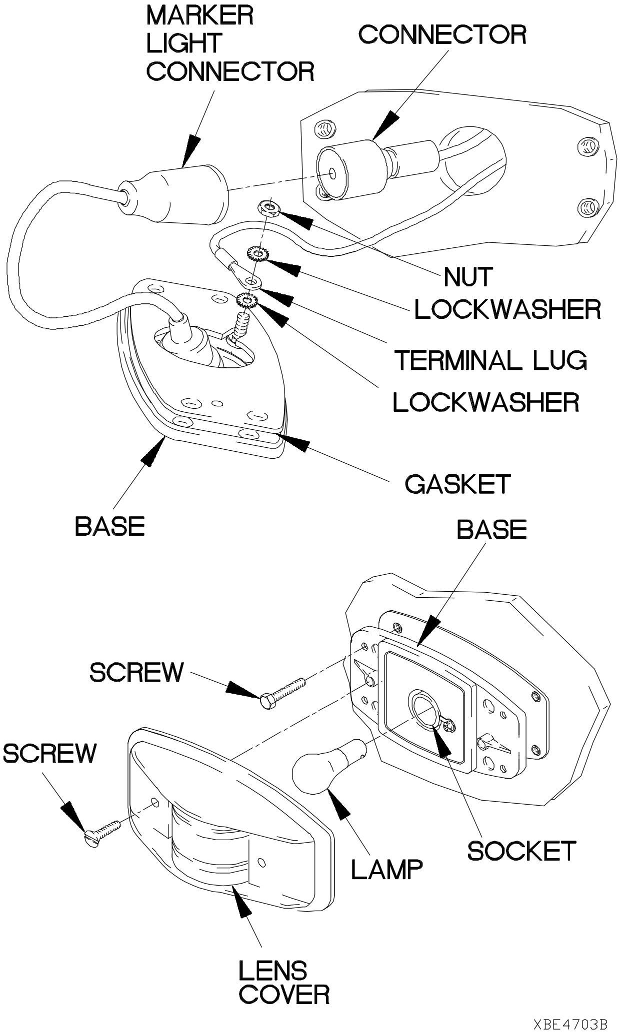


Table 2-11.2. Cab Clearance and Marker Light Terminal Lugs

Light	Terminal Lug	Wire Segment
RH Cab Top Marker Light	TL3	TL3 to splice E24
RH Cab Top ID Light	TL4	TL4 to splice E24
Middle Cab Top ID Light	TL8	TL8 to splice E24
LH Cab Top ID Light	TL22	TL22 to splice E24
LH Cab Top Marker Light	TL27	TL27 to splice E24

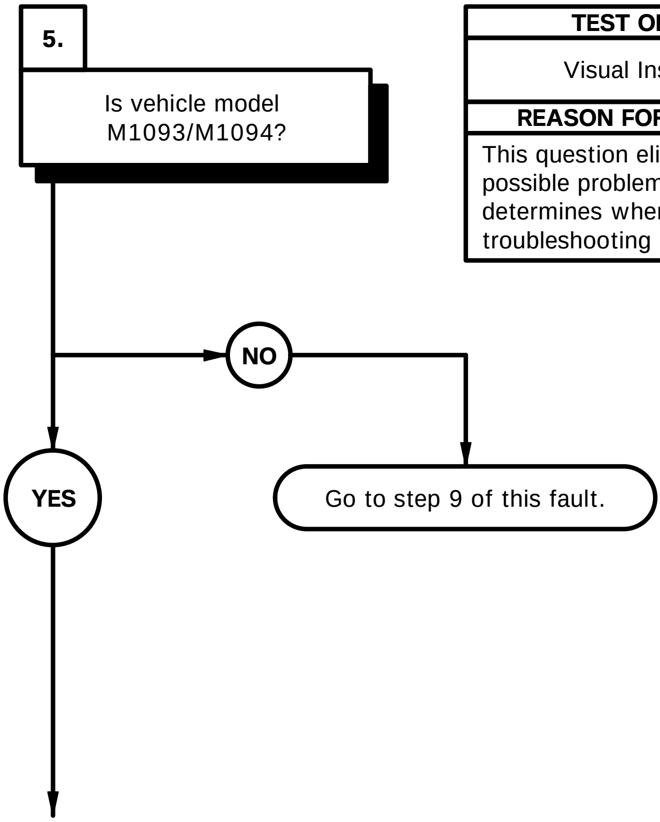
e47. ONE OR MORE TOP CAB MARKER LIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

No cab top marker lights illuminate.

POSSIBLE PROBLEMS

Faulty cab clearance and marker lights cable assembly.
Faulty M1093/M1094 cab clearance and marker lights lower cable assembly.
Faulty M1093/M1094 cab clearance and marker lights upper cable assembly.



5.

Is vehicle model M1093/M1094?

Go to step 9 of this fault.

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

(1) Is vehicle model M1093/M1094? If vehicle is not model M1093/M1094, go to step 9 of this fault.

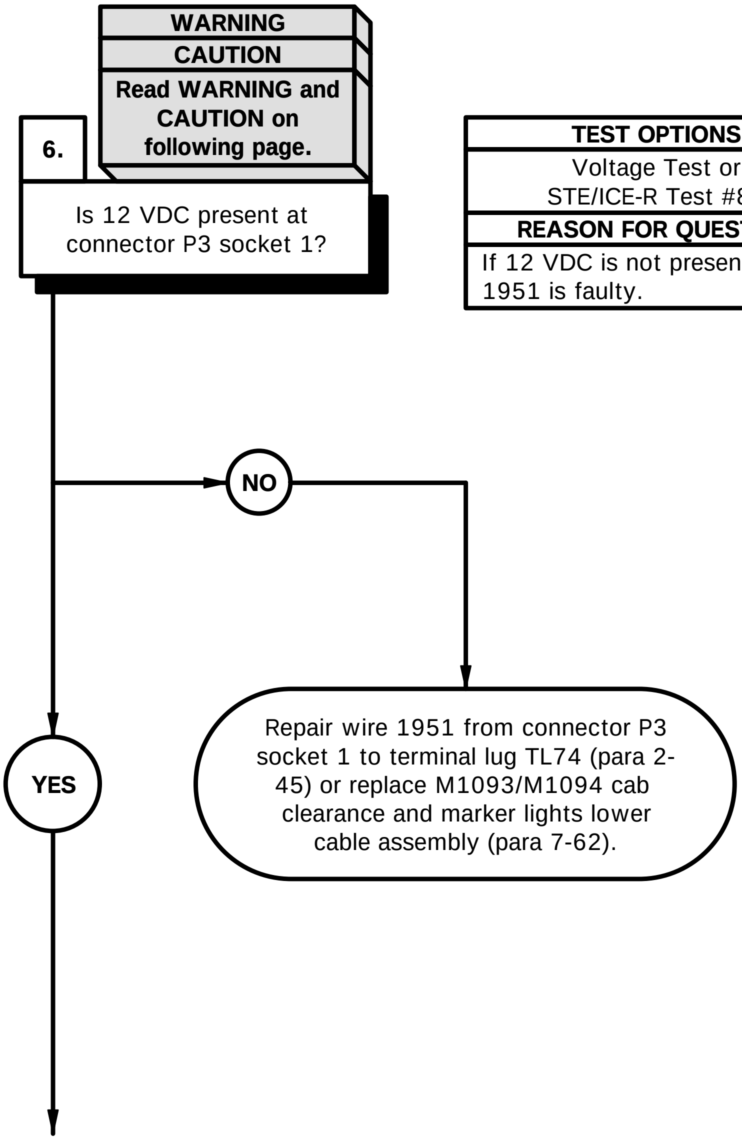
e47. ONE OR MORE CAB TOP MARKER LIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

No cab top marker lights illuminate.

POSSIBLE PROBLEMS

Faulty M1093/M1094 cab clearance and marker lights lower cable assembly.
Faulty M1093/M1094 cab clearance and marker lights upper cable assembly.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

6. Is 12 VDC present at connector P3 socket 1?

Repair wire 1951 from connector P3 socket 1 to terminal lug TL74 (para 2-45) or replace M1093/M1094 cab clearance and marker lights lower cable assembly (para 7-62).

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1951 is faulty.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

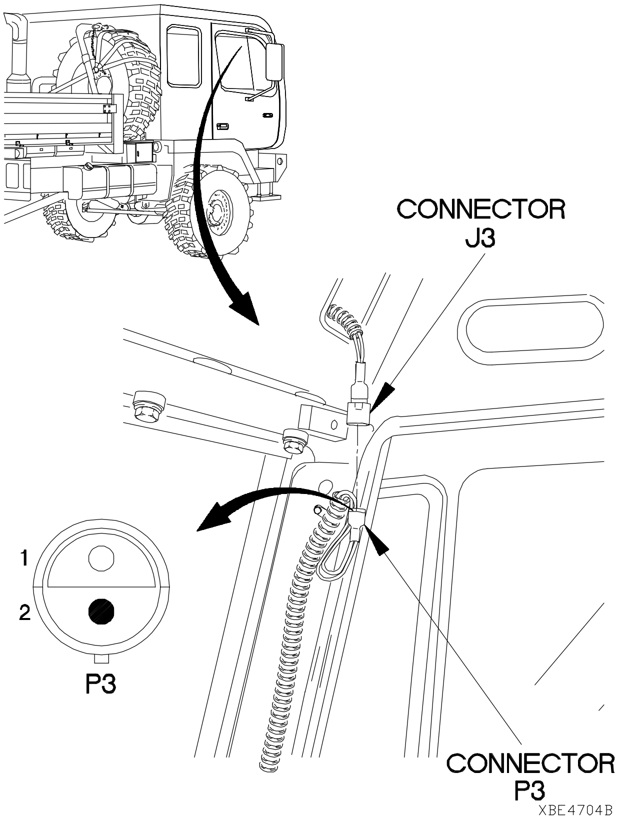
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

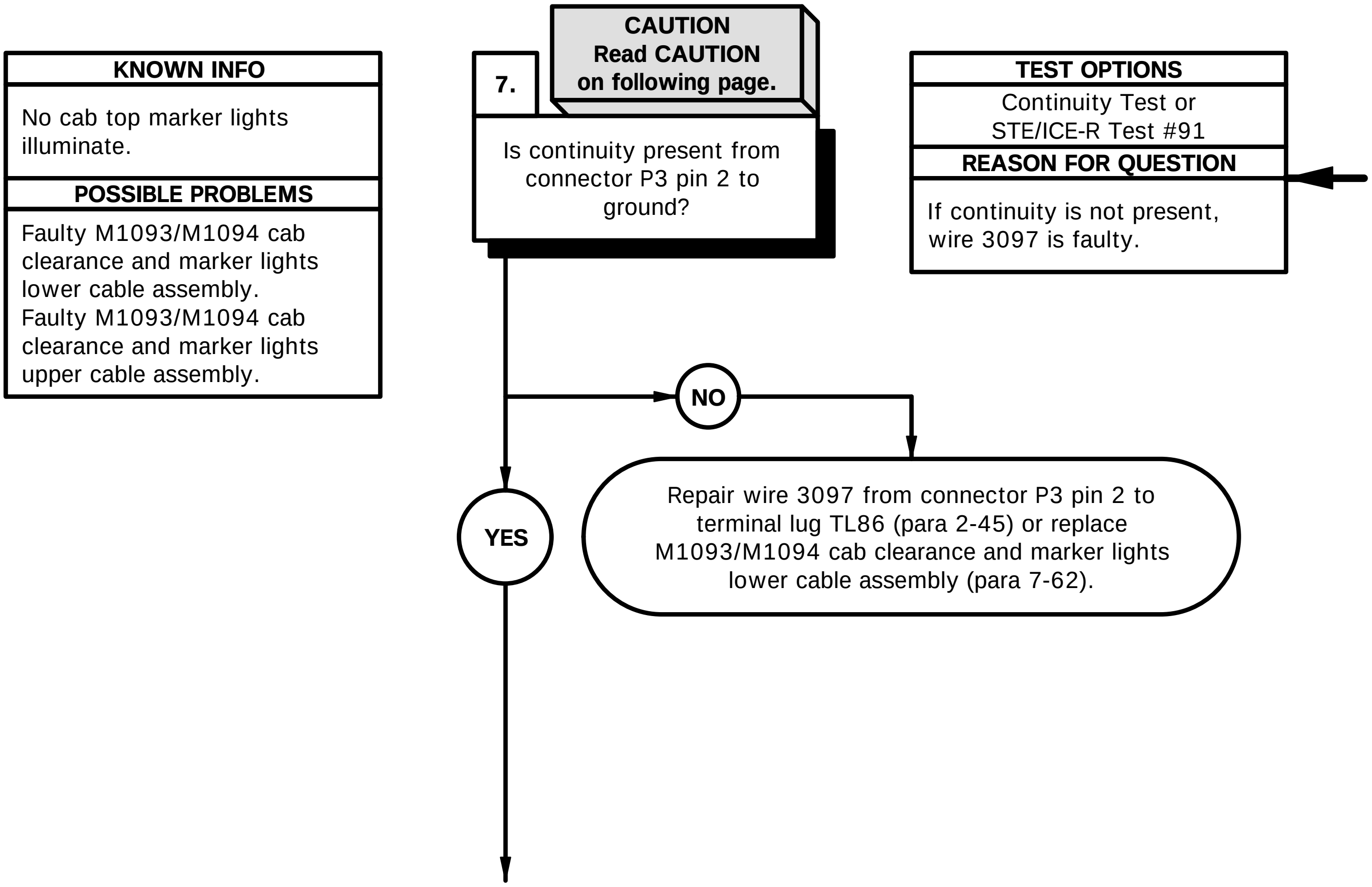
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
(1) Disconnect connector P3 from connector J3. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to connector P3 socket 1. (4) Connect negative (-) probe of multimeter to ground. (5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (6) If 12 VDC is not present, repair wire 1951 (para 2-45) from connector P3 socket 1 to terminal lug TL74 or replace M1093/M1094 cab clearance and marker lights lower cable assembly (para 7-62). (7) Position main light switch to OFF (TM 9-2320-366-10-1).



e47. ONE OR MORE CAB TOP MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

No cab top marker lights illuminate.

POSSIBLE PROBLEMS

Faulty M1093/M1094 cab clearance and marker lights lower cable assembly.

Faulty M1093/M1094 cab clearance and marker lights upper cable assembly.

CAUTION
Read CAUTION on following page.

7. Is continuity present from connector P3 pin 2 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3097 is faulty.

NO

Repair wire 3097 from connector P3 pin 2 to terminal lug TL86 (para 2-45) or replace M1093/M1094 cab clearance and marker lights lower cable assembly (para 7-62).

YES

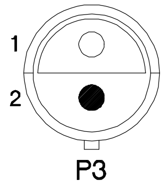
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to connector P3 pin 2. (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (4) If continuity is not present, repair wire 3097 (para 2-45) from connector P3 pin 2 to terminal lug TL86 or replace M1093/M1094 cab clearance and marker lights lower cable assembly (para 7-62).



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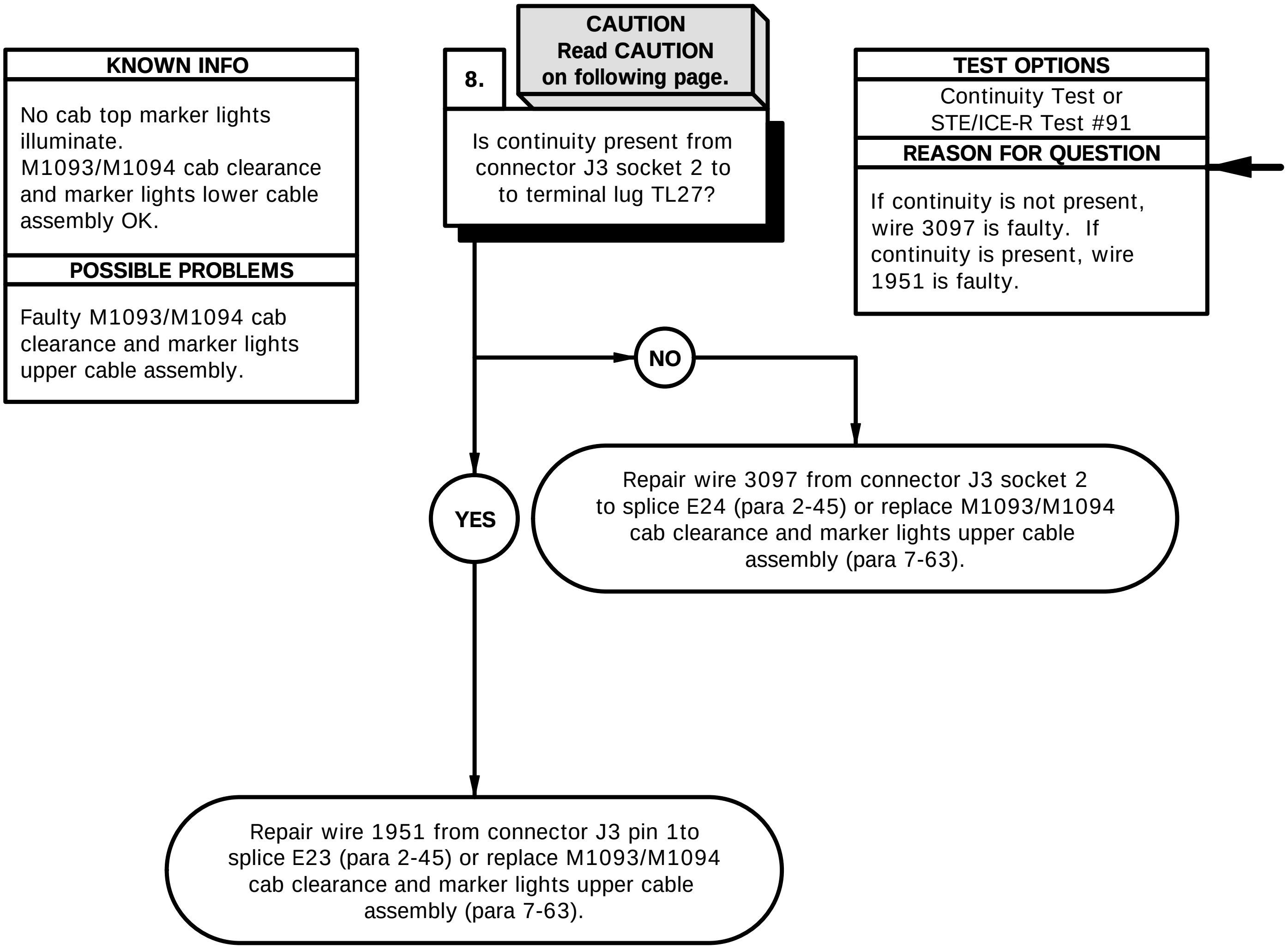
e47. ONE OR MORE CAB TOP MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

No cab top marker lights illuminate.
M1093/M1094 cab clearance and marker lights lower cable assembly OK.

POSSIBLE PROBLEMS

Faulty M1093/M1094 cab clearance and marker lights upper cable assembly.

CAUTION
Read CAUTION on following page.

8. Is continuity present from connector J3 socket 2 to to terminal lug TL27?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3097 is faulty. If continuity is present, wire 1951 is faulty.

Repair wire 3097 from connector J3 socket 2 to splice E24 (para 2-45) or replace M1093/M1094 cab clearance and marker lights upper cable assembly (para 7-63).

Repair wire 1951 from connector J3 pin 1to splice E23 (para 2-45) or replace M1093/M1094 cab clearance and marker lights upper cable assembly (para 7-63).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH cab top marker light base.
(2) Remove LH cab top marker light lamp from socket.
(3) Remove four screws from LH cab top marker light base.

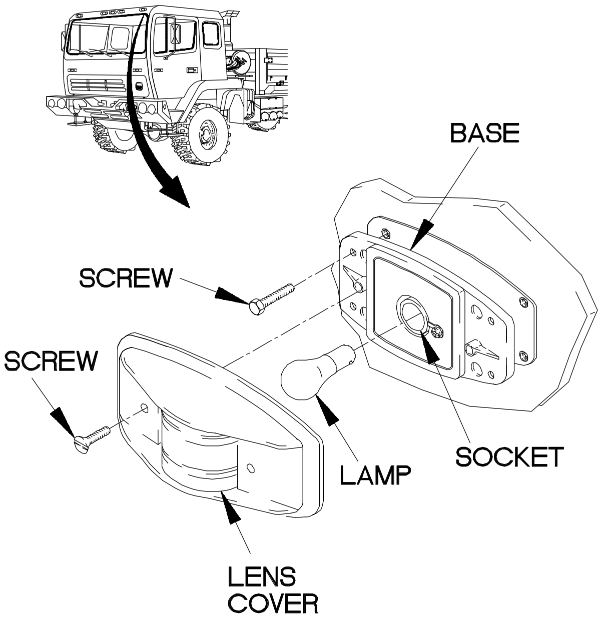
NOTE

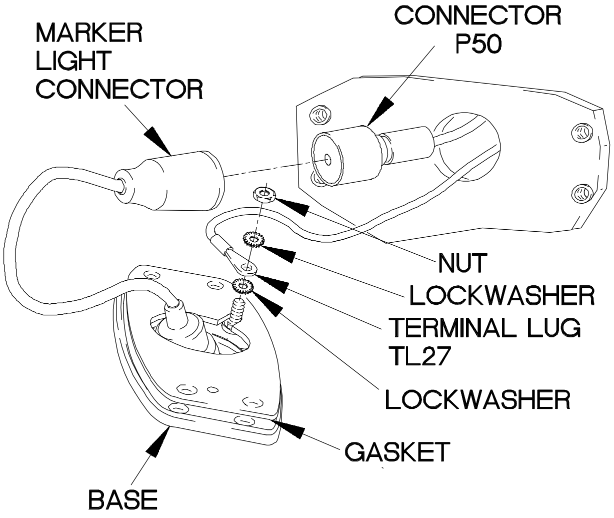
Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

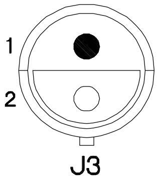
(4) Remove nut, lockwasher, terminal lug TL27, and lockwasher from LH cab top marker light base. Discard lockwashers.
(5) Extend base and disconnect marker light connector from connector P50.
(6) Remove gasket from LH cab top marker light base. Discard gasket.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector J3 socket 2.
(9) Connect negative (-) probe of multimeter to terminal lug TL27 and note reading on multimeter.
(10) If continuity is not present, repair wire 3097 from connector J3 socket 2 to splice E24 (para 2-45) or replace M1093/M1094 cab clearance and marker lights upper cable assembly (para 7-63).
(11) If continuity is present, repair wire 1951 from connector J3 pin 1 to splice E23 (para 2-45) or replace M1093/M1094 cab clearance and marker lights upper cable assembly (para 7-63).
(12) Install gasket on LH cab top marker light base.
(13) Connect marker light connector to connector P50.
(14) Install lockwasher, terminal lug TL27, lockwasher, and nut on back of LH cab top marker light base.
(15) Install LH cab top marker light base on vehicle with four screws.

CONTINUITY TEST (CONT)

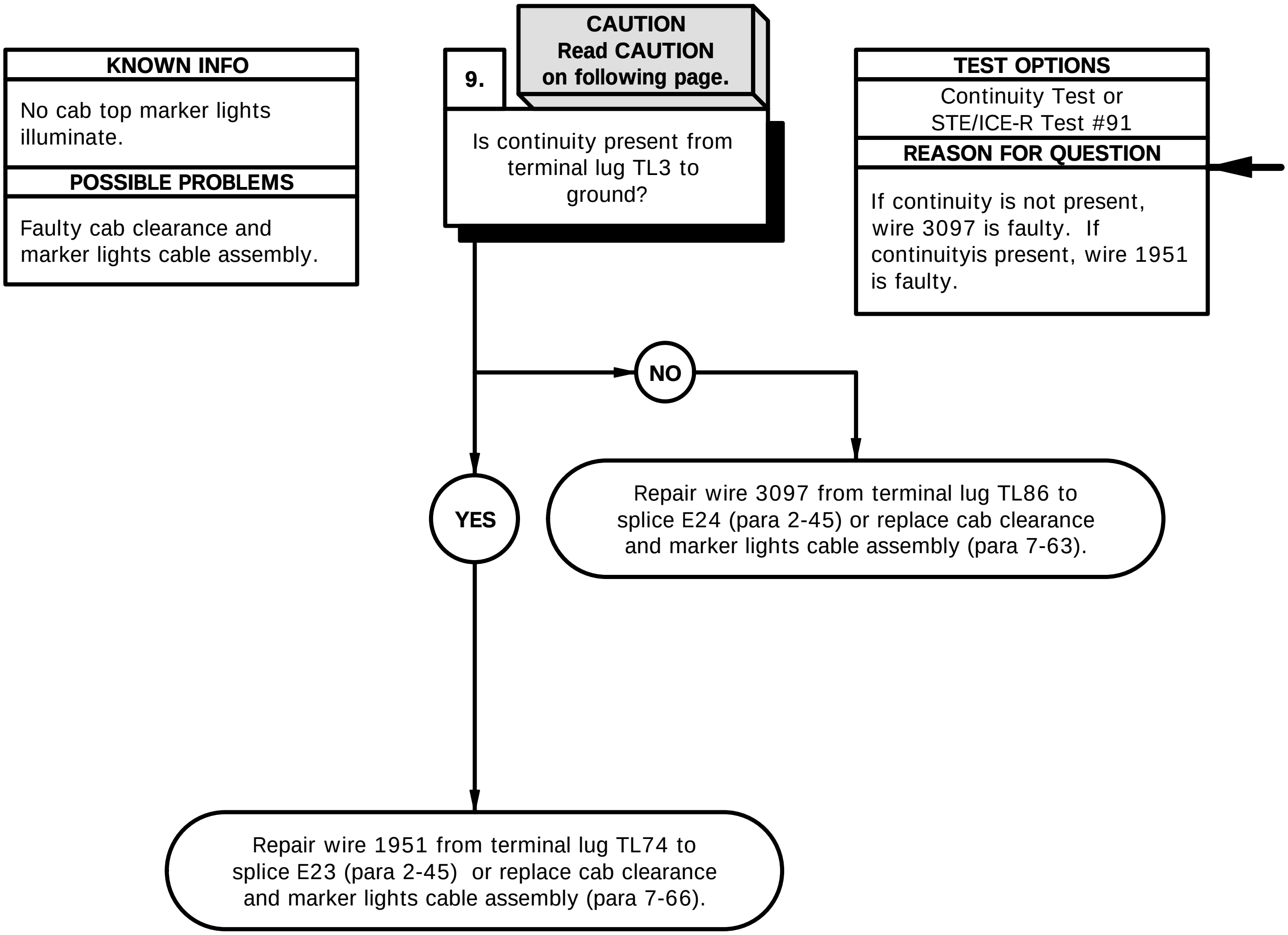
(16) Install LH cab top marker light lamp in socket.
(17) Install lens cover on base with two screws.
(18) Connect connector P3 to connector J3.







e47. ONE OR MORE CAB TOP MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

No cab top marker lights illuminate.

POSSIBLE PROBLEMS

Faulty cab clearance and marker lights cable assembly.

9.

CAUTION
Read CAUTION on following page.

Is continuity present from terminal lug TL3 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3097 is faulty. If continuityis present, wire 1951 is faulty.

Repair wire 3097 from terminal lug TL86 to splice E24 (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-63).

Repair wire 1951 from terminal lug TL74 to splice E23 (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-66).

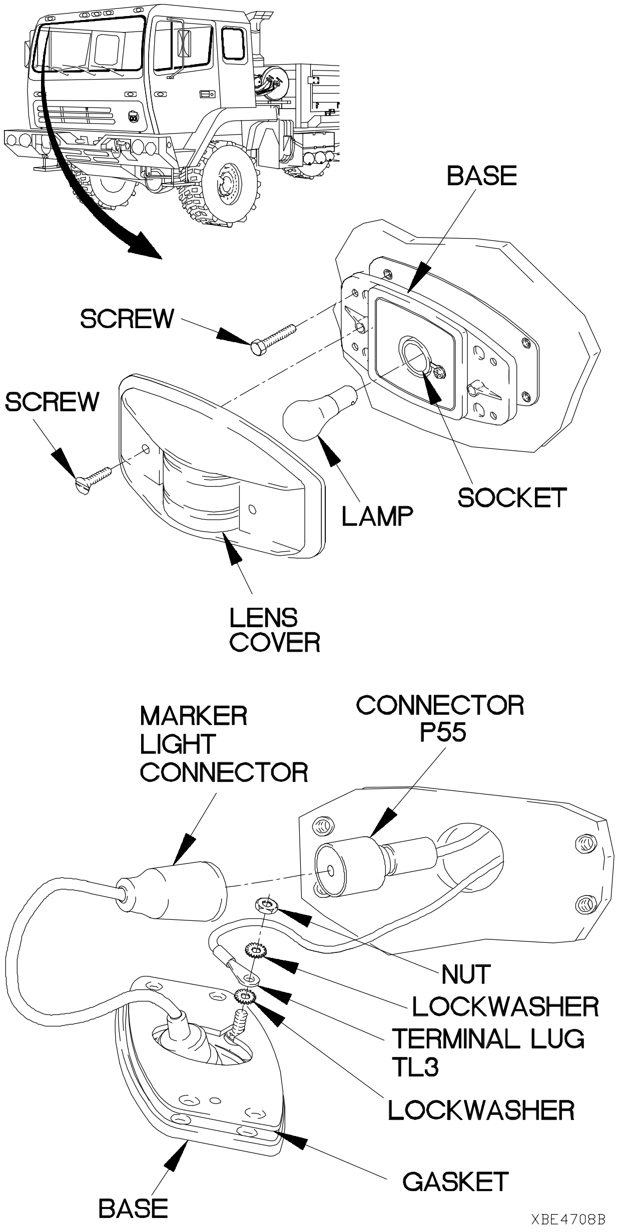
CONTINUITY TEST

(1) Remove two screws and lens cover from RH cab top marker light base.
(2) Remove RH cab top marker lamp from socket.
(3) Remove four screws from RH cab top marker light base.

NOTE

Do not let wires slip through hole into cab structure. If wires slip into cab structure, vehicle will need further disassembly to retrieve wires.

(4) Remove nut, lockwasher, terminal lug TL3, and lockwasker from RH cab top marker light base. Discard lockwashers.
(5) Extend base and disconnect marker light connector from connector P55.
(6) Remove gasket from RH cab top marker light base. Discard gasket.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to terminal lug TL3.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) If continuity is not present, repair wire 3097 from terminal lug TL86 to splice E24 (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-66).
(11) If continuity is present, repair wire 1951 from terminal lug TL74 to splice E23 (para 2-45) or replace cab clearance and marker lights cable assembly (para 7-66).
(12) Install gasket on RH cab top marker light base.
(13) Connect connector P55 to marker light connector.
(14) Install lockwasher, terminal lug TL3, lockwasher, and nut on back of RH cab top marker light base.
(15) Install RH cab top marker light base on vehicle with four screws.
(16) Install RH cab top marker light lamp in socket.
(17) Install lens cover on RH cab top marker light base with two screws.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE

INITIAL SETUP

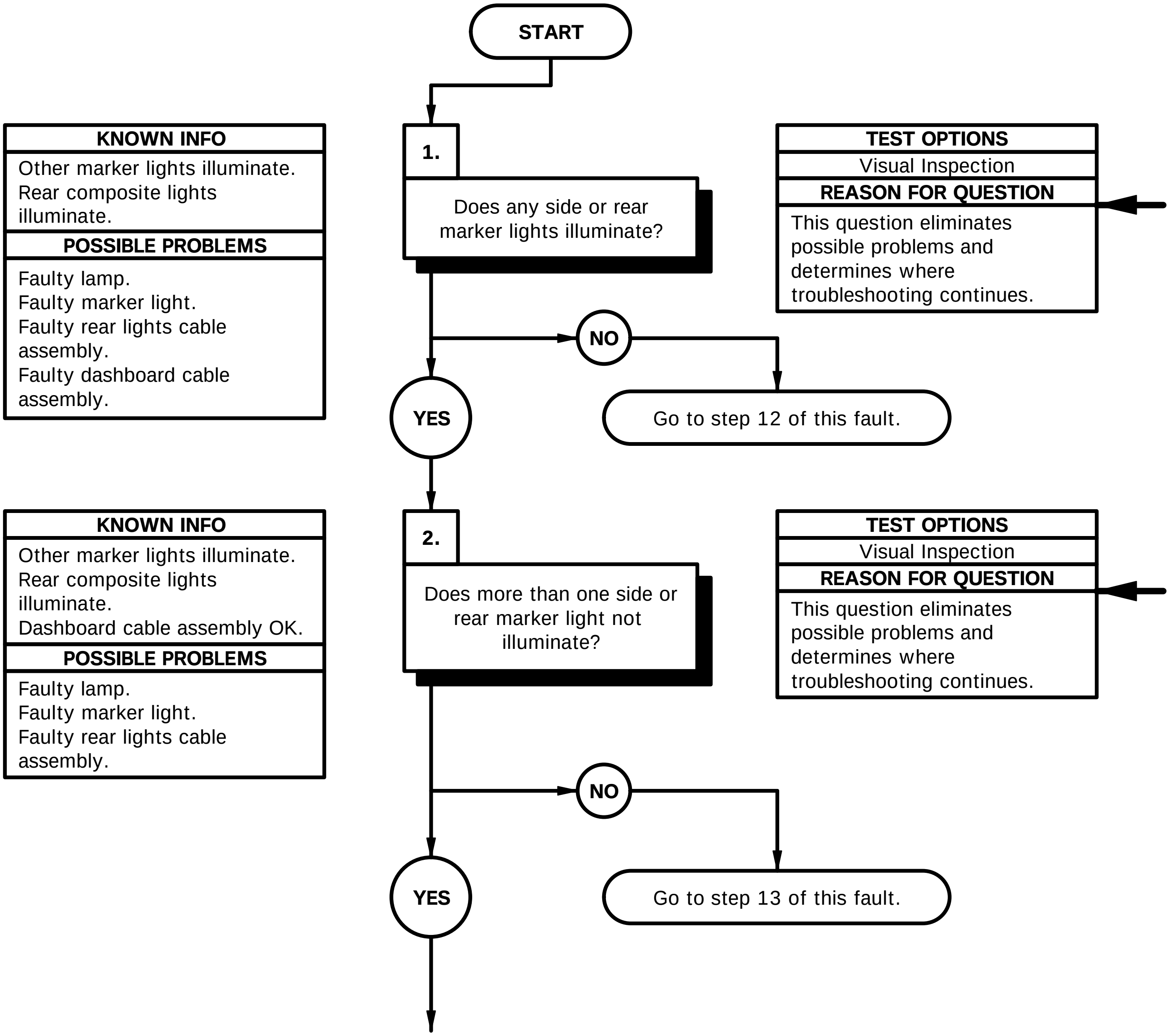
Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICR-R (Item 42, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (6) (Item 82, Appendix G)
Ties, Cable, Plastic (Item 69, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P



START

KNOWN INFO
Other marker lights illuminate.
Rear composite lights illuminate.

POSSIBLE PROBLEMS
Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.
Faulty dashboard cable assembly.

1. Does any side or rear marker lights illuminate?

TEST OPTIONS
Visual Inspection

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 12 of this fault.

YES

KNOWN INFO
Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS
Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

2. Does more than one side or rear marker light not illuminate?

TEST OPTIONS
Visual Inspection

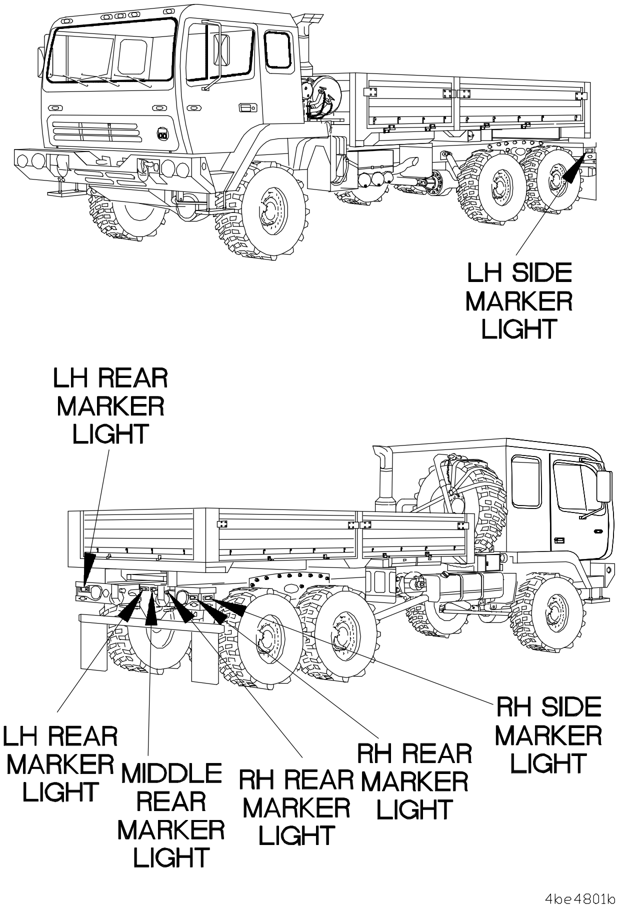
REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 13 of this fault.

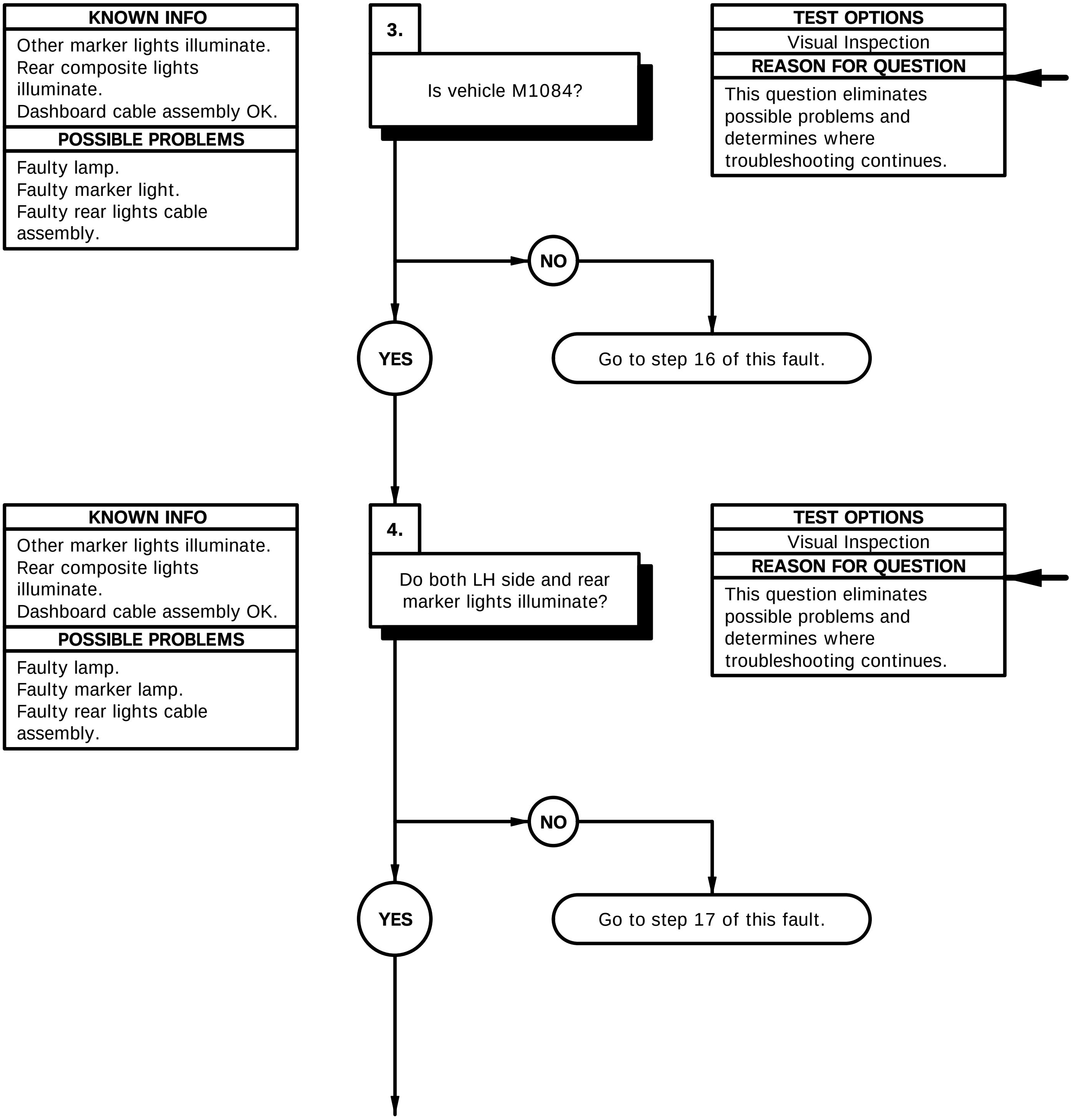
YES

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Note side and/or rear marker light(s) that do not illuminate.
(3) If all side and/or rear marker lights do not illuminate, go to step 12 of this fault.
(4) Position main light switch to OFF (TM 9-2320-366-10-1).

If only one side and/or rear marker light does not illuminate, go to step 13 of this fault.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

3.

Is vehicle M1084?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 16 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker lamp.
Faulty rear lights cable assembly.

4.

Do both LH side and rear marker lights illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

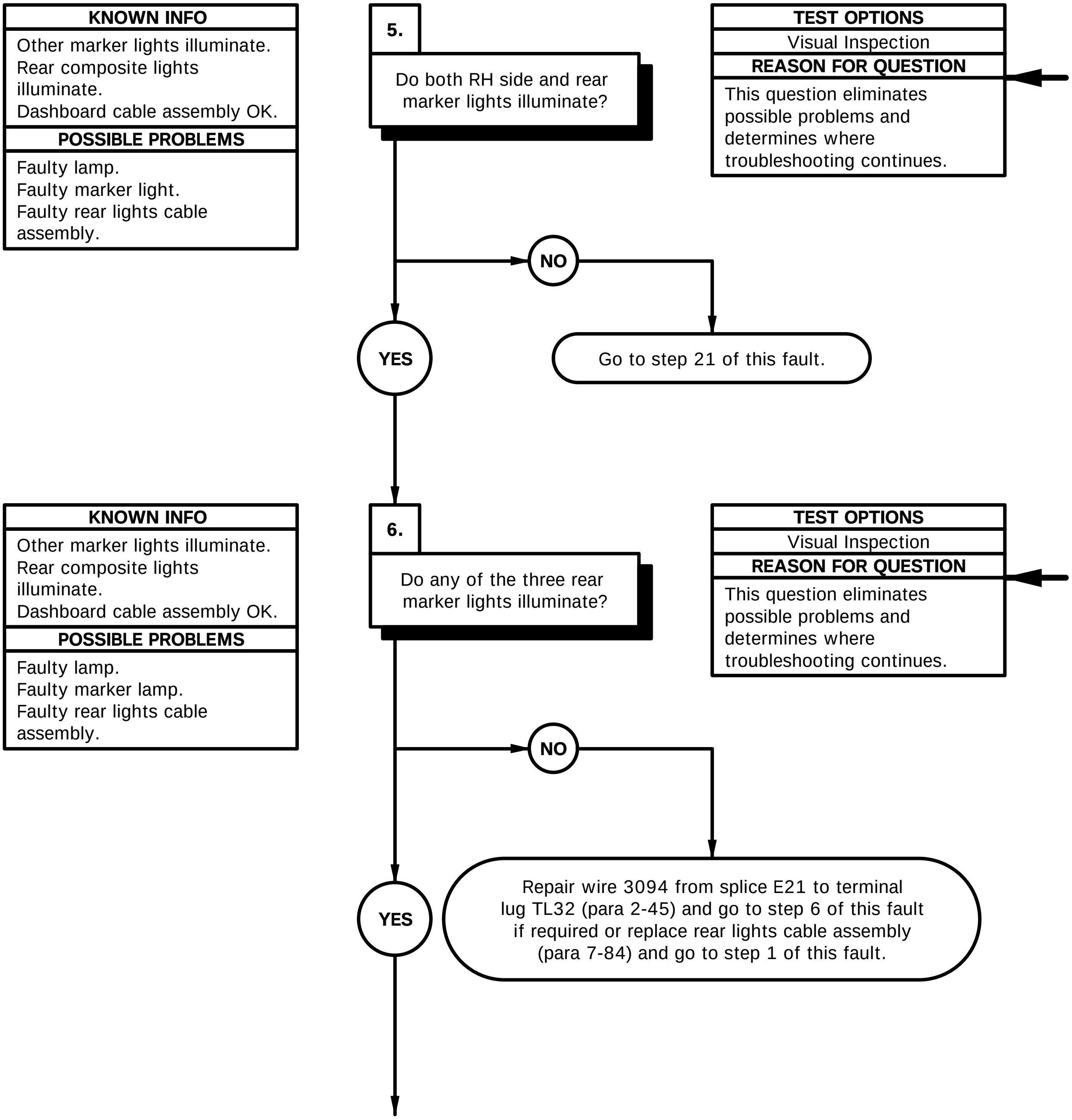
NO — Go to step 17 of this fault.

YES

Is vehicle M1084? If vehicle is not M1084, go to step 16 of this fault.

If both LH side and rear marker lights do not illuminate, go to step 17 of this fault.

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

5. Do both RH side and rear marker lights illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO Go to step 21 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker lamp.
Faulty rear lights cable assembly.

6. Do any of the three rear marker lights illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO Repair wire 3094 from splice E21 to terminal lug TL32 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

If both RH side and rear marker lights do not illuminate, go to step 21 of this fault.

If all three marker lights do not illuminate, repair wire 3094 from splice E21 to terminal lug TL32 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

7.

Does the RH rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 25 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

8.

Does the middle rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

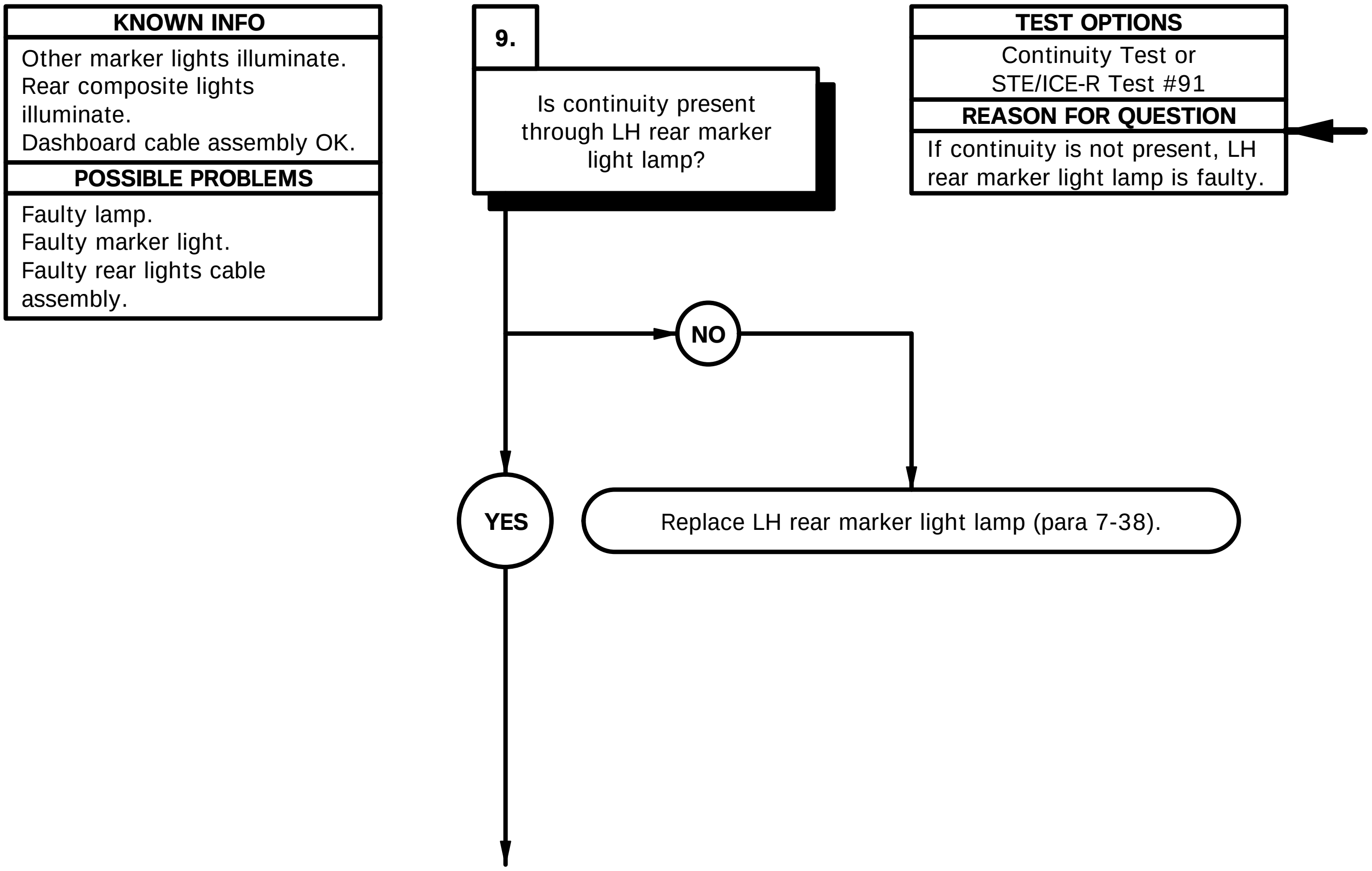
Go to step 27 of this fault.

YES

If the RH rear marker light does not illuminate, go to step 25 of this fault.

If the middle rear marker light does not illuminate, go to step 27 of this fault.

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

9. Is continuity present through LH rear marker light lamp?

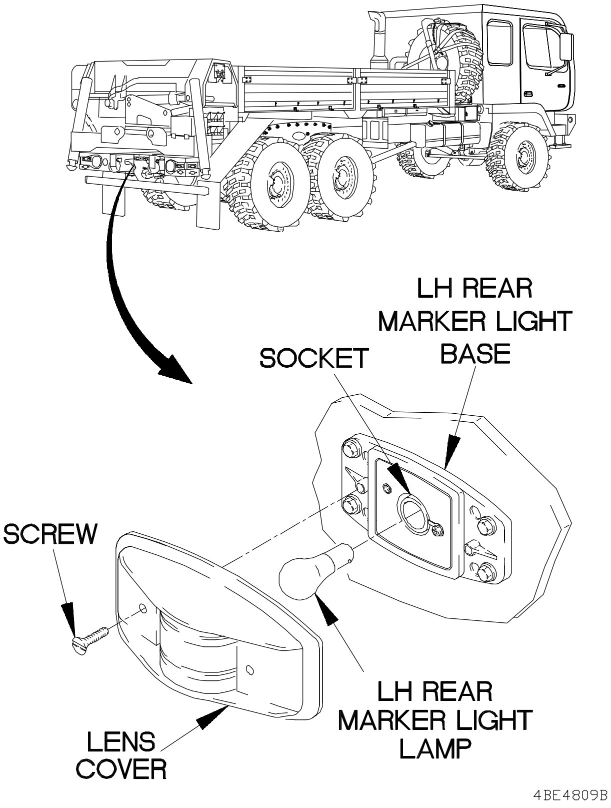
TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH rear marker light lamp is faulty.

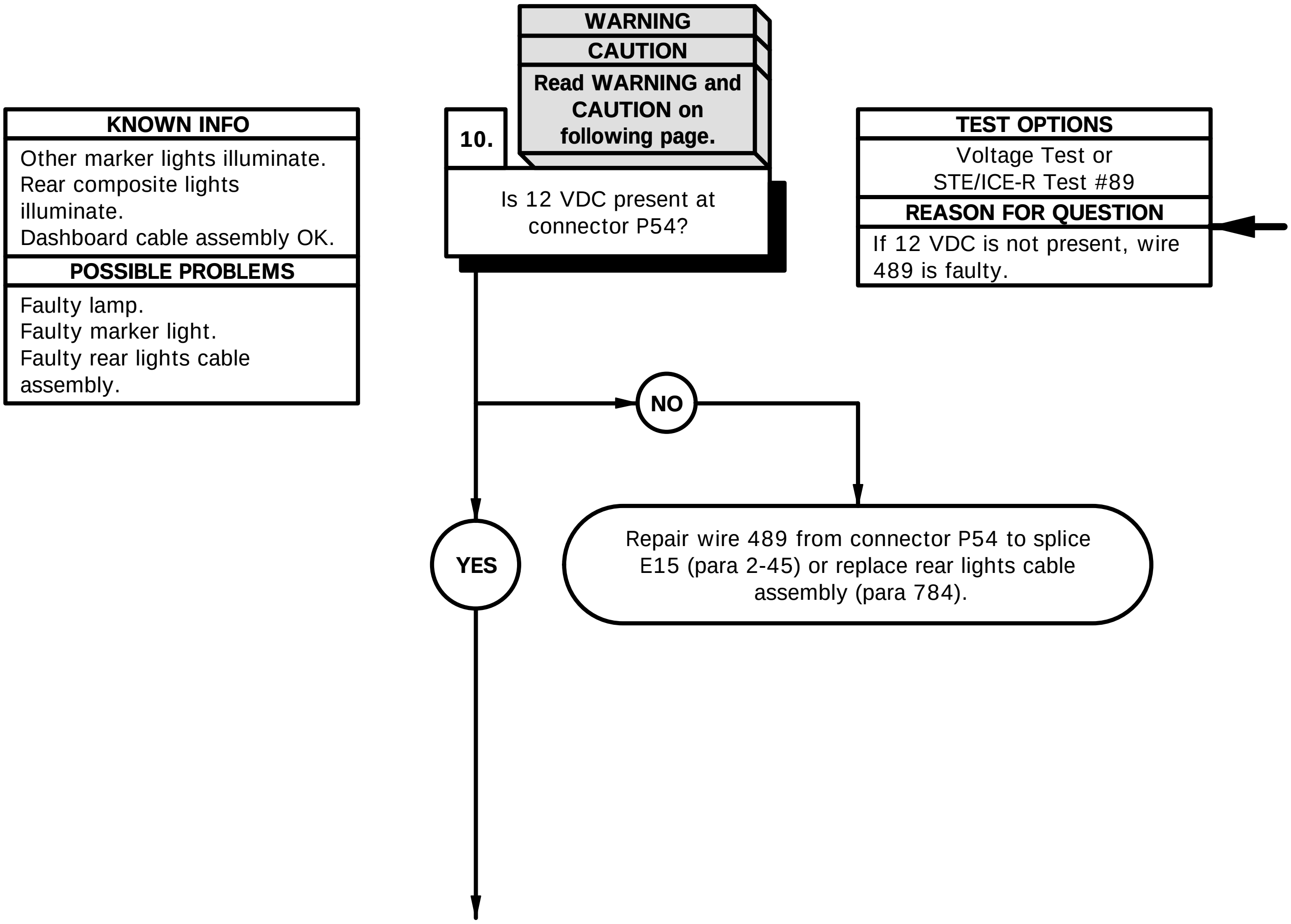
Replace LH rear marker light lamp (para 7-38).



CONTINUITY TEST

(1) Remove two screws and lens cover from LH rear marker light base.
(2) Remove LH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH rear marker light lamp (para 7-38).
(6) Install LH rear marker light lamp in socket.
(7) Install lens cover on LH rear marker light base with two screws.

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

10. Is 12 VDC present at connector P54?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P54 to splice E15 (para 2-45) or replace rear lights cable assembly (para 784).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

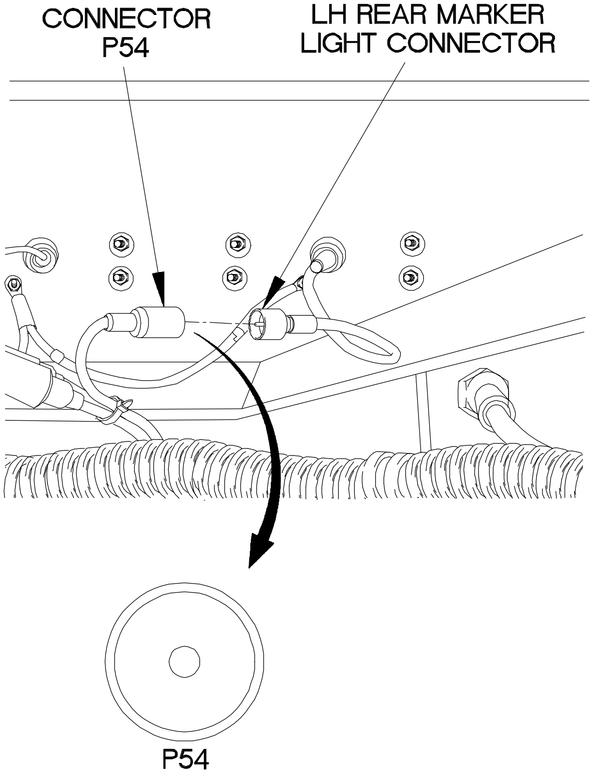
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

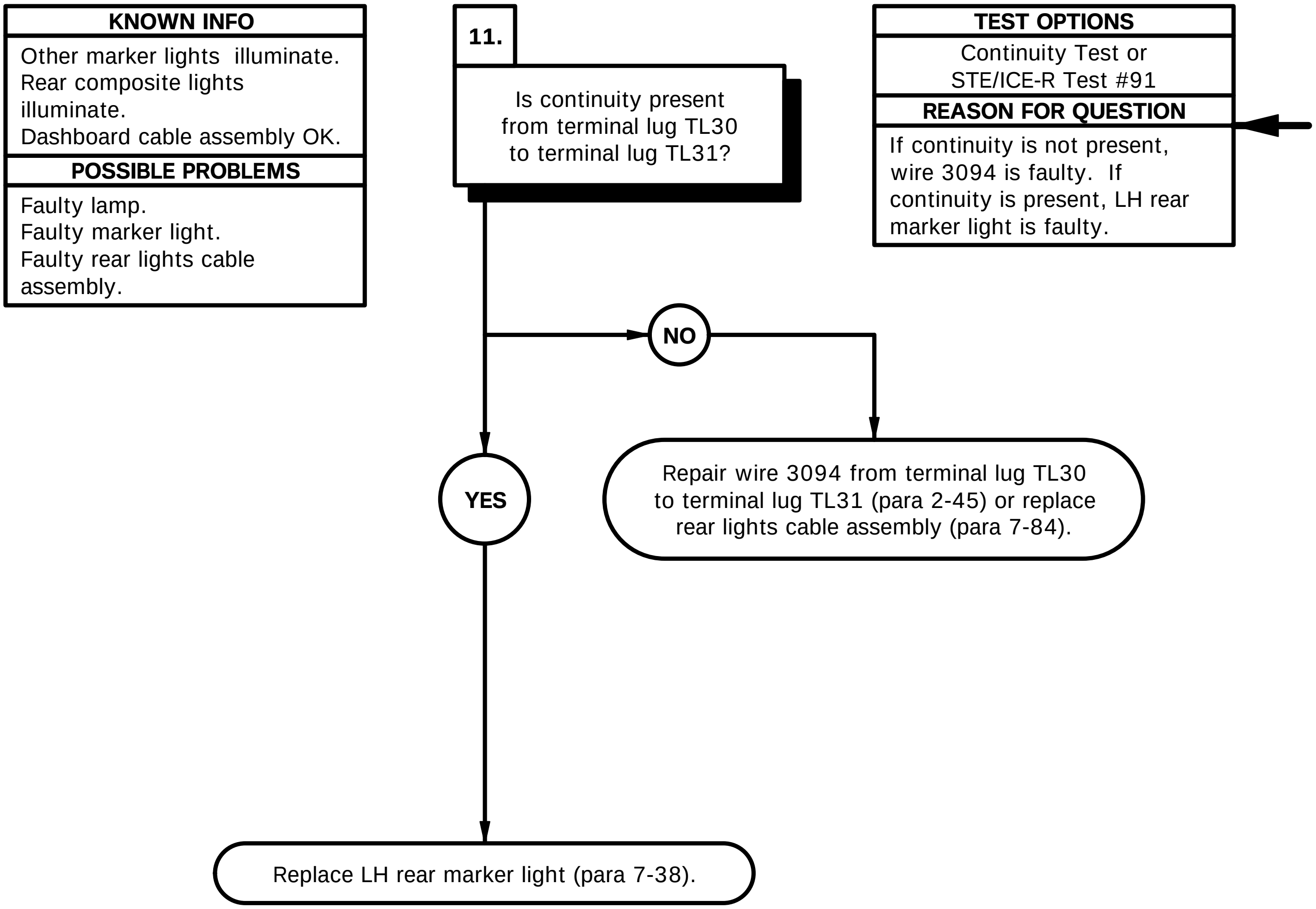
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P54 from LH rear marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P54.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P54 to splice E15 (para 2-45) or replace rear lights cable assembly (para 7-84).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Connect LH rear marker light connector to connector P54.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

11.

Is continuity present from terminal lug TL30 to terminal lug TL31?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

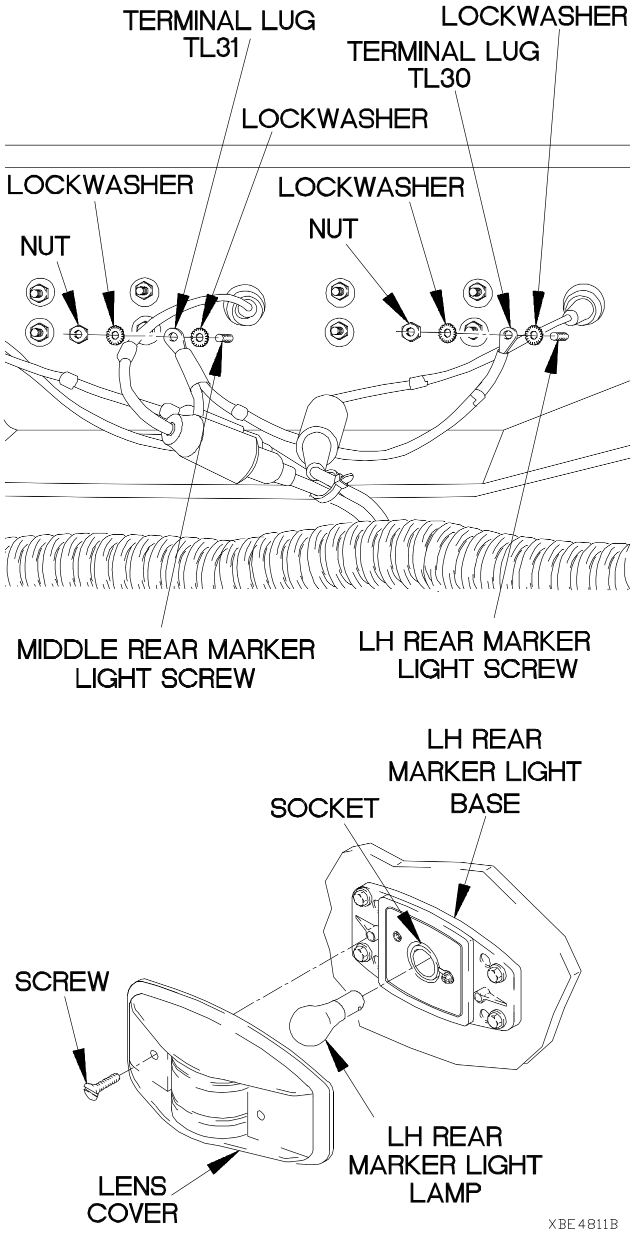
If continuity is not present, wire 3094 is faulty. If continuity is present, LH rear marker light is faulty.

Repair wire 3094 from terminal lug TL30 to terminal lug TL31 (para 2-45) or replace rear lights cable assembly (para 7-84).

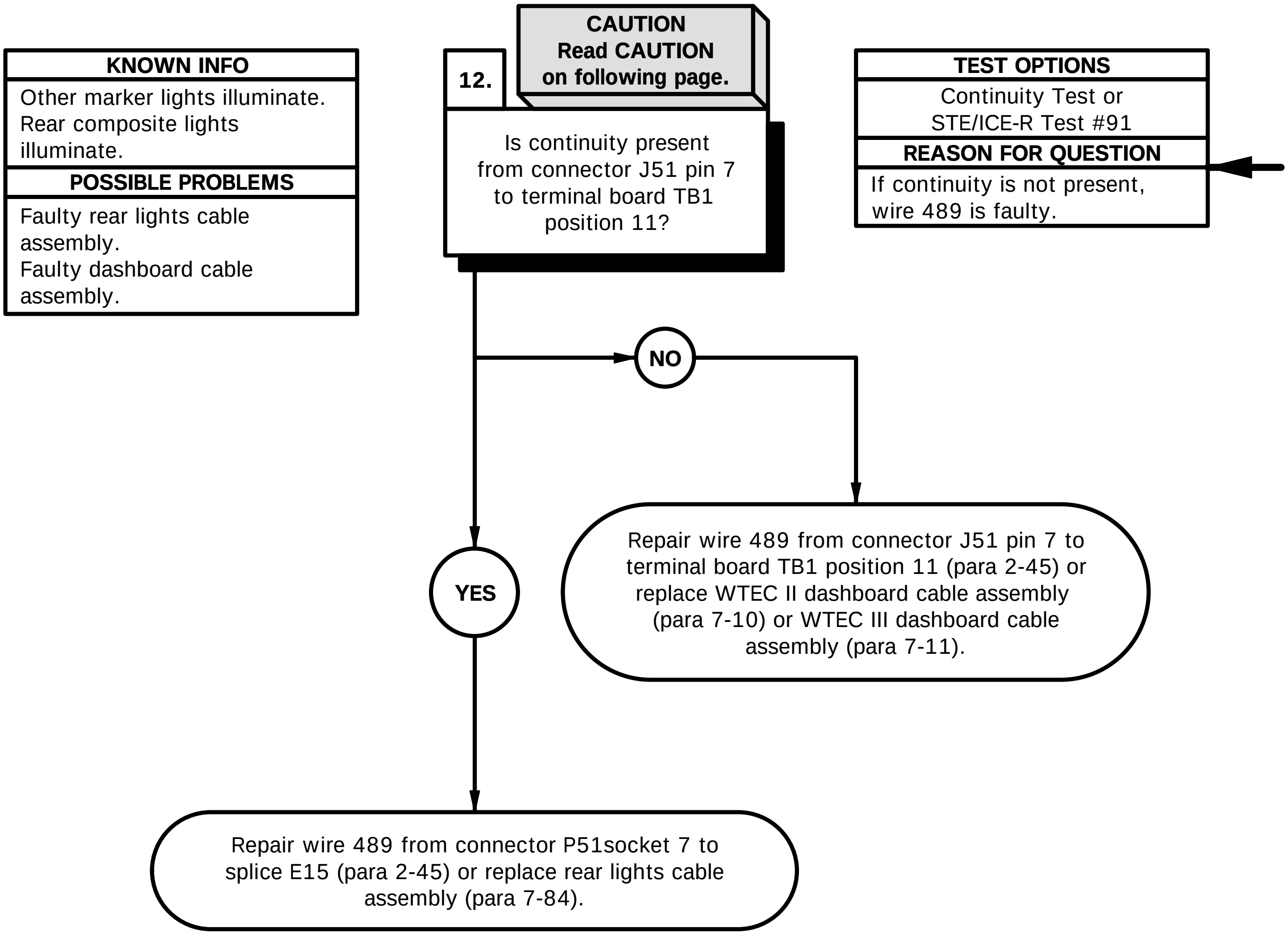
Replace LH rear marker light (para 7-38).

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL30, and lockwasher from LH rear marker light screw. Discard lockwashers.
(2) Remove nut, lockwasher, terminal lug TL31, and lockwasher from middle rear marker light screw. Discard lockwashers.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL30.
(5) Connect negative (-) probe of multimeter to terminal lug TL31 and note reading on multimeter.
(6) If continuity is not present, repair wire 3094 from terminal lug TL30 to terminal lug TL31 (para 2-45) or replace rear lights cable assembly (para 7-84).
(7) If continuity is present, replace LH rear marker light (para 7-38).
(8) Install lockwasher, terminal lug TL31, lockwasher, and nut on middle rear marker light screw.
(9) Install lockwasher, terminal lug TL30, lockwasher, and nut on LH rear marker light screw.
(10) Install LH rear marker light lamp in socket.
(11) Install lens cover on LH rear marker light base with two screws.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.

12.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J51 pin 7 to terminal board TB1 position 11?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 489 is faulty.

Repair wire 489 from connector J51 pin 7 to terminal board TB1 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Repair wire 489 from connector P51socket 7 to splice E15 (para 2-45) or replace rear lights cable assembly (para 7-84).

CAUTION

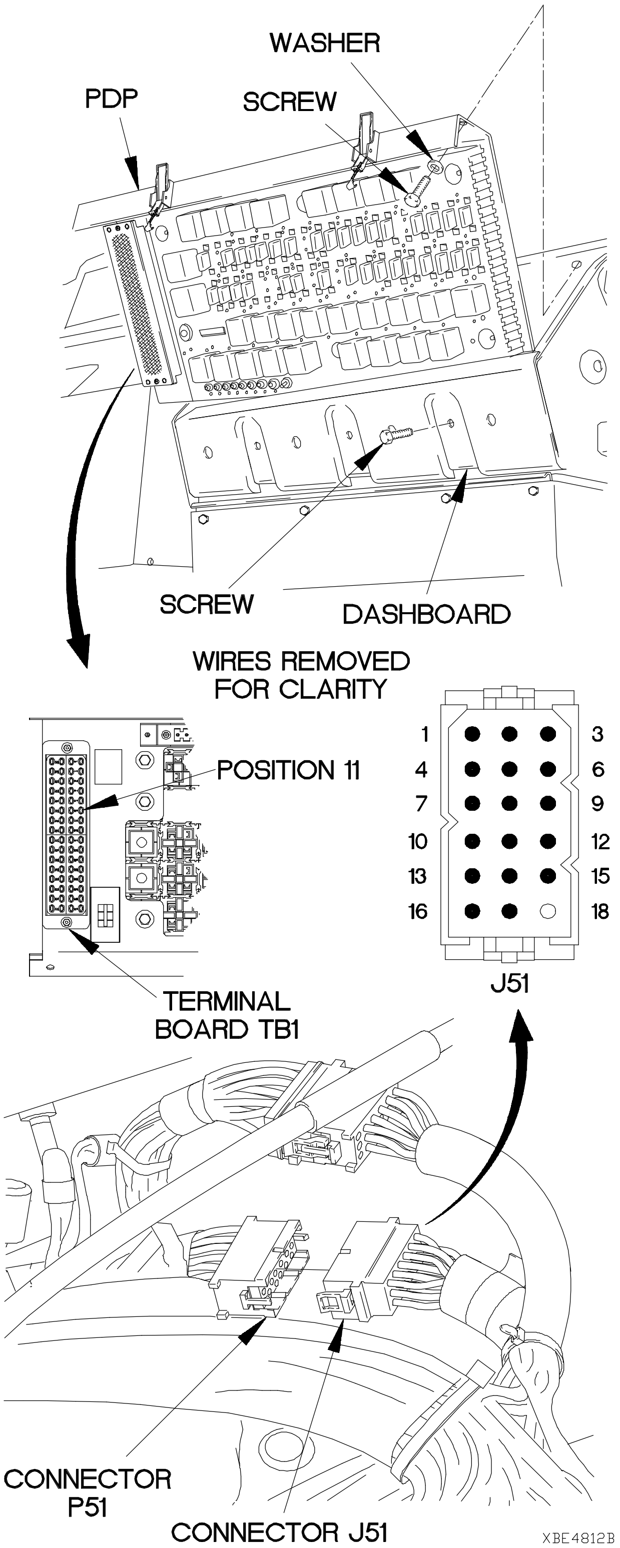
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

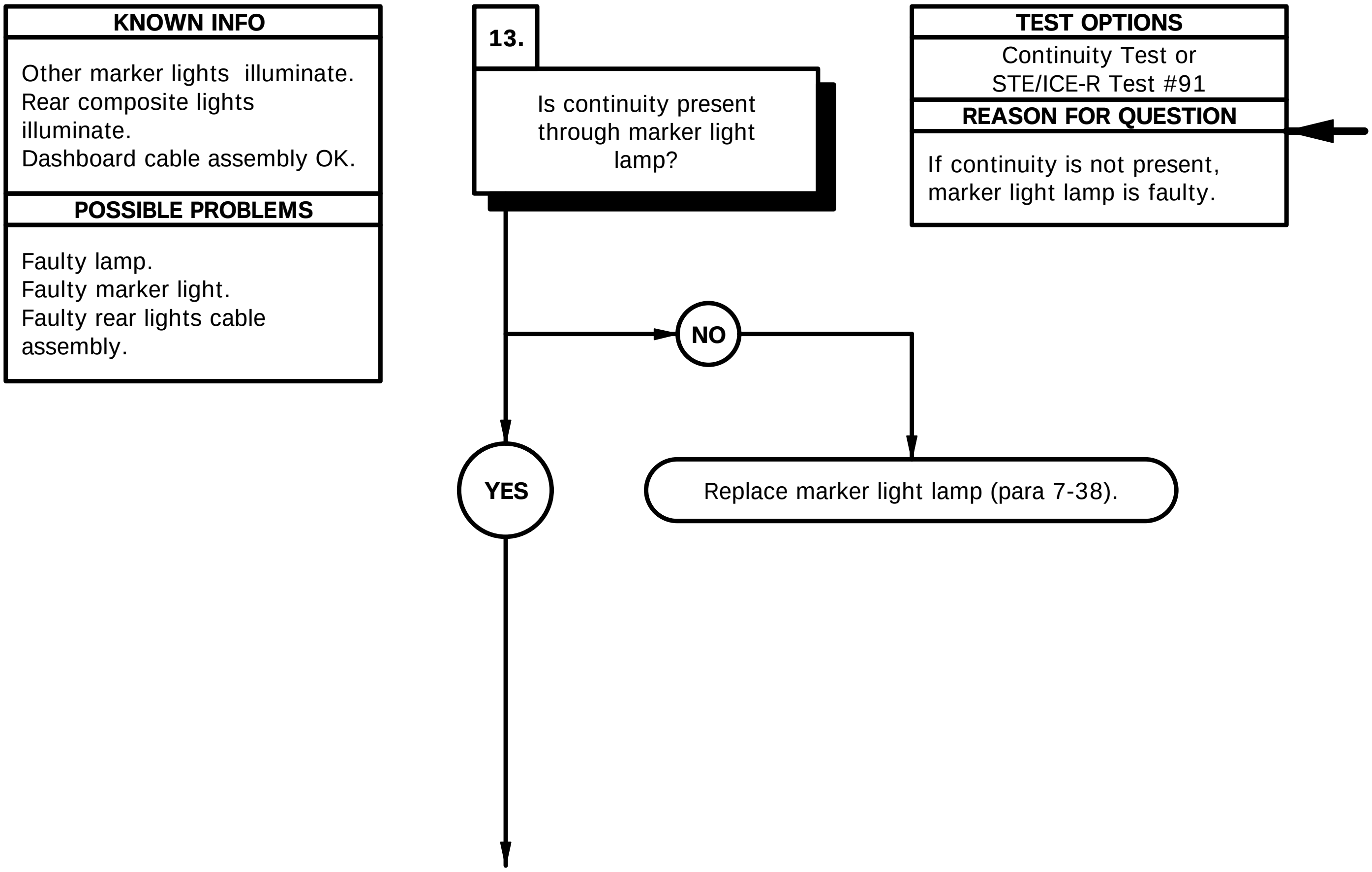
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove PDP cover (para 16-2).
(3) Remove three screws and washers from PDP.
(4) Remove three screws from PDP.
(5) Lift PDP outward to gain access.
(6) Disconnect connector P51 from connector J51.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector J51 pin 7.
(9) Connect negative (-) probe of multimeter to terminal board TB1 position 11 and note reading on multimeter.
(10) If continuity is not present, repair wire 489 from connector J51 pin 7 to terminal board TB1 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) If continuity is present, repair wire 489 from connector P51 socket 7 to splice E15 (para 2-45) or replace rear lights cable assembly (para 7-84).
(12) Connect connector J51 to connector P51.
(13) Install PDP on dashboard with three screws.
(14) Install three washers and screws in PDP.
(15) Install PDP cover (para 16-2).
(16) Connect batteries (para 7-57).



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

13.

Is continuity present through marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

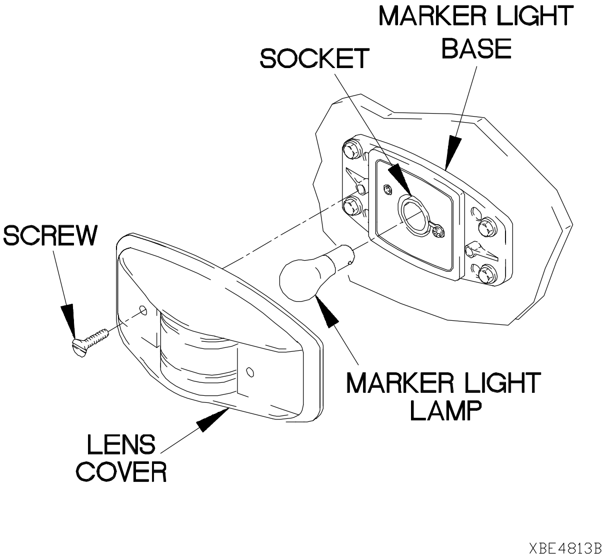
REASON FOR QUESTION

If continuity is not present, marker light lamp is faulty.

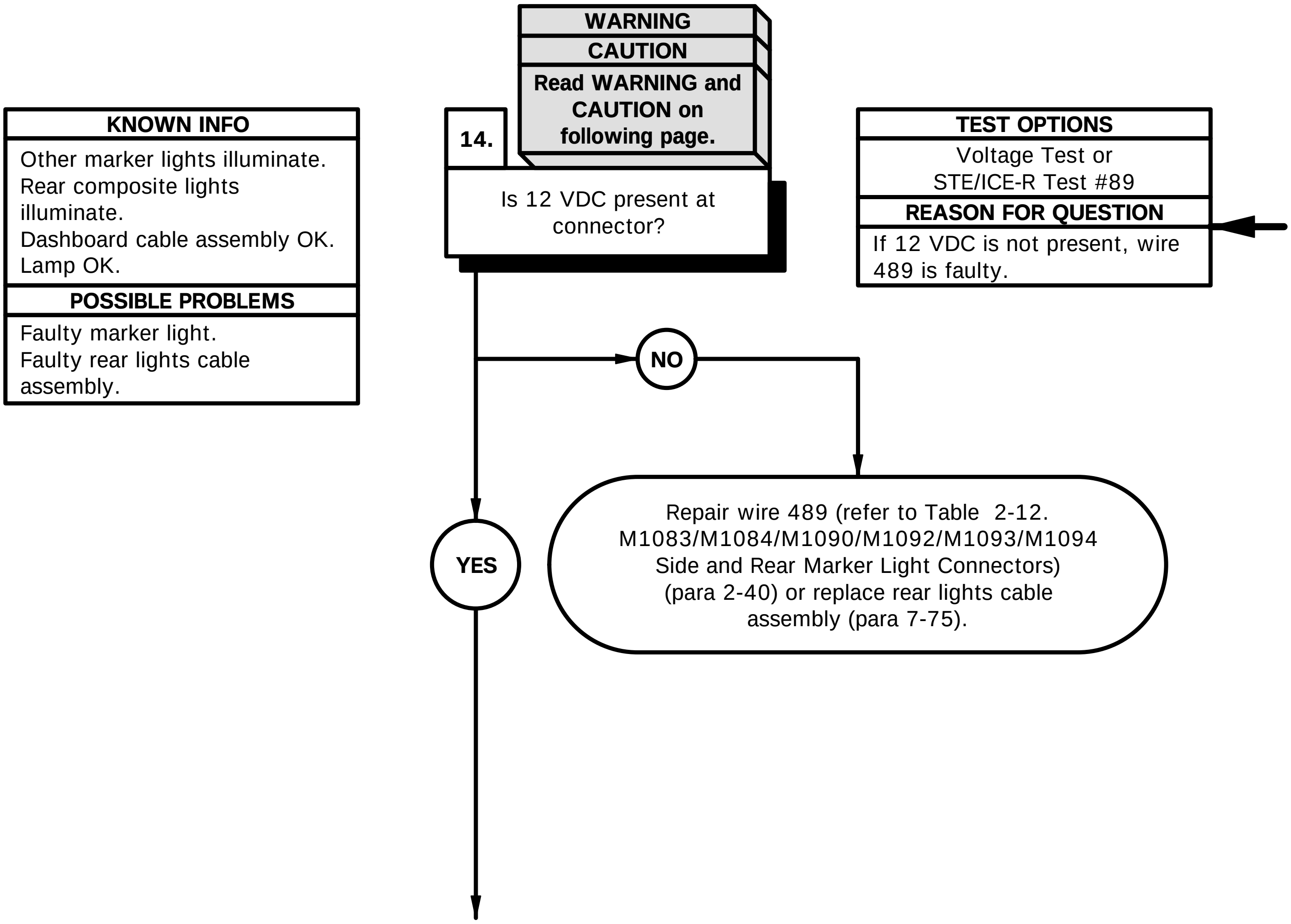
Replace marker light lamp (para 7-38).

CONTINUITY TEST

(1) Remove two screws and lens cover from marker light base.
(2) Remove marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace marker light lamp (para 7-38).
(6) Install marker light lamp in socket.
(7) Install lens cover on marker light base with two screws.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect marker light connector from connector (refer to Table 2-12. M1083/M1084/M1090/M1092/M1093/M1094 Side and Rear Marker Light Connectors).
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector (refer to Table 2-12. M1083/M1084/M1090/M1092/M1093/M1094 Side and Rear Marker Light Connectors).
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 (refer to Table 2-12. M1083/M1084/M1090/M1092/M1093/M1094 Side and Rear Marker Light Connectors) (para 2-45) or replace rear lights cable assembly (para 7-84).

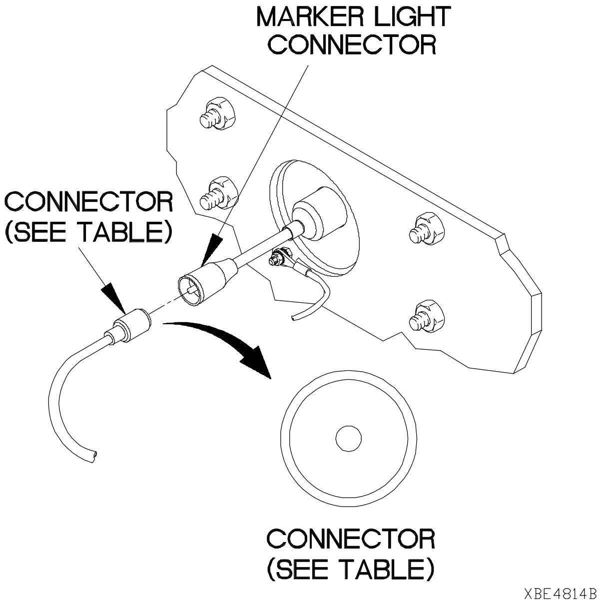
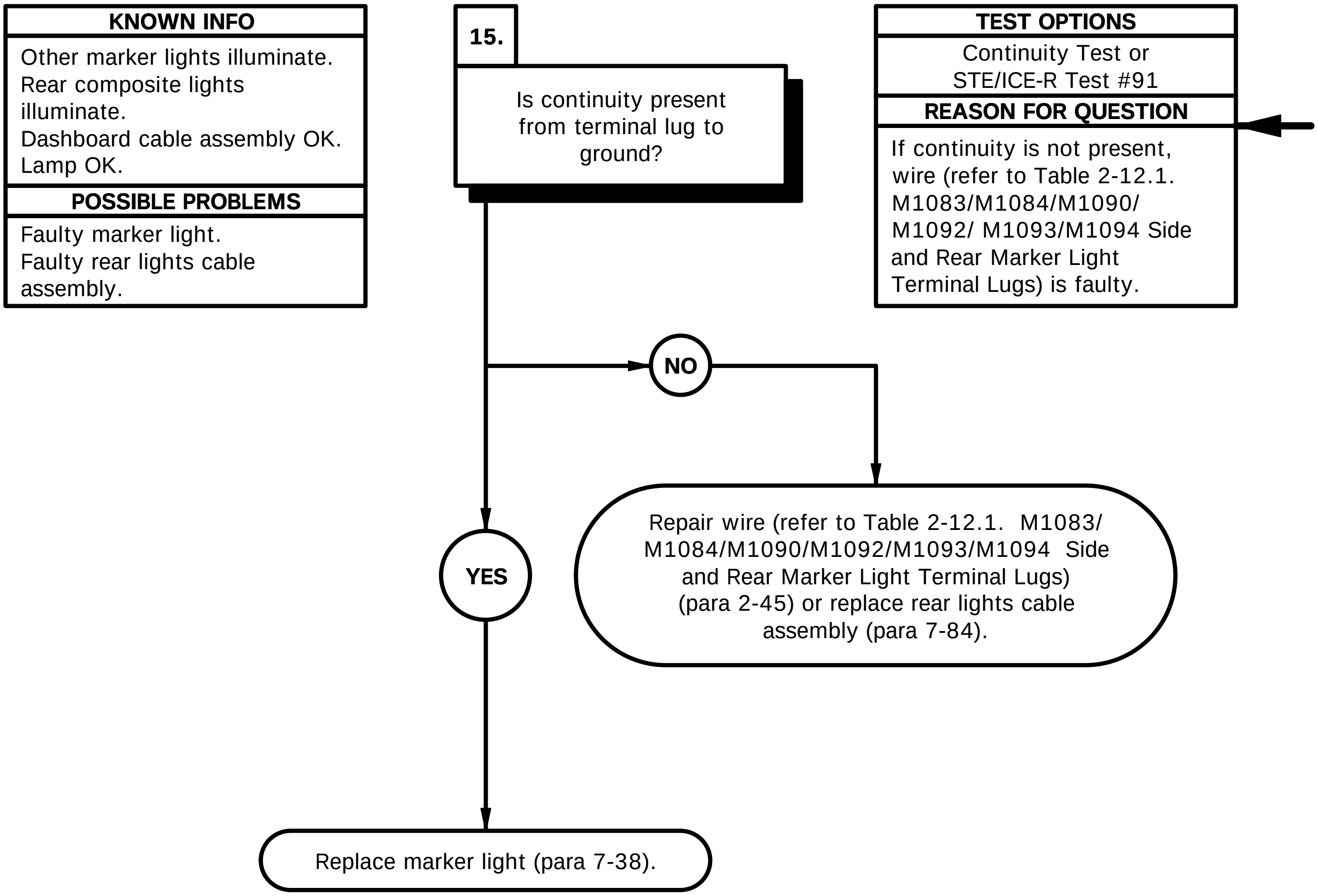


Table 2-12. M1083/M1084/M1090/M1092/M1093/M1094 Side and Rear Marker Light Connectors

Marker Light	Connector	Wire 489 Segment
LH Side	P85	Connector P85 to Splice
LH Rear	P86	Connector P86 to Splice
Left Rear	P54	Connector P54 to Splice
Middle Rear	P56	Connector P56 to Splice
Right Rear	P58	Connector P58 to Splice
RH Rear	P89	Connector P89 to Splice
RH Side	P88	Connector P88 to Splice

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

15.

Is continuity present from terminal lug to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire (refer to Table 2-12.1. M1083/M1084/M1090/ M1092/ M1093/M1094 Side and Rear Marker Light Terminal Lugs) is faulty.

Repair wire (refer to Table 2-12.1. M1083/ M1084/M1090/M1092/M1093/M1094 Side and Rear Marker Light Terminal Lugs) (para 2-45) or replace rear lights cable assembly (para 7-84).

Replace marker light (para 7-38).

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug, and lockwasher from marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug (refer to Table 2-12.1. M1093/M1084/M1090/M1090/M1092/M1093 Side and Rear Marker Light Terminal Lugs).
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire (refer to Table 2-12.1. M1093/M1084/M1090/M1090/M1092/M1093 Side and Rear Marker Light Terminal Lugs) (para 2-45) or replace rear lights cable assembly (para 7-84).
(6) If continuity is present, replace marker light (para 7-38).
(7) Install lockwasher and terminal lug on marker light screw with lockwasher and nut.

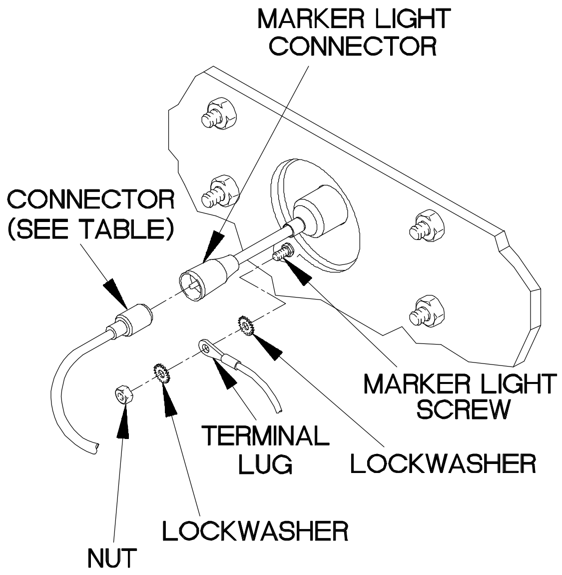
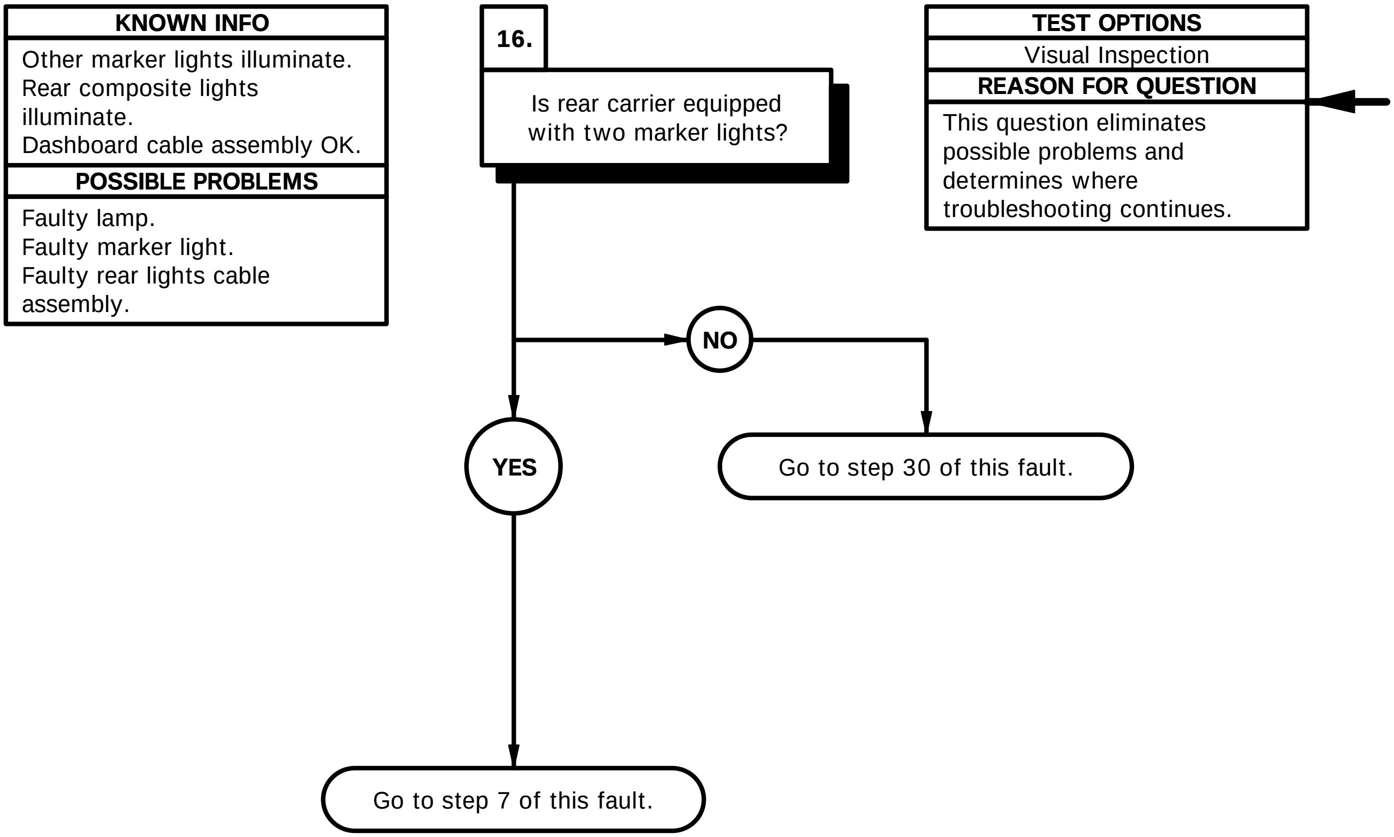


Table 2-12.1. M1083/M1084/M1090/M1092/M1093/M1094 Side and Rear Marker Light Terminal Lugs

Marker Light	Connector	Wire Segment
LH Side	TL15	Wire 3094 from Terminal Lug TL15 to Terminal Lug TL16
LH Rear	TL16	Replace Marker Light (para 7-38)
Left Rear	TL30	Wire 3094 from Terminal Lug TL31 to Terminal Lug TL30
Middle Rear	TL31	Replace Marker Light (para 7-38)
Right Rear	TL32	Replace Marker Light (para 7-38)
RH Rear	TL20	Replace Marker Light (para 7-38)
RH Side	TL19	Wire 3095 from Terminal Lug TL19 to Terminal Lug TL20

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

16.

Is rear carrier equipped with two marker lights?

TEST OPTIONS

Visual Inspection

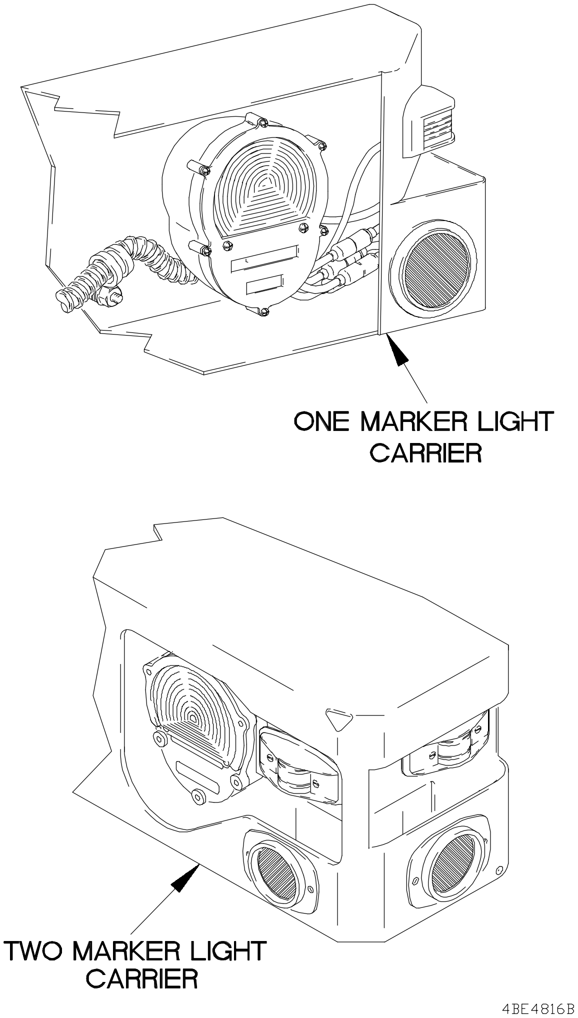
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

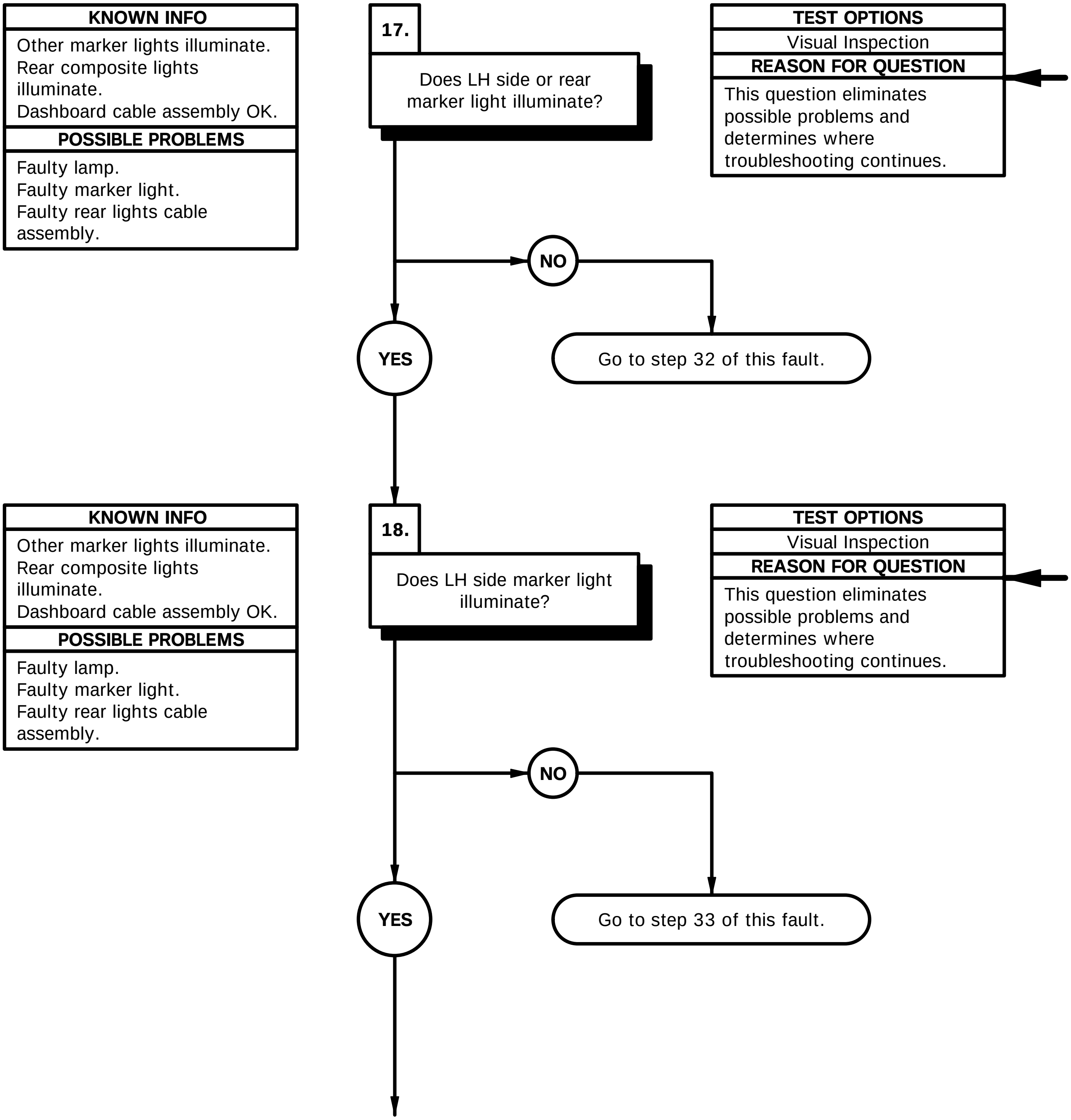
Go to step 30 of this fault.

Go to step 7 of this fault.

(1) If rear carrier is equipped with one marker light, go to step 30 of this fault.
(2) If rear carrier is equipped with two marker lights, go to step 7 of this fault.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

17.

Does LH side or rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 32 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

18.

Does LH side marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

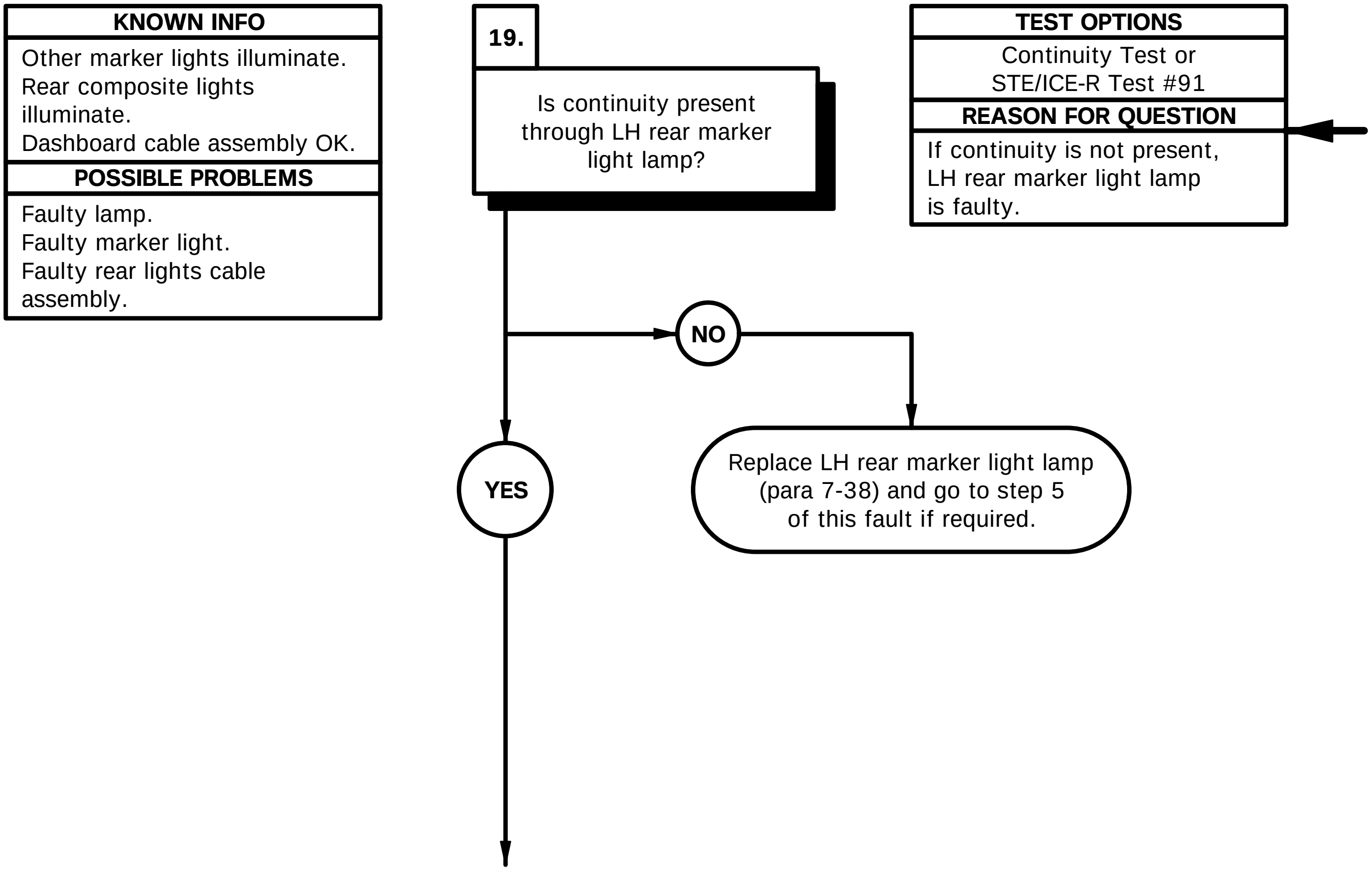
Go to step 33 of this fault.

YES

If LH side and rear marker lights do not illuminate, go to step 32 of this fault.

If LH side marker light does not illuminate, go to step 33 of this fault.

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

19.

Is continuity present through LH rear marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

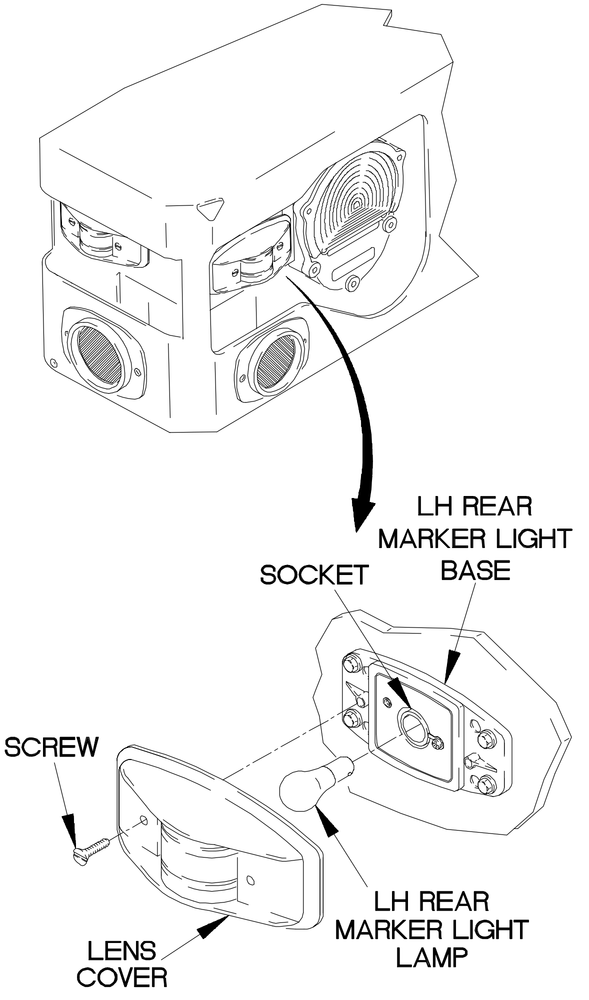
REASON FOR QUESTION

If continuity is not present, LH rear marker light lamp is faulty.

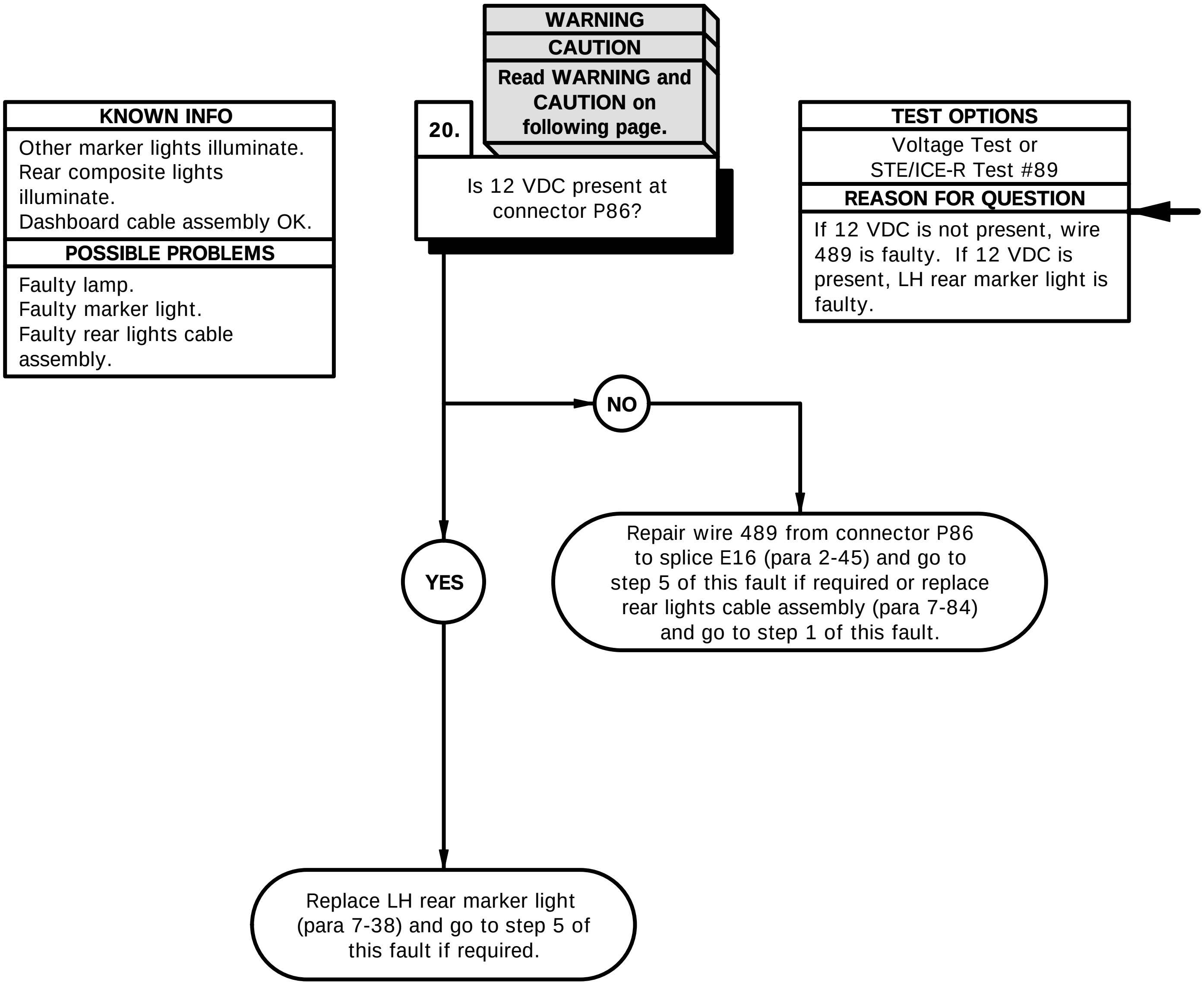
Replace LH rear marker light lamp (para 7-38) and go to step 5 of this fault if required.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH rear marker light base.
(2) Remove LH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH rear marker light lamp (para 7-38) and go to step 5 of this fault if required.
(6) Install LH rear marker light lamp in socket.
(7) Install lens cover on LH rear marker light base with two screws.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

20.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

Is 12 VDC present at connector P86?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, LH rear marker light is faulty.

NO

Repair wire 489 from connector P86 to splice E16 (para 2-45) and go to step 5 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace LH rear marker light (para 7-38) and go to step 5 of this fault if required.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

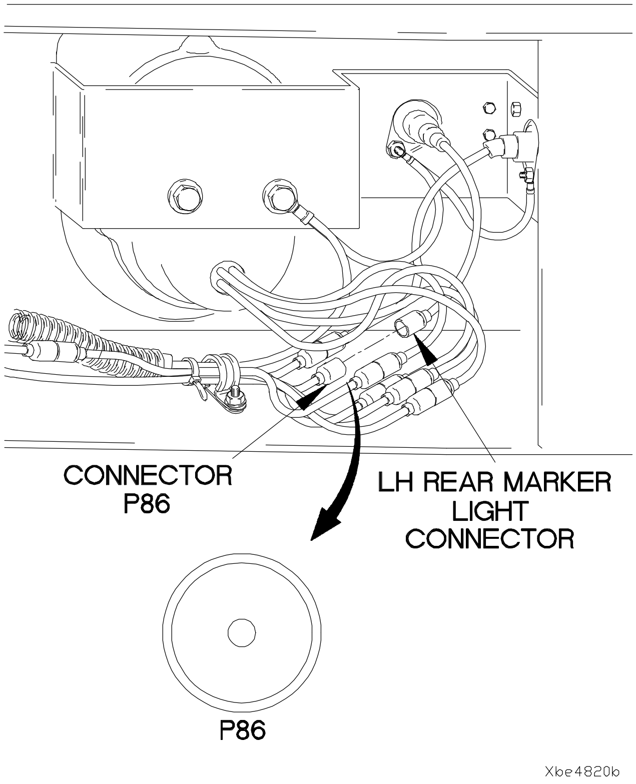
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

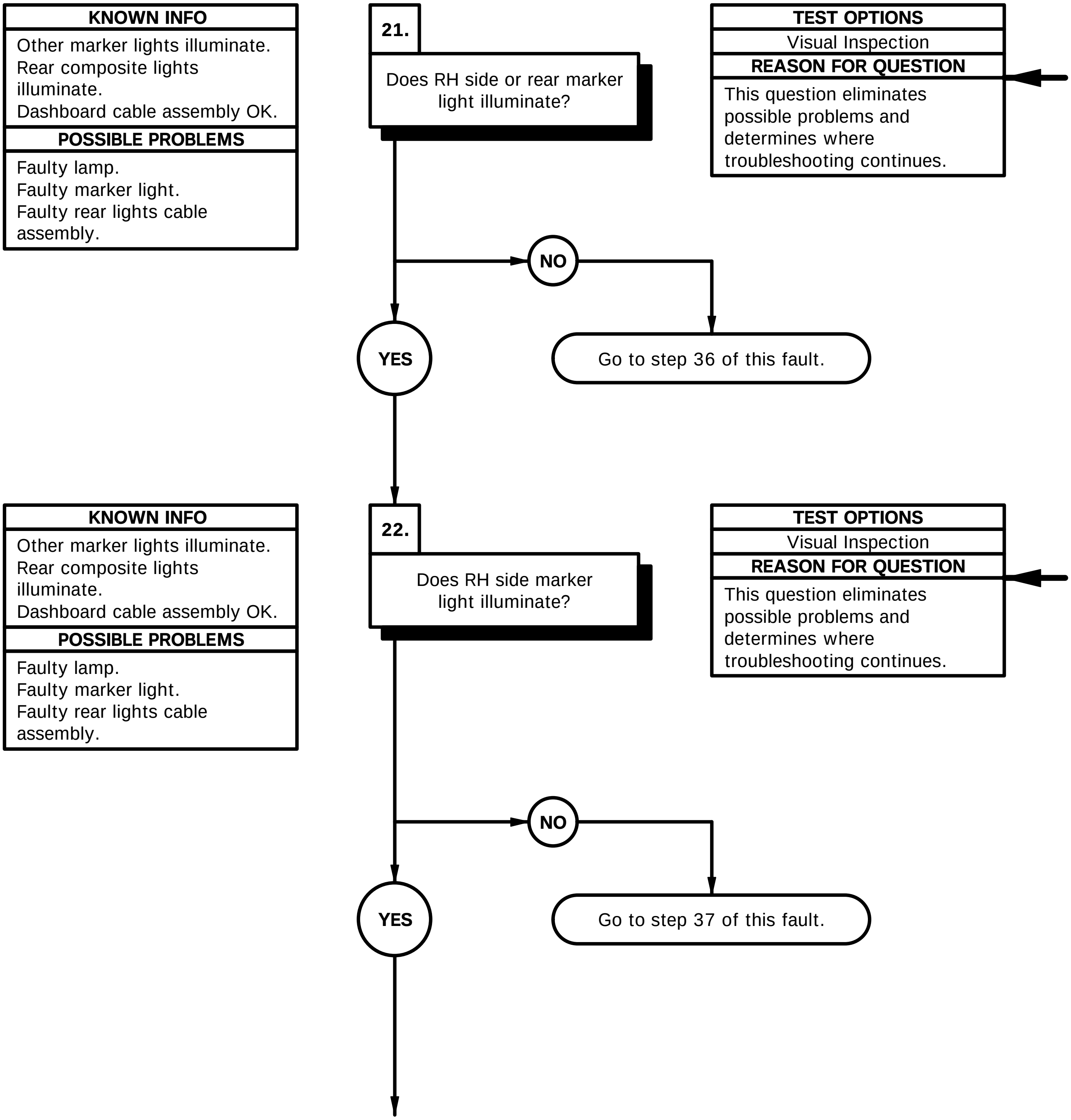
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P86 from LH rear marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P86.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P86 to splice E16 (para 2-45) and go to step 5 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) If 12 VDC is present, replace LH rear marker light (para 7-38) and go to step 5 of this fault if required.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Connect LH rear marker light connector to connector P86.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

21.

Does RH side or rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 36 of this fault.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

22.

Does RH side marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 37 of this fault.

If RH side or rear marker light does not illuminate, go to step 36 of this fault.

If RH side marker light does not illuminate, go to step 37 of this fault.

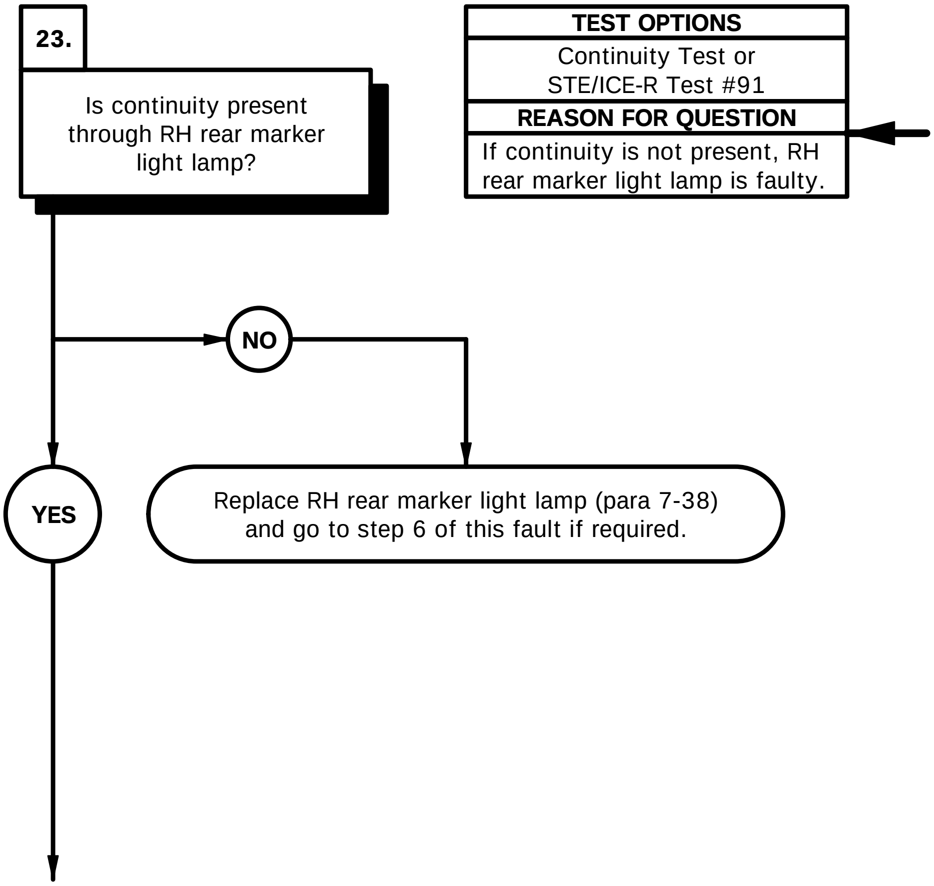
e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



23.

Is continuity present through RH rear marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH rear marker light lamp is faulty.

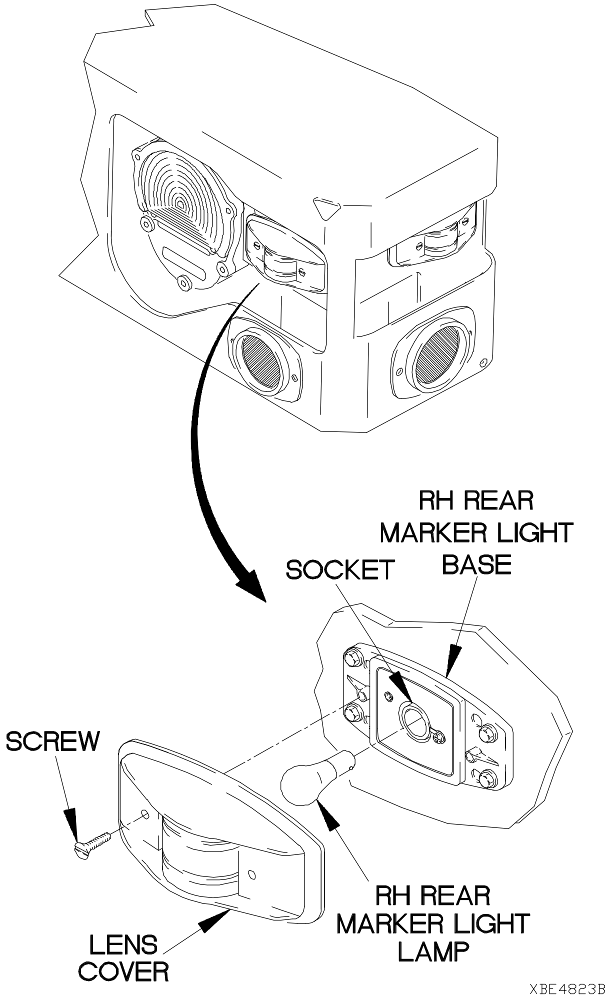
NO

Replace RH rear marker light lamp (para 7-38) and go to step 6 of this fault if required.

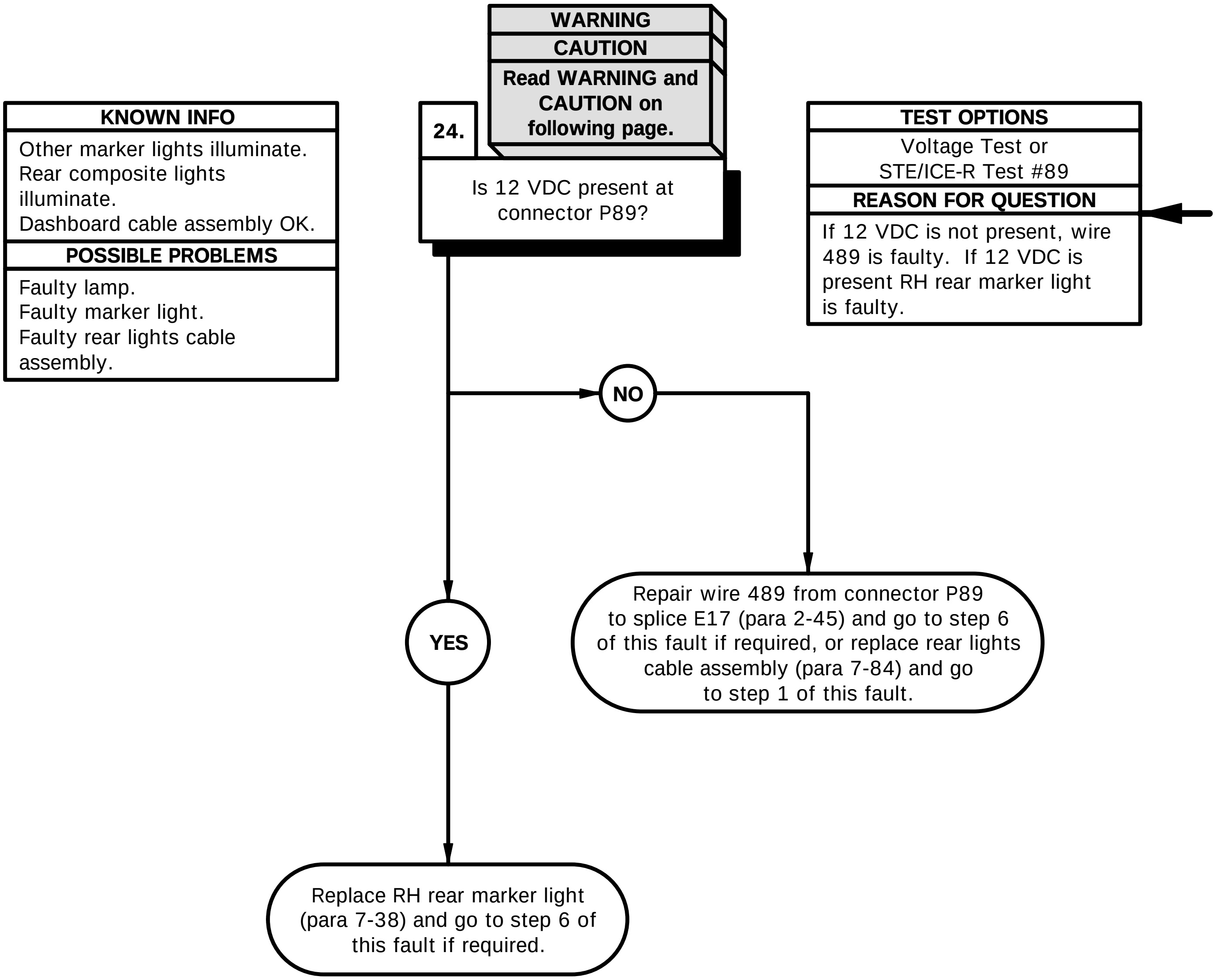
YES

CONTINUITY TEST

(1) Remove two screws and lens cover from RH rear marker light base.
(2) Remove RH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH rear marker light lamp (para 7-38) and go to step 6 of this fault if required.
(6) Install RH rear marker light lamp in socket.
(7) Install lens cover on RH rear marker light base with two screws.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

24. Is 12 VDC present at connector P89?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present RH rear marker light is faulty.

NO

Repair wire 489 from connector P89 to splice E17 (para 2-45) and go to step 6 of this fault if required, or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace RH rear marker light (para 7-38) and go to step 6 of this fault if required.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

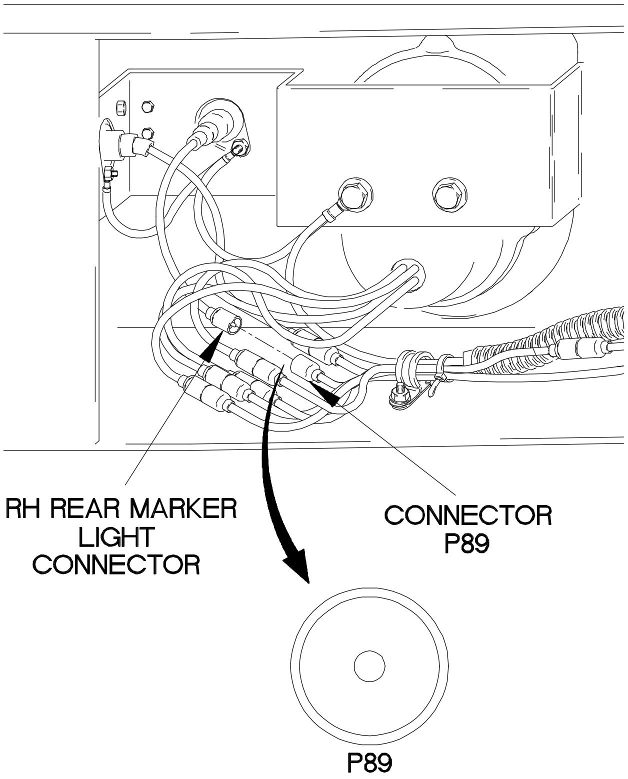
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P89 from RH rear marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P89.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P89 to splice E17 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) If 12 VDC is present, replace RH rear marker light (para 7-38) and go to step 6 of this fault.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Connect RH rear marker light connector to connector P89.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

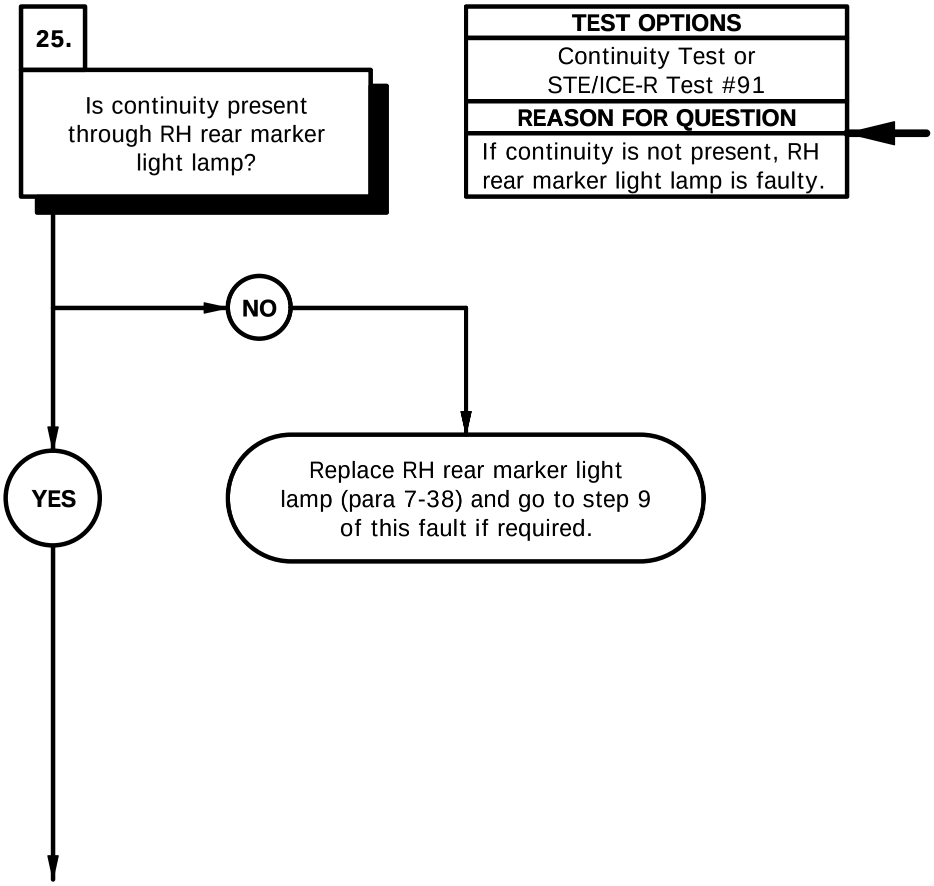
Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH rear marker light lamp is faulty.



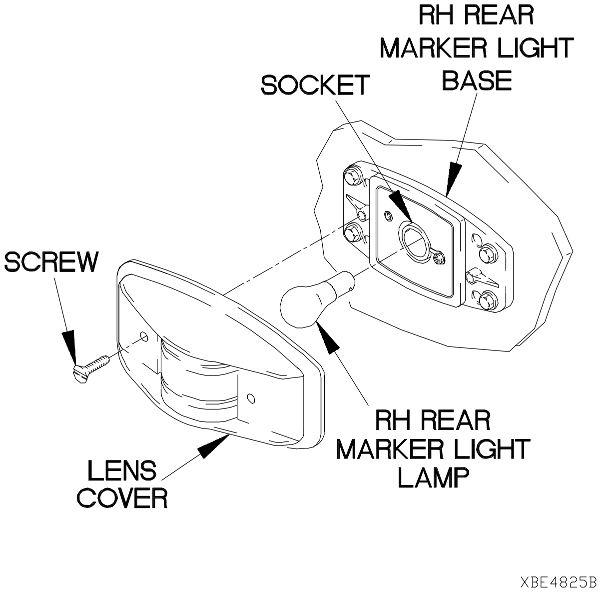
25.

Is continuity present through RH rear marker light lamp?

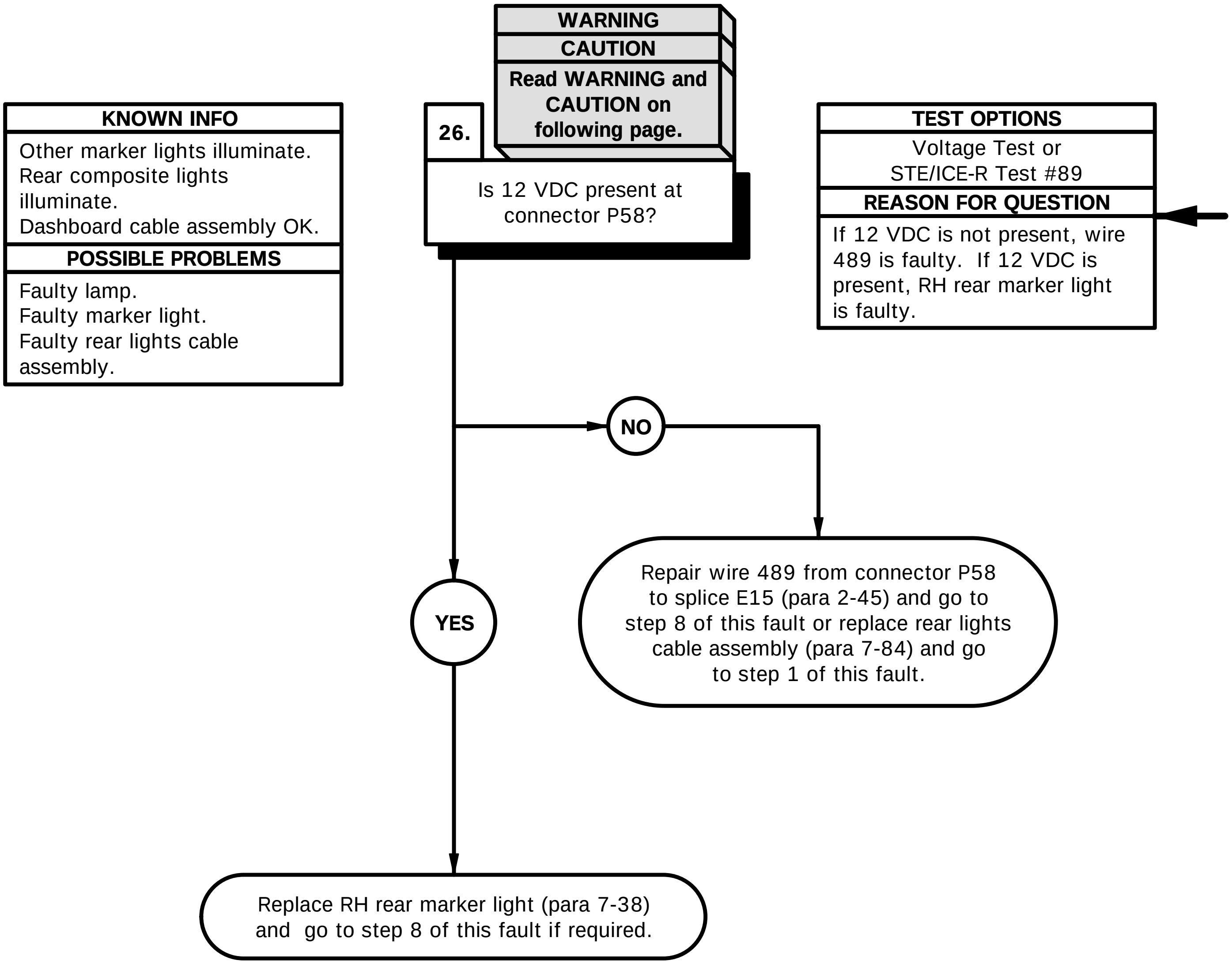
Replace RH rear marker light lamp (para 7-38) and go to step 9 of this fault if required.

CONTINUITY TEST

(1) Remove two screws and lens cover from RH rear marker light base.
(2) Remove RH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH rear marker light lamp (para 7-38) and go to step 9 of this fault if required.
(6) Install RH rear marker light lamp in socket.
(7) Install lens cover on RH rear marker light base with two screws.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

26.

Is 12 VDC present at connector P58?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, RH rear marker light is faulty.

NO

Repair wire 489 from connector P58 to splice E15 (para 2-45) and go to step 8 of this fault or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace RH rear marker light (para 7-38) and go to step 8 of this fault if required.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

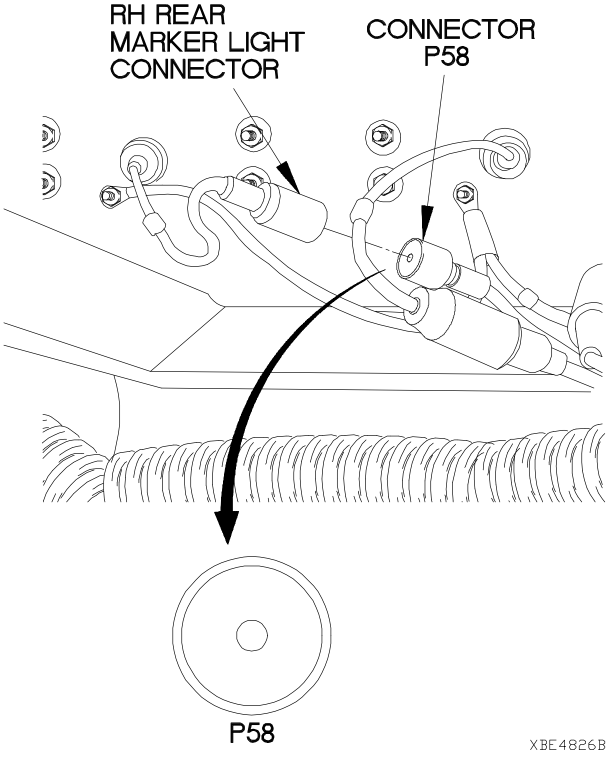
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

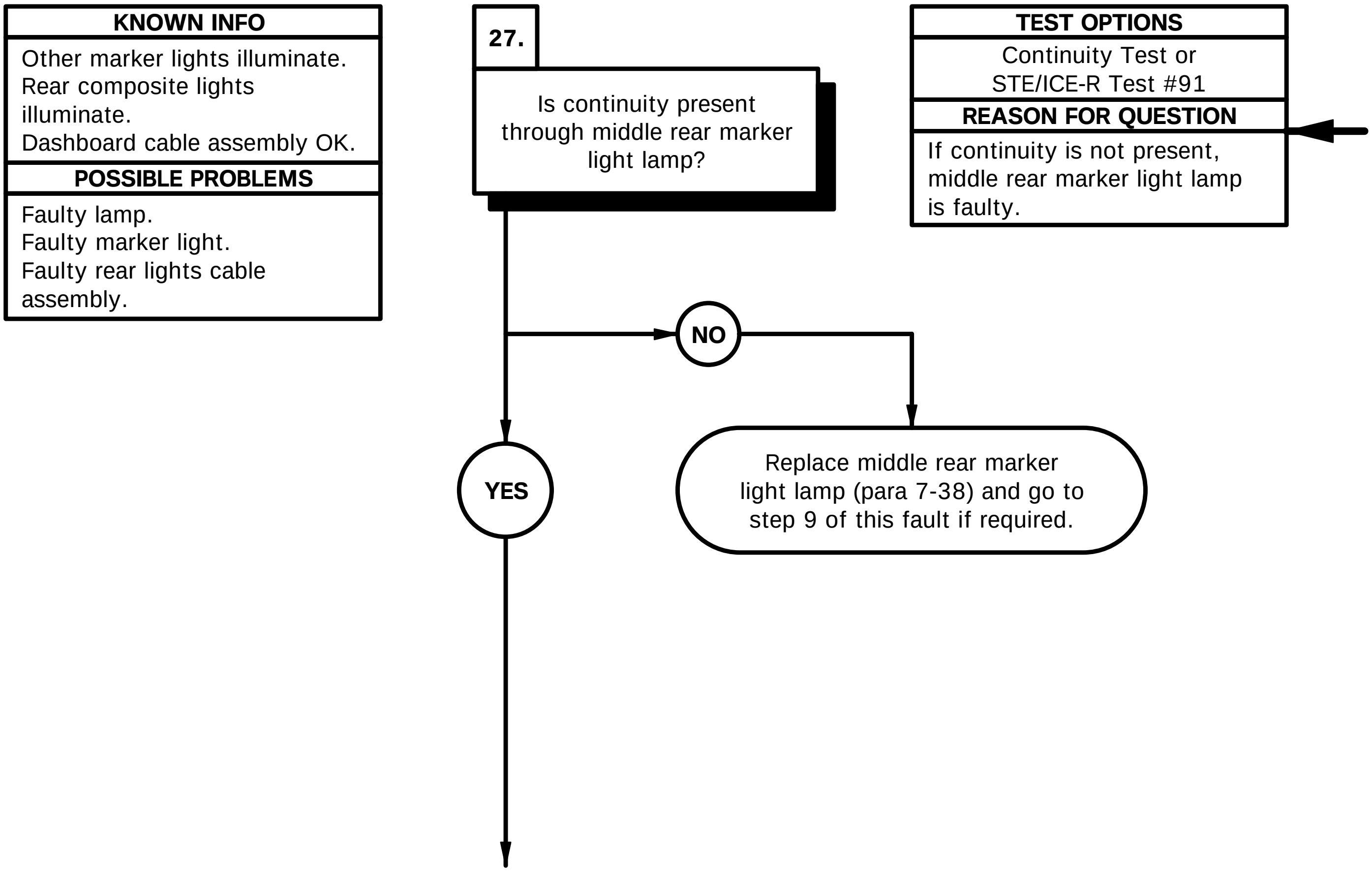
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P58 from RH rear marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P58.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P58 to splice E15 (para 2-45) and go to step 8 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) If 12 VDC is present, replace RH rear marker light (para 7-38) and go to step 8 of this fault if required.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Connect RH rear marker light connector to connector P58.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

27.

Is continuity present through middle rear marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, middle rear marker light lamp is faulty.

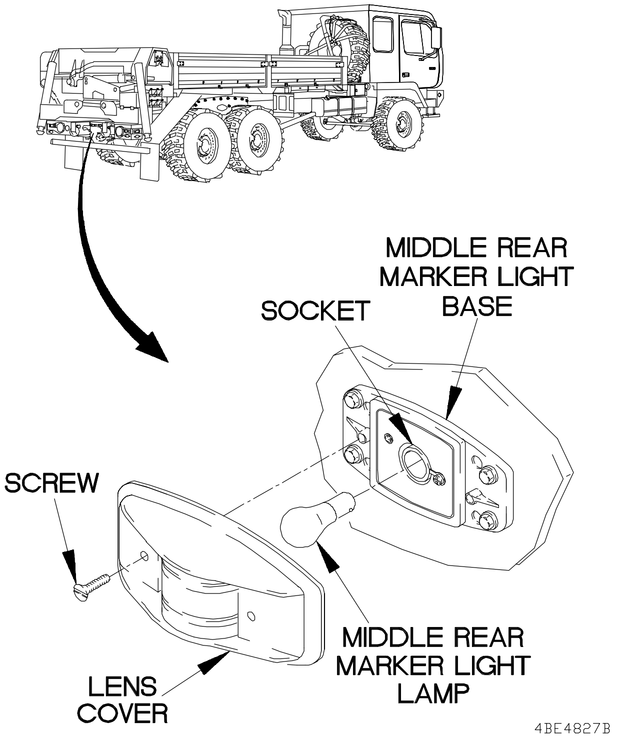
NO

Replace middle rear marker light lamp (para 7-38) and go to step 9 of this fault if required.

YES

CONTINUITY TEST

(1) Remove two screws and lens cover from middle rear marker light base.
(2) Remove middle rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through middle rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace middle rear marker light lamp (para 7-38) and go to step 9 of this fault if required.
(6) Install middle rear marker light lamp in socket.
(7) Install lens cover on middle rear marker light base with two screws.



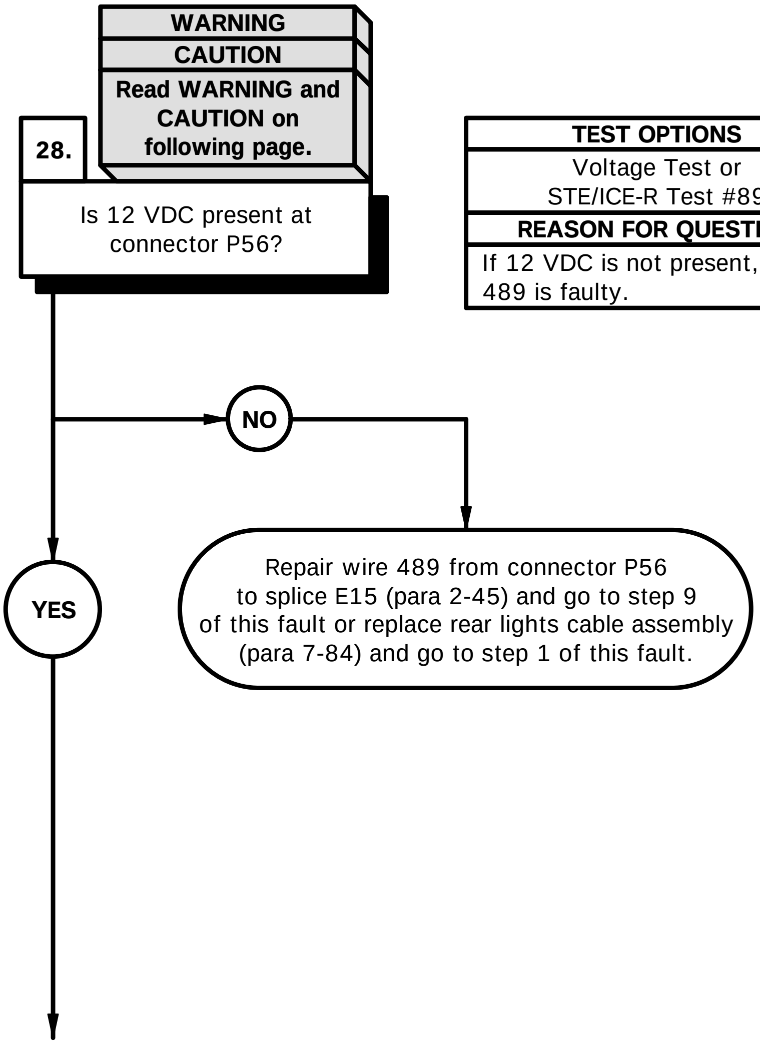
e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

28. Is 12 VDC present at connector P56?

NO: Repair wire 489 from connector P56 to splice E15 (para 2-45) and go to step 9 of this fault or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

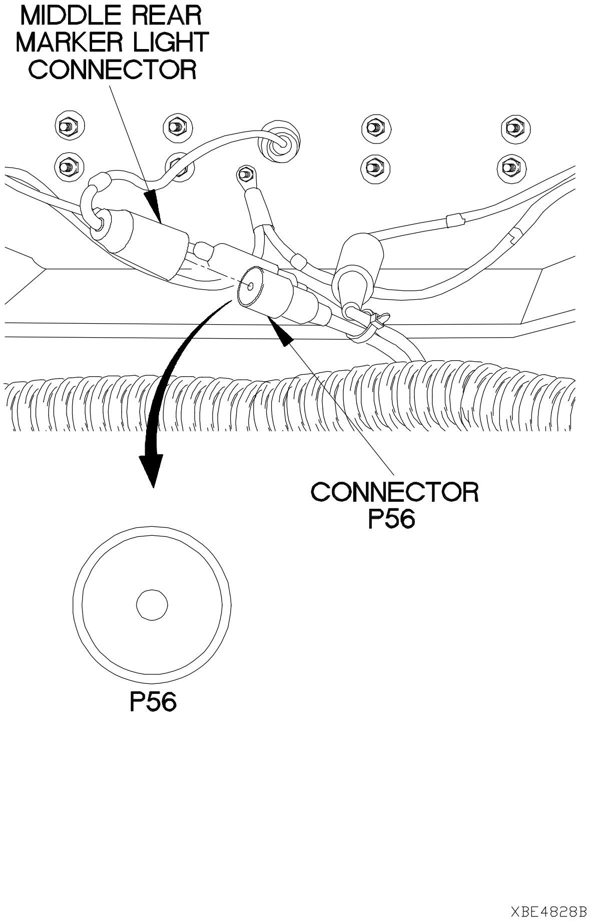
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P56 from middle rear marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P56.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P56 to splice E15 (para 2-45) and go to step 9 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Connect middle rear marker light connector to connector P56.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

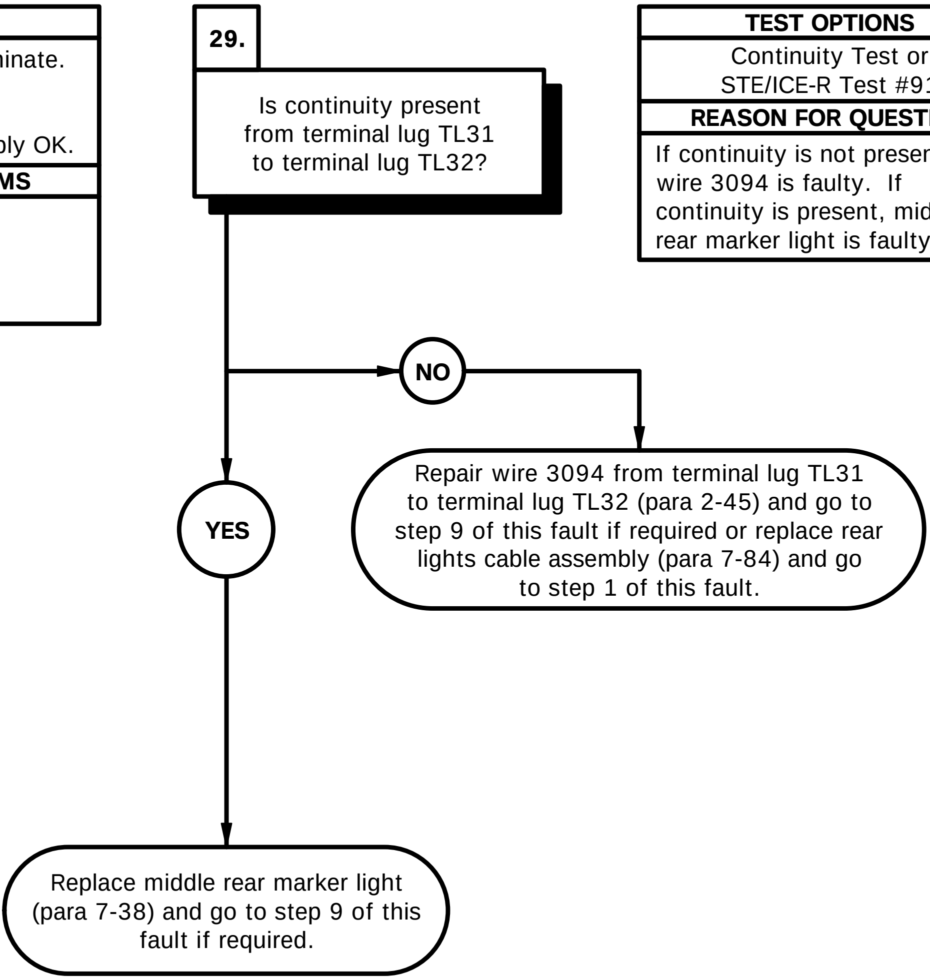
Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, middle rear marker light is faulty.



29. Is continuity present from terminal lug TL31 to terminal lug TL32?

NO

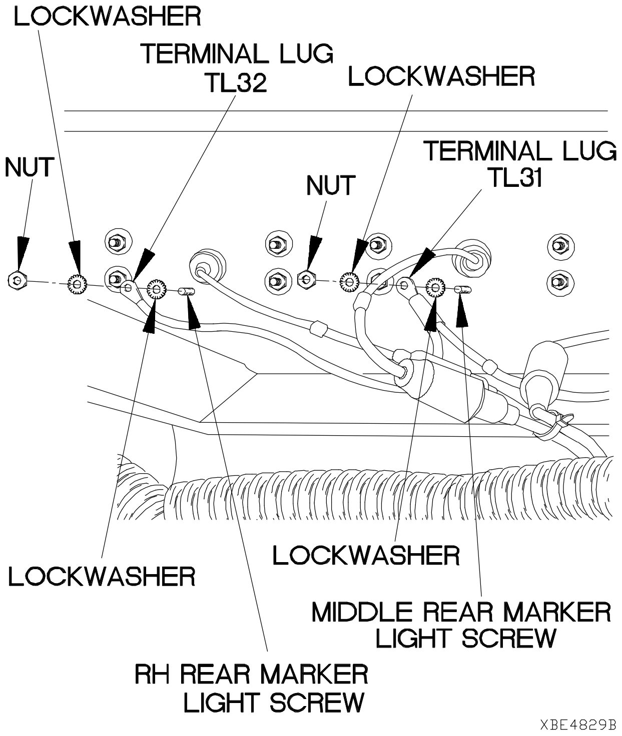
Repair wire 3094 from terminal lug TL31 to terminal lug TL32 (para 2-45) and go to step 9 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

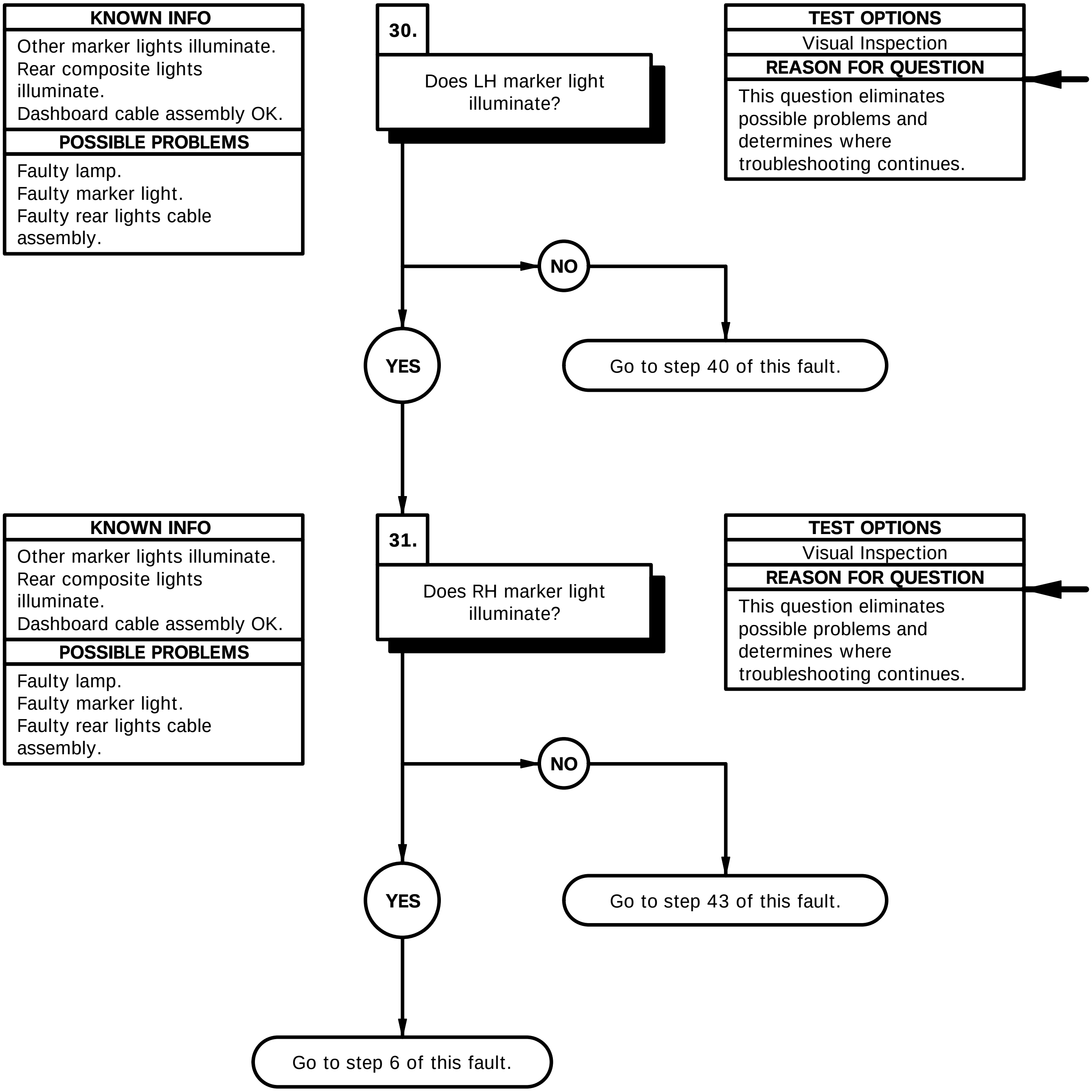
Replace middle rear marker light (para 7-38) and go to step 9 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL31 and lockwasher from middle rear marker light screw. Discard lockwashers.
(2) Remove nut, lockwasher, terminal lug TL32 and lockwasher from RH rear marker light screw. Discard lockwashers.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL31.
(5) Connect negative (-) probe of multimeter to terminal lug TL32 and note reading on multimeter.
(6) If continuity is not present, repair wire 3094 from terminal lug TL31 to terminal lug TL32 (para 2-45) and go to step 9 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) If continuity is present, replace middle rear marker light (para 7-38) and go to step 9 of this fault if required.
(8) Install lockwasher, terminal lug TL32, lockwasher, and nut on RH rear marker light screw.
(9) Install lockwasher, terminal lug TL31, lockwasher, and nut on middle rear marker light screw.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

30.

Does LH marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 40 of this fault.

YES — continue to step 31.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

31.

Does RH marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 43 of this fault.

YES — Go to step 6 of this fault.

If LH marker light does not illuminate, go to step 40 of this fault.

If RH marker light does not illuminate, go to step 43 of this fault.

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

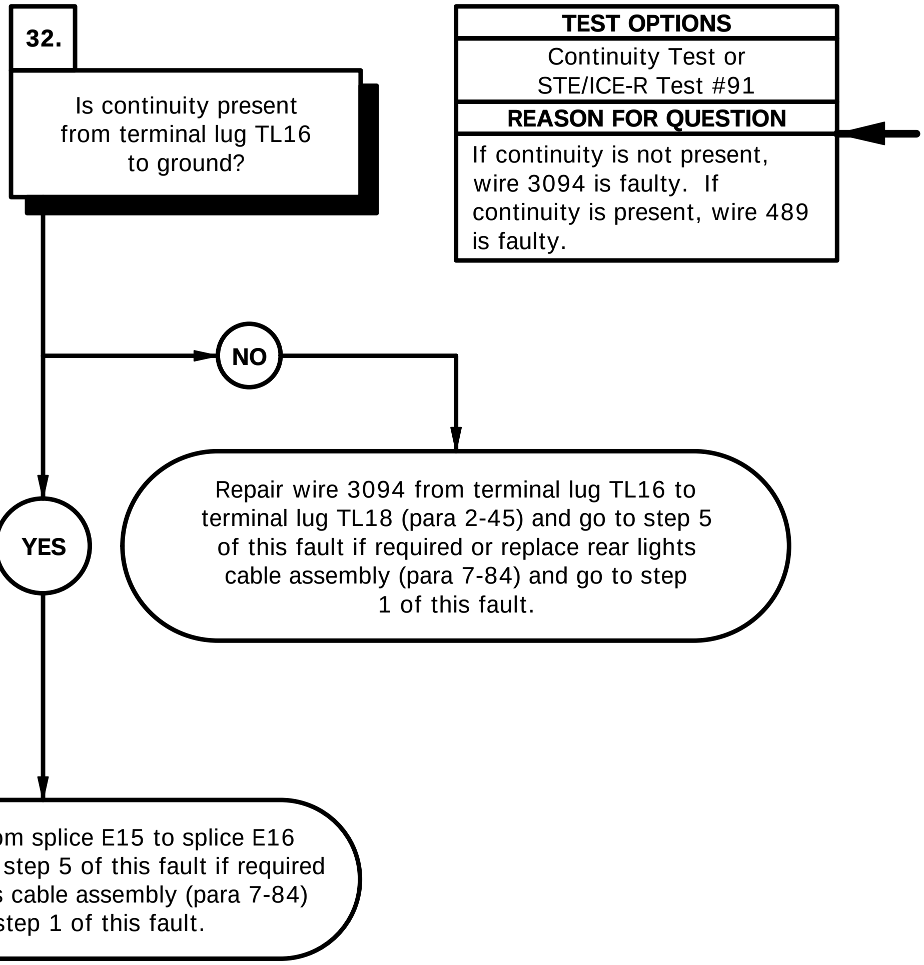
Faulty rear lights cable assembly.

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, wire 489 is faulty.



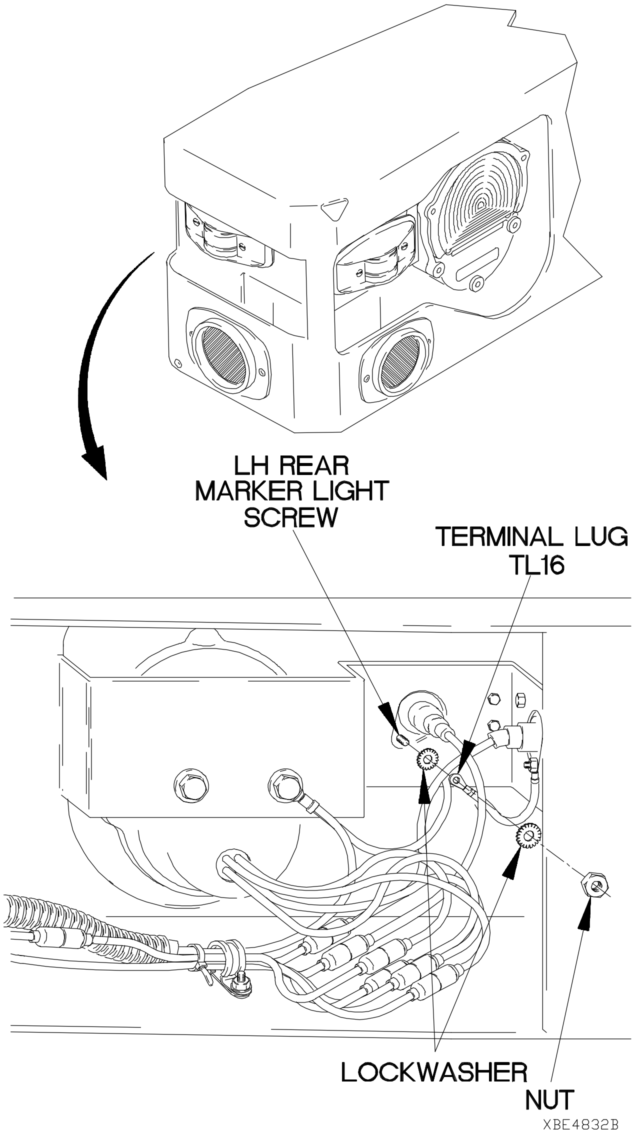
32. Is continuity present from terminal lug TL16 to ground?

NO: Repair wire 3094 from terminal lug TL16 to terminal lug TL18 (para 2-45) and go to step 5 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

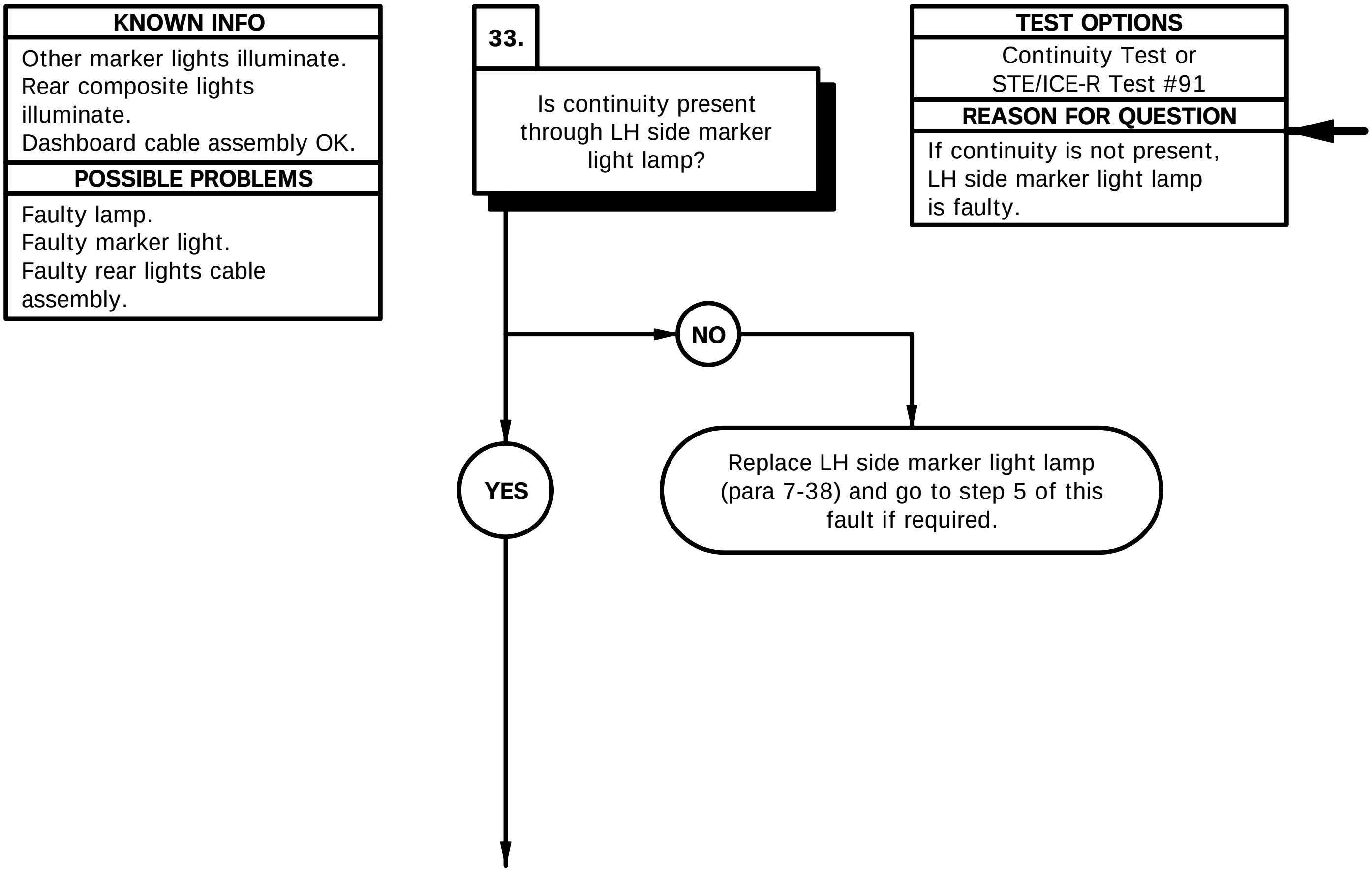
YES: Repair wire 489 from splice E15 to splice E16 (para 2-45) and go to step 5 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL16 and lockwasher from LH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL16.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL16 to ground (para 2-45) and go to step 5 of this fault or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, repair wire 489 from splice E15 to splice E16 (para 2-45) and go to step 5 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) Install lockwasher, terminal lug TL16, lockwasher, and nut on LH rear marker light screw.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

33.

Is continuity present through LH side marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH side marker light lamp is faulty.

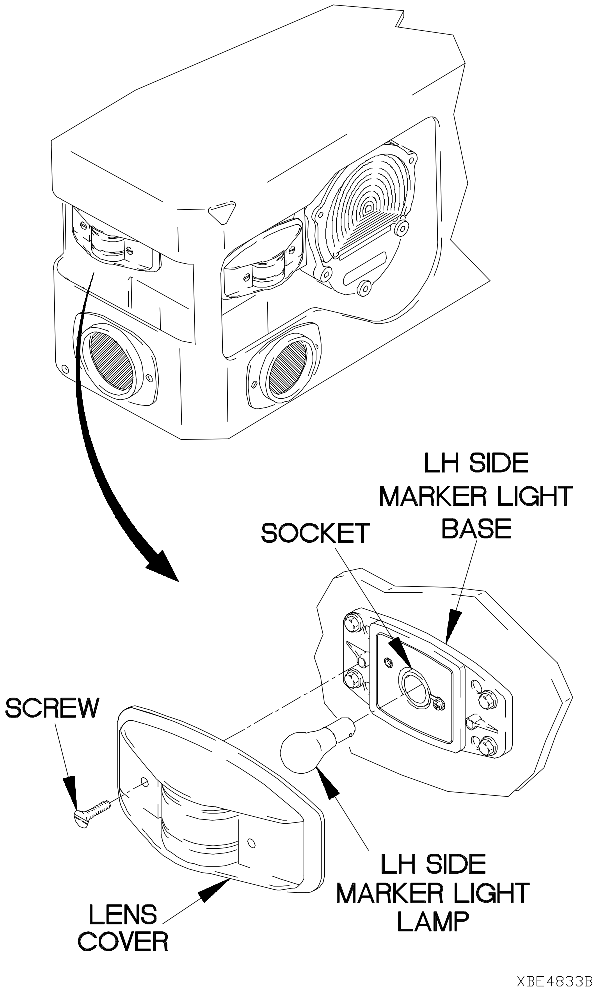
NO

Replace LH side marker light lamp (para 7-38) and go to step 5 of this fault if required.

YES

CONTINUITY TEST

(1) Remove two screws and lens cover from LH side marker light base.
(2) Remove LH side marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH side marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH side marker light lamp (para 7-38) and go to step 5 of this fault if required.
(6) Install LH side marker lamp in socket.
(7) Install lens cover on LH side marker light base with two screws.



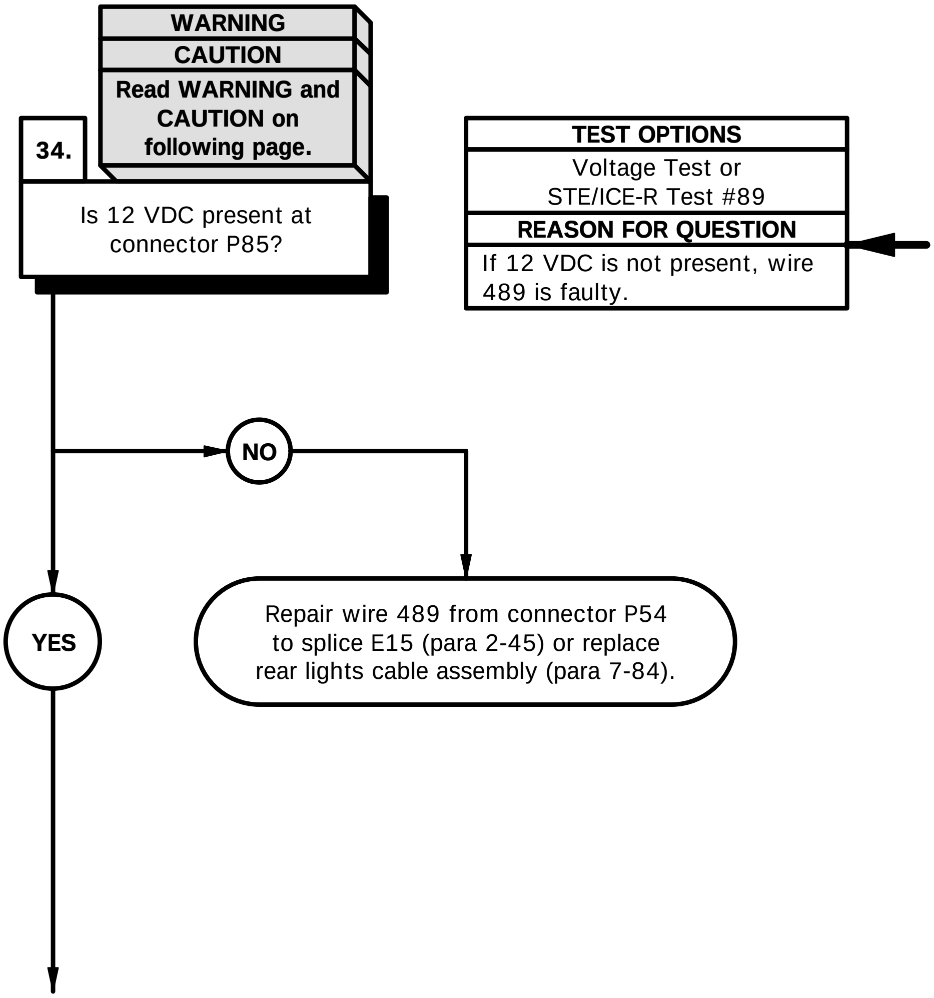
e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

34. Is 12 VDC present at connector P85?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P54 to splice E15 (para 2-45) or replace rear lights cable assembly (para 7-84).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

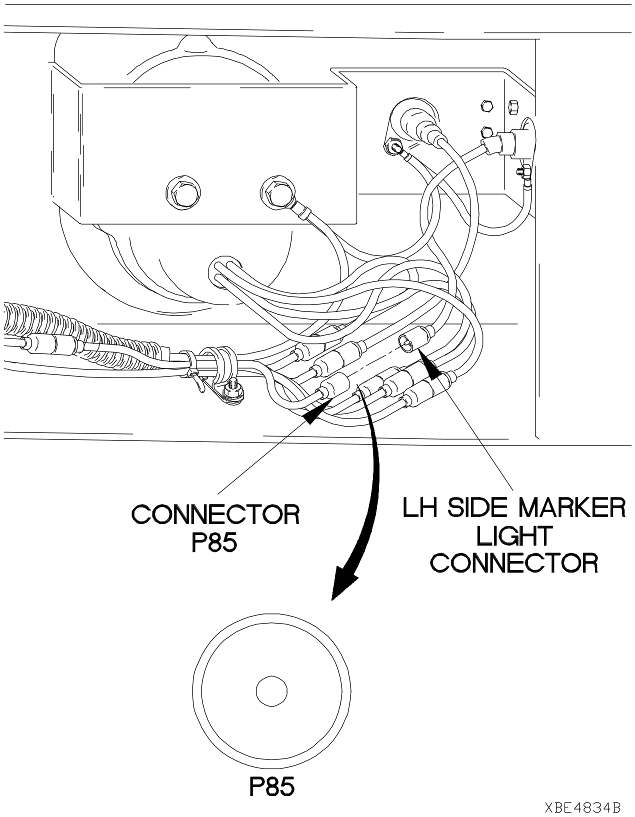
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

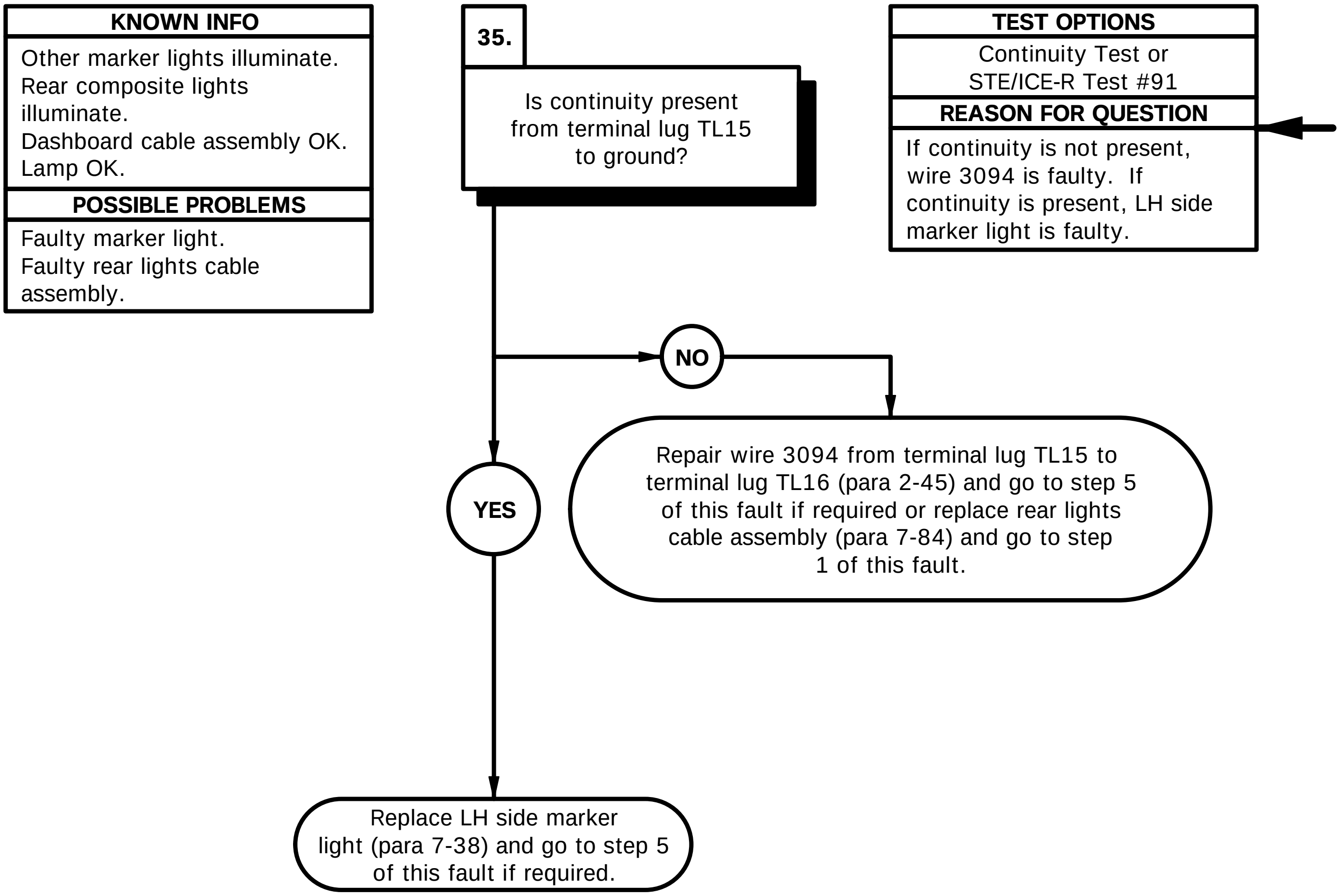
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P85 from LH side marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P85.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P85 to splice E16 (para 2-45) or replace rear lights cable assembly (para 7-84).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

35.

Is continuity present from terminal lug TL15 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, LH side marker light is faulty.

NO

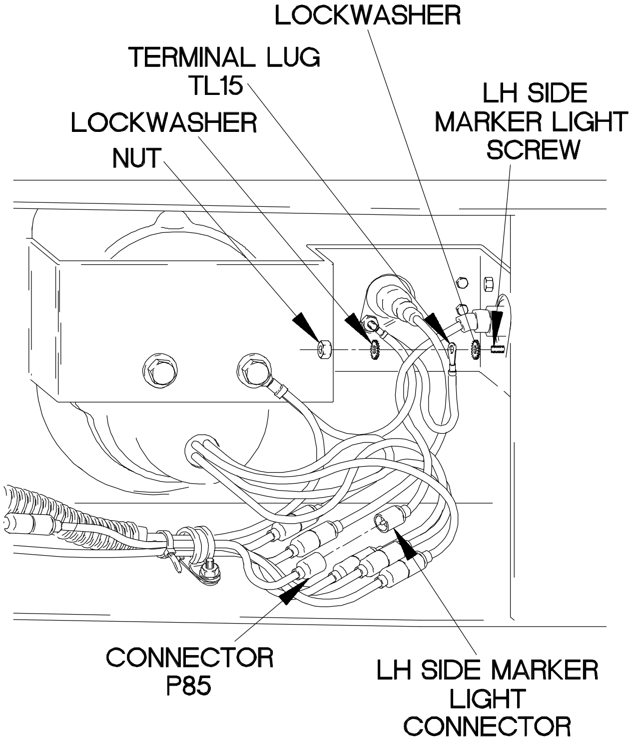
Repair wire 3094 from terminal lug TL15 to terminal lug TL16 (para 2-45) and go to step 5 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace LH side marker light (para 7-38) and go to step 5 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL15, and lockwasher from LH side marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL15.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL15 to terminal lug TL16 (para 2-45) and go to step 5 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace LH side marker light (para 7-38) and go to step 5 of this fault if required.
(7) Install lockwasher, terminal lug TL15, lockwasher, and nut on LH side marker light screw.
(8) Connect LH side marker light connector to connector P85.



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e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

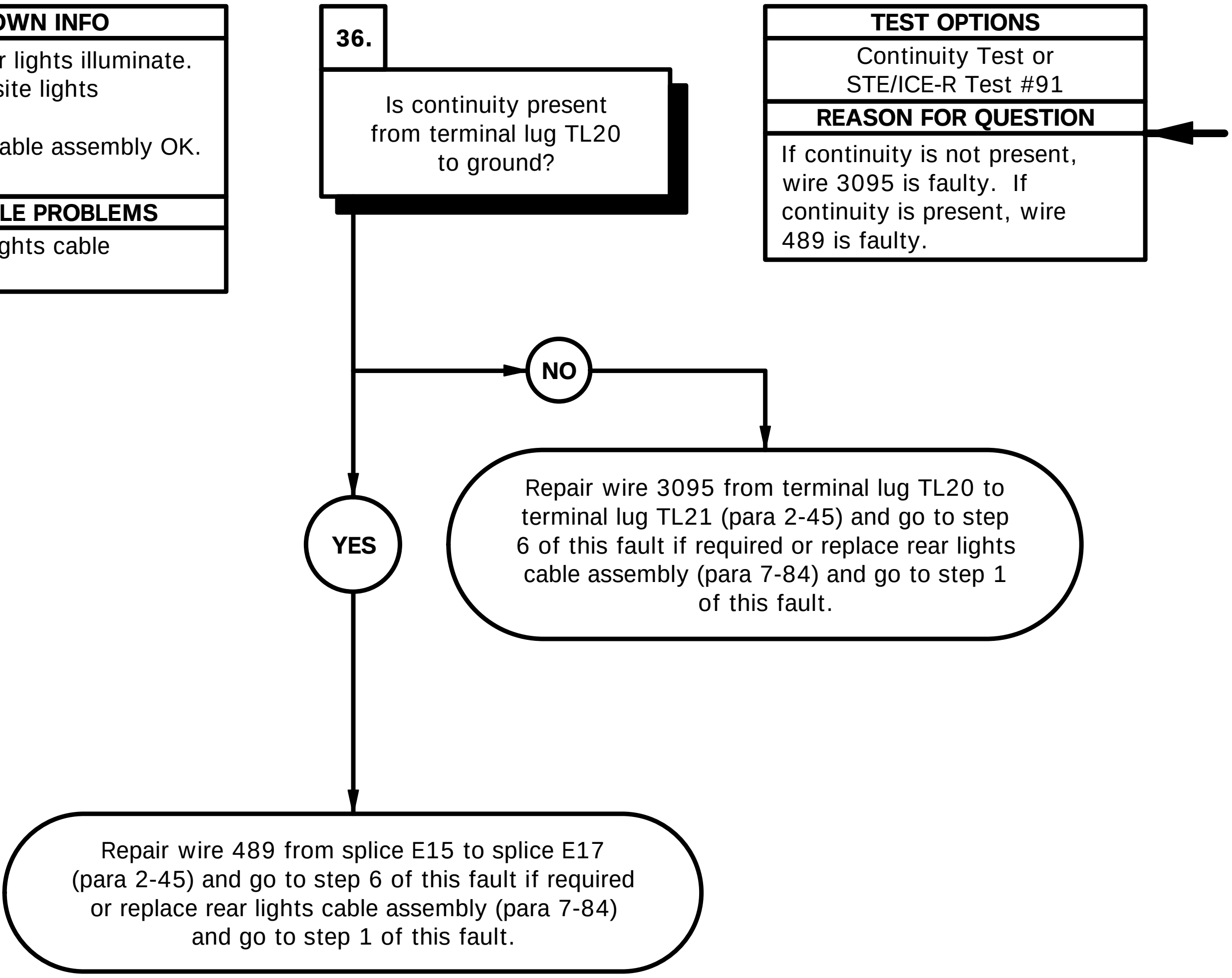
Faulty rear lights cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3095 is faulty. If continuity is present, wire 489 is faulty.



36.

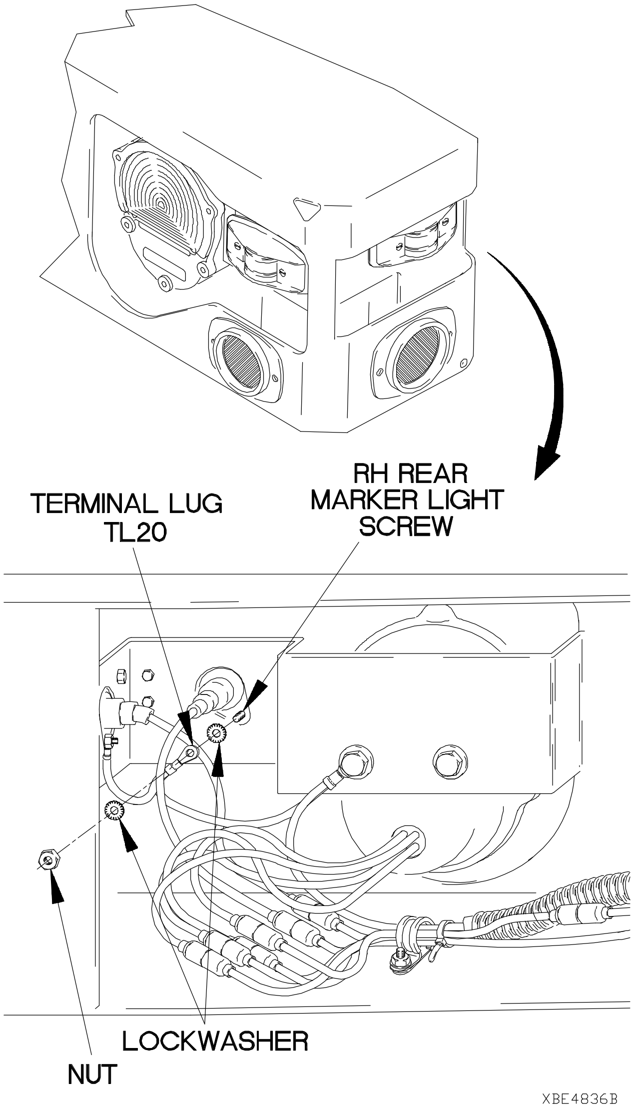
Is continuity present from terminal lug TL20 to ground?

NO: Repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

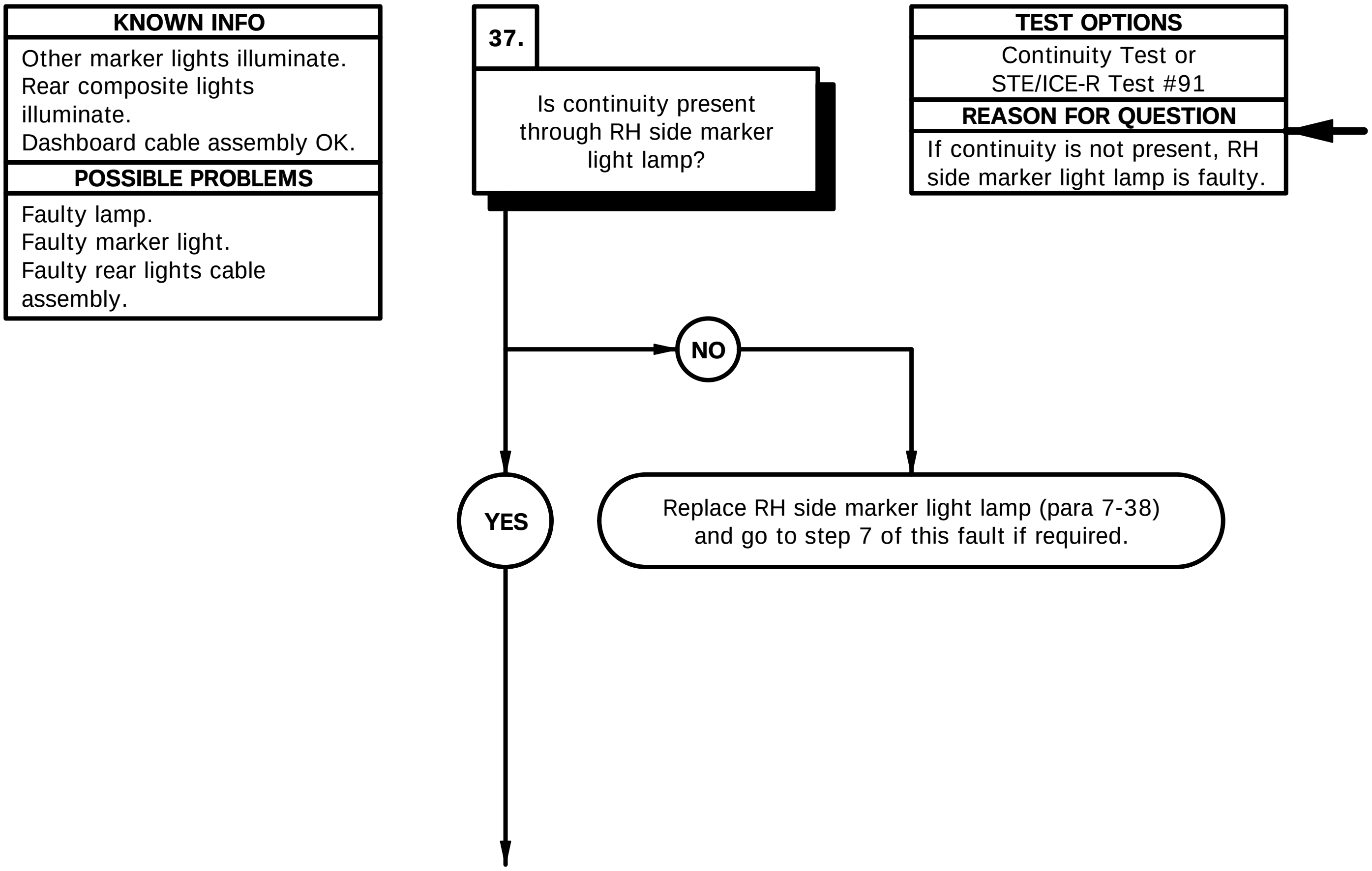
YES: Repair wire 489 from splice E15 to splice E17 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL20 and lockwasher from RH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL20.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45) and go step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, repair wire 489 from splice E15 to splice E17 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) Install lockwasher, terminal lug TL20, lockwasher, and nut on RH rear marker light screw.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

37.

Is continuity present through RH side marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH side marker light lamp is faulty.

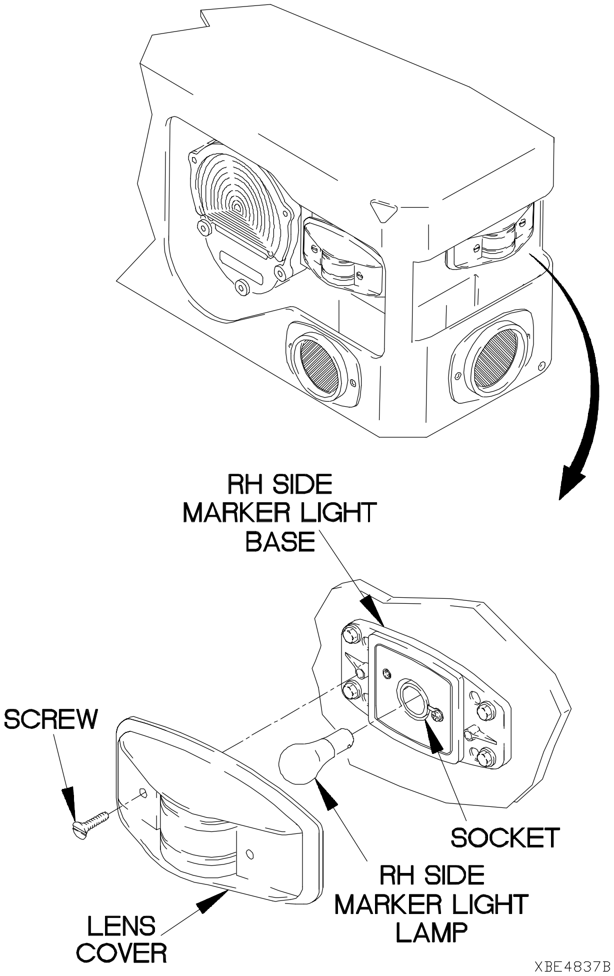
NO

Replace RH side marker light lamp (para 7-38) and go to step 7 of this fault if required.

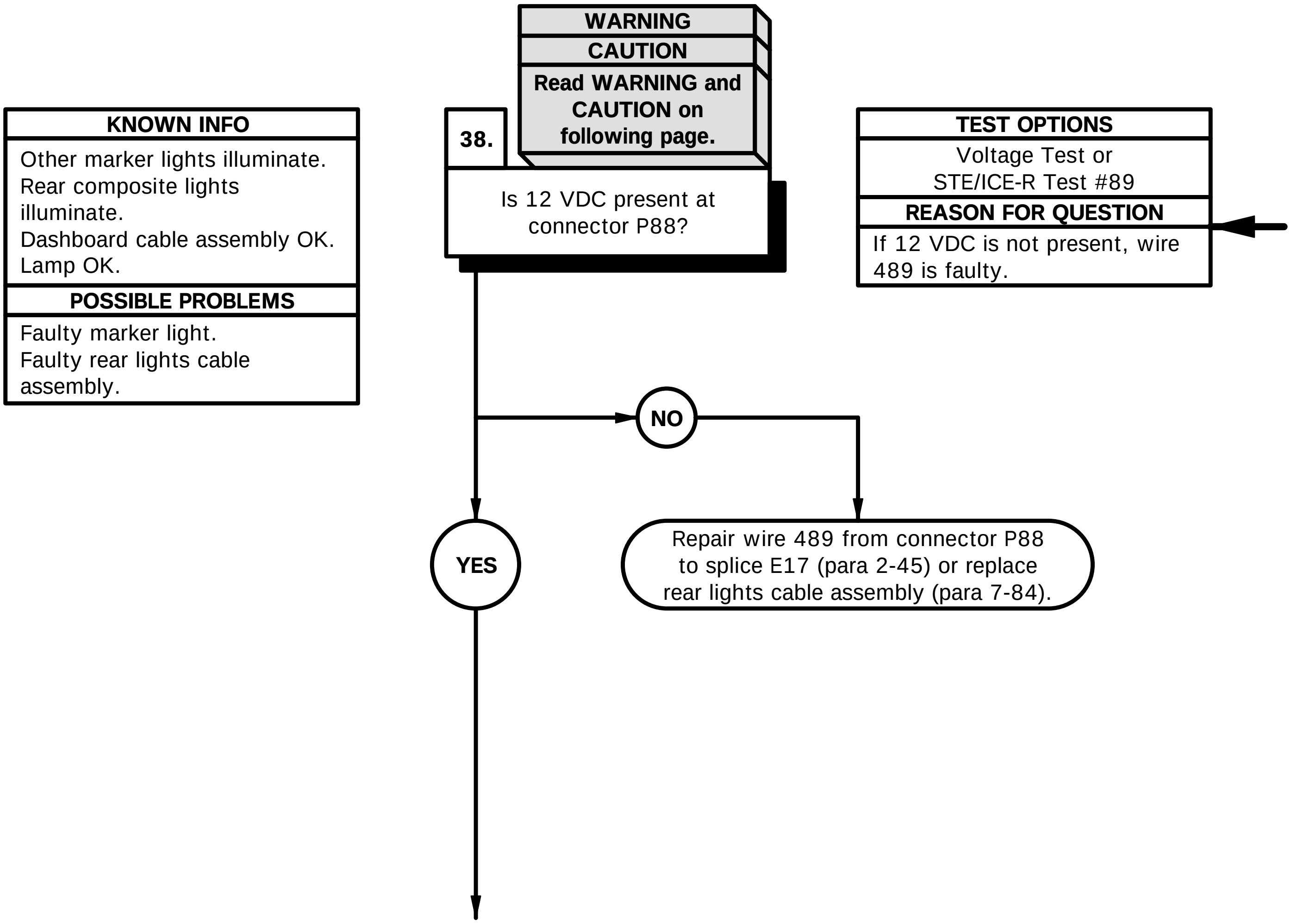
YES

CONTINUITY TEST

(1) Remove two screws and lens cover from RH side marker light base.
(2) Remove RH side marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH side marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH side marker light lamp (para 7-38) and go to step 7 of this fault if required.
(6) Install RH side marker light lamp in socket.
(7) Install lens cover on RH side marker light base with two screws.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

38.

Is 12 VDC present at connector P88?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P88 to splice E17 (para 2-45) or replace rear lights cable assembly (para 7-84).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

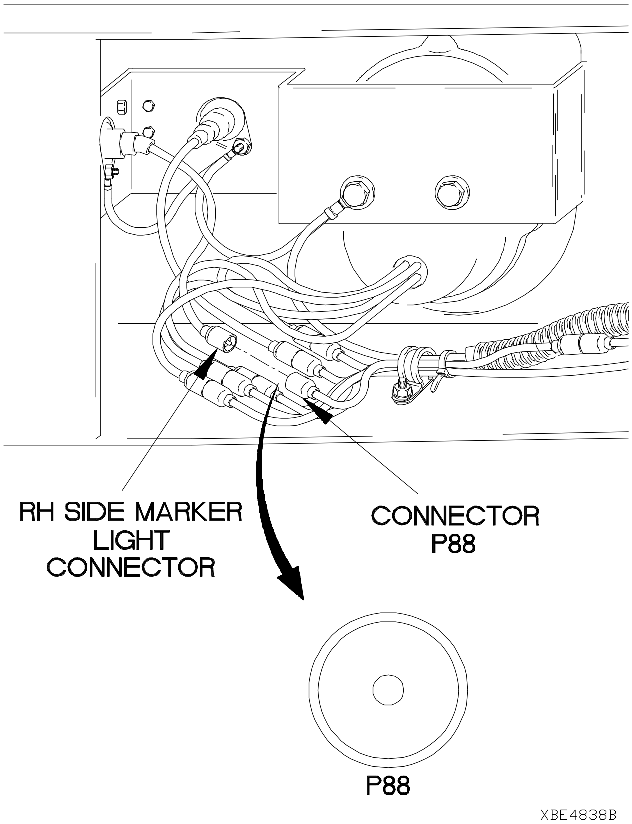
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P88 from RH side marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P88.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P88 to splice E17 (para 2-45) or replace rear lights cable assembly (para 7-84).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).



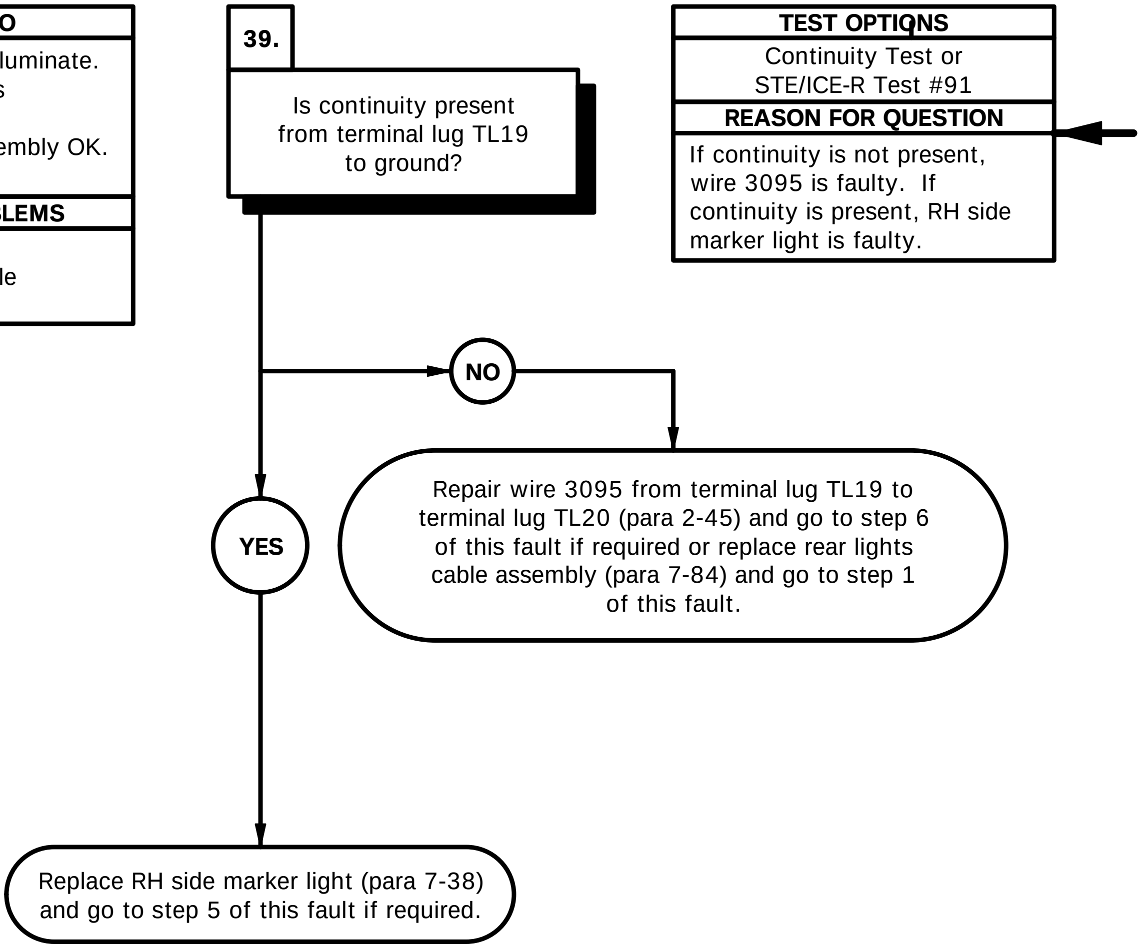
e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.



39.

Is continuity present from terminal lug TL19 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3095 is faulty. If continuity is present, RH side marker light is faulty.

NO

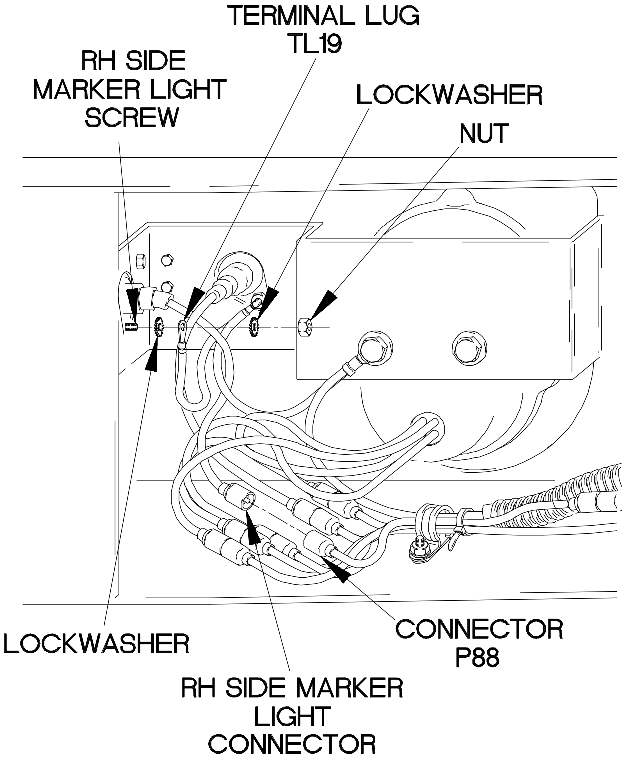
Repair wire 3095 from terminal lug TL19 to terminal lug TL20 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace RH side marker light (para 7-38) and go to step 5 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL19, and lockwasher from RH side marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL19.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3095 from terminal lug TL19 to terminal lug TL20 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace RH side marker light (para 7-38) and go to step 5 of this fault if required.
(7) Install lockwasher, terminal lug TL19, lockwasher, and nut on RH side marker light screw.
(8) Connect RH side marker light connector to connector P88.



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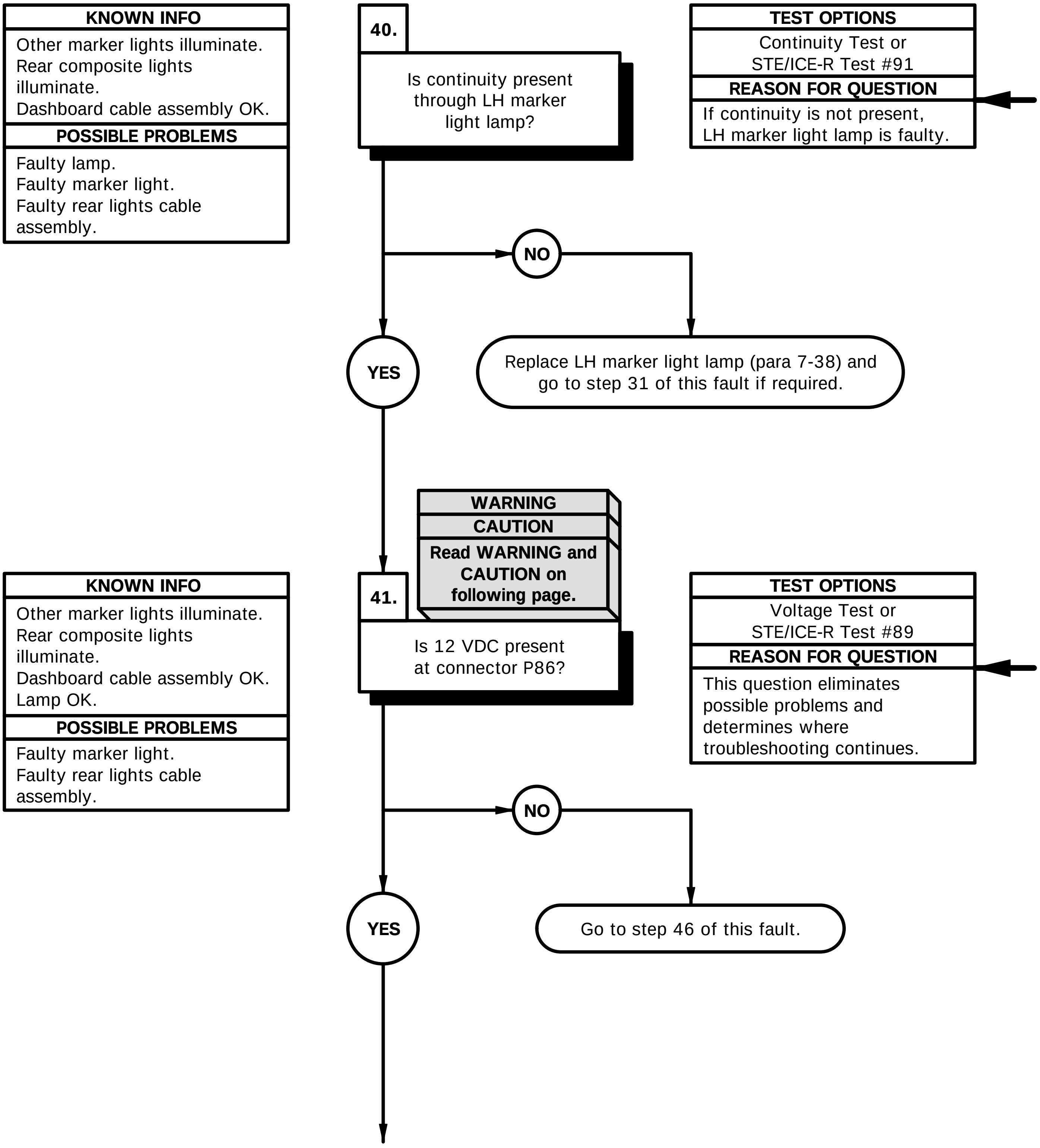
e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

40. Is continuity present through LH marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH marker light lamp is faulty.

NO: Replace LH marker light lamp (para 7-38) and go to step 31 of this fault if required.

YES:

WARNING

CAUTION

Read WARNING and CAUTION on following page.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

41. Is 12 VDC present at connector P86?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 46 of this fault.

YES:

CONTINUITY TEST

(1) Remove two screws and lens cover from LH marker light base.
(2) Remove LH marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH marker light lamp (para 7-38) and go to step 31 of this fault if required.
(6) Install LH marker light lamp in socket.
(7) Install lens cover on LH marker light base with two screws.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

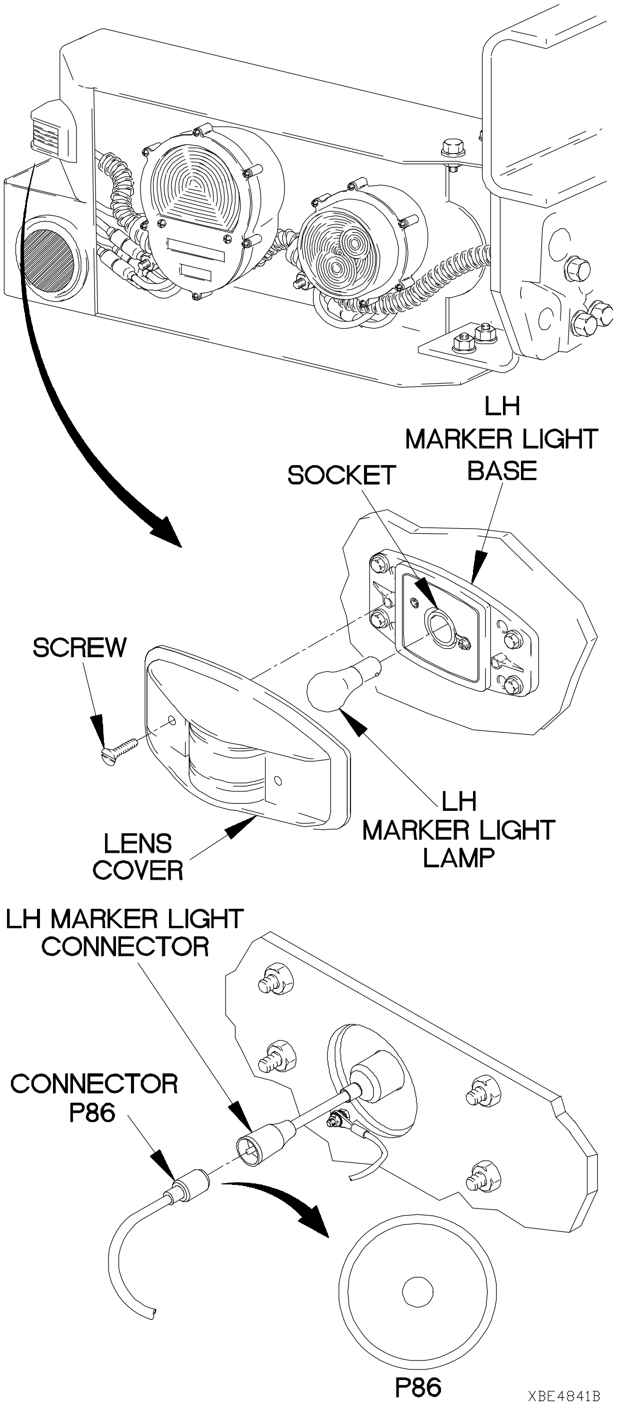
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect LH marker light connector from connector P86.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P86.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, go to step 46 of this fault.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

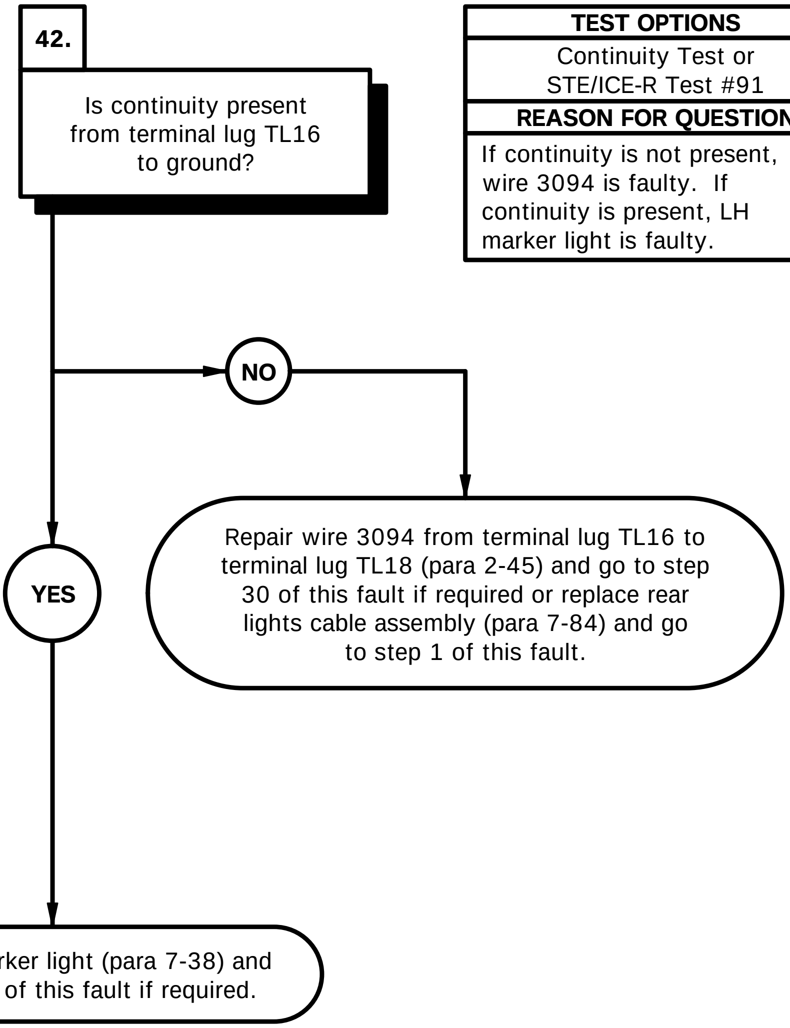
Faulty marker lights.
Faulty rear lights cable assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, LH marker light is faulty.



42.

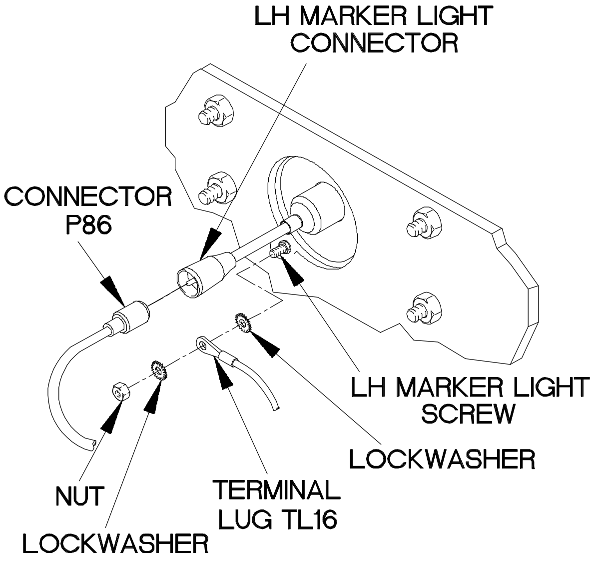
Is continuity present from terminal lug TL16 to ground?

Repair wire 3094 from terminal lug TL16 to terminal lug TL18 (para 2-45) and go to step 30 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

Replace LH marker light (para 7-38) and go to step 31 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL16 and lockwasher from LH marker light screw. Discard lockwashers.
(2) Connect positive (+) probe of multimeter to terminal lug TL16.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3094 from terminal lug TL16 to terminal lug TL18 (para 2-45) and go to step 30 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(5) If continuity is present, replace LH marker light (para 7-38) and go to step 31 of this fault if required.
(6) Install lockwasher, terminal lug TL16, lockwasher, and nut on LH marker light screw.
(7) Connect LH marker light connector to connector P86.



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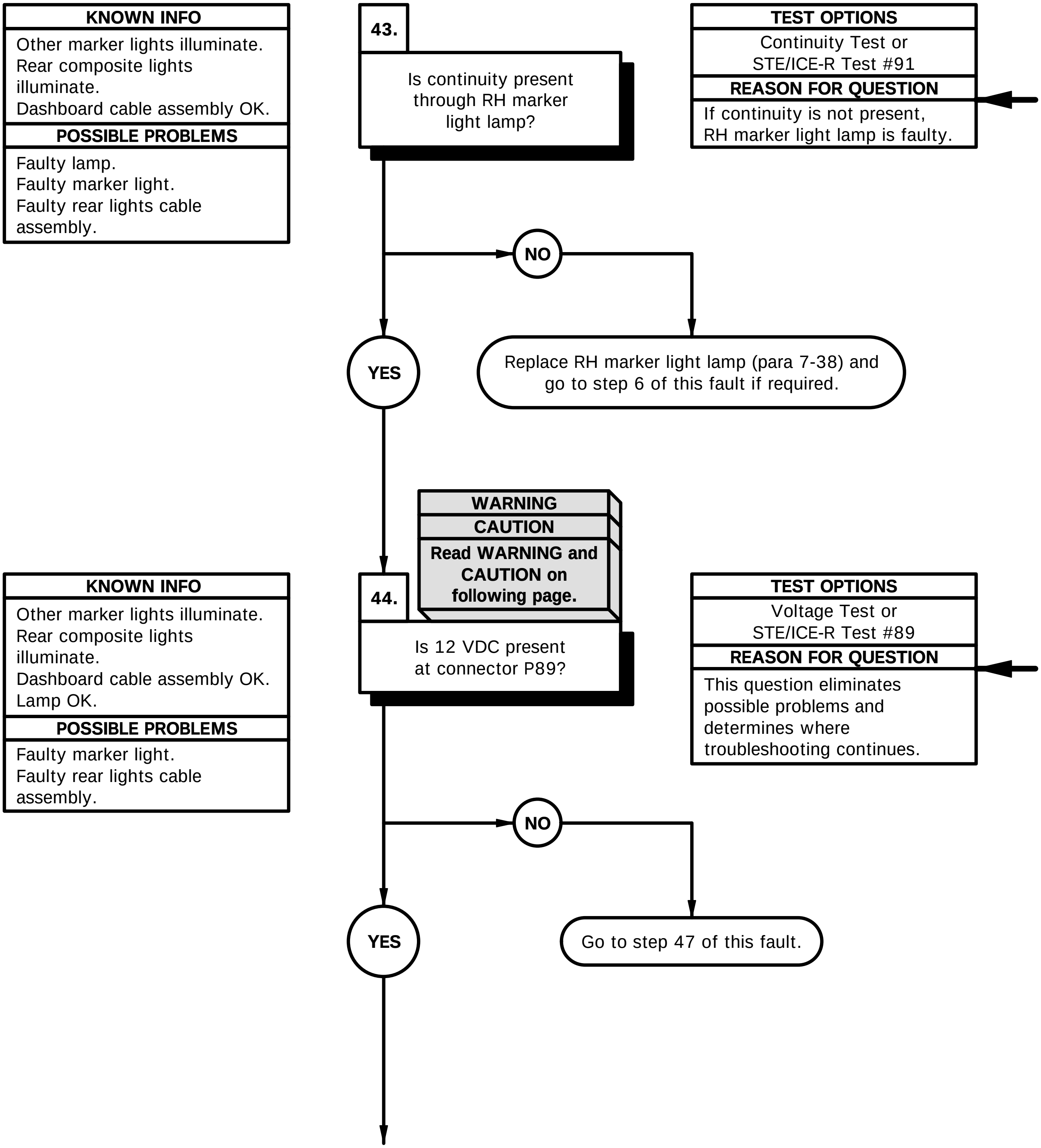
e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

43. Is continuity present through RH marker light lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH marker light lamp is faulty.

NO: Replace RH marker light lamp (para 7-38) and go to step 6 of this fault if required.

YES:

WARNING

CAUTION

Read WARNING and CAUTION on following page.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

44. Is 12 VDC present at connector P89?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

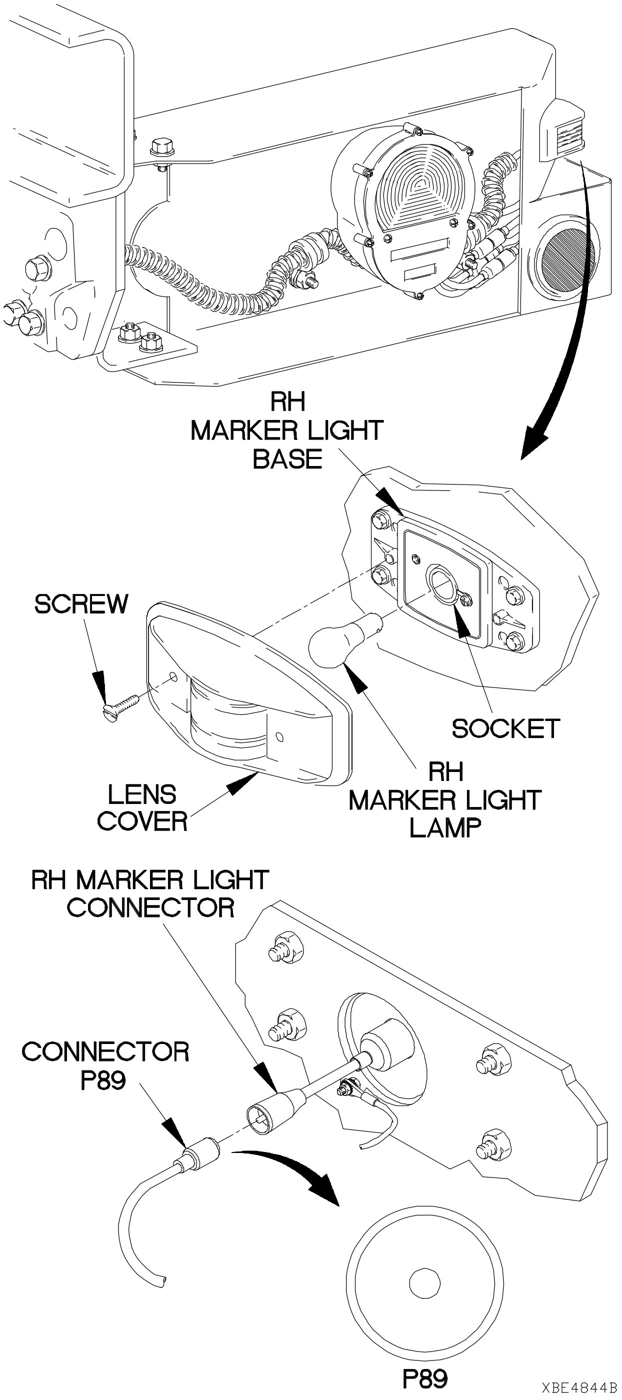
This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 47 of this fault.

YES:

CONTINUITY TEST

1. (1) Remove two screws and lens cover from RH marker light base.
2. (2) Remove RH marker light lamp from socket.
3. (3) Set multimeter to ohms.
4. (4) Check continuity through RH marker light lamp and note reading on multimeter.
5. (5) If continuity is not present, replace RH marker light lamp (para 7-38) and go to step 6 of this fault if required.
6. (6) Install RH marker light lamp in socket.
7. (7) Install lens cover on RH marker light base with two screws.



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

1. (1) Disconnect RH marker lamp connector from connector P89.
2. (2) Set multimeter to volts DC.
3. (3) Connect positive (+) probe of multimeter to connector P89.
4. (4) Connect negative (-) probe of multimeter to ground.
5. (5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
6. (6) Position main light switch to OFF (TM 9-2320-366-10-1).
7. (7) If 12 VDC is not present, go to step 47 of this fault.

e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker lights.
Faulty rear lights cable assembly.

45.

Is continuity present from terminal lug TL20 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3095 is faulty. If continuity is present, RH marker light is faulty.

NO

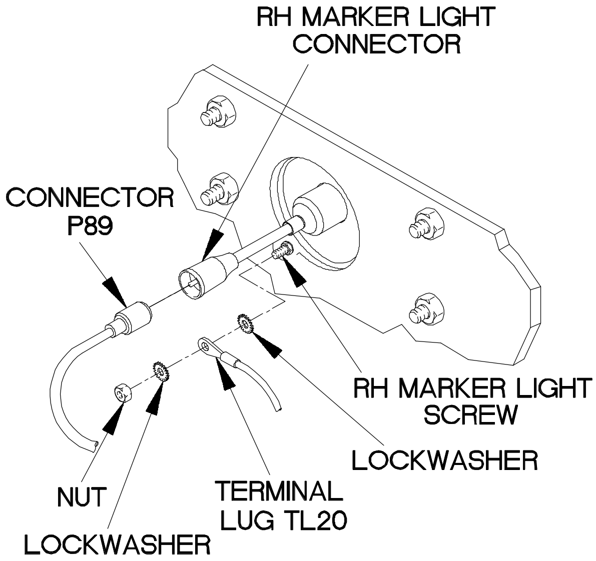
Repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace RH marker light (para 7-38) and go to step 6 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL20, and lockwasher from RH marker light screw. Discard lockwashers.
(2) Connect positive (+) probe of multimeter to terminal lug TL20.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(5) If continuity is present, replace RH marker light and go to step 6 of this fault if required.
(6) Install lockwasher, terminal lug TL20, lockwasher, and nut on RH marker light screw.
(7) Connect RH marker light connector to connector P89.



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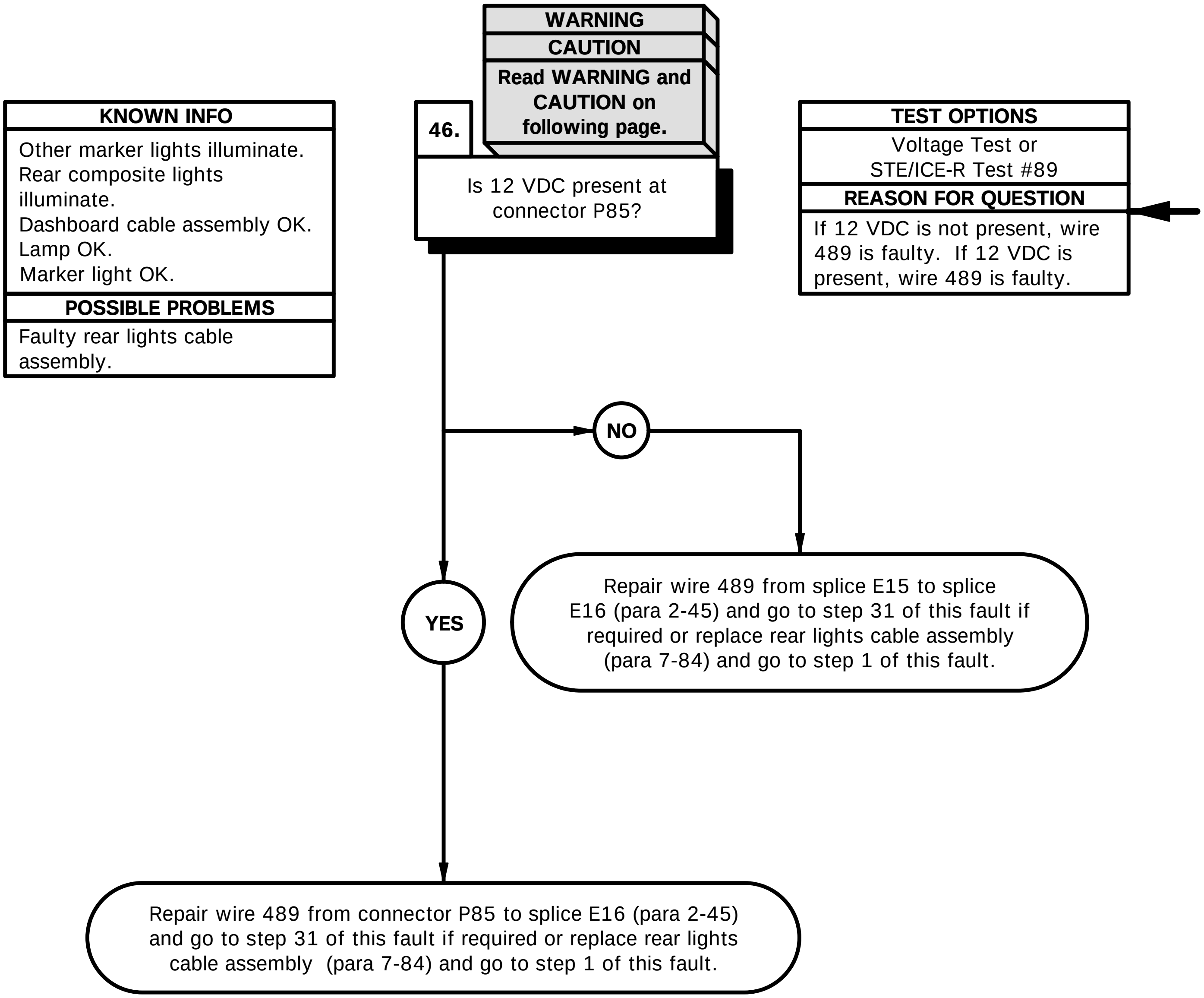
e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.
Marker light OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

46. Is 12 VDC present at connector P85?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, wire 489 is faulty.

NO

Repair wire 489 from splice E15 to splice E16 (para 2-45) and go to step 31 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Repair wire 489 from connector P85 to splice E16 (para 2-45) and go to step 31 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

NOTE

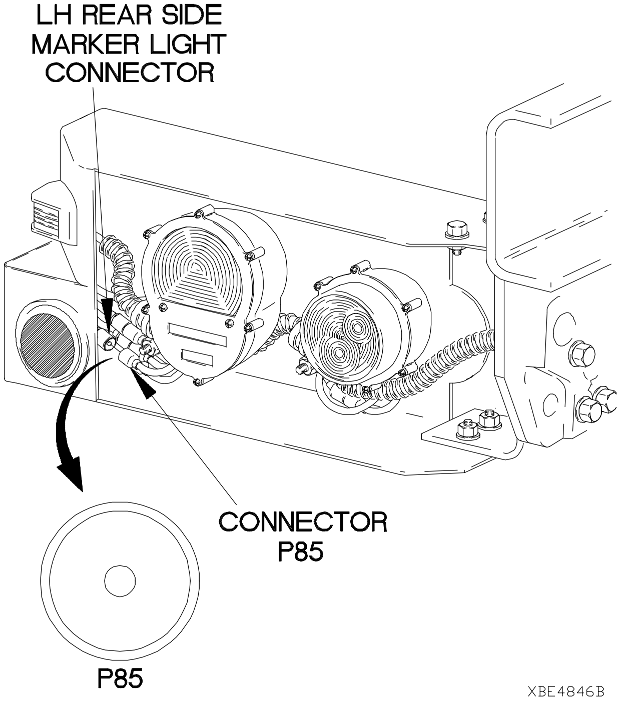
Remove plastic cable ties as required.

(1) Disconnect connector P85 from LH rear side marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P85.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P85 to splice E16 (para 2-45) and go to step 31 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) If 12 VDC is present, repair wire 489 from connector P85 to splice E16 (para 2-45) and go to step 31 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).

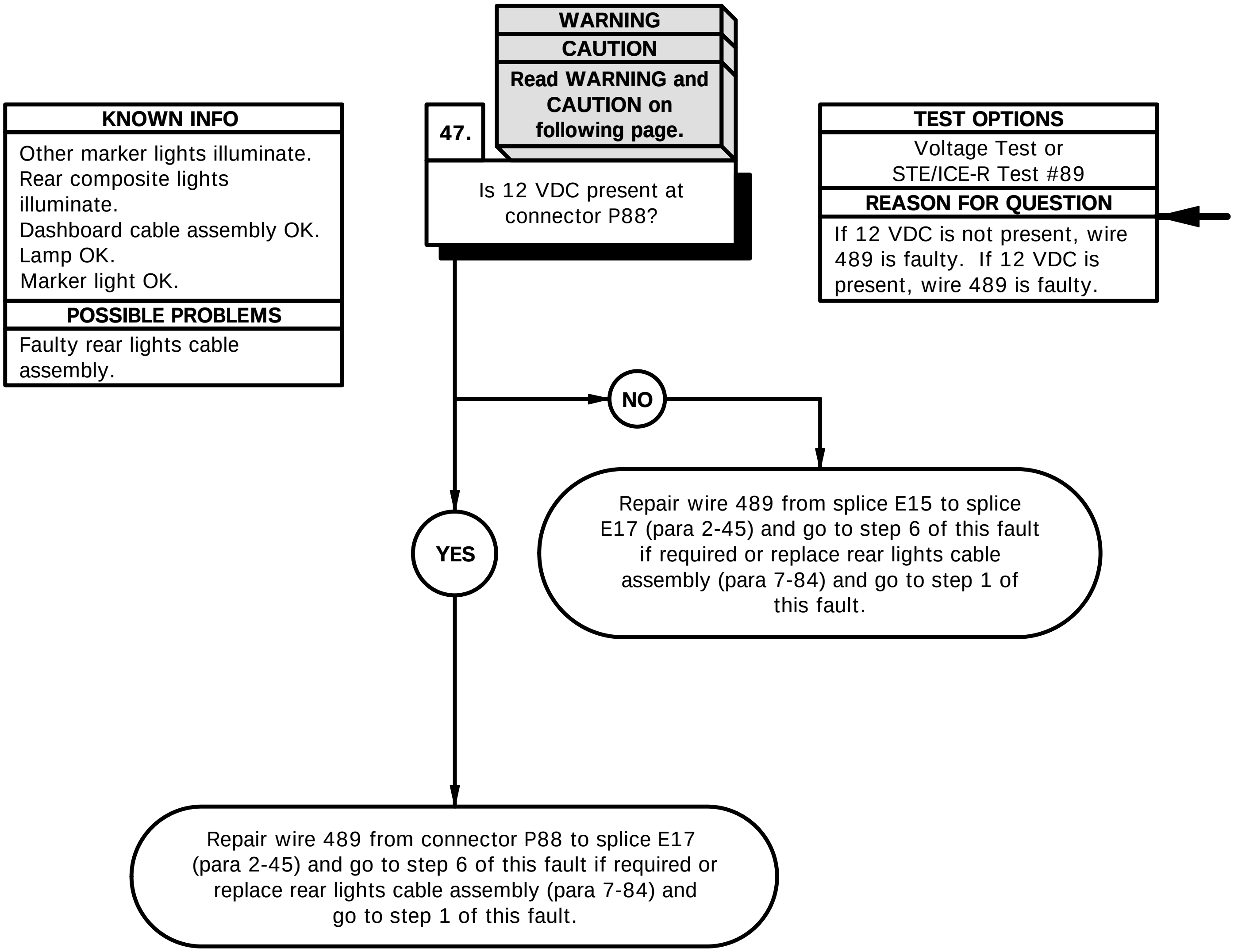
NOTE

Install plastic cable ties as required.

(9) Connect connector P85 to LH rear side marker light connector.



e48. M1083/M1084/M1090/M1092/M1093/M1094 SIDE AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.
Marker light OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

47. Is 12 VDC present at connector P88?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, wire 489 is faulty.

Repair wire 489 from splice E15 to splice E17 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

Repair wire 489 from connector P88 to splice E17 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

NOTE

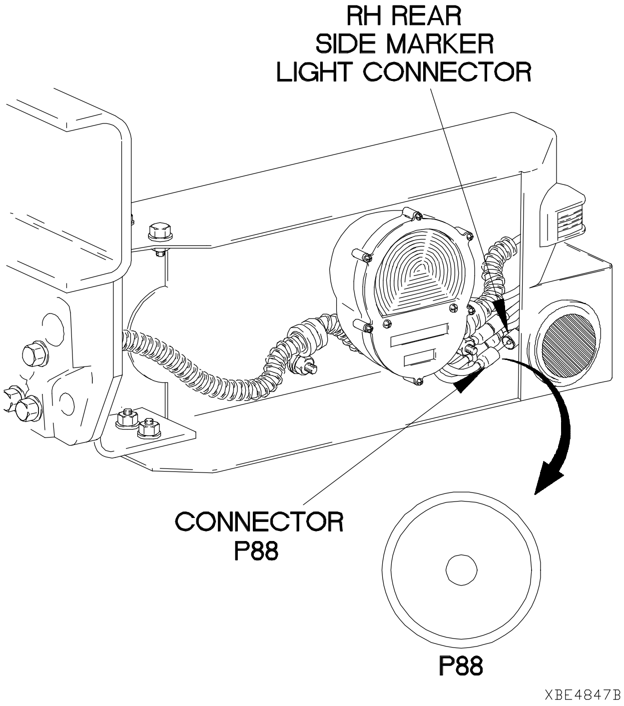
Remove plastic cable ties as required.

(1) Disconnect connector P88 from RH rear side marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P88.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 489 from connector P88 to splice E17 (para 2-44) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) If 12 VDC is present, repair wire 489 from connector P88 to splice E17 (para 2-45) and go to step 6 of this fault if required or replace rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).

NOTE

Install plastic cable ties as required.

(9) Connect connector P88 to RH rear side marker light connector.



e48A. ALL MARKER LIGHTS DO NOT ILLUMINATE IN NORMAL MODE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

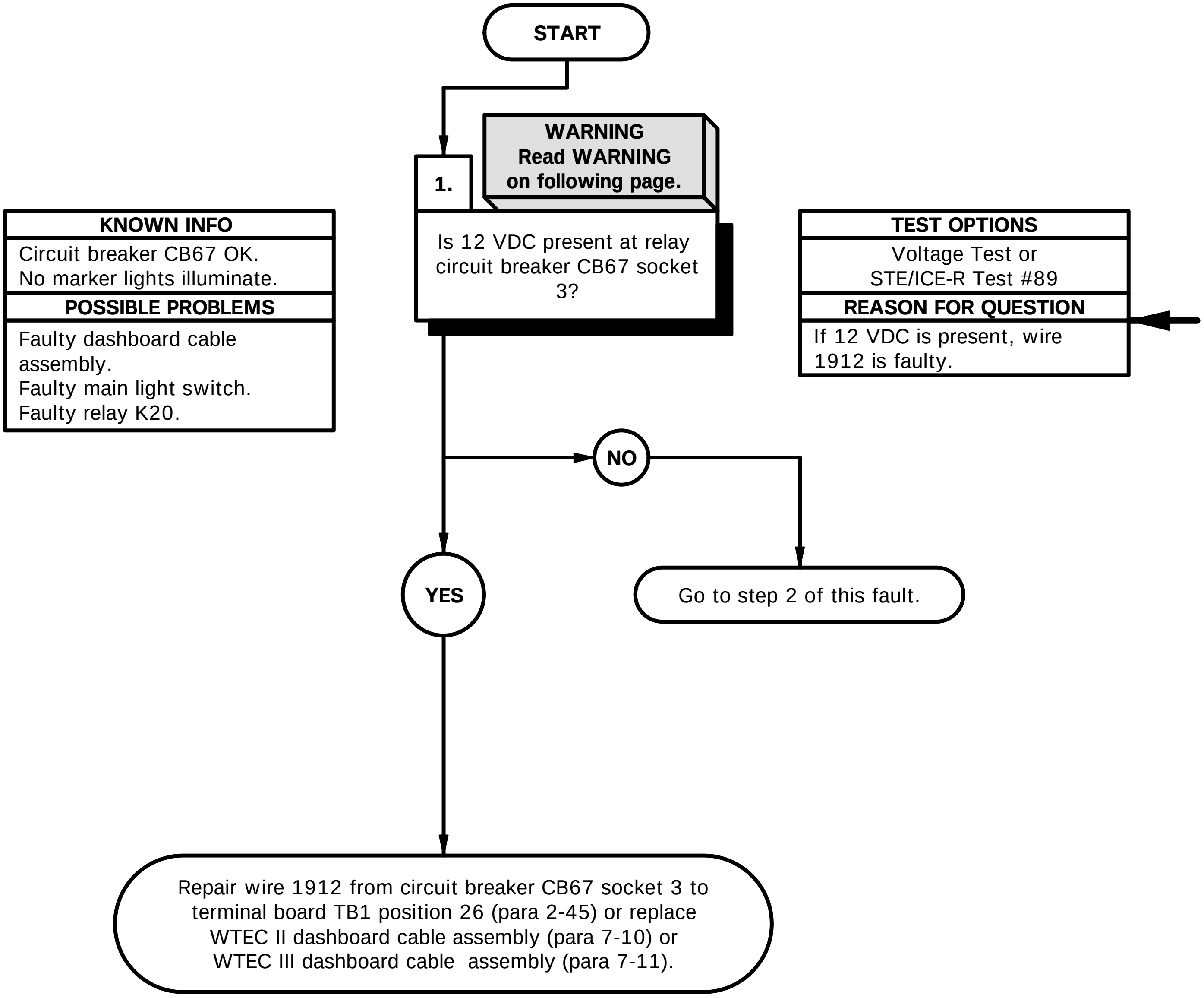
Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform electrical troubleshooting e1. CIRCUIT BREAKER DOES NOT OPERATE on circuit breaker CB67 prior to beginning this task.



KNOWN INFO

Circuit breaker CB67 OK.
No marker lights illuminate.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.
Faulty relay K20.

1. Is 12 VDC present at relay circuit breaker CB67 socket 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is present, wire 1912 is faulty.

NO: Go to step 2 of this fault.

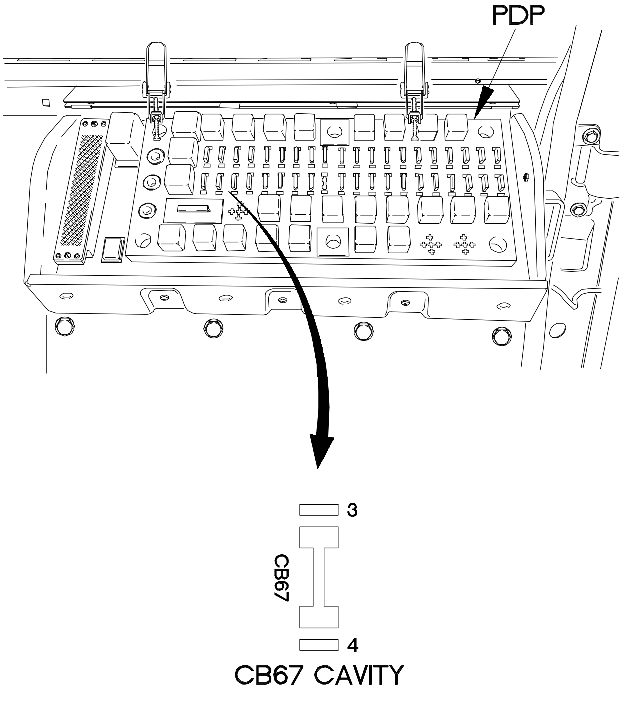
YES: Repair wire 1912 from circuit breaker CB67 socket 3 to terminal board TB1 position 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

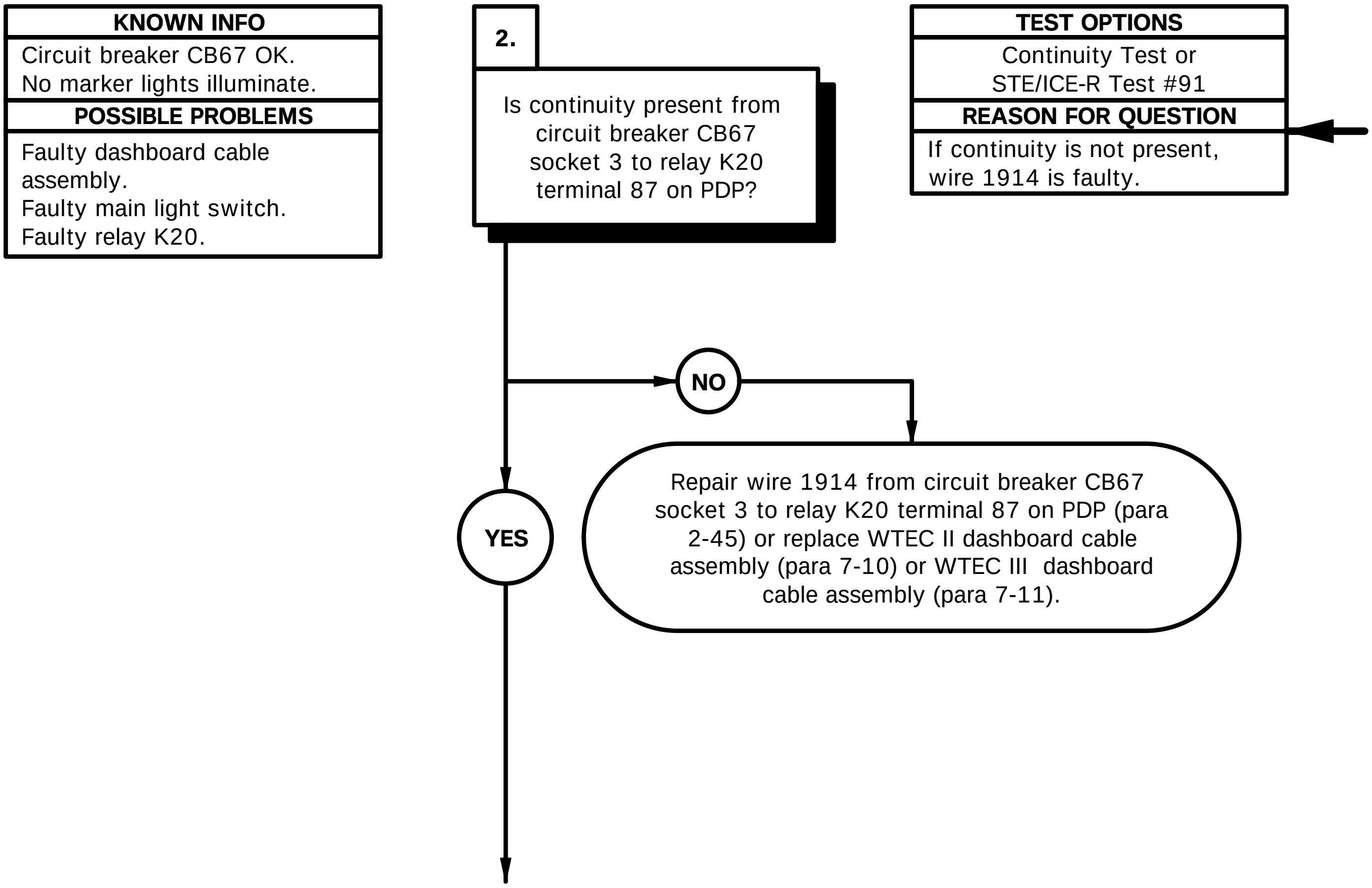
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove circuit breaker CB67 from PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to circuit breaker CB67 socket 3 on PDP.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, go to step 2 of this fault.
(8) If 12 VDC is present, repair wire 1912 from circuit breaker CB67 socket 3 to terminal board TB1 position 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).



e48A. ALL MARKER LIGHTS DO NOT ILLUMINATE IN NORMAL MODE (CONT)



KNOWN INFO

Circuit breaker CB67 OK.
No marker lights illuminate.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.
Faulty relay K20.

2.

Is continuity present from circuit breaker CB67 socket 3 to relay K20 terminal 87 on PDP?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

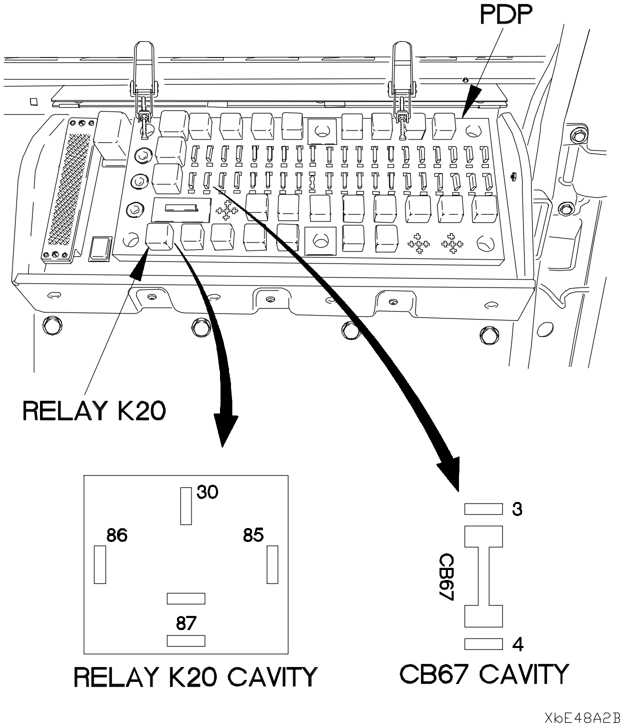
REASON FOR QUESTION

If continuity is not present, wire 1914 is faulty.

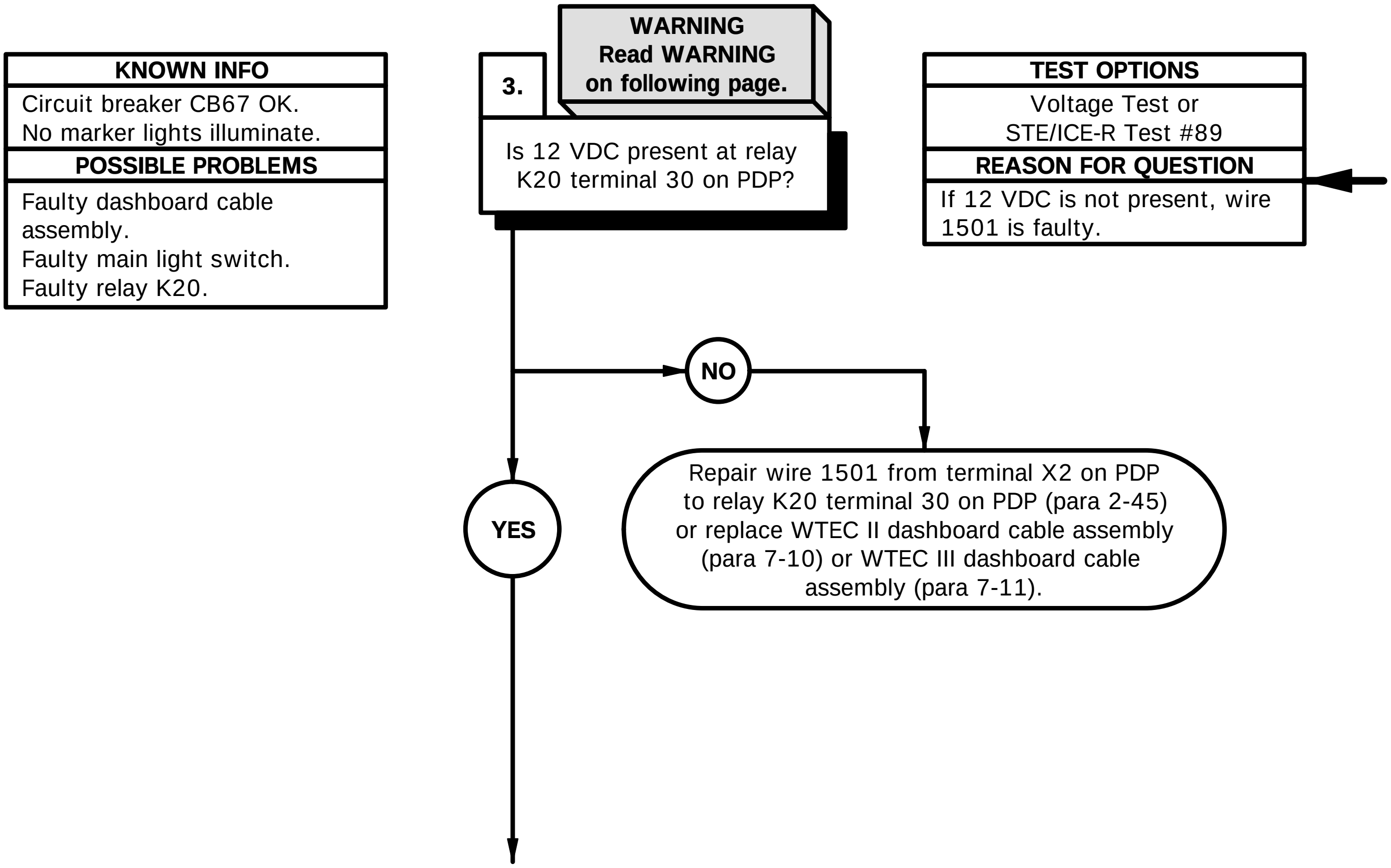
Repair wire 1914 from circuit breaker CB67 socket 3 to relay K20 terminal 87 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove relay K20 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to circuit breaker CB67 socket 3 on PDP.
(5) Connect negative (-) probe of multimeter to relay K20 terminal 87 on PDP and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 1914 from circuit breaker CB67 socket 3 to relay K20 terminal 87 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Install circuit breaker CB67 in PDP.
(8) Connect batteries (para 7-57).



e48A. ALL MARKER LIGHTS DO NOT ILLUMINATE IN NORMAL MODE (CONT)



KNOWN INFO

Circuit breaker CB67 OK.
No marker lights illuminate.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.
Faulty relay K20.

3.

WARNING
Read WARNING on following page.

Is 12 VDC present at relay K20 terminal 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1501 is faulty.

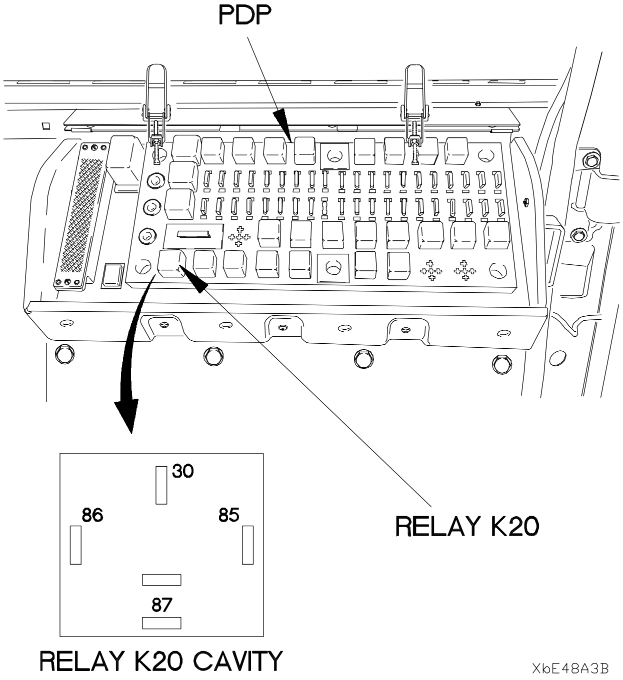
NO

Repair wire 1501 from terminal X2 on PDP to relay K20 terminal 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

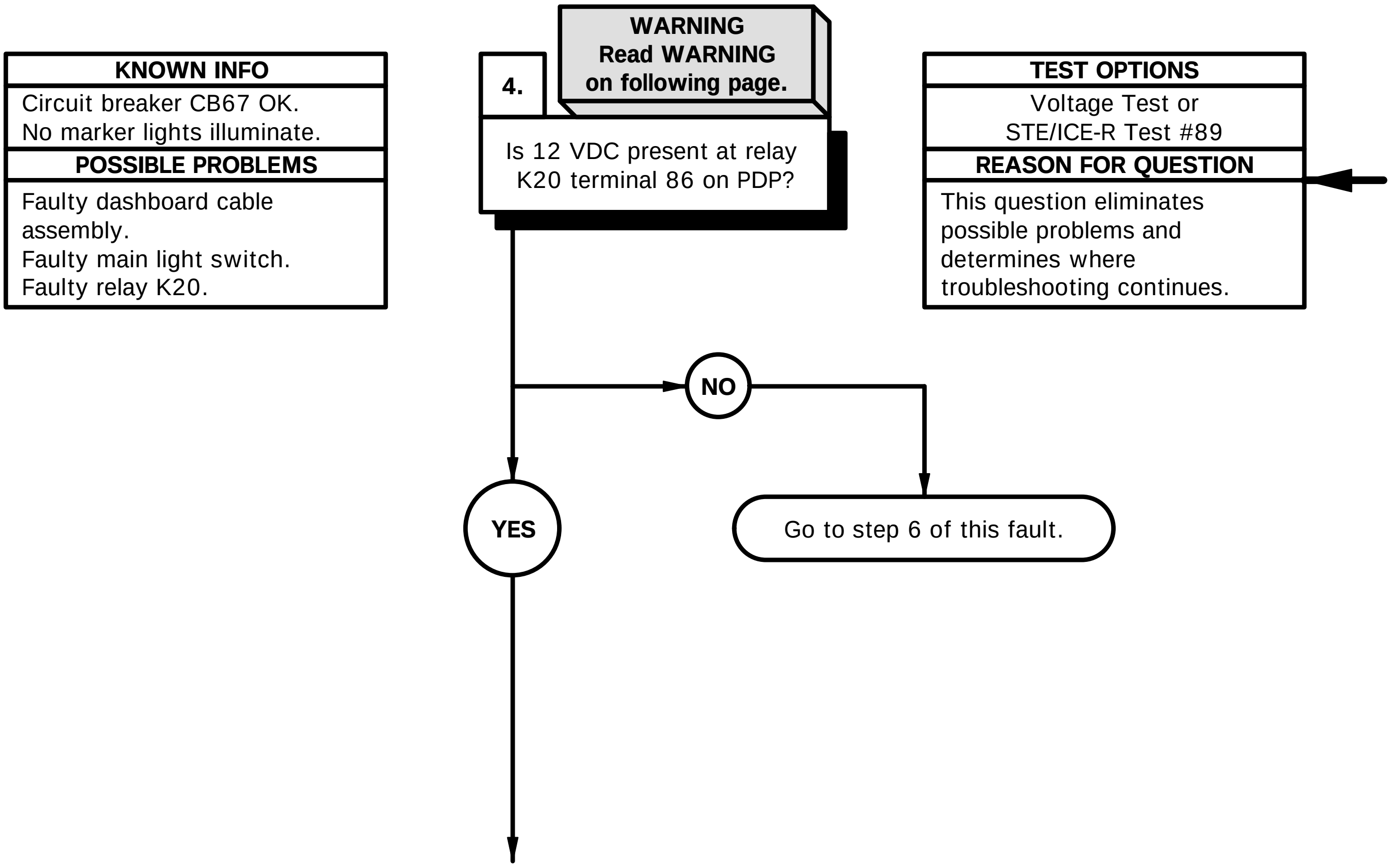
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.



VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to relay K20 terminal 30 on PDP. (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (4) If 12 VDC is not present, repair wire 1501 from terminal X2 on PDP to relay K20 terminal 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

e48A. ALL MARKER LIGHTS DO NOT ILLUMINATE IN NORMAL MODE (CONT)



KNOWN INFO

Circuit breaker CB67 OK.
No marker lights illuminate.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.
Faulty relay K20.

WARNING
Read WARNING on following page.

4. Is 12 VDC present at relay K20 terminal 86 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 6 of this fault.

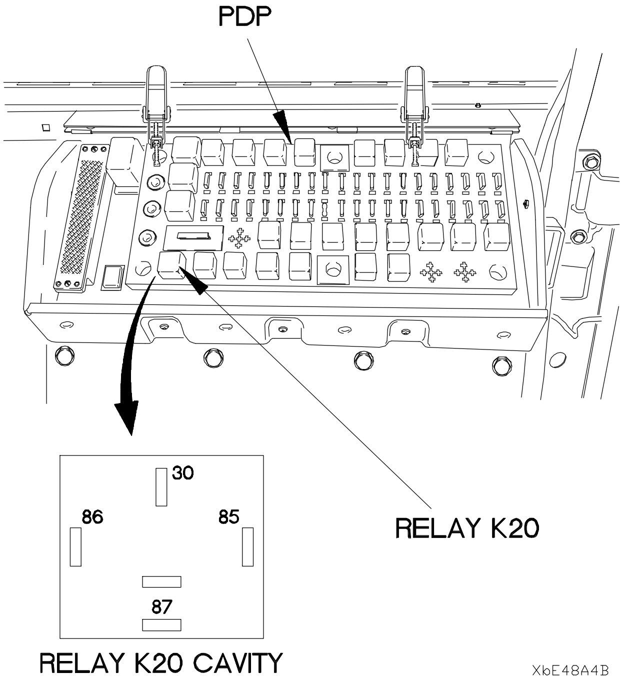
YES

WARNING

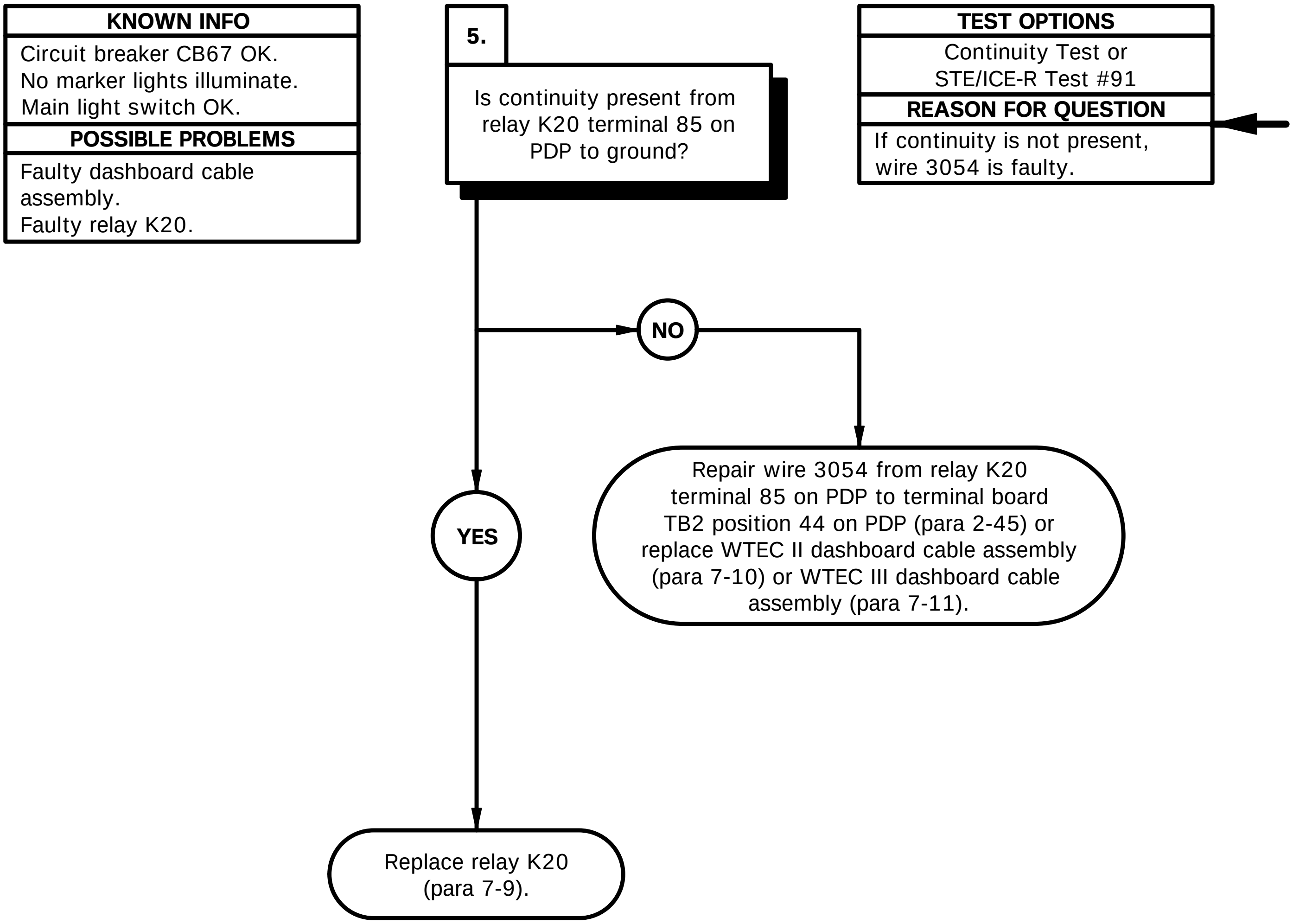
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K20 terminal 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 VDC is not present, go to step 6 of this fault.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).



e48A. ALL MARKER LIGHTS DO NOT ILLUMINATE IN NORMAL MODE (CONT)



KNOWN INFO

Circuit breaker CB67 OK.
No marker lights illuminate.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K20.

5.

Is continuity present from relay K20 terminal 85 on PDP to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

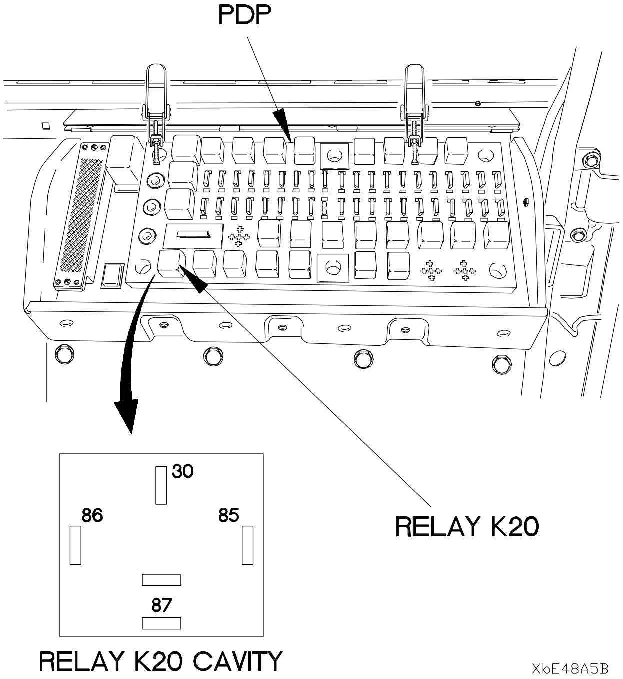
If continuity is not present, wire 3054 is faulty.

Repair wire 3054 from relay K20 terminal 85 on PDP to terminal board TB2 position 44 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

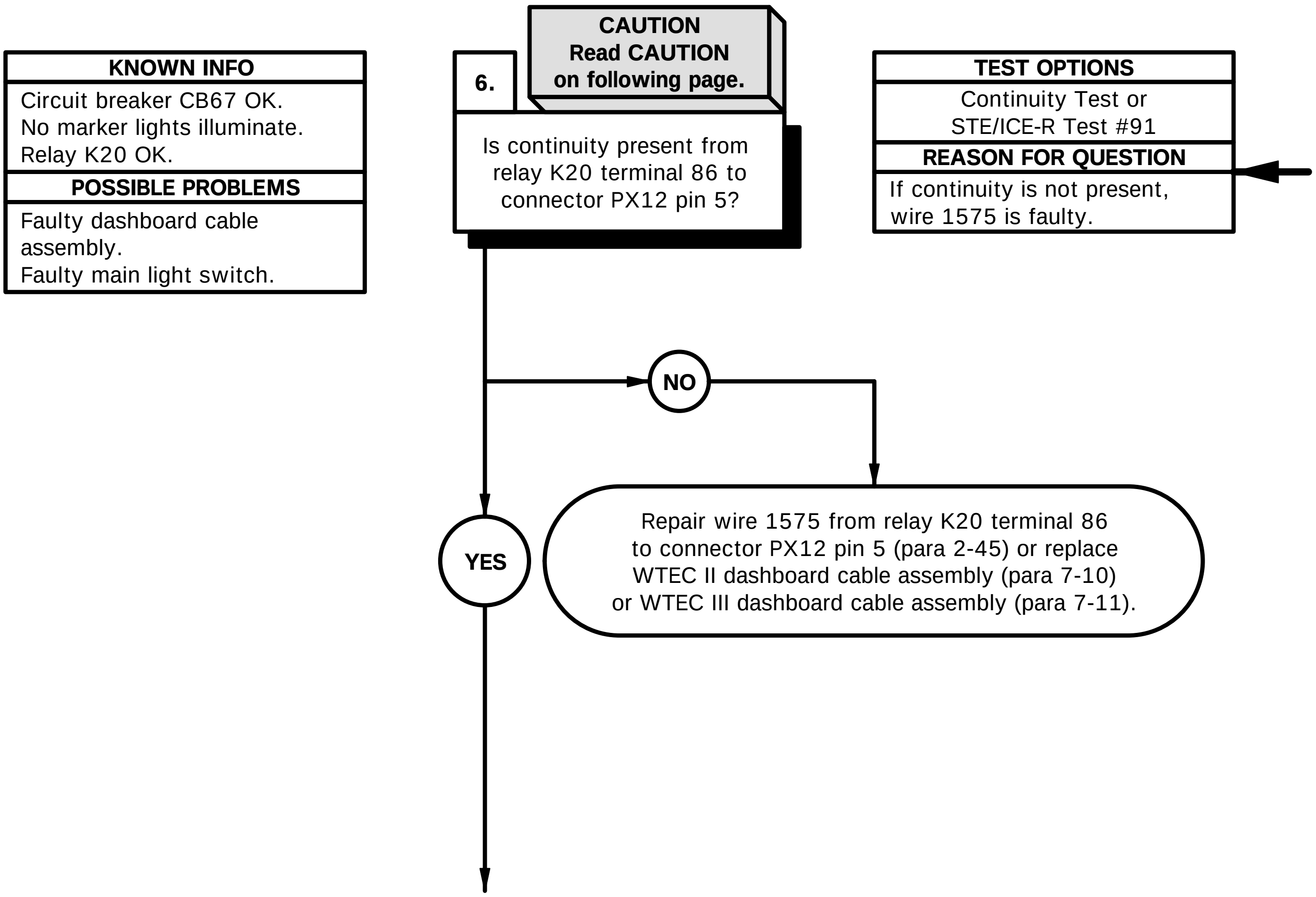
Replace relay K20 (para 7-9).

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to relay K20 terminal 85 on PDP.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3054 from relay K20 terminal 85 on PDP to terminal board TB2 position 44 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace relay K20 (para 7-9).
(7) Install relay K20 in PDP.
(8) Install PDP cover (para 16-2).



e48A. ALL MARKER LIGHTS DO NOT ILLUMINATE IN NORMAL MODE (CONT)



KNOWN INFO

Circuit breaker CB67 OK.
No marker lights illuminate.
Relay K20 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.

6.

CAUTION
Read CAUTION on following page.

Is continuity present from relay K20 terminal 86 to connector PX12 pin 5?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1575 is faulty.

NO

Repair wire 1575 from relay K20 terminal 86 to connector PX12 pin 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

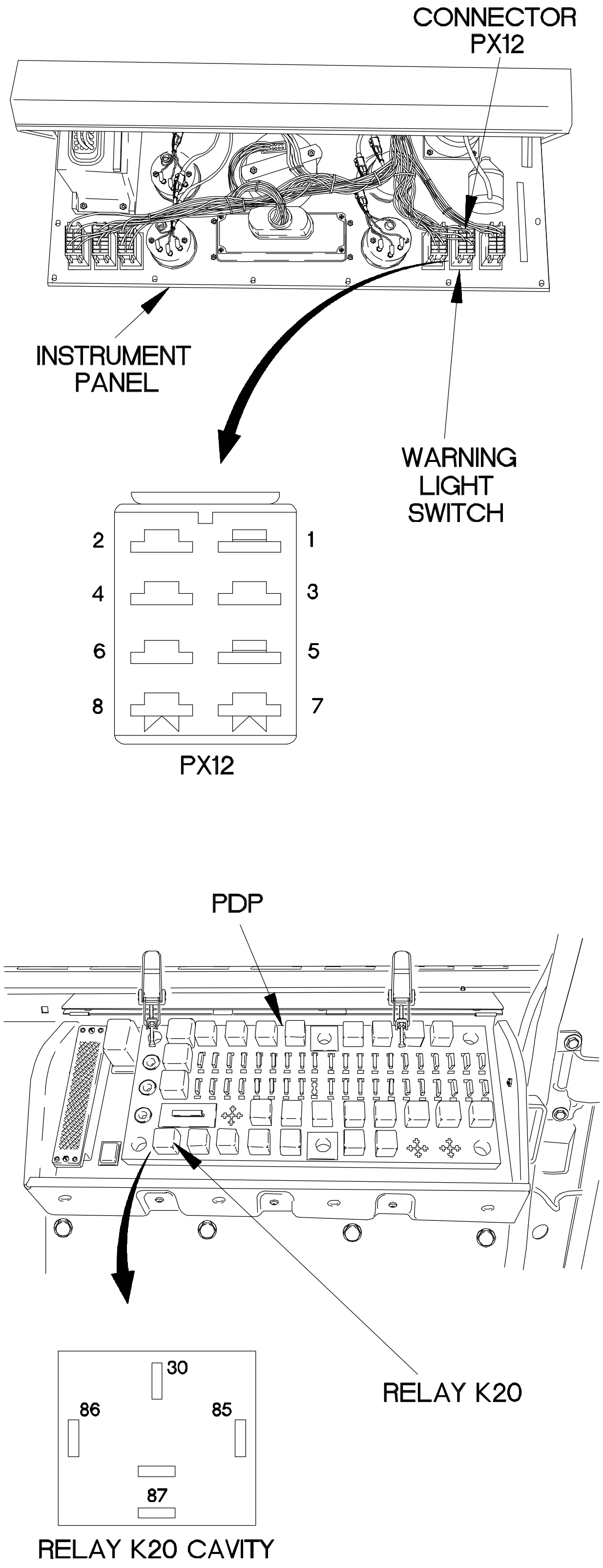
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove instrument panel assembly for access (para 7-15).
(3) Disconnect connector PX12 from warning light switch.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX12 pin 5.
(6) Connect negative (-) probe of multimeter to relay K20 terminal 86 on PDP and note reading on multimeter.
(7) If continuity is not present, repair wire 1575 from relay K20 terminal 86 to connector PX12 pin 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Install relay K20 in PDP.
(9) Install PDP cover (para 16-2).



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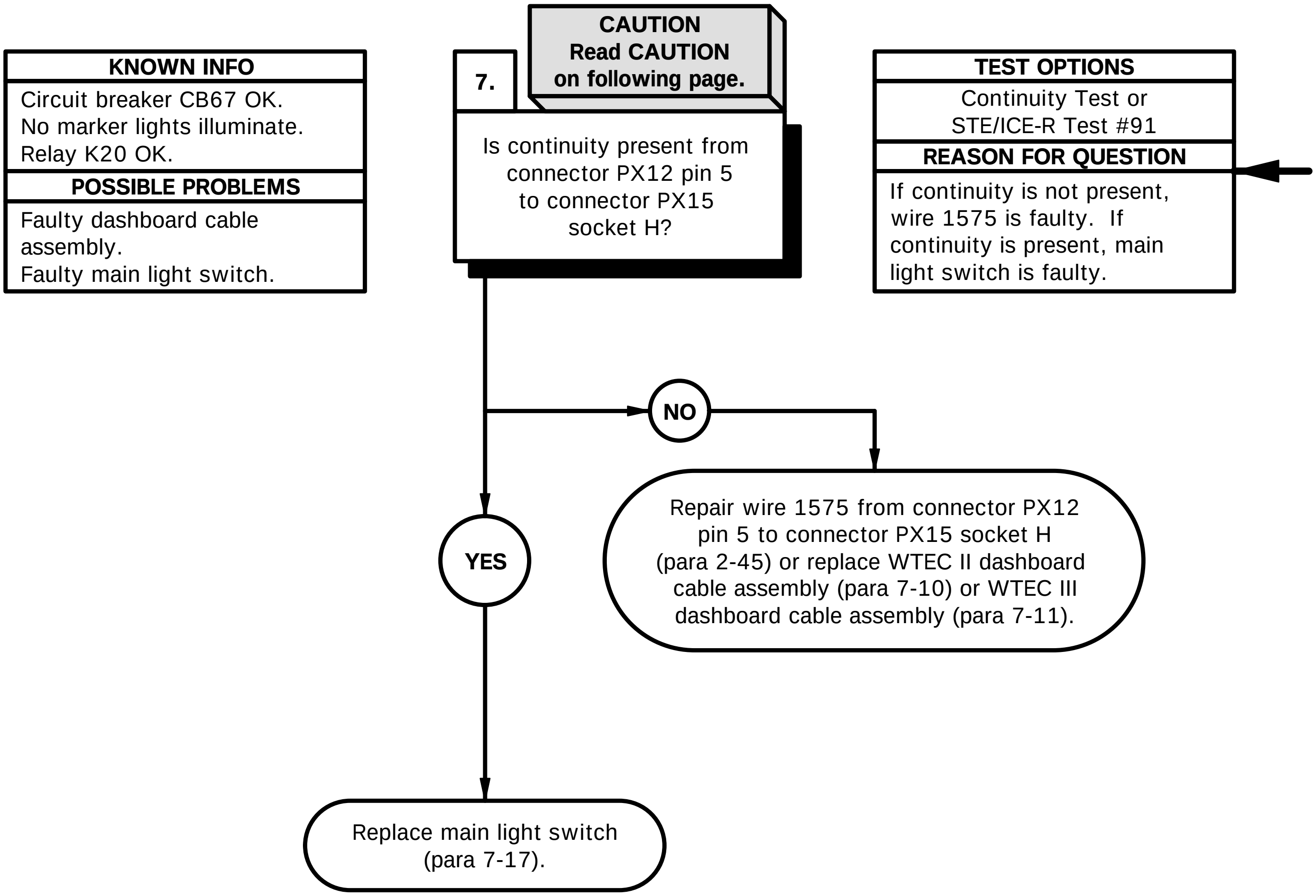
e48A. ALL MARKER LIGHTS DO NOT ILLUMINATE IN NORMAL MODE (CONT)



KNOWN INFO

Circuit breaker CB67 OK.
No marker lights illuminate.
Relay K20 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.

7.

CAUTION
Read CAUTION on following page.

Is continuity present from connector PX12 pin 5 to connector PX15 socket H?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

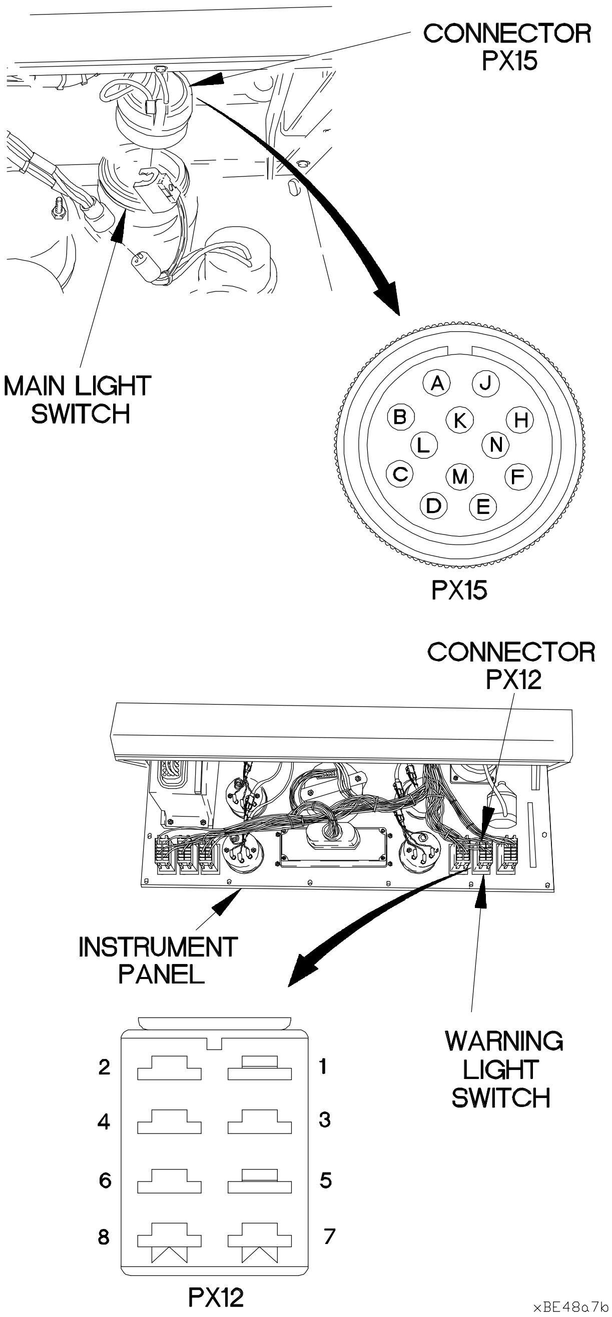
If continuity is not present, wire 1575 is faulty. If continuity is present, main light switch is faulty.

NO

Repair wire 1575 from connector PX12 pin 5 to connector PX15 socket H (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace main light switch (para 7-17).



CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Disconnect connector PX15 from main light switch. (2) Set multimeter to ohms. (3) Connect positive (+) probe of multimeter to connector PX12 pin 5. (4) Connect negative (-) probe of multimeter to connector PX15 socket H and note reading on multimeter. (5) If continuity is not present, repair wire 1575 from connector PX12 pin 5 to connector PX15 socket H (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (6) If continuity is present, replace main light switch (para 7-17). (7) Connect connector PX15 to main light switch. (8) Connect connector PX12 to warning light switch. (9) Install instrument panel assembly (para 7-15). (10) Connect batteries (para 7-57).

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (4) (Item 82, Appendix G)
Ties, Cable, Plastic (Item 69, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.
Faulty dashboard cable assembly.

1.

Does any intermediate (if equipped), side, or rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 15 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

2.

Does more than one intermediate (if equipped), side, or rear marker light not illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

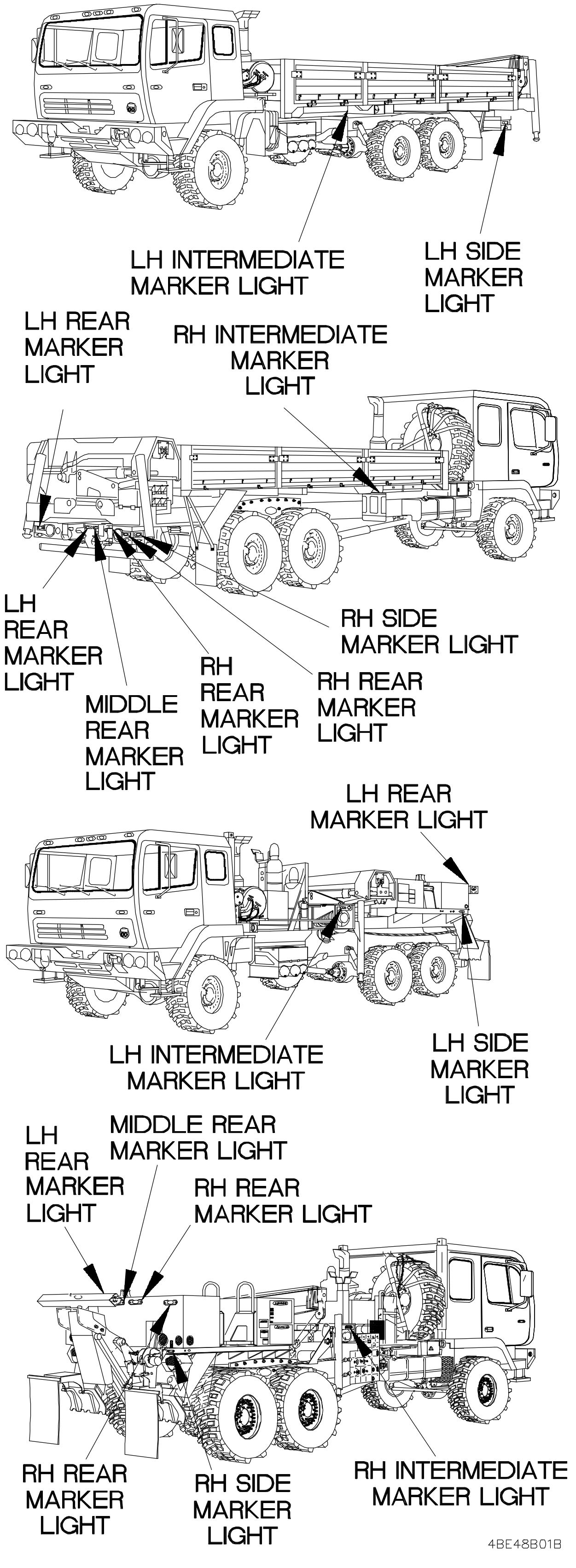
NO

Go to step 17 of this fault.

YES

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Note intermediate, side and/or rear marker light(s) that do not illuminate.
(3) If all intermediate, side, and rear marker lights do not illuminate, go to step 15 of this fault.
(4) Position main light switch to OFF (TM 9-2320-366-10-1).

If more than one intermediate, side, and/or rear marker lights do not illuminate, go to step 17 of this fault.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

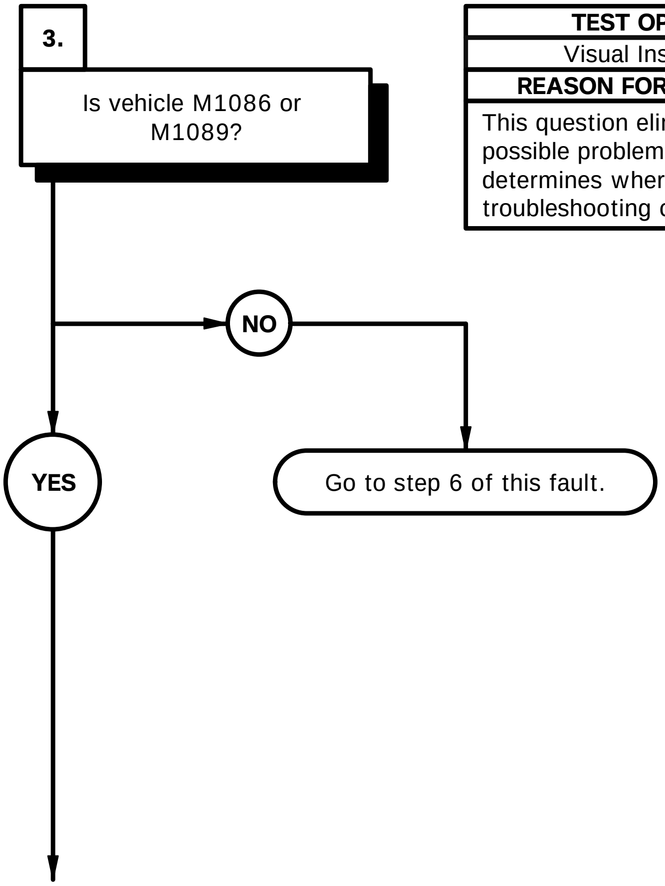
Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.



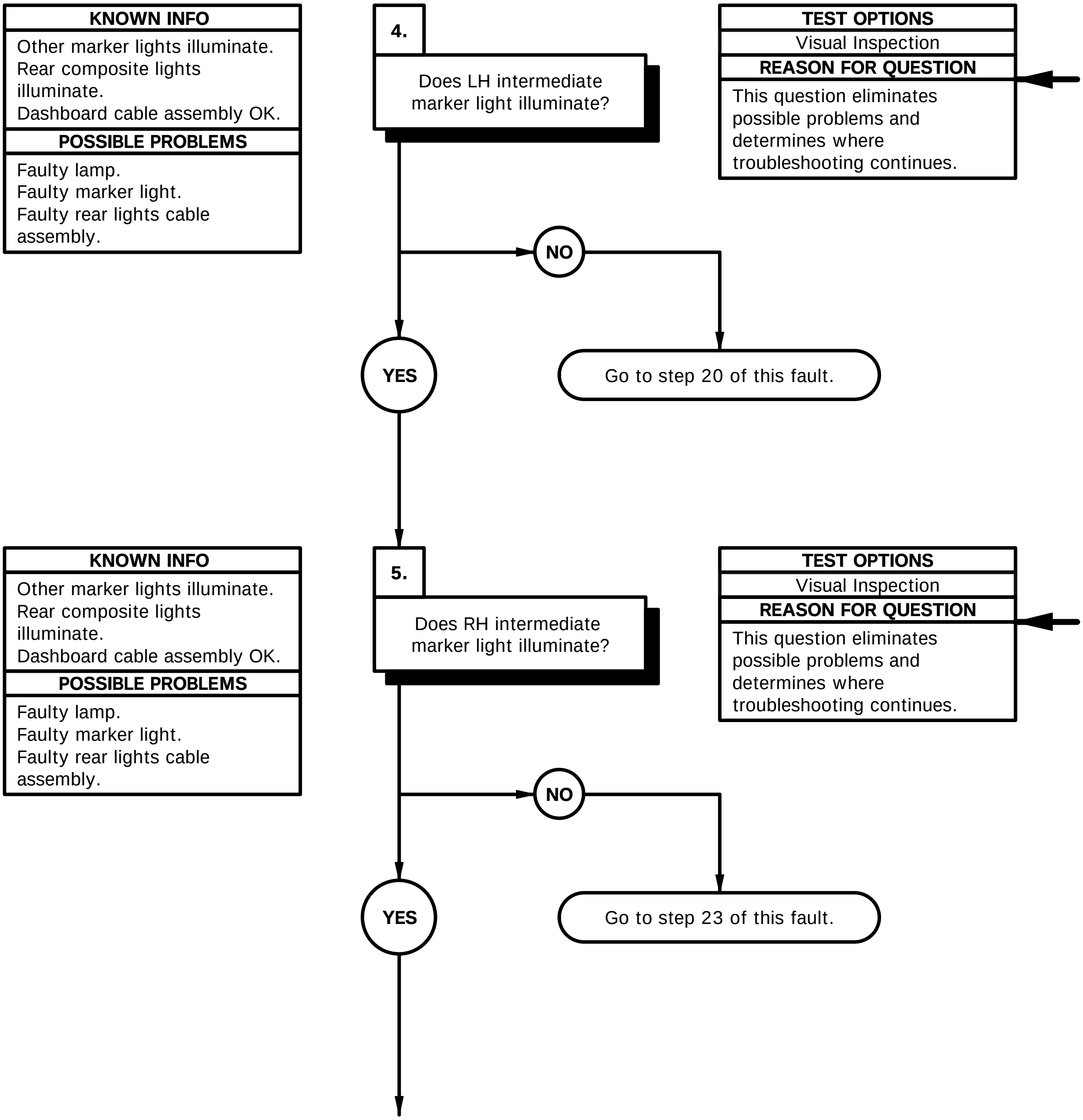
3. Is vehicle M1086 or M1089?

NO — Go to step 6 of this fault.

YES

If vehicle is not M1088 or M1089, go to step 6 of this fault.

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

4. Does LH intermediate marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 20 of this fault.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

5. Does RH intermediate marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

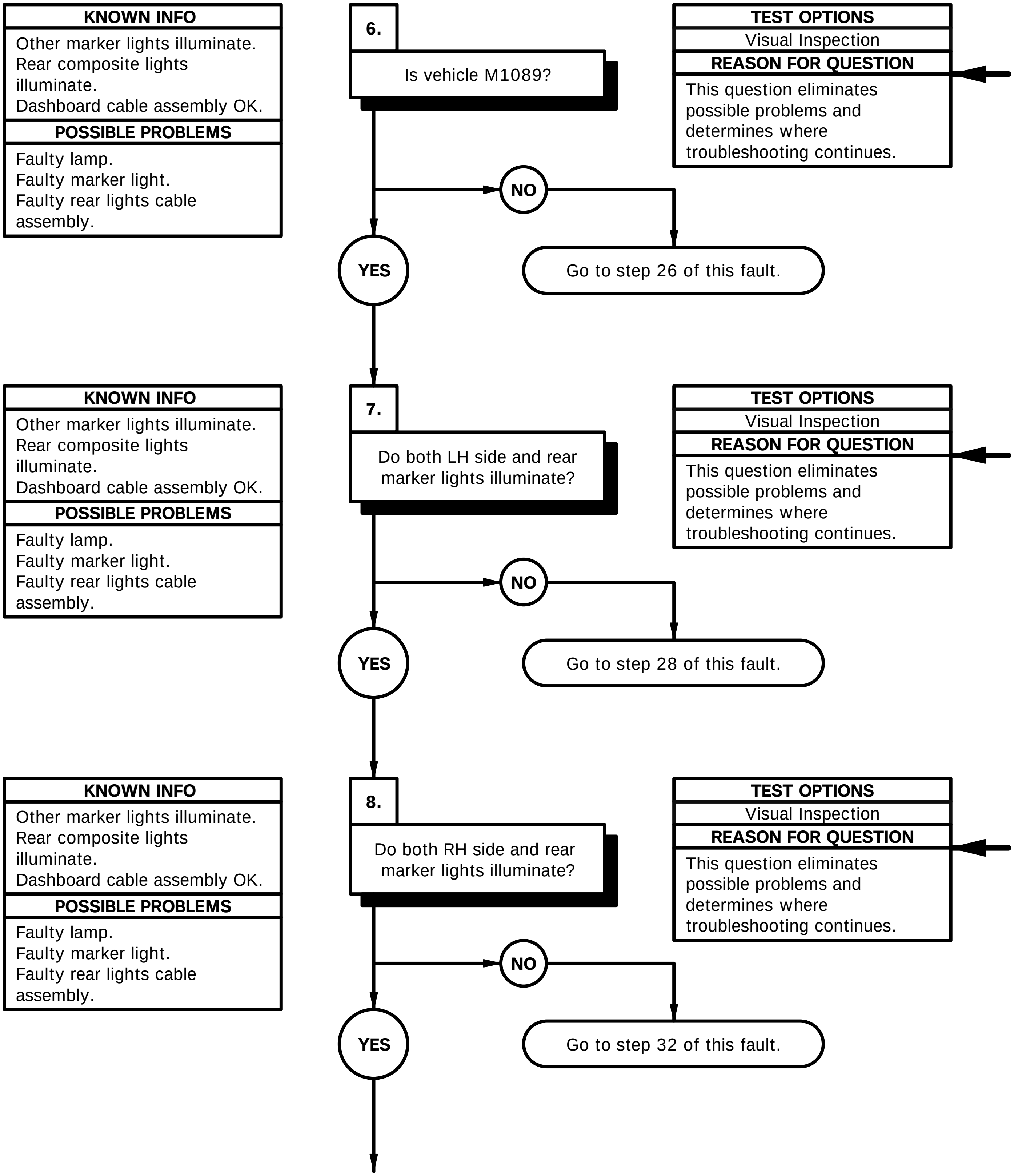
This question eliminates possible problems and determines where troubleshooting continues.

Go to step 23 of this fault.

If LH intermediate marker light does not illuminate, go to step 20 of this fault.

If RH intermediate marker light does not illuminate, go to step 23 of this fault.

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

6. Is vehicle M1089?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 26 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

7. Do both LH side and rear marker lights illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 28 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

8. Do both RH side and rear marker lights illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 32 of this fault.

YES

If vehicle is not M1089, go to step 26 of this fault.

If both LH side and rear marker lights do not illuminate, go to step 28 of this fault.

If both RH side and rear marker lights do not illuminate, go to step 32 of this fault.

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

9.

Do any of the three rear marker lights illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 36 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

10.

Does the LH rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 38 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

11.

Does the middle rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 41 of this fault.

YES

If none of the three rear marker lights illuminate, go to step 36 of this fault.

If LH rear marker light does not illuminate, go to step 38 of this fault.

If middle rear marker light does not illuminate, go to step 41 of this fault.

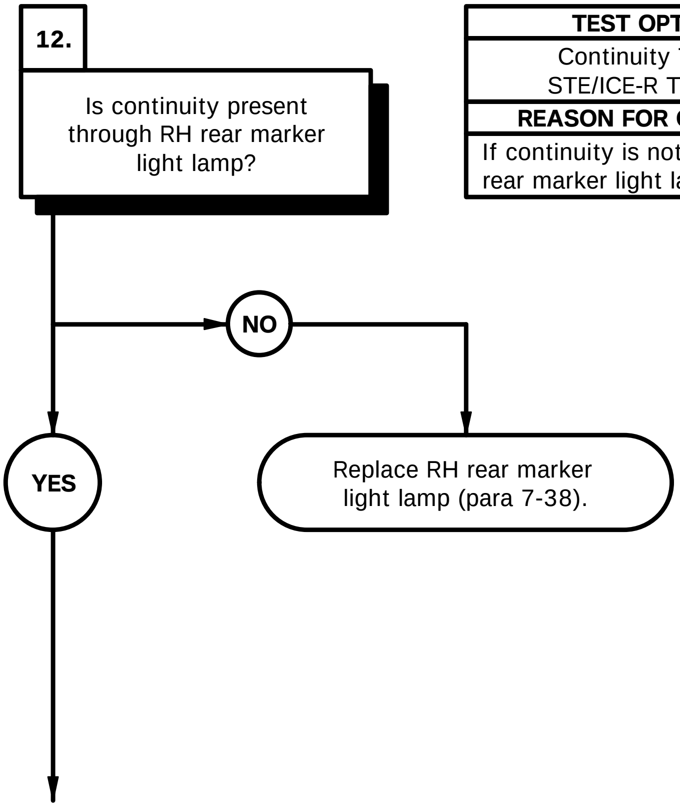
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



Is continuity present through RH rear marker light lamp?

Replace RH rear marker light lamp (para 7-38).

TEST OPTIONS

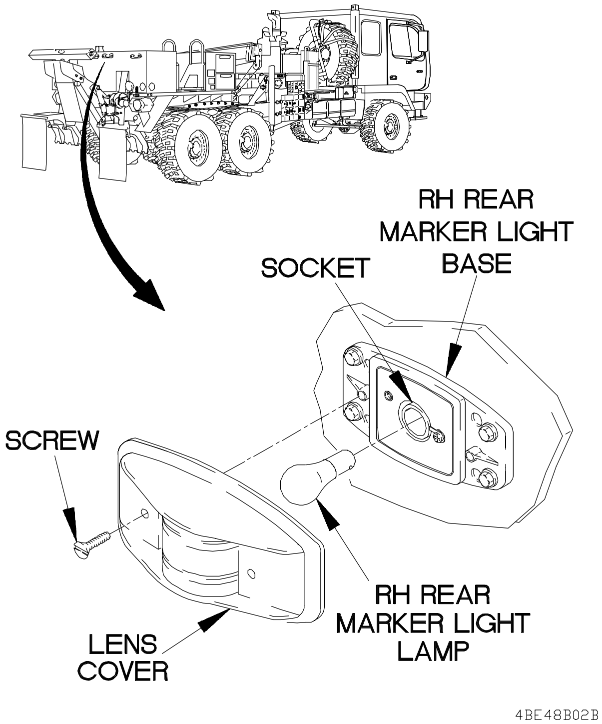
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

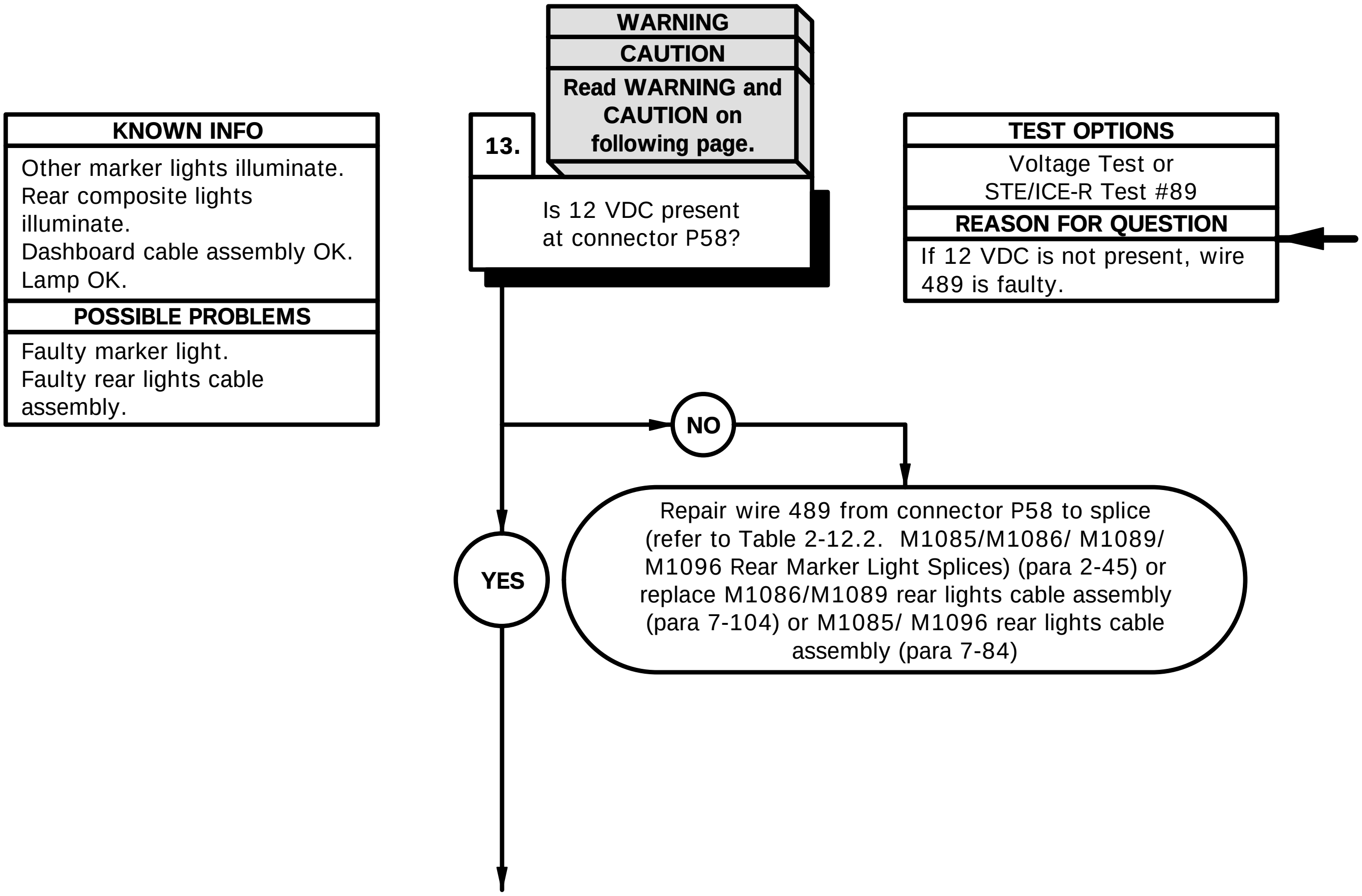
If continuity is not present, RH rear marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from RH rear marker light base.
(2) Remove RH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH rear marker light lamp (para 7-38).
(6) Install RH rear marker light lamp in socket.
(7) Install lens cover on RH rear marker light base with two screws.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

13. Is 12 VDC present at connector P58?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

Repair wire 489 from connector P58 to splice (refer to Table 2-12.2. M1085/M1086/ M1089/ M1096 Rear Marker Light Splices) (para 2-45) or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/ M1096 rear lights cable assembly (para 7-84)

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect RH rear marker light connector from connector P58.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P58.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P58 to splice (refer to Table 2-12.2. M1085/M1086/M1089/M1096 Rear Marker Light Splices) (para 2-45) or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84).

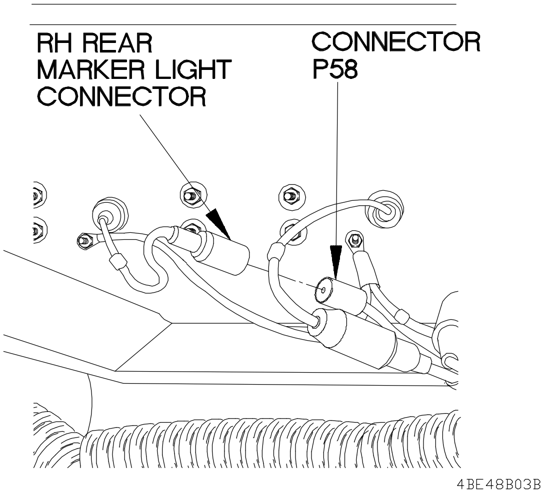
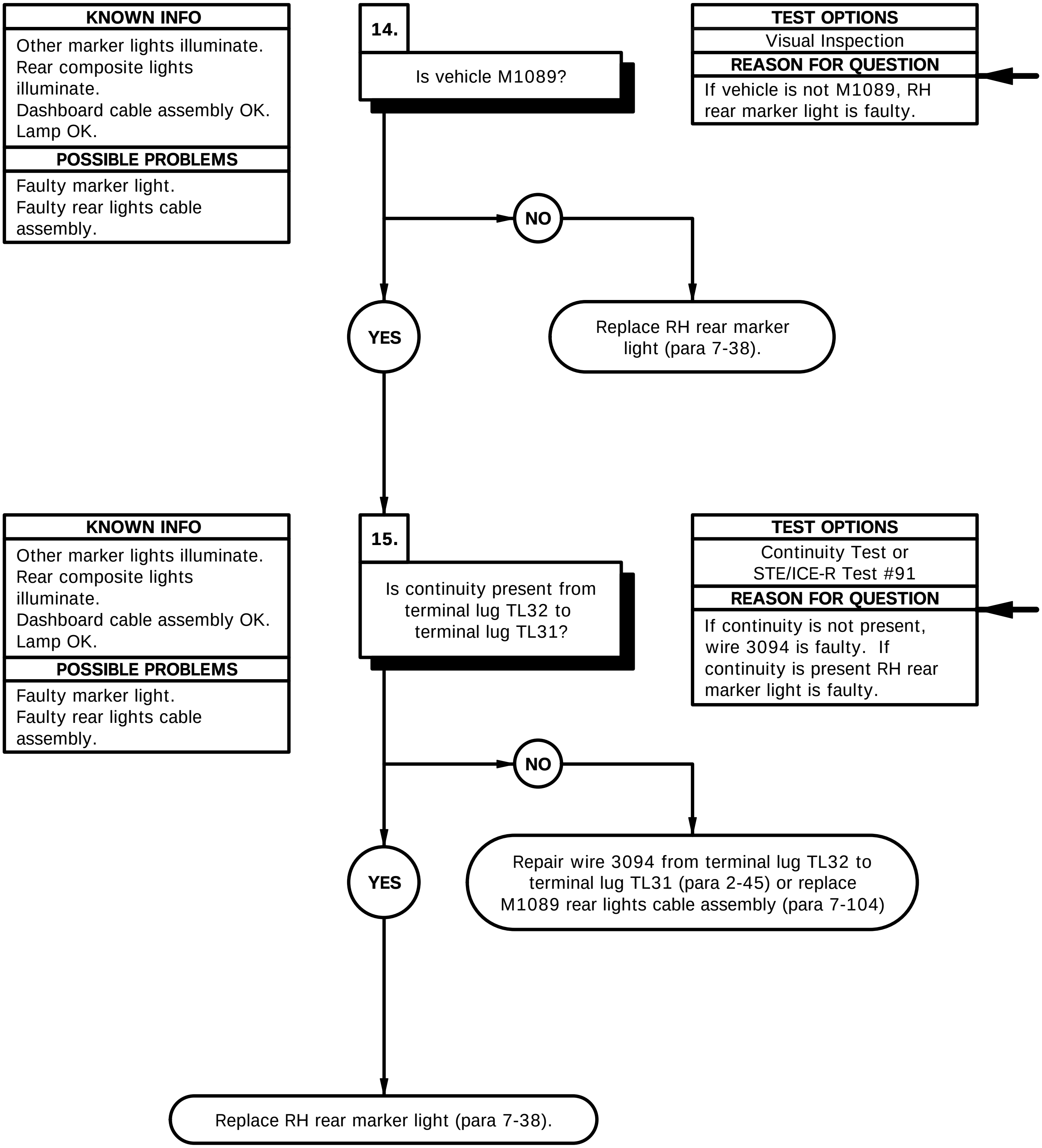


Table 2-12.2. M1085/M1086/M1089/M1096 Rear Marker Light Splices

Model	Splice
M1085/M1086/M1096	E15
M1089	E50

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO
Other marker lights illuminate. Rear composite lights illuminate. Dashboard cable assembly OK. Lamp OK.
POSSIBLE PROBLEMS
Faulty marker light. Faulty rear lights cable assembly.

14. Is vehicle M1089?

TEST OPTIONS
Visual Inspection
REASON FOR QUESTION
If vehicle is not M1089, RH rear marker light is faulty.

NO: Replace RH rear marker light (para 7-38).

YES:

KNOWN INFO
Other marker lights illuminate. Rear composite lights illuminate. Dashboard cable assembly OK. Lamp OK.
POSSIBLE PROBLEMS
Faulty marker light. Faulty rear lights cable assembly.

15. Is continuity present from terminal lug TL32 to terminal lug TL31?

TEST OPTIONS
Continuity Test or STE/ICE-R Test #91
REASON FOR QUESTION
If continuity is not present, wire 3094 is faulty. If continuity is present RH rear marker light is faulty.

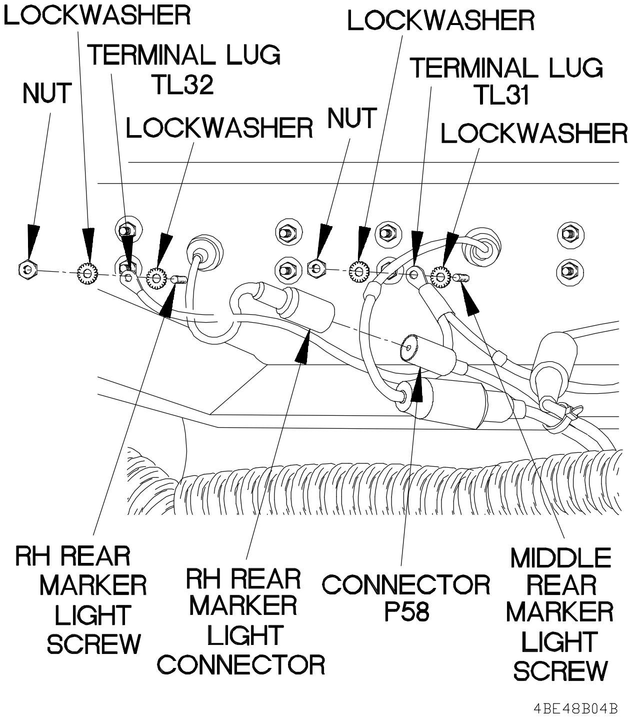
NO: Repair wire 3094 from terminal lug TL32 to terminal lug TL31 (para 2-45) or replace M1089 rear lights cable assembly (para 7-104)

YES: Replace RH rear marker light (para 7-38).

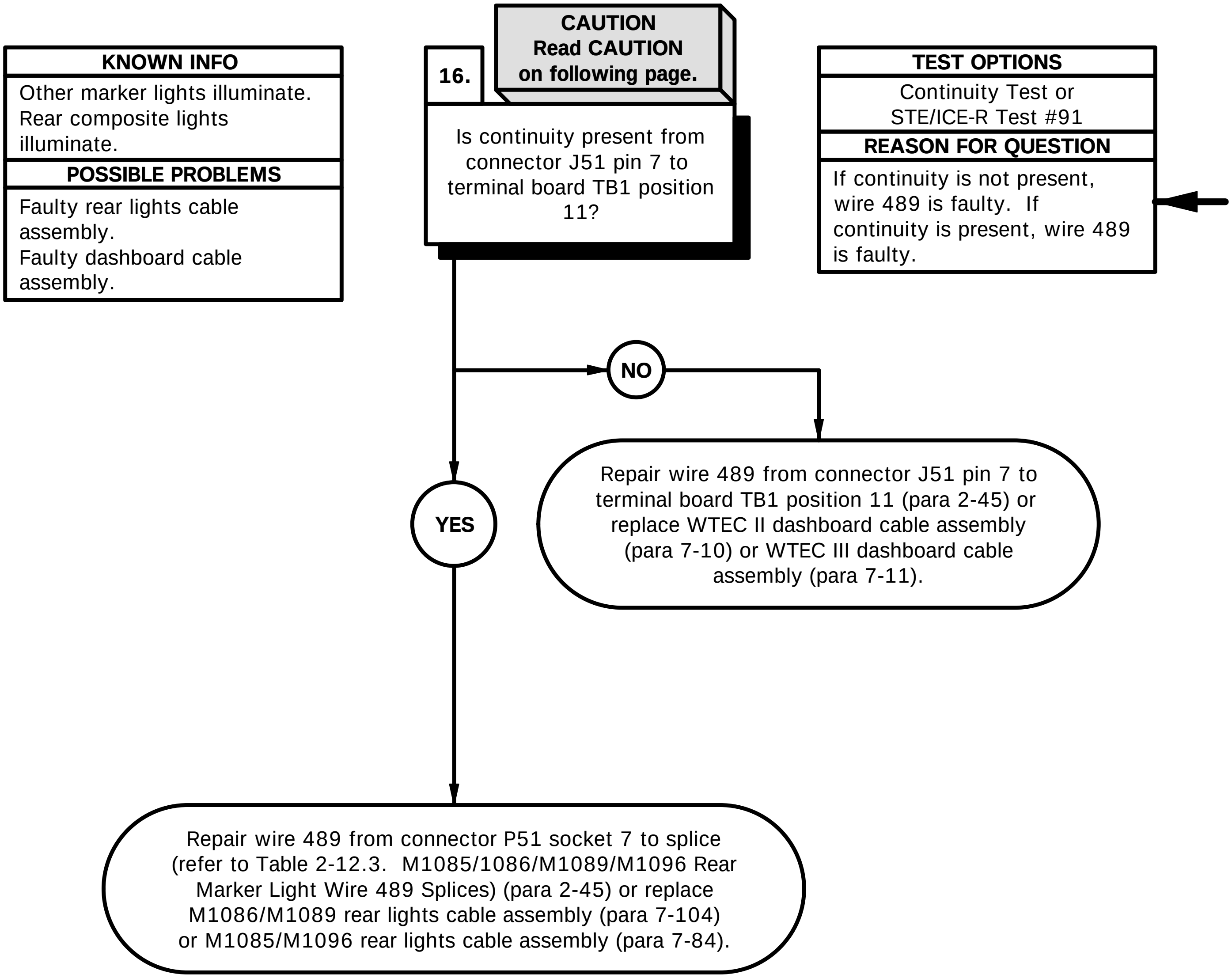
If vehicle is not M1089, replace RH rear marker light (para 7-38).

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL32, and lockwasher from RH rear marker light screw. Discard lockwashers.
(2) Remove nut, lockwasher, terminal lug TL31, and lockwasher from middle rear marker light screw. Discard lockwashers.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL32.
(5) Connect negative (-) probe of multimeter to terminal lug TL31 and note reading on multimeter.
(6) If continuity is not present, repair wire 3094 from terminal lug TL32 to terminal lug TL31 (para 2-45) or replace M1089 rear lights cable assembly (para 7-104).
(7) If continuity is present, replace RH rear marker light (para 7-38).
(8) Install lockwasher, terminal lug TL31, lockwasher, and nut on middle rear marker light screw.
(9) Install lockwasher, terminal lug TL32, lockwasher, and nut on RH rear marker light screw.
(10) Connect RH rear marker light connector to connector P58.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.

16.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J51 pin 7 to terminal board TB1 position 11?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 489 is faulty. If continuity is present, wire 489 is faulty.

NO

Repair wire 489 from connector J51 pin 7 to terminal board TB1 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Repair wire 489 from connector P51 socket 7 to splice (refer to Table 2-12.3. M1085/1086/M1089/M1096 Rear Marker Light Wire 489 Splices) (para 2-45) or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

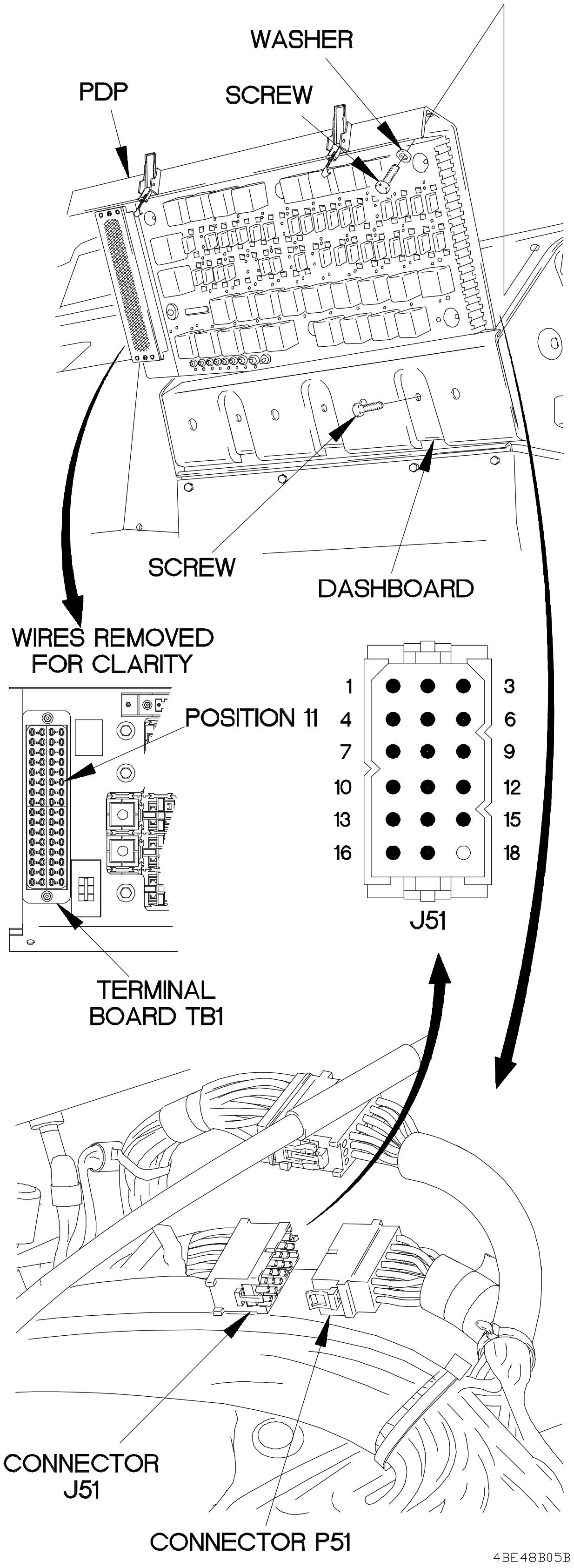
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove PDP cover (para 16-2).
(3) Remove three screws and washers from PDP.
(4) Remove three screws from PDP.
(5) Lift PDP outward to gain access.
(6) Disconnect connector P51 from connector J51.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector J51 pin 7.
(9) Connect negative (-) probe of multimeter to terminal board TB1 position 11 and note reading on multimeter.
(10) If continuity is not present, repair wire 489 from connector J51 pin 7 to terminal board TB1 position 11 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) If continuity is present, repair wire 489 from connector P51 socket 7 to splice (refer to Table 2-12.3. M1085/M1086/M1089/M1096 Rear Marker Light Wire 489 Splices) (para 2-45) or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84).
(12) Connect connector J51 to connector P51.
(13) Install PDP on dashboard with three screws.
(14) Install three washers and screws in PDP.
(15) Install PDP cover (para 16-2).

Table 2-12.3. M1085/M1086/M1089/M1096 Rear Marker Light Wire 489 Splices

Model	Splice
M1089	Splice E49
M1085/M1086/M1096	Splice E64



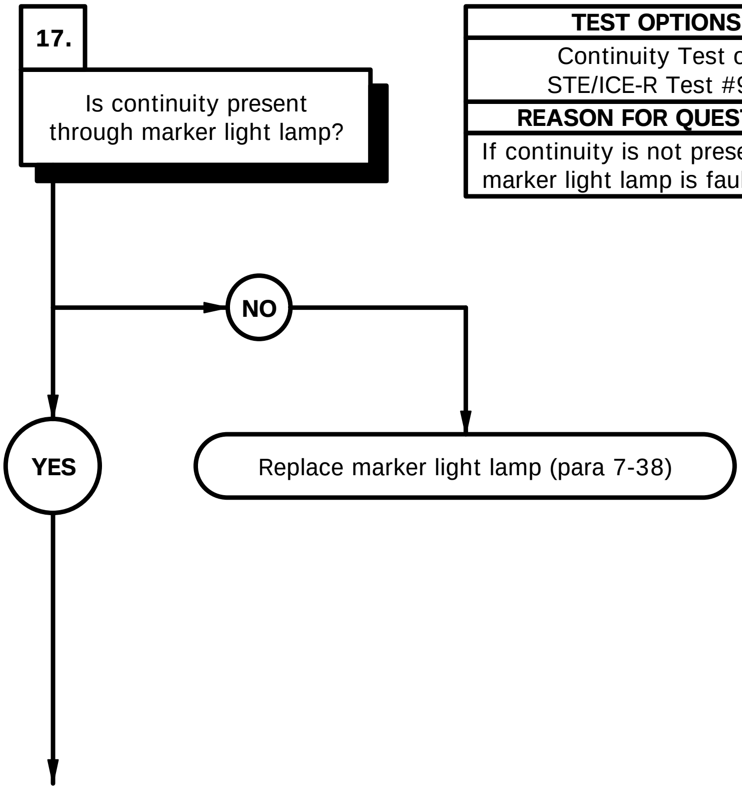
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



17.

Is continuity present through marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

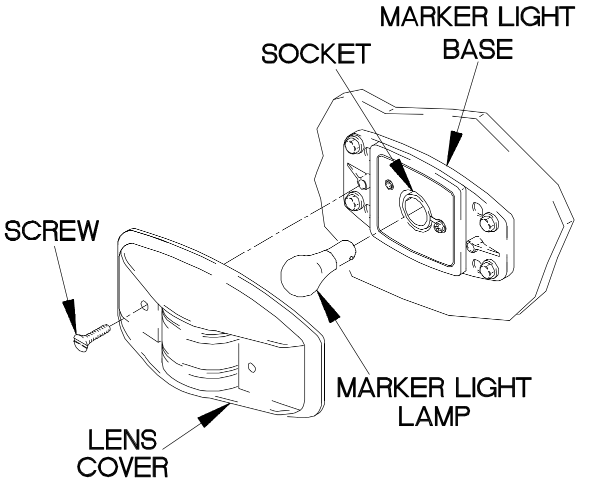
REASON FOR QUESTION

If continuity is not present, marker light lamp is faulty.

Replace marker light lamp (para 7-38)

CONTINUITY TEST

(1) Remove two screws and lens cover from marker light base.
(2) Remove marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace marker light lamp (para 7-38).
(6) Install marker light lamp in socket.
(7) Install lens cover on marker light base with two screws.



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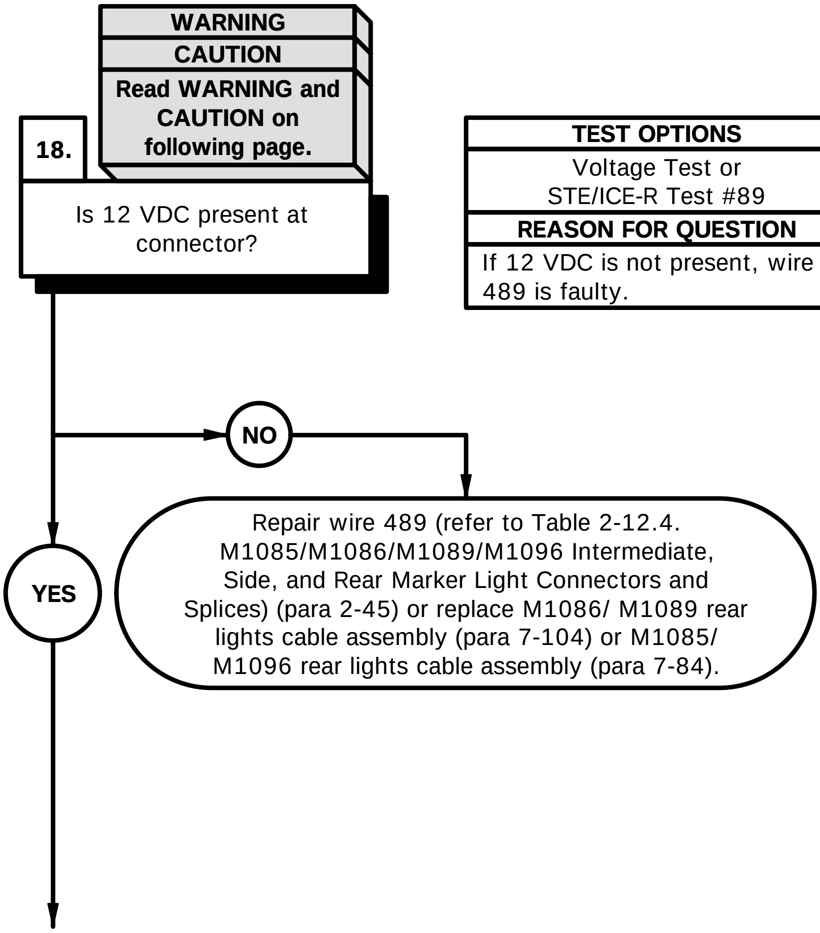
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

18. Is 12 VDC present at connector?

NO — Repair wire 489 (refer to Table 2-12.4. M1085/M1086/M1089/M1096 Intermediate, Side, and Rear Marker Light Connectors and Splices) (para 2-45) or replace M1086/ M1089 rear lights cable assembly (para 7-104) or M1085/ M1096 rear lights cable assembly (para 7-84).

YES

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect marker light connector from connector (refer to Table 2-12.4. M1085/M1086/M1089/M1096 Intermediate, Side, and Rear Marker Light Connectors and Splices).
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector (refer to Table 2-12.4. M1085/M1086/M1089/M1096 Intermediate, Side, and Rear Marker Light Connectors and Splices).
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 (refer to Table 2-12.4. M1085/M1086/M1089/M1096 Intermediate, Side, and Rear Marker Light Connectors and Splices) (para 2-45) or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84).

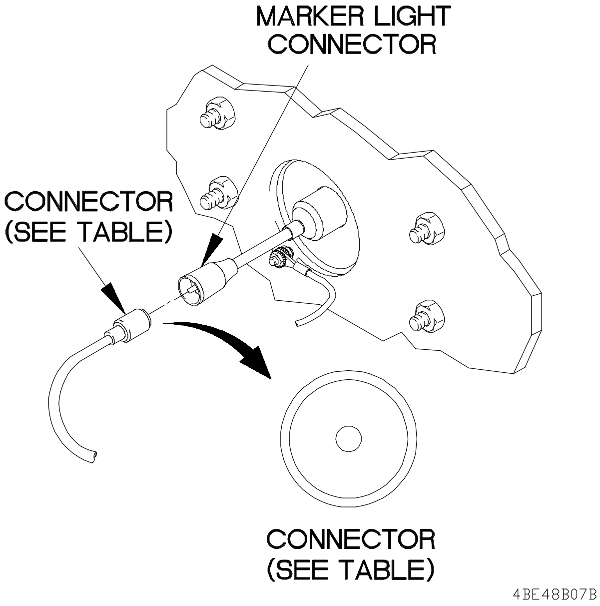
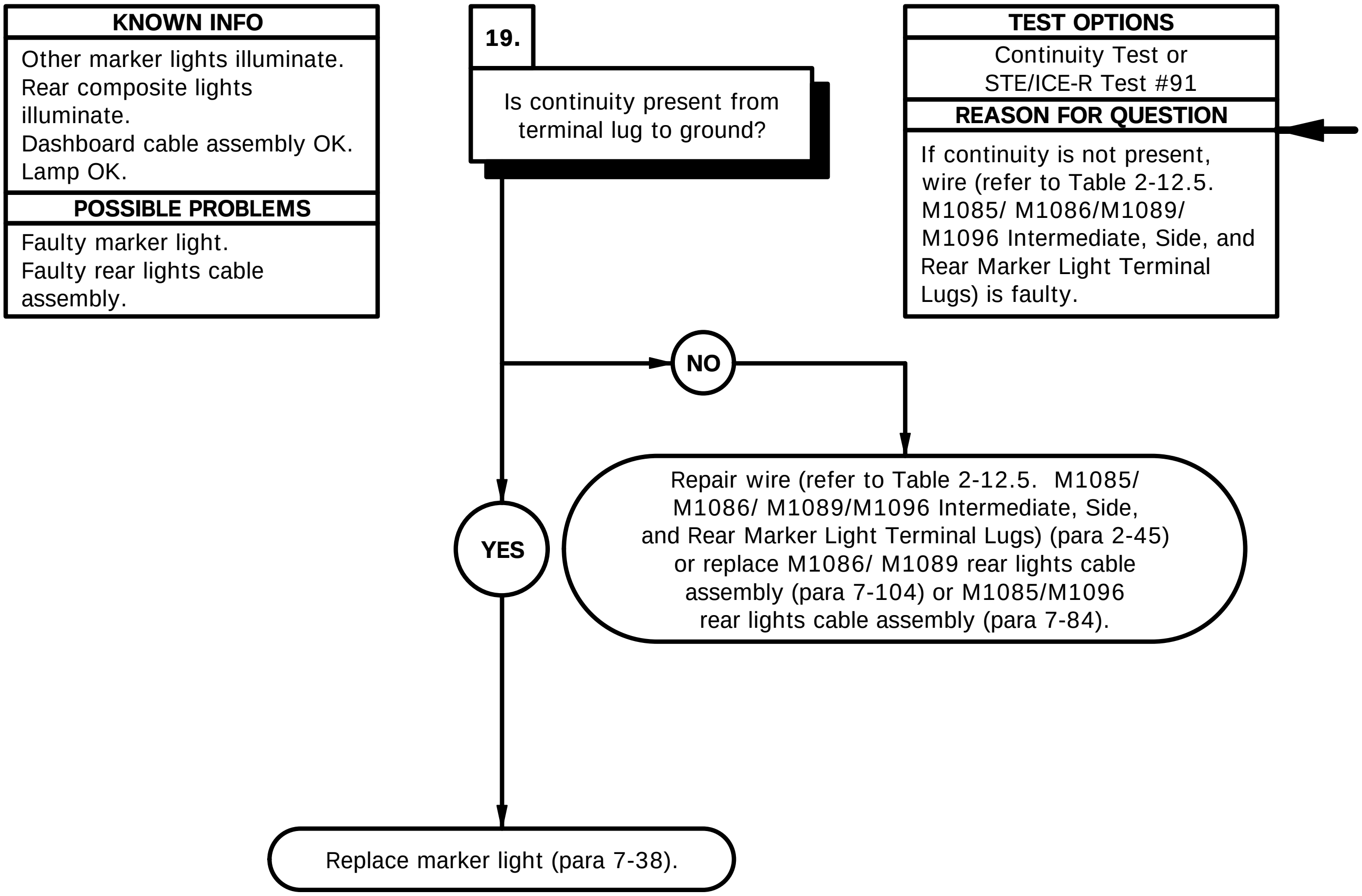


Table 2-12.4. M1085/M1086/M1089/M1096 Intermediate, Side, and Rear Marker Light Connectors and Splices

Marker Light	Connector	M1085/M1086 /M1096 Splice	M1089 Splice
LH Intermediate	P94	Splice E64	Splice E49
LH Side	P85	Splice E16	Splice E51
LH Rear	P86	Splice E16	Splice E51
Left Rear	P54	Splice E15	Splice E50
Middle Rear	P56	Splice E15	Splice E50
Right Rear	P58	Splice E15	Splice E50
RH Rear	P89	Splice E17	Splice E52
RH Side	P88	Splice E17	Splice E52
RH Intermediate	P95	Splice E64	Splice E49

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

19.

Is continuity present from terminal lug to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire (refer to Table 2-12.5. M1085/ M1086/M1089/ M1096 Intermediate, Side, and Rear Marker Light Terminal Lugs) is faulty.

Repair wire (refer to Table 2-12.5. M1085/ M1086/ M1089/M1096 Intermediate, Side, and Rear Marker Light Terminal Lugs) (para 2-45) or replace M1086/ M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84).

Replace marker light (para 7-38).

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug, and lockwasher from marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug (refer to Table 2-12.5. M1085/M1086/ M1089/M1096 Intermediate, Side, and Rear Marker Light Terminal Lugs).
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire (Refer to Table 2-12.5. M1085/M1086/ M1089/ M1096 Intermediate, Side, and Rear Marker Light Terminal Lugs) (para 2-45) or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84).
(6) If continuity is present, replace marker light (para 7-38).
(7) Install lockwasher, terminal lug, lockwasher, and nut on marker light screw.
(8) Connect marker light connector to connector (refer to Table 2-12.5. M1085/ M1086/ M1089/M1096 Intermediate, Side, and Rear Marker Light Terminal Lugs).

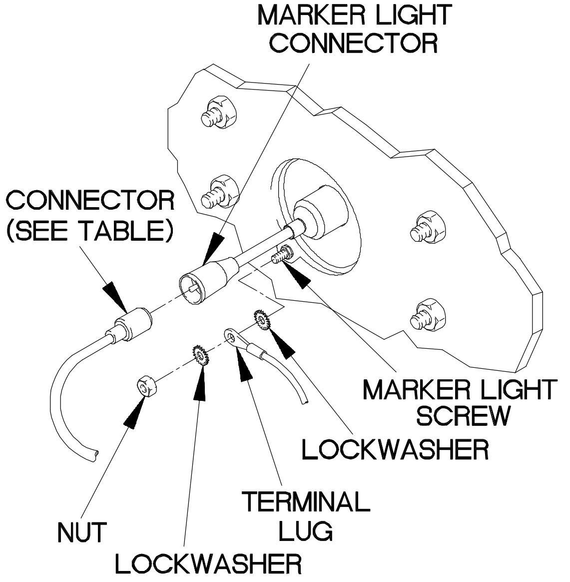
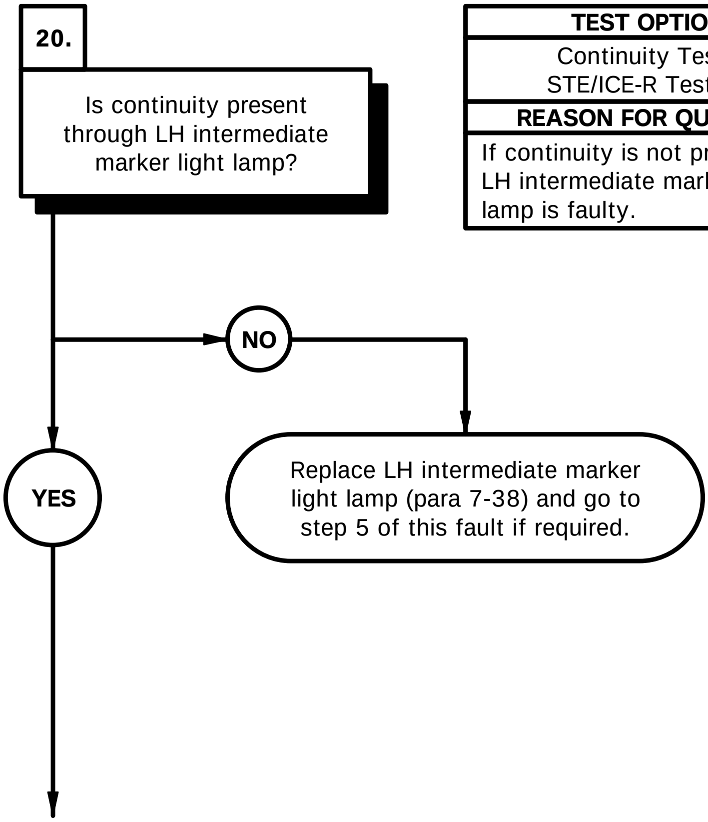


Table 2-12.5. M1085/M1086/M1089/ M1096 Intermediate, Side, and Rear Marker Light Terminal Lugs

Marker Light	Terminal Lug	M1089	M1085/M1086/M1096
LH Intermediate	TL88	Wire 3089 from Terminal Lug TL88 to Terminal Lug TL90	Wire 3089 from Terminal Lug TL88 to Terminal Lug TL90
LH Side	TL15	Wire 3094 from Terminal Lug TL15 to Terminal Lug TL16	Wire 3094 from Terminal Lug TL15 to Terminal Lug TL16
LH Rear	TL16	Replace Marker Light (para 7-38)	Wire 3094 from Terminal Lug TL30 to Terminal Lug TL31
Left Rear	TL30	Replace Marker Light (para 7-38)	Replace Marker Light (para 7-38)
Middle Rear	TL31	Replace Marker Light (para 7-38)	Replace Marker Light (para 7-38)
Right Rear	TL32	Wire 3094 from Terminal Lug TL32 to Terminal Lug TL31	Replace Marker Light (para 7-38)
RH Rear	TL20	Replace Marker Light (para 7-38)	Replace Marker Light (para 7-38)
RH Side	TL19	Wire 3095 from Terminal Lug TL19 to Terminal Lug TL20	Wire 3095 from Terminal Lug TL19 to Terminal Lug TL20
RH Intermediate	TL89	Wire 3090 from Terminal Lug TL89 to Terminal Lug TL90	Wire 3090 from Terminal Lug TL89 to Terminal Lug TL90

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO
Other marker lights illuminate. Rear composite lights illuminate. Dashboard cable assembly OK.
POSSIBLE PROBLEMS
Faulty lamp. Faulty marker light. Faulty rear lights cable assembly.



20. Is continuity present through LH intermediate marker light lamp?

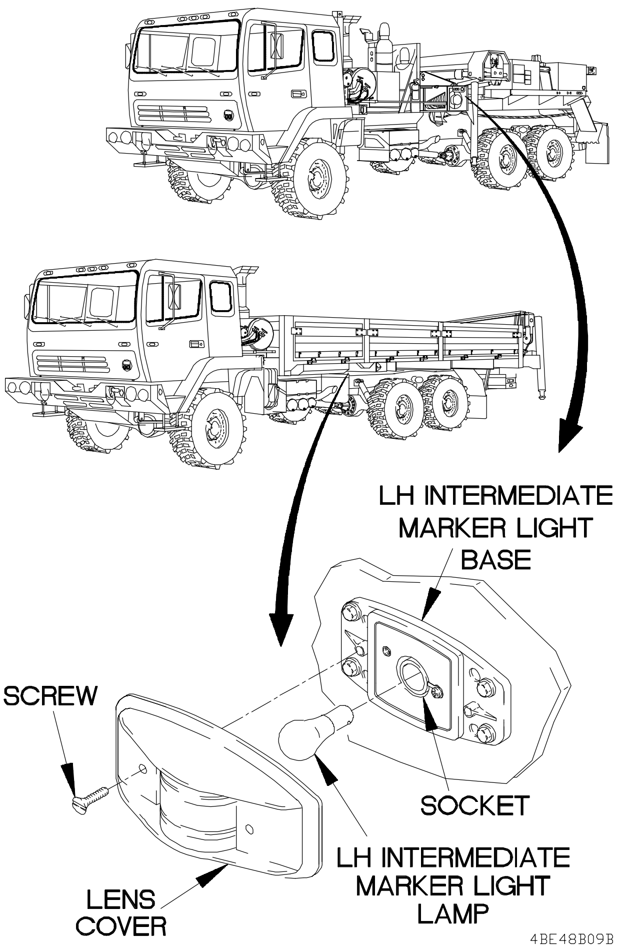
NO: Replace LH intermediate marker light lamp (para 7-38) and go to step 5 of this fault if required.

YES

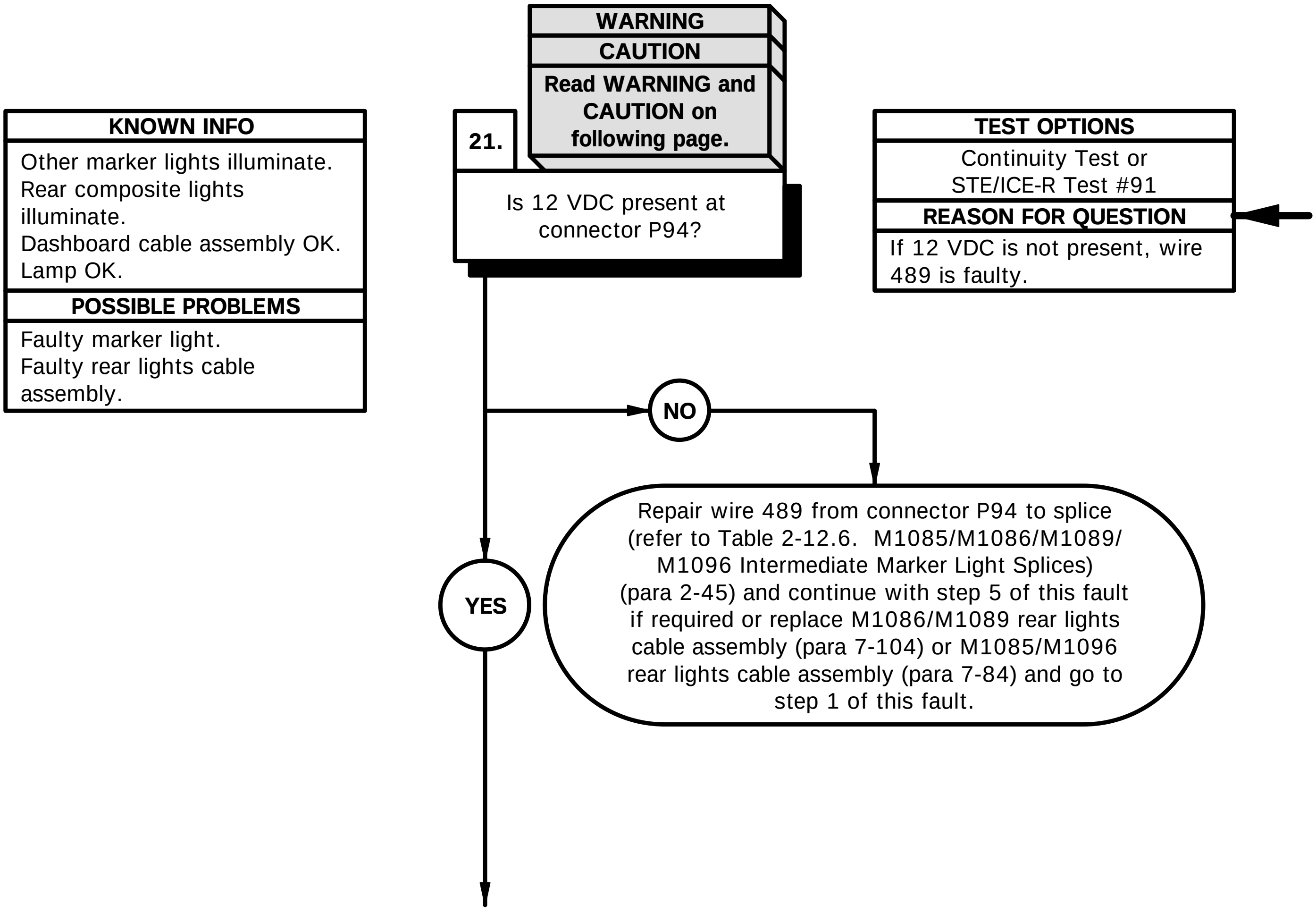
TEST OPTIONS
Continuity Test or STE/ICE-R Test #91
REASON FOR QUESTION
If continuity is not present, LH intermediate marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH intermediate marker light base.
(2) Remove LH intermediate marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH intermediate marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH intermediate marker light lamp (para 7-38) and go to step 5 of this fault if required.
(6) Install LH intermediate marker light lamp in socket.
(7) Install lens cover on LH intermediate marker light base with two screws.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

21. Is 12 VDC present at connector P94?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P94 to splice (refer to Table 2-12.6. M1085/M1086/M1089/M1096 Intermediate Marker Light Splices) (para 2-45) and continue with step 5 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect LH intermediate marker light connector from connector P94.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P94.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P94 to splice (refer to Table 2-12.6. M1085/M1086/M1089/M1096 Intermediate Marker Light Splices) (para 2-45) and go to step 5 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1086 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

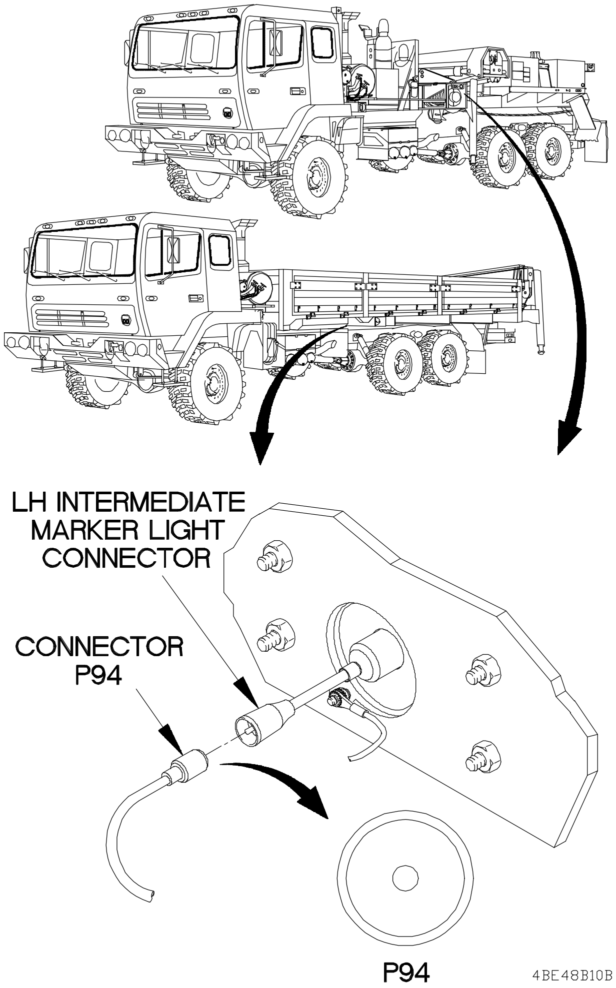
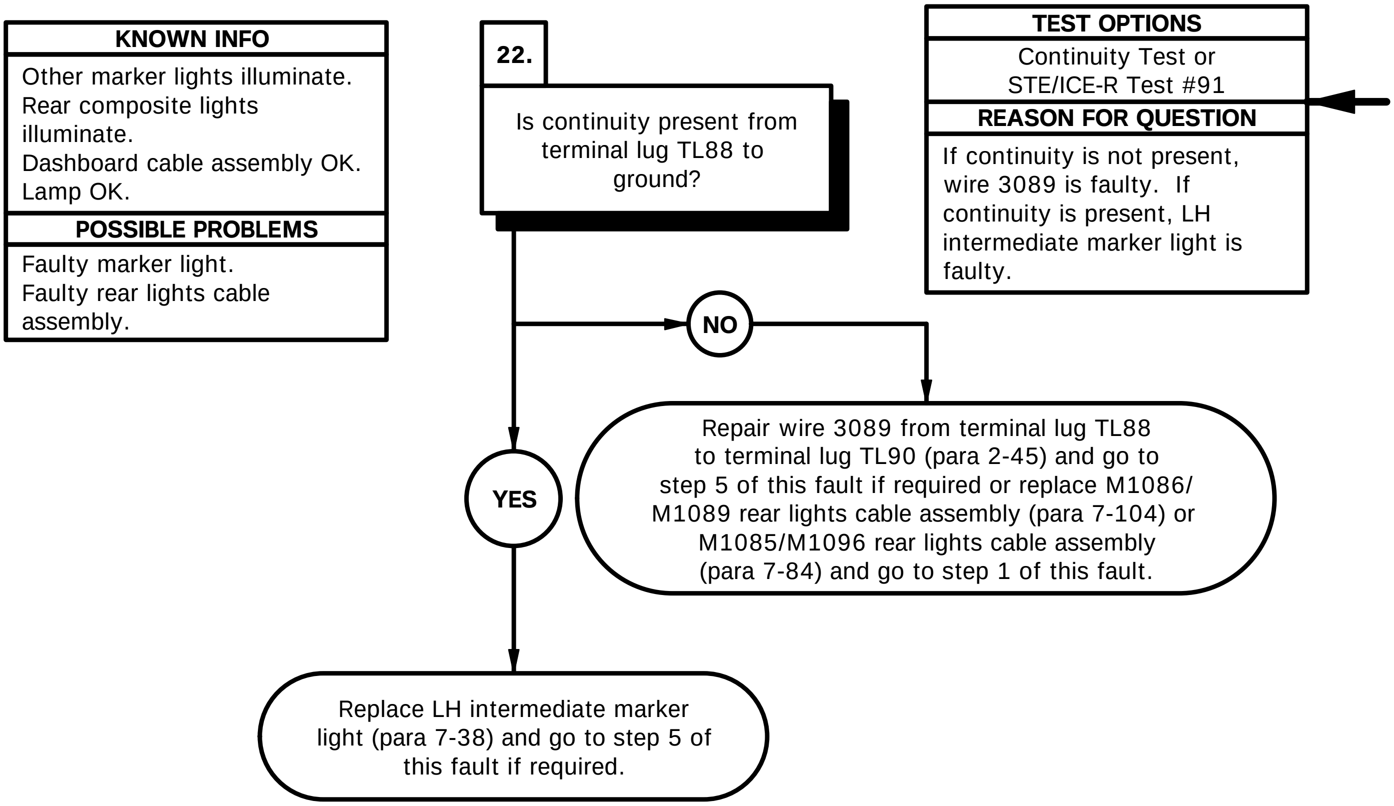


Table 2-12.6. M1085/M1086/M1089/M1096 Intermediate Marker Light Splices

Model	Splice
M1085/M1086/M1096	E64
M1089	E49

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

22.

Is continuity present from terminal lug TL88 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

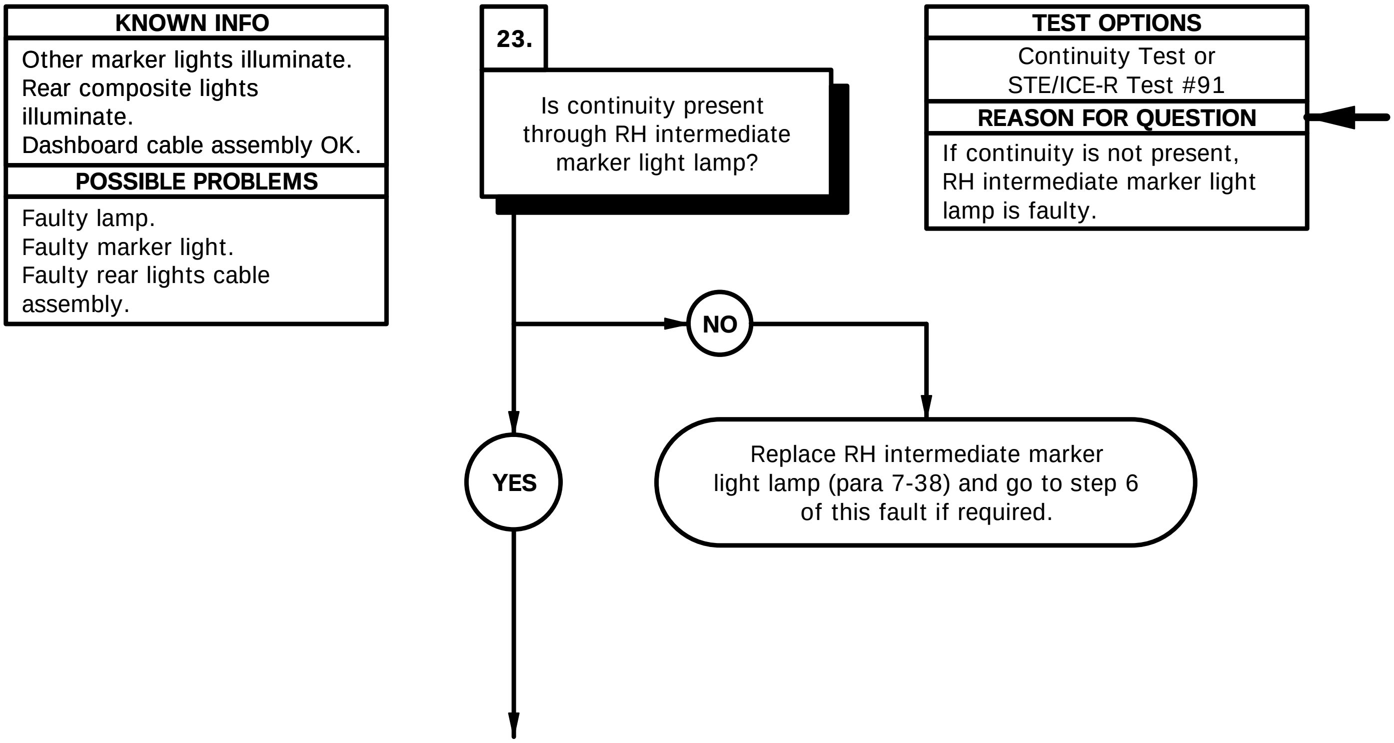
If continuity is not present, wire 3089 is faulty. If continuity is present, LH intermediate marker light is faulty.

NO

Repair wire 3089 from terminal lug TL88 to terminal lug TL90 (para 2-45) and go to step 5 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace LH intermediate marker light (para 7-38) and go to step 5 of this fault if required.



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

23.

Is continuity present through RH intermediate marker light lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH intermediate marker light lamp is faulty.

NO

Replace RH intermediate marker light lamp (para 7-38) and go to step 6 of this fault if required.

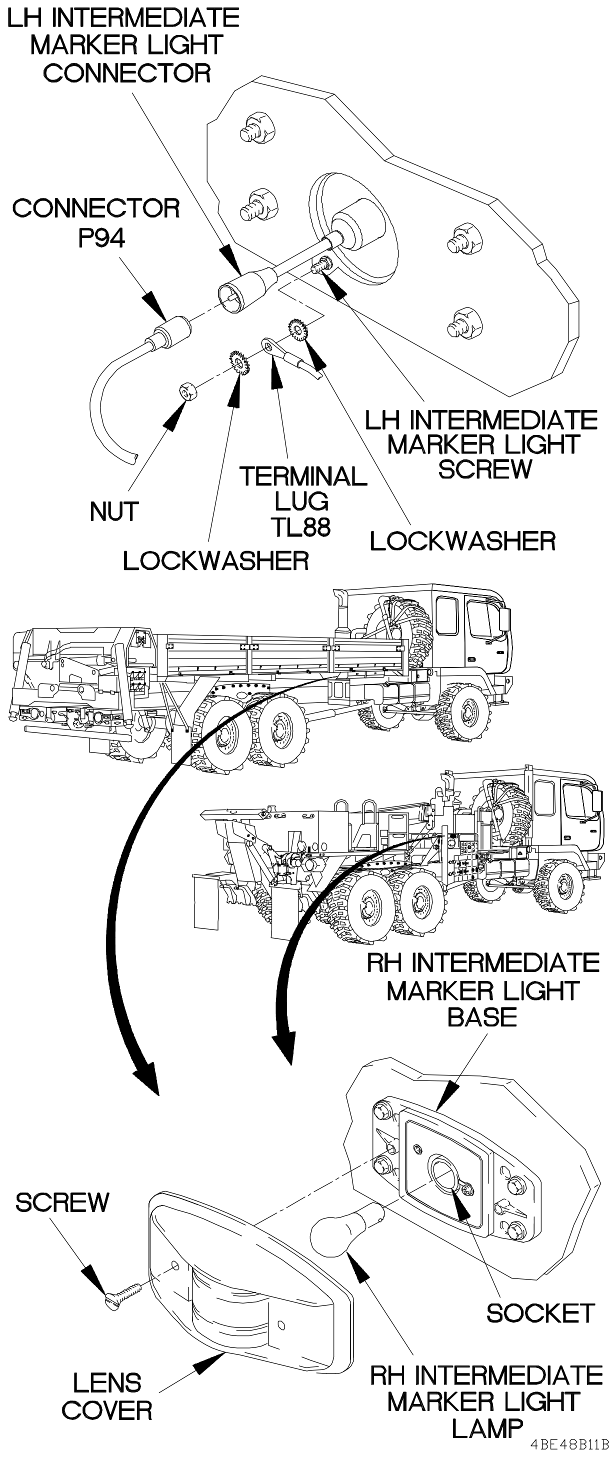
YES

CONTINUITY TEST

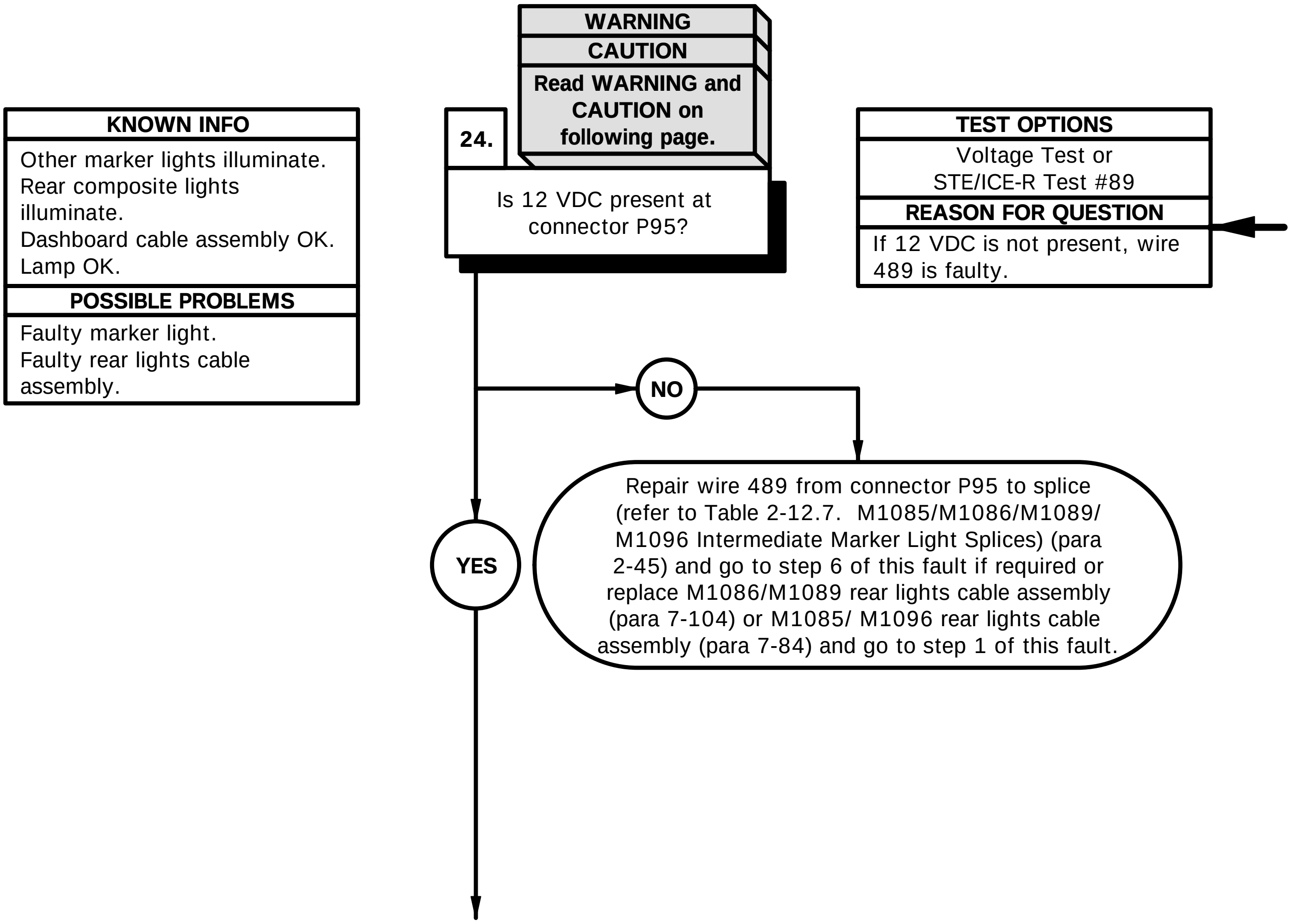
(1) Remove nut, lockwasher, terminal lug TL88, and lockwasher from LH intermediate marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL88.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3089 from terminal lug TL88 to terminal lug TL90 (para 2-45) and go to step 5 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace LH intermediate marker light (para 7-38) and go to step 5 of this fault if required.
(7) Install lockwasher, terminal lug TL88, lockwasher, and nut on LH intermediate marker light screw.
(8) Connect LH intermediate marker light connector to connector P94.

CONTINUITY TEST

(1) Remove two screws and lens cover from RH intermediate marker light base.
(2) Remove RH intermediate marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH intermediate marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH intermediate marker light lamp (para 7-38) and go to step 6 of this fault if required.
(6) Install RH intermediate marker light lamp in socket.
(7) Install lens cover on RH intermediate marker light base with two screws.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

24.

Is 12 VDC present at connector P95?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P95 to splice (refer to Table 2-12.7. M1085/M1086/M1089/M1096 Intermediate Marker Light Splices) (para 2-45) and go to step 6 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/ M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

WARNING

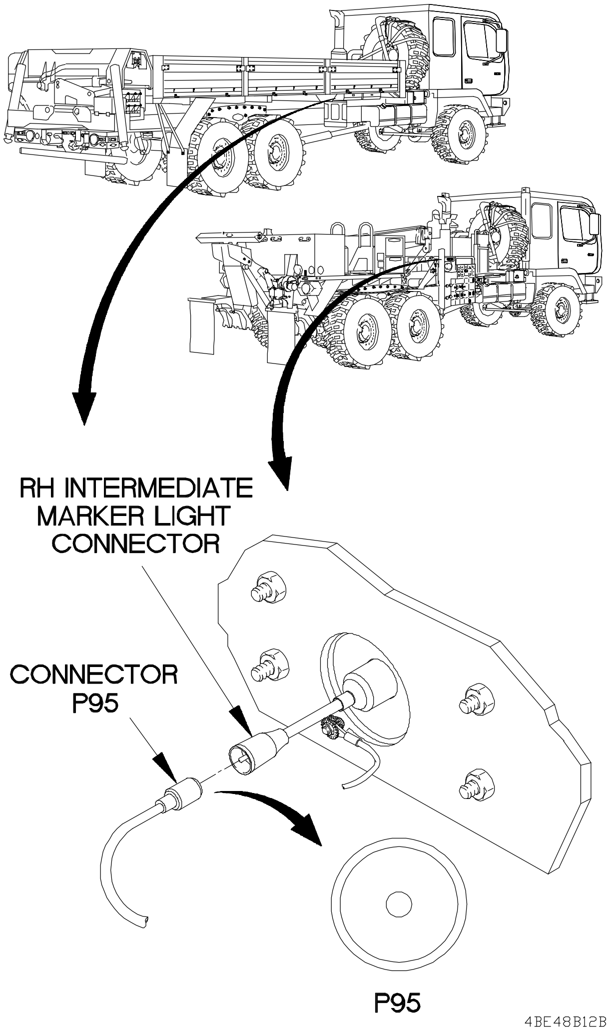
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.



VOLTAGE TEST

(1) Disconnect RH intermediate marker light connector from connector P95.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P95.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P95 to splice (refer to Table 2-12.7. M1085/M1086/M1089/M1096 Intermediate Marker Light Splices) (para 2-45) and go to step 6 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

Table 2-12.7. M1085/M1086/M1089/M1096 Intermediate Marker Light Splices

Model	Splice
M1085/M1086/M1096	E64
M1089	E49

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

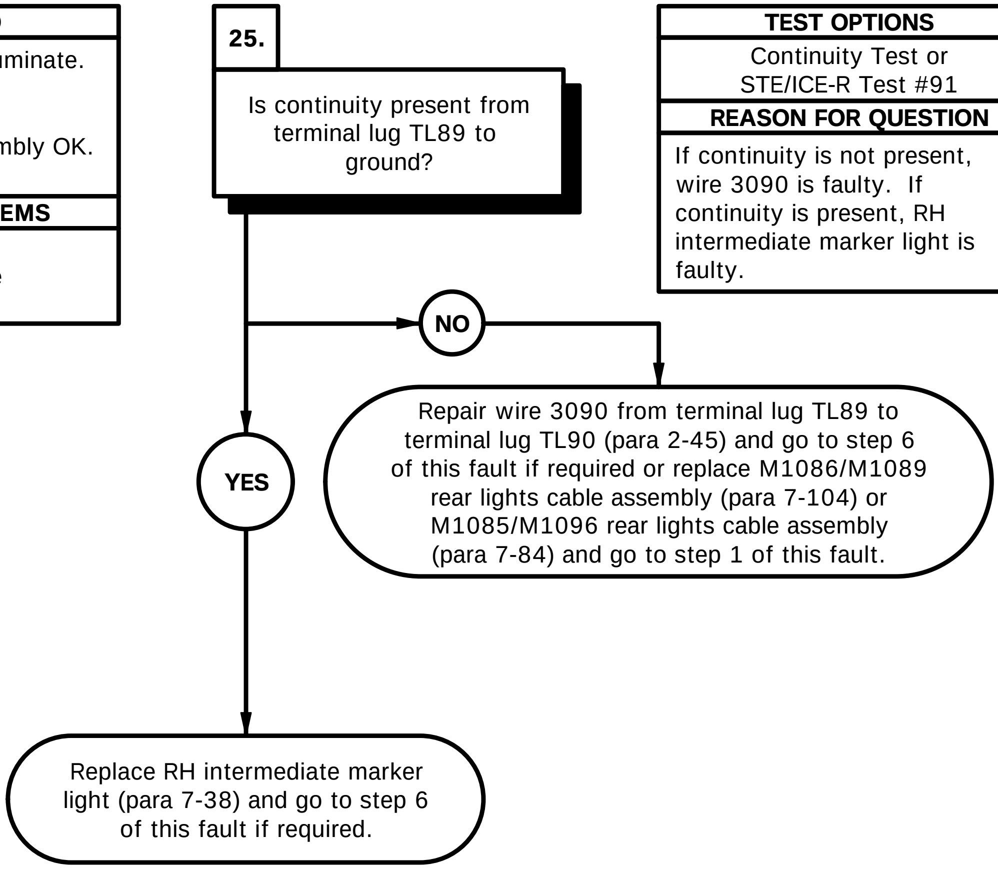
Faulty marker light.
Faulty rear lights cable assembly.

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3090 is faulty. If continuity is present, RH intermediate marker light is faulty.



25.

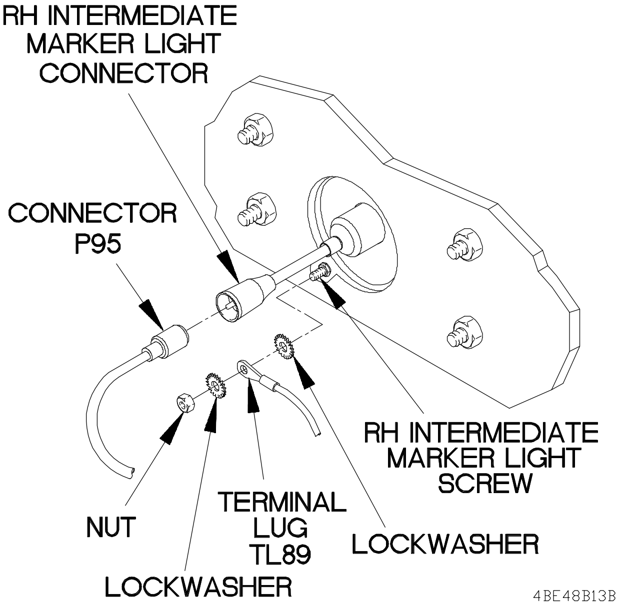
Is continuity present from terminal lug TL89 to ground?

Repair wire 3090 from terminal lug TL89 to terminal lug TL90 (para 2-45) and go to step 6 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

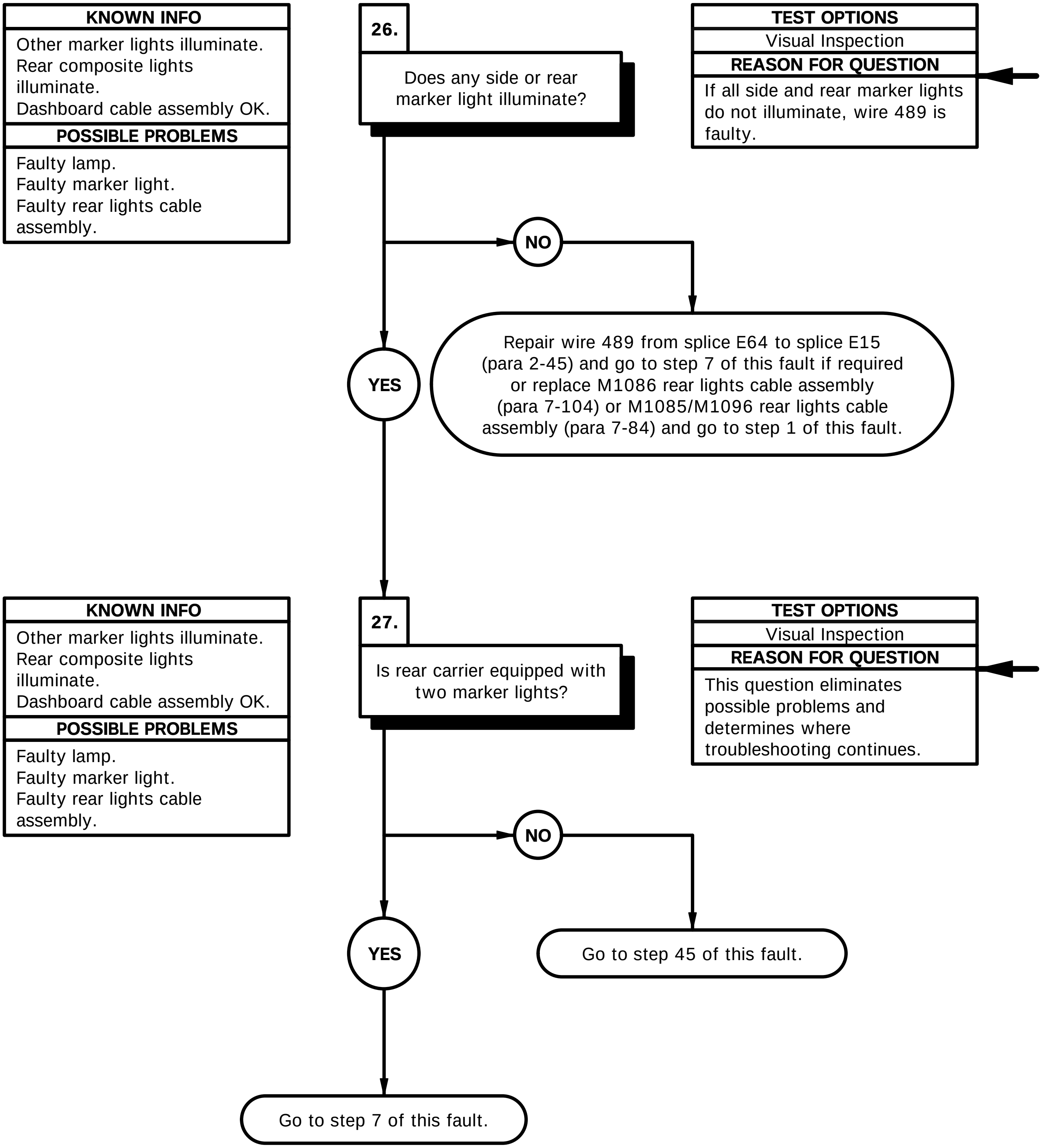
Replace RH intermediate marker light (para 7-38) and go to step 6 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL89, and lockwasher from RH intermediate marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL89.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3090 from terminal lug TL89 to terminal lug TL90 (para 2-45) and go to step 6 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace RH intermediate marker light (para 7-38) and go to step 6 of this fault if required.
(7) Install lockwasher, terminal lug TL89, lockwasher, and nut on RH intermediate marker light screw.
(8) Connect RH intermediate marker light connector to connector P95.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

26. Does any side or rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If all side and rear marker lights do not illuminate, wire 489 is faulty.

NO – Repair wire 489 from splice E64 to splice E15 (para 2-45) and go to step 7 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

27. Is rear carrier equipped with two marker lights?

TEST OPTIONS

Visual Inspection

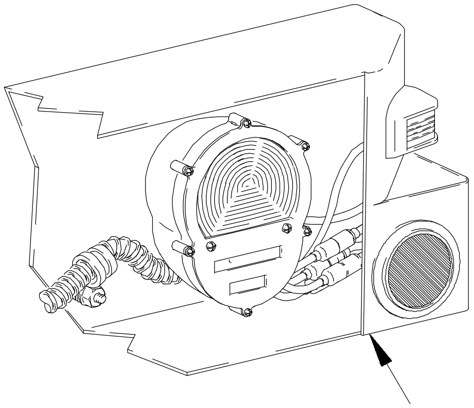
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

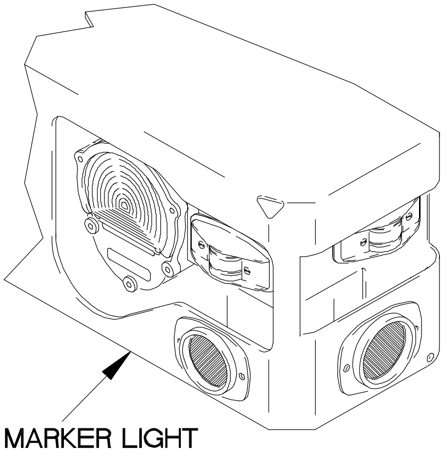
NO – Go to step 45 of this fault.

YES – Go to step 7 of this fault.

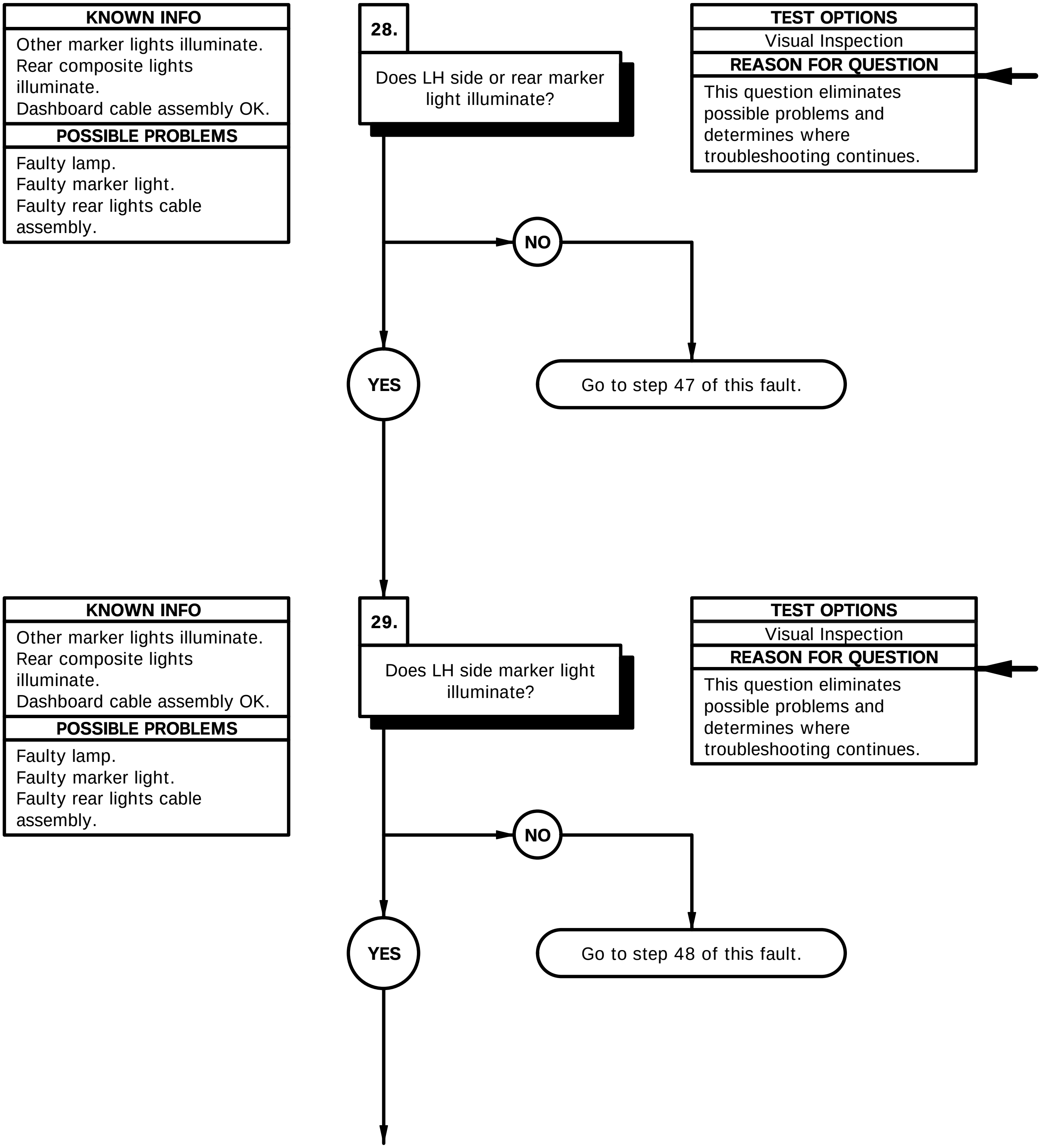
If all side and rear marker lights do not illuminate, repair wire 489 from splice E64 to splice E15 (para 2-45) and go to step 7 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.



(1) If rear carrier is equipped with one marker light, go to step 45 of this fault.
(2) If rear carrier is equipped with two marker lights, go to step 7 of this fault.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

28. Does LH side or rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 47 of this fault.

YES:

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

29. Does LH side marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 48 of this fault.

YES:

If LH side and rear marker lights do not illuminate, go to step 47 of this fault.

If LH side marker light does not illuminate, go to step 48 of this fault.

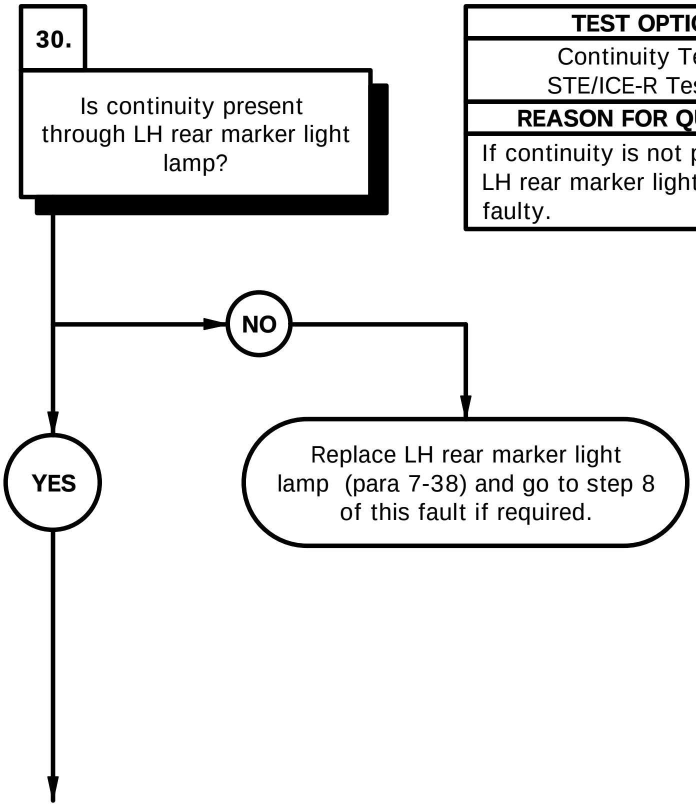
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



30\.

Is continuity present through LH rear marker light lamp?

Replace LH rear marker light lamp (para 7-38) and go to step 8 of this fault if required.

TEST OPTIONS

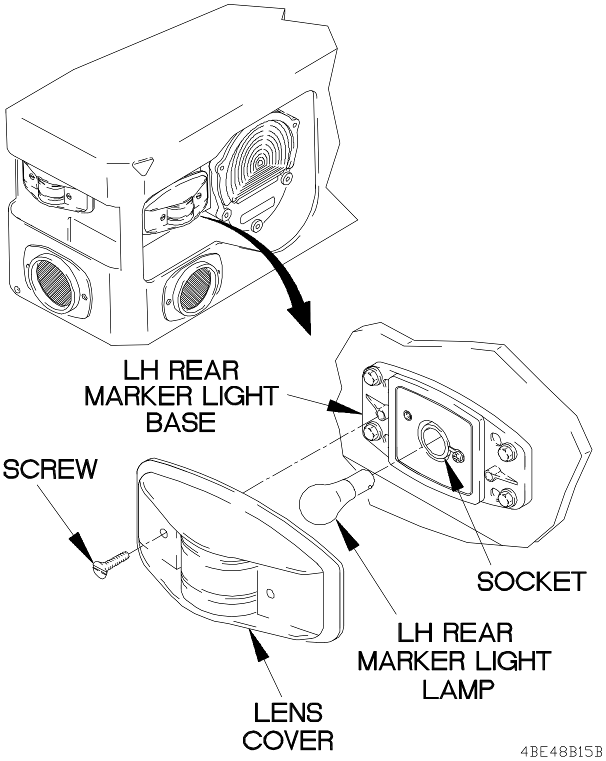
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

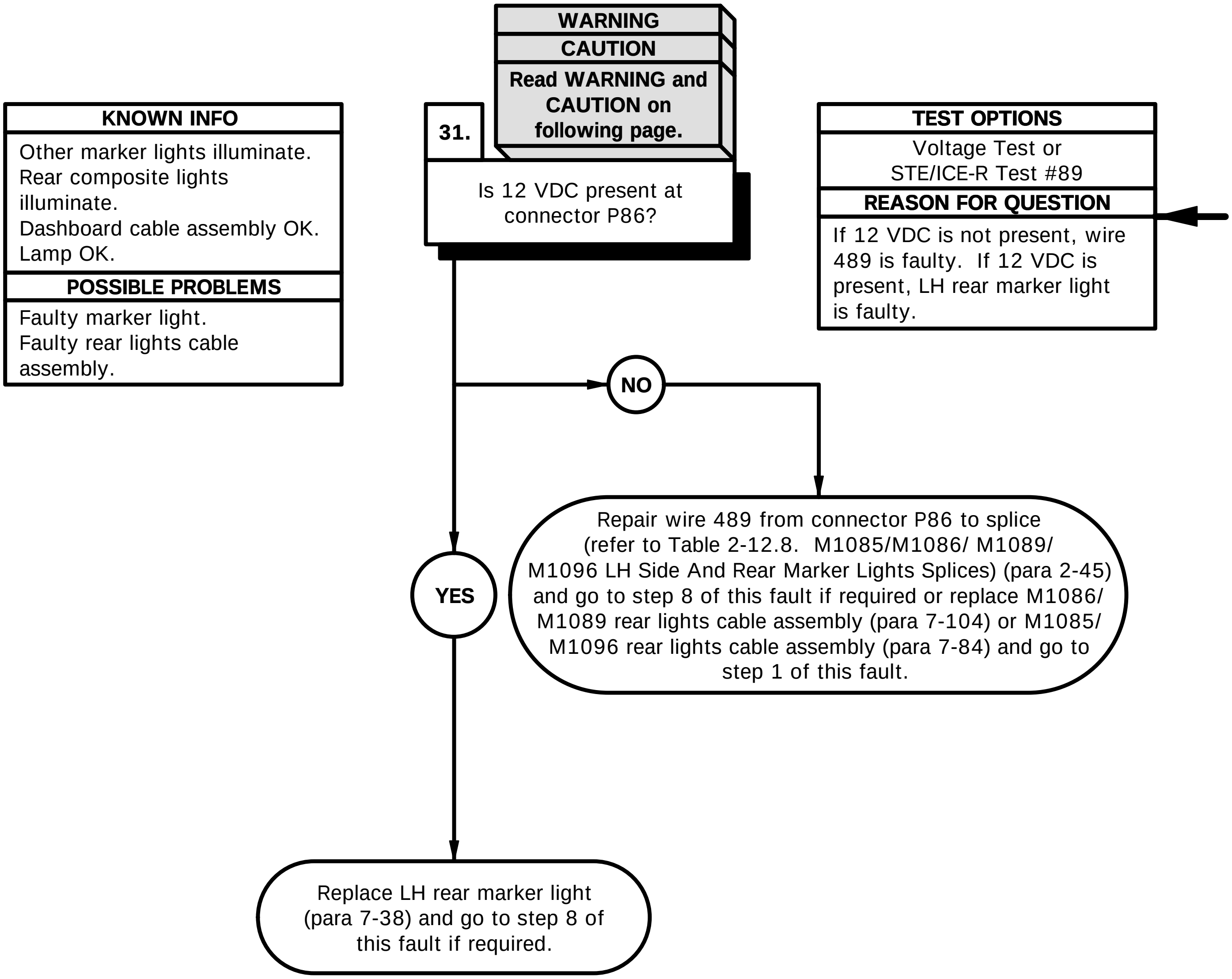
If continuity is not present, LH rear marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH rear marker light base.
(2) Set multimeter to ohms.
(3) Remove LH rear marker light lamp from socket.
(4) Check continuity through LH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH rear marker light lamp (para 7-38) and go to step 8 of this fault if required.
(6) Install LH rear marker light lamp in socket.
(7) Install lens cover on LH rear marker light base with two screws.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

31.

Is 12 VDC present at connector P86?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, LH rear marker light is faulty.

NO

Repair wire 489 from connector P86 to splice (refer to Table 2-12.8. M1085/M1086/ M1089/ M1096 LH Side And Rear Marker Lights Splices) (para 2-45) and go to step 8 of this fault if required or replace M1086/ M1089 rear lights cable assembly (para 7-104) or M1085/ M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace LH rear marker light (para 7-38) and go to step 8 of this fault if required.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

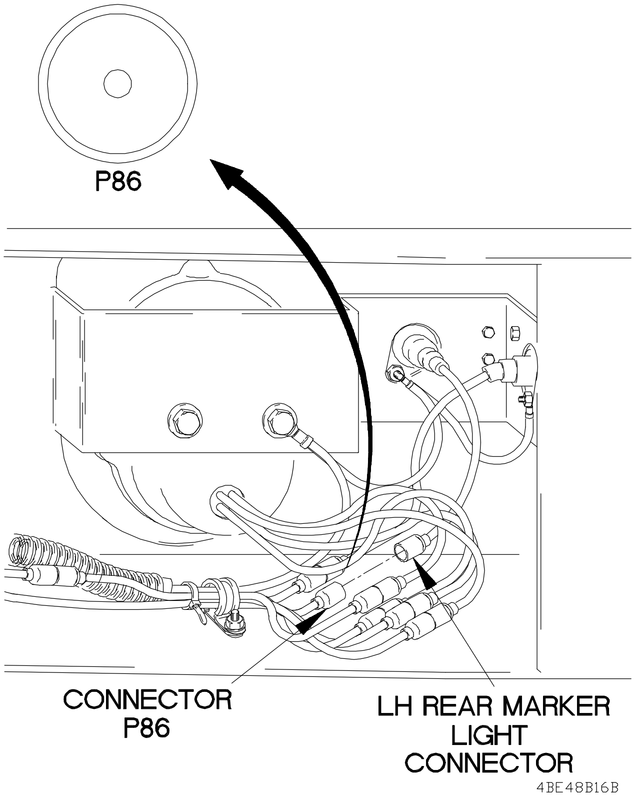
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

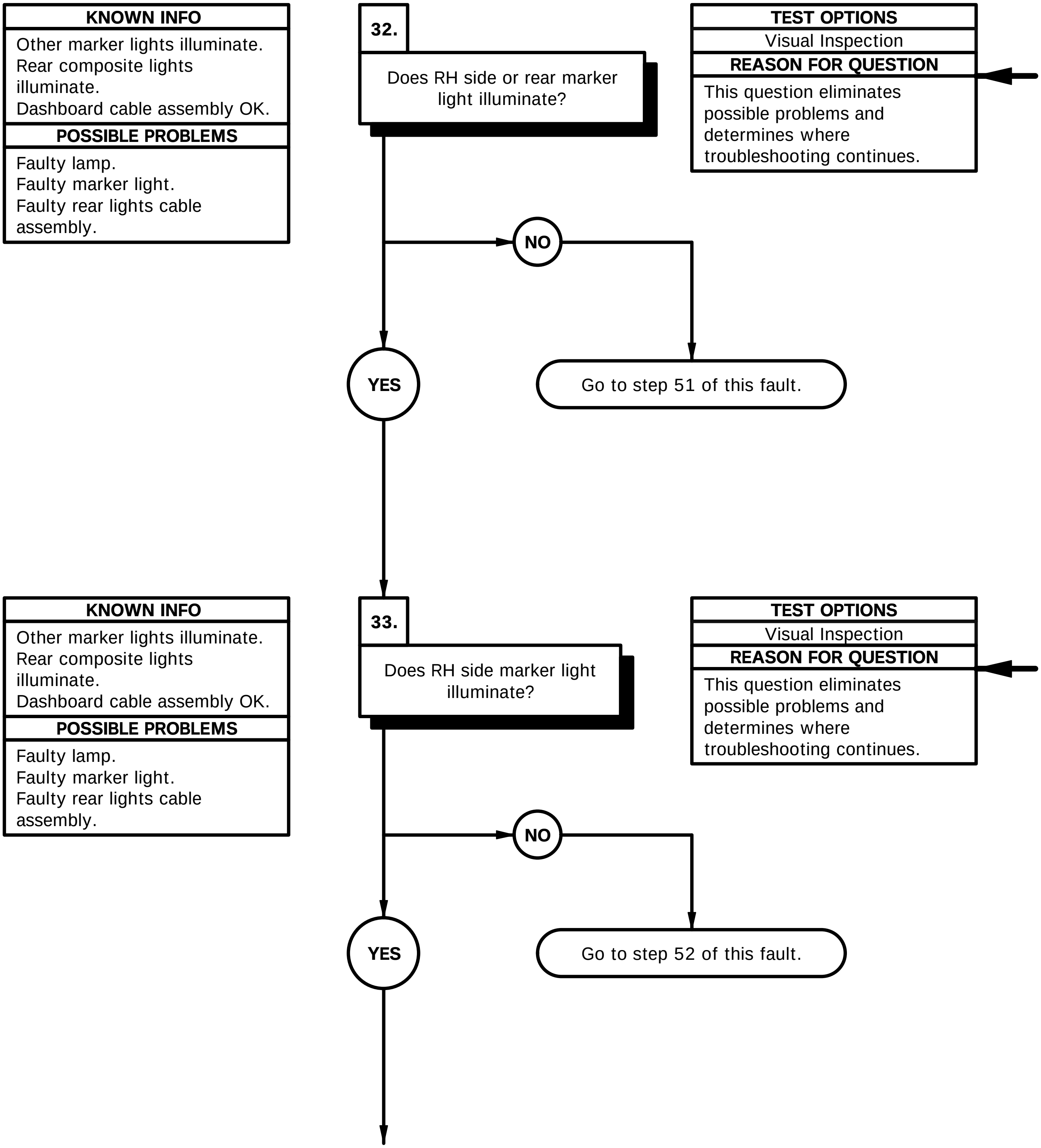
(1) Disconnect LH rear marker light connector from connector P86.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P86.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) Is 12 VDC is not present, repair wire 489 from connector P86 to splice (refer to Table 2-12.8. M1085/M1086/M1089/M1096 LH Side And Rear Marker Lights Splices) (para 2-45) and go to step 8 of this fault if or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(8) If 12 VDC is present, replace LH rear marker light (para 7-38) and go to step 8 of this fault if required.
(9) Connect LH rear marker light connector to connector P86.

Table 2-12.8. M1085/M1086/M1089/M1096 LH Side and Rear Marker Light Splices

Model	Splice
M1085/M1086/M1096	E16
M1089	E51



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

32. Does RH side or rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 51 of this fault.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

33. Does RH side marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 52 of this fault.

If RH side and rear marker lights do not illuminate, go to step 51 of this fault.

If RH side marker light does not illuminate, go to step 52 of this fault.

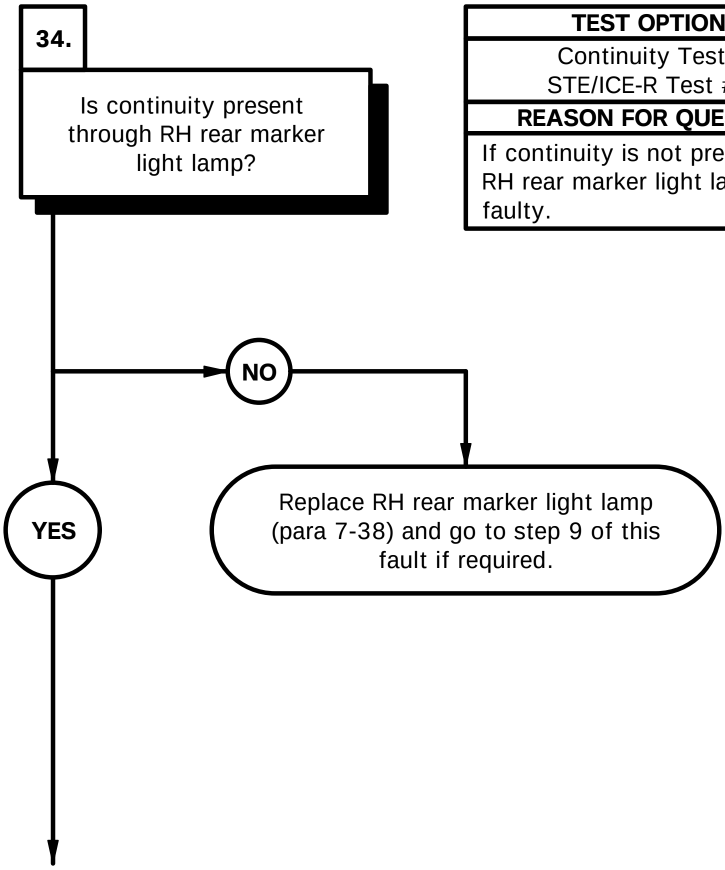
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



Is continuity present through RH rear marker light lamp?

Replace RH rear marker light lamp (para 7-38) and go to step 9 of this fault if required.

TEST OPTIONS

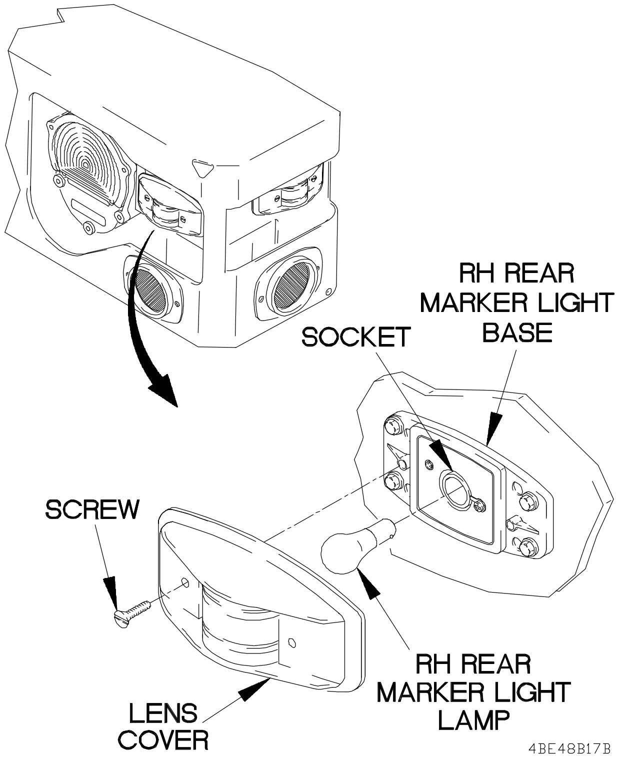
Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

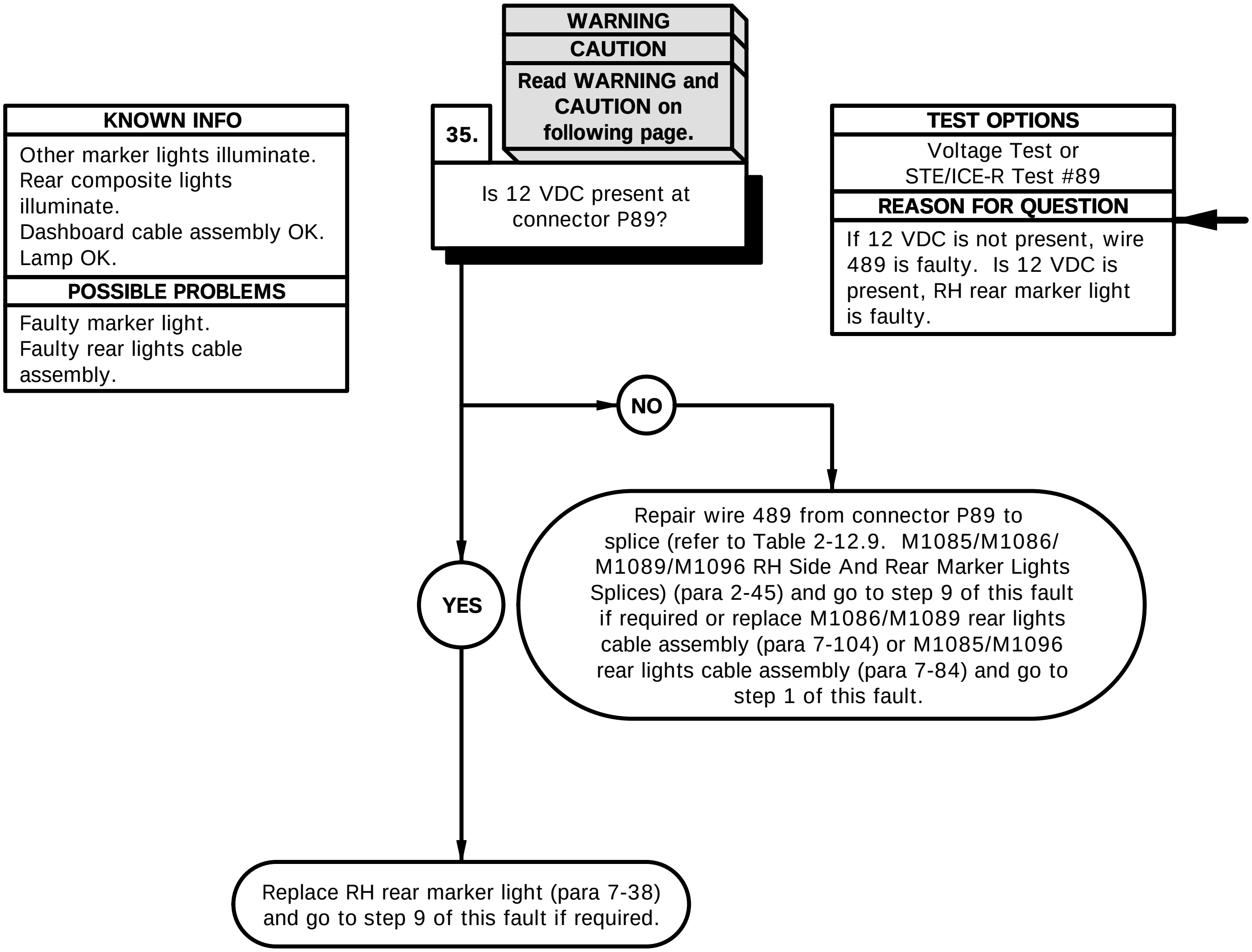
If continuity is not present, RH rear marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from RH rear marker light base.
(2) Set multimeter to ohms.
(3) Remove RH rear marker light lamp from socket.
(4) Check continuity through RH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH rear marker light lamp (para 7-38) and go to step 9 of this fault if required.
(6) Install RH rear marker light lamp in socket.
(7) Install lens cover on RH rear marker light base with two screws.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

35. Is 12 VDC present at connector P89?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. Is 12 VDC is present, RH rear marker light is faulty.

NO

Repair wire 489 from connector P89 to splice (refer to Table 2-12.9. M1085/M1086/ M1089/M1096 RH Side And Rear Marker Lights Splices) (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Replace RH rear marker light (para 7-38) and go to step 9 of this fault if required.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

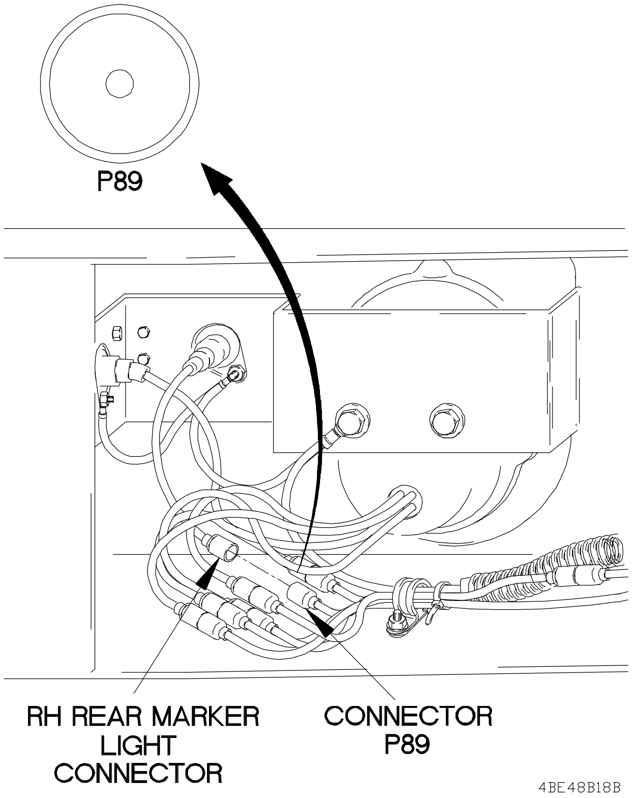
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

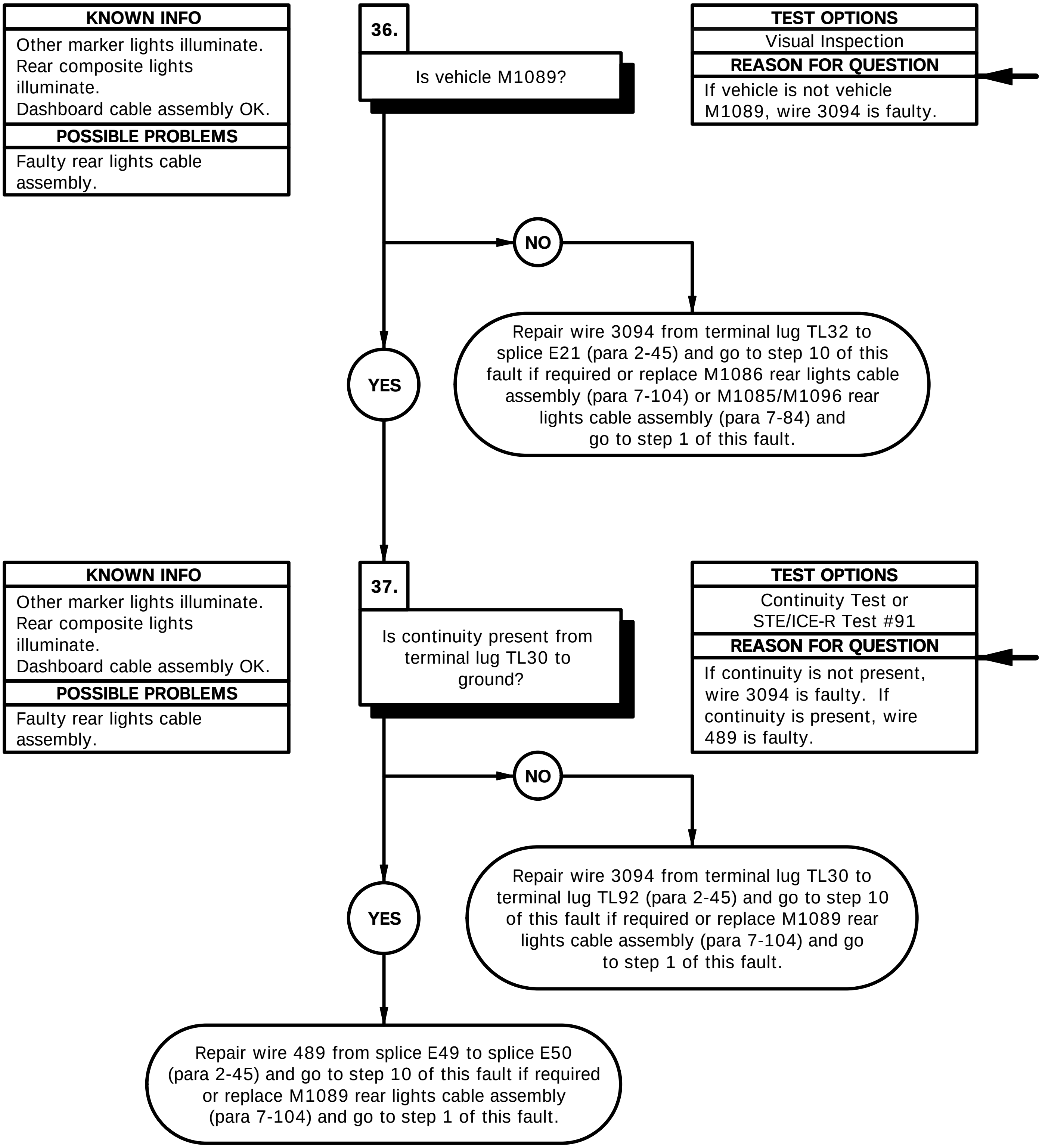
(1) Disconnect RH rear marker light connector from connector P89.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P89.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) Is 12 VDC is not present, repair wire 489 from connector P89 to splice (refer to Table 2-12.9. M1085/M1086/M1089/M1096 RH Side And Rear Marker Lights Splices) (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(8) If 12 VDC is present, replace RH rear marker light (para 7-38) and go to step 9 of this fault if required.
(9) Connect RH rear marker light connector to connector P89.

Table 2-12.9. M1085/M1086/M1089/M1096 RH Side and Rear Marker Light Splices

Model	Splice
M1085/M1086/M1096	E17
M1089	E52



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

36. Is vehicle M1089?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If vehicle is not vehicle M1089, wire 3094 is faulty.

NO

Repair wire 3094 from terminal lug TL32 to splice E21 (para 2-45) and go to step 10 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

37. Is continuity present from terminal lug TL30 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, wire 489 is faulty.

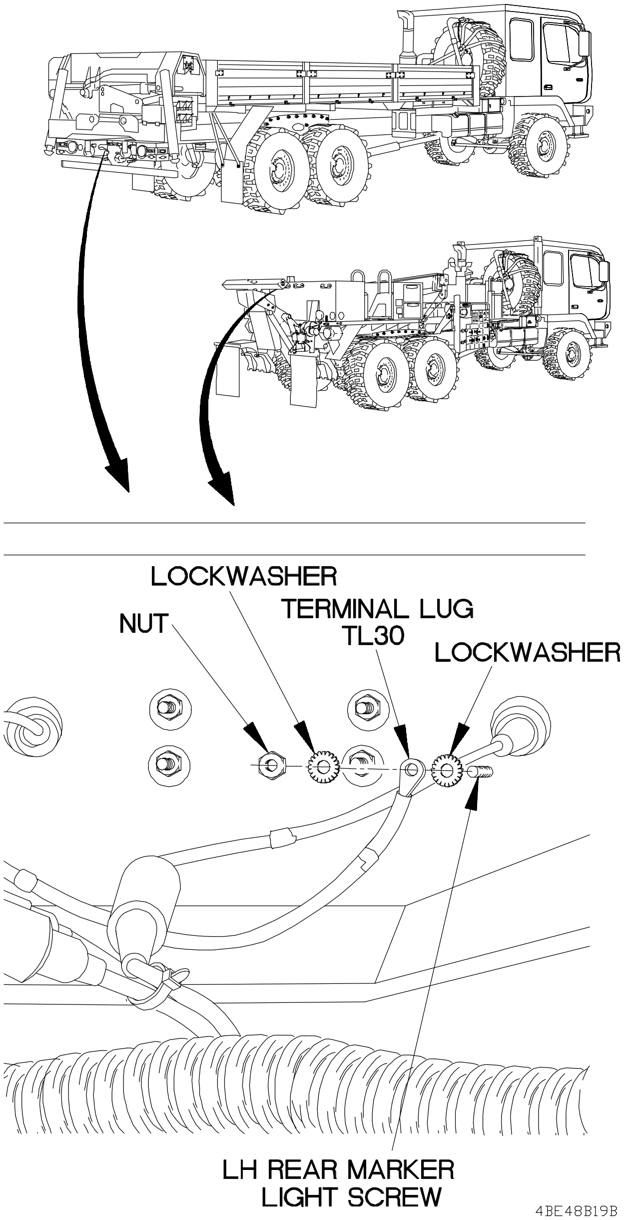
NO

Repair wire 3094 from terminal lug TL30 to terminal lug TL92 (para 2-45) and go to step 10 of this fault if required or replace M1089 rear lights cable assembly (para 7-104) and go to step 1 of this fault.

YES

Repair wire 489 from splice E49 to splice E50 (para 2-45) and go to step 10 of this fault if required or replace M1089 rear lights cable assembly (para 7-104) and go to step 1 of this fault.

If vehicle is not M1089, repair wire 3094 from terminal lug TL32 to splice E21 (para 2-45) and go to step 10 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.



CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL30, and lockwasher from LH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL30.
(4) Connect negative (-) probe of multimeter to to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL30 to terminal lug TL92 (para 2-45) and go to step 10 of this fault if required or replace M1089 rear lights cable assembly (para 7-104) and go to step 1 of this fault.
(6) If continuity is present, repair wire 489 from splice E49 to splice E50 (para 2-45) and go to step 10 of this fault if required or replace M1089 rear lights cable assembly (para 7-104) and go to step 1 of this fault.
(7) Install lockwasher, terminal lug TL30, lockwasher, and nut on LH rear marker light screw.

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

38.

Is continuity present through LH rear marker light lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH rear marker light lamp is faulty.

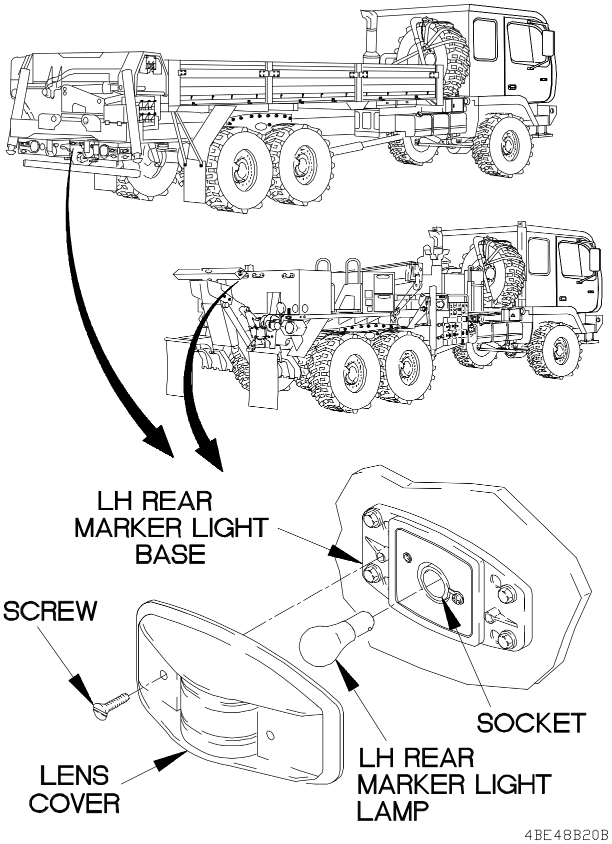
NO

Replace LH rear marker light lamp (para 7-38) and go to step 11 of this fault if required.

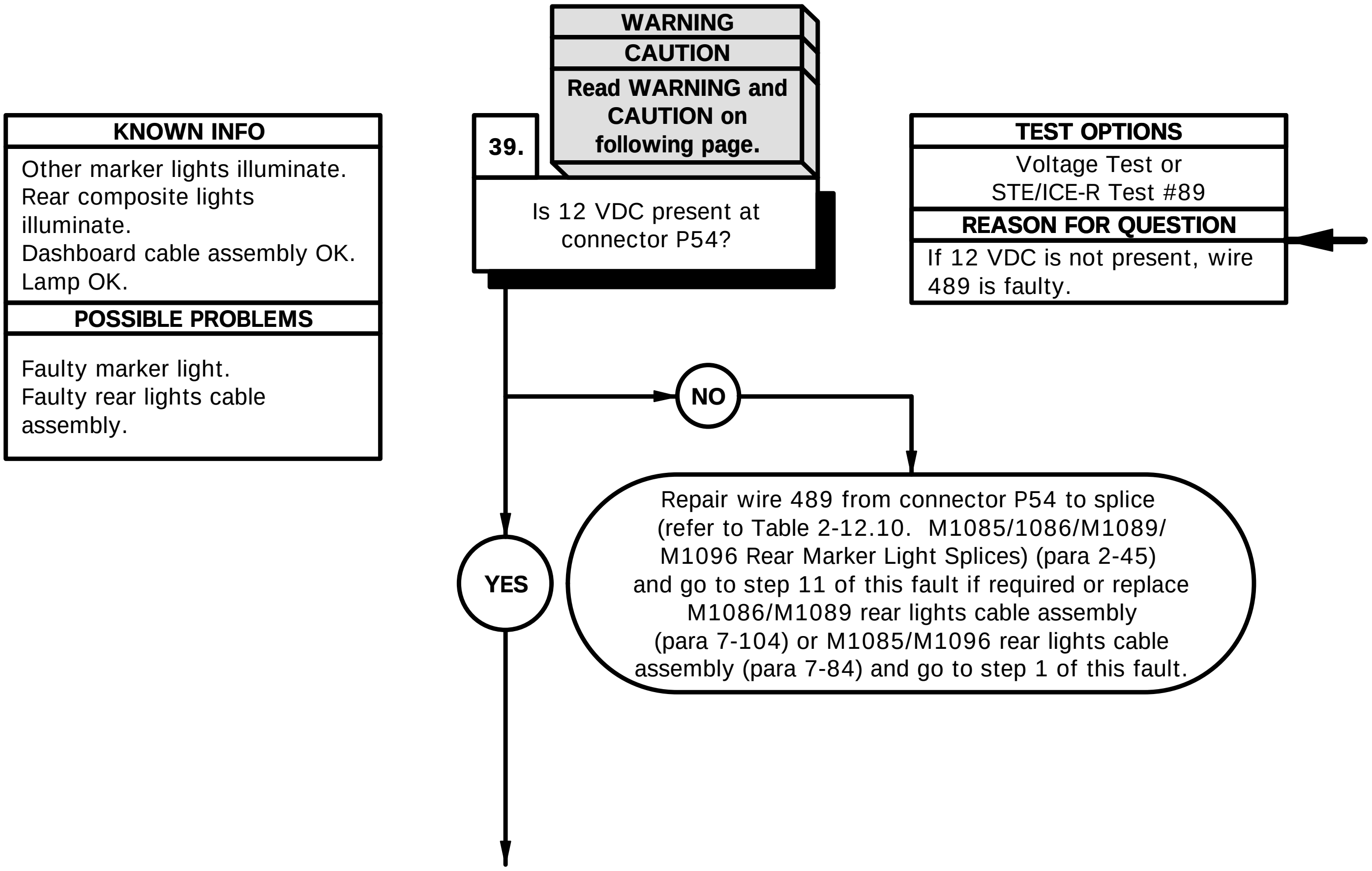
YES

CONTINUITY TEST

(1) Remove two screws and lens cover from LH rear marker light base.
(2) Remove LH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH rear marker light lamp (para 7-38) and go to step 11 of this fault if required.
(6) Install LH rear marker light lamp in socket.
(7) Install lens cover on LH rear marker light base.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

39. Is 12 VDC present at connector P54?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P54 to splice (refer to Table 2-12.10. M1085/1086/M1089/M1096 Rear Marker Light Splices) (para 2-45) and go to step 11 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

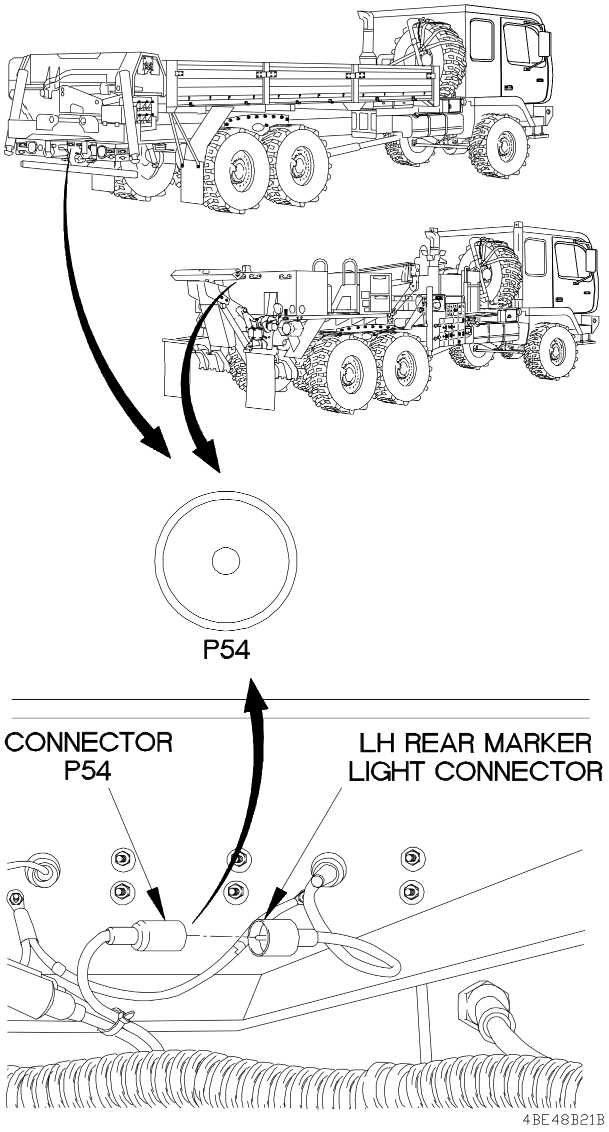
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
(1) Disconnect LH rear marker light connector from connector P54. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to connector P54. (4) Connect negative (-) probe of multimeter to to ground. (5) Position main light switch to SER DIVE (TM 9-2320-366-10-1) and note reading on multimeter. (6) Position main light switch to OFF (TM 9-2320-366-10-1). (7) If 12 VDC is not present, repair wire 489 from connector P54 to splice (refer to Table 2-12.10. M1085/1086/M1089/M1096 Rear Marker Light Splices) (para 2-45) and go to step 11 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault. (8) Connect LH rear marker light connector to connector P54.

Table 2-12.10. M1085/M1086/M1089/M1096 Rear Marker Light Splices

Model	Splice
M1085/M1086/M1096	E15
M1089	E50



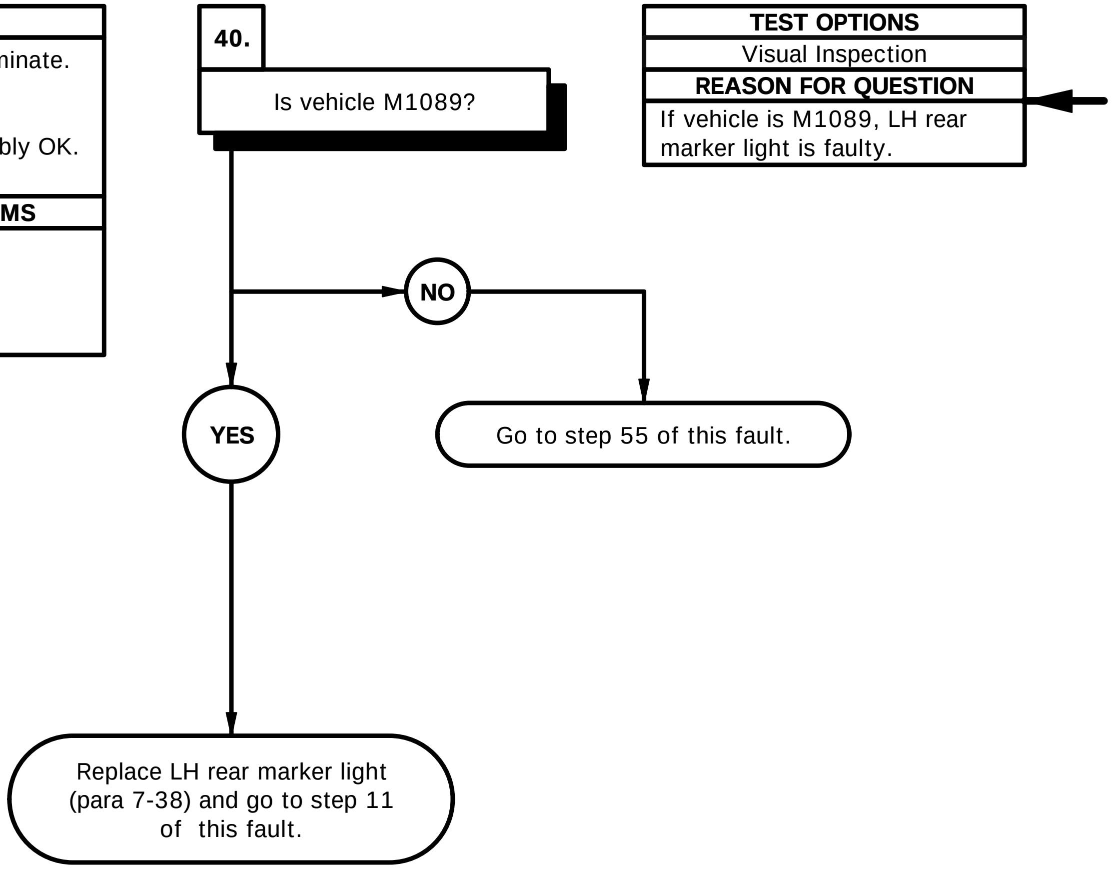
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.



40.

Is vehicle M1089?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If vehicle is M1089, LH rear marker light is faulty.

NO

Go to step 55 of this fault.

YES

Replace LH rear marker light (para 7-38) and go to step 11 of this fault.

(1) If vehicle is not M1089, go to step 55 of this fault.

(2) If vehicle is M1089, replace LH rear marker light (para 7-38) and go to step 11 of this fault if required.

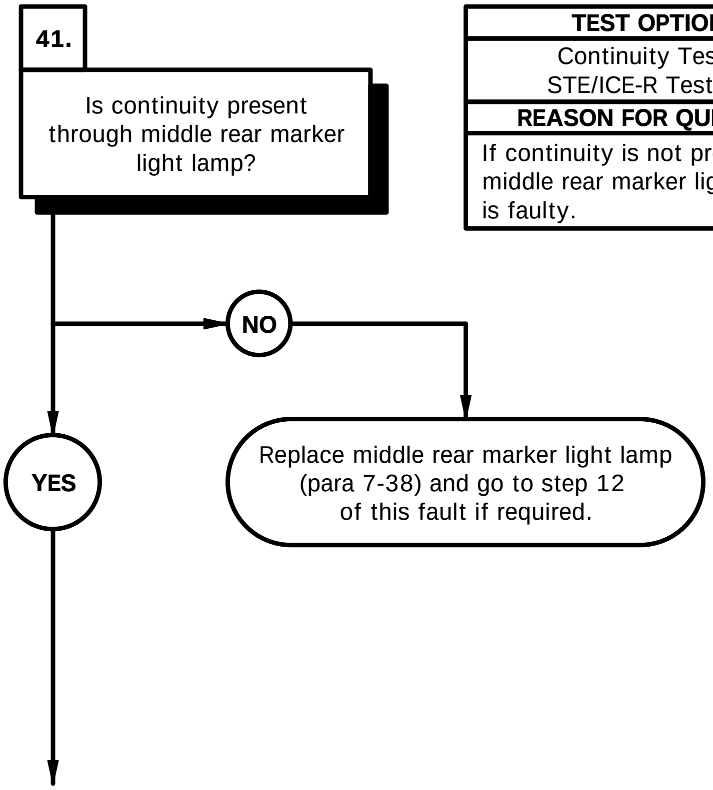
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



41.

Is continuity present through middle rear marker light lamp?

Replace middle rear marker light lamp (para 7-38) and go to step 12 of this fault if required.

TEST OPTIONS

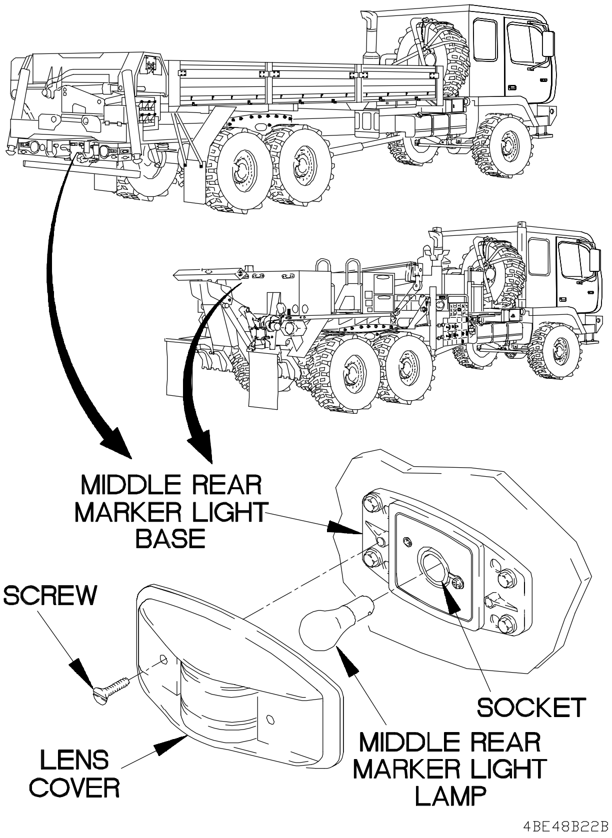
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

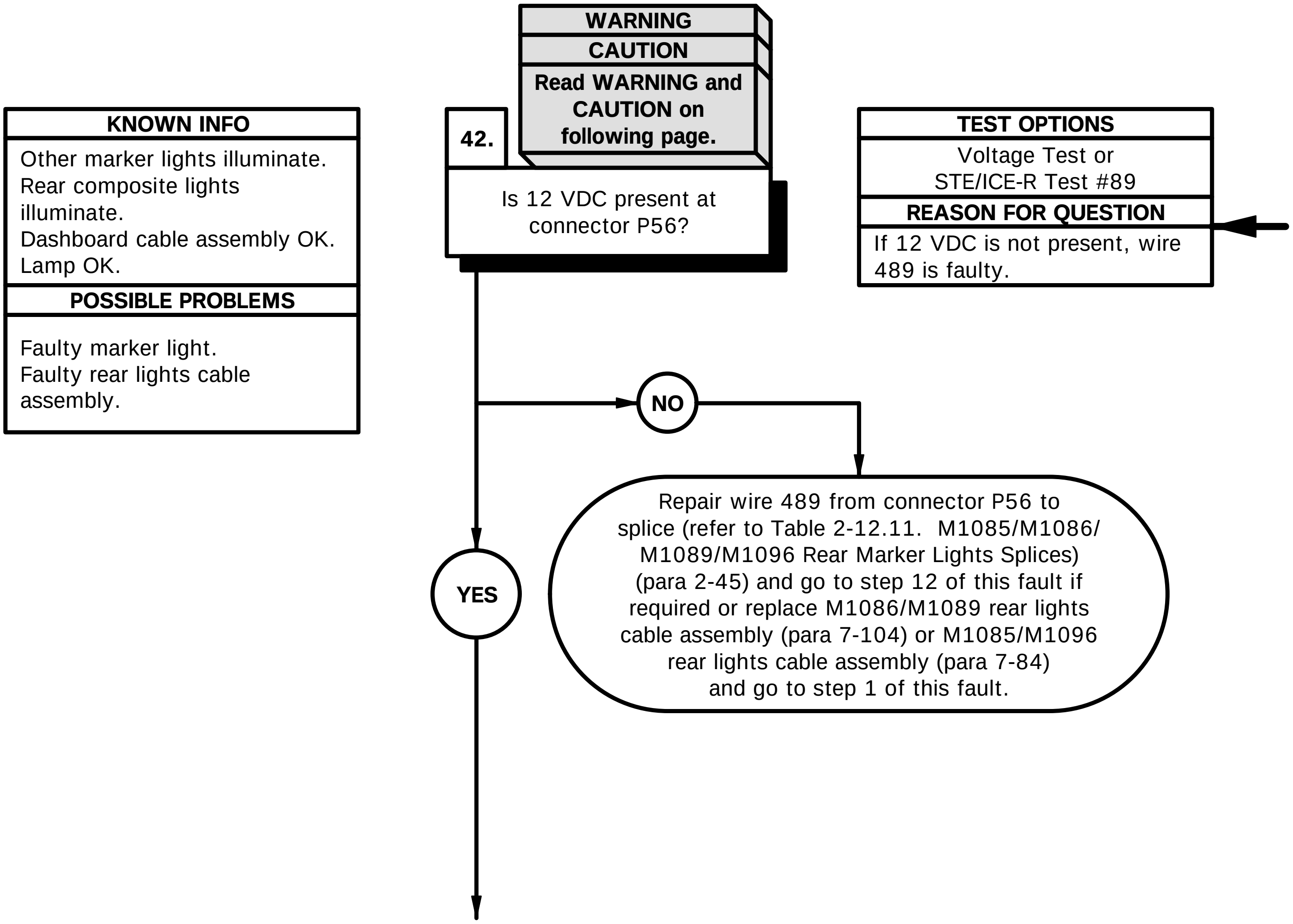
If continuity is not present, middle rear marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from middle rear marker light base.
(2) Remove middle rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through middle rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace middle rear marker light lamp (para 7-38) and go to step 12 of this fault if required.
(6) Install middle rear marker light lamp in socket.
(7) Install lens cover on middle rear marker light base with two screws.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

42.

Is 12 VDC present at connector P56?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P56 to splice (refer to Table 2-12.11. M1085/M1086/M1089/M1096 Rear Marker Lights Splices) (para 2-45) and go to step 12 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

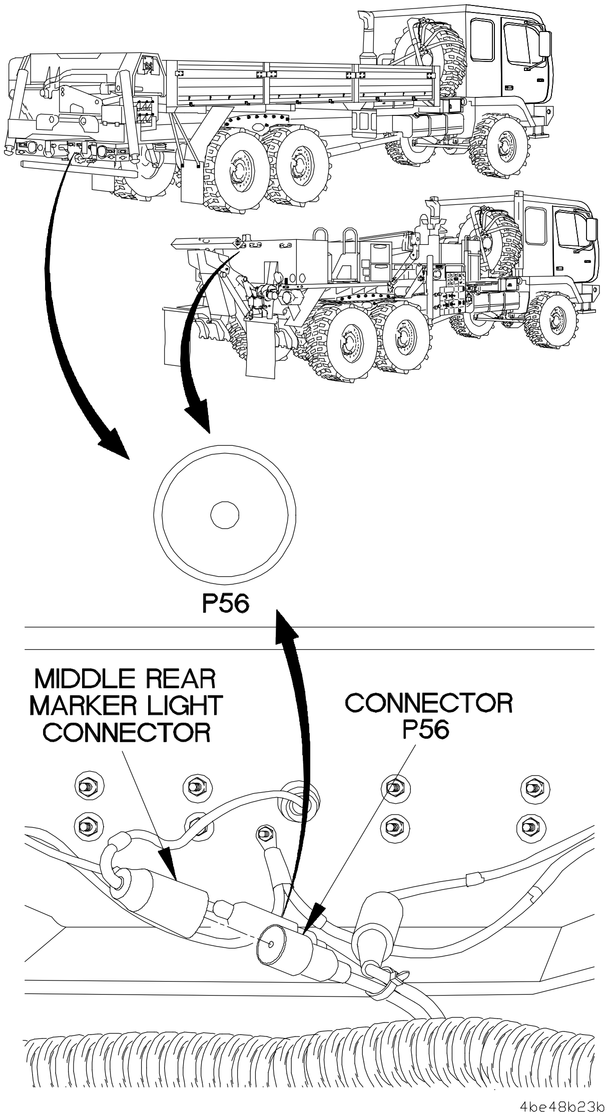
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

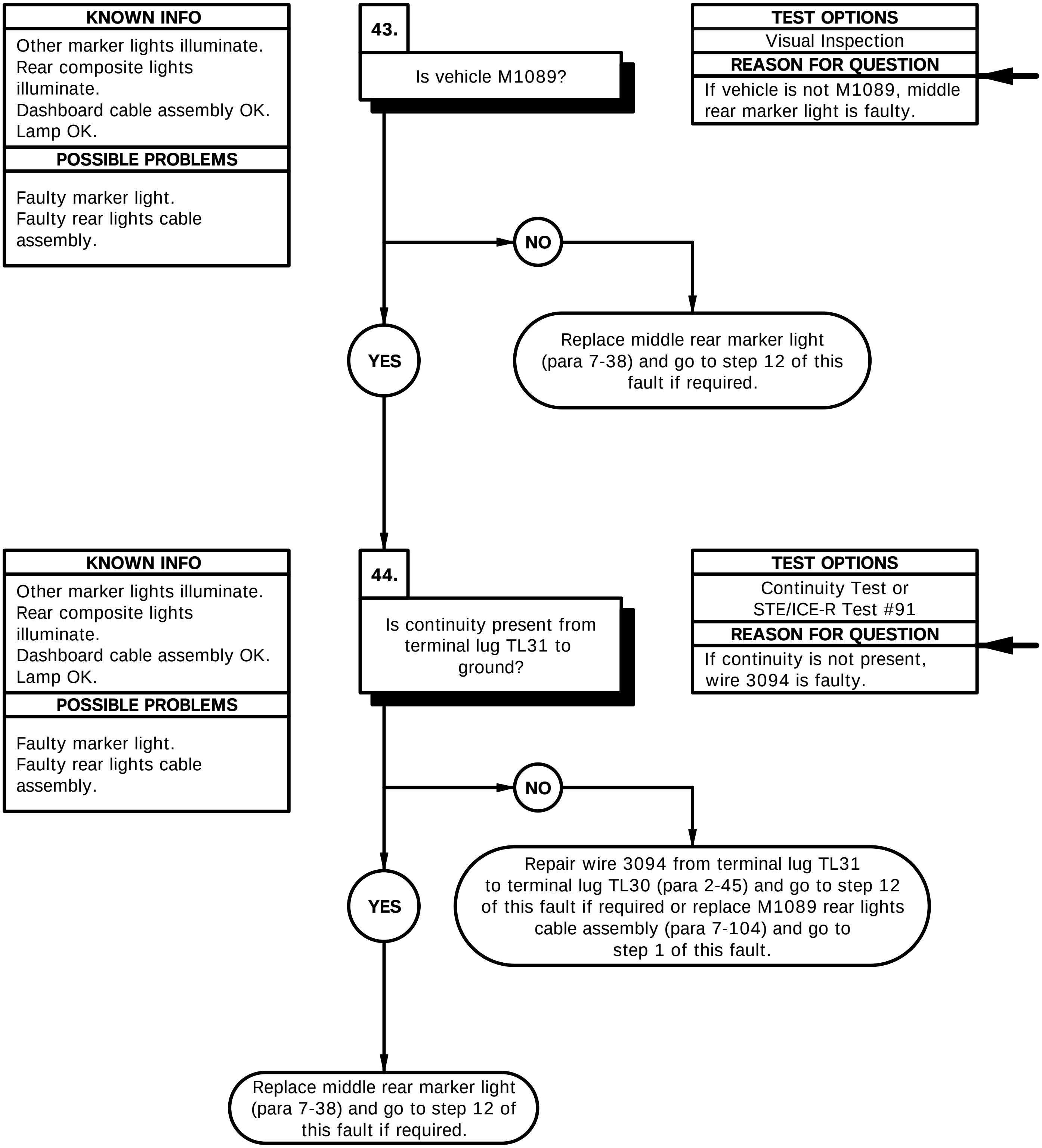
(1) Disconnect middle rear marker light connector from connector P56.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P56.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P56 to splice (refer to Table 2-12.11. M1085/M1086/M1089/M1096 Rear Marker Lights Splices) (para 2-45) and go to step 12 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(8) Connect middle rear marker light connector to connector P56.

Table 2-12.11. M1085/M1086/M1089/M1096 Rear Marker Light Splices

Model	Splice
M1085/M1086/M1096	E15
M1089	E50



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

43.

Is vehicle M1089?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

If vehicle is not M1089, middle rear marker light is faulty.

NO

Replace middle rear marker light (para 7-38) and go to step 12 of this fault if required.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

44.

Is continuity present from terminal lug TL31 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty.

NO

Repair wire 3094 from terminal lug TL31 to terminal lug TL30 (para 2-45) and go to step 12 of this fault if required or replace M1089 rear lights cable assembly (para 7-104) and go to step 1 of this fault.

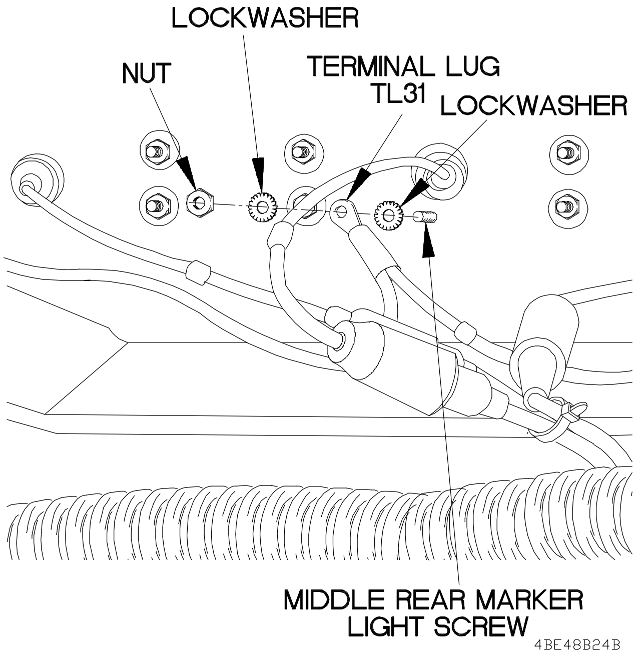
YES

Replace middle rear marker light (para 7-38) and go to step 12 of this fault if required.

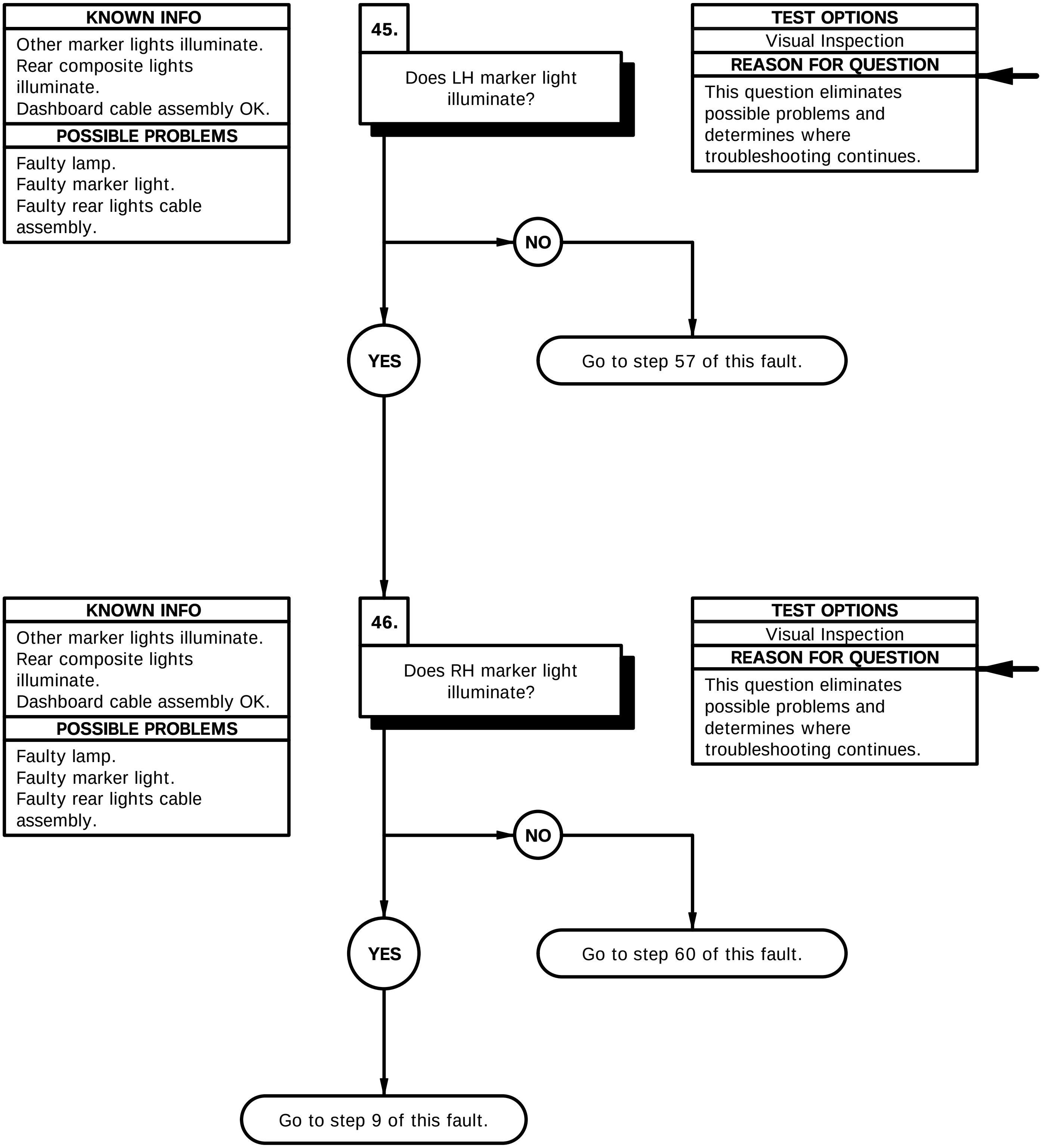
If vehicle is not M1089, replace middle rear marker light (para 7-38) and go to step 12 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher terminal lug TL31, and lockwasher from middle rear masrker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL31.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL31 to terminal lug TL30 (para 2-45) and go to step 12 of this fault if required or replace M1089 rear lights cable assembly (para 7-104) and go to step 1 of this fault.
(6) If continuity is present, replace middle rear marker light (para 7-38) and go to step 12 of this fault if required.
(7) Install lockwasher, terminal lug TL31, lockwasher, and nut on middle rear marker light screw.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

45. Does LH marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 57 of this fault.

YES:

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

46. Does RH marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

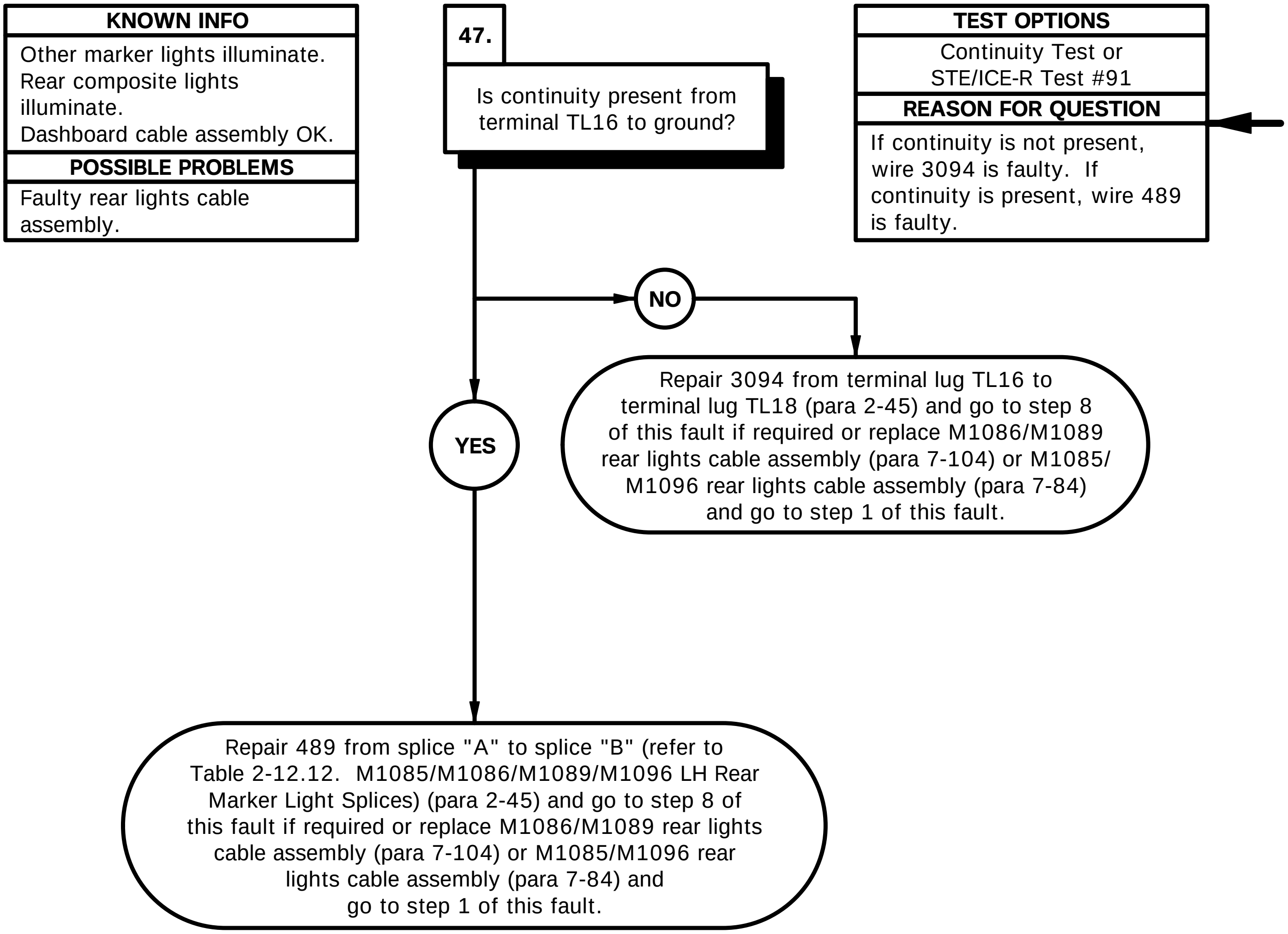
NO: Go to step 60 of this fault.

YES: Go to step 9 of this fault.

If LH marker light does not illuminate, go to step 57 of this fault.

(1) If RH marker light does not illuminate, go to step 60 of this fault.
(2) If RH marker light does illuminate, go to step 9 of this fault.

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

47.

Is continuity present from terminal TL16 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, wire 489 is faulty.

NO

Repair 3094 from terminal lug TL16 to terminal lug TL18 (para 2-45) and go to step 8 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

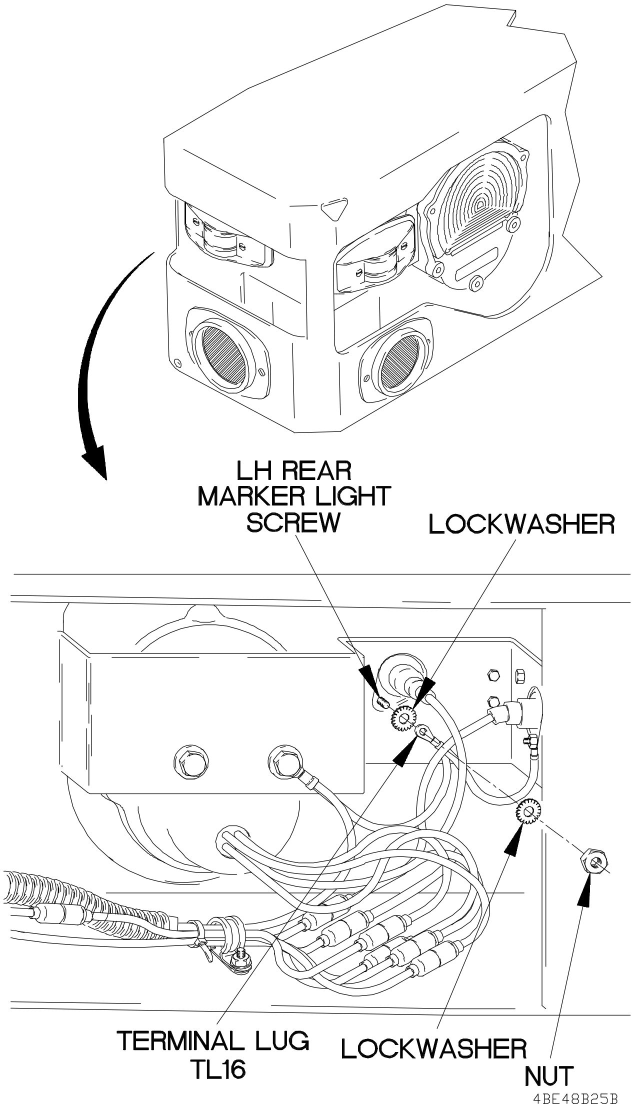
Repair 489 from splice "A" to splice "B" (refer to Table 2-12.12. M1085/M1086/M1089/M1096 LH Rear Marker Light Splices) (para 2-45) and go to step 8 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

CONTINUITY TEST

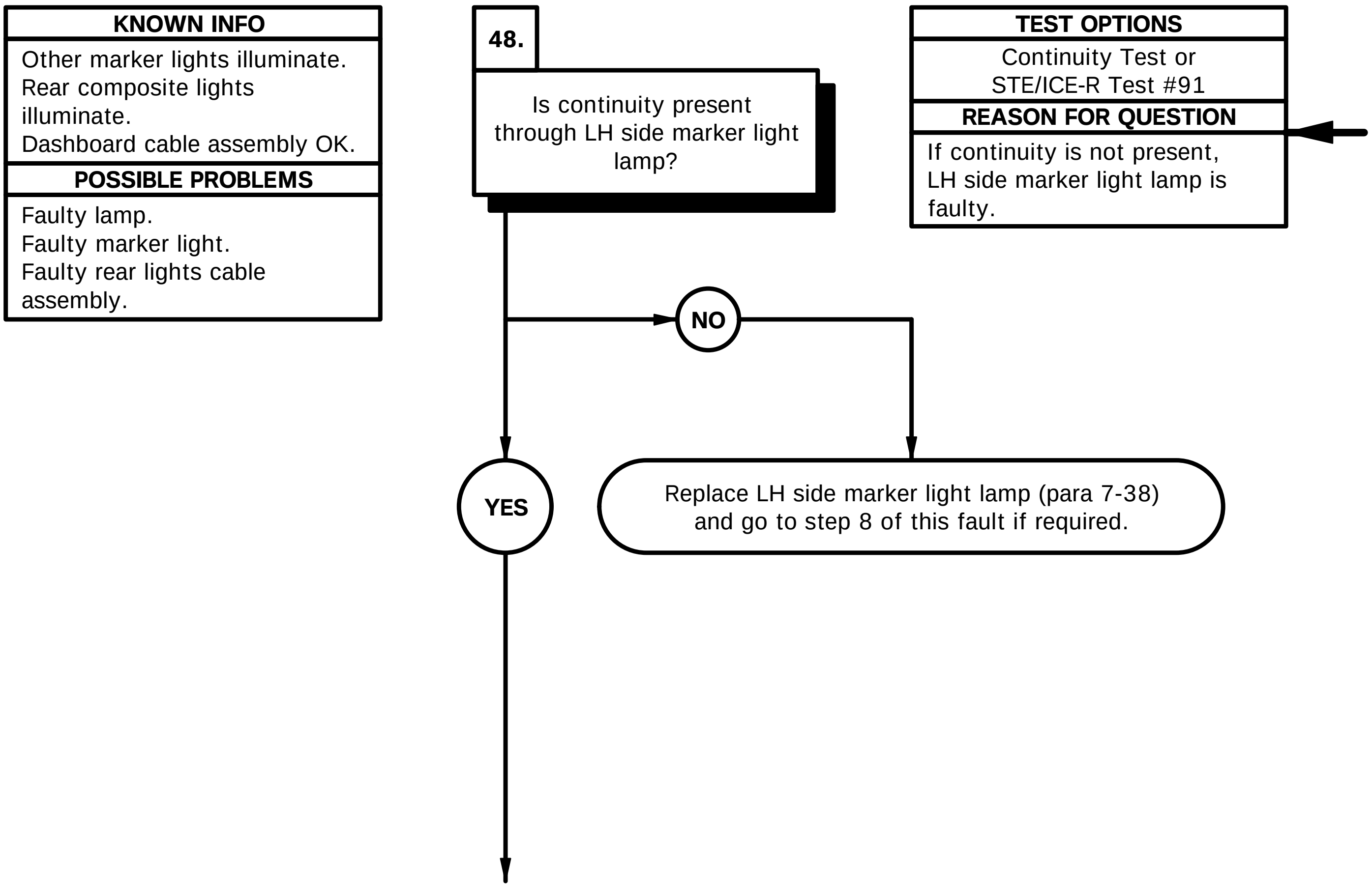
(1) Remove nut, lockwasher, terminal lug TL16, and lockwasher from LH rear marker light screw. Discard lockwashers.
(2) Step multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL16.
(4) Connect negative probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair 3094 from terminal lug TL16 to terminal lug TL18 (para 2-45) and go to step 8 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, repair 489 from splice "A" to splice "B" (refer to Table 2-12.12. M1085/M1086/M1089/M1096 LH Rear Marker Light Splices) (para 2-45) and go to step 8 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) Install lockwasher, terminal lug TL16, lockwasher, and nut on LH rear marker light screw.

Table 2-12.12. M1085/M1086/M1089/M1096 LH Rear Marker Light Splices

Model	Splice "A"	Splice "B"
M1085/M1086/M1096	E15	E16
M1089	E49	E51



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

48.

Is continuity present through LH side marker light lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

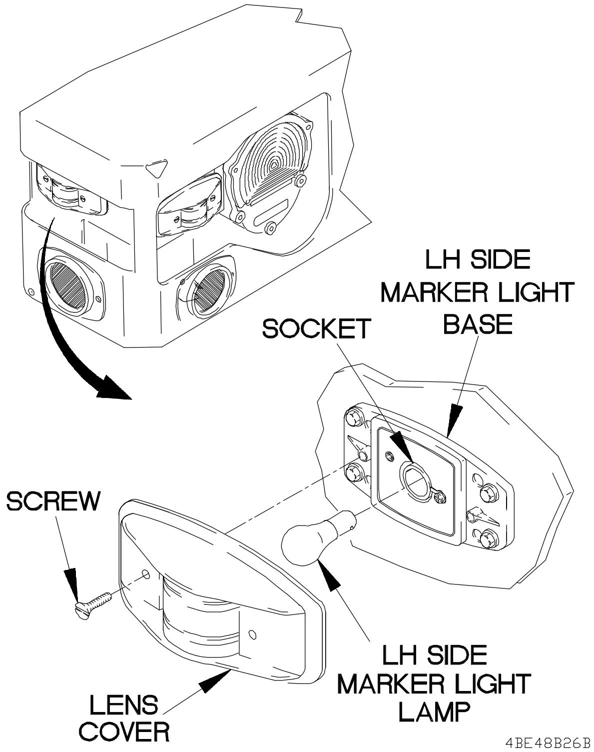
REASON FOR QUESTION

If continuity is not present, LH side marker light lamp is faulty.

Replace LH side marker light lamp (para 7-38) and go to step 8 of this fault if required.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH side marker light base.
(2) Set multimeter to ohms.
(3) Remove LH side marker light lamp from socket.
(4) Check continuity through LH side marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH side marker light lamp (para 7-38) and go to step 8 of this fault if required.
(6) Install LH side marker light lamp in socket.
(7) Install lens cover on LH side marker light base with two screws.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

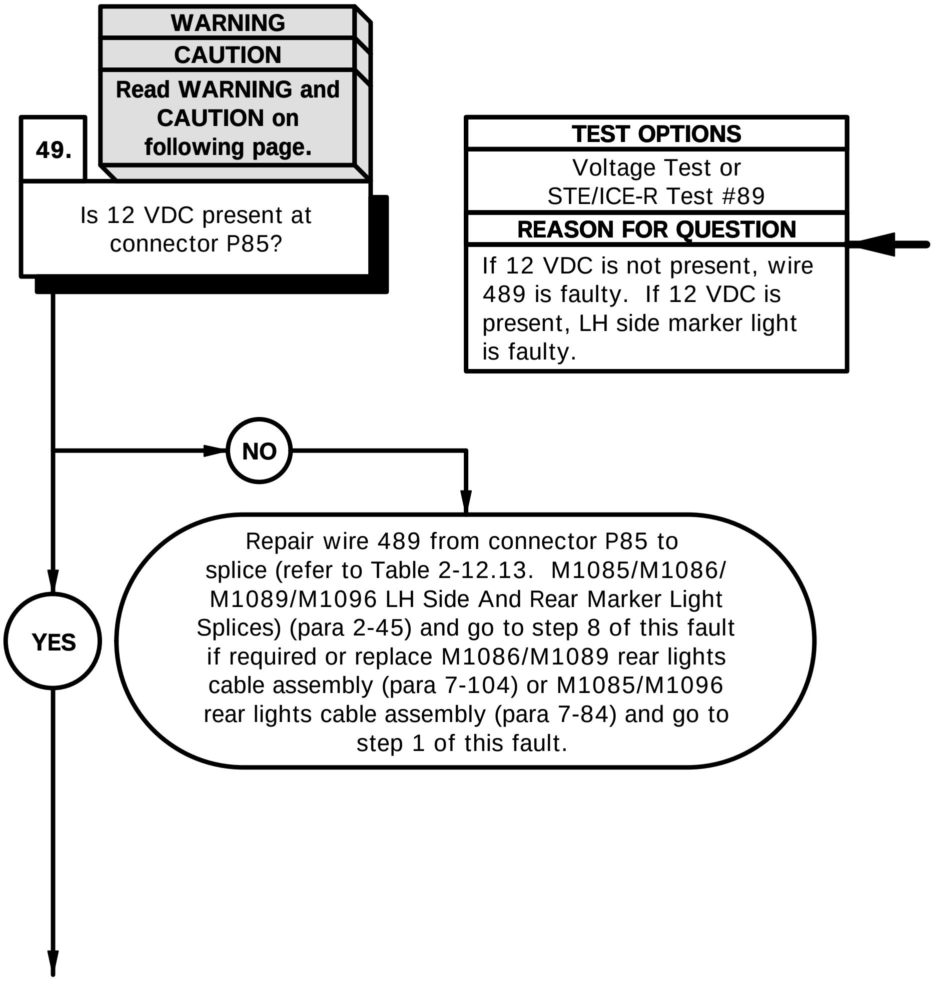
Faulty marker light.
Faulty rear lights cable assembly.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, LH side marker light is faulty.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

49. Is 12 VDC present at connector P85?

Repair wire 489 from connector P85 to splice (refer to Table 2-12.13. M1085/M1086/M1089/M1096 LH Side And Rear Marker Light Splices) (para 2-45) and go to step 8 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect LH side marker light connector from connector P85.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P85.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P85 to splice (refer to Table 2-12.13. M1085/M1086/M1089/M1096 LH Side And Rear Marker Light Splices) (para 2-45) and go to step 8 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

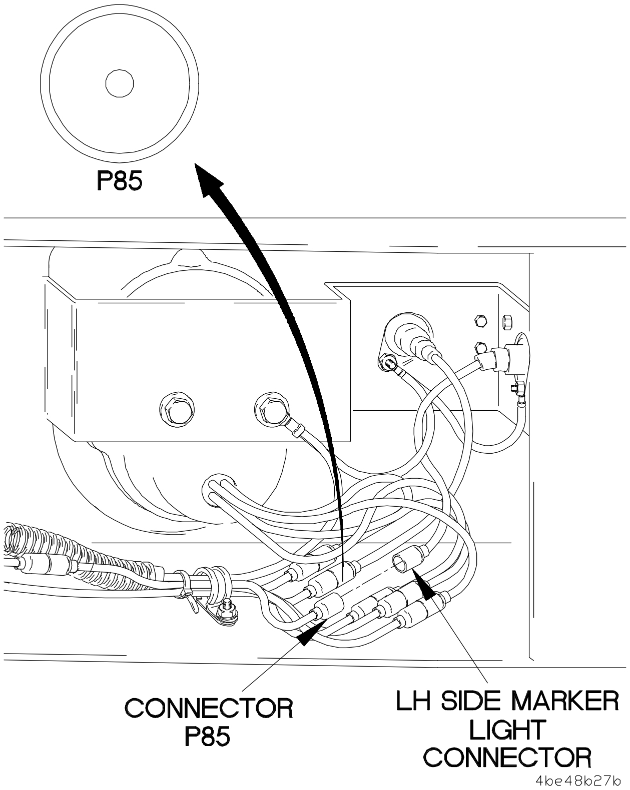


Table 2-12.13. M1085/M1086/M1089/M1096 Rear Marker Light Splices

Model	Splice
M1085/M1086/M1096	E15
M1089	E50

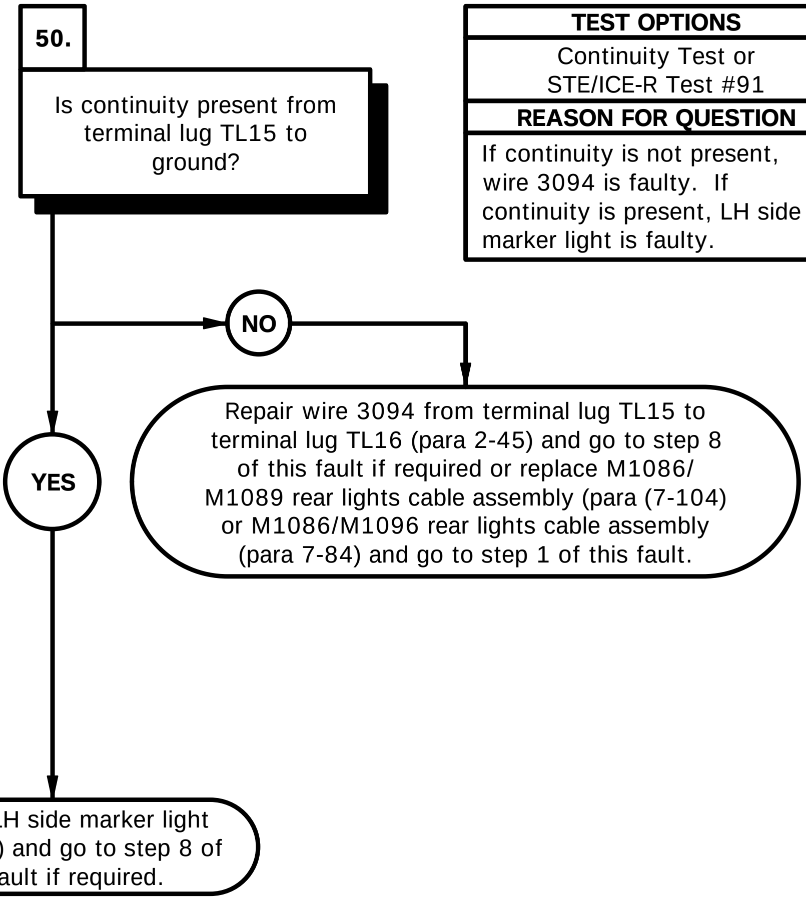
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.



50.

Is continuity present from terminal lug TL15 to ground?

Repair wire 3094 from terminal lug TL15 to terminal lug TL16 (para 2-45) and go to step 8 of this fault if required or replace M1086/ M1089 rear lights cable assembly (para (7-104) or M1086/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

Replace LH side marker light (para 7-38) and go to step 8 of this fault if required.

TEST OPTIONS

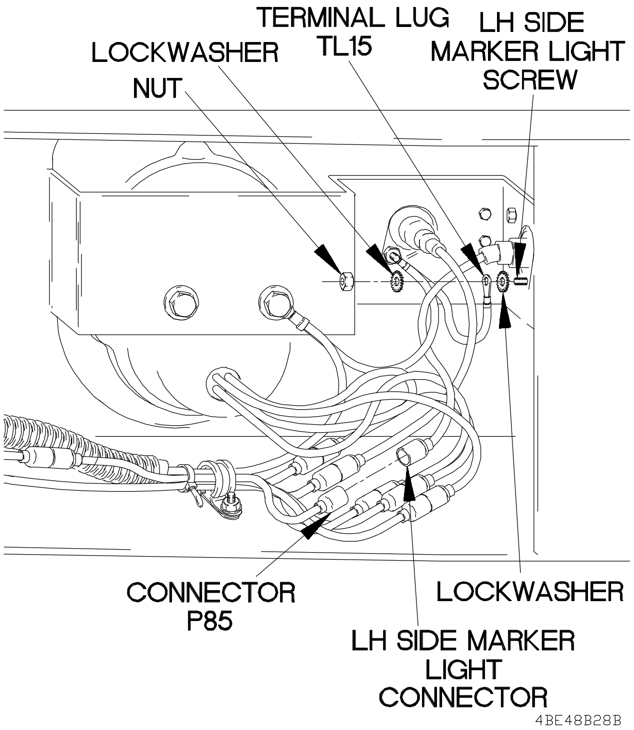
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

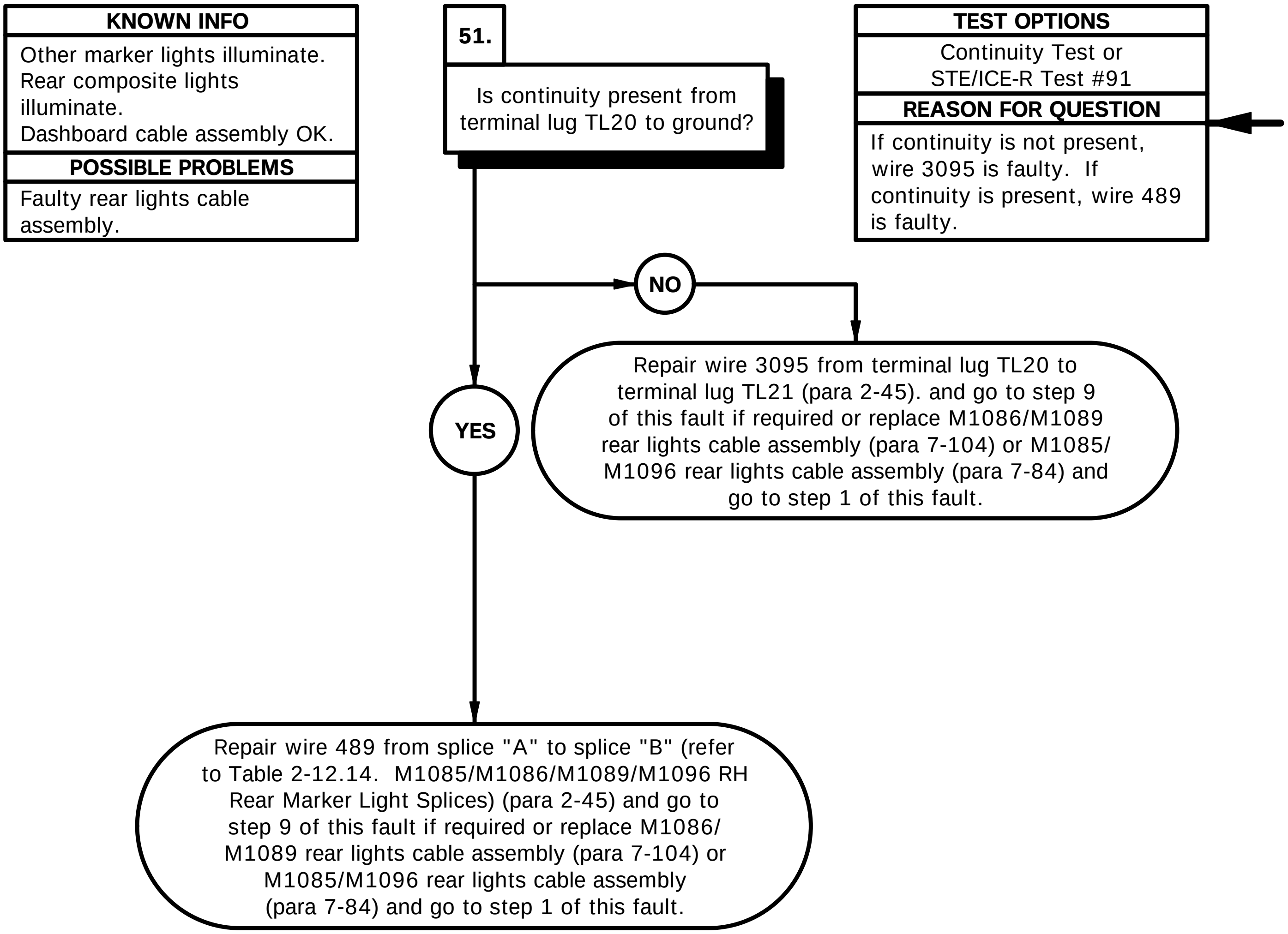
If continuity is not present, wire 3094 is faulty. If continuity is present, LH side marker light is faulty.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL15, and lockwasher from LH side marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL15.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL15 to terminal lug TL16 (para 2-45) and go to step 8 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1086/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace LH side marker light (para 7-38) and go to step 8 of this fault if required.
(7) Install lockwasher, terminal lug TL15, lockwasher, and nut on LH side marker light.
(8) Connect LH side marker light connector to connector 85.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

51.

Is continuity present from terminal lug TL20 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3095 is faulty. If continuity is present, wire 489 is faulty.

NO

Repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45). and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

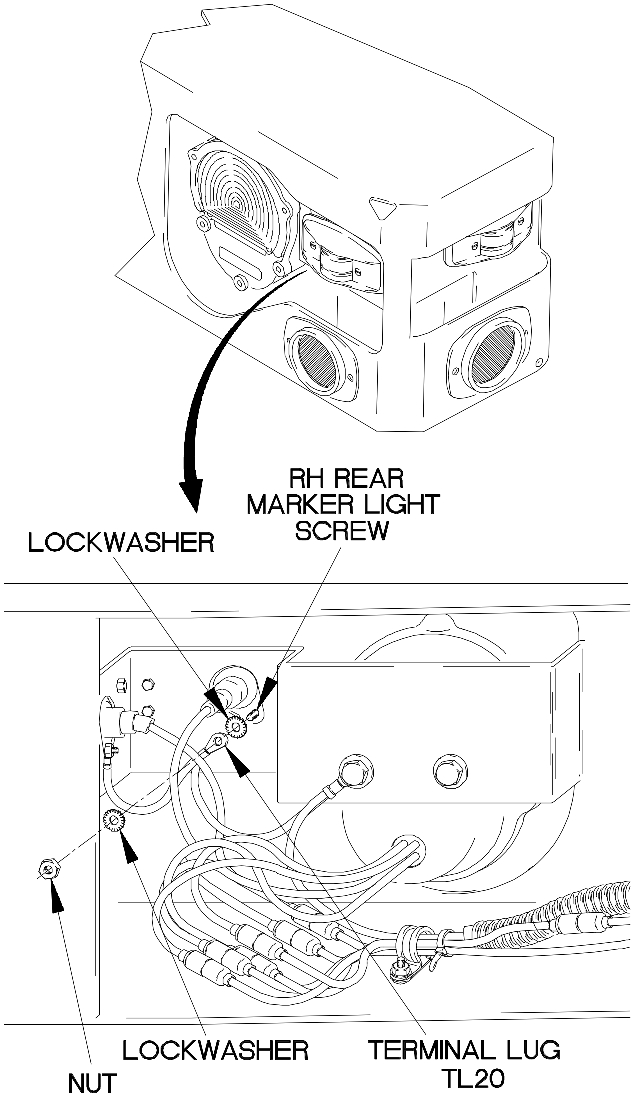
Repair wire 489 from splice "A" to splice "B" (refer to Table 2-12.14. M1085/M1086/M1089/M1096 RH Rear Marker Light Splices) (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL20, and lockwasher from RH rear marker light screw. Discard lockwashers.
(2) Step multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL20.
(4) Connect negative probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, repair wire 489 from splice "A" to splice "B" (refer to Table 2-12.14. M1085/M1086/M1089/M1096 RH Rear Marker Light Splices) (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/ M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) Install lockwasher, terminal lug TL20, lockwasher, and nut on RH rear marker light screw.

Table 2-12.14. M1085/M1086/M1089/M1096 RH Rear Marker Light Splices

Model	Splice "A"	Splice "B"
M1085/M1086/M1096	E15	E17
M1089	E49	E52



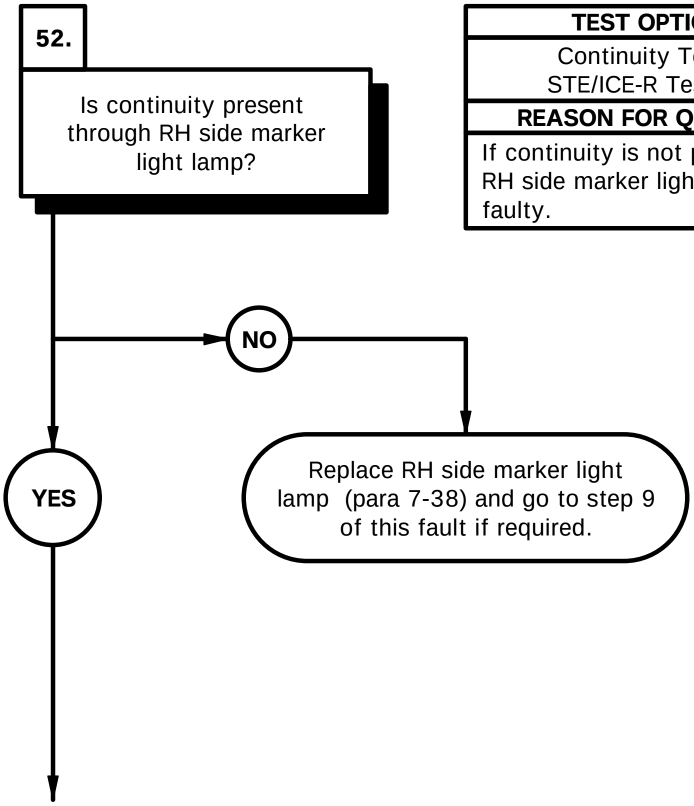
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



Is continuity present through RH side marker light lamp?

Replace RH side marker light lamp (para 7-38) and go to step 9 of this fault if required.

TEST OPTIONS

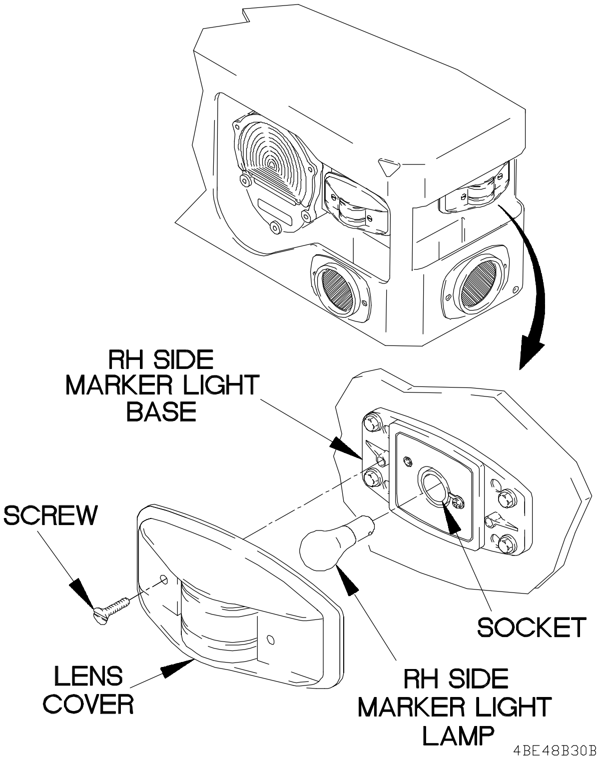
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH side marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from RH side marker light base.
(2) Set multimeter to ohms.
(3) Remove RH side marker light lamp from socket.
(4) Check continuity through RH side marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH side marker light lamp (para 7-38) and go to step 9 of this fault if required.
(6) Install RH side marker light lamp in socket.
(7) Install lens cover on RH side marker light base with two screws.



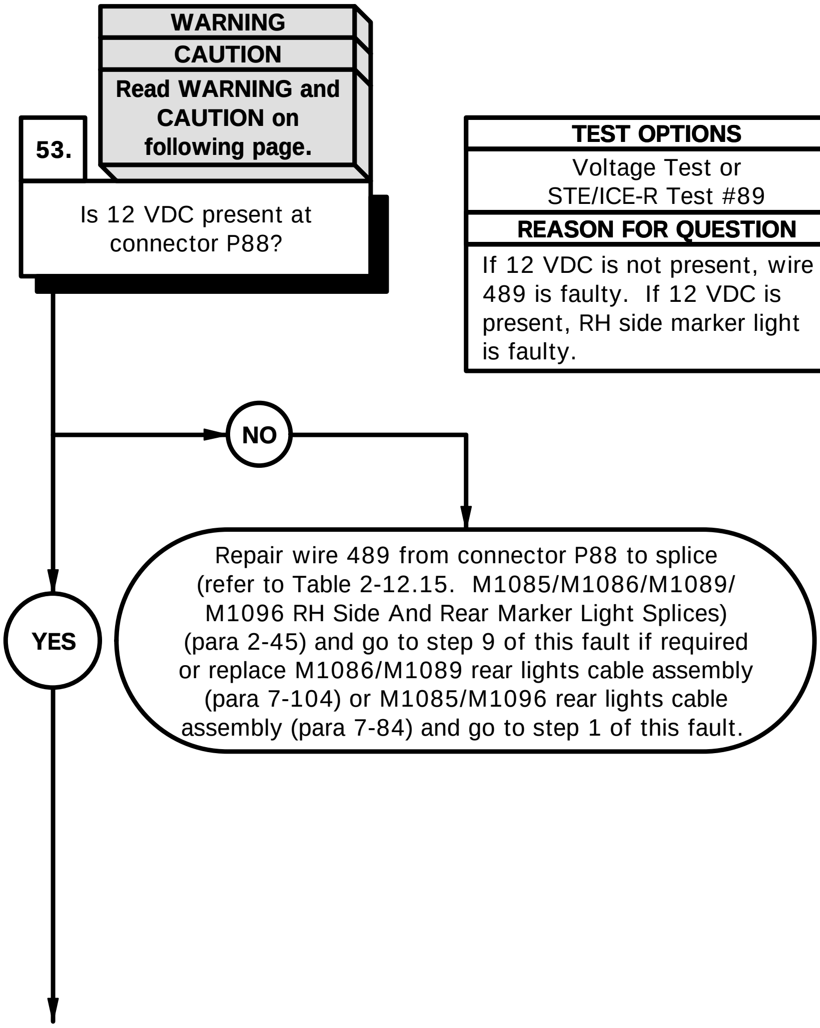
e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

53.

Is 12 VDC present at connector P88?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, RH side marker light is faulty.

NO

Repair wire 489 from connector P88 to splice (refer to Table 2-12.15. M1085/M1086/M1089/M1096 RH Side And Rear Marker Light Splices) (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect RH side marker light connector from connector P88.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P88.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) Is 12 VDC is not present, repair wire 489 from connector P88 to splice (refer to Table 2-12.15. M1085/M1086/M1089/M1096 RH Side And Rear Marker Light Splices) (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

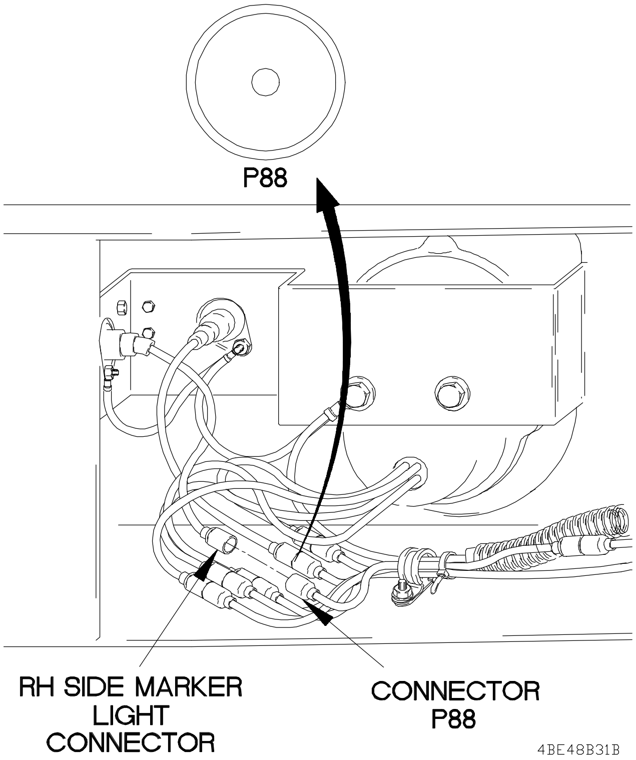
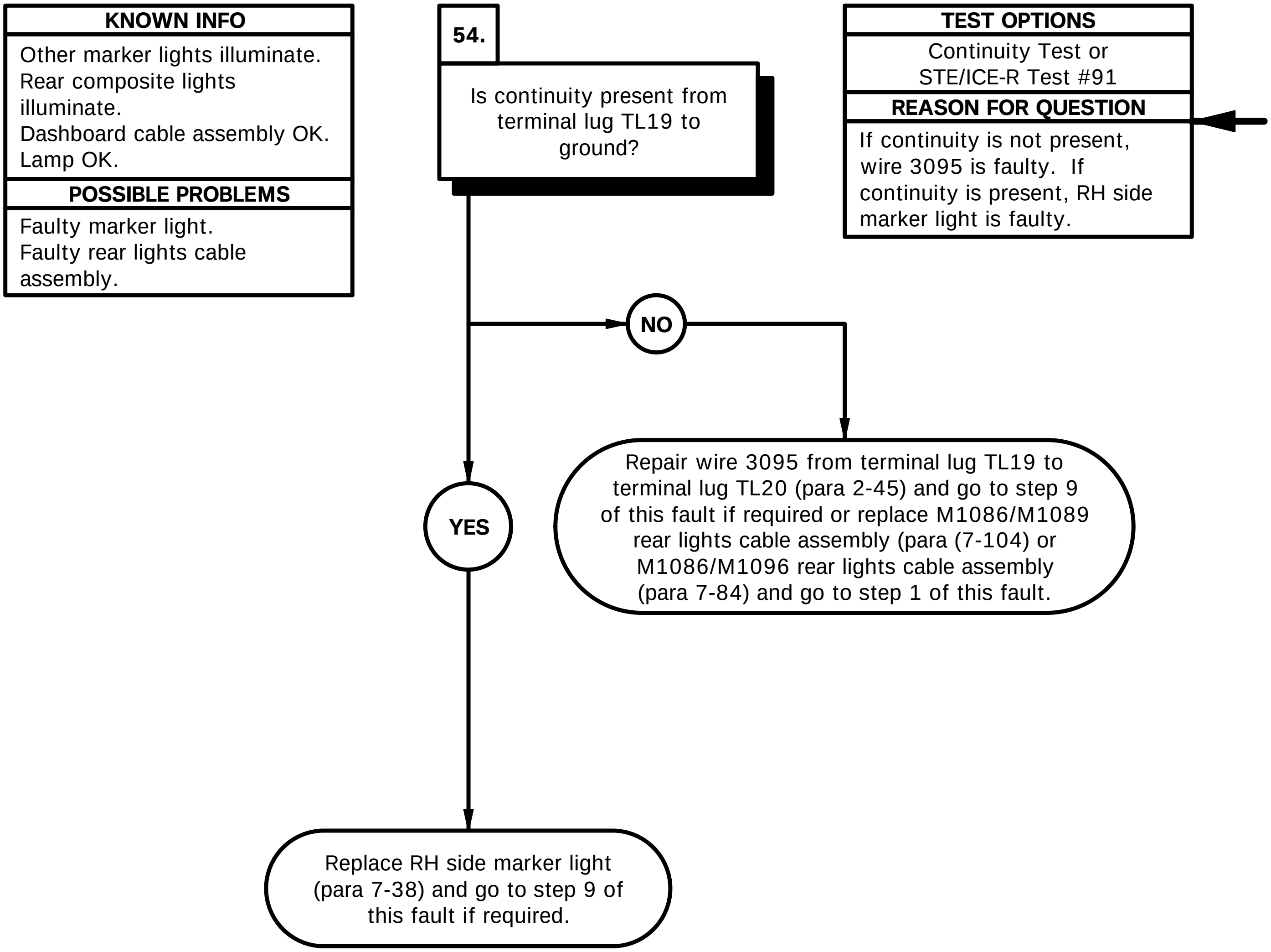


Table 2-12.15. M1085/M1086/M1089/M1096 RH Side and Rear Marker Light Splices

Model	Splice
M1085/M1086/M1096	E17
M1089	E52

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

54.

Is continuity present from terminal lug TL19 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3095 is faulty. If continuity is present, RH side marker light is faulty.

NO

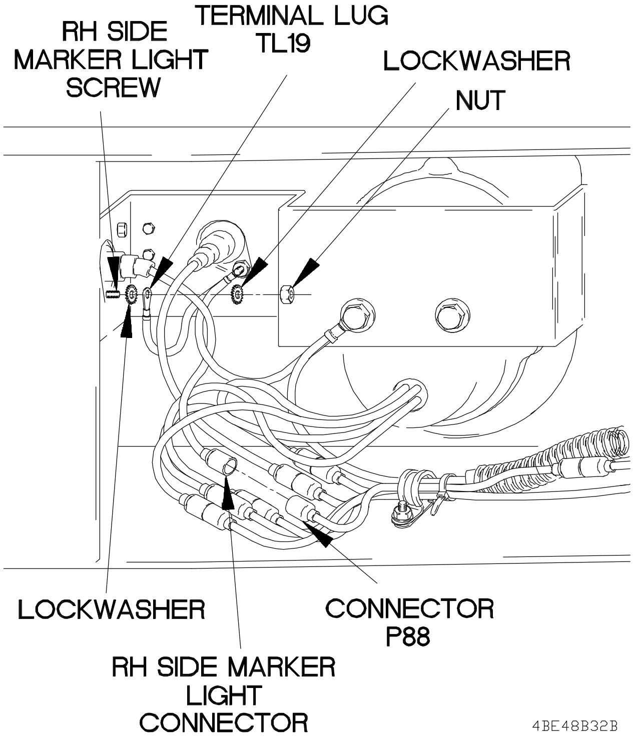
Repair wire 3095 from terminal lug TL19 to terminal lug TL20 (para 2-45) and go to step 9 of this fault if required or replace M1086/M1089 rear lights cable assembly (para (7-104) or M1086/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

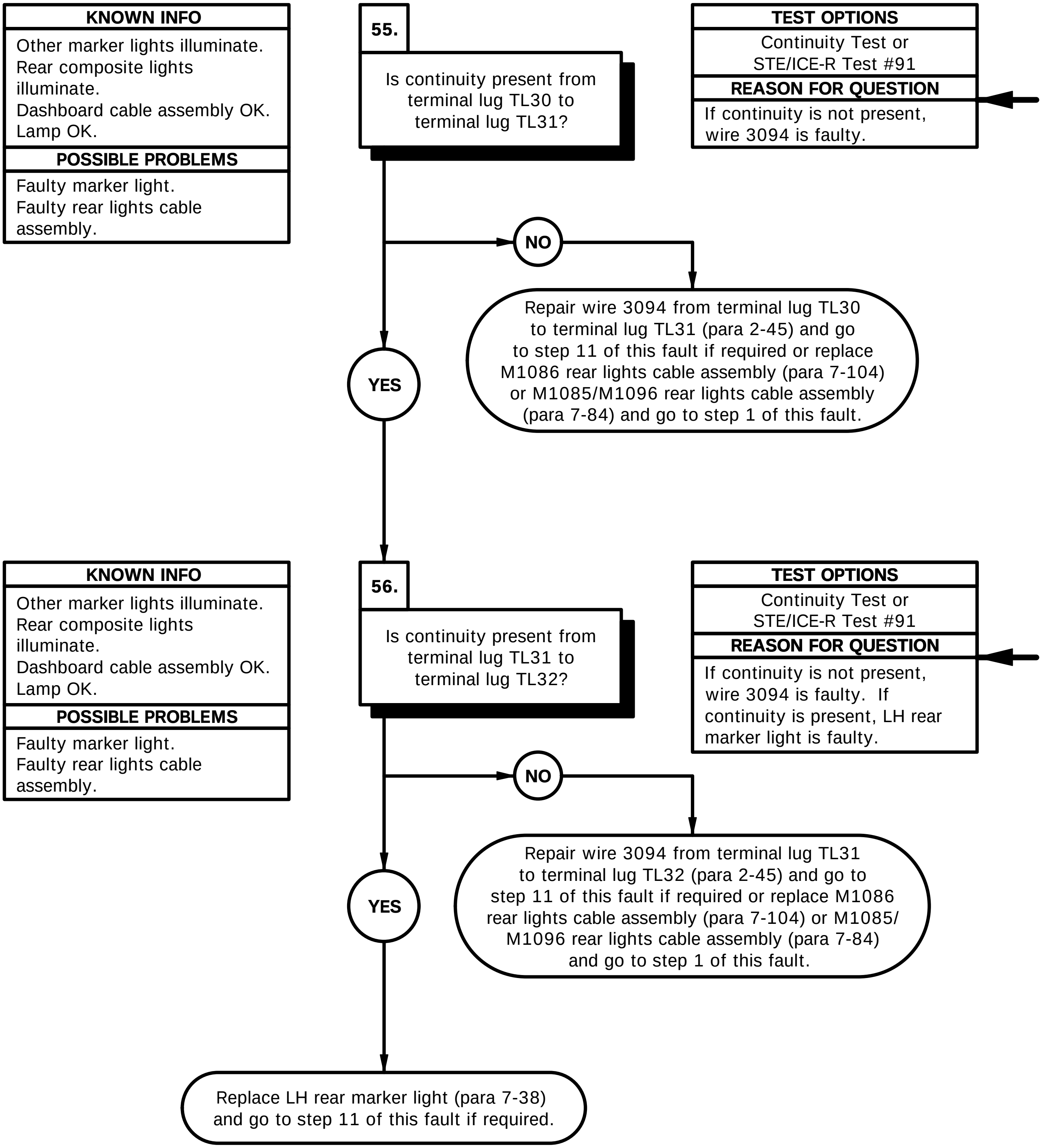
Replace RH side marker light (para 7-38) and go to step 9 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL19, and lockwasher from RH side marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL19.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3095 from terminal lug TL19 to terminal lug TL20 (para 2-45) and go to step 9 of this fault if required or replace M1086/ M1089 rear lights cable assembly (para 7-104) or M1086/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace RH side marker light (para 7-38) and go to step 9 of this fault if required.
(7) Install lockwasher, terminal lug TL19, lockwasher, and nut on RH side marker light screw.
(8) Connect RH side marker light connector to connector P88.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

55. Is continuity present from terminal lug TL30 to terminal lug TL31?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty.

NO

Repair wire 3094 from terminal lug TL30 to terminal lug TL31 (para 2-45) and go to step 11 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

56. Is continuity present from terminal lug TL31 to terminal lug TL32?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, LH rear marker light is faulty.

NO

Repair wire 3094 from terminal lug TL31 to terminal lug TL32 (para 2-45) and go to step 11 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

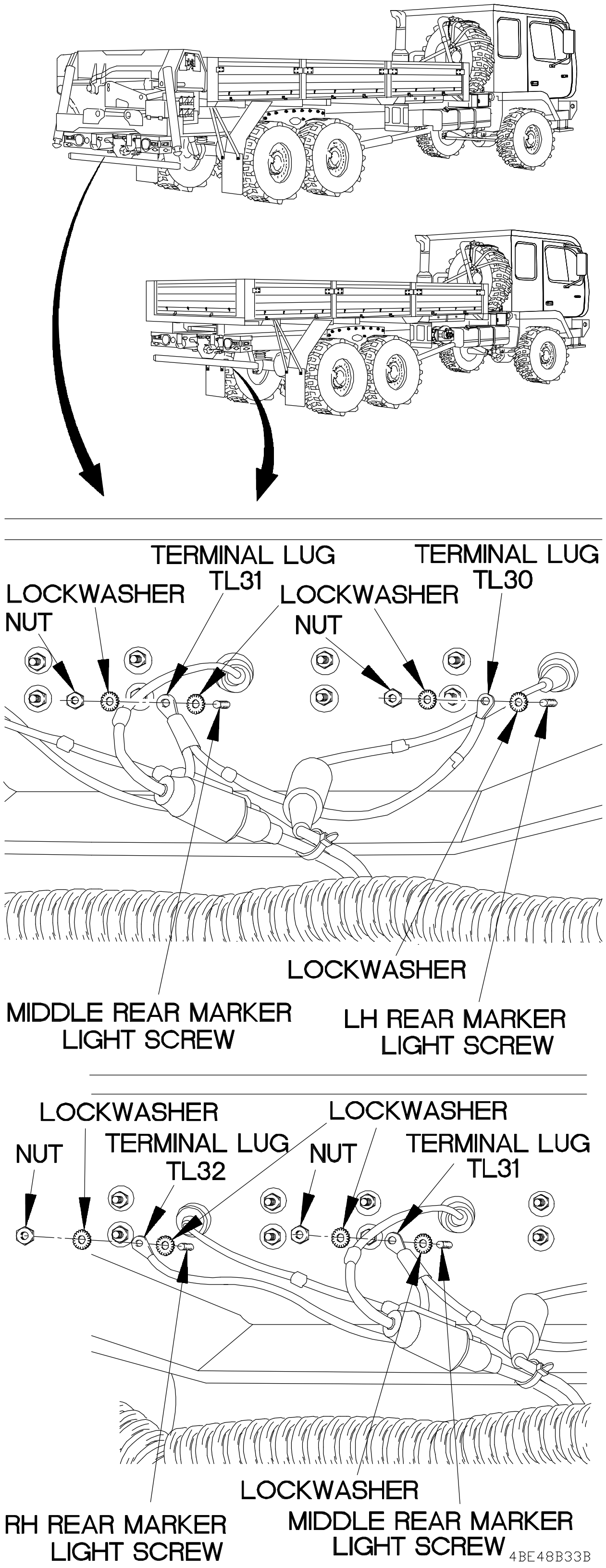
Replace LH rear marker light (para 7-38) and go to step 11 of this fault if required.

CONTINUITY TEST

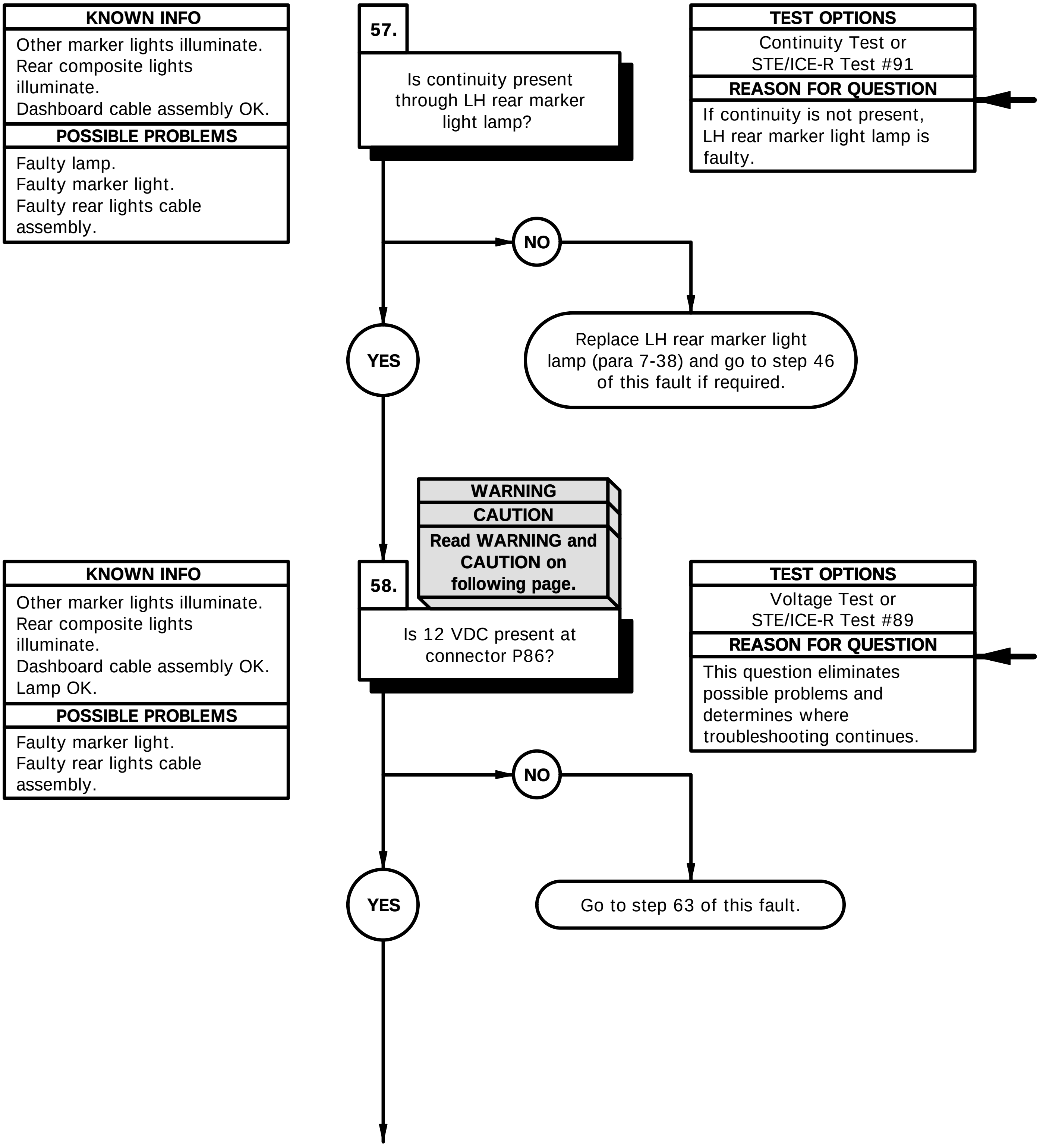
(1) Remove nut, lockwasher, terminal lug TL30, and lockwasher from LH rear marker light screw. Discard lockwashers.
(2) Remove nut, lockwasher, terminal lug TL31, and lockwasher from middle rear marker light screw. Discard lockwashers.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL30.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present, repair wire 3094 from terminal lug TL30 to terminal lug TL31 (para 2-45) and go to step 11 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(7) Install lockwasher, terminal lug TL30, lockwasher, and nut on LH rear marker light screw.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL32, and lockwasher from RH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL31.
(4) Connect negative (-) probe of multimeter to terminal lug TL32 and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL31 to terminal lug TL32 (para 2-45) and go to step 11 of this fault if required or replace M1086 rear lights cable assembly (para 7-104) or M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace LH rear marker light (para 7-38) and go to step 11 of this fault if required.
(7) Install lockwasher, terminal lug TL32, lockwasher, and nut on RH rear marker light screw.
(8) Install lockwasher, terminal lug TL31, lockwasher, and nut on middle rear marker light screw.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

57. Is continuity present through LH rear marker light lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, LH rear marker light lamp is faulty.

NO: Replace LH rear marker light lamp (para 7-38) and go to step 46 of this fault if required.

YES:

WARNING

CAUTION

Read WARNING and CAUTION on following page.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

58. Is 12 VDC present at connector P86?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 63 of this fault.

YES:

CONTINUITY TEST

(1) Remove two screws and lens cover from LH rear marker light base.
(2) Remove LH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH rear marker light lamp (para 7-38) and go to step 46 of this fault if required.
(6) Install LH rear marker light lamp in socket.
(7) Install lens cover on LH rear marker light base with two screws.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

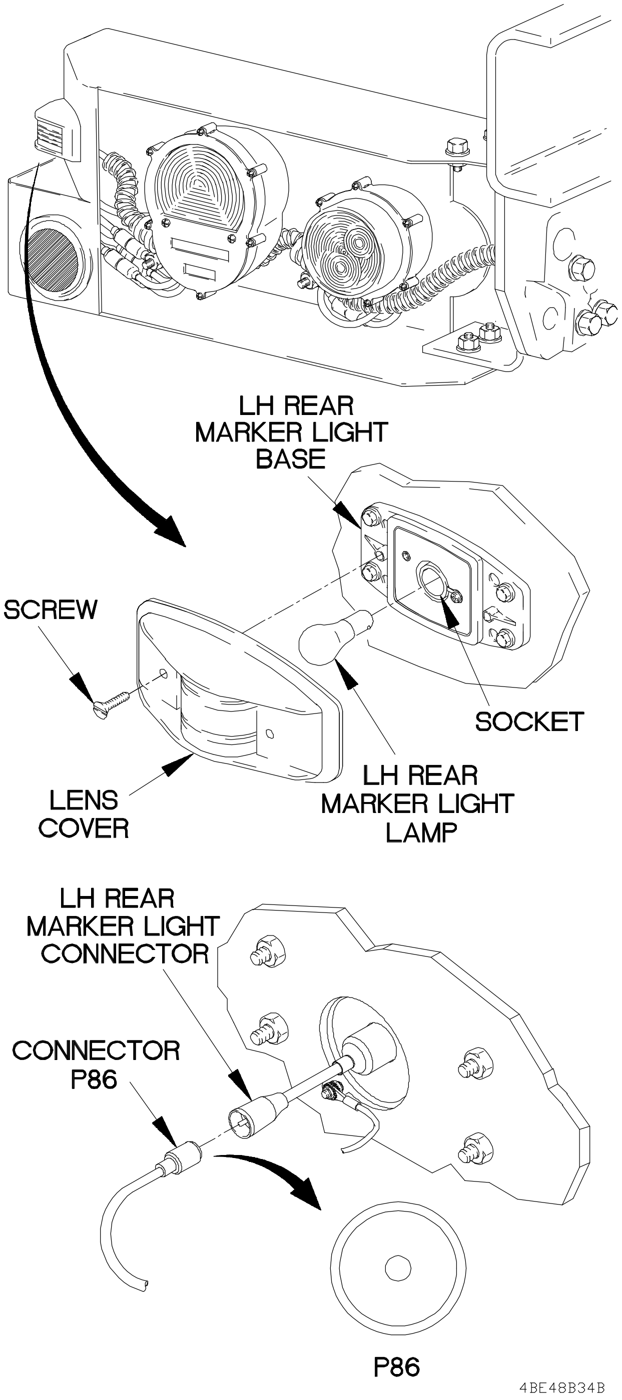
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

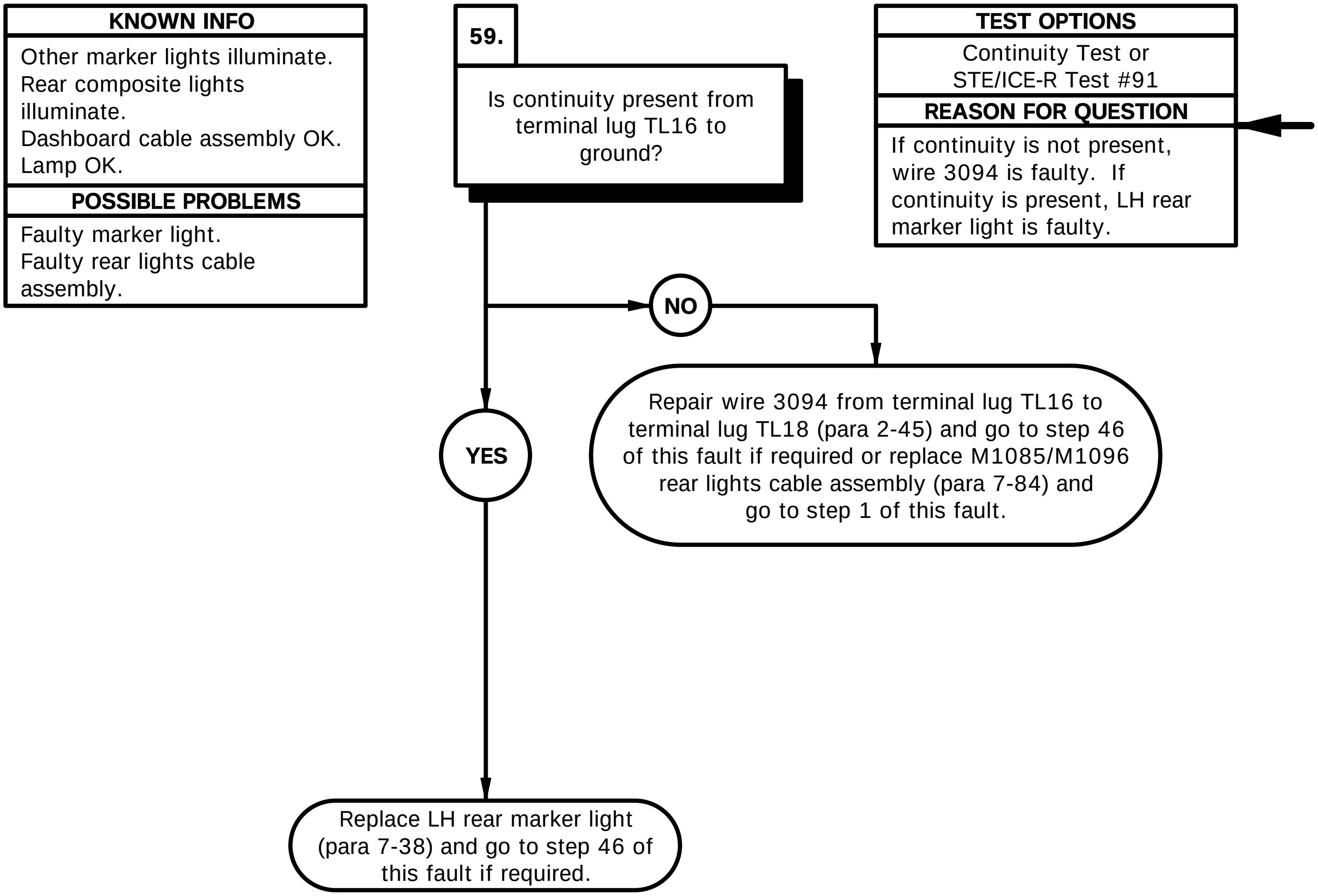
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect LH rear marker light connector from connector P86.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P86.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, go to step 63 of this fault.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

59.

Is continuity present from terminal lug TL16 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, LH rear marker light is faulty.

NO

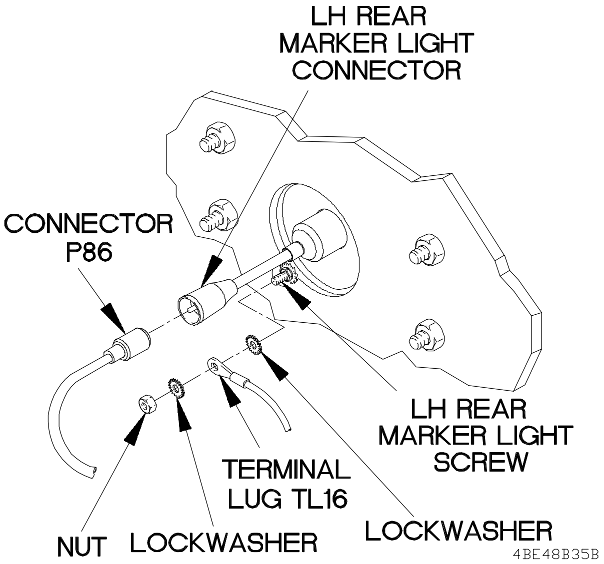
Repair wire 3094 from terminal lug TL16 to terminal lug TL18 (para 2-45) and go to step 46 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

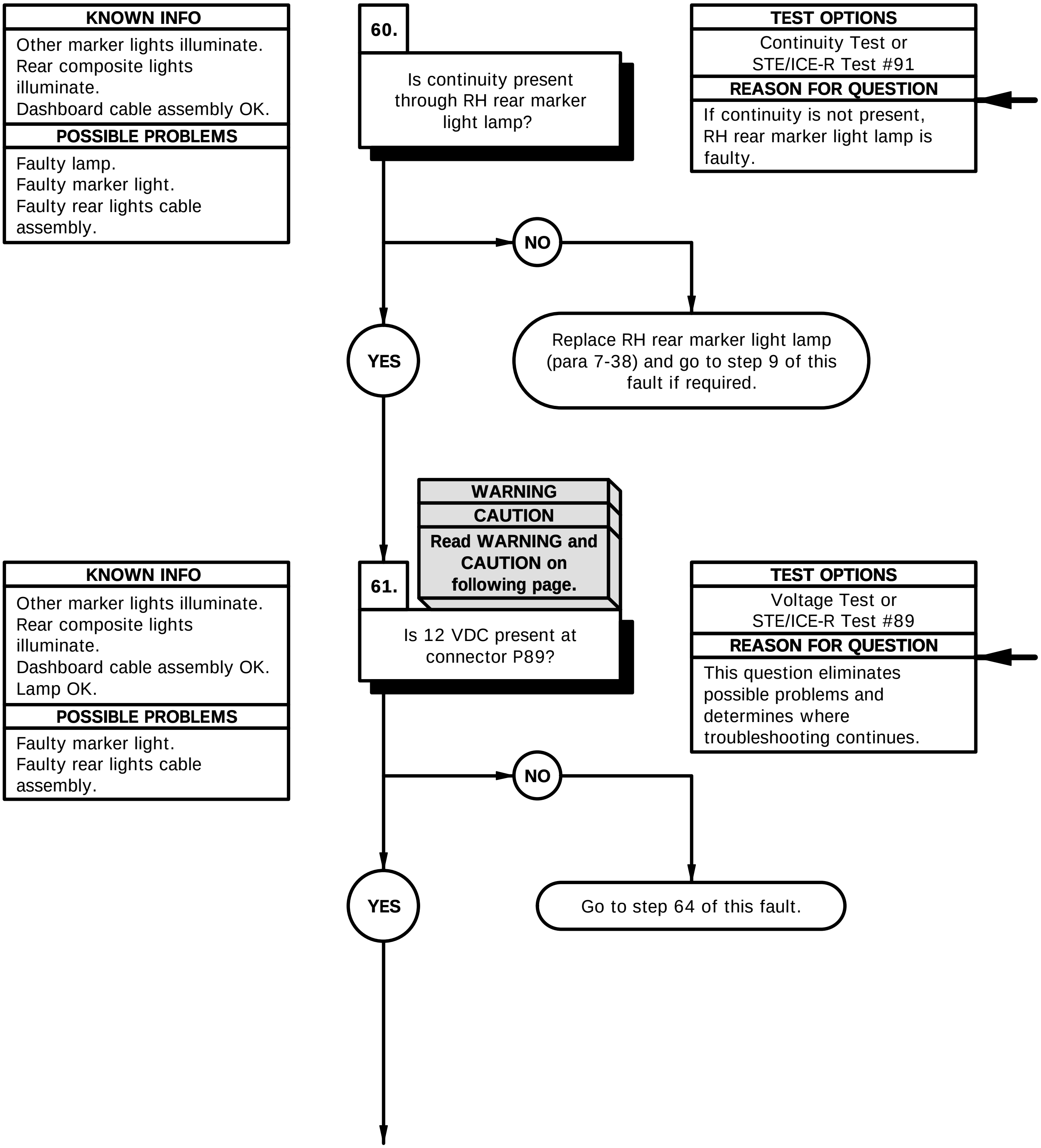
Replace LH rear marker light (para 7-38) and go to step 46 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL16, and lockwasher from LH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL16.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL16 to terminal lug TL18 (para 2-45) and go to step 46 of this fault if required or replace M1085/ M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace LH rear marker light (para 7-38) and go to step 46 of this fault if required.
(7) Install lockwasher, terminal lug TL16, lockwasher, and nut on LH rear marker light screw.
(8) Connect LH rear marker light connector to connector P86.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

60.

Is continuity present through RH rear marker light lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH rear marker light lamp is faulty.

NO

Replace RH rear marker light lamp (para 7-38) and go to step 9 of this fault if required.

YES

WARNING

CAUTION

Read WARNING and CAUTION on following page.

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

61.

Is 12 VDC present at connector P89?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

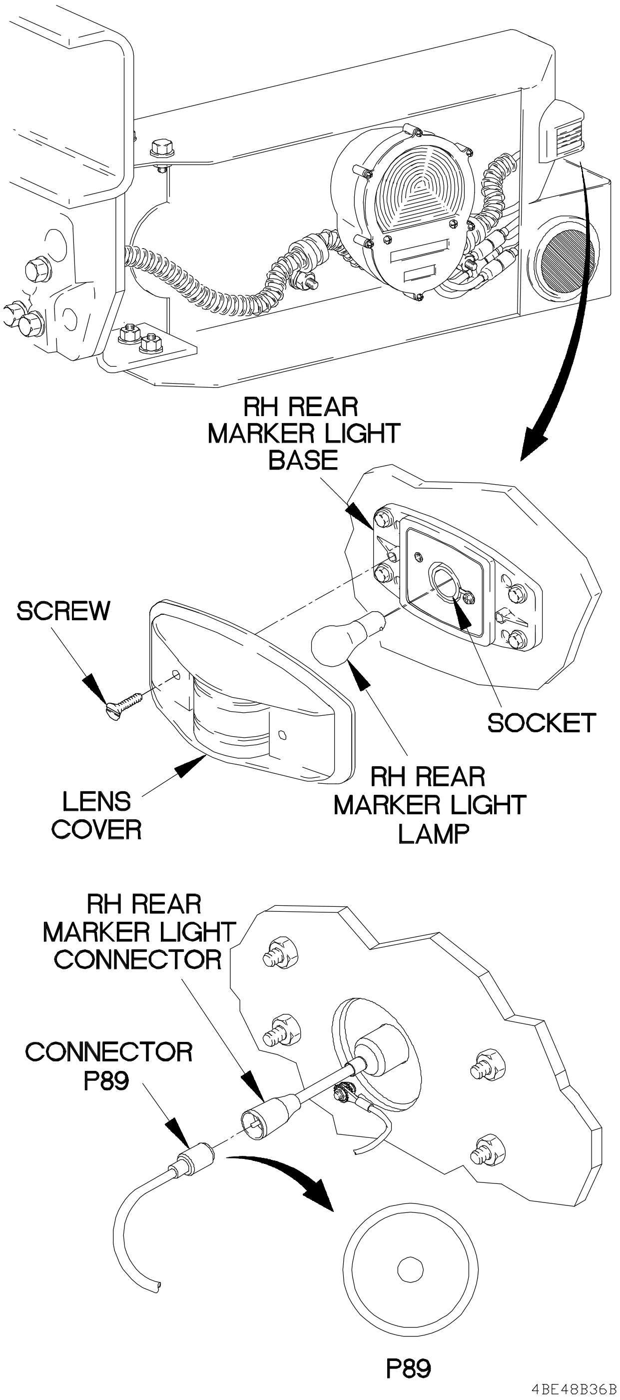
NO

Go to step 64 of this fault.

YES

CONTINUITY TEST

(1) Remove two screws and lens cover from RH rear marker light base.
(2) Remove RH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH rear marker light lamp (para 7-38) and go to step 9 of this fault if required.
(6) Install RH rear marker light lamp in socket.
(7) Install lens cover on RH rear marker light base with two screws.



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

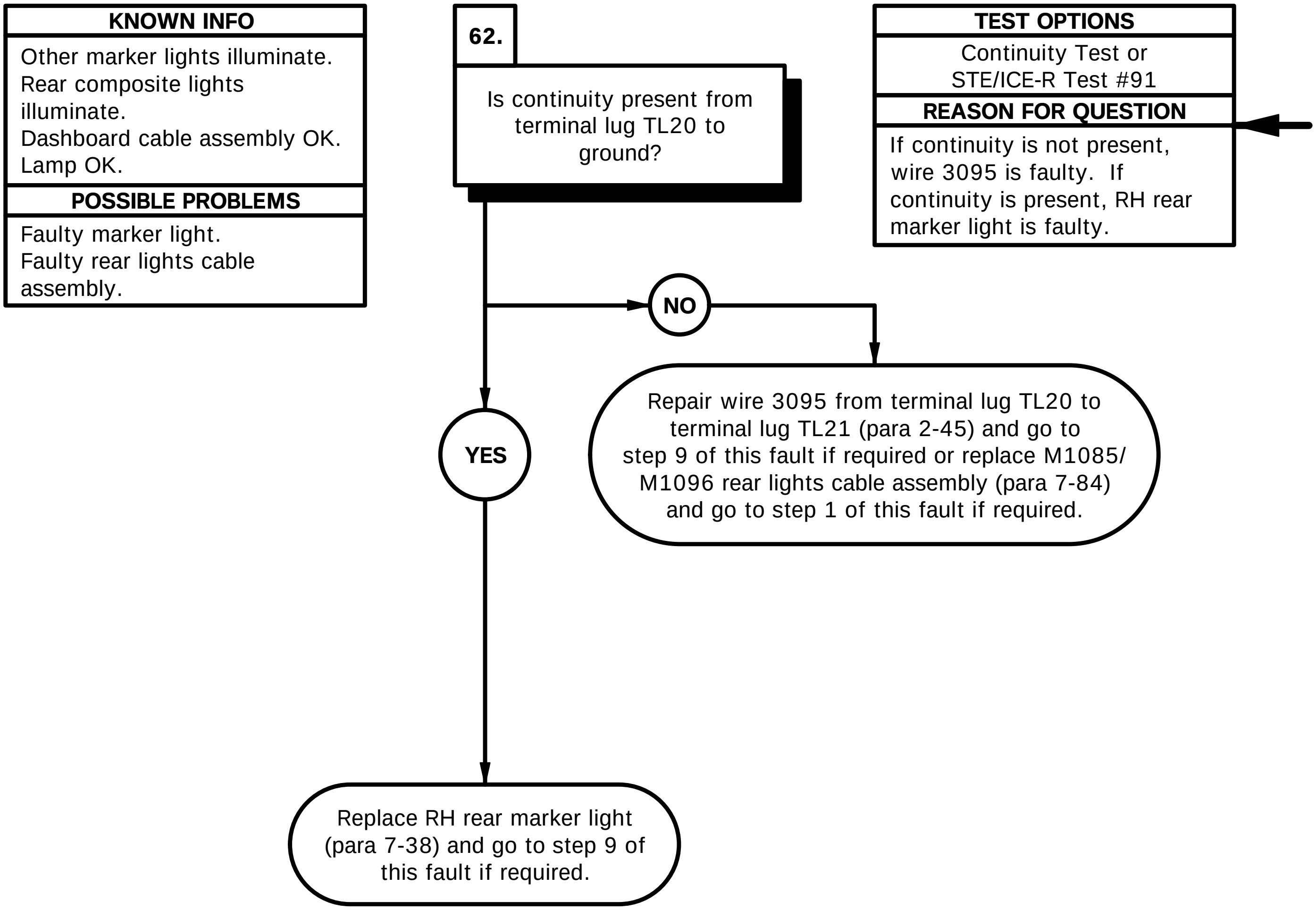
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect RH rear marker light connector from connector P89.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P89.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, go to step 64 of this fault.

e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

62.

Is continuity present from terminal lug TL20 to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3095 is faulty. If continuity is present, RH rear marker light is faulty.

NO

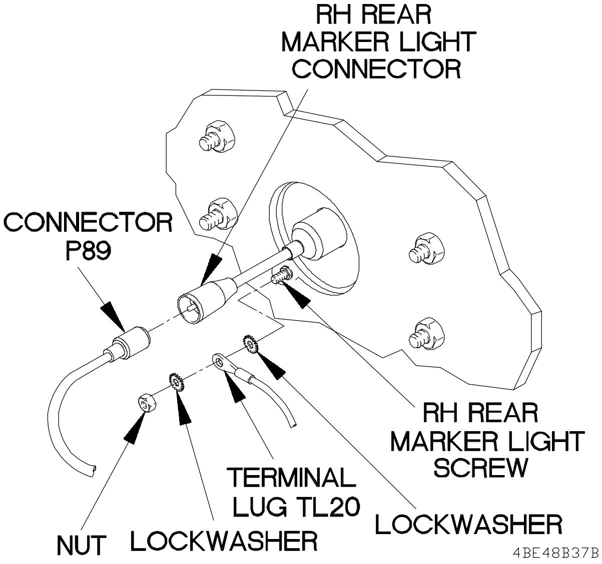
Repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45) and go to step 9 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault if required.

YES

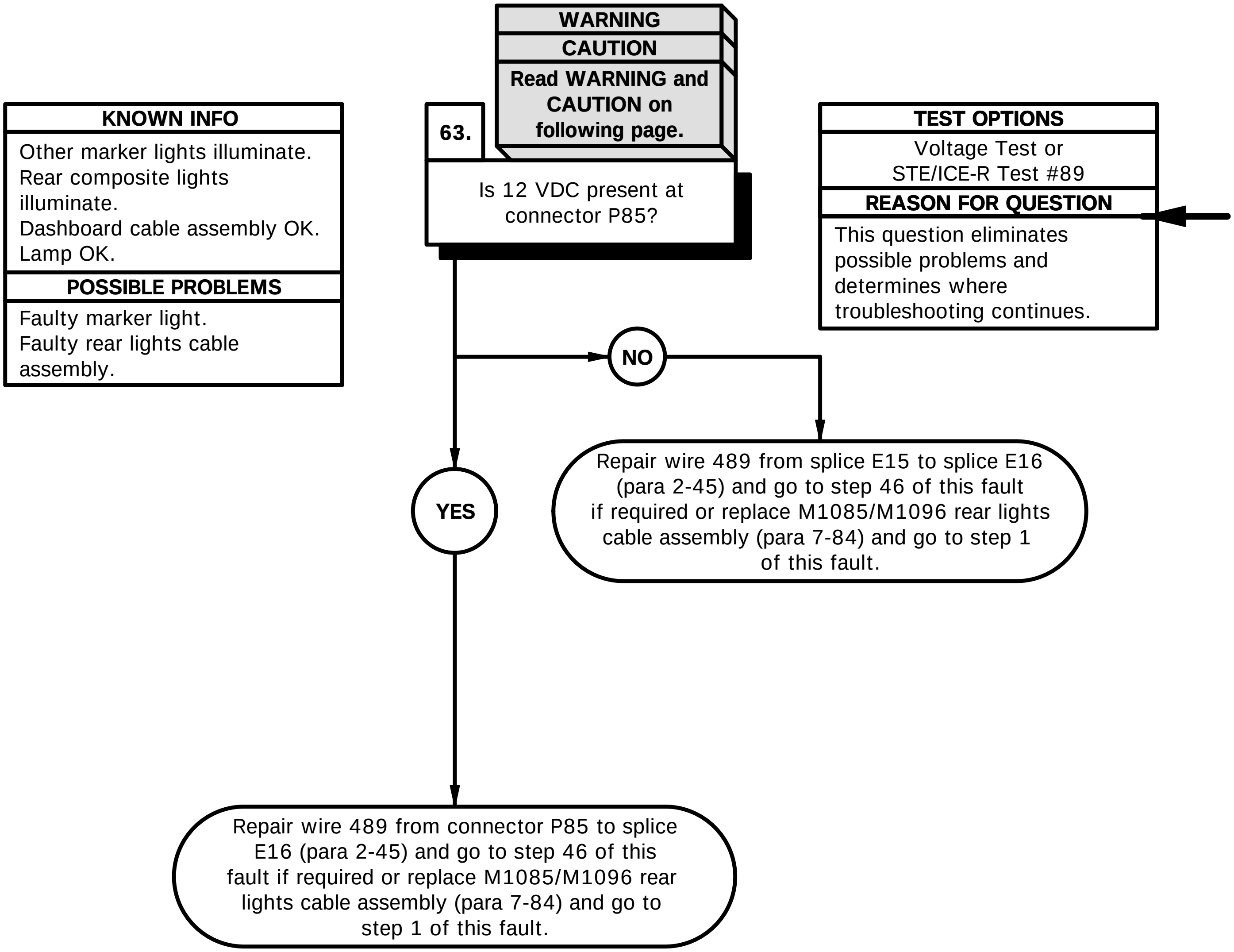
Replace RH rear marker light (para 7-38) and go to step 9 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL20, and lockwasher from RH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL20.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3095 from terminal lug TL20 to terminal lug TL21 (para 2-45) and go to step 9 of this fault if required or replace M1085/ M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.
(6) If continuity is present, replace RH rear marker light (para 7-38) and go to step 9 of this fault if required.
(7) Install lockwasher, terminal lug TL20, lockwasher, and nut on RH rear marker light screw.
(8) Connect RH rear marker light connector to connector P89.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

63. Is 12 VDC present at connector P85?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Repair wire 489 from splice E15 to splice E16 (para 2-45) and go to step 46 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES

Repair wire 489 from connector P85 to splice E16 (para 2-45) and go to step 46 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets wo multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

NOTE

Remove plastic cable ties as required.

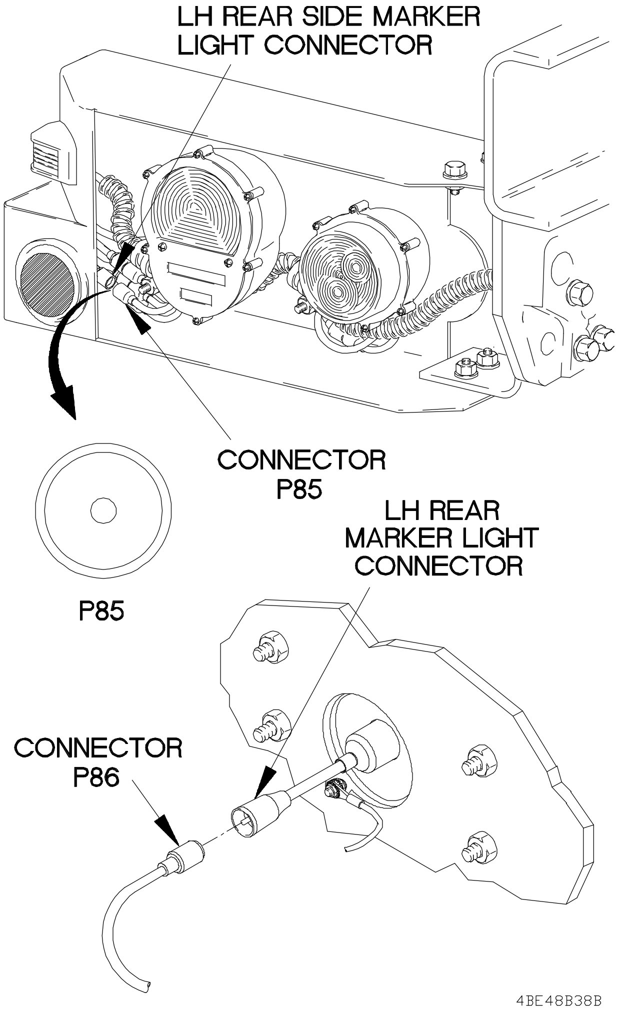
(1) Disconnect connector P85 from LH rear side marker light connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P85.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from splice E15 to splice E16 (para 2-45) and go to step 46 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

(8) If 12 VDC is present, repair wire 489 from connector P85 to splice E16 (para 2-45) and go to step 46 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of of this fault.

NOTE

Install plastic cable ties as required.

(9) Connect LH rear side marker light connector to connector P85.
(10) Connect LH marker light connector to connector P86.



e48B. M1085/M1086/M1089/M1096 INTERMEDIATE, SIDE, AND/OR REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Rear composite lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

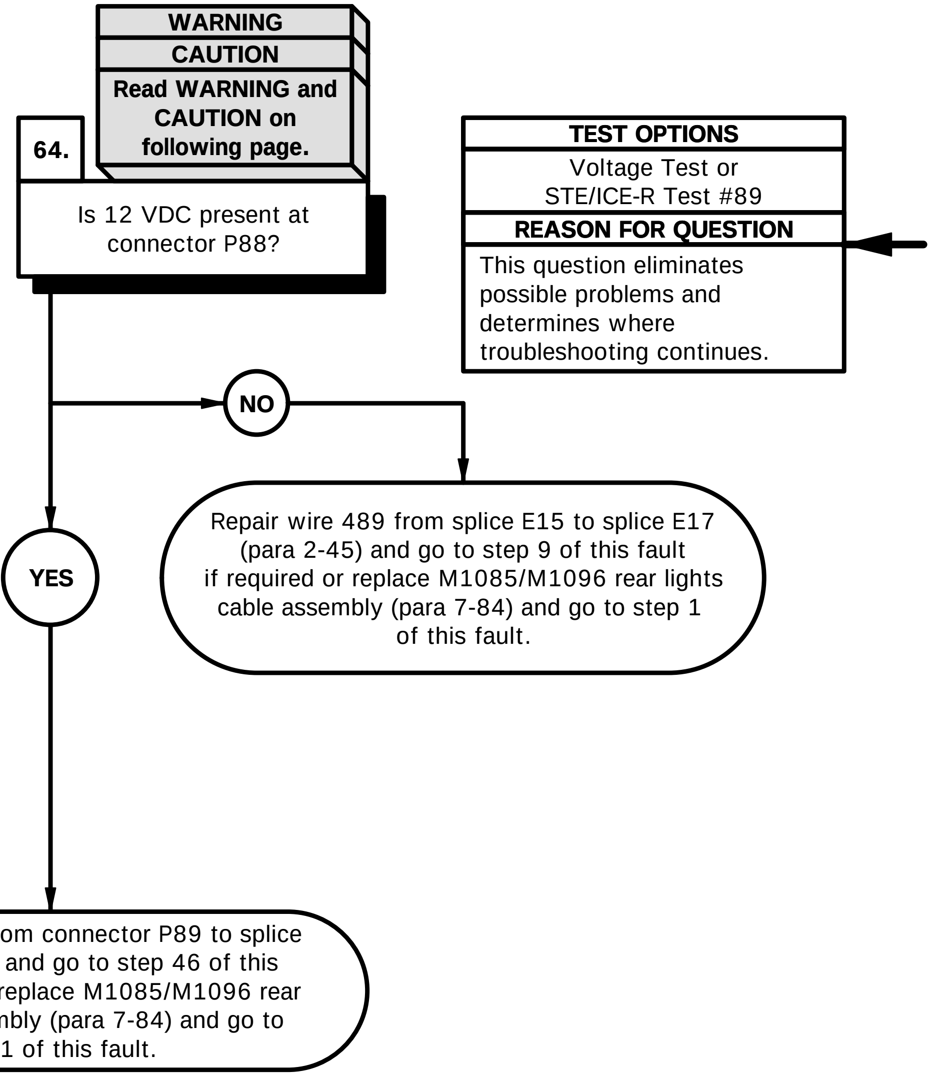
Faulty marker light.
Faulty rear lights cable assembly.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

64. Is 12 VDC present at connector P88?

NO: Repair wire 489 from splice E15 to splice E17 (para 2-45) and go to step 9 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

YES: Repair wire 489 from connector P89 to splice E17 (para 2-45) and go to step 46 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

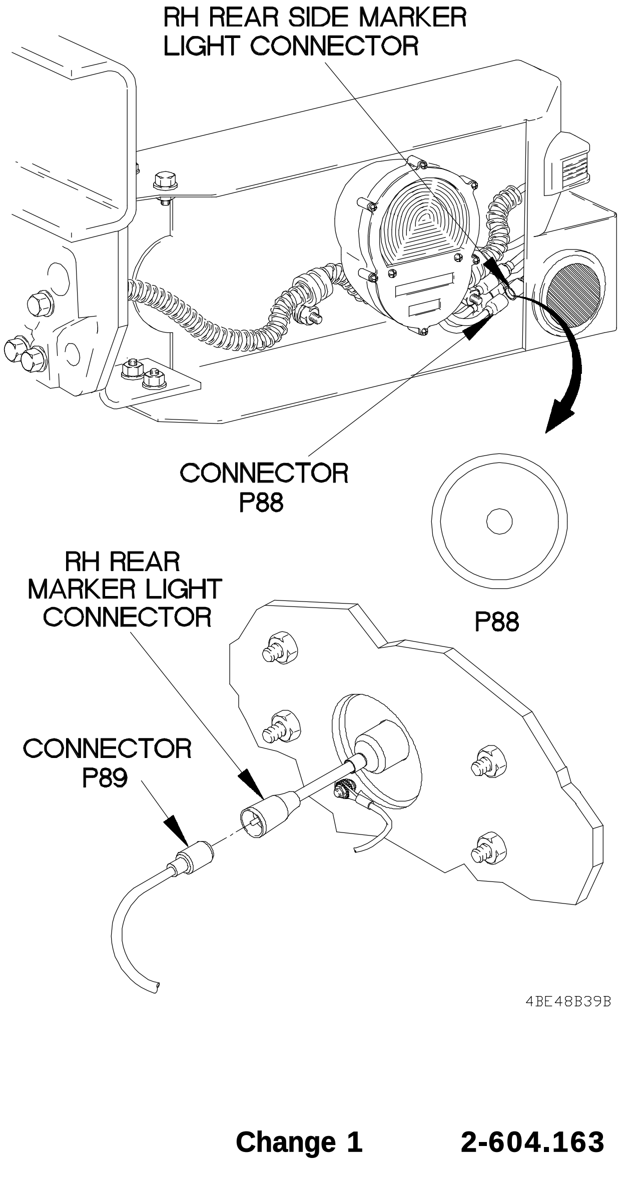
CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
NOTE Remove plastic cable ties as required. (1) Disconnect connector P88 from RH rear side marker light connector. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to connector P88. (4) Connect negative (-) probe of multimeter to ground. (5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (6) Position main light switch to OFF (TM 9-2320-366-10-1). (7) If 12 VDC is not present, repair wire 489 from splice E15 to splice E17 (para 2-45) and go to step 9 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault. (8) If 12 VDC is present, repair wire 489 from connector P89 to splice E17 (para 2-45) and go to step 46 of this fault if required or replace M1085/M1096 rear lights cable assembly (para 7-84) and go to step 1 of this fault. **NOTE** Install plastic cable ties as required. (9) Connect RH rear side marker light connector to connector P88. (10) Connect RH rear marker light connector to connector P89.



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE

INITIAL SETUP

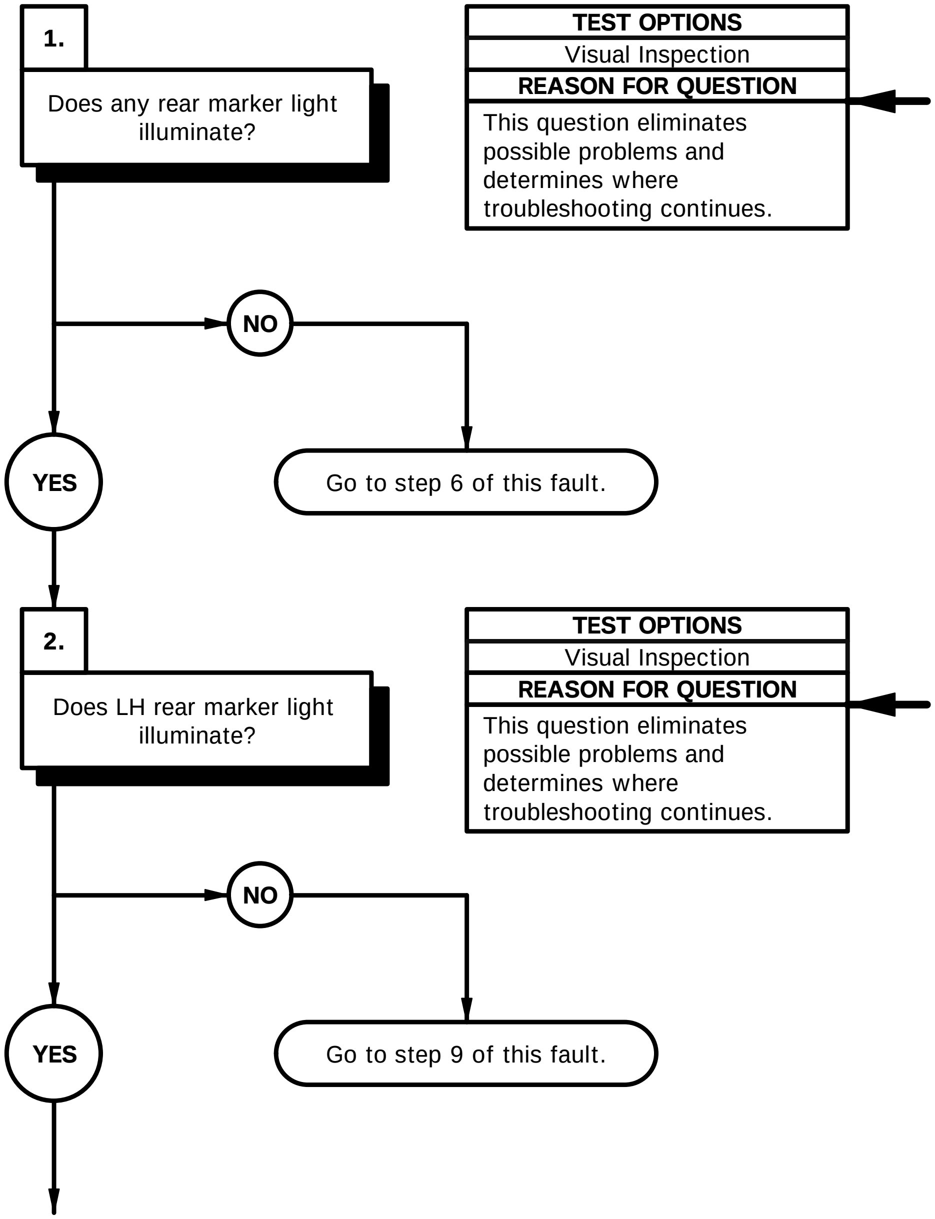
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (4) (Item 82, Appendix G)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO
Other marker lights illuminate.
POSSIBLE PROBLEMS
Faulty lamp. Faulty marker light. Faulty rear lights cable assembly. Faulty dashboard cable assembly.

1. Does any rear marker light illuminate?

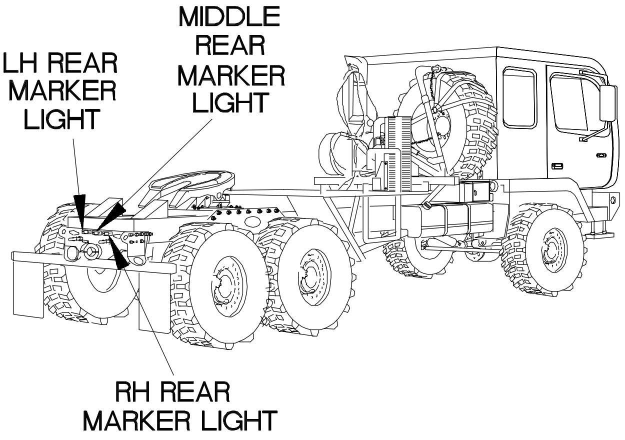
TEST OPTIONS
Visual Inspection
REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

KNOWN INFO
Other marker lights illuminate. Dashboard cable assembly OK.
POSSIBLE PROBLEMS
Faulty lamp. Faulty marker light. Faulty rear lights cable assembly.

2. Does LH rear marker light illuminate?

TEST OPTIONS
Visual Inspection
REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Note rear marker light(s) that do not illuminate.
(3) If all rear marker lights do not illuminate, go to step 6 of this fault.
(4) Position main light switch to OFF (TM 9-2320-366-10-1).



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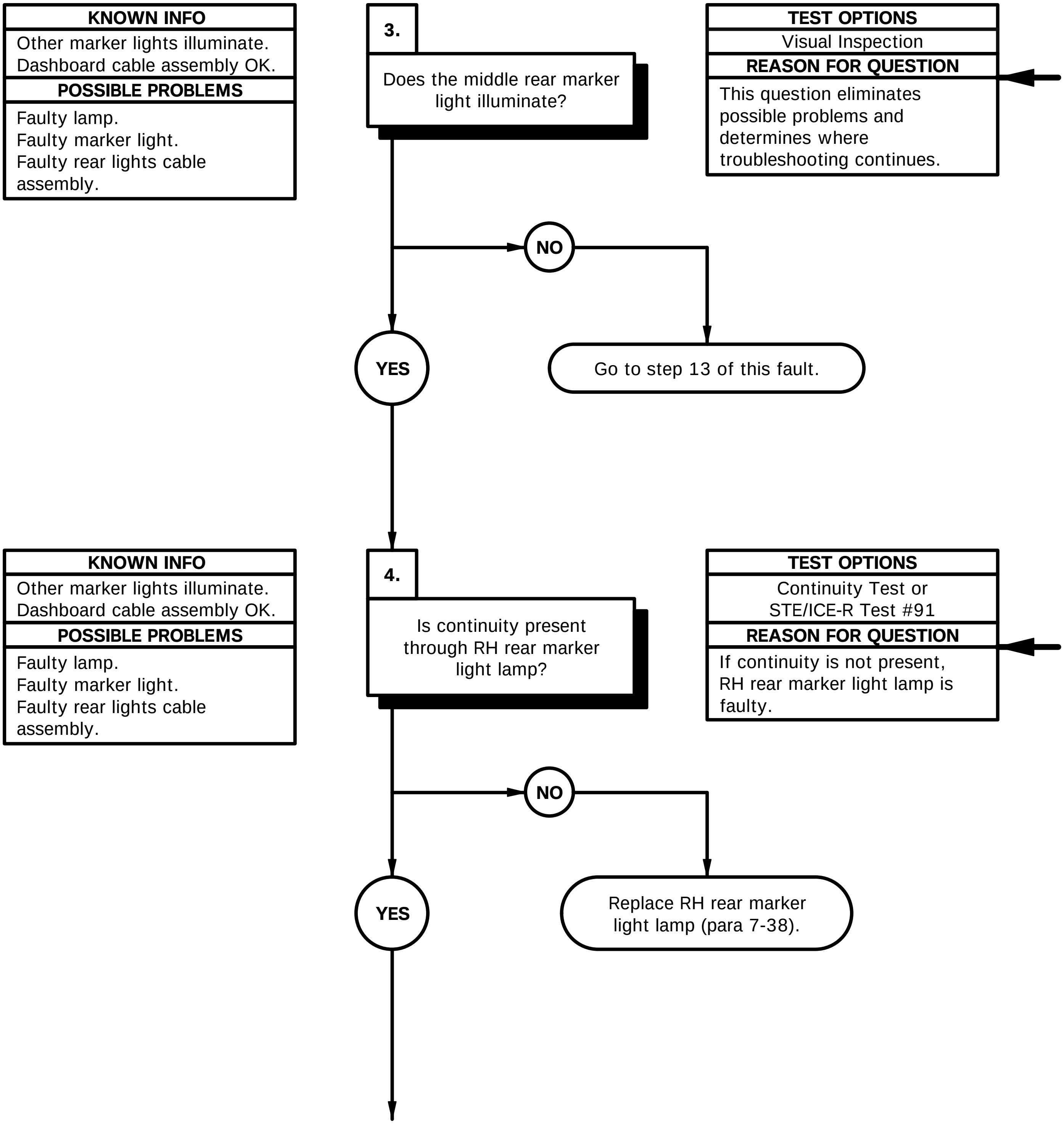
If LH rear marker light does not illuminate, go to step 9 of this fault.

e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

3. Does the middle rear marker light illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 13 of this fault.

KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.

4. Is continuity present through RH rear marker light lamp?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

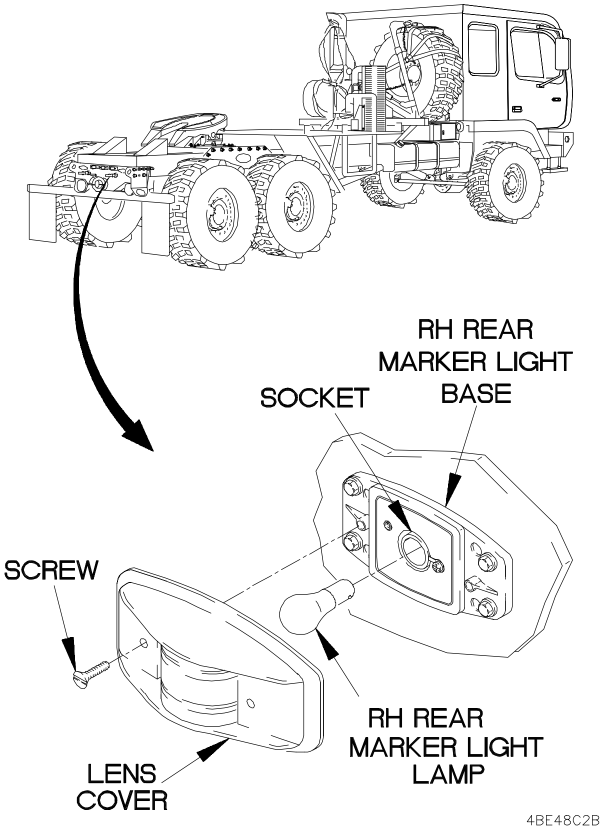
If continuity is not present, RH rear marker light lamp is faulty.

Replace RH rear marker light lamp (para 7-38).

If middle rear marker light does not illuminate, go to step 13 of this fault.

CONTINUITY TEST

(1) Remove two screws and lens cover from RH rear marker light base.
(2) Remove RH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace RH rear marker light lamp (para 7-38).
(6) Install RH rear marker light lamp in socket.
(7) Install lens cover on RH rear marker light base with two screws.



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

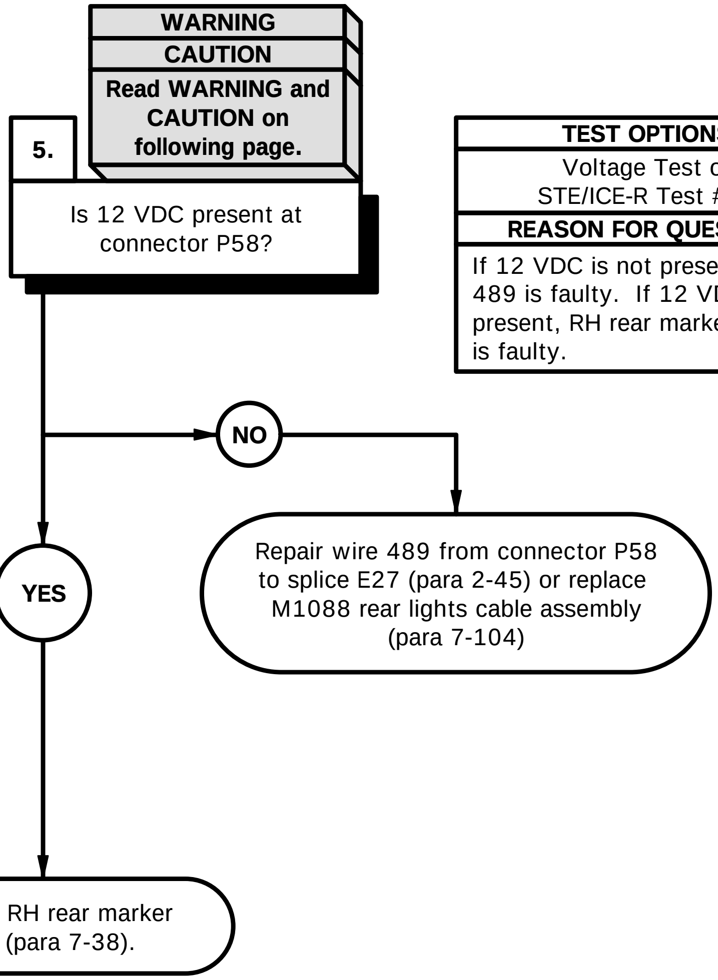
Faulty marker light.
Faulty rear lights cable assembly.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, RH rear marker light is faulty.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

5. Is 12 VDC present at connector P58?

NO: Repair wire 489 from connector P58 to splice E27 (para 2-45) or replace M1088 rear lights cable assembly (para 7-104)

YES: Replace RH rear marker light (para 7-38).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

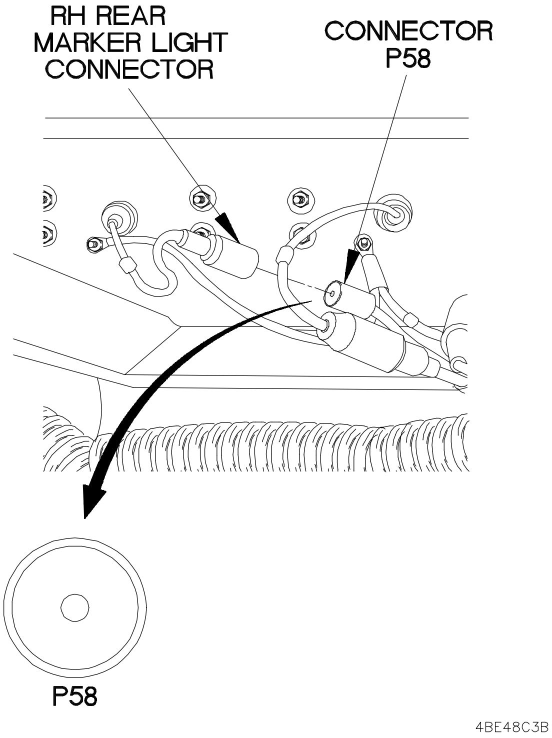
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

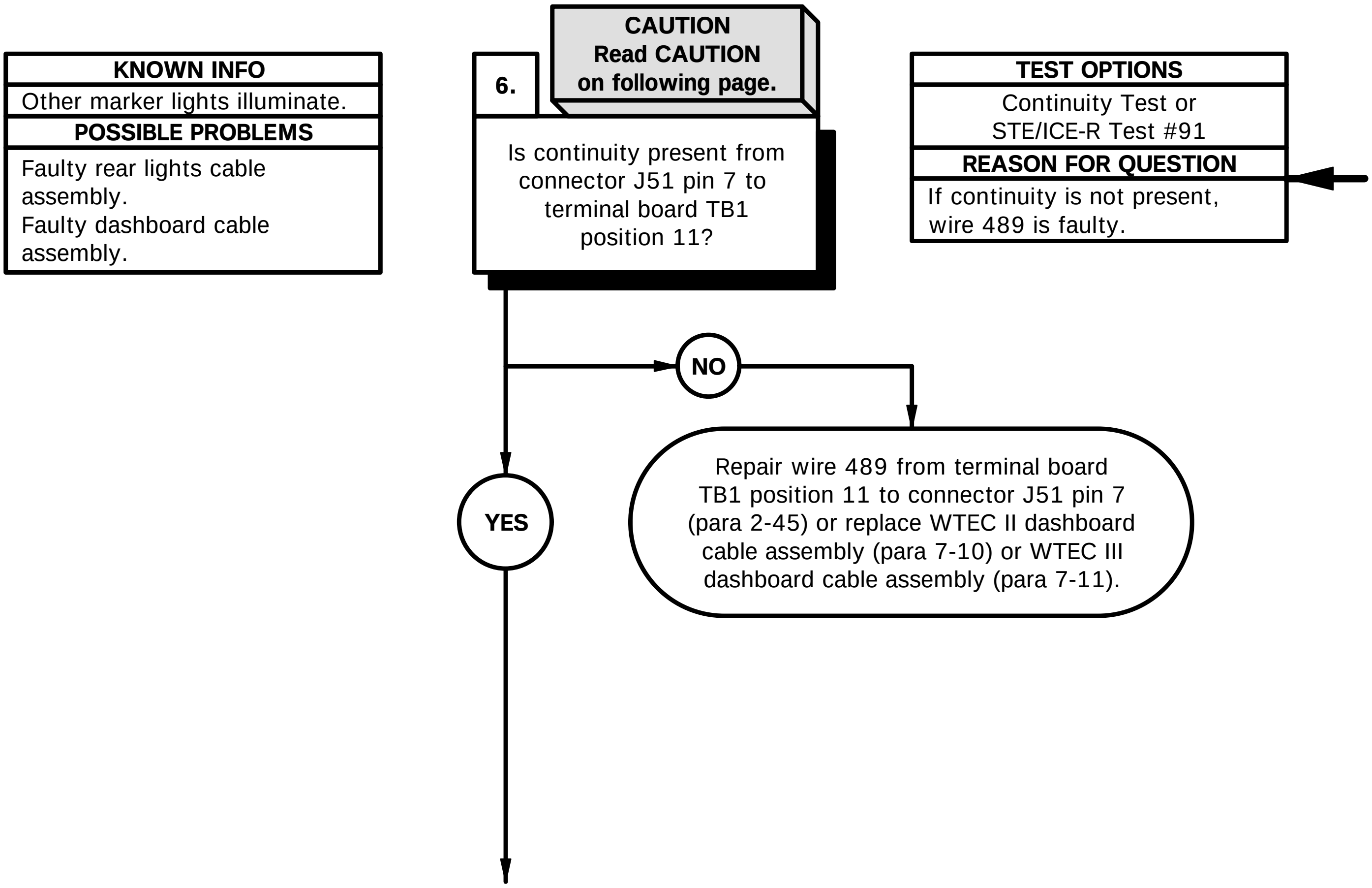
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect RH rear marker light connector from connector P58.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P58.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P58 to splice E27 (para 2-45) or replace M1088 rear lights cable assembly (para 7-104).
(8) If 12 VDC is present, replace RH rear marker light (para 7-38).
(9) Connect RH rear marker light connector to connector P58.



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.

6.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J51 pin 7 to terminal board TB1 position 11?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 489 is faulty.

NO

Repair wire 489 from terminal board TB1 position 11 to connector J51 pin 7 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

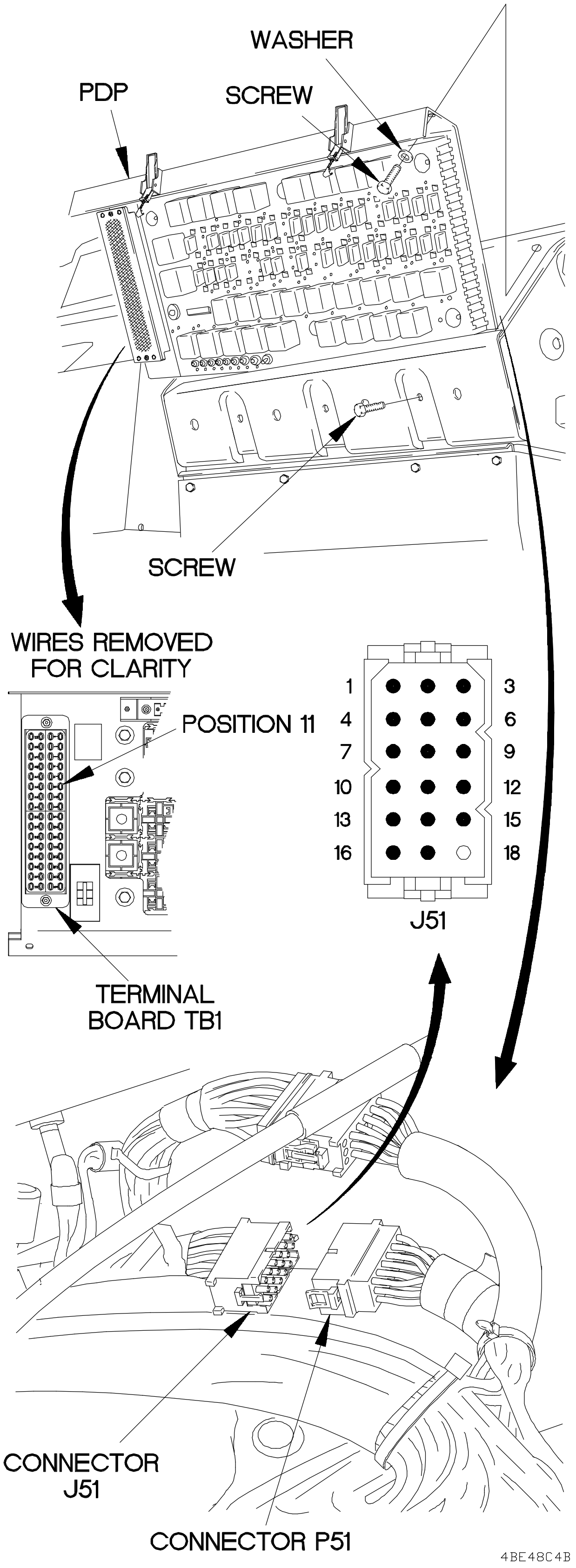
CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

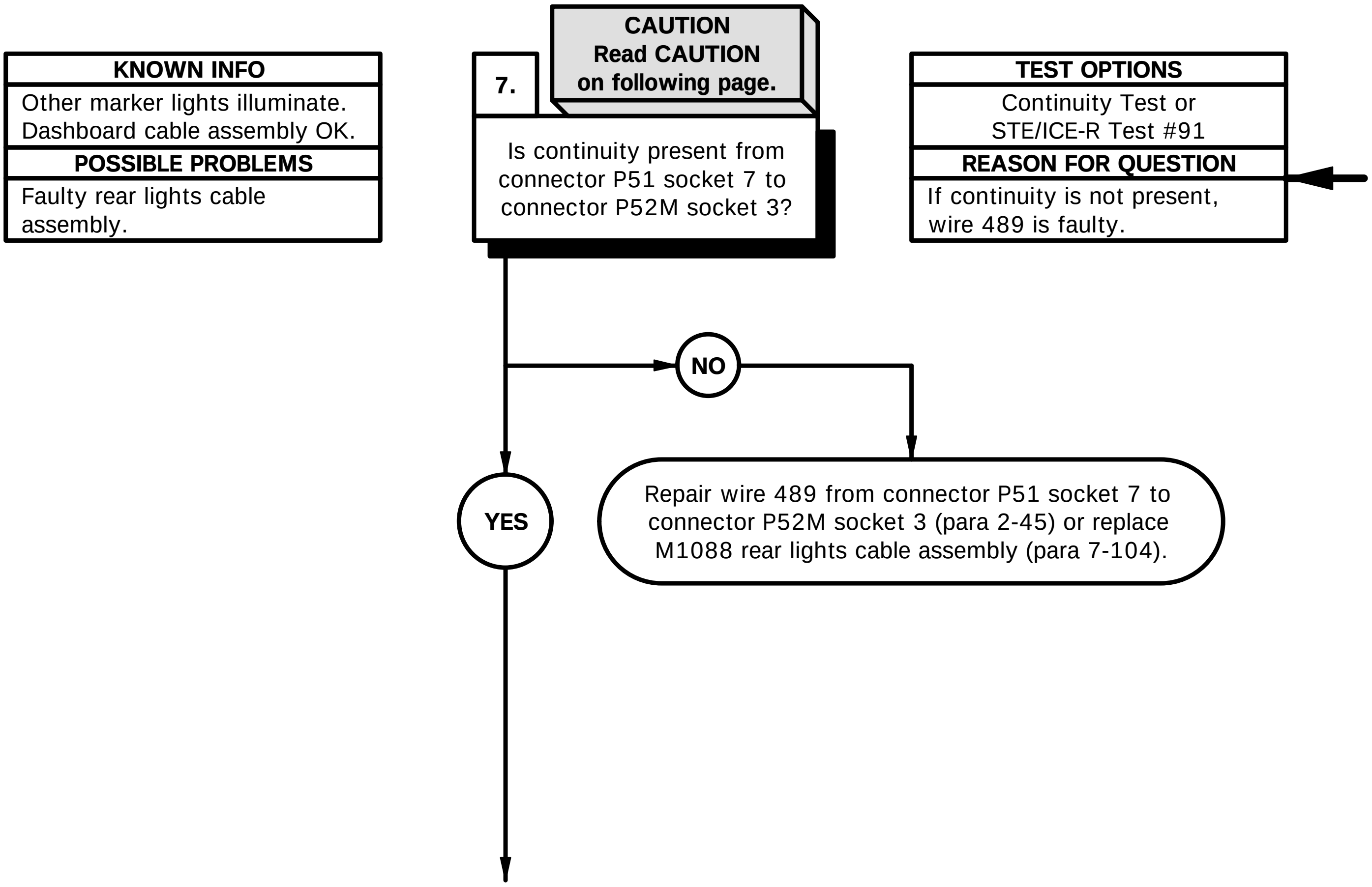
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove PDP cover (para 16-2).
(3) Remove three screws and washers from PDP.
(4) Remove three screws from PDP.
(5) Lift PDP outward to gain access.
(6) Disconnect connector P51 from connector J51.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector J51 pin 7.
(9) Connect negative (-) probe of multimeter to terminal board TB1 position 11 and note reading on multimeter.
(10) If continuity is not present, repair wire 489 from terminal board TB1 position 11 to connector J51 pin 7 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

CAUTION
Read CAUTION on following page.

7.

Is continuity present from connector P51 socket 7 to connector P52M socket 3?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P51 socket 7 to connector P52M socket 3 (para 2-45) or replace M1088 rear lights cable assembly (para 7-104).

YES

CAUTION

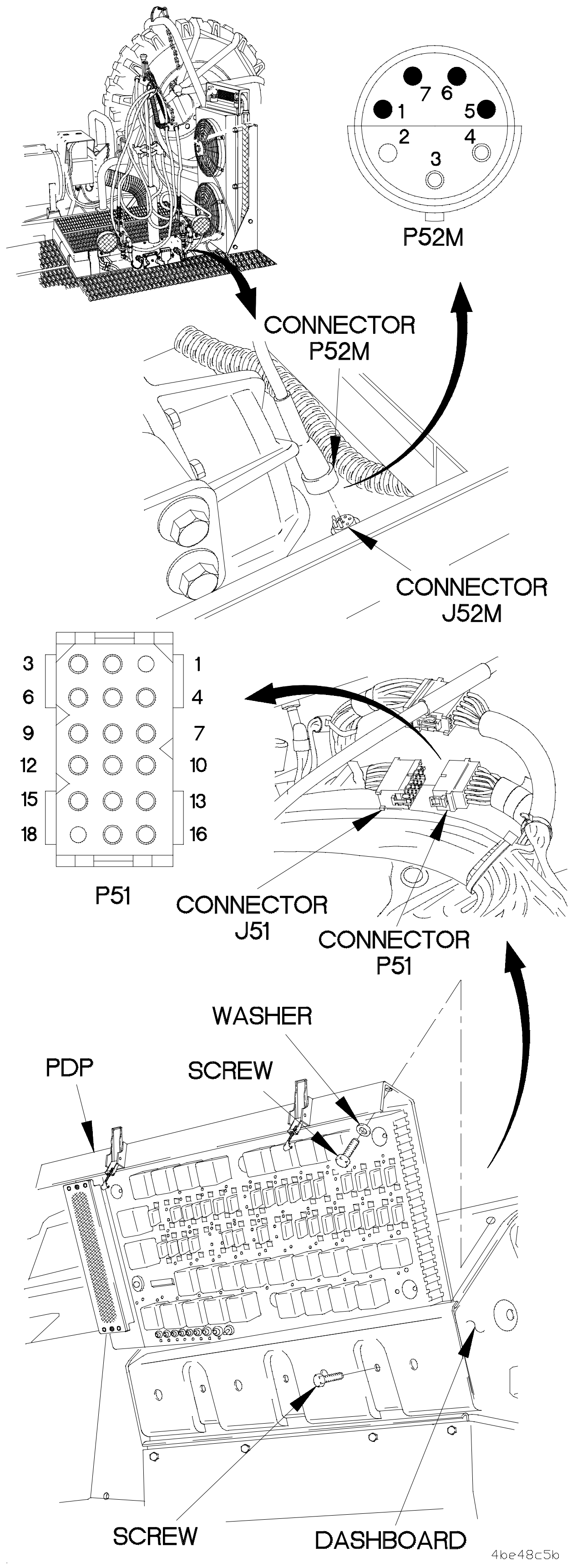
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

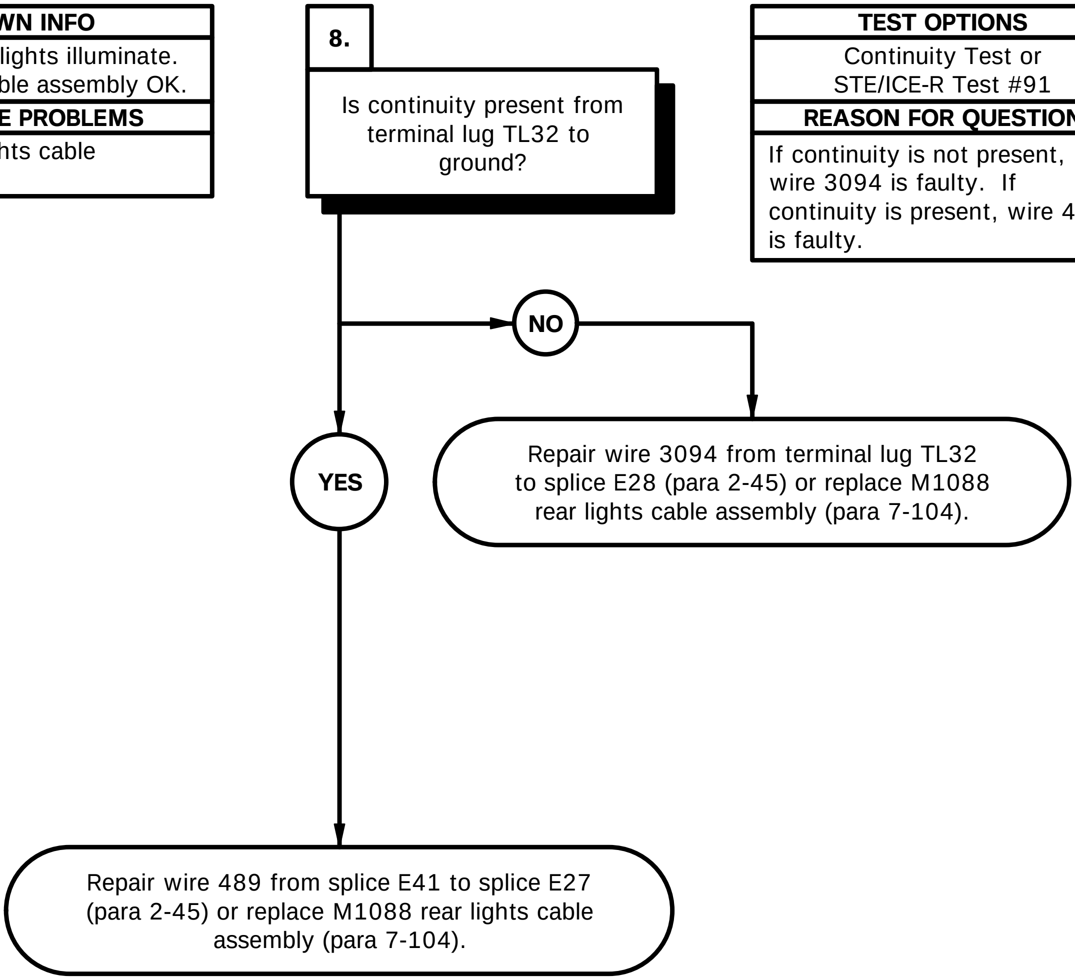
(1) Disconnect connector P52M from connector J52M.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P51 socket 7.
(4) Connect negative (-) probe of multimeter to connector P52M socket 3 and note reading on multimeter.
(5) If continuity is not present, repair wire 489 from connector P51 socket 7 to P52M socket 3 or replace M1088 rear lights cable assembly (7-104).
(6) Connect connector J52M to connector P52M.
(7) Connect connector J51 to connector P51.
(8) Install PDP on dashboard with three screws.
(9) Install three washers and screws in PDP.
(10) Install PDP cover (para 16-2).
(11) Connect batteries (para 7-57).



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

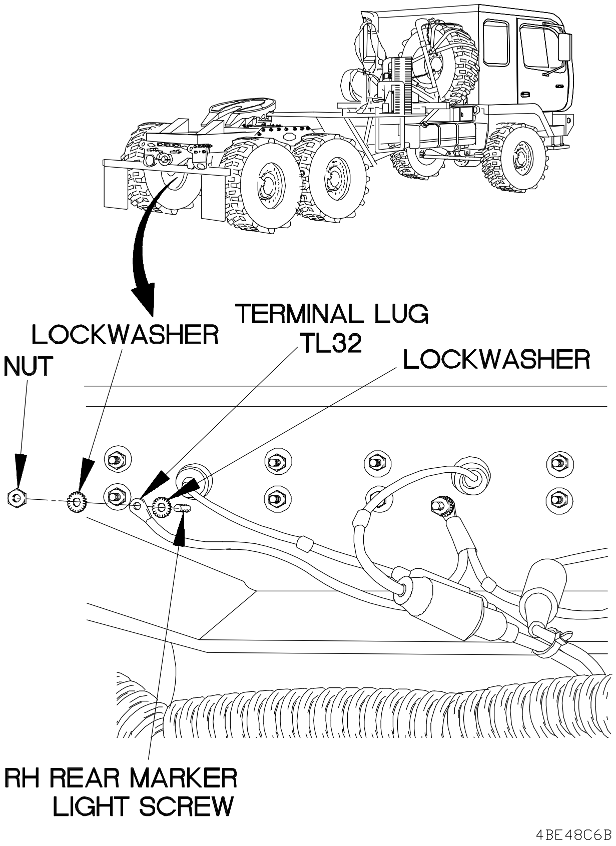
KNOWN INFO
Other marker lights illuminate. Dashboard cable assembly OK.
POSSIBLE PROBLEMS
Faulty rear lights cable assembly.

TEST OPTIONS
Continuity Test or STE/ICE-R Test #91
REASON FOR QUESTION
If continuity is not present, wire 3094 is faulty. If continuity is present, wire 489 is faulty.



CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL32, and lockwasher from RH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL32.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL32 to splice E28 (para 2-45) or replace M1088 rear lights cable assembly (7-104).
(6) If continuity is present, repair wire 489 from splice E41 to splice E27 (para 2-45) or replace M1088 rear lights cable assembly (para 7-104).
(7) Install lockwasher, terminal lug TL32, lockwasher, and nut on RH rear marker light screw.



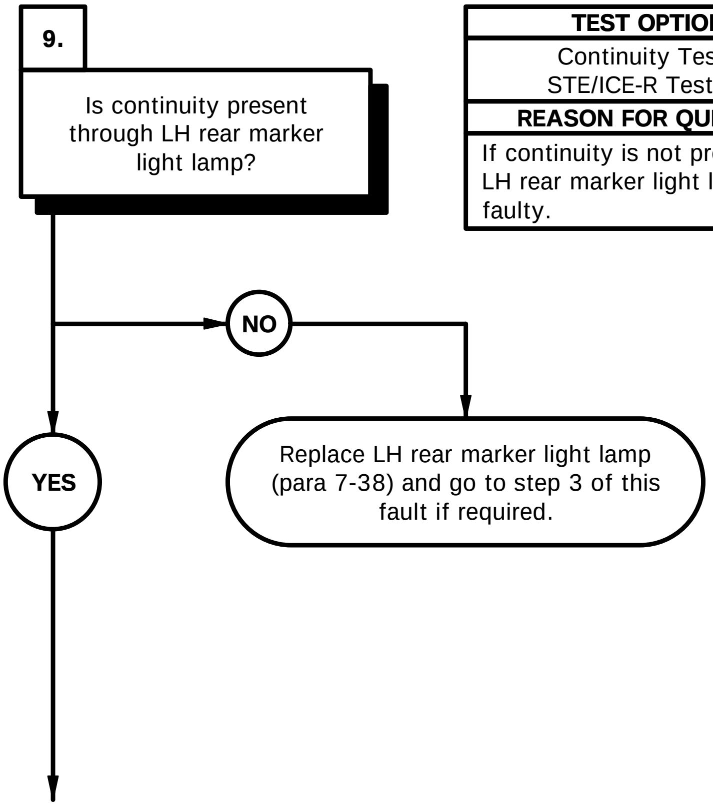
e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



9. Is continuity present through LH rear marker light lamp?

Replace LH rear marker light lamp (para 7-38) and go to step 3 of this fault if required.

TEST OPTIONS

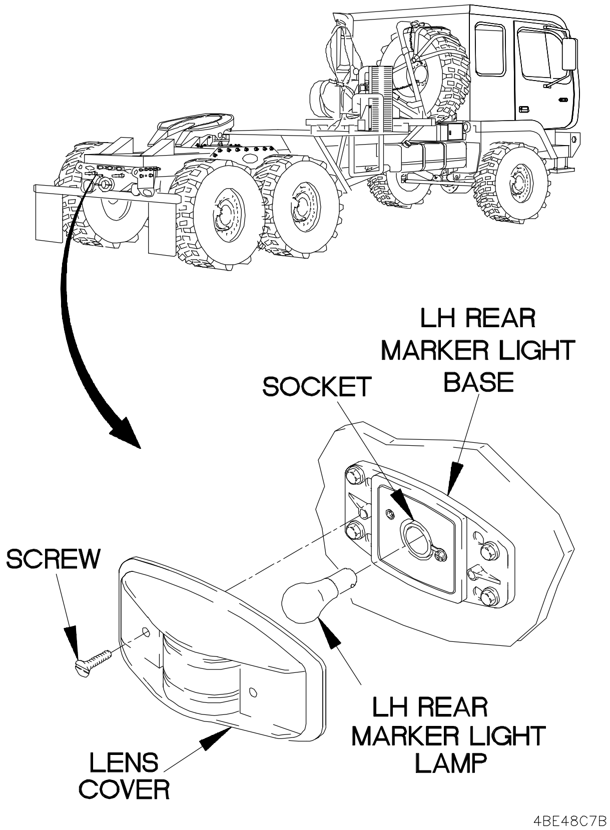
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

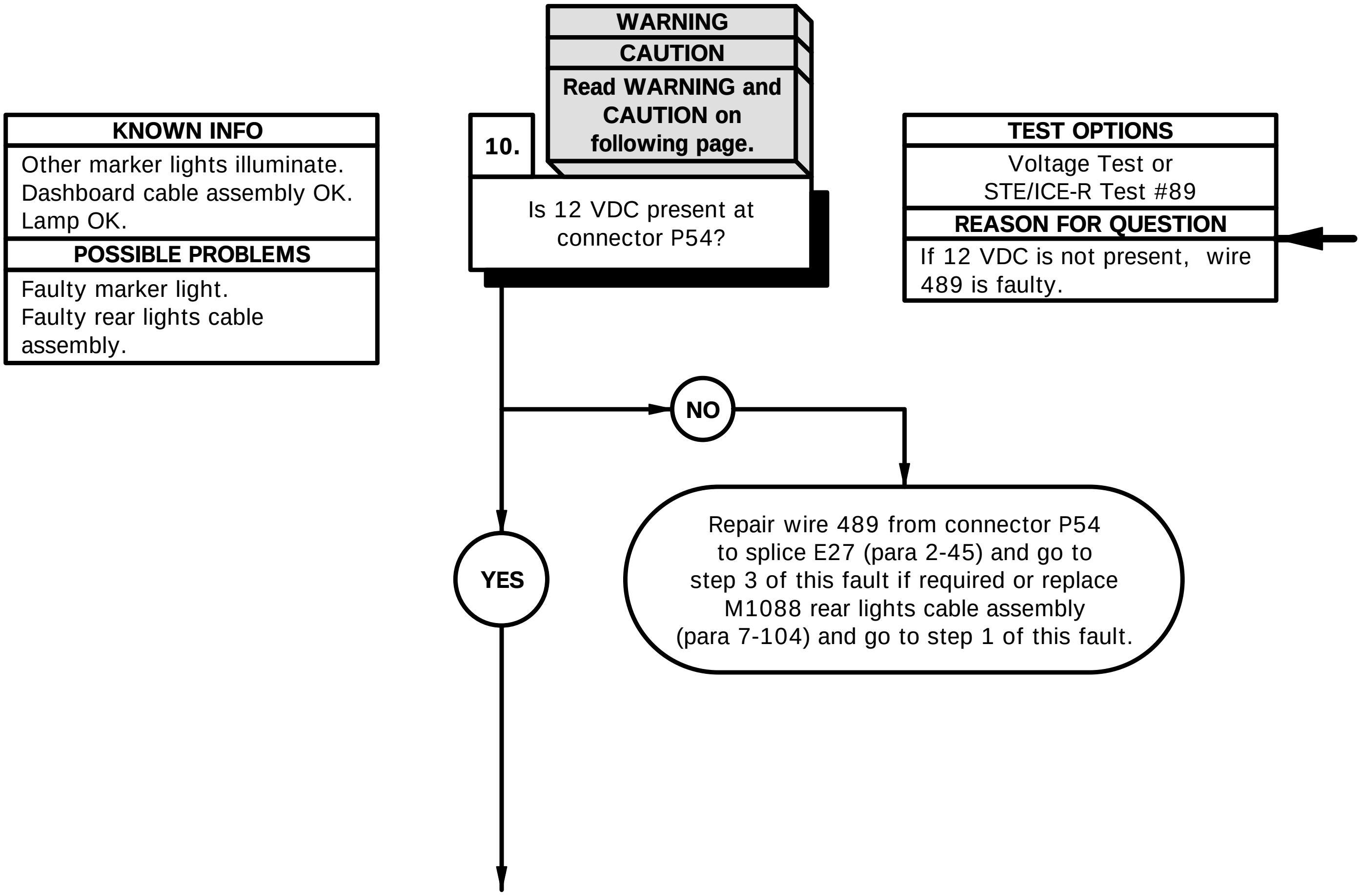
If continuity is not present, LH rear marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from LH rear marker light base.
(2) Remove LH rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH rear marker light lamp (para 7-38) and go to step 3 of this fault if required.
(6) Install LH rear marker light lamp in socket.
(7) Install lens cover on LH rear marker light base with two screws.



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

10. Is 12 VDC present at connector P54?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty.

NO

Repair wire 489 from connector P54 to splice E27 (para 2-45) and go to step 3 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) and go to step 1 of this fault.

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

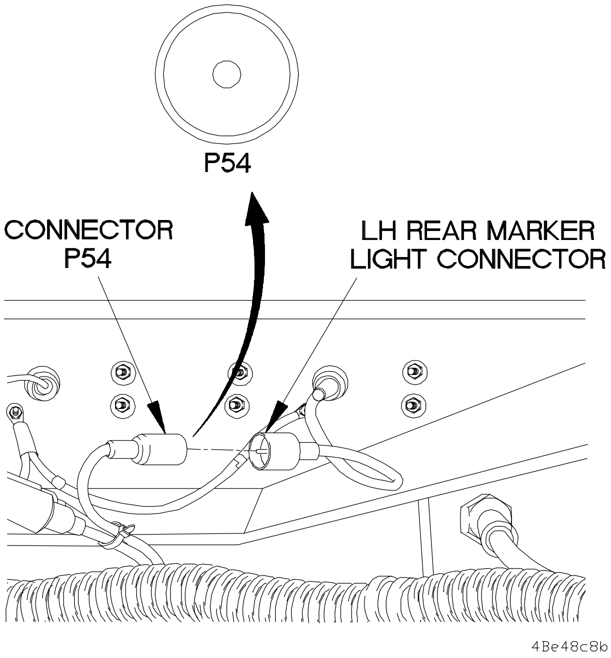
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

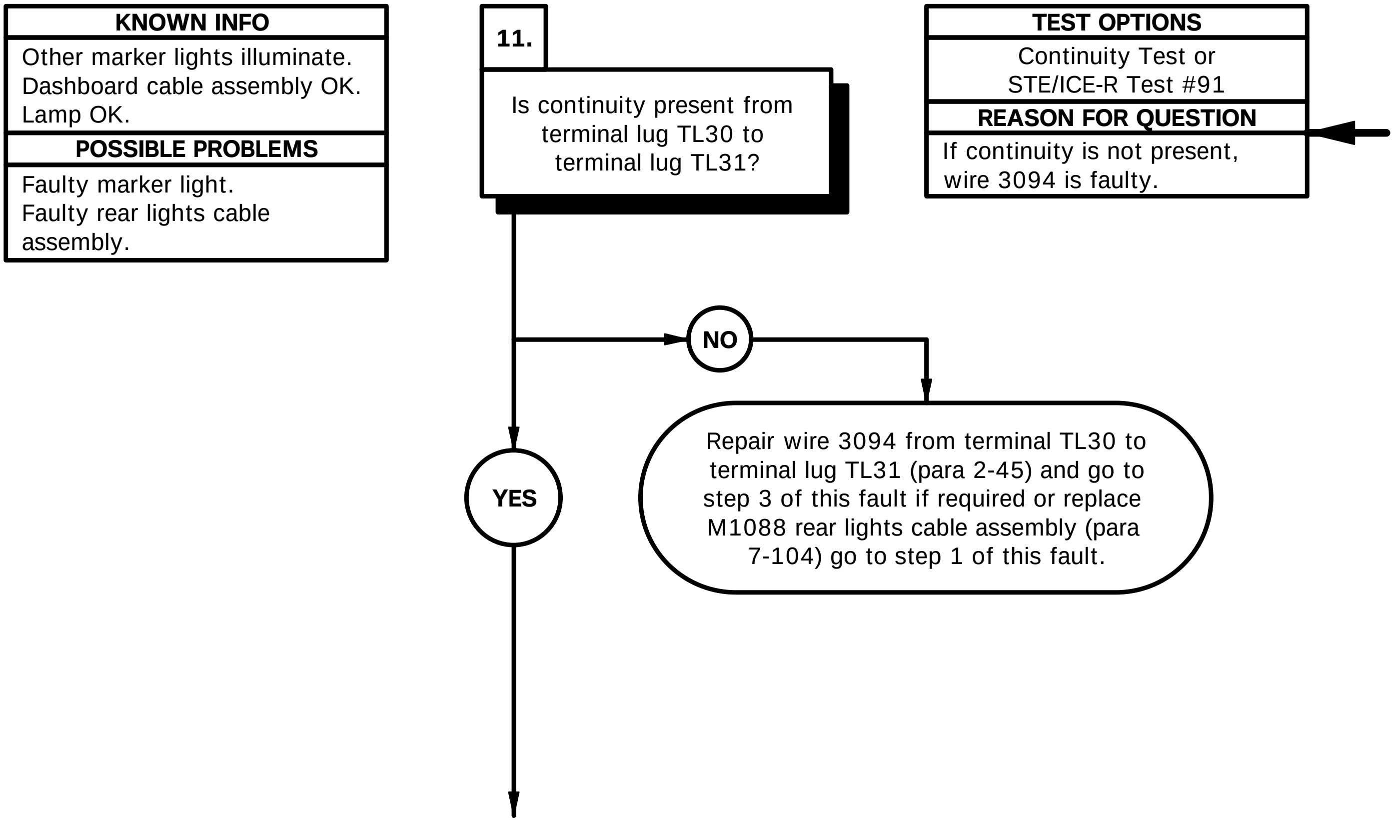
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect LH rear marker light connector from connector P54.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P54.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P54 to splice E27 (para 2-45) and go to step 3 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) and go to step 1 of this fault.
(8) Connect LH rear marker light connector to connector P54.



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

11.

Is continuity present from terminal lug TL30 to terminal lug TL31?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

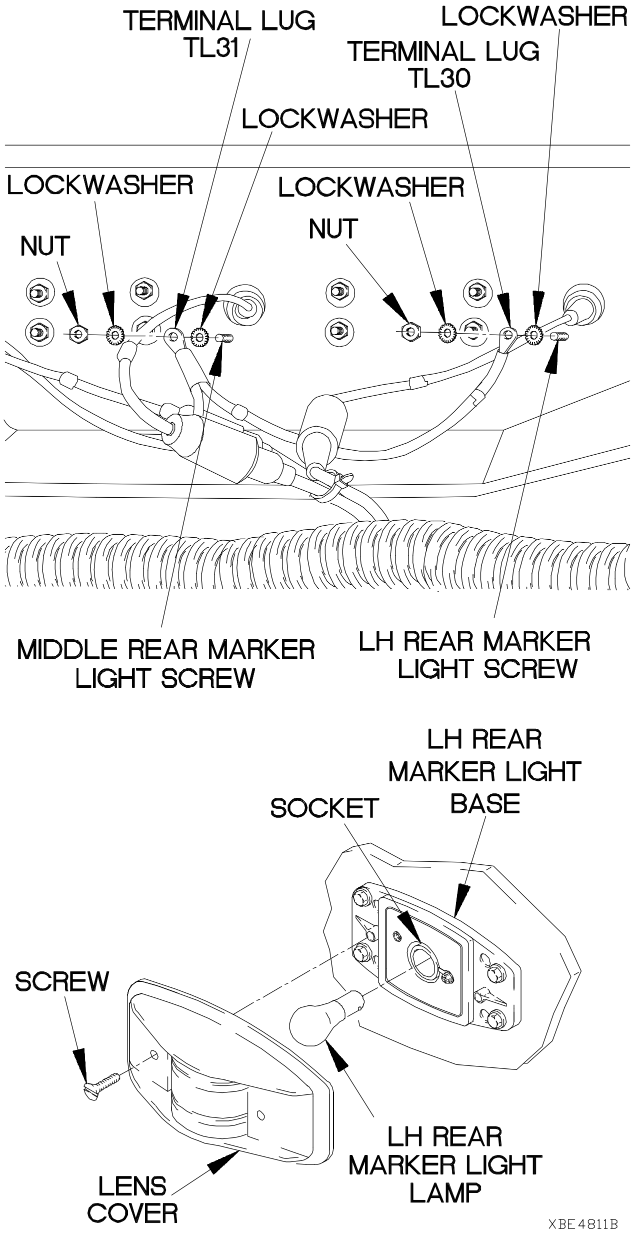
REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty.

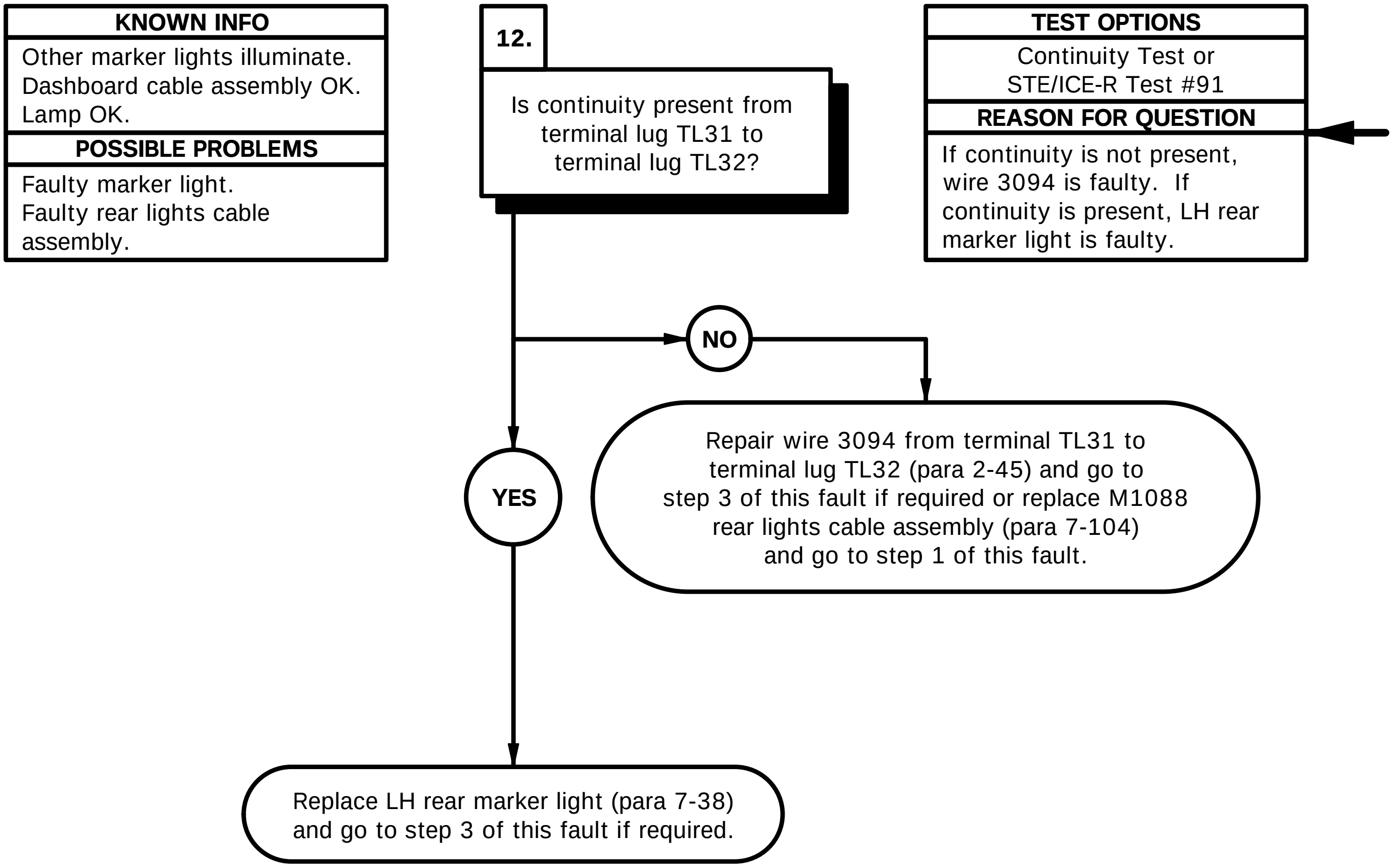
Repair wire 3094 from terminal TL30 to terminal lug TL31 (para 2-45) and go to step 3 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) go to step 1 of this fault.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL30, and lockwasher from LH rear marker light screw. Discard lockwashers.
(2) Remove nut, lockwasher, terminal lug TL31, and lockwasher from middle rear marker light screw. Discard lockwashers.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to terminal lug TL30.
(5) Connect negative (-) probe of multimeter to terminal lug TL31 and note reading on multimeter.
(6) If continuity is not present, repair wire 3094 from terminal TL30 to terminal lug TL31 (para 2-45) and go to step 3 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) and go to step 1 of this fault.
(7) Install lockwasher, terminal lug TL30, lockwasher, and nut on LH rear maker light screw.
(8) Install LH rear marker light lamp in socket.
(9) Install lens cover on LH rear marker light base with two screws.



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

12.

Is continuity present from terminal lug TL31 to terminal lug TL32?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 is faulty. If continuity is present, LH rear marker light is faulty.

NO

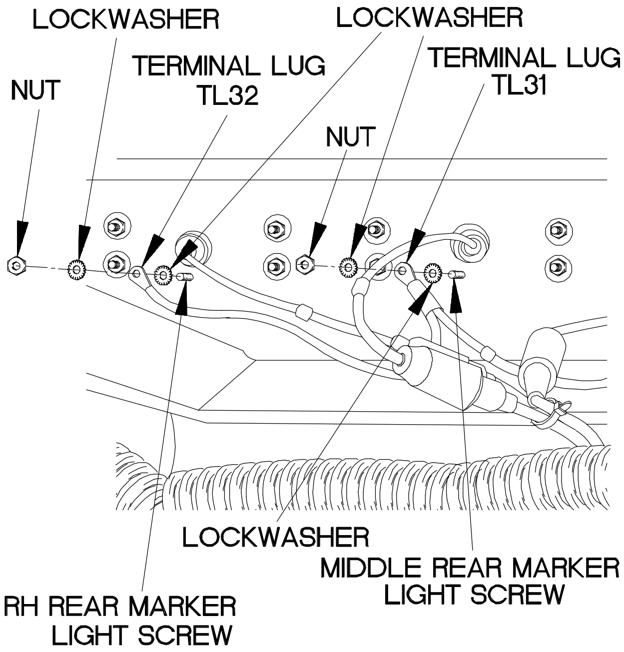
Repair wire 3094 from terminal TL31 to terminal lug TL32 (para 2-45) and go to step 3 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) and go to step 1 of this fault.

YES

Replace LH rear marker light (para 7-38) and go to step 3 of this fault if required.

CONTINUITY TEST

(1) Remove nut, lockwasher, terminal lug TL32, and lockwasher from RH rear marker light screw. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL31.
(4) Connect negative (-) probe of multimeter to terminal lug TL32 and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal TL31 to terminal lug TL32 (para 2-45) and go to step 3 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) and go to step 1 of this fault.
(6) If continuity is present, replace LH rear marker light (para 7-38) and go to step 3 of this fault if required.
(7) Install lockwasher, terminal lug TL31, lockwasher, and nut on middle rear marker light screw.
(8) Install lockwasher, terminal lug TL32, lockwasher, and nut on RH rear marker light screw.



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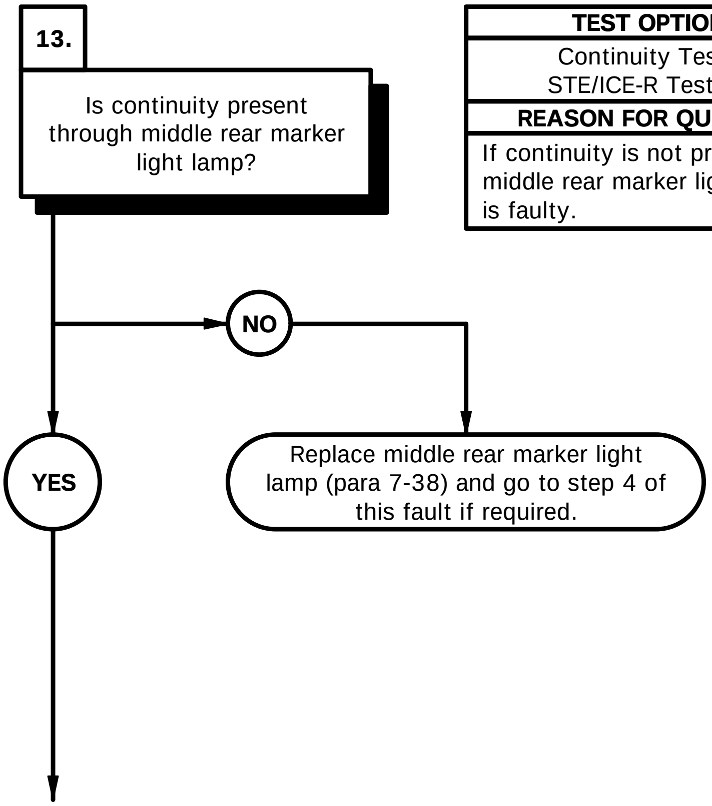
e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty marker light.
Faulty rear lights cable assembly.



TEST OPTIONS

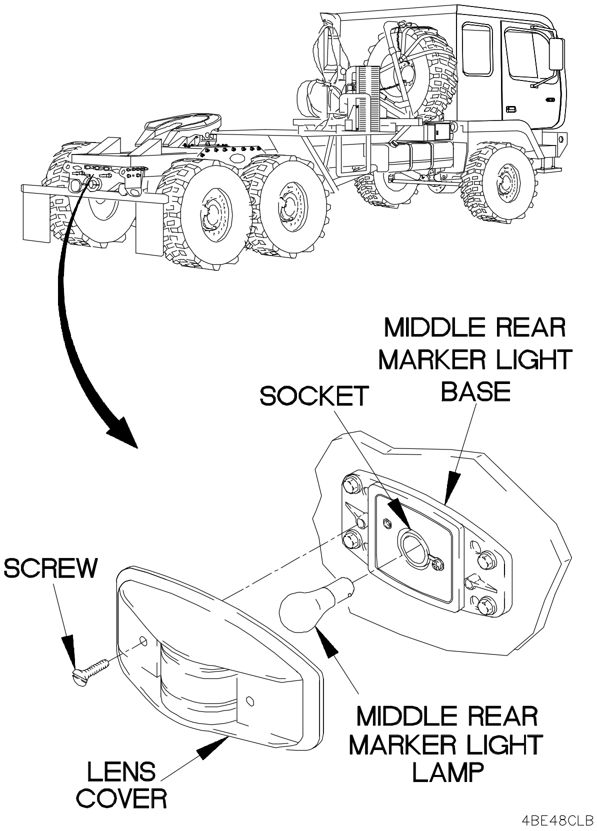
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

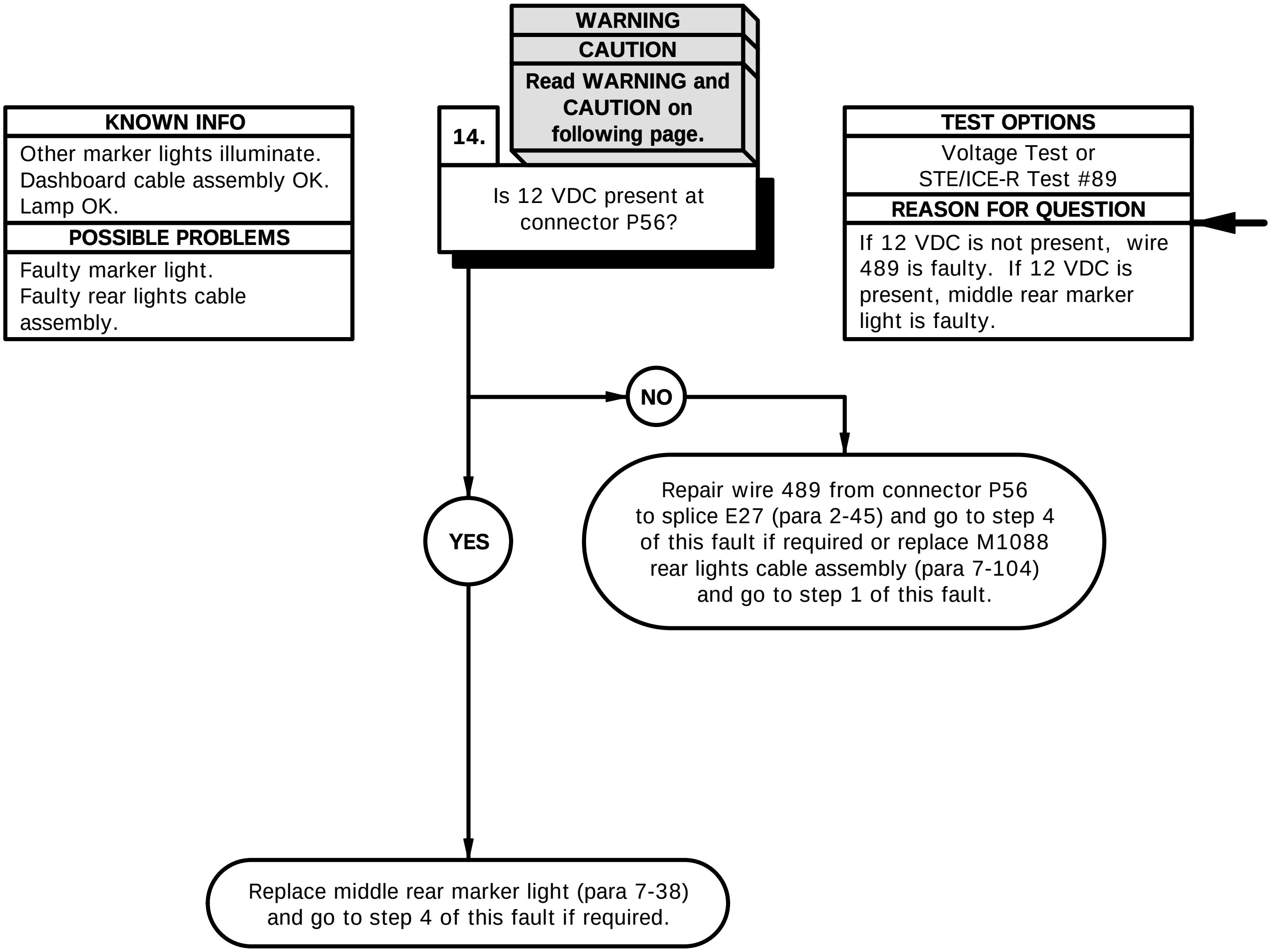
If continuity is not present, middle rear marker light lamp is faulty.

CONTINUITY TEST

(1) Remove two screws and lens cover from middle rear marker light base.
(2) Remove middle rear marker light lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH rear marker light lamp and note reading on multimeter.
(5) If continuity is not present, replace LH rear marker light lamp (para 7-38) and go to step 4 of this fault if required.
(6) Install middle rear marker light lamp in socket.
(7) Install lens cover on middle rear marker light base with two screws.



e48C. M1088 REAR MARKER LIGHT(S) DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other marker lights illuminate.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty marker light.
Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

14. Is 12 VDC present at connector P56?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 489 is faulty. If 12 VDC is present, middle rear marker light is faulty.

NO

Repair wire 489 from connector P56 to splice E27 (para 2-45) and go to step 4 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) and go to step 1 of this fault.

YES

Replace middle rear marker light (para 7-38) and go to step 4 of this fault if required.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

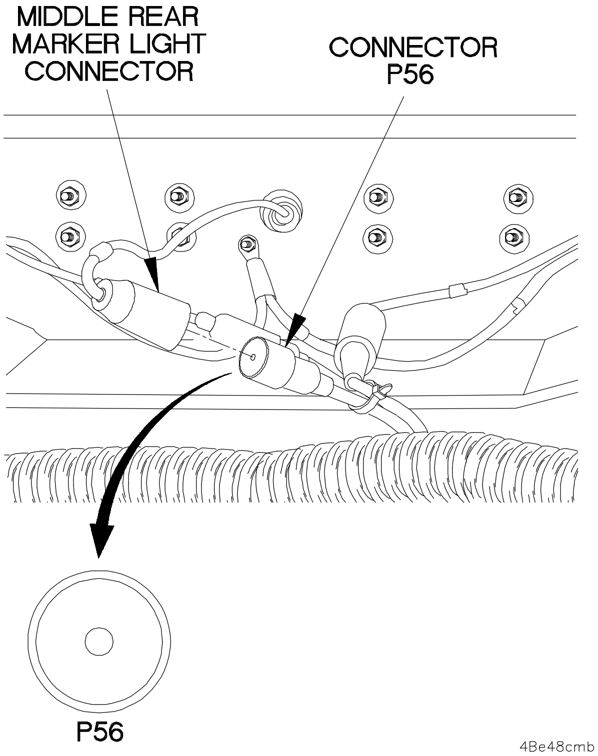
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect middle rear marker light connector from connector P56.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P56.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) Position main light switch to OFF (TM 9-2320-366-10-1).
(7) If 12 VDC is not present, repair wire 489 from connector P56 to splice E27 (para 2-45) and go to step 4 of this fault if required or replace M1088 rear lights cable assembly (para 7-104) and go to step 1 of this fault.
(8) If 12 VDC is present, replace middle rear marker light (para 7-38) and go to step 4 of this fault if required.
(9) Connect middle rear marker light connector to connector P58.



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Packing, Preformed (Item 191, Appendix G)
Lockwasher (2) (Item 96, Appendix G)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

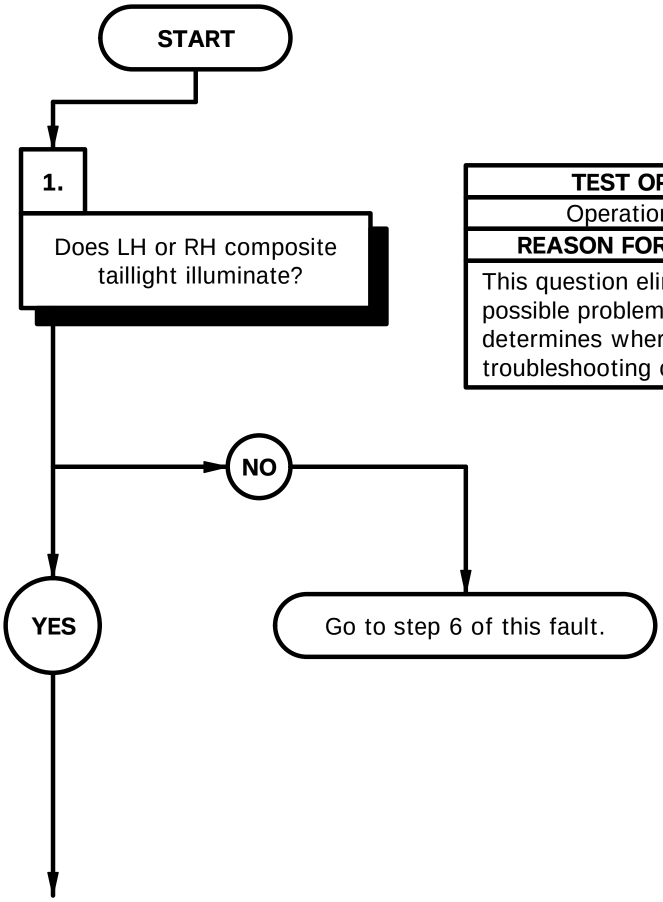
Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB80 prior to beginning this task.

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty dashboard cable assembly.
Faulty relay K20.
Faulty main light switch.



TEST OPTIONS

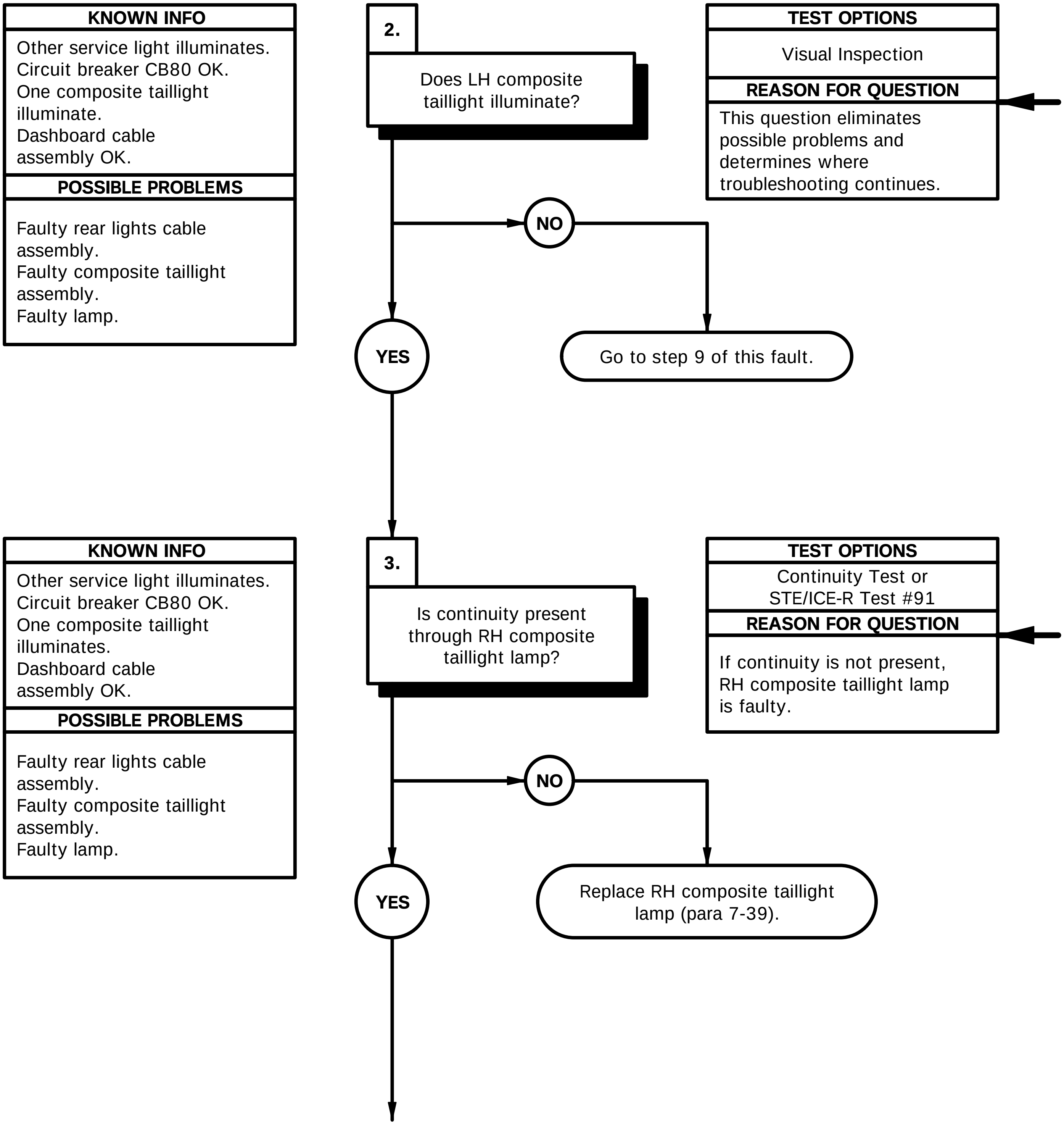
Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) If neither composite taillight illuminates, go to step 6 of this fault.
(3) Position main light switch to OFF (TM 9-2320-366-10-1).

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminate.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty lamp.

2.

Does LH composite taillight illuminate?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Go to step 9 of this fault.

YES

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminates.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty lamp.

3.

Is continuity present through RH composite taillight lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, RH composite taillight lamp is faulty.

NO

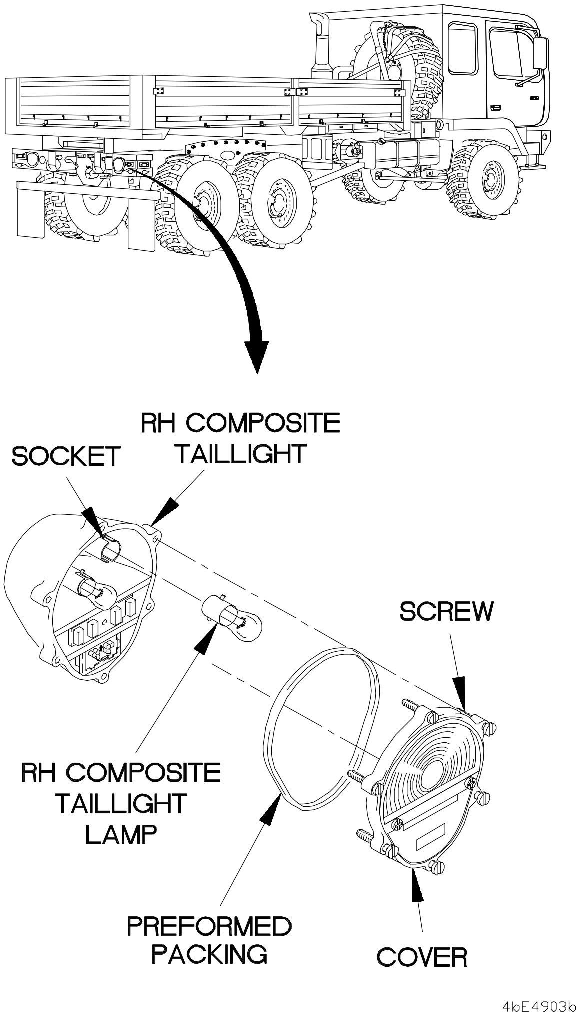
Replace RH composite taillight lamp (para 7-39).

YES

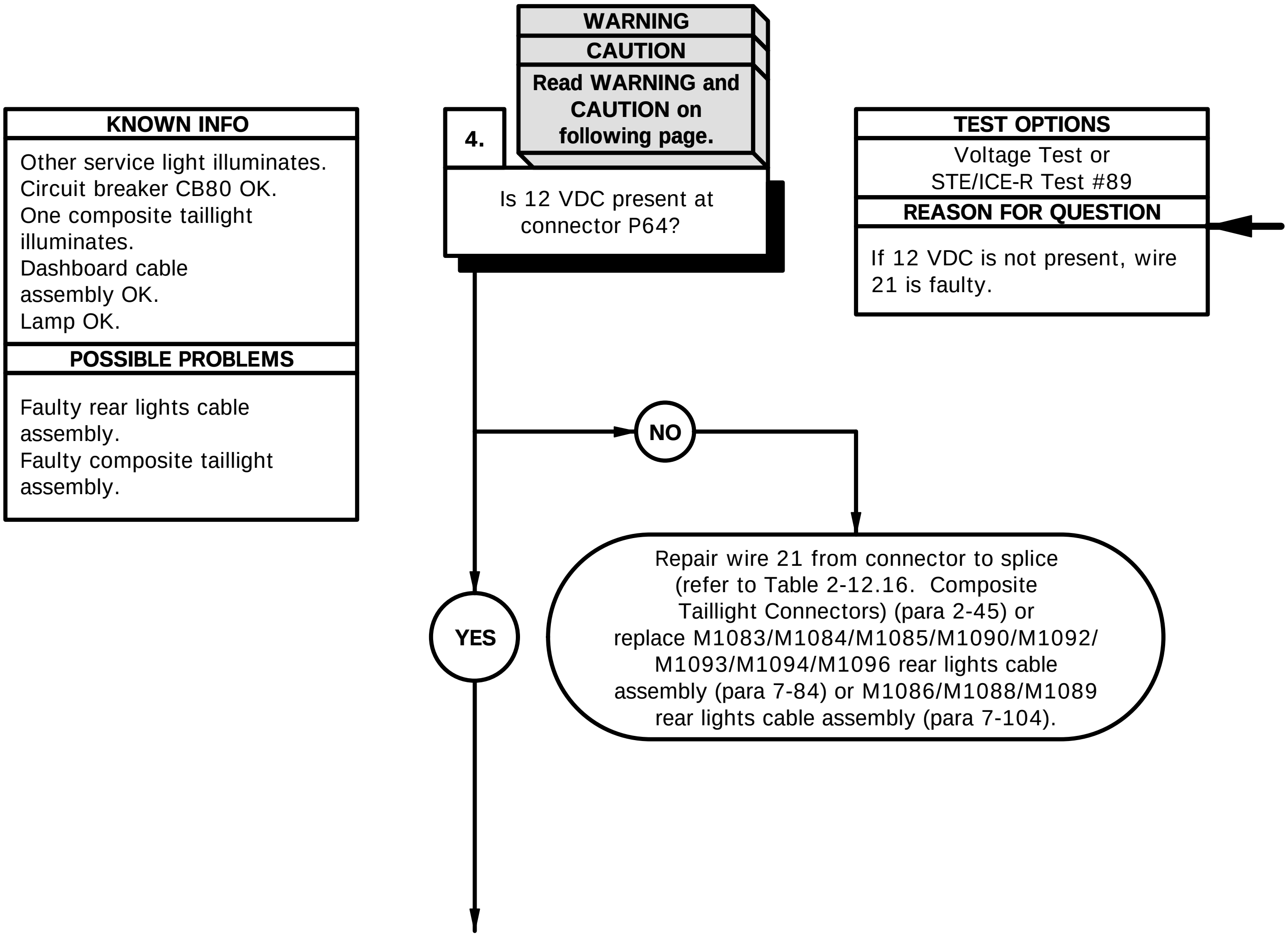
If LH taillight does not illuminate, go to step 9 of this fault.

CONTINUITY TEST

(1) Loosen six screws and remove cover and preformed packing from RH composite taillight. Discard preformed packing.
(2) Remove RH composite taillight lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through RH composite taillight lamp and note reading on multimeter.
(5) If continuity is not present, replace RH composite taillight lamp (para 7-39).



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminates.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

4. Is 12 VDC present at connector P64?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 21 is faulty.

NO

Repair wire 21 from connector to splice (refer to Table 2-12.16. Composite Taillight Connectors) (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P64 from RH composite taillight assembly.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P64.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 21 (refer to Table 2-12.16. Composite Taillight Connectors) (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).

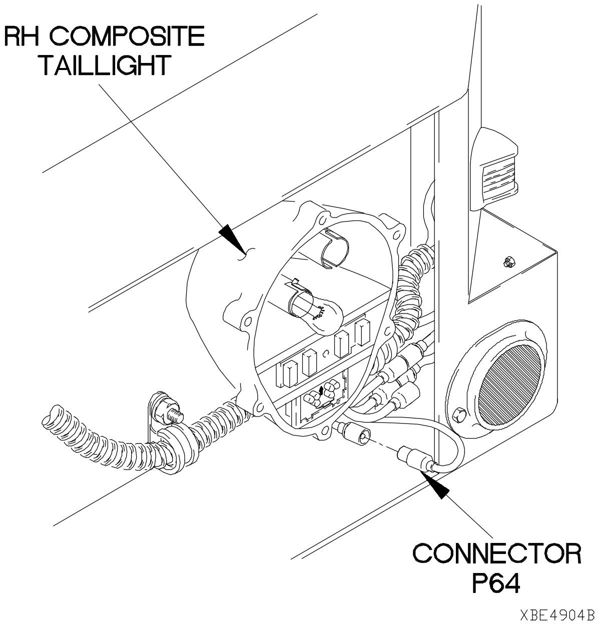


Table 2-12.16. Composite Taillight Connectors

Model	Splice
M1083/M1084/M1085/M1086/M1090/M1092/M1093/M1094/M1096	Connector P64 to Splice E20
M1088	Connector P64 to Splice E32
M1089	Connector P64 to Splice E48

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminates.
Dashboard cable assembly OK.
Lamp OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

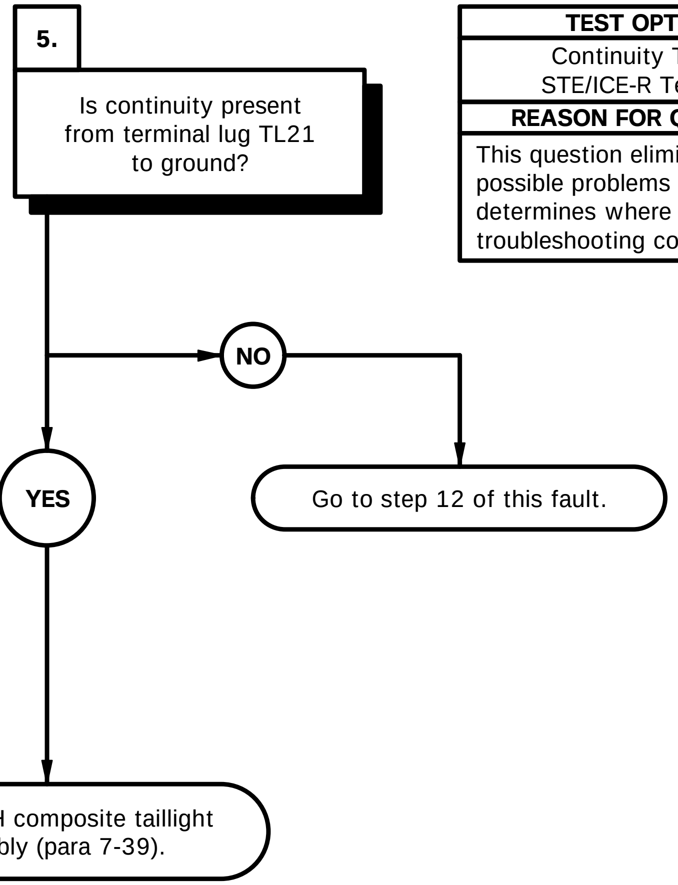
Faulty composite taillight assembly.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.



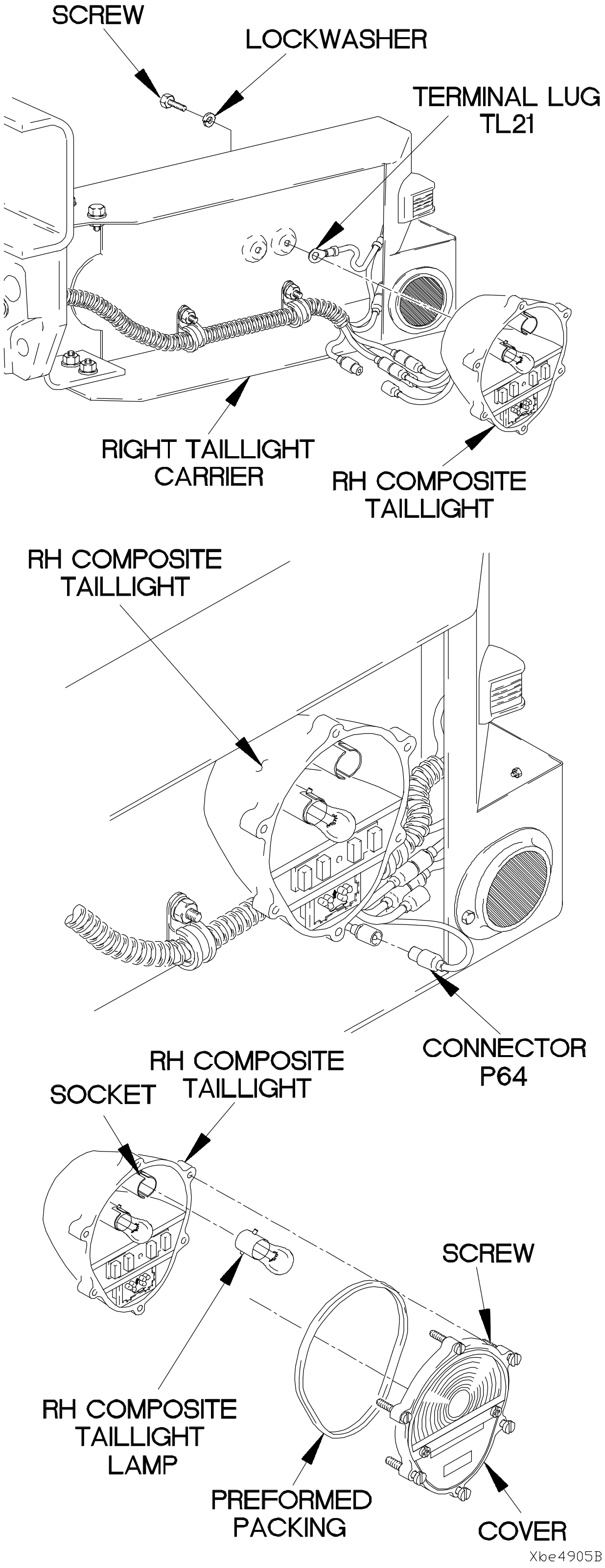
5. Is continuity present from terminal lug TL21 to ground?

NO: Go to step 12 of this fault.

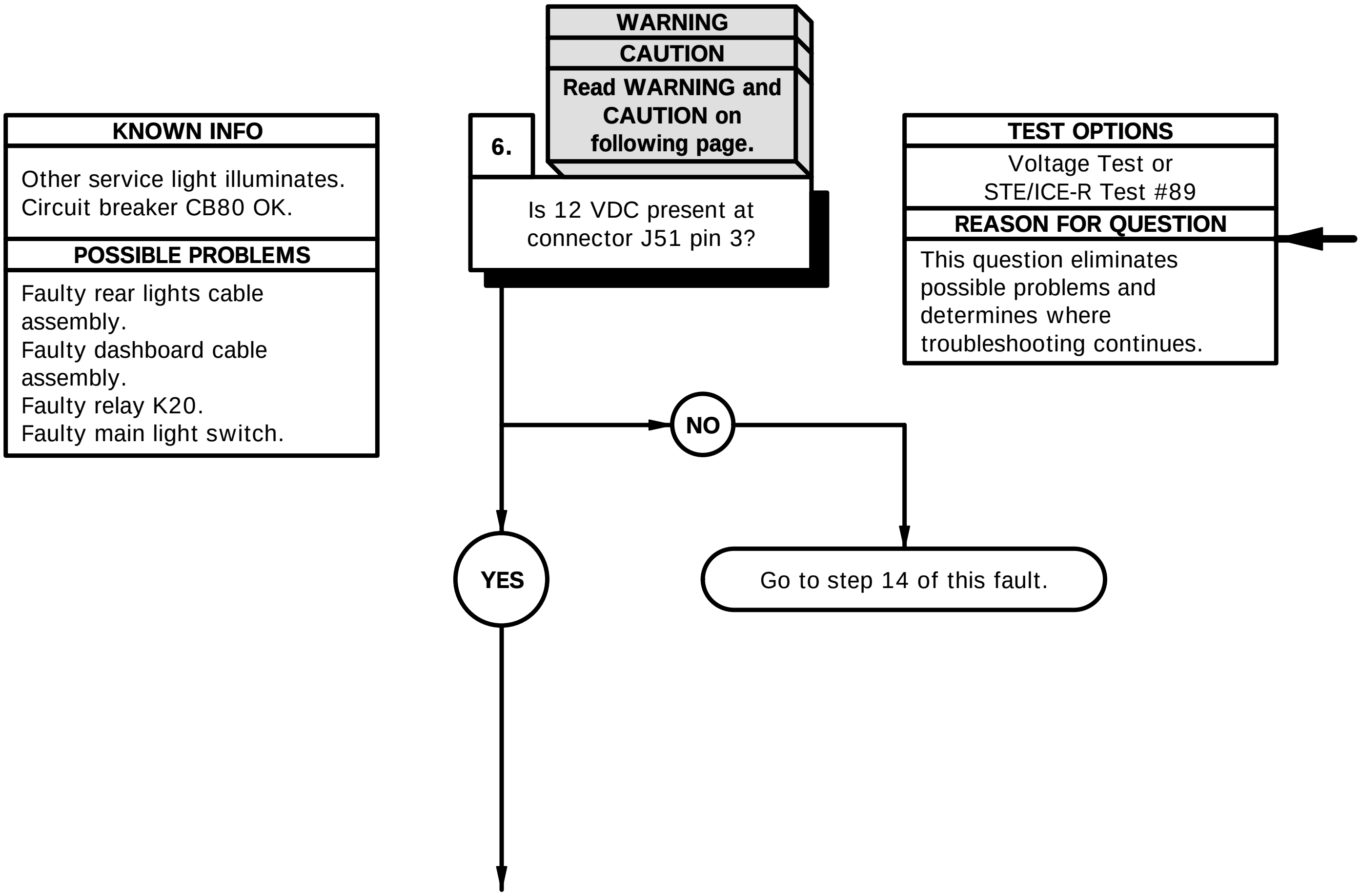
YES: Replace RH composite taillight assembly (para 7-39).

CONTINUITY TEST

(1) Remove two screws, lockwashers, RH composite taillight assembly, and terminal lug TL21 from right taillight carrier. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL21.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, go to step 12 of this fault.
(6) If continuity is present, replace RH composite taillight assembly (para 7-39).
(7) Install terminal lug TL21, and RH composite taillight assembly on right taillight carrier with two lockwashers and screws.
(8) Connect connector P64 to RH composite taillight assembly.
(9) Install RH composite taillight lamp in socket.
(10) Install preformed packing and cover on RH composite taillight assembly with six screws.



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.
Faulty relay K20.
Faulty main light switch.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

6. Is 12 VDC present at connector J51 pin 3?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 14 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

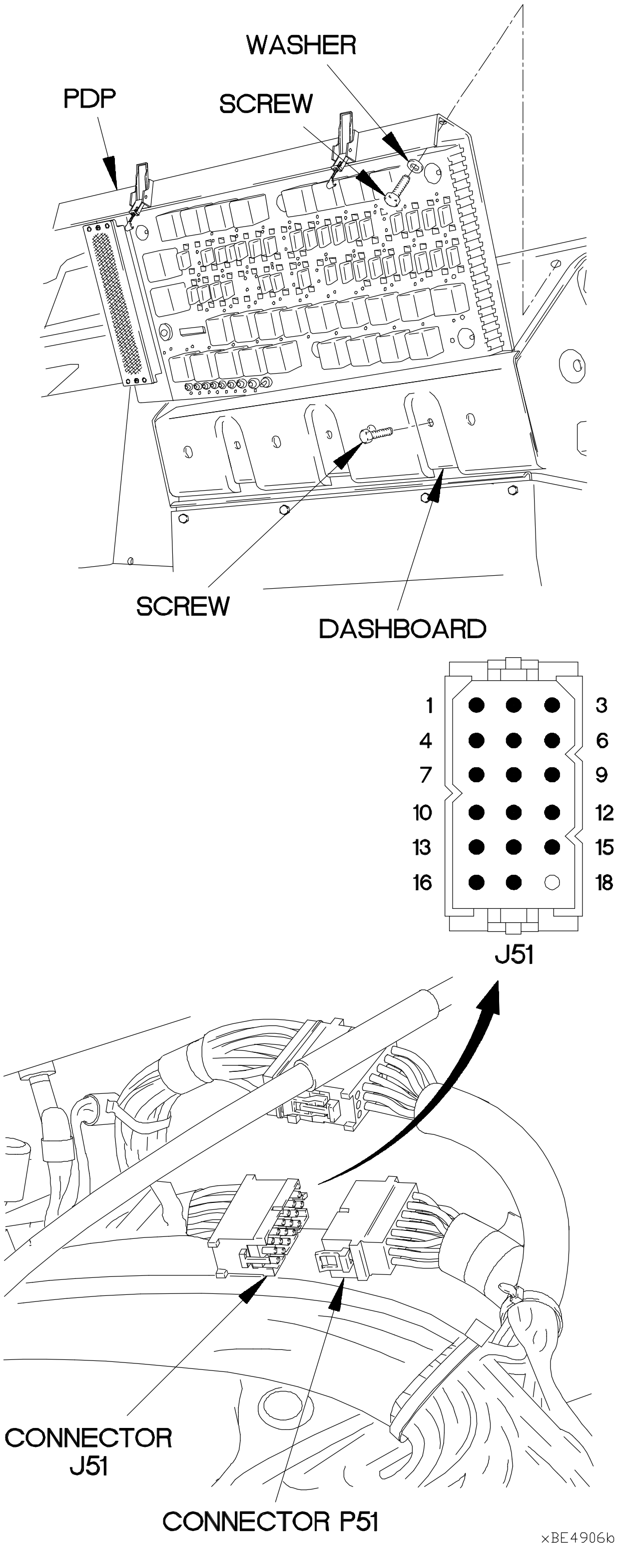
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector P51 from connector J51.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to connector J51 pin 3.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If 12 VDC is not present, go to step 14 of this fault.
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Connect connector J51 to connector P51.
(13) Install PDP on dashboard with three screws.
(14) Install three washers and screws in PDP.



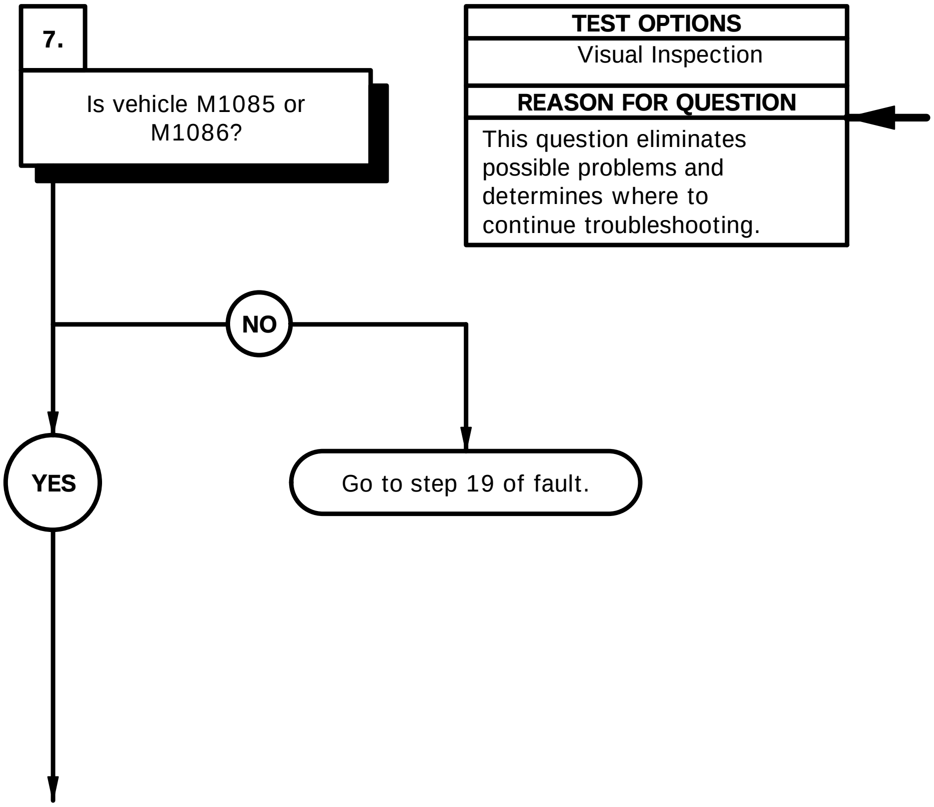
e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.



7\. Is vehicle M1085 or M1086?

TEST OPTIONS

Visual Inspection

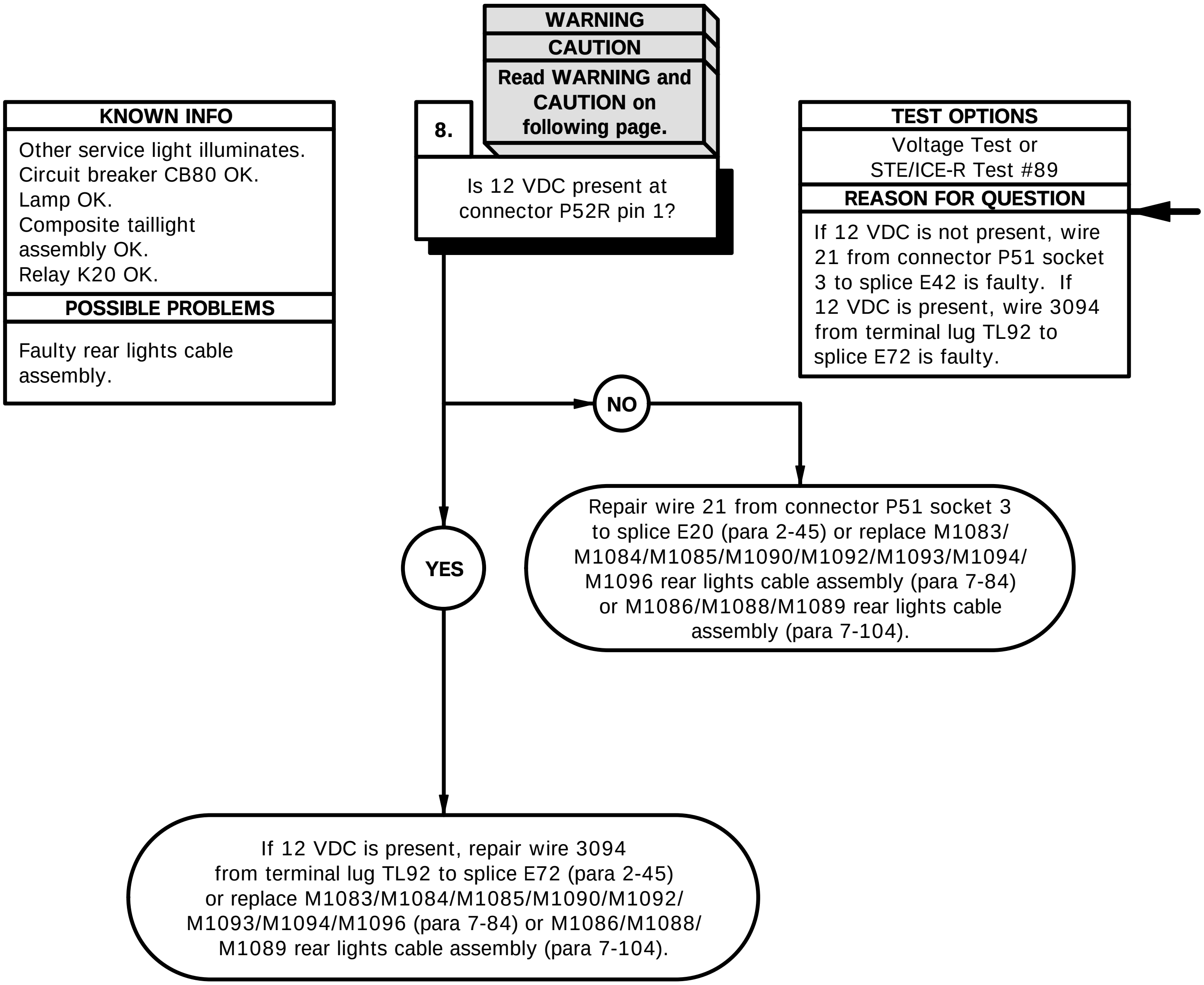
REASON FOR QUESTION

This question eliminates possible problems and determines where to continue troubleshooting.

Go to step 19 of fault.

If vehicle is not M1085 or M1086, go to step 19 of this fault.

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

8. Is 12 VDC present at connector P52R pin 1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 21 from connector P51 socket 3 to splice E42 is faulty. If 12 VDC is present, wire 3094 from terminal lug TL92 to splice E72 is faulty.

NO: Repair wire 21 from connector P51 socket 3 to splice E20 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

YES: If 12 VDC is present, repair wire 3094 from terminal lug TL92 to splice E72 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

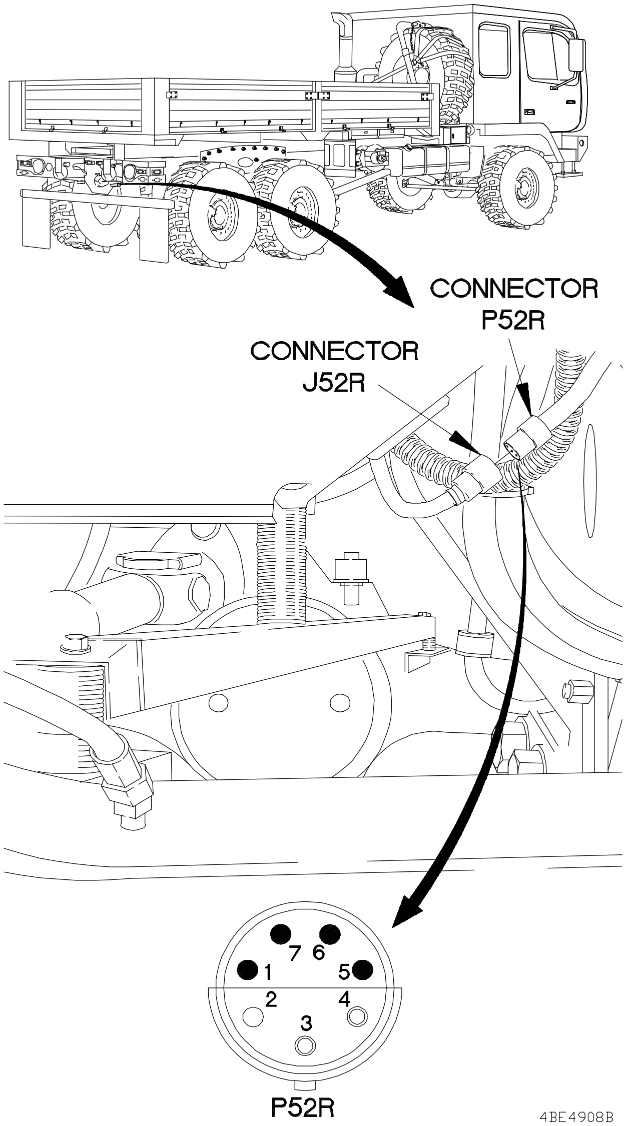
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

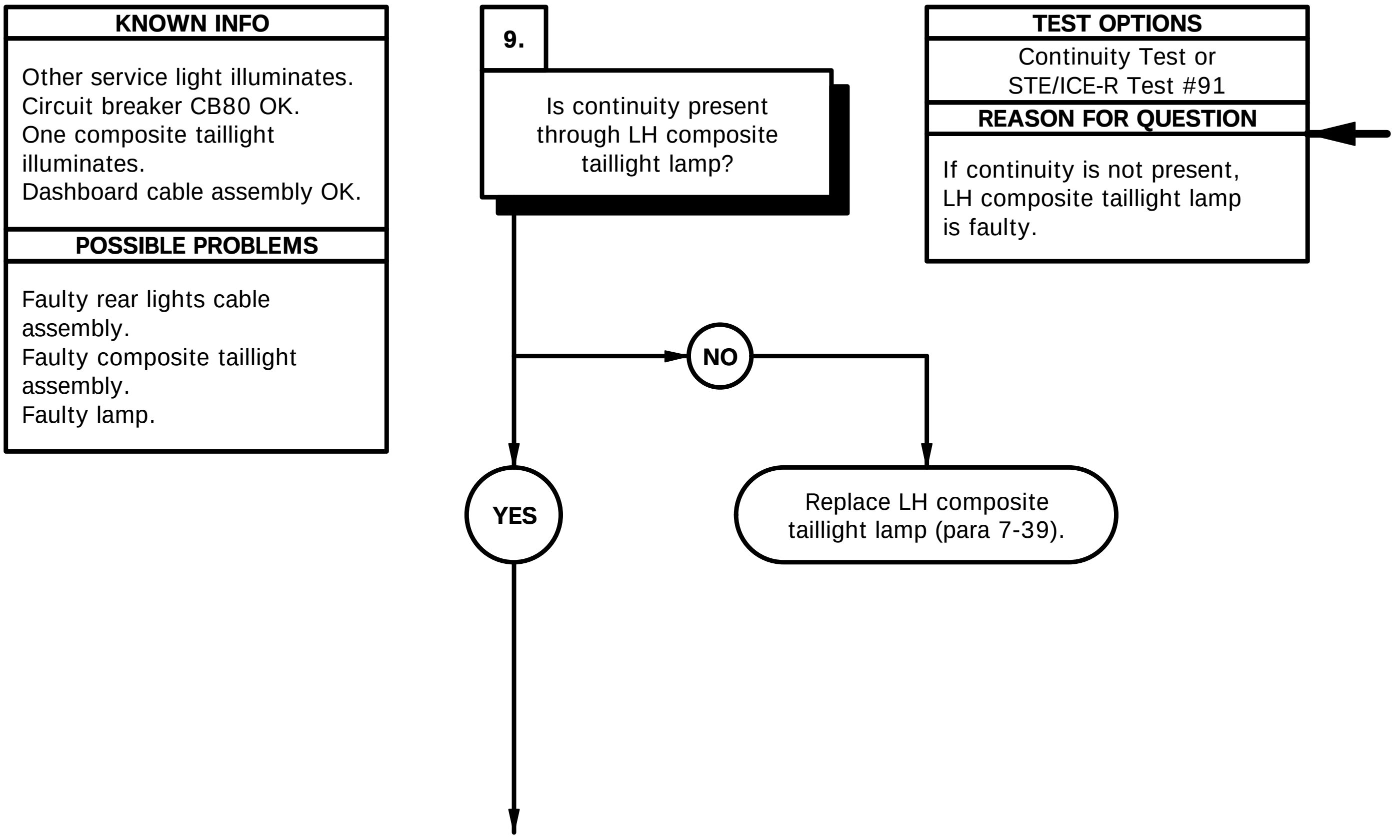
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P52R from connector J52R.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P52R pin 1.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 21 from connector P51 socket 3 to splice E20 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(7) If 12 VDC is present, repair wire 3094 from terminal lug TL92 to splice E72 (para 2-45) or replace M1083M1084/M1085/M1090/M1092/M1093/M1094/M1096 (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Connect connector J52 to connector P52R.



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminates.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty lamp.

9.

Is continuity present through LH composite taillight lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

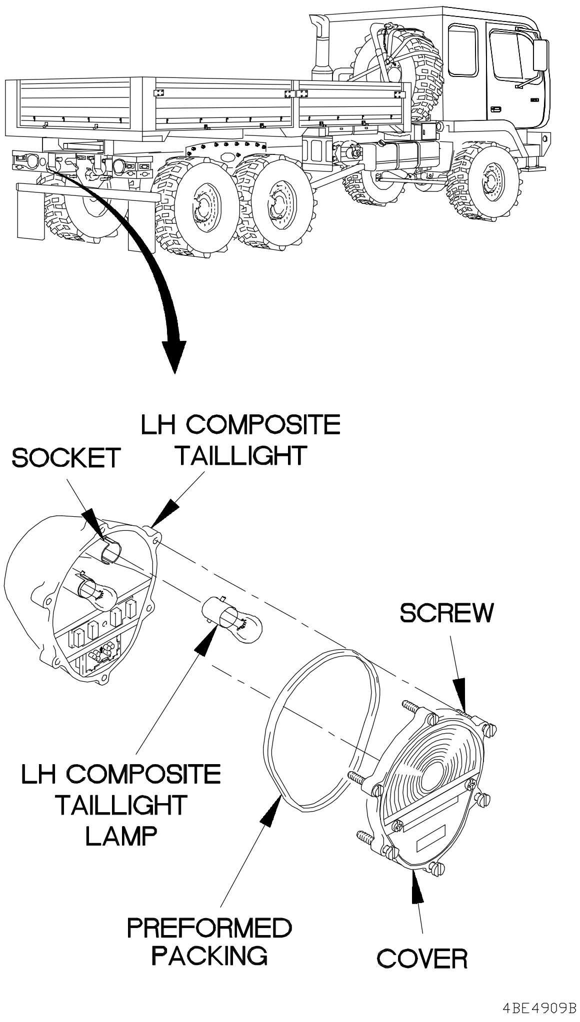
REASON FOR QUESTION

If continuity is not present, LH composite taillight lamp is faulty.

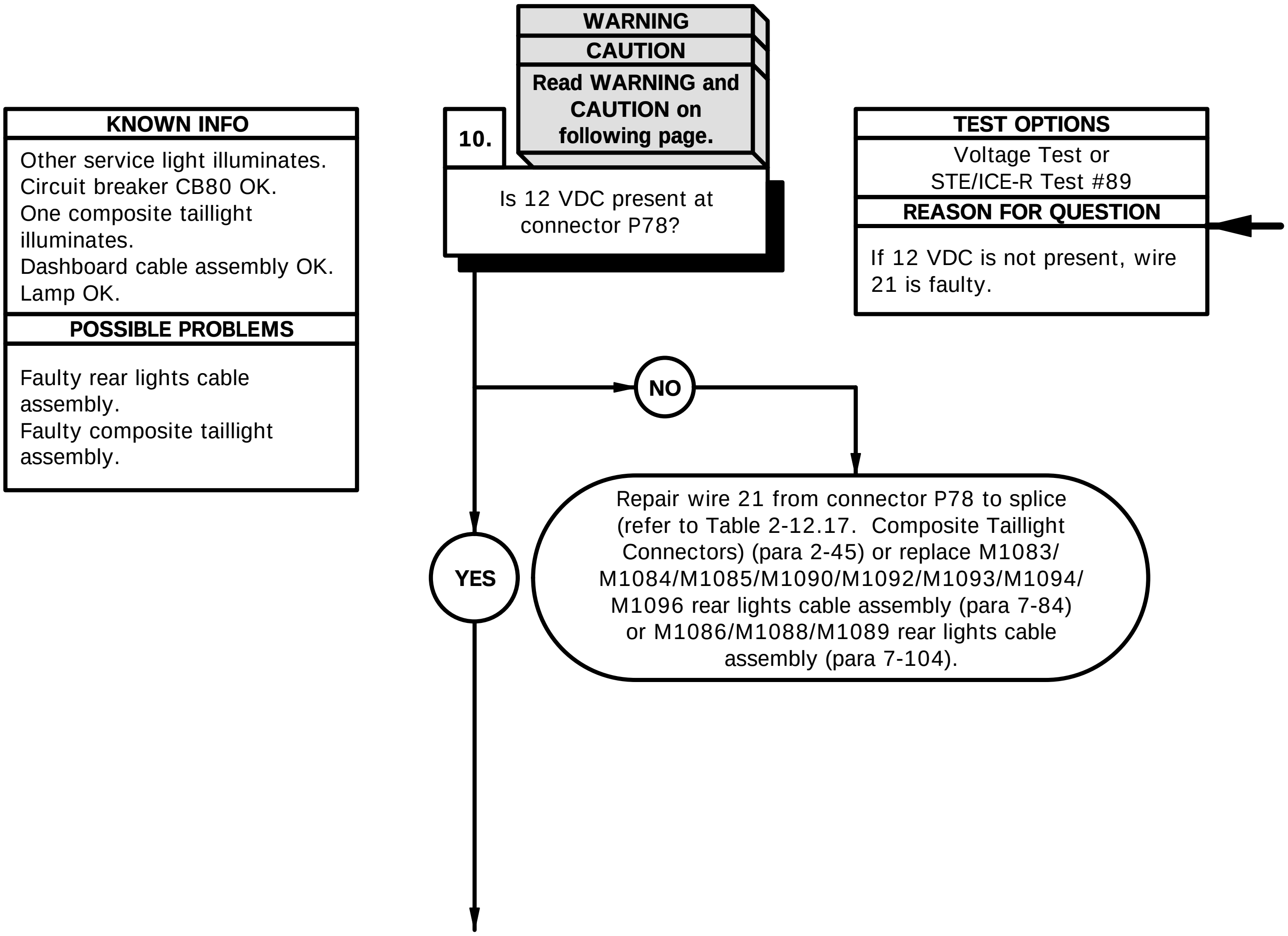
Replace LH composite taillight lamp (para 7-39).

CONTINUITY TEST

(1) Loosen six screws and remove cover and preformed packing from LH composite taillight lamp. Discard preformed packing.
(2) Remove LH composite taillight lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through LH composite taillight lamp and note reading on multimeter.
(5) If continuity is not present, replace LH composite taillight lamp (para 7-39).



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminates.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

10. Is 12 VDC present at connector P78?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 21 is faulty.

Repair wire 21 from connector P78 to splice (refer to Table 2-12.17. Composite Taillight Connectors) (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits, or cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P78 from LH composite taillight assembly.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P78.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 21 (refer to Table 2-12.17. Composite Taillight Connectors) (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).

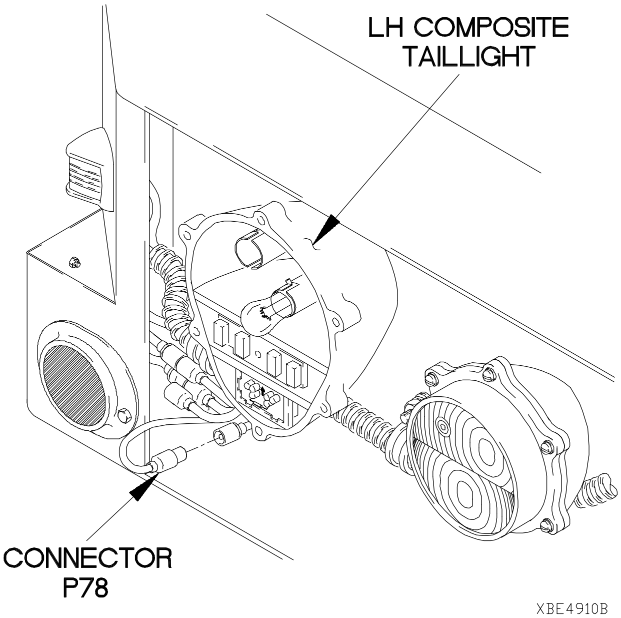
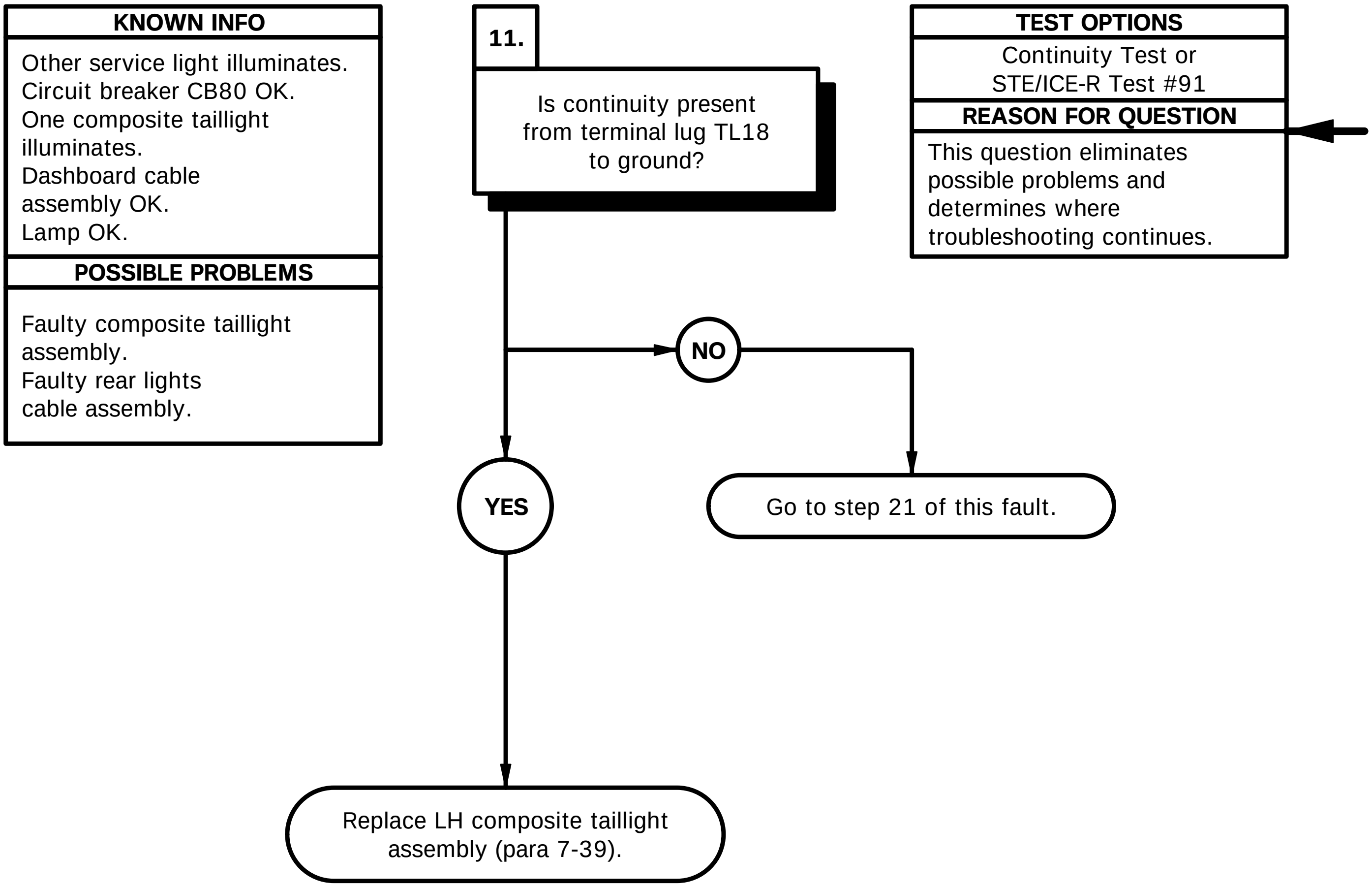


Table 2-12.17. Composite Taillight Connector

Model	Splice
M1083/M1084/M1085/M1086/ M1090/M1093/M1094/M1096	Connector P78 to Splice E20
M1088	Connector P78 to Splice E32
M1089	Connector P78 to Splice E48

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminates.
Dashboard cable assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty composite taillight assembly.
Faulty rear lights cable assembly.

11.

Is continuity present from terminal lug TL18 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

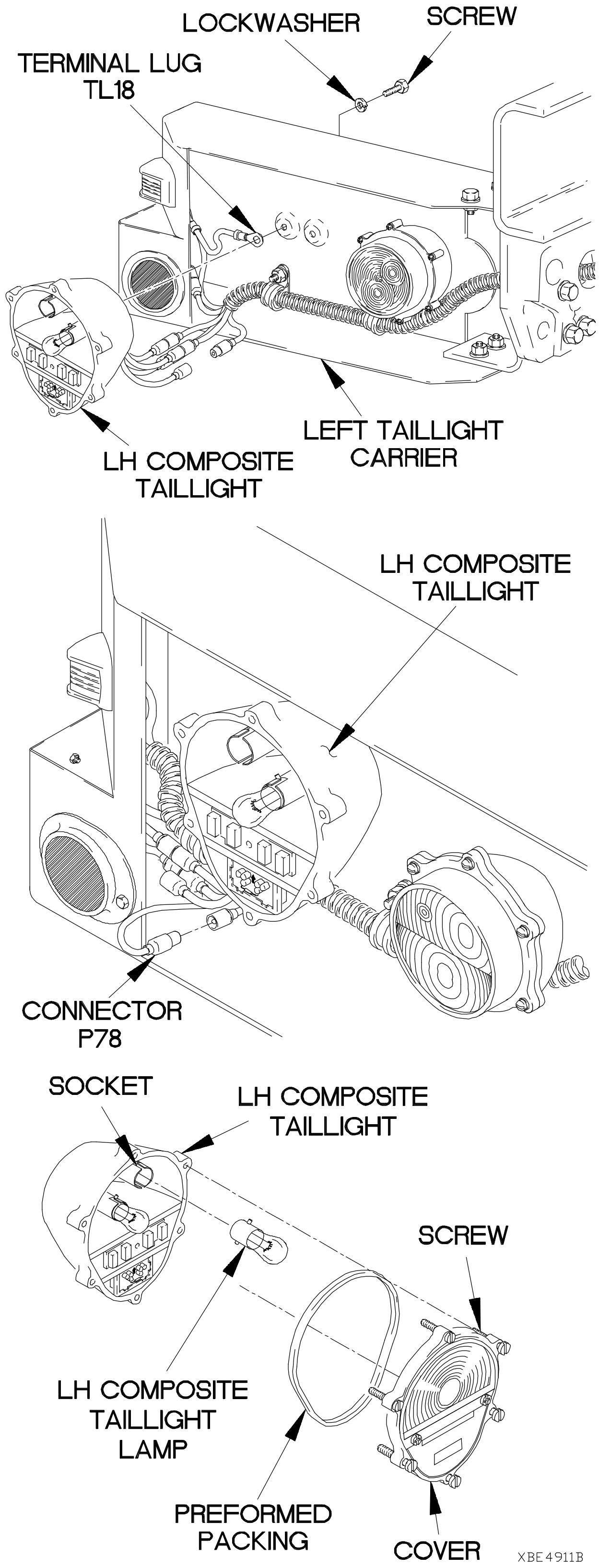
Go to step 21 of this fault.

YES

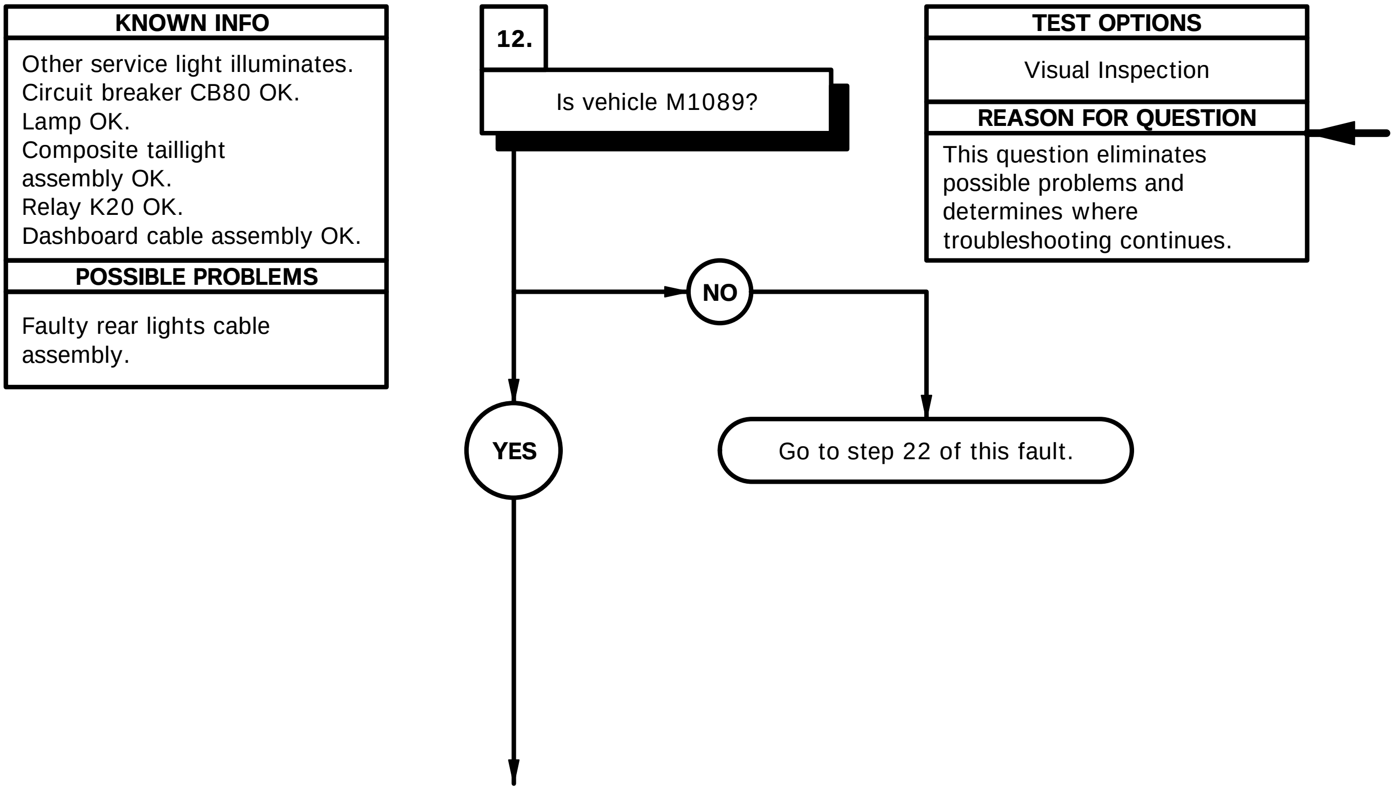
Replace LH composite taillight assembly (para 7-39).

CONTINUITY TEST

(1) Remove two screws, lockwashers, LH composite taillight assembly, and terminal lug TL18 from right taillight carrier. Discard lockwashers.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal lug TL18.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, go to step 21 of this fault.
(6) If continuity is present, replace LH composite taillight assembly (para 7-39).
(7) Install terminal lug TL18, and LH composite taillight assembly on left taillight carrier with two lockwashers and screws.
(8) Connect connector P78 to LH composite taillight assembly.
(9) Install LH composite taillight lamp in socket.
(10) Install preformed packing and cover on LH composite taillight assembly with six screws.



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

12.

Is vehicle M1089?

TEST OPTIONS

Visual Inspection

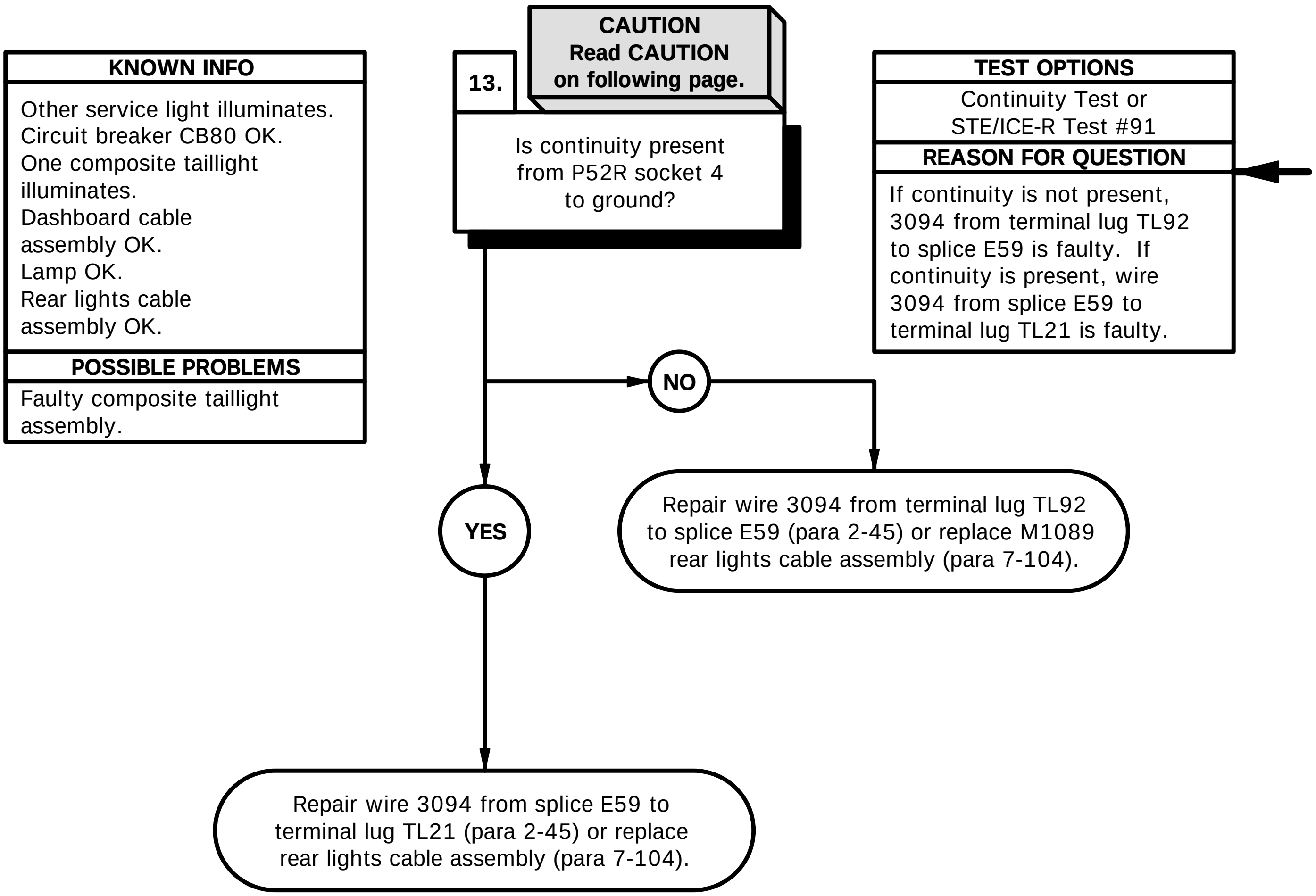
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 22 of this fault.

If vehicle is not M1089, go to step 22 of this fault.

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminates.
Dashboard cable assembly OK.
Lamp OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty composite taillight assembly.

13.

CAUTION
Read CAUTION on following page.

Is continuity present from P52R socket 4 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, 3094 from terminal lug TL92 to splice E59 is faulty. If continuity is present, wire 3094 from splice E59 to terminal lug TL21 is faulty.

Repair wire 3094 from terminal lug TL92 to splice E59 (para 2-45) or replace M1089 rear lights cable assembly (para 7-104).

Repair wire 3094 from splice E59 to terminal lug TL21 (para 2-45) or replace rear lights cable assembly (para 7-104).

CAUTION

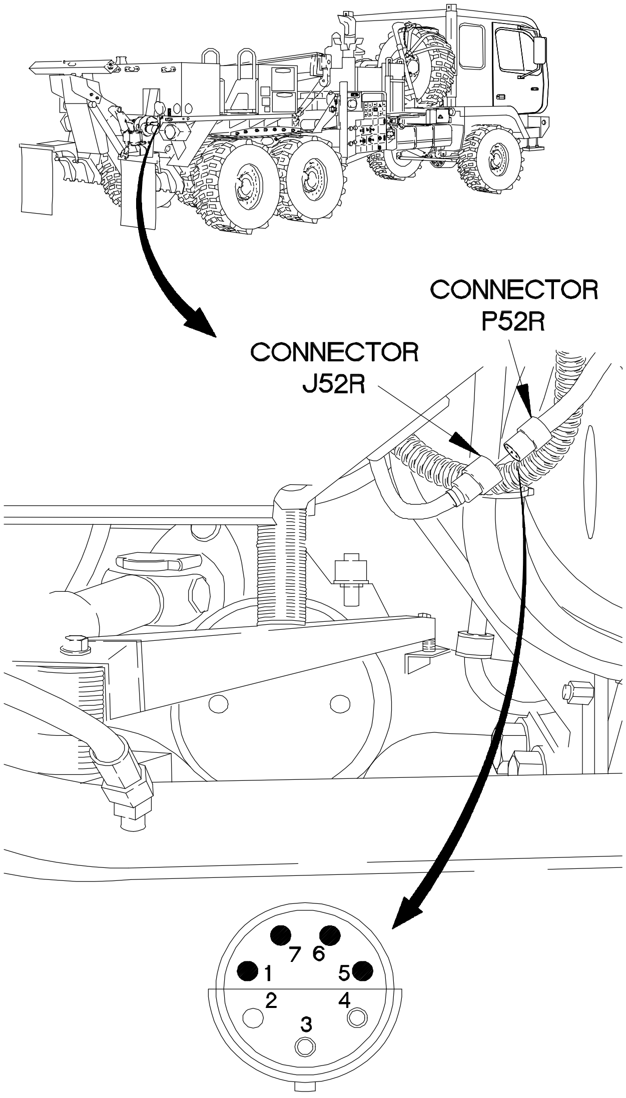
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

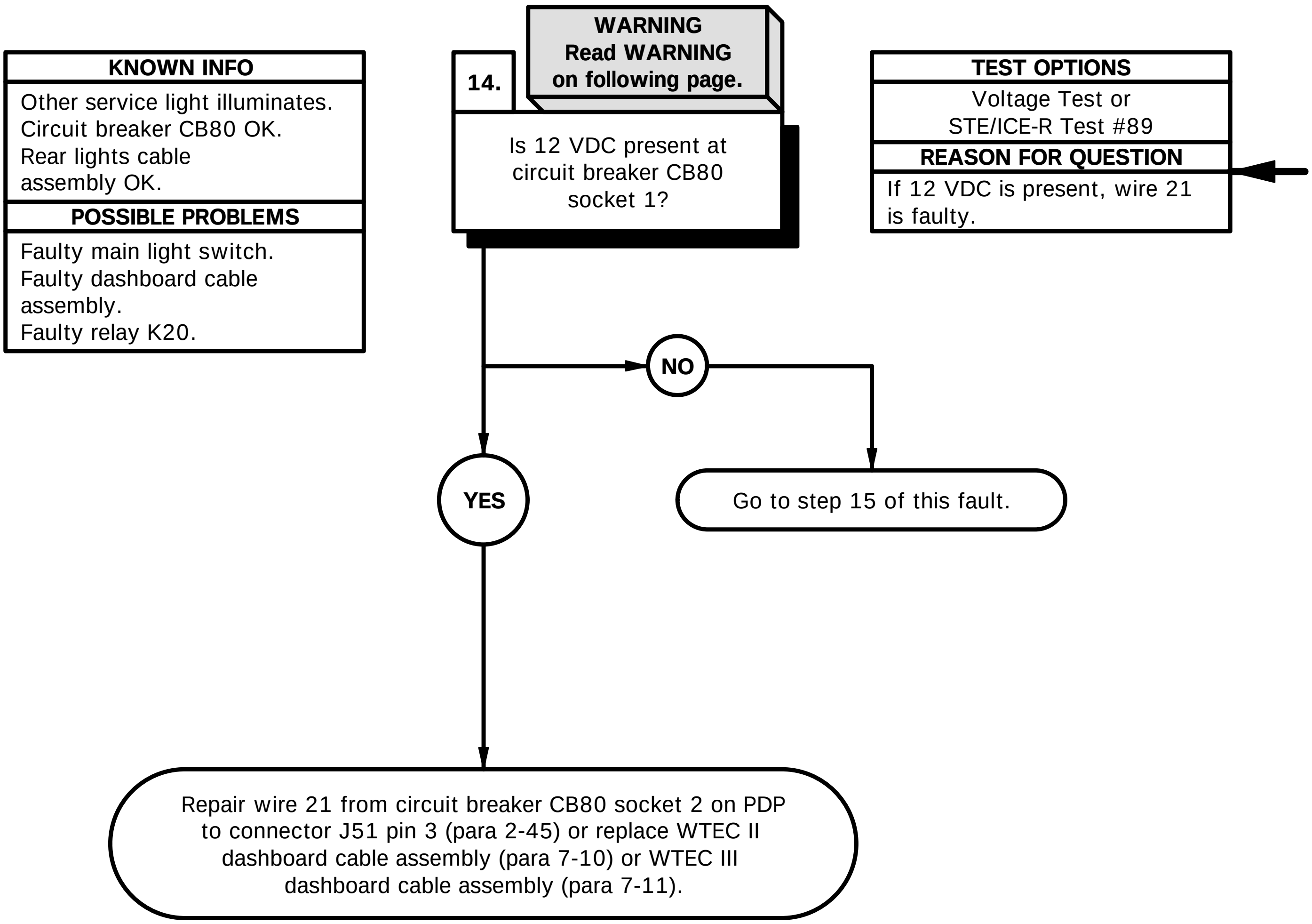
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P52R from connector J52.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P52R socket 4.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3094 from terminal lug TL92 to splice E59 (para 2-45) or replace M1089 rear lights cable assembly (para 7-104).
(6) If continuity is present, repair wire 3094 from splice E59 to terminal lug TL21 (para 2-45) or replace rear lights cable assembly (para 7-104).
(7) Connect connector J52 to connector P52R.



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dashboard cable assembly.
Faulty relay K20.

14.

WARNING
Read WARNING on following page.

Is 12 VDC present at circuit breaker CB80 socket 1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is present, wire 21 is faulty.

Go to step 15 of this fault.

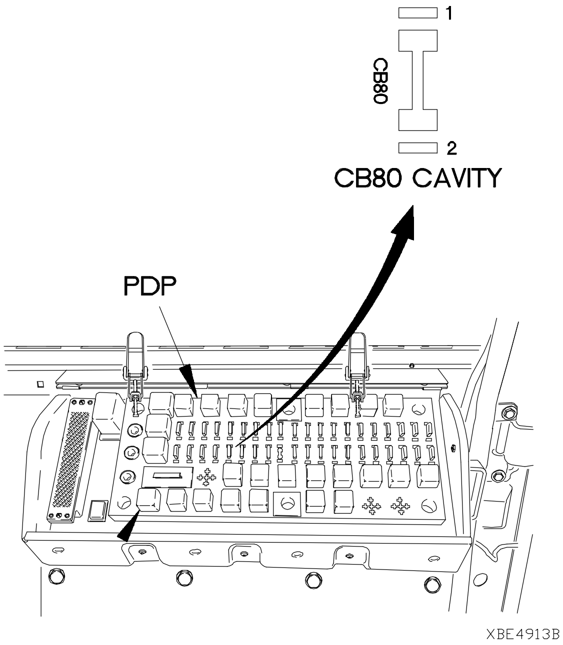
Repair wire 21 from circuit breaker CB80 socket 2 on PDP to connector J51 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

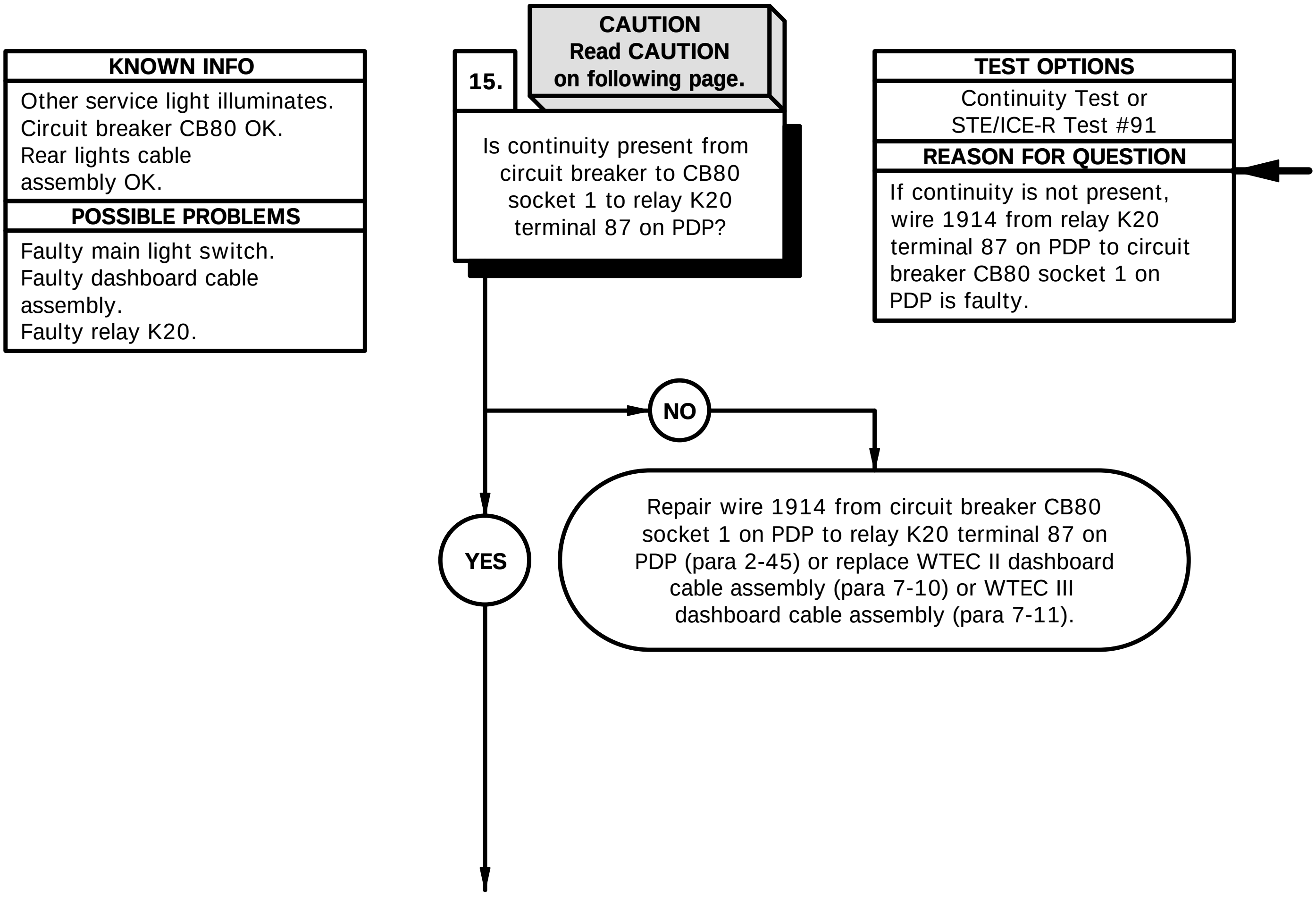
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove circuit breaker CB80 from PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to circuit breaker CB80 socket 1.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, go to 15 of this fault.
(8) If 12 VDC is present, repair wire 21 from circuit breaker CB80 socket 2 on PDP to connector J51 pin 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dashboard cable assembly.
Faulty relay K20.

CAUTION
Read CAUTION on following page.

15. Is continuity present from circuit breaker to CB80 socket 1 to relay K20 terminal 87 on PDP?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1914 from relay K20 terminal 87 on PDP to circuit breaker CB80 socket 1 on PDP is faulty.

NO

Repair wire 1914 from circuit breaker CB80 socket 1 on PDP to relay K20 terminal 87 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

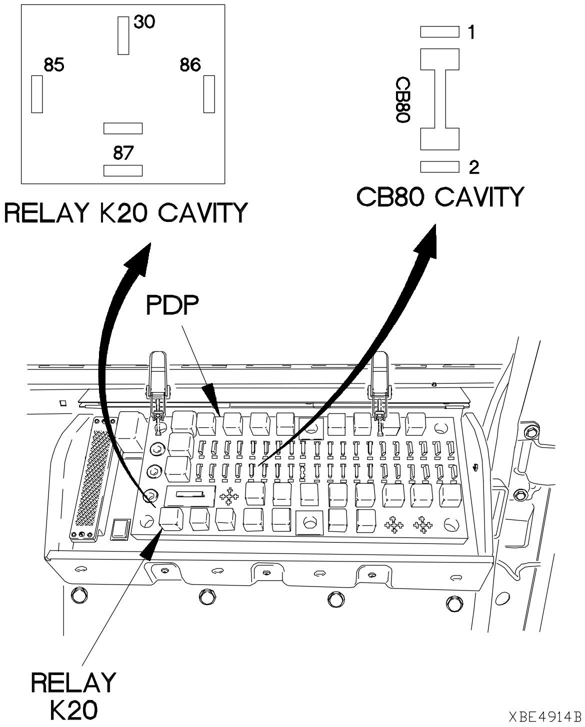
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

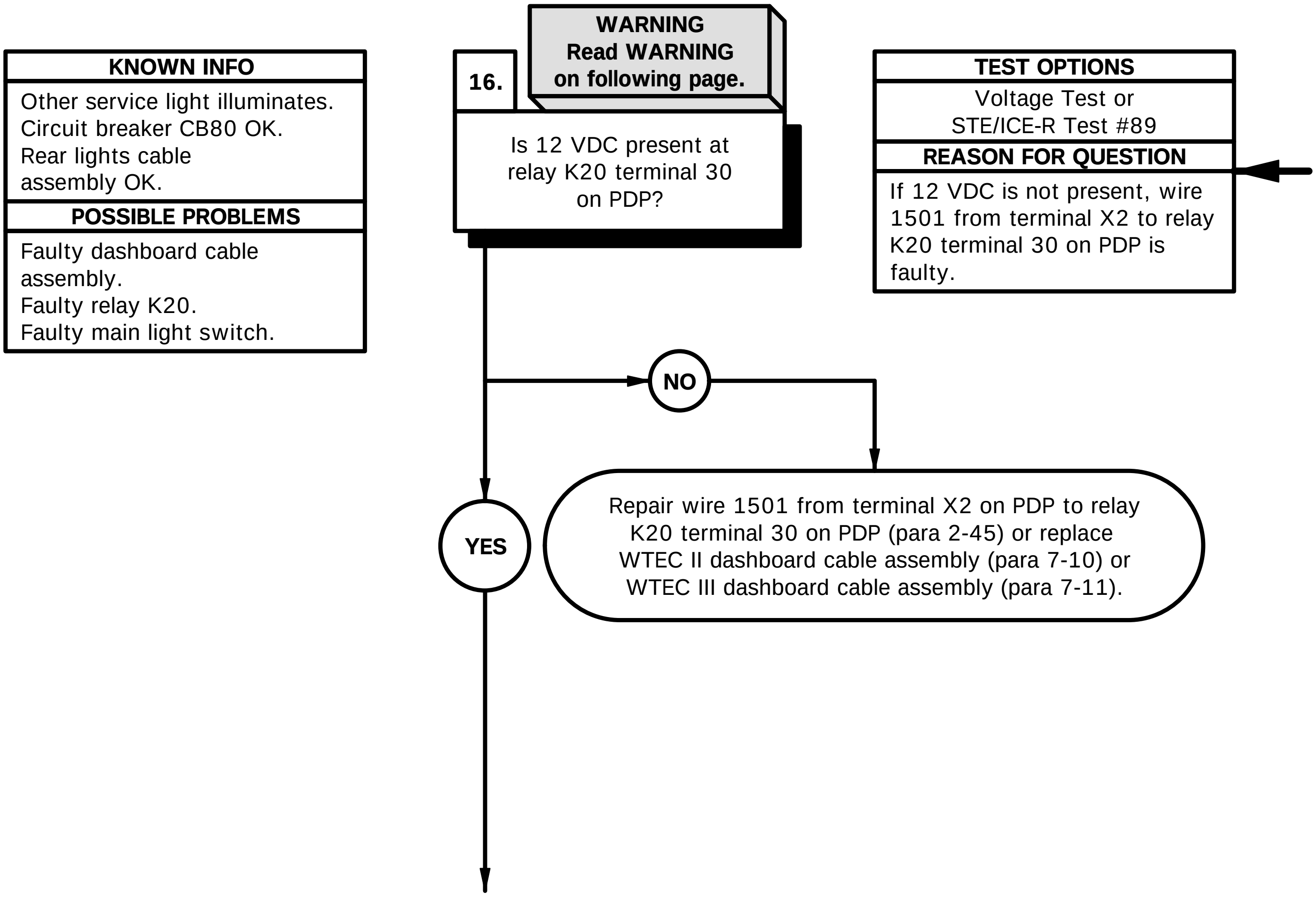
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove relay K20 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to circuit breaker CB80 socket 1 on PDP.
(5) Connect negative (-) probe of multimeter to relay K20 terminal 87 on PDP and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 1914 from circuit breaker CB80 socket 1 on PDP to relay K20 terminal 87 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Install circuit breaker CB80 in PDP.
(8) Connect batteries (para 7-57).



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K20.
Faulty main light switch.

16.

WARNING
Read WARNING on following page.

Is 12 VDC present at relay K20 terminal 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1501 from terminal X2 to relay K20 terminal 30 on PDP is faulty.

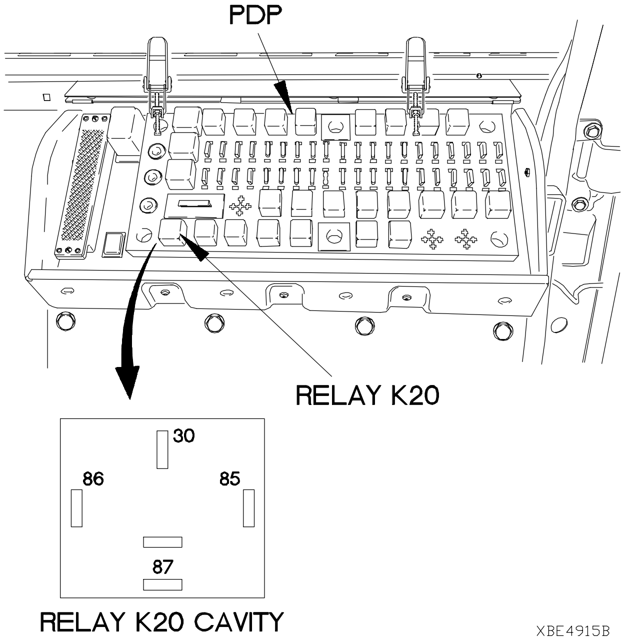
Repair wire 1501 from terminal X2 on PDP to relay K20 terminal 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

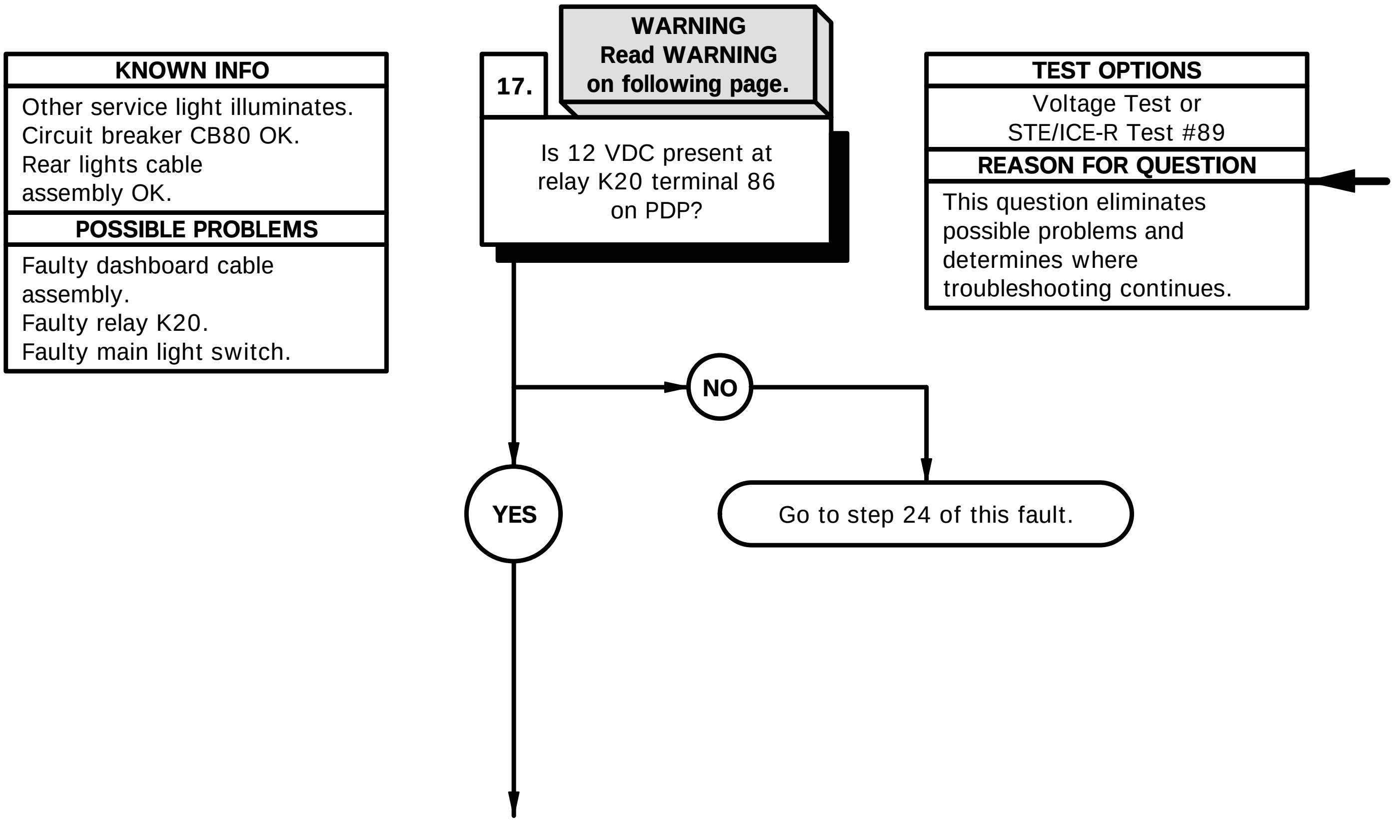
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K20 terminal 30 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 VDC is not present, repair wire 1501 from terminal X2 on PDP to relay K20 terminal 30 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K20.
Faulty main light switch.

17.

WARNING
Read WARNING on following page.

Is 12 VDC present at relay K20 terminal 86 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

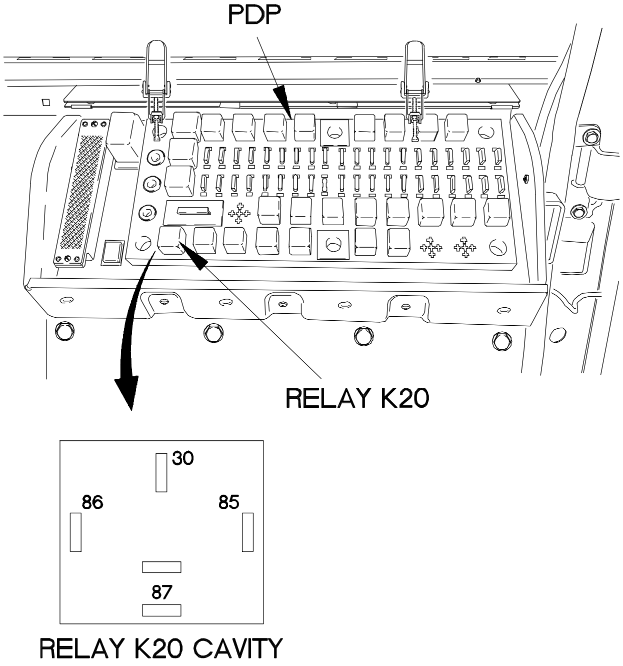
Go to step 24 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K20 terminal 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If 12 VDC is not present, go to step 24 of this fault.



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

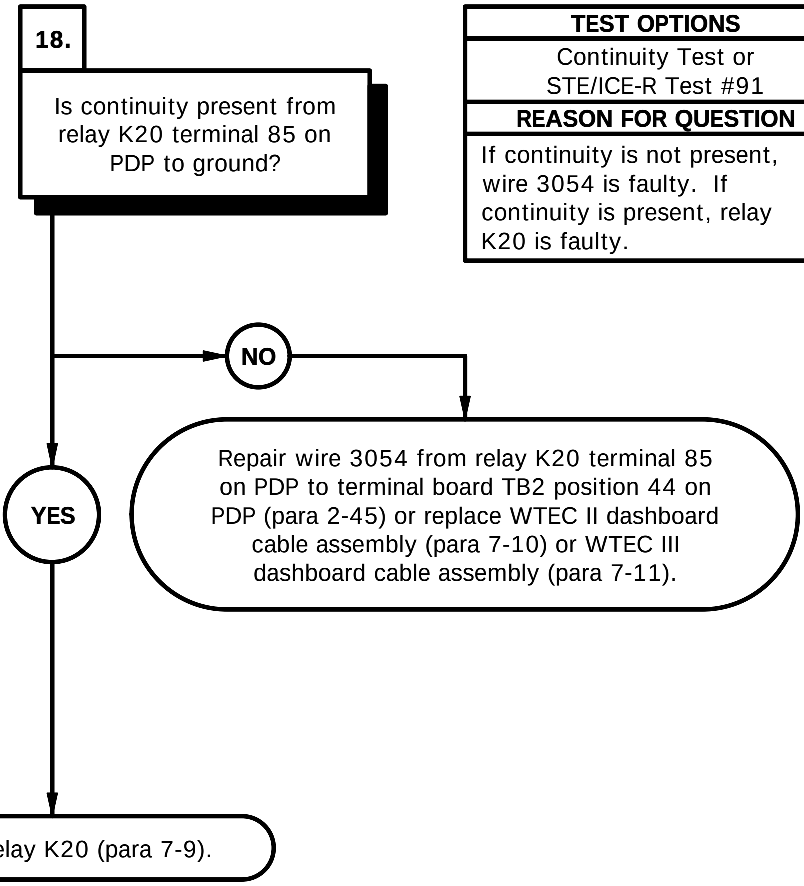
Faulty dashboard cable assembly.
Faulty relay K20.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3054 is faulty. If continuity is present, relay K20 is faulty.



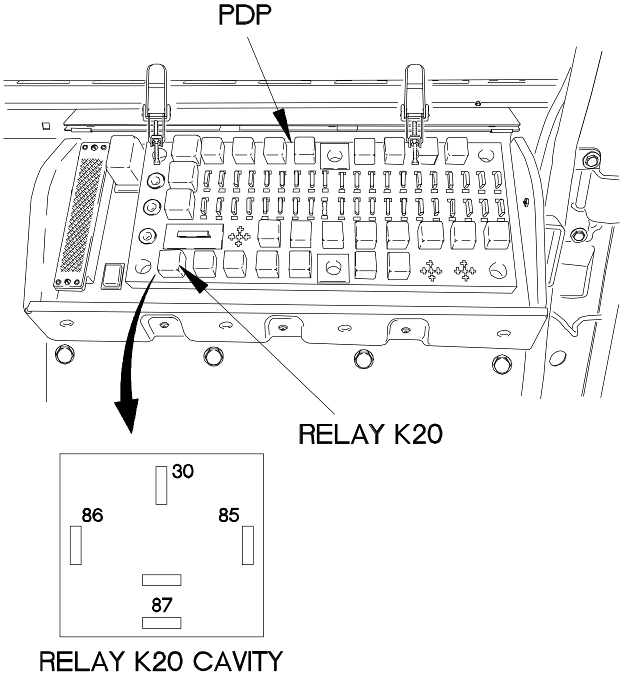
18. Is continuity present from relay K20 terminal 85 on PDP to ground?

NO: Repair wire 3054 from relay K20 terminal 85 on PDP to terminal board TB2 position 44 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace relay K20 (para 7-9).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K20 terminal 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3054 from relay K20 terminal 85 on PDP to terminal board TB2 position 44 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K20 (para 7-9).
(6) Install relay K20 in PDP.
(7) Install PDP cover (para 16-2).



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e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.

19.

Is vehicle M1088?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

Repair wire 21 from connector P51 socket 3 to splice (refer to Table 2-12.18. Composite Taillight Splices) (para 2-45) or replace M1083/ M1084/M1085/M1090/M1092/ M1092/M1093/ M1094/M1096 rear lights cable assembly (para 7-104) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

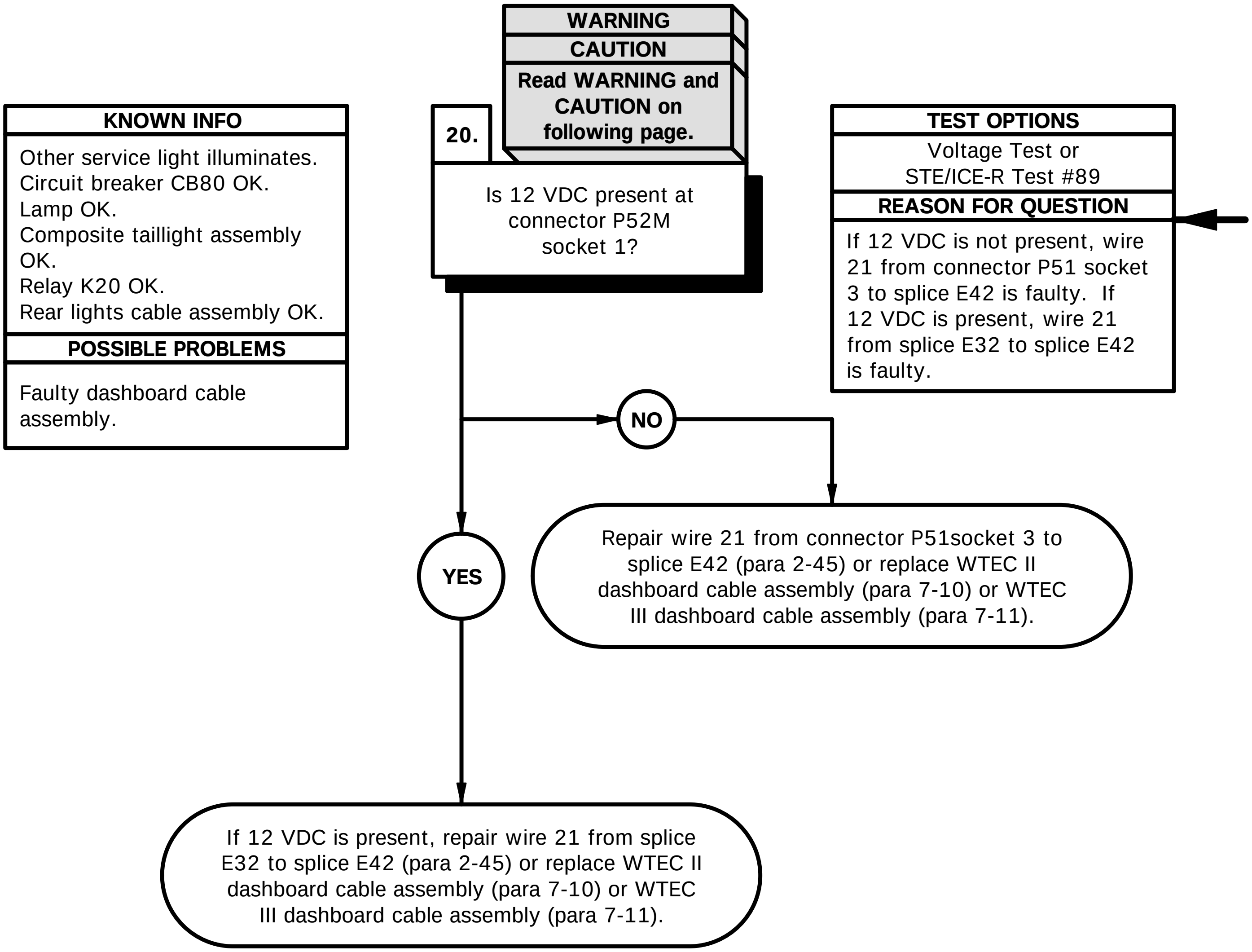
YES

If vehicle is not M1088, repair wire 21 from connector P51 socket 3 to splice (refer to Table 2-12.18. Composite Taillight Splices) (para 2-45) or replace M1088 rear lights cable assembly (para 7-104).

Table 2-12.18. Composite Taillight Splices

Model	Splice
M1083/M1084/M1085/M1086 M1090/M1092/M1093/M1094 M1096	Connector P51 Socket 3 to Splice E20
M1089	Connector P51 Socket 3 to Splice E48

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

20. Is 12 VDC present at connector P52M socket 1?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 21 from connector P51 socket 3 to splice E42 is faulty. If 12 VDC is present, wire 21 from splice E32 to splice E42 is faulty.

Repair wire 21 from connector P51socket 3 to splice E42 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

If 12 VDC is present, repair wire 21 from splice E32 to splice E42 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

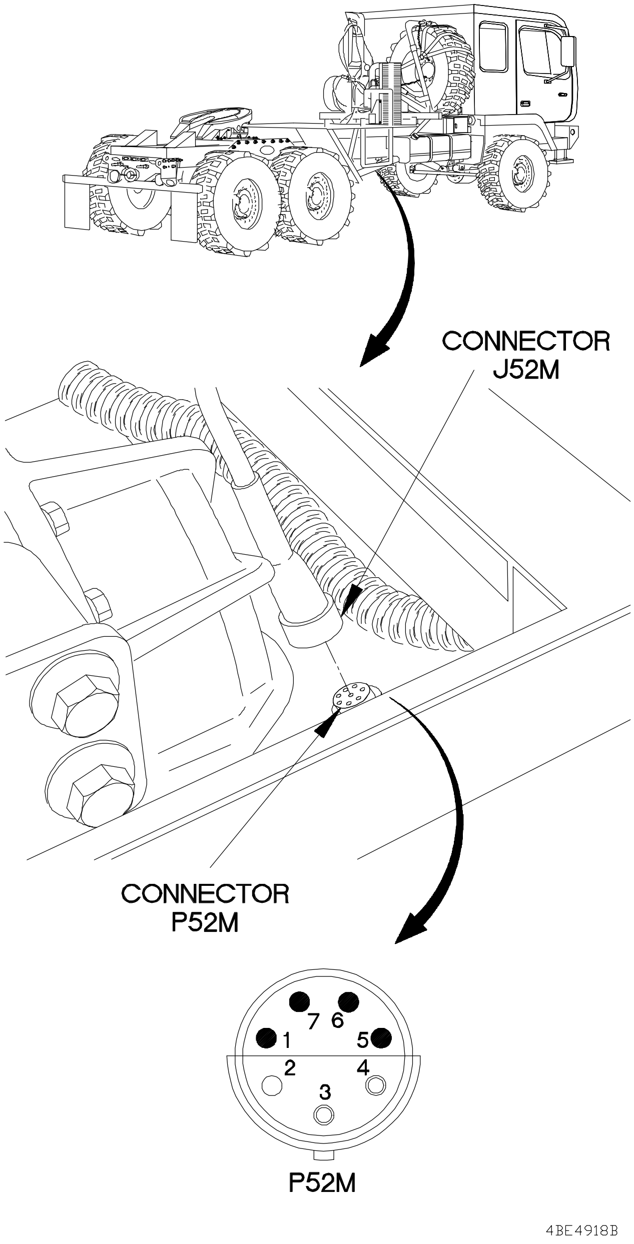
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P52M from connector J52M.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P52M pin 1.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 VDC is not present, repair wire 21 from connector P51 socket 3 to splice E42 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If 12 VDC is present, repair wire 21 from splice E32 to splice E42 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or replace WTEC III dashboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Connect connector J52 to connector P52M.



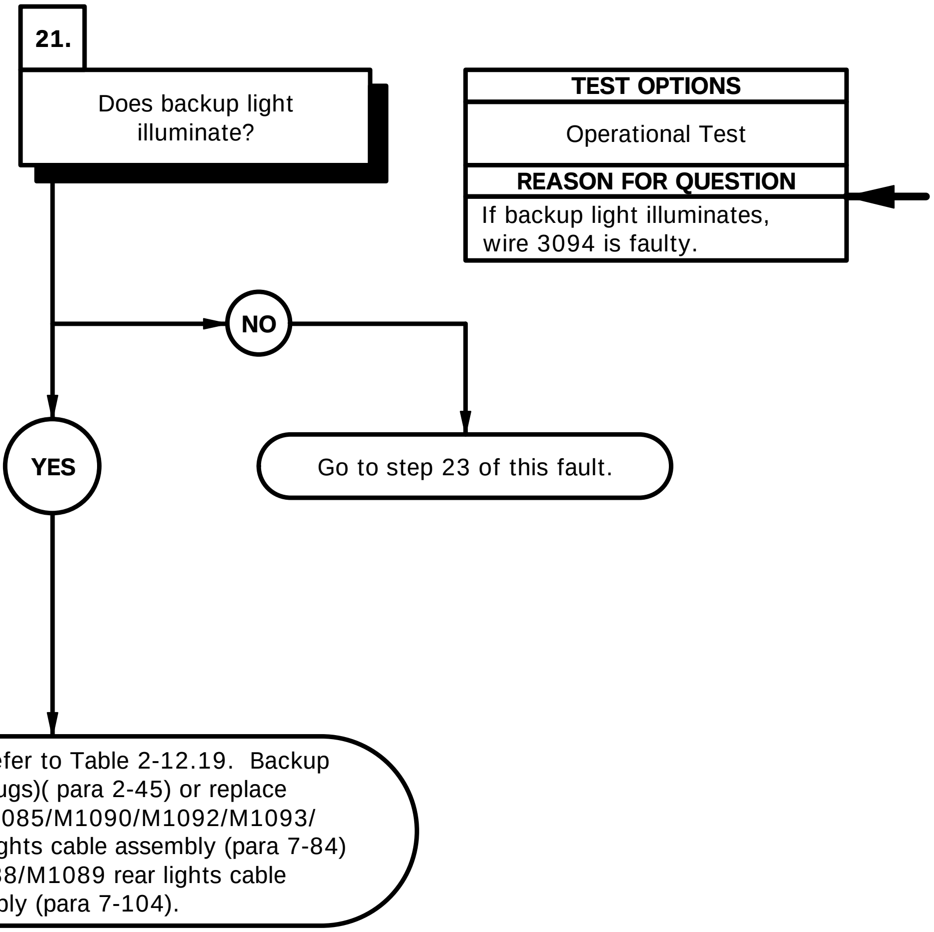
e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
One composite taillight illuminate.
Dashboard cable assembly OK.
Lamp OK.
Composite taillight assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.



21.

Does backup light illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

If backup light illuminates, wire 3094 is faulty.

NO

Go to step 23 of this fault.

YES

Repair wire 3094 (refer to Table 2-12.19. Backup Light Terminal Lugs)(para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

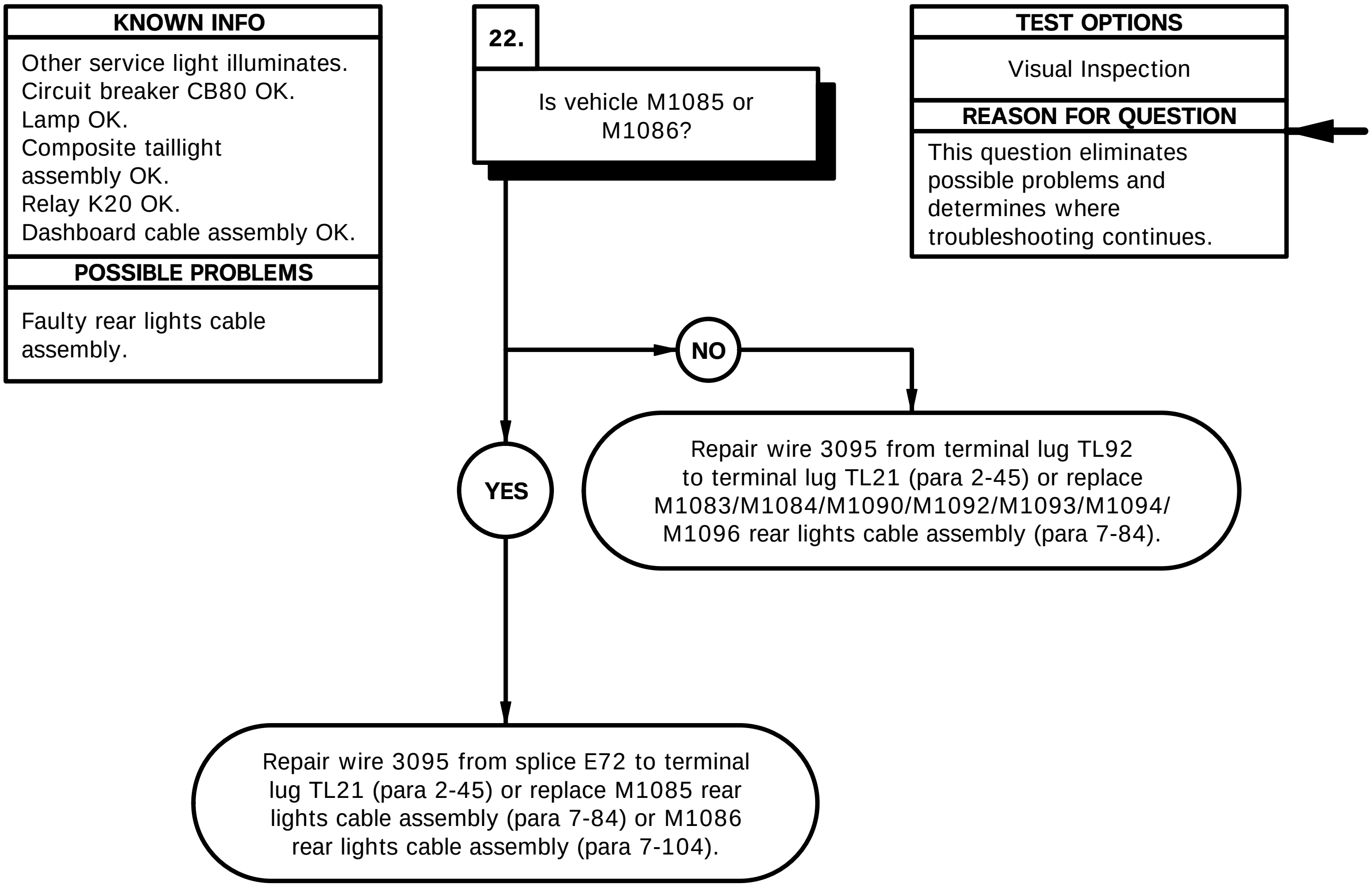
OPERATIONAL TEST

(1) Start engine (TM 9-2320-366-10-1).
(2) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(3) Select R (reverse) on pushbutton shift selector (TM 9-2320-366-10-1).
(4) If backup light does not illuminate, go to step 23 of this fault.
(5) If backup light does illuminate, repair wire 3094 (refer to Table 2-12.19. Backup Light Terminal Lugs) (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(6) Select N (neutral) on pushbutton shift selector (TM 9-2320-366-10-1).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Shut down engine (TM 9-2320-366-10-1).

Table 2-12.19. Backup Light Terminal Lugs

Model	Wire Segment
M1083/M1084/M1085/M1086/ M1090/M1092/M1093/M1094/ M1096	Wire 3094 from Terminal Lug TL18 to Splice E21
M1088	Wire 3094 from Terminal Lug TL18 to Splice E28
M1089	Wire 3094 from Terminal Lug TL18 to Terminal Lug TL17

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

22.

Is vehicle M1085 or M1086?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO

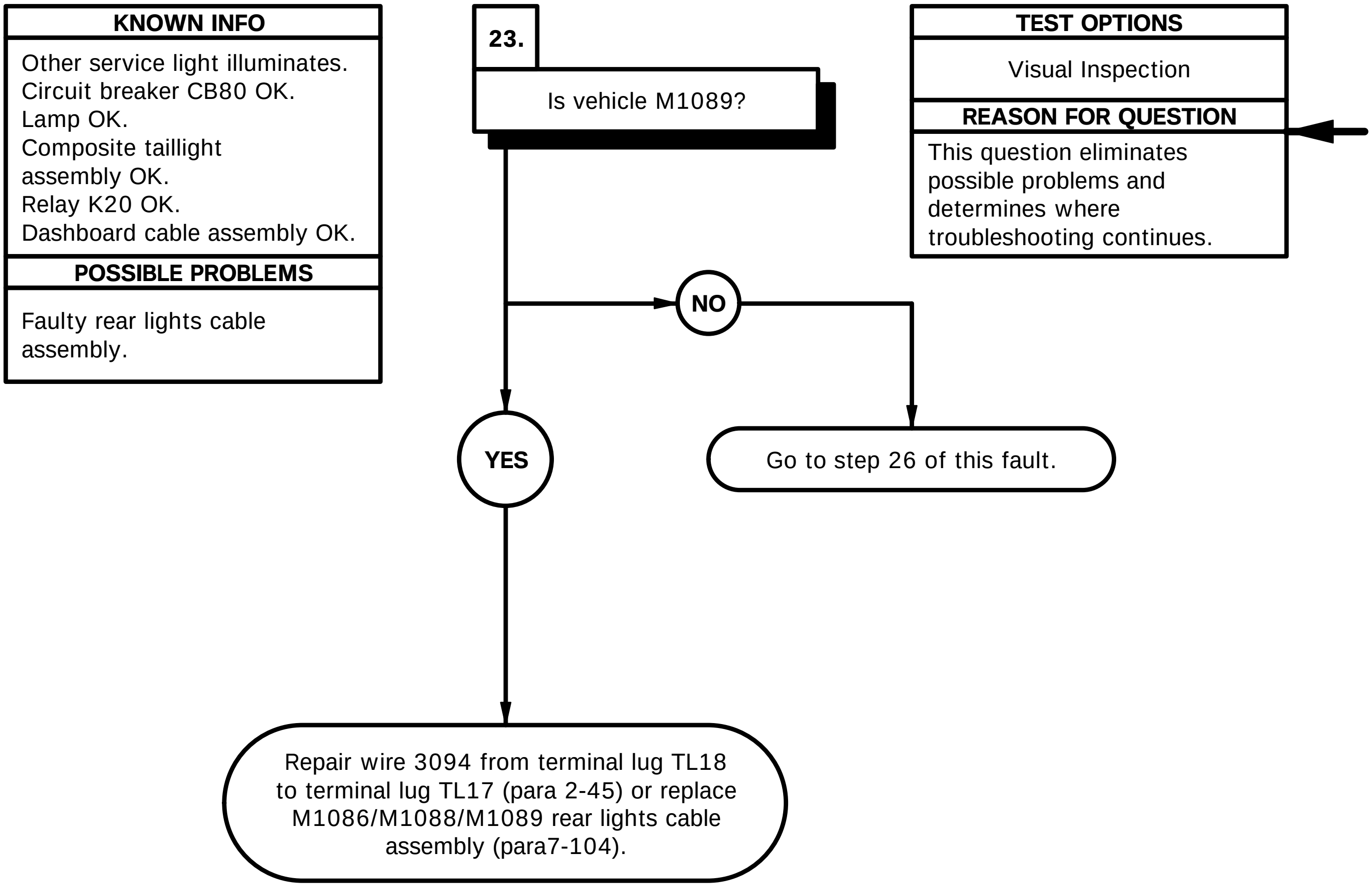
Repair wire 3095 from terminal lug TL92 to terminal lug TL21 (para 2-45) or replace M1083/M1084/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84).

YES

Repair wire 3095 from splice E72 to terminal lug TL21 (para 2-45) or replace M1085 rear lights cable assembly (para 7-84) or M1086 rear lights cable assembly (para 7-104).

If vehicle is not M1085 or M1086, repair wire 3095 from terminal lug TL92 to terminal lug TL21 (para 2-45) or replace M1083/M1084/ M1085/M1090/M1092/M1093/M1094/M1096 rear lights cable assembly (para 7-84). If vehicle is M1085/M1086 repair wire 3095 from splice E72 to terminal lug TL21 (para 2-45) or replace M1085 rear lights cable assembly (para 7-84) or M1086 rear lights cable assembly (para 7-104).

e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

23. Is vehicle M1089?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 26 of this fault.

YES: Repair wire 3094 from terminal lug TL18 to terminal lug TL17 (para 2-45) or replace M1086/M1088/M1089 rear lights cable assembly (para7-104).

If vehicle is not M1089, go to step 26 of this fault. If vehicle is M1089 repair wire 3094 from terminal lug TL18 to terminal lug TL17 (para 2-45) or replace M1086/M1088/M1089 rear lights cable assembly (para 7-104).

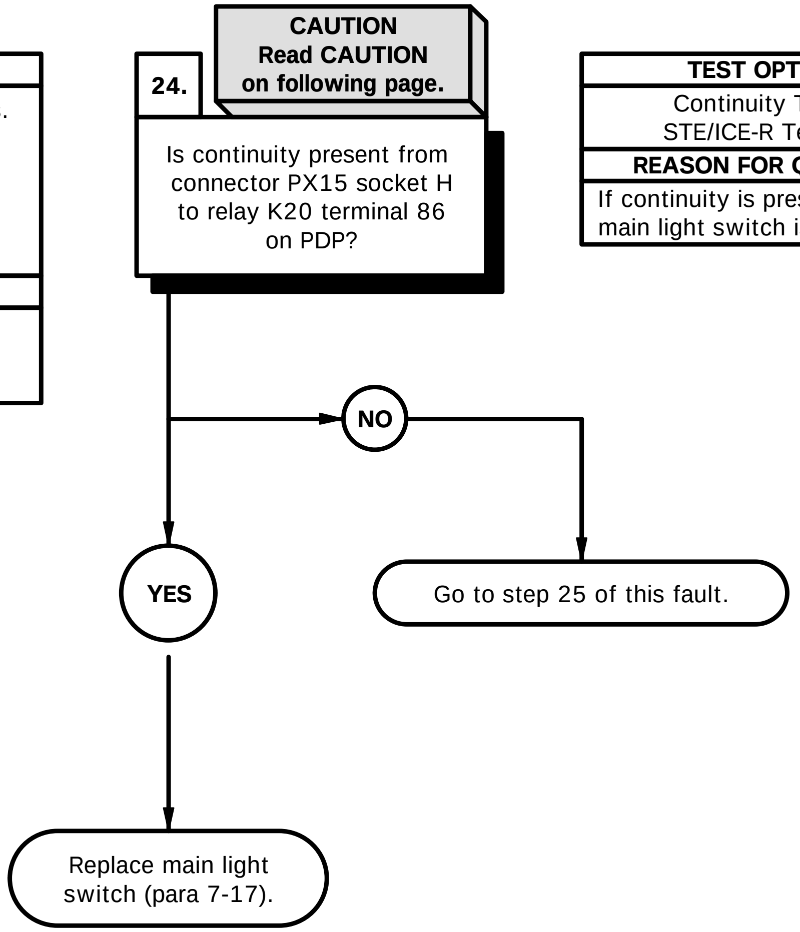
e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Relay K20 OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.



CAUTION
Read CAUTION on following page.

24. Is continuity present from connector PX15 socket H to relay K20 terminal 86 on PDP?

YES: Replace main light switch (para 7-17).

NO: Go to step 25 of this fault.

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is present, main light switch is faulty.

CAUTION

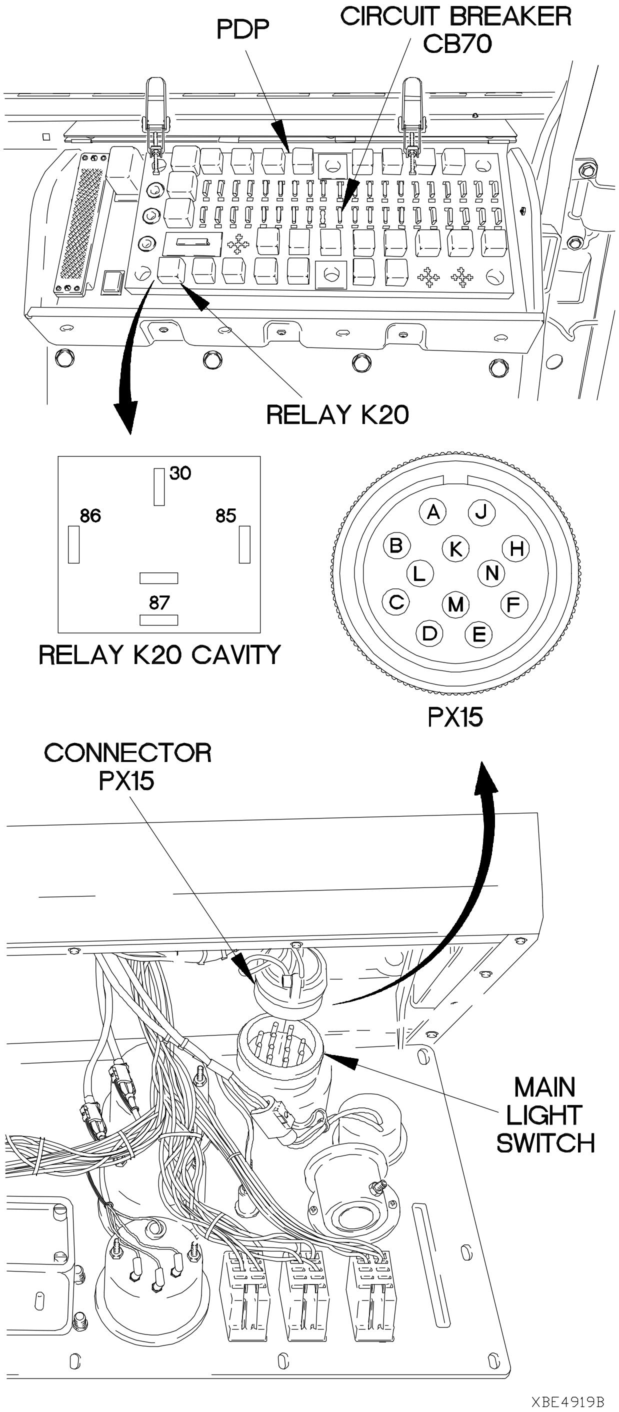
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

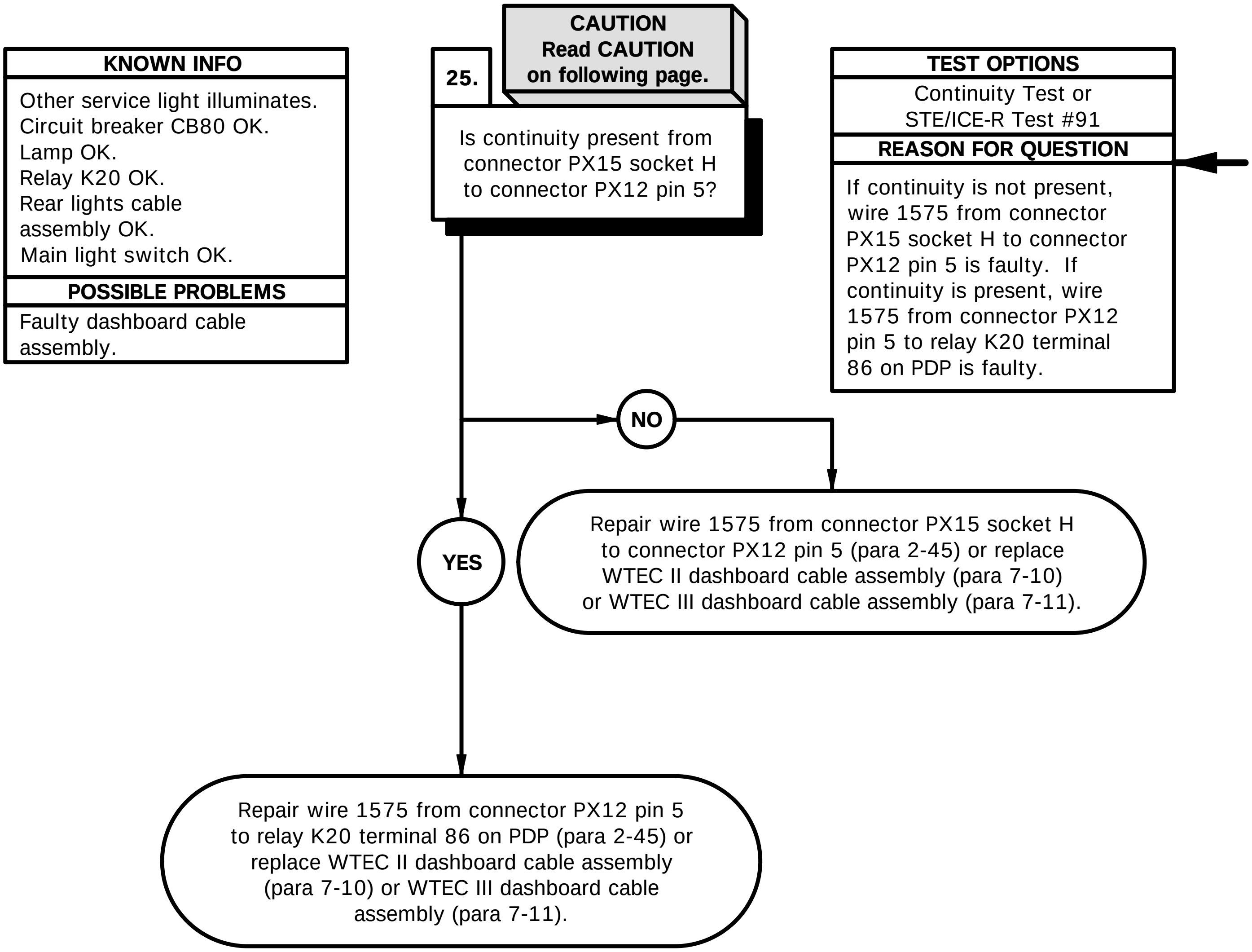
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove circuit breaker CB70 from PDP.
(2) Remove instrument panel assembly for access (para 7-15).
(3) Disconnect connector PX15 from main light switch.
(4) Install circuit breaker CB70 in PDP.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector PX15 socket H.
(7) Connect negative (-) probe of multimeter to relay K20 terminal 86 on PDP and note reading on multimeter.
(8) If continuity is not present, go to step 25 of this fault.
(9) If continuity is present, replace main light switch (para 7-17).



e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Relay K20 OK.
Rear lights cable assembly OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

CAUTION
Read CAUTION on following page.

25. Is continuity present from connector PX15 socket H to connector PX12 pin 5?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1575 from connector PX15 socket H to connector PX12 pin 5 is faulty. If continuity is present, wire 1575 from connector PX12 pin 5 to relay K20 terminal 86 on PDP is faulty.

Repair wire 1575 from connector PX15 socket H to connector PX12 pin 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Repair wire 1575 from connector PX12 pin 5 to relay K20 terminal 86 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

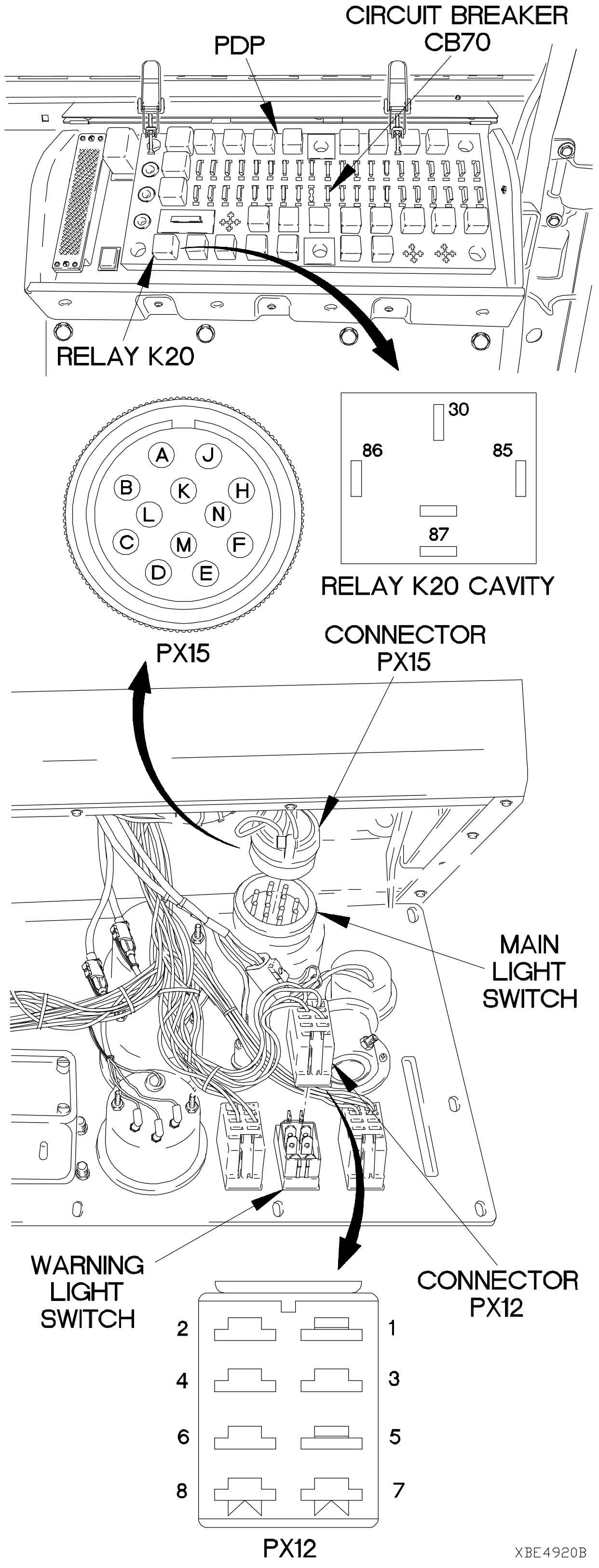
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove circuit breaker CB70 from PDP.
(2) Disconnect connector PX12 from warning light switch.
(3) Install circuit breaker CB70 in PDP.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector PX15 socket H.
(6) Connect negative (-) probe of multimeter to connector PX12 pin 5 and note reading on multimeter.
(7) If continuity is not present, repair wire 1575 from connector PX15 socket H (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, repair wire 1575 from connector PX12 pin 5 to relay K20 terminal 86 on PDP (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Remove circuit breaker CB70 from PDP.
(10) Connect connector PX12 to warning light switch.
(11) Connect connector PX15 to main light switch.
(12) Install circuit breaker CB70 in PDP.
(13) Install relay K20 in PDP.
(14) Install PDP cover (16-2).
(15) Install instrument panel assembly (para 7-15).



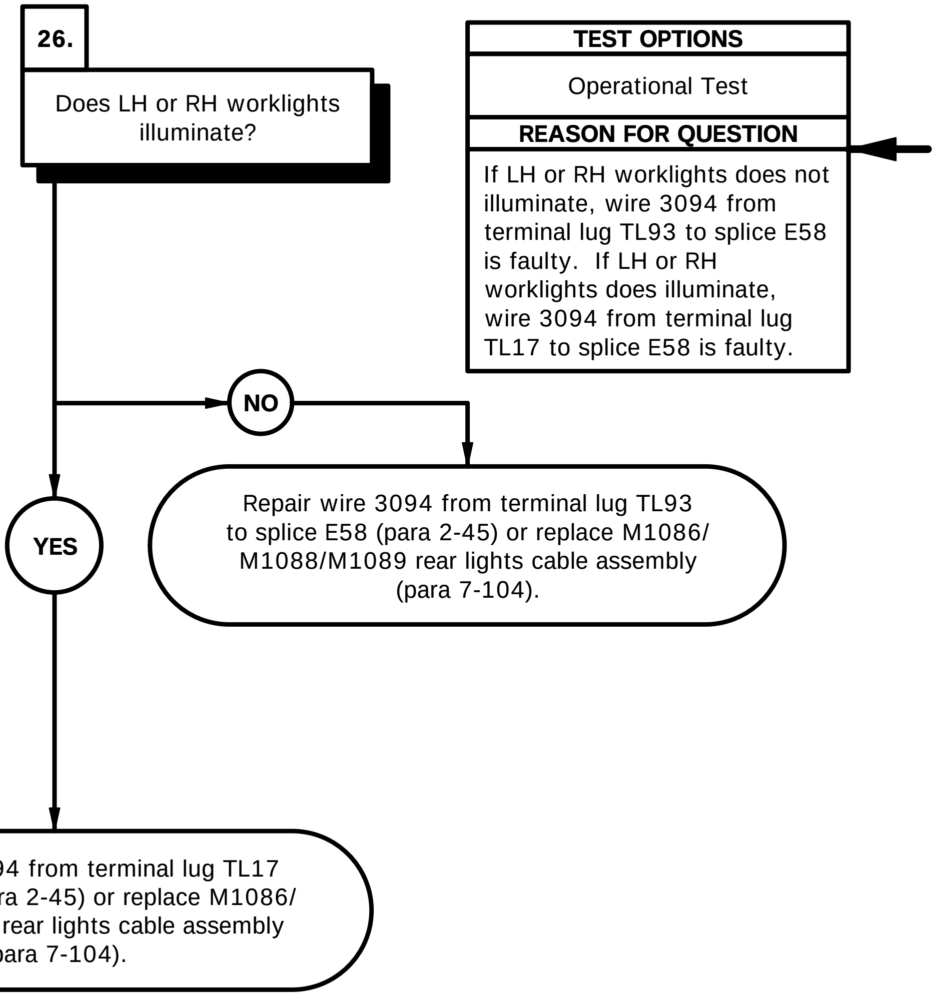
e49. ONE OR BOTH COMPOSITE TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Other service light illuminates.
Circuit breaker CB80 OK.
Lamp OK.
Composite taillight assembly OK.
Relay K20 OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.



26.

Does LH or RH worklights illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

If LH or RH worklights does not illuminate, wire 3094 from terminal lug TL93 to splice E58 is faulty. If LH or RH worklights does illuminate, wire 3094 from terminal lug TL17 to splice E58 is faulty.

NO

Repair wire 3094 from terminal lug TL93 to splice E58 (para 2-45) or replace M1086/ M1088/M1089 rear lights cable assembly (para 7-104).

YES

Repair wire 3094 from terminal lug TL17 to splice E58 (para 2-45) or replace M1086/ M1088/M1089 rear lights cable assembly (para 7-104).

OPERATIONAL TEST

(1) Position main light switch to STOP/PARK (TM 9-2320-366-10-1).
(2) Position work light switch to on (TM 9-2320-366-10-1).
(3) If LH or RH worklights does not illuminate, repair wire 3094 from terminal lug TL93 to splice E58 (para 2-45) or replace M1086/ M1088/M1089 rear lights cable assembly (para 7-104).
(4) If LH or RH worklights does illuminate, repair wire 3094 from terminal lug TL17 to splice E58 (para 2-45) or replace M1086/ M1088/M1089 rear lights cable assembly (para 7-104).
(5) Position worklight switch to off (TM 9-232-366-10-1).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

e50. ONE OR BOTH FRONT BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

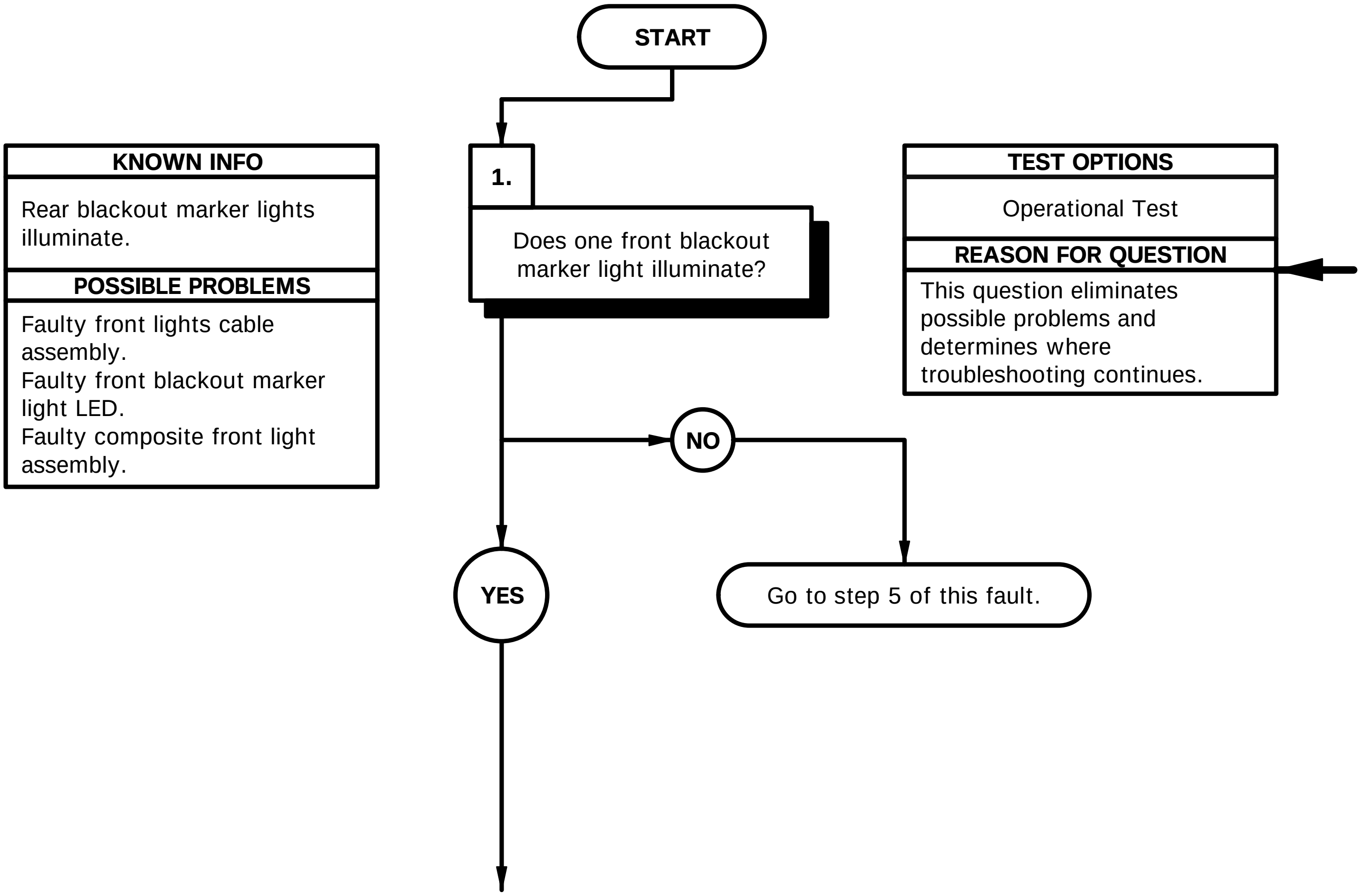
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Materials/Parts
Packing, Preformed (Item 191, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO

Rear blackout marker lights illuminate.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty front blackout marker light LED.
Faulty composite front light assembly.

1. Does one front blackout marker light illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 5 of this fault.

OPERATIONAL TEST

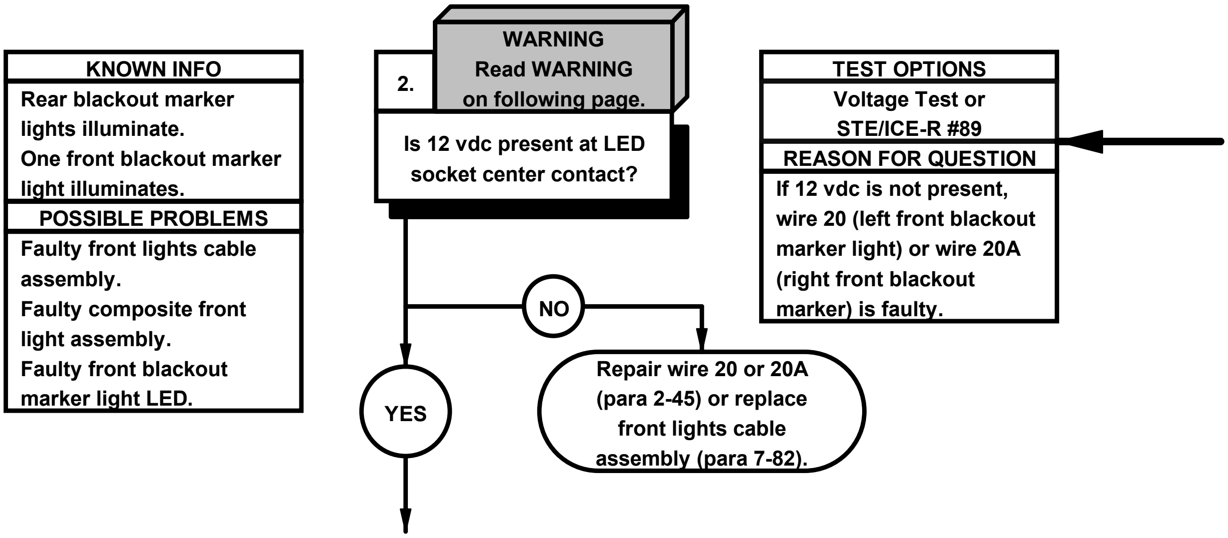
(1) Position main light switch to BO MARKER (TM 9-2320-366-10-1).

(2) Observe front blackout marker lights and determine how many lights do not illuminate.

(3) If both marker lights do not illuminate, go to step 5 of this fault.

(4) Position main light switch to OFF (TM 9-2320-366-10-1).

e50. ONE OR BOTH FRONT BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Rear blackout marker lights illuminate.
One front blackout marker light illuminates.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty composite front light assembly.
Faulty front blackout marker light LED.

WARNING
Read WARNING on following page.

2. Is 12 vdc present at LED socket center contact?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 20 (left front blackout marker light) or wire 20A (right front blackout marker) is faulty.

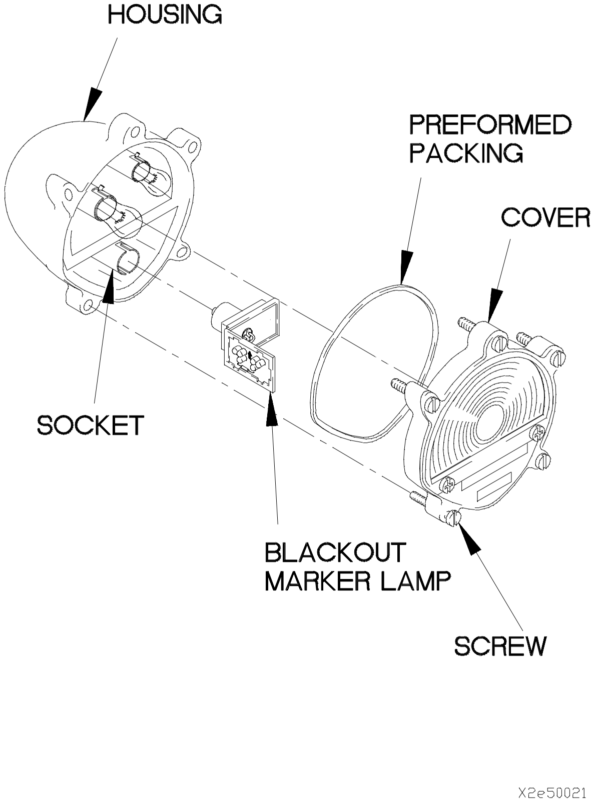
NO: Repair wire 20 or 20A (para 2-45) or replace front lights cable assembly (para 7-82).

YES

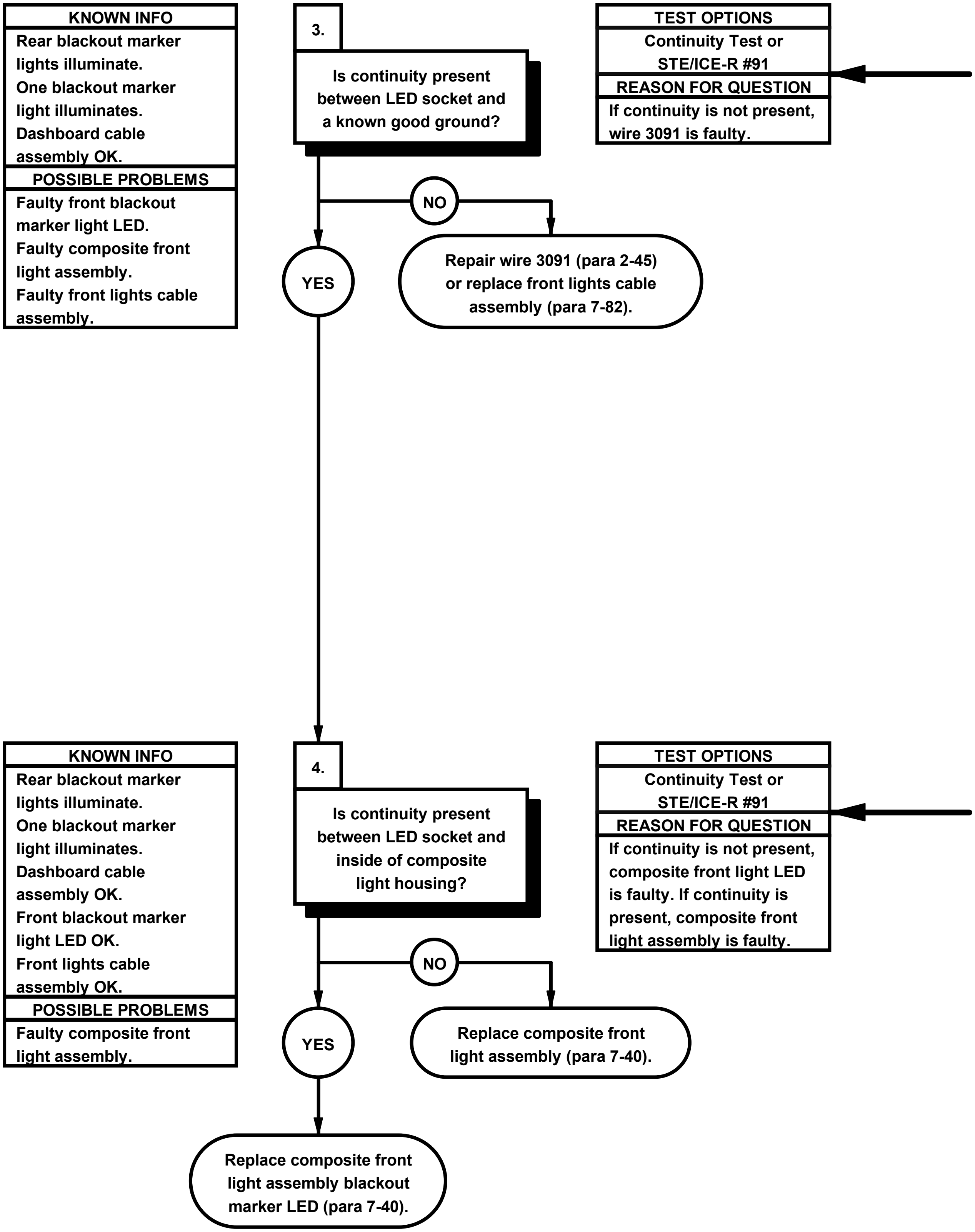
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Loosen five screws on cover. **(2) Remove cover and preformed packing from housing. Discard preformed packing.** **(3) Open blackout marker lamp.** **(4) Remove blackout marker lamp from socket.** **(5) Set multimeter to volts dc.** **(6) Connect positive (+) probe of multimeter to LED socket center contact.** **(7) Connect negative (-) probe of multimeter to ground.** **(8) Position main light switch BO MARKER (TM 9-2320-366-10-1) and note reading on multimeter.** **(9) If 12 vdc is not present, repair wire 20 (left front blackout marker) or wire 20A (right front blackout marker) (para 2-45) or replace front lights cable assembly (para 7-82).** **(10) Position main light switch to OFF (TM 9-2320-366-10-1).**



e50. ONE OR BOTH FRONT BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Rear blackout marker lights illuminate.
One blackout marker light illuminates.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front blackout marker light LED.
Faulty composite front light assembly.
Faulty front lights cable assembly.

3. Is continuity present between LED socket and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3091 is faulty.

NO: Repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82).

YES

KNOWN INFO

Rear blackout marker lights illuminate.
One blackout marker light illuminates.
Dashboard cable assembly OK.
Front blackout marker light LED OK.
Front lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty composite front light assembly.

4. Is continuity present between LED socket and inside of composite light housing?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

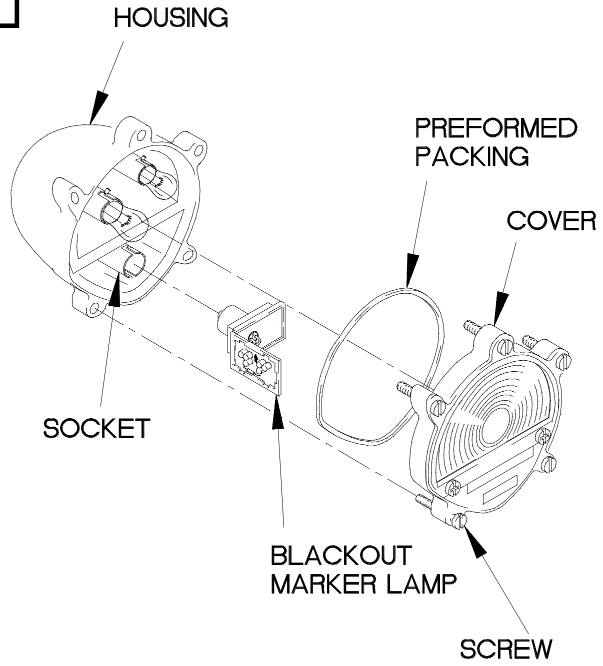
If continuity is not present, composite front light LED is faulty. If continuity is present, composite front light assembly is faulty.

NO: Replace composite front light assembly (para 7-40).

YES: Replace composite front light assembly blackout marker LED (para 7-40).

CONTINUITY TEST

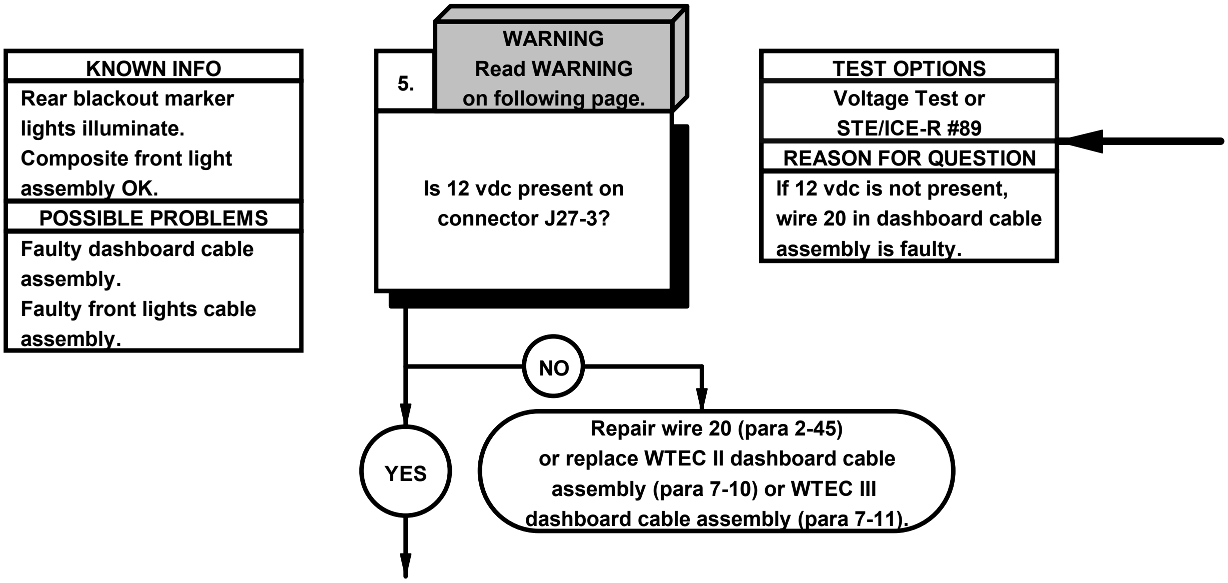
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to LED socket.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to inside of housing.
(3) Connect negative (-) probe of multimeter to socket and note reading on multimeter.
(4) If continuity is not present, replace composite front light assembly blackout marker LED (para 7-40).
(5) If continuity is present, replace composite front light assembly (para 7-40).
(6) Open blackout marker lamp.
(7) Install blackout marker lamp in socket.
(8) Install preformed packing and cover on housing with five screws.

e50. ONE OR BOTH FRONT BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Rear blackout marker lights illuminate.
Composite front light assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty front lights cable assembly.

WARNING
Read WARNING on following page.

Is 12 vdc present on connector J27-3?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 20 in dashboard cable assembly is faulty.

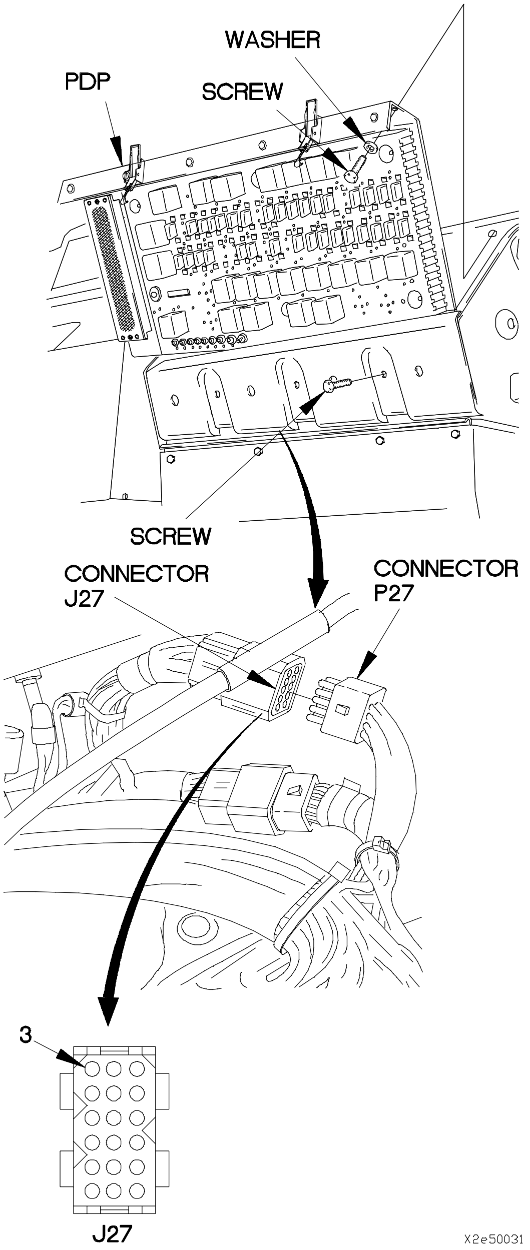
Repair wire 20 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

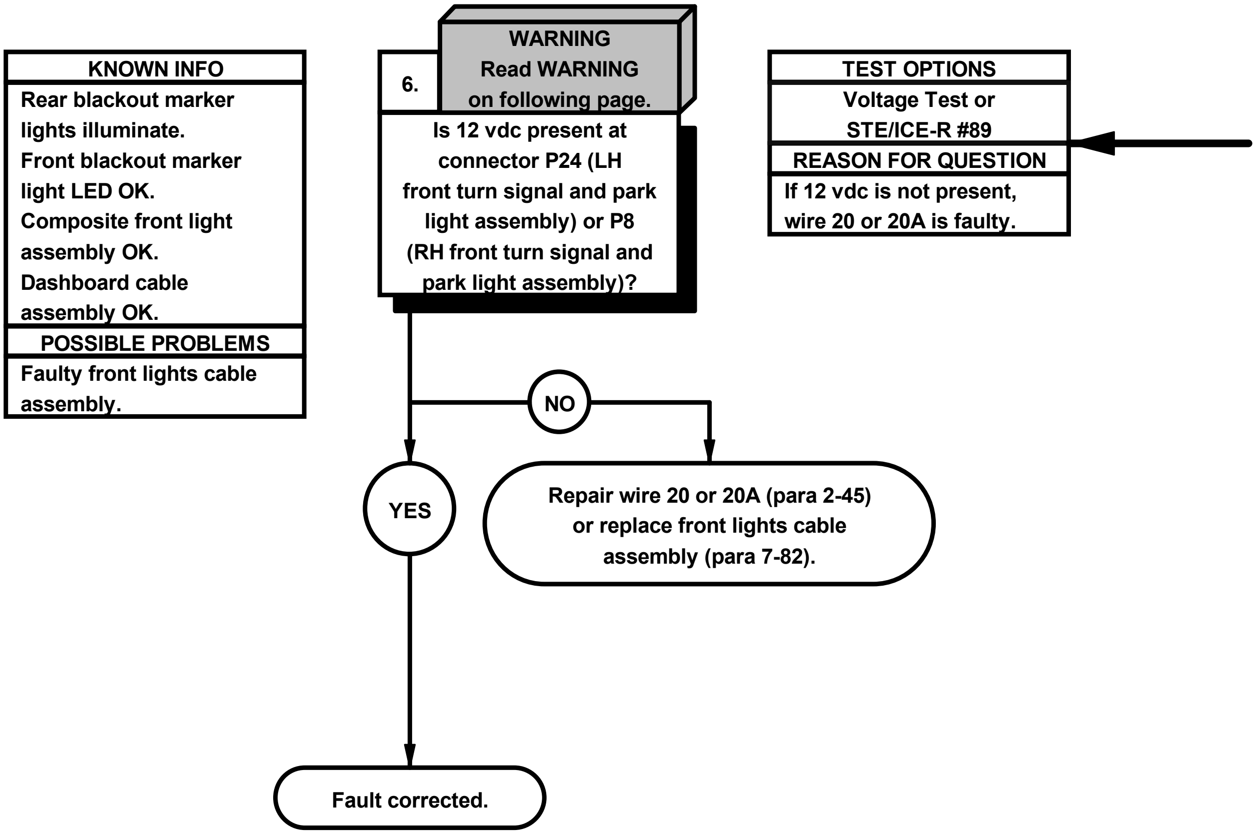
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J27 from connector P27.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to J27-3.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If 12 vdc is not present, repair wire 20 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Connect connector J27 to connector P27.
(13) Install PDP on dashboard with three screws.
(14) Install three washers and screws in PDP.
(15) Install PDP cover (para 16-2).



e50. ONE OR BOTH FRONT BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Rear blackout marker lights illuminate.

Front blackout marker light LED OK.

Composite front light assembly OK.

Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.

WARNING
Read WARNING on following page.

6. Is 12 vdc present at connector P24 (LH front turn signal and park light assembly) or P8 (RH front turn signal and park light assembly)?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 20 or 20A is faulty.

Repair wire 20 or 20A (para 2-45) or replace front lights cable assembly (para 7-82).

Fault corrected.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector P24 (LH composite front light assembly) or connector P8 (RH composite front assembly) from composite front assembly connector.

(2) Set multimeter to ohms.

(3) Connect positive (+) probe of multimeter to connector P24 or connector P8.

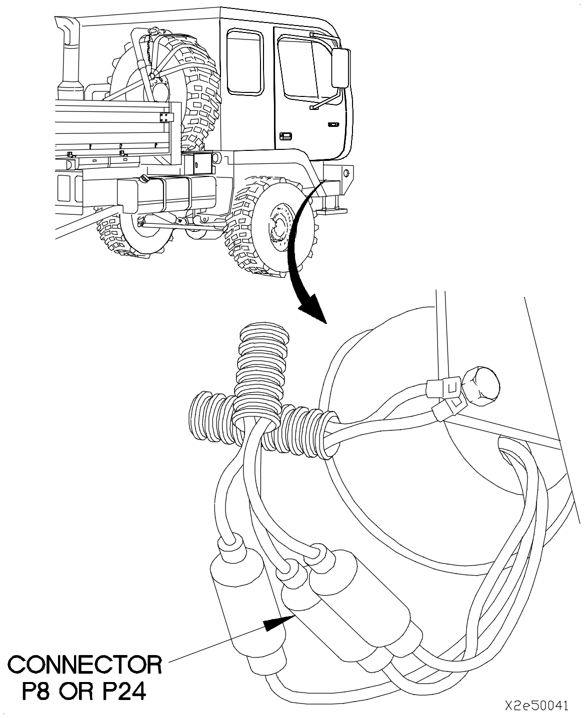
(4) Connect negative (-) probe of multimeter to ground.

(5) Position main light switch to BO MARKER (TM 9-2320-366-10-1) and note reading on multimeter.

(6) If 12 vdc is not present, repair wire 20 or 20A (para 2-45) or replace front lights cable assembly (para 7-82).

(7) Position main light switch to OFF (TM 9-2320-366-10-1).

(8) Connect connector P24 or connector P8 to composite front light assembly connector.



e51. BLACKOUT DRIVE LIGHT DOES NOT ILLUMINATE

INITIAL SETUP

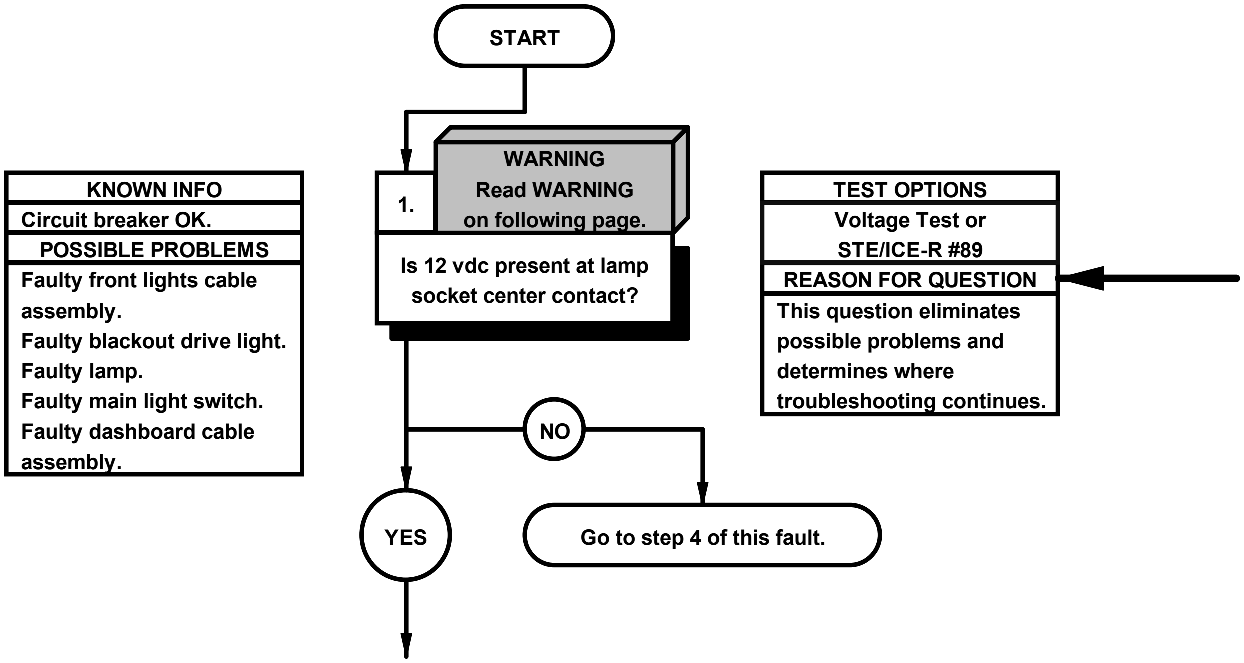
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Materials/Parts
Packing, Preformed (Item 189, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Circuit breaker OK.

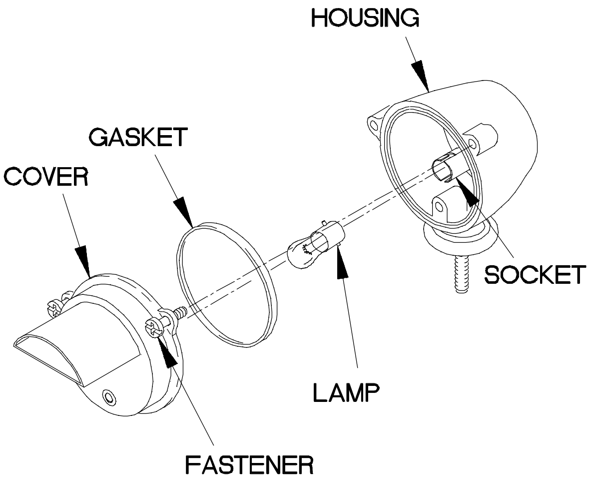
POSSIBLE PROBLEMS
Faulty front lights cable assembly.
Faulty blackout drive light.
Faulty lamp.
Faulty main light switch.
Faulty dashboard cable assembly.

1. Is 12 vdc present at lamp socket center contact?

TEST OPTIONS
Voltage Test or
STE/ICE-R #89

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

Go to step 4 of this fault.



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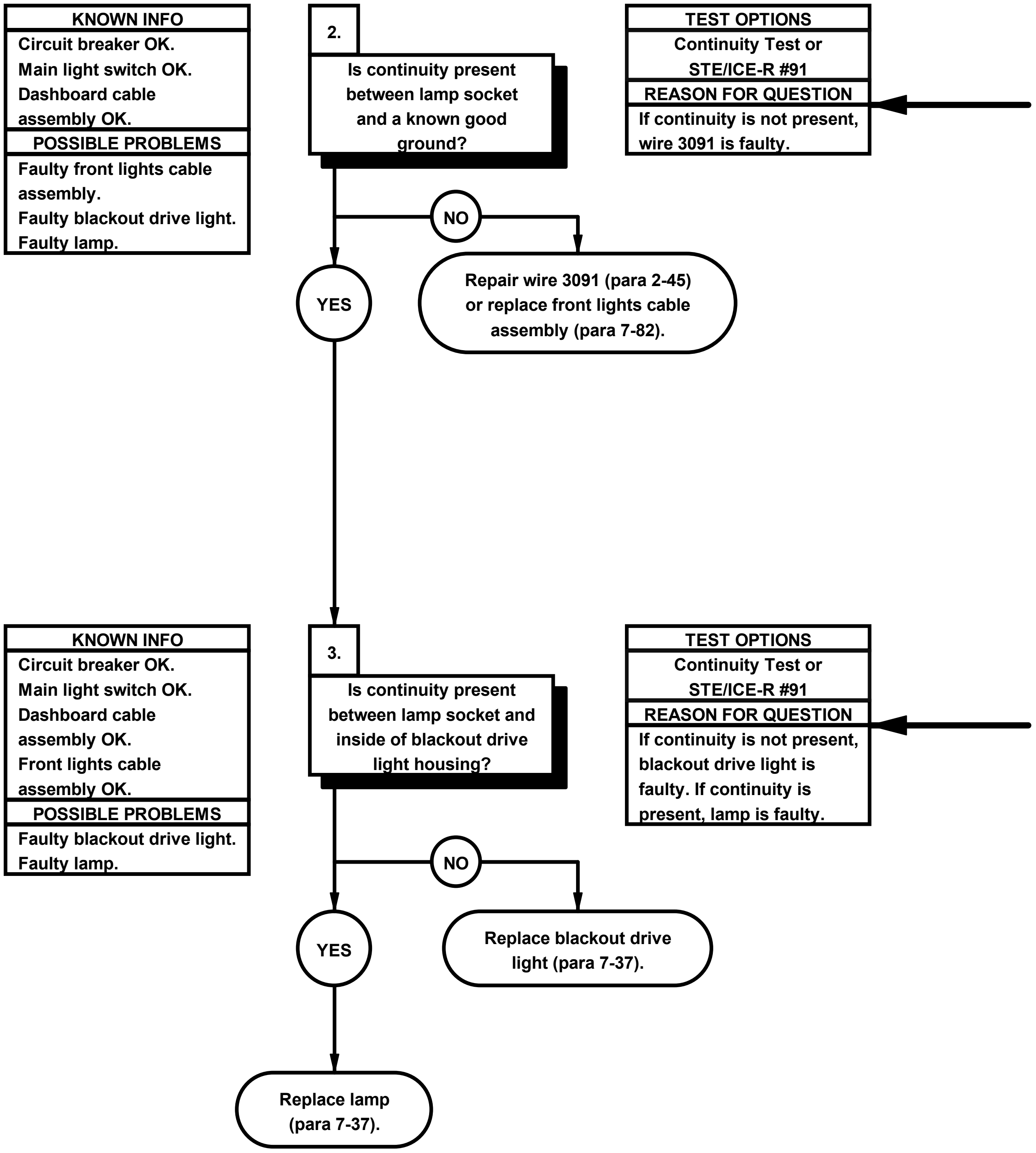
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Loosen three screws on cover.
(2) Remove cover and gasket from housing. Discard gasket.
(3) Remove lamp from socket.
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to lamp socket center contact.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 12 vdc is not present, go to step 4 of this fault.
(9) Position main light switch to OFF (TM 9-2320-366-10-1).

e51. BLACKOUT DRIVE LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Main light switch OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty blackout drive light.
Faulty lamp.

2. Is continuity present between lamp socket and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3091 is faulty.

NO: Repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82).

KNOWN INFO

Circuit breaker OK.
Main light switch OK.
Dashboard cable assembly OK.
Front lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty blackout drive light.
Faulty lamp.

3. Is continuity present between lamp socket and inside of blackout drive light housing?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

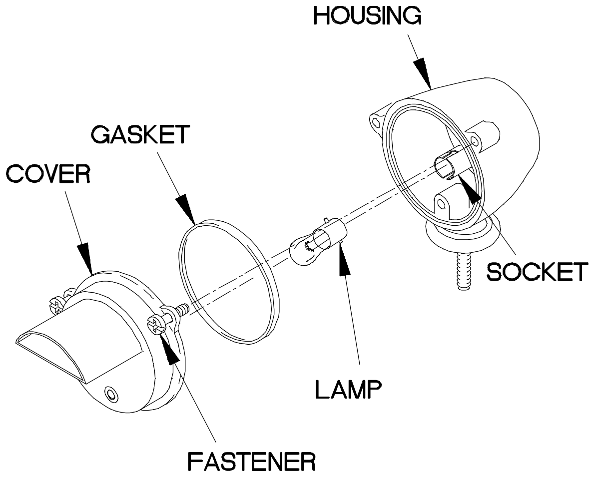
If continuity is not present, blackout drive light is faulty. If continuity is present, lamp is faulty.

NO: Replace blackout drive light (para 7-37).

YES: Replace lamp (para 7-37).

CONTINUITY TEST

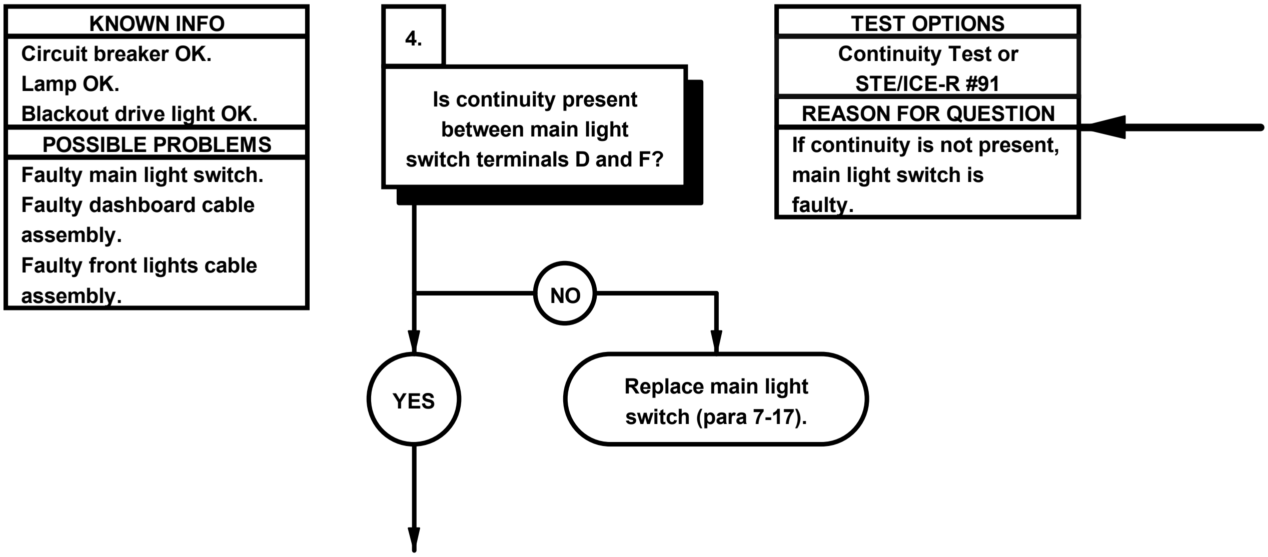
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to lamp socket.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to inside of blackout drive light housing.
(3) Connect negative (-) probe of multimeter to lamp socket and note reading on multimeter.
(4) If continuity is not present, replace blackout drive light (para 7-37).
(5) If continuity is present, replace lamp (para 7-37).
(6) Install lamp in socket.
(7) Install gasket and cover on housing with three screws.

e51. BLACKOUT DRIVE LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Lamp OK.
Blackout drive light OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dashboard cable assembly.
Faulty front lights cable assembly.

4.

Is continuity present between main light switch terminals D and F?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

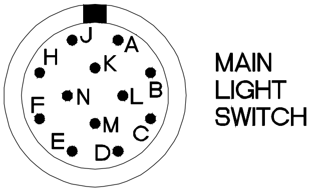
REASON FOR QUESTION

If continuity is not present, main light switch is faulty.

Replace main light switch (para 7-17).

CONTINUITY TEST

(1) Remove main light switch (para 7-17).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to main light switch terminal F.
(4) Connect negative (-) probe of multimeter to main light switch terminal D.
(5) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If continuity is not present, replace main light switch (para 7-17).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Install main light switch (para 7-17).



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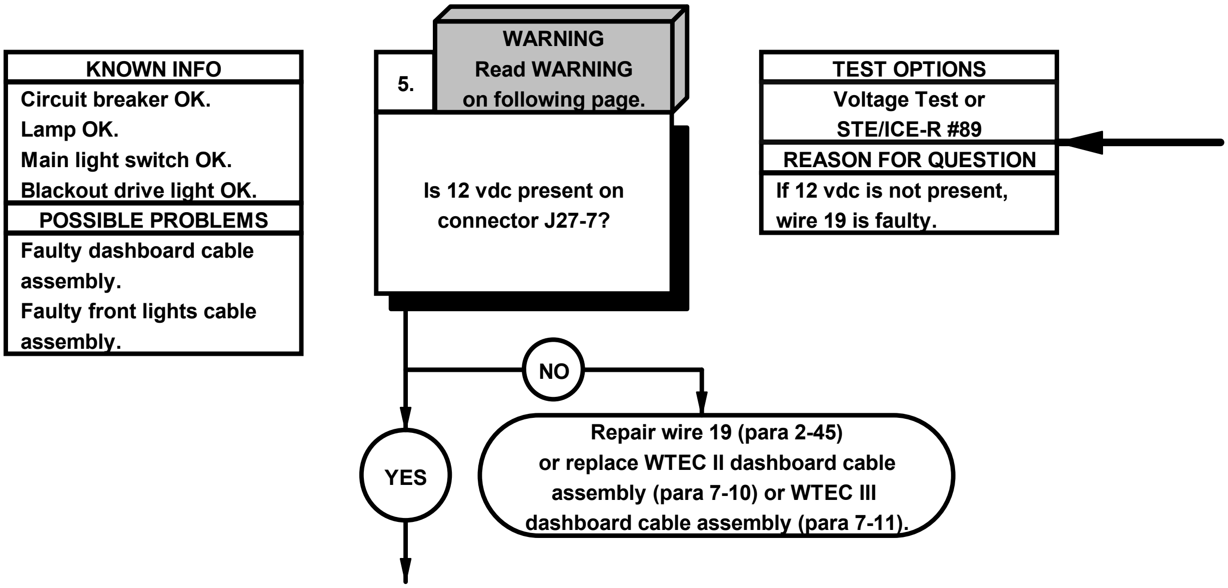
e51. BLACKOUT DRIVE LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Lamp OK.
Main light switch OK.
Blackout drive light OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty front lights cable assembly.

5\.

WARNING
Read WARNING on following page.

Is 12 vdc present on connector J27-7?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 19 is faulty.

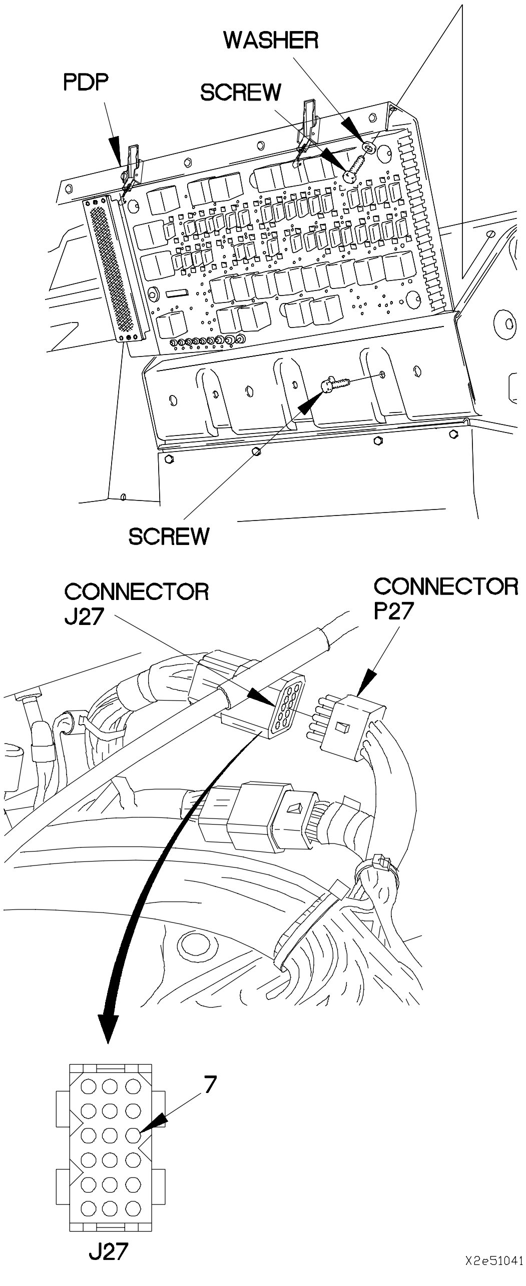
Repair wire 19 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

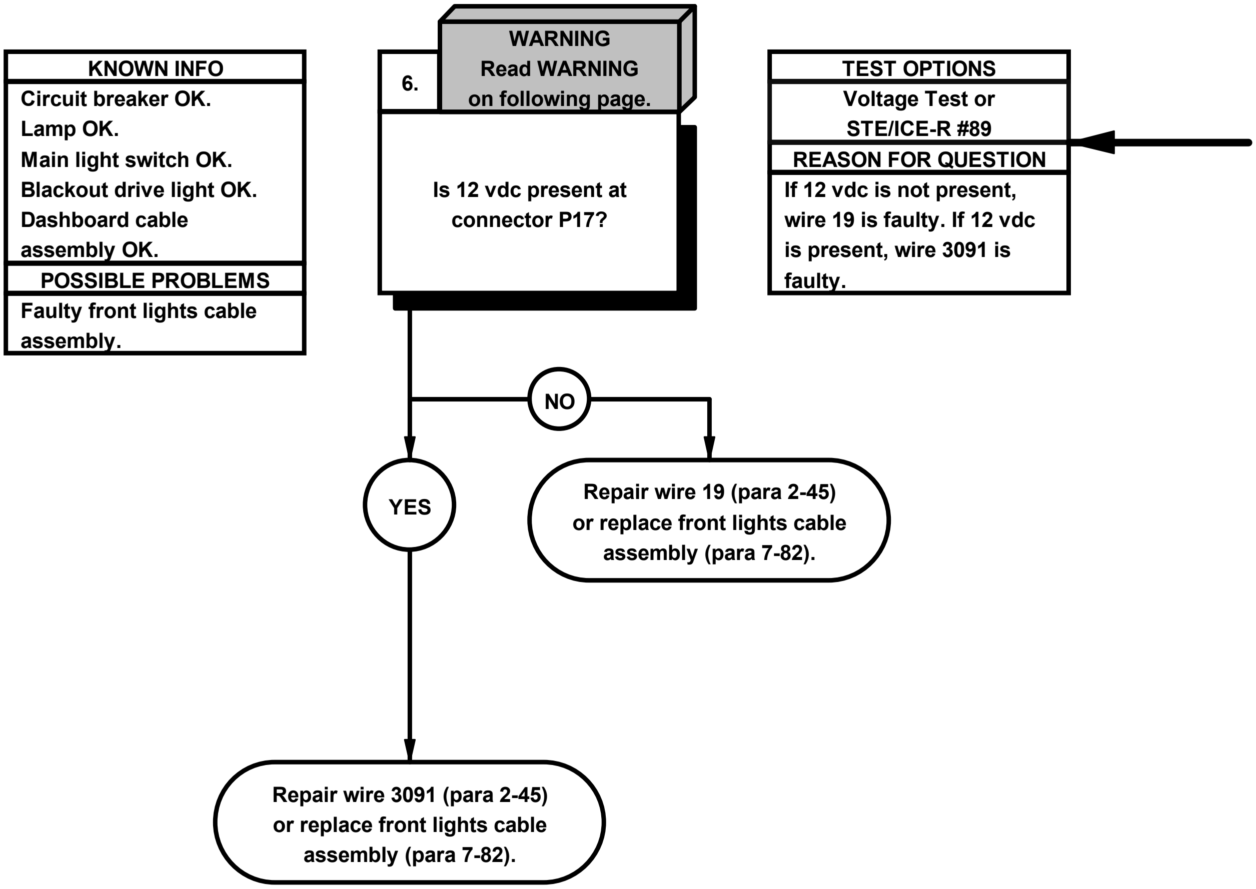
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J27 from connector P27.
(6) Set multimeter to volts dc.
(7) Connect positive (+) probe of multimeter to J27-7.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If 12 vdc is not present, repair wire 19 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Connect connector J27 to connector P27.
(13) Install PDP on dashboard with three screws.
(14) Install three washers and screws in PDP.
(15) Install PDP cover (para 16-2).



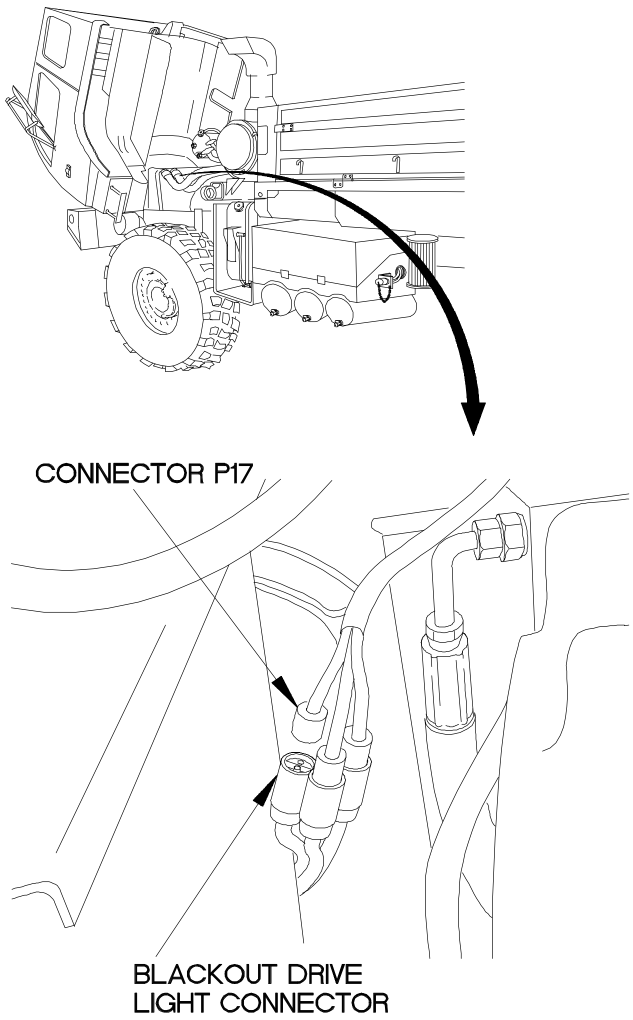
e51. BLACKOUT DRIVE LIGHT DOES NOT ILLUMINATE (CONT)



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Disconnect connector P17 from blackout drive light connector. (2) Set multimeter to volts dc. (3) Connect positive (+) probe of multimeter to connector P17. (4) Connect negative (-) probe of multimeter to ground. (5) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (6) If 12 vdc is not present, repair wire 19 (para 2-45) or replace front lights cable assembly (para 7-82). (7) If 12 vdc is present, repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82). (8) Position main light switch to OFF (TM 9-2320-366-10-1). (9) Connect connector P17 to blackout drive light connector.



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e52. ONE OR BOTH REAR BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Packing, Preformed (Item 191, Appendix G)
Nut, Self-Locking (Item 128, Appendix G)

Personnel Required
(2)

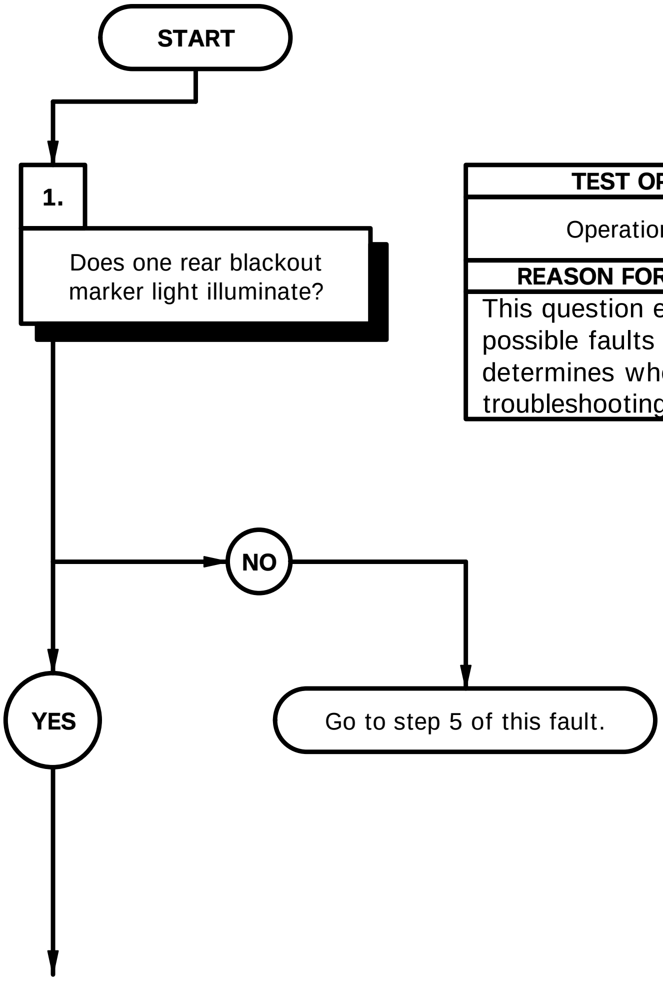
References
TM 9-4910-571-12&P

KNOWN INFO

Front blackout marker lights illuminate.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear blackout marker light LED.
Faulty composite taillight assembly.
Faulty dashboard cable assembly.



TEST OPTIONS

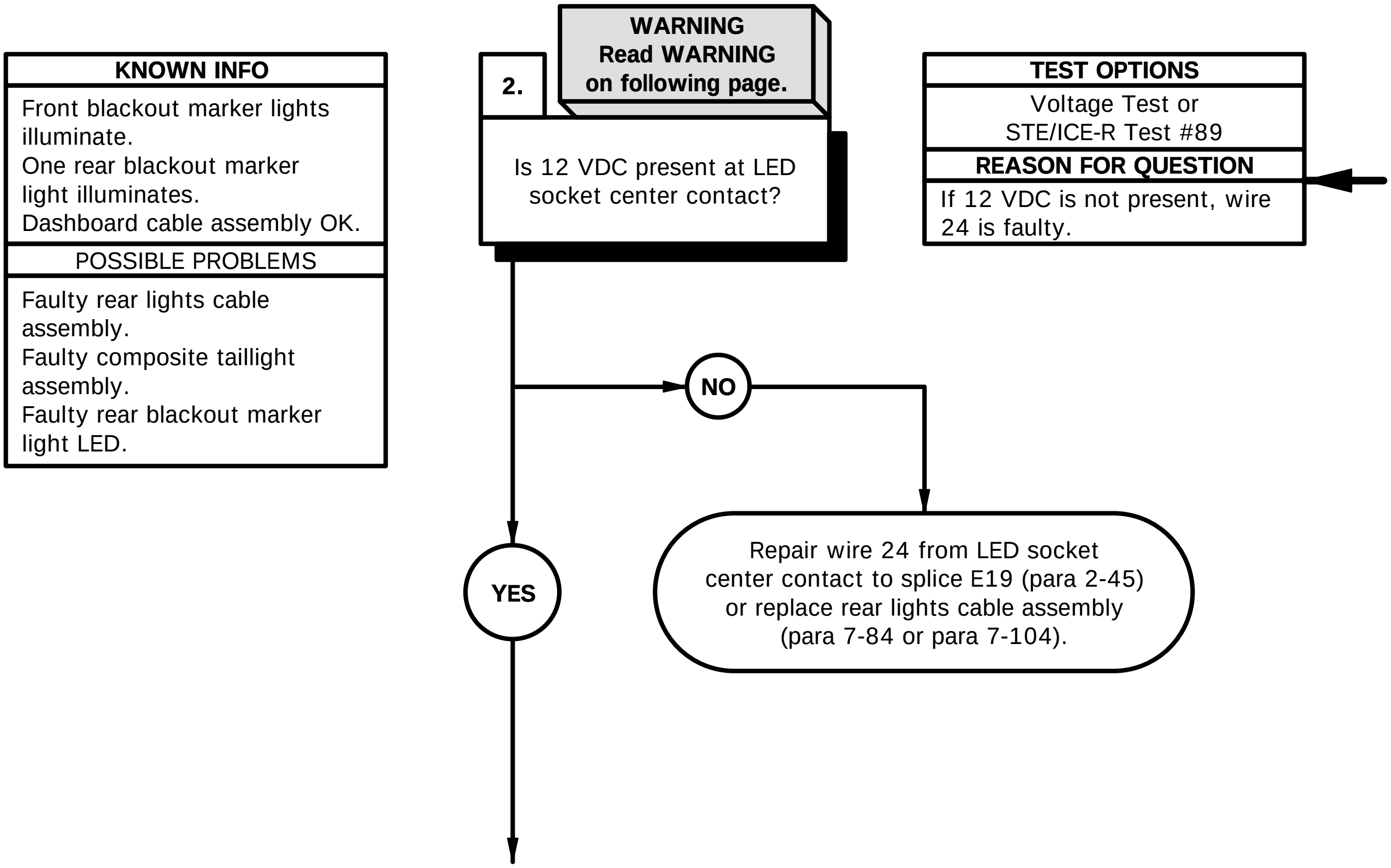
Operational Test

REASON FOR QUESTION

This question eliminates possible faults and determines where troubleshooting continues.

(1) Position main light switch to BO MARKER (TM 9-2320-366-10-1).
(2) Observe operation of rear blackout marker lights.
(3) If neither rear blackout marker light illuminates, go to step 5 of this fault.
(4) Position main light switch to OFF (TM 9-2320-366-10-1).

e52. ONE OR BOTH REAR BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Front blackout marker lights illuminate.
One rear blackout marker light illuminates.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty rear blackout marker light LED.

2.

WARNING
Read WARNING on following page.

Is 12 VDC present at LED socket center contact?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 24 is faulty.

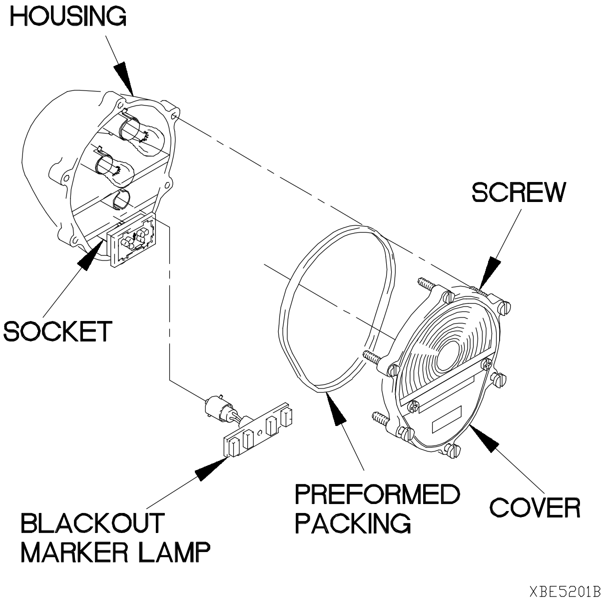
Repair wire 24 from LED socket center contact to splice E19 (para 2-45) or replace rear lights cable assembly (para 7-84 or para 7-104).

WARNING

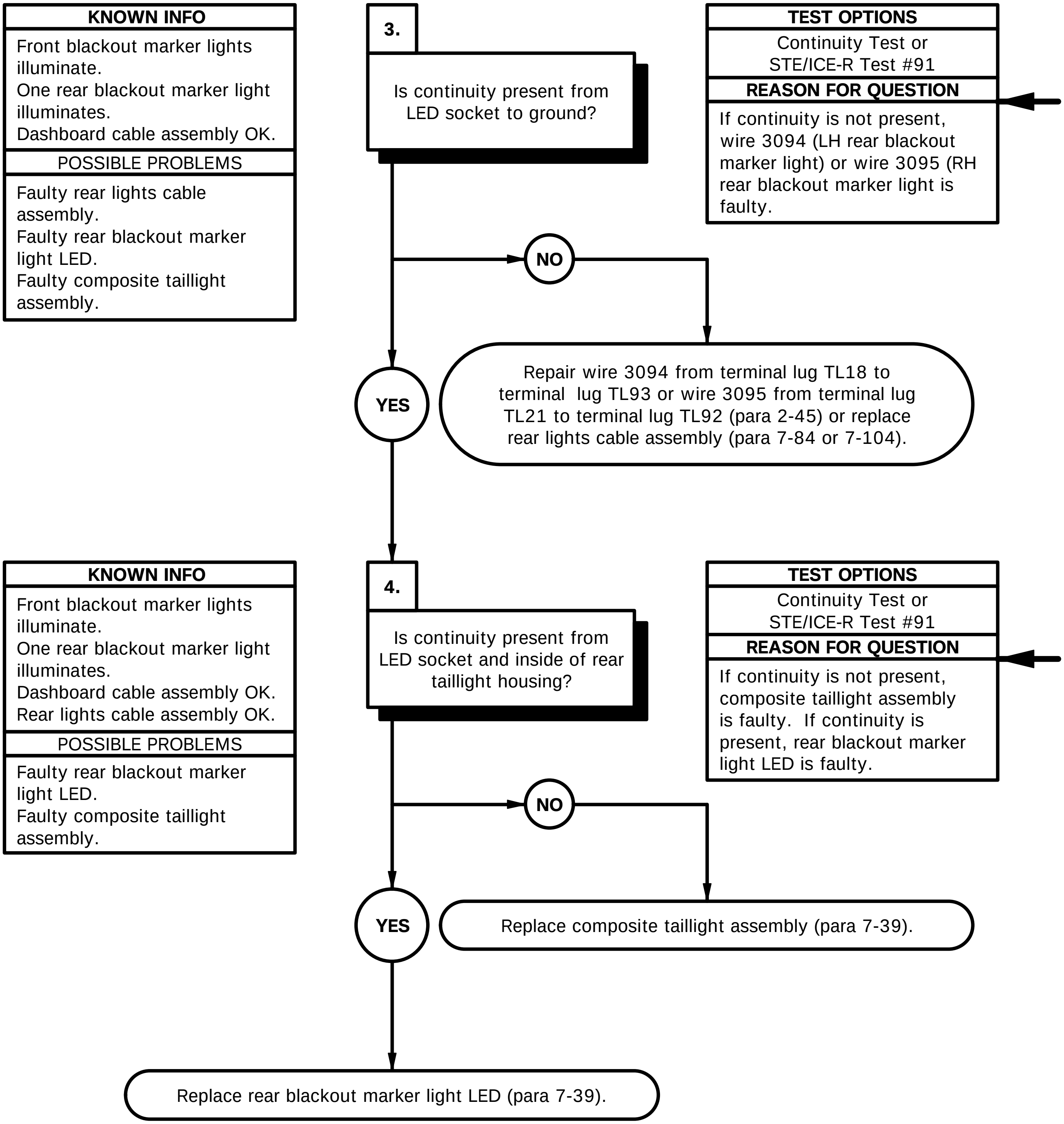
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Loosen six screws and remove cover and preformed packing from housing. Discard preformed packing.
(2) Open blackout marker lamp.
(3) Remove blackout marker lamp from socket.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to LED socket center contact.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position main light switch to BO MARKER (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 12 VDC is not present, repair wire 24 from LED socket center contact to splice E19 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).



e52. ONE OR BOTH REAR BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Front blackout marker lights illuminate.
One rear blackout marker light illuminates.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear blackout marker light LED.
Faulty composite taillight assembly.

3. Is continuity present from LED socket to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3094 (LH rear blackout marker light) or wire 3095 (RH rear blackout marker light is faulty.

NO: Repair wire 3094 from terminal lug TL18 to terminal lug TL93 or wire 3095 from terminal lug TL21 to terminal lug TL92 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

KNOWN INFO

Front blackout marker lights illuminate.
One rear blackout marker light illuminates.
Dashboard cable assembly OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear blackout marker light LED.
Faulty composite taillight assembly.

4. Is continuity present from LED socket and inside of rear taillight housing?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, composite taillight assembly is faulty. If continuity is present, rear blackout marker light LED is faulty.

NO: Replace composite taillight assembly (para 7-39).

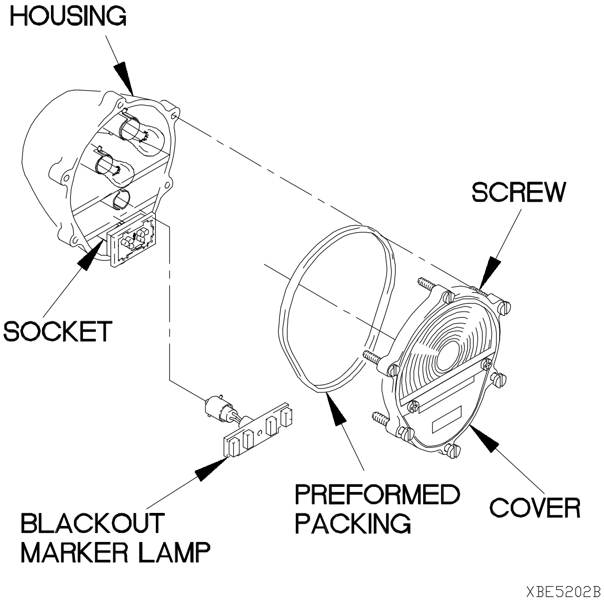
YES: Replace rear blackout marker light LED (para 7-39).

CONTINUITY TEST

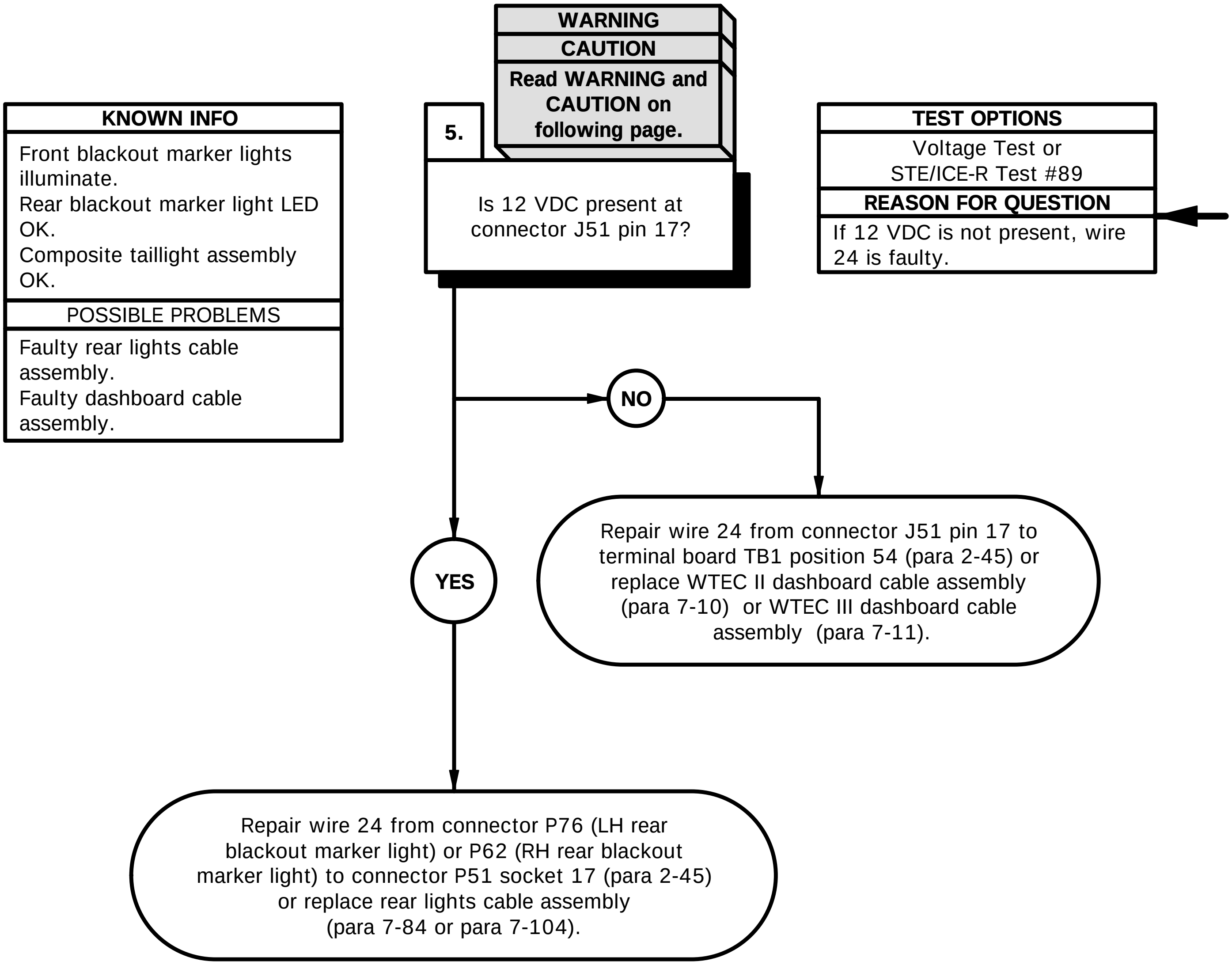
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to LED socket.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3094 from terminal lug TL18 to terminal lug TL93 (LH rear blackout marker light) or wire 3095 from terminal lug TL21 to terminal lug TL92 (RH rear blackout marker light) (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to inside of housing.
(3) Connect negative (-) probe of multimeter to LED socket and note reading on multimeter.
(4) If continuity is not present, replace composite taillight assembly (para 7-39).
(5) If continuity is present, replace rear blackout marker light LED (para 7-39).
(6) Open blackout marker lamp.
(7) Install blackout marker lamp in socket.
(8) Install preformed packing and cover on housing with six screws.



e52. ONE OR BOTH REAR BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Front blackout marker lights illuminate.
Rear blackout marker light LED OK.
Composite taillight assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

5.

Is 12 VDC present at connector J51 pin 17?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 24 is faulty.

Repair wire 24 from connector J51 pin 17 to terminal board TB1 position 54 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Repair wire 24 from connector P76 (LH rear blackout marker light) or P62 (RH rear blackout marker light) to connector P51 socket 17 (para 2-45) or replace rear lights cable assembly (para 7-84 or para 7-104).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

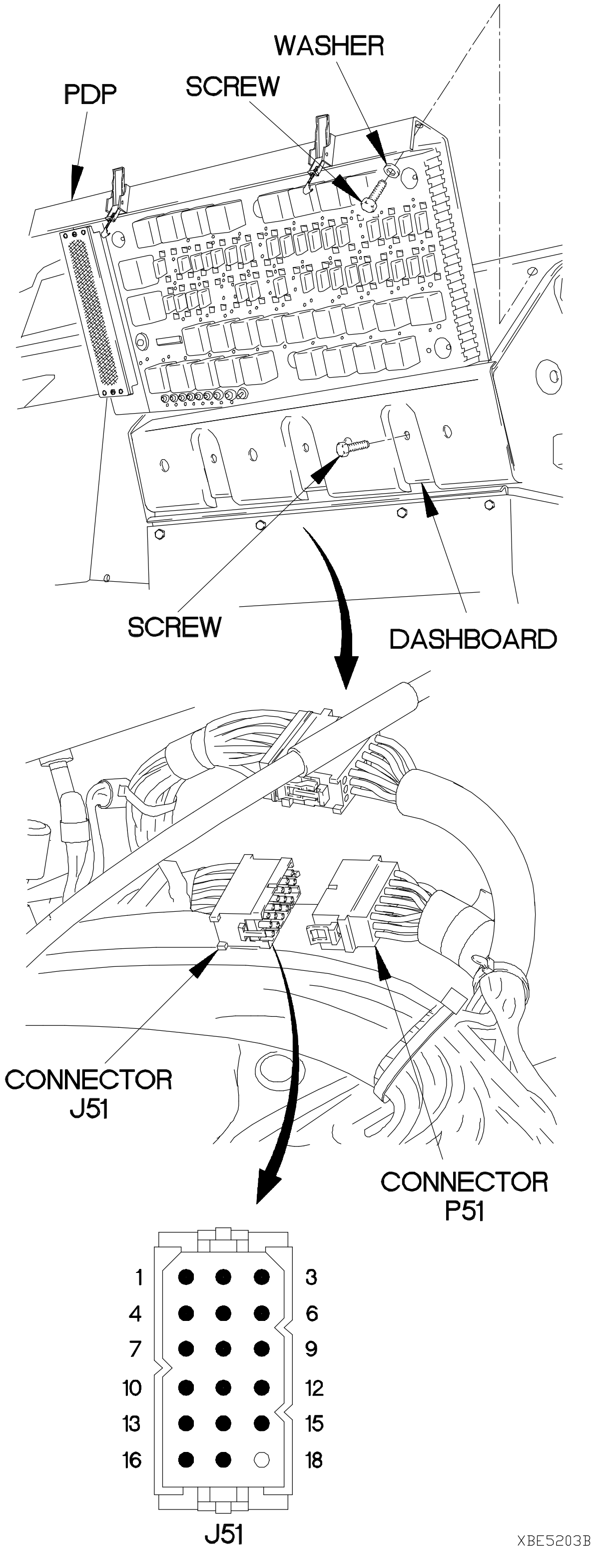
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J51 from connector P51.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to connector J51 pin 17.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch to BO MARKER (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If 12 VDC is not present, repair wire 24 from connector J51 pin 17 to terminal board TB1 position 54 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) If 12 VDC is present, repair wire 24 from connector P76 (LH rear blackout marker light) or P62 (RH rear blackout marker light) to connector P51 socket 17 (para 2-45) or replace rear lights cable assembly (para 7-84 or para 7-104).
(12) Position main light switch to OFF (TM 9-2320-366-10-1).
(13) Connect connector J51 to connector P51.
(14) Install PDP on dashboard wtih three screws.
(15) Install three washers and screws in PDP.
(16) Install PDP cover (para 16-2).



e53. AMBER WARNING LIGHT DOES NOT ILLUMINATE (ALL MODELS EXCEPT M1089)

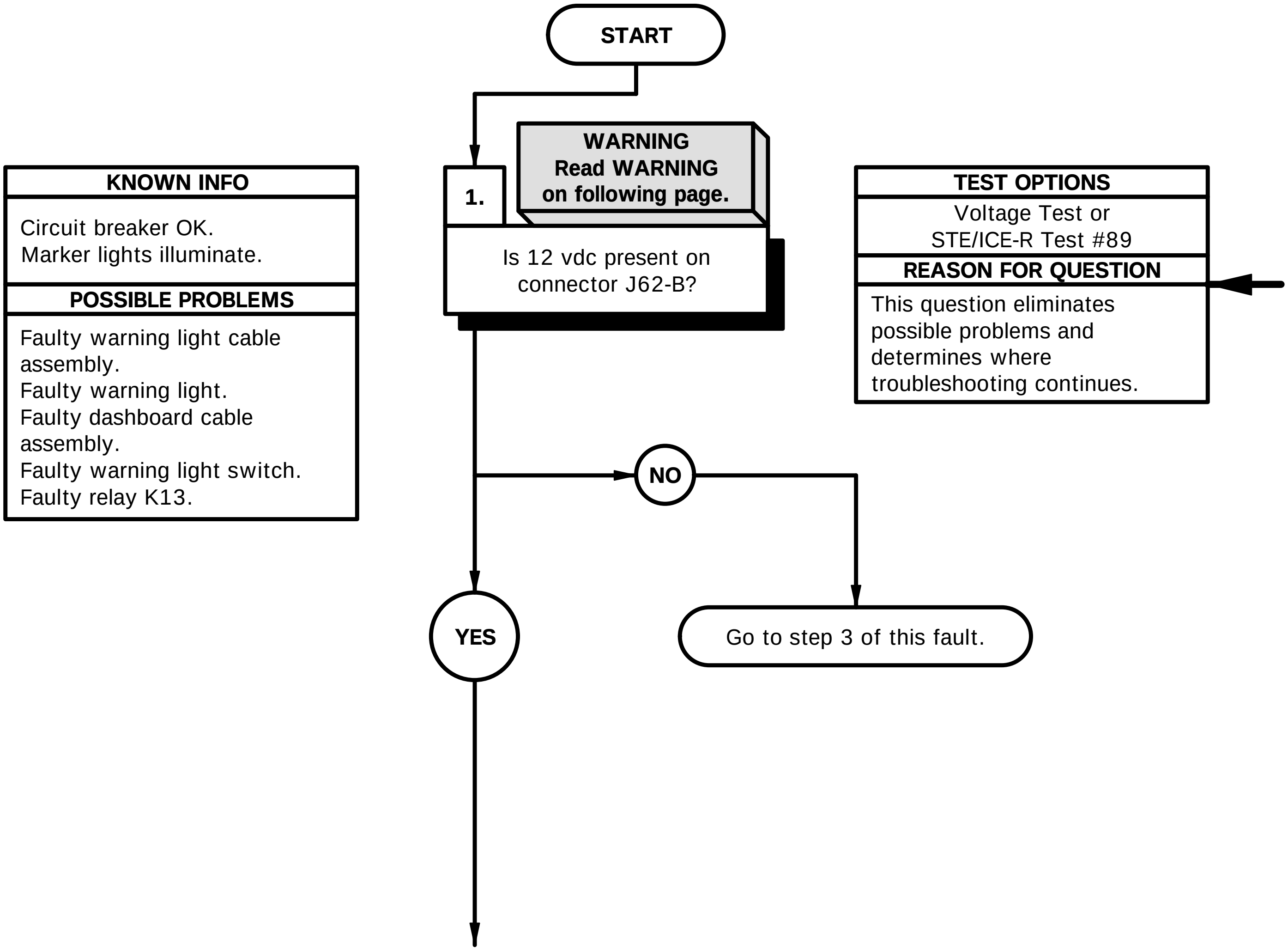
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.

POSSIBLE PROBLEMS

Faulty warning light cable assembly.
Faulty warning light.
Faulty dashboard cable assembly.
Faulty warning light switch.
Faulty relay K13.

Is 12 vdc present on connector J62-B?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

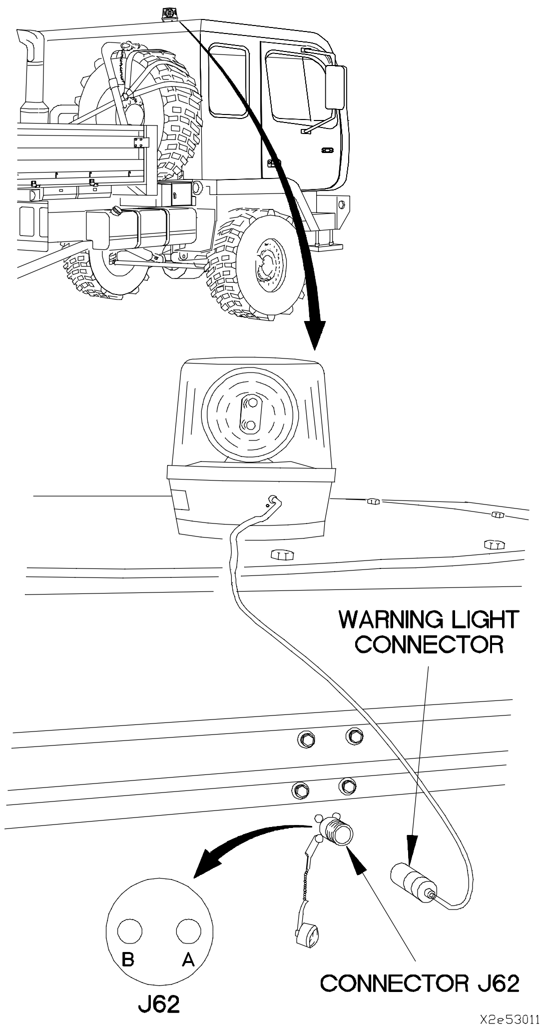
This question eliminates possible problems and determines where troubleshooting continues.

Go to step 3 of this fault.

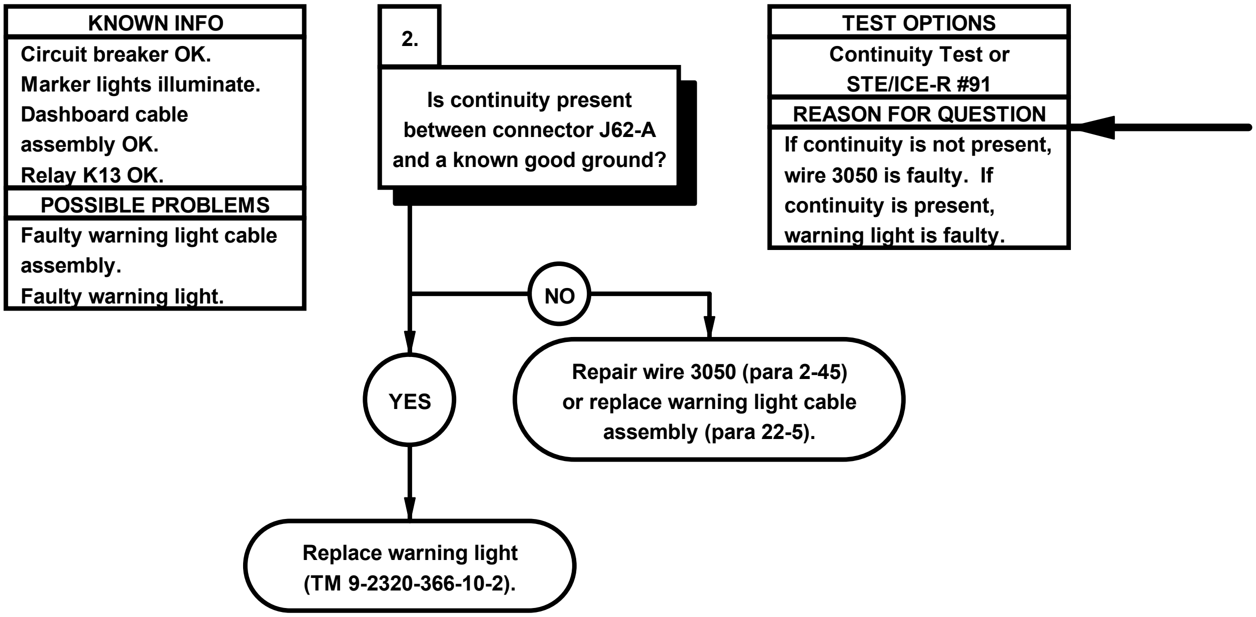
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Disconnect warning light connector from connector J62. (2) Set multimeter to volts dc. (3) Connect positive (+) probe of multimeter to connector J62-B. (4) Connect negative (-) probe of multimeter to ground. (5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1). (6) Position warning light switch to on (TM 9-2320-366-10-1) and note reading on multimeter. (7) If 12 vdc is not present, go to step 3 of this fault. (8) Position warning light switch to off (TM 9-2320-366-10-1). (9) Position main light switch to OFF (TM 9-2320-366-10-1).



e53. AMBER WARNING LIGHT DOES NOT ILLUMINATE (ALL MODELS EXCEPT M1089) (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Dashboard cable assembly OK.
Relay K13 OK.

POSSIBLE PROBLEMS

Faulty warning light cable assembly.
Faulty warning light.

2. Is continuity present between connector J62-A and a known good ground?

TEST OPTIONS

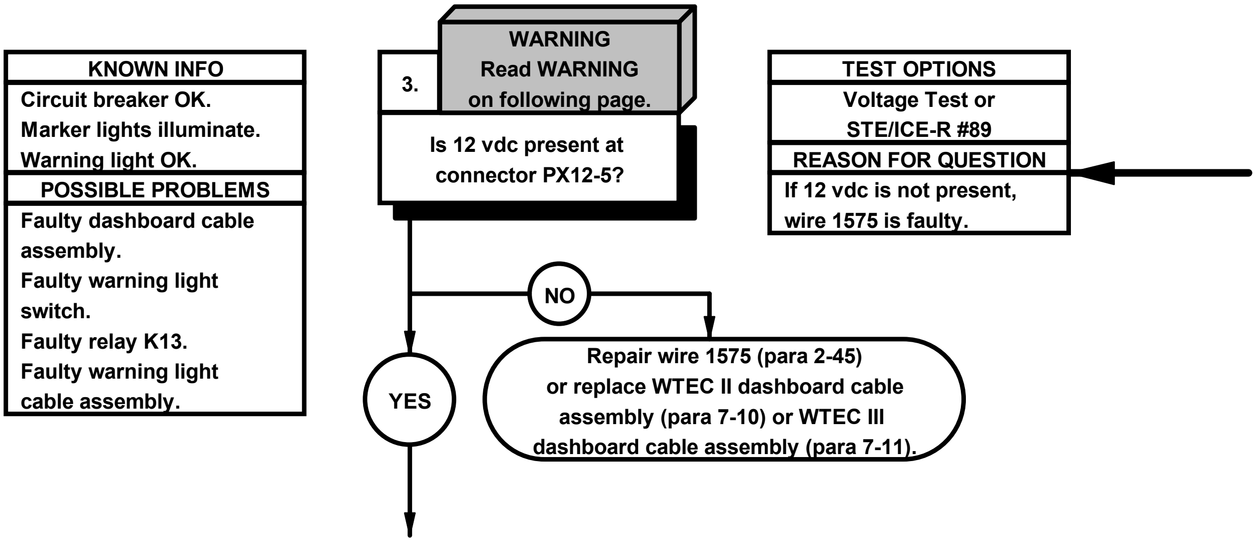
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3050 is faulty. If continuity is present, warning light is faulty.

Repair wire 3050 (para 2-45) or replace warning light cable assembly (para 22-5).

Replace warning light (TM 9-2320-366-10-2).



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty warning light switch.
Faulty relay K13.
Faulty warning light cable assembly.

WARNING

Read WARNING on following page.

3. Is 12 vdc present at connector PX12-5?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

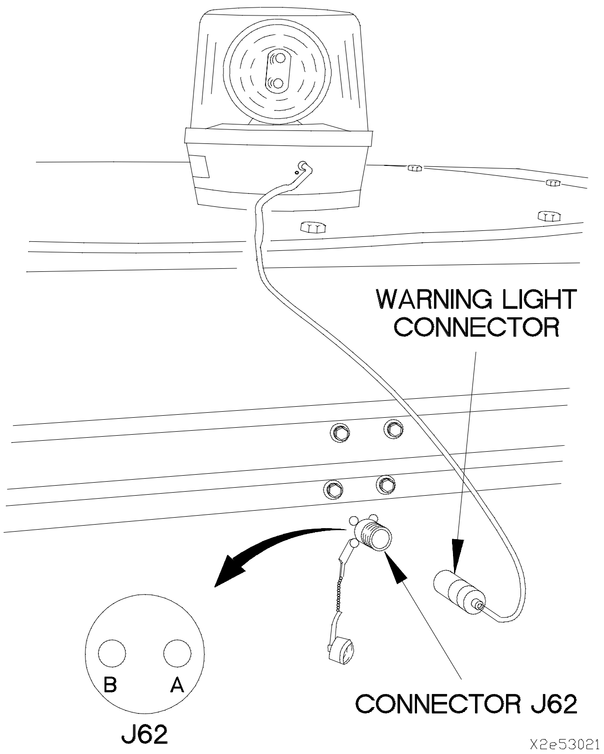
REASON FOR QUESTION

If 12 vdc is not present, wire 1575 is faulty.

Repair wire 1575 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J62-A.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3050 (para 2-45) or replace warning light cable assembly (para 22-5).
(5) If continuity is present, replace warning light (TM 9-2320-366-10-2).

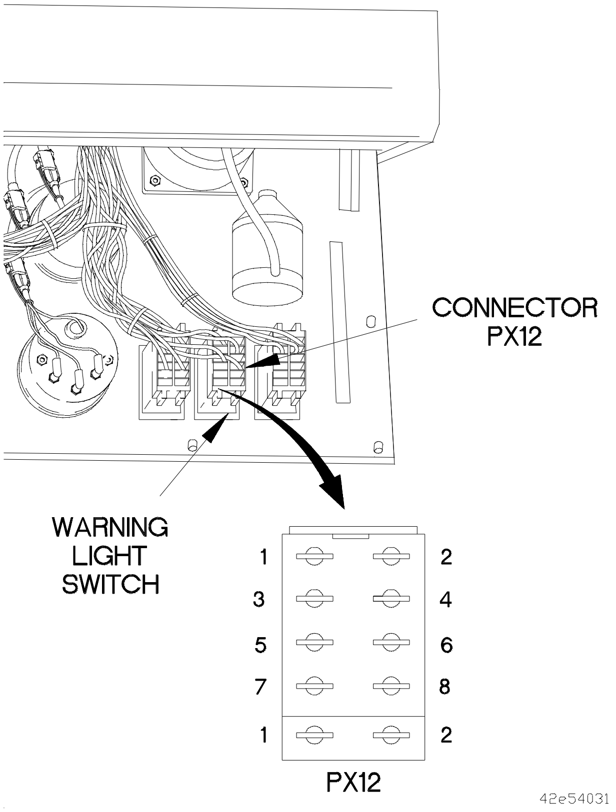


WARNING

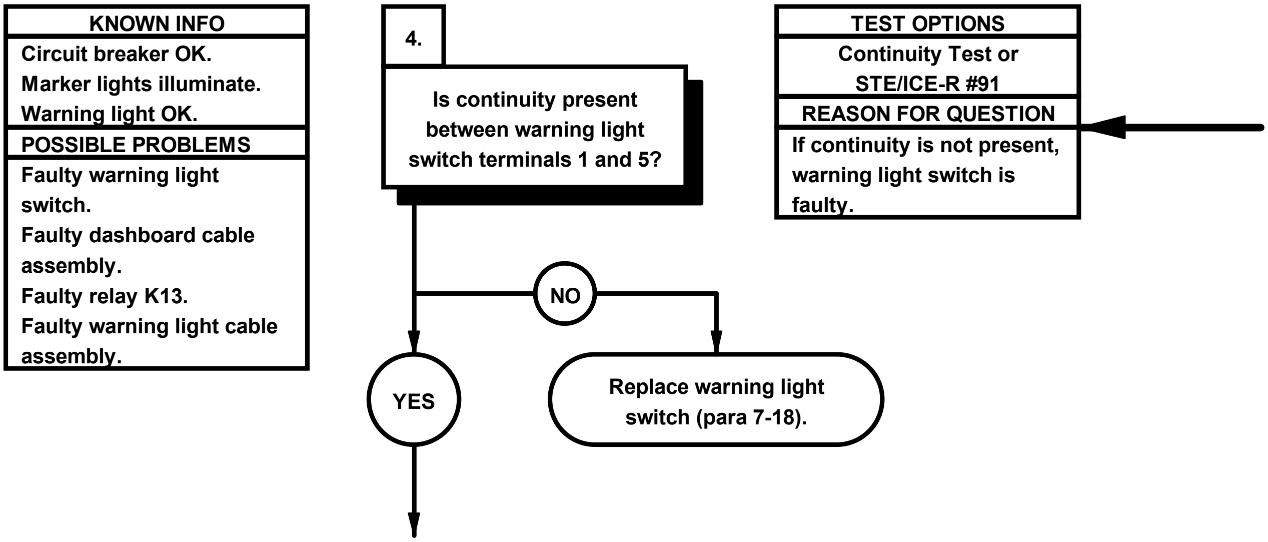
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Set multimeter to volts dc.
(3) Disconnect connector PX12 from warning light switch.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(5) Connect positive (+) probe of multimeter to connector PX12-5.
(6) Connect negative (-) probe of multimeter to ground.
(7) If 12 vdc is not present, repair wire 1575 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



e53. AMBER WARNING LIGHT DOES NOT ILLUMINATE (ALL MODELS EXCEPT M1089) (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light OK.

POSSIBLE PROBLEMS

Faulty warning light switch.
Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

4\.

Is continuity present between warning light switch terminals 1 and 5?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

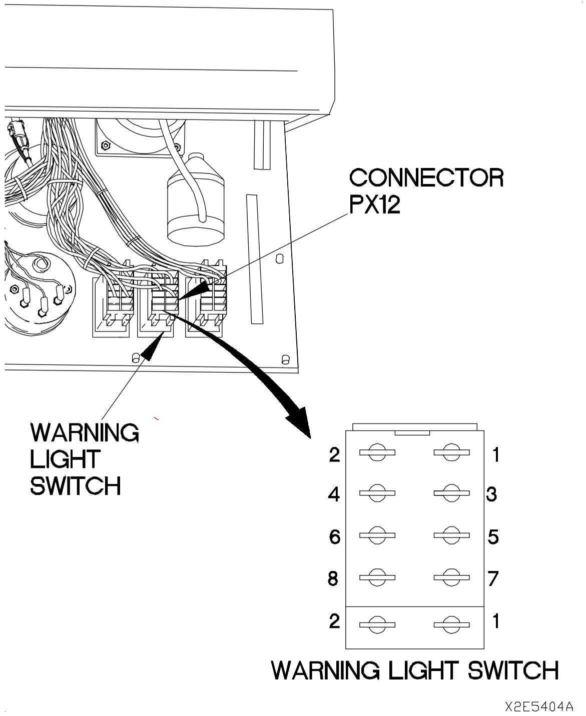
REASON FOR QUESTION

If continuity is not present, warning light switch is faulty.

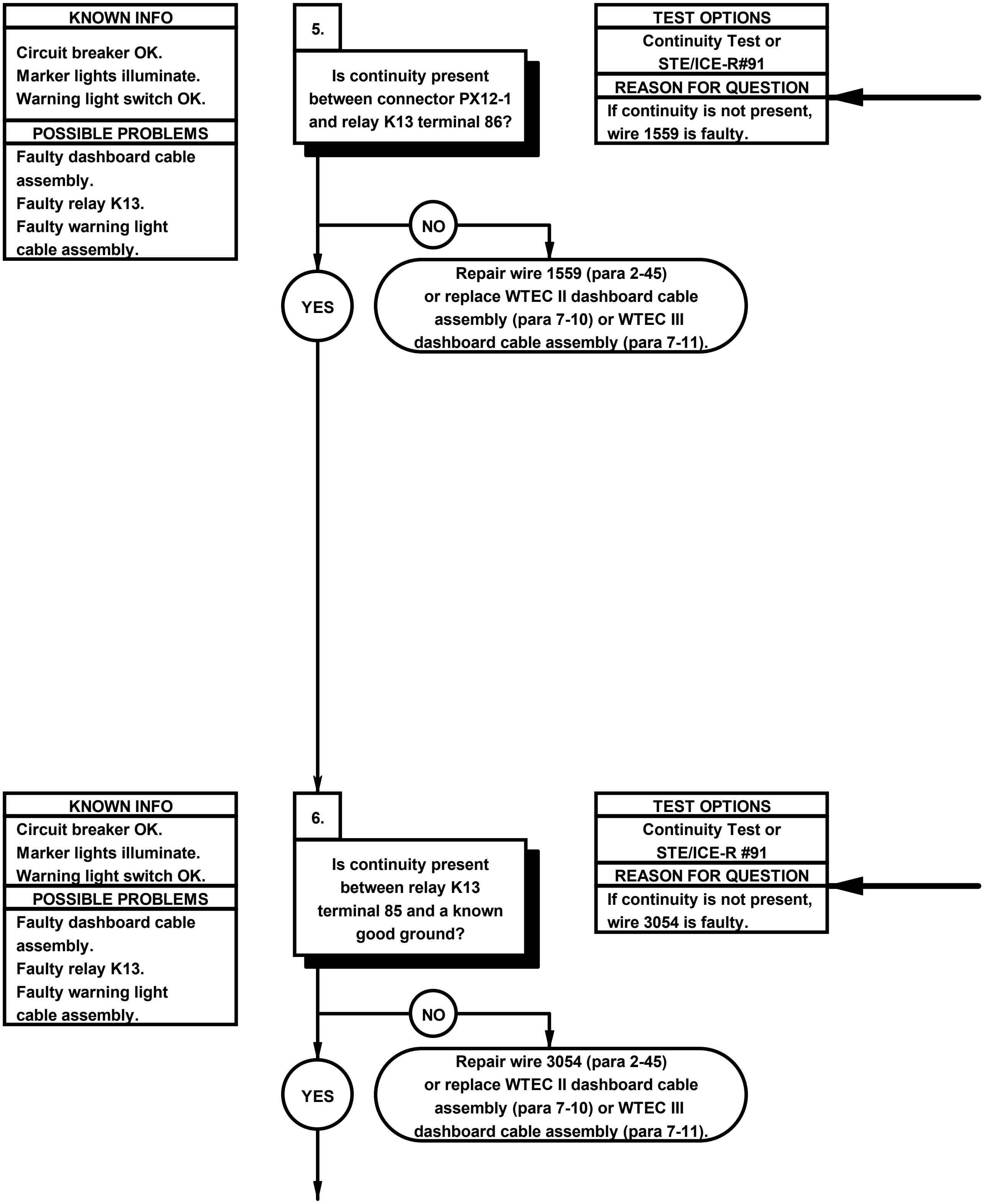
Replace warning light switch (para 7-18).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to warning light switch terminal 1.
(3) Connect negative (-) probe of multimeter to warning light switch terminal 5.
(4) Position warning light switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If continuity is not present, replace warning light switch (para 7-18).



e53. AMBER WARNING LIGHT DOES NOT ILLUMINATE (ALL MODELS EXCEPT M1089) (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

5.

Is continuity present between connector PX12-1 and relay K13 terminal 86?

TEST OPTIONS

Continuity Test or STE/ICE-R#91

REASON FOR QUESTION

If continuity is not present, wire 1559 is faulty.

NO: Repair wire 1559 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

6.

Is continuity present between relay K13 terminal 85 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

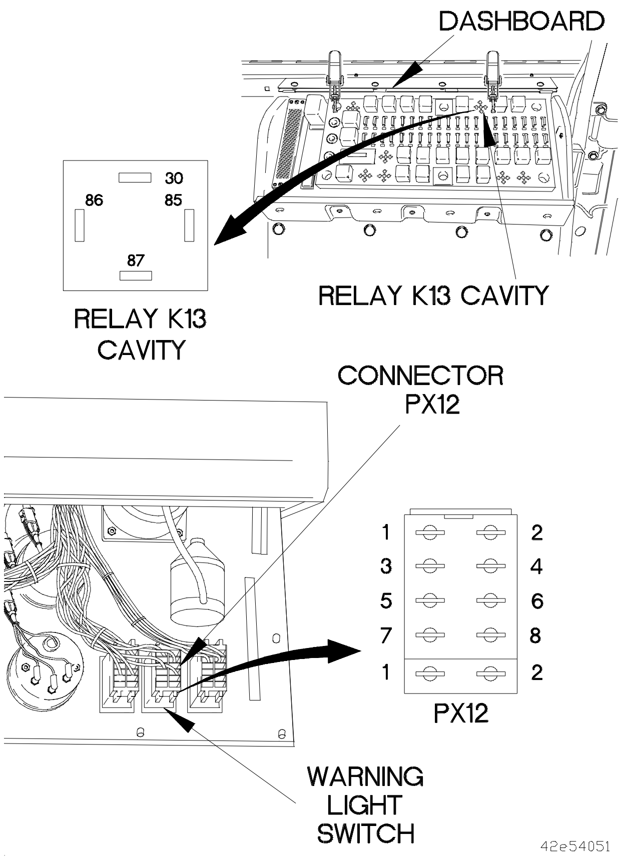
If continuity is not present, wire 3054 is faulty.

NO: Repair wire 3054 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CONTINUITY TEST

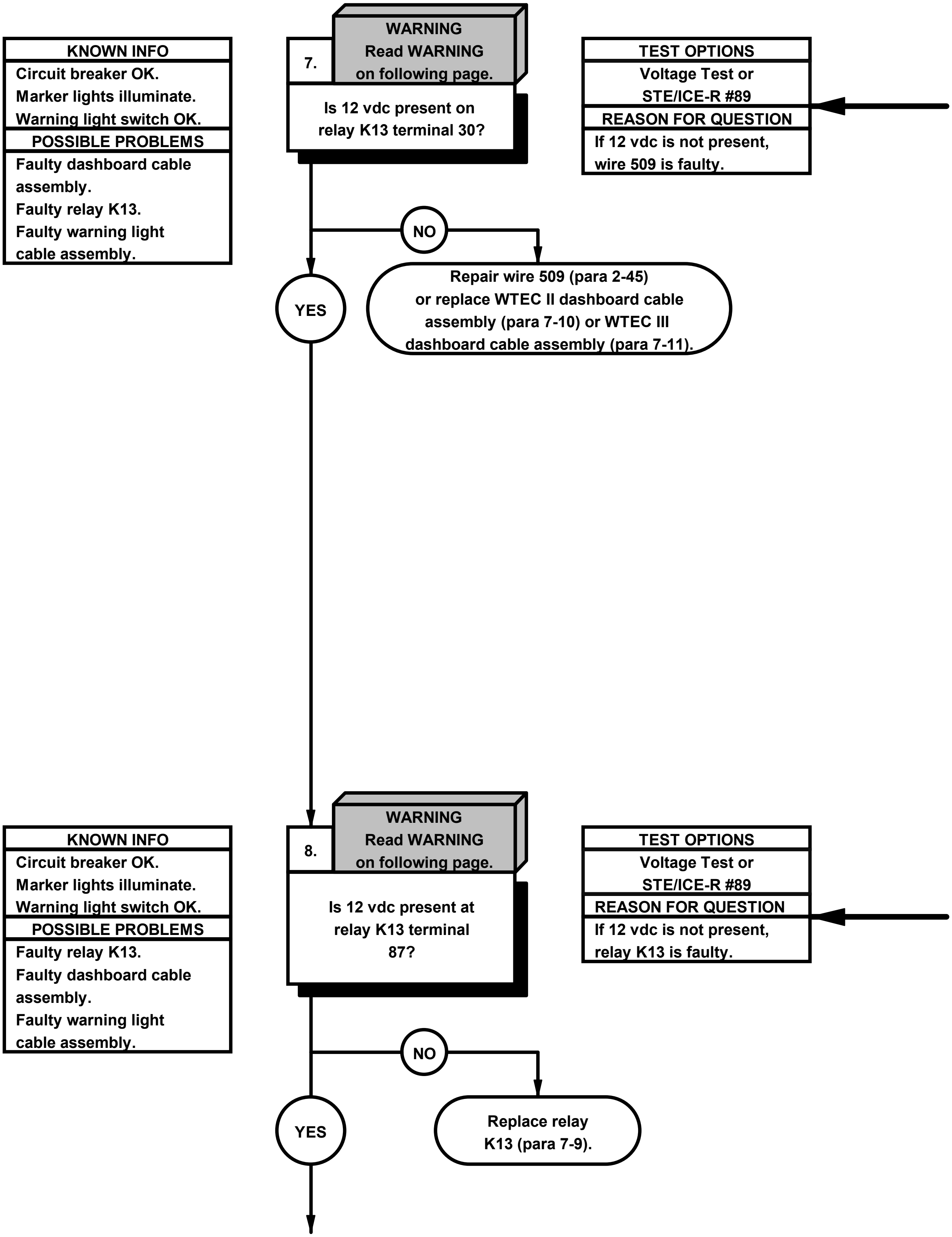
(1) Remove PDP cover (para 16-2).
(2) Remove relay K13 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to PDP, socket 86, where relay K13 was removed.
(5) Connect negative (-) probe of multimeter to connector PX12-1 and note reading on multimeter.
(6) If continuity is not present, repair wire 1559 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Connect connector PX12 to warning light switch.
(8) Install instrument panel assembly (para 7-15).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP, socket 85, where relay K13 was removed.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3054 (para 2-45)or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

e53. AMBER WARNING LIGHT DOES NOT ILLUMINATE (ALL MODELS EXCEPT M1089) (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

7. **WARNING** Read WARNING on following page.

Is 12 vdc present on relay K13 terminal 30?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 509 is faulty.

NO: Repair wire 509 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty relay K13.
Faulty dashboard cable assembly.
Faulty warning light cable assembly.

8. **WARNING** Read WARNING on following page.

Is 12 vdc present at relay K13 terminal 87?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, relay K13 is faulty.

NO: Replace relay K13 (para 7-9).

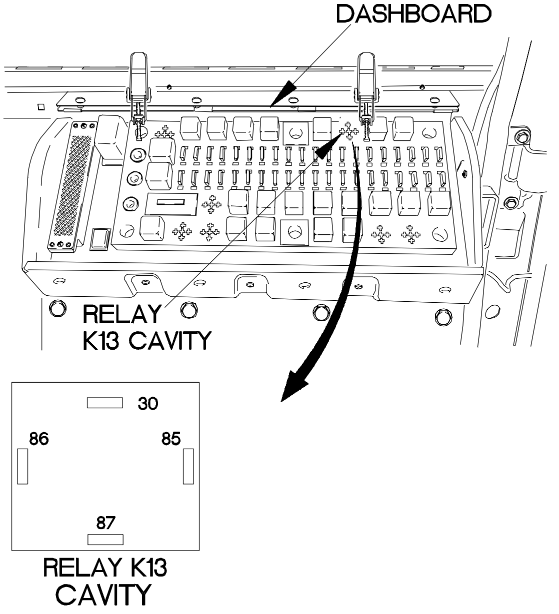
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

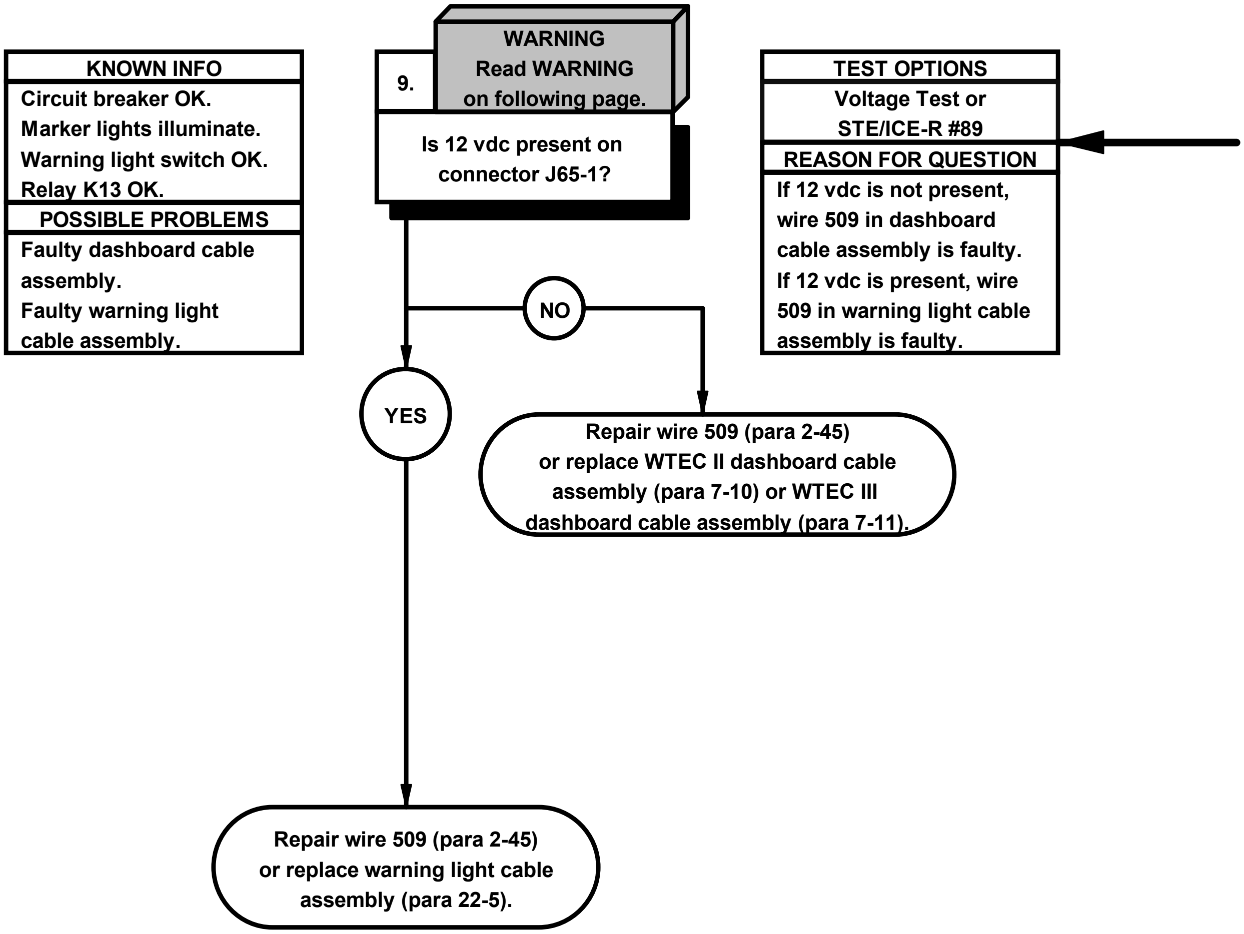
(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to PDP, socket 30, where relay K13 was removed.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(5) Position warning light switch to on (TM 9-2320-366-10-1).
(6) If 12 vdc is not present, repair wire 509 (para 2-45)or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Position warning light switch to off (TM 9-2320-366-10-1).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



VOLTAGE TEST

(1) Install relay K13 in PDP.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to relay K13 terminal 87.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position warning light switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, replace relay K13 (para 7-9).
(8) Position warning light switch to off (TM 9-2320-366-10-1).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).

e53. AMBER WARNING LIGHT DOES NOT ILLUMINATE (ALL MODELS EXCEPT M1089) (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light switch OK.
Relay K13 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty warning light cable assembly.

WARNING
Read WARNING on following page.

9. Is 12 vdc present on connector J65-1?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 509 in dashboard cable assembly is faulty. If 12 vdc is present, wire 509 in warning light cable assembly is faulty.

Repair wire 509 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

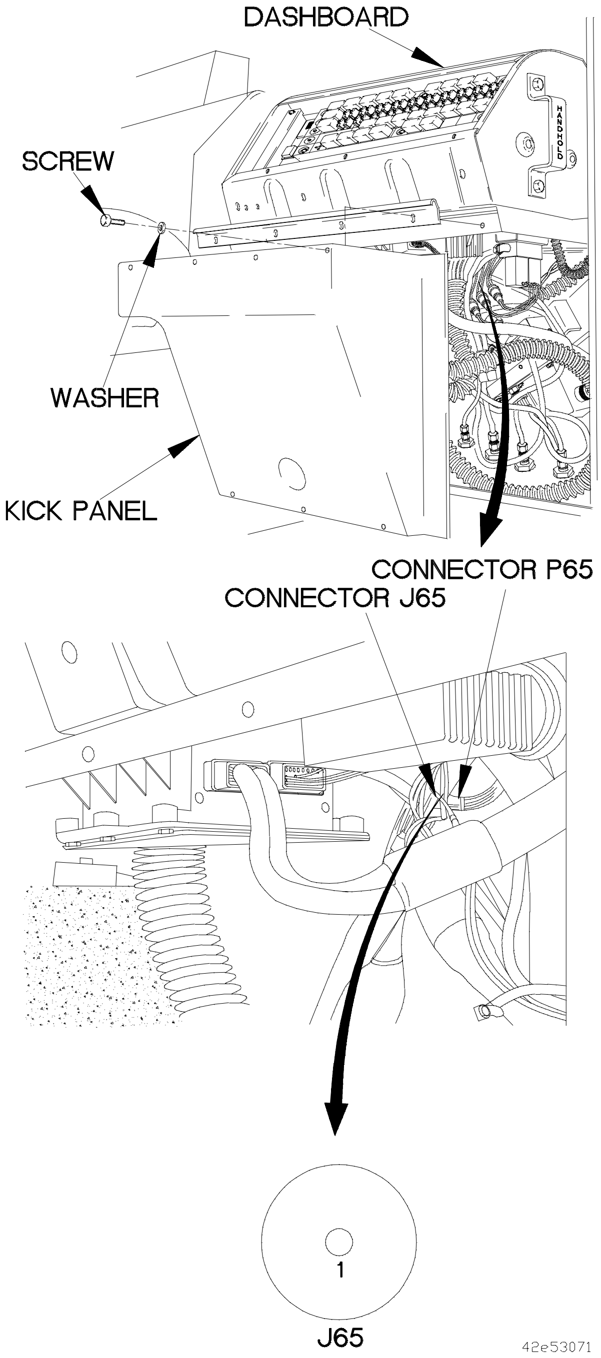
Repair wire 509 (para 2-45) or replace warning light cable assembly (para 22-5).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove seven screws and washers from kick panel.
(2) Remove kick panel and stiffener from dashboard.
(3) Disconnect connector P65 from connector J65.
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to connector J65-1.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(8) Position warning light switch to on (TM 9-2320-366-10-1).
(9) If 12 vdc is not present, repair wire 509 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) If 12 vdc is present, repair wire 509 (para 2-45) or replace warning light cable assembly (para 22-5).
(11) Position warning light switch to off (TM 9-2320-366-10-1).
(12) Position main light switch to OFF (TM 9-2320-366-10-1).
(13) Connect connector P65 to connector J65.
(14) Install kick panel (para 16-3).



e54. M1089 AMBER WARNING LIGHT DOES NOT ILLUMINATE

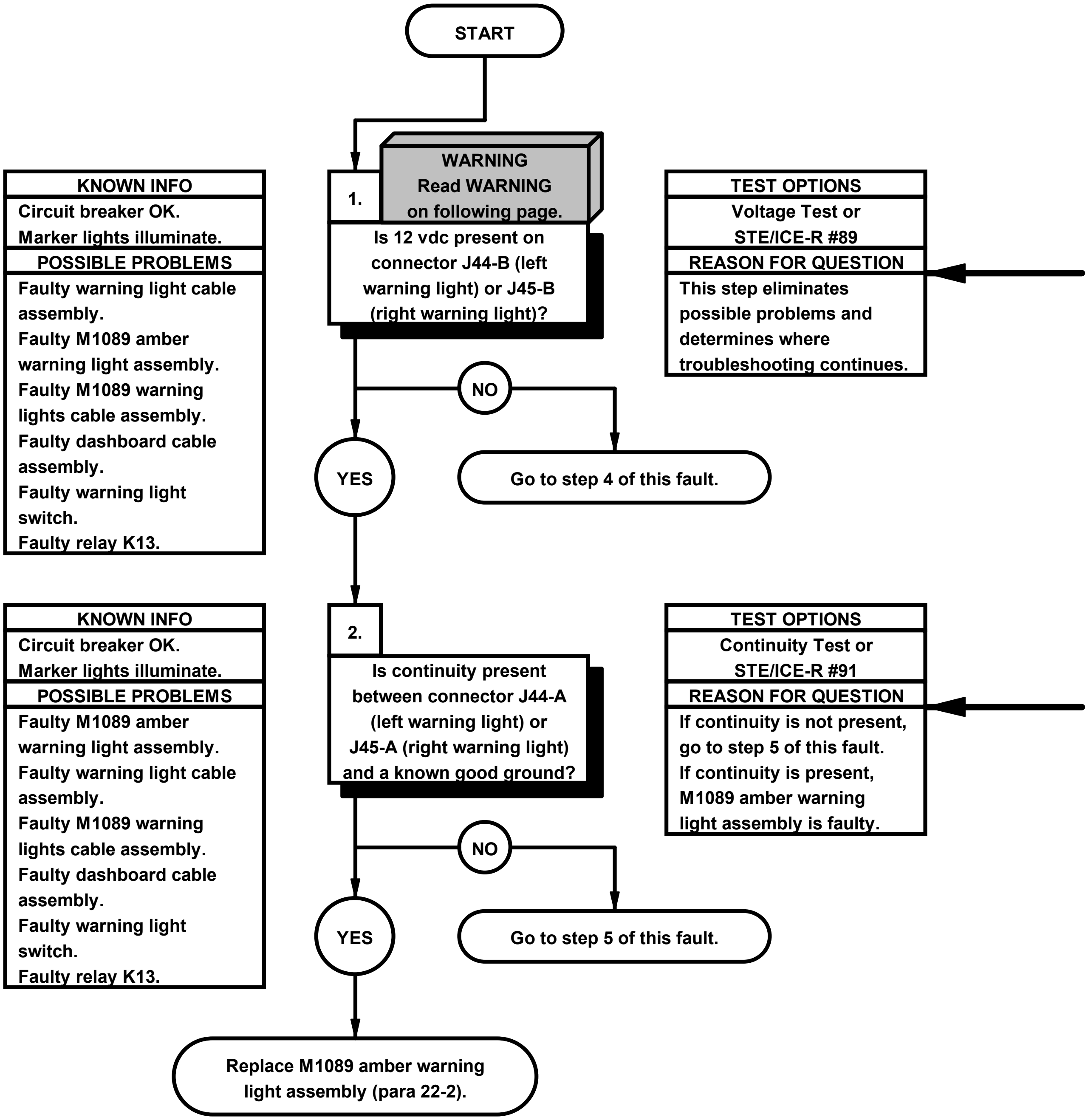
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



START

WARNING
Read WARNING on following page.

1. Is 12 vdc present on connector J44-B (left warning light) or J45-B (right warning light)?

KNOWN INFO
Circuit breaker OK.
Marker lights illuminate.

POSSIBLE PROBLEMS
Faulty warning light cable assembly.
Faulty M1089 amber warning light assembly.
Faulty M1089 warning lights cable assembly.
Faulty dashboard cable assembly.
Faulty warning light switch.
Faulty relay K13.

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
This step eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 4 of this fault.

YES

2. Is continuity present between connector J44-A (left warning light) or J45-A (right warning light) and a known good ground?

KNOWN INFO
Circuit breaker OK.
Marker lights illuminate.

POSSIBLE PROBLEMS
Faulty M1089 amber warning light assembly.
Faulty warning light cable assembly.
Faulty M1089 warning lights cable assembly.
Faulty dashboard cable assembly.
Faulty warning light switch.
Faulty relay K13.

TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
If continuity is not present, go to step 5 of this fault.
If continuity is present, M1089 amber warning light assembly is faulty.

NO: Go to step 5 of this fault.

YES: Replace M1089 amber warning light assembly (para 22-2).

WARNING

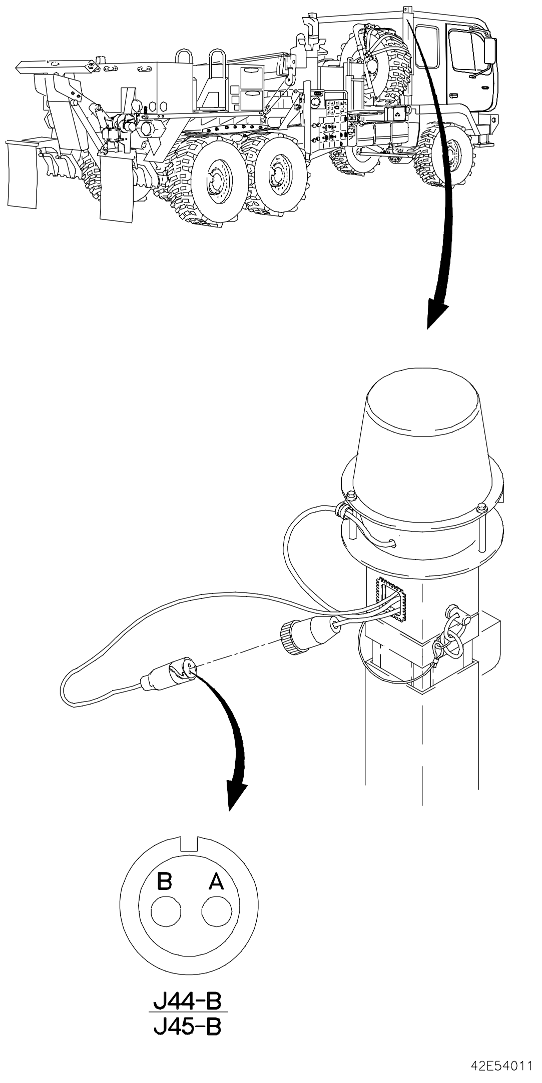
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

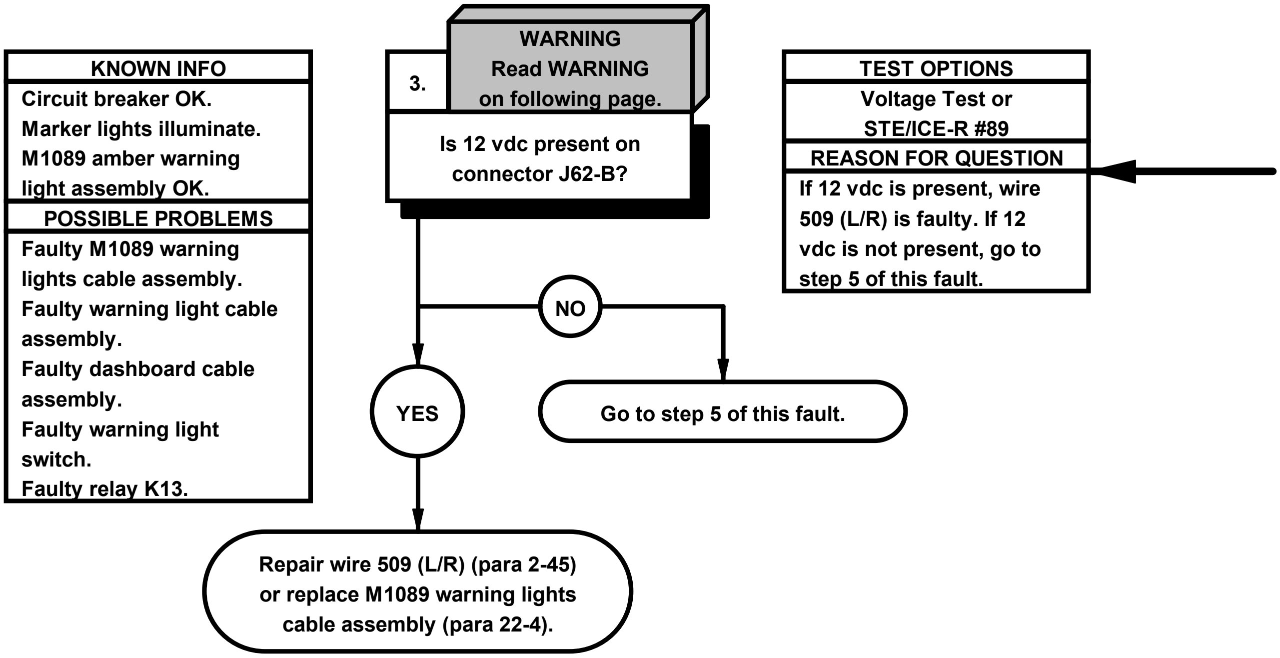
(1) Disconnect warning light connector from connector J44 (left) or J45 (right).
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J44-B (left) or J45-B (right).
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position warning light switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, go to step 4 of this fault.
(8) Position warning light switch to off (TM 9-2320-366-10-1).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J44-A (left) or J45-A (right).
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 5 of this fault.
(5) If continuity is present, replace M1089 amber warning light assembly (para 22-2).
(6) Connect connector J44 (left) or J45 (right) to warning light connector.



e54. M1089 AMBER WARNING LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.

POSSIBLE PROBLEMS

Faulty M1089 warning lights cable assembly.
Faulty warning light cable assembly.
Faulty dashboard cable assembly.
Faulty warning light switch.
Faulty relay K13.

3.

WARNING
Read WARNING on following page.

Is 12 vdc present on connector J62-B?

TEST OPTIONS

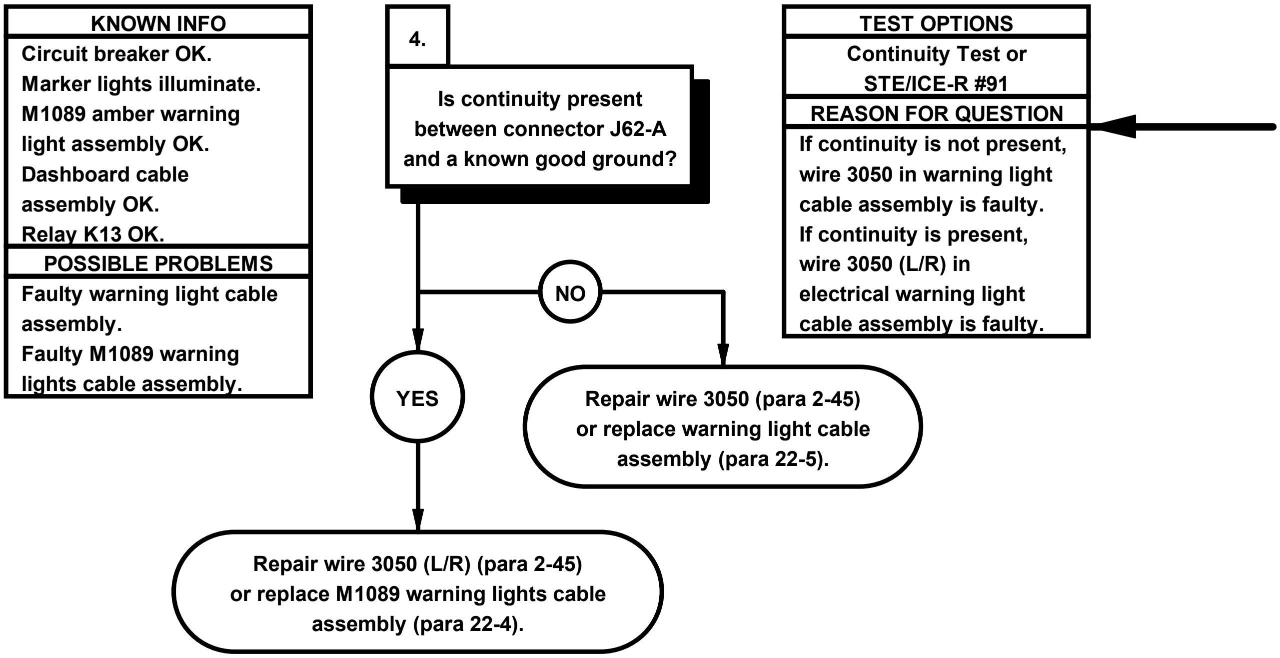
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is present, wire 509 (L/R) is faulty. If 12 vdc is not present, go to step 5 of this fault.

NO: Go to step 5 of this fault.

YES: Repair wire 509 (L/R) (para 2-45) or replace M1089 warning lights cable assembly (para 22-4).



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.
Dashboard cable assembly OK.
Relay K13 OK.

POSSIBLE PROBLEMS

Faulty warning light cable assembly.
Faulty M1089 warning lights cable assembly.

4.

Is continuity present between connector J62-A and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3050 in warning light cable assembly is faulty. If continuity is present, wire 3050 (L/R) in electrical warning light cable assembly is faulty.

NO: Repair wire 3050 (para 2-45) or replace warning light cable assembly (para 22-5).

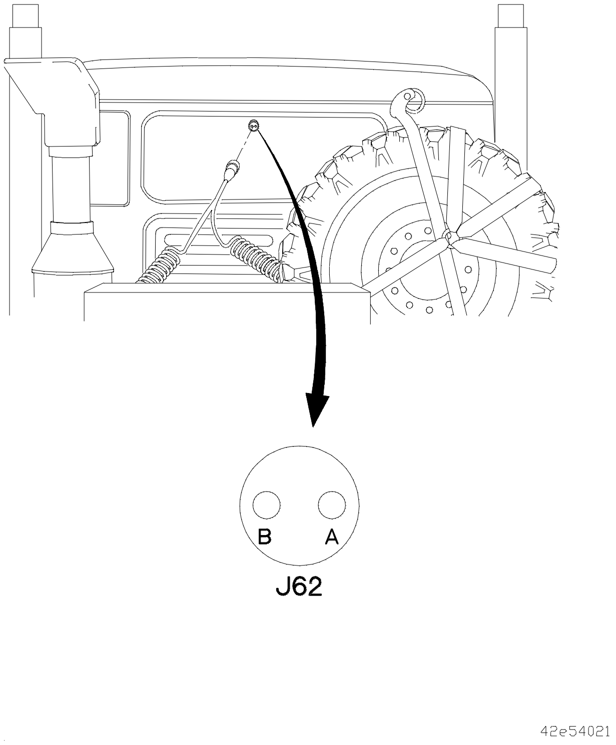
YES: Repair wire 3050 (L/R) (para 2-45) or replace M1089 warning lights cable assembly (para 22-4).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

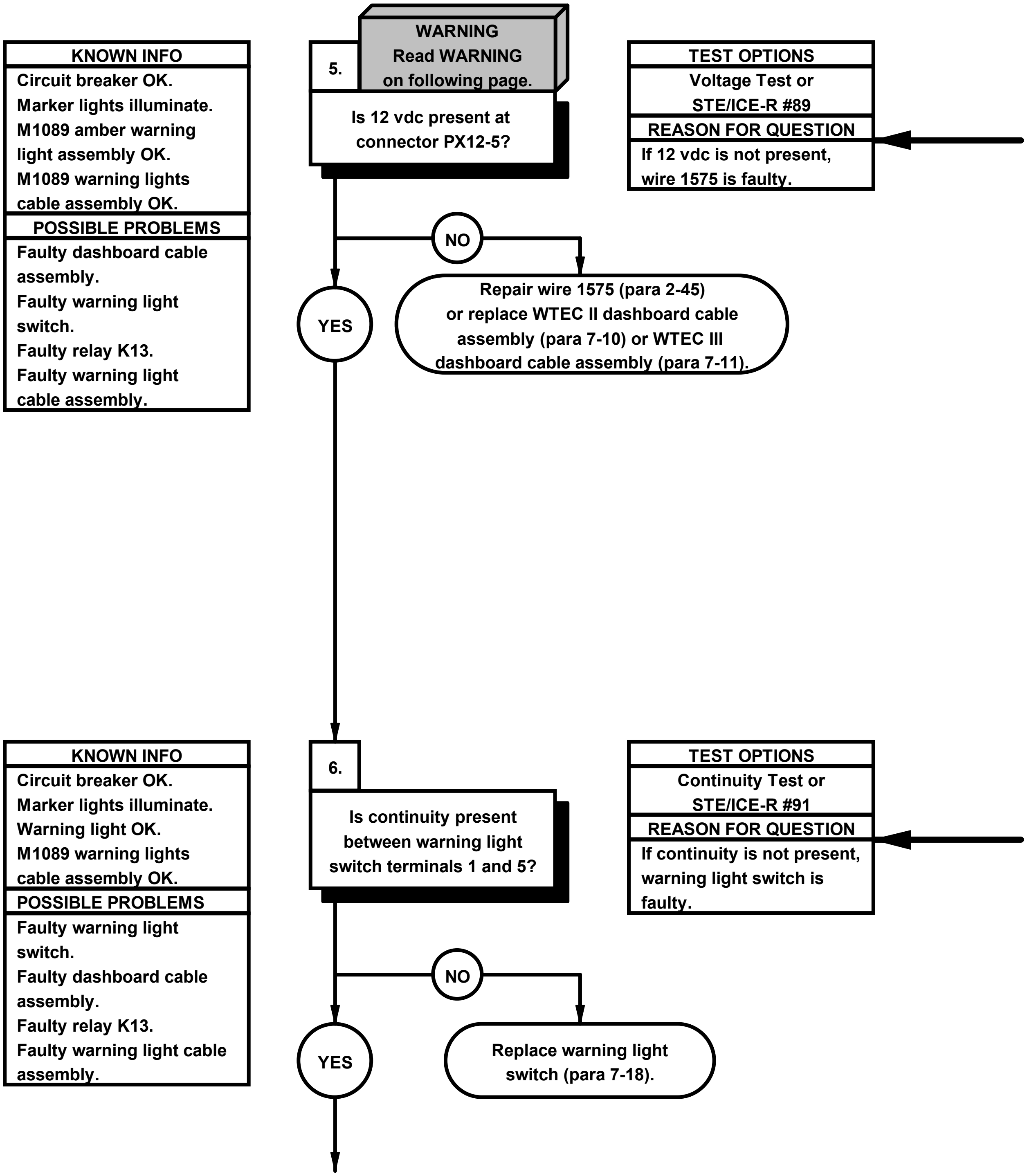
(1) Disconnect connector P62A from connector J62.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J62-B.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position warning light switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, go to step 5 of this fault.
(8) If 12 vdc is present, repair wire 509 (L/R) (para 2-45) or replace M1089 warning lights cable assembly (para 22-4).
(9) Position warning light switch to off (TM 9-2320-366-10-1).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J62-A.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3050 (para 2-45) or replace warning light cable assembly (para 22-5).
(5) If continuity is present, repair wire 3050 (L/R) (para 2-45) or replace M1089 warning lights cable assembly (para 22-4).
(6) Connect connector P62A to connector J62.

e54. M1089 AMBER WARNING LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.
M1089 warning lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty warning light switch.
Faulty relay K13.
Faulty warning light cable assembly.

WARNING
Read WARNING on following page.

5. Is 12 vdc present at connector PX12-5?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 1575 is faulty.

NO: Repair wire 1575 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
Warning light OK.
M1089 warning lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty warning light switch.
Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

6. Is continuity present between warning light switch terminals 1 and 5?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

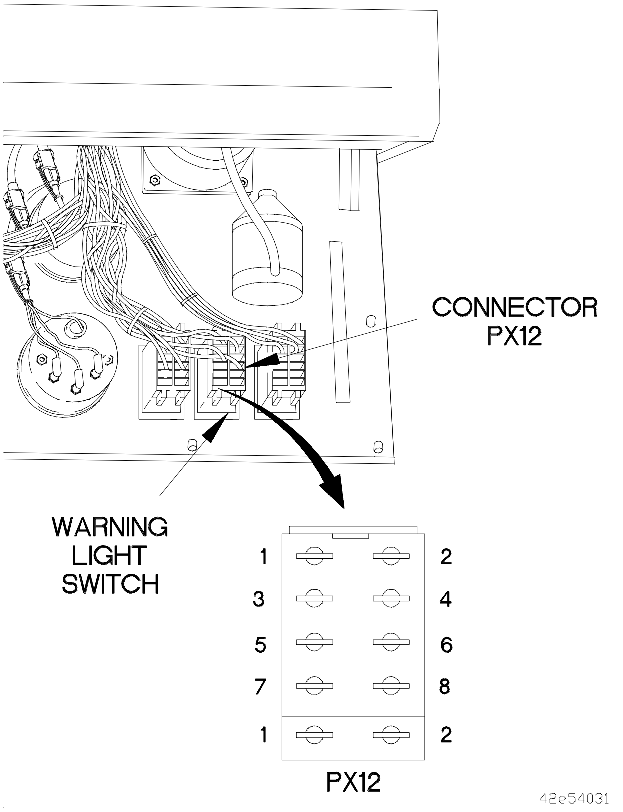
If continuity is not present, warning light switch is faulty.

NO: Replace warning light switch (para 7-18).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.



VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).

(2) Set multimeter to volts dc.

(3) Disconnect connector PX12 from warning light switch.

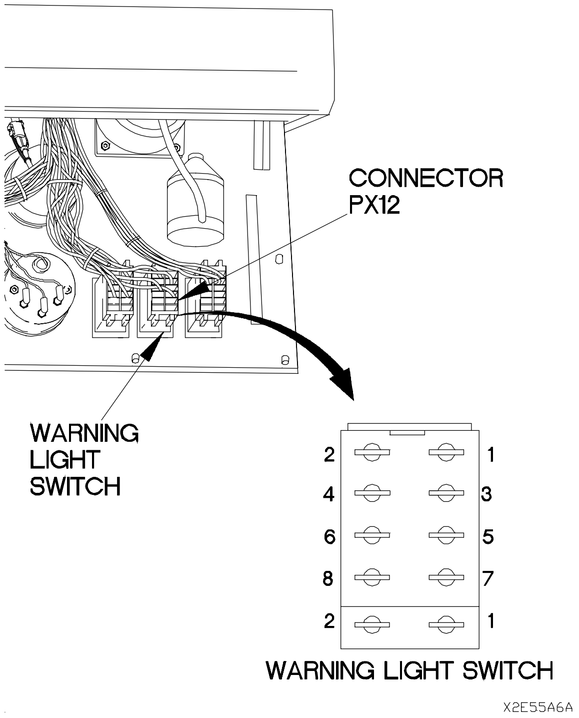
(4) Connect positive (+) probe of multimeter to connector PX12-5.

(5) Connect negative (-) probe of multimeter to ground.

(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.

(7) If 12 vdc is not present, repair wire 1575 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

(8) Position main light switch to OFF (TM 9-2320-366-10-1).



CONTINUITY TEST

(1) Set multimeter to ohms.

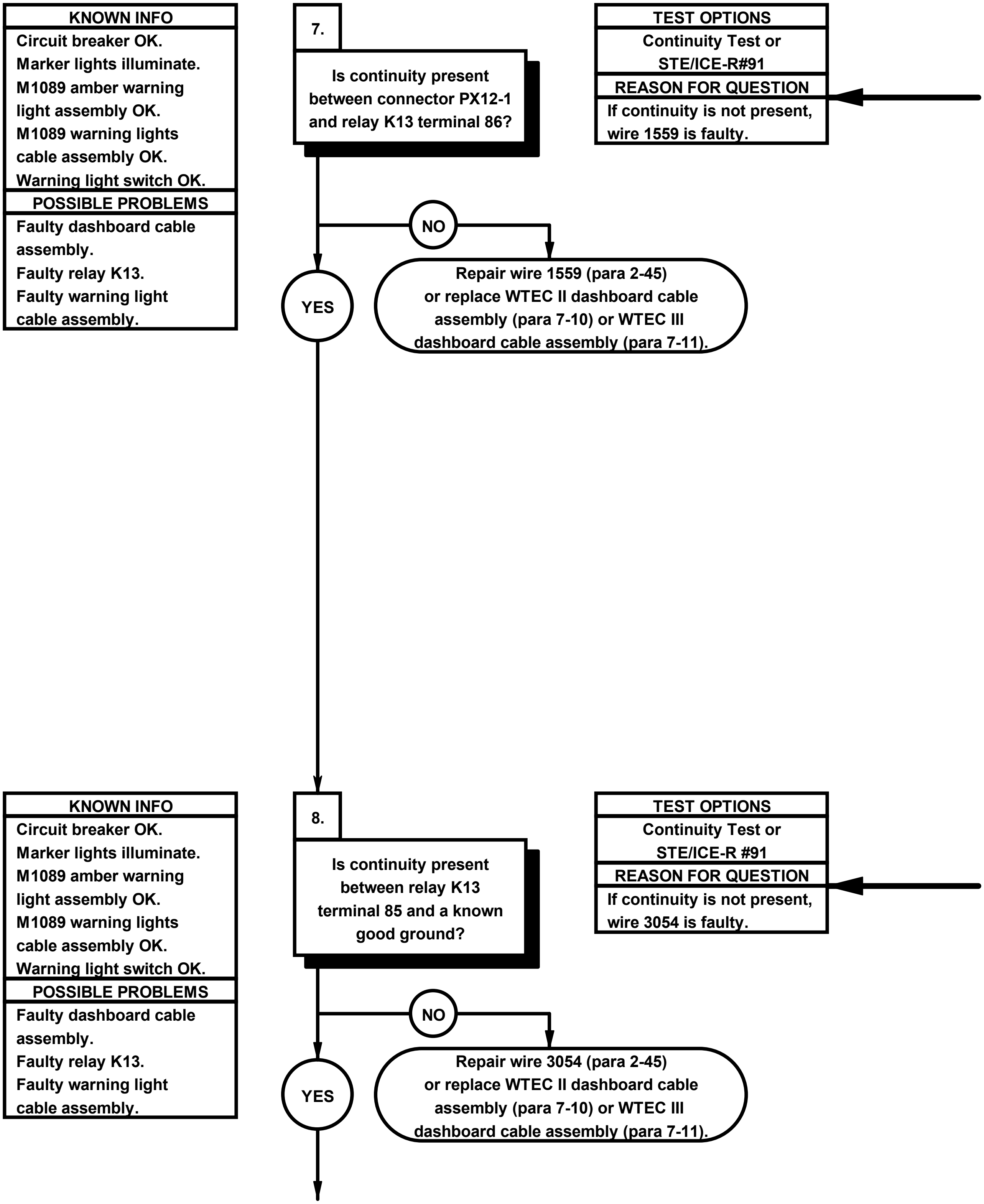
(2) Connect positive (+) probe of multimeter to warning light switch terminal 1.

(3) Connect negative (-) probe of multimeter to warning light switch terminal 5.

(4) Position warning light switch to on (TM 9-2320-366-10-1) and note reading on multimeter.

(5) If continuity is not present, replace warning light switch (para 7-18).

e54. M1089 AMBER WARNING LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.
M1089 warning lights cable assembly OK.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

7.

Is continuity present between connector PX12-1 and relay K13 terminal 86?

TEST OPTIONS

Continuity Test or STE/ICE-R#91

REASON FOR QUESTION

If continuity is not present, wire 1559 is faulty.

NO

Repair wire 1559 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.
M1089 warning lights cable assembly OK.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

8.

Is continuity present between relay K13 terminal 85 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3054 is faulty.

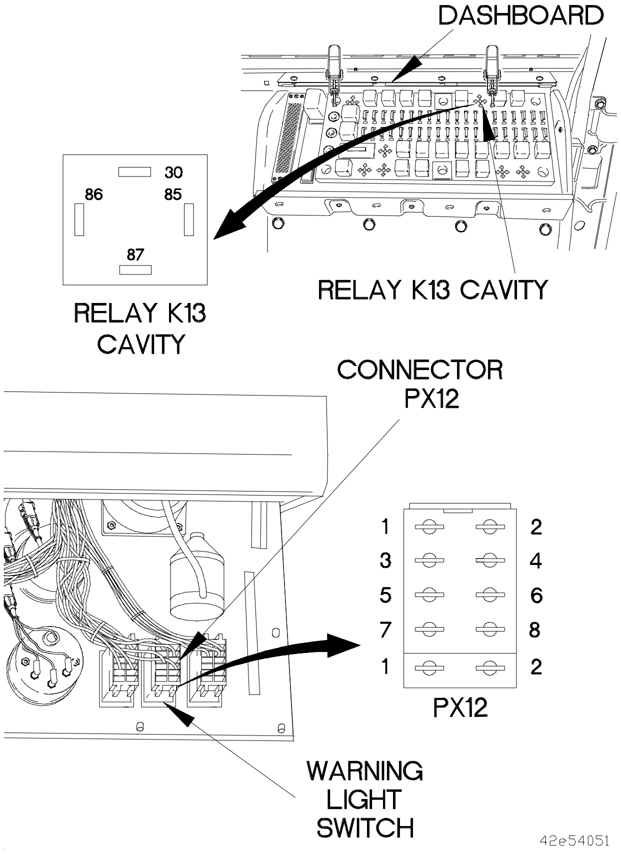
NO

Repair wire 3054 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

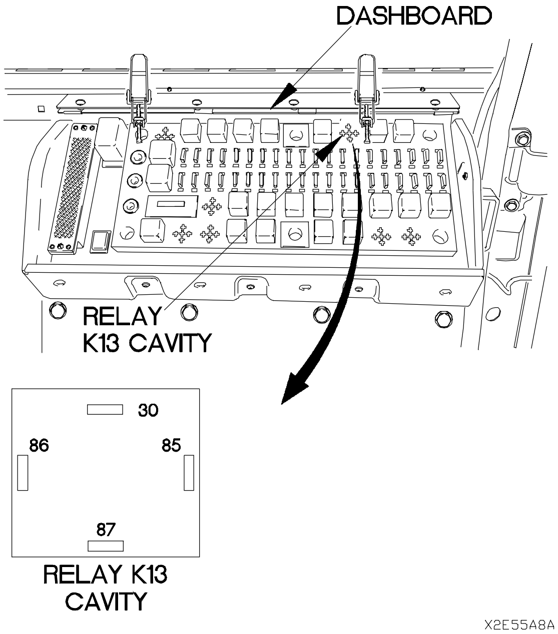
CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K13 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to PDP, socket 86, where relay K13 was removed.
(5) Connect negative (-) probe of multimeter to connector PX12-1 and note reading on multimeter.
(6) If continuity is not present, repair wire 1559 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Connect connector PX12 to warning light switch.
(8) Install instrument panel assembly (para 7-15).

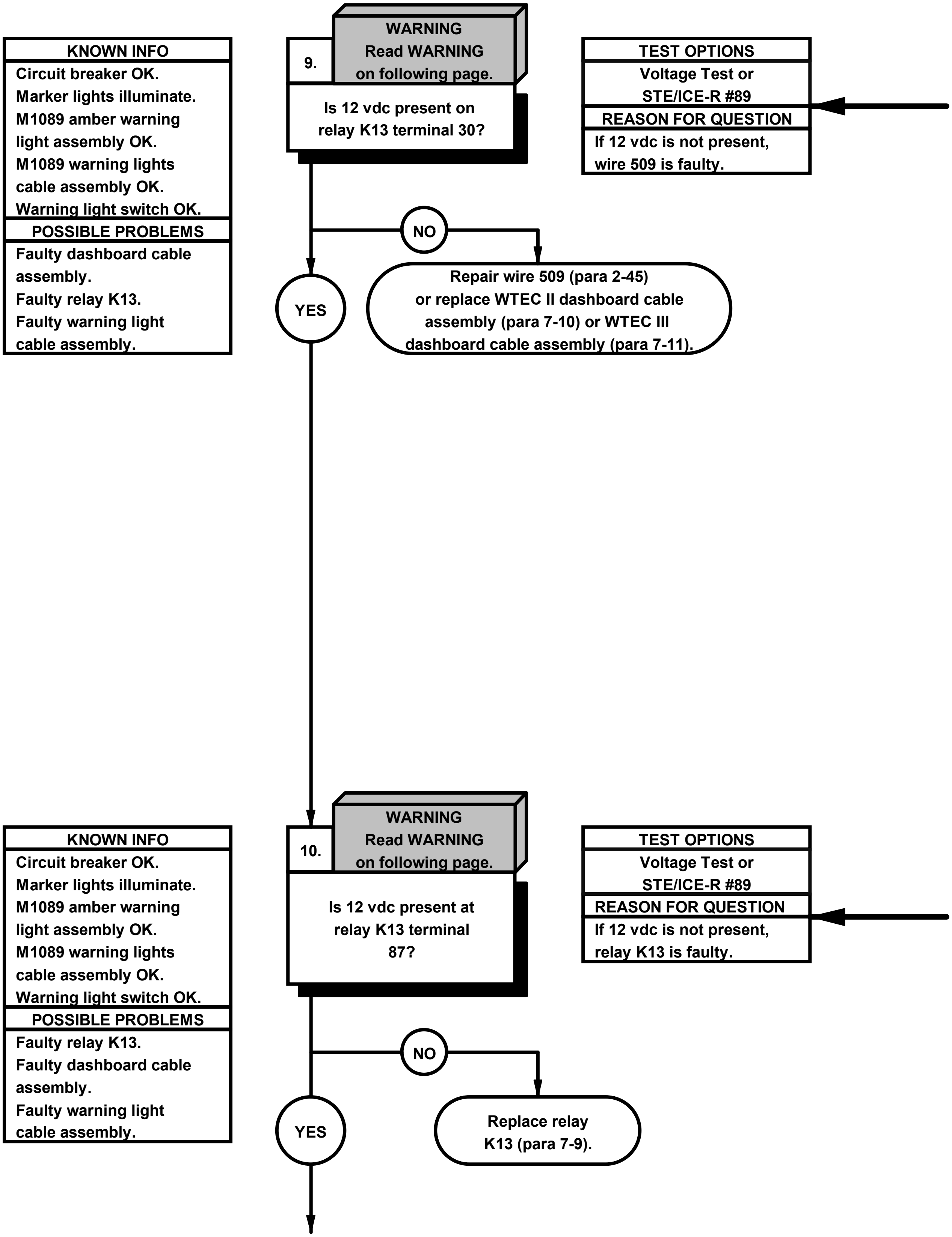


CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP, socket 85, where relay K13 was removed.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3054 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e54. M1089 AMBER WARNING LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.
M1089 warning lights cable assembly OK.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K13.
Faulty warning light cable assembly.

9. **WARNING** Read WARNING on following page.

Is 12 vdc present on relay K13 terminal 30?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 509 is faulty.

Repair wire 509 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.
M1089 warning lights cable assembly OK.
Warning light switch OK.

POSSIBLE PROBLEMS

Faulty relay K13.
Faulty dashboard cable assembly.
Faulty warning light cable assembly.

10. **WARNING** Read WARNING on following page.

Is 12 vdc present at relay K13 terminal 87?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, relay K13 is faulty.

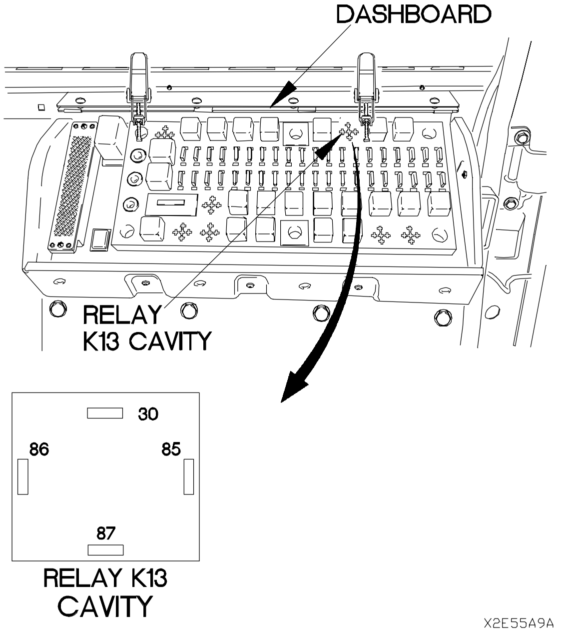
Replace relay K13 (para 7-9).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to PDP, socket 30, where relay K13 was removed.
(3) Connect negative (-) probe of multimeter to ground.
(4) If 12 vdc is not present, repair wire 509 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



VOLTAGE TEST

(1) Install relay K13 in PDP.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to relay K13 terminal 87.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position warning light switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, replace relay K13 (para 7-9).
(8) Position warning light switch to off (TM 9-2320-366-10-1).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).

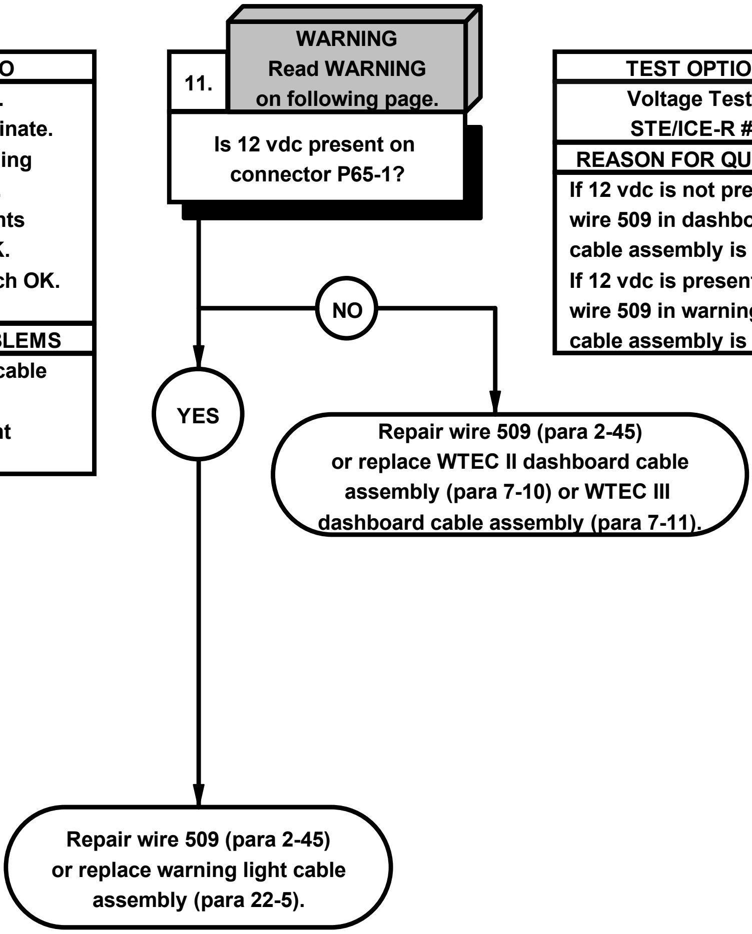
e54. M1089 AMBER WARNING LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker OK.
Marker lights illuminate.
M1089 amber warning light assembly OK.
M1089 warning lights cable assembly OK.
Warning light switch OK.
Relay K13 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty warning light cable assembly.



TEST OPTIONS

Voltage Test or STE/ICE-R #89

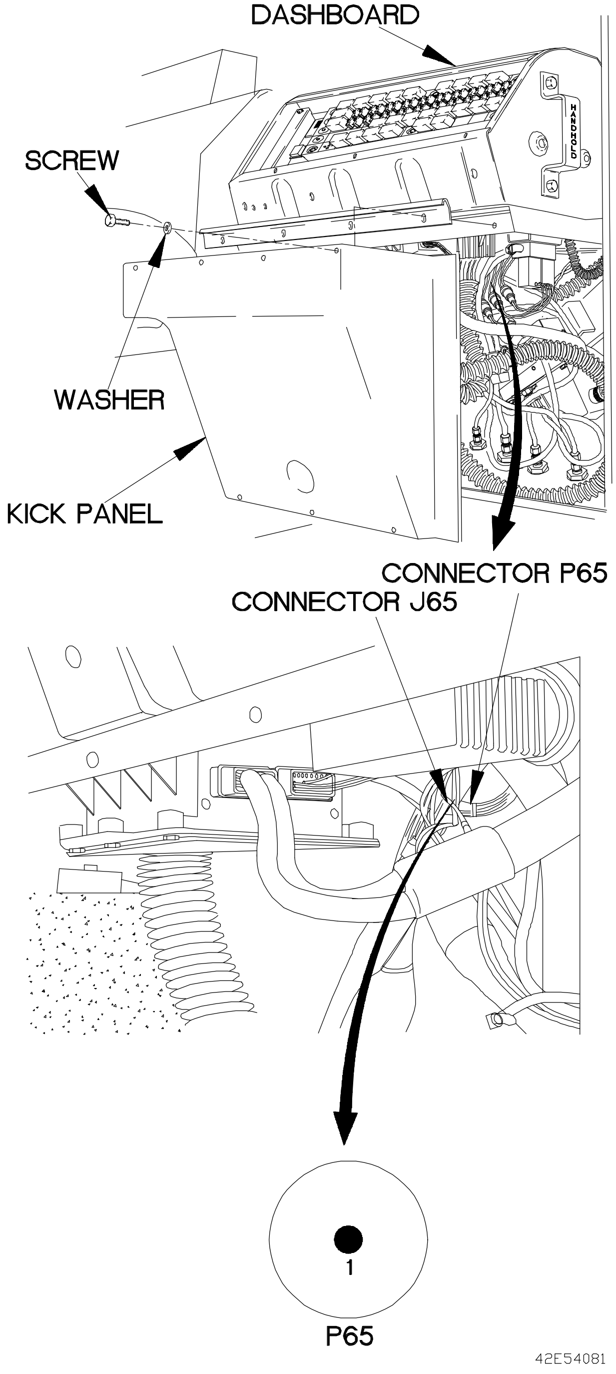
REASON FOR QUESTION

If 12 vdc is not present, wire 509 in dashboard cable assembly is faulty.
If 12 vdc is present, wire 509 in warning light cable assembly is faulty.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Remove seven screws and washers from kick panel. (2) Remove kick panel and stiffener from dashboard. (3) Disconnect connector P65 from connector J65. (4) Set multimeter to volts dc. (5) Connect positive (+) probe of multimeter to connector P65-1. (6) Connect negative (-) probe of multimeter to ground. (7) Position main light switch to SER DRIVE (TM 9-2320-366-10-1). (8) Position warning light switch to on (TM 9-2320-366-10-1). (9) If 12 vdc is not present, repair wire 509 (para 2-45)or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (10) If 12 vdc is present, repair wire 509 (para 2-45) or replace warning light cable assembly (para 22-5). (11) Position warning light switch to off (TM 9-2320-366-10-1). (12) Position main light switch to OFF (TM 9-2320-366-10-1). (13) Connect connector P65 to connector J65. (14) Install kick panel (para 16-3).



e55. BACKUP LIGHT DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10).
Batteries disconnected (para 7-57).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)\

Materials/Parts
Packing, Preformed (Item 209, Appendix G)
Wire, Electrical , 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

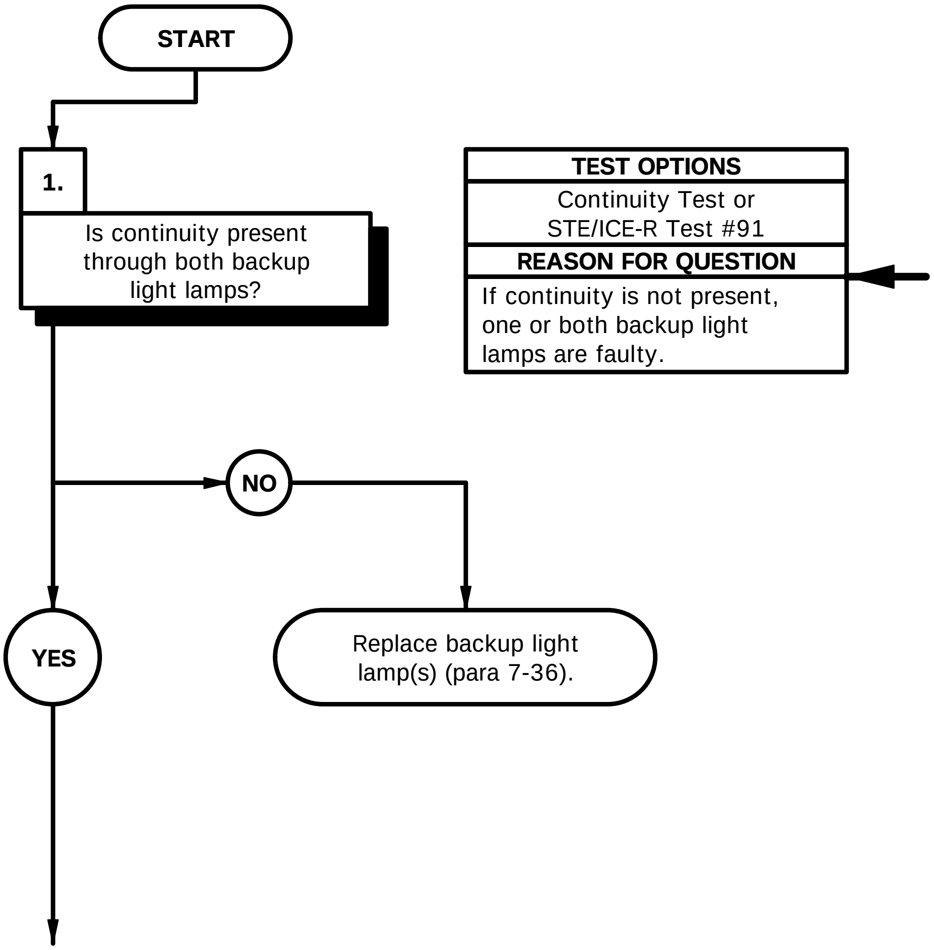
Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breakers CB70 and CB73 prior to beginning this task.

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.

POSSIBLE PROBLEMS

Faulty backup light lamps.
Faulty backup light assembly.
Faulty dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.
Faulty WTEC III relay K25.
Faulty WTEC III transmission ECU.



Is continuity present through both backup light lamps?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

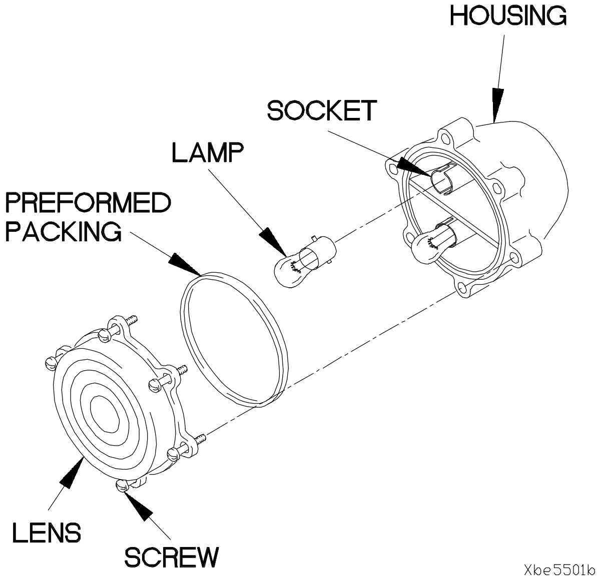
REASON FOR QUESTION

If continuity is not present, one or both backup light lamps are faulty.

Replace backup light lamp(s) (para 7-36).

CONTINUITY TEST

(1) Remove lens from housing.
(2) Remove preformed packing from housing. Discard preformed packing.
(3) Remove two lamps from sockets.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to center contact of lamp.
(6) Connect negative (-) probe of multimeter to lamp base and note reading on multimeter.
(7) If continuity is not present, replace one or both lamps (para 7-36).
(8) Install two lamps in sockets.
(9) Install preformed packing and lens on housing with six captive screws.
(10) Connect batteries (para 7-57).



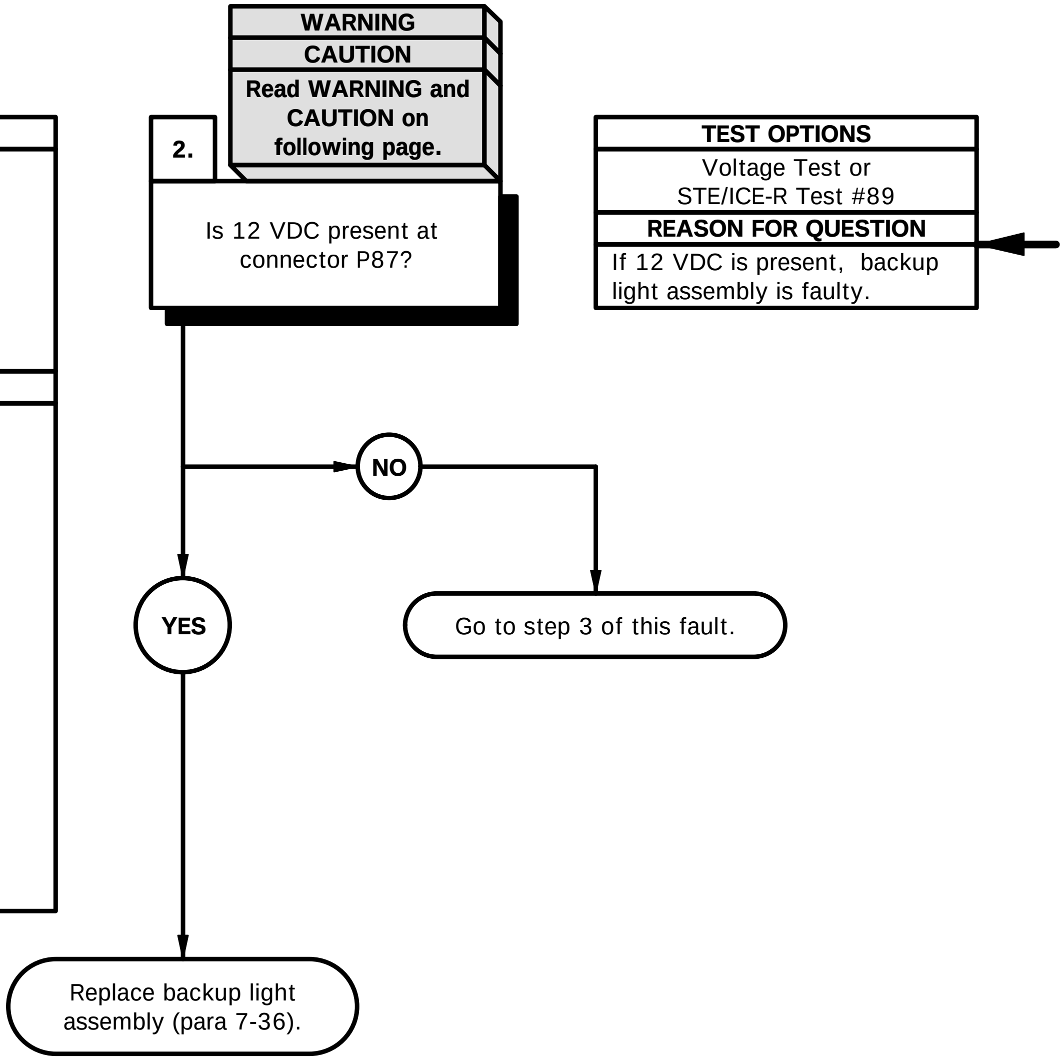
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.

POSSIBLE PROBLEMS

Faulty backup light assembly.
Faulty dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.
Faulty WTEC III relay K25.
Faulty WTEC III transmission ECU.



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

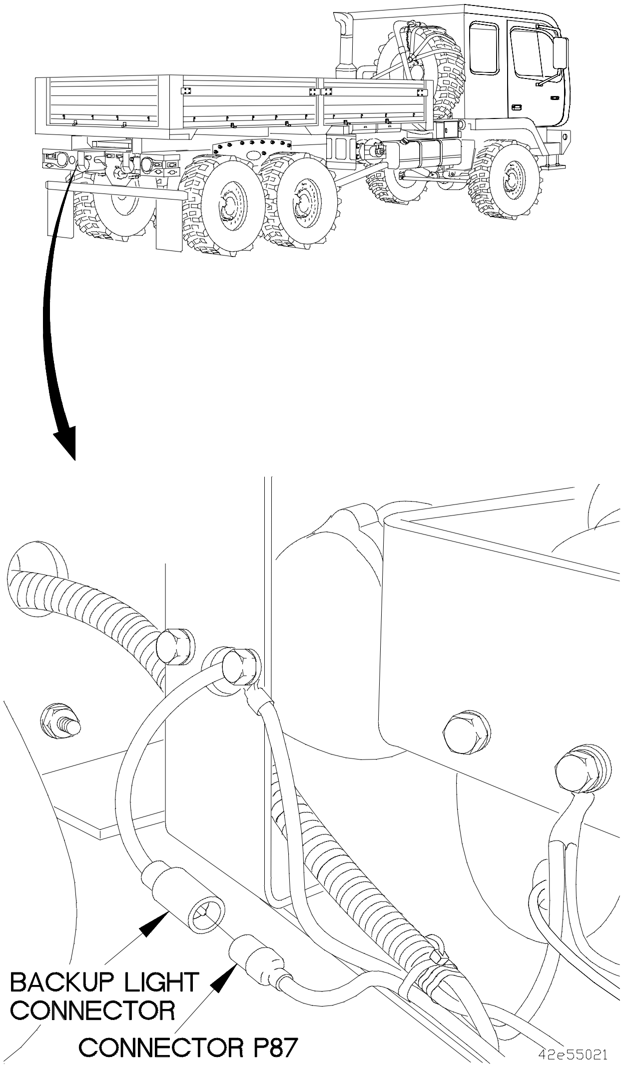
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
(1) Disconnect connector P87 from backup light connector. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to connector P87. (4) Connect negative (-) probe of multimeter to ground. (5) Start engine (TM 9-2320-366-10-1). (6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1). (7) Select R (reverse) on pushbutton shift selector (TM 9-2320-366-10-1) and note reading on multimeter. (8) If 12 VDC is not present, go to step 3 of this faulty. If 12 VDC is present, replace backup light assembly (para 7-36). (9) Select N (neutral) on pushbutton shift selector (TM 9-2320-366-10-1). (10) Position main light switch to OFF (TM 9-2320-366-10-1). (11) Shut down engine (TM 9-2320-366-10-1). (12) Connect connector P87 to backup light connector.



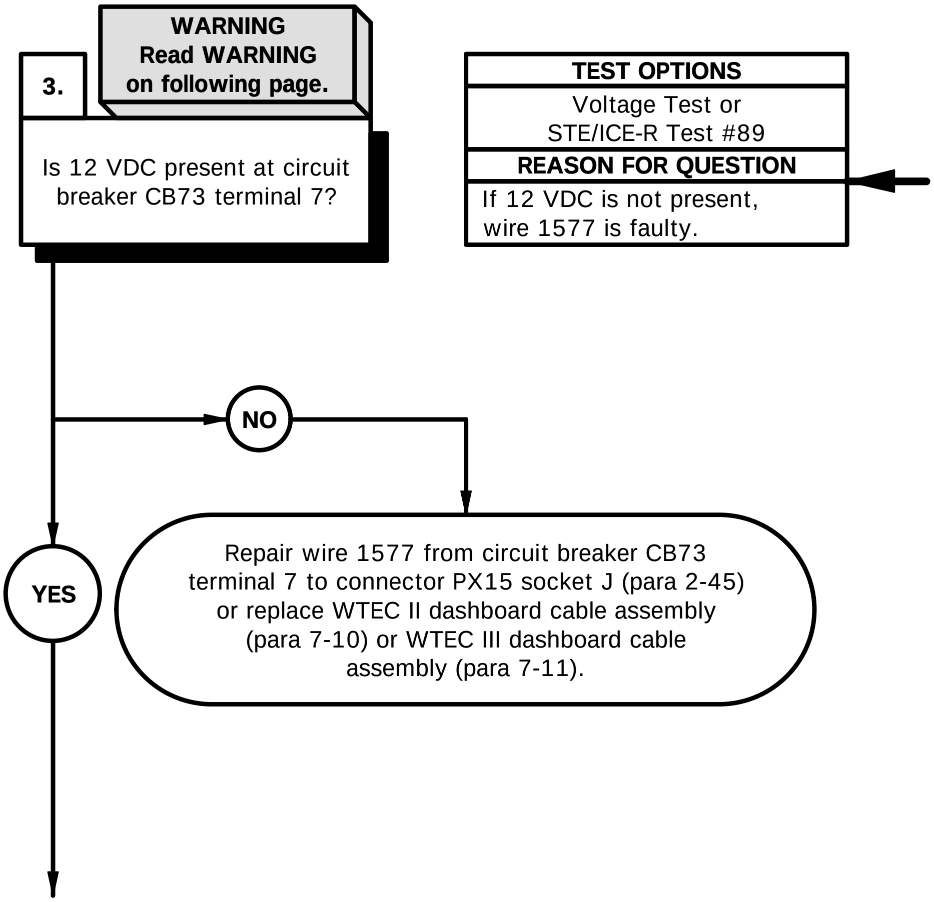
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.
Faulty WTEC III relay K25.
Faulty WTEC III transmission ECU.



3.

WARNING
Read WARNING on following page.

Is 12 VDC present at circuit breaker CB73 terminal 7?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1577 is faulty.

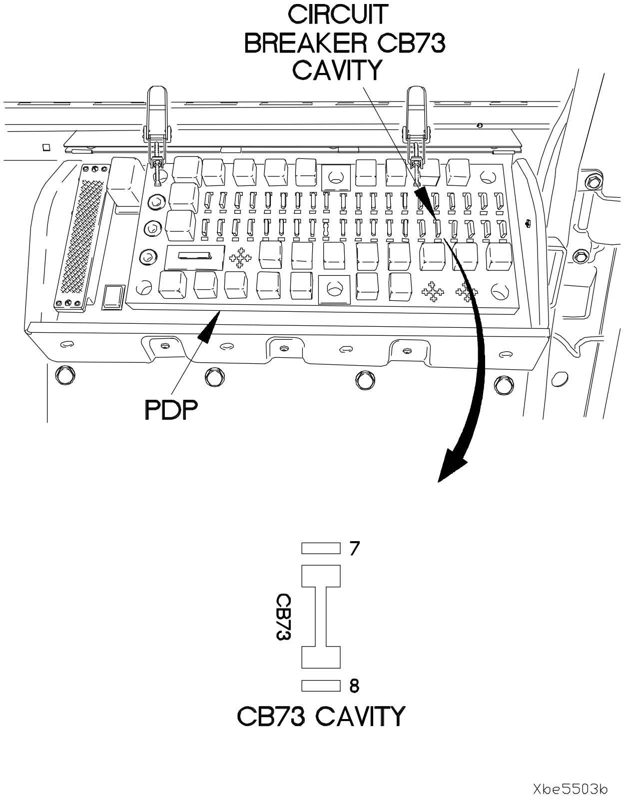
Repair wire 1577 from circuit breaker CB73 terminal 7 to connector PX15 socket J (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove circuit breaker CB73 from PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to PDP, terminal 7, where circuit breaker CB73 was removed.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1577 from circuit breaker CB73 terminal 7 to connector PX15 socket J. (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.
Faulty WTEC III relay K25.
Faulty WTEC III transmission ECU.

4.

Is vehicle equipped with WTEC II transmission controls?

TEST OPTIONS

Visual Inspection

REASON FOR QUESTION

This question helps eliminate possible problems and determines where troubleshooting continues.

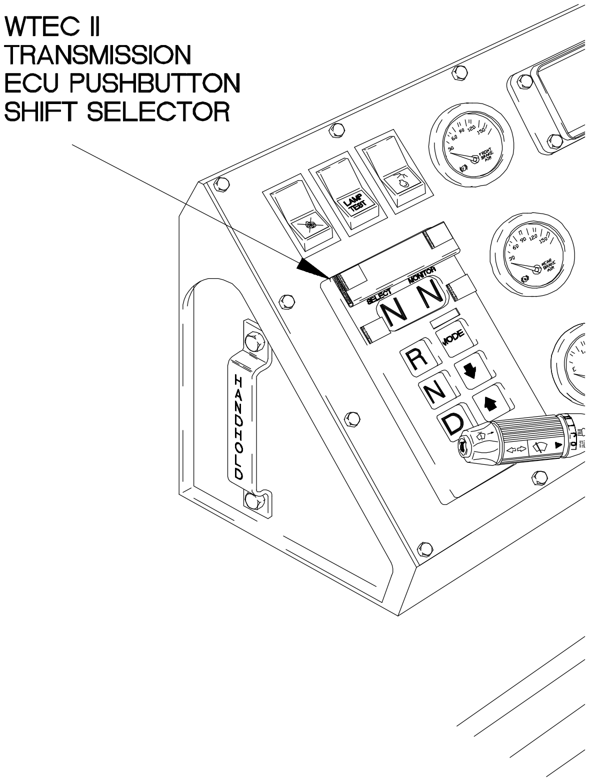
NO

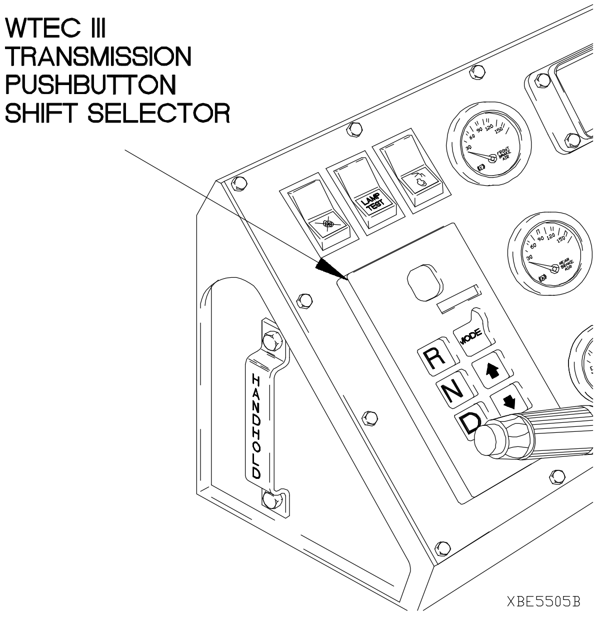
Go to step 12 of this fault.

YES

(1) Check if vehicle is equipped with WTEC II TEPSS.

(2) If transmission pushbutton shift selector is not mounted with four screws and does not have a filter cover, go to step 13 of this fault.





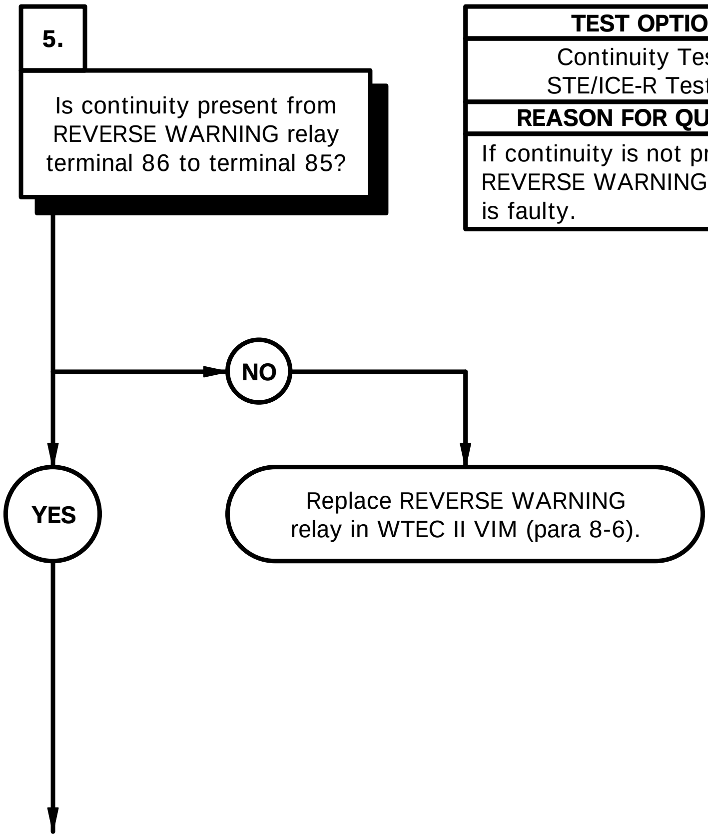
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC II transmission controls.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.



5.

Is continuity present from REVERSE WARNING relay terminal 86 to terminal 85?

Replace REVERSE WARNING relay in WTEC II VIM (para 8-6).

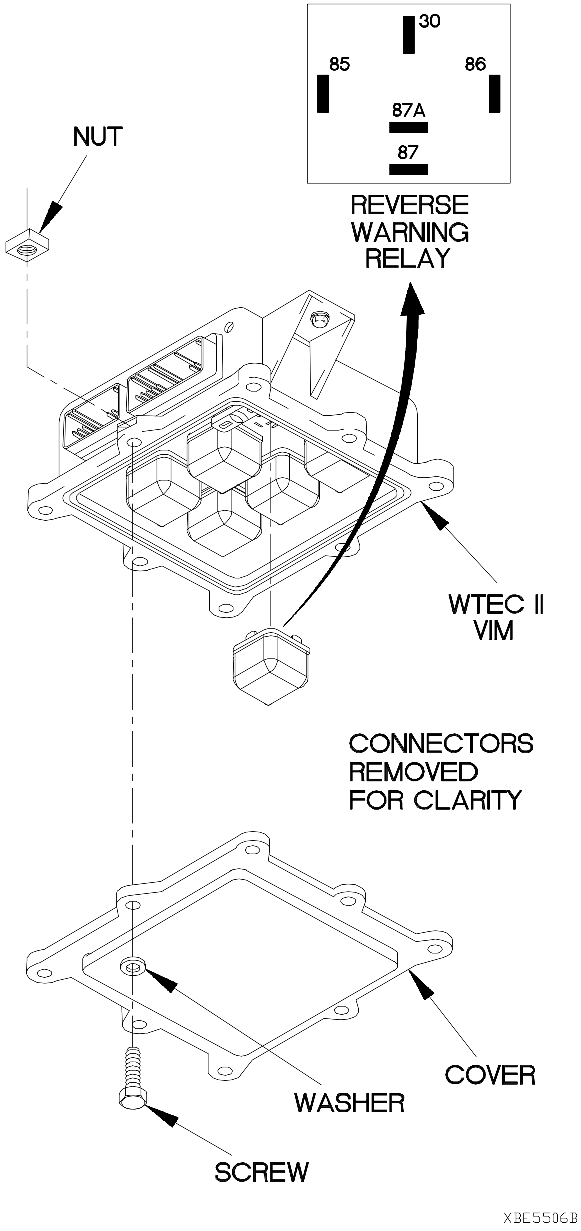
TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, REVERSE WARNING relay is faulty.

CONTINUITY TEST
(1) Remove kick panel (para 16-3). (2) Remove seven screws and washers from cover. (3) Remove screw, washer, cover, and nut from WTEC II VIM. (4) Remove REVERSE WARNING relay from WTEC II VIM. (5) Set multimeter to ohms. (6) Connect positive (+) probe of multimeter to REVERSE WARNING relay terminal 86. (7) Connect negative (-) probe of multimeter to REVERSE WARNING relay terminal 85 and note reading on multimeter. (8) If continuity is not present, replace REVERSE WARNING relay in WTEC II VIM (para 8-6). (9) Install REVERSE WARNING relay in WTEC II VIM. (10) Install cover on WTEC II VIM with nut, washer, and screw. (11) Install seven washers and screws in cover.



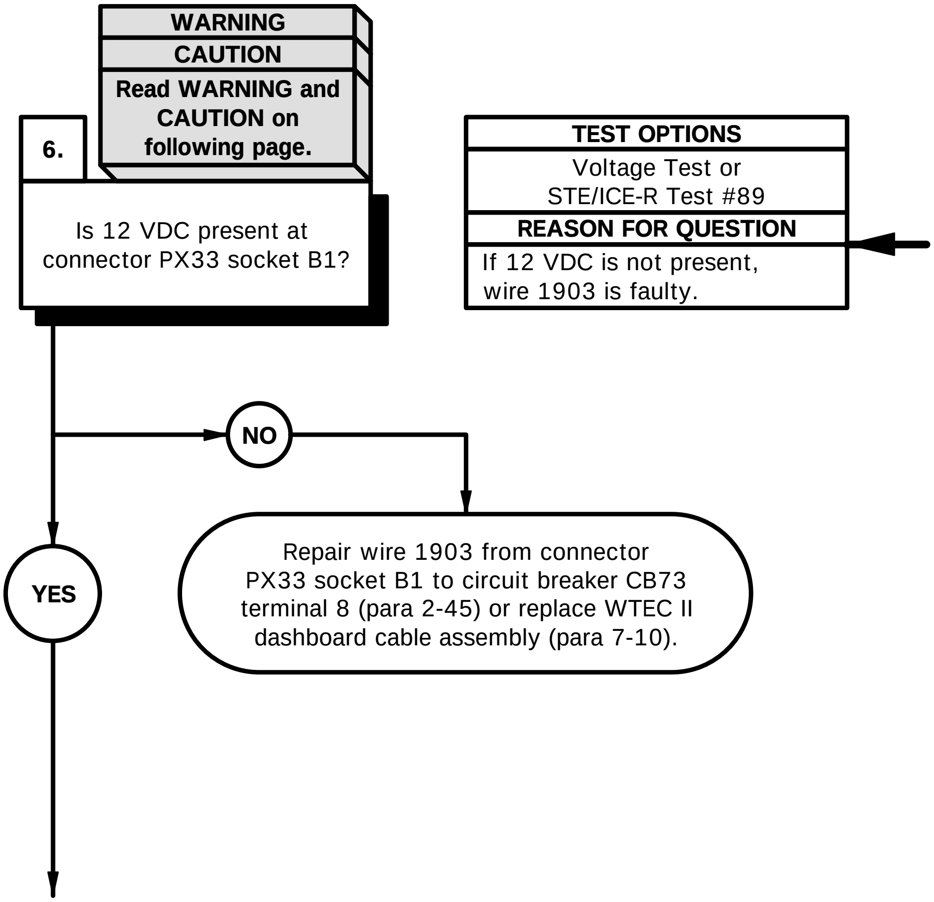
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC II transmission controls.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

Is 12 VDC present at connector PX33 socket B1?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1903 is faulty.

Repair wire 1903 from connector PX33 socket B1 to circuit breaker CB73 terminal 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

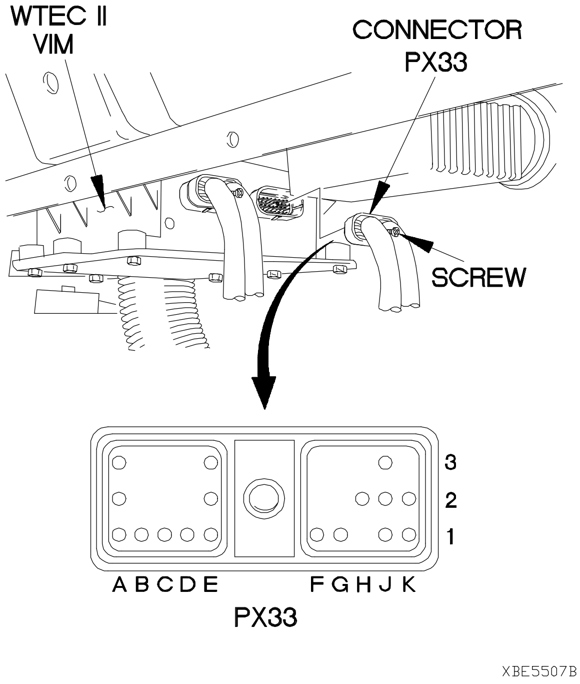
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Loosen screw in connector PX33.
(2) Disconnect connector PX33 from WTEC II VIM.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to connector PX33 socket B1.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1903 from connector PX33 socket B1 to circuit breaker CB73 terminal 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



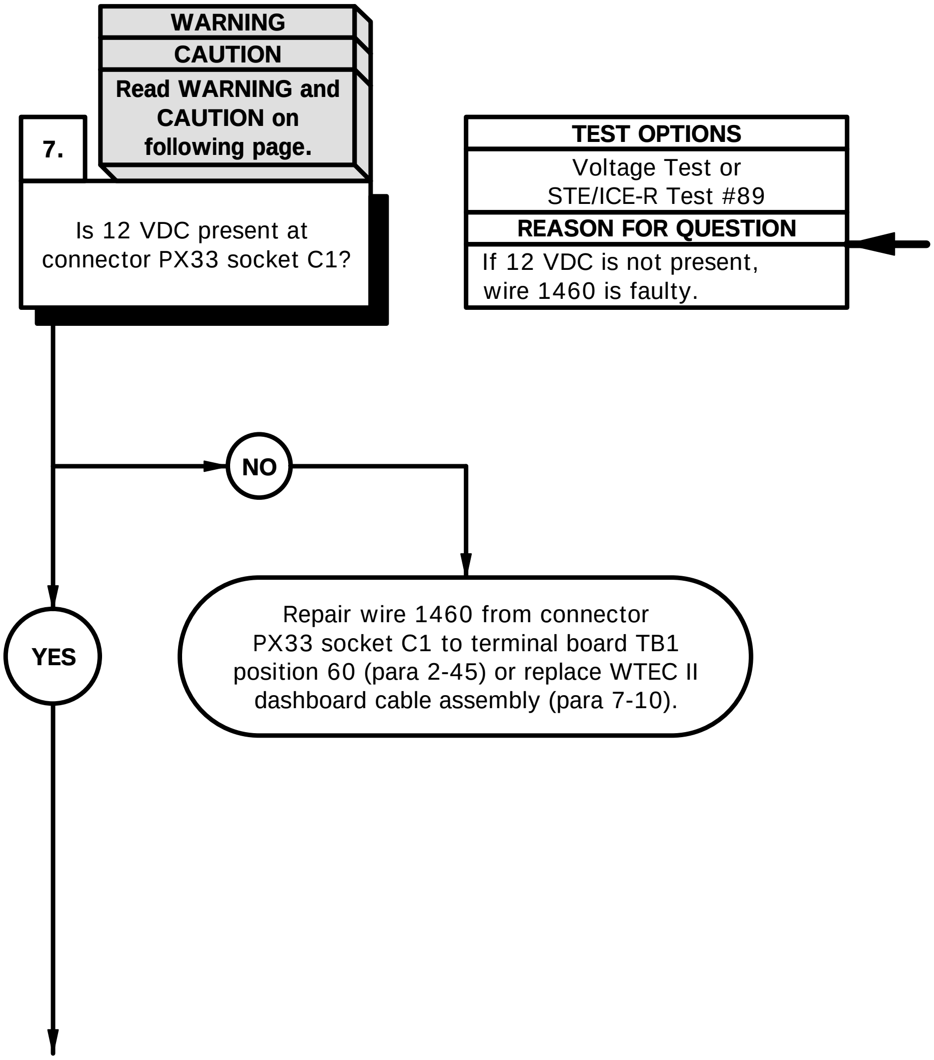
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC II transmission controls.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty WTEC II cab transmission harness.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.



WARNING

CAUTION

Read WARNING and CAUTION on following page.

7.

Is 12 VDC present at connector PX33 socket C1?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1460 is faulty.

Repair wire 1460 from connector PX33 socket C1 to terminal board TB1 position 60 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

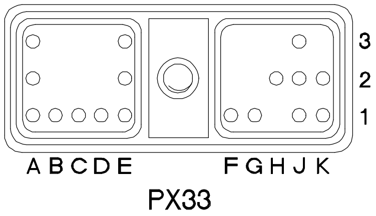
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to connector PX33 socket C1. (3) Connect negative (-) probe of multimeter to ground. (4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (5) If 12 VDC is not present, repair wire 1460 from connector PX33 socket C1 to terminal board TB1 position 60 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10). (6) Position main light switch to OFF (TM 9-2320-366-10-1).



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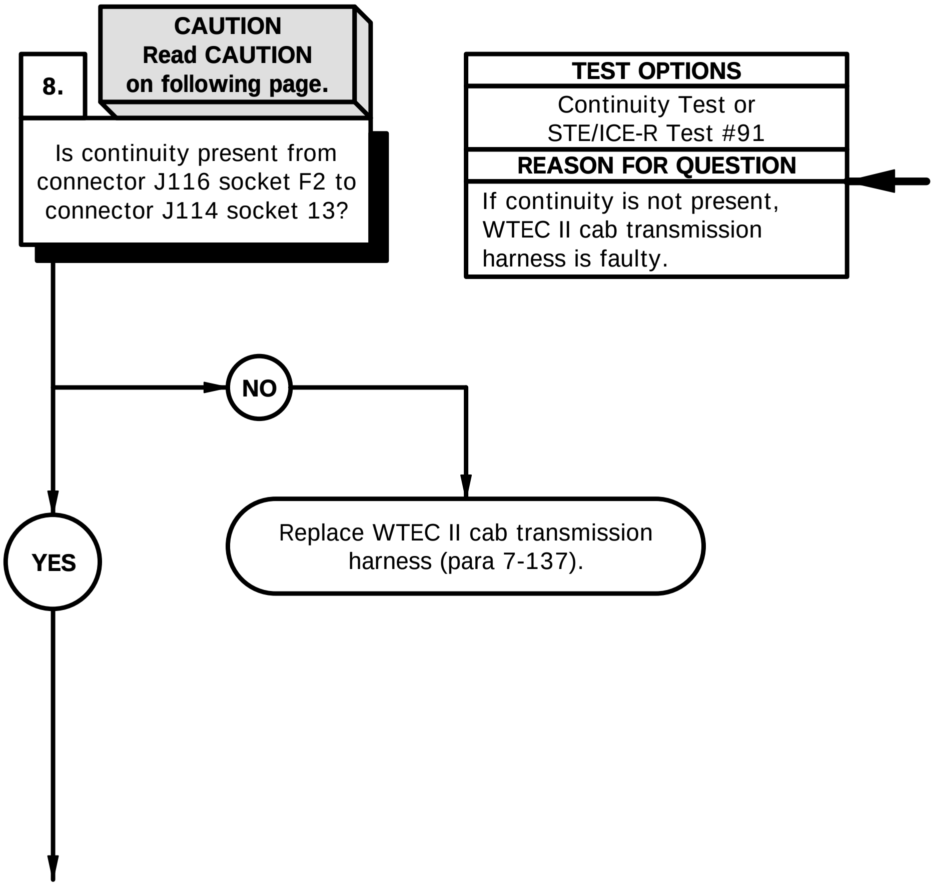
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC II transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC II cab transmission harness.
Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.



CAUTION
Read CAUTION on following page.

8. Is continuity present from connector J116 socket F2 to connector J114 socket 13?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, WTEC II cab transmission harness is faulty.

Replace WTEC II cab transmission harness (para 7-137).

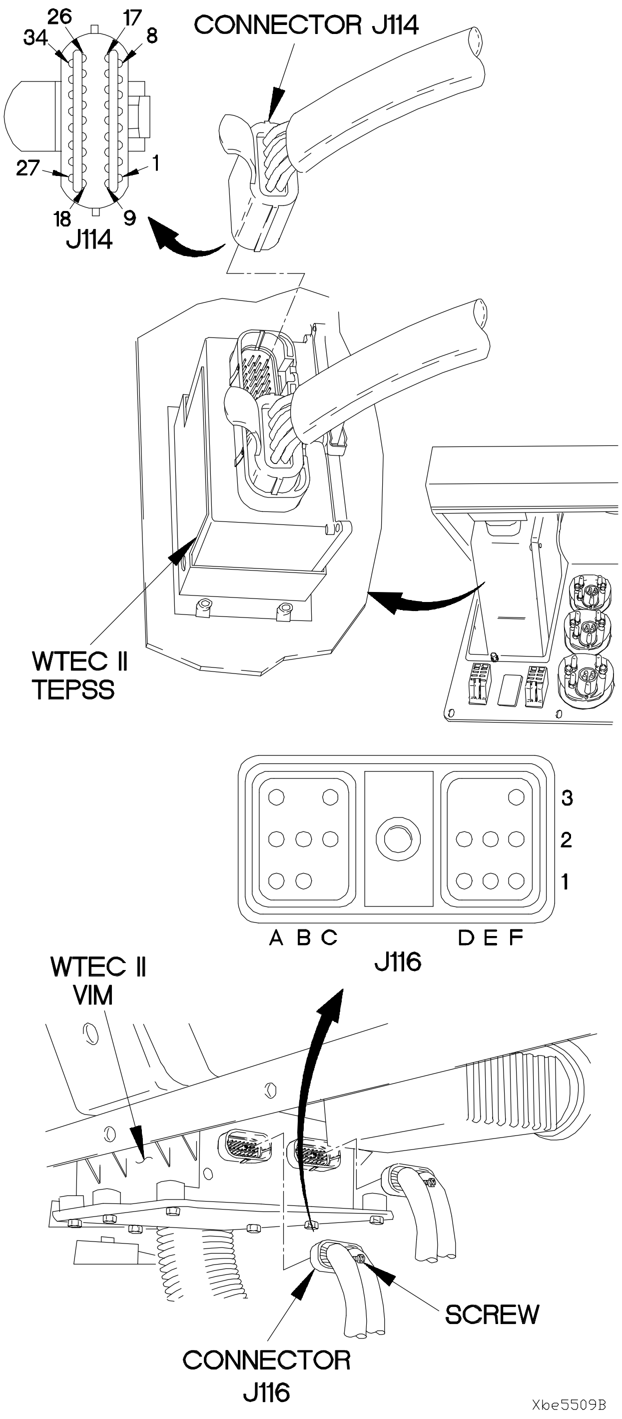
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Remove instrument panel assembly for access (para 7-15). (2) Disconnect connector J114 from WTEC II TEPSS. (3) Loosen screw in connector J116. (4) Disconnect connector J116 from WTEC II VIM. (5) Connect positive (+) probe of multimeter to connector J116 socket F2. (6) Connect negative (-) probe of multimeter to connector J114 socket 13 and note reading on multimeter. (7) If continuity is not present, replace WTEC II cab transmission harness (para 7-137). (8) Connect connector J114 to WTEC II TEPSS. (9) Install instrument panel assembly (para 7-15). (10) Connect connector J116 to WTEC II VIM. (11) Tighten screw in connector J116.



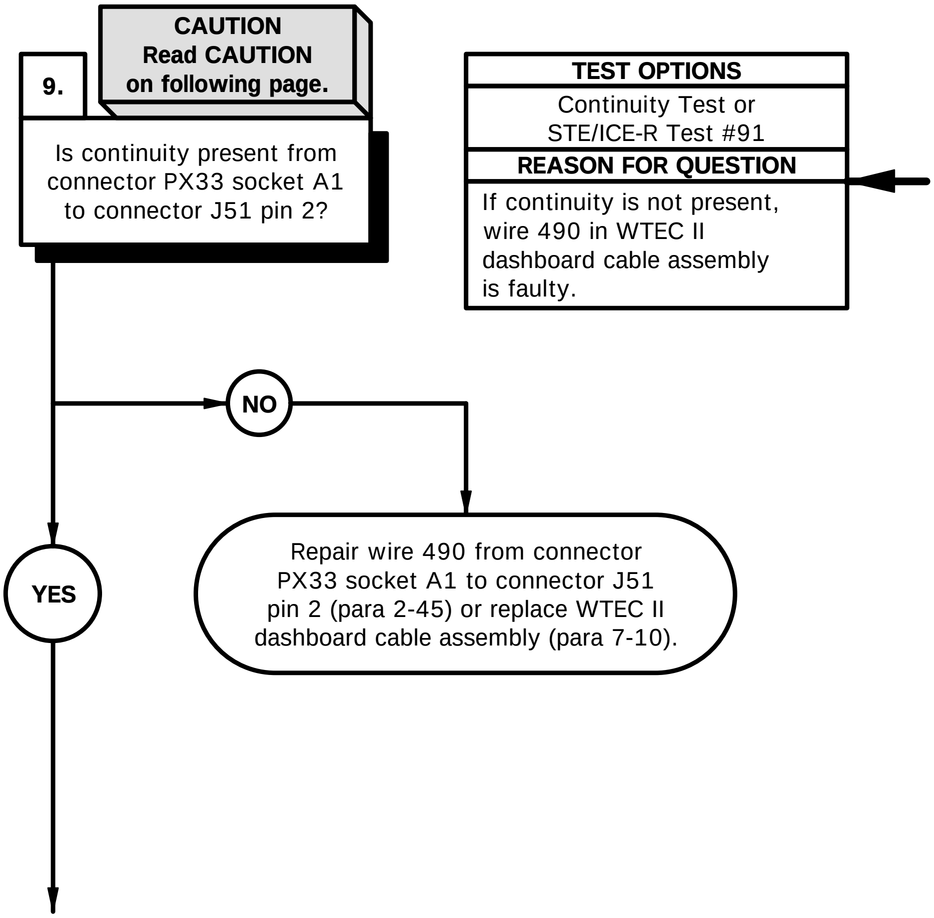
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC II transmission controls.
WTEC II cab transmission harness OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.



CAUTION
Read CAUTION on following page.

9. Is continuity present from connector PX33 socket A1 to connector J51 pin 2?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 490 in WTEC II dashboard cable assembly is faulty.

Repair wire 490 from connector PX33 socket A1 to connector J51 pin 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).

CAUTION

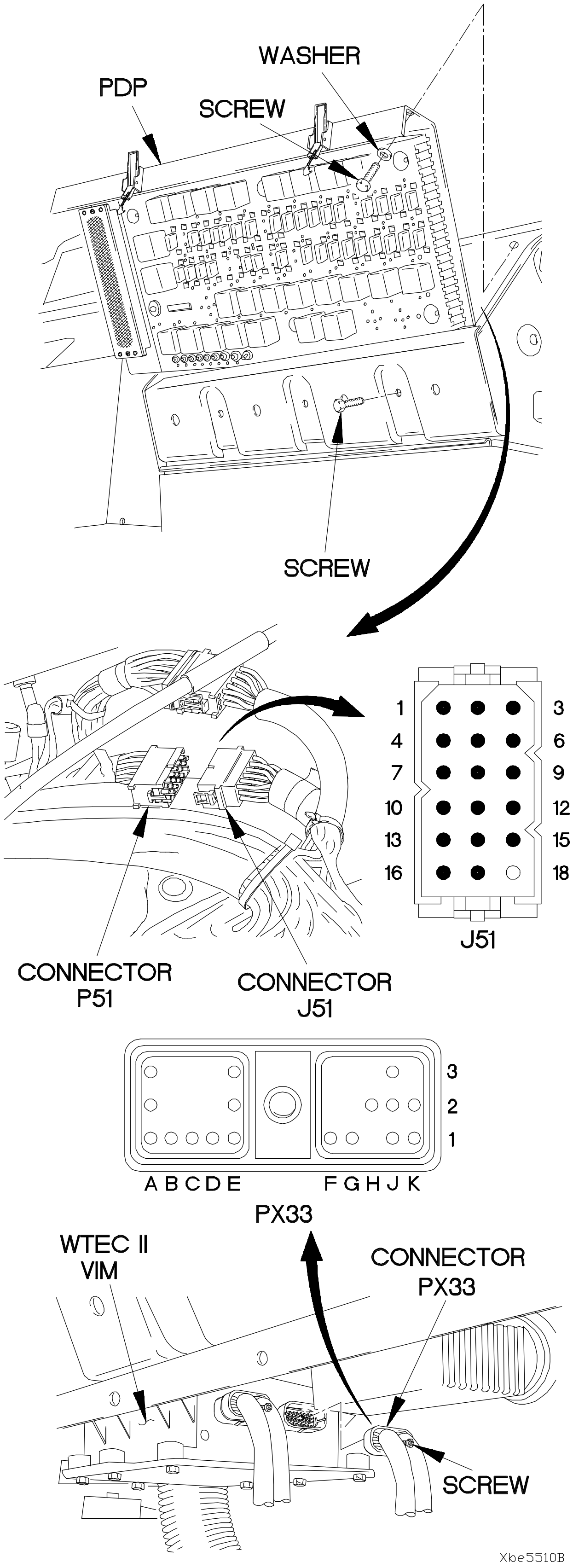
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove three screws from PDP.
(2) Remove three screws and washers from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector P51 from connector J51.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector PX33 socket A1.
(7) Connect negative (-) probe of multimeter to connector J51 pin 2 and note reading on multimeter.
(8) If continuity is not present, repair wire 490 from connector PX33 socket A1 to connector J51 pin 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10).
(9) Connect connector PX33 to WTEC II VIM.
(10) Tighten screw in connector PX33.
(11) Install kick panel (para 16-3).



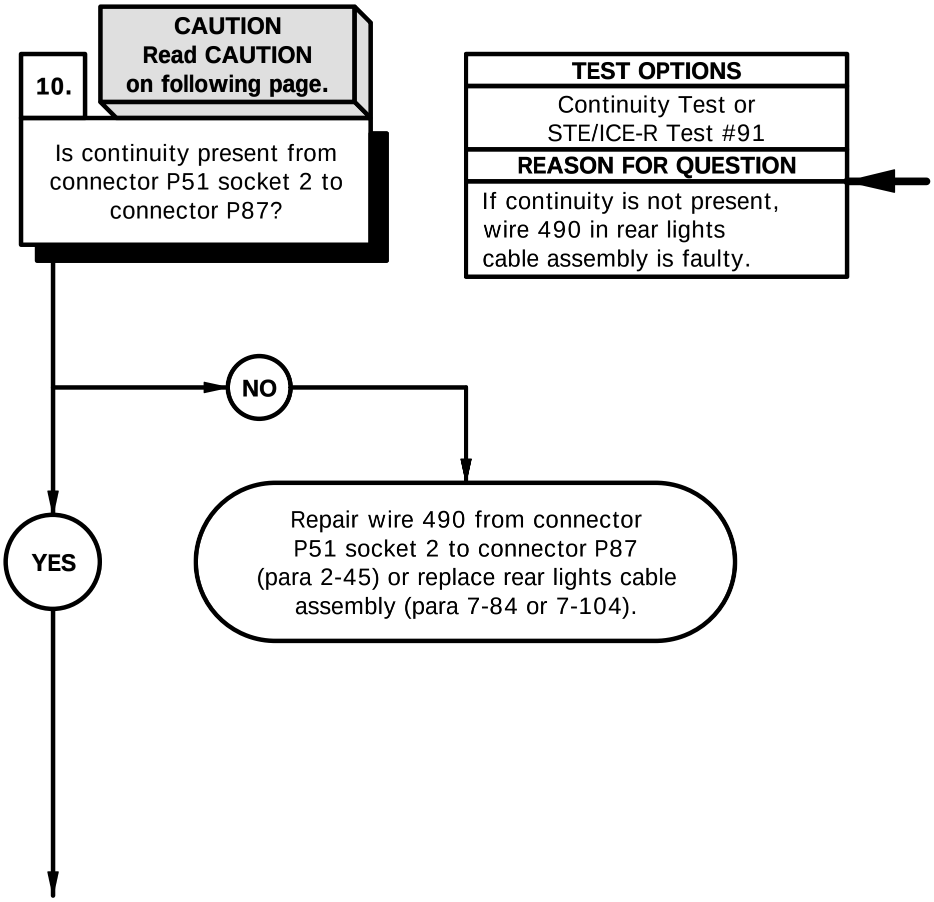
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC II transmission controls.
WTEC II cab transmission harness OK.
WTEC II dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.



CAUTION
Read CAUTION on following page.

10. Is continuity present from connector P51 socket 2 to connector P87?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 490 in rear lights cable assembly is faulty.

NO

Repair wire 490 from connector P51 socket 2 to connector P87 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

YES

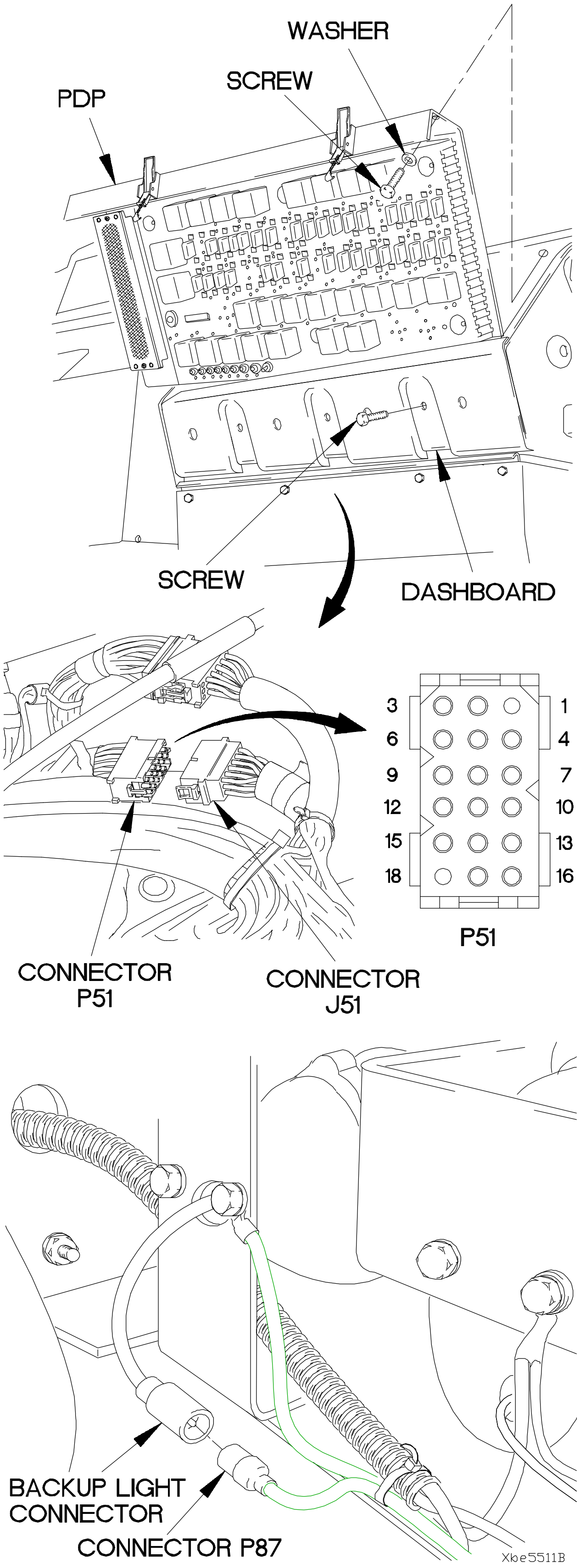
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

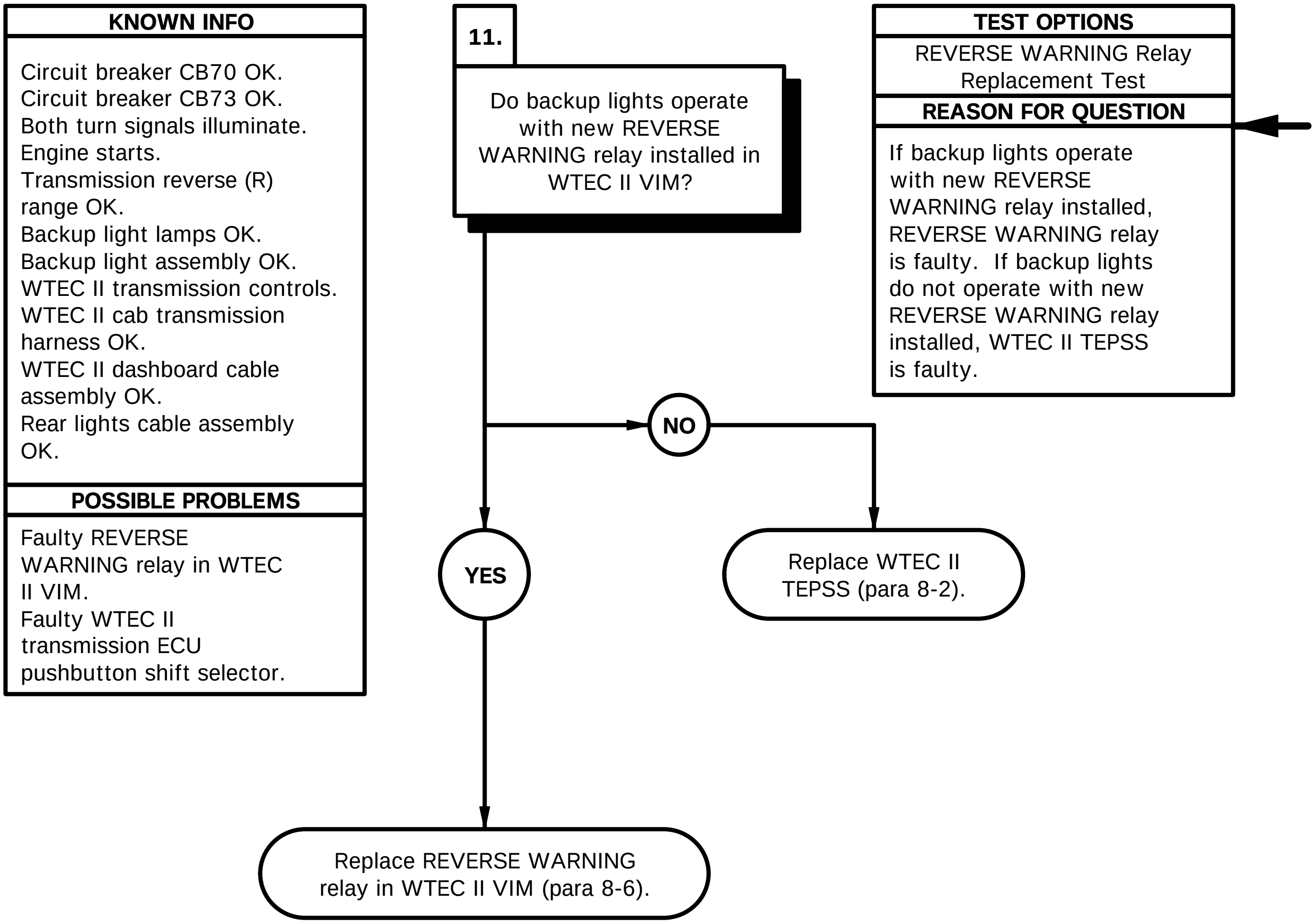
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST
(1) Disconnect connector P87 from backup light connector. (2) Set multimeter to ohms. (3) Connect positive (+) probe of multimeter to connector P51 socket 2. (4) Connect negative (-) probe of multimeter to connector P87 and note reading on multimeter. (5) If continuity is not present, repair wire 490 from connector P51 socket 2 to connector P87 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104). (6) Connect connector P87 to backup light connector. (7) Connect connector P51 to connector J51. (8) Install PDP on dashboard with three screws. (9) Install three washers and screws in PDP.



e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC II transmission controls.
WTEC II cab transmission harness OK.
WTEC II dashboard cable assembly OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty REVERSE WARNING relay in WTEC II VIM.
Faulty WTEC II transmission ECU pushbutton shift selector.

11.

Do backup lights operate with new REVERSE WARNING relay installed in WTEC II VIM?

TEST OPTIONS

REVERSE WARNING Relay Replacement Test

REASON FOR QUESTION

If backup lights operate with new REVERSE WARNING relay installed, REVERSE WARNING relay is faulty. If backup lights do not operate with new REVERSE WARNING relay installed, WTEC II TEPSS is faulty.

Replace WTEC II TEPSS (para 8-2).

Replace REVERSE WARNING relay in WTEC II VIM (para 8-6).

(1) Replace REVERSE WARNING relay in WTEC II VIM (para 8-6).
(2) Start engine (TM 9-2320-366-10-1).
(3) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(4) Select R (reverse) on WTEC II TEPSS (TM 9-2320-366-10-1).
(5) Check to see if backup lights operate.
(6) Select N (neutral) on WTEC II TEPSS (TM 9-2320-366-10-1).
(7) Position main light switch to OFF (TM 9-2320-365-10).
(8) Shut down engine (TM 9-2320-366-10-1).
(9) If backup lights do not operate, install old REVERSE WARNING relay in WTEC II VIM (para 8-6) and replace WTEC II TEPSS (para 8-2).

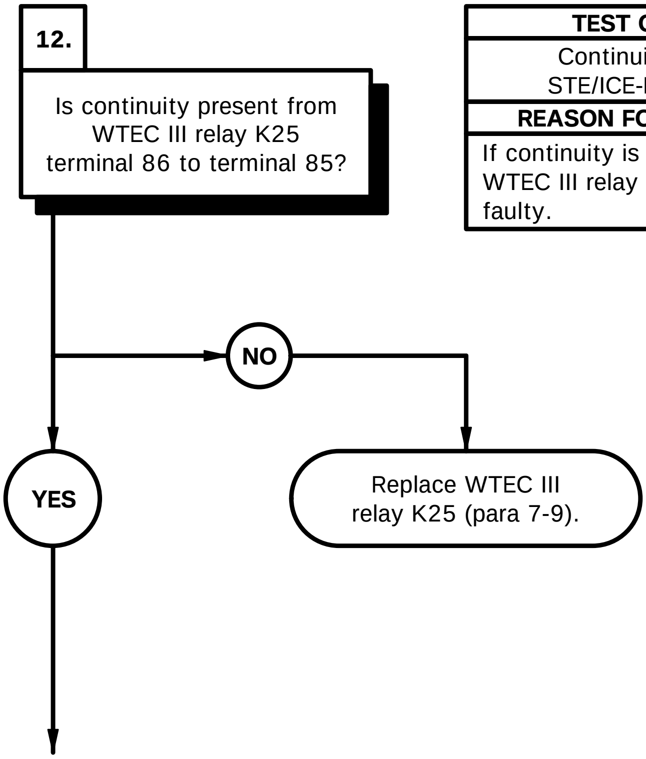
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC III transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC III relay K25.
Faulty WTEC III dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty WTEC III transmission ECU.



12.

Is continuity present from WTEC III relay K25 terminal 86 to terminal 85?

Replace WTEC III relay K25 (para 7-9).

TEST OPTIONS

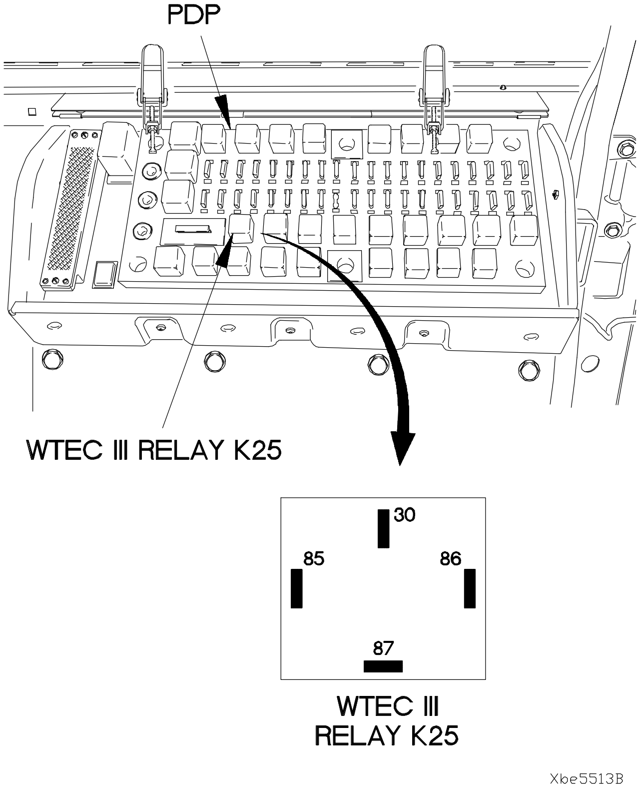
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

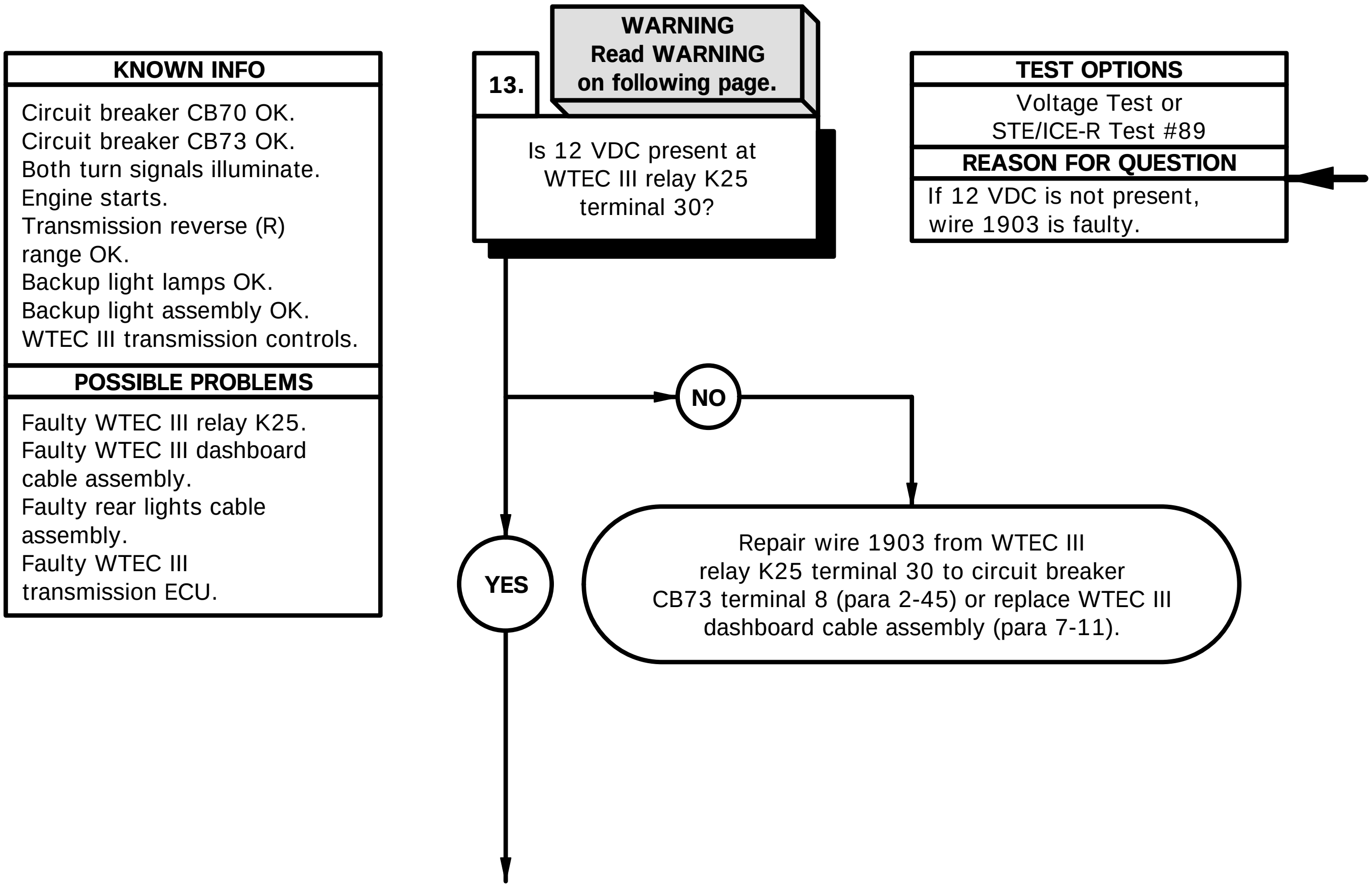
If continuity is not present, WTEC III relay K25 if faulty.

CONTINUITY TEST

(1) Remove WTEC III relay K25 from PDP.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to WTEC III relay K25 terminal 86.
(4) Connect negative (-) probe of multimeter to WTEC III relay K25 terminal 85 and note reading on multimeter.
(5) If continuity is not present, replace WTEC III relay K25 (para 7-9).



e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC III transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC III relay K25.
Faulty WTEC III dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty WTEC III transmission ECU.

WARNING
Read WARNING on following page.

13. Is 12 VDC present at WTEC III relay K25 terminal 30?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1903 is faulty.

NO

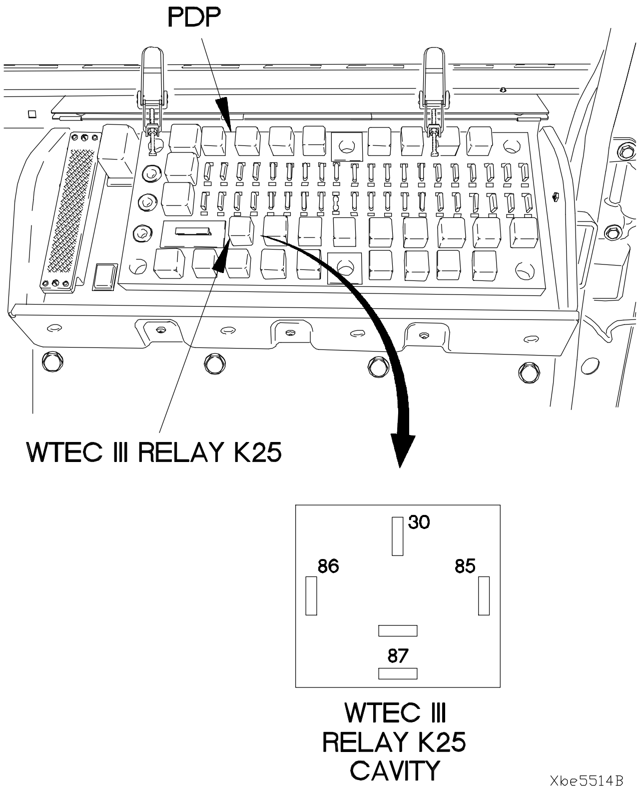
Repair wire 1903 from WTEC III relay K25 terminal 30 to circuit breaker CB73 terminal 8 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to PDP, where WTEC III relay K25 terminal 30 was removed. (5) Connect negative (-) probe of multimeter to ground. (6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (7) If 12 VDC is not present, repair wire 1903 from WTEC III relay K25 terminal 30 to circuit breaker CB73 terminal 8 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11). (8) Position main light switch to OFF (TM 9-2320-366-10-1).



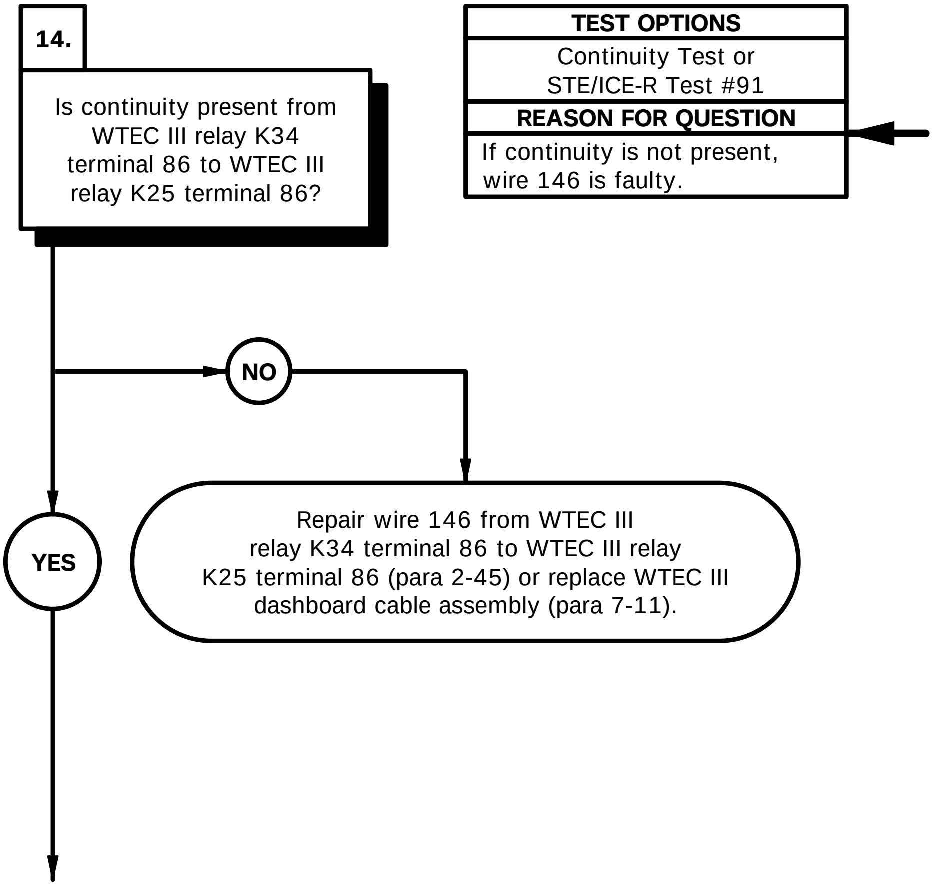
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC III transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC III relay K25.
Faulty WTEC III dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty WTEC III transmission ECU.



14.

Is continuity present from WTEC III relay K34 terminal 86 to WTEC III relay K25 terminal 86?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

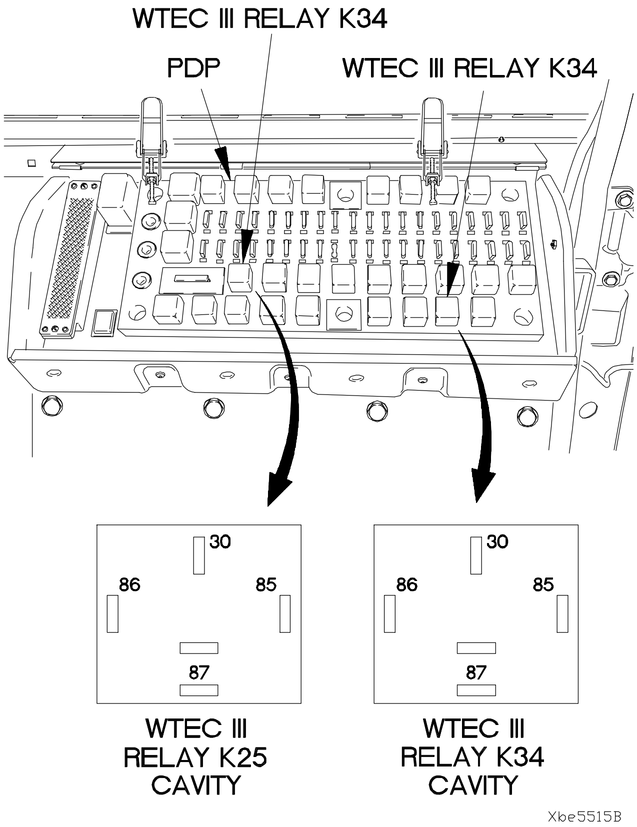
REASON FOR QUESTION

If continuity is not present, wire 146 is faulty.

Repair wire 146 from WTEC III relay K34 terminal 86 to WTEC III relay K25 terminal 86 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove WTEC III relay K34 from PDP.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to PDP, where WTEC III relay K34 terminal 86 was removed.
(4) Connect negative (-) probe of multimeter to PDP, where WTEC III relay K25 terminal 86 was removed, and note reading on multimeter.
(5) If continuity is not present, repair wire 146 from WTEC III relay K34 terminal 86 to WTEC III relay K25 terminal 86 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(6) Install WTEC III relay K34 on PDP.



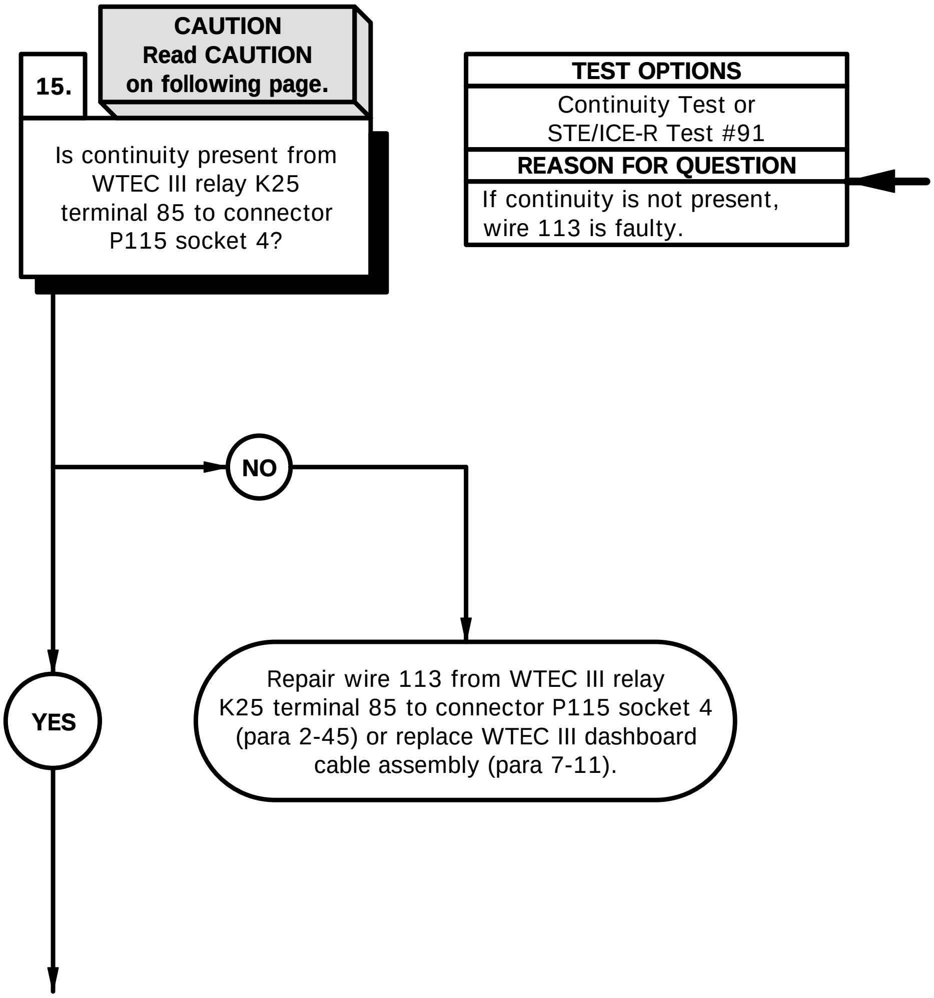
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC III transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC III relay K25.
Faulty WTEC III dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty WTEC III transmission ECU.



CAUTION
Read CAUTION on following page.

15. Is continuity present from WTEC III relay K25 terminal 85 to connector P115 socket 4?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 113 is faulty.

Repair wire 113 from WTEC III relay K25 terminal 85 to connector P115 socket 4 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

CAUTION

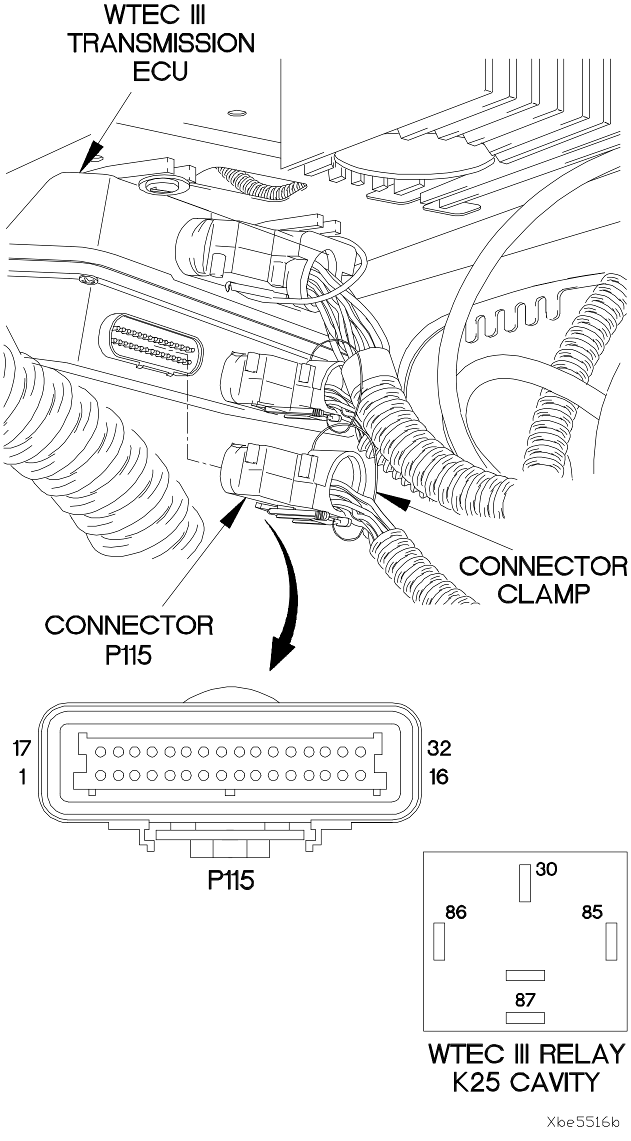
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove kick panel (para 16-3).
(2) Disconnect connector clamp from connector P115.
(3) Disconnect connector P115 from WTEC III transmission ECU.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to PDP, where WTEC III relay K25 terminal 85 was removed.
(6) Connect negative (-) probe of multimeter to connecter P115 socket 4 and note reading on multimeter.
(7) If continuity is not present, repair wire 113 from WTEC III relay K25 terminal 85 to connector P115 socket 4 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).
(8) Connect connector P115 to WTEC III transmission ECU.
(9) Connect connector clamp to connector P115.



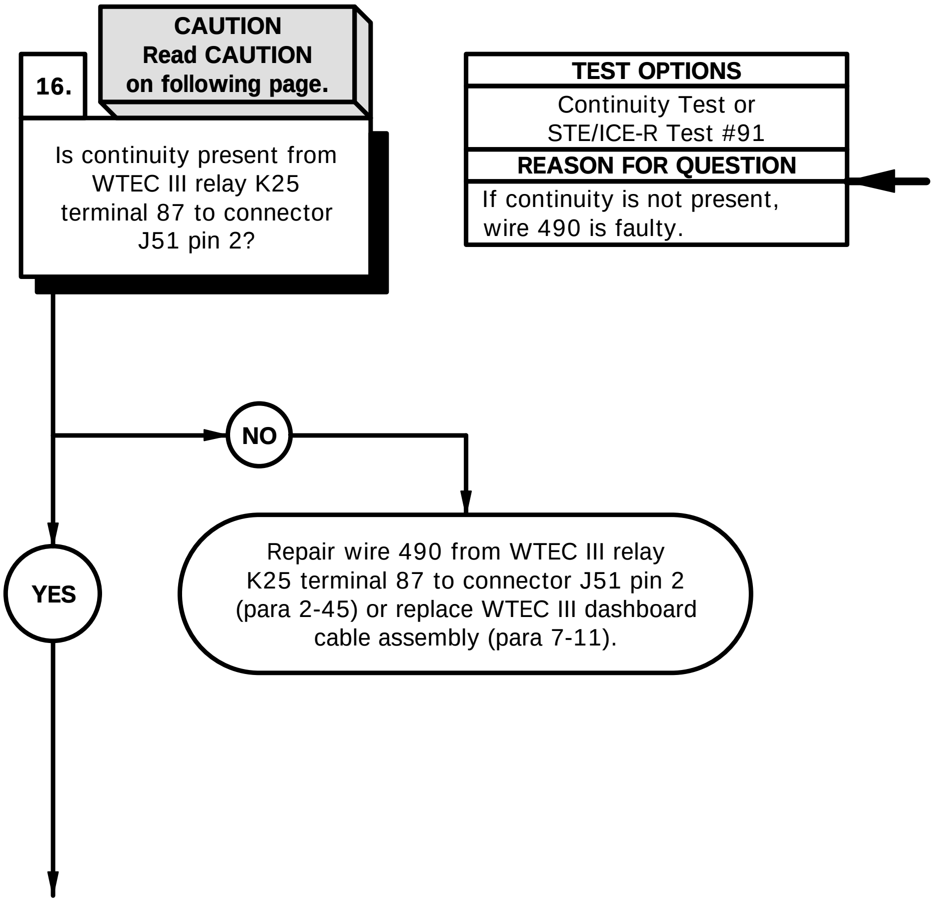
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC III transmission controls.

POSSIBLE PROBLEMS

Faulty WTEC III relay K25.
Faulty WTEC III dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty WTEC III transmission ECU.



CAUTION
Read CAUTION on following page.

16. Is continuity present from WTEC III relay K25 terminal 87 to connector J51 pin 2?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 490 is faulty.

Repair wire 490 from WTEC III relay K25 terminal 87 to connector J51 pin 2 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).

CAUTION

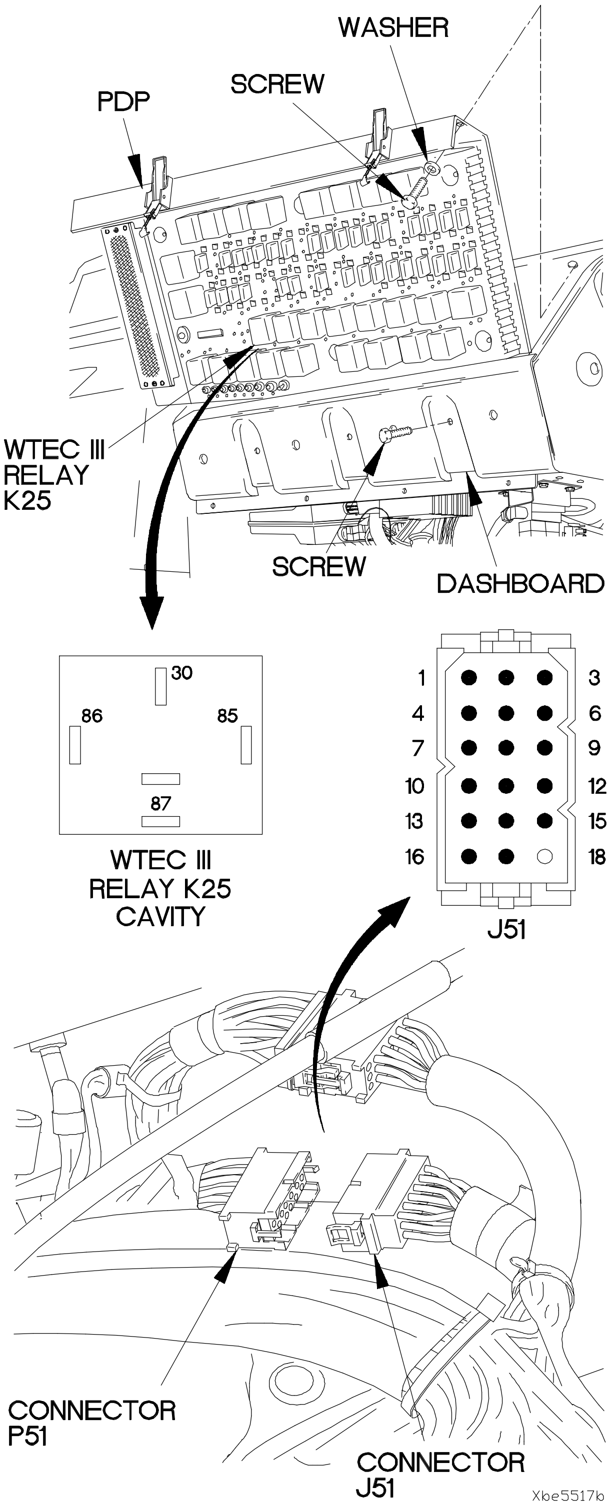
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove three screws from PDP.
(2) Remove three screws and washers from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector P51 from connector J51.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to PDP, where WTEC III relay K25 terminal 87 was removed.
(7) Connect negative (-) probe of multimeter to connector J51 pin 2 and note reading on multimeter.
(8) If continuity is not present, repair wire 490 from WTEC III relay K25 terminal 87 to connector J51 pin 2 (para 2-45) or replace WTEC III dashboard cable assembly (para 7-11).



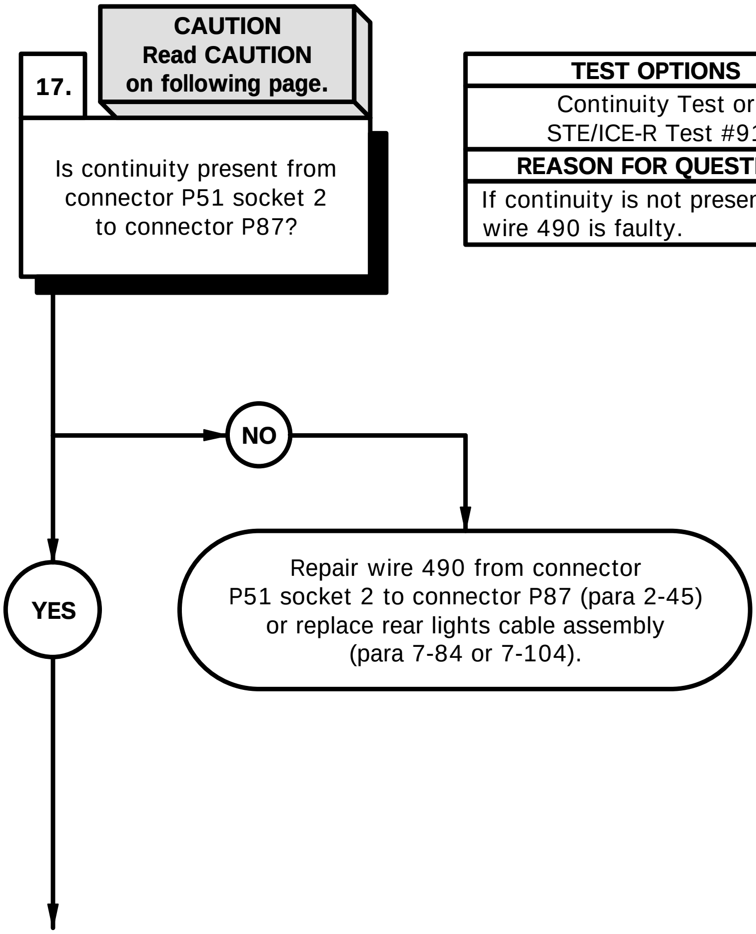
e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC III transmission controls.
WTEC III dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty WTEC III relay K25.
Faulty WTEC III transmission ECU.



17.

CAUTION
Read CAUTION on following page.

Is continuity present from connector P51 socket 2 to connector P87?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 490 is faulty.

NO

Repair wire 490 from connector P51 socket 2 to connector P87 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

YES

CAUTION

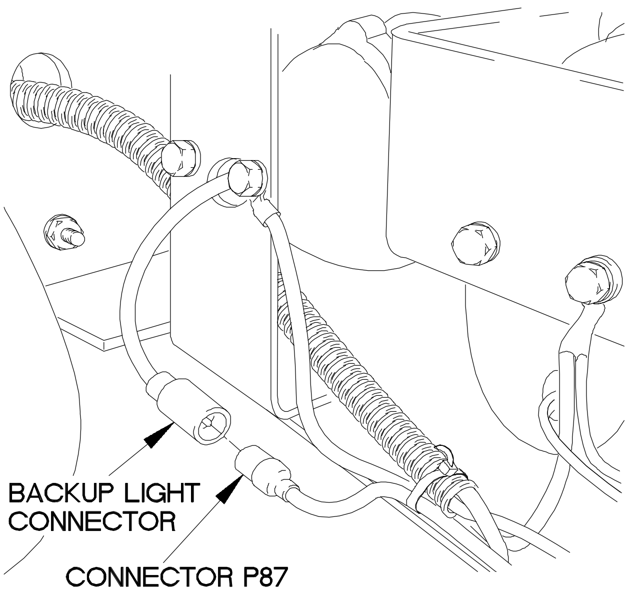
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

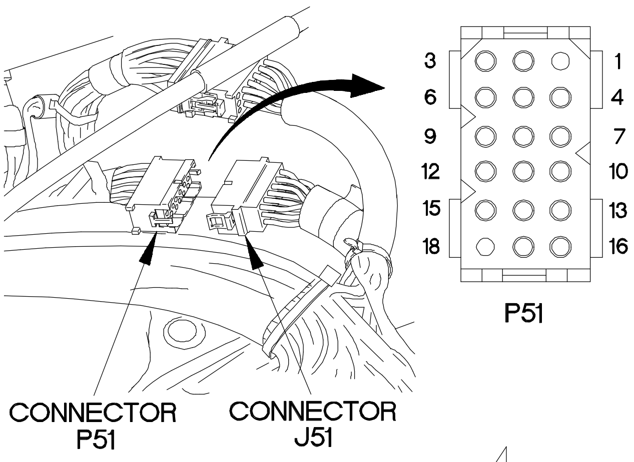
NOTE

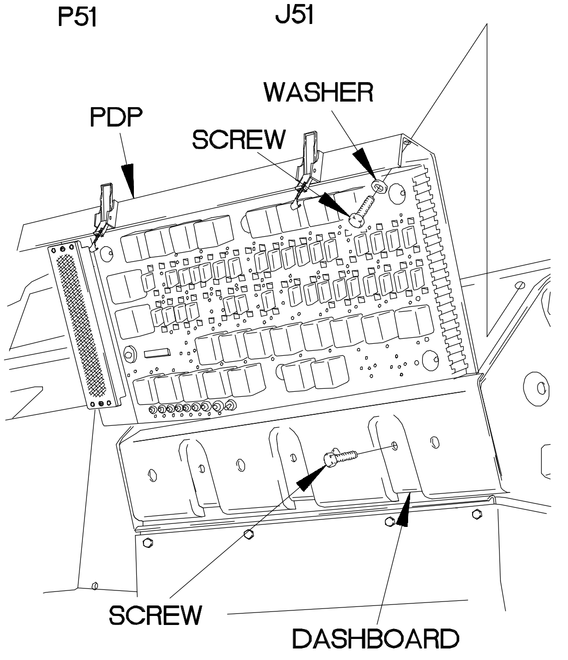
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P87 from backup light connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P51 socket 2.
(4) Connect negative (-) probe of multimeter to connector P87 and note reading on multimeter.
(5) If continuity is not present, repair wire 490 from connector P51 socket 2 to connector P87 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(6) Connect connector P87 to backup light connector.
(7) Connect connector P51 to connector J51.
(8) Install PDP on dashboard with three screws.
(9) Install three washers and screws in PDP.







Xbe5518b

e55. BACKUP LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Circuit breaker CB70 OK.
Circuit breaker CB73 OK.
Both turn signals illuminate.
Engine starts.
Transmission reverse (R) range OK.
Backup light lamps OK.
Backup light assembly OK.
WTEC III transmission controls.
WTEC III dashboard cable assembly OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty WTEC III relay K25.
Faulty WTEC III transmission ECU.

18.

Do backup lights operate with new WTEC III relay K25 installed?

TEST OPTIONS

WTEC III Relay K25 Replacement Test

REASON FOR QUESTION

If backup lights operate with new WTEC III relay K25 installed, WTEC III relay K25 is faulty. If backup lights do not operate with new WTEC III relay K25 installed, WTEC III transmission ECU is faulty.

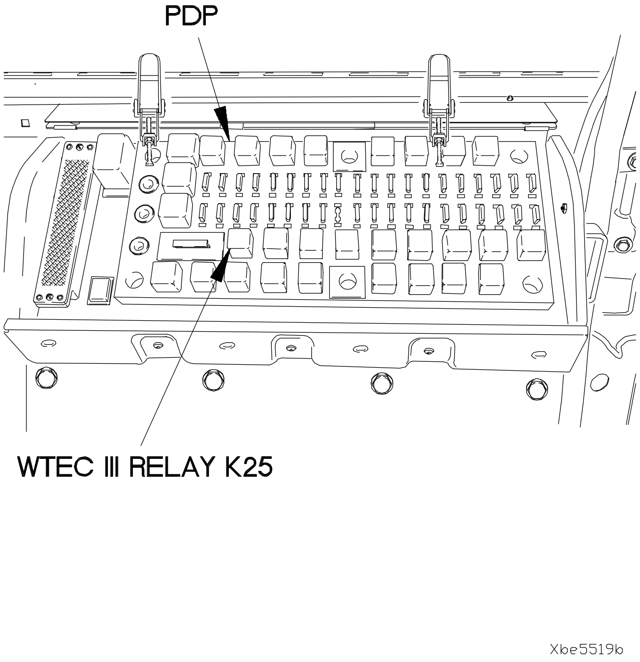
NO

Replace WTEC III transmission ECU (para 8-7).

YES

Replace WTEC III relay K25 (para 7-9).

(1) Install new WTEC III relay K25 on PDP.
(2) Start engine (TM 9-2320-366-10-1).
(3) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(4) Select R (reverse) on WTEC III TPSS (TM 9-2320-366-10-1).
(5) Check to see if backup lights operate.
(6) Select N (neutral) on WTEC III TPSS (TM 9-2320-366-10-1).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Shut down engine (TM 9-2320-366-10-1).
(9) Remove new WTEC III relay K25 from PDP.
(10) Install old WTEC III relay K25 on PDP.
(11) If backup lights operate, replace WTEC III relay K25 (para 7-9).
(12) If backup lights do not operate, replace WTEC III transmission ECU (para 8-7).
(13) Install kick panel (para 16-3).



e56. BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

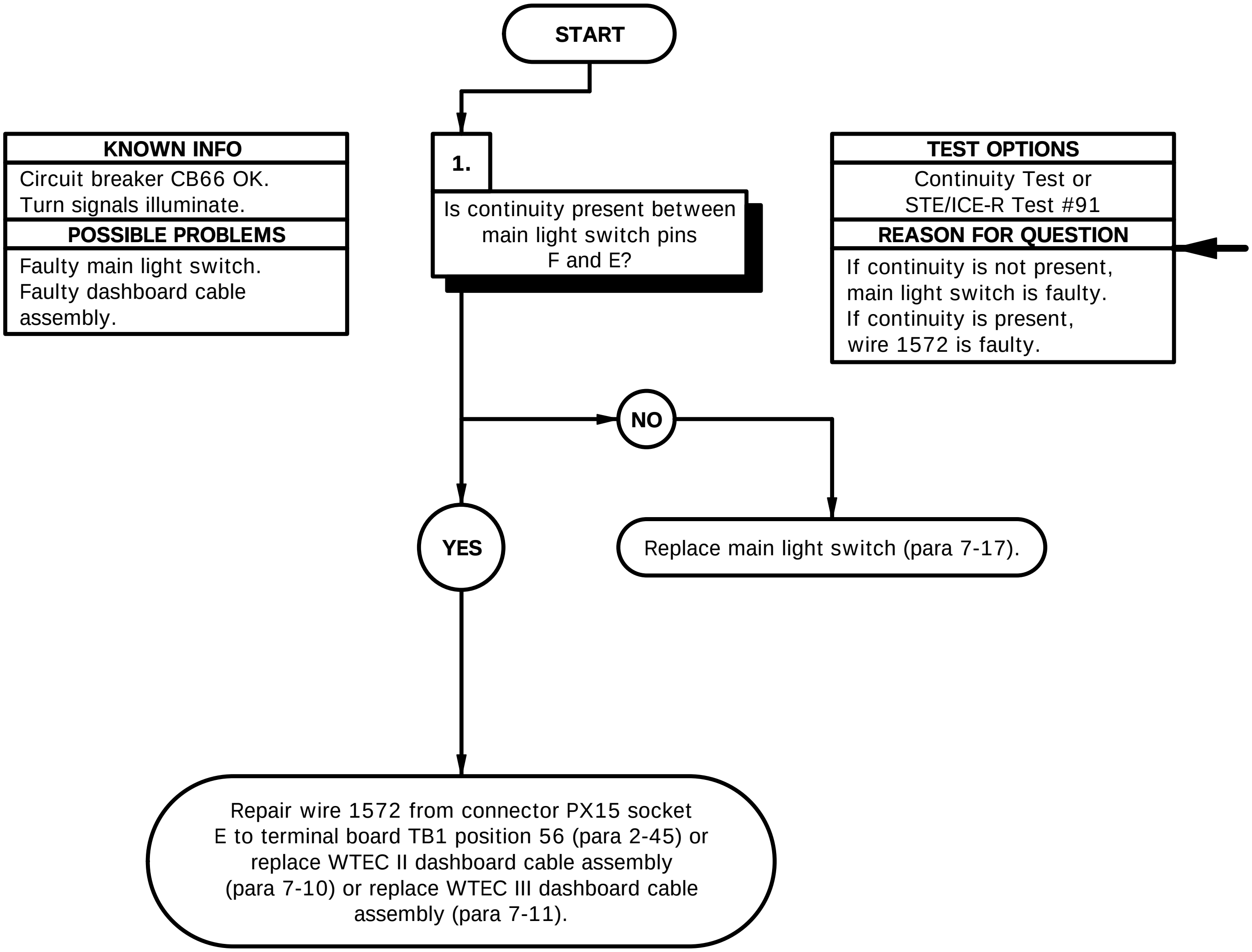
Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB66 prior to beginning this task.



KNOWN INFO
Circuit breaker CB66 OK.
Turn signals illuminate.

POSSIBLE PROBLEMS
Faulty main light switch.
Faulty dashboard cable assembly.

Is continuity present between main light switch pins F and E?

TEST OPTIONS
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION
If continuity is not present, main light switch is faulty.
If continuity is present, wire 1572 is faulty.

NO: Replace main light switch (para 7-17).

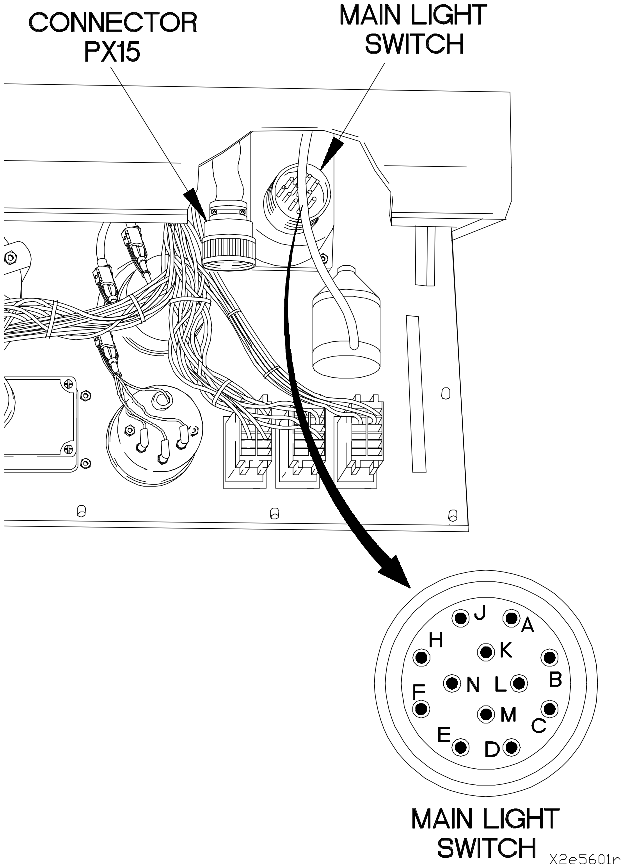
YES: Repair wire 1572 from connector PX15 socket E to terminal board TB1 position 56 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or replace WTEC III dashboard cable assembly (para 7-11).

NOTE-

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel assembly for access(para 7-15).
(2) Disconnect connector PX15 from main light switch.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to main light switch pin F.
(5) Connect negative (-) probe of multimeter to main light switch pin E.
(6) Position main light switch to BO MARKER (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace main light switch connector (para 7-17).
(8) If continuity is present, repair wire 1572 from connector PX15 socket E to terminal board TB1 position 56 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).
(10) Connect connector PX15 to main light switch.
(11) Install instrument panel assembly (para 7-15).



e56A. FRONT HAZARD LIGHTS DO NOT ILLUMINATE

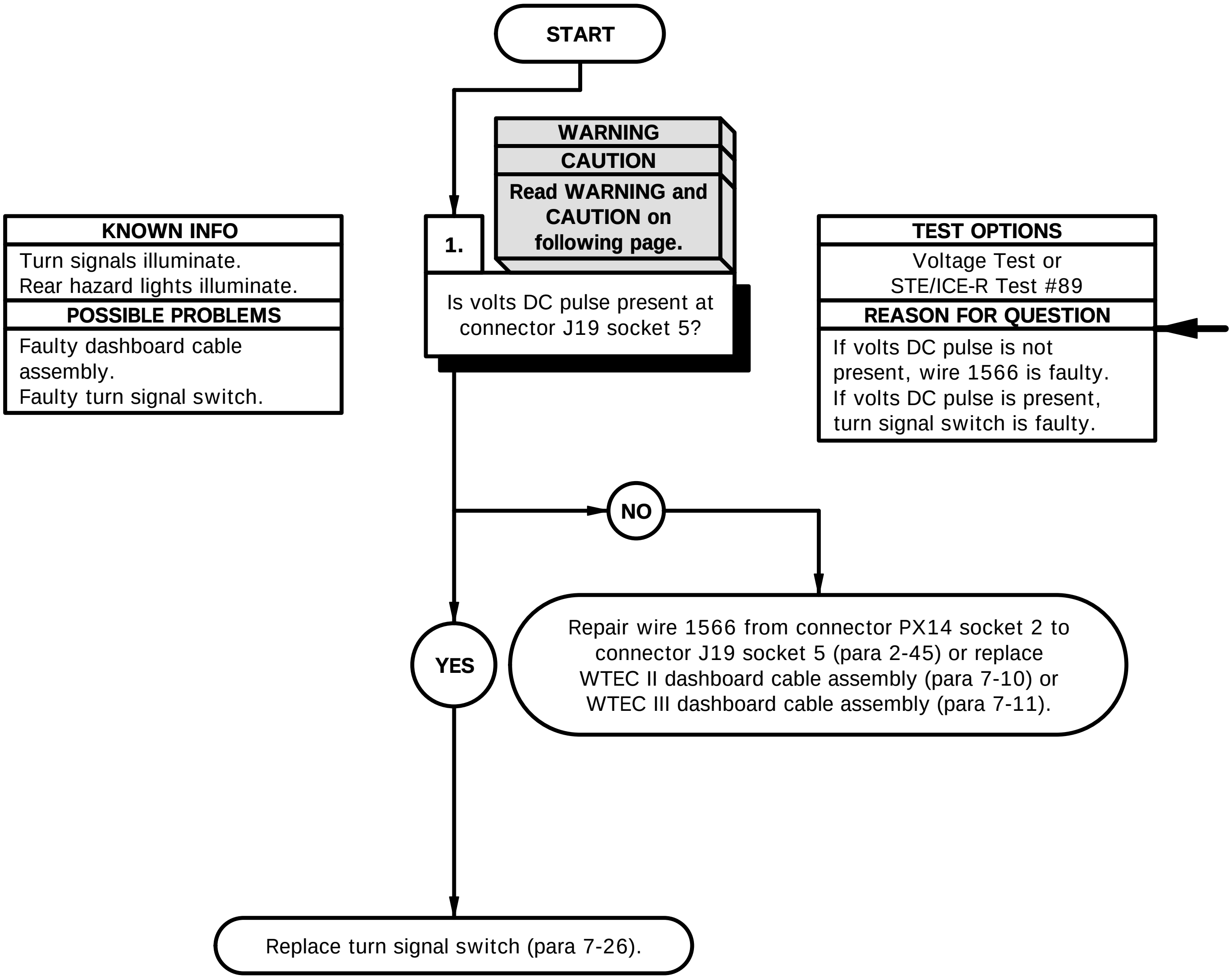
INITAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



START

WARNING
CAUTION
Read WARNING and CAUTION on following page.

KNOWN INFO
Turn signals illuminate.
Rear hazard lights illuminate.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty turn signal switch.

1. Is volts DC pulse present at connector J19 socket 5?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If volts DC pulse is not present, wire 1566 is faulty.
If volts DC pulse is present, turn signal switch is faulty.

NO: Repair wire 1566 from connector PX14 socket 2 to connector J19 socket 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace turn signal switch (para 7-26).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

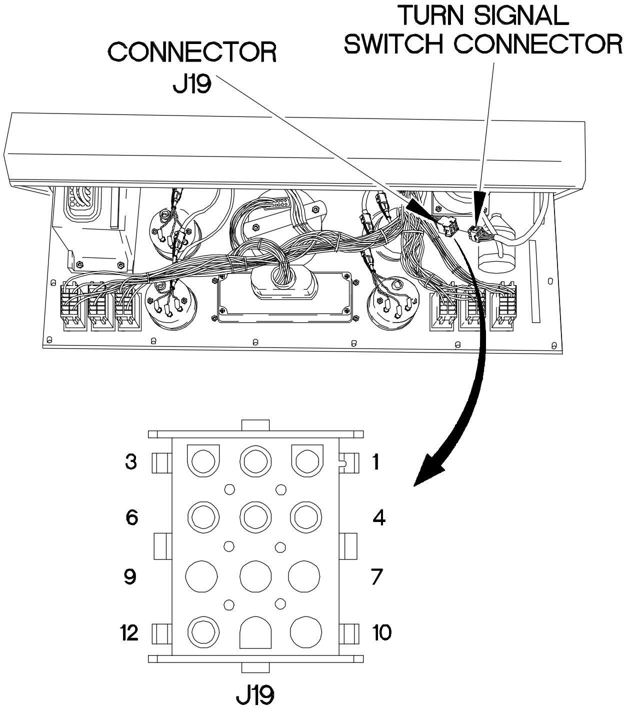
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector J19 from turn signal switch connector.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to connector J19 socket 5.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1.
(7) Position hazard lights switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If volts DC pulse is not present, Repair wire 1566 from connector PX14 socket 2 to connector J19 socket 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If volts DC is present, replace turn signal switch (para 7-26).
(10) Position hazard lights switch to off (TM 9-2320-366-10-1).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).



e57. REAR HAZARD LIGHTS DO NOT ILLUMINATE

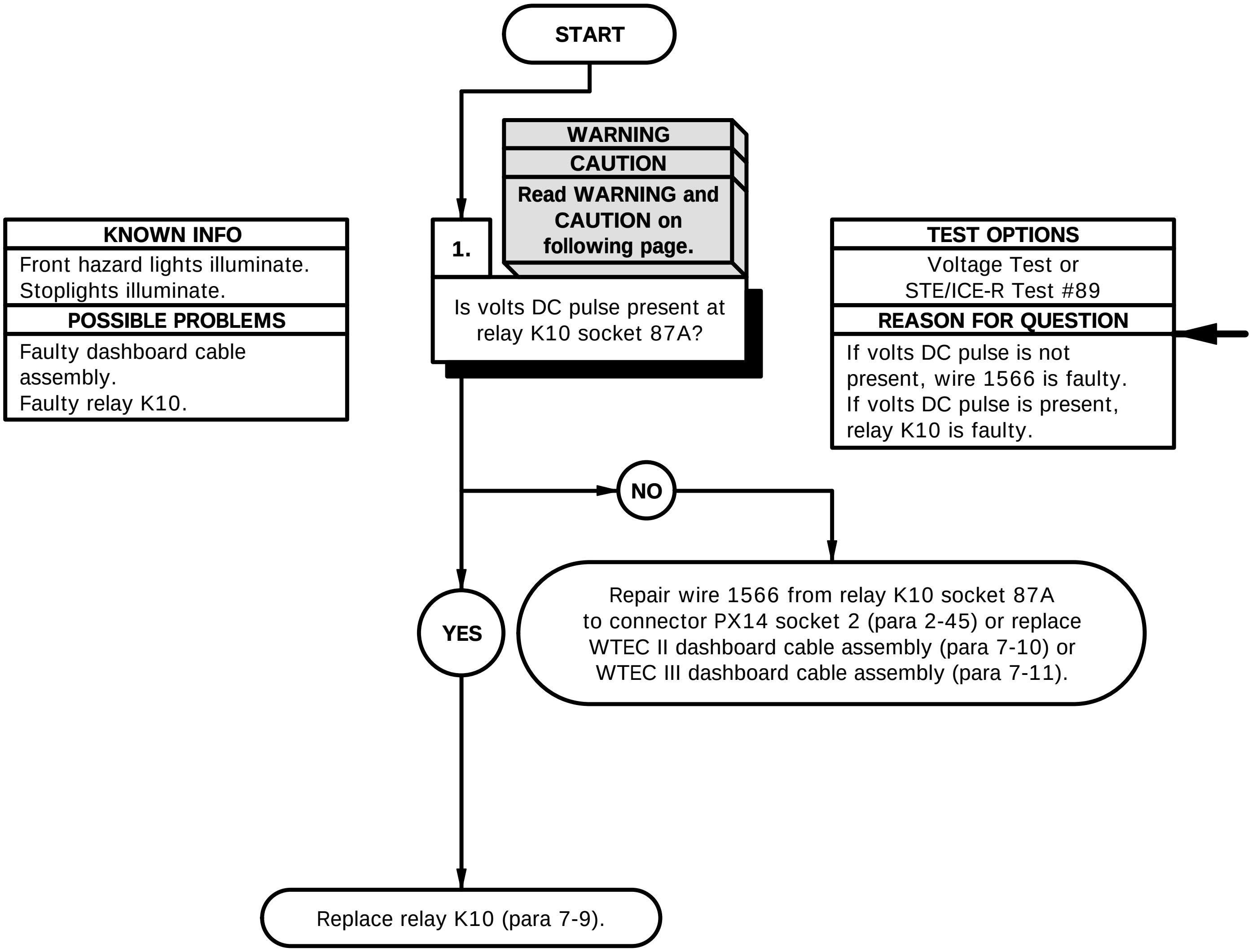
INITAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO
Front hazard lights illuminate.
Stoplights illuminate.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty relay K10.

START

WARNING
CAUTION
Read WARNING and CAUTION on following page.

1. Is volts DC pulse present at relay K10 socket 87A?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If volts DC pulse is not present, wire 1566 is faulty. If volts DC pulse is present, relay K10 is faulty.

NO: Repair wire 1566 from relay K10 socket 87A to connector PX14 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace relay K10 (para 7-9).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

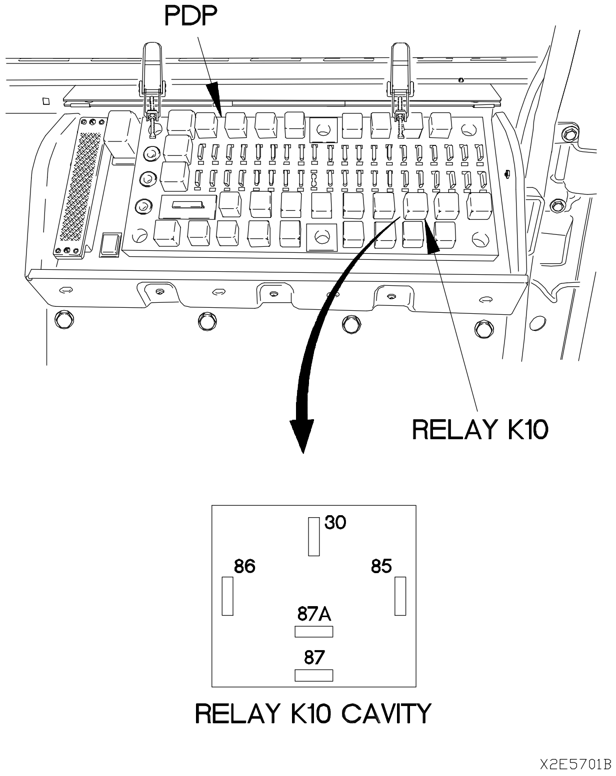
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K10 from PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to PDP, socket 87A, where relay K10 was removed.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(7) Position hazard lights switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If volts DC pulse is not present, Repair wire 1566 from relay K10 socket 87A to connector PX14 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) If volts DC is present, replace relay K10 (para 7-9).
(10) Position hazard lights switch to off (TM 9-2320-366-10-1).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Install relay K10 in PDP.
(13) Install PDP cover (para 16-2).



e58. FRONT AND REAR HAZARD LIGHTS DO NOT ILLUMINATE

INITAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-366-10-1).

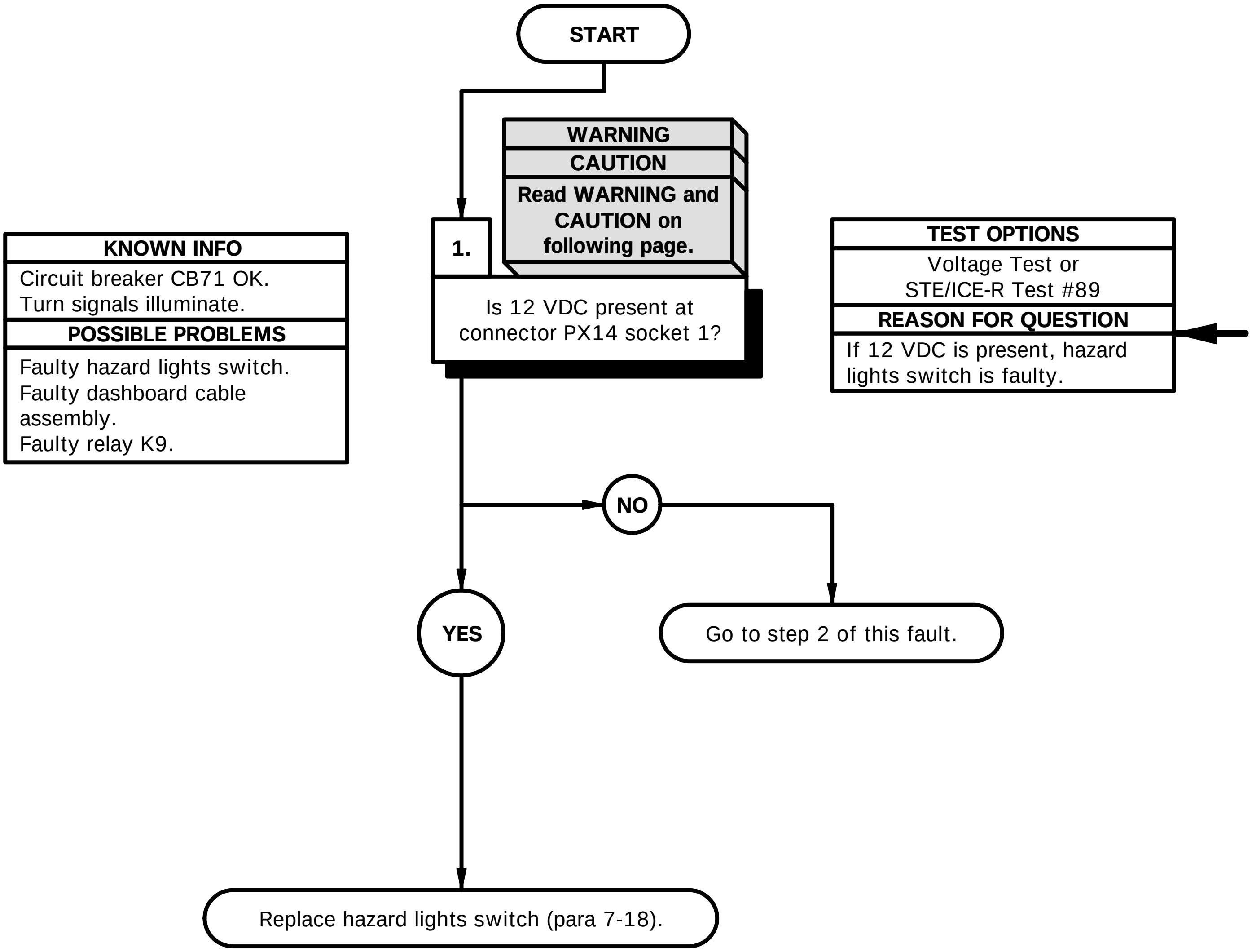
Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB71 prior to beginning this task.



WARNING
CAUTION
Read WARNING and CAUTION on following page.

KNOWN INFO
Circuit breaker CB71 OK.
Turn signals illuminate.

POSSIBLE PROBLEMS
Faulty hazard lights switch.
Faulty dashboard cable assembly.
Faulty relay K9.

1. Is 12 VDC present at connector PX14 socket 1?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If 12 VDC is present, hazard lights switch is faulty.

NO — Go to step 2 of this fault.

YES — Replace hazard lights switch (para 7-18).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

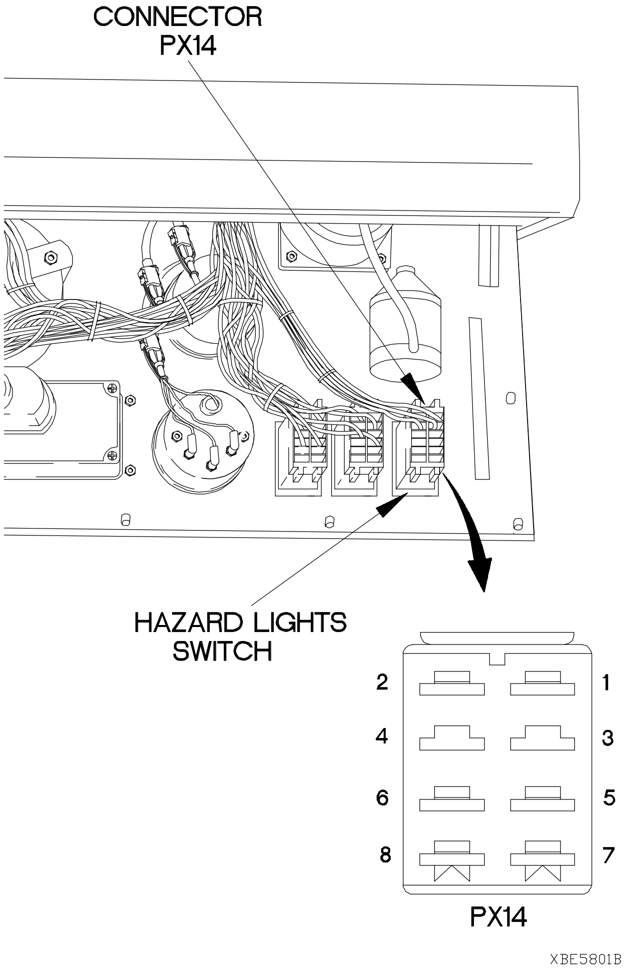
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

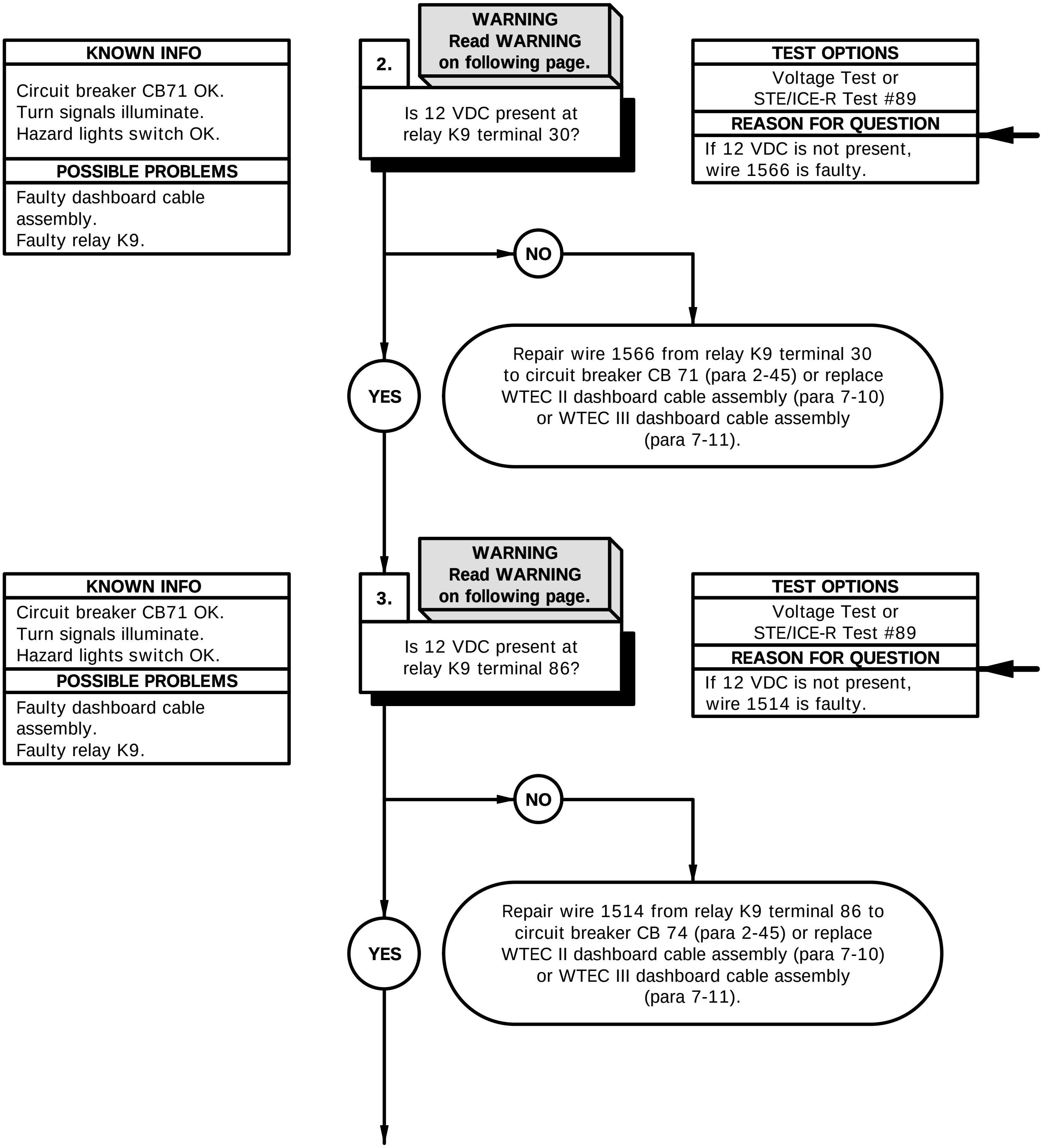
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX14 from hazard lights switch.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to connector PX14 socket 1.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC is not present, go to step 2 of this fault.
(8) If 12 VDC is present, replace hazard lights switch (para 7-18).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).



e58. FRONT AND REAR HAZARD LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB71 OK.
Turn signals illuminate.
Hazard lights switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K9.

WARNING
Read WARNING on following page.

2\. Is 12 VDC present at relay K9 terminal 30?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1566 is faulty.

NO: Repair wire 1566 from relay K9 terminal 30 to circuit breaker CB 71 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker CB71 OK.
Turn signals illuminate.
Hazard lights switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K9.

WARNING
Read WARNING on following page.

3\. Is 12 VDC present at relay K9 terminal 86?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1514 is faulty.

NO: Repair wire 1514 from relay K9 terminal 86 to circuit breaker CB 74 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

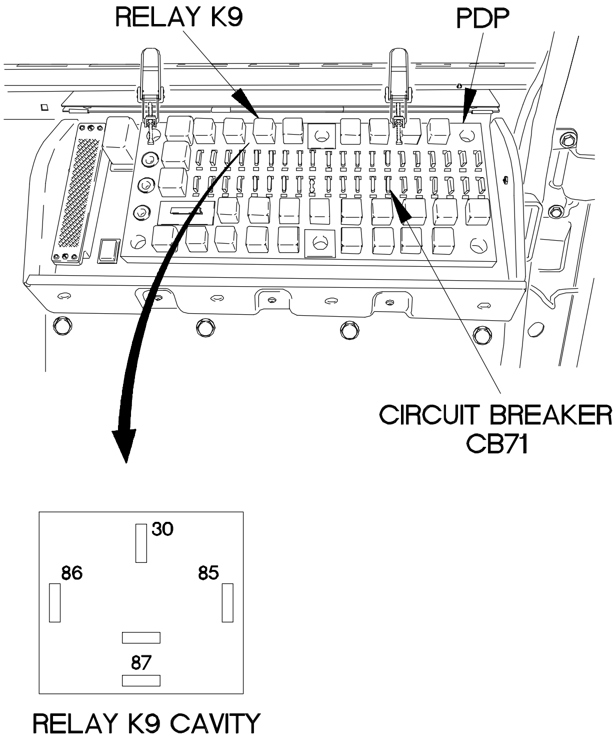
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove circuit breaker CB71 from PDP.
(3) Remove relay K9 from PDP.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to PDP, terminal 30, where relay K9 was removed.
(6) Connect negative (-) probe of multimeter to ground.
(7) Install circuit breaker CB71 in PDP and and note reading on multimeter.
(8) If 12 VDC is not present, repair wire 1566 from relay K9 terminal 30 to circuit breaker CB 71 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to PDP, terminal 86, where relay K9 was removed.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and not reading on multimeter.
(5) If 12 VDC is not present, repair wire 1514 from relay K9 terminal 86 to circuit breaker CB74 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

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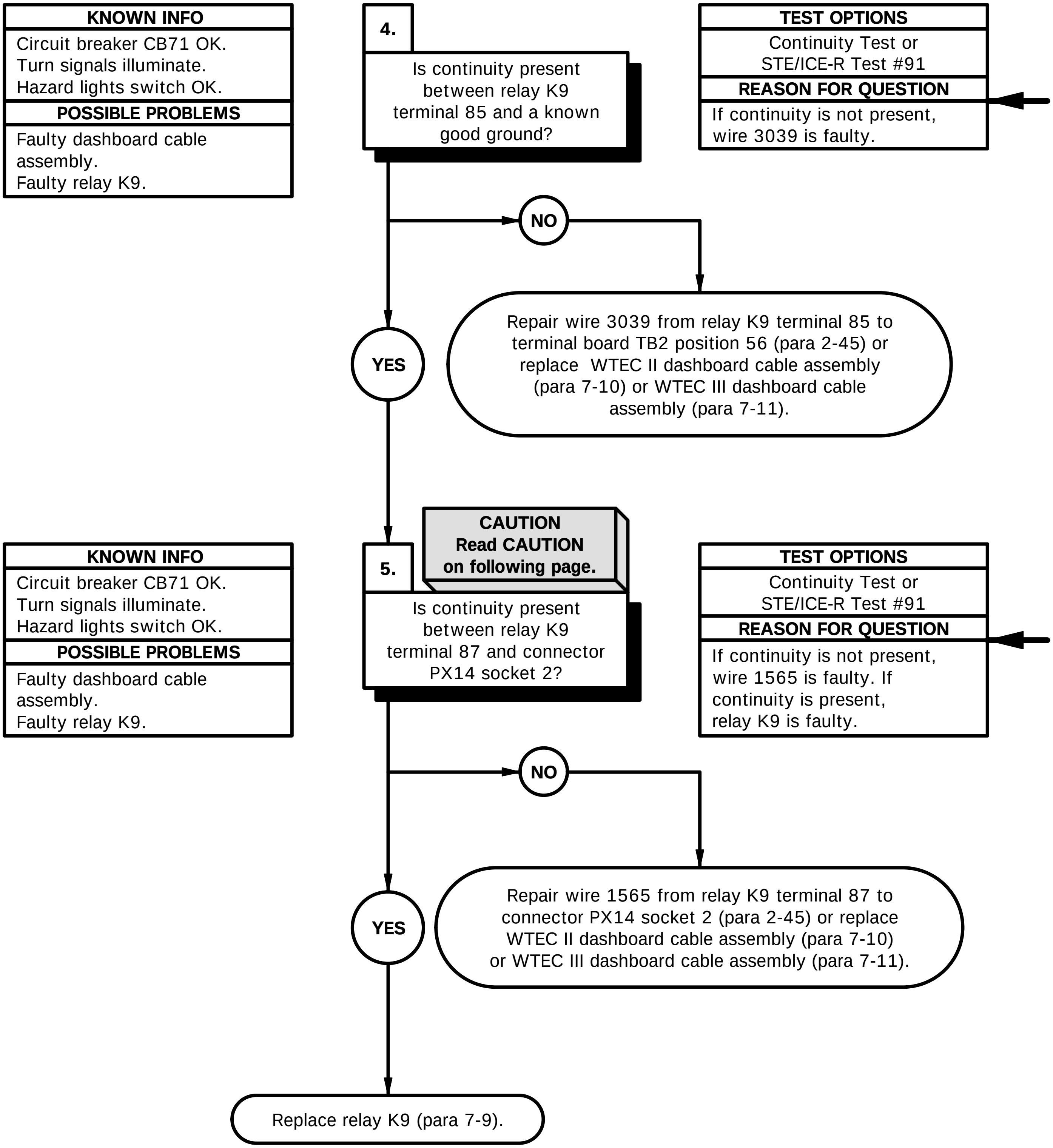
e58. FRONT AND REAR HAZARD LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Circuit breaker CB71 OK.
Turn signals illuminate.
Hazard lights switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K9.

4. Is continuity present between relay K9 terminal 85 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3039 is faulty.

NO

Repair wire 3039 from relay K9 terminal 85 to terminal board TB2 position 56 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker CB71 OK.
Turn signals illuminate.
Hazard lights switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K9.

CAUTION
Read CAUTION on following page.

5. Is continuity present between relay K9 terminal 87 and connector PX14 socket 2?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1565 is faulty. If continuity is present, relay K9 is faulty.

NO

Repair wire 1565 from relay K9 terminal 87 to connector PX14 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace relay K9 (para 7-9).

CONTINUITY TEST

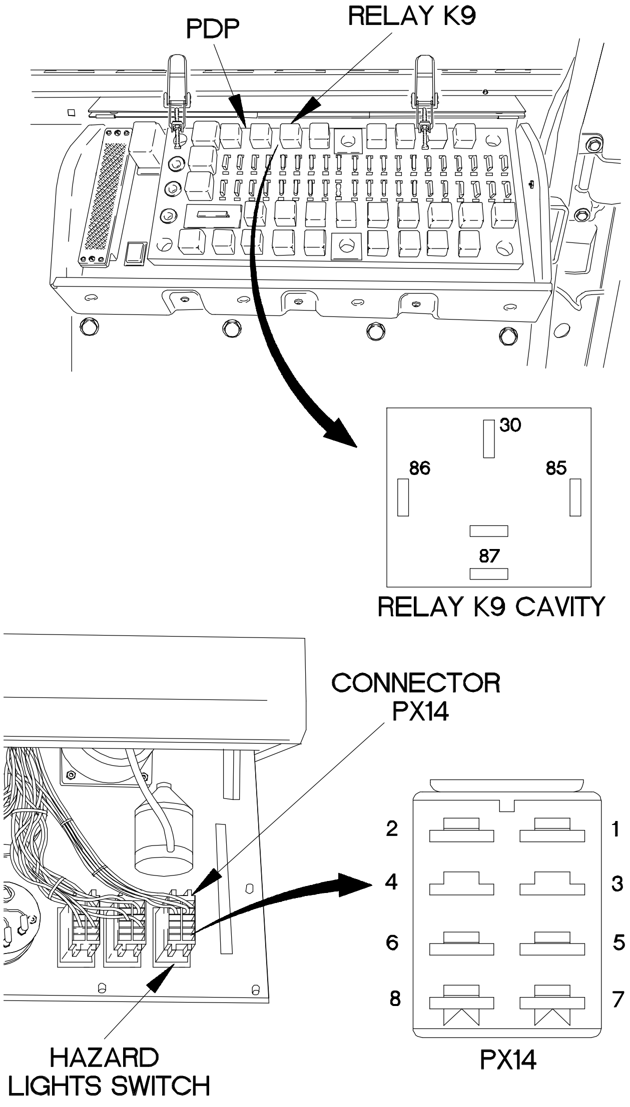
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP, terminal 85, where relay K9 was removed.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 1565 from relay K9 terminal 85 to terminal board TB2 position 56 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP, terminal 87, where relay K9 was removed.
(3) Connect negative (-) probe of multimeter to connector PX14 socket 2.
(4) If continuity is not present, repair wire 1565 from relay K9 terminal 87 to connector PX14 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K9 (para 7-9).
(6) Connect connector PX14 to hazard lights switch.
(7) Install relay K9 in PDP.
(8) Install PDP cover (para 16-2).
(9) Install instrument panel assembly (para 7-15).



e59. FRONT AND REAR TURN SIGNALS DO NOT OPERATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

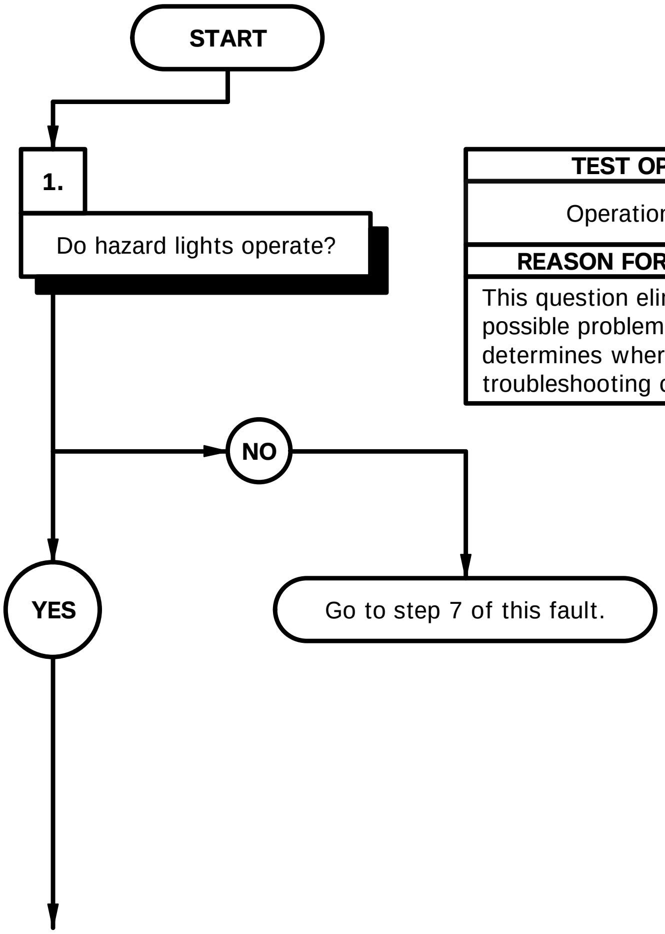
References
TM 9-4910-571-12&P

KNOWN INFO

Circuit breaker OK.
Stoplights operate.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.
Faulty turn signal switch.
Faulty hazard lights switch.
Faulty flasher unit.



TEST OPTIONS

Operational Test

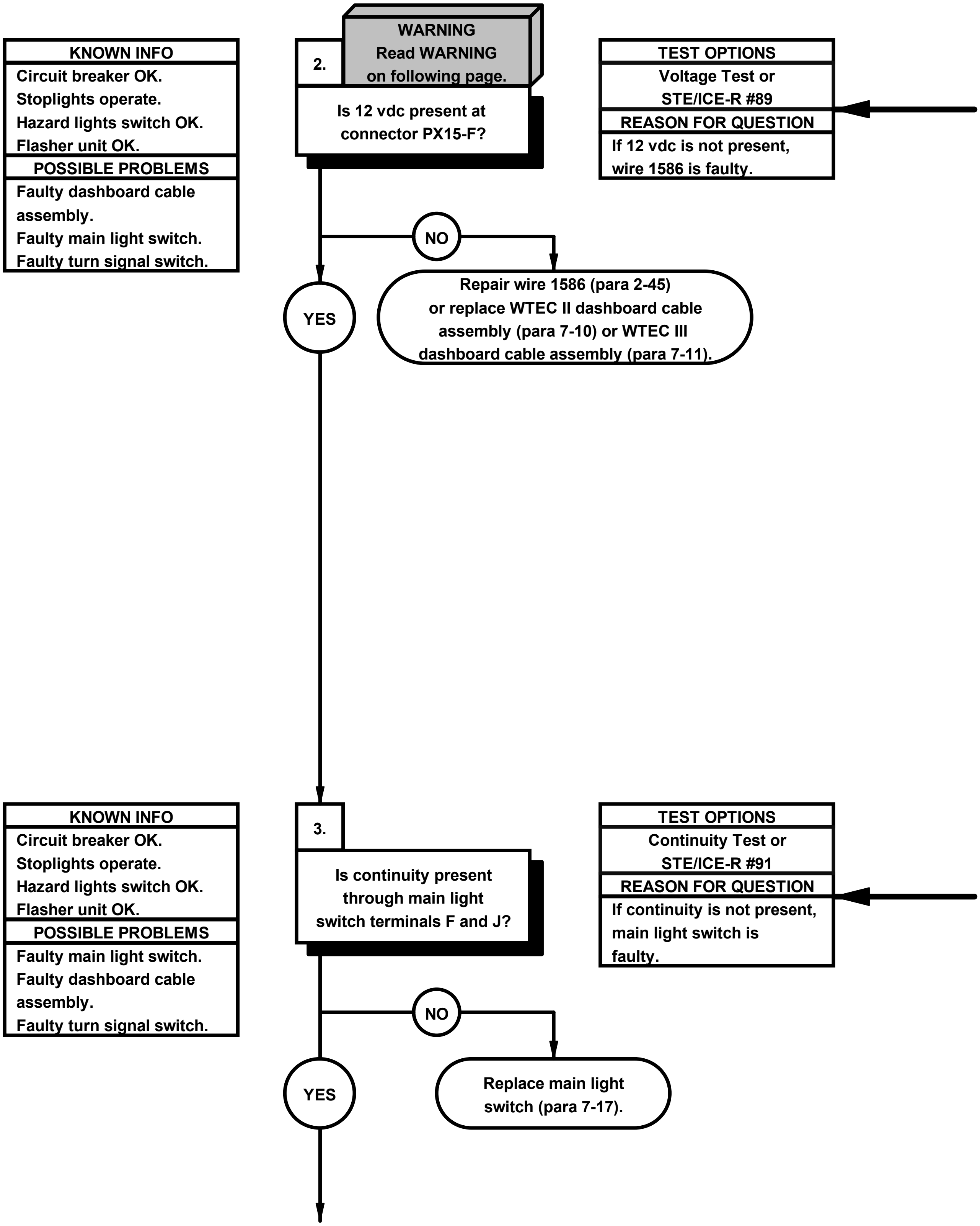
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

OPERATIONAL TEST

(1) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(2) Position hazard lights switch to on (TM 9-2320-366-10-1).
(3) Observe hazard lights.
(4) If hazard lights do not operate, go to step 7 of this fault.
(5) Position hazard lights switch to off (TM 9-2320-366-10-1).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

e59. FRONT AND REAR TURN SIGNALS DO NOT OPERATE (CONT)



KNOWN INFO
Circuit breaker OK.
Stoplights operate.
Hazard lights switch OK.
Flasher unit OK.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty main light switch.
Faulty turn signal switch.

2.

WARNING
Read WARNING on following page.

Is 12 vdc present at connector PX15-F?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If 12 vdc is not present, wire 1586 is faulty.

Repair wire 1586 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO
Circuit breaker OK.
Stoplights operate.
Hazard lights switch OK.
Flasher unit OK.

POSSIBLE PROBLEMS
Faulty main light switch.
Faulty dashboard cable assembly.
Faulty turn signal switch.

3.

Is continuity present through main light switch terminals F and J?

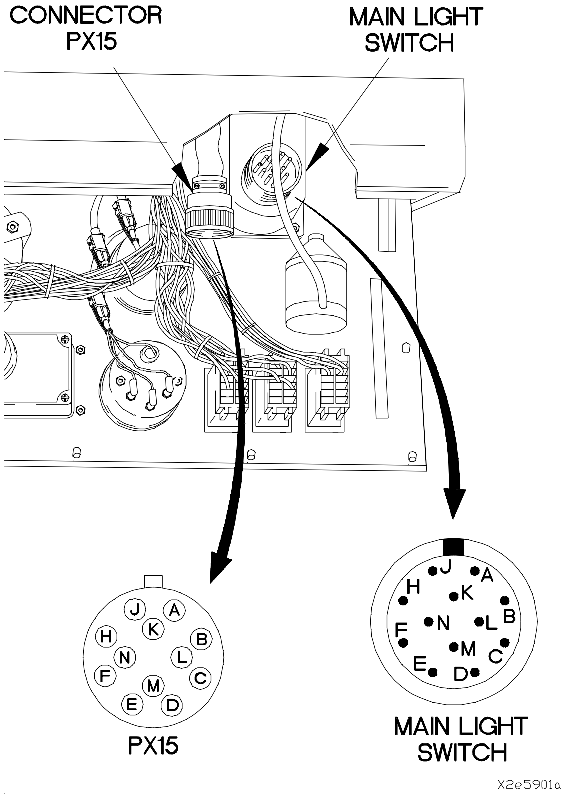
TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
If continuity is not present, main light switch is faulty.

Replace main light switch (para 7-17).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.



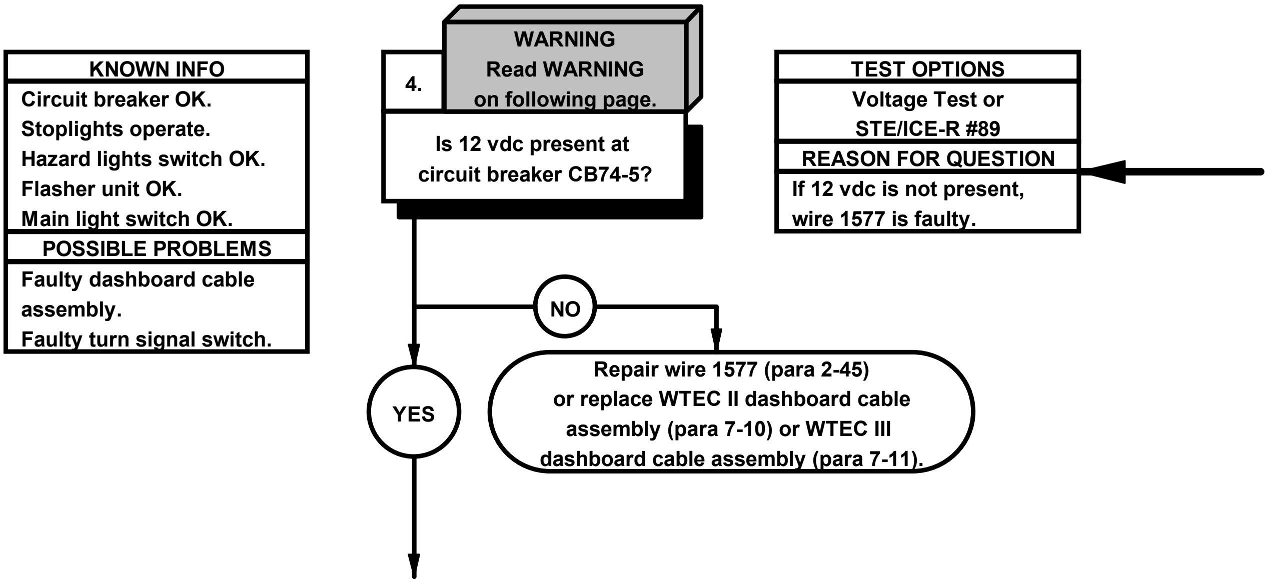
VOLTAGE TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX15 from main light switch.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector PX15-F.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If 12 vdc is not present, repair wire 1586 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove main light switch (para 7-17).
(2) Set multimeter to ohms.
(3) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(4) Connect positive (+) probe of multimeter to main light switch terminal F.
(5) Connect negative (-) probe of multimeter to main light switch terminal J and note reading on multimeter.
(6) If continuity is not present, replace main light switch (para 7-17).
(7) Install main light switch (para 7-17).

e59. FRONT AND REAR TURN SIGNALS DO NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Stoplights operate.
Hazard lights switch OK.
Flasher unit OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty turn signal switch.

4\.

WARNING
Read WARNING on following page.

Is 12 vdc present at circuit breaker CB74-5?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

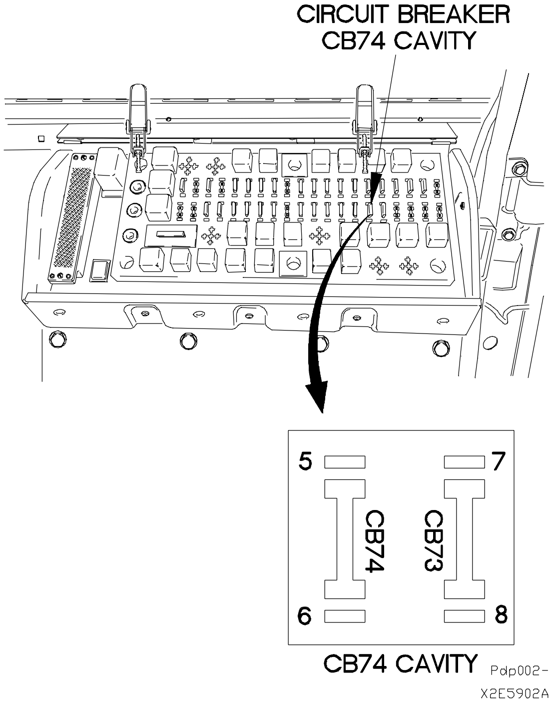
If 12 vdc is not present, wire 1577 is faulty.

NO: Repair wire 1577 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

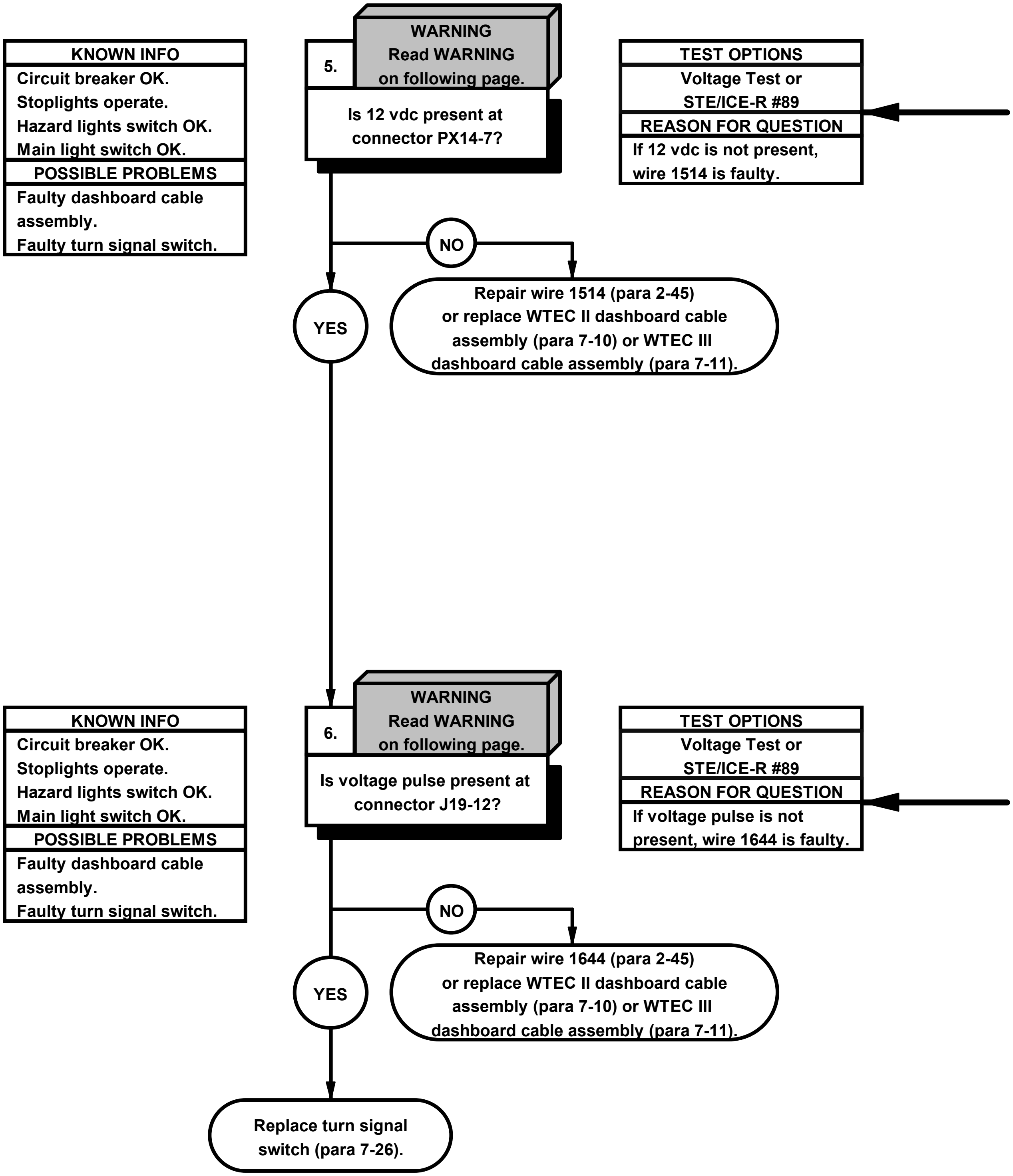
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Remove PDP cover (para 16-2). (2) Remove circuit breaker CB74 from PDP. (3) Set multimeter to volts dc. (4) Connect positive (+) probe of multimeter to PDP, terminal 5, where circuit breaker CB74 was removed. (5) Connect negative (-) probe of multimeter to ground. (6) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1) and note reading on multimeter. (7) If 12 vdc is not present, repair wire 1577 (para 2-45)or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (8) Position main light switch to OFF (TM 9-2320-366-10-1). (9) Install circuit breaker CB74 in PDP. (10) Install PDP cover (para 16-2).



e59. FRONT AND REAR TURN SIGNALS DO NOT OPERATE (CONT)



KNOWN INFO
Circuit breaker OK.
Stoplights operate.
Hazard lights switch OK.
Main light switch OK.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty turn signal switch.

5.
WARNING
Read WARNING on following page.

Is 12 vdc present at connector PX14-7?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If 12 vdc is not present, wire 1514 is faulty.

NO: Repair wire 1514 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO
Circuit breaker OK.
Stoplights operate.
Hazard lights switch OK.
Main light switch OK.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty turn signal switch.

6.
WARNING
Read WARNING on following page.

Is voltage pulse present at connector J19-12?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If voltage pulse is not present, wire 1644 is faulty.

NO: Repair wire 1644 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

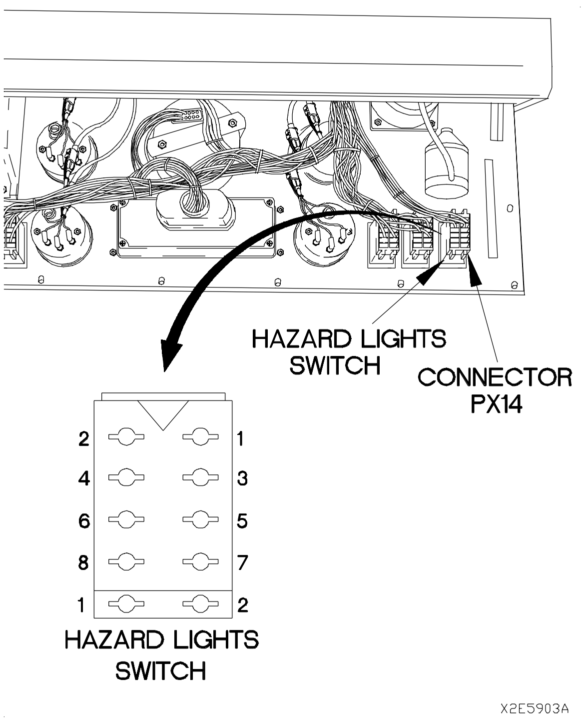
YES: Replace turn signal switch (para 7-26).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector PX14 from hazard lights switch.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector PX14-7.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 vdc is not present, repair wire 1514 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Position main light switch to OFF (TM 9-2320-366-10-1).
(8) Connect connector PX14 to hazard light switch.

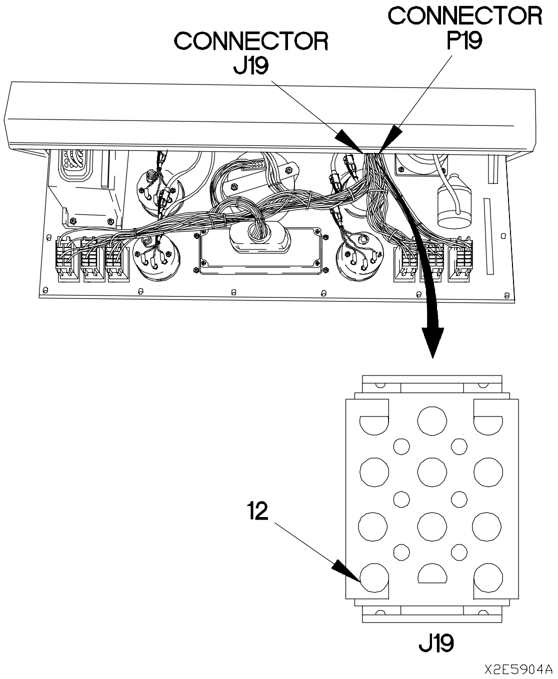


WARNING

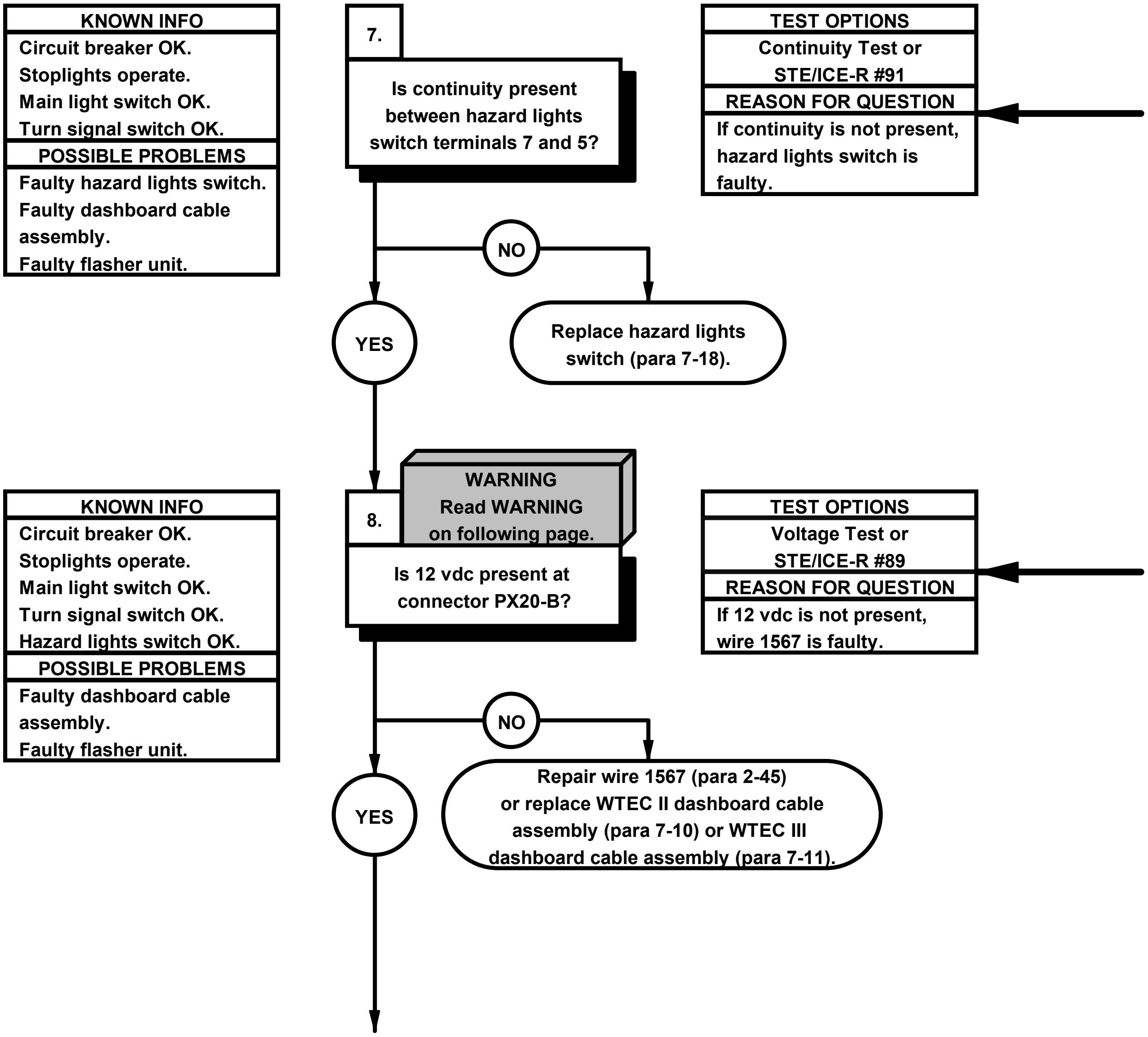
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector P19 from connector J19.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J19-12.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If voltage pulse is not present, repair wire 1644 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If voltage pulse is present, replace turn signal switch (para 7-26).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Connect connector P19 to connector J19.
(10) Install instrument panel assembly (para 7-15).



e59. FRONT AND REAR TURN SIGNALS DO NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Stoplights operate.
Main light switch OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty hazard lights switch.
Faulty dashboard cable assembly.
Faulty flasher unit.

7. Is continuity present between hazard lights switch terminals 7 and 5?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, hazard lights switch is faulty.

Replace hazard lights switch (para 7-18).

WARNING

Read WARNING on following page.

KNOWN INFO

Circuit breaker OK.
Stoplights operate.
Main light switch OK.
Turn signal switch OK.
Hazard lights switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty flasher unit.

8. Is 12 vdc present at connector PX20-B?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

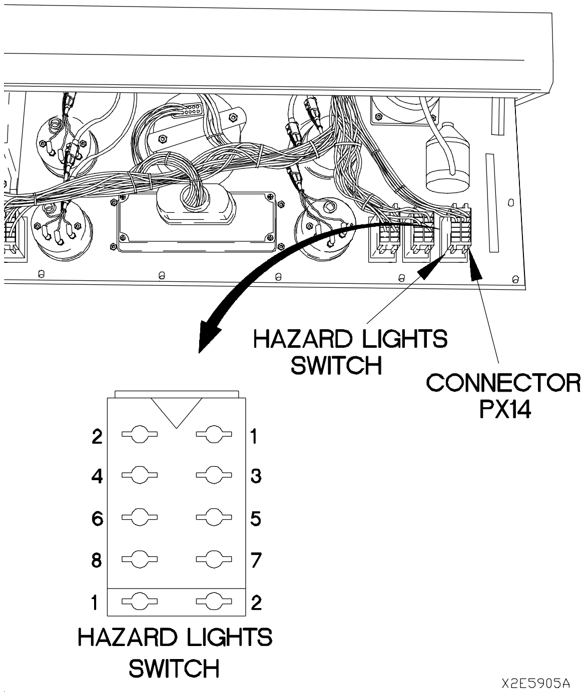
REASON FOR QUESTION

If 12 vdc is not present, wire 1567 is faulty.

Repair wire 1567 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX14 from hazard lights switch.
(3) Set multimeter to volts dc.
(4) Position hazard lights switch to on (TM 9-2320-366-10-1).
(5) Connect positive (+) probe of multimeter to hazard lights switch terminal 7.
(6) Connect negative (-) probe of multimeter to hazard lights switch terminal 5 and note reading on multimeter.
(7) If continuity is not present, replace hazard lights switch (para 7-18).
(8) Connect connector PX14 to hazard lights switch.

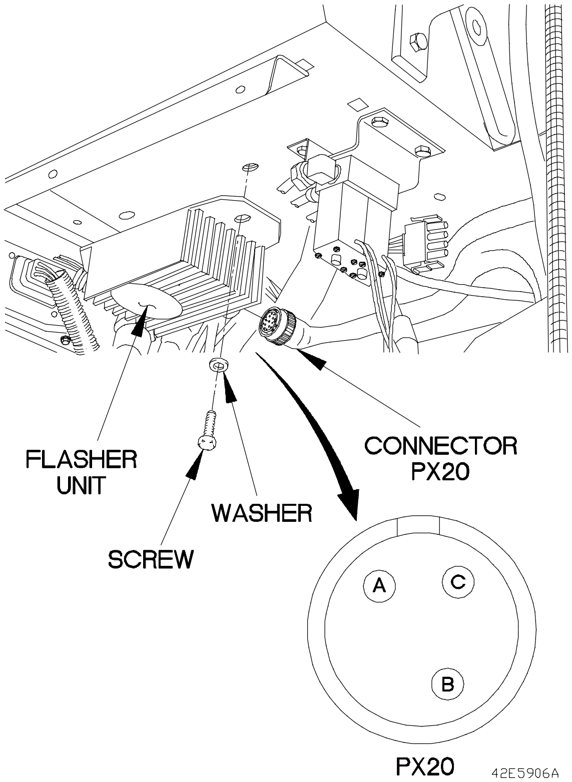


WARNING

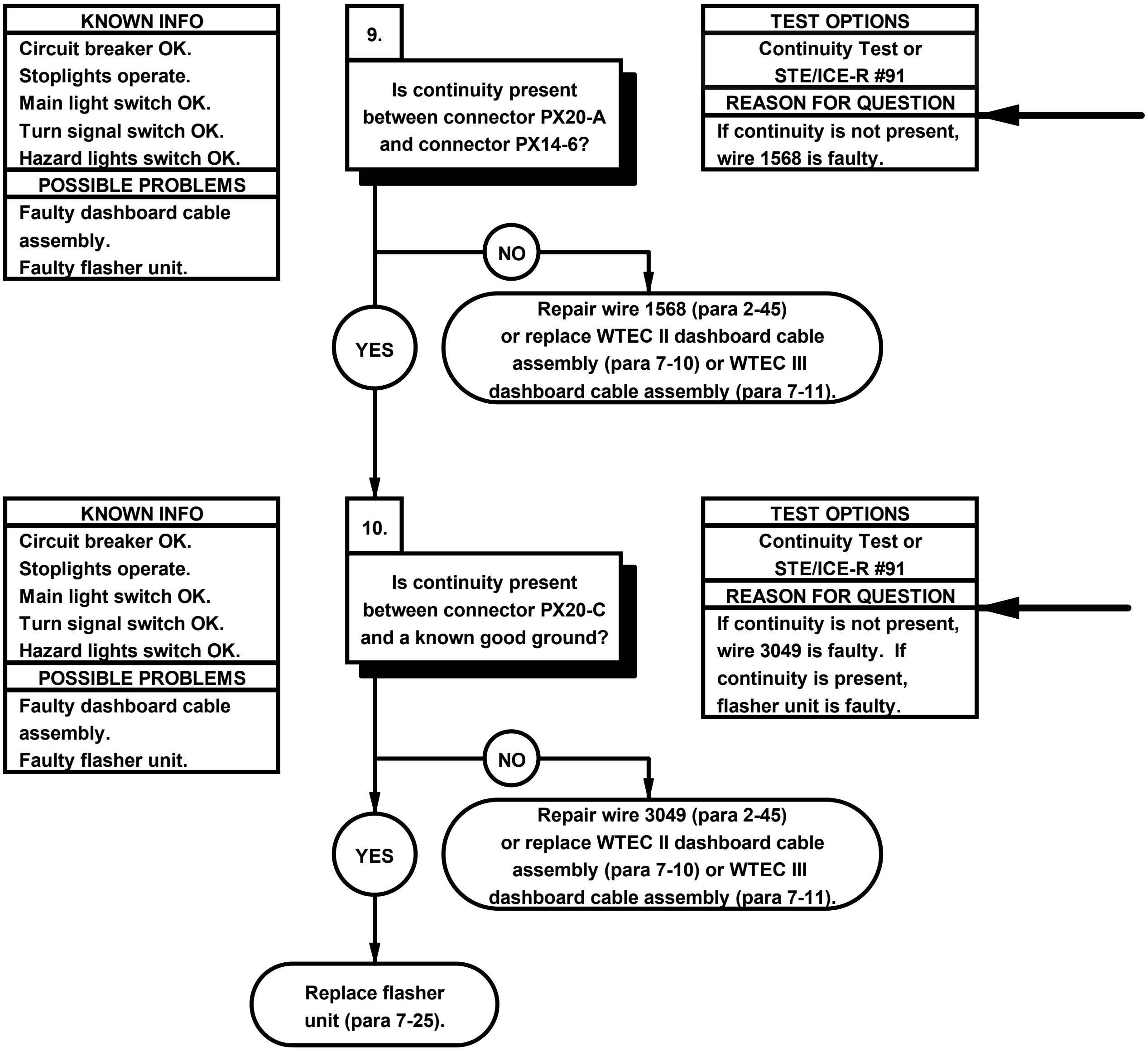
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove kick panel (para 16-3).
(2) Remove two screws, washers, and flasher unit from dashboard.
(3) Disconnect connector PX20 from flasher unit.
(4) Position hazard light switch to off (TM 9-2320-366-10-1).
(5) Set multimeter to volts dc.
(6) Connect positive (+) probe of multimeter to connector PX20-B.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 vdc is not present, repair wire 1567 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).



e59. FRONT AND REAR TURN SIGNALS DO NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Stoplights operate.
Main light switch OK.
Turn signal switch OK.
Hazard lights switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty flasher unit.

9. Is continuity present between connector PX20-A and connector PX14-6?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1568 is faulty.

NO: Repair wire 1568 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker OK.
Stoplights operate.
Main light switch OK.
Turn signal switch OK.
Hazard lights switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty flasher unit.

10. Is continuity present between connector PX20-C and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

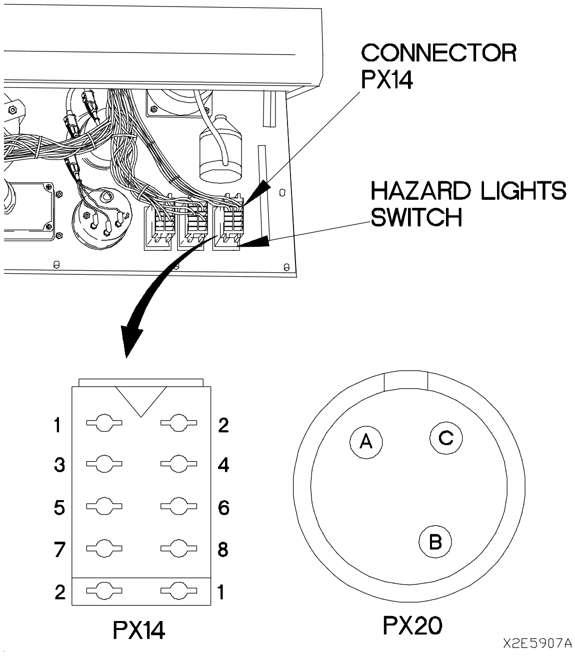
If continuity is not present, wire 3049 is faulty. If continuity is present, flasher unit is faulty.

NO: Repair wire 3049 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace flasher unit (para 7-25).

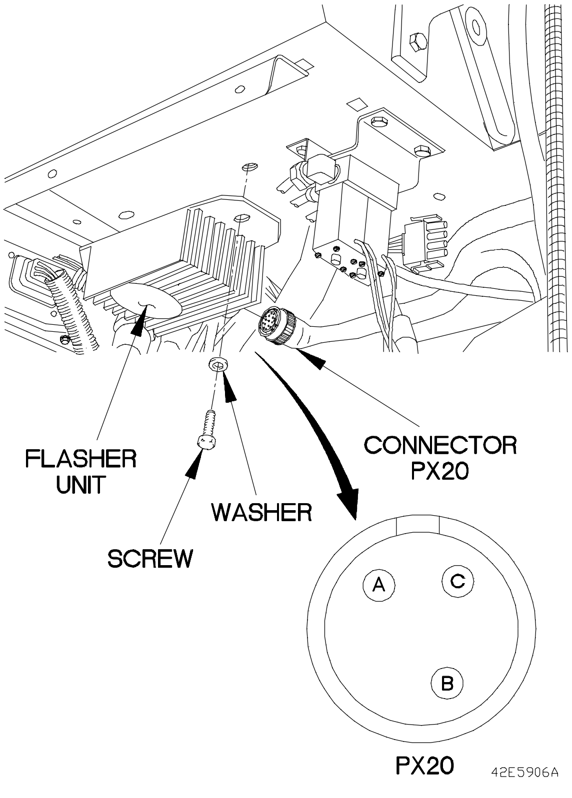
CONTINUITY TEST

(1) Disconnect connector PX14 from hazard lights switch.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX20-A.
(4) Connect negative (-) probe of multimeter to connector PX14-6 and note reading on multimeter.
(5) If continuity is not present, repair wire 1568 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX14 to hazard lights switch.
(7) Install instrument panel assembly (para 7-15).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX20-C.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3049 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace flasher unit (para 7-25).
(6) Connect connector PX20 to flasher unit.
(7) Install flasher unit on dashboard with two washers and screws.
(8) Install kick panel (para 16-3).



e60. LEFT OR RIGHT FRONT TURN SIGNAL DOES NOT OPERATE

INITIAL SETUP

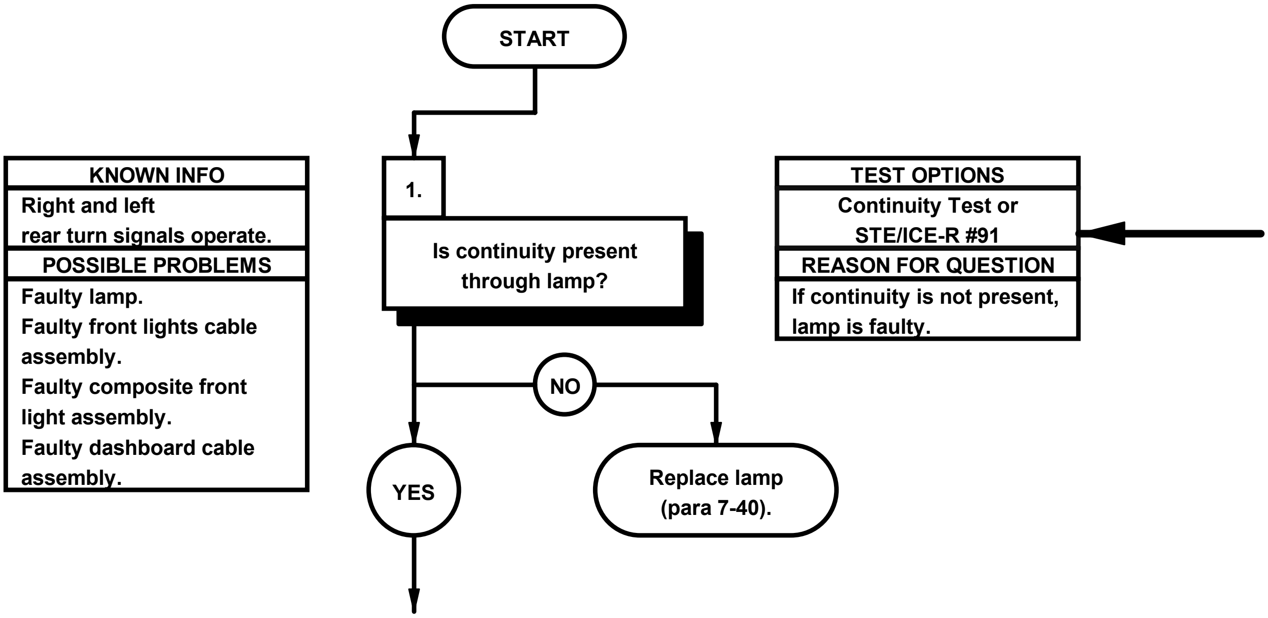
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Materials/Parts
Packing, Preformed (Item 191, Appendix G)
Lockwasher (Item 96, Appendix G)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Right and left rear turn signals operate.

POSSIBLE PROBLEMS
Faulty lamp.
Faulty front lights cable assembly.
Faulty composite front light assembly.
Faulty dashboard cable assembly.

TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
If continuity is not present, lamp is faulty.

CONTINUITY TEST

(1) Loosen five screws on cover.

(2) Remove cover and preformed packing from housing. Discard preformed packing.

(3) Remove lamp from socket.

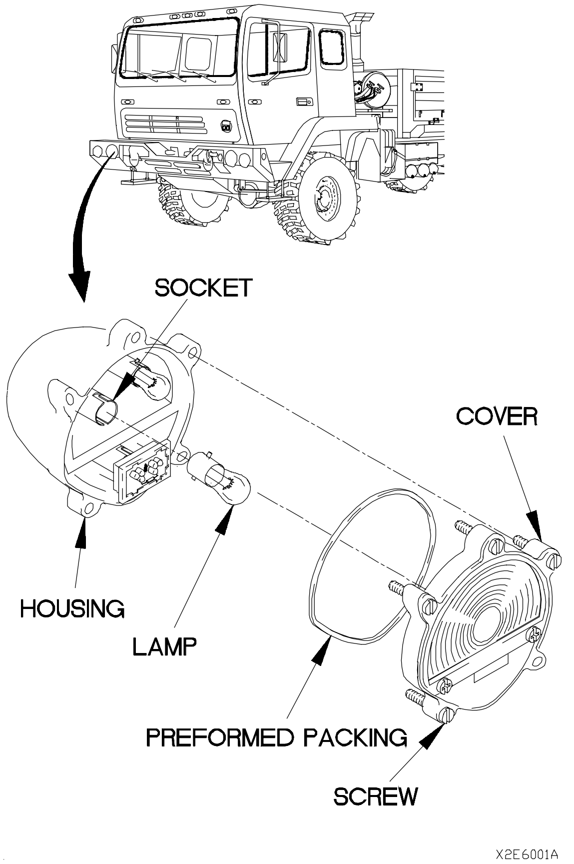
(4) Set multimeter to ohms.

(5) Check continuity through lamp and note reading on multimeter.

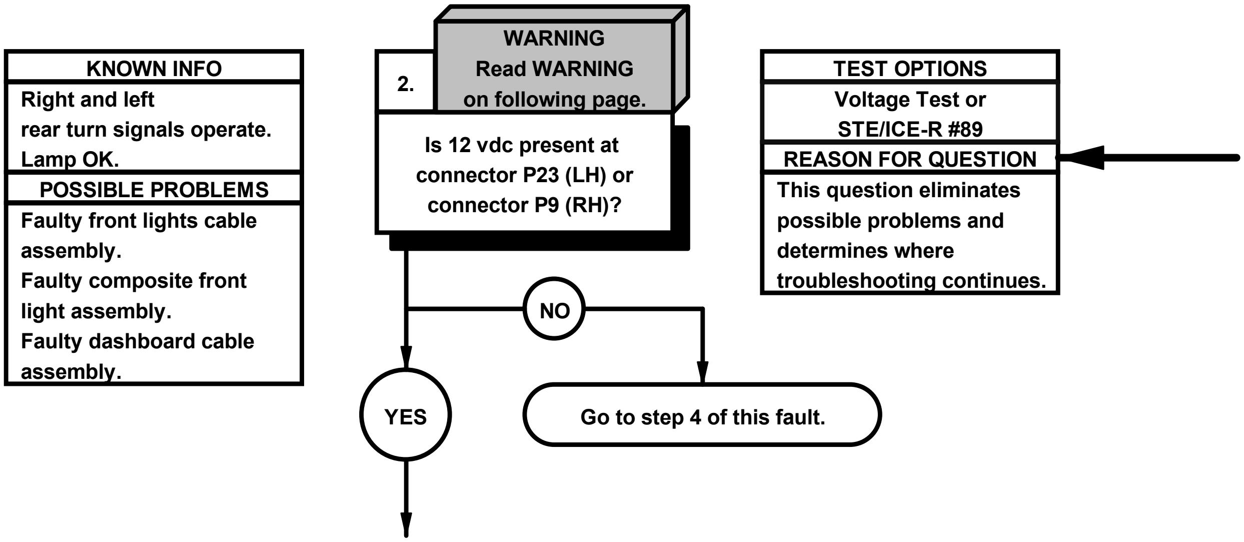
(6) If continuity is not present, replace lamp (para 7-40).

(7) Install turn signal lamp in socket.

(8) Install preformed packing and cover on housing with five screws.



e60. LEFT OR RIGHT FRONT TURN SIGNAL DOES NOT OPERATE (CONT)



KNOWN INFO

Right and left rear turn signals operate.
Lamp OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty composite front light assembly.
Faulty dashboard cable assembly.

2.

WARNING
Read WARNING on following page.

Is 12 vdc present at connector P23 (LH) or connector P9 (RH)?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

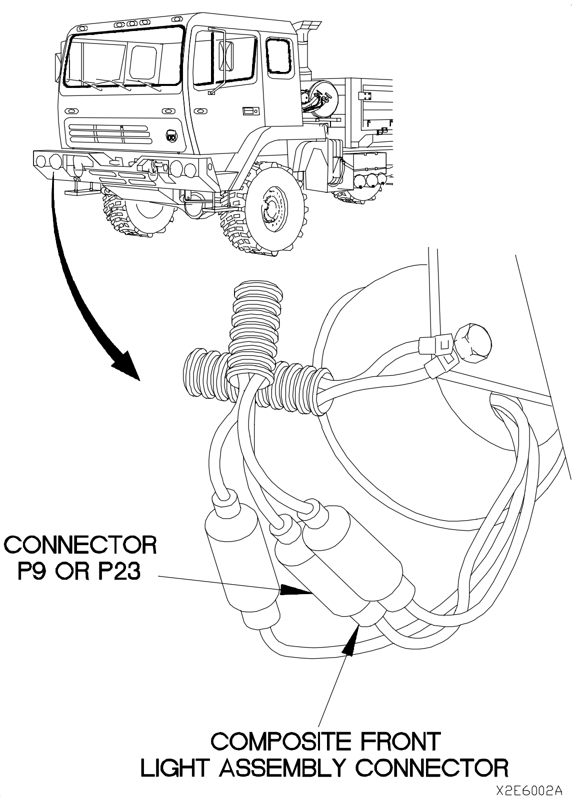
Go to step 4 of this fault.

WARNING

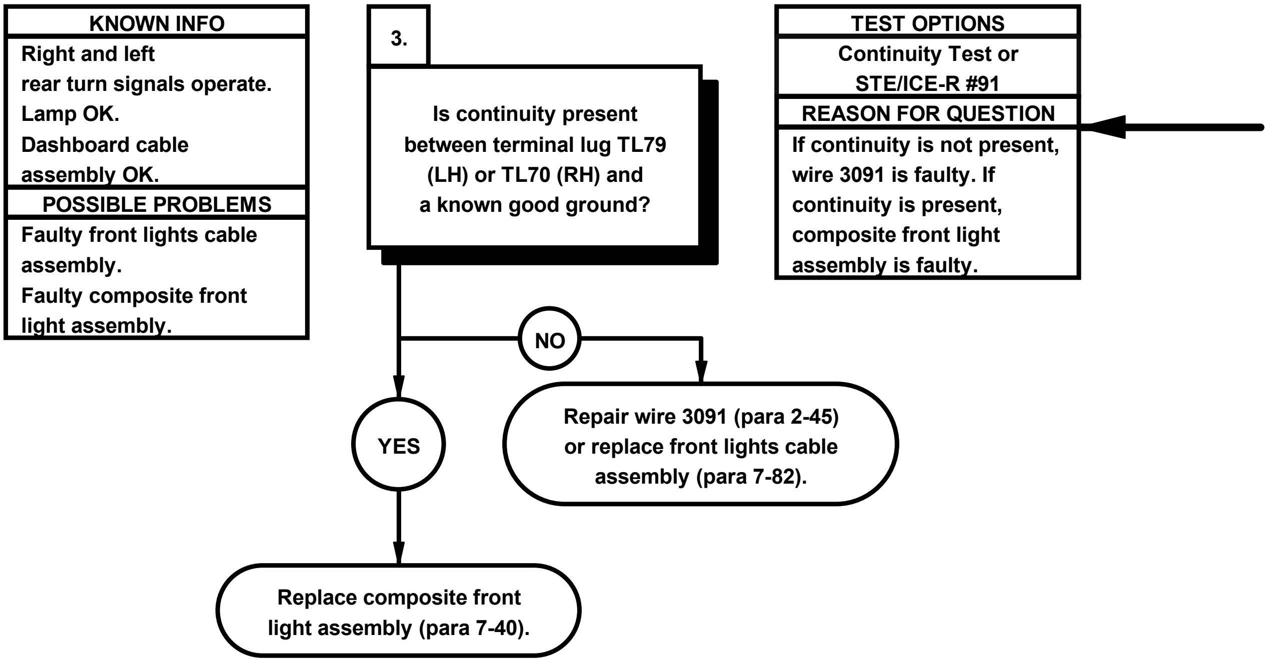
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Raise cab (TM 9-2320-366-10-1).
(2) Disconnect connector P23 (LH composite front light assembly) or P9 (RH composite front light assembly) from composite front light assembly connector.
(3) Lower cab (TM 9-2320-366-10-1).
(4) Connect positive (+) probe of multimeter to connector P23 (LH composite front light assembly) or P9 (RH composite front light light assembly).
(5) Connect negative (-) probe of multimeter to ground.
(6) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(7) Position turn signal switch to left turn or right turn position (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 12 vdc is not present, go to step 4 of this fault.
(9) Position turn signal switch to off (TM 9-2320-366-10-1).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Raise cab (TM 9-2320-366-10-1).
(12) Connect connector P23 (LH composite front light assembly) or P9 (RH composite front light assembly) to composite front light assembly connector.



e60. LEFT OR RIGHT FRONT TURN SIGNAL DOES NOT OPERATE (CONT)



KNOWN INFO

Right and left rear turn signals operate.
Lamp OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty composite front light assembly.

3\. Is continuity present between terminal lug TL79 (LH) or TL70 (RH) and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

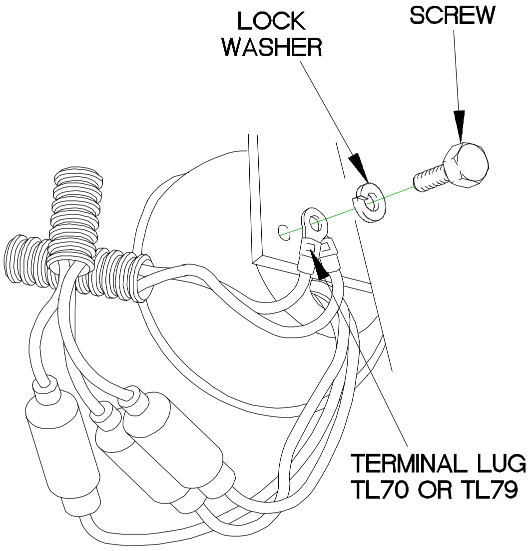
REASON FOR QUESTION

If continuity is not present, wire 3091 is faulty. If continuity is present, composite front light assembly is faulty.

Repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82).

Replace composite front light assembly (para 7-40).

CONTINUITY TEST
(1) Remove screw, lockwasher, and terminal lug TL79 (LH) or TL70 (RH) from composite front light light assembly. Discard lockwasher. (2) Set multimeter to ohms. (3) Connect positive (+) probe of multimeter to terminal lug TL79 (LH) or TL90 (RH). (4) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (5) If continuity is not present, repair wire 3091 (para 2-45) or replace front lights cable assembly (para 7-82). (6) If continuity is present, replace composite front light assembly (para 7-40). (7) Install terminal lug TL79 (LH) or TL90 (RH), lockwasher, and screw on composite front light assembly.



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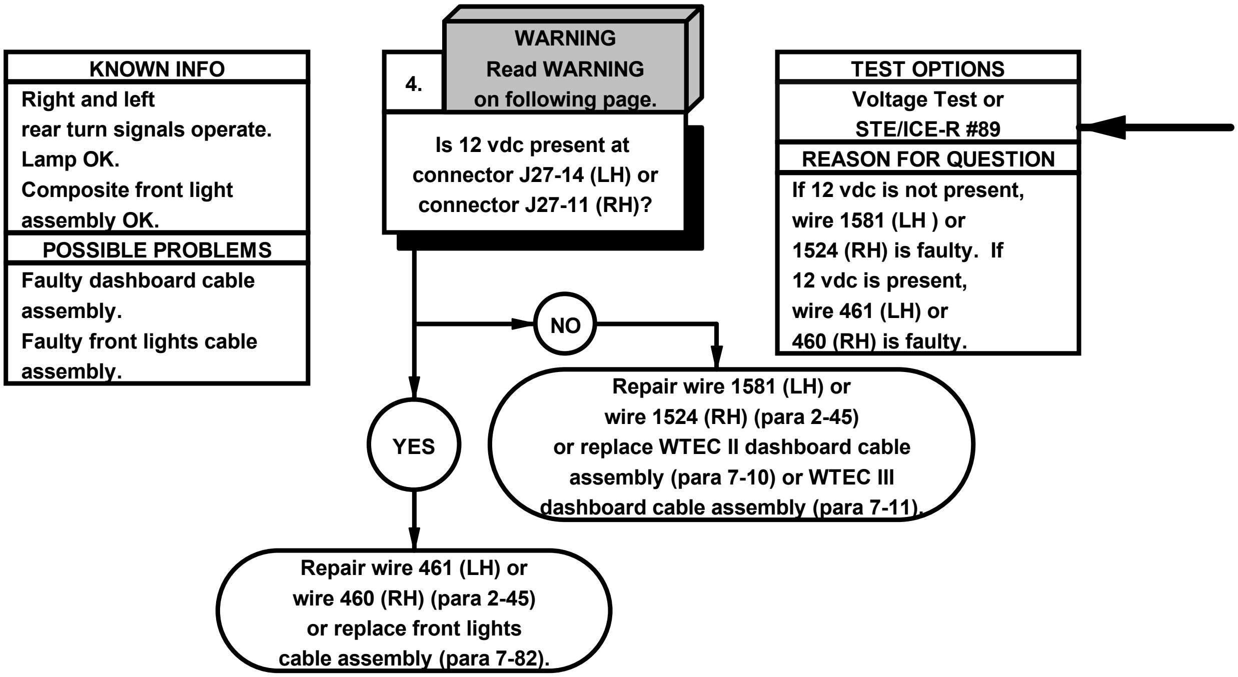
e60. LEFT OR RIGHT FRONT TURN SIGNAL DOES NOT OPERATE (CONT)



KNOWN INFO

Right and left rear turn signals operate.
Lamp OK.
Composite front light assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty front lights cable assembly.

WARNING

Read WARNING on following page.

4. Is 12 vdc present at connector J27-14 (LH) or connector J27-11 (RH)?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

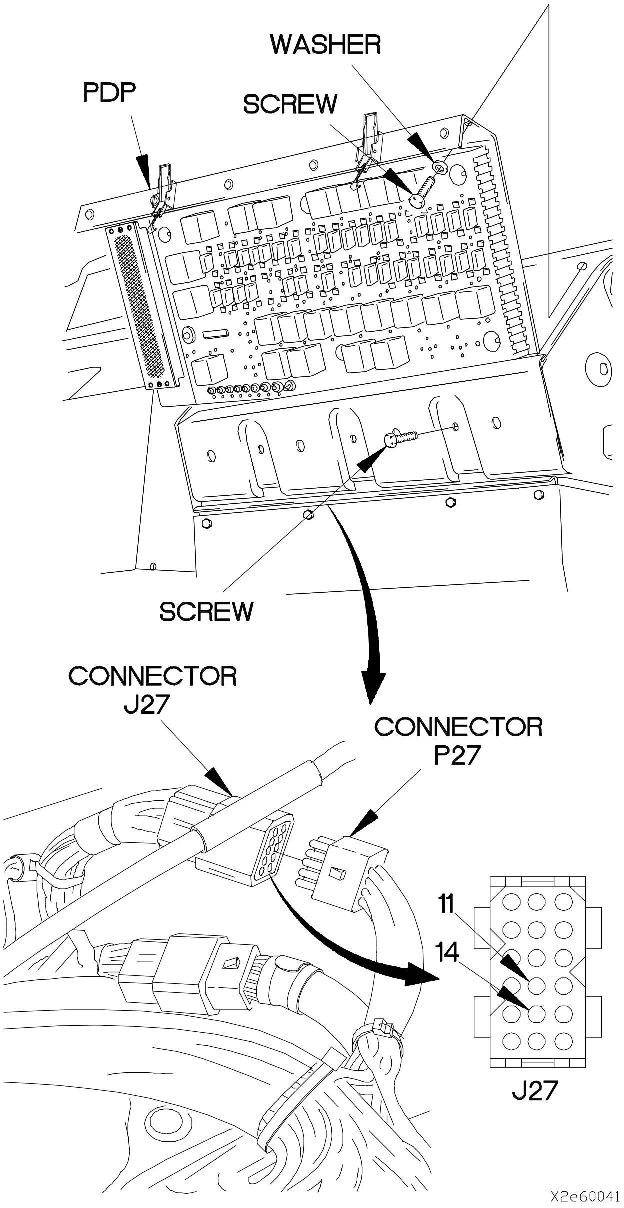
If 12 vdc is not present, wire 1581 (LH) or 1524 (RH) is faulty. If 12 vdc is present, wire 461 (LH) or 460 (RH) is faulty.

NO: Repair wire 1581 (LH) or wire 1524 (RH) (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Repair wire 461 (LH) or wire 460 (RH) (para 2-45) or replace front lights cable assembly (para 7-82).

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J27 from connector P27.
(6) Set multimeter to volts dc.
(7) Connect positive (+) probe of multimeter to connector J27-14 (LH) or J27-11 (RH).
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(10) Position turn signal switch to up for right turn signal operation or down for left turn signal operation (TM 9-2320-366-10-1).
(11) If 12 vdc is not present, repair wire 1581 (LH) or wire 1524 (RH) (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(12) If 12 vdc is present, repair wire 461 (LH) or wire 460 (RH) (para 2-45) or replace front lights cable assembly (para 7-82).
(13) Position main light switch to OFF (TM 9-2320-366-10-1).
(14) Position turn signal switch to middle (off) (TM 9-2320-366-10-1).
(15) Connect connector P27 to connector J27.
(16) Install PDP on dashboard with three screws.
(17) Install three washers and screws in PDP.
(18) Install PDP cover (para 16-2).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE

INITIAL SETUP

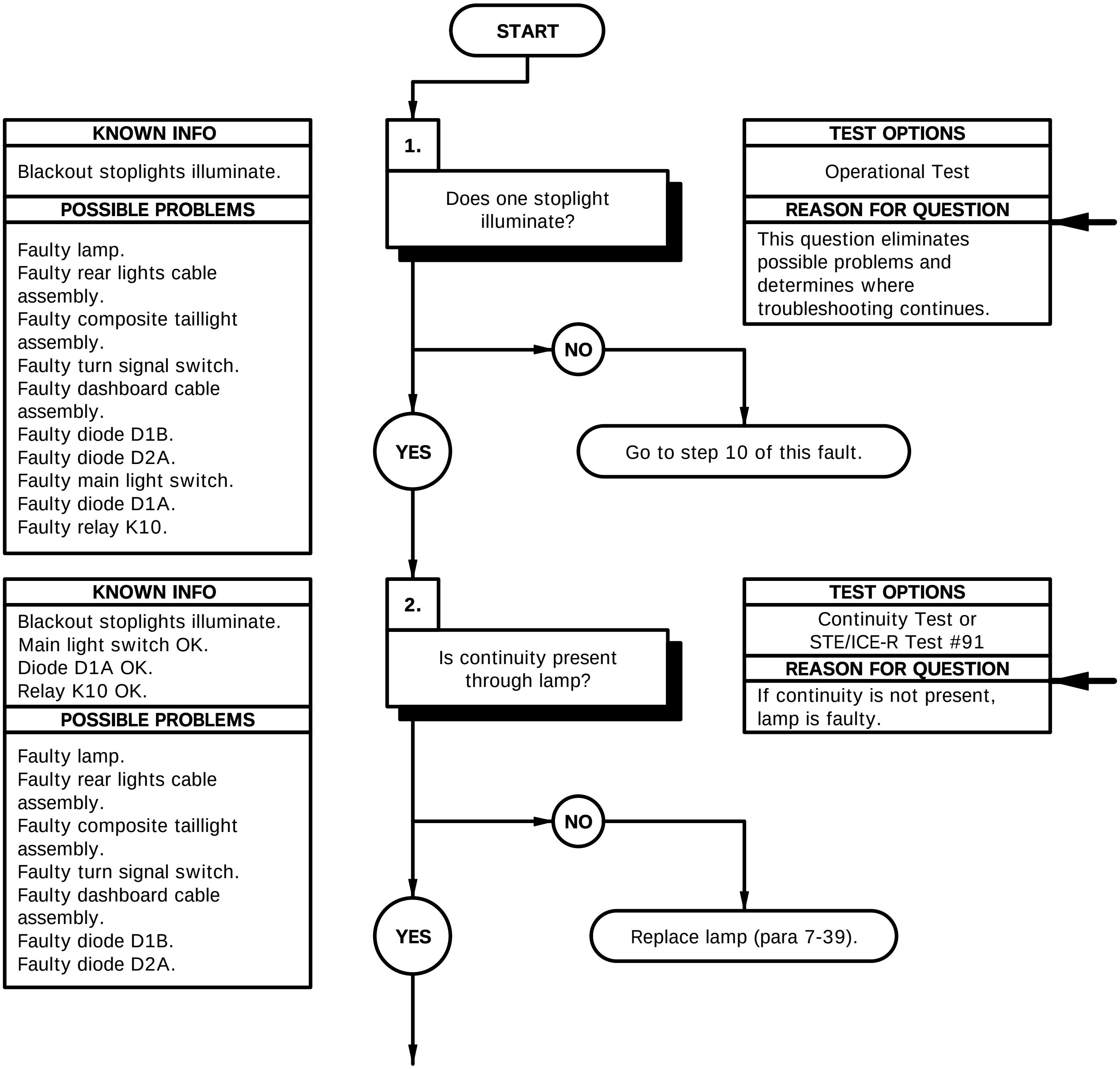
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Packing, Preformed (Item 191, Appendix G)

Personnel Required
(2)

References
TM 9-4910-571-12&P



START

KNOWN INFO

Blackout stoplights illuminate.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.
Faulty main light switch.
Faulty diode D1A.
Faulty relay K10.

1. Does one stoplight illuminate?

TEST OPTIONS

Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 10 of this fault.

YES

KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.

POSSIBLE PROBLEMS

Faulty lamp.
Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.

2. Is continuity present through lamp?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

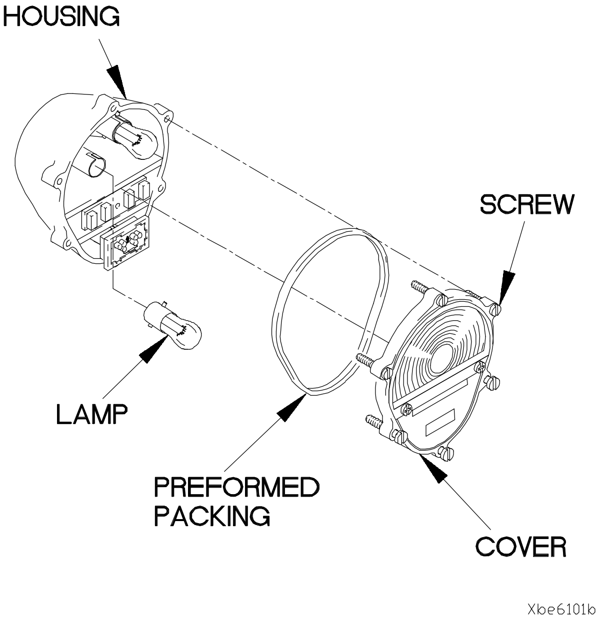
REASON FOR QUESTION

If continuity is not present, lamp is faulty.

NO — Replace lamp (para 7-39).

YES

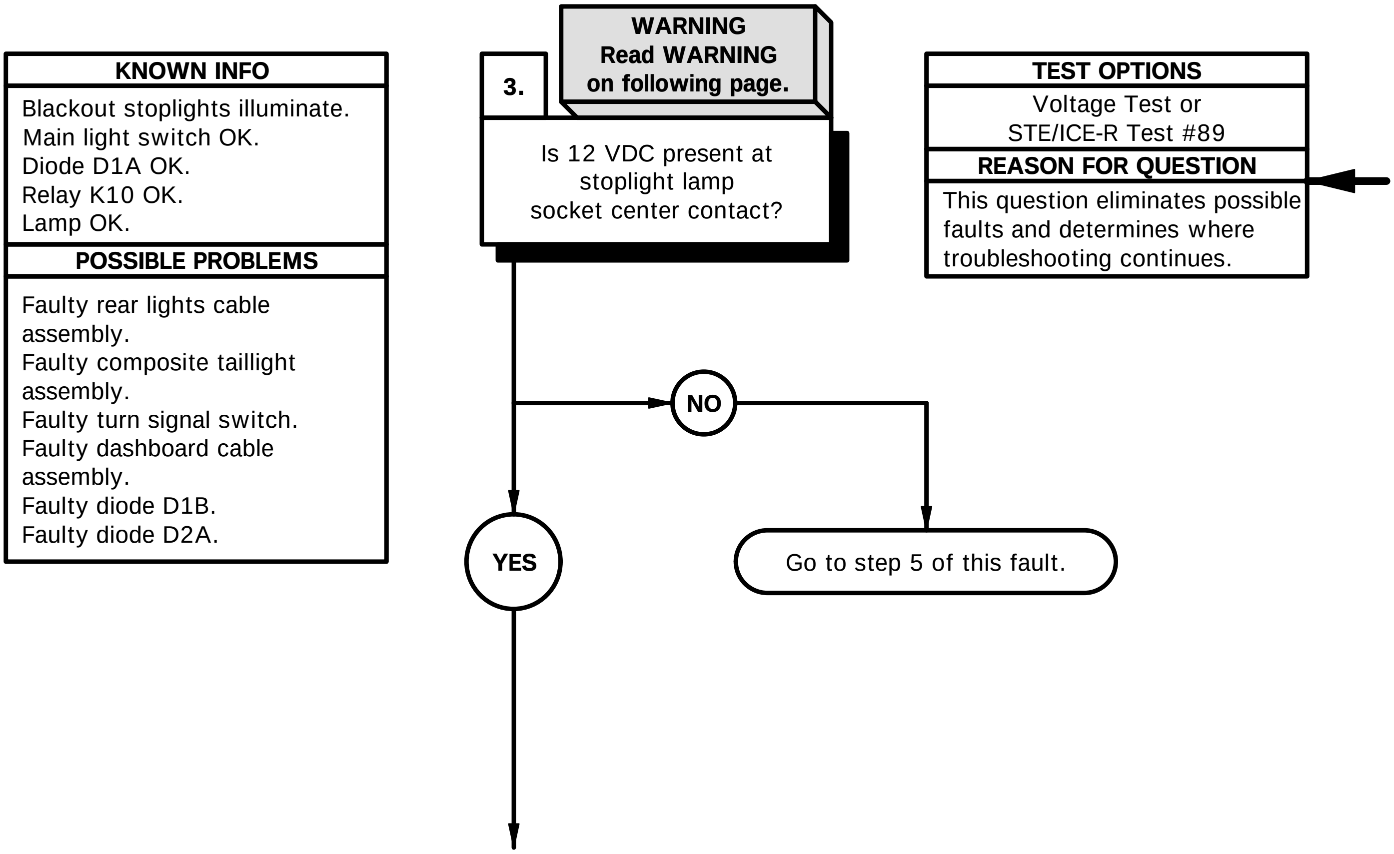
(1) Position master power switch to on (TM 9-2320-366-10-1).
(2) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(3) Apply brakes and observe stoplights.
(4) If both stoplights do not illuminate, go to step 5 of this fault.
(5) Position main light switch to OFF (TM 9-2320-366-10-1).
(6) Position master power switch to off (TM 9-2320-366-10-1).



CONTINUITY TEST

(1) Loosen six screws on composite taillight assembly cover.
(2) Remove cover and preformed packing from housing. Discard preformed packing.
(3) Remove lamp from socket.
(4) Set multimeter to ohms.
(5) Check continuity through lamp.
(6) If continuity is not present, replace lamp (para 7-39).

e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.

WARNING
Read WARNING on following page.

3. Is 12 VDC present at stoplight lamp socket center contact?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

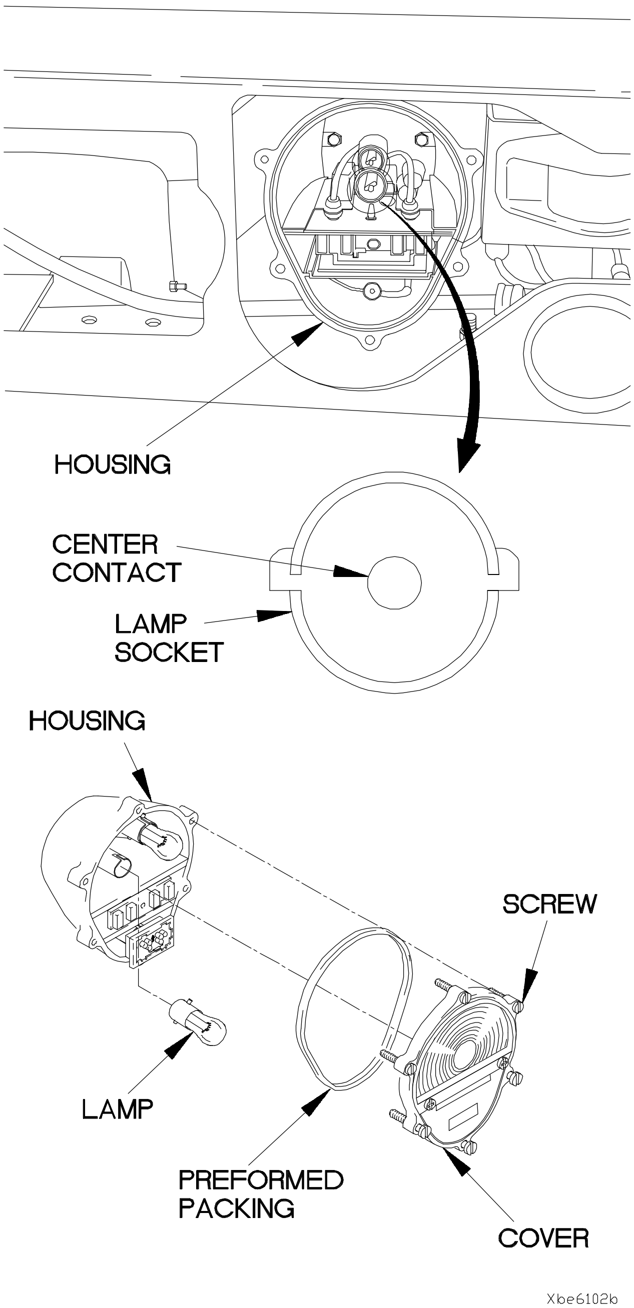
This question eliminates possible faults and determines where troubleshooting continues.

Go to step 5 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Set multimeter to volts DC. (2) Connect positive (+) probe of multimeter to stoplight lamp socket center contact. (3) Connect negative (-) probe of multimeter to ground. (4) Position master power switch to on (TM 9-2320-366-10-1). (5) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1). (6) Apply brakes and note reading on multimeter. (7) If 12 VDC is not present, go to step 5 of this fault. (8) Position master power switch to off (TM 9-2320-366-10-1). (9) Position main light switch to OFF (TM 9-2320-366-10-1). (10) Install lamp in socket. (11) Install preformed packing and cover on housing with six screws.



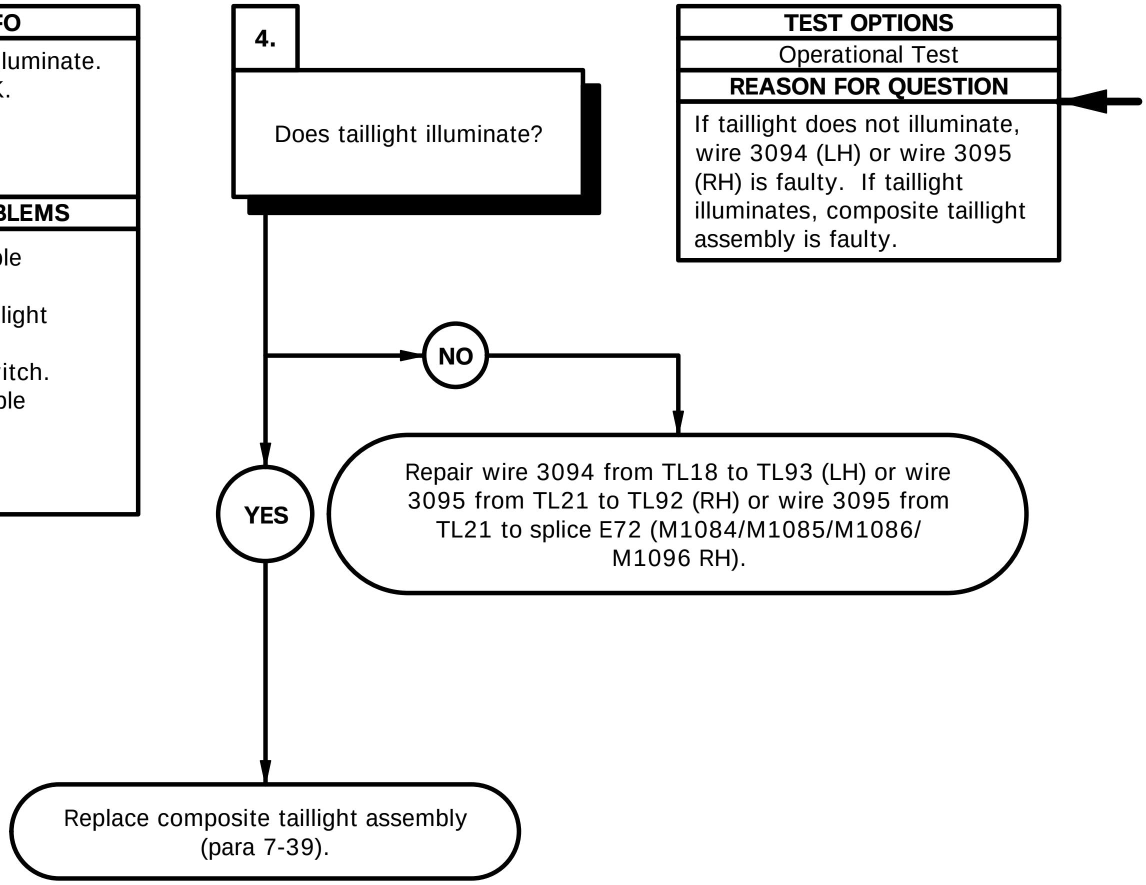
e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.



TEST OPTIONS

Operational Test

REASON FOR QUESTION

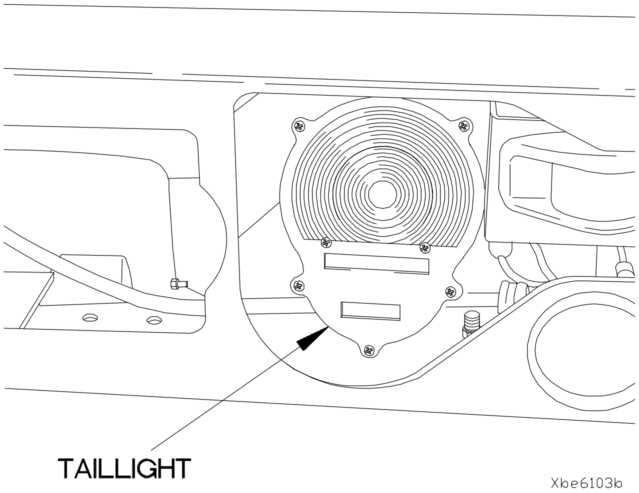
If taillight does not illuminate, wire 3094 (LH) or wire 3095 (RH) is faulty. If taillight illuminates, composite taillight assembly is faulty.

4. Does taillight illuminate?

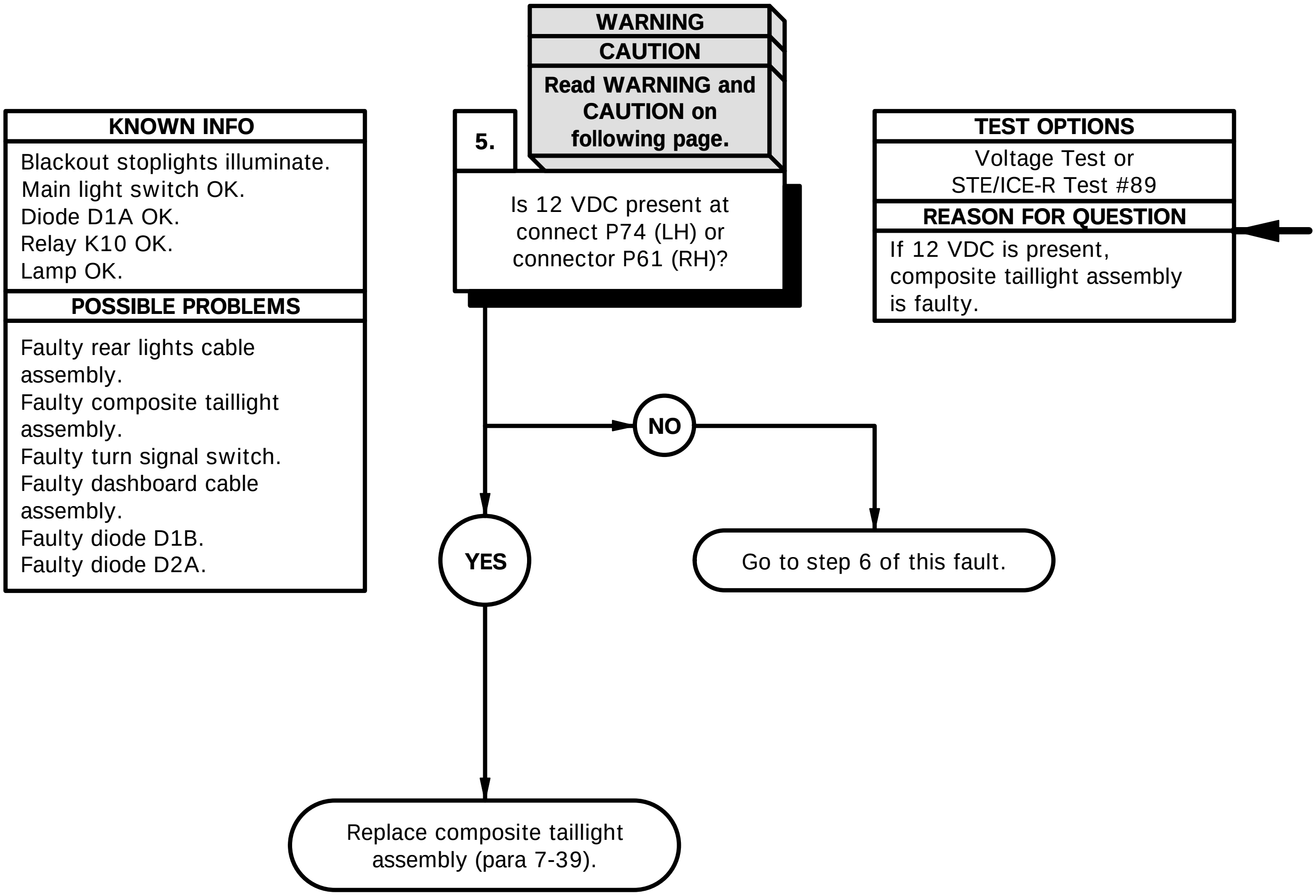
Repair wire 3094 from TL18 to TL93 (LH) or wire 3095 from TL21 to TL92 (RH) or wire 3095 from TL21 to splice E72 (M1084/M1085/M1086/M1096 RH).

Replace composite taillight assembly (para 7-39).

(1) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(2) Observe taillight in housing with non-illuminating stoplight.
(3) If taillight does not illuminate, repair wire 3094 from TL18 to TL93 (LH) or wire 3095 from TL21 to TL92 (RH) or wire 3095 from TL21 to splice E72 (M1084/M1085/M1086/M1096 RH).
(4) If taillight illuminates, replace composite taillight assembly (para 7-39).
(5) Position main light switch to OFF (TM 9-2320-366-10-1).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

5. Is 12 VDC present at connect P74 (LH) or connector P61 (RH)?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is present, composite taillight assembly is faulty.

NO – Go to step 6 of this fault.

YES – Replace composite taillight assembly (para 7-39).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

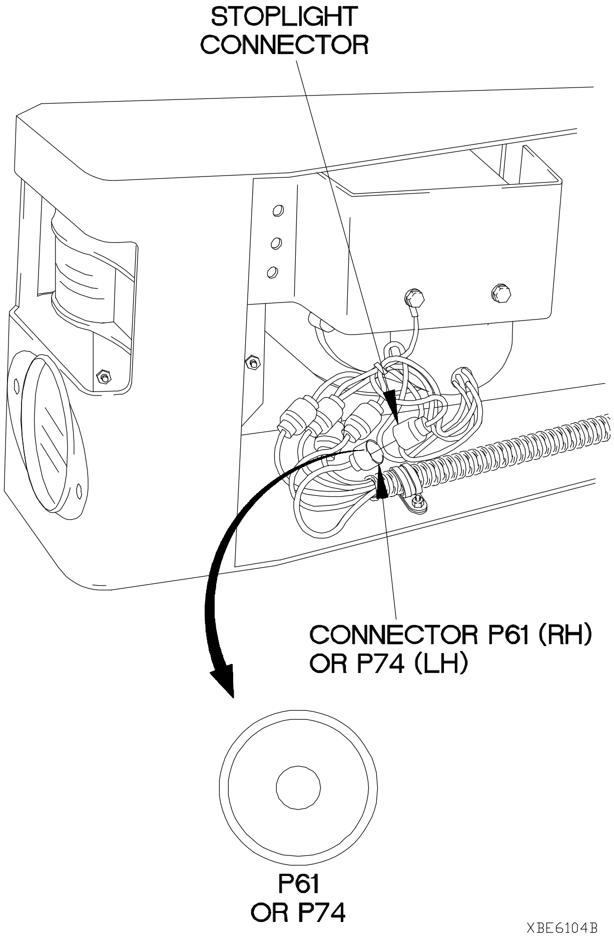
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

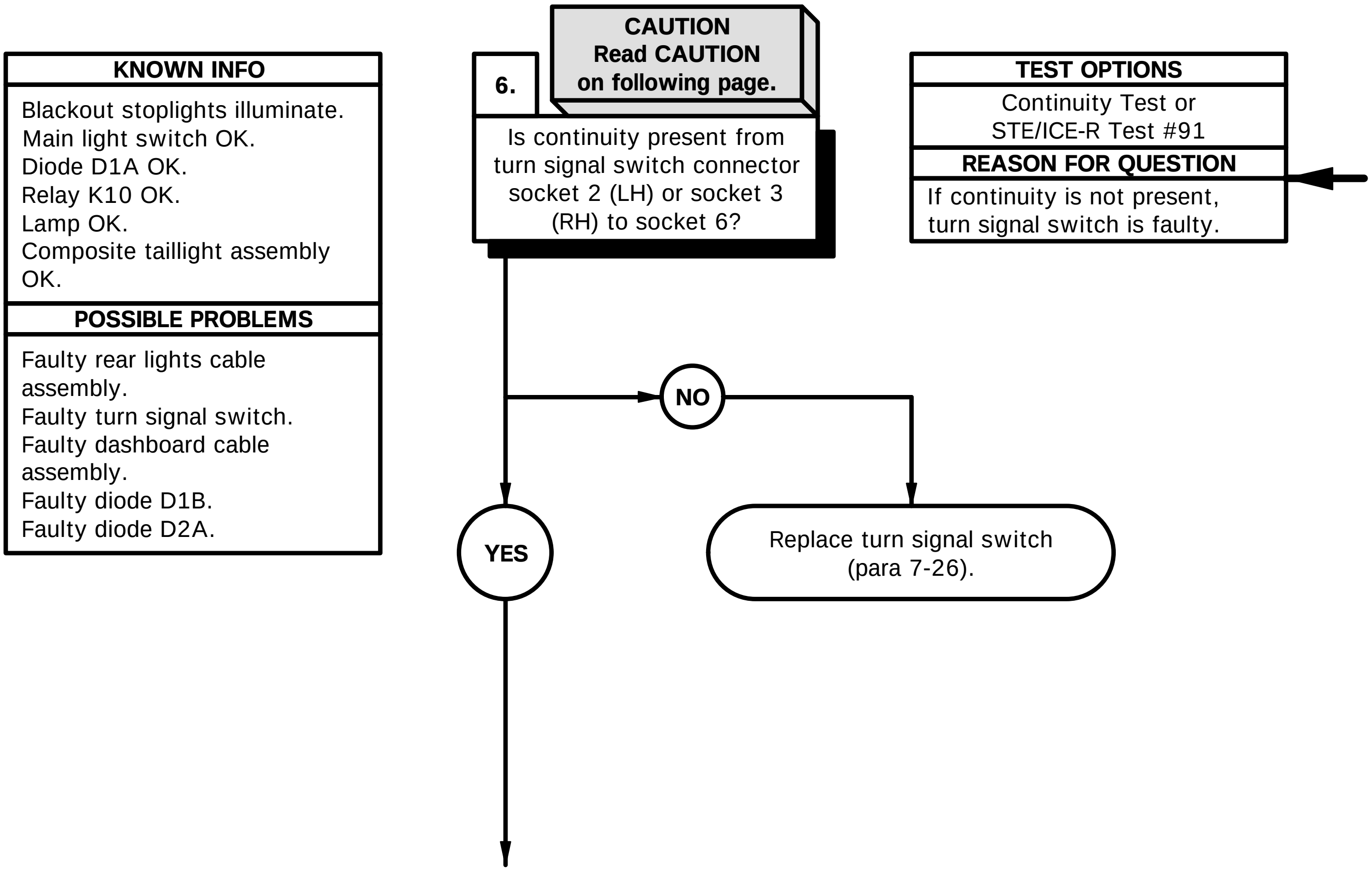
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Disconnect connector P74 (LH) or connector P61 (RH) from stoplight connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P74 or connector P61.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(7) Apply brakes and note reading on multimeter.
(8) If 12 VDC is not present, go to step 6 of this fault.
(9) If 12 VDC is present, replace composite taillight assembly (para 7-39).
(10) Position master power switch to off (TM 9-2320-366-10-1).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Connect connector P74 or connector P61 to stoplight connector.



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.
Lamp OK.
Composite taillight assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.

CAUTION
Read CAUTION on following page.

6. Is continuity present from turn signal switch connector socket 2 (LH) or socket 3 (RH) to socket 6?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, turn signal switch is faulty.

Replace turn signal switch (para 7-26).

CAUTION

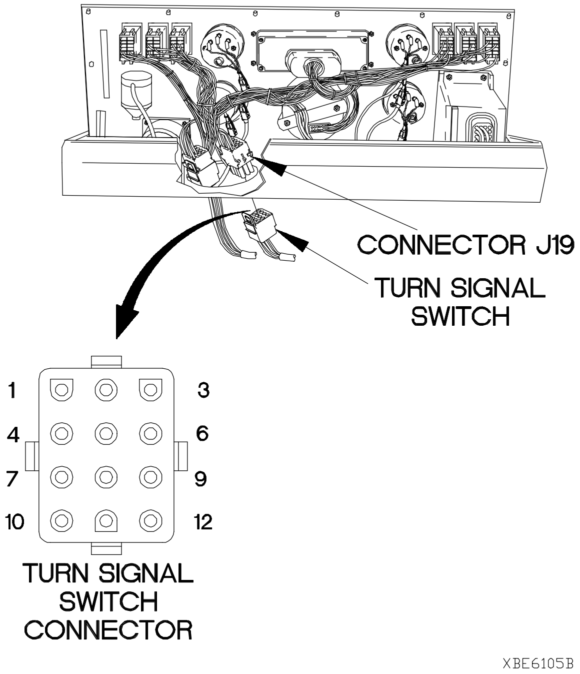
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect turn signal switch connector from connector J19.
(3) Position turn signal switch to center position (TM 9-2320-366-10-1).
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to turn signal switch connector socket 6.
(6) Connect negative (-) probe of multimeter to turn signal switch connector socket 2 (LH) or socket 3 (RH) and note reading on multimeter.
(7) If continuity is not present, replace turn signal switch (para 7-26).
(8) Connect connector J19 to turn signal switch connector.
(9) Install instrument panel assembly (para 7-15).



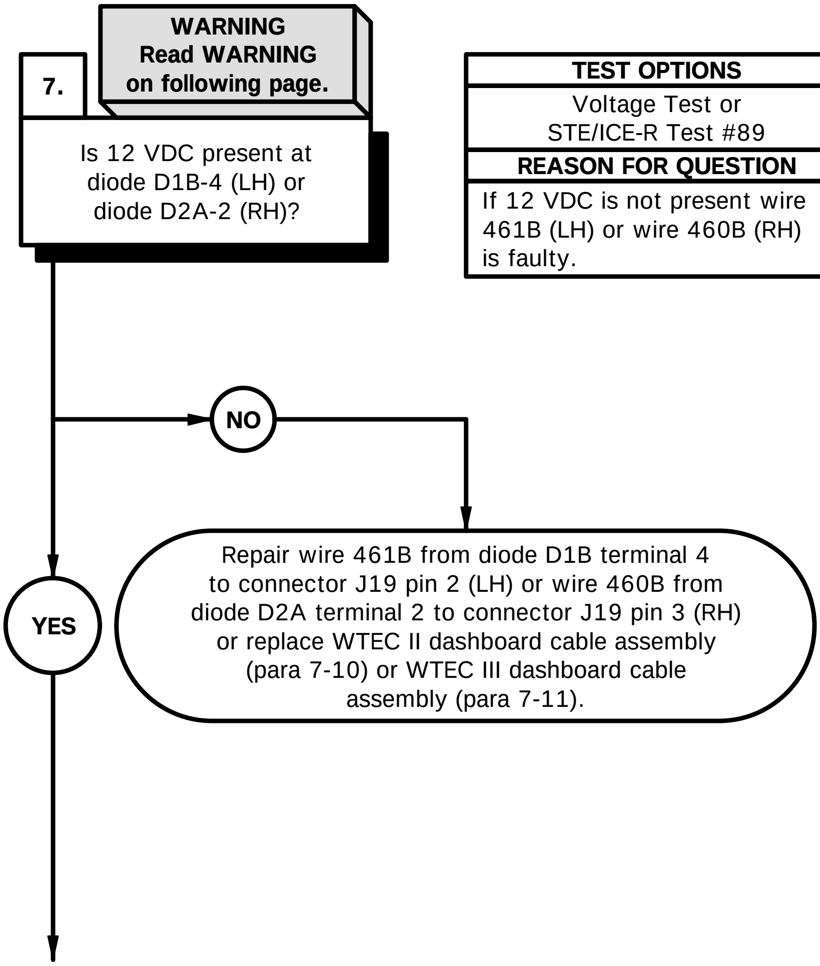
e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.
Lamp OK.
Composite taillight assembly OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.



WARNING
Read WARNING on following page.

7.

Is 12 VDC present at diode D1B-4 (LH) or diode D2A-2 (RH)?

NO

Repair wire 461B from diode D1B terminal 4 to connector J19 pin 2 (LH) or wire 460B from diode D2A terminal 2 to connector J19 pin 3 (RH) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

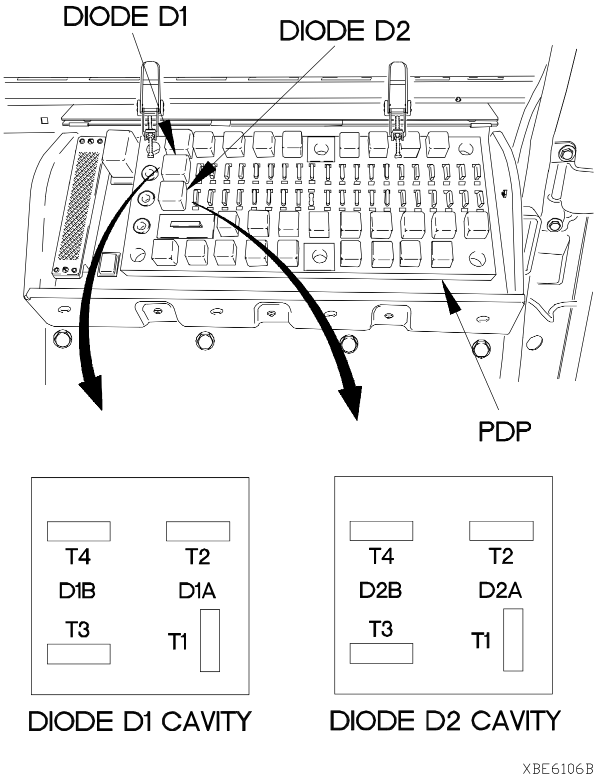
If 12 VDC is not present wire 461B (LH) or wire 460B (RH) is faulty.

WARNING

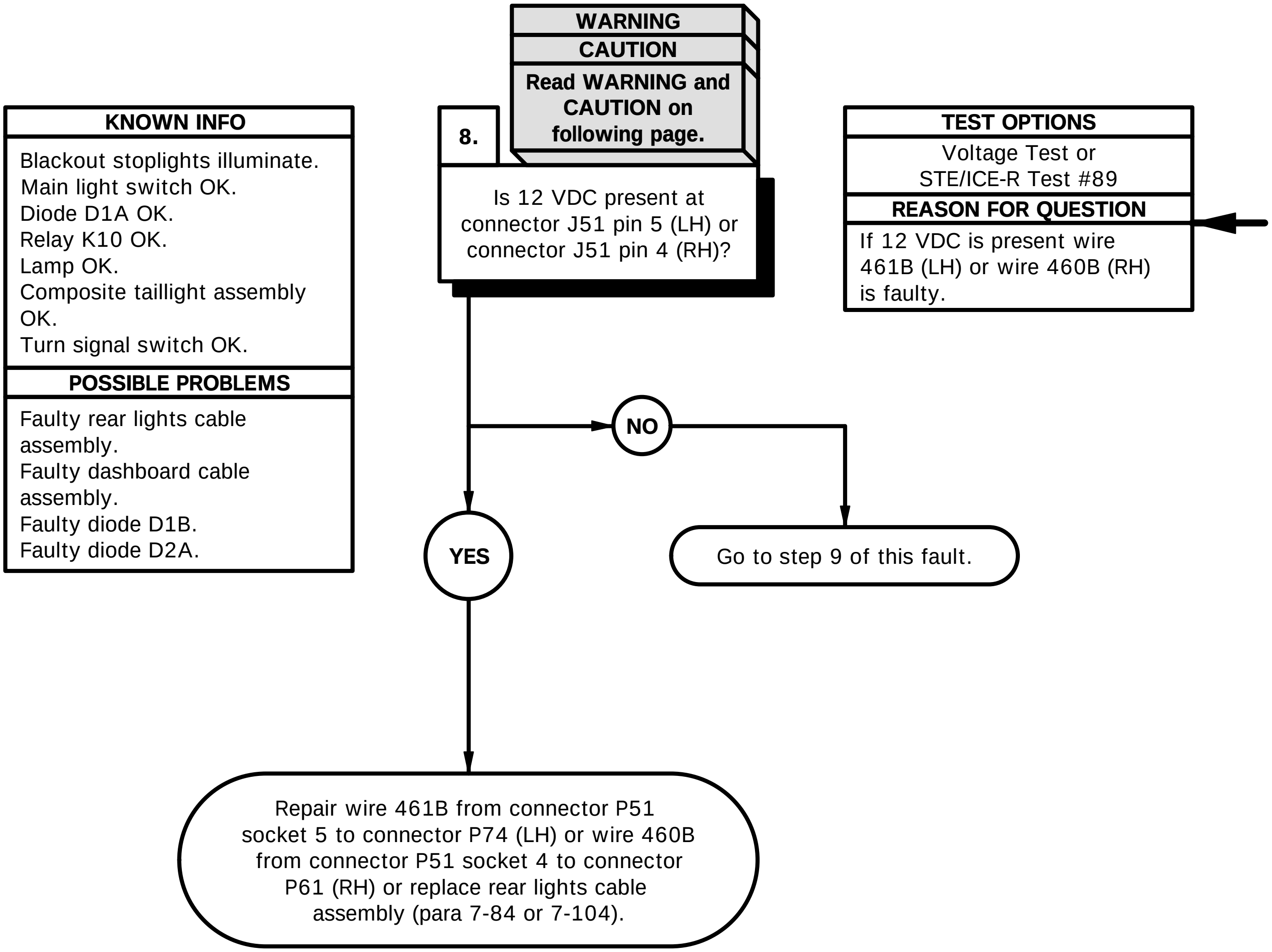
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove diode D1B (LH) or diode D2A (RH) from PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to PDP, terminal 4 (LH) or terminal 2 (RH) where diode D1B (LH) or diode D2A (RH) was removed.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1).
(7) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(8) Apply brakes and note reading on multimeter.
(9) If 12 VDC is not present, repair wire 461B from diode D1B terminal 4 to connector J19 pin 2 (LH) or wire 460B from diode D2A terminal 2 to connector J19 pin 3 (RH) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) Position master power switch to off (TM 9-2320-366-10-1).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.
Lamp OK.
Composite taillight assembly OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

8. Is 12 VDC present at connector J51 pin 5 (LH) or connector J51 pin 4 (RH)?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is present wire 461B (LH) or wire 460B (RH) is faulty.

NO

Go to step 9 of this fault.

YES

Repair wire 461B from connector P51 socket 5 to connector P74 (LH) or wire 460B from connector P51 socket 4 to connector P61 (RH) or replace rear lights cable assembly (para 7-84 or 7-104).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

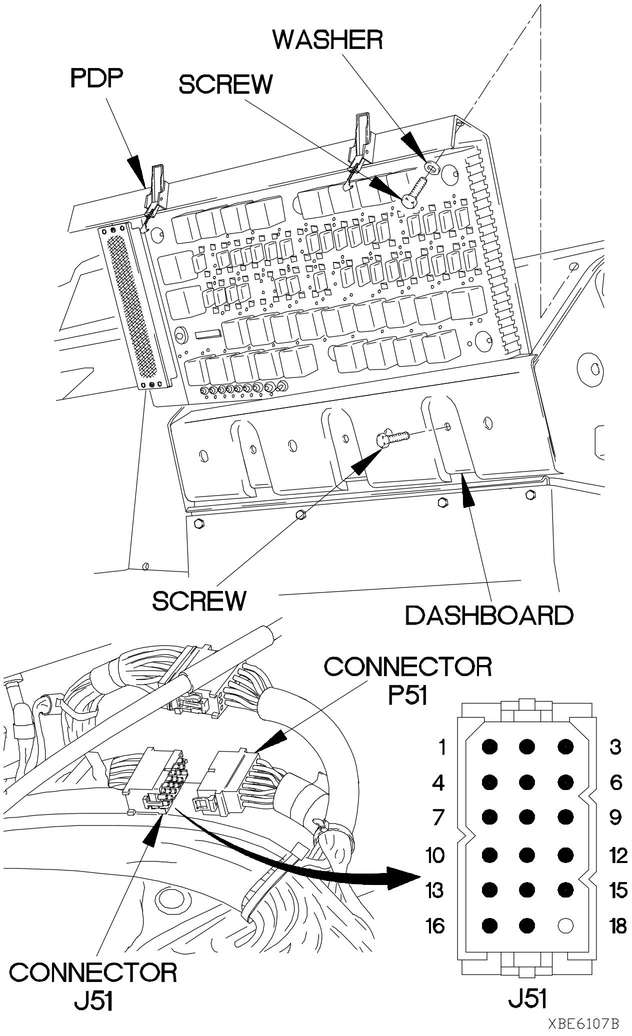
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

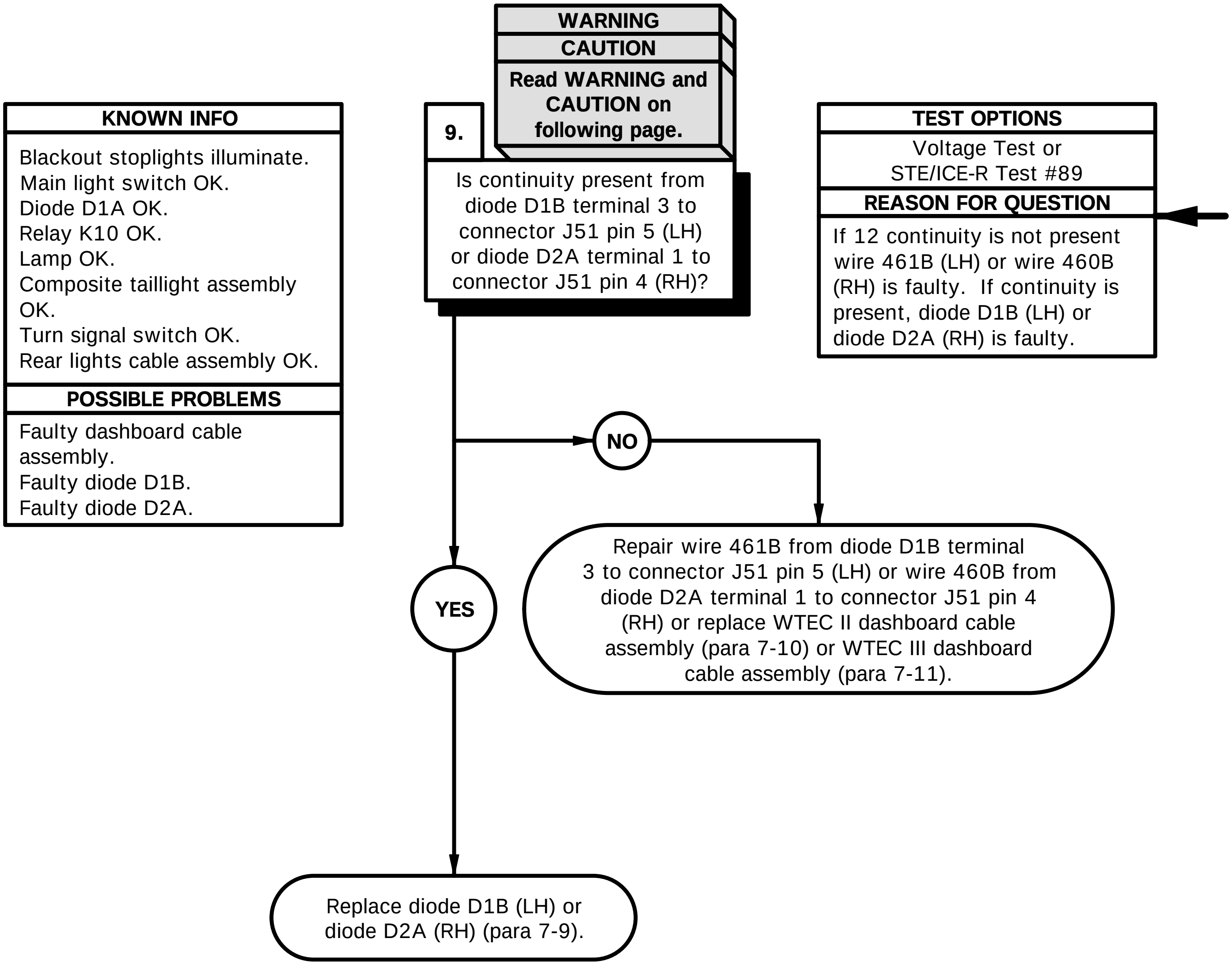
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J51 from connector P51.
(5) Set multimeter to volts DC.
(6) Connect positive (+) probe of multimeter to connector J51 pin 5 (LH) or pin 4 (RH).
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1).
(9) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(10) Apply brakes and note reading on multimeter.
(11) If 12 VDC is not present, got to step 9 of this faulty.
(12) If 12 VDC is present, repair wire 461B from connector P51 socket 5 to connector P74 (LH) or wire 460B from connector P51 socket 4 to connector P61 (RH) or replace rear lights cable assembly (para 7-84 or 7-104).
(13) Position main light switch to OFF (TM 9-2320-366-10-1).
(14) Position master power switch to off (TM 9-2320-366-10-1).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Main light switch OK.
Diode D1A OK.
Relay K10 OK.
Lamp OK.
Composite taillight assembly OK.
Turn signal switch OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty diode D1B.
Faulty diode D2A.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

9. Is continuity present from diode D1B terminal 3 to connector J51 pin 5 (LH) or diode D2A terminal 1 to connector J51 pin 4 (RH)?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 continuity is not present wire 461B (LH) or wire 460B (RH) is faulty. If continuity is present, diode D1B (LH) or diode D2A (RH) is faulty.

NO

Repair wire 461B from diode D1B terminal 3 to connector J51 pin 5 (LH) or wire 460B from diode D2A terminal 1 to connector J51 pin 4 (RH) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

Replace diode D1B (LH) or diode D2A (RH) (para 7-9).

CAUTION

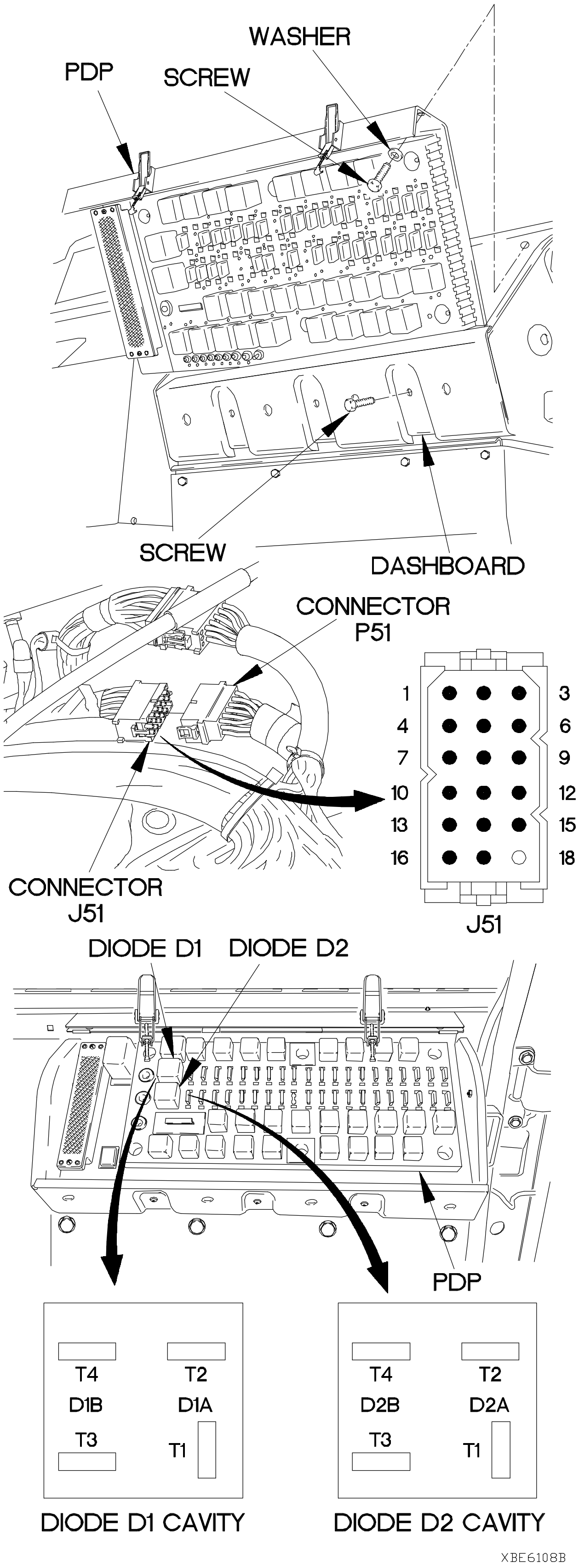
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

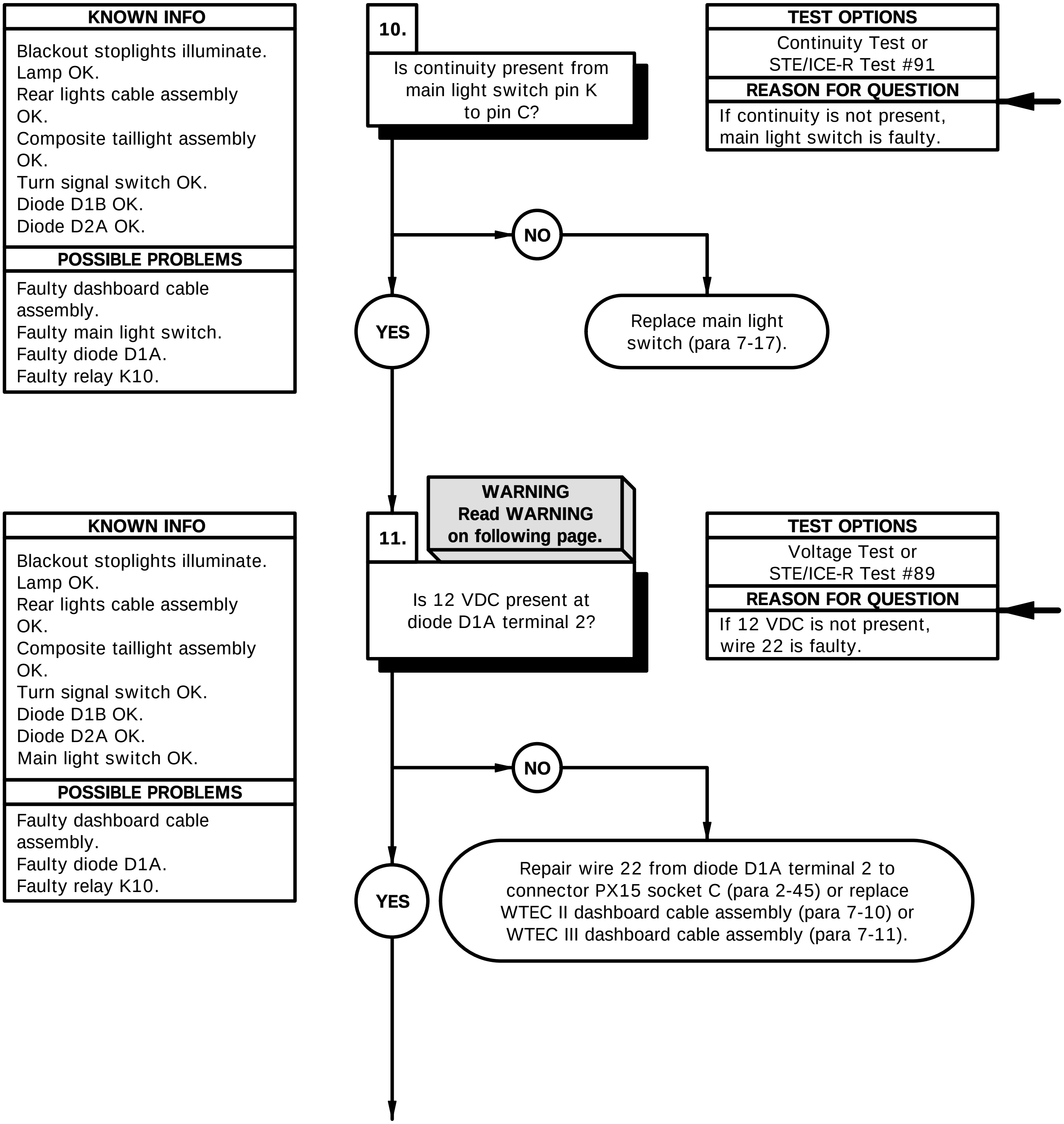
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Set multimeter to volts ohms.
(2) Connect positive (+) probe of multimeter to diode D1B terminal 3 (LH) or diode D2A terminal 1 (RH).
(3) Connect negative (-) probe of multimeter to connector J51 pin 5 (LH) or pin 4 (RH) and note reading on multimeter.
(4) If continuity is not present, repair wire 461B from connector J51 pin 5 to diode D1B terminal 3 (LH) or wire 460B from connector J51 pin 4 to diode D2A terminal 1 (RH) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) Connect connector J51 to connector P51.
(6) Install PDP on dashboard with three screws.
(7) Install three washers and screws in PDP.
(8) Install diode D1B (LH) or diode D2A (RH) in PDP.
(9) Install PDP cover (para 16-2).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty main light switch.
Faulty diode D1A.
Faulty relay K10.

10. Is continuity present from main light switch pin K to pin C?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, main light switch is faulty.

Replace main light switch (para 7-17).

KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty diode D1A.
Faulty relay K10.

WARNING
Read WARNING on following page.

11. Is 12 VDC present at diode D1A terminal 2?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 22 is faulty.

Repair wire 22 from diode D1A terminal 2 to connector PX15 socket C (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

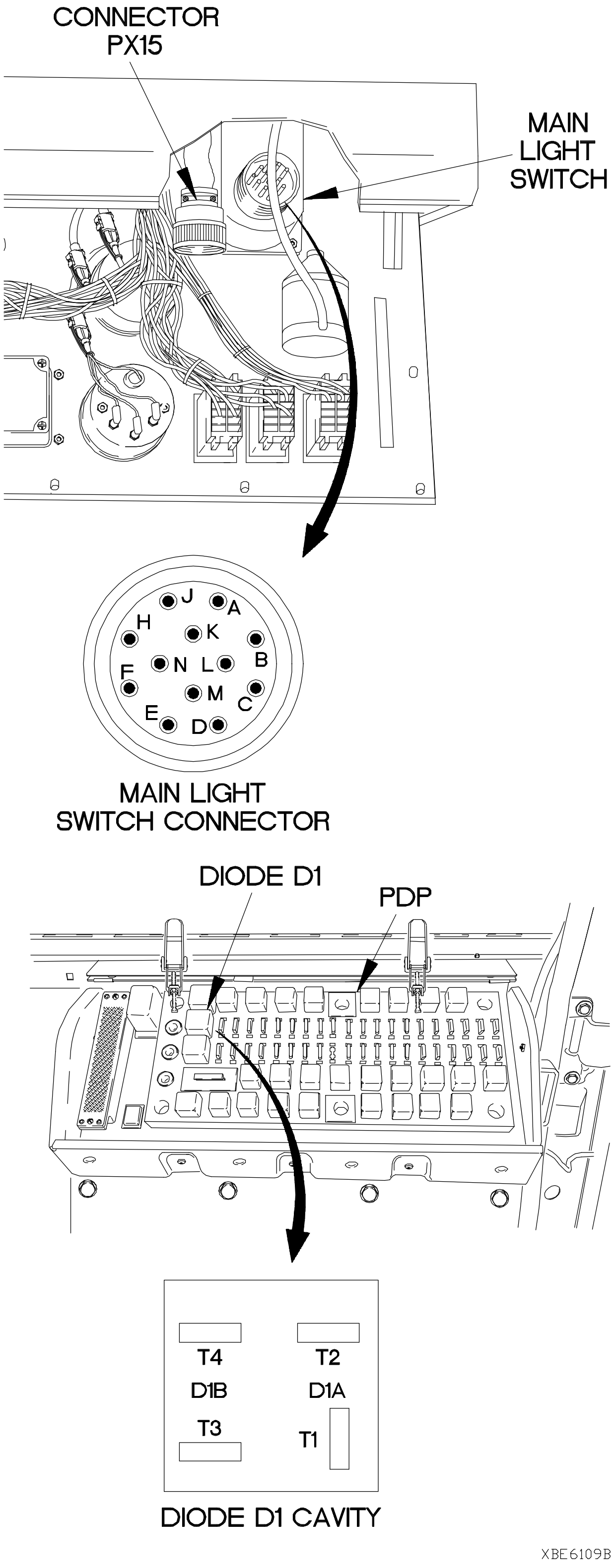
(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX15 from main light switch.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to main light switch pin K.
(5) Connect negative (-) probe of multimeter to main light switch pin C.
(6) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace main light switch (para 7-17).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Connect connector PX15 to main light switch.

WARNING

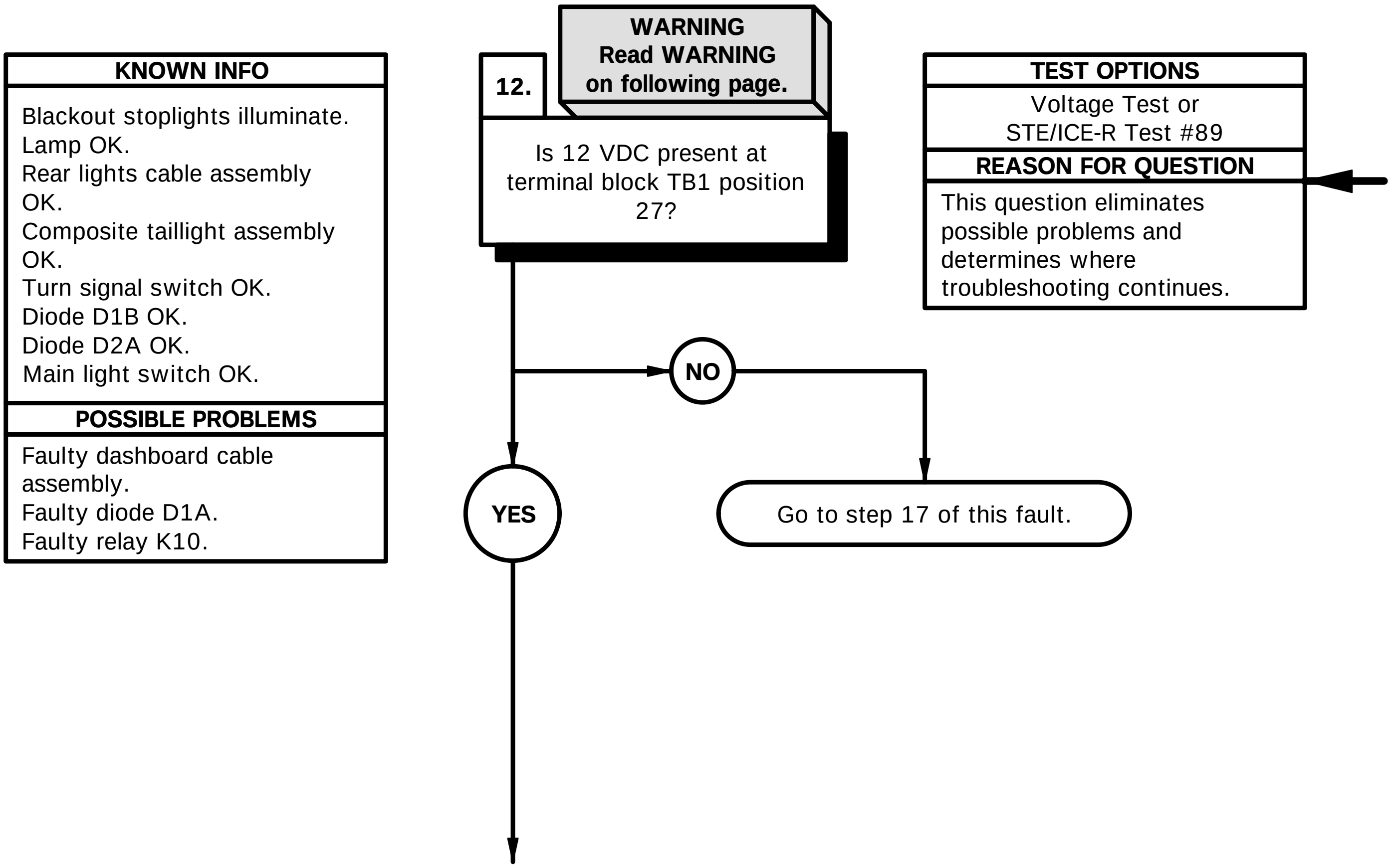
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove diode D1A from PDP.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to PDP, terminal 2, where diode D1A was removed.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1).
(7) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(8) Apply brakes and note reading on multimeter.
(9) If 12 VDC is not present, repair wire 22 from diode D1A terminal 2 to connector PX15 socket C (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Position master power switch to off (TM 9-2320-366-10-1).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty diode D1A.
Faulty relay K10.

12.

WARNING
Read WARNING on following page.

Is 12 VDC present at terminal block TB1 position 27?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

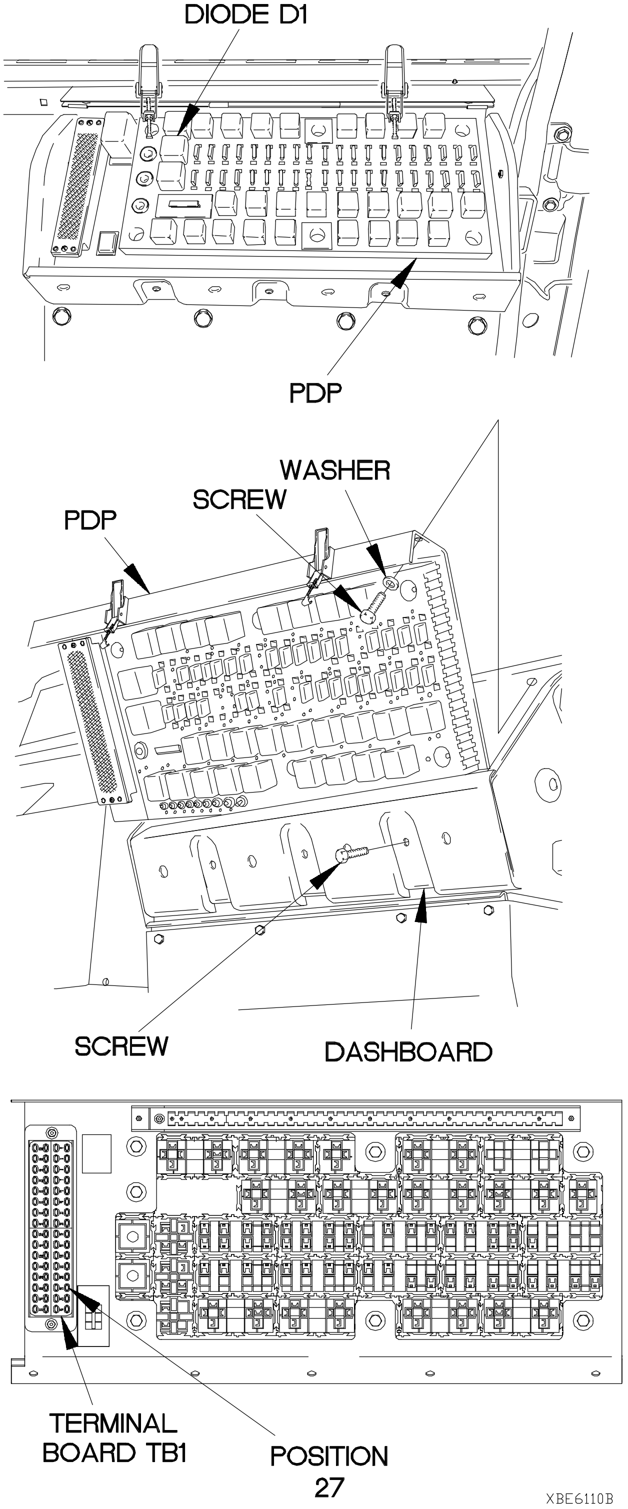
Go to step 17 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Set multimeter to volts DC.
(5) Connect positive (+) probe of multimeter to terminal block TB1 position 27.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position master power switch to on (TM 9-2320-366-10-1).
(8) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(9) Apply brakes and note reading on multimeter.
(10) If 12 VDC is not present, go to step 17 of this fault.
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Position master power switch to off (TM 9-2320-366-10-1).
(13) Install PDP on dashboard with three screws.
(14) Install three washers and screws in PDP.
(15) Install diode D1A in PDP.



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.
Main light switch OK.
Diode D1A OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K10.

WARNING
Read WARNING on following page.

13.

Is 12 VDC present at relay K10 terminal 86?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1940 is faulty.

NO

Repair wire 1940 from relay K10 terminal 86 to terminal board TB1 position 29 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

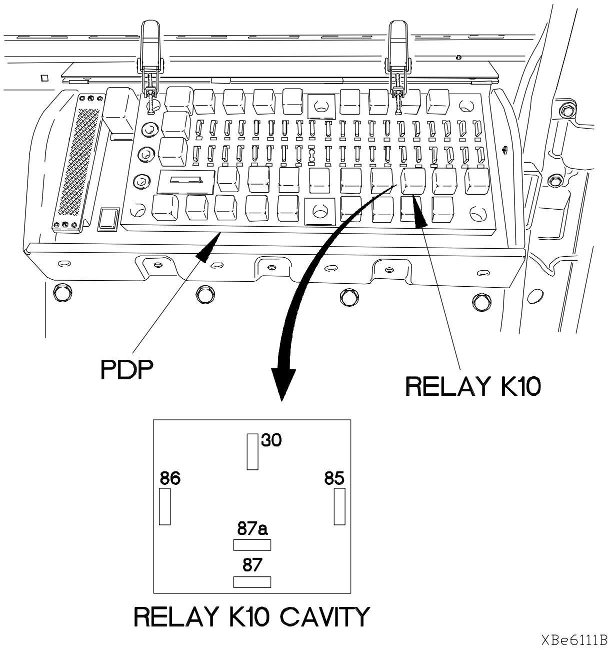
YES

WARNING

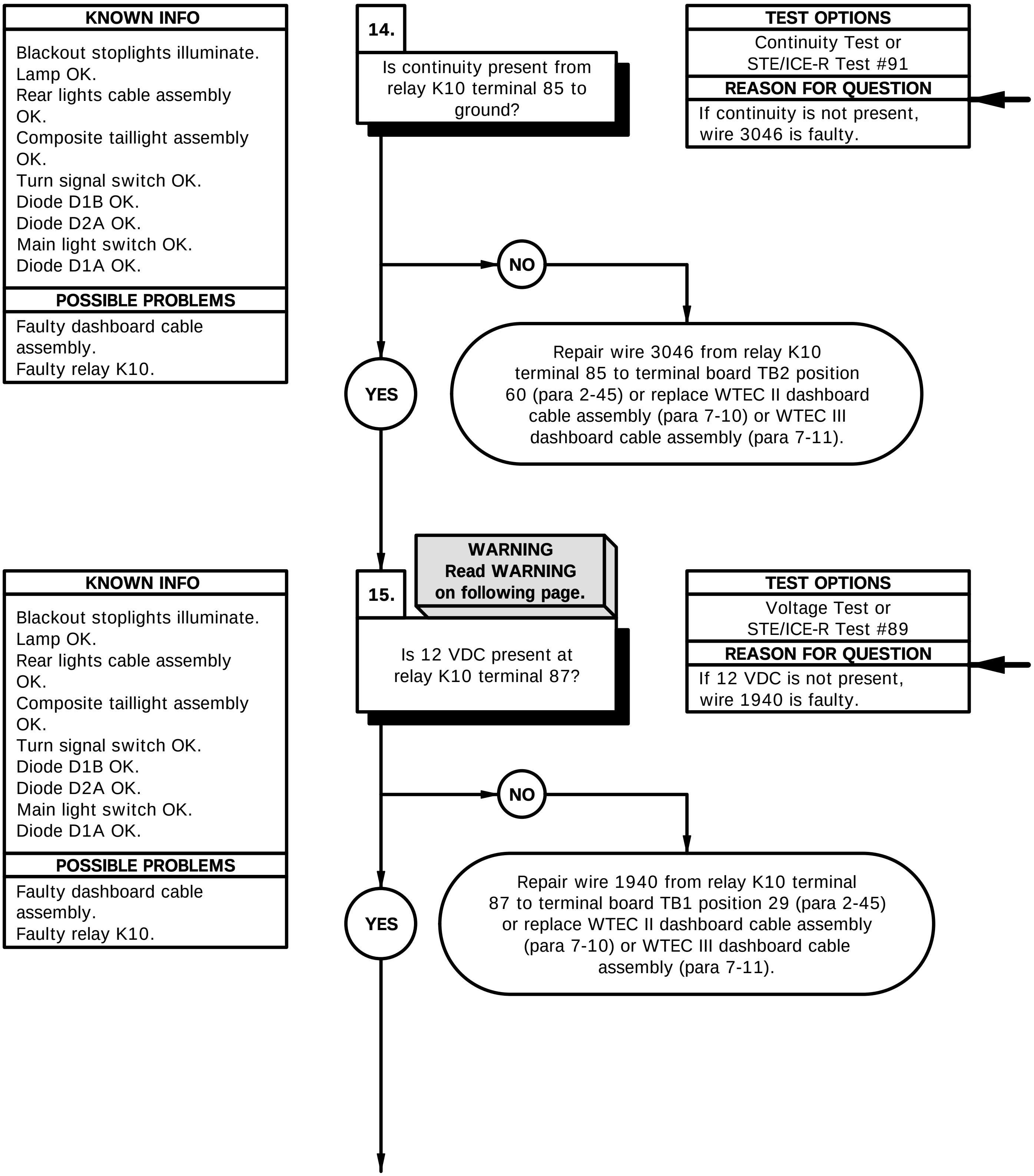
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove relay K10 from PDP.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to PDP, terminal 86, where relay K10 was removed.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(7) Apply brakes and note reading on multimeter.
(8) If 12 VDC is not present, repair wire 1940 from relay K10 terminal 86 to terminal board TB1 position 29 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position main light switch to OFF (TM 9-2320-366-10-1).
(10) Position master power switch to off (TM 9-2320-366-10-1).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.
Main light switch OK.
Diode D1A OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K10.

14. Is continuity present from relay K10 terminal 85 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3046 is faulty.

NO: Repair wire 3046 from relay K10 terminal 85 to terminal board TB2 position 60 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.
Main light switch OK.
Diode D1A OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K10.

WARNING
Read WARNING on following page.

15. Is 12 VDC present at relay K10 terminal 87?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1940 is faulty.

NO: Repair wire 1940 from relay K10 terminal 87 to terminal board TB1 position 29 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

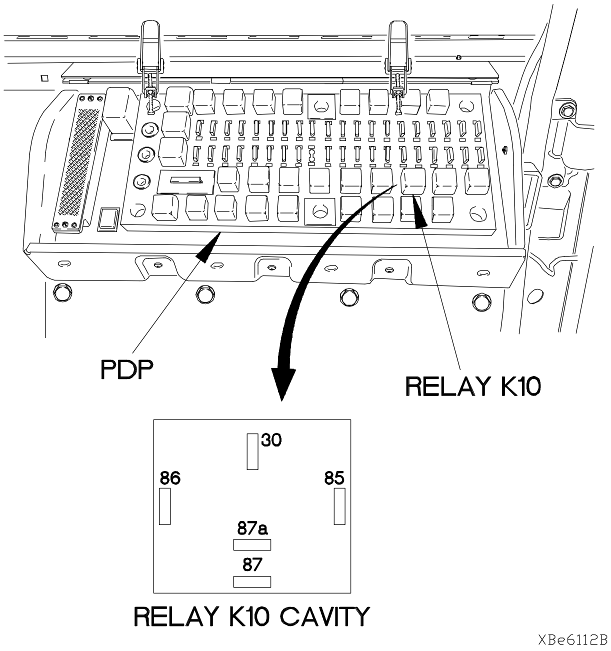
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP, terminal 85, where relay K10 was removed.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3046 from relay K10 terminal 85 to terminal board TB2 position 60 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

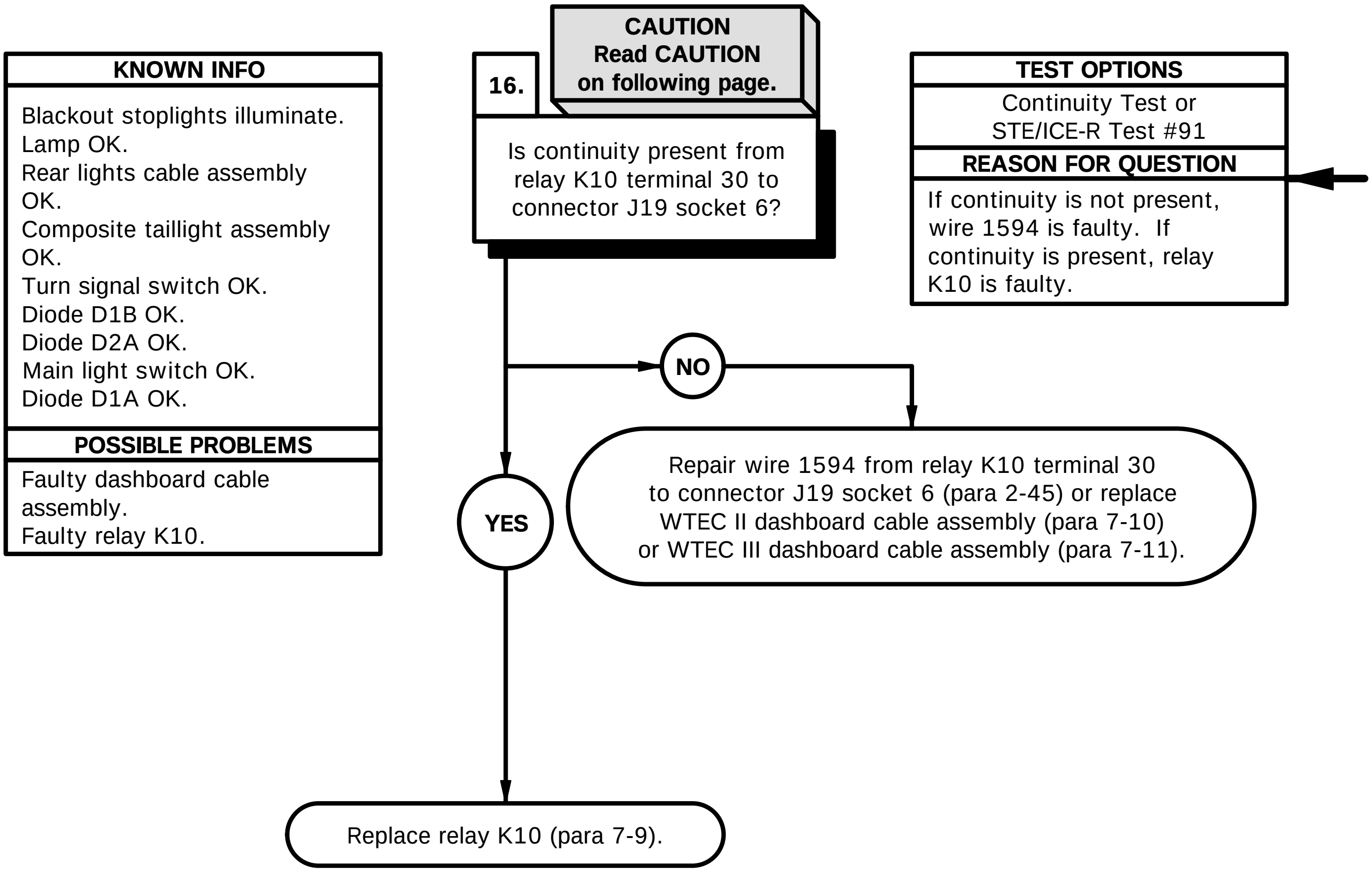
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to PDP, terminal 87, where relay K10 was removed.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1).
(5) Position main light switch to STOPLIGHT (TM 9-2320-366-10-1).
(6) Apply brakes and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 1940 from relay K10 terminal 87 to terminal board TB1 position 29 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashsboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.
Main light switch OK.
Diode D1A OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K10.

CAUTION
Read CAUTION on following page.

16. Is continuity present from relay K10 terminal 30 to connector J19 socket 6?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 1594 is faulty. If continuity is present, relay K10 is faulty.

NO: Repair wire 1594 from relay K10 terminal 30 to connector J19 socket 6 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace relay K10 (para 7-9).

CAUTION

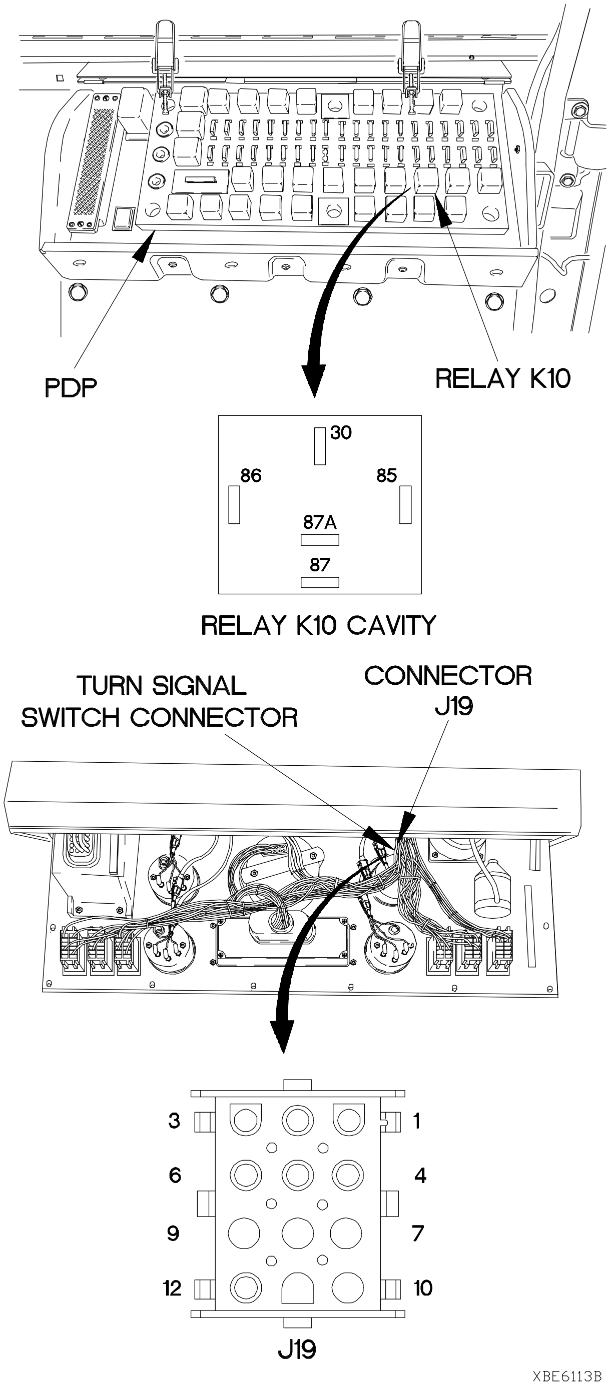
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect turn signal switch connector from connector J19.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to PDP, terminal 30, where relay K10 was removed.
(4) Connect negative (-) probe of multimeter to connector J19 socket 6.
(5) If continuity is not present, repair wire 1594 from relay K10 terminal 30 to connector J19 socket 6 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace relay K10 (para 7-9).
(7) Connect connector J19 to turn signal switch connector.
(8) Install instrument panel assembly (para 7-15).
(9) Install relay K10 in PDP.
(10) Install PDP cover (para 16-2).



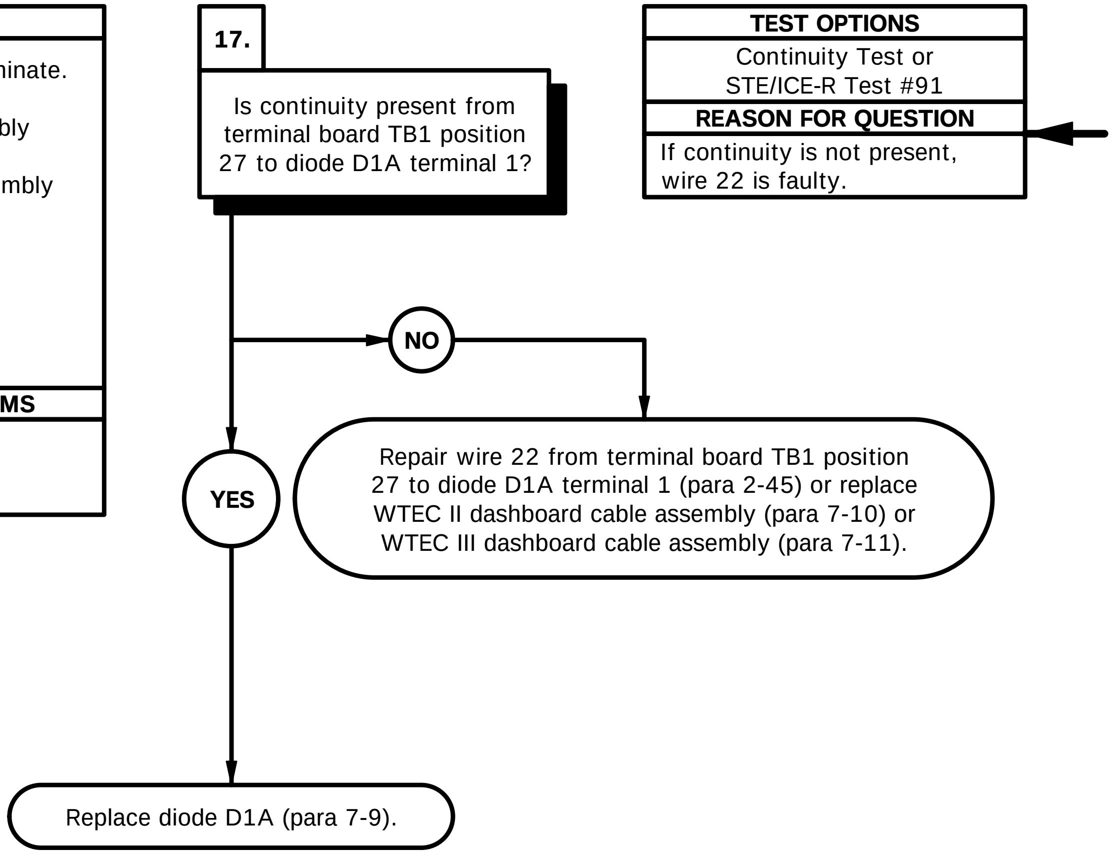
e61. ONE OR BOTH STOPLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Blackout stoplights illuminate.
Lamp OK.
Rear lights cable assembly OK.
Composite taillight assembly OK.
Turn signal switch OK.
Diode D1B OK.
Diode D2A OK.
Main light switch OK.
Relay K10 OK.

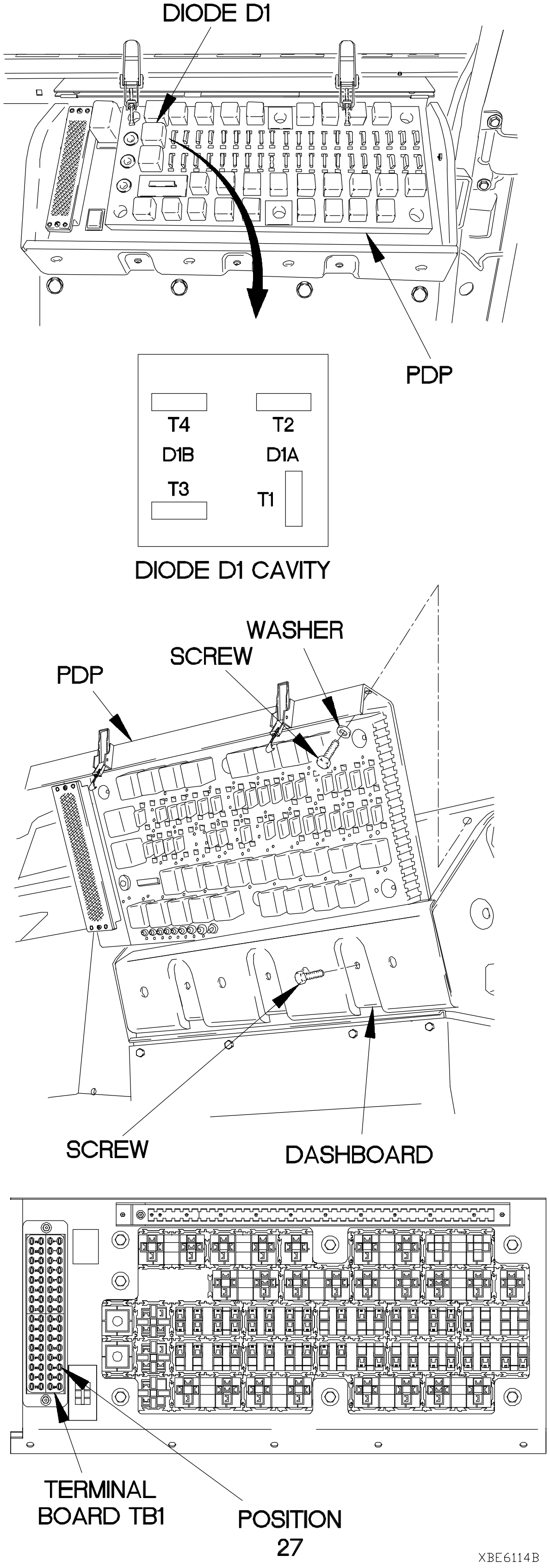
POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty diode D1A.



CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to terminal board TB1 position 27.
(6) Connect negative (-) probe of multimeter to diode D1A terminal 1 and note reading on multimeter.
(7) If continuity is not present, repair wire 22 from terminal board TB1 position 27 to diode D1A terminal 1 (para 2-45) 1 or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If continuity is present, replace diode D1A (para 7-9).
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Install diode D1A in PDP.
(12) Install PDP cover (para 16-2).



e62. ONE OR BOTH BLACKOUT STOPLIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Packing, Preformed (Item 191, Appendix G)

Personnel Required
(2)

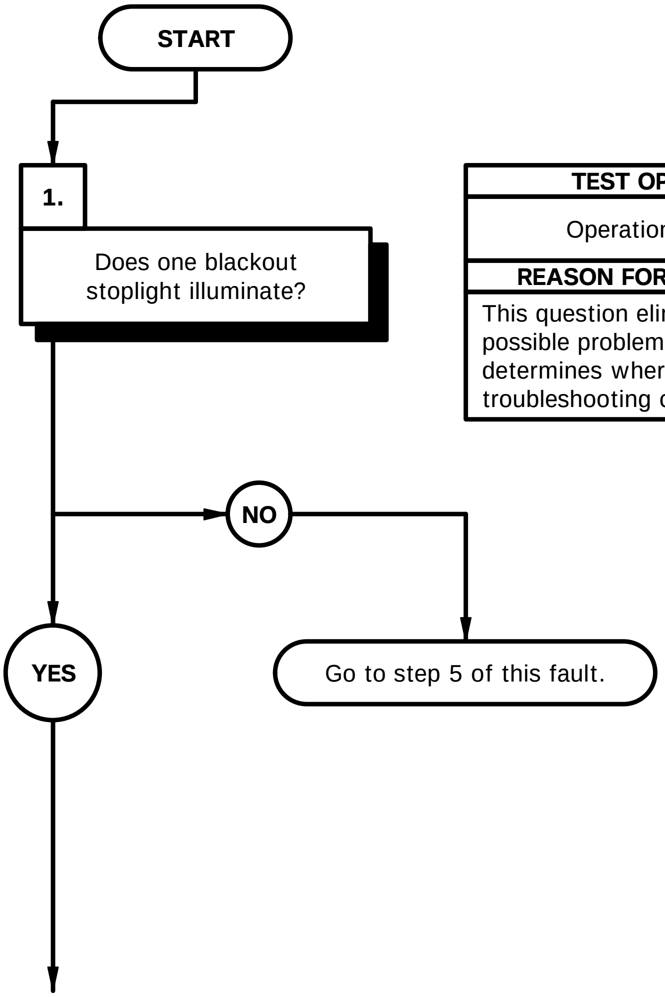
References
TM 9-4910-571-12&P

KNOWN INFO

Stoplights operate in normal mode.

POSSIBLE PROBLEMS

Faulty composite taillight assembly.
Faulty lamp.
Faulty rear lights cable assembly.
Faulty main light switch.
Faulty dashboard cable assembly.



TEST OPTIONS

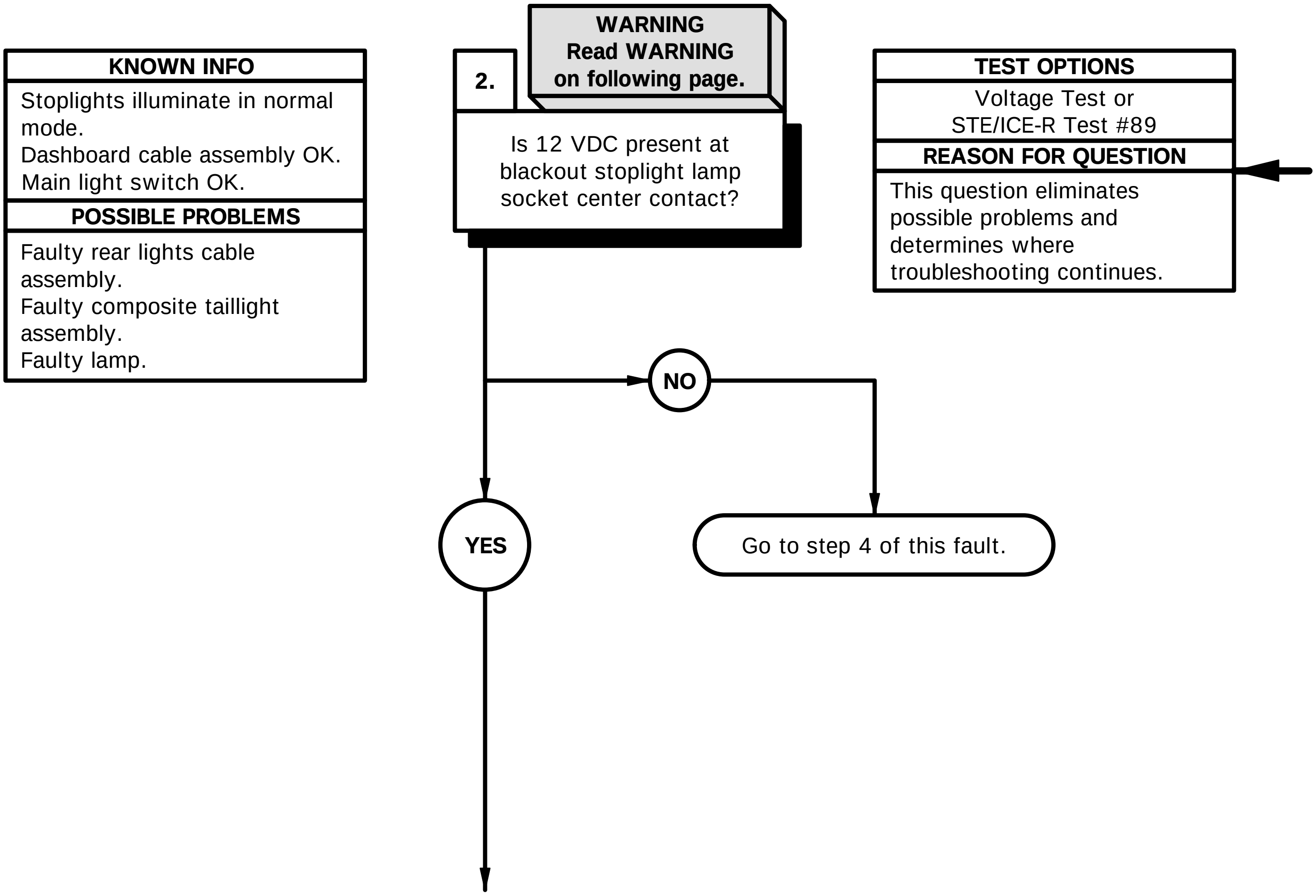
Operational Test

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

(1) Position master power switch to on (TM 9-2320-366-10-1).
(2) Position main light switch to BO DRIVE (TM 9-2320-366-10-1).
(3) Apply brakes and observe blackout stoplights.
(4) If both blackout stoplights do not illuminate, go to step 5 of this fault.
(5) Position main light switch to OFF (TM 9-2320-366-10-1).
(6) Position master power switch to off (TM 9-2320-366-10-1).

e62. ONE OR BOTH BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Stoplights illuminate in normal mode.
Dashboard cable assembly OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.
Faulty lamp.

WARNING
Read WARNING on following page.

2. Is 12 VDC present at blackout stoplight lamp socket center contact?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

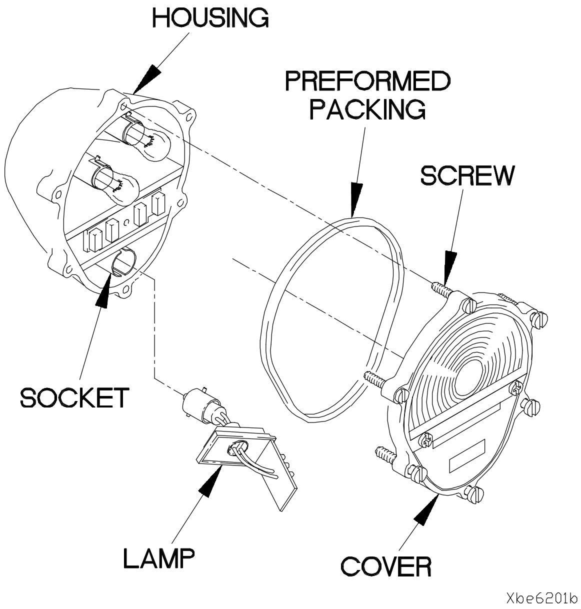
Go to step 4 of this fault.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Loosen six screws and remove cover and preformed packing from composite taillight assembly housing. Discard preformed packing.
(2) Remove lamp from socket.
(3) Set multimeter to volts DC.
(4) Connect positive (+) probe of multimeter to blackout stoplight lamp socket center contact.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1).
(7) Position main light switch to BO DRIVE (TM 9-2320-366-10-1).
(8) Apply brakes and note reading on multimeter.
(9) If 12 VDC is not present, go to step 4 of this fault.
(10) Position master power switch to off (TM 9-2320-366-10-1).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).



e62. ONE OR BOTH BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Stoplights illuminate in normal mode.
Dashboard cable assembly OK.
Main light switch OK.
Rear lights cable assembly OK.

POSSIBLE PROBLEMS

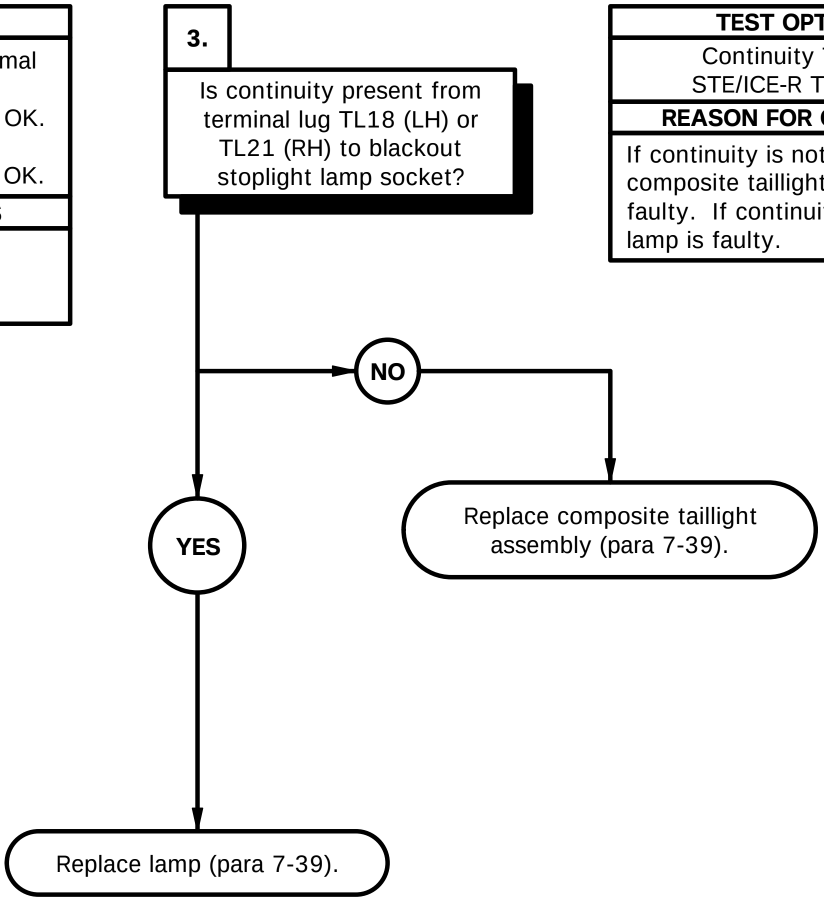
Faulty composite taillight assembly.
Faulty lamp.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

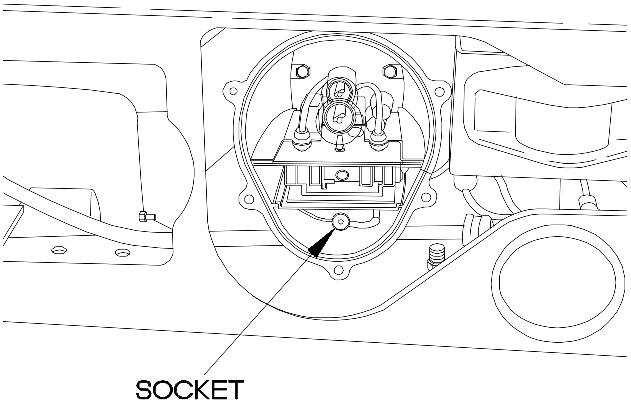
If continuity is not present, composite taillight assembly is faulty. If continuity is present, lamp is faulty.



3. Is continuity present from terminal lug TL18 (LH) or TL21 (RH) to blackout stoplight lamp socket?

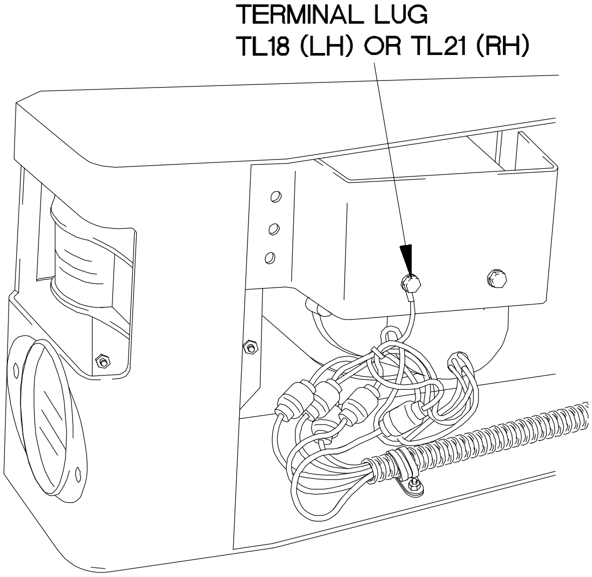
NO: Replace composite taillight assembly (para 7-39).

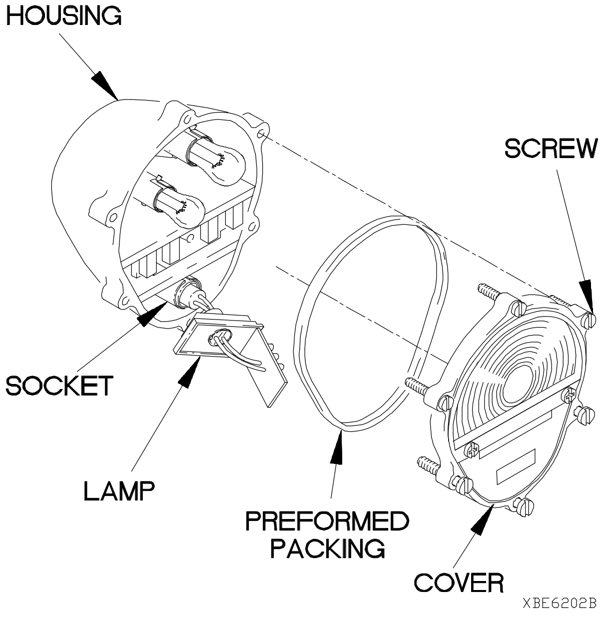
YES: Replace lamp (para 7-39).



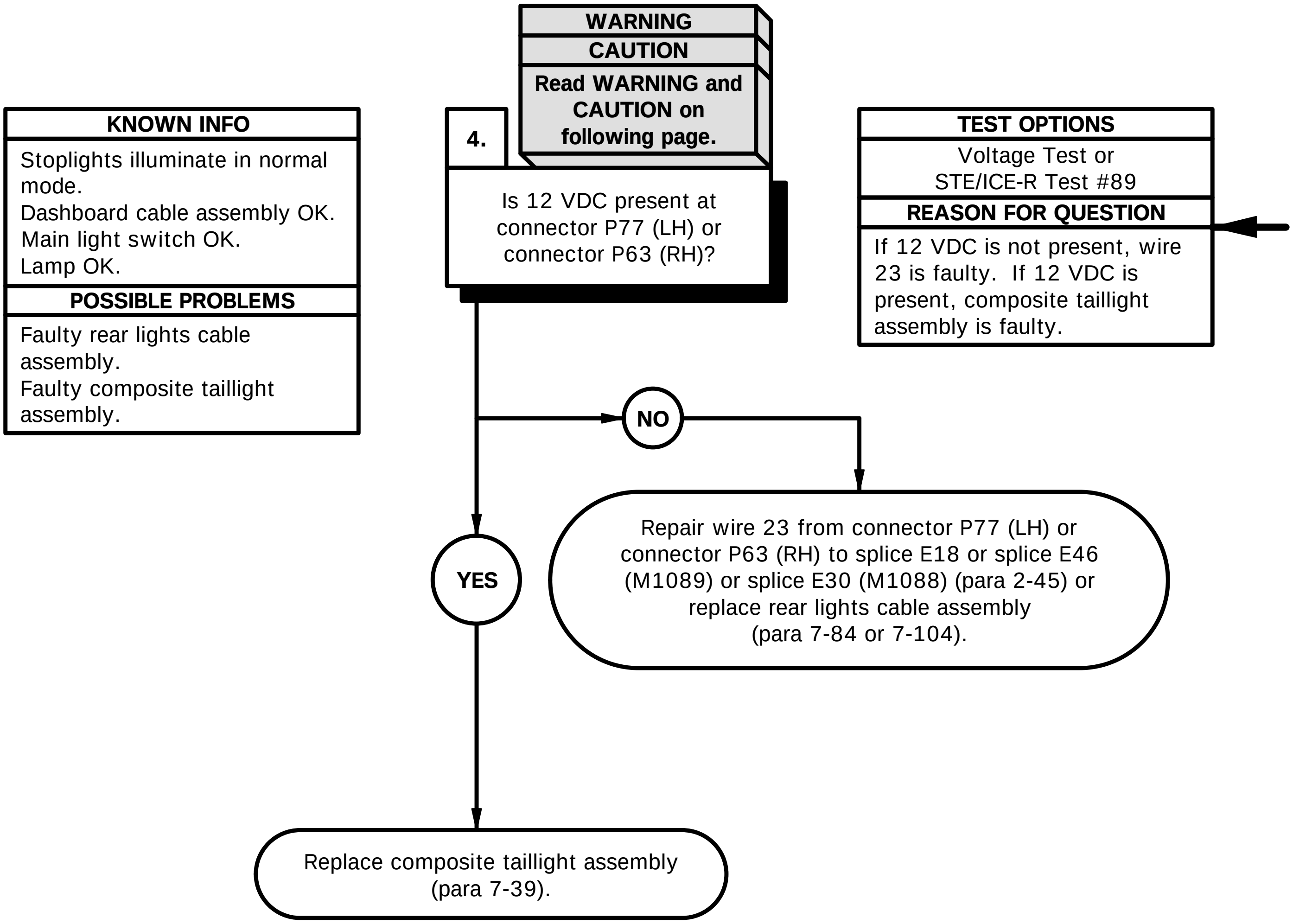
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL18 (LH) or TL21 (RH).
(3) Connect negative (-) probe of multimeter to blackout stoplight lamp socket and note reading on multimeter.
(4) If continuity is not present, replace composite taillight assembly (para 7-39).
(5) If continuity is present, replace lamp (para 7-39).
(6) Install lamp in socket.
(7) Install preformed packing and cover on housing with six screws.





e62. ONE OR BOTH BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Stoplights illuminate in normal mode.
Dashboard cable assembly OK.
Main light switch OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty composite taillight assembly.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

4. Is 12 VDC present at connector P77 (LH) or connector P63 (RH)?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 23 is faulty. If 12 VDC is present, composite taillight assembly is faulty.

NO: Repair wire 23 from connector P77 (LH) or connector P63 (RH) to splice E18 or splice E46 (M1089) or splice E30 (M1088) (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

YES: Replace composite taillight assembly (para 7-39).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

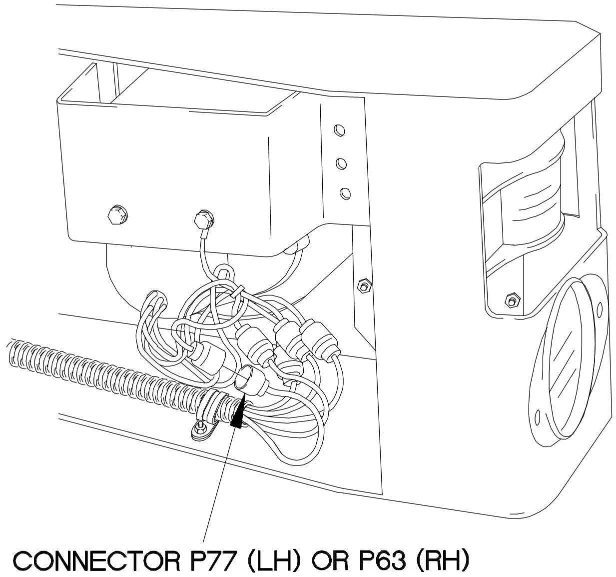
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

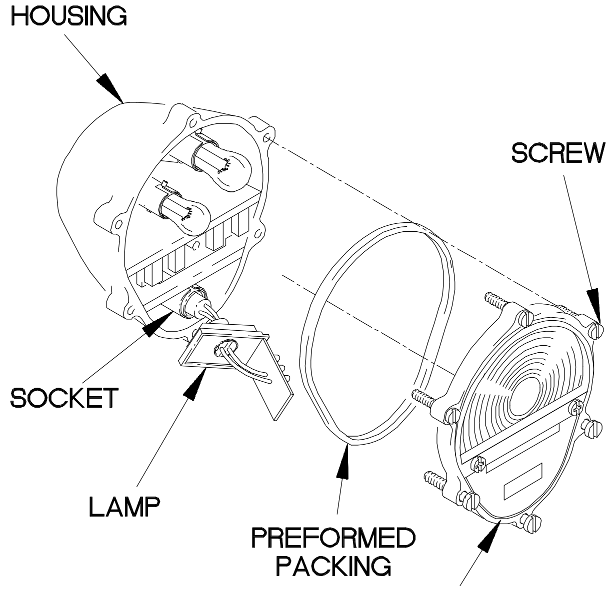
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Disconnect connector P77 (LH) or connector P63 (RH) from blackout stoplight connector.
(3) Connect positive (+) probe of multimeter to connector P77 or connector P63.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position main light switch to BO DRIVE (TM 9-2320-366-10-1).
(7) Apply brakes and note reading on multimeter.
(8) If 12 VDC is not present, repair wire 23 from connector P77 (LH) or connector P63 (RH) to splice E18 or splice E46 (M1089) or splice E30 (M1088) (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(9) If 12 VDC is present, replace composite taillight assembly (para 7-39).
(10) Position master power switch to off (TM 9-2320-366-10-1).
(11) Position main light switch to OFF (TM 9-2320-366-10-1).
(12) Install lamp in socket.
(13) Install preformed packing and cover on housing with six screws.





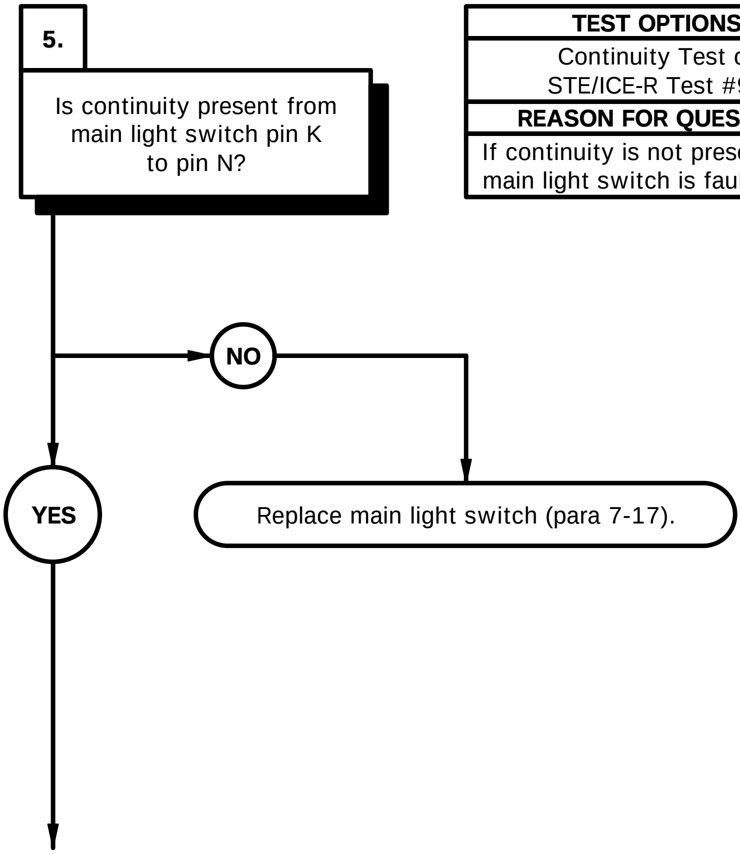
e62. ONE OR BOTH BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Stoplights illuminate in normal mode.
Composite taillight assembly OK.
Lamp OK.

POSSIBLE PROBLEMS

Faulty main light switch.
Faulty dashboard cable assembly.
Faulty rear lights cable assembly.



5.

Is continuity present from main light switch pin K to pin N?

Replace main light switch (para 7-17).

TEST OPTIONS

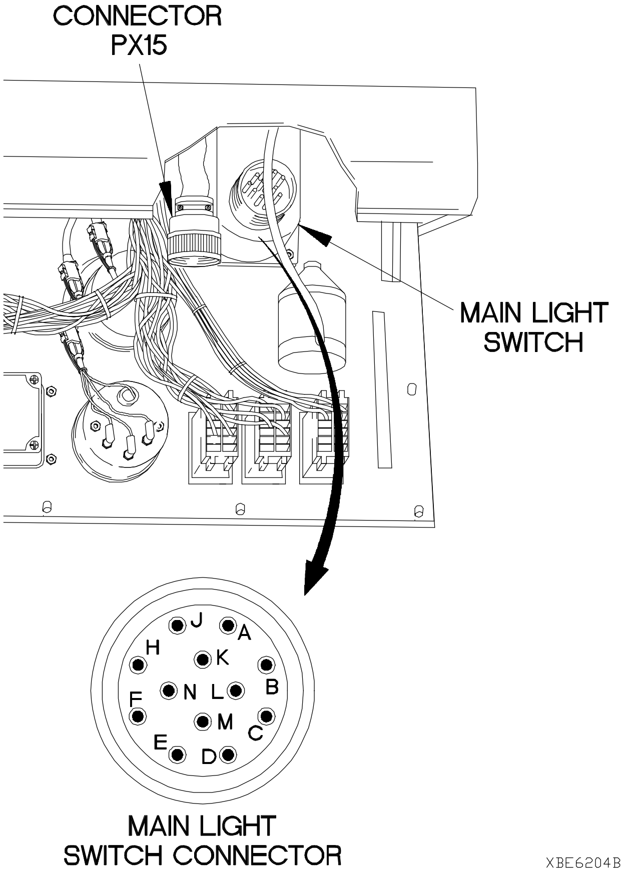
Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

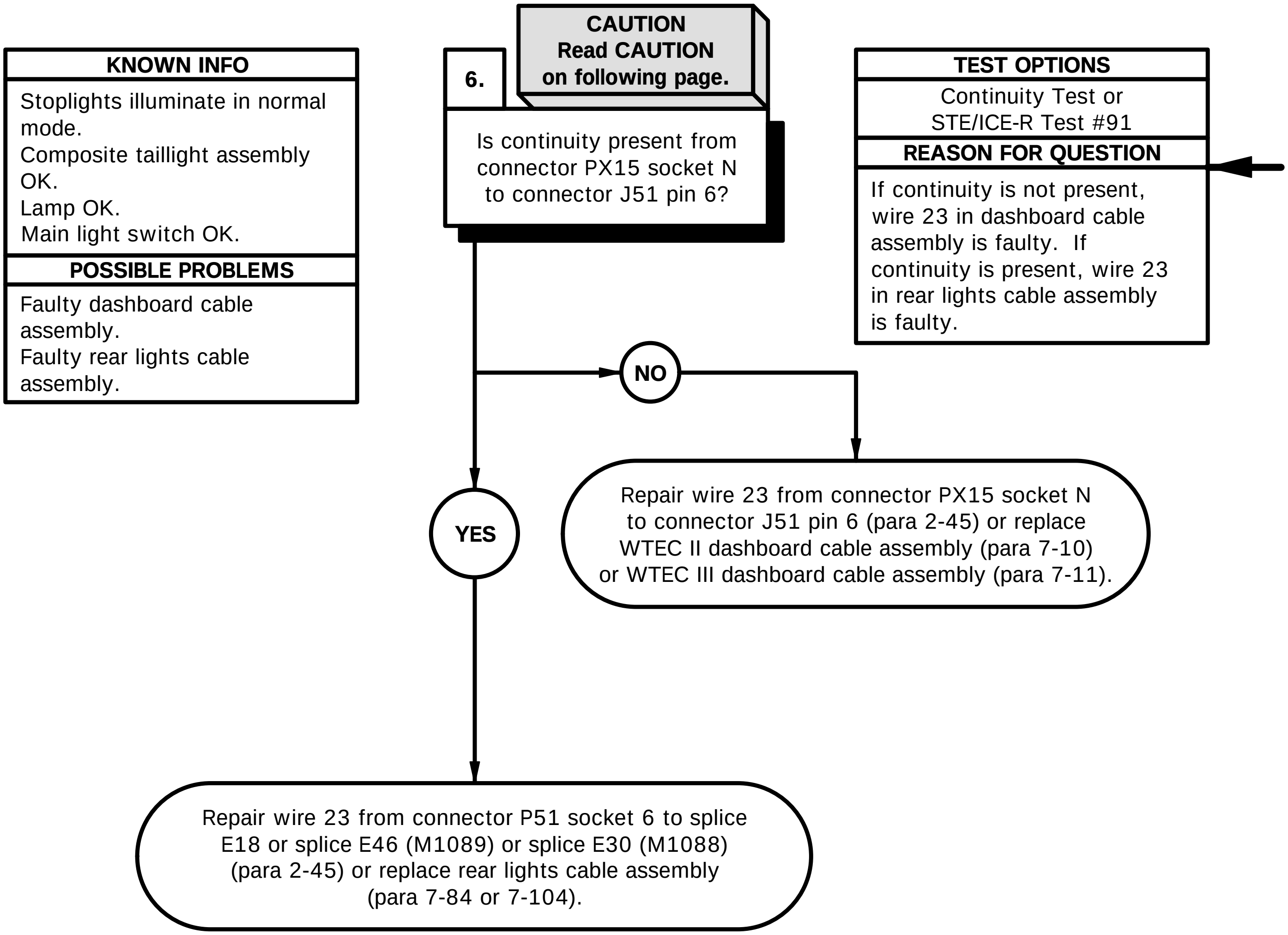
If continuity is not present, main light switch is faulty.

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX15 from main light switch.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to main light switch pin K.
(5) Connect negative (-) probe of multimeter to main light switch pin N.
(6) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace main light switch (para 7-17).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



e62. ONE OR BOTH BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Stoplights illuminate in normal mode.
Composite taillight assembly OK.
Lamp OK.
Main light switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.

CAUTION
Read CAUTION on following page.

6.

Is continuity present from connector PX15 socket N to connector J51 pin 6?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 23 in dashboard cable assembly is faulty. If continuity is present, wire 23 in rear lights cable assembly is faulty.

Repair wire 23 from connector PX15 socket N to connector J51 pin 6 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Repair wire 23 from connector P51 socket 6 to splice E18 or splice E46 (M1089) or splice E30 (M1088) (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

CAUTION

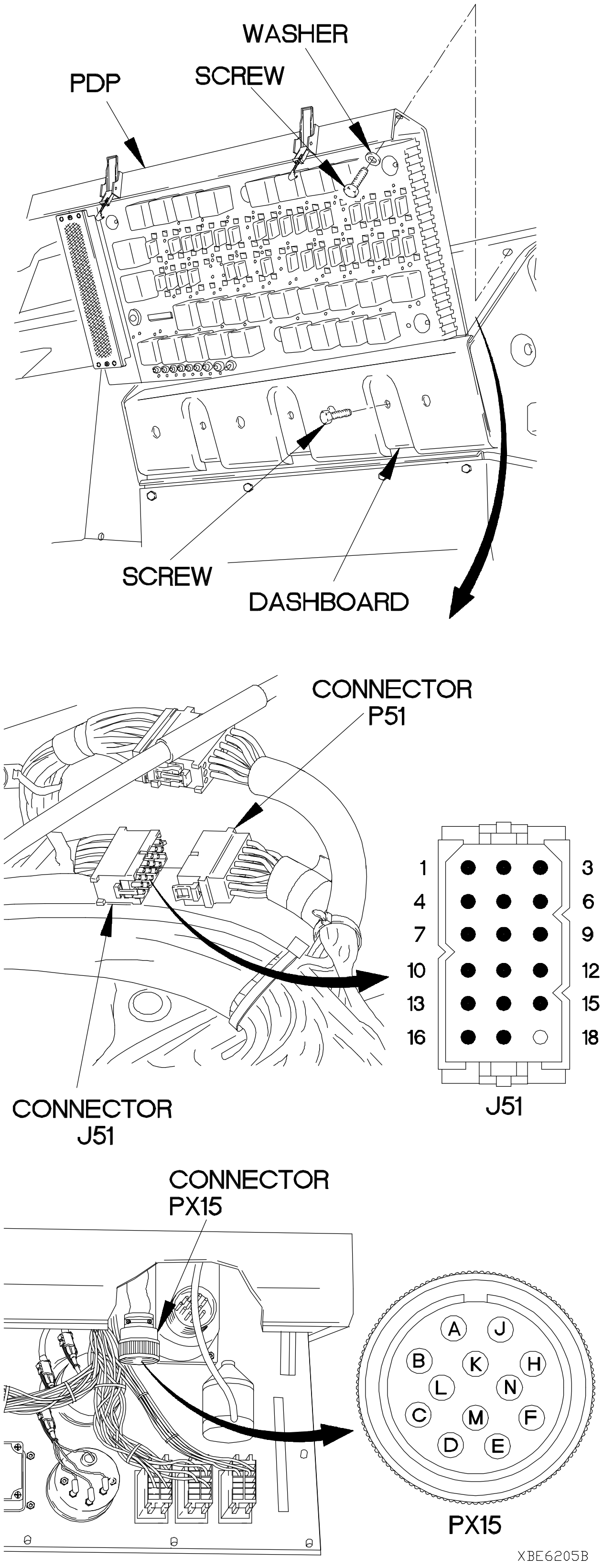
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J51 from connector P51.
(6) Set multimeter to ohms.
(7) Connect positive (+) probe of multimeter to connector PX15 socket N.
(8) Connect negative (-) probe of multimeter to connector J51 pin 6 and note reading on multimeter.
(9) If continuity is not present, repair wire 23 from connector PX15 socket N to connector J51 pin 6 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) If continuity is present, repair wire 23 from connector P51socket 6 to splice E18 or splice E46 (M1089) or splice E30 (M1088) (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(11) Connect connector PX15 to main light switch.
(12) Install instrument panel assembly (para 7-15).
(13) Connect connector J51 to connector P51.
(14) Install PDP on dashboard with three screws.
(15) Install three washers and screws in PDP.
(16) Install PDP cover (para 16-2).



e63. STOPLIGHTS AND BLACKOUT STOPLIGHTS DO NOT OPERATE

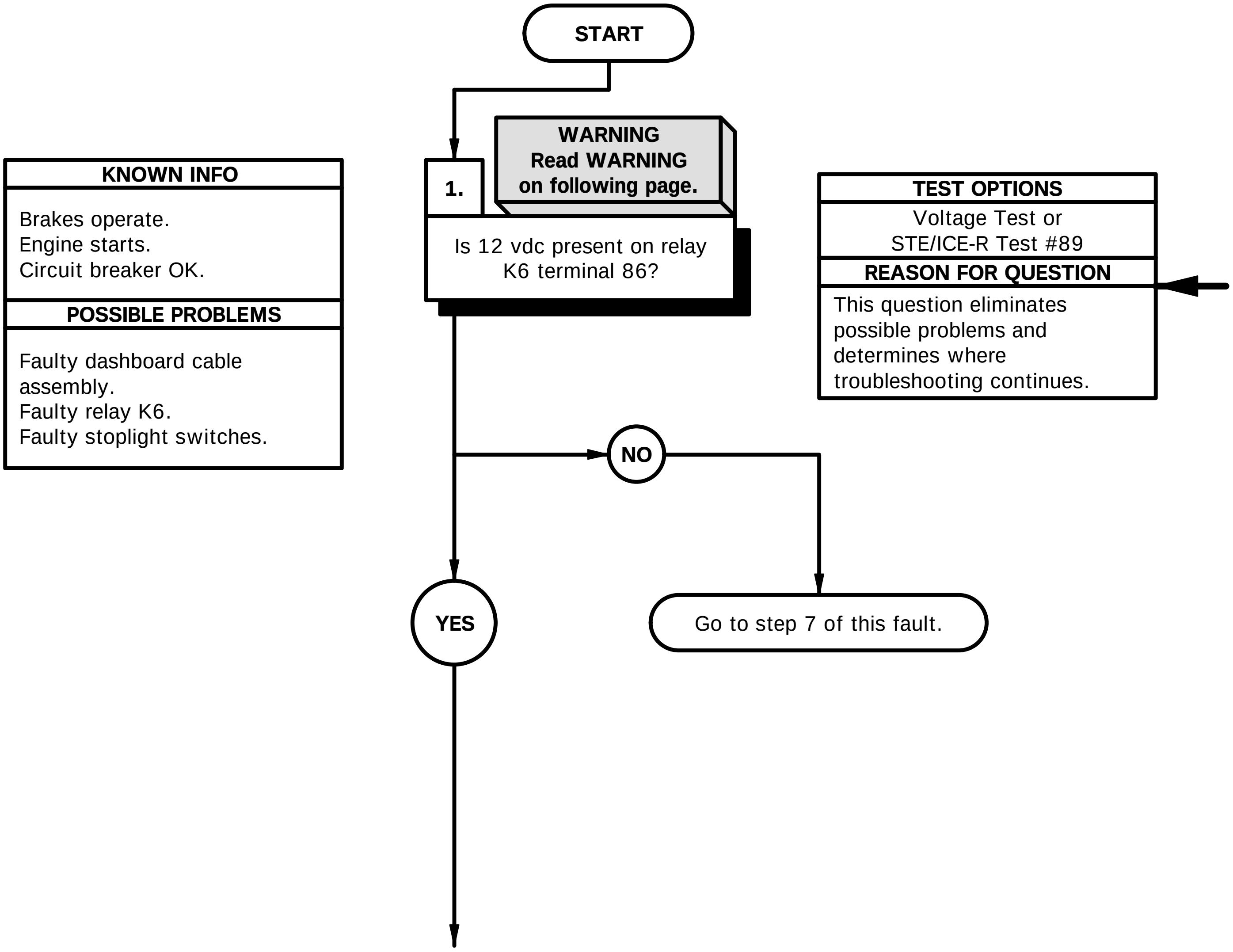
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



WARNING
Read WARNING on following page.

Is 12 vdc present on relay K6 terminal 86?

Go to step 7 of this fault.

KNOWN INFO

Brakes operate.
Engine starts.
Circuit breaker OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K6.
Faulty stoplight switches.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).

(2) Remove relay K6 from PDP.

(3) Set multimeter to volts dc.

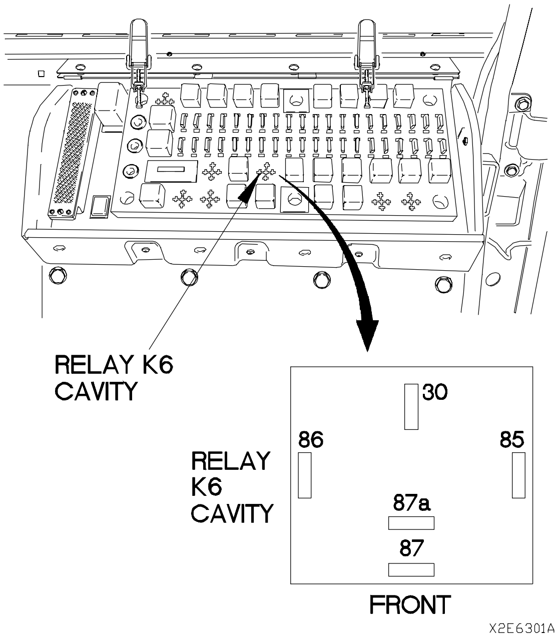
(4) Connect positive (+) probe of multimeter to PDP, terminal 86, where relay K6 was removed.

(5) Connect negative (-) probe of multimeter to ground.

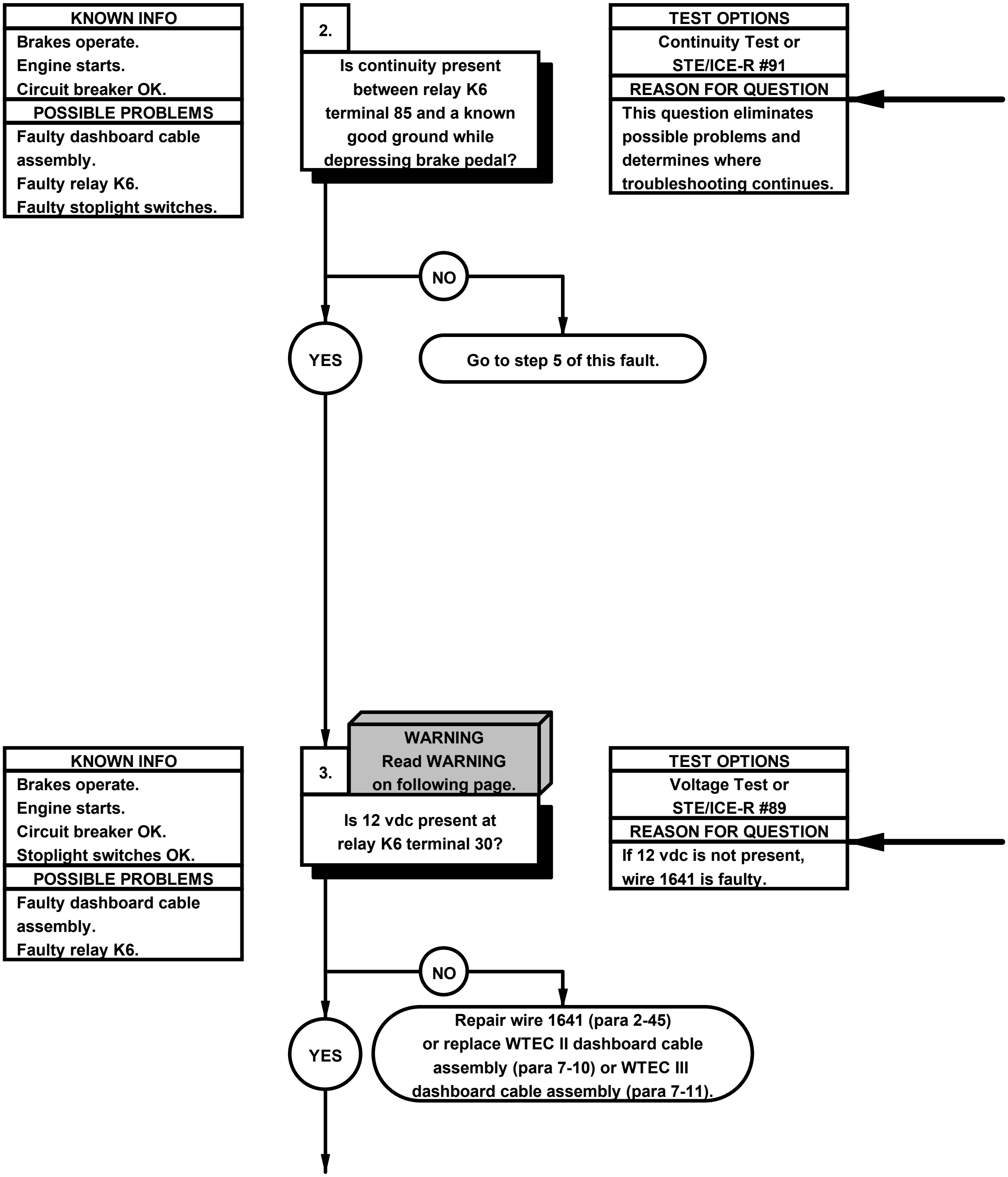
(6) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.

(7) If 12 vdc is not present, go to step 7 of this fault.

(8) Position master power switch to off (TM 9-2320-366-10-1).



e63. STOPLIGHTS AND BLACKOUT STOPLIGHTS DO NOT OPERATE (CONT)



KNOWN INFO

Brakes operate.
Engine starts.
Circuit breaker OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K6.
Faulty stoplight switches.

2. Is continuity present between relay K6 terminal 85 and a known good ground while depressing brake pedal?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 5 of this fault.

YES:

KNOWN INFO

Brakes operate.
Engine starts.
Circuit breaker OK.
Stoplight switches OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K6.

3. WARNING
Read WARNING on following page.

Is 12 vdc present at relay K6 terminal 30?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 1641 is faulty.

NO: Repair wire 1641 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES:

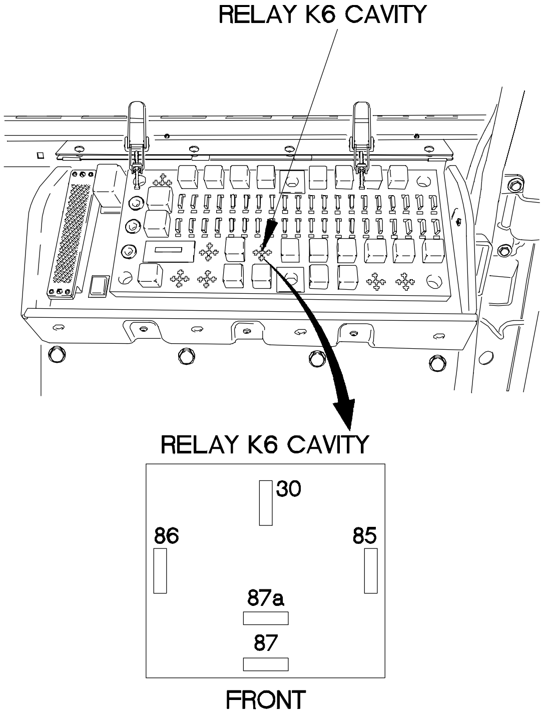
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PDP, terminal 85, where relay K6 was removed.
(3) Connect negative (-) probe of multimeter to ground.

NOTE

Full system air pressure is required to actuate stoplights.

(4) Apply brakes (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If continuity is not present, go to step 5 of this fault.



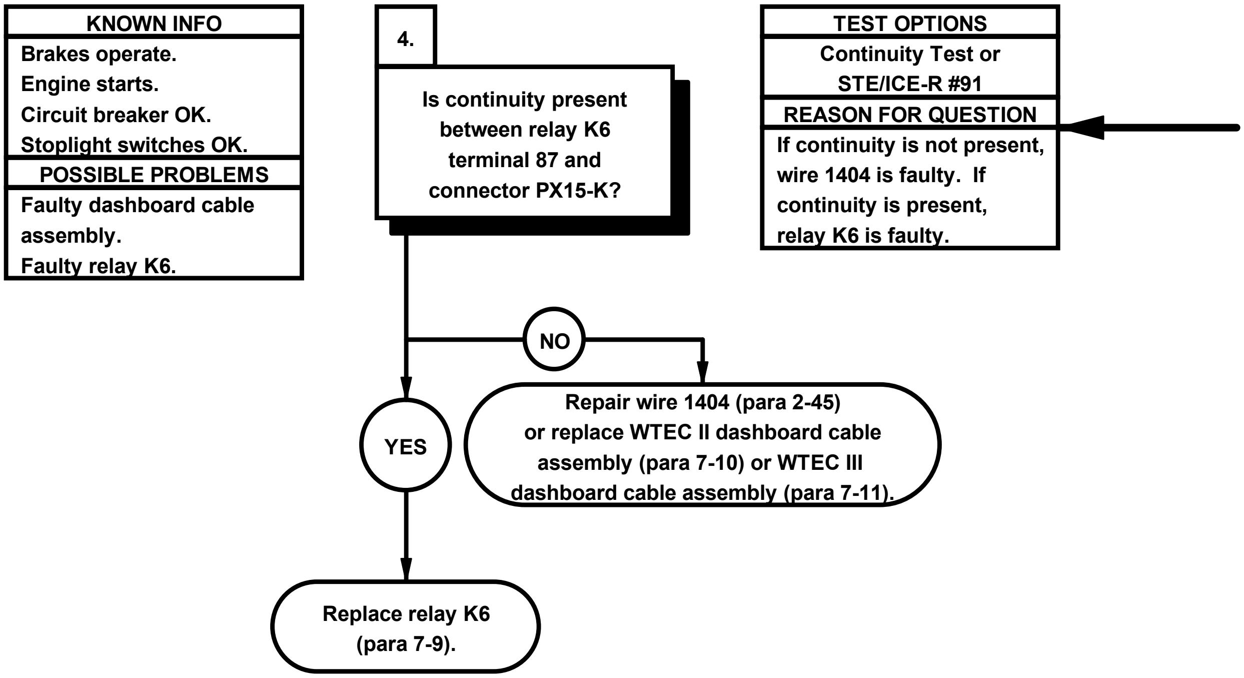
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to PDP, terminal 30, where relay K6 was removed.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 vdc is not present, repair wire 1641 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position master power switch to off (TM 9-2320-366-10-1).

e63. STOPLIGHTS AND BLACKOUT STOPLIGHTS DO NOT OPERATE (CONT)



KNOWN INFO

Brakes operate.
Engine starts.
Circuit breaker OK.
Stoplight switches OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K6.

4.

Is continuity present between relay K6 terminal 87 and connector PX15-K?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

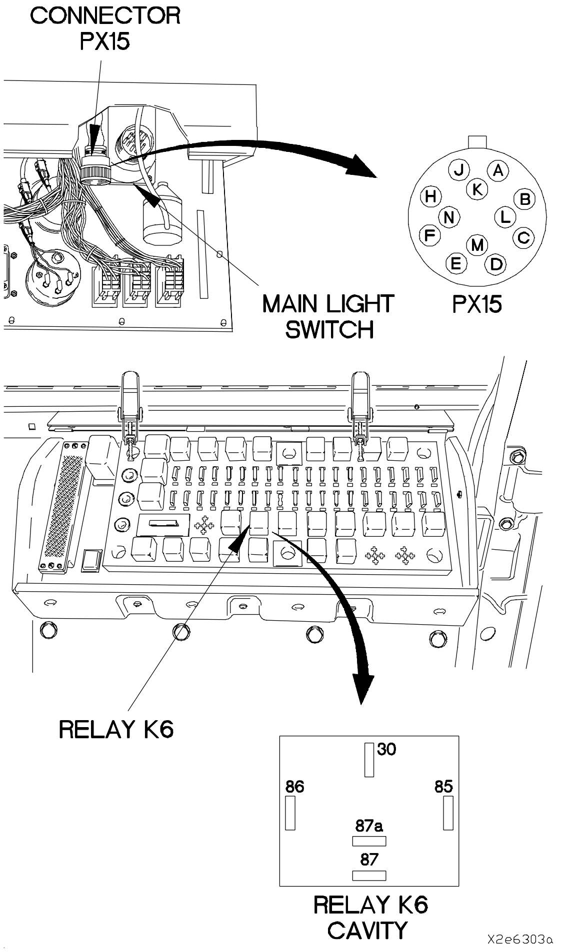
If continuity is not present, wire 1404 is faulty. If continuity is present, relay K6 is faulty.

NO

Repair wire 1404 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

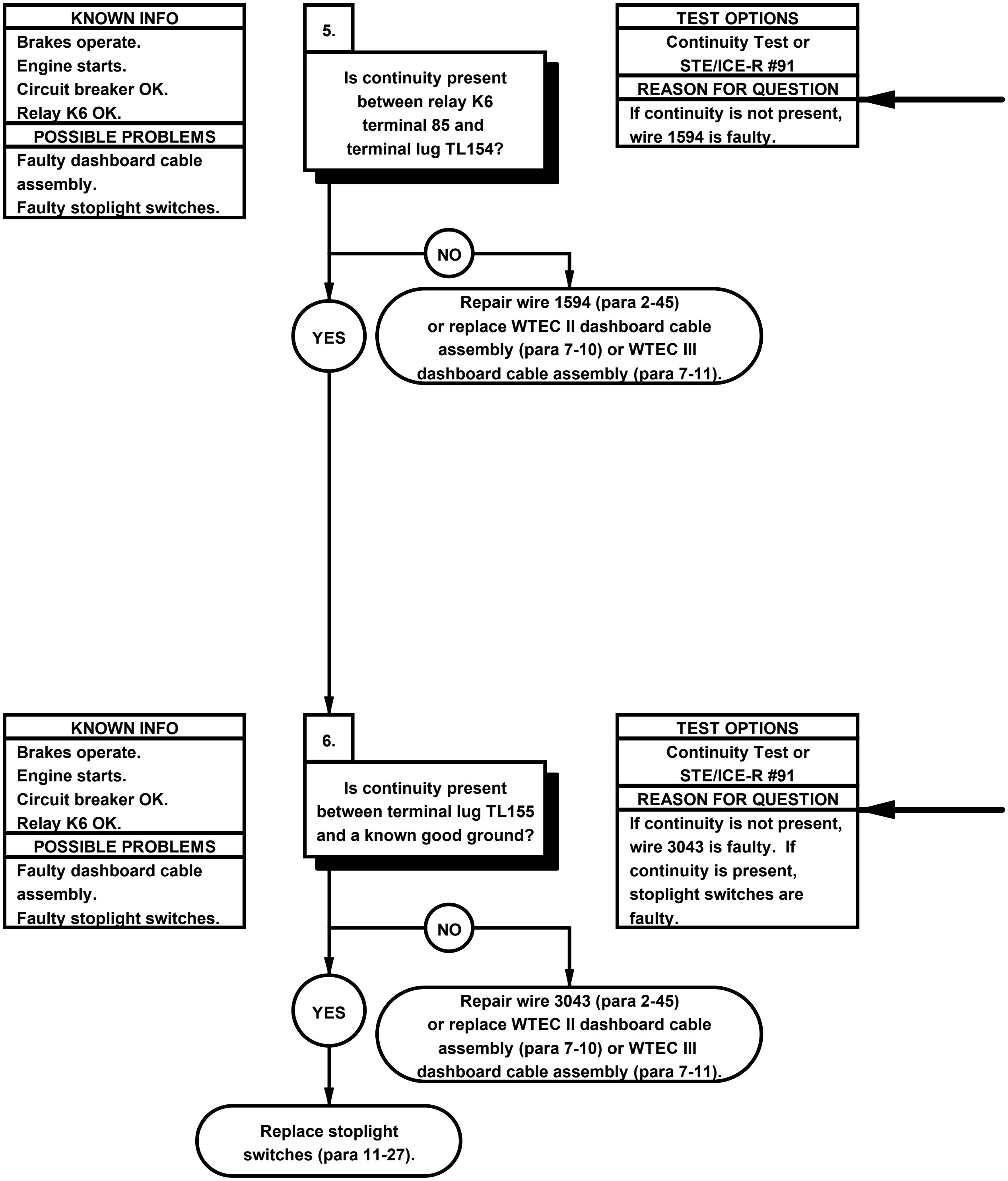
Replace relay K6 (para 7-9).



CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector PX15 from main light switch.
(3) Connect positive (+) probe of multimeter to connector PX15-K.
(4) Connect negative (-) probe of multimeter to PDP, terminal 87, where relay K6 was removed, and note reading on multimeter.
(5) If continuity is not present, repair wire 1404 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace relay K6 (para 7-9).
(7) Install relay K6 in PDP.
(8) Install PDP cover (para 16-2).
(9) Connect connector PX15 to main light switch.
(10) Install instrument panel assembly (para 7-15).

e63. STOPLIGHTS AND BLACKOUT STOPLIGHTS DO NOT OPERATE (CONT)



KNOWN INFO

Brakes operate.
Engine starts.
Circuit breaker OK.
Relay K6 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty stoplight switches.

5. Is continuity present between relay K6 terminal 85 and terminal lug TL154?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1594 is faulty.

Repair wire 1594 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO

Brakes operate.
Engine starts.
Circuit breaker OK.
Relay K6 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty stoplight switches.

6. Is continuity present between terminal lug TL155 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

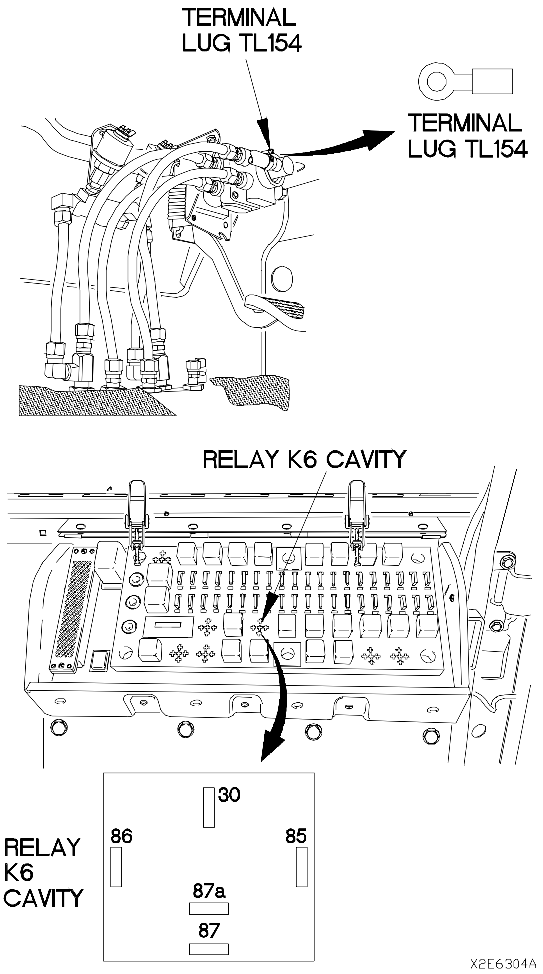
If continuity is not present, wire 3043 is faulty. If continuity is present, stoplight switches are faulty.

Repair wire 3043 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace stoplight switches (para 11-27).

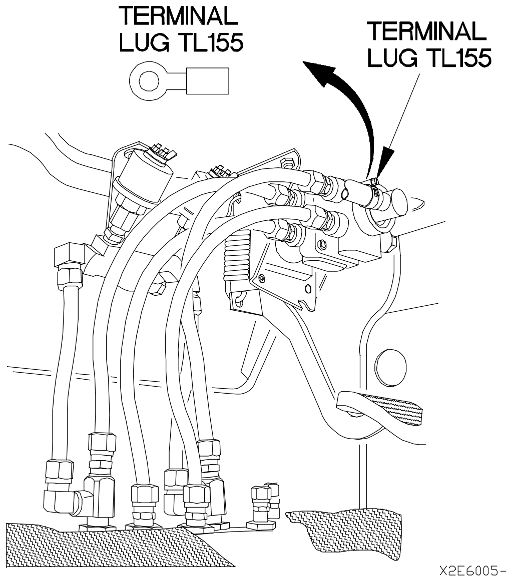
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL154.
(3) Connect negative (-) probe of multimeter to PDP, terminal 85, where relay K6 was removed, and note reading on multimeter.
(4) If continuity is not present, repair wire 1594 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) Install relay K6 in PDP.
(6) Install PDP cover (para 16-2).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL155.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3043 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace both stoplight switches (para 11-27).



e63. STOPLIGHTS AND BLACKOUT STOPLIGHTS DO NOT OPERATE (CONT)

KNOWN INFO

Brakes operate.
Engine starts.
Circuit breaker OK.
Relay K6 OK.
Stoplight switches OK.

POSSIBLE PROBLEMS

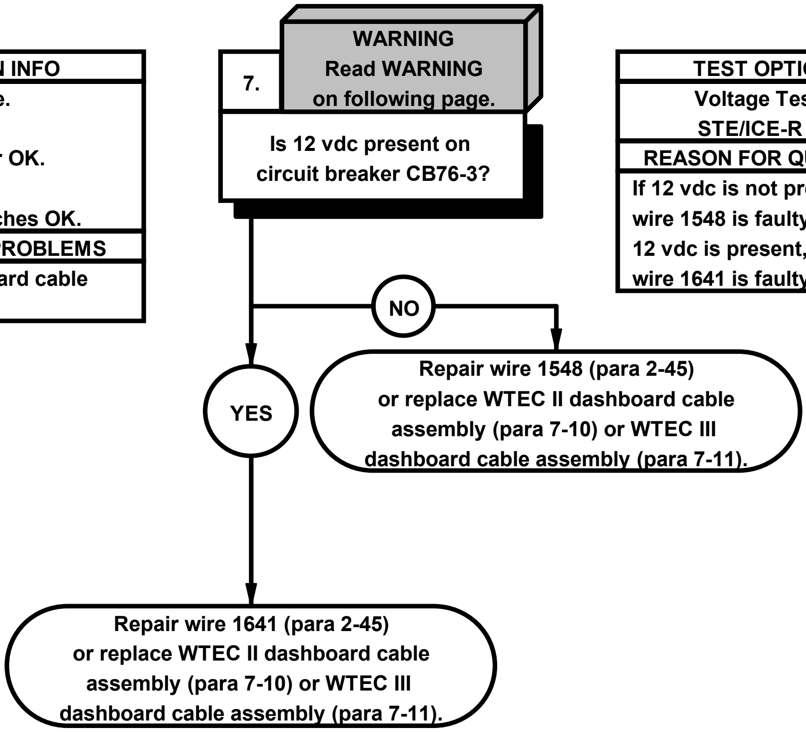
Faulty dashboard cable assembly.

TEST OPTIONS

Voltage Test or
STE/ICE-R #89

REASON FOR QUESTION

If 12 vdc is not present, wire 1548 is faulty. If 12 vdc is present, wire 1641 is faulty.

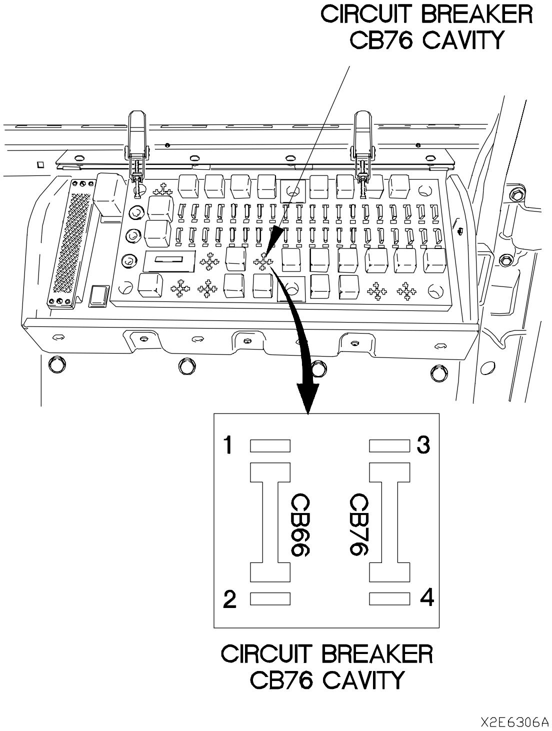


WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove circuit breaker CB76 from PDP.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to PDP, terminal 3, where circuit breaker CB76 was removed.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 vdc is not present, repair wire 1548 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If 12 vdc is present, repair wire 1641 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position master power switch to off (TM 9-2320-366-10-1).
(9) Install circuit breaker CB76 in PDP.
(10) Install relay K6 in PDP.
(11) Install PDP cover (para 16-2).



e64. STOPLIGHTS DO NOT OPERATE WHEN M1088 TRAILER BRAKES ARE APPLIED

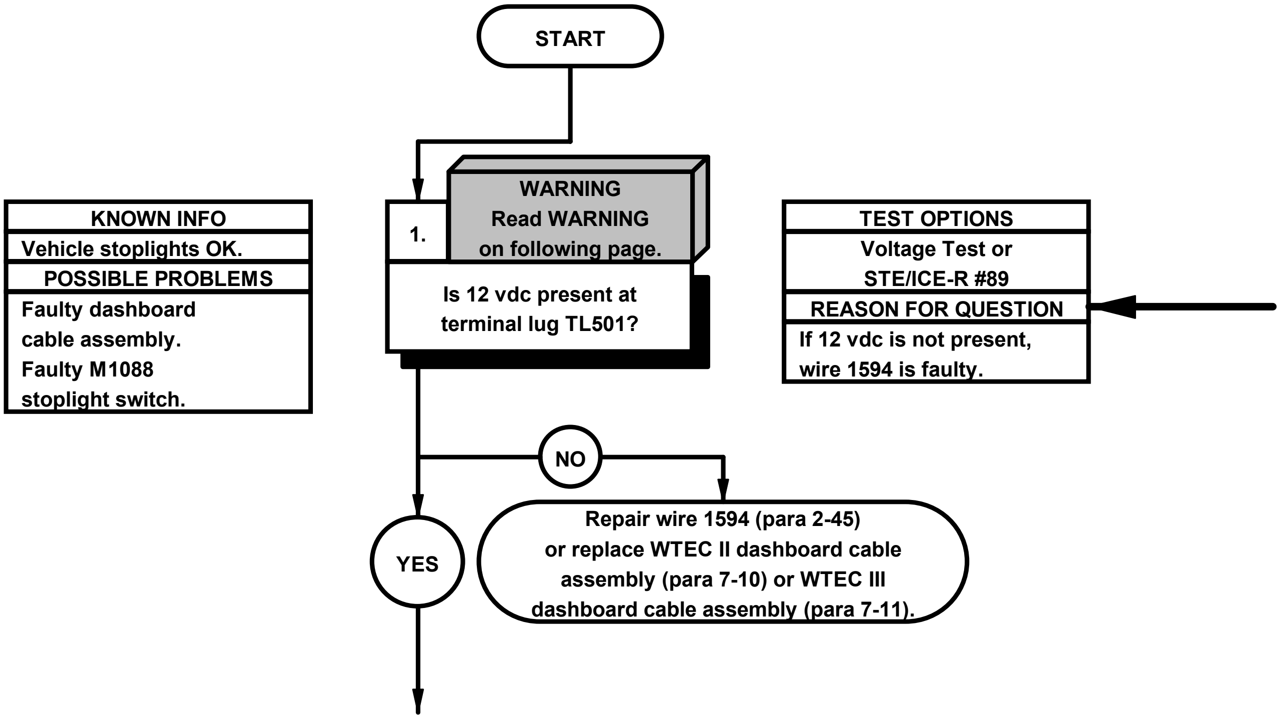
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P

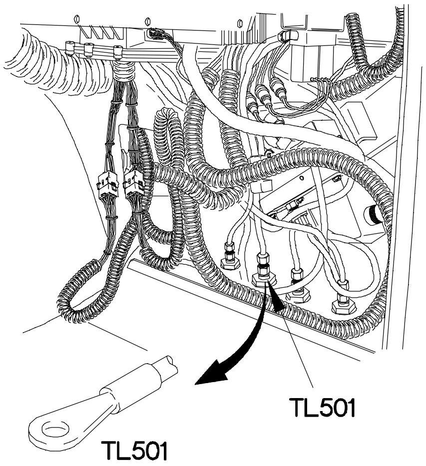


WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove kick panel (para 16-3).
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to terminal lug TL501.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Apply trailer brakes (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, repair wire 1594 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position master power switch to off (TM 9-2320-366-10-1).



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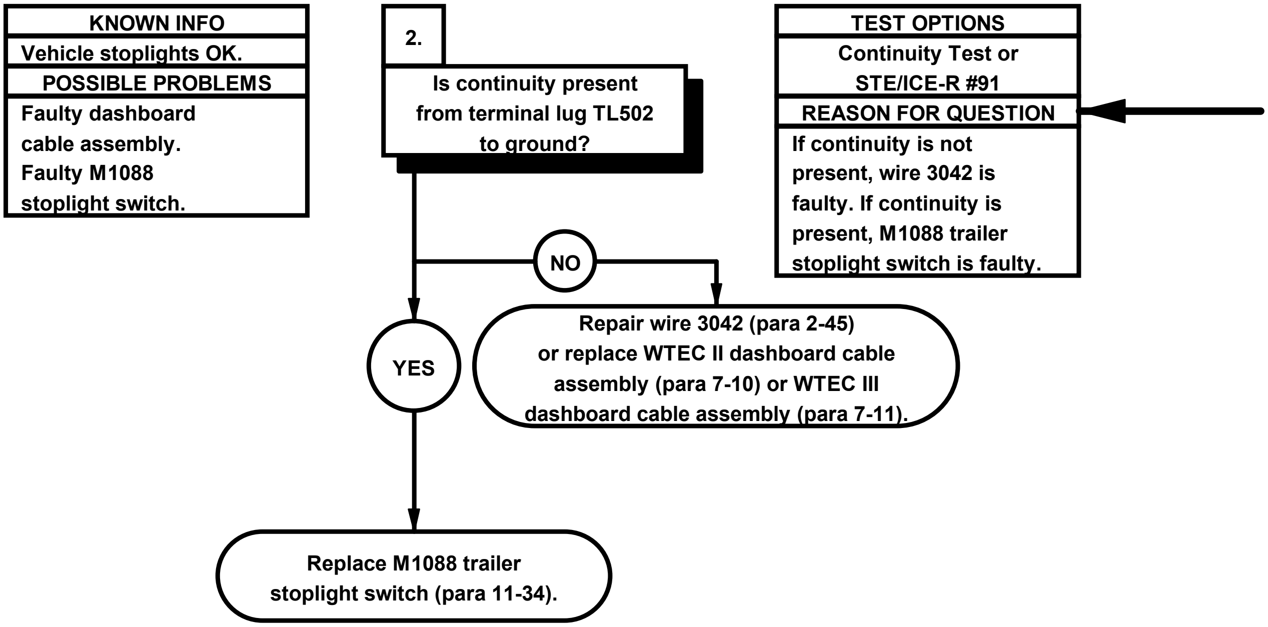
e64. STOPLIGHTS DO NOT OPERATE WHEN M1088 TRAILER BRAKES ARE APPLIED (CONT)



KNOWN INFO

Vehicle stoplights OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty M1088 stoplight switch.

2.

Is continuity present from terminal lug TL502 to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

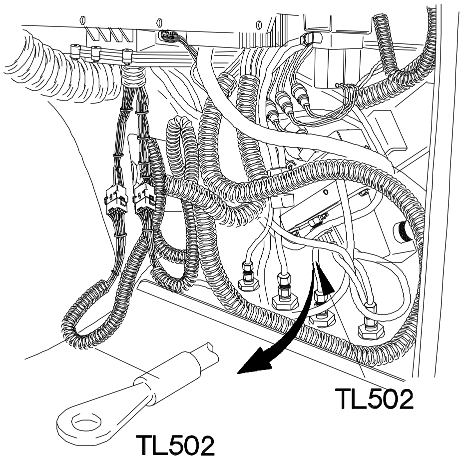
If continuity is not present, wire 3042 is faulty. If continuity is present, M1088 trailer stoplight switch is faulty.

Repair wire 3042 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace M1088 trailer stoplight switch (para 11-34).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL502.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3042 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If contintuity is present, replace M1088 trailer stoplight switch (para 11-34).
(6) Install kick panel (para 16-3).



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e65. TRAILER MARKER/TAILLIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

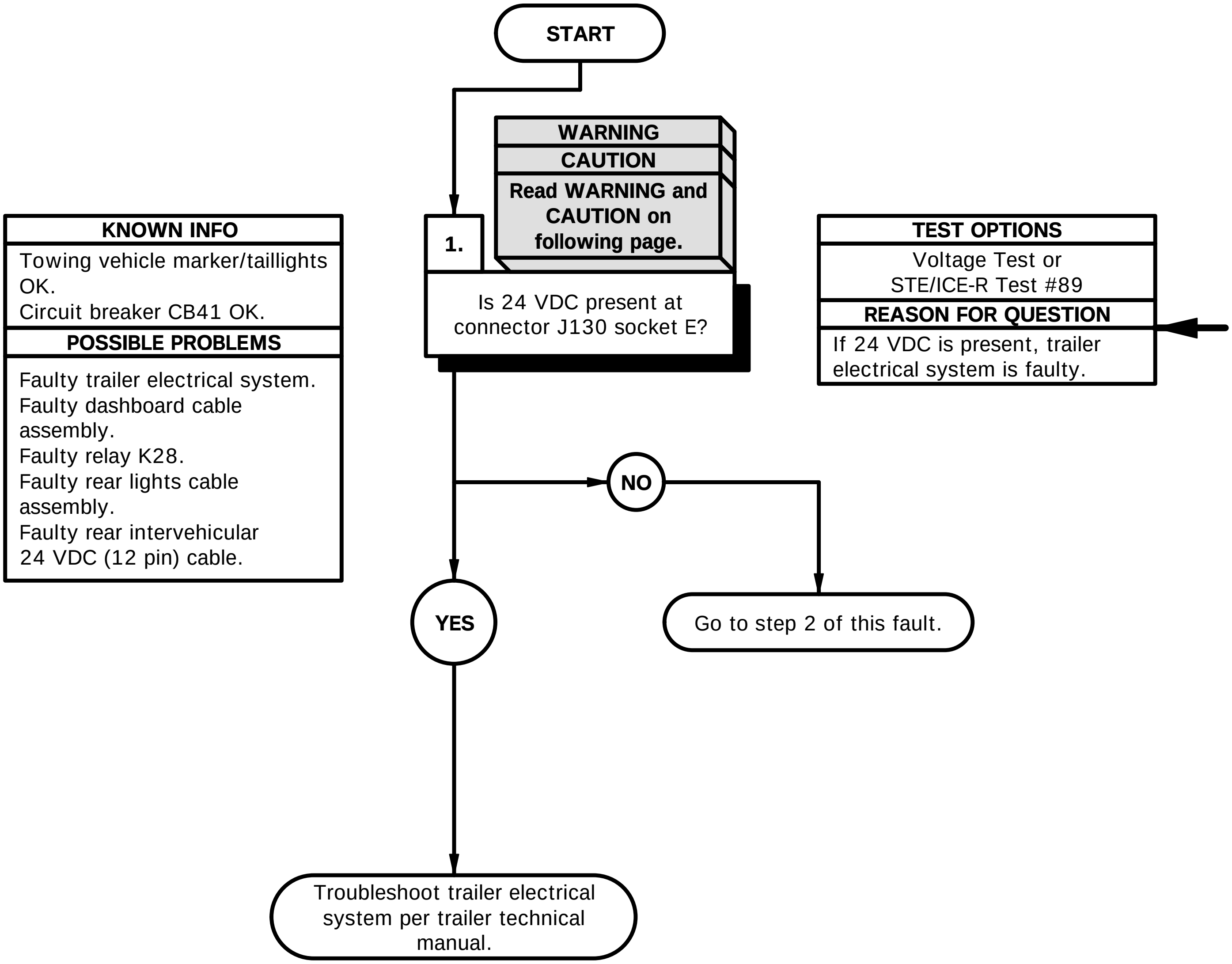
Material/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB41 prior to beginning this task.



START

1.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

Is 24 VDC present at connector J130 socket E?

KNOWN INFO

Towing vehicle marker/taillights OK.
Circuit breaker CB41 OK.

POSSIBLE PROBLEMS

Faulty trailer electrical system.
Faulty dashboard cable assembly.
Faulty relay K28.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is present, trailer electrical system is faulty.

NO

Go to step 2 of this fault.

YES

Troubleshoot trailer electrical system per trailer technical manual.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

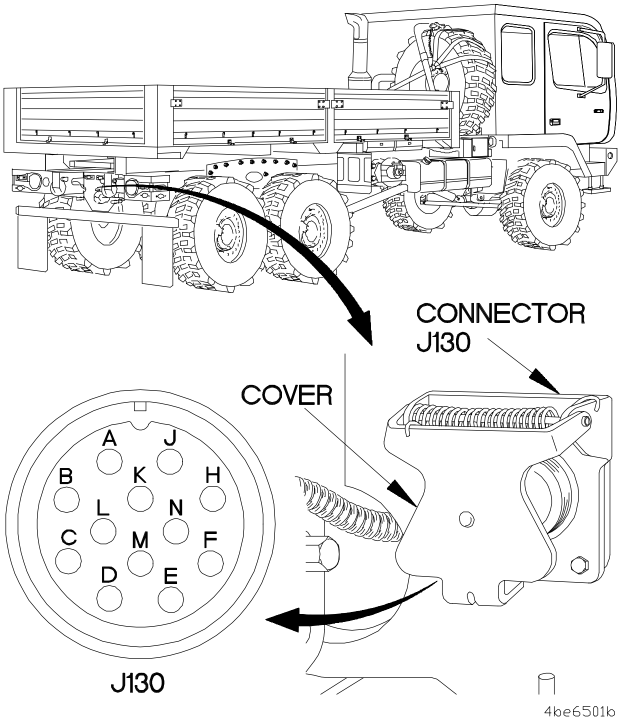
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

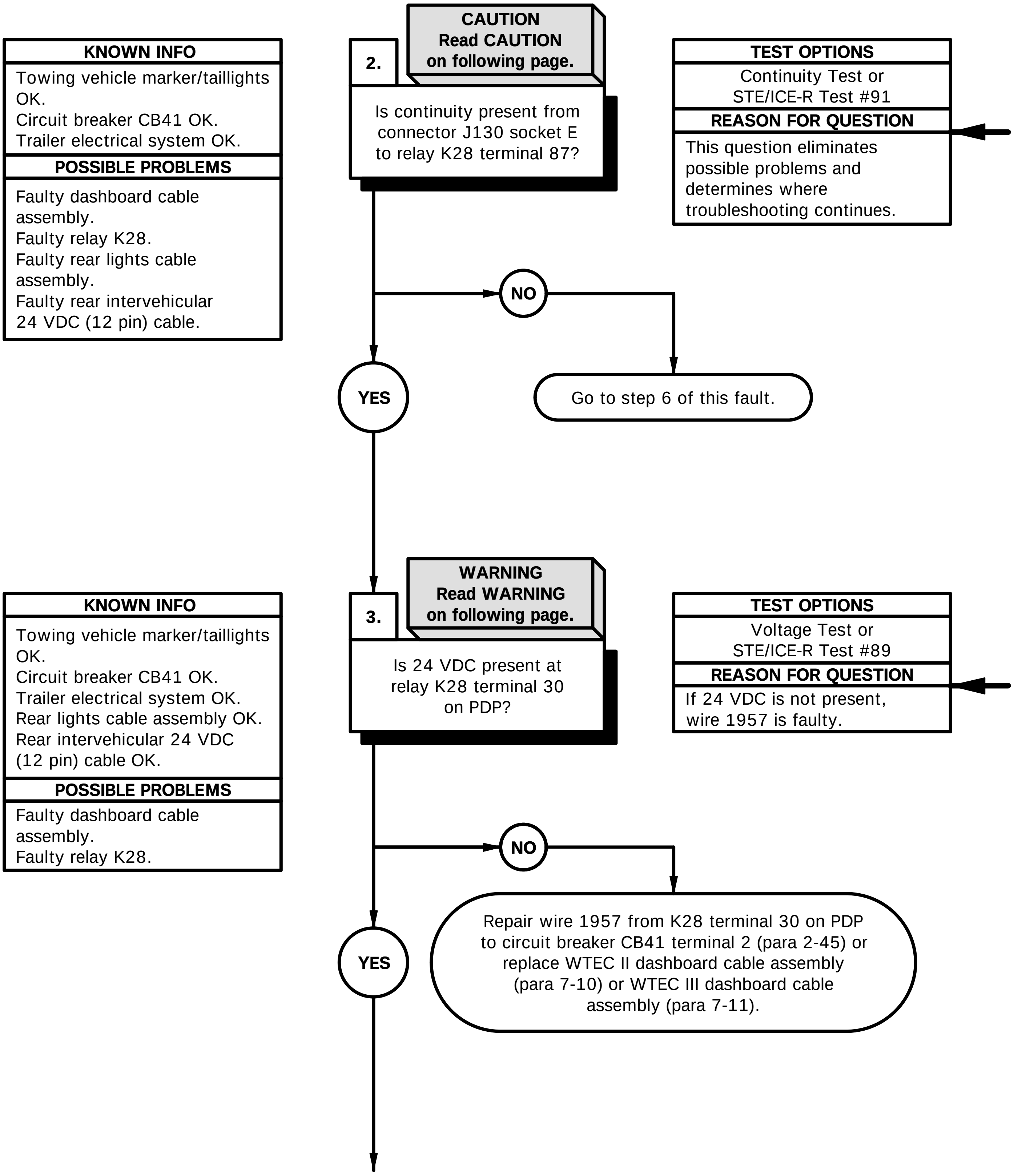
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Lift cover on connector J130 intervehicular 24 VDC connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector J130 socket E.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 24 VDC is not present, go to step 2 of this fault.
(7) If 24 VDC is present, troubleshoot trailer electrical system per trailer technical manual.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).



e65. TRAILER MARKER/TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle marker/taillights OK.
Circuit breaker CB41 OK.
Trailer electrical system OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K28.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector J130 socket E to relay K28 terminal 87?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 6 of this fault.

KNOWN INFO

Towing vehicle marker/taillights OK.
Circuit breaker CB41 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K28.

WARNING
Read WARNING on following page.

3. Is 24 VDC present at relay K28 terminal 30 on PDP?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1957 is faulty.

Repair wire 1957 from K28 terminal 30 on PDP to circuit breaker CB41 terminal 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

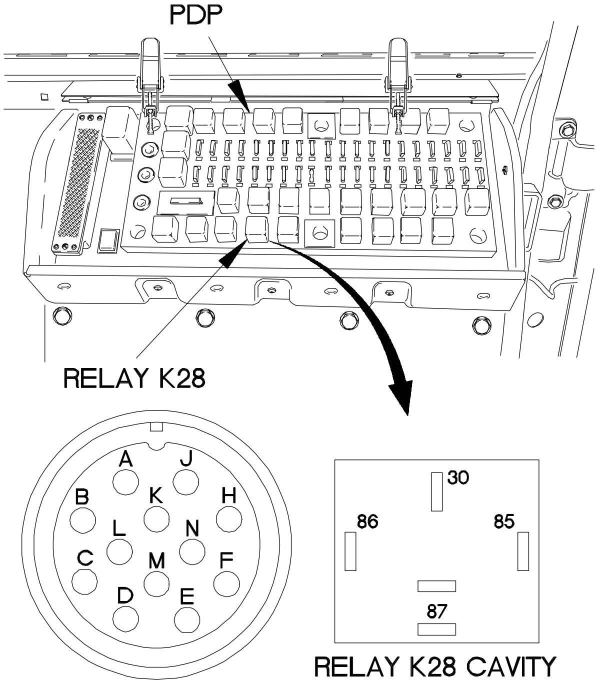
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K28 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J130 socket E.
(5) Connect negative (-) probe of multimeter to relay K28 terminal 87 on PDP and note reading on multimeter.
(6) If continuity is not present, go to step 6 of this fault.



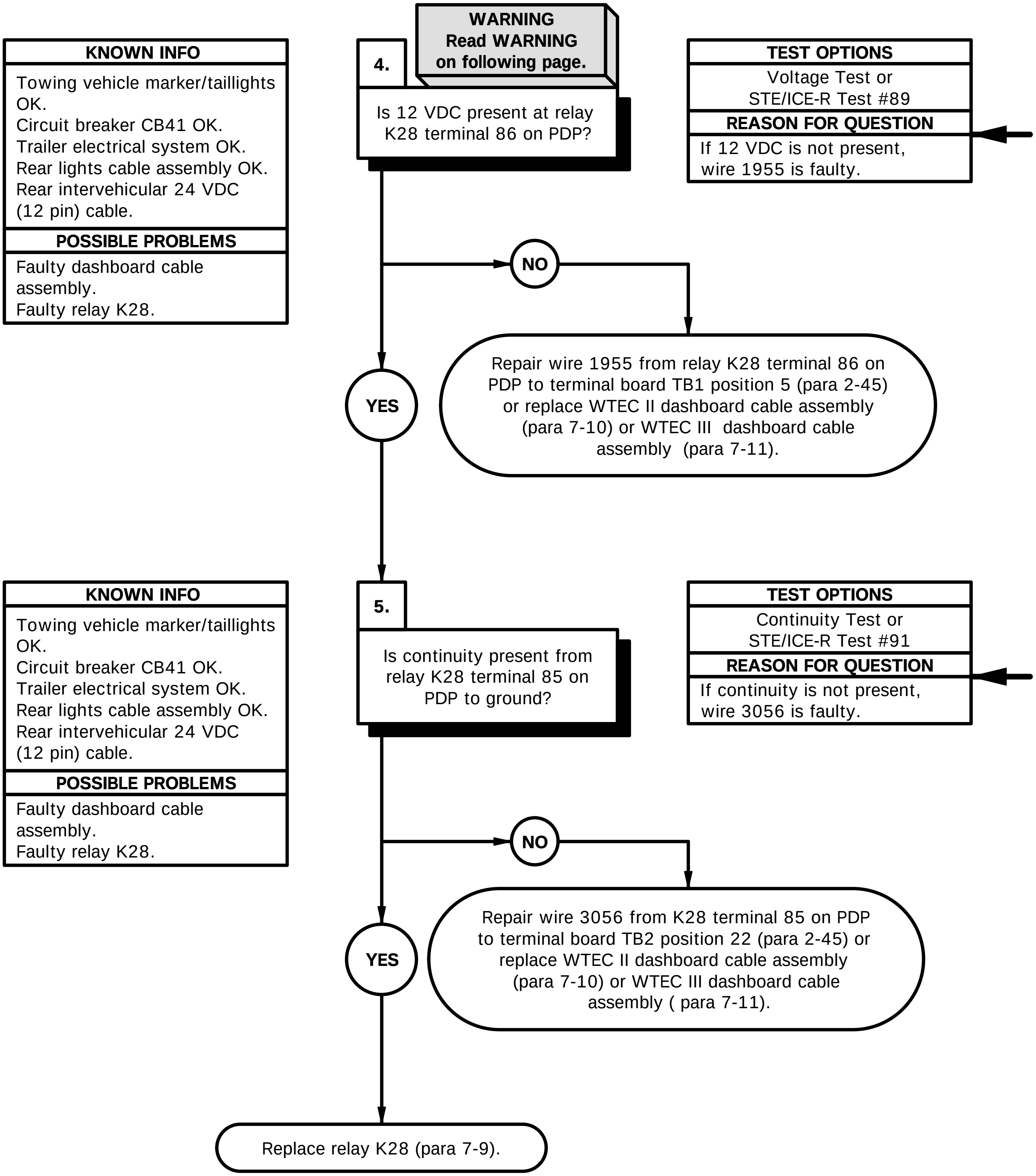
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K28 terminal 30 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, repair wire 1957 from K28 terminal 30 on PDP to circuit breaker CB41 terminal 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboaard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

e65. TRAILER MARKER/TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle marker/taillights OK.
Circuit breaker CB41 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K28.

WARNING
Read WARNING on following page.

4. Is 12 VDC present at relay K28 terminal 86 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1955 is faulty.

Repair wire 1955 from relay K28 terminal 86 on PDP to terminal board TB1 position 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO

Towing vehicle marker/taillights OK.
Circuit breaker CB41 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K28.

5. Is continuity present from relay K28 terminal 85 on PDP to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3056 is faulty.

Repair wire 3056 from K28 terminal 85 on PDP to terminal board TB2 position 22 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace relay K28 (para 7-9).

WARNING

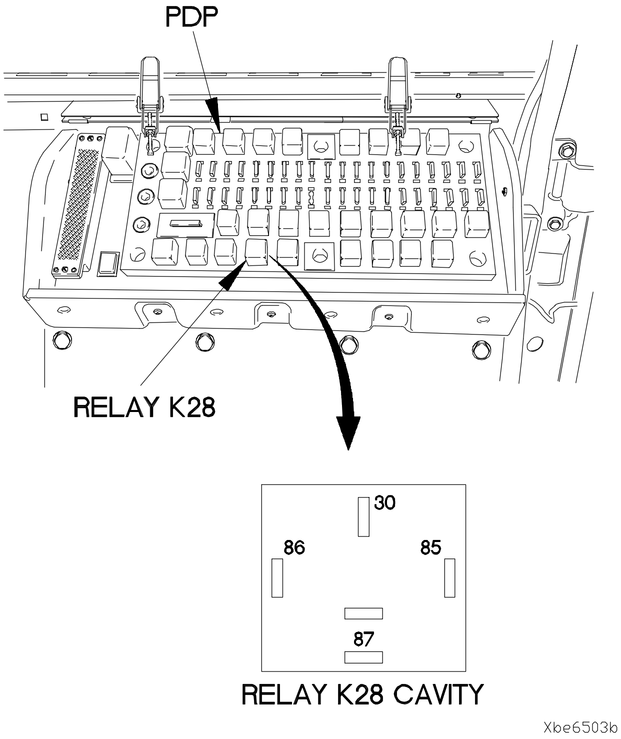
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K28 terminal 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 VDC is not present, repair wire 1955 from relay K28 terminal 86 on PDP to terminal board TB1 position 5 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K28 terminal 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3056 from K28 terminal 85 on PDP to terminal board TB2 position 22 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K28 (para 7-9).
(6) Install relay K28 in PDP.
(7) Install PDP cover (para 16-2).



e65. TRAILER MARKER/TAILLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Towing vehicle marker/taillights OK.
Circuit breaker CB41
Trailer electrical system OK.
Relay K28 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

6. Is continuity present from relay K28 terminal 87 on PDP to connector J51 pin 9?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 489T is faulty.

NO

Repair wire 489T from relay K28 terminal 87 on PDP to connector J51 pin 9 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

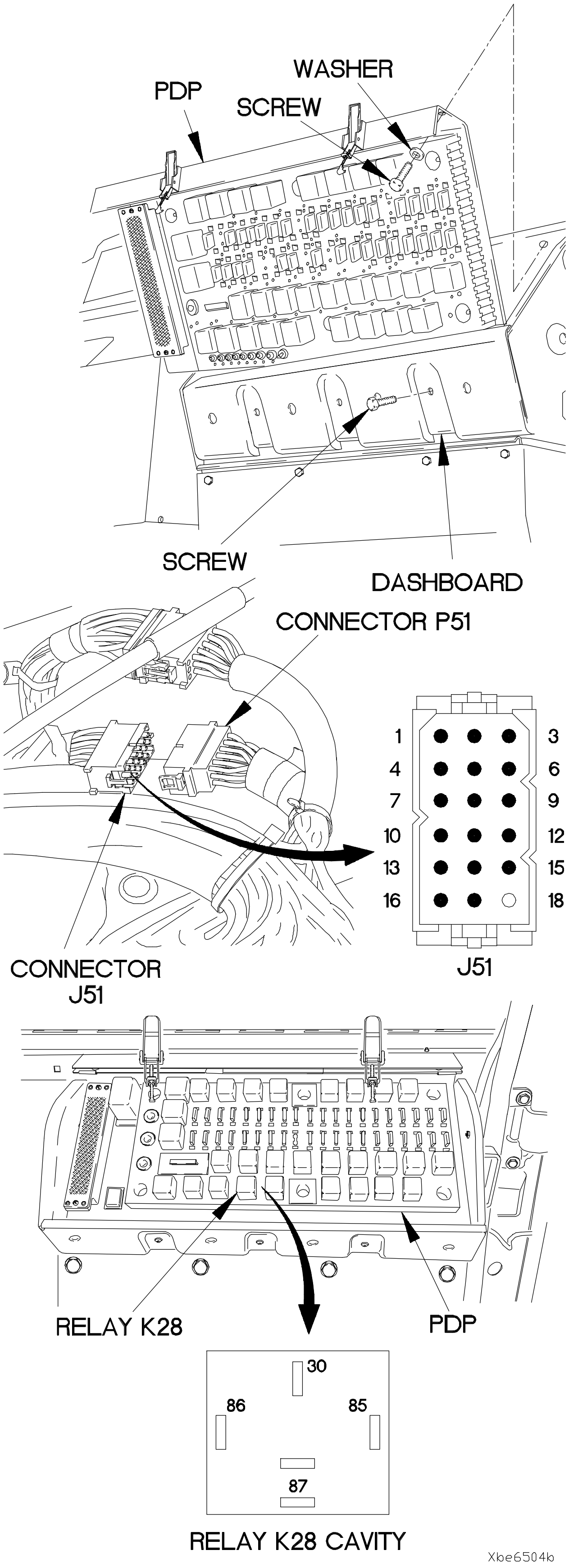
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

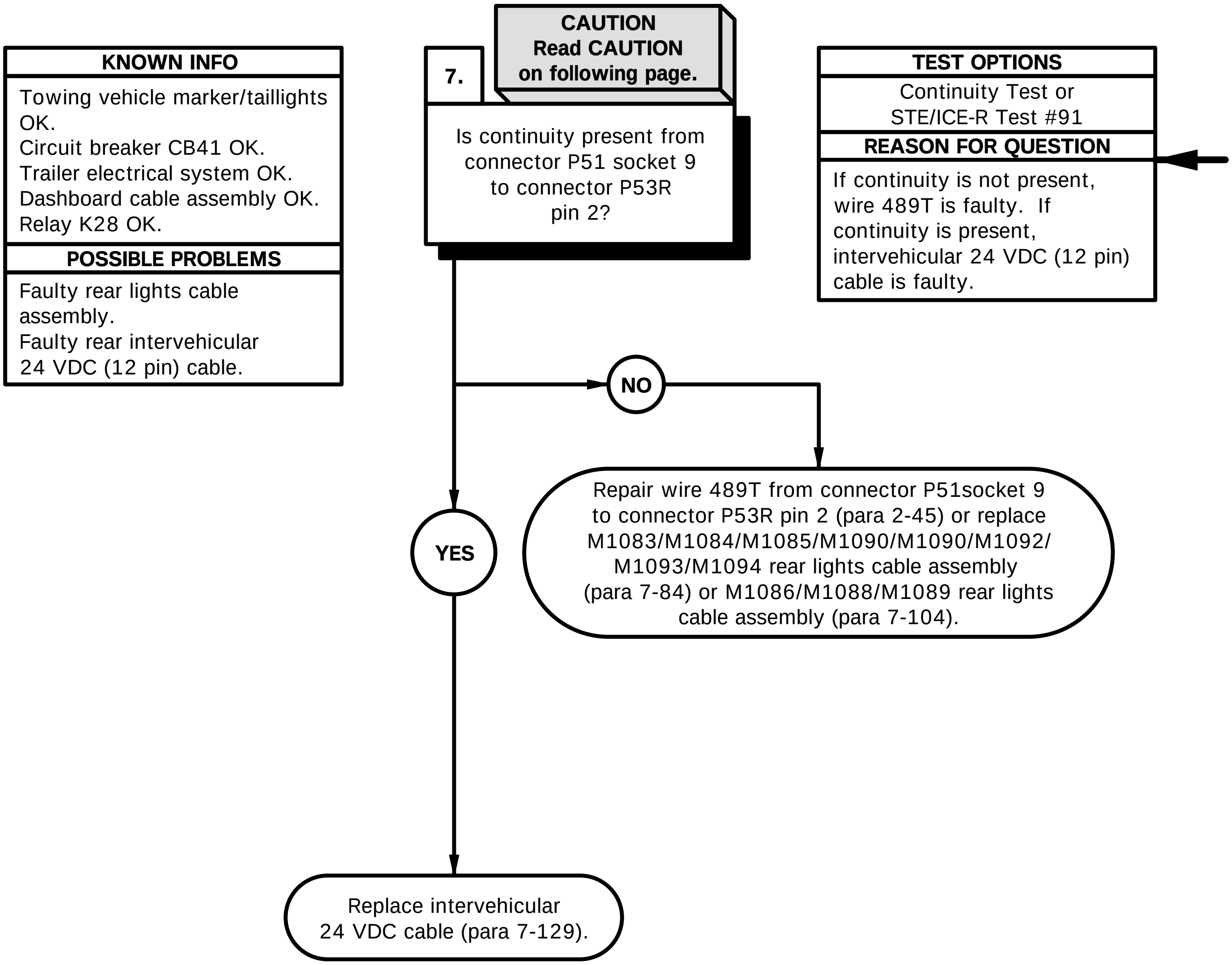
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J51 from connector P51.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to relay K28 terminal 87 on PDP.
(7) Connect negative (-) probe of multimeter to connector J51 pin 9 and note reading on multimeter.
(8) If continuity is not present, repair wire 489T from relay K28 terminal 87 on PDP to connector J51 pin 9 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Install relay K28 in PDP.



e65. TRAILER MARKER/TAILLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle marker/taillights OK.
Circuit breaker CB41 OK.
Trailer electrical system OK.
Dashboard cable assembly OK.
Relay K28 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

7. Is continuity present from connector P51 socket 9 to connector P53R pin 2?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 489T is faulty. If continuity is present, intervehicular 24 VDC (12 pin) cable is faulty.

NO: Repair wire 489T from connector P51socket 9 to connector P53R pin 2 (para 2-45) or replace M1083/M1084/M1085/M1090/M1090/M1092/ M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

YES: Replace intervehicular 24 VDC cable (para 7-129).

CAUTION

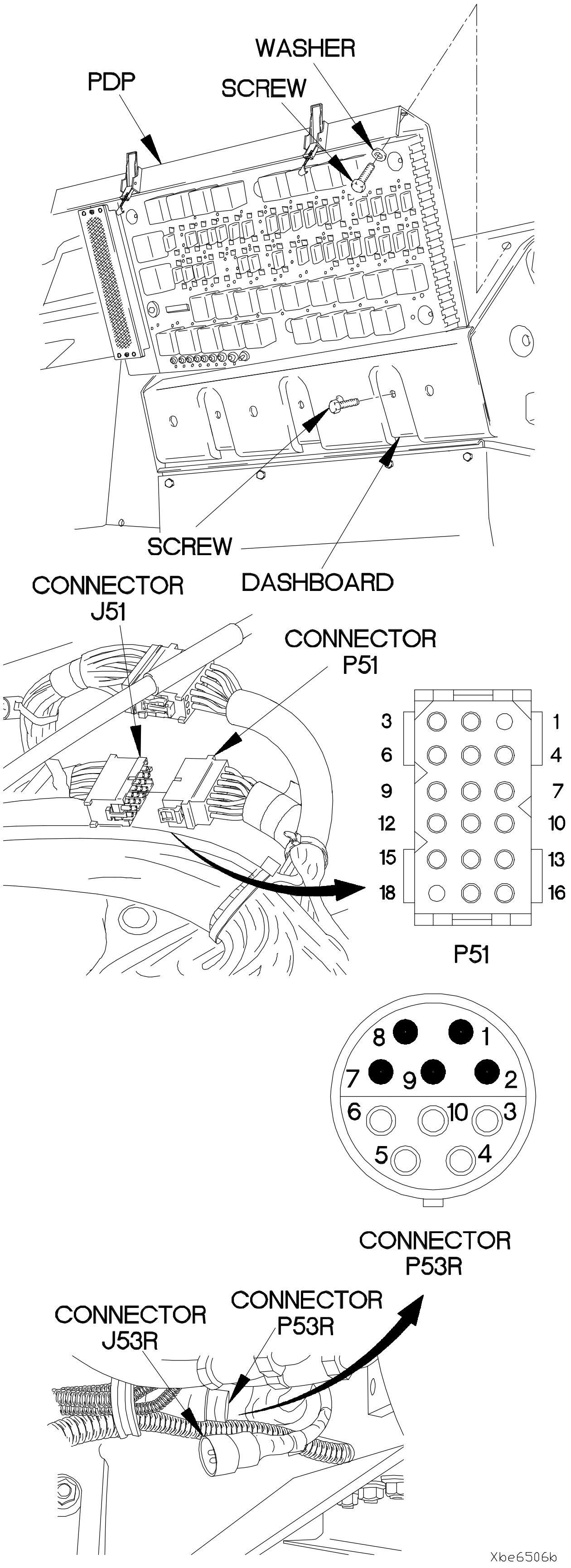
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P53R from connector J53R.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P51 socket 9.
(4) Connect negative (-) probe of multimeter to connector P53R pin 2 and note reading on multimeter.
(5) If continuity is not present, repair wire 489T from connector P51 socket 9 to connector P53R pin 2 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(6) If continuity is present, replace intervehicular 24 VDC (12 pin) cable (para 7-129).
(7) Connect connector P53R to connector J53R.
(8) Connect connector P51 to connector J51.
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Install PDP cover (para 16-2).



e66. TRAILER RIGHT STOP/TURN LIGHT DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)\b

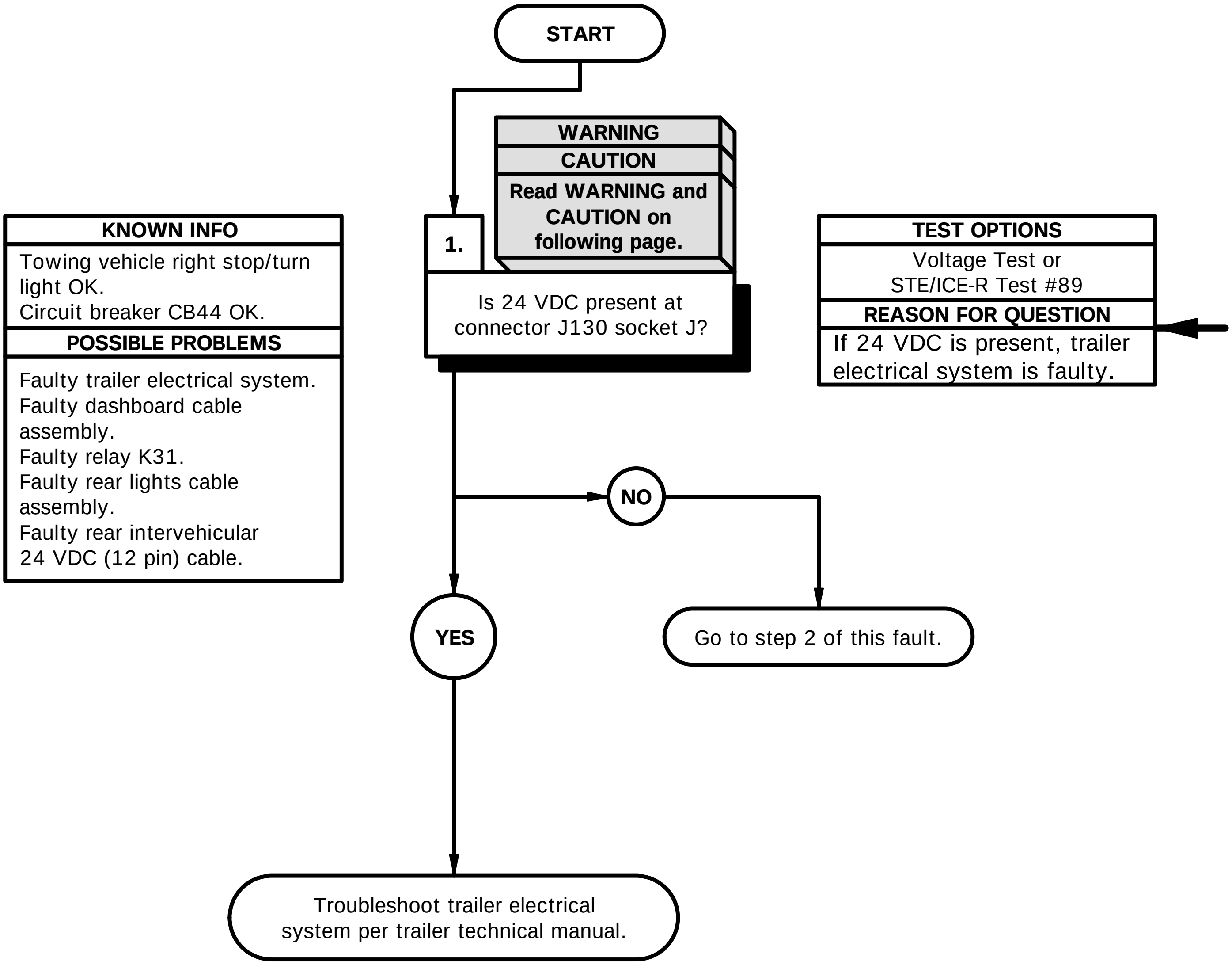
Material/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB44 prior to beginning this task.



START

1.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

Is 24 VDC present at connector J130 socket J?

KNOWN INFO

Towing vehicle right stop/turn light OK.
Circuit breaker CB44 OK.

POSSIBLE PROBLEMS

Faulty trailer electrical system.
Faulty dashboard cable assembly.
Faulty relay K31.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is present, trailer electrical system is faulty.

NO: Go to step 2 of this fault.

YES: Troubleshoot trailer electrical system per trailer technical manual.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

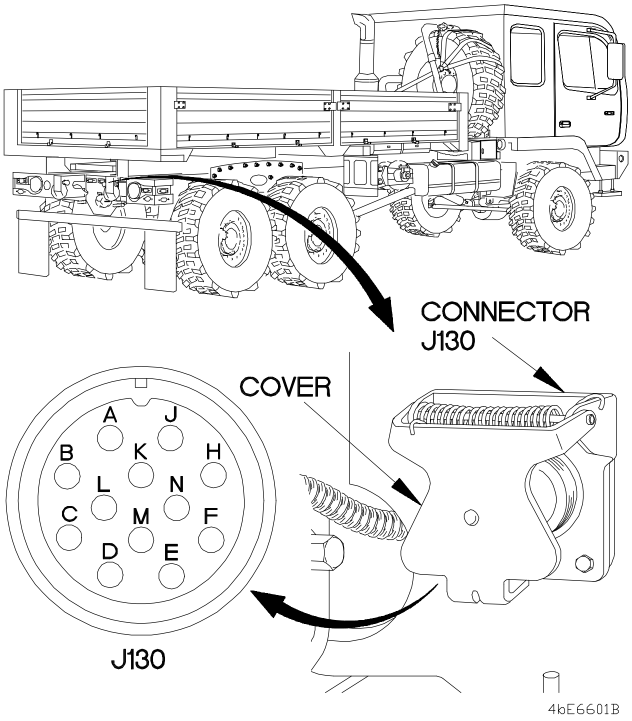
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

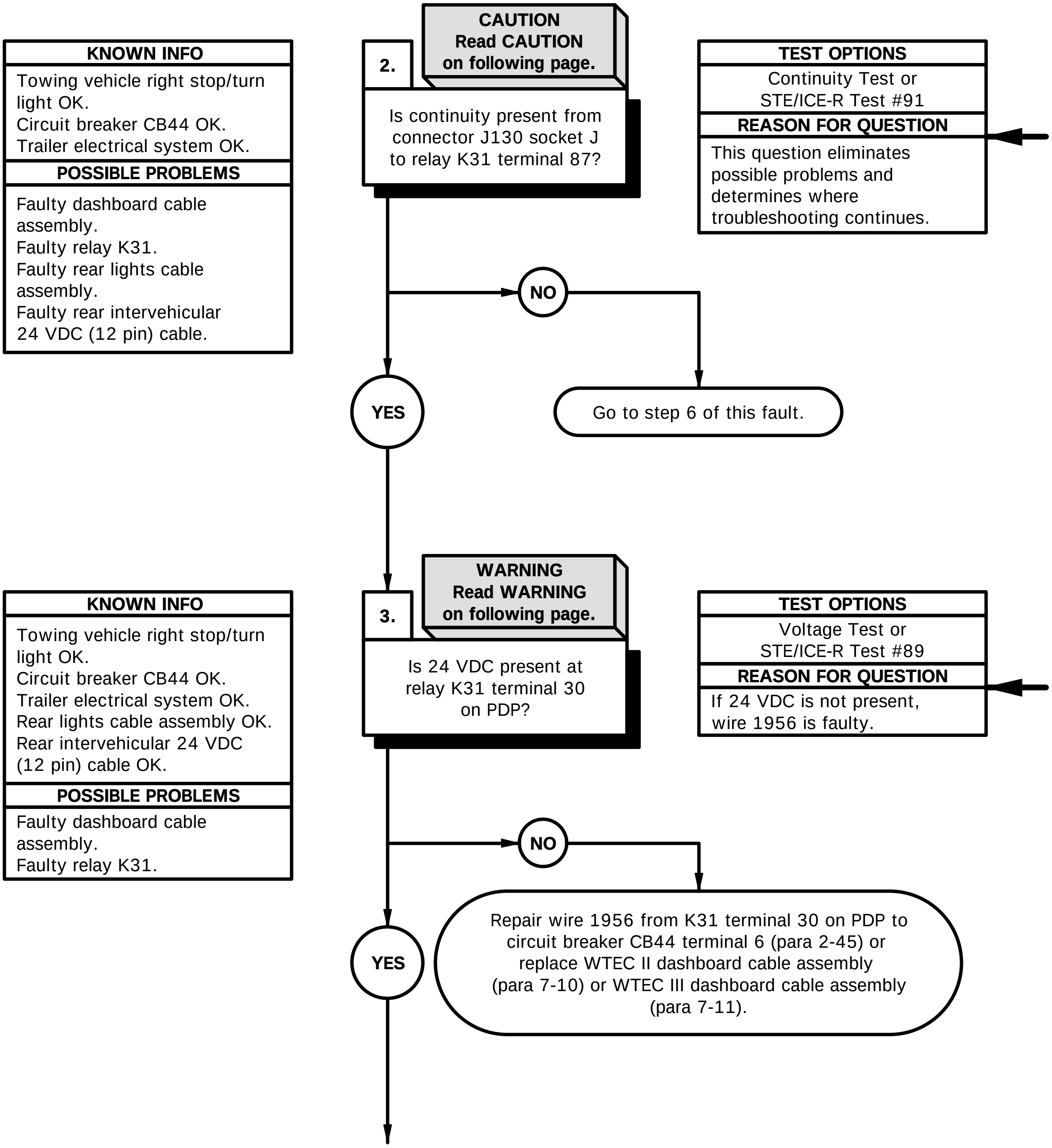
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Lift cover on connector J130 intervehicular 24 VDC connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connnector J130 socket J.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(7) Apply brakes and note reading on multimeter.
(8) If 24 VDC is not present, go to step 2 of this fault.
(9) If 24 VDC is present, troubleshoot trailer electrical system per trailer technical manual.
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Position master power switch to off (TM 9-2320-366-10-1).



e66. TRAILER RIGHT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle right stop/turn light OK.
Circuit breaker CB44 OK.
Trailer electrical system OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K31.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

2.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J130 socket J to relay K31 terminal 87?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 6 of this fault.

YES

KNOWN INFO

Towing vehicle right stop/turn light OK.
Circuit breaker CB44 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K31.

3.

WARNING
Read WARNING on following page.

Is 24 VDC present at relay K31 terminal 30 on PDP?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1956 is faulty.

NO — Repair wire 1956 from K31 terminal 30 on PDP to circuit breaker CB44 terminal 6 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

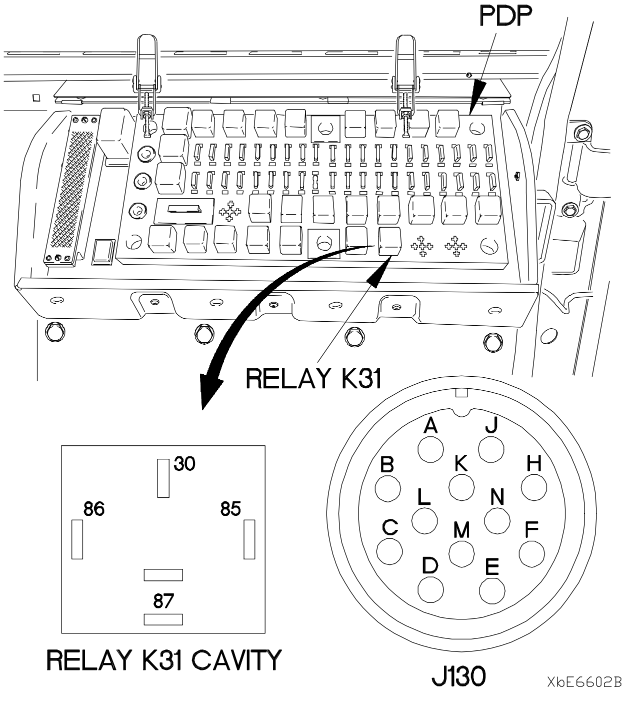
(1) Remove PDP cover (para 16-2).
(2) Remove relay K31 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J130 socket J.
(5) Connect negative (-) probe of multimeter to relay K31 terminal 87 on PDP and note reading on multimeter.
(6) If continuity is not present, go to step 6 of this fault.

WARNING

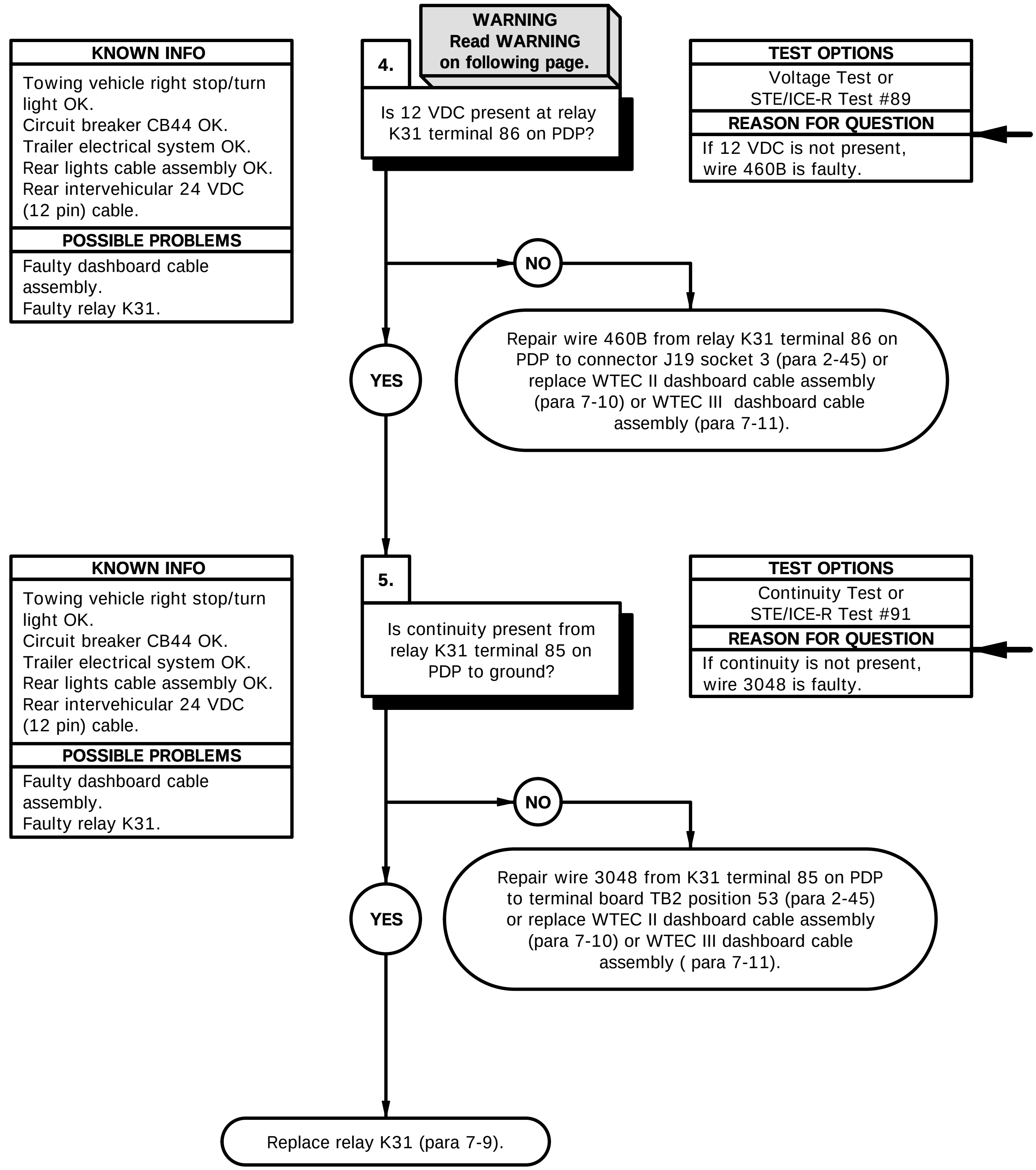
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K31 terminal 30 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, repair wire 1956 from K31 terminal 30 on PDP to circuit breaker CB44 terminal 6 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboaard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).



e66. TRAILER RIGHT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle right stop/turn light OK.
Circuit breaker CB44 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K31.

WARNING
Read WARNING on following page.

4. Is 12 VDC present at relay K31 terminal 86 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 460B is faulty.

NO: Repair wire 460B from relay K31 terminal 86 on PDP to connector J19 socket 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES:

KNOWN INFO

Towing vehicle right stop/turn light OK.
Circuit breaker CB44 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K31.

5. Is continuity present from relay K31 terminal 85 on PDP to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3048 is faulty.

NO: Repair wire 3048 from K31 terminal 85 on PDP to terminal board TB2 position 53 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace relay K31 (para 7-9).

WARNING

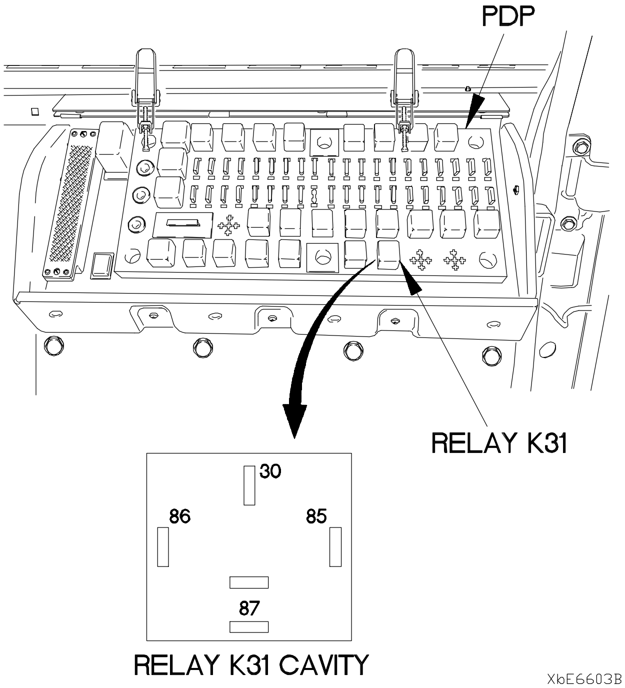
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

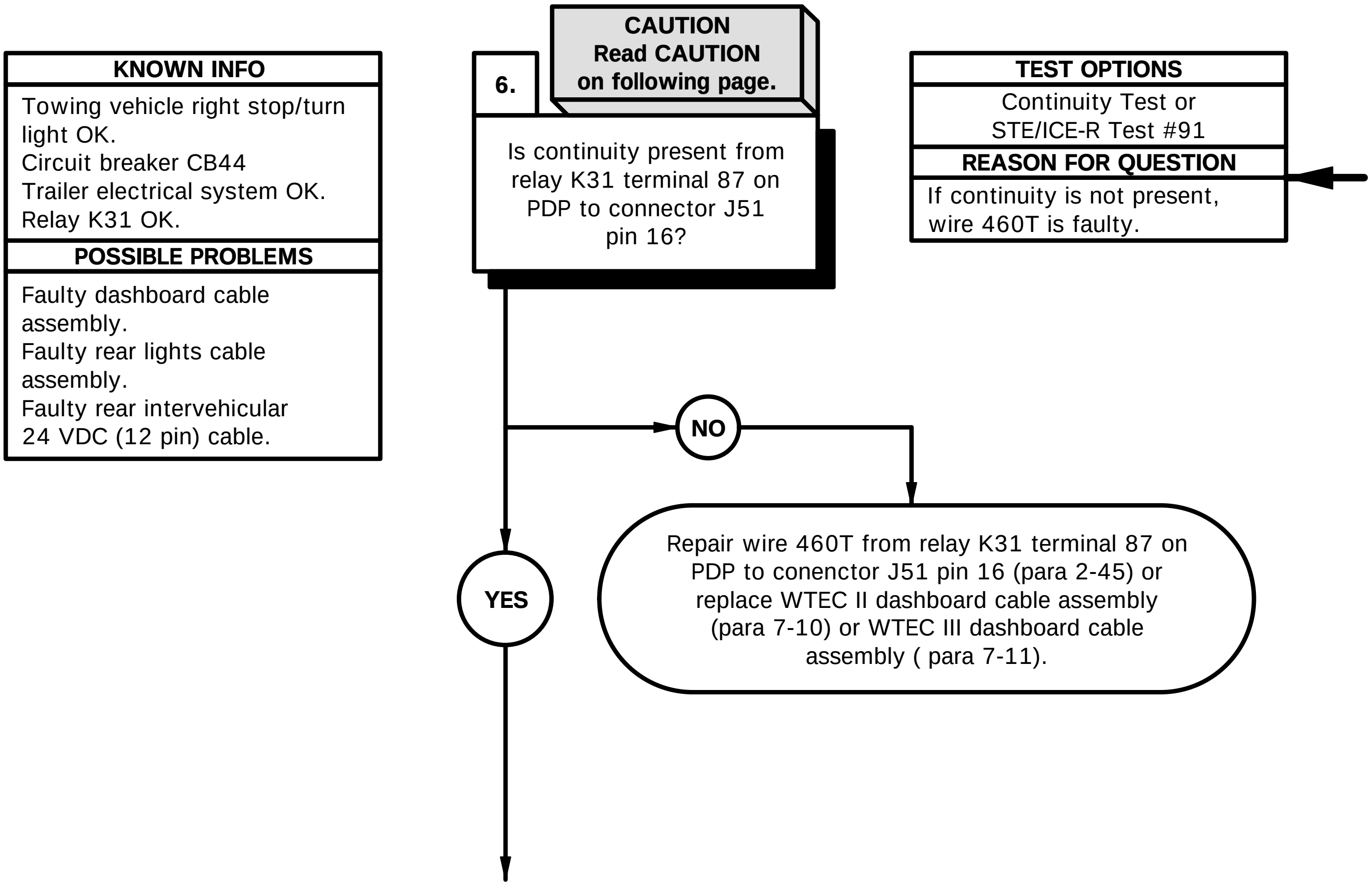
(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K31 terminal 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1).
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Apply brakes and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 460B from relay K31 terminal 86 on PDP to connector J19 socket 3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Position master power switch to off (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K31 terminal 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3048 from K31 terminal 85 on PDP to terminal board TB2 position 53 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K31 (para 7-9).
(6) Install relay K31 in PDP.
(7) Install PDP cover (para 16-2).



e66. TRAILER RIGHT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle right stop/turn light OK.
Circuit breaker CB44
Trailer electrical system OK.
Relay K31 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

6. Is continuity present from relay K31 terminal 87 on PDP to connector J51 pin 16?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 460T is faulty.

NO

Repair wire 460T from relay K31 terminal 87 on PDP to conenctor J51 pin 16 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

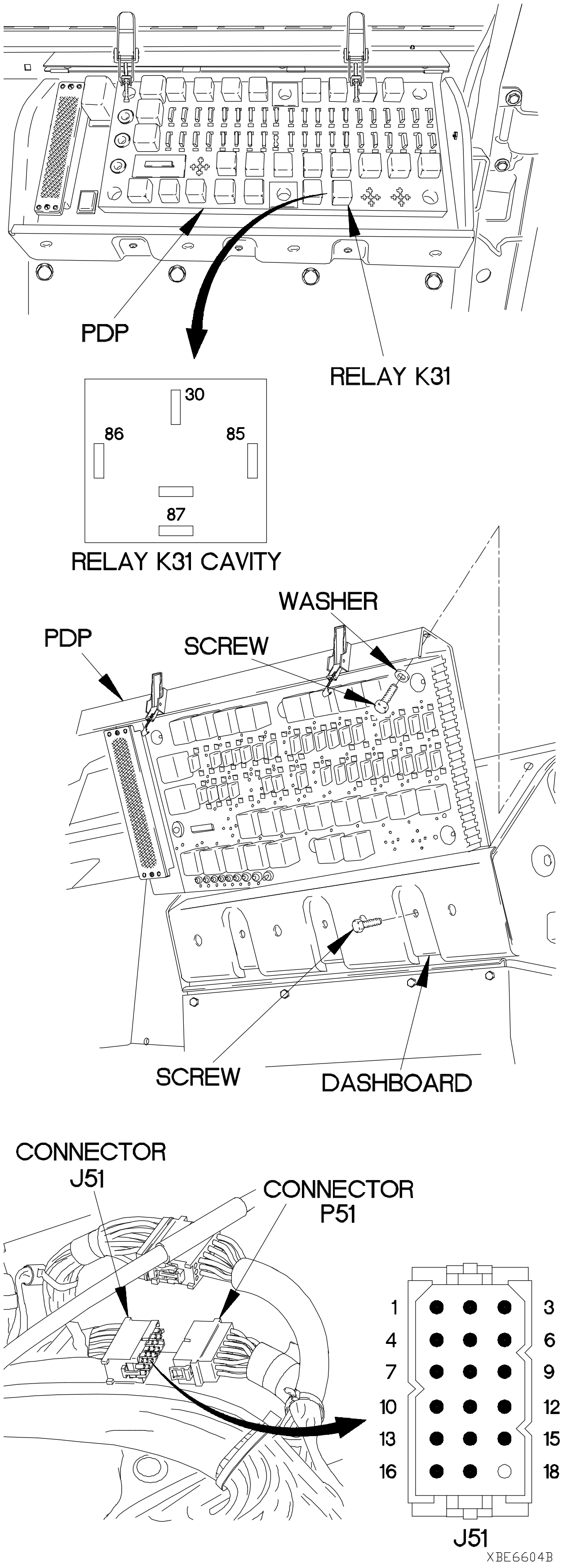
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

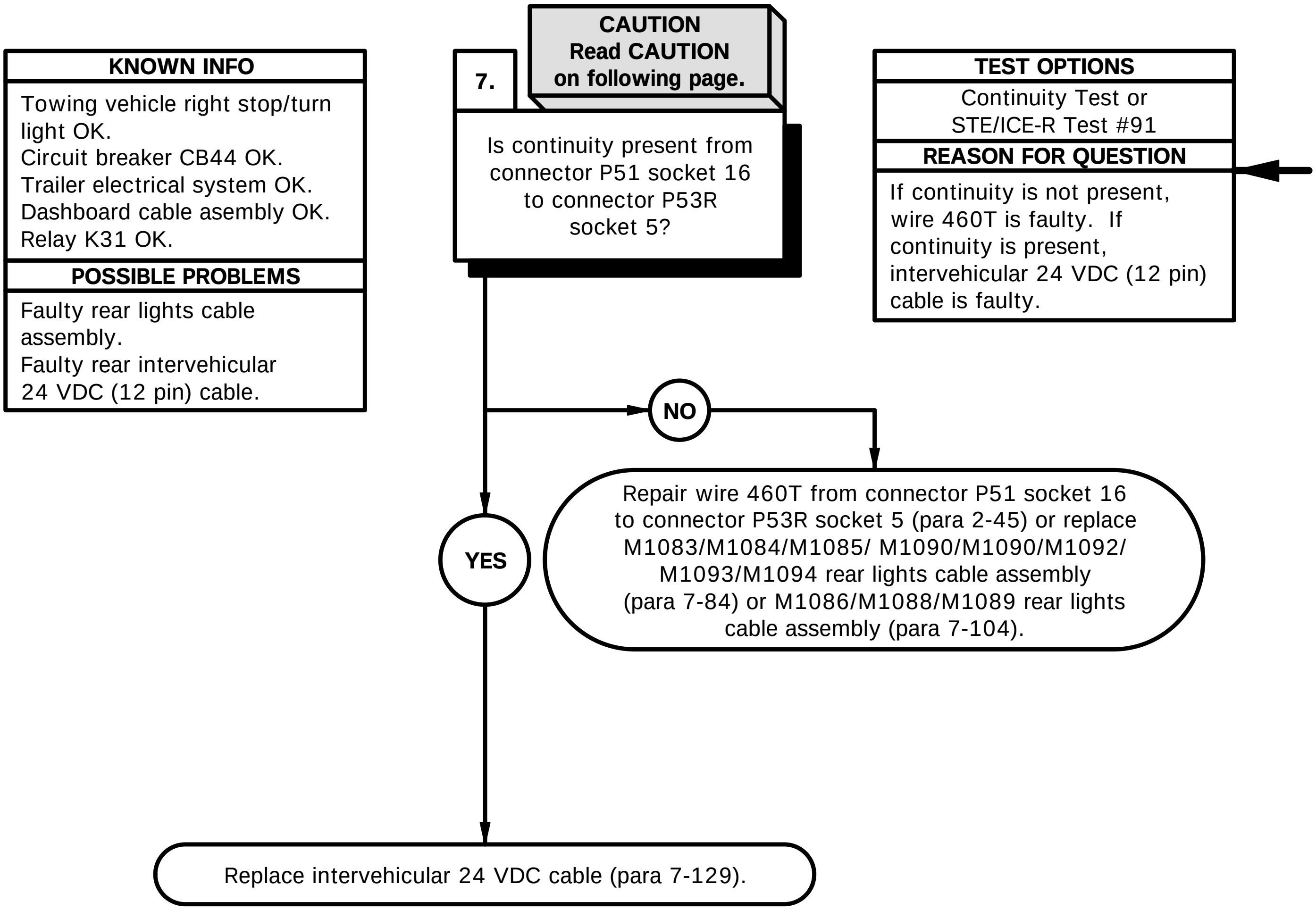
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J51 from connector P51.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to relay K31 terminal 87 on PDP.
(7) Connect negative (-) probe of multimeter to connector J51 pin 16 and note reading on multimeter.
(8) If continuity is not present, repair wire 460T from relay K31 terminal 87 on PDP to connector J51 pin 16 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Install relay K31 in PDP.



e66. TRAILER RIGHT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle right stop/turn light OK.
Circuit breaker CB44 OK.
Trailer electrical system OK.
Dashboard cable asembly OK.
Relay K31 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

7.

Is continuity present from connector P51 socket 16 to connector P53R socket 5?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 460T is faulty. If continuity is present, intervehicular 24 VDC (12 pin) cable is faulty.

NO

Repair wire 460T from connector P51 socket 16 to connector P53R socket 5 (para 2-45) or replace M1083/M1084/M1085/ M1090/M1090/M1092/ M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

YES

Replace intervehicular 24 VDC cable (para 7-129).

CAUTION

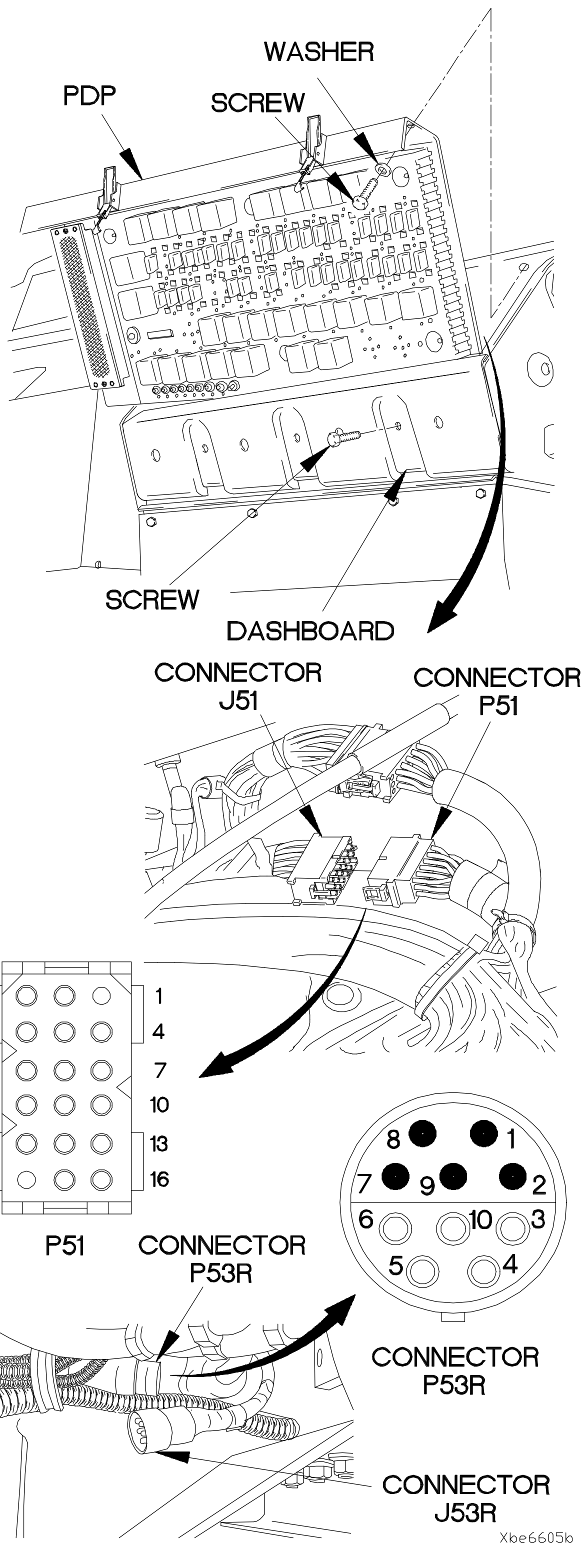
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P53R from connector J53R.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P51 socket 16.
(4) Connect negative (-) probe of multimeter to connector P53R socket 5 and notereading on multimeter.
(5) If continuity is not present, repair wire 460T from connector P51 socket 16 to connector P53R socket 5 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(6) If continuity is present, replace intervehicular 24 VDC (12 pin) cable (para 7-129).
(7) Connect connector P53R to connector J53R.
(8) Connect connector P51 to connector J51.
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Install PDP cover (para 16-2).



e67. TRAILER LEFT STOP/TURN LIGHT DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

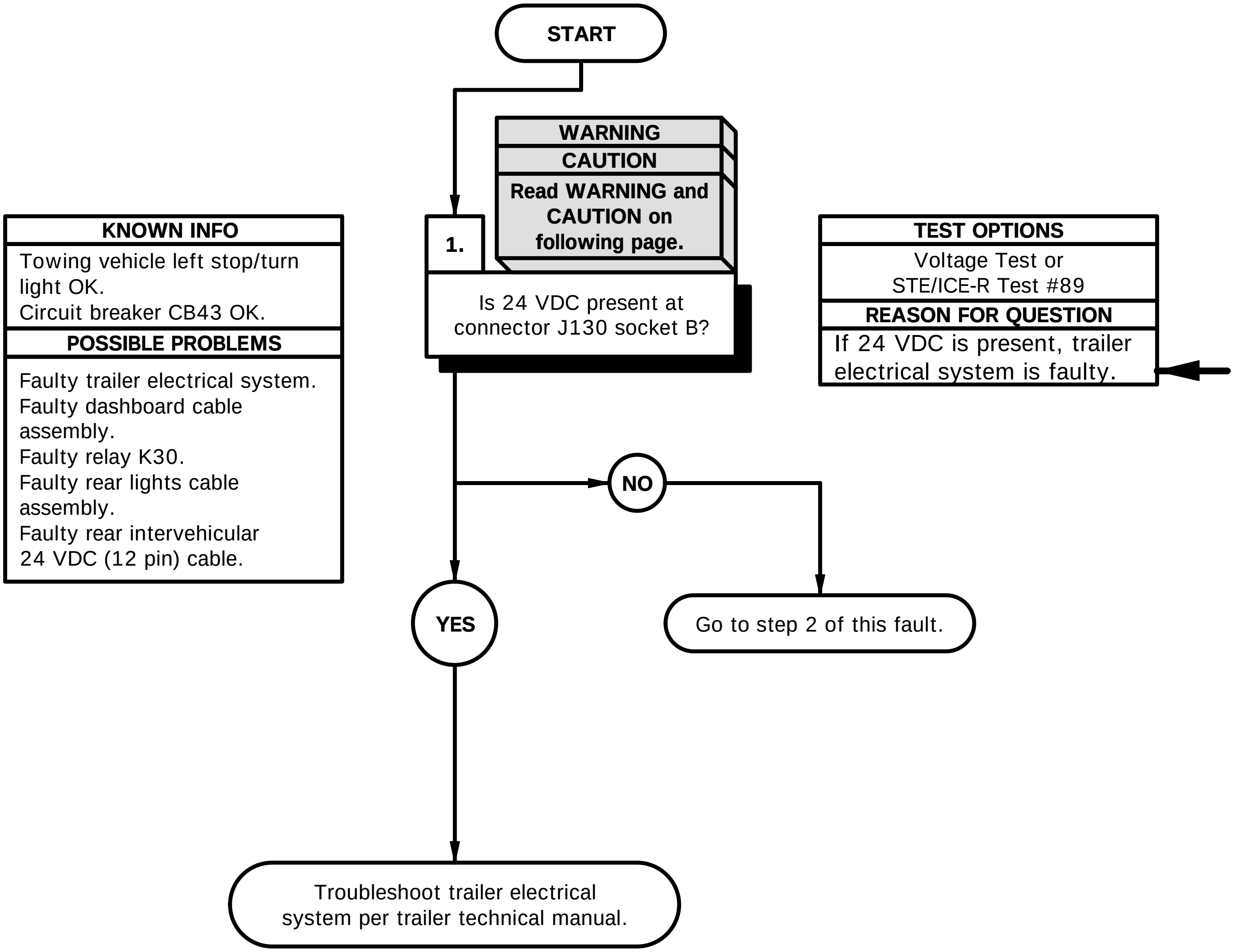
Material/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB43 prior to beginning this task.



KNOWN INFO
Towing vehicle left stop/turn light OK.
Circuit breaker CB43 OK.

POSSIBLE PROBLEMS
Faulty trailer electrical system.
Faulty dashboard cable assembly.
Faulty relay K30.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If 24 VDC is present, trailer electrical system is faulty.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

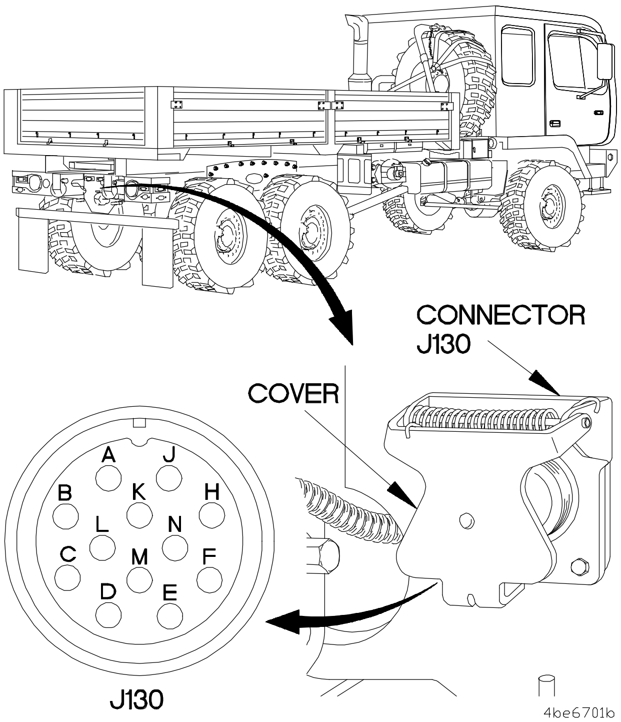
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

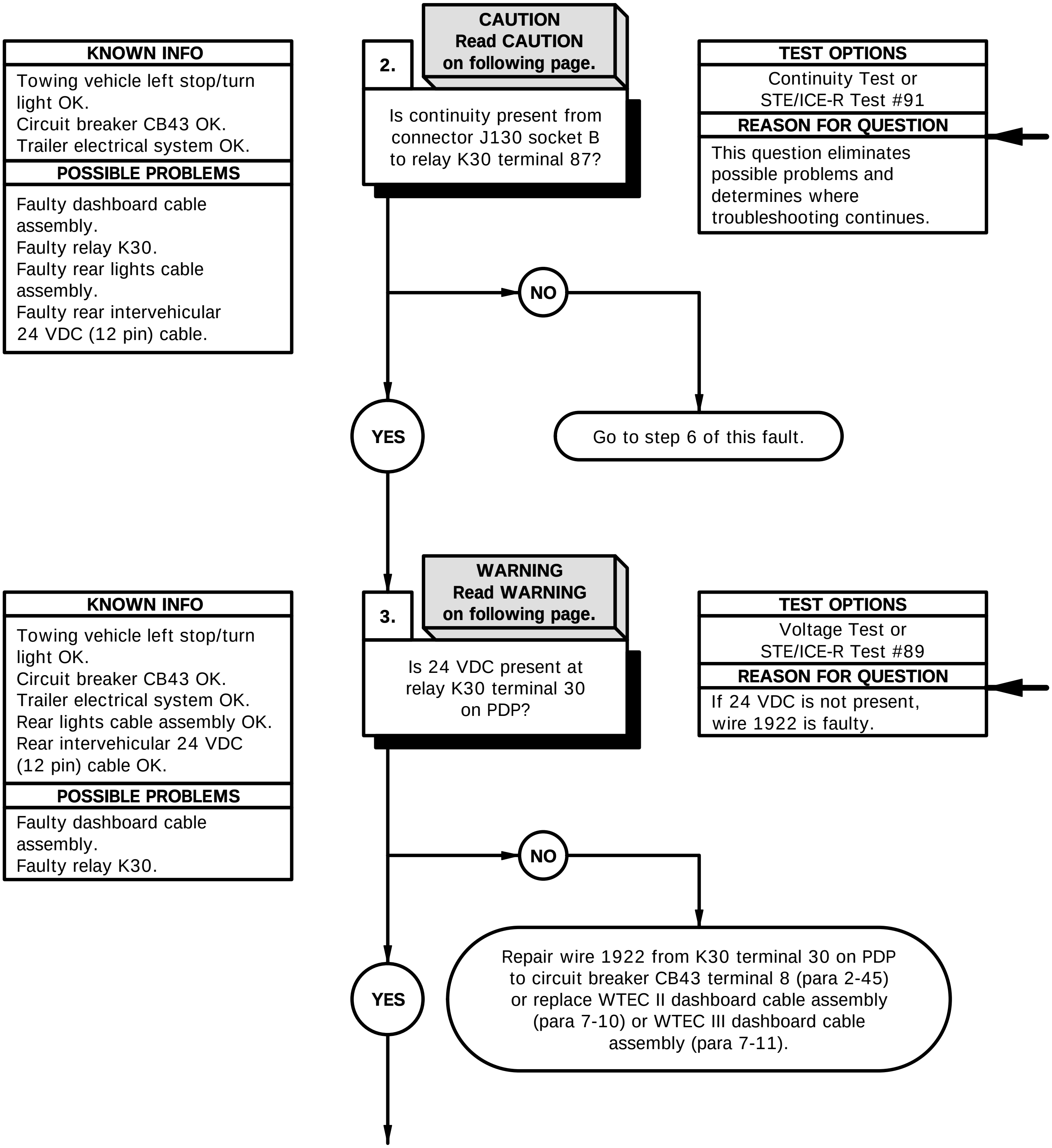
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST
(1) Lift cover on connector J130 intervehicular 24 VDC connector. (2) Set multimeter to volts DC. (3) Connect positive (+) probe of multimeter to connnector J130 socket B. (4) Connect negative (-) probe of multimeter to ground. (5) Position master power switch to on (TM 9-2320-366-10-1). (6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1). (7) Apply brakes and note reading on multimeter. (8) If 24 VDC is not present, go to step 2 of this fault. (9) If 24 VDC is present, troubleshoot trailer electrical system per trailer technical manual. (10) Position main light switch to OFF (TM 9-2320-366-10-1). (11) Position master power switch to off (TM 9-2320-366-10-1).



e67. TRAILER LEFT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle left stop/turn light OK.
Circuit breaker CB43 OK.
Trailer electrical system OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K30.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector J130 socket B to relay K30 terminal 87?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO — Go to step 6 of this fault.

YES

KNOWN INFO

Towing vehicle left stop/turn light OK.
Circuit breaker CB43 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K30.

WARNING
Read WARNING on following page.

3. Is 24 VDC present at relay K30 terminal 30 on PDP?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1922 is faulty.

NO — Repair wire 1922 from K30 terminal 30 on PDP to circuit breaker CB43 terminal 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

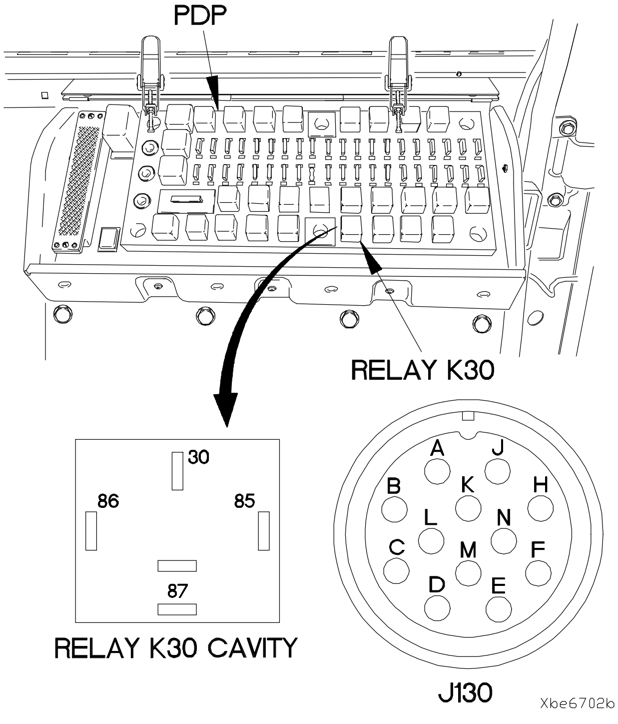
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K30 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J130 socket B.
(5) Connect negative (-) probe of multimeter to relay K30 terminal 87 on PDP and note reading on multimeter.
(6) If continuity is not present, go to step 6 of this fault.



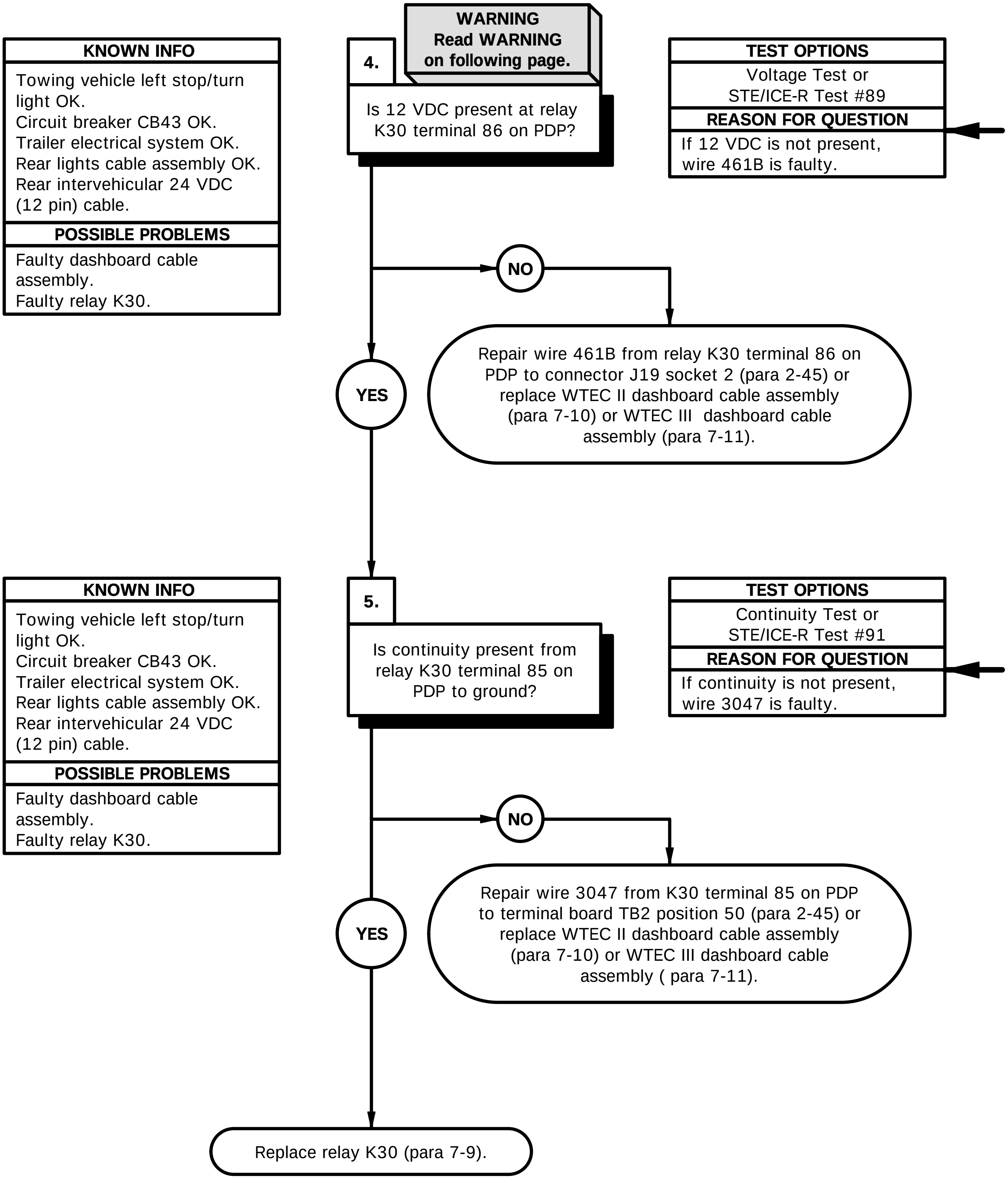
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K30 terminal 30 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, repair wire 1922 from K30 terminal 30 on PDP to circuit breaker CB43 terminal 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboaard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

e67. TRAILER LEFT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle left stop/turn light OK.
Circuit breaker CB43 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K30.

WARNING
Read WARNING on following page.

4. Is 12 VDC present at relay K30 terminal 86 on PDP?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 461B is faulty.

NO — Repair wire 461B from relay K30 terminal 86 on PDP to connector J19 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Towing vehicle left stop/turn light OK.
Circuit breaker CB43 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K30.

5. Is continuity present from relay K30 terminal 85 on PDP to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3047 is faulty.

NO — Repair wire 3047 from K30 terminal 85 on PDP to terminal board TB2 position 50 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES — Replace relay K30 (para 7-9).

WARNING

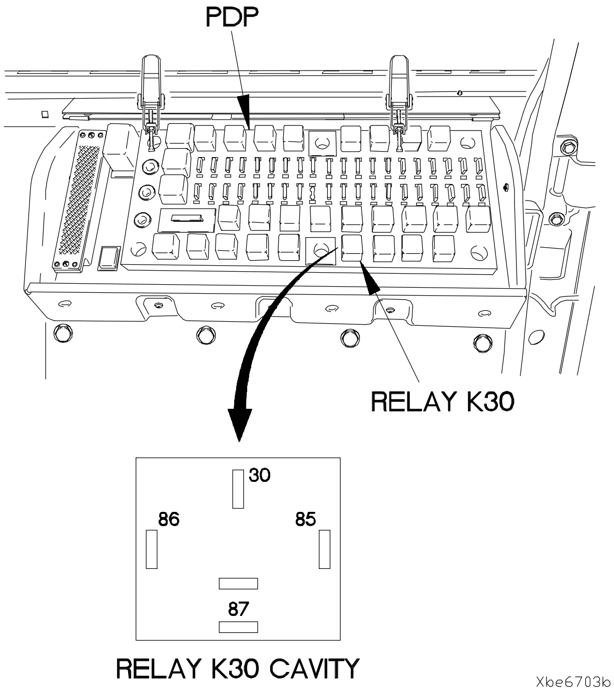
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

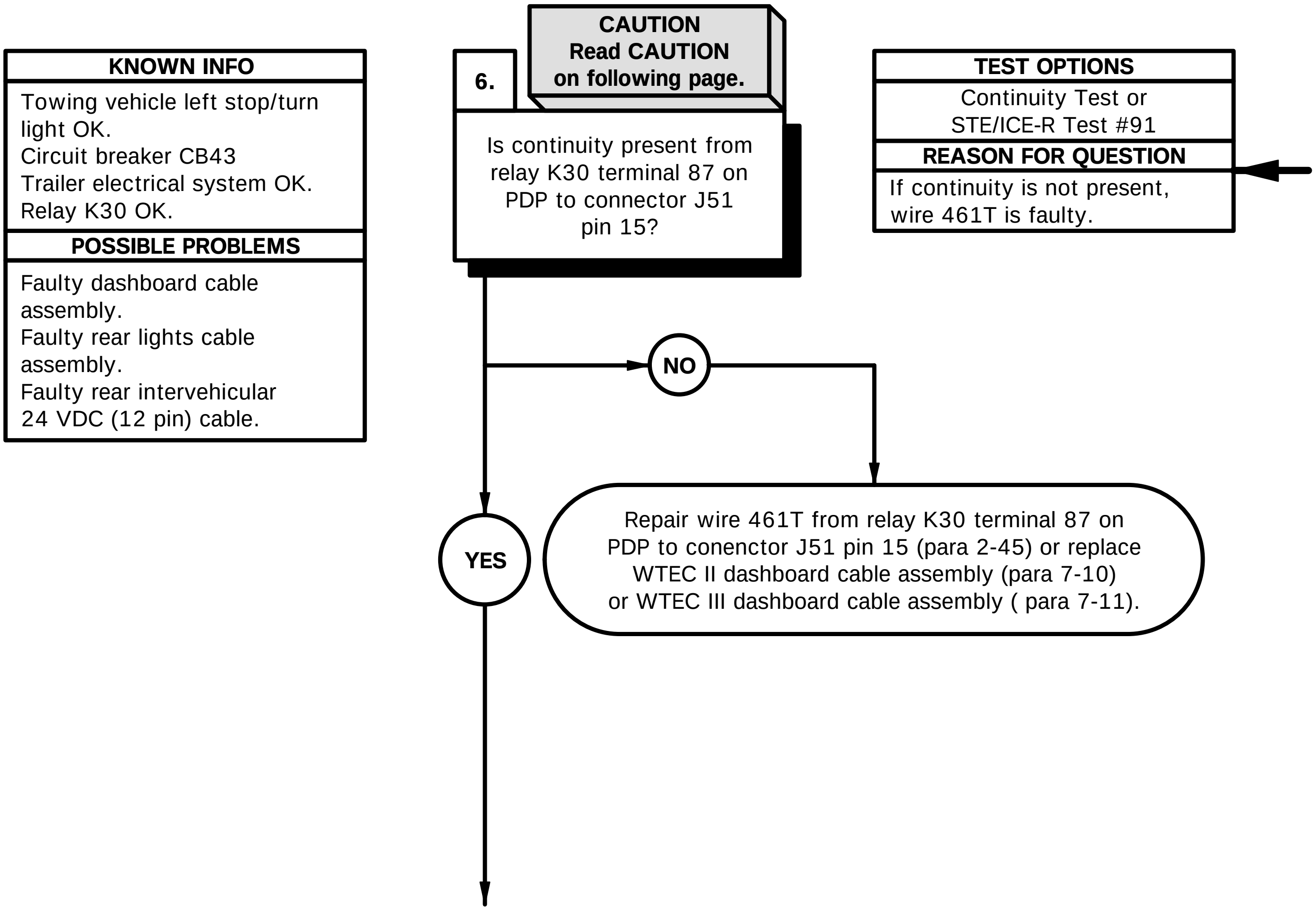
(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K30 terminal 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1).
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Apply brakes and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 461B from relay K30 terminal 86 on PDP to connector J19 socket 2 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Position master power switch to off (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K30 terminal 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3047 from K30 terminal 85 on PDP to terminal board TB2 position 50 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K30 (para 7-9).
(6) Install relay K30 in PDP.
(7) Install PDP cover (para 16-2).



e67. TRAILER LEFT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle left stop/turn light OK.
Circuit breaker CB43
Trailer electrical system OK.
Relay K30 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

6. Is continuity present from relay K30 terminal 87 on PDP to connector J51 pin 15?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 461T is faulty.

NO: Repair wire 461T from relay K30 terminal 87 on PDP to conenctor J51 pin 15 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

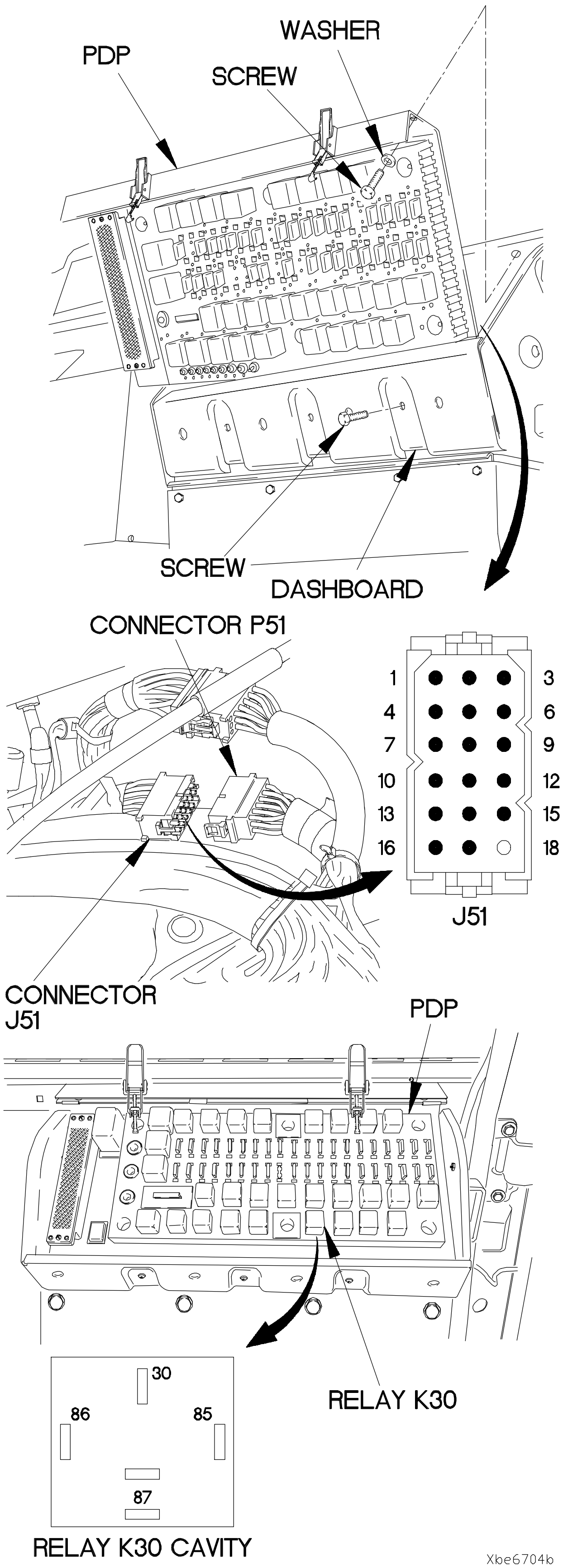
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J51 from connector P51.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to relay K30 terminal 87 on PDP.
(7) Connect negative (-) probe of multimeter to connector J51 pin 15 and note reading on multimeter.
(8) If continuity is not present, repair wire 461T from relay K30 terminal 87 on PDP to connector J51 pin 15 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Install relay K30 in PDP.



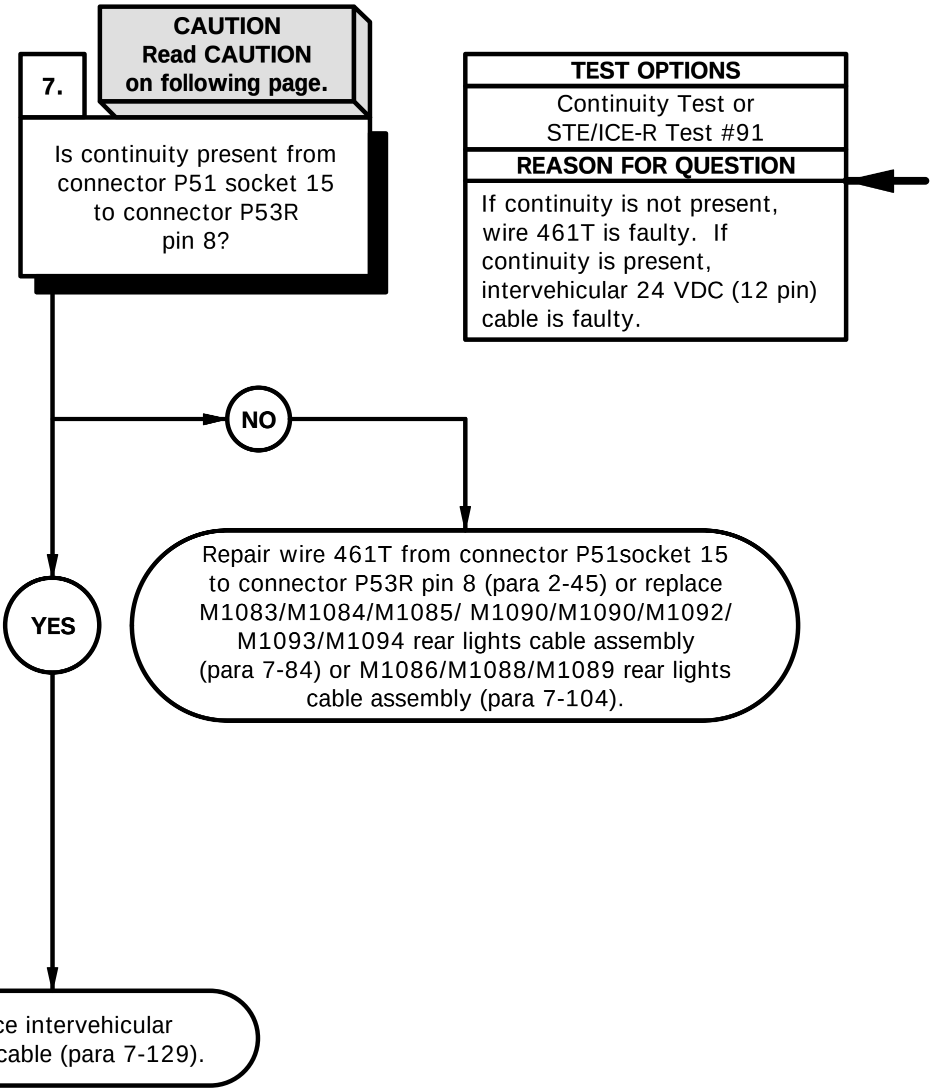
e67. TRAILER LEFT STOP/TURN LIGHT DOES NOT ILLUMINATE (CONT)

KNOWN INFO

Towing vehicle left stop/turn light OK.
Circuit breaker CB43 OK.
Trailer electrical system OK.
Dashboard cable asembly OK.
Relay K30 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.



CAUTION
Read CAUTION on following page.

7. Is continuity present from connector P51 socket 15 to connector P53R pin 8?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 461T is faulty. If continuity is present, intervehicular 24 VDC (12 pin) cable is faulty.

Repair wire 461T from connector P51socket 15 to connector P53R pin 8 (para 2-45) or replace M1083/M1084/M1085/ M1090/M1090/M1092/ M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

Replace intervehicular 24 VDC cable (para 7-129).

CAUTION

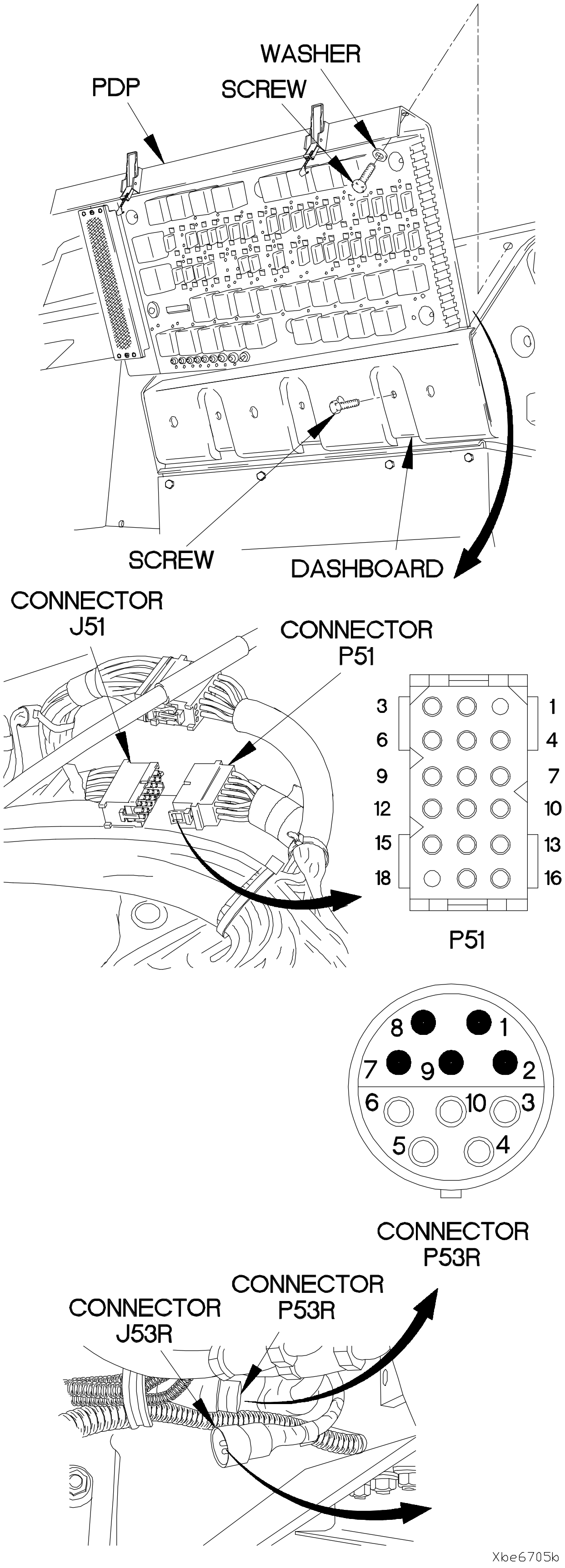
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P53R from connector J53R.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P51 socket 15.
(4) Connect negative (-) probe of multimeter to connector P53R pin 8 and note reading on multimeter.
(5) If continuity is not present, repair wire 461T from connector P51 socket 15 to connector P53R pin 8 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(6) If continuity is present, replace intervehicular 24 VDC (12 pin) cable (para 7-129).
(7) Connect connector P53R to connector J53R.
(8) Connect connector P51 to connector J51.
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Install PDP cover (para 16-2).



e68. TRAILER BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

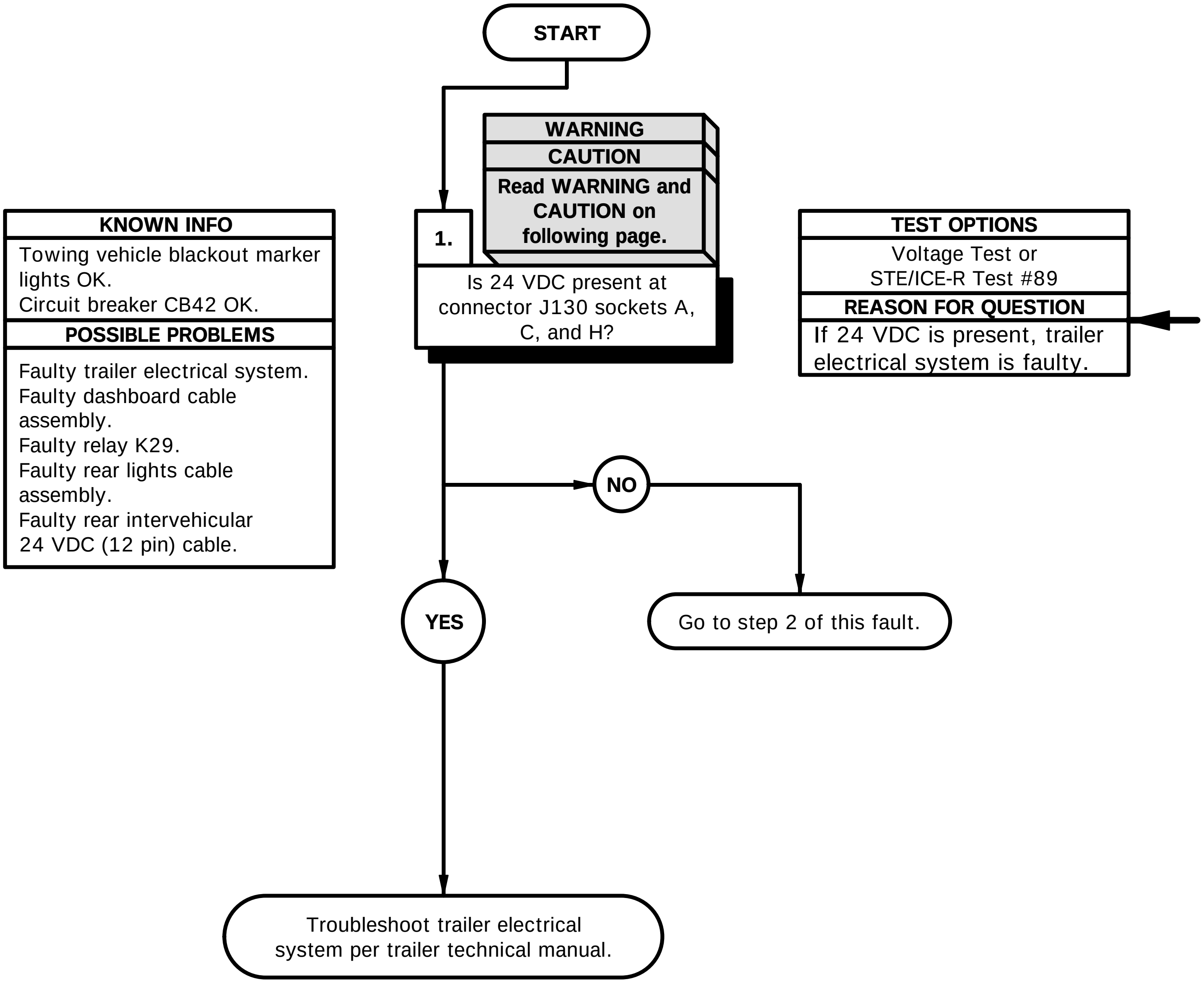
Material/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB42 prior to beginning this task.



KNOWN INFO

Towing vehicle blackout marker lights OK.
Circuit breaker CB42 OK.

POSSIBLE PROBLEMS

Faulty trailer electrical system.
Faulty dashboard cable assembly.
Faulty relay K29.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

START

WARNING

CAUTION

Read WARNING and CAUTION on following page.

1. Is 24 VDC present at connector J130 sockets A, C, and H?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is present, trailer electrical system is faulty.

NO – Go to step 2 of this fault.

YES – Troubleshoot trailer electrical system per trailer technical manual.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

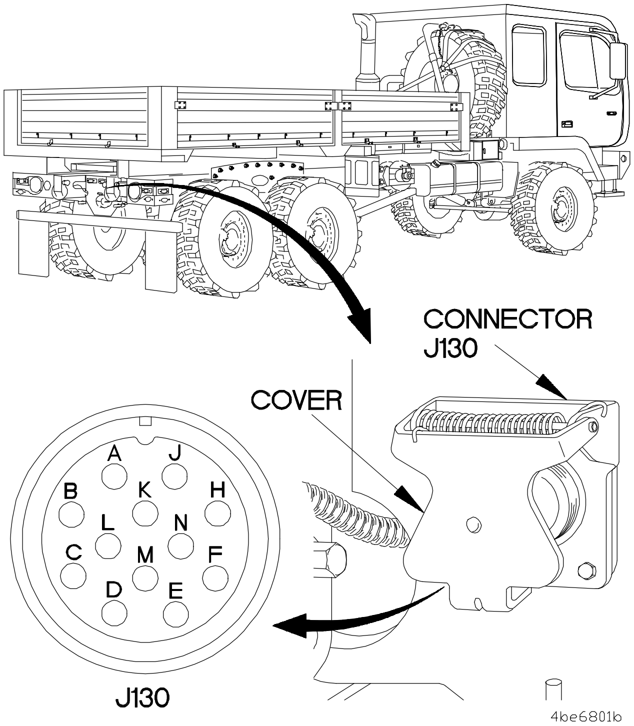
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Lift cover on connector J130 intervehicular 24 VDC connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector J130 socket A.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to connector J130 socket C.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) Connect positive (+) probe of multimeter to connector J130 socket H.
(10) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(11) If 24 VDC is not present, go to step 2 of this fault.
(12) If 24 VDC is present, troubleshoot trailer electrical system per trailer technical manual.
(13) Position main light switch to OFF (TM 9-2320-366-10-1).



e68. TRAILER BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Towing vehicle blackout marker lights OK.
Circuit breaker CB42 OK.
Trailer electrical system OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K29.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

2. Is continuity present from connector J130 sockets A, C, and H to relay K29 terminal 87?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible faults and determines where troubleshooting continues.

NO — Go to step 6 of this fault.

YES

KNOWN INFO

Towing vehicle blackout marker lights OK.
Circuit breaker CB42 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K29.

WARNING
Read WARNING on following page.

3. Is 24 VDC present at relay K29 terminal 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1958 is faulty.

NO — Repair wire 1958 from K29 terminal 30 on PDP to circuit breaker CB42 terminal 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

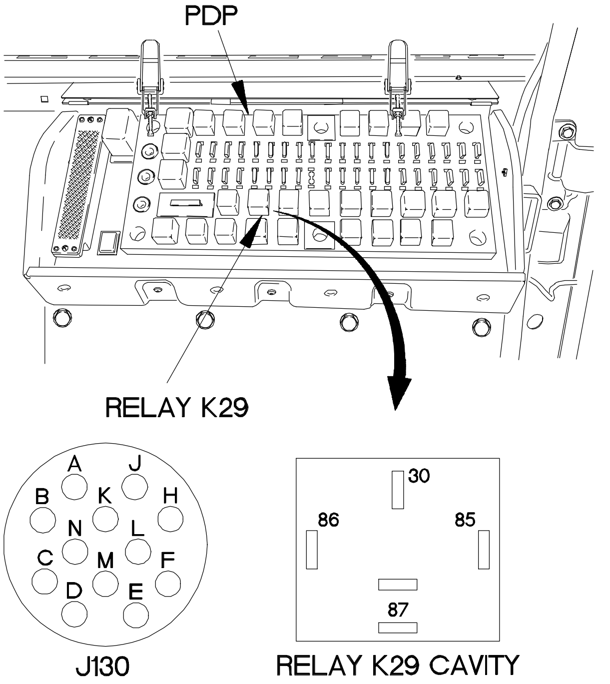
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K29 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J130 sockets A, C, and H, one at a time.
(5) Connect negative (-) probe of multimeter to relay K29 terminal 87 on PDP and note reading on multimeter.
(6) If continuity is not present, go to step 6 of this fault.



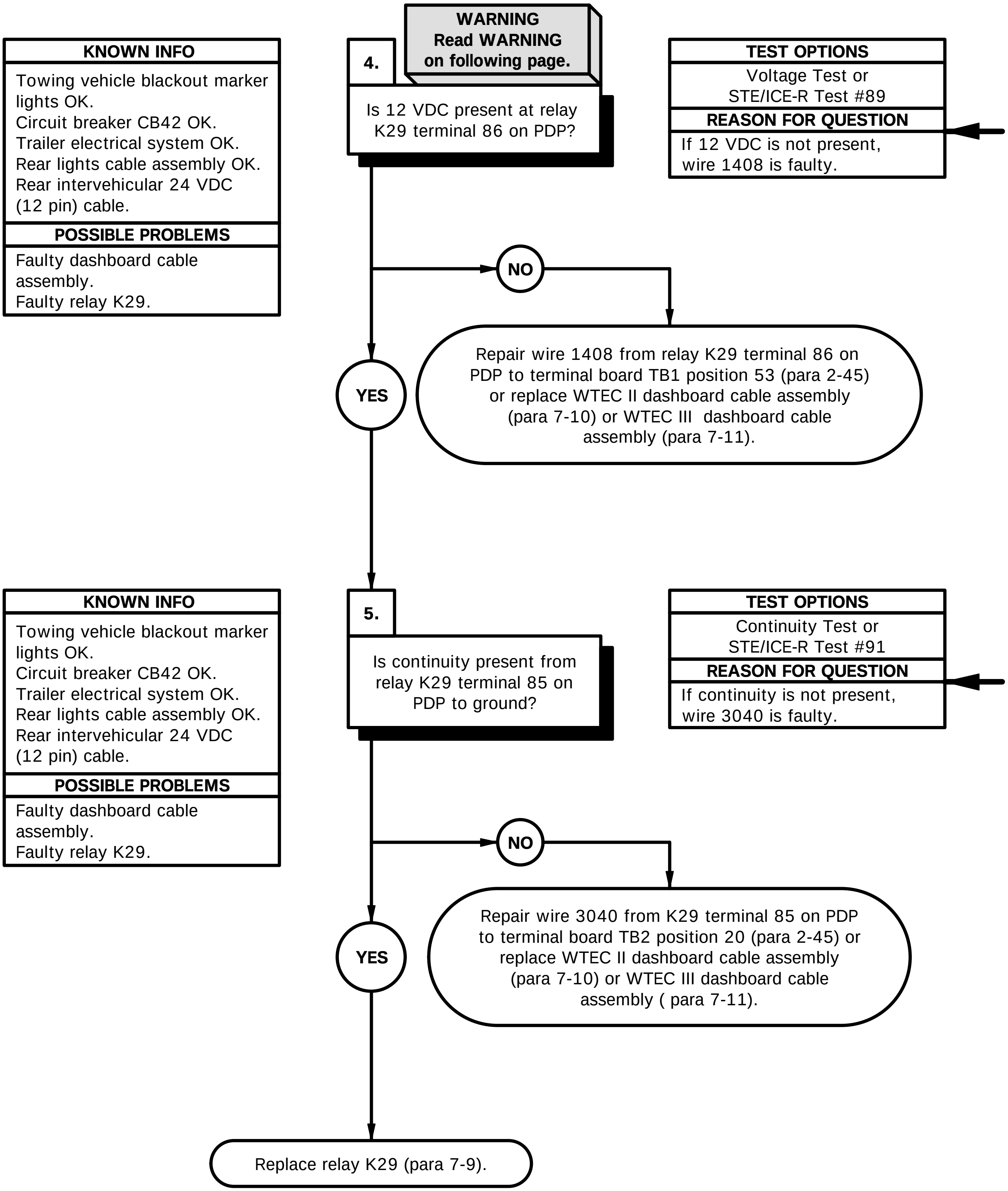
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K29 terminal 30 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, repair wire 1958 from K29 terminal 30 on PDP to circuit breaker CB42 terminal 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

e68. TRAILER BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle blackout marker lights OK.
Circuit breaker CB42 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K29.

WARNING
Read WARNING on following page.

4. Is 12 VDC present at relay K29 terminal 86 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 1408 is faulty.

NO: Repair wire 1408 from relay K29 terminal 86 on PDP to terminal board TB1 position 53 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Towing vehicle blackout marker lights OK.
Circuit breaker CB42 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K29.

5. Is continuity present from relay K29 terminal 85 on PDP to ground?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3040 is faulty.

NO: Repair wire 3040 from K29 terminal 85 on PDP to terminal board TB2 position 20 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

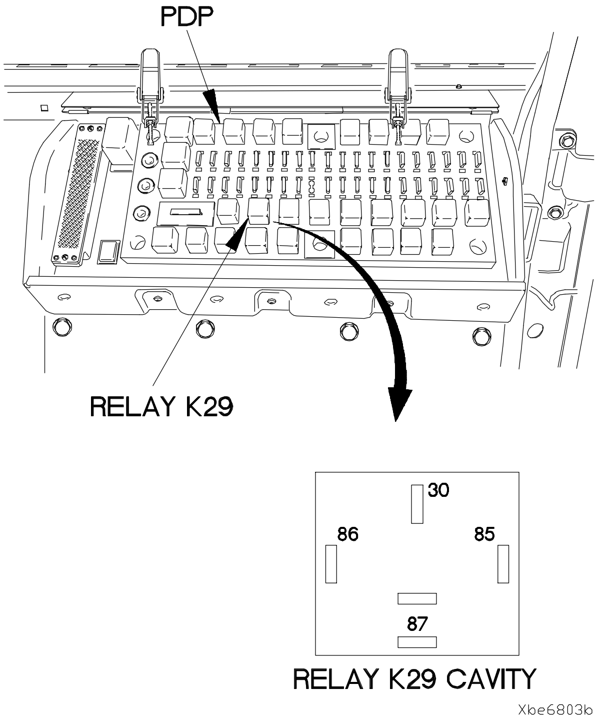
YES: Replace relay K29 (para 7-9).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

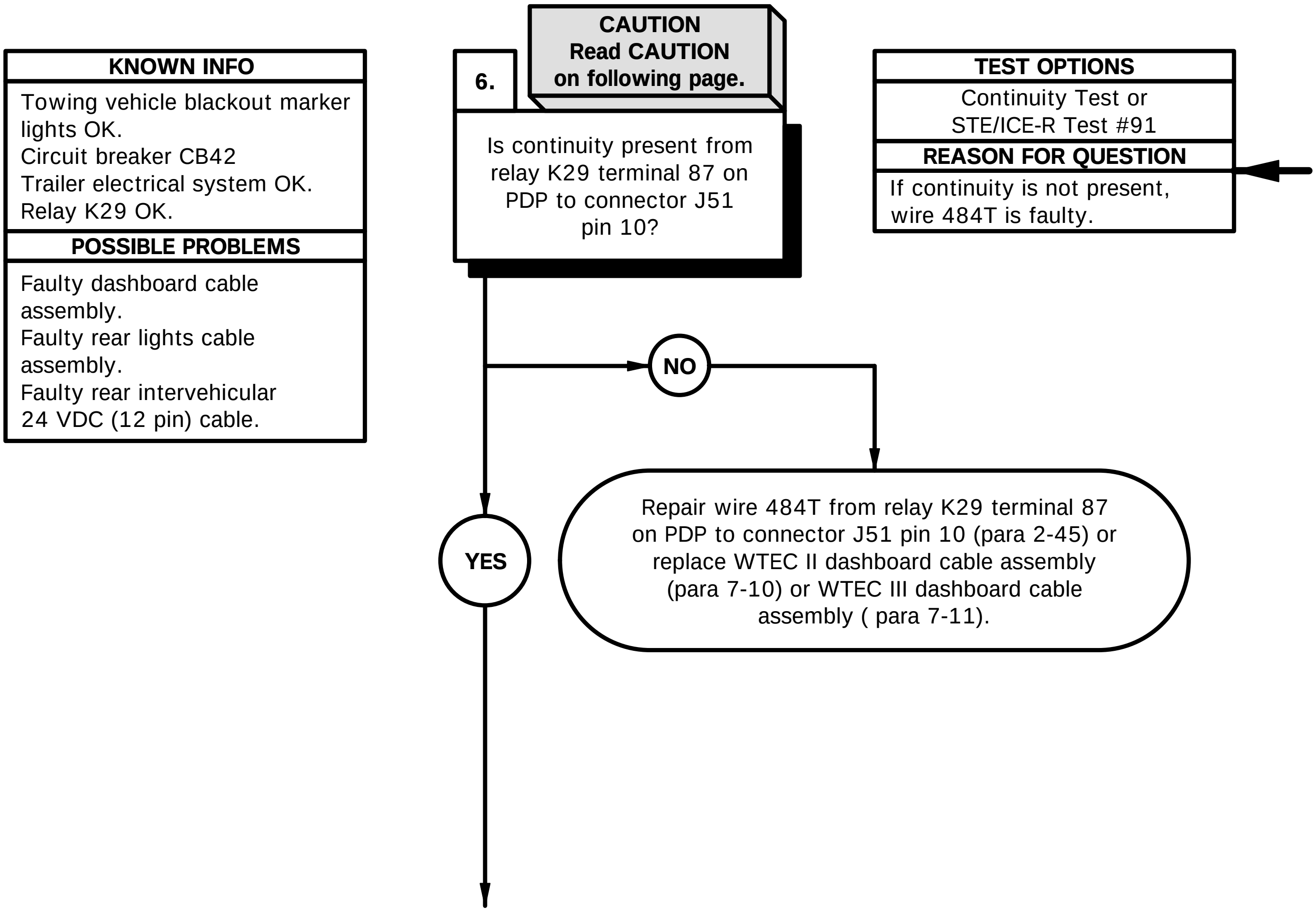
(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K29 terminal 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 VDC is not present, repair wire 1408 from relay K29 terminal 86 on PDP to terminal board TB1 position 53 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K29 terminal 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3040 from K29 terminal 85 on PDP to terminal board TB2 position 20 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K29 (para 7-9).
(6) Install relay K29 in PDP.
(7) Install PDP cover (para 16-2).

e68. TRAILER BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle blackout marker lights OK.
Circuit breaker CB42
Trailer electrical system OK.
Relay K29 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

6.

CAUTION
Read CAUTION on following page.

Is continuity present from relay K29 terminal 87 on PDP to connector J51 pin 10?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 484T is faulty.

NO

Repair wire 484T from relay K29 terminal 87 on PDP to connector J51 pin 10 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CAUTION

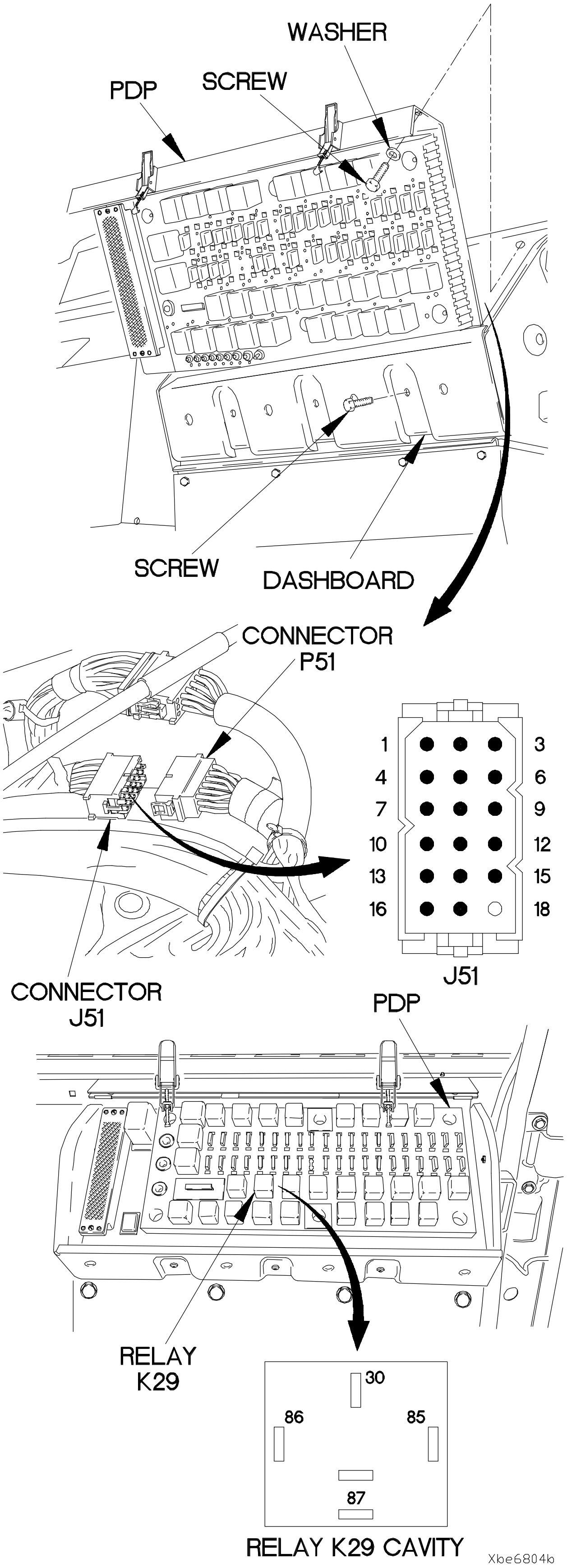
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

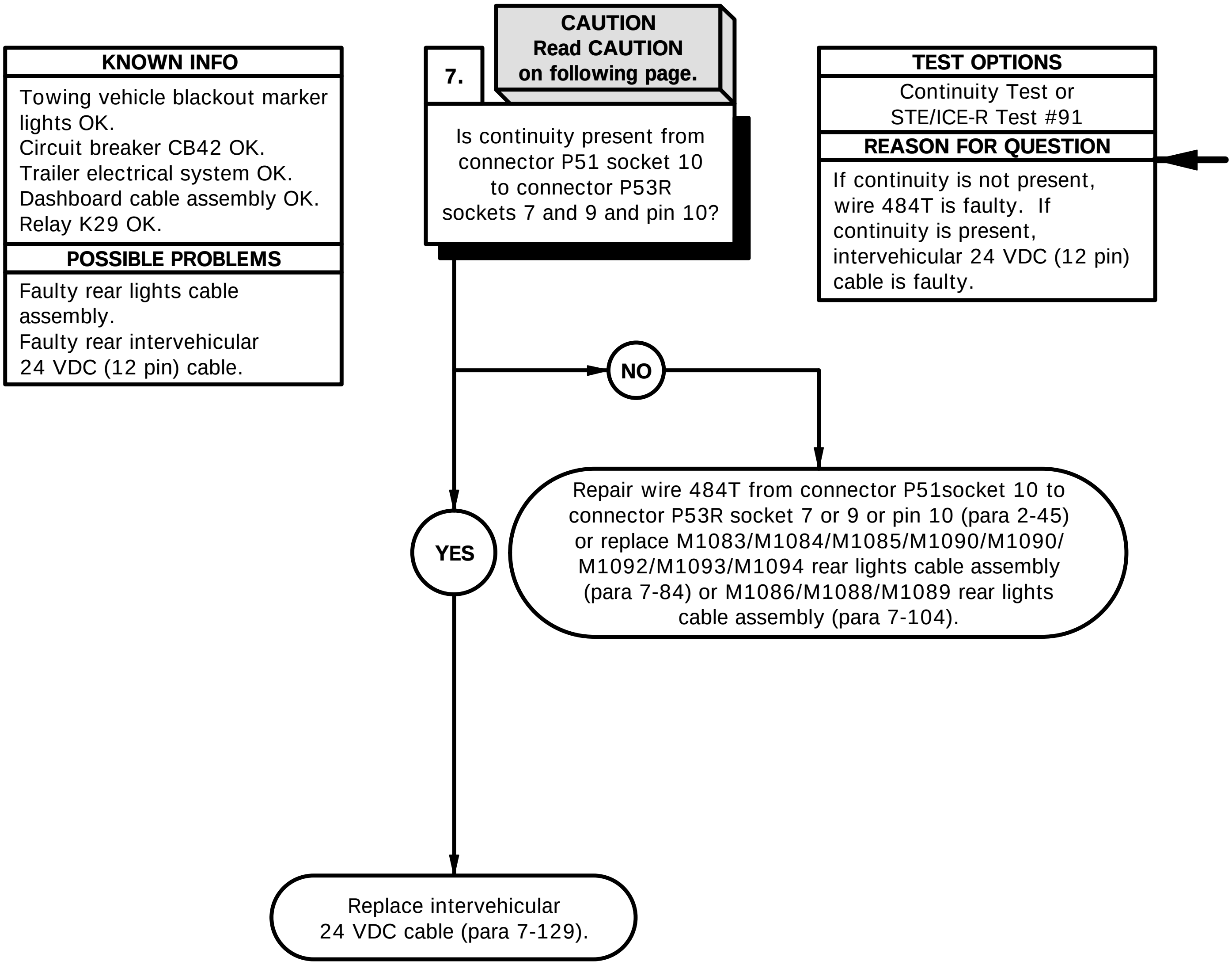
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J51 from connector P51.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to relay K29 terminal 87 on PDP.
(7) Connect negative (-) probe of multimeter to connector J51 pin 10 and note reading on multimeter.
(8) If continuity is not present, repair wire 484T from relay K29 terminal 87 on PDP to connector J51 pin 10 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Install relay K29 in PDP.



e68. TRAILER BLACKOUT MARKER LIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle blackout marker lights OK.
Circuit breaker CB42 OK.
Trailer electrical system OK.
Dashboard cable assembly OK.
Relay K29 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

7.

Is continuity present from connector P51 socket 10 to connector P53R sockets 7 and 9 and pin 10?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 484T is faulty. If continuity is present, intervehicular 24 VDC (12 pin) cable is faulty.

Repair wire 484T from connector P51socket 10 to connector P53R socket 7 or 9 or pin 10 (para 2-45) or replace M1083/M1084/M1085/M1090/M1090/ M1092/M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

Replace intervehicular 24 VDC cable (para 7-129).

CAUTION

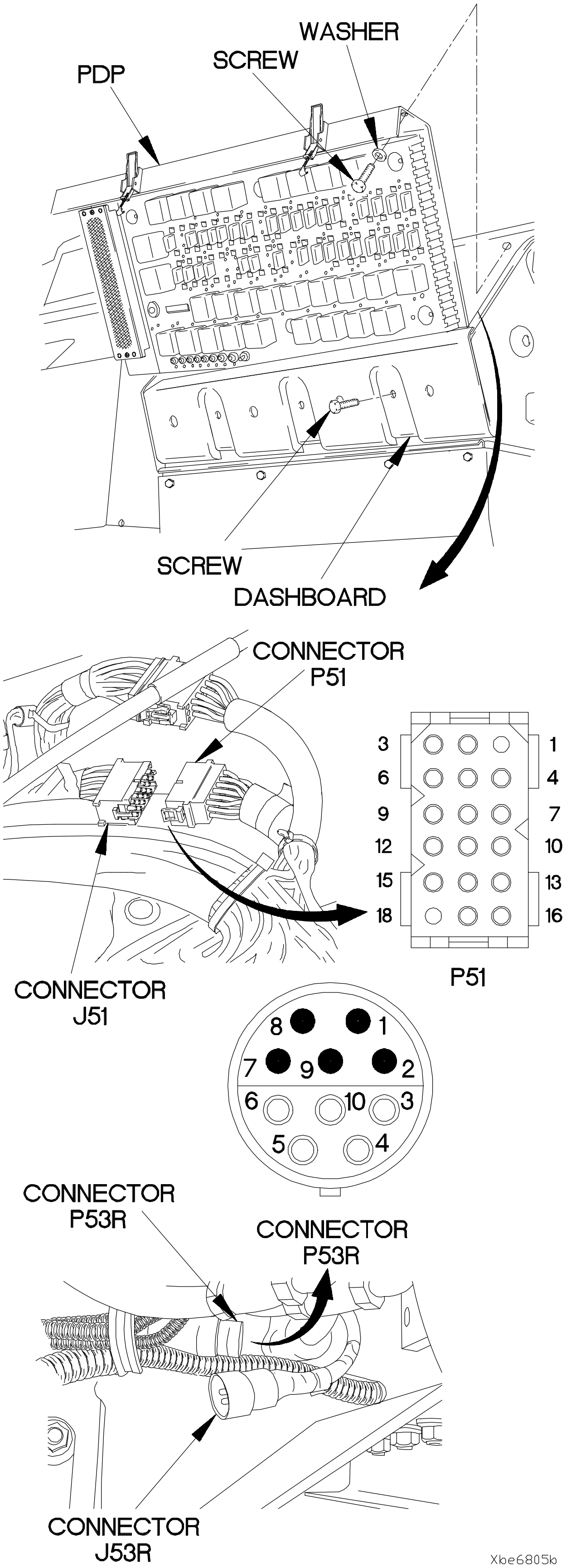
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P53R from connector J53R.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P51 socket 10.
(4) Connect negative (-) probe of multimeter to connector P53R sockets 7 and 9 and pin 10, one at a time, and note reading on multimeter.
(5) If continuity is not present, repair wire 484T from connector P51 socket 10 to connector P53R socket 7 or 9 or pin 10 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(6) If continuity is present, replace intervehicular 24 VDC (12 pin) cable (para 7-129).
(7) Connect connector P53R to connector J53R.
(8) Connect connector P51 to connector J51.
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Install PDP cover (para 16-2).



e69. TRAILER BLACKOUT STOPLIGHTS DO NOT ILLUMINATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

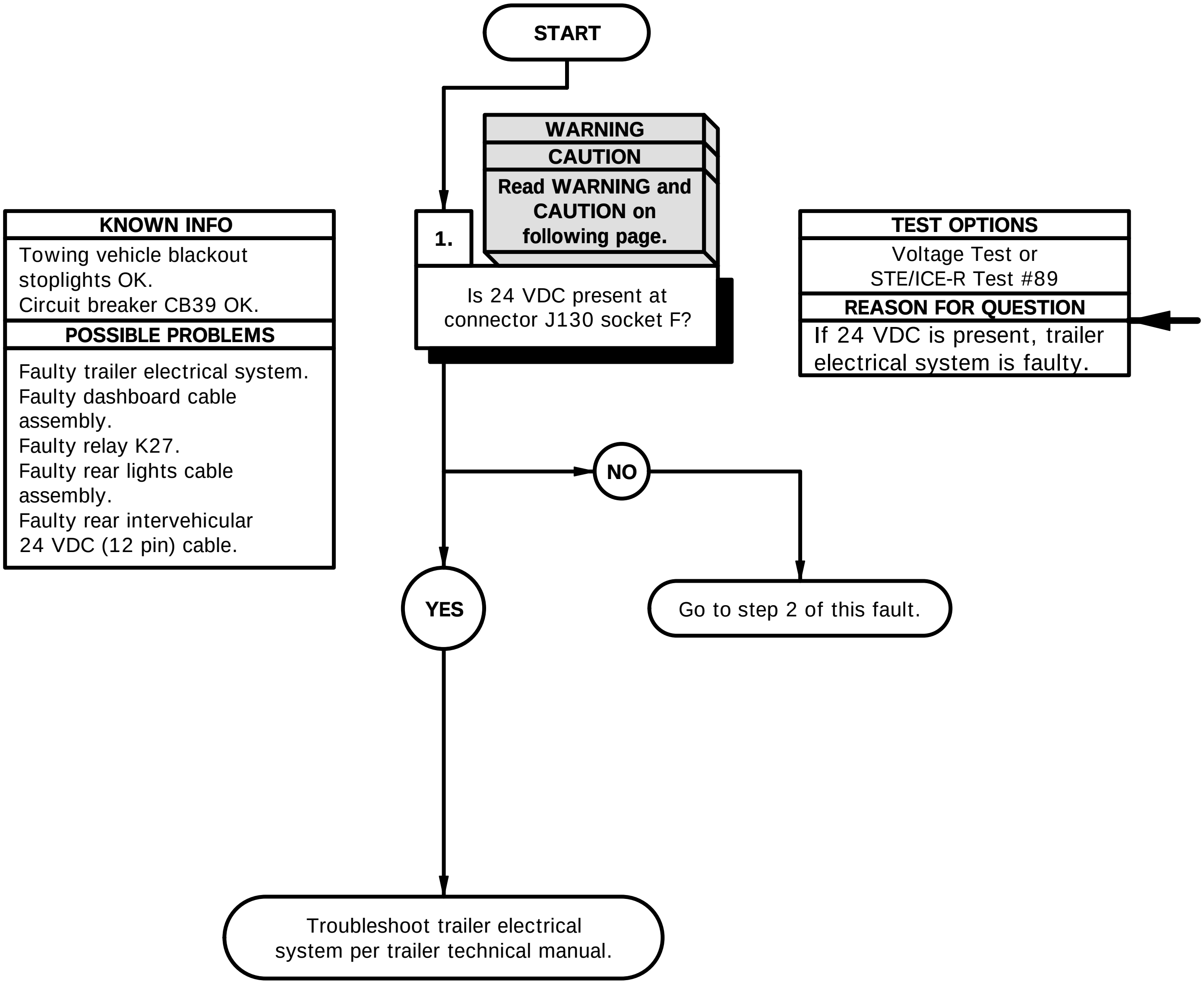
Material/Parts
Wire, Elect, 50 ft (Item 71, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker CB39 prior to beginning this task.



KNOWN INFO

Towing vehicle blackout stoplights OK.
Circuit breaker CB39 OK.

POSSIBLE PROBLEMS

Faulty trailer electrical system.
Faulty dashboard cable assembly.
Faulty relay K27.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

WARNING
CAUTION
Read WARNING and CAUTION on following page.

1. Is 24 VDC present at connector J130 socket F?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is present, trailer electrical system is faulty.

Go to step 2 of this fault.

Troubleshoot trailer electrical system per trailer technical manual.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

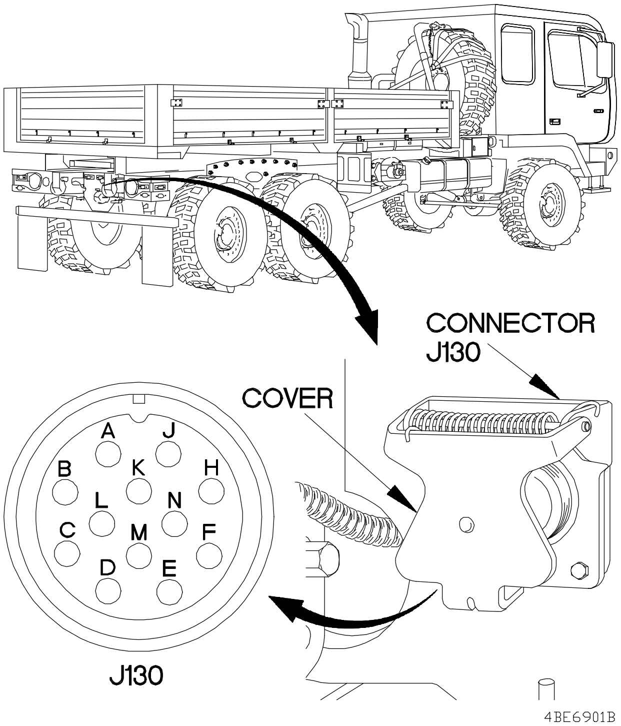
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

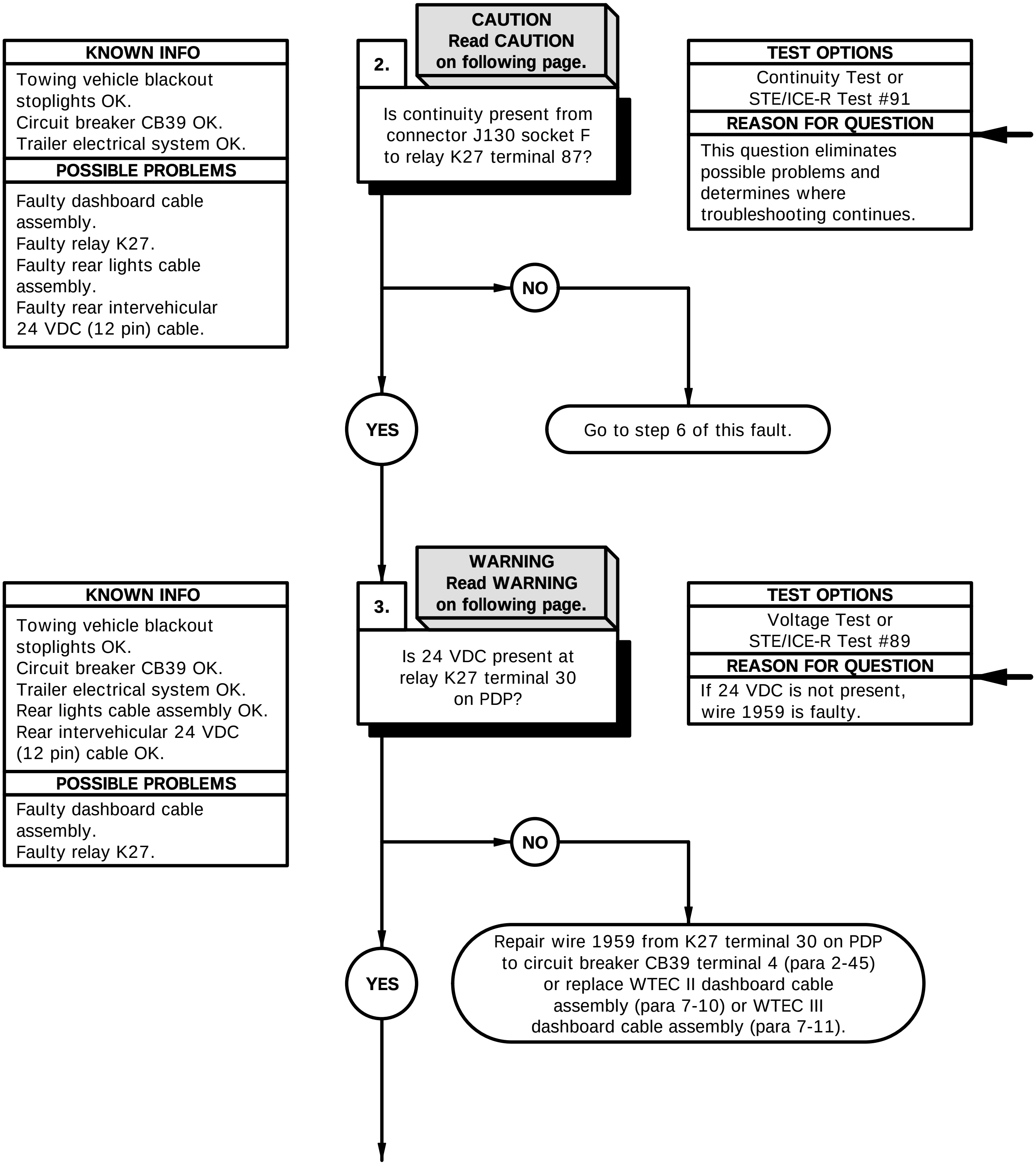
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Lift cover on connector J130 intervehicular 24 VDC connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector J130 socket F.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position main light switch to BO DRIVE (TM 9-2320-366-10-1).
(7) Apply brakes and note reading on multimeter.
(8) If 24 VDC is not present, go to step 2 of this fault.
(9) If 24 VDC is present, troubleshoot trailer electrical system per trailer technical manual.
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Position master power switch to off (TM 9-2320-366-10-1).



e69. TRAILER BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle blackout stoplights OK.
Circuit breaker CB39 OK.
Trailer electrical system OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K27.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

2.

CAUTION
Read CAUTION on following page.

Is continuity present from connector J130 socket F to relay K27 terminal 87?

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 6 of this fault.

YES:

KNOWN INFO

Towing vehicle blackout stoplights OK.
Circuit breaker CB39 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K27.

3.

WARNING
Read WARNING on following page.

Is 24 VDC present at relay K27 terminal 30 on PDP?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 24 VDC is not present, wire 1959 is faulty.

NO: Repair wire 1959 from K27 terminal 30 on PDP to circuit breaker CB39 terminal 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES:

CAUTION

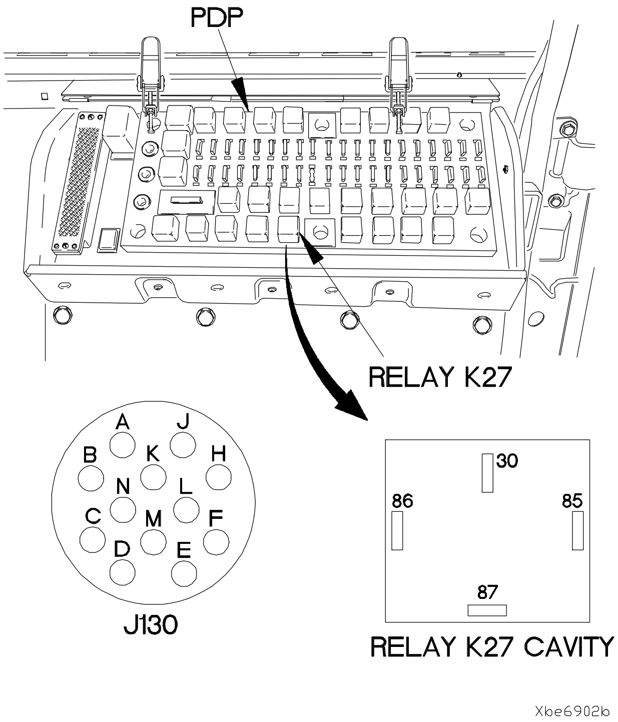
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K27 from PDP.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J130 socket F.
(5) Connect negative (-) probe of multimeter to relay K27 terminal 87 on PDP and note reading on multimeter.
(6) If continuity is not present, go to step 6 of this fault.



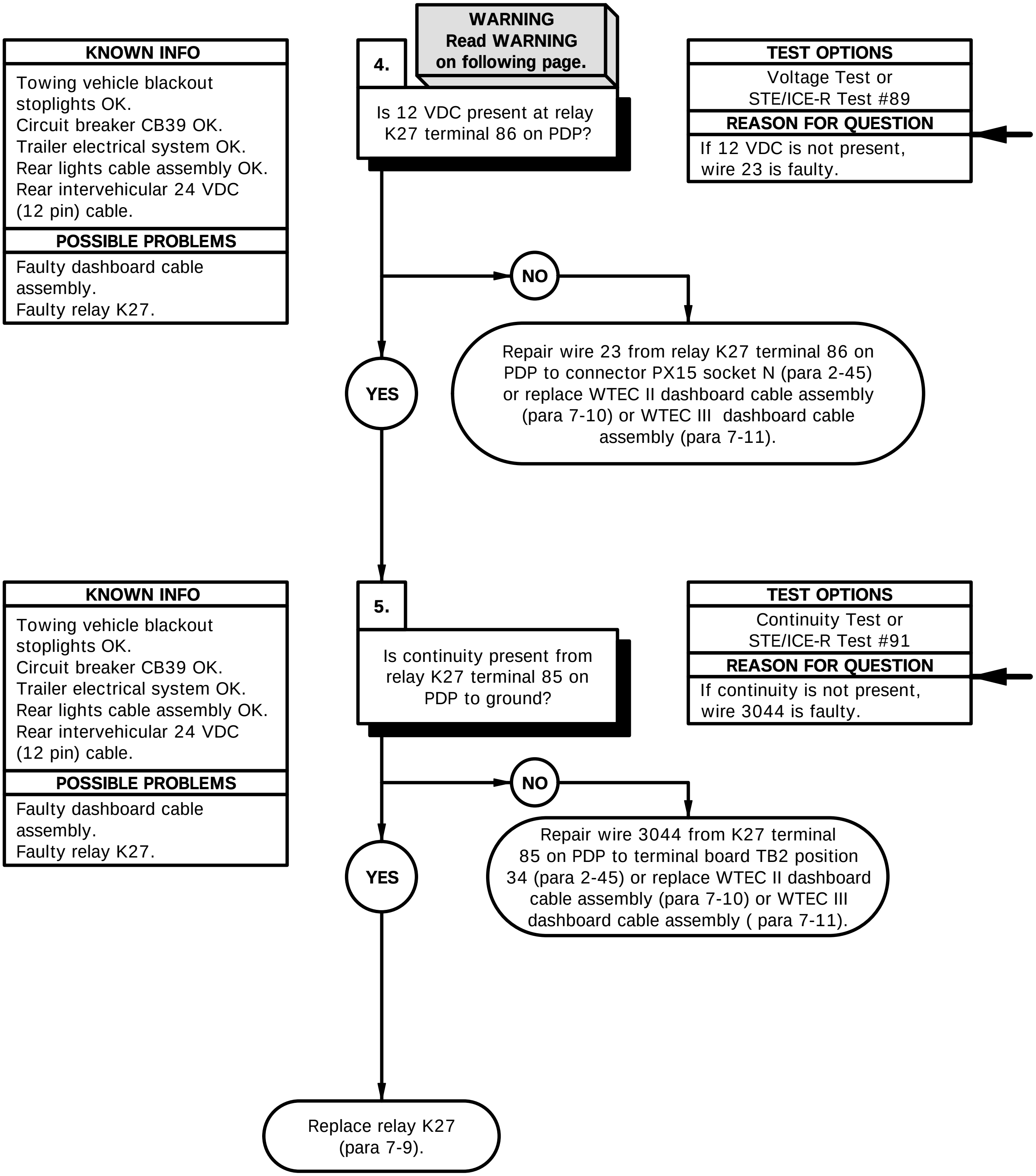
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K27 terminal 30 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to BO DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 24 VDC is not present, repair wire 1959 from K27 terminal 30 on PDP to circuit breaker CB39 terminal 4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Position main light switch to OFF (TM 9-2320-366-10-1).

e69. TRAILER BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)



WARNING
Read WARNING on following page.

KNOWN INFO

Towing vehicle blackout stoplights OK.
Circuit breaker CB39 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K27.

4. Is 12 VDC present at relay K27 terminal 86 on PDP?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 23 is faulty.

NO: Repair wire 23 from relay K27 terminal 86 on PDP to connector PX15 socket N (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Go to step 5.

KNOWN INFO

Towing vehicle blackout stoplights OK.
Circuit breaker CB39 OK.
Trailer electrical system OK.
Rear lights cable assembly OK.
Rear intervehicular 24 VDC (12 pin) cable.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K27.

5. Is continuity present from relay K27 terminal 85 on PDP to ground?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 3044 is faulty.

NO: Repair wire 3044 from K27 terminal 85 on PDP to terminal board TB2 position 34 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace relay K27 (para 7-9).

WARNING

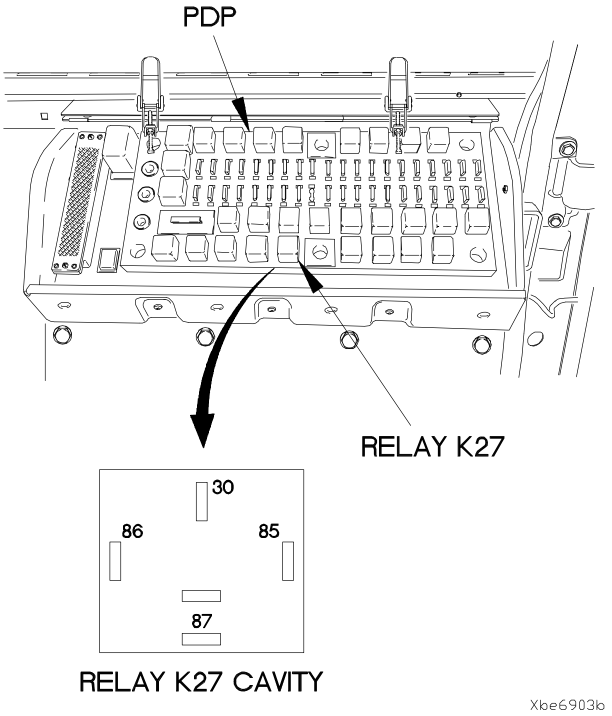
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts DC.
(2) Connect positive (+) probe of multimeter to relay K27 terminal 86 on PDP.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1).
(5) Position main light switch to BO DRIVE (TM 9-2320-366-10-1).
(6) Apply brakes and note reading on multimeter.
(7) If 12 VDC is not present, repair wire 23 from relay K27 terminal 86 on PDP to connector PX15 socket N (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Position master power switch to off (TM 9-2320-366-10-1).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to relay K27 terminal 85 on PDP.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3044 from K27 terminal 85 on PDP to terminal board TB2 position 34 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) If continuity is present, replace relay K27 (para 7-9).
(6) Install relay K27 in PDP.
(7) Install PDP cover (para 16-2).



e69. TRAILER BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)

KNOWN INFO

Towing vehicle blackout stoplights OK.
Circuit breaker CB39
Trailer electrical system OK.
Relay K27 OK.

POSSIBLE PROBLEMS

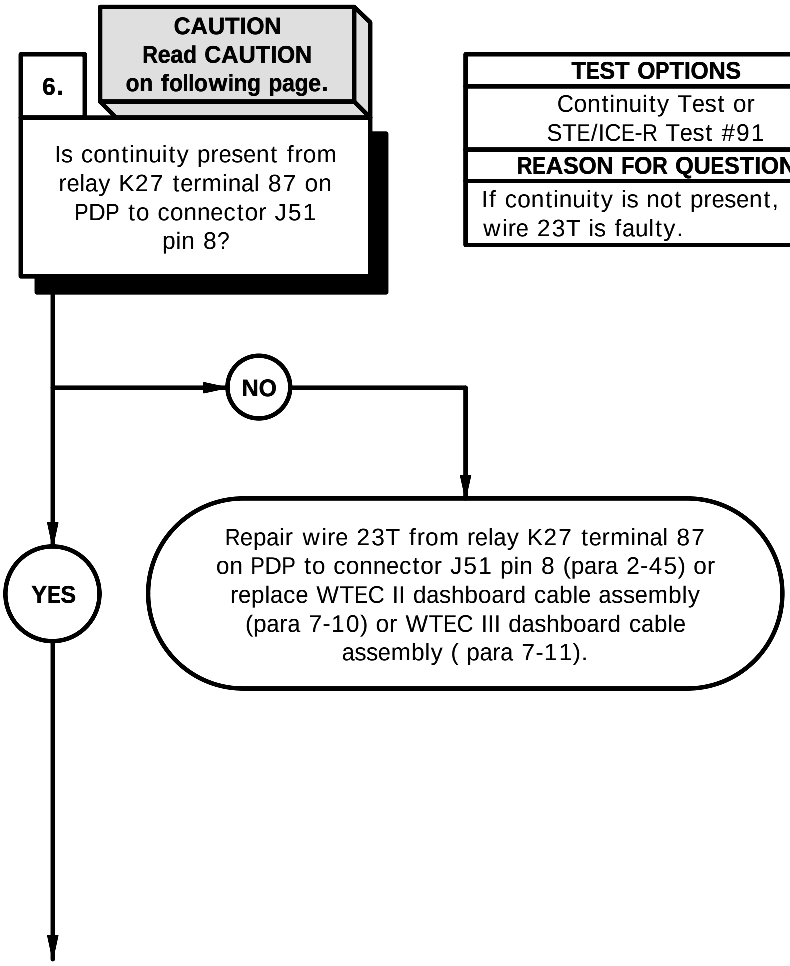
Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

TEST OPTIONS

Continuity Test or
STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 23T is faulty.



6. Is continuity present from relay K27 terminal 87 on PDP to connector J51 pin 8?

NO: Repair wire 23T from relay K27 terminal 87 on PDP to connector J51 pin 8 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CAUTION

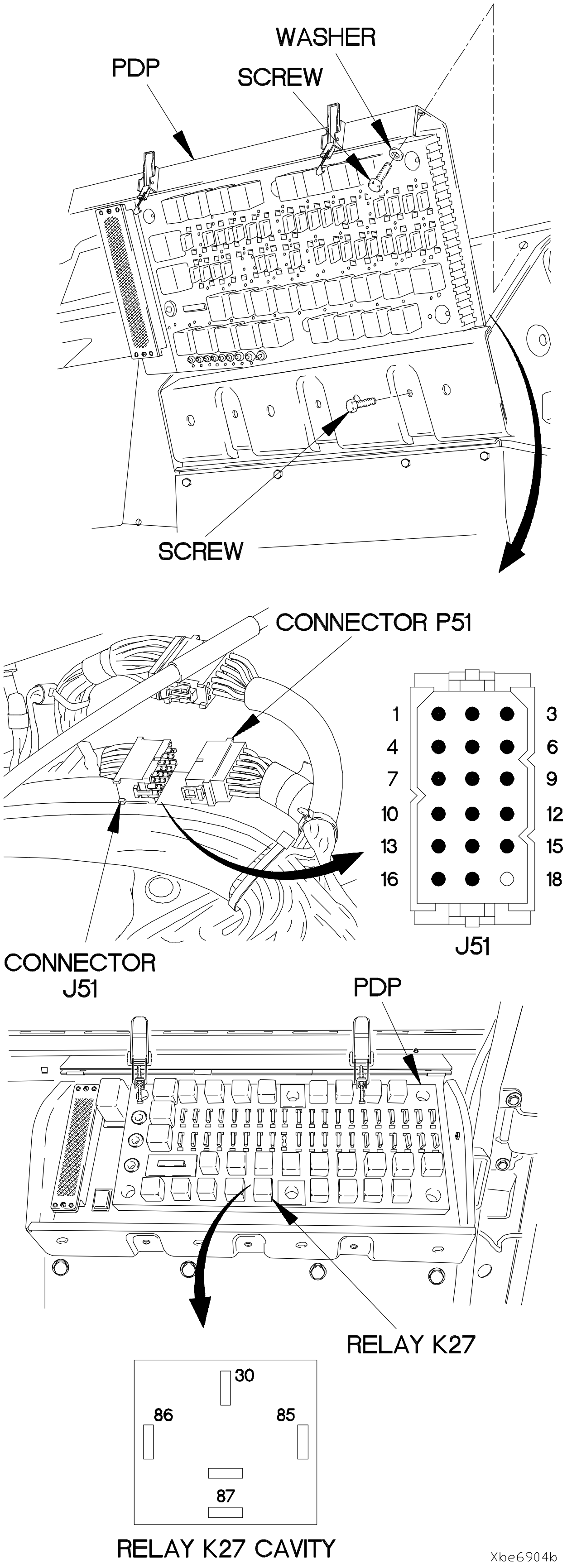
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

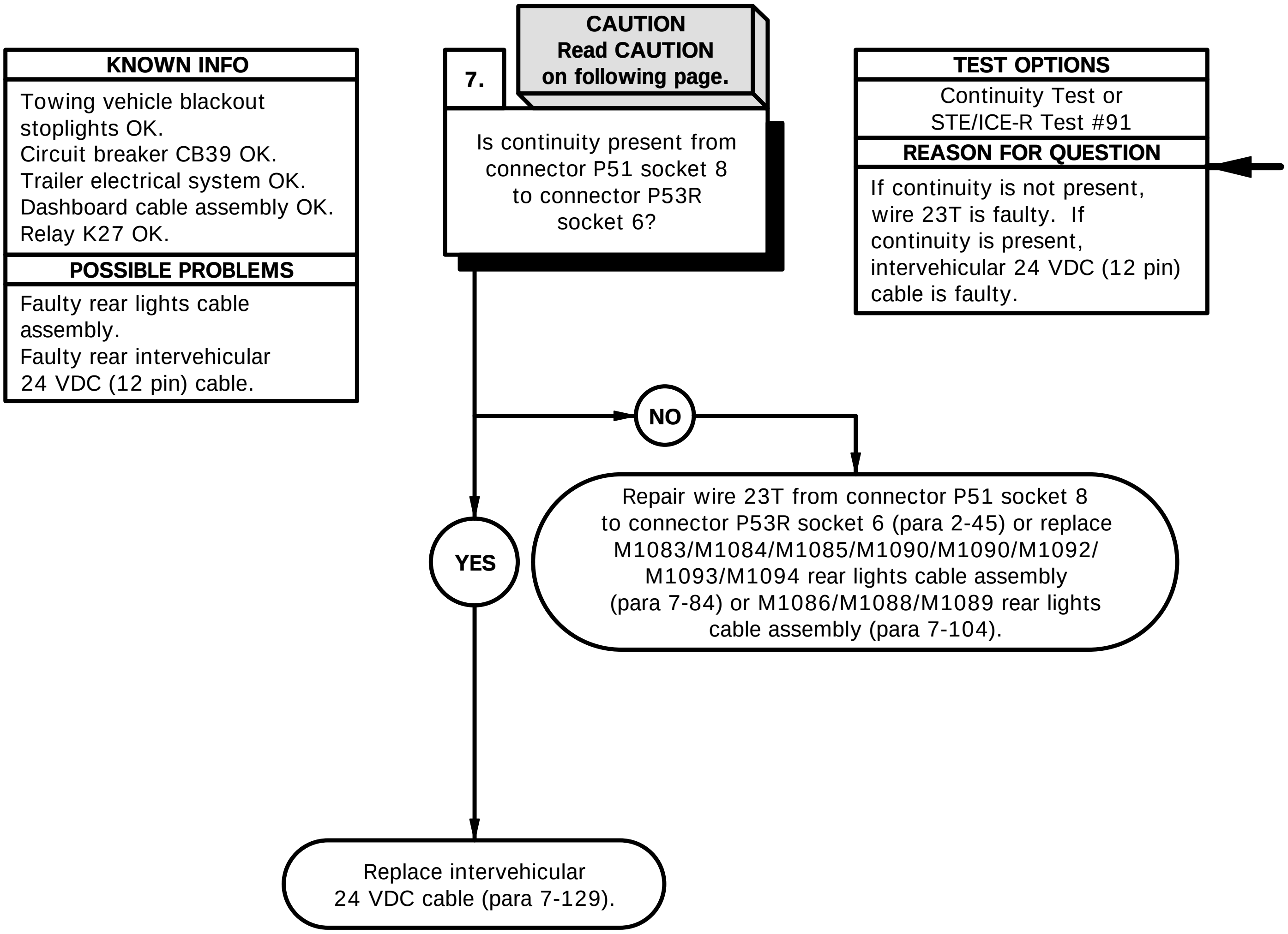
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Disconnect connector J51 from connector P51.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to relay K27 terminal 87 on PDP.
(7) Connect negative (-) probe of multimeter to connector J51 pin 8 and note reading on multimeter.
(8) If continuity is not present, repair wire 23T from relay K27 terminal 87 on PDP to connector J51 pin 8 (para 2-45) or replace WTEC II dashboard assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Install relay K27 in PDP.



e69. TRAILER BLACKOUT STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle blackout stoplights OK.
Circuit breaker CB39 OK.
Trailer electrical system OK.
Dashboard cable assembly OK.
Relay K27 OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear intervehicular 24 VDC (12 pin) cable.

CAUTION
Read CAUTION on following page.

7. Is continuity present from connector P51 socket 8 to connector P53R socket 6?

TEST OPTIONS

Continuity Test or STE/ICE-R Test #91

REASON FOR QUESTION

If continuity is not present, wire 23T is faulty. If continuity is present, intervehicular 24 VDC (12 pin) cable is faulty.

NO

Repair wire 23T from connector P51 socket 8 to connector P53R socket 6 (para 2-45) or replace M1083/M1084/M1085/M1090/M1090/M1092/M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).

YES

Replace intervehicular 24 VDC cable (para 7-129).

CAUTION

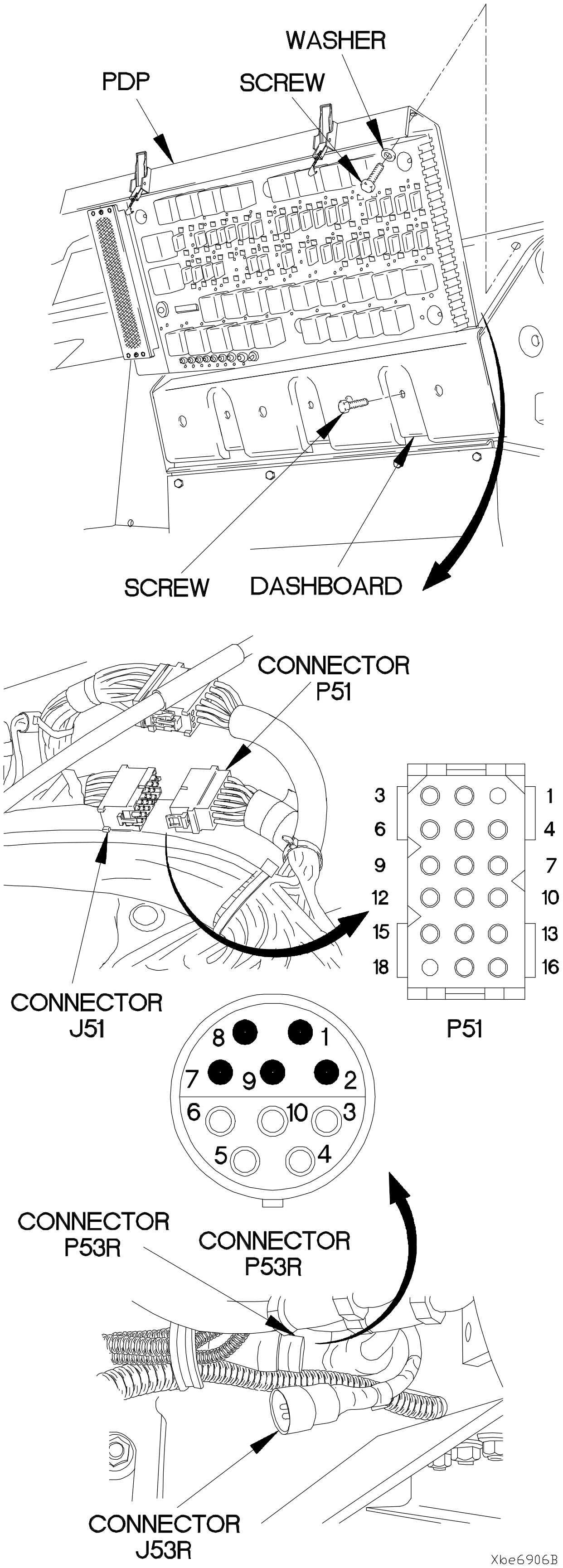
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

(1) Disconnect connector P53R from connector J53R.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P51 socket 8.
(4) Connect negative (-) probe of multimeter to connector P53R socket 6 and note reading on multimeter.
(5) If continuity is not present, repair wire 23T from connector P51 socket 8 to connector P53R socket 6 (para 2-45) or replace M1083/M1084/M1085/M1090/M1092/M1093/M1094 rear lights cable assembly (para 7-84) or M1086/M1088/M1089 rear lights cable assembly (para 7-104).
(6) If continuity is present, replace intervehicular 24 VDC (12 pin) cable (para 7-129).
(7) Connect connector P53R to connector J53R.
(8) Connect connector P51 to connector J51.
(9) Install PDP on dashboard with three screws.
(10) Install three washers and screws in PDP.
(11) Install PDP cover (para 16-2).



e70. INTERVEHICLE CLEARANCE LIGHTS DO NOT OPERATE

INITIAL SETUP

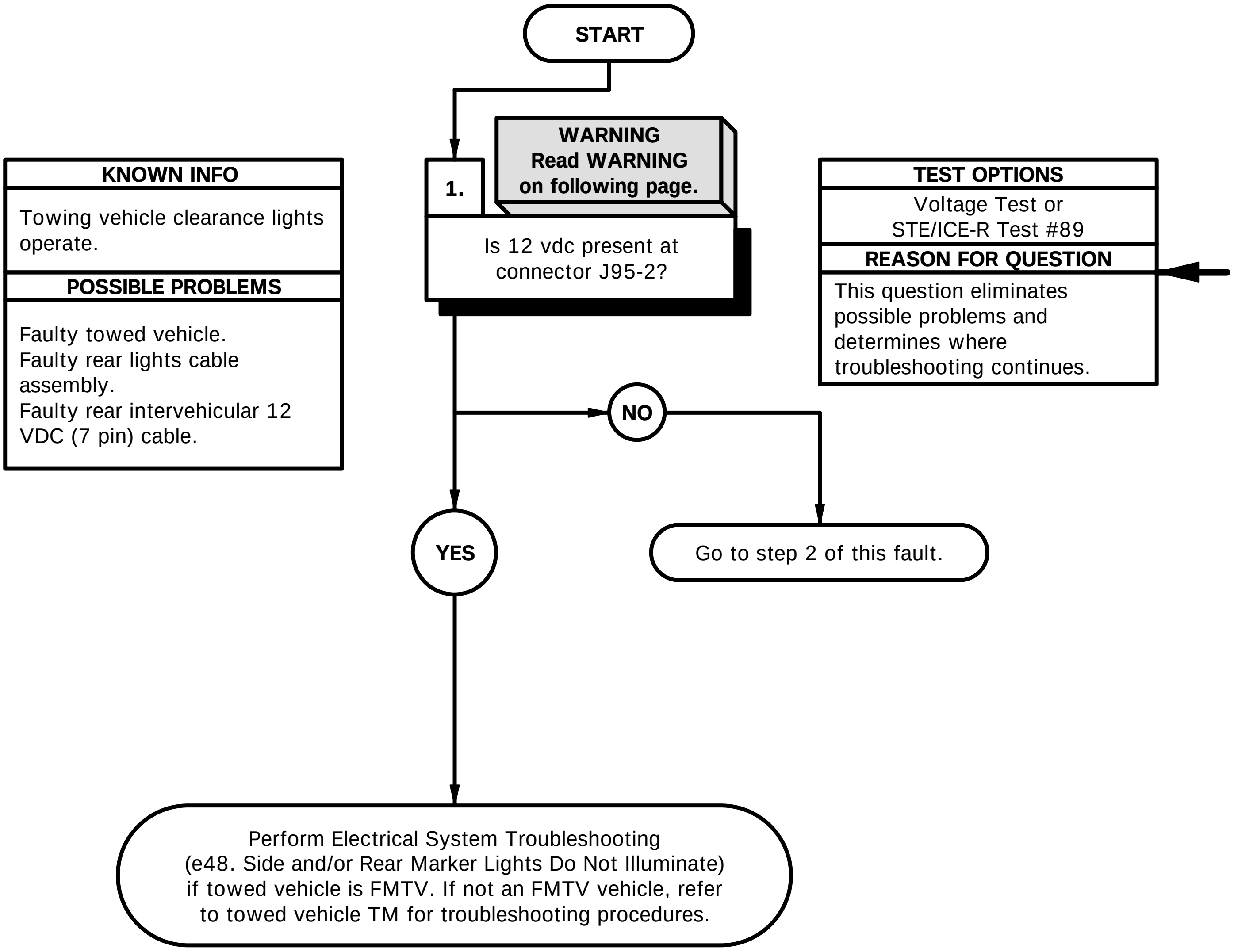
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Ties, Cable, Plastic (Item 69, Appendix D)



KNOWN INFO

Towing vehicle clearance lights operate.

POSSIBLE PROBLEMS

Faulty towed vehicle.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

WARNING
Read WARNING on following page.

Is 12 vdc present at connector J95-2?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 2 of this fault.

Perform Electrical System Troubleshooting (e48. Side and/or Rear Marker Lights Do Not Illuminate) if towed vehicle is FMTV. If not an FMTV vehicle, refer to towed vehicle TM for troubleshooting procedures.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Raise cover on connector J95 intervehicular 12 vdc connector.

(2) Set multimeter to volts dc.

(3) Connect positive (+) probe of multimeter to connector J95-2.

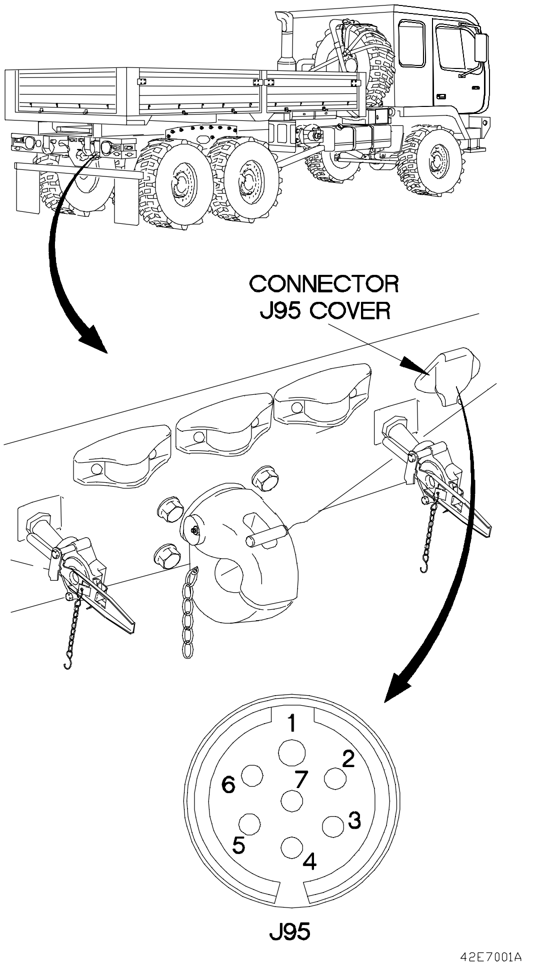
(4) Connect negative (-) probe of multimeter to ground.

(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.

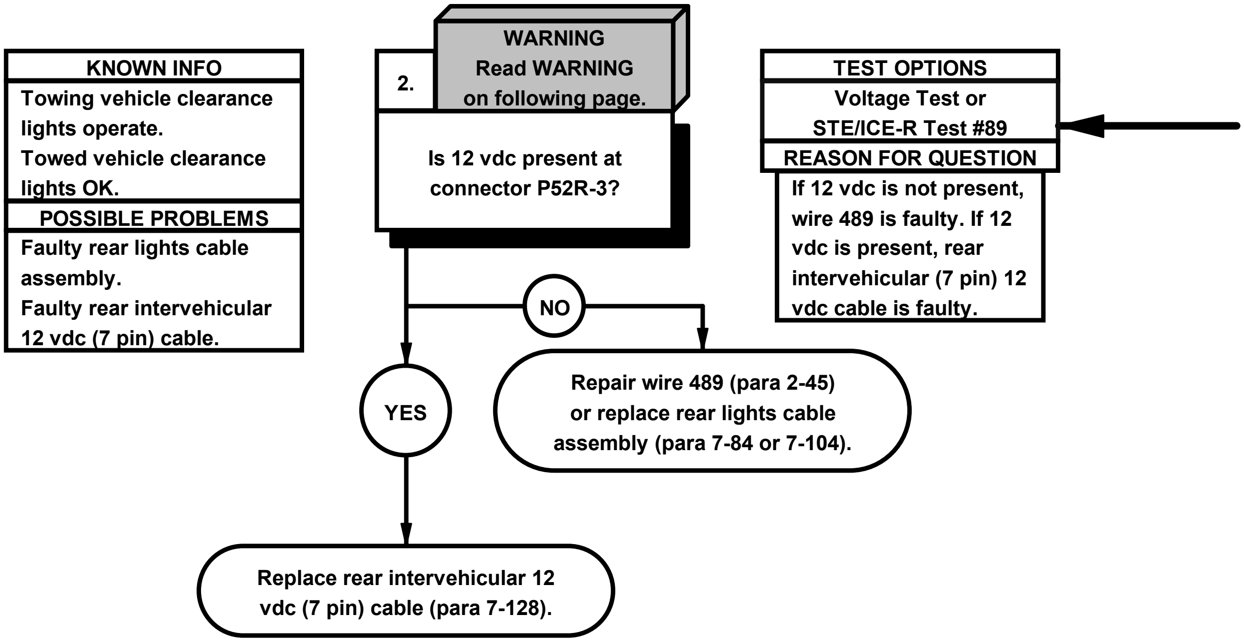
(6) If 12 vdc is not present, go to step 2 of this fault.

(7) If 12 vdc is present, perform Electrical System Troubleshooting (e48. Side and/or Rear Marker Lights Do Not Illuminate) if towed vehicle is FMTV. If towed vehicle is not an FMTV, refer to towed vehicle TM for troubleshooting procedures.

(8) Position main light switch to OFF (TM 9-2320-366-10-1).



e70. INTERVEHICLE CLEARANCE LIGHTS DO NOT OPERATE (CONT)



KNOWN INFO

Towing vehicle clearance lights operate.

Towed vehicle clearance lights OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

Faulty rear intervehicular 12 vdc (7 pin) cable.

WARNING

Read WARNING on following page.

2\. Is 12 vdc present at connector P52R-3?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 vdc is not present, wire 489 is faulty. If 12 vdc is present, rear intervehicular (7 pin) 12 vdc cable is faulty.

Repair wire 489 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

Replace rear intervehicular 12 vdc (7 pin) cable (para 7-128).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

NOTE

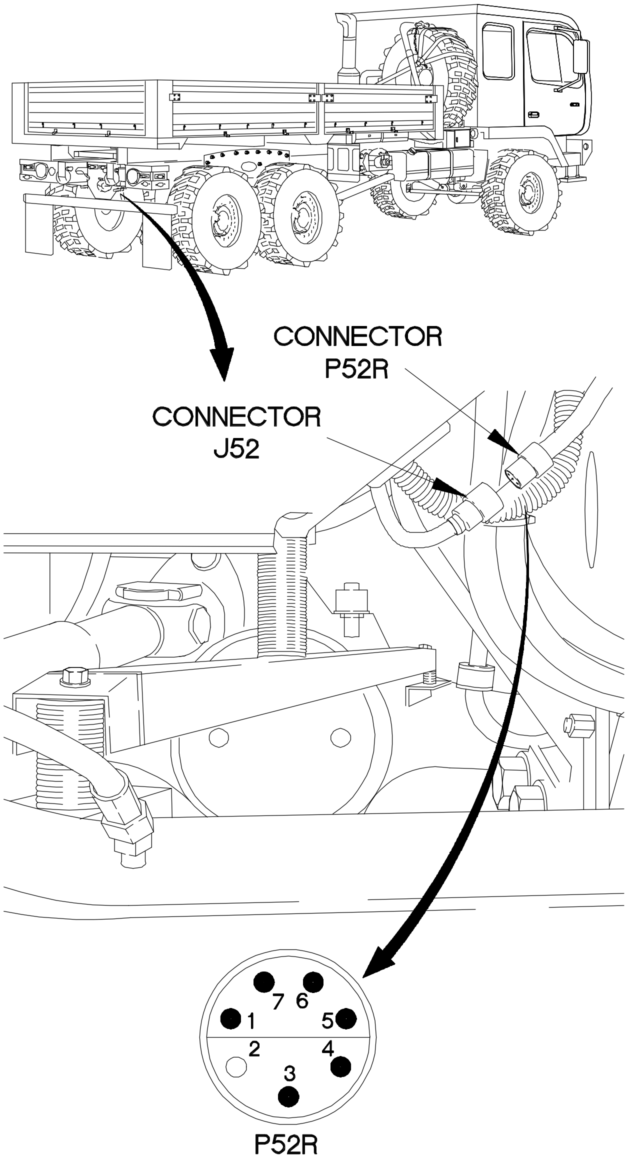
Remove plastic cable ties as required.

(1) Disconnect connector P52R from connector J52.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector P52R-3.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 12 vdc is not present, repair wire 489 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(7) If 12 vdc is present, replace rear intervehicular 12 vdc (7 pin) cable (para 7-128).
(8) Position main light switch to OFF (TM 9-2320-366-10-1).

NOTE

Install plastic cable ties as required.

(9) Connect connector P52R to connector J52.



e71. INTERVEHICULAR LEFT TURN SIGNAL DOES NOT ILLUMINATE

INITIAL SETUP

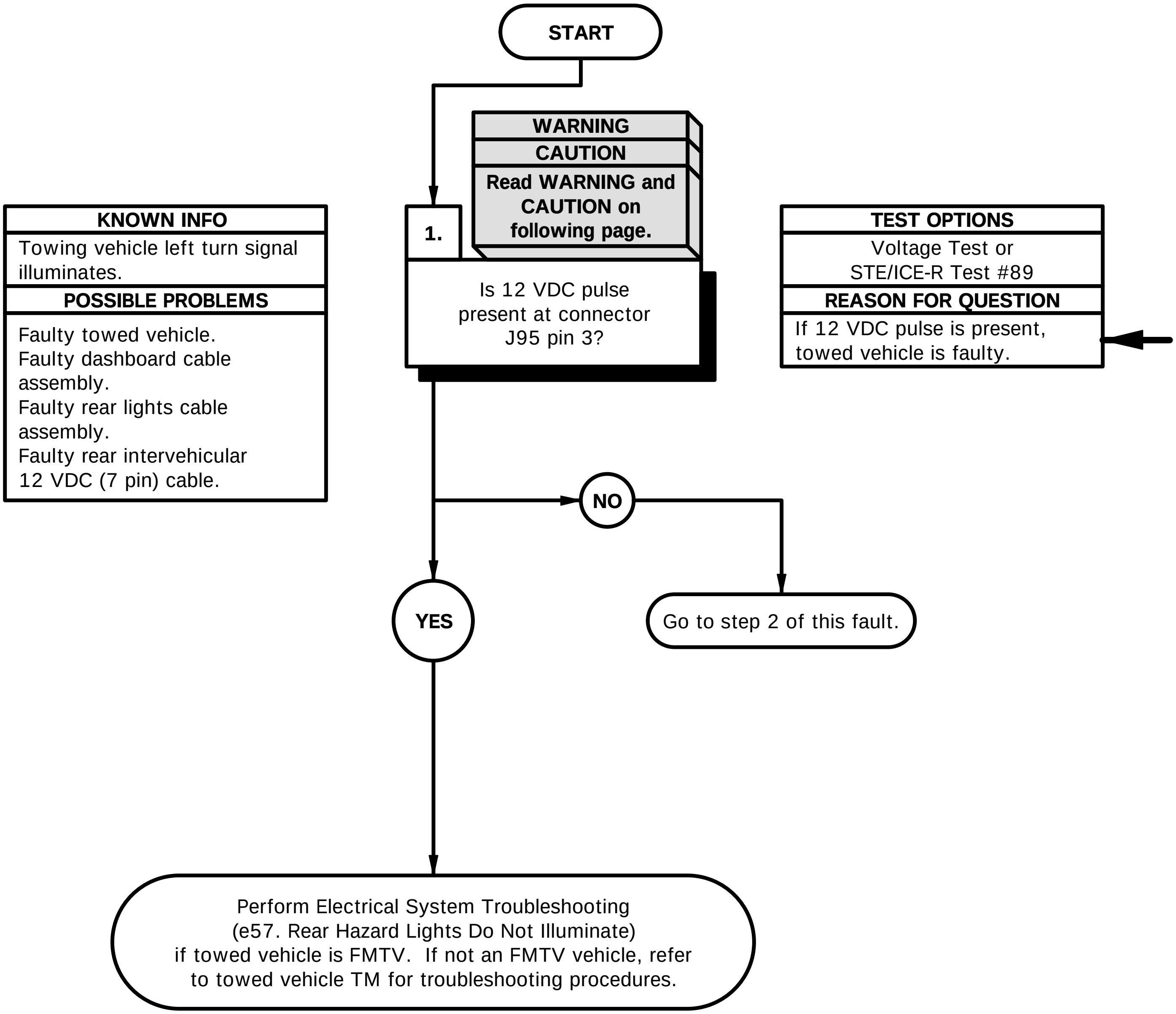
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Ties, Cable, Plastic (Item 69, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P



Read WARNING and CAUTION on following page.

KNOWN INFO
Towing vehicle left turn signal illuminates.

POSSIBLE PROBLEMS
Faulty towed vehicle.
Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

1. Is 12 VDC pulse present at connector J95 pin 3?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If 12 VDC pulse is present, towed vehicle is faulty.

NO: Go to step 2 of this fault.

YES: Perform Electrical System Troubleshooting (e57. Rear Hazard Lights Do Not Illuminate) if towed vehicle is FMTV. If not an FMTV vehicle, refer to towed vehicle TM for troubleshooting procedures.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

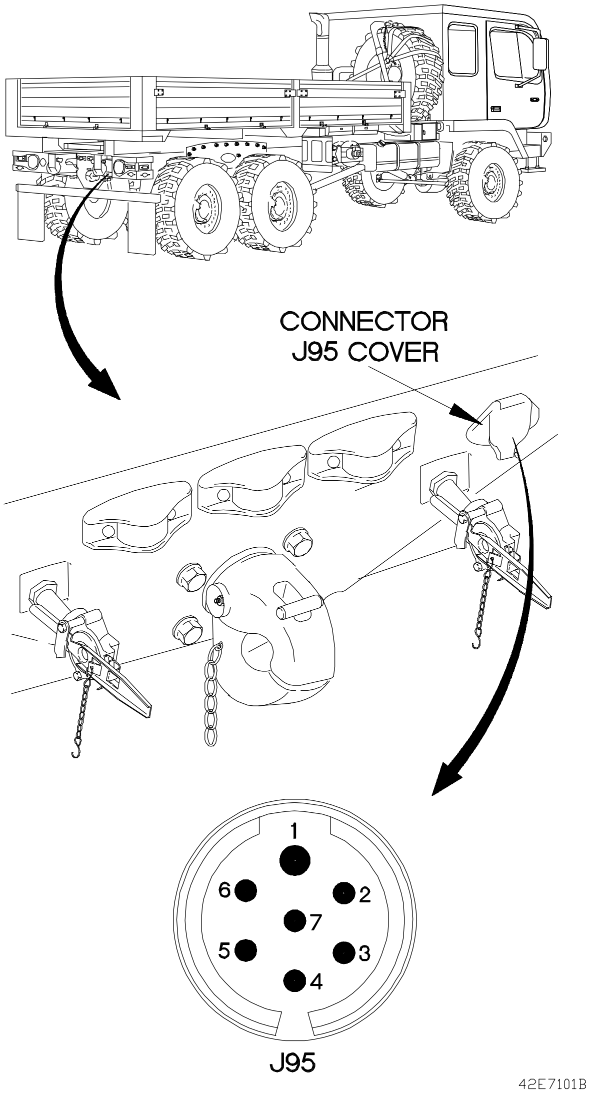
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

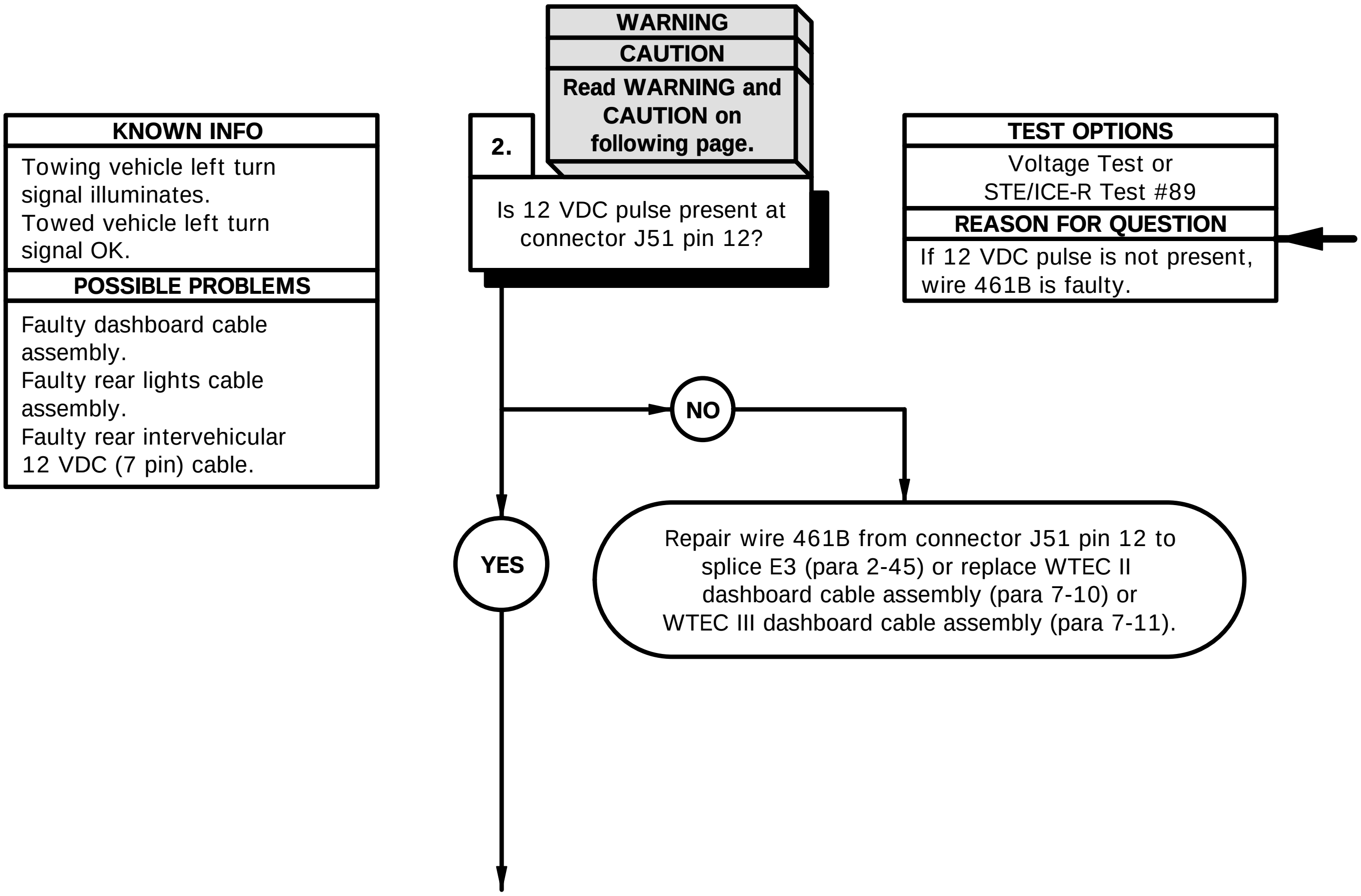
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Lift cover on connector J95 intervehicular 12 VDC connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector J95 pin 3.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position turn signal switch to left turn (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC pulse is not present, go to step 2 of this fault.
(8) If 24 VDC pulse is present, perform Electrical System Troubleshooting (e57. Rear Hazard Lights Do Not Illuminate) if towed vehicle is FMTV. If towed vehicle is not an FMTV, refer to towed vehicle TM for troubleshooting procedures.
(9) Position turn signal switch to off (TM 9-2320-366-10-1).
(10 Position main light switch to OFF (TM 9-2320-366-10-1).



e71. INTERVEHICULAR LEFT TURN SIGNAL DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle left turn signal illuminates.
Towed vehicle left turn signal OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2.

Is 12 VDC pulse present at connector J51 pin 12?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC pulse is not present, wire 461B is faulty.

NO

Repair wire 461B from connector J51 pin 12 to splice E3 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

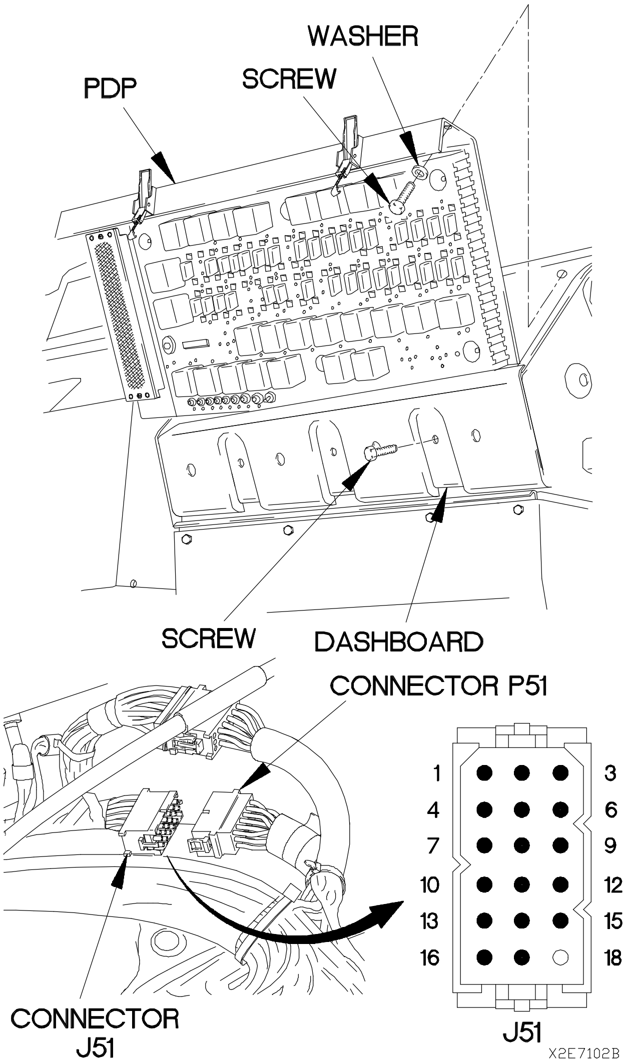
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

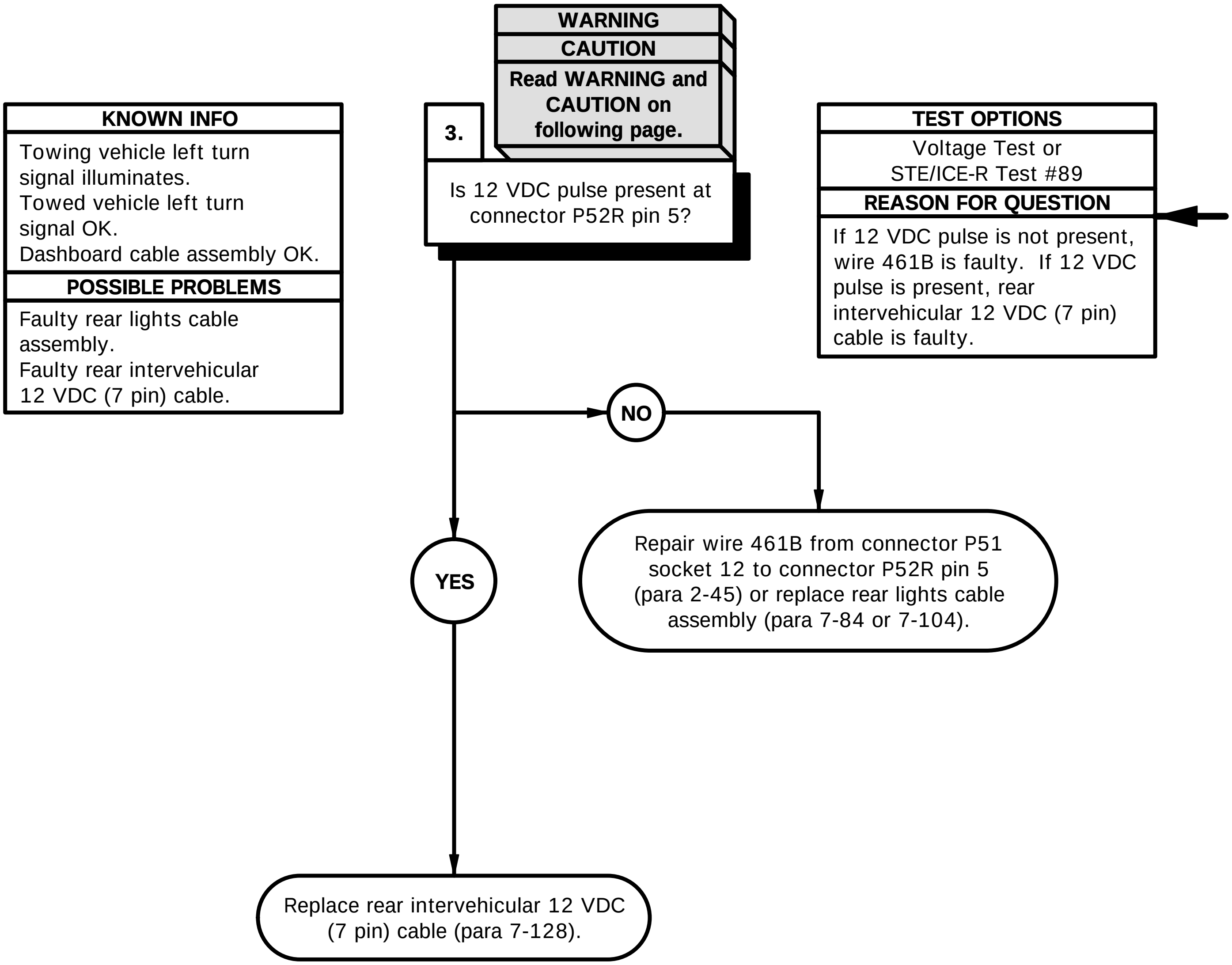
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J51 from connector P51.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to connector J51 pin 12.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(10) Position turn signal switch to left turn (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 12 VDC pulse is not present, repair wire 461B from connector J51 pin 12 to splice E3.
(12) Position main light switch to OFF (TM 9-2320-366-10-1).
(13) Position turn signal switch to off (TM 9-2320-366-10-1).
(14) Connect connector J51 to connector P51.
(15) Install PDP on dashboard with three screws.
(16) Install three washers and screws in PDP.
(17) Install PDP cover (para 16-2).



e71. INTERVEHICULAR LEFT TURN SIGNAL DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle left turn signal illuminates.

Towed vehicle left turn signal OK.

Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

Faulty rear intervehicular 12 VDC (7 pin) cable.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3.

Is 12 VDC pulse present at connector P52R pin 5?

TEST OPTIONS

Voltage Test or

STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC pulse is not present, wire 461B is faulty. If 12 VDC pulse is present, rear intervehicular 12 VDC (7 pin) cable is faulty.

Repair wire 461B from connector P51 socket 12 to connector P52R pin 5 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

Replace rear intervehicular 12 VDC (7 pin) cable (para 7-128).

WARNING

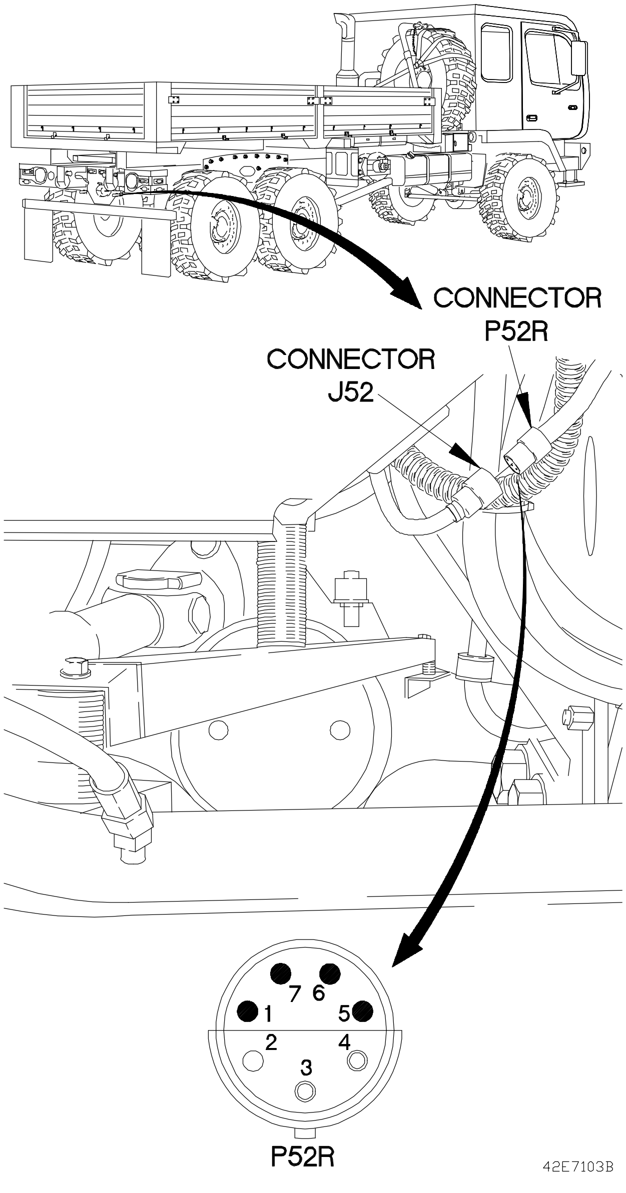
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.



VOLTAGE TEST

NOTE

Remove plastic cable ties as required.

(1) Disconnect connector P52R from connector J52.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P52R pin 5.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position turn signal switch to left turn (TM 9-2320-366-10-1).
(7) If 12 VDC pulse is not present, repair wire 461B from connector P51 socket 12 to connector P52R pin 5 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(8) If 12 VDC pulse is present, replace rear intervehicular 12 VDC (7 pin) cable (para 7-128).
(9) Position turn signal switch to off (TM 9-2320-366-10-1).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).

NOTE

Install plastic cable ties as required.

(11) Connect connector P52R to connector J52.

e72. INTERVEHICULAR RIGHT TURN SIGNAL DOES NOT ILLUMINATE

INITIAL SETUP

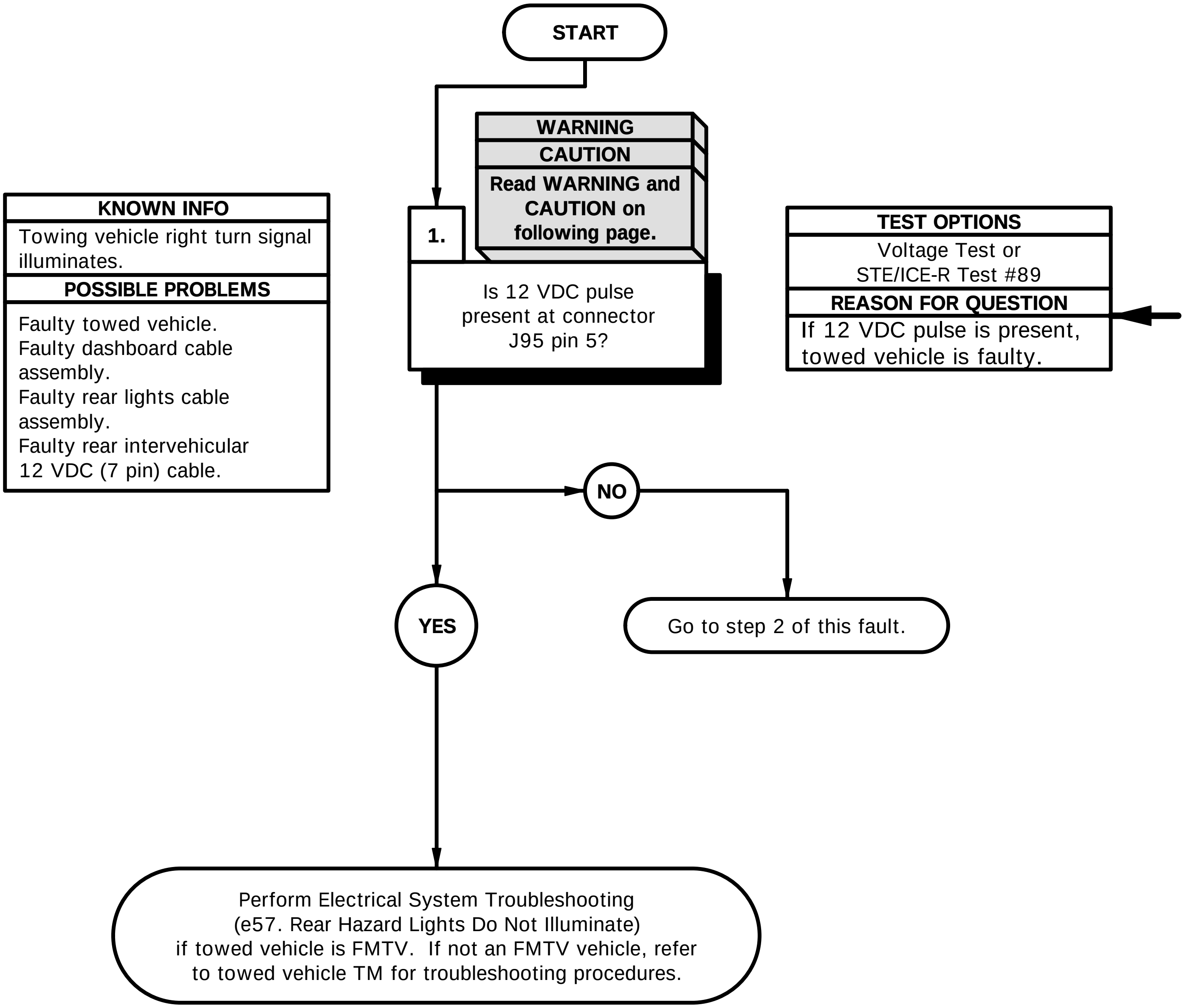
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Ties, Cable, Plastic (Item 69, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P



KNOWN INFO
Towing vehicle right turn signal illuminates.

POSSIBLE PROBLEMS
Faulty towed vehicle.
Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

START

WARNING
CAUTION
Read WARNING and CAUTION on following page.

1. Is 12 VDC pulse present at connector J95 pin 5?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If 12 VDC pulse is present, towed vehicle is faulty.

NO: Go to step 2 of this fault.

YES: Perform Electrical System Troubleshooting (e57. Rear Hazard Lights Do Not Illuminate) if towed vehicle is FMTV. If not an FMTV vehicle, refer to towed vehicle TM for troubleshooting procedures.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

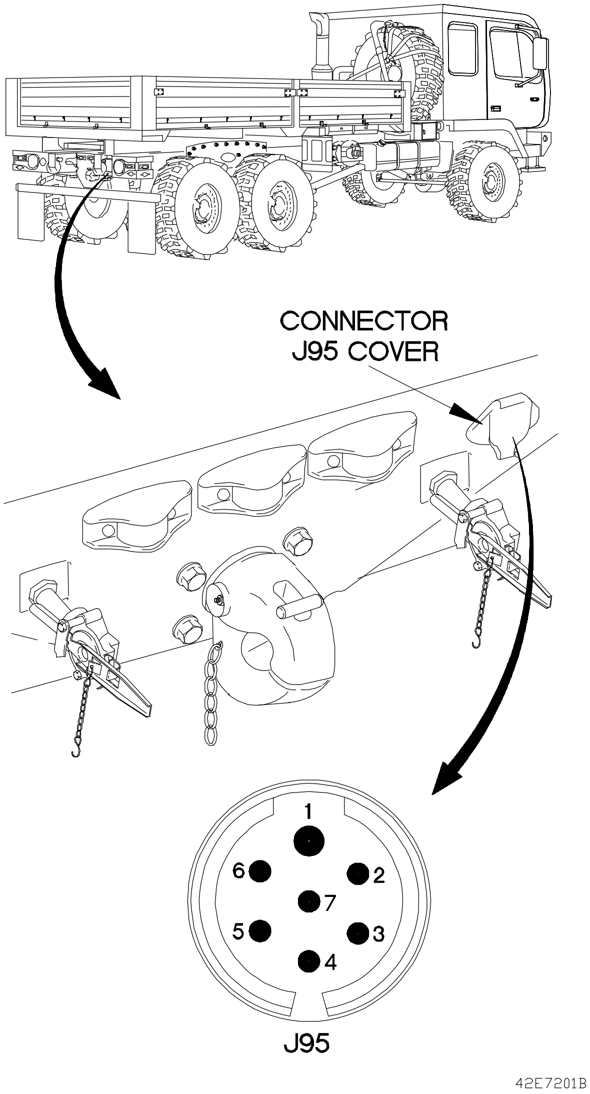
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

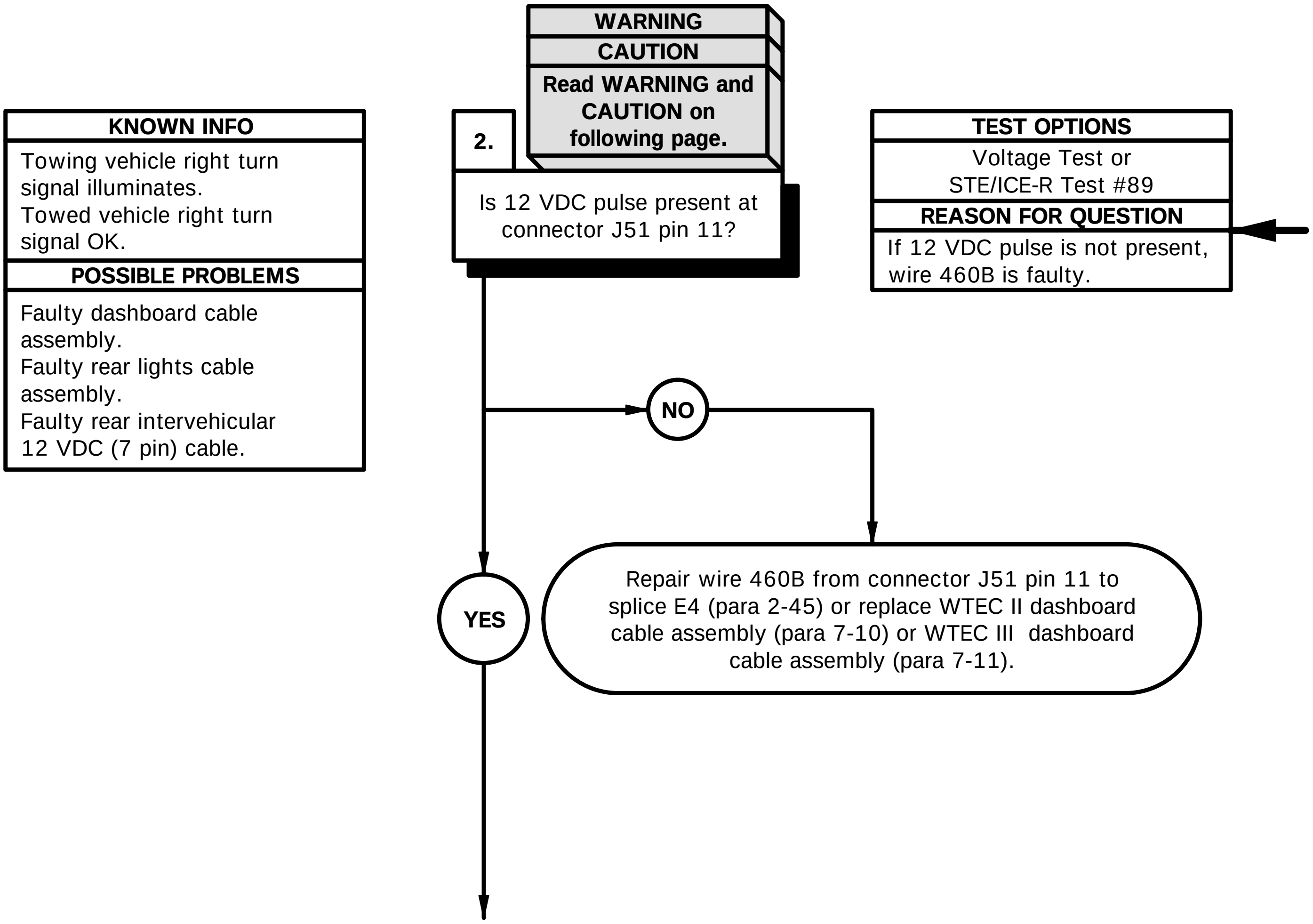
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Lift cover on connector J95 intervehicular 12 VDC connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector J95 pin 5.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position turn signal switch to right turn (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 VDC pulse is not present, go to step 2 of this fault.
(8) If 24 VDC pulse is present, perform Electrical System Troubleshooting (e57. Rear Hazard Lights Do Not Illuminate) if towed vehicle is FMTV. If towed vehicle is not an FMTV, refer to towed vehicle TM for troubleshooting procedures.
(9) Position turn signal switch to off (TM 9-2320-366-10-1).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).



e72. INTERVEHICULAR RIGHT TURN SIGNAL DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle right turn signal illuminates.
Towed vehicle right turn signal OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2.

Is 12 VDC pulse present at connector J51 pin 11?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC pulse is not present, wire 460B is faulty.

Repair wire 460B from connector J51 pin 11 to splice E4 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

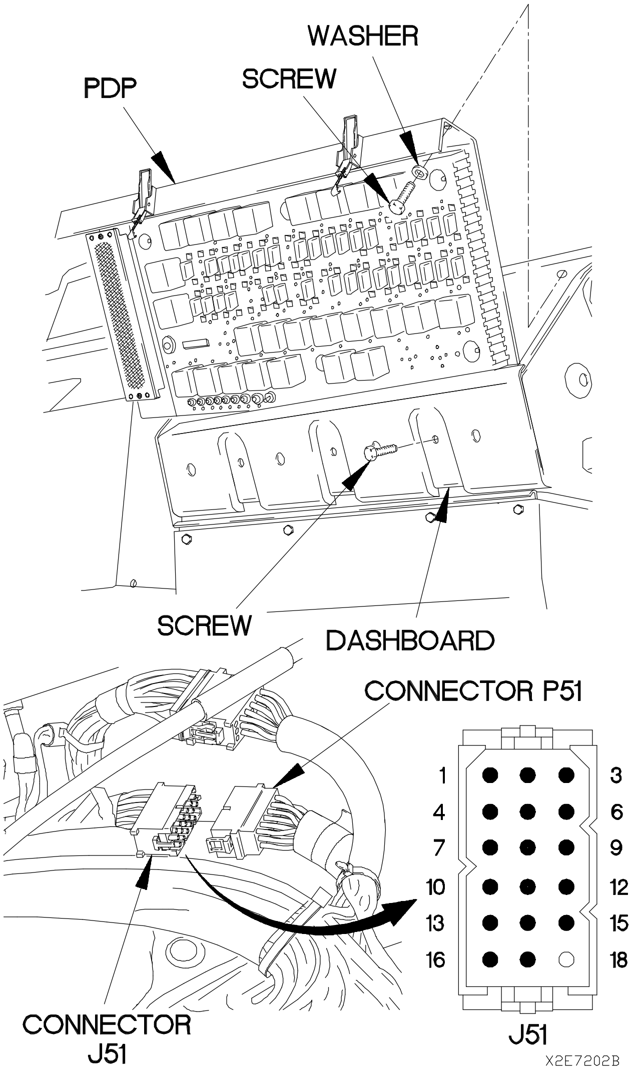
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

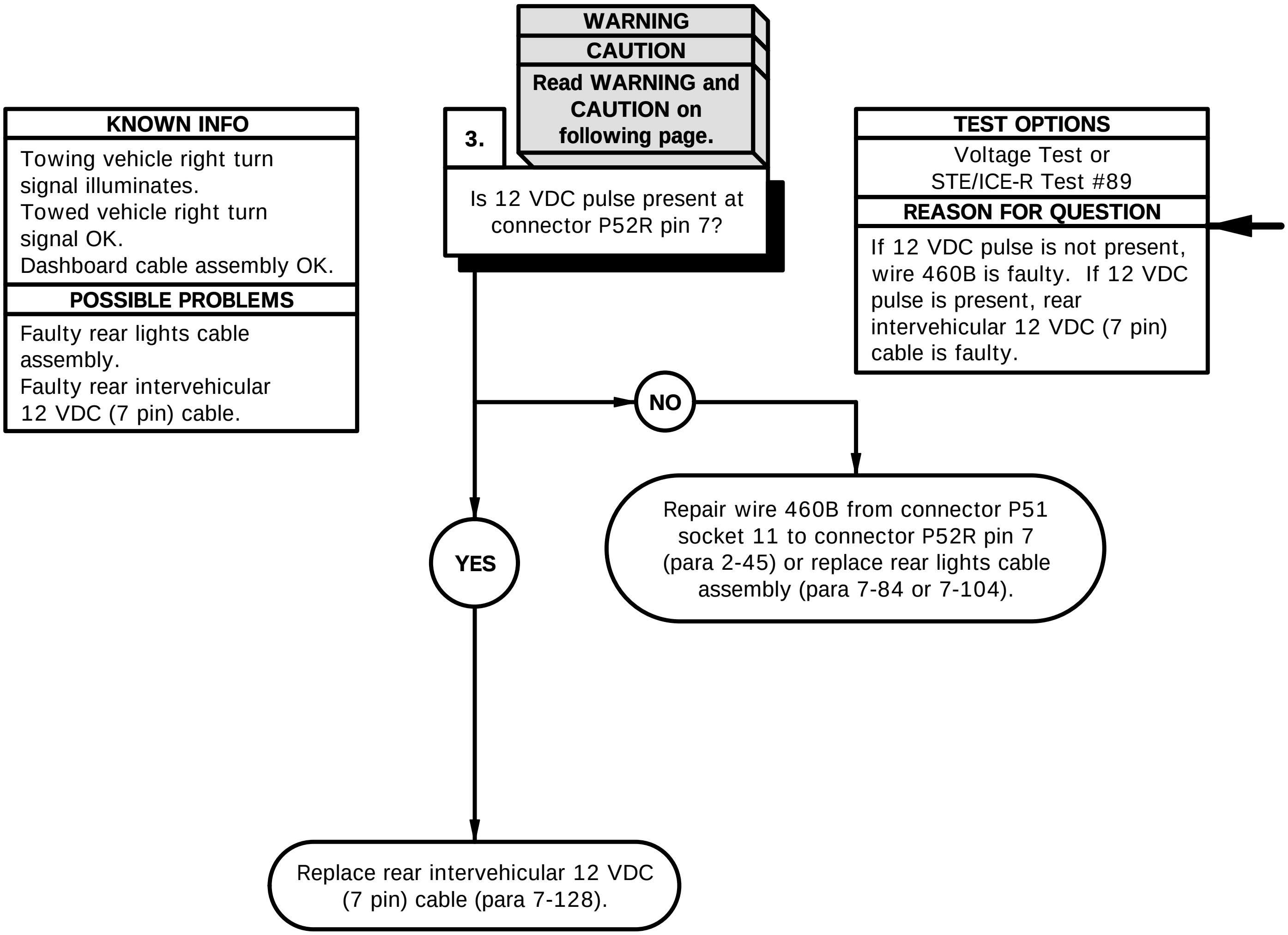
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J51 from connector P51.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to connector J51 pin 11.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(10) Position turn signal switch to right turn (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 12 VDC pulse is not present, repair wire 460B from connector J51 pin 11 to splice E4.
(12) Position main light switch to OFF (TM 9-2320-366-10-1).
(13) Position turn signal switch to off (TM 9-2320-366-10-1).
(14) Connect connector J51 to connector P51.
(15) Install PDP on dashboard with three screws.
(16) Install three washers and screws in PDP.
(17) Install PDP cover (para 16-2).



e72. INTERVEHICULAR LEFT TURN SIGNAL DOES NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle right turn signal illuminates.
Towed vehicle right turn signal OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3.

Is 12 VDC pulse present at connector P52R pin 7?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC pulse is not present, wire 460B is faulty. If 12 VDC pulse is present, rear intervehicular 12 VDC (7 pin) cable is faulty.

Repair wire 460B from connector P51 socket 11 to connector P52R pin 7 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

Replace rear intervehicular 12 VDC (7 pin) cable (para 7-128).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

NOTE

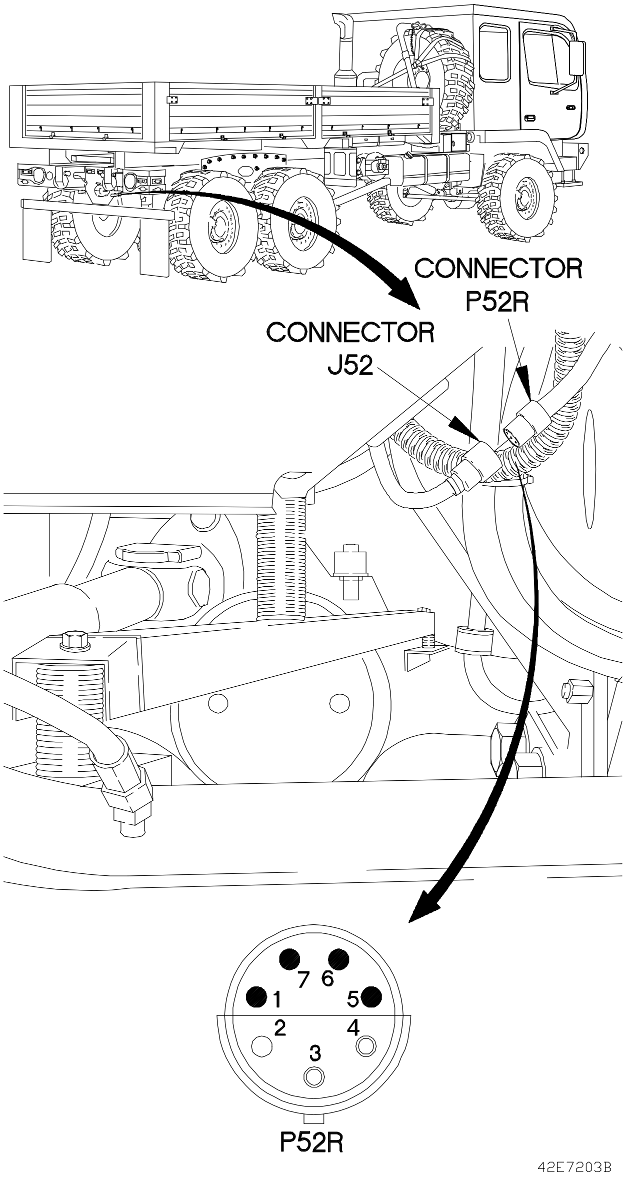
Remove plastic cable ties as required.

(1) Disconnect connector P52R from connector J52.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P52R pin 7.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(6) Position turn signal switch to right turn (TM 9-2320-366-10-1).
(7) If 12 VDC pulse is not present, repair wire 460B from connector P51 socket 11 to connector P52R pin 7 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(8) If 12 VDC pulse is present, replace rear intervehicular 12 VDC (7 pin) cable (para 7-128).
(9) Position turn signal switch to off (TM 9-2320-366-10-1).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).

NOTE

Install plastic cable ties as required.

(11) Connect connector P52R to connector J52.



e73. INTERVEHICULAR STOPLIGHTS DO NOT ILLUMINATE

INITIAL SETUP

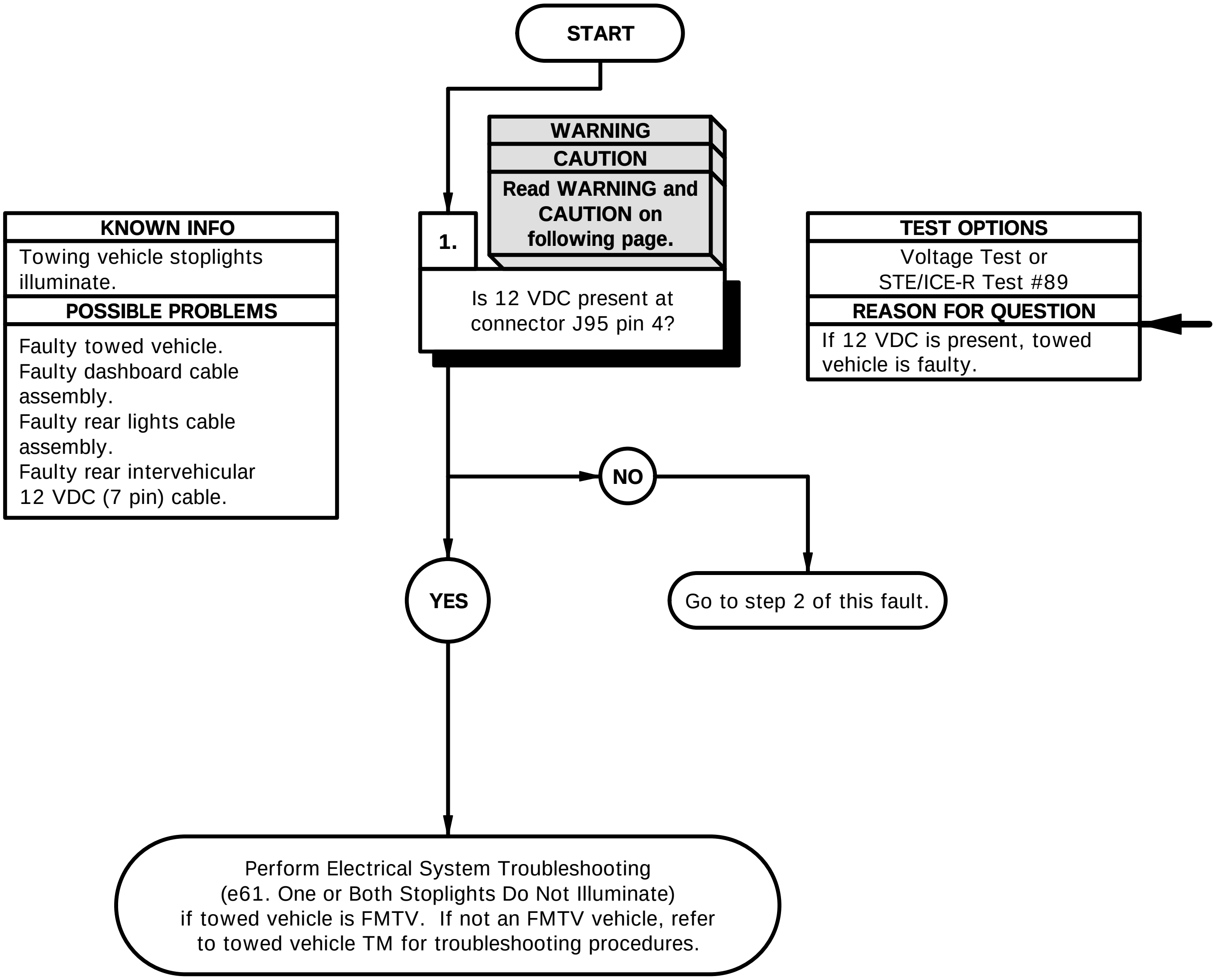
Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Ties, Cable, Plastic (Item 69, Appendix D)

Personnel Required
(2)

References
TM 9-4910-571-12&P



Read WARNING and CAUTION on following page.

KNOWN INFO
Towing vehicle stoplights illuminate.

POSSIBLE PROBLEMS
Faulty towed vehicle.
Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

1. Is 12 VDC present at connector J95 pin 4?

TEST OPTIONS
Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION
If 12 VDC is present, towed vehicle is faulty.

NO: Go to step 2 of this fault.

YES: Perform Electrical System Troubleshooting (e61. One or Both Stoplights Do Not Illuminate) if towed vehicle is FMTV. If not an FMTV vehicle, refer to towed vehicle TM for troubleshooting procedures.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

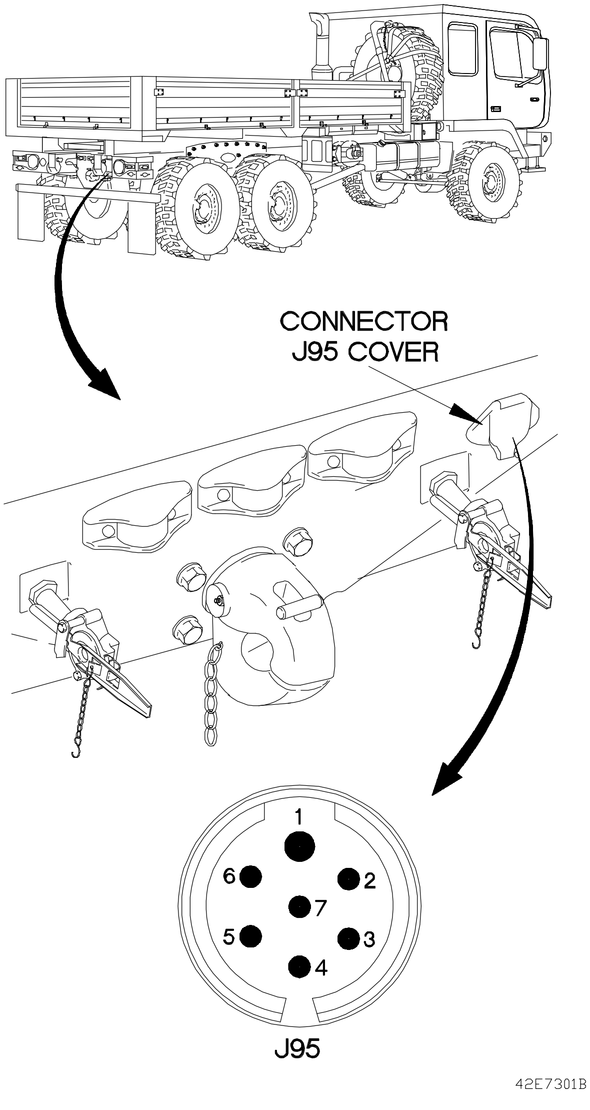
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

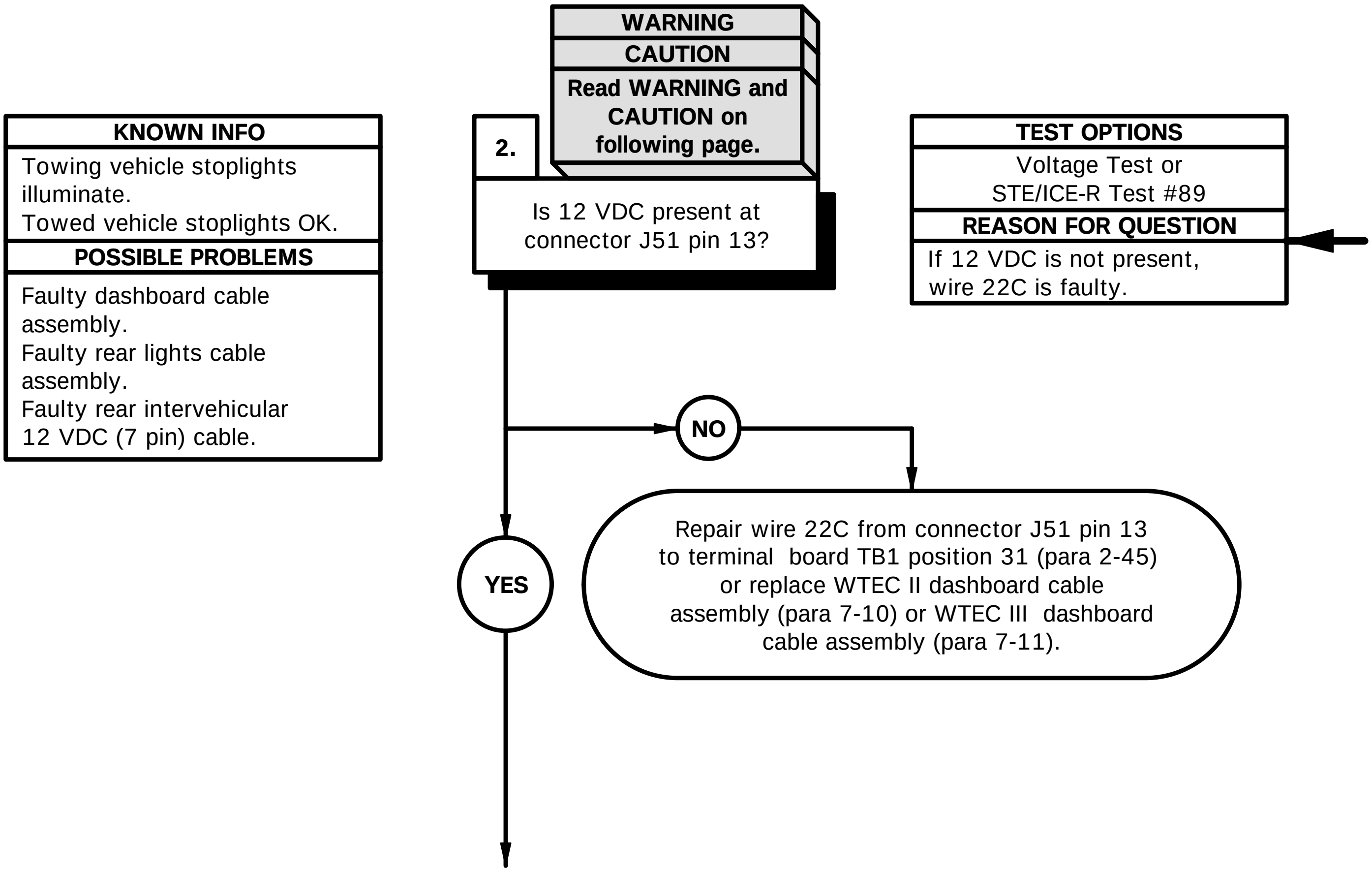
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Lift cover on connector J95 intervehicular 12 VDC connector.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector J95 pin 4.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(7) Apply brakes and note reading on multimeter.
(8) If 12 VDC is not present, go to step 2 of this fault.
(9) If 24 VDC is present, perform Electrical System Troubleshooting (e61. One or Both Stoplights Do Not Illuminate) if towed vehicle is FMTV. If towed vehicle is not FMTV, refer to towed vehicle TM for troubleshooting procedures.
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Position master power switch to off (TM 9-2320-366-10-1).



e73. INTERVEHICULAR STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle stoplights illuminate.
Towed vehicle stoplights OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

2. Is 12 VDC present at connector J51 pin 13?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 22C is faulty.

NO

Repair wire 22C from connector J51 pin 13 to terminal board TB1 position 31 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

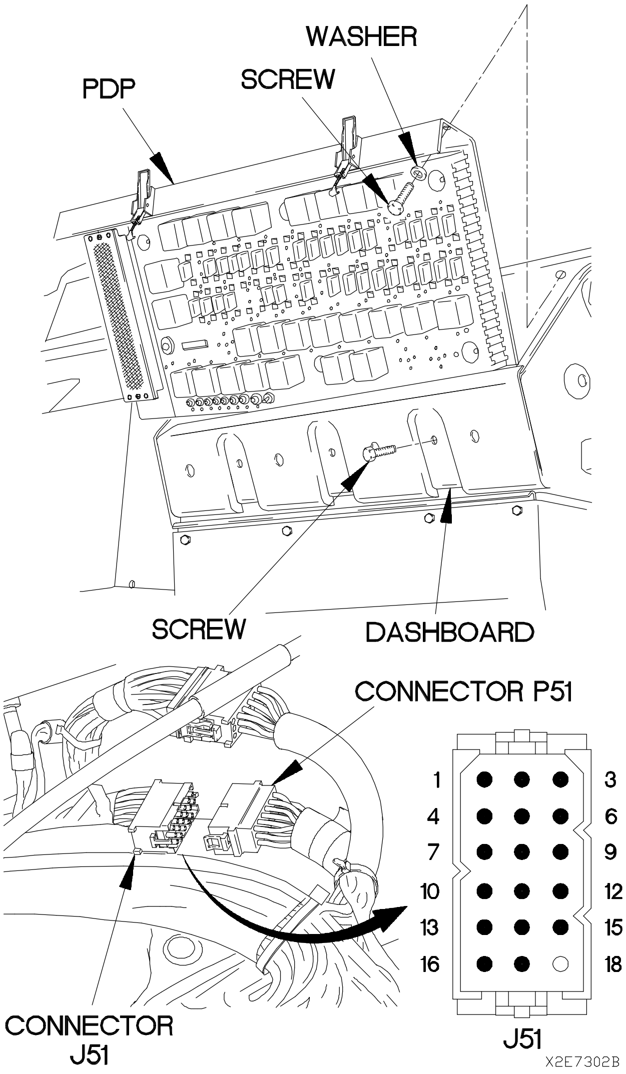
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

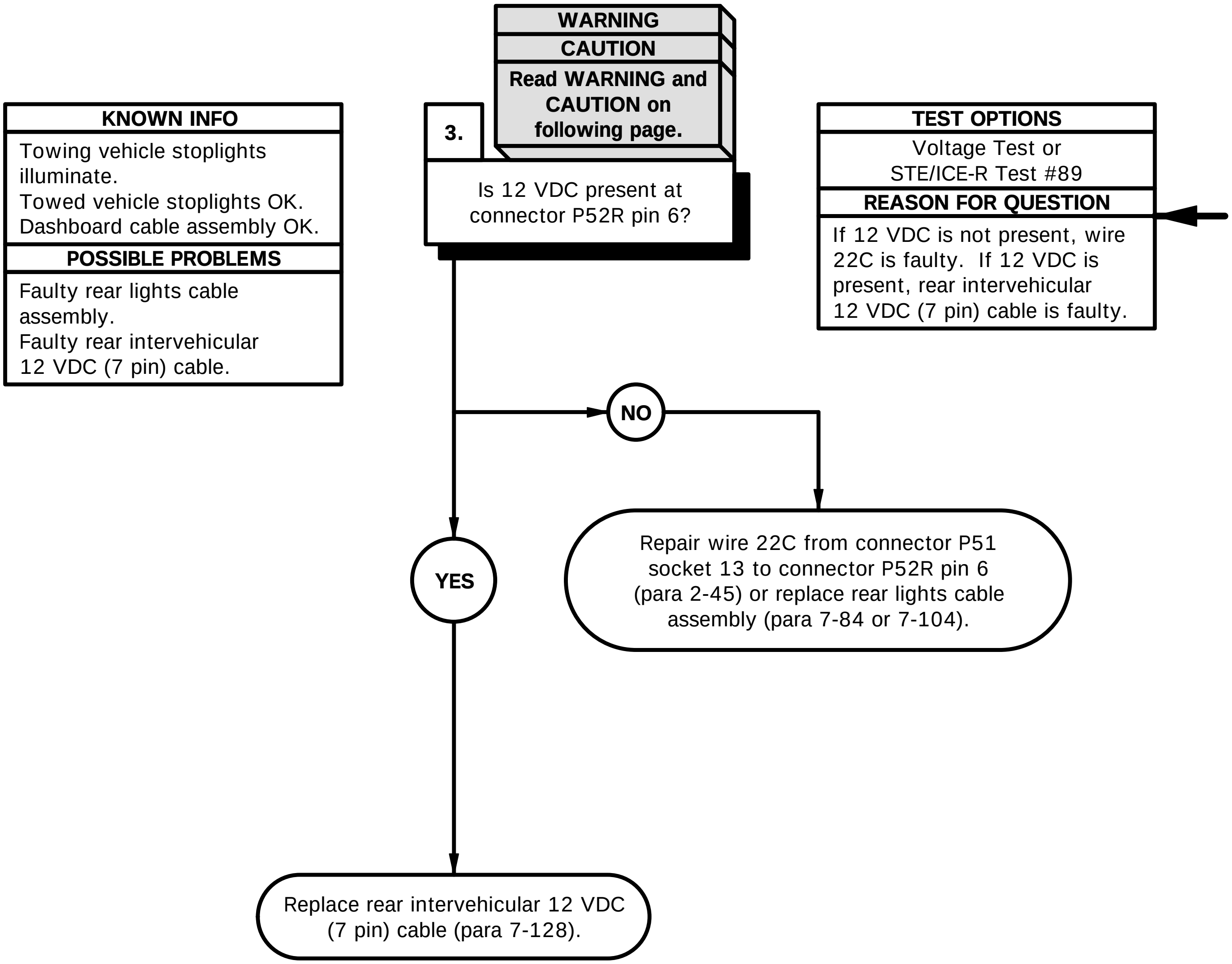
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J51 from connector P51.
(6) Set multimeter to volts DC.
(7) Connect positive (+) probe of multimeter to connector J51 pin 13.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position master power switch to on (TM 9-2320-366-10-1).
(10) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(11) Apply brakes and note reading on multimeter.
(12) If 12 VDC is not present, repair wire 22C from connector J51 pin 13 to terminal board TB1 position 31.
(13) Position main light switch to OFF (TM 9-2320-366-10-1).
(14) Position master power switch to off (TM 9-2320-366-10-1).
(15) Connect connector J51 to connector P51.
(16) Install PDP on dashboard with three screws.
(17) Install three washers and screws in PDP.
(18) Install PDP cover (para 16-2).



e73. INTERVEHICULAR STOPLIGHTS DO NOT ILLUMINATE (CONT)



KNOWN INFO

Towing vehicle stoplights illuminate.
Towed vehicle stoplights OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.

WARNING

CAUTION

Read WARNING and CAUTION on following page.

3. Is 12 VDC present at connector P52R pin 6?

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

REASON FOR QUESTION

If 12 VDC is not present, wire 22C is faulty. If 12 VDC is present, rear intervehicular 12 VDC (7 pin) cable is faulty.

NO

Repair wire 22C from connector P51 socket 13 to connector P52R pin 6 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

YES

Replace rear intervehicular 12 VDC (7 pin) cable (para 7-128).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

NOTE

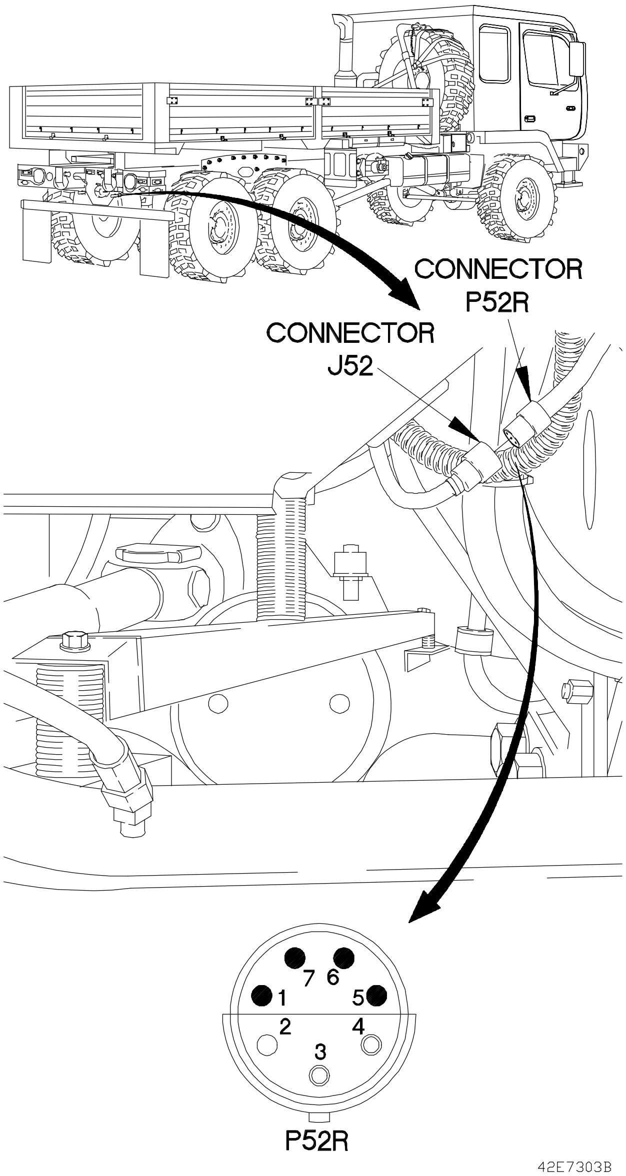
Remove plastic cable ties as required.

(1) Disconnect connector P52R from connector J52.
(2) Set multimeter to volts DC.
(3) Connect positive (+) probe of multimeter to connector P52R pin 6.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(7) Apply brakes and note reading on multimeter.
(8) If 12 VDC is not present, repair wire 22C from connector P51 socket 13 to connector P52R pin 6 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).
(9) If 12 VDC is present, replace rear intervehicular 12 VDC (7 pin) cable (para 7-128).
(10) Position main light switch to OFF (TM 9-2320-366-10-1).
(11) Position master power switch to off (TM 9-2320-366-10-1).

NOTE

Install plastic cable ties as required.

(12) Connect connector P52R to connector J52.



e74. INTERVEHICLE TAILLIGHTS DO NOT OPERATE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

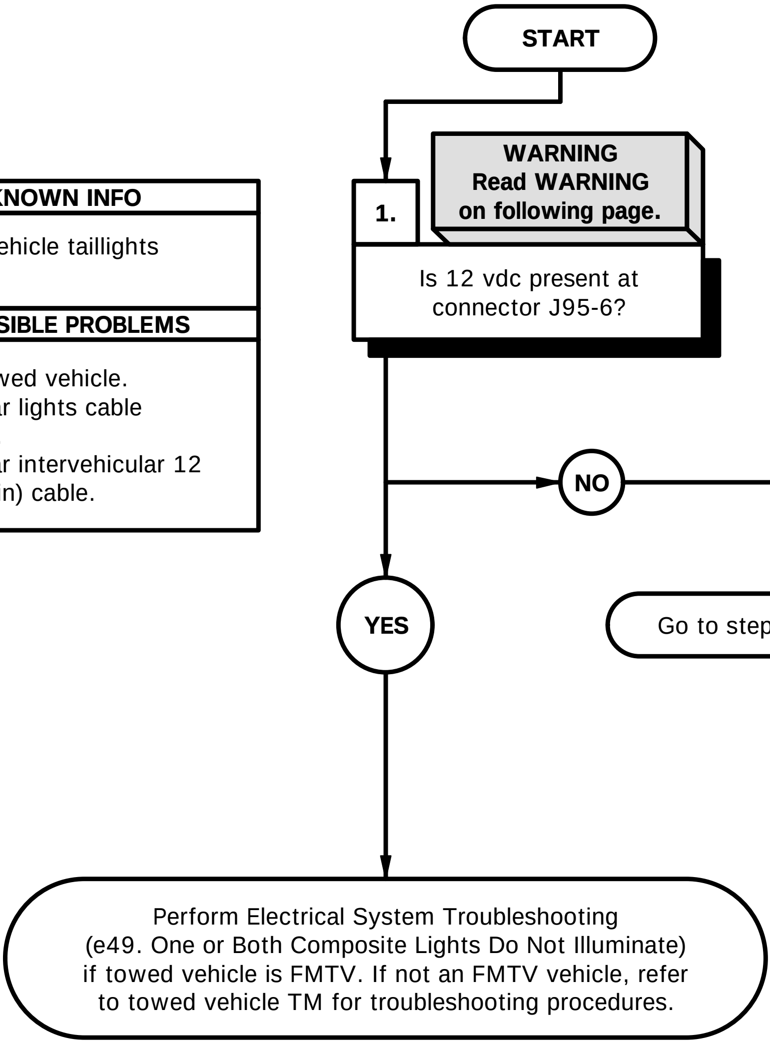
Materials/Parts
Ties, Cable, Plastic (Item 69, Appendix D)

KNOWN INFO

Towing vehicle taillights operate.

POSSIBLE PROBLEMS

Faulty towed vehicle.
Faulty rear lights cable assembly.
Faulty rear intervehicular 12 VDC (7 pin) cable.



WARNING
Read WARNING on following page.

Is 12 vdc present at connector J95-6?

Go to step 2 of this fault.

Perform Electrical System Troubleshooting (e49. One or Both Composite Lights Do Not Illuminate) if towed vehicle is FMTV. If not an FMTV vehicle, refer to towed vehicle TM for troubleshooting procedures.

TEST OPTIONS

Voltage Test or
STE/ICE-R Test #89

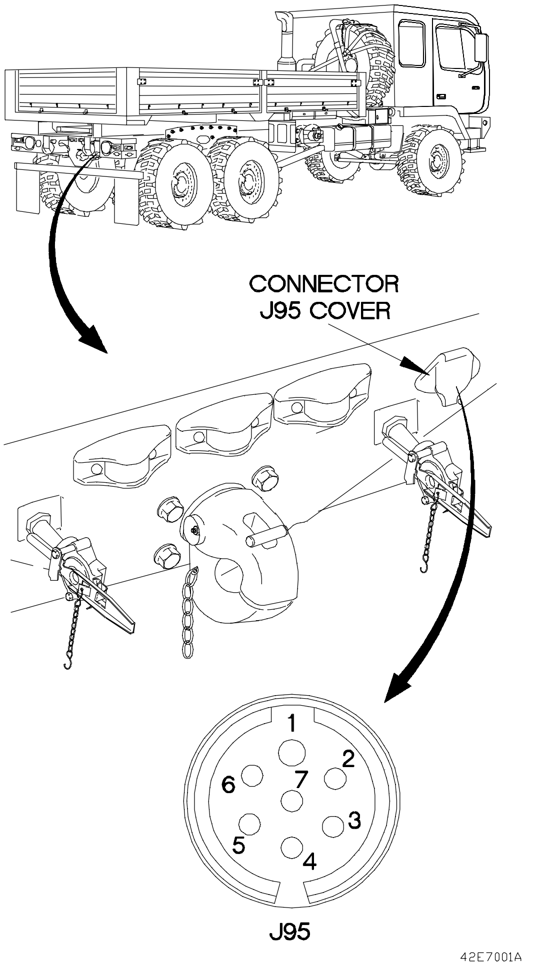
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

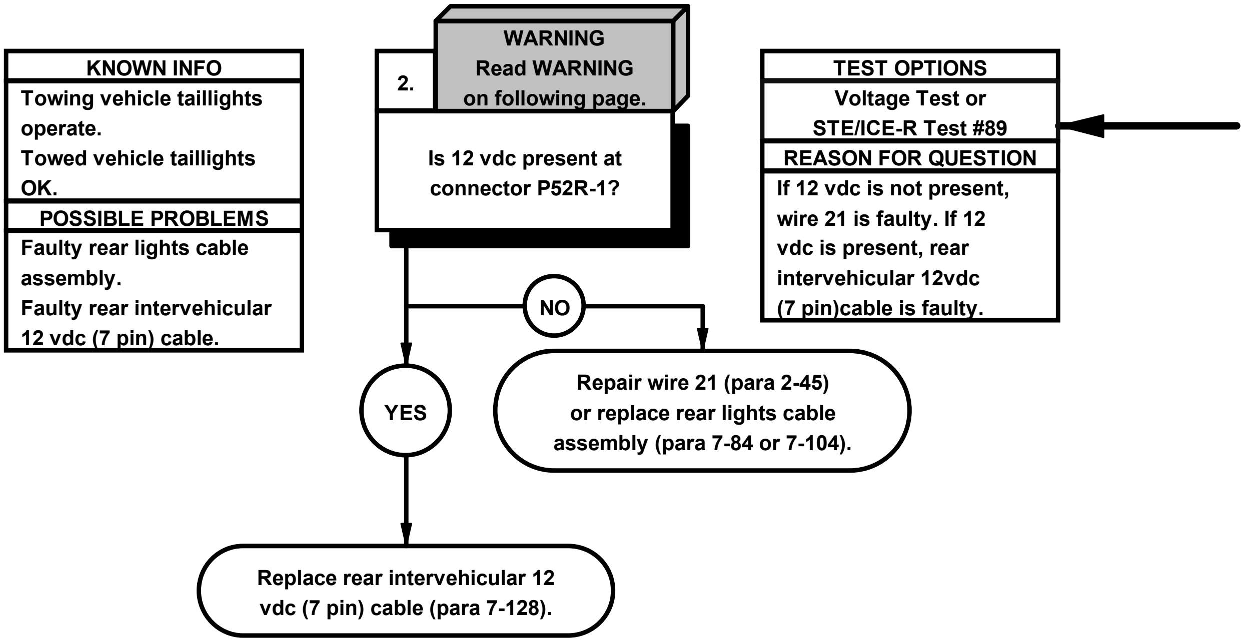
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Raise cover on connector J95 intervehicular 12 vdc connector. (2) Set multimeter to volts dc. (3) Connect positive (+) probe of multimeter to connector J95-6. (4) Connect negative (-) probe of multimeter to ground. (5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter. (6) If 12 vdc is not present, go to step 2 of this fault. (7) If 12 vdc is present, perform Electrical System Troubleshooting (e49. One or Both Composite Lights Do Not Illuminate) if towed vehicle is FMTV. If towed vehicle is not an FMTV, refer to towed vehicle TM for troubleshooting procedures. (8) Position main light switch to OFF (TM 9-2320-366-10-1).



e74. INTERVEHICLE TAILLIGHTS DO NOT OPERATE (CONT)



KNOWN INFO

Towing vehicle taillights operate.

Towed vehicle taillights OK.

POSSIBLE PROBLEMS

Faulty rear lights cable assembly.

Faulty rear intervehicular 12 vdc (7 pin) cable.

WARNING

Read WARNING on following page.

2\. Is 12 vdc present at connector P52R-1?

TEST OPTIONS

Voltage Test or STE/ICE-R Test #89

REASON FOR QUESTION

If 12 vdc is not present, wire 21 is faulty. If 12 vdc is present, rear intervehicular 12vdc (7 pin)cable is faulty.

NO: Repair wire 21 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

YES: Replace rear intervehicular 12 vdc (7 pin) cable (para 7-128).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

NOTE

Remove plastic cable ties as required.

(1) Disconnect connector P52R from connector J52.

(2) Set multimeter to volts dc.

(3) Connect positive (+) probe of multimeter to connector P52R-1.

(4) Connect negative (-) probe of multimeter to ground.

(5) Position main light switch to SER DRIVE (TM 9-2320-366-10-1) and note reading on multimeter.

(6) If 12 vdc is not present, repair wire 21 (para 2-45) or replace rear lights cable assembly (para 7-84 or 7-104).

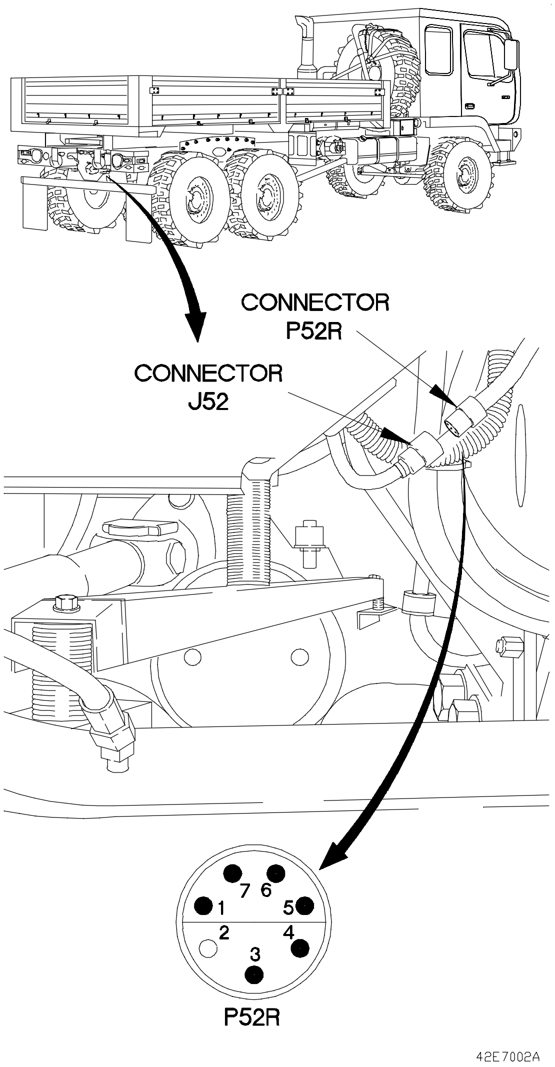
(7) If 12 vdc is present, replace rear intervehicular 12 vdc (7 pin) cable (para 7-128).

(8) Position main light switch to OFF (TM 9-2320-366-10-1).

NOTE

Install plastic cable ties as required.

(9) Connect connector P52R to connector J52.



e75. PERSONNEL HEATER CONTROL ILLUMINATION DOES NOT OPERATE

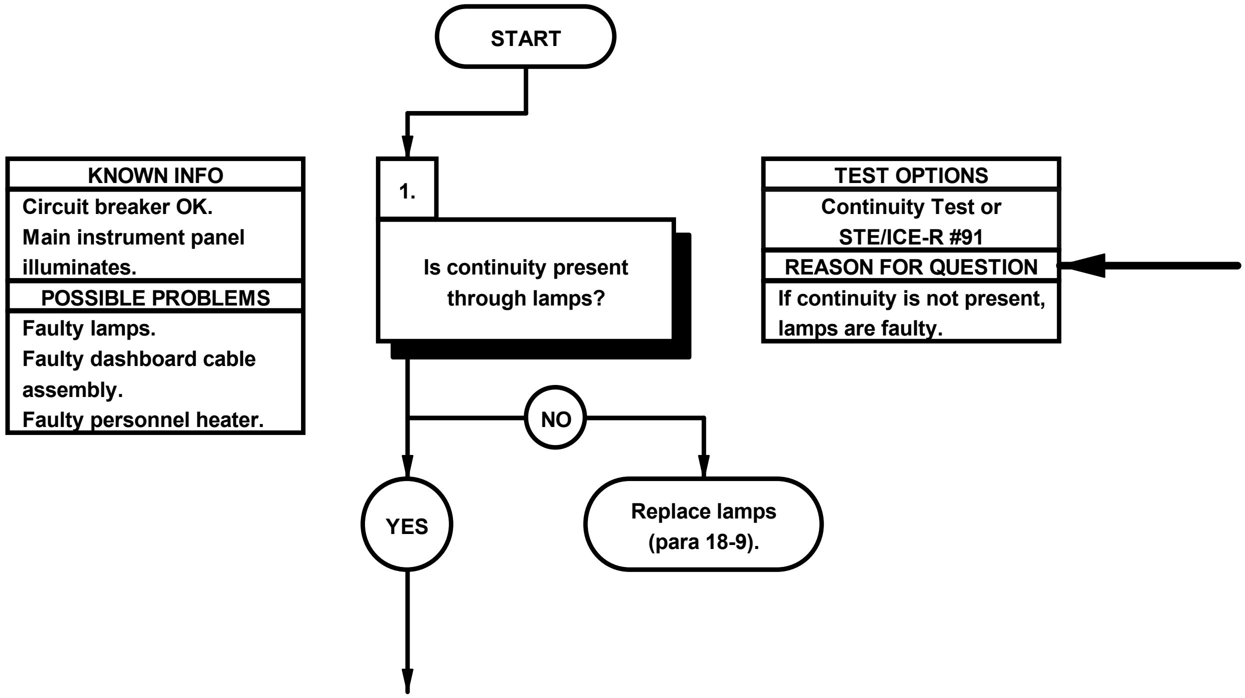
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)



KNOWN INFO
Circuit breaker OK.
Main instrument panel illuminates.

POSSIBLE PROBLEMS
Faulty lamps.
Faulty dashboard cable assembly.
Faulty personnel heater.

Is continuity present through lamps?

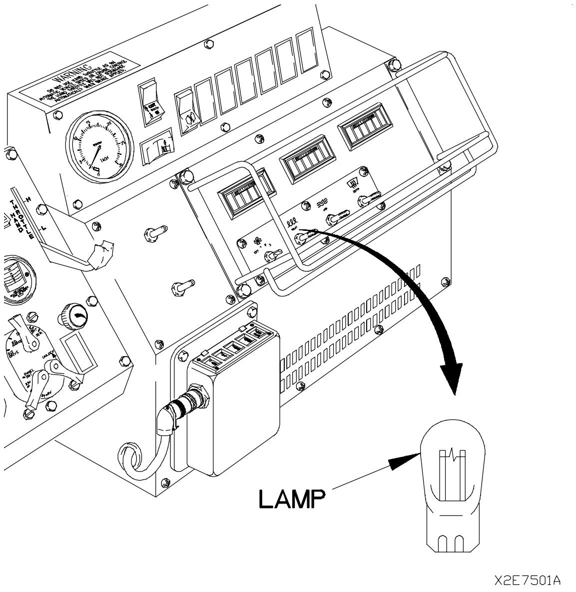
TEST OPTIONS
Continuity Test or
STE/ICE-R #91

REASON FOR QUESTION
If continuity is not present, lamps are faulty.

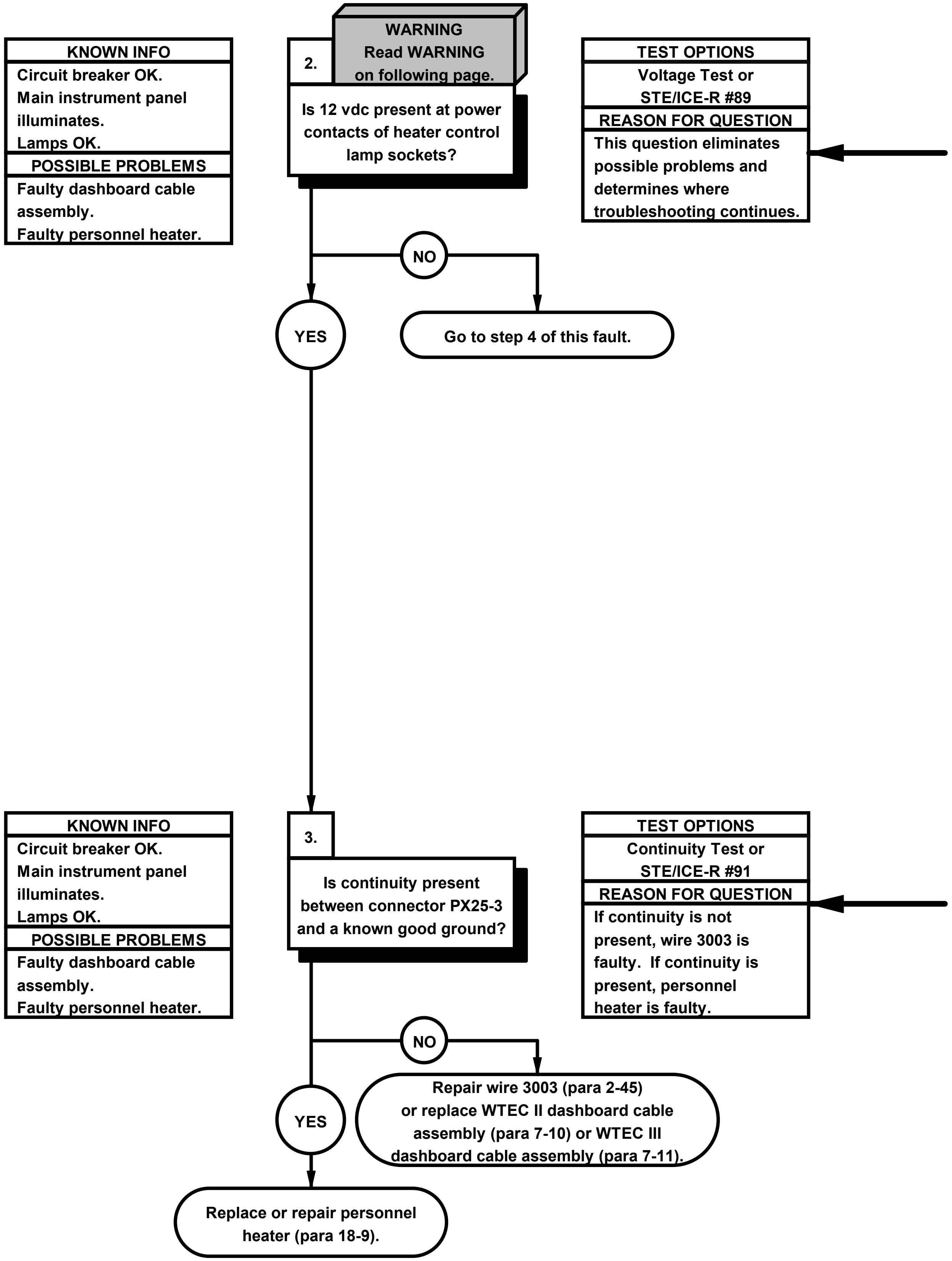
Replace lamps (para 18-9).

CONTINUITY TEST

(1) Remove lamps from heater (para 18-9).
(2) Set multimeter to ohms.
(3) Check continuity through each lamp.
(4) If continuity is not present, replace lamp(s) (para 18-9).



e75. PERSONNEL HEATER ILLUMINATION DOES NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Main instrument panel illuminates.
Lamps OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty personnel heater.

WARNING
Read WARNING on following page.

2. Is 12 vdc present at power contacts of heater control lamp sockets?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

Go to step 4 of this fault.

KNOWN INFO

Circuit breaker OK.
Main instrument panel illuminates.
Lamps OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty personnel heater.

3. Is continuity present between connector PX25-3 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3003 is faulty. If continuity is present, personnel heater is faulty.

Repair wire 3003 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

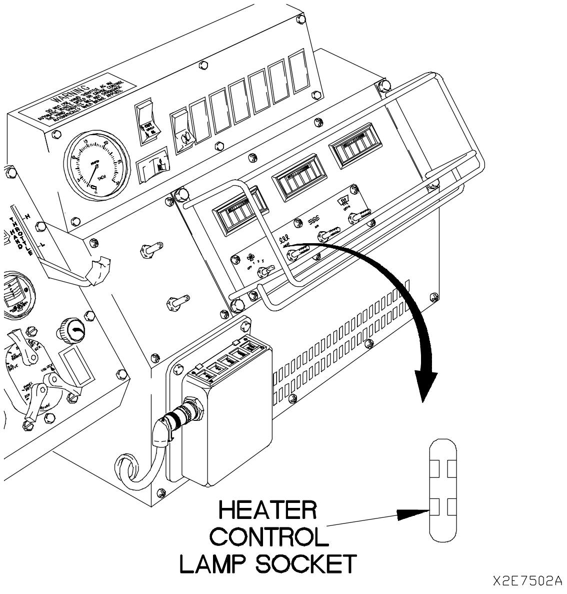
Replace or repair personnel heater (para 18-9).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

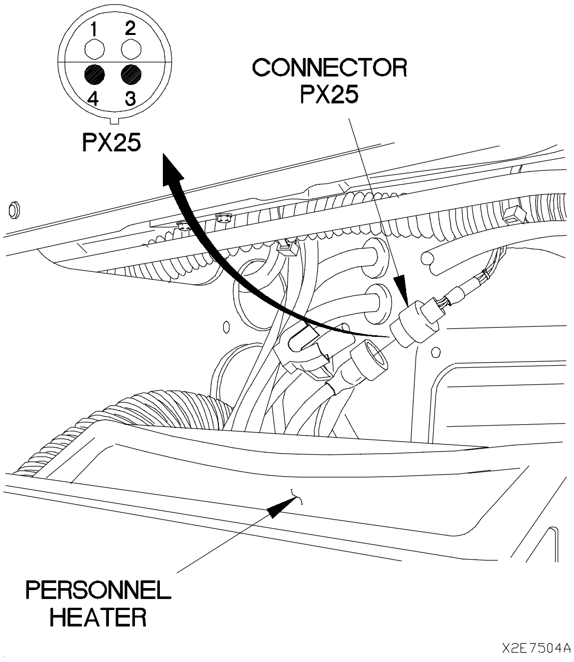
VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to power contact of each heater control lamp socket.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position main light switch to SER DRIVE (TM 9-2320-366-10-1).
(5) Position main light switch auxiliary lever to PANEL BRT (TM 9-2320-366-10-1).
(6) Position dimmer switch to maximum brightness (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 12 vdc is not present, go to step 4 of this fault.
(8) Position main light switch to OFF (TM 9-2320-366-10-1).
(9) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1).
(10) Install lamps in heater (para 18-9).

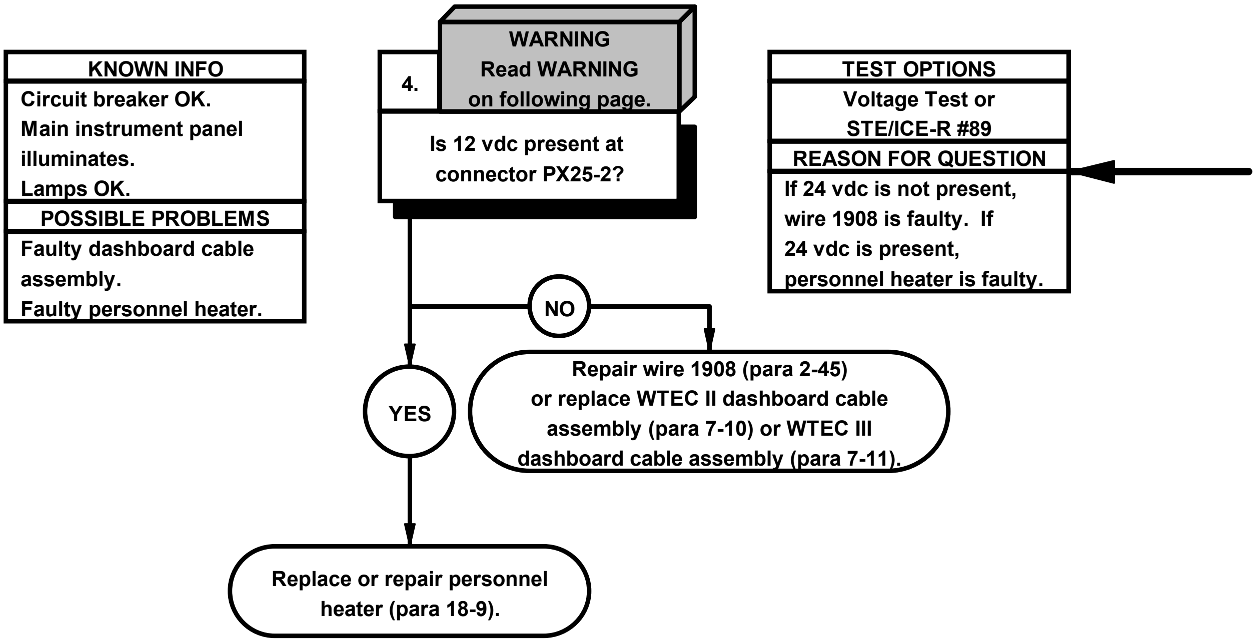


CONTINUITY TEST

(1) Remove personnel heater for access (para 18-9).
(2) Disconnect connector PX25 from personnel heater connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector PX25-3.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present, repair wire 3003 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If continuity is present, replace or repair personnel heater (para 18-9).
(8) Connect connector PX25 to personnel heater connector.
(9) Install personnel heater (para 18-9).



e75. PERSONNEL HEATER ILLUMINATION DOES NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Main instrument panel illuminates.
Lamps OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty personnel heater.

4\.

WARNING
Read WARNING on following page.

Is 12 vdc present at connector PX25-2?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

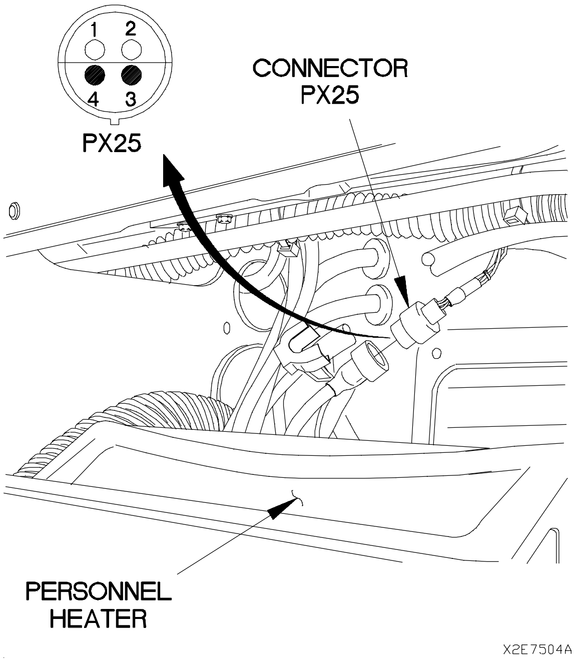
If 24 vdc is not present, wire 1908 is faulty. If 24 vdc is present, personnel heater is faulty.

Repair wire 1908 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace or repair personnel heater (para 18-9).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.



VOLTAGE TEST

(1) Remove personnel heater for access (para 18-9).
(2) Disconnect connector PX25 from personnel heater connector.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector PX25-1.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1).
(7) Position main light switch auxiliary lever to PNL BRT (TM 9-2320-366-10-1).
(8) Position dimmer switch to maximum brightness (TM 9-2320-366-10-1) and note reading on multimeter.
(9) If 12 vdc is not present, repair wire 1908 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(10) If 12 vdc is present, replace or repair personnel heater (para 18-9).
(11) Position master power switch to off (TM 9-2320-366-10-1).
(12) Position main light switch auxiliary lever to OFF (TM 9-2320-366-10-1).
(13) Connect connector PX25 to personnel heater connector.
(14) Install personnel heater (para 18-8).

e76. PERSONNEL HEATER FAN DOES NOT OPERATE

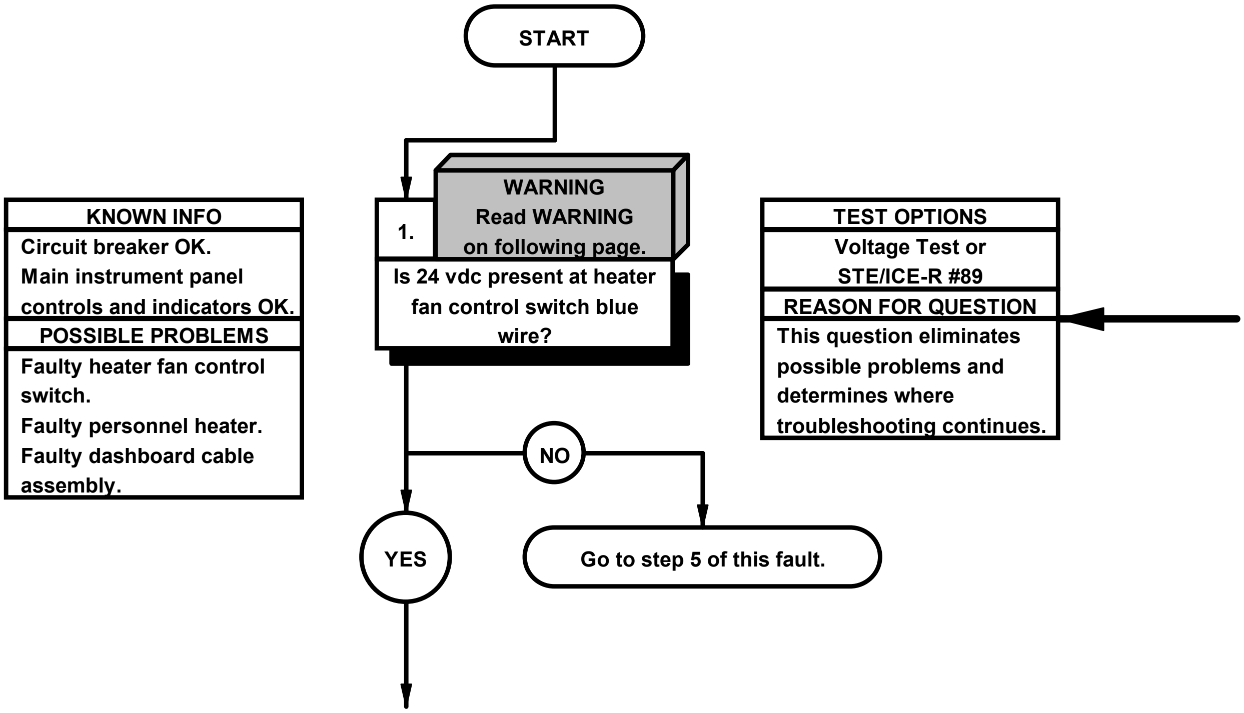
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)



KNOWN INFO
Circuit breaker OK.
Main instrument panel controls and indicators OK.

POSSIBLE PROBLEMS
Faulty heater fan control switch.
Faulty personnel heater.
Faulty dashboard cable assembly.

WARNING
Read WARNING on following page.

1. Is 24 vdc present at heater fan control switch blue wire?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

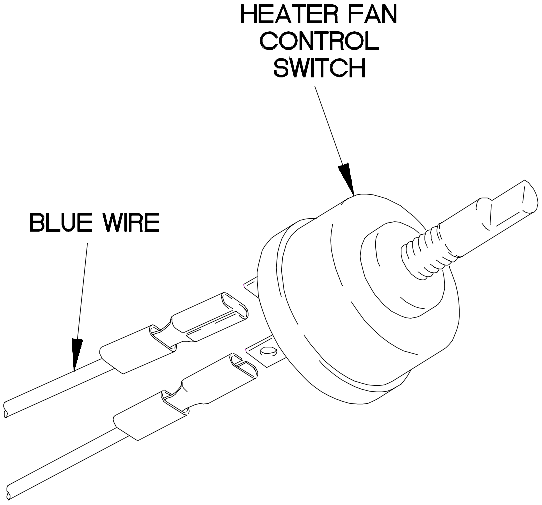
Go to step 5 of this fault.

WARNING

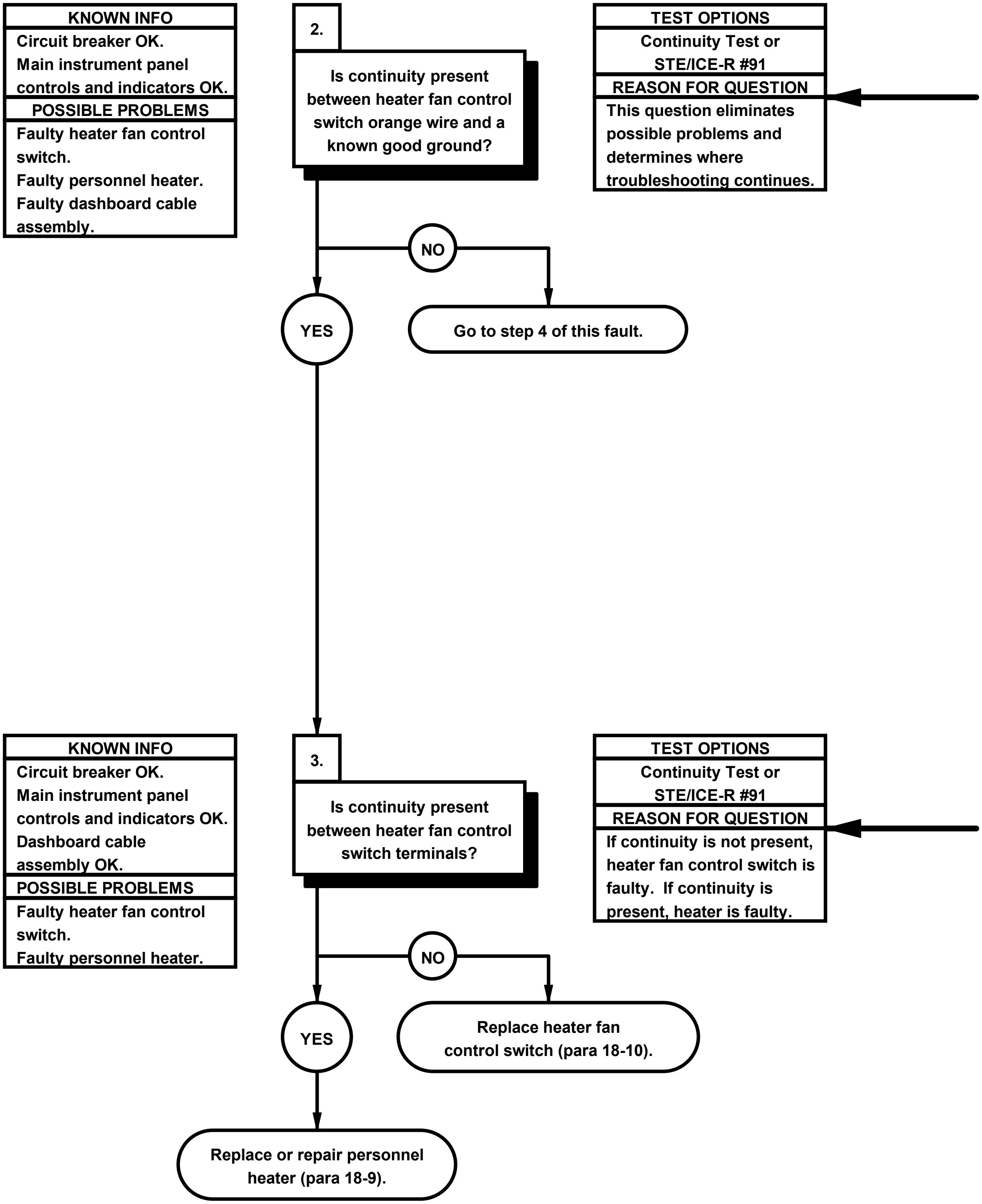
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

1. Remove heater fan control switch (para 18-10).
2. Set multimeter to volts dc.
3. Connect positive (+) probe of multimeter to personnel heater fan control switch blue wire.
4. Connect negative (-) probe of multimeter to ground.
5. Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
6. If 24 vdc is not present, go to step 5 of this fault.
7. Position master power switch to off (TM 9-2320-366-10-1).



e76. PERSONNEL HEATER FAN DOES NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Main instrument panel controls and indicators OK.

POSSIBLE PROBLEMS

Faulty heater fan control switch.
Faulty personnel heater.
Faulty dashboard cable assembly.

2. Is continuity present between heater fan control switch orange wire and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 4 of this fault.

YES:

KNOWN INFO

Circuit breaker OK.
Main instrument panel controls and indicators OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty heater fan control switch.
Faulty personnel heater.

3. Is continuity present between heater fan control switch terminals?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

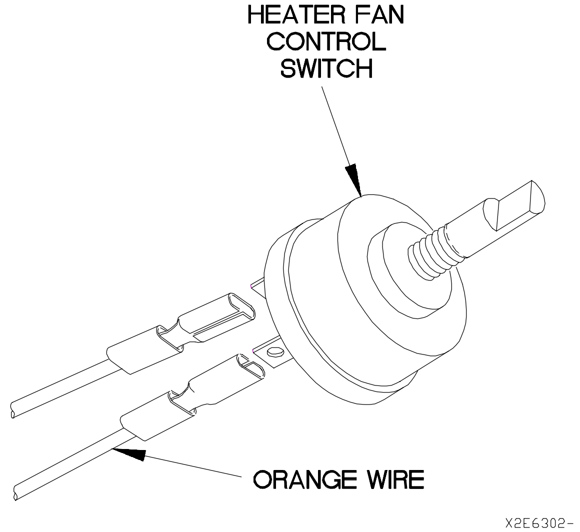
If continuity is not present, heater fan control switch is faulty. If continuity is present, heater is faulty.

NO: Replace heater fan control switch (para 18-10).

YES: Replace or repair personnel heater (para 18-9).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to heater fan control switch orange wire.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 4 of this fault.



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Position heater fan control switch to high speed.
(3) Connect positive (+) probe of multimeter to one heater fan control switch terminal.
(4) Connect negative (-) probe of multimeter to other heater fan control switch terminal and note reading on multimeter.
(5) If continuity is not present, replace heater fan control switch (para 18-10).
(6) If continuity is present, replace or repair personnel heater (para 18-9).
(7) Install heater fan control switch (para 18-10).

e76. PERSONNEL HEATER FAN DOES NOT OPERATE (CONT)

KNOWN INFO

Circuit breaker OK.
Main instrument panel controls and indicators OK.
Heater fan control switch OK.

POSSIBLE PROBLEMS

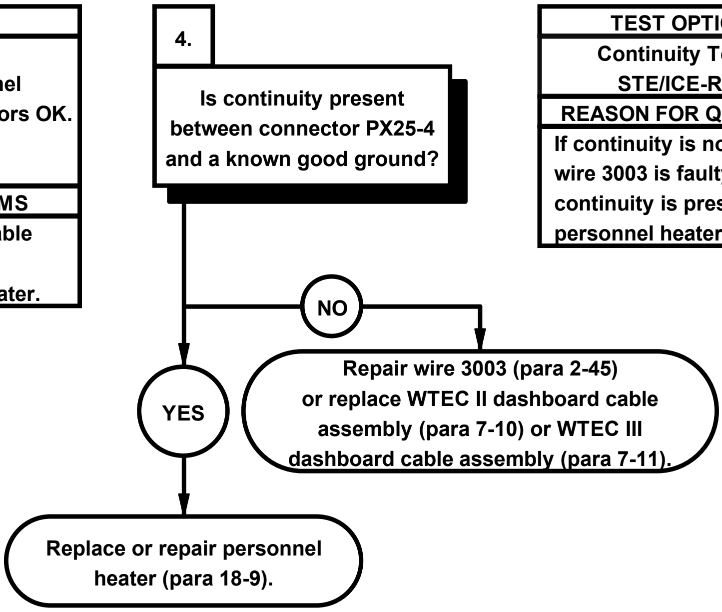
Faulty dashboard cable assembly.
Faulty personnel heater.

TEST OPTIONS

Continuity Test or STE/ICE-R#91

REASON FOR QUESTION

If continuity is not present, wire 3003 is faulty. If continuity is present, personnel heater is faulty.



KNOWN INFO

Circuit breaker OK.
Main instrument panel controls and indicators OK.
Heater fan control switch OK.

POSSIBLE PROBLEMS

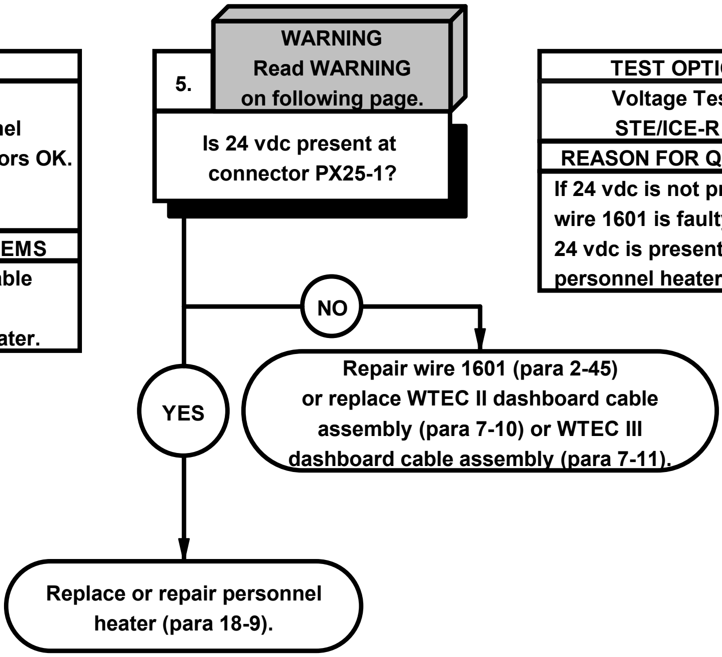
Faulty dashboard cable assembly.
Faulty personnel heater.

TEST OPTIONS

Voltage Test or STE/ICE-R #89

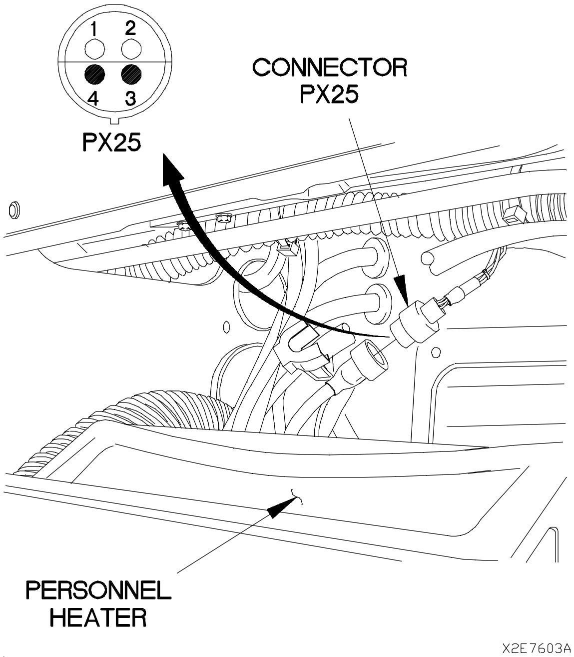
REASON FOR QUESTION

If 24 vdc is not present, wire 1601 is faulty. If 24 vdc is present, personnel heater is faulty.



CONTINUITY TEST

(1) Remove personnel heater for access (para 18-9).
(2) Disconnect connector PX25 from personnel heater connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector PX25-4.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present, repair wire 3003 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If continuity is present, replace or repair personnel heater (para 18-9).
(8) Install personnel heater (para 18-9).
(9) Install heater fan control switch (para 18-10).



WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove personnel heater for access (para 18-9).
(2) Disconnect connector PX25 from personnel heater connector.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector PX25-2.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 vdc is not present, repair wire 1601 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 24 vdc is present, replace or repair personnel heater (para 18-9).
(9) Position master power switch to off (TM 9-2320-366-20-1).
(10) Install personnel heater (para 18-9).
(11) Install heater fan control switch (para 18-10).

e77. WINDSHIELD WASHER DOES NOT OPERATE

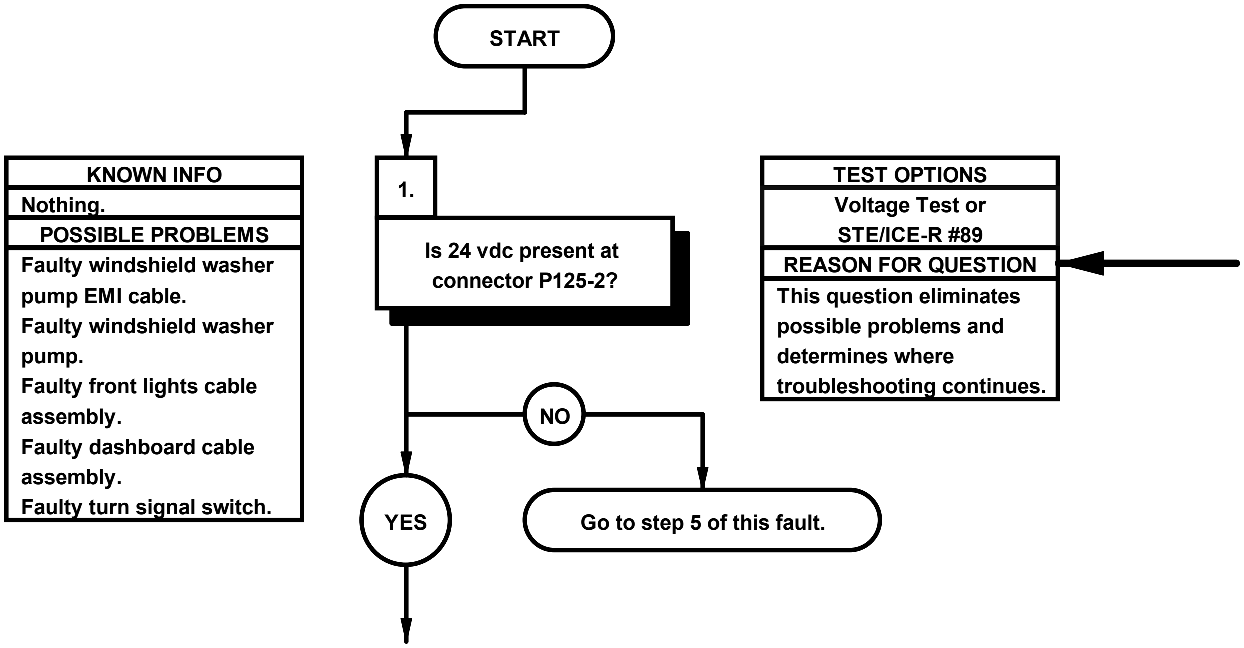
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Nothing.

POSSIBLE PROBLEMS
Faulty windshield washer pump EMI cable.
Faulty windshield washer pump.
Faulty front lights cable assembly.
Faulty dashboard cable assembly.
Faulty turn signal switch.

1. Is 24 vdc present at connector P125-2?

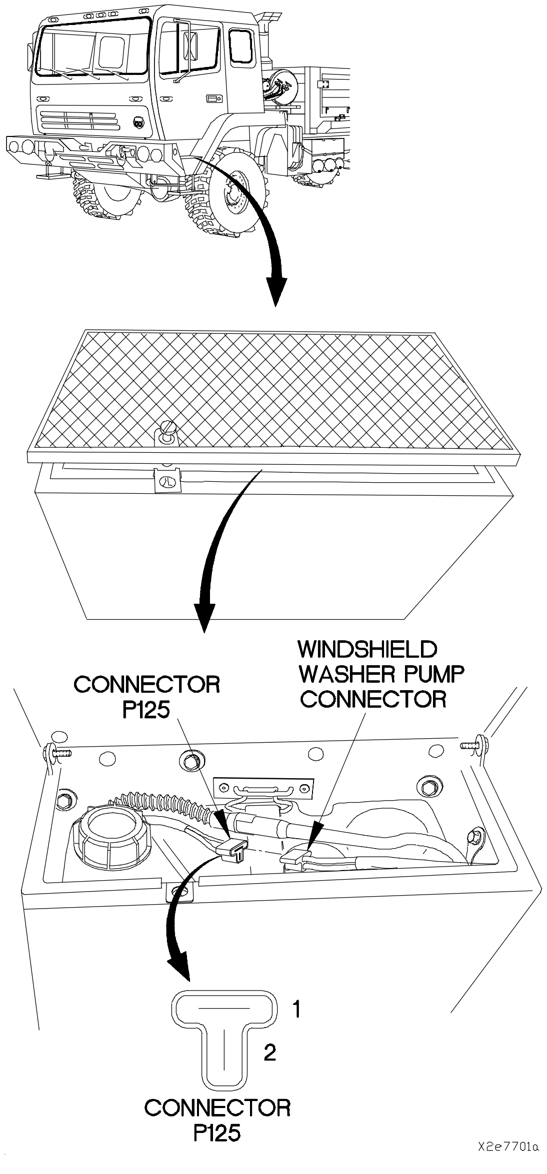
TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

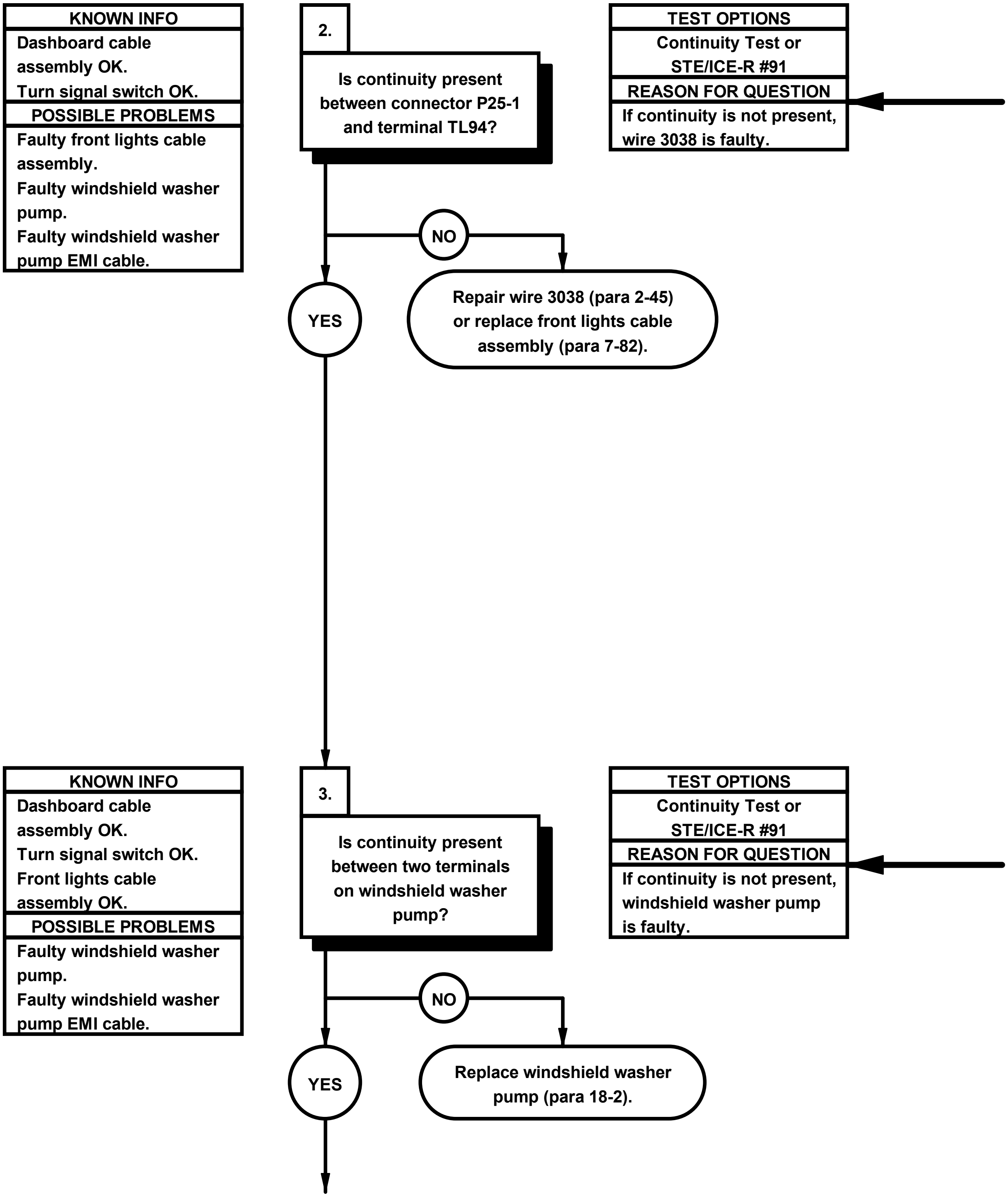
NO: Go to step 5 of this fault.

VOLTAGE TEST

(1) Open left cab step tread (TM 9-2320-366-10-1).
(2) Disconnect connector P125 from windshield washer pump connector.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector P125-2.
(5) Connect negative (-) probe of multimeter to ground.
(6) Operate windshield washer (TM 9-2320-366-10-1).
(7) If 24 vdc is not present, go to step 5 of this fault.
(8) Position master power switch to off (TM 9-2320-366-10-1).
(9) Connect connector P125 to windshield washer pump connector.



e77. WINDSHIELD WASHER DOES NOT OPERATE (CONT)



KNOWN INFO

Dashboard cable assembly OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty windshield washer pump.
Faulty windshield washer pump EMI cable.

2\. Is continuity present between connector P25-1 and terminal TL94?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3038 is faulty.

Repair wire 3038 (para 2-45) or replace front lights cable assembly (para 7-82).

KNOWN INFO

Dashboard cable assembly OK.
Turn signal switch OK.
Front lights cable assembly OK.

POSSIBLE PROBLEMS

Faulty windshield washer pump.
Faulty windshield washer pump EMI cable.

3\. Is continuity present between two terminals on windshield washer pump?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, windshield washer pump is faulty.

Replace windshield washer pump (para 18-2).

CONTINUITY TEST

(1) Disconnect connector P25 from connector J25.

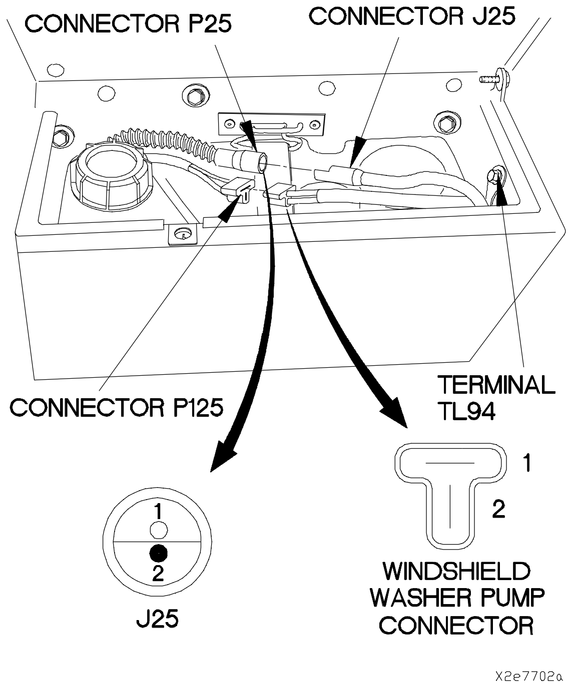
(2) Set multimeter to ohms.

(3) Connect positive (+) probe of multimeter to connector J25-1.

(4) Connect negative (-) probe of multimeter to terminal TL94.

(5) If continuity is not present, repair wire 3038 (para 2-45) or replace front lights cable assembly (para 7-82).

(6) Connect connector P25 to connector J25.



CONTINUITY TEST

(1) Disconnect connector P125 from windshield washer pump connector.

(2) Set multimeter to ohms.

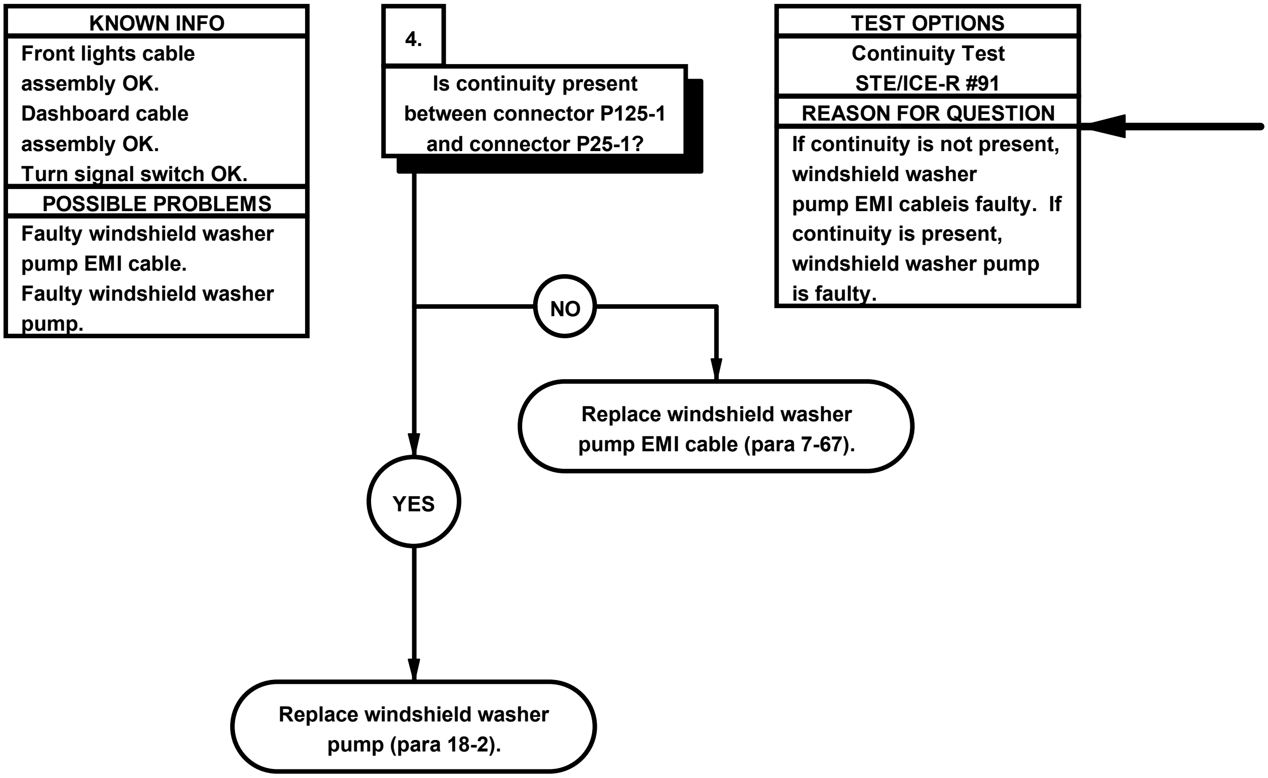
(3) Connect positive (+) probe of multimeter to terminal 1 of windshield washer pump connector.

(4) Connect negative (-) probe of multimeter to terminal 2 or windshield washer pump connector.

(5) If continuity is not present, replace windshield washer motor pump (para 18-2).

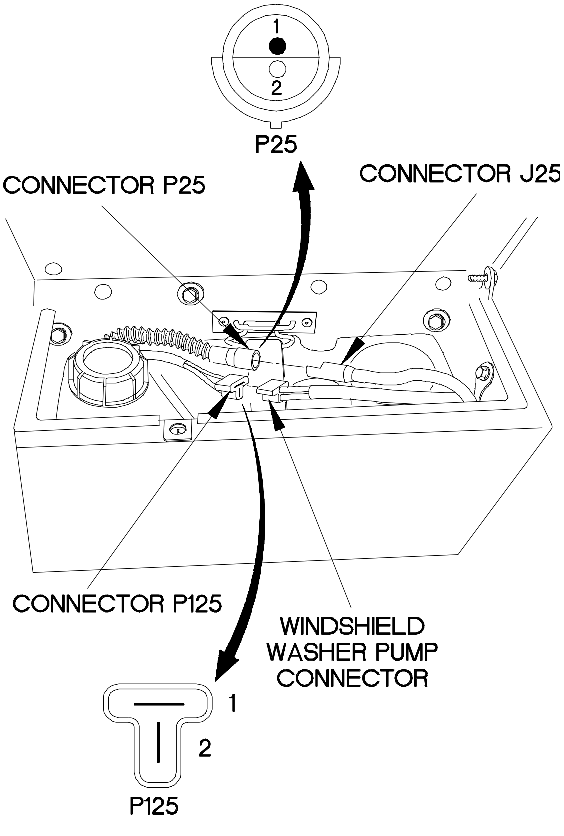
(6) Connect connector P125 to windshield washer pump connector.

e77. WINDSHIELD WASHER DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Disconnect connector P25 from connector J25.
(2) Disconnect connector P125 from windshield washer pump connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P25-1.
(5) Connect negative (-) probe of multimeter to connector P125-1 and note reading on multimeter.
(6) If continuity is not present, replace windshield washer pump EMI cable (para 7-67).
(7) If continuity is present, replace windshield washer pump (para 18-2).
(8) Connect connector P25 to connector J25.
(9) Connect connector P125 to windshield washer pump.
(10) Close left cab step tread (TM 9-2320-366-10-1).



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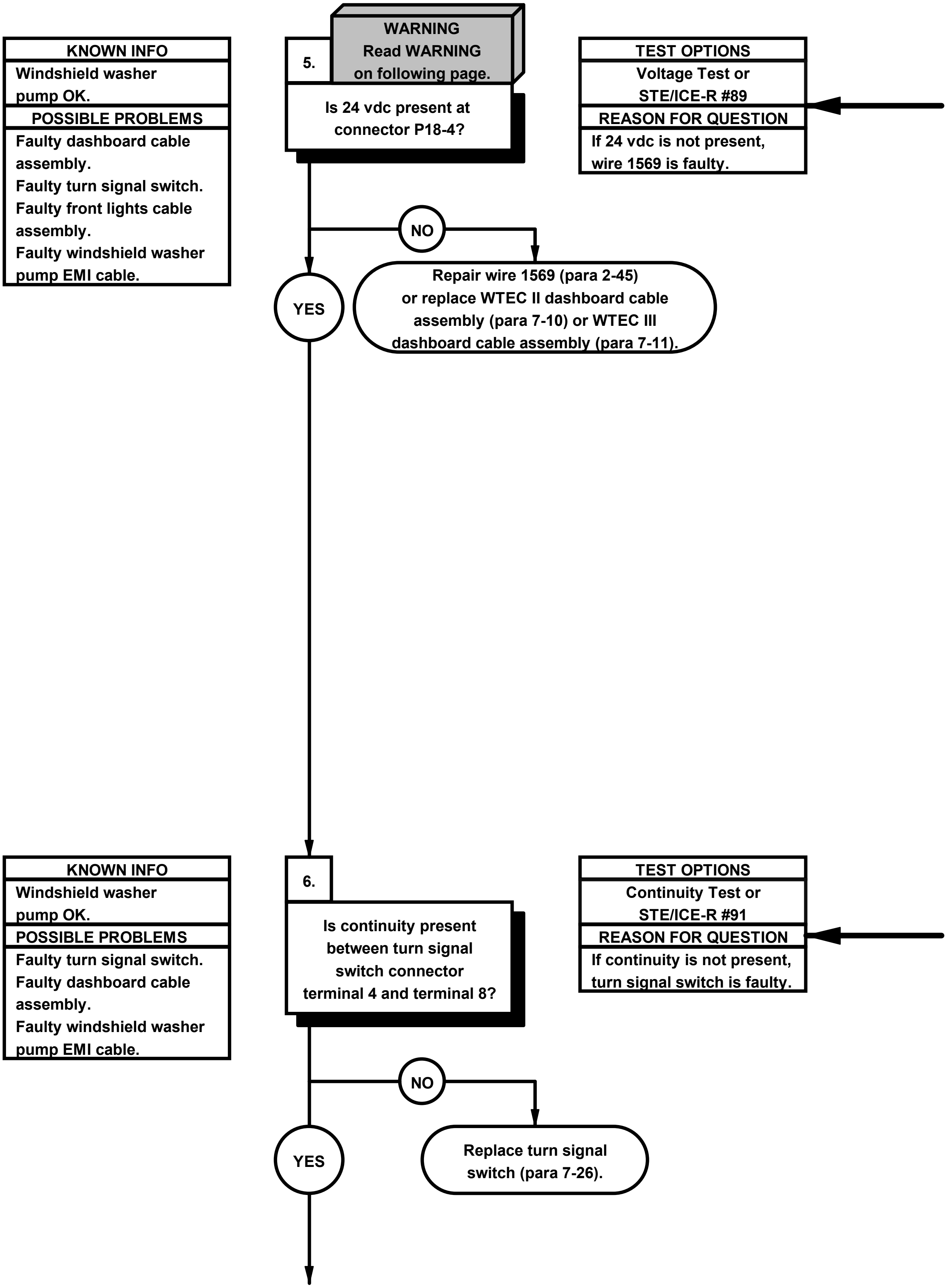
e77. WINDSHIELD WASHER DOES NOT OPERATE (CONT)



KNOWN INFO

Windshield washer pump OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty turn signal switch.
Faulty front lights cable assembly.
Faulty windshield washer pump EMI cable.

5.

WARNING
Read WARNING on following page.

Is 24 vdc present at connector P18-4?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 1569 is faulty.

NO: Repair wire 1569 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Windshield washer pump OK.

POSSIBLE PROBLEMS

Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty windshield washer pump EMI cable.

6.

Is continuity present between turn signal switch connector terminal 4 and terminal 8?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, turn signal switch is faulty.

NO: Replace turn signal switch (para 7-26).

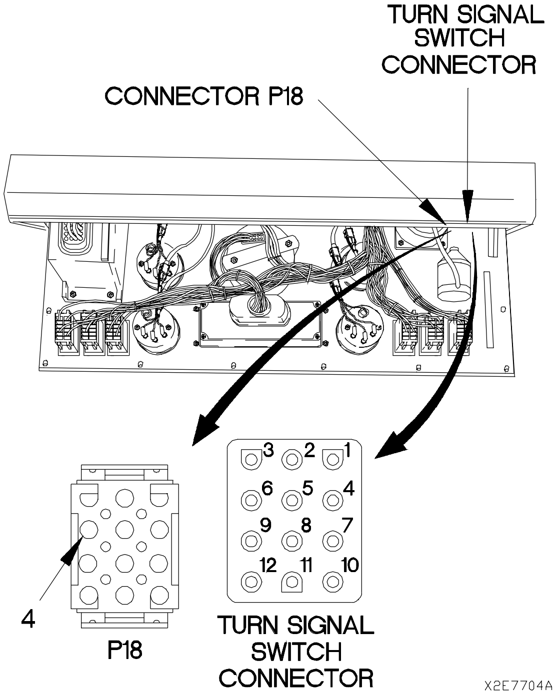
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

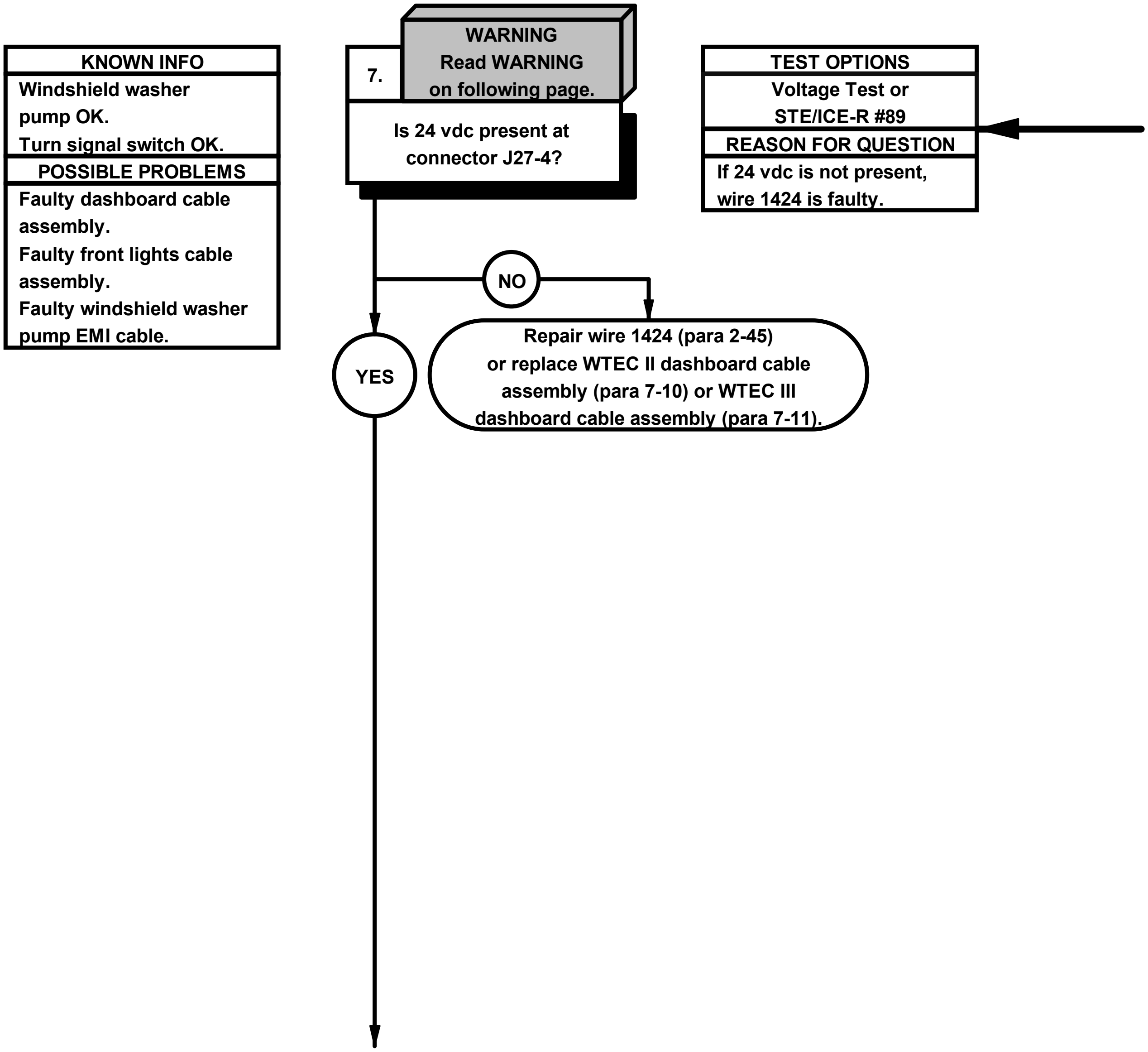
(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector P18 from turn signal switch connector.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector P18-4.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1).
(7) Press windshield washer switch (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 vdc is not present, repair wire 1569 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to turn signal switch connector terminal 4.
(3) Connect negative (-) probe of multimeter to turn signal switch connector terminal 8.
(4) Press windshield washer switch (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If continuity is not present, replace turn signal switch (para 7-26).
(6) Connect connector P18 to turn signal switch connector.
(7) Install instrument panel assembly (para 7-15).

e77. WINDSHIELD WASHER DOES NOT OPERATE (CONT)

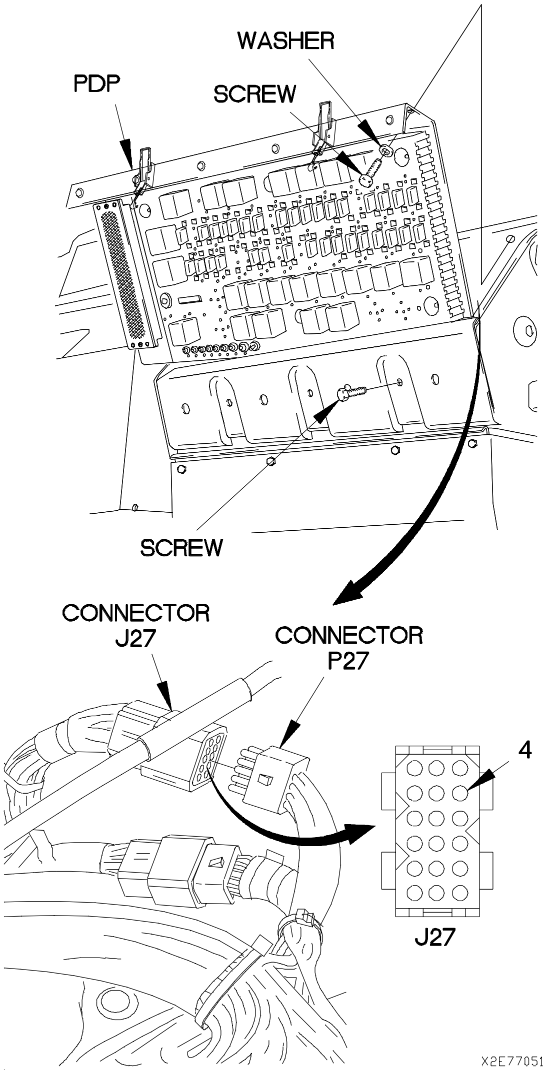


WARNING

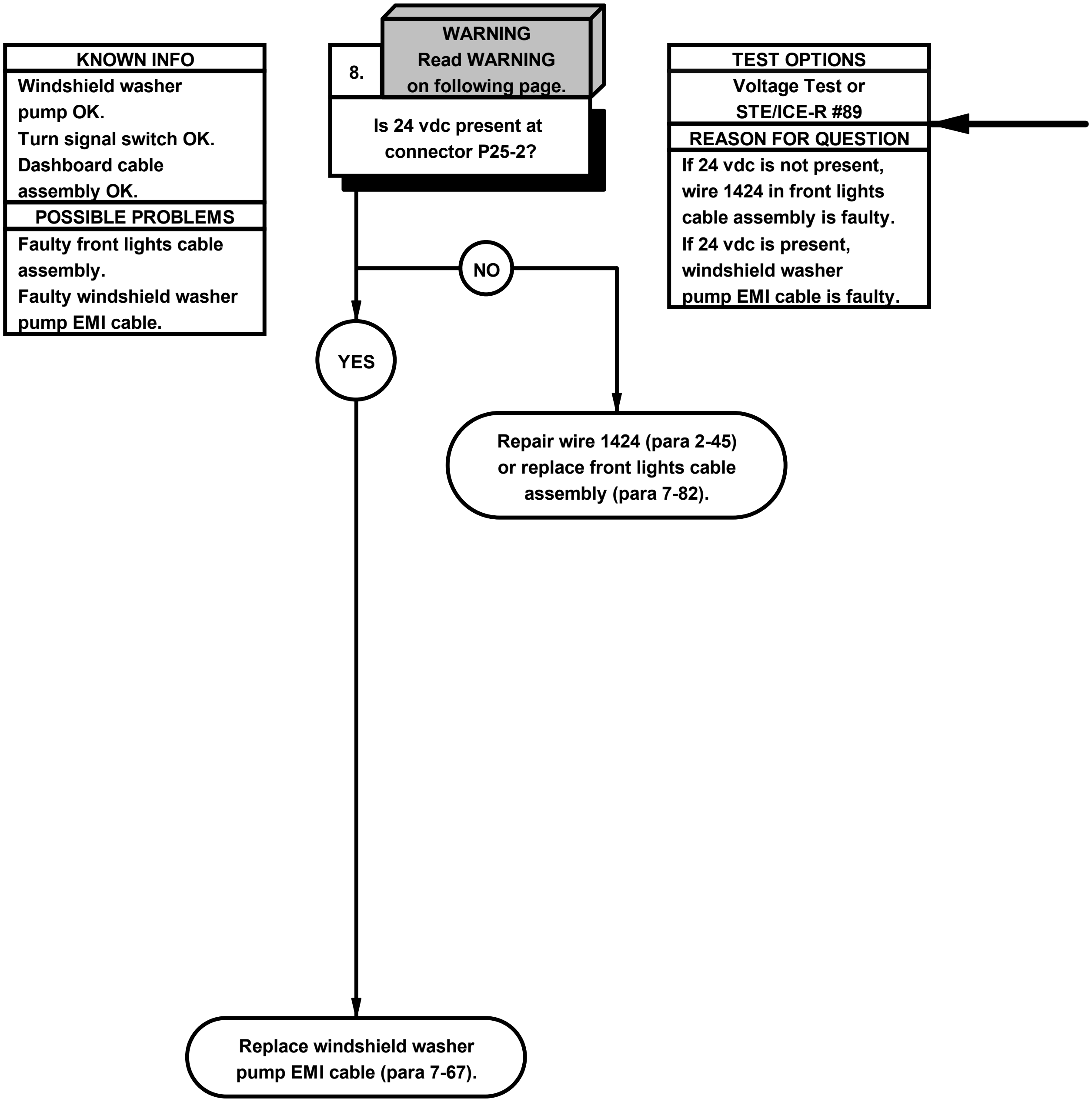
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector J27 from connector P27.
(6) Set multimeter to volts dc.
(7) Connect positive (+) probe of multimeter to connector J27-4.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position master power switch to on (TM 9-2320-366-10-1).
(10) Press windshield washer switch (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 24 vdc is not present, repair wire 1424 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(12) Position master power switch to off (TM 9-2320-366-10-1).
(13) Connect connector J27 to connector P27.
(14) Install PDP on dashboard with three screws.
(15) Install three washers and screws in PDP.
(16) Install PDP cover (para 16-2).



e77. WINDSHIELD WASHER DOES NOT OPERATE (CONT)



KNOWN INFO

Windshield washer pump OK.
Turn signal switch OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty windshield washer pump EMI cable.

WARNING
Read WARNING on following page.

Is 24 vdc present at connector P25-2?

TEST OPTIONS

Voltage Test or
STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 1424 in front lights cable assembly is faulty.
If 24 vdc is present, windshield washer pump EMI cable is faulty.

NO: Repair wire 1424 (para 2-45) or replace front lights cable assembly (para 7-82).

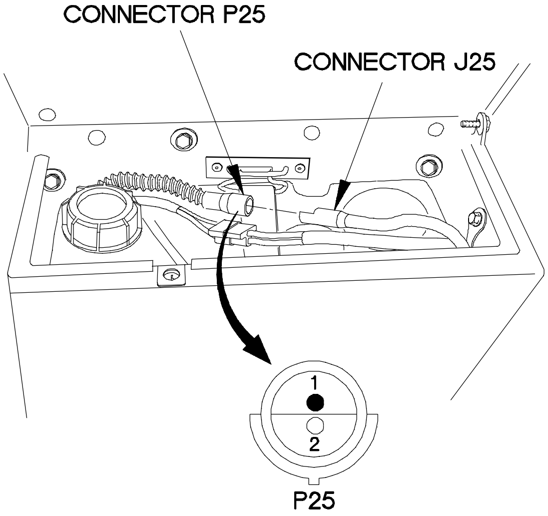
YES: Replace windshield washer pump EMI cable (para 7-67).

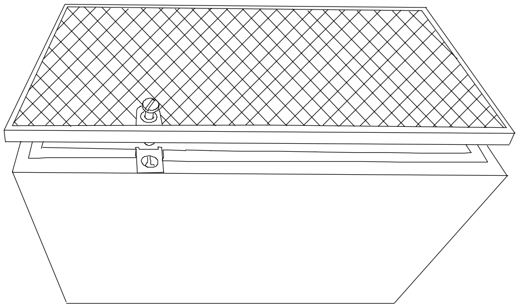
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector P25 from connector J25.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector P25-2.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Press windshield washer switch (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 vdc is not present, repair wire 1424 (para 2-45) or replace front lights cable assembly (para 7-82).
(8) If 24 vdc is present, replace windshield washer pump EMI cable (para 7-67).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Connect connector P25 to connector J25.
(11) Close left cab step tread (TM 9-2320-366-10-1).





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e78. WINDSHIELD WIPER DOES NOT OPERATE ON LOW SPEED

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

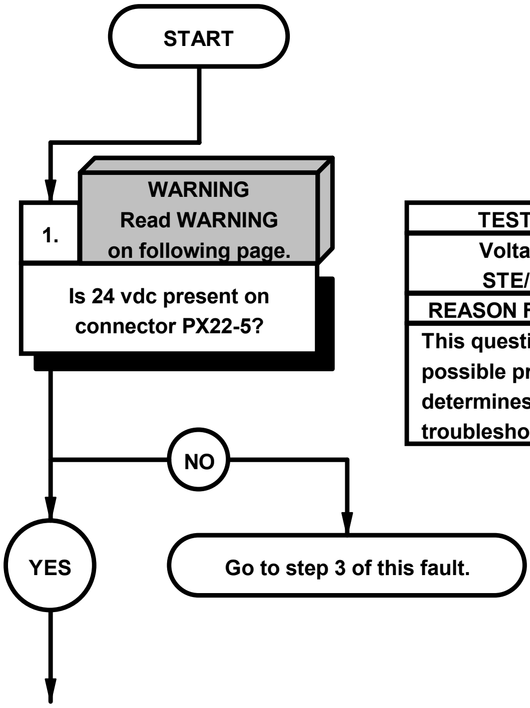
References
TM 9-4910-571-12&P

KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on intermittent speed.

POSSIBLE PROBLEMS

Faulty windshield wiper motor.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.
Faulty windshield wiper ECU.



Read WARNING on following page.

Is 24 vdc present on connector PX22-5?

Go to step 3 of this fault.

TEST OPTIONS

Voltage Test or STE/ICE-R #89

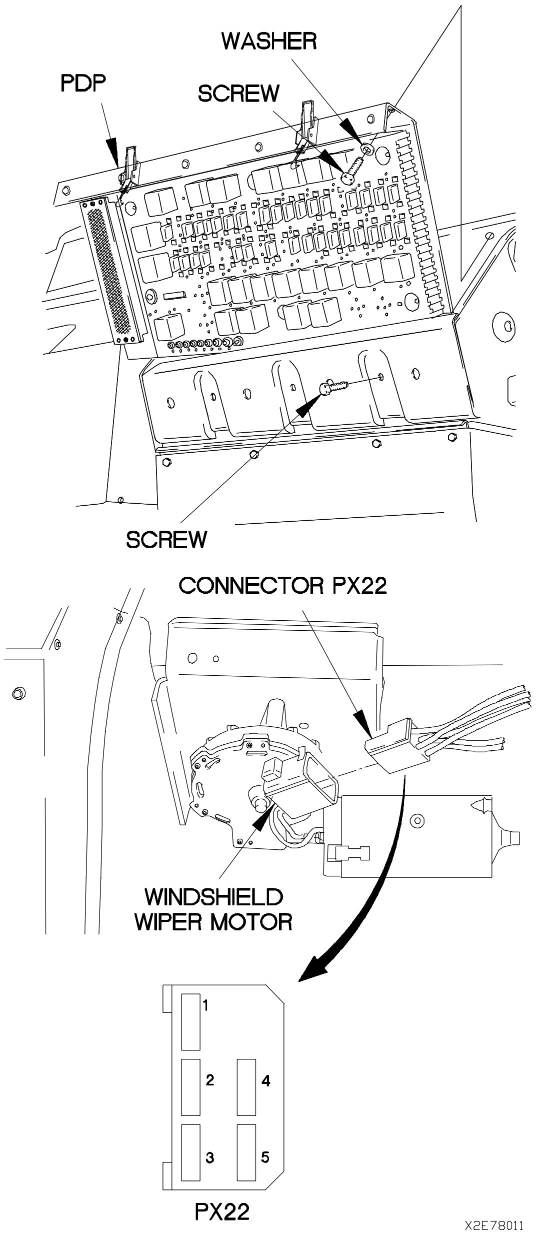
REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

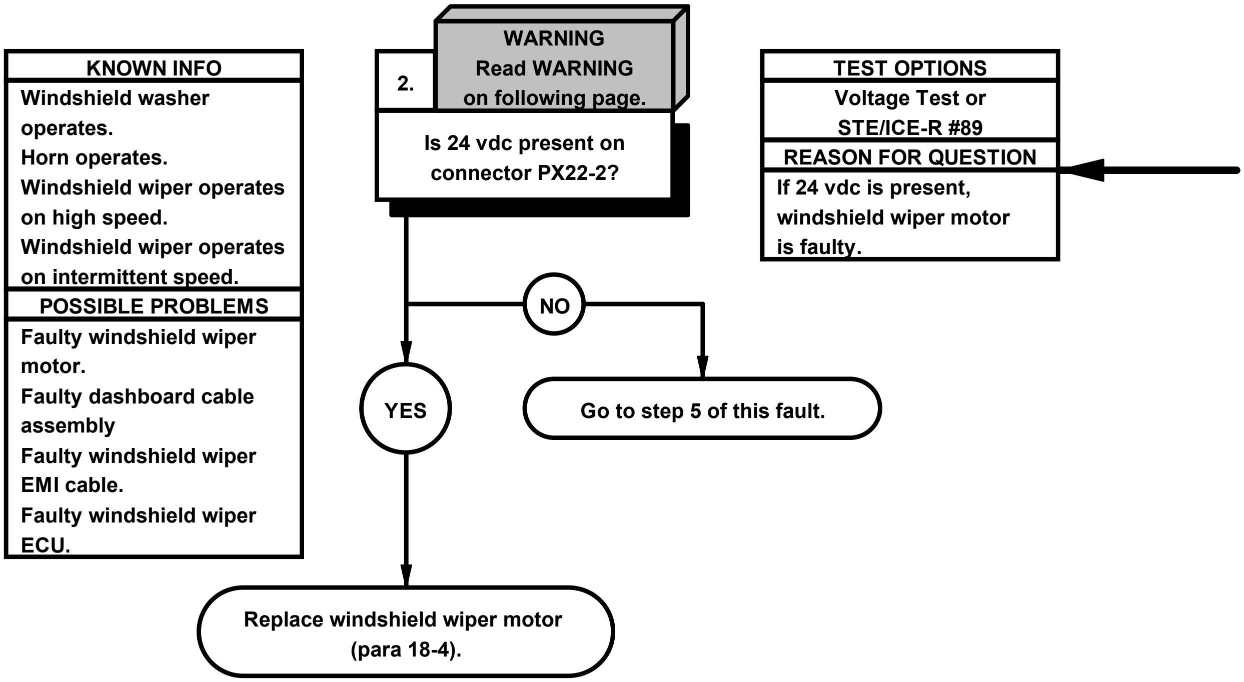
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector PX22 from windshield wiper motor.
(6) Set multimeter to volts dc.
(7) Connect positive (+) probe of multimeter to connector PX22-5.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position master power switch to on (TM 9-2320-366-10-1).
(10) Position windshield wiper switch to low (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 24 vdc is not present, go to step 3 of this fault.
(12) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(13) Position master power switch to off (TM 9-2320-366-10-1).



e78. WINDSHIELD WIPER DOES NOT OPERATE ON LOW SPEED (CONT)



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on intermittent speed.

POSSIBLE PROBLEMS

Faulty windshield wiper motor.
Faulty dashboard cable assembly
Faulty windshield wiper EMI cable.
Faulty windshield wiper ECU.

WARNING
Read WARNING on following page.

2. Is 24 vdc present on connector PX22-2?

TEST OPTIONS

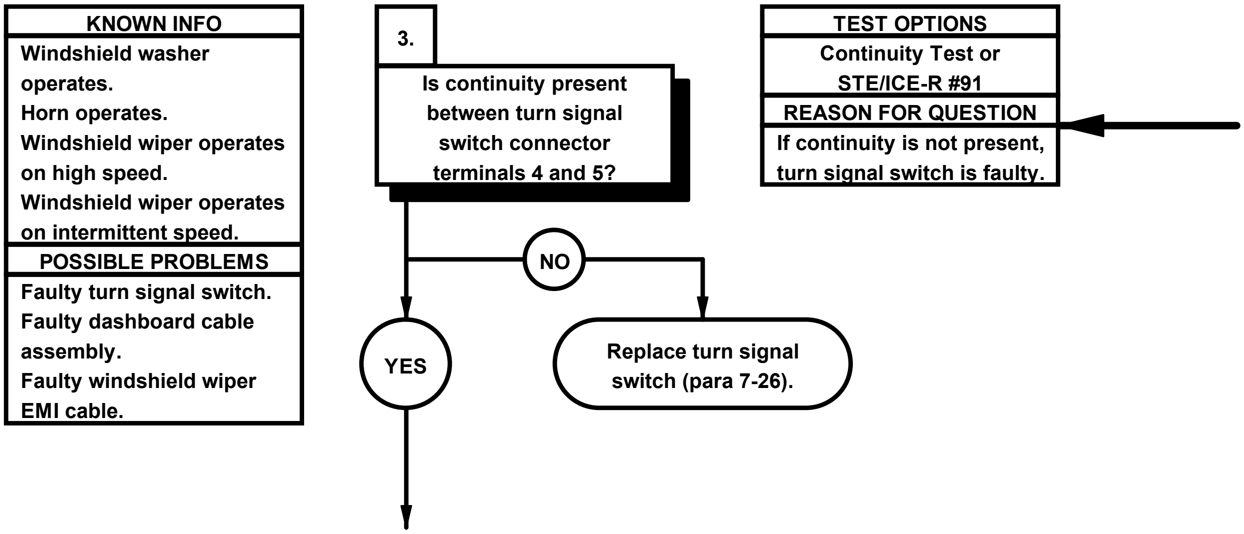
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is present, windshield wiper motor is faulty.

Go to step 5 of this fault.

Replace windshield wiper motor (para 18-4).



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on intermittent speed.

POSSIBLE PROBLEMS

Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.

3. Is continuity present between turn signal switch connector terminals 4 and 5?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

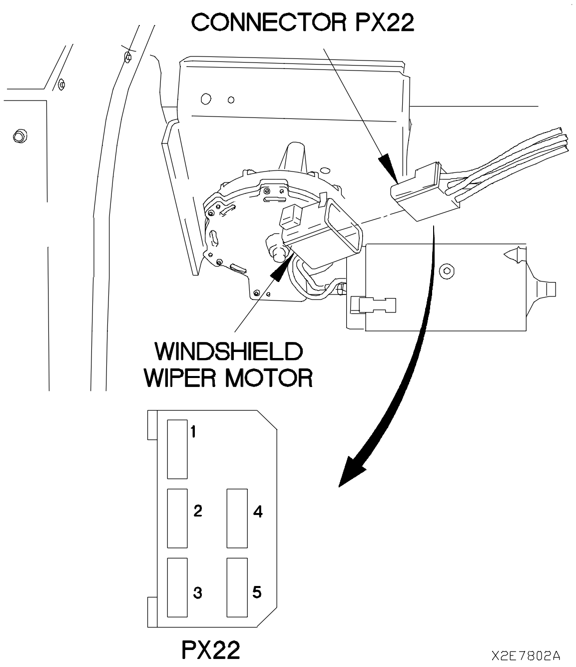
REASON FOR QUESTION

If continuity is not present, turn signal switch is faulty.

Replace turn signal switch (para 7-26).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.



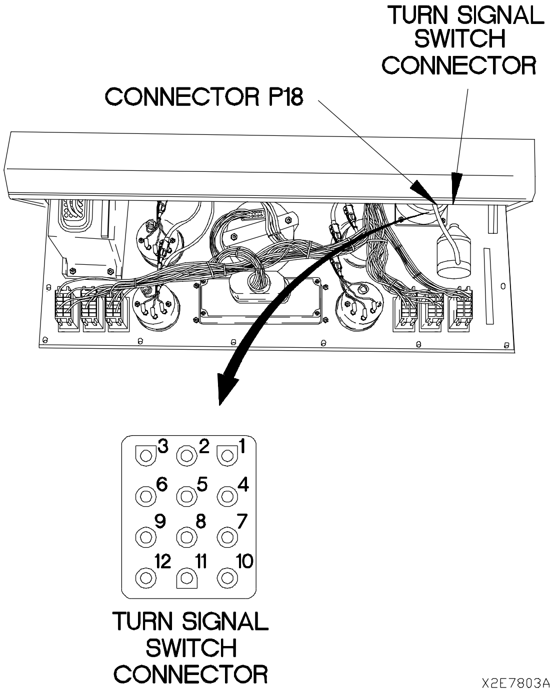
VOLTAGE TEST

1. **Set multimeter to volts dc.**
2. **Connect positive (+) probe of multimeter to connector PX22-2.**
3. **Connect negative (-) probe of multimeter to ground.**
4. **Position master power switch to on (TM 9-2320-366-10-1).**

NOTE

24 vdc is indicated for approximately 1 (one) second.

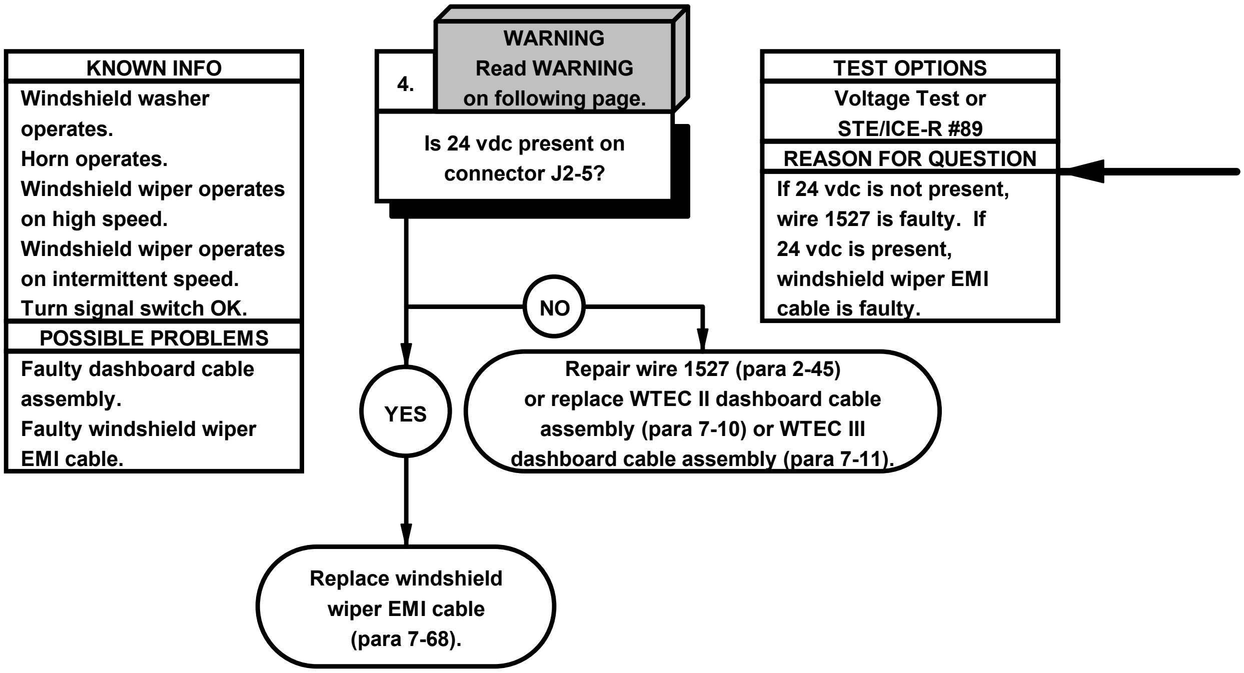
5. **Position windshield wiper switch to low (TM 9-2320-366-10-1) and note reading on multimeter.**
6. **If 24 vdc is not present, go to step 5 of this fault.**
7. **Position windshield wiper switch to off (TM 9-2320-366-10-1).**
8. **Position master power switch to off (TM 9-2320-366-10-1).**



CONTINUITY TEST

1. **Remove instrument panel assembly for access (para 7-15).**
2. **Disconnect turn signal switch connector from connector P18.**
3. **Set multimeter to ohms.**
4. **Connect positive (+) probe of multimeter to turn signal switch connector terminal 4.**
5. **Connect negative (-) probe of multimeter to turn signal switch connector terminal 5.**
6. **Position windshield wiper switch to low position (TM 9-2320-366-10-1) and note reading on multimeter.**
7. **If continuity is not present, replace turn signal switch (para 7-26).**
8. **Position windshield wiper switch to off (TM 9-2320-366-10-1).**
9. **Connect turn signal switch connector to connector P18.**
10. **Install instrument panel assembly (para 7-15).**

e78. WINDSHIELD WIPER DOES NOT OPERATE ON LOW SPEED (CONT)



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on intermittent speed.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.

4.

WARNING
Read WARNING on following page.

Is 24 vdc present on connector J2-5?

TEST OPTIONS

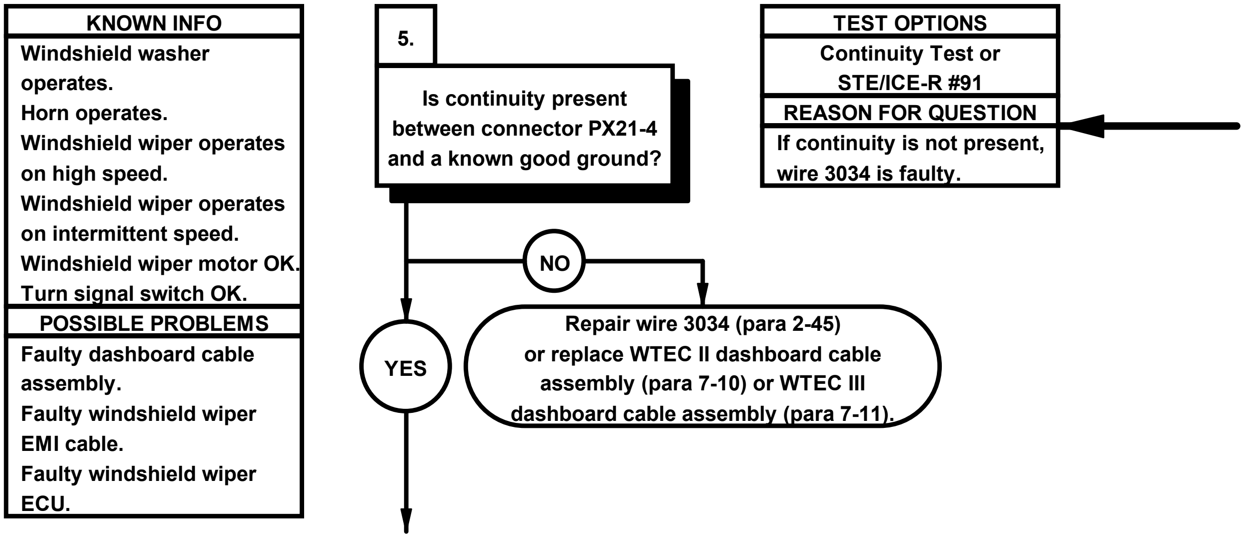
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 1527 is faulty. If 24 vdc is present, windshield wiper EMI cable is faulty.

NO: Repair wire 1527 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace windshield wiper EMI cable (para 7-68).



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on intermittent speed.
Windshield wiper motor OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.
Faulty windshield wiper ECU.

5.

Is continuity present between connector PX21-4 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3034 is faulty.

NO: Repair wire 3034 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

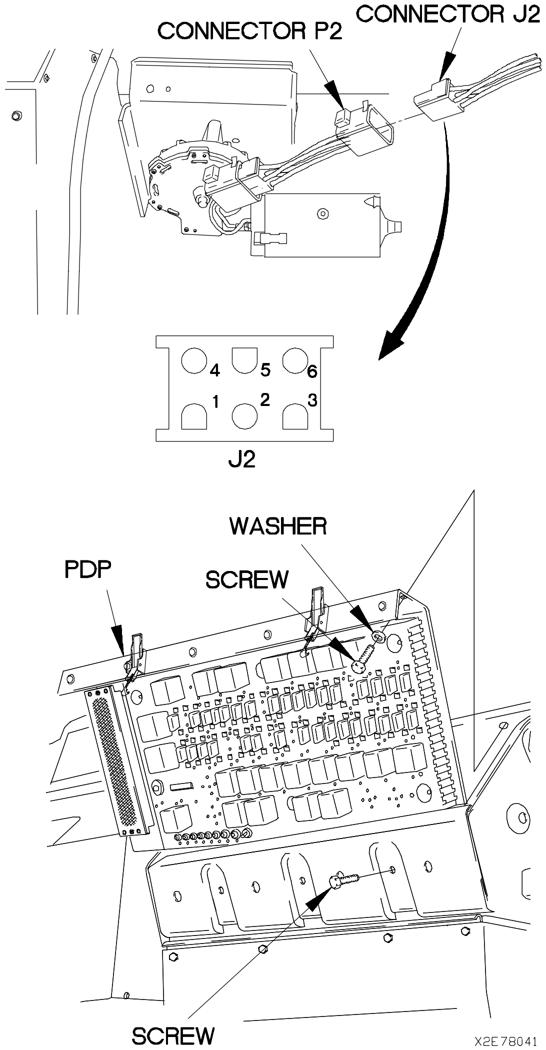
YES

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

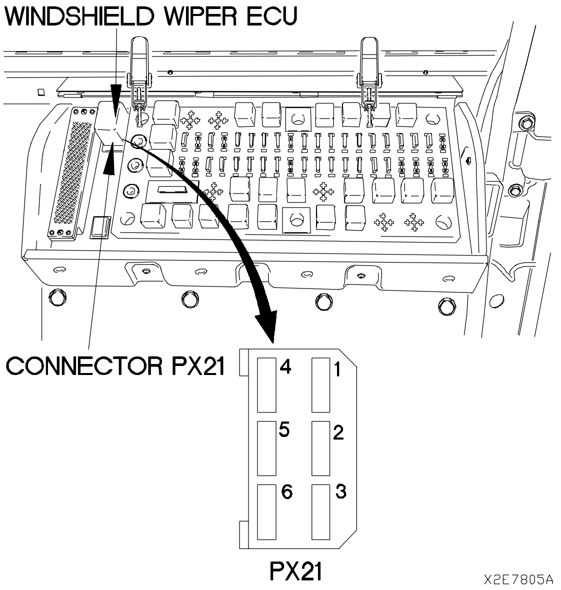
VOLTAGE TEST

(1) Disconnect connector J2 from connector P2.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J2-5.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position windshield wiper switch to low (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 vdc is not present, repair wire 1527 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 24 vdc is present, replace windshield wiper EMI cable (para 7-68).
(9) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(10) Position master power switch to off (TM 9-2320-366-10-1).
(11) Connect connector J2 to connector P2.
(12) Install PDP on dashboard with three screws.
(13) Install three washers and screws in PDP.
(14) Install PDP cover (para 16-2).

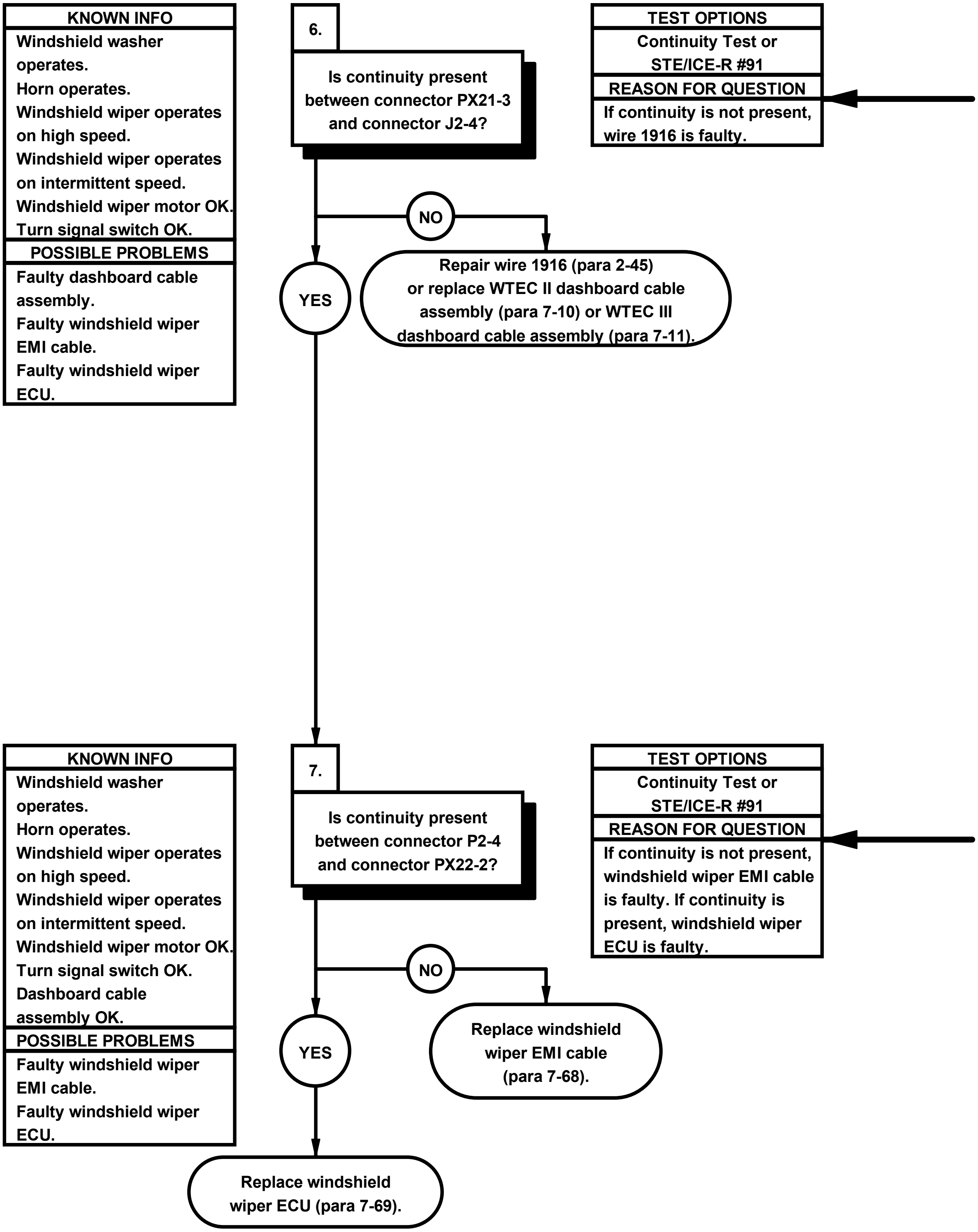


CONTINUITY TEST

(1) Disconnect windshield wiper ECU from connector PX21.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX21-4.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3034 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



e78. WINDSHIELD WIPER DOES NOT OPERATE ON LOW SPEED (CONT)



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on intermittent speed.
Windshield wiper motor OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.
Faulty windshield wiper ECU.

6. Is continuity present between connector PX21-3 and connector J2-4?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1916 is faulty.

NO: Repair wire 1916 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: go to 7.

KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on intermittent speed.
Windshield wiper motor OK.
Turn signal switch OK.
Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty windshield wiper EMI cable.
Faulty windshield wiper ECU.

7. Is continuity present between connector P2-4 and connector PX22-2?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, windshield wiper EMI cable is faulty. If continuity is present, windshield wiper ECU is faulty.

NO: Replace windshield wiper EMI cable (para 7-68).

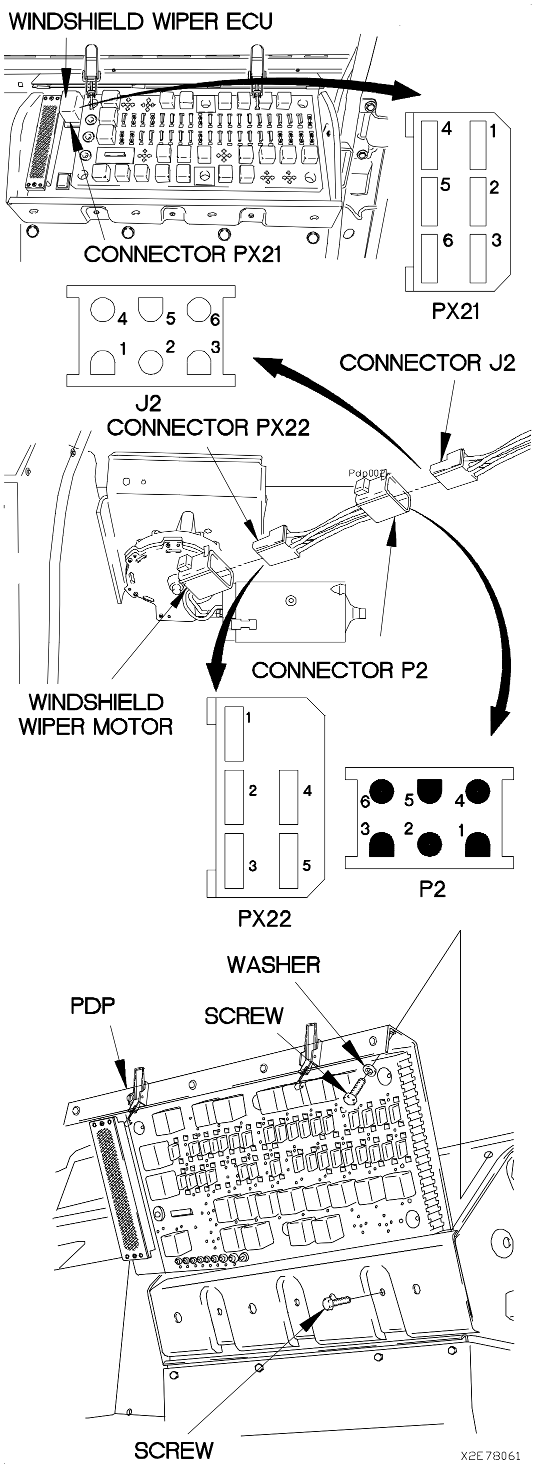
YES: Replace windshield wiper ECU (para 7-69).

CONTINUITY TEST

(1) Disconnect connector J2 from connector P2.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector J2-4.
(4) Connect negative (-) probe of multimeter to connector PX21-3 and note reading on multimeter.
(5) If continuity is not present, repair wire 1916 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) Connect windshield wiper ECU to connector PX21.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P2-4.
(3) Connect negative (-) probe of multimeter to connector PX22-2 and note reading on multimeter.
(4) If continuity is not present, replace windshield wiper EMI cable (para 7-68).
(5) If continuity is present, replace windshield wiper ECU (para 7-69).
(6) Connect connector P2 to connector J2.
(7) Connect connector PX22 to windshield wiper motor.
(8) Install PDP on dashboard with three screws.
(9) Install three washers and screws in PDP.
(10) Install PDP cover (para 16-2).



e79. ALL WINDSHIELD WIPER SPEEDS DO NOT OPERATE

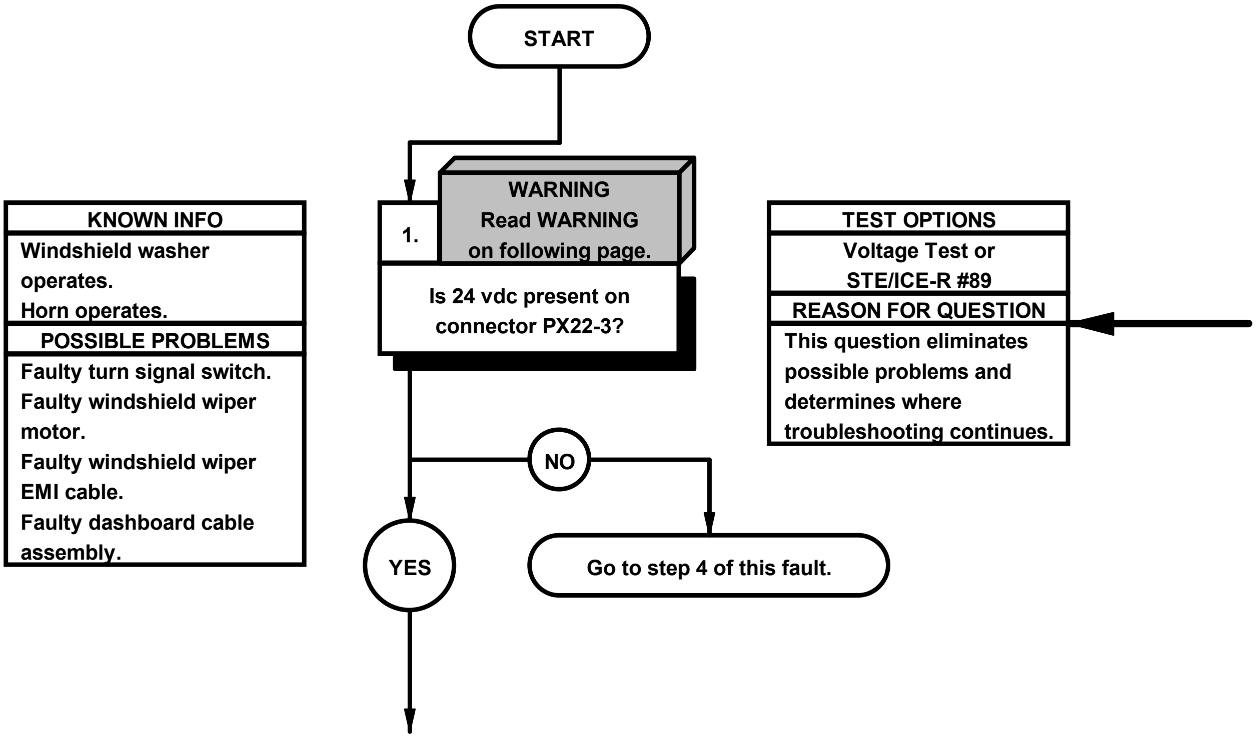
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Windshield washer operates.
Horn operates.

POSSIBLE PROBLEMS
Faulty turn signal switch.
Faulty windshield wiper motor.
Faulty windshield wiper EMI cable.
Faulty dashboard cable assembly.

1\. **WARNING**
Read WARNING on following page.

Is 24 vdc present on connector PX22-3?

Go to step 4 of this fault.

TEST OPTIONS
Voltage Test or STE/ICE-R #89

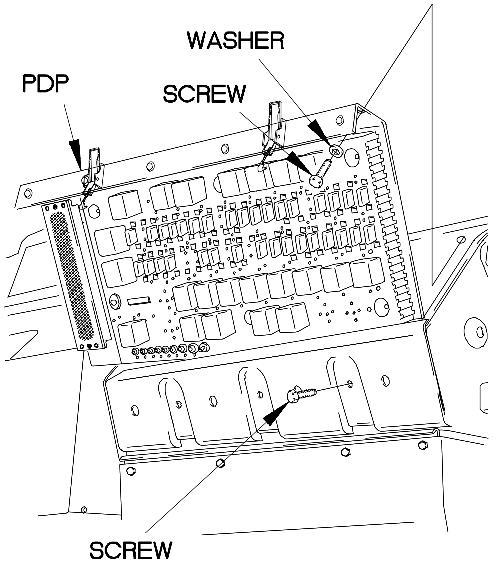
REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

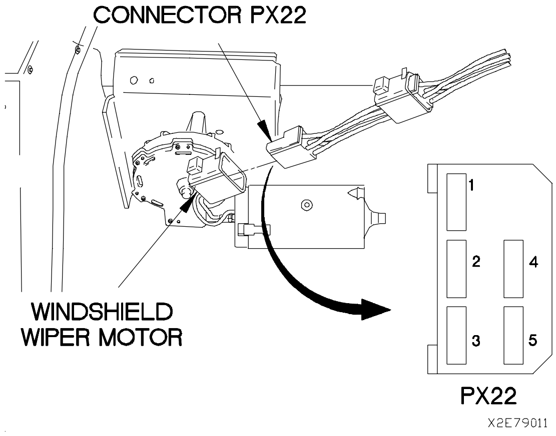
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

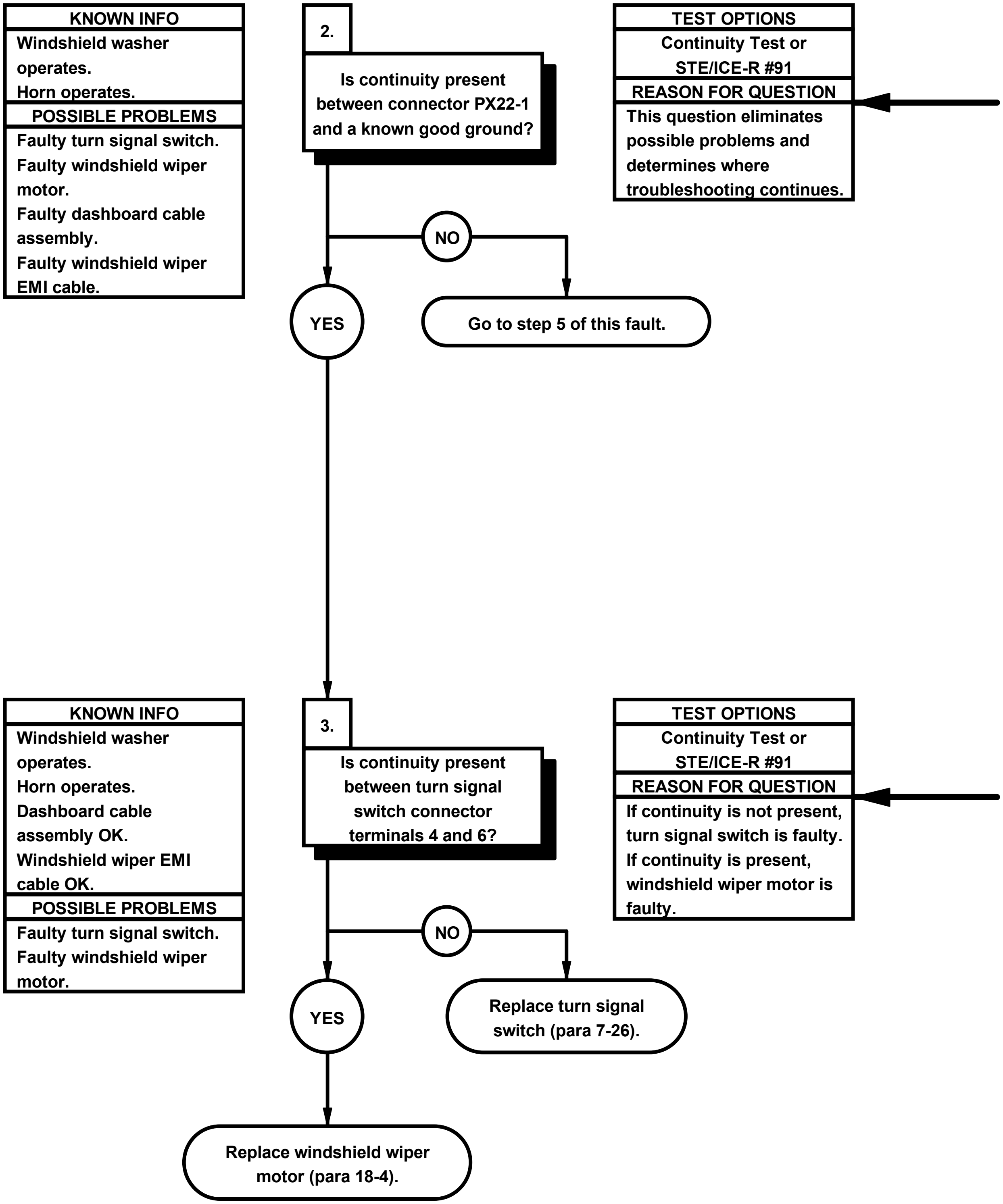
VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector PX22 from windshield wiper motor.
(6) Set multimeter to volts dc.
(7) Connect positive (+) probe of multimeter to connector PX22-3.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If 24 vdc is not present, go to step 4 of this fault.
(11) Position master power switch to off (TM 9-2320-366-10-1).



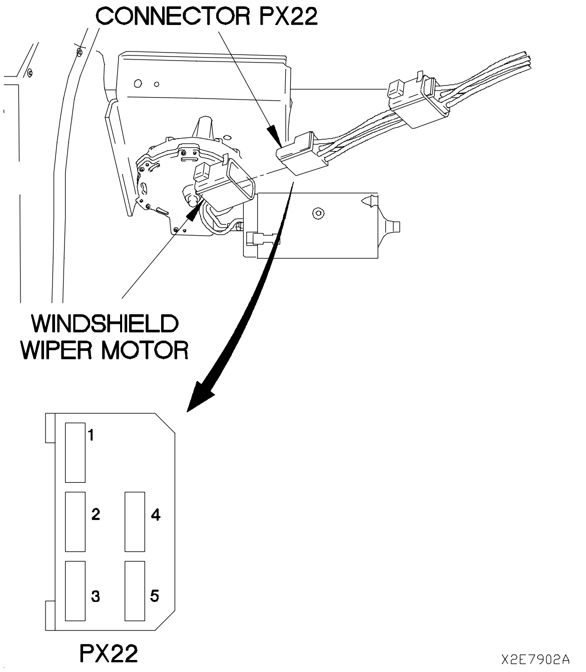


e79. ALL WINDSHIELD WIPER SPEEDS DO NOT OPERATE (CONT)



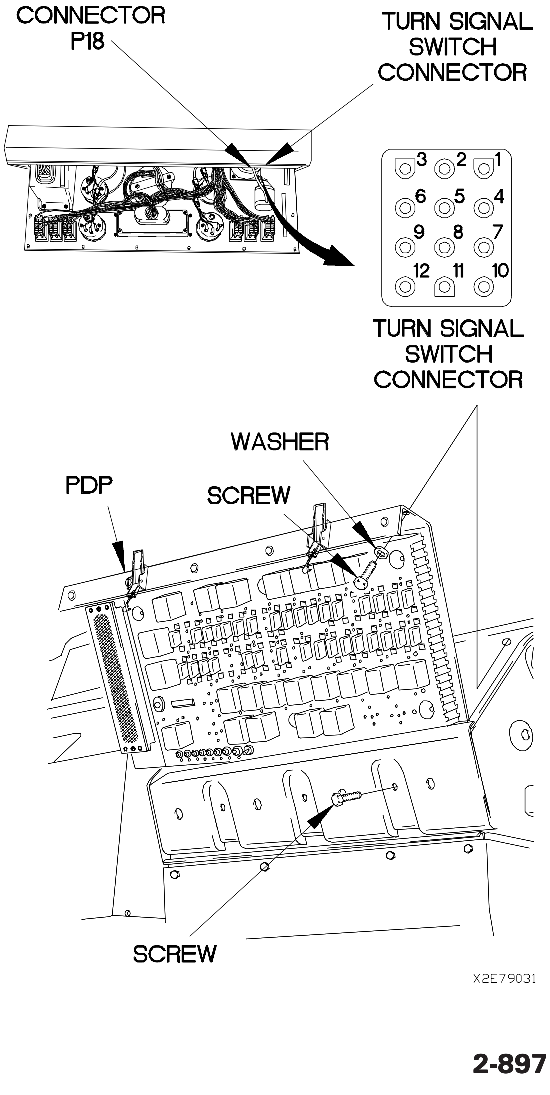
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX22-1.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 5 of this fault.
(5) Connect connector PX22 to windshield wiper motor.

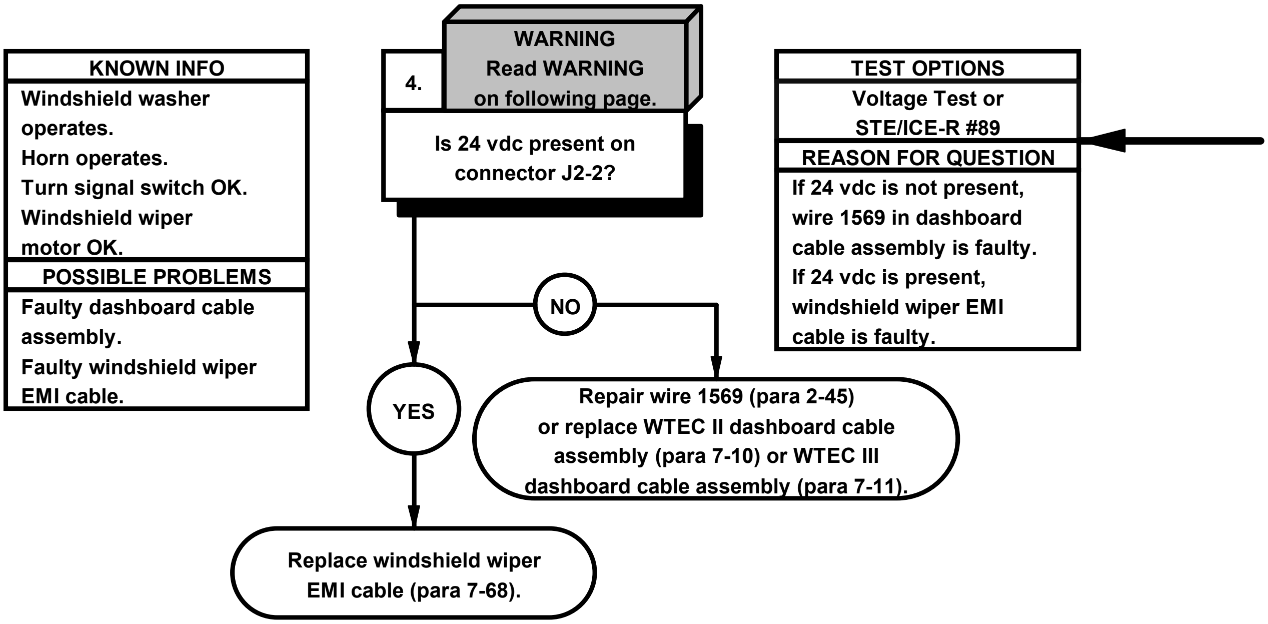


CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect turn signal switch connector from connector P18.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to turn signal switch connector terminal 6.
(5) Connect negative (-) probe of multimeter to turn signal switch connector terminal 4.
(6) Position windshield wiper switch to high (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace turn signal switch (para 7-26).
(8) If continuity is present, replace windshield wiper motor (para 18-4).
(9) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(10) Connect turn signal switch connector to connector P18.
(11) Install instrument panel assembly (para 7-15).
(12) Install PDP on dashboard with three screws.
(13) Install three washers and screws in PDP.
(14) Install PDP cover (para 16-2).



e79. ALL WINDSHIELD WIPER SPEEDS DO NOT OPERATE (CONT)



KNOWN INFO

Windshield washer operates.
Horn operates.
Turn signal switch OK.
Windshield wiper motor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.

WARNING
Read WARNING on following page.

4. Is 24 vdc present on connector J2-2?

TEST OPTIONS

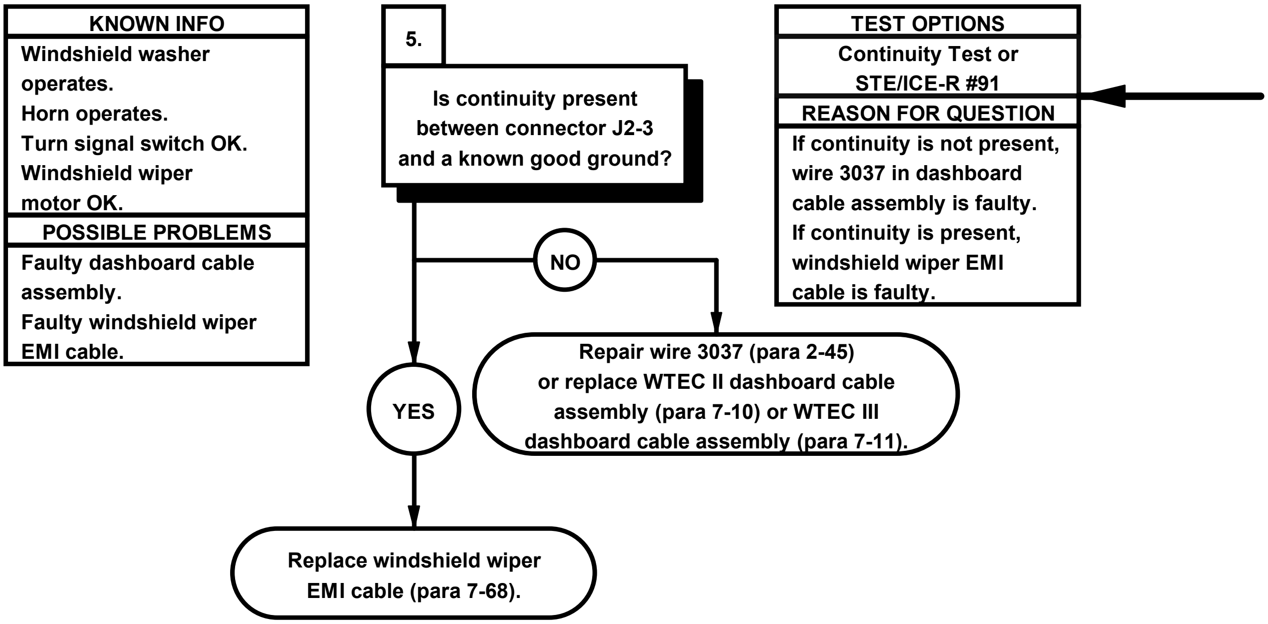
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 1569 in dashboard cable assembly is faulty.
If 24 vdc is present, windshield wiper EMI cable is faulty.

NO: Repair wire 1569 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES: Replace windshield wiper EMI cable (para 7-68).



KNOWN INFO

Windshield washer operates.
Horn operates.
Turn signal switch OK.
Windshield wiper motor OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.

5. Is continuity present between connector J2-3 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3037 in dashboard cable assembly is faulty.
If continuity is present, windshield wiper EMI cable is faulty.

NO: Repair wire 3037 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

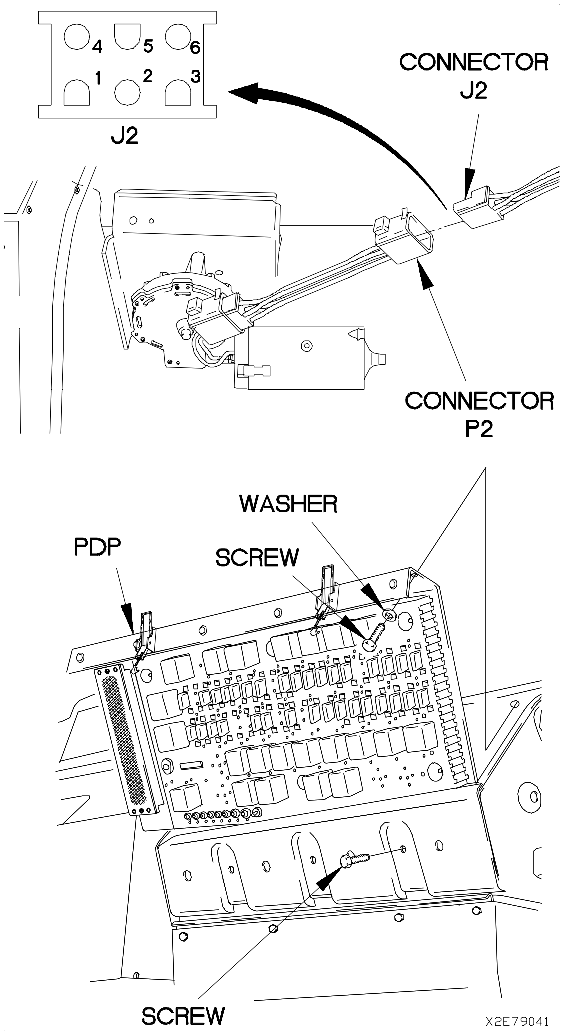
YES: Replace windshield wiper EMI cable (para 7-68).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector J2 from connector P2.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J2-2.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 24 vdc is not present, repair wire 1569 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If 24 vdc is present, replace windshield wiper EMI cable (para 7-68).
(8) Position master power switch to off (TM 9-2320-366-10-1).
(9) Connect connector P2 to connector J2.
(10) Install PDP on dashboard with three screws.
(11) Install three washers and screws in PDP.
(12) Install PDP cover (para 16-2).



CONTINUITY TEST

(1) Disconnect connector J2 from connector P2.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector J2-3.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3037 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(6) If continuity is present, replace windshield wiper EMI cable (para 7-68).
(7) Connect connector P2 to connector J2.
(8) Install PDP on dashboard with three screws.
(9) Install three washers and screws in PDP.
(10) Install PDP cover (para 16-2).

e80. WINDSHIELD WIPER DOES NOT OPERATE ON INTERMITTENT SPEED

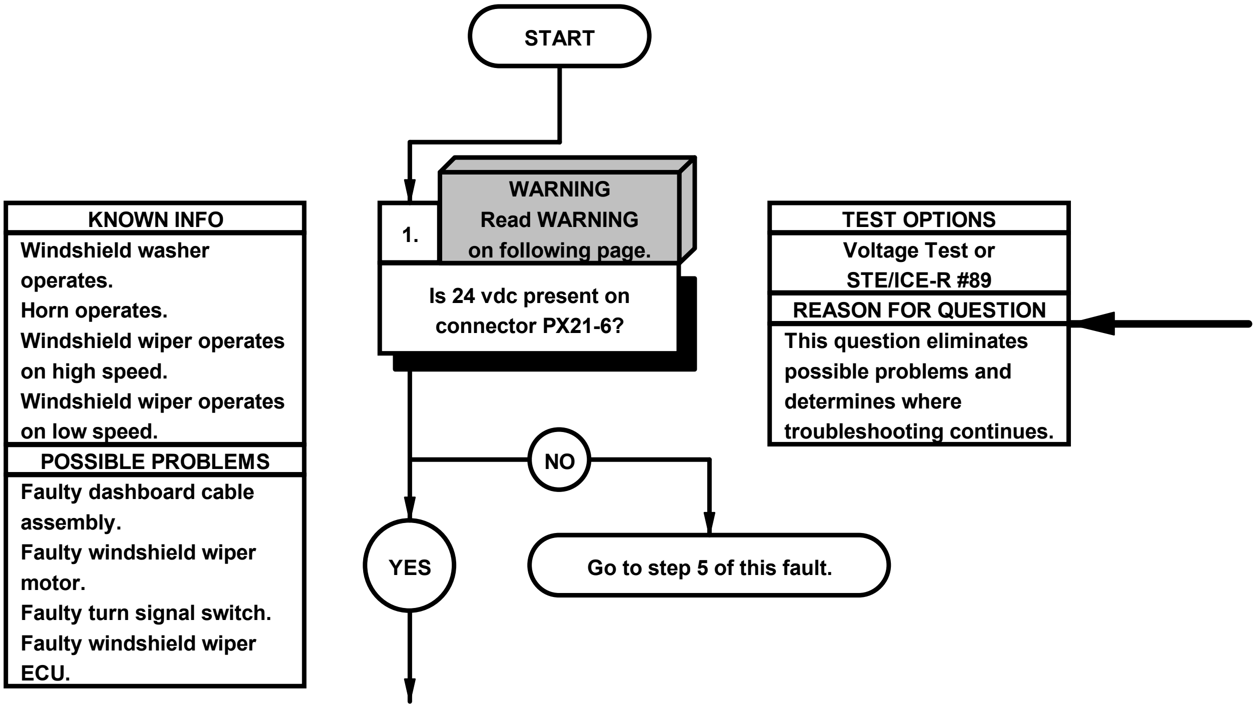
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty windshield wiper motor.
Faulty turn signal switch.
Faulty windshield wiper ECU.

WARNING
Read WARNING on following page.

1. Is 24 vdc present on connector PX21-6?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

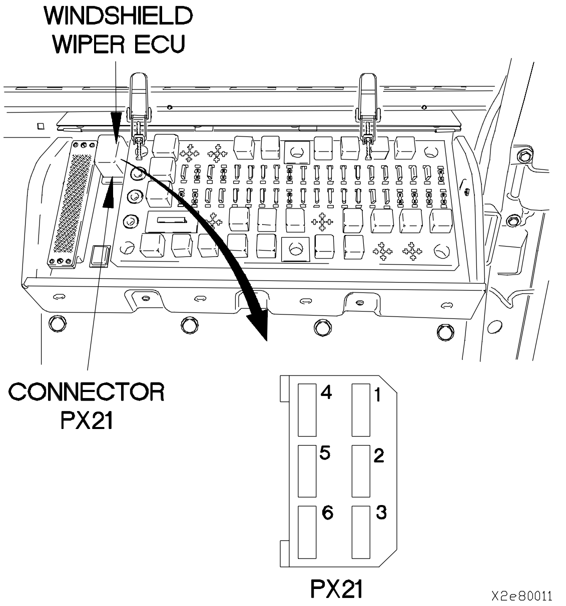
REASON FOR QUESTION
This question eliminates possible problems and determines where troubleshooting continues.

Go to step 5 of this fault.

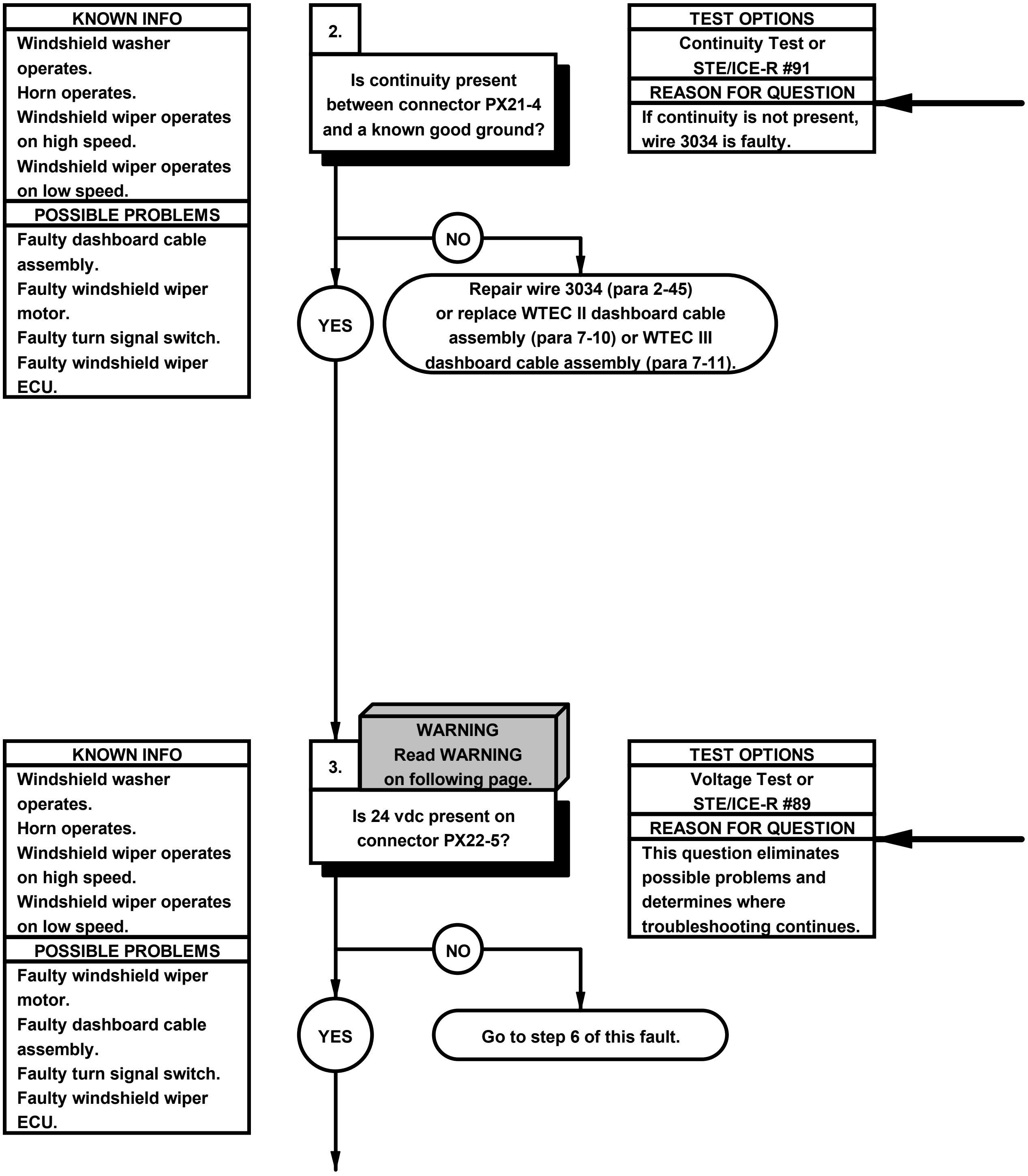
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Remove PDP cover (para 16-2). (2) Disconnect windshield wiper ECU from connector PX21. (3) Set multimeter to volts dc. (4) Connect positive (+) probe of multimeter to connector PX21-6. (5) Connect negative (-) probe of multimeter to ground. (6) Position master power switch to on (TM 9-2320-366-10-1). (7) Position windshield wiper switch to intermittent (TM 9-2320-366-10-1) and note reading on multimeter. (8) If 24 vdc is not present, go to step 5 of this fault. (9) Position windshield wiper switch to off (TM 9-2320-366-10-1). (10) Position master power switch to off (TM 9-2320-366-10-1).



e80. WINDSHIELD WIPER DOES NOT OPERATE ON INTERMITTENT SPEED (CONT)



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty windshield wiper motor.
Faulty turn signal switch.
Faulty windshield wiper ECU.

2.

Is continuity present between connector PX21-4 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3034 is faulty.

NO: Repair wire 3034 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS

Faulty windshield wiper motor.
Faulty dashboard cable assembly.
Faulty turn signal switch.
Faulty windshield wiper ECU.

3.

WARNING
Read WARNING on following page.

Is 24 vdc present on connector PX22-5?

TEST OPTIONS

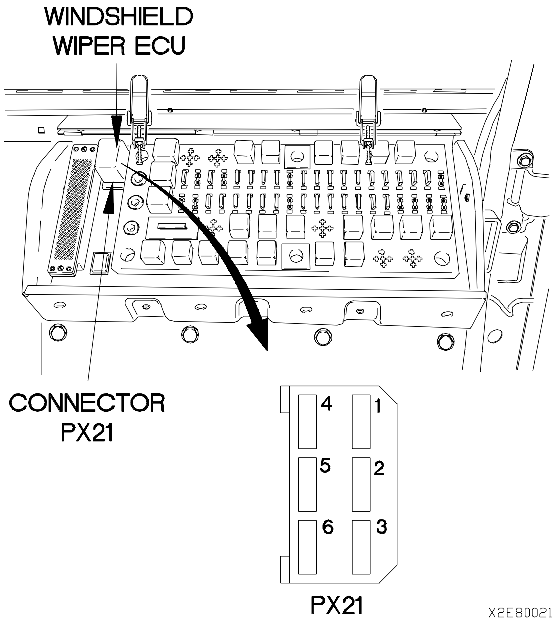
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

This question eliminates possible problems and determines where troubleshooting continues.

NO: Go to step 6 of this fault.

YES



CONTINUITY TEST

(1) Set multimeter to ohms.

(2) Connect positive (+) probe of multimeter to connector PX21-4.

(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.

(4) If continuity is not present, repair wire 3034 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

(5) Connect windshield wiper ECU to connector PX21.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove three screws from PDP.

(2) Remove three screws and washers from PDP.

(3) Lift PDP outward to gain access.

(4) Disconnect connector PX22 from windshield wiper motor.

(5) Set multimeter to volts dc.

(6) Connect positive (+) probe of multimeter to connector PX22-5.

(7) Connect negative (-) probe of multimeter to ground.

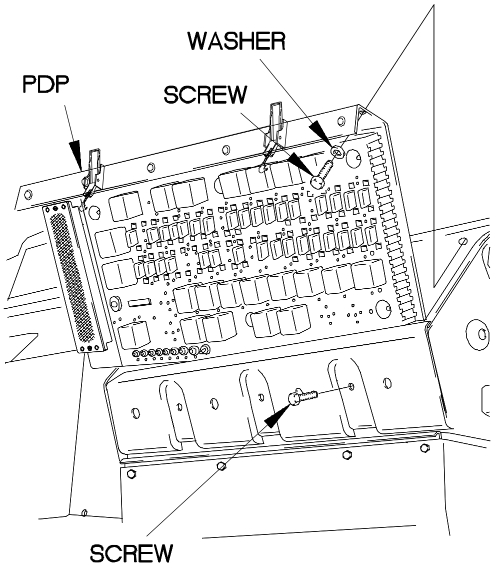
(8) Position master power switch to on (TM 9-2320-366-10-1).

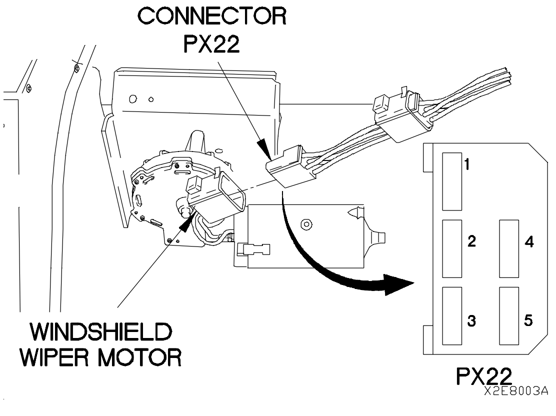
(9) Position windshield wiper switch to intermittent (TM 9-2320-366-10-1) and note reading on multimeter.

(10) If 24 vdc is not present, go to step 6 of this fault.

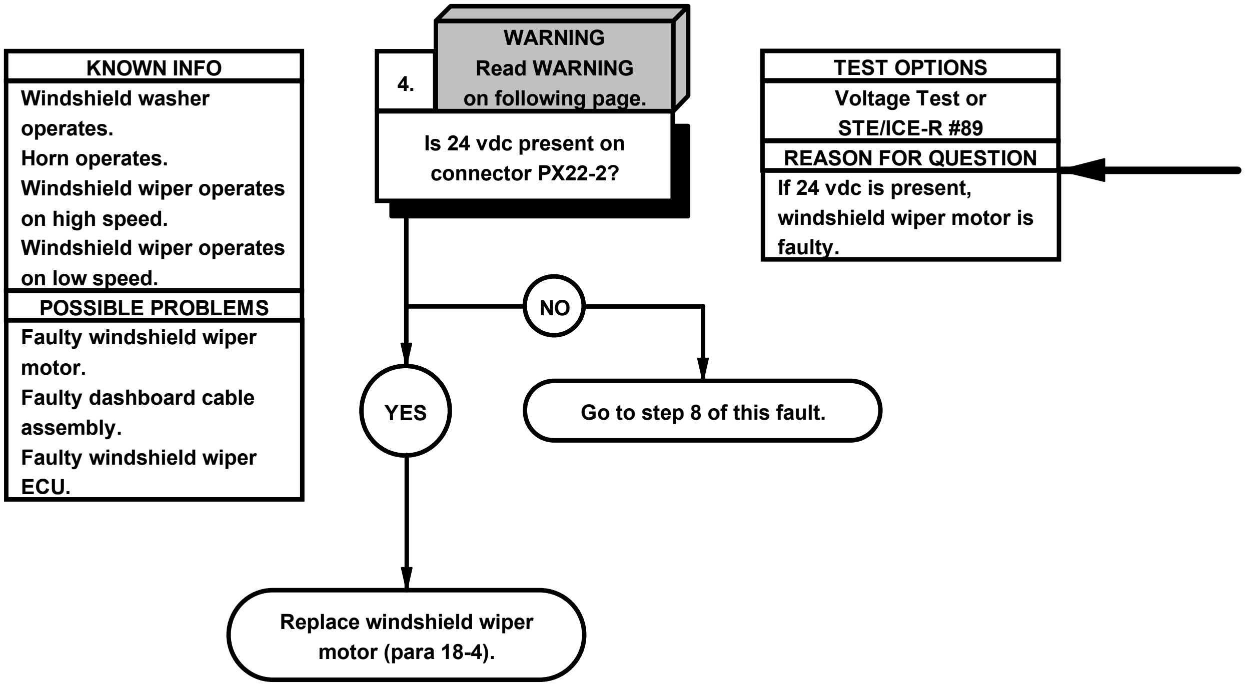
(11) Position windshield wiper switch to off (TM 9-2320-366-10-1).

(12) Position master power switch to off (TM 9-2320-366-10-1).





e80. WINDSHIELD WIPER DOES NOT OPERATE ON INTERMITTENT SPEED (CONT)



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS

Faulty windshield wiper motor.
Faulty dashboard cable assembly.
Faulty windshield wiper ECU.

4.

WARNING
Read WARNING on following page.

Is 24 vdc present on connector PX22-2?

TEST OPTIONS

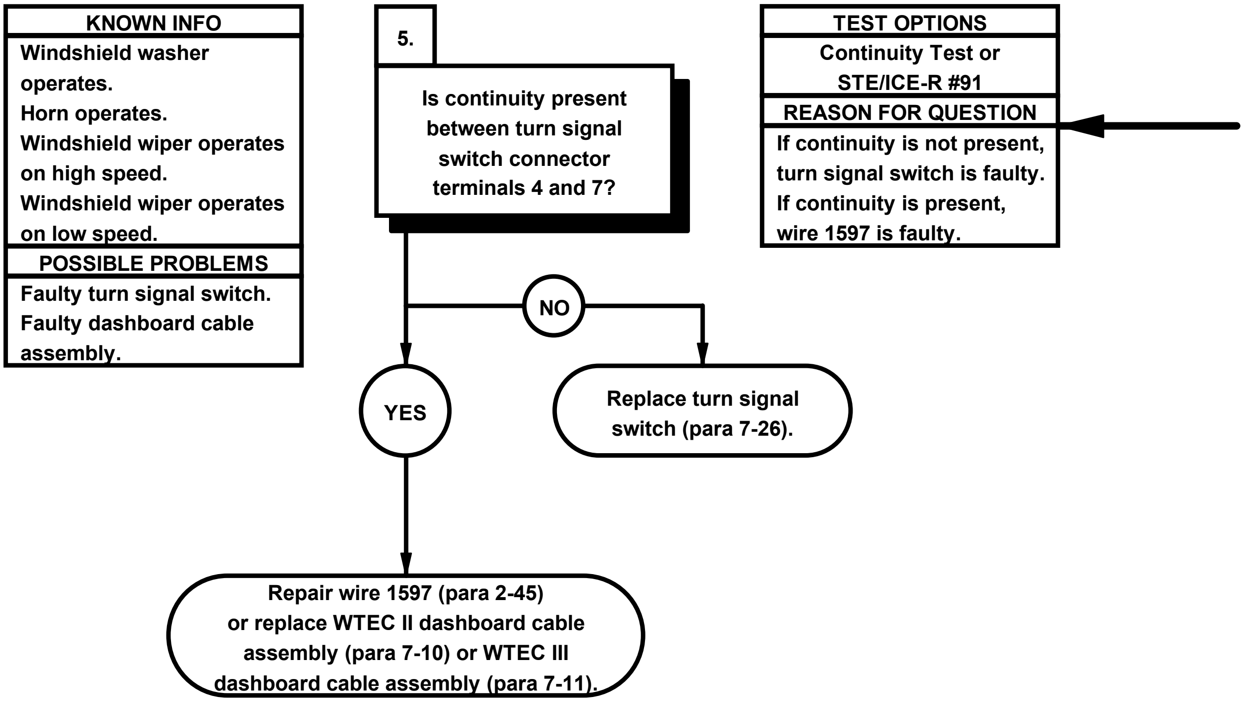
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is present, windshield wiper motor is faulty.

NO: Go to step 8 of this fault.

YES: Replace windshield wiper motor (para 18-4).



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS

Faulty turn signal switch.
Faulty dashboard cable assembly.

5.

Is continuity present between turn signal switch connector terminals 4 and 7?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, turn signal switch is faulty.
If continuity is present, wire 1597 is faulty.

NO: Replace turn signal switch (para 7-26).

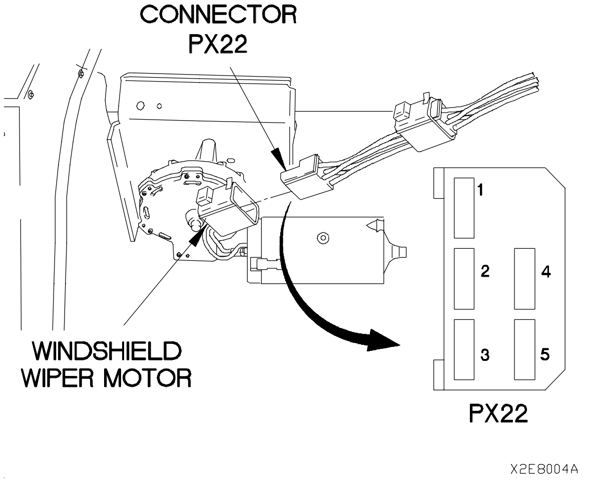
YES: Repair wire 1597 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

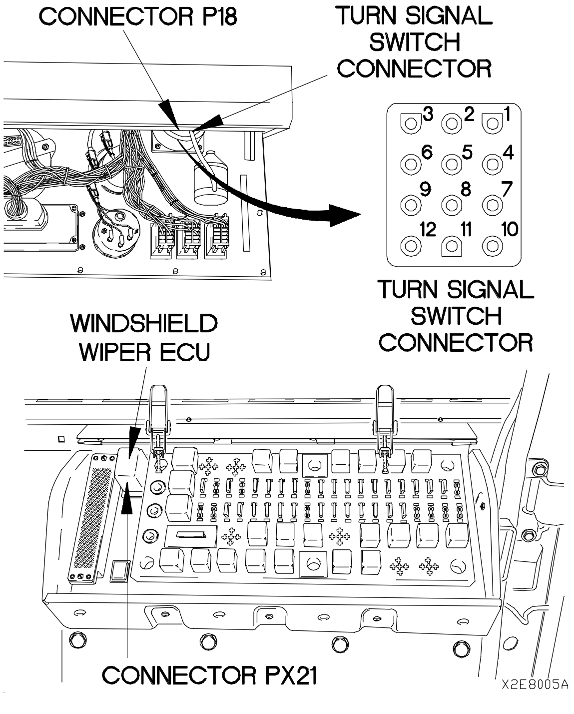
VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to connector PX22-2.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1).
(5) Position windshield wiper switch to intermittent (TM 9-2320-366-10-1) and note reading on multimeter.
(6) If 24 vdc is not present, go to step 8 of this fault.
(7) If 24 vdc is present, replace windshield wiper motor (para 18-4).
(8) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Connect connector PX22 to windshield wiper motor.

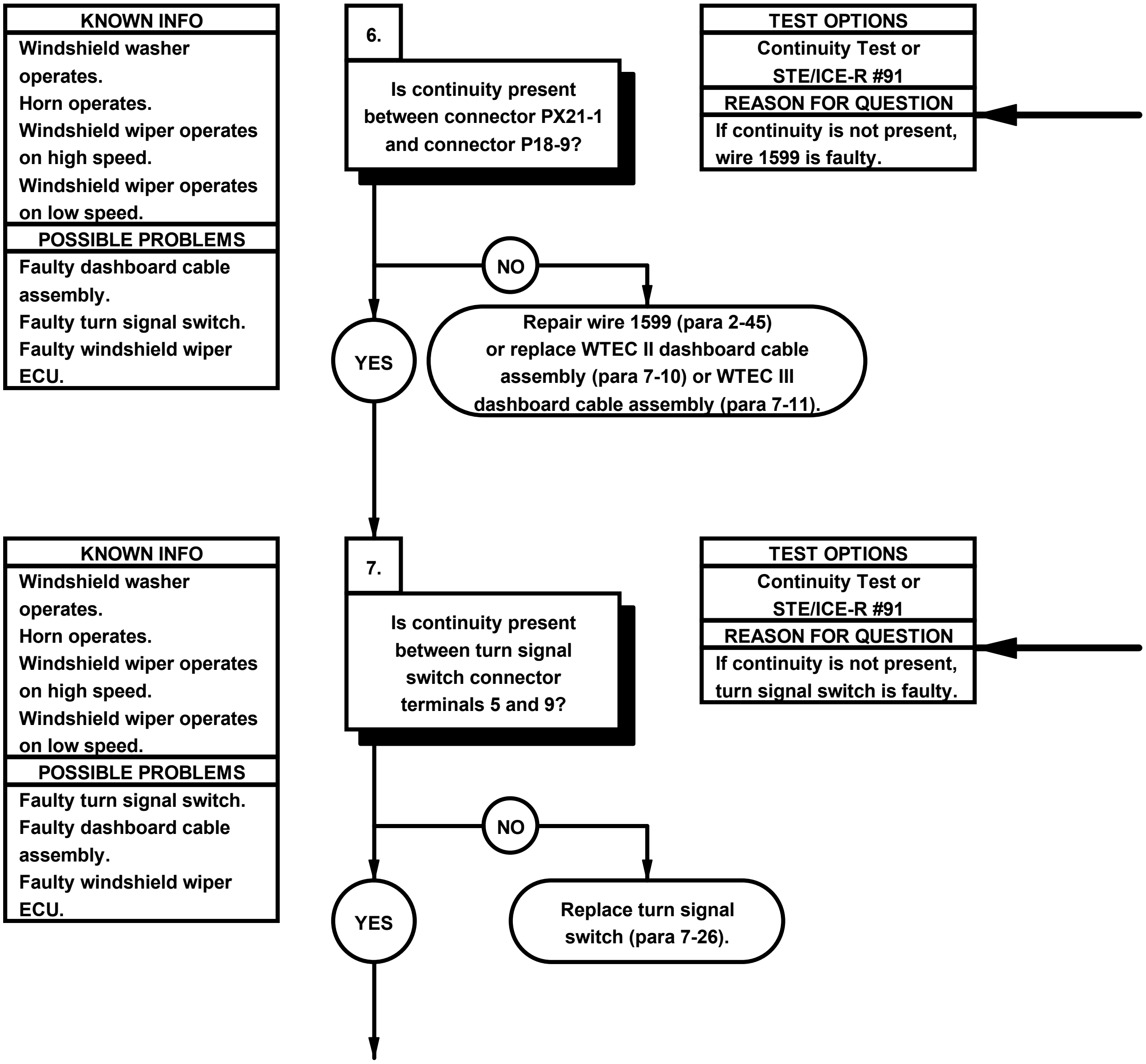


CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect turn signal switch connector from connector P18.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to turn signal switch connector terminal 4.
(5) Connect negative (-) probe of multimeter to turn signal switch connector terminal 7.
(6) Position windshield wiper switch to intermittent (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace turn signal switch (para 7-26).
(8) If continuity is present, repair wire 1597 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(10) Connect turn signal switch connector to connector P18.
(11) Install instrument panel assembly (para 7-15).
(12) Connect windshield wiper ECU to connector PX21.
(13) Install PDP cover (para 16-2).



e80. WINDSHIELD WIPER DOES NOT OPERATE ON INTERMITTENT SPEED (CONT)



KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty turn signal switch.
Faulty windshield wiper ECU.

6\. Is continuity present between connector PX21-1 and connector P18-9?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 1599 is faulty.

NO: Repair wire 1599 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Windshield washer operates.
Horn operates.
Windshield wiper operates on high speed.
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS

Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty windshield wiper ECU.

7\. Is continuity present between turn signal switch connector terminals 5 and 9?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

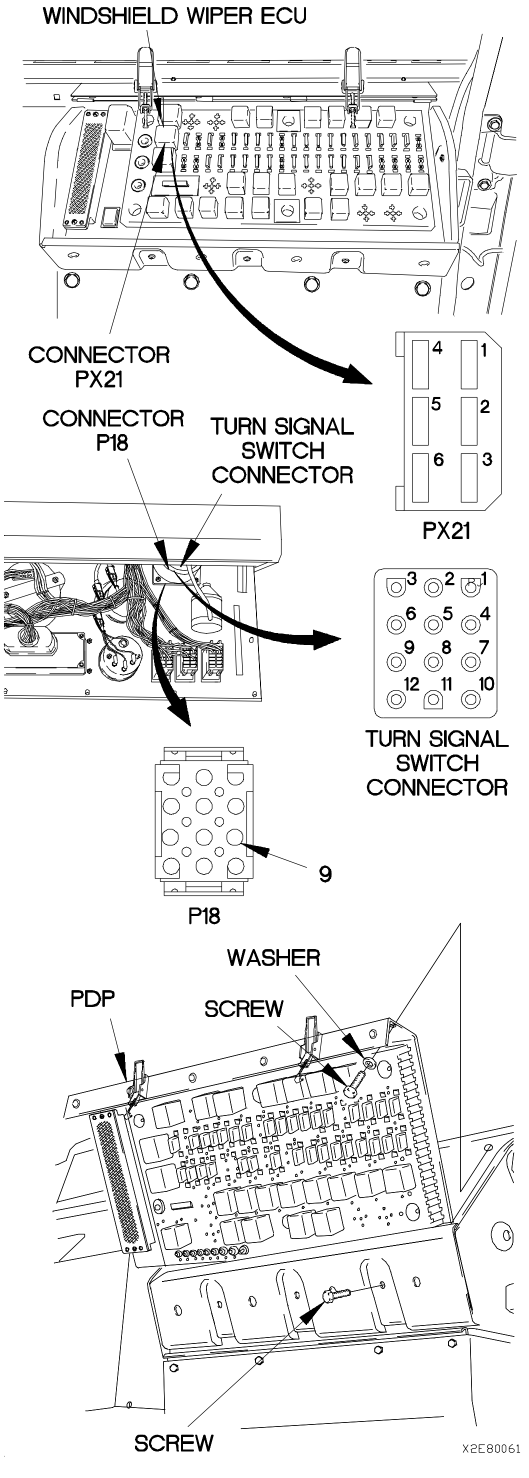
If continuity is not present, turn signal switch is faulty.

NO: Replace turn signal switch (para 7-26).

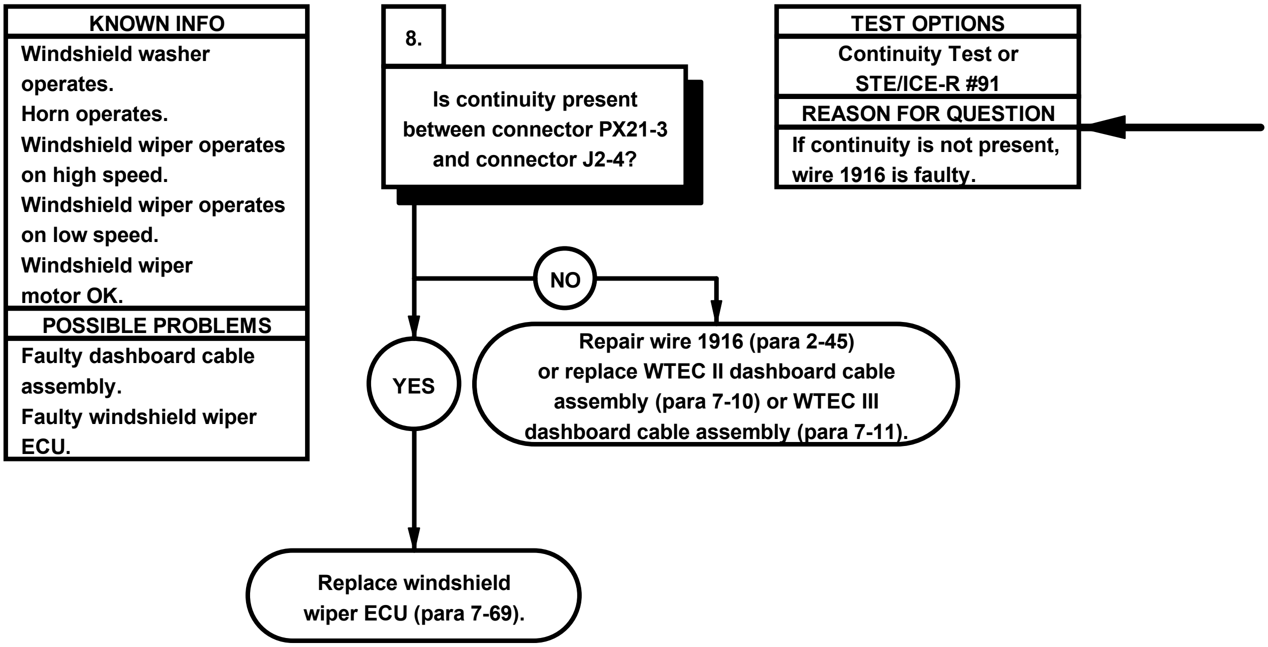
YES

CONTINUITY TEST
(1) Remove instrument panel assembly for access (para 7-15). (2) Disconnect windshield wiper ECU from connector PX21. (3) Disconnect connector P18 from turn signal switch connector. (4) Set multimeter to ohms. (5) Connect positive (+) probe of multimeter to connector PX21-1. (6) Connect negative (-) probe of multimeter to connector P18-9 and note reading on multimeter. (7) If continuity is not present, repair wire 1599 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to turn signal switch connector terminal 9. (3) Connect negative (-) probe of multimeter to turn signal switch connector terminal 5. (4) Position windshield wiper switch to intermittent (TM 9-2320-366-10-1) and note reading on multimeter. (5) If continuity is not present, replace turn signal switch (para 7-26). (6) Position windshield wiper switch to off (TM 9-2320-366-10-1). (7) Connect windshield wiper ECU to connector PX21. (8) Connect connector P18 to turn signal switch connector. (9) Install instrument panel assembly (para 7-15). (10) Install PDP on dashboard with three screws. (11) Install three washers and screws in PDP. (12) Install PDP cover (para 16-2).



e80. WINDSHIELD WIPER DOES NOT OPERATE ON INTERMITTENT SPEED (CONT)



CONTINUITY TEST

(1) Disconnect connector J2 from connector P2.

(2) Disconnect windshield wiper ECU from connector PX21.

(3) Set multimeter to ohms.

(4) Connect positive (+) probe of multimeter to connector PX21-3.

(5) Connect negative (-) probe of multimeter to connector J2-4 and note reading on multimeter.

(6) If continuity is not present, repair wire 1916 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

(7) If continuity is present, replace windshield wiper ECU (para 7-69).

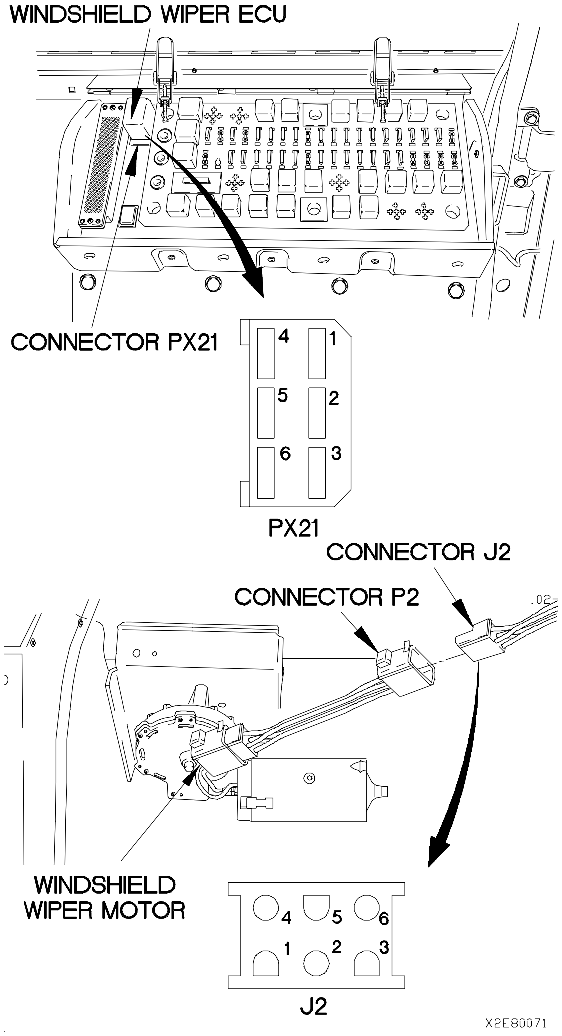
(8) Connect windshield wiper ECU to connector PX21.

(9) Connect connector P2 to connector J2.

(10) Install PDP on dashboard with three screws.

(11) Install three washers and screws in PDP.

(12) Install PDP cover (para 16-2).



e81. WINDSHIELD WIPER DOES NOT OPERATE ON HIGH SPEED

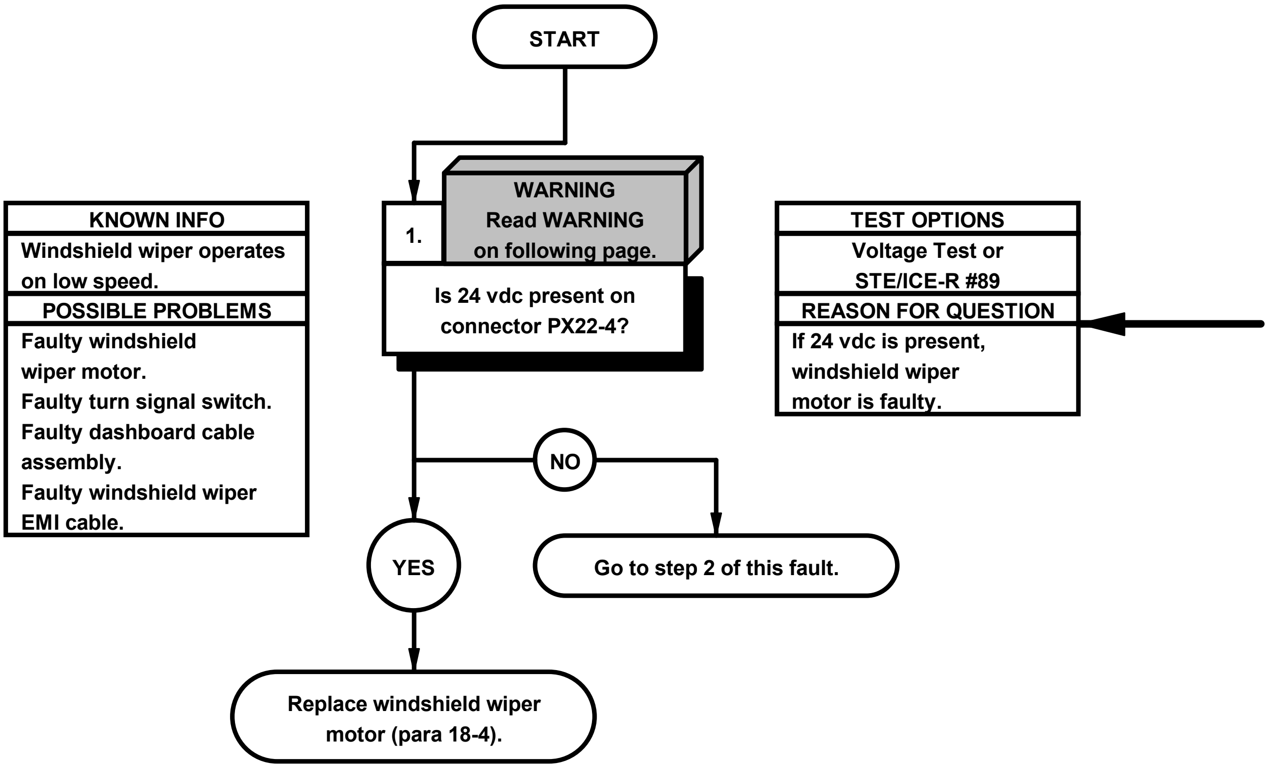
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



START

KNOWN INFO
Windshield wiper operates on low speed.

POSSIBLE PROBLEMS
Faulty windshield wiper motor.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.

WARNING
Read WARNING on following page.

1. Is 24 vdc present on connector PX22-4?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If 24 vdc is present, windshield wiper motor is faulty.

YES: Replace windshield wiper motor (para 18-4).

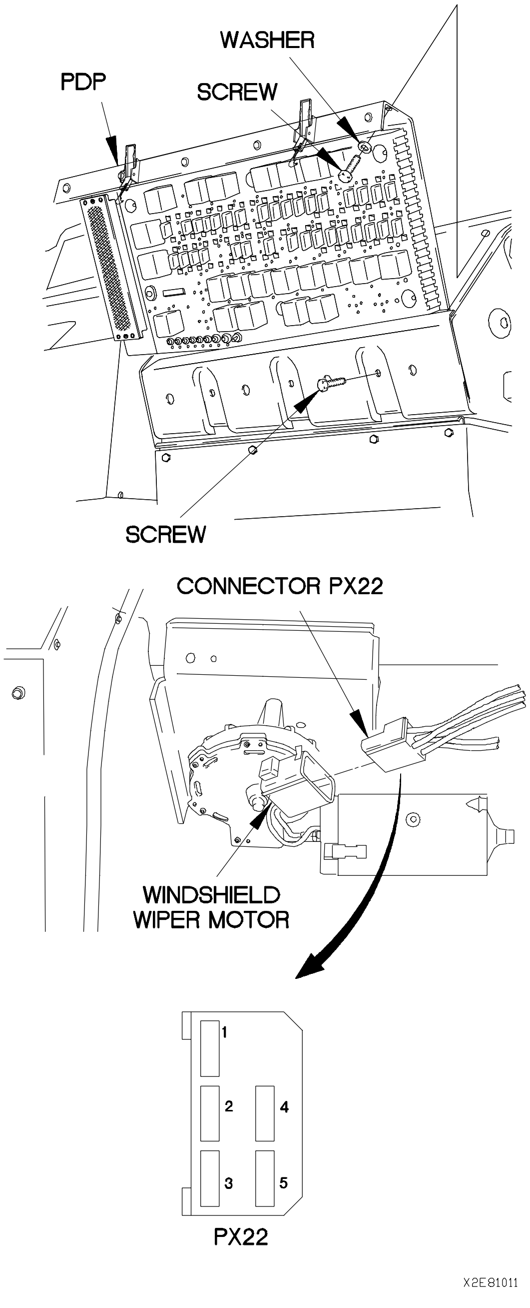
NO: Go to step 2 of this fault.

WARNING

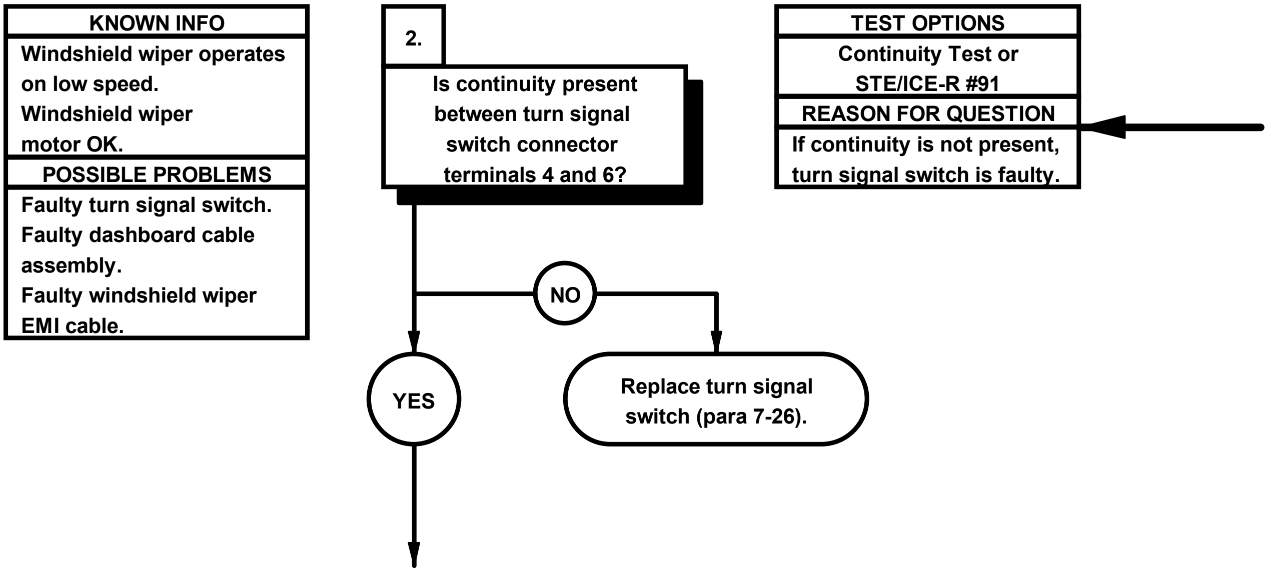
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove three screws and washers from PDP.
(3) Remove three screws from PDP.
(4) Lift PDP outward to gain access.
(5) Disconnect connector PX22 from windshield wiper motor.
(6) Set multimeter to volts dc.
(7) Connect positive (+) probe of multimeter to connector PX22-4.
(8) Connect negative (-) probe of multimeter to ground.
(9) Position master power switch to on (TM 9-2320-366-10-1).
(10) Position windshield wiper switch to high (TM 9-2320-366-10-1) and note reading on multimeter.
(11) If 24 vdc is not present, go to step 2 of this fault.
(12) If 24 vdc is present, replace windshield wiper motor (para 18-4).
(13) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(14) Position master power switch to off (TM 9-2320-366-10-1).
(15) Connect connector PX22 to windshield wiper motor.



e81. WINDSHIELD WIPER DOES NOT OPERATE ON HIGH SPEED (CONT)



KNOWN INFO

Windshield wiper operates on low speed.

Windshield wiper motor OK.

POSSIBLE PROBLEMS

Faulty turn signal switch.

Faulty dashboard cable assembly.

Faulty windshield wiper EMI cable.

2.

Is continuity present between turn signal switch connector terminals 4 and 6?

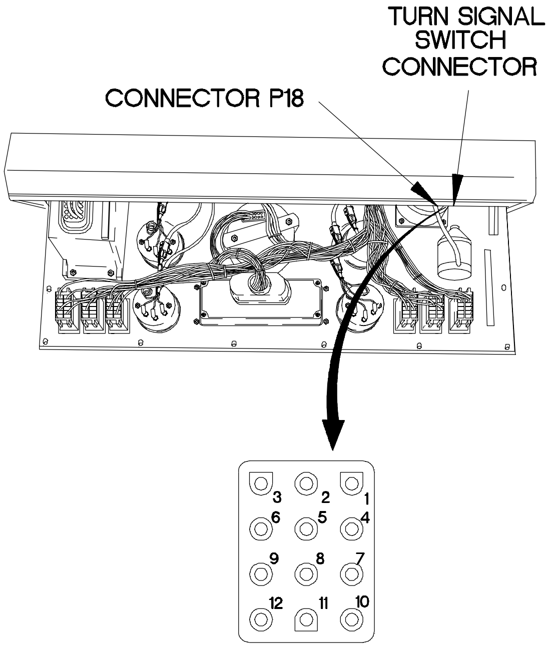
TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, turn signal switch is faulty.

Replace turn signal switch (para 7-26).



TURN SIGNAL SWITCH CONNECTOR

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect turn signal switch connector from connector P18.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to turn signal switch connector terminal 4.
(5) Connect negative (-) probe of multimeter to turn signal switch connector terminal 6.
(6) Position windshield wiper switch to high (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace turn signal switch (para 7-26).
(8) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(9) Connect turn signal switch connector to connector P18.
(10) Install instrument panel assembly (para 7-15).

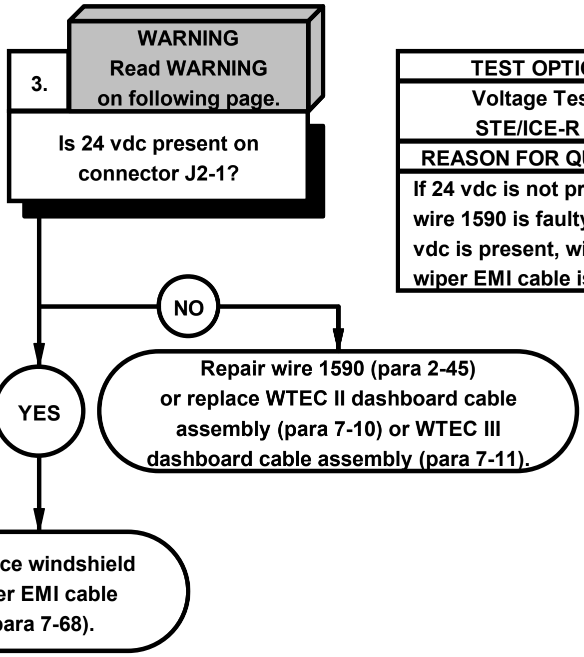
e81. WINDSHIELD WIPER DOES NOT OPERATE ON HIGH SPEED (CONT)

KNOWN INFO

Windshield wiper operates on low speed.
Windshield wiper motor OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty windshield wiper EMI cable.



3.

WARNING
Read WARNING on following page.

Is 24 vdc present on connector J2-1?

Repair wire 1590 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Replace windshield wiper EMI cable (para 7-68).

TEST OPTIONS

Voltage Test or
STE/ICE-R #89

REASON FOR QUESTION

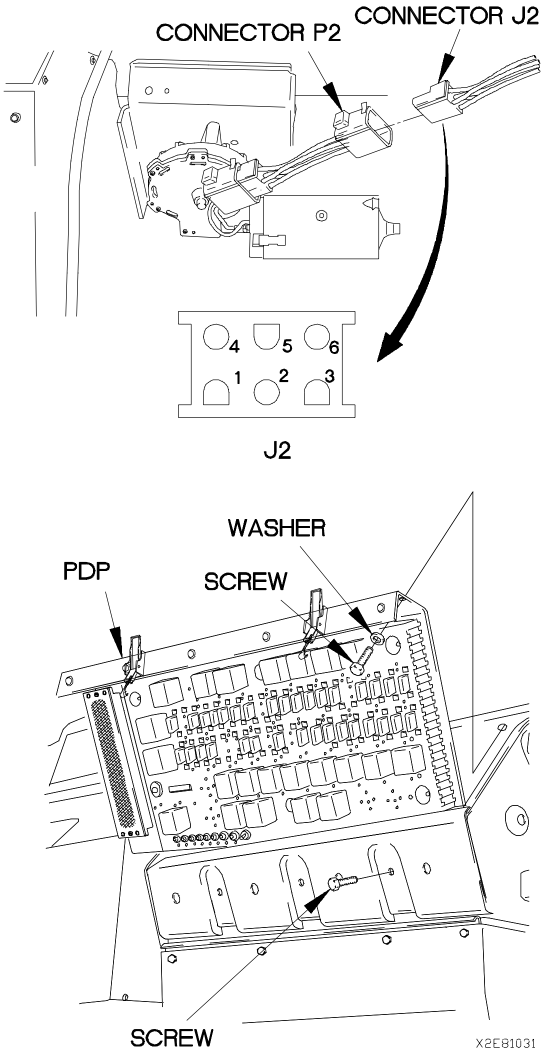
If 24 vdc is not present, wire 1590 is faulty. If 24 vdc is present, windshield wiper EMI cable is faulty.

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector J2 from connector P2.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J2-1.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Position windshield wiper switch to high (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 vdc is not present, repair wire 1590 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 24 vdc is present, replace windshield wiper EMI cable (para 7-68).
(9) Position windshield wiper switch to off (TM 9-2320-366-10-1).
(10) Position master power switch to off (TM 9-2320-366-10-1).
(11) Connect connector J2 to connector P2.
(12) Install PDP on dashboard with three screws.
(13) Install three washers and screws in PDP.
(14) Install PDP cover (para 16-2).



e82. HORN DOES NOT OPERATE

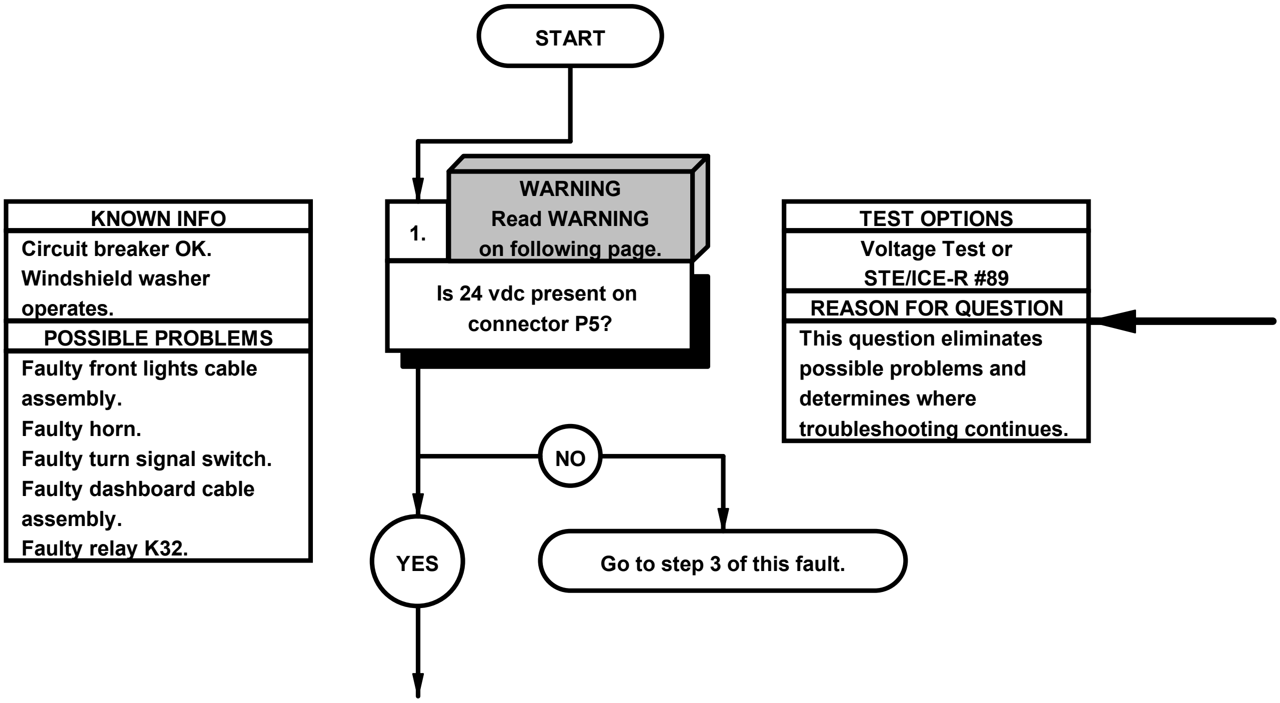
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 59, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO

Circuit breaker OK.
Windshield washer operates.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty horn.
Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty relay K32.

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

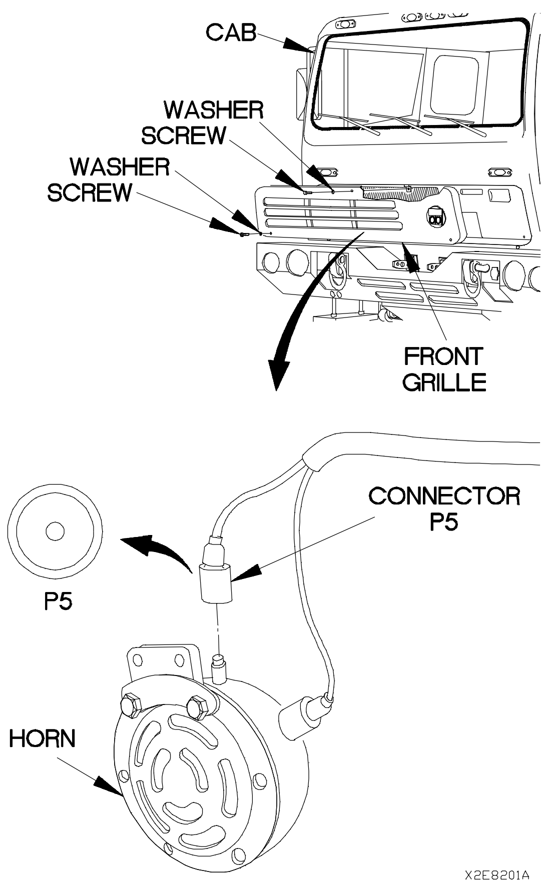
This question eliminates possible problems and determines where troubleshooting continues.

WARNING

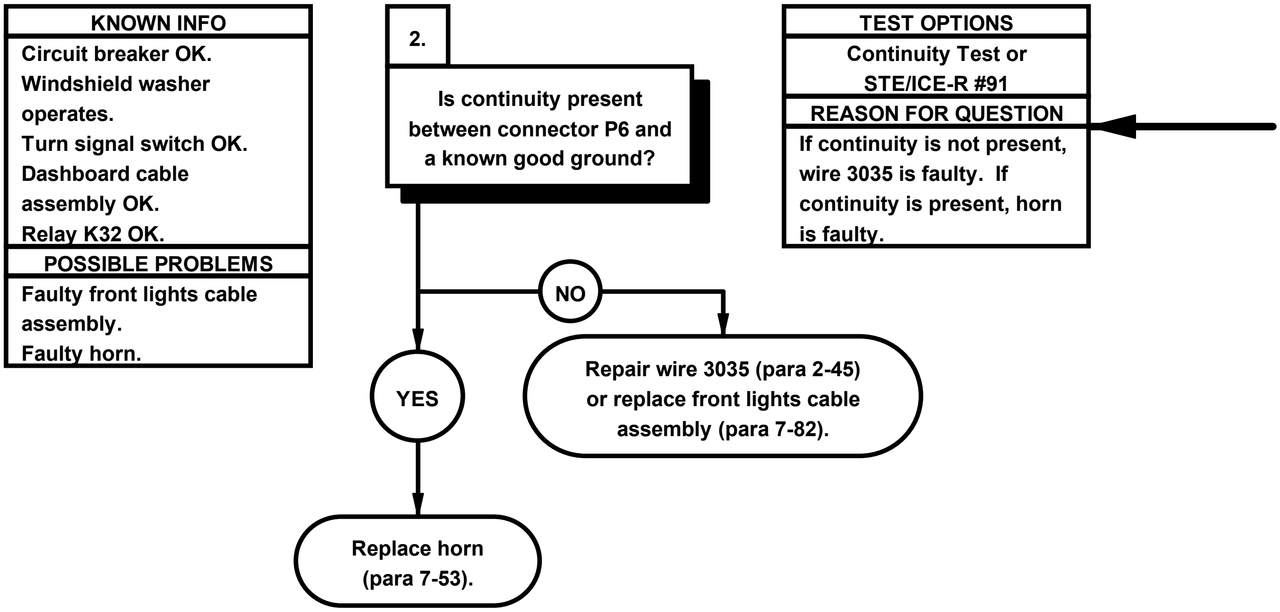
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P5 from horn.
(5) Set multimeter to volts dc.
(6) Connect positive (+) probe of multimeter to connector P5.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1).
(9) Press horn button (TM 9-2320-366-10-1) and note reading of multimeter.
(10) If 24 vdc is not present, go to step 3 of this fault.
(11) Position master power switch to off (TM 9-2320-366-10-1).
(12) Connect connector P5 to horn.



e82. HORN DOES NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Windshield washer operates.
Turn signal switch OK.
Dashboard cable assembly OK.
Relay K32 OK.

POSSIBLE PROBLEMS

Faulty front lights cable assembly.
Faulty horn.

2\.

Is continuity present between connector P6 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

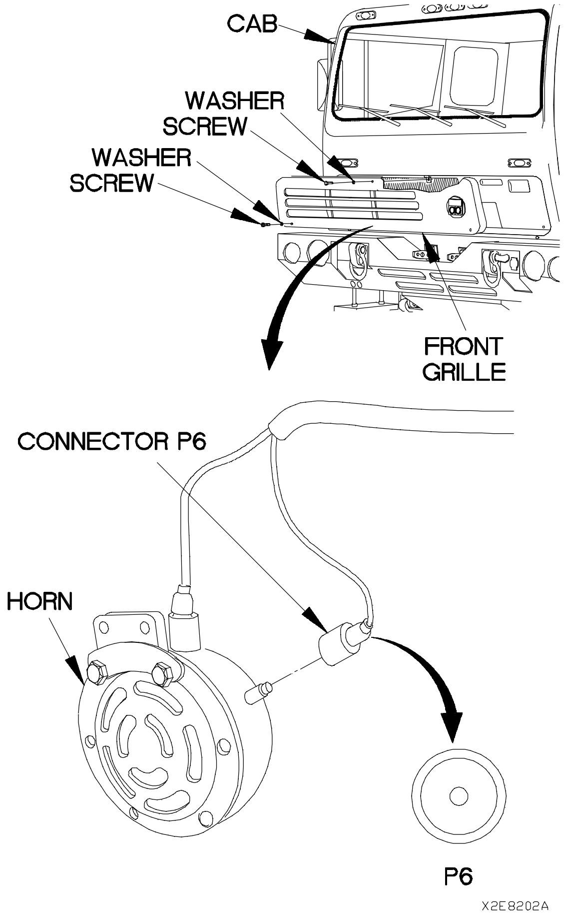
If continuity is not present, wire 3035 is faulty. If continuity is present, horn is faulty.

Repair wire 3035 (para 2-45) or replace front lights cable assembly (para 7-82).

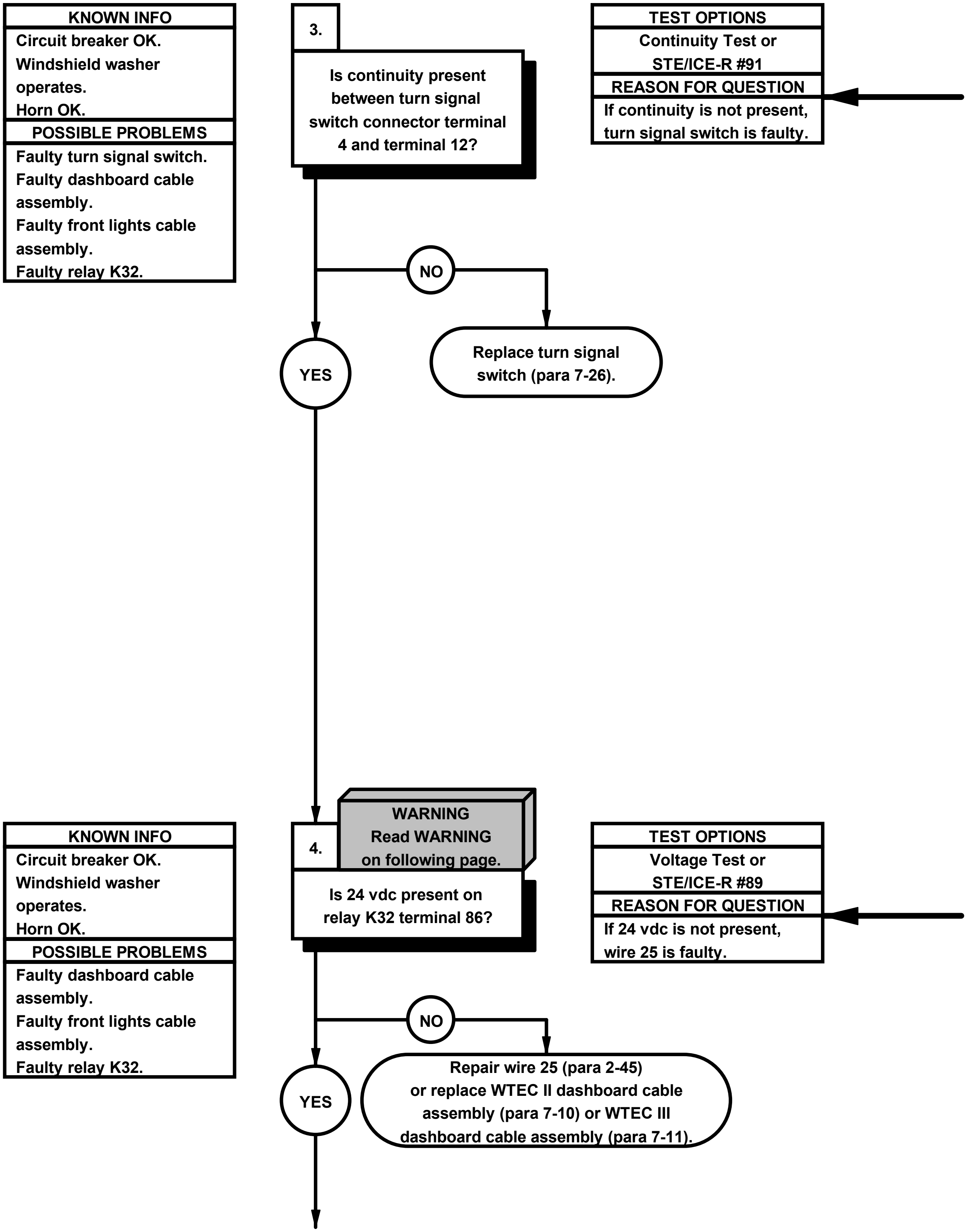
Replace horn (para 7-53).

CONTINUITY TEST

(1) Disconnect connector P6 from horn.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P6.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If continuity is not present, repair wire 3035 (para 2-45) or replace front lights cable assembly (para 7-82).
(6) If continuity is present, replace horn (para 7-53).
(7) Connect connector P6 to horn.
(8) Position front grille on cab with washer and screw.
(9) Position two washers and screws in front grille.
(10) Tighten screw to 48-60 lb-in. (5-7 N·m).
(11) Tighten two screws to 24 lb-in. (3 N·m).



e82. HORN DOES NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Windshield washer operates.
Horn OK.

POSSIBLE PROBLEMS

Faulty turn signal switch.
Faulty dashboard cable assembly.
Faulty front lights cable assembly.
Faulty relay K32.

3\. Is continuity present between turn signal switch connector terminal 4 and terminal 12?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, turn signal switch is faulty.

NO: Replace turn signal switch (para 7-26).

YES

KNOWN INFO

Circuit breaker OK.
Windshield washer operates.
Horn OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty front lights cable assembly.
Faulty relay K32.

WARNING
Read WARNING on following page.

4\. Is 24 vdc present on relay K32 terminal 86?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

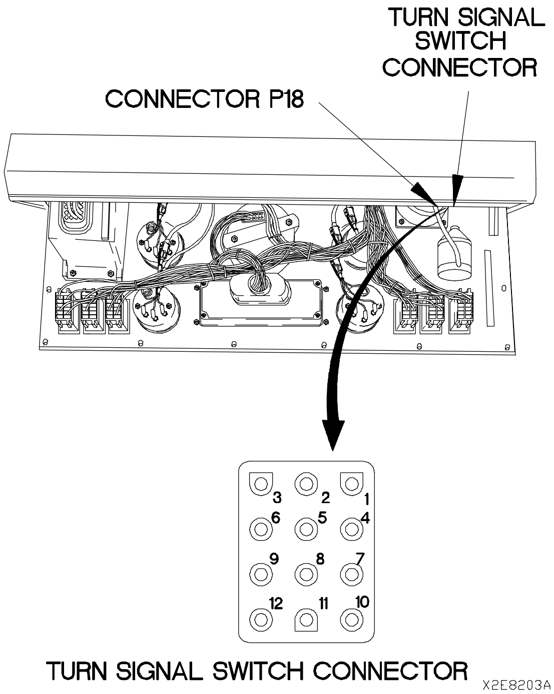
If 24 vdc is not present, wire 25 is faulty.

NO: Repair wire 25 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector P18 from turn signal switch connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to turn signal switch connector terminal 4.
(5) Connect negative (-) probe of multimeter to turn signal switch connector terminal 12.
(6) Press horn button (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If continuity is not present, replace turn signal switch (para 7-26).
(8) Connect connector P18 to turn signal switch connector.
(9) Install instrument panel assembly (para 7-15).

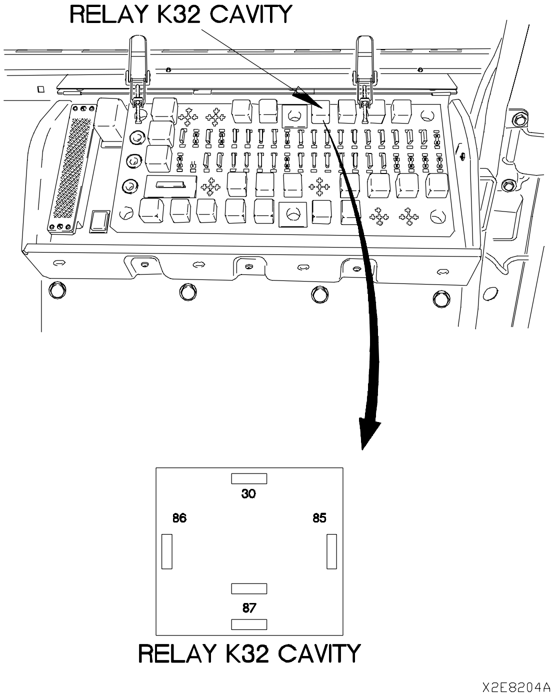


WARNING

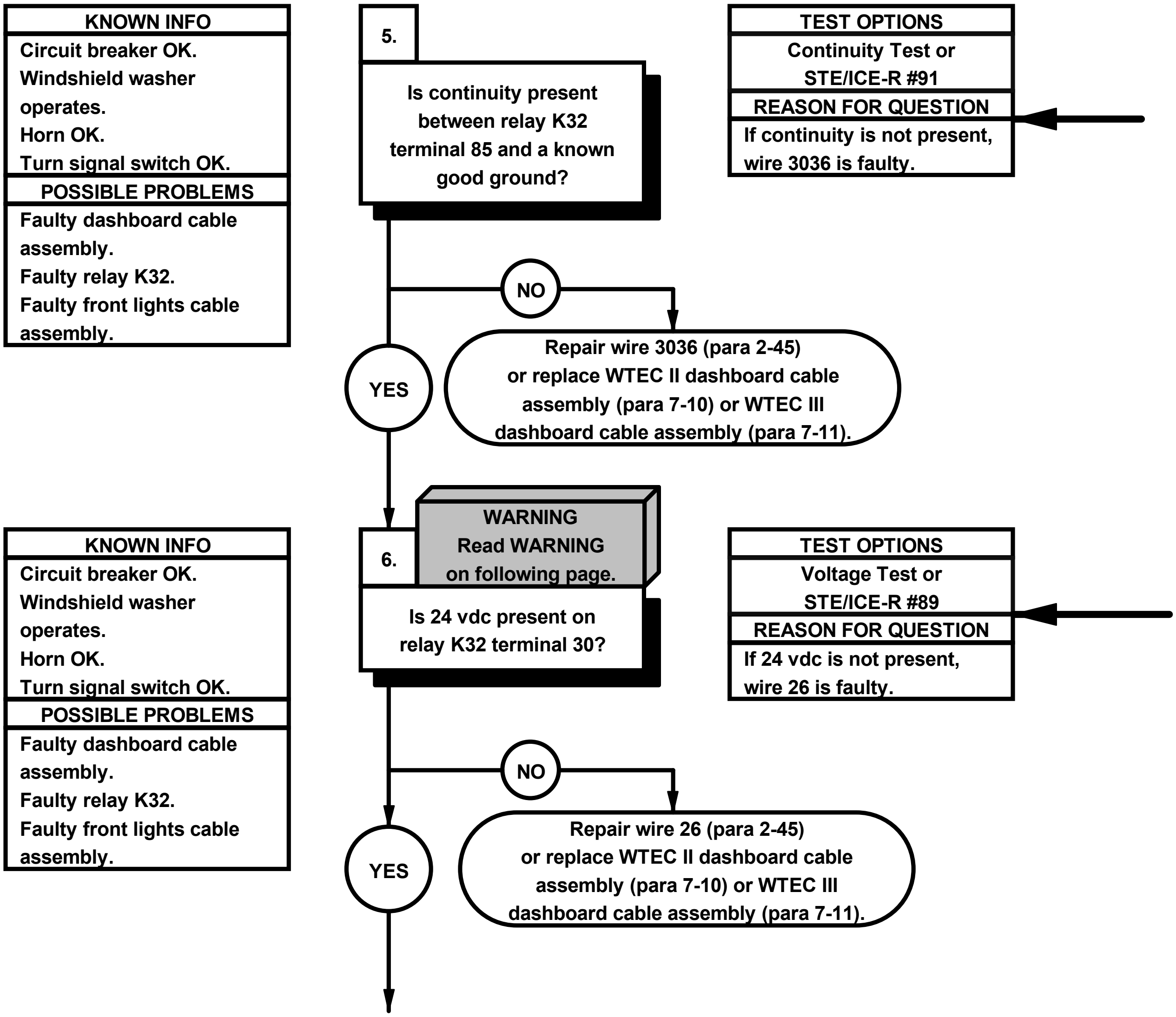
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove PDP cover (para 16-2).
(2) Remove relay K32 from PDP.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to PDP, terminal 86, where relay K32 was removed.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1).
(7) Press horn button (TM 9-2320-366-10-1) and note reading on multimeter.
(8) If 24 vdc is not present, repair wire 25 (para 2-45) or WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Position master power switch to off (TM 9-2320-366-10-1).



e82. HORN DOES NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Windshield washer operates.
Horn OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K32.
Faulty front lights cable assembly.

5\. Is continuity present between relay K32 terminal 85 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3036 is faulty.

NO: Repair wire 3036 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

KNOWN INFO

Circuit breaker OK.
Windshield washer operates.
Horn OK.
Turn signal switch OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty relay K32.
Faulty front lights cable assembly.

WARNING
Read WARNING on following page.

6\. Is 24 vdc present on relay K32 terminal 30?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

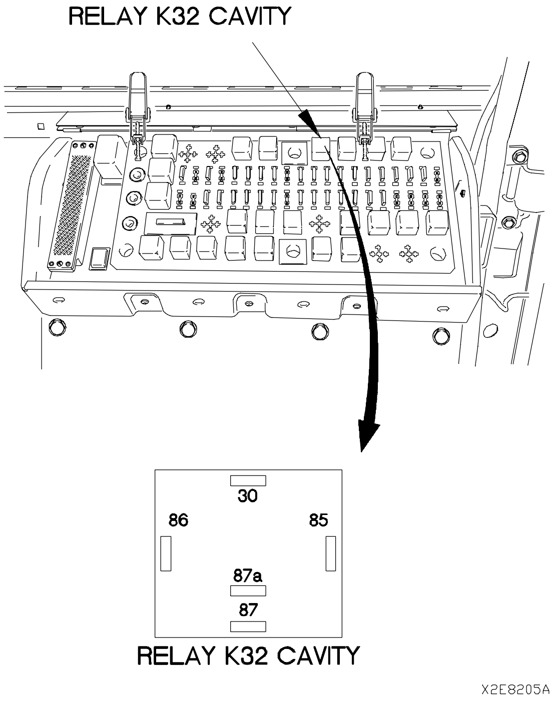
REASON FOR QUESTION

If 24 vdc is not present, wire 26 is faulty.

NO: Repair wire 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

YES

CONTINUITY TEST
(1) Set multimeter to ohms. (2) Connect positive (+) probe of multimeter to PDP, terminal 85, where relay K32 was removed. (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter. (4) If continuity is not present, repair wire 3036 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

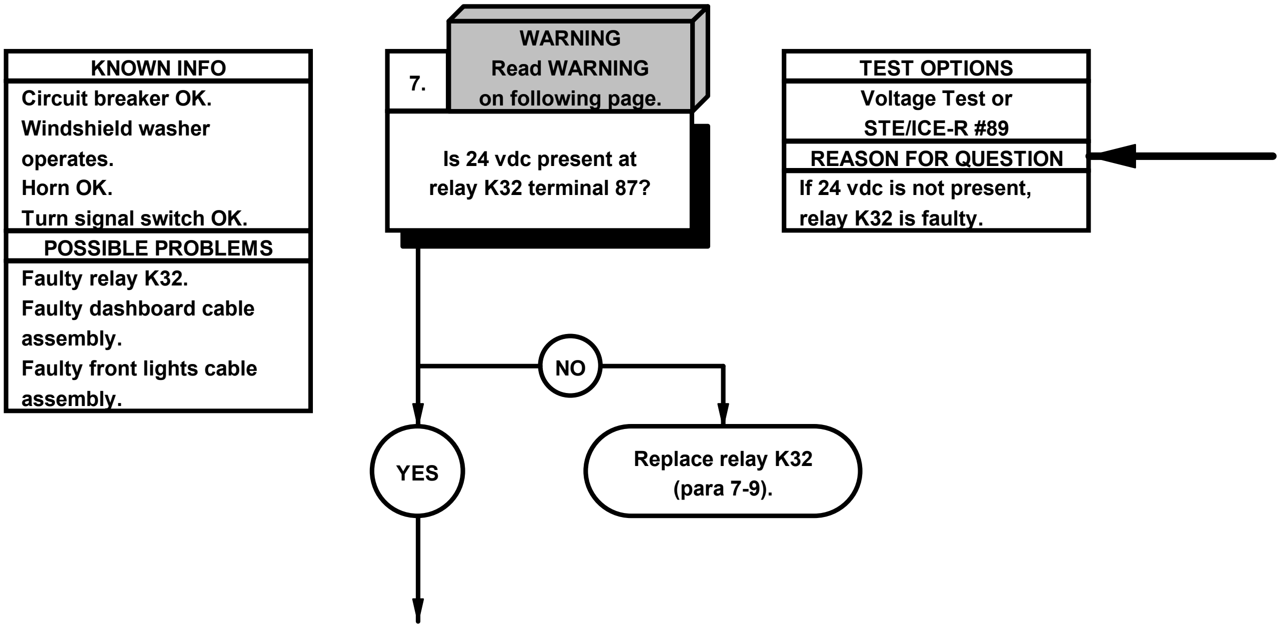


WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Set multimeter to volts dc. (2) Connect positive (+) probe of multimeter to PDP, terminal 30, where relay K32 was removed. (3) Connect negative (-) probe of multimeter to ground. (4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter. (5) If 24 vdc is not present, repair wire 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11). (6) Position master power switch to off (TM 9-2320-366-10-1).

e82. HORN DOES NOT OPERATE (CONT)

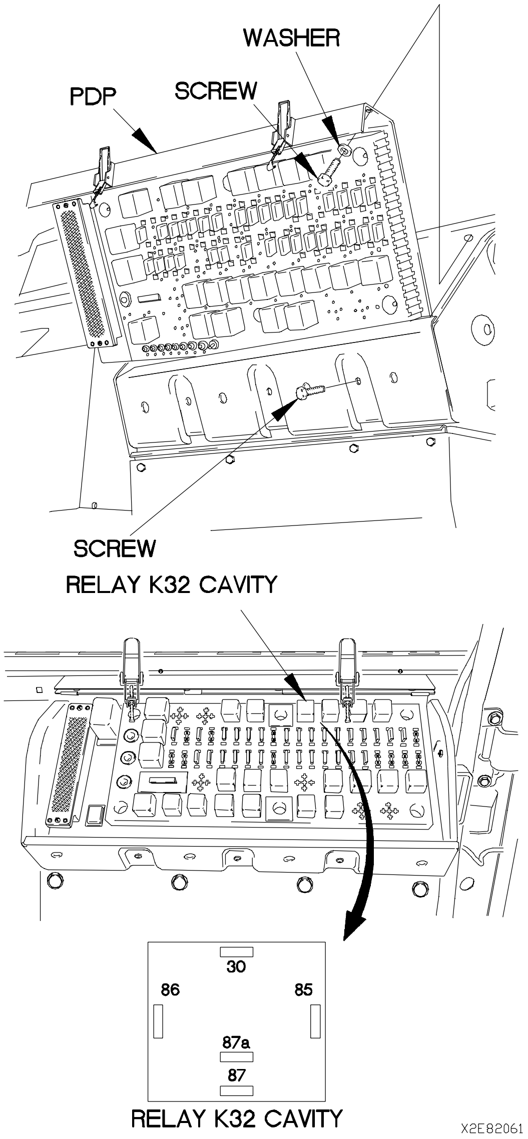


WARNING

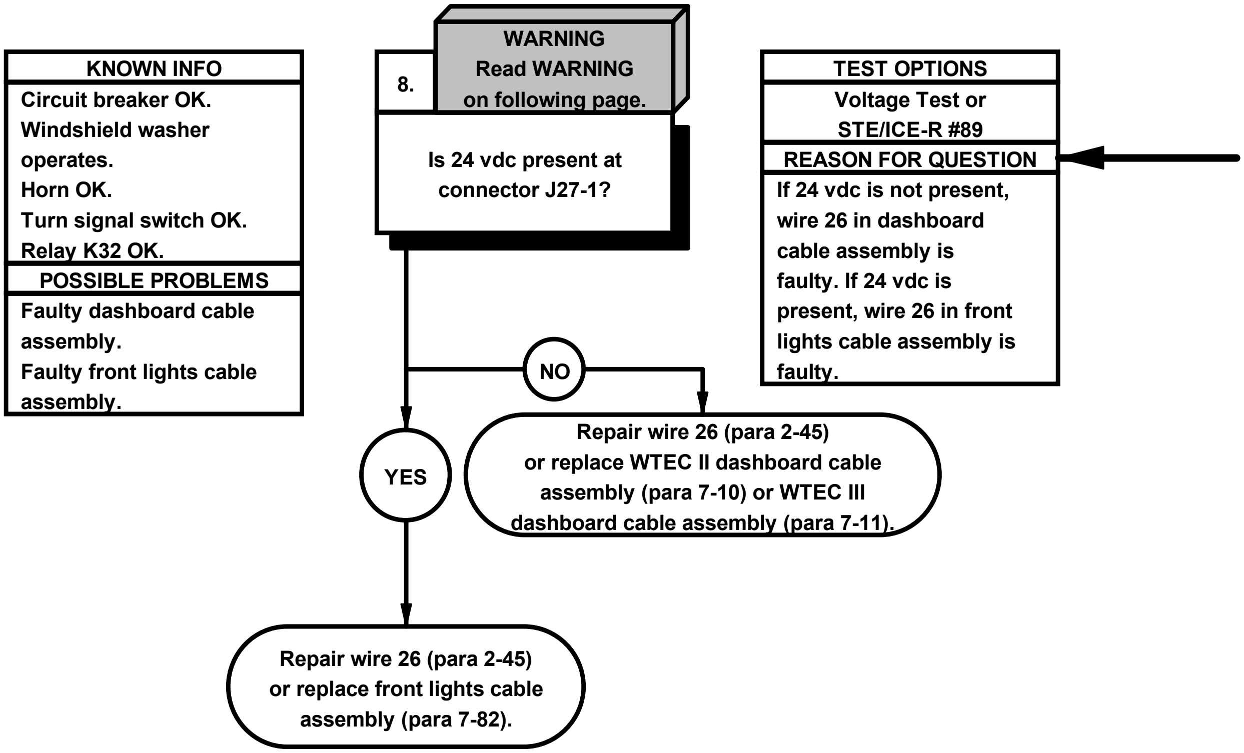
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove three screws and washers from PDP.
(2) Remove three screws from PDP.
(3) Lift PDP outward to gain access.
(4) Install relay K32 in PDP.
(5) Set multimeter to volts dc.
(6) Connect positive (+) probe of multimeter to terminal 87 on relay K32.
(7) Connect negative (-) probe of multimeter to ground.
(8) Position master power switch to on (TM 9-2320-366-10-1).
(9) Press horn button (TM 9-2320-366-10-1) and note reading on multimeter.
(10) If 24 vdc is not present, replace relay K32 (para 7-9).
(11) Position master power switch to off (TM 9-2320-366-10-1).



e82. HORN DOES NOT OPERATE (CONT)



KNOWN INFO

Circuit breaker OK.
Windshield washer operates.
Horn OK.
Turn signal switch OK.
Relay K32 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty front lights cable assembly.

8. WARNING Read WARNING on following page.

Is 24 vdc present at connector J27-1?

TEST OPTIONS

Voltage Test or STE/ICE-R #89

REASON FOR QUESTION

If 24 vdc is not present, wire 26 in dashboard cable assembly is faulty. If 24 vdc is present, wire 26 in front lights cable assembly is faulty.

NO: Repair wire 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

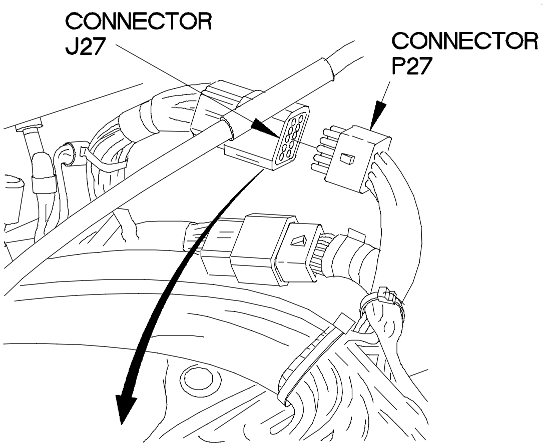
YES: Repair wire 26 (para 2-45) or replace front lights cable assembly (para 7-82).

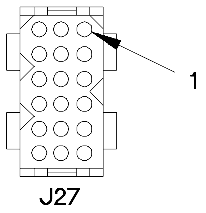
WARNING

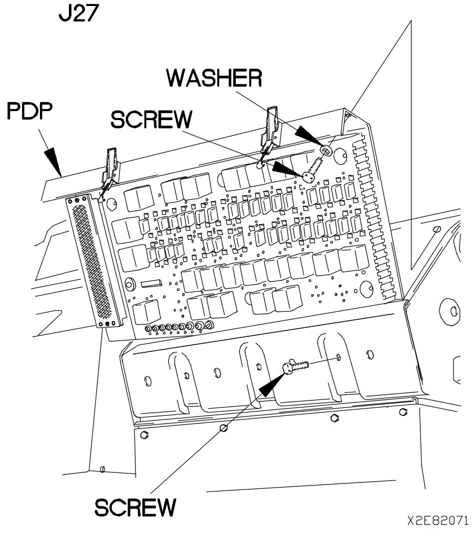
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector J27 from connector P27.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J27-1.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-366-10-1).
(6) Press horn button (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 vdc is not present, repair wire 26 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 24 vdc present, repair wire 26 (para 2-45) or replace front lights cable assembly (para 7-82).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Connect connector J27 to connector P27.
(11) Install PDP on dashboard with three screws.
(12) Install three washers and screws in PDP.
(13) Install PDP cover (para 16-2).







e83. CHEMICAL ALARM DOES NOT OPERATE

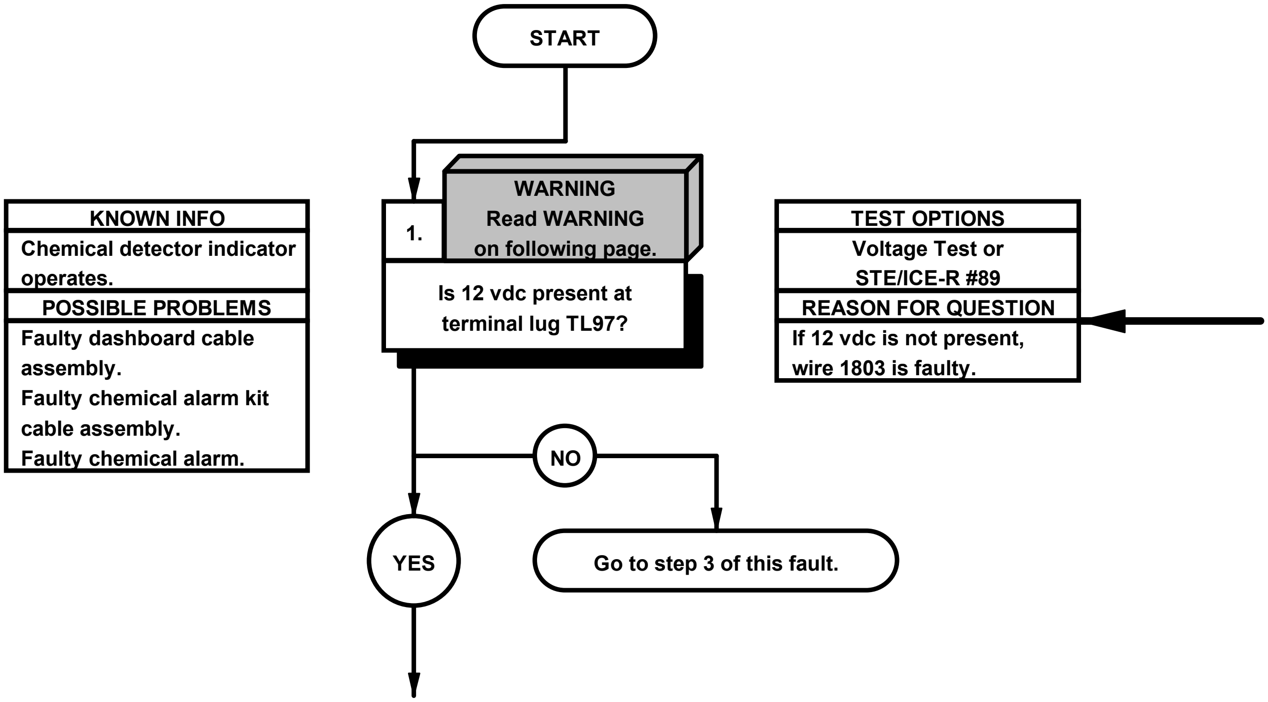
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



KNOWN INFO
Chemical detector indicator operates.

POSSIBLE PROBLEMS
Faulty dashboard cable assembly.
Faulty chemical alarm kit cable assembly.
Faulty chemical alarm.

START

1. WARNING
Read WARNING on following page.

Is 12 vdc present at terminal lug TL97?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If 12 vdc is not present, wire 1803 is faulty.

NO: Go to step 3 of this fault.

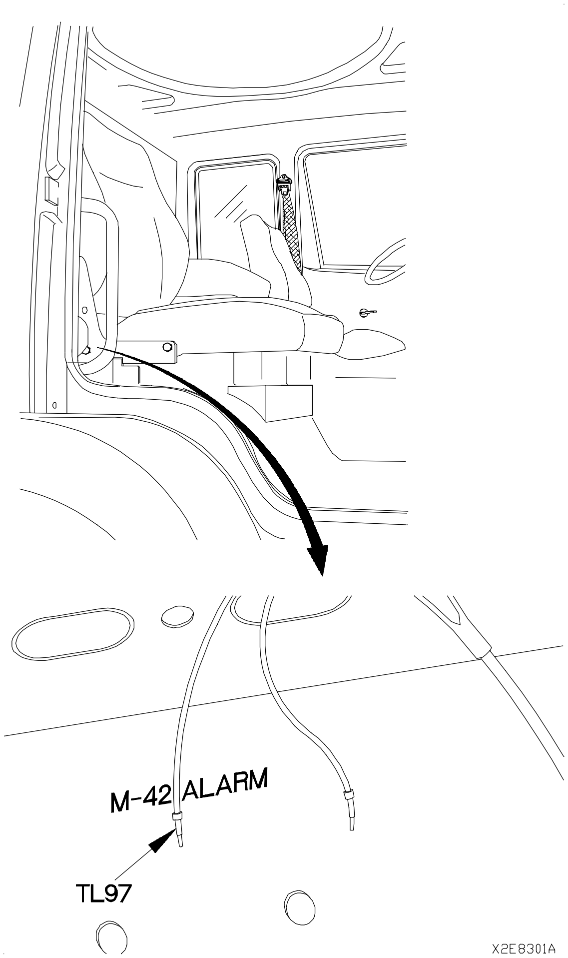
YES

WARNING

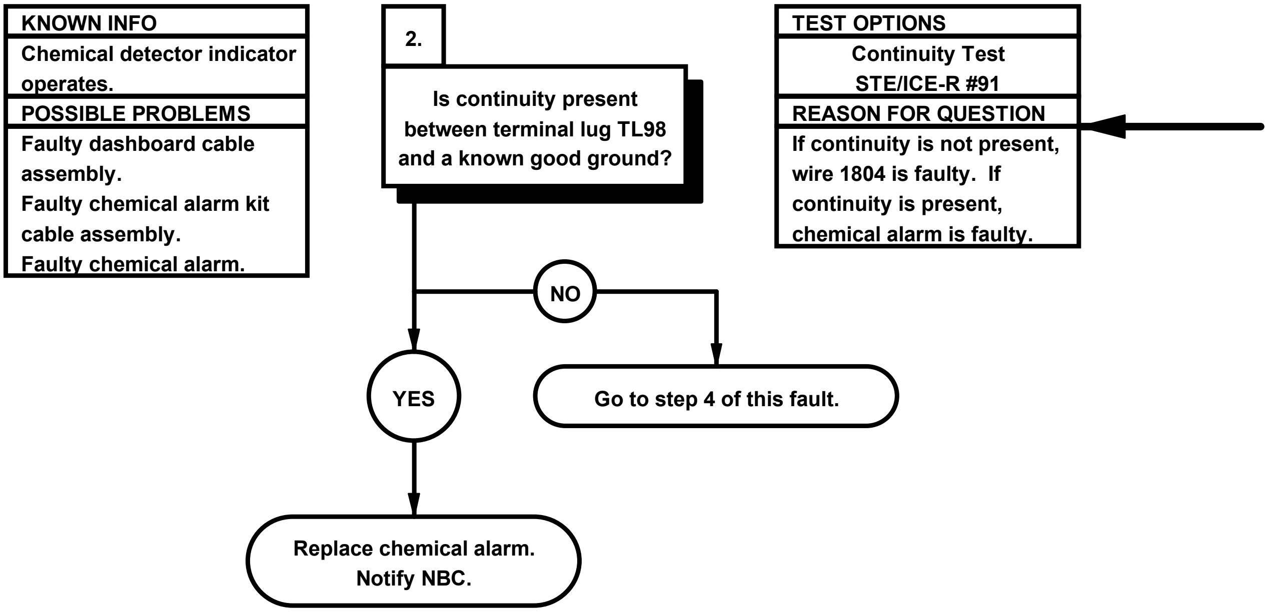
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to terminal lug TL97.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 vdc is not present, go to step 3 of this fault.
(6) Position master power switch to off (TM 9-2320-366-10-1).



e83. CHEMICAL ALARM DOES NOT OPERATE (CONT)



KNOWN INFO

Chemical detector indicator operates.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.
Faulty chemical alarm kit cable assembly.
Faulty chemical alarm.

2.

Is continuity present between terminal lug TL98 and a known good ground?

TEST OPTIONS

Continuity Test
STE/ICE-R #91

REASON FOR QUESTION

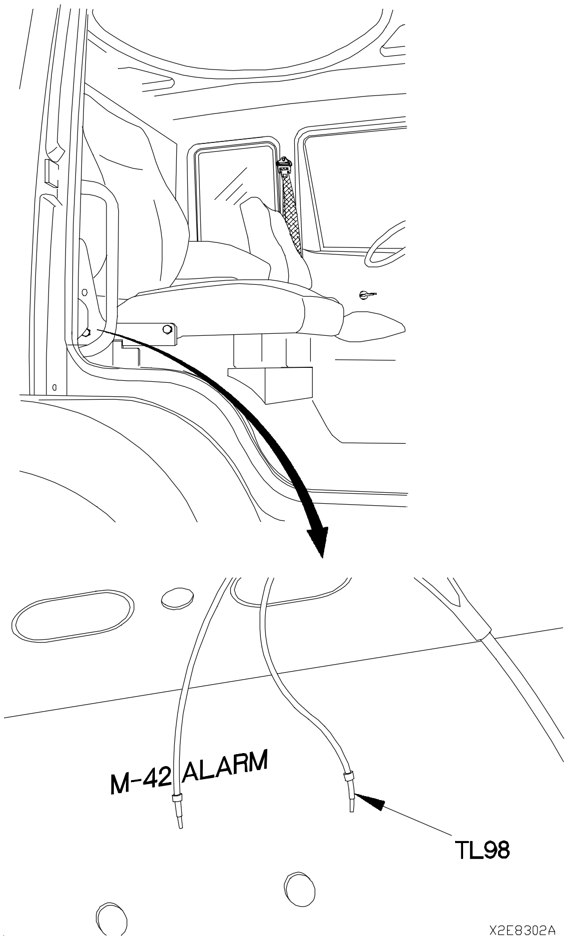
If continuity is not present, wire 1804 is faulty. If continuity is present, chemical alarm is faulty.

YES: Replace chemical alarm. Notify NBC.

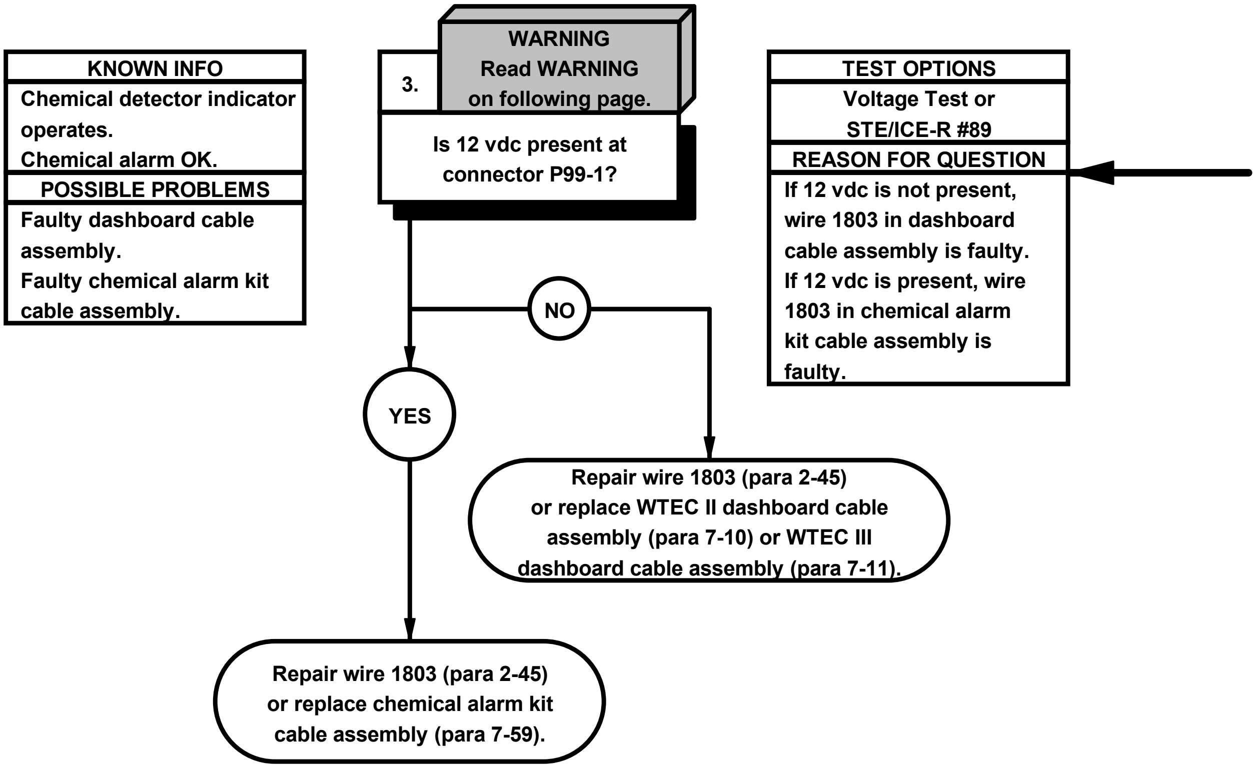
NO: Go to step 4 of this fault.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL98.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, go to step 4 of this fault.
(5) If continuity is present, replace chemical alarm (notify NBC).



e83. CHEMICAL ALARM DOES NOT OPERATE (CONT)

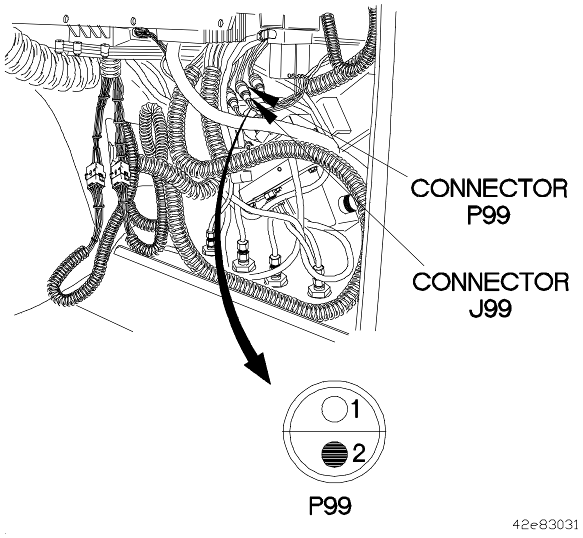


WARNING

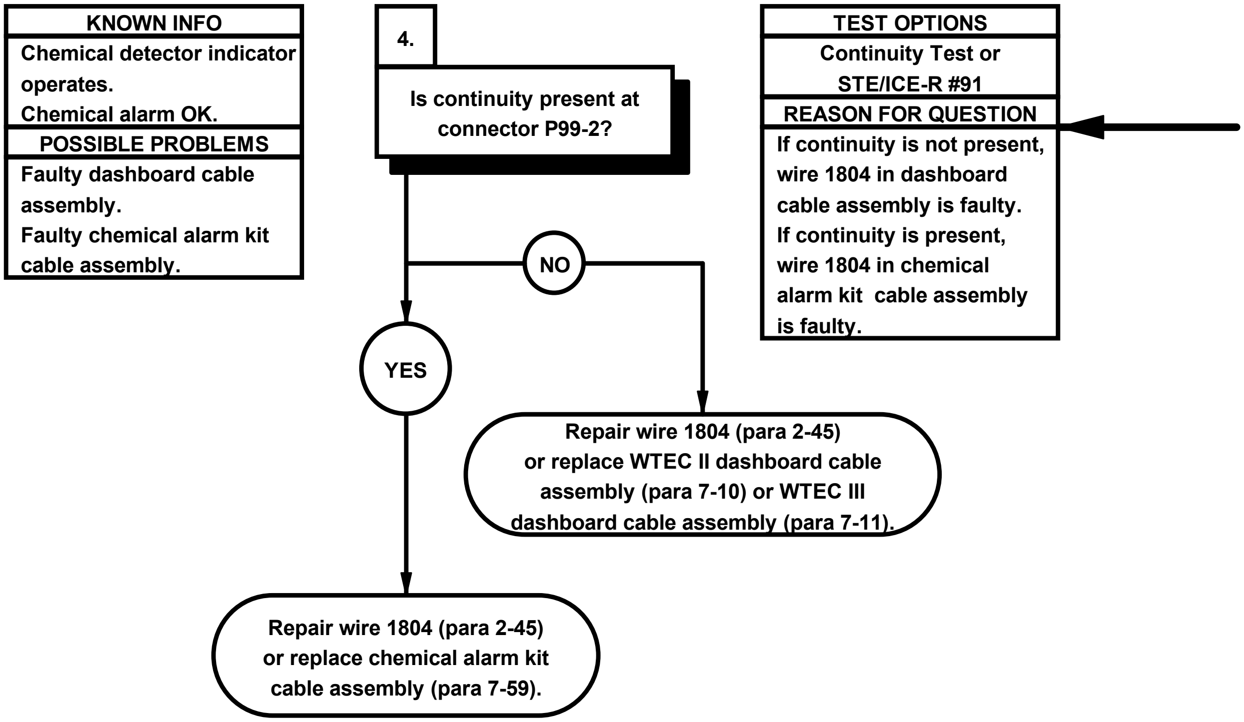
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove kick panel (para 16-3).
(2) Disconnect connector P99 from connector J99.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector P99-1.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(7) If 24 vdc is not present, repair wire 1803 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) If 24 vdc is present, repair wire 1803 (para 2-45) or replace chemical alarm kit cable assembly (para 7-59).
(9) Position master power switch to off (TM 9-2320-366-10-1).
(10) Connect connector P99 to connector J99.
(11) Install kick panel (para 16-3).



e83. CHEMICAL ALARM DOES NOT OPERATE (CONT)



KNOWN INFO

Chemical detector indicator operates.

Chemical alarm OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

Faulty chemical alarm kit cable assembly.

4.

Is continuity present at connector P99-2?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

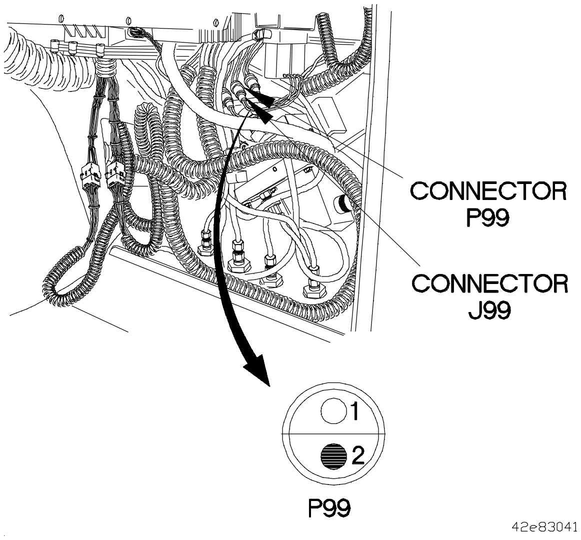
If continuity is not present, wire 1804 in dashboard cable assembly is faulty.

If continuity is present, wire 1804 in chemical alarm kit cable assembly is faulty.

Repair wire 1804 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

Repair wire 1804 (para 2-45) or replace chemical alarm kit cable assembly (para 7-59).

CONTINUITY TEST
(1) Remove kick panel (para 16-3).
(2) Disconnect connector P99 from connector J99.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P99-2.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present, repair wire 1804 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) If continuity is present, repair wire 1804 (para 2-45) or replace chemical alarm kit cable assembly (para 7-59).
(8) Connect connector P99 to connector J99.
(9) Install kick panel (para 16-3).



e84. CHEMICAL DETECTOR DOES NOT OPERATE

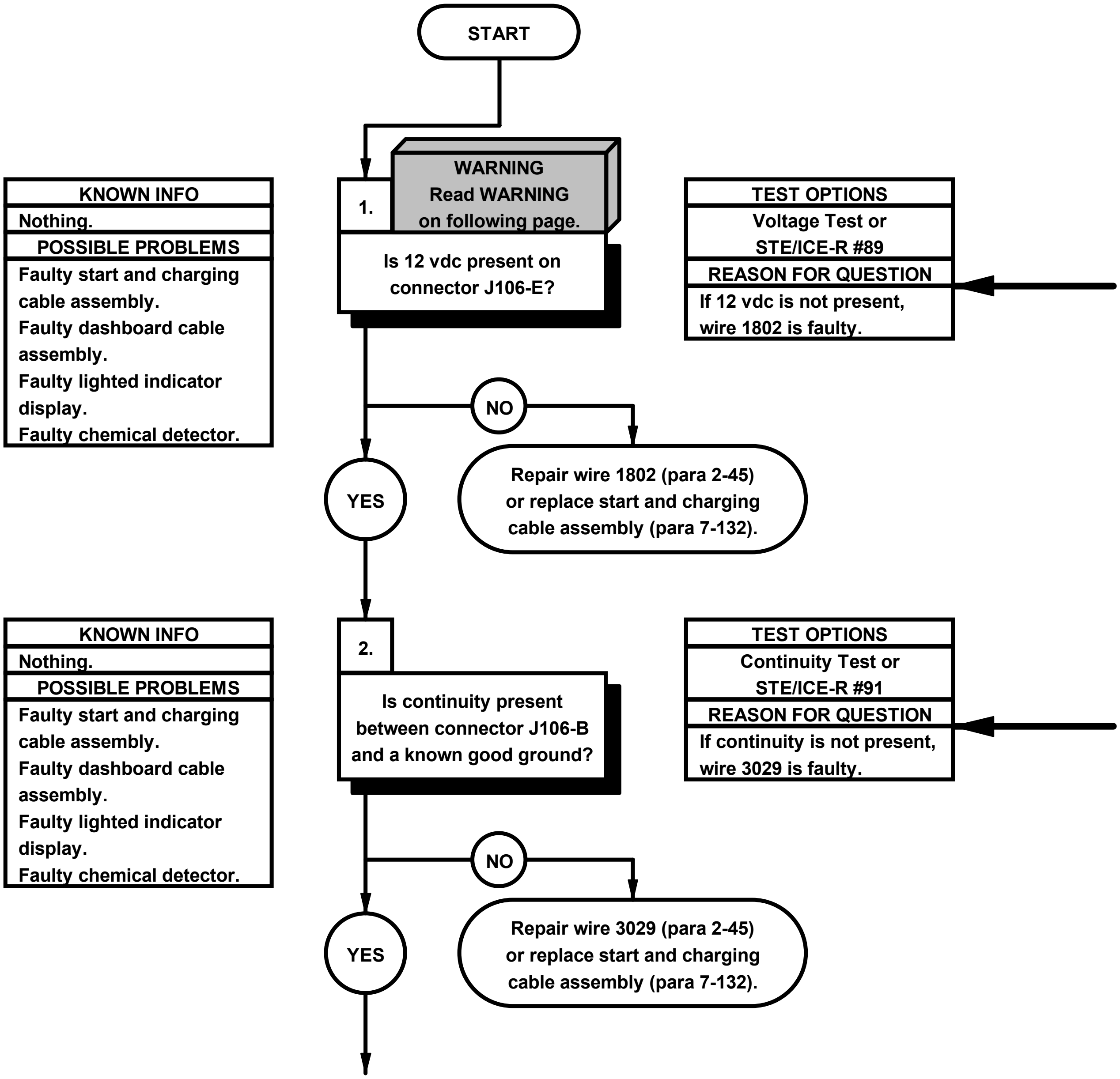
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-366-10-1).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 90, Appendix B)

References
TM 9-4910-571-12&P



KNOWN INFO
Nothing.

POSSIBLE PROBLEMS
Faulty start and charging cable assembly.
Faulty dashboard cable assembly.
Faulty lighted indicator display.
Faulty chemical detector.

1\.

WARNING
Read WARNING on following page.

Is 12 vdc present on connector J106-E?

TEST OPTIONS
Voltage Test or STE/ICE-R #89

REASON FOR QUESTION
If 12 vdc is not present, wire 1802 is faulty.

Repair wire 1802 (para 2-45) or replace start and charging cable assembly (para 7-132).

KNOWN INFO
Nothing.

POSSIBLE PROBLEMS
Faulty start and charging cable assembly.
Faulty dashboard cable assembly.
Faulty lighted indicator display.
Faulty chemical detector.

2\.

Is continuity present between connector J106-B and a known good ground?

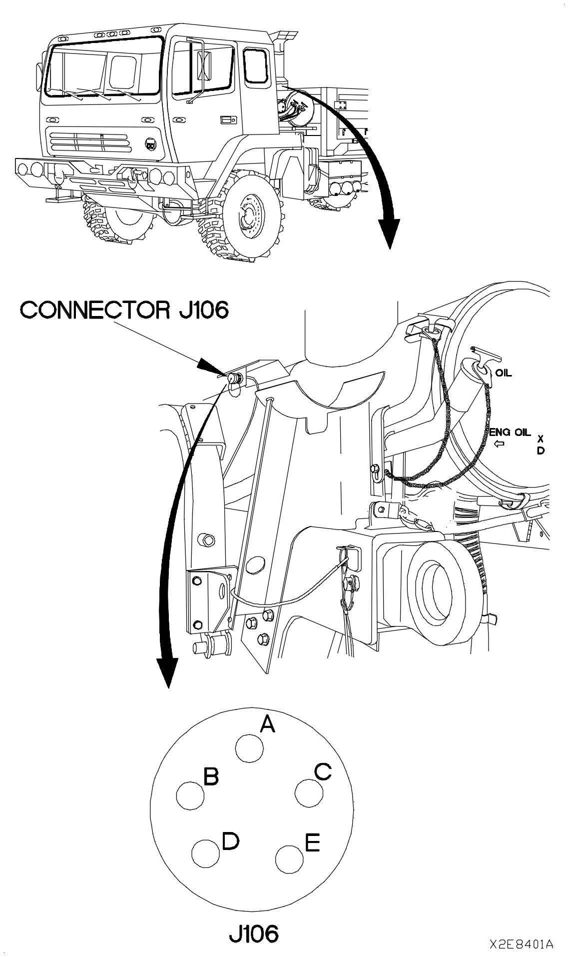
TEST OPTIONS
Continuity Test or STE/ICE-R #91

REASON FOR QUESTION
If continuity is not present, wire 3029 is faulty.

Repair wire 3029 (para 2-45) or replace start and charging cable assembly (para 7-132).

WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.



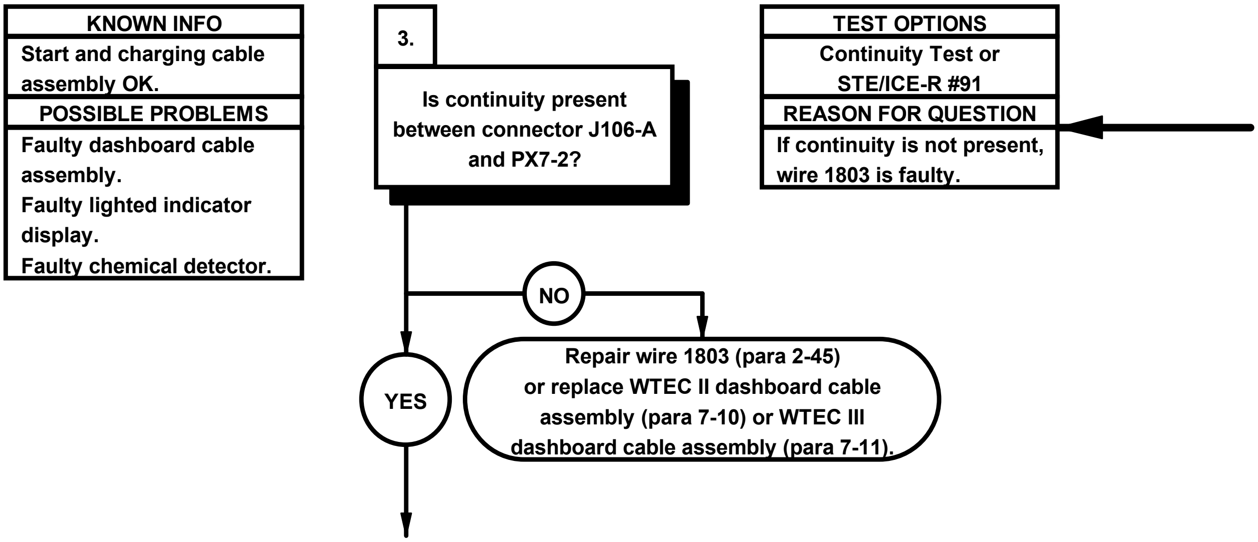
VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to connector J106-E.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-366-10-1) and note reading on multimeter.
(5) If 12 vdc is not present, repair wire 1802 (para 2-45) or replace start and charging cable assembly (para 7-132).
(6) Position master power switch to off (TM 9-2320-366-10-1).

CONTINUITY TEST

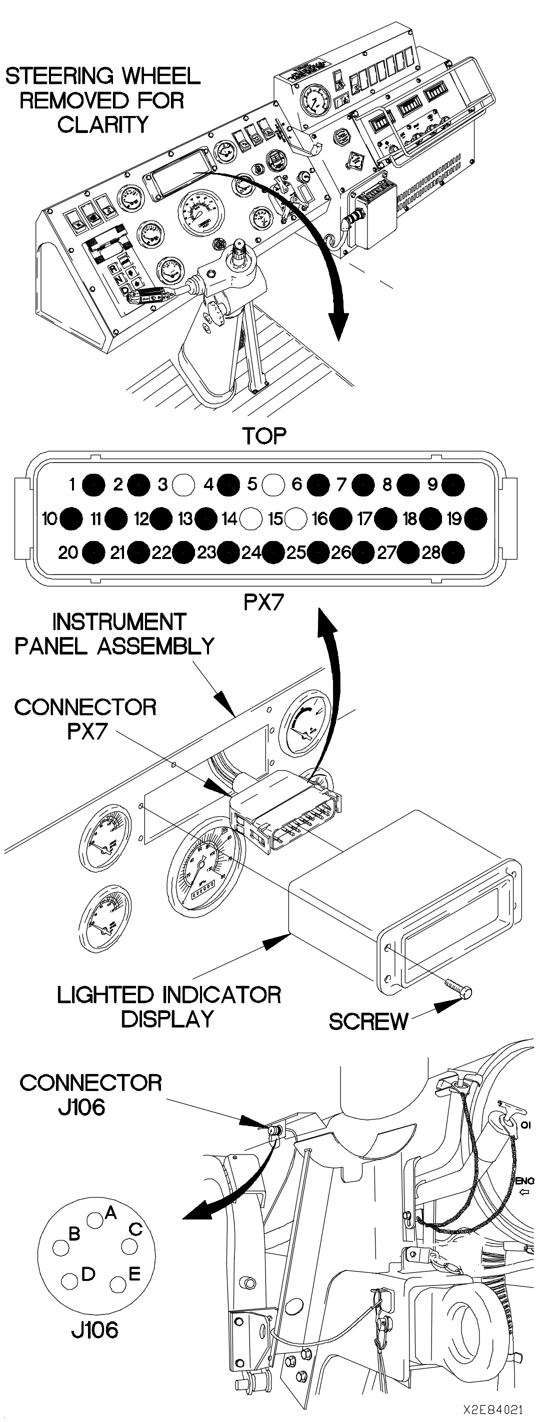
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J106-B.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3029 (para 2-45) or replace start and charging cable assembly (para 7-132).

e84. CHEMICAL DETECTOR DOES NOT OPERATE (CONT)

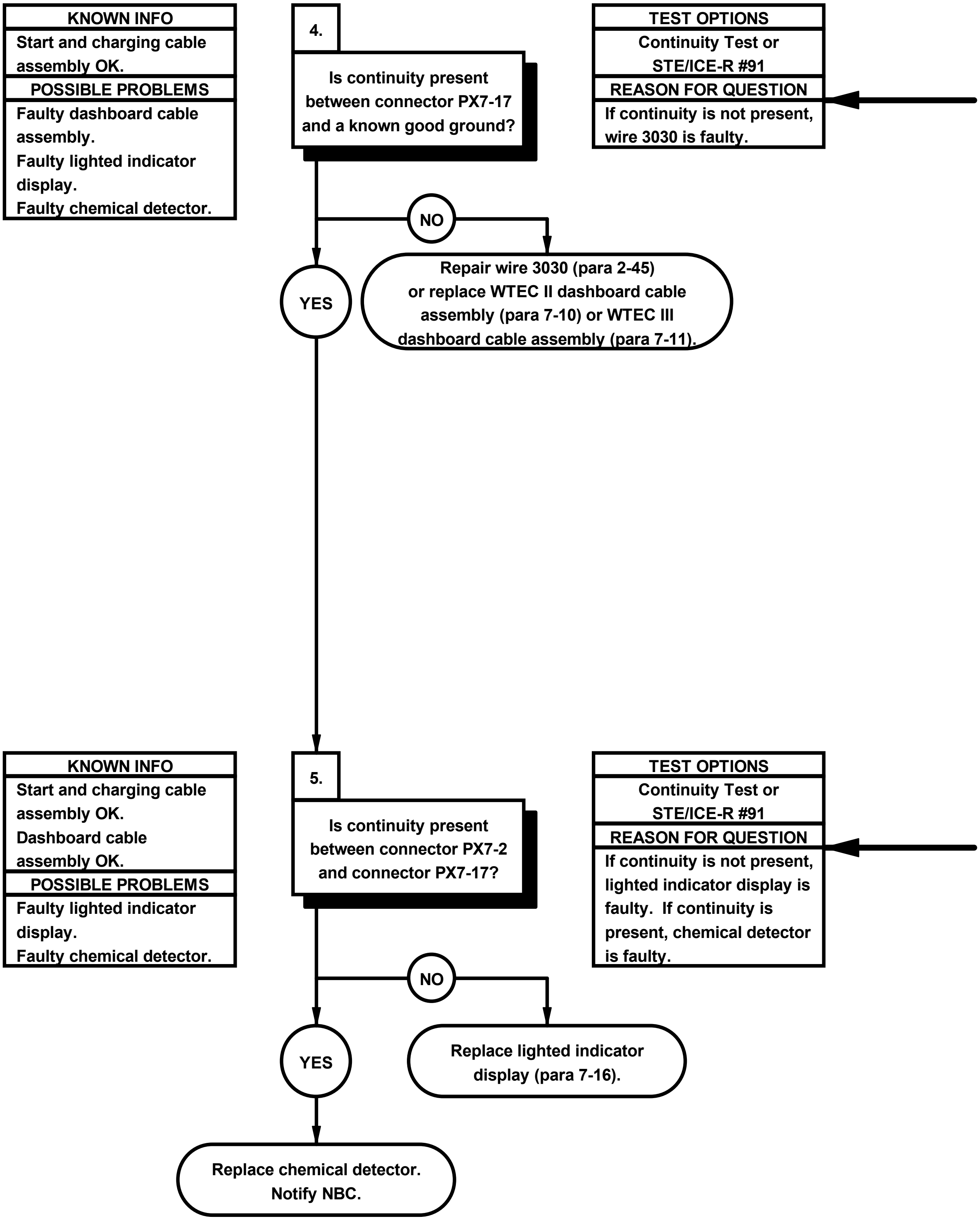


CONTINUITY TEST

(1) Disconnect batteries (para 7-57).
(2) Remove four screws from lighted indicator display.
(3) Remove lighted indicator display from instrument panel assembly.
(4) Disconnect connector PX7 from lighted indicator display.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector J106-A.
(7) Connect negative (-) probe of multimeter to connector PX7-2 and note reading on multimeter.
(8) If continuity is not present, repair wire 1803 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(9) Connect connector J106 to connector P106.



e84. CHEMICAL DETECTOR DOES NOT OPERATE (CONT)



KNOWN INFO

Start and charging cable assembly OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

Faulty lighted indicator display.

Faulty chemical detector.

4. Is continuity present between connector PX7-17 and a known good ground?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

If continuity is not present, wire 3030 is faulty.

NO: Repair wire 3030 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

KNOWN INFO

Start and charging cable assembly OK.

Dashboard cable assembly OK.

POSSIBLE PROBLEMS

Faulty lighted indicator display.

Faulty chemical detector.

5. Is continuity present between connector PX7-2 and connector PX7-17?

TEST OPTIONS

Continuity Test or STE/ICE-R #91

REASON FOR QUESTION

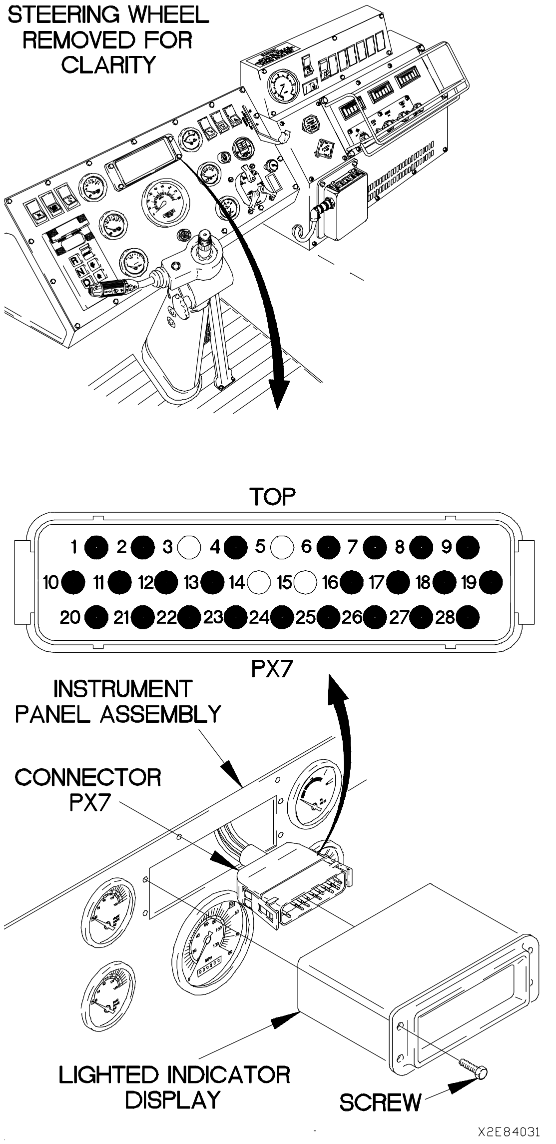
If continuity is not present, lighted indicator display is faulty. If continuity is present, chemical detector is faulty.

NO: Replace lighted indicator display (para 7-16).

YES: Replace chemical detector. Notify NBC.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX7-17.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3030 (para 2-45) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX7-2.
(3) Connect negative (-) probe of multimeter to connector PX7-17 and note reading on multimeter.
(4) If continuity is not present, replace lighted indicator display (para 7-16).
(5) If continuity is present, replace chemical detector (notify NBC).
(6) Connect lighted indicator display to connector PX7.
(7) Position lighted indicator display in instrument panel assembly with four screws.
(8) Tighten four screws to 6-10 lb-in. (1 N·m).
(9) Connect batteries (para 7-57).

APPENDIX A
REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, technical manuals, and other publications referenced in this manual. Those publications that should be consulted for additional information about vehicle operations are also listed.

A-2. PUBLICATIONS INDEX

The following index should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this technical manual.

Consolidated Index of Army Publications and Blank Forms	DA Pam 25-30

A-3. FORMS

The following forms pertain to this manual. See DA Pam 25-30 for index of blank forms. See DA Pam 738-750, The Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms pertaining to this material.

Recommended Changes to DA Publications and Blank Forms	DA Form 2028-2
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Maintenance Request	DA Form 2407
Equipment Control Record	DA Form 2408-9
Processing and Deprocessing Record of Shipping, Storage, and Issue of Vehicles and Spare Engines	DD Form 1397
Packaging Improvement Report	DD Form 6
Report of Item Discrepancy (ROID)	SF 364
Product Quality Deficiency Report	SF 368

A-4. OTHER PUBLICATIONS

The following publications contain information pertinent to the MTV and associated equipment.

a. Safety.

First Aid for Soldiers	FM 21-11
Security of Tactical Wheeled Vehicles	TB 9-2300-422-20
Safety Inspection and Testing of Lifting Devices	TB 43-0142

A-4. OTHER PUBLICATIONS (CONT)

b. MTV.

Direct Support and General Support Maintenance Manual for M1083 Series, 5-Ton, 6x6, Medium Tactical Vehicle (MTV)	TM 9-2320-366-34
Hand Receipt Covering Contents of Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL), for M1083 Series, 5-Ton, 6x6, Medium Tactical Vehicles (MTV)	TM 9-2320-366-10-HR
Operator's Manual for M1083 Series, 5-Ton, 6x6, Medium Tactical Vehicle (MTV)	TM 9-2320-366-10
Unit, Direct Support, and General Support Repair Parts and Special Tools List for M1083 Series, 5-Ton, 6x6, Medium Tactical Vehicle (MTV)	TM 9-2320-366-24P
Warranty Program for M1083 Series, 5-Ton, 6x6, Medium Tactical Vehicle (MTV)	TB 9-2300-366-15

c. General Vehicle Operation.

Army Motor Transport Units and Operations	FM 55-30
Deleted	
Manual for the Wheeled Vehicle Driver	FM 21-305
Petroleum Tank Vehicle Operations	FM 10-71
Safety Prevention of Motor Vehicle Accidents	AR 385-557
Vehicle Recovery Operations	FM 20-22

d. General Maintenance and Repair.

Army Oil Analysis Program	TB 43-0211
Camouflage Pattern Painting	FM 5-20
Charging System Troubleshooting	DA Pam 750-33
Color, Marking, and Camouflage Painting of Military Vehicles	TB 43-0209
Cooling Systems: Tactical Vehicles	TM 750-254
Corrosion Prevention and Control Including Rustproofing Procedures for Tactical Vehicles and Trailers	TB 43-0213
Description, Use, Bonding Techniques, and Properties of Adhesives	TB ORD 1032
Equipment Improvement Report and Maintenance Digest: TACOM Equipment	TB 43-0001-39-1
Equipment Improvement Report and Maintenance Summary	TM 43-0143
Installation Instructions for Installation Kit, Electronic Equipment, MK-2700/VRC (NSN 5895-01-421-0814) (EIC: N/A) to Permit Installation of Radio Set AN/VRC-87/88/90 Series into M1078, M1080, M1081, M1083-M1086, M1088-M1094 and M1096 Family of Medium Tactical Vehicles	TB 11-5820-890-20-101
Installation Instructions for Installation Kit, Electronic Equipment, MK-2715/VRC (NSN 5895-01-421-0812) (EIC: N/A) to Permit Installation of Radio Set AN/VRC-89/91/92 Series into M1078, M1080, M1081, M1083-M1086, M1088-M1094 and M1096 Family of Medium Tactical Vehicles	TB 11-5820-890-20-92
Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materials Including Chemicals	TM 9-247
Metal Body Repair and Related Operations	FM 43-2
Operator's and Organizational Maintenance Manual for Radio Sets	TM 11-5820-498-12
Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List Simplified Test Equipment for Internal Combustion Engines Reprogrammable (STE/ICE-R) (NSN 4910-01-222-6589)	TM 9-4910-571-12&P
Operator's Manual, Radio Set, AN/VRC-46	TM 11-5820-401-10-1
Operator's Manual, Radio Set, AN/VRC-90A	TM 11-5820-890-10-1
Operator's, Unit, Direct Support, and General Support Maintenance Manual for Lead-Acid Storage Batteries	TM 9-6140-200-14

Ordnance Tracked and Wheeled Vehicle Hull and Chassis Wiring, Repair of	TB ORD 650
Organizational Care, Maintenance, and Repair of Pneumatic Tires and Inner Tubes	TM 9-2610-200-14
Painting Instructions for Field Use	TM 43-0139
Purging, Cleaning, and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks	TB 43-0212
Repair of Tents, Canvas, and Webbing	FM 10-16
Rigging Techniques, Procedures, and Applications	FM 5-125
Use and Care of Hand Tools and Measuring Tools	TM 9-243
Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems	TB 750-651
Welding Theory and Application	TM 9-237

e. Cold Weather Operation.

Basic Cold Weather Manual	FM 31-70
Northern Operations	FM 31-71
Operation and Maintenance of Ordnance Materiel in Cold Weather (0° to -65°F)	FM 9-207

f. Decontamination.

Decontamination Operations Facilities & Equipment	TB 700-4
NBC Decontamination	FM 3-5
NBC Protection	FM 3-4

g. Maintenance of Special Purpose Kits.

Operator and Organizational Maintenance Manual for Chemical Alarm	TM 3-6665-225-12
Operator’s and Unit Maintenance Manual Including Repair Parts and Special Tools List for Decontaminating Apparatus: M13	TM 3-4230-214-12&P
Operator, Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List for Various Machine Gun Mounts	TM 9-1005-245-14

h. General.

Operator’s Manual (M998 Series)	TM 9-2320-280-10
Operator’s Manual (M1008 Series)	TM 9-2320-289-10
Operator’s Manual (M35 Series)	TM 9-2320-361-10
Operator’s Manual (M939 Series)	TM 9-2320-272-10
Principles of Automotive Vehicles	TM 9-8000
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (US Army Tank-automotive and Armaments Command)	TM 750-244-6
Route Reconnaissance and Classification	FM 5-36
Soldier’s Manual MOS 88M Motor Transport Operator, Skill Levels 1/2	STP 55-88-M12-SM

i. Land, Sea, and Air Shipment.

Airdrop of Supplies and Equipment: Rigging 5-Ton Trucks	FM 10-526
Containerization of Military Vehicles	MTMCTEA Ref 95-55-23
Lifting and Tiedown of U.S. Military Helicopters	MTMCTEA Ref 95-55-21
Marine Lifting and Lashing Handbook	MTMCTEA Ref 95-55-22
Marine Terminal Lifting Guidance	MTMCTEA Pam 56-1

A-4. OTHER PUBLICATIONS (CONT)

i. Land, Sea, and Air Shipment (Cont).

Multiservice Helicopter External Air Transport: Basic Operations and Equipment	FM 55-450-3
Multiservice Helicopter External Air Transport: Dual-Point Load Rigging Procedures	FM 55-450-5
Multiservice Helicopter External Air Transport: Single-Point Load Rigging Procedures	FM 55-450-4
Standard Characteristics (Dimensions, Weight, and Cube) for Transportability of Military Vehicles and Other Outsize/Overweight Equipment (in TOE Line Sequence)	TB 55-46-1
Tiedown Handbook for Rail Movements	MTMCTEA Pam 55-19
Tiedown Handbook for Truck Movements	MTMCTEA Ref 92-55-20

APPENDIX B
MAINTENANCE ALLOCATION CHART (MAC)

SECTION I

INTRODUCTION

B-1. The Army Maintenance System MAC.

a. This introduction (Section I) provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit - includes two subcolumns, C (Operator/Crew) and O (Unit) maintenance.

Direct Support - includes an F subcolumn.

General Support - includes an H subcolumn.

Depot - includes a D subcolumn.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. Maintenance Functions. Maintenance functions are limited to and defined as follows:

a. **Inspect**. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g. by sight, sound, or feel).

b. **Test**. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. **Service**. Operations required periodically to keep an item in proper operating condition; e.g. to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemicals fluids, or gases.

d. **Adjust**. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

e. **Align**. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. **Calibrate**. To determine and cause corrections to be made or to be adjusted on instruments or Test, Measurement, and Diagnostic Equipment (TMDE) used in precision measurement. Consists of comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. **Remove/Install**. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. **Replace**. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace " is authorized by the MAC and assigned maintenance level is shown as the 3d position code of the SMR code.

i. **Repair**. The application of maintenance services[1] including fault location/troubleshooting[2], removal/installation, and disassembly/assembly[3] procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. **Overhaul**. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. **Rebuild**. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

B-3. Explanation of Columns in the MAC, Section II.

a. **Column 1, Group Number.** Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

b. **Column 2, Component/Assembly.** Column 2 contains the item names of components , assemblies, subassemblies, and modules for which maintenance is authorized.

c. **Column 3, Maintenance Function.** Column 3 lists the functions to be performed on the items listed in Column 2. (For detailed explanation of these functions, see Paragraph B-2.)

d. **Column 4, Maintenance Level.** Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed in man-hours in whole hours or decimals) in the appropriate subcolumn. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work-time figures are to be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions.

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[1] Services - Inspect, test, service, adjust, align calibrate, and/or replace.

[2] Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunction; the act of isolating a fault within a system or Unit Under Test (UUT).

[3] Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item, to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

[4] Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

C	Operator or crew maintenance
O	Unit maintenance
F	Direct Support maintenance
L	Specialized Repair Activity (SRA)[5]
H	General Support maintenance
D	Depot maintenance

e. **Column 5, Tools and Test Equipment Reference Code.** Column 5 specifies, by code, those common tools sets (not individual tools), common TMDE, and special tools, special TMDE, and special support equipment required to perform the designated functions. Codes are keyed to tools and test equipment in Section III.

f. **Column 6, Remarks.** When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Section IV.

B-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.

a. **Column 1, Reference Code.** The tool and test equipment reference code correlates with a code used in the MAC, Section II column 5.

b. **Column 2, Maintenance Level.** The lowest level of maintenance authorized to use the tool or test equipment.

c. **Column 3, Nomenclature.** Name or identification of the tool or test equipment.

d. **Column 4, National Stock Number.** The National Stock Number of tool or test equipment.

e. **Column 5, Tool Number.** The manufacturer’s part number, model number, or type number.

B-5. Explanation of Columns in Remarks, Section IV.

a. **Column 1, Remarks Code.** The code recorded in column 6, Section II.

b. **Column 2, Remarks.** This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

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[5] This maintenance level is not included in Section II, Column (4) of the Maintenance Allocation Chart. Functions to this level of maintenance are identified by a work-time figure in the "H" column of Section II, Column (4), and an associated reference code is used in the Remarks column (6). This code is keyed to Section IV, Remarks, and the SRA complete repair application is explained there.

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
Group Number	Component/Assembly	Maintenance Function	Unit		Direct Support	General Support	Depot	Tools and Equipment Ref Code	Remarks Code
			C	O	F	H	D		
0100	ENGINE ASSEMBLY	Inspect		0.1				80	
		Test		1.5	0.3			80,81	
		Adjust			3.0			58,62,80,82	
		Service		0.8				59,61,80	
		Replace			7.0			19,58,61,63,80,81	
		Repair		0.4	1.6	3.3		19,35,36,46,58,61,62,63,80,81	
0101	CYLINDER HEAD ASSEMBLY	Inspect			0.1			80	
		Replace			2.0			46,58,61,62,80	
		Repair				2.5		58,61,62,63,64,80,83	
0102	CRANKSHAFT	Replace				16.0		58,59,62,73,80	
		Repair			3.8	16.0		19,35,36,58,61,62,63,80	
0103	FLEXPLATE, ENGINE	Replace			6.5			58,61,80	
		Repair			1.0			58,61,80	
0104	PISTON ASSEMBLY	Replace				9.0		58,59,61,62,64,80,81	
		Repair				0.6		80	
0105	CAMSHAFT ASSEMBLY	Replace				3.1		17,58,59,61,62,80	
		Repair				1.2		58,80	
0105	ROCKER ARM AND PUSH RODS	Replace			2.0			46,61,62,63,80	
		Repair			0.3			59,80	
0106	COOLER, ENGINE OIL	Replace			1.3			58,80	
		Repair			0.3			58,80	
0108	MANIFOLDS, INLET AND EXHAUST	Replace			1.5			58,62,63,80,81	
0301	INJECTOR ASSEMBLY, FUEL	Replace			2.1			46,59,80,82	
		Adjust			1.6			58,80,81,82	
0304	AIR INTAKE SYSTEM	Service		0.3					
		Repair		0.3				48,59,	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
0304	INTAKE AIR CLEANER	Service		0.2					
		Replace		0.8				6,48,59, 80	
		Repair		0.4				59,80	
0305	TURBOCHARGER	Replace			0.8			58,63,80,81	
0306	FUEL TANK	Inspect	0.1						
		Replace		1.5				59,61,80	
0308	GOVERNOR, ENGINE SPEED	Replace			1.0			59,62,78,80,81	
		Repair		0.5	0.7			59,80	
0309	FILTER, FUEL/WATER SEPARATOR	Inspect	0.2						
		Service	0.2	0.3				80	
		Replace		0.5				59,80	
0311	ETHER STARTING AID	Replace		0.6				59,61,80	
0312	ACCELERATOR/HAND THROTTLE	Replace		0.5				59,80	
		Adjust		0.2				59,80	
0401	EXHAUST MUFFLER/PIPES	Inspect	0.1	0.2					
		Replace		0.9				59,61,80	
0501	RADIATOR/CHARGE AIR COOLER	Inspect	0.1						
		Replace		2.5				2,31,55, 61,80	
		Service		1.5				61,80	
		Repair		0.6	2.0			2,31,55, 61,80	
0501	RADIATOR OVERFLOW TANK	Replace		0.5				48,59,80	
		Repair		0.3				80	
0502	SHROUD, FAN	Replace		1.0				59,61,80,90	
0503	HOSES, WATER	Replace		0.5				59,61,80,90	
0504	PUMP, WATER	Replace		0.8				18,59,61,80,90	
0505	CLUTCH, ENGINE FAN	Inspect		1.0				59	
		Replace		1.5				2,55,59, 80	
		Repair			1.2			58,61,62,63,80,81	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
0601	ALTERNATOR, 100 AMP	Inspect		0.2					
		Test		0.5	1.5			61,65,80	
		Replace		1.0				61,80	
		Repair		0.2	0.5			40,58,59,61,65,80,81	
0603	STARTING MOTOR, ENGINE	Inspect		0.1					
		Test		0.5	0.5			59,65	
		Replace		1.5				2,8,59,61,80	
		Repair			2.1			54,58,61,62,78,80	
0606	SOLENOID, FUEL SHUTOFF	Replace			1.0			62,80,82	
0607	CABLE ASSEMBLY, DASHBOARD	Test		0.5				58	
		Replace		2.9				59,61,78,80	
		Repair		1.0	0.6			58,59,63,80	
0607	DISPLAY, LIGHTED INDICATOR	Test		0.3					
		Replace		0.5				80,90	
		Repair		0.3				80	
0608	JUNCTION BOX ASSEMBLY, M1084/M1086	Inspect	0.1						
		Replace		1.5				59,61,80,90	
		Repair		1.5				59,61,65,80	
0608	JUNCTION BOX ASSEMBLY, M1089	Inspect	0.1						
		Replace		1.5				59,61,80,90	
		Repair		1.5				59,61,65,80	
0609	LIGHT ASSEMBLY, BACKUP	Inspect	0.1						
		Replace		0.8				59,80	
		Repair		0.3				80	
0609	LIGHT, BLACKOUT DRIVE	Inspect	0.1						
		Replace		0.8				59,61,80	
		Repair		0.5				80	
0609	TAILLIGHT ASSEMBLY, COMPOSITE	Inspect	0.1						
		Replace		0.8				59,61,80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref Code	(6) Remarks Code
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
		Repair		0.5				80	
0609	LIGHT ASSEMBLY, FRONT TURN SIGNAL AND PARK	Inspect	0.1						
		Replace		0.8				59,61,80	
		Repair		0.5				80	
0609	HEADLIGHT	Inspect	0.1						
		Adjust		0.4					
		Replace		1.0				59,61,80	
0609	WORKLIGHT ASSEMBLY, M1088/M1089 STATIONARY	Inspect	0.1						
		Replace		0.8				80	
		Repair		0.3				80	
0610	AUDIBLE ALARM	Inspect	0.1						
		Replace		0.6				80	
0611	HORN, CAB	Inspect	0.1						
		Replace		0.4				59,80	
0612	BOX ASSEMBLY, BATTERY	Inspect	0.1						
		Test		0.5				59,80	
		Service		0.3				59	A
		Replace		1.0				59,61,80	
		Repair		0.2				65	
0613	CABLE ASSEMBLY, LH/RH CAB AND DOOR MARKER LIGHTS	Inspect	0.1						
		Replace		0.8				80	
		Repair		0.7				65	
0613	CABLE ASSEMBLY, LOWER, CAB MARKER LIGHTS, M1093/M1094	Inspect	0.1						
		Replace		0.6				80,90	
		Repair		0.5				65	
0613	CABLE ASSEMBLY, UPPER, CAB CLEARANCE AND MARKER LIGHTS, M1093/M1094	Inspect	0.1						
		Replace		0.8				80,90	
		Repair		0.5				65	
0613	CABLE ASSEMBLY, STE/ICE-R	Replace		1.0				80	
		Repair		0.5	0.8			65	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
Group Number	Component/Assembly	Maintenance Function	Unit		Direct Support	General Support	Depot	Tools and Equipment Ref Code	Remarks Code
			C	O	F	H	D		
0613	CABLE ASSEMBLY, CAB CLEARANCE AND MARKER LIGHTS	Inspect	0.1						
		Replace		1.2				59,80	
		Repair		0.5	0.8			65	
0613	CABLE ASSEMBLY, WARNING LIGHT	Replace		0.5				50,80,90	
		Repair		0.3	0.5			65	
0613	CABLE ASSEMBLY, WINDSHIELD WASHER PUMP/EMI	Replace		0.5				80	
		Repair		0.3				65	
Deleted									
		Repair		0.5	0.5			65	
0613	CABLE ASSEMBLY, CRANE POWER	Inspect	0.1						
		Replace		1.2				80	
		Repair		0.5	0.5			65	
0613	BOX ASSEMBLY, CRANE REMOTE CONTROL	Test		0.5					
		Repair		0.7				80,90	
0613	CABLE ASSEMBLY, ENGINE CONTROL	Inspect	0.1						
		Replace		2.3				59,80	
		Repair		0.5	0.5			65	
0613	CABLE ASSEMBLY, FRONT INTERVEHICULAR, 12 VDC	Replace		0.8				61,80	
0613	CABLE ASSEMBLY, FRONT LIGHTS	Replace		2.0				59,61,80,90	
		Repair		0.5	0.5			65	
0613	CABLE ASSEMBLY, REAR LIGHTS	Replace		2.8				59,61,80	
		Repair		0.5	0.5			65	
0613	CABLE, M1084/M1086 BOOM DOWN LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 BOOM DOWN SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
0613	CABLE, M1084/M1086 BOOM UP LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 BOOM UP SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 CONTROL LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 CRANE POWER	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 HOIST DOWN SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 HOIST UP LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 HOIST UP SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 LEFT JACK CYLINDER PROXIMITY SENSOR	Replace		1.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 OVERLOAD LOCKOUT	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 REMOTE CONTROL	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 SWING CCW SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 SWING CW SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 SYSTEM SHUTDOWN SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	(4) Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
0613	CABLE, M1084/M1086 TELESCOPE IN SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 TELESCOPE OUT LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1084/M1086 TELESCOPE OUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 BOOM DOWN LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 BOOM DOWN SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 BOOM UP LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 BOOM UP SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE ASSEMBLY, M1089 CONTROL PANEL POWER	Replace		2.0				80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 CRANE POWER	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 HOIST DOWN SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 HOIST UP LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 HOIST UP SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 HYDRAULIC SYSTEM SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 LEFT SIDE REMOTE CONTROL	Replace		2.0				59,80	
		Repair		0.5	0.8			65	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
0613	CABLE, M1089 OVERLOAD LOCKOUT	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	WIRING HARNESS, M1089 REMOTE CONTROL	Replace		2.0				80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 RIGHT SIDE REMOTE CONTROL	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 SWING CCW SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 SWING CW SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 TELESCOPE IN SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 TELESCOPE OUT LOCKOUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	CABLE, M1089 TELESCOPE OUT SOLENOID	Replace		2.0				59,80	
		Repair		0.5	0.8			65	
0613	BOX ASSEMBLY, WRECKER REMOTE CONTROL	Repair		1.6				59,80	
0613	CABLE ASSEMBLY, M1090/M1094 DUMP	Replace		0.8				59,61,80	
		Repair		0.5	0.8			65	
0613	CABLE ASSEMBLY, M1090/M1094 DUMP POWER	Replace		1.2				59,61,80	
		Repair		0.5	0.8			65	
0613	CABLE ASSEMBLY, PTO	Replace		1.6				59,61,80	
		Repair		0.5	0.8			65	
0613	CABLE ASSEMBLY, REAR INTERVEHICULAR, 24 VDC	Replace		0.6				61,80	
		Repair		0.5	0.8			65	
0613	CABLE ASSEMBLY, START AND CHARGING	Replace		2.0				59,80	
		Repair		0.5	0.8			65	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	(4) Maintenance Level Unit O	(4) Direct Support F	(4) General Support H	(4) Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
0613	CABLE ASSEMBLY, WINCH CONTROL VALVE	Replace		1.8				59,61,80	
		Repair		0.5	0.8			65	
0613	CABLE ASSEMBLY, TRANSMISSION AUXILIARY OIL COOLER FAN	Replace		1.8				59,61,80	
		Repair		0.5				65	
0705	VEHICLE INTERFACE MODULE	Replace		0.6				80	
		Repair		0.8				80	
0708	TORQUE CONVERTER	Adjust			0.9			22,61,62,80	
		Remove/ Install			0.8			48,61,62,64, 80	
		Repair			1.3			34,58,61,62, 64,80	
0710	TRANSMISSION	Inspect		0.4				80	
		Service		1.5				59,61,80	
		Replace			7.0			58,61,62,63, 80,81,87	
		Repair		0.4	2.7	1.9		3,22,23, 28,29,31,43, 58,59,61,62, 63,80,81,87	
0710	MODULE, FRONT SUPPORT	Remove/ Install				2.0		58,59,61,62, 63,80	
		Repair				0.7		34,58,59,61, 62,63,80	
0710	MODULE, PLANETARY GEAR (P1)	Remove/ Install				2.0		61,62,73,80	
		Repair				1.5		61,62,73,80	
0710	MODULE, PLANETARY (P2)	Remove/ Install				2.0		3,58,61, 62,63,80	
		Repair				1.9		3,23,58, 61,62,63,73, 80	
0710	PLANETARY CARRIER (P3)	Remove/ Install				2.0		3,58,62, 80	
		Repair				1.9		3,31,58, 62,80	
0710	MODULE, MAIN SHAFT	Remove/ Install				2.0		61,62,80	
		Repair				0.4		61,62,80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
0710	MODULE, CONVERTER HOUSING	Remove/ Install				4.3		3,58,59,61,62,80	
		Repair				2.0		3,23,29,58,59,61,62,80	
0713	CLUTCH ASSEMBLY, C3/C4/C5, TRANSMISSION	Remove/ Install				2.0		58,59,61,62,80	
		Repair				1.0		43,58,59,61,62,80	
0713	MODULE, ROTATING CLUTCH	Remove/ Install				2.0		3,58,61,62,80	
		Repair				2.4		3,23,28,58,61,62,80	
0714	VALVE ASSEMBLY, CONTROL MODULE	Remove/ Install			2.0			58,61,62,63,80,81	
		Repair		1.0	2.5			61,63,80,81	
0714	BODY ASSEMBLY, MAIN VALVE	Service		1.5				59,61,80	
		Remove/ Install			2.0			58,61,62,63,80,81	
		Repair		1.5	2.5			58,61,62,63,80,81	
0801	MODULE, TRANSFER CASE	Adjust				1.0			
		Remove/ Install				2.0		25,58,59,61,62,63,73,76,80,81	
		Repair				1.1		27,31,37,52,58,59,62,80	
0802	HOUSING ASSEMBLY, C6 AND C7 CLUTCH	Remove/ Install				2.0		58,61,62,63,80	
		Repair				0.8		23,27,30,31,32,33,58,61,62,63,64,73,80	
0802	CONTROL VALVE ASSEMBLY	Remove/ Install				2.0		58,61,63,80,81	
		Repair				1.0		58,61,63,80,81	
0804	PUMP ASSEMBLY, OIL	Replace				1.0		81	
		Repair				0.8		81	
0900	PROPELLER SHAFT	Inspect		0.1					

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
		Service		0.5				61	
		Repair		0.6				59,61,80	
		Replace		0.5				59,61,80	
1000	AXLE ASSEMBLY, FRONT	Inspect	0.1	0.3	0.7			80	
		Adjust			1.0			59,81	
		Service		0.5				61,80	
		Replace			4.5			58,59,61,62,63,72,80	
		Repair		2.3	2.2	6.0		58,59,61,62,63,80	
1002	CARRIER ASSEMBLY, DIFFERENTIAL	Inspect		0.1	0.1	0.1		80,81	
		Service			0.3			80	
		Replace				4.6		25,58,59,61,62,80,81	
		Repair				2.7		58,59,61,62,80,81	
1004	STEERING KNUCKLE, AXLE	Inspect			0.2				
		Adjust			2.5			81	
		Service			0.3			81	
		Replace			5.1			58,59,61,62,73,80	
1100	AXLE ASSEMBLY, INTERMEDIATE	Inspect	0.1	0.4	0.7				
		Service		0.8				59,61,80	
		Replace			4.5			58,59,61,62,63,80,87	
		Repair			1.6	6.0		25,58,59,61,62,69,80	
1100	AXLE ASSEMBLY, REAR	Inspect	0.1	0.4	0.7				
		Service		0.8				59,61,80	
		Replace			4.5			38,58,59,61,62,80,87	
		Repair			0.9	6.0		25,58,59,61,62,80,87,88	
1102	CARRIER ASSEMBLY, DIFFERENTIAL, INTERMEDIATE AXLE	Inspect		0.1	0.1	1.0		80,81	
		Service			0.3			80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
		Replace				4.6		25,58,59,61,62,69,80	
		Repair				2.7		25,58,59,61,62,63,69,75,80	
1102	CARRIER ASSEMBLY, DIFFERENTIAL, REAR AXLE	Inspect		0.1	0.1	1.0		80,81	
		Service			0.3			80	
		Replace				4.6		25,58,59,61,62,80,81,88	
		Repair				2.7		25,39,58,59,61,62,73,75,80	
1202	BRAKE ASSEMBLY, FRONT AXLE	Inspect		0.1	1.0			61,80,81	
		Adjust		0.4				59,61,80	
		Repair		1.5	0.5			59,61,80,85	
1202	BRAKE ASSEMBLY, INTERMEDIATE AND REAR AXLE	Inspect		0.1	1.0			61,80,81	
		Adjust		0.4				59,61,80	
		Repair		1.5	0.5			59,61,80,85	
1208	AIR DRYER, BRAKE SYSTEM	Replace		0.5				59,61,80	
		Repair		1.0				59,61,80	
1209	AIR COMPRESSOR	Adjust		0.6				61,80	
		Replace			1.2			58,62,63,80,81	
1311	WHEEL ASSEMBLY, PNEUMATIC TIRE	Inspect	0.1					59	B
		Replace	1.0	1.2				59,61	
		Repair		2.0				59,61	
1313	TIRE, PNEUMATIC	Replace		2.0				59,61	
1401	STEERING SYSTEM	Inspect		0.2					
		Adjust			1.0			58,62,80	
		Repair		1.0	1.5			56,58,59,61,62,63,80,81	
1407	STEERING GEAR ASSEMBLY	Replace			4.0			58,62,80	
1410	PUMP, POWER STEERING	Replace			1.5			49,58,61,62,80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
1411	HOSES, POWER STEERING	Replace		0.3				59,61,80,90	
1413	HYDRAULIC RESERVOIR, POWER STEERING	Service	0.1	0.5				80	
		Replace		0.8				61,80,90	
1501	FRAME ASSEMBLY	Inspect	0.1	0.3					
		Repair		0.8	14.0			58,59,61,62,63,80,81	
1501	BOOM REST ASSEMBLY, CRANE	Inspect	0.1						
		Replace			2.0			58,59,61,62,80,81,87	
		Repair			0.7			58,59,61,62,80,81,87	
1504	RETAINER, SPARE TIRE	Inspect	0.1	0.1					
		Replace		3.0				59,61,80	
		Repair		0.6				59,61,80	
1506	FIFTH WHEEL ASSEMBLY	Inspect	0.1						
		Service		0.5				21,80	
		Replace			4.0			58,61,62,80,81	
		Repair			2.5			21,58,61,62,66,80,81	
1601	LEAF SPRING ASSEMBLIES	Inspect	0.1	0.2					
		Service		0.3				59	
		Replace			2.7			58,59,61,62,80,81	
1604	SHOCK ABSORBERS	Inspect	0.1	0.3					
		Replace		0.5				59,61,80	
1605	STABILIZER BAR, REAR	Inspect		0.2					
		Replace		2.0				59,61,70,80	
		Repair		1.5				59,80	
1801	CAB BODY, STANDARD	Inspect	0.1						
		Replace			60.0			58,59,62,63,80,81	
		Repair		0.6				59,61,80	
1801	CAB BODY, AIR DROP	Inspect	0.1						
		Replace			60.0			58,59,62,63,80,81	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref Code	(6) Remarks Code
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
		Repair		0.6				59,61,80	
1801	CAB DOORS, STANDARD	Inspect	0.1						
		Replace			1.0			57,61,80	
		Repair		2.7				51,59,80	
1801	CAB DOORS, AIR DROP	Inspect	0.1						
		Replace			1.0			57,61,80	
		Repair		2.7				51,59,80	
1801	SUPPORT ASSEMBLY, CAB FRONT	Inspect	0.1						
		Repair		1.1				59,61,80	
		Replace			3.0			7,15,59,61,62,80,81	
1801	SUPPORT ASSEMBLY, CAB REAR	Inspect	0.1						
		Replace		1.0				59,61,80	
		Repair		0.8				59,80	
1802	WINDSHIELD	Replace			0.6			57,61,80	
1802	FENDER, VEHICULAR, FRONT	Inspect	0.1						
		Replace		2.0				59,61,80	
		Repair		0.5				59,80	
1803	ROOF, CAB, M1093/M1094	Replace		1.0				47,52,59,61,80	
1805	STEP ASSEMBLY, CAB	Replace		1.0				59,80	
		Repair		0.7				59,80	
1808	TOOL BOX ASSEMBLY	Inspect	0.1						
		Replace		0.5				49,59,61,80	
		Repair		0.5				59,61,80	
1808	STOWAGE BOX, CAB	Replace		0.8				59,80	
		Repair		0.5				59,80	
1810	BODY, CARGO, (W/MHC, LWB AND LWB W/MHC)	Inspect	0.1						
		Replace			4.0			58,59,61,62,80	
		Repair		0.5				59,61,80	
1810	DUMP BODY ASSEMBLY	Inspect	0.1						
		Replace			4.0			58,61,62,80	
		Repair		0.5	4.0			58,59,61,62,80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref Code	(6) Remarks Code
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
1810	DUMP HYDRAULIC CYLINDER	Inspect	0.1						
		Replace			1.0			59,62,80	
		Repair				2.5		59,61,62,80,89	
1810	DUMP TAILGATE ASSEMBLY	Inspect	0.1						
		Replace		1.5				80	
		Repair		0.8				80	
1812	BOX ASSEMBLY, TOOL, M1089	Inspect	0.1						
		Remove/ Install		1.0				59,61,80	
		Repair		0.8				59,61,80	
2001	UNDERLIFT ASSEMBLY, M1089	Inspect	0.1						
		Test		0.5	0.1				
		Service		0.5				61	
		Replace			6.0			58,59,61,62,80,87	
		Repair			1.0			54,58,59,61,62,80,81,86,87	
2001	CROSSBAR ASSEMBLY, M1089	Inspect			0.1				
		Replace			0.5			58,59,61,62,80,81,86	
		Repair			1.0			58,59,61,62,81,86	
2001	LOWER ARM, UNDERLIFT	Inspect			0.1				
		Replace			2.0			58,59,61,62,80,87	
		Repair			0.5			58,59,61,62,80,87	
2001	CYLINDER, TELESCOPIC LIFT	Replace			1.5			59,61,80	
		Repair				1.0		61,62,63,80	
2001	STIFFLEG ASSEMBLY	Inspect			0.1				
		Replace			2.0			59,61,62,80,87	
		Repair			1.6	1.0		58,59,61,62,63,68,80,87	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
2001	BOOM FRAME, FOLDING, UNDERLIFT	Inspect			0.1				
		Repair			2.5			61,80	
2001	ARM ASSEMBLY, UPPER, UNDERLIFT	Repair			2.5			58,59,61,62,80	
2001	CYLINDER, UNDERLIFT FOLD	Replace			0.5			59,61,80,87	
		Repair				0.5		59,61,62,63,80	
2001	CYLINDER, UNDERLIFT STINGER	Replace			0.5			59,61,62,80,87	
		Repair				0.5		58,61,62,63,68,80,81	
2001	WINCH, 15K SELF-RECOVERY	Inspect	0.1	4.0					
		Service		0.2				61	
		Replace			1.0			61,62,80	
		Repair			0.9			61,62,80	
2001	MOTOR, HYDRAULIC, SELF-RECOVERY WINCH	Replace			0.5			59,80	
2001	MATERIAL HANDLING CRANE (MHC), M1089	Inspect	0.1	0.5				80	
		Test	0.2		0.3			59	
		Service		0.5				61	
		Replace			6.0			59,61,62,80,87	
		Repair		0.5				9,58,59, 61,62,80	
2001	CYLINDER, LIFT, M1089 MHC	Inspect	0.1						
		Test			0.2			61	
		Replace			4.0			58,62,80	
		Repair				2.0		59,61,62,63,80	
2001	CYLINDER, ERECTION, M1089 MHC	Inspect	0.1						
		Test			0.2			61	
		Replace			4.0			58,62,80	
		Repair				2.0		59,61,62,63,80,81	
2001	HOIST ASSEMBLY, M1089 MHC	Inspect	0.1						
		Test			0.2			61	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref Code	(6) Remarks Code
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
		Replace			6.0			61,62,80	
		Repair			3.0			59,61,62,80	
2001	HYDRAULIC MOTOR, HOIST, M1089 MHC	Inspect	0.1						
		Test			0.1			59,65	
		Replace			2.0			59,80	
		Repair				4.2		58,59,61,62,63,80	
2001	GEAR SET, M1089 MHC	Inspect		0.2					
		Test			0.2			61	
		Repair			1.7			61,62,80	
2001	BOOM ASSEMBLY, M1089 MHC	Inspect	0.1						
		Test			0.2				
		Replace			8.0			58,62,80	
		Repair			2.0			58,61,62,80	
2001	CYLINDER, TELESCOPIC, BOOM, M1089 MHC	Inspect	0.1						
		Test			0.2			61	
		Replace			6.0			58,61,62,80	
		Repair				2.0		59,61,62,80	
2001	SWING DRIVE ASSEMBLY, M1089 MHC	Inspect	0.1	0.5					
		Test			0.2			61	
		Service		0.3					
		Replace			4.0			59,61,62,80	
		Repair			4.0			59,61,62,80	
2001	MOTOR, ORBIT, HYDRAULIC, M1089 MHC	Inspect	0.1						
		Test			0.2				
		Replace			1.0			59,61,62,80	
		Repair				3.0		59,61,62,63,80,81	
2001	CYLINDER ASSEMBLY, EXTENSION, OUTRIGGER, M1089 MHC	Inspect	0.1						
		Test			0.2			61	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
		Replace			3.0			80	
		Repair				5.0		61,62,80	
2001	CYLINDER ASSEMBLY, JACK, M1089 MHC	Inspect	0.1						
		Test			0.2			61	
		Replace			3.0			62,80	
		Repair				5.0		59,61,62,80	
2001	VALVE ASSEMBLY, EIGHT-BANK, M1089 MHC	Inspect	0.1						
		Replace			0.5			58,59,61,80	
		Repair			2.0			58,59,61,80	
2001	WINCH ASSEMBLY, M1089 (30K)	Inspect	0.1						
		Test		0.5	0.2			63	
		Replace			9.0			20,59,61,62,80,81	
		Repair			0.5			59,61,62,63,73,80,81	
2001	MOTOR ASSEMBLY, DRIVE, (30K) WINCH	Replace			0.5			59,61,62,63,73,80,81	
		Repair			8.0			59,61,62,63,73,80,81	
2001	VALVE ASSEMBLY, MAIN, UPPER, M1089	Replace			0.5			61,62,80	
		Repair			0.5			61,62,80	
2001	VALVE ASSEMBLY, MAIN, LOWER, M1089	Replace			0.5			61,62,80	
		Repair			0.5			61,62,80	
2001	VALVE ASSEMBLY, MONO, M1089	Replace			1.5			59,61,62,80,87	
		Repair			1.0			59,61,62,80,87	
2001	MATERIAL HANDLING CRANE (MHC), M1084/M1086	Inspect	0.1						
		Test			0.2			81	
		Service		2.0				61	
		Replace			4.0			58,59,61,62,80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
		Repair				0.5		58,59,61,62,63,73,80,81	
2001	CYLINDER, LIFT, M1084/M1086 MHC	Inspect	0.1						
		Test			2.0			65,81	
		Replace			2.0			58,59,62,80	
		Repair				4.0		58,59,62,80	
2001	CYLINDER, ERECTION, M1084/M1086 MHC	Inspect	0.1						
		Test			0.2			65,81	
		Replace			4.0			58,62,80	
		Repair				4.0		59,61,63,80,81	
2001	HOIST ASSEMBLY, M1084/M1086 MHC	Inspect	0.1						
		Test			0.2			65,81	
		Replace			6.0			61,62,80	
		Repair				3.5		59,61,62,80	
2001	MOTOR, HYDRAULIC, HOIST, M1084/M1086 MHC	Inspect	0.1						
		Test			0.1			65,81	
		Replace			2.0			59,80	
		Repair				4.2		58,59,61,62,63,80	
2001	GEAR SET, M1084/M1086 MHC	Inspect		0.2					
		Test			0.2				
		Repair			4.5			61,62,80	
2001	CYLINDER, TELESCOPIC, BOOM, M1084/M1086 MHC	Inspect	0.1						
		Test			0.1			65,81	
		Replace			2.0			58,61,62,80	
		Repair				4.0		59,61,62,80	
2001	SWING DRIVE ASSEMBLY, M1084/M1086 MHC	Inspect	0.1	0.5				61	
		Test			0.1			65,81	
		Service		0.3					

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
		Replace			4.0			59,61,62,80	
		Repair			3.5	4.2		59,61,62,80	
2001	MOTOR, ORBIT, HYDRAULIC, M1084/M1086 MHC	Inspect	0.1					61	
		Test			0.1			65,81	
		Replace			2.0			59,61,80	
		Repair				4.2		59,61,63,73,80,81	
2001	VALVE ASSEMBLY, CONTROL, FOUR WAY, M1084/M1086 MHC	Replace			0.8			59,61,62,80	
		Repair			1.1			59,61,62,80	
2001	VALVE ASSEMBLY, CONTROL, THREE WAY, M1084/M1086 MHC	Replace			0.8			59,61,62,80,81	
		Repair			1.1			59,61,62,80,81	
2001	CYLINDER, JACK, M1084/M1086 MHC	Inspect	0.1						
		Test			0.2			81	
		Replace			2.0			62,80	
		Repair				4.0		59,61,62,80	
2004	POWER TAKEOFF ASSEMBLY (PTO)	Inspect	0.1						
		Replace			1.0			58,59,61,62,80	
		Repair			0.8			58,59,61,62,80	
2201	CAB PROTECTOR, M1090/M1094	Inspect	0.1						
		Replace			2.0			58,80	
2202	MOTOR, WIPER, WINDSHIELD	Test		0.5					
		Replace		1.0				80	
2207	HEATER ASSEMBLY, PERSONNEL	Replace		2.0				59,61,80	
		Repair		1.0				59,61,80	
2210	DECALS	Inspect	0.1						
		Replace		1.0				80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
2401	POWER UNIT, AIR/HYDRAULIC	Inspect	0.1						
		Test		0.2					
		Service		1.0					
		Replace		3.0				59,61,80	
		Repair			2.0			59,61,62,71,80,81	
2402	MANIFOLD, HYDRAULIC	Inspect	0.1						
		Test		0.2					
		Replace		1.5				53,59,61,80	
		Repair		1.0				53,59,61,80	
2406	FILTER, HYDRAULIC	Service		0.3				61,80	
		Replace		0.2				61,80	
2407	LATCH, HYDRAULIC, CAB	Inspect	0.1						
		Adjust		0.5				59,61,80	
		Replace		0.5				59,61,80	
2408	RESERVOIR, HYDRAULIC	Replace		1.0				59,61,80	
		Repair		0.5				59,61,80	
2408	TANK ASSEMBLY, HYDRAULIC, M1089	Inspect	0.1						
		Service		2.0				59,61,80	
		Replace		2.0				6,9,59,61,80	
		Repair		0.5				59,61,80	
3307	ALTERNATOR KIT, 200 AMP	Inspect	0.1	0.2					
		Test		0.5					
		Remove/ Install		2.0				59,61,80	
		Replace		1.0				59,61,80	
		Repair			0.5			58,59,62,63,80	
3307	ALTERNATOR, 200 AMP	Inspect		0.2					
		Test		0.5	1.5			61,65,80	
		Replace		1.0				59,61,80	
		Repair		0.2	0.5			58,59,62,63,65,80	
3307	CRANE (LMHC), MATERIAL HANDLING, LIGHT	Inspect	0.1	0.1					
		Replace		0.5				61,78,80	
		Repair		0.5					
		Test		0.5					

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
3307	WEIGHT BLOCK AND WIRE ROPE, LMHC	Inspect	0.1						
		Replace		0.1				61,80	
		Repair		0.5				61,80	
		Test			0.5				
3307	WINCH, LMHC	Inspect	0.1						
		Replace		0.5				61,80	
		Repair		1.0				61,80	
		Test		0.5					
3307	MAST/SWING ASSEMBLY, LMHC	Inspect	0.1						
		Repair		1.0				61,80	
		Test		0.5					
3307	CONTROL BOX, LMHC	Inspect	0.1						
		Replace		0.1					
		Repair		0.5				78,80	
		Test	0.1	0.5					
3307	TROOPSEAT KIT	Remove/ Install	1.0						
		Inspect	0.1						
		Replace		1.0					
		Repair		0.5				80	
3307	COVER KIT, CARGO SOFT TOP	Remove/ Install	1.5						
		Inspect	0.1						
		Replace		2.0					
		Repair		0.5					
3307	WARNING LIGHT ASSEMBLY, AMBER	Inspect	0.1						
		Repair		0.4				80	
		Test		0.2					
3401	MACHINE GUN RING KIT	Inspect	0.1						
		Remove/ Install			4.0			58,59,62, 80,81,87	
		Repair		1.1				10,59,80	
3402	MOUNT, SMALL ARMS	Inspect	0.1						
		Replace		0.3				80	
3901	WARNING LIGHT ASSEMBLY, AMBER, M1089	Repair		0.8				59,61,80	
3903	MAST, WARNING LIGHT, AMBER, M1089	Replace		0.6				59,61,80	

Section II. MAINTENANCE ALLOCATION CHART FOR THE MTV VEHICLE (CONT)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level Unit C	Unit O	Direct Support F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
3909	CABLE ASSEMBLY, WARNING LIGHT	Inspect	0.1						
		Replace		0.5				80	
4316	AIR HOSE, CTIS	Inspect	0.1						
		Replace		0.4				61,80	
4317	VALVE, INVERSION	Replace		0.5				61,80	
4318	CYLINDER, PNEUMATIC, TAILGATE, M1090/M1094	Replace		0.4				61,80	
4321	AIR DRYER	Inspect	0.1	0.1					
		Replace		1.0				59,61,80	
		Repair		0.6				59,61,80	
4702	GAUGE, AIR FILTER RESTRICTION	Replace		0.5				80	

Section III. TOOLS AND TEST EQUIPMENT FOR MTV VEHICLES

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
1	O,F	ADAPTER, RADIATOR	4910-01-170-4928	J29003-A
2	O	ADAPTER, SOCKET WRENCH	5120-00-240-8702	11655788-2
2.1	O	BASE, MAGNETIC		P5646
3	H	BUSHING DRIVER SET	5120-01-391-3541	J35922
4	O	CRIMPING TOOL, TERMINAL, HAND	5120-00-165-3912	M22520/1-01
5	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-00-078-3809	10935497
6	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-00-293-1010	5120-293-1282
7	F	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-074-7557	FCOM19
8	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-236-9996	FCOM15
9	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1089	FCO28
10	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1091	FCO32
11	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1119	SCO34
12	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1122	SCO40
12.1	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1126	SCO48

Section III. TOOLS AND TEST EQUIPMENT FOR MTV VEHICLES

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
13	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1153	FCO20
14	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1156	FCO26
15	F	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-348-9473	AN8508-19A
16	O	CUTTER, BOLT	5110-00-224-7057	GGG-C-740
16.1	O	DISPENSER, SEALANT	5120-00-061-1283	45RCT
16.2	F	DRILL SET, STOPCOLLAR	5133-01-383-7665	1955
17	H	DRIVER KIT, BEARING	4910-01-032-3128	8S0602
18		DELETED		
19	O,F	GAGE, BELT TENSION	6635-01-143-2237	GA-424
20	O,F	GAGE, PRESSURE, 0-150 psi	6685-00-474-5721	111T1D05A01
21	O	GAGE, PROFILE	5220-01-357-4913	TF-0237
22	F,H	GAGE, PROFILE	5220-01-388-1460	J-38548-1
23	H	HANDLE, DRIVE	5120-00-377-2259	J8092
24	O	HEATER, GUN TYPE, ELECTRIC	4940-00-561-1002	500A
25	F,H	HOLDING BAR, PINION	5120-01-166-0573	J3453
25.1	O	INDICATOR, DIAL		P36491
26	O	INSERTER AND REMOVER, ELECTRICAL CONTACT	5120-00-915-4588	MS3447-16
27	H	INSERTER AND REMOVER, SPRING	5120-01-388-3660	J38573
28	H	INSERTER AND REMOVER, SPRING	5120-01-388-4436	J35923
29	H	INSERTER, BEARING AND BUSHING	5120-01-388-7841	J-38565
30	H	INSERTER, BEARING AND BUSHING	5120-01-389-0658	J35921-1
31	H	INSERTER, BEARING AND BUSHING	5120-01-390-1104	J 38569
32	H	INSERTER, BEARING AND BUSHING	5120-01-390-1105	J 38568-3
33	H	INSERTER, BEARING AND BUSHING	5120-01-391-5133	J 38579
34	F,H	INSERTER, BEARING AND BUSHING	5120-01-414-7398	J38566
35	F	INSERTER, SEAL	5120-01-362-2026	1U7430
36	F	INSERTER, SEAL	5120-01-362-2027	1U7598
37	F	INSTALLER, SEAL	N/A	J38574
37.1	F	JACK, DOLLY TYPE HYDRAULIC	4910-01-396-5044	TTJ3
38	F	JACK, LEVELING SUPPORT, VEHICLE	2590-00-231-7418	10876244
38.1	O	KEY, SOCKET HEAD SCREW	5120-01-355-1670	AWML2.5
38.2	F	NOSE ASSEMBLY		99-3307
38.3	O	PLIERS, HOG RING STAPLE	5120-01-413-8837	0012
38.4	F	LIFTING SADDLE ASSEMBLY		TTJ-ZIFA
39	H	PULLER KIT, UNIVERSAL	5180-00-089-3660	A57QB
40	F	PULLER KIT, UNIVERSAL	5180-01-124-1903	1P3075
41	O	REMOVER, ELECTRICAL CONTACT	5120-00-148-9844	MS3448-001B
42	F	RIVETER, BLIND, HAND	5120-01-289-4310	HP-2
42.1	F	RIVETER, BLIND, PNEUMATIC	5130-01-232-4042	245
43	H	RIVETER, YOKE, HAND	5120-01-415-3558	J-39354

Section III. TOOLS AND TEST EQUIPMENT FOR MTV VEHICLES (CONT)

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
44	F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-00-601-6934	LAW120A
45	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-053-4158	FAM5A
46	O,F,H	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-055-1308	ANSIB18.3.2M
47	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-079-8032	SAM8A
48	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-160-8862	S 6 HBS
49	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3462	SA10A
49.1	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3483	FA5LE
50	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3497	TMP12A
51	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3519	F23D
52	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3526	FP24
53	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3527	FP32A
54	F,H	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3536	FTX40A
55	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3574	GFA8A
56	O	SEPARATOR, BALL JOINT	5120-01-255-8238	2287
57	F	SETTING TOOL, WINDSHIELD	5120-01-316-4995	CRL216
58	O,F	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-348-7696	SC4910-95CLA02
59	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0650	SC4910-95CLA72
60	O	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0653	SC4910-95CLA73
61	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0654	SC4910-95CLA74
62	F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0705	SC4910-95CLA31
63	F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0706	SC4910-95CLA62
64	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0707	SC4910-95CLA63
65	O,F	SHOP EQUIPMENT, FUEL AND ELECTRICAL	4910-00-754-0714	SC4910-95CLA01
66	F	SLIDER, SPRING COMPRESSOR	4910-01-165-6015	TF-TUN-J500
67	F	SLING, MULTIPLE LEG	3940-00-777-5744	A170
68	H	SOCKET SET, SOCKET WRENCH	5120-01-195-0640	208FA

Section III. TOOLS AND TEST EQUIPMENT FOR MTV VEHICLES

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
69	F,H	SOCKET, SOCKET WRENCH	5120-01-068-5643	5555M
70	O	SOCKET, SOCKET WRENCH	5120-01-161-5907	GLDH382
71	F	SOCKET, SOCKET WRENCH	5120-01-335-0784	TW321
72	O	SOCKET, SOCKET WRENCH	5120-01-144-5324	ANS 1913A
73	F	SOLDERING AND BRAZING OUTFIT, RESISTANCE HEATING	3439-00-460-7198	SC4940-95-CLB20
74	O	SOLDERING IRON, ELECTRIC	3439-01-036-3308	3112-S3-40W
75	H	STAND, DIFFERENTIAL CARRIER REPAIR	4910-01-085-7729	J3409-D
76	H	STAND, MAINTENANCE, AUTOMOTIVE ENGINE	4910-00-808-3372	J29109
77	F	TOOL, DISTORTER	5120-01-119-1748	5P-7312
78	O,F	TOOL KIT, AUTO FUEL AND ELECTRICAL SYSTEM REPAIR	5180-00-754-0655	SC4910-95CLA50
79	F	TOOL KIT, BODY AND FENDER	5180-00-754-0643	SC5180-90-N34
80	O,F,H	TOOL KIT, GENERAL MECHANIC'S	5180-00-177-7033	SC5180-90-CL-N26
81	F,H	TOOL KIT, GENERAL MECHANIC'S	5180-00-699-5273	SC5180-90-CL-N05
82	F	TOOL KIT, INTERNAL COMBUSTION ENGINE	5180-01-356-8155	1U6680
83	H	TOOL KIT, DIESEL INJECTOR	5180-01-466-3966	143-2099
84	F	TOOL OUTFIT, HYDRAULIC	4940-01-036-5784	SC4940-95-CL-B07
85	O	TOOL, SPRING REMOVAL	5120-01-360-1918	TV940010
86	F	WIRE TWISTER, PLIER	5120-00-542-4171	GGG-W-340
87	F	WRENCH SET, CROWFOOT, RATCHETING	5120-00-293-0013	GGG-W-646
88	F	WRENCH SET, SOCKET	5120-00-148-3706	ANSI-B107.5
89	H	WRENCH SET, SPANNER	5120-00-215-1882	46D7578
90	O	WRENCH, TORQUE, 0-75 LB-IN.	5120-01-112-9532	TQSC6A

Section IV. REMARKS FOR THE MTV VEHICLE

Remarks Code	Remarks
A	Battery service will be in accordance with TM 9-6140-200-14.
B	Repair of tires will be in accordance with TM 9-2610-200-14.

APPENDIX C
TOOLS IDENTIFICATION LIST

Section I. INTRODUCTION

C-1. INTRODUCTION

This appendix lists common tools, supplements, and special tools/fixtures that are suggested for maintenance tasks performed at the Unit Maintenance level.

C-2. EXPLANATION OF COLUMNS

a. Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item, e.g., "Bar, Pry (Item 1, Appendix C)."

b. Column (2) - Item Name. This column contains the nomenclature for the item.

c. Column (3) - National Stock Number. This is the national stock number assigned to the item which you can use to requisition it.

d. Column (4) - Part Number. This provides the Government, manufacturer, or vendor part number for the item.

e. Column (5) - Reference. This column contains the shop catalog (SC), technical manual, or other publication which provides an illustration and description of the item, or lists whether the item is fabricated.

APPENDIX C
Section II. TOOLS IDENTIFICATION LIST

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
1	ADAPTER, SOCKET WRENCH	5120-00-227-8088	A-A-2172	SC 4910-95-CL-A74
2	ADJUSTING TOOL, BRAKE SHOE	5120-01-154-3029	J34061	SC 4910-95-CL-A74
3	APRON, RUBBER	8145-00-082-6108	MIL-A-41829	SC 4910-95-CL-A74
4	CAPS, VISE JAW	5120-00-221-1506	GGG-C-137	SC 4910-95-CL-A74
5	DISPENSING PUMP, HAND DRIVEN	4930-00-263-9886	43D15069	SC 4910-95-CL-A74
6	DRILL SET, TWIST	5130-00-293-0983	58	SC 4910-95-CL-A74
7	DRILL, PORTABLE, ELECTRIC	5130-00-293-1849	W-D-661	SC 4910-95-CL-A74
8	DRILL, TWIST	5133-01-120-3519		SC 4910-95-CL-A72

Section II. TOOLS IDENTIFICATION LIST (CONT)

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
9	FISHING TOOL, PNEUMATIC TIRE VALVE	5120-00-516-4220	991	SC 4910-95-CL-A74
10	GAGE, DEPTH, MICROMETER	5210-00-619-4045	445BZ-6RL	CTA 50-909
11	GAGE, TIRE PRESSURE	4910-01-117-2994	955	SC 4910-95-CL-A72
12	GAGE, WHEEL ALIGNMENT	5210-01-223-3701	WA361	SC 4910-95-CL-A72
13	GLOVES, RUBBER	8415-00-641-4601	ZZ-G-381	SC 4910-95-CL-A74
14	GLOVES, WELDER'S	8415-00-268-7859	A-A-50022	SC 4910-95-CL-A72
15	GOGGLES, INDUSTRIAL	4240-00-052-3776	A-A-1110	SC 4910-95-CL-A74
16	GUN, LUBRICATING	4930-00-253-2478	1142	SC 4910-95-CL-A74
17	HAMMER, HAND	5120-00-224-4130	A-A-1292	SC 4910-95-CL-A74
18	HAMMER, HAND	5120-01-065-9037	57-533	SC 4910-95-CL-A72
19	HOSE ASSEMBLY, NONMETALLIC	4720-00-356-8557	ZZ-H-461	SC 4910-95-CL-A74
20	IRON, TIRE	5120-00-765-8536	T48A	SC 4910-95-CL-A74
21	JACK, HYDRAULIC, HAND	5120-00-224-7330	D120	SC 4910-95-CL-A74
22	MULTIMETER, DIGITAL	6625-01-139-2512	T00377	SC 4910-95-CL-A74
23	MULTIPLIER, TORQUE WRENCH	5120-00-574-9318	292	SC 4910-95-CL-A72
24	PAN, DRAIN	4910-00-387-9592	450	SC 4910-95-CL-A74
25	PAN, WASH	4940-00-617-9859	5582281	SC 4910-95-CL-A72
26	PRESSURE TESTER, RADIATOR	4910-01-170-4929	J24460-01	SC 4910-95-CL-A74
27	PULLER KIT, MECHANICAL	5120-00-313-9496	1178	SC 4910-95-CL-A74
28	PULLER, BATTERY TERMINAL	5120-00-944-4268	21	SC 4910-95-CL-A74
29	RESPIRATOR, AIR FILTER	4240-00-022-2524	GGG-M-125/6	SC 4910-95-CL-A72
30	SCALE, WEIGHING	6670-00-254-4634	AAA-S-133	SC 4910-95-CL-A74
31	SLING, CARGO	1670-00-823-5043	63J4261-13	CTA 50-970
32	SLING, ENDLESS	3940-00-675-5003	PD101-96	CTA 50-970
33	SOCKET SET, IMPACT	5120-01-117-0466	4151MMY	SC 4910-95-CL-A74
34	SOCKET SET, SOCKET WRENCH	5120-01-073-2821	217FMY	SC 4910-95-CL-A74

Section II. TOOLS IDENTIFICATION LIST (CONT)

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
35	SOCKET SET, SOCKET WRENCH	5120-01-115-1149	315SIMMY	SC 4910-95-CL-A74
36	SOCKET SET, SOCKET WRENCH	5120-01-117-3876	221FSMY	SC 4910-95-CL-A72
37	SOCKET, SOCKET WRENCH	5120-00-181-6813	5530	SC 4910-95-CL-A74
38	SOCKET, SOCKET WRENCH	5120-00-232-5681	1242	SC 4910-95-CL-A74
39	SOCKET, SOCKET WRENCH	5120-00-243-7351	5316	SC 4910-95-CL-A74
40	SOCKET, SOCKET WRENCH	5120-01-112-0581	SIMM190	SC 4910-95-CL-A74
41	STE/ICE-R	4910-01-222-6589	12259266	SC 4910-95-CL-A74
41.1	TEST KIT, RADIATOR	4910-00-728-8227		SC 4910-95-CL-A74
41.2	TAP AND DIE SET	5136-01-119-0005	TDM99117	SC 4910-95-CL-A72
42.3	TAP, THREAD, CUTTING	5136-00-729-5692	B94.9 ½-13 UNCHSGH3	SC 4910-95-CL-A72
42	TESTER, ANTIFREEZE AND BATTERY	6630-00-105-1418	10425	SC 4910-95-CL-A74
43	TOOL KIT, AUTO FUEL	5180-00-754-0655		SC 5180-95-CL-A50
44	TOOL KIT, BLIND RIVET	5180-01-201-4978	D-100-MIL-1	SC 4910-95-CL-A74
45	TOOL KIT, ELECTRICAL	5180-00-876-9336	7550526	SC 4910-95-CL-A72
46	TOOL KIT, GENERAL MECHANIC'S	5180-00-177-7033		SC 5180-90-N26
47	TRESTLE, MOTOR VEHICLE MAINTENANCE	4910-00-251-8013	306	SC 4910-95-CL-A74
48	VISE, MACHINIST	5120-00-293-1439	504M2	SC 4910-95-CL-A74
49	WRENCH SET, SOCKET	5120-00-081-2305	GGG-W-641	SC 4910-95-CL-A74
50	WRENCH SET, SOCKET	5120-00-204-1999	GGG-W-641	SC 4910-95-CL-A74
51	WRENCH SET, SOCKET	5120-00-322-6231	51200017510	SC 4910-95-CL-A74
52	WRENCH, ADJUSTABLE	5120-00-264-3793	2117080	SC 4910-95-CL-A74
53	WRENCH, ADJUSTABLE, AUTOMOTIVE	5120-00-449-8083	1B7536	SC 4910-95-CL-A74
54	WRENCH, BOX AND OPEN END	5120-00-277-8833	1244	SC 4910-95-CL-A74
55	WRENCH, BOX AND OPEN END	5120-00-277-8834	GGG-W-636	SC 4910-95-CL-A74
56	WRENCH, PIPE	5120-00-277-1485		SC 4910-95-CL-A74

Section II. TOOLS IDENTIFICATION LIST (CONT)

(1) ITEM NUMBER	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) REFERENCE
57	WRENCH, STRAP, ADJUSTABLE	5120-00-020-2947	A91C	SC 4910-95-CL-A74
58	WRENCH, TORQUE, 0-175 lb-ft	5120-00-640-6364	1753LDF	SC 4910-95-CL-A74
59	WRENCH, TORQUE, 0-200 lb-in.	5120-00-853-4538	F2001	SC 4910-95-CL-A72
59.1	WRENCH, TORQUE, 0-300 lb-in.	5120-00-776-1841	2163993	SC 4910-95-CL-A74
60	WRENCH, TORQUE, 0-600 lb-ft	5120-00-221-7983	SW130-301	SC 4910-95-CL-A72

APPENDIX D
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE

This appendix lists expendable and durable items that you will need to operate and maintain the MTV vehicle. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except medical, class V repair parts, and heraldic items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D-2. EXPLANATION OF COLUMNS

a. Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item, e.g., "Oil, Lubricating (Item 25, Appendix D).

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the item.

c. Column (3) - National Stock Number. This is the national stock number assigned to the item which you can use to requisition it.

d. Column (4) - Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number. This provides the other information you need to identify the item.

e. Column (5) - Unit of Measure. This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	O	4730-00-248-9340	Adapter, Pipe to Tube (81343) 4-4 010103B	ea
1.1	O	4730-01-453-9651	Adapter, Straight, Pipe to Boss (19207) 12421890-001	ea
1.2	O	4730-01-457-4025	Adapter, Straight, Pipe to Tube (96906) MS51503B4-4	ea
1.3	O	4730-00-760-3525	Adapter, Straight, Tube to Boss (81361) C116-3-71	ea
2	O	8040-00-273-8717	Adhesive (81348) MMM-A-121	pt
3	O	8040-00-152-0063	Adhesive (81348) MMM-A-1617 TY3	bt
4	O	8040-01-250-3969	Adhesive (05972) 242	ea
5	O	8040-00-117-8510	Adhesive (71984) 3145 RTV Clear	tu
6	O	8040-00-776-9602	Adhesive (73168) 80055-31	kt
7	O	8040-00-522-3429	Adhesive (81349) (MIL-A-46106)	oz

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
8	O	8040-00-118-2695	Adhesive (72799) RTV162	kt
9	O	8040-01-331-7473	Adhesive (81349) (MIL-A-46106 GP3TY1)	tu
10	O	8040-01-331-7470	Adhesive (81349) MIL-A-46106 5 oz tube	oz
10.1	O	8040-01-446-7842	Adhesive (01139) RTV123	ca
10.2	O	8040-00-728-3088	Adhesive (78500) 1199-T-3842 6 oz	kt
11	C	6850-00-174-1806	Antifreeze, Arctic Type (81349) (MIL-A-11755) 55 gl drum	dr
12	C		Antifreeze, Multi-Engine Type (58536) (A-A-52624A)	dr
		6850-01-441-3218	Type I (Green) – 1 gal	gal
		6850-01-441-3221	Type I (Green) - 5 gal	co
		6850-01-441-3257	Type II (Purple) - 5 gal	co
13	O	8030-00-597-5367	Antiseize Compound (81349) (MIL-A-907)	lb
13.1	O	5340-01-454-4336	Bracket, Angle (0FW39) 12421859-001	ea
14	O	5340-00-450-5718	Cap and Plug Set (19207) 10935405	ea
14.1	O	5340-01-423-0972	Clamp, Loop (18076) S630H-20	ea
14.2	O	5340-01-377-6171	Clamp, Loop (18076) 5630H-24	ea
15	O	6850-00-926-2275	Cleaning Compound, Windshield (81349) O-C-1901 16 oz bottle	bt
16	O	7920-00-044-9281	Cloth, Cleaning (81349) (MIL-C-85043)	bx
17	O		Corrosion Preventive Compound (81349) (MIL-C-16173)	
		8030-00-062-6950	Grade 1 - 1 qt can	qt
		8030-01-149-1731	Grade 2 - 1 qt can	qt
		8030-00-837-6557	Grade 3 - 1 pt can	pt
		8030-00-903-0931	Grade 4 - 1 pt can	pt
18	O	8030-00-033-4291	Corrosion Preventive Compound (81349) (MIL-C-82594) 8 oz can	bt
18.1	O	2540-01-460-8048	Cover, Seat, Vehicular (27797) WM1058	ea
18.2	O	2540-01-463-8394	Cover, Seat, Vehicular (0FW39) WM1059	ea
19	C	9150-00-024-9621	Damping Fluid (81348) VV-D-1078	pt
20	O	7520-01-209-1152	Dispenser, Pressure Sensitive Adhesive Tape (75037) STD-0-9	ea
20.1	O	4730-01-454-1233	Elbow, Pipe to Boss (19207) 12421891-001	ea
20.2	O	4730-00-863-9098	Elbow, Pipe to Tube (30780) 4VBTXB	ea
21	O	5330-01-325-6993	Gasket Forming Compound (05972) 515	ea
21.1	O		Gasket Maker, RTV Silicone (05972) 5699	ea

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
22	O		Grease, Automotive and Artillery (GAA) (81349) (MIL-G-10924)	
		9150-01-197-7688	2-1/4 oz tube	tu
		9150-01-197-7690	1.75 lb can	cn
		9150-01-197-7689	6.5 lb can	cn
		9150-01-197-7692	35 lb can	cn
23	O	9150-00-180-6382	Grease, General Purpose (81349) MIL-T-24139 6.5 lb can	lb
24	O	9150-00-935-4018	Grease, Molybenum Disulfide (81349) (MIL-G-21164)	ca
24.1	O	4720-01-469-9208	Hose Assembly, Nonmetallic (0FW39) 12418004-002	ea
24.2	O		Hose Assembly (0FW39) 12421278-003	ea
24.3	O		Hose Assembly (0FW39) 12421858-002	ea
24.4	O		Hose Assembly (0FW39) 12421858-003	ea
24.5	O		Hose Assembly (0FW39) 12421858-004	ea
24.6	O		Hose Assembly (0FW39) 12421858-005	ea
24.7	O	4720-01-384-0995	Hose Assembly, Nonmetallic (19207) 12421858-006	ea
24.8	O		Hose Assembly (0FW39) 12421927-001	ea
24.9	O		Hose Assembly (0FW39) 12421927-002	ea
24.10	O		Hose Assembly (0FW39) 12421927-003	ea
24.11	O	4720-01-469-9266	Hose Assembly, Nonmetallic (0FW39) 12421927-004	ea
24.12	O		Hose Assembly (0FW39) 12421991	ea
24.13	O	4720-00-988-3842	Hose Assembly, Nonmetallic (50599) R25679-1	ea
25	C		Hydraulic Fluid A (81349) (MIL-H-5606)	
		9150-00-252-6383	1 qt can	cn
		9150-00-223-4134	1 gl can	cn
26	O	7510-00-145-0559	Ink, Marking Stencil (81349) (MIL-I-43553)	oz
27	O	7510-01-386-0787	Inking Pad, Rubber Stamp (88001) 0603A	ea
28	O	5970-01-100-4464	Insulating Compound, Electrical (08800) RTV-102WHITE	tu
28.1	O	5970-01-378-3018	Insulation Sleeving, Electrical (06090) ATUM-1/4-0-4FT	lg
29	O	5970-00-838-5951	Insulation Sleeving, Electrical (06090) CRN3-16BLACK	ft
29.1	O	5970-01-161-6796	Insulation Sleeving, Electrical (06090) M23053/4-302-0	ft
29.2	O	5970-00-767-0524	Insulation Sleeving, Electrical (81349) (MIL-1-23053/5 4 in.	ea

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
30	O	1650-00-166-4834	Lockwire (90166) 68A32	ea
31	O	9150-01-360-1905	Lubricant, Solid Film (81349) (MIL-L-46147) 16 oz can	cn
31.1	O		Modification Kit, Junction Box 6-576-100041 (12361)	ea
32	O	4730-00-019-0608	Nipple, Pipe (81996) A2303-12-52PC102	ea
33	O	4730-00-825-7304	Nipple, Tube (96906) MS51501B4	ea
34	O	5310-00-059-4265	Nut, Plain, Hex (89346) 98881R1	ea
34.1	C		Oil, Commercial Burner Fuel, Grade FO-1 (ASTM D396)	
34.2	C		Oil, Commercial Burner Fuel, Grade FO-2 (ASTM D396)	
35	C		Oil, Fuel, Diesel, DF-A Arctic (81348) (VV-F-800)	
		9140-00-286-5282	5 gl can	cn
		9140-00-286-5283	Bulk	gl
		9140-00-286-5284	55 gl drum, 16 gauge	dr
		9140-00-286-5285	55 gl drum, 18 gauge	dr
36	C		Oil, Fuel, Diesel, DF-1, Winter (81348) (VV-F-800)	
		9140-00-286-5286	Bulk	gl
		9140-00-286-5287	5 gl can	cn
		9140-00-286-5288	55 gl drum, 16 gauge	dr
		9140-00-286-5289	55 gl drum, 18 gauge	dr
37	C		Oil, Fuel, Diesel, DF-2, Regular (81348) (VV-F-800)	
		9140-00-286-5294	Bulk	gl
		9140-00-286-5295	Can	cn
		9140-00-286-5296	55 gl drum, 16 gauge	dr
		9140-00-286-5297	55 gl drum, 18 gauge	dr
38	C		Oil, Lubricating, Arctic (81349) (MIL-L-46167)	
		9150-00-402-2372	5 gl can	cn
		9150-00-491-7197	55 gl drum	dr
39	C		Oil, Lubricating, Gear, GO 75W (81349) (MIL-L-2105)	
		9150-01-035-5390	1 qt can	cn
		9150-01-035-5391	5 gl can	cn
40	C		Oil, Lubricating, Gear, 80W-90 (81349) (MIL-L-2105)	
		9150-01-035-5392	1 qt can	qt
		9150-01-035-5393	5 gl can	cn
		9150-01-035-5394	55 gl drum, 16 gauge	dr

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
41	O		Oil, Lubricating, Gear, 85W-140 (81349) (MIL-L-2105)	
		9150-01-048-4591	1 qt can	qt
		9150-01-035-5395	5 gl can	cn
		9150-01-035-5396	55 gl drum	dr
42	C		Oil, Lubricating, OE/HDO 10 (81349) (MIL-L-2104)	
		9150-00-183-7807	Bulk	gl
		9150-00-186-6668	5 gl can	cn
		9150-00-191-2772	55 gl drum	dr
43	C	9150-00-189-6727	Oil, Lubricating, OE/HDO 10W (81349) (MIL-L-2104) 1 qt can	cn
44	C		Oil, Lubricating, OE/HDO 15W-40 (81349) (MIL-L-2104)	
		9150-01-152-4117	1 qt can	cn
		9150-01-152-4118	5 gl can	cn
		9150-01-152-4119	55 gl drum	dr
45	C		Oil, Lubricating, OE/HDO 30 (SAE 30) (81349) (MIL-L-2104)	
		9150-00-183-7808	Bulk	gl
		9150-00-186-6681	1 qt can	cn
		9150-00-188-9858	5 gl can	cn
		9150-00-189-6729	55 gl drum, 18 gauge	dr
46	C		Oil, Lubricating, OE/HDO 40 (81349) (MIL-L-2104)	
		9150-00-405-2987	Bulk	gl
		9150-00-189-6730	1 qt can	cn
		9150-00-188-9862	5 gl can	cn
47	O	5350-00-067-7639	Paper, Abrasive (28124) 02347 pg contains 100 sheets	pg
48	O	8010-01-146-2650	Polyurethane Coating (81349) (MIL-C-46168)	kt
49	O	8030-00-181-8372	Primer, Sealing Compound (05972) 747-56	cn
50	C	7920-00-205-1711	Rag, Wiping (64067) 7920-00-205-1711 50 lb bale	be
51		DELETED		
52	O	4020-00-106-9342	Rope, Nylon (81349) (MIL-R-24050)	ro
53	O	7520-00-634-2442	Rubber Stamp Set, Fixed Type (02663) W-5-3/8-AZ SET	ea
53.1	O	5305-01-299-4602	Screw, Cap, Hex Hd (64678) 000933 006058	ea
53.2	O	5305-01-454-5938	Screw, Cap, Hex Hd (19207) 12419954-093	ea
53.3	O	5305-00-021-3740	Screw, Cap, Hex Hd (97942) 645A560H43	ea

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
54	O	5305-01-296-0019	Screw, Cap, Socket Head (06888) SHCM75275 50 ct box	bx
54.1	O	8030-01-157-0988	Sealing Compound (83574) PR-1422 A-1/2 6 oz	ca
54.2	O	8030-01-371-8405	Sealing Compound (83574) PR-1422 B-1/2 6 oz	ca
55	O	8030-00-111-2762	Sealing Compound (05972) 290-31	bt
55.1	O	8030-01-255-4144	Sealant (19207) 12297953	tb
55.2	O	8030-00-956-2397	Sealing Compound 104	ea
55.3	O	8030-00-728-9665	Sealant (62377) 80017	pt
56	O	8030-00-133-3164	Sealing Compound (05972) 571-31	bt
57	O	8030-00-148-9833	Sealing Compound (05972) 271-21	bx
58	O	8030-00-204-9149	Sealing Compound (05972) 592-41	tu
59	O	8030-00-656-1426	Sealing Compound (81349) (MIL-S-45180)	pt
60	O	8030-01-025-1692	Sealing Compound (05972) 242-41 (MIL-S-46163)	bt
61	O	8030-01-088-8140	Sealing Compound (52571) 9001512-0011	bt
62	O	8030-01-155-3238	Sealing Compound (11083) 6V6640	ml
63	C	7930-00-634-3935	Soap, Laundry (81348) P-S-1792	lb
64	O	3439-00-006-7764	Solder, Tin Alloy (81348) SN63WRAP3 1 lb spool	sl
65	C		Solvent, Dry Cleaning SD (P-D-680)	
		6850-00-281-1985	1 gl can	cn
		6850-00-664-5685	1 qt can	cn
65.1	O		Strap, Tiedown, Electrical Components (06383) PLP2S	ea
65.2	O	9320-01-244-0046	Tape, Adhesive, Rubber (18876) MIS-41157-08 180 ft	ro
66	O	8030-00-889-3534	Tape, Antiseizing (81349) (MIL-T-27730)	ea
67	O	5640-00-103-2254	Tape, Duct (39428) 1791K70	ea
68	O	5970-00-644-3167	Tape, Insulation, Electrical (80063) TL83	ro
68.1	O	4730-00-138-8050	Tee, Pipe (81343) 8-8-8 140424C	ea
69	O	5975-01-379-4997	Ties, Cable, Plastic (06383) PLT 35-C-O	hd
69.1	C		Turbine Fuel, Aviation, Kerosene Type (MIL-T-83133), Grade JP-8	
69.2	C		Turbine Fuel, (MIL-F-16884), (NATO Code No. F75 or F-72)	
		9140-00-255-7764	5 gl can	cn
		9140-00-273-2378	55 gl drum	dr
		9140-00-273-2377	1 gl can	cn

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
69.3	C		Turbine Fuel, (MIL-F-5624), Grade JP-4 (NATO Code No. F40)	
		9130-00-273-2380	Drum, 16 gage	dr
69.4	C		Turbine Fuel, (MIL-T-5624), Grade JP-5 (NATO Code No. F-44)	
		9130-01-305-5596	Bulk	gl
		9130-01-250-6353	Drum, 16 gage	dr
70	O	8010-00-180-6343	Varnish, Oil (23667) 515320	pt
71	O		Wire, Electrical (80009) 175-0825-00	
		6145-01-148-2263	50 ft	ft
72	O		Wire, Nonelectrical (96906) MS20995C47	
		9505-00-555-8648	5 lb spool	sl

APPENDIX E
ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

E-1. INTRODUCTION

This appendix includes complete instructions for manufacturing or fabricating authorized items locally. All bulk materials needed to manufacture an item are listed by part number or specification number. Figures are provided as needed. See standards and specifications DoD-Std-00100D(AR) and ANSI Y14.5M1982 for required details.

Section II. MANUFACTURED ITEMS INDEX

ITEM NAME/PART NUMBER	ITEM DESCRIPTION	PARA NO.
Brake Adjusting Tool Support		E-2
Brake Plunger Seal Driver		E-3
Cab Support Tool		E-4
Dump Body Lifting Bracket		E-5
Headlight Adjustment Screen		E-6
M1089 30K Winch Test Adapter		E-7
M1089 Solenoid Test Adapter		E-8
Relay Test Wire		E-9
Transmission Auxiliary Oil Cooler Rubber Seal		E-10
Wheel Bearing Shim Tool Rest		E-11
12414690-001	Pneumatic Tube	E-12
12414690-002	Pneumatic Tube	E-12
12414690-003	Pneumatic Tube	E-12
12414690-004	Pneumatic Tube	E-12
12414690-005	Pneumatic Tube	E-12
12414690-006	Pneumatic Tube	E-12
12414690-007	Pneumatic Tube	E-12
12414690-008	Pneumatic Tube	E-12
12414690-009	Pneumatic Tube	E-12
12414690-010	Pneumatic Tube	E-12
12414690-101	Pneumatic Tube	E-12
12414690-102	Pneumatic Tube	E-12
12414690-103	Pneumatic Tube	E-12
12414690-104	Pneumatic Tube	E-12
12414690-105	Pneumatic Tube	E-12
12414690-106	Pneumatic Tube	E-12
12414690-107	Pneumatic Tube	E-12
12414690-108	Pneumatic Tube	E-12
12414690-109	Pneumatic Tube	E-12
12414690-112	Pneumatic Tube	E-12
12414690-113	Pneumatic Tube	E-12
12414690-115	Pneumatic Tube	E-12
12414690-118	Pneumatic Tube	E-12
12414690-120	Pneumatic Tube	E-12
12414690-125	Pneumatic Tube	E-12
12414690-128	Pneumatic Tube	E-12
12414690-129	Pneumatic Tube	E-12
12414690-130	Pneumatic Tube	E-12

Section II. MANUFACTURED ITEMS INDEX (CONT)

ITEM NAME/PART NUMBER	ITEM DESCRIPTION	PARA NO.
12414690-131	Pneumatic Tube	E-12
12414690-132	Pneumatic Tube	E-12
12414690-133	Pneumatic Tube	E-12
12414690-134	Pneumatic Tube	E-12
12414690-135	Pneumatic Tube	E-12
12414690-136	Pneumatic Tube	E-12
12414690-137	Pneumatic Tube	E-12
12414690-138	Pneumatic Tube	E-12
12414690-139	Pneumatic Tube	E-12
12414690-140	Pneumatic Tube	E-12
12414690-141	Pneumatic Tube	E-12
12414690-142	Pneumatic Tube	E-12
12414690-143	Pneumatic Tube	E-12
12414690-144	Pneumatic Tube	E-12
12414690-145	Pneumatic Tube	E-12
12414690-146	Pneumatic Tube	E-12
12414690-147	Pneumatic Tube	E-12
12414690-148	Pneumatic Tube	E-12
12414690-149	Pneumatic Tube	E-12
12414690-150	Pneumatic Tube	E-12
12414690-151	Pneumatic Tube	E-12
12414690-152	Pneumatic Tube	E-12
12414690-153	Pneumatic Tube	E-12
12414690-154	Pneumatic Tube	E-12
12414690-155	Pneumatic Tube	E-12
12414690-156	Pneumatic Tube	E-12
12414690-157	Pneumatic Tube	E-12
12414690-158	Pneumatic Tube	E-12
12414690-159	Pneumatic Tube	E-12
12414690-160	Pneumatic Tube	E-12
12414690-161	Pneumatic Tube	E-12
12414690-162	Pneumatic Tube	E-12
12414690-163	Pneumatic Tube	E-12
12414690-164	Pneumatic Tube	E-12
12414690-165	Pneumatic Tube	E-12
12414690-166	Pneumatic Tube	E-12
12414690-167	Pneumatic Tube	E-12
12414690-168	Pneumatic Tube	E-12
12414690-169	Pneumatic Tube	E-12
12414690-201	Pneumatic Tube	E-12
12414690-202	Pneumatic Tube	E-12
12414690-203	Pneumatic Tube	E-12
12414690-205	Pneumatic Tube	E-12
12414690-206	Pneumatic Tube	E-12
12414690-207	Pneumatic Tube	E-12
12414690-208	Pneumatic Tube	E-12
12414690-209	Pneumatic Tube	E-12
12414690-210	Pneumatic Tube	E-12
12414690-211	Pneumatic Tube	E-12
12414690-212	Pneumatic Tube	E-12
12414690-215	Pneumatic Tube	E-12

ITEM NAME/PART NUMBER	ITEM DESCRIPTION	PARA NO.
12414690-216	Pneumatic Tube	E-12
12414690-217	Pneumatic Tube	E-12
12414690-218	Pneumatic Tube	E-12
12414690-219	Pneumatic Tube	E-12
12414690-220	Pneumatic Tube	E-12
12414690-221	Pneumatic Tube	E-12
12414690-222	Pneumatic Tube	E-12
12414690-223	Pneumatic Tube	E-12
12414690-224	Pneumatic Tube	E-12
12414690-225	Pneumatic Tube	E-12
12414690-228	Pneumatic Tube	E-12
12414690-229	Pneumatic Tube	E-12
12414690-230	Pneumatic Tube	E-12
12414690-231	Pneumatic Tube	E-12
12414690-232	Pneumatic Tube	E-12
12414690-233	Pneumatic Tube	E-12
12414690-234	Pneumatic Tube	E-12
12414690-235	Pneumatic Tube	E-12
12414690-236	Pneumatic Tube	E-12
12414690-237	Pneumatic Tube	E-12
12414690-238	Pneumatic Tube	E-12
12414690-239	Pneumatic Tube	E-12
12414690-240	Pneumatic Tube	E-12
12414690-241	Pneumatic Tube	E-12
12414690-242	Pneumatic Tube	E-12
12414690-243	Pneumatic Tube	E-12
12414690-244	Pneumatic Tube	E-12
12414690-245	Pneumatic Tube	E-12
12414690-246	Pneumatic Tube	E-12
12414690-247	Pneumatic Tube	E-12
12414690-248	Pneumatic Tube	E-12
12414690-249	Pneumatic Tube	E-12
12414690-301	Pneumatic Tube	E-12
12414690-302	Pneumatic Tube	E-12
12414690-303	Pneumatic Tube	E-12
12416381P1	Non-Metallic Electrical Cable Conduit	E-13
12416381P10	Non-Metallic Electrical Cable Conduit	E-13
12416381P11	Non-Metallic Electrical Cable Conduit	E-13
12416381P12	Non-Metallic Electrical Cable Conduit	E-13
12416381P13	Non-Metallic Electrical Cable Conduit	E-13
12416381P14	Non-Metallic Electrical Cable Conduit	E-13
12416381P15	Non-Metallic Electrical Cable Conduit	E-13
12416381P16	Non-Metallic Electrical Cable Conduit	E-13
12416381P17	Non-Metallic Electrical Cable Conduit	E-13
12416381P2	Non-Metallic Electrical Cable Conduit	E-13
12416381P20	Non-Metallic Electrical Cable Conduit	E-13
12416381P21	Non-Metallic Electrical Cable Conduit	E-13
12416381P22	Non-Metallic Electrical Cable Conduit	E-13
12416381P23	Non-Metallic Electrical Cable Conduit	E-13
12416381P26	Non-Metallic Electrical Cable Conduit	E-13
12416381P3	Non-Metallic Electrical Cable Conduit	E-13
12416381P30	Non-Metallic Electrical Cable Conduit	E-13
12416381P32	Non-Metallic Electrical Cable Conduit	E-13

Section II. MANUFACTURED ITEMS INDEX (CONT)

ITEM NAME/PART NUMBER	ITEM DESCRIPTION	PARA NO.
12416381P34	Non-Metallic Electrical Cable Conduit	E-13
12416381P35	Non-Metallic Electrical Cable Conduit	E-13
12416381P36	Non-Metallic Electrical Cable Conduit	E-13
12416381P37	Non-Metallic Electrical Cable Conduit	E-13
12416381P38	Non-Metallic Electrical Cable Conduit	E-13
12416381P4	Non-Metallic Electrical Cable Conduit	E-13
12416381P5	Non-Metallic Electrical Cable Conduit	E-13
12416381P6	Non-Metallic Electrical Cable Conduit	E-13
12416381P7	Non-Metallic Electrical Cable Conduit	E-13
12416381P8	Non-Metallic Electrical Cable Conduit	E-13
12416381P9	Non-Metallic Electrical Cable Conduit	E-13
12418037	Steering Gear Return Hose	E-14
12418460-001	Transmission Oil Cooler Hose	E-14
12418460-002	Transmission Oil Cooler Hose	E-14
12418763	Lanyard Assembly	E-15
12420196	Lanyard Assembly	E-15
12420197-001	Non-Metallic Vent Air Hose	E-16
12420197-002	Non-Metallic Vent Air Hose	E-16
12420197-003	Non-Metallic Vent Air Hose	E-16
12420197-004	Non-Metallic Vent Air Hose	E-16
12420197-005	Non-Metallic Vent Air Hose	E-16
12420197-006	Non-Metallic Vent Air Hose	E-16
12420198-001	Non-Metallic Vent Air Hose	E-16
12420198-002	Non-Metallic Vent Air Hose	E-16
12420308-457	Personnel Heater Air Duct Hose	E-17
12420308-760	Personnel Heater Air Duct Hose	E-17
12420489	Block Seal	E-18
3256-H-1048	CTIS Seal Driver	E-19
3256-K-1051	Wheel Hub Grease Seal Driver	E-20
Dimmer Switch Test Wire		E-21
Purge Valve Tool		E-22
M1089 30K Winch Air Hoses		E-23
M1089 30K Winch Pneumatic Test Adapter		E-24

Section III. MANUFACTURED ITEMS

E-2. BRAKE ADJUSTING TOOL SUPPORT

Make the brake adjusting tool support from 0.134 in. (3.4 mm) flat steel stock according to the following instructions. Refer to the parts list and **Figure E-1. Brake Adjusting Tool Support** for details.

Item	Part Number	Material Description	Size	Qty
1	N/A	Steel, ASTM A569 Sheet, Hot Rolled	6.0 in. (152.4 mm) x 6.0 in. (152.4 mm) x 0.134 in. (3.4 cm)	2

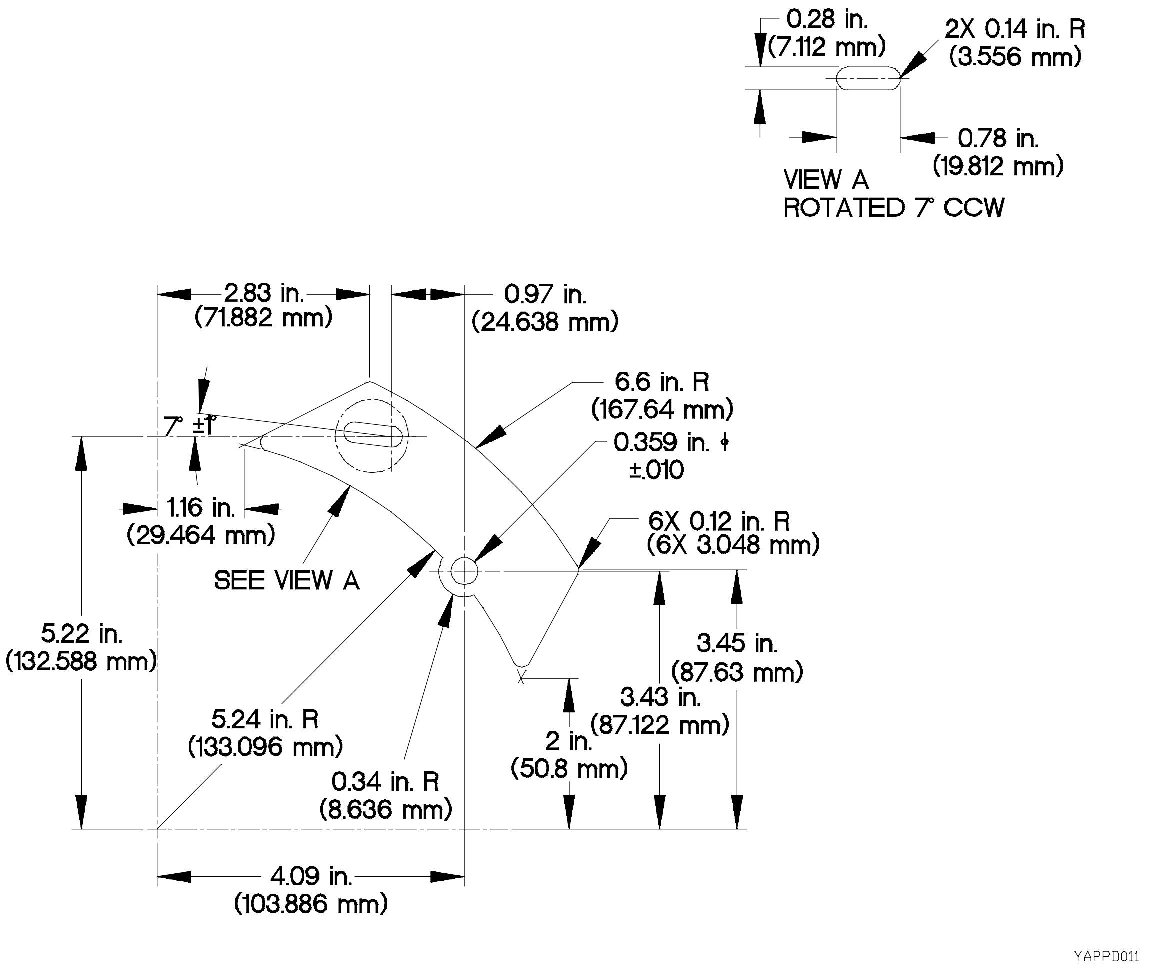


Figure E-1. Brake Adjusting Tool Support

a. All dimensions are in inches (millimeters).
b. Cut steel sheet as shown by dimensions on **Figure E-1. Brake Adjusting Tool Support**.
c. De-burr and remove sharp edges.

E-3. BRAKE PLUNGER SEAL DRIVER

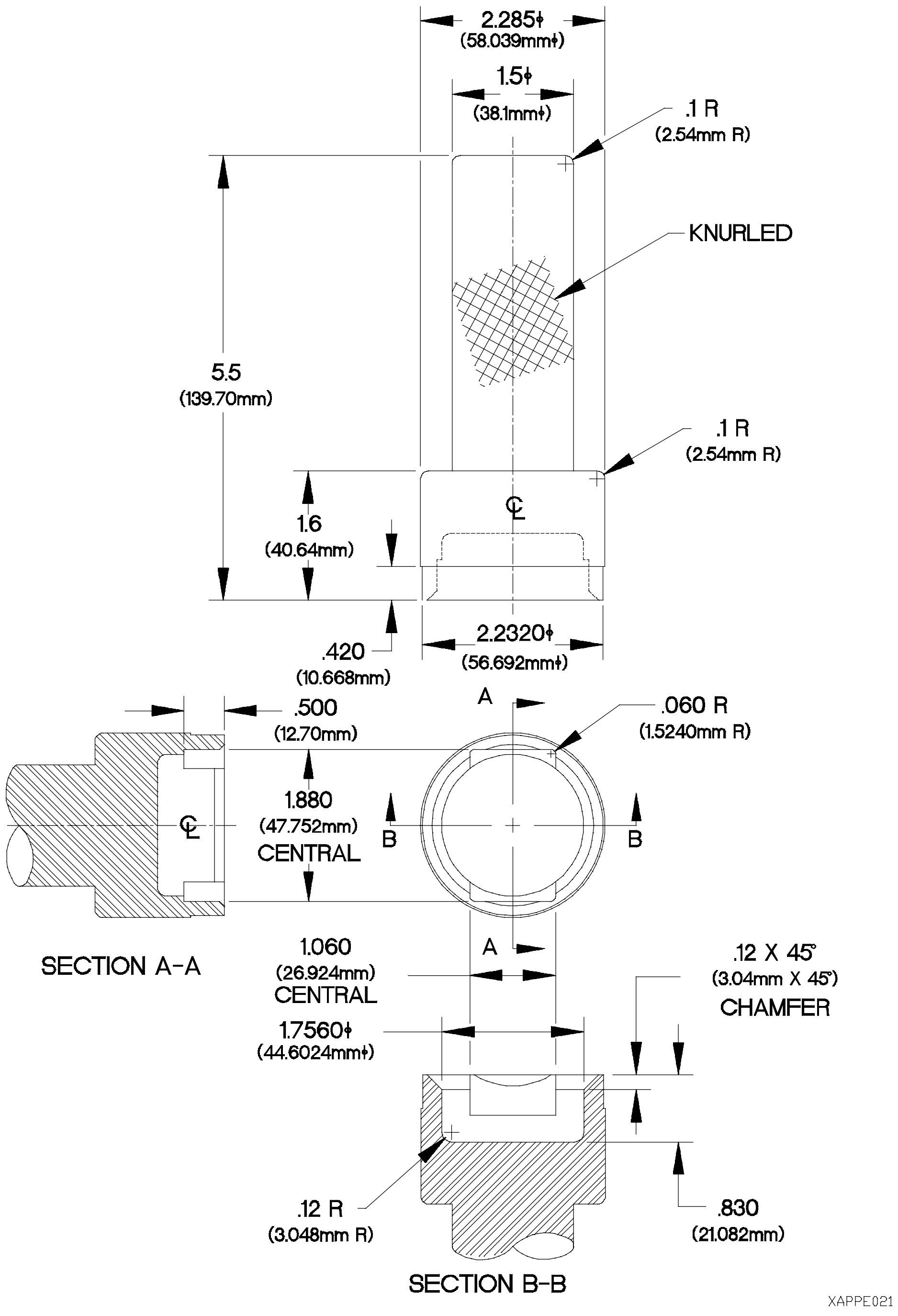


Figure E-2. Brake Plunger Seal Driver

a. All dimensions are in inches (millimeters).
b. Manufacture from round steel stock.
c. De-burr and remove sharp edges.

E-4. CAB SUPPORT TOOL

Make the cab support tool from .38 inch (.96 cm) flat steel stock and angle iron stock according to the following instructions. Refer to the parts list and **Figure E-3. Cab Support Tool Strut and Cab Rest** for details.

Item	Part Number	Material Description	Size	Qty
1	N/A	Steel, Flat Bar	4.0 in. (10.2 cm) X 33.38 in. X (84.8 cm) X 0.38 in. (0.96 cm)	1
2	N/A	Steel, Flat Bar	4.0 in. (10.2 cm) X 12.0 in. (30.5 cm) X 0.38 in. (0.96 cm)	1
3	N/A	Angle Iron	2.0 in. (5.1 cm) X 2.0 in. (5.1 cm) X 3.5 in. (8.9 cm)	2
4	H.S.105VW-1	Insulgrip, CSA 105 C		

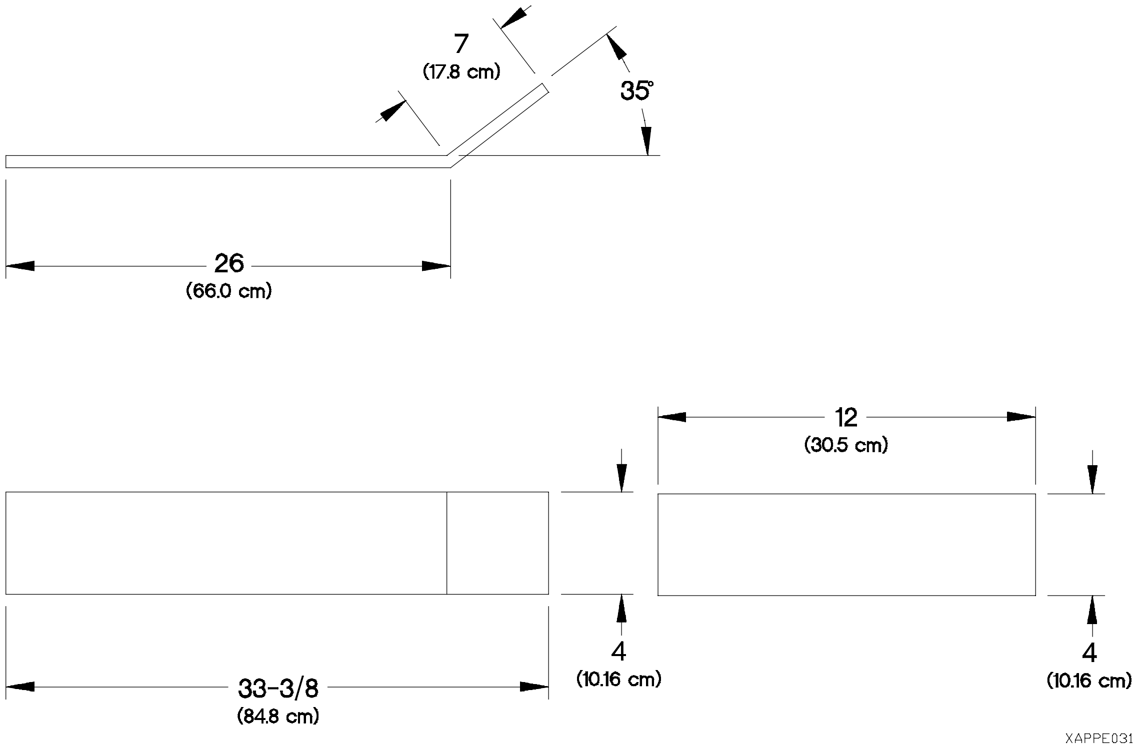


Figure E-3. Cab Support Tool Strut and Cab Rest

a. All dimensions are in inches (centimeters).
b. Cut cab support tool strut (1) from steel flat bar and bend to shape as shown in **Figure E-3. Cab Support Tool Strut and Cab Rest**.
c. Cut cab support tool cab rest (2) from steel flat bar.
d. De-burr and remove sharp edges.

E-4. CAB SUPPORT TOOL (CONT)

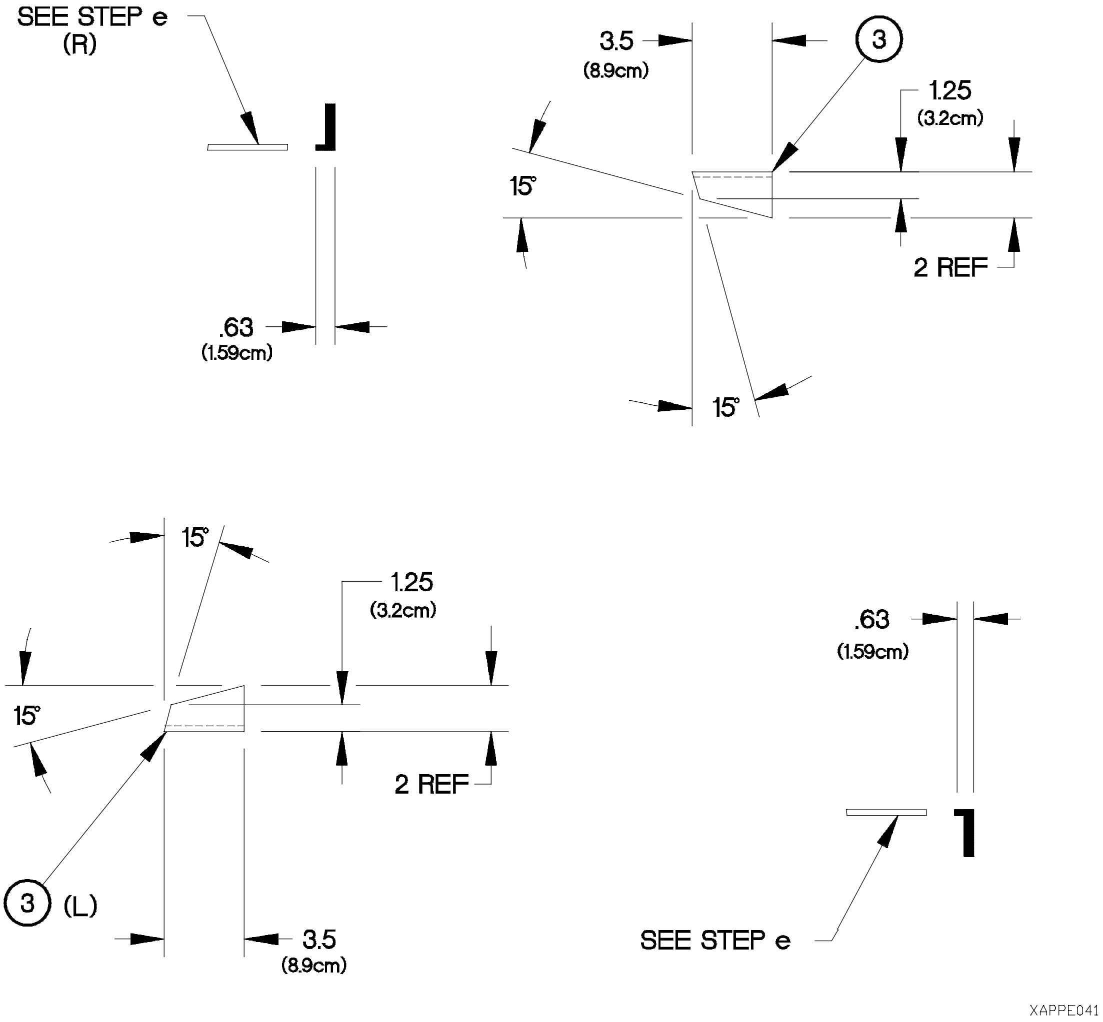


Figure E-4. Cab Support Tool Seat

e. Remove flange side of cab support tool seats (3) as shown in **Figure E-4. Cab Support Tool Seat**.
f. Cut cab support tool seats (3) L and (3) R according to dimensions and left\right orientation shown on **Figure E-4. Cab Support Tool Seat**.
g. De-burr and remove sharp edges.

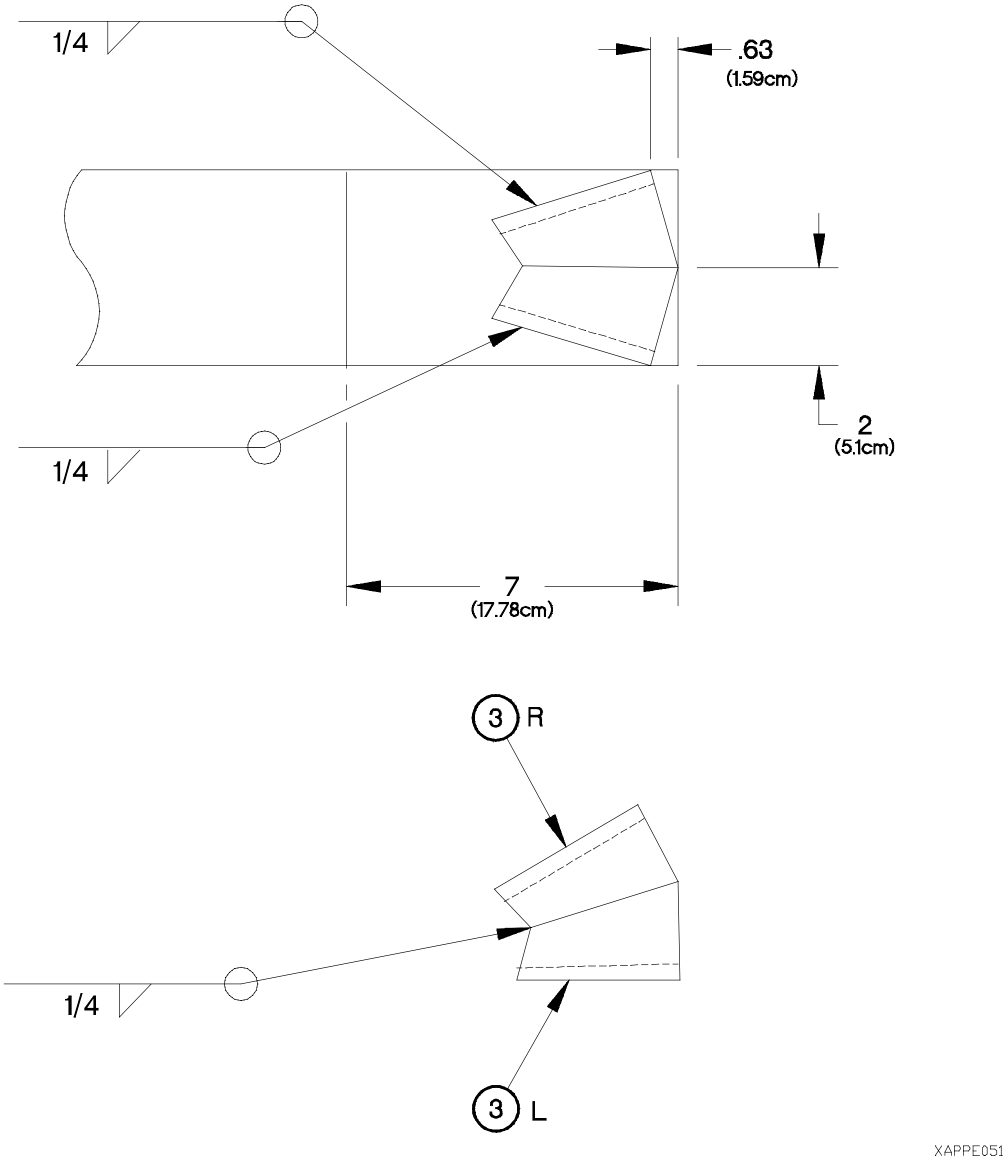


Figure E-5. Cab Support Tool Seat Layout

h. Position and clamp cab support tool seats (3) L and (3) R together as shown by dimensions on **Figure E-5. Cab Support Tool Seat Layout**.
i. Weld cab support tool seat (3) L to cab support tool seat (3) R as identified on assembly table and **Figure E-5. Cab Support Tool Seat Layout**.
j. Position and clamp cab support tool seats (3) L and (3) R to cab support tool strut (1) as shown by dimensions on **Figure E-5. Cab Support Tool Seat Layout**.
k. Weld items clamped in step (f) as shown in **Figure E-5. Cab Support Tool Seat Layout**.
l. De-burr and remove sharp edges.

E-4. CAB SUPPORT TOOL (CONT)

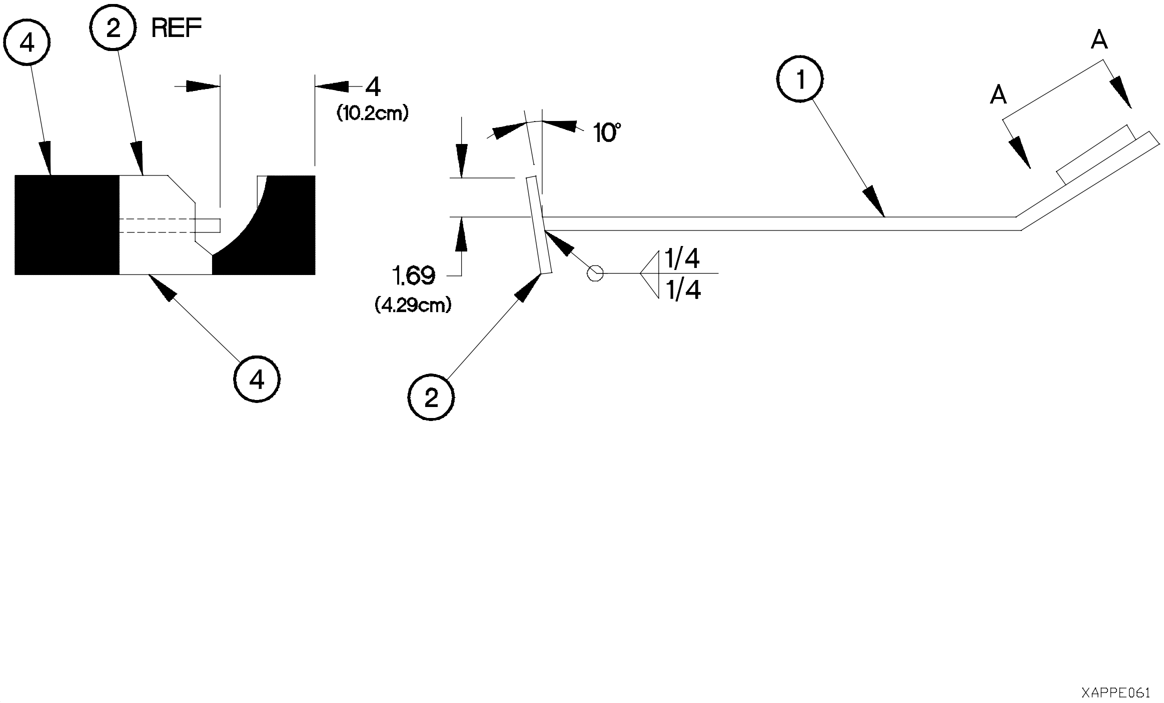


Figure E-6. Cab Support Tool Assembly

m. Position and clamp cab support tool strut (1) to cab support tool cab rest (2) as shown by dimensions on **Figure E-6. Cab Support Tool Assembly**, before insulgrip (4) is applied.
n. Weld cab support tool strut (1) to cab support tool cab rest (2).
o. Apply Insulgrip (4) to cab support tool cab rest (2) as described on material container.

E-5. DUMP BODY LIFTING BRACKET

Make the dump body lifting bracket assembly from the front, rear, top, guide, and mount plates according to the following instructions. Refer to the parts list tables and accompanying figures for details.

Item	Part Number	Name/Description	Qty
1	N/A	Rear Plate	1
2	N/A	Top Plate	1
3	N/A	Front Plate	1
4	N/A	Guide Brace	1
5	N/A	Plate, Mounting	1

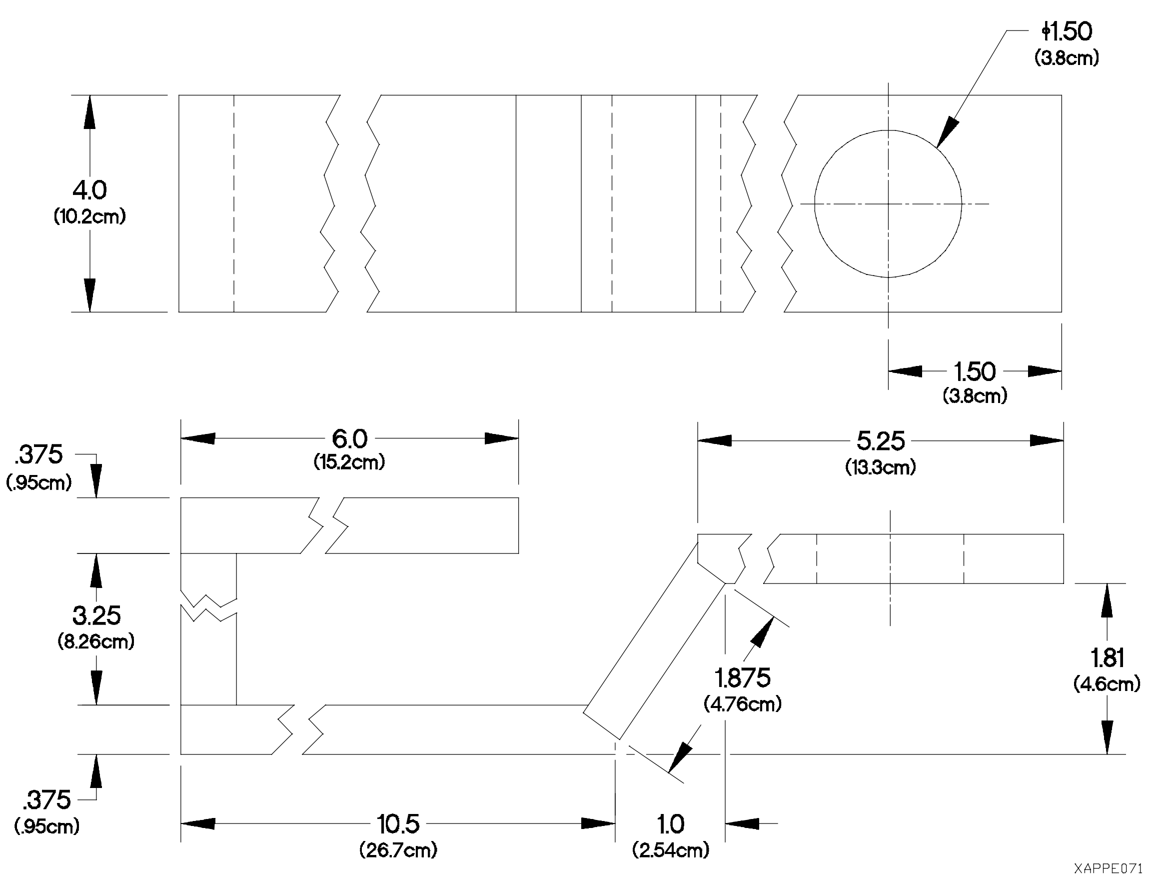


Figure E-7. Dump Body Lifting Bracket

a. All dimensions are in inches (centimeters).
b. Position and clamp pieces (1 through 5) together as shown by dimensions on **Figure E-7. Dump Body Lifting Bracket**.
c. Weld pieces together as shown in **Figure E-7. Dump Body Lifting Bracket**.
d. Coat all surfaces with Plastisol.

E-5. DUMP BODY LIFTING BRACKET (CONT)

Item	Part Number	Material Description	Size	Qty
1	N/A	Plate, steel, ASTM A-36	6.0 in. (15.2 cm) X 4.0 in. (10.2 cm) X 0.375 in. (0.95 cm)	1
2	N/A	Plate, steel, ASTM A-36	3.25 in. (8.26 cm) X 4.0 in. (10.2 cm) X 0.375 in. (0.95 cm)	1
4	N/A	Plate, steel, ASTM A-36	1.875 in. (10.2 cm) X 4.0 in. (10.2 cm) X 0.375 in. (0.95 cm)	1

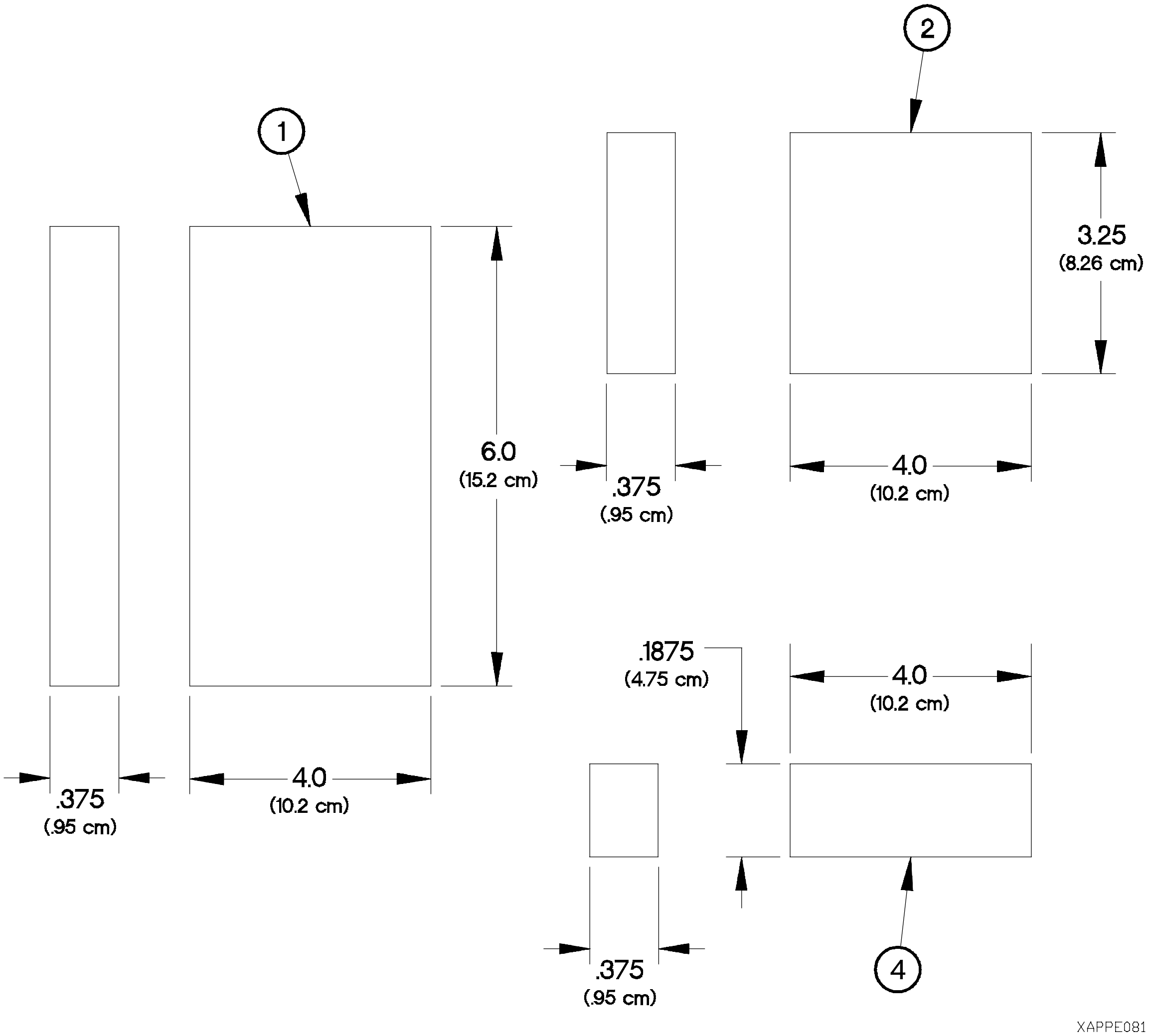


Figure E-8. Rear, Top, and Guide Plate

a. All dimensions are in inches (centimeters).
b. Fabricate (1),(2), and (4) from ASTM A-36 steel plate as shown on **Figure E-8. Rear, Top, and Guide Plate**.
c. De-burr and remove sharp edges.

Item	Part Number	Material Description	Size	Qty
3	N/A	Plate steel, ASTM A36	10.5 in. (26.7 cm) X 4.0 in. (10.2 cm) X 0.375 in. (0.95 cm)	1
5	N/A	Plate steel, ASTM A36	5.25 in. (13.3 cm) X 4.0 in. (10.2 cm) X 0.375 in. (0.95 cm)	1

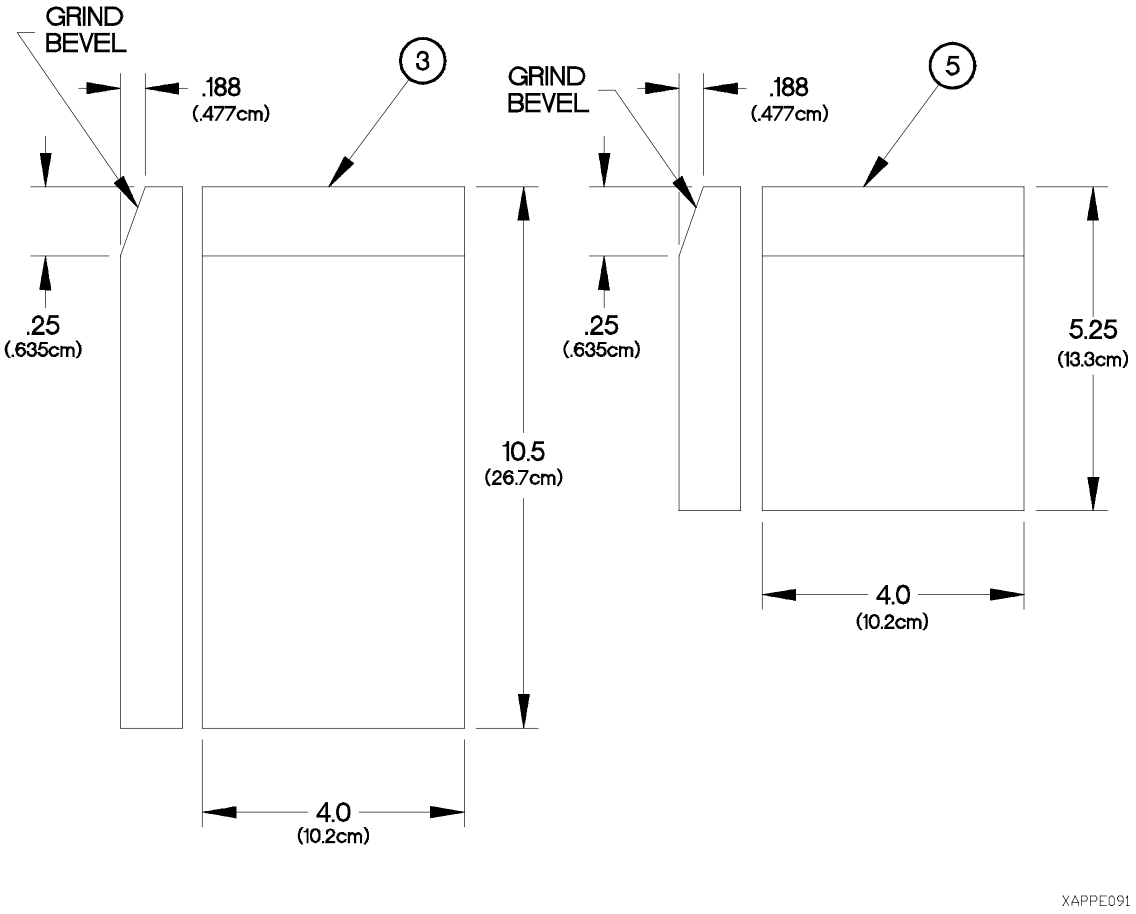


Figure E-9. Front and Mounting Plate

a. All dimensions are in inches (centimeters).
b. Fabricate (3) and (5) from ASTM A-36 steel plate.
c. Drill 1-1/2 inch (3.84 cm) diameter hoe in (5) as shown on **Figure E-9. Front and Mounting Plate**.
d. Grind bevel edge of each plate for weld surface as shown on **Figure E-9. Front and Mounting Plate**.
e. De-burr and remove sharp edges.

E-6. HEADLIGHT ADJUSTMENT SCREEN

The headlight adjustment screen may be drawn on any vertical surface at least 50 in. (127 cm) high and 100 in. (254 cm) wide.

a. Draw two vertical lines (1) 50 in. (127 cm) high and 90.6 in. (230 cm) apart (centered on headlight adjustment screen).

b. Locate two points 40 in. (101.6 cm) from floor and 13 in. (33 cm) toward the center from each vertical line (1).

c. Draw vertical line (2) about 3-5 in. (8-13 cm) centered on each of the two points.

d. Draw horizontal line (3) about 3-5 in. (8-13 cm) centered on each of the two points.

e. Measure out 4 in. (10 cm) along each vertical line (2) and horizontal line (3) from each of the two points to make 8 in. (20 cm) squares (4).

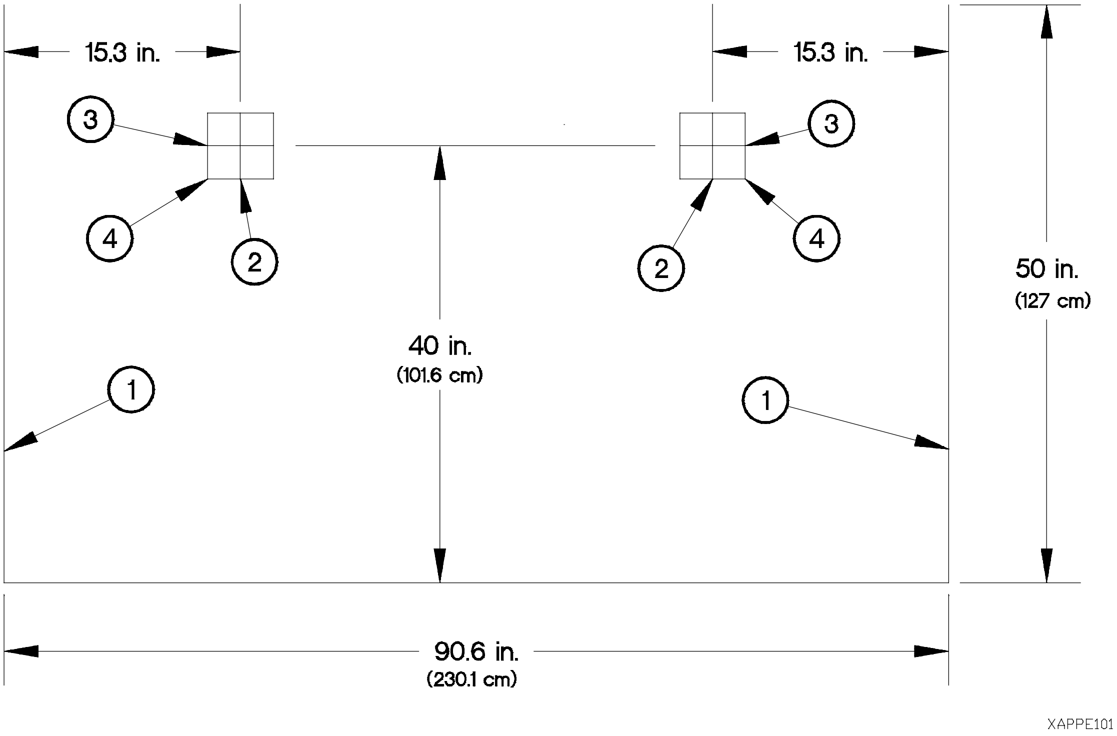


Figure E-10. Headlight Adjustment Screen

E-7. M1089 30K WINCH TEST ADAPTER

Assemble the M1089 30K winch test adapter according to the following steps. Refer to the following parts list and **Figure E-11. M1089 30K Winch Test Adapter** for details.

Part Number	Material Description	National Stock Number	Qty
4-4-4 100401BA	Tee, Tube	4730-01-095-3430	1
4-6 100102BA	Adapter, Straight, Pipe to Tube	4730-01-096-9398	1
207P-4	Coupling, Pipe	4730-00-881-1161	1
NB-4-035	Tubing, Nonmetallic	4720-01-071-4042	4 in.
MIL-T-27730	Tape, Antiseizing	8030-00-889-3534	1 roll

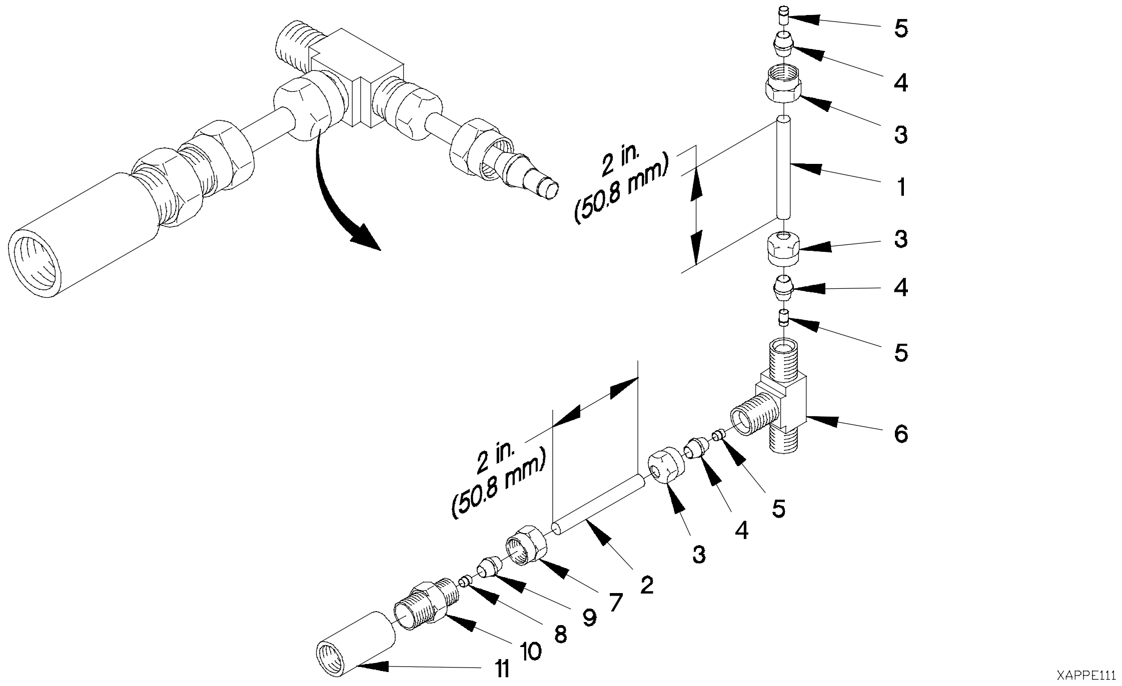


Figure E-11. M1089 30K Winch Test Adapter

a. All dimensions are in inches (millimeters).
b. Cut two pieces of nonmetallic tubing (1 and 2) to 2.0 in. (50.8 mm) long.
c. Remove three nuts (3), sleeves (4), and ferrules (5) from tube tee (6).
d. Install two nuts (3), sleeves (4), and ferrules (5) on nonmetallic tubing (1).
e. Install nonmetallic tubing (1) on tube tee (6).
f. Remove nut (7), sleeve (8), and ferrule (9) from straight adapter (10).
g. Install two nuts (3 and 7), sleeves (4 and 8), and ferrules (5 and 9) on nonmetallic tubing (2).
h. Install nonmetallic tubing (2) on tube tee (6).
i. Install nut (9) on straight adapter (10).
j. Apply one wrap of antiseizing tape to threads of straight adapter (10).
k. Install pipe coupling (11) on straight adapter (10).

E-8. M1089 SOLENOID TEST ADAPTER

Assemble the M1089 solenoid test adapter according to the following steps. Refer to the following parts list and **Figure E-12. M1089 Solenoid Test Adapter** for details.

Part Number	Material Description	National Stock Number	Qty
2-2-2 080401CA	Tee, Tube	4730-01-214-6990	1
2-2 080202CA	Elbow, Pipe to Tube	4730-00-845-5345	1
4-2 130140B	Bushing, Pipe	4730-00-828-0171	1
NB-2-031	Tubing, Nonmetallic	4720-01-287-4499	24 in.

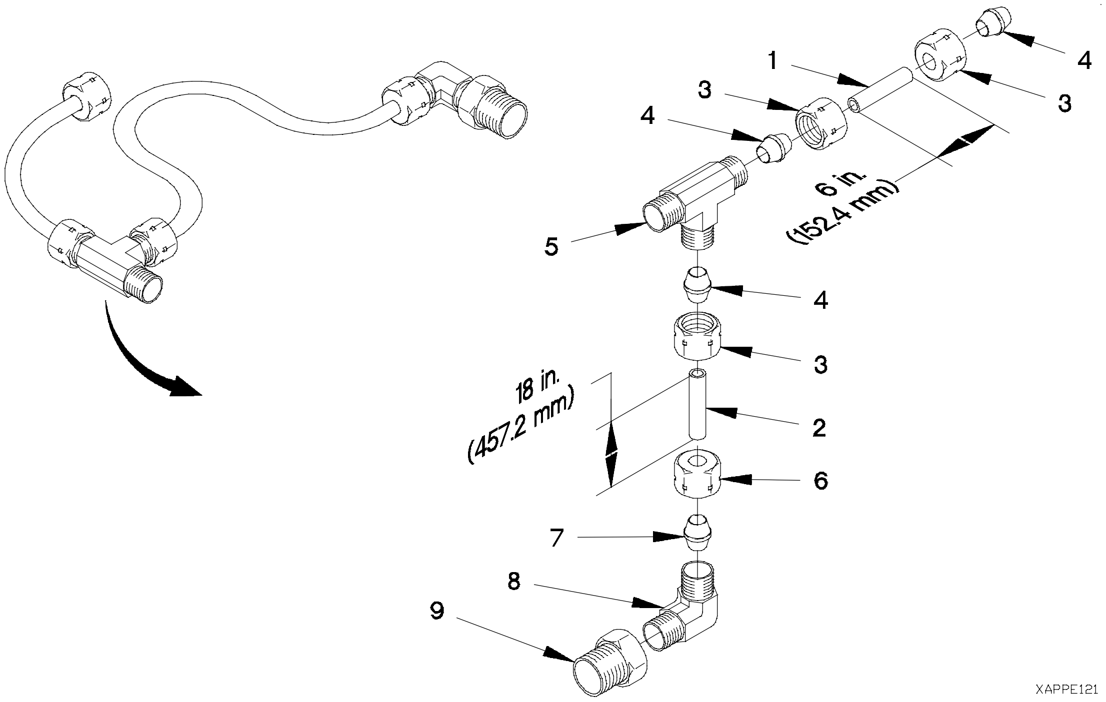


Figure E-12. M1089 Solenoid Test Adapter

a. All dimensions are in inches (millimeters).
b. Cut one piece of nonmetallic tubing (1) to 6.0 in. (152.4 mm) long.
c. Cut one piece of nonmetallic tubing (2) to 18.0 in. (457.2 mm) long.
c. Remove three nuts (3) and ferrule sleeves (4) from tube tee (5).
d. Install two nuts (3) and ferrule sleeves (4) on nonmetallic tubing (1).
e. Install nonmetallic tubing (1) on tube tee (5).
f. Remove nut (6) and ferrule sleeve (7) from pipe to tube elbow (8).
g. Install two nuts (3 and 6) and ferrule sleeves (4 and 7) on nonmetallic tubing (2).
h. Install nonmetallic tubing (2) on tube tee (5).
i. Install nut (6) on pipe to tube elbow (8).
j. Install pipe bushing (9) on pipe to tube elbow (8).

E-9. RELAY TEST WIRE

Fabricate the relay test wire according to the following steps. Refer to the following parts list for materials.

Material Description	National Stock Number	Cut Length
Wire, Electrical (MIL-W-16878)	6145-00-330-3318	6 in. (152 mm)

a. Dimensions are in inches (millimeters).
b. Cut a length of wire six inches (152 mm) long.
c. Remove approximately 3/4 in. (19 mm) of electrical insulation from each end of wire.

E-10. TRANSMISSION AUXILIARY OIL COOLER RUBBER SEAL

Fabricate the transmission auxiliary oil cooler rubber seals in accordance with the following parts list.

Part Number	Description	National Stock Number	Cut Length	
			inches	mm
MIL-R-6130	Tape, Adhesive, Rubber	9320-00-501-7537	24.7	627

E-11. WHEEL BEARING SHIM TOOL REST

Fabricate the wheel bearing shim tool rest according to the following steps. Refer to the following parts list for materials.

Part Number	National Stock Number	Description
QQ-T-570	9510-00-866-1037	Bar, Metal

a. Dimensions are in inches (millimeters)
b. Cut metal bar to 9.0 inches (228.6 mm) long.
c. De-burr and remove sharp edges from ends of metal bar.

E-12. PNEUMATIC TUBES FABRICATION

Cut pneumatic tubes from bulk tubing stock listed in **Table E-1. Pneumatic Tube Lengths**. Use a fine-toothed hacksaw or suitable cutting device and cut tubing to required length.

Table E-1. Pneumatic Tube Lengths

Tube Part Number	Bulk Tubing Part Number	Cut Length	
		inches	cm
12414690-001	NT-100-4 (79470)	18.1	46.0
12414690-002	NT-100-4 (79470)	16.0	40.6
12414690-003	NT-100-4 (79470)	15.0	38.1
12414690-004	NT-100-4 (79470)	74.8	190.0
12414690-005	NT-100-4 (79470)	69.7	177.0

E-12. PNEUMATIC TUBES FABRICATION (CONT)

Table E-1. Pneumatic Tube Lengths (Cont)

Tube Part Number	Bulk Tubing Part Number	Cut Length	
		inches	cm
12414690-006	NT-100-4 (79470)	239.0	607.0
12414690-007	NT-100-4 (79470)	254.8	647.0
12414690-008	NT-100-4 (79470)	286.3	727.0
12414690-009	NT-100-4 (79470)	294.1	747.0
12414690-010	NT-100-4 (79470)	180.0	457.2
12414690-101	J844TYBSIZE 3/8 (81343)	18.0	45.7
12414690-102	J844TYBSIZE 3/8 (81343)	35.4	90.0
12414690-103	J844TYBSIZE 3/8 (81343)	20.9	53.0
12414690-104	J844TYBSIZE 3/8 (81343)	13.8	35.0
12414690-105	J844TYBSIZE 3/8 (81343)	11.8	30.0
12414690-106	J844TYBSIZE 3/8 (81343)	20.5	52.0
12414690-107	J844TYBSIZE 3/8 (81343)	39.0	99.0
12414690-108	J844TYBSIZE 3/8 (81343)	15.4	39.0
12414690-109	J844TYBSIZE 3/8 (81343)	23.0	58.4
12414690-112	J844TYBSIZE 3/8 (81343)	80.0	198.0
12414690-113	J844TYBSIZE 3/8 (81343)	11.4	29.0
12414690-115	J844TYBSIZE 3/8 (81343)	82.8	210.2
12414690-118	J844TYBSIZE 3/8 (81343)	11.8	30.0
12414690-120	J844TYBSIZE 3/8 (81343)	11.9	30.2
12414690-125	J844TYBSIZE 3/8 (81343)	10.8	27.3
12414690-128	J844TYBSIZE 3/8 (81343)	180.1	457.5
12414690-129	J844TYBSIZE 3/8 (81343)	39.3	99.7
12414690-130	J844TYBSIZE 3/8 (81343)	164.4	417.5
12414690-131	J844TYBSIZE 3/8 (81343)	180.1	457.5
12414690-132	J844TYBSIZE 3/8 (81343)	219.5	557.5
12414690-133	J844TYBSIZE 3/8 (81343)		
12414690-134	J844TYBSIZE 3/8 (81343)	277.4	704.5
12414690-135	J844TYBSIZE 3/8 (81343)	325.0	825.5
12414690-136	J844TYBSIZE 3/8 (81343)	332.5	844.6
12414690-137	J844TYBSIZE 3/8 (81343)	51.0	129.5
12414690-138	J844TYBSIZE 3/8 (81343)	67.0	170.2
12414690-139	J844TYBSIZE 3/8 (81343)	98.5	250.2
12414690-140	J844TYBSIZE 3/8 (81343)	106.0	269.2
12414690-141	J844TYBSIZE 3/8 (81343)	52.5	133.4
12414690-142	J844TYBSIZE 3/8 (81343)	68.5	174.0
12414690-143	J844TYBSIZE 3/8 (81343)	100.0	254.0
12414690-144	J844TYBSIZE 3/8 (81343)	107.5	273.0

Table E-1. Pneumatic Tube Lengths (Cont)

Tube Part Number	Bulk Tubing Part Number	Cut Length	
		inches	cm
12414690-145	J844TYBSIZE 3/8 (81343)		
12414690-146	J844TYBSIZE 3/8 (81343)	267.3	679.0
12414690-147	J844TYBSIZE 3/8 (81343)	283.1	719.0
12414690-148	J844TYBSIZE 3/8 (81343)	314.6	799.0
12414690-149	J844TYBSIZE 3/8 (81343)	322.4	819.0
12414690-150	J844TYBSIZE 3/8 (81343)	296.1	752.0
12414690-151	J844TYBSIZE 3/8 (81343)	343.5	872.5
12414690-152	J844TYBSIZE 3/8 (81343)	36.0	91.5
12414690-153	J844TYBSIZE 3/8 (81343)	32.0	81.3
12414690-154	J844TYBSIZE 3/8 (81343)	48.0	122.0
12414690-155	J844TYBSIZE 3/8 (81343)	79.5	202.0
12414690-156	J844TYBSIZE 3/8 (81343)	87.0	221.0
12414690-157	J844TYBSIZE 3/8 (81343)	59.5	151.1
12414690-158	J844TYBSIZE 3/8 (81343)	66.5	169.0
12414690-159	J844TYBSIZE 3/8 (81343)	98.0	249.0
12414690-160	J844TYBSIZE 3/8 (81343)	105.5	268.0
12414690-161	J844TYBSIZE 3/8 (81343)	48.0	122.0
12414690-162	J844TYBSIZE 3/8 (81343)	36.0	91.5
12414690-163	J844TYBSIZE 3/8 (81343)	161.5	410.2
12414690-164	J844TYBSIZE 3/8 (81343)	120.0	304.8
12414690-165	J844TYBSIZE 3/8 (81343)	78.0	198.1
12414690-166	J844TYBSIZE 3/8 (81343)	108.0	274.3
12414690-167	J844TYBSIZE 3/8 (81343)	168.0	426.7
12414690-168	J844TYBSIZE 3/8 (81343)	108.0	274.3
12414690-169	J844TYBSIZE 3/8 (81343)	72.0	182.9
12414690-201	C608-100BLK (13174)	14.8	37.5
12414690-202	C608-100BLK (13174)	14.1	35.7
12414690-203	C608-100BLK (13174)	6.5	16.5
12414690-205	C608-100BLK (13174)	14.5	36.8
12414690-206	C608-100BLK (13174)	14.8	37.7
12414690-207	C608-100BLK (13174)	15.6	39.5
12414690-208	C608-100BLK (13174)	6.7	17.0
12414690-209	C608-100BLK (13174)	19.5	49.5
12414690-210	C608-100BLK (13174)	15.5	39.3
12414690-211	C608-100BLK (13174)	8.0	20.3
12414690-212	C608-100BLK (13174)	17.0	43.0
12414690-215	C608-100BLK (13174)	163.0	414.0
12414690-216	C608-100BLK (13174)	160.0	406.4
12414690-217	C608-100BLK (13174)	62.6	159.0

E-12. PNEUMATIC TUBES FABRICATION (CONT)

Table E-1. Pneumatic Tube Lengths (Cont)

Tube Part Number	Bulk Tubing Part Number	Cut Length	
		inches	cm
12414690-218	C608-100BLK (13174)	119.8	304.2
12414690-219	C608-100BLK (13174)	69.0	175.3
12414690-220	C608-100BLK (13174)	45.5	115.6
12414690-221	C608-100BLK (13174)	12.6	32.0
12414690-222	C608-100BLK (13174)	5.5	14.0
12414690-223	C608-100BLK (13174)	14.6	37.1
12414690-224	C608-100BLK (13174)	170.0	431.8
12414690-225	C608-100BLK (13174)	174.0	442.0
12414690-228	C608-100BLK (13174)	3.5	8.9
12414690-229	C608-100BLK (13174)	62.2	158.1
12414690-230	C608-100BLK (13174)	14.6	37.0
12414690-231	C608-100BLK (13174)	60.5	153.7
12414690-232	C608-100BLK (13174)	126.4	321.0
12414690-233	C608-100BLK (13174)	142.1	361.0
12414690-234	C608-100BLK (13174)		
12414690-235	C608-100BLK (13174)		
12414690-236	C608-100BLK (13174)	131.9	335.0
12414690-237	C608-100BLK (13174)	147.6	375.0
12414690-238	C608-100BLK (13174)	179.5	456.0
12414690-239	C608-100BLK (13174)	187.0	475.0
12414690-240	C608-100BLK (13174)	111.5	283.2
12414690-241	C608-100BLK (13174)	127.5	324.0
12414690-242	C608-100BLK (13174)	159.0	404.0
12414690-243	C608-100BLK (13174)	166.5	423.0
12414690-244	C608-100BLK (13174)	41.0	104.2
12414690-245	C608-100BLK (13174)	57.0	144.8
12414690-246	C608-100BLK (13174)	88.6	225.0
12414690-247	C608-100BLK (13174)	96.0	244.0
12414690-248	C608-100BLK (13174)	48.0	122.0
12414690-249	C608-100BLK (13174)	54.0	137.2
12414690-301	PFT-10B-BLK-100 (61424)	19.0	48.3
12414690-302	PFT-10B-BLK-100 (61424)	56.0	142.2
12414690-303	PFT-10B-BLK-100 (61424)	118.1	300.0

E-13. NON-METALLIC ELECTRICAL CABLE CONDUIT FABRICATION

Make conduit to cover electrical cables described on 1241638 from bulk tube stock listed in **Table E-2. Non-Metallic Electrical Cable Conduit Lengths**. Use a fine-toothed hacksaw or suitable cutting device and cut hose/tube to required length.

Table E-2. Non-Metallic Electrical Cable Conduit Lengths

Tube Part Number	Bulk Tube Part Number	Cut Length	
		inch	cm
12416381P1	49008	8.9	22.6
12416381P10	49008	17.8	45.2
12416381P11	49008	29.9	75.9
12416381P12	49008	33.0	83.8
12416381P13	49008	13.9	35.3
12416381P14	49008	4.0	10.2
12416381P15	49008	17.4	44.2
12416381P16	49008	3.2	8.1
12416381P17	49008	4.5	11.4
12416381P2	49008	16.2	41.1
12416381P20	27413	32.8	83.3
12416381P21	27413	9.2	23.4
12416381P22	27413	8.0	20.3
12416381P23	27413	23.3	59.2
12416381P26	49008	2.5	6.4
12416381P3	27413	7.3	18.5
12416381P30	49007	17.0	43.2
12416381P32	49005	1.7	4.3
12416381P34	49005	20.7	52.6
12416381P35	49005	21.8	55.4
12416381P36	49005	5.5	14.0
12416381P37	49005	8.0	20.3
12416381P38	49008	3.7	9.4
12416381P4	49008	12.0	30.5
12416381P5	49008	26.0	66.0
12416381P6	49008	7.7	19.6
12416381P7	49008	26.7	67.8
12416381P8	49008	5.2	13.2
12416381P9	49008	16.8	42.7

E-14. STEERING GEAR RETURN HOSE AND TRANSMISSION OIL COOLER HOSES FABRICATION

Cut the following hoses from bulk hose using a fine-toothed hacksaw or suitable cutting device.

Hose Part Number	Bulk Hose Part Number	Cut Length	
		inches	cm
12418037	A110 (30327)	75.5	191.7
12418460-001	MS521302B110360 (96906)	17.5	44.4
12418460-002	MS521301A206R (96906)	16.0	40.6

E-15. LANYARD ASSEMBLIES P/N 12418763 AND 12420196 FABRICATION

Make the following lanyard assemblies from bulk cable material, sleeves, and tab material and assemble according to **Figure E-14. Lanyard Assembly**. The following parts list identifies part numbers and lengths of cut pieces.

Item	Part Number	Material Description	Size	Qty
1	MIL-W-83420 Type 1, Comp B	1/16 in. stranded wire cable	4 in. (102 mm)	1
2	MS51844-22	Sleeve		2
3	N/A	Tab, Stainless Steel ASTM A617	.06 in. (16 cm) X .37 in. (9.5 mm) X 1.25 in. (32 mm)	1

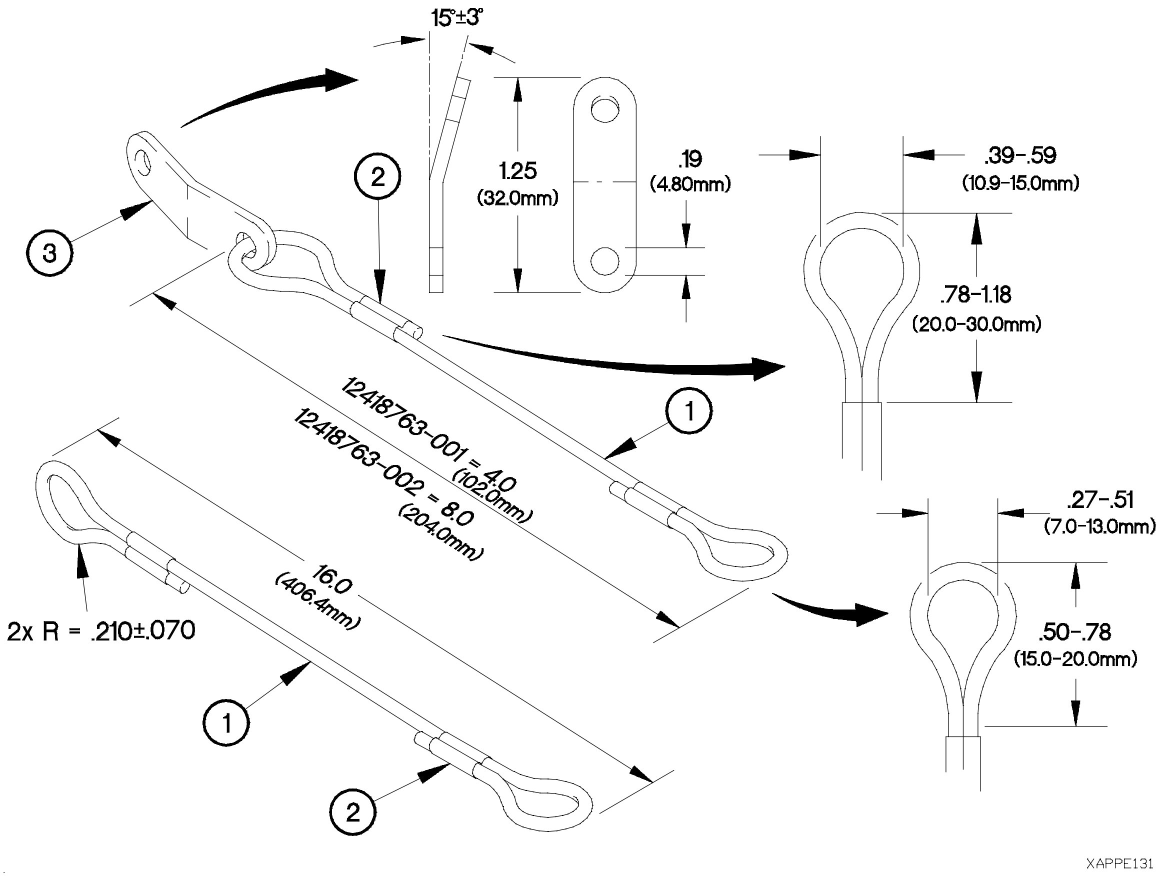


Figure E-14. Lanyard Assembly

a. All dimensions are in inches (millimeters).
b. Make from bulk cable and flat steel material as identified in parts list.
c. Drill two 0.19 in. (4.8 mm) diameter holes through tab material as shown on **Figure E-14. Lanyard Assembly**.
d. De-burr and remove sharp edges.
e. Bend tab as shown on **Figure E-14. Lanyard Assembly**.
f. Form loops on cable ends and insert sleeve material over cable on one end of cable and over cable and through sleeve at other end of cable as shown in **Figure E-14. Lanyard Assembly**.
g. Crimp two sleeves over cable ends.

E-16. NON-METALLIC VENT AIR HOSES FABRICATION

Cut the following vent air hoses from bulk hose using a fine-toothed hacksaw or suitable cutting device.

Hose Part Number	Bulk Hose Part Number	Cut Length	
		inches	cm
12420197-001	483666 (02280)	180.0	457.2
12420197-002	483666 (02280)	120.0	304.8
12420197-003	483666 (02280)	96.0	243.8
12420197-004	483666 (02280)	36.0	91.4
12420197-005	483666 (02280)	156.0	396.2
12420197-006	483666 (02280)	72.0	182.9
12420198-001	881-16 (98441)	120.0	304.8
12420198-002	11657469	36.0	91.4

E-17. PERSONNEL HEATER AIR DUCT HOSE FABRICATION

Cut the following hoses from bulk hose using a fine-toothed hacksaw or suitable cutting device.

Hose Part Number	Bulk Hose Part Number	Cut Length	
		inches	cm
12420308-457	8711054 (19207)	18.3	46.4
12420308-760	8711054 (19207)	30.4	77.2

E-18. BLOCK SEAL 12420489 FABRICATION

Make block seal from P/N (0VXY8) STN2.38X.5. Use a suitable cutting tool to cut seal to 0.52 inch (1.3 cm) long.

E-19. CTIS SEAL DRIVER 3256-H-1048

Used on Front, Intermediate, and Rear Axle CTIS Seals.

NOTES ON USE OF DRIVER

1) SEAL END OF DRIVER TO BE CLEAN OF DEBRIS, DIRT, NICKS AND BURRS
2) DO NOT USE A METAL HAMMER ON DRIVER
   A RUBBER, PLASTIC, WOOD OR SOME OTHER DEAD BLOW TYPE MALLET IS TO BE USED
3) SLIGHTLY GREASE SEAL END OF DRIVER PRIOR TO INSTALLING SEAL

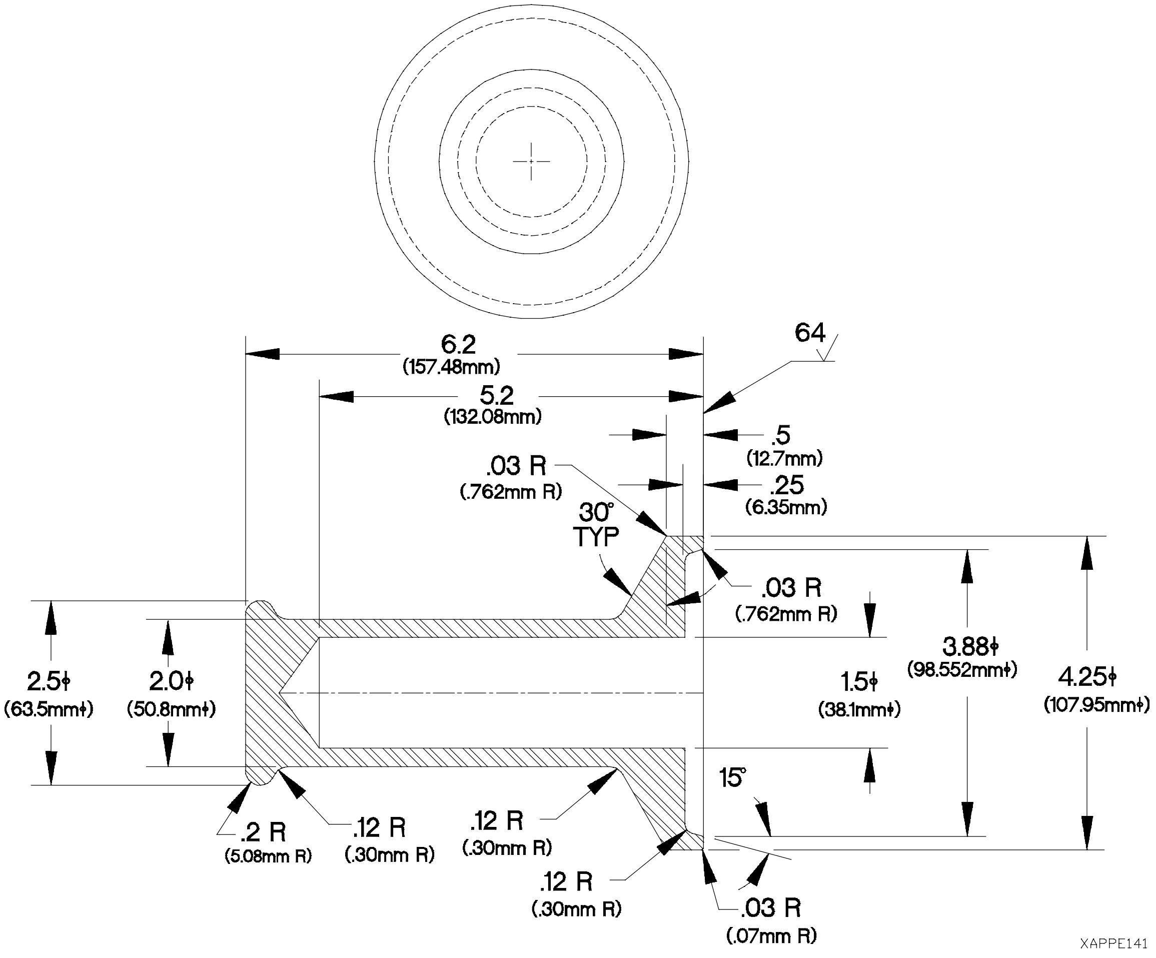


Figure E-15. CTIS Seal Driver

a. All dimensions are in inches (millimeters).
b. Manufacture from round steel stock.
c. De-burr and remove sharp edges.

E-20. WHEEL HUB GREASE SEAL DRIVER 3256-K-1051

NOTES ON USE OF DRIVER

1) SEAL END OF DRIVER TO BE CLEAN OF DEBRIS, DIRT, NICKS AND BURRS
2) DO NOT USE A METAL HAMMER ON DRIVER
   A RUBBER, PLASTIC, WOOD OR SOME OTHER DEAD BLOW TYPE MALLET IS TO BE USED
3) SLIGHTLY GREASE SEAL END OF DRIVER PRIOR TO INSTALLING SEAL

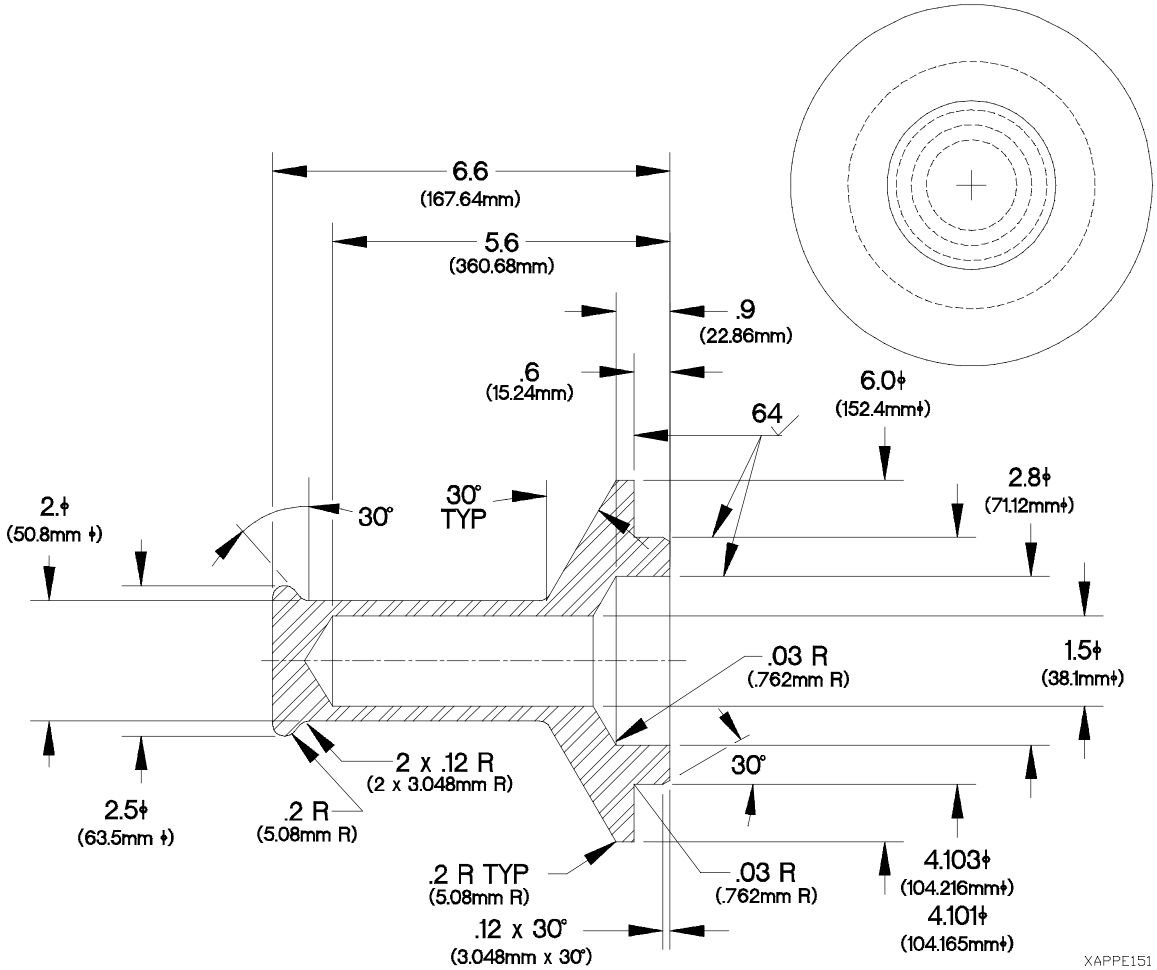


Figure E-16. Wheel Hub Grease Seal Driver

a. All dimensions are in inches (millimeters).
b. Manufacture from round steel stock.
c. De-burr and remove sharp edges.

E-21. DIMMER SWITCH TEST WIRE

Fabricate the dimmer switch test wire according to the following steps. Refer to the following parts list for materials.

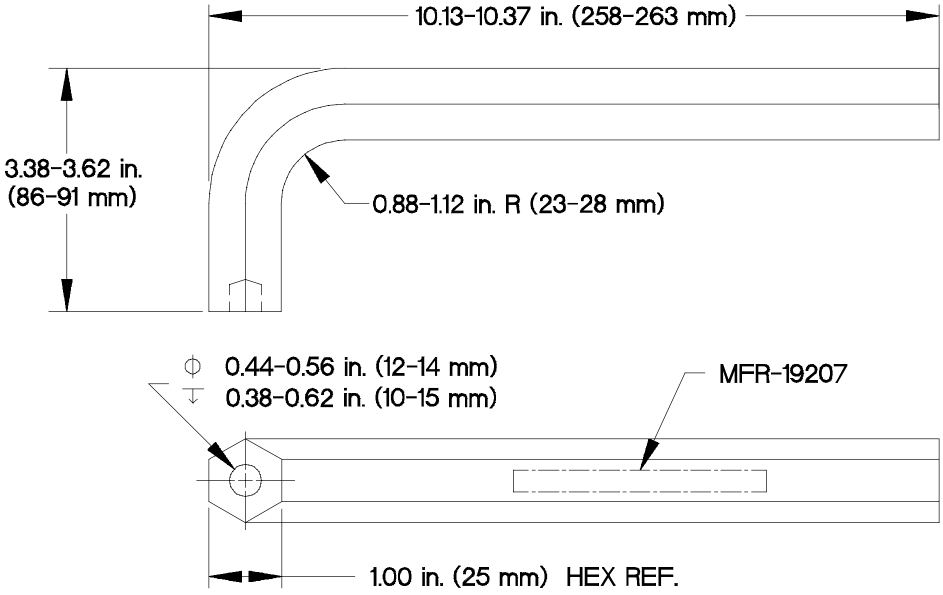
Material Description	National Stock Number	Quantity	Cut Length
Wire, Electrical (M168678/14BKE9)	6145-01-229-4134	1	12 in (305 mm)
Pin, Grooved, Headless (12258939-1)	5315-01-156-6314	1	
Contact, Electrical (12258939-2)	5999-01-150-8808	1	

a. Dimensions are in inches (millimeters).
b. Cut a length of electrical wire approximately 12 in. (305 mm) long.
c. Remove approximately 1/4 in. (6 mm) of insulation from each end of electrical wire.
d. Crimp headless grooved pin on one end of electrical wire.
e. Crimp electrical contact on opposite end of electrical wire.

E-22. PURGE VALVE TOOL

Fabricate Purge Valve Tool according to the following instructions. Refer to Figure E-17. Purge Valve Tool for details.

Item	Part Number	Material Description	Size	Qty
1	N/A	Steel, ASTM A 108 or A576 Grade 1015-1025, BAR (Ref UNS G10150-G10250). Finish Black Oxide Coat, Class I, IAW MIL-C-13924.	14.0 in. (356 mm)	1



Xappe17b

Figure E-17. Purge Valve Tool

a. All dimensions are in inches (cm).
b. Cut steel bar (1) and bend to shape as shown in Figure E-17.
c. Dimensional limits apply after coating.
d. All edges shall be broken and free from burrs.
e. Metal Stamp, electro etch, or engrave with the following marking IAW MIL-STD-130: 19207-12379968 MFR-19207.

E-23. M1089 30K WINCH AIR HOSES

Cut air hoses and convoluted tubing from bulk hose stock listed in Table E-3. M1089 30K Winch Air Hose Lengths and Fittings. Use a fine-toothed hacksaw or suitable cutting device and cut air hoses and convoluted tubing to required length.

Table E-3. M1089 30K Air Hose Lengths and Fittings

Hose Name	Bulk Hose P/N	Hose Cut Length		Bulk Convoluted Tubing P/N	Convoluted Tubing Cut Length		Fittings P/N	Fittings Qty.
		in.	mm		in.	mm		
Air Supply	NB-4-035	96.0	2438	12420924-001	94.0	2388	4-100110B 4-100115B 63NTA-4	2 2 2
Manifold Supply	NB-4-035	40.0	1016	12420924-001	38.0	965	4-100110B 4-100115B 63NTA-4	2 2 2
LH freespool	NB-4-035	66.0	1676	12420924-001	64.0	1626	4-100110B 4-100115B 63NTA-4	2 2 2
RH freespool	NB-4-035	48.0	1219	12420924-001	46.0	1168	4-100110B 4-100115B 63NTA-4	2 2 2
LH regulator input	NB-4-035	12.0	305	N/A	N/A	N/A	4-100110B 4-100115B 63NTA-4	2 2 2
RH regulator input	NB-4-035	12.0	305	N/A	N/A	N/A	4-100110B 4-100115B 63NTA-4	2 2 2
LH check valve return	NB-4-035	3.0	76	N/A	N/A	N/A	4-100110B 4-100115B 63NTA-4	2 2 2
RH check valve return	NB-4-035	3.0	76	N/A	N/A	N/A	4-100110B 4-100115B 63NTA-4	2 2 2
Front LH tension supply	NB-4-035	48.0	1219	12420924-001	46.0	1168	4-100110B 4-100115B 63NTA-4	2 2 2
Front RH tension supply	NB-4-035	66.0	1676	12420924-001	64.0	1626	4-100110B 4-100115B 63NTA-4	2 2 2

Table E-3. M1089 30K Air Hose Lengths and Fittings (Cont)

Hose Name	Bulk Hose P/N	Hose Cut Length		Bulk Convoluted Tubing P/N	Convoluted Tubing Cut Length		Fittings P/N	Fittings Qty.
		in.	mm		in.	mm		
RH 30K winch supply	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA 2-2 100202BA	1 1
RH 30K winch return	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA	2
Underlift fold supply	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA	1
Underlift fold return	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA 2-2 100202BA	1 1
Underlift supply	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA	2
Underlift return	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA 2-2 100202BA	1 1
Stinger supply	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA	2
Stinger Return	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA 2-2 100202BA	1 1
LH 30K Winch supply	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA 2-2 100202BA	1 1
LH 30K winch return	NB-2-016	40.0	1016	N/A	N/A	N/A	2-2 100102BA	2

E-24. M1089 30K WINCH PNEUMATIC TEST ADAPTER

Assembly the M1089 30K winch pneumatic test adapter to the following steps. Refer to the following parts list and **Figure E-18. M1089 30K Winch Pneumatic Test Adapter** for details.

Part Number	Material Description	National Stock Number	Qty.
NB-4-035	Tubing, Nonmetallic	4720-01-071-4042	14 in. (355.6 mm)
MIL-T-27730	Tape, antiseizing	8030-00-889-3534	1 roll
207P-4	Coupling, Pipe	4730-00-881-1161	1
4-6 100102 BA	Adapter, Straight, Pipe to Tube	4730-01-096-9398	1
4-4 100101 BA	Nipple, Tube	4730-01-091-4012	1

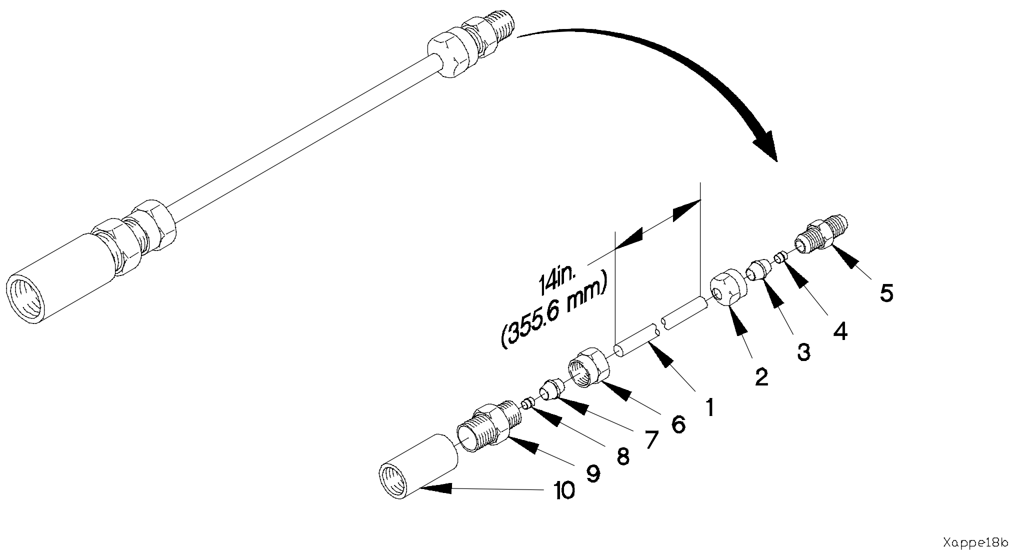


Figure E-18. M1089 30K Winch Pneumatic Test Adapter

a. All dimensions are in inches (millimeter).
b. Cut piece of nonmetallic tubing (1) to 14.0 in. (355.6 mm).
c. Remove two nuts (2), ferrules (3), and sleeves (4) from tube nipple (5).
d. Install nut (2), ferrule (3), and sleeve (4) on nonmetallic tubing (1).
e. Install nonmetallic tubing (1) on tube nipple (5).
f. Remove nut (6), ferrule (7), and sleeve (8) from straight adapter (9).
g. Install nut (6), ferrule (7), and sleeve (8) on nonmetallic tubing (1).
h. Install nonmetallic tubing (1) on straight adapter (9).
i. Apply on wrap of antiseizing tape to threads of straight adapter (9).
j. Install pipe coupling (10) on straight adapter (9).
k. Retain nut (2), ferrule (3), and sleeve (4) for future use.

APPENDIX F
TORQUE LIMITS

F-1. GENERAL

This appendix provides general torque limits for screws and nuts used on the vehicle. Special torque limits are shown in the maintenance procedures for applicable components. Use the general torque limit given in this appendix when specific torque limits are not given in the maintenance procedure. These general torque limits can not be applied to screws that retain rubber components. The rubber components will be damaged before the torque limit is reached. If a special torque limit is not given in the maintenance instructions for a fastener which retains a rubber component, tighten the screw or nut until it touches metal, then tighten one more turn. Whenever possible, the tightening force (torque) should be applied to the nut side of the fastener group.

F-2. TORQUE LIMITS

Refer to **Table F-1. Torque Limits for SAE and ANSI Fasteners** for torque limits on standard (SAE and ANSI) screws and free spinning nuts. Refer to **Table F-2. Torque Limits for SAE and ANSI Prevailing Torque Nuts** for torque limits on standard (SAE and ANSI) self-locking nuts. Refer to **Table F-3. Torque Limits for Metric Screws and Free Spinning Nuts** for torque limits on metric screws and free spinning nuts. Refer to **Table F-4. Torque Limits for Metric Prevailing Torque Nuts** for torque limits on metric self-locking nuts.

F-3. USE OF TORQUE TABLES

(1) Measure the diameter of the screw to be installed.

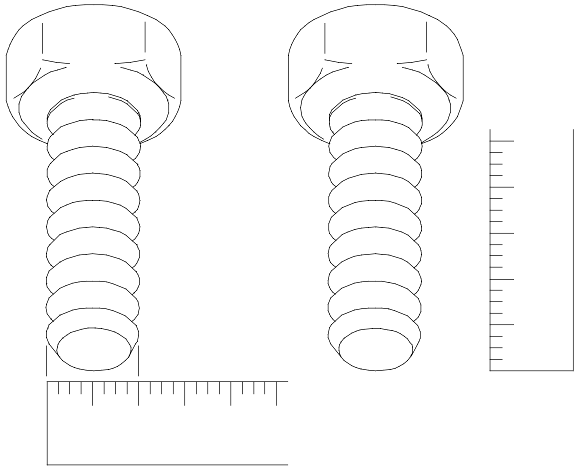
(2) Count the number of threads per inch.

(3) Under the heading DIAMETER look down the column until the diameter of the screw is found. (There are usually two lines beginning with the same diameter.)

(4) Under the heading THREADS PER INCH (SAE and ANSI) or THREAD PITCH (metric), find the number of threads per inch that matches the number counted in step (2).

(5) To find the grade of the screw, match the markings on the head to the correct picture under CAPSCREW HEAD MARKINGS on the torque table.

(6) Look down the column under the picture found in step (5) until the torque limit (lb-ft or N·m) for the diameter and threads per inch (or thread pitch, in the case of metric fasteners) of the screw are located.



APPENDIX F
TORQUE LIMITS

Table F-1. Dry Torque Limits for SAE and ANSI Screws and Free Spinning Nuts

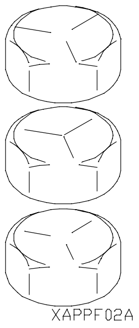
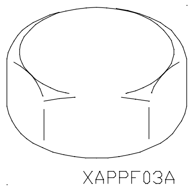
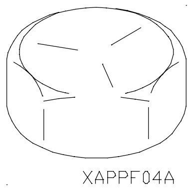
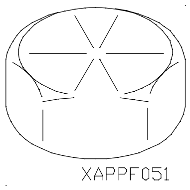
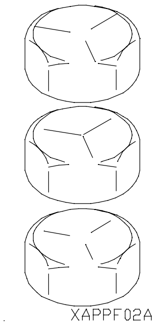
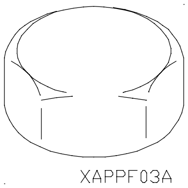
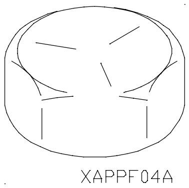
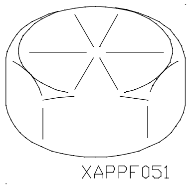
 **NOTE** **Manufacturer's marks may vary. These are all SAE Grade 5.**		**Material Grade Markings**					
		 **SAE Grade 2**		 **SAE Grade 5**		 **SAE Grade 8**	
Diameter	**Threads per inch**	**Torque**					
inch		**lb-ft**	**N·m**	**lb-ft**	**N·m**	**lb-ft**	**N·m**
1/4	20	3-5	5-7	5-7	8-10	8-10	10-14
1/4	28	4-6	5-7	6-8	9-11	8-12	12-16
1/4	32	4-6	5-7	7-9	9-11	9-13	12-16
5/16	18	7-9	9-13	11-15	15-21	15-21	21-29
5/16	24	8-10	11-15	12-16	17-23	17-23	24-32
5/16	32	9-11	12-16	14-18	18-24	19-25	27-34
3/8	16	13-17	17-23	20-26	27-35	28-38	38-50
3/8	24	15-19	20-26	22-30	31-41	32-42	43-57
3/8	32	15-21	21-27	24-32	33-43	33-45	55-61
7/16	14	20-28	28-38	32-42	43-57	44-60	61-81
7/16	20	23-31	31-41	35-47	48-64	49-67	68-90
7/16	28	25-33	33-45	37-51	51-69	54-72	73-97
1/2	13	32-42	43-57	49-65	66-88	68-92	93-123
1/2	20	35-47	48-64	55-73	74-98	77-103	105-139
1/2	28	38-50	51-67	58-78	79-105	82-110	111-149
9/16	12	55-61	62-82	70-94	95-127	98-132	134-178
9/16	18	50-68	69-91	78-104	105-141	109-147	149-199
9/16	24	53-71	72-96	82-110	111-149	115-155	158-210
5/8	11	62-84	85-113	95-129	131-175	136-182	184-246
5/8	18	70-94	96-128	108-146	148-198	154-206	209-279
5/8	24	73-99	100-134	114-154	155-207	161-217	219-293

Table F-1. Dry Torque Limits for SAE and ANSI Screws and Free Spinning Nuts (Cont)

 XAPPF02A Manufacturer's marks may vary. These are all SAE Grade 5		Material Grade Markings					
		 XAPPF03A SAE Grade 2		 XAPPF04A SAE Grade 5		 XAPPF051 SAE Grade 8	
Diameter	Threads per inch	Torque					
inch		lb-ft	N·m	lb-ft	N·m	lb-ft	N·m
11/16	24	99-133	135-181	153-207	209-279	217-291	296-394
3/4	10	110-148	150-200	171-229	232-310	240-324	328-438
3/4	16	123-165	168-224	190-256	259-345	269-361	366-488
3/4	20	127-171	174-232	197-265	268-358	278-374	379-505
13/16	20			252-340	345-459	357-481	487-649
7/8	9			275-369	374-498	387-521	528-704
7/8	14			303-407	413-551	427-575	583-777
7/8	20			319-429	435-579	450-606	614-818
15/16	20			395-531	538-718	558-750	760-1014
1	8			411-553	560-748	581-781	792-1056
1	12			450-606	614-818	636-856	867-1155
1	20			483-649	658-878	681-917	929-1239
1-1/16	18			576-776	782-1044	813-1095	1109-1479
1-1/8	7			507-683	693-923	824-1108	1123-1497
1-1/8	12			570-766	776-1034	923-1241	1258-1678
1-1/8	18			600-806	817-1089	971-1307	1324-1766
1-3/16	18			709-953	966-1288	1149-1545	1566-2088
1-1/4	7			716-964	976-1302	1161-1563	1584-2112
1-1/4	12			793-1067	1081-1441	1286-1730	1754-2338
1-1/4	18			831-1117	1132-1510	1346-1812	1835-2447
1-5/16	18			965-1299	1316-1754	1565-2105	2134-2846
1-3/8	6			939-1263	1281-1707	1523-2049	2076-2768

APPENDIX F
TORQUE LIMITS

Table F-2. Dry Torque Limits for SAE and ANSI Prevailing Torque Nuts

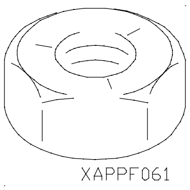
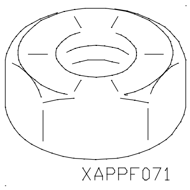
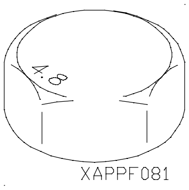
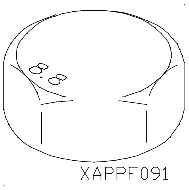
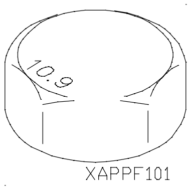
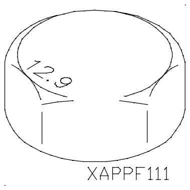
		Material Grade Markings			
		 SAE Grade 5		 SAE Grade 8	
Hole Diameter	Threads per inch	Torque			
inch		lb-ft	N·m	lb-ft	N·m
1/4	20	10-12	14-16	15-17	20-24
1/4	28	12-14	16-18	14-18	21-25
5/16	18	20-24	27-33	26-32	36-44
5/16	24	22-26	30-36	29-35	40-48
3/8	16	35-41	47-55	48-58	65-77
3/8	24	38-46	53-63	53-63	72-86
7/16	14	55-65	74-88	75-91	103-123
7/16	20	60-70	81-97	80-98	110-132
1/2	13	86-102	116-138	113-137	154-184
1/2	20	92-110	125-149	127-153	177-207
9/16	12	120-144	162-194	168-202	229-273
9/16	18	135-161	183-219	179-217	244-294
5/8	11	165-199	226-270	226-272	306-368
5/8	18	181-219	246-296	244-296	331-401
3/4	10	296-354	402-480	395-479	538-648
3/4	16	310-376	422-508	424-516	576-698
7/8	9	460-554	625-749	612-746	833-1009
7/8	14	503-607	684-822	652-800	888-1082
1	8	686-828	933-1121	941-1141	1280-1544

Table F-3. Dry Torque Limits for Metric Screws and Free Spinning Nuts

		Material Grade Markings							
									
		Metric Grade 4.8		Metric Grade 8.8		Metric Grade 10.9		Metric Grade 12.9	
Diameter	**Thread Pitch**	**Torque**							
mm		**lb-ft**	**N·m**	**lb-ft**	**N·m**	**lb-ft**	**N·m**	**lb-ft**	**N·m**
6	1	3	4-5	5-7	7-9	7-9	10-13	8-11	11-15
8	1.25	7-9	9-11	13-17	17-23	17-23	23-31	21-27	27-37
8	1	7-9	9-13	14-18	18-24	19-25	25-33	21-29	29-39
10	1.5	13-17	17-23	25-33	33-45	34-46	46-62	40-54	54-72
10	1.25	14-18	18-24	26-34	35-47	36-48	49-65	42-56	57-77
10	0.75	15-19	21-27	29-39	39-53	40-54	54-72	47-63	63-85
12	1.75	22-30	30-40	43-57	58-78	60-80	81-107	69-93	94-126
12	1.5	23-31	32-42	46-60	61-81	63-83	85-113	73-97	99-131
12	1.25	24-32	33-45	47-63	65-85	65-87	88-118	76-102	104-138
12	1	26-34	34-46	49-65	67-89	68-90	93-123	80-106	108-144
14	2	36-48	48-74	69-91	93-125	95-127	129-173	112-148	151-201
14	1.5	39-51	52-70	75-99	99-135	103-137	140-186	120-160	163-217
15	1	51-69	69-93	100-132	135-179	137-183	187-249	160-214	218-290
16	2	55-73	75-99	107-143	145-193	148-198	201-267	173-231	235-313
16	1.5	59-79	80-106	114-152	155-207	158-210	214-286	184-246	250-334
18	1.5			166-222	225-301	230-306	311-415	268-358	364-486
20	2.5			209-279	283-377	289-385	392-522	338-450	458-610
20	1.5			232-308	315-419	321-427	435-579	375-499	508-678
20	1			244-324	330-440	337-449	457-609	394-524	534-712
22	2.5			285-379	387-515	394-524	534-712	461-613	624-832
22	1.5			313-417	424-566	432-576	586-782	664-884	900-1200
24	3			361-481	489-653	499-665	677-903	584-778	791-1055
24	2			394-524	534-712	545-725	738-984	725-965	982-1310
25	1.5			467-621	633-843	645-859	875-1167	754-1004	1023-1363

APPENDIX F
TORQUE LIMITS

Table F-4. Dry Torque Limits for Metric Prevailing Torque Nuts

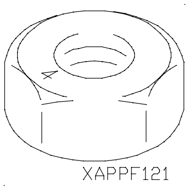
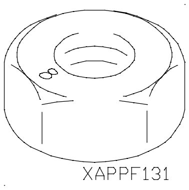
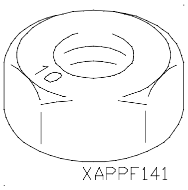
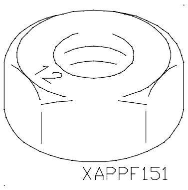
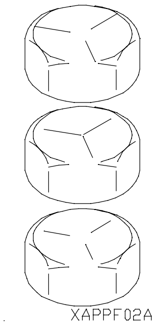
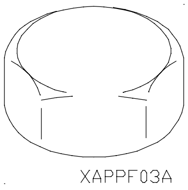
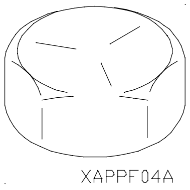
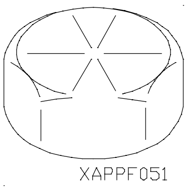
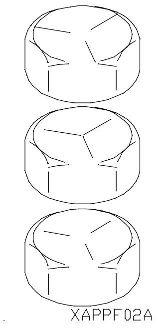
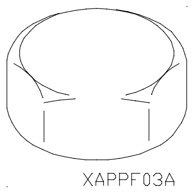
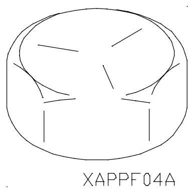
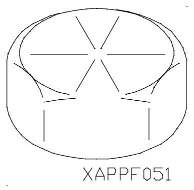
		Material Grade Markings							
									
		Metric Grade 4.8		Metric Grade 8.8		Metric Grade 10.9		Metric Grade 12.9	
Diameter	Thread Pitch	Torque							
mm		lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m
6	1	5-6	7-8	7-9	10-12	10-12	14-17	11-14	15-19
8	1.25	12-14	16-18	18-22	24-30	24-30	32-40	27-33	36-46
8	1	12-14	16-20	19-23	25-31	25-31	34-42	28-36	38-48
10	1.5	21-25	28-34	33-41	44-56	44-56	60-76	50-64	68-86
10	1.25	21-25	29-35	34-42	46-58	46-58	63-79	53-67	71-91
10	0.75	23-27	31-37	37-47	49-63	50-64	68-86	57-73	77-99
12	1.75	33-41	46-56	55-69	74-94	75-95	102-128	85-109	115-147
12	1.5	35-43	47-57	56-72	77-97	78-98	106-134	89-113	120-152
12	1.25	36-44	48-60	58-74	79-101	81-103	109-139	91-117	125-159
12	1	37-45	50-62	61-77	82-104	84-106	114-144	95-121	129-165
14	2	53-65	72-88	87-109	117-149	118-150	160-204	134-172	182-232
14	1.5	57-69	76-94	92-116	125-159	126-160	171-217	143-183	194-248
16	2	79-97	107-131	130-166	177-225	178-228	243-309	204-262	277-355
16	1.5	82-102	112-138	138-176	187-239	189-241	256-328	215-277	292-376
18	1.5			197-253	267-343	271-347	367-471	309-399	420-542
20	2.5			248-318	337-431	342-438	464-594	391-503	530-682
20	1.5			271-349	369-473	374-480	507-651	428-552	580-750
20	1			283-365	384-494	390-502	529-681	447-577	606-784
22	2.5			335-429	455-583	460-592	624-802	526-680	714-922
22	1.5			363-467	492-634	499-643	676-872	730-950	990-1290
24	3			420-540	569-733	577-743	783-1009	662-856	897-1161
24	2			453-583	614-792	622-804	844-1090	803-1043	1088-1416

Table F-5. Wet Torque Limits for SAE and ANSI Screws and Free Spinning Nuts

 **NOTE** **Manufacturer's marks may vary. These are all SAE Grade 5.**		**Material Grade Markings**					
		 **SAE Grade 2**		 **SAE Grade 5**		 **SAE Grade 8**	
Diameter	**Threads per inch**	**Torque**					
inch		**lb-ft**	**N·m**	**lb-ft**	**N·m**	**lb-ft**	**N·m**
1/4	20	4	6	6	8	9	12
1/4	28	5	7	7	9	10	14
5/16	18	8	11	13	18	18	24
5/16	24	9	12	14	19	20	27
3/8	16	15	20	23	31	35	47
3/8	24	17	23	25	34	35	47
7/16	14	24	33	35	47	55	75
7/16	20	25	34	40	54	60	81
1/2	13	35	47	55	75	80	108
1/2	20	40	54	65	88	90	122
9/16	12	50	68	80	108	110	149
9/16	18	55	75	90	122	130	176
5/8	11	70	95	110	149	170	231
5/8	18	80	108	130	176	180	244
3/4	10	120	163	200	271	280	380
3/4	16	140	190	220	298	320	434
7/8	9	110	149	300	407	460	624
7/8	14	120	163	320	434	500	678
1	8	160	217	440	597	680	922
1	12	170	231	480	651	740	1003
1-1/8	7	220	298	600	814	960	1302
1-1/8	12	260	353	660	895	1080	1464

APPENDIX F
TORQUE LIMITS

Table F-5. Wet Torque Limits for SAE and ANSI Screws and Free Spinning Nuts (Cont)

<table>
<tr><td colspan="2" rowspan="2">
Manufacturer's marks may vary. These are all SAE Grade 5</td><td colspan="6">Material Grade Markings</td></tr>
<tr><td colspan="2">
SAE Grade 2</td><td colspan="2">
SAE Grade 5</td><td colspan="2">
SAE Grade 8</td></tr>
<tr><td>Diameter</td><td>Threads per inch</td><td colspan="6">Torque</td></tr>
<tr><td>inch</td><td></td><td>lb-ft</td><td>N·m</td><td>lb-ft</td><td>N·m</td><td>lb-ft</td><td>N·m</td></tr>
<tr><td>1-1/4</td><td>7</td><td>320</td><td>434</td><td>840</td><td>1139</td><td>1360</td><td>1844</td></tr>
<tr><td>1-1/4</td><td>12</td><td>360</td><td>488</td><td>920</td><td>1248</td><td>1500</td><td>2034</td></tr>
<tr><td>1-3/8</td><td>6</td><td>420</td><td>570</td><td>1100</td><td>1492</td><td>1780</td><td>2414</td></tr>
<tr><td>1-3/8</td><td>12</td><td>460</td><td>624</td><td>1260</td><td>1709</td><td>2040</td><td>2766</td></tr>
</table>

APPENDIX G
MANDATORY REPLACEMENT PARTS

Section I. INTRODUCTION

G-1. SCOPE

This appendix lists mandatory replacement parts you will need to maintain the MTV vehicle.

G-2. EXPLANATION OF COLUMNS

a. Column (1) - Item Number.	This number is assigned to each entry in the listing and is referenced in the Initial Setup of the applicable task under Materials/Parts.
b. Column (2) - Nomenclature.	Name or identification of the part.
c. Column (3) - Part Number.	The manufacturer's part number.

d. Column (4) - National Stock Number. The National stock number of the part.

Section II. MANDATORY REPLACEMENT PARTS LIST

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
1	BLADE, WINDSHIELD WIPER	105.384	2540-01-364-1621
2	BOLT, MACHINE	12414307-065	5306-01-382-5054
3	BOOT KIT, EXHAUST	DQ6025	4730-01-417-3197
4	BUMPER, NONMETALLIC	1011-05	5340-01-342-1110
5	BUMPER, RUBBER	12419182	5340-01-410-8397
6	BUSHING, SLEEVE	7-199-002668	3120-01-367-6894
7	CHANNEL, RUBBER	ZZR765/2-001A7	9390-01-420-4560
8	CLAMP	12421183-005	4730-01-447-4312
9	CLAMP	12411183-006	4730-01-447-4313
9.1	CLAMP, WIRE ROPE, SADDLED	MS51868-56	4030-00-042-7882
10	COVER, FLUID FILTER	12412628	2590-01-414-1243
11	DECAL	12340917	7690-01-256-4909
12	FASTENER TAPE	MIL-F-21840	8315-00-006-9855
13	FASTENER TAPE	50-534718-19	8315-00-935-6762
14	FILTER ASSEMBLY	75223-11	2940-01-417-9333

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
15	FILTER ELEMENT	1048011	2940-01-385-8931
16	FILTER ELEMENT, FLUID	K05-0104	2910-01-377-3128
17	FILTER ELEMENT, FLUID	R22146	2910-01-360-6366
17.1	FILTER ELEMENT, FLUID	ST117073098-000	2910-01-467-4594
18	FILTER ELEMENT, FLUID	29507750	2940-01-361-2405
19	FILTER ELEMENT, FLUID	599791	4460-01-284-2344
20	FILTER ELEMENT, FLUID	931558	2940-01-363-4377
21	FILTER ELEMENT, INTAKE AIR CLEANER	P52-7750	2940-01-361-2407
22	FILTER, FUEL	7E9763	2910-01-363-3089
23	FILTER, OIL	1R0739	2940-00-029-0388
24	GASKET	F337576M6	
25	GASKET	M28840/24HA	5935-01-421-9754
26	GASKET	QS-1181	5330-01-058-3788
27	GASKET	10-36675-18	5330-00-298-0190
27.1	GASKET	11446	5330-00-247-4174
28	GASKET	119-2940	5330-01-424-7905
29	GASKET	12412394	5330-01-371-6199
29.1	GASKET	12421155	5330-01-295-0115
29.2	GASKET	12421469	5330-01-453-2980
29.3	GASKET	3N4087	5330-01-061-8003
30	GASKET	350700	5330-01-295-3053
31	GASKET	350903	5330-00-576-4626
32	GASKET	352200	5330-01-421-6105
33	GASKET	352302	5330-01-421-6107
34	GASKET	353400	5330-01-421-6102
35	GASKET	353806	5330-01-421-6103
36	GASKET	353810	5330-01-450-6666
37	GASKET	355148	5330-01-423-0596
38	GASKET	355175	5330-01-423-0623
39	GASKET	3K3257	5330-01-305-6550
40	GASKET	4P1624	5330-01-360-5934

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
41	GASKET	4W0549	5330-01-347-3207
42	GASKET	9Y8103	5330-01-360-5931
43	GASKET and PREFORMED PACKING KIT	P4-4	5330-00-122-0624
43.1	GASKET and PREFORMED PACKING SET	9X8318	5330-01-360-9098
44	GASKET, FUEL FILTER	7C1159	5330-01-360-5941
45	NOT USED		
46	GASKET, THERMOSTAT	2W7212	5330-01-347-3206
47	GROMMET, NONMETALLIC	MS21266-3N	5325-00-926-1394
48	GROMMET, NONMETALLIC	MS35489-109	5325-00-290-0074
49	GROMMET, NONMETALLIC	MS35489-6	5325-00-263-6632
50	GROMMET, NONMETALLIC	12412334-2	9320-01-456-1672
51	GROMMET, NONMETALLIC	12417598	5325-01-375-1299
52	GROMMET, NONMETALLIC	12421402	5325-01-440-2178
53	GROMMET, NONMETALLIC	4082-37634-01	5325-01-194-3076
54	GROMMET, NONMETALLIC	50S12-1-1AA	5325-01-145-0105
55	GROMMET, NONMETALLIC	8741442	5325-00-088-6147
55.1	HEAD, FLUID FILTER	7632-002-144	2940-01-387-4397
56	INDICATOR, SIGHT, LIQUID	SLT-1214	6680-01-356-8162
57	INSERT, NYLON	12SWS2520	5310-01-439-8881
58	INSERT, NYLON	12SWS2542	5310-01-439-8883
59	INSERT, NYLON	12421463-003	5310-01-453-2087
60	INSULATOR, TANK	A1394J	5970-01-385-7317
61	INSULATOR, TANK	A1394K	5970-01-385-7262
62	NOT USED		
63	KIT, FILTER	29526899	5330-01-453-0770
64	KIT, FILTER	29503829	
65	LAMP, INCANDESCENT	CM7-7373	6240-00-270-6824
66	LAMP, INCANDESCENT	CM7376	6240-00-499-6278
67	LATCH, BAIL HEAD	68-20-101-10	2540-01-232-2470
68	LOCKNUT	0770-023-003	5310-01-423-3725
69	LOCKWASHER	ABCH207-LW-1/2	
70	LOCKWASHER	ABCH207-LW-3/8	

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
71	LOCKWASHER	D70336/1-20	5310-01-110-7933
72	LOCKWASHER	D70336/3-50	5310-01-439-2542
73	LOCKWASHER	D70336/3-52	5310-01-439-2543
73.1	LOCKWASHER	ERNA245	5310-00-584-5272
74	LOCKWASHER	MS35333-136	5310-01-078-9699
75	LOCKWASHER	MS35333-78	5310-00-261-7156
76	LOCKWASHER	MS35335-30	5310-00-209-0788
77	LOCKWASHER	MS35335-31	5310-00-596-7693
78	LOCKWASHER	MS35335-33	5310-00-209-0786
79	LOCKWASHER	MS35335-36	5310-00-550-3503
80	LOCKWASHER	MS35335-37	5310-00-209-5116
81	LOCKWASHER	MS35335-38	5310-00-616-6354
82	LOCKWASHER	MS35335-58	5310-00-209-1366
83	LOCKWASHER	MS35335-61	5310-00-527-3634
84	LOCKWASHER	MS35335-62	5310-00-184-9562
85	LOCKWASHER	MS35337-25	5310-00-012-1637
86	LOCKWASHER	MS35338-100	5310-00-261-8278
87	LOCKWASHER	MS35338-103	5310-00-184-8971
88	LOCKWASHER	MS35338-137	5310-00-933-8119
89	LOCKWASHER	MS35338-138	5310-00-933-8120
90	LOCKWASHER	MS35338-141	5310-00-984-7042
90.1	LOCKWASHER	MS35338-147	5310-00-926-5871
91	LOCKWASHER	MS35338-41	5310-00-045-4007
92	LOCKWASHER	MS35338-42	5310-00-045-3299
93	LOCKWASHER	MS35338-43	5310-00-045-3296
94	LOCKWASHER	MS35338-44	5310-00-582-5965
95	LOCKWASHER	MS35338-45	5310-00-407-9566
96	LOCKWASHER	MS35338-46	5310-01-334-4710
97	LOCKWASHER	MS35338-47	5310-00-209-0965
98	LOCKWASHER	MS35338-51	5310-00-584-7888
99	LOCKWASHER	MS35338-58	5310-00-702-6286
100	LOCKWASHER	MS51414-1	5310-01-235-2057

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
101	LOCKWASHER	MS51414-2	5310-01-310-1098
102	LOCKWASHER	MS51414-4	5310-01-251-9276
103	LOCKWASHER	N9015	5310-01-046-0186
104	LOCKWASHER	N9459	5310-01-348-8393
105	LOCKWASHER	N9461	5310-01-348-8392
105.1	LOCKWASHER	XP1113	5310-01-460-5991
105.2	LOCKWASHER	10241	5310-01-416-3010
105.3	LOCKWASHER	10030	
106	LOCKWASHER	114021	5310-01-081-0798
107	LOCKWASHER	1229-S-513-C	5310-01-062-3384
108	LOCKWASHER	12412477-14	
109	LOCKWASHER	12412601-02	5310-01-387-1152
110	LOCKWASHER	12414570-005	5310-01-452-9420
111	LOCKWASHER	12414570-011	5310-01-374-3292
112	LOCKWASHER	12414570-013	5310-01-374-4515
113	LOCKWASHER	12414570-015	5310-01-388-2043
113.1	LOCKWASHER	12414570-019	5310-01-470-2362
114	LOCKWASHER	12414570-021	5310-01-374-4516
115	NOT USED		
116	NOT USED		
117	NOT USED		
118	LOCKWASHER	1729B262	5310-00-964-7811
119	NOT USED		
120	MOUNT, RESILIENT	12413126	5340-01-439-3765
121	MOUNT, RESILIENT	12418476	5340-01-377-0693
122	NUT, CLIP	MS90724-24	5310-01-074-5041
123	NUT, CONDUIT	BL75	5975-00-642-7261
124	NUT, CONDUIT	141	5975-00-152-1075
125	NUT, CONDUIT	143	5975-00-714-8031
126	NUT, PLAIN, BLIND RIVET	ALS7-632-80	5325-01-465-0001
127	NUT, PLAIN, HEX	MS35649-282	5310-00-934-9757
127.1	NUT, PLAIN, ROUND	1727N40	5310-00-123-2572
128	NUT, SELF-LOCKING	DIN-934STM6	5310-01-342-2739

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
129	NUT, SELF-LOCKING	MS20500-524	5310-00-208-4023
130	NUT, SELF-LOCKING	MS21042-04	5310-00-811-6419
130.1	NUT, SELF-LOCKING	MS21045L5	5310-00-857-5559
131	NUT, SELF-LOCKING	MS21083N08	5310-00-941-6019
132	NUT, SELF-LOCKING	MS21083N6	5310-00-926-1852
133	NUT, SELF-LOCKING	MS51922-1	5310-00-088-1251
134	NUT, SELF-LOCKING	MS51922-17	5310-00-087-4652
135	NUT, SELF-LOCKING	MS51922-2	5310-00-929-1807
136	NUT, SELF-LOCKING	MS51922-33	5310-00-225-6993
137	NUT, SELF-LOCKING	MS51922-49	5310-00-269-4040
138	NUT, SELF-LOCKING	MS51922-5	5310-00-959-7600
139	NUT, SELF-LOCKING	MS51922-57	5310-00-067-6356
140	NUT, SELF-LOCKING	MS51922-65	5310-00-225-6992
141	NUT, SELF-LOCKING	MS51922-9	5310-00-984-3806
142	NUT, SELF-LOCKING	N9406	5310-01-362-6171
143	NUT, SELF-LOCKING	N9410	5310-01-348-8398
143.1	NUT, SELF-LOCKING	N9453	5310-01-348-8314
144	NUT, SELF-LOCKING	N9467	5310-01-350-4257
144.1	NUT, SELF-LOCKING	N9556	5310-01-423-0880
145	NUT, SELF-LOCKING	12301125	5310-01-210-0199
146	NUT, SELF-LOCKING	12412476-09	5310-01-445-6346
146.1	NUT, SELF-LOCKING	12411174-008	
147	NUT, SELF-LOCKING	12412476-11	5310-01-407-7178
148	NUT, SELF-LOCKING	12412476-12	
149	NUT, SELF-LOCKING	12412478-04	5310-01-381-9901
150	NUT, SELF-LOCKING	12414308-002	5310-01-381-9819
151	NUT, SELF-LOCKING	12414308-003	5310-01-377-1549
152	NUT, SELF-LOCKING	12414308-004	5310-01-369-5703
153	NUT, SELF-LOCKING	12414308-007	5310-01-369-6073
154	NUT, SELF-LOCKING	12414308-017	5310-01-381-9830
155	NUT, SELF-LOCKING	12414308-018	5310-01-369-3337
156	NUT, SELF-LOCKING	12414308-019	5310-01-369-9522

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
157	NUT, SELF-LOCKING	12414308-020	5310-01-381-9849
158	NUT, SELF-LOCKING	12414308-021	5310-01-369-3338
159	NUT, SELF-LOCKING	12414308-022	5310-01-417-1262
160	NUT, SELF-LOCKING	12414308-023	5310-01-369-6705
161	NUT, SELF-LOCKING	12414308-025	5310-01-369-6706
162	NUT, SELF-LOCKING	12414308-027	5310-01-369-3339
163	NUT, SELF-LOCKING	12414308-078	
164	NUT, SELF-LOCKING	12414315-002	5310-01-374-1381
165	NUT, SELF-LOCKING	12414315-003	5310-01-374-1382
166	NUT, SELF-LOCKING	12414315-005	5310-01-372-3023
167	NUT, SELF-LOCKING	12414315-006	5310-01-369-3332
168	NUT, SELF-LOCKING	12414315-009	5310-01-365-7236
169	NUT, SELF-LOCKING	12414315-015	5310-01-462-0580
170	NUT, SELF-LOCKING	12414315-017	5310-01-368-8065
171	NUT, SELF-LOCKING	12414420-004	5310-01-370-0010
172	NUT, SELF-LOCKING	12419003	5310-01-376-0773
173	NUT, SELF-LOCKING	29514660	
174	NUT, SELF-LOCKING	7-660-081600	5310-01-390-8487
175	NUT, SELF-LOCKING	7-660-082504	5310-01-354-8734
176	NUT, SELF-LOCKING	7794625	5310-00-579-1031
177	NUT, SELF-LOCKING	7951286	5310-00-789-0398
178	PACKING, PREFORMED	A82777	5330-00-579-6495
178.1	PACKING, PREFORMED	F4001-16	5331-01-466-0354
179	PACKING, PREFORMED	J515-16-3	5331-01-465-3634
180	PACKING, PREFORMED	5999807	5331-01-456-9156
181	PACKING, PREFORMED	MS28775-011	5330-00-582-2133
181.1	PACKING, PREFORMED	MS28775-910	5331-00-448-6753
182	PACKING, PREFORMED	MS28778-10	5330-00-285-9842
183	PACKING, PREFORMED	MS28778-12	5330-00-251-8839
184	PACKING, PREFORMED	MS28778-16	5330-00-804-5694
185	PACKING, PREFORMED	MS28778-20	5330-00-816-3546

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
186	PACKING, PREFORMED	MS28778-4	5330-00-805-2966
187	PACKING, PREFORMED	MS28778-6	5330-00-804-5695
188	PACKING, PREFORMED	MS9955-113	5330-01-374-2325
189	PACKING, PREFORMED	M25988/1-246	5330-01-189-6351
189.1	PACKING, PREFORMED	M83461/1-442	5330-01-183-0987
190	PACKING, PREFORMED	OR420A	5330-01-389-6028
191	PACKING, PREFORMED	11639519-1	5330-00-463-0200
191.1	PACKING, PREFORMED	12422548-004	5331-01-059-1141
192	PACKING, PREFORMED	1509	5330-00-172-1919
192.1	PACKING, PREFORMED	195045	5331-00-618-5361
192.2	PACKING, PREFORMED	19755	5331-01-415-9632
192.3	PACKING, PREFORMED	198336	5331-00-584-1840
193	PACKING, PREFORMED	2-012N507-90	5330-01-092-5502
194	PACKING, PREFORMED	2-018N507-90	5330-01-092-5503
195	PACKING, PREFORMED	2M4453	5330-00-074-3768
196	PACKING, PREFORMED	22617-16	5330-01-168-0885
197	PACKING, PREFORMED	23043446	5330-01-424-6629
197.1	PACKING, PREFORMED	250192	5331-01-417-5105
197.2	PACKING, PREFORMED	251216	5330-01-417-5107
198	PACKING, PREFORMED	29500969	5330-01-360-7852
199	PACKING, PREFORMED	29503383	5330-01-360-6017
200	PACKING, PREFORMED	3-906N552-90	5330-01-104-1093
201	PACKING, PREFORMED	3-908N552-90	5330-00-929-8171
202	PACKING, PREFORMED	3D2824	5330-00-944-8281
203	PACKING, PREFORMED	3J1907	5330-01-333-6444
204	PACKING, PREFORMED	3J7354	5330-00-952-8008
205	PACKING, PREFORMED	3K0360	5330-00-948-6482
206	PACKING, PREFORMED	4J5477	5330-00-855-8059
207	PACKING, PREFORMED	4L9564	5330-00-828-8639
207.1	PACKING, PREFORMED	420828	5340-01-417-3788
208	PACKING, PREFORMED	5-X-1155	5330-01-392-1637
209	PACKING, PREFORMED	5F7054	5330-00-339-6224

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
210	PACKING, PREFORMED	5P7813	5330-01-335-0042
211	PACKING, PREFORMED	6V8397	5330-00-579-6495
212	PACKING, PREFORMED	673268	
213	PACKING, PREFORMED	673269	5330-01-395-1252
214	PACKING, PREFORMED	7F8267	5330-00-291-7353
215	PACKING, PREFORMED	7320658	5330-00-297-7106
216	PACKING, PREFORMED	9604792-001	5330-01-429-3089
217	PAD, CUSHIONING	12413120	2590-01-474-8307
218	PARTS KIT, DEHYDRATOR	RN-60-A	4440-01-337-7324
219	PARTS KIT, HYDRAULIC PUMP	P1-12RP	4320-00-125-3208
220	PARTS KIT, SEAL REPLACEMENT	SK10-2	5330-01-350-4474
221	PARTS KIT, SEAL REPLACEMENT	SK10-3	5330-01-350-4472
222	PARTS KIT, SEAL REPLACEMENT	SK10-4	5330-01-343-2745
222.1	PARTS KIT, SEAL REPLACEMENT, MECHANICAL	SKD1VW	5330-01-309-2603
223	PIN, COTTER	K-2412-Z	5315-01-179-9882
224	PIN, COTTER	MS24665-151	5315-00-815-1405
225	PIN, COTTER	MS24665-298	5315-00-234-1861
226	PIN, COTTER	MS24665-385	5315-00-187-9382
227	PIN, COTTER	MS24665-394	5315-00-234-1628
228	PIN, COTTER	MS24665-423	5315-00-013-7228
229	PIN, COTTER	MS24665-455	5315-00-187-9392
230	PIN, COTTER	MS24665-457	5315-00-187-9393
231	PIN, COTTER	MS24665-459	5315-00-187-9394
232	PIN, COTTER	MS24665-494	
233	PIN, COTTER	MS24665-498	5315-00-849-9854
234	PIN, COTTER	MS24665-628	5315-00-846-0126
235	PIN, COTTER	MS24665-654	5315-00-187-9413
236	PIN, COTTER	MS24665-69	5315-00-828-8190
236.1	PIN, COTTER	XB-781-1	5315-01-369-1346
237	NOT USED		
238	PIN, SPRING	MS16562-142	5315-00-058-6115

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
239	PIN, SPRING	MS16562-146	5315-00-853-3814
240	PLASTIC STRIP	352700	5330-01-396-2109
241	RECEPTACLE	50R4-1-1AA	5325-01-049-2049
241.1	REPAIR KIT, GOVERNOR	RN32W	
241.2	RETAINER, PACKING	11863-012	5330-01-417-7795
241.3	RETAINER, PACKING	202624	5330-01-417-7794
242	RETAINER	A-1205-D-2344	5330-01-360-5253
243	RIVET, BLIND	AD66H	5320-01-008-8204
243.1	RIVET, BLIND	MS20601AD5W3	5320-00-582-3299
243.2	RIVET, BLIND	MS20601B4W2	5320-00-616-5274
244	RIVET, BLIND	MS20604B3W2	5320-00-721-9075
245	RIVET, BLIND	M24243/1-B302	5320-00-999-0397
246	RIVET, BLIND	M24243/1-B610	5320-00-454-5156
247	RIVET, BLIND	M24243/1-D404	5320-00-865-8994
248	RIVET, BLIND	M24243/1-D502	5320-00-850-3248
249	RIVET, BLIND	M24243/1-D504	5320-01-020-9756
250	RIVET, BLIND	M24243/1-D506	5320-00-850-3225
251	RIVET, BLIND	M24243/1-D604	5320-00-850-3233
252	RIVET, BLIND	M24243/1-D608	5320-00-850-3246
253	RIVET, BLIND	M24243/1-D610	5320-01-030-3218
254	RIVET, BLIND	M24243/1-F402	5320-00-129-9706
254.1	RIVET, BLIND	M24243/1F608	5320-01-392-0699
254.2	RIVET, BLIND	M24243/1F610	
255	RIVET, BLIND	M24243/6-A503H	5320-00-490-2238
256	RIVET, BLIND	NAS1398C5A4	5320-00-321-2521
257	RIVET, BLIND	SD64BSLF	5320-01-397-3347
258	RIVET, BLIND	206057	5320-01-411-0081
259	RIVET, COMPRESSION	12418469	5320-01-376-0699
260	RUBBER STRIP	12412581	9320-01-399-4888
260.1	SCREW, CAP	CSH5-24-39	5305-01-479-7857
261	SCREW, CAP	12414475-131	5303-01-363-0703

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
262	SCREW, CAP	6V-2315	5306-01-433-4753
263	SCREW, SELF-LOCKING	MS16998-61L	5305-01-211-3097
264	SEAL	VC08G1R0B	5330-01-389-6109
265	SEAL	355150	5330-01-423-0689
266	SEAL ASSEMBLY, CTIS	A1205-Q-2435	5330-01-360-7753
267	SEAL ASSEMBLY, HUB	A1205-R-2254	5330-01-360-5252
268	SEAL RING, METAL	29505809	5330-01-360-5329
269	SEAL, NONMETALLIC	CC3350	5330-01-431-7575
270	SEAL, NONMETALLIC	12417725	5330-01-375-2908
270.1	SEAL, NONMETALLIC	077032935	5330-01-387-2167
271	SEAL, NONMETALLIC	673999	5310-01-454-5553
271.1	SEAL, PLAIN	N72143	5330-01-453-4462
271.2	SEAL, SHAFT	SE-RUR25-2	5330-01-135-3376
272	SEAL, URETHANE FOAM	12420420-001	5680-01-453-8912
273	SEAL, URETHANE FOAM	12420420-002	5680-01-453-8485
274	SEAL, URETHANE FOAM	12420420-003	5680-01-453-8486
274.1	SEMICONDUCTOR DEVICE, DIODE	JANTX1N3957	5961-00-181-0661
274.2	SPIDER, UNIVERSAL JOINT, VEHICULAR	R279X	
274.3	SPLICE, CONDUCTOR	M7928/5-4	5940-01-079-1375
274.4	SPLICE, CONDUCTOR	M83519/1-2	5940-01-136-2540
274.5	SPLICE, CONDUCTOR	M83519/1-3	5940-01-135-7077
274.6	SPLICE, CONDUCTOR	M83519/1-5	5940-01-135-7079
274.7	SPLICE, CONDUCTOR	12420927-001	5940-01-456-1319
275	SPLICE, CONDUCTOR	23035	5940-01-210-9261
276	SPLICE, CONDUCTOR	23075	3830-01-210-9260
276.1	SPACER	12422545	5365-01-490-6790
277	TERMINAL, LUG	MS20659-163	5940-00-113-3145
278	TERMINAL, LUG	MS20659-164	5940-00-113-3148
278.1	TERMINAL, LUG	12420344	5940-01-082-3321
279	TERMINAL, LUG	MS25036-122	5940-00-113-8190
279.1	WASHER, FLAT	12414473-010	5310-01-374-6990
280	WASHER, FLAT	12417948-004	5365-01-436-8308

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
280.1	WASHER, FLAT	251391	5310-01-417-1041
280.2	WASHER, FLAT	990 3861	5310-01-155-1911
281	WASHER, FLAT RUBBER	900.032	5330-01-378-7541
282	WASHER, KEY	TW107	5310-01-014-5136
283	WASHER, NYLON	MS51859-16	5310-01-381-9990
284	WASHER, NYLON	12421464-001	
285	WASHER, NYLON	12421464-002	5310-01-445-6828
286	WASHER, SPRING	D63474/1-30	5310-01-413-8475
287	WASHER, SPRING	110 7289	5310-01-246-1387
288	WASHER, SPRING	12414559-021	5310-01-374-4517
289	WASHER, SPRING	12414560-009	5310-01-333-5517
290	WASHER, SPRING	12414560-011	5310-01-421-9556
291	WASHER, SPRING	12414560-017	5310-01-395-0820
292	WASHER, SPRING	12414560-018	5310-01-381-3281
293	WASHER, SPRING	12414560-019	5310-01-369-6074
294	WASHER, SPRING	12417503	5310-01-406-6326
295	WASHER, SPRING	12418220	5310-01-372-3495
296	WASHER, SPRING	128BSTM4	5310-01-333-5517
297	WASHER, SPRING	12414560-009	5310-01-333-5517

APPENDIX H
LUBRICATION ORDER AND SERVICES

SECTION I. INTRODUCTION

H-1. GENERAL

The information contained in this appendix provides the lubrication/services requirements for the MTV vehicle.

a. **Adherence.** Intervals (on-condition or hardtime) and the related man-hour times are based on normal operation. The man-hour time specified is the time needed to do all the services prescribed for a particular interval. On-condition (OC) oil sample intervals will be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory. Change the hardtime interval if the lubricants are contaminated or if operating the equipment under adverse operating conditions, including longer-than-usual operating hours. The calendar interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken. Hardtime intervals will be applied in the event AOAP laboratory support is not available. Hardtime intervals must be applied during the warranty period.

Intervals shown in this lubrication order and services are based on mileage/calendar, and in some cases mileage alone. An example of a mileage/calendar interval is: **Q**, which means every 3,000 miles (4,827 km) or quarterly (every three months). The lubrication is to be performed at whichever interval occurs first for the vehicle. An example of a mileage alone interval is: **6K**, which stands for every 6,000 miles (9,654 km). The lubrication/services is to be performed at the mileage indicated regardless of the calendar interval.

WARNING

- **Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breath vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type I Dry Cleaning Solvent is 100 F (38 C) and for Type II is 138 F (50 C). Failure to comply may result in serious 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 medical attention. Failure to comply may result in injury to personnel.**

b. **Cleaning fittings before lubricating.** Clean parts with dry cleaning solvent (SD P-D-680) (Item 65, Appendix D) or equivalent. Dry before lubricating. Dashed arrows indicate lubrication on both sides of the equipment.

c. **Lubricating after fording.** If fording occurs, lubricate all fittings below fording depth and check submerged gearboxes for presence of water.

d. **Lubricating after high-pressure washing.** After a thorough washing, lubricate all grease fittings and oil can points outside and underneath vehicle.

e. **Level of Maintenance.** The lowest level of maintenance authorized to lubricate a point is Operator/Unit Maintenance (O). Operator/crew (C) may lubricate points authorized for Unit Maintenance (O) when authorized by Unit Maintenance (O).

f. **Localized views.** A reference to the appropriate localized view is given after most lubrication entries. Localized views begin on page H-13.

H-1. GENERAL (CONT)

g. **Interval Symbols.** The lubrications/services interval symbols will be used as applicable:

Q-quarterly/3,000 mi (4,827 km) (whichever occurs first)
S-semiannually/6,000 mi (9,654 km) (whichever occurs first)
A-annually/12,000 mi (19,308 km) (whichever occurs first)
B-biennially/24,000 mi (38,616 km) (whichever occurs first)
3K-every 3,000 mi (4,827 km) (no calendar interval)
6K-every 6,000 mi (9,654 km) (no calendar interval)
12K-every 12,000 mi (19,308 km) (no calendar interval)
24K-every 24,000 mi (38,616 km) (no calendar interval)

H-2. OIL FILTERS

Oil filters shall be serviced/changed as applicable, when:

a. They are known to be contaminated, or clogged;

b. Service is recommended by AOAP laboratory analysis; or

c. At prescribed hardtime intervals while vehicle is under warranty, or if AOAP is not available/used as required.

H-3. AOAP SAMPLING INTERVAL

WARNING

- **Engine oil is hot and under pressure. The oil sampling valve releases oil proportionally to the amount of pressure applied to valve. Activate oil sampling valve by pressing in slowly to prevent injury to personnel. Failure to comply may result in injury to personnel.**
- **Wear safety goggles when taking oil sample. Oil is under pressure and could cause injury to personnel. Failure to comply may result in injury to personnel.**

Units participating in AOAP will sample engine oil every 3,000 miles (4,827 km) or 6 months, whichever occurs first and change engine oil as directed by AOAP. Units participating in AOAP will sample transmission oil every 6,000 miles (9,654 km) or 12 months, whichever occurs first and change transmission oil as directed by AOAP. Units participating in AOAP will sample hydraulic system oil initially after 6 weeks or 10 hours of operation, whichever occurs first. After initial oil change samples should be taken every 12 months or 50 hours of operation, whichever occurs first and change hydraulic oil as directed by AOAP.

H-4. WARRANTY HARDTIME STATEMENT

"For equipment under manufacturer's warranty, hardtime oil service intervals shall be followed. Intervals shall be shortened if lubricants are known to be contaminated or if operation is under adverse conditions (such as longer than usual operating hours, extended idling periods, extreme dust)."

SECTION II. LUBRICATION/SERVICES CHART

H-5. LUBRICATION/SERVICES KEY

LUBRICANTS	
Specification	**Type**
MIL-L-2104 (OE/HDO)	Lubricating Oil, Internal Combustion Engine, Combat/Tactical Service
MIL-L-46167 (OEA)	Lubricating Oil, Internal Combustion Engine, Arctic
MIL-L-2105 (GO)	Lubricating Oil, Gear, Multipurpose
MIL-G-10924 (GAA)	Grease, Automotive and Artillery
MIL-G-18458 (GW)	Grease, Wire-Rope and Exposed Gear
MIL-H-5606 (OHA)	Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance

DESCRIPTION	CAPACITY	EXPECTED TEMPERATURES		
		Above +40 F (Above +4 C)	+40 F to -15 F (+4 C to -26 C)	-15 F to -50 F (-26 C to -46 C)
Engine crankcase	25 qt (24 L)	OE/HDO-15/40	OE/HDO-15/40	OEA
Transmission (total system) (all models except M1088 and M1089)	49.3 qt (46.7 L)	OE/HDO-15/40	OE/HDO-10	OEA
Transmission (at oil change) (all models except M1088 and M1089)	36.8 qt (34.7 L)	OE/HDO-15/40	OE/HDO-10	OEA
Transmission (total system) (M1088 and M1089)	58.6 qt (55.4 L)	OE/HDO-15/40	OE/HDO-10	OEA
Transmission (at oil change) (M1088 and M1089)	31.8 qt (30.0 L)	OE/HDO-15/40	OE/HDO-10	OEA
Transmission (after overhaul)	39.0 qt (37.0 L)	OE/HDO-15/40	OE/HDO-10	OEA
Steering system	5 qt (4.8 L)	OE/HDO-10	OE/HDO-10	OEA
Hydraulic reservoir (except M1089)	27 gal (102.2 L)	OE/HDO-10	OE/HDO-10	OEA
Hydraulic tank (M1089)	74 gal (280 L)	OE/HDO-10	OE/HDO-10	OEA
Front axle differential (maximum capacity)	9.5 qt (9 L)	GO-80/90	GO-80/90	SAE 75W90 OR GO-75
Intermediate axle differential (maximum capacity)	14.7 qt (13.9 L)	GO-80/90	GO-80/90	SAE 75W90 OR GO-75
Rear axle differential (maximum capacity)	12.15 qt (11.5 L)	GO-80/90	GO-80/90	SAE 75W90 OR GO-75
Front axle planetary hubs	11-13 oz (0.33-0.38 L)	GO-80/90	GO-80/90	SAE 75W90 OR GO-75

H-5. LUBRICATION/SERVICES KEY (CONT)

DESCRIPTION	CAPACITY	EXPECTED TEMPERATURES		
		Above +40 F (Above +4 C)	+40 F to -15 F (+4 C to -26 C)	-15 F to -50 F (-26 C to -46 C)
Rear axle bogie	0.5 qt (0.5 L)	GO-85/140	GO-85/140	GO-85/140
15K Self-Recovery Winch (SRW)	As Required	GO-85/140	GO-80/90	GO-75
30K winches	As Required	GO-85/140	GO-80/90	GO-75
Propeller shaft universal and slip joints	As Required	GAA	GAA	GAA
Tie rod ends	As Required	GAA	GAA	GAA
Towing pintle assembly	As Required	GAA	GAA	GAA
Fifth wheel	As Required	GAA	GAA	GAA
Spring bolts and spring shackles	As Required	GAA	GAA	GAA
Front axle shaft U-joints and steering knuckles	As Required	GAA	GAA	GAA
Front axle inner wheel bearing	As Required	GAA	GAA	GAA
Intermediate axle inner wheel bearing	As Required	GAA	GAA	GAA
Rear axle inner wheel bearing	As Required	GAA	GAA	GAA
Front lifting beam	As Required	GAA	GAA	GAA
15K Self-Recovery Winch (SRW) cable	As Required	GW	GW	GW
30K winch cables	As Required	GW	GW	GW
Air/hydraulic power unit	3 pt (1.4 L)	OHA	OHA	OHA
Backup hydraulic pump	19 oz (562 ml)	OHA	OHA	OHA

COOLANT	
Specification	**Type**
A-A-52624A	Antifreeze, Multi-Engine Type
MIL-A-11755	Antifreeze, Arctic-Type

DESCRIPTION	CAPACITY	EXPECTED TEMPERATURES		
		Above +40 F (Above +4 C)	+40 F to -15 F (+4 C to -26 C)	-15 F to -50 F (-26 C to -46 C)
Cooling system (engine only)	14 qt (13 L)	A-A-52624A	A-A-52624A	
Cooling system (total system)	50.3 qt (47.6 L)	A-A-52624A	A-A-52624A	N/A
Cooling system (total system) (M1088, M1089)	52.8 qt (49.9 L)	A-A-52624A	A-A-52624A	N/A
Cooling system, Arctic (total system)	64.8 qt (61.3 L)	N/A	N/A	MIL-A-11755
Cooling system, Arctic (total system) (M1088, M1089)	76.5 qt (72.4 L)	N/A	N/A	MIL-A-11755

CLEANING AGENT	
Specification	**Type**
P-D-680	Dry Cleaning Solvent, SD-II
O-C-1901	Cleaning Compound, Windshield

DESCRIPTION	CAPACITY	EXPECTED TEMPERATURES		
		Above +15 F (Above -9 C)	+15 F to -15 F (-9 C to -26 C)	-15 F to -50 F (-26 C to -46 C)
All metal parts as required	N/A	SD-II (all temperatures)		
Windshield washer reservoir	7.5 qt (7.1 L)	2/3 water to 1/3 O-C-1901	1/2 water to 1/2 O-C-1901	1/3 water to 2/3 O-C-1901

For arctic operation refer to FM 9-207.

H-6. LUBRICATION/SERVICES INTERVALS

Intervals		Total Man-Hours
Quarterly (Q)	Lubrication performed once every three months or 3,000 mi. (4,827 km).*	2.0
Semi-annually (S)	Lubrication performed once every six months or 6,000 mi. (9,654 km).*	6.0
Annually (A)	Lubrication performed once every year or every 12,000 mi. (19,308 km).*	1.5
Biennially (B)	Lubrication performed once every two years or every 24,000 mi. (38,616 km).*	3.5
3K	Lubrication performed once every 3,000 mi. (4,827 km).**	1.0
6K	Lubrication performed once every 6,000 mi. (9,654 km).**	1.0
12K	Lubrication performed once every 12,000 mi. (19,308 km).**	6.5
24K	Lubrication performed once every 24,000 mi. (38,616 km).**	0.5

* Whichever occurs first.
** No calendar interval.

H-7. LOCATOR VIEWS

LUBRICANT INTERVAL

Engine Crankcase Breather (O)
(See note 17 and view A)

Fuel Filter (O)
(See note 6 and view A)

Fuel/Water Separator (O)
(See note 5 and view B)

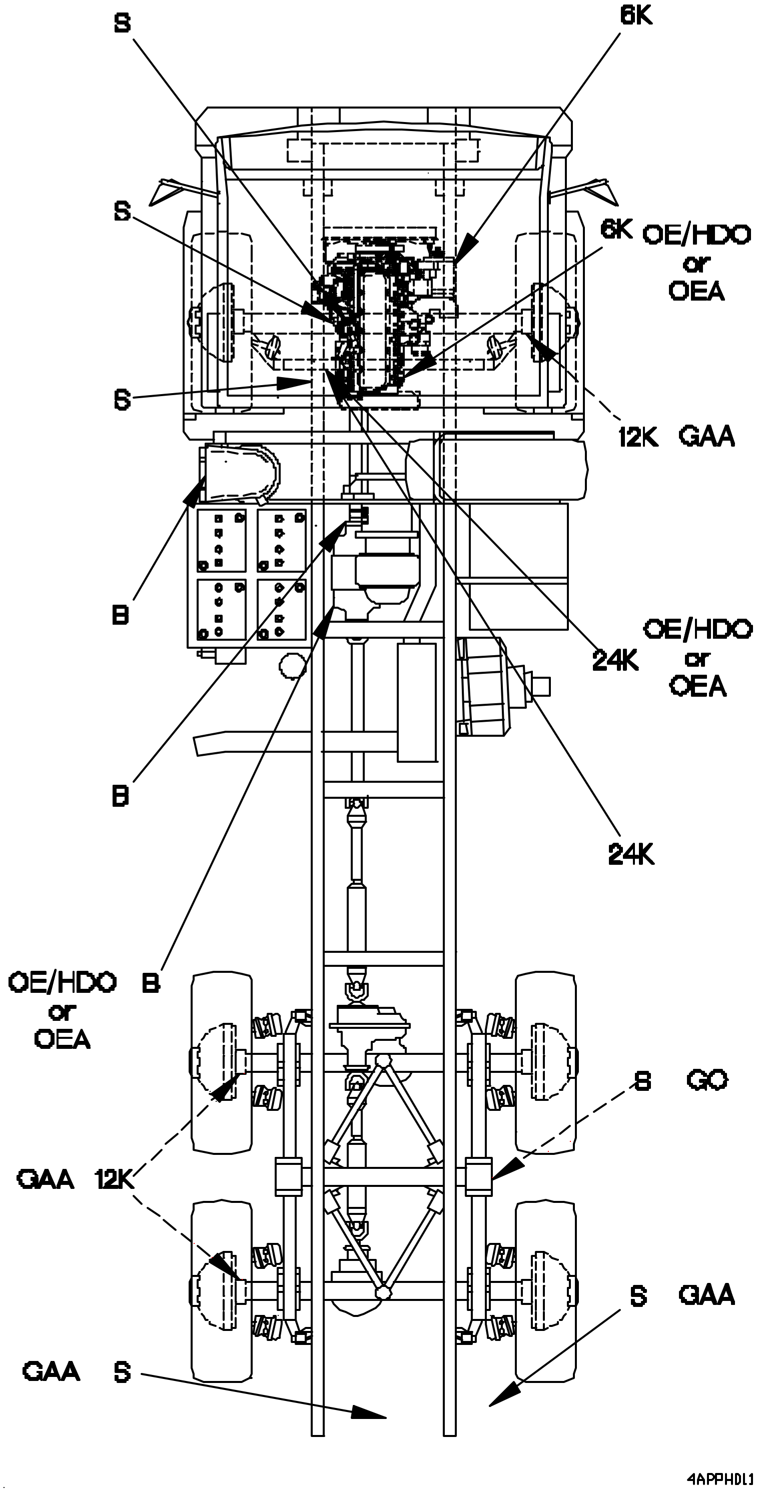
Cooling System (O)
(See note 7)

Transmission Filter (O)
(See note 3 and view F)

Transmission Drain and Fill (O)
(See note 3 and views D, E, and F)

Intermediate Axle and Rear Axle Inner Wheel Bearing Repack (O)
(See note 27)

Towing Pintle Fill (O)
(See note 16 and views J and K)



INTERVAL LUBRICANT

Engine Oil Filter (O)
(See note 2 and view C)

Crankcase Drain and Fill (O)
(See note 1 and views C and D)

Front Axle Inner Wheel Bearing Repack (O)
(See note 27)

Power Steering Reservoir Drain and Fill (O)
(See note 4 and view G)

Power Steering Filter (O)
(See note 4 and view G)

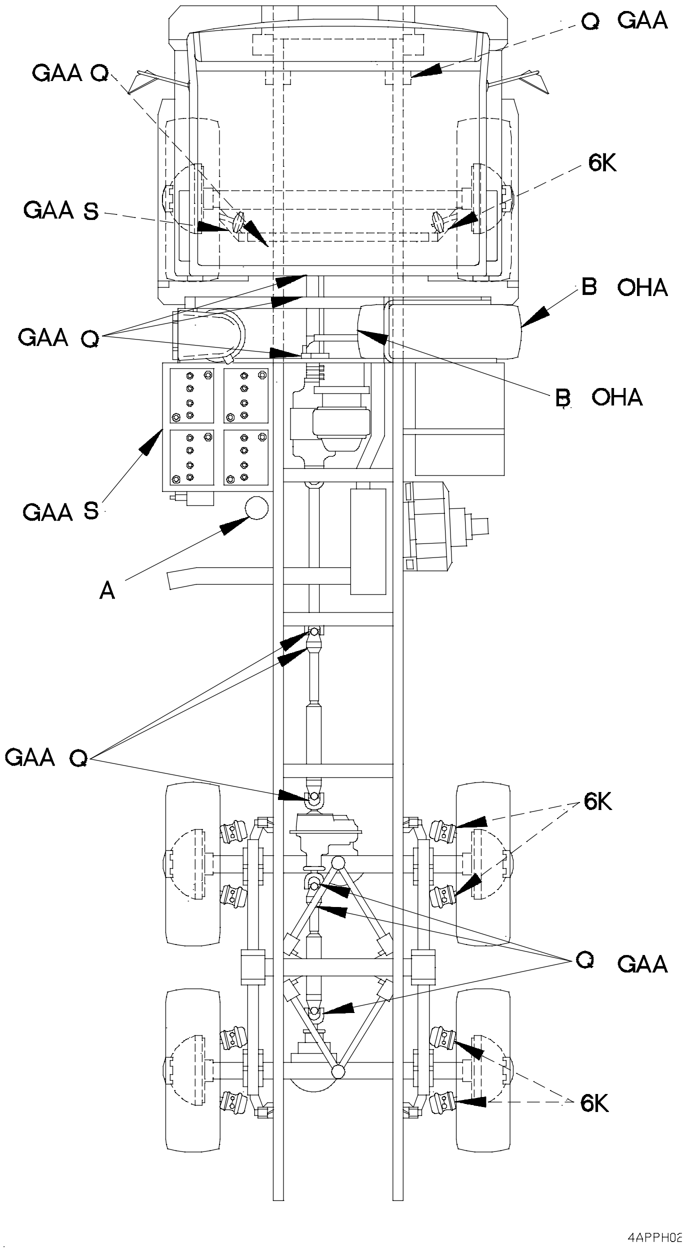
Rear Axle Bogie Drain and Fill (O)
(See note 28 and view AG)

15K Self-Recovery Winch (SRW) Cable Rear Roller Fairlead Fill (O)
(See note 29 and views AE and AF)

CHASSIS

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

LUBRICANT INTERVAL **INTERVAL LUBRICANT**



Spring Shackle
Fill (O)
(See note 18 and view I)

Tie Rod Ends
Fill (O)
(See note 13 and view N)

Universal and Slip Joints
Fill (O)
(See note 9 and view P)

Battery Posts (O)
(See note 19 and view Q)

Air Dryer (O)
(See note 37 and view BB)

Universal and Slip Joints
Fill (O)
(See note 9 and view P)

Spring Bolt
Fill (O)
(See note 18 and view H)

Brake Wedge and Air Chamber (O)
(See note 21 and view L)

Backup Hydraulic Pump Drain and Fill (O)
(See note 10 and view R)

Air/Hydraulic Power Unit Drain and Fill (O)
(See note 10 and view S)

Brake Wedge and Air Chamber (O)
(See note 21 and view M)

Universal Joint and Slip Joints
Fill (O)
(See note 9 and view P)

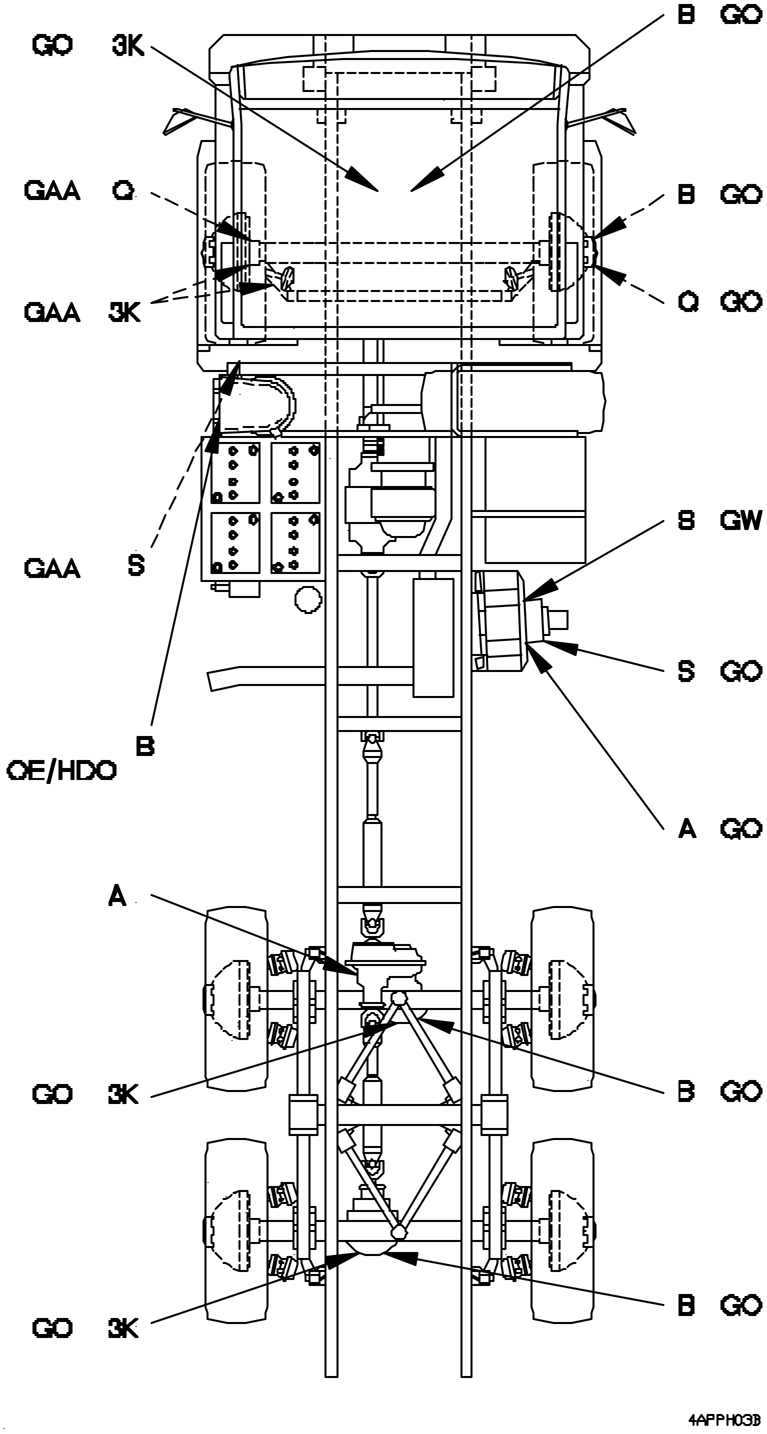
Brake Wedge and Air Chamber (O)
(See note 21 and view M)

CHASSIS

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

H-7. LOCATOR VIEWS (CONT)

LUBRICANT INTERVAL **INTERVAL LUBRICANT**



Front Axle
Check and Fill (O)
(See note 11 and view T)

Axle Shaft U-Joints
Fill (O)
(See note 20 and view U)

Steering Knuckles
Fill (O)
(See note 20 and view U)

Front Lifting Beam
Clean and Grease (O)
(See note 36 and view AI)

Hydraulic Reservoir and Filter
Drain and Fill (O)
(See note 8 and view X)

Intermediate Axle Screen and Plug Oil Filter Assembly
Clean (O)
(See note 31 and view AH)

Intermediate Axle
Check and Fill (O)
(See note 11 and view T)

Rear Axle
Check and Fill (O)
(See note 11 and view T)

Front Axle
Drain and Fill (O)
(See note 11 and view T)

Wheel End Planetary Hubs
Drain and Fill (O)
(See note 12 and view V)

Wheel End Planetary Hubs
Check and Fill (O)
(See note 12 and view V)

15K Self-Recovery Winch (SRW) Cable
Fill (O)
(See note 14 and view W)

15K Self-Recovery Winch (SRW)
Check and Fill (O)
(See note 15 and view Y)

15K Self-Recovery Winch (SRW)
Drain and Fill (O)
(See note 15 and view Y)

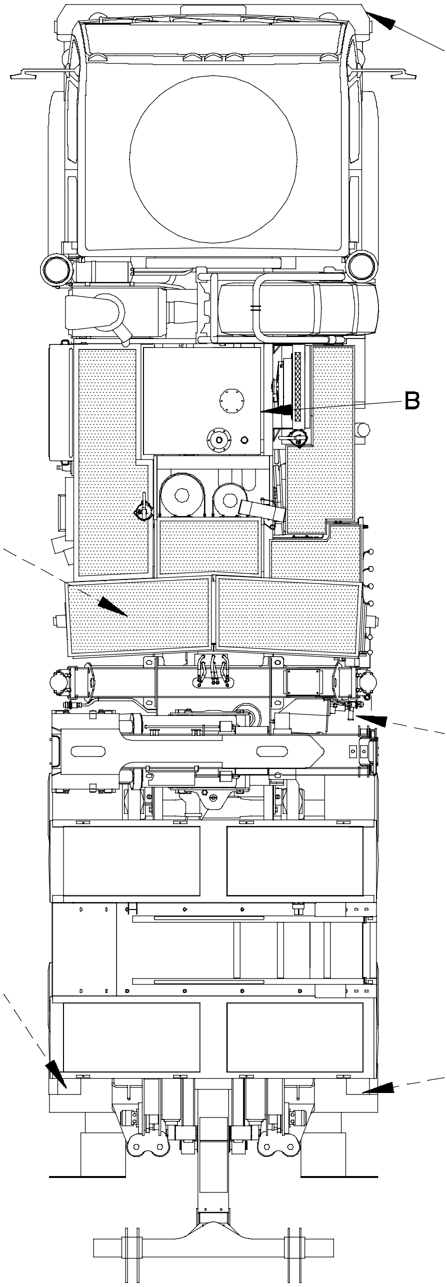
Intermediate Axle
Drain and Fill (O)
(See note 11 and view T)

Rear Axle
Drain and Fill (O)
(See note 11 and view T)

CHASSIS

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

LUBRICANT INTERVAL **INTERVAL LUBRICANT**



S GAA **15K Self-Recovery Winch (SRW) Cable Front Roller Fairlead**
Fill (O)
(See note 29 and views Z and AA)

B OE/HDO **Hydraulic Tank and Filter Drain and Fill (O)**
(See note 22 and view AD)

30K Winch Cable
Fill (O)
(See note 14 and view AB) GW S

S GAA **30K Winch Cable Guide Rollers**
Fill (O)
(See note 30 and view AB)

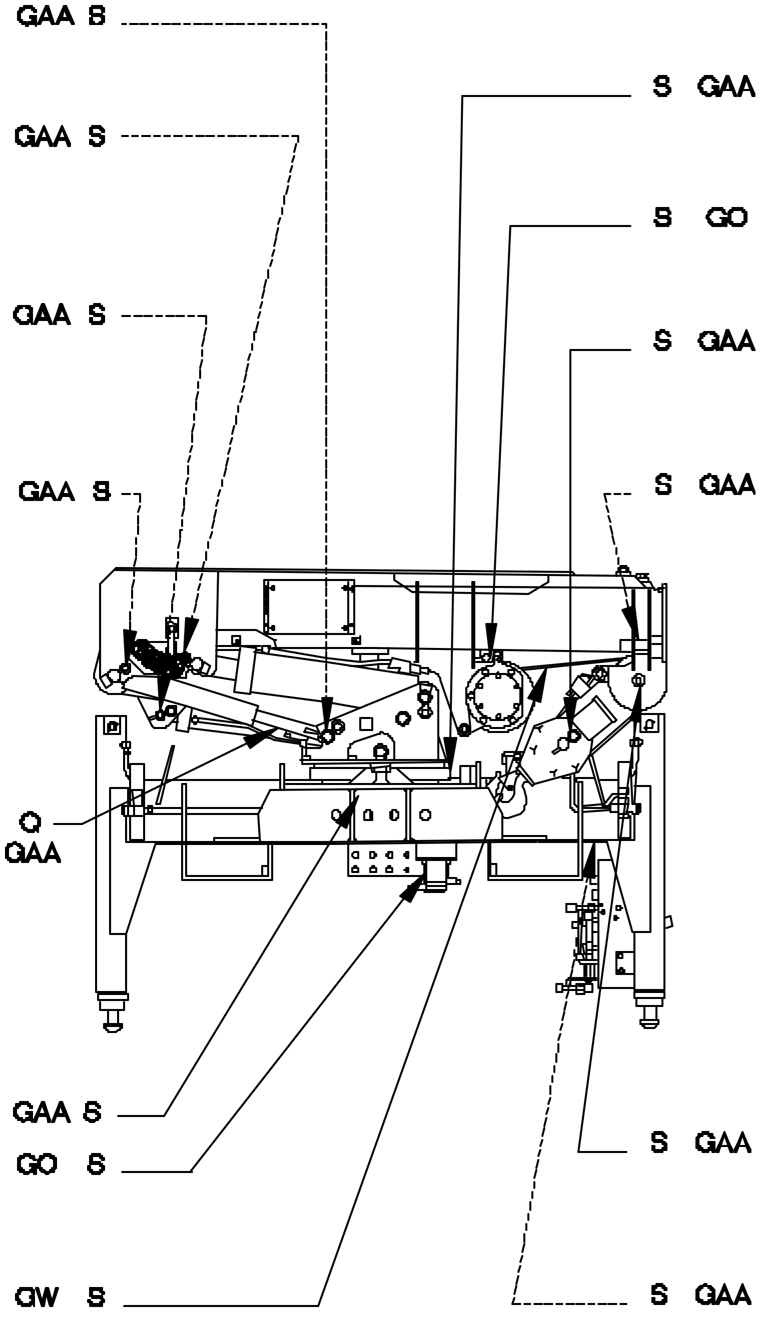
Pay-Out Assembly Lower Tension Sheave
Fill (O)
(See note 30 and view BA) GAA S

S GAA **30K Winch Cable Guide Rollers**
Fill (O)
(See note 30 and view AC)

M1089

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

H-7. LOCATOR VIEWS (CONT)



Erection Cylinder and Tension Link Pivots
Fill (O)
(See note 34 and view AL)

Lift Cylinder Pivots
Fill (O)
(See note 34 and view AJ)

Erection Cylinder Pivots
Fill (O)
(See note 34 and view AK)

Tension Link Pivots
Fill
(See note 34 and view AL)

Tension Links
Grease (O)
(See note 38 and view BC)

Turntable Bearing
Fill (O)
(See note 32 and view AP)

Turntable Gearbox
Check and Fill (O)
(See note 25 and view AQ)

Hoist Cable
Fill (O)
(See note 14)

Turntable Bearing and Pinion Gear Teeth
Fill (O)
(See note 26 and view AM)

Hoist
Check and Fill (O)
(See note 24 and view AN)

Hook Block Sheave
Fill (O)
(See note 34 and view AO)

Boom Wear Pads
Fill (O)
(See note 23)

Boom Sheave
Fill (O)
(See note 34 and view AR)

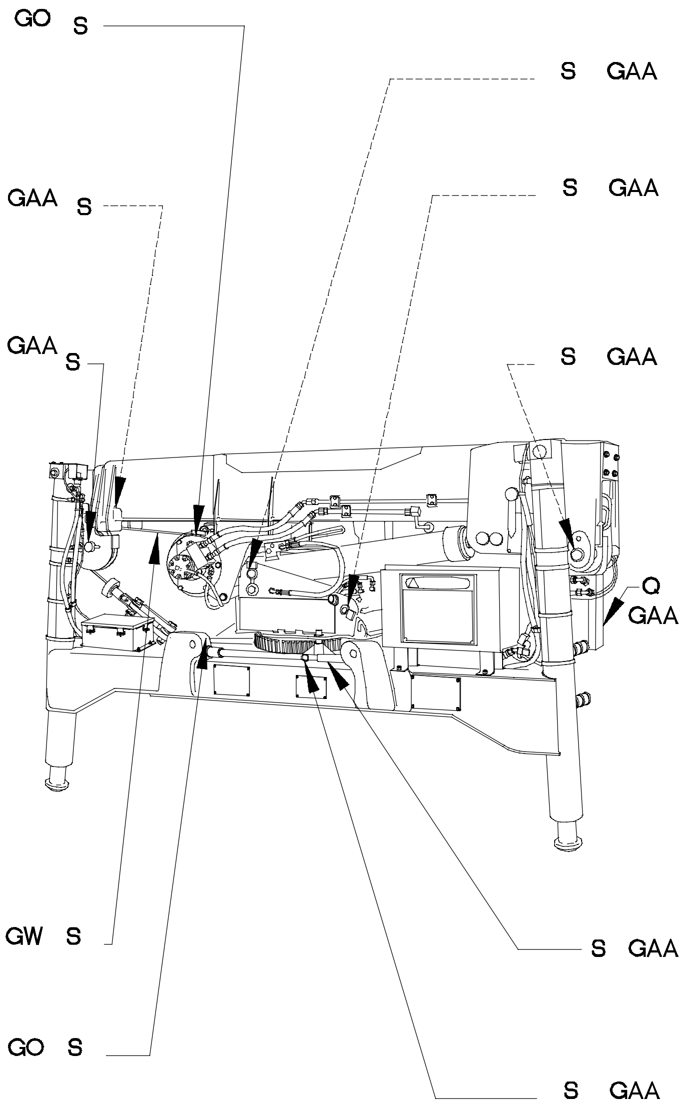
Top and Bottom Plate
Fill (O)
(See note 33)

M1089 MATERIAL HANDLING CRANE (MHC)

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

	LUBRICANT	INTERVAL
Hoist **Check and Fill (O)** (See note 24 and view AS)	GO	S
Boom Wear Pads **Fill (O)** (See note 23)	GAA	S
Boom Sheave **Fill (O)** (See note 34 and view AT)	GAA	S
Hoist Cable **Fill (O)** (See note 14)	GW	S
Turntable Gearbox **Check and Fill (O)** (See note 25 and view AU)	GO	S

INTERVAL	LUBRICANT	
S	GAA	**Lift Cylinder Pivots** **Fill (O)** (See note 34 and view AV)
S	GAA	**Erection Cylinder and Tension Link Pivots** **Fill (O)** (See note 34 and view AW)
S	GAA	**Erection Cylinder and Tension Link Pivots** **Fill (O)** (See note 34 and view AX)
Q	GAA	**Tension Link** **Grease (O)** (See note 38 and view BC)
S	GAA	**Turntable Bearing and Pinion Gear Teeth** **Fill (O)** (See note 26 and view AY)
S	GAA	**Turntable Bearing** **Fill (O)** (See note 32 and view AZ)



M1084/M1086 MATERIAL HANDLING CRANE (MHC)

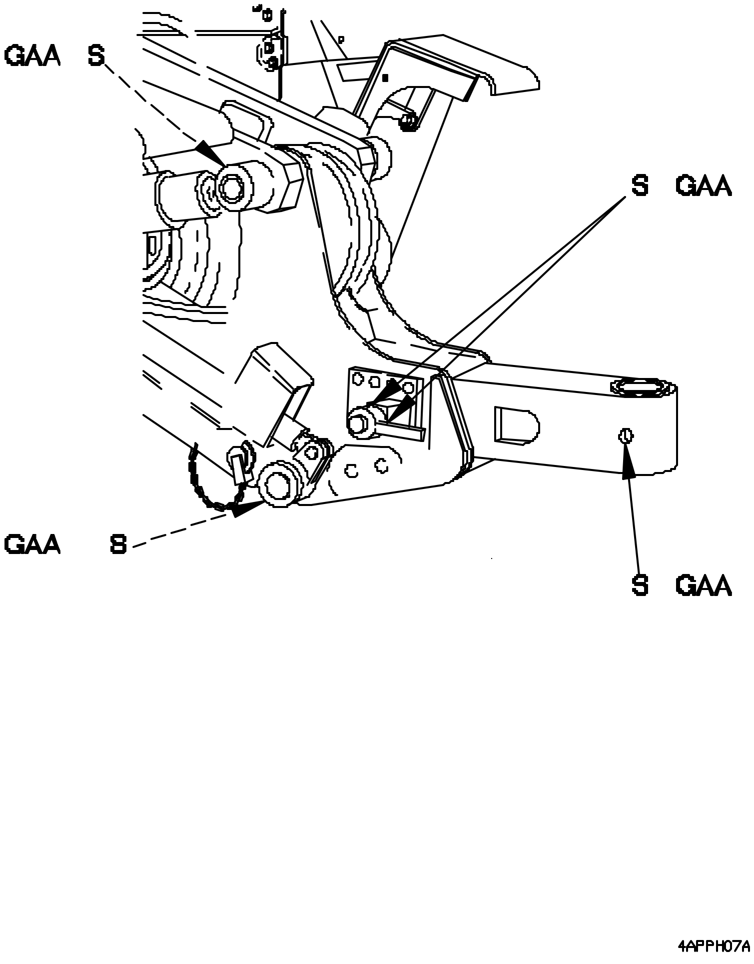
NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

H-7. LOCATOR VIEWS (CONT)

LUBRICANT INTERVAL **INTERVAL LUBRICANT**

Left and Right Lift Cylinder Pivots
Fill (O)
(See note 35)

Left and Right Lower Arm Pivots
Fill (O)
(See note 35)



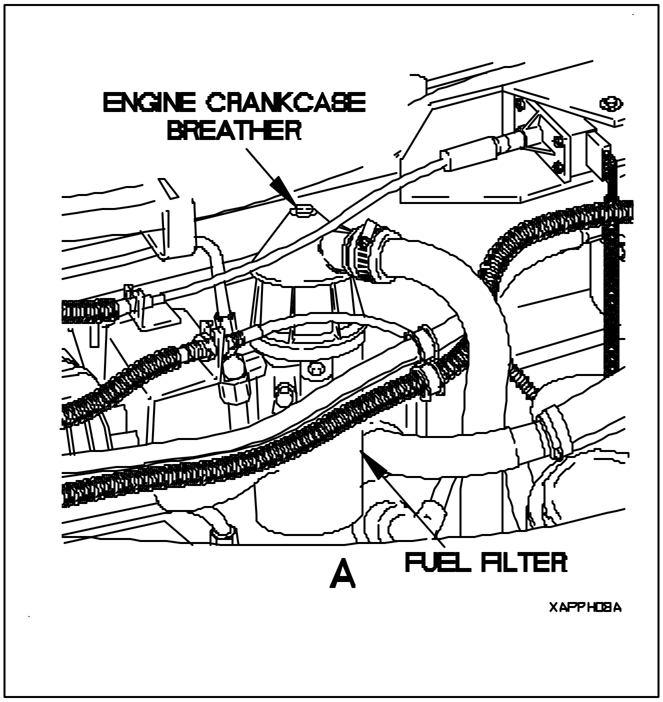
Camlock Assembly
Fill (O)
(See note 35)

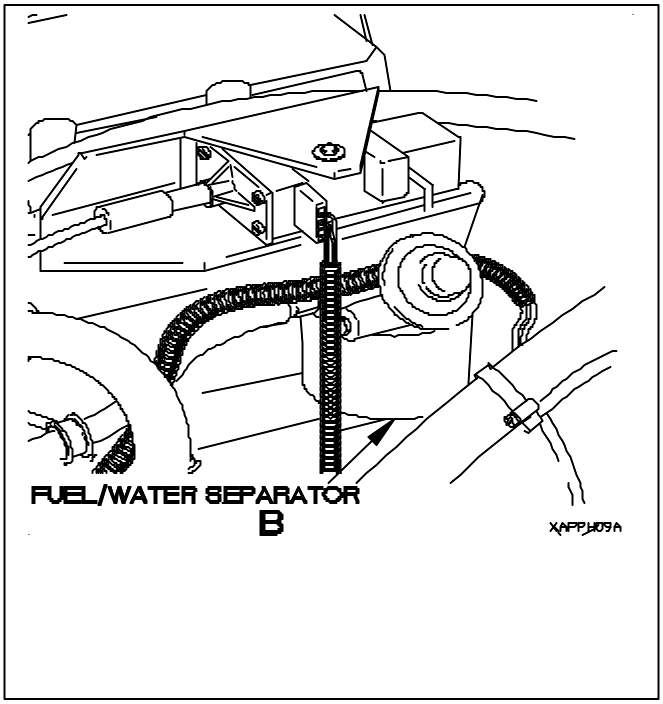
Crossbar Bushing
Fill (O)
(See note 35)

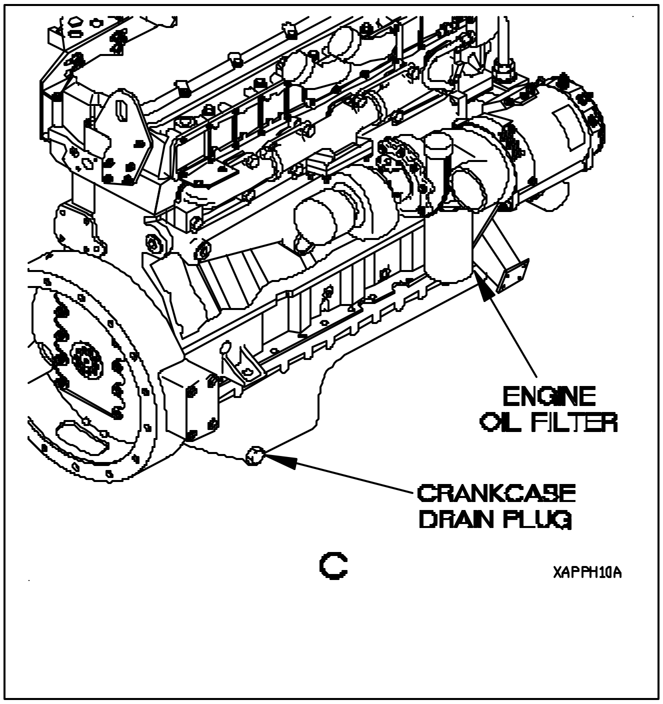
M1089 UNDERLIFT ASSEMBLY

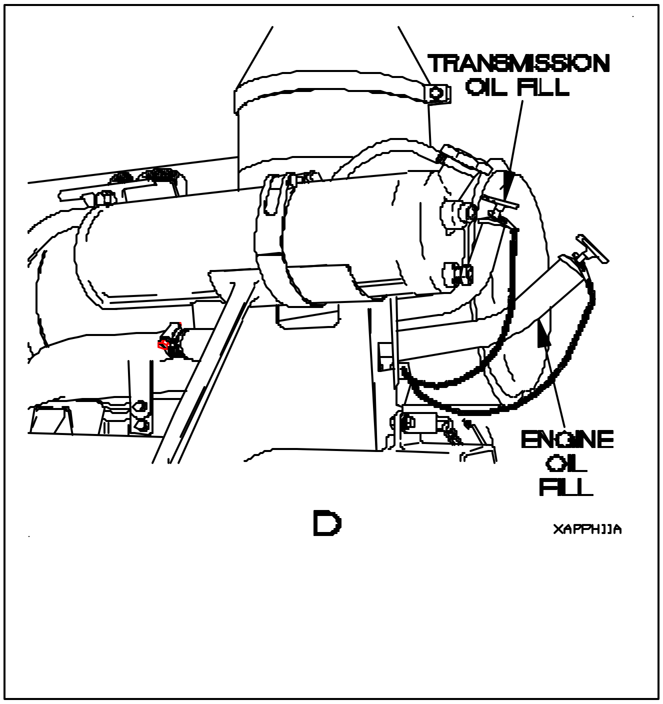
NOTE: Dashed arrows indicate lubrication on both sides of vehicle

H-8. LOCAL VIEWS

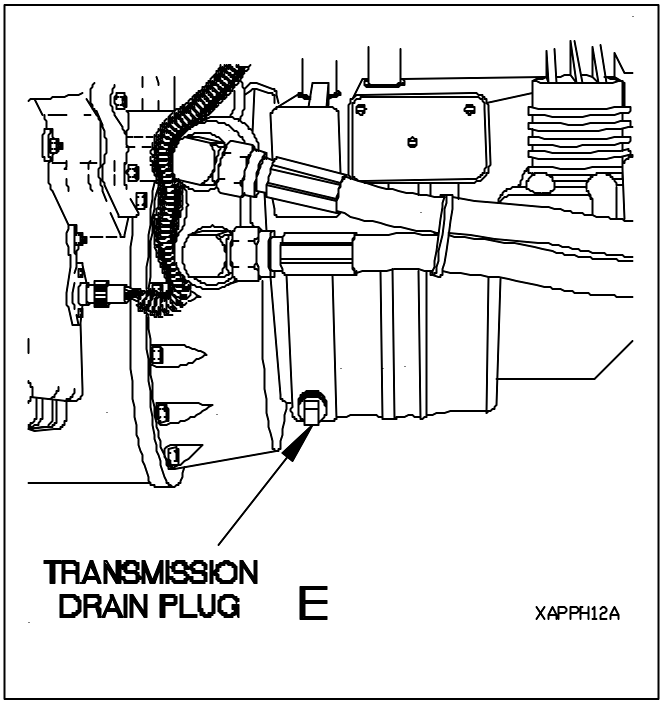


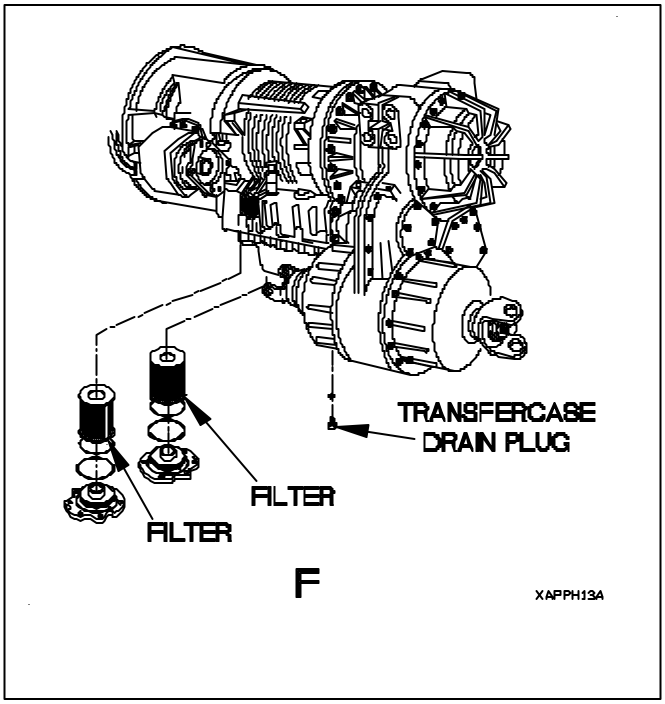


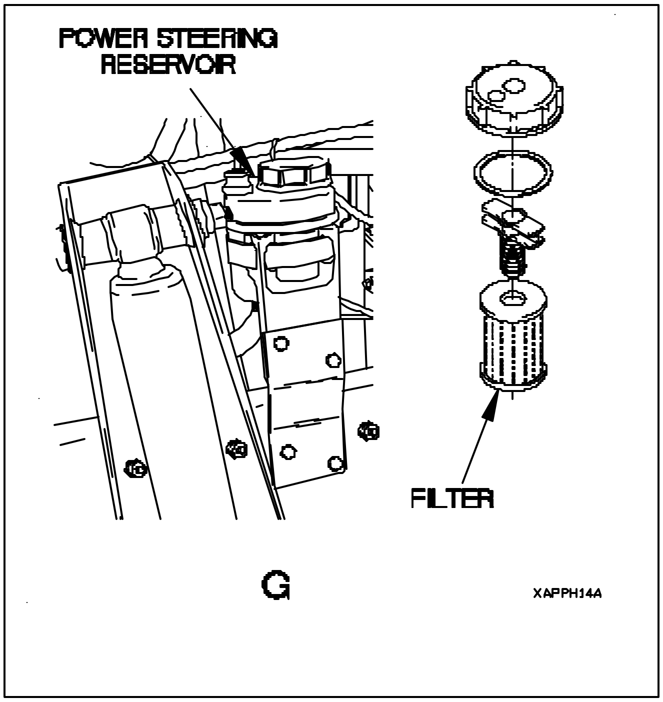


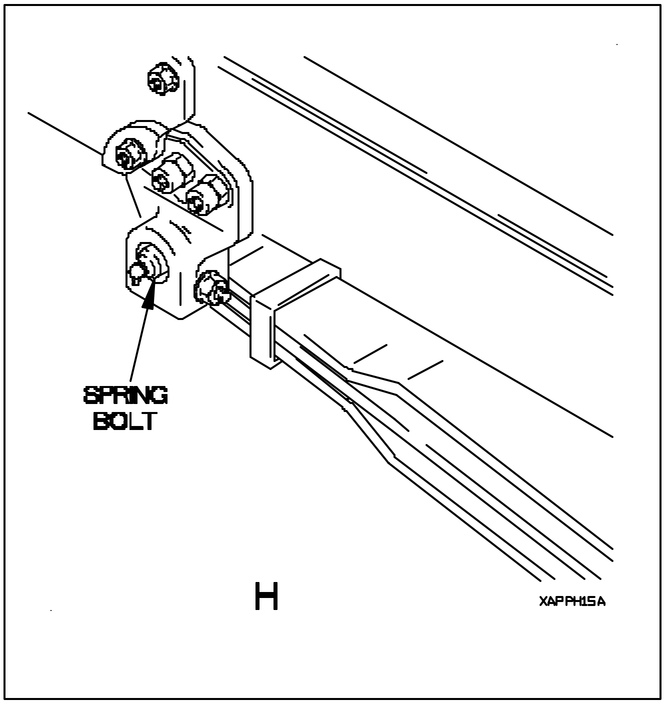


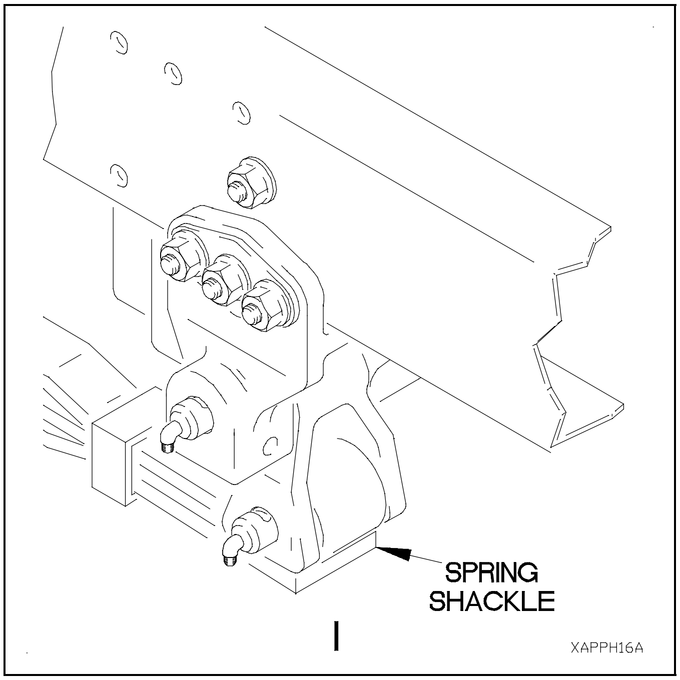
H-8. LOCAL VIEWS (CONT)

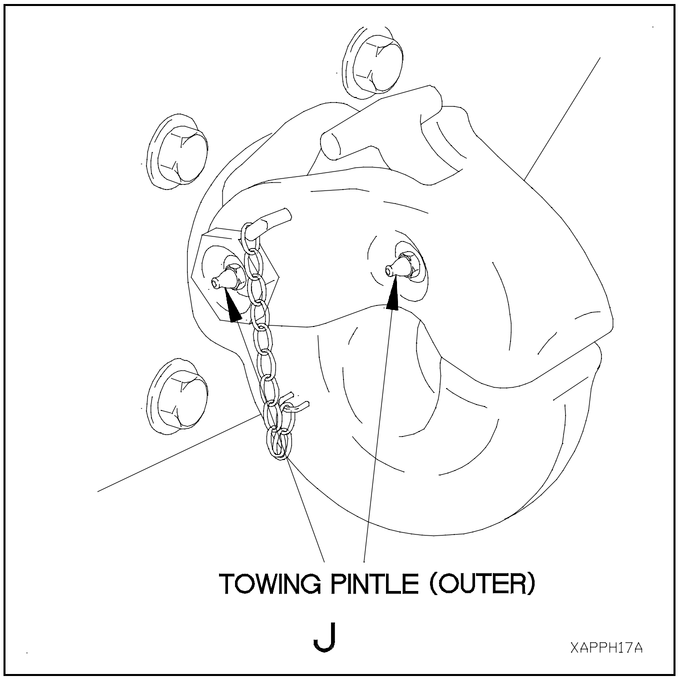


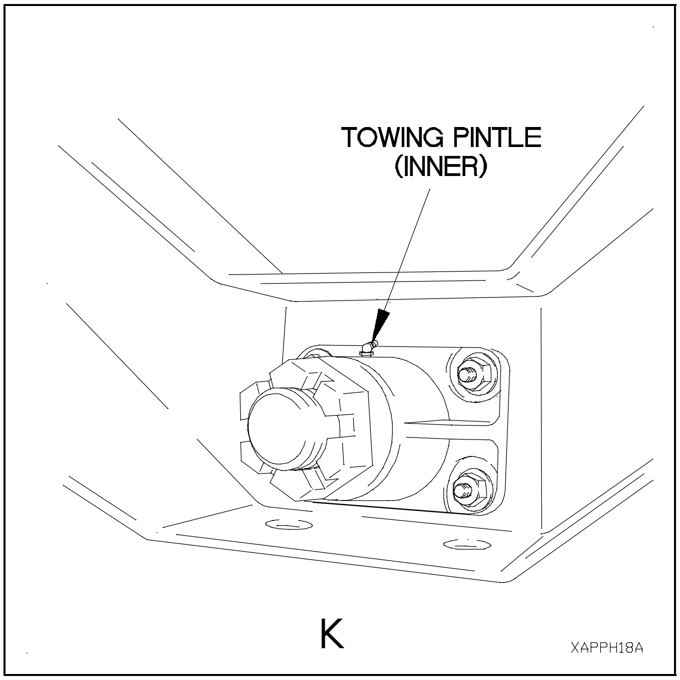


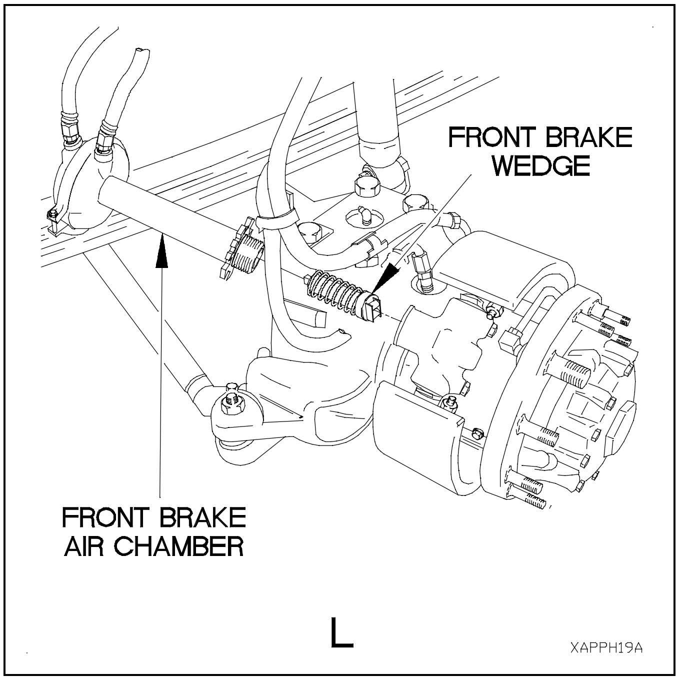




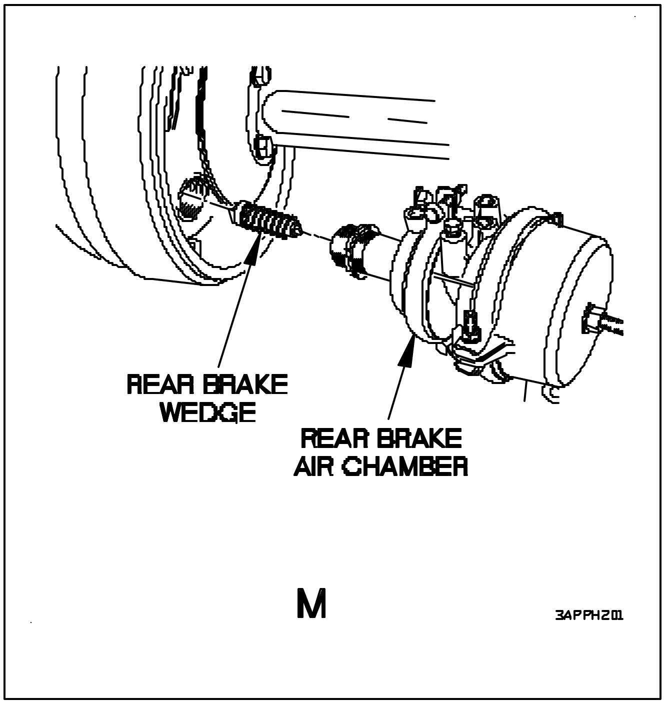

SPRING
SHACKLE
I
XAPPH16A

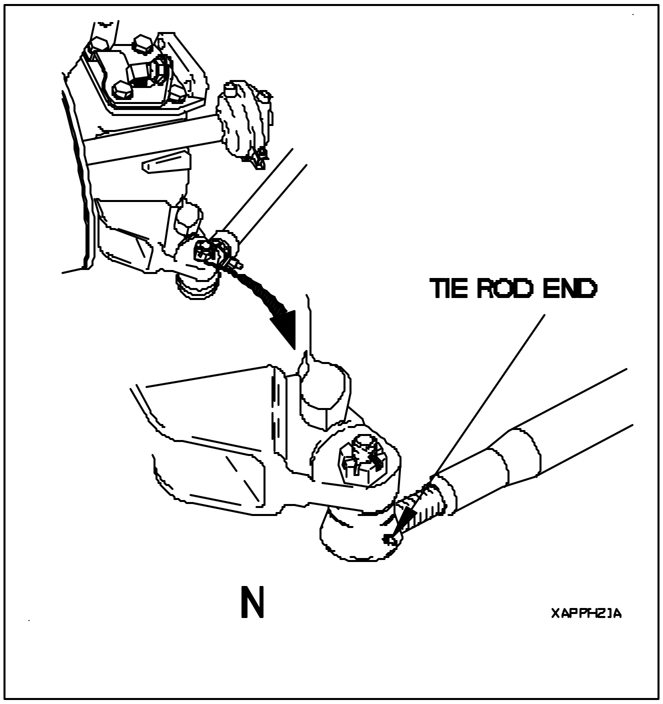

TOWING PINTLE (OUTER)
J
XAPPH17A

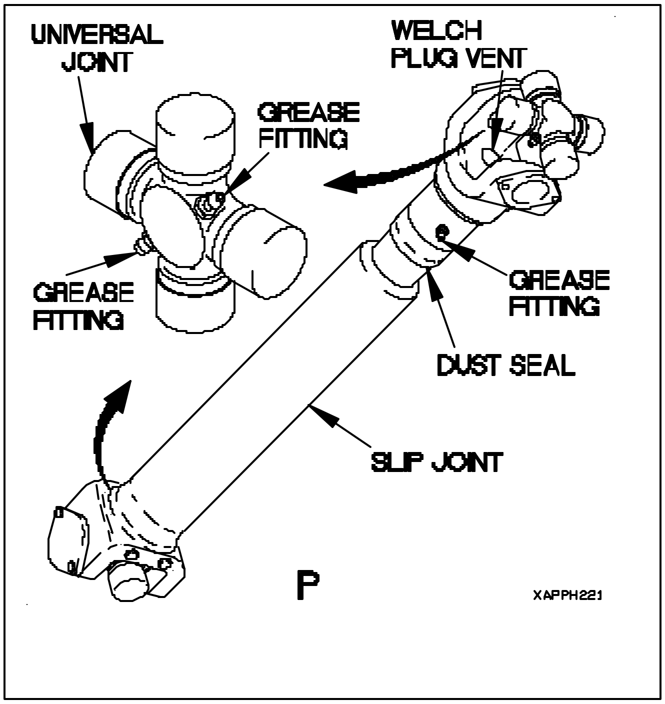

TOWING PINTLE
(INNER)
K
XAPPH18A

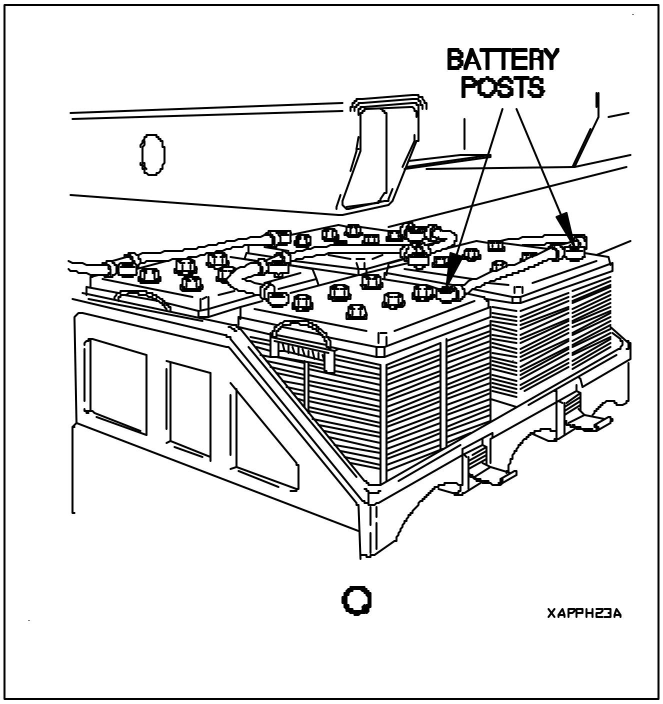

FRONT BRAKE
WEDGE
FRONT BRAKE
AIR CHAMBER
L
XAPPH19A

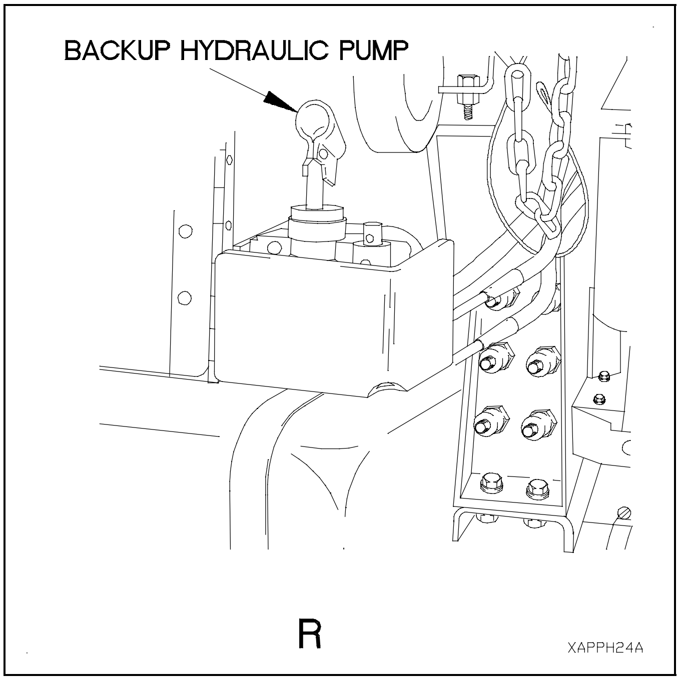
H-8. LOCAL VIEWS (CONT)










BACKUP HYDRAULIC PUMP
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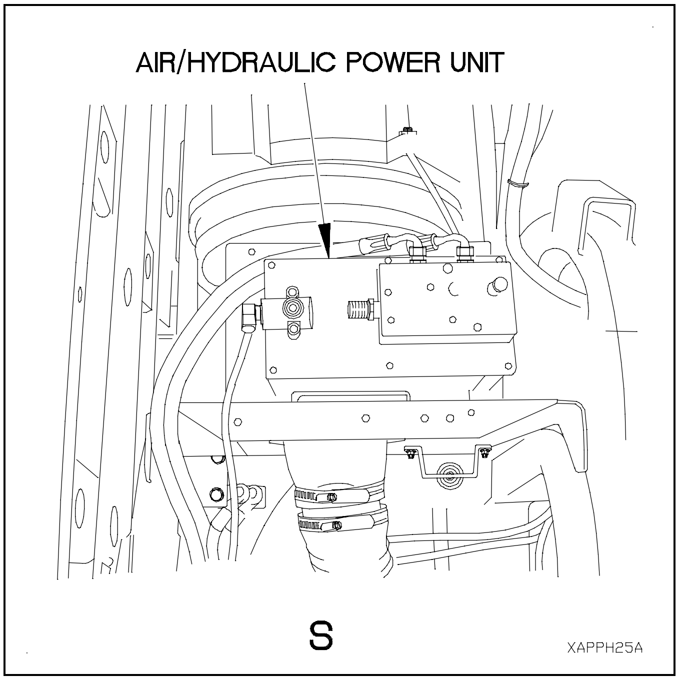
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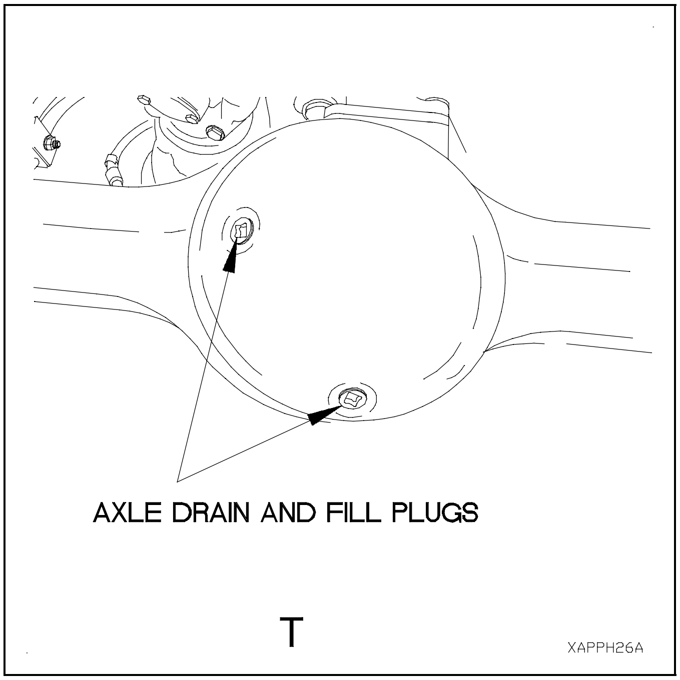
AXLE DRAIN AND FILL PLUGS
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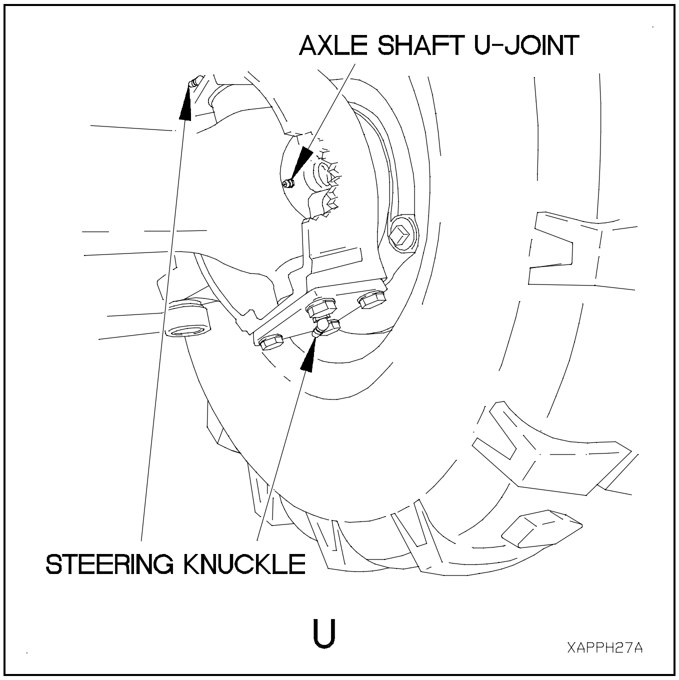
XAPPH26A


AXLE SHAFT U-JOINT
STEERING KNUCKLE
U
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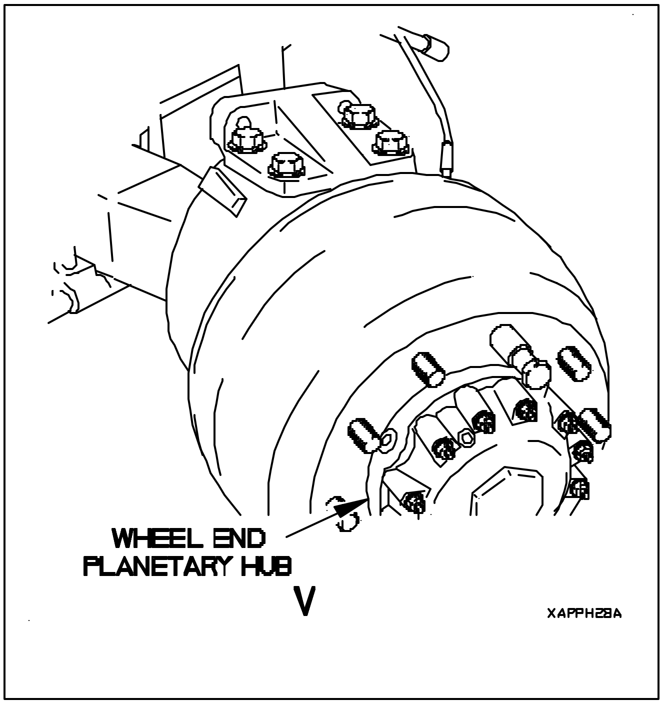
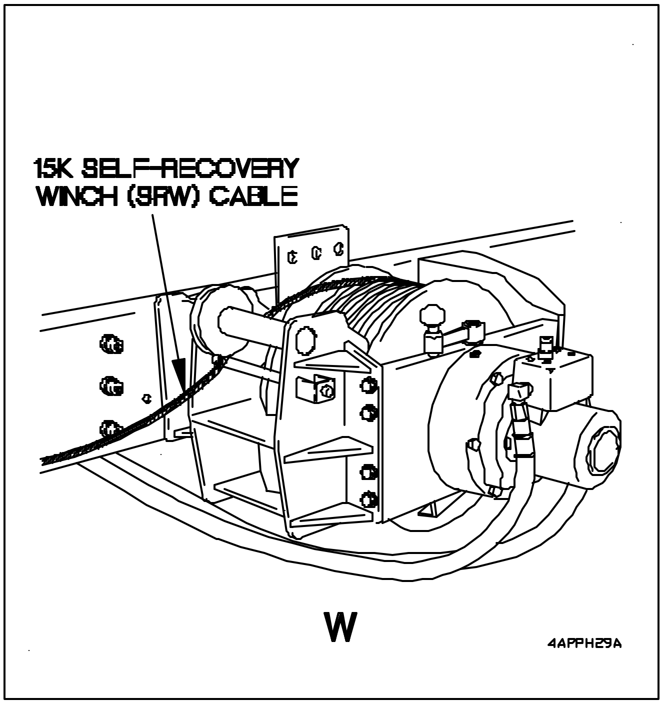
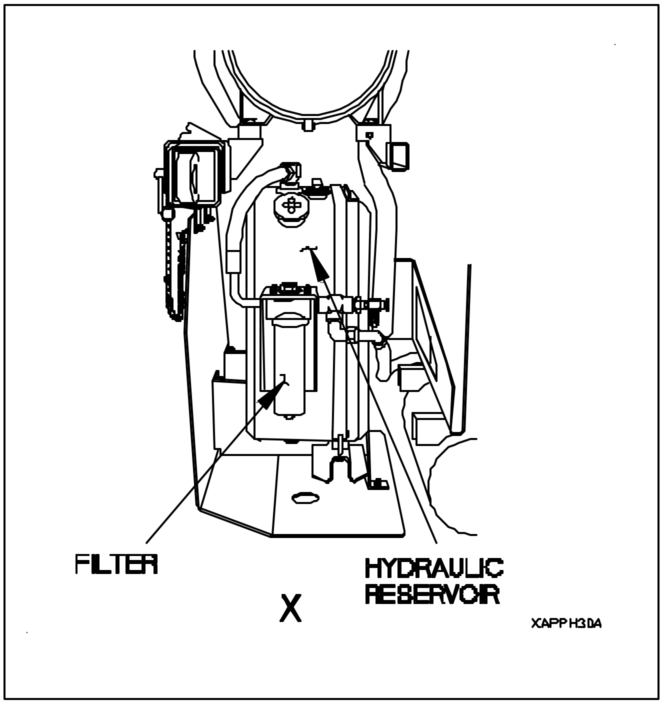
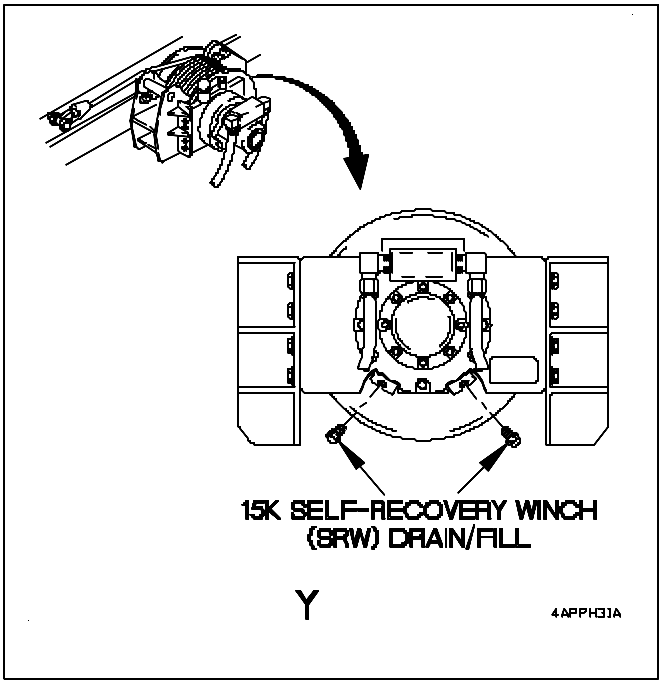
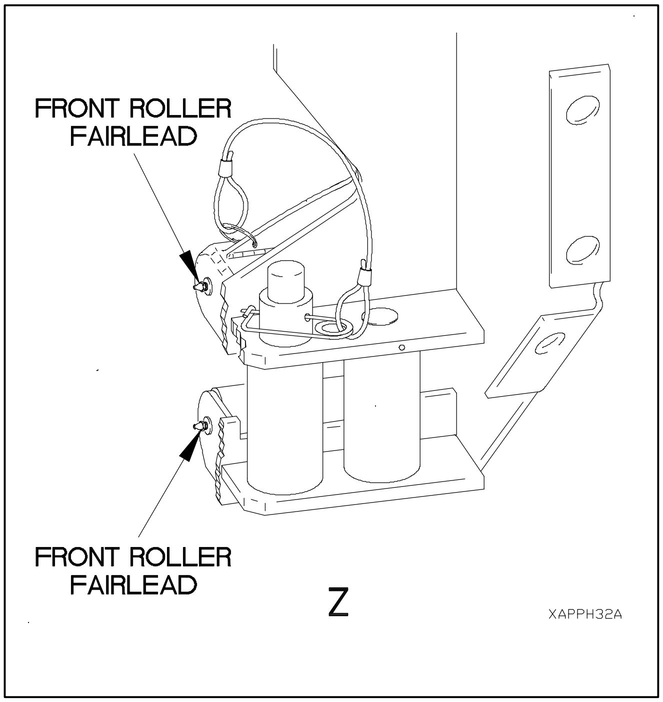
H-8. LOCAL VIEWS (CONT)

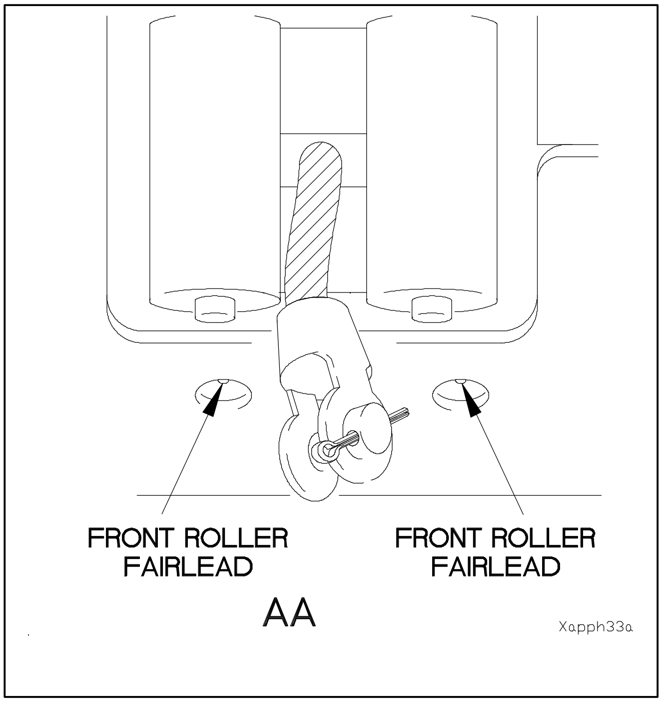









FRONT ROLLER FAIRLEAD
FRONT ROLLER FAIRLEAD
Z
XAPPH32A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AA
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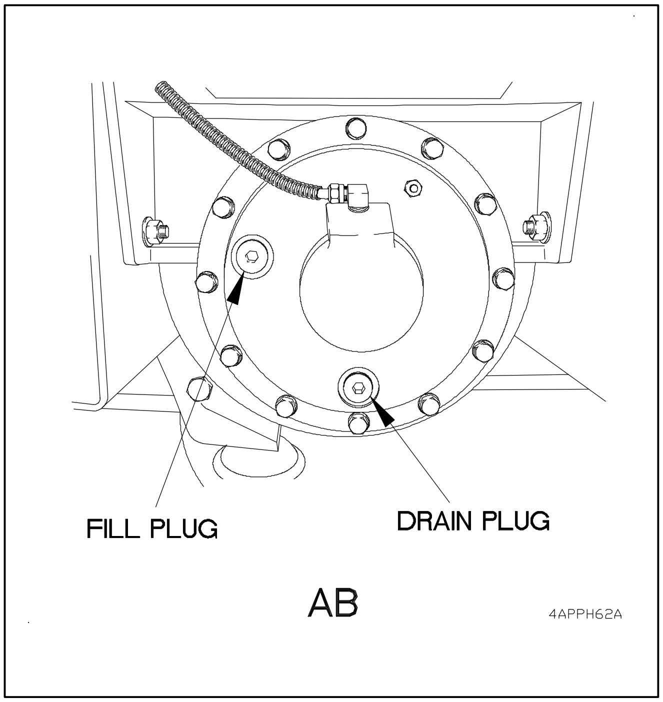
FILL PLUG
DRAIN PLUG
AB
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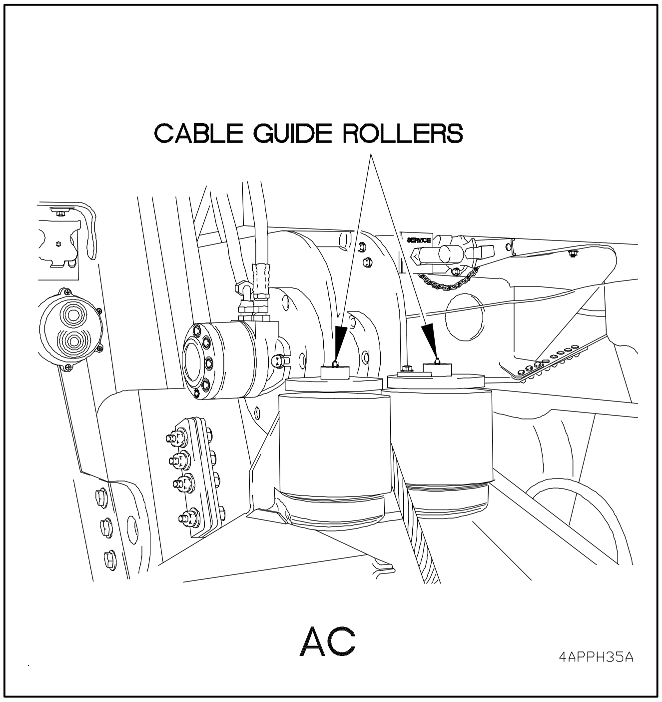
CABLE GUIDE ROLLERS
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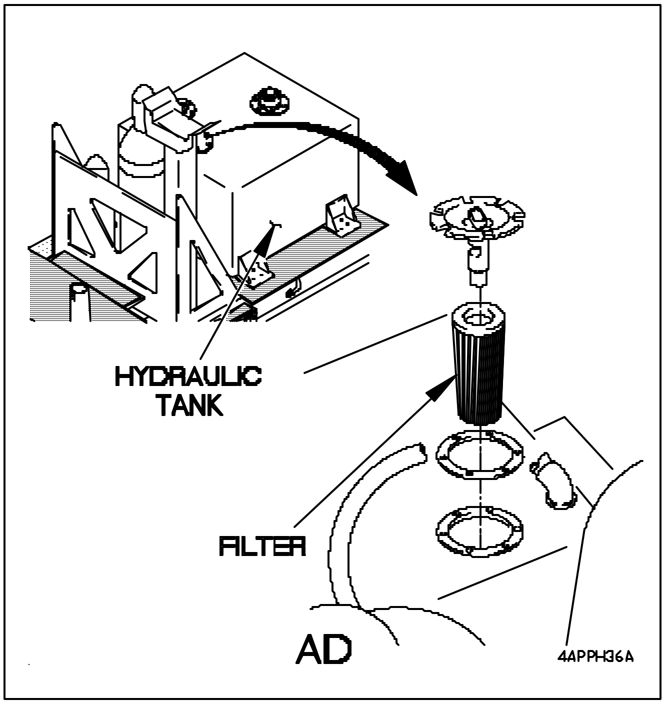
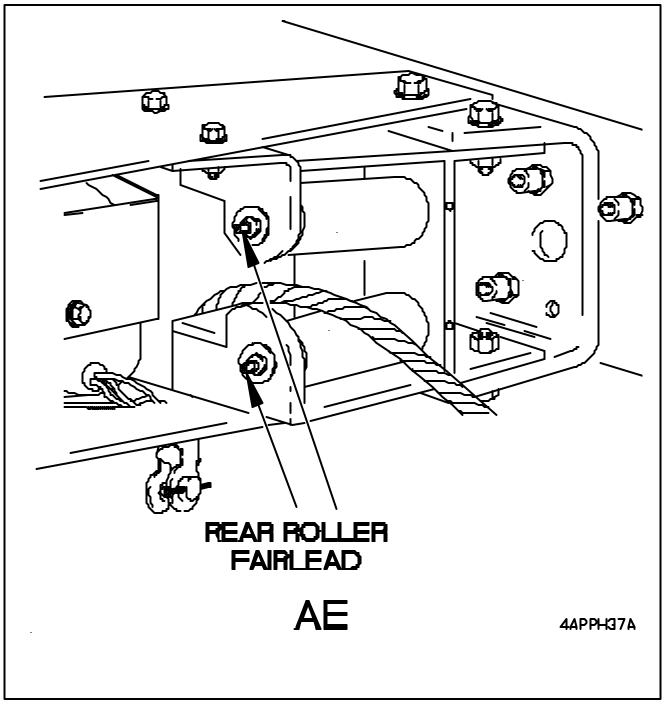
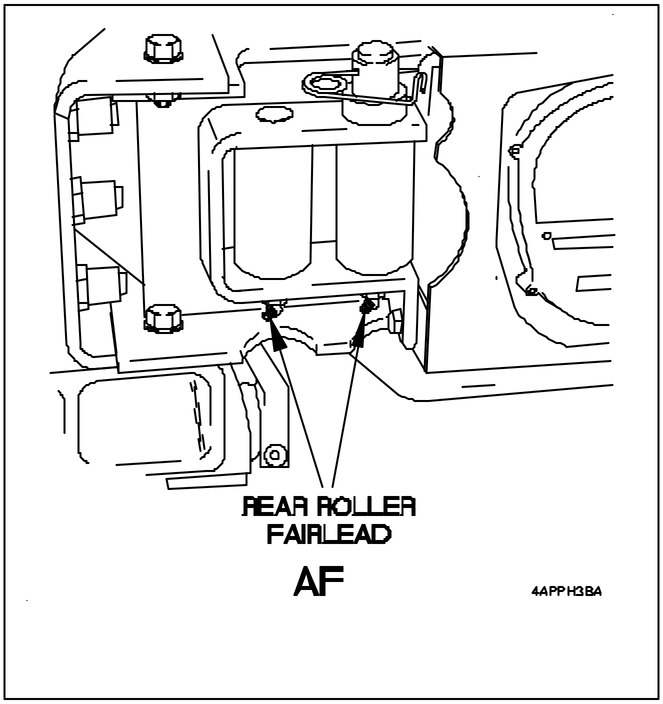
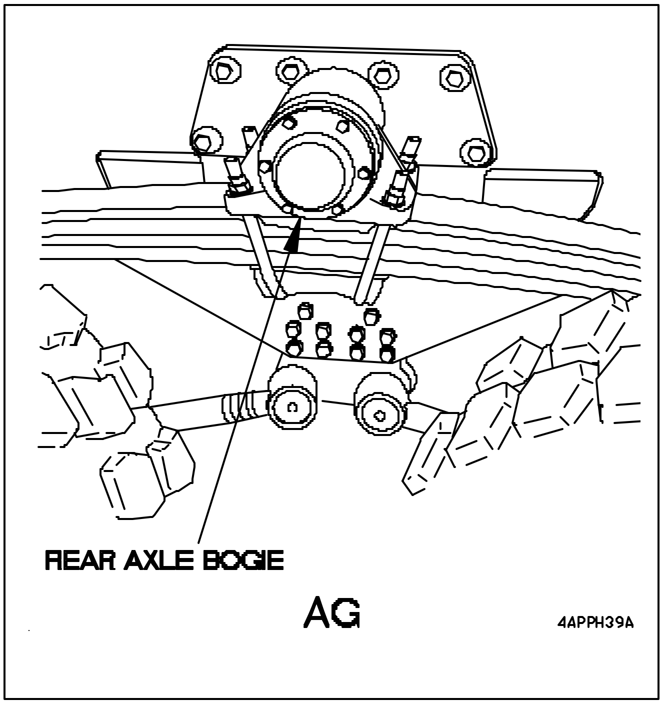
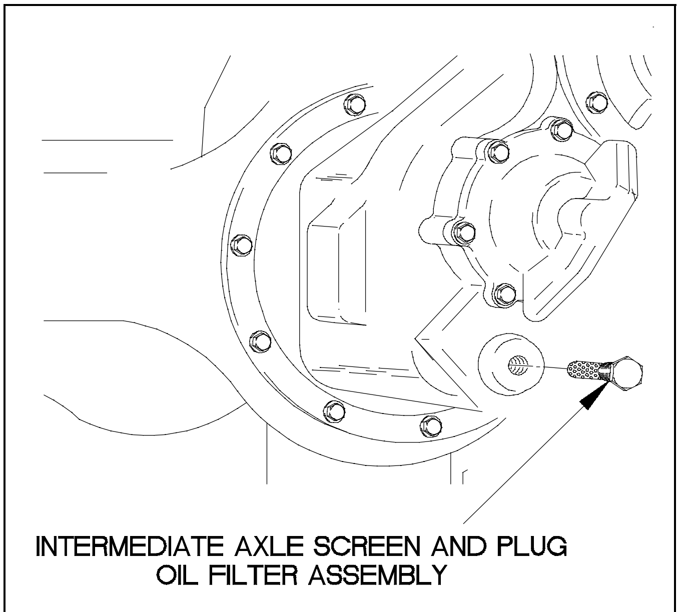
H-8. LOCAL VIEWS (CONT)










INTERMEDIATE AXLE SCREEN AND PLUG
OIL FILTER ASSEMBLY
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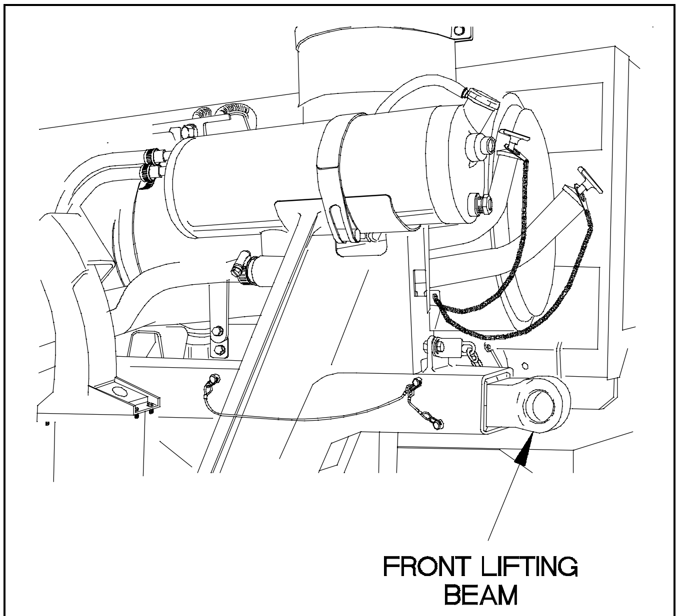
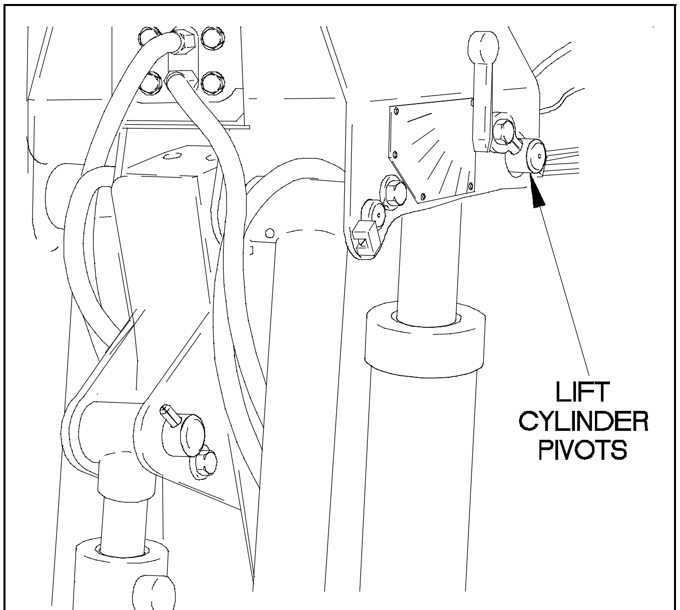
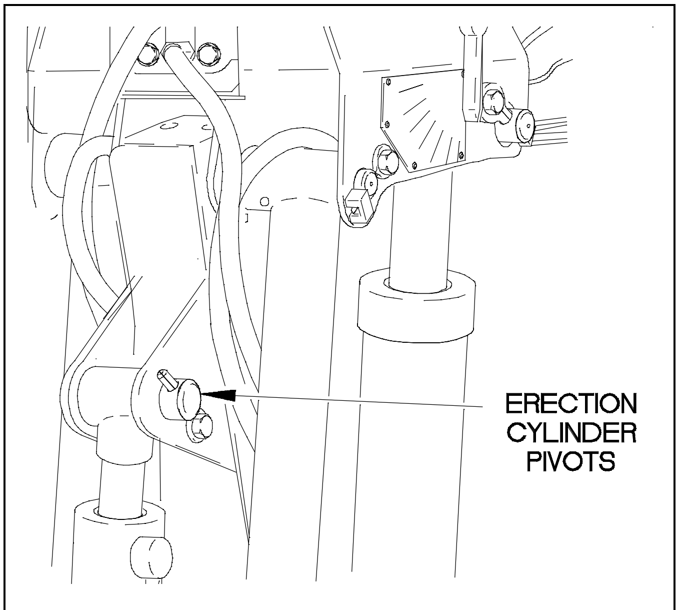
AH


FRONT LIFTING
BEAM
4APPH41A

AI

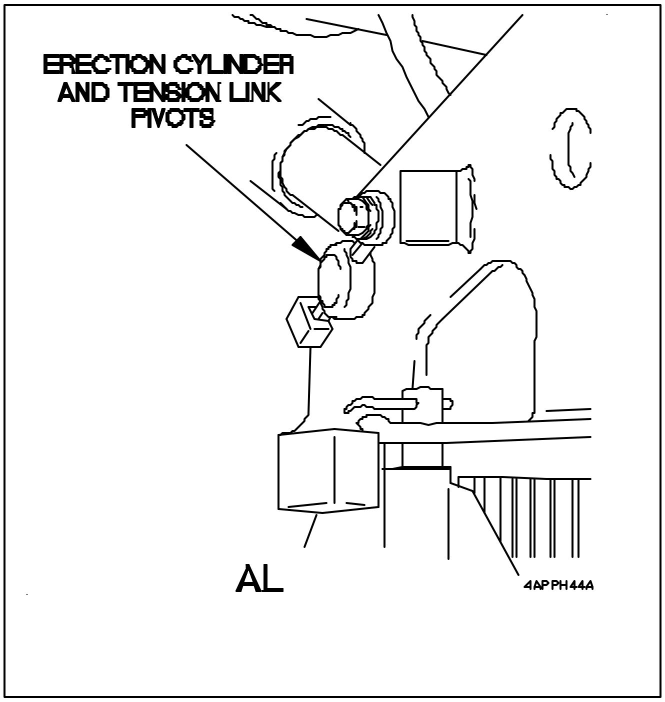

LIFT
CYLINDER
PIVOTS
4APPH42A

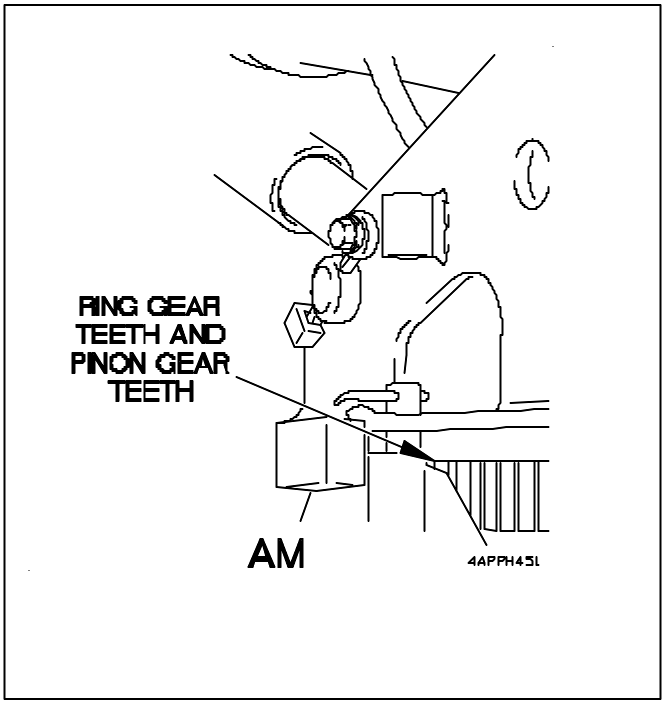
AJ

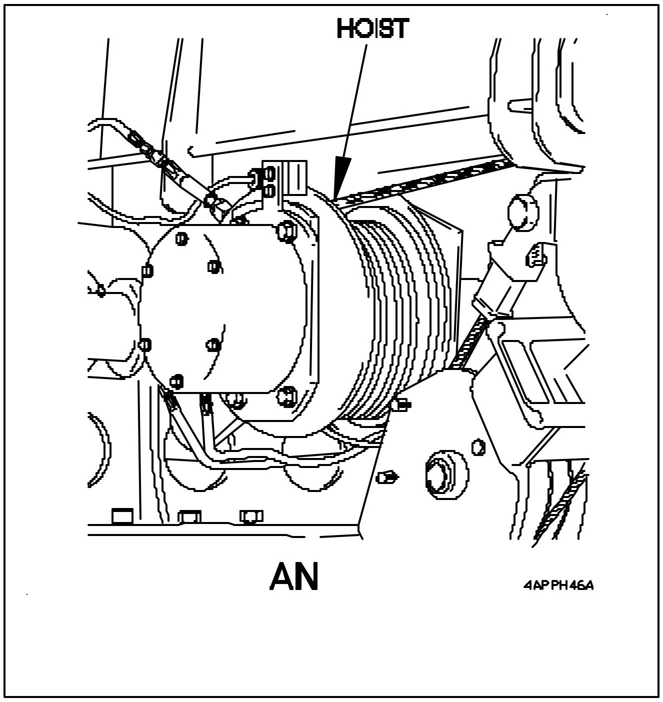

ERECTION
CYLINDER
PIVOTS
4APPH43B

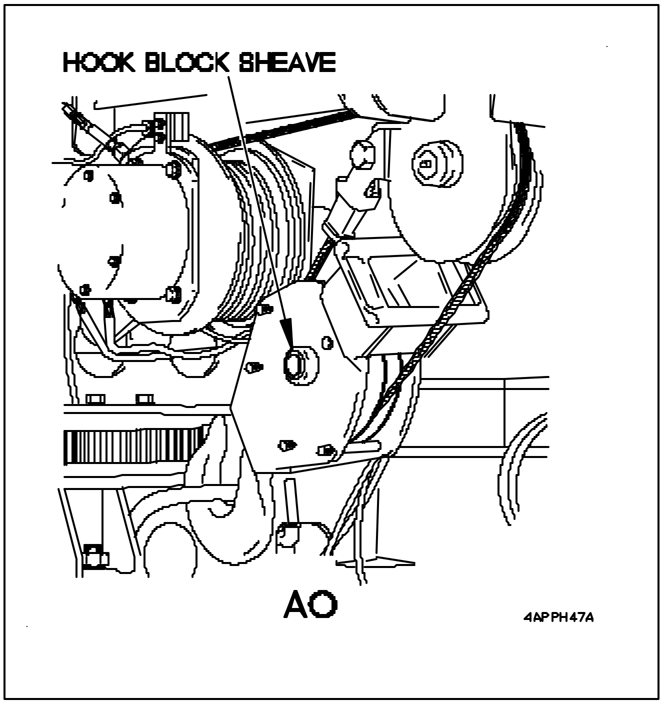
AK

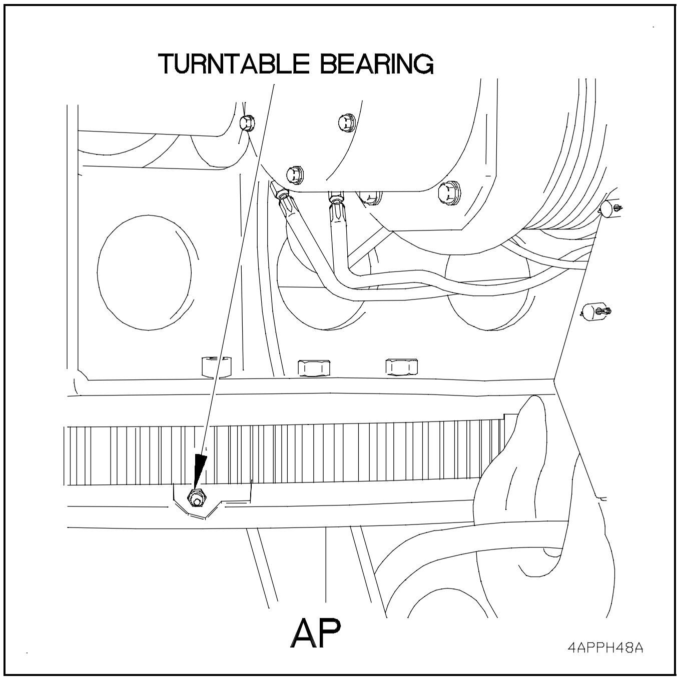
H-8. LOCAL VIEWS (CONT)







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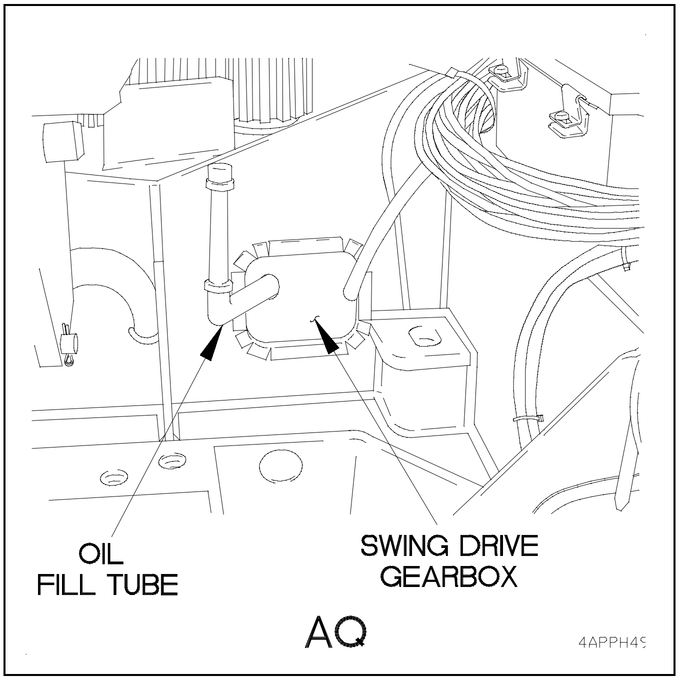
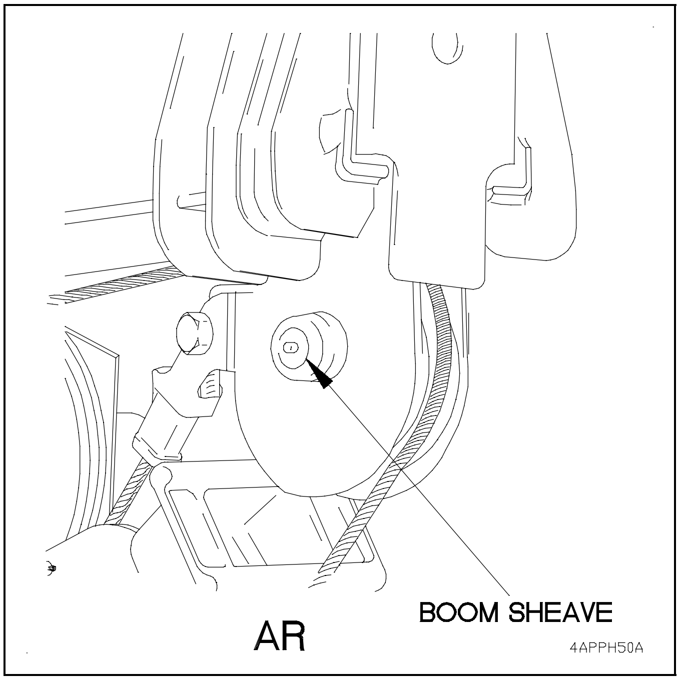
4APPH48A

AP


OIL
FILL TUBE
SWING DRIVE
GEARBOX
4APPH4

AQ


BOOM SHEAVE
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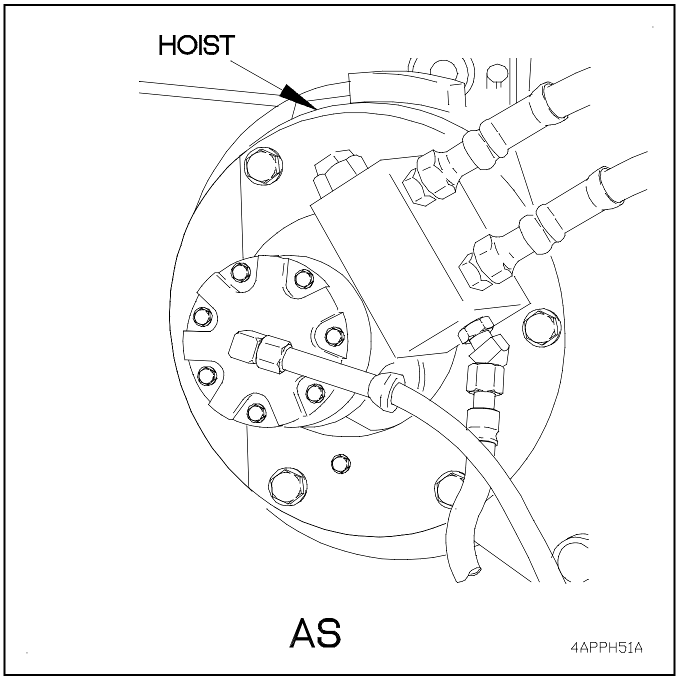
AR


HOIST
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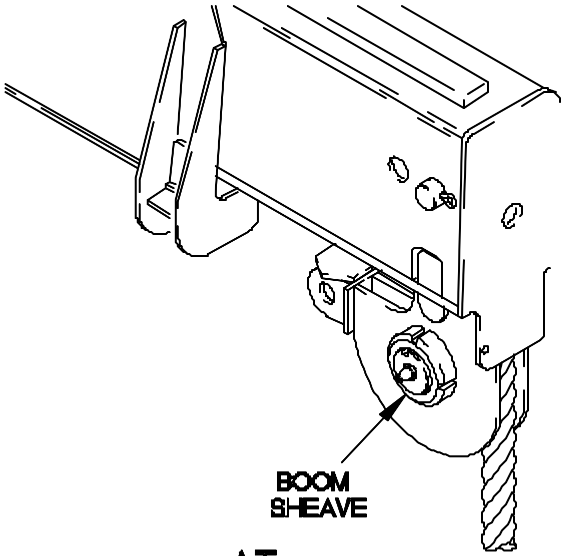
H-8. LOCAL VIEWS (CONT)



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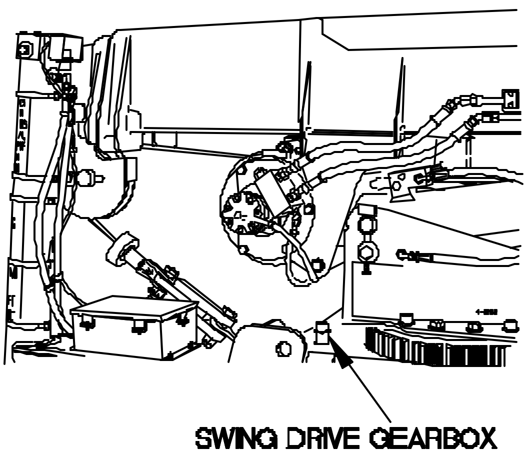

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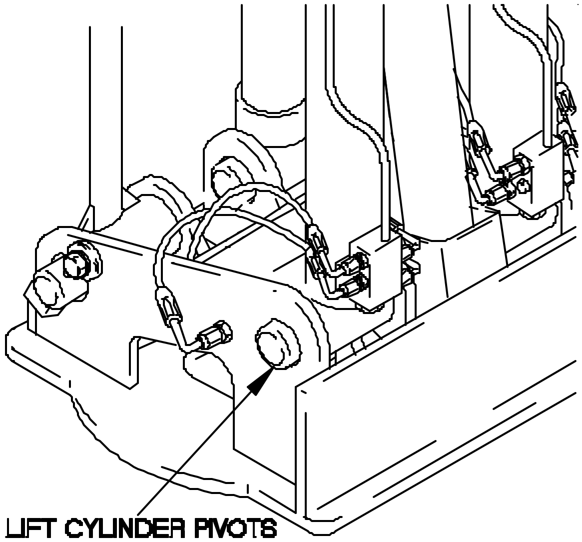

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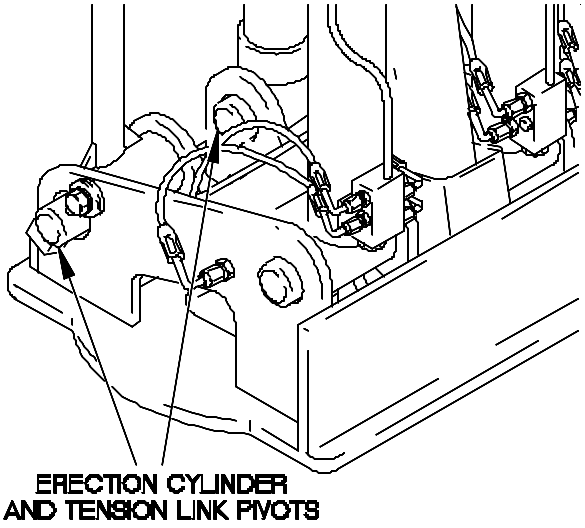

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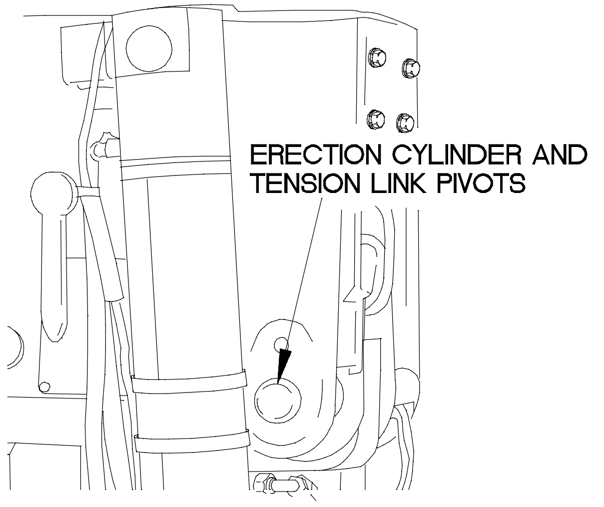
ERECTION CYLINDER AND TENSION LINK PIVOTS
4APPH56A

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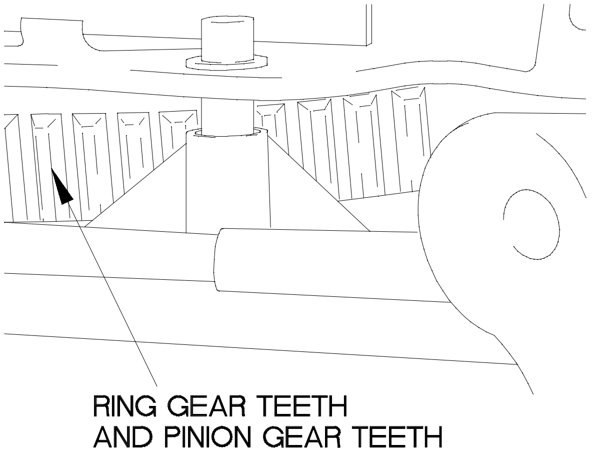
RING GEAR TEETH AND PINION GEAR TEETH
4APPH57

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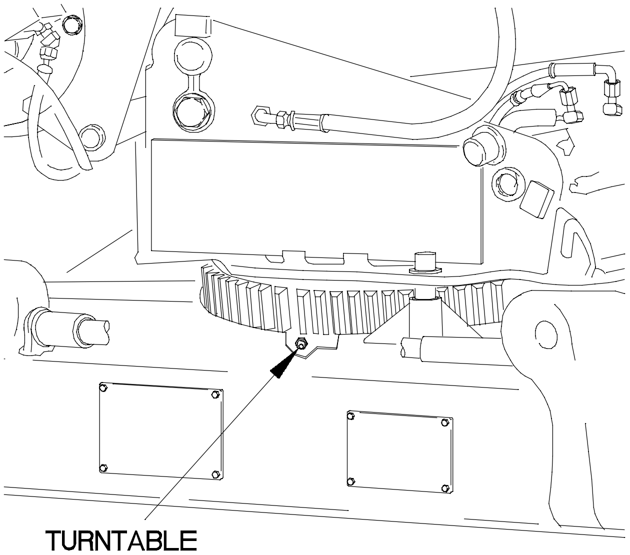
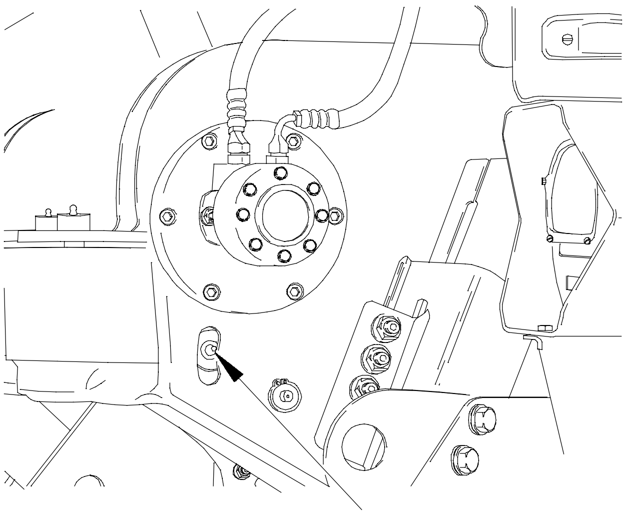
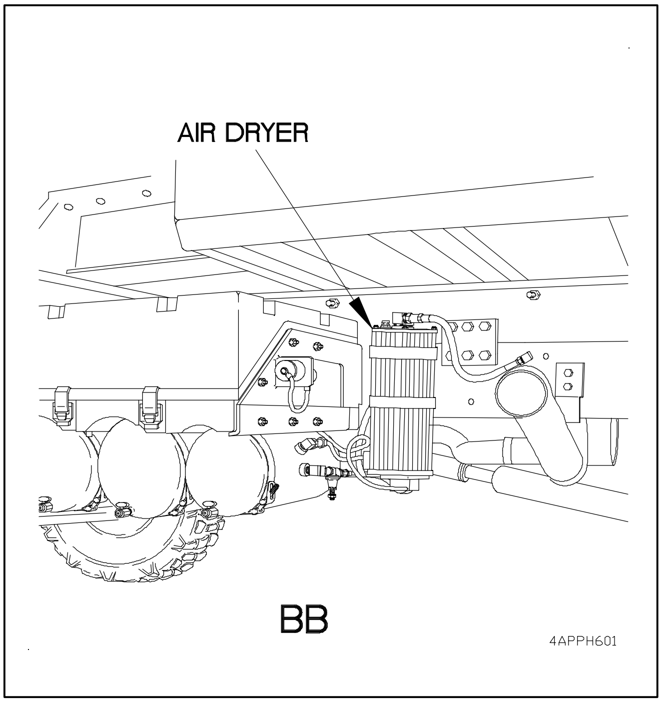

TURNTABLE BEARING
4APPH58A

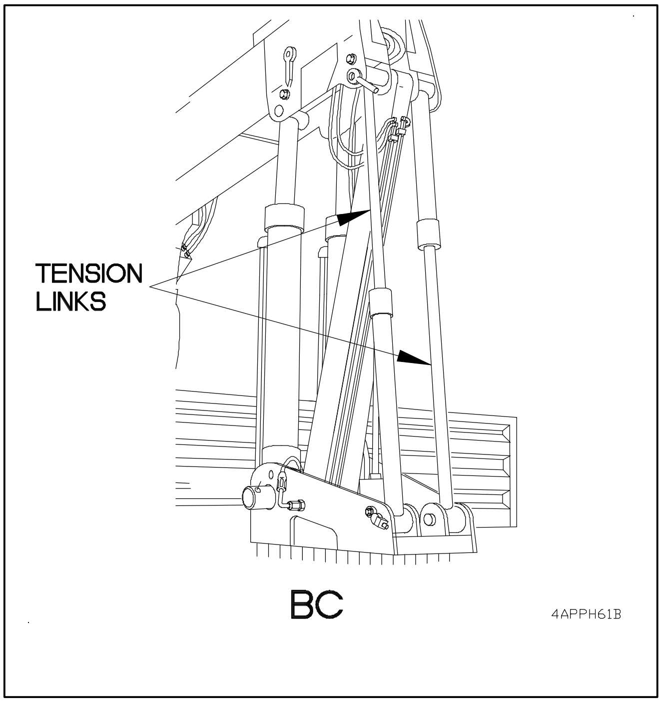
AZ


TENSION ROLLER
4APPH59A

BA

H-8. LOCAL VIEWS (CONT)





H-9. LUBRICATION/SERVICES NOTES

1. ENGINE CRANKCASE. Check engine oil level daily. Change engine oil at initial 5,000 miles (8,045 km). During the remainder of the 12,000 mile (19,308 km)/18 month warranty period. Units participating in AOAP will sample engine oil every 3,000 miles (4,827 km) or 6 months, whichever occurs first and change oil as directed by AOAP. Units not participating in AOAP, will change engine oil every 6,000 miles (9,654 km) or every six months, whichever occurs first. After expiration of engine warranty period, Units participating in AOAP will perform engine oil change as directed by AOAP. Units not participating in AOAP will change engine oil every 6,000 miles (9,654 km) or every six months, whichever occurs first, or when operating in dusty areas or under severe operating conditions, change the oil every 3,000 miles (4,827 km) or every three months, whichever occurs first. Drain engine oil when engine is warm. Refill engine crankcase with OE/HDO specified for the ambient temperature. Engine oil is full when level is within crosshatch marks on the dipstick. Do not overfill.

2. ENGINE OIL FILTER. Filter is replaced each time the crankcase is drained. If water or metal particles are detected during oil filter replacement, notify Direct Support Maintenance personnel before refilling crankcase (para 3-4).

3. TRANSMISSION. Check transmission oil level daily. Change transmission oil at initial 5,000 miles (8,045 km). During the remainder of the 24 month/unlimited mileage warranty. Units participating in AOAP will sample transmission oil every 6,000 miles (9,654 km) or 12 months, whichever occurs first and change oil as directed by AOAP. Units not participating in AOAP will perform transmission oil change every 24,000 miles (38,616 km) or once every two years, whichever occurs first. Drain transmission oil when engine is warm. Refill with OE/HDO specified for ambient temperature. Add oil until the proper level is reached (TM 9-2320-366-10-1). Do not overfill. Replace oil filters each time transmission oil is changed (para 8-9).

4. POWER STEERING. Check power steering oil level weekly. Change the oil every 24,000 miles (38,616 km). Disconnect upper and lower hoses from steering gear and drain oil. Refill power steering pump reservoir with OE/HDO specified for the ambient temperature. Reservoir is full when oil is between the two marks on the dipstick. Do not overfill. Remove dipstick, wipe clean and install dipstick fully into reservoir. Remove dipstick and read oil level. Replace oil filter each time power steering oil is changed (para 13-8).

5. FUEL/WATER SEPARATOR. Replace filter element every 6,000 miles (9,654 km) or once every six months, whichever occurs first (para 4-13).

6. FUEL FILTER. The fuel particle filter is replaced when a new fuel/water separator filter element is installed. The normal replacement interval is every 6,000 miles (9,654 km) or once every six months, whichever occurs first (para 4-14).

7. ENGINE COOLANT. Check engine coolant level daily. Change the coolant and flush the cooling system every 24,000 miles (38,616 km) or once every two years, whichever occurs first. Fill radiator overflow tank with an Ethylene Glycol/water mixture as specified in 0-A-548D. Service the cooling system before the specified interval if:

- Coolant is heavily contaminated.
- Engine overheats.
- Oil cooler has failed allowing oil and coolant to mix.

8. HYDRAULIC RESERVOIR AND FILTER (All Models Except M1089). Check oil level weekly and make sure oil level gage reads **F (full)**. Units participating in AOAP will sample oil annually and change oil and filter as directed by AOAP. Units not participating in AOAP will change oil and filter every two years. Drain oil and refill hydraulic reservoir with OE/HDO specified for ambient operating temperature. Fill hydraulic reservoir until oil level gage reads **F (full).** Do not overfill. Replace oil filter each time oil is changed (para 19-13).

9. DRIVE SHAFT UNIVERSAL and SLIP YOKE.
Lubricate drive shafts with GAA every 3,000 miles (4,827 km) or once every three months, whichever occurs first, using a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first. Perform drive shaft hinging inspection every time drive shafts are serviced (para 9-3).

- UNIVERSAL JOINT:
  A. Apply grease to both grease fittings until new grease purges from all four bearing caps.
  B. If grease does not purge from all four bearing caps, perform the following steps:
  (1) Loosen two screws on bearing cap that does not purge, approximately 1/4 in.
  (2) Apply grease to grease fitting for bearing cap that does not purge until bearing cap purges.
  (3) Remove and discard the two screws loosened in step (1).
  (4) Position two replacement screws in bearing cap and tighten down evenly.
  (5) Tighten two screws to 26-35 lb-ft (35-47 N m).

- SLIP JOINT:
  A. Apply grease until grease appears at the vent in the welch plug.
  B. Place your finger over the welch plug vent and add grease until grease purges from the dust seal.
  C. If grease does not purge from the dust seal, inspect drive shaft slip yoke (para 9-2).

10. AIR/HYDRAULIC POWER UNIT and BACKUP HYDRAULIC PUMP. Change OHA oil every 24,000 miles (38,616 km) or once every two years, whichever occurs first. To service air/hydraulic power unit and backup hydraulic pump refer to vehicle para 19-8, Air Transportability Hydraulic System Service.

11. ALL AXLE DIFFERENTIALS. Check oil level in differentials every 3,000 miles (4,827 km). Check oil level with vehicle parked on level surface and axle differential at ambient temperature, allowing at least one hour to cool down after vehicle operation. If oil is checked when axle differential is hot, it is normal for oil to spill out of the port due to expansion from the heat. Oil level is considered full if it is within one inch of the bottom of the fill port. If oil spills from the fill port when the axle differential is cool, it is overfull. Allow oil to drain until no more drains out. If the oil level is more than one inch below the bottom of the fill port, refill axle differential with GO specified for the ambient temperature until level with bottom of fill port. Change the oil every 24,000 miles (38,616 km) or once every two years, whichever occurs first. Drain oil when hot after operation.

H-9. LUBRICATION/SERVICES NOTES (CONT)

12. FRONT AXLE WHEEL END PLANETARY HUBS. There are two lube intervals for the front axle wheel end planetary hubs.

a. Check and fill front axle wheel end planetary hubs every 3,000 miles (4,827 km) or once every three months, whichever occurs first, as follows:

(1) Position vehicle on a level surface. Allow 15 minutes for vehicle to cool before checking oil levels.
(2) Position fill port at 4 o'clock position. If oil flows from fill port when plug is loosened, let oil drain to correct level. If oil level is below fill port, fill hub with GO specified for the ambient temperature until oil is level with fill port.

b. Drain and fill front axle wheel end planetary hubs every 24,000 miles (38,616 km) or once every two years, whichever occurs first, following the repacking of the inner wheel bearings, or whenever wheel end assemblies are taken apart for other maintenance as follows:

(1) Position vehicle on a level surface.
(2) Position fill port at the 6 o'clock (down) position.
(3) Drain hub oil (allow a minimum of 15 minutes for oil to drain down from vent tubes).
(4) Refill hubs with 11-13 ounces of GO specified for the ambient temperature.

13. TIE ROD ENDS. Lubricate tie rod ends with GAA every 6,000 miles (9,654 km) or once every six months, whichever occurs first, using a low pressure lubrication gun, until new grease is seen purging from the boot area. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

14. WINCH CABLES:

CAUTION

Do not use dry cleaning solvent to clean winch cables. Use of dry cleaning solvent will remove lubricant from inner strands of winch cables. Failure to comply may result in damage to equipment.

a. After winch operation:

Refer to FM 5-125.

b. Care of wire rope:

Refer to FM 5-125.

c. Inspection of wire rope:

Refer to FM 5-125.

d. Every six months:

(1) Unwind entire length of winch cable (TM 9-2320-366-10-1).
(2) Soak and clean winch cable with new OE/HDO 30.
(3) Wipe off excess OE/HDO 30.
(4) Coat winch cable with GW.
(5) Rewind winch cable (TM 9-2320-366-10-1).

15. 15K SRW. Check 15K SRW gear oil level every 6,000 miles (9,654 km) or once every six months, whichever occurs first. Refill 15K SRW with GO specified for ambient temperature. Change oil every 12,000 miles (19,308 km) or once every year, whichever occurs first. Use procedure (a) to check and fill oil level; use procedure (b) to change oil.

a. Check and fill oil level as follows:

(1) Shift the freespool mechanism to the disengage position so the drum can be freely rotated.
(2) Rotate the drum to where either plug is near the top of the 15K SRW. Remove the plug.
(3) Rotate the drum 90 degrees in the direction that allows the other plug to be near the top of the 15K SRW. Remove the plug.

NOTE

Oil level is full if a small amount of oil runs out of lower plug.

(4) Add oil until a small amount of oil runs out of lower plug hole.
(5) Apply adhesive (Item 3, Appendix D) to plug and position plug in top hole.
(6) Rotate drum until open hole is at top.
(7) Apply adhesive (Item 3, Appendix D) to plug and position plug in top hole.
(8) Tighten plugs to 13-15 lb-ft (18-20 N·m).

b. Change oil as follows:

(1) Shift the freespool mechanism to the disengage position so the drum can be freely rotated.
(2) Rotate the drum to where either plug is near the top of the 15K SRW. Remove the plug.
(3) Rotate the drum 90 degrees in the direction that allows the other plug to be near the top of the 15K SRW. Remove the plug.
(4) Position drain pan (Item 39, Appendix C) under 15K SRW.
(5) Rotate the drum until either hole is straight down to the bottom of the 15K SRW. Allow the oil to drain completely.
(6) Rotate the drum until either hole is at top.

NOTE

Oil level is full if a small amount of oil runs out of lower plug.

(7) Add oil until a small amount of oil runs out of lower plug hole.
(8) Apply adhesive (Item 3, Appendix D) to plug and position plug in top hole.
(9) Rotate drum until open hole is at top.
(10) Apply adhesive (Item 3, Appendix D) to plug and position plug in top hole.
(11) Tighten plugs to 13-15 lb-ft (18-20 N·m).

16. TOWING PINTLE. Lubricate towing pintle with GAA every 6,000 miles (9,654 km) or once every six months, whichever occurs first, using a low pressure lubrication gun until new grease is seen purging.

H-9. LUBRICATION/SERVICES NOTES (CONT)

WARNING

- **Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breath vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type I Dry Cleaning Solvent is 100 F (38 C) and for Type II is 138 F (50 C). Failure to comply may result in serious 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 medical attention. Failure to comply may result in injury to personnel.**

17. ENGINE CRANKCASE BREATHER. Remove crankcase breather and clean with Dry Cleaning Solvent (SD P-D-680) (Item 65, Appendix D) or equivalent, and replace o-ring seal every 6,000 miles (9,654 km) or once every six months, whichever occurs first (para 3-5).

18. FRONT AXLE SPRING BOLT and SPRING SHACKLE. Lubricate front axle spring bolt and spring shackle with GAA every 3,000 miles (4,827 km) or once every three months, whichever occurs first, using a low pressure lubrication gun until grease appears between pins and bushings at both ends of spring bolt and spring shackle. If pins do not accept grease, notify Direct Support to remove pins. Clean and inspect pins and bushings, replace if necessary. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

19. BATTERY POSTS. Service batteries in accordance with TM 9-6140-200-14, every 6,000 miles (9,654 km) or once every six months, whichever occurs first.

20. FRONT AXLE SHAFT UNIVERSAL JOINTS and STEERING KNUCKLES. Lubricate universal joints every 3,000 miles (4,827 km) or once every three months, whichever occurs first. Lubricate steering knuckles with GAA every 6,000 miles (9,654 km) or once every six months, whichever occurs first, using a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

21. BRAKE WEDGE and AIR CHAMBER: BRAKE SPIDER, SELF-ADJUSTER MECHANISM, AND WEDGE ASSEMBLY. Clean and lubricate (with GAA) areas of spider and hardware that contact the brake shoes. Disassemble, clean and lubricate the self-adjuster mechanism. Clean and lubricate the wedge head, rollers and ramps in the plungers. Clean and lubricate every 6,000 miles (9,654 km). If operating conditions are severe or abnormal, service at 3,000 miles (4,827 km) or once every three months, whichever occurs first, or when any of the following occur: Refer to para 11-4 and 11-5

- Seals are replaced
- Plungers are removed
- Brakes are relined
- Grease becomes contaminated or hardened

22. HYDRAULIC TANK (M1089). Check oil level weekly and make sure oil level indicates FULL. Units participating in AOAP will sample oil annually and change oil and filter as directed by AOAP. Units not participating in AOAP will change oil and filter every two years. Drain oil and refill hydraulic tank with OE/HDO specified for ambient operating temperature. Fill hydraulic tank until oil level is at the FULL mark on the sight glass. Do not overfill. Replace hydraulic oil filter (para 19-20) when oil is changed. Check oil level with Material Handling Crane (MHC) in the stowed position.

23. BOOM WEAR PADS (M1084/M1086/M1089). Lubricate every 6,000 miles (9,654 km) or once every six months, whichever occurs first. Coat boom wear pads with GAA while boom is extended, for the lower wear pads, boom must be retracted and access cover removed at rear of base boom to grease the upper wear pads. Extend boom in and out while applying grease. This method assures full lubrication for entire length of boom. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

24. HOIST ASSEMBLY DRUM (M1084/M1086/M1089). Check hoist assembly drum oil level every 6,000 miles (9,654 km) or every six months, whichever occurs first. Check oil level in hoist assembly drum using two pipe plugs (90 degrees apart) on the drum housing. Operate hoist assembly drum so that one pipe plug is positioned at top of drum (fill point) and the other is accessible and level with ground (check level point). Oil level is full if a small quantity of oil runs from check level opening. If oil level is low, add oil at fill opening. to drain, operate drum so that one pipe plug is bottom of drum. Remove plug to drain. Drain and refill with GO specified for the ambient temperature, if oil becomes contaminated.

25. SWING DRIVE GEARBOX (M1084/M1086/M1089). Check swing drive gearbox oil level every 6,000 miles (9,654 km) or once every six months, whichever occurs first. Oil level is checked by removing pipe plug located on side of gear reducer. Oil level is full if a small quantity of oil runs out of opening. Add oil at fill point if necessary. Notify Direct Support to drain and refill with GO specified for the ambient temperature, if oil becomes contaminated.

26. RING GEAR TEETH and PINION GEAR TEETH (M1084/M1086/M1089). Lubricate every 6,000 miles (9,654 km), after washing, or once every six months, whichever occurs first. Apply a light coat of GAA to ring gear teeth and pinion gear teeth. Operate MHC (TM 9-2320-366-10) to rotate turntable. This will allow grease to be applied to all gear teeth. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

27. FRONT, INTERMEDIATE, and REAR AXLE INNER WHEEL BEARINGS. Repack inner wheel bearings with GAA every 12,000 miles (19,308 km), when semiannual PMCS inspection of service brakes reveals oil leak from inner hub, or whenever wheel end assemblies are taken apart for other maintenance (para 10-2).

28. REAR AXLE BOGIE. Change oil every 6,000 miles (9,654 km) or once every six months, whichever occurs first. Remove six screws and rear axle bogie cover from one side at a time. Raise axle on opposite side of vehicle to allow oil to drain out. Lower axle and repeat on other side of vehicle. Apply thin bead of silicone adhesive sealant 593 to seating surface of housing. Position cover (with fill plug at the 1 o'clock position) and six screws on housing. Tighten six screws to 24 lb-ft (32 N m). Remove plug from cover and plug from top of rear axle bogie housing. Refill rear axle bogie with GO specified for the ambient temperature, until level with port on housing cover. Install plugs in cover and housing.

29. 15K SELF-RECOVERY WINCH (SRW) CABLE ROLLER FAIRLEADS. Lubricate with GAA every 6,000 miles (9,654 km) or once every six months, whichever occurs first, using a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

30. 30K WINCH CABLE GUIDE ROLLERS and PAY-OUT LOWER TENSION SHEAVE. Lubricate with GAA every 6,000 miles (9,654 km) or once every six months, whichever occurs first, using a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

H-9. LUBRICATION/SERVICES NOTES (CONT)

WARNING

- **Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breath vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type I Dry Cleaning Solvent is 100 F (38 C) and for Type II is 138 F (50 C). Failure to comply may result in serious 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 medical attention. Failure to comply may result in injury to personnel.**

31. SCREEN and PLUG OIL FILTER ASSEMBLY (intermediate axle only). Clean the area around the screen and plug oil filter assembly. Remove the screen and plug oil filter assembly. Clean with Dry Cleaning Solvent (Item 65, Appendix D) or equivalent, every 12,000 miles (19,308 km) or once every year, whichever occurs first. Clean filter each time the differential is drained. If screen is crushed or bent, replace with a new one. Clean the screen cavity in the carrier of all debris and particles. If excessive amount of metal particles are detected during oil filter servicing, notify Direct Support Maintenance personnel before refilling differential.

32. TURNTABLE BEARING (M1084/M1086/M1089). Lubricate with GAA every 6,000 miles (9,654 km), after washing, or once every six months, whichever occurs first. Use a low pressure lubrication gun. Apply lubrication to grease fitting inside turntable bearing. Operate MHC (TM 9-2320-366-10) to rotate turntable bearing through full range of travel between applications of grease. This method assures full lubrication of the turntable bearing. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

33. TOP and BOTTOM PLATES (M1089). Lubricate every 6,000 miles (9,654 km) or once every six months, whichever occurs first. Coat top and bottom plates with GAA. Extending outriggers in and out while applying grease assures full lubrication for the entire length of top and bottom plates. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

34. CRANE GREASE FITTINGS (M1084/M1086/M1089). Lubricate with GAA every 6,000 miles (9,654), after washing, or once every six months, whichever occurs first. Use a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

35. UNDERLIFT ASSEMBLY GREASE FITTINGS. Lubricate with GAA every 6,000 miles (9,654), after washing, or once every six months, whichever occurs first. Use a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

36. FRONT LIFTING BEAM. Remove left and right lifting beams and clean with Dry Cleaning Solvent (Item 65, Appendix D) or equivalent, every 6,000 miles (9,654 km) or once every six months, whichever occurs first. Apply a light coat of GAA to lifting beams. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.

37. AIR DRYER. Service air dryer (para 23-11) every 12,000 miles (19,308 km) or annually, whichever occurs first.

38. TENSION LINKS. Lubricate tension link(s) every three months with GAA.

39. FRONT LEAF SPRING AND REAR BOGIE AXLE. At initial 1000 miles (1609 km) of vehicle operation, tighten U-bolts to 390-510 lb-ft (529-692 N•m).

APPENDIX J
ADDITIONAL AUTHORIZATION LIST (AAL)

Section I. INTRODUCTION

J-1. SCOPE

This appendix lists additional items you are authorized for the support of the MTV.

J-2. GENERAL

This list identifies items that do not have to accompany the MTV and that do not have to be turned in with it. These items are all authorized to you by Common Tables of Allowance (CTA), Modification Table of Organization and Equipment (MTOE), Tables of Distribution and Allowances (TDA), or Joint Table of Allowance (JTA).

J-3. EXPLANATION OF LISTING

National Stock Numbers, description, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description (CAGE) Part Number	(3) U/M	(4) Qty Auth
6685-01-193-1733	10,000 PSI Transducer: (19207) 12258956	EA	1

APPENDIX K
TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART

Section I. INTRODUCTION

K-1. INTRODUCTION

This appendix lists the various transmission controls and configuration modifications that may be required to permit the transmission to function correctly. This appendix will guide the mechanic through the hardware selection process by identifying compatibility issues between the transmission controls (WTEC II/WTEC III) and the numerous revisions of the Allison MD3070PT transmission (PRE-ID w/ 24-pin connector, PRE-ID w/ 31-pin connector, TID 1, TID 2, and TID 3). Refer to Figure 1. After replacing any component of the transmission controls or the transmission assembly, perform calibration procedures in TM 9-2320-366-20-4 paragraph 8-2 or 8-3.

K-2. EXPLANATION OF COLUMNS

a. **Column (1) - Installed Controls or Controls Being Installed.** This column lists all of the variables concerning which version of transmission controls are installed in the vehicle, or may need to be installed, to communicate correctly with the transmission.

b. **Column (2) - Installed Transmission or Transmission Being Installed.** This column lists all of the various revisions of the Allison MD3070PT transmissions that may be installed in the vehicle.

c. **Column (3) - Required Modification.** This column lists the various electrical interface (hardware) modifications that may be required to allow the transmission controls to communicate with the transmission.

K-3. HOW TO USE THIS CHART

a. Determine which controls and transmission are installed in the vehicle.

b. Determine which component requires replacement.

c. Read across the row to column (3) to determine the required modification.

Section II.

TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART

(1) Installed Controls or Controls Being Installed	(2) Installed Transmission or Transmission Being Installed	(3) Required Modification (Refer to Section III)
WTEC II (with 24-pin connector)	PRE-ID w/ 24-pin connector (transmission serial number prior to 6510032369)	No modification required.
WTEC II (with 24-pin connector)	PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	Install 31-pin connector.
WTEC II (with 24-pin connector)	TID 1 (transmission serial number 6510090786 to 6510142171)	Install 31-pin connector.
WTEC II (with 24-pin connector)	TID 2 (transmission serial number 6510142172 to 6510262116)	Install 31-pin connector and replace transmission internal wiring harness.

TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART (CONT)

(1) Installed Controls or Controls Being Installed	(2) Installed Transmission or Transmission Being Installed	(3) Required Modification (Refer to Section III)
WTEC II (with 24-pin connector)	TID 3 (transmission serial number 6510262117 and subsequent)	Install 31-pin connector, replace transmission internal wiring harness, and reprogram WTEC II TEPSS. [1]
WTEC II (with 31-pin connector)	PRE-ID w/ 24-pin connector (transmission serial number prior to 6510032369)	Install adapter cable assembly.
WTEC II (with 31-pin connector)	PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	No modification required.
WTEC II (with 31-pin connector)	TID 1 (transmission serial number 6510090786 to 6510142171)	No modification required.
WTEC II (with 31-pin connector)	TID 2 (transmission serial number 6510142172 to 6510262116)	Replace transmission internal wiring harness.
WTEC II (with 31-pin connector)	TID 3 (transmission serial number 6510262117 and subsequent)	Replace transmission internal wiring harness and reprogram WTEC II TEPSS. [1]
WTEC III (with ECU manufactured prior to October 1999) [2]	PRE-ID w/ 24-pin connector (transmission serial number prior to 6510032369)	Install adapter cable assembly and ID harness.
WTEC III (with ECU manufactured prior to October 1999) [2]	PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	Install ID harness.
WTEC III (with ECU manufactured prior to October 1999) [2]	TID 1 (transmission serial number 6510090786 to 6510142171)	No modification required.
WTEC III (with ECU manufactured prior to October 1999) [2]	TID 2 (transmission serial number 6510142172 to 6510262116)	No modification required.
WTEC III (with ECU manufactured prior to October 1999) [2]	TID 3 (transmission serial number 6510262117 and subsequent)	Reprogram WTEC III ECU [1] or install new WTEC III ECU (P/N 12421787-002).
WTEC III (with ECU manufactured after October 1999) [3]	PRE-ID w/ 24-pin connector (transmission serial number prior to 6510032369)	Install adapter cable assembly and ID harness.
WTEC III (with ECU manufactured after October 1999) [3]	PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	Install ID harness.
WTEC III (with ECU manufactured after October 1999) [3]	TID 1 (transmission serial number 6510090786 to 6510142171)	No modification required.

---

[1] Reprogramming can only be accomplished by an authorized Allison Transmission distributor. You must provide the transmission serial number of the transmission being installed to ensure correct reprogramming. If at a later time, an earlier version transmission is installed in a WTEC II equipped vehicle, WTEC II TEPSS will require reprogramming again.

[2] Vehicle serial number 012477 and lower. Refer to Figure 1.

[3] Vehicle serial number 012478 and higher. Refer to Figure 1.

(1) Installed Controls or Controls Being Installed	(2) Installed Transmission or Transmission Being Installed	(3) Required Modification (Refer to Section III)
WTEC III (with ECU manufactured after October 1999) [3]	TID 2 (transmission serial number 6510142172 to 6510262116)	No modification required.
WTEC III (with ECU manufactured after October 1999) [3]	TID 3 (transmission serial number 6510262117 and subsequent)	No modification required.

Section III.

MODIFICATION PARTS IDENTIFICATION

Identification	Part Number/NSN	Description
31-pin connector	300130 5935-21-921-1813	Converts a transmission external wiring harness from a 24-pin ("D" type) connector to a 31-pin (round type) connector.
Transmission internal wiring harness	29529474 6150-01-481-8088	Converts a TID 2 transmission to a TID 1 configuration to allow WTEC II controls to communicate with the transmission.
Gasket	29503283 5330-01-360-9035	Required when replacing transmission internal wiring harness.
ID harness	200100 6150-21-921-1191	Allows WTEC III controls to communicate with a PRE-ID transmission.
Adapter cable assembly	29519210 6150-01-420-5987	Adapts a PRE-ID transmission with 24-pin ("D" type) connector to a transmission external wiring harness with a 31-pin (round) connector.

MODIFICATION PARTS IDENTIFICATION (CONT)

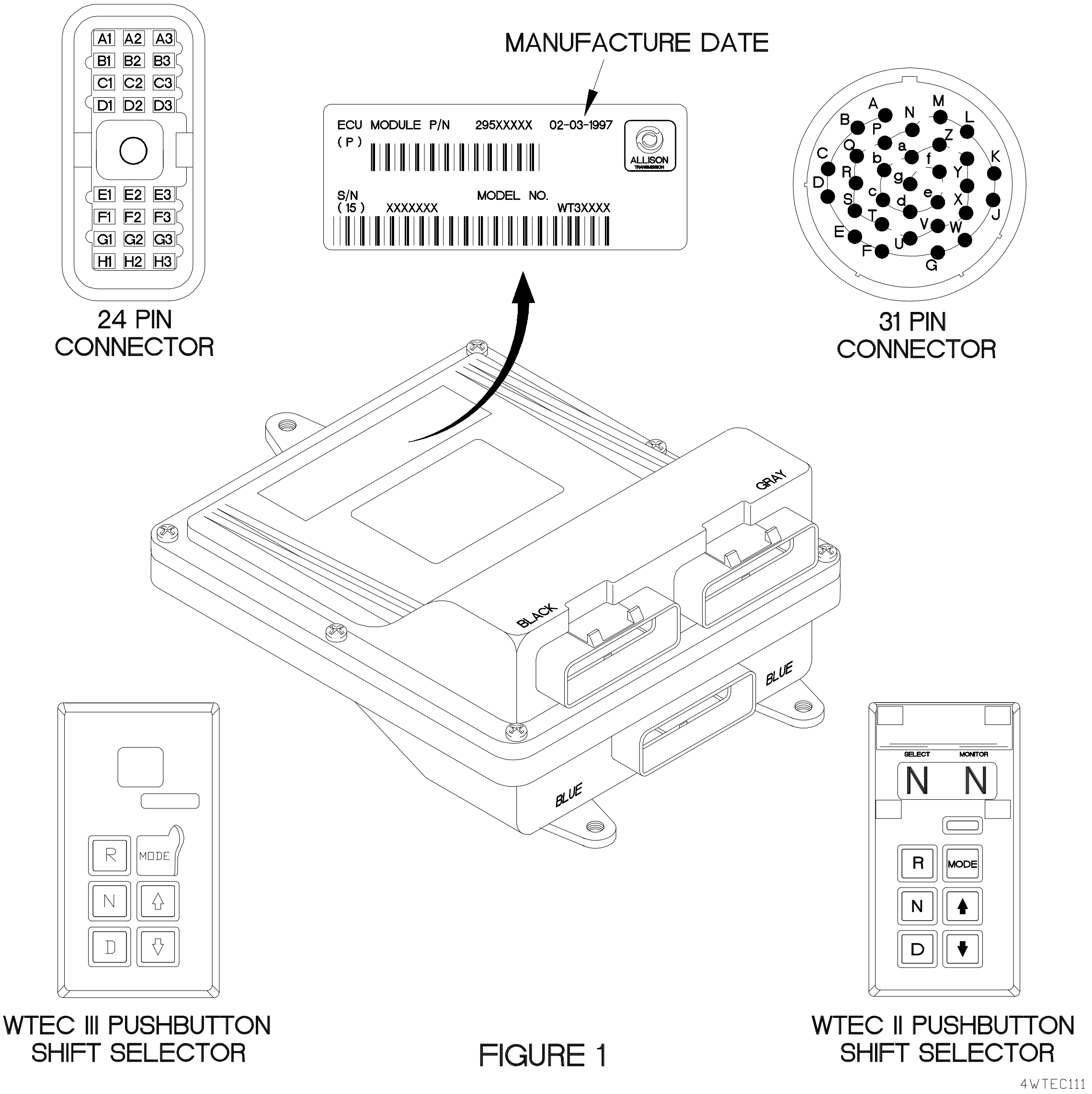


FIGURE 1

SUBJECT INDEX

SUBJECT INDEX (CONT)

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GLOSSARY
ABBREVIATIONS

ANSI	American National Standards Institute
CCW	Counterclockwise
CTIS	Central Tire Inflation System
CW	Clockwise
ECU	Electronic Control Unit
EMI	Electromagnetic Interference
LED	Light Emitting Diode
LH	Left Hand
LMHC	Light Material Handling Crane
MAC	Maintenance Allocation Chart
MHC	Material Handling Crane
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, or Chemical
NO/NC	Normally Open/Normally Closed
O/R	Outrigger
PDP	Power Distribution Panel
PMCS	Preventive Maintenance Checks and Services
PTO	Power Takeoff
RH	Right Hand
SAE	Society of Automotive Engineers
SRW	Self-Recovery Winch
STE/ICE-R	Simplified Test Equipment/Internal Combustion Engine-Reprogrammable
TEPSS	Transmission ECU Pushbutton Shift Selector
TM	Technical Manual
TPS	Thottle Position Sensor

GLOSSARY
ABBREVIATIONS (CONT)

TPSS	Transmission Pushbutton Shift Selector
VDC	Volts Direct Current
VIM	Vehicle Interface Module
WTEC II	World Transmission Electronic Controls (version 2)
WTEC III	World Transmission Electronic Controls (version 3)

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:
Joel B. Hud
JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
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PUBLICATION/FORM NUMBER	DATE	TITLE
	Publication Date	**Publication Title**

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON
10	**15-33**	**15-7**		**4**		**Item 10. Change Illustration. Reason: Text calls out 90-degree fitting. Art shows straight fitting. Text is correct.**
	19-6	**19-2**				**Step (4) of removal says to disconnect four hydraulic hoses from manifold. The correct number of hydraulic hoses is five. correct the text to reflect the actual quantity of hydraulic hoses. The supporting illustration is correct.**

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Your title	**Your telephone number**	**Your signature**

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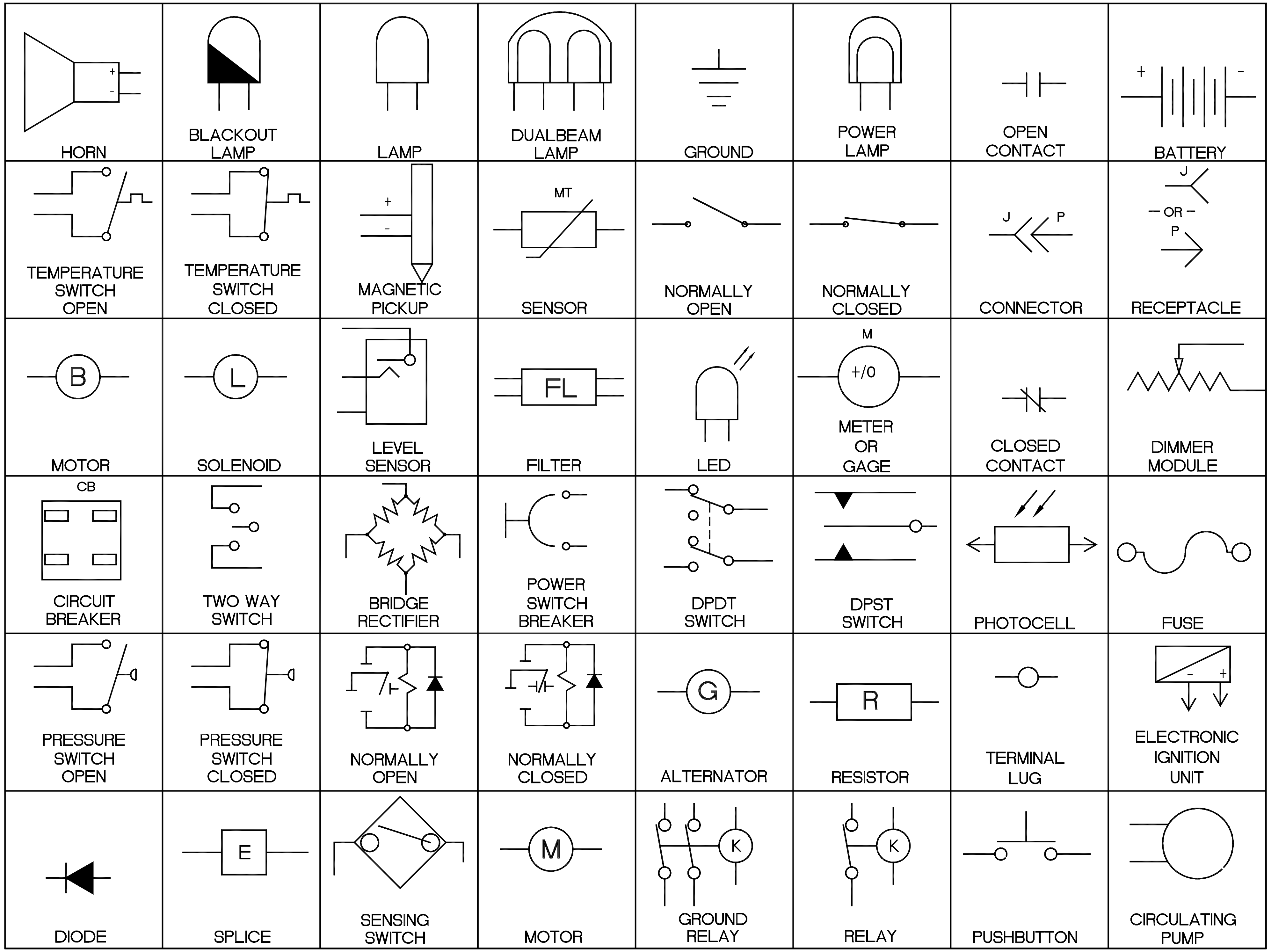


FIGURE FO-1 ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 1 OF 40

SIZE B ILL. NO. 6WD01L1B FP-1/ (FP-2 BLANK)

CONNECTORS

NUMBER	ZONE	SH	DESCRIPTION
CABLE A	G315	35	OVERLOAD SHUTDOWN SYSTEM
CABLE A	D317	36	WRECKER MATERIAL HANDLING CRANE
CABLE A	F324	36	OVERLOAD SHUTDOWN SYSTEM
CABLE A	D340	38	WRECKER CONTROLS
CABLE B	A307	35	CARGO MATERIAL HANDLING CRANE
CABLE C	G308	35	CARGO MATERIAL HANDLING CRANE
CABLE F	B308	36	INTERNAL REMOTE CONNECTOR
CABLE G	F299	35	CARGO MATERIAL HANDLING CRANE
CABLE G	A324	36	INTERNAL REMOTE CONTROL CONNECTOR
CABLE H	F304	35	CRANE CONTROL PANEL
CABLE H	E313	36	CRANE CONTROL PANEL
CABLE I	G313	35	CRANE CONTROL PANEL
CABLE I	F322	36	CRANE CONTROL PANEL
CABLE J	G313	35	CRANE CONTROL PANEL
CABLE J	F322	36	CRANE CONTROL PANEL
CABLE K	G304	35	CRANE CONTROL PANEL
CABLE K	F322	36	CRANE CONTROL PANEL
CABLE L	D304	35	CRANE CONTROL PANEL
CABLE L	C322	36	CRANE CONTROL PANEL
CABLE M	D313	35	CRANE CONTROL PANEL
CABLE M	C322	36	CRANE CONTROL PANEL
CABLE N	D313	35	CRANE CONTROL PANEL
CABLE N	D322	36	CRANE CONTROL PANEL
CABLE O	C313	35	CRANE CONTROL PANEL
CABLE O	G322	36	CRANE CONTROL PANEL
CABLE P	C313	35	CRANE CONTROL PANEL
CABLE P	C322	36	CRANE CONTROL PANEL
CABLE Q	E313	35	CRANE CONTROL PANEL
CABLE Q	E322	36	CRANE CONTROL PANEL
CABLE R	E313	35	CRANE CONTROL PANEL
CABLE R	D322	36	CRANE CONTROL PANEL
CABLE S	F313	35	CRANE CONTROL PANEL
CABLE S	E322	36	CRANE CONTROL PANEL
CABLE T	F313	35	CRANE CONTROL PANEL
CABLE T	E322	36	CRANE CONTROL PANEL
CABLE U	A314	35	CRANE REMOTE CONNECTOR
CABLE V	E313	35	CRANE CONTROL PANEL
CONN F	C335	38	WRECKER REMOTE
CONN G	C340	38	WRECKER REMOTE
J2	A194	22	EMI FILTER
J3	D241	27	AIRDROP ONLY
J4	E340	38	WRECKER CONTROLS
J5	A47	6	VEHICLE HORN
J6	A47	6	VEHICLE HORN
J7	A197	22	WTEC II TRANSMISSION PUSHBUTTON SHIFT SELECTOR DIMMER MODULE
J8	B47	6	BLACKOUT MARKER RIGHT FRONT
J9	C47	6	FRONT RIGHT TURN SIGNAL
J10	B47	6	PARKING LIGHT FRONT RIGHT
J12	D47	6	RIGHT HEADLIGHT
J13	C47	6	RIGHT HEADLIGHT
J14	C47	6	RIGHT HEADLIGHT
J17	H47	6	BLACKOUT DRIVE LIGHT
J18	D47	6	LEFT HEADLIGHT
J19	E47	6	LEFT HEADLIGHT
J19	C186	21	CAB - DASH - LEFT - UNDERDASH
J20	D47	6	LEFT HEADLIGHT
J22	G47	6	PARKING LIGHT FRONT LEFT
J23	F47	6	FRONT LEFT TURN SIGNAL
J24	H47	6	BLACKOUT MARKER LEFT FRONT
J25	G94	11	WINDSHIELD WASHER ROTARY PUMP (B3)
J27	A52	6	CHASSIS - FRONT
J31	E65	8	ENGINE
J31X	F184	21	CAB - DASH - LEFT - UNDERDASH
J39	G70	8	ENGINE
J43	G51	6	CHASSIS - FRONT
J43X	F51	6	CHASSIS - FRONT
J43X	G184	21	CAB - DASH - LEFT - UNDERDASH
J44	B238	27	ROTARY WARNING LIGHT CONNECTOR
J45	C238	27	ROTARY WARNING LIGHT CONNECTOR
J50	E94	11	CAB MARKER LIGHT FRONT UPPER LEFT
J51	D51	6	CHASSIS - FRONT
J52	E47	6	CHASSIS - FRONT BUMPER

CONNECTORS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
J52	B239	27	CHASSIS - FRONT
J53	F236	27	AIRDROP ONLY
J55	C94	11	CAB MARKER LIGHT FRONT UPPER RIGHT
J57	D94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE LEFT
J59	C94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
J60	D94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE
J62	E97	11	ROTARY WARNING LIGHT CONNECTOR
J65	E195	22	ROTARY WARNING LIGHT CONNECTOR
J78	F194	22	CAB RADIO CONNECTOR
J80	A299	34	AIR DRYER CONNECTOR
J80	D87	10	AIR DRYER (EXCEPT DUMP)
J93	B59	7	CHASSIS - SPARE TIRE
J95	E47	6	12V INTERVEHICULAR
J95	B242	27	ENGINE
J99	E196	22	CHEMICAL ALARM CONNECTOR
J106	F59	7	CHEMICAL DETECTOR RECEPTACLE
J108	B258	29	CAB - DASH - CENTER - OPTIONS PANEL
J111	E131	15	CTIS ELECTRONIC CONTROL UNIT
J113	G195	22	CTIS PRESSURE TRANSDUCER
J114	B173	20	CAB - DASH - LEFT - TRANSMISSION HARNESS - WTEC II
J114	C353	40	WTEC III CAB TRANSMISSION HARNESS (TID1) CONNECTOR
J114	C357	40	WTEC III CAB TRANSMISSION HARNESS (TID2) CONNECTOR
J115	C163	19	CAB - DASH - LEFT - WTEC III TRANSMISSION HARNESS
J115	C346	39	WTEC III TRANSMISSION ECU CONNECTOR
J116	C168	19	CAB - DASH - LEFT - WTEC III TRANSMISSION HARNESS
J116	E346	39	WTEC III TRANSMISSION ECU CONNECTOR
J117	F170	19	CAB - DASH - LEFT - WTEC III TRANSMISSION HARNESS
J117	B343	39	WTEC III DIAGNOSTIC CONNECTOR
J118	D170	19	CAB - DASH - LEFT - WTEC III TRANSMISSION HARNESS
J119	B178	20	CAB - DASH - LEFT - TRANSMISSION HARNESS
J119	C355	40	WTEC III CAB TRANSMISSION HARNESS (TID1)
J119	C359	40	WTEC III CAB TRANSMISSION HARNESS (TID2)
J129	F94	11	CAB MARKER LIGHT FRONT LOWER LEFT
J130	F94	11	CAB MARKER LIGHT LEFT DOOR
J130	F238	27	12 PIN CONNECTOR
J131	B94	11	CAB MARKER LIGHT RIGHT DOOR
J132	B94	11	CAB MARKER LIGHT FRONT LOWER RIGHT
J172	A300	34	DUMP BODY CONNECTOR
J209	F265	30	ALL MTV W/O PTO
J209	G265	30	DUMP, CARGO LWB, CARGO W/MHC, CARGO LWB W/MHC
J209A	G267	30	TRACTOR W/O WINCH
J209A	C266	30	PTO EQUIPPED
J209B	F267	30	TRANSMISSION AUXILIARY OIL COOLER FAN
J209B	D266	30	PTO EQUIPPED
J210	F258	29	CAB - DASH - CENTER - OPTIONS PANEL
J215	E266	30	PTO EQUIPPED
J912	B133	15	CAB - DASH - CENTER - HEATER/CTIS ECU
J912	D245	28	CAB - DASH - CENTER - OPTIONS PANEL
J912	G264	30	ALL MTV W/O PTO
J912	F265	30	TRACTOR W/O WINCH
J913	B131	15	CAB - DASH - CENTER - HEATER/CTIS ECU
J921	G70	8	TROOP TRANSPORT ALARM
L4	E268	30	WINCH IN SOLENOID
L5	D268	30	WINCH OUT SOLENOID
L7	B301	34	TAILGATE RELEASE CONNECTOR
L8	B301	34	DUMP BED UP CONNECTOR
L9	A301	34	DUMP BED DOWN CONNECTOR
P2	A194	22	EMI FILTER
P3	D240	27	AIRDROP ONLY
P5	A47	6	VEHICLE HORN
P6	A47	6	VEHICLE HORN

CONNECTORS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
P8	B47	6	BLACKOUT MARKER RIGHT FRONT
P9	C47	6	FRONT RIGHT TURN SIGNAL
P10	B47	6	PARKING LIGHT FRONT RIGHT
P12	D47	6	RIGHT HEADLIGHT
P13	C47	6	RIGHT HEADLIGHT
P14	C47	6	RIGHT HEADLIGHT
P17	H47	6	BLACKOUT DRIVE LIGHT
P18	D47	6	LEFT HEADLIGHT
P18	A186	21	CAB - DASH - LEFT - UNDERDASH
P19	E47	6	LEFT HEADLIGHT
P20	D47	6	LEFT HEADLIGHT
P22	G47	6	PARKING LIGHT FRONT LEFT
P23	F47	6	FRONT LEFT TURN SIGNAL
P24	H47	6	BLACKOUT MARKER LEFT FRONT
P25	G94	11	WINDSHIELD WASHER ROTARY PUMP (B3)
P25	B300	34	DUMP BED SWITCH CONNECTOR
P27	A52	6	CHASSIS - FRONT
P31	E65	8	ENGINE
P31X	D65	8	ENGINE
P32	F68	8	ENGINE OIL PRESSURE SENSOR
P33	H68	8	FUEL/WATER SEPARATOR
P34	E68	8	OIL PRESSURE WARNING LIGHT SWITCH
P36	A66	8	WATER COOLER TEMPERATURE
P37	C66	8	WATER TEMPERATURE SWITCH
P38	F70	8	ENGINE SPEED MAGNETIC PICKUP
P39	G70	8	ENGINE
P41	B66	8	WATER TEMPERATURE SENSOR
P42	F66	8	ETHER SENSOR SWITCH
P43	G51	6	CHASSIS - FRONT
P43X	F51	6	CHASSIS - FRONT
P50	E94	11	CAB MARKER LIGHT FRONT UPPER LEFT
P50	F242	27	LH FRONT TOP CAB MARKER LIGHT
P51	D199	23	CAB - DASH - RIGHT - POWER DISTRIBUTION PANEL
P51	D208	24	REAR LIGHTS TRACTOR
P51	D217	25	LONG WHEEL BASE
P51	D226	26	CAB - DASH - RIGHT - POWER DISTRIBUTION PANEL
P52F	E47	6	CHASSIS - FRONT
P52M	G208	24	REAR LIGHTS TRACTOR
P52R	E205	23	WRECKER REAR LIGHTS
P52R	G214	24	REAR LIGHTS TRACTOR
P52R	E223	25	LONG WHEEL BASE
P52R	E232	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
P53M	F208	24	REAR LIGHTS TRACTOR
P53R	D205	23	WRECKER REAR LIGHTS
P53R	F214	24	REAR LIGHTS TRACTOR
P53R	D223	25	LONG WHEEL BASE
P53R	D232	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
P54	D206	23	LEFT REAR MARKER
P54	F215	24	LEFT REAR MARKER
P54	D224	25	LEFT REAR MARKER
P54	D233	26	LEFT REAR MARKER
P55	C94	11	CAB MARKER LIGHT FRONT UPPER RIGHT
P55	D242	27	RH FRONT TOP CAB MARKER LIGHT
P56	D206	23	MIDDLE REAR MARKER
P56	E224	25	MIDDLE REAR MARKER
P56	F215	24	MIDDLE REAR MARKER
P56	E233	26	MIDDLE REAR MARKER
P57	D94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE LEFT
P57	F242	27	LH FRONT TOP CAB CLEARANCE LIGHT
P58	E206	23	RIGHT REAR MARKER
P58	E215	24	RIGHT REAR MARKER
P58	E224	25	RIGHT REAR MARKER
P58	E233	26	RIGHT REAR MARKER
P59	C94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
P59	D242	27	RH FRONT TOP CAB CLEARANCE LIGHT
P60	D94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE

CONNECTORS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
P60	E242	27	MIDDLE FRONT TOP CLEARANCE LIGHT
P61	E215	24	RH COMPOSITE LIGHT
P61	F206	23	RH COMPOSITE LIGHT
P61	F224	25	RH COMPOSITE LIGHT
P61	F233	26	RH COMPOSITE LIGHT
P62	D215	24	RH COMPOSITE LIGHT
P62	F206	23	RH COMPOSITE LIGHT
P62	F224	25	RH COMPOSITE LIGHT
P62	F233	26	RH COMPOSITE LIGHT
P62A	B236	27	ROTARY WARNING LIGHT CONNECTOR
P63	F224	25	RH COMPOSITE LIGHT
P63	G206	23	RH COMPOSITE LIGHT
P63	D215	24	RH COMPOSITE LIGHT
P63	G233	26	RH COMPOSITE LIGHT
P64	F206	23	RH COMPOSITE LIGHT
P64	F224	25	RH COMPOSITE LIGHT
P64	D215	24	RH COMPOSITE LIGHT
P64	F233	26	RH COMPOSITE LIGHT
P65	E195	22	ROTARY WARNING LIGHT CONNECTOR
P67	A83	10	PRE-BLOCK SEVEN WITH PIGTAIL TRANSMISSION EXTERNAL WIRING HARNESS TO TRANSMISSION CONNECTOR
P67	B78	9	TID1, TID2, AND TID3 TRANSMISSION EXTERNAL WIRING HARNESS TO TRANSMISSION CONNECTOR
P69	D68	8	ENGINE
P71	E75	9	PRE-BLOCK SEVEN TRANSMISSION OUTPUT SPEED SENSOR CONNECTOR
P71	E79	9	TID1, TID2, AND TID3 TRANSMISSION OUTPUT SPEED SENSOR CONNECTOR
P71	E83	10	PRE-BLOCK SEVEN WITH PIGTAIL TRANSMISSION OUTPUT SPEED SENSOR CONNECTOR
P72	E83	10	PRE-BLOCK SEVEN W/PIGTAIL TRANSMISSION ENGINE SPEED SENSOR CONNECTOR
P72	F75	9	PRE-BLOCK SEVEN TRANSMISSION ENGINE SPEED SENSOR CONNECTOR
P72	F79	9	TID1, TID2, AND TID3 TRANSMISSION ENGINE SPEED SENSOR CONNECTOR
P73	F75	9	PRE-BLOCK SEVEN TRANSMISSION THROTTLE POSITION SENSOR CONNECTOR
P73	F79	9	TID1, TID2, AND TID3 TRANSMISSION THROTTLE POSITION SENSOR CONNECTOR
P73	F83	10	PRE-BLOCK SEVEN WITH PIGTAIL TRANSMISSION THROTTLE POSITION SENSOR CONNECTOR
P74	A215	24	LH COMPOSITE LIGHT
P74	B206	23	LH COMPOSITE LIGHT
P74	B224	25	LH COMPOSITE LIGHT
P74	B233	26	LH COMPOSITE LIGHT
P76	B206	23	LH COMPOSITE LIGHT
P76	B215	24	LH COMPOSITE LIGHT
P76	B224	25	LH COMPOSITE LIGHT
P76	B233	26	LH COMPOSITE LIGHT
P77	C206	23	LH COMPOSITE LIGHT
P77	B215	24	LH COMPOSITE LIGHT
P77	C224	25	LH COMPOSITE LIGHT
P77	C233	26	LH COMPOSITE LIGHT
P78	B206	23	LH COMPOSITE LIGHT
P78	B215	24	LH COMPOSITE LIGHT
P78	B224	25	LH COMPOSITE LIGHT
P78	B234	26	LH COMPOSITE LIGHT
P80	G60	7	CHASSIS - REAR
P80	A298	34	AIR DRYER CONNECTOR (DUMP)
P80B	A298	34	AIR DRYER CONNECTOR (DUMP)
P80B	A299	34	AIR DRYER CONNECTOR (DUMP)
P81	C56	7	CHASSIS - FRONT
P81	D71	8	STARTER THERMO SWITCH
P82	B60	7	FUEL TANK LEVEL SENSOR
P83	B181	21	CAB - DASH - LEFT - UNDERDASH
P84	F60	7	CHASSIS - REAR
P85	A206	23	LH SIDE MARKER LIGHT
P85	A224	25	LH SIDE MARKER LIGHT

CONNECTORS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
P85	A233	26	LH SIDE MARKER LIGHT
P86	A206	23	LH REAR MARKER LIGHT
P86	A215	24	LH REAR MARKER LIGHT
P86	A224	25	LH REAR MARKER LIGHT
P86	A233	26	LH REAR MARKER LIGHT
P87	C206	23	BACKUP LIGHT
P87	B215	24	BACKUP LIGHT
P87	C224	25	BACKUP LIGHT
P87	C233	26	BACKUP LIGHT
P88	G206	23	RH SIDE MARKER LIGHT
P88	H224	25	RH SIDE MARKER LIGHT
P88	H233	26	RH SIDE MARKER LIGHT
P89	G206	23	RH REAR MARKER LIGHT
P89	C215	24	RH REAR MARKER LIGHT
P89	G224	25	RH REAR MARKER LIGHT
P89	G233	26	RH REAR MARKER LIGHT
P107	B199	23	WRECKER REAR LIGHTS
P108	B258	29	CAB - DASH - CENTER - OPTIONS PANEL
P108	F199	23	WRECKER REAR LIGHTS
P110	E128	15	CTIS ELECTRONIC CONTROL UNIT
P111	E131	15	CTIS ELECTRONIC CONTROL UNIT
P112	G132	15	CAB - DASH - CENTER - HEATER/CTIS ECU
P113	F132	15	CTIS ELECTRONIC CONTROL UNIT
P114	C350	39	WTEC III CAB TRANSMISSION HARNESS (TID2)
P115	C346	39	WTEC III CAB - DASH - RIGHT - KICK PANEL
P116	E346	39	WTEC III CAB - DASH - RIGHT - KICK PANEL
P116	C194	22	CAB - DASH - RIGHT - UNDERDASH WTEC II
P118	D170	19	CAB - DASH - LEFT - TRANSMISSION HARNESS
P119	B178	20	CAB - DASH - LEFT - TRANSMISSION HARNESS
P119	D73	9	PRE-BLOCK SEVEN TRANSMISSION CONNECTOR
P119	D78	9	TID1, TID2, AND TID3 TRANSMISSION CONNECTOR
P119	D82	10	PRE-BLOCK SEVEN WITH PIGTAIL TRANSMISSION CONNECTOR
P125	G93	11	WINDSHIELD WASHER ROTARY PUMP (B3)
P129	F94	11	CAB MARKER LIGHT FRONT LOWER LEFT
P130	F94	11	CAB MARKER LIGHT LEFT DOOR
P131	A94	11	CAB MARKER LIGHT RIGHT DOOR
P132	B94	11	CAB MARKER LIGHT FRONT LOWER RIGHT
P133	A199	23	LH WORKLIGHTS
P133	B209	24	LH WORKLIGHTS
P133A	B199	23	LH WORKLIGHTS
P133A	B209	24	LH WORKLIGHTS
P134	G199	23	RH WORKLIGHTS
P134	C209	24	RH WORKLIGHTS
P134A	F199	23	RH WORKLIGHTS
P134A	B209	24	RH WORKLIGHTS
P135	D260	29	CAB - DASH - CENTER - OPTIONS PANEL
P136	C260	29	CAB - DASH - CENTER - OPTIONS PANEL
P171	F308	35	CARGO MATERIAL HANDLING CRANE
P172	A300	34	DUMP BODY CONNECTOR
P201	G70	8	ENGINE
P209A	F268	30	TRANSMISSION AUXILIARY OIL COOLER FAN
P209B	G264	30	DUMP, CARGO LWB, CARGO W/MHC, CARGO LWB W/MHC
P209B	G268	30	TRANSMISSION AUXILIARY OIL COOLER FAN
P210	F258	29	CAB - DASH - CENTER - OPTIONS PANEL
P210	C263	30	PTO EQUIPPED
P215	E266	30	PTO EQUIPPED
P216	E265	30	PTO EQUIPPED
P216	A304	34	PTO PRESSURE SWITCH CONNECTOR
P217	C265	30	PTO EQUIPPED
P217	B304	34	PTO SOLENOID CONNECTOR
P901	A245	28	CAB - DASH - CENTER - OPTIONS PANEL
P902	C250	28	CAB - DASH - CENTER - OPTIONS PANEL
P902A	D250	28	CAB - DASH - CENTER - OPTIONS PANEL
P903	C248	28	CAB - DASH - CENTER - OPTIONS PANEL
P903A	D248	28	CAB - DASH - CENTER - OPTIONS PANEL
P904	C247	28	CAB - DASH - CENTER - OPTIONS PANEL
P904A	D247	28	CAB - DASH - CENTER - OPTIONS PANEL
P905	A247	28	CAB - DASH - CENTER - OPTIONS PANEL

FIGURE FO-1 ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 2 OF 40

SIZE B | ILL. NO. 6WD01L2B | FP-3/ (FP-4 BLANK)

CONNECTORS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
P905A	B247	28	CAB - DASH - CENTER - OPTIONS PANEL
P906	A248	28	CAB - DASH - CENTER - OPTIONS PANEL
P906A	B248	28	CAB - DASH - CENTER - OPTIONS PANEL
P908	A251	28	CAB - DASH - CENTER - OPTIONS PANEL
P908A	B251	28	CAB - DASH - CENTER - OPTIONS PANEL
P909	A256	29	CAB - DASH - CENTER - OPTIONS PANEL
P909A	B256	29	CAB - DASH - CENTER - OPTIONS PANEL
P910	B251	28	CAB - DASH - CENTER - OPTIONS PANEL
P910A	D251	28	CAB - DASH - CENTER - OPTIONS PANEL
P911	B256	29	CAB - DASH - CENTER - OPTIONS PANEL
P911A	D256	29	CAB - DASH - CENTER - OPTIONS PANEL
P912	B133	15	CAB - DASH - CENTER - HEATER/CTIS - ECU
P912A	F134	15	CAB - DASH - CENTER - HEATER/CTIS - ECU
P913	B131	15	CAB - DASH - CENTER - HEATER/CTIS - ECU
P913	F245	28	CAB - DASH - CENTER - OPTIONS PANEL
P914	A250	28	CAB - DASH - CENTER - OPTIONS PANEL
P914A	B250	28	CAB - DASH - CENTER - OPTIONS PANEL
P921	G70	8	TROOP TRANSPORT ALARM
P94	A199	23	LH INTERMEDIATE MARKER
P94	A217	25	LH INTERMEDIATE MARKER
P95	G199	23	RH INTERMEDIATE MARKER
P95	G217	25	RH INTERMEDIATE MARKER
P99	F195	22	CHEMICAL ALARM CONNECTOR
PX1	A101	12	ENGINE FAN OFF SWITCH
PX10	D116	13	CAB - DASH - LEFT - INSTRUMENT PANEL
PX11	G116	13	CAB - DASH - LEFT - INSTRUMENT PANEL
PX12	C121	14	ROTATING WARNING LIGHT SWITCH
PX12A	E121	14	CAB - DASH - LEFT - INSTRUMENT PANEL
PX13	F101	12	ETHER STARTER SWITCH
PX13A	G101	12	CAB - DASH - LEFT - INSTRUMENT PANEL
PX14	F121	14	FULL HAZARD WARNING SWITCH
PX14A	H121	14	CAB - DASH - LEFT - INSTRUMENT PANEL
PX15	C124	14	MAIN LIGHT SWITCH
PX17	A121	14	IGNITION SWITCH
PX17A	C112	14	CAB - DASH - LEFT - INSTRUMENT PANEL
PX1A	B101	12	CAB - DASH - LEFT - INSTRUMENT PANEL
PX2	D101	12	LAMP TEST SWITCH
PX20	C197	22	TURN SIGNAL FLASHER
PX21	A143	16	WIPER DELAY MODULE
PX22	A193	22	EMI FILTER
PX24	G124	14	INSTRUMENT PANEL LIGHTS DIMMER MODULE
PX25	C128	15	CAB - DASH - CENTER - HEATER/CTIS - ECU
PX26	B188	21	CAB - DASH - LEFT - UNDERDASH
PX2A	E101	12	CAB - DASH - LEFT - INSTRUMENT PANEL
PX33	B191	22	CAB - DASH - RIGHT - UNDERDASH
PX33	G346	39	WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR
PX34	E197	22	FRONT AIR PRESSURE METER
PX4	F106	12	FAN SOLENOID
PX5	B106	12	REAR AIR PRESSURE METER
PX50	D197	22	INTER-AXLE DIFFERENTIAL SOLENOID
PX6	B116	13	CAB - DASH - LEFT - INSTRUMENT PANEL
PX7	A113	13	CAB - DASH - LEFT - INSTRUMENT PANEL
PX8	G111	13	CAB - DASH - LEFT - INSTRUMENT PANEL
PX9	D106	12	FUEL LEVEL METER

LIGHTS

NUMBER	ZONE	SH	DESCRIPTION
DS1	D105	12	CAB - DASH - LEFT - INSTRUMENT PANEL
DS2	G115	12	CAB - DASH - LEFT - INSTRUMENT PANEL
DS3	F105	12	CAB - DASH - LEFT - INSTRUMENT PANEL
DS4	B105	12	CAB - DASH - LEFT - INSTRUMENT PANEL
DS5	B115	13	CAB - DASH - LEFT - INSTRUMENT PANEL
DS6	G110	13	CAB - DASH - LEFT - INSTRUMENT PANEL
DS7	D115	13	CAB - DASH - LEFT - INSTRUMENT PANEL
DS8	C100	12	CAB - DASH - LEFT - INSTRUMENT PANEL
DS9	B110	13	DUMP BODY UP
DS10	E120	14	CAB - DASH - LEFT - INSTRUMENT PANEL
DS11	G100	12	CAB - DASH - LEFT - INSTRUMENT PANEL
DS12	H120	14	CAB - DASH - LEFT - INSTRUMENT PANEL
DS13	C120	14	CAB - DASH - LEFT - INSTRUMENT PANEL
DS14	B110	13	LEFT TURN SIGNAL
DS15	B110	13	RIGHT TURN SIGNAL

LIGHTS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
DS16	E110	13	HIGH BEAM
DS17	D128	15	HEATER CONTROL PANEL ILLUMINATION
DS18	A244	28	CAB - DASH - CENTER - OPTIONS PANEL
DS19	E110	13	RADIATOR FAN OFF
DS21	C110	13	EMERGENCY BRAKE
DS22	D110	13	PARKING BRAKE
DS23	C110	13	PTO ON
DS24	D110	13	OIL PRESSURE
DS25	C110	13	WATER TEMPERATURE
DS27	C110	13	REAR BRAKE AIR
DS28	E110	13	FRONT AIR BRAKE
DS29	D110	13	ENGINE OIL LEVEL
DS30	F110	13	MASTER STOP
DS31	D249	28	CAB - DASH - CENTER - OPTIONS PANEL
DS32	B110	13	CHEMICAL DETECT
DS34	C110	13	CTIS OVERSPEED
DS35	C207	23	WRECKER BLACKOUT STOP LEFT REAR
DS35	B216	24	TRACTOR BLACKOUT STOP LEFT REAR
DS35	C225	25	LONG WHEEL BASE BLACKOUT STOP LEFT REAR
DS35	C234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE BLACKOUT STOP LEFT REAR
DS36	G207	23	WRECKER BLACKOUT STOP RIGHT REAR
DS36	D216	24	TRACTOR BLACKOUT STOP RIGHT REAR
DS36	G225	25	LONG WHEEL BASE BLACKOUT STOP RIGHT REAR
DS36	G234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE BLACKOUT STOP RIGHT REAR
DS37	B207	23	WRECKER REAR LEFT COMPOSITE
DS37	A216	24	TRACTOR REAR LEFT COMPOSITE
DS37	B225	25	LONG WHEEL BASE REAR LEFT COMPOSITE
DS37	B234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE REAR LEFT COMPOSITE
DS38	F207	23	WRECKER REAR RIGHT COMPOSITE
DS38	E216	24	TRACTOR REAR RIGHT COMPOSITE
DS38	F225	25	LONG WHEEL BASE REAR RIGHT COMPOSITE
DS38	F234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE REAR RIGHT COMPOSITE
DS39	F46	6	FRONT LEFT TURN SIGNAL
DS41	D110	13	TRANSMISSION OIL TEMPERATURE
DS42	C47	6	FRONT RIGHT TURN SIGNAL
DS43	D248	28	CAB - DASH - CENTER - OPTIONS PANEL
DS44	D46	6	RIGHT HEADLIGHT
DS45	D207	23	WRECKER BACKUP LIGHT
DS45	C216	24	TRACTOR BACKUP LIGHT
DS45	C225	25	LONG WHEEL BASE BACKUP LIGHT
DS45	C234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE BACKUP LIGHT
DS46	D246	28	CAB - DASH - CENTER - OPTIONS PANEL
DS47	G46	6	PARKING LIGHT FRONT LEFT
DS48	B47	6	PARKING LIGHT FRONT RIGHT
DS49	G46	6	BLACKOUT MARKER LEFT FRONT
DS50	B47	6	BLACKOUT MARKER RIGHT FRONT
DS51	B207	23	WRECKER BLACKOUT MARKER LEFT REAR
DS51	B216	24	TRACTOR BLACKOUT MARKER LEFT REAR
DS51	B225	25	LONG WHEEL BASE BLACKOUT MARKER LEFT REAR
DS51	C234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND WRECKER BLACKOUT MARKER LEFT REAR
DS52	F207	23	WRECKER BLACKOUT MARKER RIGHT REAR
DS52	D216	24	TRACTOR BLACKOUT MARKER RIGHT REAR
DS52	F225	25	LONG WHEEL BASE BLACKOUT MARKER RIGHT REAR
DS52	F234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE BLACKOUT MARKER RIGHT REAR
DS53	H46	6	BLACKOUT DRIVE LIGHT
DS54	D93	11	CAB MARKER LIGHT FRONT UPPER MIDDLE LEFT
DS54	F242	27	LH FRONT TOP CAB CLEARANCE LIGHT
DS52	F234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE BLACKOUT MARKER RIGHT REAR

LIGHTS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
DS53	H46	6	BLACKOUT DRIVE LIGHT
DS54	D93	11	CAB MARKER LIGHT FRONT UPPER MIDDLE LEFT
DS54	F242	27	LH FRONT TOP CAB CLEARANCE LIGHT
DS55	D93	11	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE
DS55	E242	27	MIDDLE FRONT TOP CLEARANCE LIGHT
DS56	C93	11	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
DS56	D242	27	RH FRONT TOP CAB CLEARANCE LIGHT
DS57	C93	11	CAB MARKER LIGHT FRONT UPPER RIGHT
DS57	D242	27	RH FRONT TOP CAB MARKER LIGHT
DS58	E93	11	CAB MARKER LIGHT FRONT UPPER LEFT
DS58	F242	27	LH FRONT TOP CAB MARKER LIGHT
DS59	B93	11	CAB MARKER LIGHT RIGHT DOOR
DS60	F93	11	CAB MARKER LIGHT FRONT LOWER LEFT
DS61	A93	11	CAB MARKER LIGHT RIGHT DOOR
DS62	F93	11	CAB MARKER LIGHT LEFT DOOR
DS63	B246	28	CAB - DASH - CENTER - OPTIONS PANEL
DS64	B248	28	CAB - DASH - CENTER - OPTIONS PANEL
DS65	A207	23	WRECKER LH SIDE MARKER LIGHT
DS65	A225	25	LONG WHEEL BASE LH SIDE MARKER LIGHT
DS65	A234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE LH SIDE MARKER LIGHT
DS66	A207	23	WRECKER LH REAR MARKER LIGHT
DS66	A216	24	TRACTOR LH REAR MARKER LIGHT
DS66	A225	25	LONG WHEEL BASE LH REAR MARKER LIGHT
DS66	A234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE LH REAR MARKER LIGHT
DS67	H207	23	WRECKER RH SIDE MARKER LIGHT
DS67	H225	25	LONG WHEEL BASE RH SIDE MARKER LIGHT
DS67	H234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE RH SIDE MARKER LIGHT
DS68	G207	23	WRECKER RH REAR MARKER LIGHT
DS68	C216	24	TRACTOR RH REAR MARKER LIGHT
DS68	G225	25	LONG WHEEL BASE RH REAR MARKER LIGHT
DS68	G234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE RH REAR MARKER LIGHT
DS69	D207	23	WRECKER LEFT REAR MARKER
DS69	G216	24	TRACTOR LEFT REAR MARKER
DS69	D225	25	LONG WHEEL BASE LEFT REAR MARKER
DS69	D234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE LEFT REAR MARKER
DS70	E207	23	WRECKER MIDDLE REAR MARKER
DS70	F216	24	TRACTOR MIDDLE REAR MARKER
DS70	E225	25	LONG WHEEL BASE MIDDLE REAR MARKER
DS70	E234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE MIDDLE REAR MARKER
DS71	E207	23	WRECKER RIGHT REAR MARKER
DS71	E216	24	TRACTOR RIGHT REAR MARKER
DS71	E225	25	LONG WHEEL BASE RIGHT REAR MARKER
DS71	E234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE RIGHT REAR MARKER
DS72	B207	23	WRECKER REAR LEFT COMPOSITE
DS72	B216	24	TRACTOR REAR LEFT COMPOSITE
DS72	B225	25	LONG WHEEL BASE REAR LEFT COMPOSITE
DS72	B234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE REAR LEFT COMPOSITE
DS73	F207	23	WRECKER REAR RIGHT COMPOSITE
DS73	E216	24	TRACTOR REAR RIGHT COMPOSITE
DS73	F225	25	LONG WHEEL BASE REAR RIGHT COMPOSITE
DS73	F234	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE REAR RIGHT COMPOSITE
DS74	D46	6	LEFT HEADLIGHT
DS96	B251	28	CAB - DASH - CENTER - OPTIONS PANEL
DS97	B255	29	CAB - DASH - CENTER - OPTIONS PANEL
DS98	D251	28	CAB - DASH - CENTER - OPTIONS PANEL
DS99	D255	29	CAB - DASH - CENTER - OPTIONS PANEL
DS100	B249	28	CAB - DASH - CENTER - OPTIONS PANEL
DS101	D128	15	HEATER CONTROL PANEL ILLUMINATION
DS108	E100	12	CAB - DASH - LEFT - INSTRUMENT PANEL

CIRCUIT BREAKERS

NUMBER	ZONE	SH	DESCRIPTION
CB20	C149	17	CAB RADIO
CB21	C158	18	WTEC II VIM STE/ICE

CIRCUIT BREAKERS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
CB22	C158	18	FAN/ETHER
CB23	C156	18	HEATER BLOWER
CB30	C148	17	CHEMICAL ALARM
CB35	D158	18	WTEC II VIM POWER
CB36	C156	18	HORN POWER
CB37	C160	18	WINDSHIELD WIPER/WASHER
CB38	D156	18	ROTATING BEACON
CB39	C155	18	TRAILER BLACKOUT STOP
CB40	C159	18	CTIS COOLER
CB41	C151	17	TRAILER REAR LIGHTS POWER
CB42	C151	17	BLACKOUT MARKER LIGHTS POWER
CB43	C152	17	REAR COMPOSITE LIGHTS / WTEC III ECU
CB44	C152	17	REAR COMPOSITE LIGHTS
CB45	C148	17	FUEL PREHEAT
CB48	C149	17	ARCTIC CAB/ENGINE KILL
CB49	C160	18	PTO POWER
CB50	C155	18	SWINGFIRE PUMP POWER
CB53	D149	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB54	D151	17	BLACKOUT HEADLIGHT
CB61	D162	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB62	D162	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB63	D160	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB64	D160	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB65	D149	17	PARKING LIGHTS
CB66	D152	17	BLACKOUT MARKER POWER
CB67	D148	17	MARKER LIGHTS
CB68	C161	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB70	D155	18	IGNITION/MAIN LIGHT SWITCH
CB71	D158	18	HAZARD/FLASHER WORKLIGHTS
CB72	D148	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB73	D159	18	BACK-UP LIGHT POWER
CB74	D159	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB76	D152	17	BLACKOUT STOP RELAY POWER
CB77	C161	18	ENGINE INSTR POWER
CB78	D156	18	HEADLIGHTS
CB79	C159	18	WTEC II VIM POWER / WTEC III REVERSE WARNING RELAY
CB80	D151	17	TAILLIGHTS

TERMINAL LUGS

NUMBER	ZONE	SH	DESCRIPTION
TL1	B63	7	POLARITY PROTECTION
TL1	E69	8	ALTERNATOR
TL1	F62	7	200 AMP
TL2	D62	7	200 AMP
TL2	B62	7	POLARITY PROTECTION
TL2	D69	8	ALTERNATOR
TL3	C94	11	CAB MARKER LIGHT FRONT UPPER RIGHT
TL3	D242	27	RH FRONT TOP CAB MARKER LIGHT
TL4	C94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
TL4	D242	27	RH FRONT TOP CAB CLEARANCE LIGHT
TL5	D69	8	ALTERNATOR
TL6	D69	8	ALTERNATOR
TL9	D56	7	24V AUXILIARY STARTER SOLENOID
TL8	D94	11	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE
TL8	E242	27	MIDDLE FRONT TOP CLEARANCE LIGHT
TL10	C61	7	CHASSIS - REAR (REF E1)
TL12	C58	7	BATTERIES
TL12	C71	8	STARTER/STARTER SOLENOID
TL14	E97	11	ROTARY WARNING LIGHT CONNECTOR
TL15	A206	23	WRECKER REAR LIGHTS
TL15	A224	25	LONG WHEEL BASE
TL15	A233	26	LH SIDE MARKER LIGHT
TL16	B206	23	WRECKER REAR LIGHTS
TL16	G215	24	REAR LIGHTS TRACTOR
TL16	B224	25	LONG WHEEL BASE
TL16	A233	26	LH REAR MARKER LIGHT

TERMINAL LUGS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
TL17	C233	26	BACKUP LIGHT
TL17	C206	23	WRECKER REAR LIGHTS
TL17	C215	24	REAR LIGHTS TRACTOR
TL17	C224	25	LONG WHEEL BASE
TL18	C206	23	WRECKER REAR LIGHTS
TL18	H215	24	REAR LIGHTS TRACTOR
TL18	C224	25	LONG WHEEL BASE REAR LIGHTS
TL18	C233	26	LONG WHEEL BASE
TL19	H206	23	WRECKER REAR LIGHTS
TL19	H224	25	LONG WHEEL BASE
TL19	H233	26	RH SIDE MARKER LIGHT
TL20	G233	26	RH REAR MARKER LIGHT
TL20	C215	24	TRACTOR REAR LIGHTS
TL20	G224	25	LONG WHEELBASE REAR LIGHTS
TL20	G206	23	WRECKER REAR LIGHTS
TL21	G206	23	WRECKER REAR LIGHTS
TL21	D215	24	REAR LIGHTS TRACTOR
TL21	G224	25	LONG WHEEL BASE
TL21	G233	26	RH COMPOSITE LIGHT
TL22	D94	11	CAB MARKER LIGHTS
TL22	E242	27	LH FRONT TOP CAB CLEARANCE LIGHT
TL23	D56	7	24V AUXILIARY STARTER SOLENOID
TL24	D56	7	24V AUXILIARY STARTER SOLENOID
TL25	C56	7	CHASSIS - FRONT
TL25	C71	8	STARTER/STARTER SOLENOID
TL26	B56	7	CHASSIS - FRONT
TL26	C71	8	STARTER/STARTER SOLENOID
TL27	E94	11	CAB MARKER LIGHTS
TL27	F242	27	LH FRONT TOP CAB MARKER LIGHT
TL28	G66	8	FUEL SOLENOID
TL29	H66	8	FUEL SOLENOID
TL30	D206	23	WRECKER REAR LIGHTS
TL30	E215	24	REAR LIGHTS TRACTOR
TL30	D224	25	LONG WHEEL BASE
TL30	D233	26	LEFT REAR MARKER
TL31	E206	23	WRECKER REAR LIGHTS
TL31	F215	24	REAR LIGHTS TRACTOR
TL31	E224	25	LONG WHEEL BASE
TL31	E233	26	MIDDLE REAR MARKER
TL32	E206	23	WRECKER REAR LIGHTS
TL32	G215	24	REAR LIGHTS TRACTOR
TL32	E224	25	LONG WHEEL BASE
TL32	E233	26	RIGHT REAR MARKER
TL320	E268	30	PTO EQUIPPED
TL320	C277	31	ARCTIC KIT W/PTO EQUIPPED
TL33	E56	7	24V AUXILIARY STARTER SOLENOID
TL35	D70	8	ALTERNATOR
TL36	B62	7	POLARITY PROTECTION
TL36	F63	7	200 AMP
TL37	F63	7	200 AMP
TL37	B63	7	POLARITY PROTECTION
TL38	D59	7	SHUNT
TL39	C61	7	CHASSIS - REAR (REF E1)
TL41	B62	7	POLARITY PROTECTION
TL42	B62	7	POLARITY PROTECTION
TL44	B62	7	POLARITY PROTECTION
TL44	E63	7	200 AMP
TL45	D59	7	SHUNT
TL46	D58	7	SHUNT
TL46	D71	8	STARTER/STARTER SOLENOID
TL47	F63	7	200 AMP
TL47	C63	7	POLARITY PROTECTION
TL48	E61	7	CHASSIS - REAR (REF E2)
TL49A	D61	7	CHASSIS - REAR (REF E1)
TL49A	F61	7	NATO SLAVE RECEPTACLE
TL50	G130	15	CHASSIS GROUND
TL50A	F61	7	NATO SLAVE RECEPTACLE
TL51	E59	7	SHUNT
TL52	E59	7	SHUNT

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 3 OF 40

SIZE B | ILL. NO. 6WD01L3B | FP-5/ (FP-6 BLANK)

TERMINAL LUGS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
TL53	B56	7	CHASSIS - FRONT
TL53	B71	8	STARTER/STARTER SOLENOID
TL54	C200	23	WRECKER REAR LIGHTS
TL55	B56	7	CHASSIS - FRONT
TL55	C71	8	STARTER/STARTER SOLENOID
TL56	F145	17	X3 GROUND
TL57	F145	17	CAB GROUND
TL58	D69	8	ALTERNATOR
TL59	C70	8	ALTERNATOR
TL60	C62	7	POLARITY PROTECTION
TL60	D69	8	ALTERNATOR
TL61	C62	7	POLARITY PROTECTION
TL61	E69	8	ALTERNATOR
TL61	F62	7	200 AMP
TL62	C56	7	CHASSIS - FRONT
TL63	C56	7	CHASSIS - FRONT
TL63	B71	8	STARTER/STARTER SOLENOID
TL66	H70	8	ENGINE (REF P201)
TL67	F307	35	CARGO MATERIAL HANDLING CRANE
TL68	D260	29	CAB - DASH - CENTER - OPTIONS PANEL
TL69	E260	29	CAB - DASH - CENTER - OPTIONS PANEL
TL70	B47	6	FRONT RH COMPOSITE LIGHT
TL71	A94	11	CAB MARKER LIGHT RIGHT DOOR
TL72	H47	6	BLACKOUT DRIVE LIGHT
TL73	B95	11	CAB MARKER LIGHTS
TL74	D95	11	CAB MARKER LIGHTS
TL74	E240	27	AIRDROP ONLY
TL75	F96	11	CAB MARKER LIGHTS
TL76	D265	30	PTO EQUIPPED
TL77	B299	34	DUMP BODY
TL78	B298	34	DUMP BODY
TL77	B299	34	DUMP BODY
TL78	B298	34	DUMP BODY
TL79	F47	6	FRONT LH COMPOSITE LIGHT
TL80	E63	7	200 AMP
TL80	C62	7	POLARITY PROTECTION
TL81	C48	6	CHASSIS - GROUND
TL82	F47	6	CHASSIS - GROUND
TL83	B61	7	FUEL TANK LEVEL SENSOR
TL84	B58	7	CHASSIS - SPARE TIRE (REF J93)
TL85	G61	7	CHASSIS - REAR
TL86	C95	11	CAB MARKER LIGHTS
TL86	D240	27	AIRDROP ONLY
TL87	F95	11	CAB MARKER LIGHTS
TL88	A199	23	WRECKER REAR LIGHTS
TL88	A217	25	LONG WHEEL BASE
TL89	G199	23	WRECKER REAR LIGHTS
TL89	G217	25	LONG WHEEL BASE
TL90	H199	23	WRECKER REAR LIGHTS
TL90	H217	25	LONG WHEEL BASE
TL92	H200	23	WRECKER REAR LIGHTS
TL92	C215	24	REAR LIGHTS TRACTOR
TL92	G224	25	LONG WHEEL BASE
TL92	F231	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
TL93	H199	23	WRECKER REAR LIGHTS
TL93	G215	24	REAR LIGHTS TRACTOR
TL93	G230	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
TL93M	G208	24	REAR LIGHTS TRACTOR
TL94	G94	11	WINDSHIELD WASHER ROTARY PUMP (B3)
TL97	B97	11	CHEMICAL ALARM CONNECTOR
TL98	B97	11	CHEMICAL ALARM CONNECTOR
TL99	D61	7	CHASSIS - REAR (REF E2)
TL101	G264	30	ALL MTV W/O PTO
TL101	G267	30	TRACTOR W/O WINCH
TL109	C209	24	REAR LIGHTS TRACTOR
TL110	D70	8	ALTERNATOR
TL111	D266	30	PTO EQUIPPED
TL123	E47	6	CHASSIS - FRONT (REF J19)
TL126	E135	15	CHASSIS - GROUND
TL130	F94	11	CAB MARKER LIGHTS
TL131	A94	11	CAB MARKER LIGHTS

TERMINAL LUGS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
TL133	F94	11	CAB MARKER LIGHTS
TL134	B94	11	CAB MARKER LIGHT FRONT LOWER RIGHT
TL150	F186	21	SENSOR/FRONT AIR PRESSURE TRANSMITTER
TL151	G186	21	SENSOR/REAR AIR PRESSURE TRANSMITTER
TL152	C188	21	STOPLIGHT SWITCH
TL501	G197	22	CAB - DASH - RIGHT - UNDERDASH
TL502	G197	22	CAB - DASH - RIGHT - UNDERDASH
TL153	C188	21	STOPLIGHT SWITCH
TL154	D188	21	STOPLIGHT SWITCH
TL155	D188	21	STOPLIGHT SWITCH
TL156	F186	21	SWITCH/FRONT AIR PRESSURE TRANSMITTER
TL157	G186	21	SWITCH/REAR AIR PRESSURE TRANSMITTER
TL158	E146	17	START INHIBIT PUSHBUTTON
TL159	E145	17	START INHIBIT PUSHBUTTON
TL162	B123	14	STARTER PUSHBUTTON
TL163	B123	14	STARTER PUSHBUTTON
TL164	G71	8	ENGINE (REF J921)
TL165	G71	8	ENGINE (REF J921)
TL166	F62	7	200 AMP
TL167	E62	7	200 AMP
TL168	D63	7	200 AMP
TL169	D62	7	200 AMP
TL171	F62	7	200 AMP
TL172	F62	7	200 AMP
TL173	E63	7	200 AMP
TL174	D62	7	200 AMP
TL190	D344	39	WTEC III PRESSURE SWITCH GROUND
TL201	E134	15	PARKING BRAKE SWITCH
TL202	E133	15	PARKING BRAKE SWITCH

SWITCHES

NUMBER	ZONE	SH	DESCRIPTION
S3	A186	21	COLUMN SWITCH
S3	C186	21	COLUMN SWITCH
S4	D123	14	MAIN LIGHT SWITCH
S5/1	B120	14	IGNITION SWITCH
S5/11	A100	12	ENGINE FAN OFF SWITCH
S5/14	C249	28	WINCH ON OFF
S5/15	B248	28	WINCH IN-OUT
S5/16	F100	12	ETHER STARTER SWITCH
S5/2	D100	12	LAMP TEST SWITCH
S5/2	D120	14	ROTATING WARNING LIGHT SWITCH
S5/22	G120	14	FULL HAZARD WARNING SWITCH
S5/25	A255	29	SWINGFIRE PUMP SWITCH
S5/37	C255	29	DUMP UP DOWN SWITCH
S5/5	A247	28	WORKLIGHTS ON/OFF SWITCH
S5/6	B246	28	PTO ON/OFF SWITCH
S5/8	A249	28	BLACKOUT OVERRIDE SWITCH
S5/9	A250	28	FUEL PRE-HEAT SWITCH
S6	A123	14	STARTER PUSHBUTTON
S7	F146	17	START INHIBIT PUSHBUTTON
S10A	C188	21	STOPLIGHT SWITCH
S10B	D188	21	STOPLIGHT SWITCH
S18	D305	34	PTO PRESSURE SWITCH
S20	E186	21	SWITCH/FRONT AIR PRESSURE TRANSMITTER
S23	F61	7	AIR PRESSURE SWITCH FOR CTIS
S24	E134	15	PARKING BRAKE SWITCH
S25	B299	34	DUMP BED POSITION SWITCH
S26	C66	8	WATER TEMPERATURE SENSOR
S27	E68	8	OIL PRESSURE WARNING LIGHT SWITCH
S29	G186	21	SWITCH/REAR AIR PRESSURE TRANSMITTER
S31	A252	28	ARCTIC TROOP HEATER SWITCH
S36	C251	28	TAILGATE RELEASE SWITCH
S40	F67	8	ETHER SENSOR SWITCH
S45	G71	8	TROOP ALARM SWITCH
S56	A66	8	WATER TEMPERATURE SWITCH

GAGES

NUMBER	ZONE	SH	DESCRIPTION
M2	D115	13	VOLTMETER
M3	B115	13	ENGINE OIL PRESSURE METER
M4	F105	12	FRONT AIR PRESSURE METER
M5	B105	12	REAR AIR PRESSURE METER

GAGES (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
M6	G116	13	WATER TEMPERATURE METER
M7	D105	12	FUEL LEVEL METER
M8	G111	13	SPEEDOMETER
M9	A246	28	TACHOMETER

RELAYS

NUMBER	ZONE	SH	DESCRIPTION
K1	F158	18	STARTER RELAY
K2	B152	17	CONTROL PANEL RELAY
K6	F153	17	STOPLIGHT RELAY
K7	G162	18	HEADLIGHT RELAY
K8	G160	18	HEADLIGHT LO/HI-BEAM RELAY
K9	A151	17	HAZARD FLASHER BO OVERIDE
K10	F159	18	STARTER RELAY
K11	F155	18	ALTERNATOR EXCITATION RELAY
K12	B148	17	WORKLIGHT RELAY
K13	B158	18	ROTATING BEACON BO OVRD RELAY
K15	B149	17	AUXILIARY COOLER RELAY
K19	B159	18	START INHIBIT RELAY
K20	H147	17	MARKER LIGHTS RELAY
K24	B160	18	CRANKING LOCKOUT RELAY
K25	B346	39	WTEC III REVERSE WARNING RELAY
K26	B344	39	WTEC III NEUTRAL START RELAY
K27	H152	17	BO STOP RELAY
K28	H151	17	TRAILER REAR LIGHTS RELAY
K29	F151	17	BO MARKER RELAY / WTEC III BLACKOUT DRIVE RELAY
K30	H156	18	REAR LEFT COMPOSITE LAMP RELAY
K31	H158	18	REAR RIGHT COMPOSITE LAMP RELAY
K32	B156	18	HORN RELAY
K37	B348	39	WTEC III PTO ENABLE OUTPUT RELAY
K52	H148	17	CTIS OVERSPEED INDICATION RELAY
K53	H149	17	RADIO POWER RELAY

RESISTORS

NUMBER	ZONE	SH	DESCRIPTION
R1	D88	10	AIR DRYER
R2	E181	21	CAB - DASH - LEFT - UNDERDASH
R4	D184	21	CAB - DASH - LEFT - UNDERDASH
R5	C184	21	CAB - DASH - LEFT - UNDERDASH
R6	F181	21	CAB - DASH - LEFT - UNDERDASH

SOLENOIDS

NUMBER	ZONE	SH	DESCRIPTION
KS	D56	7	24V AUXILIARY STARTER SOLENOID
L1	E198	22	FAN SOLENOID
L1	H337	38	RIGHT WINCH OUT
L2	H76	8	FUEL SOLENOID
L2	H337	38	RIGHT WINCH IN
L3	B305	34	PTO SOLENOID
L4	E269	30	WINCH IN SOLENOID
L5	D269	30	WINCH OUT SOLENOID
L5	H340	38	LEFT WINCH IN
L6	D198	22	INTER-AXLE DIFFERENTIAL SOLENOID
L6	H339	38	LEFT WINCH OUT
L7	B302	34	TAILGATE RELEASE SOLENOID
L8	B302	34	DUMP BED UP SOLENOID
L9	A302	34	DUMP BED SOLENOID
L11	H338	38	UNDERLIFT DOWN
L13	H339	38	STINGER OUT
L14	H338	38	UNDERLIFT UP
L15	B60	7	CHASSIS - SPARE TIRE
L15	H337	38	UNDERLIFT FOLD DOWN
L16	H339	38	STINGER IN
L18	H338	38	UNDERLIFT FOLD UP

HORNS AND ALARMS

NUMBER	ZONE	SH	DESCRIPTION
LS1	A46	6	VEHICLE HORN
LS2	H110	13	AUDIBLE ALARM

MOTORS

NUMBER	ZONE	SH	DESCRIPTION
B2	A192	22	WINDSHIELD WIPER MOTOR
B4	C127	15	FAN MOTOR
B6	F268	30	TRANSMISSION AUXILIARY OIL COOLER FAN
B6A	G268	30	TRANSMISSION AUXILIARY OIL COOLER FAN

BATTERIES

NUMBER	ZONE	SH	DESCRIPTION
BT1	C61	7	BATTERY
BT2	D61	7	BATTERY
BT3	D61	7	BATTERY
BT4	E61	7	BATTERY

MISCELLANEOUS

NUMBER	ZONE	SH	DESCRIPTION
10A	C192	22	WTEC II VEHICLE INTERFACE MODULE
10A	E192	22	WTEC II VEHICLE INTERFACE MODULE
A2	F127	15	CTIS ELECTRONIC CONTROL UNIT
A3	G123	14	INSTRUMENT PANEL LIGHTS DIMMER MODULE
A5	A143	16	WIPER DELAY MODULE
A7	B188	21	FREQUENCY DIVIDER
A18	A112	13	LIGHTED INDICATOR DISPLAY
A20	H68	8	FUEL/WATER SEPARATOR
B1	C72	8	STARTER/STARTER SOLENOID
B10	E76	9	WTEC II TRANSFER CASE (SERIAL # 6510032369)
B10	E81	9	WTEC II TRANSFER CASE (SERIAL # 651032369 AND HIGHER)
B10	E75	9	WTEC II TRANSMISSION (SERIAL # 6510032369)
B10	E79	9	WTEC II TRANSMISSION (SERIAL # 6510032369 AND HIGHER)
B10	E85	10	TRANSFER CASE PRIOR (SERIAL # 6510032369 WITH ADAPTER CABLE ASSEMBLY)
B10	E83	10	TRANSMISSION PRIOR TO (SERIAL # 6510032369 WITH ADAPTER CABLE ASSEMBLY)
B3	G92	11	WINDSHIELD WASHER ROTARY PUMP
BJ1	A184	21	JUNCTION BOX
D1A	C147	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D1B	C147	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D2A	D147	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D2B	D147	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D3A	B147	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D3B	A147	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D7	B307	35	DIODE ASSEMBLY
D7	B318	36	DIODE ASSEMBLY
D8	C307	35	DIODE ASSEMBLY
D8	A318	36	DIODE ASSEMBLY
E1	C61	7	BATTERY
E1	D61	7	BATTERY
E1	D61	7	BATTERY
E1	E61	7	BATTERY
E2	C4	6	CHASSIS - FRONT BUMPER (REF J27)
E2	C52	7	BATTERY
E2	D52	7	BATTERY
E2	E52	7	BATTERY
E2	E52	7	BATTERY
E3	H157	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
E4	H159	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
E5	B160	18	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
E14	E221	25	LONG WHEEL BASE
E14	E230	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E15	E224	25	LONG WHEEL BASE
E15	E233	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E16	A224	25	LONG WHEEL BASE
E16	A233	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E17	G222	25	LONG WHEEL BASE

MISCELLANEOUS (CONTINUED)

NUMBER	ZONE	SH	DESCRIPTION
E17	G222	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E18	G212	25	LONG WHEEL BASE
E18	G221	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E19	F212	25	LONG WHEEL BASE
E19	F221	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E20	E213	25	LONG WHEEL BASE
E20	E221	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E21	D213	25	LONG WHEEL BASE
E21	D222	26	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E22	B86	11	CAB MARKER LIGHTS
E27	F213	24	REAR LIGHTS TRACTOR
E28	G215	24	REAR LIGHTS TRACTOR
E29	E209	24	REAR LIGHTS TRACTOR
E30	D214	24	REAR LIGHTS TRACTOR
E31	D213	24	REAR LIGHTS TRACTOR
E32	G212	24	REAR LIGHTS TRACTOR
E33	C209	24	REAR LIGHTS TRACTOR
E34	B210	24	REAR LIGHTS TRACTOR
E35	F209	24	REAR LIGHTS TRACTOR
E36	E210	24	REAR LIGHTS TRACTOR
E37	E211	24	REAR LIGHTS TRACTOR
E38	F209	24	REAR LIGHTS TRACTOR
E39	E210	24	REAR LIGHTS TRACTOR
E40	F210	24	REAR LIGHTS TRACTOR
E41	D211	24	REAR LIGHTS TRACTOR
E42	D210	24	REAR LIGHTS TRACTOR
E43	D210	24	REAR LIGHTS TRACTOR
E44	H213	24	REAR LIGHTS TRACTOR
E45	G209	24	REAR LIGHTS TRACTOR
E46	G203	23	WRECKER REAR LIGHTS
E47	F203	23	WRECKER REAR LIGHTS
E48	E204	23	WRECKER REAR LIGHTS
E49	D203	23	WRECKER REAR LIGHTS
E50	E206	23	WRECKER REAR LIGHTS
E51	A206	23	WRECKER REAR LIGHTS
E52	G204	23	WRECKER REAR LIGHTS
E53	D200	23	WRECKER REAR LIGHTS
E54	B200	23	WRECKER REAR LIGHTS
E55	F200	23	WRECKER REAR LIGHTS
E56	E211	24	REAR LIGHTS TRACTOR
E57	E203	23	WRECKER REAR LIGHTS
E58	D204	23	WRECKER REAR LIGHTS
E59	G204	23	WRECKER REAR LIGHTS
E64	D221	25	LONG WHEEL BASE
E65	B50	6	CHASSIS - FRONT
E66	C50	6	CHASSIS - FRONT
E66	D354	40	WTEC III CAB TRANSMISSION HARNESS (TID1)
E66	D358	40	WTEC III CAB TRANSMISSION HARNESS (TID2)
E67	D47	6	CHASSIS - FRONT
E68	D49	6	CHASSIS - FRONT
E69	D260	29	CAB - DASH - CENTER - OPTIONS PANEL
E70	C265	30	PTO EQUIPPED
E70	F266	30	TRACTOR W/O WINCH
E71	F182	21	CAB - DASH - LEFT - UNDERDASH
E72	G222	25	LONG WHEEL BASE
E74	G266	30	TRACTOR W/O WINCH
E78	A290	34	DUMP BODY
E79	B227	27	ROTARY WARNING LIGHT CONNECTOR
E80	C227	27	ROTARY WARNING LIGHT CONNECTOR
E81	B228	27	ROTARY WARNING LIGHT CONNECTOR
E82	C228	27	ROTARY WARNING LIGHT CONNECTOR
E83	B228	27	ROTARY WARNING LIGHT CONNECTOR
E84	B228	27	ROTARY WARNING LIGHT CONNECTOR
E88	B106	13	CAB - DASH - LEFT - INSTRUMENT PANEL

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 4 OF 40

SIZE B ILL. NO. 6WD01L4B FP-7/ (FP-8 BLANK)

MISCELLANEOUS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
E89	C115	13	CAB - DASH - LEFT - INSTRUMENT PANEL
E90	E354	40	WTEC III CAB TRANSMISSION HARNESS (TID1)
E90	E358	40	WTEC III CAB TRANSMISSION HARNESS (TID2)
E91	C354	40	WTEC III CAB TRANSMISSION HARNESS (TID1)
E91	C358	40	WTEC III CAB TRANSMISSION HARNESS (TID2)
FL	E183	22	WTEC II VEHICLE INTERFACE MODULE
FL1	G85	11	EMI FILTER
FL2	A184	22	EMI FILTER
FL3	C118	15	FAN MOTOR
G1	D70	8	ALTERNATOR
MPU1	F61	8	ENGINE SPEED MAGNETIC PICKUP
MT3	G69	8	ENGINE OIL PRESSURE SENSOR
MT4	E177	21	SENSOR/FRONT AIR PRESSURE TRANSMITTER
MT5	G186	21	SENSOR/REAR AIR PRESSURE TRANSMITTER
MT6	B66	8	WATER COOLER TEMPERATURE
MT7	B61	7	FUEL TANK LEVEL SENSOR
NS	E192	22	WTEC II VEHICLE INTERFACE MODULE
NS	F192	22	WTEC II VEHICLE INTERFACE MODULE
R11	D59	7	SHUNT
TB	C309	35	CARGO MATERIAL HANDLING CRANE
TB	F309	35	CARGO MATERIAL HANDLING CRANE
TB	D319	36	WRECKER MATERIAL HANDLING CRANE
TB	E247	38	WRECKER CONTROLS
TB1	C137	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PANEL
TB2	F139	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PANEL
X1	C146	17	24 VDC
X11	F61	7	NATO SLAVE RECEPTACLE
X2	D146	17	24 VDC
X3	F146	17	GROUND

TRANSMISSION			
NUMBER	ZONE	SH	DESCRIPTION
A10	B192	22	WTEC II VEHICLE INTERFACE MODULE
A11	C347	39	WTEC III TRANSMISSION ECU
A12	G347	39	WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR
A13	A75	9	PRE-BLOCK SEVEN TRANSMISSIONS
A13	A78	9	TID1, TID2 AND TID3 TRANSMISSIONS
A13	A82	10	PRE-BLOCK SEVEN WITH PIGTAIL TRANSMISSIONS
B10	E76	9	PRE-BLOCK SEVEN TRANSMISSION OUTPUT SPEED SENSOR
B10	E85	10	PRE-BLOCK SEVEN TRANSMISSION WITH PIGTAIL OUTPUT SPEED SENSOR
B10	E80	9	TID1, TID2, AND TID3 TRANSMISSION OUTPUT SPEED SENSOR
MT9	F76	9	PRE-BLOCK SEVEN TRANSMISSION ENGINE SPEED SENSOR
MT9	F85	10	PRE-BLOCK SEVEN WITH PIGTAIL TRANSMISSION ENGINE SPEED SENSOR
MT9	F80	9	TID1, TID2, AND TID3 TRANSMISSION ENGINE SPEED SENSOR
MT11	G76	9	PRE-BLOCK SEVEN TRANSMISSION THROTTLE POSITION SENSOR
MT11	F85	10	PRE-BLOCK SEVEN WITH PIGTAIL TRANSMISSION THROTTLE POSITION SENSOR
MT11	F80	9	TID1, TID2, AND TID3 TRANSMISSION THROTTLE POSITION SENSOR
REV	C192	22	WTEC II VEHICLE INTERFACE MODULE
RW	D192	22	WTEC II VEHICLE INTERFACE MODULE
S02	F192	22	WTEC II VEHICLE INTERFACE MODULE
S03	F192	22	WTEC II VEHICLE INTERFACE MODULE
SF01	D192	22	WTEC II VEHICLE INTERFACE MODULE
SF01	D192	22	WTEC II VEHICLE INTERFACE MODULE
SF02	C192	22	WTEC II VEHICLE INTERFACE MODULE
SF02	D192	22	WTEC II VEHICLE INTERFACE MODULE
SF3	F192	22	WTEC II VEHICLE INTERFACE MODULE
SF04	C192	22	WTEC II VEHICLE INTERFACE MODULE
SF4	D192	22	WTEC II VEHICLE INTERFACE MODULE

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 5 OF 40
SIZE B ILL. NO. 6WD01L5B

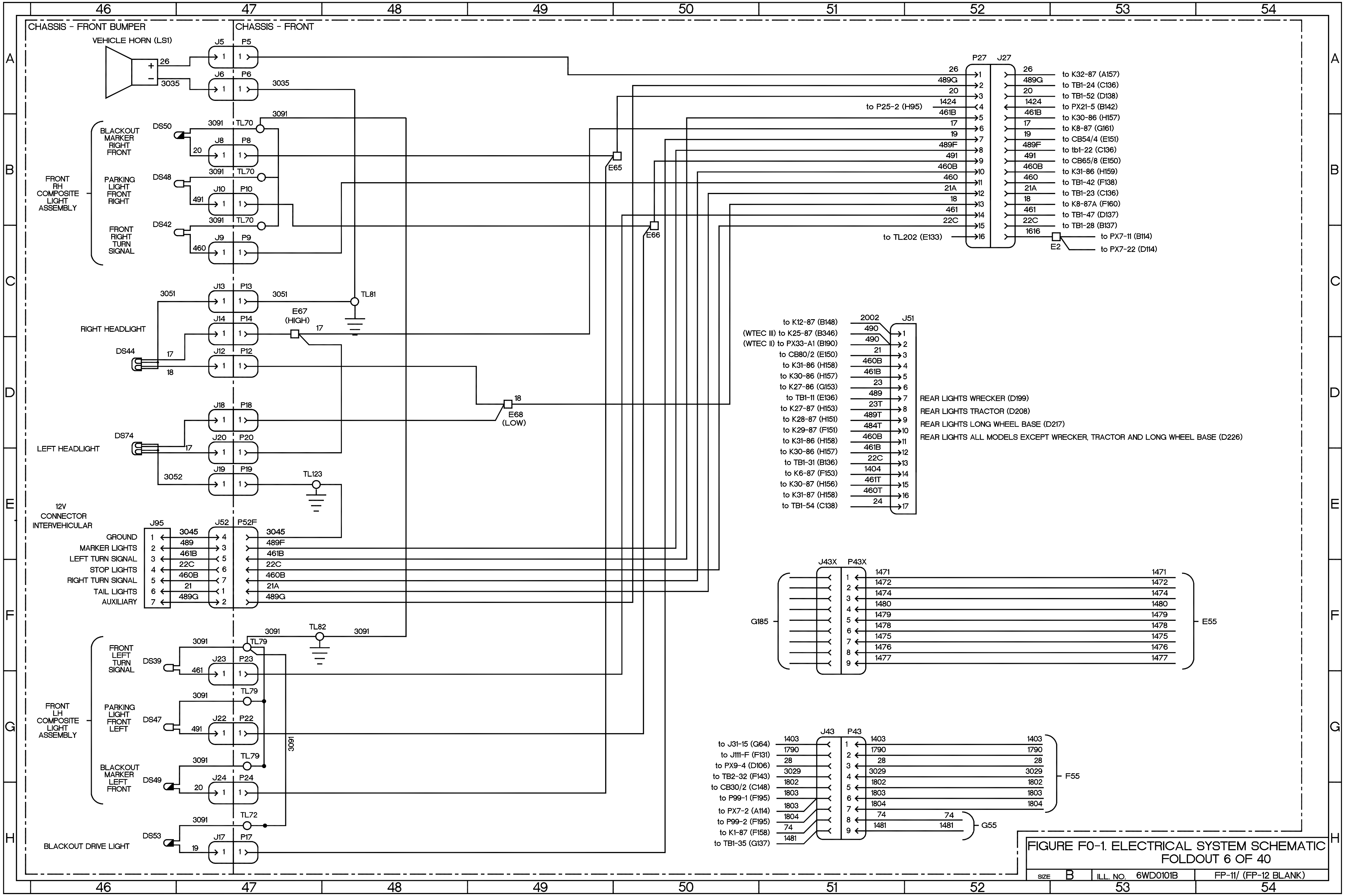


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 6 OF 40

SIZE B	ILL. NO. 6WD0101B	FP-11/ (FP-12 BLANK)

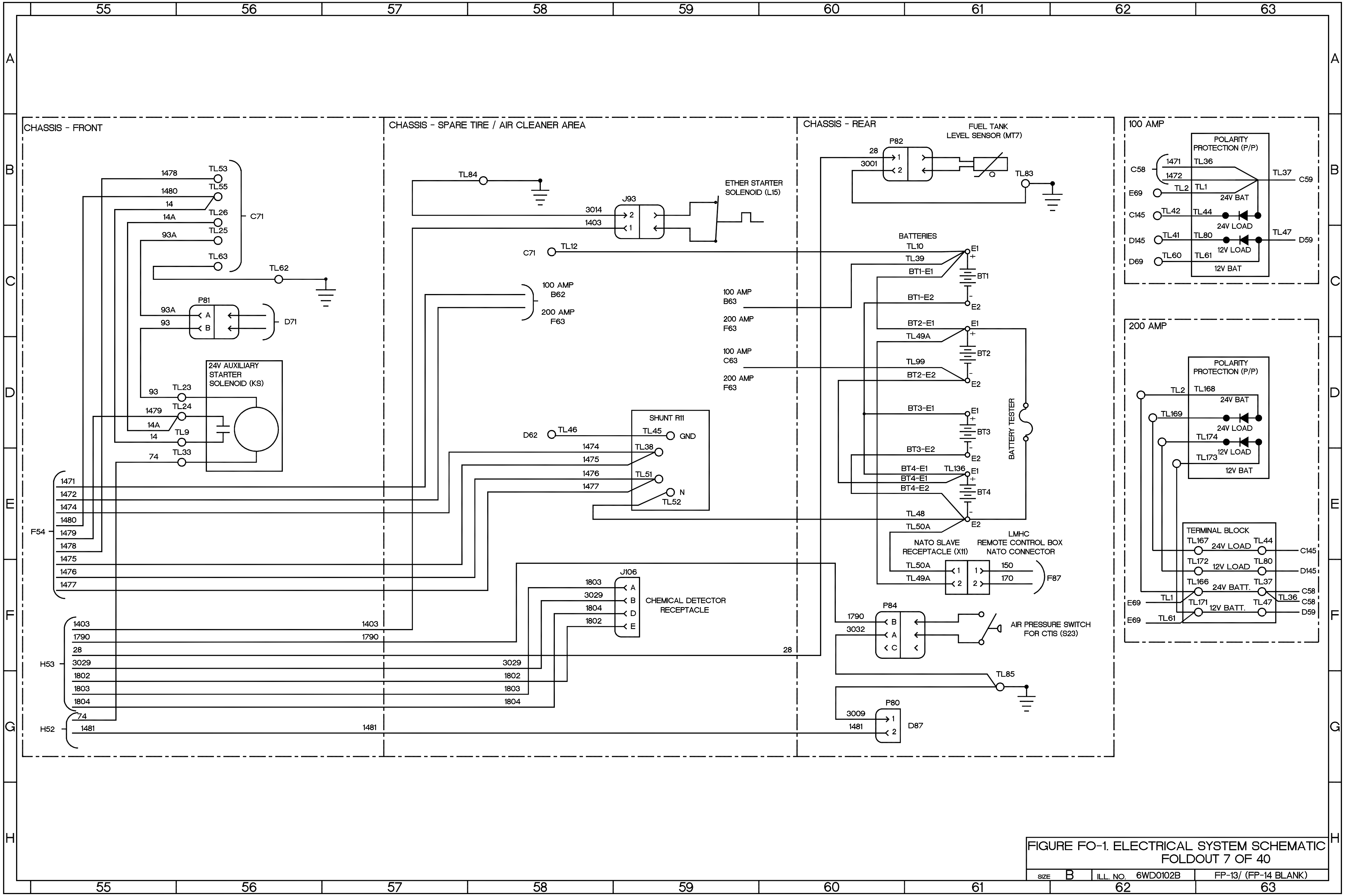


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 7 OF 40

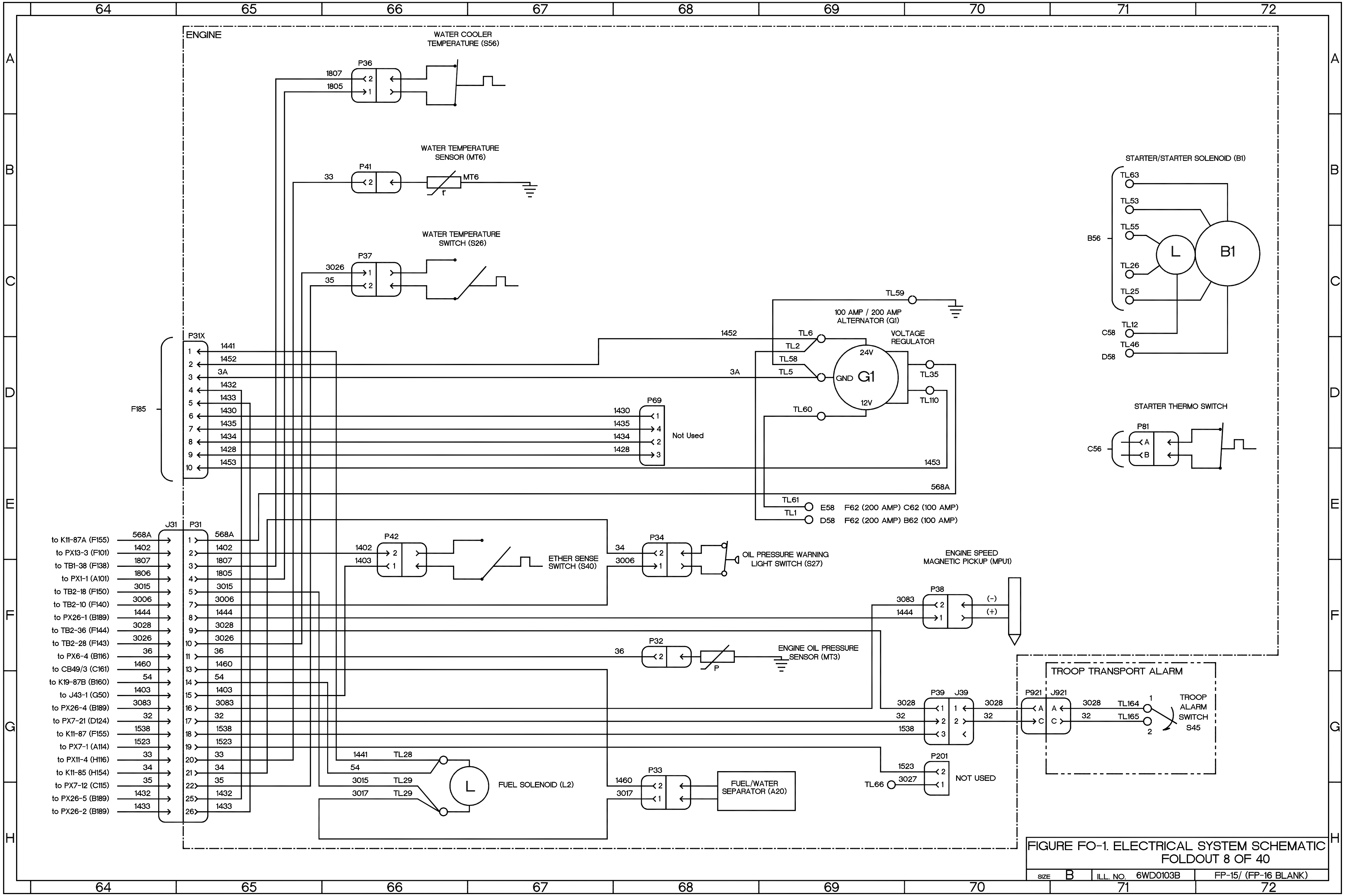


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 8 OF 40

SIZE B ILL. NO. 6WD0103B FP-15/ (FP-16 BLANK)

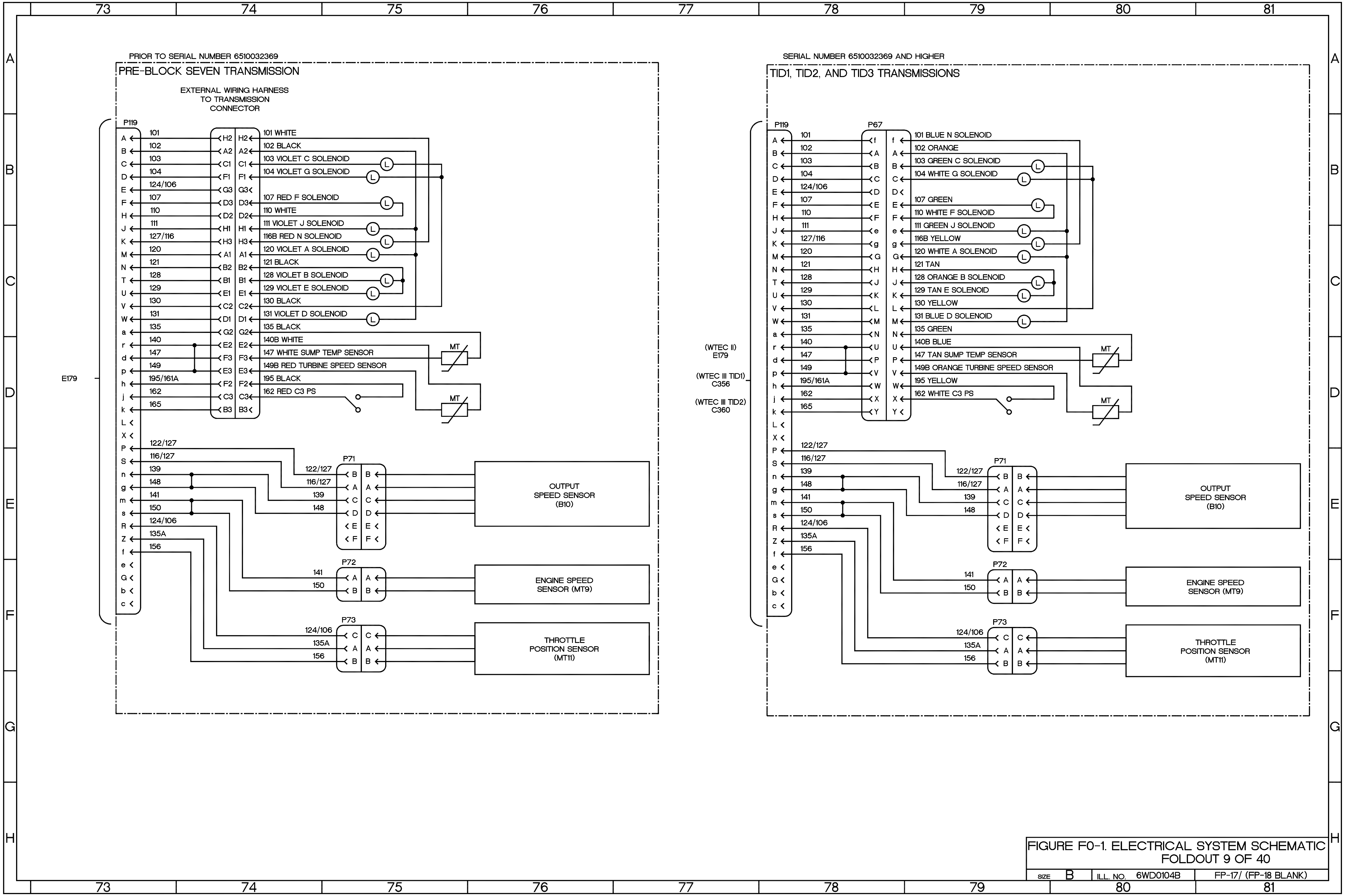


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 9 OF 40

SIZE B ILL. NO. 6WD0104B FP-17/ (FP-18 BLANK)

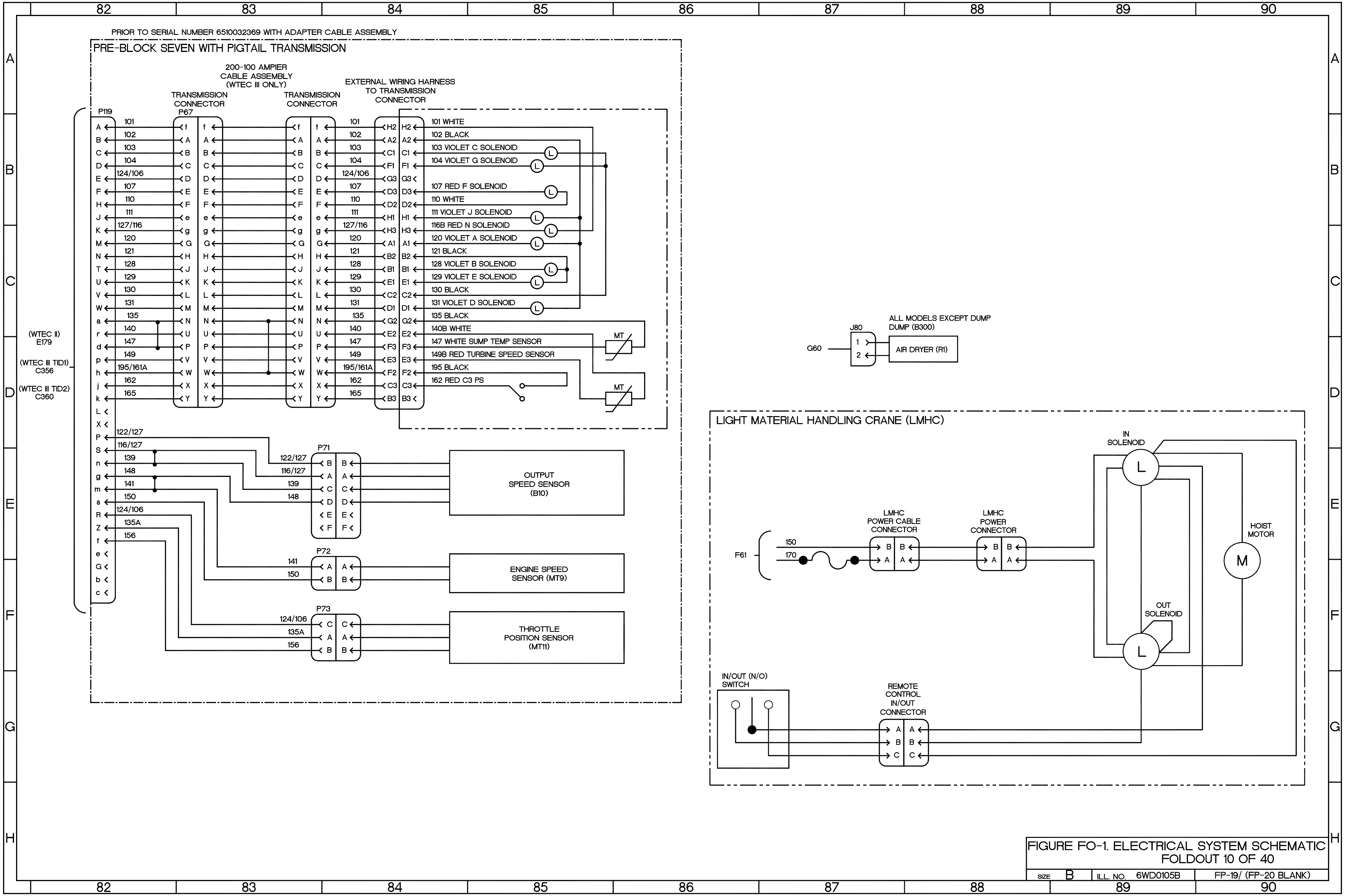


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 10 OF 40

SIZE B ILL. NO. 6WD0105B FP-19/ (FP-20 BLANK)

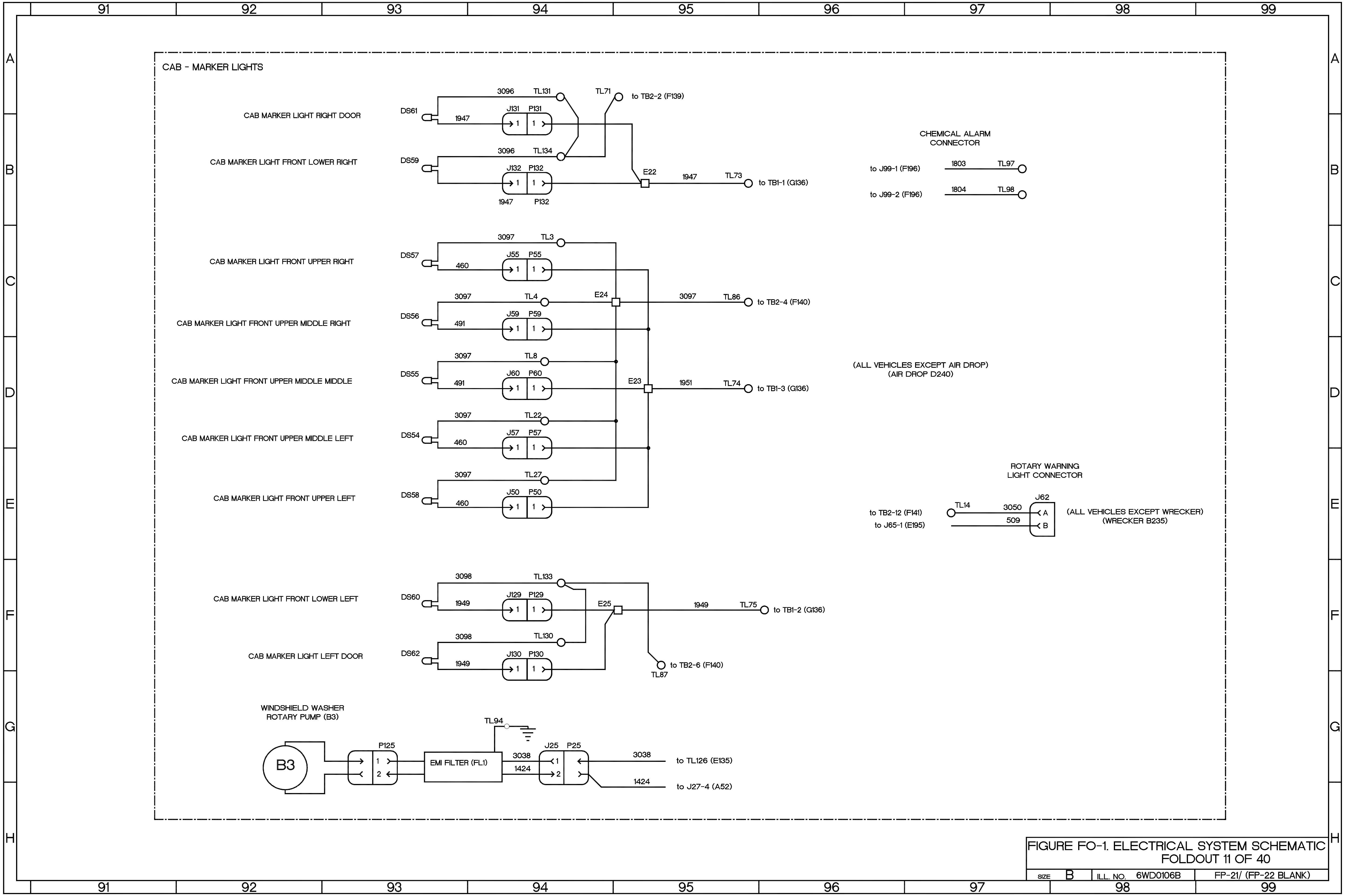


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 11 OF 40

SIZE B ILL. NO. 6WD0106B FP-21/ (FP-22 BLANK)

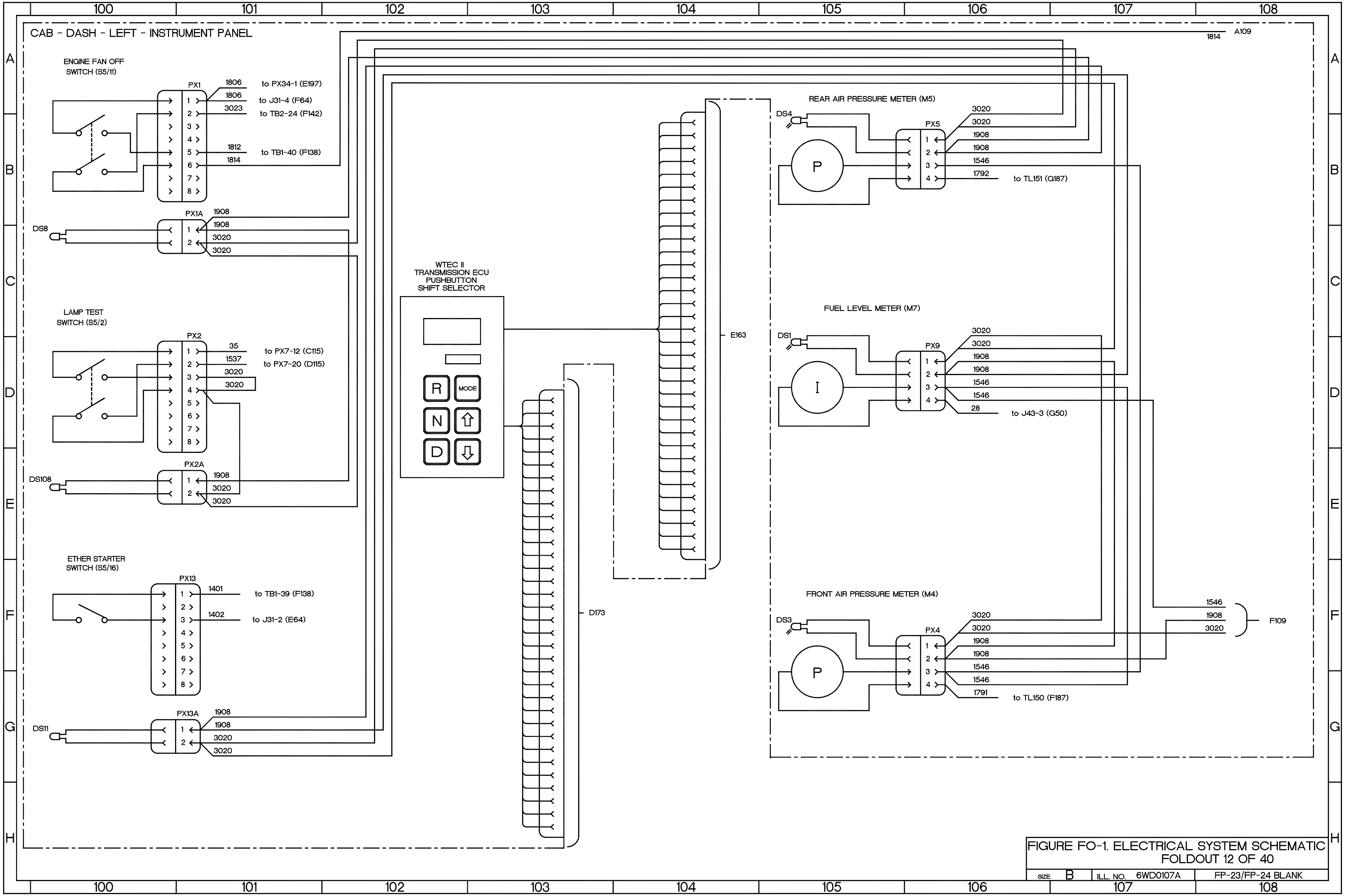


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 12 OF 40

SIZE B | ILL. NO. 6WD0107A | FP-23/FP-24 BLANK

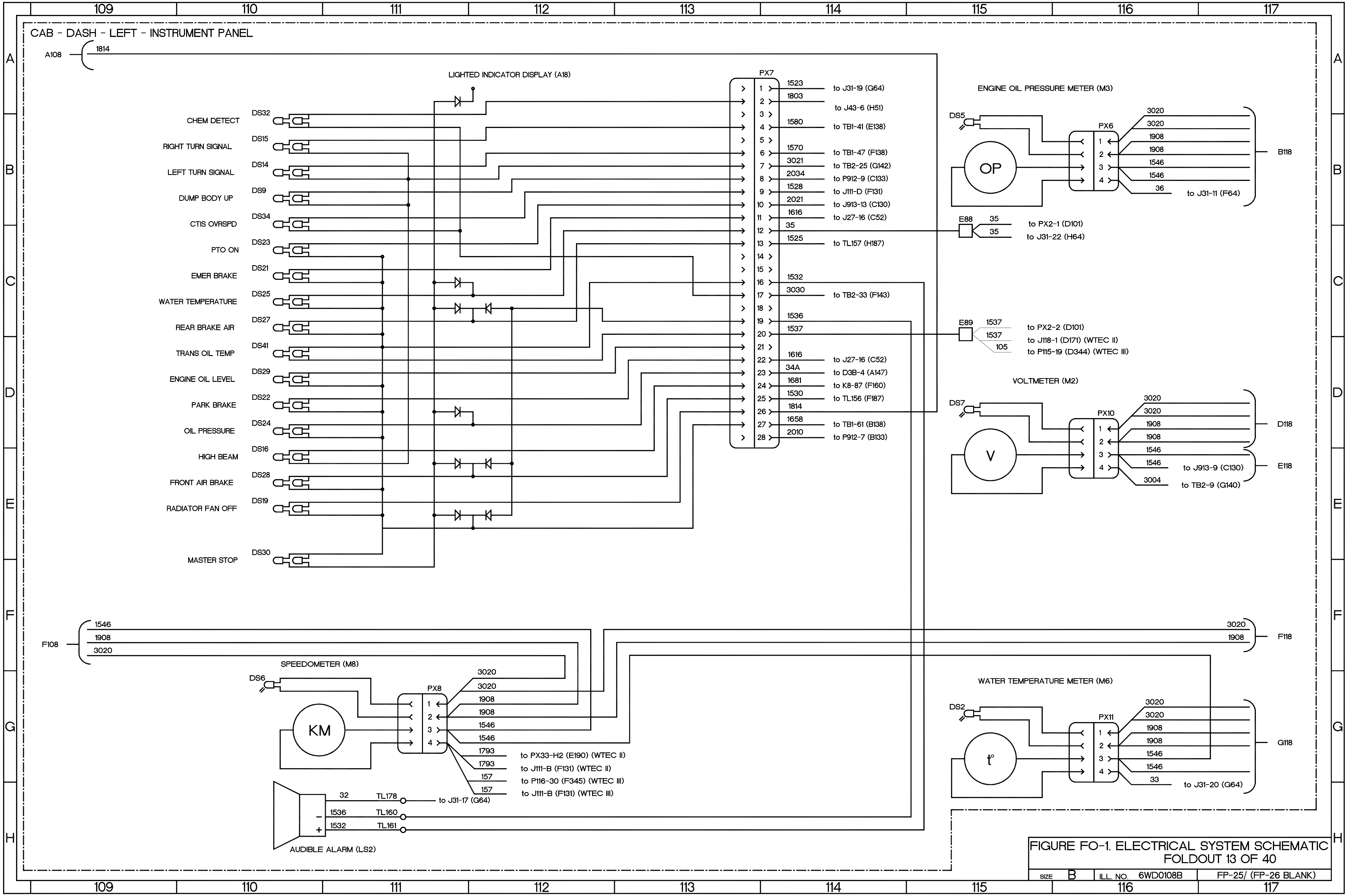


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 13 OF 40

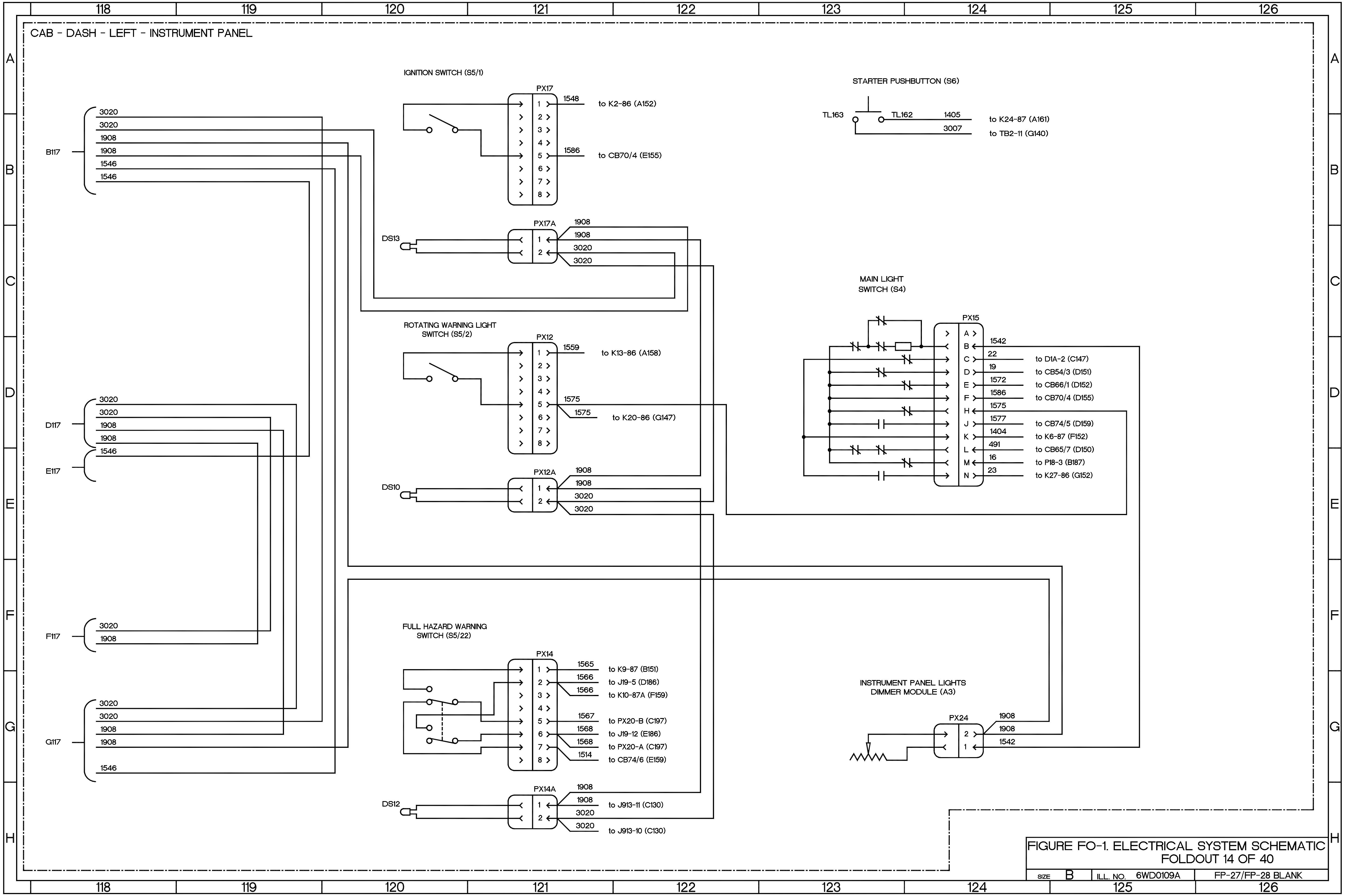


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 14 OF 40

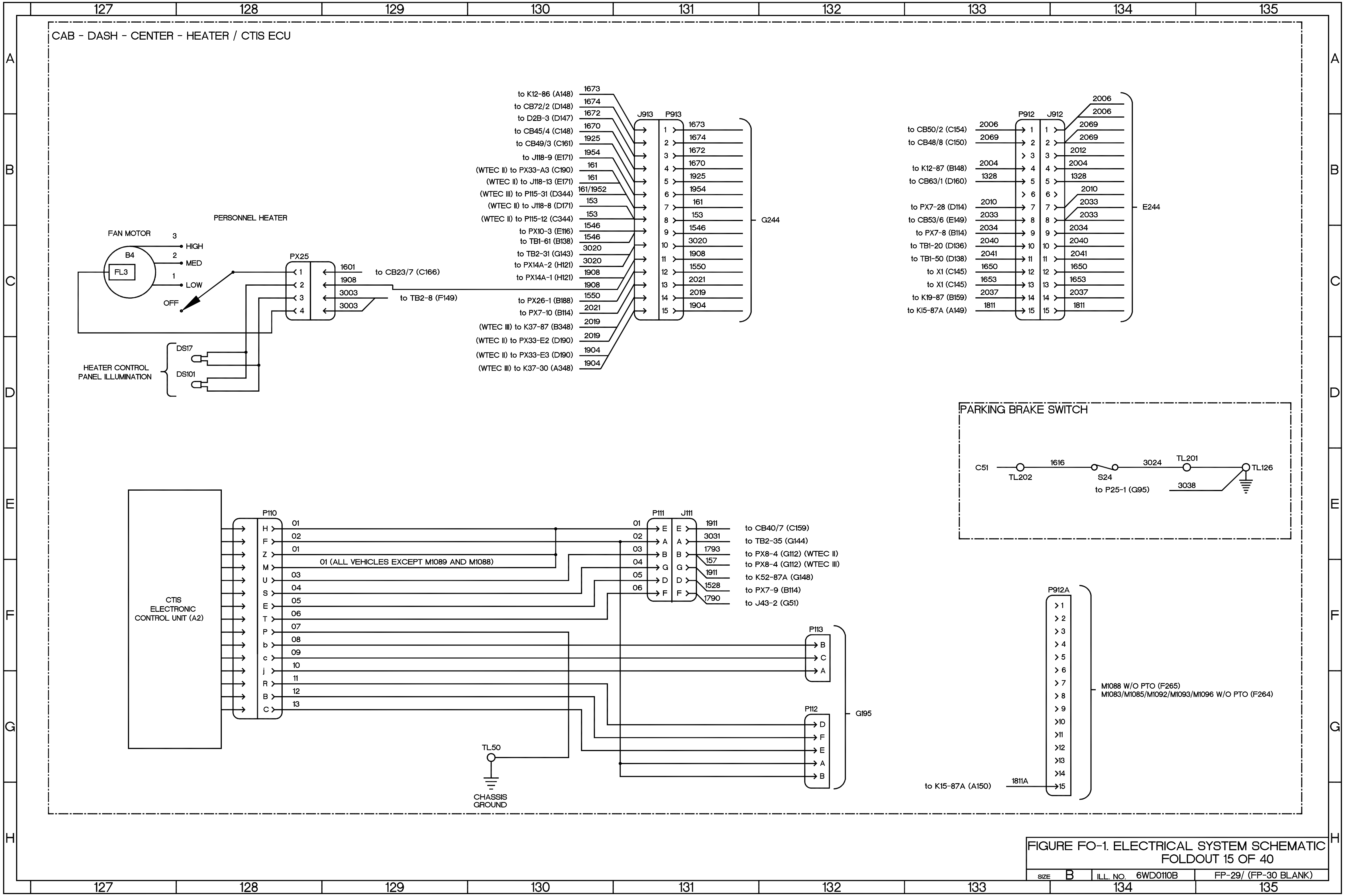


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 15 OF 40

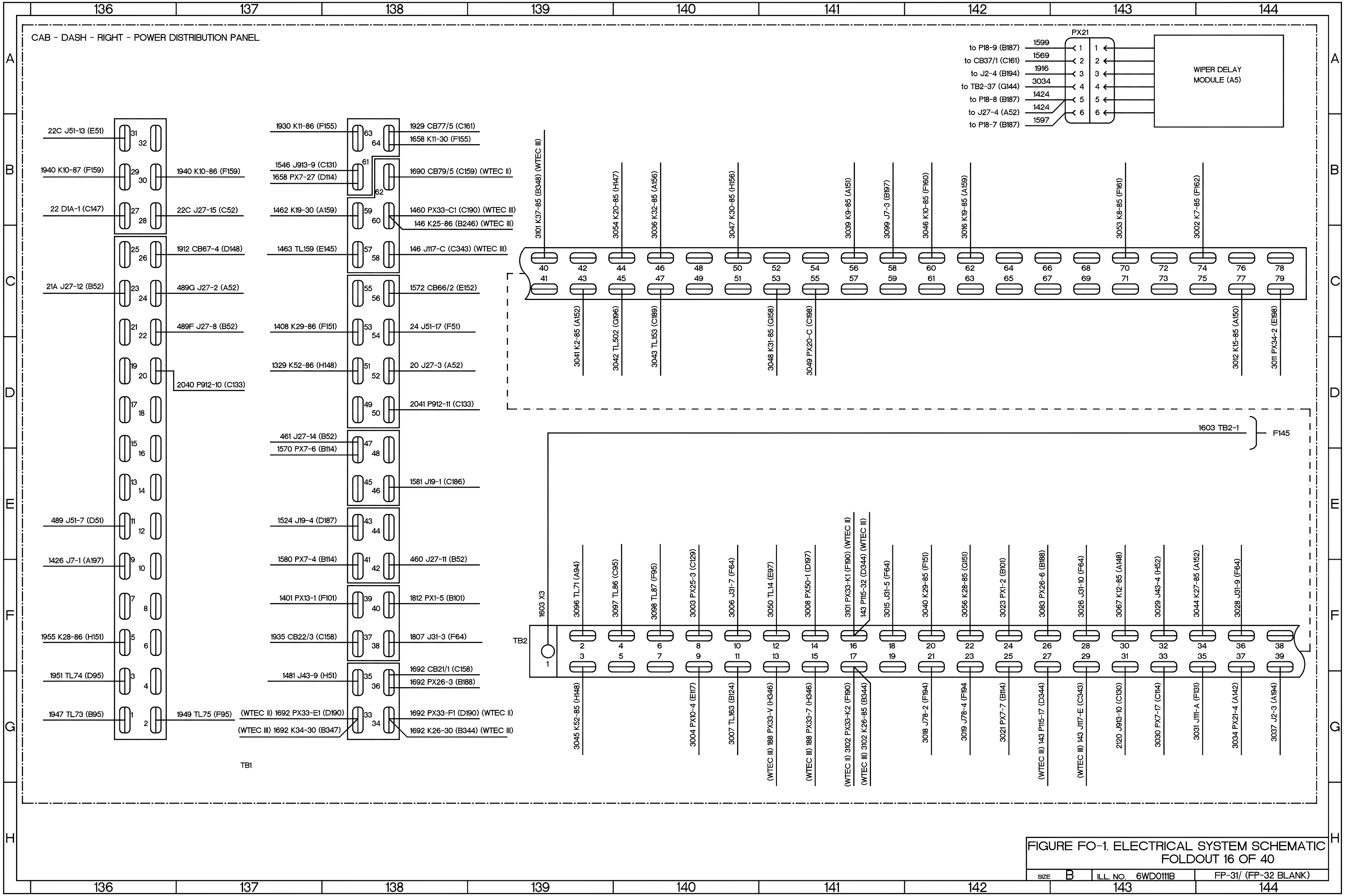


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 16 OF 40

SIZE B ILL. NO. 6WD0111B FP-31/ (FP-32 BLANK)

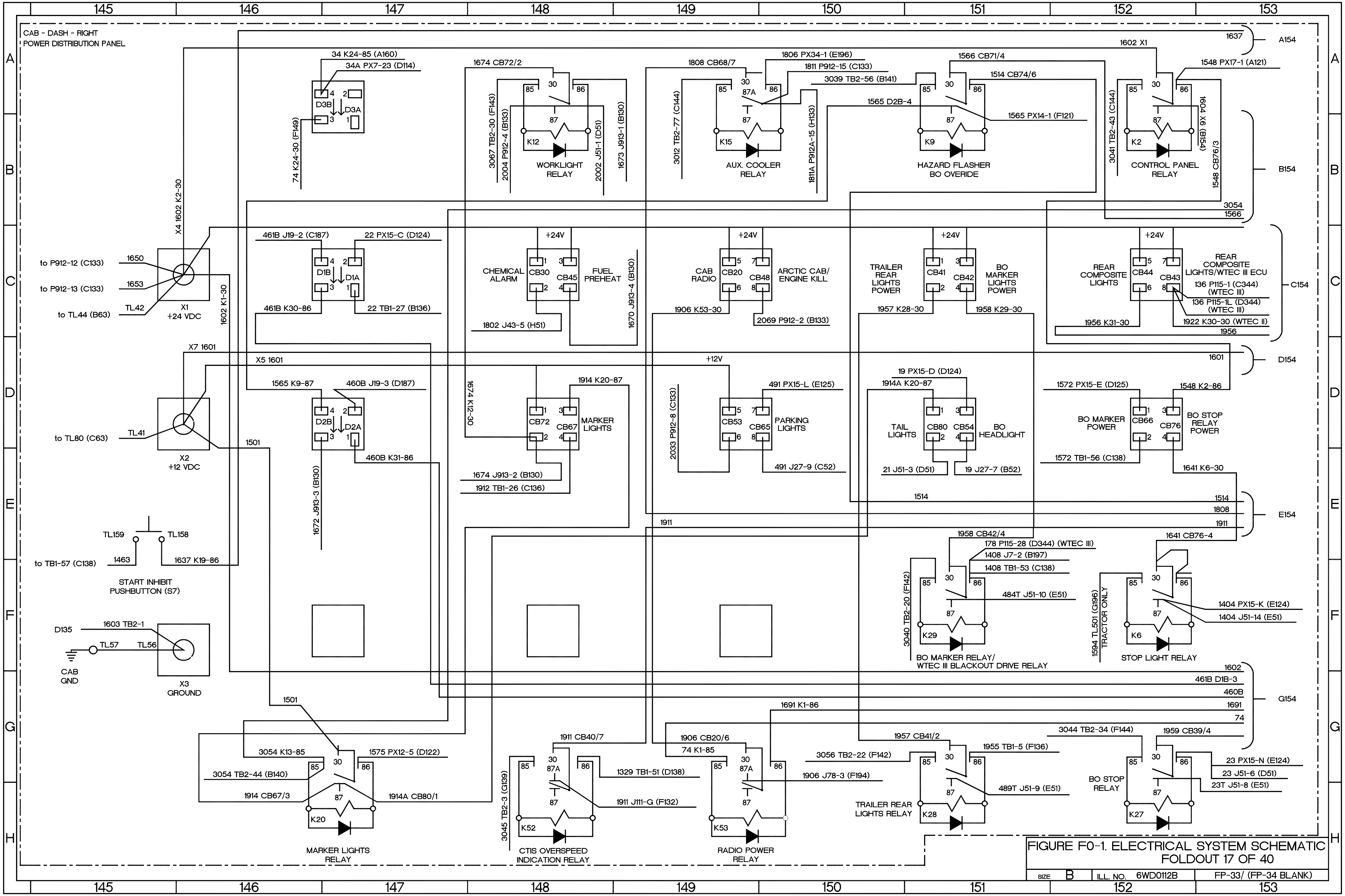


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 17 OF 40

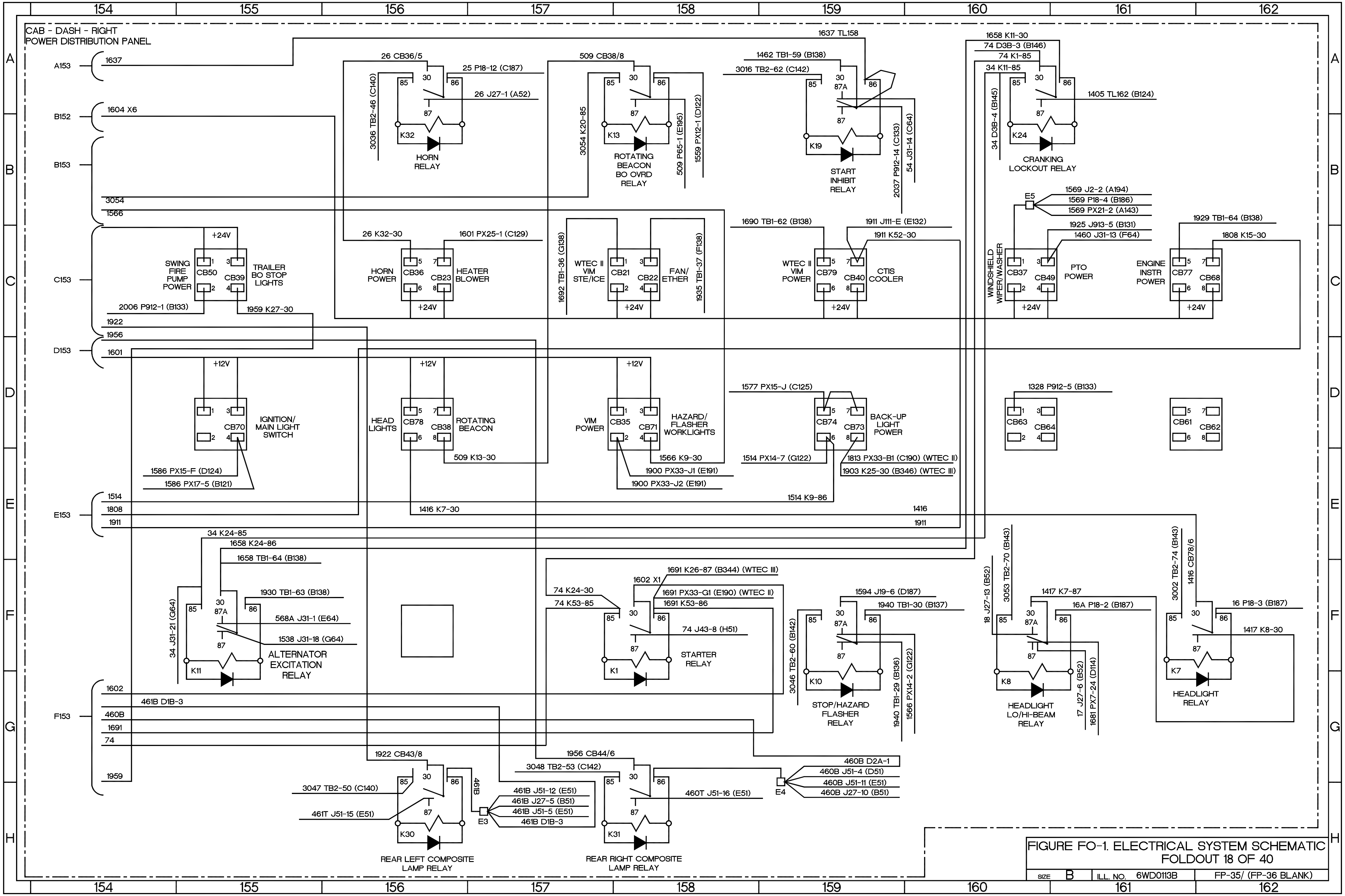


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 18 OF 40

SIZE B	ILL. NO. 6WD0113B	FP-35/ (FP-36 BLANK)

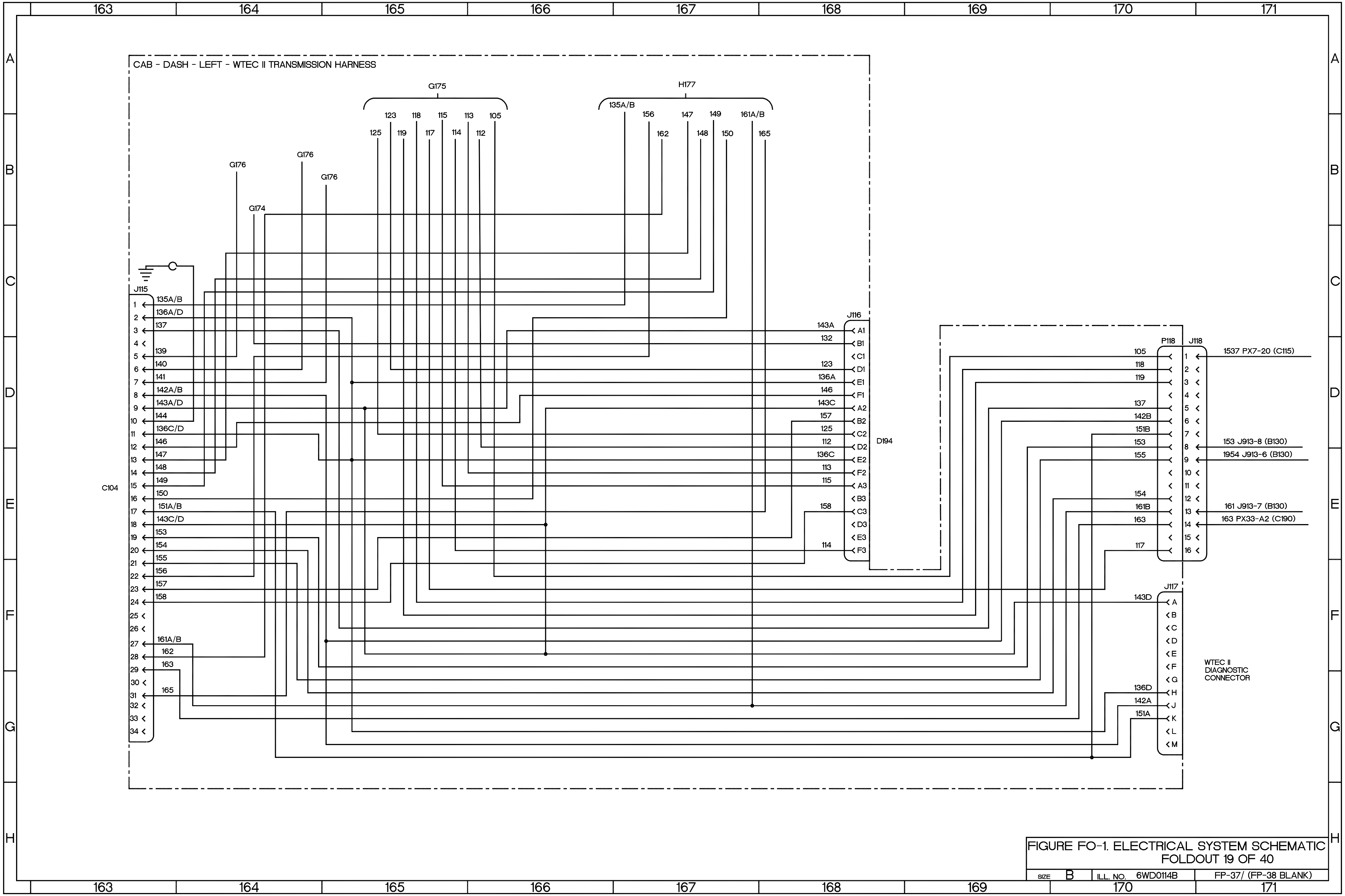


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 19 OF 40

SIZE B ILL. NO. 6WD0114B FP-37/ (FP-38 BLANK)

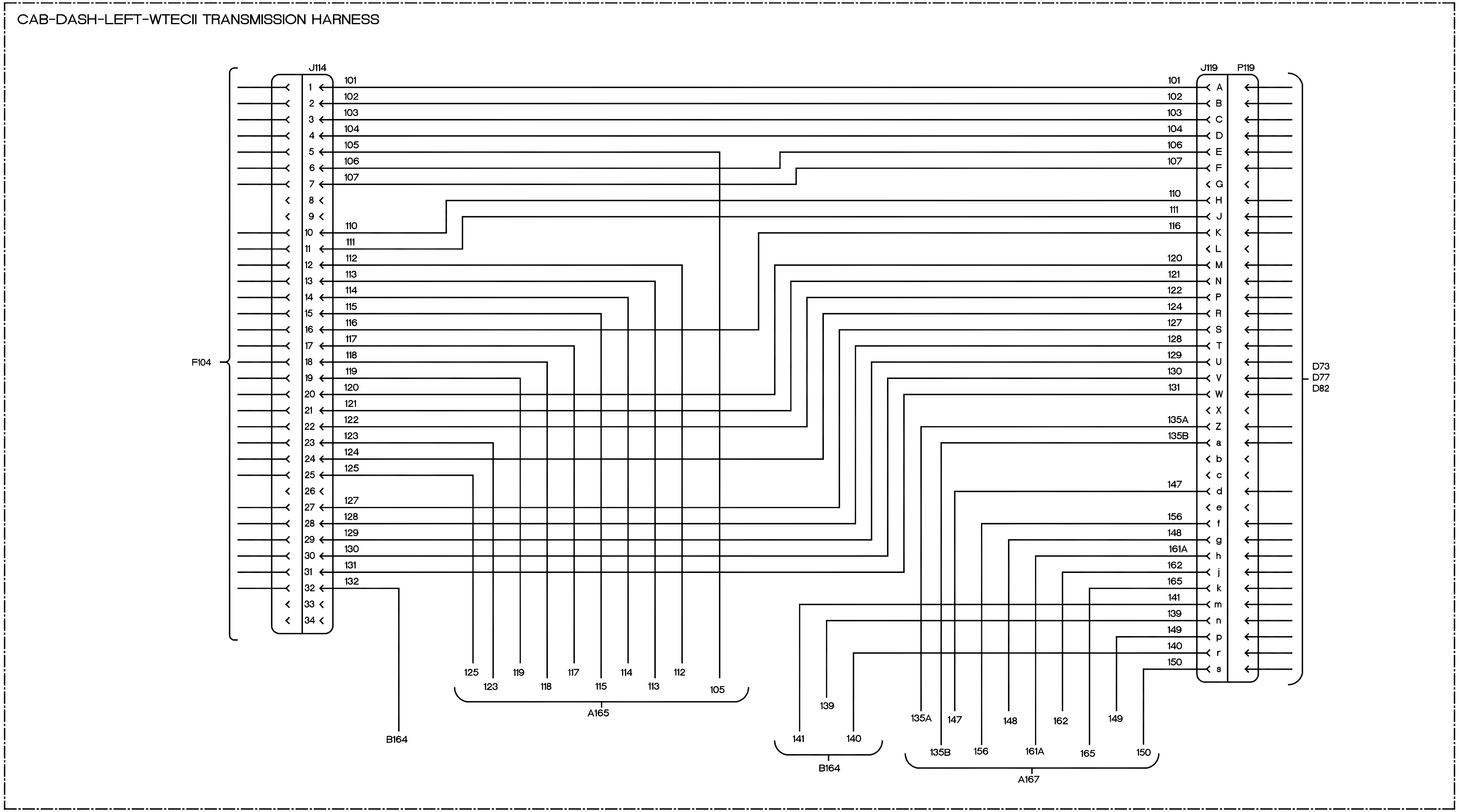


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 20 OF 40

SIZE B | ILL. NO. 6WD0115B | FP-39/ (FP-40 BLANK)

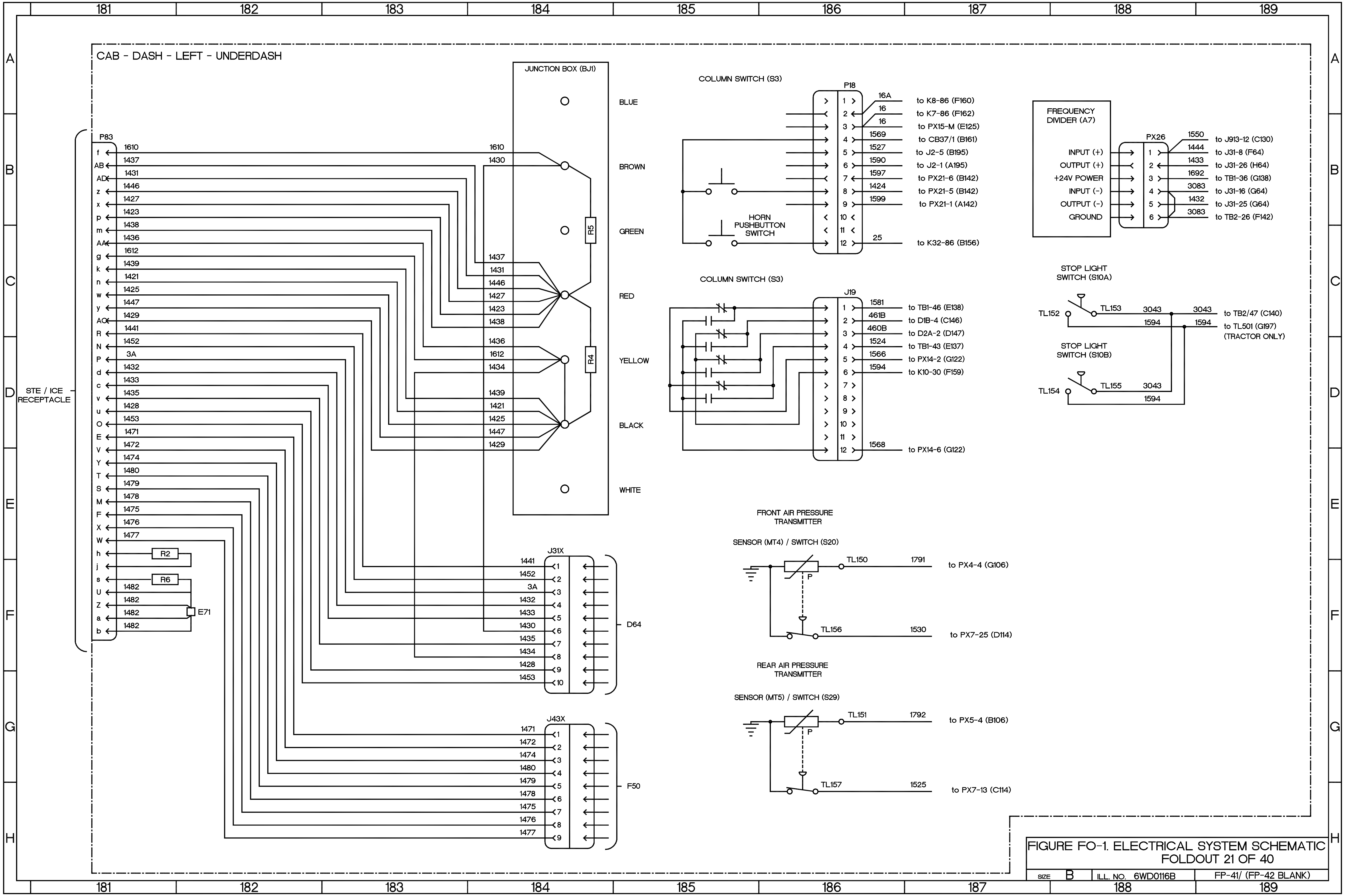


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 21 OF 40

SIZE B ILL. NO. 6WD0116B FP-41/ (FP-42 BLANK)

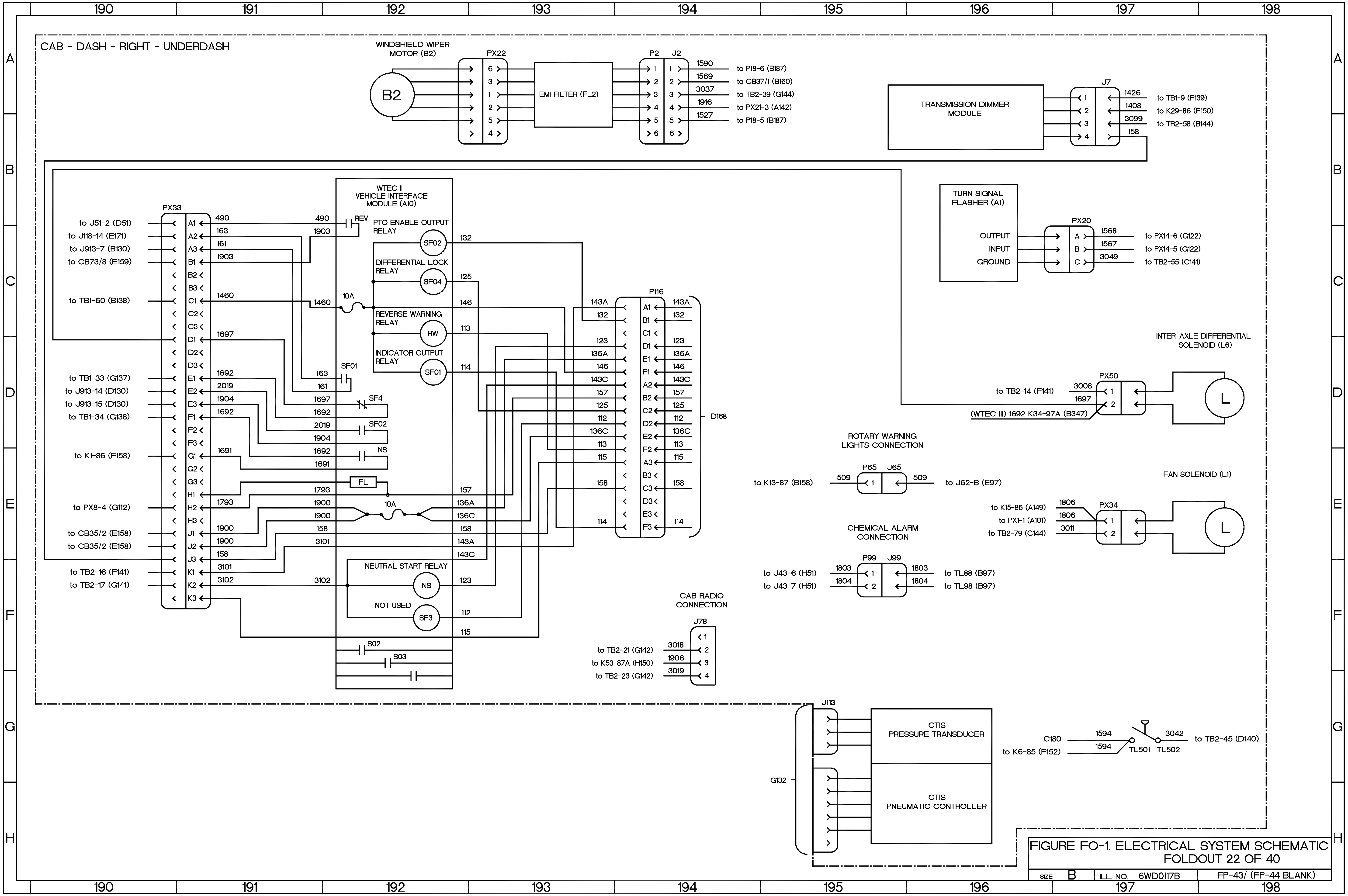


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 22 OF 40

SIZE B ILL. NO. 6WD0117B FP-43/ (FP-44 BLANK)

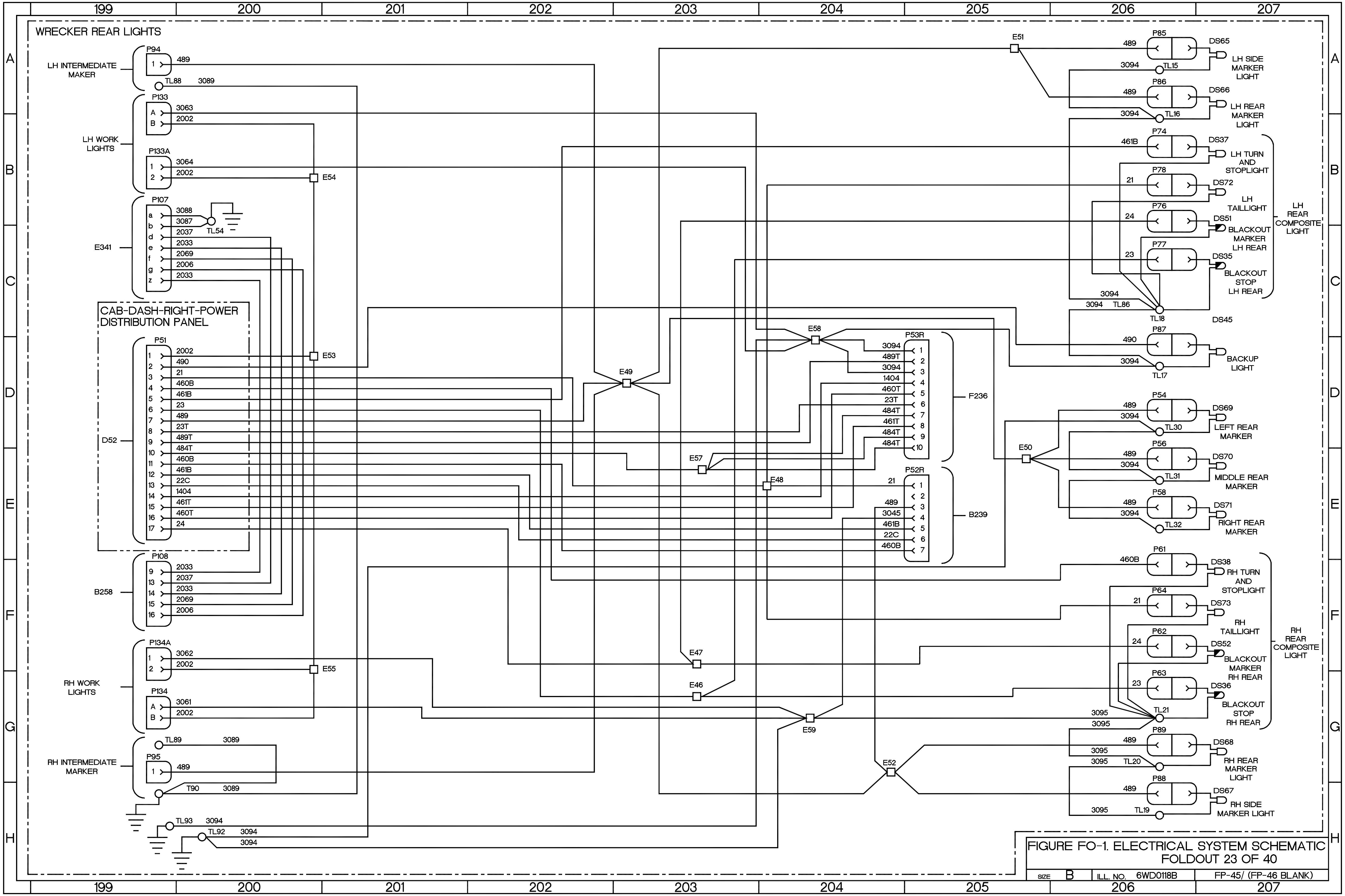


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 23 OF 40

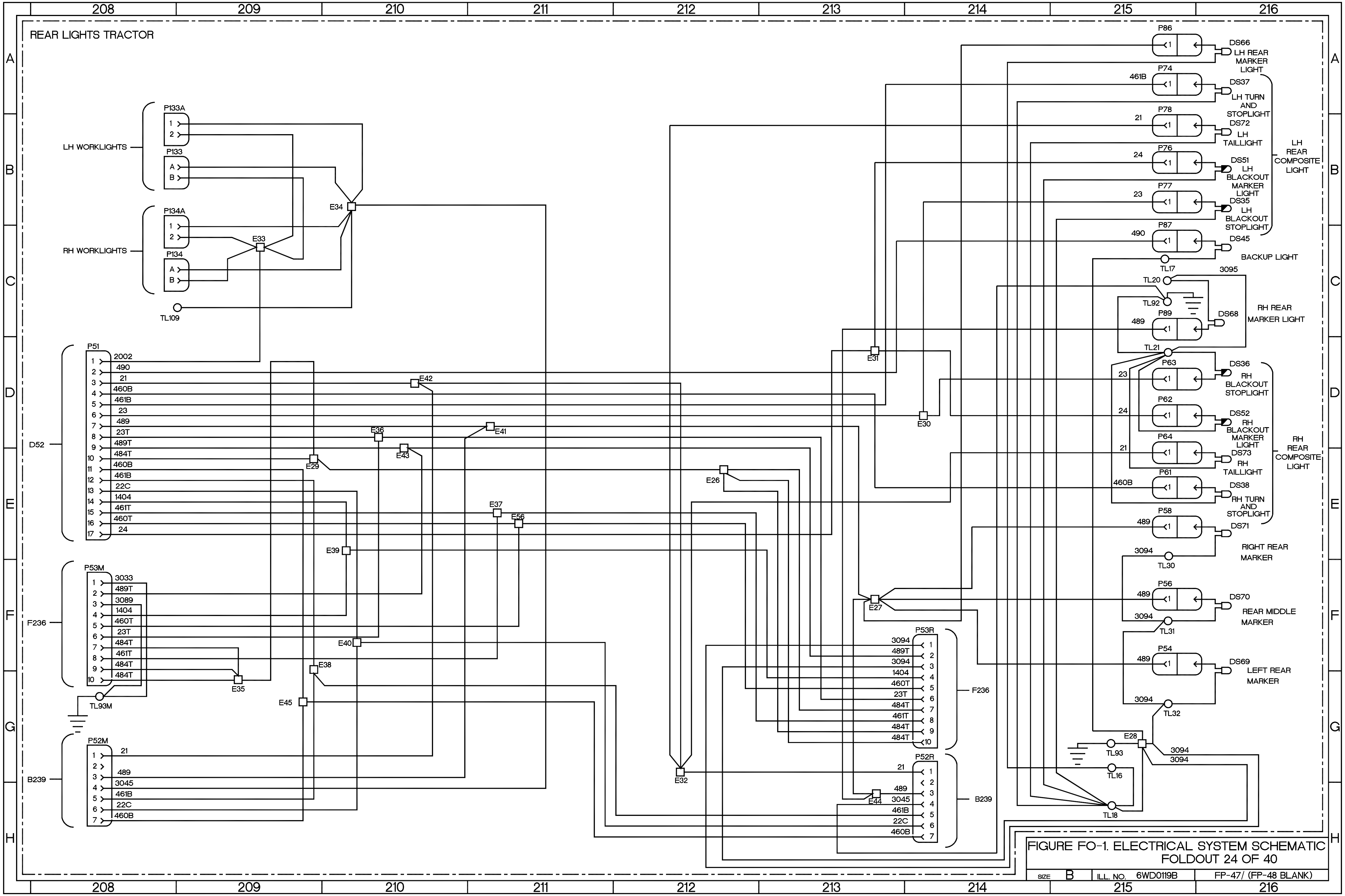


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 24 OF 40

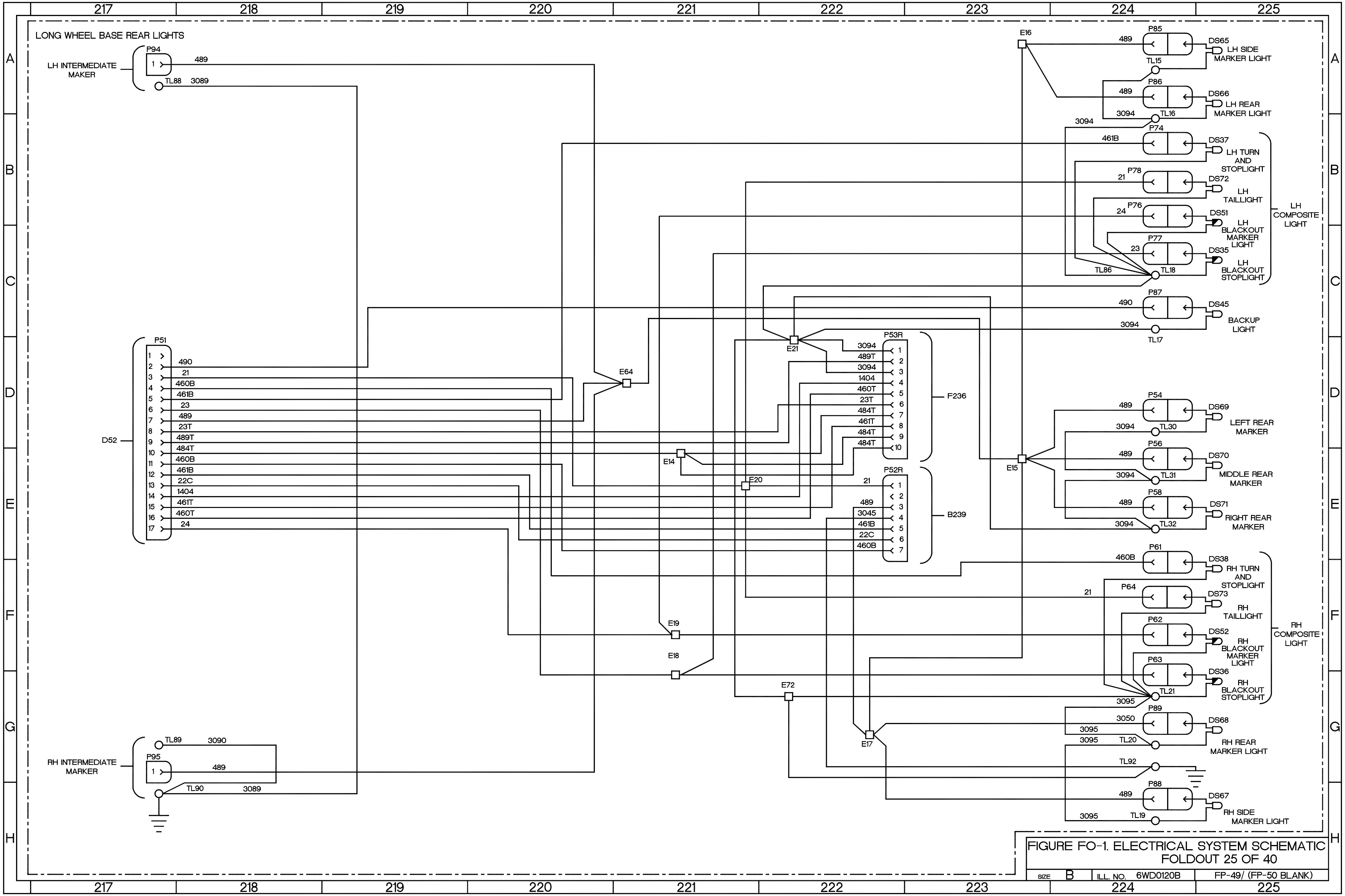


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 25 OF 40

SIZE B ILL. NO. 6WD0120B FP-49/ (FP-50 BLANK)

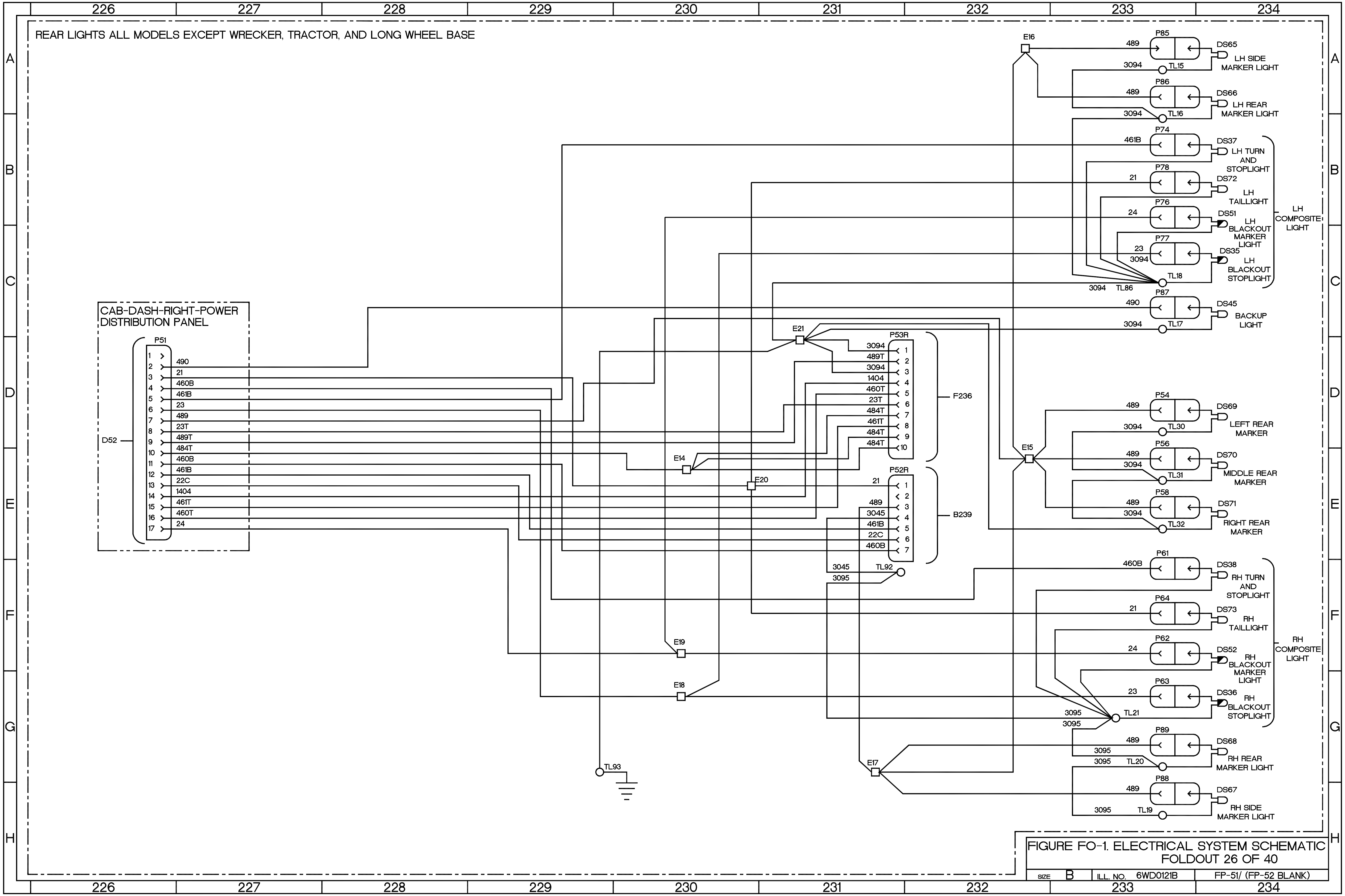


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 26 OF 40

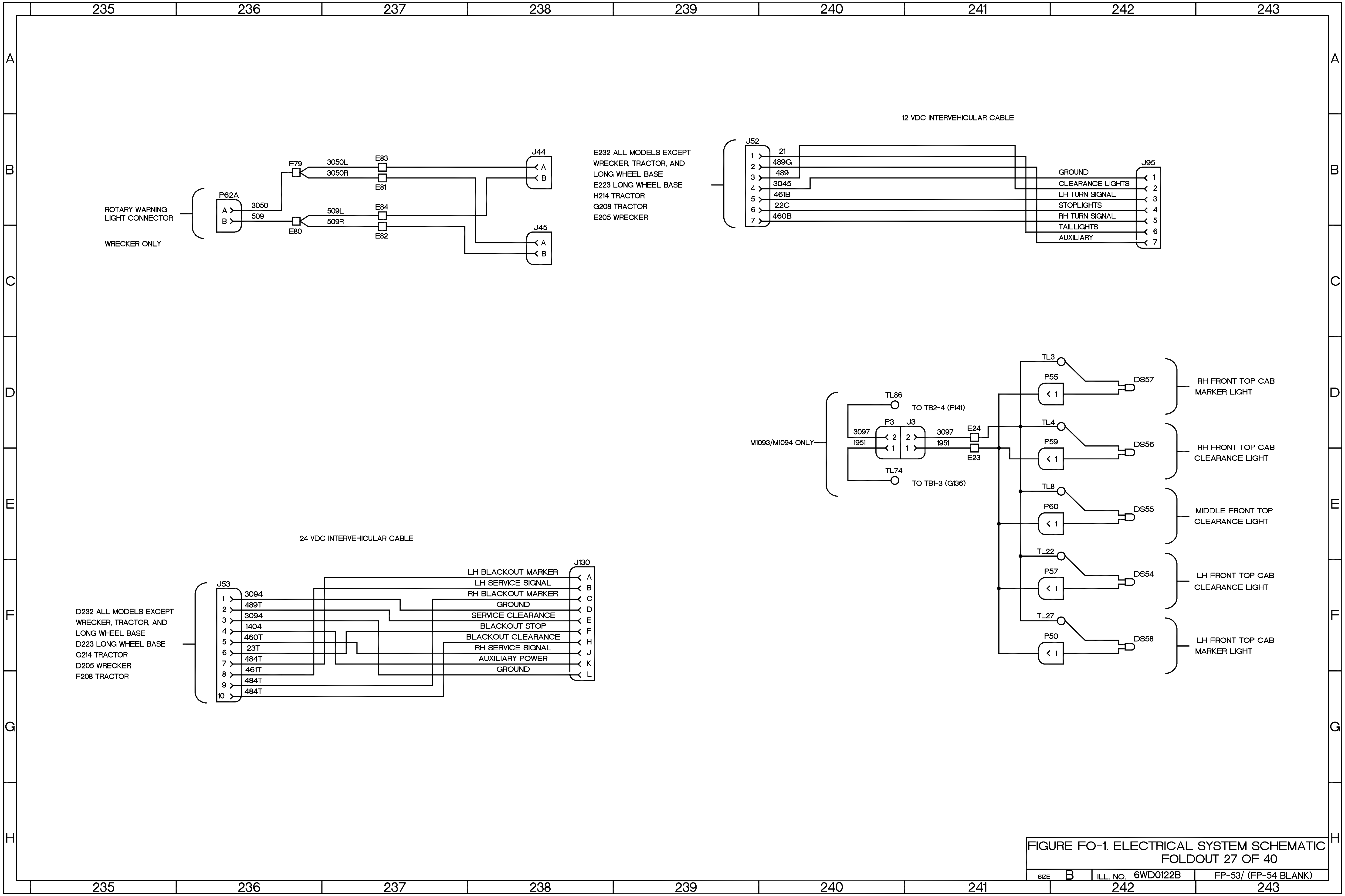


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 27 OF 40

SIZE B ILL. NO. 6WD0122B FP-53/ (FP-54 BLANK)

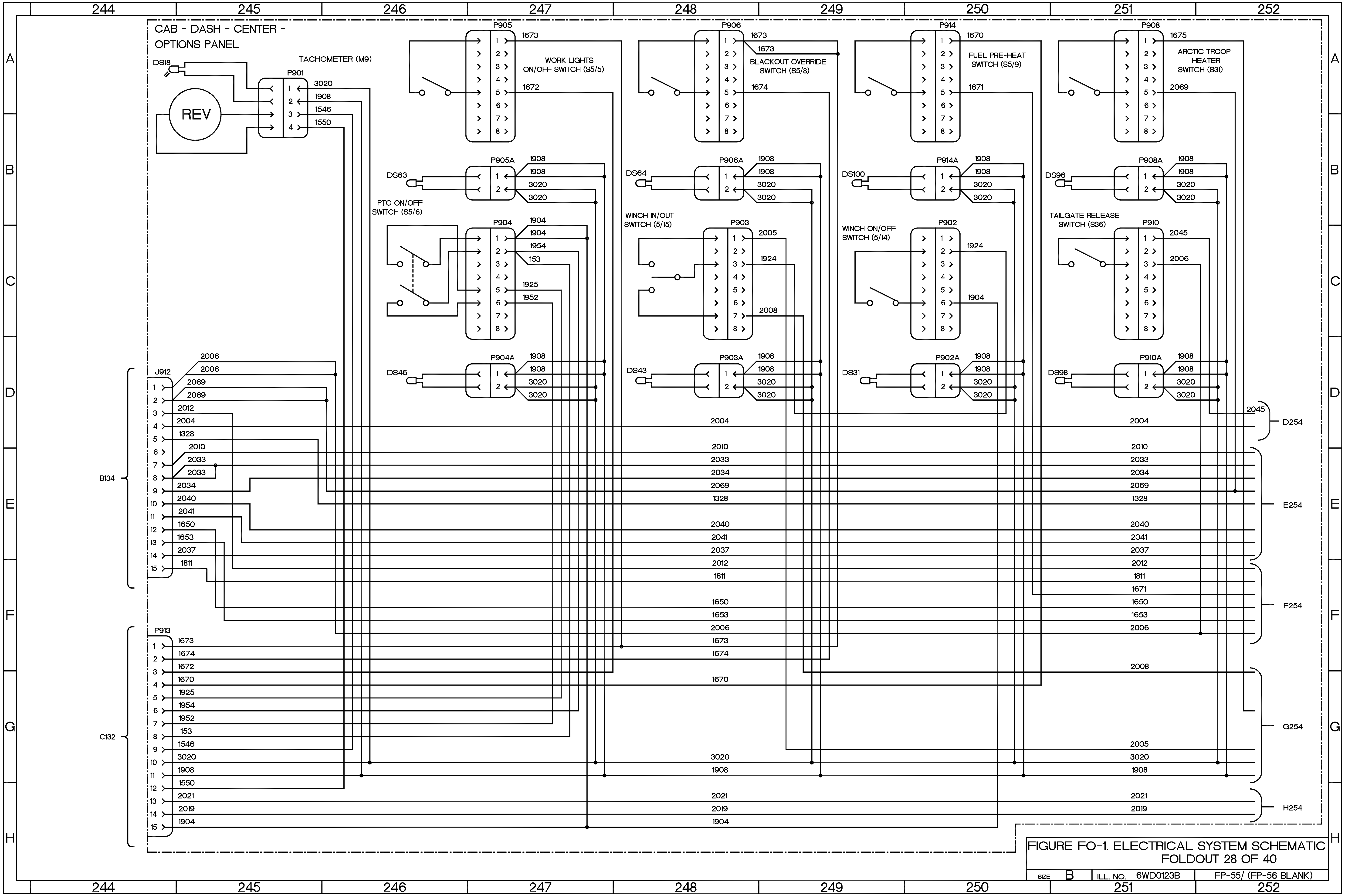


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 28 OF 40

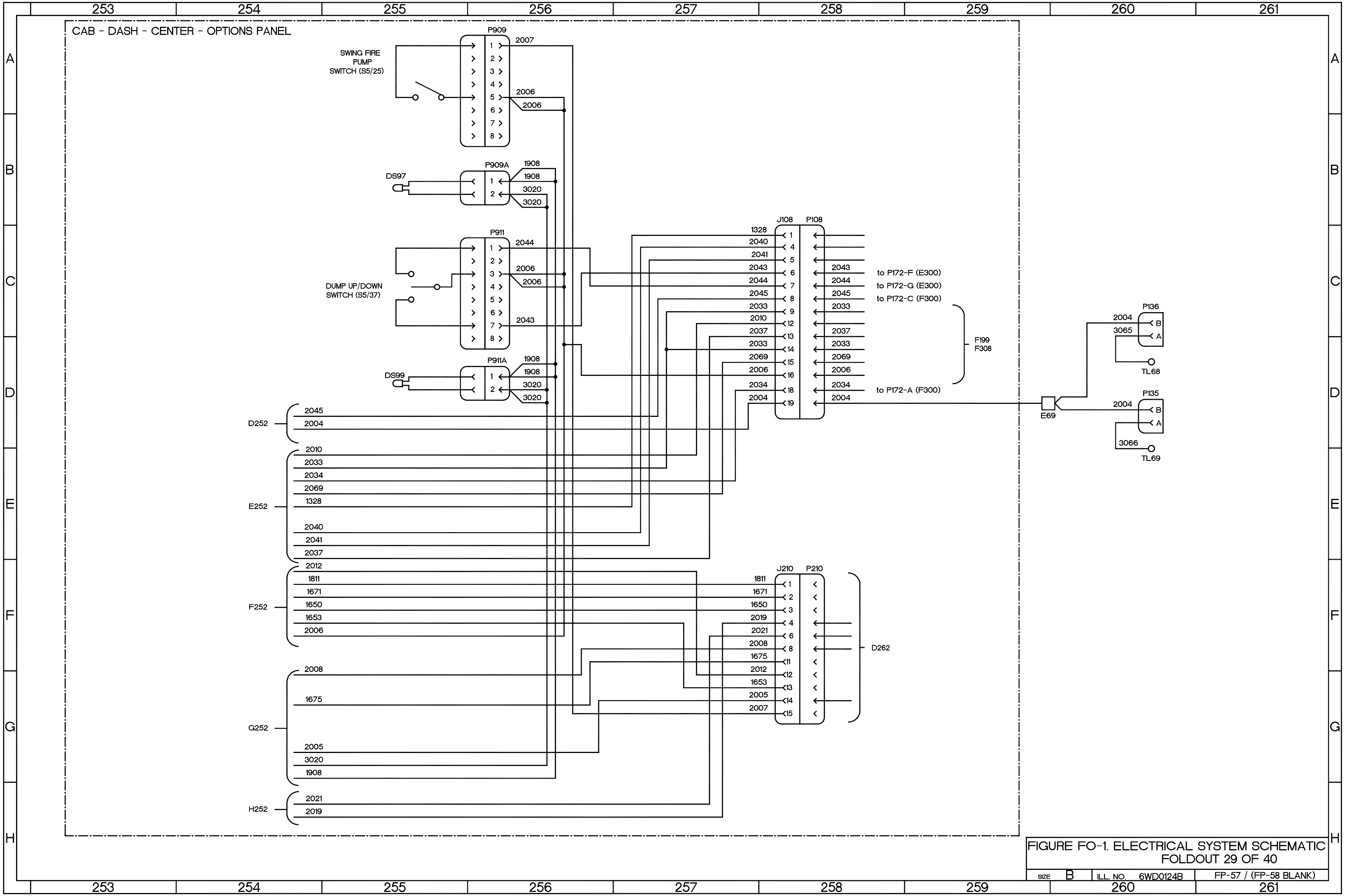


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 29 OF 40

SIZE B ILL. NO. 6WD0124B FP-57 / (FP-58 BLANK)

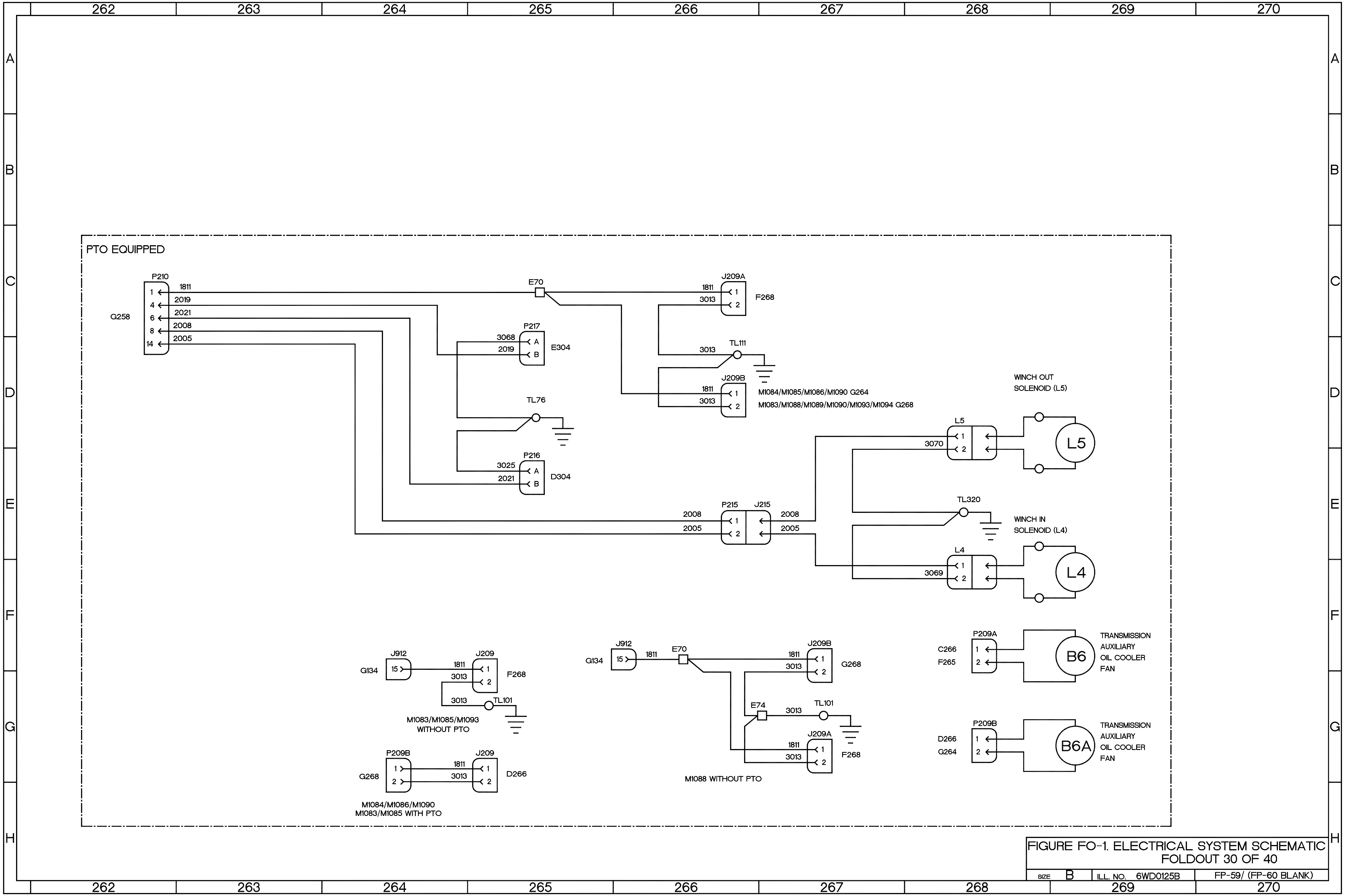


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 30 OF 40

SIZE B | ILL. NO. 6WD0125B | FP-59/ (FP-60 BLANK)

DELETED

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 31 OF 40

SIZE B | ILL. NO. 6WD0126B | FP-61/ (FP-62 BLANK)

280 281 282 283 284 285 286 287 288

A B C D E F G H

DELETED

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 32 OF 40

SIZE B ILL. NO. 6WD0127B FP-63/ (FP-64 BLANK)

289 290 291 292 293 294 295 296 297

A B C D E F G H

DELETED

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 33 OF 40

SIZE B	ILL. NO. 6WD0128B	FP-65/ (FP-66 BLANK)

289 290 291 292 293 294 295 296 297

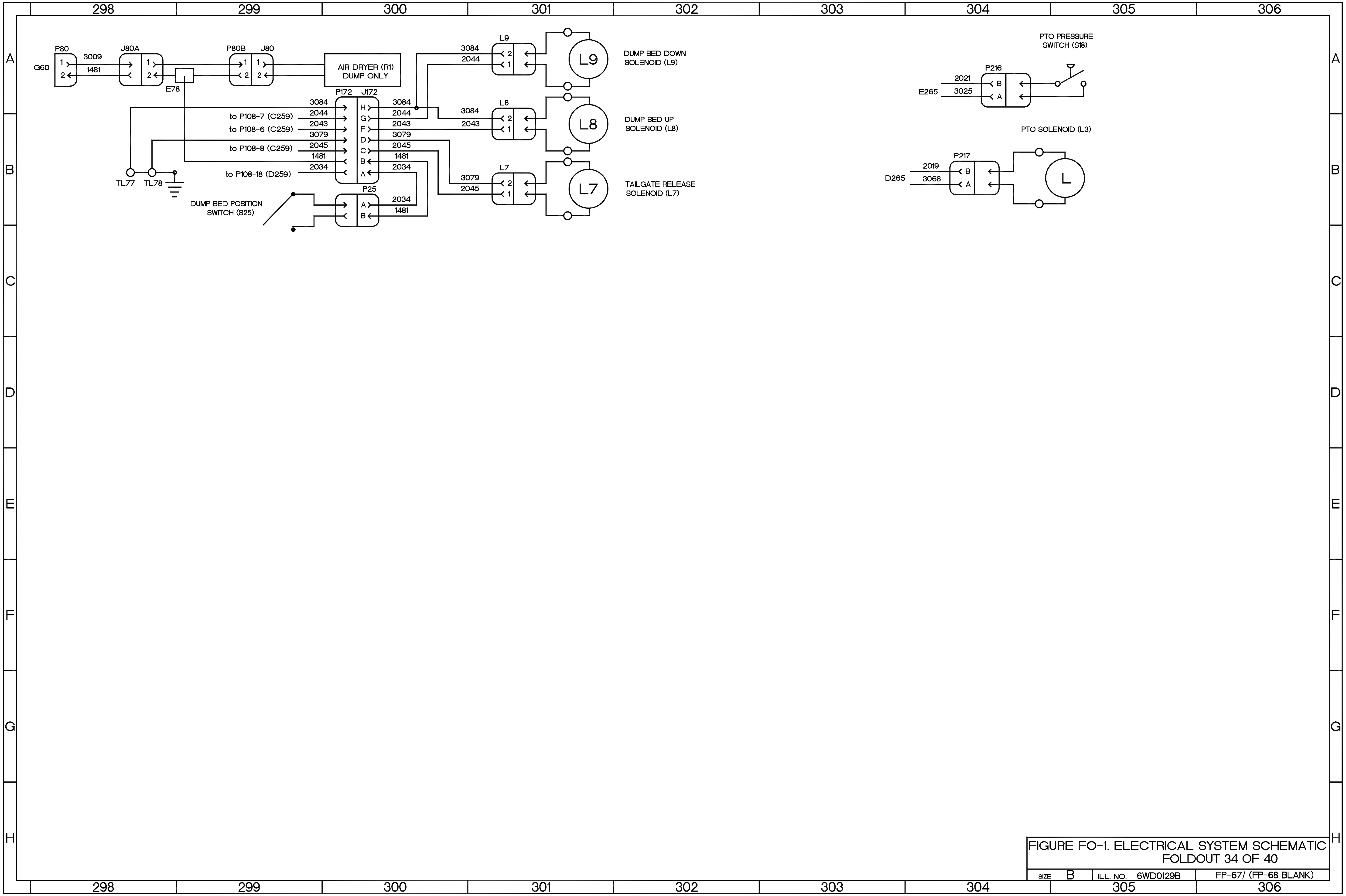


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 34 OF 40

SIZE B | ILL. NO. 6WD0129B | FP-67/ (FP-68 BLANK)

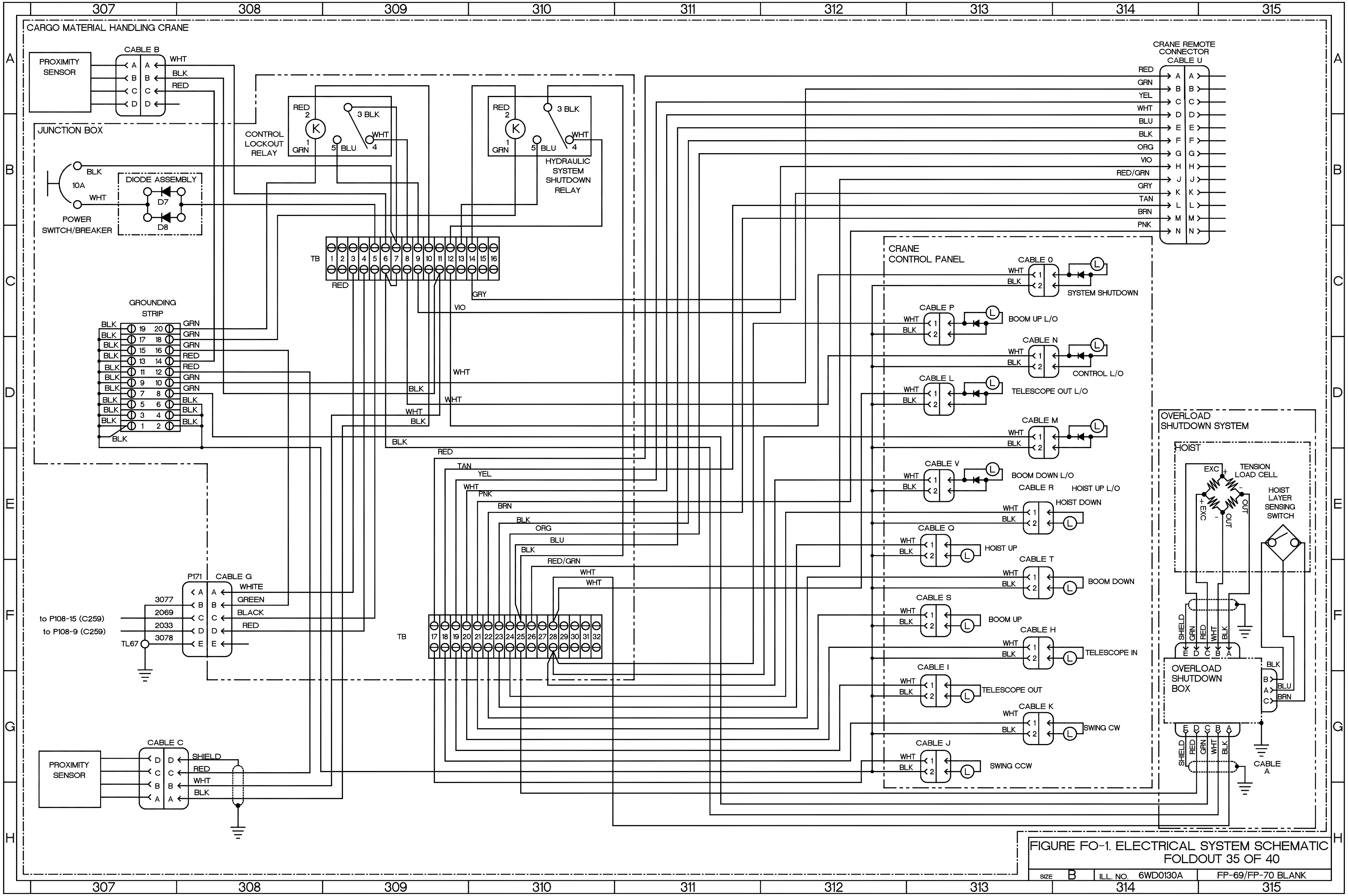


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 35 OF 40

SIZE B | ILL. NO. 6WD0130A | FP-69/FP-70 BLANK

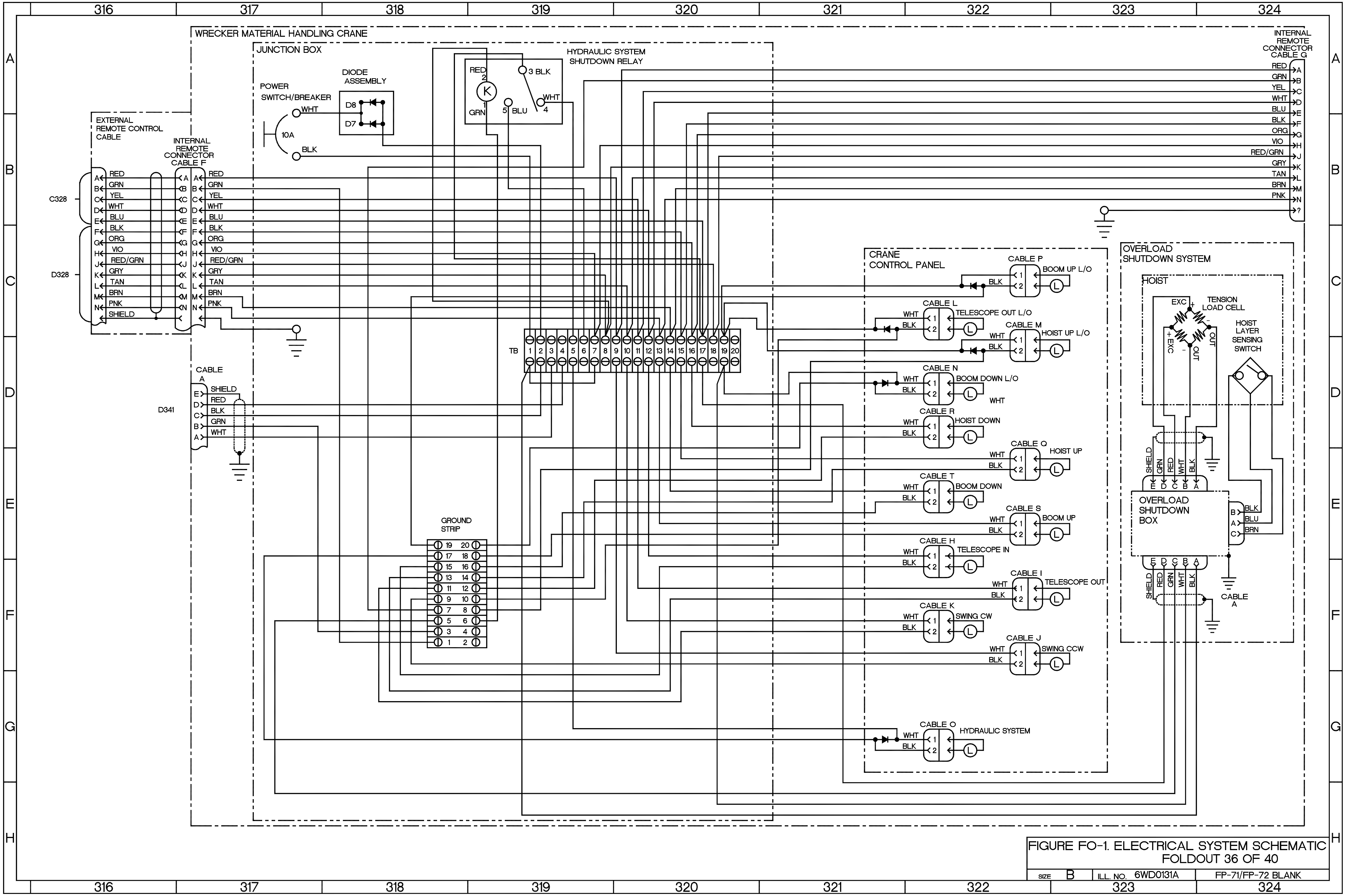


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 36 OF 40

SIZE B ILL. NO. 6WD0131A FP-71/FP-72 BLANK

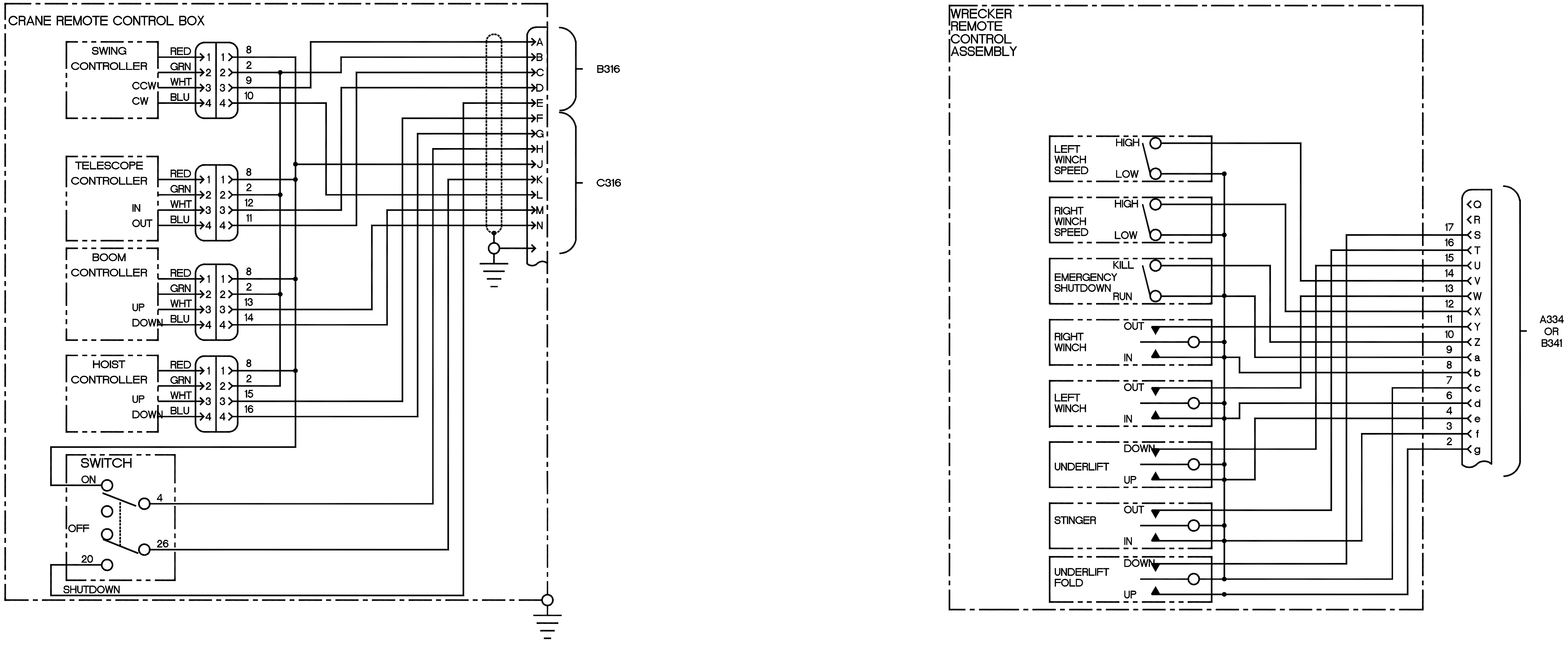


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 37 OF 40

SIZE B	ILL. NO. 6WD0132A	FP-73/FP-74 BLANK

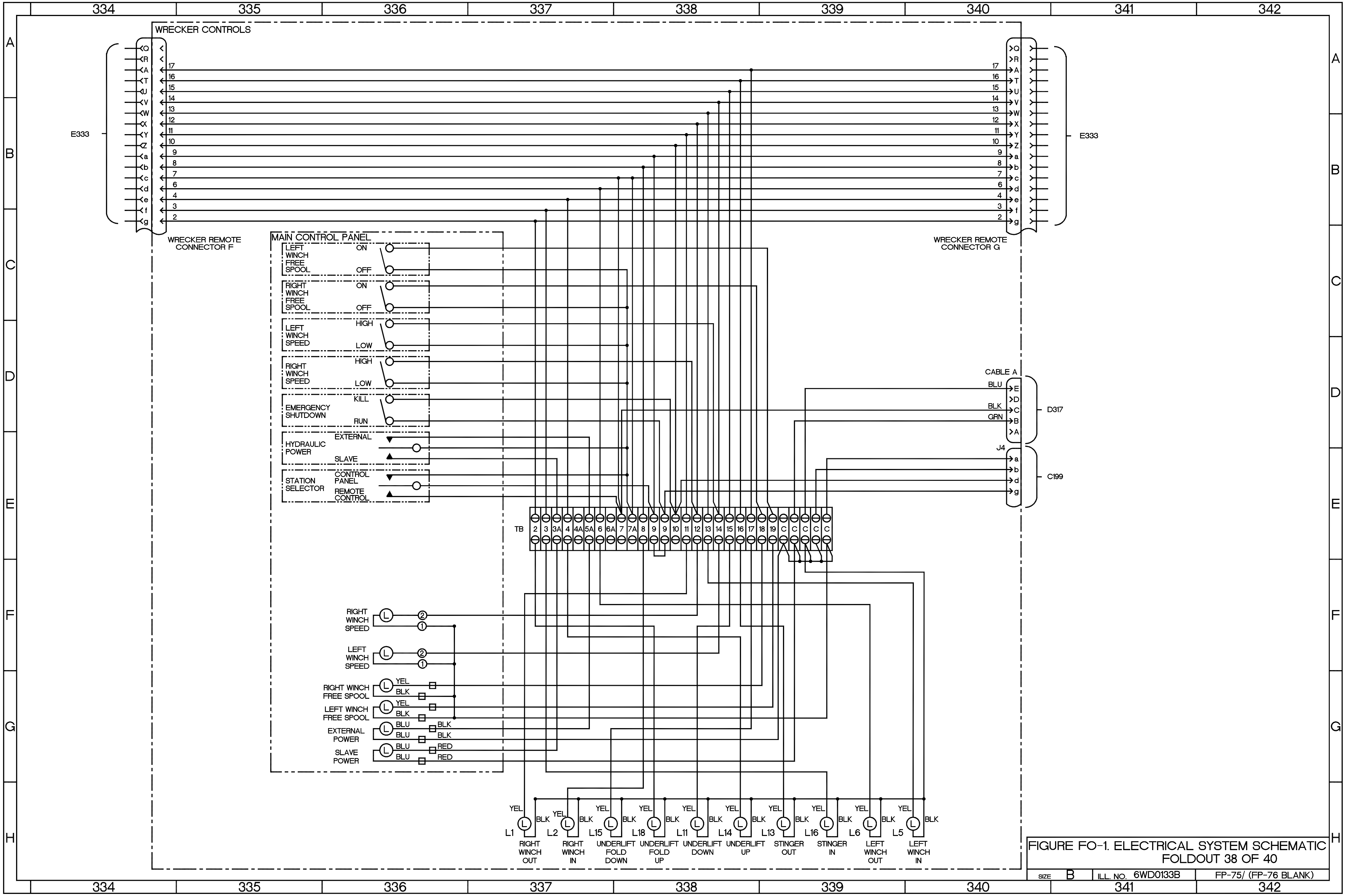


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 38 OF 40

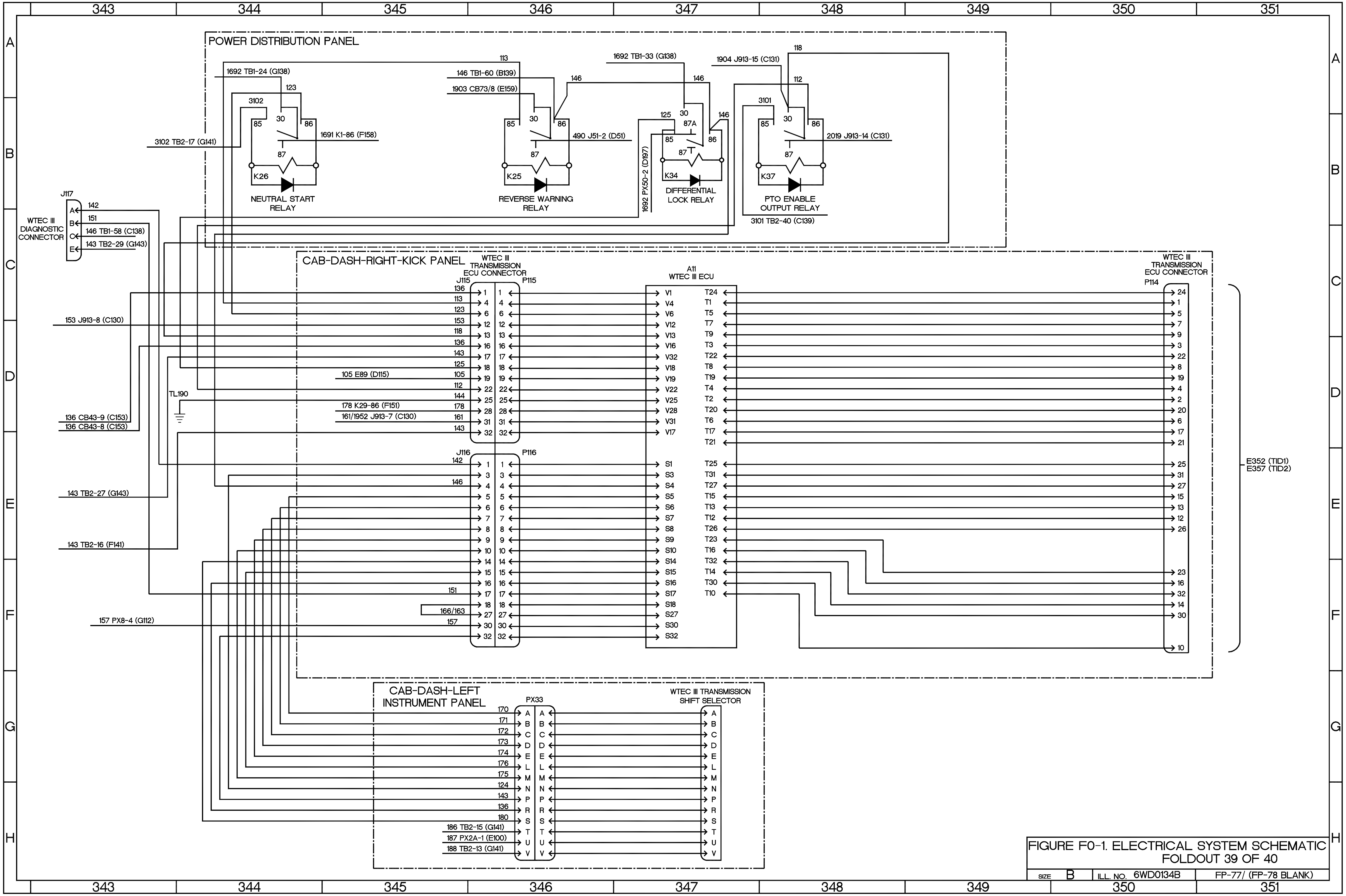
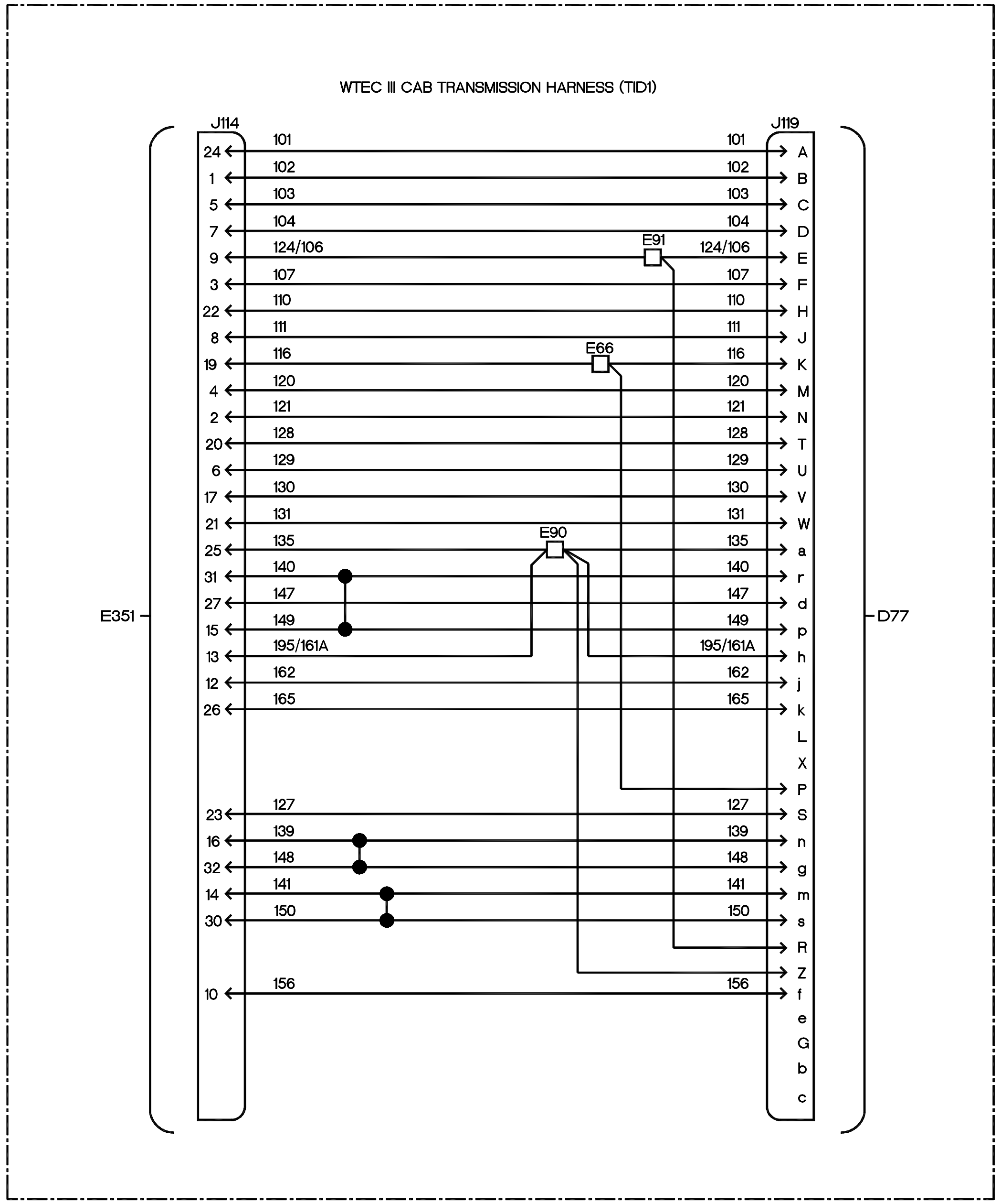


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 39 OF 40

TRANSMISSION SERIAL #: 6510090785 AND LOWER



TRANSMISSION SERIAL #: 6510090786 AND HIGHER

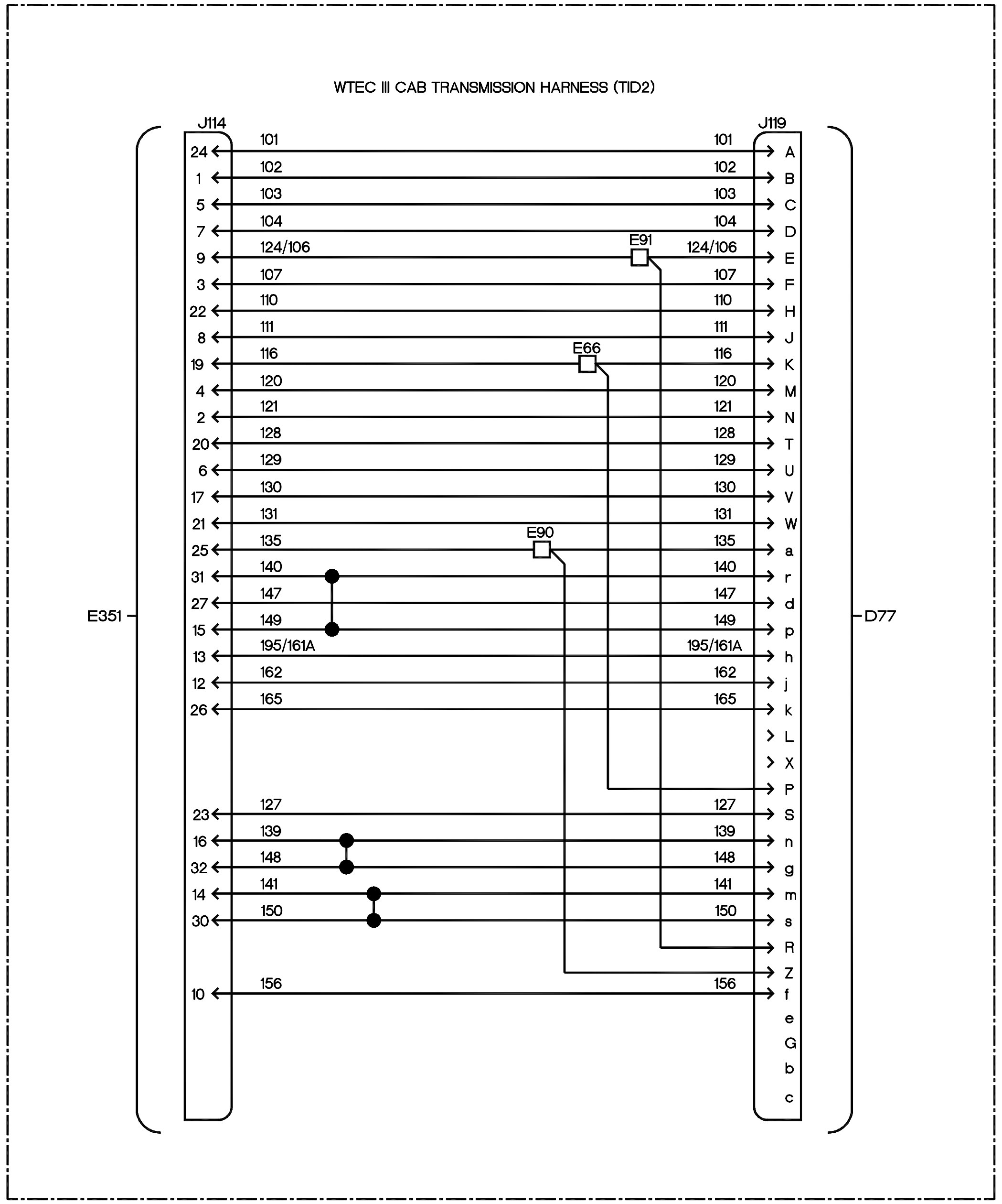


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 40 OF 40

SIZE B ILL. NO. 6WD0135B FP-79/ (FP-80 BLANK)

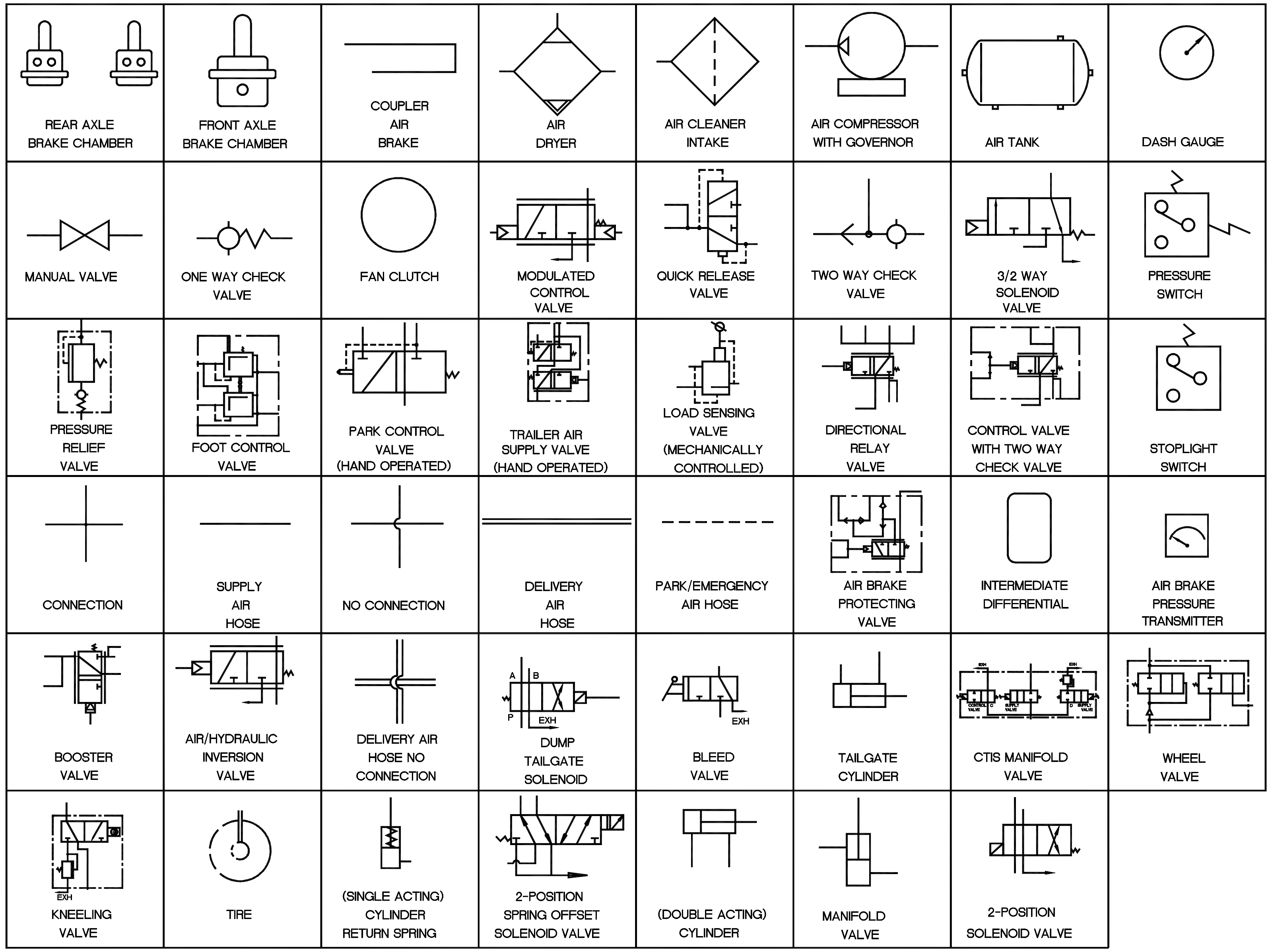


FIGURE F0-2 PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 1 OF 4

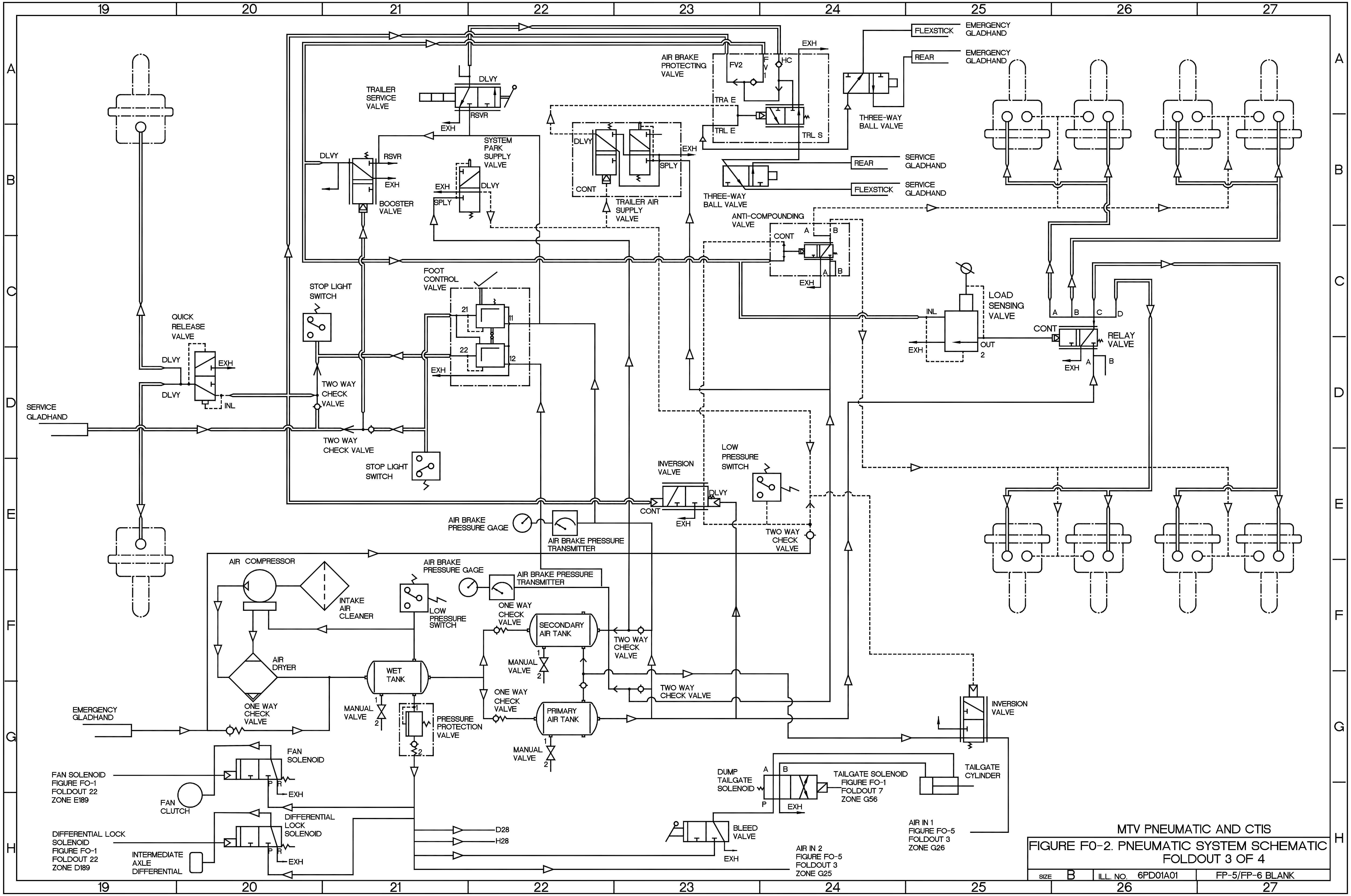
SIZE B ILL. NO. 6PD01AL1 FP-1/FP-2 BLANK

SH	ZONE	DESCRIPTION
3	E22	AIR BRAKE PRESSURE TRANSMITTER
3	F21	AIR BRAKE PRESSURE TRANSMITTER
3	A23	AIR BRAKE PROTECTING VALVE
3	F20	AIR COMPRESSOR
3	F20	AIR DRYER
3	B24	ANTI-COMPOUNDING VALVE
3	H23	BLEED VALVE
3	B21	BOOSTER VALVE
4	D30	CONTROL VALVE
4	C30	CTIS MANIFOLD VALVE
4	D31	DEFLATE VALVE
3	H20	DIFFERENTIAL LOCK SOLENOID
3	G24	DUMP TAILGATE SOLENOID
3	A25	EMERGENCY GLADHAND
3	A25	EMERGENCY GLADHAND
3	G19	EMERGENCY GLADHAND
3	H20	FAN CLUTCH
3	G20	FAN SOLENOID
3	C22	FOOT CONTROL VALVE
3	F20	INTAKE AIR CLEANER
3	H19	INTERMEDIATE AXLE DIFFERENTIAL
3	E23	INVERSION VALVE
3	G25	INVERSION VALVE
4	A28	KNEELING VALVE
4	C28	KNEELING VALVE
4	E28	LH MAIN WINCH FREESPOOL
4	E30	LH MAIN WINCH TENSIONER
4	G29	LH MAIN WINCH VALVE
3	C25	LOAD SENSING VALVE
3	E23	LOW PRESSURE SWITCH
3	F21	LOW PRESSURE SWITCH
4	F28	MANIFOLD
4	G29	MANIFOLD
3	F22	MANUAL VALVE
3	G21	MANUAL VALVE
3	G22	MANUAL VALVE
3	F22	ONE WAY CHECK VALVE
3	G20	ONE WAY CHECK VALVE
3	G22	ONE WAY CHECK VALVE
3	G21	PRESSURE PROTECTION VALVE
3	G22	PRIMARY AIR TANK
4	B30	QUICK RELEASE VALVE
4	B33	QUICK RELEASE VALVE
4	B36	QUICK RELEASE VALVE
3	C20	QUICK RELEASE VALVE
4	E30	REGULATOR
4	E31	REGULATOR
4	F28	REGULATOR
3	D26	RELAY VALVE
4	E29	RH MAIN WINCH FREESPOOL
4	E30	RH MAIN WINCH TENSIONER
4	G33	RH MAIN WINCH VALVE
3	F22	SECONDARY AIR TANK
3	B24	SERVICE GLADHAND
3	B24	SERVICE GLADHAND
3	D19	SERVICE GLADHAND
4	G30	STINGER VALVE
3	C20	STOPLIGHT SWITCH
3	E21	STOPLIGHT SWITCH
4	D31	SUPPLY VALVE
3	B21	SYSTEM PARK SUPPLY VALVE
3	G25	TAILGATE CYLINDER
3	A24	THREE WAY BALL VALVE
3	B23	THREE WAY BALL VALVE
3	B22	TRAILER AIR SUPPLY VALVE
3	A21	TRAILER SERVICE VALVE
3	D21	TWO WAY CHECK VALVE
3	D21	TWO WAY CHECK VALVE
3	E24	TWO WAY CHECK VALVE
4	E30	TWO WAY CHECK VALVE
4	E30	TWO WAY CHECK VALVE
3	F23	TWO WAY CHECK VALVE
3	G23	TWO WAY CHECK VALVE
4	G32	UNDERLIFT FOLD VALVE
4	G31	UNDERLIFT VALVE
3	F21	WET TANK
4	C34	WHEEL VALVE
4	A28	WHEEL VALVE
4	A32	WHEEL VALVE
4	A34	WHEEL VALVE
4	C28	WHEEL VALVE
4	C32	WHEEL VALVE

MTV PNEUMATIC AND CTIS

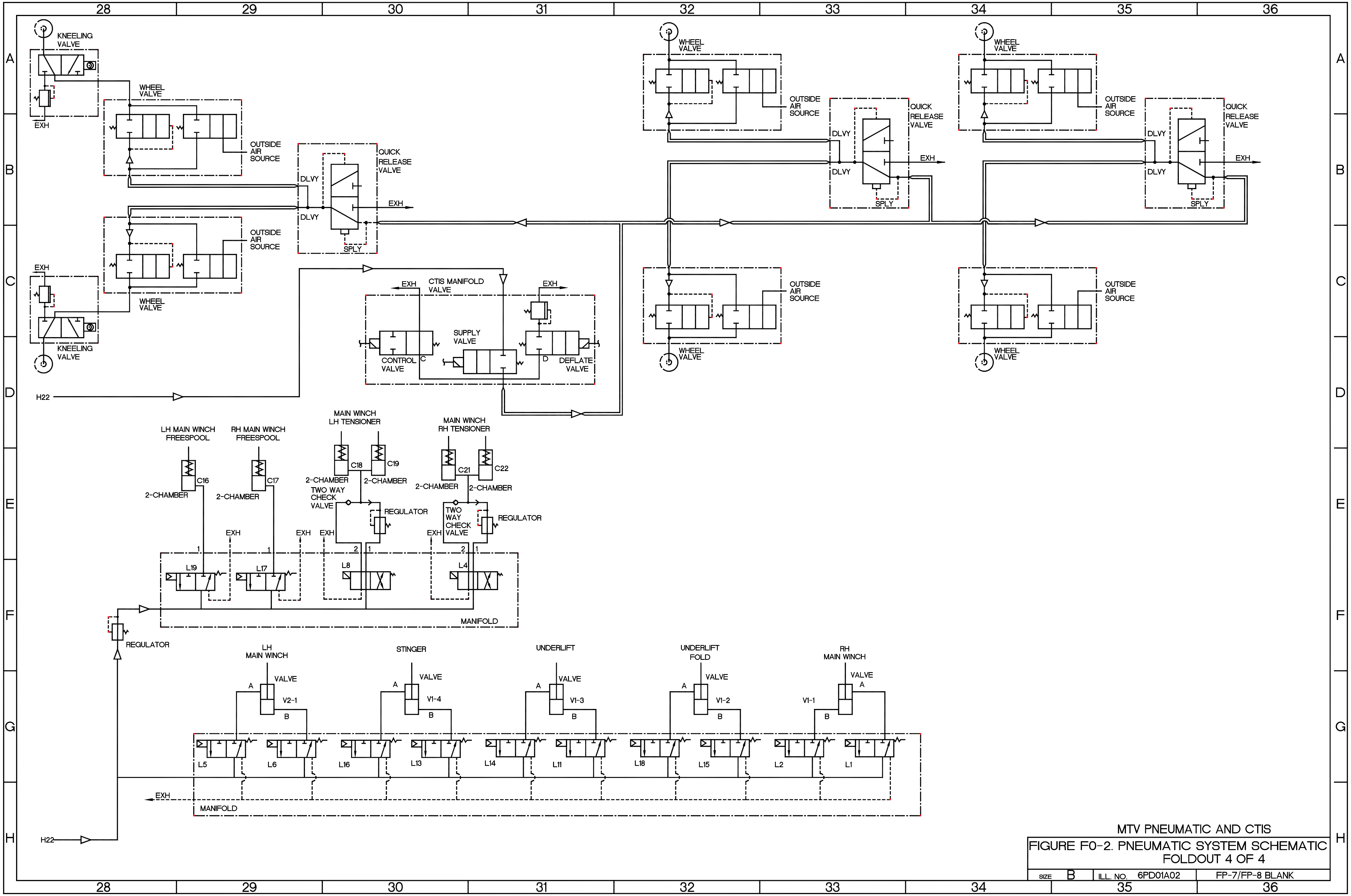
FIGURE F0-2. PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 2 OF 4

SIZE B ILL. NO. 6PDO1AL2 FP-3/FP-4 BLANK



MTV PNEUMATIC AND CTIS

FIGURE F0-2. PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 3 OF 4



MTV PNEUMATIC AND CTIS

FIGURE F0-2. PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 4 OF 4

SIZE B ILL. NO. 6PD01A02 FP-7/FP-8 BLANK

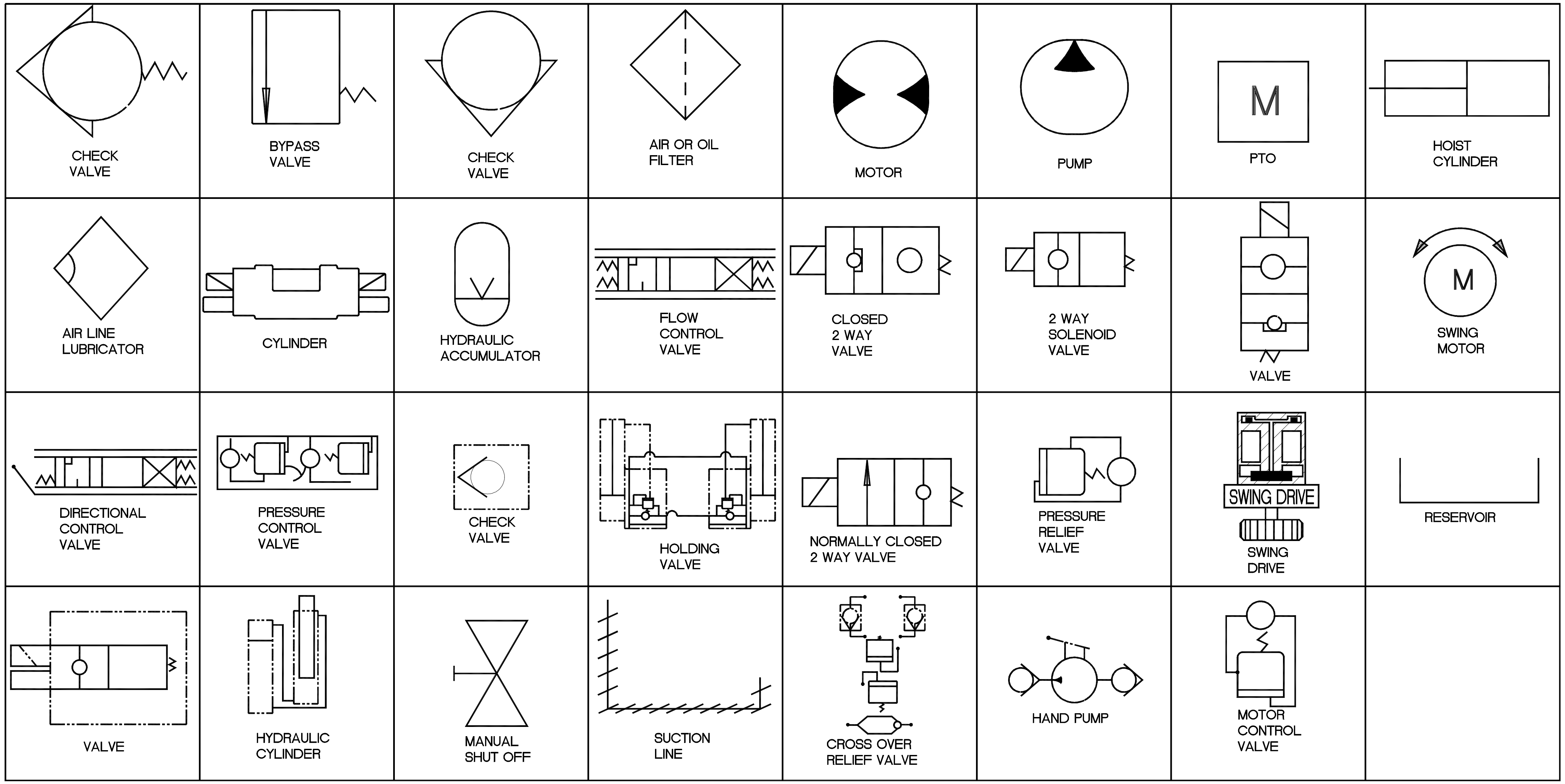


FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC

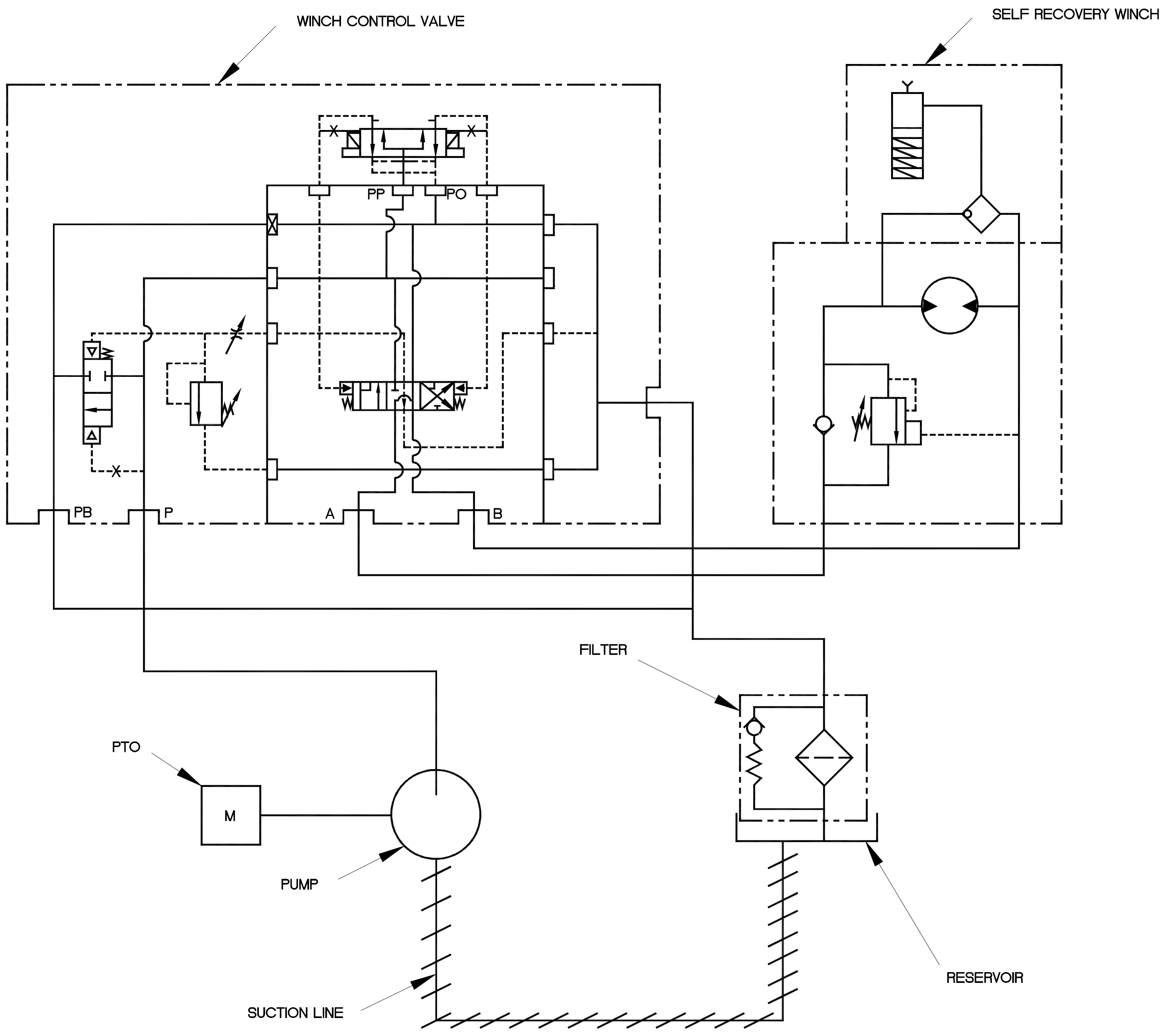
FOLDOUT 1 OF 8

SIZE B ILL. NO. 6HD01AL1 FP-1/FP-2 BLANK

SH	ZONE	DESCRIPTION
6	D46	2 WAY SOLENOID VALVE
7	D60	2 WAY SOLENOID VALVE
7	D55	2 WAY SOLENOID VALVE, OPERATING PRESS
7	F60	3 BANK VALVE ASSEMBLY
7	C61	4 BANK VALVE ASSEMBLY
6	B52	BOOM
7	F55	BULKHEAD PLATE (SUBFRAME)
7	F57	CHECK VALVE
7	G62	CHECK VALVE
7	D55	CHECK VALVE
5	E37	CHECK VALVE CK1
5	E37	CHECK VALVE CK2
5	E37	CHECK VALVE CK3
5	E37	CHECK VALVE CK4
5	E37	CHECK VALVE CK5
5	E37	CHECK VALVE CK6
8	E65	CONTROL VALVE
5	B44	COUNTERBALANCE VALVE
6	B48	CROSS RELIEF VALVE
7	C57	CROSS RELIEF VALVE
8	E64	DUMP BODY HYDRAULIC HOIST
6	G48	ERECTION CYLINDER
5	E38	FC1 SLAVE POWER
5	E38	FC2 EXTERNAL POWER
3	F23	FILTER
4	D34	FILTER
8	E68	FILTER
5	B43	FLOW CONTROL VALVE
5	B45	FLOW CONTROL VALVE
5	B43	FOLD CYLINDER
7	C62	FULL FLOW
6	G54	GAUGE PORT
6	E47	HAND PUMP
7	E56	HAND PUMP
7	G57	HOIST
7	A62	HOIST
6	B53	HOIST
8	G65	HOIST CYLINDER
7	G58	HOIST MOTOR
6	G46	HOIST MOTOR
7	H57	HOIST MOTOR CONTROL VALVE
6	H46	HOIST MOTOR CONTROL VALVE
7	H59	HOLDING VALVE
7	G62	HOLDING VALVE
6	C47	HOLDING VALVE
6	H53	HOLDING VALVE
7	C55	HOLDING VALVE
7	G56	HOLDING VALVES
6	E48	HOLDING VALVES
6	G48	HOLDING VALVES
5	D41	HYDRAULIC MOTOR, PAY-OUT
5	E41	HYDRAULIC MOTOR, PAY-OUT
7	A60	HYDRAULIC ACCUMULATOR
6	E54	HYDRAULIC ACCUMULATOR
7	H61	LEFT JACK CYLINDER
6	H49	LEFT JACK CYLINDER
5	G42	LEFT MAIN WINCH
7	A61	LIFT
6	E48	LIFT CYLINDERS
5	C37	LINEAR DIRECTIONAL CONTROL VALVE
5	B42	LOWER MAIN CONTROL VALVE ASSEMBLY
5	D37	M1089 MATERIAL HANDLING CRANE LOC.
6	B51	MANUAL OVERRIDE
7	G61	MAST ERECTION
7	H59	MAST ERECTION CYLINDER
4	C30	MATERIAL HANDLING EQUIPMENT
5	E38	MC1 SLAVE POWER
5	E38	MC2 EXTERNAL POWER
5	D40	MONO BLOCK VALVE ASSEMBLY
7	G58	MOTOR DRAIN
6	G46	MOTOR DRAIN
6	D54	N/C 2 WAY VALVE
6	H52	OUTRIGGER EXTENSION CYLINDER
7	A60	PRESSURE CHECK POINT
3	F21	PTO
4	E32	PTO
8	G68	PTO
3	F22	PUMP
4	E33	PUMP
8	F68	PUMP
5	F37	PUMP ASSEMBLY
5	D41	RELIEF VALVE
5	E41	RELIEF VALVE
5	F42	RELIEF VALVE ASSEMBLY
5	B42	RELIEF VALVE ASSY (RIGHT MAIN WINCH)
3	F24	RESERVOIR
4	F34	RESERVOIR
8	G69	RESERVOIR
5	G40	RETURN VALVE
5	B44	RH UNDERLIFT COUNTERBALANCE VALVE
7	G62	RIGHT JACK CYLINDER
6	H54	RIGHT JACK CYLINDER
5	B42	RIGHT MAIN WINCH
5	F40	SAMPLING VALVE
3	B24	SELF RECOVERY WINCH
5	G41	SELF RECOVERY WINCH
8	B71	SELF RECOVERY WINCH
5	G43	STIFFLEG CYLINDER LH
5	G45	STIFFLEG CYLINDER RH
5	B45	STINGER CYLINDER
7	F55	SUCTION LINE-HAND PUMP
3	G22	SUCTION LINE
4	F33	SUCTION LINE
5	F37	SUPPLY VALVE
7	A58	SWING
6	B50	SWING
6	B48	SWING DRIVE
7	B57	SWING DRIVE
6	A48	SWING MOTOR
7	B57	SWING MOTOR
6	C46	TELESCOPE CYLINDER
7	A59	TELESCOPE
6	B51	TELESCOPE
7	B55	TELESCOPE CYLINDER
5	A44	TELESCOPIC LIFT CYLINDER, LH
5	A45	TELESCOPIC LIFT CYLINDER, RH
6	F49	UNLOADER VALVE
7	E56	UNLOADER VALVE
5	E42	UPPER MAIN CONTROL VALVE ASSEMBLY
5	E37	VALVE, SELECTOR
3	B21	WINCH CONTROL VALVE
8	B69	WINCH CONTROL VALVE

FIGURE FO-3 HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 2 OF 8

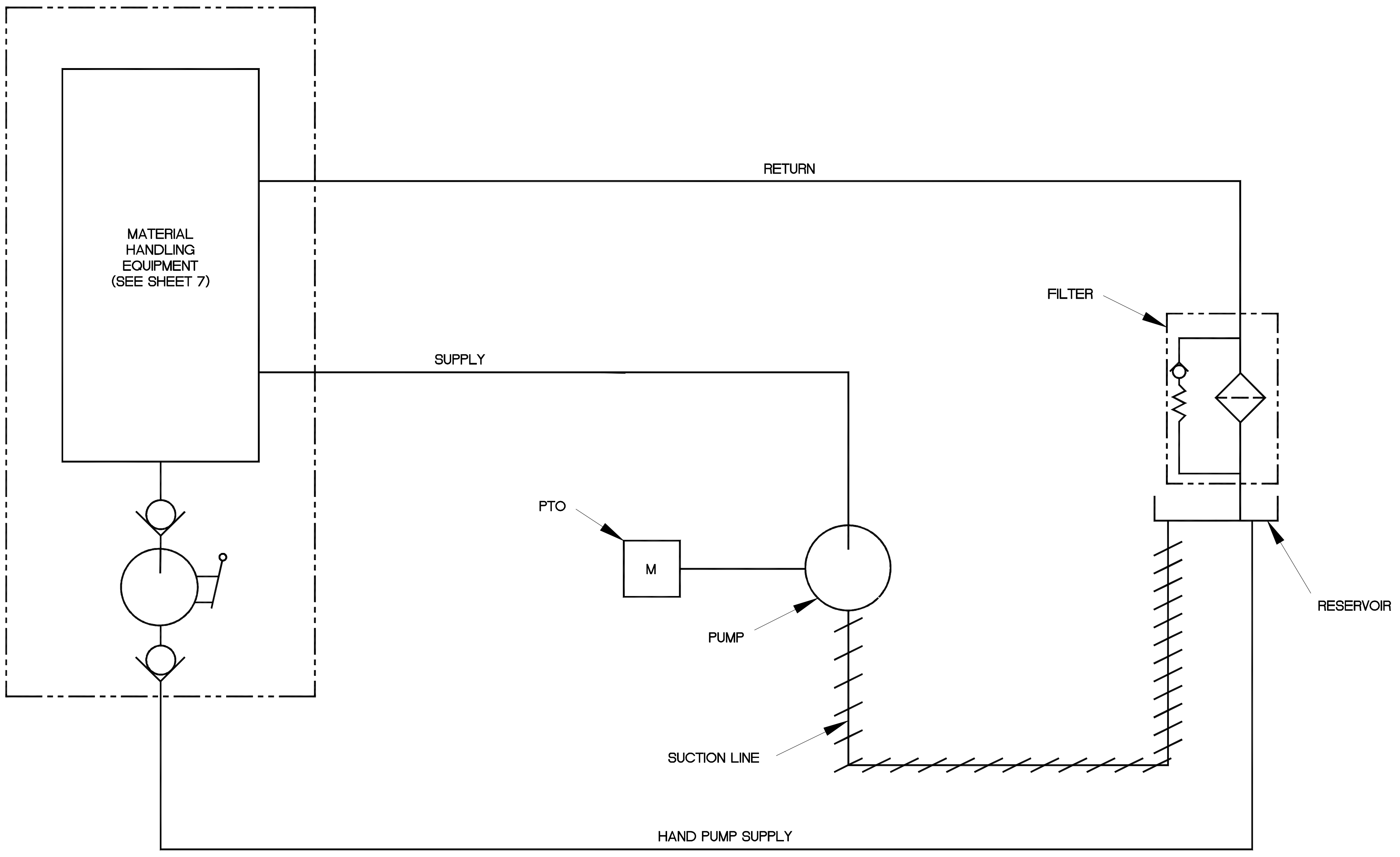
SIZE B
ILL. NO. 6HD01AL2
FP-3/FP-4 BLANK



MTV TRUCK W/WINCH

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 3 OF 8

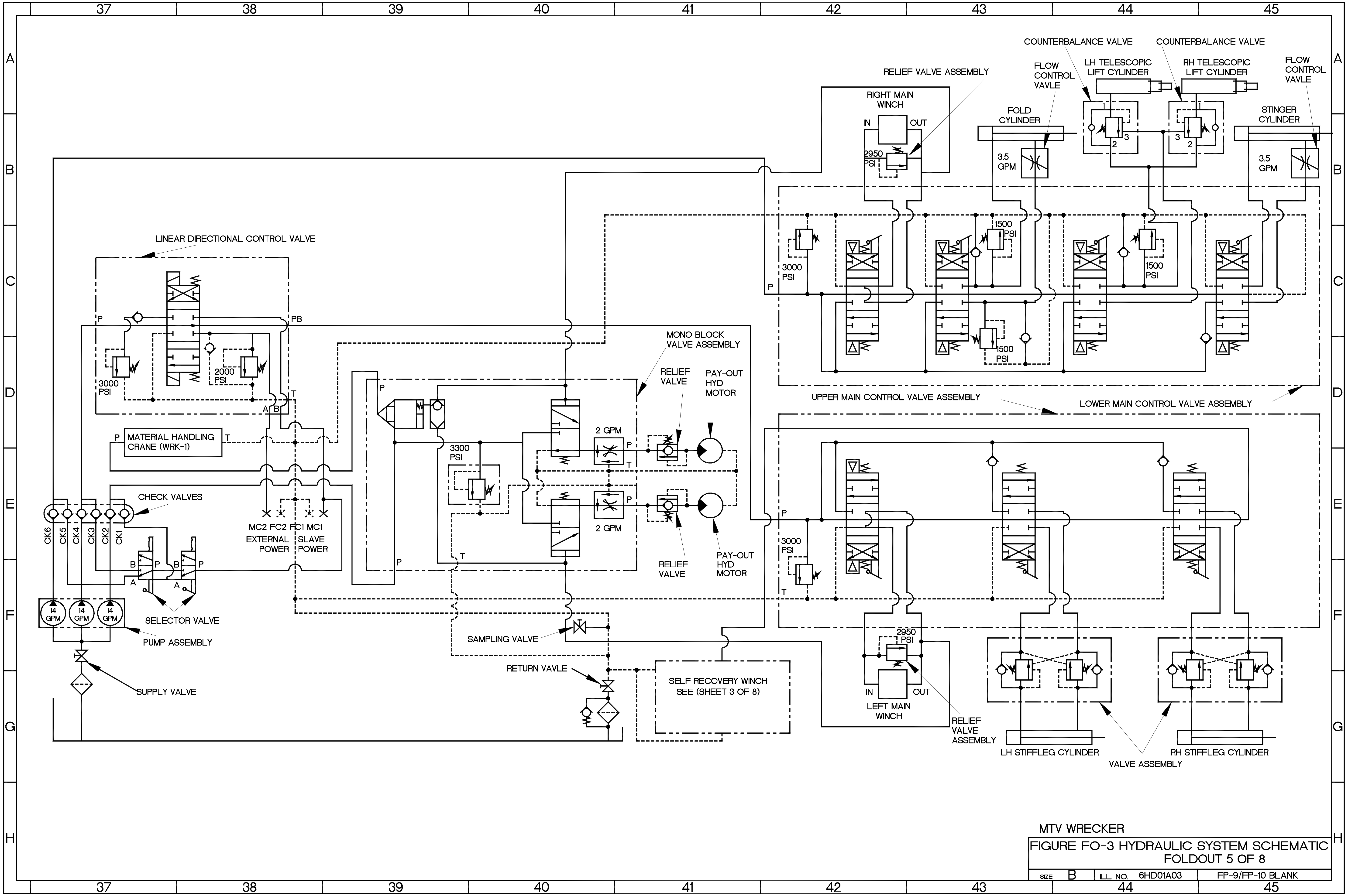
SIZE B ILL. NO. 6HD01A01



MTV MATERIAL HANDLING CRANE

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 4 OF 8

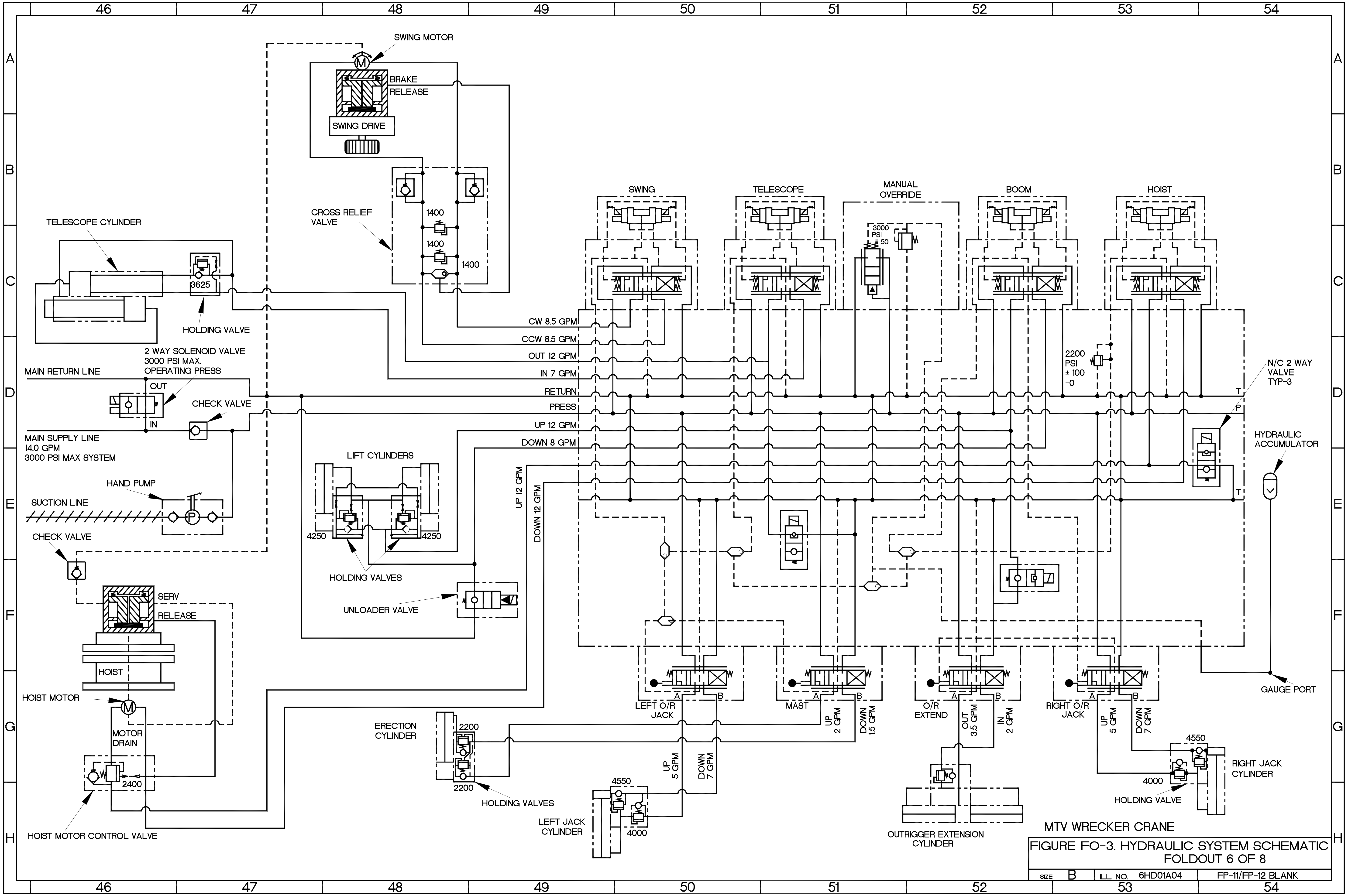
SIZE B ILL. NO. 6HD01A02



MTV WRECKER

FIGURE FO-3 HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 5 OF 8

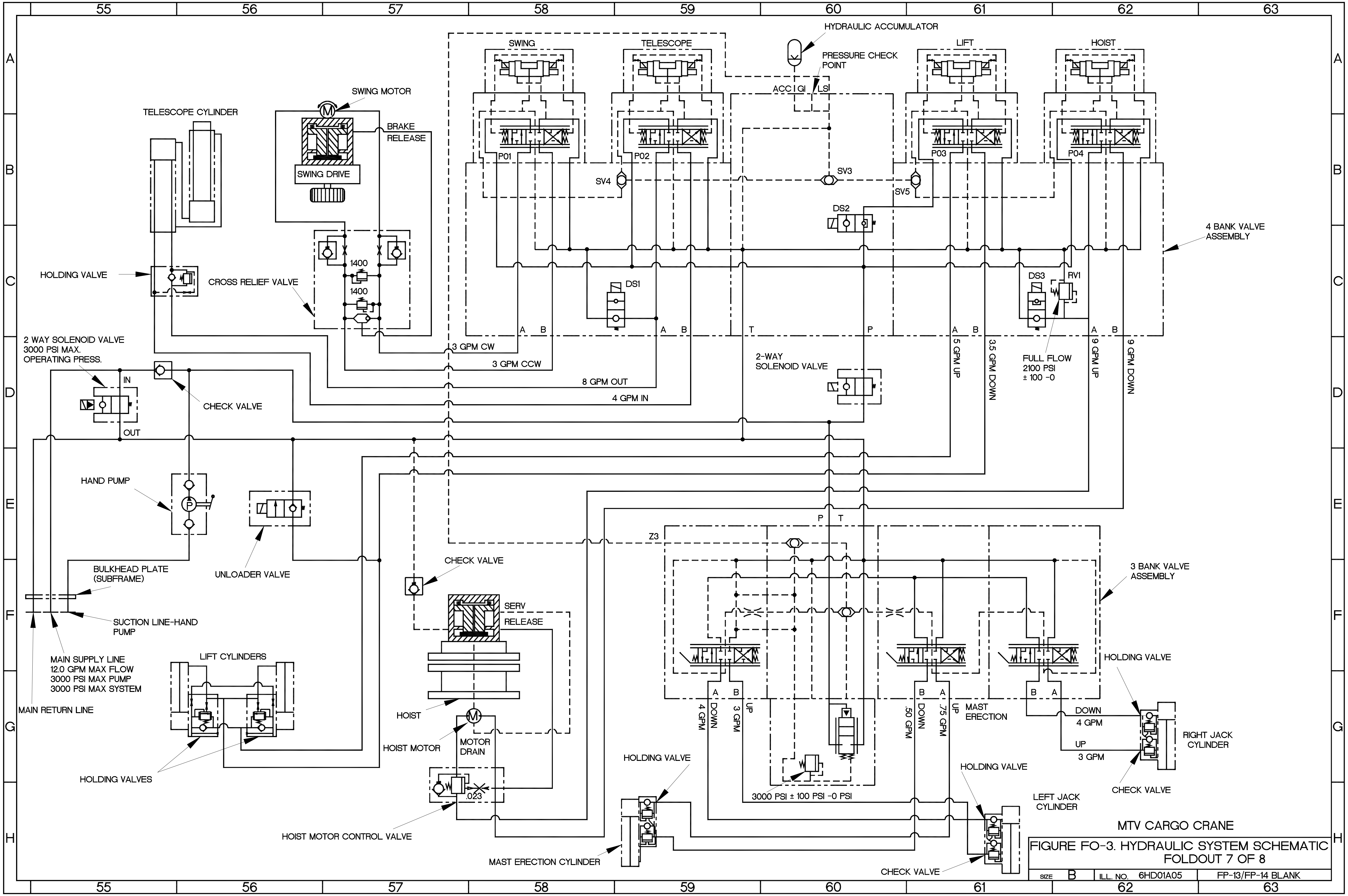
SIZE B ILL. NO. 6HD01A03 FP-9/FP-10 BLANK



MTV WRECKER CRANE

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 6 OF 8

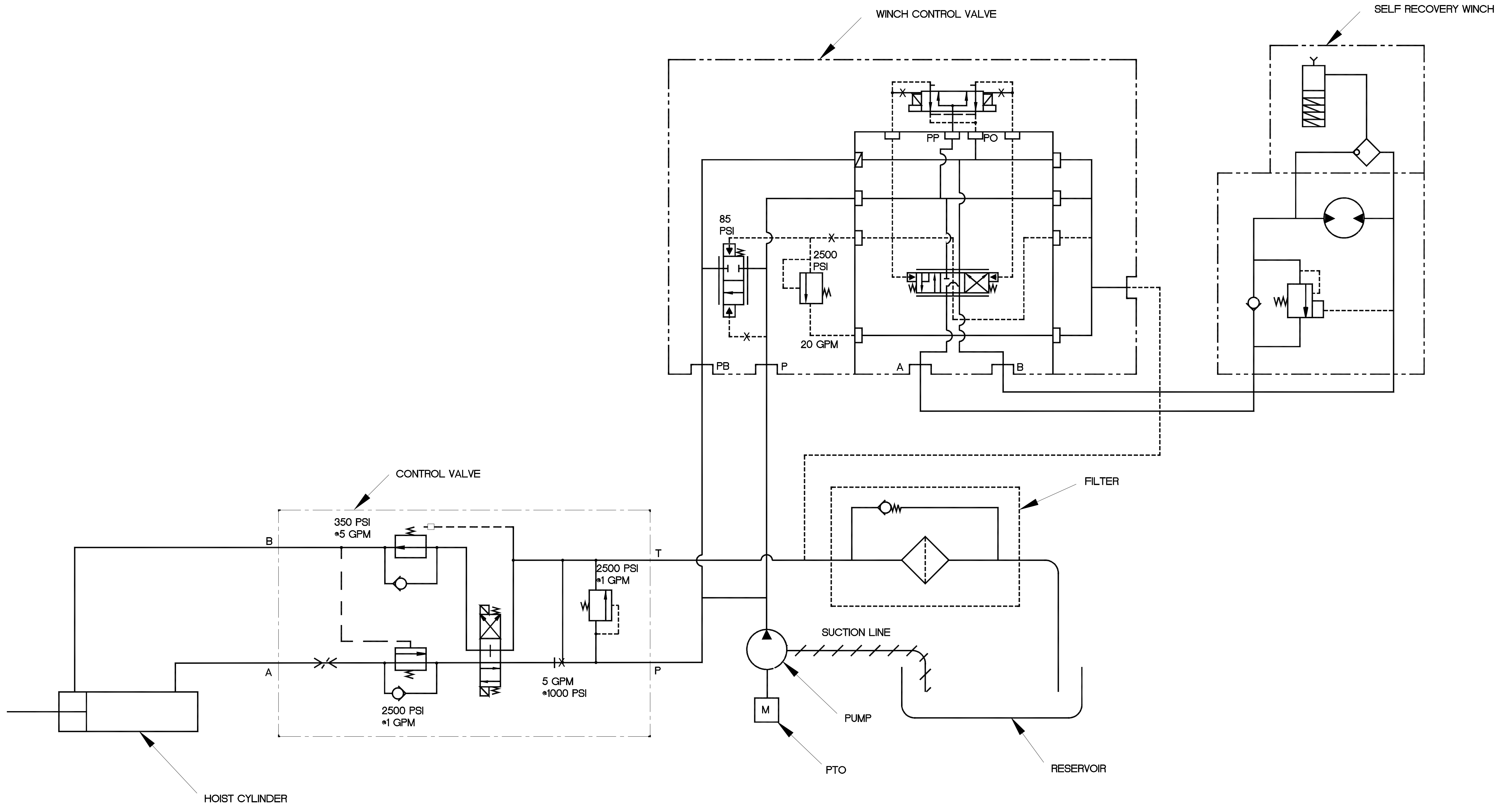
SIZE B ILL. NO. 6HD01A04 FP-11/FP-12 BLANK



MTV CARGO CRANE

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 7 OF 8

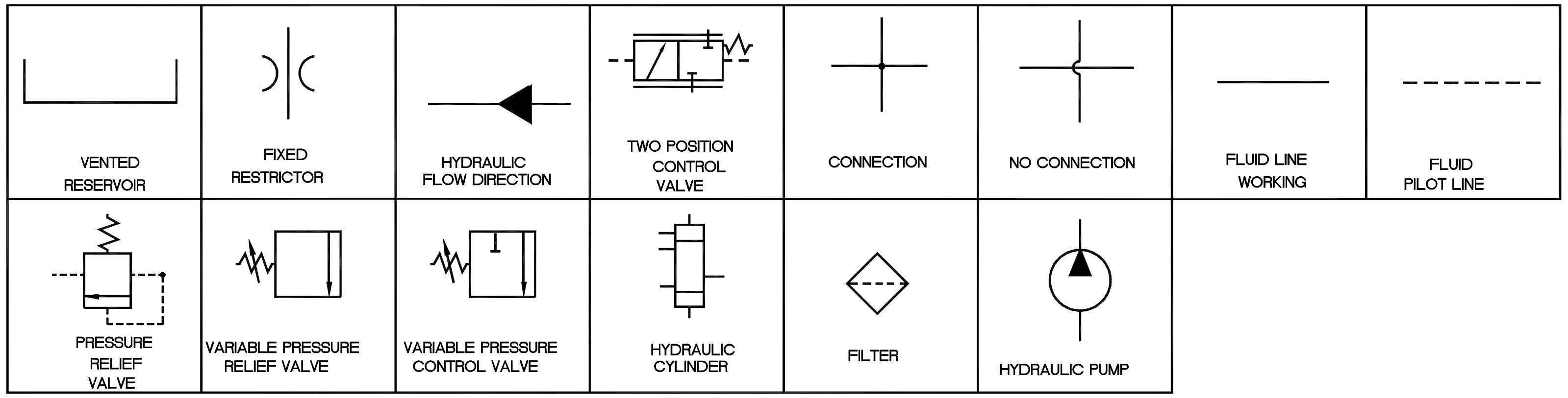
SIZE B	ILL. NO. 6HD01A05	FP-13/FP-14 BLANK



MTV DUMP W/ WINCH
MTV DUMP W/O WINCH

FIGURE FO-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 8 OF 8

SIZE B
ILL. NO. 6HD01A06
FP-15/FP-16 BLANK



SH	ZONE	DESCRIPTION
2	D11	FILTER
2	D14	FIXED RESTRICTOR
2	E17	HYDRAULIC CYLINDER
2	E13	HYDRAULIC PUMP
2	C13	PRESSURE RELIEF VALVE
2	D13	TWO POSITION CONTROL VALVE
2	E16	VARIABLE PRESSURE CONTROL VALVE
2	E16	VARIABLE PRESSURE RELIEF VALVE
2	C11	VENTED RESERVOIR

FIGURE FO-4 HYDRAULIC STEERING SYSTEM

FOLDOUT 1 OF 2

SIZE B ILL. NO. YSD01AL1 FP-1/FP-2 BLANK

◀

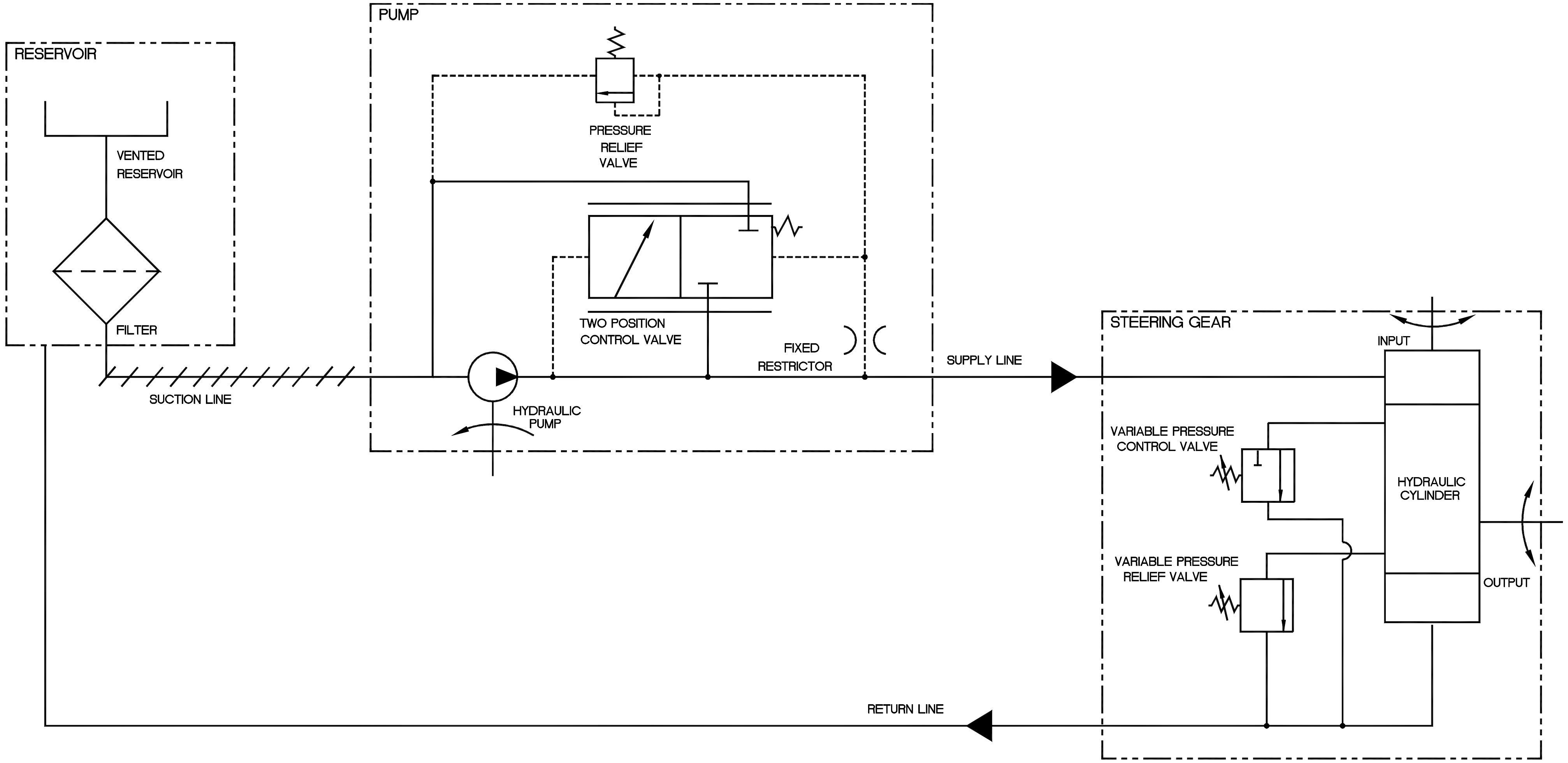


FIGURE FO-4 HYDRAULIC STEERING SYSTEM

FOLDOUT 2 OF 2

SIZE B ILL. NO. YSD01A01 FP-3/FP-4 BLANK

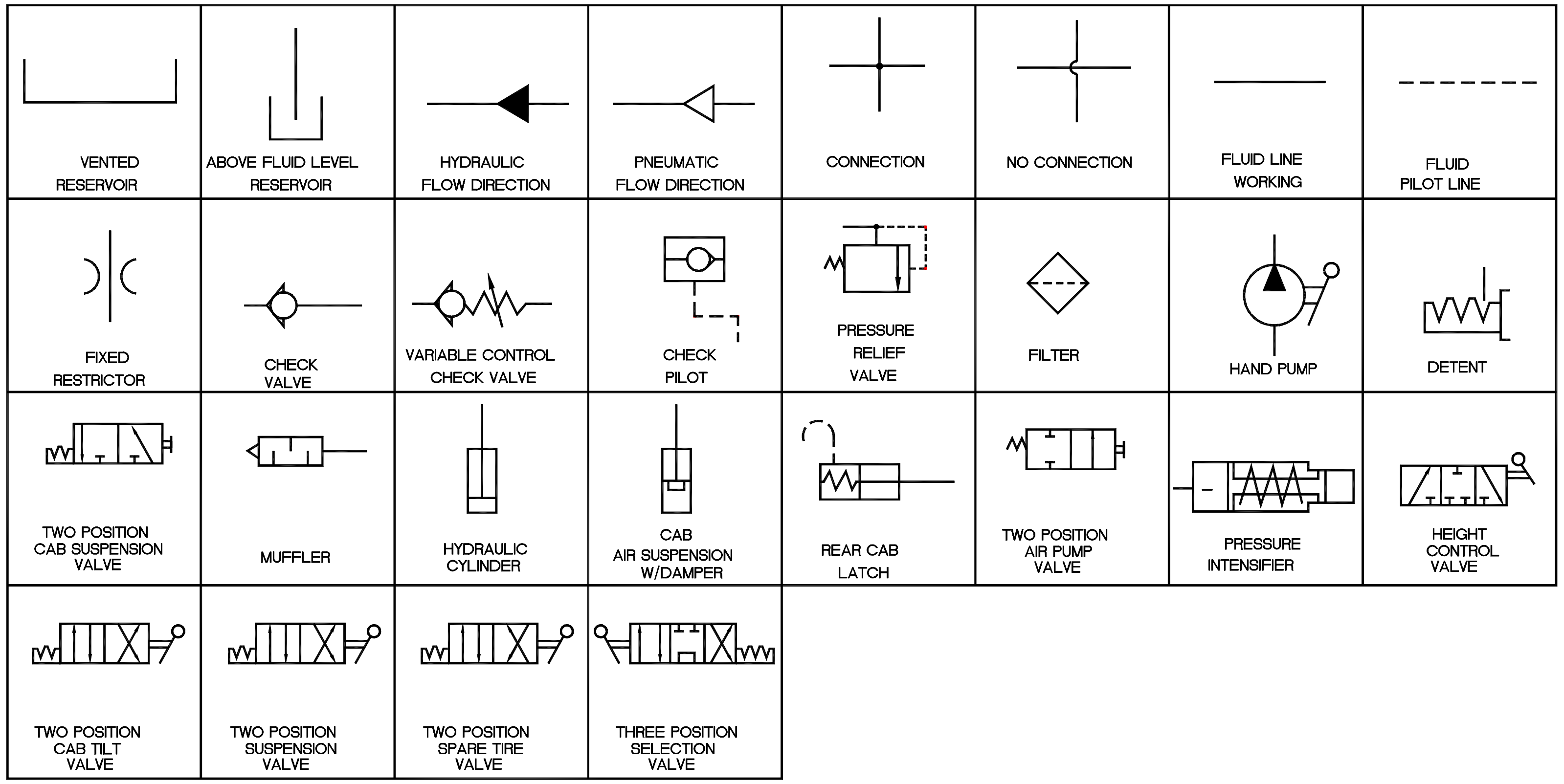


FIGURE F0-5 AIR TRANSPORTABILITY
HYDRAULIC/PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 1 OF 3

SIZE B ILL. NO. YAD01AL1 FP-1/FP-2 BLANK

SH	ZONE	DESCRIPTION
3	A25	CAB AIR SUSPENSION W/DAMPER
3	F21	CHECK PILOT
3	A22	CHECK VALVE
3	A23	CHECK VALVE
3	B22	CHECK VALVE
3	B23	CHECK VALVE
3	B25	CHECK VALVE
3	C20	CHECK VALVE
3	C21	CHECK VALVE
3	E19	CHECK VALVE
3	E24	CHECK VALVE
3	E25	CHECK VALVE
3	F19	CHECK VALVE
3	F21	CHECK VALVE
3	G21	CHECK VALVE
3	A22	FILTER
3	B22	FILTER
3	A24	FILTER
3	B24	FILTER
3	D19	FILTER
3	D20	FILTER
3	D21	FILTER
3	E19	FILTER
3	G19	FILTER
3	G21	FILTER
3	A22	FIXED RESTRICTOR
3	B22	FIXED RESTRICTOR
3	A23	FIXED RESTRICTOR
3	B23	FIXED RESTRICTOR
3	F19	HAND PUMP
3	B25	HEIGHT CONTROL VALVE
3	B22	HYDRAULIC CYLINDER
3	B23	HYDRAULIC CYLINDER
3	C21	HYDRAULIC CYLINDER
3	F20	MUFFLER
3	F21	PRESSURE INTENSIFIER
3	F19	PRESSURE RELIEF VALVE
3	A24	REAR CAB LATCH
3	E21	THREE POSITION SELECTION VALVE
3	D26	TWO POSITION AIR PUMP VALVE
3	D25	TWO POSITION CAB SUSPENSION VALVE
3	C24	TWO POSITION CAB TILT VALVE
3	C23	TWO POSITION SPARE TIRE VALVE
3	D21	TWO POSITION SUSPENSION VALVE
3	G22	VARIABLE CONTROL CHECK VALVE
3	G22	VENTED RESERVOIR

FIGURE F0-5 AIR TRANSPORTABILITY
HYDRAULIC/PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 2 OF 3

SIZE B ILL. NO. YAD01AL2 FP-3/FP-4 BLANK

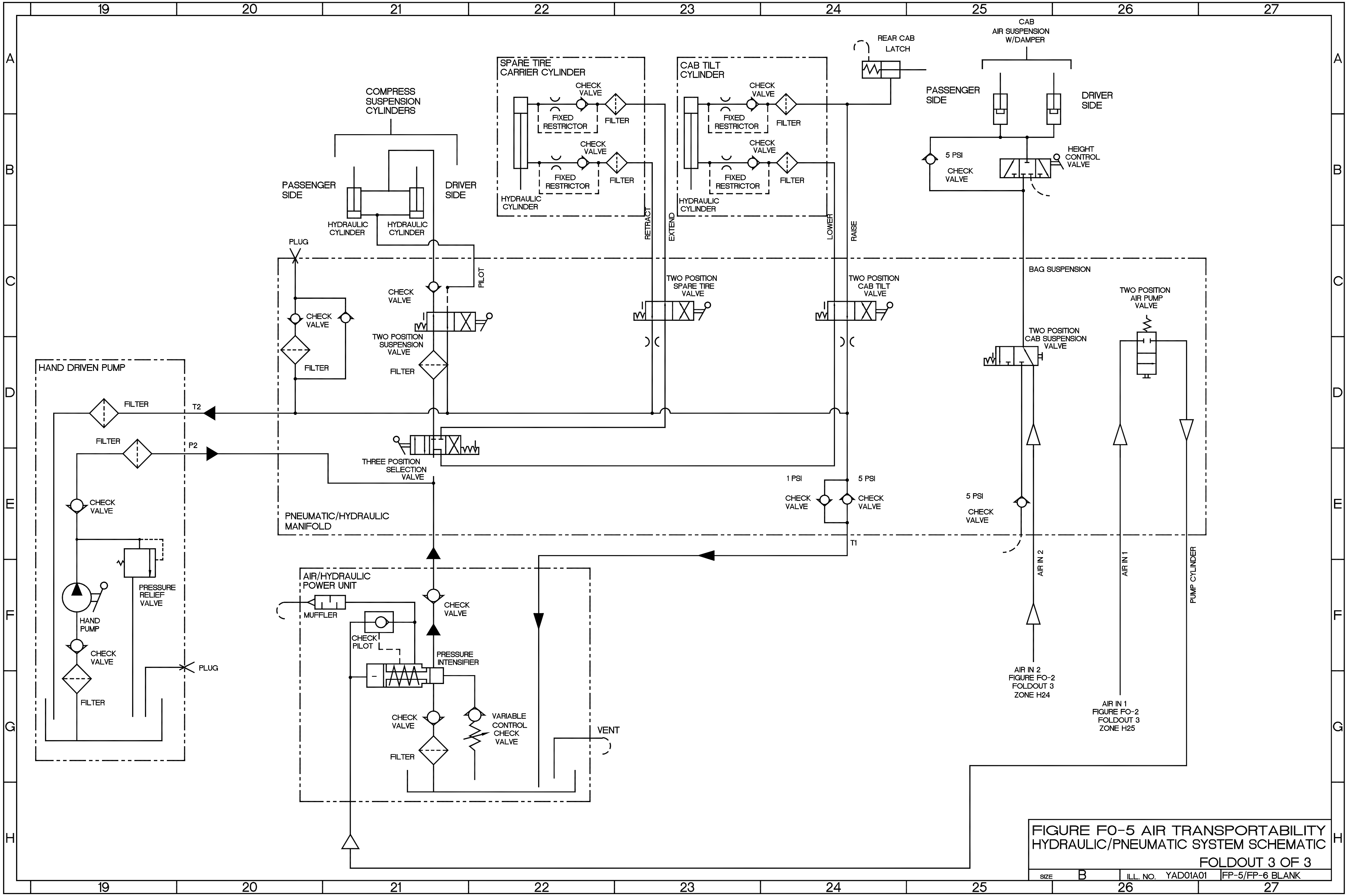


FIGURE FO-5 AIR TRANSPORTABILITY HYDRAULIC/PNEUMATIC SYSTEM SCHEMATIC

FOLDOUT 3 OF 3

SIZE B ILL. NO. YAD01A01 FP-5/FP-6 BLANK

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

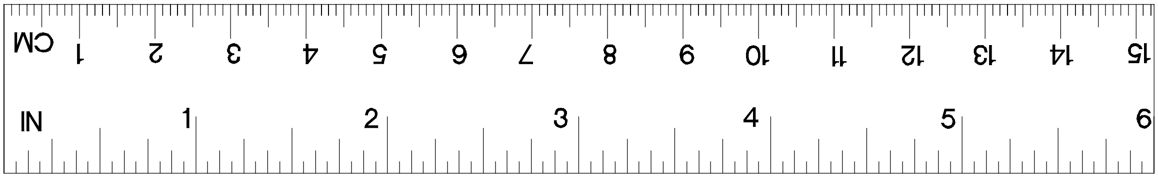
1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

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	TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540	Centimeters	Inches	0.394
Inches	Millimeters	25.4	Millimeters	Inches	0.0394
Feet	Meters	0.305	Meters	Feet	3.280
Yards	Meters	0.914	Meters	Yards	1.094
Miles	Kilometers	1.609	Kilometers	Miles	0.621
Square Inches	Square Centimeters	6.451	Sq Centimeters	Square Inches	0.155
Square Feet	Square Meters	0.093	Square Meters	Square Feet	10.764
Square Yards	Square Meters	0.836	Square Meters	Square Yards	1.196
Square Miles	Square Kilometers	2.590	Square Kilometers	Square Miles	0.386
Acres	Square Hectometers	0.405	Sq Hectometers	Acres	2.471
Cubic Feet	Cubic Meters	0.028	Cubic Meters	Cubic Feet	35.315
Cubic Yards	Cubic Meters	0.765	Cubic Meters	Cubic Yards	1.308
Fluid Ounces	Milliliters	29.57	Milliliters	Fluid Ounces	0.034
Pints	Liters	0.473	Liters	Pints	2.113
Quarts	Liters	0.946	Liters	Quarts	1.057
Gallons	Liters	3.785	Liters	Gallons	0.264
Ounces	Grams	28.35	Grams	Ounces	0.035
Pounds	Kilograms	0.454	Kilograms	Pounds	2.205
Pounds (force)	Newtons	4.448	Newtons	Pounds (force)	0.2248
Short Tons	Metric Tons	0.907	Metric Tons	Short Tons	1.102
Pound-Feet	Newton-Meters	1.356	Newton-Meters	Pound-Feet	0.738
Pounds/Sq Inch	Kilopascals	6.895	Kilopascals	Pounds per Sq Inch	0.145
Miles per Gallon	Kilometers per Liter	0.425	Km per Liter	Miles per Gallon	2.354
Miles per Hour	Kilometers per Hour	1.609	Km per Hour	Miles per Hour	0.621



YMET001A

PIN: 074428-000