ARMY TM 9-2320-365-20-2
AIR FORCE T.O. 36A12-1B-1095-2-2

*Supersedes copy dated 1 October 1995.

TECHNICAL MANUAL
MAINTENANCE INSTRUCTIONS
UNIT MAINTENANCE
M1078 SERIES, 2 1/2-TON, 4 X 4,
LIGHT MEDIUM TACTICAL VEHICLES (LMTV)
VOLUME NO. 2 OF 5

MODEL	NSN	EIC
TRK, CAR., LMTV, M1078		
W/WN	2320-01-360-1898	BHH
W/O WN	2320-01-354-3385	BHD
TRK, VAN. LMTV, M1079		
W/WN	2320-01-360-1891	BHG
W/O WN	2320-01-354-3384	BHE
TRK CHAS, LMTV, M1080	2320-01-353-9098	BHC
TRK, CAR., LMTV, AIR DROP, M1081		
W/WN	2320-01-380-1899	BHJ
W/O WN	2320-01-355-3064	BHF

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TRANSMISSION SYSTEM
TROUBLESHOOTING
PAGE 2-1359

BRAKE SYSTEM TROUBLESHOOTING
PAGE 2-1607

AIR SYSTEM TROUBLESHOOTING
PAGE 2-1713

CENTRAL TIRE INFLATION SYSTEM
(CTIS) TROUBLESHOOTING
PAGE 2-1767

AXLE TROUBLESHOOTING
PAGE 2-1895

STEERING TROUBLESHOOTING
PAGE 2-1903

11K SELF-RECOVERY WINCH (SRW)
SYSTEM TROUBLESHOOTING
PAGE 2-1945

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

HEADQUARTERS, DEPARTMENTS OF THE ARMY AND THE AIR FORCE
17 JUNE 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.

WARNING

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

WARNING SUMMARY (CONT)

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. 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 degrees F (38 degrees C) and for Type II is 130 degrees F (50 degrees 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

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

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

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

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

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

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

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

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 lb (41 kg). 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 lb (41 kg). 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 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.

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

Wire rope can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling wire rope. Frayed or broken wires can injure hands. 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.

WARNING SUMMARY (CONT)

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 to personnel.

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

Diesel fuel is flammable. Arctic heater components and fuel lines may contain small amounts of fuel. If fuel is spilled, clean up immediately. Failure to comply may result in serious injury or death to personnel.

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

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

WARNING

Sling spreader weighs approximately 200 lbs (91 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Remove all loose equipment from van body. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Van body weighs approximately 3,360 lbs (1525 kgs) empty. Attach a suitable lifting device prior to removal. Failure to comply may result in serious injury or death to personnel.

WARNING

Guide ropes must be attached at opposite corners of van body to aid in controlling van body during removal. Failure to comply may result in serious injury or death to personnel.

WARNING

Center of gravity will change depending on equipment installed in van body. Attach and adjust lifting device so that van body lifts level. Failure to comply may result in serious injury or death to personnel or damage to equipment.

WARNING

Pod frame weighs approximately 80 lbs (36 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Do not install pod frame on van body for 72 hours after installing blind rivet nuts and spacers. Failure to comply may result in injury to personnel and/or damage to equipment.

WARNING

Goggles and gloves must be worn when working with glass. Failure to comply may result in injury to personnel.

WARNING SUMMARY (CONT)

WARNING

RH door assembly weighs approximately 85 lbs (39 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

LH door assembly weighs approximately 85 lbs (39 kgs). Attach a suitable lifting device prior to removal. Failure to comply may result in injury to personnel or damage to equipment.

WARNING

Wear appropriate eye protection when handling fluorescent lamps. Failure to comply may result in injury to personnel.

WARNING

- **Heavy objects/loads, such as tool boxes and heavy parts, must always be carried on the floor with the weight distributed as equally as possible between left and right sides of M1079 van. Failure to comply decreases the stability of the M1079 van and will increase the likelihood of a rollover.**

- **Heavy cabinets must always be mounted as low as possible with the weight distributed as equally as possible between left and right sides of M1079 van. Remember to consider the weight of the items that will be stored in the cabinets. Failure to comply decreases the stability of the M1079 van and will increase the likelihood of a rollover.**

- **Always keep in mind, when placing items inside the M1079 van, that heavier items must always be positioned as low as possible and the weight distributed as equally as possible between left and right sides of M1079 van. Failure to comply decreases the stability of the M1079 van and will increase the likelihood of a rollover.**

WARNING

Diesel fuel is flammable. Arctic heater components and fuel hoses may contain small amounts of fuel. If fuel is spilled, clean it up immediately. Failure to comply may result in serious injury or death to personnel.

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

- **Do not open coolant fill cap if temperature reads above 110°F (43°C). Steam or hot coolant Is under pressure. Failure to comply may result in injury to personnel.**
- **Pressure in reservoir tank must be released before removing cap. Failure to comply may result in injury to personnel.**

WARNING

Excess coolant may splash out when hoses are removed from swingfire pump. Wear appropriate eye protection. Failure to comply may result in injury to personnel.

WARNING

Excess coolant may splash out upon removal of hoses on swingfire tube jacket. Ensure proper eye protection is worn. Failure to comply may result in injury to personnel.

WARNING

Excess coolant may splash out upon removal of hoses from swingfire valve. Ensure proper eye protection is worn. Failure to comply may result in injury to personnel.

WARNING

Heater weighs approximately 120 lbs (54 kgs). Use the aid of an assistant when lifting. Failure to comply may result in injury to personnel.

WARNING

200 amp alternator weighs approximately 70 lbs (32 kgs). The aid of an assistant is required to install 200 amp alternator. 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 LMHC boom assembly. Failure to comply may result in injury to personnel.

WARNING SUMMARY (CONT)

WARNING

Light Material Handling Crane (LMHC) boom 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

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

Use care when removing/installing springs. Springs are under tension and can act as projectiles when released. Failure to comply may result in injury to personnel.

WARNING

Air conditioner weighs approximately 300 lbs (136 kg). Attach a suitable lifting device prior to installation. Failure to comply may result in injury to personnel.

WARNING

Ensure cargo bed is free of equipment and debris, and is not warped or damaged in any way. 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.

TECHNICAL MANUAL
NO. 9-2320-365-20-2

TECHNICAL ORDER
NO. 36A12-1B-1095-2-2

HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington D.C., 17 June 1998

Unit Maintenance Manual

M1078 SERIES, 2 1/2-TON, 4 x 4, LIGHT MEDIUM TACTICAL VEHICLES (LMTV)

VOLUME NO. 2 OF 5

MODEL	NSN	EIC
TRK, CAR., LMTV, M1078		
W/WN	2320-01-360-1898	BHH
W/O WN	2320-01-354-3385	BHD
TRK, VAN, LMTV, M1079		
W/WN	2320-01-360-1891	BHG
W/O WN	2320-01-354-3384	BHE
TRK, CHAS, LMTV, M1080	2320-01-353-9098	BHC
TRK, CAR., LMTV, AIR DROP, M1081		
W/WN	2320-01-360-1899	BHJ
W/O WN	2320-01-355-3064	BHF

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of any way to improve the procedures, please let us know. Mail your letter, DA Form 2082 (Recommended Changes to Publications and Blank Forms), or DA form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NMLI, Rock Island, Ill, 61299. A reply will be furnished to you.

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*This publication supersedes TM 9-2320-365-20-2 dated 1 October 1995.

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SUSPENSION SYSTEM TROUBLESHOOTING 2-1925

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G. MANDATORY REPLACEMENT PARTS G-1
H. LUBRICATION ORDER H-1

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HOW TO USE THIS MANUAL

OVERVIEW

This technical manual (TM) is provided to help you maintain the LMTV at the Unit Maintenance level. Because of its size, it is divided into five volumes. 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, VEHICLE MAINTENANCE.** This chapter contains the continuation of the troubleshooting tables.
- **CHAPTER 3, ENGINE MAINTENANCE.**
- **APPENDIX A, REFERENCES.** Lists publications used with the LMTV.
- **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 LMTV.
- **APPENDIX F, TORQUE LIMITS.** Lists the standard torque values for specific attaching hardware.
- **APPENDIX G, MANDATORY REPLACEMENT PARTS.**
- **APPENDIX H, LUBRICATION ORDER.**
- **SUBJECT INDEX.** Lists important subjects contained in volume 2 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, PMCS. 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 thru 22. 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.

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e99. M1079 FAN DOES NOT OPERATE

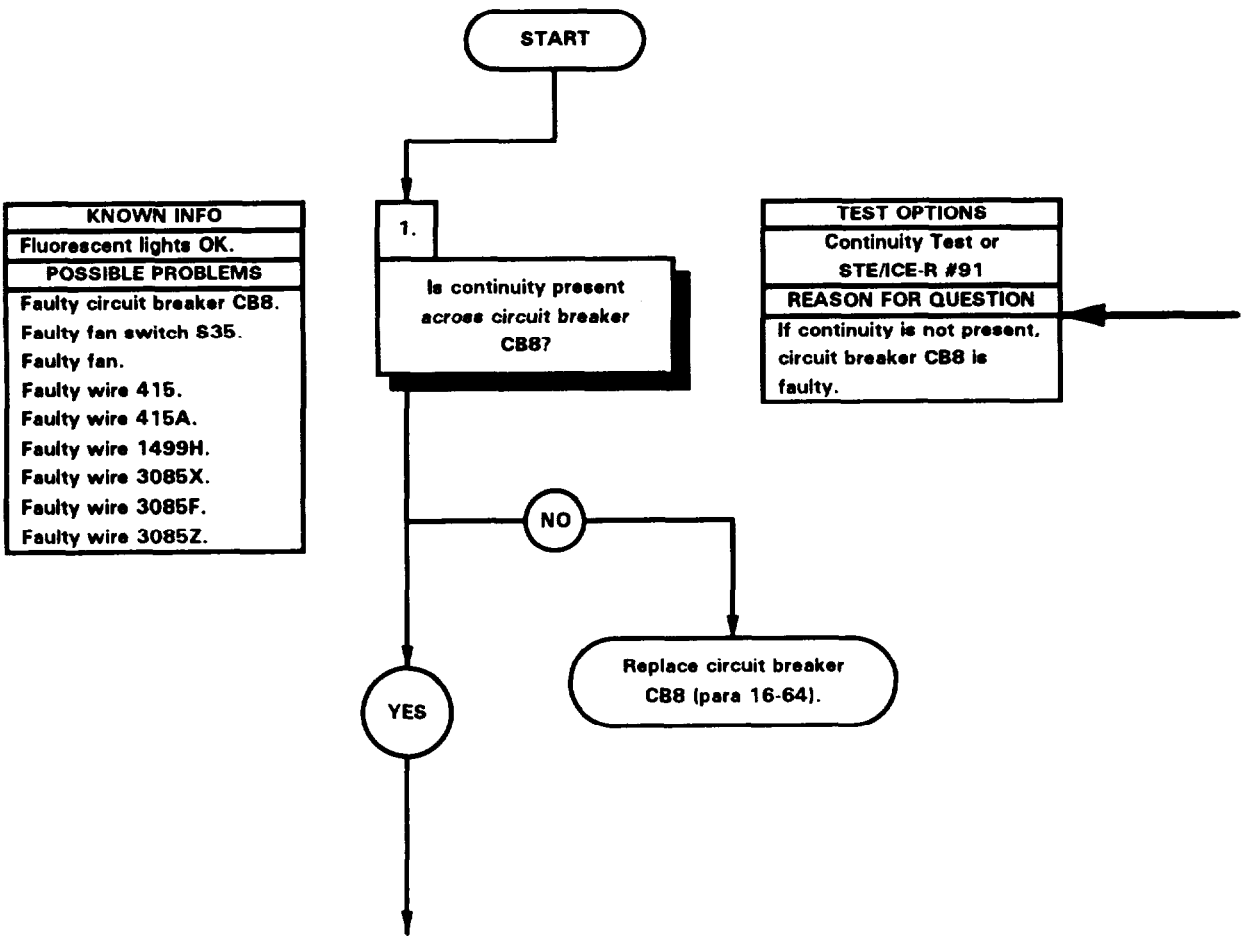
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
AC power disconnected (TM 9-2320-365-10).

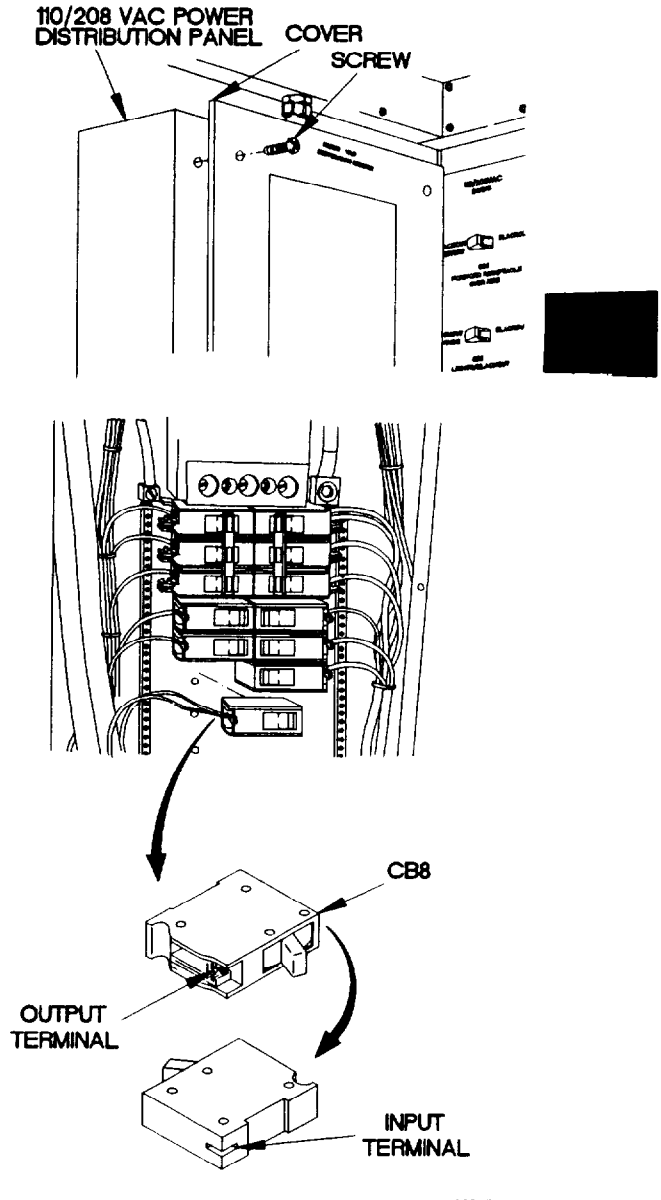
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required
(2)

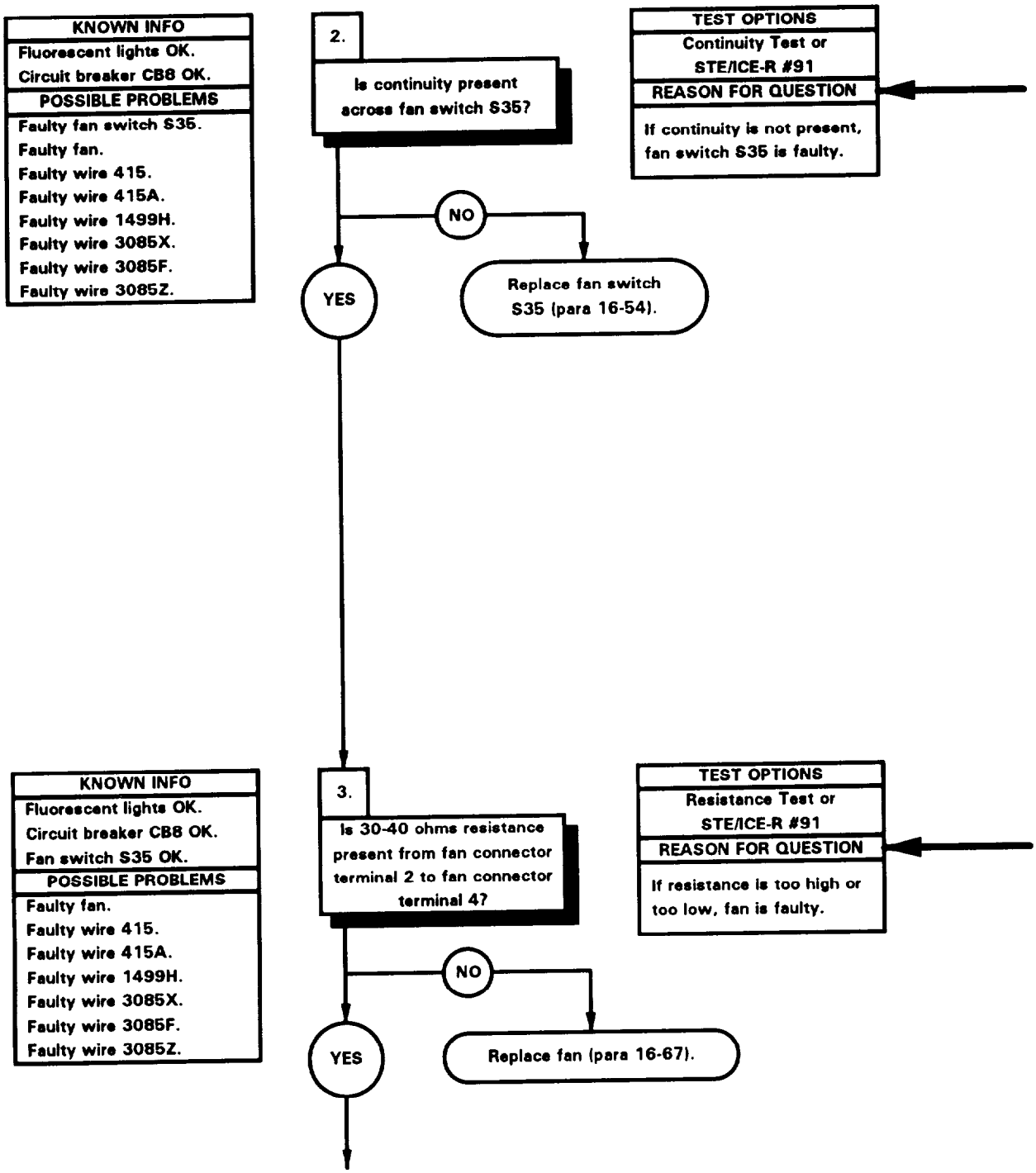
References
TM 9-4910-571-12&P



CONTINUITY TEST
(1) Remove six screws and 110/208 VAC POWER DISTRIBUTION PANEL cover from power distribution panel.
(2) Remove circuit breaker CB8 from power distribution panel.
(3) Position circuit breaker CB8 to ON.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB8.
(6) Connect negative (-) probe of multimeter to input terminal of circuit breaker CB8 and note reading on multimeter.
(7) If continuity is not present, replace circuit breaker CB8 (para 16-64).
(8) Install circuit breaker CB8 in power distribution panel.

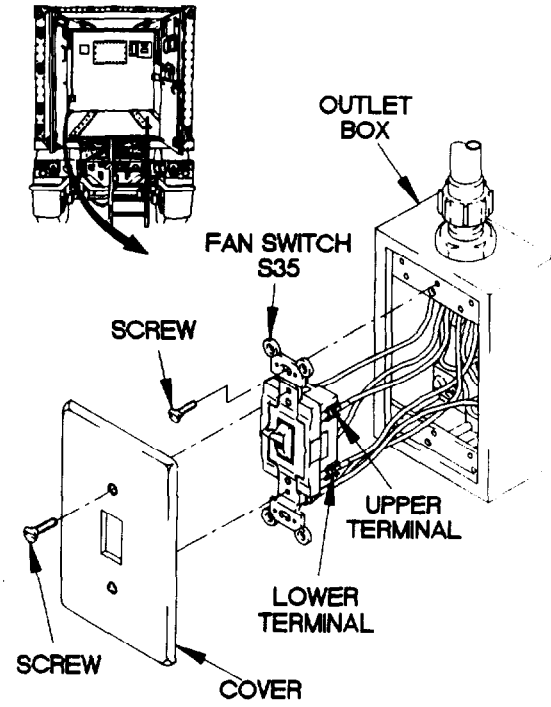


e99. M1079 FAN DOES NOT OPERATE (CONT)



CONTINUITY TEST

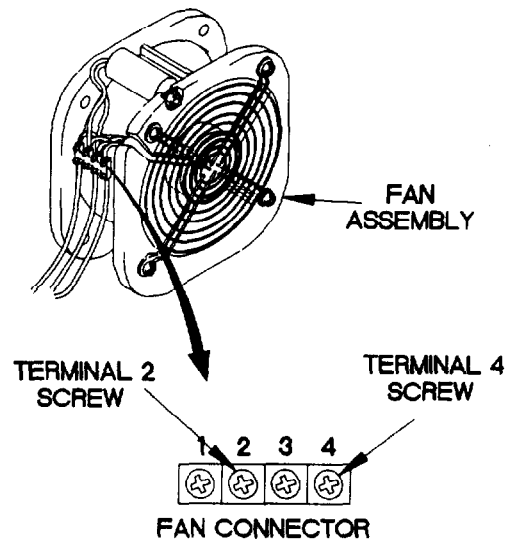
(1) Remove two screws and cover from outlet box.
(2) Remove two screws and fan switch S35 from outlet box.
(3) Position fan switch S35 to ON.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lower terminal of fan switch S35.
(6) Connect negative (-) probe of multimeter to upper terminal of fan switch S35 and note reading on multimeter.
(7) If continuity is not present, replace fan switch S35 (para 16-54).



32E97021

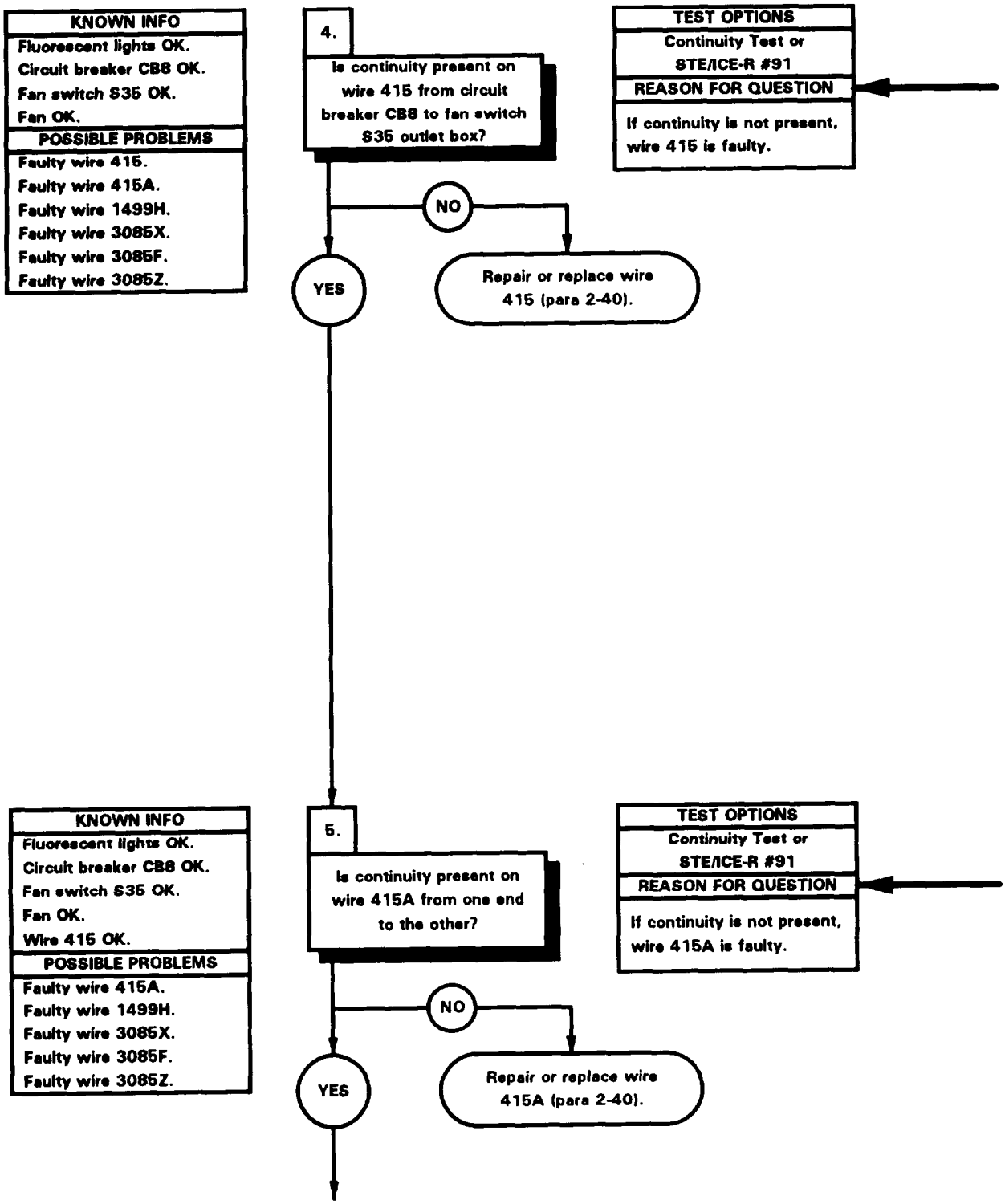
RESISTANCE TEST

(1) Remove fan assembly (para 16-67).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to fan connector terminal 4 screw.
(4) Connect negative (-) probe of multimeter to fan connector terminal 2 screw and note reading on multimeter.
(5) If 30-40 ohms resistance is not present, replace fan (para 16-67).

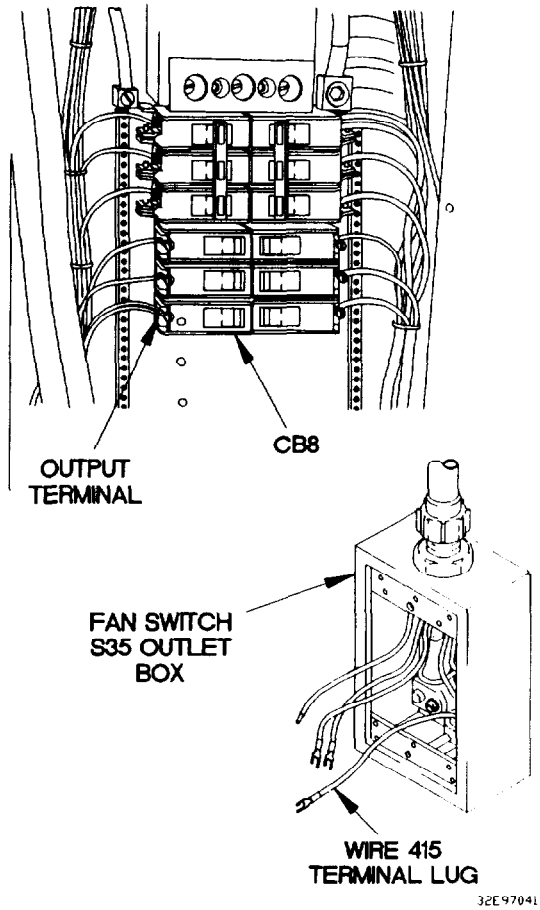


32E97031

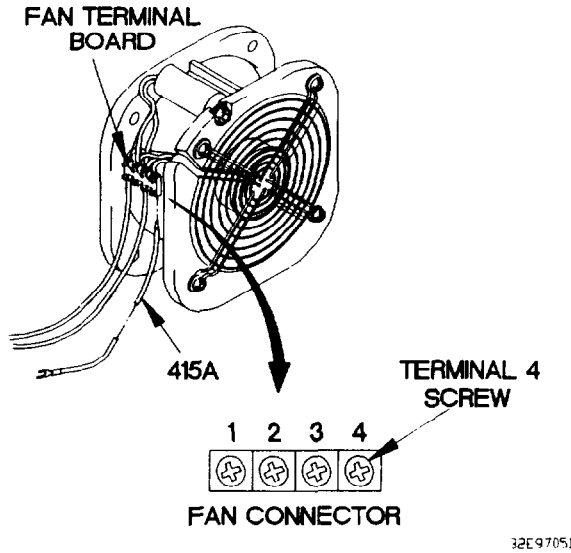
e99. M1079 FAN DOES NOT OPERATE (CONT)



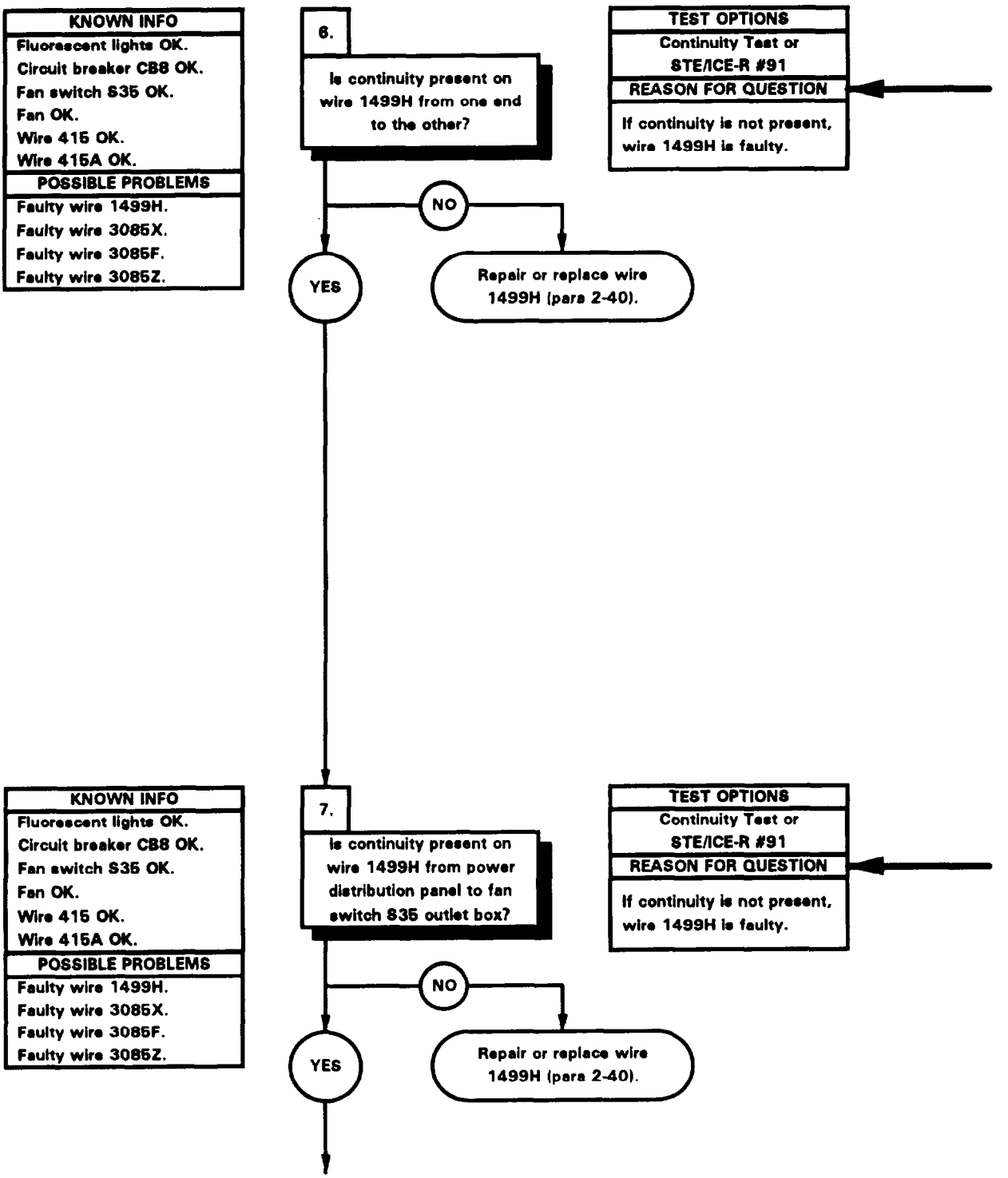
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB8.
(3) Connect negative (-) probe of multimeter to wire 415 terminal lug in fan switch S35 outlet box and note reading on multimeter.
(4) If continuity is not present, repair or replace 415 (para 2-40).



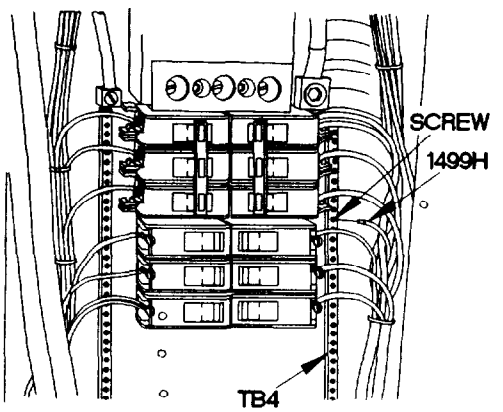
CONTINUITY TEST
(1) Loosen terminal 4 screw on fan terminal board.
(2) Remove wire 415A from fan terminal board.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 415A terminal lug.
(5) Connect negative (-) probe of multimeter to other end of wire 415A and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 415A (para 2-40).
(7) Position wire 415A in fan terminal board.
(8) Tighten terminal 4 screw on fan terminal board.

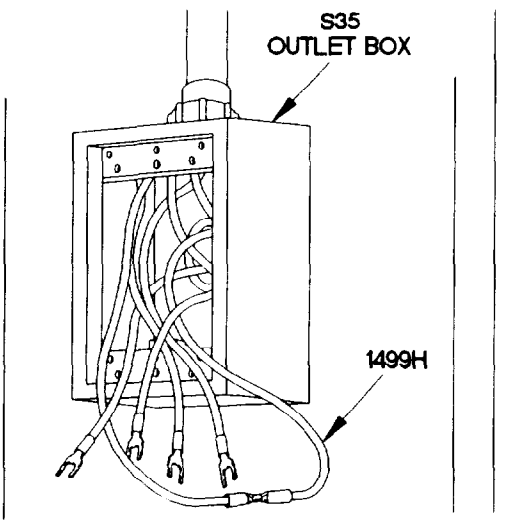


e99. M1079 FAN DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Loosen screw on fan terminal board.
(2) Remove wire 1499H from fan terminal board.
(3) Set multimeter to ohms.
(4) Connect positive (+) multimeter to wire 1499H.
(5) Connect negative (-) probe of multimeter to wire 1499H and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 1499H (para 2-40).
(7) Position wire 1499H in fan terminal board.
(8) Tighten screw on fan terminal board.

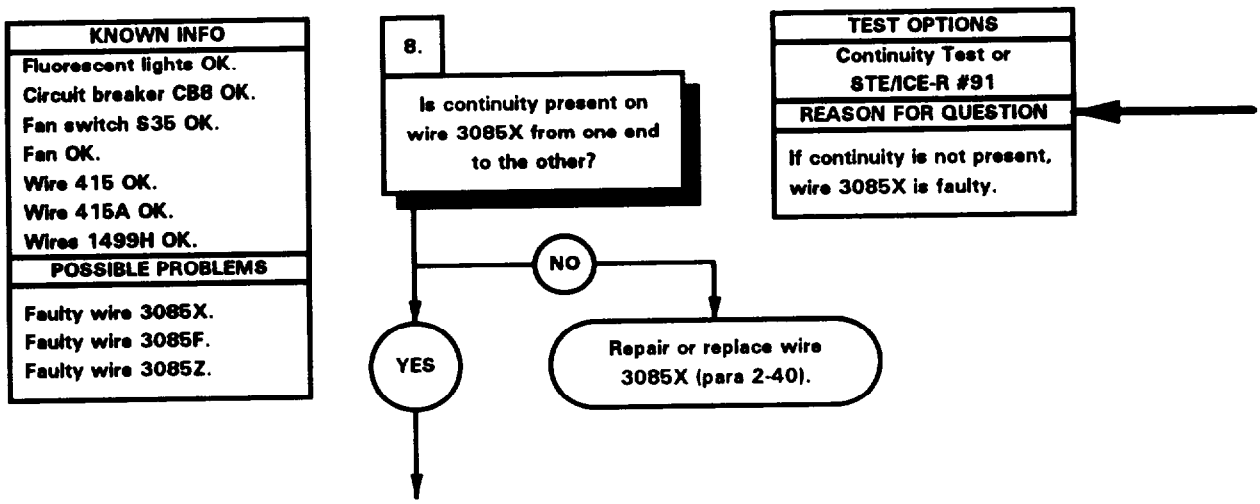




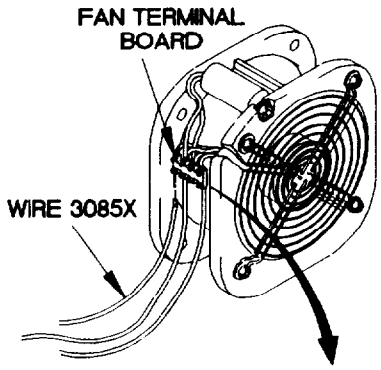
32E97071

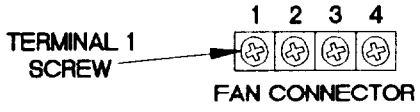
CONTINUITY TEST
(1) Loosen screw in terminal board TB4.
(2) Remove wire 1499H from terminal board TB4.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 1499H in power distribution panel.
(5) Connect negative (-) probe of multimeter to wire 1499H in fan switch S35 outlet box and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 1499H (para 2-40).
(7) Position wire 1499H in terminal board TB4.
(8) Tighten screw in terminal board TB4.

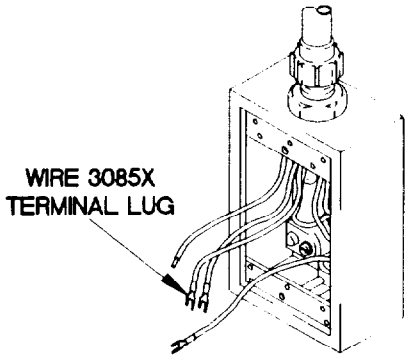
e99. M1079 FAN DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Loosen terminal 1 screw on fan terminal board.
(2) Remove wire 3085X from fan terminal board.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085X terminal lug.
(5) Connect negative (-) probe of multimeter to other end of wire 3085X and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 3085X.
(7) Position wire 3085X in fan terminal board.
(8) Tighten terminal 1 screw on fan terminal board.

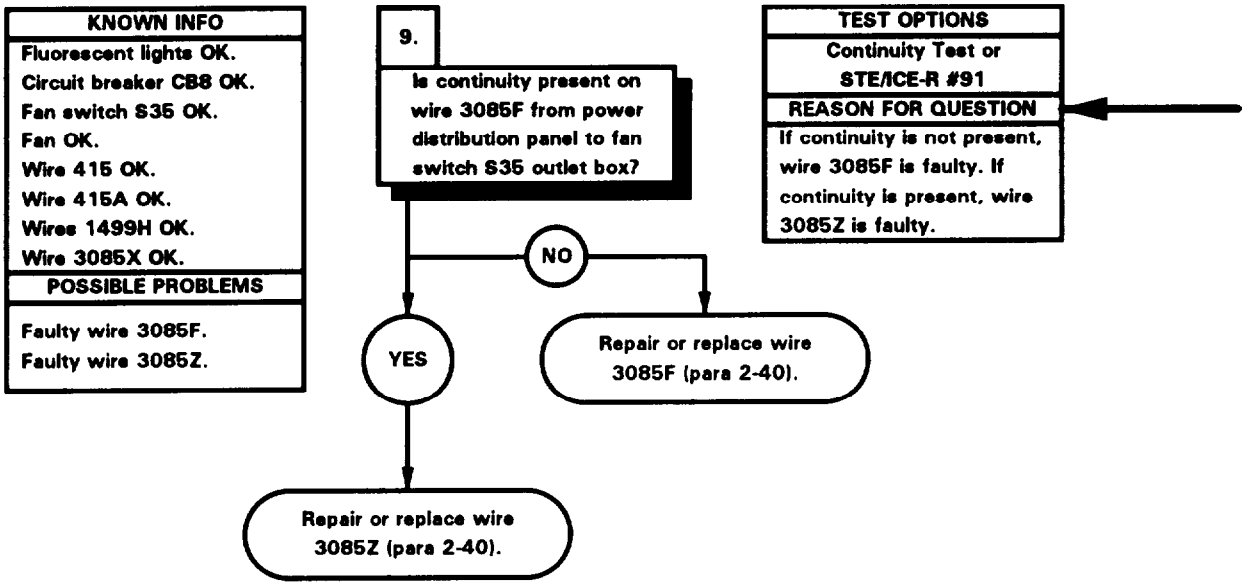






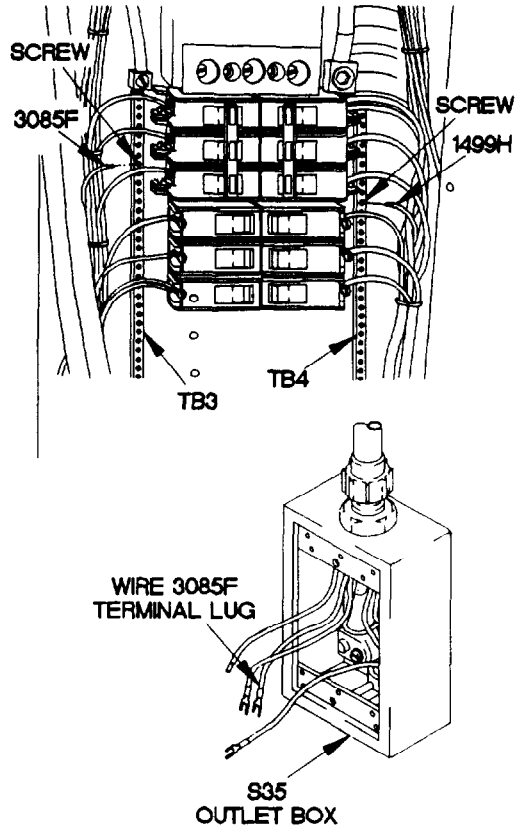
32E97081

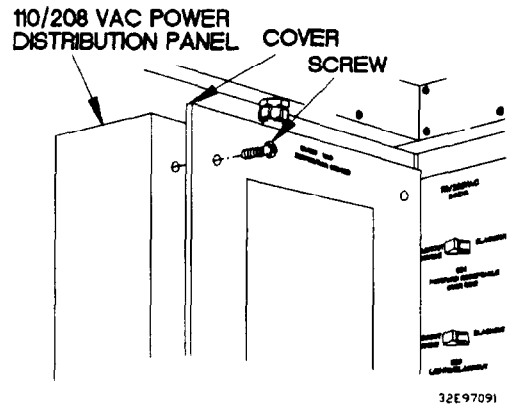
e99. M1079 FAN DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085F from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085F in power distribution panel.
(5) Connect negative (-) probe of multimeter to wire 3085F terminal lug in fan switch S35 outlet box and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 3085F (para 2-40).
(7) If continuity is present, repair or replace wire 3085Z (para 2-40).
(8) Position wire 3085F in terminal board TB3.
(9) Tighten screw in terminal board TB3.
(10) Position wire 1499H in terminal board TB4.
(11) Tighten screw in terminal board TB4.
(12) Install 110/208 VAC POWER DISTRIBUTION PANEL cover on power distribution panel with *six screws*.
(13) Install fan assembly (para 16-67).





•100. ALL M1079 VAN BODY CLEARANCE AND MARKER LIGHTS DO NOT OPERATE

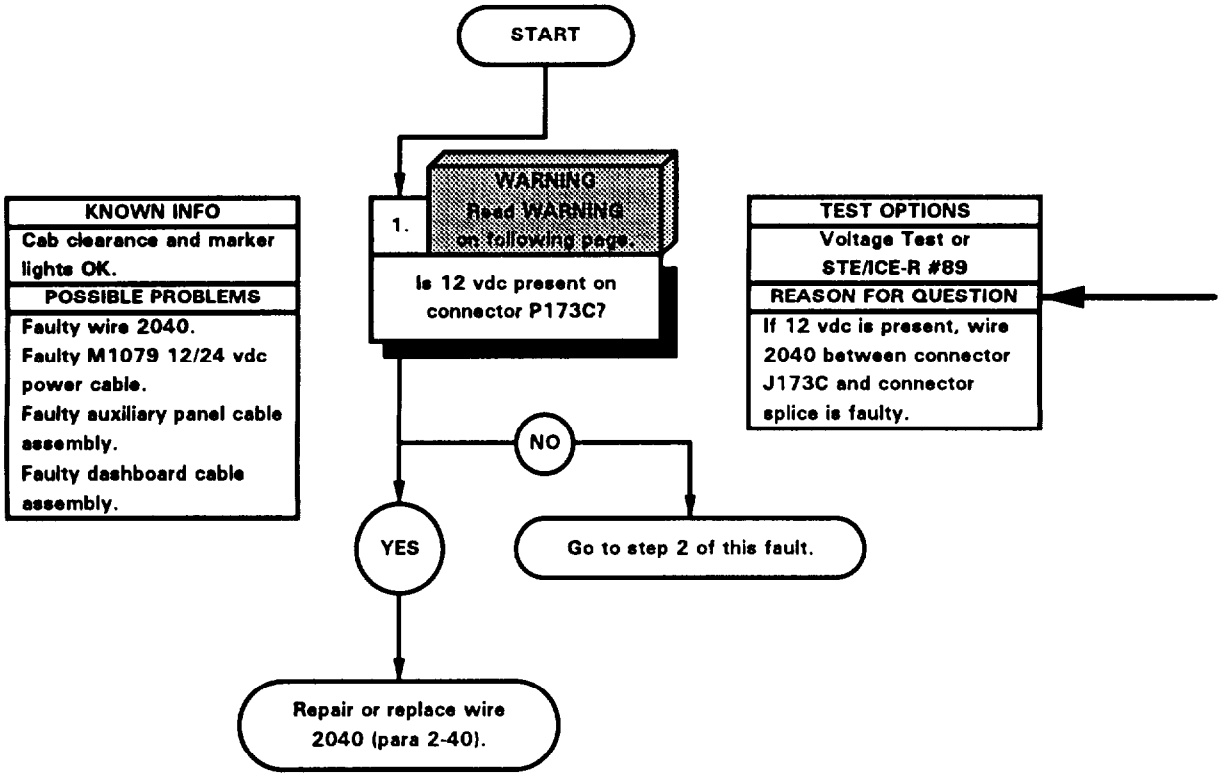
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P

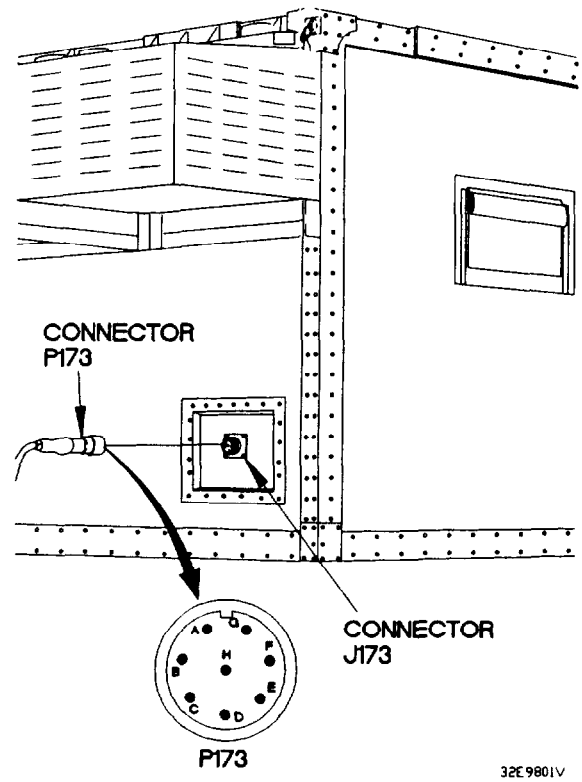


WARNING

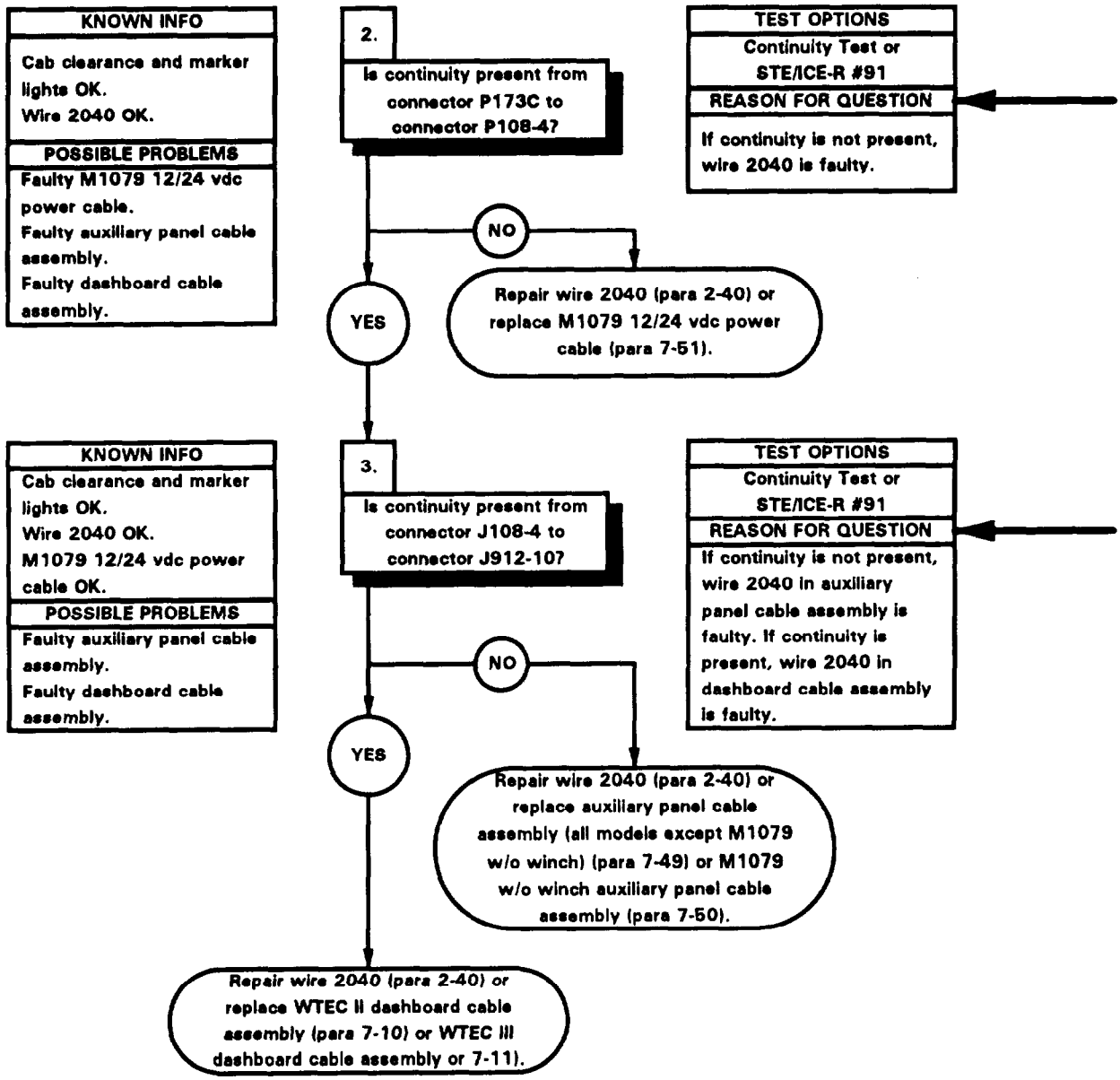
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector P173 from connector J173.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector P173C.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position main light switch to SER DRIVE (TM 9-2320-365-10) and note reading on multimeter.
(6) If 12 vdc is not present, repair or replace wire 2040 between connector J173 and connector splice (para 2-40).
(7) Position main light switch to OFF (TM 9-2320-365-10).



e100. ALL M1079 VAN BODY CLEARANCE AND MARKER LIGHTS DO NOT OPERATE (CONT)

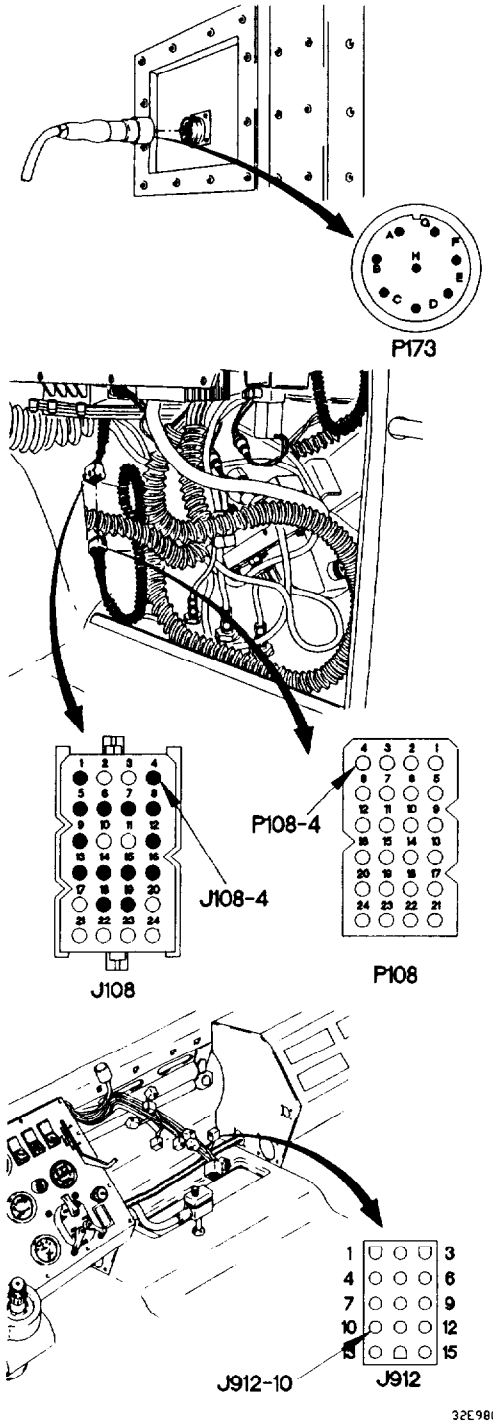


CONTINUITY TEST

(1) Remove kick panel (para 16-3).
(2) Disconnect connector P108 from connector J108.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P173C.
(5) Connect negative (-) probe of multimeter to connector P108-4 and note reading on multimeter.
(6) If continuity is not present, repair wire 2040 (para 2-40) or replace M1079 12/24 vdc power cable (para 7-51).
(7) Connect connector P173 to connector J173.

CONTINUITY TEST

(1) Remove personnel heater (para 18-9).
(2) Disconnect connector J912 from connector P912.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J108-4.
(5) Connect negative (-) probe of multimeter to connector J912-10 and note reading on multimeter.
(6) If continuity is not present, repair wire 2040 (para 2-40) or replace auxilliary panel cable assembly (all models except M1079 w/o winch) (para 7-49) or M1079 w/o winch auxiliary panel cable assembly (para 7-50).
(7) If continuity is present, repair wire 2040 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Connect connector J912 to connector P912.
(9) Connect connector P108 to connector J108.
(10) Install personnel heater (para 18-9).



•101. M1079 VAN BODY CLEARANCE/MARKER LIGHT DOES NOT OPERATE

INITIAL SETUP

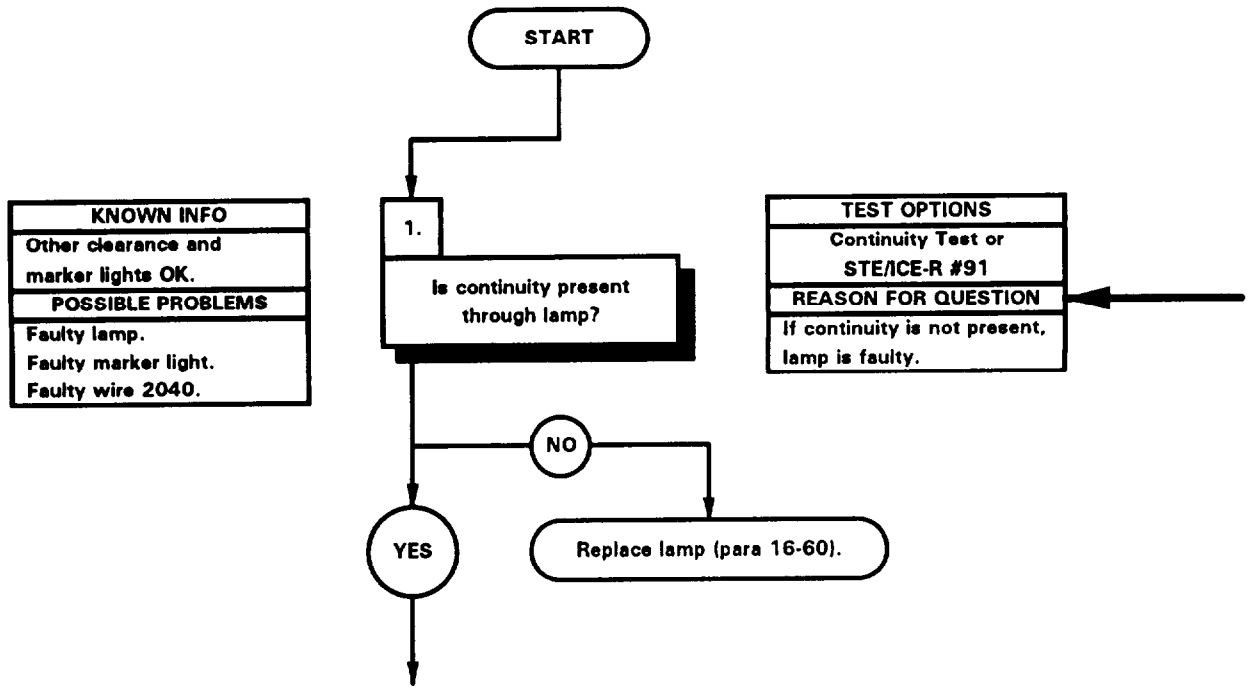
Equipment Condition
Engine shut down (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

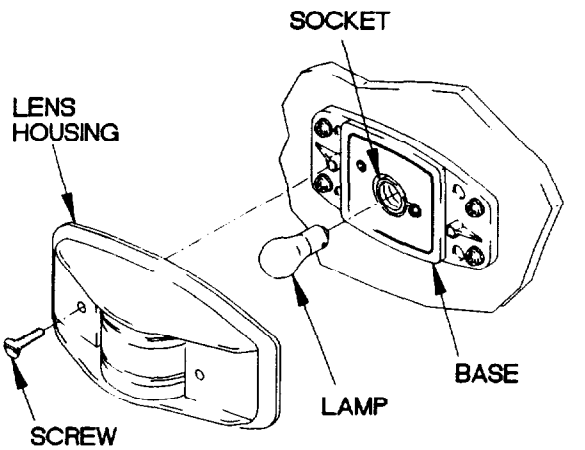
Materials/Parts
Lockwasher (4) (Item 77, Appendix G)
Gasket (Item 28, Appendix G)

Personnel Required
(2)

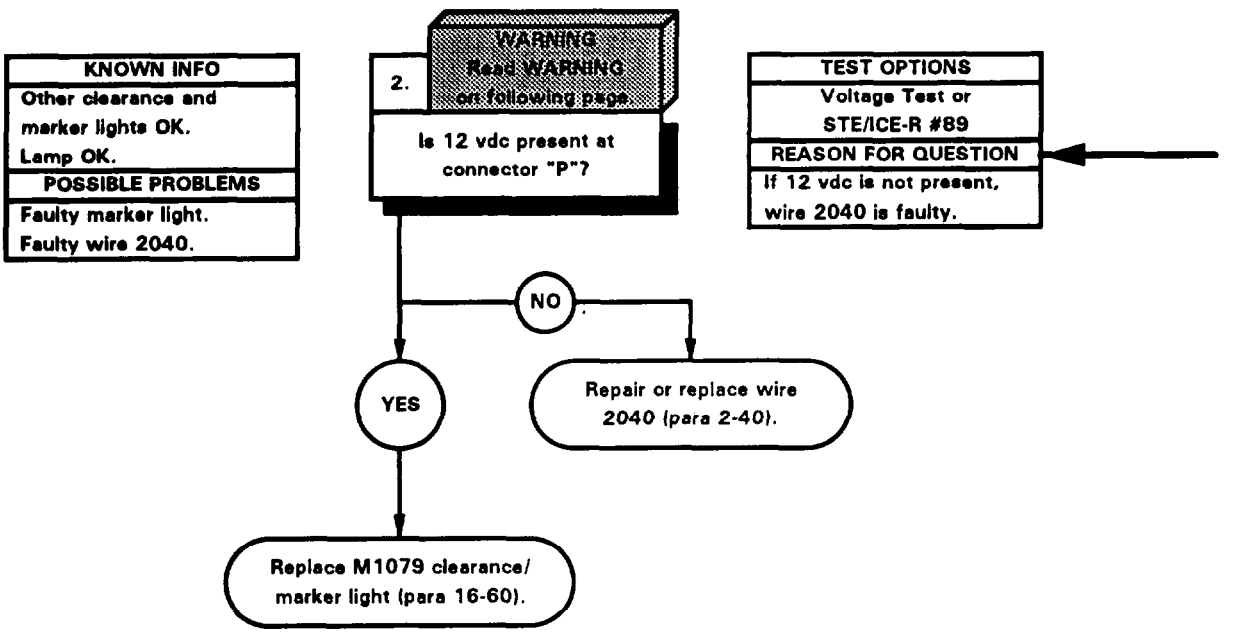
References
TM 9-4910-571-12&P



CONTINUITY TEST
(1) Remove two screws and lens housing from base.
(2) Remove lamp from socket.
(3) Set multimeter to ohms.
(4) Check continuity through lamp and note reading on multimeter.
(5) If continuity is not present, replace lamp (para 16-60).
(6) Install lamp in socket.



e101. M1079 VAN BODY CLEARANCE/MARKER LIGHT DOES NOT OPERATE (CONT)



WARNING

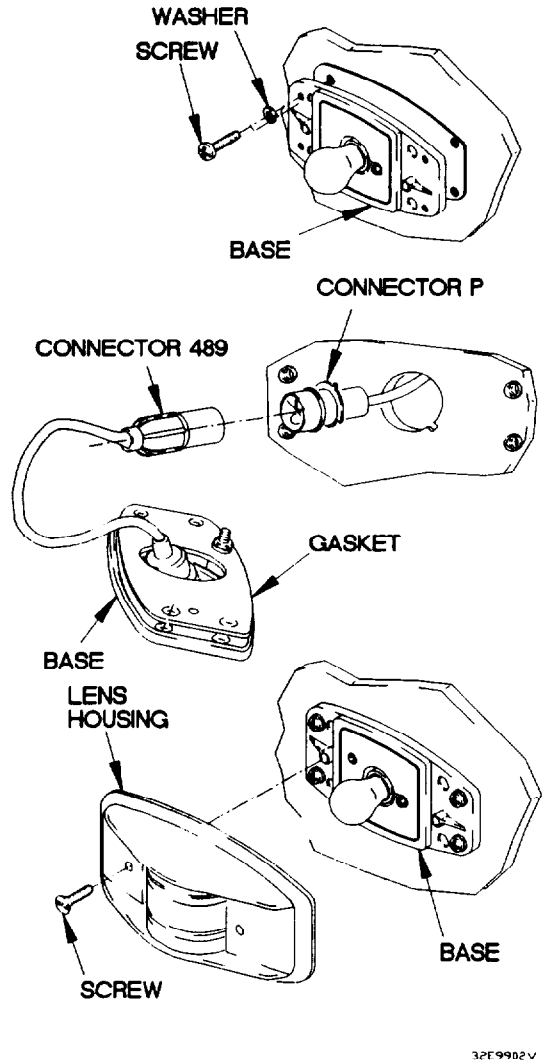
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove four screws, lockwashers, and base from van body. Discard lockwashers.
(2) Disconnect connector "P" from connector 489.
(3) Remove gasket from base. Discard gasket.
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to "P" connector. Refer to Table 2-13. Van Body Clearance/Marker Light Location and Connector Number for details.
(6) Connect negative (-) probe of multimeter to ground.
(7) Position main light switch to SER DRIVE (TM 9-2320-365-10) and note reading on multimeter.
(8) If 12 vdc is not present, repair or replace wire 2040 (para 2-40).
(9) If 12 vdc is present, replace M1079 clearance/marker light (para 16-60).
(10) Position main light switch to OFF (TM 9-2320-365-10).
(11) Install gasket on base.
(12) Connect connector "P" to connector 489.
(13) Install base on van body with four lockwashers and screws.
(14) Install lens housing on base with two screws.

TABLE 2-13. VAN BODY CLEARANCE/MARKER LIGHT LOCATION AND CONNECTOR NUMBER

LOCATION	CONNECTOR NUMBER
LEFT FRONT	P150
LEFT FRONT CENTER	P151
FRONT CENTER	P152
RIGHT FRONT CENTER	P153
RIGHT FRONT	P154
LEFT SIDE REAR	P155
LEFT REAR	P156
LEFT REAR CENTER	P157
REAR CENTER	P158
RIGHT REAR CENTER	P159
RIGHT REAR	P160
RIGHT SIDE REAR	P161



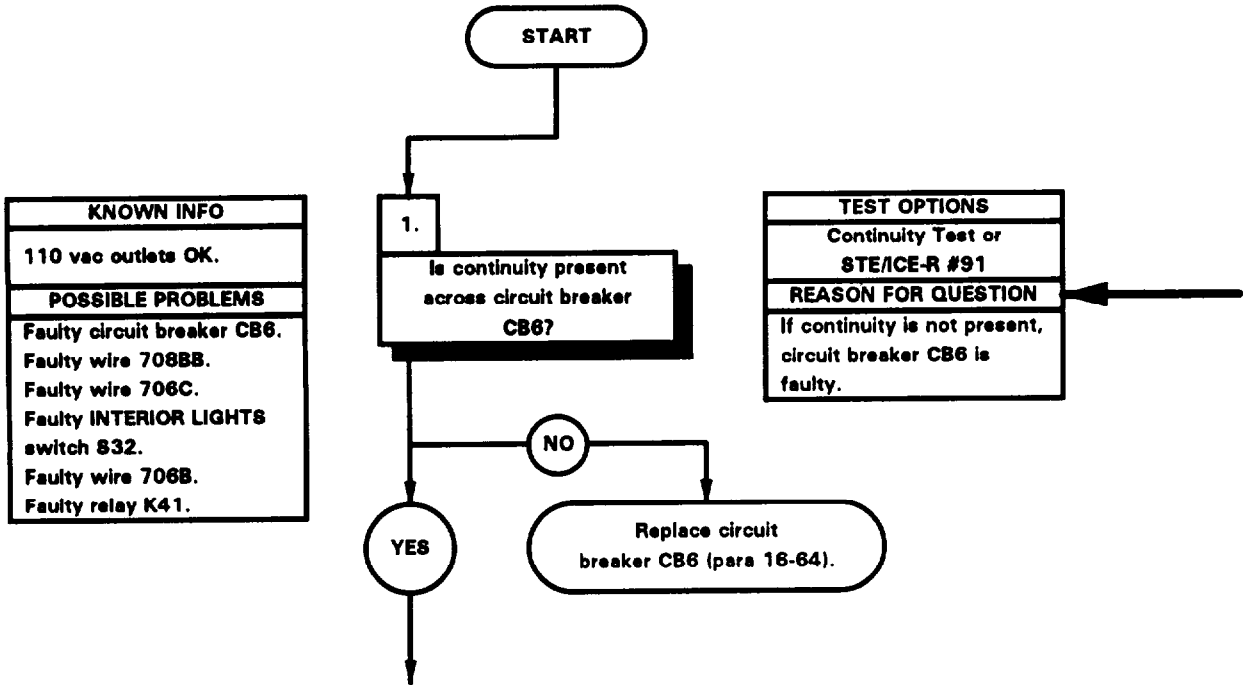
e102. ALL M1079 FLUORESCENT LIGHTS DO NOT OPERATE

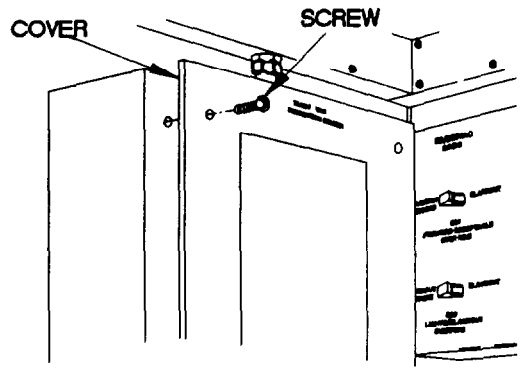
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
AC power disconnected (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

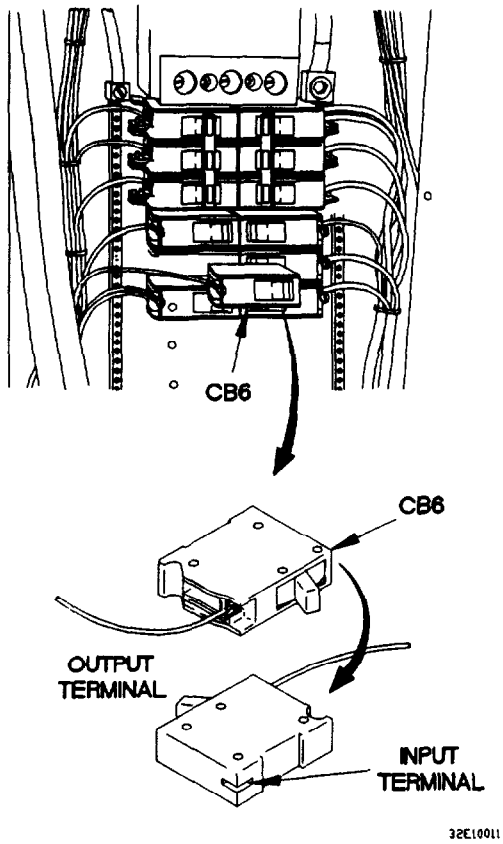
References
TM 9-4910-571-12&P



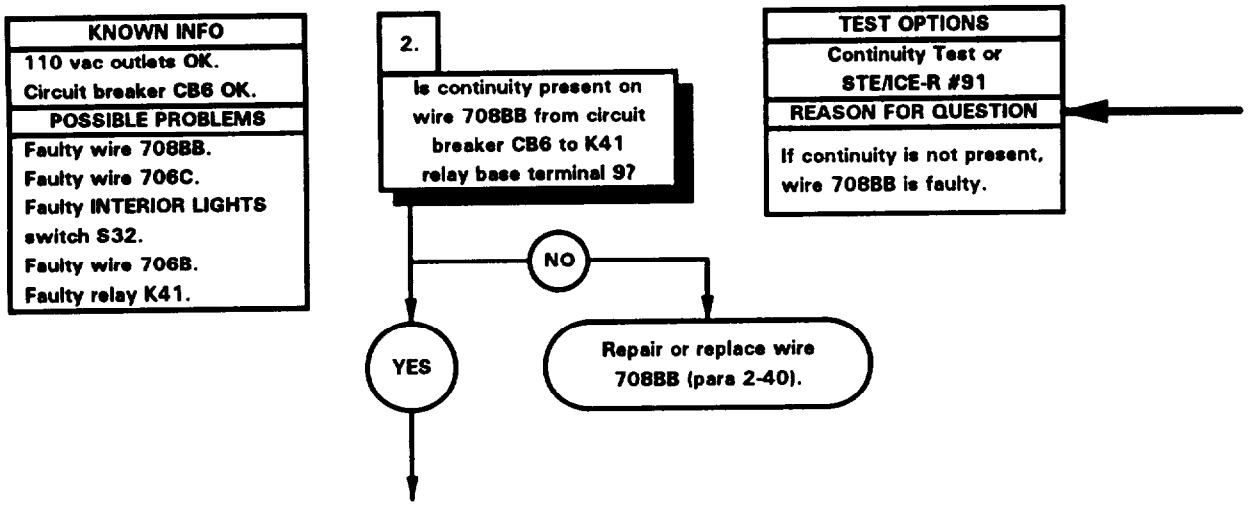


CONTINUITY TEST

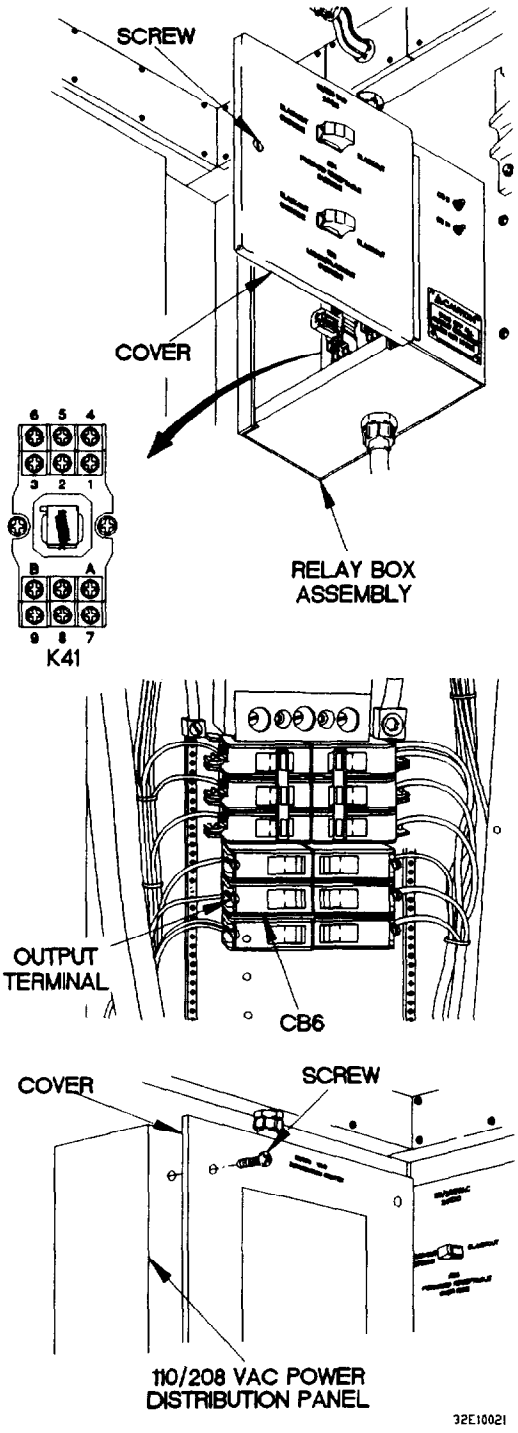
(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Remove circuit breaker CB6 from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Position circuit breaker CB6 to ON.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB6.
(6) Connect negative (-) probe of multimeter to input terminal of circuit breaker CB6 and note reading on multimeter.
(7) If continuity is not present, replace circuit breaker CB6 (para 16-64).
(8) Install circuit breaker CB6 on 110/208 VAC POWER DISTRIBUTION PANEL.



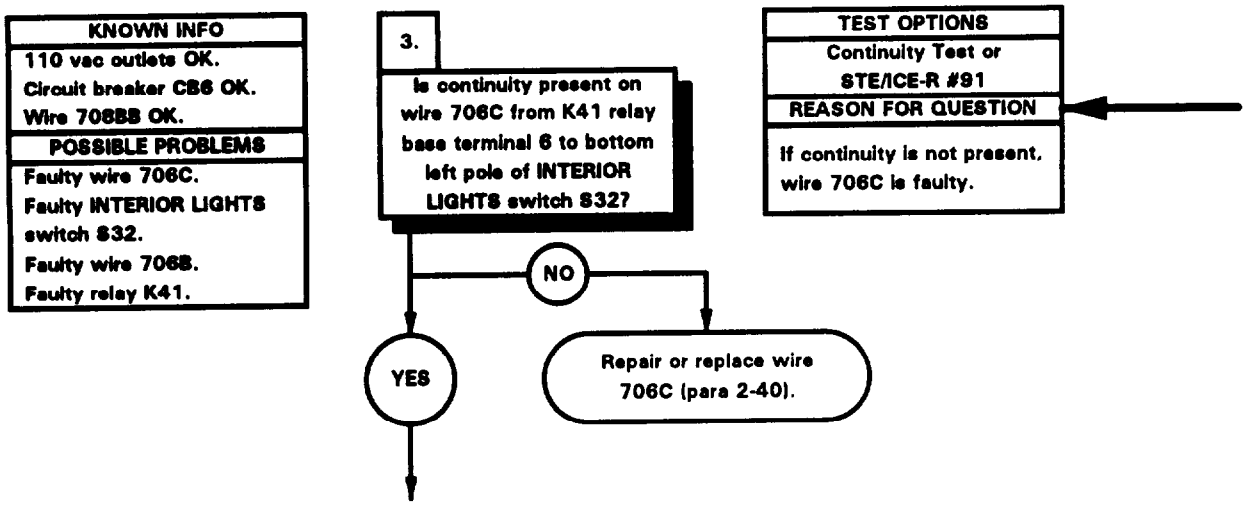
e102. ALL M1079 FLOURESCENT LIGHTS DO NOT OPERATE (CONT)



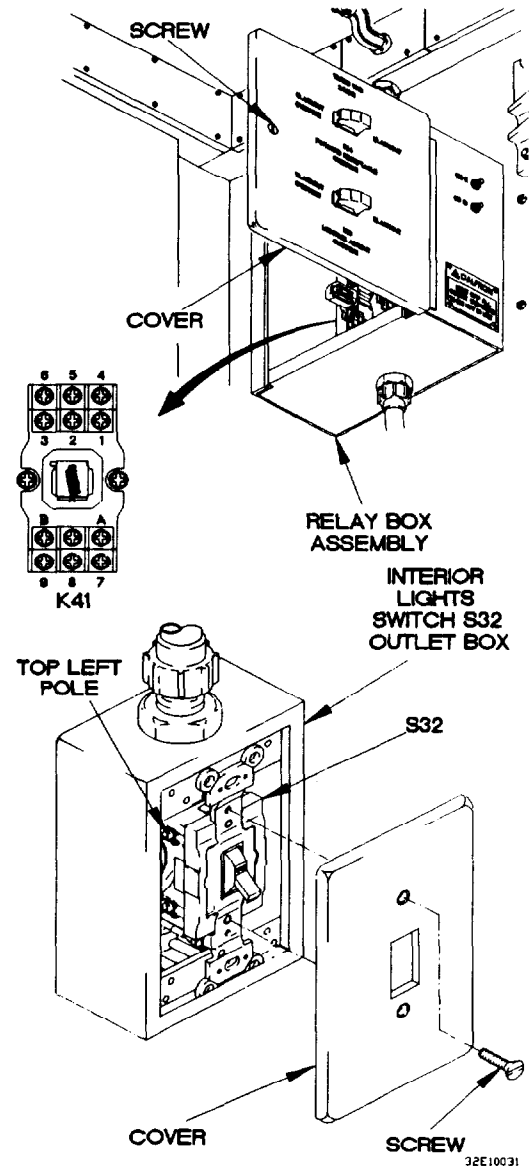
CONTINUITY TEST
(1) Loosen screw in cover.
(2) Open cover on relay box assembly.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB6.
(5) Connect negative (-) probe of multimeter to K41 relay base terminal 9 and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 7088B (para 2-40).
(7) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.



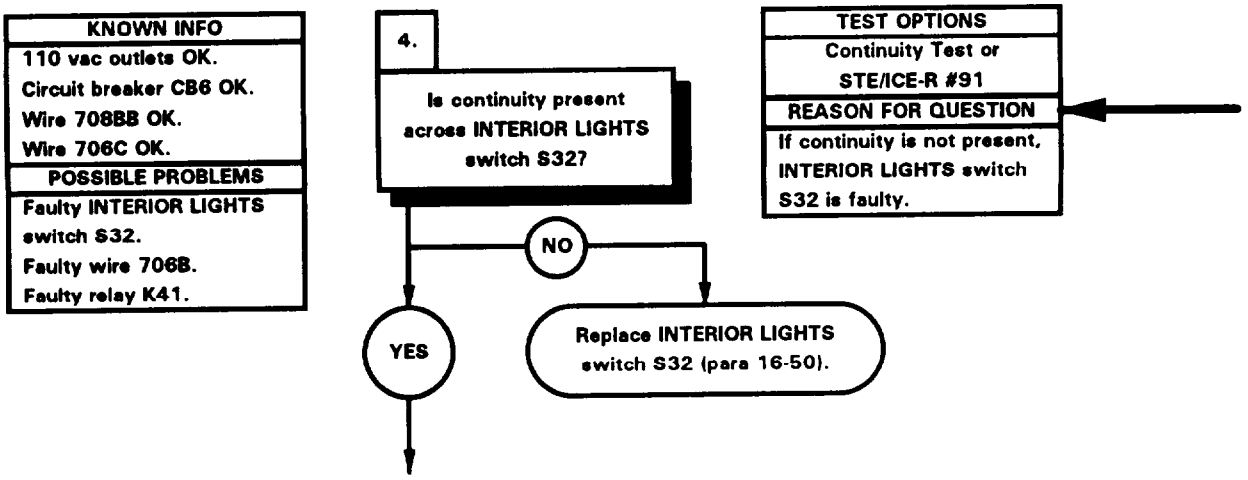
e102. ALL M1079 FLOURESCENT LIGHTS DO NOT OPERATE (CONT)



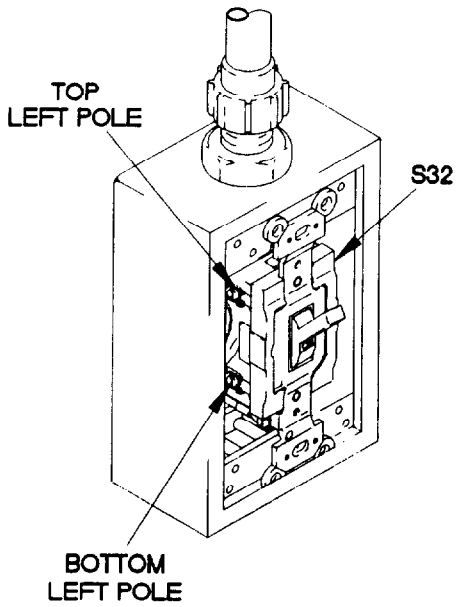
CONTINUITY TEST
(1) Remove two screws and cover from INTERIOR LIGHTS switch S32 outlet box.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to K41 relay base terminal 6.
(4) Connect negative (-) probe of multimeter to top left pole of INTERIOR LIGHTS switch S32 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 706C (para 2-40).
(6) Close cover on relay box assembly.
(7) Tighten screw in cover.



e102. ALL M1079 FLOURESCENT LIGHTS DO NOT OPERATE (CONT)

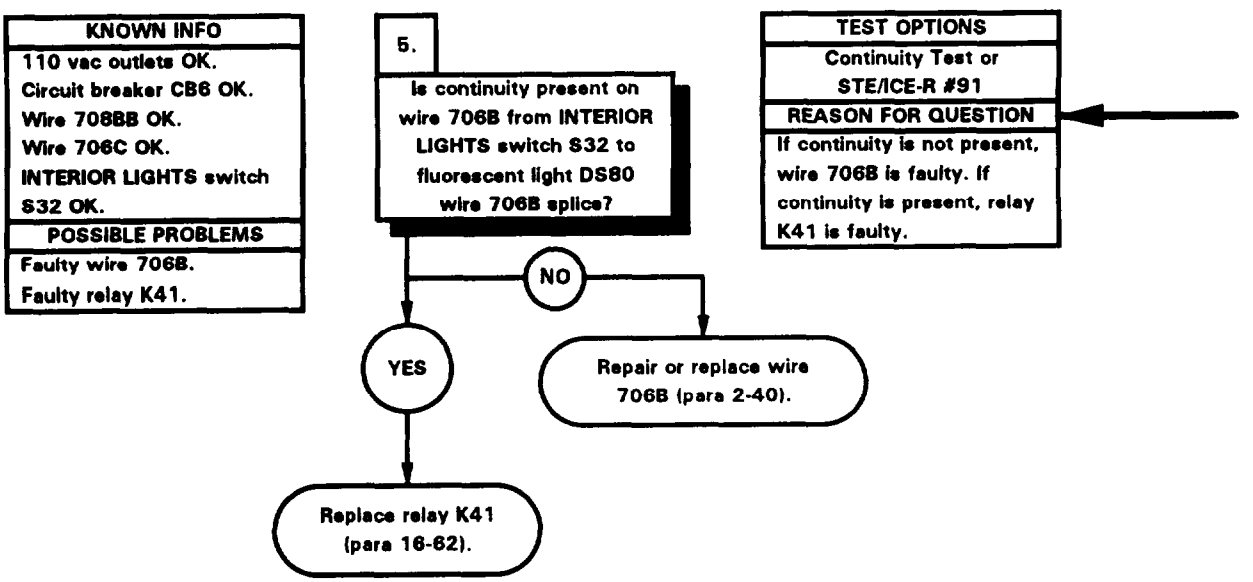


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to bottom left pole of INTERIOR LIGHTS switch S32.
(3) Connect negative (-) probe of multimeter to top left pole of INTERIOR LIGHTS switch S32.
(4) Position INTERIOR LIGHTS switch S32 to ON and note reading on multimeter.
(5) If continuity is not present, replace INTERIOR LIGHTS switch S32 (para 16-50).
(6) Position INTERIOR LIGHTS switch S32 to OFF.



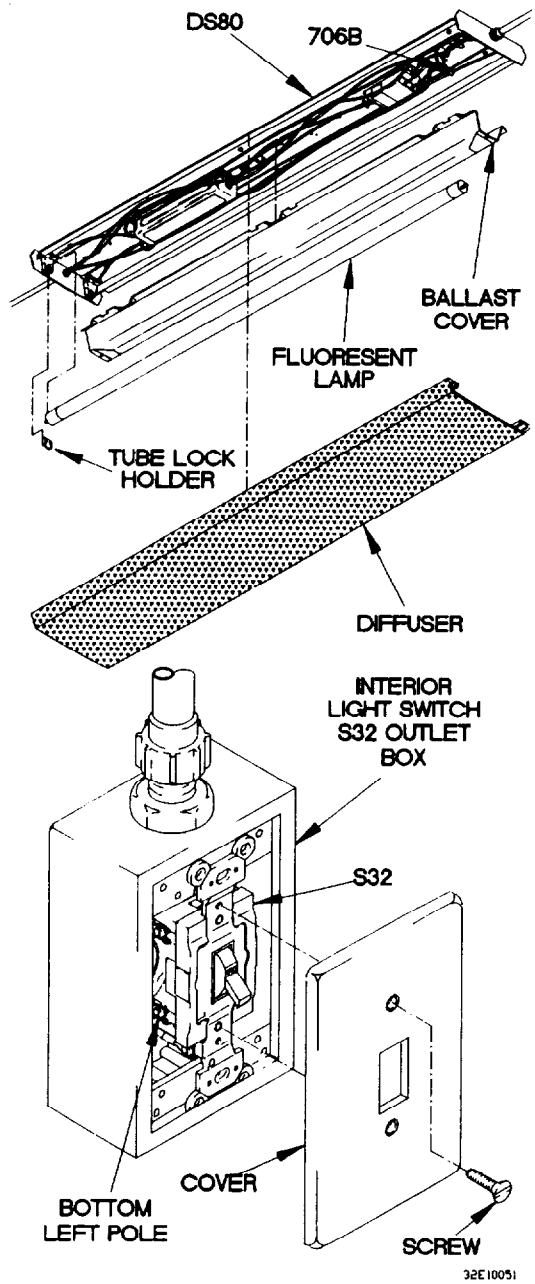
32E10041

e102. ALL M1079 FLOURESCENT LIGHTS DO NOT OPERATE (CONT)

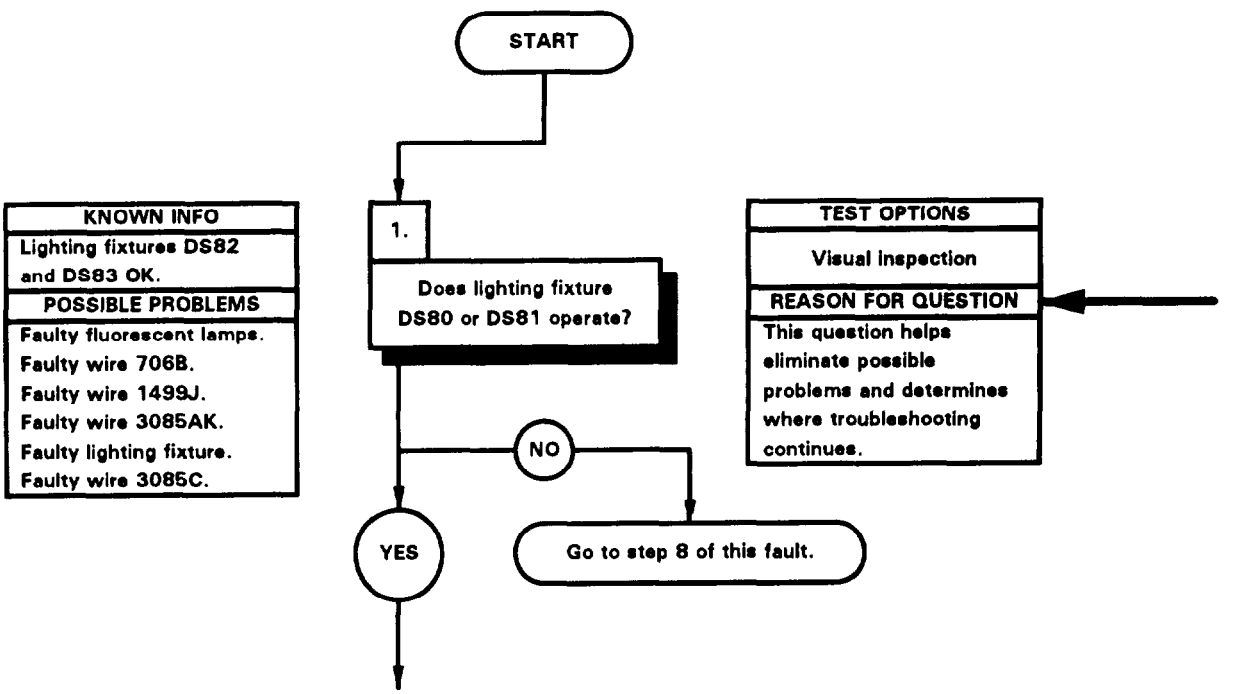


CONTINUITY TEST

(1) Remove diffuser from light fixture DS80.
(2) Remove tube lock holder from each end of two fluorescent lamps.
(3) Remove two fluorescent lamps from light fixture DS80.
(4) Remove ballast cover from light fixture DS80.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to bottom left pole of INTERIOR LIGHTS switch S32.
(7) Connect negative (-) probe of multimeter to fluorescent light DS80 wire 706B splice and note reading on multimeter.
(8) If continuity is not present, repair or replace wire 706B (para 2-40).
(9) If continuity is present, replace relay K41 (para 16-62).
(10) Install ballast cover on light fixture DS80.
(11) Install two fluorescent lights in light fixture DS80.
(12) Install tube lock holder at each end of two fluorescent lamps.
(13) Install diffuser on light fixture DS80.
(14) Install cover on INTERIOR LIGHTS switch S32 box with two screws.

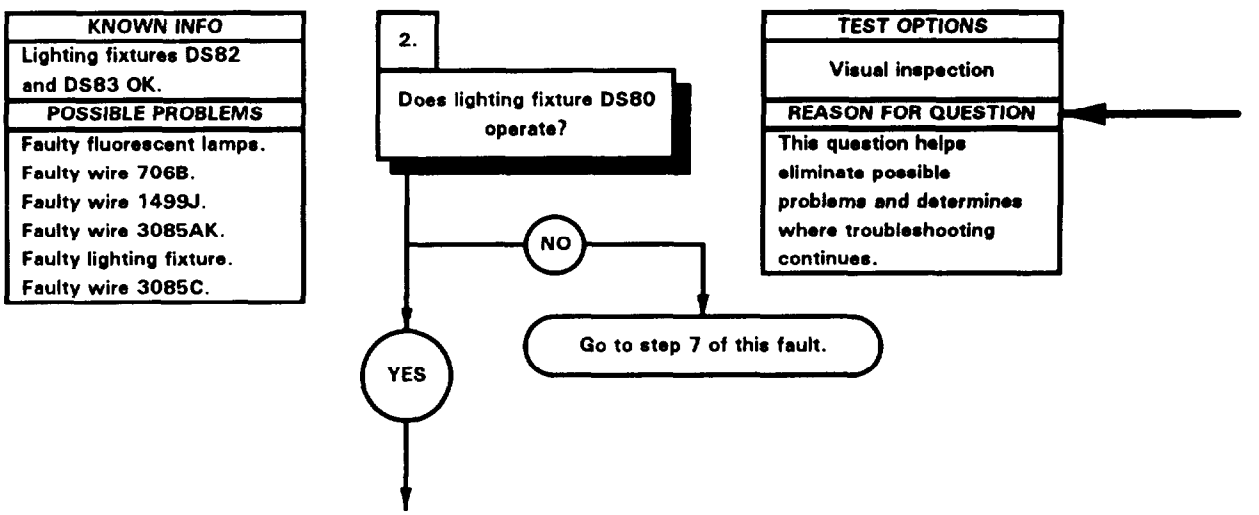


e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE	
INITIAL SETUP	
Equipment Condition Engine shut down (TM 9-2320-365-10). AC power connected (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C)
Personnel Required (2)	**References** TM 9-4910-571-12&P



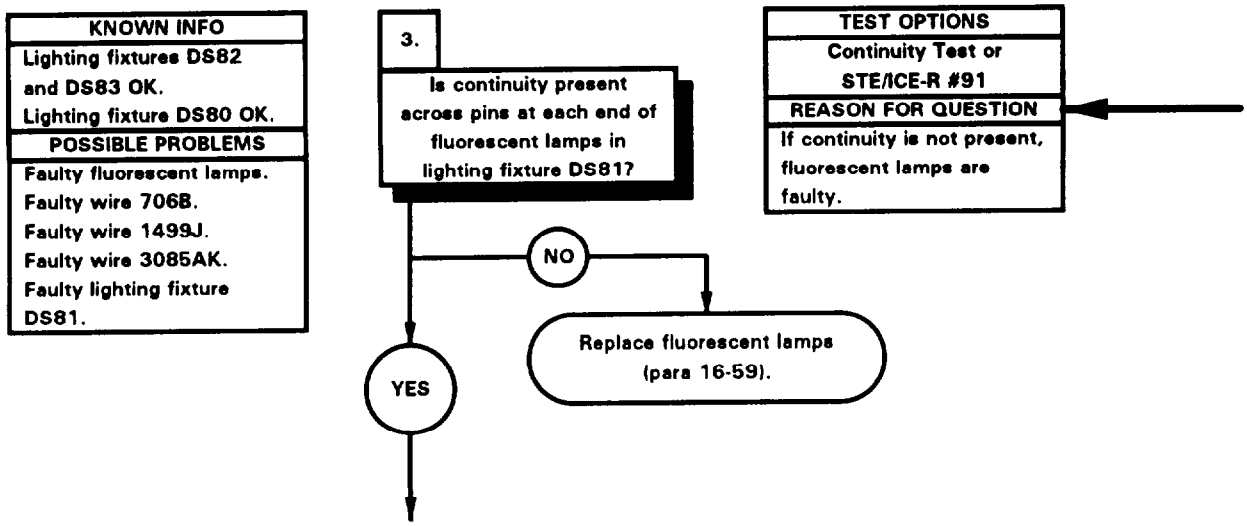
(1) Turn on interior lights (TM 9-2320-365-10).
(2) Check to see if lighting fixture DS80 or DS81 operates.
(3) If lighting fixtures DS80 and DS81 do not operate, go to step 8 of this fault.
(4) Turn off interior lights (TM 9-2320-365-10).

e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)



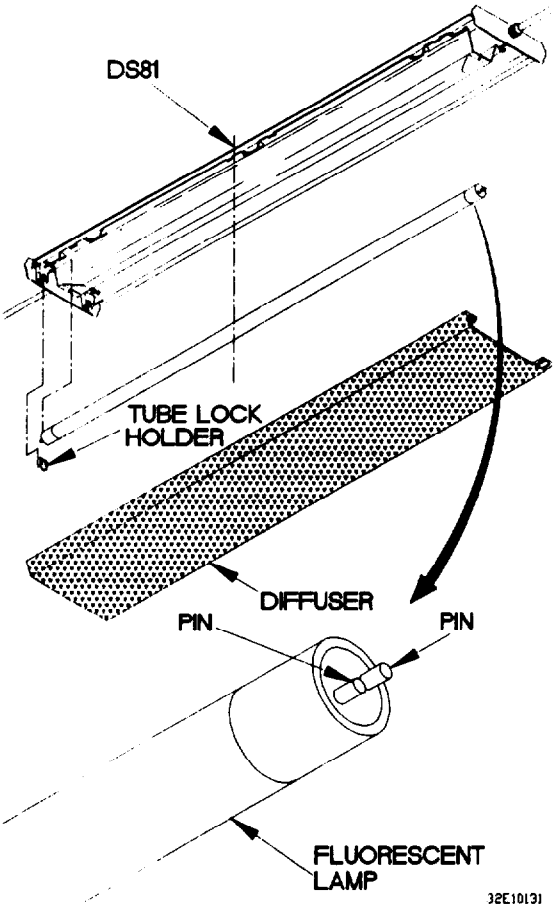
(1) Turn on interior lights (TM 9-2320-365-10).
(2) Check to see if lighting fixture DS80 operates.
(3) If lighting fixture DS80 does not operate, go to step 7 of this fault.
(4) Turn off interior lights (TM 9-2320-365-10).

e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)

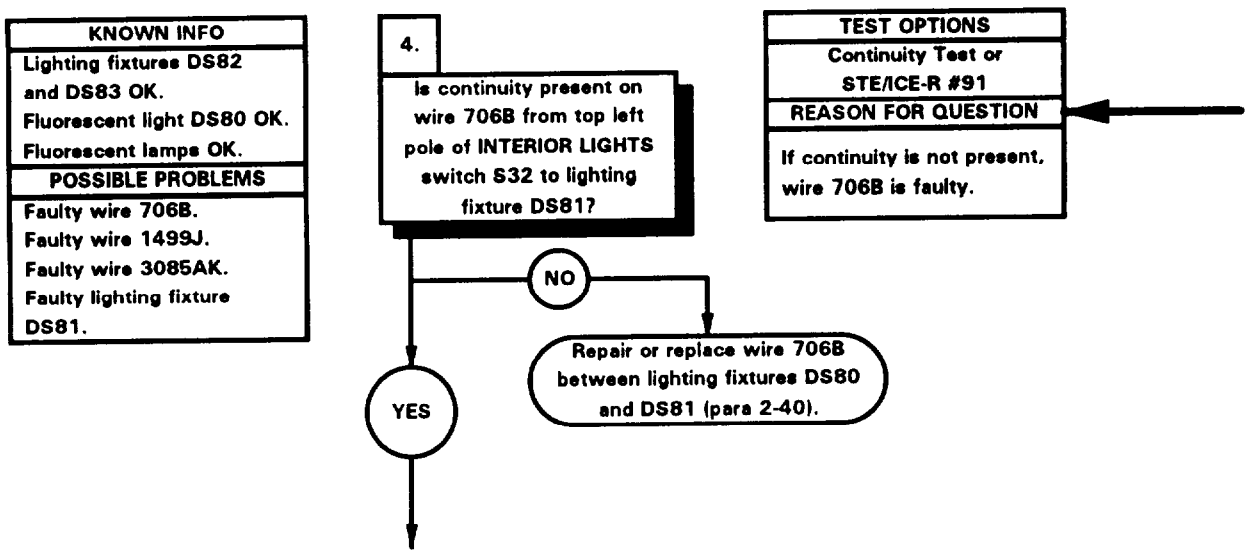


CONTINUITY TEST

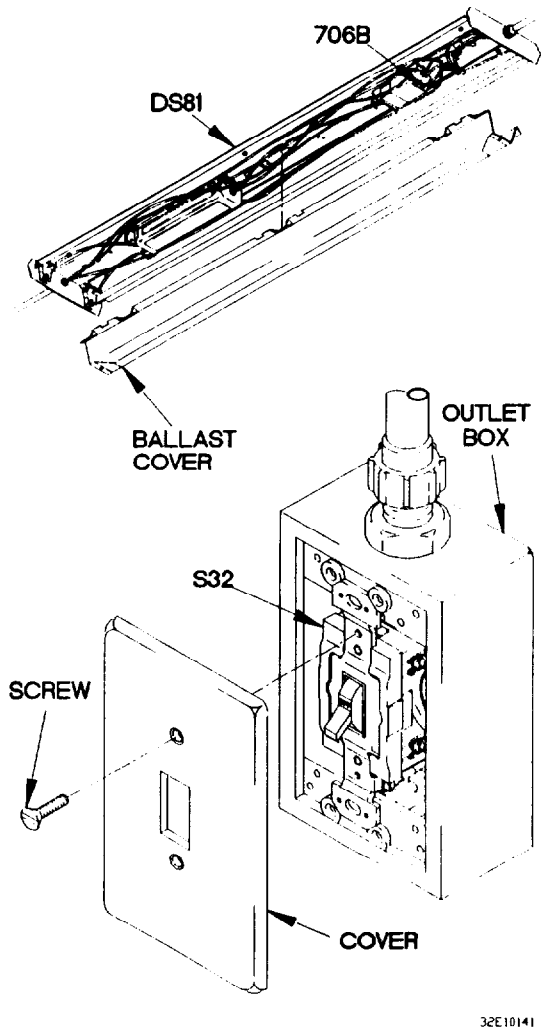
(1) Remove diffuser from lighting fixture DS81.
(2) Remove tube lock holder from each end of two fluorescent lamps.
(3) Remove two fluorescent lamps from lighting fixture DS81.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
(6) Connect negative (-) probe of multimeter to other pin on same end of fluorescent lamp and note reading on multimeter.
(7) Perform steps (5) and (6) on opposite end of fluorescent lamp.
(8) If continuity is not present at either end of fluorescent lamp, replace fluorescent lamp (para 16-59).
(9) Perform steps (5) through (8) on second fluorescent lamp.



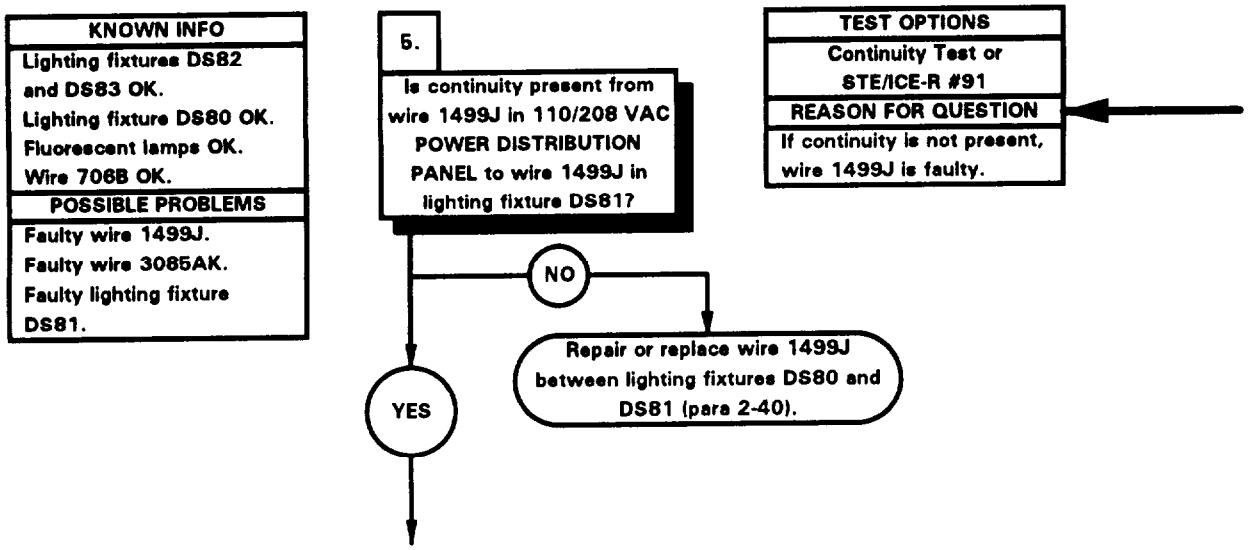
e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)

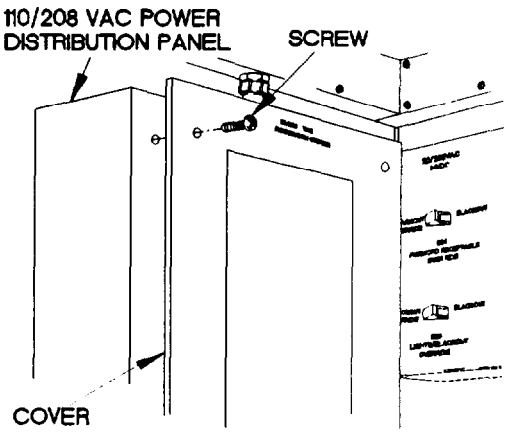


CONTINUITY TEST
(1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
(3) Remove two screws and cover from outlet box.
(4) Remove ballast cover from lighting fixture DS81.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to top left pole of INTERIOR LIGHTS switch S32.
(7) Connect negative (-) probe of multimeter to wire 706B in lighting fixture DS81 and note reading on multimeter.
(8) If continuity is not present, repair or replace wire 706B between lighting fixtures DS80 and DS81 (para 2-40).
(9) Install cover on outlet box with two screws.
(10) Close door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).

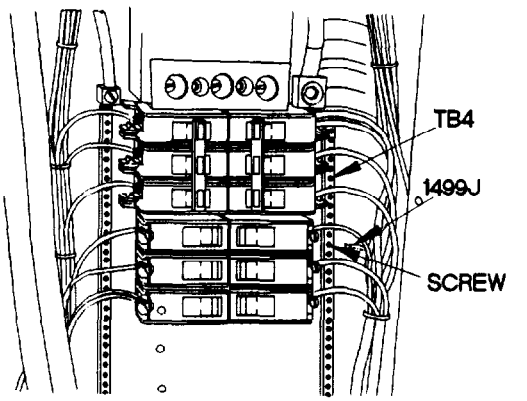


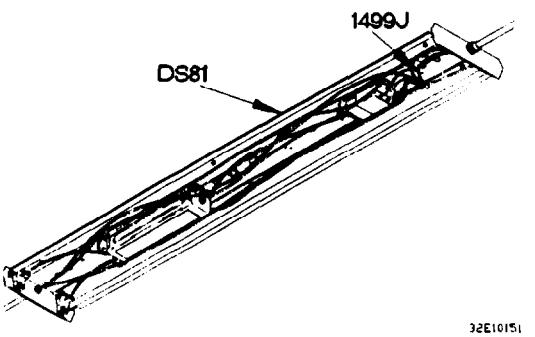
e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)





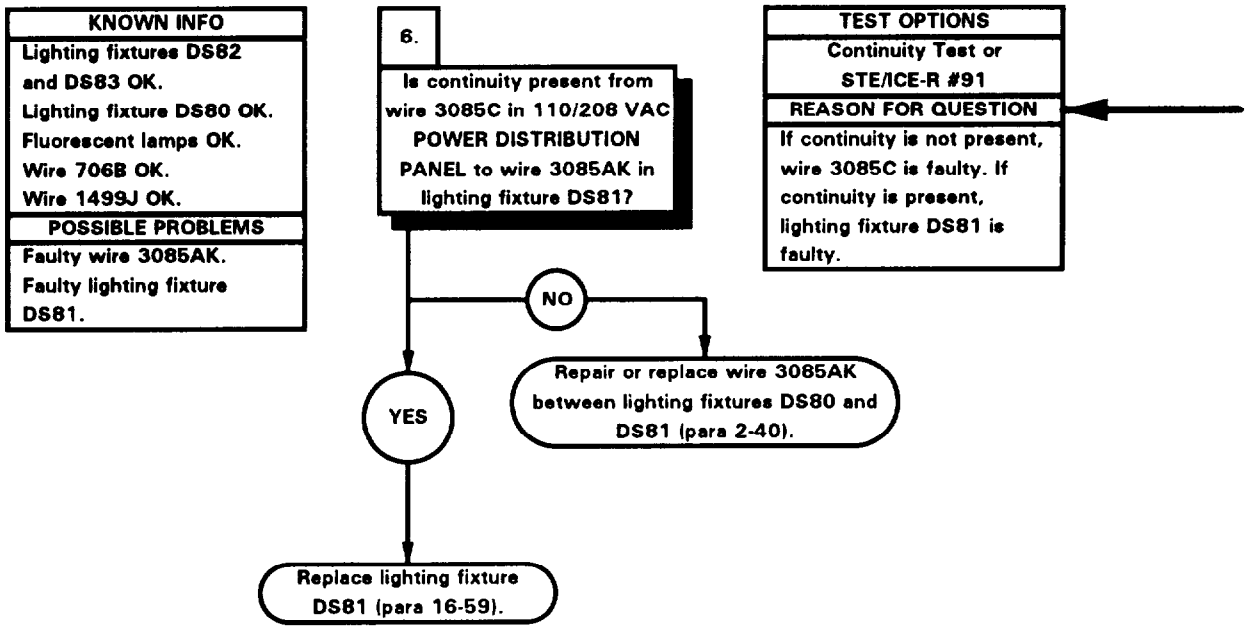
CONTINUITY TEST
(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Loosen screw in terminal board TB4.
(3) Remove wire 1499J from terminal board TB4.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to wire 1499J in 110/208 VAC POWER DISTRIBUTION PANEL.
(6) Connect negative (-) probe of multimeter to wire 1499J in lighting fixture DS81 and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 1499J between lighting fixtures DS80 and DS81 (para 2-40).
(8) Install wire 1499J on terminal board TB4.
(9) Tighten screw in terminal board TB4.



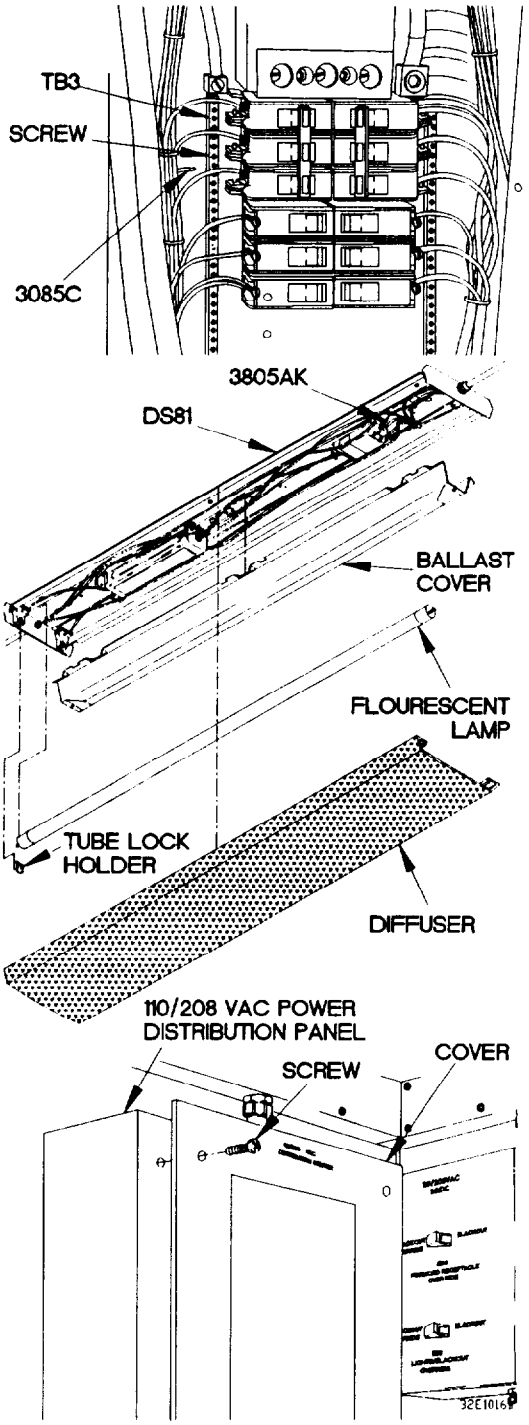


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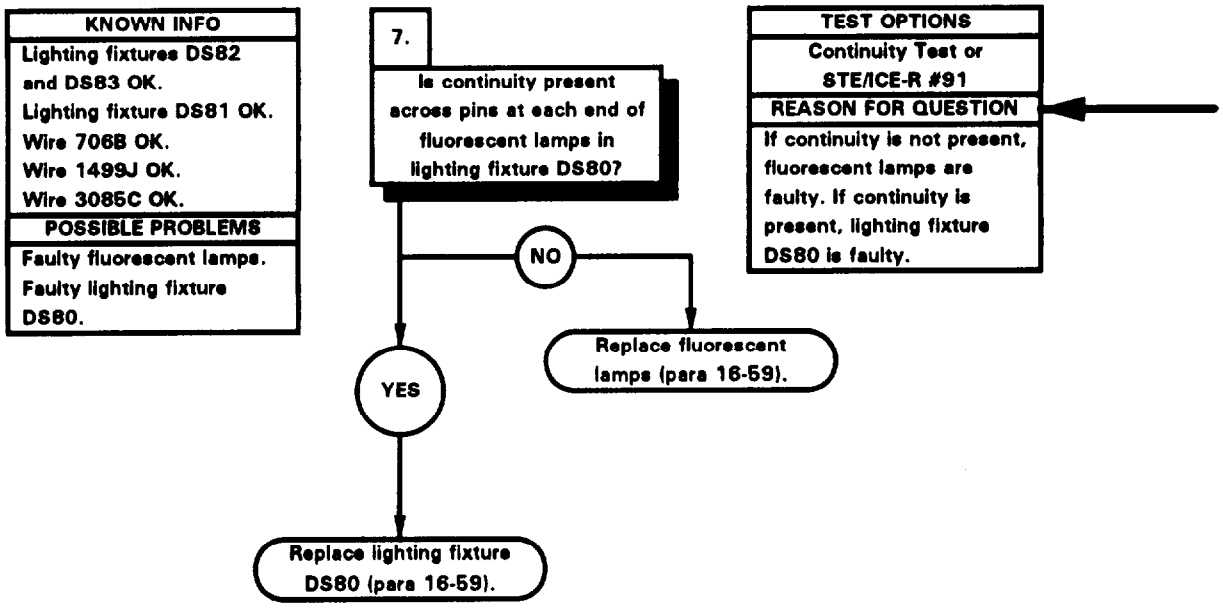
e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)



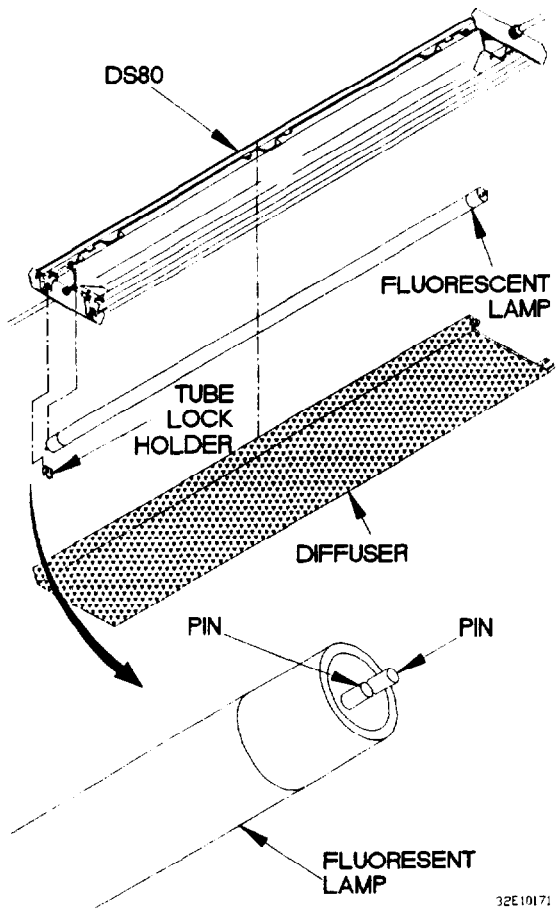
CONTINUITY TEST
(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085C from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085C.
(5) Connect negative (-) probe of multimeter to wire 3085AK and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 3085AK between lighting fixtures DS80 and DS81 (para 2-40).
(7) If continuity is present, replace lighting fixture DS81 (para 16-59).
(8) Install ballast cover on lighting fixture DS81.
(9) Install two fluorescent lamps in lighting fixture DS81.
(10) Install tube lock holder at each end of two fluorescent lamps.
(11) Install diffuser on lighting fixture DS81.
(12) Install wire 3085C on terminal board TB3.
(13) Tighten screw in terminal board TB3.
(14) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.



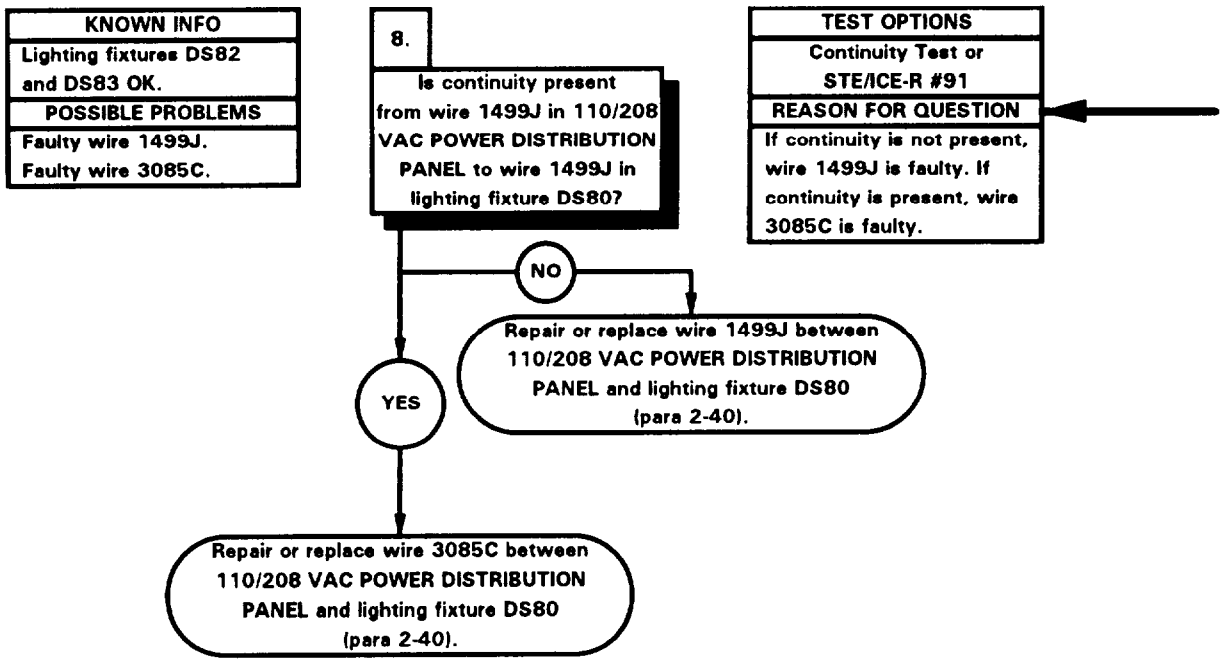
e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)



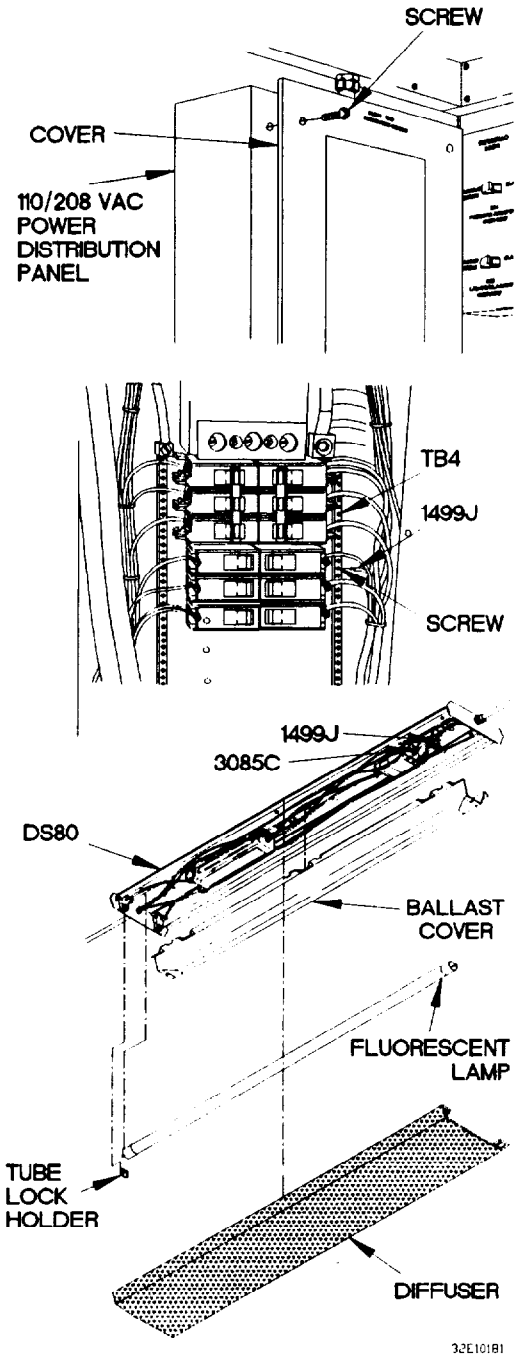
CONTINUITY TEST
(1) Remove diffuser from lighting fixture DS80.
(2) Remove tube lock holder from each end of two fluorescent lamps.
(3) Remove two fluorescent lamps from lighting fixture DS80.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
(6) Connect negative (-) probe of multimeter to other pin on same end of fluorescent lamp and note reading on multimeter.
(7) Perform steps (5) and (6) on opposite end of fluorescent lamp.
(8) If continuity is not present at either end of fluorescent lamp, replace fluorescent lamp (para 16-59).
(9) Perform steps (5) through (8) on second fluorescent lamp.
(10) If continuity is present at both ends of two fluorescent lamps, replace lighting fixture DS80 (para 16-59).
(11) Install two fluorescent lamps in lighting fixture DS80.
(12) Install tube lock holder at each end of two fluorescent lamps.
(13) Install diffuser on lighting fixture DS80.



e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)



CONTINUITY TEST
(1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
(3) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(4) Loosen screw in terminal board TB4.
(5) Remove wire 1499J from terminal board TB4.
(6) Remove diffuser from lighting fixture DS80.
(7) Remove tube lock holder from each end of two fluorescent lamps.
(8) Remove two fluorescent lamps from lighting fixture DS80.
(9) Remove ballast cover from lighting fixture DS80.
(10) Set multimeter to ohms.
(11) Connect positive (+) probe of multimeter to wire 1499J in 110/208 VAC POWER DISTRIBUTION PANEL.
(12) Connect negative (-) probe of multimeter to wire 1499J in lighting fixture DS80 and note reading on multimeter.
(13) If continuity is not present, repair or replace wire 1499J (para 2-40).
(14) If continuity is present, repair or replace wire 3085C (para 2-40).
(15) Install ballast cover on lighting fixture DS80.
(16) Install two fluorescent lamps in lighting fixture DS80.
(17) Install tube lock holder at each end of two fluorescent lamps.
(18) Install diffuser on lighting fixture DS80.
(19) Install wire 1499J on terminal board TB4.
(20) Tighten screw in terminal board TB4.
(21) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(22) Close door on 110/208 VAC POWER DISTRIBUTION PANEL.



e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE

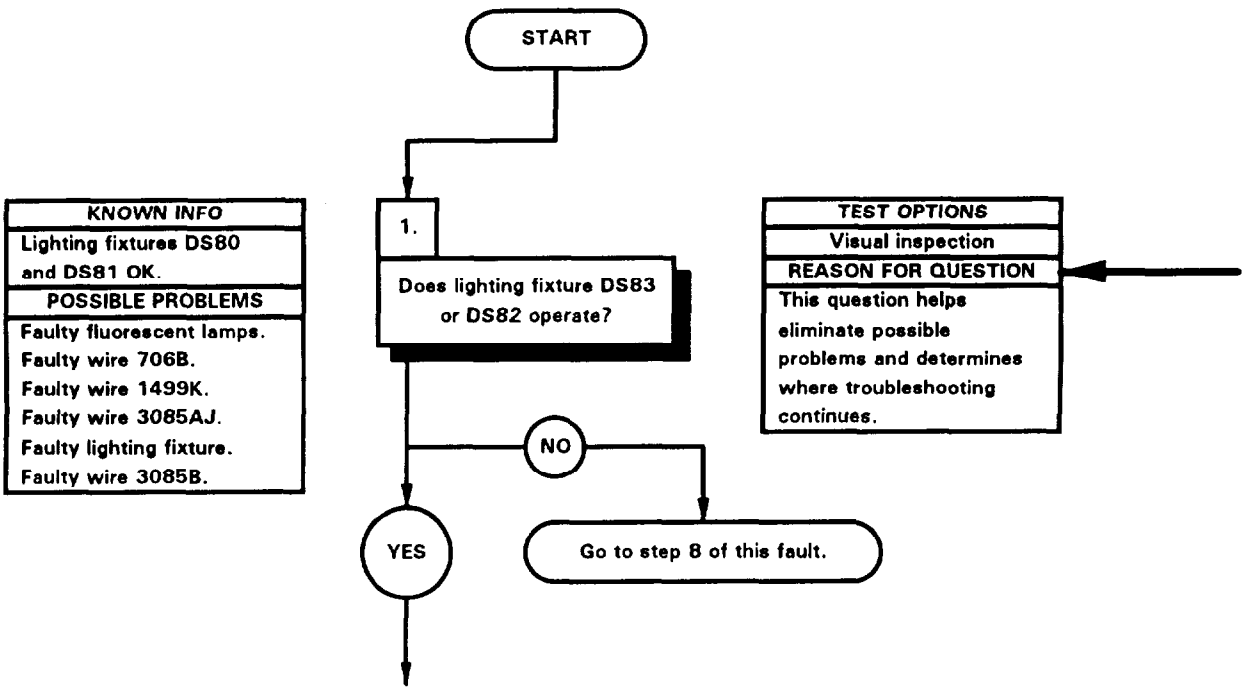
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
AC power connected (TM 9-2320-365-10).

Personnel Required
(2)

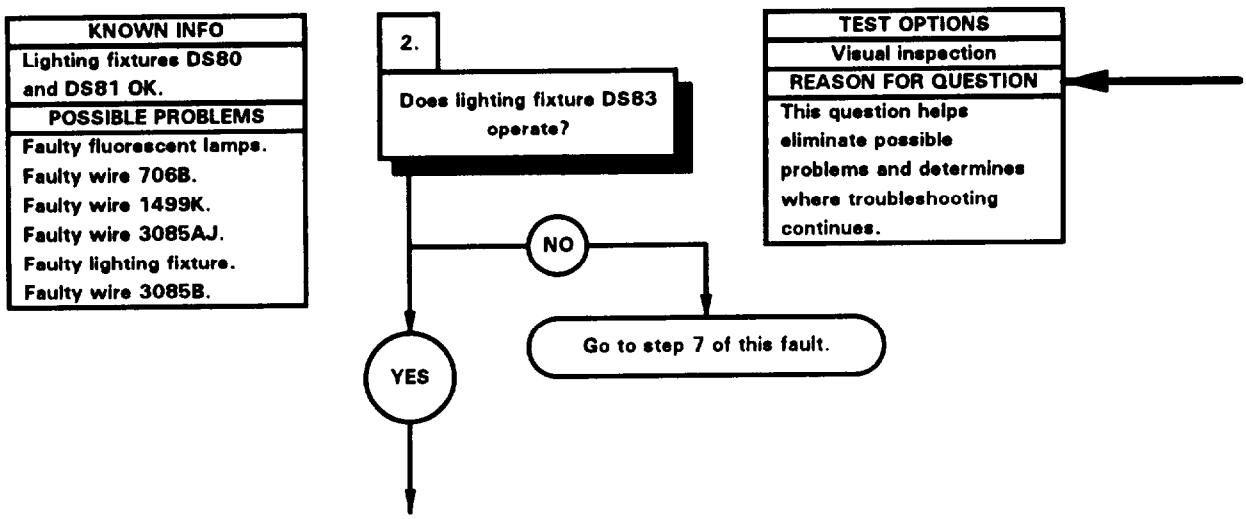
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



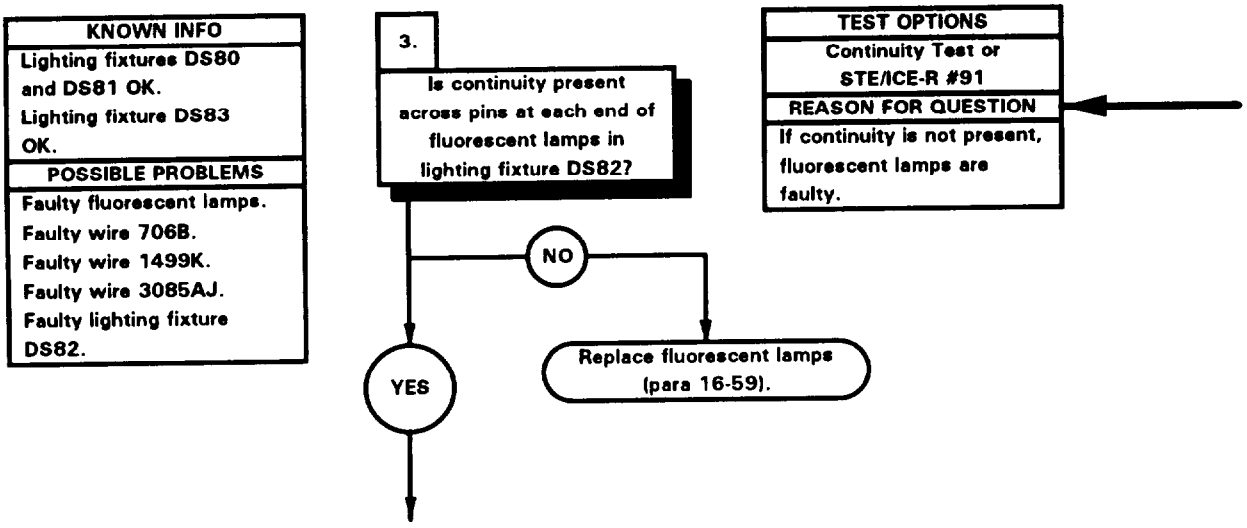
(1) Turn on interior lights (TM 9-2320-365-10).
(2) Check to see if lighting fixture DS82 or DS83 operates.
(3) If lighting fixtures DS82 and DS83 do not operate, go to step 8 of this fault.
(4) Turn off interior lights (TM 9-2320-365-10).

e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)

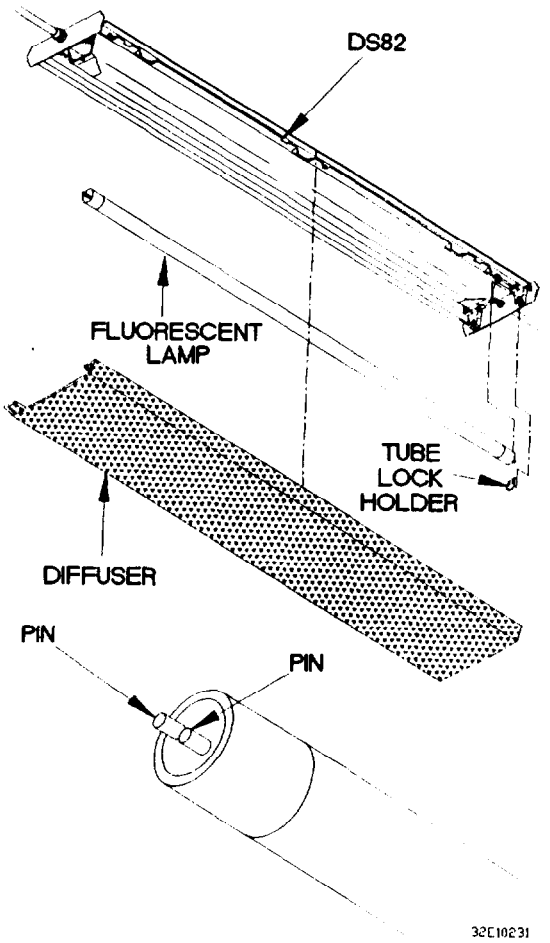


(1) Turn on interior lights (TM 9-2320-365-10).
(2) Check to see if lighting fixture DS83 operates.
(3) If lighting fixture DS83 does not operate, go to step 7 of this fault.
(4) Turn off interior lights (TM 9-2320-365-10).

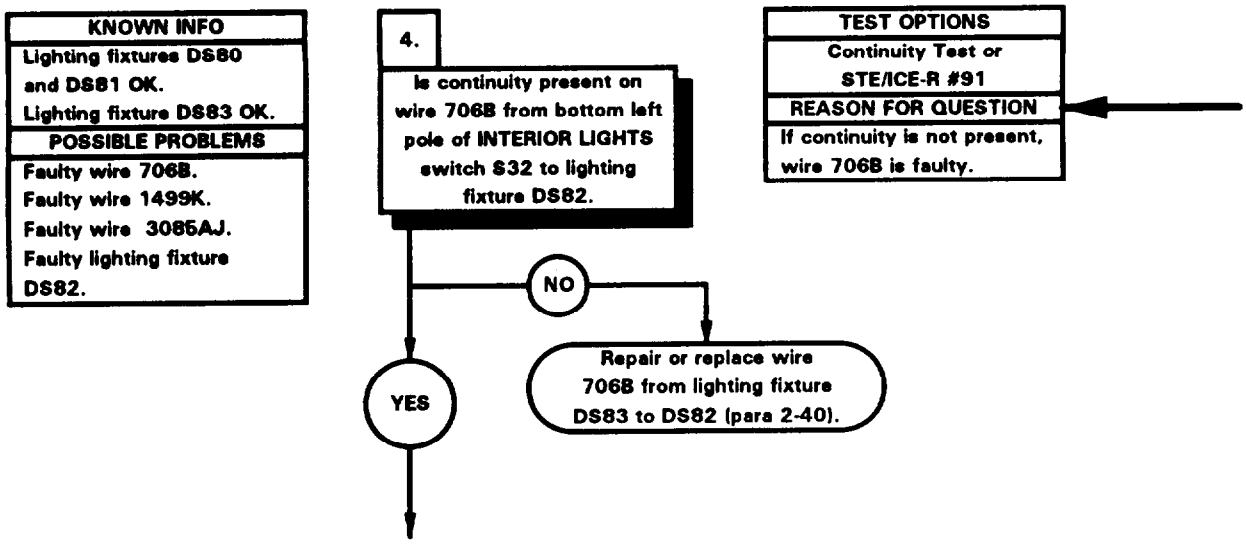
e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)



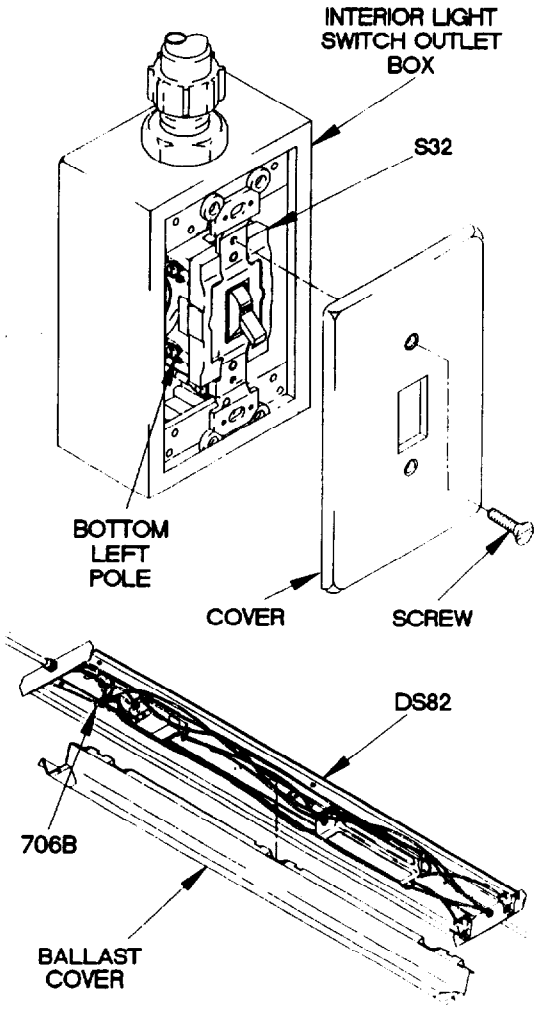
CONTINUITY TEST
(1) Remove diffuser from lighting fixture DS82.
(2) Remove tube lock holder from each end of two fluorescent lamps.
(3) Remove two fluorescent lamps from lighting fixture DS82.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
(6) Connect negative (-) probe of multimeter to other pin on same end of fluorescent lamp and note reading on multimeter.
(7) Perform steps (5) and (6) on opposite end of fluorescent lamp.
(8) If continuity is not present at either end of fluorescent lamp, replace fluorescent lamp (para 16-59).
(9) Perform steps (5) through (8) on second fluorescent lamp.



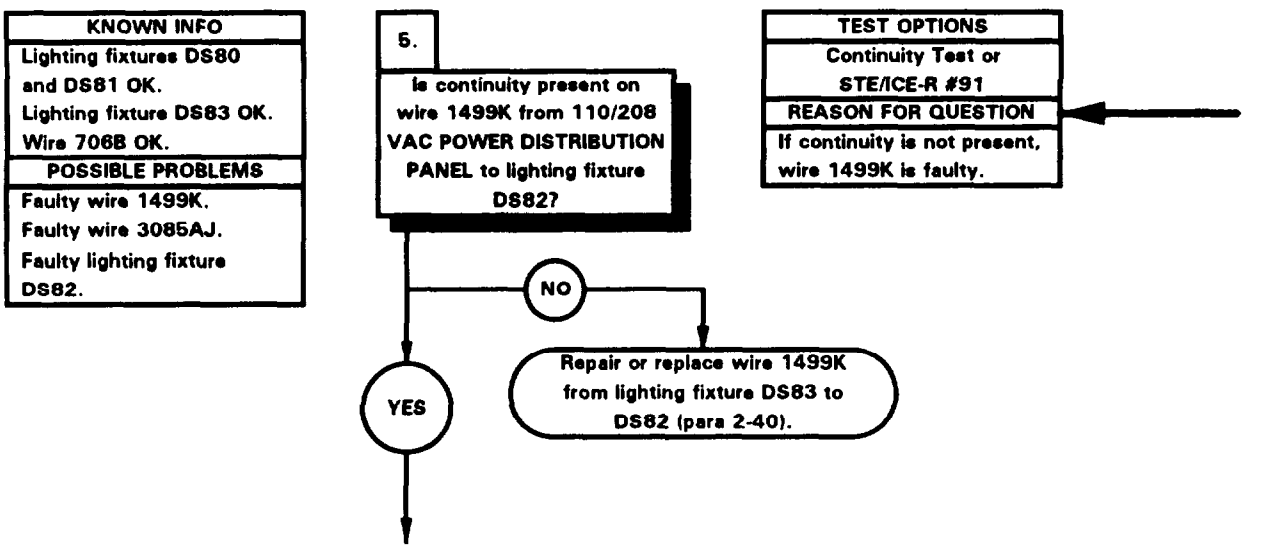
e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)



CONTINUITY TEST
(1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
(3) Remove two screws and cover from INTERIOR LIGHTS switch outlet box.
(4) Remove ballast cover from lighting fixture DS82.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to bottom left pole of switch S32.
(7) Connect negative (-) probe of multimeter to wire 706B in lighting fixture DS82 and note reading on multimeter.
(8) If continuity is not present, repair or replace wire 706B from lighting fixture DS83 to DS82 (para 2-40).
(9) Install cover on INTERIOR LIGHTS switch outlet box with two screws.
(10) Close door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).

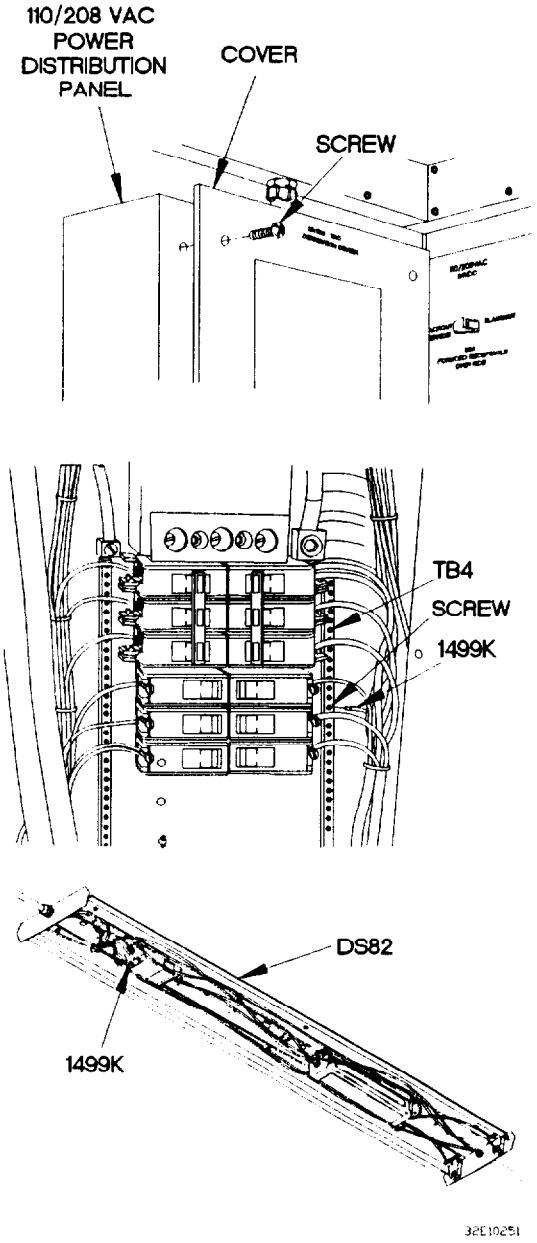


e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)

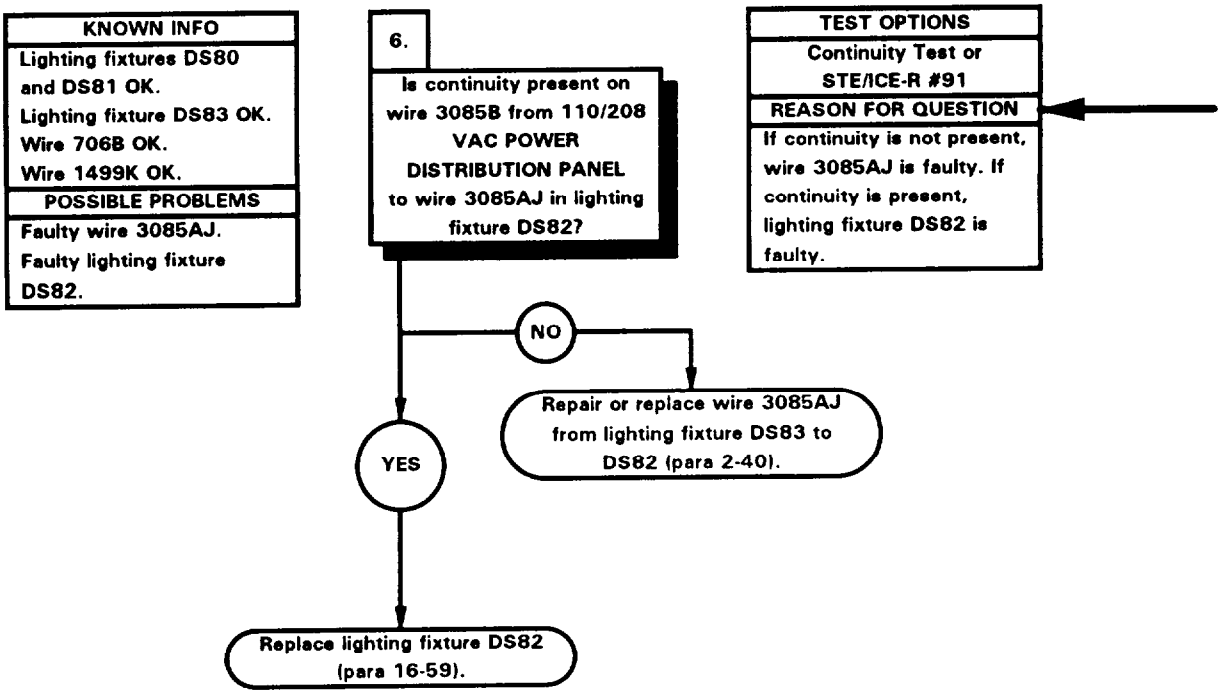


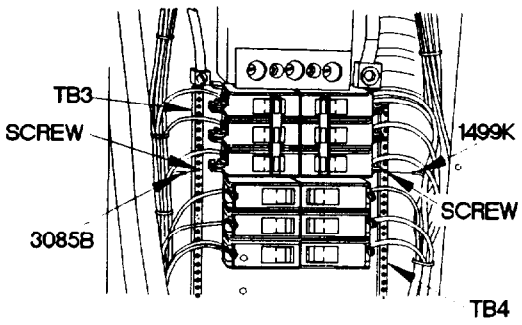
CONTINUITY TEST

(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Loosen screw in terminal board TB4.
(4) Remove wire 1499K from terminal board TB4.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to wire 1499K in 110/208 VAC POWER DISTRIBUTION PANEL.
(7) Connect negative (-) probe of multimeter to wire 1499K in lighting fixture DS82 and note reading on multimeter.
(8) If continuity is not present, repair or replace wire 1499K from lighting fixture DS83 to DS82 (para 2-40).



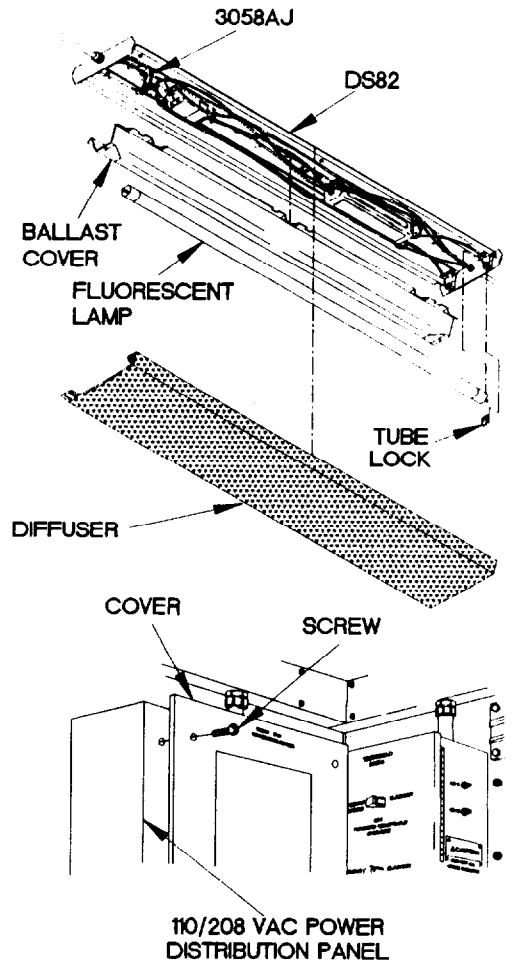
e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)





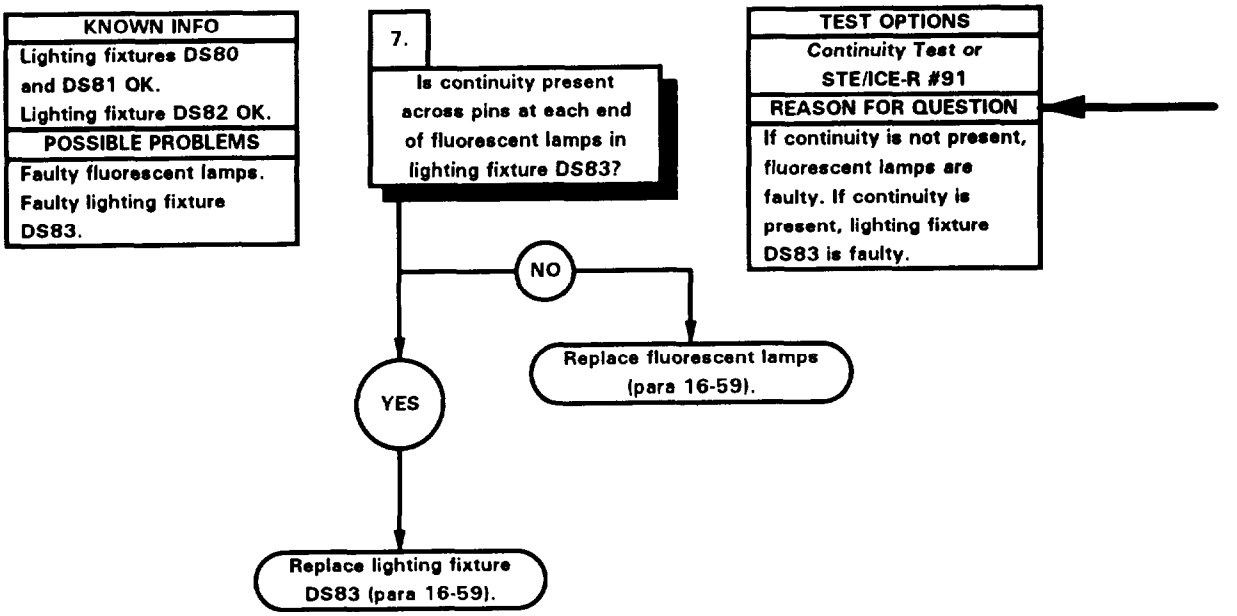
CONTINUITY TEST

(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085B from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085B.
(5) Connect negative (-) probe of multimeter to wire 3085AJ and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 3085AJ from lighting fixture DS83 to DS82 (para 2-40).
(7) If continuity is present, replace lighting fixture DS82 (para 16-59).
(8) Install ballast cover on lighting fixture DS82.
(9) Install two fluorescent lamps in lighting fixture DS82.
(10) Install tube lock holder at each end of two fluorescent lamps.
(11) Install diffuser on lighting fixture DS82.
(12) Install wire 3085B on terminal board TB3.
(13) Tighten screw in terminal board TB3.
(14) Install wire 1499K on terminal board TB4.
(15) Tighten screw in terminal board TB4.
(16) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(17) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(18) Position circuit breaker CB1 to ON (TM 9-2320-365-10).
(19) Close door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).



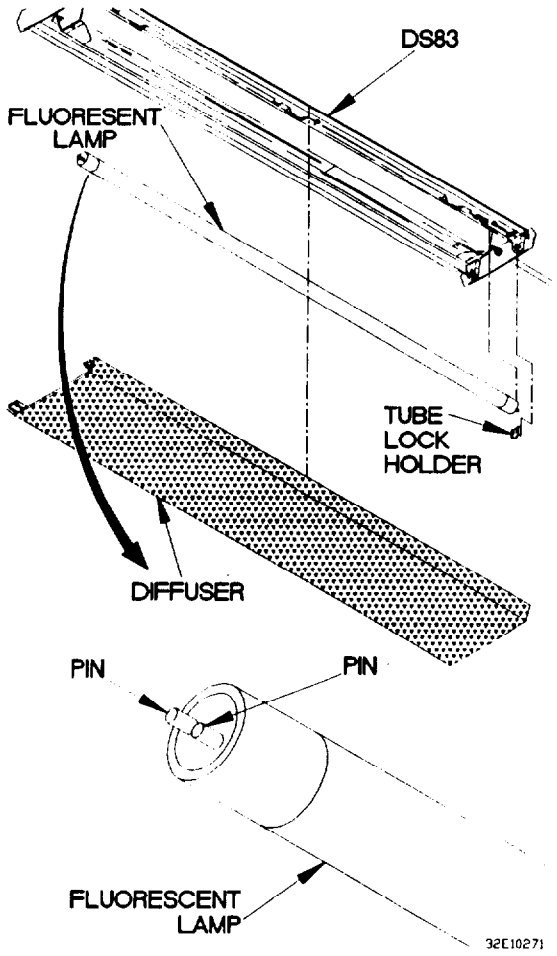
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e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)

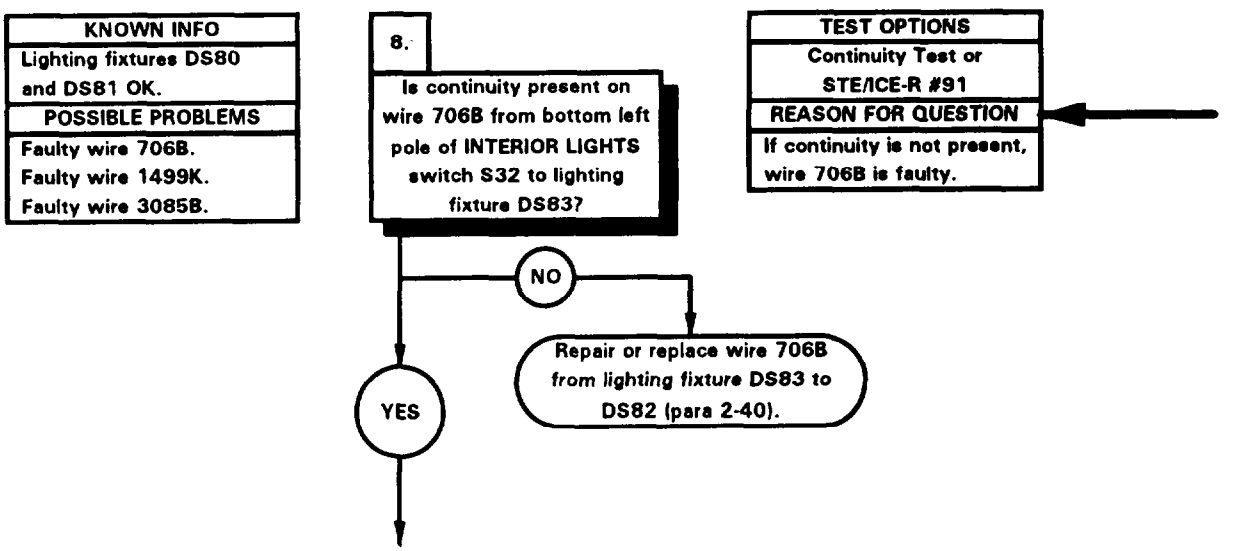


CONTINUITY TEST

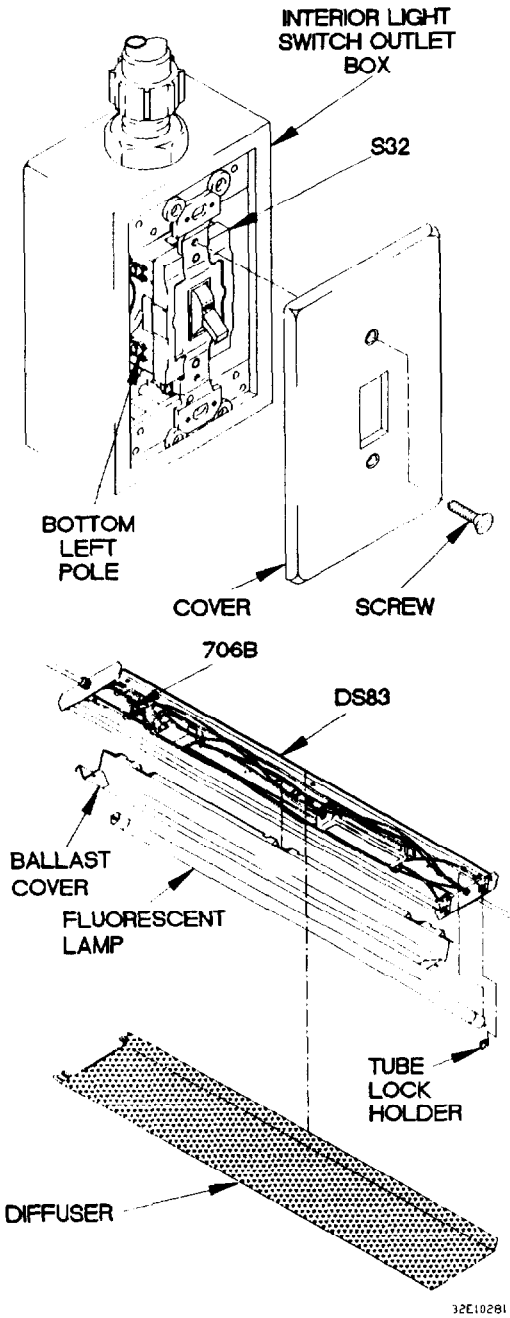
(1) Remove diffuser from lighting fixture DS83.
(2) Remove tube lock holder from each end of two fluorescent lamps.
(3) Remove two fluorescent lamps from lighting fixture DS83.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
(6) Connect negative (-) probe of multimeter to other pin on same end of fluorescent lamp and note reading on multimeter.
(7) Perform steps (5) and (6) on opposite end of fluorescent lamp.
(8) If continuity is not present at either end of fluorescent lamp, replace fluorescent lamp (para 16-59).
(9) Perform steps (5) through (8) on second fluorescent lamp.
(10) If continuity is present at both ends of two fluorescent lamps, replace lighting fixture DS83 (para 16-59).
(11) Install two fluorescent lamps in lighting fixture DS83.
(12) Install tube lock holder at each end of two fluorescent lamps.
(13) Install diffuser on lighting fixture DS83.



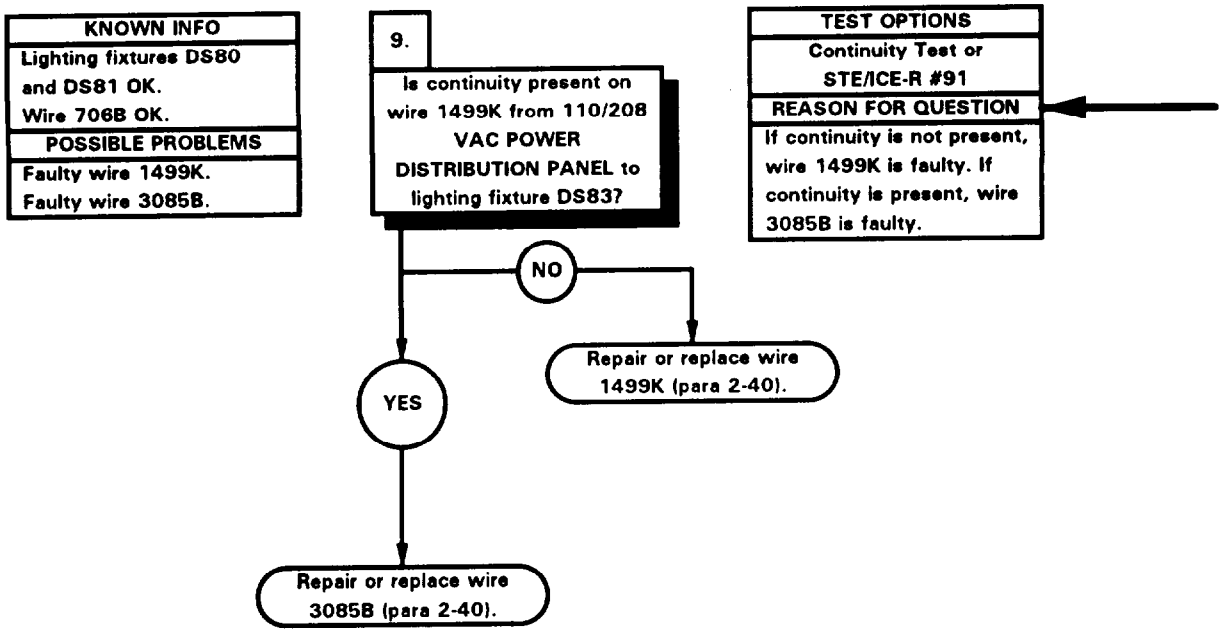
e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)



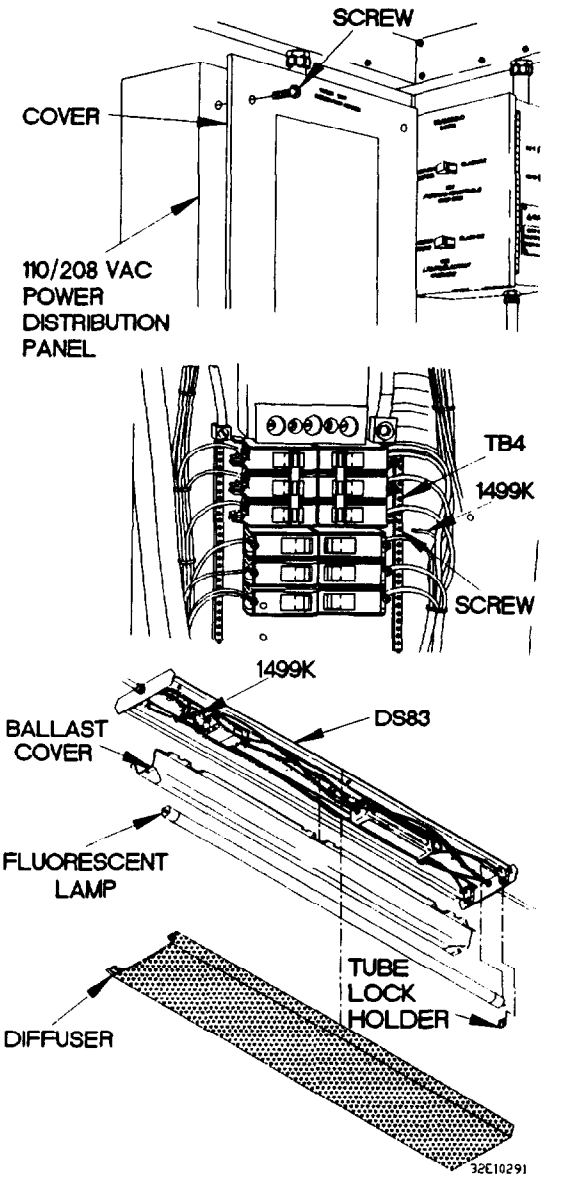
CONTINUITY TEST
(1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
(3) Remove two screws and cover from INTERIOR LIGHTS switch outlet box.
(4) Remove diffuser from lighting fixture DS83.
(5) Remove tube lock holder from each end of two fluorescent lamps.
(6) Remove two fluorescent lamps from lighting fixture DS83.
(7) Remove ballast cover from lighting fixture DS83.
(8) Set multimeter to ohms.
(9) Connect positive (+) probe of multimeter to bottom left pole of INTERIOR LIGHTS switch S32.
(10) Connect negative (-) probe of multimeter to wire 706B in lighting fixture DS83 and note reading on multimeter.
(11) If continuity is not present, repair or replace wire 706B from lighting fixture DS83 to DS82 (para 2-40).
(12) Install cover on INTERIOR LIGHTS switch outlet box S32 with two screws.



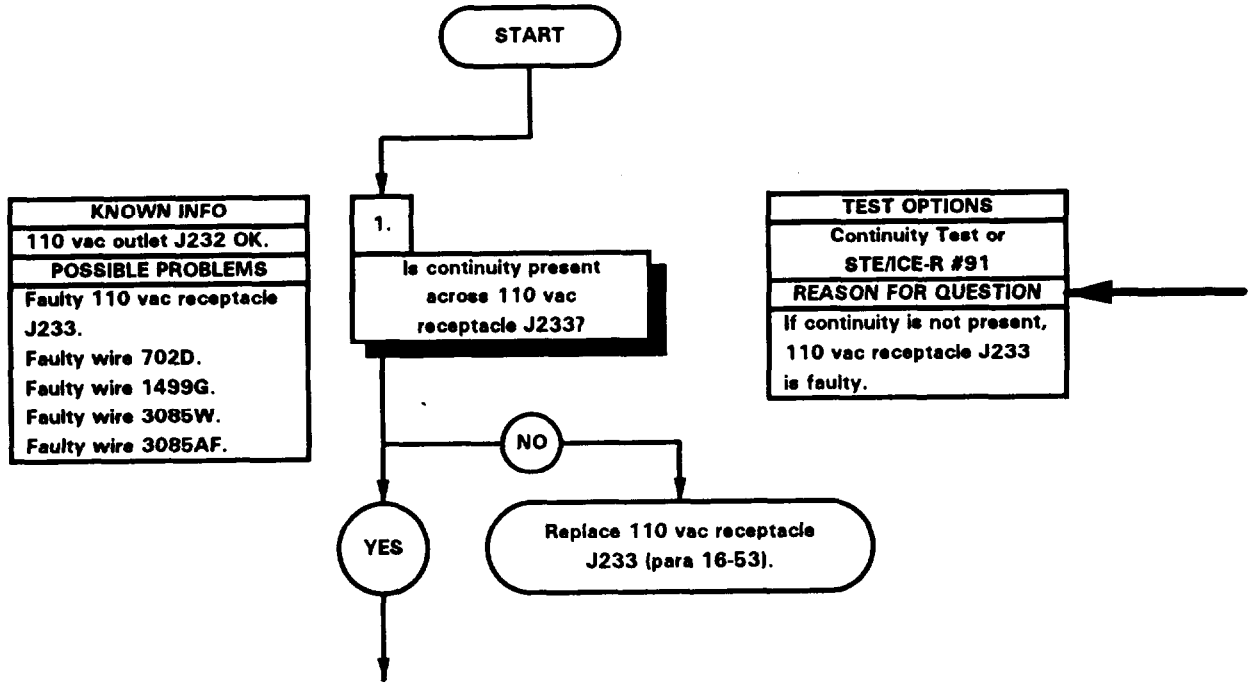
e104. M1079 LIGHTING FIXTURE(S) DS82 AND/OR DS83 DO NOT OPERATE (CONT)



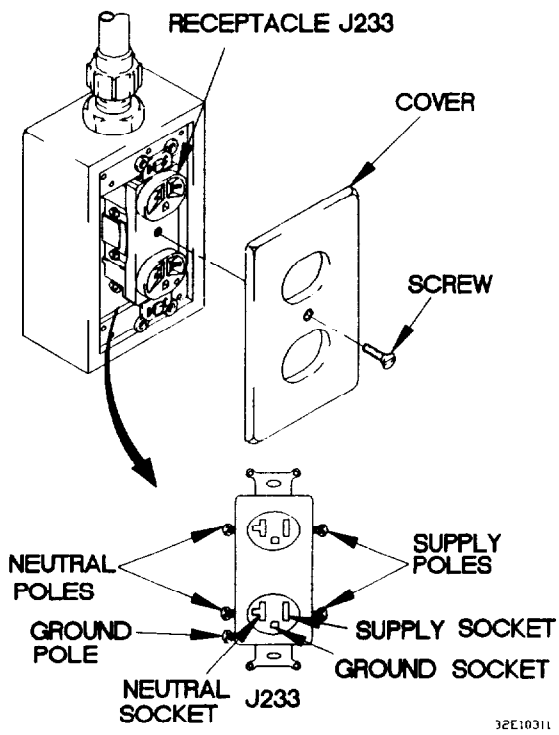
CONTINUITY TEST
(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Loosen screw in terminal board TB4.
(4) Remove wire 1499K from terminal board TB4.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to wire 1499K in 110/208 VAC POWER DISTRIBUTION PANEL.
(7) Connect negative (-) probe of multimeter to wire 1499K in lighting fixture DS83 and note reading on multimeter.
(8) If continuity is not present, repair or replace wire 1499K (para 2-40).
(9) If continuity is present, repair or replace wire 3085B (para 2-40).
(9) Install ballast cover on lighting fixture DS83.
(10) Install two fluorescent lamps in lighting fixture DS83.
(11) Install tube lock holder at each end of two fluorescent lamps.
(12) Install diffuser on lighting fixture DS83.
(13) Install wire 1499K on terminal board TB4.
(14) Tighten screw in terminal board TB4.
(15) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(16) Position circuit breaker CB1 to ON (TM 9-2320-365-10).
(17) Close door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(18) Connect AC power (TM 9-2320-365-10).



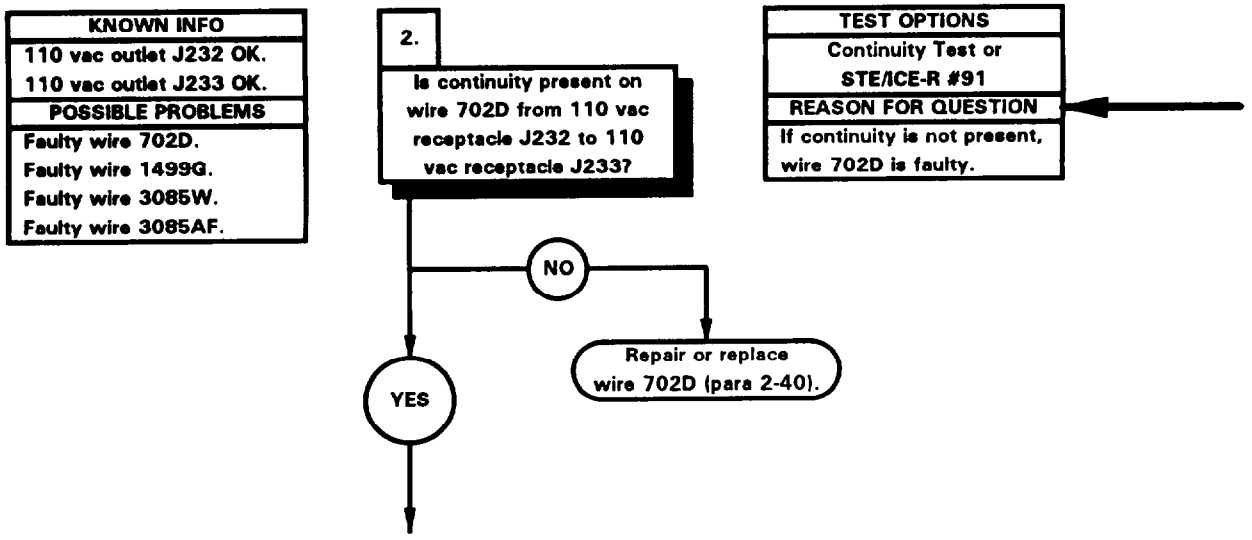
•105. M1079 110 VAC OUTLET J233 DOES NOT OPERATE	
INITIAL SETUP	
Equipment Condition Engine shut down (TM 9-2320-365-10). AC power disconnected (TM 9-2320-365-10). **Personnel Required** (2)	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C) **References** TM 9-4910-571-12&P



CONTINUITY TEST
(1) Remove screw and cover from 110 vac outlet J233.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J233.
(4) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J233 and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to neutral pole of 110 vac receptacle J233.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J233 and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to ground pole of 110 vac receptacle J233.
(8) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J233 and note reading on multimeter.
(9) If continuity is not present in steps (4), (6), and (8), replace 110 vac receptacle J233 (para 16-53).

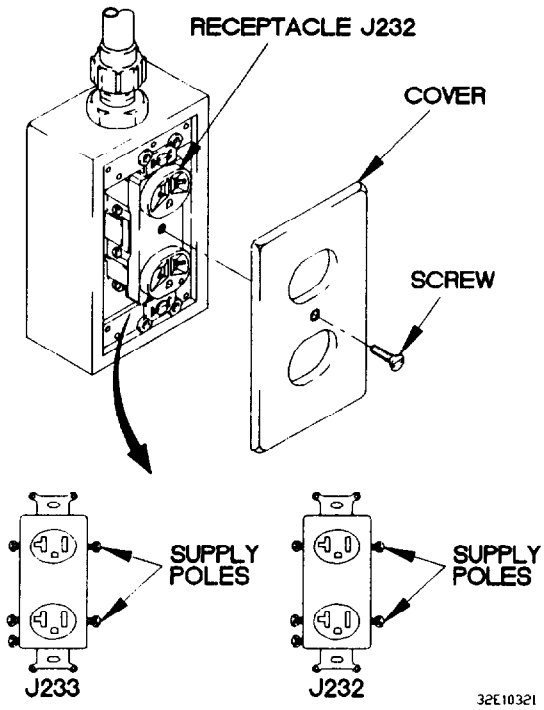


e105. M1079 110 VAC OULET J233 DOES NOT OPERATE (CONT)

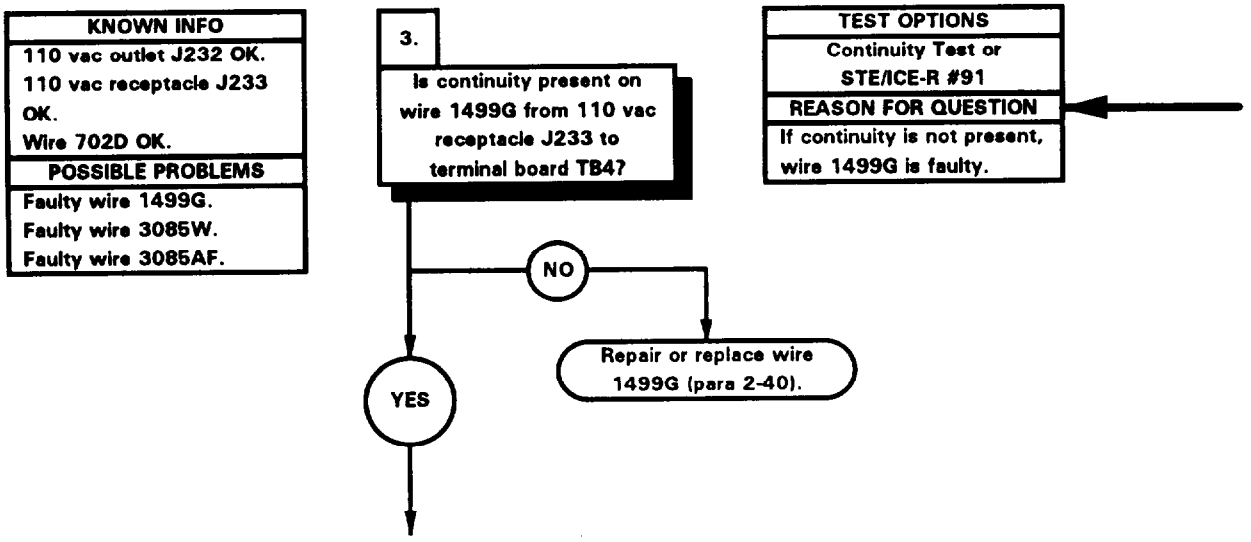


CONTINUITY TEST

(1) Remove screw and cover from 110 vac outlet J232.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J232.
(4) Connect negative (-) probe of multimeter to supply pole of 110 vac receptacle J233 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 702D (para 2-40).
(6) Install cover on 110 vac outlet J232 with screw.

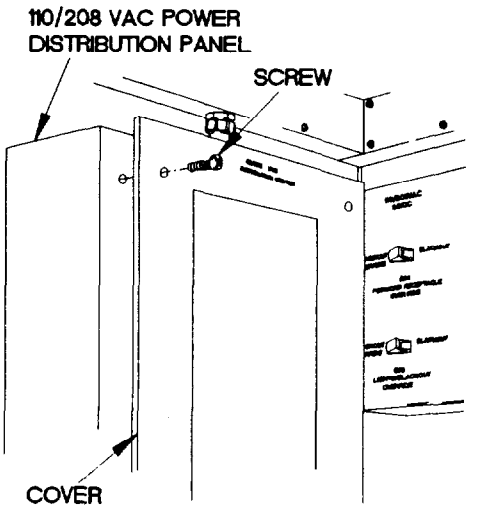


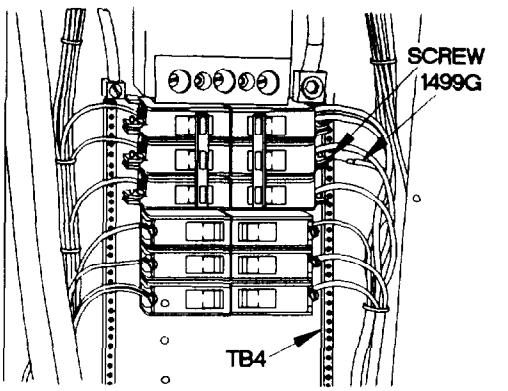
e105. M1079 110 VAC OULET J233 DOES NOT OPERATE (CONT)

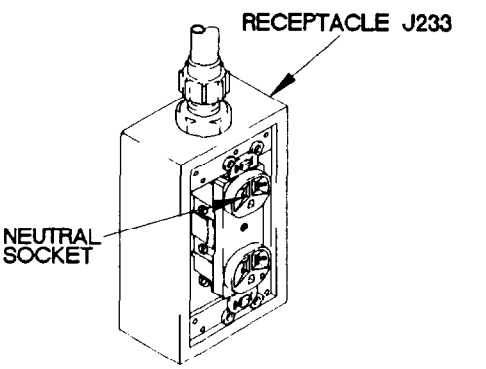


CONTINUITY TEST

(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Loosen screw in terminal board TB4.
(3) Remove wire 1499G from terminal board TB4.
(4) Set multimeter to ohms.
(5) *Connect positive (+) probe of multimeter to* wire 1499G.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J233 and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 1499G (para 2-40).

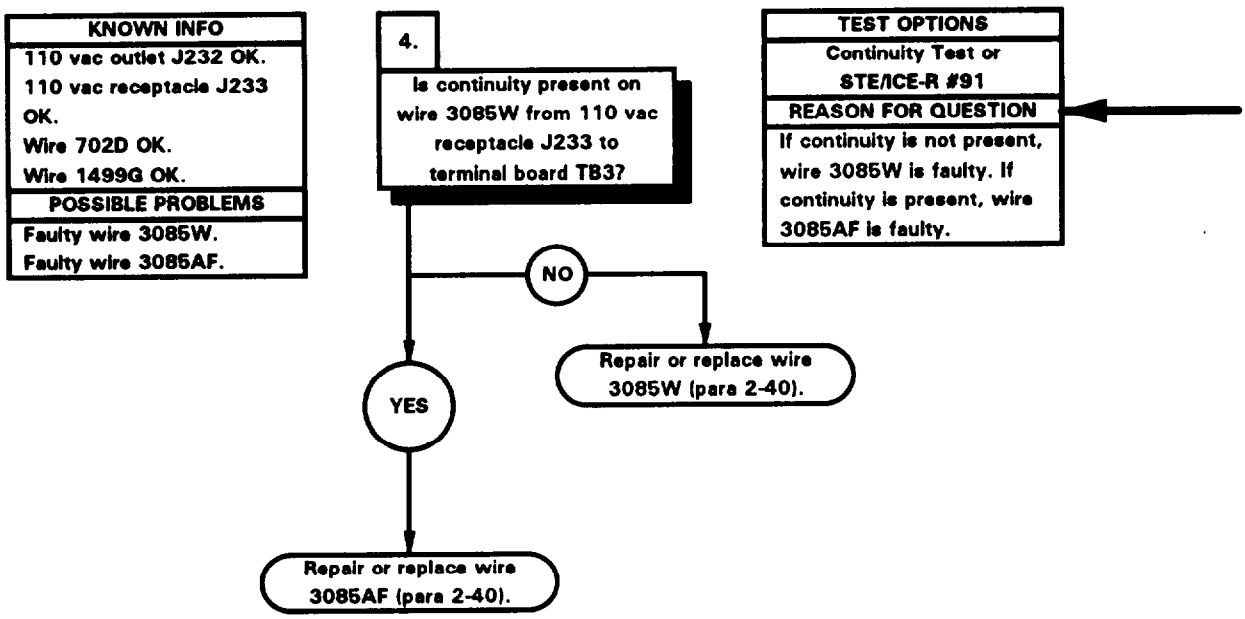


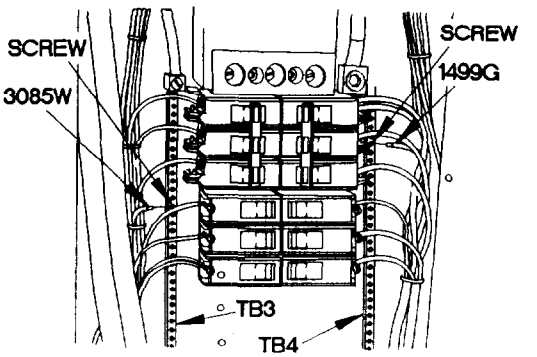




32E10331

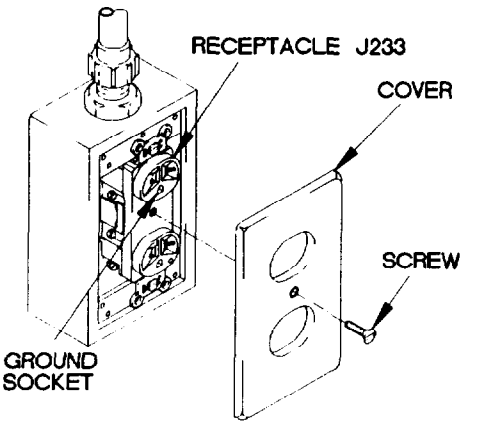
e105. M1079 110 VAC OULET J233 DOES NOT OPERATE (CONT)

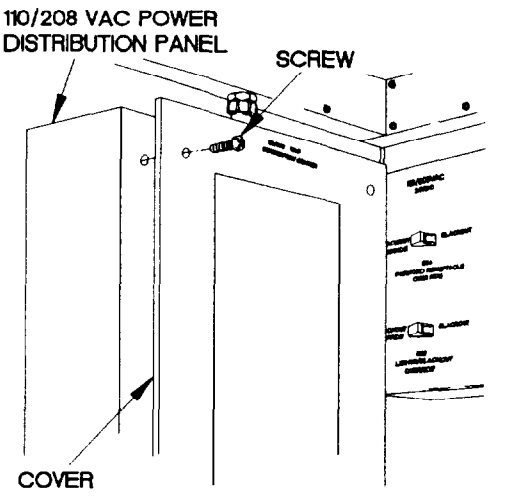




CONTINUITY TEST

(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085W from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085W.
(5) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J233 and note multimeter.
(6) If continuity is not present, repair or replace wire 3085W (para 2-40).
(7) If continuity is present, repair or replace wire 3085AF (para 2-40).
(8) Install wire 3085W on terminal board TB3.
(9) Tighten screw in terminal board TB3.
(10) Install wire 1499G on terminal board TB4.
(11) Tighten screw in terminal board TB4.
(12) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(13) Install cover on 110 vac outlet J233 with screw.





32E10341

e106. M1079 110 VAC OUTLET J234 DOES NOT OPERATE

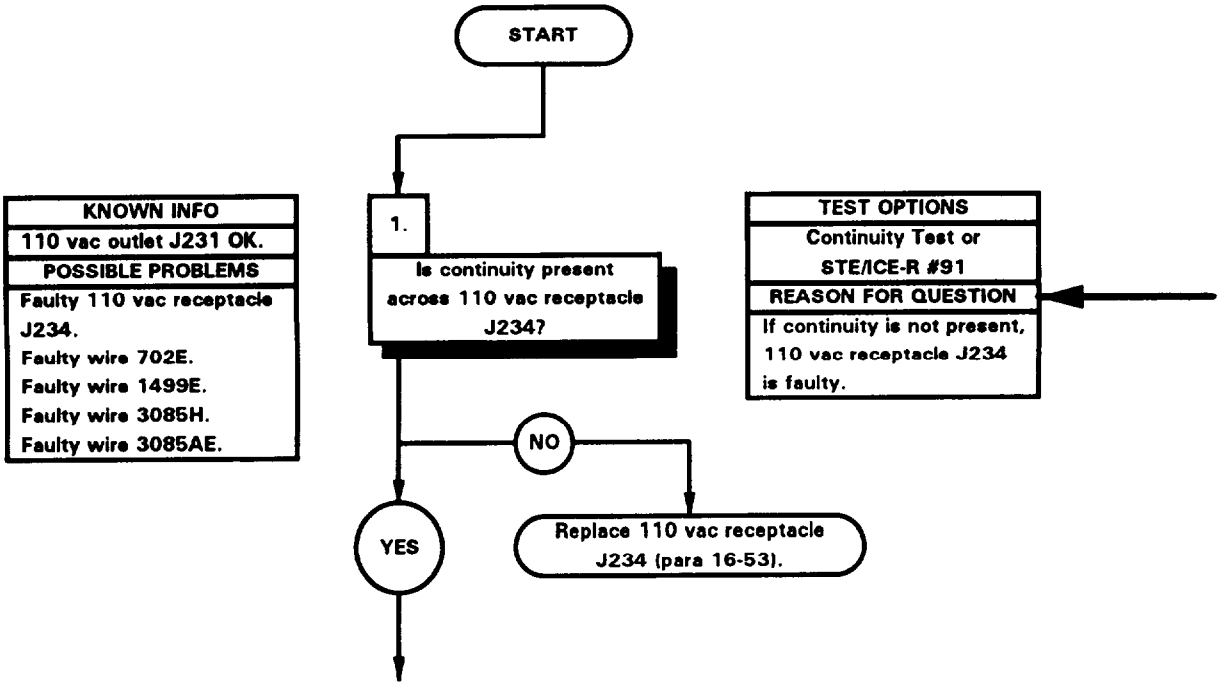
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
AC power disconnected (TM 9-2320-365-10).

Personnel Required
(2)

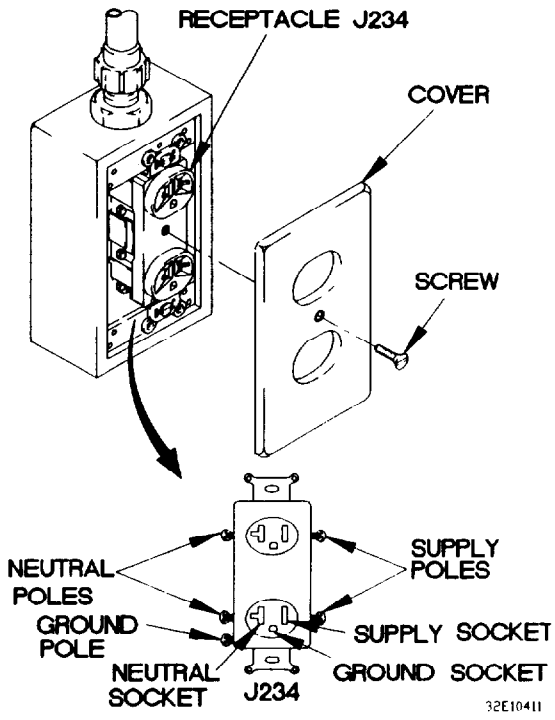
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P

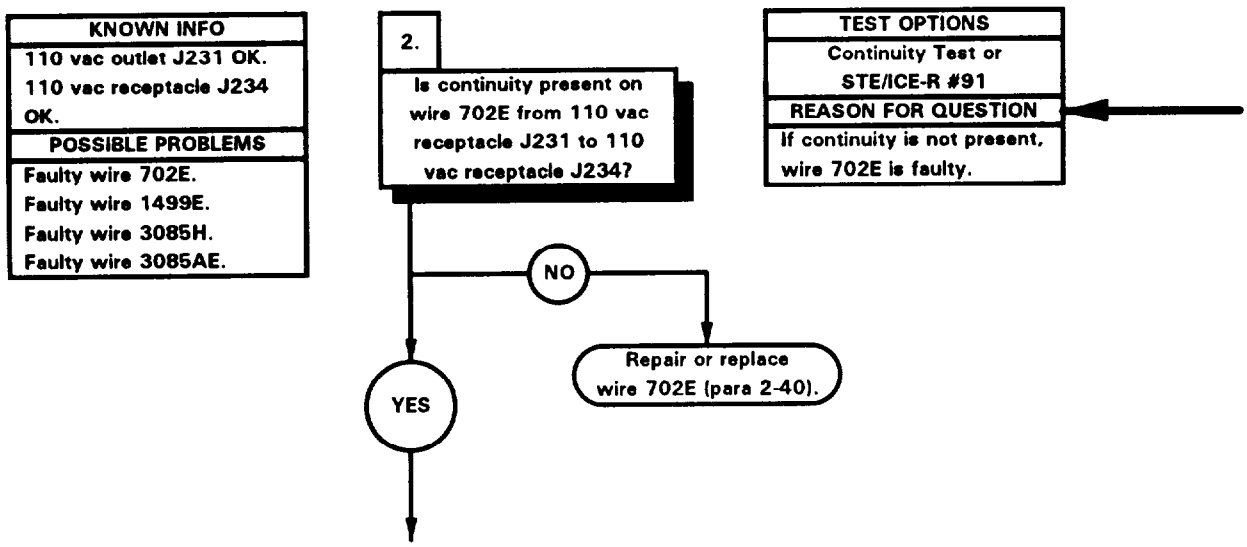


CONTINUITY TEST

(1) Remove screw and cover from 110 vac outlet J234.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J234.
(4) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J234 and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to neutral pole of 110 vac receptacle J234.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J234 and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to ground pole of 110 vac receptacle J234.
(8) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J234 and note reading on multimeter.
(9) If continuity is not present in steps (4), (6), and (8), replace 110 vac receptacle J234 (para 16-53).

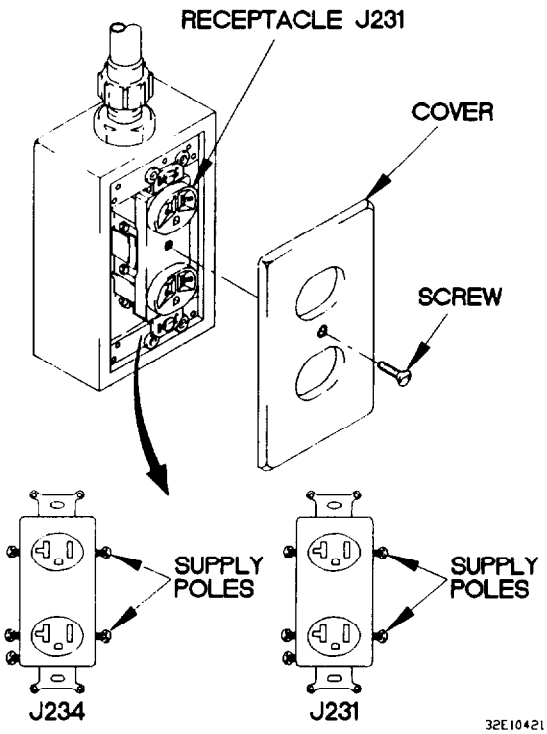


e106. M1079 110 VAC OULET J234 DOES NOT OPERATE (CONT)

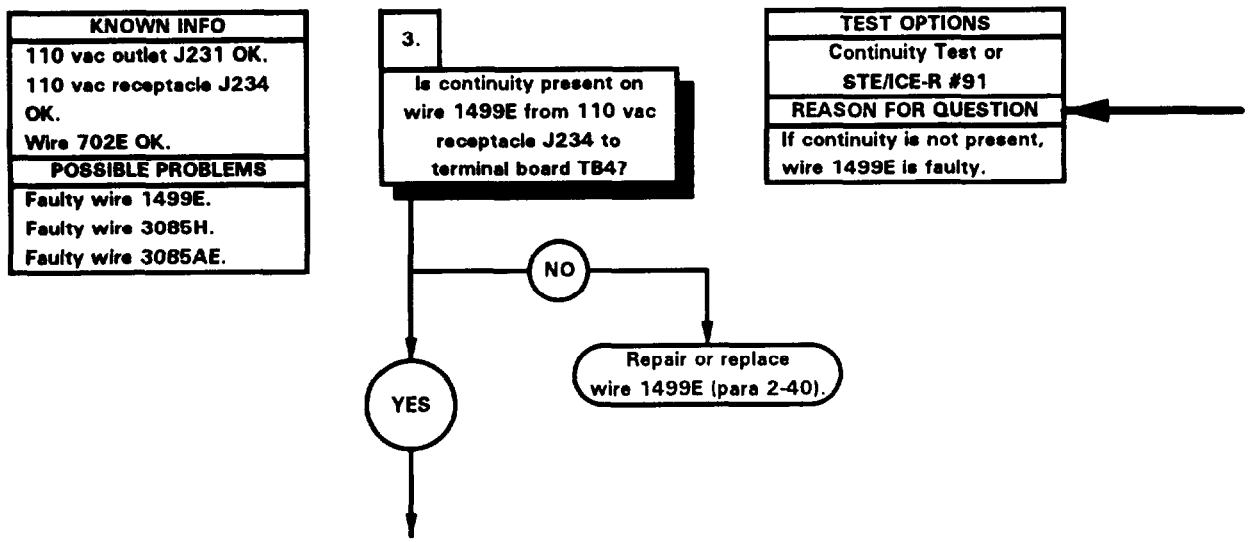


CONTINUITY TEST

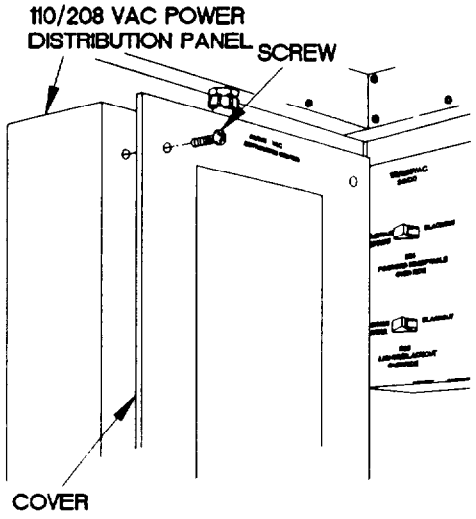
(1) Remove screw and cover from 110 vac outlet J231.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J231.
(4) Connect negative (-) probe of multimeter to supply pole of 110 vac receptacle J234 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 702E (para 2-40).
(6) Install cover on 110 vac outlet J231 with screw.

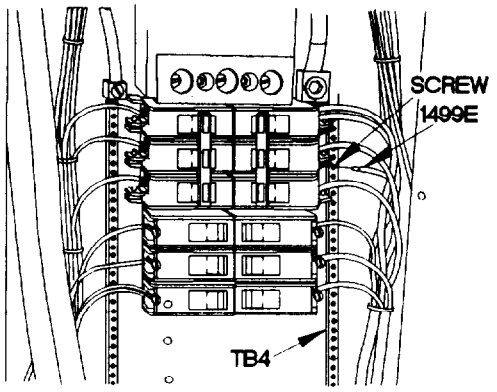


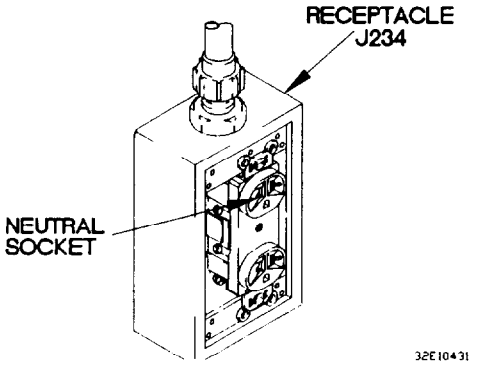
e106. M1079 110 VAC OULET J234 DOES NOT OPERATE (CONT)



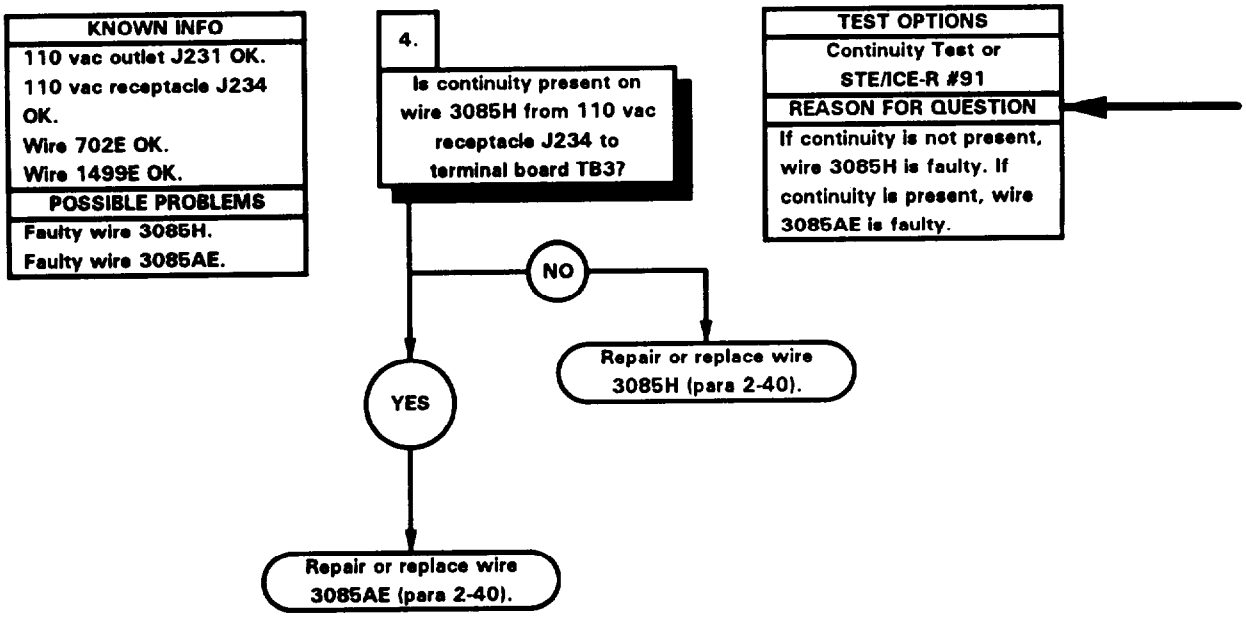
CONTINUITY TEST
(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Loosen screw in terminal board TB4.
(3) Remove wire 1499E from terminal board TB4.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to wire 1499E.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J234 and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 1499E (para 2-40).





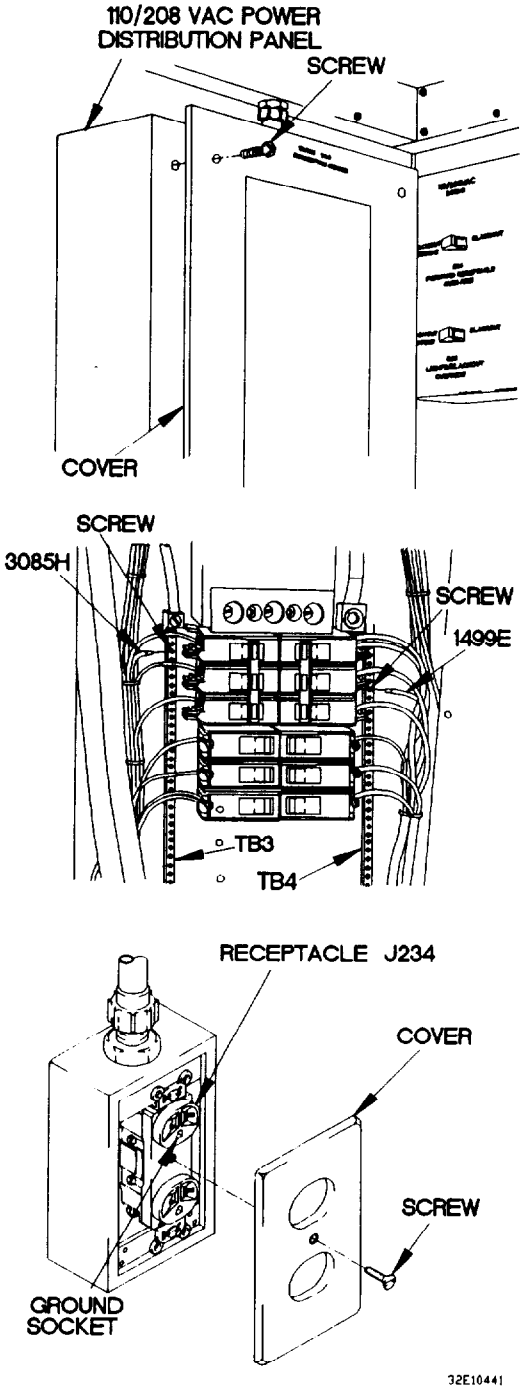


e106. M1079 110 VAC OULET J234 DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085H from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085H.
(5) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J234 and note multimeter.
(6) If continuity is not present, repair or replace wire 3085H (para 2-40).
(7) If continuity is present, repair or replace wire 3085AE (para 2-40).
(8) Install wire 3085H on terminal board TB3.
(9) Tighten screw in terminal board TB3.
(10) Install wire 1499E on terminal board TB4.
(11) Tighten screw in terminal board TB4.
(12) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(13) Install cover on 110 vac outlet J234 with screw.



e107. M1079 110 VAC OUTLET J235 DOES NOT OPERATE

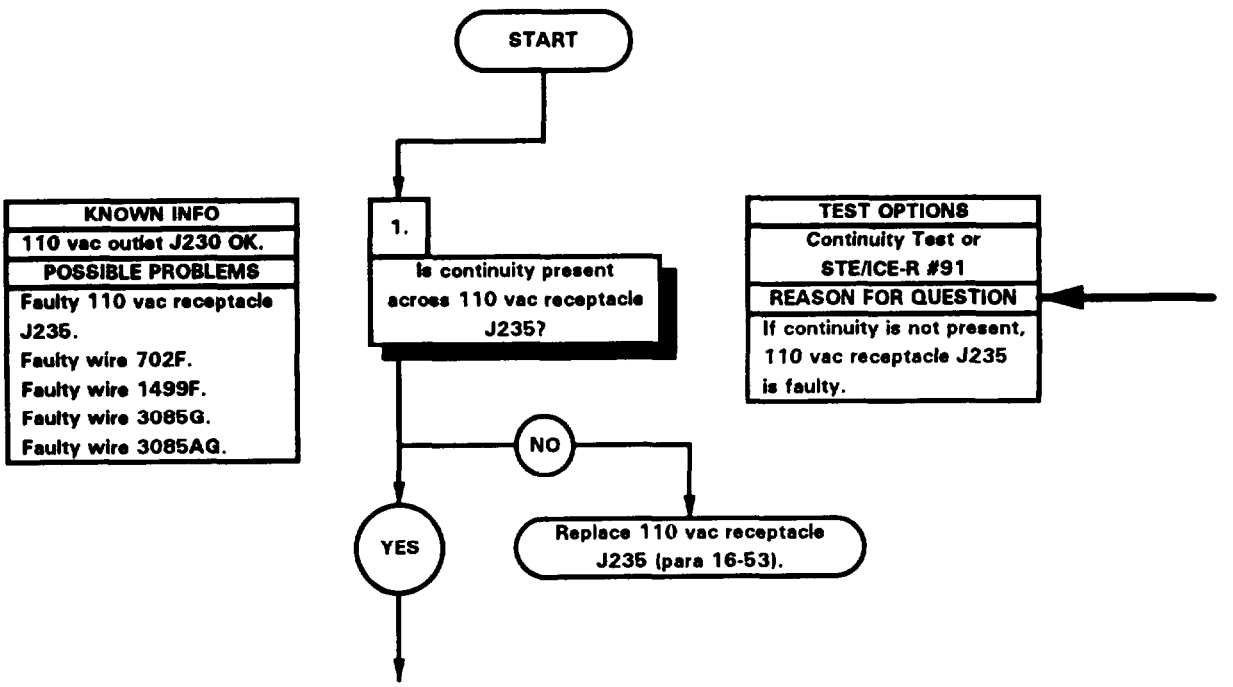
INITIAL SETUP

Equipment Condition
- Engine shut down (TM 9-2320-365-10).
- AC power disconnected (TM 9-2320-365-10).

Personnel Required
- (2)

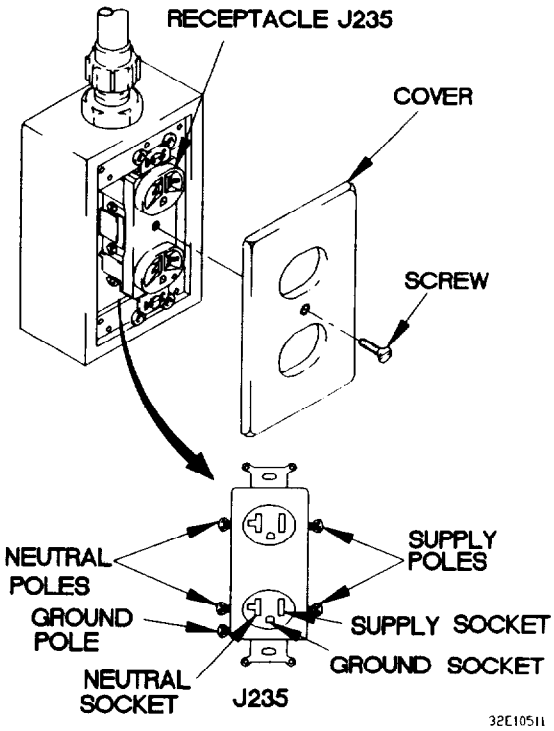
Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

References
- TM 9-4910-571-12&P

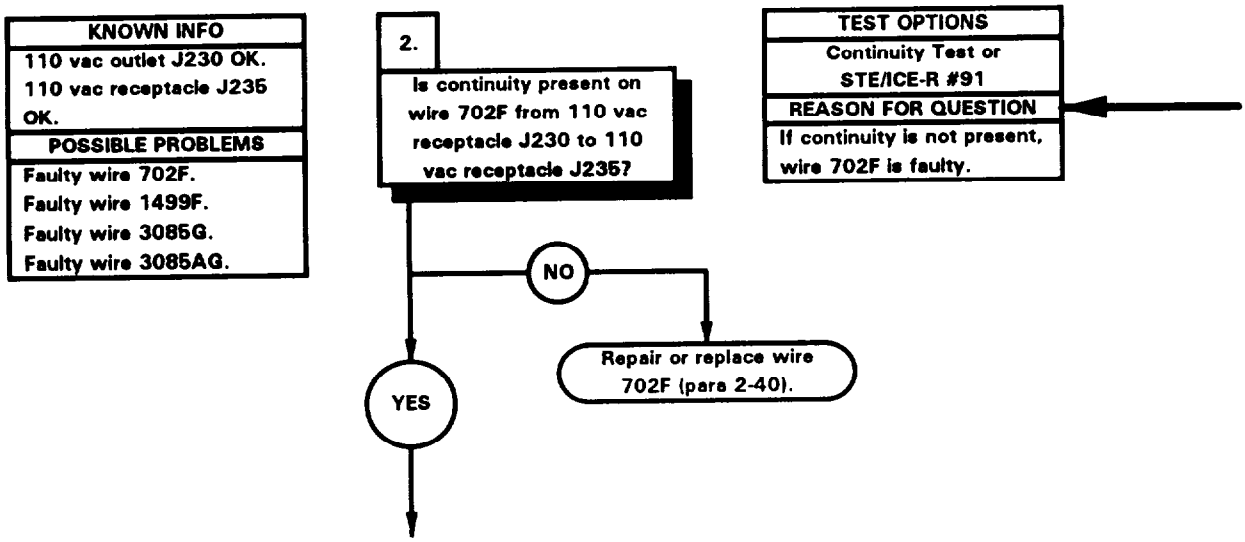


CONTINUITY TEST

(1) Remove screw and cover from 110 vac outlet J235.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J235.
(4) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J235 and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to neutral pole of 110 vac receptacle J235.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J235 and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to ground pole of 110 vac receptacle J235.
(8) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J235 and note reading on multimeter.
(9) If continuity is not present in steps (4), (6), and (8), replace 110 vac receptacle J235 (para 16-53).

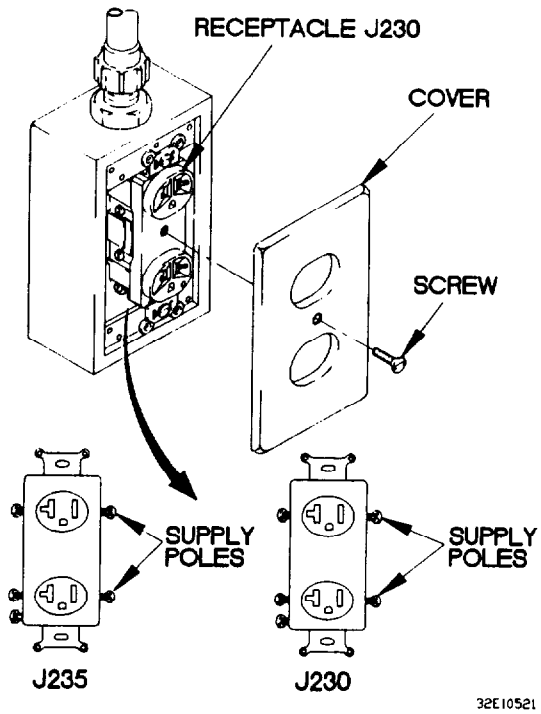


e107. M1079 110 VAC OULET J235 DOES NOT OPERATE (CONT)

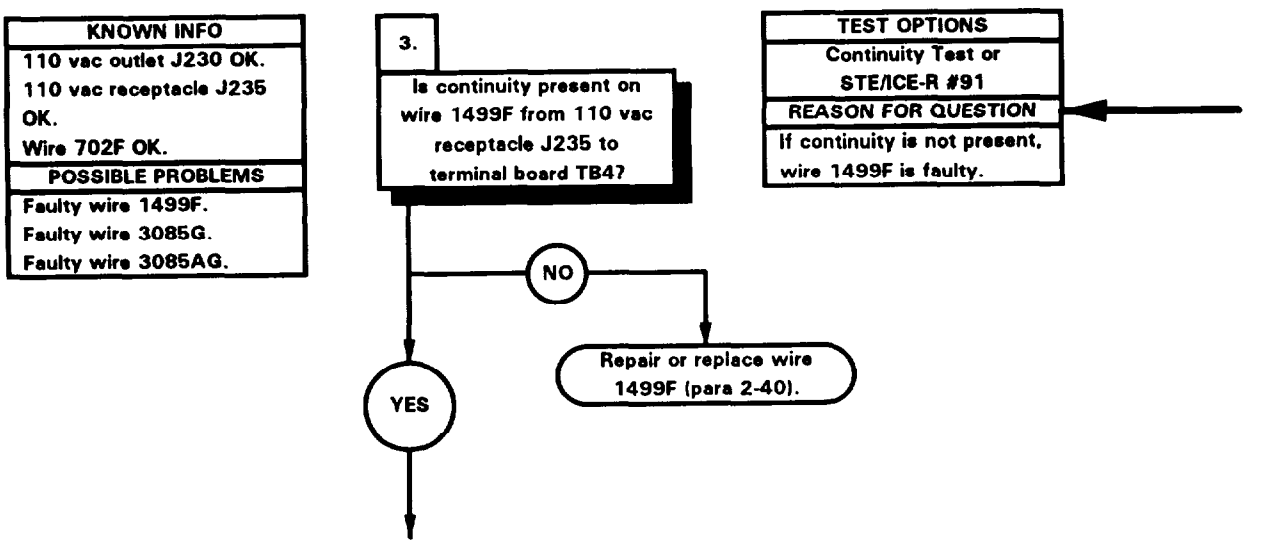


CONTINUITY TEST

(1) Remove screw and cover from 110 vac outlet J230.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J230.
(4) Connect negative (-) probe of multimeter to supply pole of 110 vac receptacle J235 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 702F (para 2-40).
(6) Install cover on 110 vac outlet J230 with screw.

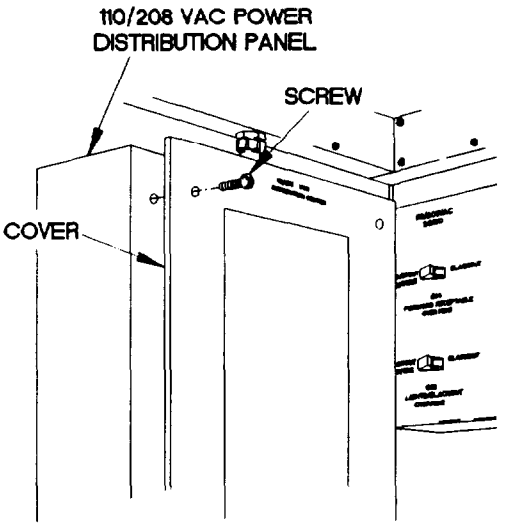


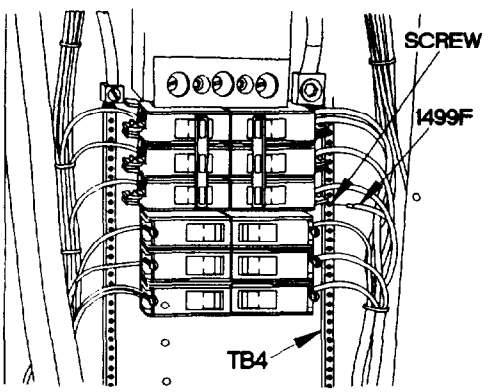
e107. M1079 110 VAC OULET J235 DOES NOT OPERATE (CONT)

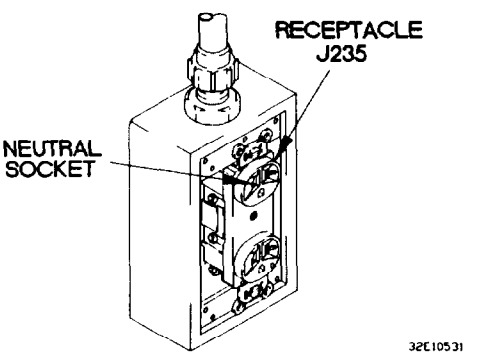


CONTINUITY TEST

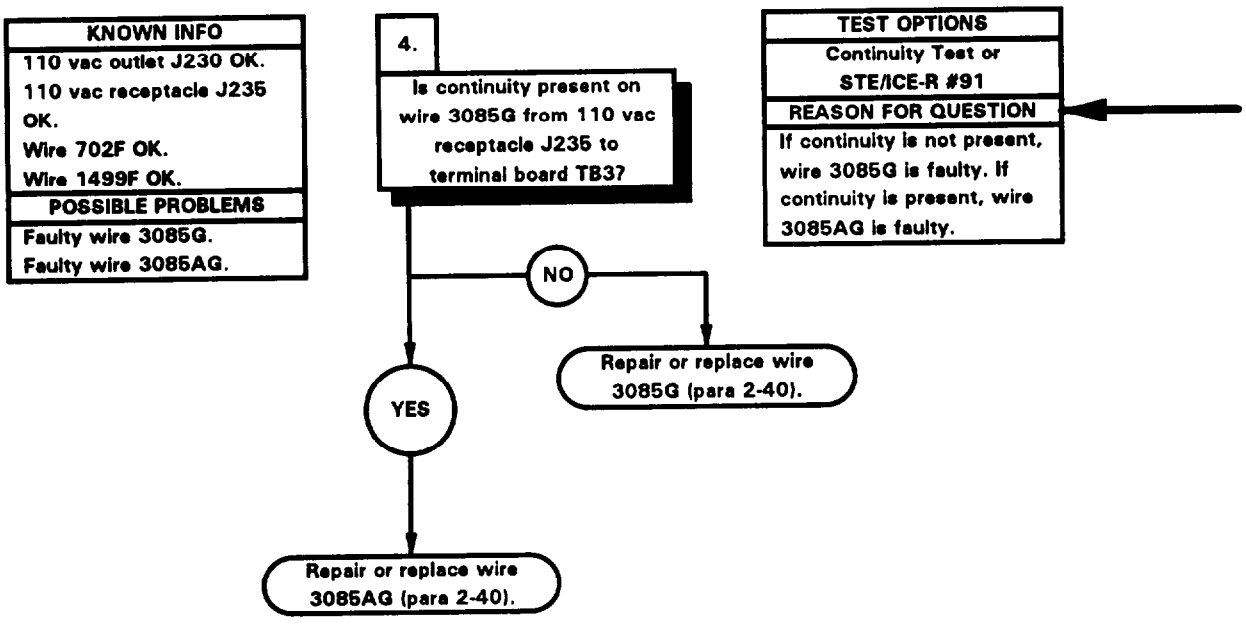
(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Loosen screw in terminal board TB4.
(3) Remove wire 1499F from terminal board TB4.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to wire 1499F.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J235 and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 1499F (para 2-40).





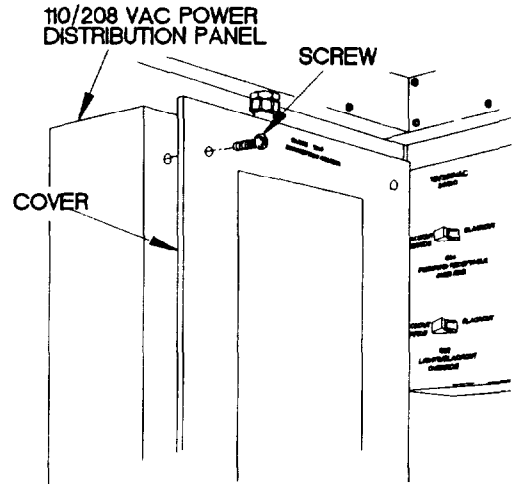


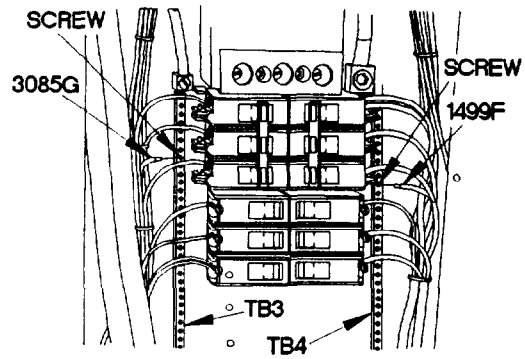
e107. M1079 110 VAC OULET J235 DOES NOT OPERATE (CONT)

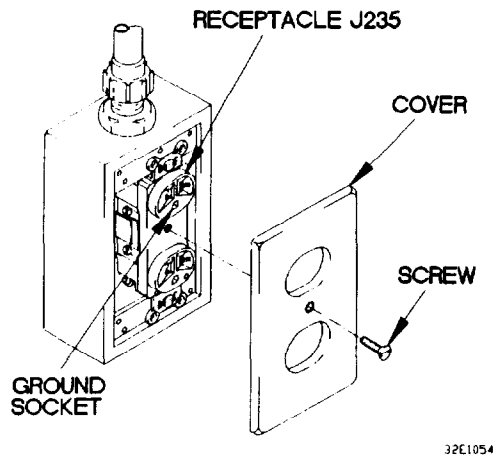


CONTINUITY TEST

(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085G from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085G.
(5) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J235 and note multimeter.
(6) If continuity is not present, repair or replace wire 3085G (para 2-40).
(7) If continuity is present, repair or replace wire 3085AG (para 2-40).
(8) Position wire 3085G on terminal board TB3.
(9) Tighten screw in terminal board TB3.
(10) Position wire 1499F on terminal board TB4.
(11) Tighten screw in terminal board TB4.
(12) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(13) Install cover on 110 vac outlet J235 with screw.







32E10541

•108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE

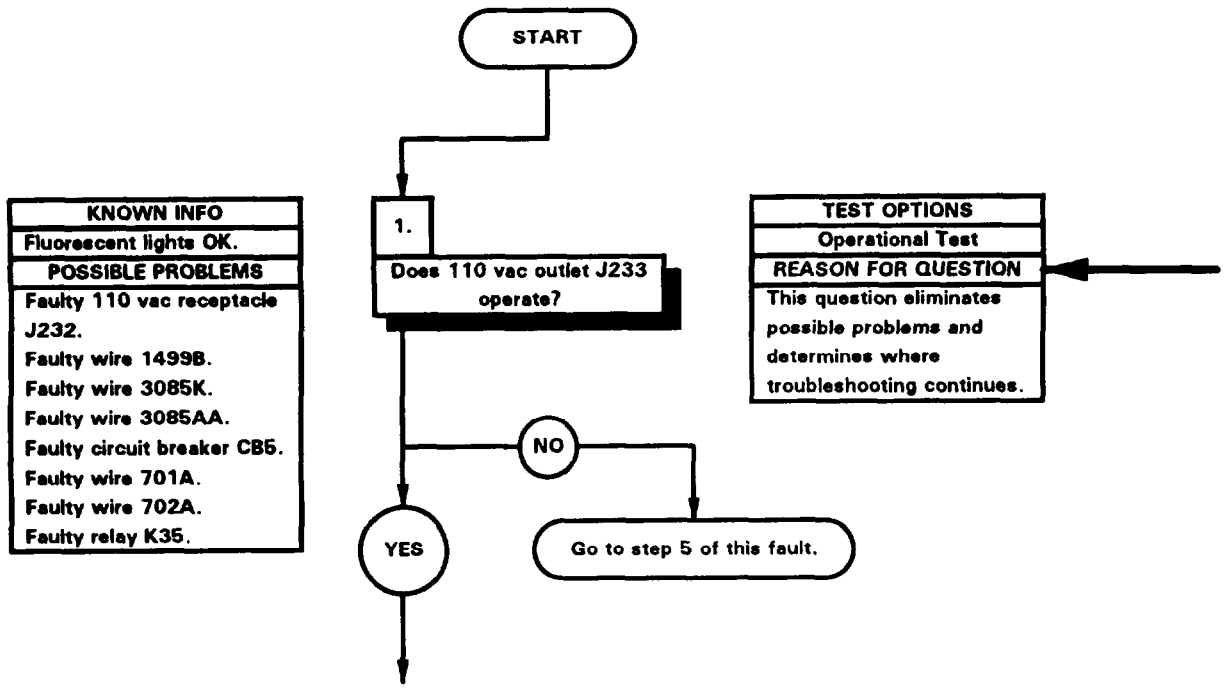
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).

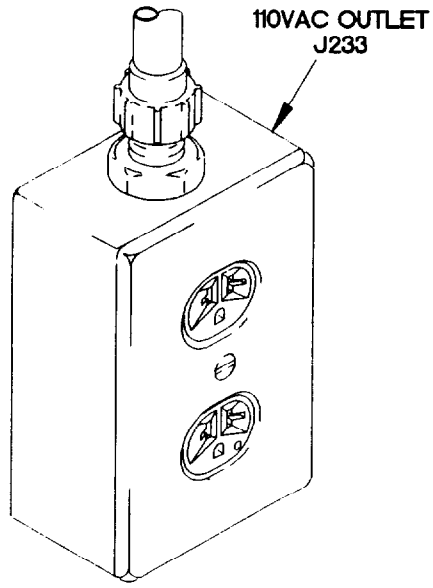
Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P

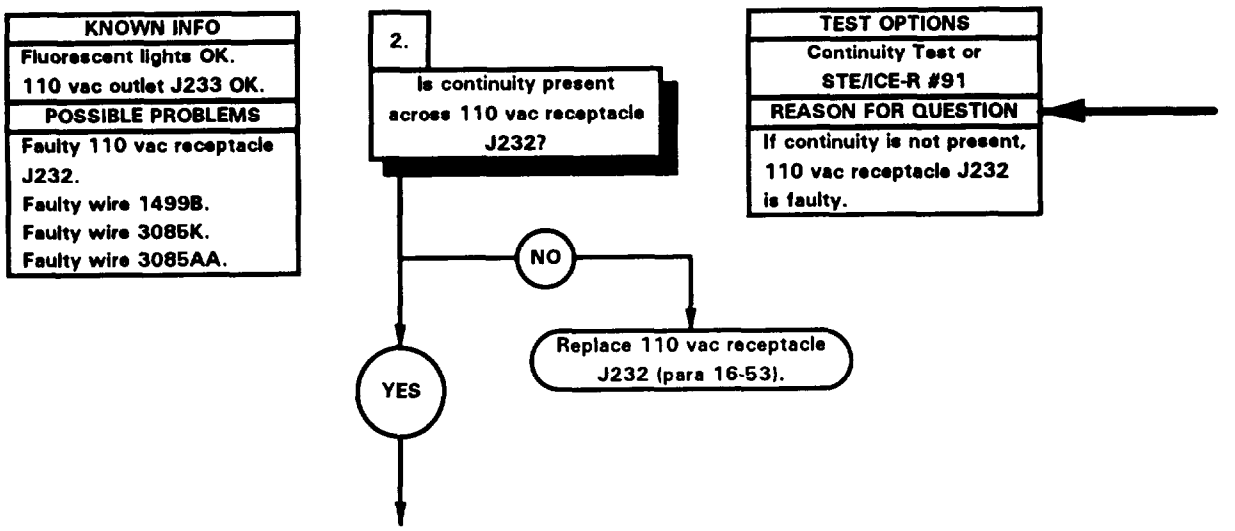


OPERATIONAL TEST
(1) Connect any 110 vac appliance to 110 vac outlet J233 and check for operation.
(2) If 110 vac outlet J233 does not operate, go to step 5 of this fault.
(3) Disconnect 110 vac appliance from 110 vac outlet J233.



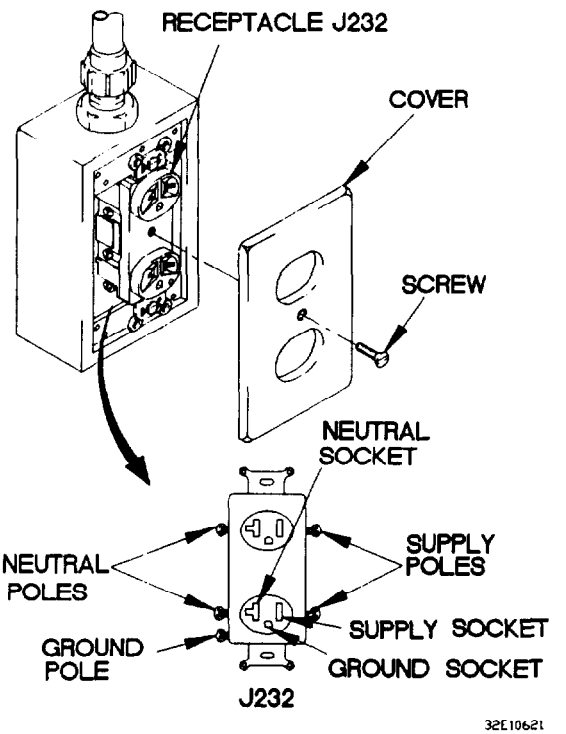
32E10611

e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)

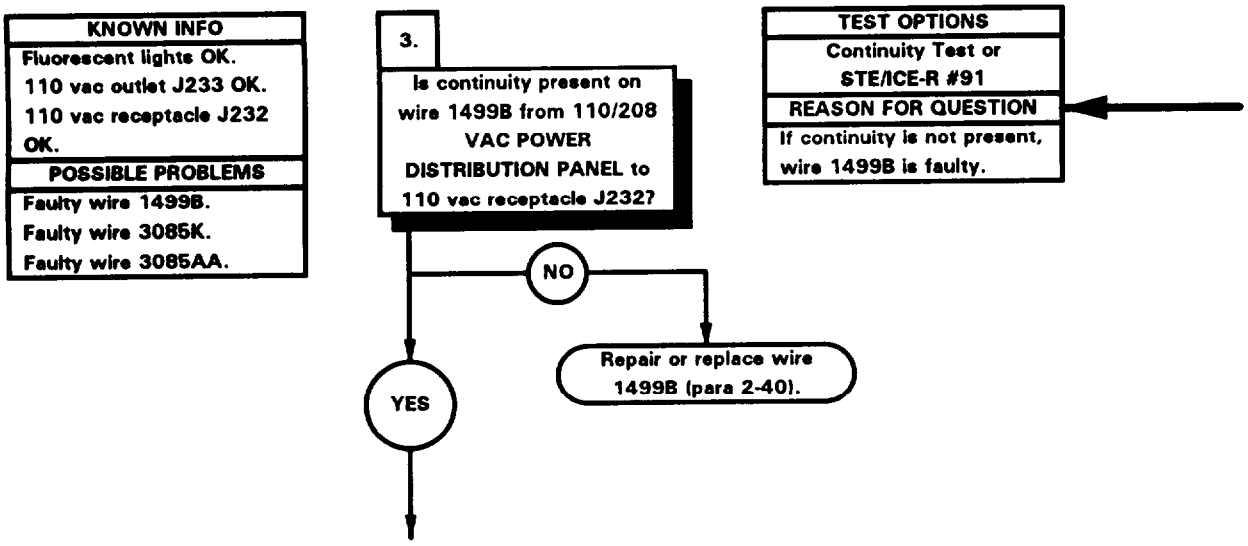


CONTINUITY TEST

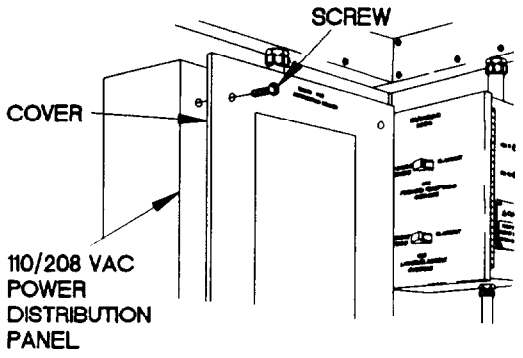
(1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
(3) Remove screw and cover from 110 vac outlet J232.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J232.
(6) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J232 and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to neutral pole of 110 vac receptacle J232.
(8) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J232 and note reading on multimeter.
(9) Connect positive (+) probe of multimeter to ground pole of 110 vac receptacle J232.
(10) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J232 and note reading on multimeter.
(11) If continuity is not present in steps (6), (8), and (10), replace 110 vac receptacle J232 (para 16-53).

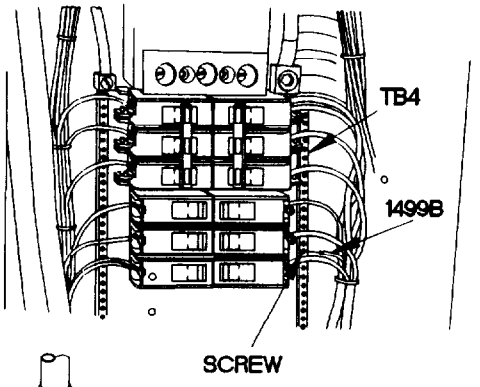


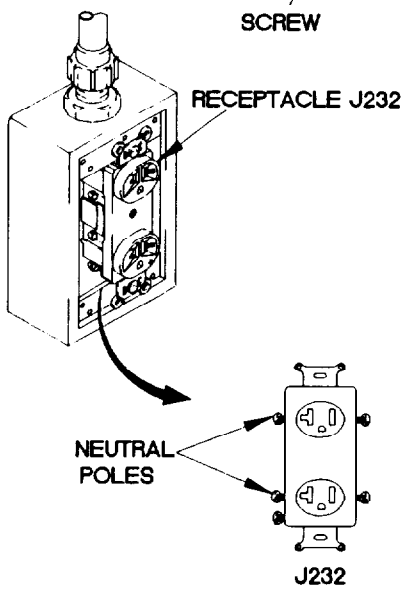
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



CONTINUITY TEST
(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove six screws and cover from 110/208 VAC POWER DISTIBUTION PANEL.
(3) Loosen screw in terminal board TB4.
(4) Remove wire 1499B from terminal board TB4.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to wire 1499B.
(7) Connect negative (-) probe of multimeter to neutral pole of 110 vac receptacle J232 and note reading on multimeter.
(8) If continuity is not present, repair or replace wire 1499B (para 2-40).

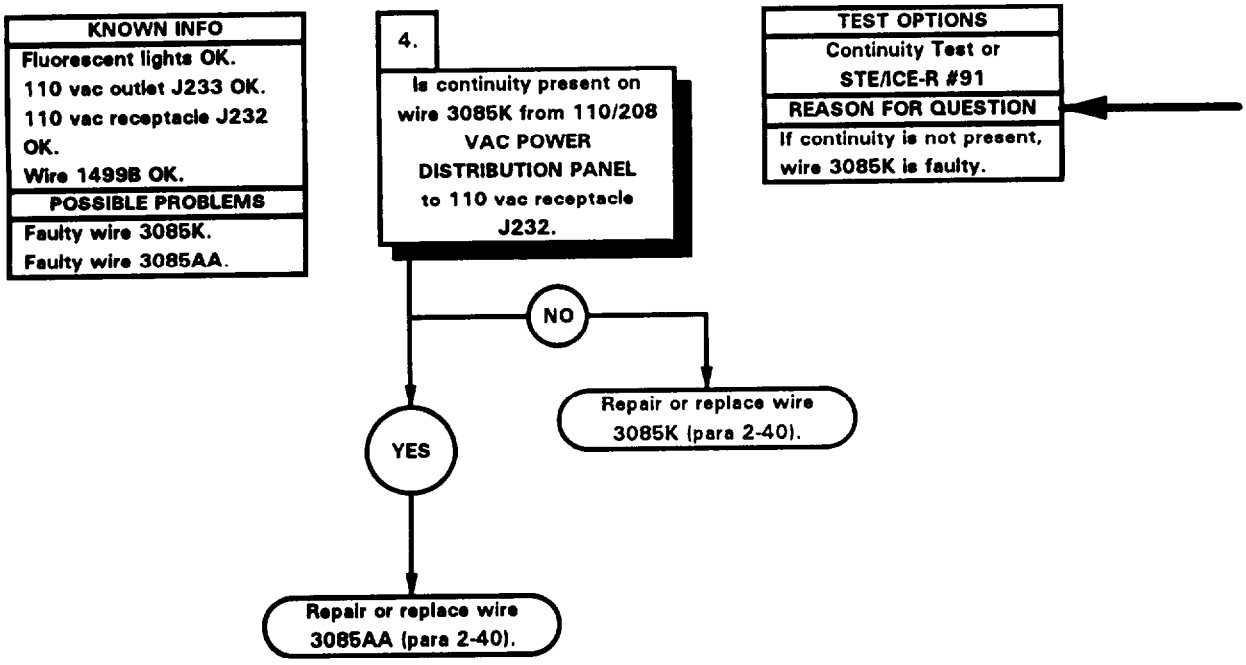






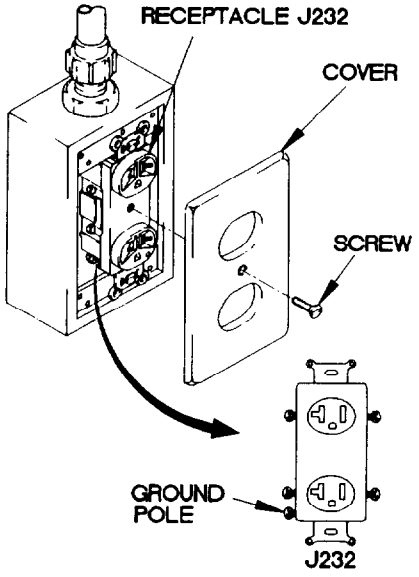
32E10631

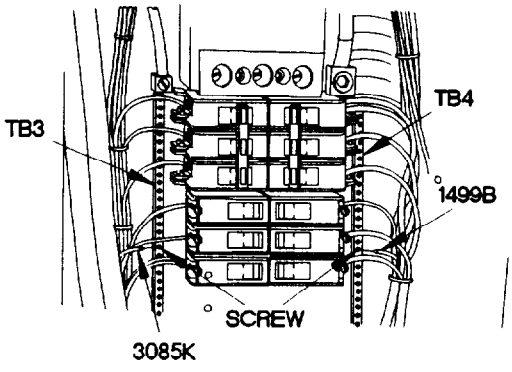
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)

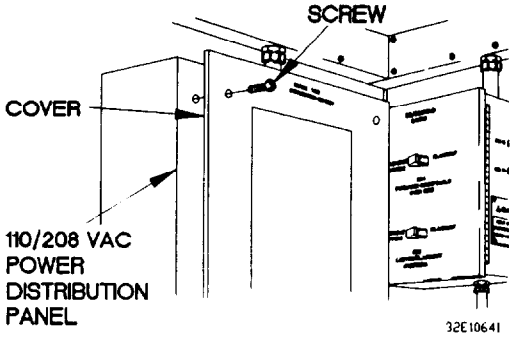


CONTINUITY TEST

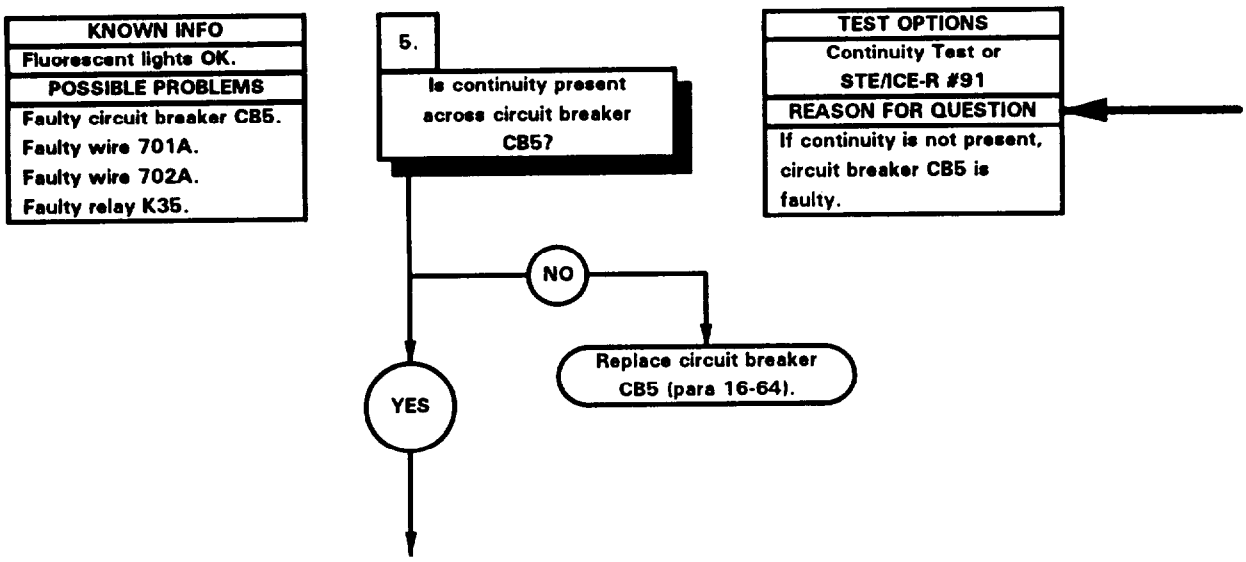
(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085K from terminal board TB3.
(3) Connect positive (+) probe of multimeter to wire 3085K.
(4) Connect negative (-) probe of multimeter to ground pole of 110 vac receptacle J232 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 3085K (para 2-40).
(6) If continuity is present, repair or replace wire 3085AA (para 2-40).
(7) Position wire 3085K on terminal board TB3.
(8) Tighten screw in terminal board TB3.
(9) Position wire 1499B on terminal board TB4.
(10) Tighten screw in terminal board TB4.
(11) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(12) Install cover on 110 vac outlet J232 with screw.
(13) Connect AC power (TM 9-2320-365-10).
(14) Position circuit breaker CB1 to ON (TM 9-2320-365-10).



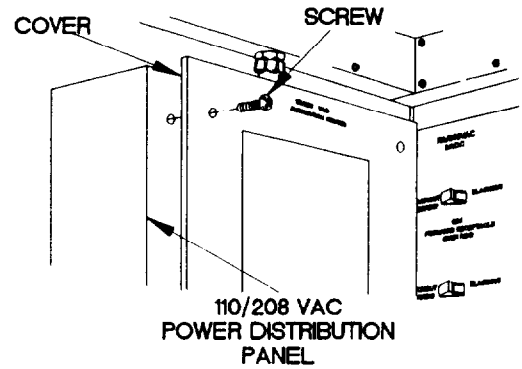


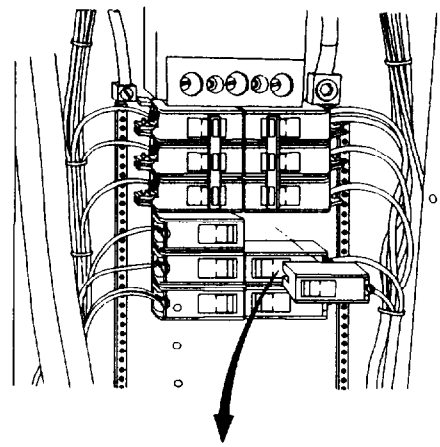


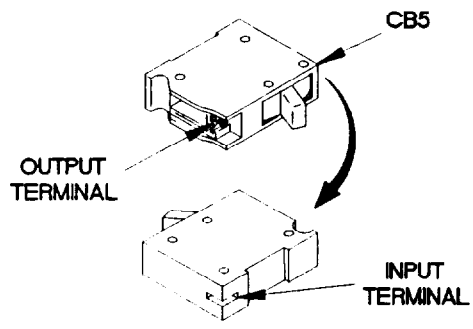
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



CONTINUITY TEST
(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Remove circuit breaker CB5 from 110/208 VAC POWER DISTRIBUTION PANEL.
(4) Position circuit breaker CB5 to ON (TM 9-2320-365-10).
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB5.
(7) Connect negative (-) probe of multimeter to input terminal of circuit breaker CB5 and note reading on multimeter.
(8) If continuity is not present, replace circuit breaker CB5 (para 16-64).
(9) Install circuit breaker CB5 on 110/208 VAC POWER DISTRIBUTION PANEL.

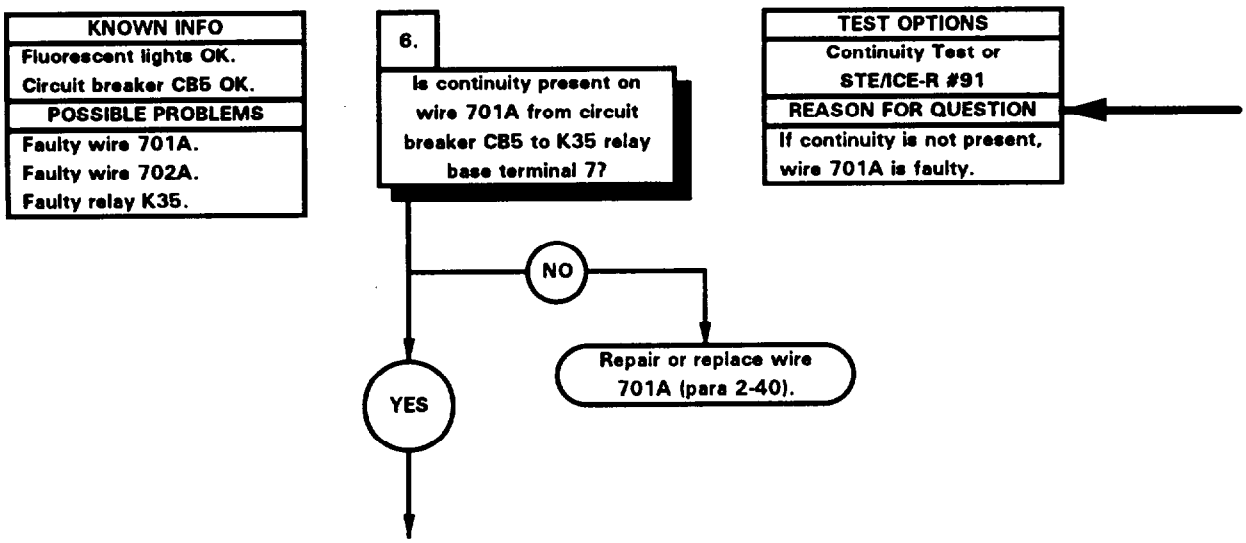




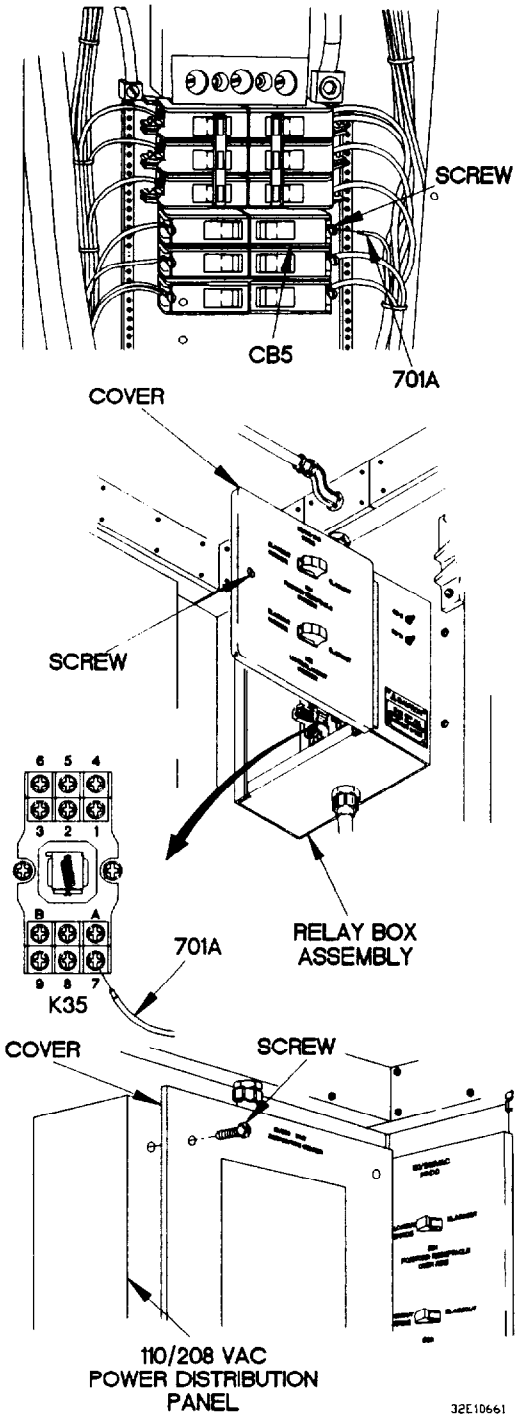


32E10651

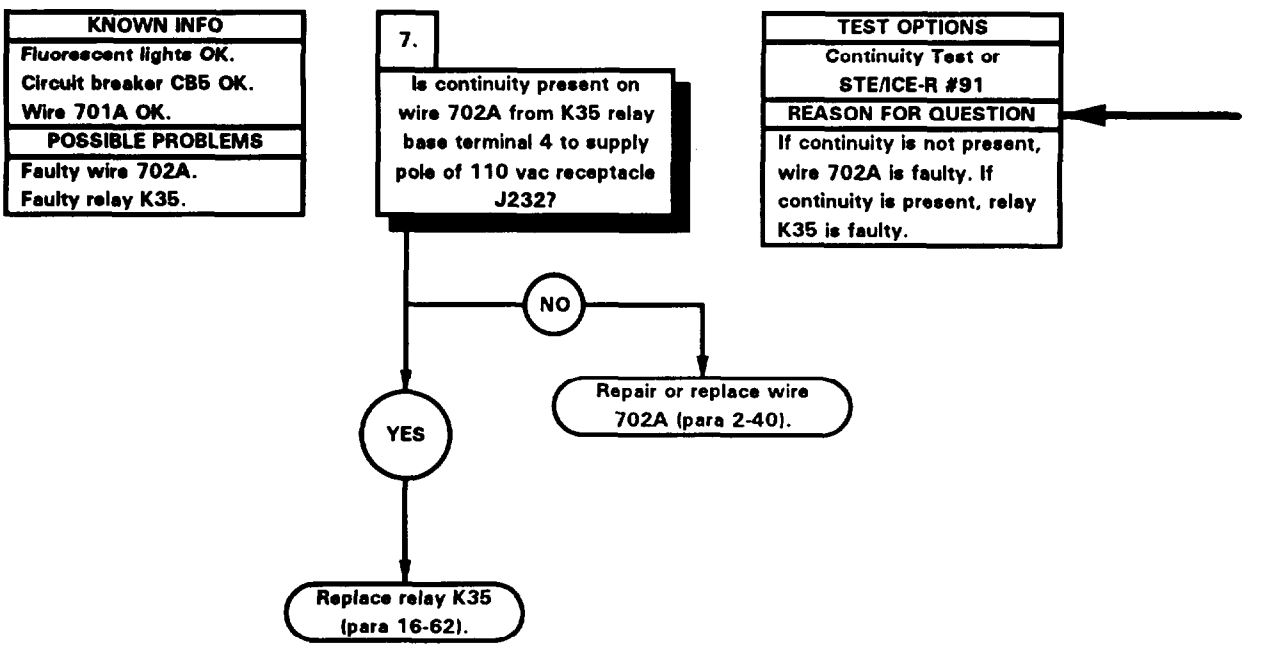
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



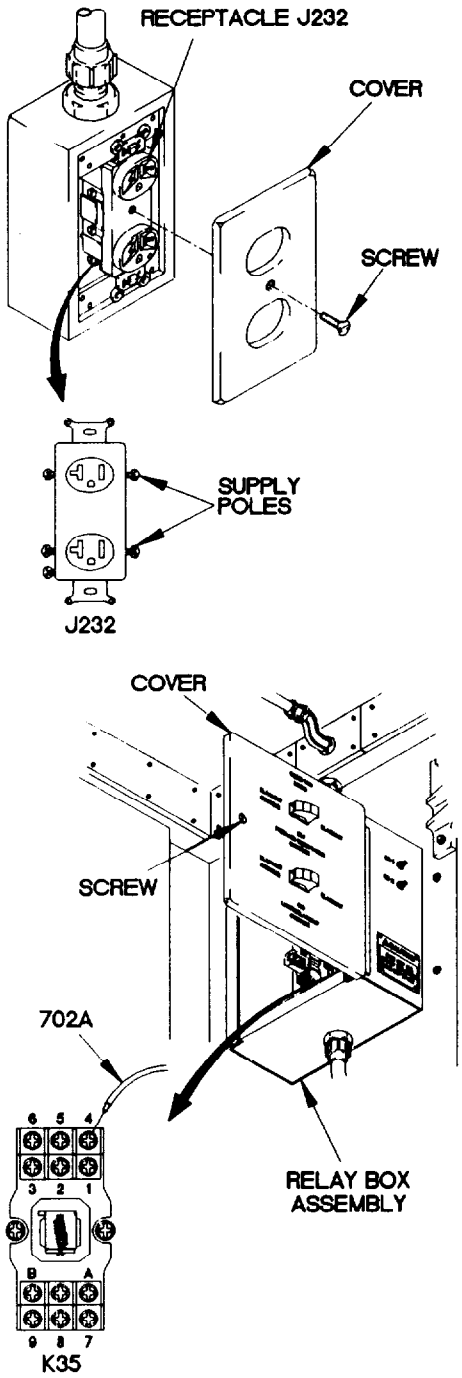
CONTINUITY TEST
(1) Loosen screw in circuit breaker CB5.
(2) Remove wire 701A from circuit breaker CB5.
(3) Loosen screw in cover.
(4) Open cover on relay box assembly.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to wire 701A.
(7) Connect negative (-) probe of multimeter to K35 relay base terminal 7 and note reading on multimeter.
(8) If continuity is not present, repair or replace wire 701A (para 2-40).
(9) Position wire 701A in circuit breaker CB5.
(10) Tighten screw in circuit breaker CB5.
(11) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.



e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



CONTINUITY TEST
(1) Remove screw and cover from 110 vac outlet J232.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to K35 relay base terminal 4.
(4) Connect negative (-) probe of multimeter to supply pole of 110 vac receptacle J232 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 702A (para 2-40).
(6) If continuity is present, replace relay K35 (para 16-62).
(7) Install cover on 110 vac outlet J232 with screw.
(8) Close cover on relay box assembly.
(9) Tighten screw in cover.
(10) Connect AC power (TM 9-2320-365-10).



32E10671

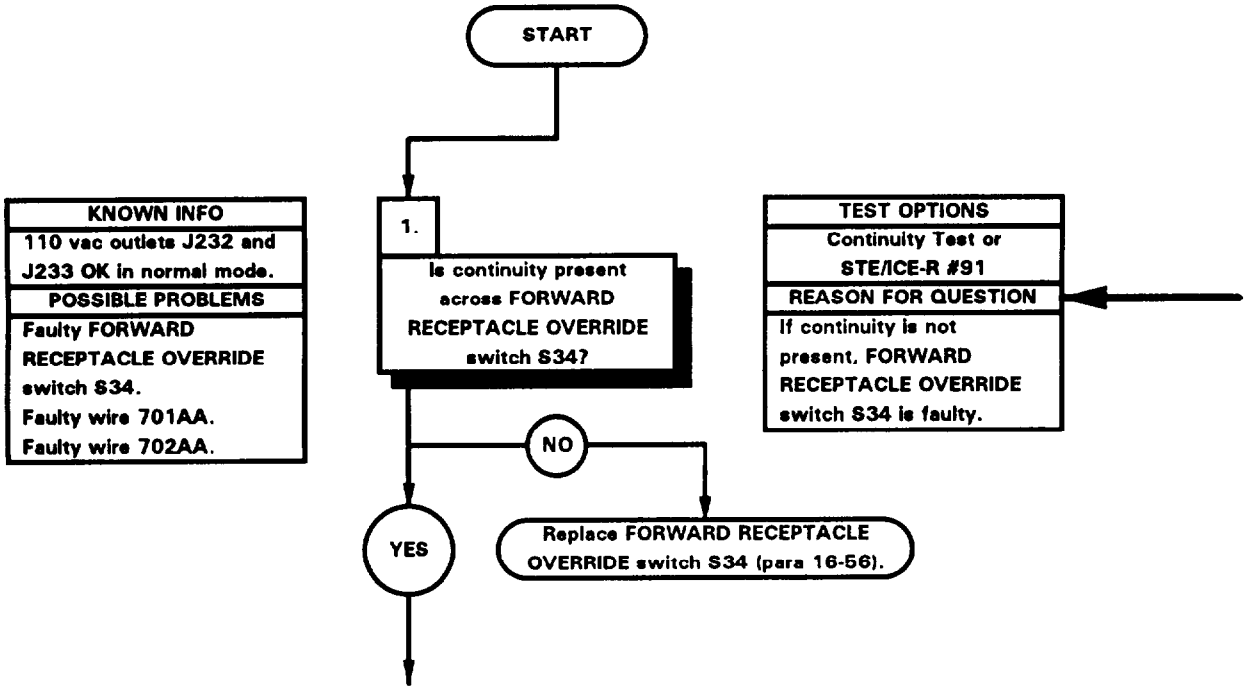
•109. M1079 110 VAC OUTLETS J232 and J233 DO NOT OPERATE IN BLACKOUT OVERRIDE MODE

INITIAL SETUP

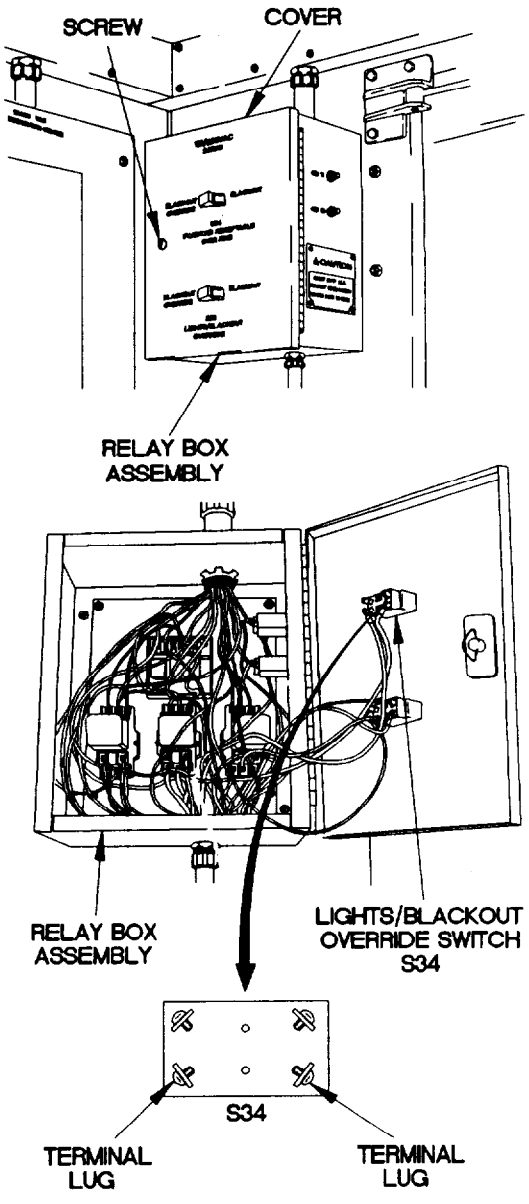
Equipment Condition
- Engine shut down (TM 9-2320-365-10).
- AC power disconnected (TM 9-2320-365-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

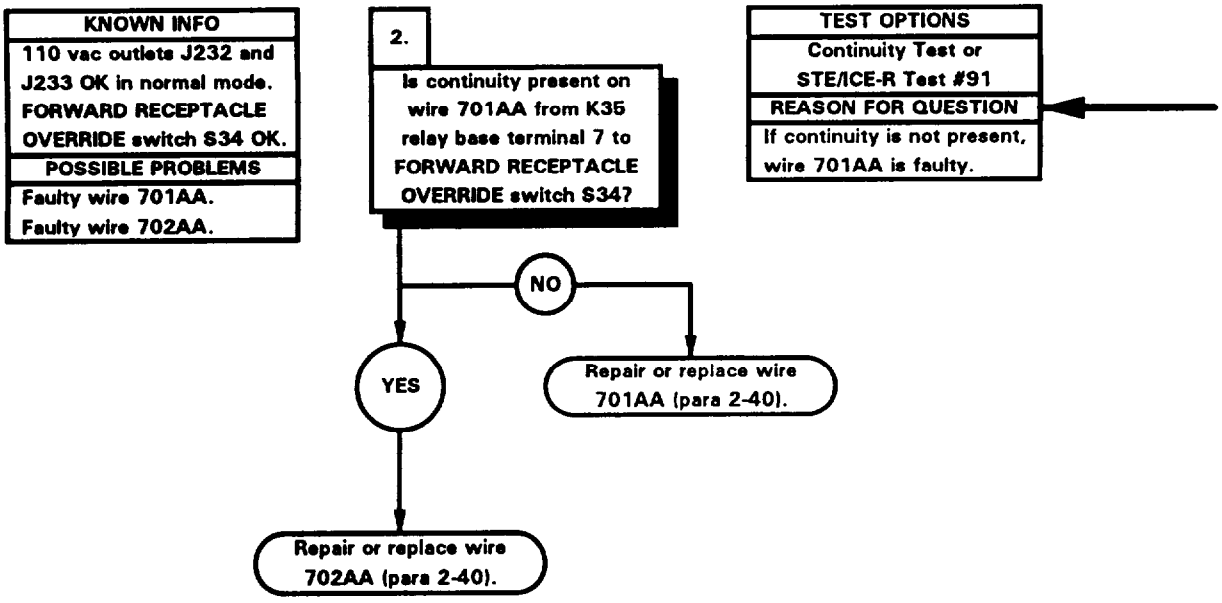
References
- TM 9-4910-571-12&P



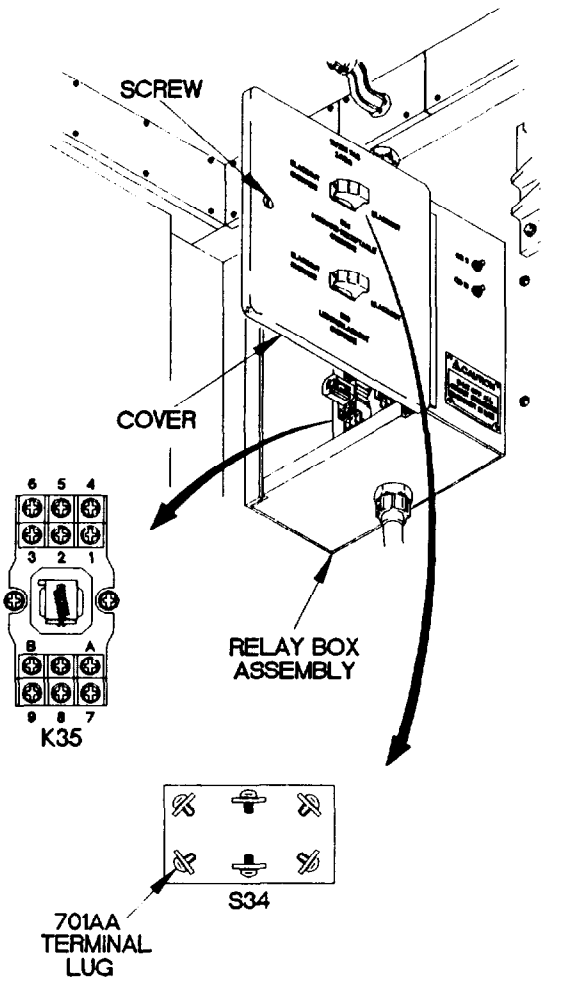
Continuity Test
(1) Loosen screw in cover.
(2) Open cover on relay box assembly.
(3) Position FORWARD RECEPTACLE OVERRIDE switch S34 to BLACKOUT OVERRIDE.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to one terminal of FORWARD RECEPTACLE OVERRIDE switch S34.
(6) Connect negative (-) probe of multimeter to second terminal of FORWARD RECEPTACLE OVERRIDE switch S34 and note reading on multimeter.
(7) If continuity is not present, replace FORWARD RECEPTACLE OVERRIDE switch S34 (para 16-56).



e109. M1079 110 VAC OUTLETS J232 AND J233 DO NOT OPERATE IN BLACKOUT OVERRIDE MODE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to K35 relay base terminal 7.
(3) Connect negative (-) probe of multimeter to wire 701AA terminal lug on FORWARD RECEPTACLE OVERRIDE switch S34 and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 701AA (para 2-40).
(5) If continuity is present, repair or replace wire 702AA (para 2-40).
(6) Position FORWARD RECEPTACLE OVERRIDE switch S34 to BLACKOUT (TM 9-2320-365-10).
(7) Close cover on relay box assembly.
(8) Tighten screw in cover.



32EK7021

e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE

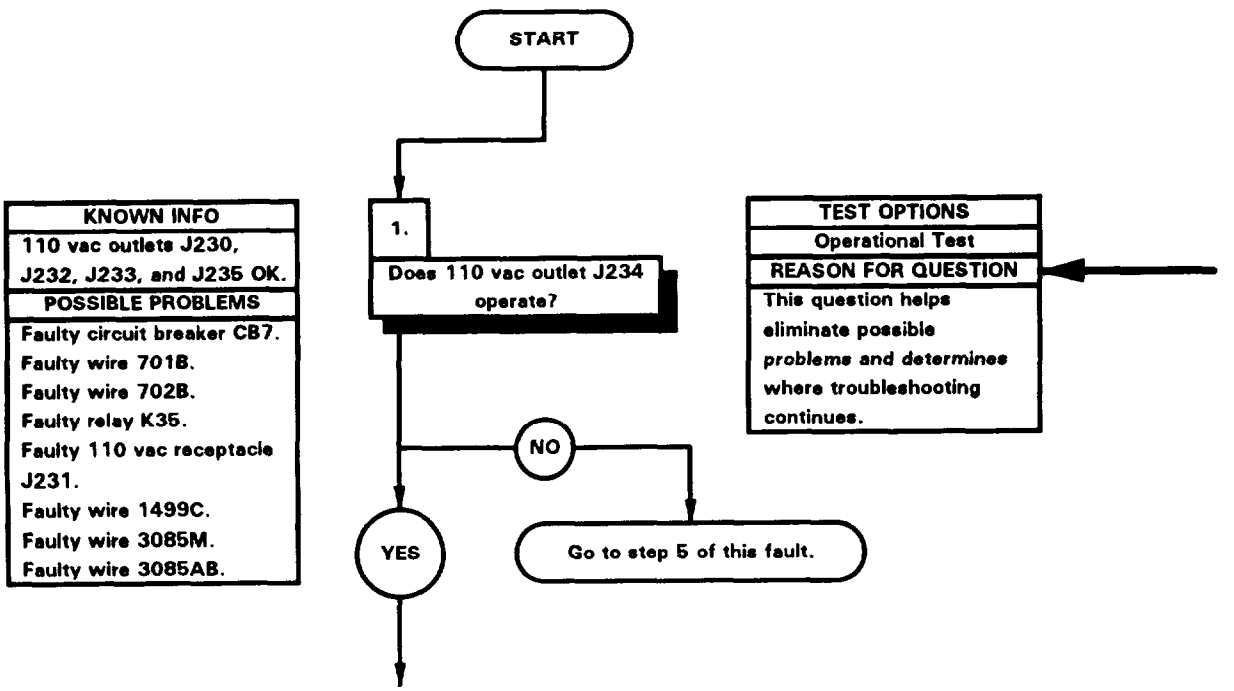
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
AC power connected (TM 9-2320-365-10).

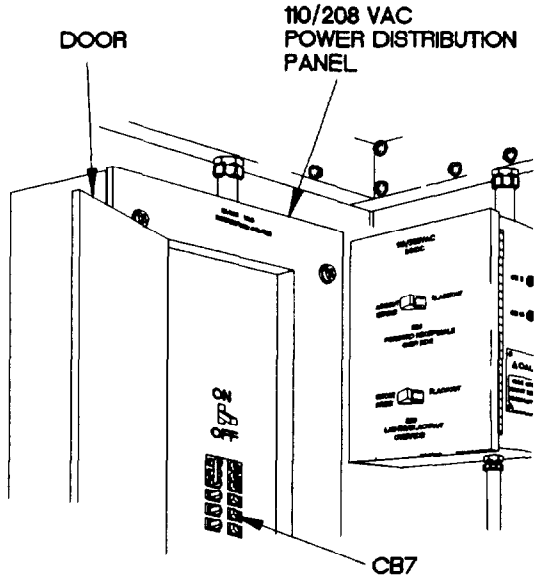
Personnel Required
(2)

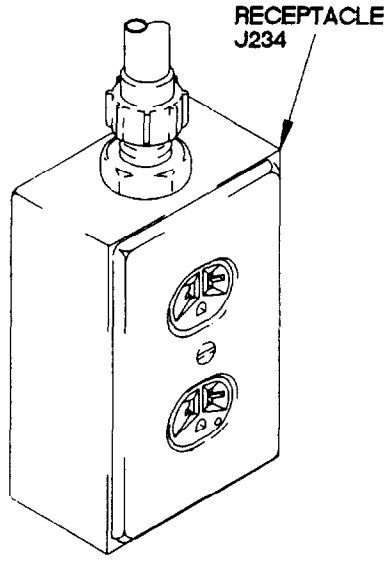
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



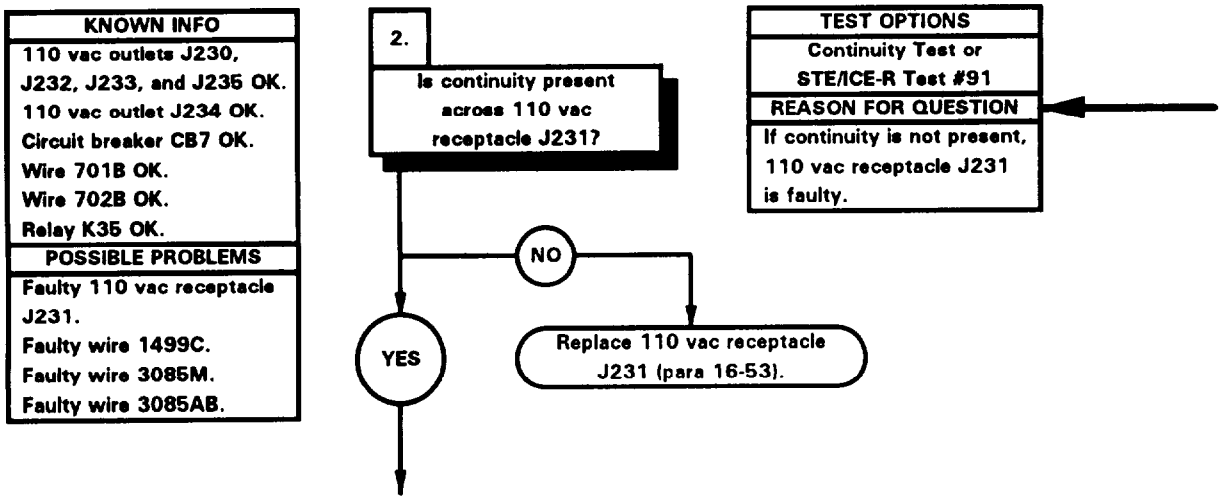
Operational Test
(1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(2) Position circuit breaker CB7 to ON (TM 9-2320-365-10).
(3) Plug any 110 vac appliance in 110 vac receptacle J234.
(4) Check to see if 110 vac appliance operates.
(5) If 110 vac appliance does not operate, go to step 5 *of this fault*.

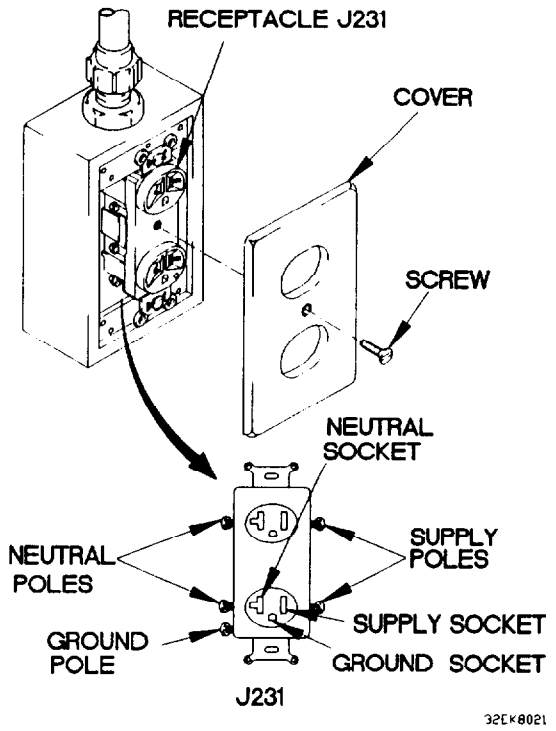




32EK801I

e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)

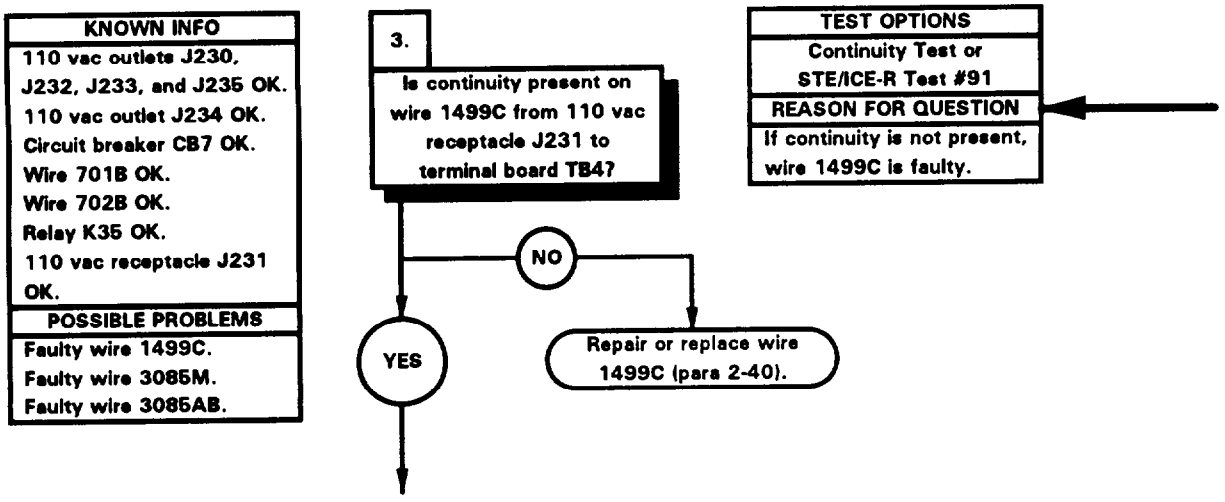




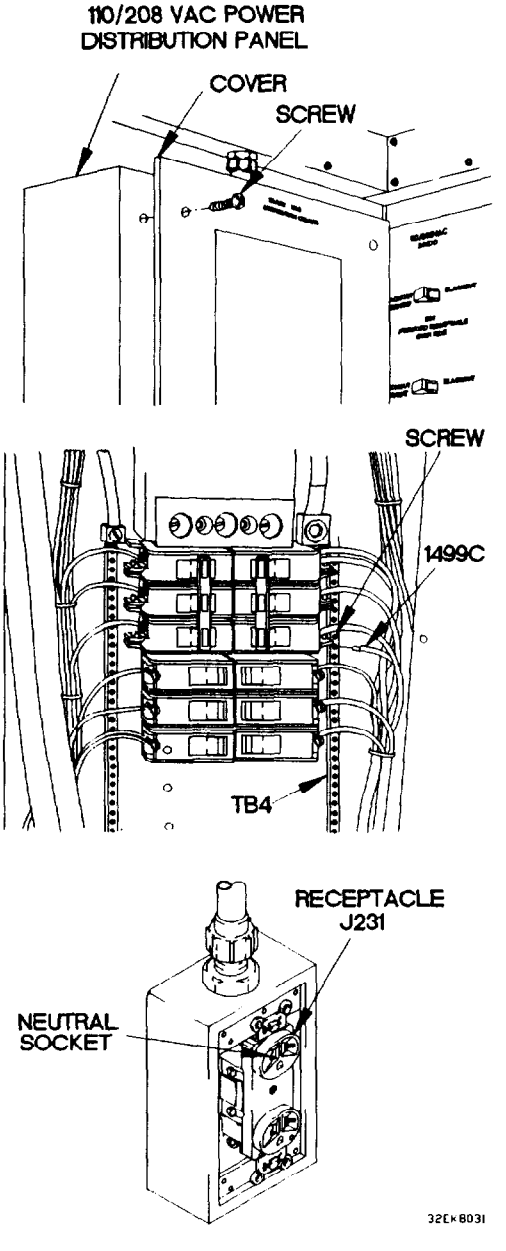
CONTINUITY TEST

(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove screw and cover from 110 vac outlet J231.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J231.
(5) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J231 and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to neutral pole of 110 vac receptacle J231.
(7) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J231 and note reading on multimeter.
(8) Connect positive (+) probe of multimeter to ground pole of 110 vac receptacle J231.
(9) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J231 and note reading on multimeter.
(10) If continuity is not present in steps (5), (7), and (9), replace 110 vac receptacle J231 (para 16-53).

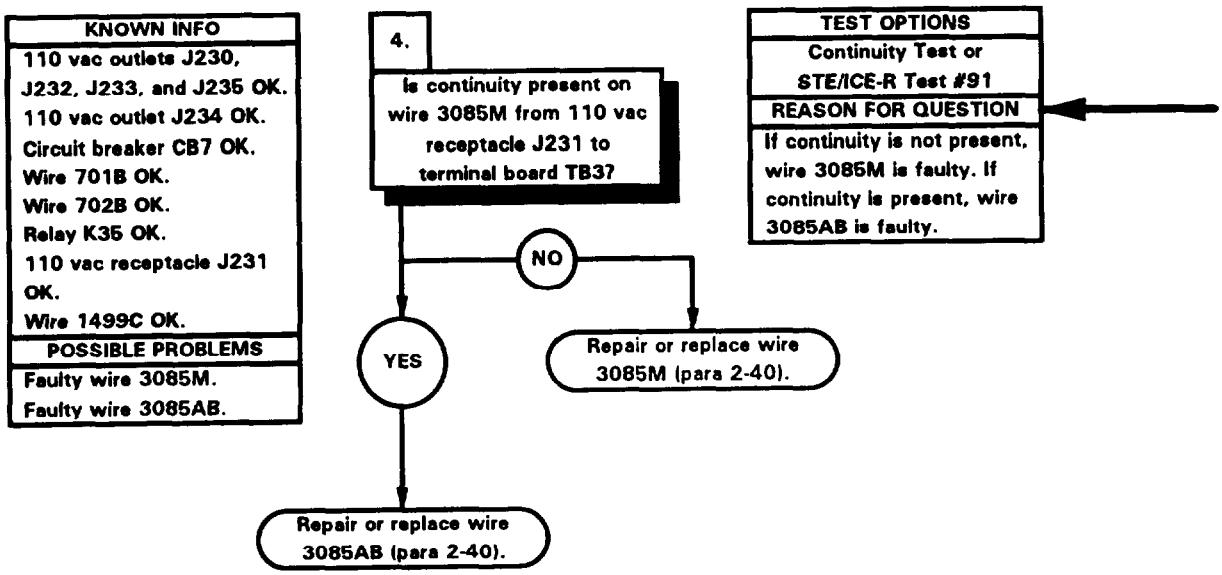
e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)



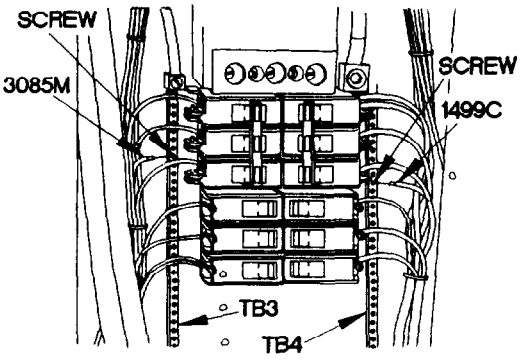
CONTINUITY TEST
(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Loosen screw in terminal board TB4.
(3) Remove wire 1499C from terminal board TB4.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to wire 1499C.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J231 and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 1499C (para 2-40).

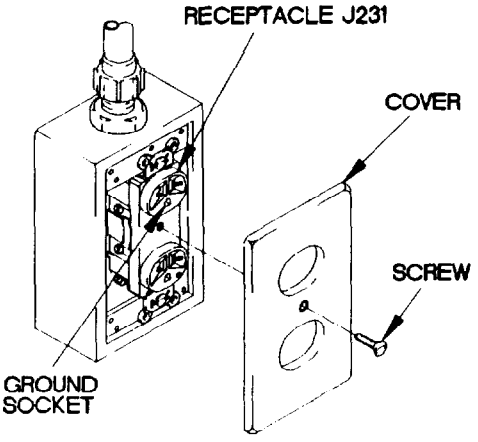


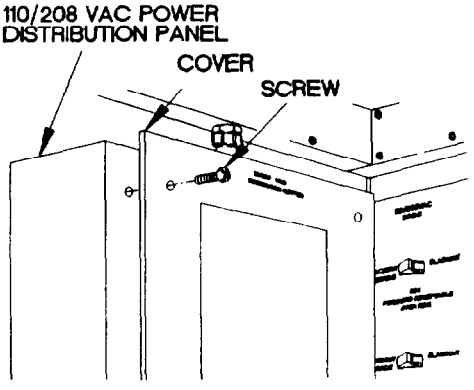
e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085M from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085M.
(5) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J231 and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 3085M (para 2-40).
(7) If continuity is present, repair or replace wire 3085AB (para 2-40).
(8) Position wire 3085M on terminal board TB3.
(9) Tighten screw in terminal board TB3.
(10) Position wire 1499C on terminal board TB4.
(11) Tighten screw in terminal board TB4.
(12) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(13) Install cover on 110 vac outlet J231 with screw.

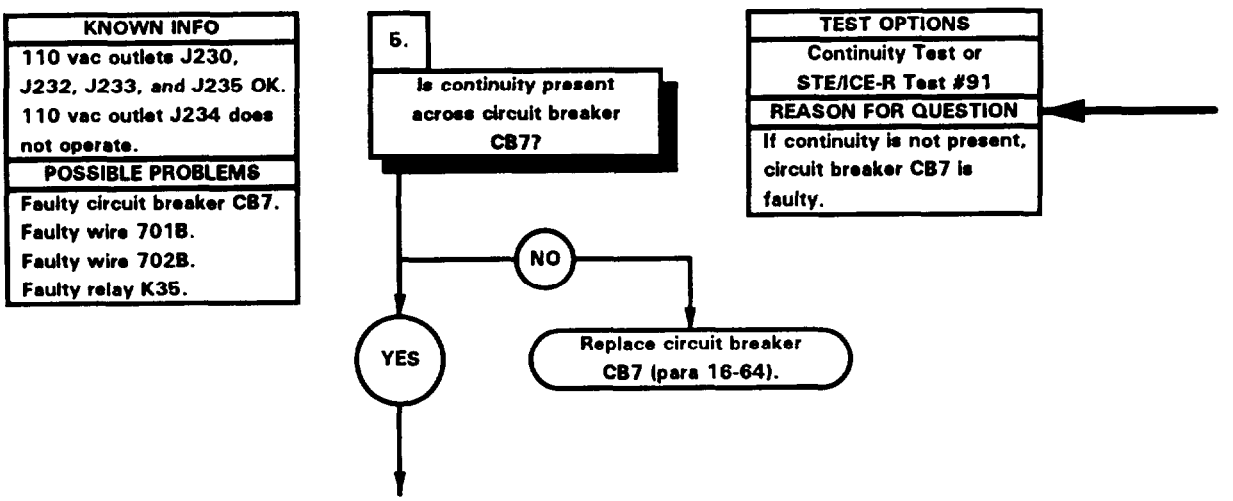




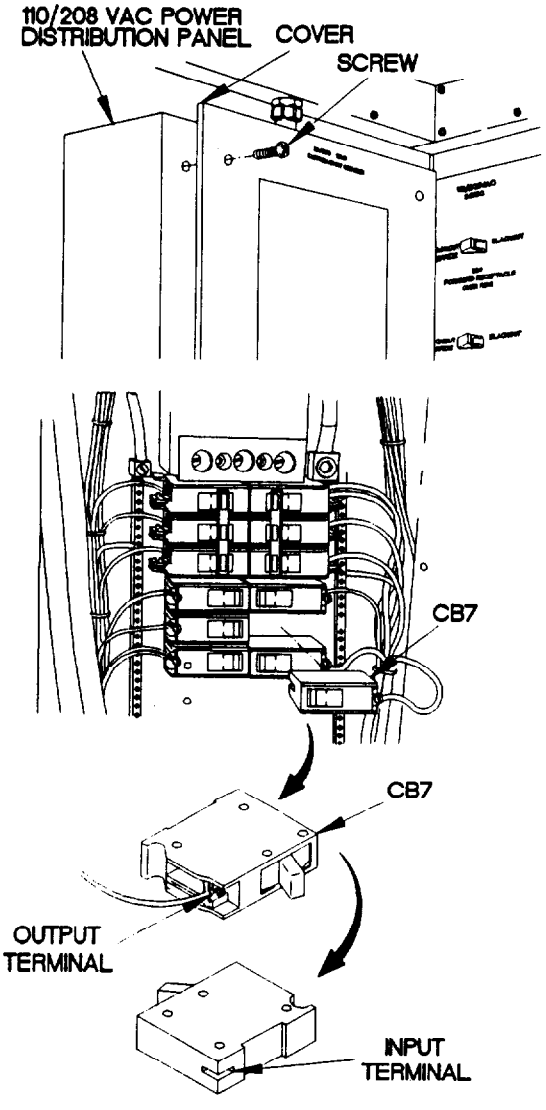


32Ek8041

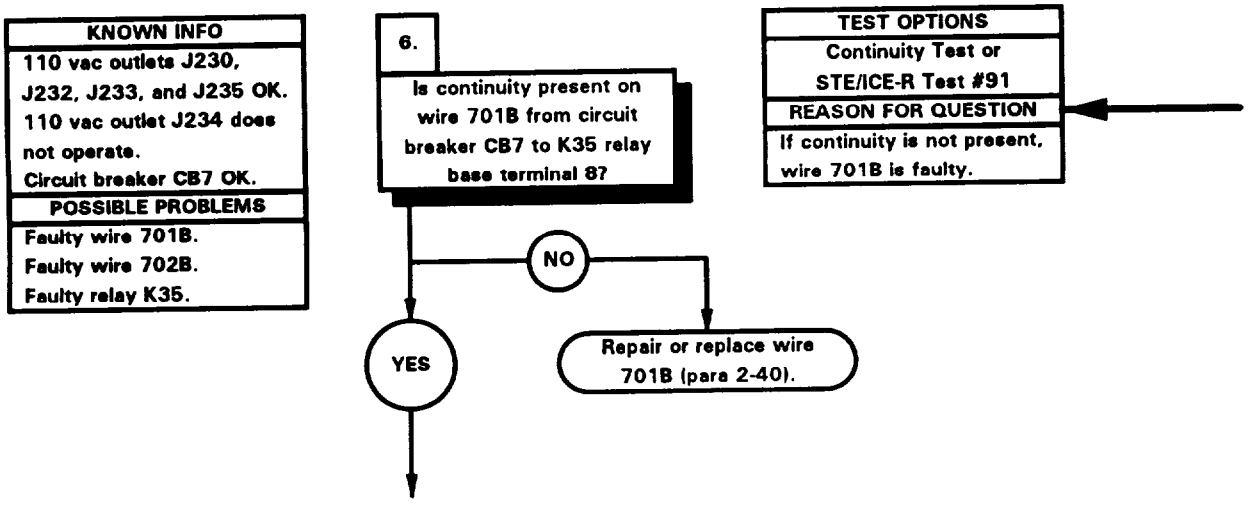
e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Remove circuit breaker CB7 from 110/208 VAC POWER DISTRIBUTION PANEL.
(4) Position circuit breaker CB7 to ON (TM 9-2320-365-10).
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB7.
(7) Connect negative (-) probe of multimeter to input terminal of circuit breaker CB7 and note reading on multimeter.
(8) If continuity is not present, replace circuit breaker CB7 (para 16-64).
(9) Install circuit breaker CB7 on 110/208 VAC POWER DISTRIBUTION PANEL.

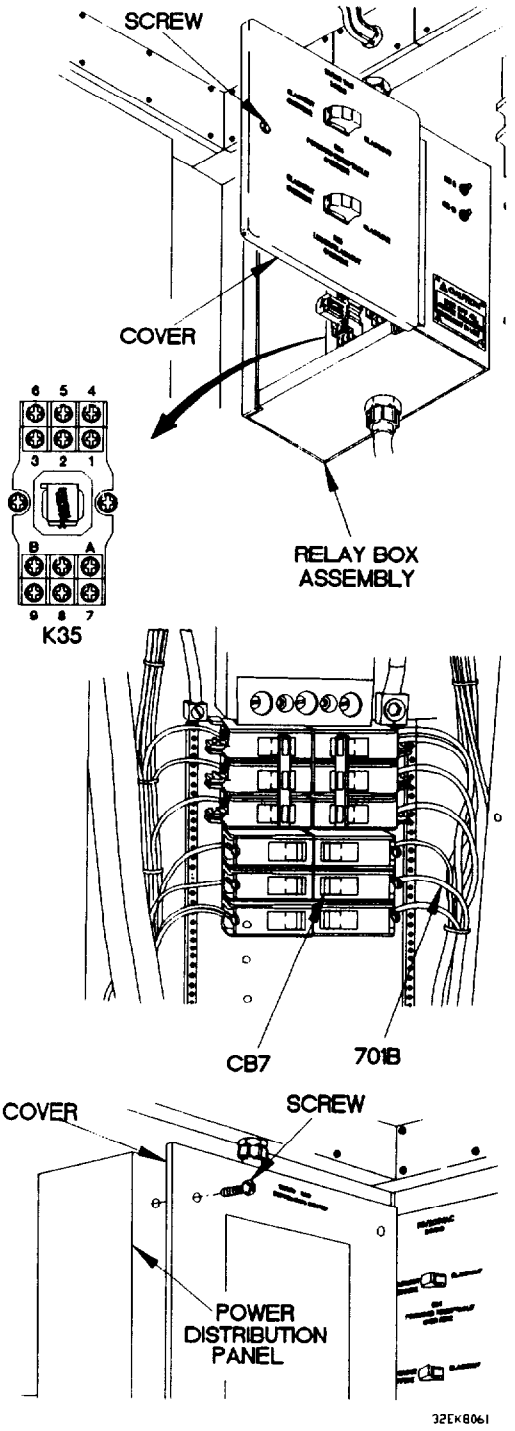


e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)

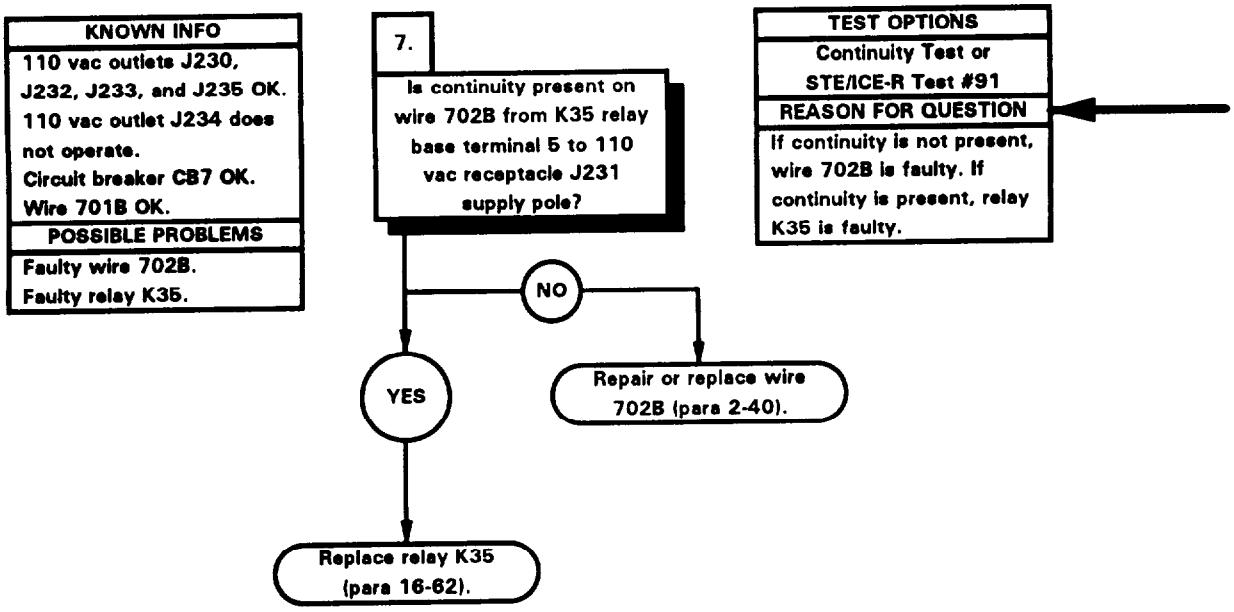


CONTINUITY TEST

(1) Loosen screw in cover.
(2) Open cover on relay box assembly.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to K35 relay base terminal 8.
(5) Connect negative (-) probe of multimeter to output terminal on circuit breaker CB7 and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 701B (para 2-40).
(7) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.

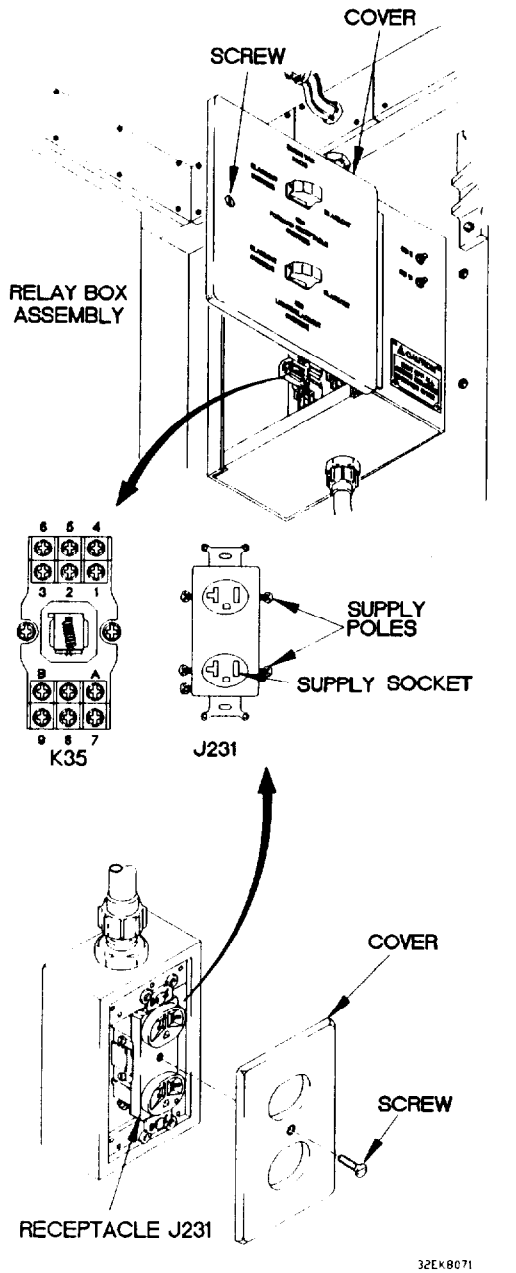


e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Remove screw and cover from 110 vac outlet J231.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to K35 relay base terminal 5.
(4) Connect negative (-) probe of multimeter to supply pole on 110 vac receptacle J231 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 702B (para 2-40).
(6) If continuity is present, replace relay K35 (para 16-62).
(7) Install cover on 110 vac outlet J231 with screw.
(8) Close cover on relay box assembly.
(9) Tighten screw in cover.



e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE

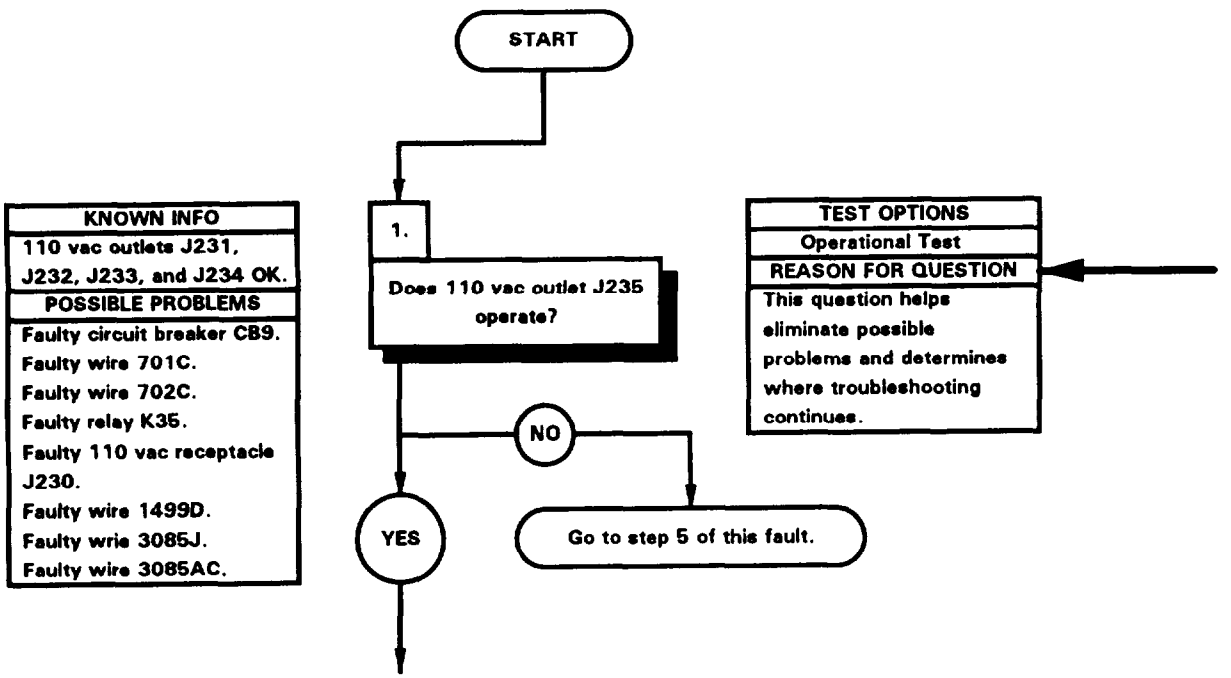
INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
AC power connected (TM 9-2320-365-10).

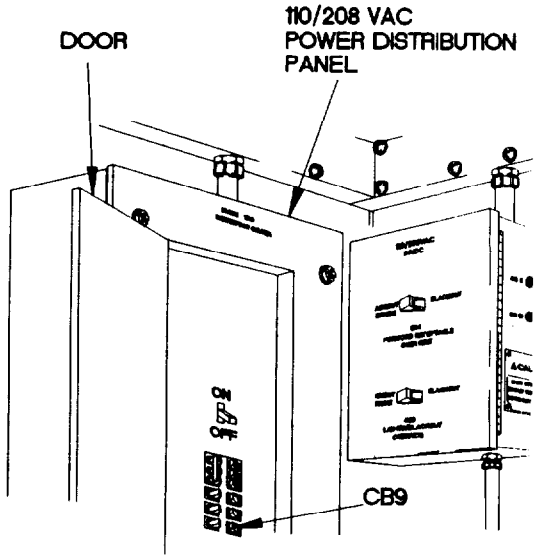
Personnel Required
(2)

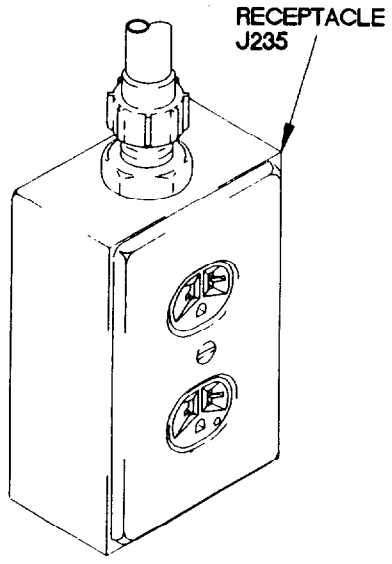
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

References
TM 9-4910-571-12&P



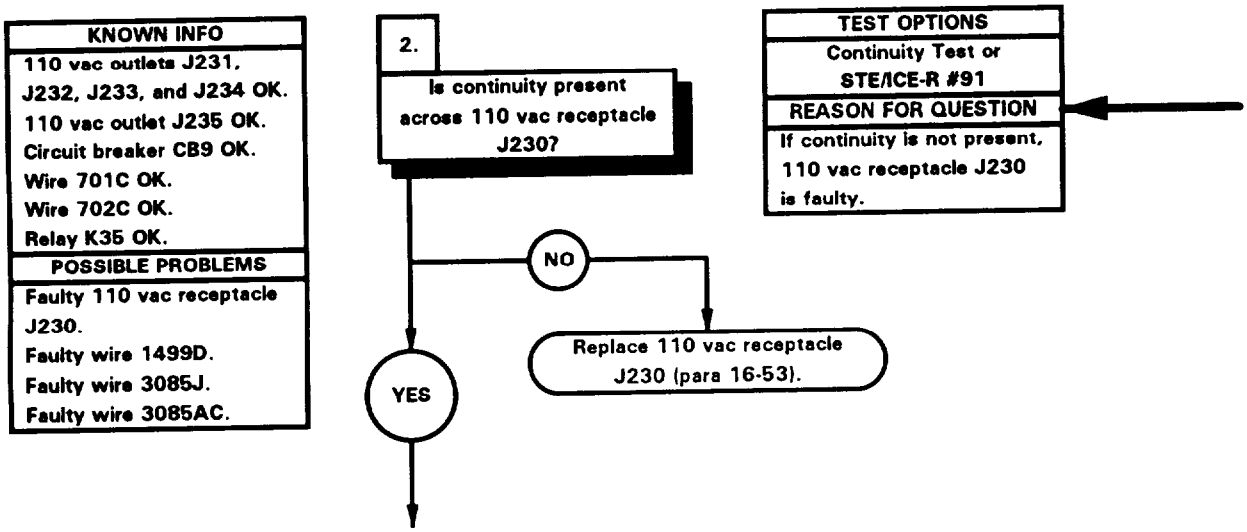
OPERATIONAL TEST
(1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
(2) Position circuit breaker CB9 to ON (TM 9-2320-365-10).
(3) Plug any 110 vac appliance in 110 vac receptacle J235.
(4) Check to see if 110 vac appliance operates.
(5) If 110 vac appliance does not operate, go to step 5 of this fault.

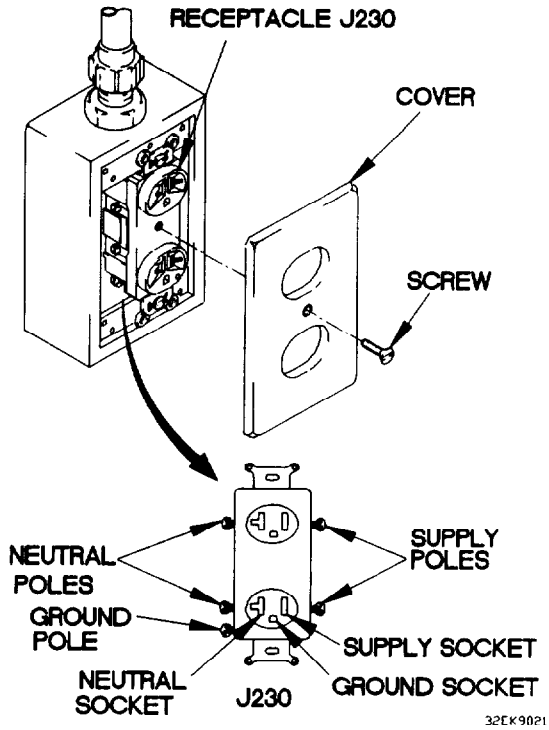




32EK9011

e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)

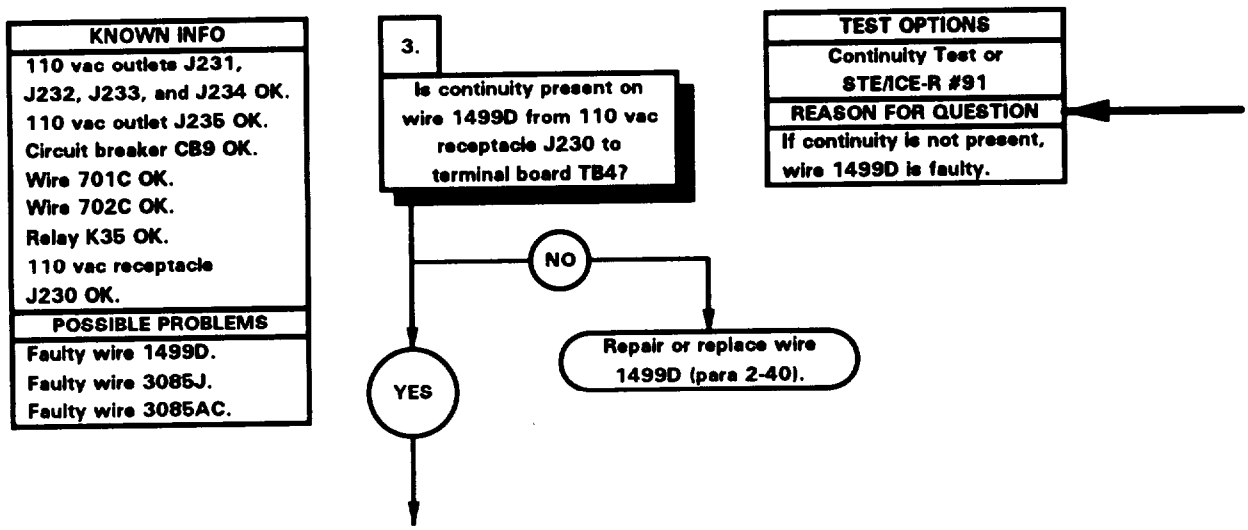




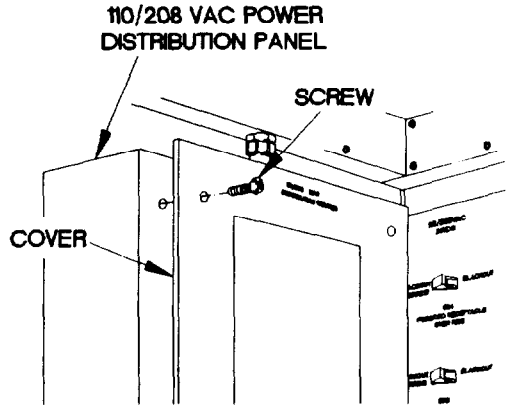
CONTINUITY TEST

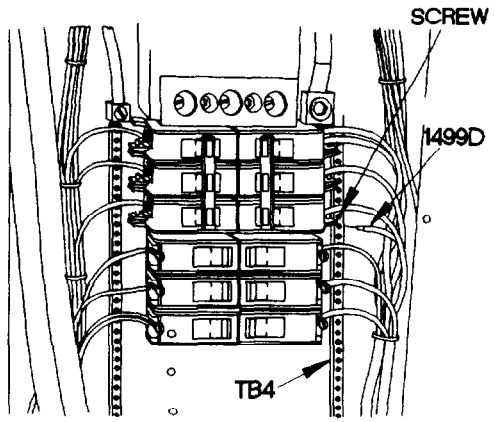
(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove screw and cover from 110 vac outlet J230.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J230.
(5) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J230 and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to neutral pole of 110 vac receptacle J230.
(7) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J230 and note reading on multimeter.
(8) Connect positive (+) probe of multimeter to ground pole of 110 vac receptacle J230.
(9) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J230 and note reading on multimeter.
(10) If continuity is not present in steps (5), (7), and (9), replace 110 vac receptacle J230 (para 16-53).

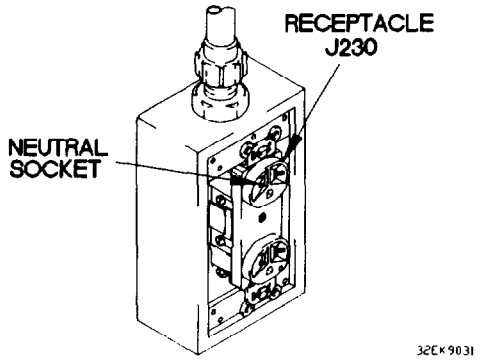
e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)



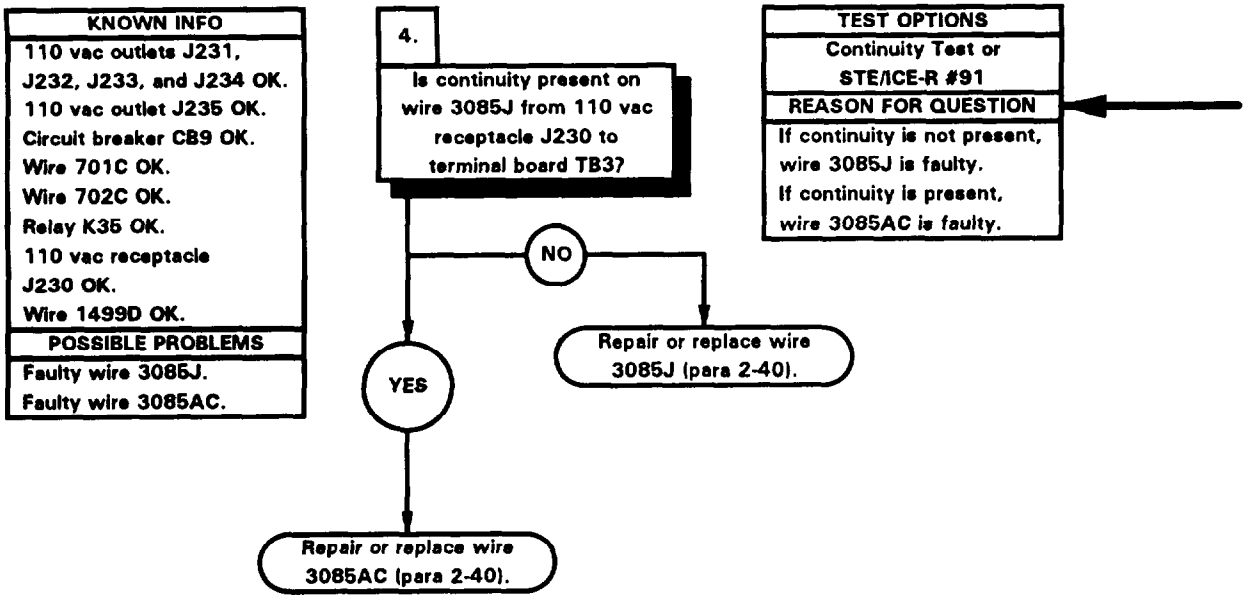
CONTINUITY TEST
(1) Remove six screws and cover from 110/208 POWER DISTRIBUTION PANEL.
(2) Loosen screw in terminal board TB4.
(3) Remove wire 1499D from terminal board TB4.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to wire 1499D.
(6) Connect negative (-) probe of multimeter to neutral socket of 110 vac receptacle J230 and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 1499D (para 2-40).





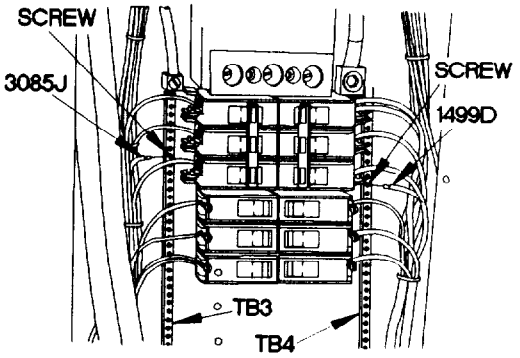


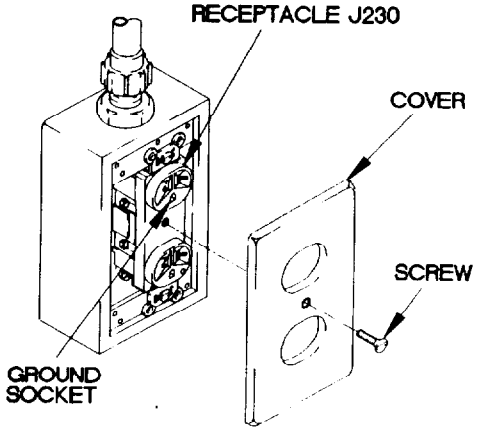
e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)

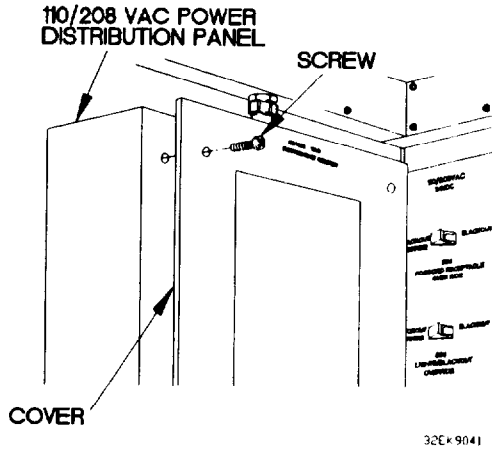


CONTINUITY TEST

(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085J from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085J.
(5) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J230 and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 3085J (para 2-40).
(7) If continuity is present, repair or replace wire 3085AC (para 2-40).
(8) Position wire 3085J on terminal board TB3.
(9) Tighten screw in terminal board TB3.
(10) Position wire 1499D on terminal board TB4.
(11) Tighten screw in terminal board TB4.
(12) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(13) Install cover on 110 vac outlet J230 with screws.

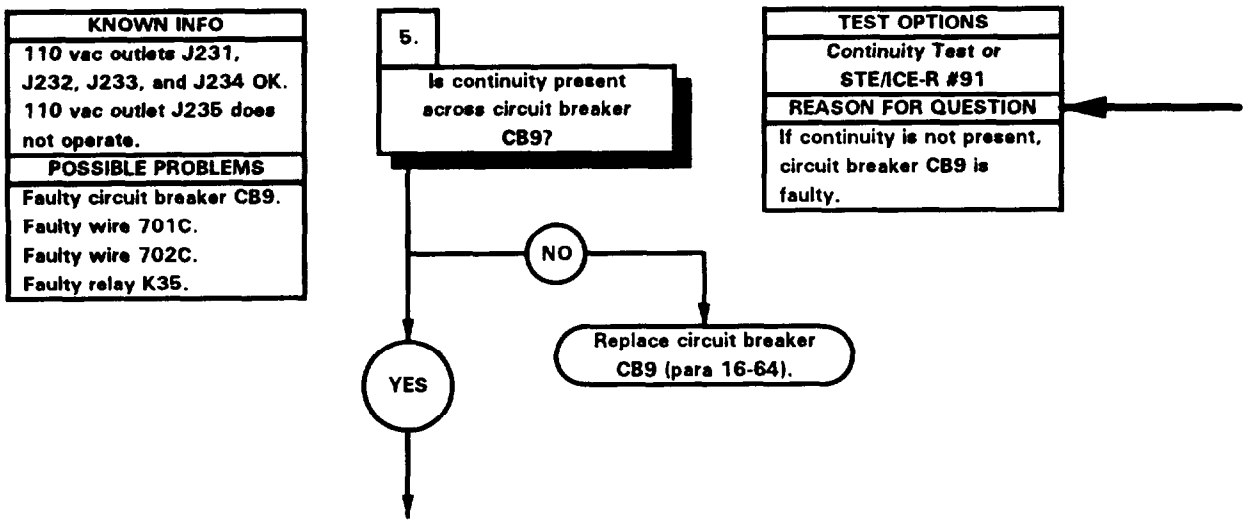




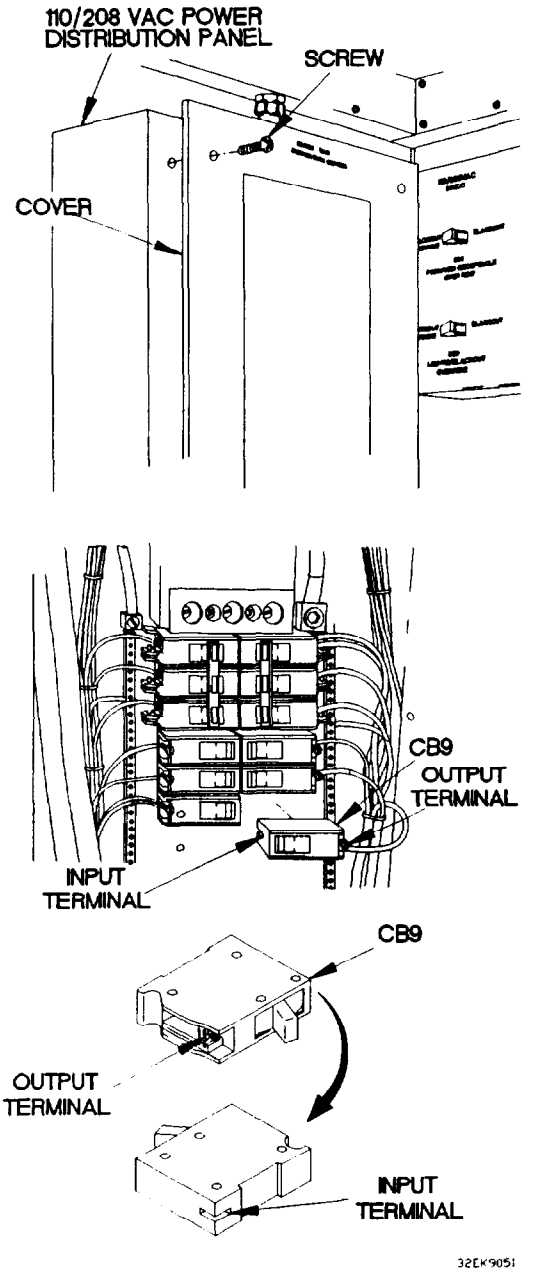


32EK9041

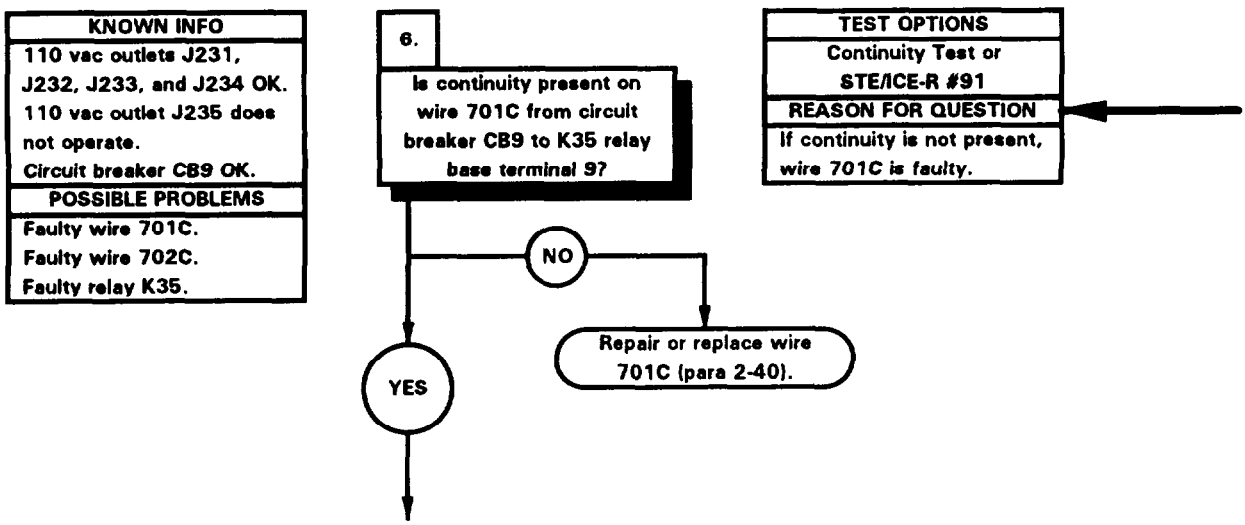
e111. M1079 110 VAC OUTLET DOES NOT OPERATE (CONT)

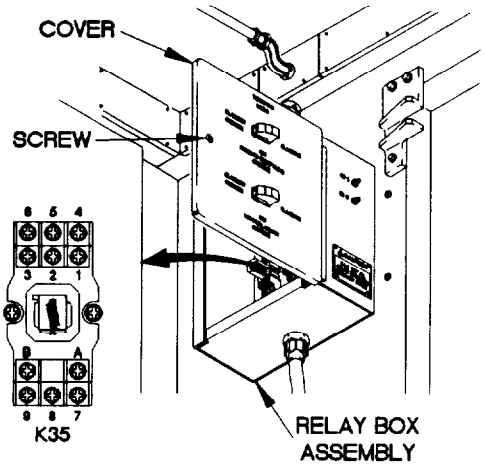


CONTINUITY TEST
(1) Disconnect AC power (TM 9-2320-365-10).
(2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Remove circuit breaker CB9 from 110/208 POWER DISTRIBUTION PANEL.
(4) Position circuit breaker CB9 to ON (TM 9-2320-365-10).
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB9.
(7) Connect negative (-) probe of multimeter to input terminal of circuit breaker CB9 and note reading on multimeter.
(8) If continuity is not present, replace circuit breaker CB9 (para 16-64).
(9) Install circuit breaker CB9 on 110/208 VAC POWER DISTRIBUTION PANEL.



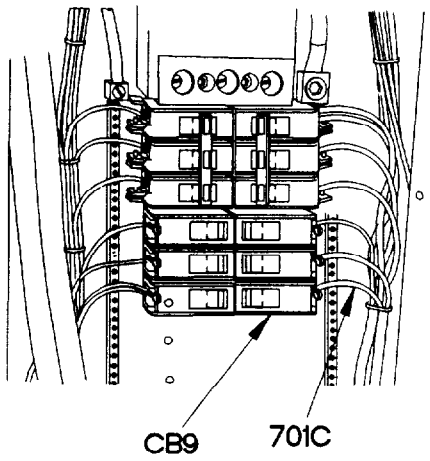
e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)

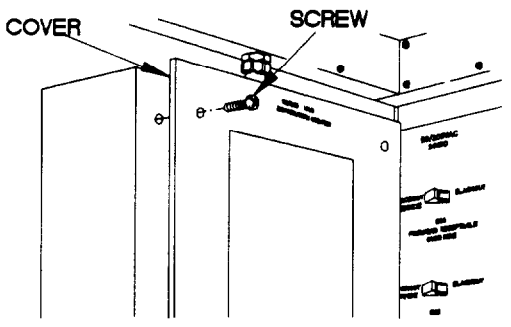




CONTINUITY TEST

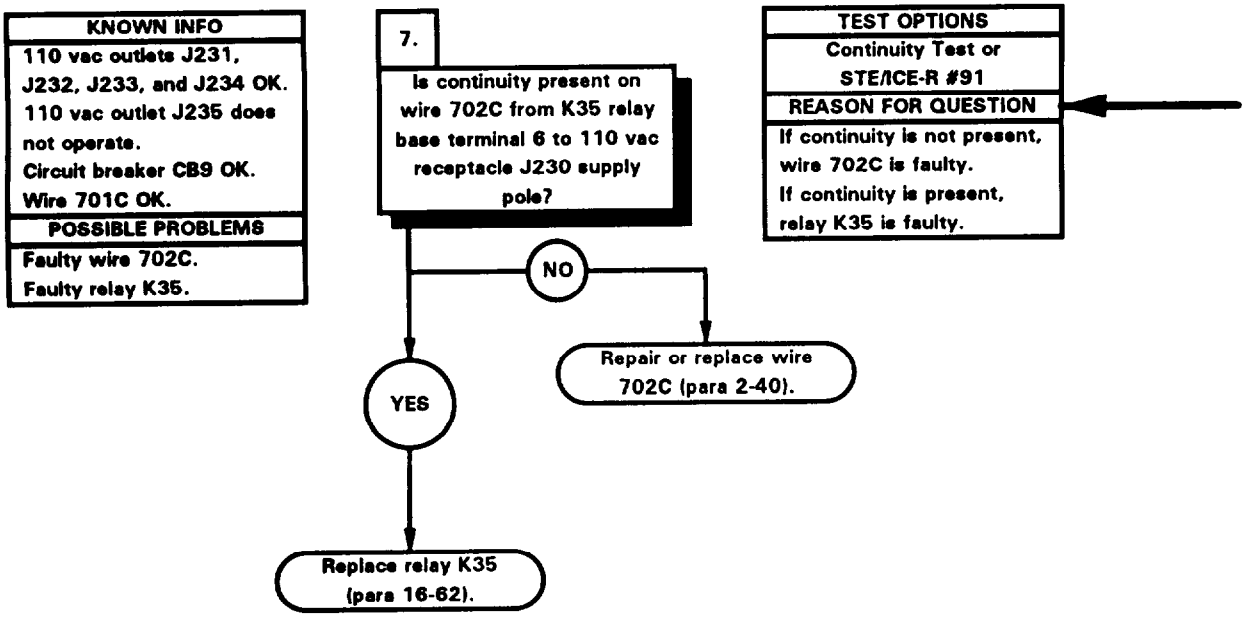
(1) Loosen screw in cover.
(2) Open cover on relay box assembly.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to K35 relay base terminal 9.
(5) Connect negative (-) probe of multimeter to output terminal on circuit breaker CB9 and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 701C (para 2-40).
(7) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.



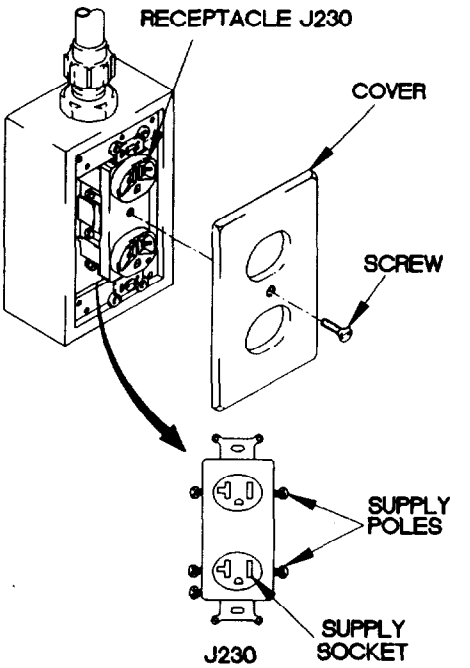


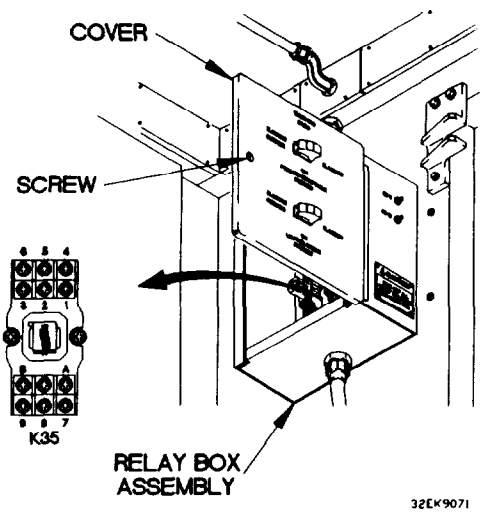
32EK9061

e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Remove screw and cover from 110 vac outlet J230.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to K35 relay base terminal 6.
(4) Connect negative (-) probe of multimeter to supply pole on 110 vac receptacle J230 and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 702C (para 2-40).
(6) If continuity is present, replace relay K35 (para 16-62).
(7) Install cover on 110 vac outlet J230 with screw.
(8) Close cover on relay box assembly.
(9) Tighten screw in cover.





•112. M1079 BLACKOUT LIGHT(S) DOES NOT OPERATE

INITIAL SETUP

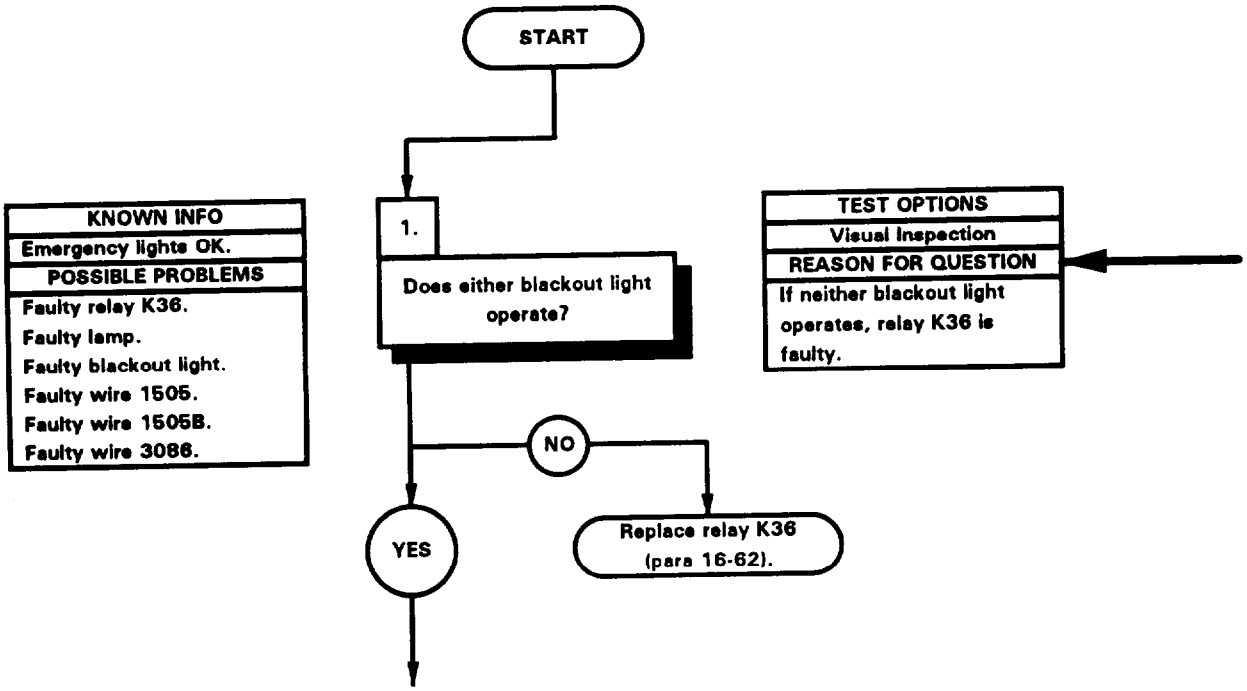
Equipment Condition
Engine shut down (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (12) (Item 81, Appendix G)

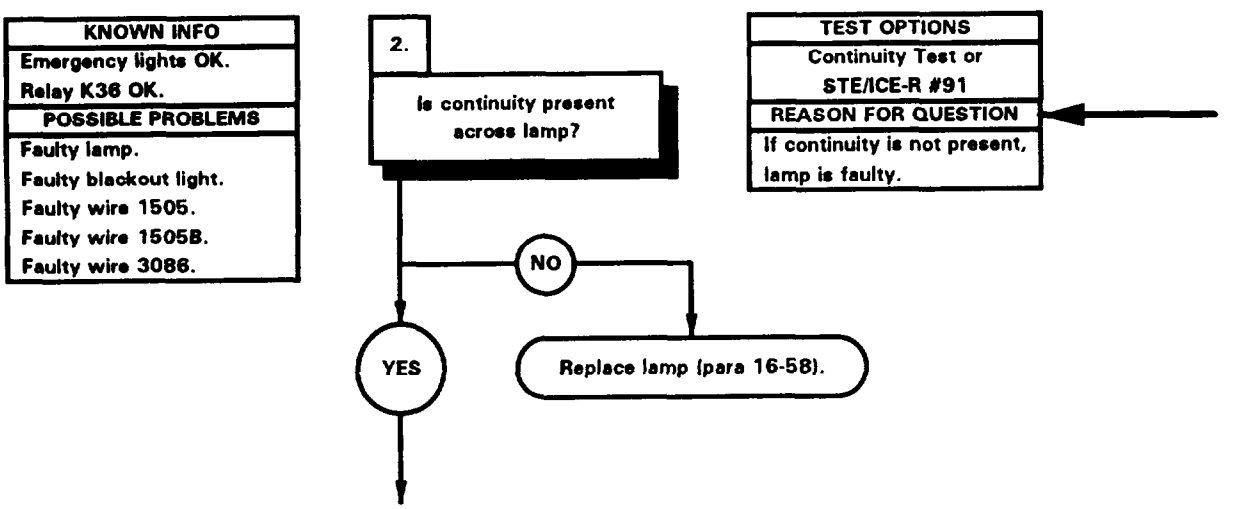
Personnel Required
(2)

References
TM 9-4910-571-12&P



(1) Push in circuit breaker CB11 (TM 9-2320-365-10).
(2) Push in circuit breaker CB10 (TM 9-2320-365-10).
(3) Position INTERIOR LIGHTS switch S32 to ON (TM 9-2320-365-10).
(4) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT (TM 9-2320-365-10).
(5) Open any blackout shield or RH door (TM 9-2320-365-10).
(6) Check to see if either blackout light operates.
(7) If neither blackout light operates, replace relay K36 (para 16-62).
(8) Position INTERIOR LIGHTS switch S32 to OFF (TM 9-2320-365-10).
(9) Pull out circuit breaker CB10 (TM 9-2320-365-10).
(10) Pull out circuit breaker CB11 (TM 9-2320-365-10).

e112. M1079 BLACKOUT LIGHT(S) DOES NOT OPERATE (CONT)

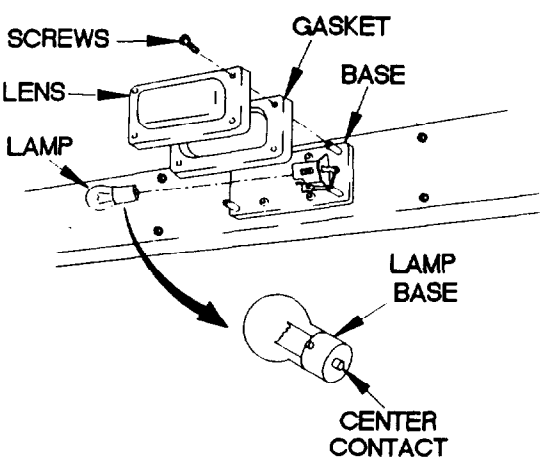


CONTINUITY TEST

NOTE

Both blackout light lamps are tested the same way. Refer to Table 2-14. M1079 Blackout Light Locations and Connector Numbers for details. Blackout light DS75 shown.

(1) Remove four screws and lens from base.
(2) Remove gasket from base.
(3) Remove lamp from base.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to center contact of lamp base.
(6) Connect negative (-) probe of multimeter to lamp base and note reading on multimeter.
(7) If continuity is not present, replace lamp (para 16-58).
(8) Install lamp in base.
(9) Install gasket on base.
(10) Install lens on base with four screws.

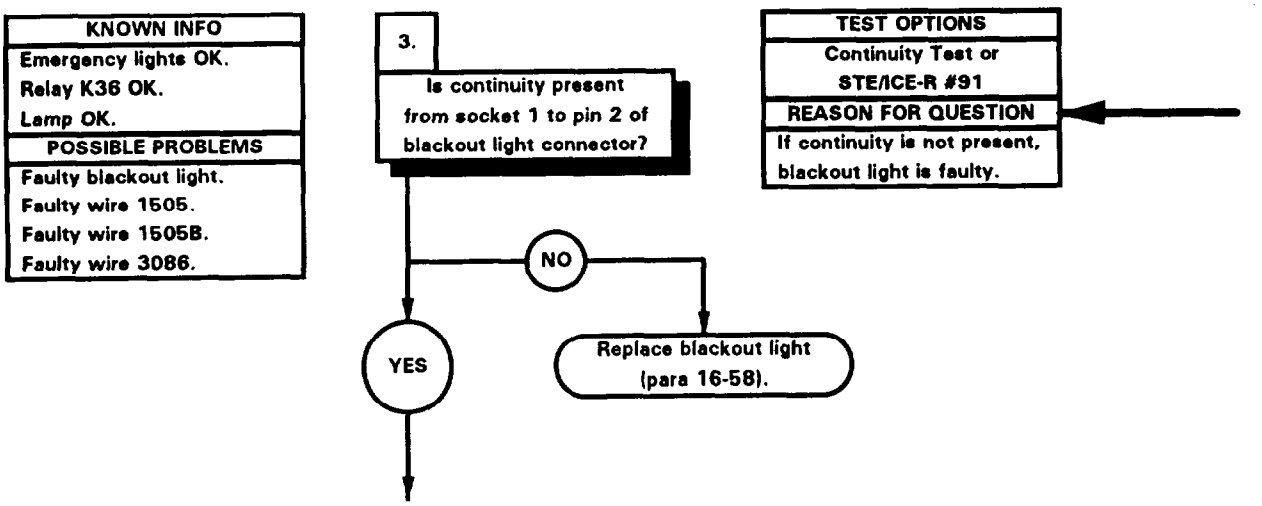


32EK4021

Table 2-14. M1079 Blackout Light Locations and Connector Numbers

LOCATION	NUMBER	CONNECTORS
RH side	DS75	J162, P162
LH side	DS76	J164, P164

e112. M1079 BLACKOUT LIGHT(S) DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Remove 12 screws, lockwashers, and washers from raceway cover. Discard lockwashers.

(2) Remove raceway cover from raceway.

NOTE

Both blackout lights are tested the same way. Refer to Table 2-14. M1079 Blackout Light Locations and Connector Numbers for details. Blackout Light DS75 shown.

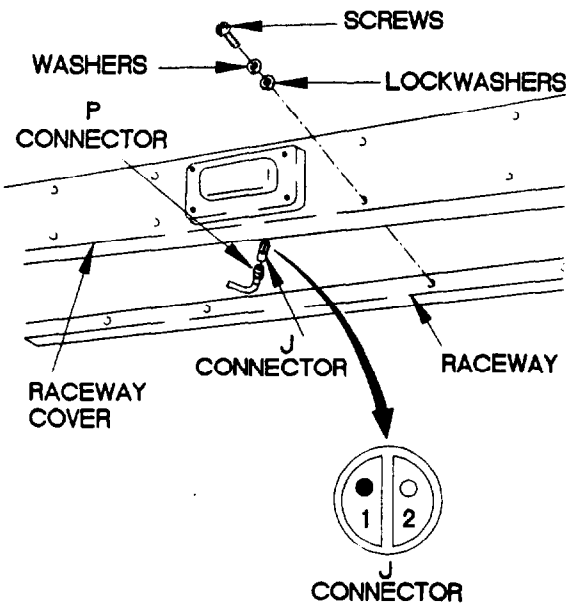
(3) Disconnect J connector from P connector.

(4) Set multimeter to ohms.

(5) Connect positive (+) probe of multimeter to socket 1 of J connector.

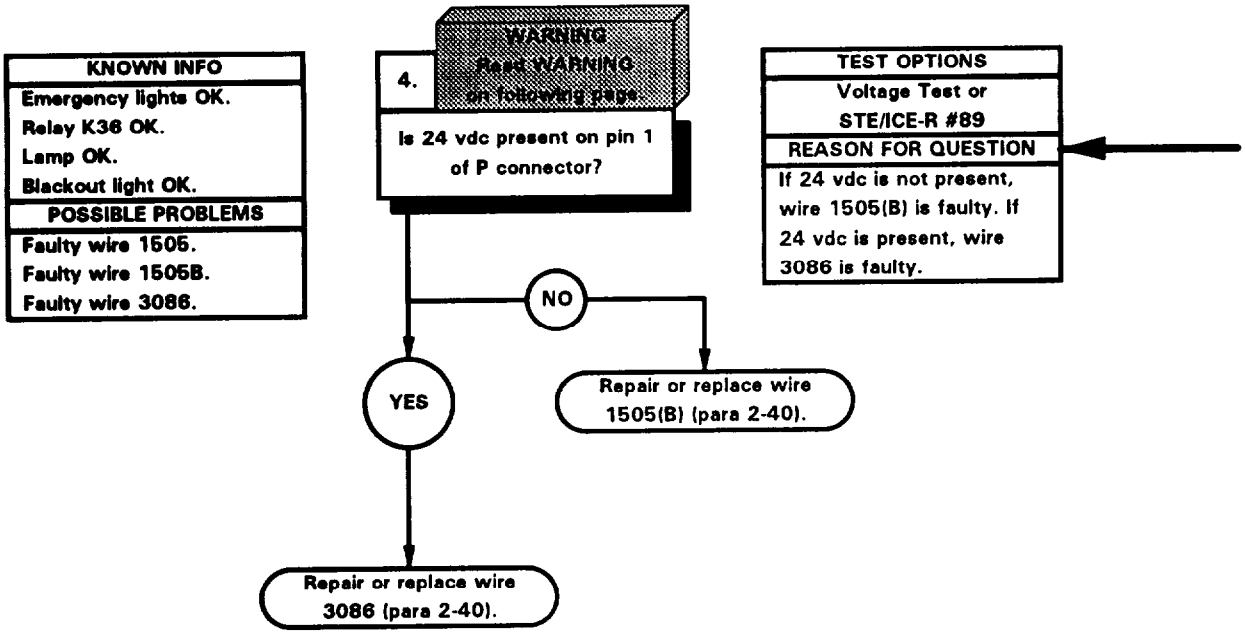
(6) Connect negative (-) probe of multimeter to pin 2 of J connector and note reading on multimeter.

(7) If continuity is not present, replace blackout light (para 16-58).



32EK4031

e112. M1079 BLACKOUT LIGHT(S) DOES NOT OPERATE (CONT)

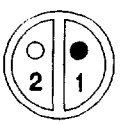


WARNING

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) Push in circuit breaker CB11 (TM 9-2320-365-10).
(2) Push in circuit breaker CB10 (TM 9-2320-365-10).
(3) Position INTERIOR LIGHTS switch S32 to ON (TM 9-2320-365-10).
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to pin 1 of P connector. Refer to Table 2-14. M1079 Blackout Light Locations and Connector Numbers.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If 24 vdc is not present, repair or replace wire 1505(B) (para 2-40).
(8) If 24 vdc is present, repair or replace wire 3086 (para 2-40).
(9) Position INTERIOR LIGHTS switch S32 to OFF (TM 9-2320-365-10).
(10) Pull out circuit breaker CB10 (TM 9-2320-365-10).
(11) Pull out circuit breaker CB11 (TM 9-2320-365-10).
(12) Install blackout light (para 16-58).



P
CONNECTOR

32EK4041

•113. M1079 EMERGENCY LIGHT(S) DOES NOT OPERATE

INITIAL SETUP

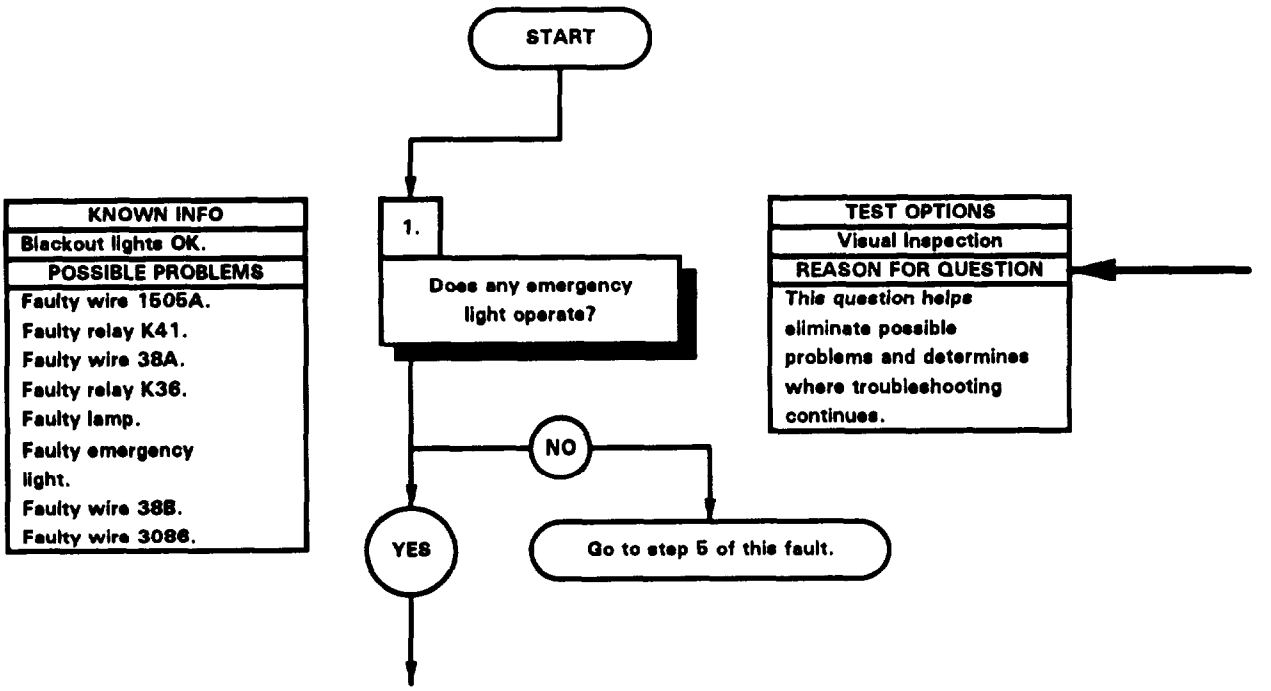
Equipment Condition
Engine shut down (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts
Lockwasher (12) (emergency lights DS78, DS79, and DS97) (Item 81, Appendix G)
Lockwasher (16) (emergency light DS96) (Item 81, Appendix G)

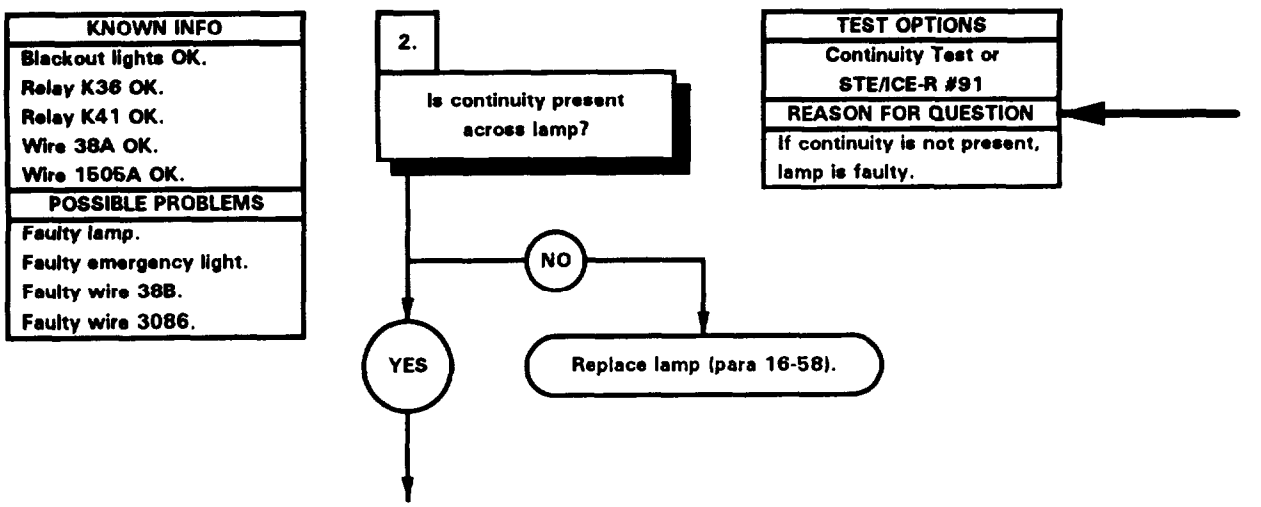
Personnel Required
(2)

References
TM 9-4910-571-12&P

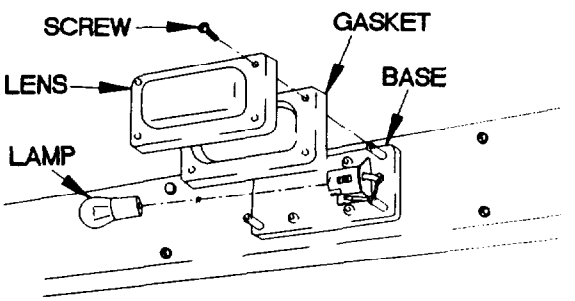


(1) Disconnect AC power (TM 9-2320-365-10).
(2) Push in circuit breaker CB11 (TM 9-2320-365-10).
(3) Push in circuit breaker CB10 (TM 9-2320-365-10).
(4) Position INTERIOR LIGHTS switch S32 to ON (TM 9-2320-365-10).
(5) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT OVERRIDE (TM 9-2320-365-10).
(6) Check to see if any emergency light operates.
(7) If all emergency lights do not operate, go to step 5 of this fault.
(8) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT (TM 9-2320-365-10).
(9) Position INTERIOR LIGHTS switch S32 to OFF (TM 9-2320-365-10).
(10) Pull out circuit breaker CB10 (TM 9-2320-365-10).
(11) Pull out circuit breaker CB11 (TM 9-2320-365-10).

e113. M1079 EMERGENCY LIGHT(S) DOES NOT OPERATE (CONT)



CONTINUITY TEST
NOTE All emergency light lamps are tested the same way. Refer to Table 2-15. M1079 Emergency Light Locations and Connector Numbers for details. Emergency light DS78 shown.
(1) Remove four screws and lens from base.
(2) Remove gasket from base.
(3) Remove lamp from base.
(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 lamp (16-58).
(8) Install lamp in base.

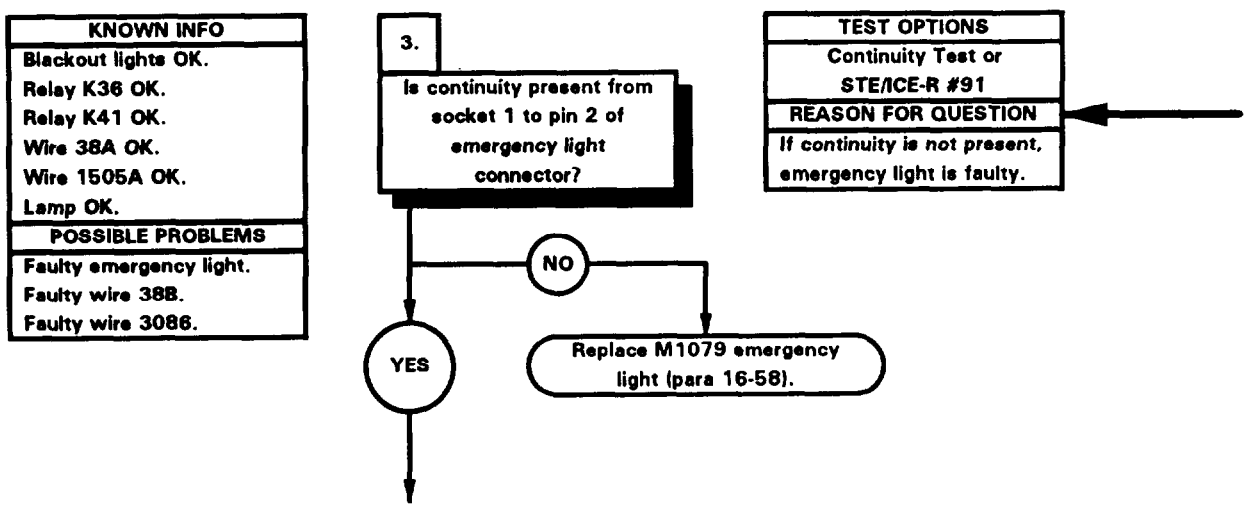


32EX1021

Table 2-15. M1079 Emergency Light Locations and Connector Numbers

LOCATION	NUMBER	CONNECTOR
RH SIDE	DS78	J163,P163
LH SIDE	DS79	J165, P165
FRONT	DS96	J166, P166
REAR	DS97	J167, P167

e113. M1079 EMERGENCY LIGHT(S) DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Remove 12 screws, lockwashers, and washers from raceway cover. Discard lockwashers.

NOTE

Perform step (2) on front raceway cover.

(2) Remove two screws, lockwashers, and washers from each end of raceway cover. Discard lockwashers.

(3) Remove raceway cover from raceway.

NOTE

All emergency lights are tested the same way. Refer to Table 2-15. M1079 Emergency Light Locations and Connector Numbers for details. Emergency light DS78 shown.

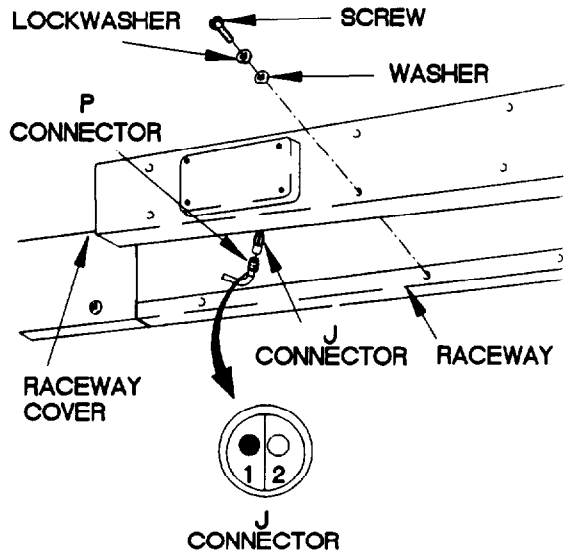
(4) Disconnect J connector from P connector.

(5) Set multimeter to ohms.

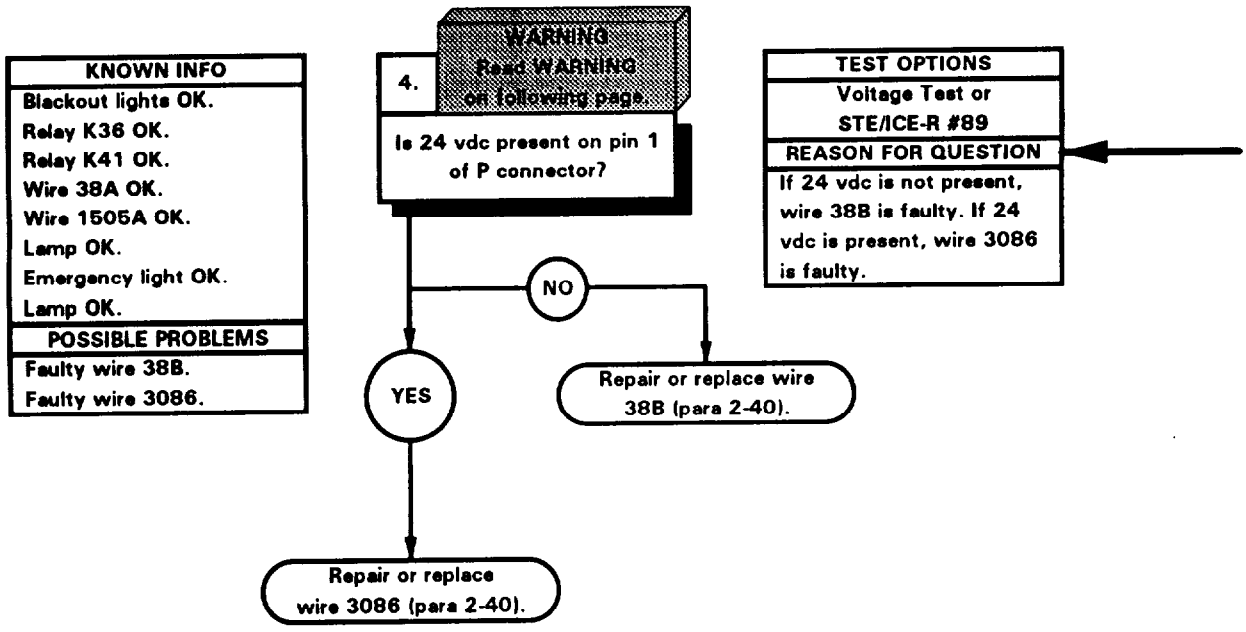
(6) Connect positive (+) probe of multimeter to socket 1 of J connector.

(7) Connect negative (-) probe of multimeter to pin 2 of J connector and note reading on multimeter.

(8) If continuity is not present, replace M1079 emergency light (para 16-58).



e113. M1079 EMERGENCY LIGHT(S) DOES NOT OPERATE (CONT)

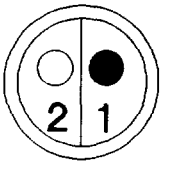


WARNING

Remove rings, bracelets, wristwatches, neck chains, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

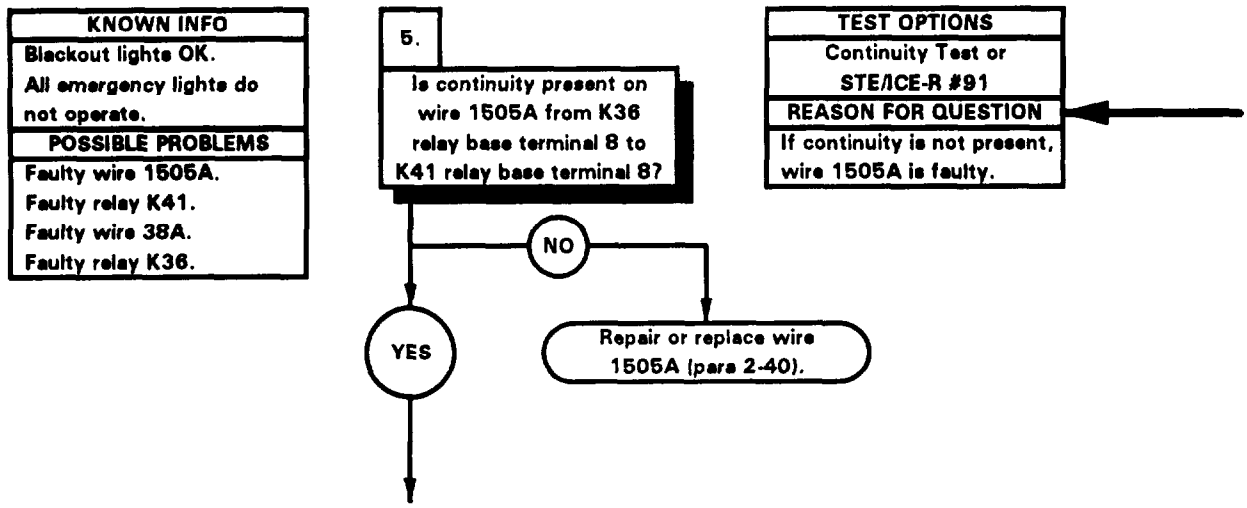
(1) Push in circuit breaker CB11 (TM 9-2320-365-10).
(2) Push in circuit breaker CB10 (TM 9-2320-365-10).
(3) Position INTERIOR LIGHTS switch S32 to ON (TM 9-2320-365-10).
(4) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT OVERRIDE (TM 9-2320-365-10).
(5) Set multimeter to volts dc.
(6) Connect positive (+) probe of multimeter to pin 1 of P connector. Refer to Table 2-15. M1079 Emergency Light Locations and Connector Numbers.
(7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(8) If 24 vdc is not present, repair or replace wire 38B (para 2-40).
(9) If 24 vdc is present, repair or replace wire 3086 (para 2-40).
(10) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT (TM 9-2320-365-10).
(11) Position INTERIOR LIGHTS switch to OFF (TM 9-2320-365-10).
(12) Pull out circuit breaker CB10 (TM 9-2320-365-10).
(13) Pull out circuit breaker CB11 (TM 9-2320-365-10).
(14) Install M1079 emergency light (para 16-58).



P
CONNECTOR

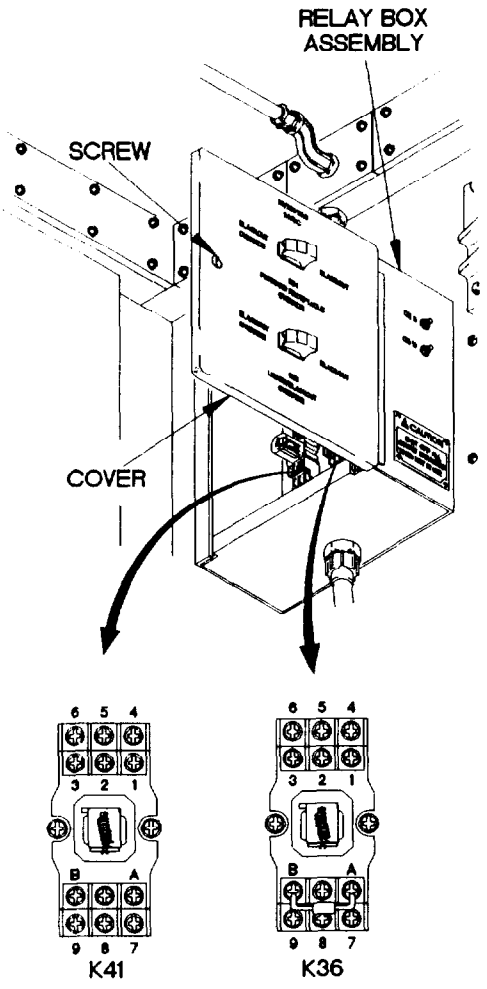
32EK1041

e113. M1079 EMERGENCY LIGHT(S) DOES NOT OPERATE (CONT)



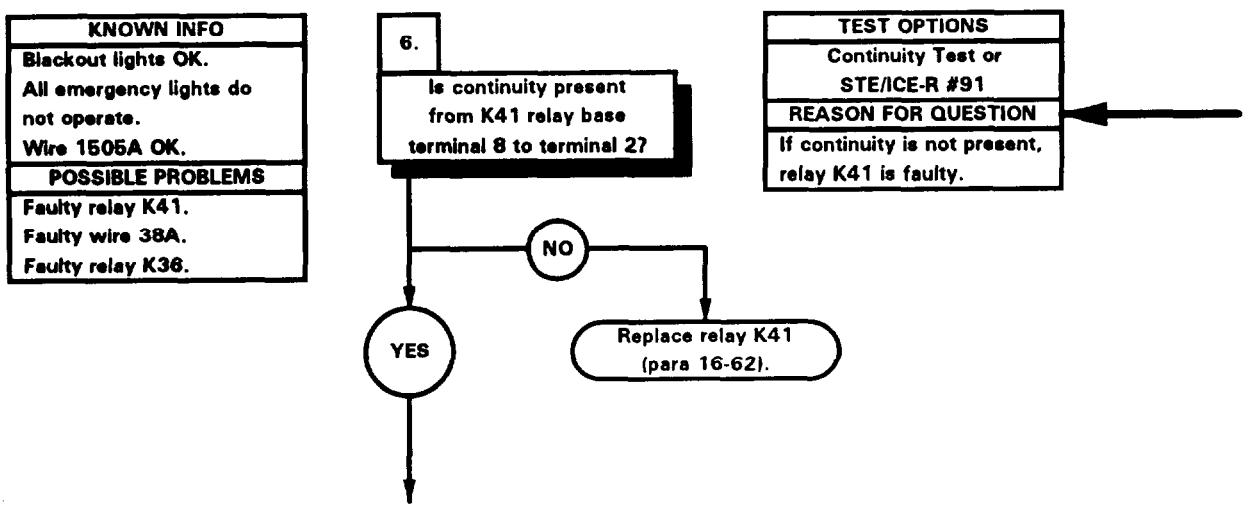
CONTINUITY TEST

(1) Loosen screw in cover.
(2) Open cover on relay box assembly.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to K36 relay base terminal 8.
(5) Connect negative (-) probe of multimeter to K41 relay base terminal 8 and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 1505A (para 2-40).

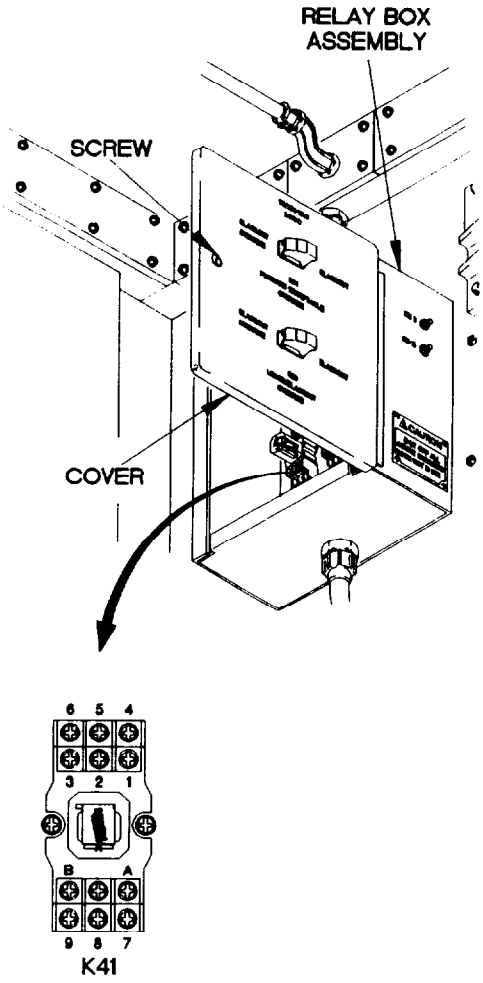


32EK1051

e113. M1079 EMERGENCY LIGHT(S) DOES NOT OPERATE (CONT)

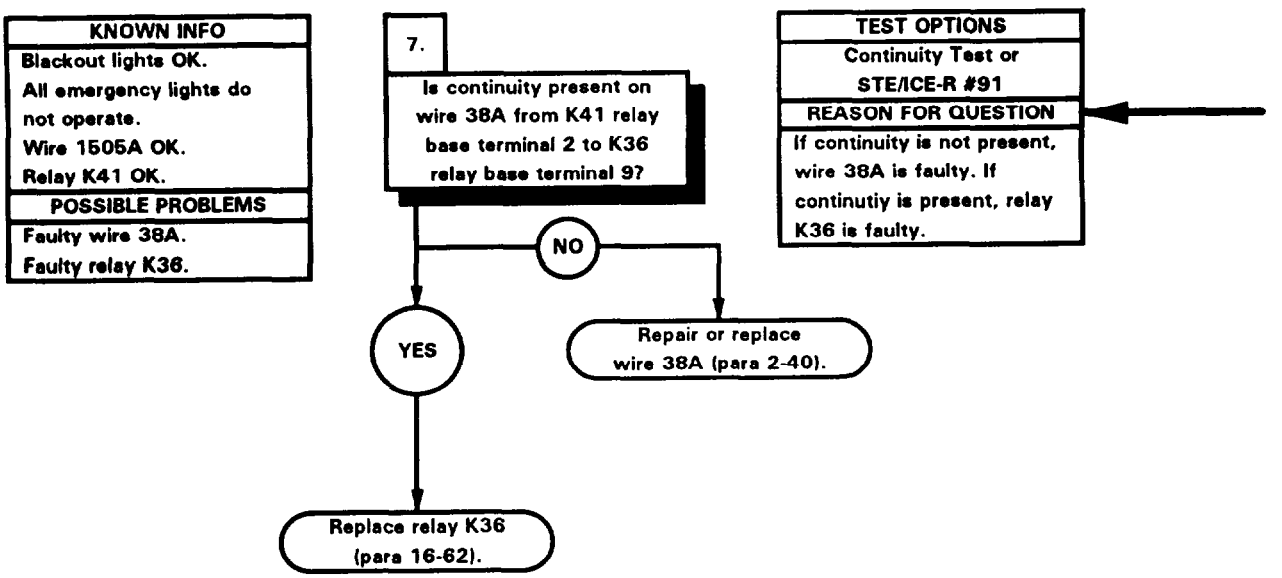


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to K41 relay base terminal 8.
(3) Connect negative (-) probe of multimeter to K41 relay base terminal 2 and note reading on multimeter.
(4) If continuity is not present, replace relay K41 (para 16-62).



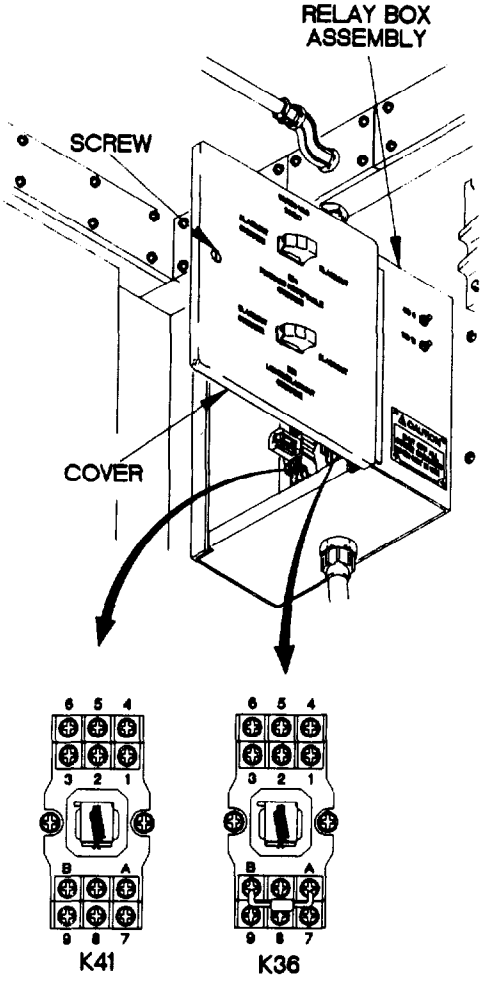
32EK1061

e113. M1079 EMERGENCY LIGHT(S) DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to K41 relay base terminal 2.
(3) Connect negative (-) probe of multimeter to K36 relay base terminal 9 and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 38A (para 2-40).
(5) If continuity is present, replace relay K36 (para 16-62).
(6) Close cover on relay box assembly.
(7) Tighten screw in cover.



32EK1071

•114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE

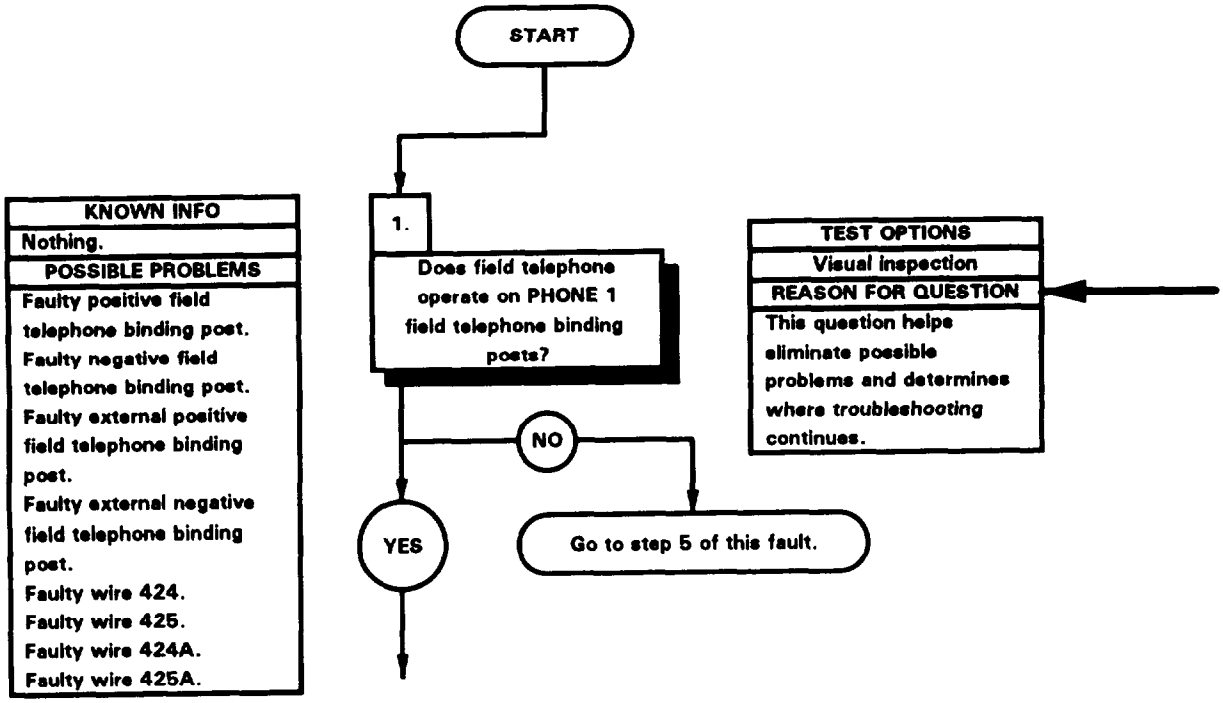
INITIAL SETUP

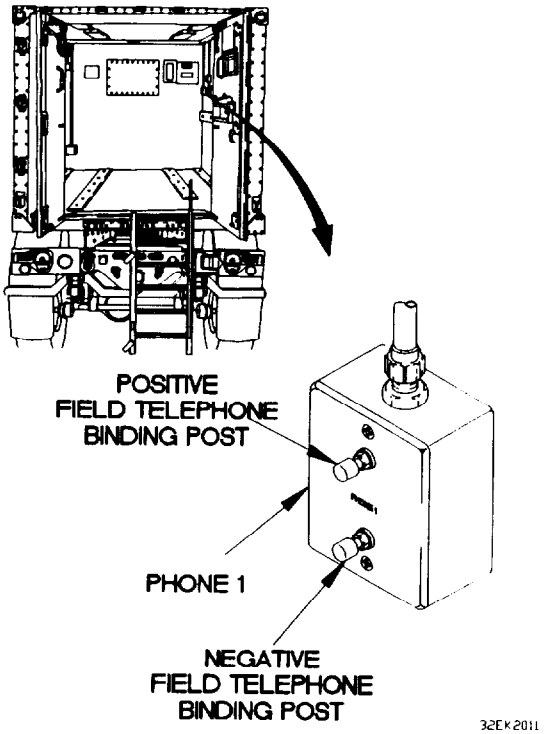
Equipment Condition
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

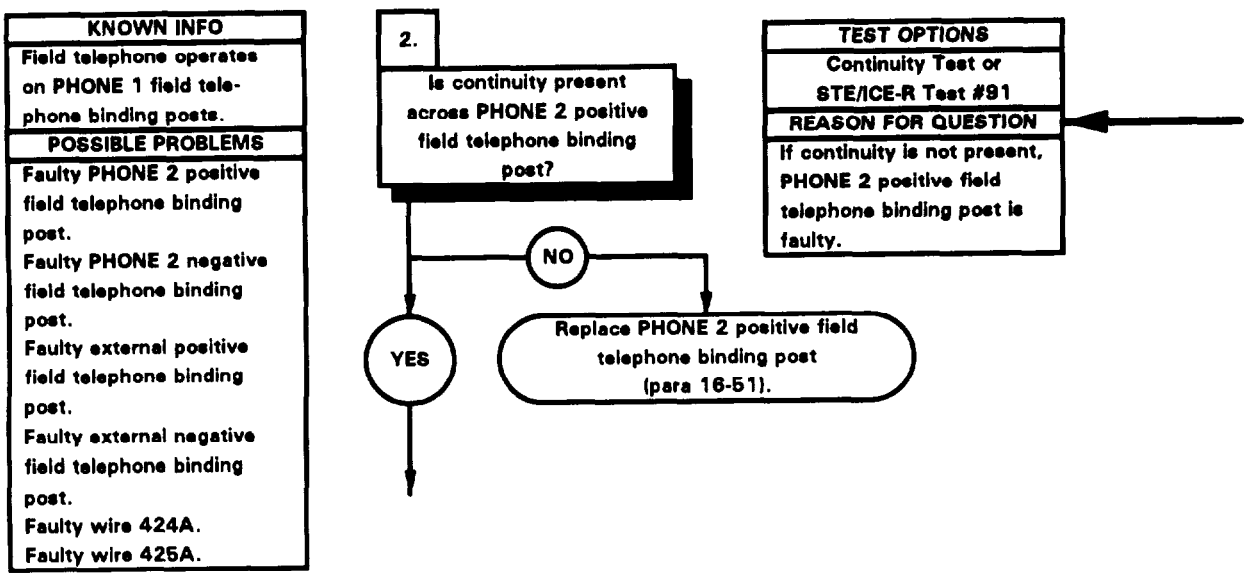
References
TM 9-4910-571-12&P



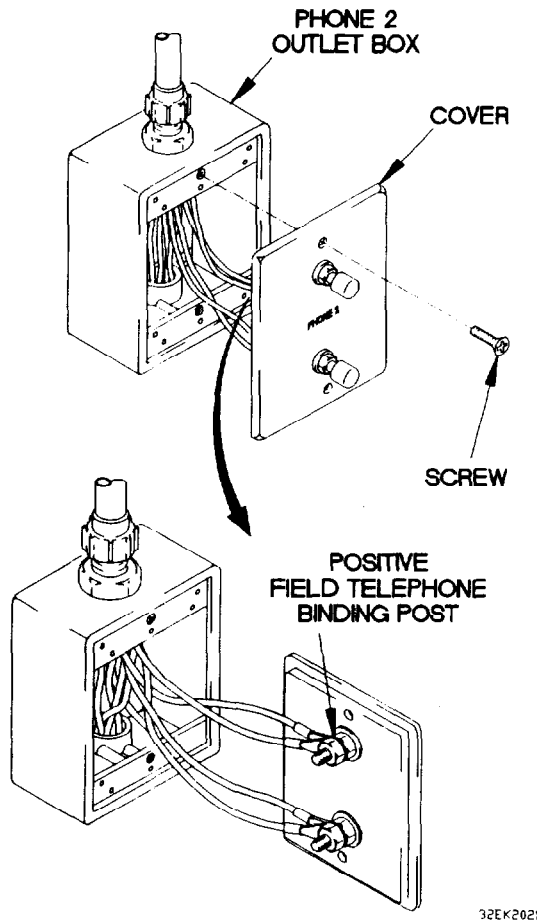


(1) Install field telephone on PHONE 1 field telephone binding posts.
(2) Operate field telephone.
(3) If field telephone does not operate, go to step 5 of this fault.
(4) Remove field telephone from PHONE 1 field telephone binding posts.

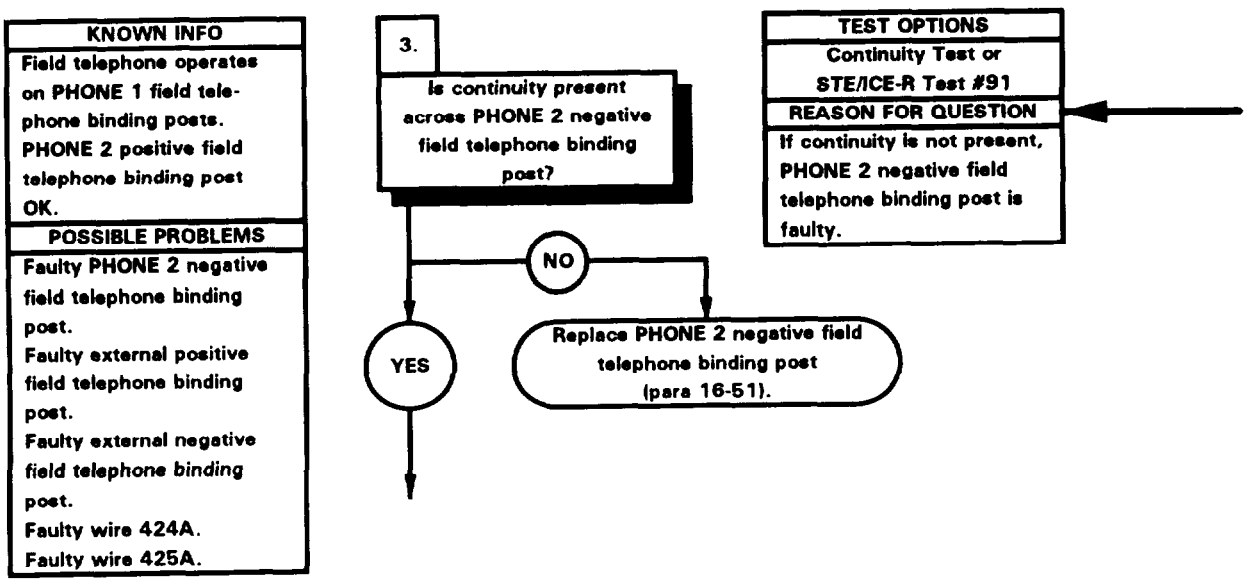
e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Remove two screws and cover from PHONE 2 outlet box.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to one side of PHONE 2 positive field telephone binding post.
(4) Connect negative (-) probe of multimeter to other side of PHONE 2 positive field telephone binding post and note reading on multimeter.
(5) If continuity is not present, replace PHONE 2 positive field telephone binding post (para 16-51).

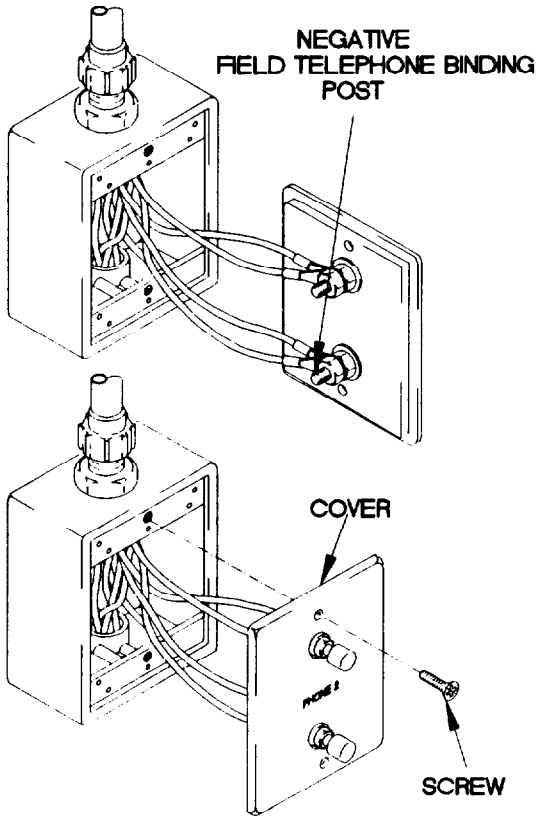


e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)

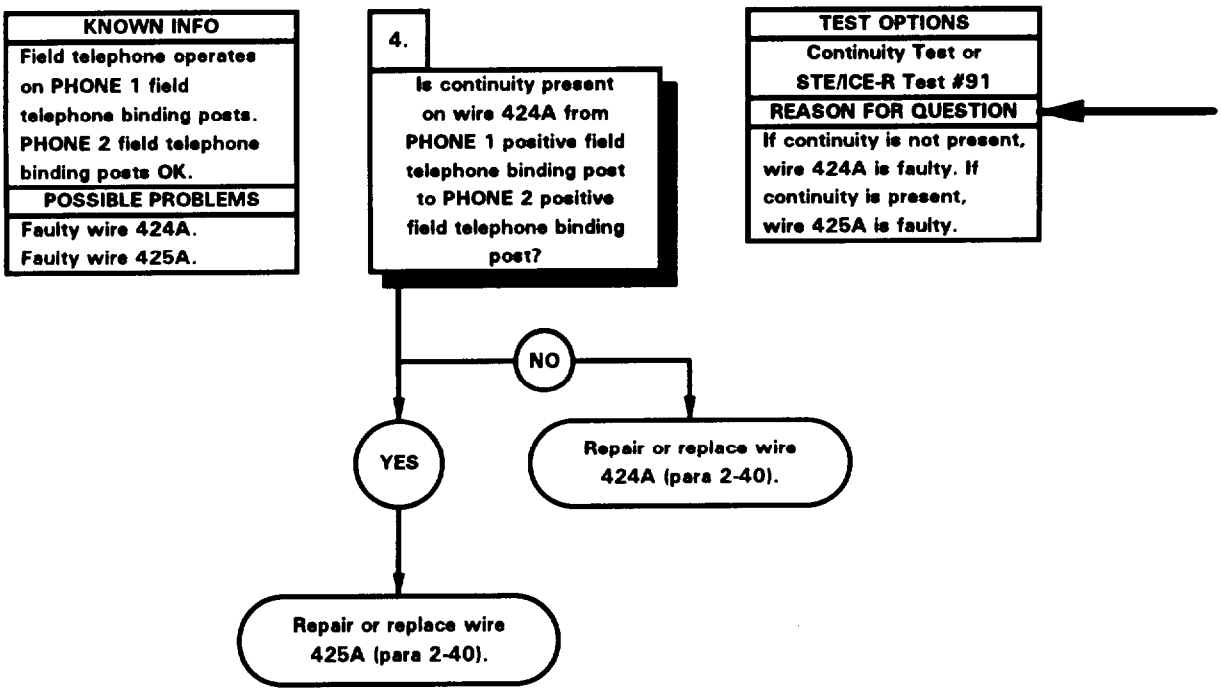


CONTINUITY TEST

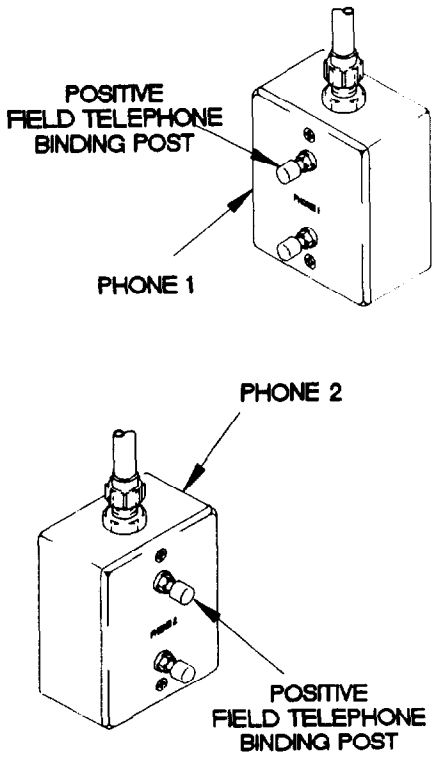
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to one side of PHONE 2 negative field telephone binding post.
(3) Connect negative (-) probe of multimeter to other side of PHONE 2 negative field telephone binding post and note reading on multimeter.
(4) If continuity is not present, replace PHONE 2 negative field telephone binding post (para 16-51).
(5) Install cover on PHONE 2 outlet box with two screws.



e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)

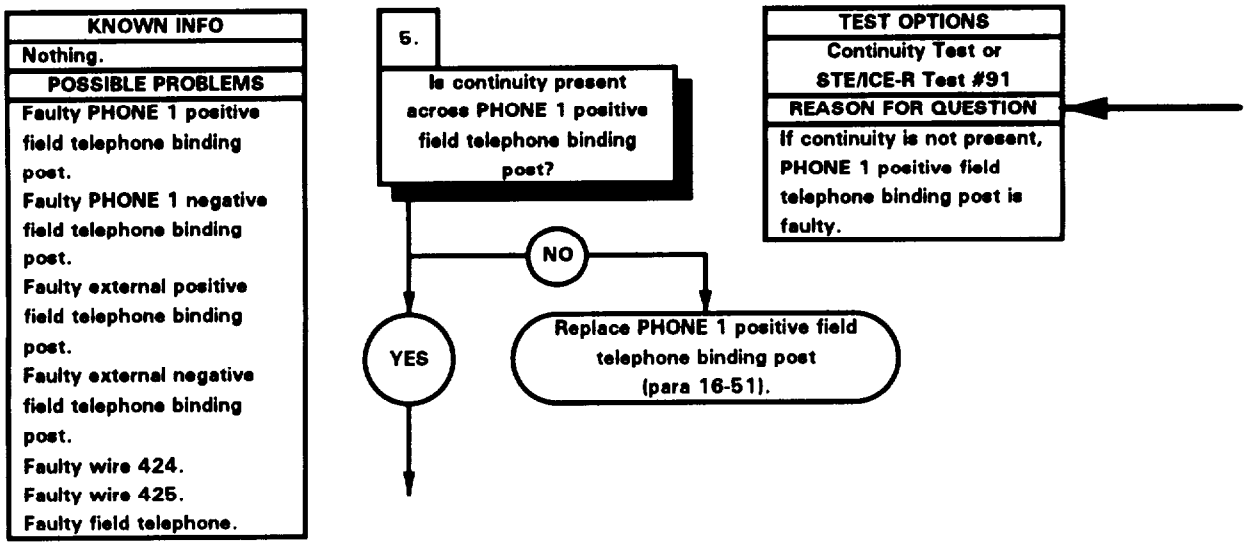


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PHONE 1 positive field telephone binding post.
(3) Connect negative (-) probe of multimeter to PHONE 2 positive field telephone binding post and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 424A (para 2-40).
(5) If continuity is present, repair or replace wire 425A (para 2-40).

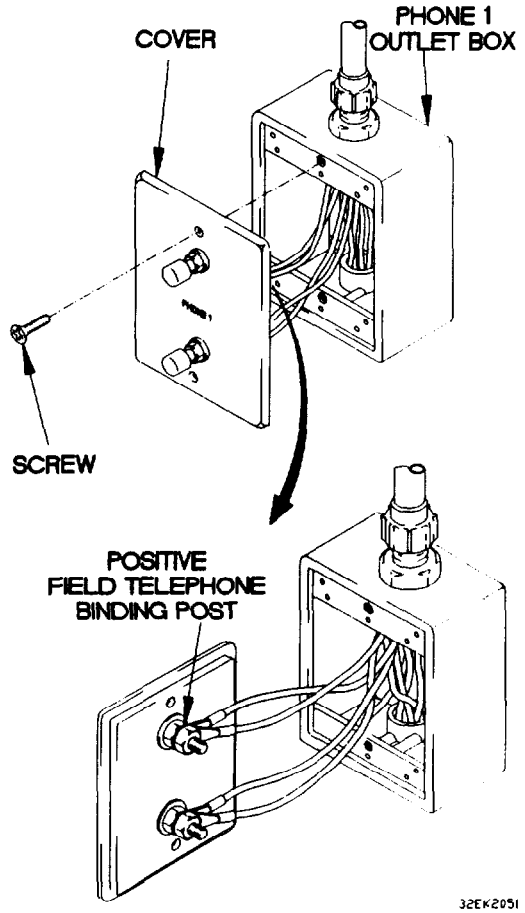


32EK2041

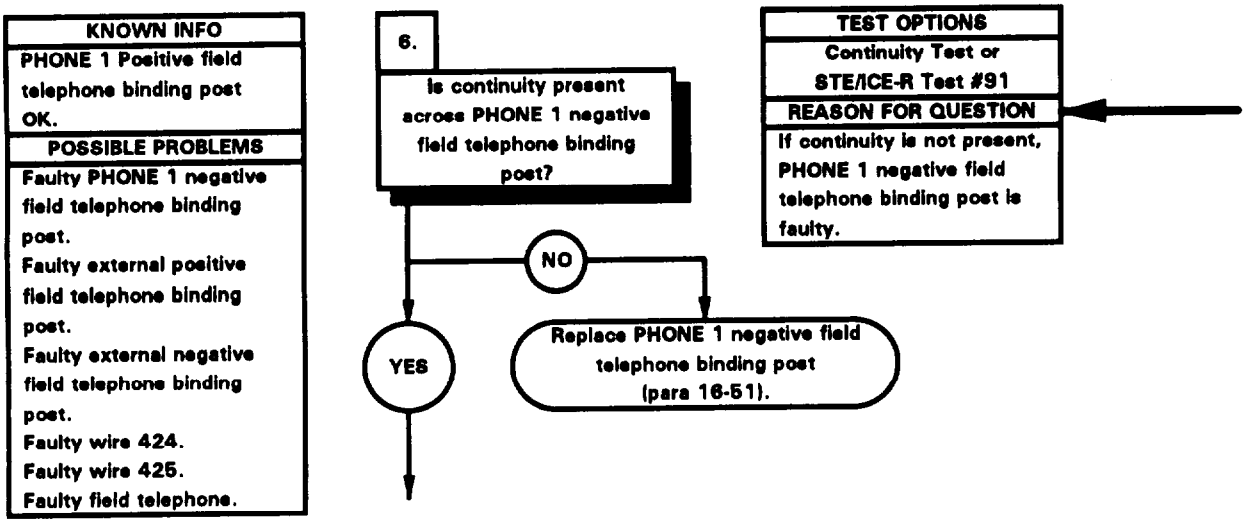
e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Remove two screws and cover from PHONE 1 outlet box.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to one side of PHONE 1 positive field telephone binding post.
(4) Connect negative (-) probe of multimeter to other side of PHONE 1 positive field telephone binding post and note reading on multimeter.
(5) If continuity is not present, replace PHONE 1 positive field telephone binding post (para 16-51).

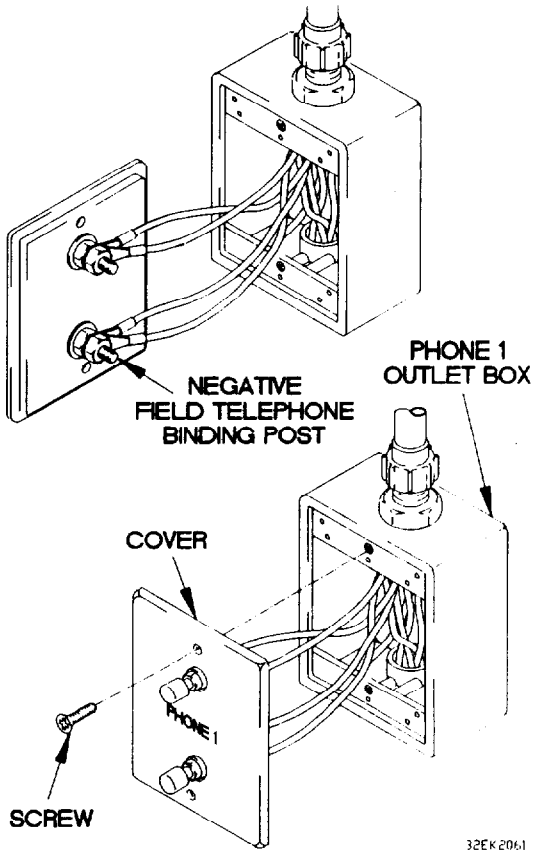


e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)

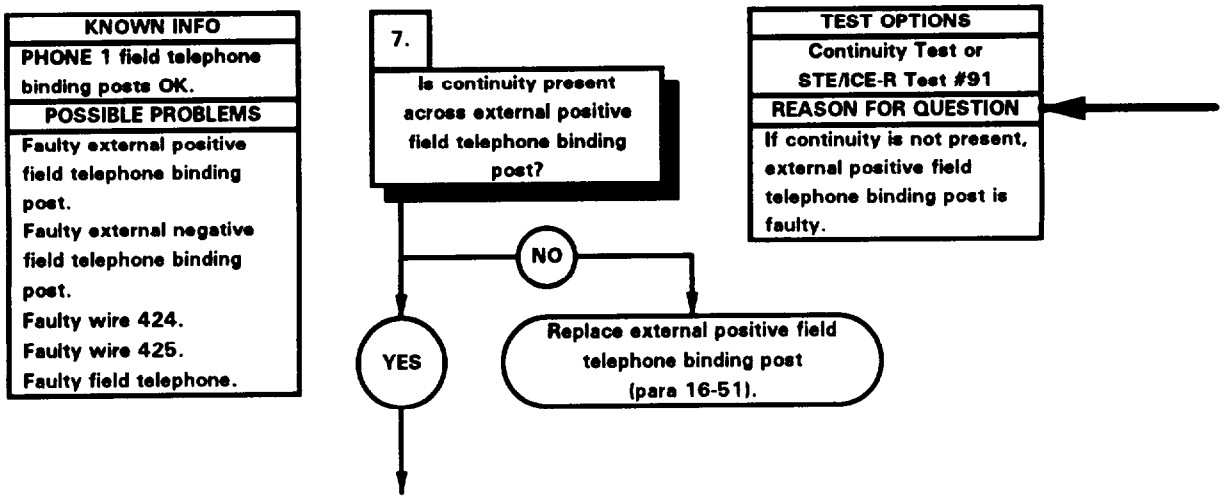


CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to one side of PHONE 1 negative field telephone binding post.
(3) Connect negative (-) probe of multimeter to other side of PHONE 1 negative field telephone binding post and note reading on multimeter.
(4) If continuity is not present, replace PHONE 1 negative field telephone binding post (para 16-51).
(5) Install cover on PHONE 1 outlet box with two screws.



e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)



CONTINUITY TEST

NOTE

Perform step (1) on van body serial numbers 001 through 190.

(1) Remove 28 screws, lockwashers, washers, and cover from 110/208 vac power entry panel. Discard lockwashers.

NOTE

Perform step (2) on van bodies serial number 191 and higher.

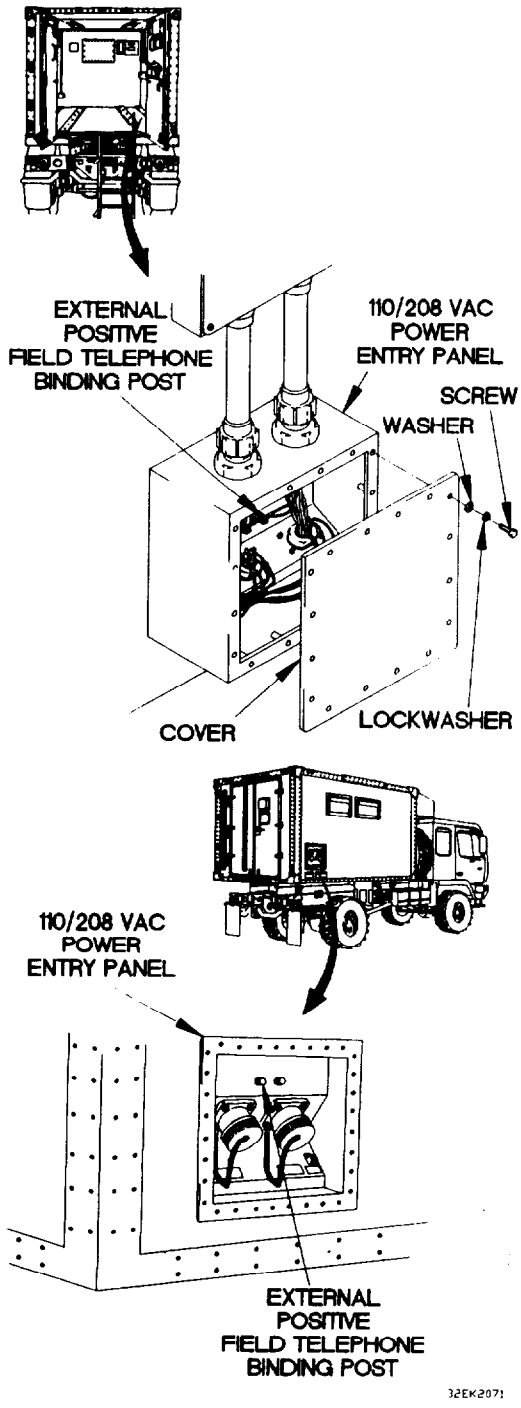
(2) Remove 16 screws, lockwashers, washers, and cover from 110/208 vac power entry panel. Discard lockwashers.

(3) Set multimeter to ohms.

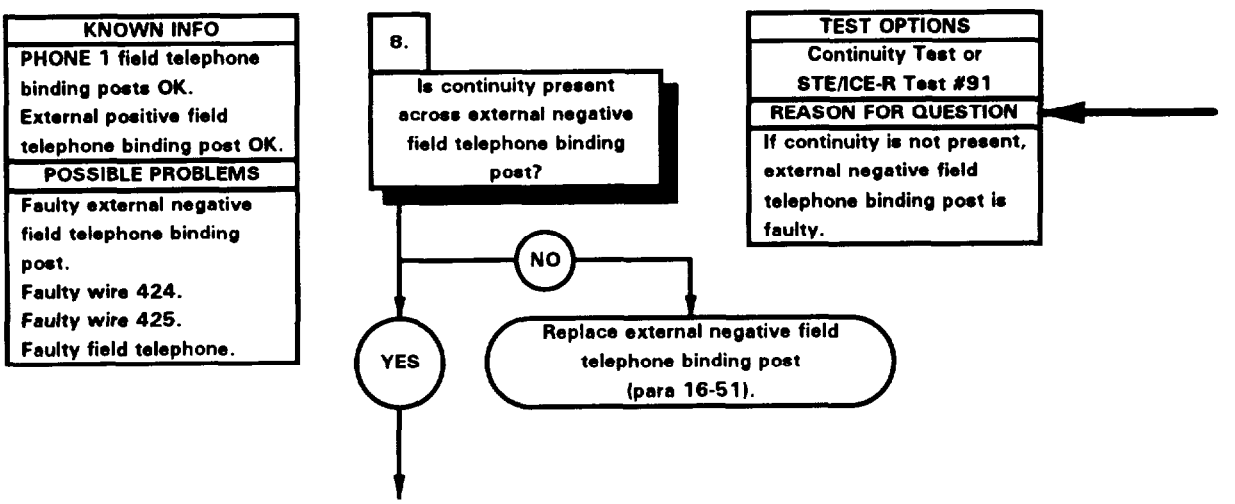
(4) Connect positive (+) probe of multimeter to one end of external positive field telephone binding post.

(5) Connect negative (-) probe of multimeter to other end of external positive field telephone binding post and note reading on multimeter.

(6) If continuity is not present, replace external positive field telephone binding post (para 16-51).



e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Set multimeter to ohms.

(2) Connect positive (+) probe of multimeter to one end of external negative field telephone binding post.

(3) Connect negative (-) probe of multimeter to other end of external negative field telephone binding post and note reading on multimeter.

(4) If continuity is not present, replace external negative field telephone binding post (para 16-51).

NOTE

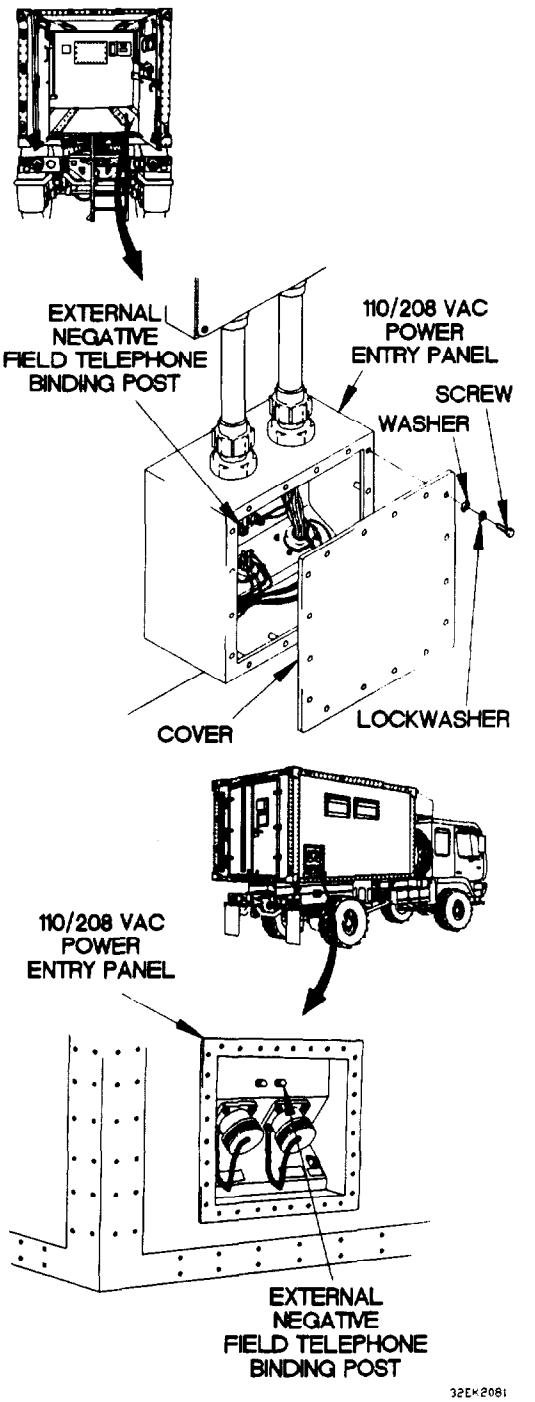
Perform step (5) on van bodies serial number 191 and higher.

(5) Install cover on 110/208 vac power entry panel with 16 washers, lockwashers, and screws.

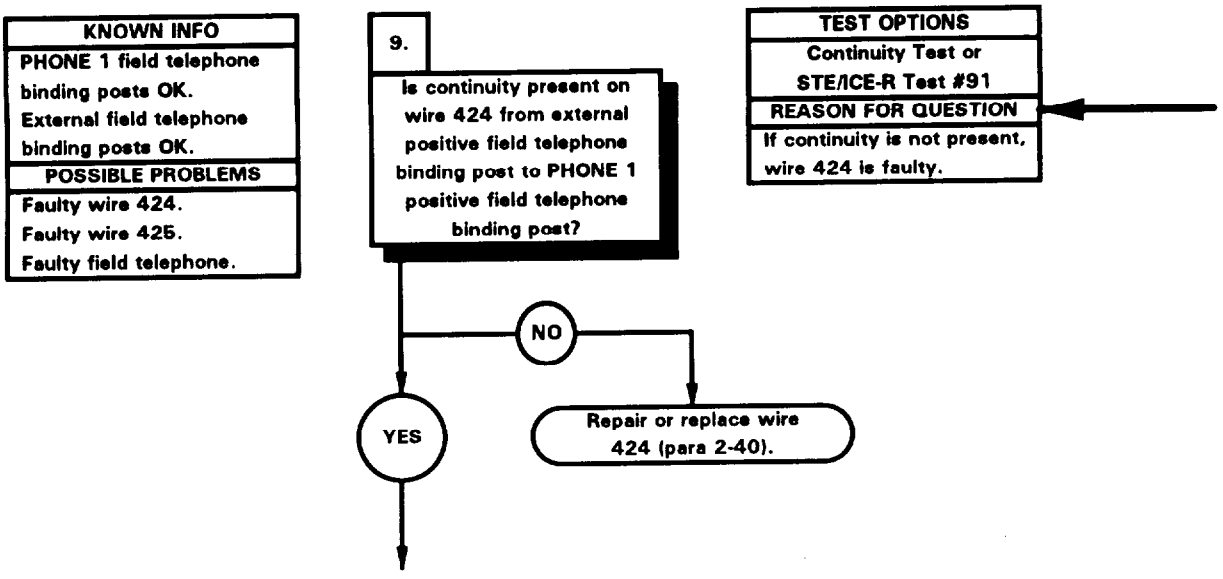
NOTE

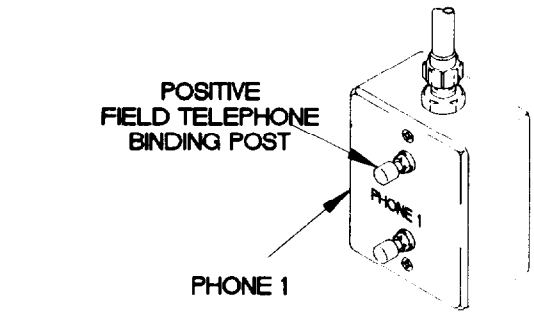
Perform step (6) on van body serial numbers 001 through 190.

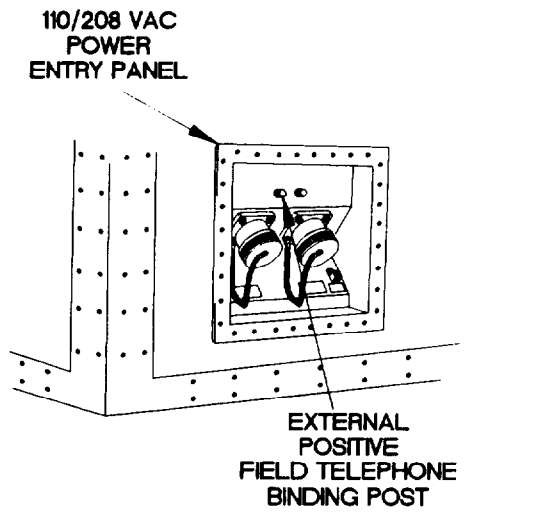
(6) Install cover on 110/208 vac power entry panel with 28 washers, lockwashers, and screws.



e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)





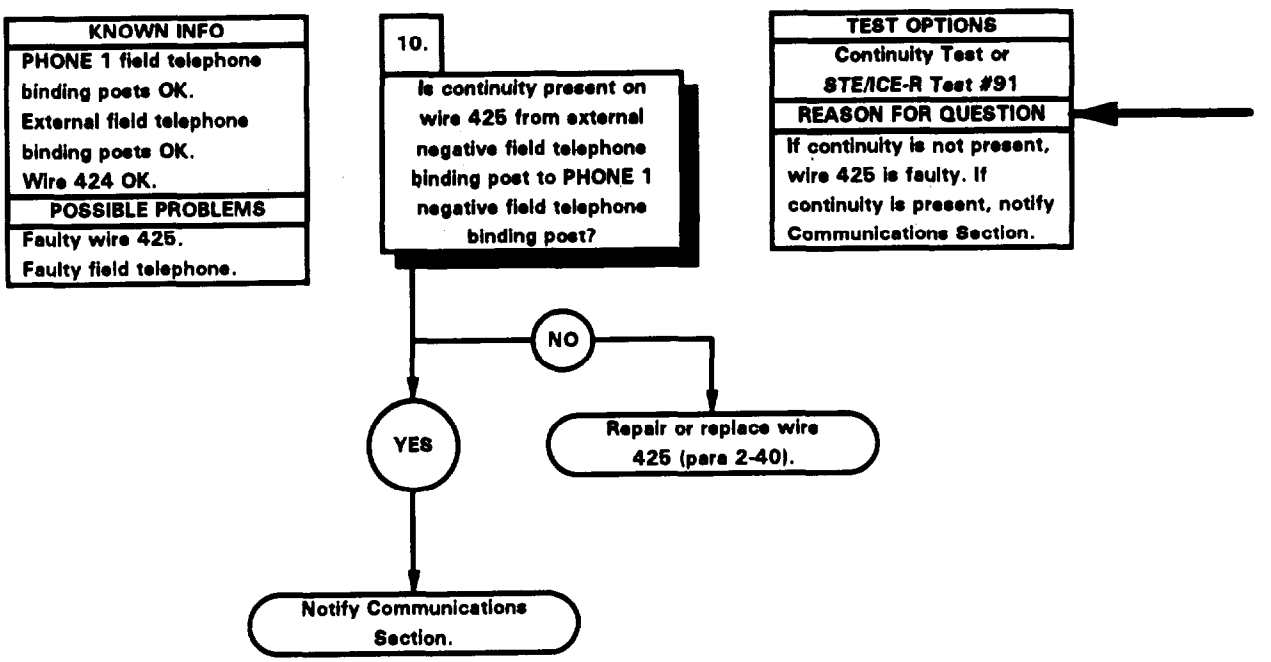


32EK2091

CONTINUITY TEST

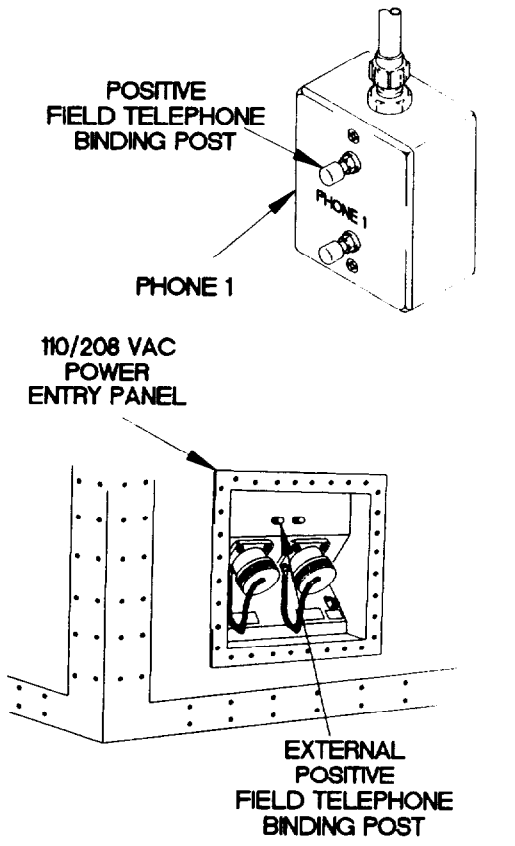
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PHONE 1 positive field telephone binding post.
(3) Connect negative (-) probe of multimeter to external positive field telephone binding post and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 424 (para 2-40).

e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to PHONE 1 negative field telephone binding post.
(3) Connect negative (-) probe of multimeter to external negative field telephone binding post and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 425 (para 2-40).
(5) If continuity is present, notify communications section.



32EK2101

e115. M1079 AIR CONDITIONER DOES NOT OPERATE

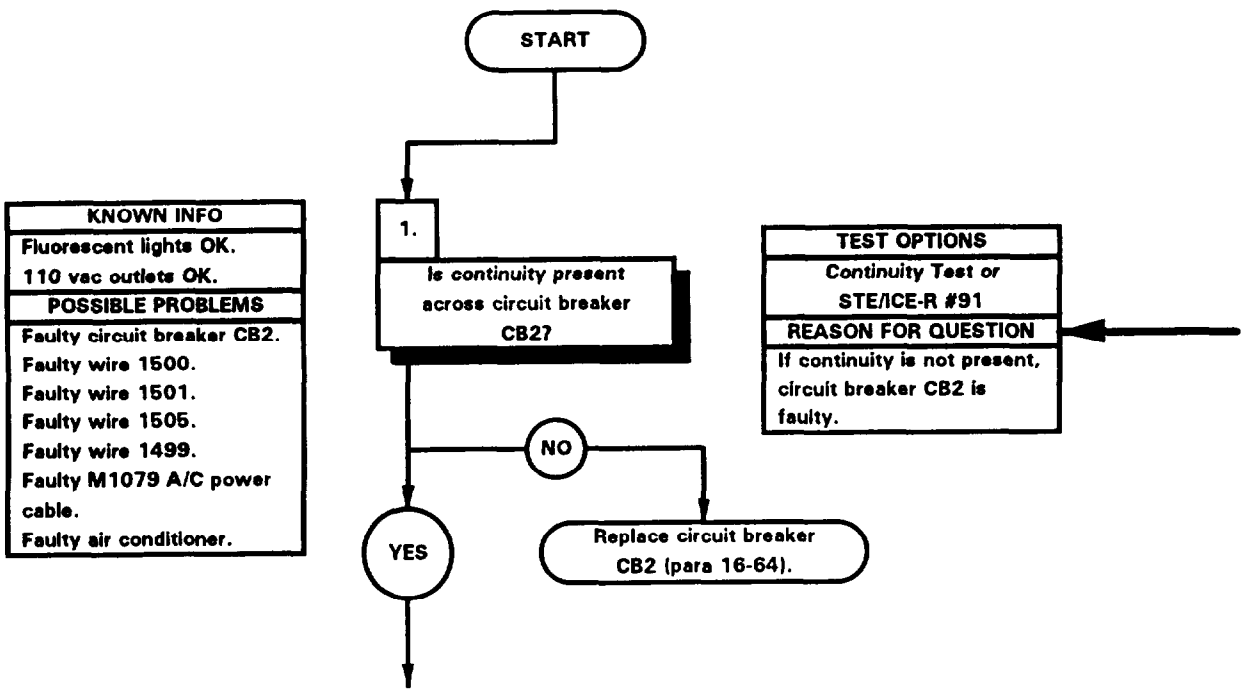
INITIAL SETUP

Equipment Condition
- Engine shut down (TM 9-2320-365-10).
- AC power disconnected (TM 9-2320-365-10).

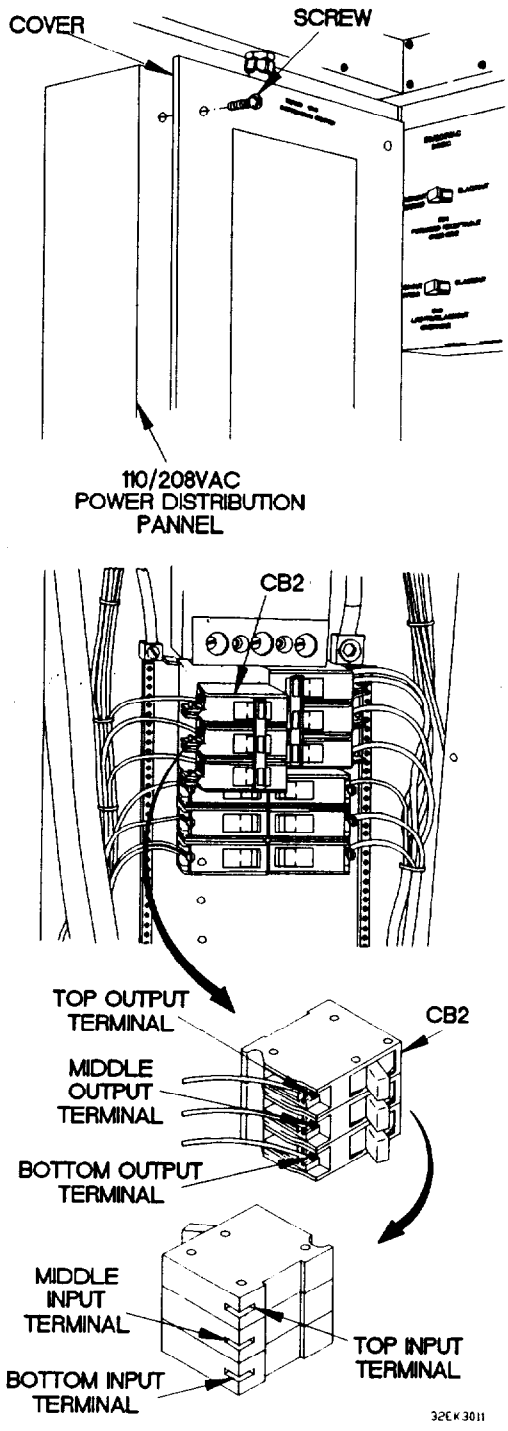
Personnel Required
(2)

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

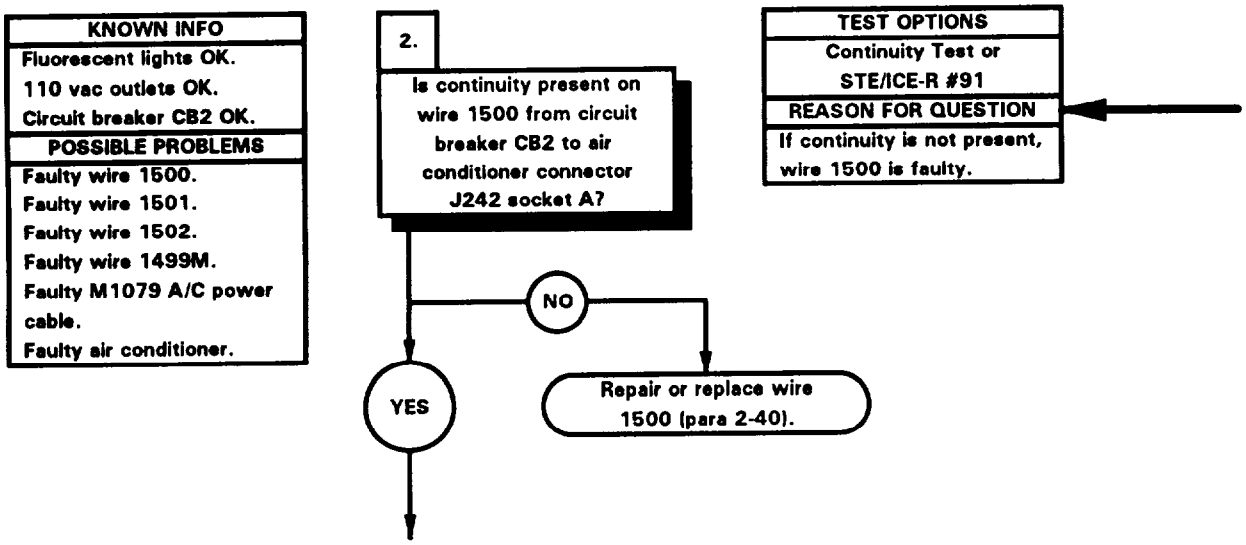
References
- TM 9-4910-571-12&P
- TM 5-4120-384-14



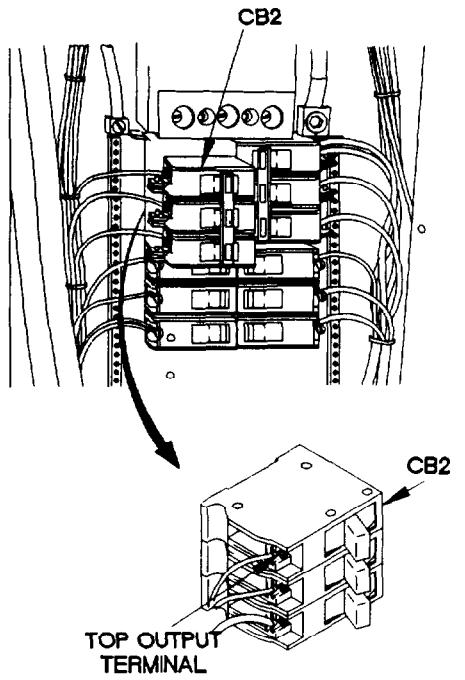
CONTINUITY TEST
(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Remove circuit breaker CB2 from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Position circuit breaker CB2 to ON (TM 9-2320-365-10).
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to top output terminal on circuit breaker CB2.
(6) Connect negative (-) probe of multimeter to top input terminal on circuit breaker CB2 and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to middle output terminal on circuit breaker CB2.
(8) Connect negative (-) probe of multimeter to middle input terminal on circuit breaker CB2 and note reading on multimeter.
(9) Connect positive (+) probe of multimeter to bottom output terminal on circuit breaker CB2.
(10) Connect negative (-) probe of multimeter to bottom input terminal on circuit breaker CB2 and note reading on multimeter.
(11) If continuity is not present in steps (6), (8), and (10), replace circuit breaker CB2 (para 16-64).
(12) Install circuit breaker CB2 on 110/208 VAC POWER DISTRIBUTION PANEL.

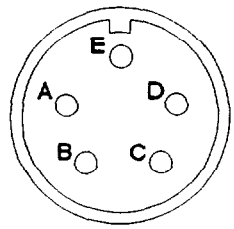


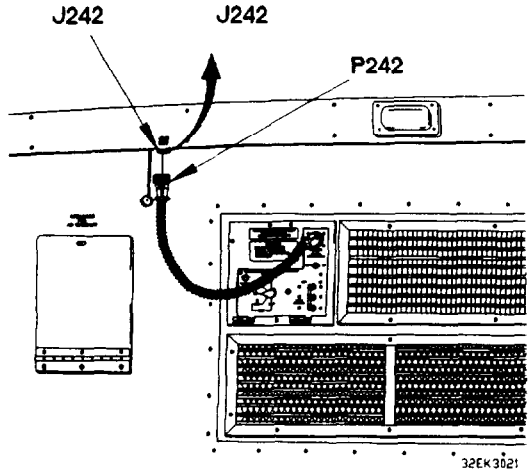
e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)



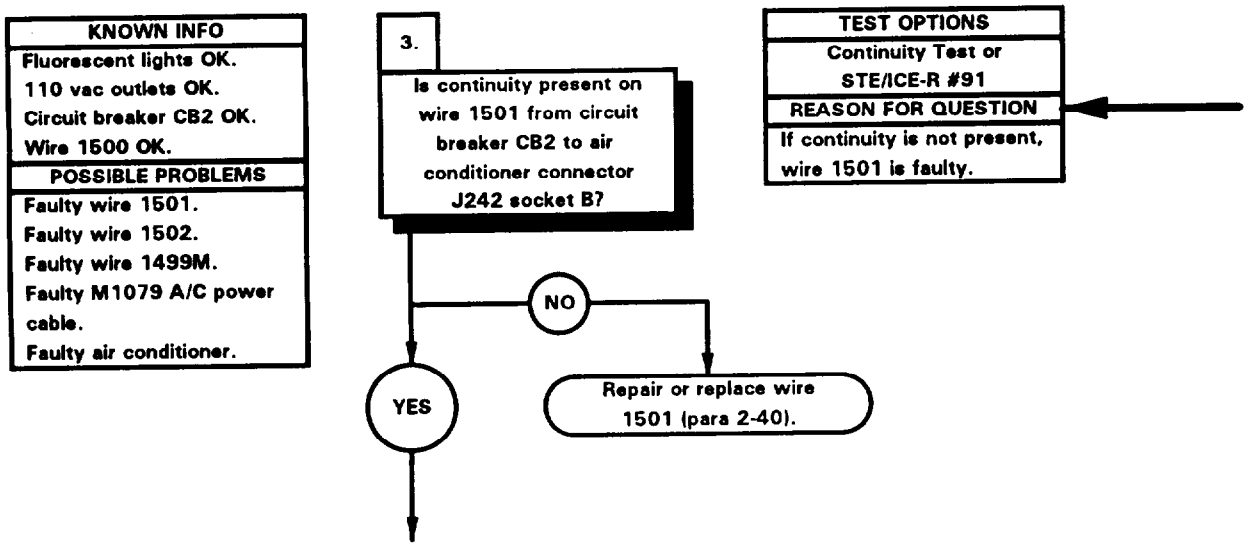
CONTINUITY TEST
(1) Disconnect connector P242 from air conditioner connector J242.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to top output terminal on circuit breaker CB2.
(4) Connect negative (-) probe of multimeter to air conditioner connector J242 socket A and note reading on multimeter.
(5) If continuity is not present, repair or replace wire 1500 (para 2-40).



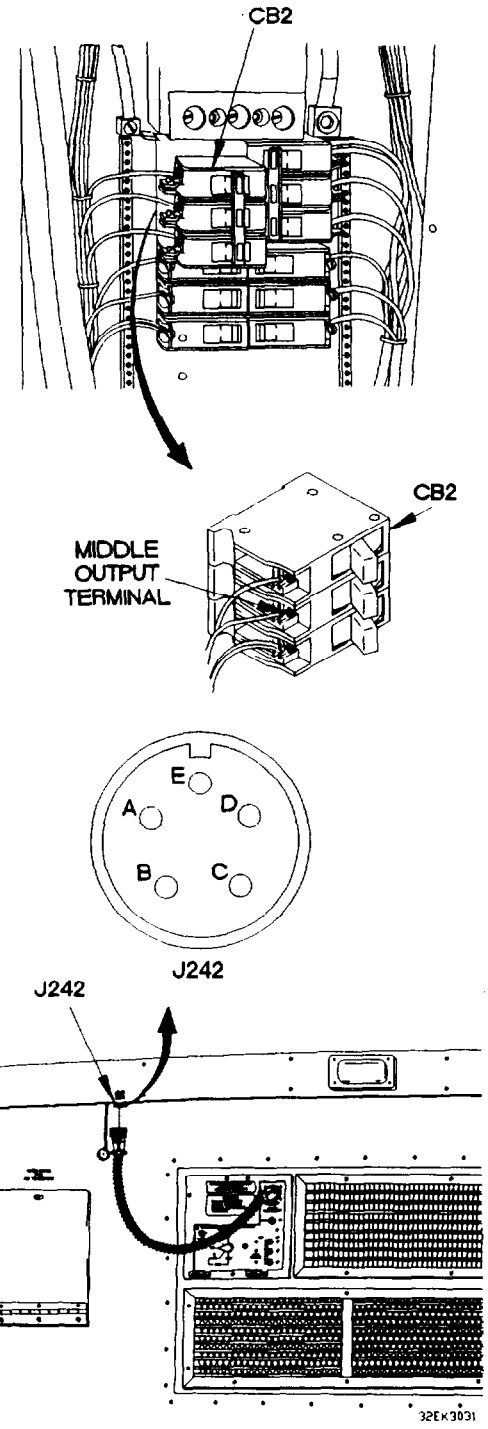




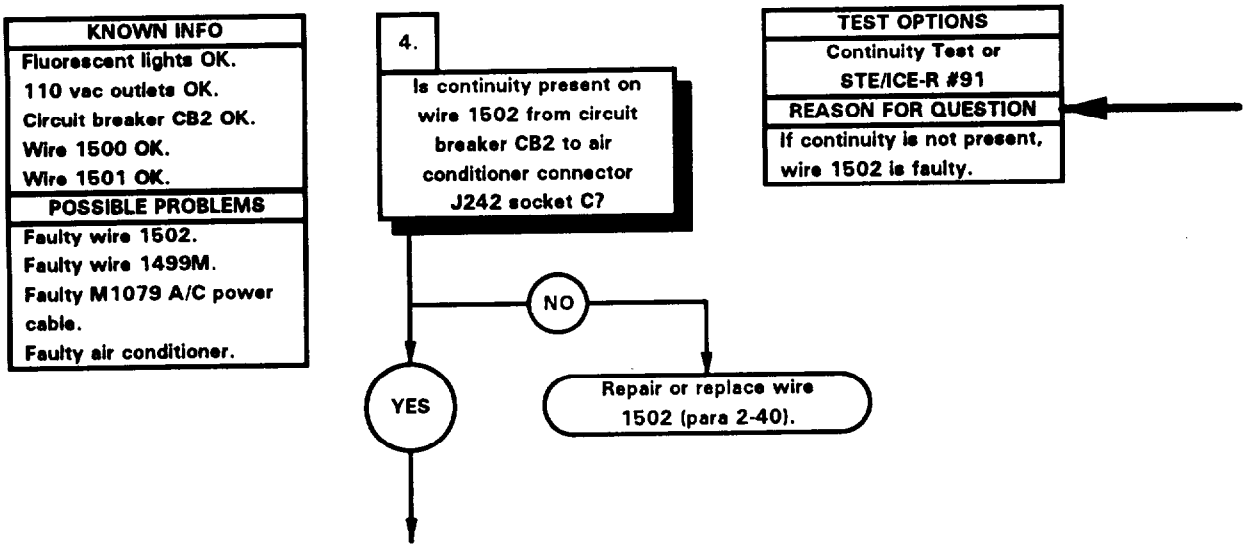
e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)

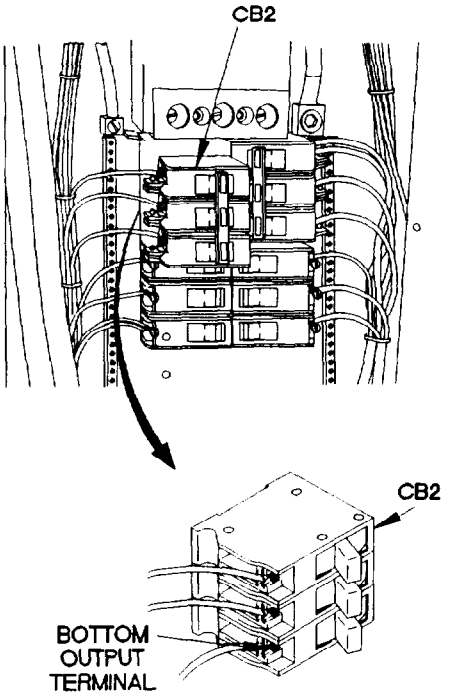


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to middle output terminal on circuit breaker CB2.
(3) Connect negative (-) probe of multimeter to air conditioner connector J242 socket B and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 1501 (para 2-40).

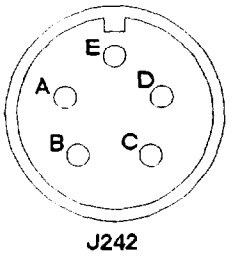


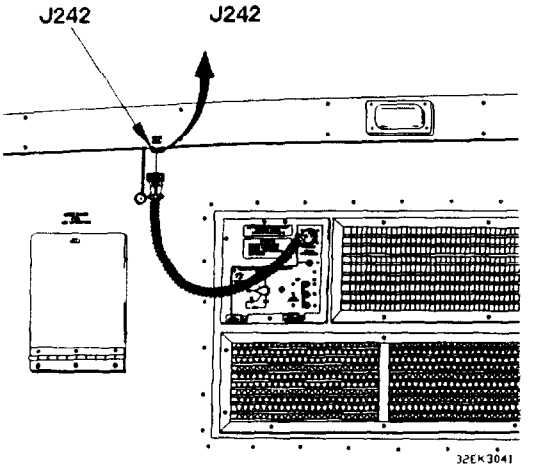
e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)



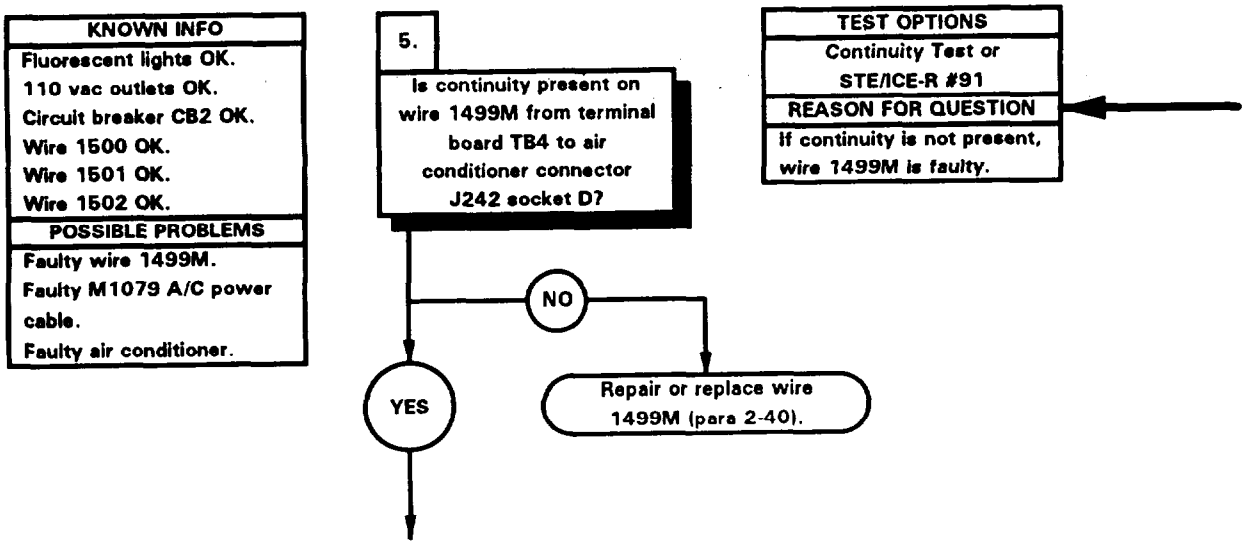


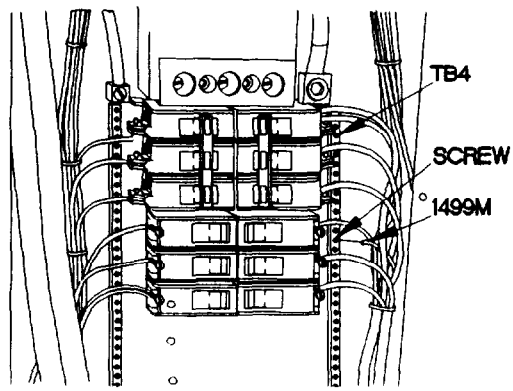
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to bottom output terminal on circuit breaker CB2.
(3) Connect negative (-) probe of multimeter to air conditioner connector J242 socket C and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 1502 (para 2-40).





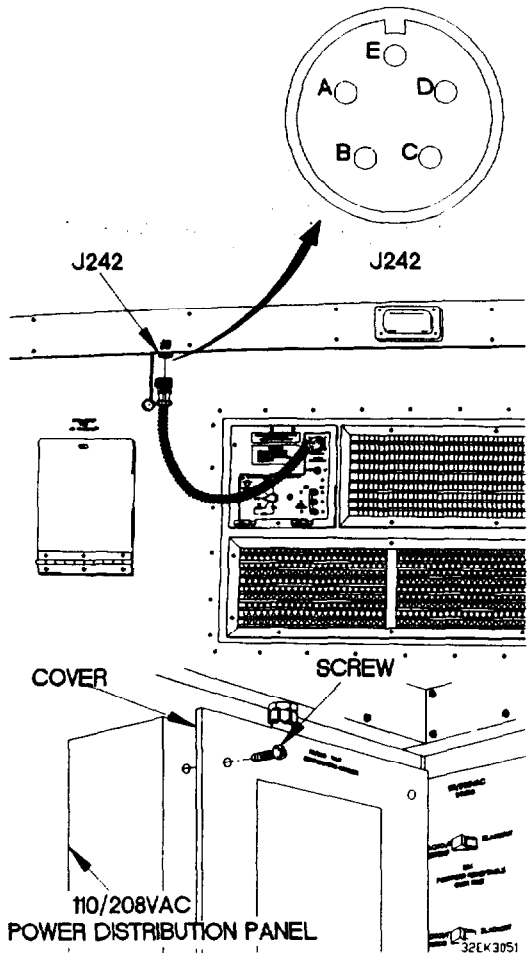
e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)



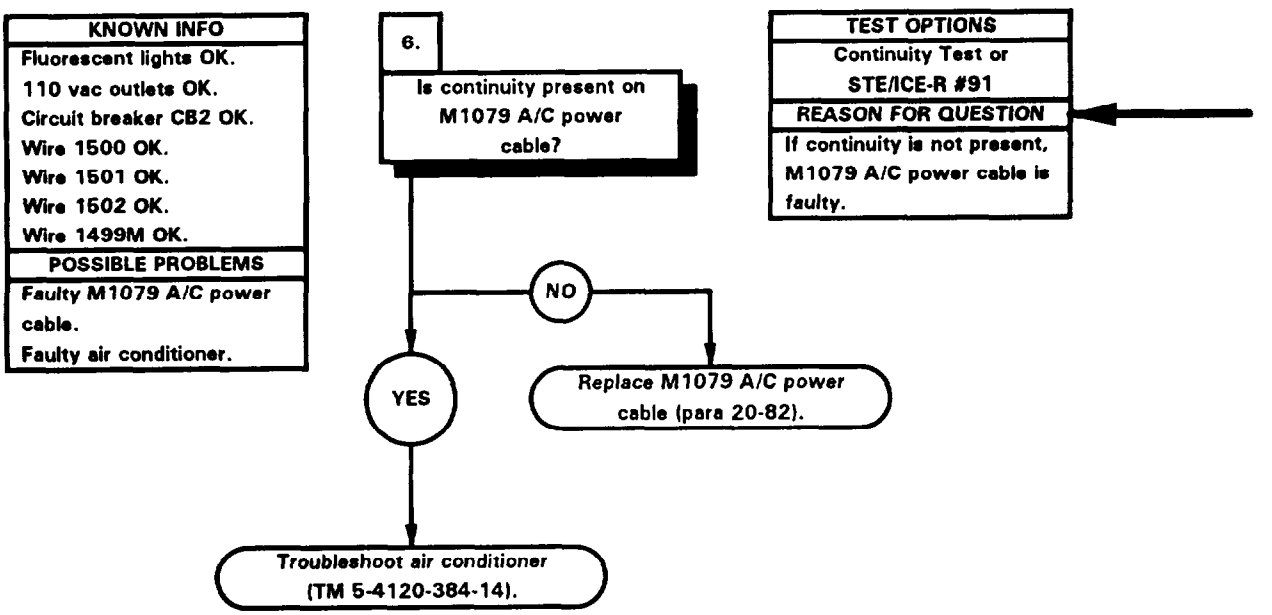


CONTINUITY TEST

(1) Loosen screw in terminal board TB4.
(2) Remove wire 1499M from terminal board TB4.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 1499M.
(5) Connect negative (-) probe of multimeter to air conditioner connector J242 socket D and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 1499M (para 2-40).
(7) Install wire 1499M on terminal board TB4.
(8) Tighten screw in terminal board TB4.
(9) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.

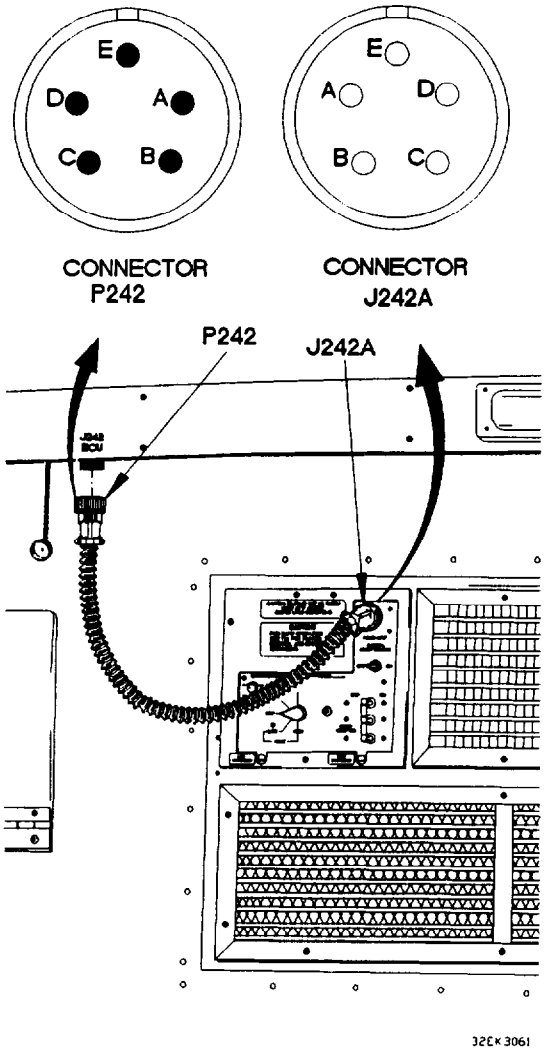


e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Disconnect connector J242A from air conditioner POWER INPUT connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P242 socket A.
(4) Connect negative (-) probe of multimeter to connector J242A pin A and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P242 socket B.
(6) Connect negative (-) probe of multimeter to connector J242A pin B and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to connector P242 socket C.
(8) Connect negative (-) probe of multimeter to connector J242A pin C and note reading on multimeter.
(9) Connect positive (+) probe of multimeter to connector P242 socket D.
(10) Connect negative (-) probe of multimeter to connector J242A pin D and note reading on multimeter.
(11) If continuity is not present in steps (4), (6), (8), and (10), replace M1079 A/C power cable (para 20-82).
(12) If continuity is present, troubleshoot air conditioner (TM 5-4120-384-14).
(13) Connect connector J242A to air conditioner POWER INPUT connector.
(14) Connect connector P242 to air conditioner connector J242.



•116. M1079 HEATER DOES NOT OPERATE

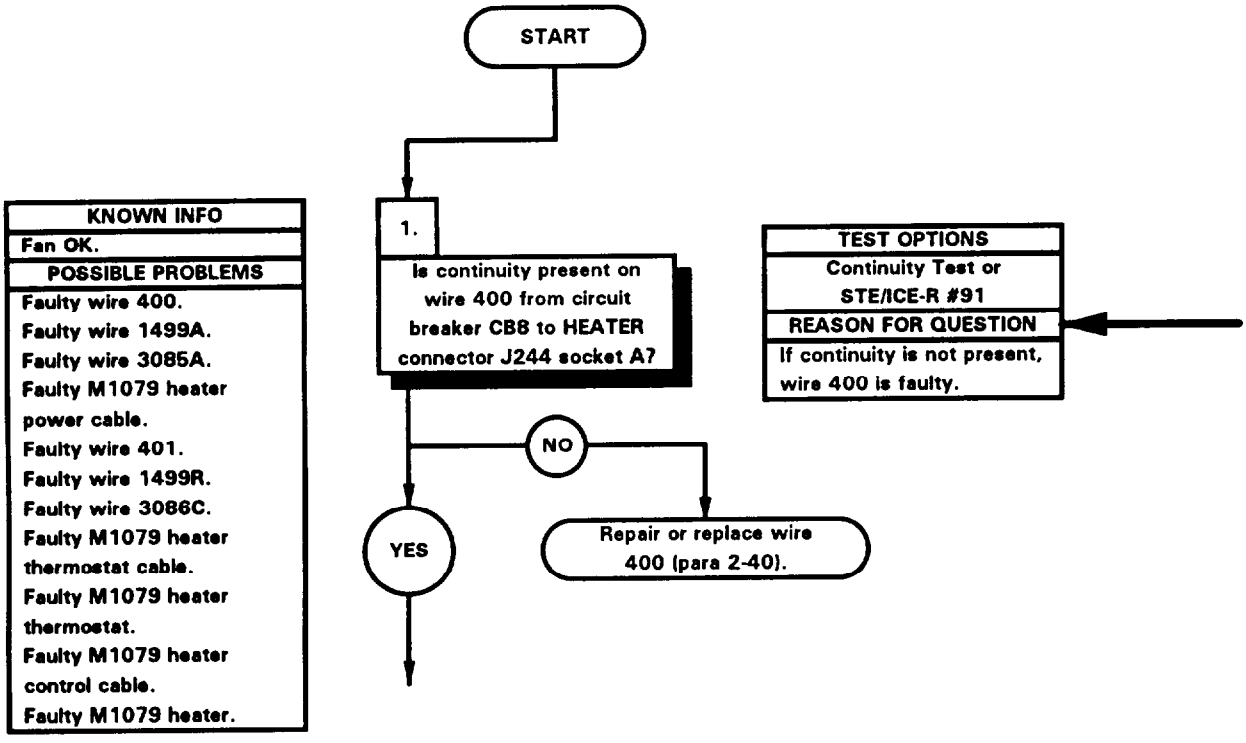
INITIAL SETUP

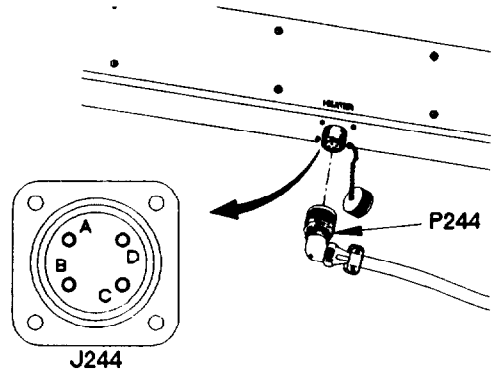
Equipment Condition
- Engine shut down (TM 9-2320-365-10).
- AC power disconnected (TM 9-2320-365-10).

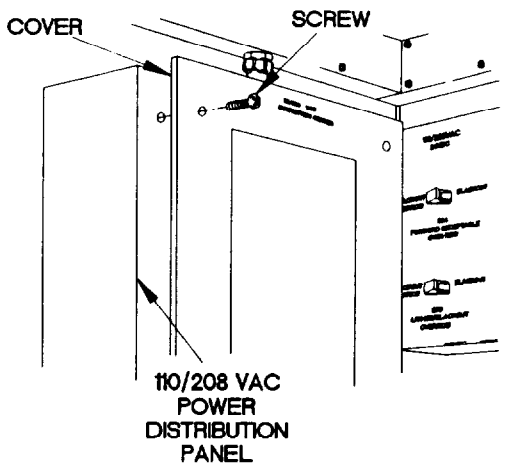
Personnel Required
(2)

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

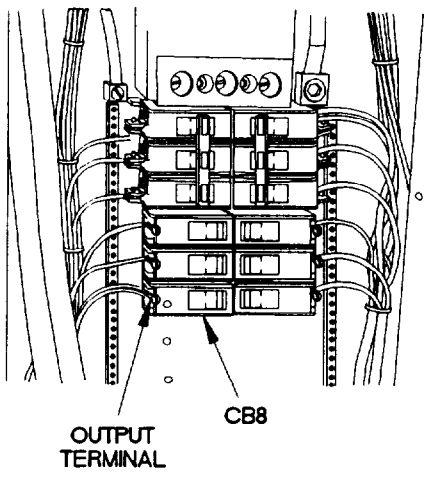
References
- TM 9-4910-571-12&P
- TM 5-4520-253-13





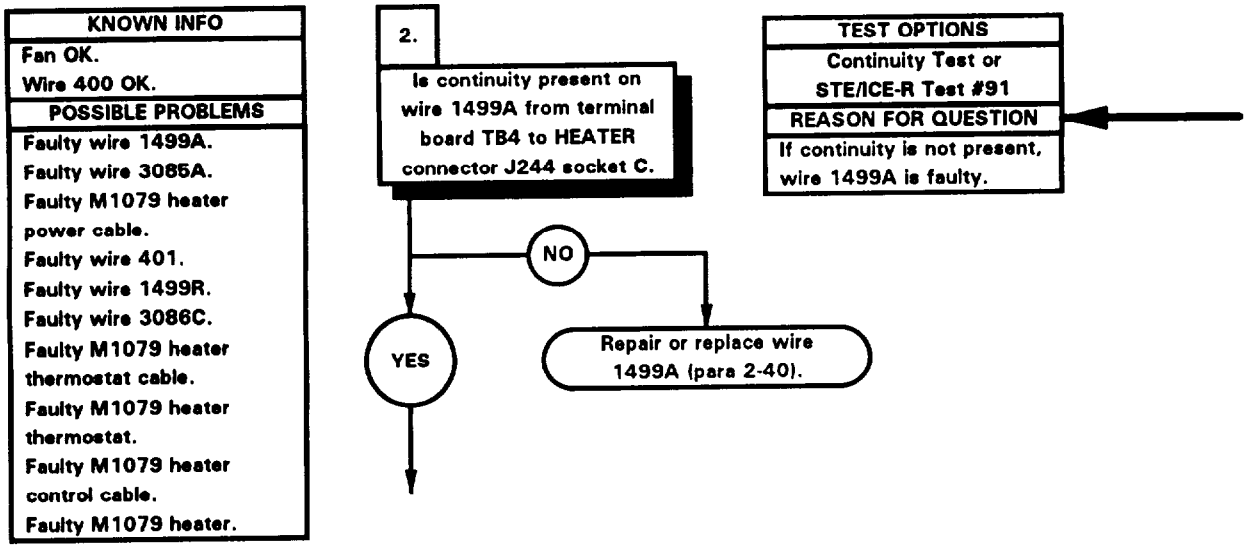


CONTINUITY TEST
(1) Disconnect connector P244 from HEATER connector J244.
(2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to output terminal on circuit breaker CB8.
(5) Connect negative (-) probe of multimeter to HEATER connector J244 socket A and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 400 (para 2-40).

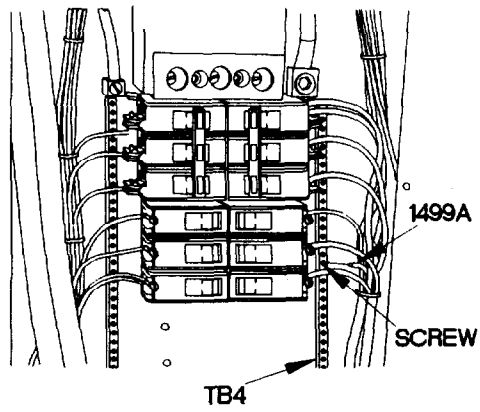


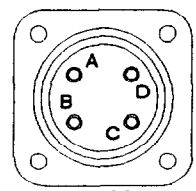
32E11401

e116. M1079 HEATER DOES NOT OPERATE (CONT)



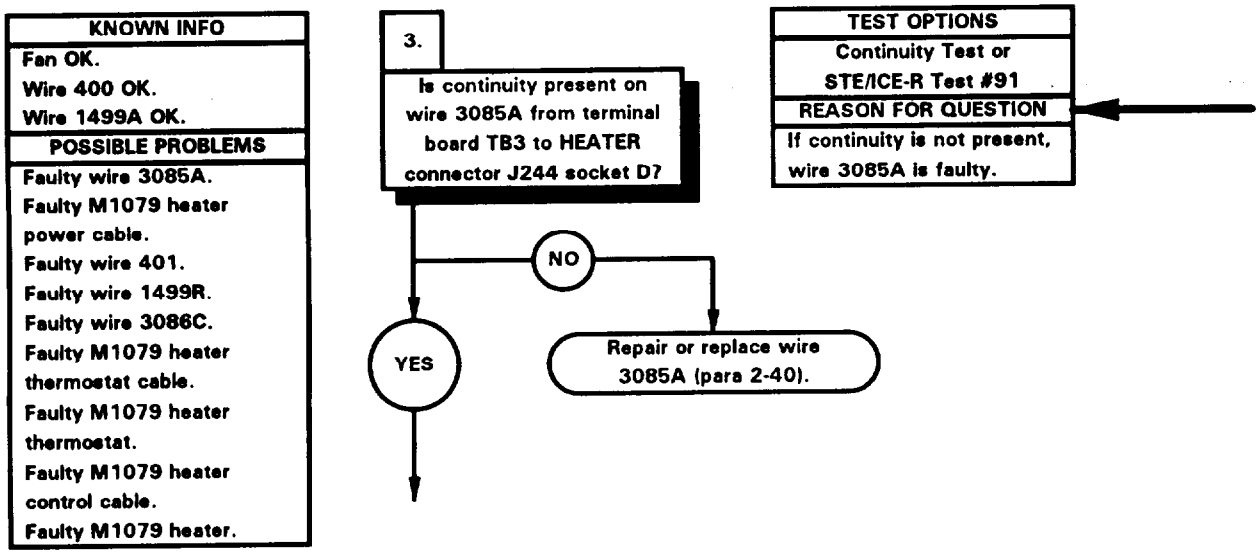
CONTINUITY TEST
(1) Loosen screw in terminal board TB4.
(2) Remove wire 1499A from terminal board TB4.
(3) Set multimeter to ohms.
(4) Connect positve (+) probe of multimeter to wire 1499A.
(5) Connect negative (-) probe of multimeter to HEATER connector J244 socket C and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 1499A (para 2-40).

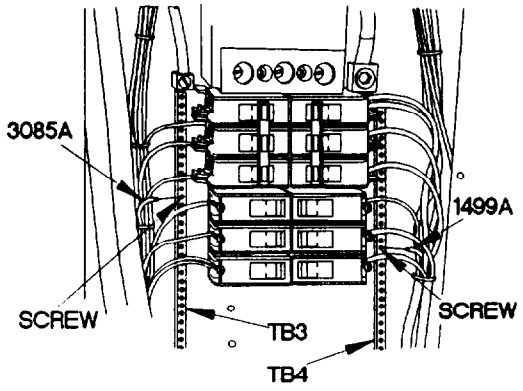




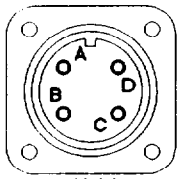
32E11421

e116. M1079 HEATER DOES NOT OPERATE (CONT)

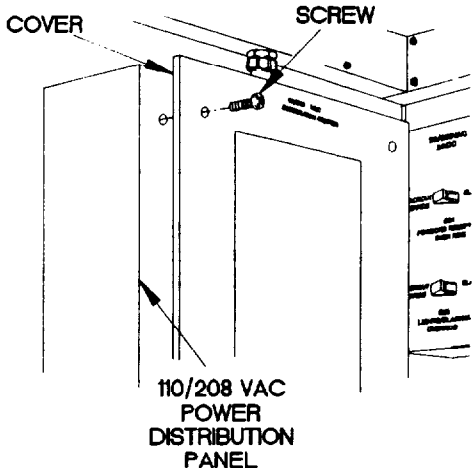




CONTINUITY TEST
(1) Loosen screw in terminal board TB3.
(2) Remove wire 3085A from terminal board TB3.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to wire 3085A.
(5) Connect negative (-) probe of multimeter to HEATER connector J244 socket D and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 3085A (para 2-40).
(7) Install wire 3085A on terminal board TB3.
(8) Tighten screw in terminal board TB3.
(9) Install wire 1499A on terminal board TB4.
(10) Tighten screw in terminal board TB4.
(11) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.

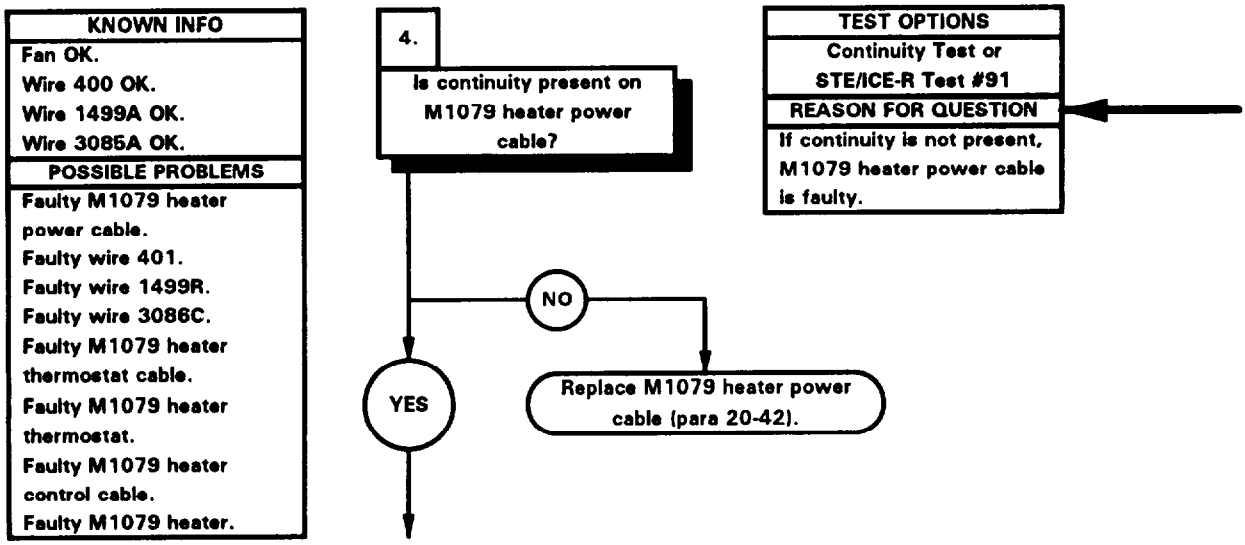


J244

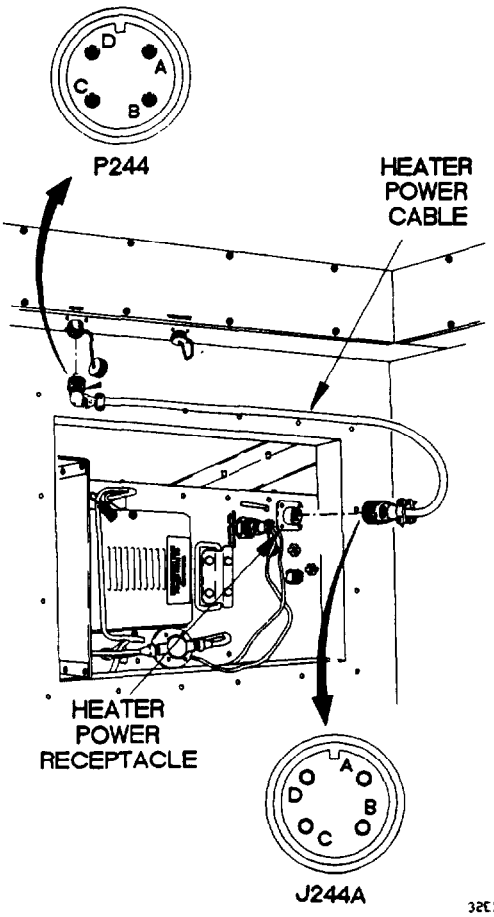


32E11431

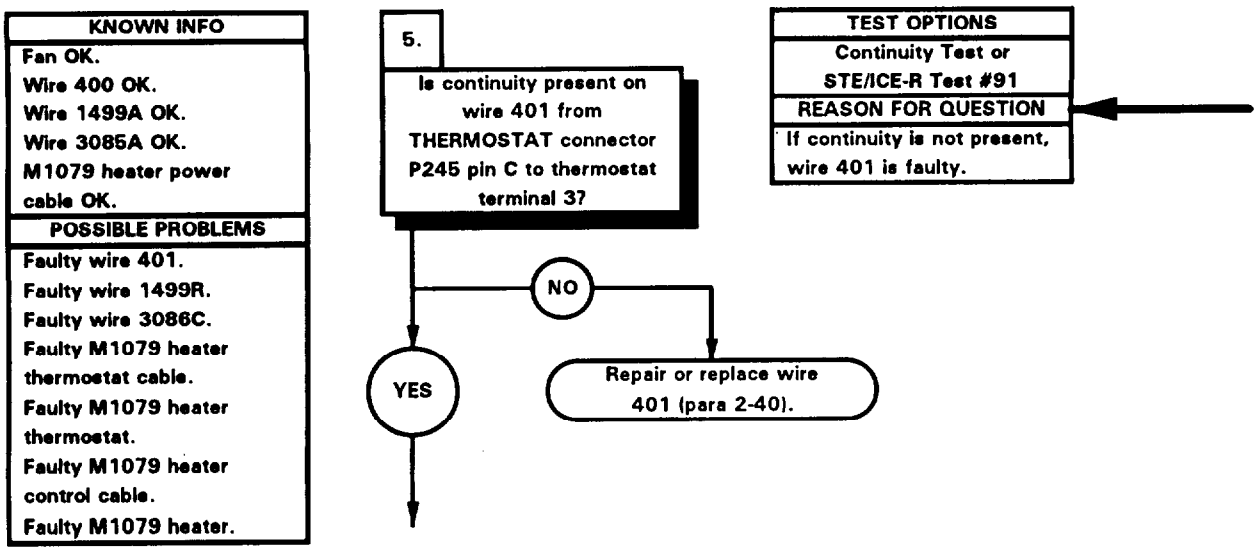
e116. M1079 HEATER DOES NOT OPERATE (CONT)

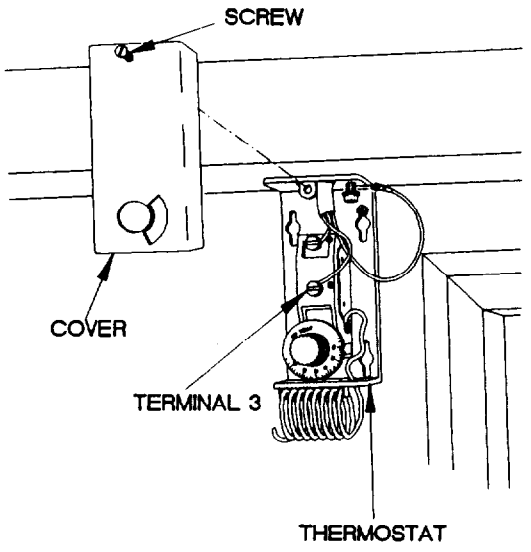


CONTINUITY TEST
(1) Remove heater deflector/duct and hood (para 20-50).
(2) Disconnect connector J244A from heater POWER RECEPTACLE connector.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P244 pin A.
(5) Connect negative (-) probe of multimeter to connector J244A socket A and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector P244 pin C.
(7) Connect negative (-) probe of multimeter to connector J244A socket C and note reading on multimeter.
(8) Connect positive (+) probe of multimeter to connector P244 pin D.
(9) Connect negative (-) probe of multimeter to connector J244A socket D and note reading on multimeter.
(10) If continuity is not present in step 5, 7, or 9, replace M1079 heater power cable (para 20-50).
(11) Connect connector J244A to heater POWER RECEPTACLE connector.



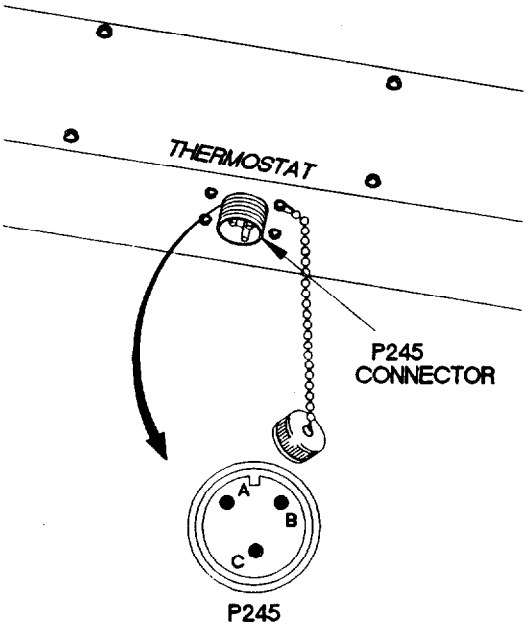
e116. M1079 HEATER DOES NOT OPERATE (CONT)





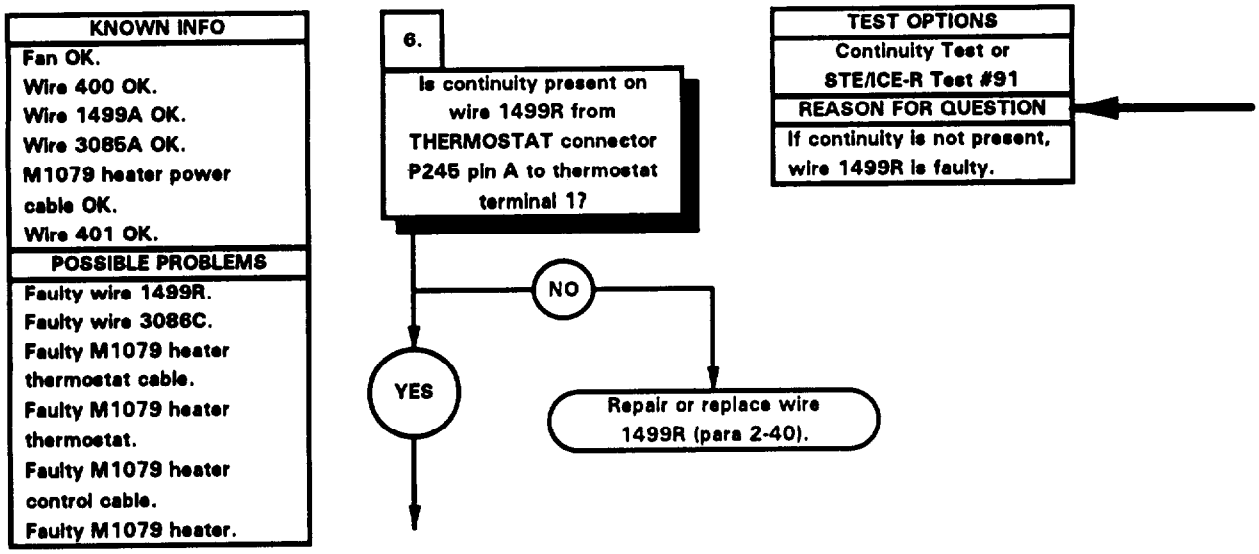
CONTINUITY TEST

(1) Loosen screw in thermostat cover.
(2) Remove thermostat cover from thermostat.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to thermostat terminal 3.
(5) Connect negative (-) probe of multimeter to THERMOSTAT connector P245 pin C and note reading on multimeter.
(6) If continuity is not present, repair or replace wire 401 (para 2-40).

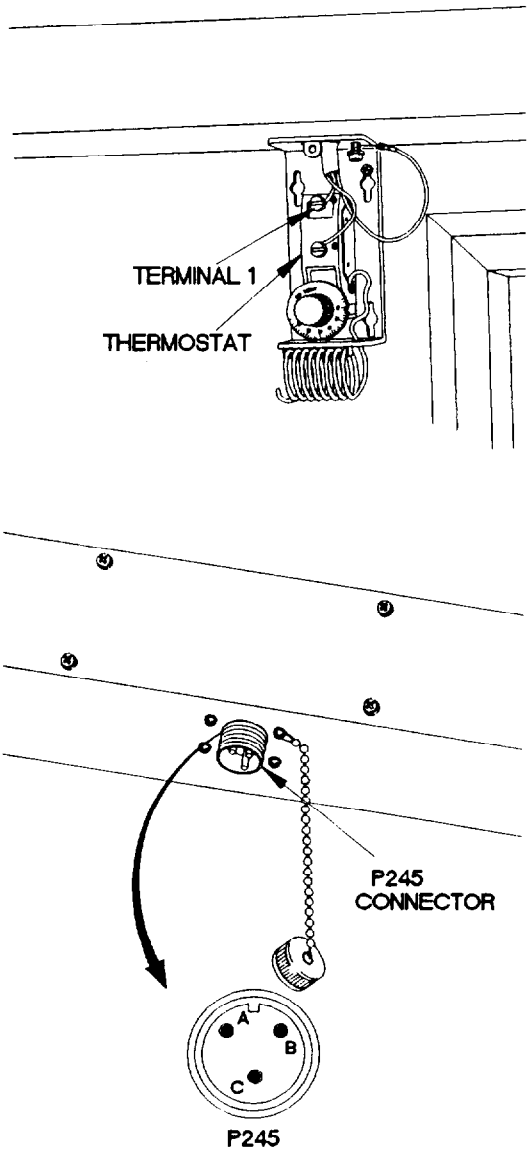


32E11451

e116. M1079 HEATER DOES NOT OPERATE (CONT)

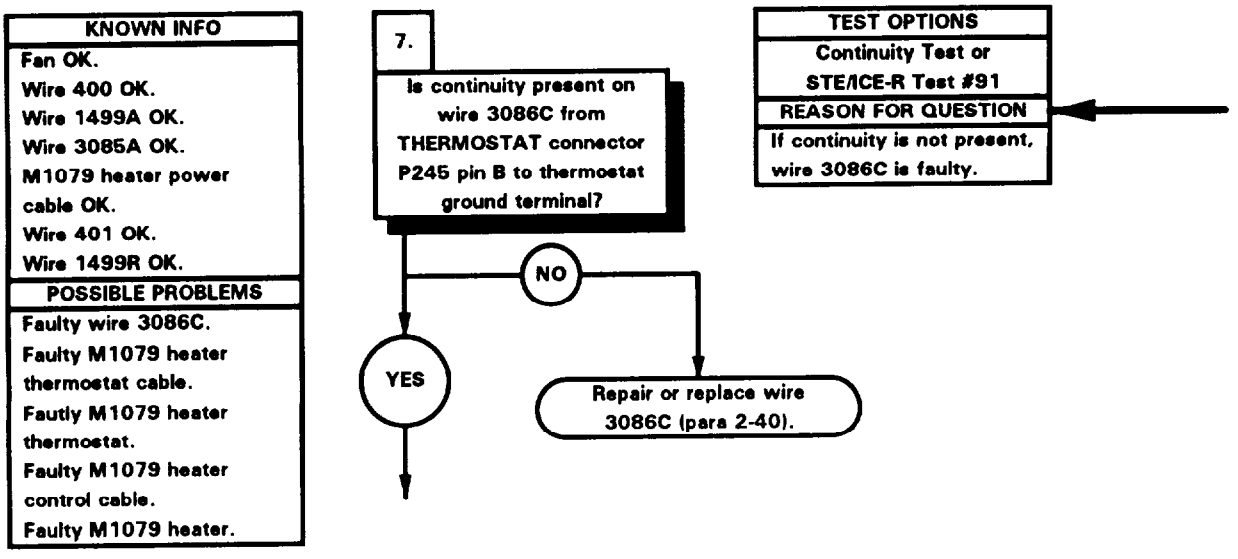


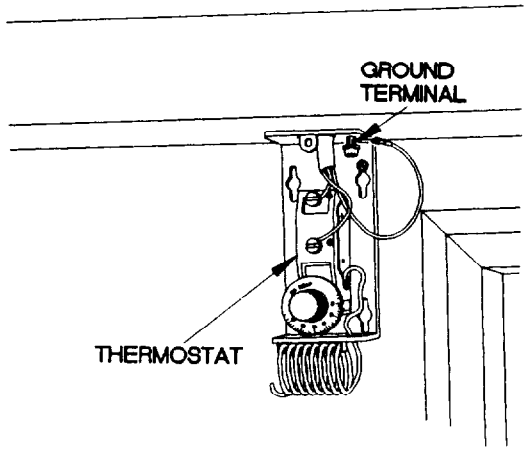
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to thermostat terminal 1.
(3) Connect negative (-) probe of multimeter to **THERMOSTAT** connector P245 pin A and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 1499R (para 2-40).



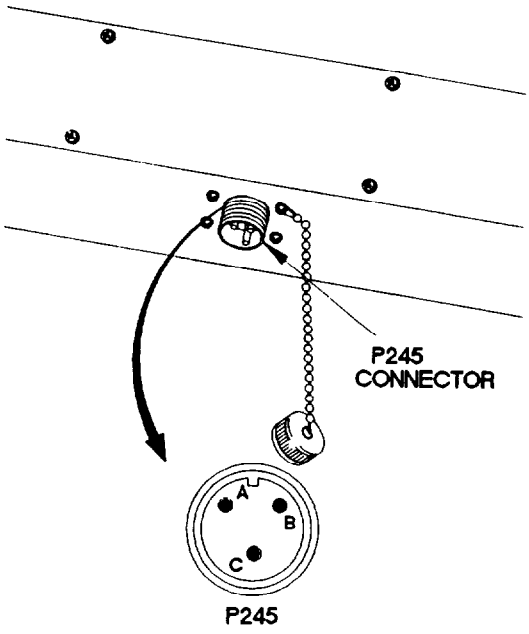
32E11461

e116. M1079 HEATER DOES NOT OPERATE (CONT)



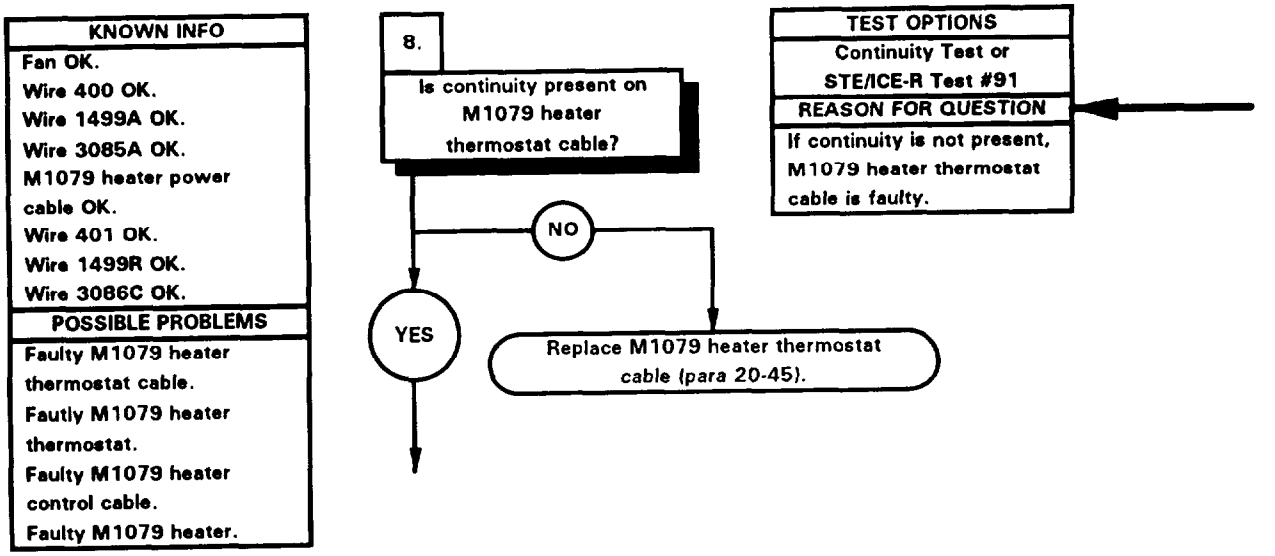


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to thermostat ground terminal.
(3) Connect negative (-) probe of multimeter to THERMOSTAT connector P245 pin B and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 3086C (para 2-40).

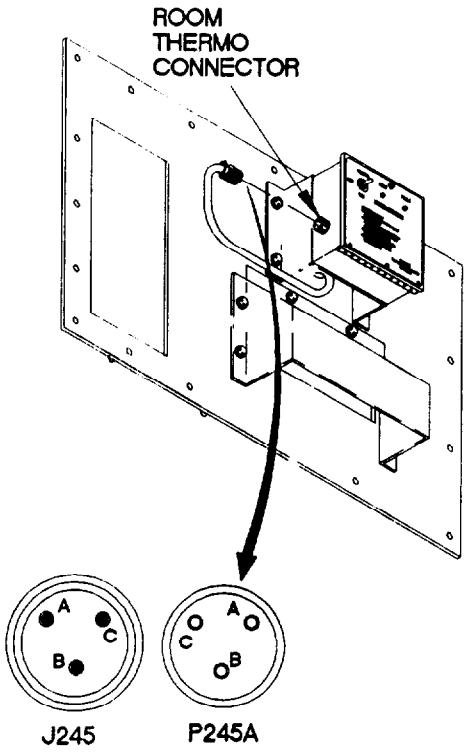


32E11471

e116. M1079 HEATER DOES NOT OPERATE (CONT)

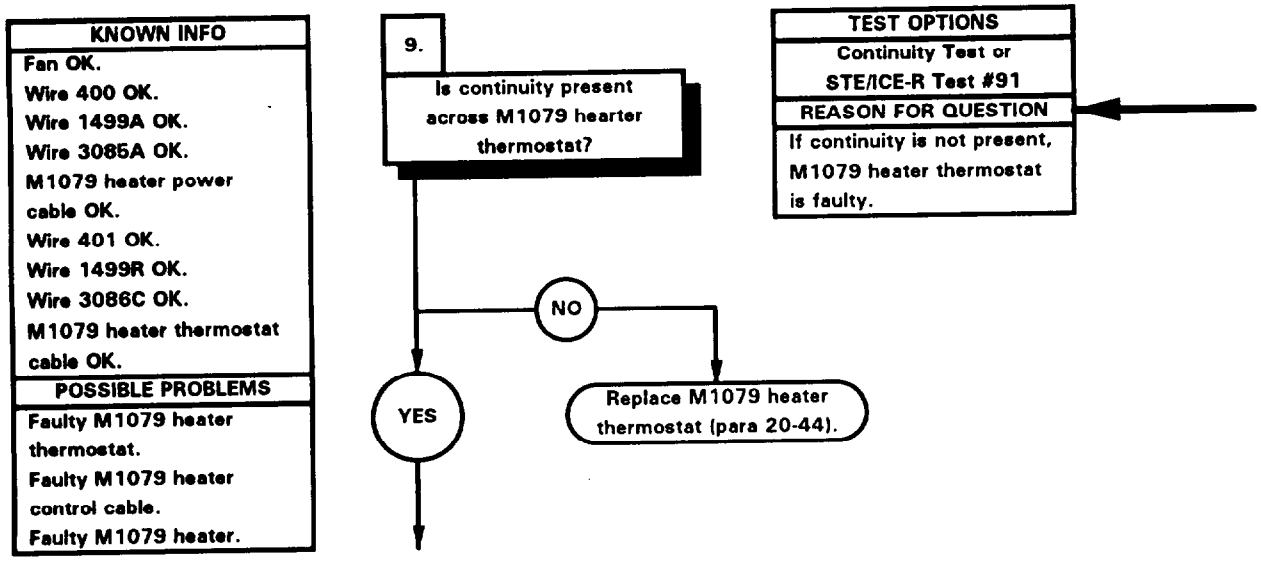


CONTINUITY TEST
(1) Disconnect connector P245A from ROOM THERMO connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P245A pin A.
(4) Connect negative (-) probe of multimeter to connector J245 socket A and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P245A pin B.
(6) Connect negative (-) probe of multimeter to connector J245 socket B and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to connector P245A pin C.
(8) Connect negative (-) probe of multimeter to connector J245 socket C and note reading on multimeter.
(9) If continuity is not present in step 4, 6, or 8, replace M1079 heater thermostat cable (para 20-45).
(10) Connect connector P245A to ROOM THERMO connector.

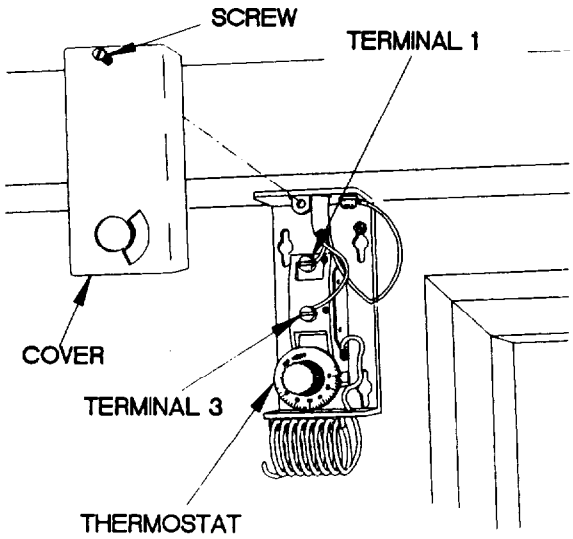


32E11481

e116. M1079 HEATER DOES NOT OPERATE (CONT)

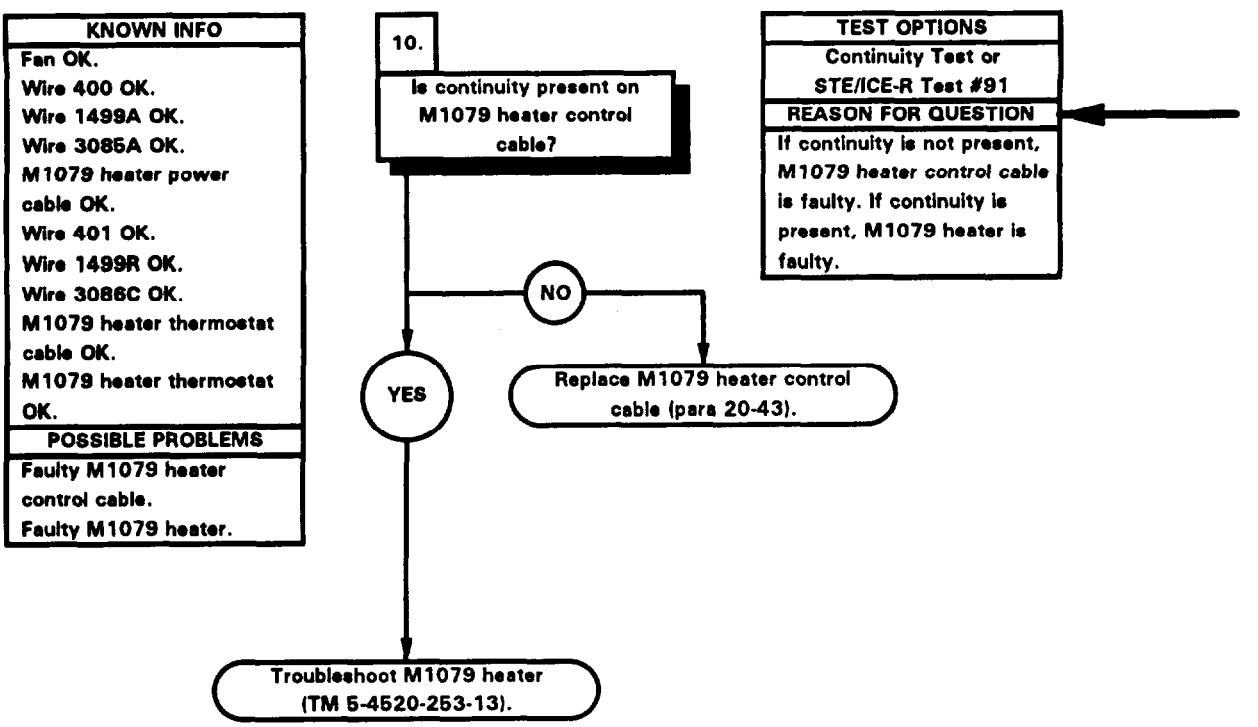


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Set M1079 heater thermostat to highest setting (TM 9-2320-365-10).
(3) Connect positive (+) probe of multimeter to thermostat terminal 3.
(4) Connect negative (-) probe of multimeter to thermostat terminal 1 and note reading on multimeter.
(5) If continuity is not present, replace M1079 heater thermostat (para 20-44).
(6) Install thermostat cover on thermostat.
(7) Tighten screw in thermostat cover.

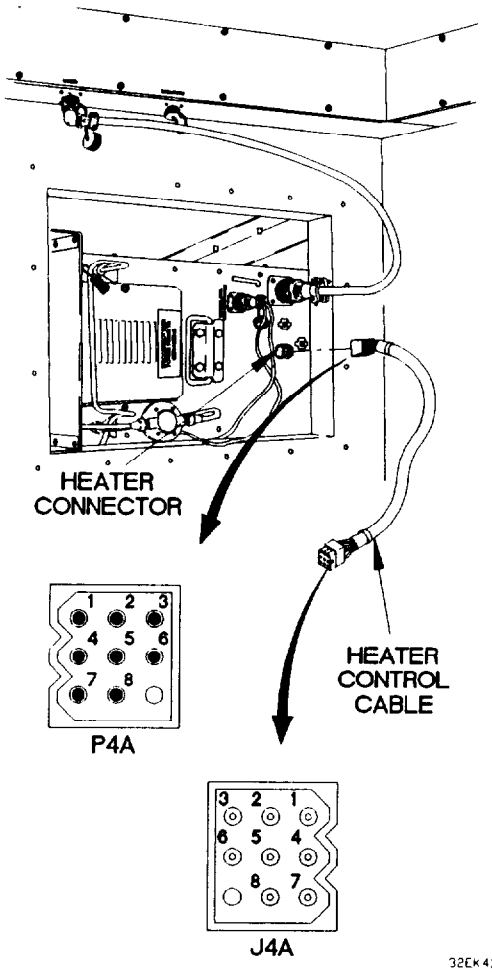


32E11491

e116. M1079 HEATER DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Disconnect connector P4A from heater connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P4A pin 1.
(4) Connect negative (-) probe of multimeter to connector J4A socket 1 and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P4A pin 2.
(6) Connect negative (-) probe of multimeter to connector J4A socket 2 and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to connector P4A pin 3.
(8) Connect negative (-) probe of multimeter to connector J4A socket 3 and note reading on multimeter.
(9) Connect positive (+) probe of multimeter to connector P4A pin 4.
(10) Connect negative (-) probe of multimeter to connector J4A socket 4 and note reading on multimeter.
(11) Connect positive (+) probe of multimeter to connector P4A pin 5.
(12) Connect negative (-) probe of multimeter to connector J4A socket 5 and note reading on multimeter.
(13) Connect positive (+) probe of multimeter to connector P4A pin 6.
(14) Connect negative (-) probe of multimeter to connector J4A socket 6 and note reading on mutimeter.
(15) Connect positive (+) probe of multimeter to connector P4A pin 7.
(16) Connect negative (-) probe of multimeter to connector J4A socket 7 and note reading on multimeter.
(17) Connect positive (+) probe of multimeter to connector P4A pin 8.
(18) Connect negative (-) probe of multimeter to connector J4A socket 8 and note reading on multimeter.
(19) If continuity is not present in step 4, 6, 8, 10, 12, 14, 16, or 18, replace M1079 heater control cable (para 20-53).
(20) If continuity is present, troubleshoot M1079 heater (TM 5-4520-253-13).
(21) Connect connector P127 to heater connector.
(22) Install M1079 heater deflector/duct (para 20-50).



32EK 4101

•117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE

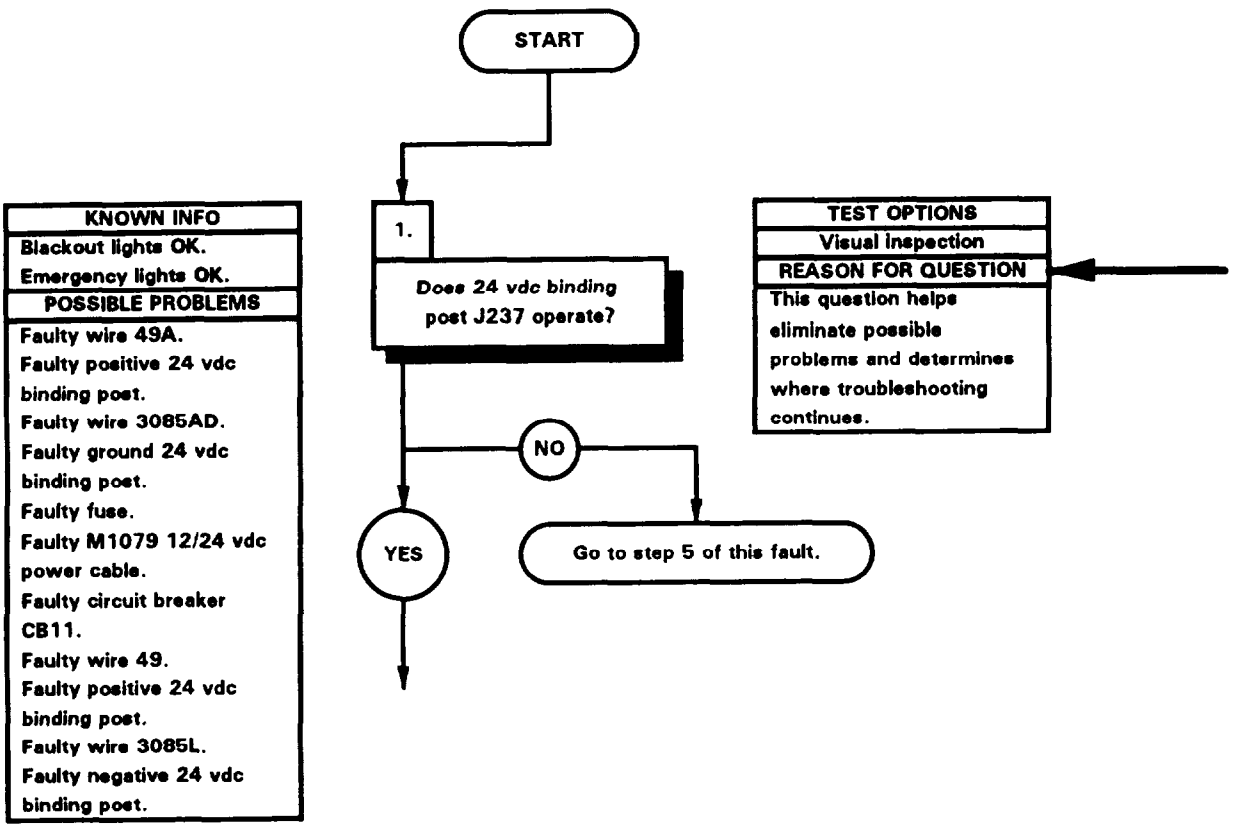
INITIAL SETUP

Equipment Condition
- Engine shut down (TM 9-2320-365-10).
- AC power disconnected (TM 9-2320-365-10).

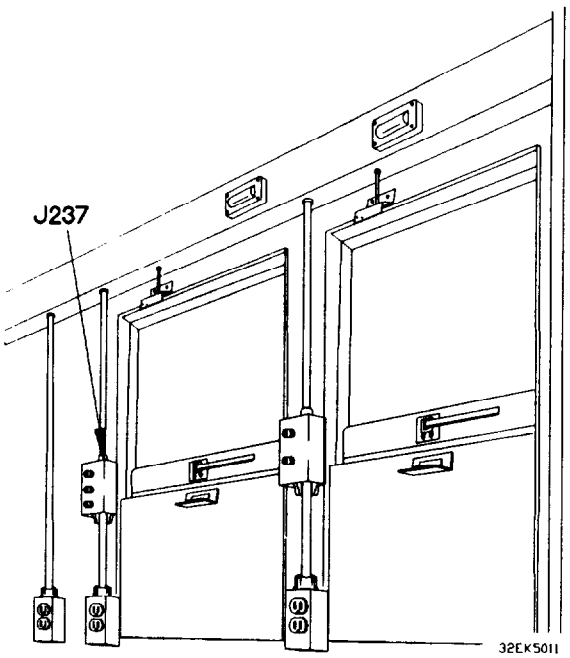
Personnel Required
- (2)

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

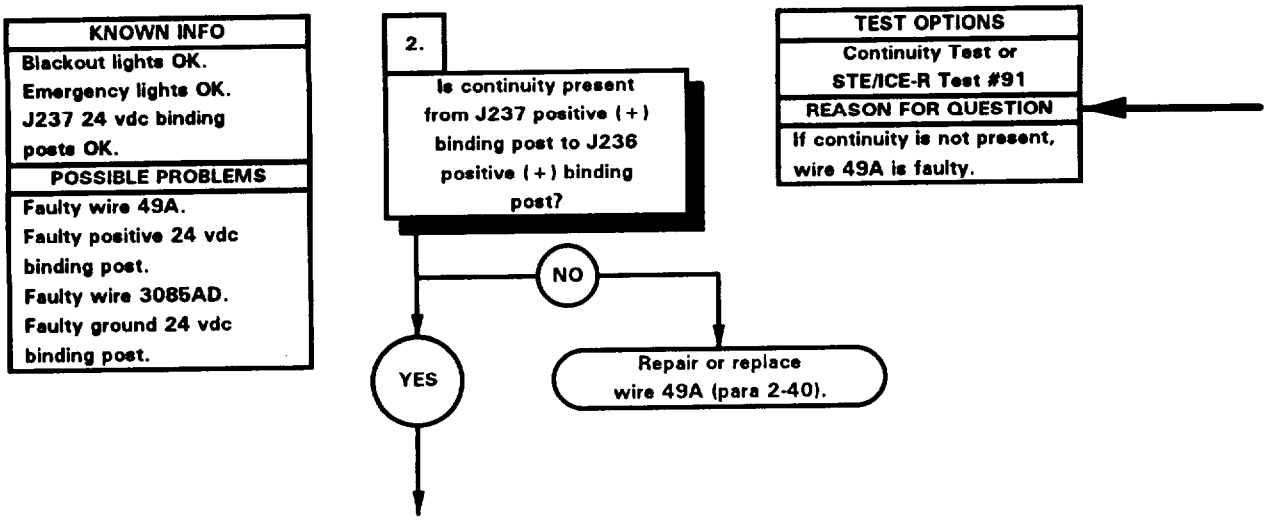
References
- TM 9-4910-571-12&P



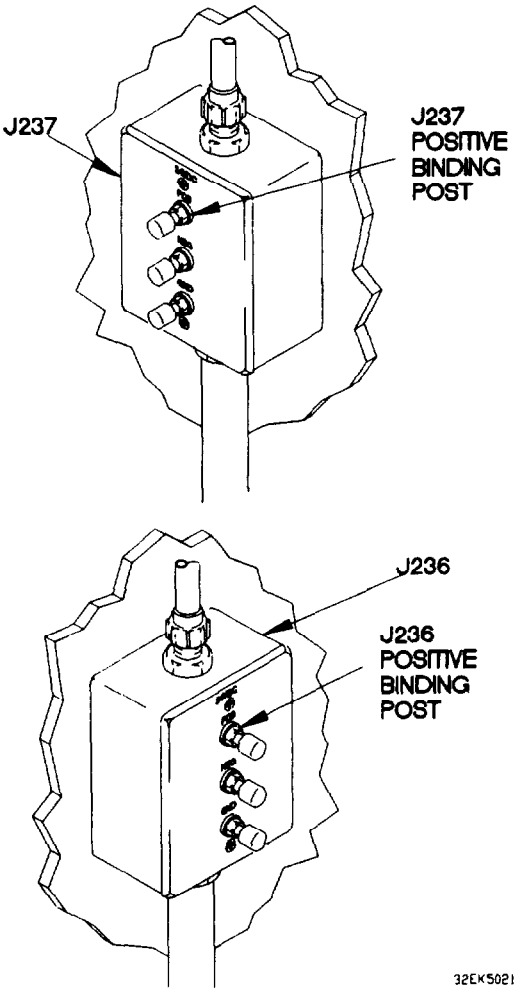
(1) Install a known good 24 vdc appliance to J237 binding posts.
(2) Operate 24 vdc appliance.
(3) If 24 vdc appliance does not operate, go to step 5 of this fault.
(4) Remove 24 vdc appliance from J237 binding posts.



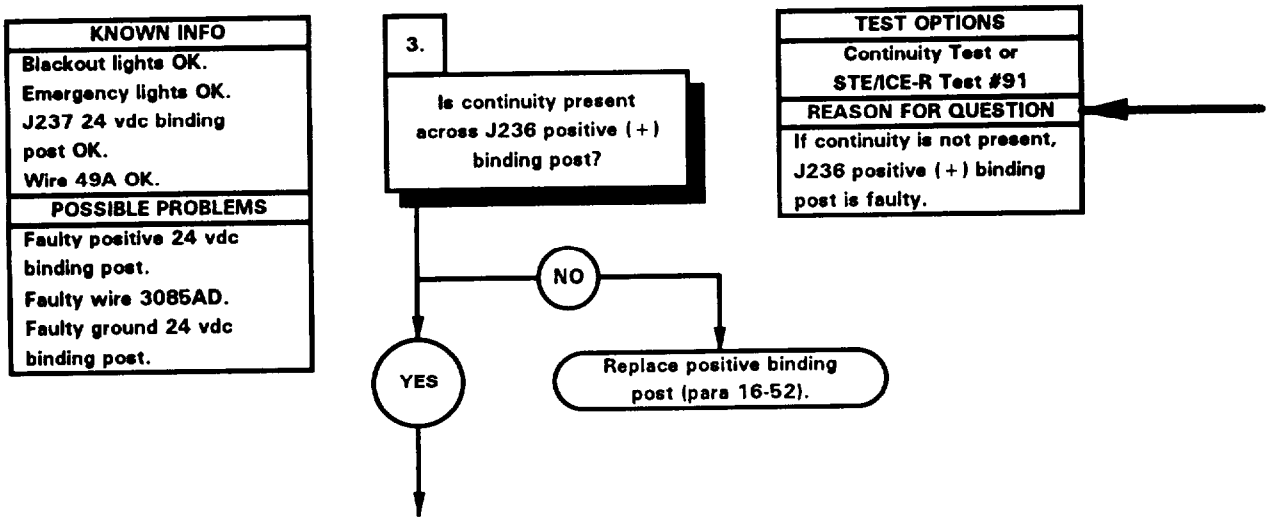
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



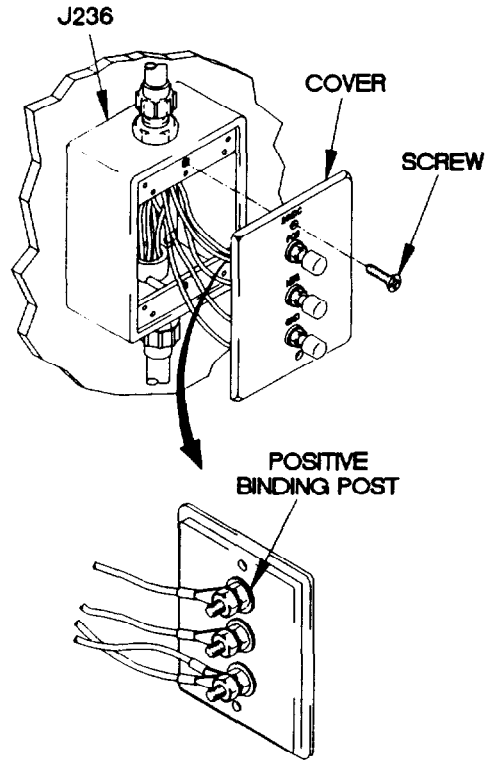
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to J237 positive (+) binding post.
(3) Connect negative (-) probe of multimeter to J236 positive (+) binding post and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 49A (para 2-40).



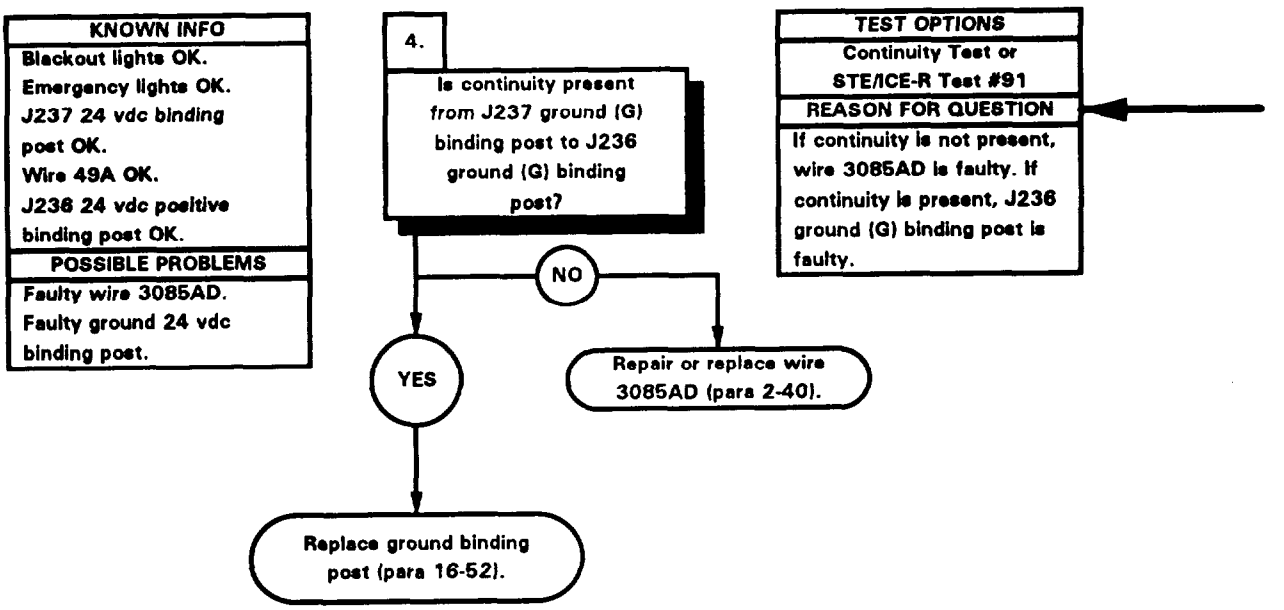
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



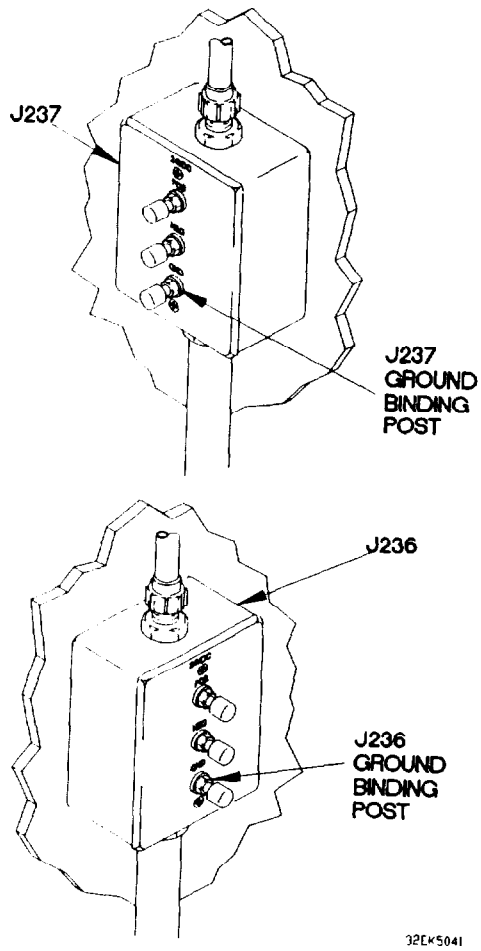
CONTINUITY TEST
(1) Disconnect M1079 12/24 vdc power cable from van body (TM 9-2320-365-10).
(2) Remove two screws and cover from J236 24 vdc outlet box.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to inside of J236 positive (+) binding post.
(5) Connect negative (-) probe of multimeter to front side of J236 positive (+) binding post and note reading on multimeter.
(6) If continuity is not present, replace J236 24 vdc positive binding post (para 16-52).
(7) Install cover on J236 24 vdc outlet box with two screws.



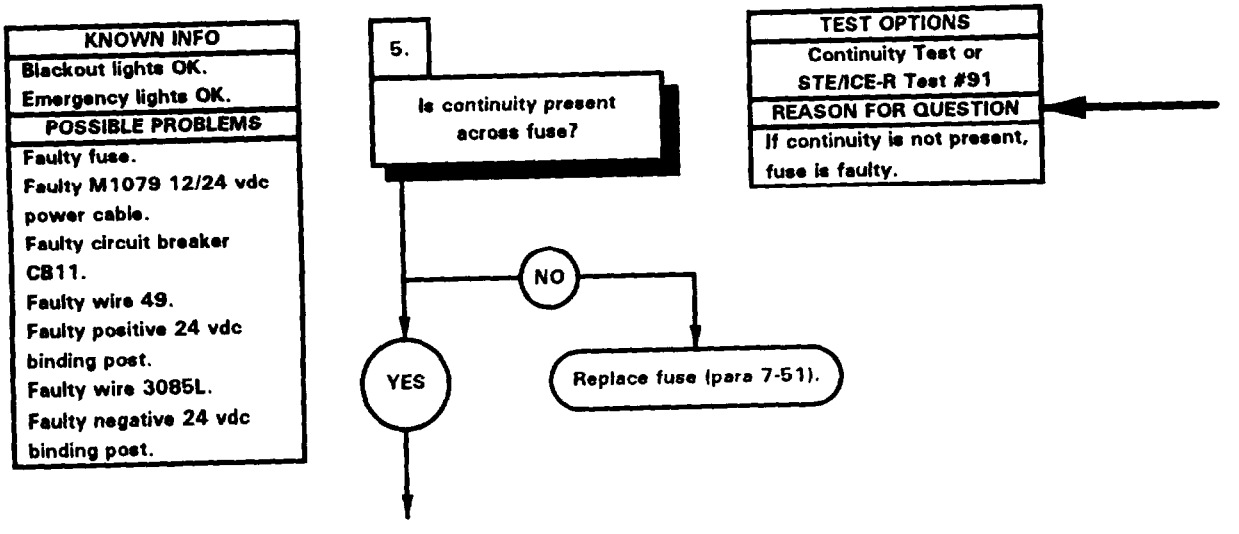
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)

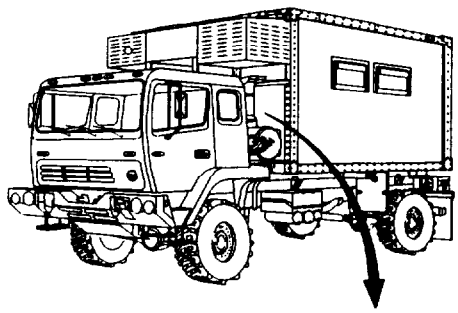


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to J237 ground (G) binding post.
(3) Connect negative (-) probe of multimeter to J236 ground (G) binding post and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 3085AD (para 2-40).
(5) If continuity is present, replace J236 24 vdc ground binding post (para 16-52).

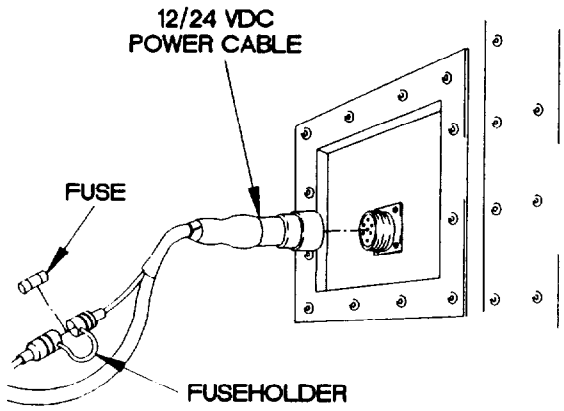


e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



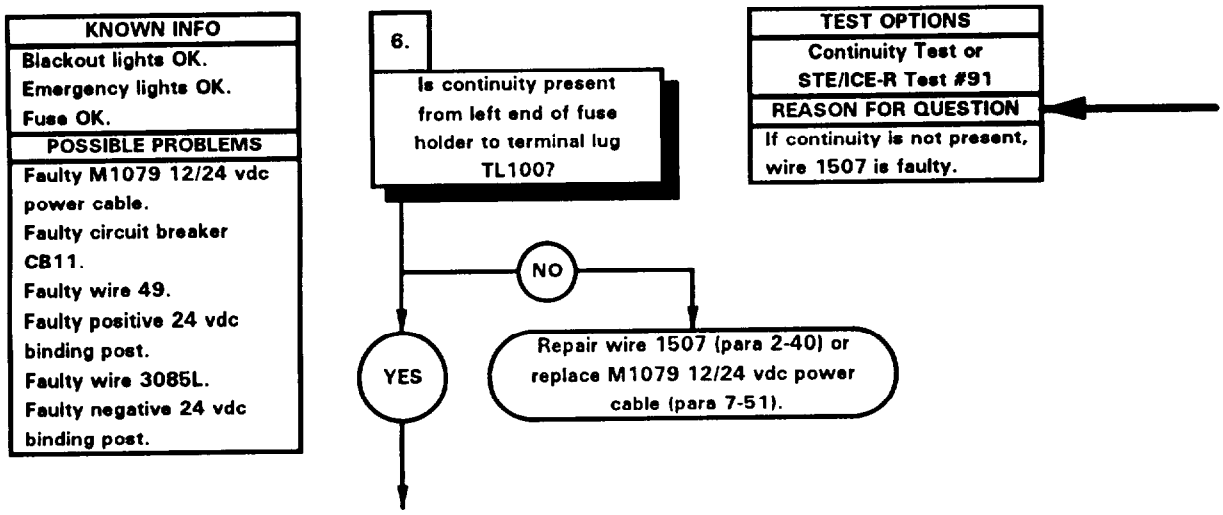


CONTINUITY TEST
(1) Disconnect M1079 12/24 vdc power cable from van body (TM 9-2320-365-10).
(2) Open fuse holder on M1079 12/24 vdc power cable.
(3) Remove fuse from fuse holder.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to one end of fuse.
(6) Connect negative (-) probe of multimeter to other end of fuse and note reading on multimeter.
(7) If continuity is not present, replace fuse (para 7-51).

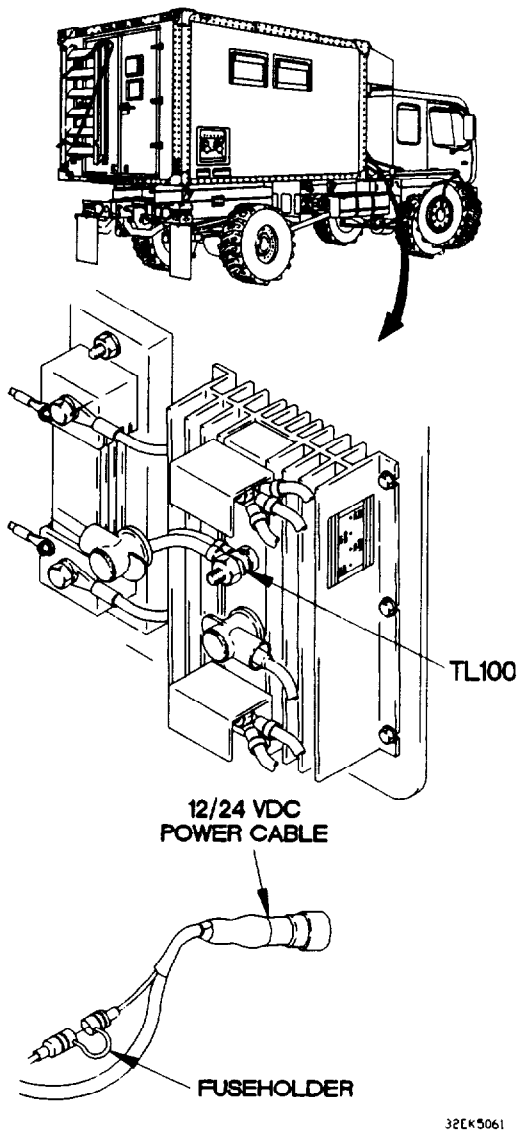


32CK5051

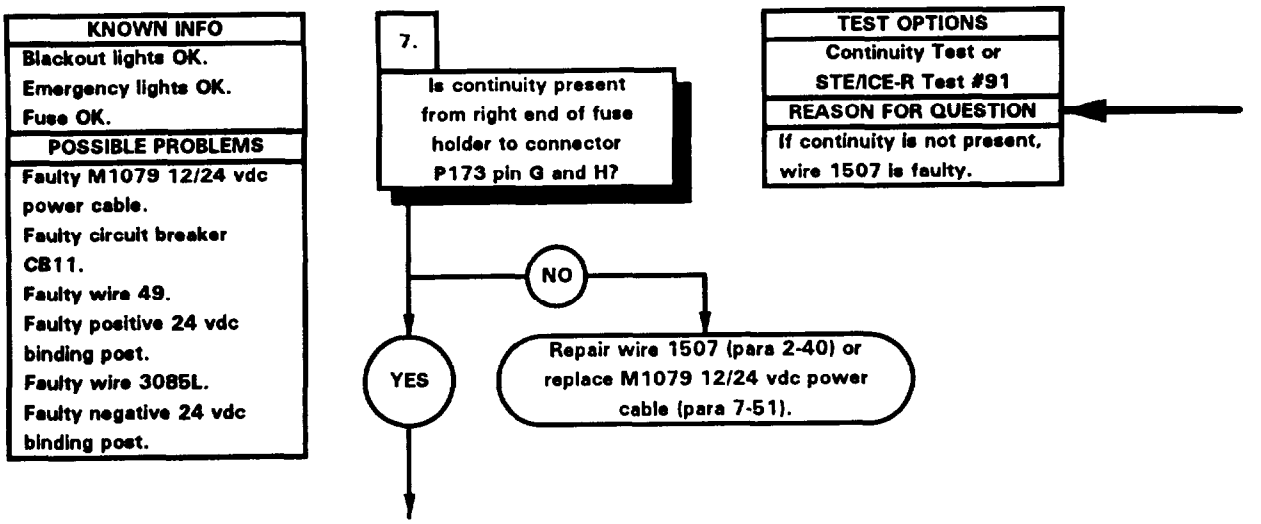
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



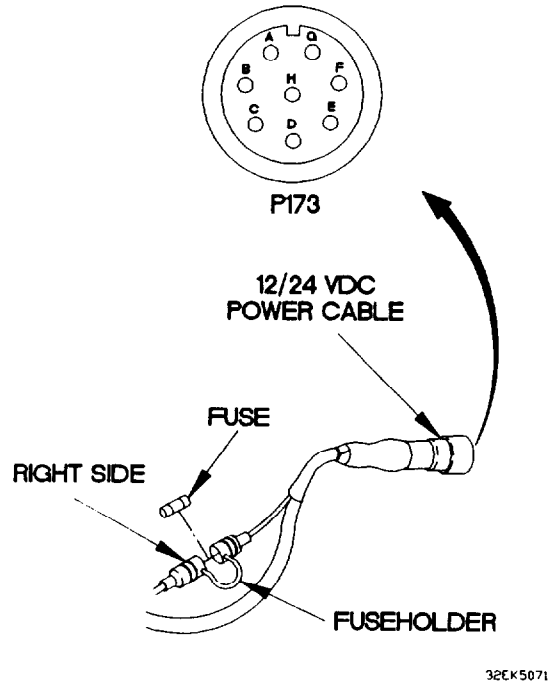
CONTINUITY TEST
(1) Lower spare tire (TM 9-2320-365-10).
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to left end of fuse holder.
(4) Connect negative (-) probe of multimeter to terminal lug TL100 and note reading on multimeter.
(5) If continuity is not present, repair wire 1507 (para 2-40) or replace M1079 12/24 vdc power cable (para 7-51).
(6) Raise spare tire (TM 9-2320-365-10).



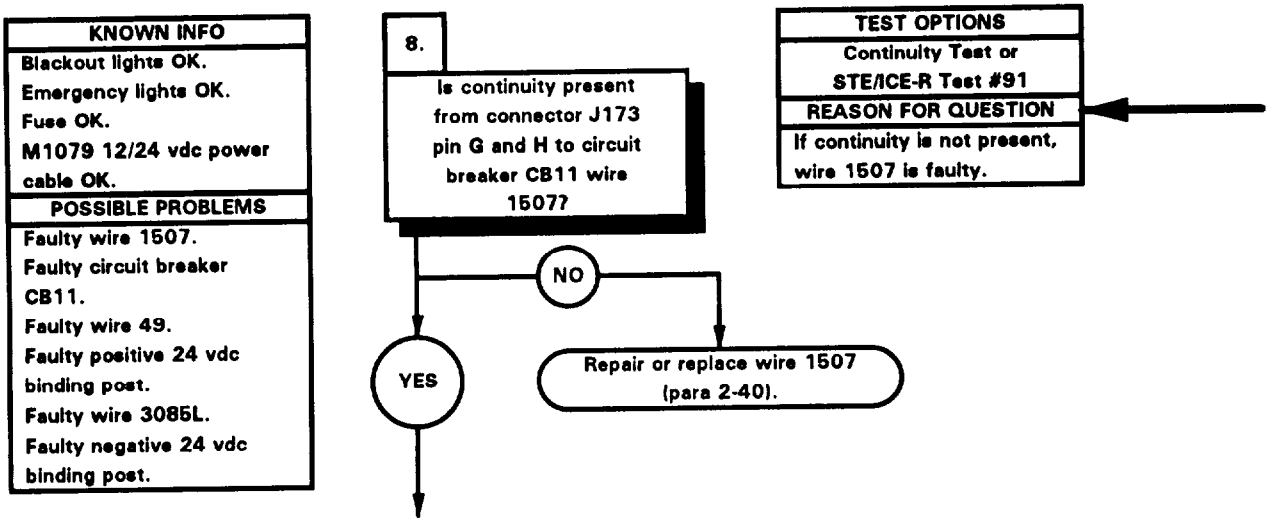
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



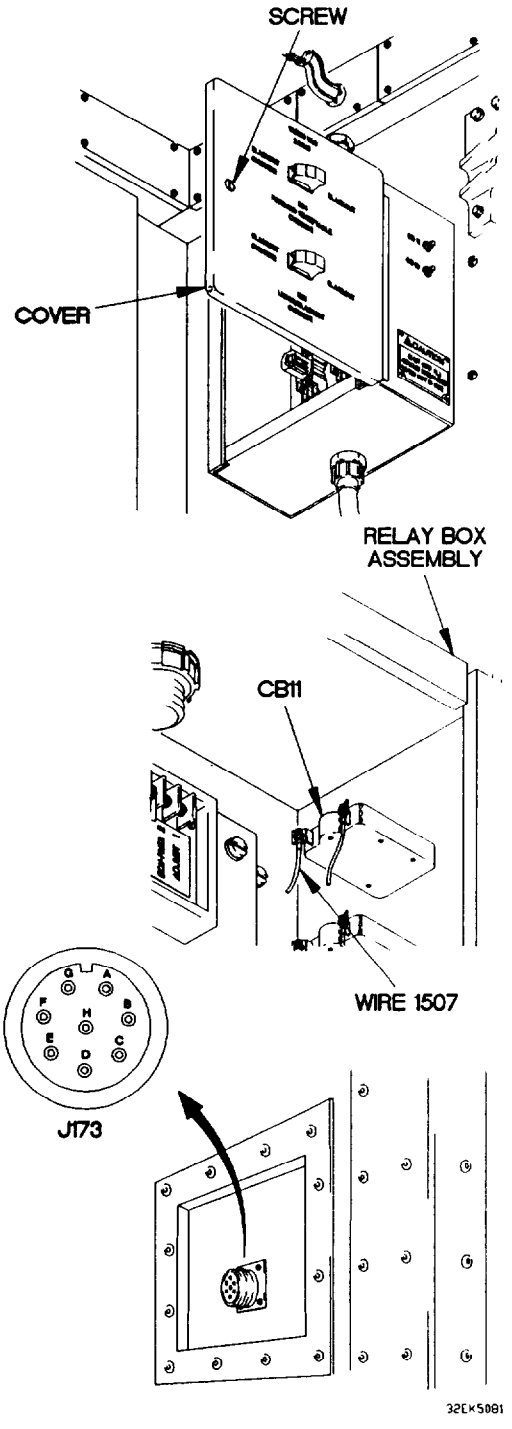
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to right end of fuse holder.
(3) Connect negative (-) probe of multimeter to connector P173-G and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to connector P173-H and note reading on multimeter.
(5) If continuity is not present at connector P173-G and/or P173-H, repair wire 1507 (para 2-40) or replace M1079 12/24 vdc power cable (para 7-51).
(6) Install fuse in fuse holder on M1079 12/24 vdc power cable.
(7) Close fuse holder.



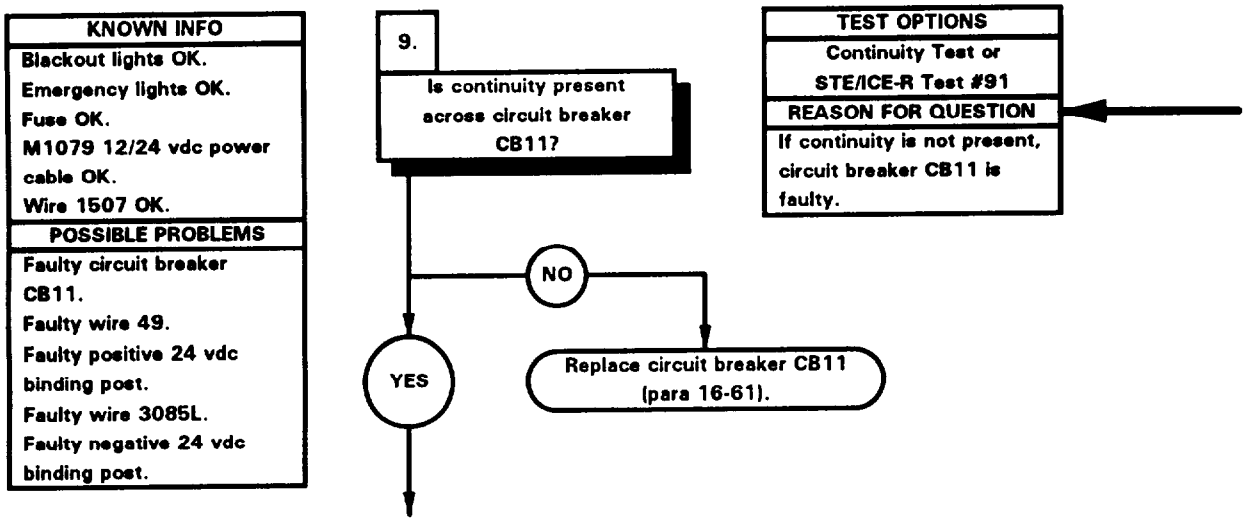
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



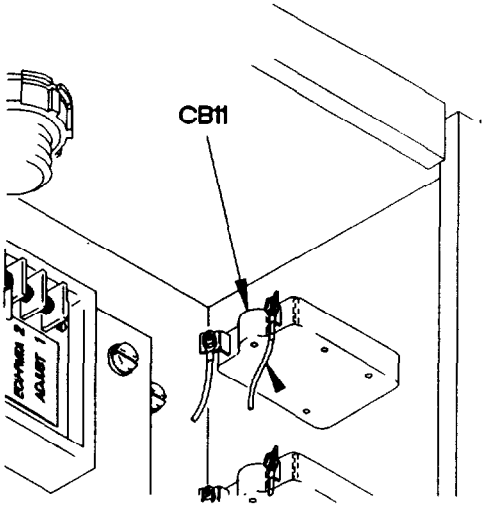
CONTINUITY TEST
(1) Loosen screw in cover.
(2) Open cover on relay box assembly.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J173-G.
(5) Connect negative (-) probe of multimeter to circuit breaker CB11 wire 1507 and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector J173-H and note reading on multimeter.
(5) If continuity is not present at connector J173-G and/or J173-H, repair wire 1507 (para 2-40).



e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)

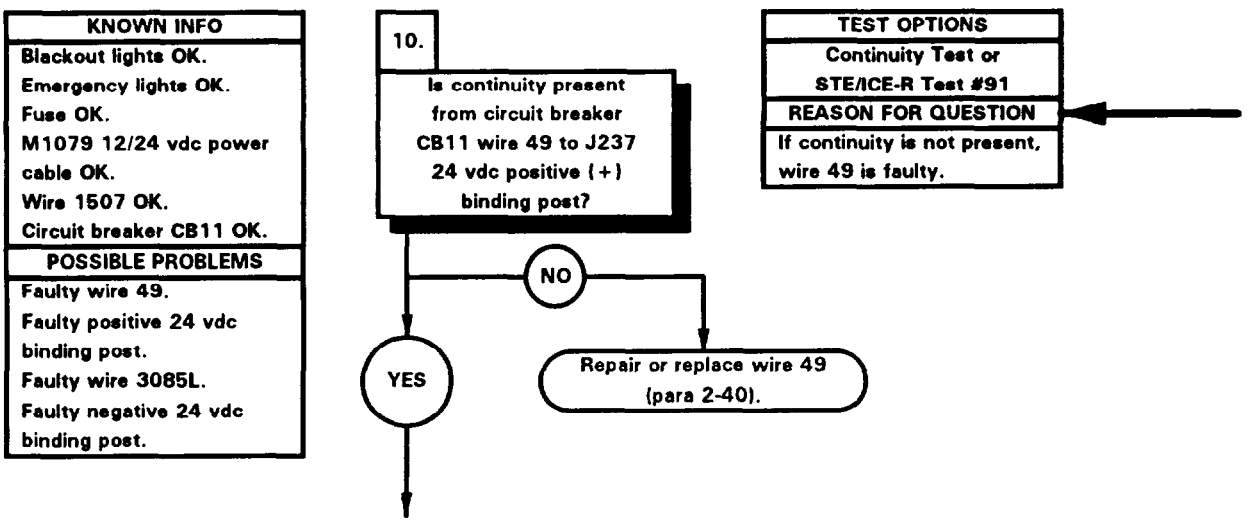


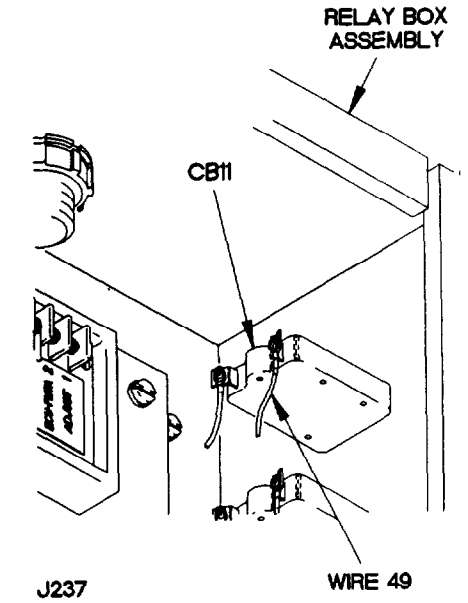
CONTINUITY TEST
(1) Push in circuit breaker CB11.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to one end of circuit breaker CB11.
(4) Connect negative (-) probe of multimeter to other end of circuit breaker CB11 and note reading on multimeter.
(5) If continuity is not present, replace circuit breaker CB11 (para 16-61).

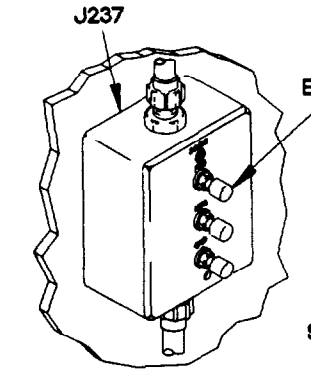


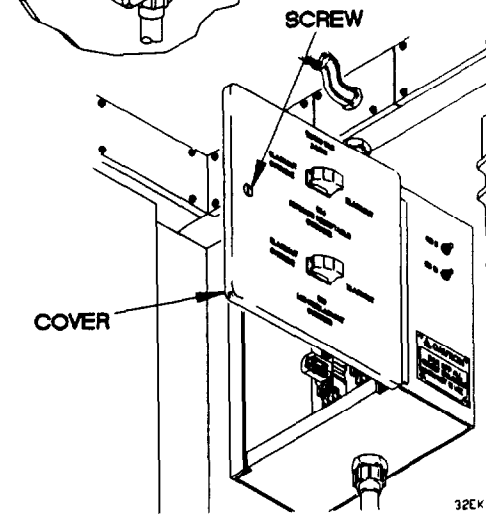
32EK5091

e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)





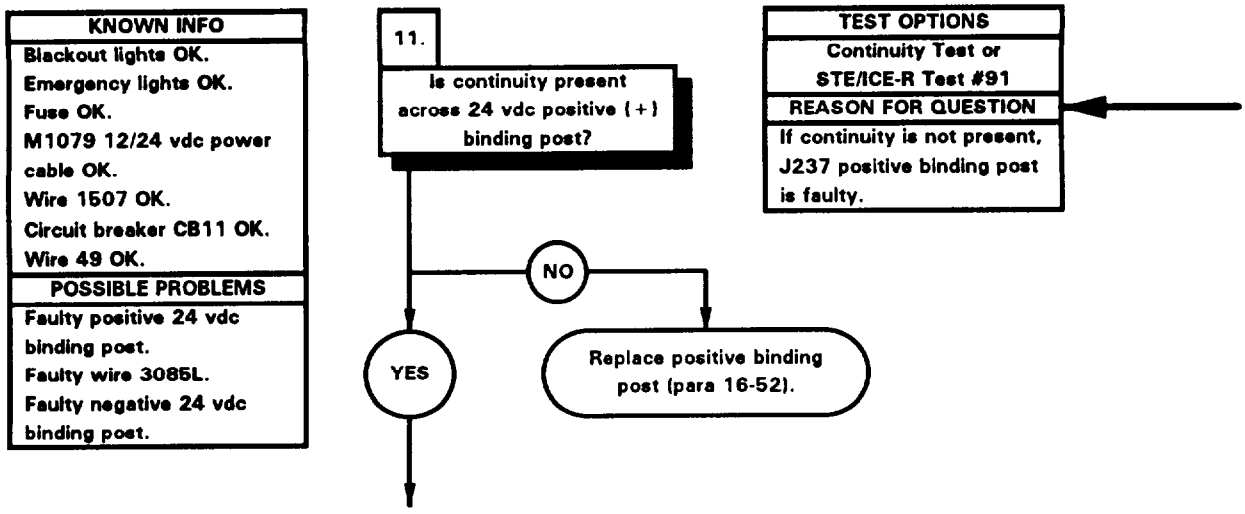




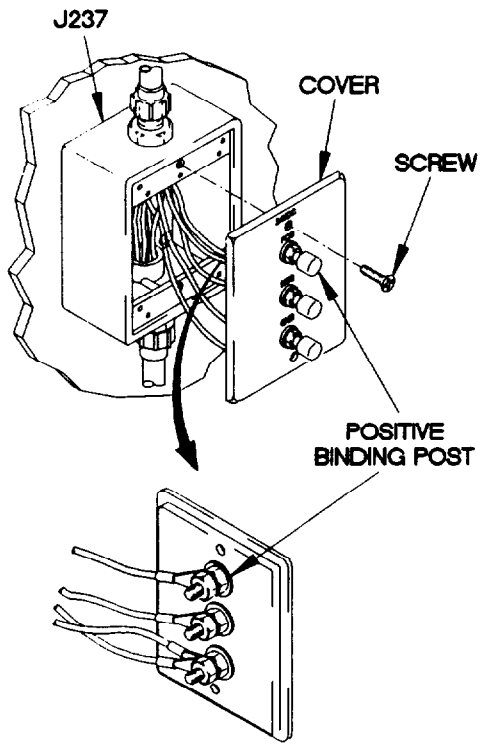
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to circuit breaker CB11 wire 49.
(3) Connect negative (-) probe of multimeter to J237 24 vdc positive (+) binding post and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 49 (para 2-40).
(5) Close cover on relay box assembly.
(6) Tighten screw in cover.

e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)

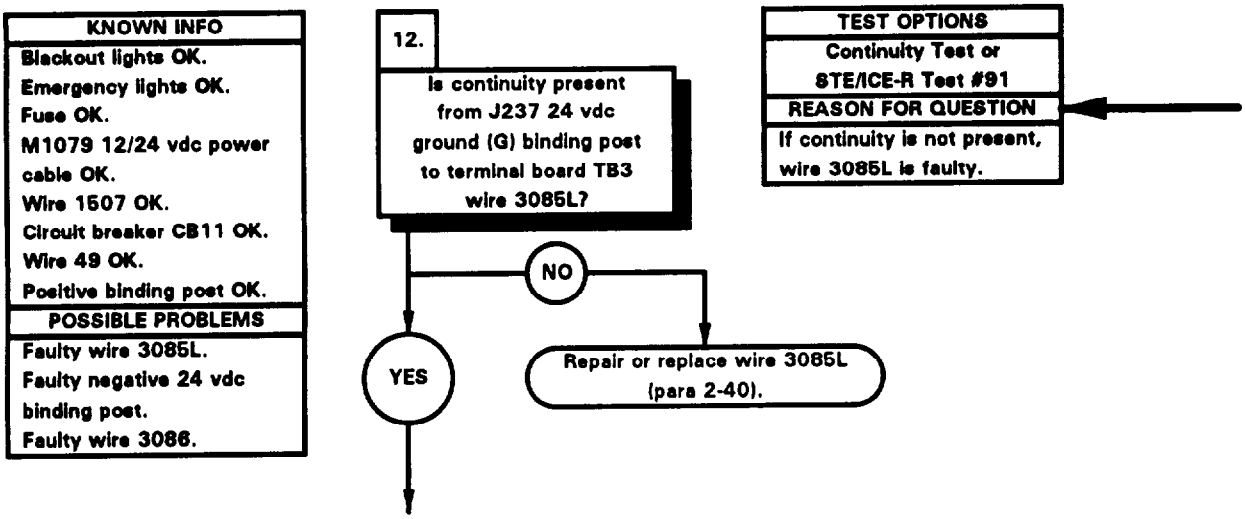


CONTINUITY TEST
(1) Remove two screws and cover from J237 24 vdc outlet box.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to one side of J237 positive (+) binding post.
(4) Connect negative (-) probe of multimeter to other side of J237 positive (+) binding post and note reading on multimeter.
(5) If continuity is not present, replace J237 24 vdc positive binding post (para 16-52).



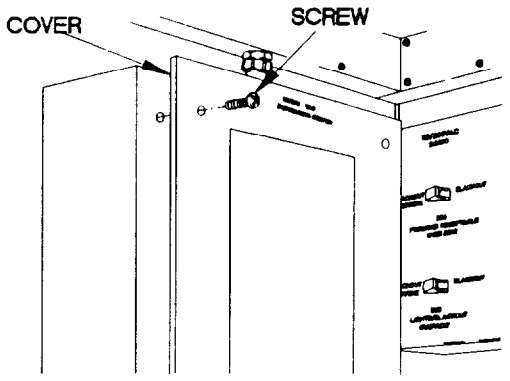
32EK512L

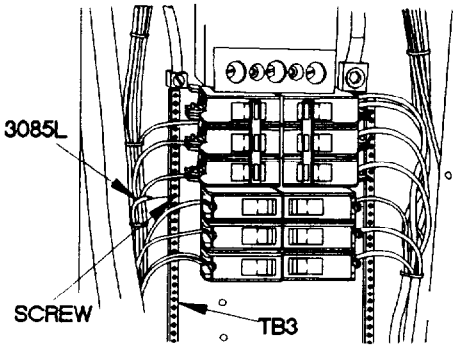
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)

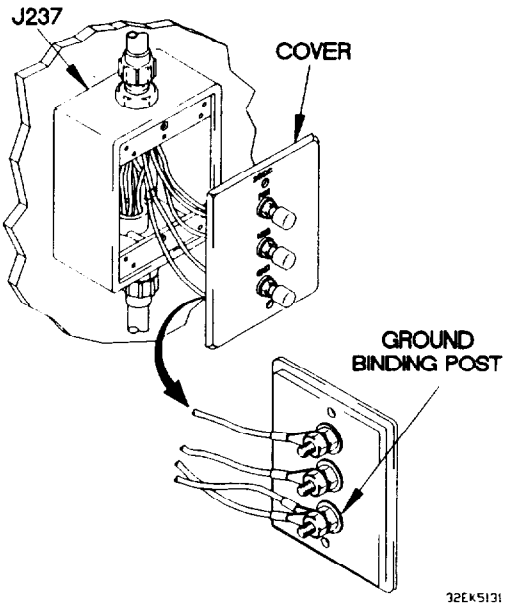


CONTINUITY TEST

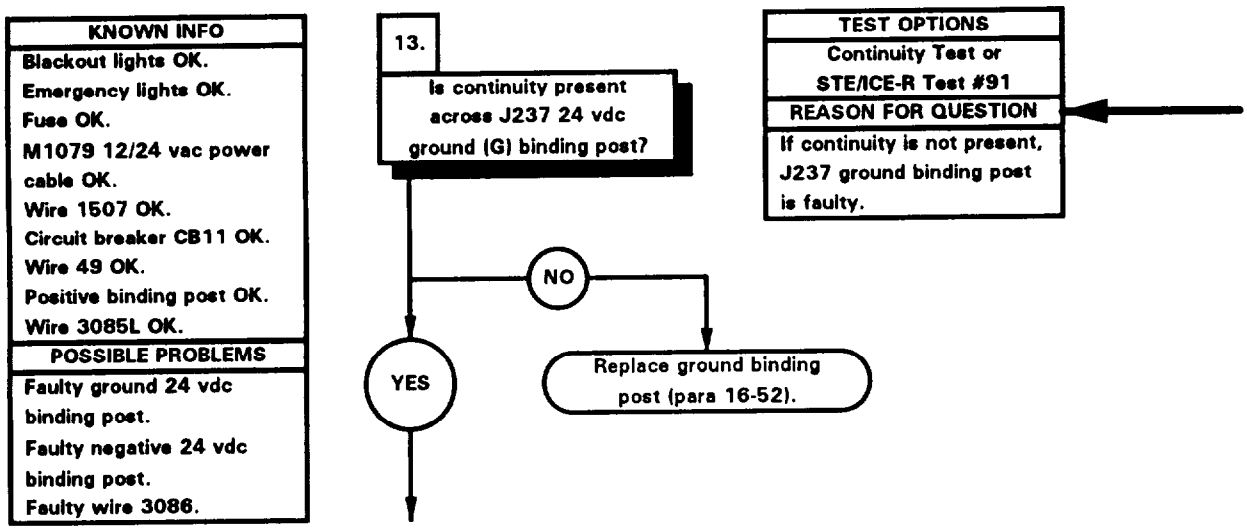
(1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(2) Loosen screw in terminal board TB3.
(3) Remove wire 3085L from terminal board TB3.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to J237 24 vdc ground (G) binding post.
(6) Connect negative (-) probe of multimeter to terminal board TB3 wire 3085L and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 3085L (para 2-40).
(8) Position wire 3085L in terminal board TB3.
(9) Tighten screw in terminal board TB3.
(10) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.



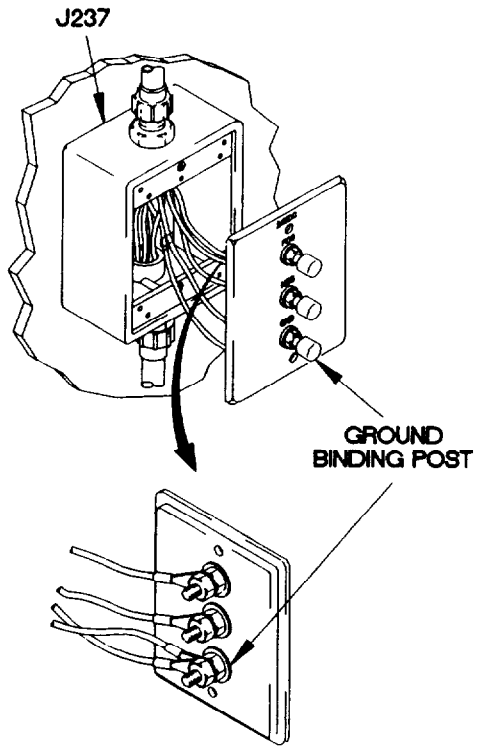




e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)

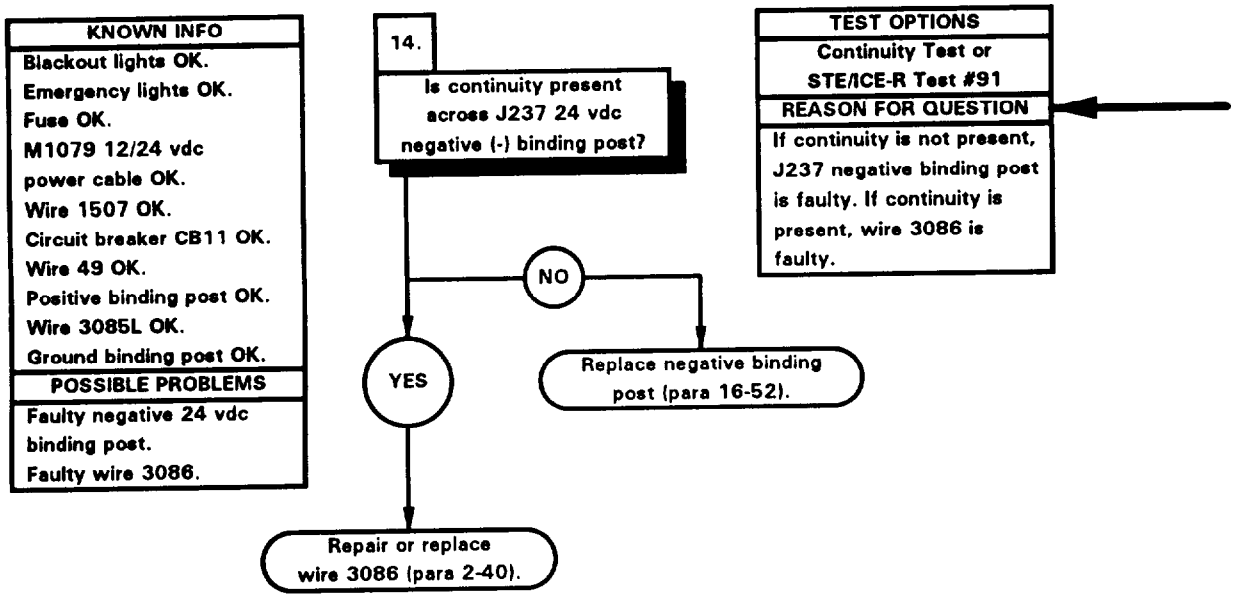


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to inside of J237 ground (G) binding post.
(3) Connect negative (-) probe of multimeter to front side of J237 ground (G) binding post and note reading on multimeter.
(4) If continuity is not present, replace J237 24 vdc ground binding post (para 16-52).

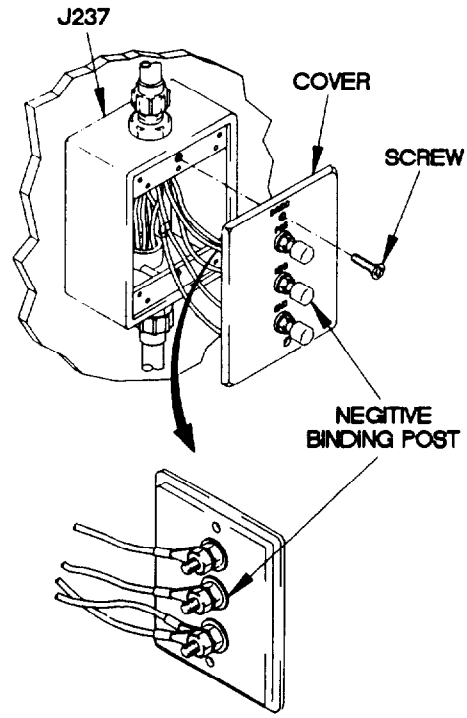


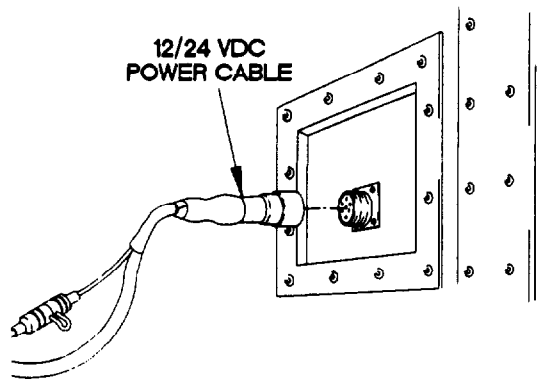
32EK514L

e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to inside of J237 negative (-) binding post.
(3) Connect negative (-) probe of multimeter to front side of J237 negative (-) binding post and note reading on multimeter.
(4) If continuity is not present, replace J237 24 vdc negative binding post (para 16-52).
(5) If continuity is present, repair or replace wire 3086 (para 2-40).
(6) Install cover on J237 24 vdc outlet box with two screws.
(7) Connect M1079 12/24 vdc power cable to van body (TM 9-2320-365-10).





32EK5151

e118. M1079 VAN DOOR OPEN INDICATOR DOES NOT OPERATE

INITIAL SETUP

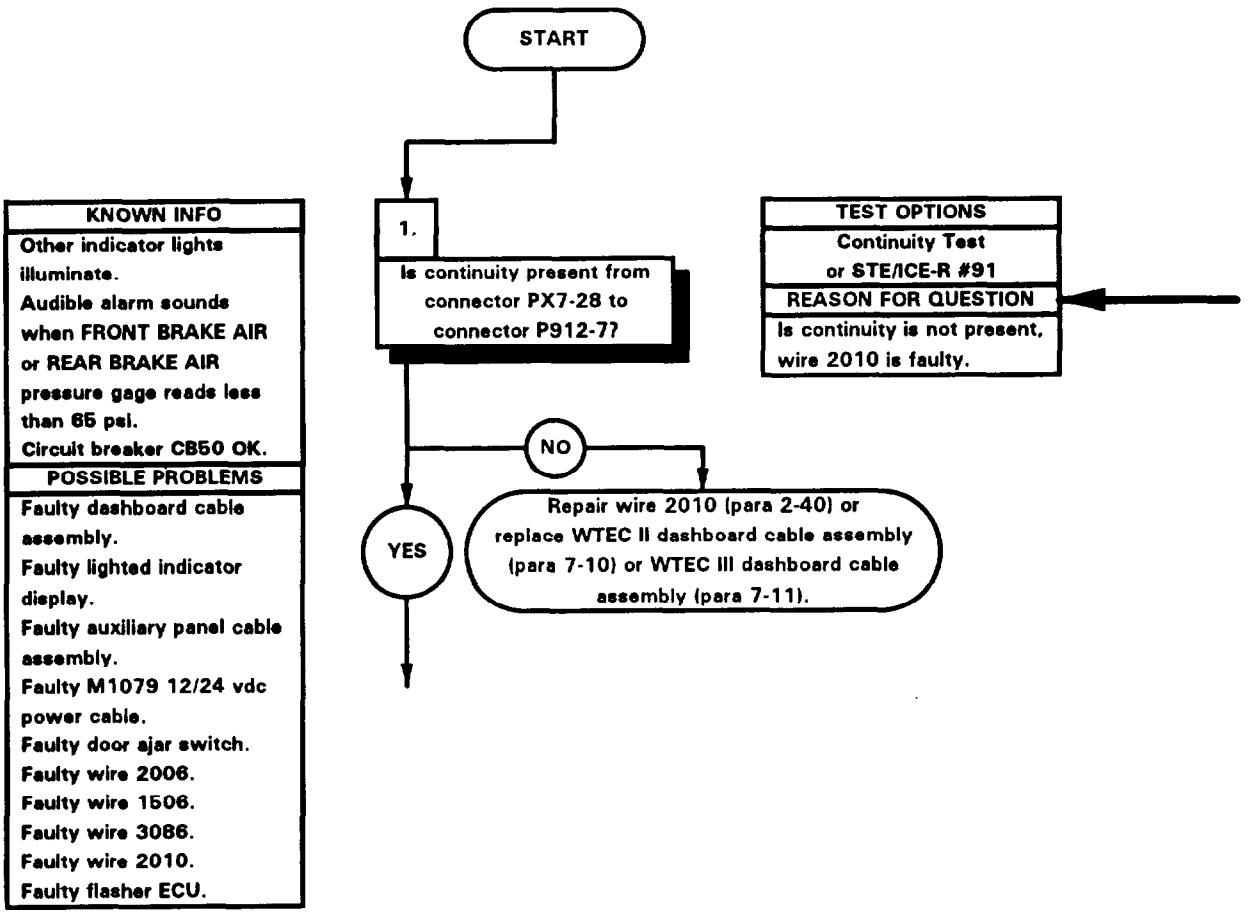
Equipment Condition
- Engine shut down (TM 9-2320-365-10).
- AC power disconnected (TM 9-2320-365-10).

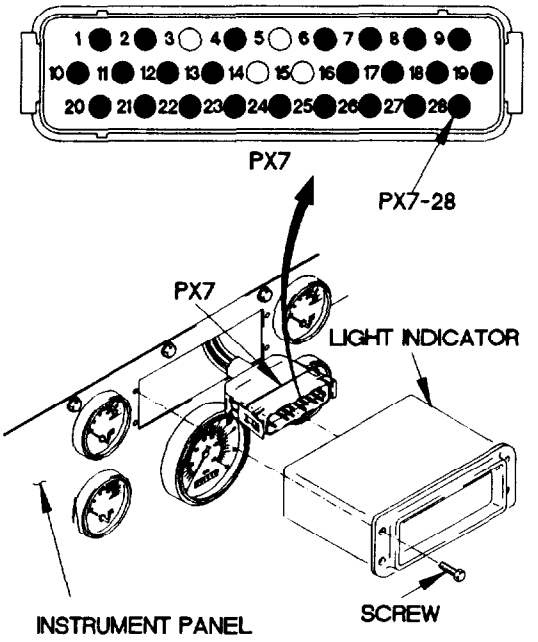
Personnel Required
- (2)

Materials/Parts
- Wire, Elect, 50 ft (Item 77, Appendix D)

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)
- Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)

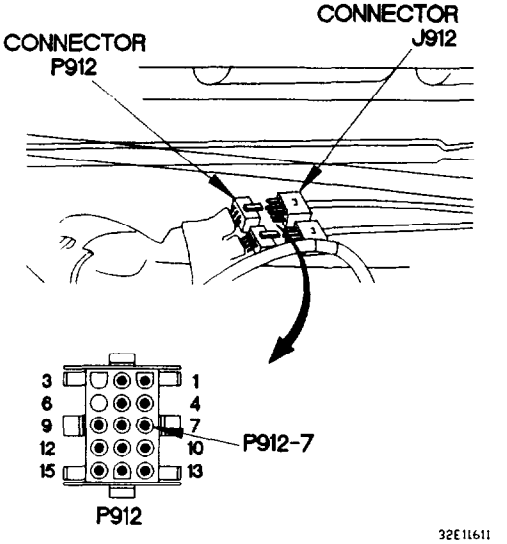
References
- TM 9-4910-571-12&P



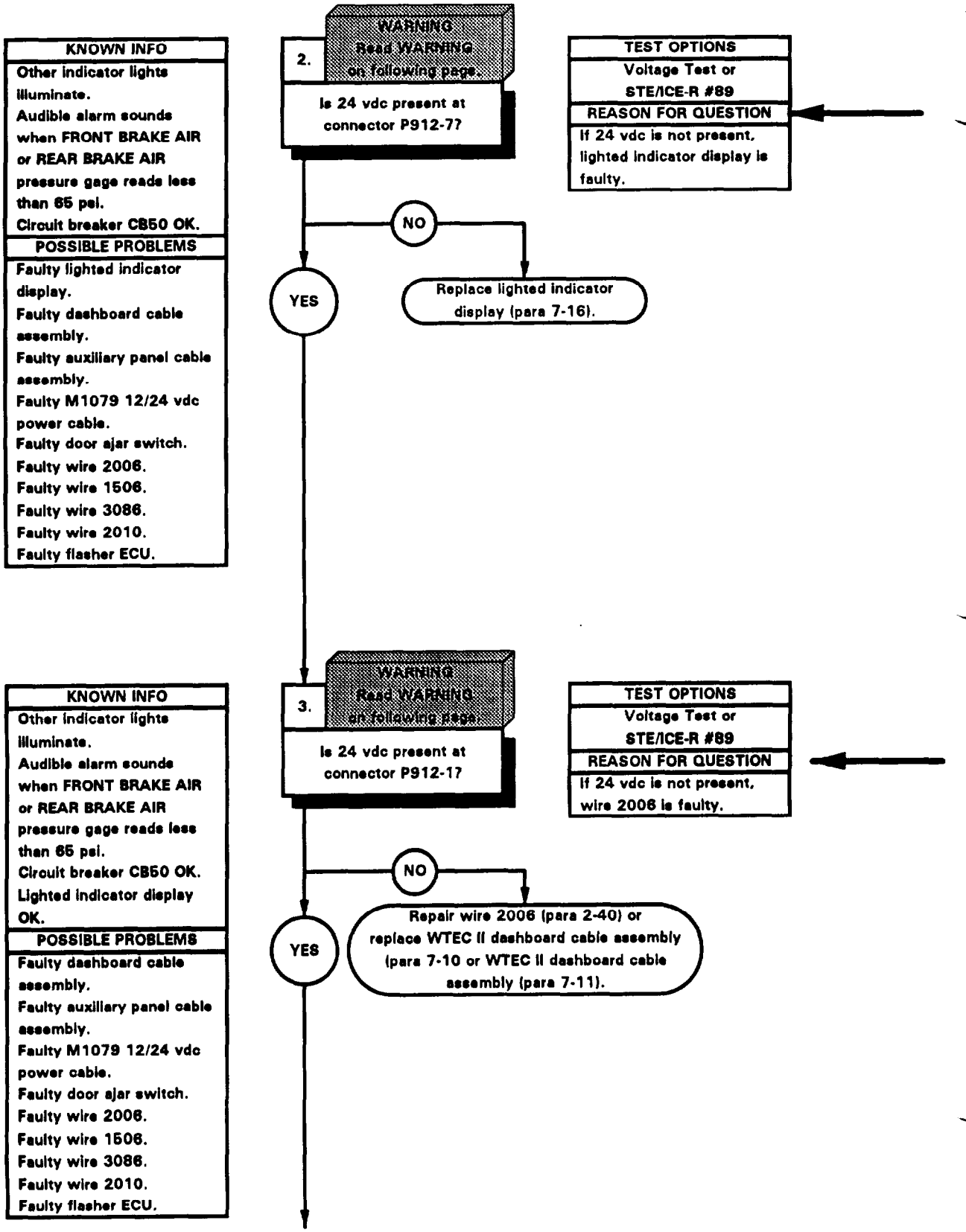


CONTINUITY TEST

(1) Open van body RH door (TM 9-2320-365-10).
(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) Remove personnel heater for access (para 18-9).
(6) Disconnect connector P912 from connector J912.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector PX7-28.
(9) Connect negative (-) probe of multimeter to connector P912-7 and note reading on multimeter.
(10) If continuity is not present, repair wire 2010 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(11) Connect connector PX7 to lighted indicator display.
(12) Position lighted indicator display in instrument panel assembly with four screws.
(13) Tighten four screws to 6-10 lb-in. (1 N·m).



e118. M1079 VAN DOOR OPEN INDICATOR DOES NOT OPERATE (CONT)

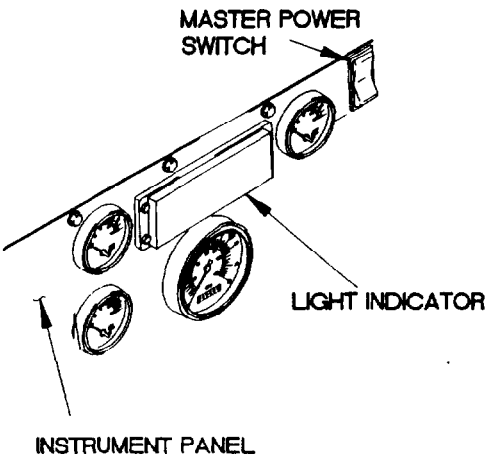


WARNING

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) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to connector P912-7.
(3) Connect negative (-) probe of multimeter to ground.
(4) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
(5) If 24 vdc is not present, replace lighted indicator display (para 7-16).
(6) Position master power switch to off (TM 9-2320-365-10).

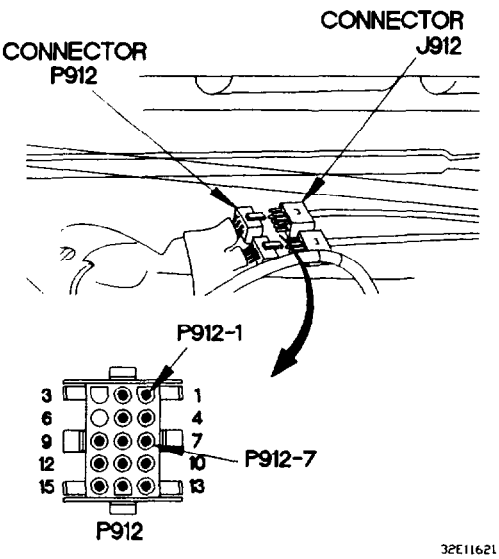


WARNING

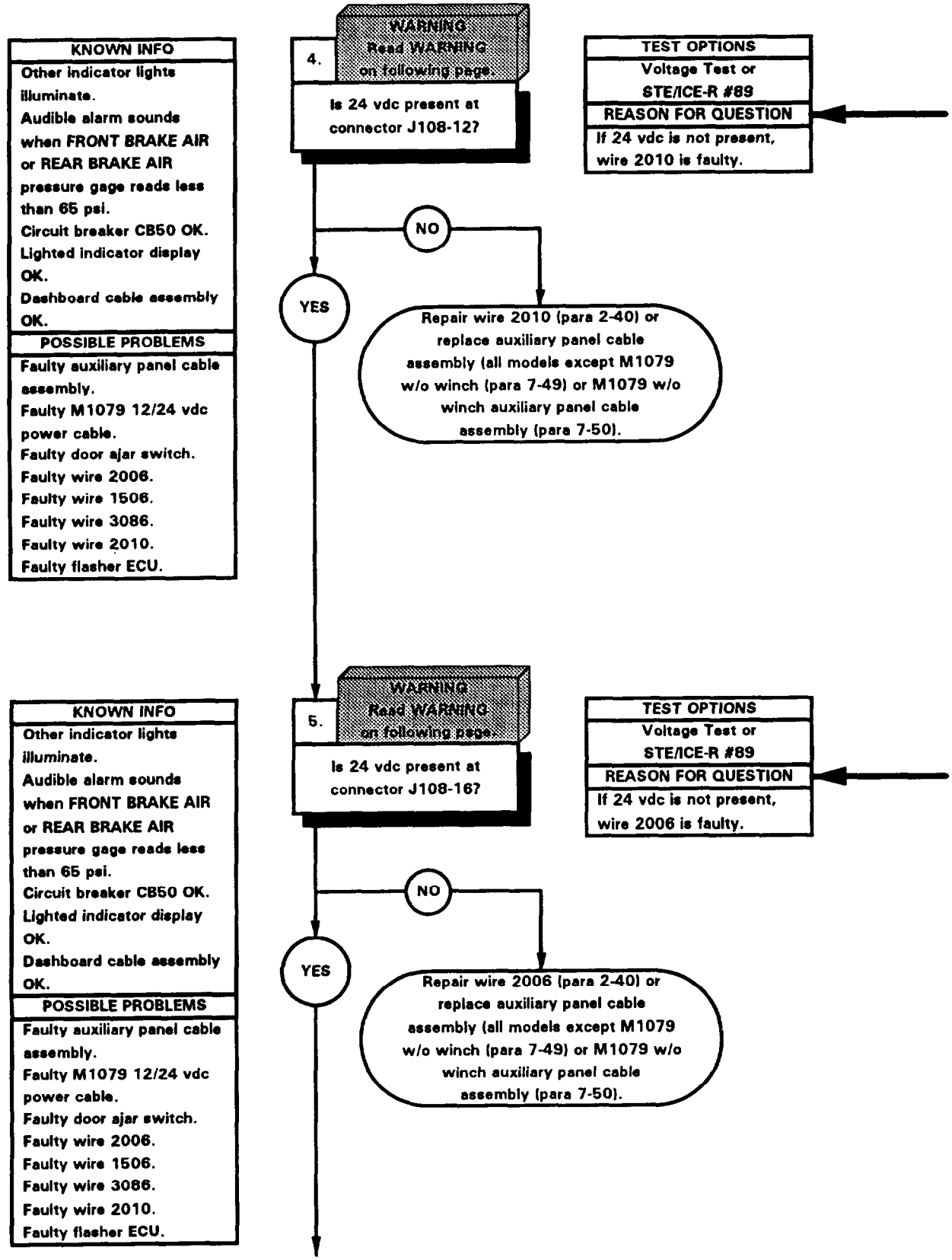
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to connector P912-1.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If 24 vdc is not present, repair wire 2006 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10 or WTEC III dashboard cable assembly (para 7-11).
(5) Connect connector P912 to connector J912.
(6) Install personnel heater (para 18-9).



e118. M1079 VAN DOOR OPEN INDICATOR DOES NOT OPERATE (CONT)

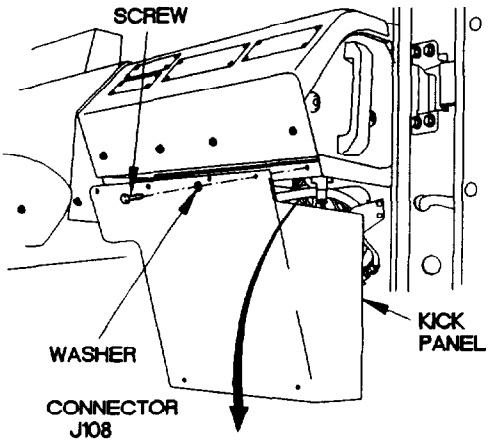


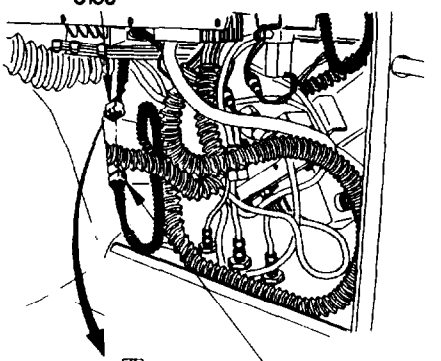
WARNING

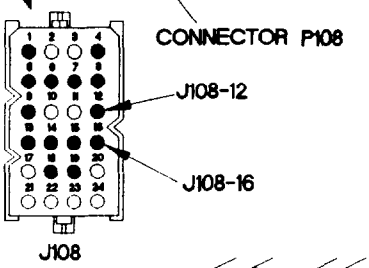
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Remove kick panel (para 16-3).
(2) Disconnect connector P108 from connector J108.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to connector J108-12.
(5) Connect negative (-) probe of multimeter to ground.
(6) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
(7) If 24 vdc is not present, repair wire 2010 (para 2-40) or replace auxiliary panel cable assembly (all models except M1079 w/o winch) (para 7-49) or M1079 w/o winch auxiliary panel cable assembly (par 7-50).
(8) Position master power switch to off (TM 9-2320-365-10).





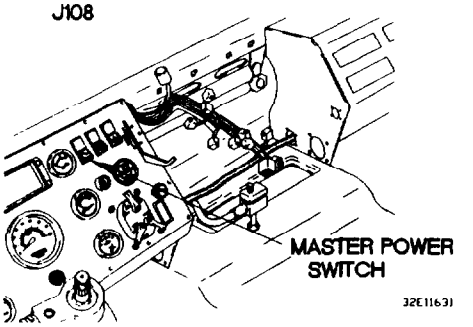


WARNING

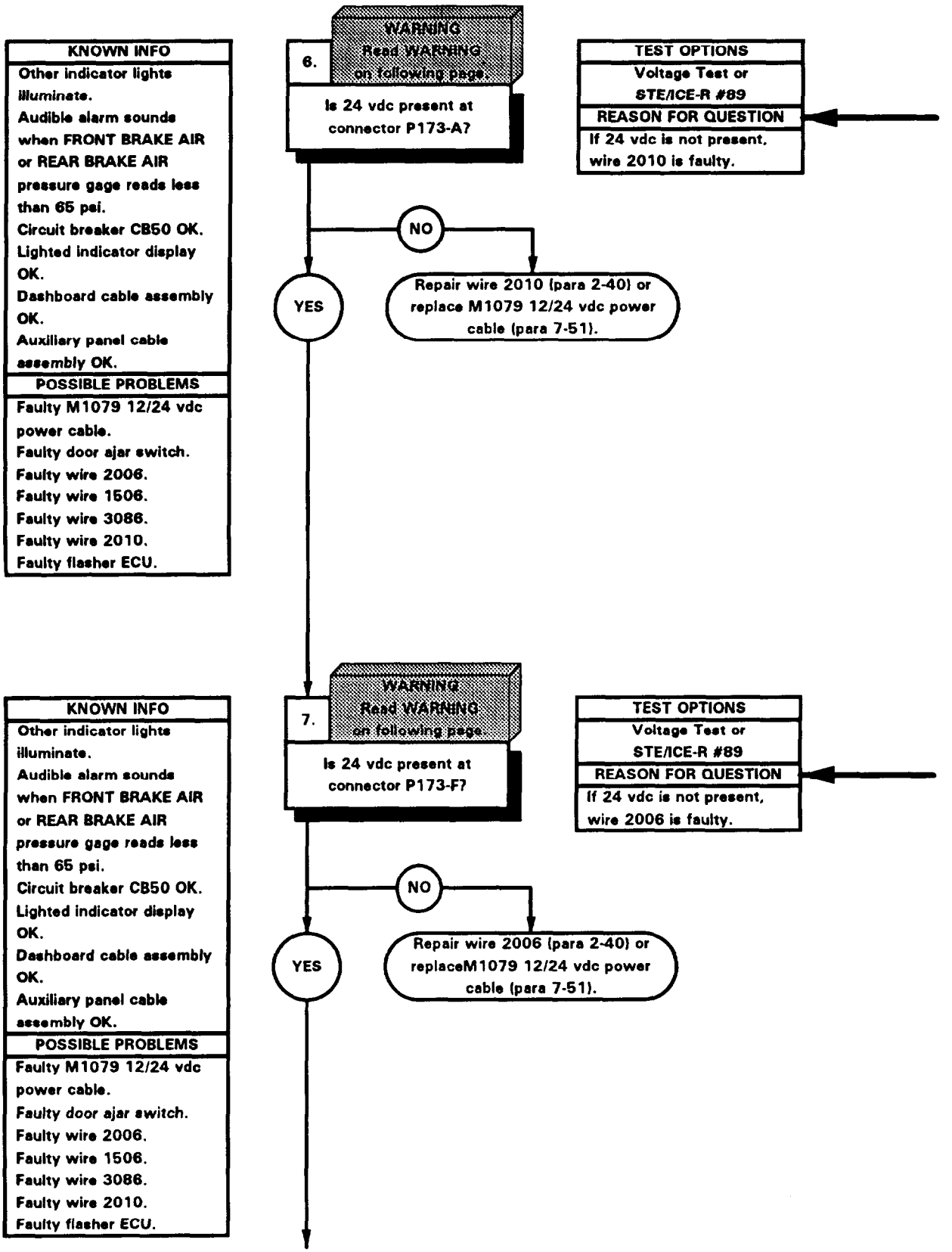
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to connector J108-16.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If 24 vdc is not present, repair wire 2006 (para 2-40) or replace auxiliary panel cable assembly (all models except M1079 w/o winch) (para 7-49) or M1079 w/o/ winch auxiliary panel cable assembly (para 7-50).
(5) Connect connector P108 to connector J108.
(6) Install kick panel (para 16-3).



e118. M1079 VAN DOOR OPEN INDICATOR DOES NOT OPERATE (CONT)

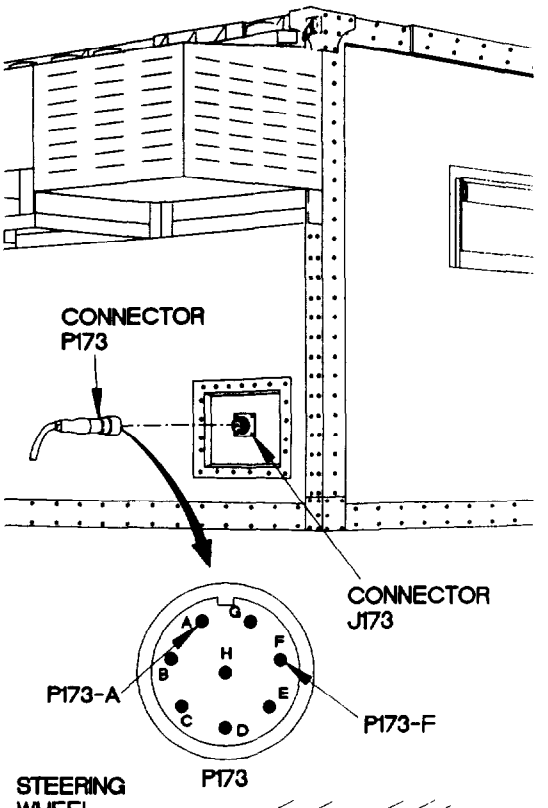


WARNING

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) Disconnect connector P173 from connector J173.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector P173-A.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
(6) If 24 vdc is not present, repair wire 2010 (para 2-40) or replace M1079 12/24 vdc power cable (para 7-51).
(7) Position master power switch to off (TM 9-2320-365-10).

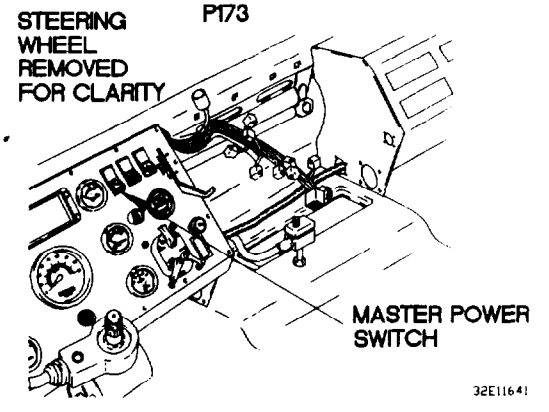


WARNING

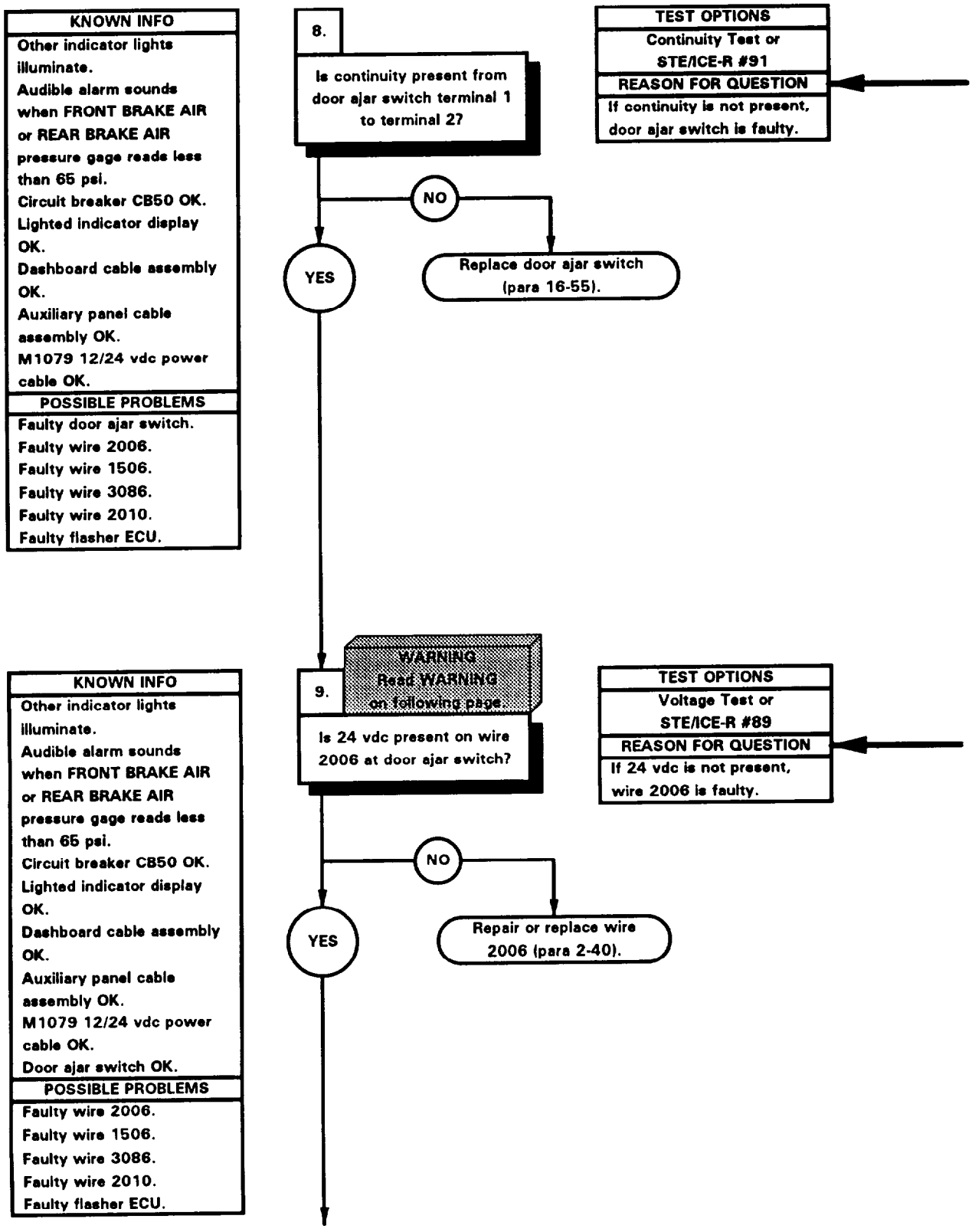
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Set multimeter to volts dc.
(2) Connect positive (+) probe of multimeter to connector P173-F.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If 24 vdc is not present, repair wire 2006 (para 2-40) or replace M1079 12/24 vdc power cable (para 7-51).

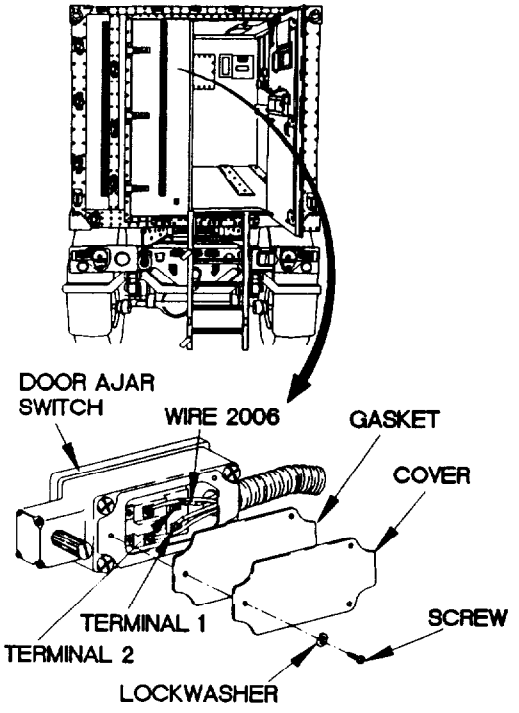


e118. M1079 VAN DOOR OPEN INDICATOR DOES NOT OPERATE (CONT)



CONTINUITY TEST

(1) Remove three screws, lockwashers, cover, and gasket from door ajar switch.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to door ajar switch terminal 1.
(4) Connect negative (-) probe of multimeter to door ajar switch terminal 2 and note reading on multimeter.
(5) If continuity is not present, replace door ajar switch (para 16-55).

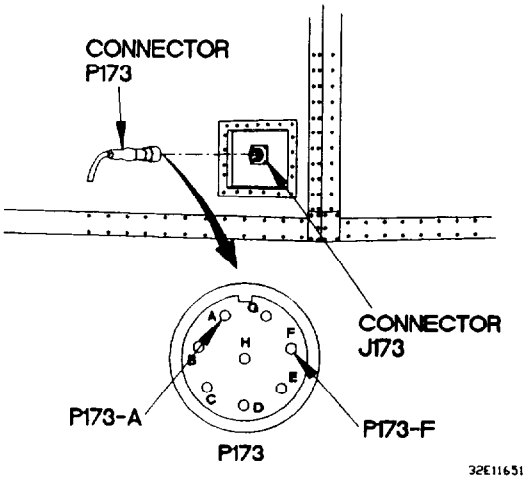


WARNING

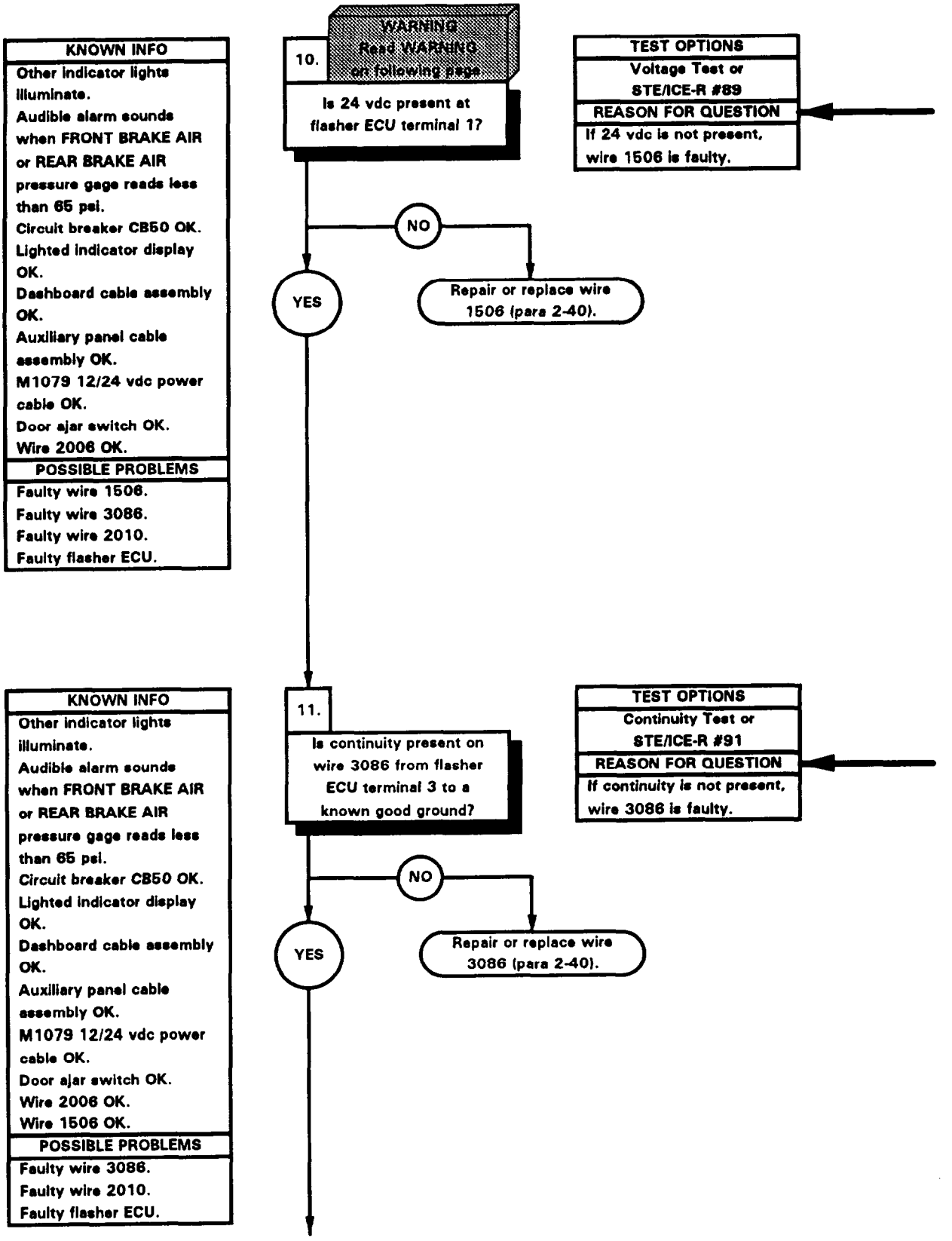
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Loosen screw 2 in door ajar switch.
(2) Remove wire 2006 from door ajar switch terminal 2.
(3) Connect connector P173 to connector J173.
(4) Set multimeter to volts dc.
(5) Connect positive (+) probe of multimeter to wire 2006.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If 24 vdc is not present, repair or replace wire 2006 (para 2-40).
(8) Disconnect connector P173 from connector J173.
(9) Install wire 2006 on door ajar switch terminal 2.
(10) Tighten screw 2 in door ajar switch.
(11) Install gasket and cover on door ajar switch with three lockwashers and screws.
(12) Connect connector P173 to connector J173.



e118. M1079 VAN DOOR OPEN INDICATOR DOES NOT OPERATE (CONT)



WARNING

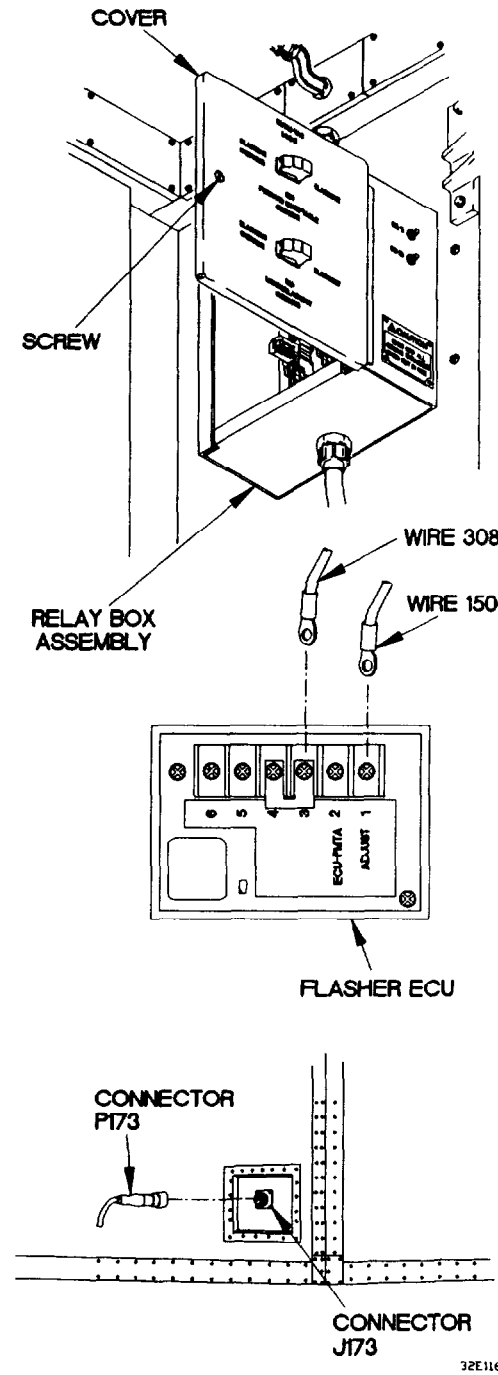
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

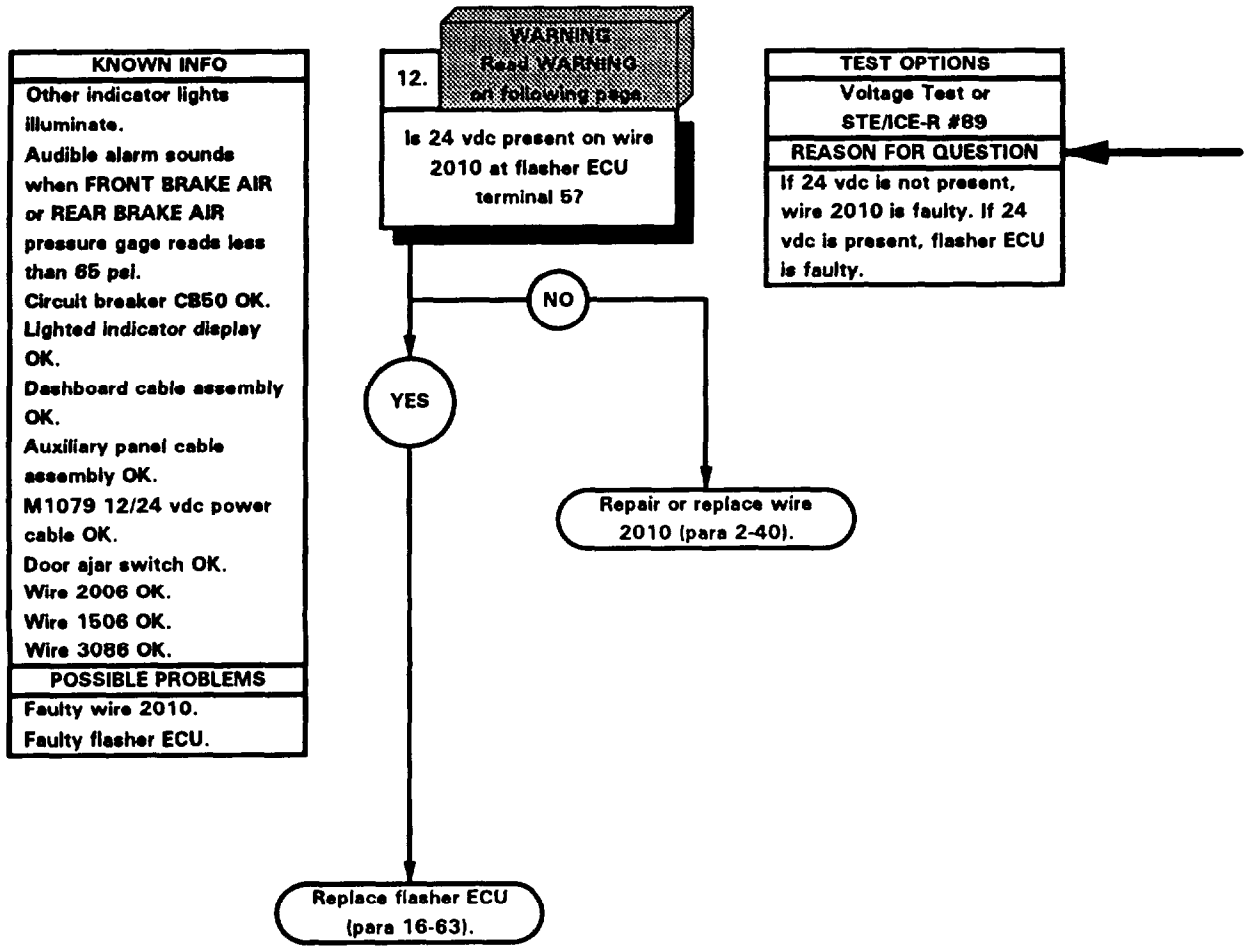
(1) Loosen screw in cover.
(2) Open cover on relay box assembly.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to flasher ECU terminal 1.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If 24 vdc is not present, repair or replace wire 1506 (para 2-40).

VOLTAGE TEST

(1) Disconnect connector P173 from connector J173.
(2) Loosen screw 3 in flasher ECU.
(3) Remove wire 3086 from flasher ECU terminal 3.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to wire 3086.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 3086 (para 2-40).
(8) Install wire 3086 on flasher ECU terminal 3.
(9) Tighten screw 3 in flasher ECU.



e118. M1079 VAN DOOR OPEN INDICATOR DOES NOT OPERATE (CONT)

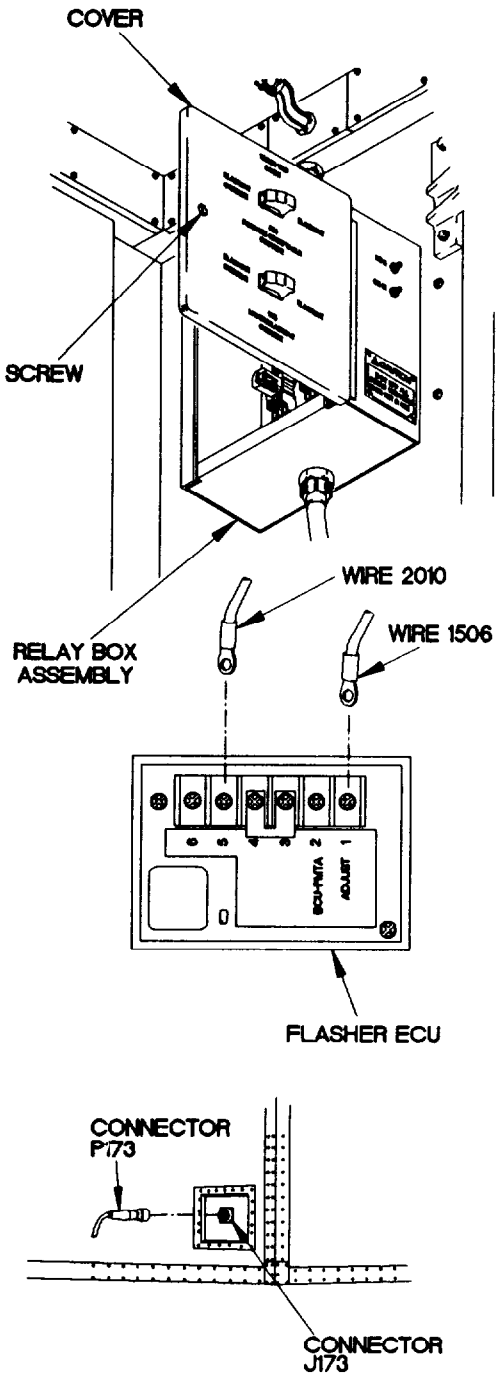


WARNING

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) Loosen screw 1 in flasher ECU.
(2) Remove wire 1506 from flasher ECU terminal 1.
(3) Loosen screw 5 in flasher ECU.
(4) Remove wire 2010 from flasher ECU terminal 5.
(5) Connect connector P173 to connector J173.
(6) Position master power switch to on (TM 9-2320-365-10).
(7) Set multimeter to volts dc.
(8) Connect positive (+) probe of multimeter to wire 2010.
(9) Connect negative (-) probe of multimeter to flasher ECU terminal 3 and note reading on multimeter.
(10) If 24 vdc is not present, repair or replace wire 2010 (para 2-40).
(11) If 24 vdc is present, replace flasher ECU (para 16-63).
(12) Position master power switch to off (TM 9-2320-365-10).
(13) Disconnect connector P173 from connector J173.
(14) Install wire 2010 on flasher ECU terminal 5.
(15) Tighten screw 5 in flasher ECU.
(16) Install wire 1506 on flasher ECU terminal 1.
(17) Tighten screw 1 in flasher ECU.
(18) Close cover on relay box assembly.
(19) Tighten screw in cover.
(20) Connect connector P173 to connector J173.
(21) Close van body RH door (TM 9-2320-365-10).



e119. M1079 110 VAC POWER DOES NOT OPERATE

INITIAL SETUP

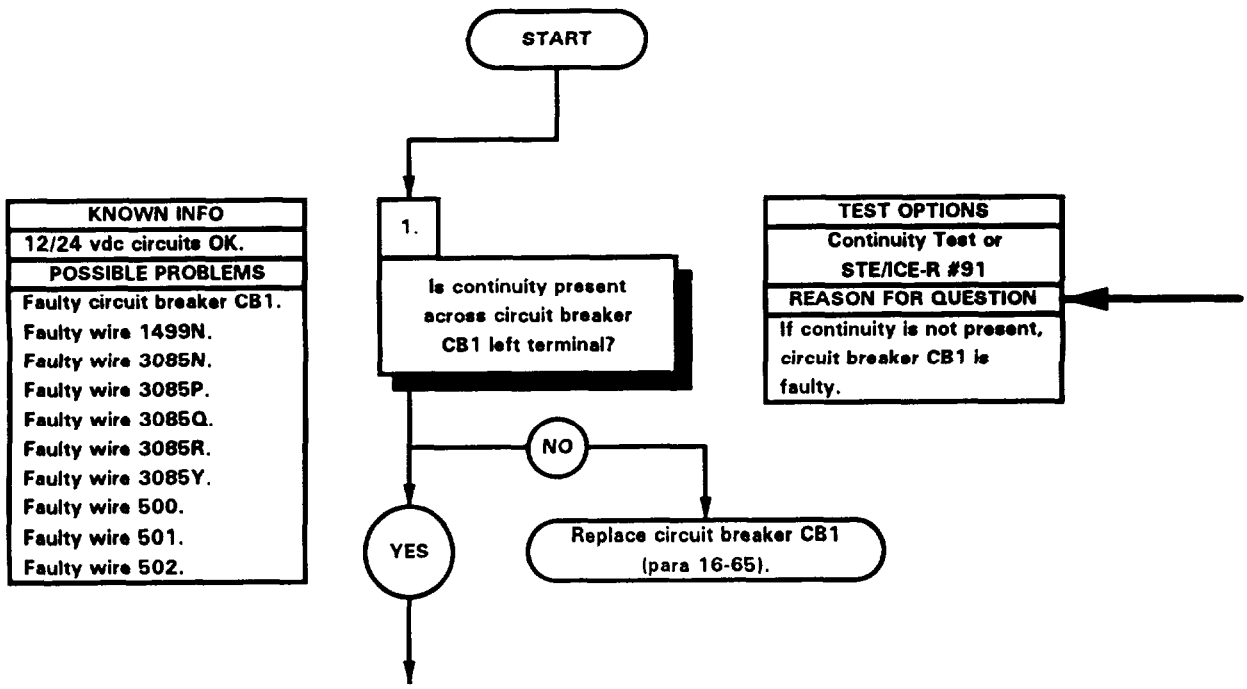
Equipment Condition
Engine shut down (TM 9-2320-365-10).
AC power disconnected (TM 9-2320-365-10).

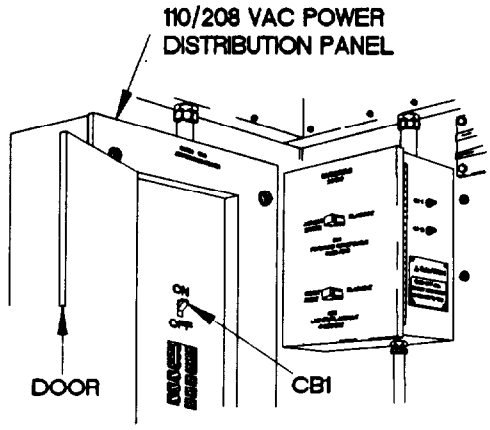
Materials/Parts
Wire, Electrical, 50 ft (Item 77, Appendix C)

Personnel Required
(2)

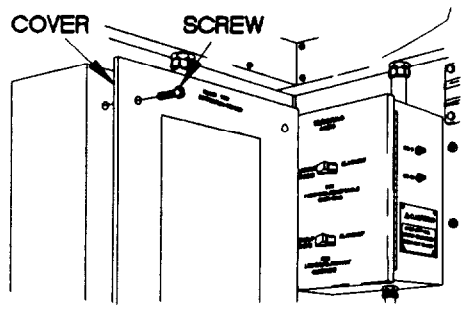
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

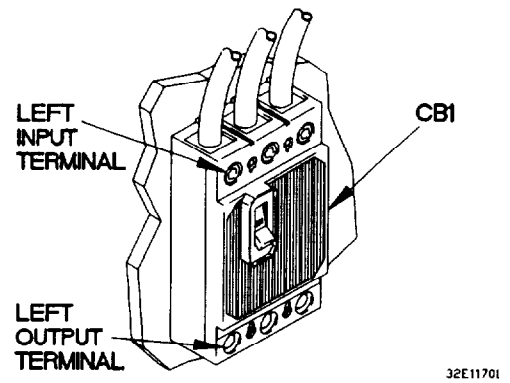
References
TM 9-4910-571-12&P



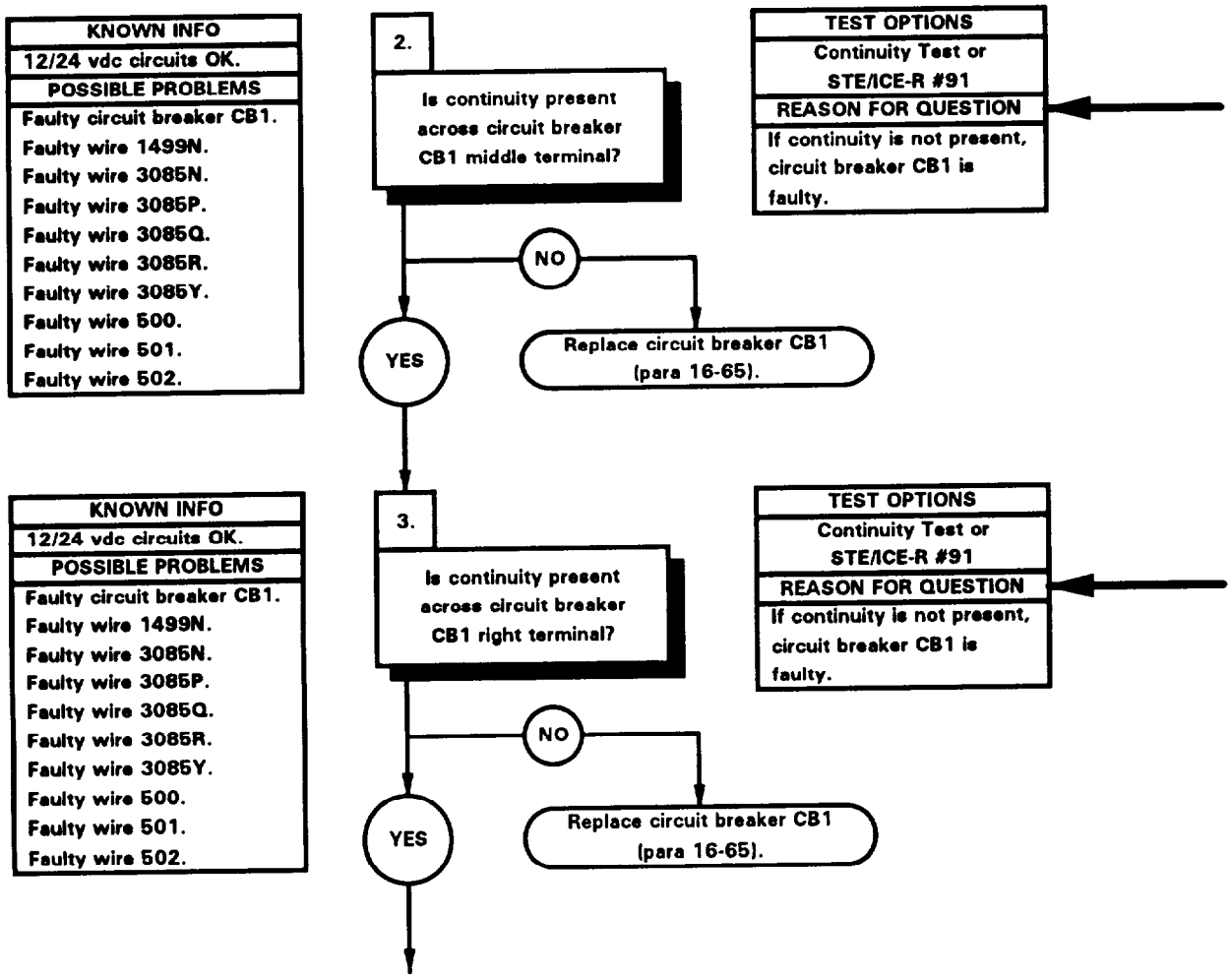


CONTINUITY TEST
(1) Position circuit breaker CB1 to OFF.
(2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
(3) Position circuit breaker CB1 to ON.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to left output terminal of circuit breaker CB1.
(6) Connect negative (-) probe of multimeter to left input terminal of circuit breaker CB1 and note reading on multimeter.
(7) If continuity is not present, replace circuit breaker CB1 (para 16-65).

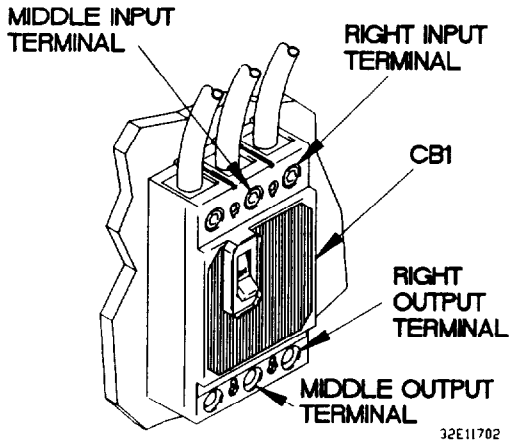




e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)

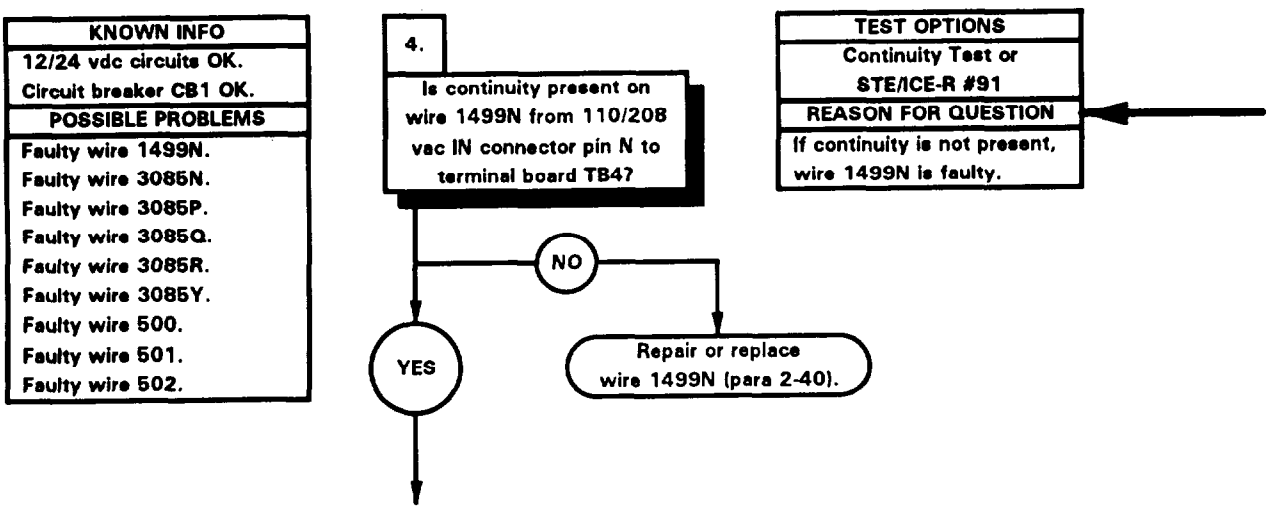


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to middle output terminal of circuit breaker CB1.
(3) Connect negative (-) probe of multimeter to middle input terminal of circuit breaker CB1 and note reading on multimeter.
(4) If continuity is not present, replace circuit breaker CB1 (para 16-65).

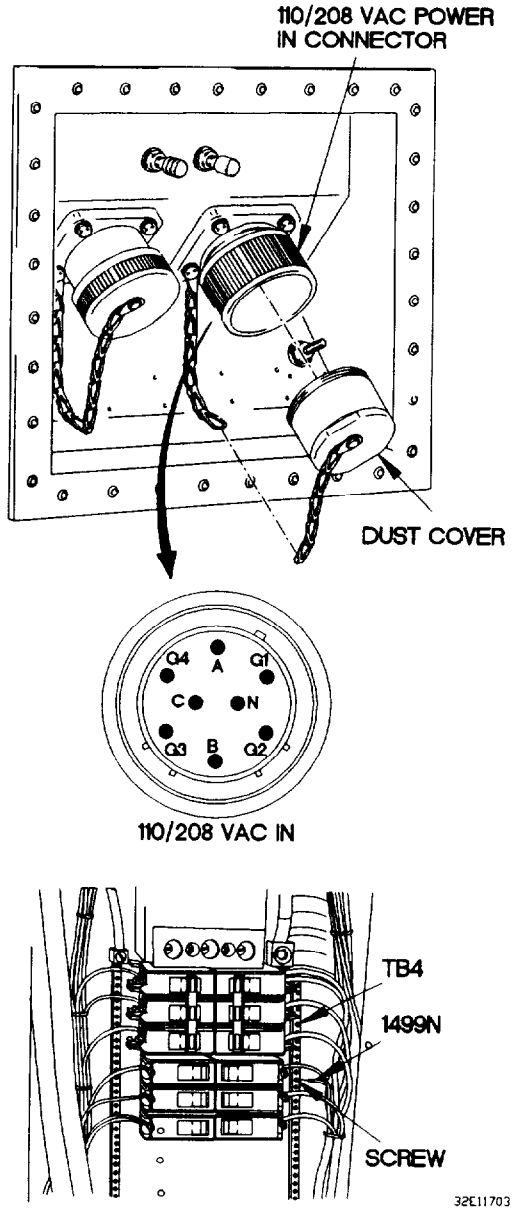


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to right output terminal of circuit breaker CB1.
(3) Connect negative (-) probe of multimeter to right input terminal of circuit breaker CB1 and note reading on multimeter.
(4) If continuity is not present, replace circuit breaker CB1 (para 16-65).

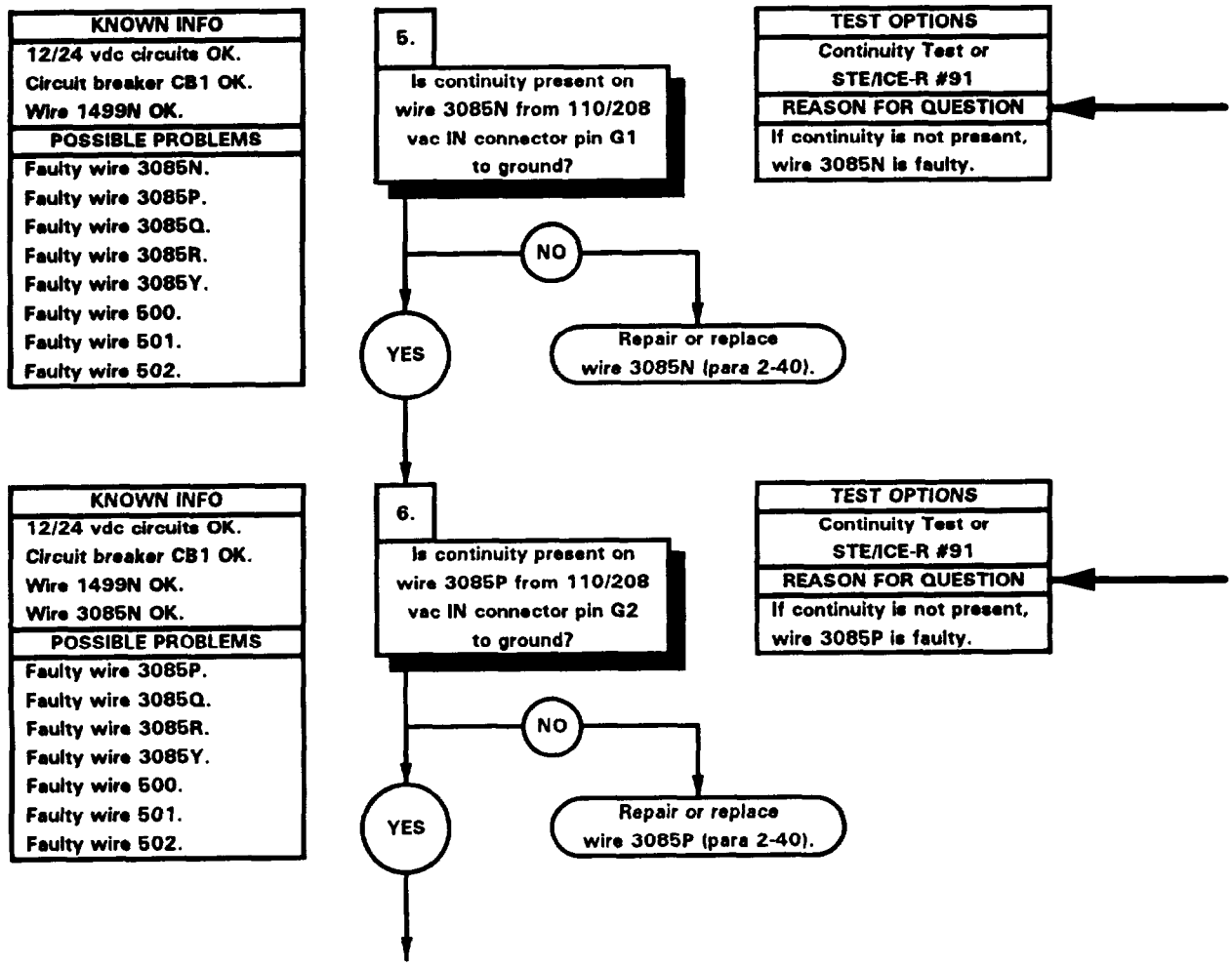
e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Remove dust cover on 110/208 VAC power IN connector.
(2) Loosen screw in terminal board TB4.
(3) Remove wire 1499N from terminal board TB4.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin N.
(6) Connect negative (-) probe of multimeter to terminal board TB4 wire 1499N and note reading on multimeter.
(7) If continuity is not present, repair or replace wire 1499N (para 2-40).
(8) Position wire 1499N in terminal board TB4.
(9) Tighten screw in terminal board TB4.

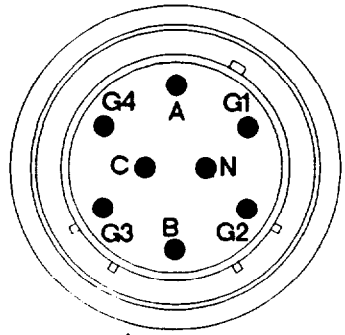


e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin G1.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 3085N (para 2-40).

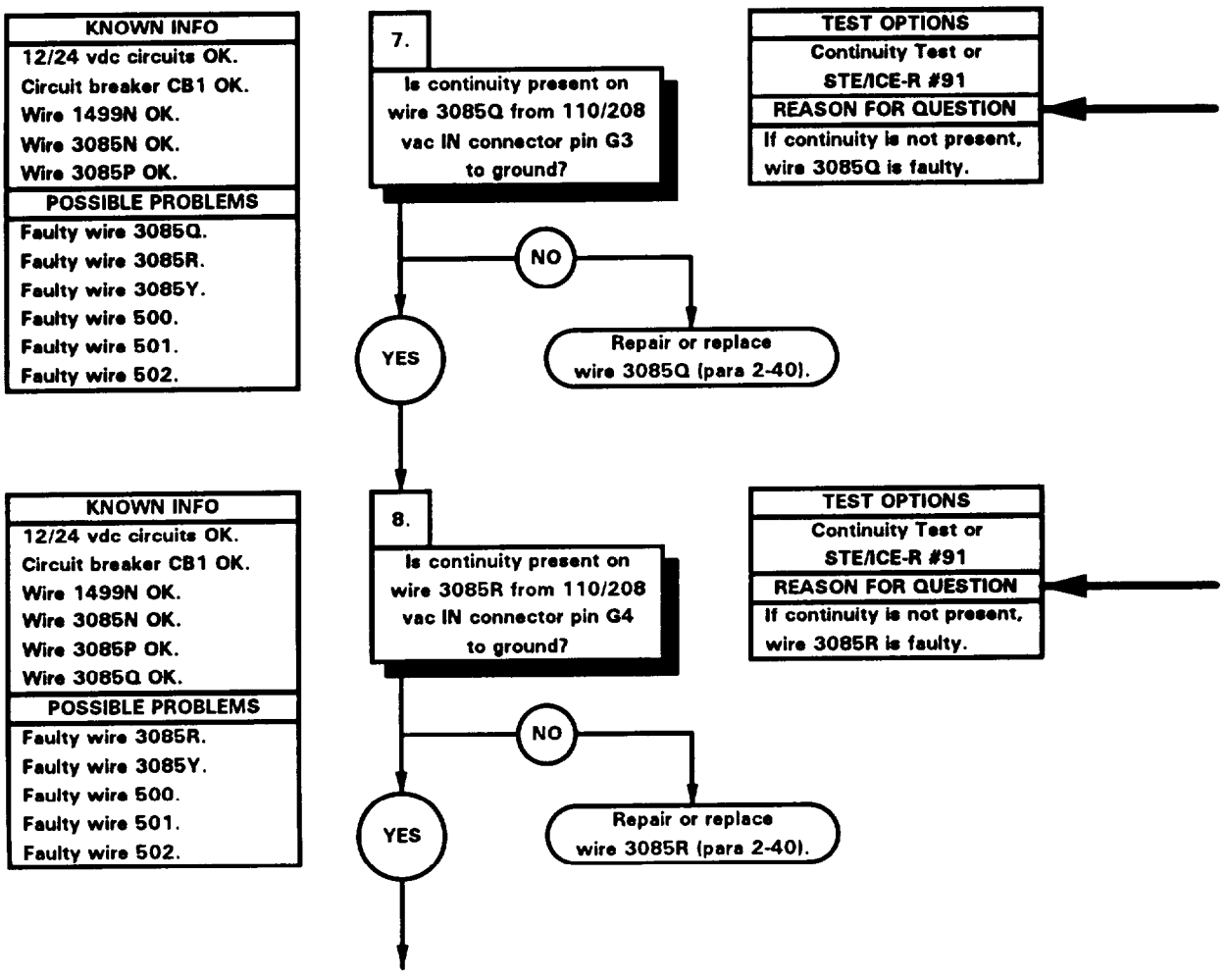
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin G2.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 3085P (para 2-40).



110/208 VAC IN

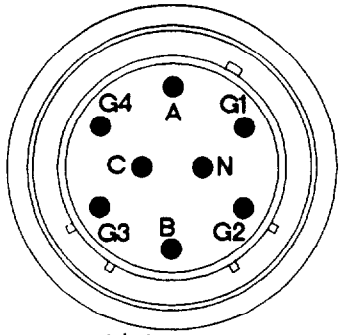
32E11704

e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin G3.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 3085Q (para 2-40).

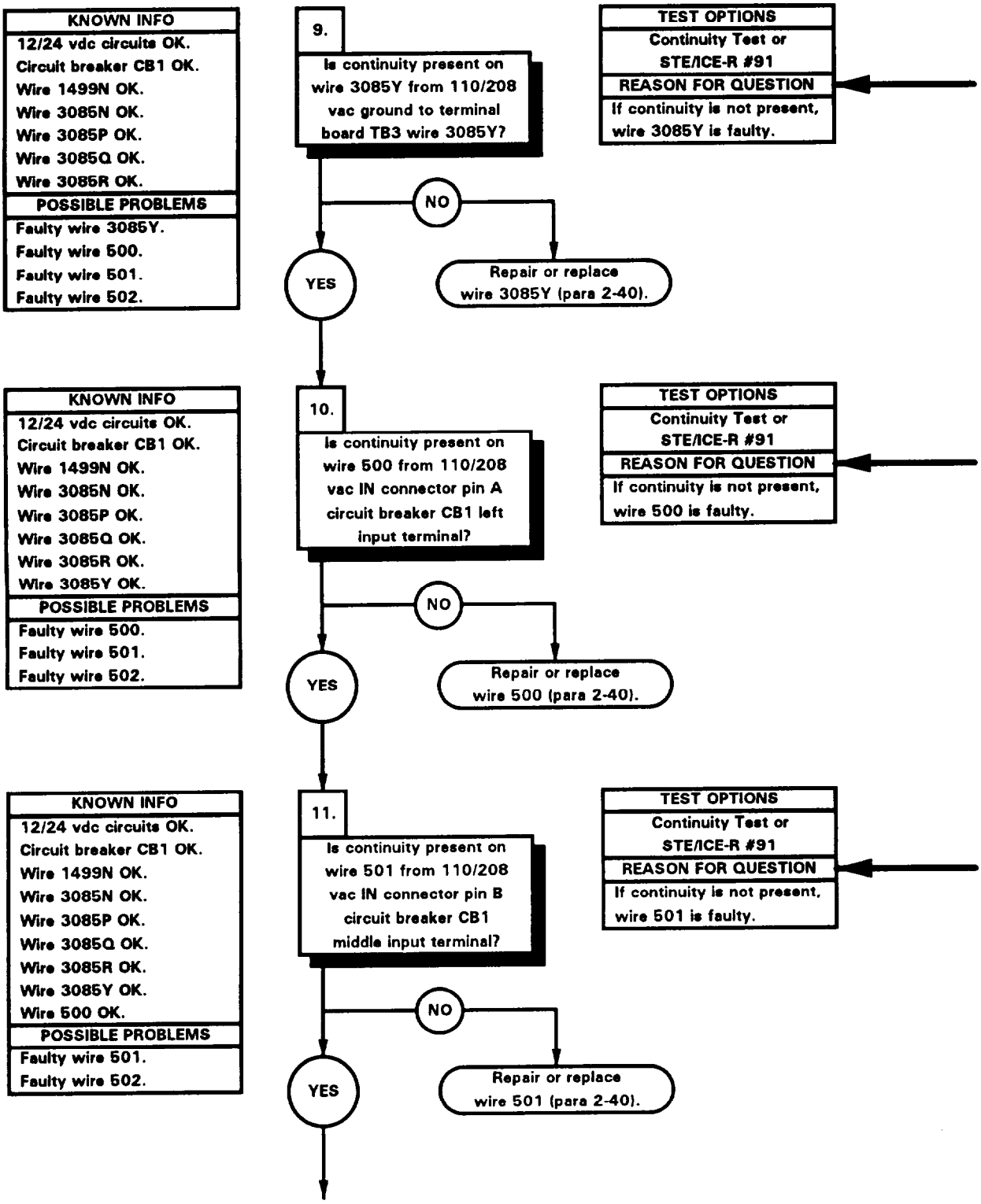
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin G4.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 3085R (para 2-40).



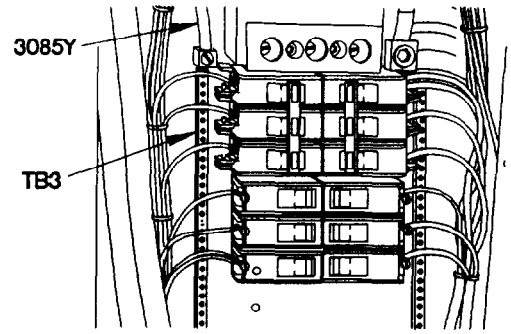
110/208 VAC IN

32E11705

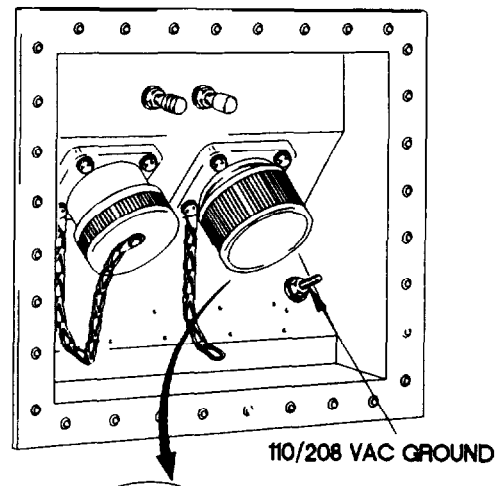
e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



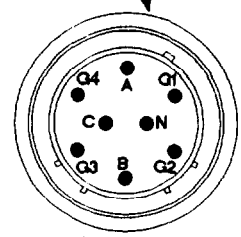
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac ground.
(3) Connect negative (-) probe of multimeter to terminal board TB3 wire 3085Y and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 3085Y (para 2-40).



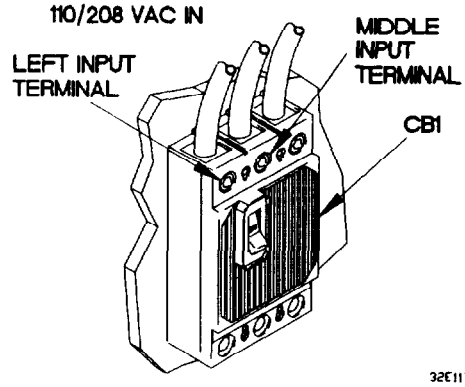
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin A.
(3) Connect negative (-) probe of multimeter to circuit breaker CB1 left input terminal and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 500 (para 2-40).



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin B.
(3) Connect negative (-) probe of multimeter to circuit breaker CB1 middle input terminal and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 501 (para 2-40).

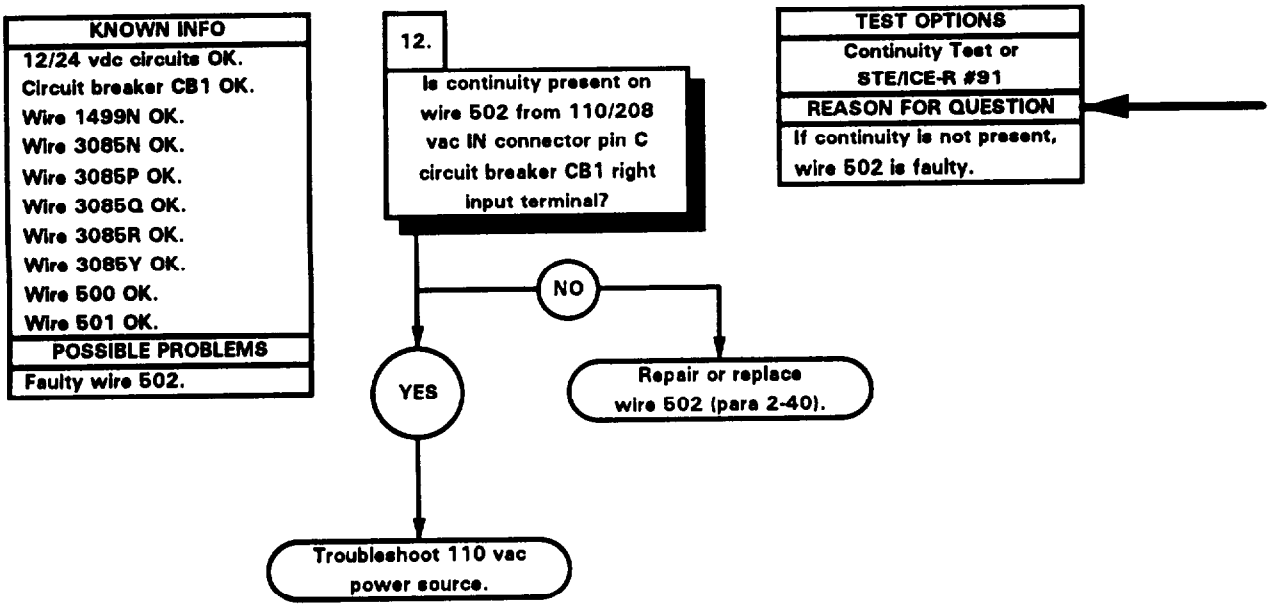


110/208 VAC IN

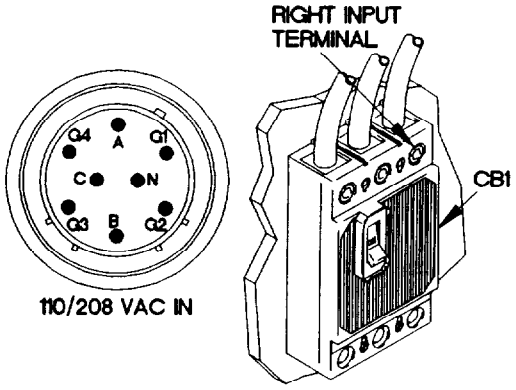


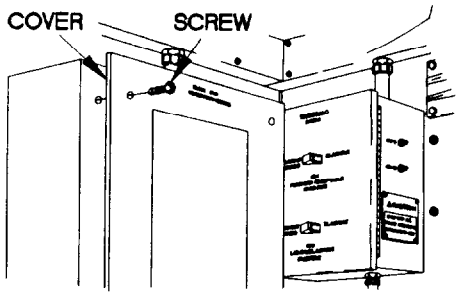
32E11709

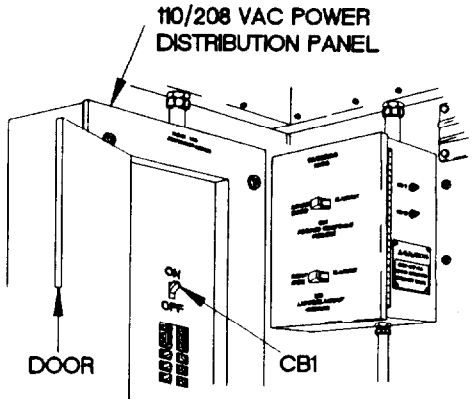
e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)

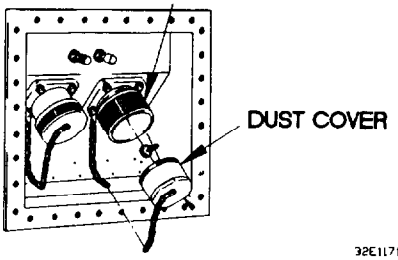


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin C.
(3) Connect negative (-) probe of multimeter to circuit breaker CB1 right input terminal and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 502 (para 2-40).
(5) If continuity is present, troubleshoot 110 vac power source.
(6) Position circuit breaker CB1 to OFF.
(7) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.
(8) Install dust cover on 110/208 VAC power IN connector.
(9) Position circuit breaker CB1 to ON.









32E11711

e120. M1079 FLUORESCENT LIGHTS DO NOT OPERATE IN BLACKOUT OVERRIDE MODE

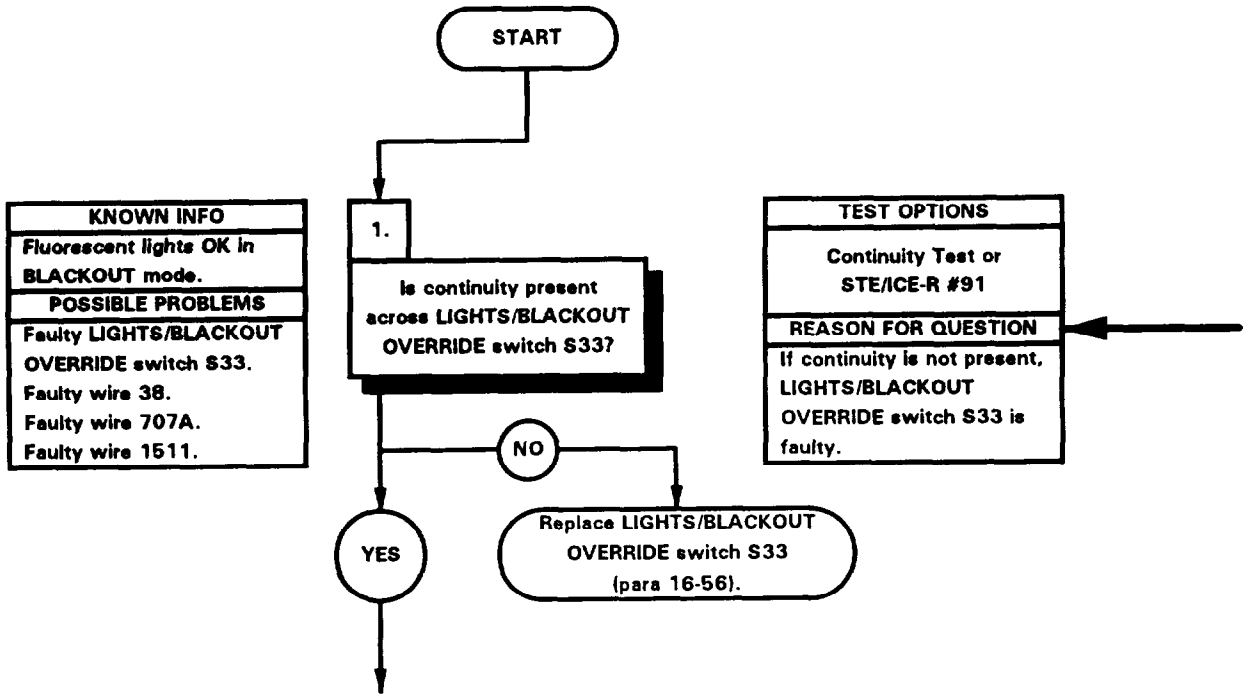
INITIAL SETUP

Equipment Condition
- Engine shut down (TM 9-2320-365-10).
- AC power disconnected (TM 9-2320-365-10).

Personnel Required
- (2)

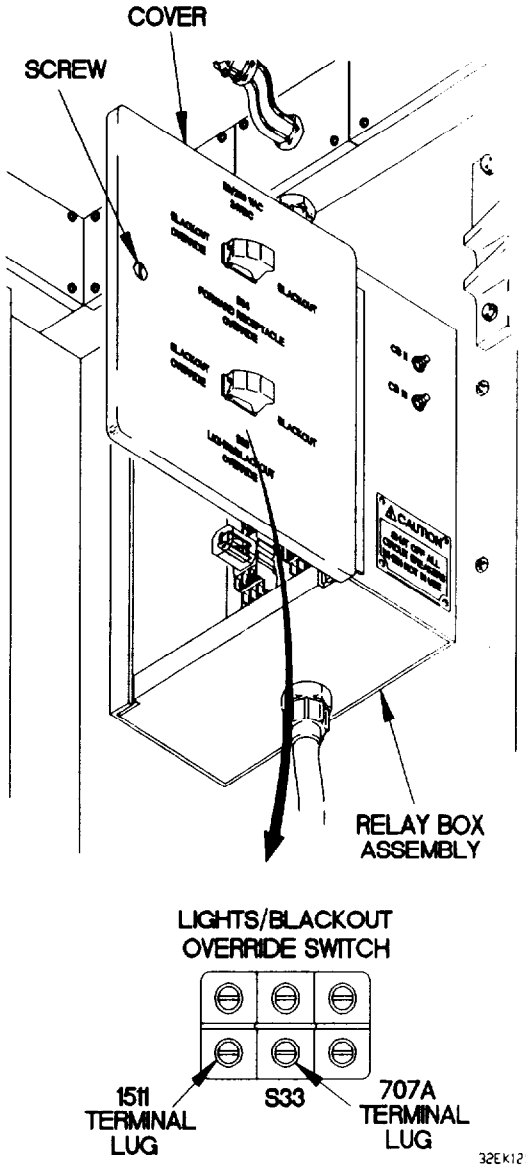
Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

References
- TM 9-4910-571-12&P

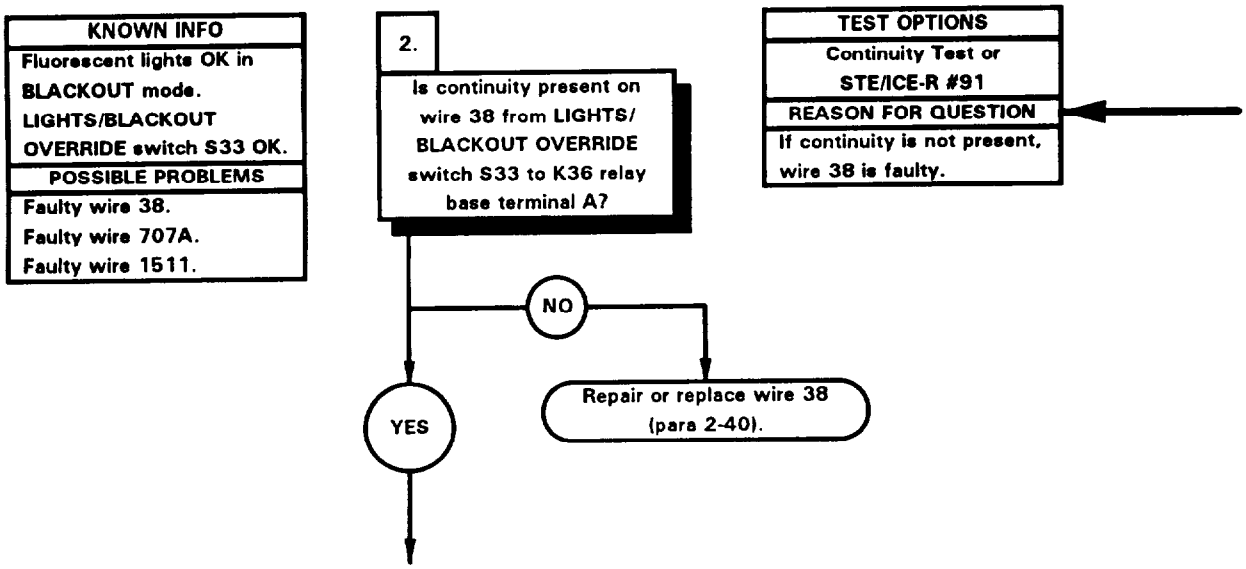


CONTINUITY TEST

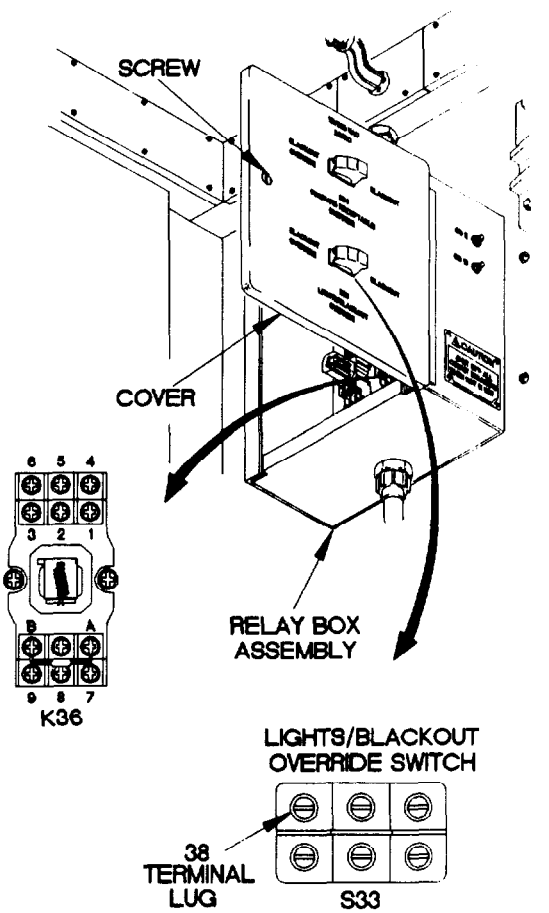
(1) Pull out circuit breaker CB10 (TM 9-2320-365-10).
(2) Loosen screw in cover.
(3) Open cover on relay box assembly.
(4) Set multimeter to ohms.
(5) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT OVERRIDE (TM 9-2320-365-10).
(6) Connect positive (+) probe of multimeter to wire 707A terminal lug on LIGHTS/BLACKOUT OVERRIDE switch S33.
(7) Connect negative (-) probe of multimeter to wire 1511 terminal lug on LIGHTS/BLACKOUT OVERRIDE switch S33 and note reading on multimeter.
(8) If continuity is not present, replace LIGHTS/BLACKOUT OVERRIDE switch S33 (para 16-56).



e120. M1079 FLUORESCENT LIGHTS DO NOT OPERATE IN BLACKOUT OVERRIDE MODE (CONT)

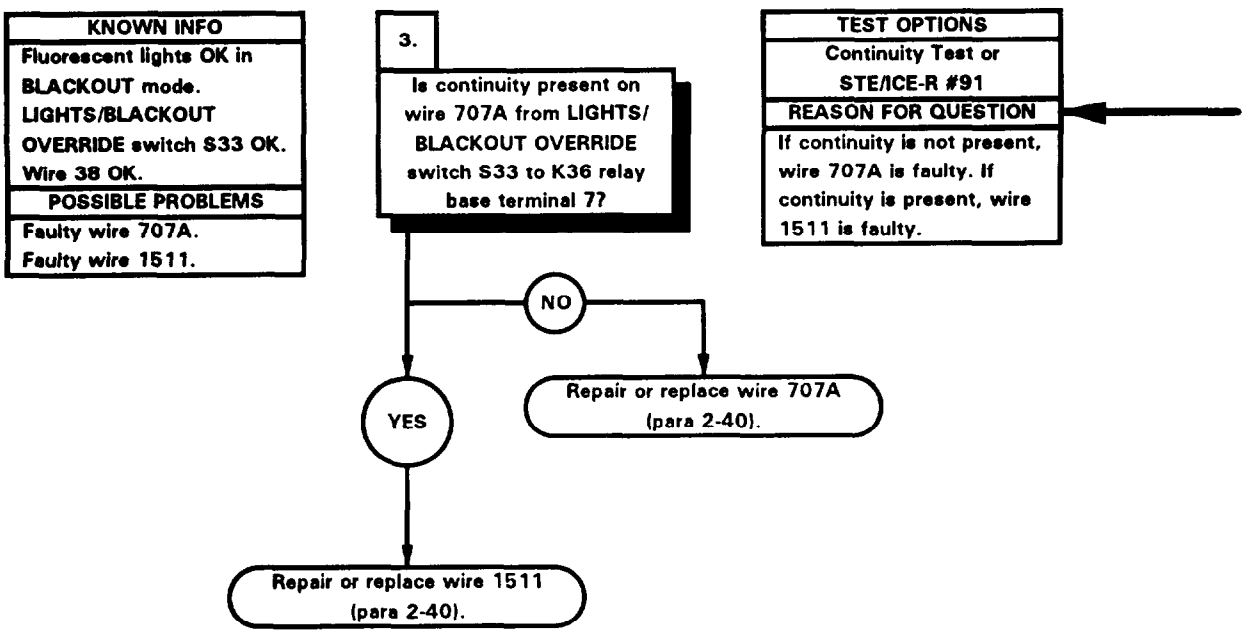


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to wire 38 terminal lug on LIGHTS/BLACKOUT OVERRIDE switch S33.
(3) Connect negative (-) probe of multimeter to K36 relay base terminal A and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 38 (para 2-40).



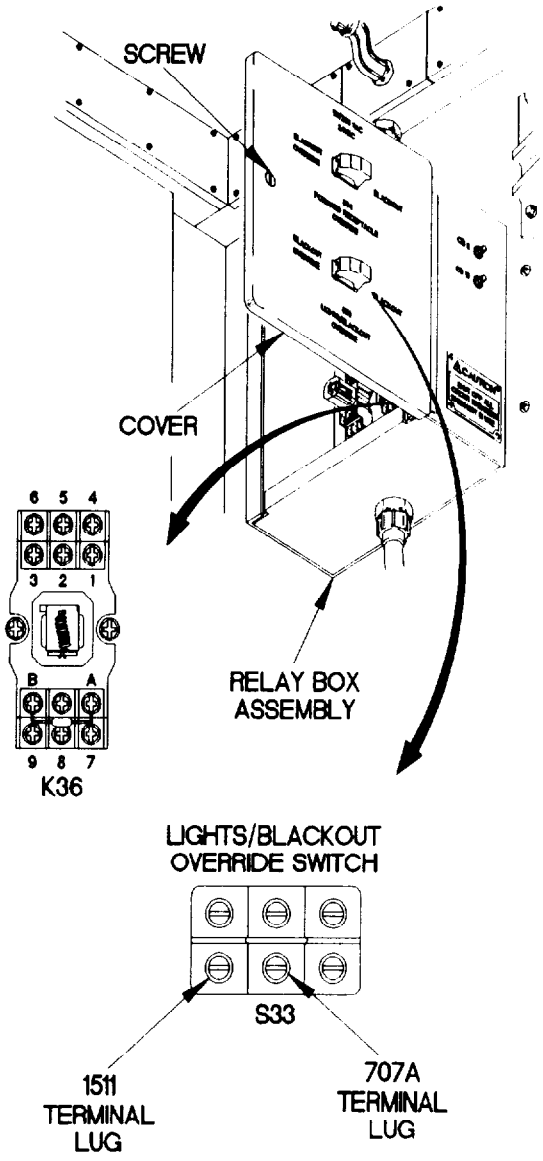
32EK1221

e120. M1079 FLUORESCENT LIGHTS DO NOT OPERATE IN BLACKOUT OVERRIDE MODE



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to wire 707A terminal lug on LIGHTS/BLACKOUT OVERRIDE switch S33.
(3) Connect negative (-) probe of multimeter to K36 relay base terminal 7 and note reading on multimeter.
(4) If continuity is not present, repair or replace wire 707A (para 2-40).
(5) If continuity is present, repair or replace wire 1511 (para 2-40).
(6) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT (TM 9-2320-365-10).
(7) Close cover on relay box assembly.
(8) Tighten screw in cover.



32EK1231

2-17. TRANSMISSION SYSTEM TROUBLESHOOTING

This paragraph covers Transmission System Troubleshooting. The Transmission System Fault Index, Table 2-13, lists faults for the transmission system of the vehicle.

Table 2- 13. Transmission System Fault Index

Fault No. Description	Page
f1. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) emits eight seconds of beeps and/or transmission does not shift gears	2-1362
f2. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 22 sub code 14	2-1364
f3. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 22 sub code 15	2-1372
f4. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 22 sub code 16	2-1378
f5. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays maincode 24 and/or 33 and any sub code	2-1384
f6. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 32 and any sub code	2-1396
f7. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 41, 42, 44, and/or 45 and any sub code	2-1400
f8. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 43 and any sub code	2-1404
f9. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 52 and any sub code	2-1410
f10. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 57 and any sub code	2-1416
f11. Transmission unusually noisy when operating	2-1420
f12. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 21 and any sub code	2-1430
f13. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 51 sub code 10, 12, 21, 43, 45, or 65	2-1444
f14. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 25 and any sub code	2-1448
f15. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 53 and any sub code	2-1452
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	2-1456
f17. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 55 and any sub code	2-1462
f18. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 56 and any sub code	2-1468
f19. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) displays main code 13 and any sub code	2-1474
f20. Metal particles found during transmission oil change	2-1484
f21. Transmission does not shift or is slow to shift when cold	2-1486
f22. WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 22 sub code 14	2-1488

2-17. TRANSMISSION SYSTEM TROUBLESHOOTING (CONT)

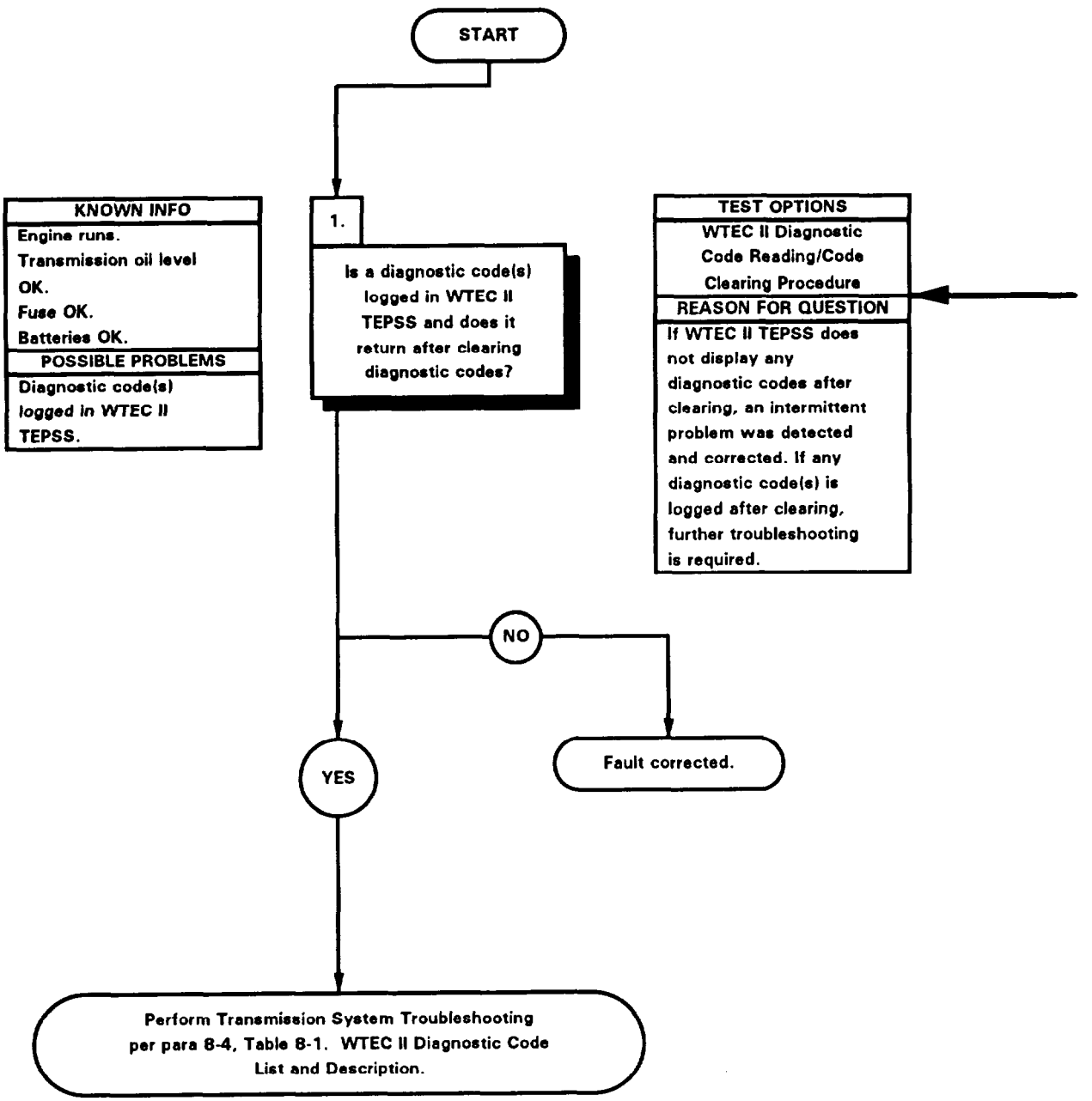
Table 2-13. Transmission System Fault Index (Cont)

Fault No.	Description	Page
f23.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 22 sub code 15	2-1494
f24.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 22 sub code 16	2-1498
f25.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 24 and/or 33 and any sub code	2-1504
f26.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 32 and any sub code	2-1516
f27.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 42, 44, and/or 45 and any sub code	2-1522
f28.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 52 and any sub code	2-1526
f29.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 57 and any sub code	2-1532
f30.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 21 and any sub code	2-1536
f31.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 51 and any sub code	2-1550
f32.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 25 and any sub code	2-1554
f33.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 53 and any sub code	2-1558
f34.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 54 and any sub code	2-1562
f35.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 55 and any sub code	2-1568
f36.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 56 and any sub code	2-1574
f37.	WTEC III Transmission Pushbutton Shift Selector (TPSS) displays main code 13 and any sub code	2-1580
f38.	WTEC III Transmission Pushbutton Shift Selector (TPSS) indicator displays “--” and/or transmission does not shift gears	2-1594

f1. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) EMITS EIGHT SECONDS OF BEEPS AND/OR TRANSMISSION DOES NOT SHIFT GEARS

INITIAL SETUP

Equipment Conditions
Engine running (TM 9-2320-365-10).



(1) Perform WTEC II Code Reading and Code Clearing (para 8-4).
(2) If no diagnostic codes are logged after clearing, fault is corrected.
(3) If diagnostic codes are still logged, perform Transmission System Troubleshooting of active diagnostic codes per para 8-4, Table 8-1. WTEC II Diagnostic Code List and Description.

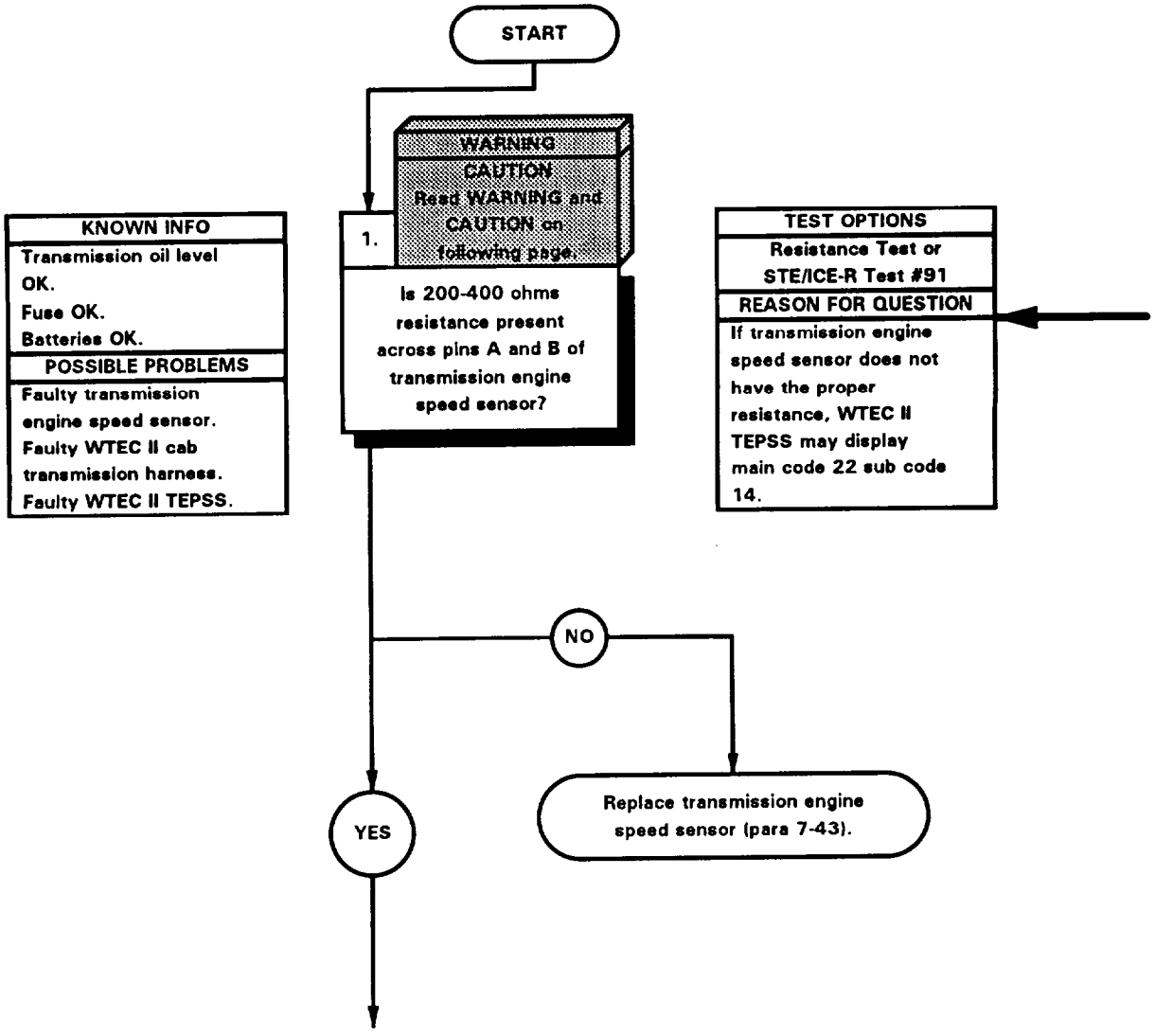
f2. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 14

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)



RESISTANCE TEST

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.

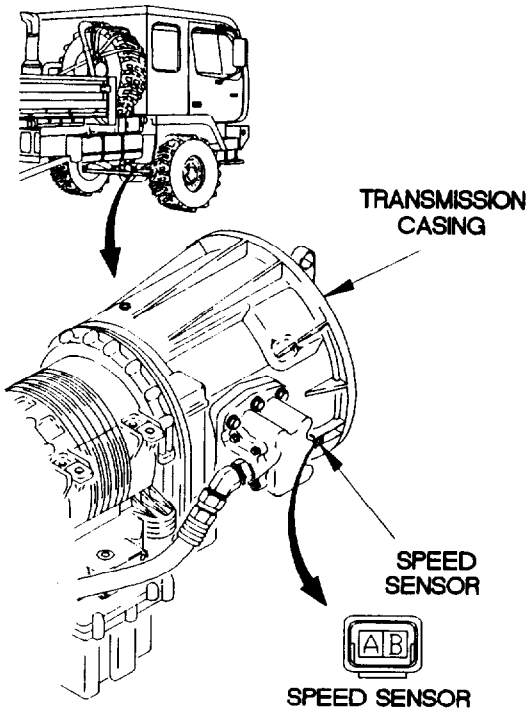
(1) Disconnect transmission engine speed sensor connector from transmission engine speed sensor.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to terminal A of transmission engine speed sensor.
(4) Connect negative (-) probe of multimeter to terminal B of transmission engine speed sensor and note reading on multimeter.

NOTE

A good transmission engine speed sensor will return a reading of 200-400 ohms resistance as follows:

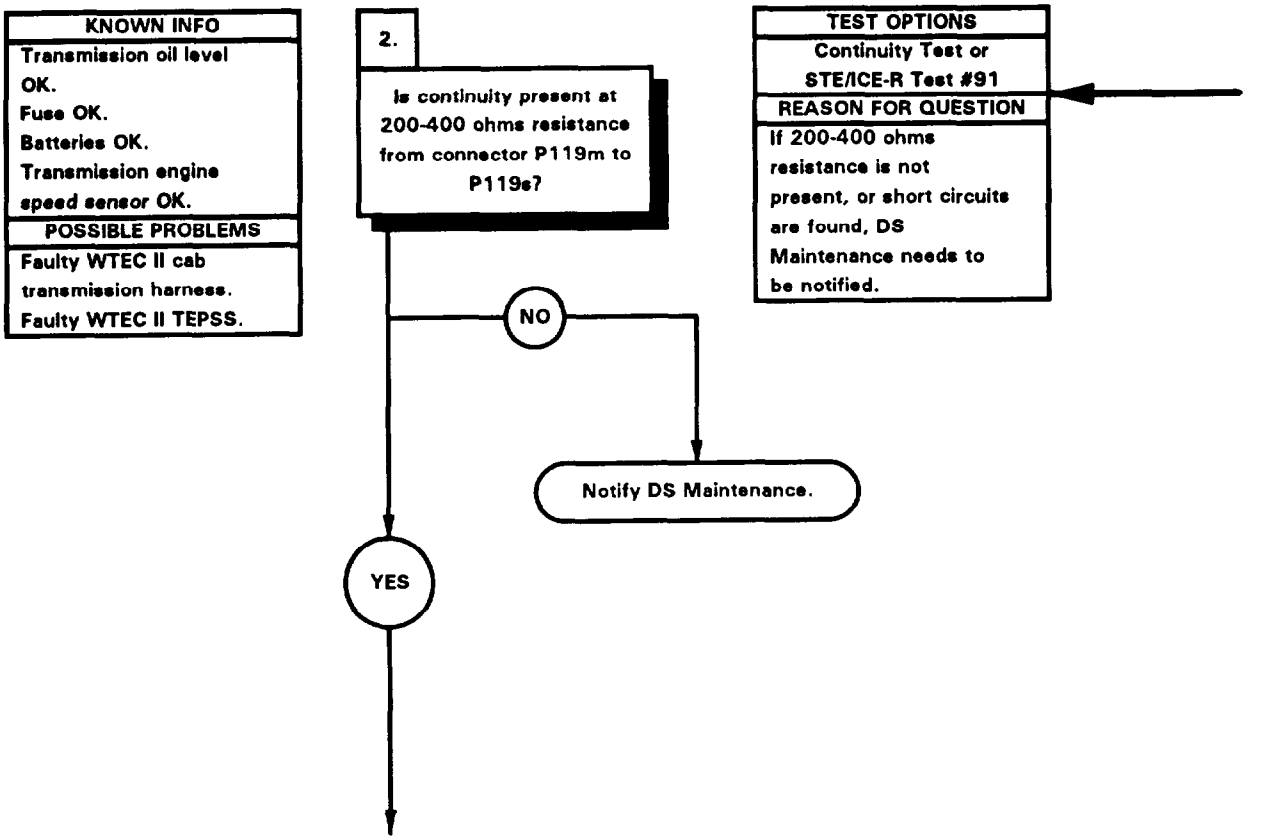
a. 200 ohms at -40°F (-40°C).
b. 300 ohms at 68°F (20°C).
c. 400 ohms at 230°F (110°C).

(5) If resistance is not 200-400 ohms, replace transmission engine speed sensor (para 7-43).
(6) Connect transmission engine speed sensor connector to transmission engine speed sensor.

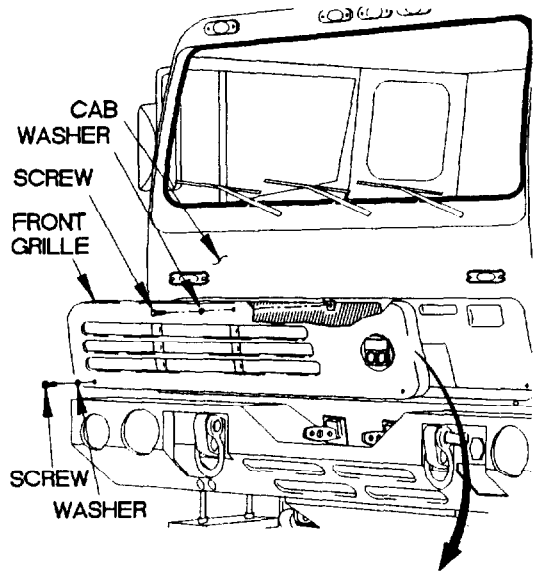


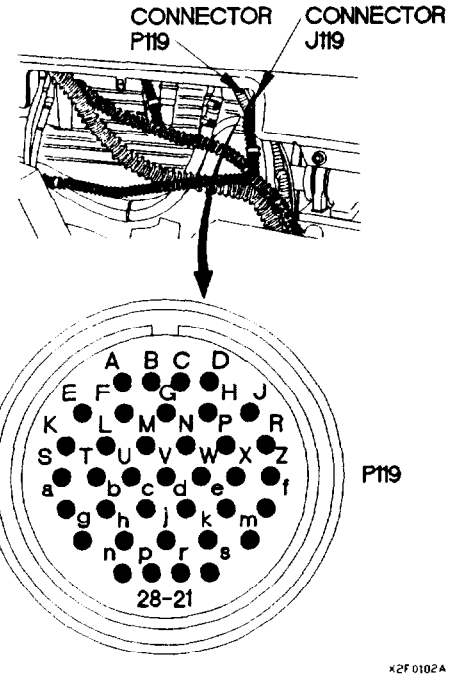
X2F0101A

f2. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 14 (CONT)



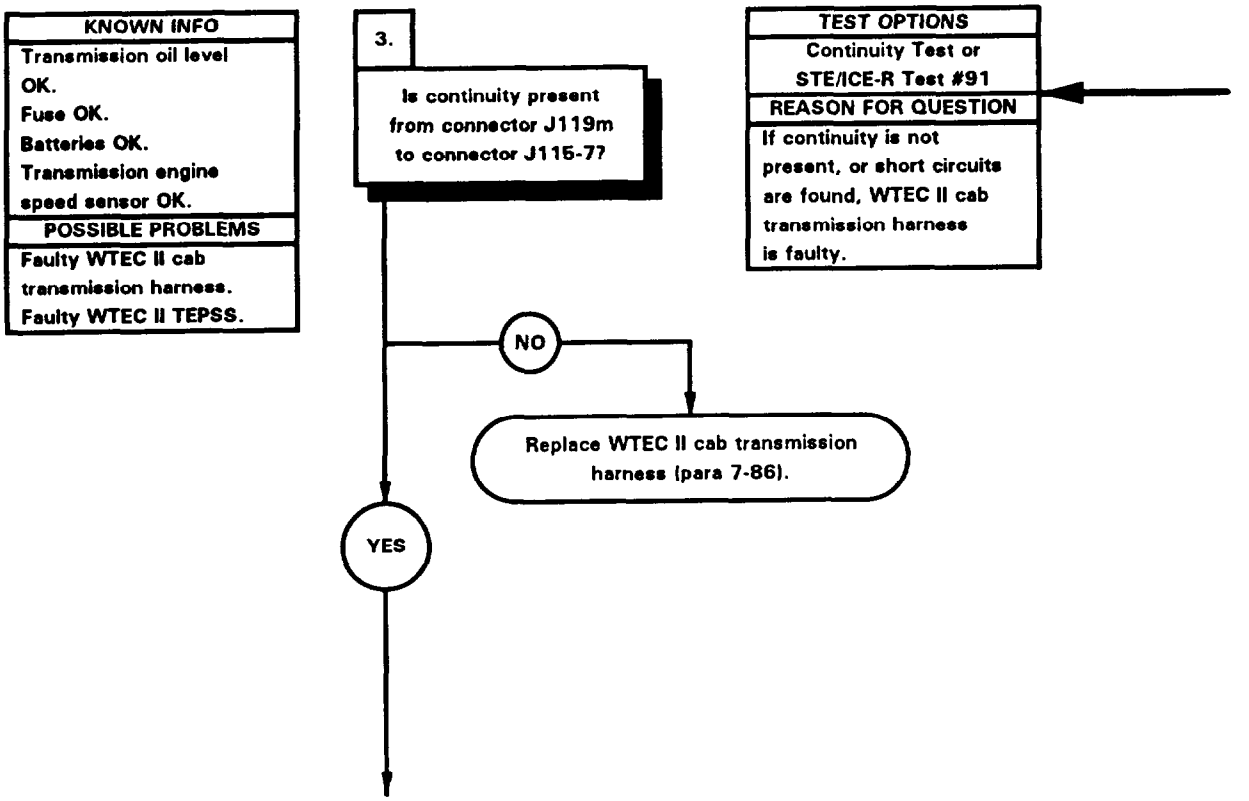
CONTINUITY TEST
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P119m.
(7) Connect negative (-) probe of multimeter to connector P119s and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to all other pins in connector P119 and note reading on multimeter.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) If continuity is not present, at 200-400 ohms resistance in step 7, or continuity is present in step 8 or step 9, notify DS Maintenance.





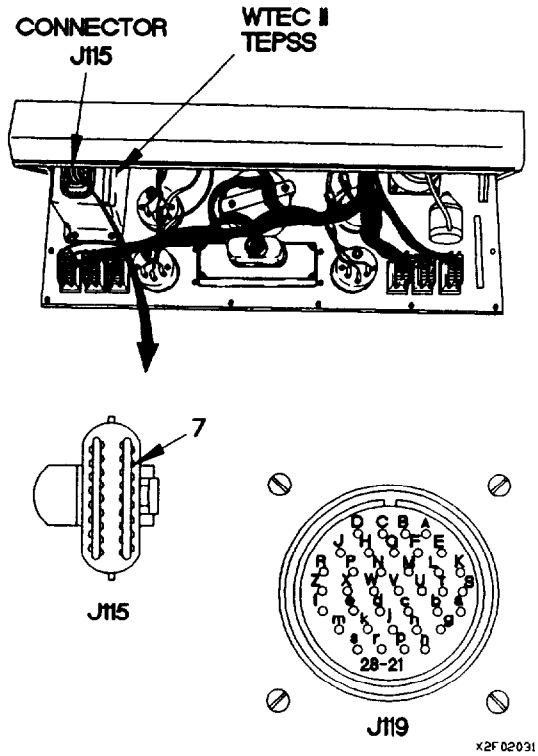
X2F0102A

f2. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 14 (CONT)

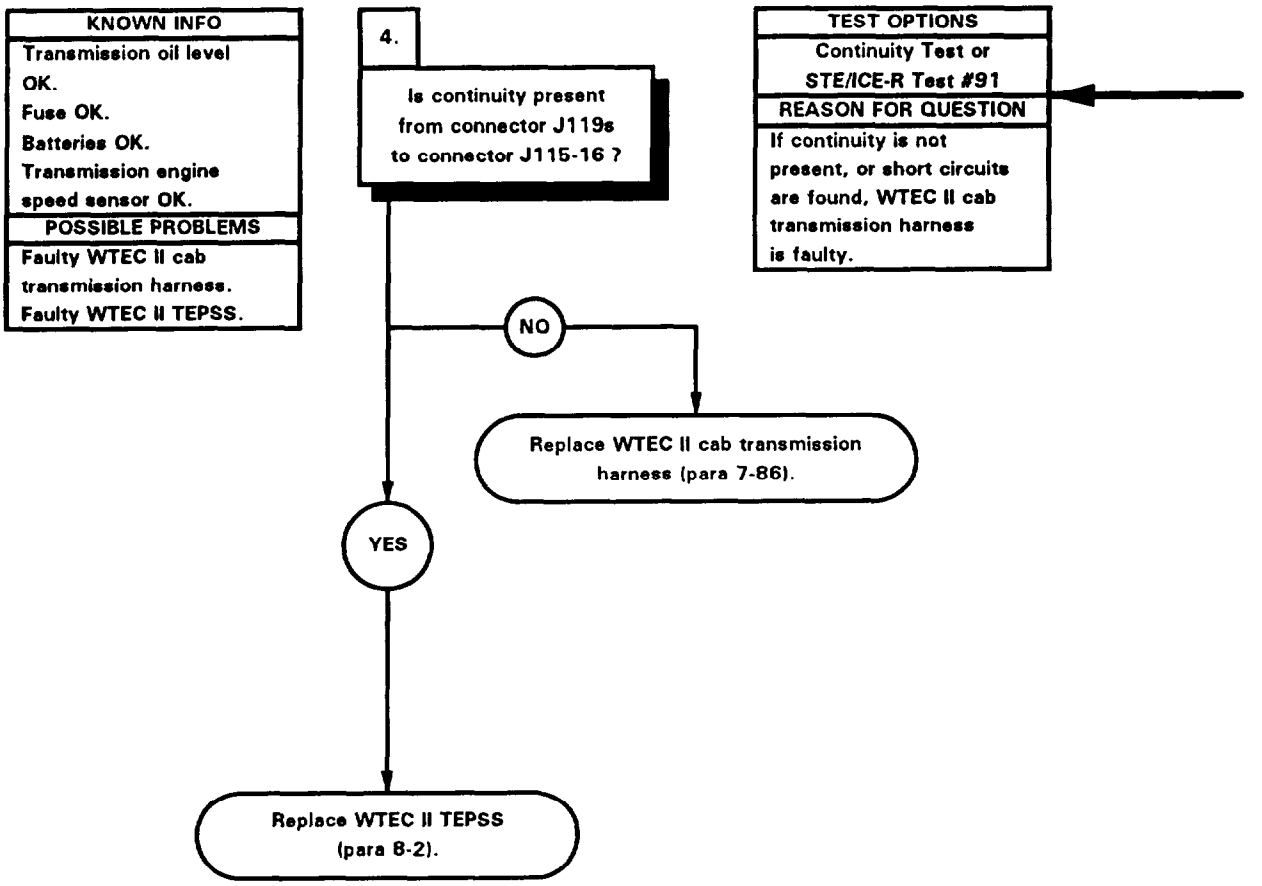


CONTINUITY TEST

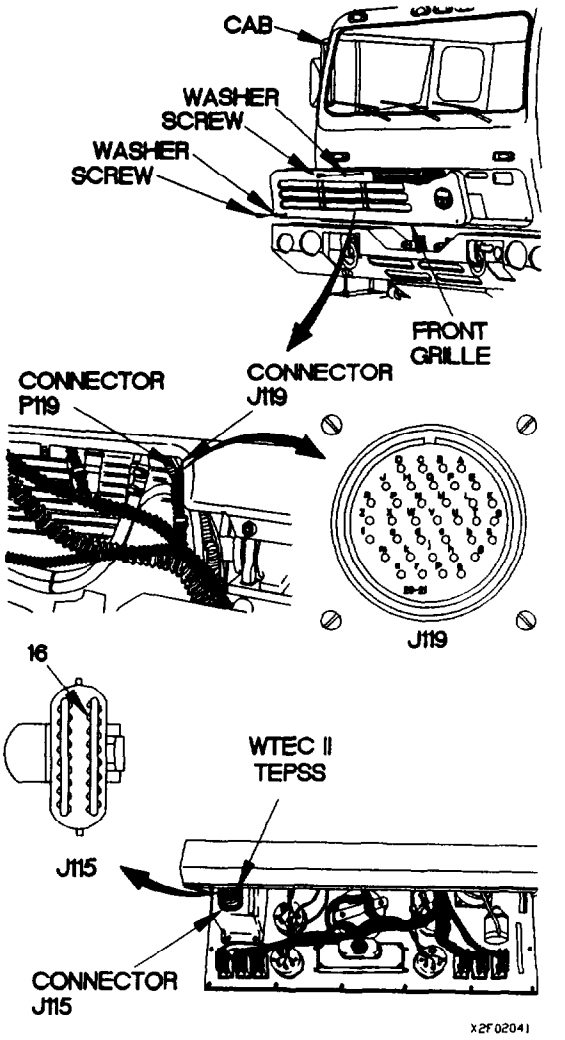
(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J115-7.
(5) Connect negative (-) probe of multimeter to connector J119m and note reading on multimeter.
(6) Connect negative (-) probe of multimeter to all other sockets in connector J119m and note reading on multimeter.
(7) Connect negative (-) probe of multimeter to ground to and note reading on multimeter.
(8) If continuity is not present in step 5, or continuity is present in step 6 or step 7, replace WTEC II cab transmission harness (para 7-86).



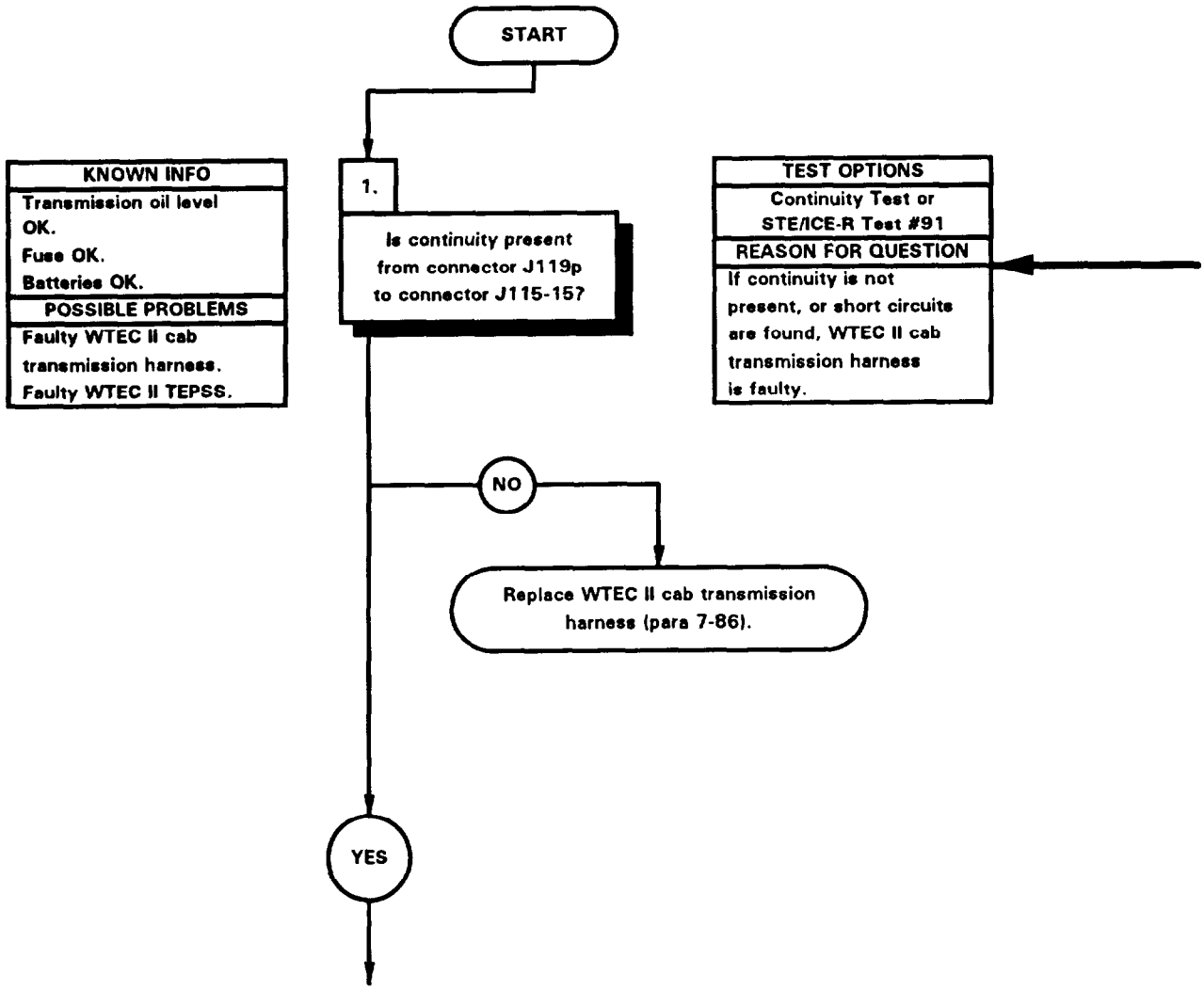
f2. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 14 (CONT)



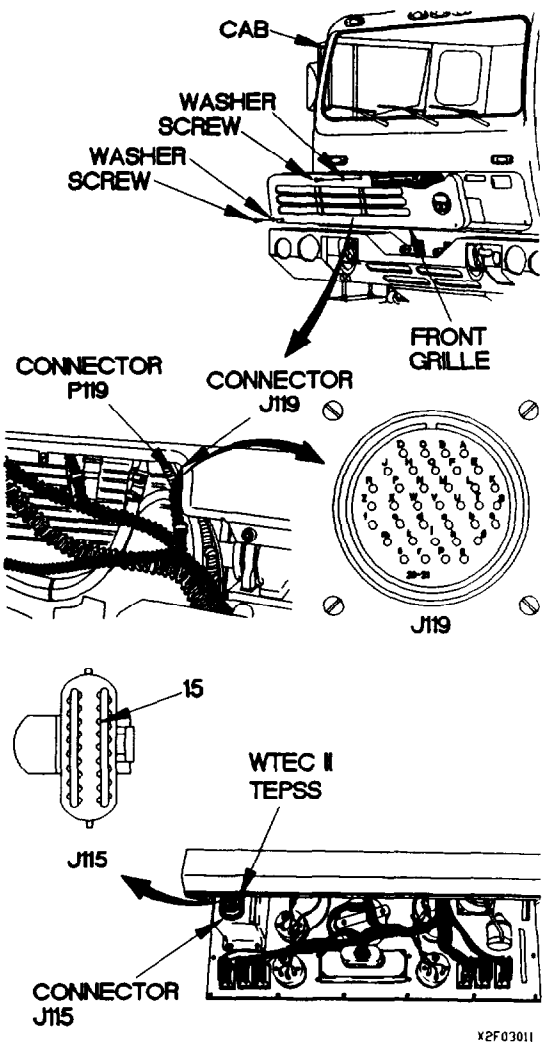
CONTINUITY TEST
(1) Set multimeter to ohms position.
(2) Connect positive (+) probe of multimeter to connector J115-16.
(3) Connect negative (-) probe of multimeter to connector J119a and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to all other sockets in connector J119 and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present in step 3, or continuity is present in step 4 or step 5, replace WTEC II cab transmission harness (para 7-86).
(7) If continuity is present in step 3 and no shorts circuits are found, replace WTEC II TEPSS (para 8-2).
(8) Connect connector J115 to WTEC II TEPSS.
(9) Install instrument panel assembly (para 7-15).
(10) Connect connector P119 to connector J119.
(11) Position front grille on cab with washer and screw.
(12) Position two washers and screws in front grille.
(13) Tighten screw to 48-60 lb-in. (5-7 N·m).
(14) Tighten two screws to 24 lb-in. (3 N·m).
(15) Clear diagnostic codes (para 8-4).



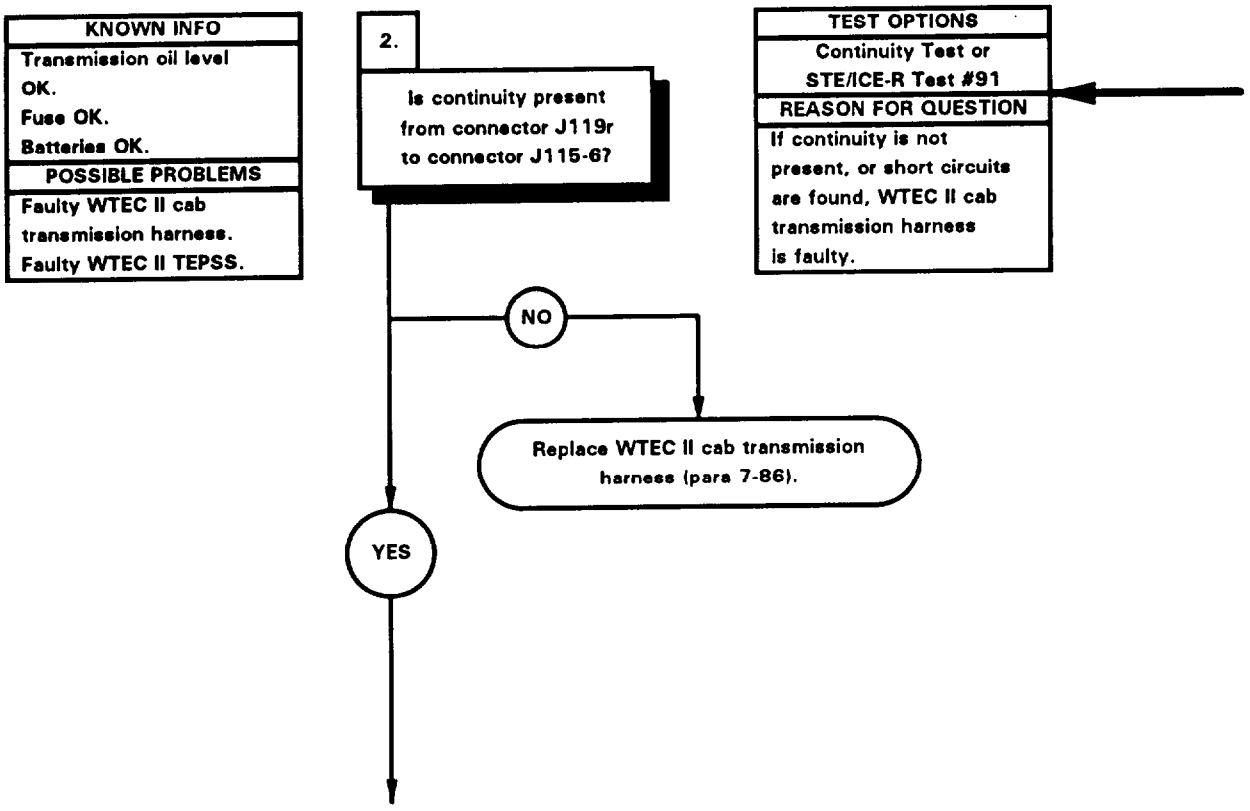
f3. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 15	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Multimeter, Digital (Item 22, Appendix C) Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C) STE/ICE-R (Item 39, Appendix C)
References TM 9-4910-571-12&P	



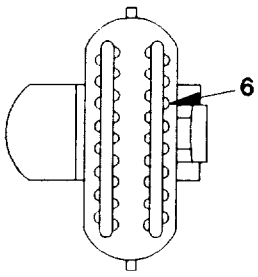
CONTINUITY TEST
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector J115-15.
(9) Connect negative (-) probe of multimeter to connector J119p and note reading on multimeter.
(10) Connect negative (-) probe of multimeter to all other sockets in connector J119 and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(12) If continuity is not present in step 9, or continuity is present in step 10 or step 11, replace WTEC II cab transmission harness (para 7-86).



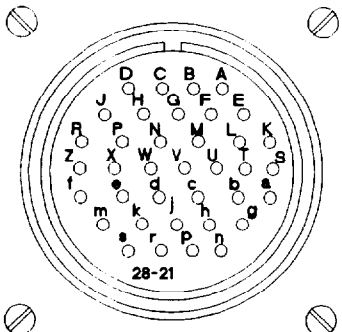
f3. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 15 (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J115-6.
(3) Connect negative (-) probe of multimeter to connector J119r and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to all other sockets in connector J119 and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present in step 3, or continuity is present in step 4 or step 5, replace WTEC II cab transmission harness (para 7-86).



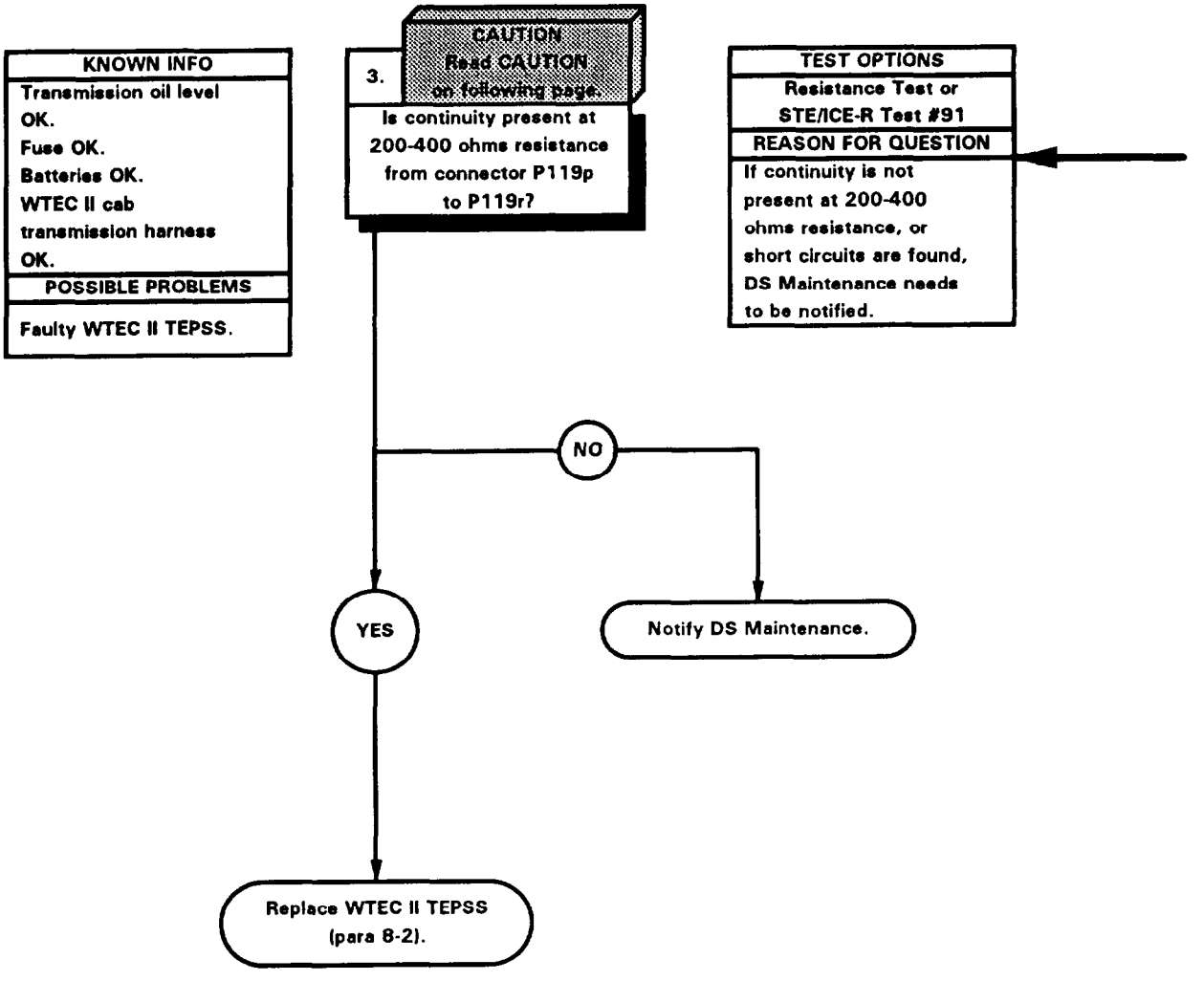
J115



J119

X2F0202A

f3. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 15 (CONT)



RESISTANCE TEST

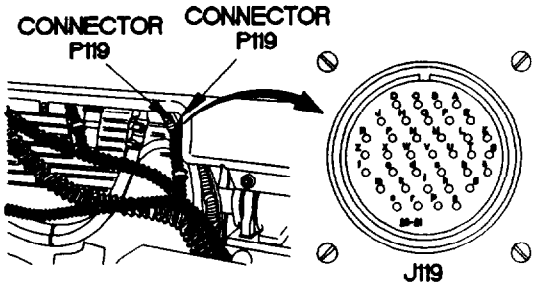
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P119p.
(3) Connect negative (-) probe of multimeter to connector P119r and note reading on multimeter.

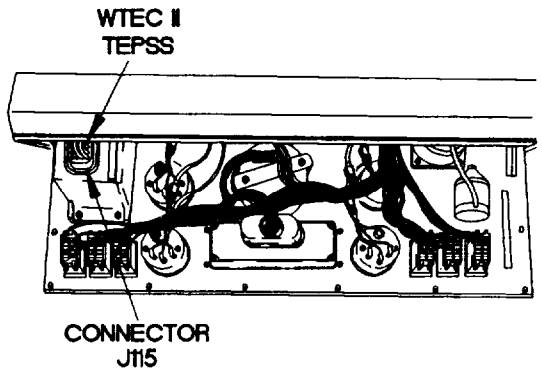
NOTE

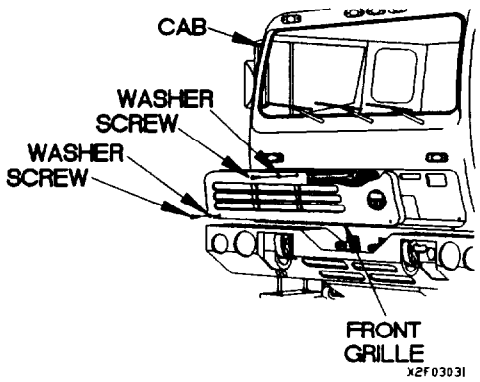
A good turbine speed sensor will return a reading of 200-400 ohms resistance as follows:

a. 200 ohms at -40°F (-40°C).
b. 300 ohms at 68°F (20°C).
c. 400 ohms at 230°F (110°C).

(5) Connect negative (-) probe of multimeter to all other pins in connector P119 and note reading on multimeter.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If good resistance is not noted in step 4, or continuity is present in step 5 or step 6, notify DS Maintenance. If good resistance is noted in step 3 and continuity is not present in step 5 or step 6, replace WTEC II TEPSS (para 8-2).
(8) Connect connector J115 to WTEC II TEPSS.
(9) Install instrument panel assembly (para 7-15).
(10) Connect connector P119 to connector J119.
(11) Position front grille on cab with washer and screw.
(12) Position two washers and screws in front grille.
(13) Tighten screw to 48-60 lb-in. (5-7 N·m).
(14) Tighten two screws to 24 lb-in. (3 N·m).
(15) Clear diagnostic codes (para 8-4).







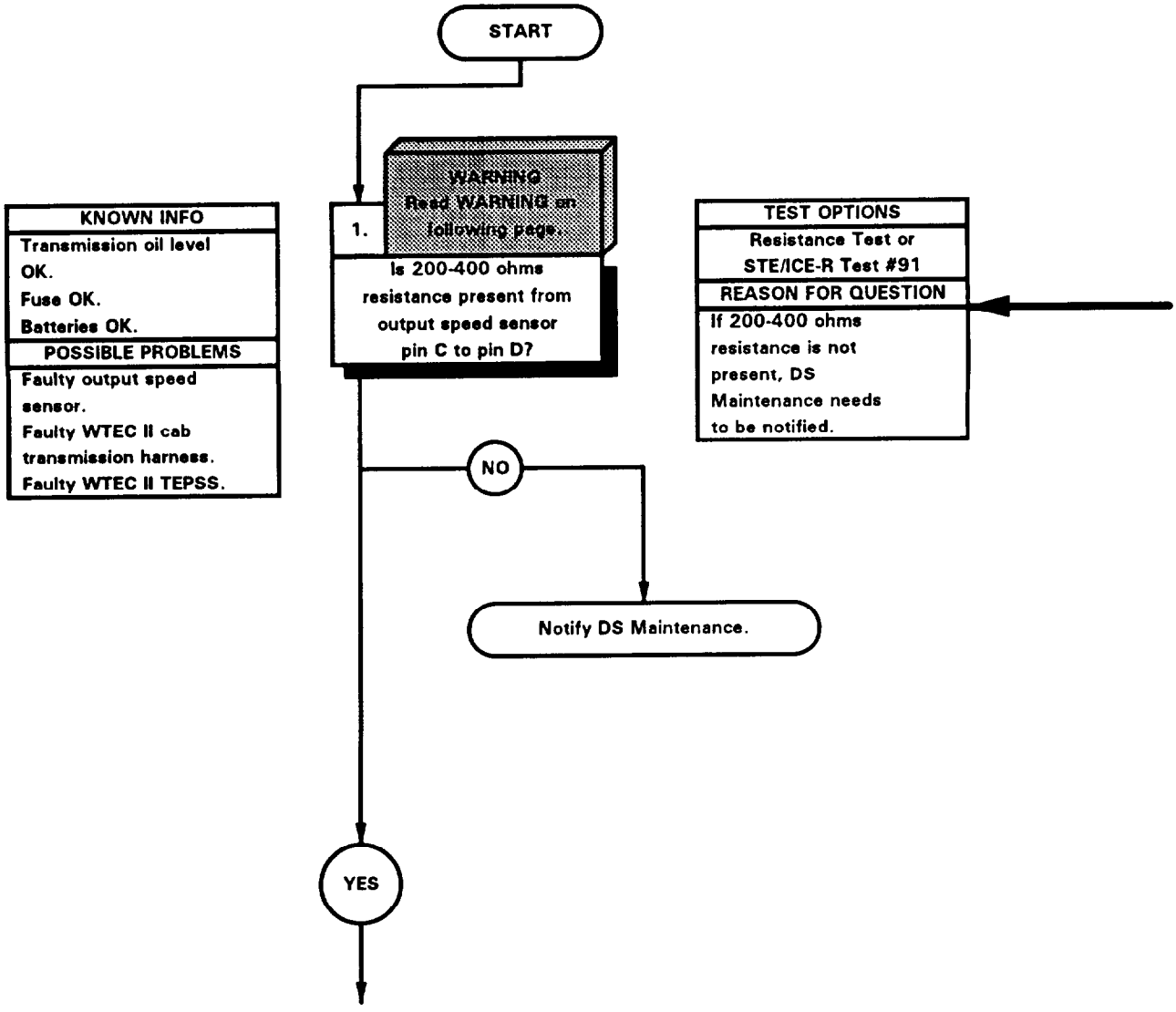
f4. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 16

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)
STE/ICE-R (Item 39, Appendix C)



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.

RESISTANCE TEST

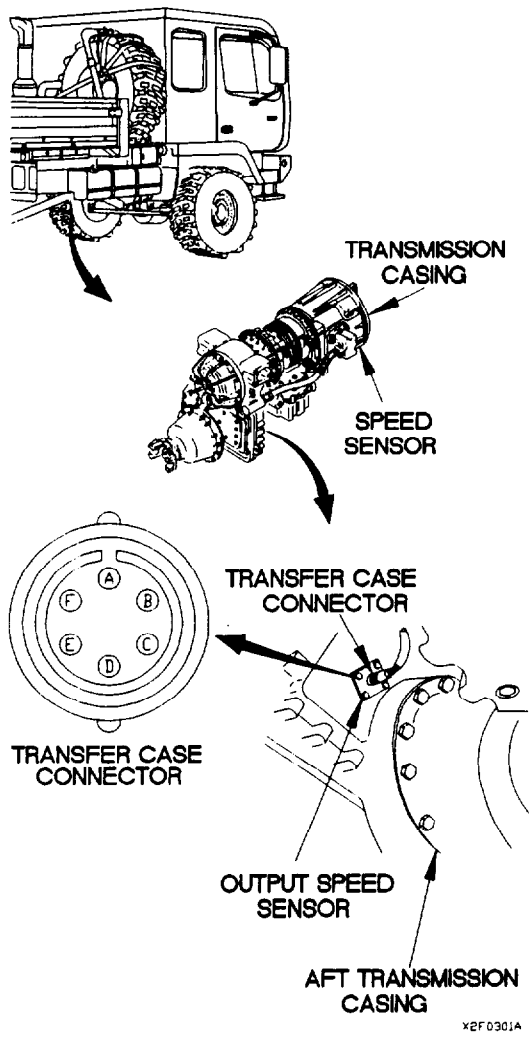
(1) Disconnect output speed sensor connector from transfer case connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to pin C of transfer case connector.

NOTE

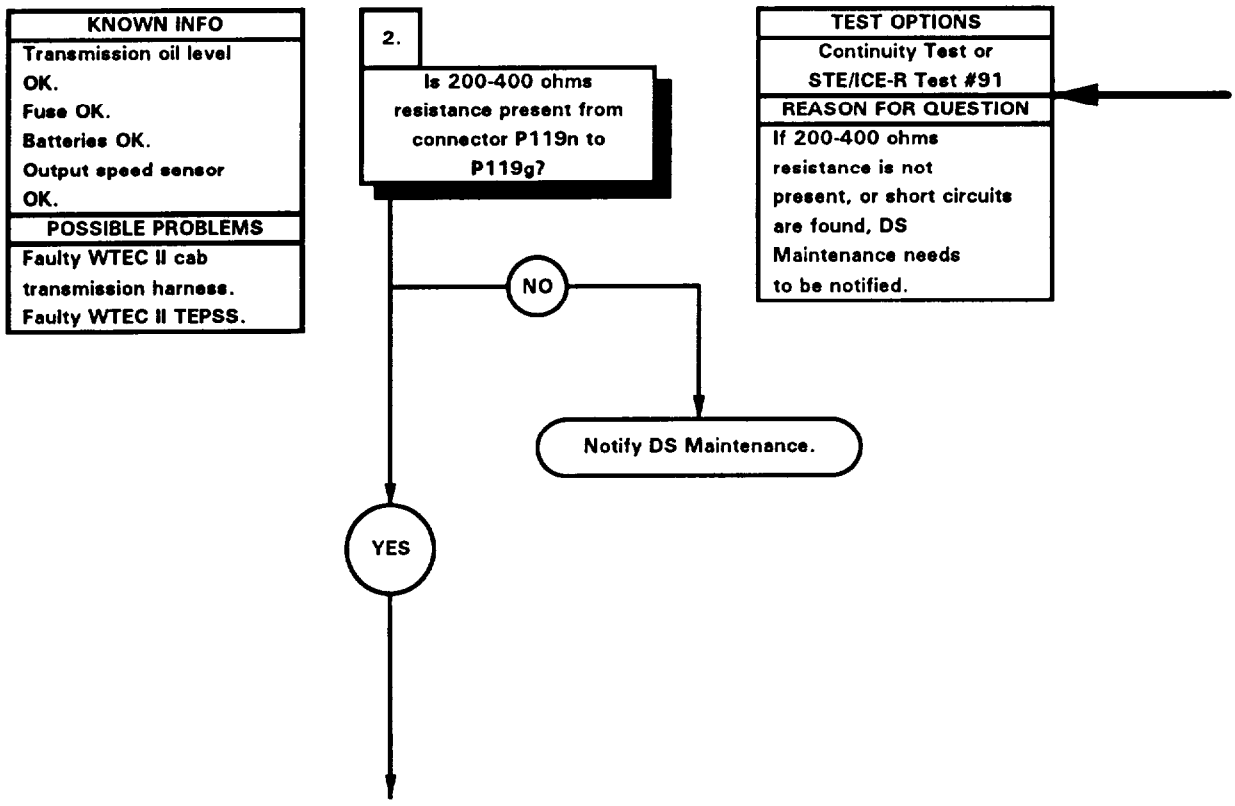
A good output speed sensor will return a reading of 200-400 ohms resistance as follows:

a. 200 ohms at -40°F (-40°C)
b. 300 ohms at 68°F (20°C)
c. 400 ohms at 230°F (110°C)

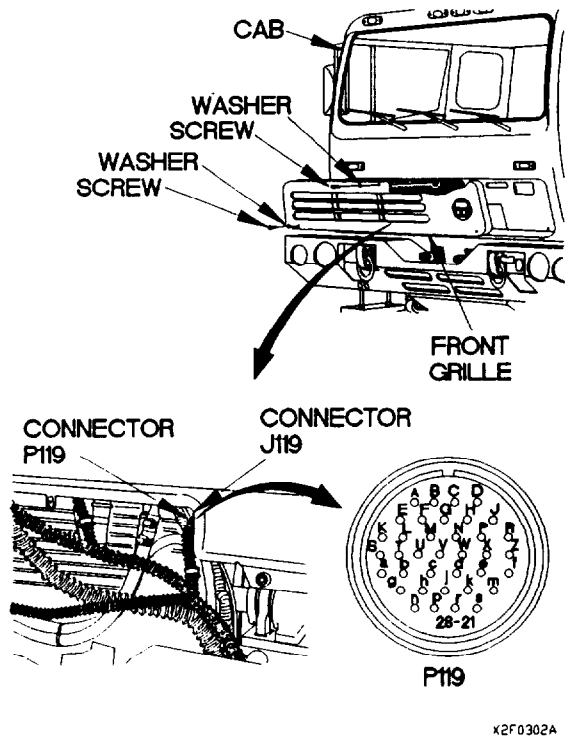
(4) Connect negative (-) probe of multimeter to pin D of transfer case connector and note reading on multimeter.
(5) If good resistance is not noted, notify DS Maintenance.
(6) Connect output speed sensor connector to transfer case connector.



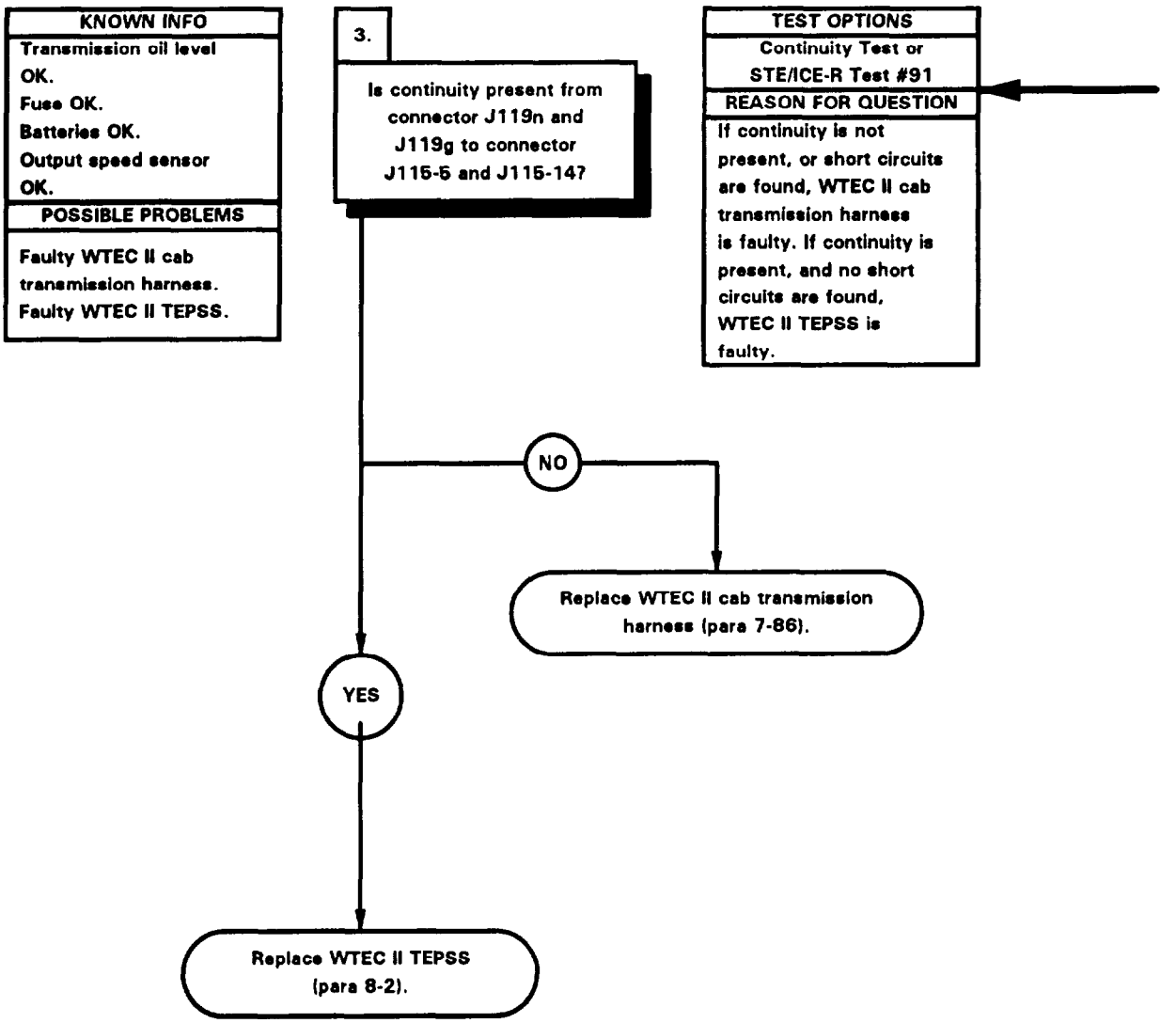
f4. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 16 (CONT)



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) Disconnect connector P119 from connector J119.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P119n.
(7) Connect negative (-) probe of multimeter on connector P119g and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) Connect positive (+) probe of multimeter to connector P119g.
(11) Connect negative (-) probe of multimeter to all other pins in connector P119 (except P119n), one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity 200-400 ohms resistance is not present in step 7, or continuity is present in step 8, 9, 11, or 12, notify DS Maintenance.

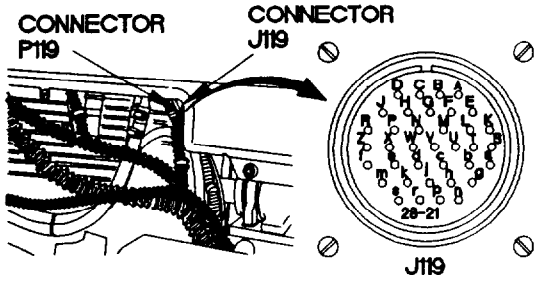


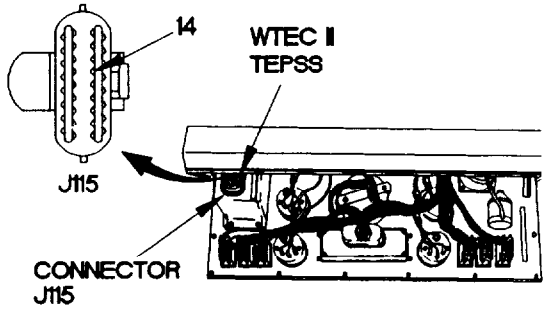
f4. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 16 (CONT)

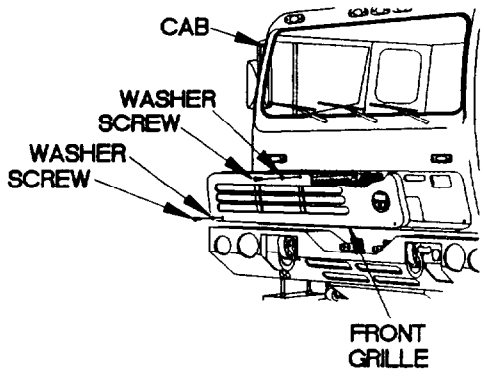


CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(3) Install jumper wire from connector J119g to J119n.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector J115-5.
(6) Connect negative (-) probe of multimeter to connector J115-14 and note reading on multimeter.
(7) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) Connect positive (+) probe of multimeter to connector J115-14.
(10) Connect negative (-) probe of multimeter to all other sockets in connector J115 (except J115-5), one at a time, and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(12) If continuity is not present in step 6, or continuity is present in step 7, 8, 10, or 11, replace WTEC II cab transmission harness (para 7-86).
(13) If continuity is present in step 6, and continuity is not present in steps 7, 8, 10, and 11, replace WTEC II TEPSS (para 8-2).
(14) Remove jumper wire from connector J119.
(15) Connect connector J115 to WTEC II TEPSS.
(16) Install instrument panel assembly (para 7-15).
(17) Connect connector P119 to connector J119.
(18) Position front grille on cab with washer and screw.
(19) Position two washers and screws in front grille.
(20) Tighten screw to 48-60 lb-in. (5-7 N·m).
(21) Tighten two screws to 24 lb-in. (3 N·m).
(22) Clear diagnostic codes (para 8-4).







X2F04041

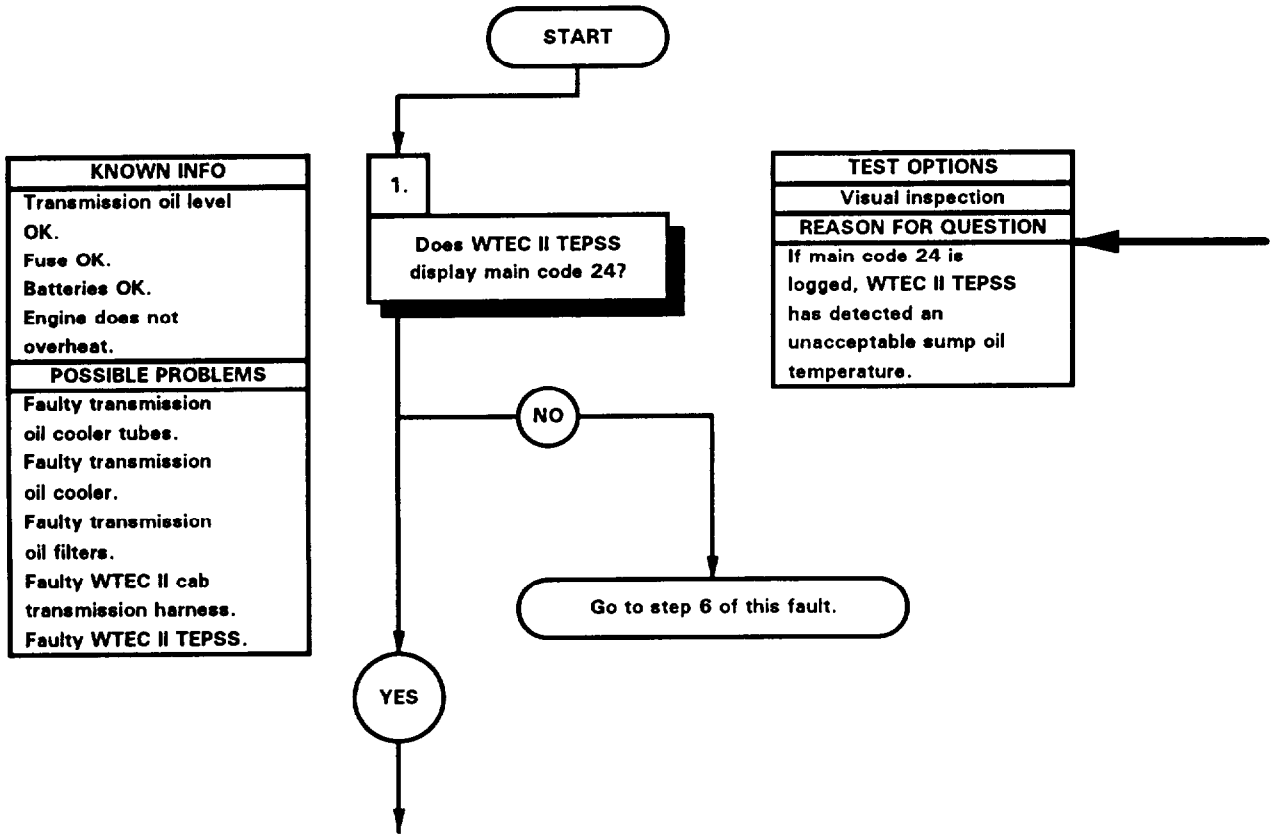
f5. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

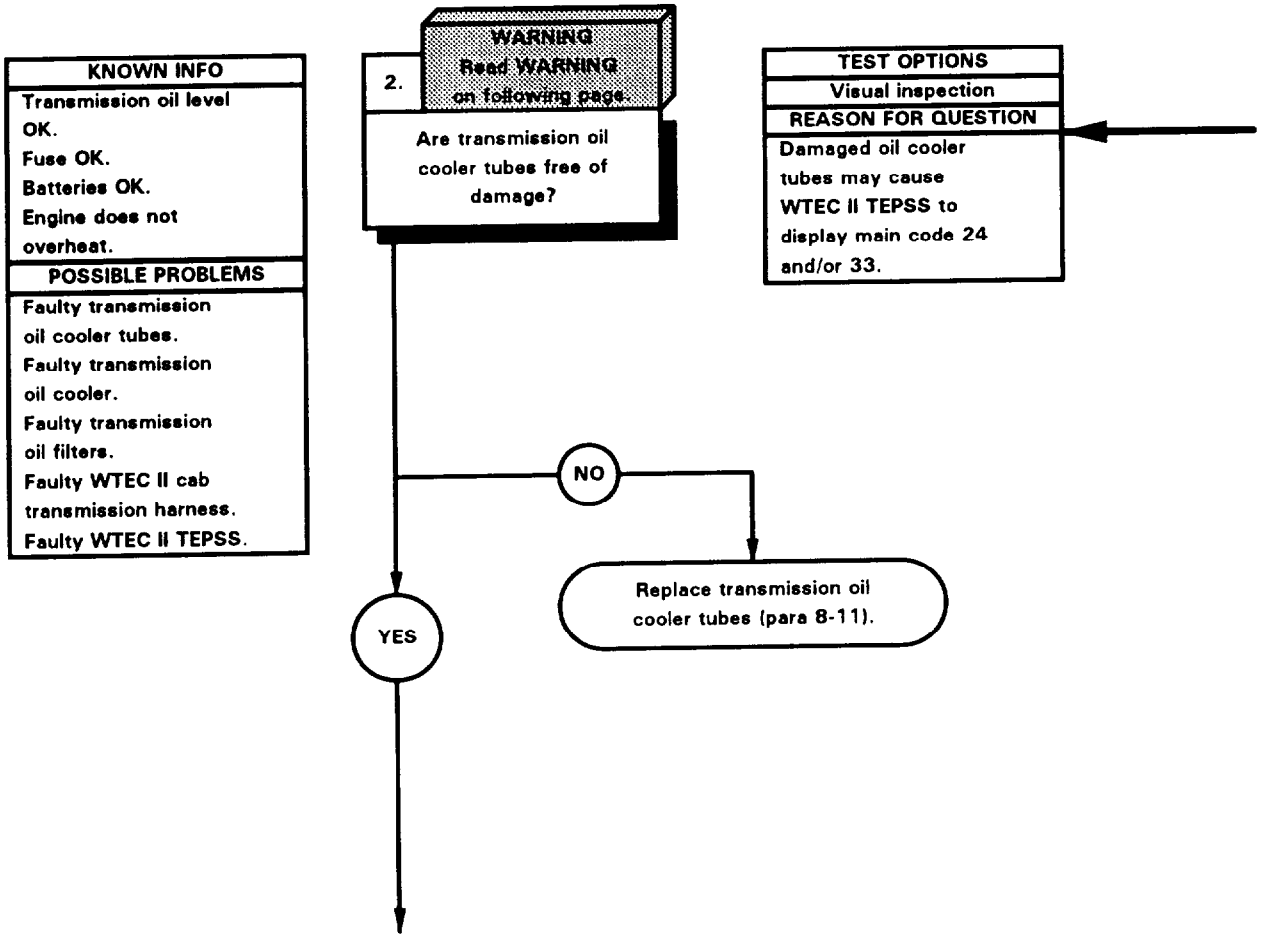
References
TM 9-4910-571-12&P

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)



(1) Position master power switch to on (TM 9-2320-365-10).
(2) Check to see if main code 24 or main code 33 is logged in WTEC II TEPSS (para 8-4).
(3) If main code 24 is logged:
    (a) WTEC II TEPSS has detected a sump oil temperature above (subcode 23) or below (subcode 12) operating limits.
    (b) Troubleshoot oil cooling system followed by sump oil temperature sensor and circuits.
(4) If main code 33 is logged:
    (a) WTEC II TEPSS has detected a fault with sump oil temperature sensor or its circuit.
    (b) Troubleshoot electrical system.
(5) Position master power switch to off (TM 9-2320-365-10).

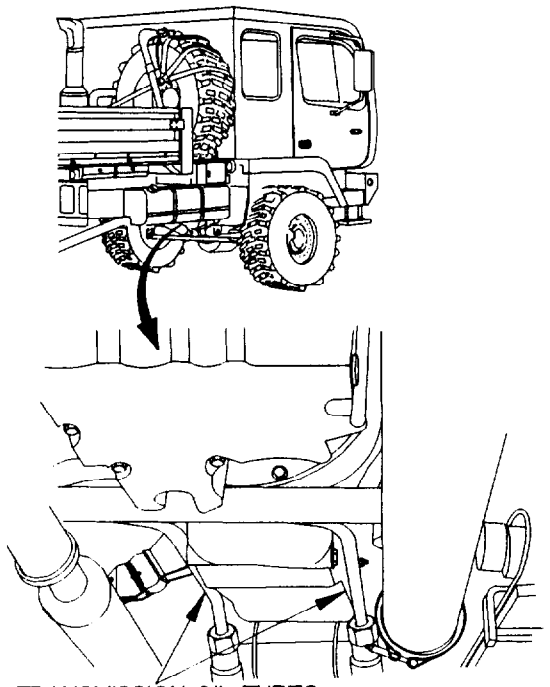
f5. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



WARNING

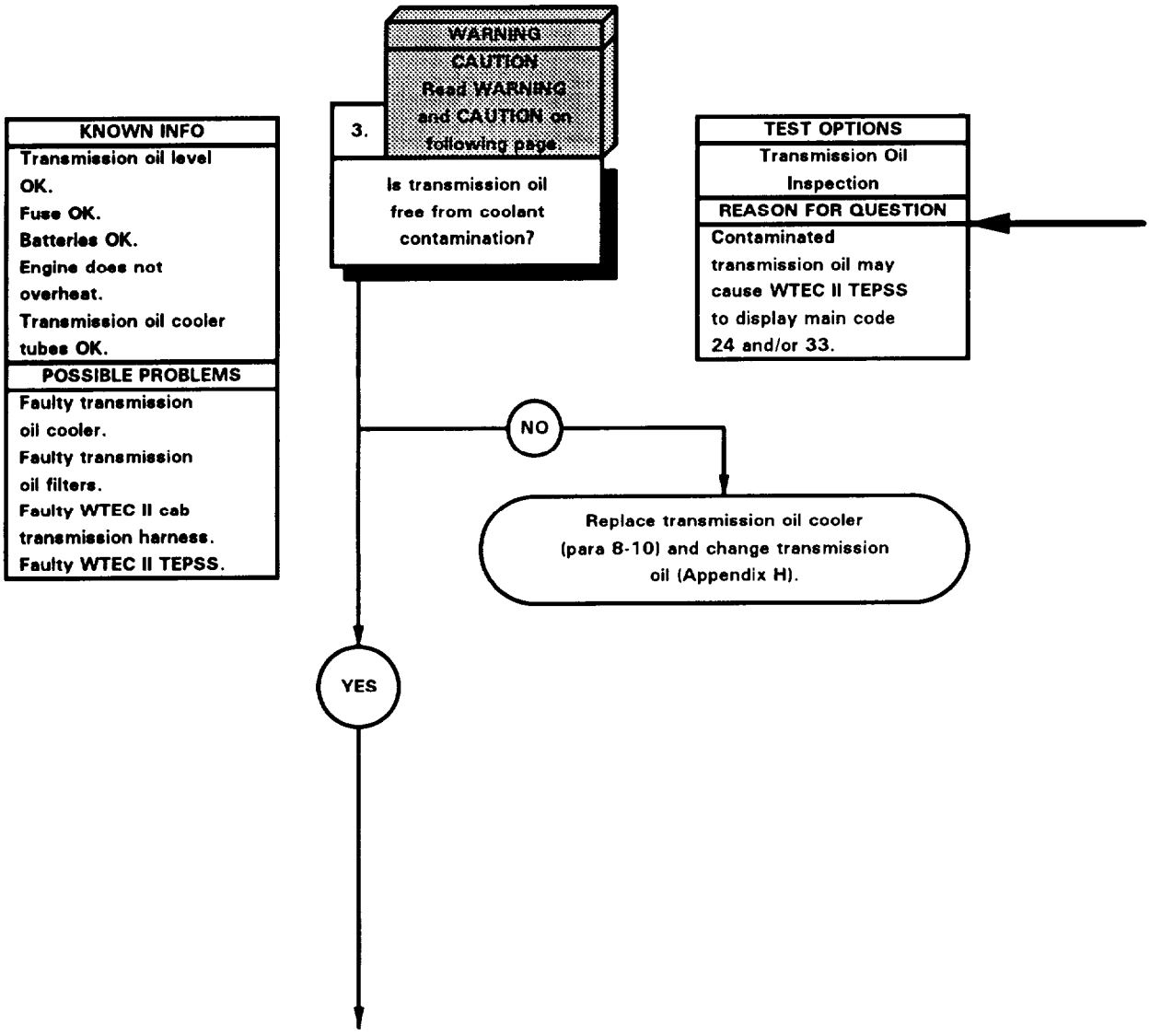
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

Check transmission oil cooler tubes for damage and restrictions.



TRANSMISSION OIL TUBES X2F0401A

f5. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



TRANSMISSION OIL INSPECTION

WARNING

- Do not drain transmission oil when transmission is hot. 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.

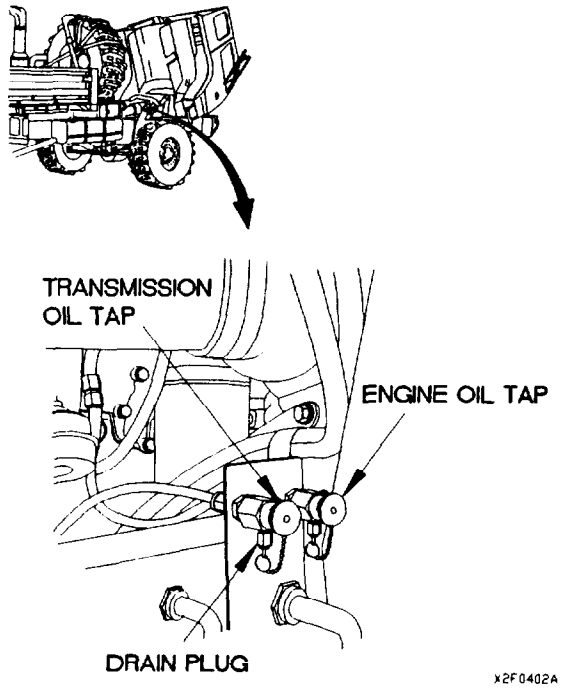
CAUTION

Transmission oil must be changed whenever there is evidence of oil breakdown or contamination. Oil breakdown or contamination may be caused from overheating transmission and/or oil cooler internal failure and is indicated by discoloration, strong odor, or oil analysis.

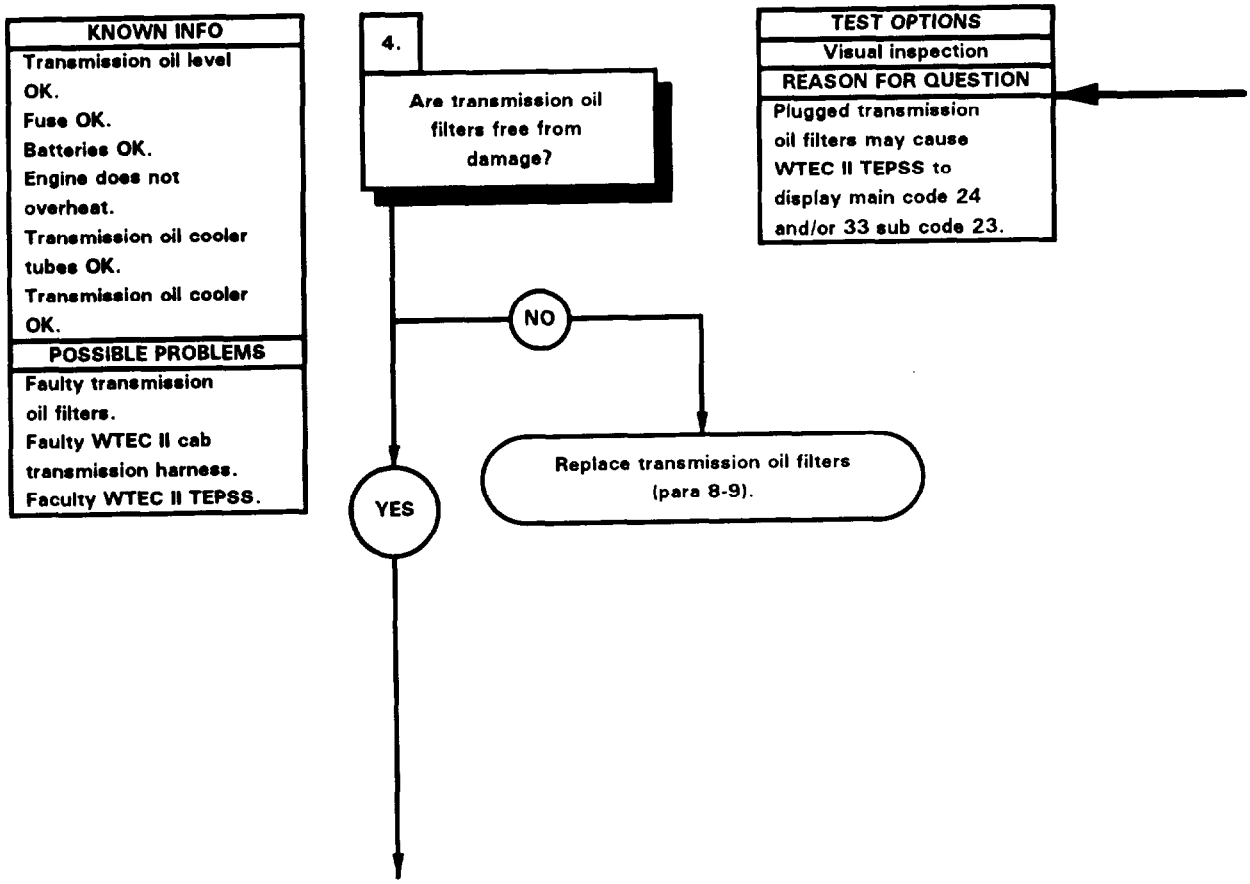
NOTE

Transmission fluid capacity is 42.3 qt (40 L).

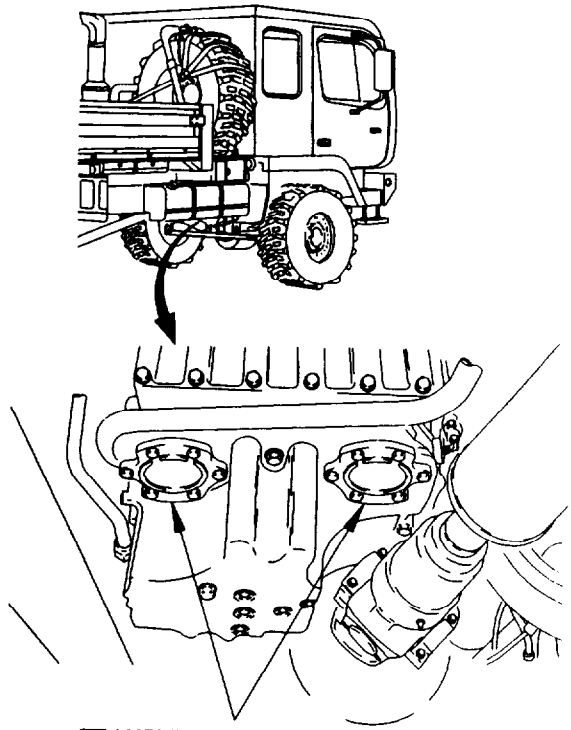
(1) Start engine (TM 9-2320-365-10).
(2) Allow oil to circulate for a few minutes.
(3) Position drain pan under transmission AOAP valve.
(4) Remove drain plug from transmission AOAP valve and press plunger to extract oil from system.
(5) Allow approximately 1 qt (0.9 L) of oil to drain into drain pan. Release plunger.
(6) Install drain plug on transmission AOAP valve.
(7) Inspect oil for coolant contamination.
(8) If oil is contaminated, replace transmission oil cooler (para 8-10).
(9) Shut down engine (TM 9-2320-365-10).
(10) Add oil to transmission (Appendix H).



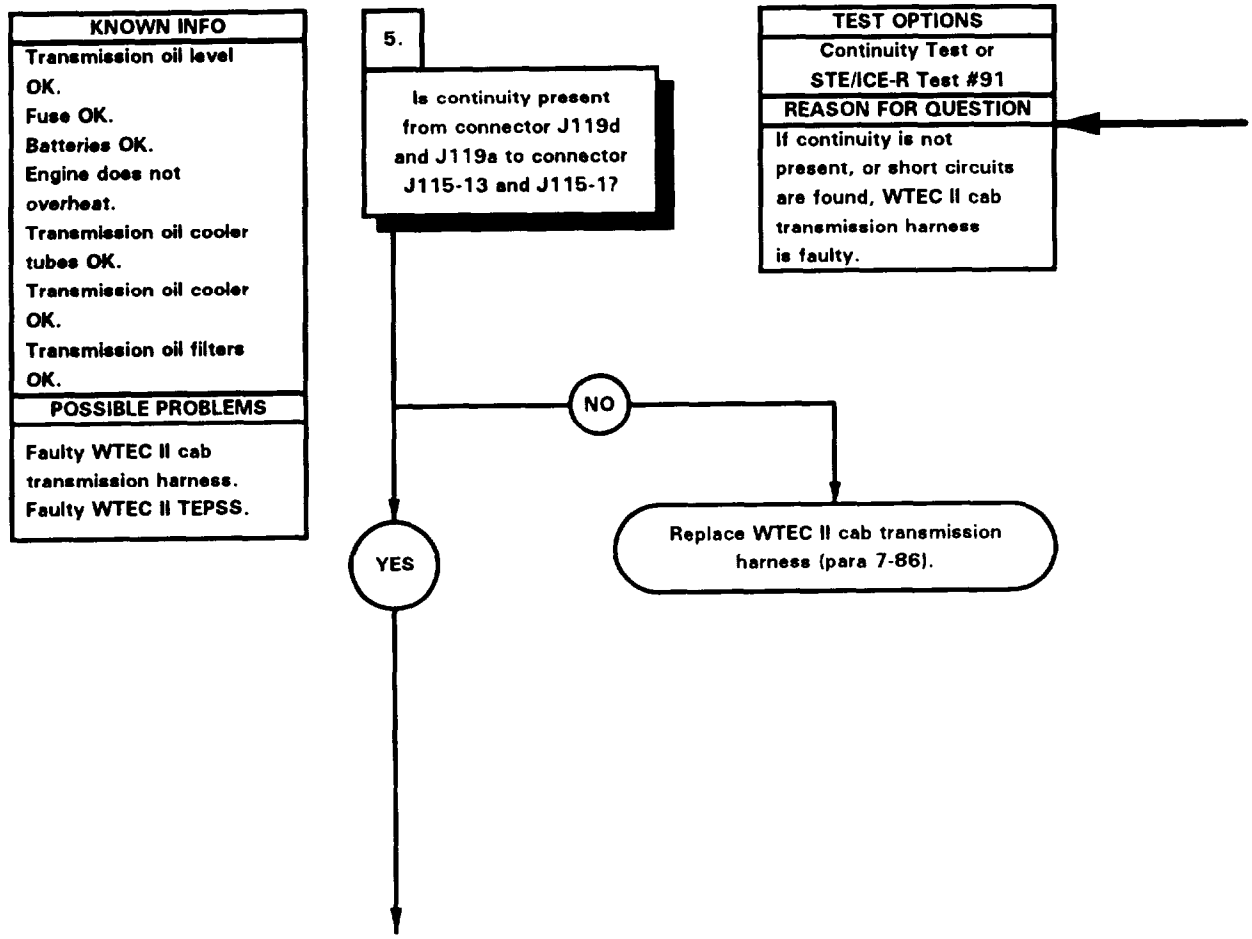
f5. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



Check transmission oil filters for damage (para 8-9).

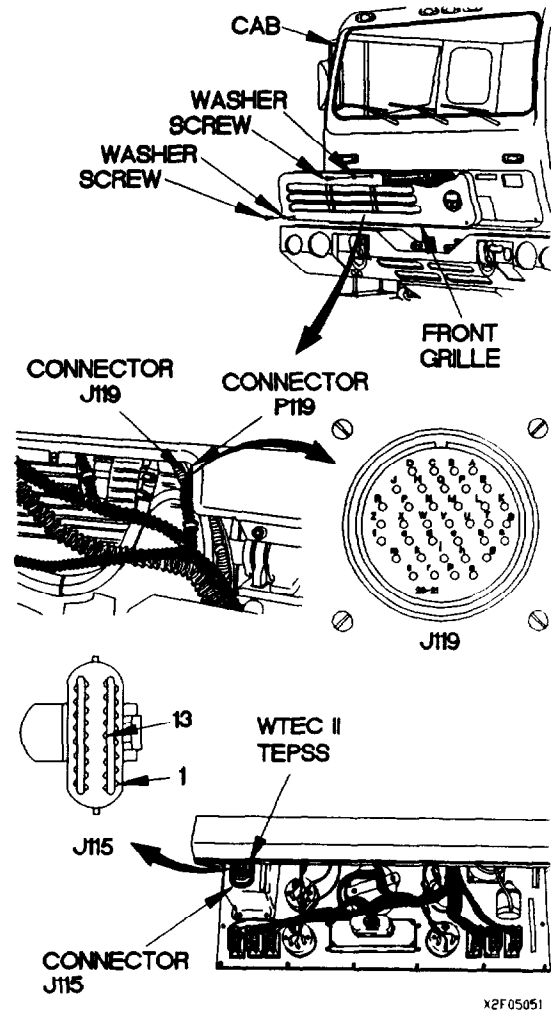


f5. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)

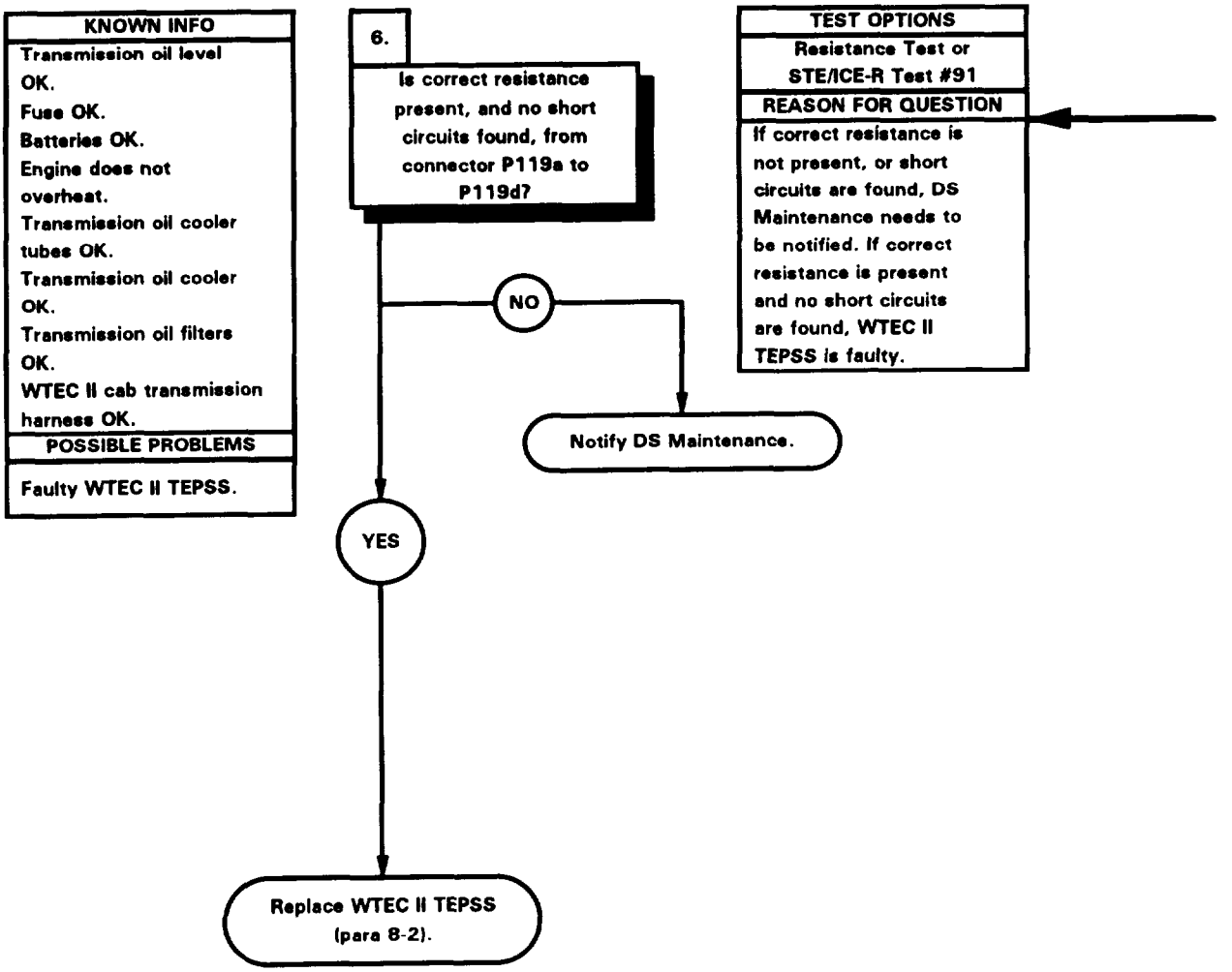


CONTINUITY TEST

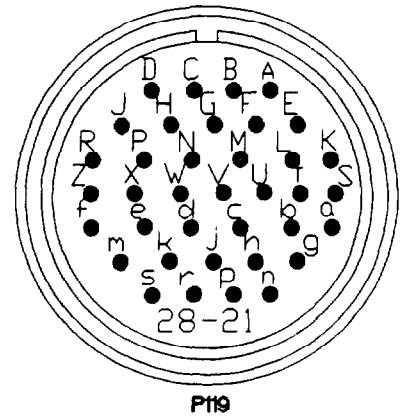
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(7) Set multimeter to ohms.
(8) Install jumper wire from connector J119d to J119a.
(9) Connect positive (+) probe of multimeter to connector J115-13.
(10) Connect negative (-) probe of multimeter on J115-1 and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) Connect positive (+) probe of multimeter to connector J115-1.
(14) Connect negative (-) probe of multimeter to all other sockets in connector J115 (except J115-13), one at a time, and note reading on multimeter.
(15) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(16) If continuity is not present in step 10, or continuity is present in step 11, 12, 14, or 15, replace WTEC II cab transmission harness (para 7-86).
(17) Connect connector J115 to WTEC II TEPSS.
(18) Install instrument panel assembly (para 7-15).

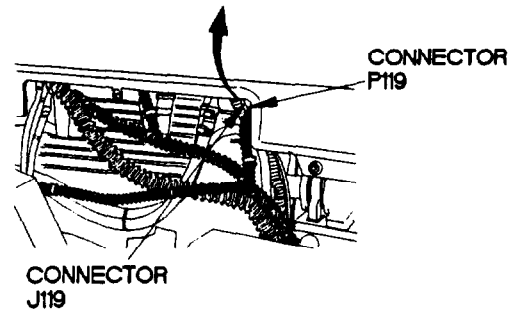


f5. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



RESISTANCE TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter on P119a.
NOTE Transmission sump oil temperature sensor resistance reading is affected by temperature. Refer to Table 2-17. Transmission Sump Oil Temperature Sensor Resistance Readings for details.
(3) Connect negative (-) prove of multimeter on P119d and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector P119d.
(7) Connect negative (-) probe of multimeter to all other pins in connector P119 (except P119a), one at a time, and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) If correct resistance is not present in step 3, or continuity is present in step 4, 5, 7, or 8, notify DS Maintenance.
(10) If correct resistance is present in step 3 and continuity is not present in step 4, 5, 7, or 8, replace WTEC II TEPSS (para 8-2).
(11) Connect connector P119 to connector J119.
(12) Position front grille on cab with washer and screw.
(13) Position two washers and screws in front grille.
(14) Tighten screw to 48-60 lb-in. (5-7 N·m).
(15) Tighten two screws to 24 lb-in. (3 N·m).
(16) Clear diagnostic codes (para 8-4).





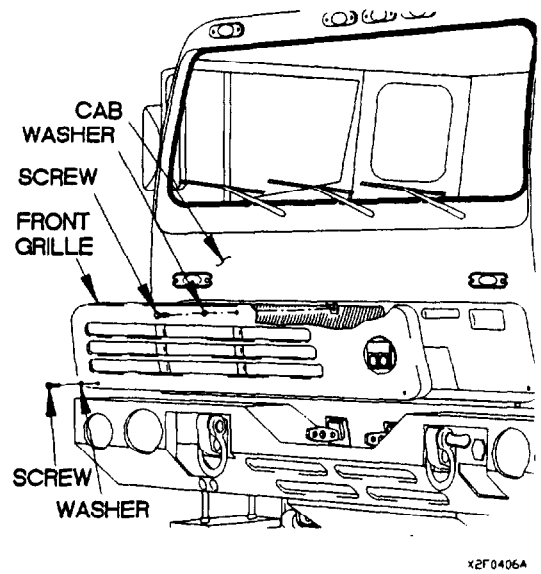


TABLE 2-17. TRANSMISSION SUMP OIL TEMPERATURE SENSOR RESISTANCE READINGS	
Temperature	**Resistance**
-4° to 14°F (-20° to -10°C)	691-754 ohms
14° to 32°F (-10° to 0°C)	754-820 ohms
32° to 50°F (0° to 10°C)	820-889 ohms
50° to 68°F (10° to 20°C)	889-962 ohms
68° to 86°F (20° to 30°C)	962-1039 ohms
86° to 104°F (30° to 40°C)	1039-1118 ohms
104° to 122°F (40° to 50°C)	1118-1202 ohms
122° to 140°F (50° to 60°C)	1202-1286 ohms

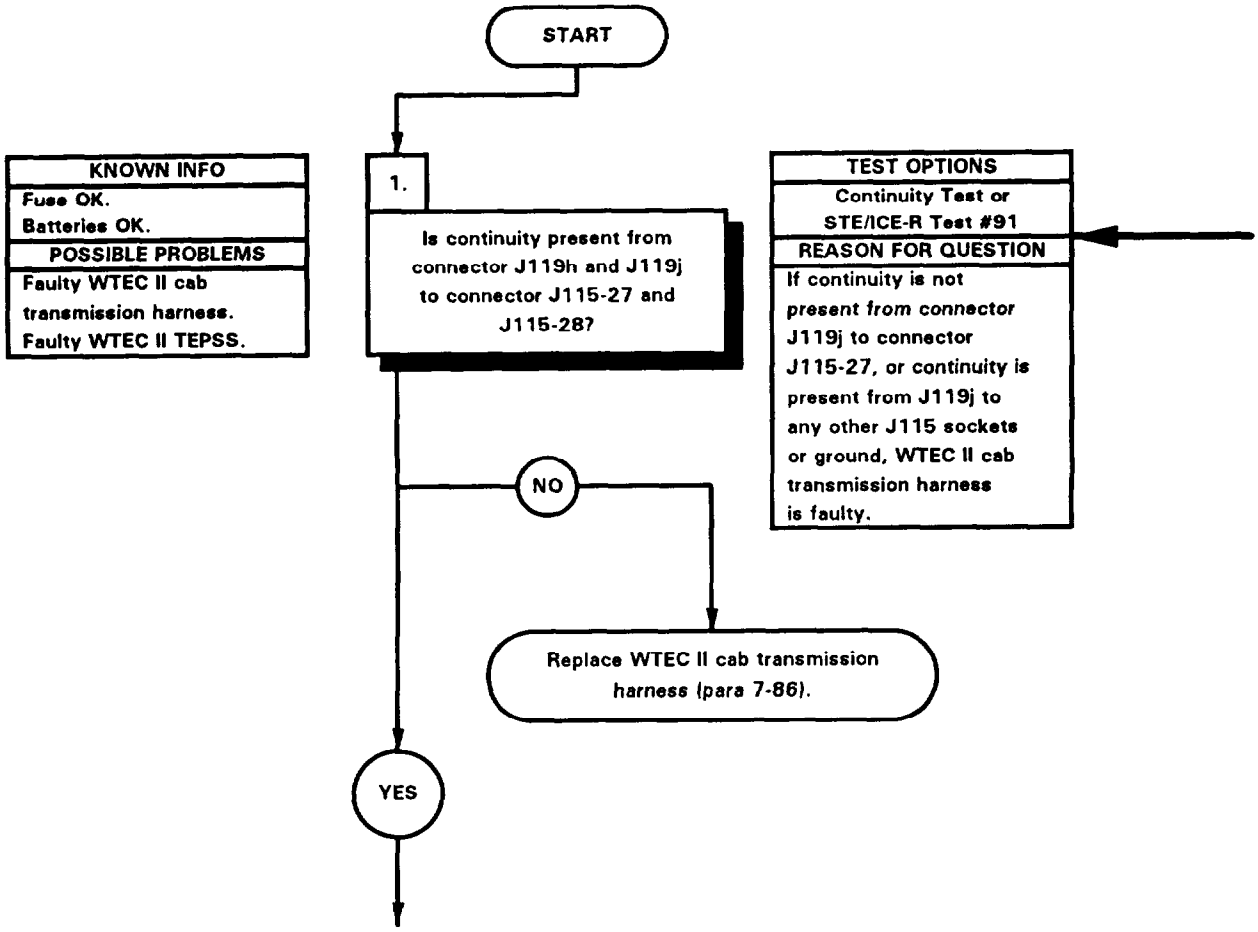
16. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 32 AND ANY SUB CODE

INITIAL SETUP

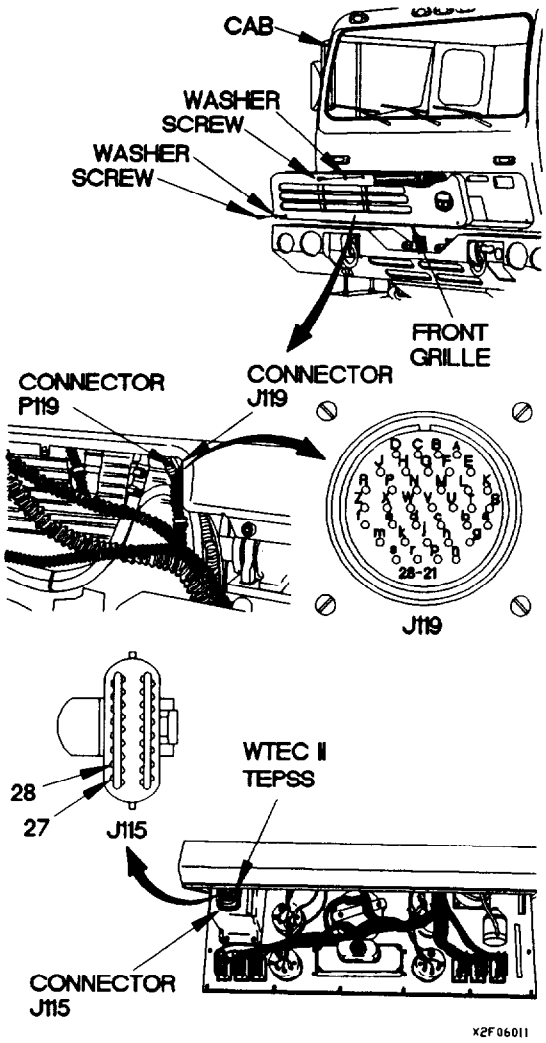
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

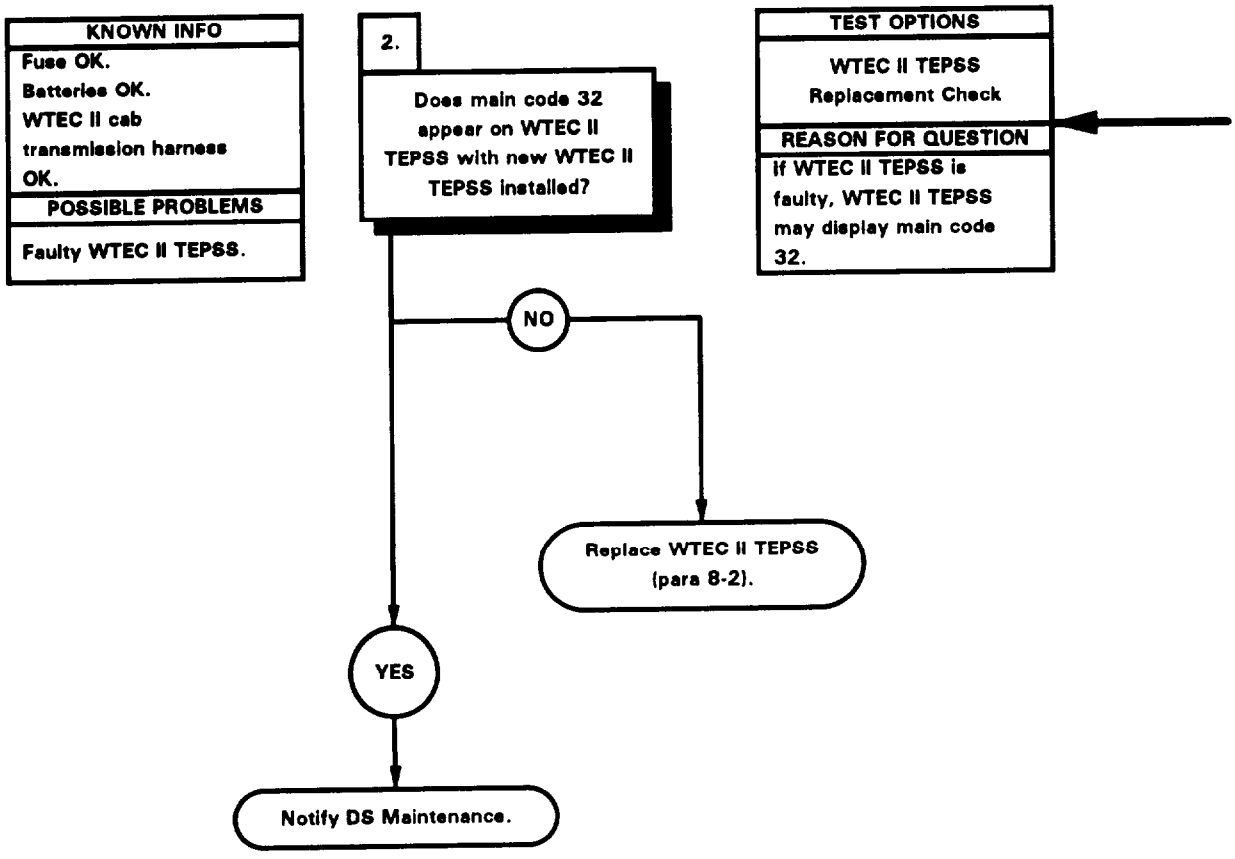
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)



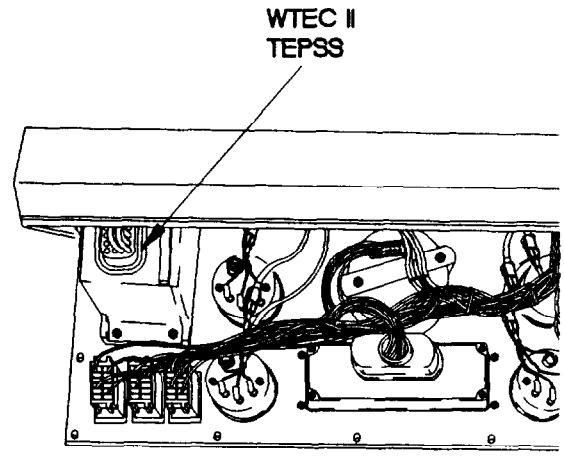
CONTINUITY TEST
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(7) Install jumper wire from connector J119h to J119j.
(8) Set multimeter to ohms.
(9) Connect positive (+) probe of multimeter to connector J115-27.
(10) Connect negative (-) probe of multimeter to connector J115-28 and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity is not present in step 10, or continuity is present in step 11 or step 12, replace WTEC II cab transmission harness (para 7-86).
(14) Connect connector P119 to connector J119.
(15) Position front grille on cab with washer and screw.
(16) Position two washers and screws in front grille.
(17) Tighten screw to 48-60 lb-in. (5-7 N·m).
(18) Tighten two screws to 24 lb-in. (3 N·m).



f6. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 32 AND ANY SUB CODE (CONT)



WTEC II TEPSS REPLACEMENT CHECK
(1) Remove original WTEC II TEPSS (para 8-2).
(2) Install replacement WTEC II TEPSS (para 8-2).
(3) Install instrument panel assembly (para 7-15).
(4) Start engine (TM 9-2320-365-10).
(5) Road test vehicle and read WTEC II TEPSS codes (para 8-4).
(6) If main code 32 does not appear with replacement WTEC II TEPSS installed, replace original WTEC II TEPSS (para 8-2).
(7) If main code 32 appears with replacement WTEC II TEPSS installed, notify DS Maintenance.
(8) Shut down engine (TM 9-2320-365-10).
(9) Clear diagnostic codes (para 8-4).



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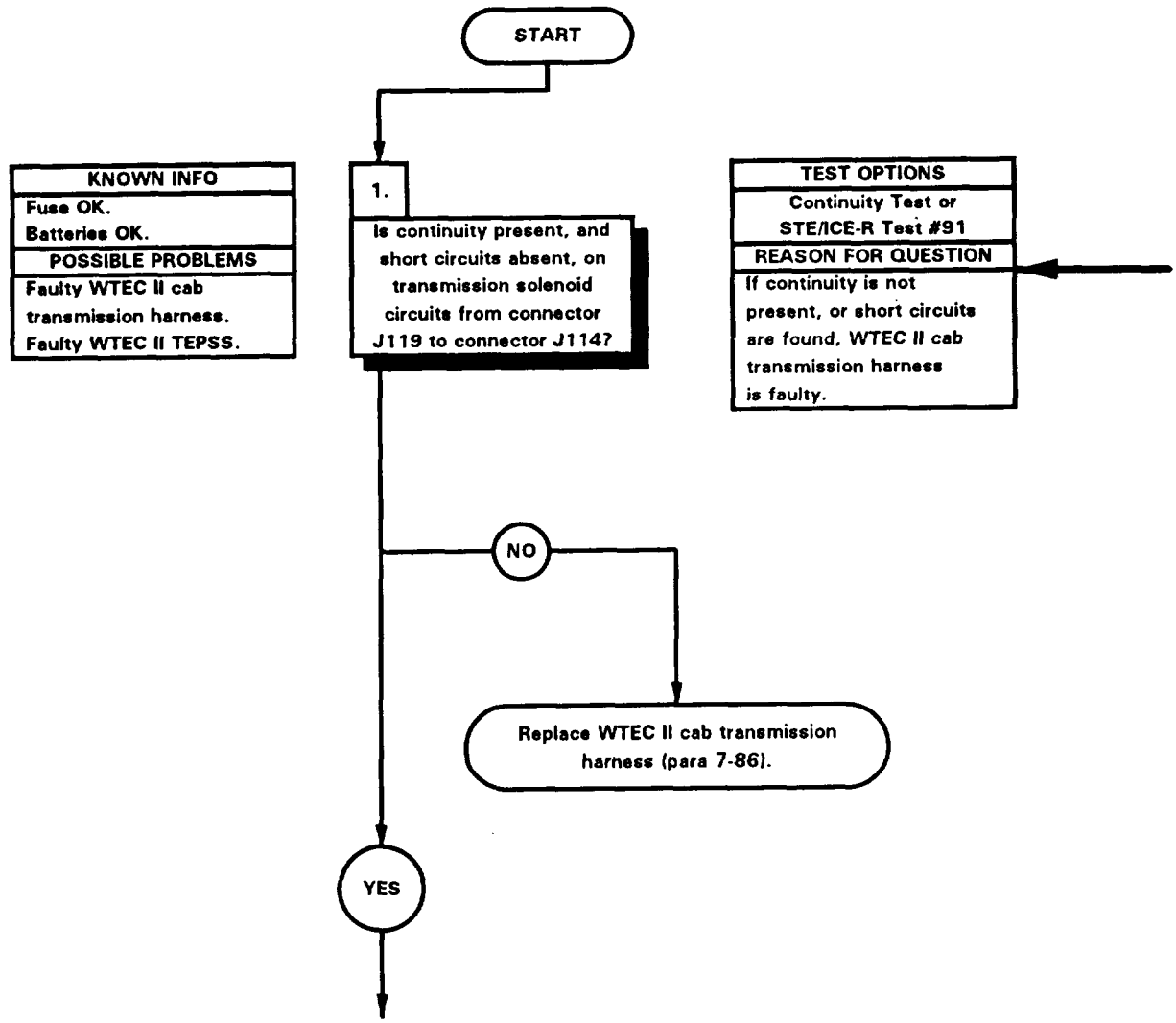
17. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE AND ANY SUB CODE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)
STE/ICE-R (Item 39, Appendix C)



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) Disconnect connector P119 from connector J119.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connector J114 (bottom connector) from WTEC II TEPSS.
(7) Install jumper wire on connector J119 for appropriate sub code. Refer to Table 2-18. WTEC II Cab Transmission Harness Transmission Solenoid Test Points.
(8) Set multimeter to ohms.
(9) Connect positive (+) probe of multimeter to connector J114. Refer to Table 2-18. WTEC II Cab Transmission Harness Transmission Solenoid Test Points.
(10) Connect negative (-) probe of multimeter to connector J114 and note reading on multimeter. Refer to Table 2-18. WTEC II Cab Transmission Harness Transmission Solenoid Test Points.
(11) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity is not present in step 10, or continuity is present in step 11 or step 12, replace WTEC II cab transmission harness (para 7-86).
(14) Connect connector J114 to WTEC II TEPSS.
(15) Install instrument panel assembly (para 7-15).

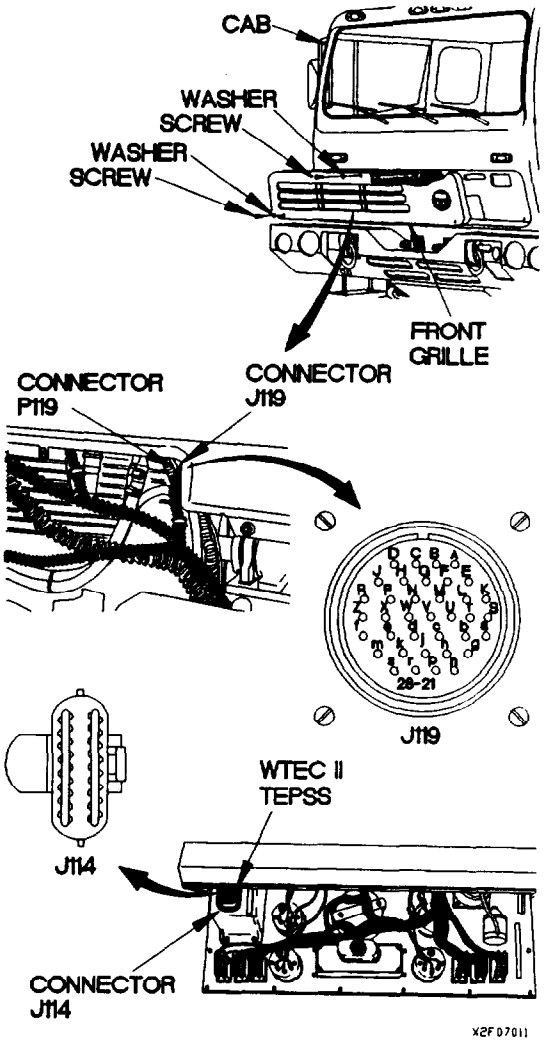
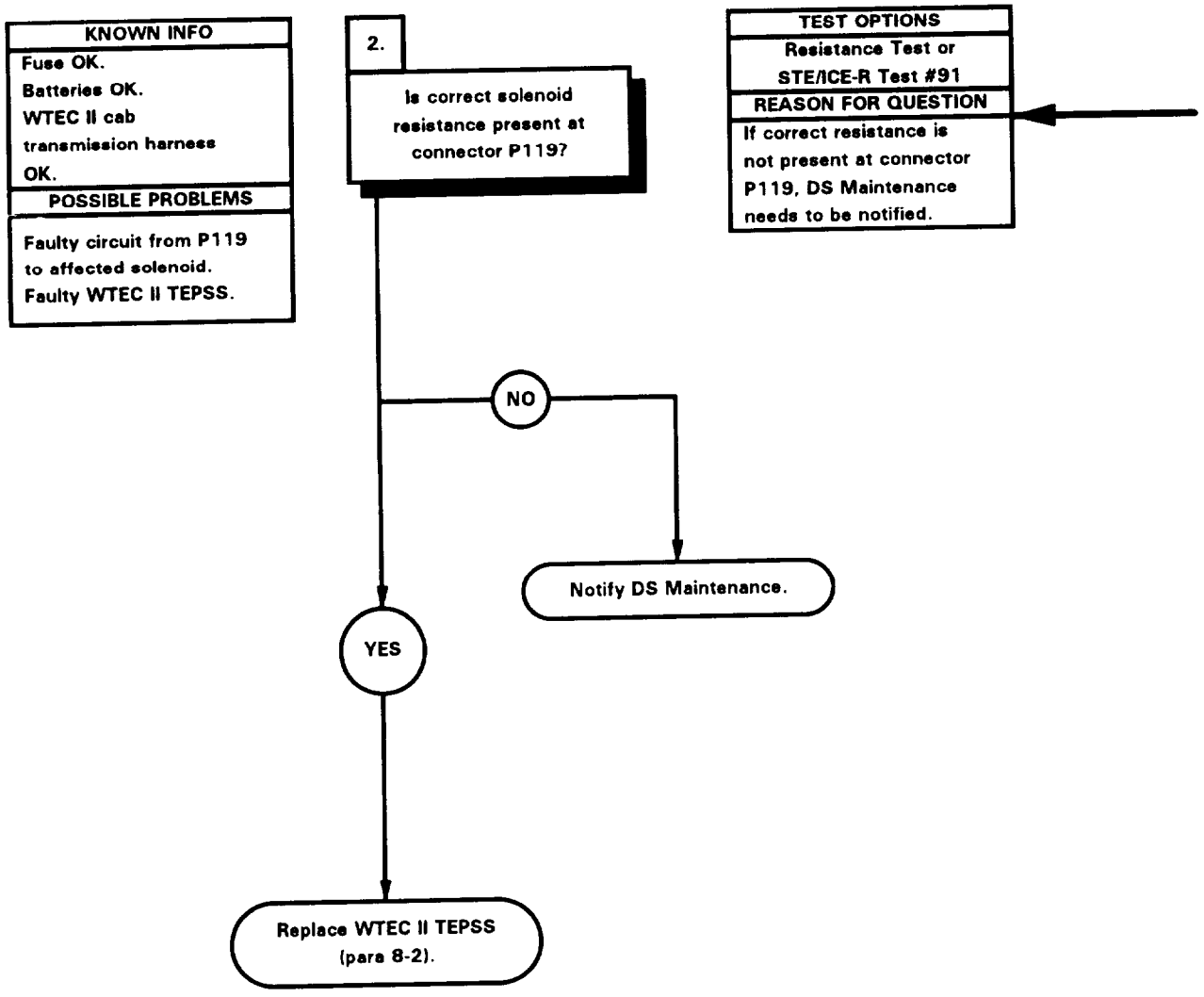


TABLE 2-18. WTEC II CAB TRANSMISSION HARNESS TRANSMISSION SOLENOID TEST POINTS

SUB CODE	JUMPER ACROSS	CONNECTOR J114	
		POSITIVE (+) PROBE	NEGATIVE (-) PROBE
12	J119M to J119B	J114-2	J114-20
13	J119T to J119N	J114-21	J114-28
14	J119C to J119V	J114-30	J114-3
15	J119W to J119B	J114-2	J114-31
16	J119U to J119N	J114-21	J114-29
21	J119F to J119H	J114-10	J114-7
22	J119D to J119V	J114-30	J114-4
23	J119P to J119S	J114-22	J114-27
24	J119J to J119B	J114-2	J114-11
26	J119K to J119A	J114-1	J114-16

f7. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 41, 42, 44, AND/OR 45 AND ANY SUB CODE (CONT)



RESISTANCE TEST

(1) Disconnect connector P119 from connector J119.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P119. Refer to Table 2-19. Connector P119 Transmission Solenoid Resistance Test Points for appropriate sub code(s) and connector P119 pin(s).
(4) Connect negative (-) probe of multimeter to connector P119 and note reading on multimeter. Refer to Table 2-19. Connector P119 Transmission Solenoid Resistance Test Points for appropriate sub code(s) and connector P119 pin(s).

NOTE

Transmission solenoid resistance is affected by temperature. Refer to Table 2-20. Transmission Solenoid Resistance Readings.

(5) If resistance reading indicates transmission solenoid is good, replace WTEC II TEPSS (para 8-2).
(6) If resistance reading indicates transmission solenoid is faulty, notify DS Maintenance.
(7) Connect connector P119 to connector J119.
(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).
(12) Clear diagnostic codes (para 8-4).

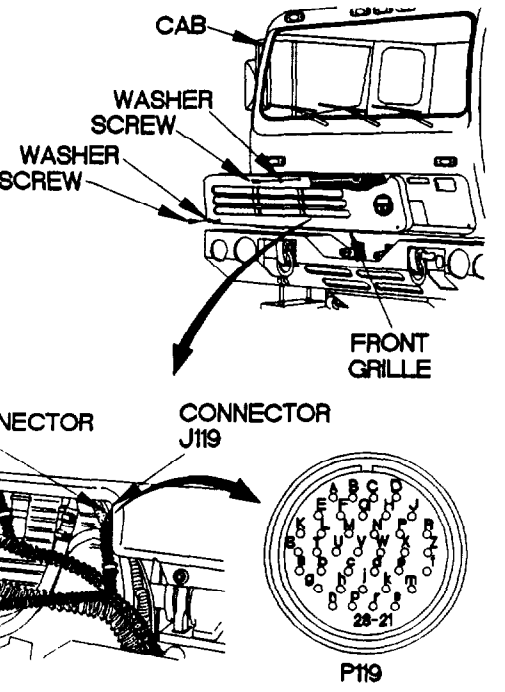


TABLE 2-19. CONNECTOR P119 TRANSMISSION SOLENOID RESISTANCE TEST POINTS

SUB CODE	CONNECTOR P119	
	positive (+) probe	negative (-) probe
12	P119M	P119B
13	P119T	P119N
14	P119C	P119V
15	P119W	P119B
16	P119U	P119N
21	P119F	P119H
22	P119D	P119V
23	P119P	P119S
24	P119J	P119B
26	P119K	P119A

TABLE 2-20. TRANSMISSION SOLENOID RESISTANCE READINGS

Temperature	Resistance
4° to 16°F (-20° to -10°C)	2.50-3.12 ohms
16° to 32°F (-10° to 0°C)	2.62-3.25 ohms
32° to 50°F (0° to 10°C)	2.74-3.38 ohms
50° to 68°F (10° to 20°C)	2.86-3.50 ohms
68° to 86°F (20° to 30°C)	2.98-3.62 ohms
86° to 104°F (30° to 40°C)	3.09-3.75 ohms
104° to 122°F (40° to 50°C)	3.21-3.88 ohms
122° to 140°F (50° to 60°C)	3.33-4.00 ohms

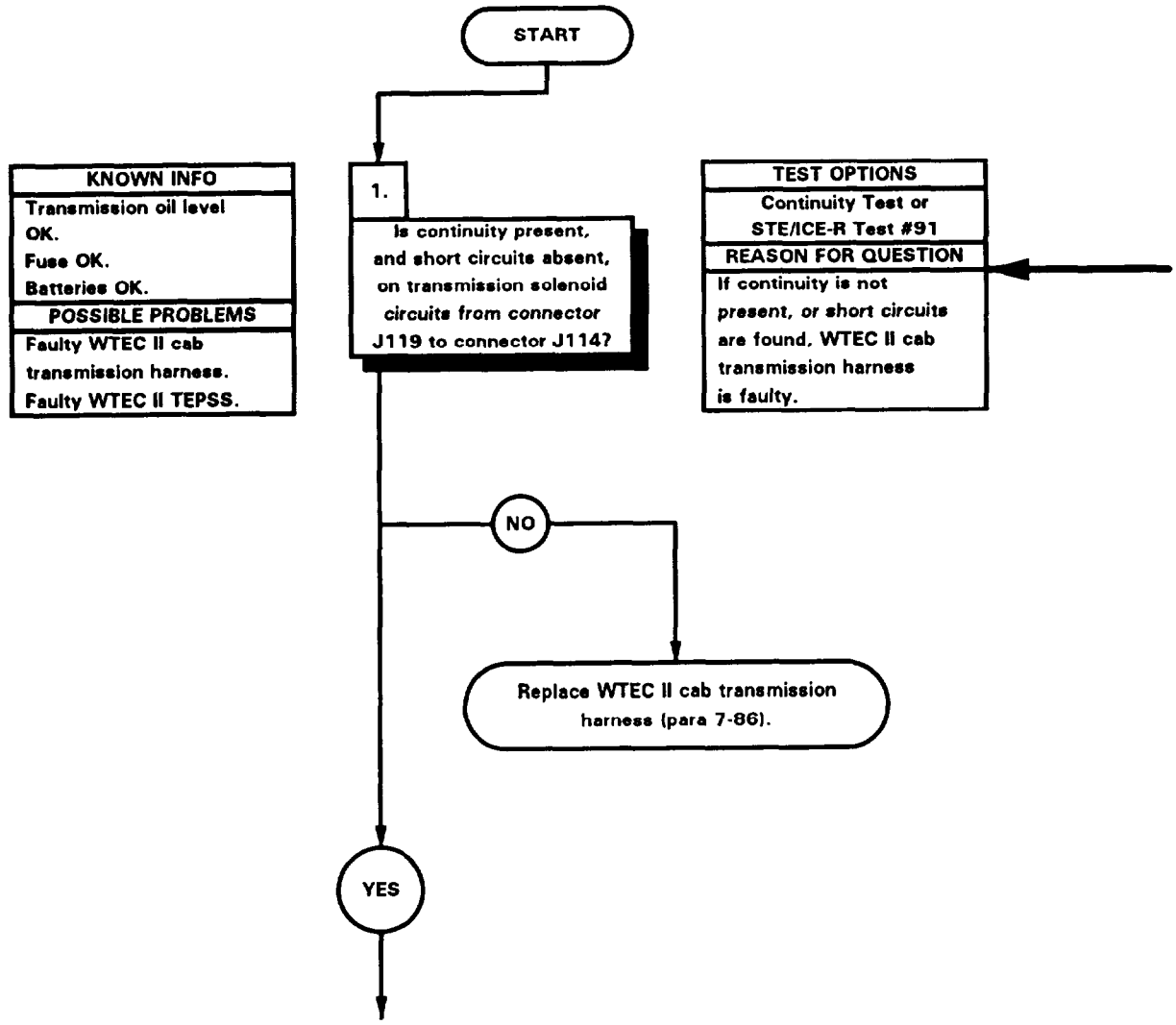
f8. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 43 AND ANY SUB CODE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

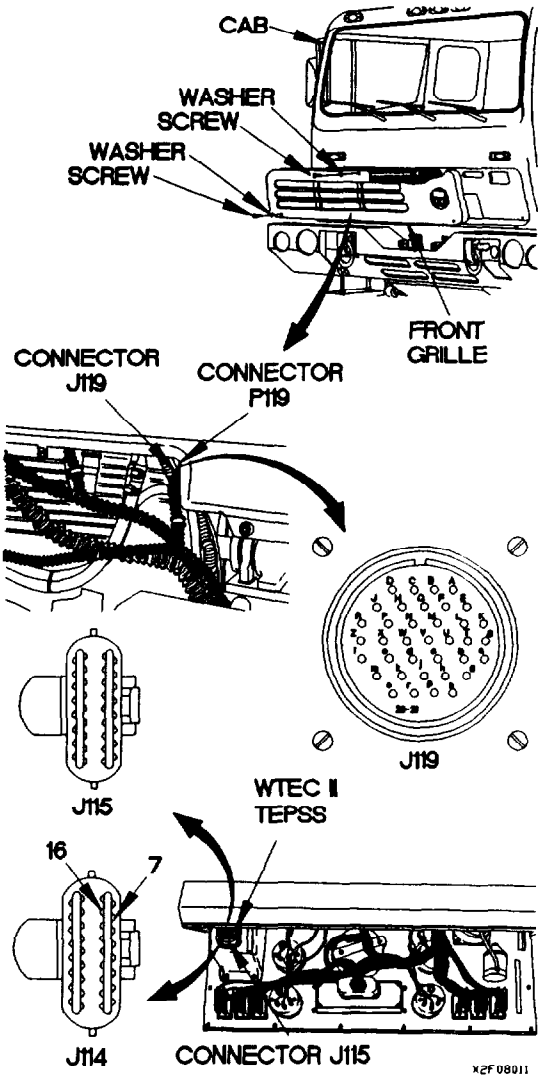
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)



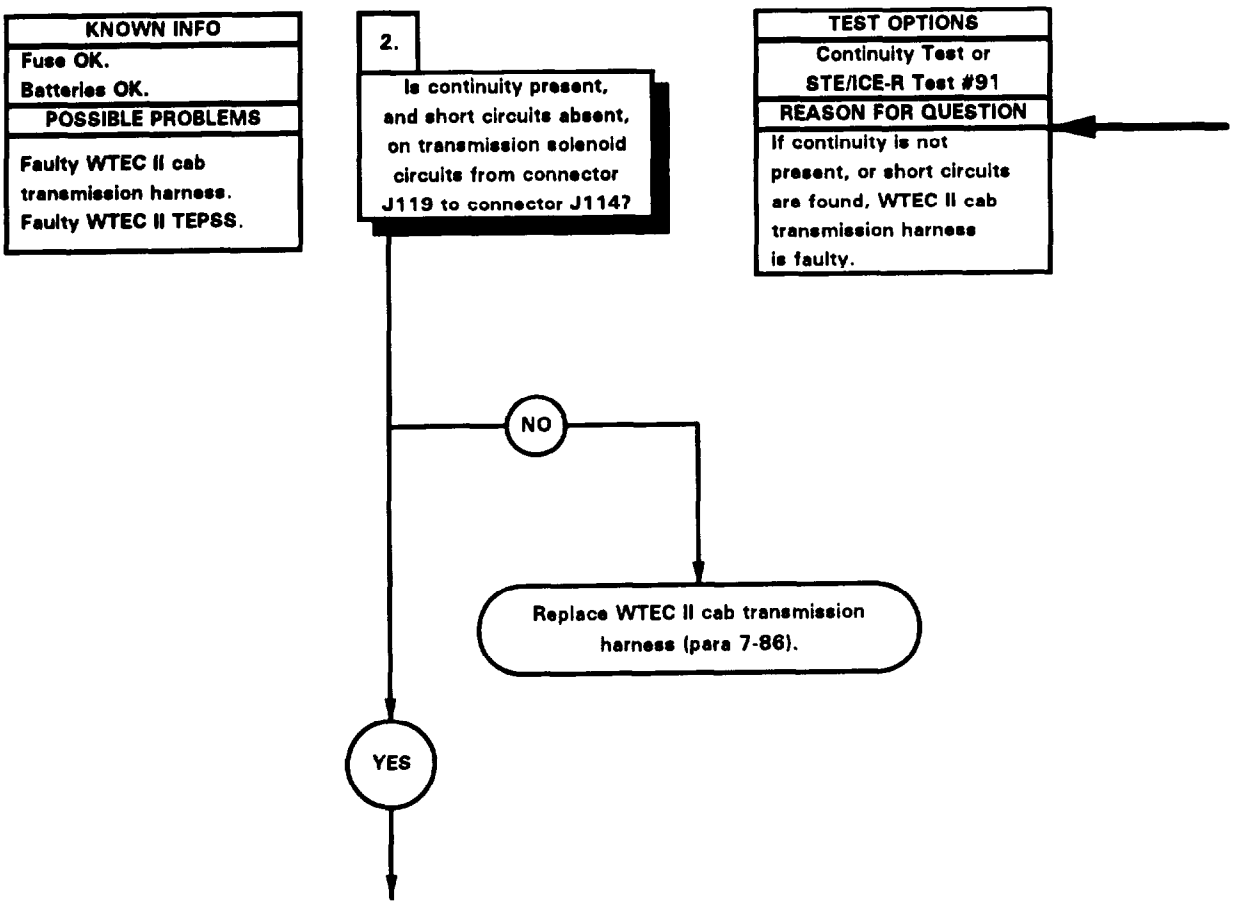
CONTINUITY TEST
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connectors J114 and J115 from WTEC II TEPSS.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to High side socket of connector J119. Refer to Table 2-21. Main Code 43 Sub Code 21 and 26 High Side Test Points.
(9) Connect negative (-) probe of multimeter to High side socket of connector J114 and note reading on multimeter. Refer to Table 2-21. Main Code 43 Sub Code 21 and 26 High Side Test Points.
(10) Connect negative (-) probe of multimeter to all other sockets in connector J114, one at a time, and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to all sockets in connector J115, one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity is not present in step 9, or continuity is present in step 10, 11, or 12, replace WTEC II cab transmission harness (para 7-86).

TABLE 2-21. MAIN CODE 43 SUB CODE 21 AND 26 HIGH SIDE TEST POINTS

SUB CODE	CONNECTOR J114	CONNECTOR J119
21	7	F
26	16	K



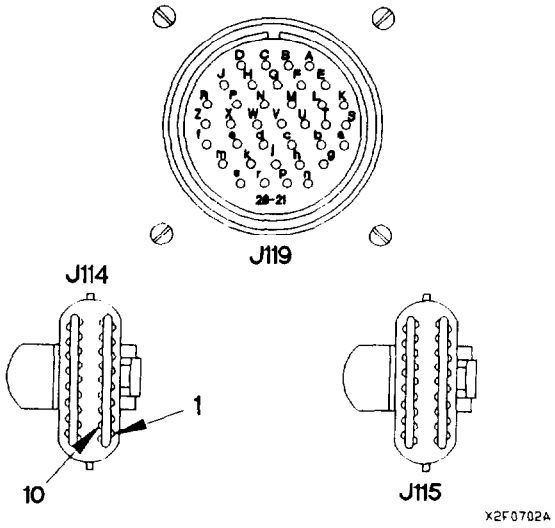
f8. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 43 AND ANY SUB CODE (CONT)



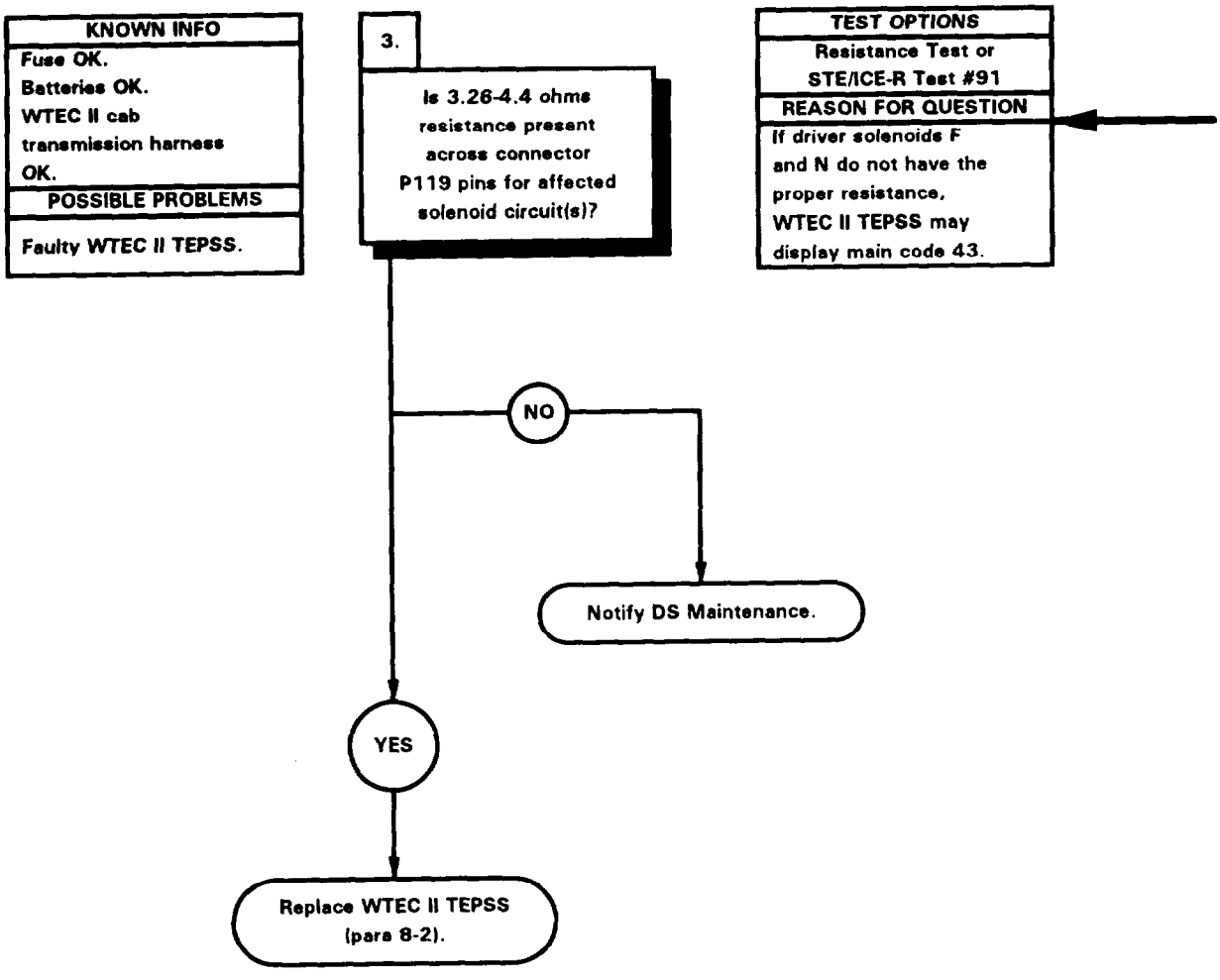
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J119. Refer to Table 2-22. Main Code 43 Sub Code 21 and 26 Low Side Test Points.
(3) Connect negative (-) probe of multimeter to connector J114 and note reading on multimeter. Refer to Table 2-22. Main Code 43 Sub Code 21 and 26 Low Side Test Points.
(4) Connect negative (-) probe of multimeter to all other sockets in connector J114, one at a time, and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to all sockets in connector J115, one at a time, and note reading on multimeter.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present in step 3, or continuity is present in step 4, 5, or 6, replace WTEC II cab transmission harness (para 7-86).

TABLE 2-22. MAIN CODE 43 SUB CODE 21 AND 26 LOW SIDE TEST POINTS

SUB CODE	CONNECTOR J114	CONNECTOR J119
21	10	H
26	1	A



f8. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 43 AND ANY SUB CODE (CONT)

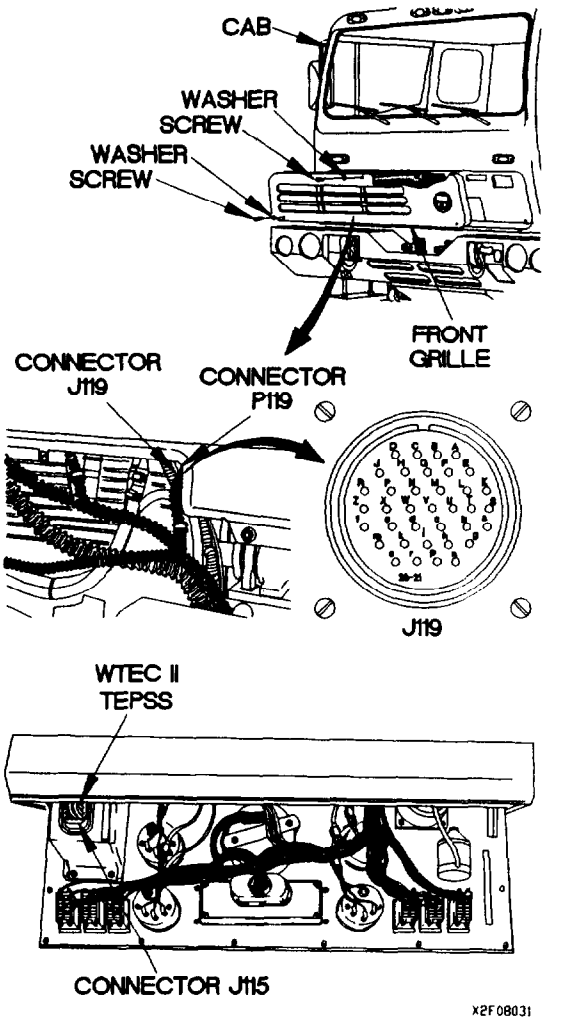


RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P119. Refer to Table 2-23. Transmission Solenoid F and G Resistance Test Points.
(4) Connect negative (-) probe of multimeter to connector P119 on note reading on multimeter. Refer to Table 2-23. Transmission Solenoid F and G Resistance Test Points.
(5) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If good resistance is not noted in step 4, or continuity is present in step 5 or step 6, replace WTEC II cab transmission harness (para 7-86).
(8) If good resistance is noted in step 4, and continuity is not present in step 5 or step 6, replace WTEC II TEPSS (para 8-2).
(9) Connect connector P119 to connector J119.
(10) Position front grille on cab with washer and screw.
(11) Position two washers and screws in front grille.
(12) Tighten screw to 48-60 lb-in. (5-7 N·m).
(13) Tighten two screws to 24 lb-in. (3 N·m).
(14) Connect connectors J114 and J115 to WTEC II TEPSS.
(15) Install instrument panel assembly (para 7-15).
(16) Clear diagnostic codes (para 8-4).

TABLE 2-23. TRANSMISSION SOLENOID F AND G RESISTANCE TEST POINTS

SUB CODE	AFFECTED SOLENOID	CONNECTOR P119 HIGH	CONNECTOR P119 LOW
21	F	F	H
26	N	K	A



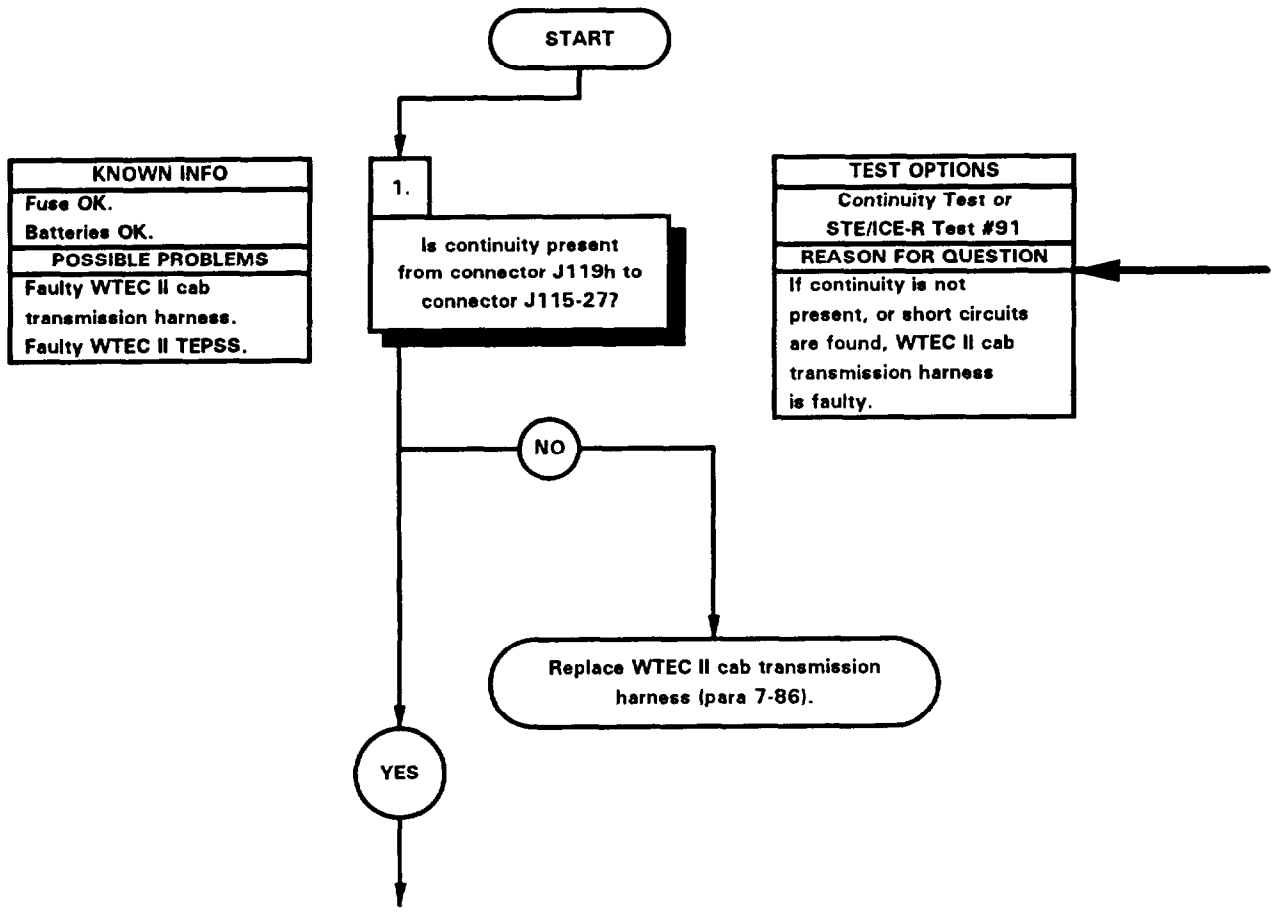
19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE

INITIAL SETUP

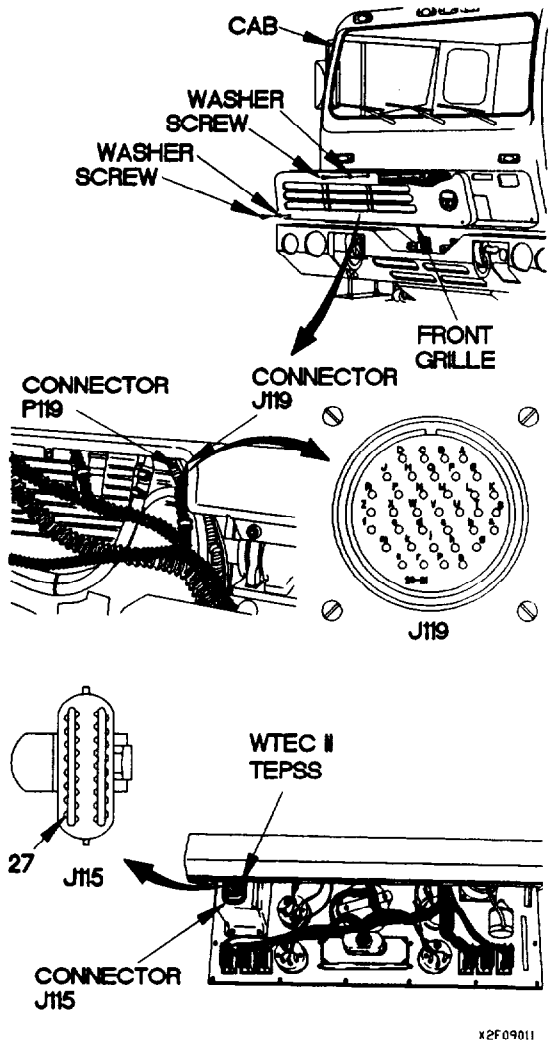
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

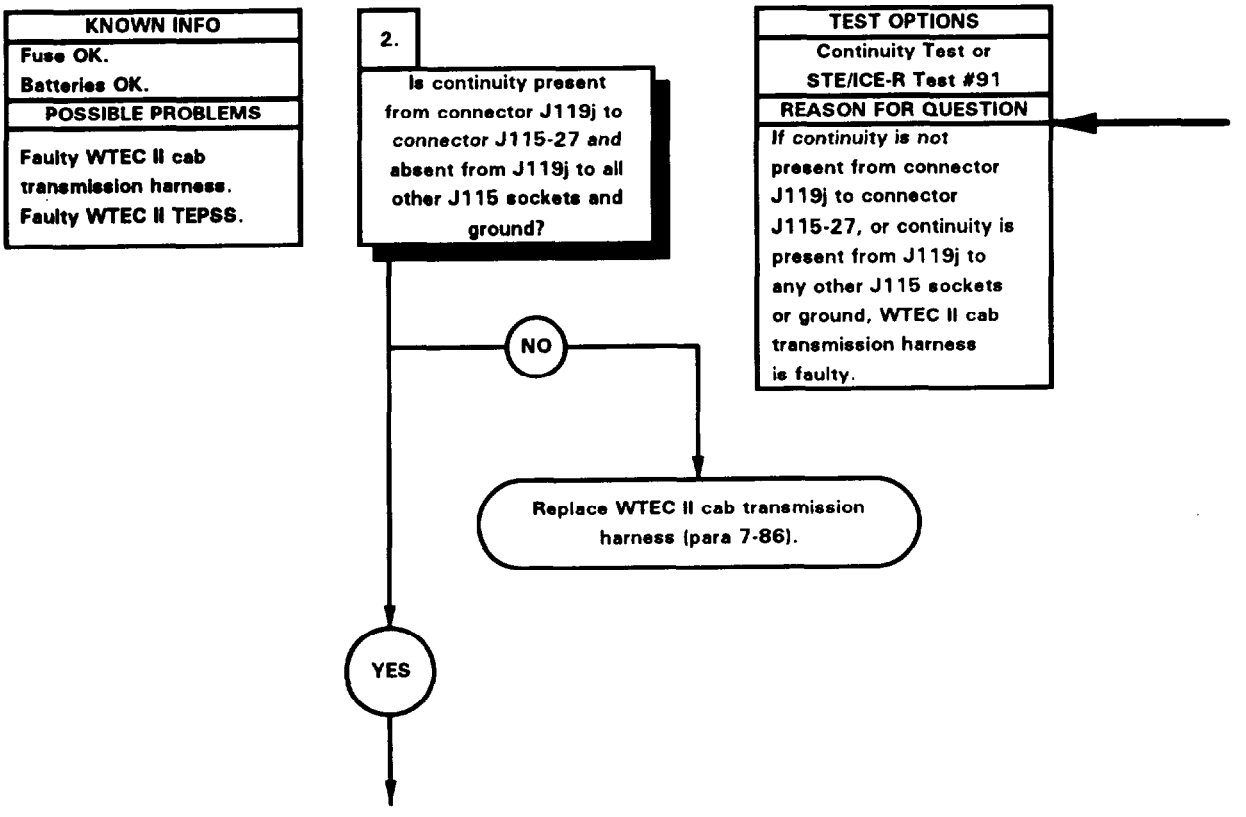
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)
STE/ICE-R (Item 39, Appendix C)



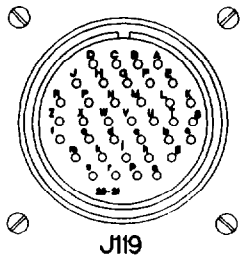
CONTINUITY TEST
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille on cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector J119h.
(9) Connect negative (-) probe of multimeter to connector J115-27 and note reading on multimeter.
(10) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(12) If continuity is not present in step 9, or continuity is present in step 10 or step 11, replace WTEC II cab transmission harness (para 7-86).

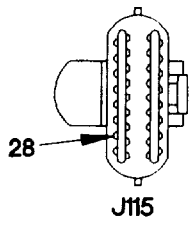


f9. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)



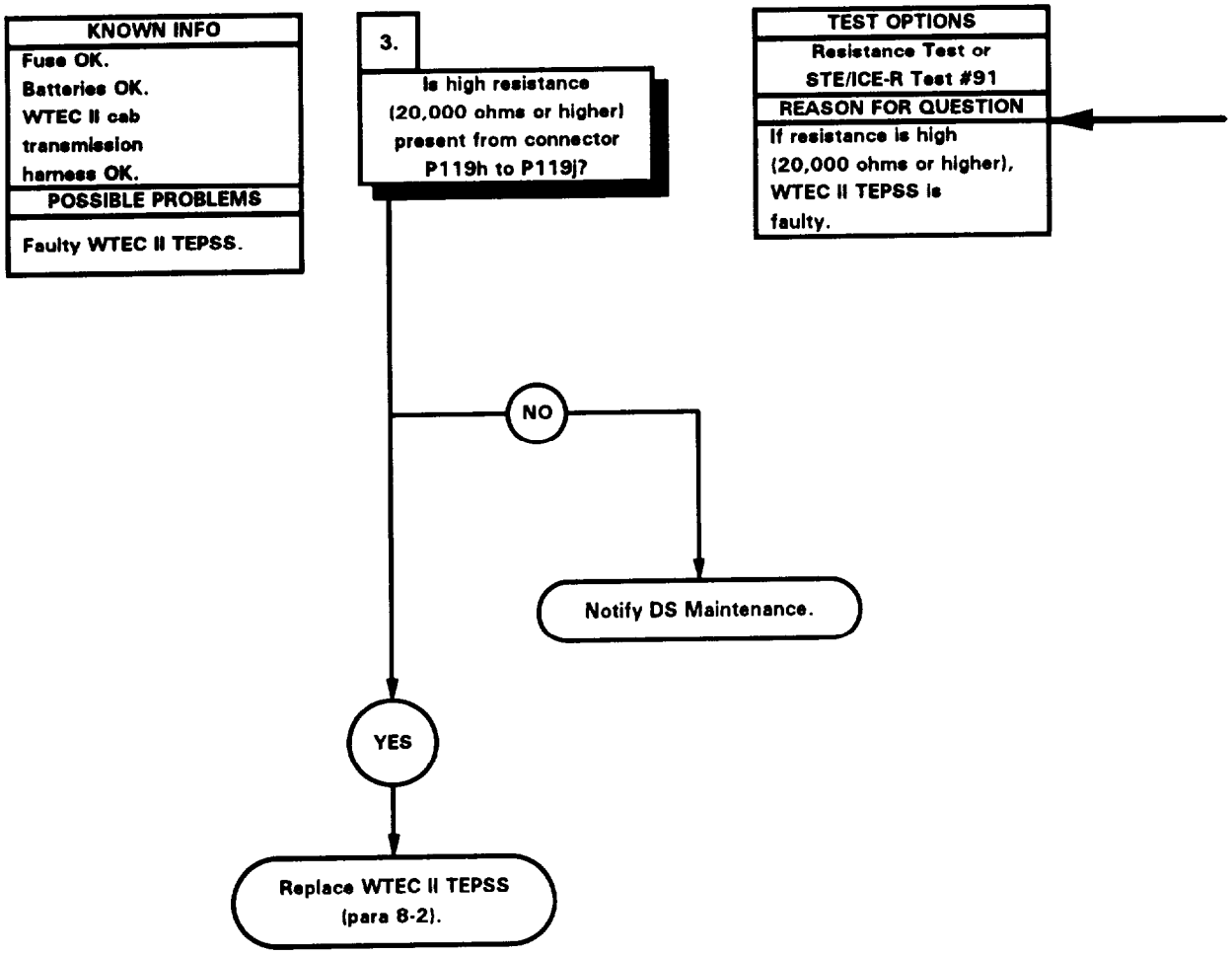
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J119j.
(3) Connect negative (-) probe of multimeter to connector J115-28 and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present in step 3, or continuity is present in step 4 or step 5, replace WTEC II cab transmission harness (para 7-66).





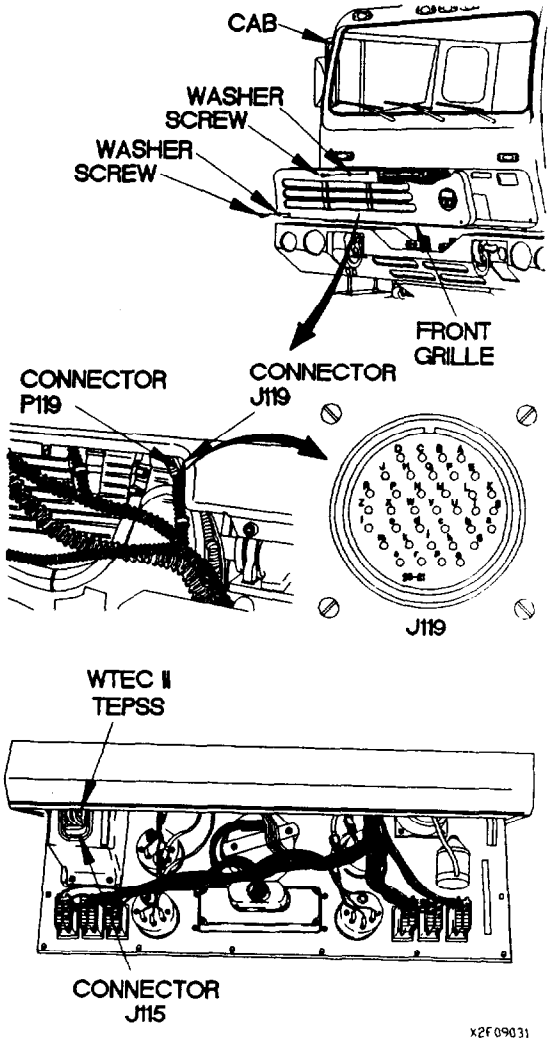
X2F0802A

f9. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)



RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) prove of multimeter to connector P119h.
(3) Connect negative (-) probe of multimeter to connector P119j and note reading on multimeter.
(4) If resistance is high (20,000 ohms or higher), replace WTEC II TEPSS (para 8-2).
(5) If resistance is low (less than 20,000 ohms), notify DS Maintenance.
(6) Connect connector J115 to WTEC II TEPSS.
(7) Install instrument panel assembly (para 7-15).
(8) Connect connector P119 to connector J119.
(9) Position front grille on cab with washer and screw.
(10) Position two washers and screws in front grille.
(11) Tighten screw to 48-60 lb-in. (5-7 N·m).
(12) Tighten two screws to 24 lb-in. (3 N·m).
(13) Clear diagnostic codes (para 8-4).



110. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 57 AND ANY SUB CODE

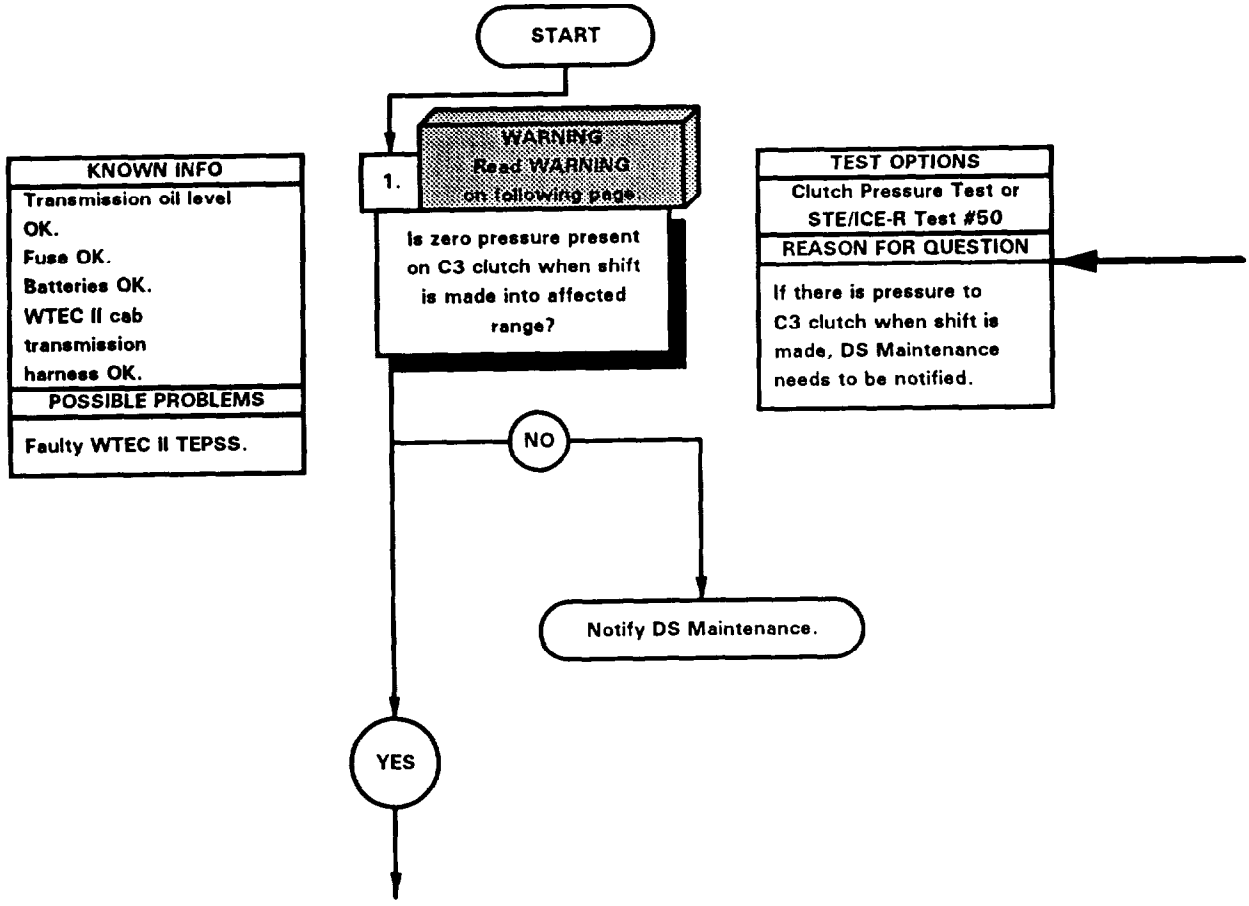
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Reference
TM 9-491-571-12&P

Materials/Parts
Packing, Preformed (Item 199, Appendix G)

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)



CLUTCH PRESSURE TEST

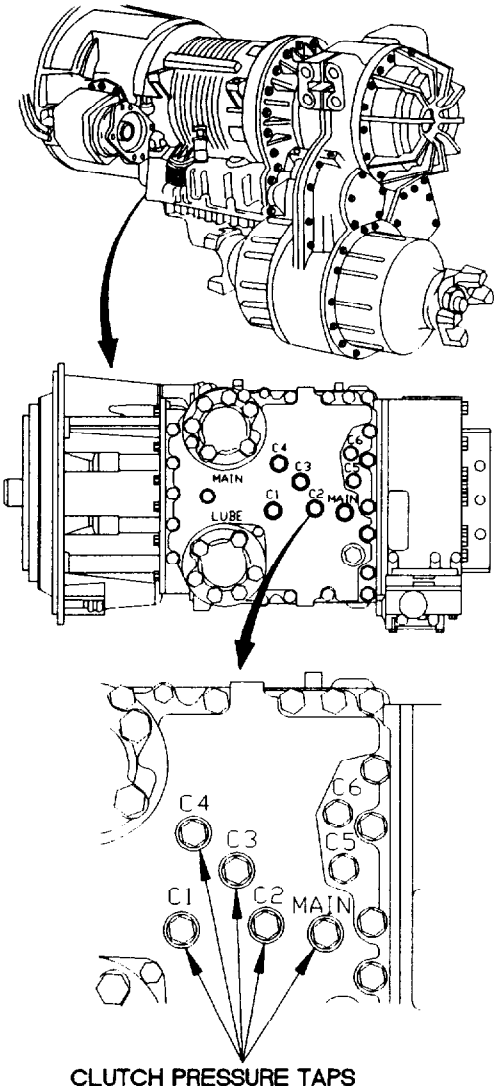
WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under C3 pressure tap plug.
(3) Remove C3 pressure tap plug and preformed packing from control valve module. Discard preformed packing.
(4) Connect adapter and snubber to C3 pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R.
(8) If pressure does not drop to zero in selected range indicated by code values, notify DS Maintenance.
(9) Shut down engine (TM 9-2320-365-10).
(10) Remove adapter and snubber from C3 pressure tap.
(11) Position preformed packing and C3 pressure tap plug in control valve module.
(12) Tighten C3 pressure tap plug to 84-120 lb-in. (9-14 N·m).
(13) Remove drain pan under C3 pressure tap.
(14) Install transmission front and rear output propeller shafts (para 9-2).

TABLE 2-24. SUB CODE RANGE

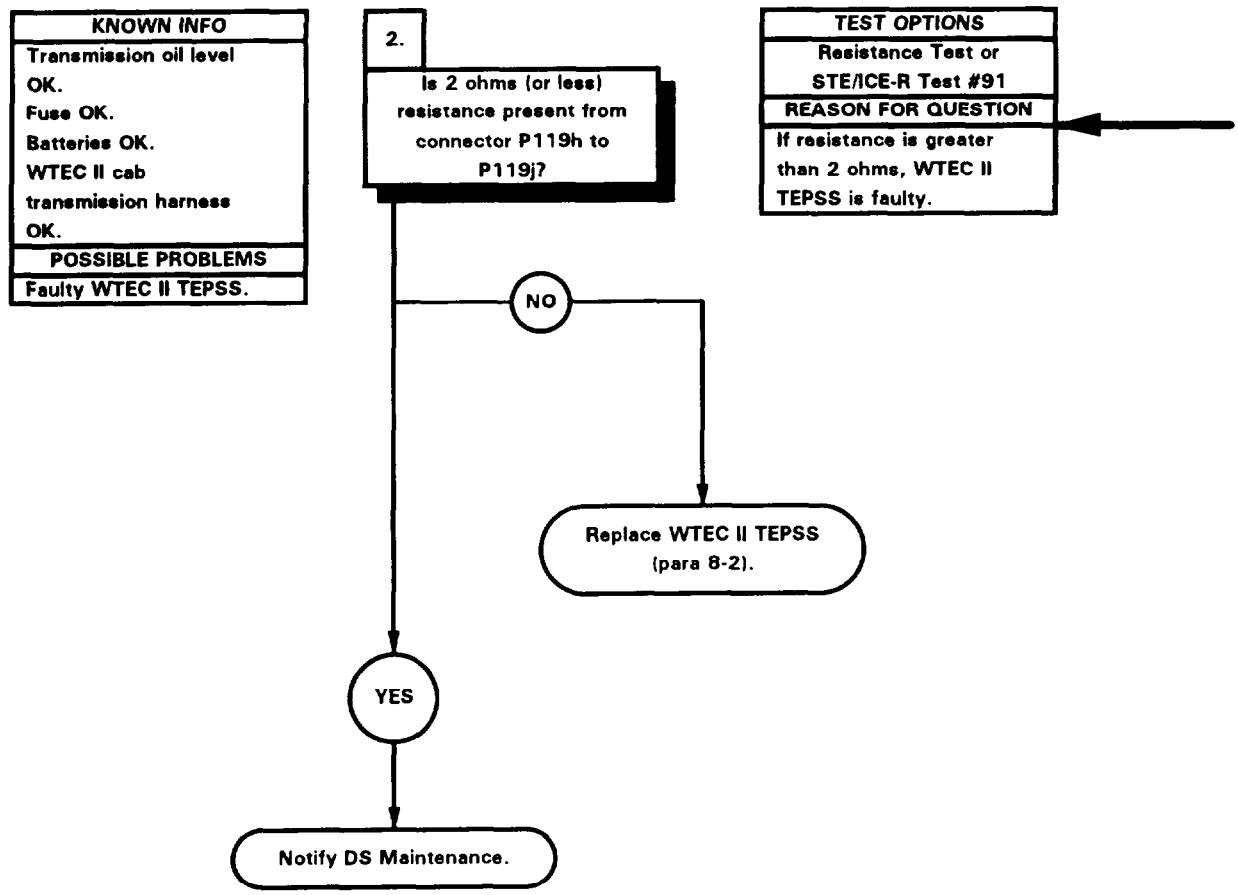
SUB CODE	SUB CODE MEANING
11	1st Range VER
22	2nd Range VER
44	4th Range VER
66	6th Range VER
88	N1 Range VER
99	N2/N4 Range VER



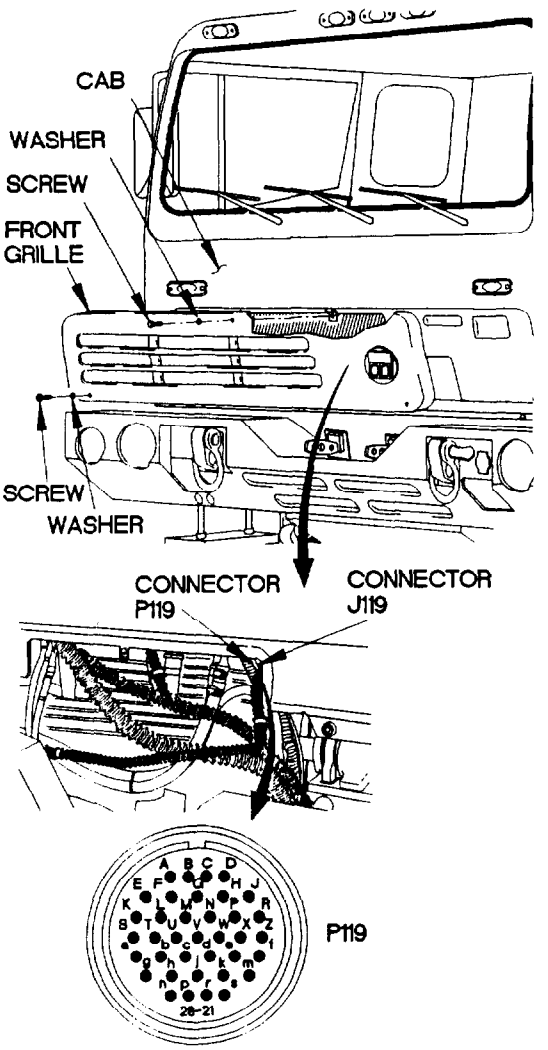
CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2F0901-

f10. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 57 AND ANY SUB CODE (CONT)



RESISTANCE 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 P119 from connector J119.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P119h.
(7) Connect negative (-) probe of multimeter to connector P119j and note reading on multimeter.
(8) If 2 ohms (or less) resistance is present, notify DS Maintenance.
(9) If resistance is greater than 2 ohms, replace WTEC II TEPSS (para 8-2).
(10) Connect connector P119 to connector J119.
(11) Position front grille on cab with washer and screw.
(12) Position two washers and screws in front grille.
(13) Tighten screw to 48-60 lb-in. (5-7 N·m).
(14) Tighten two screws to 24 lb-in. (3 N·m).
(15) Clear diagnostic codes (para 8-4).



f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING

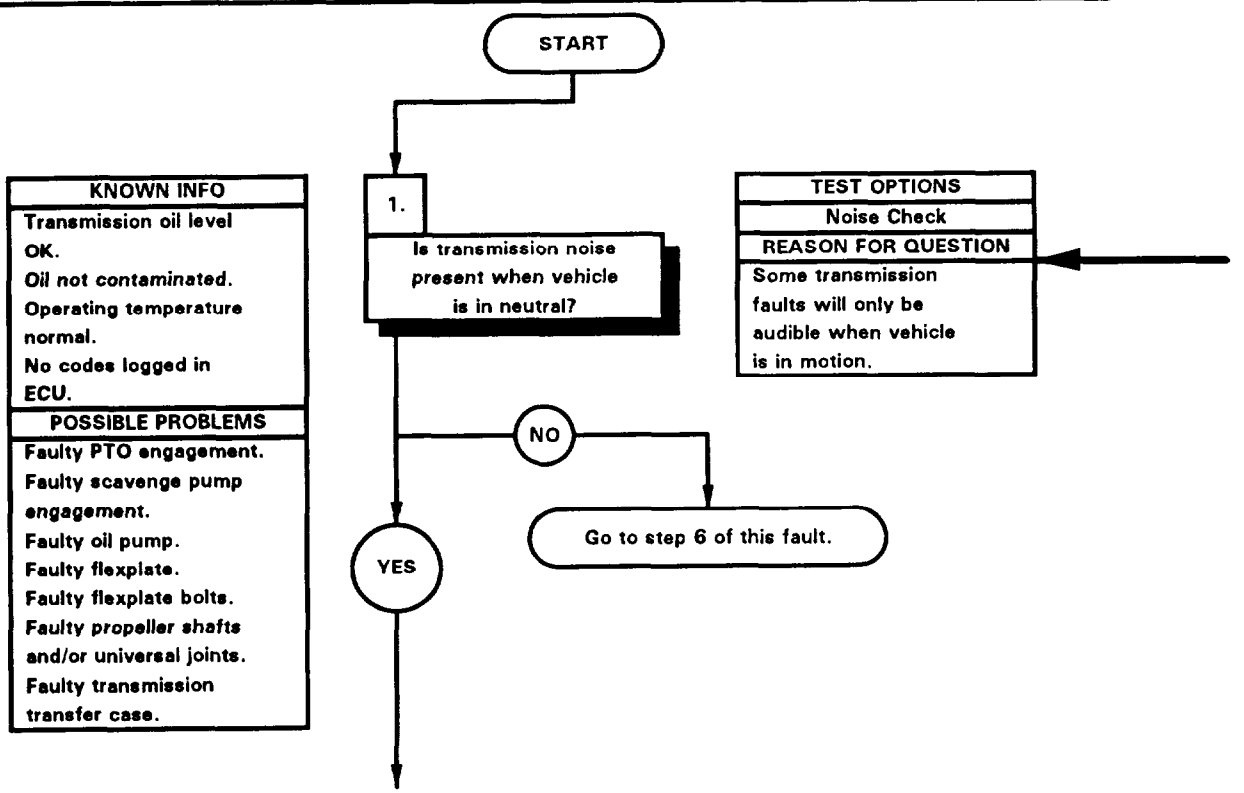
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Reference
TM 9-4910-571-12&P

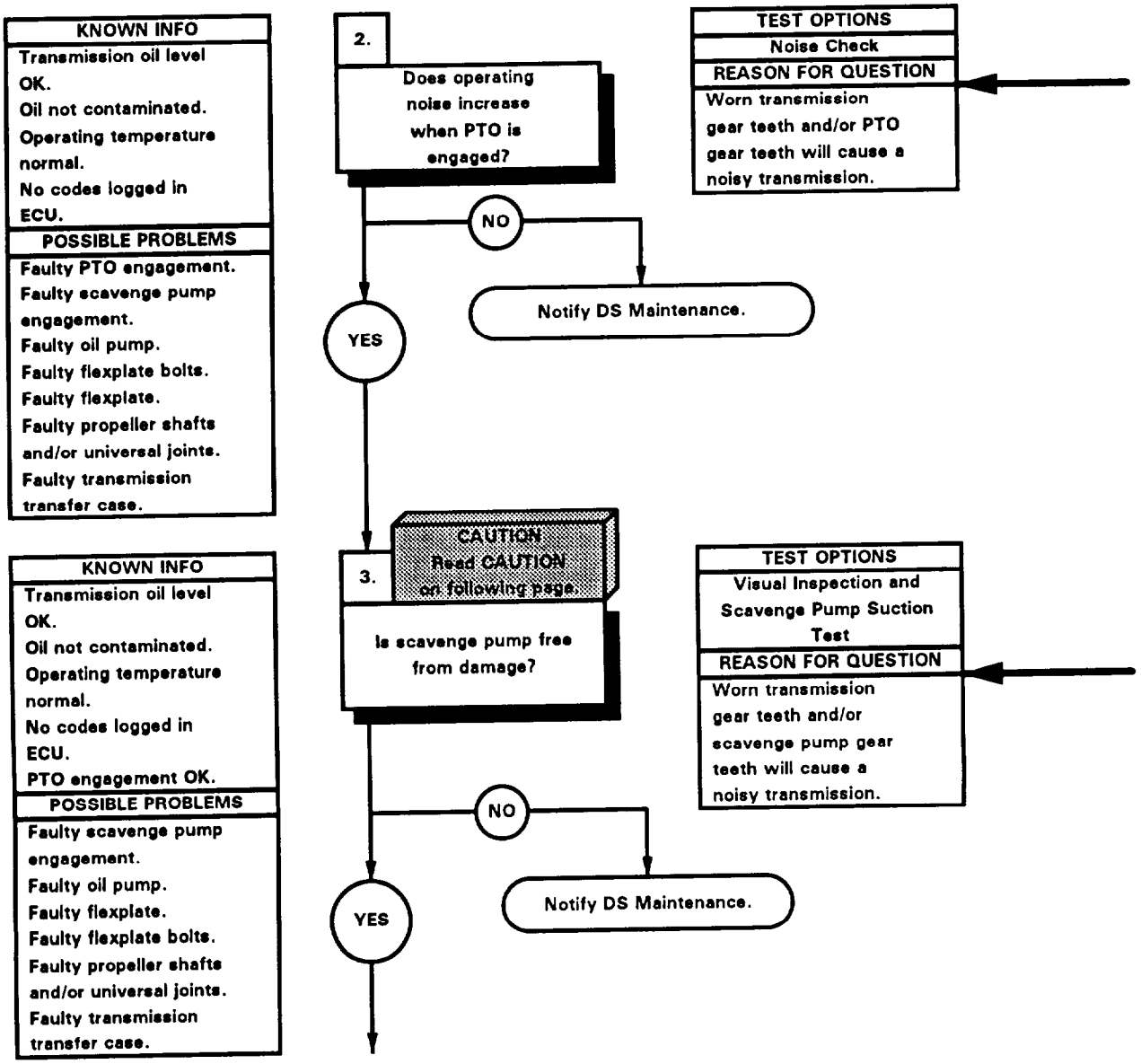
Materials/Parts
Packing, Preformed (Item 199, Appendix G)

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Wrench, Torque, 0-175 lb-ft (Item 57, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)



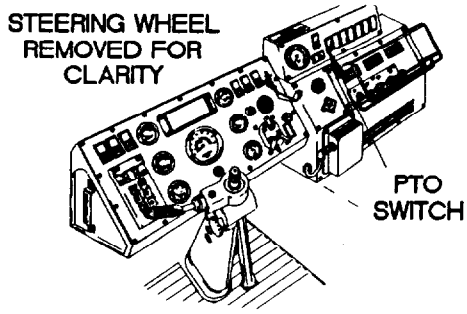
NOISE CHECK
(1) Check if noise is heard when transmission is in neutral.
(2) If noise occurs when vehicle is in motion, probable causes are faulty propeller drive shafts or faulty transfer case bearings.

f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)



NOISE CHECK

(1) Engage PTO (TM 9-2320-365-10).
(2) Listen for unusual noise or increase in noise from PTO.
(3) If transmission is noisy when PTO is engaged, transmission gear teeth are faulty and/or PTO gear teeth are faulty. Notify DS Maintenance.
(4) Disengage PTO (TM 9-2320-365-10).
(5) Shut down engine (TM 9-2320-365-10).



X2F1001A

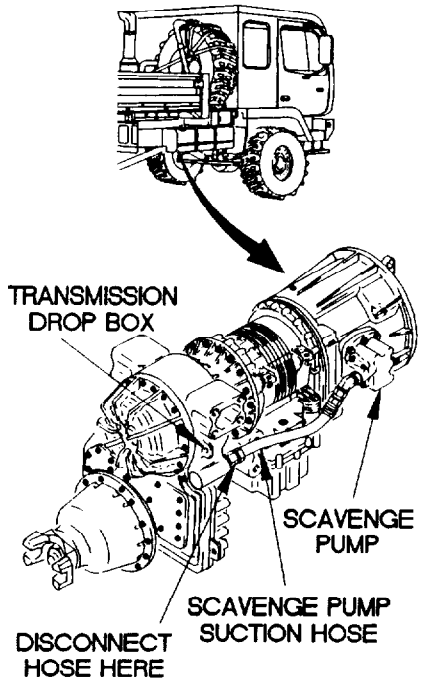
(1) Place drain pan under transfer case.
(2) Disconnect scavenge pump suction hose at transfer case.
(3) Start engine (TM 9-2320-365-10).
(4) If oil drips or runs from fitting on transfer case, scavenge pump is not picking up oil from transmission transfer case causing it to overflow.
(5) Perform scavenge pump suction test.
(6) Shut down engine (TM-2320-365-10).

SCAVENGE PUMP SUCTION TEST

CAUTION

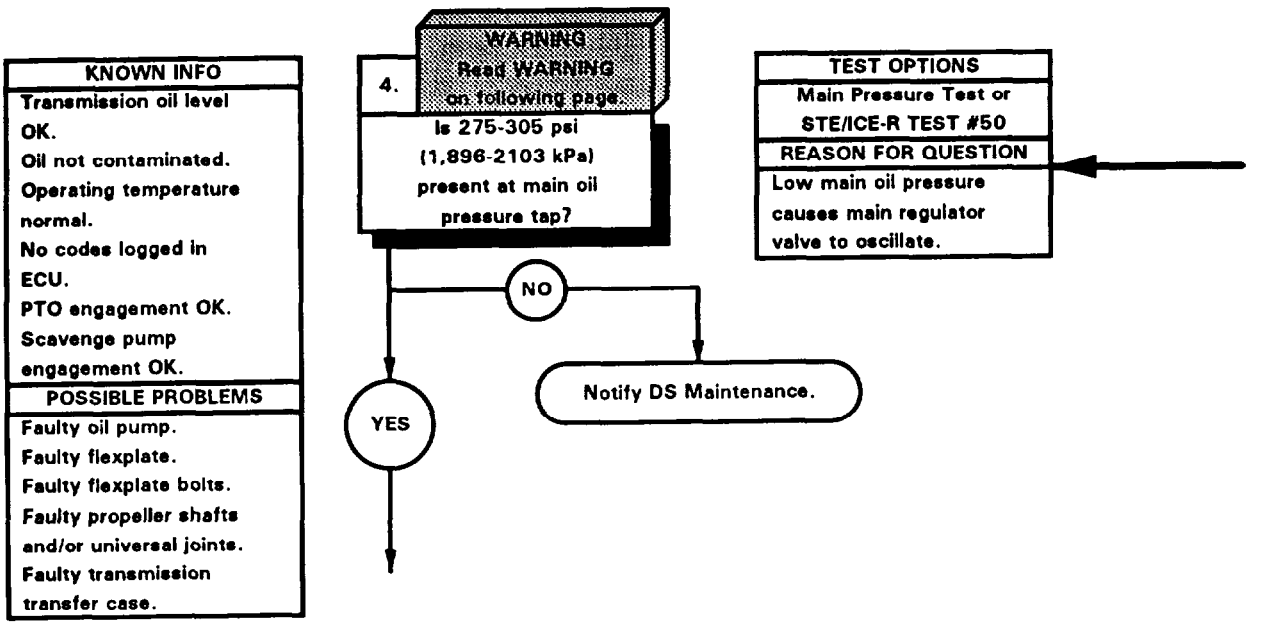
Be sure to shut down engine immediately after test has been completed. Failure to comply may result in damage to transmission.

(1) Place end of hose in cup containing approximately one pint of oil.
(2) Start engine (TM 9-2320-365-10).
(3) Select neutral at pushbutton shift selector (TM 9-2320-365-10) and check if oil is immediately sucked into hose by scavenge pump.
(4) Shut down engine (TM 9-2320-365-10).
(5) If oil is not immediately removed from cup by scavenge pump, scavenge pump is faulty due to worn gears. Notify DS Maintenance.
(6) Connect scavenge pump section hose to transfer case.
(7) Remove drain pan under transfer case.



X2F1002A

f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)

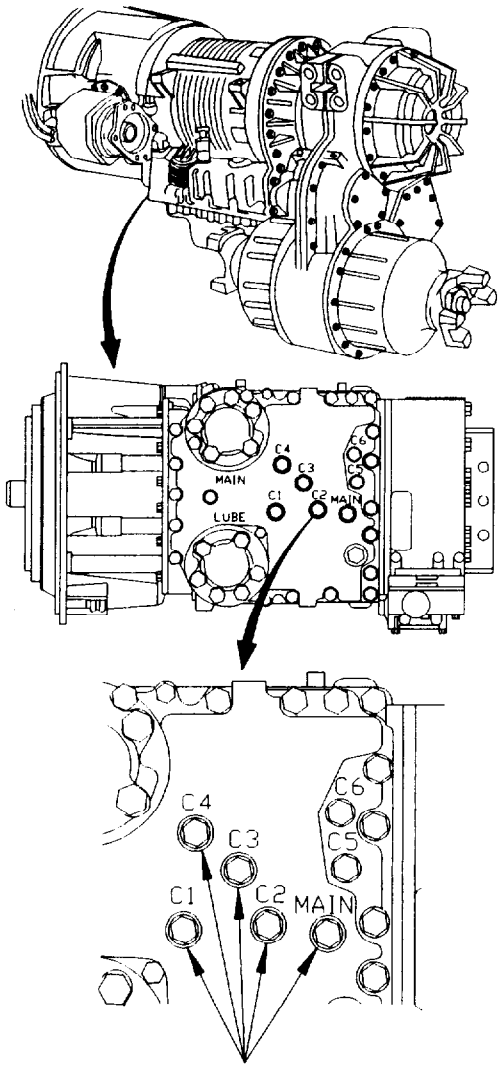


MAIN OIL PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

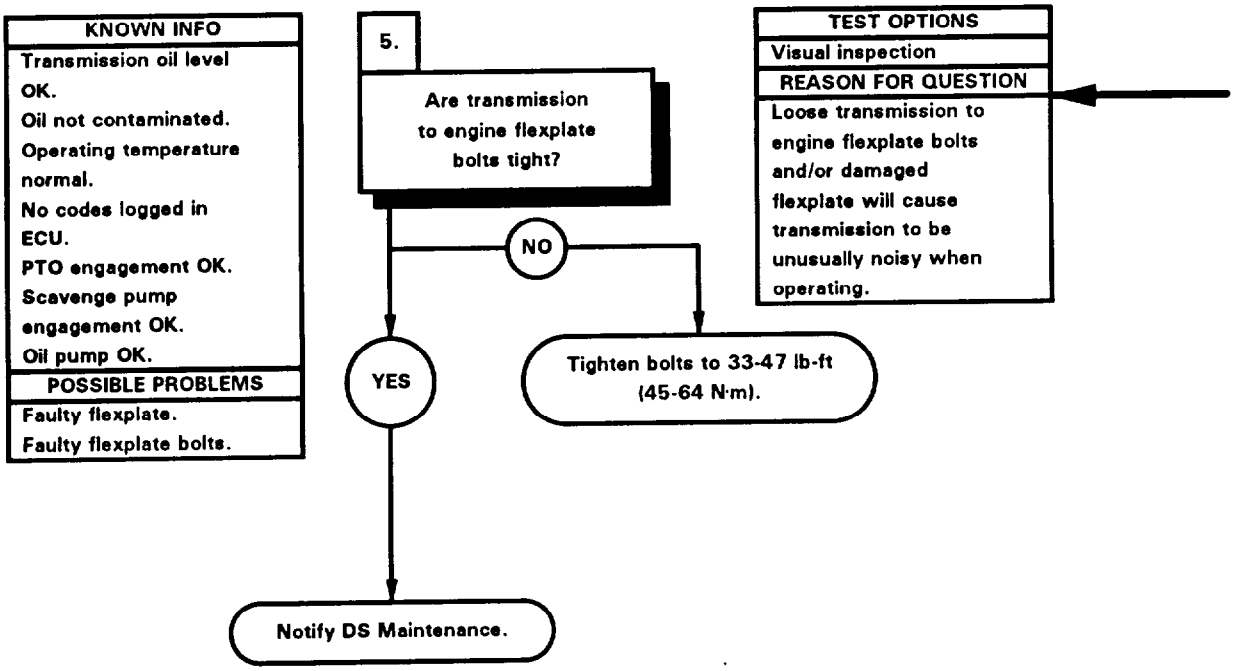
(1) Position drain pan under pressure tap.
(2) Remove main pressure tap plug and preformed packing from control valve module. Discard preformed packing.
(3) Connect STE/ICE-R adapter and snubber to main pressure tap.
(4) Perform STE/ICE-R Test #50 (TM 9-4910-571-12&P).
(5) Start engine (TM 9-2320-365-10) and run at idle.
(6) With parking brake applied, position WTEC II TEPSS to R position then to N position (TM 9-2320-365-10) while assistant checks reading on STE/ICE-R.
(7) Shut down engine (TM 9-2320-365-10).
(8) If main oil pressure is low, oil pump is faulty. Notify DS Maintenance.
(9) If oil pressure is good, moving components in transmission are faulty. Notify DS Maintenance.
(10) Remove STE/ICE-R adapter and snubber.
(11) Position preformed packing and main pressure tap plug in control valve module.
(12) Tighten main pressure tap plug to 84-120 lb-in. (9-14 N·m).
(13) Remove drain pan under pressure tap.



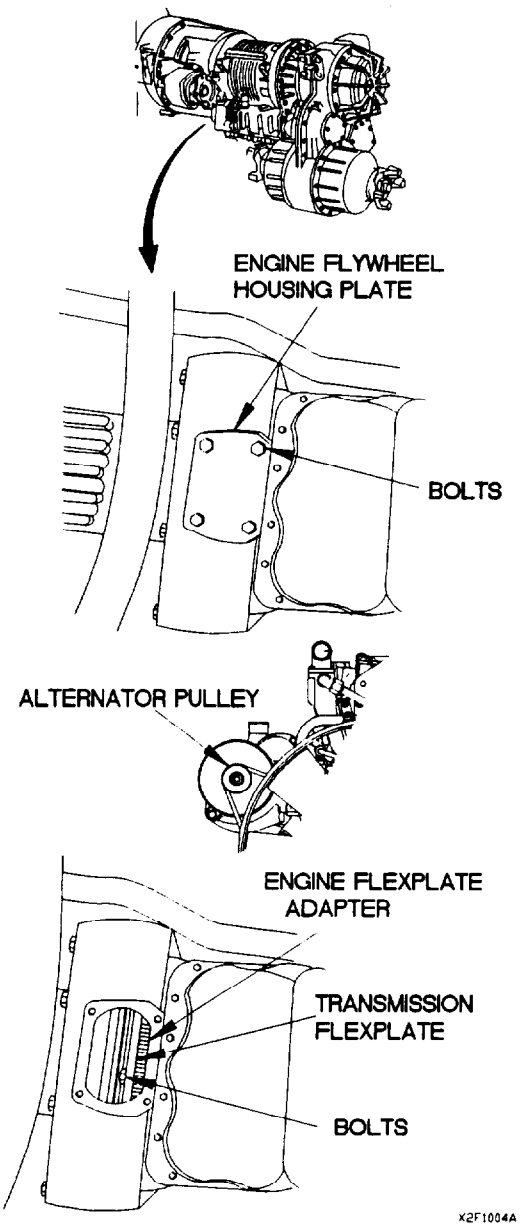
CLUTCH PRESSURE TAPS
C1-C6 AND MAIN

X2F1003A

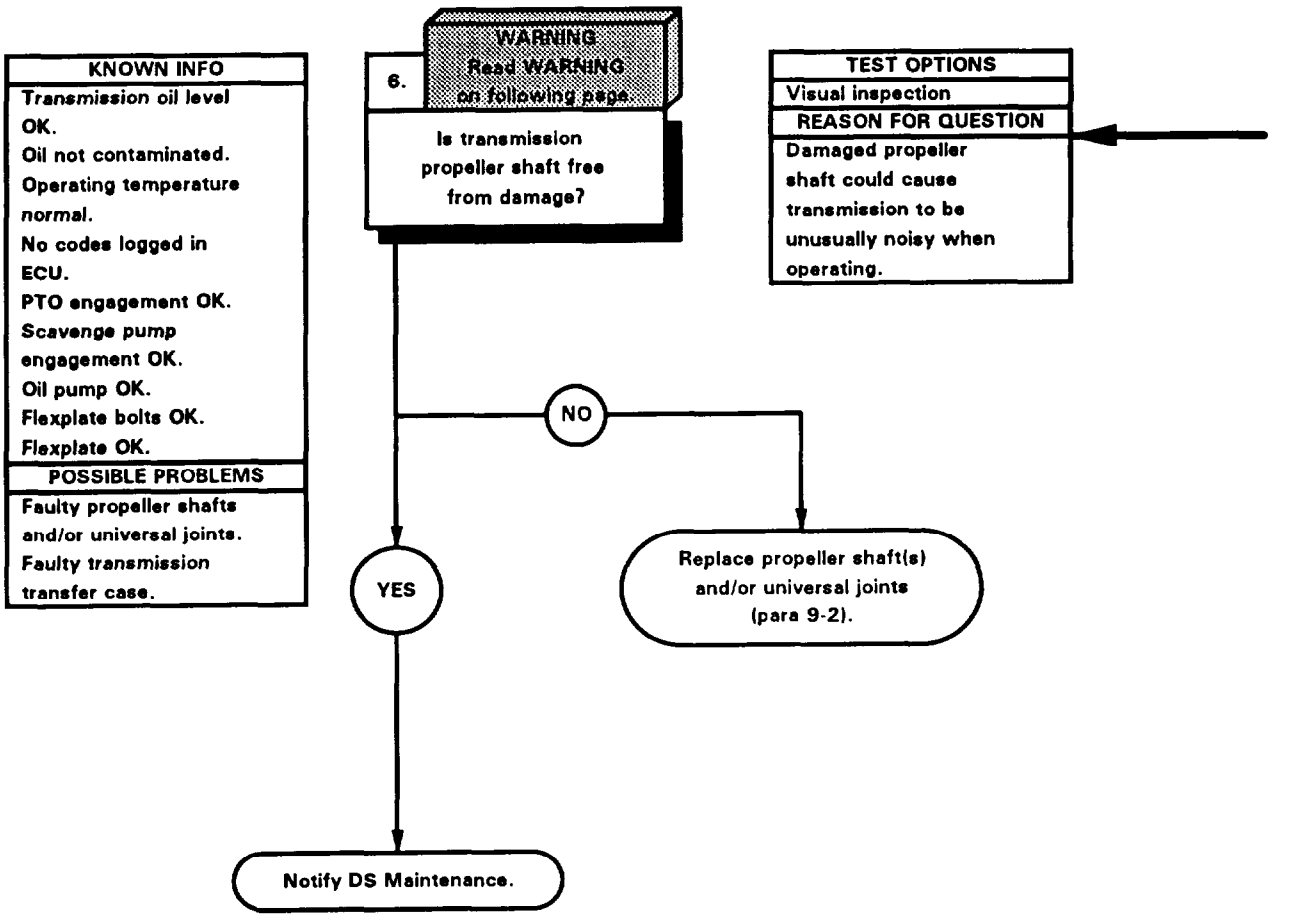
f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)



(1) Remove four bolts from engine flywheel housing plate.
(2) Turn engine alternator pulley in clockwise arcs to reposition transmission flexplate for transmission to engine flexplate bolt inspection.
(3) Inspect bolts in flexplate for looseness.
(4) Inspect flexplate for play or damage.
(5) If bolts are loose, transmission will make noise.
(6) Tighten bolts in flexplate.
(7) If flexplate has play or visible signs of damage, flexplate is faulty.



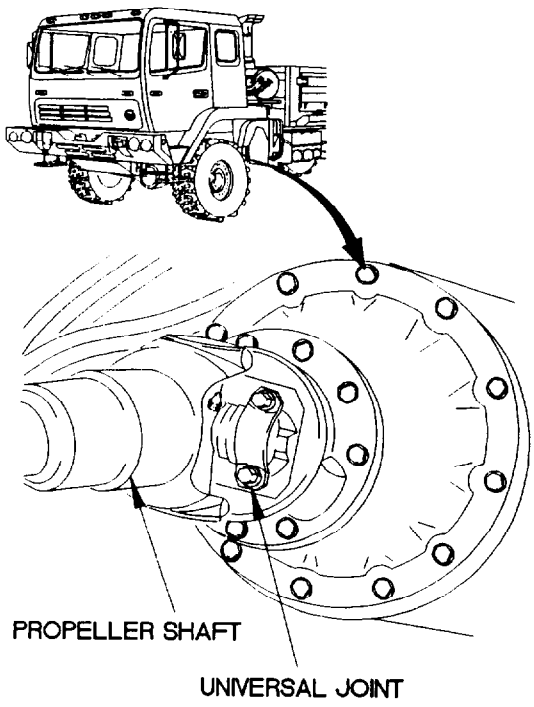
f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)



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) Inspect propeller shafts for loose universal joints, bent tubing, or missing balance weights.
(2) If propeller shafts and universal joints are undamaged, bearings in transmission transfer case are faulty. Notify DS Maintenance.



f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE

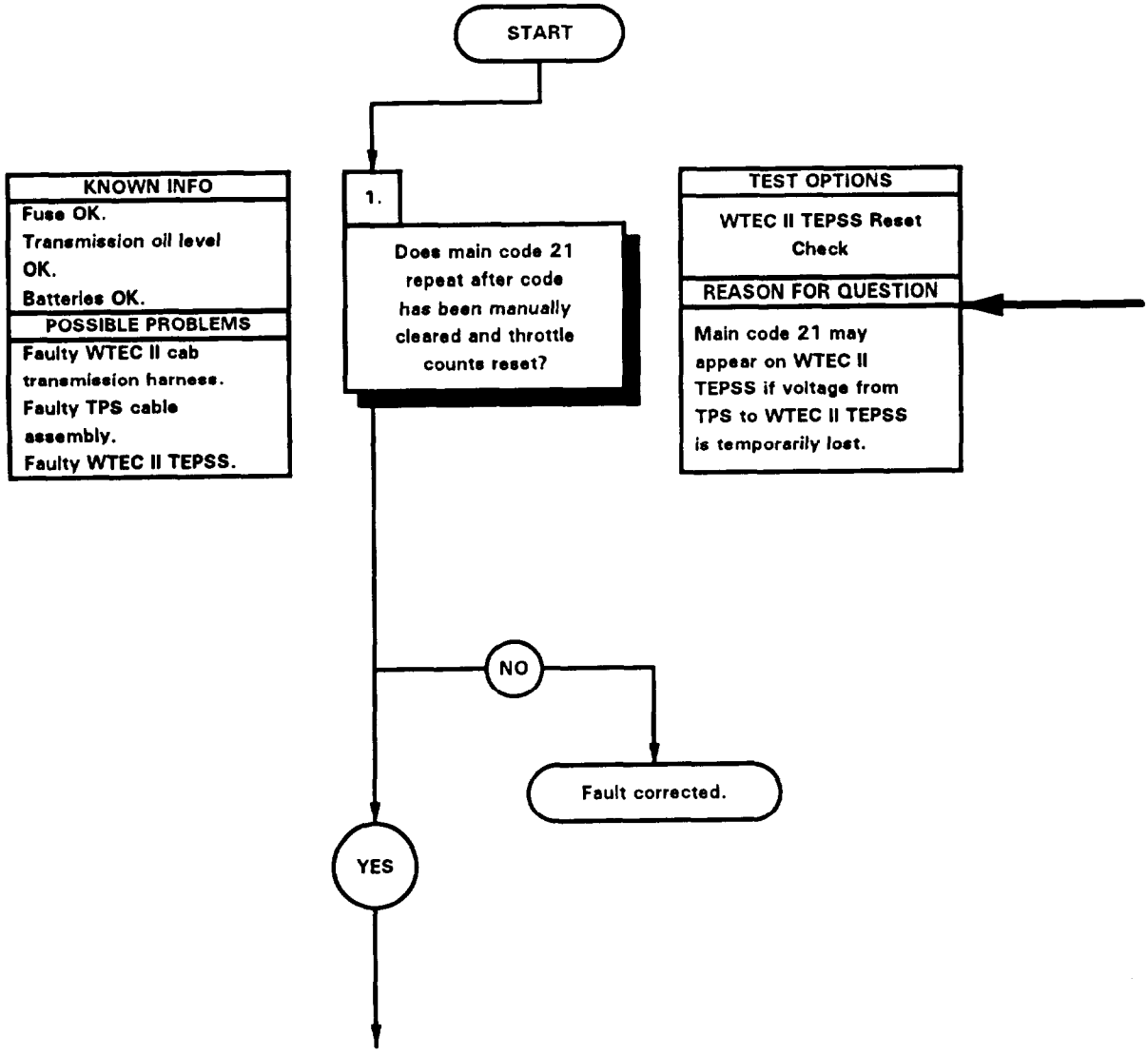
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References
TM 9-4910-571-12&P

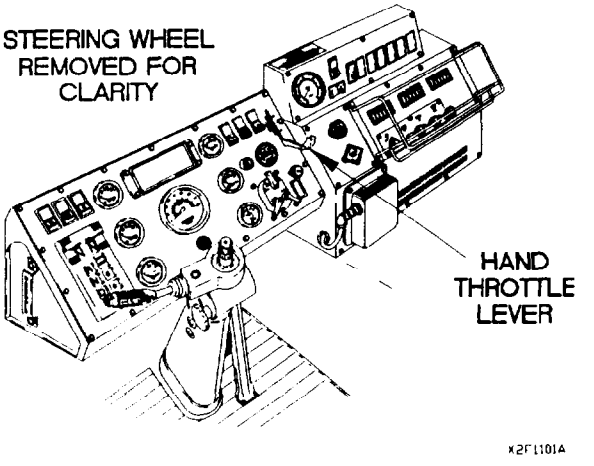


NOTE

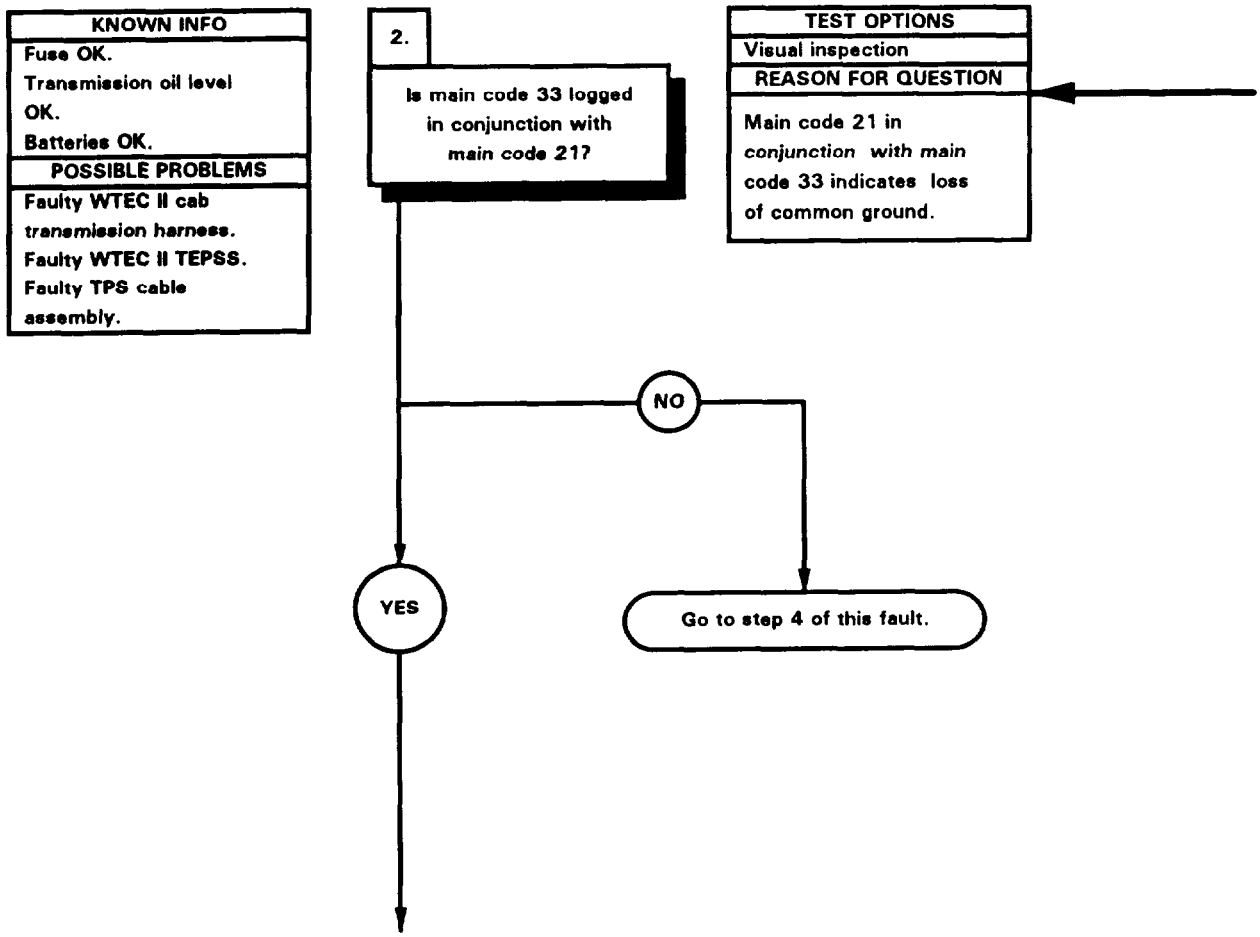
Main display code 21 needs to be cleared manually from WTEC II TEPSS after a maintenance task has been performed and before vehicle is returned to service (para 8-4).

WTEC II TEPSS RESET CHECK

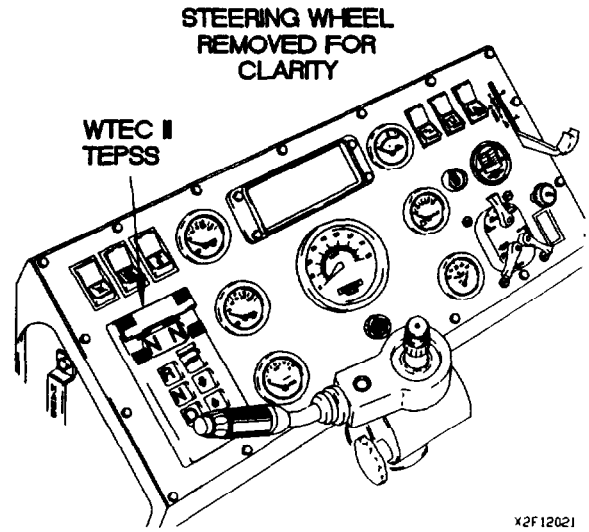
(1) Cycle master power switch to on (TM 9-2320-365-10), then to off five times to clear existing throttle count settings.
(2) Position master power switch to on (TM 9-2320-365-10).
(3) Depress accelerator pedal from idle position to full throttle position (TM 9-2320-365-10) to set new 0% and 100% throttle count values in WTEC II TEPSS.
(4) Clear diagnostic code from WTEC II TEPSS (para 8-4).
(5) If main code 21 does not reappear, electrical communication between WTEC II TEPSS and TPS may be faulty.
(6) If main code 21 reappears, TPS may be faulty.
(7) Position master power switch to off (TM 9-2320-365-10).



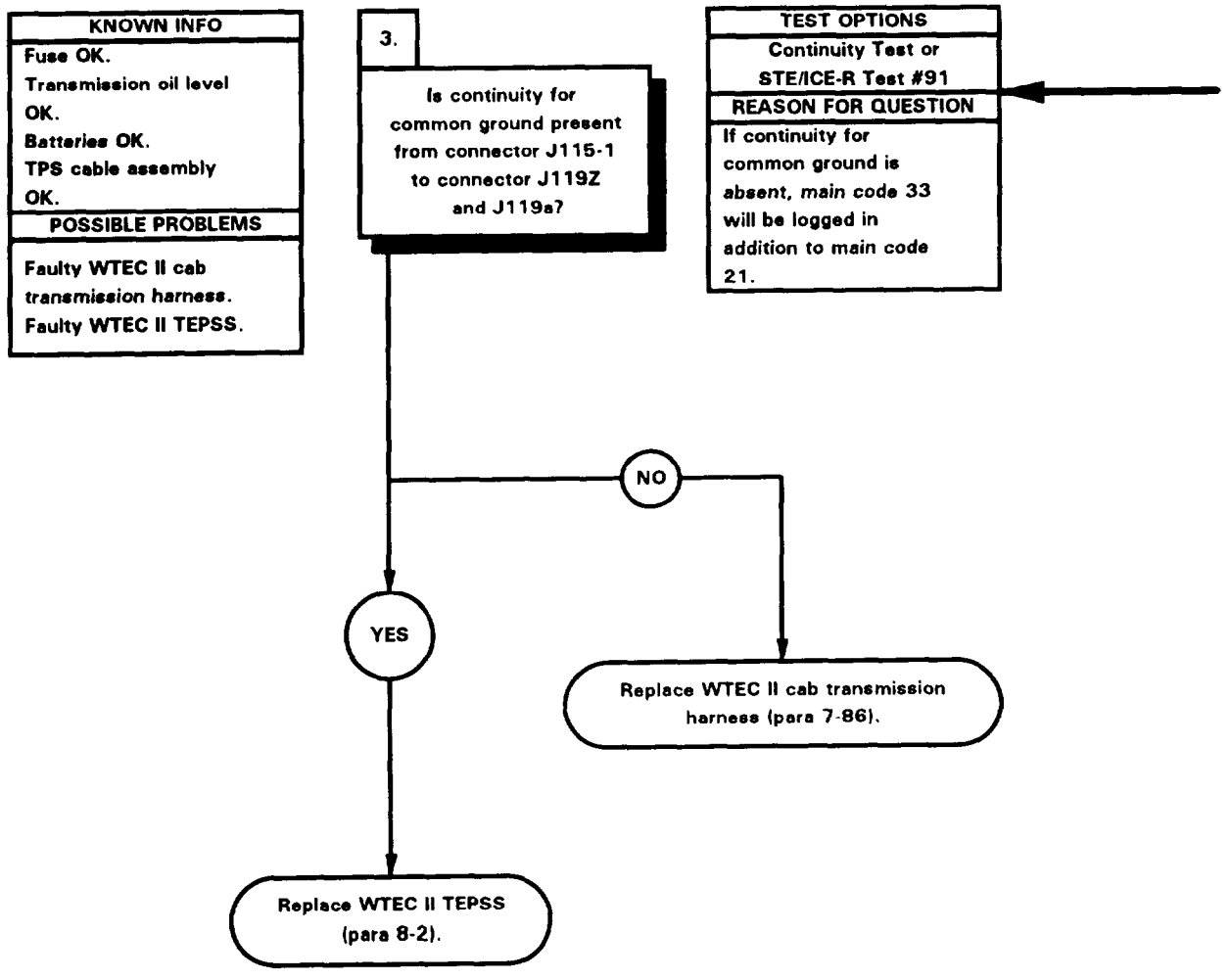
f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



(1) Position master power switch to on (TM 9-2320-365-10).
(2) Press MODE button on WTEC II TEPSS to bring up second code (if any).
(3) If main code 33 displays at WTEC II TEPSS, common ground may have been lost.
(4) If main code 21 is the only code displayed TPS may be faulty. Go to step 4 of this fault.
(5) Position master power switch to off (TM 9-2320-365-10).

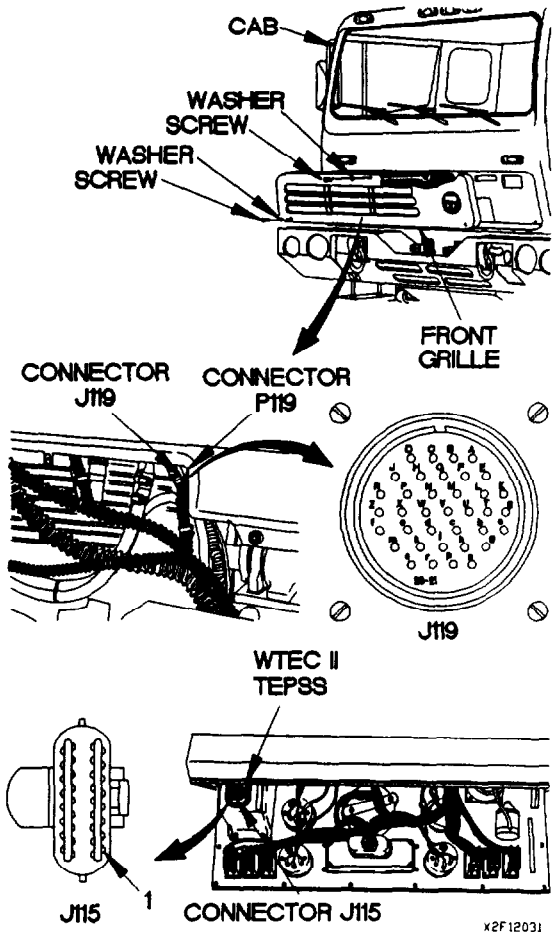


f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

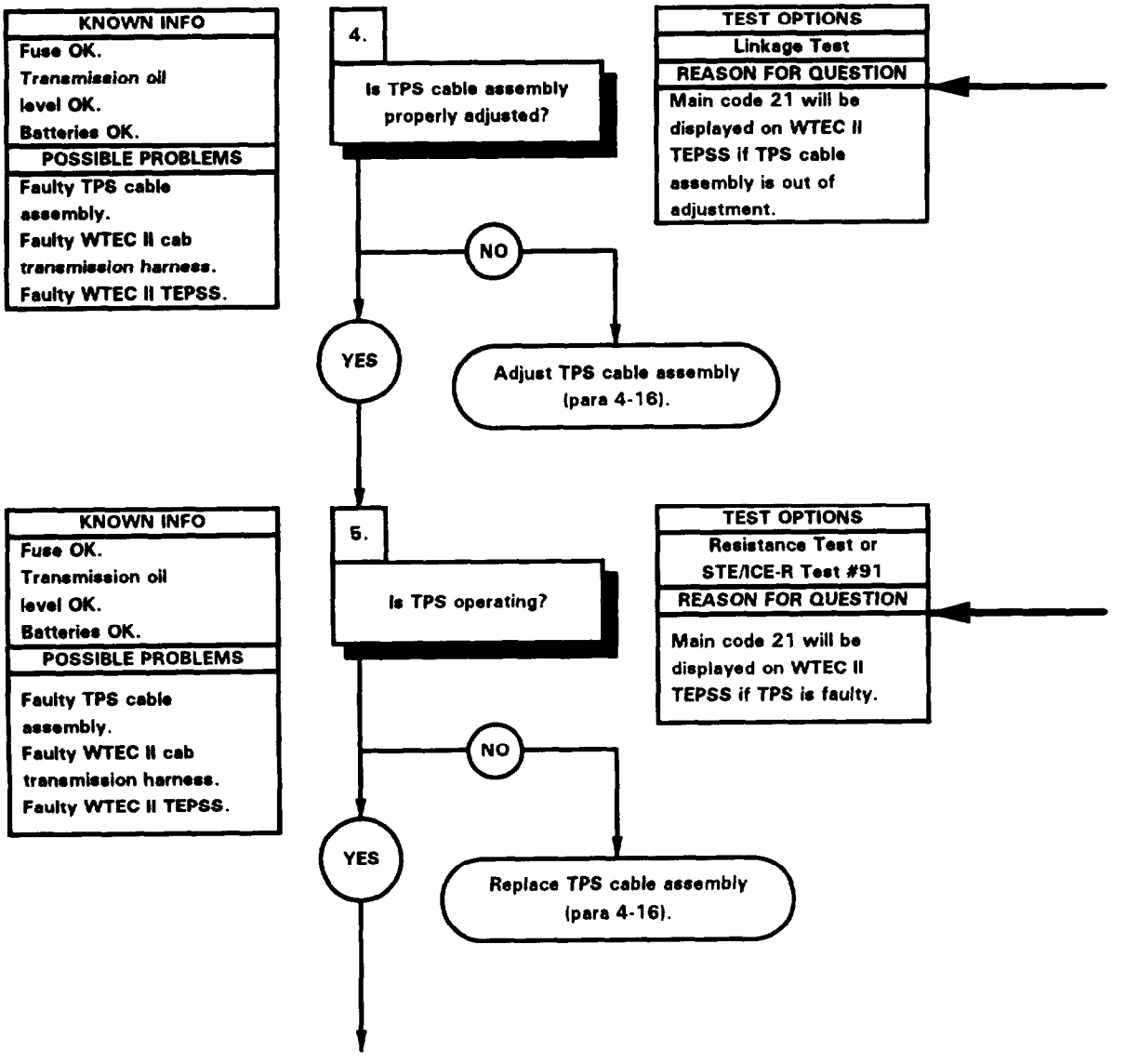


CONTINUITY TEST

(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(7) Set multimeter to ohms.
(8) Connect positive (+) probe of multimeter to connector J115-1.
(9) Connect negative (-) probe of multimeter to connector J119a and note reading on multimeter.
(10) Connect negative (-) probe of multimeter to connector J119Z and note reading on multimeter.
(11) If continuity is not present from connector J115-1 to connector J119a and J119Z, replace WTEC II cab transmission harness (para 7-86).
(12) If continuity is present, replace WTEC II TEPSS (para 8-2).
(13) Install instrument panel assembly (para 7-15).
(14) Connect connector P119 to connector J119.
(15) Position front grille on cab with washer and screw.
(16) Position two washers and screws in front grille.
(17) Tighten screw to 48-60 lb-in. (5-7 N·m).
(18) Tighten two screws to 24 lb-in. (3 N·m).
(19) Clear diagnostic codes (para 8-4).



f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

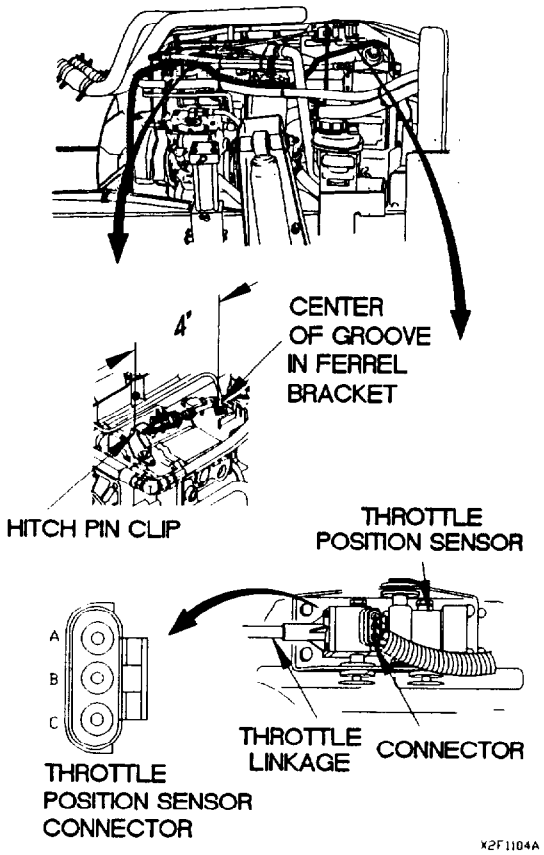


LINKAGE TEST

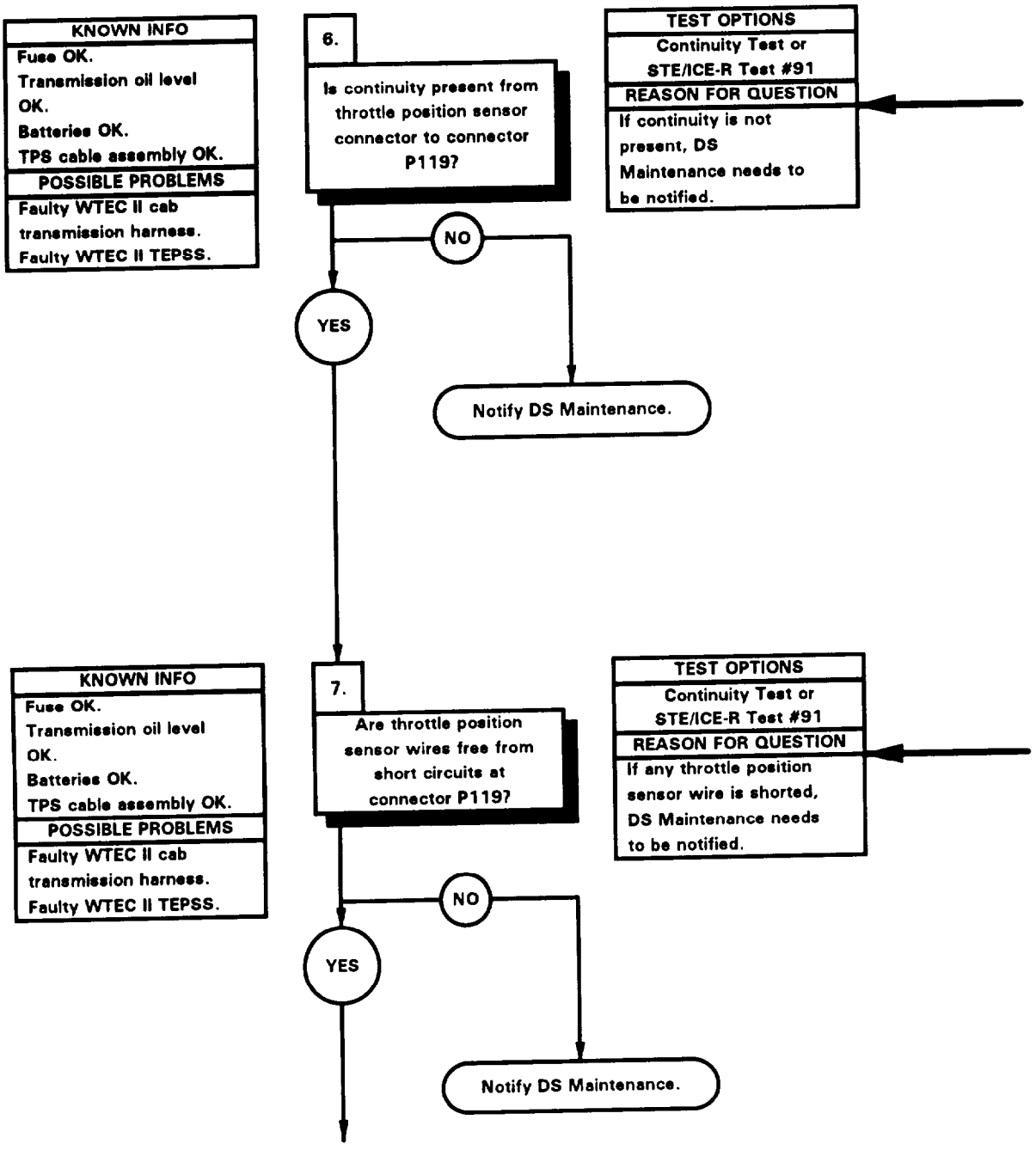
(1) Raise cab (TM 9-2320-365-10).
(2) Verify distance between hitch pin clip on end of sensor rod and center of cable groove in ferrule is 4 in. (10 cm).
(3) If distance is not 4 in. (10 cm), adjust TPS cable assembly (para 4-16).

RESISTANCE TEST

(1) Disconnect TPS connector from TPS.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to TPS terminal A.
(4) Connect negative (-) probe of multimeter to TPS terminal C and verify multimeter reads between 9,000-15,000 ohms across terminals A and C.
(5) Disconnect negative (-) probe of multimeter from terminal C.
(6) Connect negative (-) probe of multimeter to TPS terminal B and note record on multimeter.
(7) Move governor linkage to high idle stop and record reading on multimeter.
(8) Return governor linkage to low idle stop.
(9) Verify that difference between highest (high idle) reading and lowest (low idle) reading is between 4,000 and 6,000 ohms.
(10) Verify that highest (high idle) reading does not exceed 15,000 ohms.
(11) If resistance readings are not within limits, replace TPS cable assembly (para 4-16).



f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

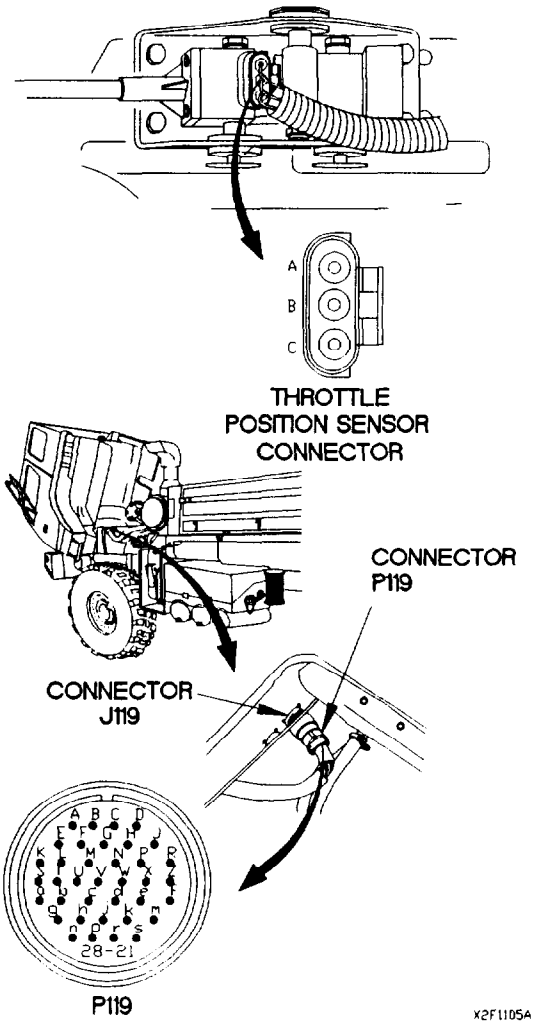


CONTINUITY TEST

(1) Disconnect connector P119 from connector J119.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P119R.
(4) Connect negative (-) probe of multimeter to TPS connector pin C and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P119f.
(6) Connect negative (-) probe of multimeter to TPS connector pin B and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to connector P119Z.
(8) Connect negative (-) probe of multimeter to TPS connector pin A and note reading on multimeter.
(9) If continuity is not present on one or more wires, notify DS Maintenance.

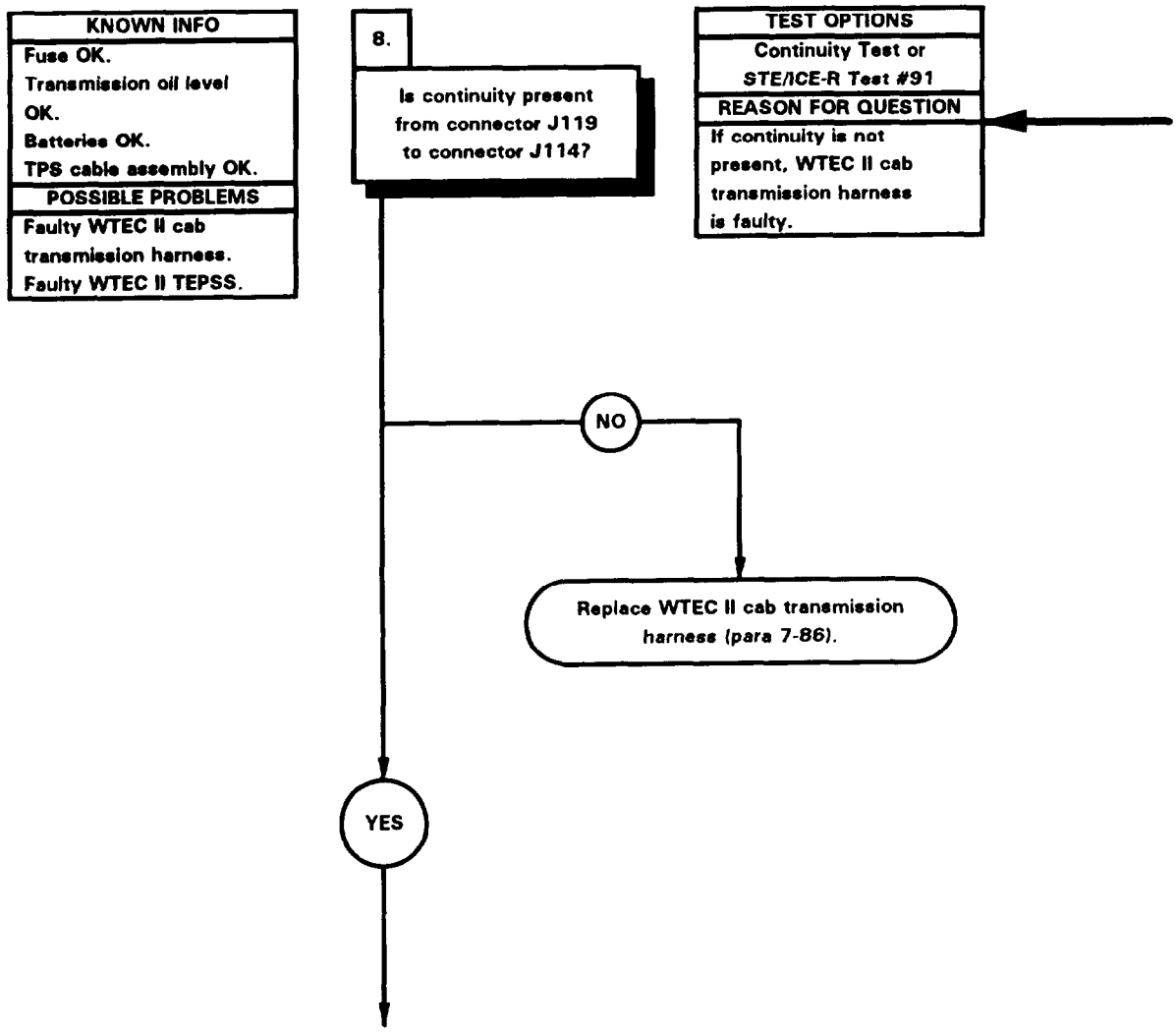
CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P119R.
(3) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(4) If continuity is found between pin R and any other pin, notify DS Maintenance.
(5) Perform steps (2) and (3) for P119f and P119Z.
(6) If continuity is found between pin f and any other pin, or between pin Z and any other pin, notify DS Maintenance.
(7) Connect TPS connector to TPS.



X2F1105A

f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

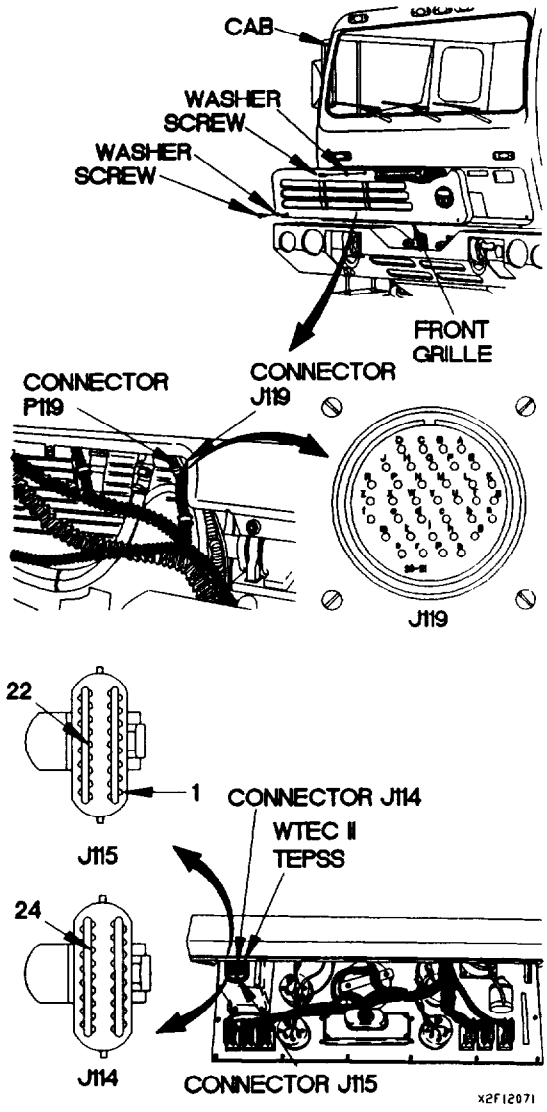


CONTINUITY TEST

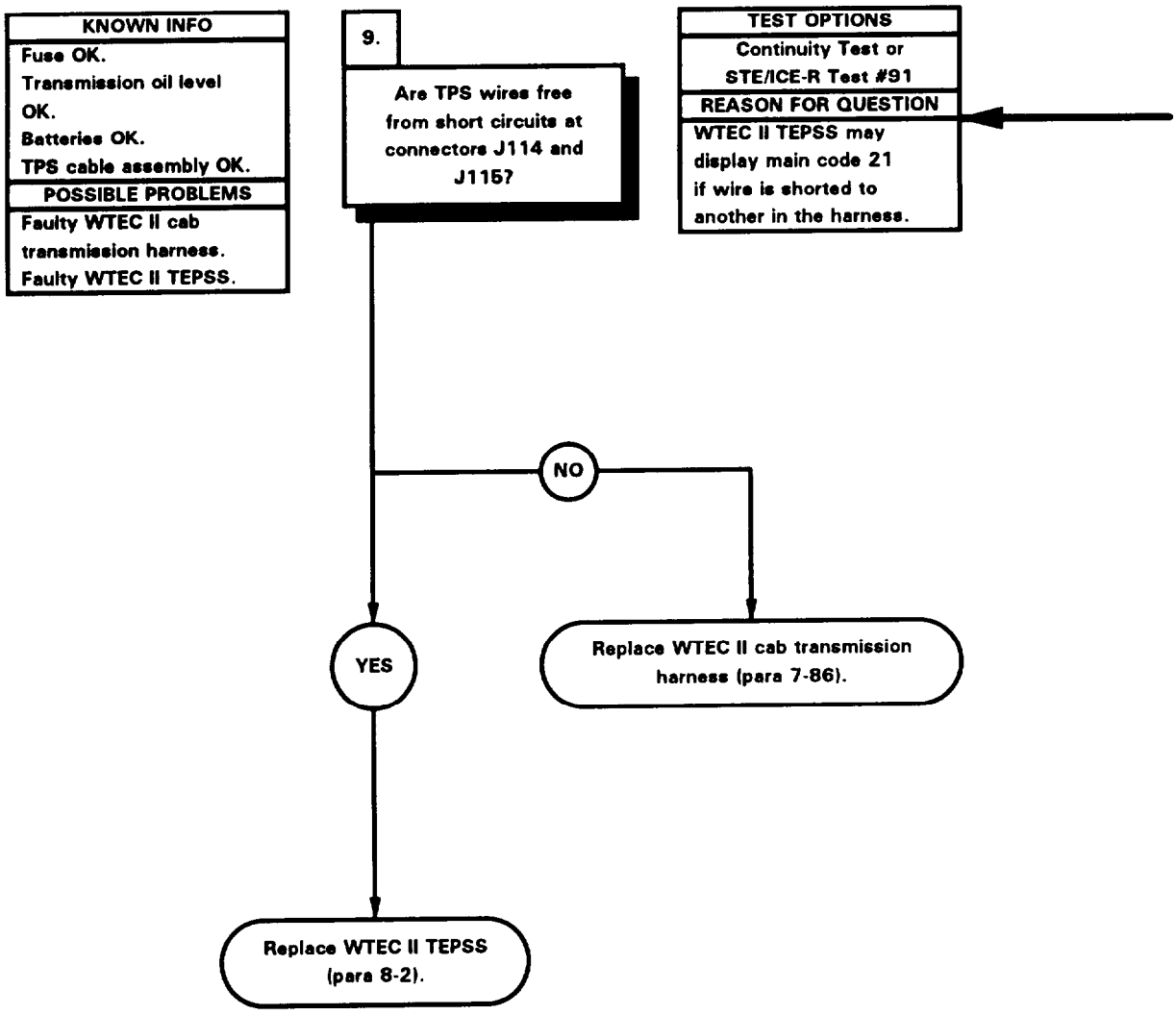
(1) Lower cab (TM 9-2320-365-10).
(2) Remove two screws and washers from front grille.
(3) Remove screw and washer from front grille.
(4) Remove front grille from cab.
(5) Remove instrument panel assembly for access (para 7-15).
(6) Disconnect connector J114 (bottom connector) at WTEC II TEPSS.
(7) Set multimeter to ohms.
(8) For each line of Table 2-25. WTEC II Cab Transmission Harness Continuity Check:
  (a) Install jumper wire across sockets in column 1.
  (b) Connect positive (+) probe of multimeter to socket in column 2.
  (c) Connect negative (-) probe of multimeter to socket in column 3 and note reading on multimeter.
(9) If continuity is not present on any wire in Table 2-25. WTEC II Cab Transmission Harness Continuity Check, replace WTEC II cab transmission harness (para 7-86).
(10) Remove jumper wire from connector J119.

TABLE 2-25. WTEC II CAB TRANSMISSION HARNESS CONTINUITY CHECK

COLUMN 1 Jumper across:	COLUMN 2 Positive (+) probe to:	COLUMN 3 Negative (-) probe to:
J119F to J119Z	J115-1	J115-22
J119Z to J119R	J115-1	J114-24
J119F to J119R	J115-22	J114-24

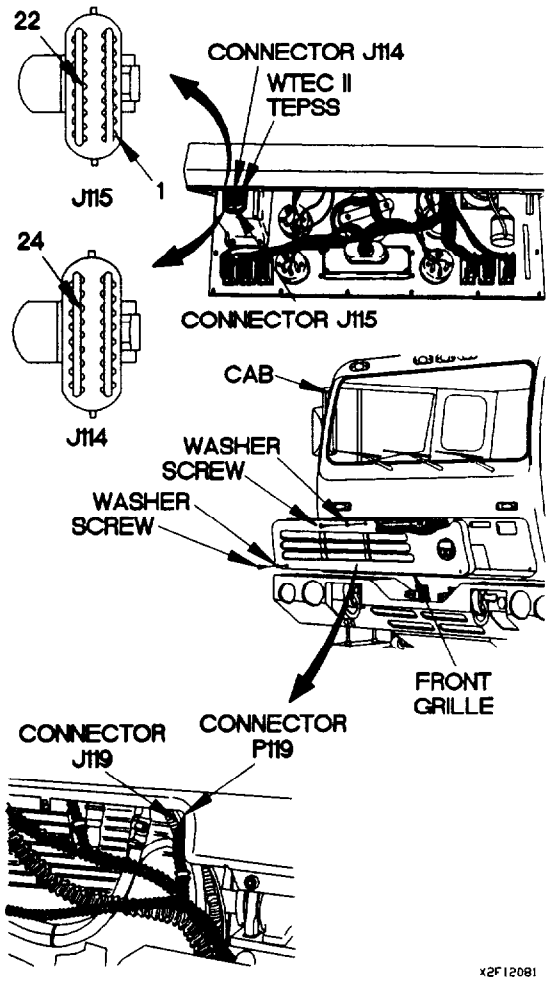


f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



CONTINUITY TEST

(1) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector J114-24.
(4) Connect negative (-) probe of multimeter to all other sockets in connector J114, one at a time, and all sockets in connector J115, one at a time, and note readings on multimeter.
(5) Connect positive (+) probe of multimeter to connector J115-1.
(6) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and all sockets in connector J114, one at a time, and note readings on multimeter.
(7) Connect positive (+) probe of multimeter to connector J115-22.
(8) Connect negative (-) probe of multimeter to all other sockets in connector J115, one at a time, and all sockets in connector J114, one at a time, note readings on multimeter.
(9) If continuity is present in step 4, 6, or 8, replace WTEC II cab transmission harness (para 7-86).
(10) If continuity is not present in step 4, 6, and 8, replace WTEC II TEPSS (para 8-2).
(11) Connect connector J114 (bottom connector) to WTEC II TEPSS.
(12) Connect connector J115 (top connector) to WTEC II TWPSS.
(13) Install instrument panel assembly (para 7-15).
(14) Connect connector P119 to connector J119.
(15) Position front grille on cab with washer and screw.
(16) Position two washer and screws in front grille.
(17) Tighten screw to 48-60 lb-in. (5-7 N·m).
(18) Tighten two screws to 24 lb-in. (3 N·m).
(19) Clear diagnostic codes (para 8-4).



f13. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 51 SUB CODE 10, 12, 21, 43, 45, or 65

INITIAL SETUP

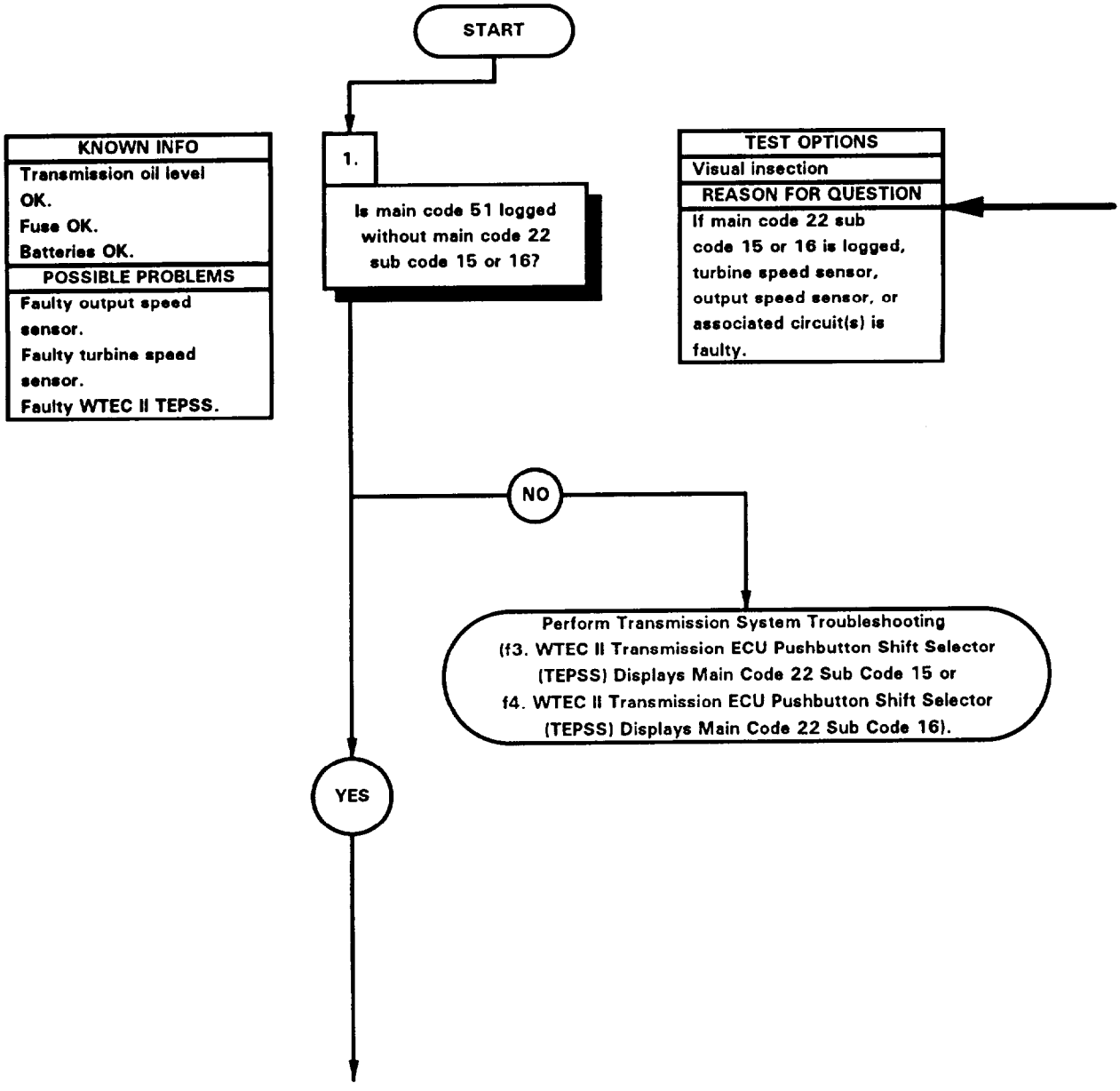
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

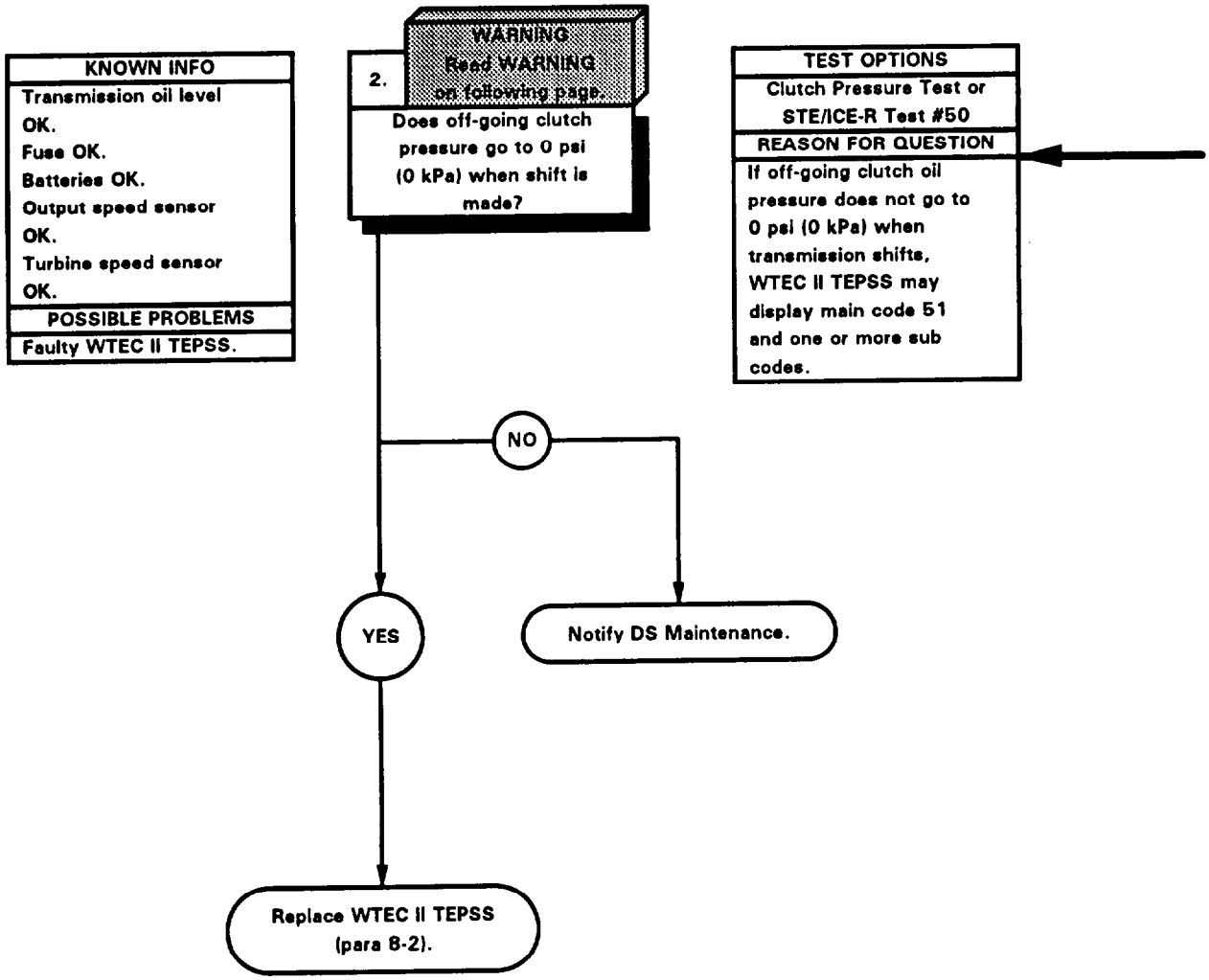
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 15 or 16 is logged in WTEC II TEPSS (para 8-4).
(2) If main code 22 sub code 15 or 16 is logged, WTEC II TEPSS has sensed a fault with the turbine speed sensor, output speed sensor, or associated circuits. Perform Transmission System Troubleshooting (f3. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 15 or f4. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 16).

f13. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 51 SUB CODE 10, 12, 21, 43, 45, OR 65 (CONT)

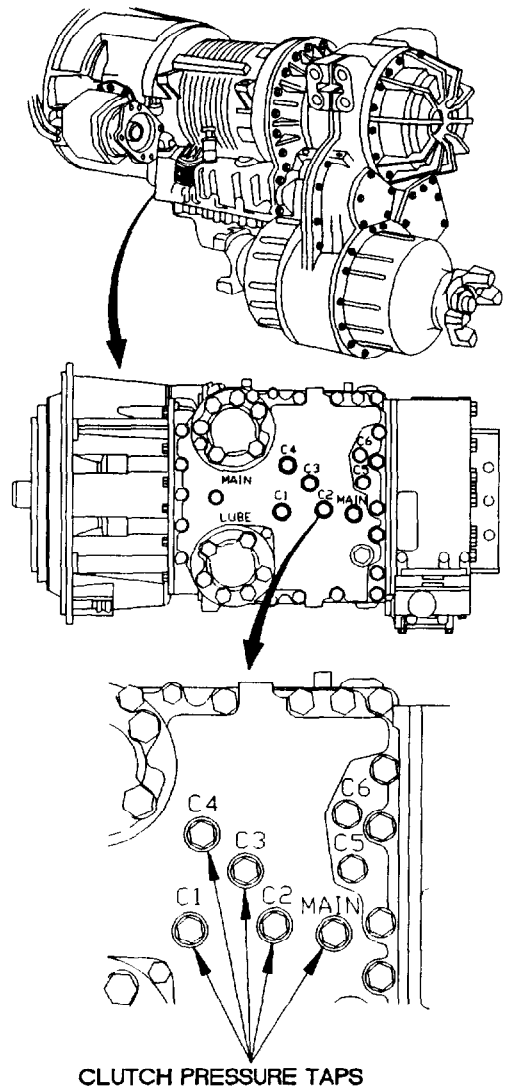


CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from off-going clutch indicated by the sub code, refer to Table 2-26 Off-Going Clutch Pressure Tap. Discard preformed packing.
(4) Connect reducer, STE/ICE-R adapter, and snubber to clutch pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R.
(8) If one or more off-going clutches fail to loose pressure, notify DS Maintenance.
(9) Shut down engine (TM 9-2320-365-10).
(10) Remove STE/ICE-R adapter, snubber, and reducer from clutch pressure tap.
(11) Position preformed packing and pressure tap plug in control valve module.
(12) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(13) Remove drain pan under pressure tap.
(14) Install transmission front and rear output propeller shaft (para 9-2).
(15) Clear diagnostic codes (para 8-4).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2F1101-

TABLE 2-26. OFF-GOING CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	OFF-GOING CLUTCH	SOLENOID LOCATION
10	2-1 Downshift	C5	Stationary Clutch
12	2-3 Upshift	C5	Stationary Clutch
21	3-2 Downshift	C4	Stationary Clutch
23	3-4 Upshift	C4	Stationary Clutch
43	5-4 Downshift	C2	Rotating Clutch
45	5-6 Upshift	C1	Rotating Clutch
65	7-6 Downshift	C4	Stationary Clutch

f14. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 25 AND ANY SUB CODE

INITIAL SETUP

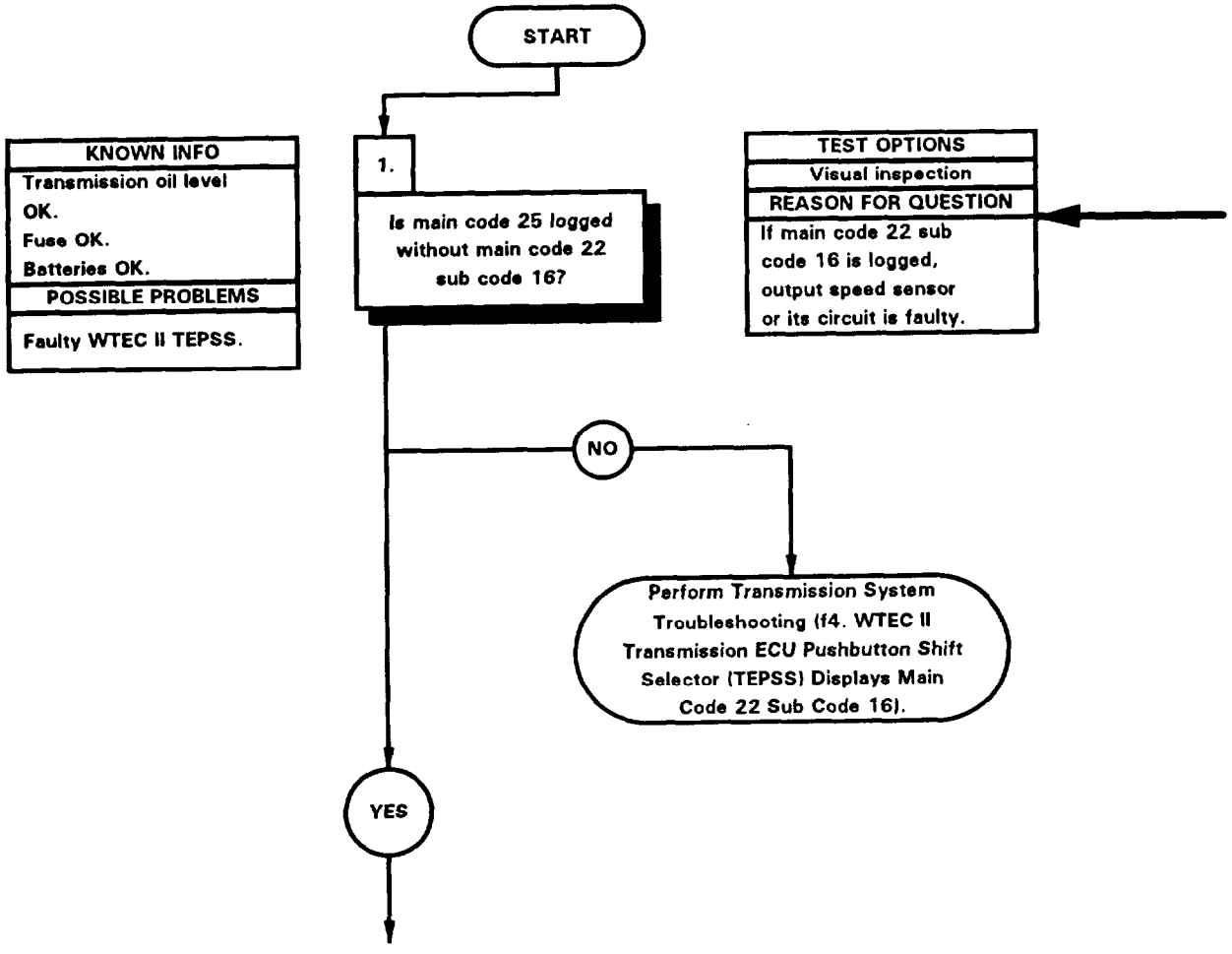
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

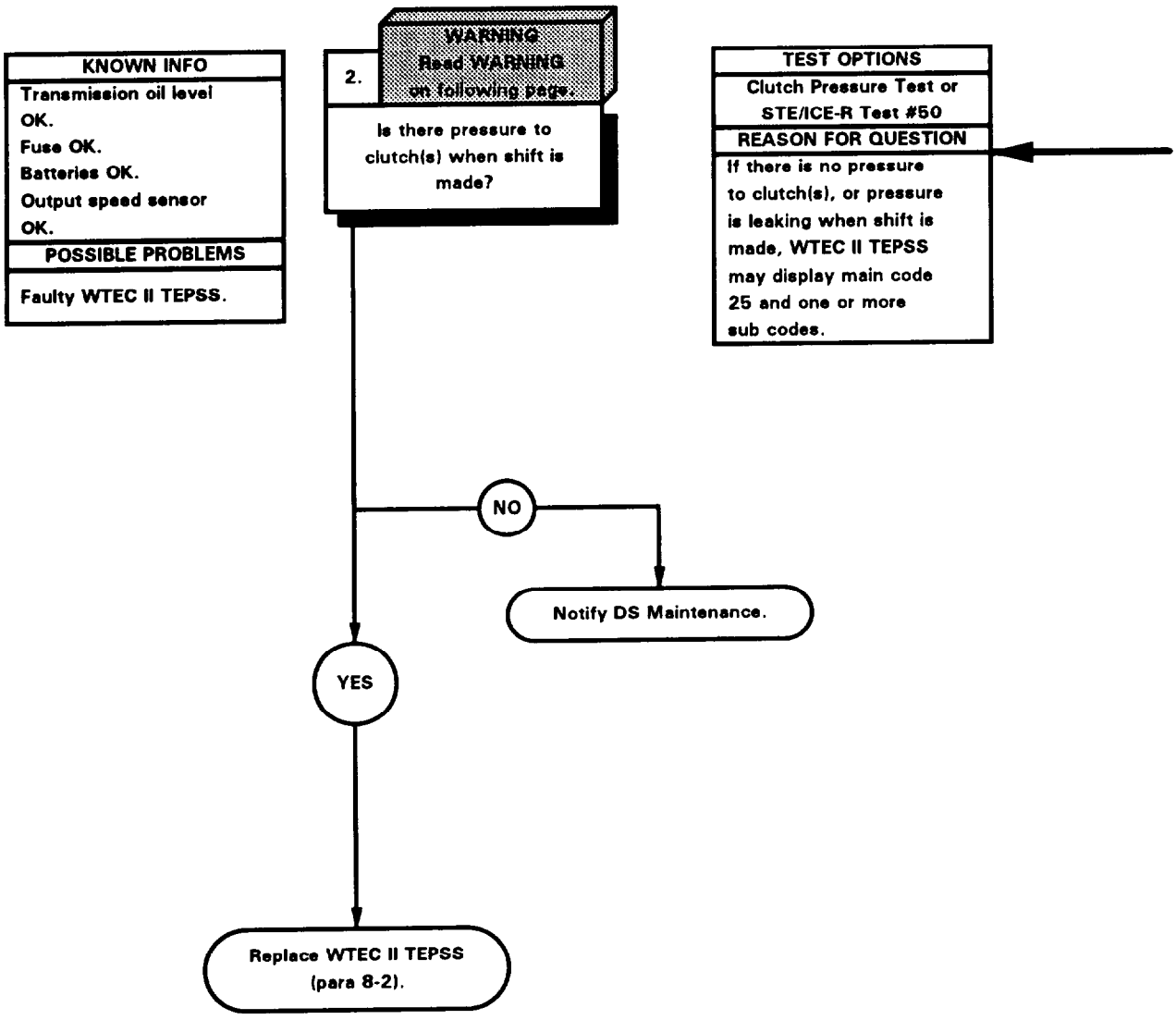
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 16 is logged in WTEC II TEPSS (para 8-4).
(2) If main code 22 sub code 16 is logged, WTEC II TEPSS has sensed a fault with the output sensor or its circuit. Perform Transmission System Troubleshooting (f4. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 16).

f14. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 25 AND ANY SUB CODE (CONT)

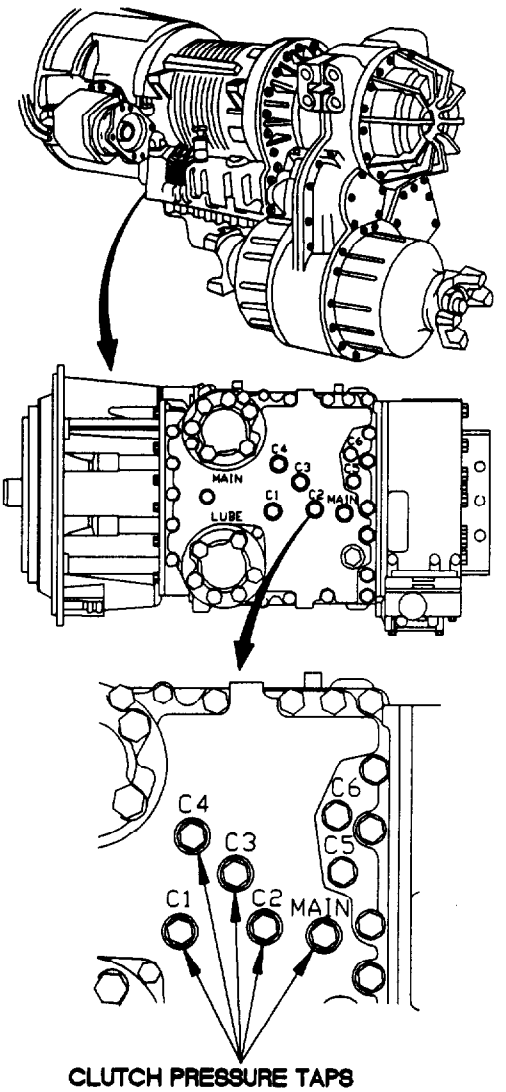


CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from clutch pressure tap indicated by the sub code. Refer to Table 2-27. Clutch Pressure Tap. Discard preformed packing.
(4) Connect reducer, STE/ICE-R adapter, and snubber to clutch pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10).
(7) With brake applied, make shift indicated by sub code. Refer to Table 2-27. Clutch Pressure Tap.
(8) Accelerate engine until WTEC II TEPSS displays desired range. Refer to Table 2-27. Clutch Pressure Tap.
(9) Maintain engine speed to keep desired transmission range while assistant notes reading on STE/ICE-R.
(10) Let engine return to idle.
(11) Shift transmission into neutral.
(12) Shut down engine (TM 9-2320-365-10).
(13) Remove STE/ICE-R adapter, snubber, and reducer from pressure tap.
(14) Position preformed packing and pressure tap plug in control valve module.
(15) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(16) Remove drain pan.
(17) Install transmission front and rear output propeller shafts (para 9-2).
(18) If one or more clutches failed to indicate proper pressure, notify DS Maintenance.
(19) If all clutches indicate proper pressure, replace WTEC II TEPSS (para 8-2).
(20) Clear diagnostic codes (para 8-4).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2FL101-

TABLE 2-27. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	PRESSURE at CLUTCH(S)	SOLENOID ASSEMBLY LOCATION	PRESSURE READINGS at TAPS
00	Speed Zero in 1st	C3 & C6	ROT & C6 Clutch	215-334 psi (1480-2300 kPa)
11	Speed Zero in 2nd	C1 & C5	ROT & STA Clutch	215-334 psi (1480-2300 kPa)
22	Speed Zero in 3rd	C1 & C4	ROT & STA Clutch	142-203 psi (980-1400 kPa)
33	Speed Zero in 4th	C1 & C3	ROT & STA Clutch	142-203 psi (980-1400 kPa)
44	Speed Zero in 5th	C1 & C2	Rotating Clutch	142-203 psi (980-1400 kPa)
55	Speed Zero in 6th	C2 & C3	ROT & STA Clutch	128-189 psi (880-1300 kPa)
66	Speed Zero in 7th	C2 & C4	ROT & STA Clutch	128-189 psi (880-1300 kPa)
77	Speed Zero in R	C3 & C5	Stationary Clutch	215-334 psi (1480-2300 kPa)

f15. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 53 AND ANY SUB CODE

INITIAL SETUP

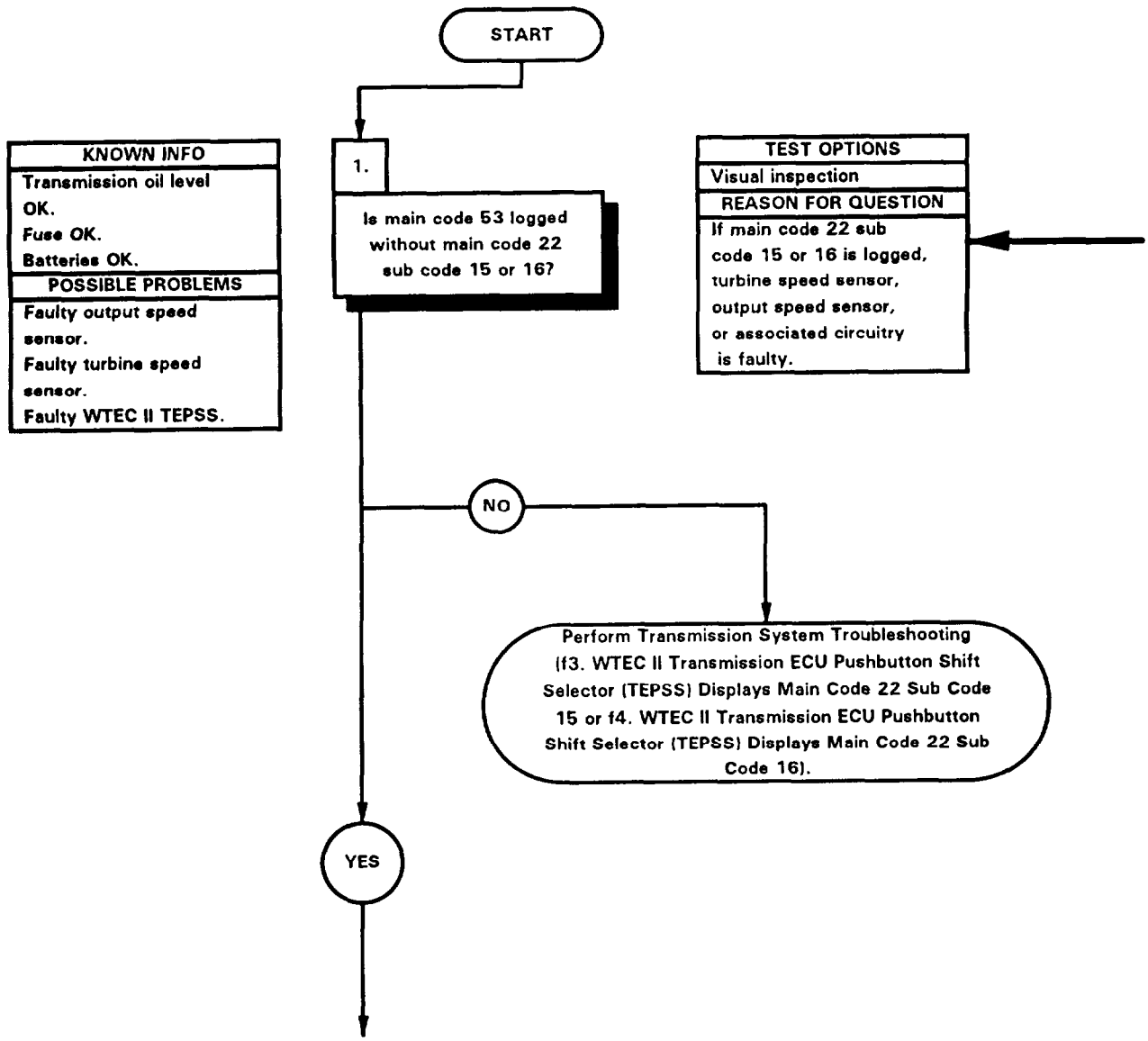
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

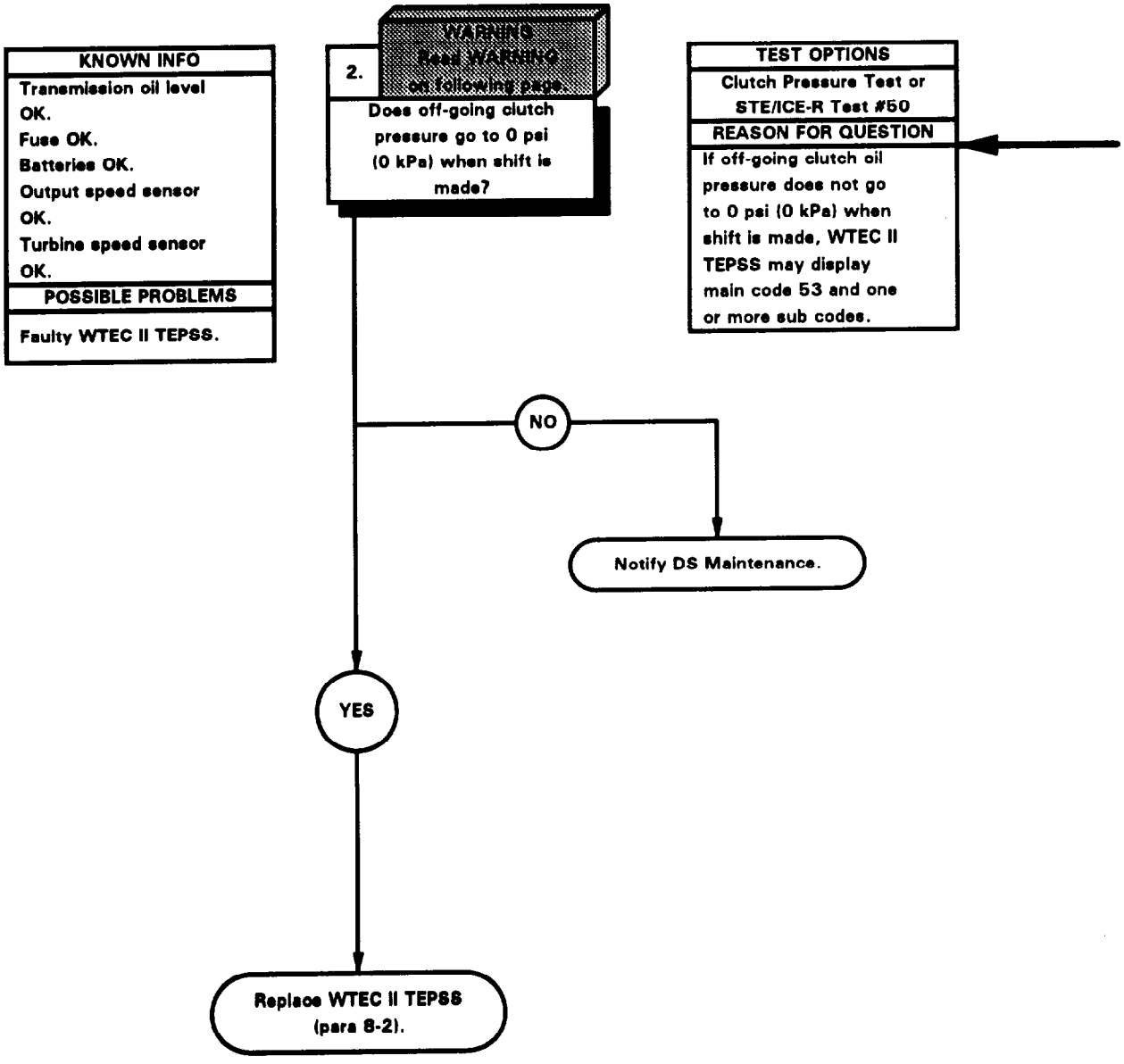
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 15 or 16 is logged in WTEC II TEPSS (para 8-4).
(2) If main code 22 sub code 15 or 16 is logged, WTEC II TEPSS has sensed a fault with the turbine speed sensor, output speed sensor, or associated circuits. Perform Transmission System Troubleshooting (f3. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 15 or f4. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 16).

f15. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 53 AND ANY SUB CODE (CONT)

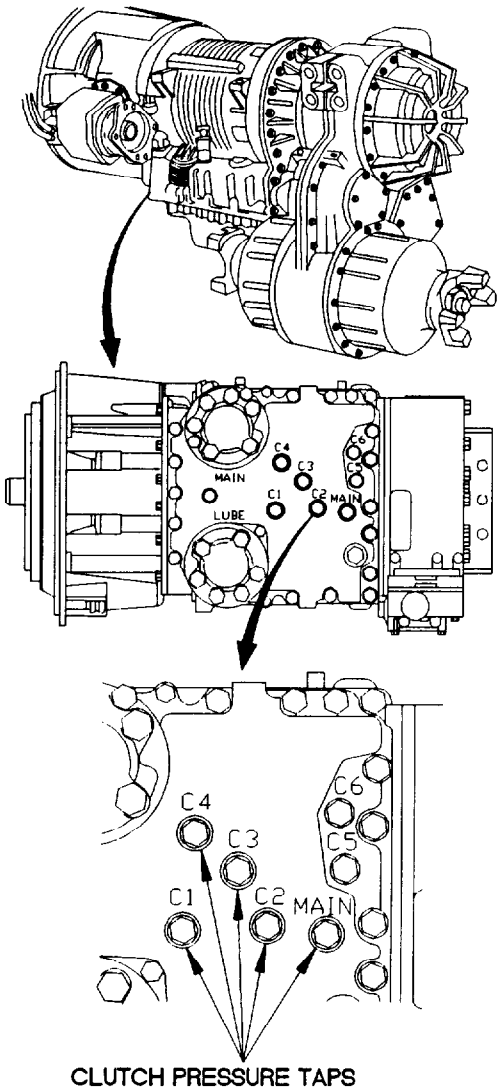


CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from off-going clutch indicated by the sub code. Refer to Table 2-28. Off-Going Clutch Pressure Tap. Discard preformed packing.
(4) Connect reducer, STE/ICE-R adapter, and snubber to clutch pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R.
(8) If off-going clutch pressure does not go to 0 psi (0 kPa) when shift is made, notify DS Maintenance.
(9) If off-going clutch pressure does go to 0 psi (0 kPa) when shift is made, replace WTEC III TEPSS (para 8-2).
(10) Shut down engine (TM 9-2320-365-10).
(11) Remove STE/ICE-R adapter, snubber, and reducer from pressure tap.
(12) Position preformed packing and pressure tap plug in control valve module.
(13) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(14) Remove drain pan under pressure tap.
(15) Install transmission front and rear output propeller shafts (para 9-2).
(16) Clear diagnostic codes (para 8-4).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2F1101-

TABLE 2-28. OFF-GOING CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	OFF-GOING CLUTCH(S)	SOLENOID ASSEMBLY LOCATION
08	L-N1 Shift	C3	Stationary Clutch
18	1-N1 Shift	C1	Rotating Clutch
28	2-N1 Shift	C1 & C4	ROT & STA Clutch
29	2-N2 Shift	C1	Rotating Clutch
38	3-N1 Shift	C1 & C3	ROT & STA Clutch
39	3-N3 Shift	C1	Rotating Clutch
48	4-N1 Shift	C1 & C2	Rotating Clutch
49	4-N3 Shift	C1 & C2	Rotating Clutch
58	5-N1 Shift	C2 & C3	ROT & STA Clutch
59	5-N3 Shift	C2	Rotating Clutch
68	6-N1 Shift	C2 & C4	ROT & STA Clutch
69	6-N4 Shift	C2	Rotating Clutch
78	R-N1 Shift	C3	Stationary Clutch
99	N3-N2 or N2-N3 Shift	C2 or C4	ROT or STA Clutch

116. 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

INITIAL SETUP

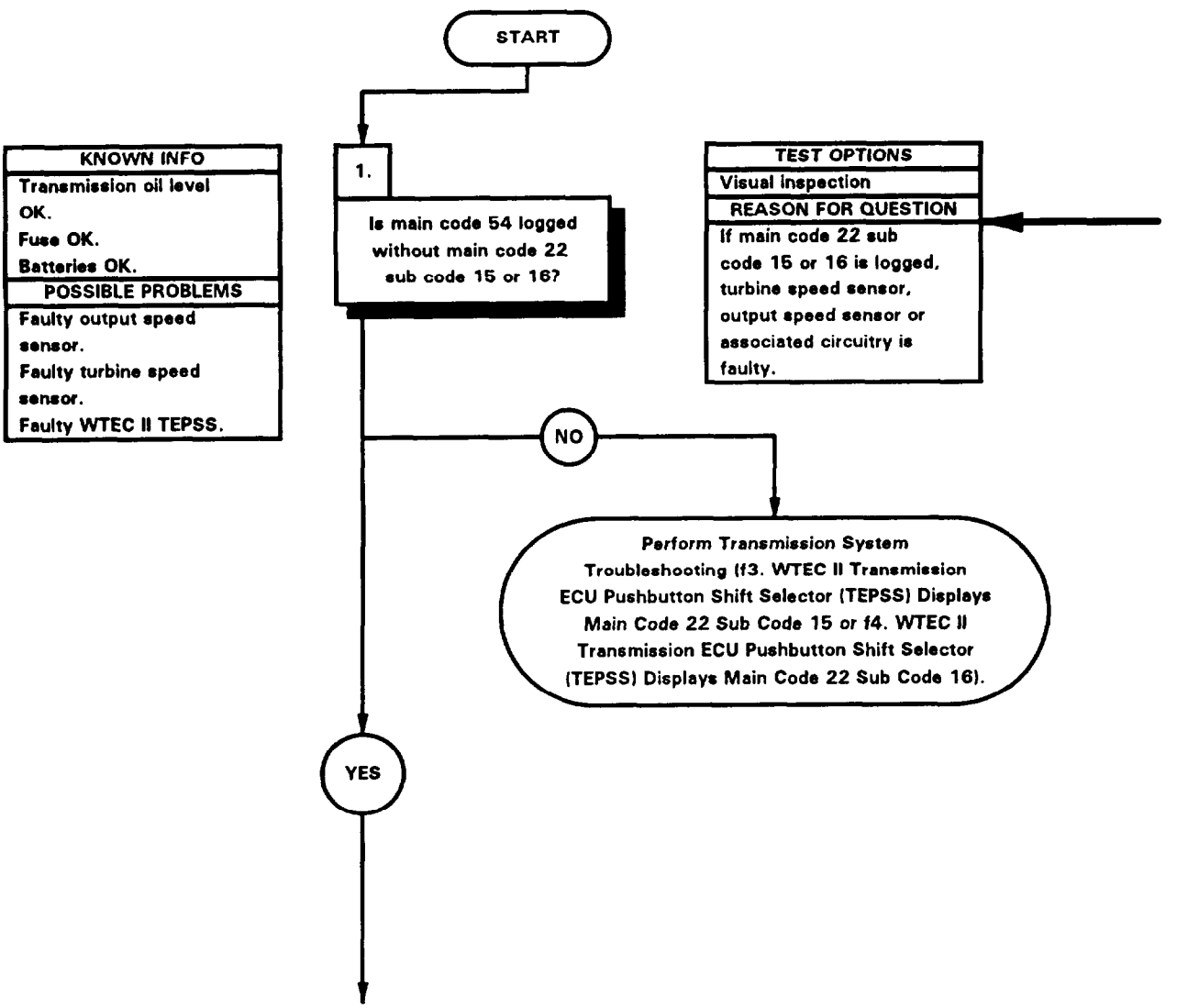
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

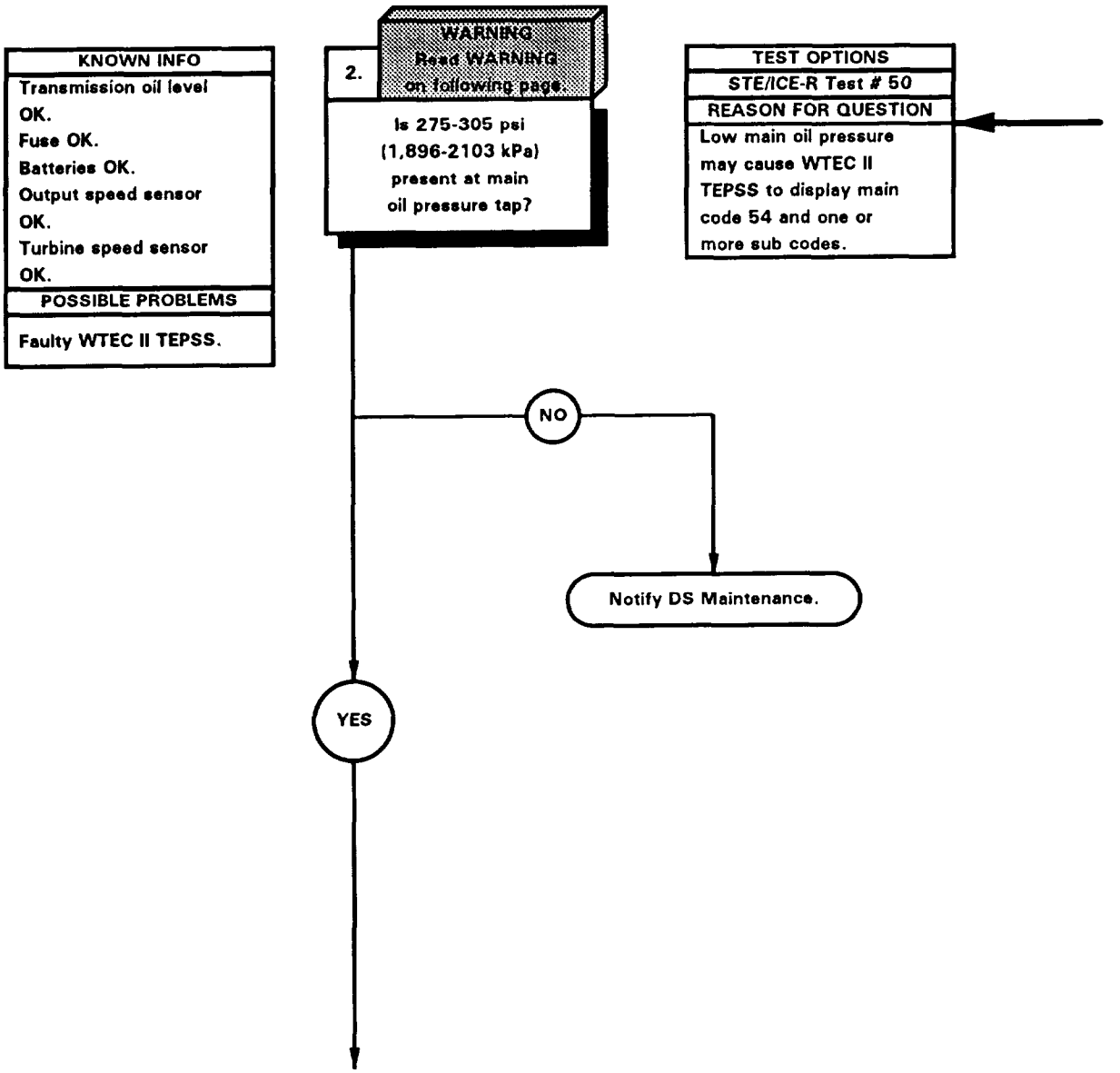
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 15 or 16 is logged in the WTEC II TEPSS (para 8-4).
(2) If main code 22 sub code 15 or 16 is logged, WTEC II TEPSS has sensed a fault with the turbine speed sensor, output sensor or associated circuits. Perform Transmission System Troubleshooting (f3. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 15 or f4. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 16).

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 (CONT)

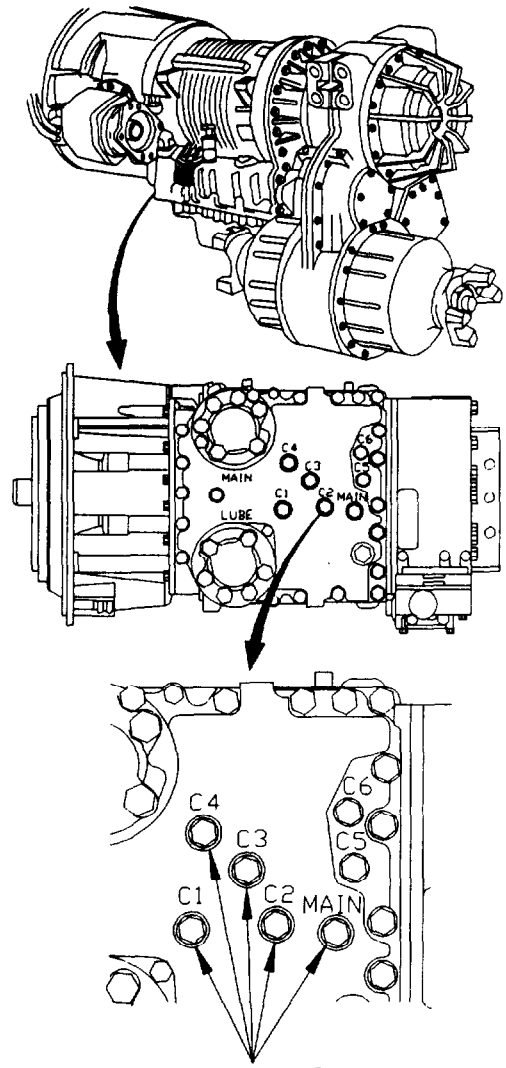


STE/ICE-R TEST #50

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

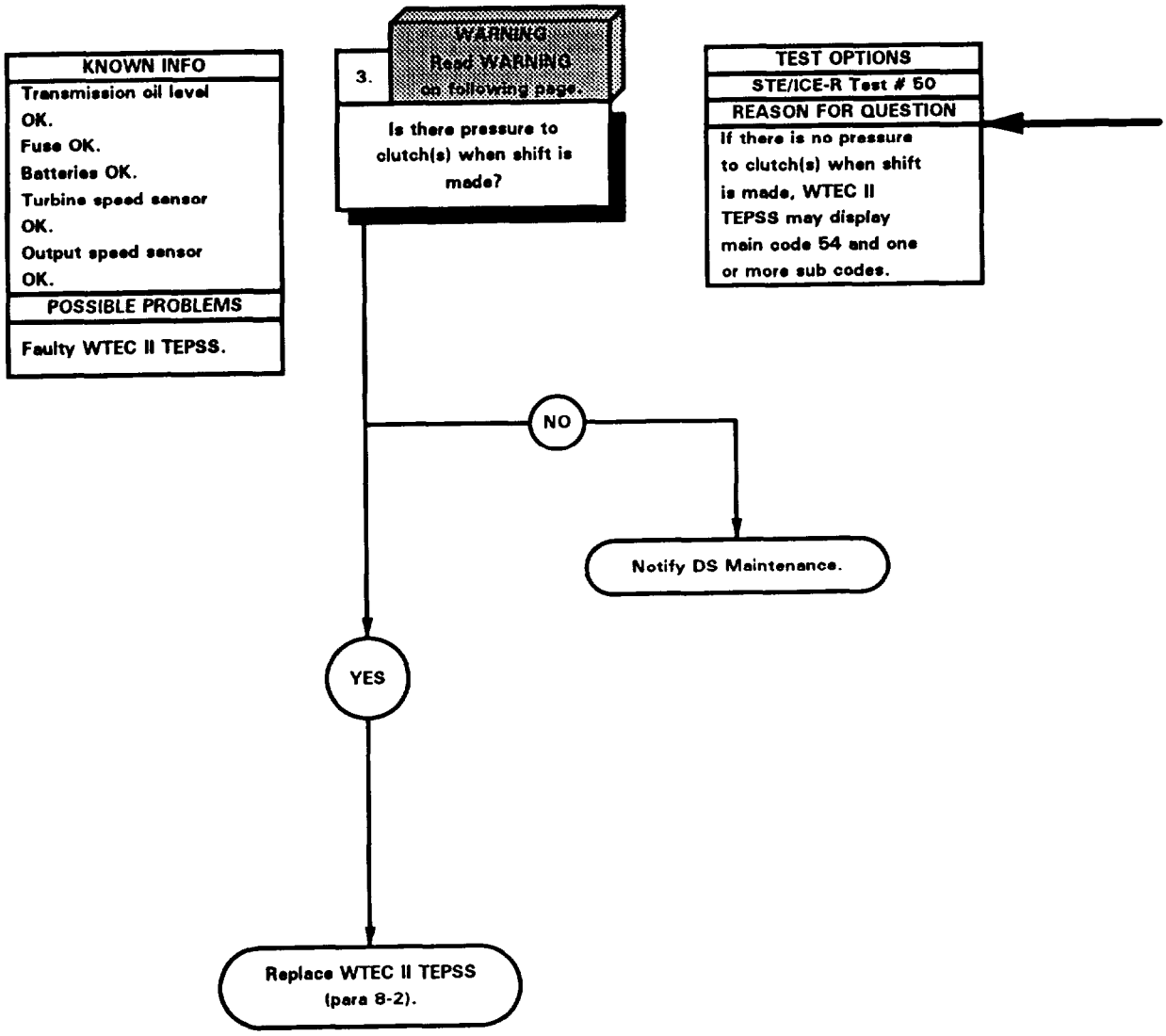
(1) Position drain pan under pressure tap.
(2) Remove main pressure tap plug and preformed packing from control valve module.
(3) Connect STE/ICE-R adapter, snubber, and reducer to main pressure tap.
(4) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(5) Start engine (TM 9-2320-365-10) and run at idle.
(6) With parking brake applied, position WTEC II TEPSS to R position then to N position while assistant checks reading on STE/ICE-R.
(7) Shut down engine (TM 9-2320-365-10).
(8) If main oil pressure is low, notify DS Maintenance.
(9) Remove reducer, STE/ICE-R adapter, and snubber from main pressure tap.
(10) Position preformed packing and main pressure tap plug in control valve module.
(11) Tighten main pressure tap plug to 84-120 lb-in. (9-14 N·m).
(12) Remove drain pan under main pressure tap.



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2F1101-

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 (CONT)



CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from clutch pressure tap indicated by the sub code. Refer to Table 2-29. Clutch Pressure Tap.
(4) Connect STE/ICE-R adapter, snubber, and reducer to clutch pressure tap.
(5) Start engine (TM 9-2320-365-10).
(6) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(7) With parking brake applied, make shift indicated by sub code. Refer to Table 2-29. Clutch Pressure Tap.
(8) Accelerate engine until WTEC II TEPSS displays denied range. Refer to Table 2-29. Clutch Pressure Tap.
(9) Maintain sufficient engine speed to keep desired transmission range while assistant notes reading on STE/ICE-R.
(10) Let engine return to idle.
(11) Shift WTEC II TEPSS into neutral.
(12) If one or more clutches failed to indicate proper pressure, notify DS Maintenance. If all clutches indicate proper pressure, replace WTEC II TEPSS (para 8-2).
(13) Shut down engine (TM 9-2320-365-10).
(14) Remove reducer, STE/ICE-R adapter, and snubber from pressure tap.
(15) Position preformed packing and pressure tap plug in control valve module.
(16) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(17) Remove drain pan under pressure tap.
(18) Install transmission front and rear output propeller shafts (para 9-2).
(19) Clear diagnostic codes (para 8-4).

TABLE 2-29. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	PRESSURE at CLUTCH(S)	SOLENOID ASSEMBLY LOCATION	PRESSURE READINGS at TAPS
01	L-1 Upshift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
07	L-R Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)
10	1-L Downshift	C3 & C6	ROT & C6 Clutch	235-265 psi (1620-1827 kPa)
12	1-2 Upshift	C1 & C4	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
17	1-R Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)
21	2-1 Downshift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
23	2-3 Upshift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
27	2-R Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)
32	3-2 Downshift	C1 & C4	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
34	3-4 Upshift	C1 & C2	Rotating Clutch	170-194 psi (1172-1338 kPa)
43	4-3 Downshift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
45	4-5 Upshift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
54	5-4 Downshift	C1 & C2	Rotating Clutch	170-194 psi (1172-1338 kPa)
56	5-6 Upshift	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
65	6-5 Downshift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
70	R-L Shift	C3 & C6	ROT & C6 Clutch	235-265 psi (1620-1827 kPa)
71	R-1 Shift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
72	R-2 Shift	C1 & C4	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
80	N1-L Shift	C3 & C6	ROT & C6 Clutch	235-265 psi (1620-1827 kPa)
81	N1-1 Shift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
82	N1-2 Shift	C1 & C4	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
83	N1-3 Shift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
85	N1-5 Shift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
86	N1-6 Shift	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
92	N2-2 Shift	C1 & C4	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
93	N3-3 Shift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
95	N3-5 Shift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
96	N4-6 Shift	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
97	2-R Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)

f17. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE

INITIAL SETUP

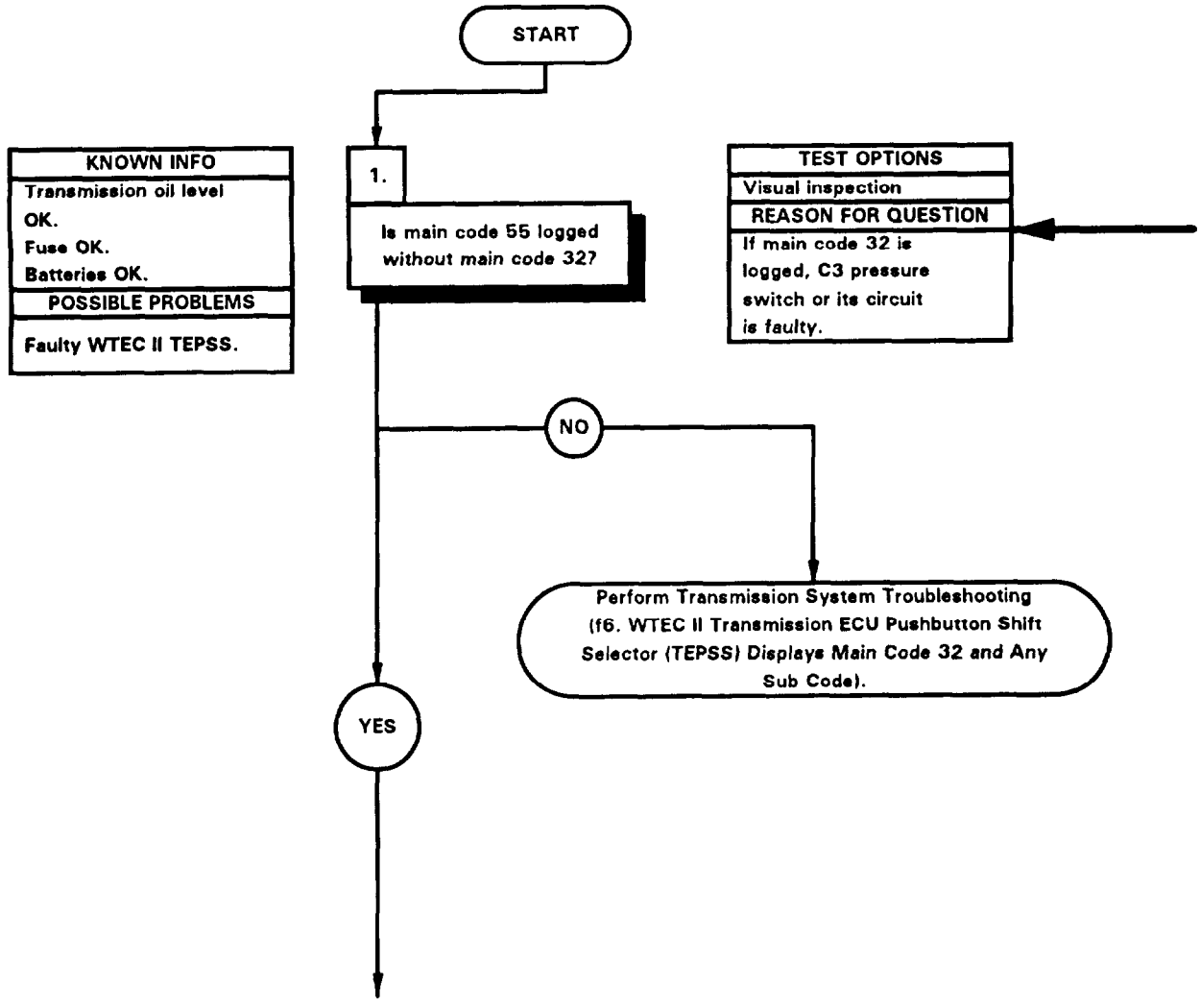
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

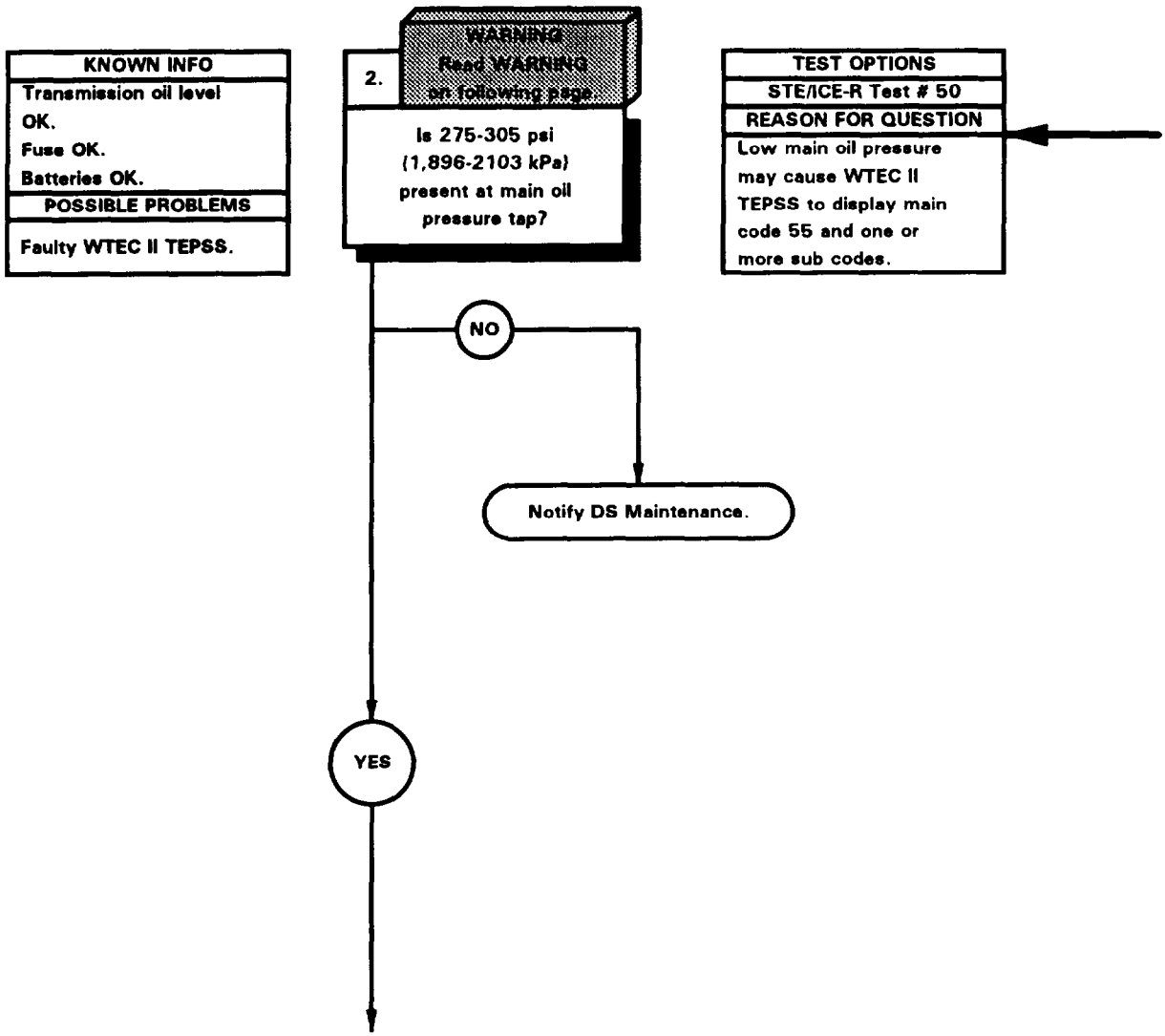
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 32 is logged in WTEC II TEPSS (para 8-4).
(2) If main code 32 is logged, WTEC II TEPSS has sensed a fault C3 pressure switch or its circuit. Perform Transmission System Troubleshooting (f6. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 32 and Any Sub Code).

f17. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE (CONT)

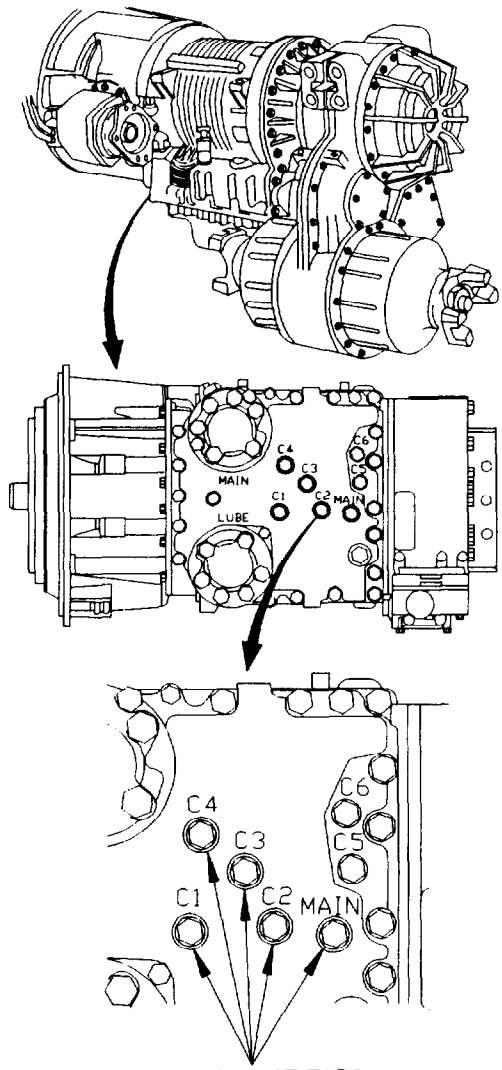


STE/ICE TEST # 50

WARNING

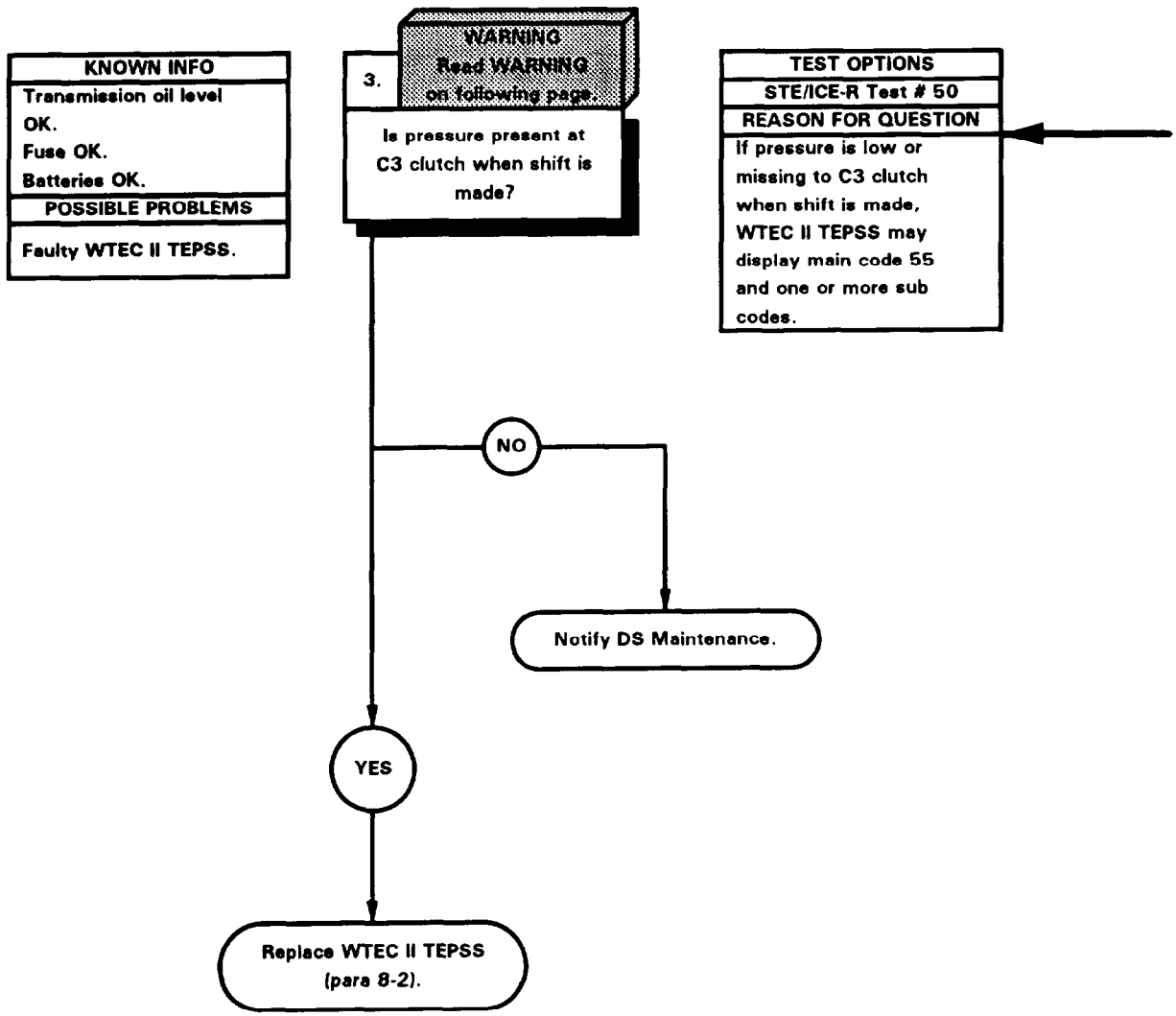
Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Position drain pan under pressure tap.
(2) Remove main pressure tap plug and preformed packing from control valve module.
(3) Connect STE/ICE-R adapter, snubber, and reducer to clutch pressure tap.
(4) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(5) Start engine (TM 9-2320-365-10) and run at idle.
(6) With parking brake applied, position WTEC II TEPSS to R position then to N position while assistant checks reading on STE/ICE-R.
(7) Shut down engine (TM 9-2320-365-10).
(8) If main oil pressure is low, notify DS Maintenance.
(9) Remove reducer, STE/ICE-R adapter, and snubber from main pressure tap.
(10) Position preformed packing and main pressure tap plug in control valve module.
(11) Tighten main pressure tap plug to 84-120 lb-in. (9-14 N·m).
(12) Remove drain pan under pressure tap.



CLUTCH PRESSURE TAPS
C1-C6 AND MAIN

f17. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE (CONT)



STE/ICE TEST # 50

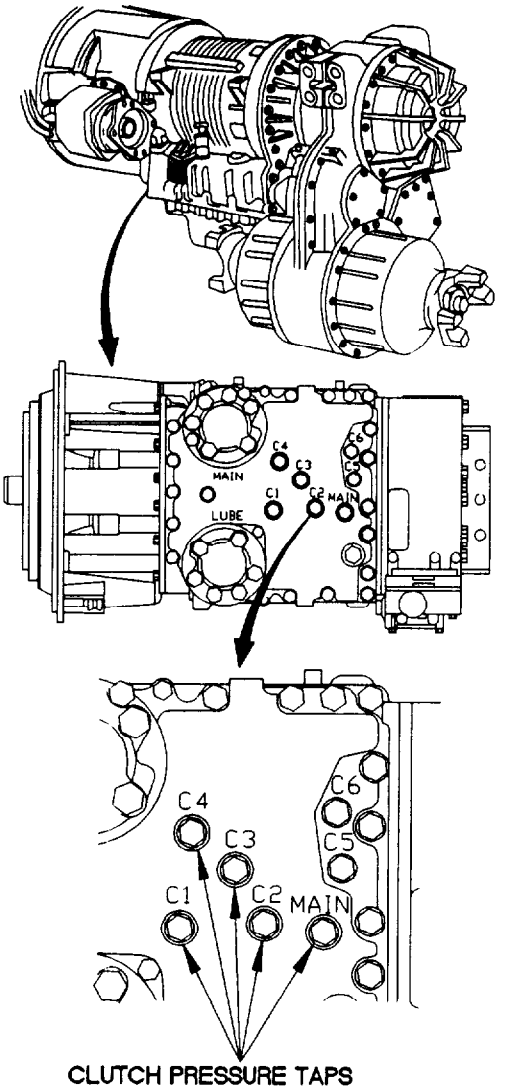
WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under C3 pressure tap.
(3) Remove C3 pressure tap plug and preformed packing from control valve module.
(4) Connect STE/ICE-R adapter, snubber, and reducer to C3 pressure tap.
(5) Perform STE/ICE-R test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R. Refer to Table 2-30. Clutch Pressure Tap.
(8) Shut down engine (TM 9-2320-365-10).
(9) If 275-305 psi pressure is not obtained for affected code, notify DS Maintenance.
(10) If 275-305 psi pressure is obtained, replace WTEC II TEPSS (para 8-2).
(11) Remove reducer, STE/ICE-R adapter, and snubber from C3 pressure tap.
(12) Position preformed packing and C3 pressure tap plug in control valve module.
(13) Tighten C3 pressure tap plug to 84-120 lb-in. (9-14 N·m).
(14) Remove drain pan under pressure tap.
(15) Install transmission front and rear output propeller shafts (para 9-2).
(16) Clear diagnostic codes (para 8-4).

TABLE 2-30. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	PRESSURE READINGS C3 TAP
17	1-R Shift	275-305 psi (1896-2103 kPa)
27	2-R Shift	275-305 psi (1896-2103 kPa)
80	N1-L Shift	235-265 psi (1620-1827 kPa)
87	N1-R Shift	275-305 psi (1896-2103 kPa)
97	2-R Shift	275-305 psi (1896-2103 kPa)



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

x2F1101-

f18. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE

INITIAL SETUP

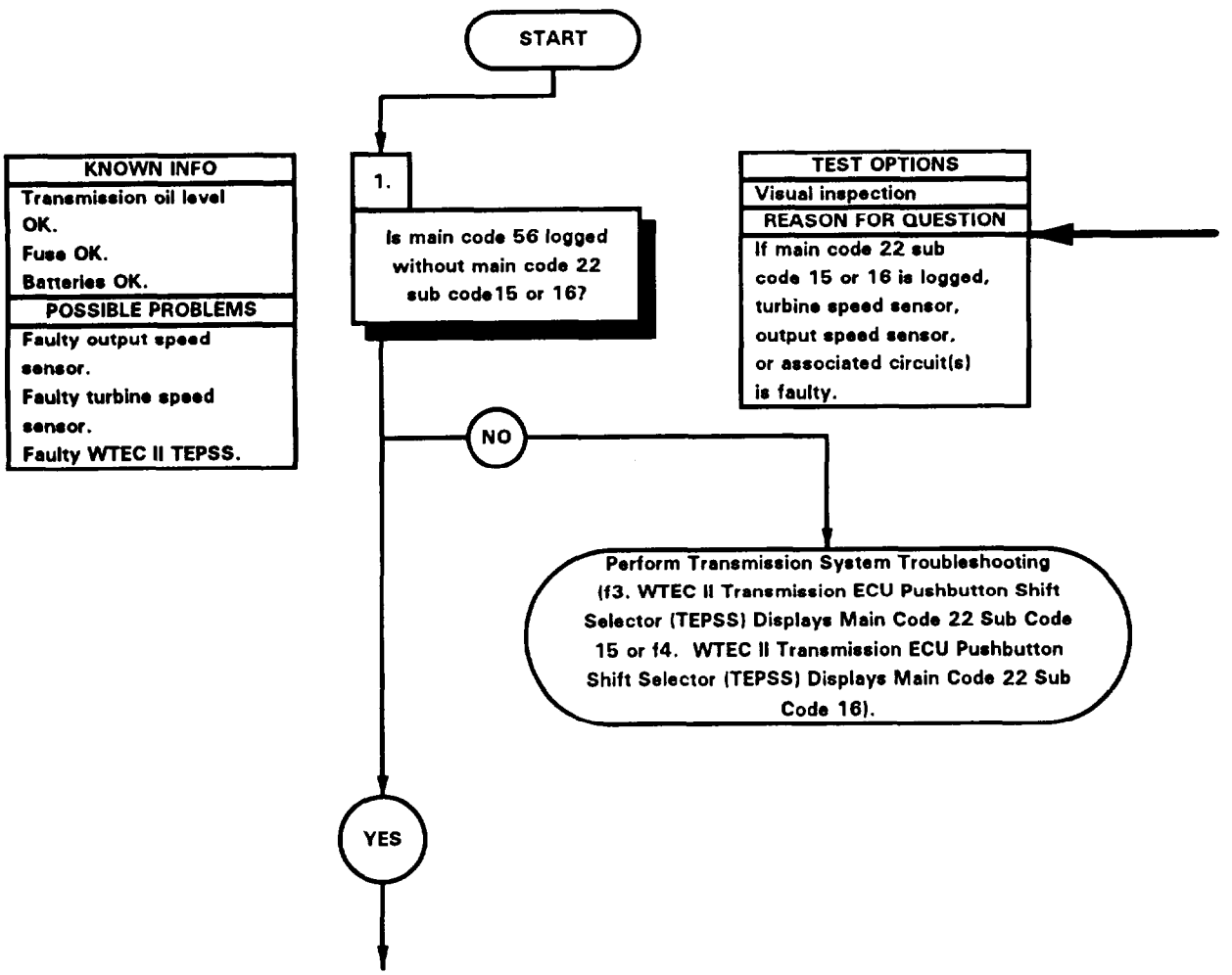
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

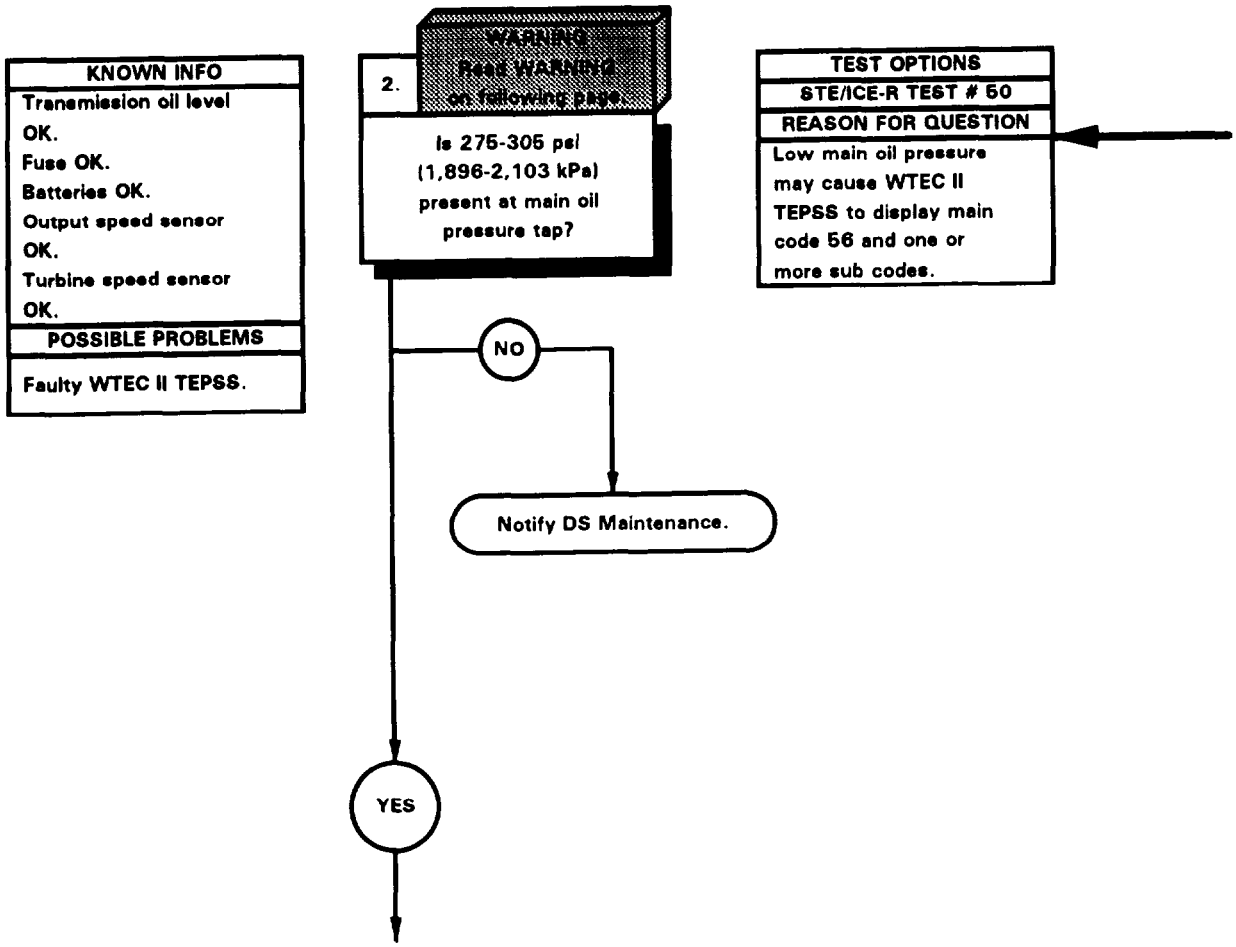
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 15 or 16 is logged in WTEC II TEPSS (para 8-4).
(2) If main code 22 sub code 15 or 16 is logged, WTEC II TEPSS has sensed a fault with the turbine speed sensor, output speed sensor, or associated circuit(s). Perform Transmission System Troubleshooting (f3. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 15 or f4. WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 16).

f18. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE (CONT)

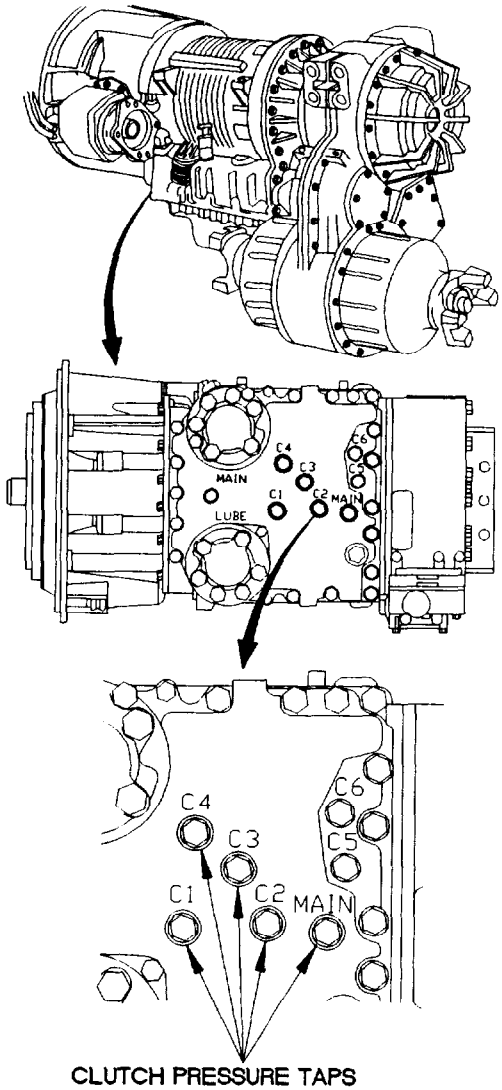


STE/ICE-R TEST #50

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

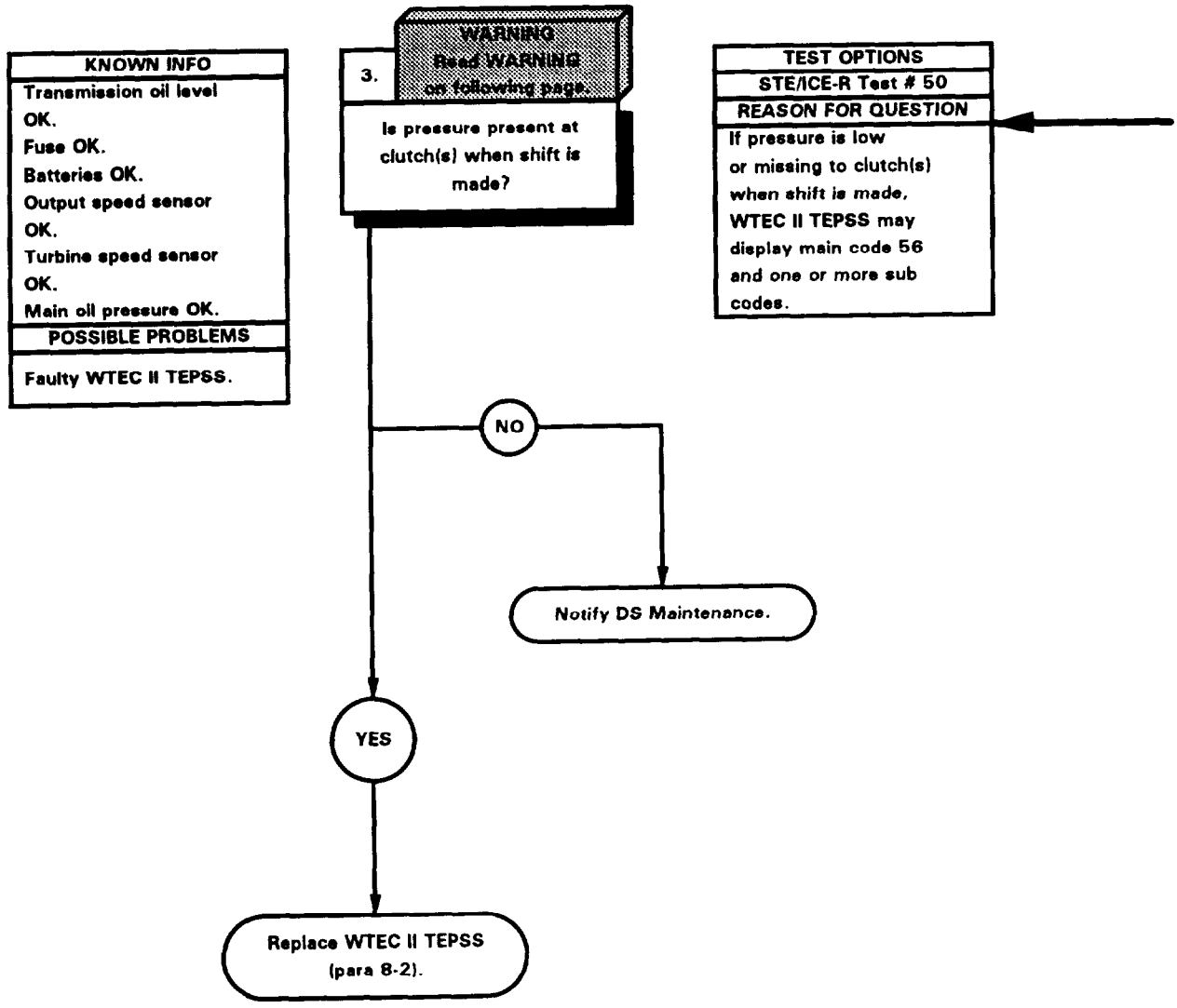
(1) Position drain pan under pressure tap.
(2) Remove main pressure tap plug and preformed packing from control valve module.
(3) Install STE/ICE-R adapter, snubber, and reducer on main pressure tap.
(4) Perform STE/ICE-R test #50 (TM 9-4910-571-12&P).
(5) Start engine (TM 9-2320-365-10) and run at idle.
(6) With parking brake applied, position WTEC II TEPSS to R position then to N position while assistant checks reading on STE/ICE-R.
(7) Shut down engine (TM 9-2320-365-10).
(8) If main oil pressure is low, notify DS Maintenance.
(9) Remove reducer, STE/ICE-R adapter, and snubber from main pressure tap.
(10) Position preformed packing and main pressure tap plug in control valve module.
(11) Tighten main pressure tap plug to 84-120 lb-in. (9-14 N·m).
(12) Remove drain pan under pressure tap.



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

x2F1101-

f18. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE (CONT)

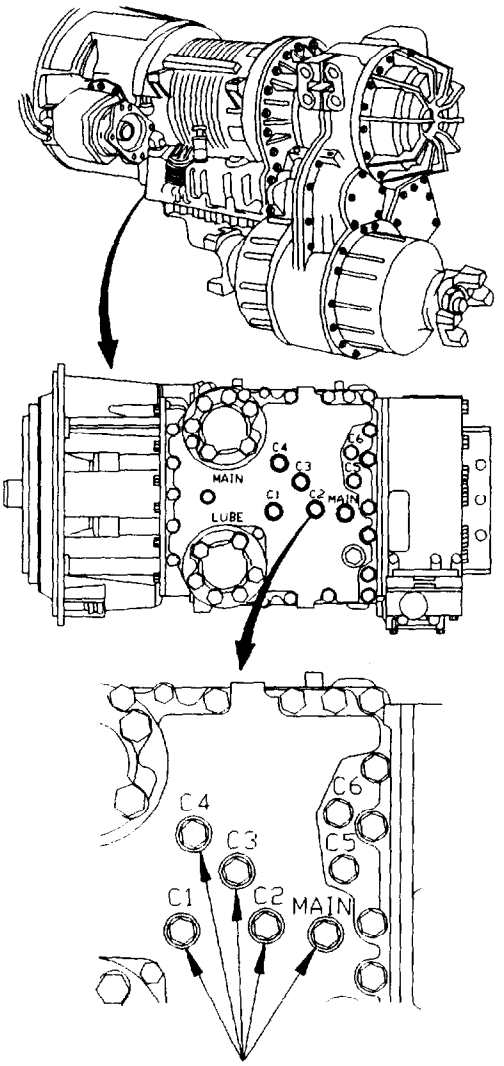


STE/ICE-R TEST #50

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from clutch pressure tap indicated by the sub code. Refer to Table 2-31. Clutch Pressure Tap.
(4) Connect STE/ICE-R adapter, snubber, and reducer to clutch pressure tap.
(5) Perform STE/ICE-R test #50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10).
(7) Make shift indicated by sub code. Refer to Table 2-31. Clutch Pressure Tap.
(8) Accelerate engine until WTEC II TEPSS displays desired range. Refer to Table 2-31. Clutch Pressure Tap.
(9) Maintain sufficient engine speed to keep desired transmission range while assistant notes reading on STE/ICE-R.
(10) Let engine return to idle.
(11) Shift transmission into neutral (TM 9-2320-365-10).
(12) Shut down engine (TM 9-2320-365-10).
(13) If one or more of clutches failed to indicate proper pressure, notify DS Maintenance. If all clutches indicate proper pressure, replace WTEC II TEPSS (para 8-2).
(14) Remove reducer, STE/ICE-R adapter, and snubber from clutch pressure tap.
(15) Position preformed packing and pressure tap plug in control valve module.
(16) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(17) Remove drain pan under pressure tap.
(18) Install transmission front and rear output propeller shafts (para 9-2).
(19) Clear diagnostic codes (para 8-4).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2F1101-

TABLE 2-31. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	PRESSURE at CLUTCH(S)	SOLENOID ASSEMBLY LOCATION	PRESSURE READINGS at TAPS
00	L Range Test	C3 & C6	STA & C6 Clutch	235-265 psi (1620-1827 kPa)
11	1 Range Test	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
22	2 Range Test	C1 & C4	ROT & STA Clutch	170-265 psi (1172-1827 kPa)
33	3 Range Test	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
44	4 Range Test	C1 & C2	Rotating Clutch	170-194 psi (1172-1338 kPa)
55	5 Range Test	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
66	6 Range Test	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
77	R Range Test	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)

f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE

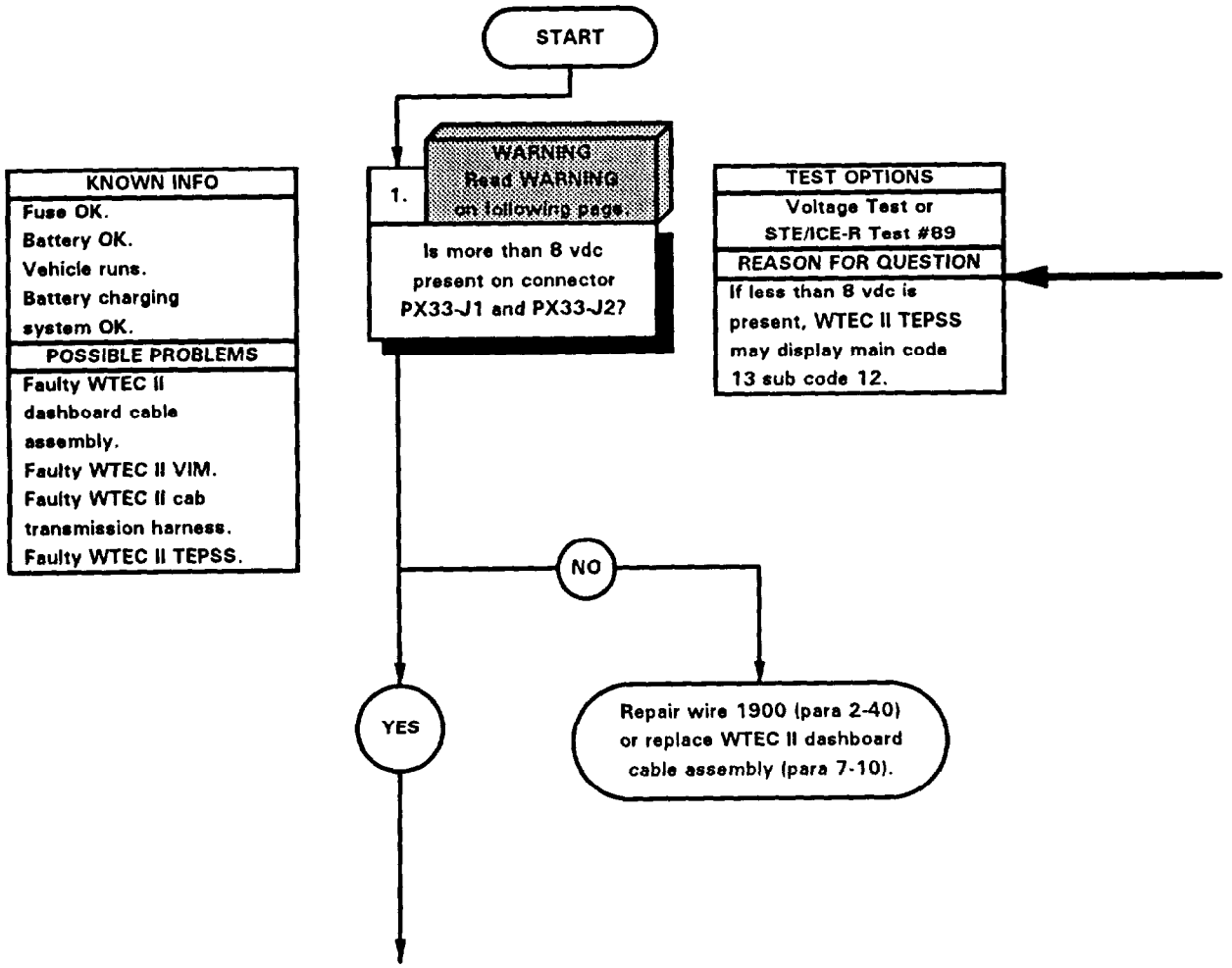
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References
TM 9-4910-571-12&P

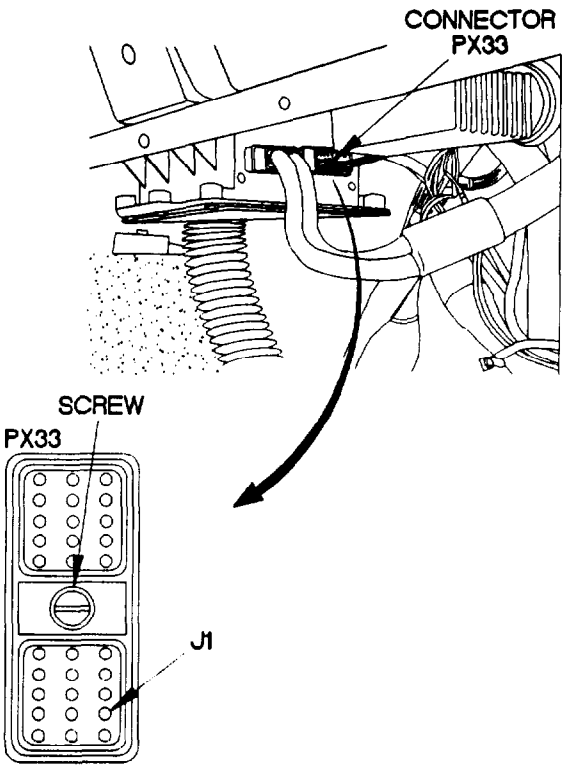


WARNING

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.

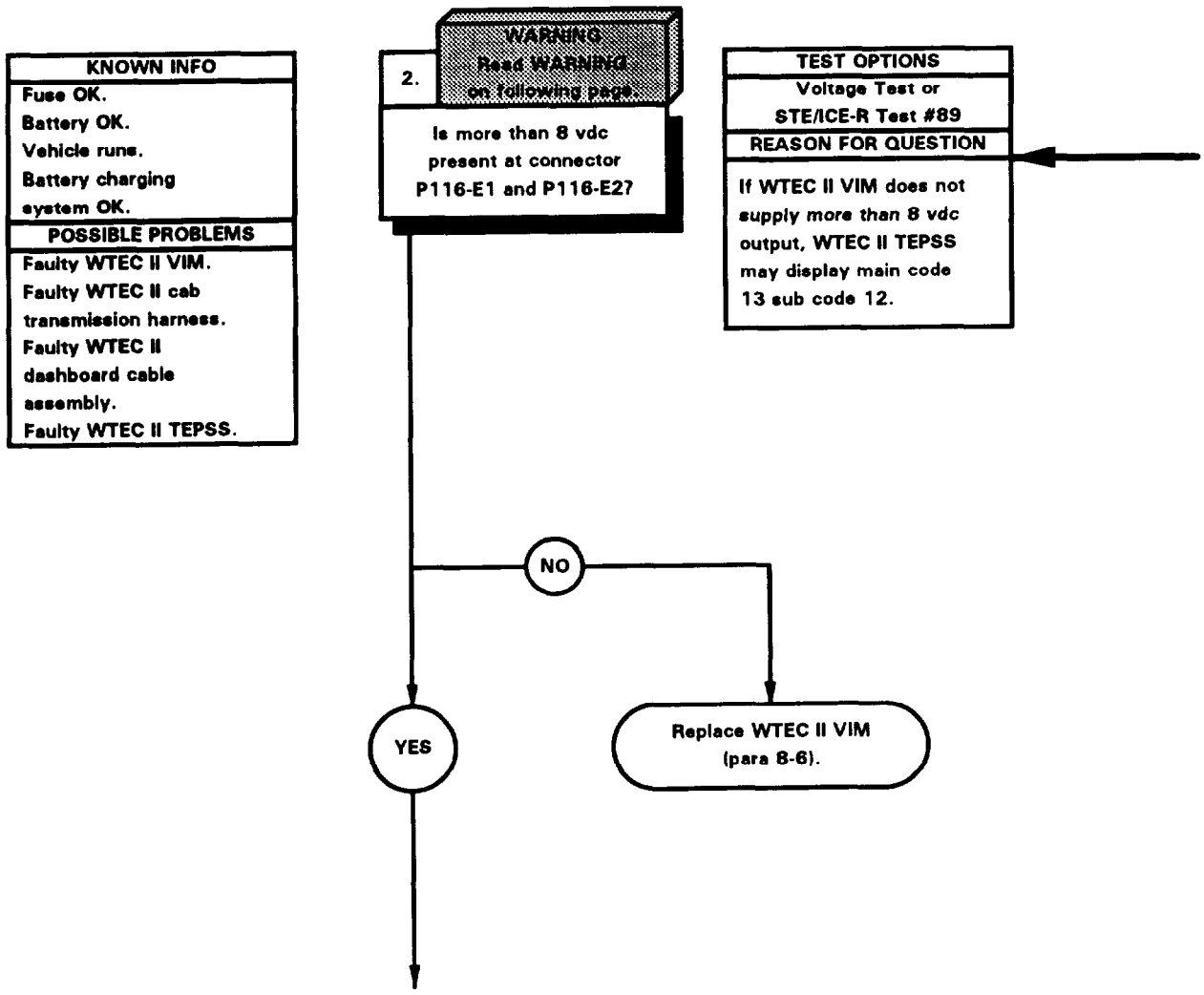
VOLTAGE TEST

(1) Remove kick panel (para 16-3).
(2) Set multimeter to volts dc.
(3) Start engine (TM 9-2320-365-10).
(4) Connect positive (+) probe of multimeter to connector PX33-J1.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector PX33-J2.
(7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(8) If 12 to 14.5 vdc is not verified, repair wire 1900 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).
(9) Shut down engine (TM 9-2320-365-10).



X2F180IA

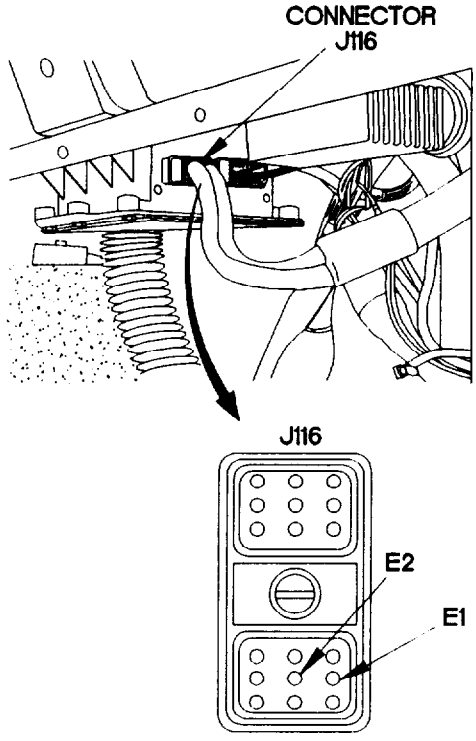
f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



WARNING

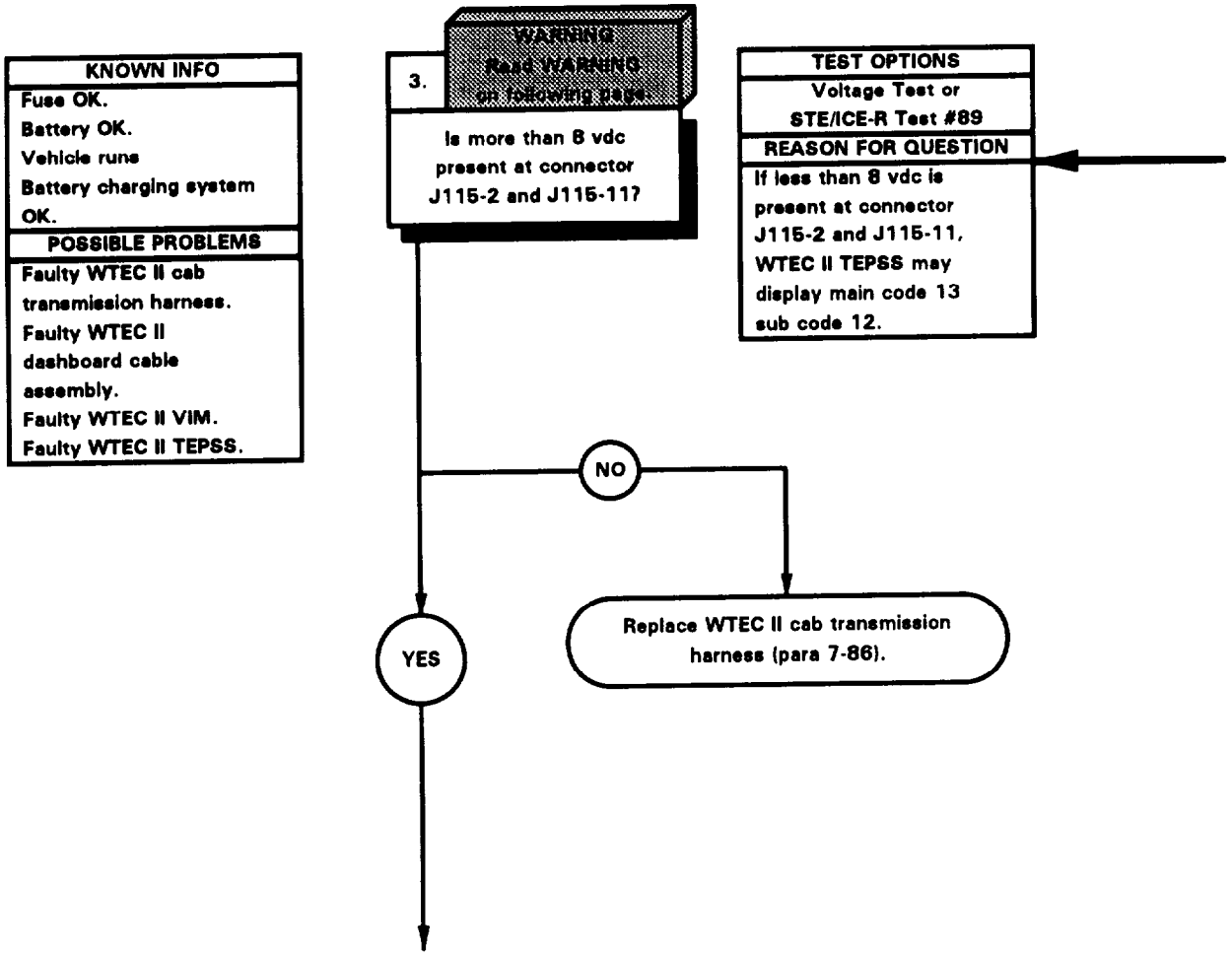
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Start engine (TM 9-2320-365-10).
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector P116-E1.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P116-E2.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If 12 to 14.5 vdc is not present, replace WTEC II VIM (para 8-6).
(8) Shut down engine (TM 9-2320-365-10).



X2F1802A

f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)

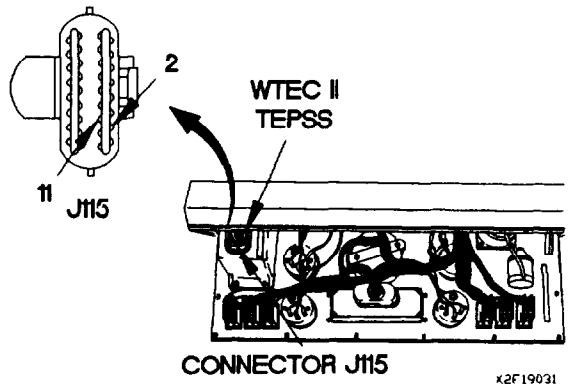


WARNING

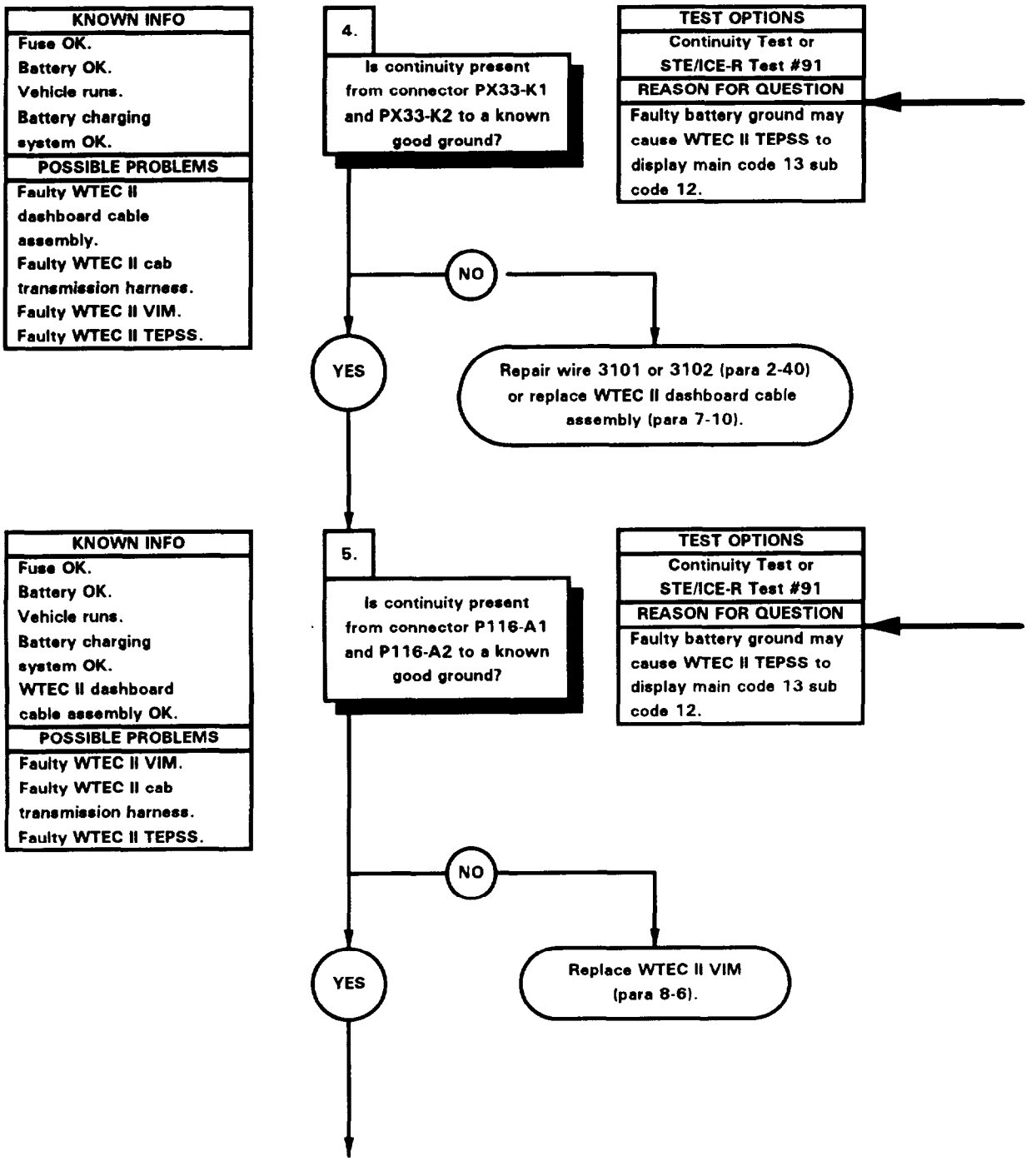
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewerly can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

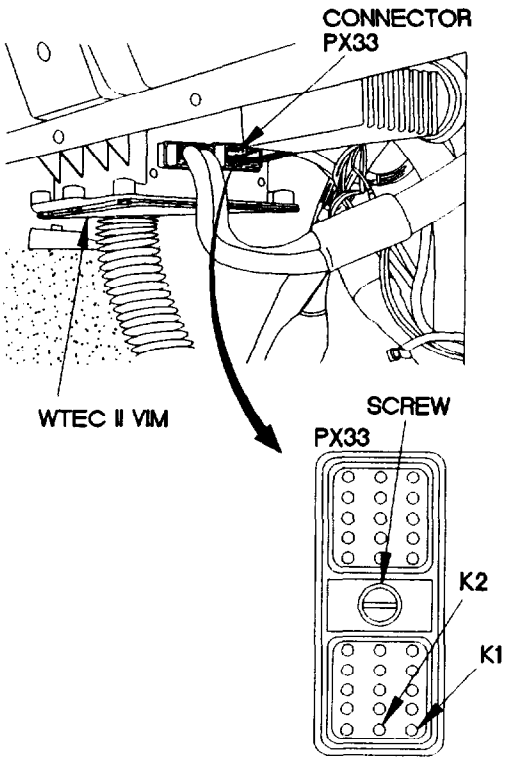
(1) Remove instrument panel assembly for access (para 7-15).
(2) Start engine (TM 9-2320-365-10).
(3) Set multimeter to volts dc.
(4) Disconnect connector J115 (top connector) from WTEC II TEPSS.
(5) Connect positive (+) probe of multimeter to connector J115-2.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to connector J115-11.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) If 12 to 14.5 vdc is not present connector J115-2 and J115-11, replace WTEC II cab transmission harness (para 7-86).
(10) Shut down engine (TM 9-2320-365-10).



f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)

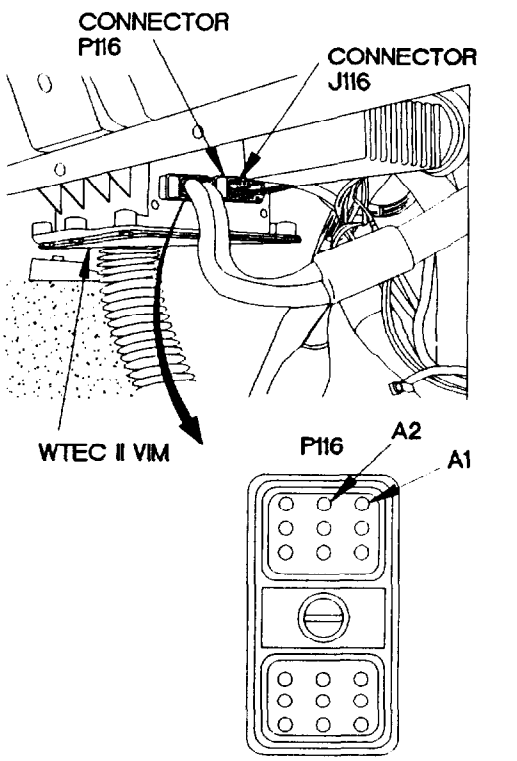


CONTINUITY TEST
(1) Loosen center screw and disconnect connector PX33 from WTEC II VIM.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector PX33-K1.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector PX33-K2.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present on connector PX33-K1, repair wire 3101 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10). If continuity is not present on connector PX33-K2, repair wire 3102 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).
(9) Connect connector PX33 to WTEC II VIM and tighten center screw.



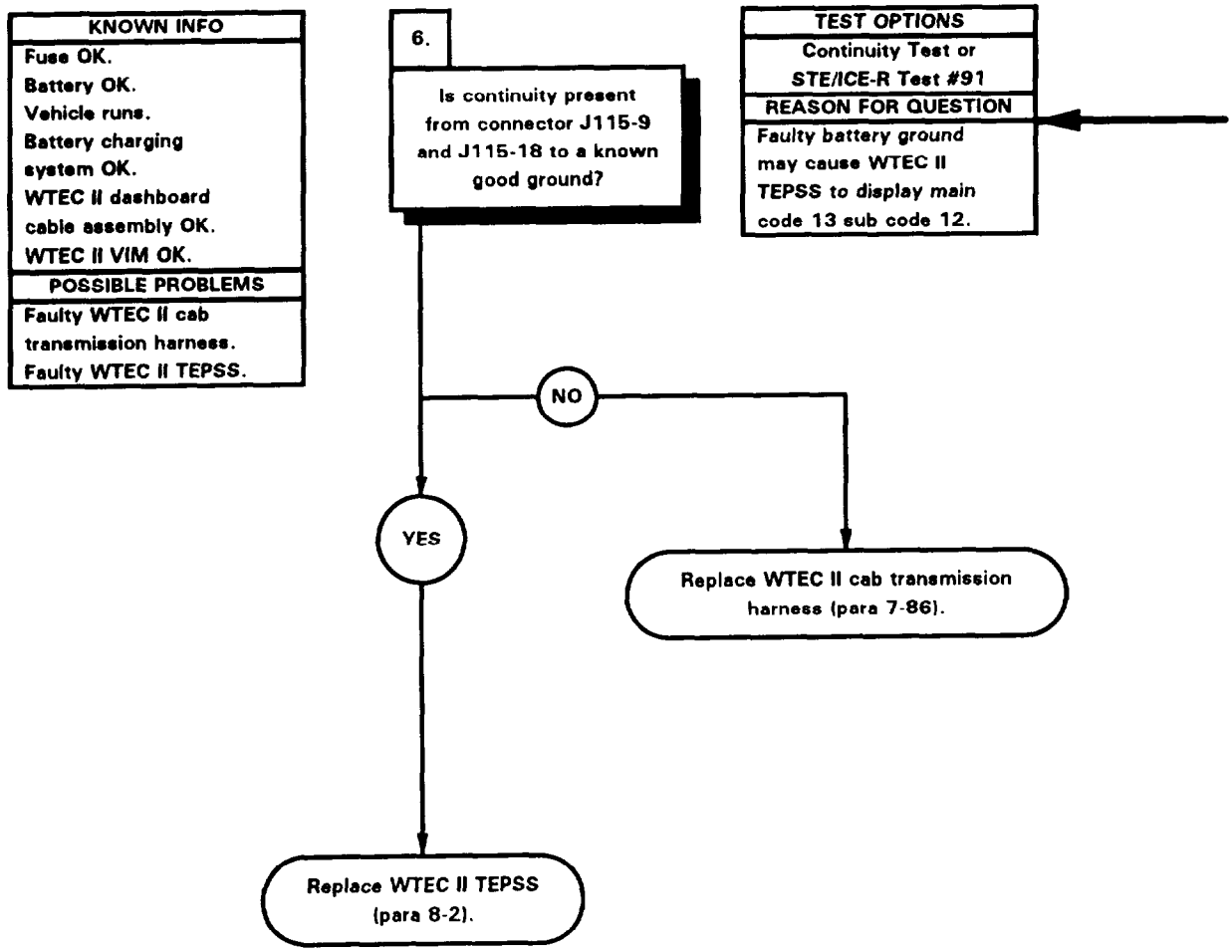
X2F18041

CONTINUITY TEST
(1) Loosen center screw and disconnect connector J116 from WTEC II VIM.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to WTEC II VIM connector P116-A1.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to WTEC II VIM connector P116-A2.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If continuity is not present, replace WTEC II VIM (para 8-6).
(8) Connect connector J116 to WTEC II VIM and tighten center screw.
(9) Install kick panel (para 16-3).

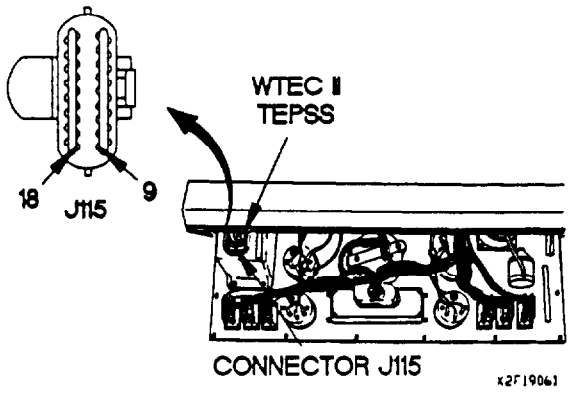


X2F18051

f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J115-9.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) Connect positive (+) probe of multimeter to connector J115-18.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present, replace WTEC II cab transmission harness (para 7-86).
(7) If continuity is present, replace WTEC II TEPSS (para 8-2).
(8) Connect connector J115 (top connector) to WTEC II TEPSS.
(9) Install instrument panel assembly (para 7-15).
(10) Clear diagnostic codes (para 8-4).

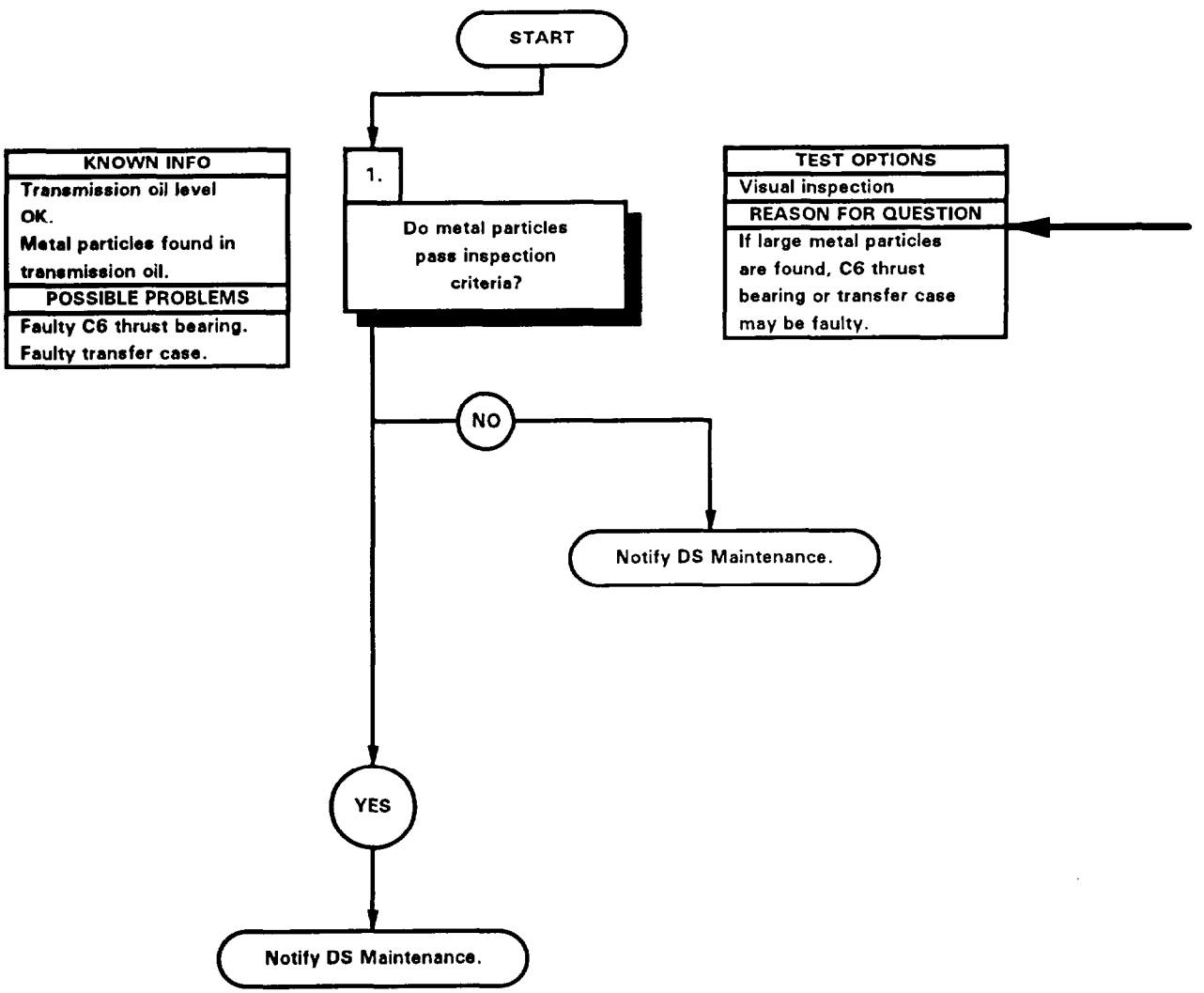


f20. METAL PARTICLES FOUND DURING TRANSMISSION OIL CHANGE

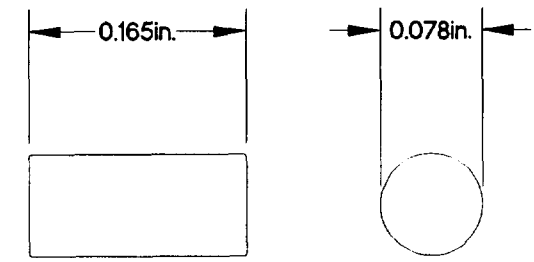
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)



If metal particles are found on transfer case drain plug that are 0.165 in. (4.19 mm) x 0.078 in. (1.98 mm) or larger, C6 thrust bearing may be faulty. Notify DS Maintenance.



NEEDLE - SIDE VIEW NEEDLE - END VIEW

METAL PARTICLES

X2F200JA

f21. TRANSMISSION DOES NOT SHIFT OR IS SLOW TO SHIFT WHEN COLD

INITIAL SETUP

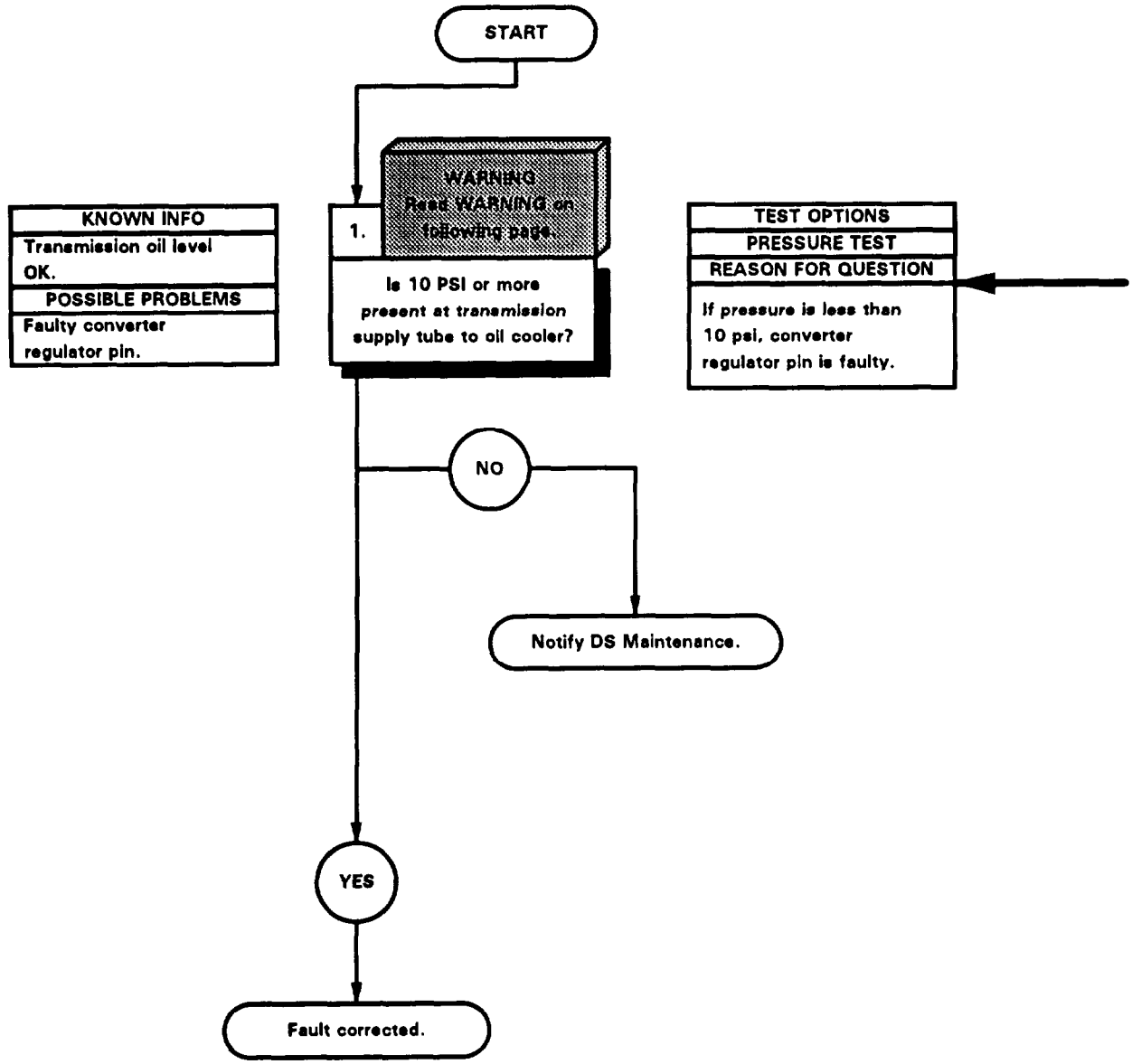
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

References
(TM 9-4910-571-12&P)

Tools and Special Tools
Tool Kit, Genl, Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Goggles, Industrial (Item 15, Appendix C)

Materials/Parts
Adapter, Pipe to Tube (Item 0.1, Appendix D)
Packing, Preformed (Item 177, Appendix G)

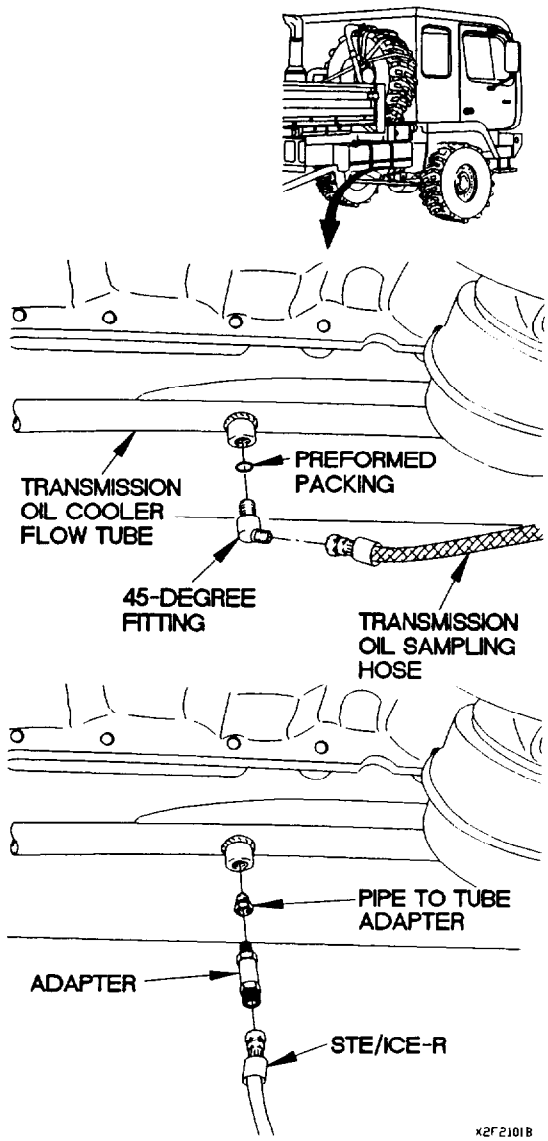


WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

(1) Place drain pan under transmission oil cooler flow tube.
(2) Disconnect transmission oil sampling hose from 45-degree fitting.
(3) Remove 45-degree fitting from transmission oil cooler flow tube.
(4) Remove preformed packing from 45-degree fitting. Discard preformed packing.
(5) Install pipe to tube adapter in transmission oil cooler flow tube.
(6) Connect STE/ICE-R with adapter to pipe to tube adapter.
(7) Start engine (TM 9-2320-365-10).
(8) Perform STE/ICE-R Test # 50.
(9) Check if pressure is 10 psi or more.
(10) If pressure is less than 10 psi, notify DS Maintenance.
(11) Shut down engine (TM 9-2320-365-10).
(12) Disconnect STE/ICE-R and adapter from pipe to tube adapter.
(13) Remove pipe to tube adapter from transmission oil cooler flow tube.
(14) Install preformed packing on 45-degree fitting.
(15) Install 45-degree fitting in transmission oil cooler flow tube.
(16) Connect transmission oil sampling hose to 45-degree fitting.
(17) Remove drain pan from under oil cooler flow tube.



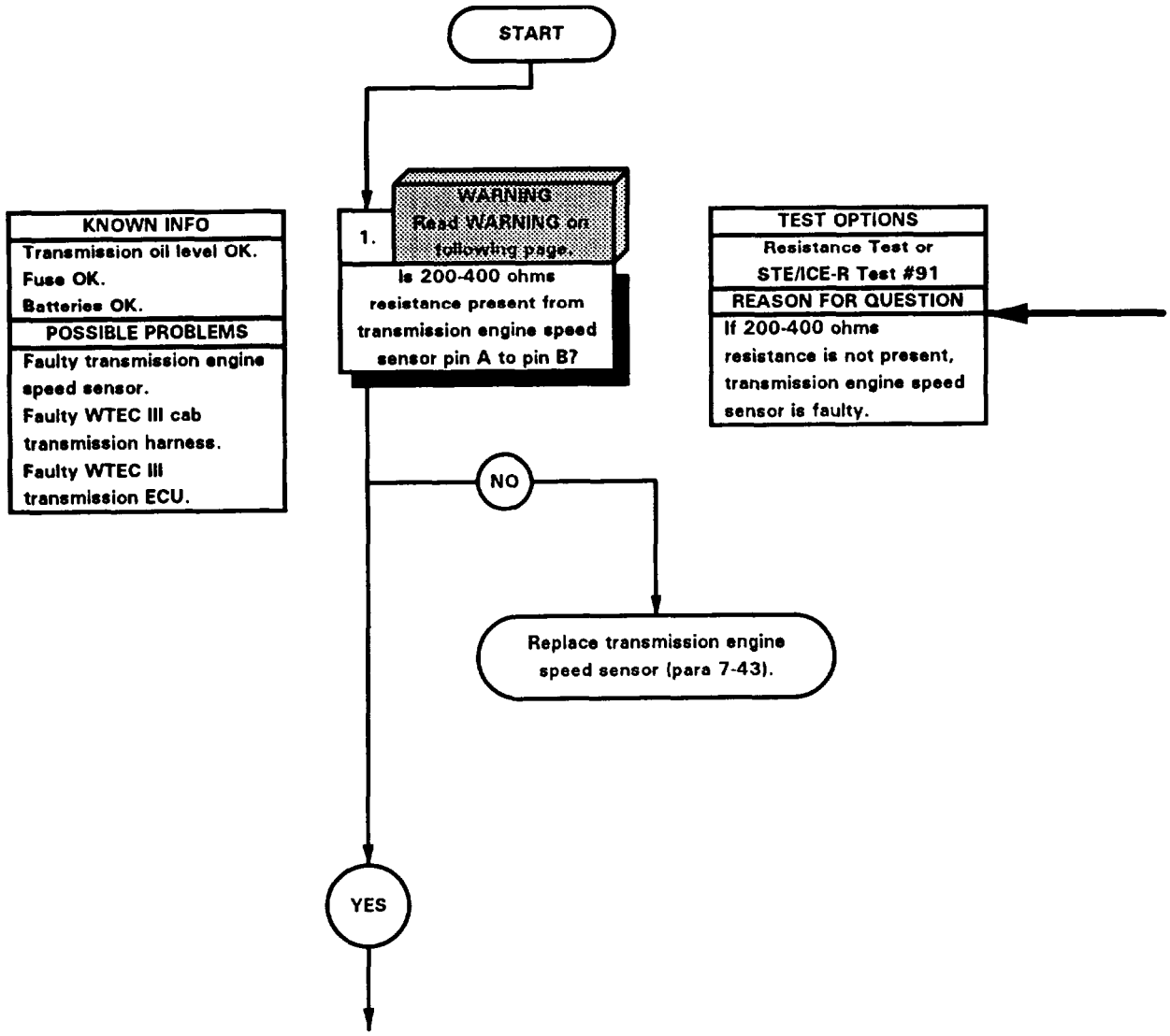
f22. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 14

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 81, Appendix B)
STE/ICE-R (Item 39, Appendix C)



RESISTANCE TEST

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.

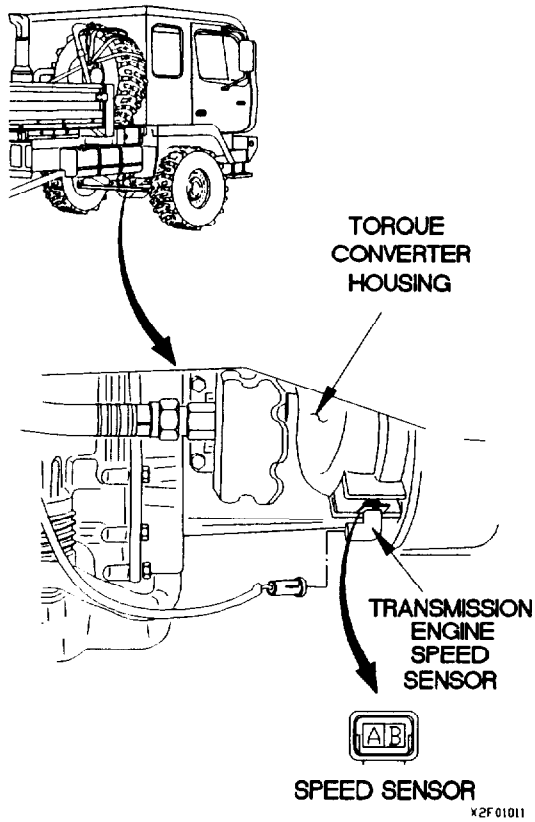
(1) Disconnect connector P72 from transmission engine speed sensor.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to pin A of transmission engine speed sensor.

NOTE

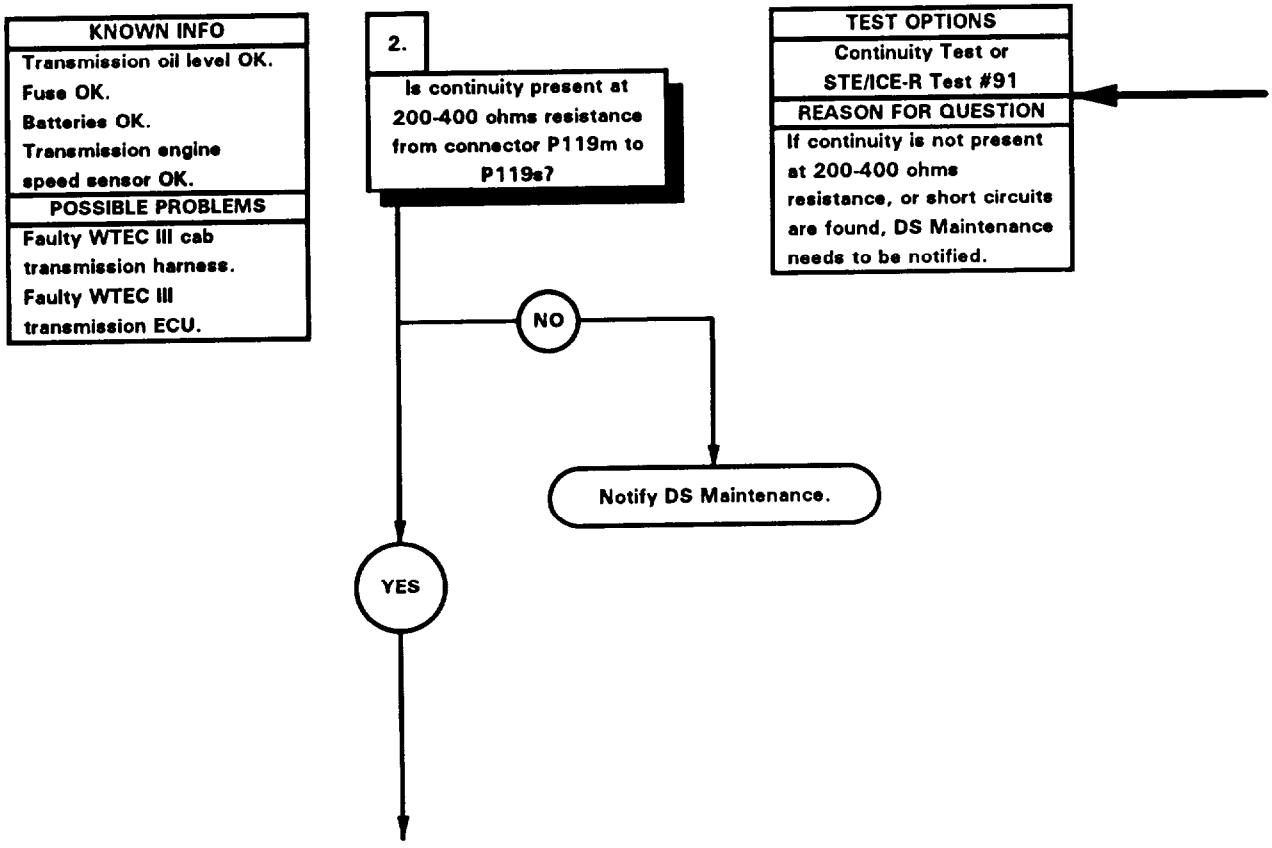
A good transmission engine speed sensor will return a reading of 200-400 ohms resistance as follows:

a. 200 ohms at - 40° F (- 40° C)
b. 300 ohms at 68° F (20° C)
c. 400 ohms at 230° F (110° C)

(4) Connect negative (-) probe of multimeter to pin B of transmission engine speed sensor and note reading on multimeter.
(5) If good resistance is not noted, replace transmission engine speed sensor (para 7-43).
(6) Connect connector P72 to transmission engine speed sensor.

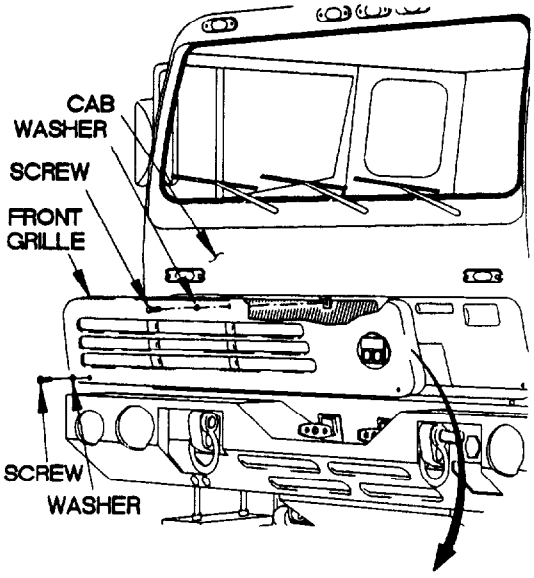


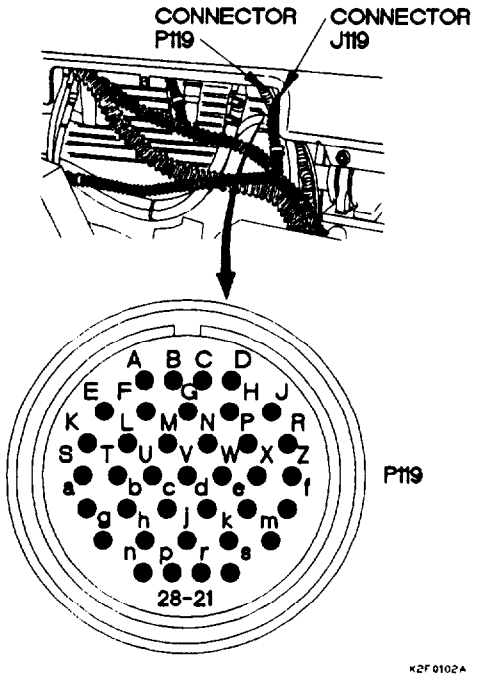
f22. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 14 (CONT)



CONTINUITY TEST

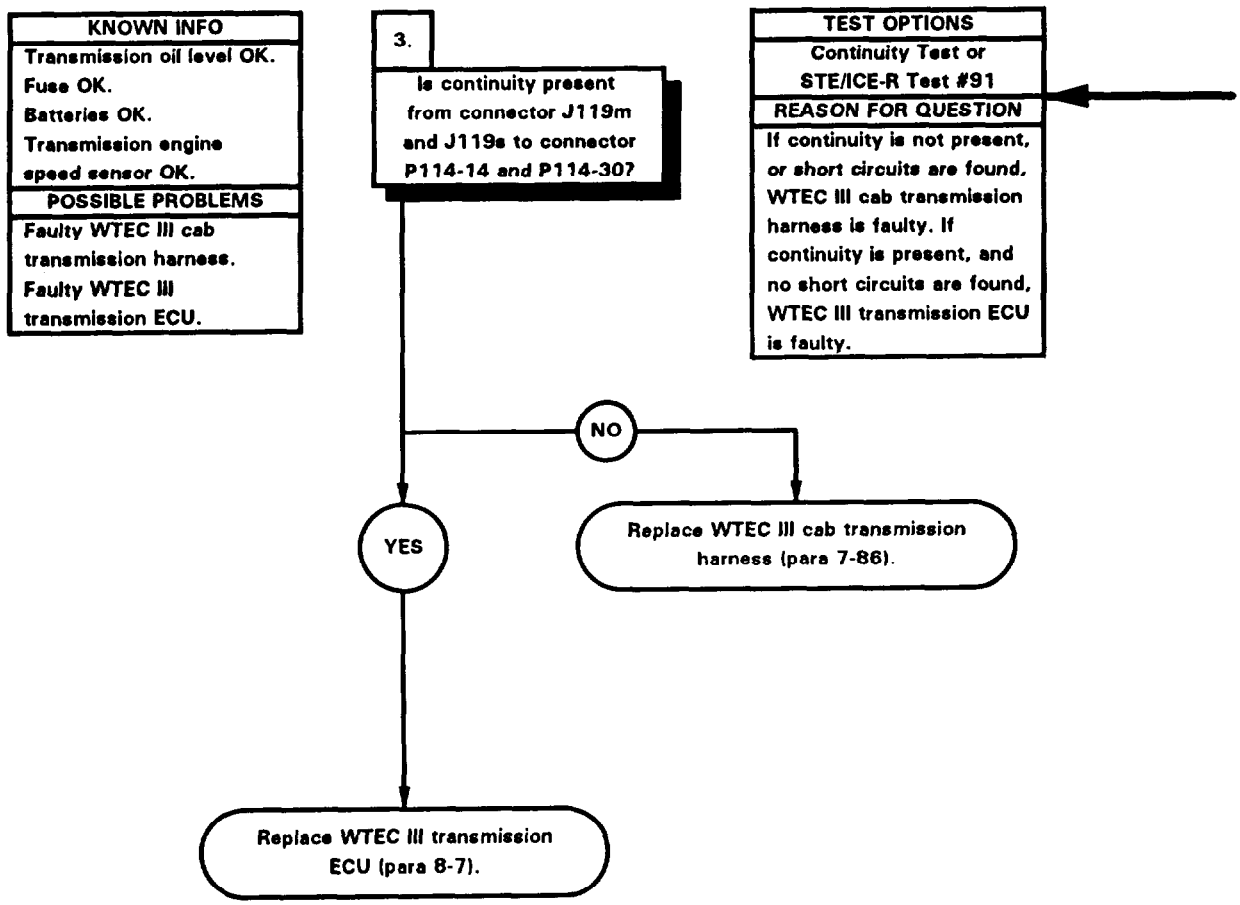
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P119m.
(7) Connect negative (-) probe of multimeter to connector P119s and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) Connect positive (+) probe of multimeter to connector P119s.
(11) Connect negative (-) probe of multimeter to all other pins in connector P119 (except P119m), one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity is not present at 200-400 ohms resistance in step 7, or continuity is present in step 8, 9, 11, or 12, notify DS Maintenance.



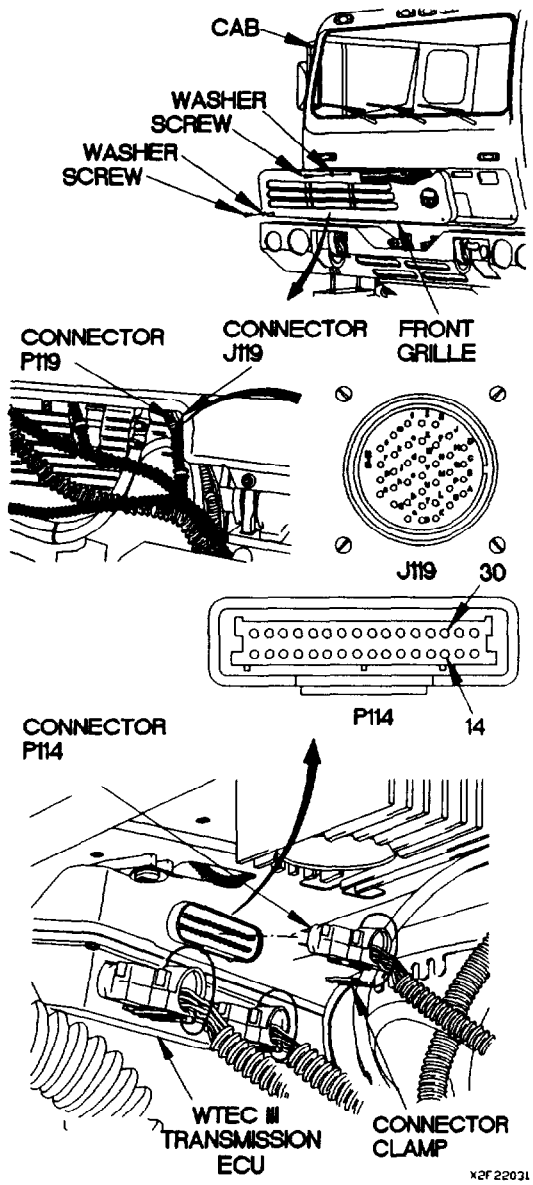


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f22. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 14 (CONT)



CONTINUITY TEST
(1) Remove kick panel (para 16-3).
(2) Disconnect connector clamp from connector P114.
(3) Disconnect connector P114 from WTEC III transmission ECU.
(4) Install jumper wire from connector J119m to J119s.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P114-14.
(7) Connect negative (-) probe of multimeter to connector P114-30 and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note reading on multimeter.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) Connect positive (+) probe of multimeter to connector P114-30.
(11) Connect negative (-) probe of multimeter to all other sockets in connector P114 (except P114-14), one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity is not present in step 7, or continuity is present in step 8, 9, 11, or 12, replace WTEC III cab transmission harness (para 8-7). If continuity is present in step 7, and continuity is not present in step 8, 9, 11, and 12, replace WTEC III transmission ECU (para 7-86).
(14) Remove jumper wire from connector J119s and J119m.
(15) Connect connector P119 to connector J119.
(16) Position front grille on cab with washer and screw.
(17) Position two washers and screws in front grille.
(18) Tighten screw to 48-60 lb-in. (5-7 N·m).
(19) Tighten two screws to 24 lb-in. (3 N·m).
(20) Connect connector P114 to WTEC III transmission ECU.
(21) Connect connector clamp to connector P114.
(22) Install kick panel (para 16-3).
(23) Clear diagnostic codes (para 8-5).



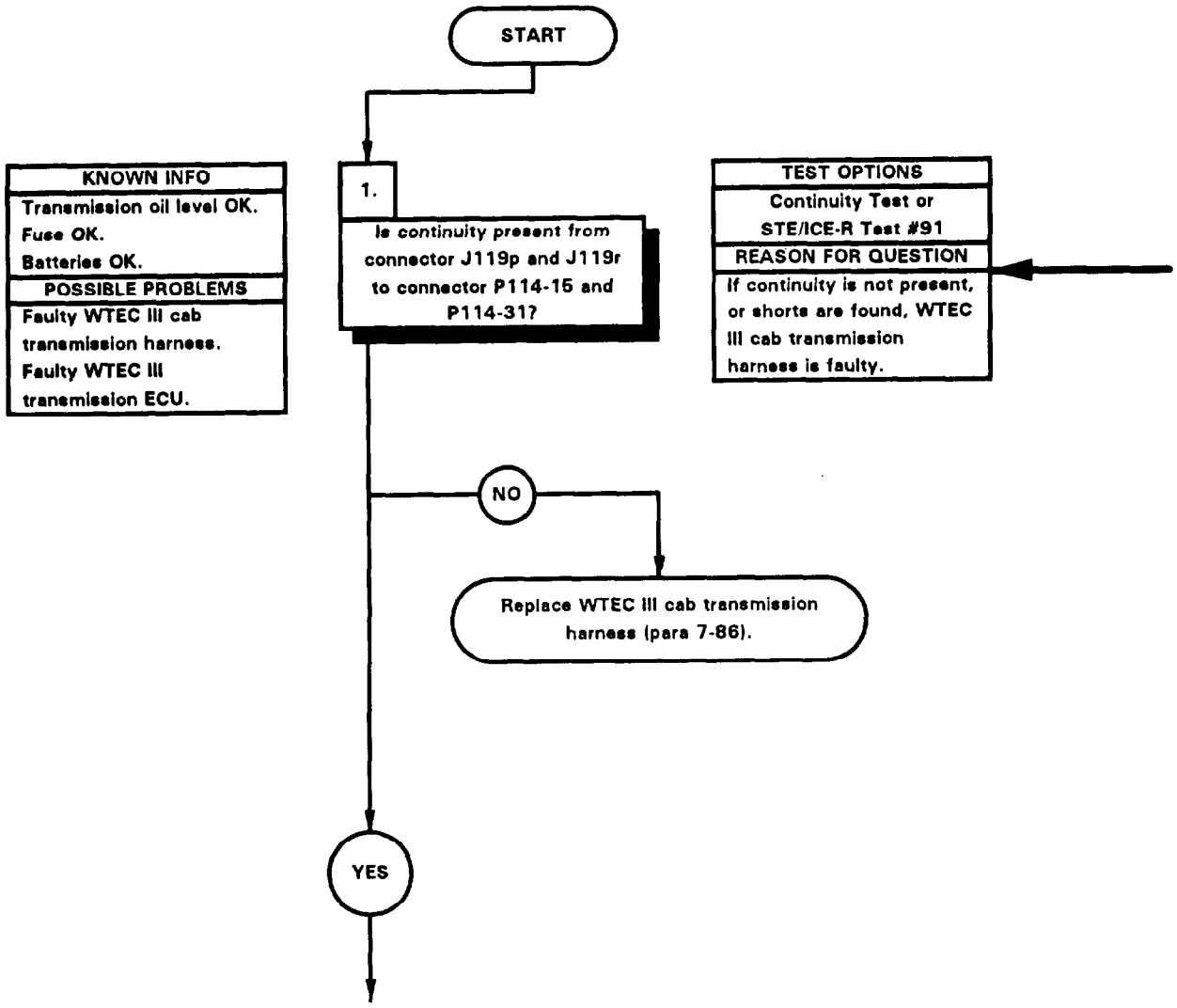
f23. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 15

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

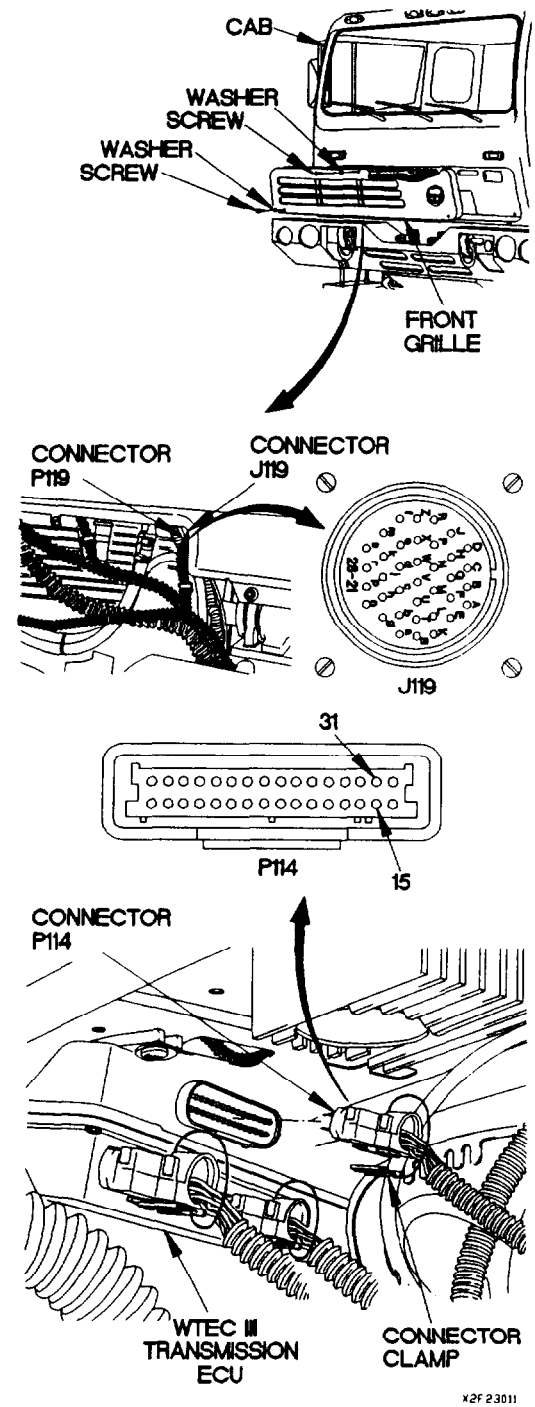
References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 81, Appendix B)
STE/ICE-R (Item 39, Appendix C)

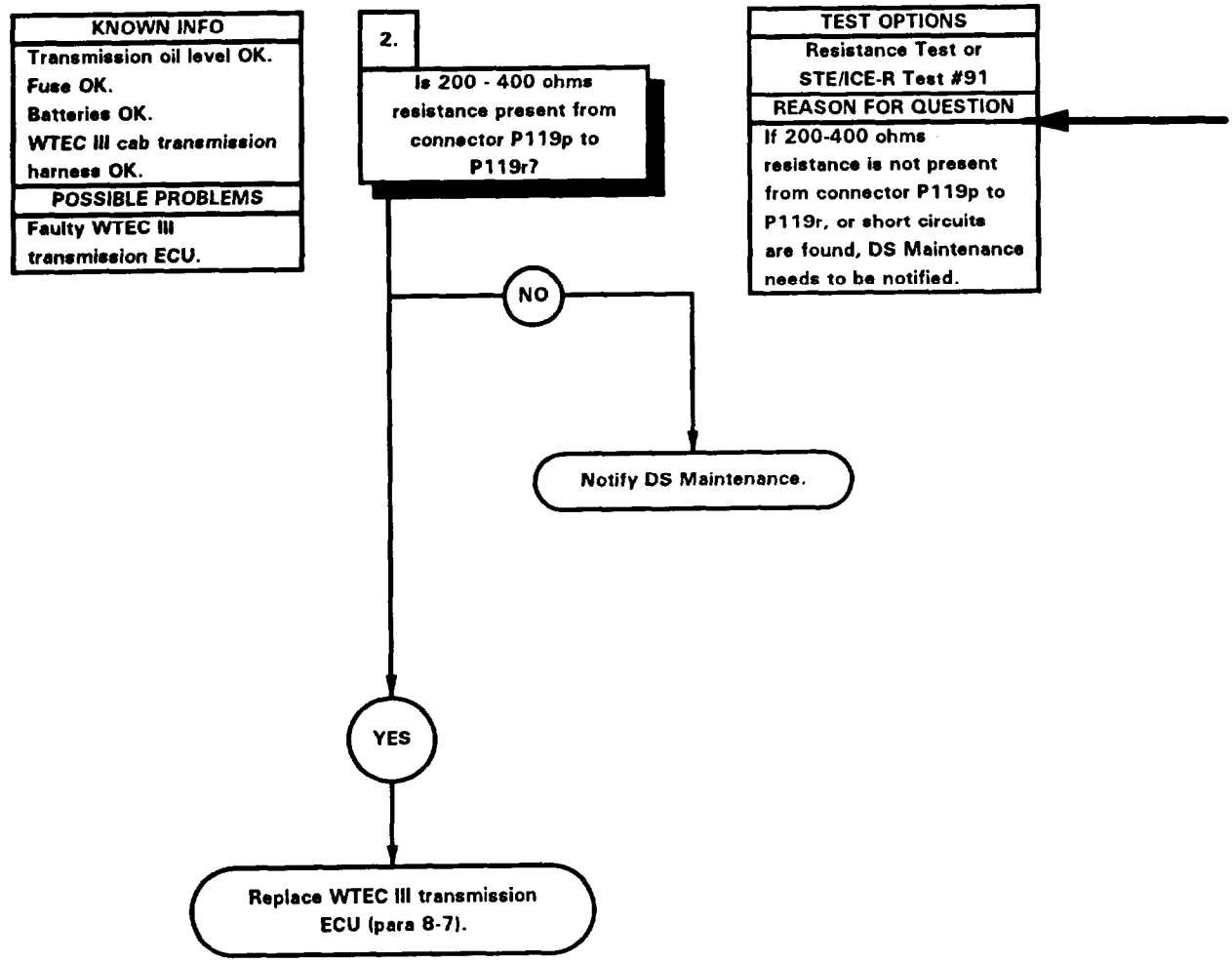


CONTINUITY TEST

(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove kick panel (para 16-3).
(6) Disconnect connector clamp from connector P114.
(7) Disconnect connector P114 from WTEC III transmission ECU.
(8) Install jumper wire from connector J119p to J119r.
(9) Set multimeter to ohms.
(10) Connect positive (+) probe of multimeter to connector P114-15.
(11) Connect negative (-) probe of multimeter to connector P114-31 and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note reading on multimeter.
(13) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(14) Remove jumper wire from connector J119r and J119p.
(15) Connect positive (+) probe of multimeter to connector P114-31.
(16) Connect negative (-) probe of multimeter to all sockets in connector P114 (except P114-15), one at a time, and note reading on multimeter.
(17) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(18) If continuity is not present in step 11, or continuity is present in step 12, 13, 16, or 17, replace WTEC III cab transmission harness (para 7-86).
(19) Connect connector P114 to WTEC III transmission ECU.
(20) Connect connector clamp to connector P114.
(21) Install kick panel (para 16-3).



f23. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 15 (CONT)



RESISTANCE TEST

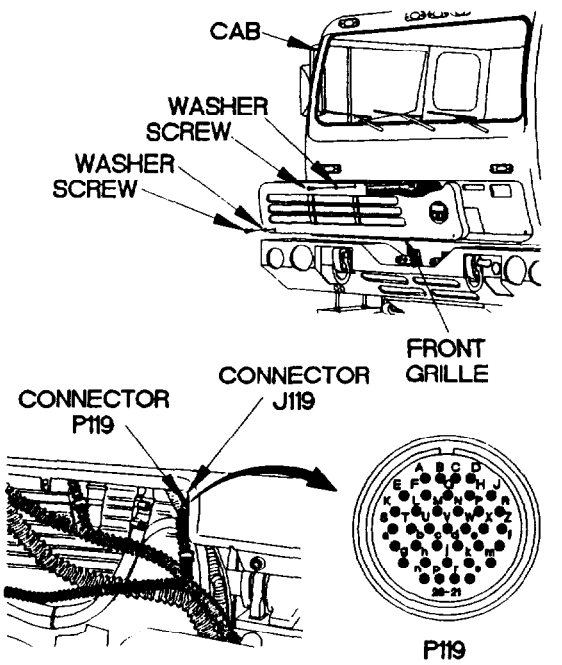
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P119p.
(3) Connect negative (-) probe of multimeter to connector P119r and note reading on multimeter.

NOTE

A good turbine speed sensor will return a reading of 200-400 ohms resistance as follows:

a. 200 ohms at -40°F (-40°C).
b. 300 ohms at 68°F (20°C).
c. 400 ohms at 230°F (110°C).

(4) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector P119r.
(7) Connect negative (-) probe of multimeter to all pins in connector P119 (except P119p), one at a time, and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) If good resistance is not noted in step 3, or continuity is present in step 4, 5, 7, or 8, notify DS Maintenance.
(10) If good resistance is noted in step 3 and continuity is not present in step 4, 5, 7, or 8, replace WTEC III transmission ECU (para 8-7).
(11) Connect connector P119 to connector J119.
(12) Position front grille on cab with washer and screw.
(13) Position two washers and screws in front grille.
(14) Tighten screw to 48-60 lb-in. (5-7 N·m).
(15) Tighten two screws to 24 lb-in. (3 N·m).
(16) Clear diagnostic codes (para 8-5).



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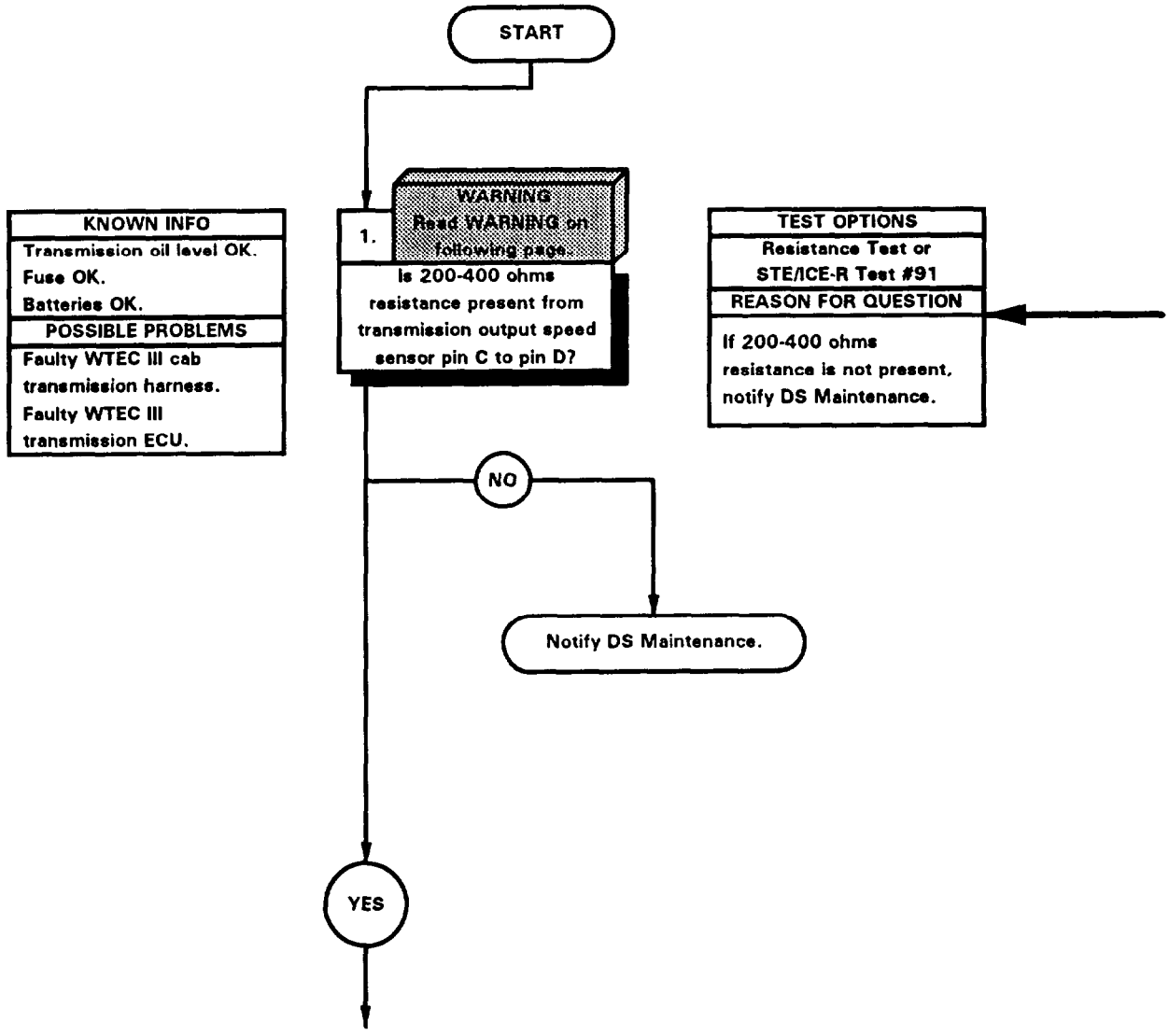
f24. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS
MAIN CODE 22 SUB CODE 16

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 81, Appendix B)
STE/ICE-R (Item 39, Appendix C)



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.

RESISTANCE TEST

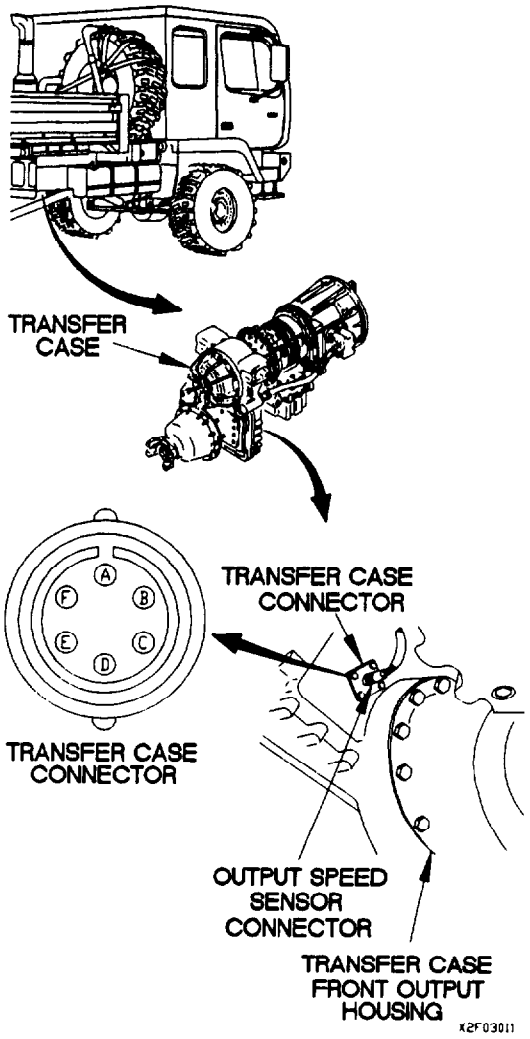
(1) Disconnect output speed sensor connector from transfer case connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to pin C of transfer case connector.

NOTE

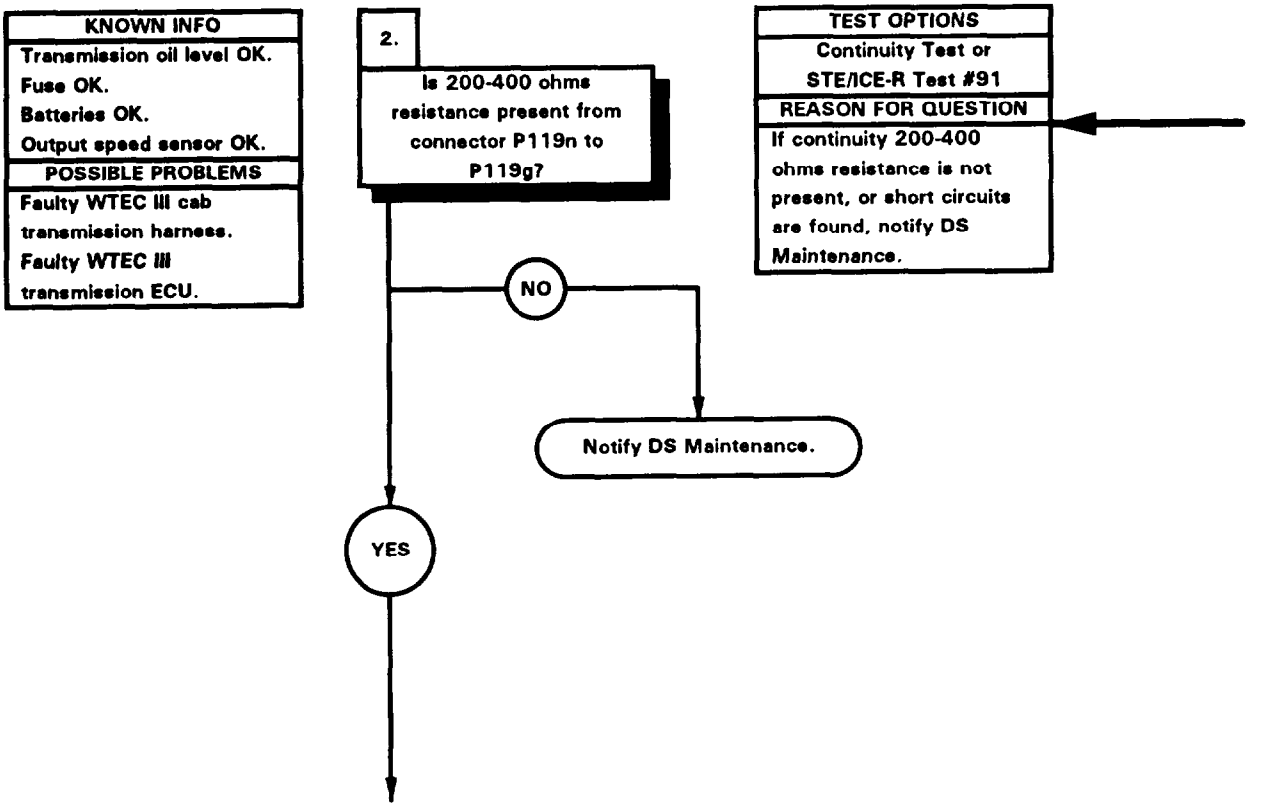
A good output speed sensor will return a reading of 200-400 ohms resistance as follows:

a. 200 ohms at -40° F (-40° C)
b. 300 ohms at 68° F (20° C)
c. 400 ohms at 230° F (110° C)

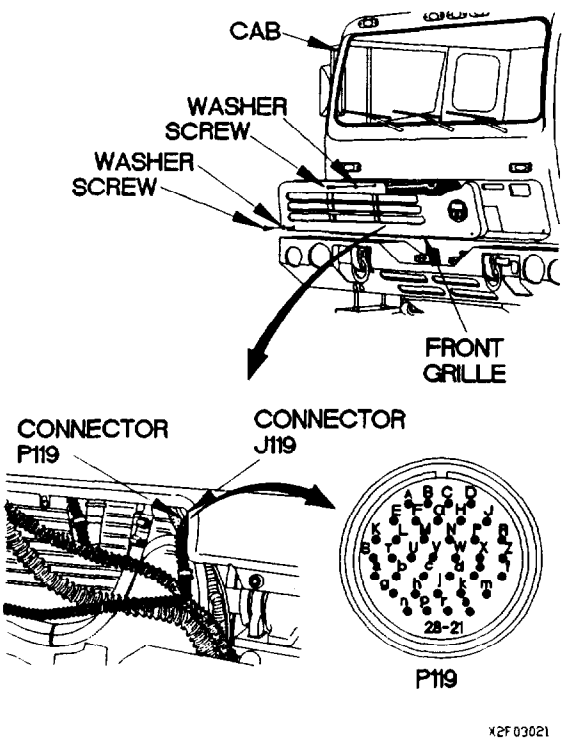
(4) Connect negative (-) probe of multimeter to pin D of transfer case connector and note reading on multimeter.
(5) If good resistance is not noted, notify DS Maintenance.
(6) Connect output speed sensor connector to transfer case connector.



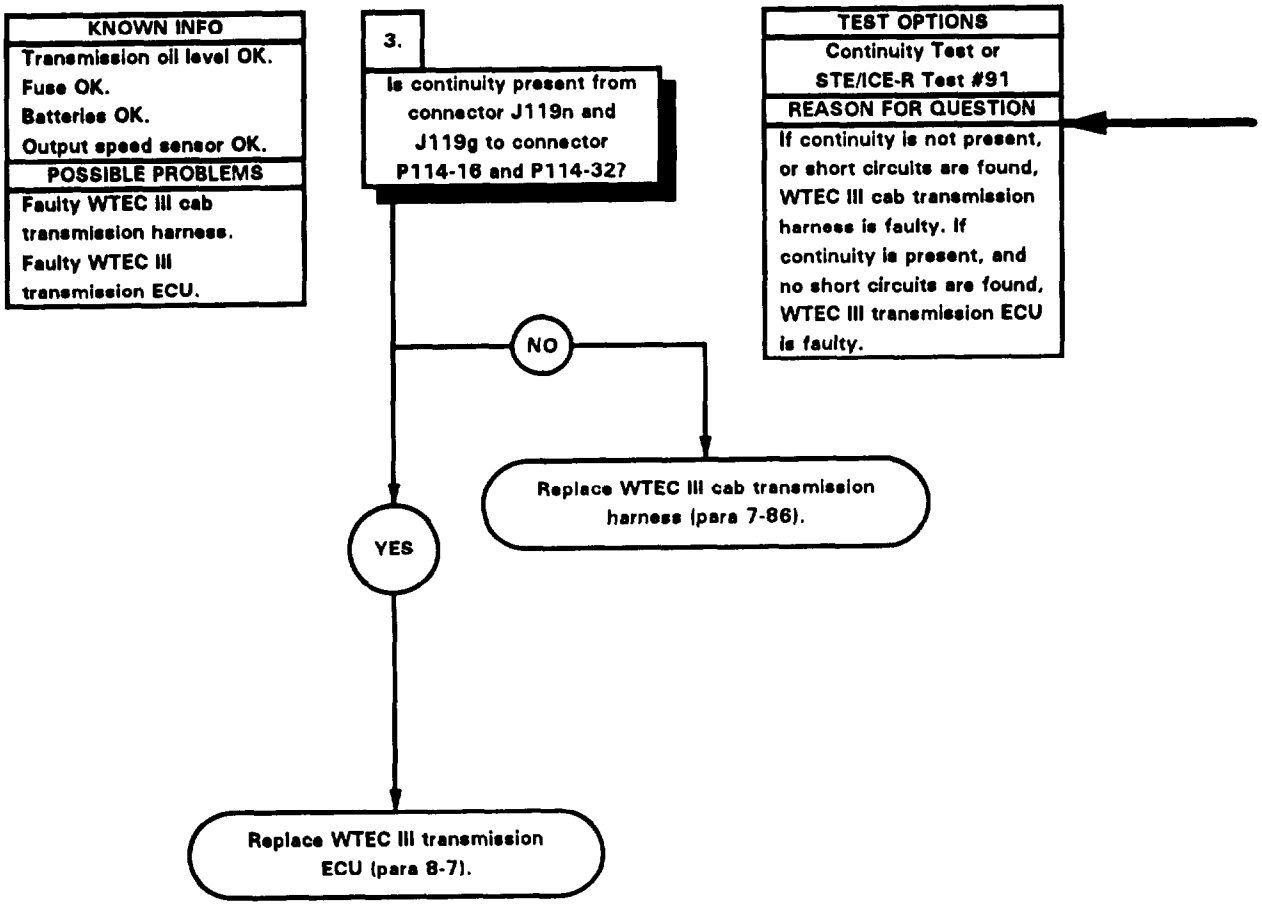
f24. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 16 (CONT)



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) Disconnect connector P119 from connector J119.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P119n.
(7) Connect negative (-) probe of multimeter on connector P119g and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) Connect positive (+) probe of multimeter to connector P119g.
(11) Connect negative (-) probe of multimeter to all other pins in connector P119 (except P119n), one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity 200-400 ohms resistance is not present in step 7, or continuity is present in step 8, 9, 11, or 12, notify DS Maintenance.

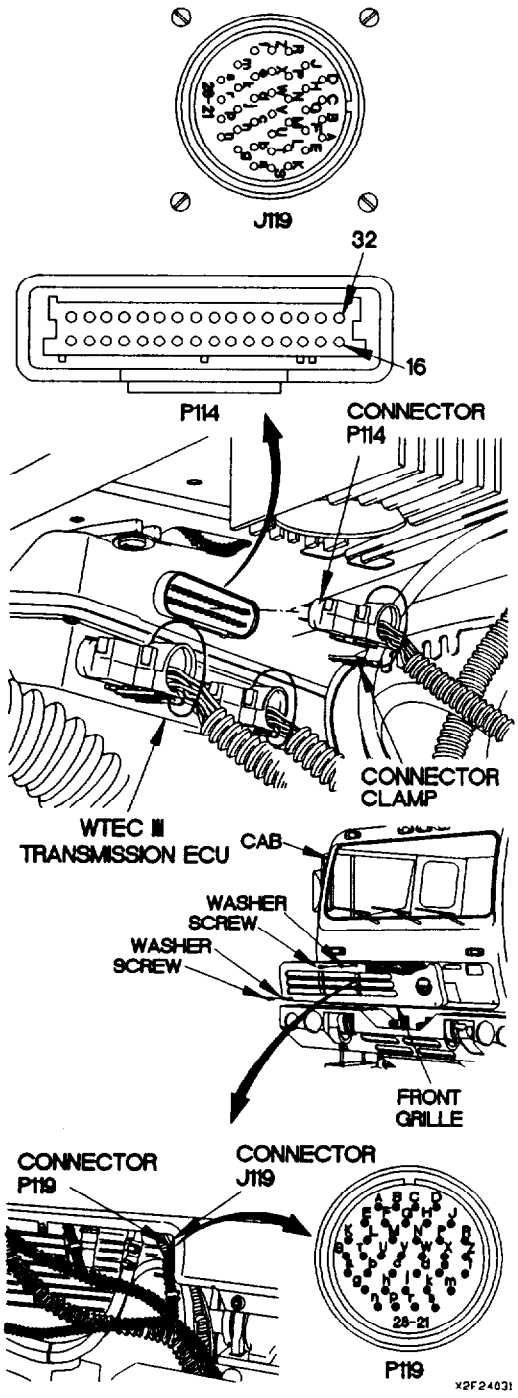


124. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 16 (CONT)



CONTINUITY TEST

(1) Remove kick panel (para 16-3).
(2) Disconnect connector clamp from connector P114.
(3) Disconnect connector P114 from WTEC III transmission ECU.
(4) Install jumper wire from connector J119g to J119n.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P114-32.
(7) Connect negative (-) probe of multimeter to connector P114-16 and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note reading on multimeter.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) Connect positive (+) probe of multimeter to connector P114-16.
(11) Connect negative (-) probe of multimeter to all other sockets in connector P114 (except P114-32), one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity is not present in step 7, or continuity is present in step 8, 9, 11, or 12, replace WTEC III cab transmission harness (para 7-86).
(14) If continuity is present in step 7, and continuity is not present in step 8, 9, 11, and 12, replace WTEC III transmission ECU (para 8-7).
(15) Remove jumper wire from connector J119n and J119g.
(16) Connect connector P119 to connector J119.
(17) Position front grille on cab with washer and screw.
(18) Position two washers and screws in front grille.
(19) Tighten screw to 48-60 lb-in. (5-7 N·m).
(20) Tighten two screws to 24 lb-in. (3 N·m).
(21) Connect connector P114 to WTEC III transmission ECU.
(22) Connect connector clamp to connector P114.
(23) Install kick panel (para 16-3).
(24) Clear diagnostic codes (para 8-5).



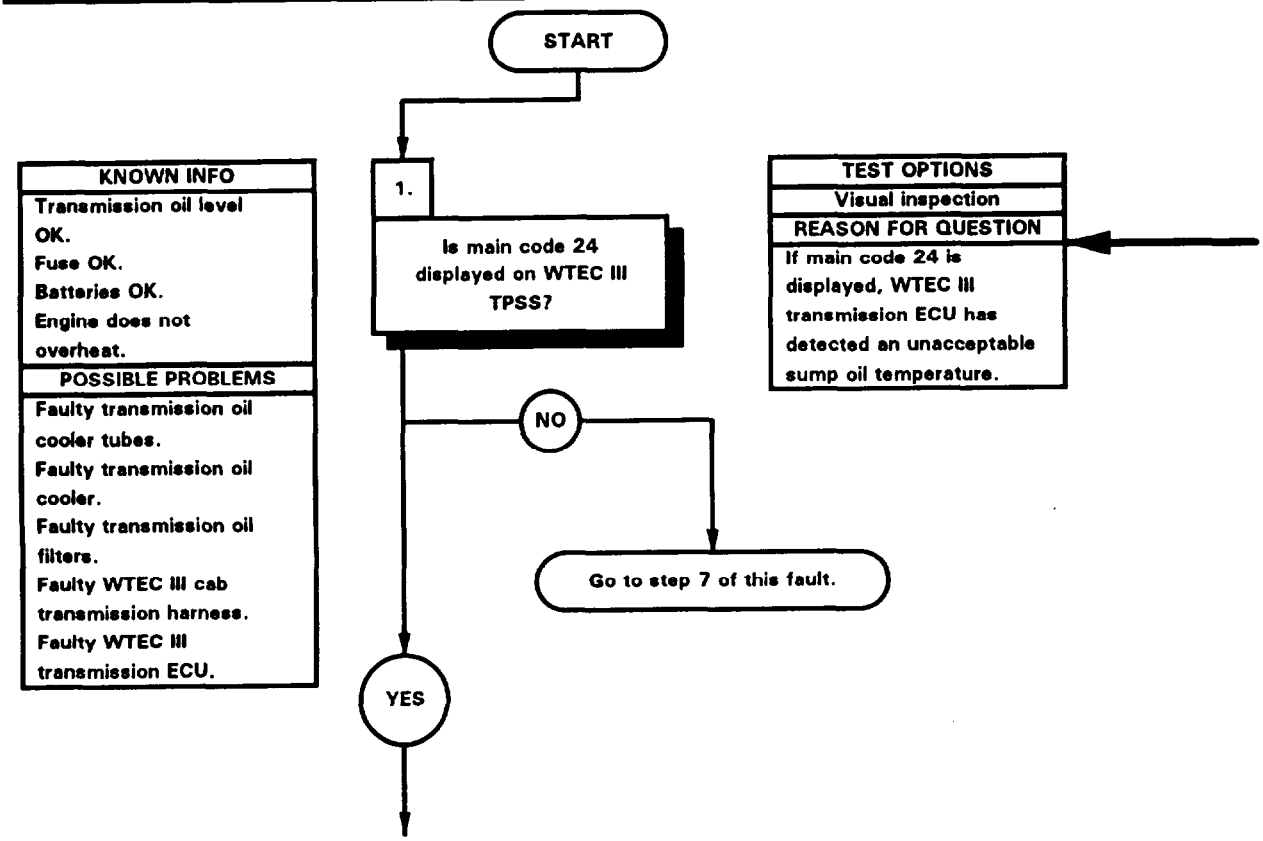
125. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

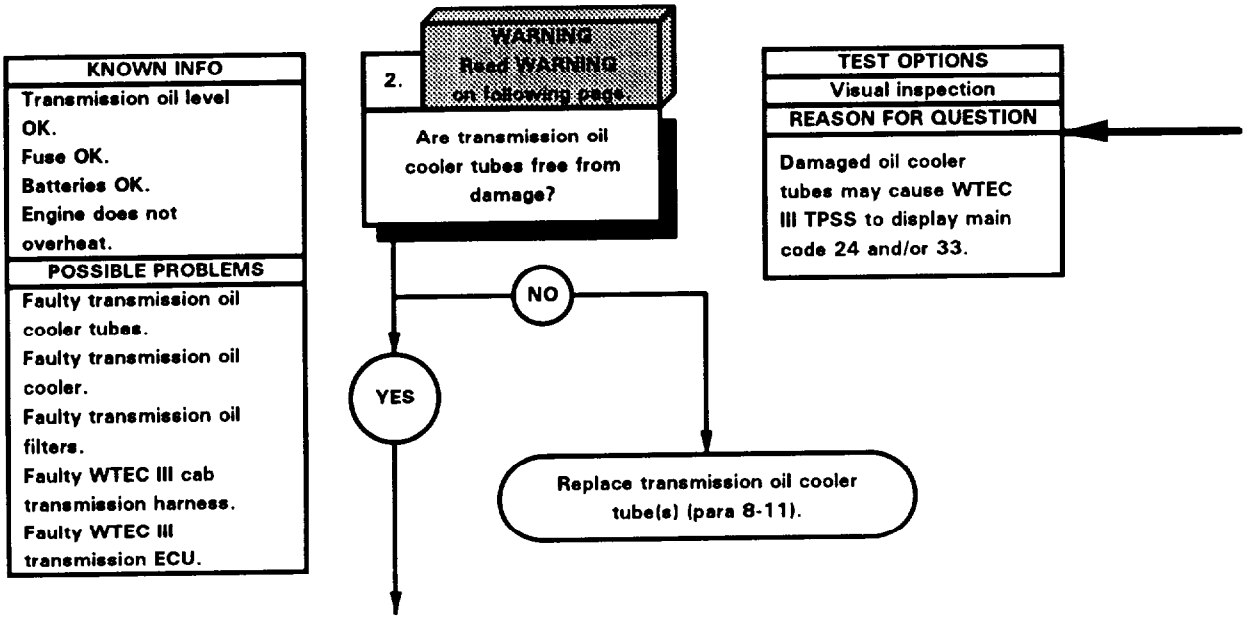
References
TM 9-4910-571-12&P

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)



(1) Position master power switch to on (TM 9-2320-365-10).
(2) Check to see if main code 24 or main code 33 is displayed on WTEC III TPSS (para 8-5).
(3) If main code 24 is displayed:
    (a) WTEC III transmission ECU has detected a sump oil temperature above (sub code 23) or below (sub code 12) operating limits.
    (b) Troubleshoot oil cooling system followed by sump oil temperature sensor and circuits.
(4) If main code 33 is displayed:
    (a) WTEC III transmission ECU has detected a fault with sump oil temperature sensor or its circuit.
    (b) Troubleshoot electrical system.
(5) Position master power switch to off (TM 9-2320-365-10).

f25. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)

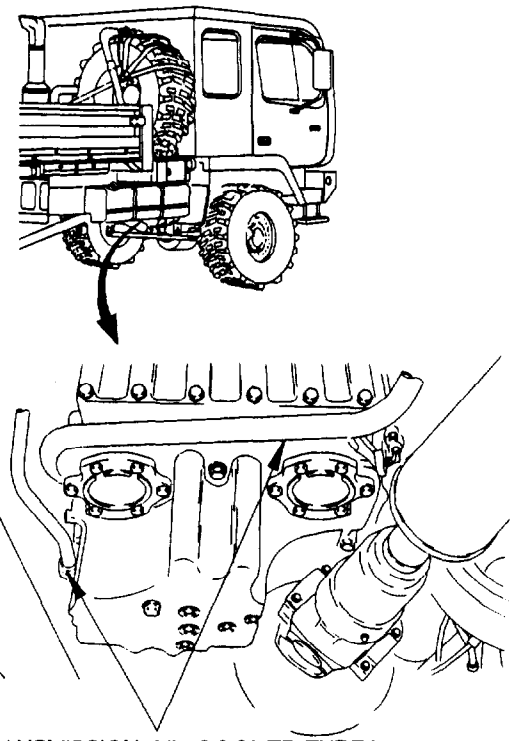


WARNING

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 tubes for damage and restrictions.

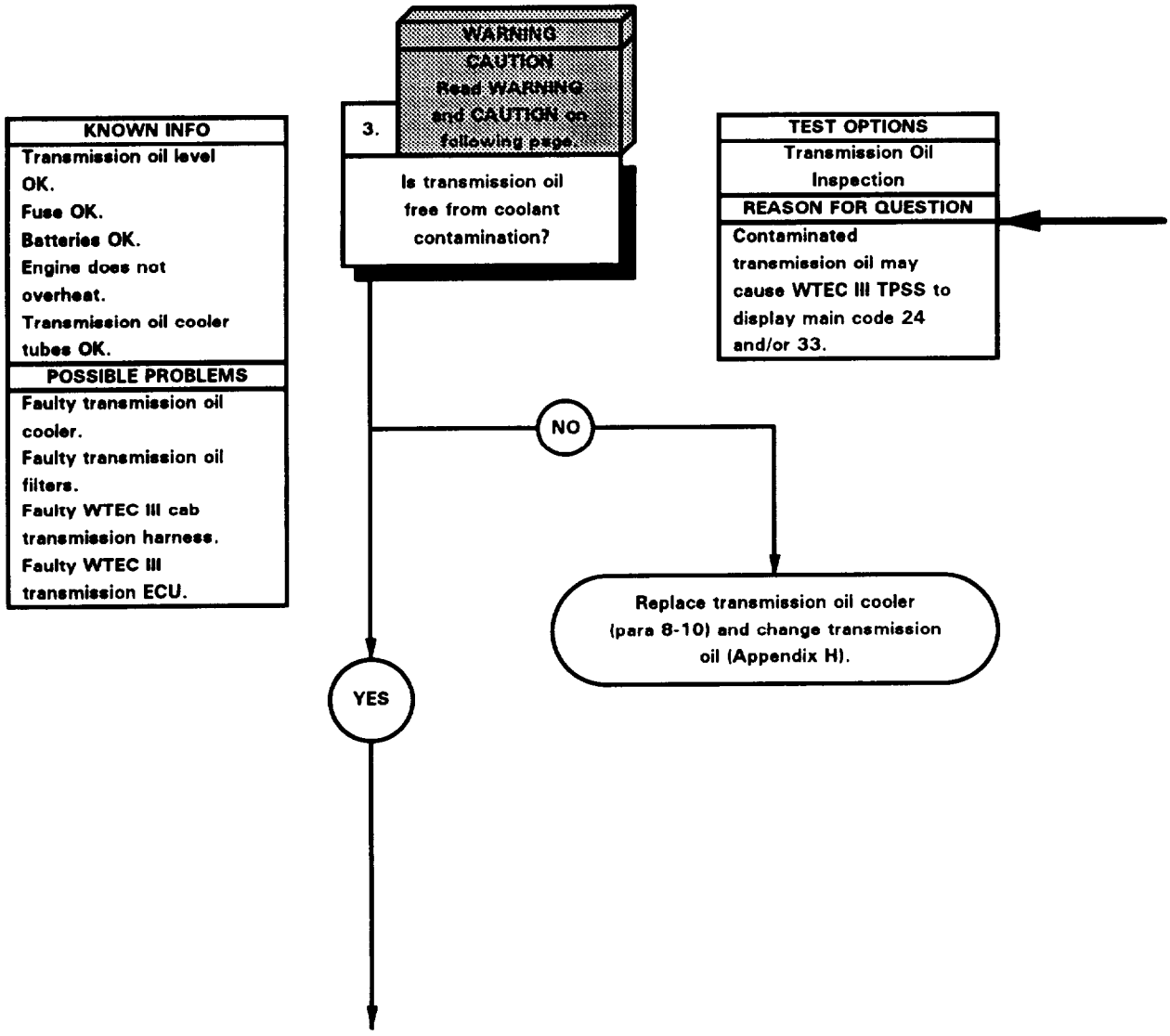
(2) If damage or restrictions are found, replace transmission oil cooler tube(s) (para 8-11).



TRANSMISSION OIL COOLER TUBES

X2F04011

f25. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



TRANSMISSION OIL INSPECTION

WARNING

- Do not drain transmission oil when transmission is hot. Failure to comply may cause severe 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.

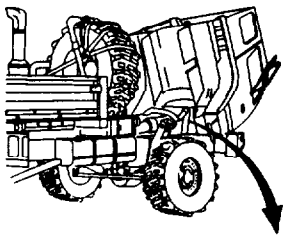
CAUTION

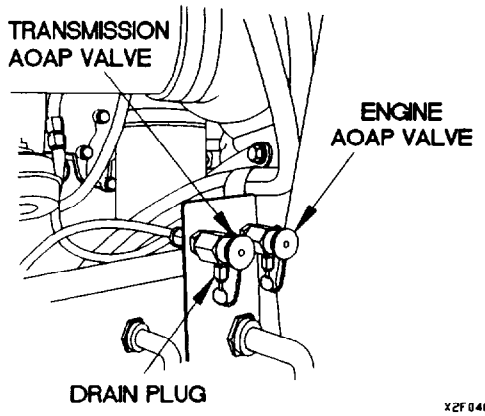
Transmission oil must be changed whenever there is evidence of oil breakdown or contamination. Oil breakdown or contamination may be caused from overheating transmission and/or oil cooler internal failure and is indicated by discoloration, strong odor, or oil analysis.

NOTE

Transmission fluid capacity is 42.3 qt (40 L).

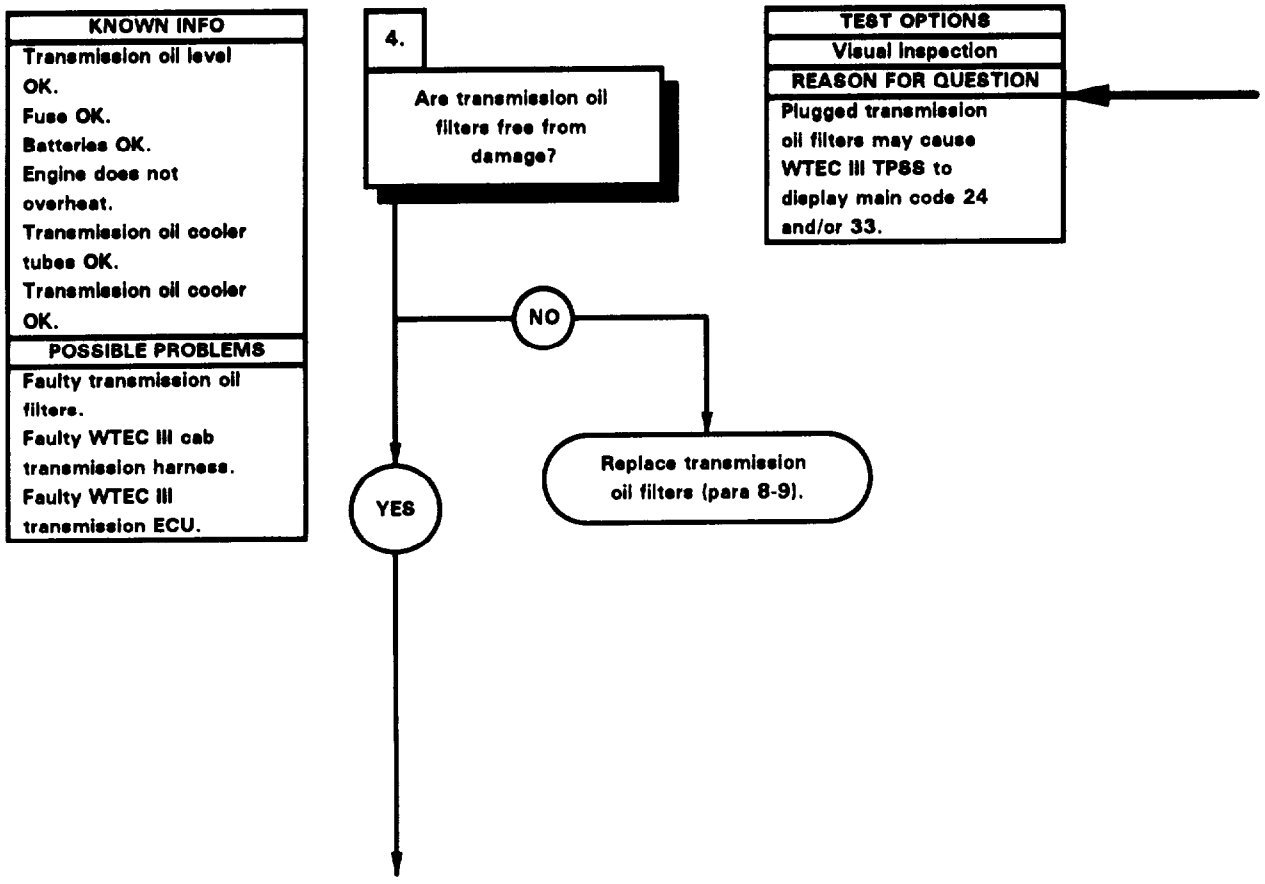
(1) Start engine (TM 9-2320-365-10).
(2) Allow oil to circulate for a few minutes.
(3) Place drain pan under transmission AOAP valve.
(4) Remove drain plug from transmission AOAP valve and press plunger to extract oil from system.
(5) Allow approximately 1 qt (0.9 L) of oil to drain into drain pan. Release plunger.
(6) Install drain plug on transmission AOAP valve.
(7) Inspect oil for coolant contamination.
(8) If oil is contaminated, replace transmission oil cooler (para 8-10).
(9) Shut down engine (TM 9-2320-366-10-1).
(10) Fill transmission (Appendix H).



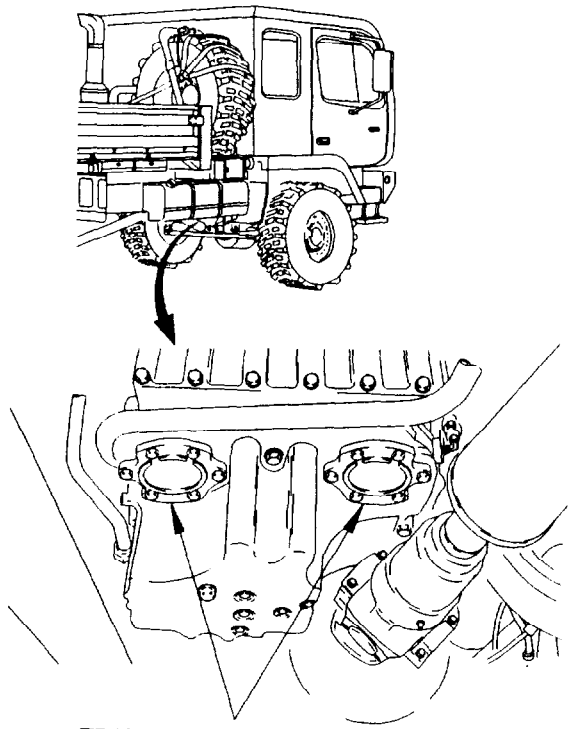


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f25. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



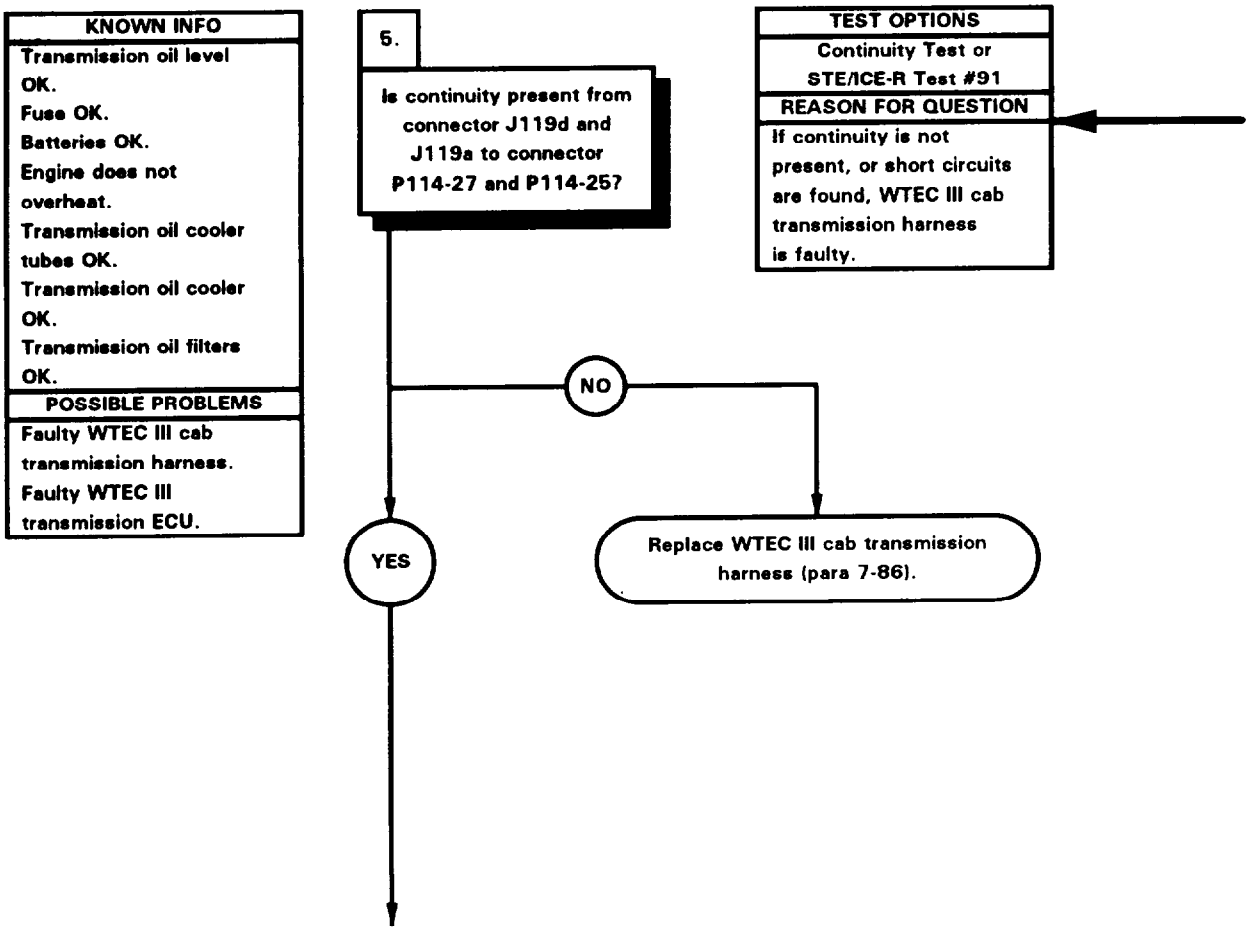
Check transmission oil filters for damage (para 8-9).



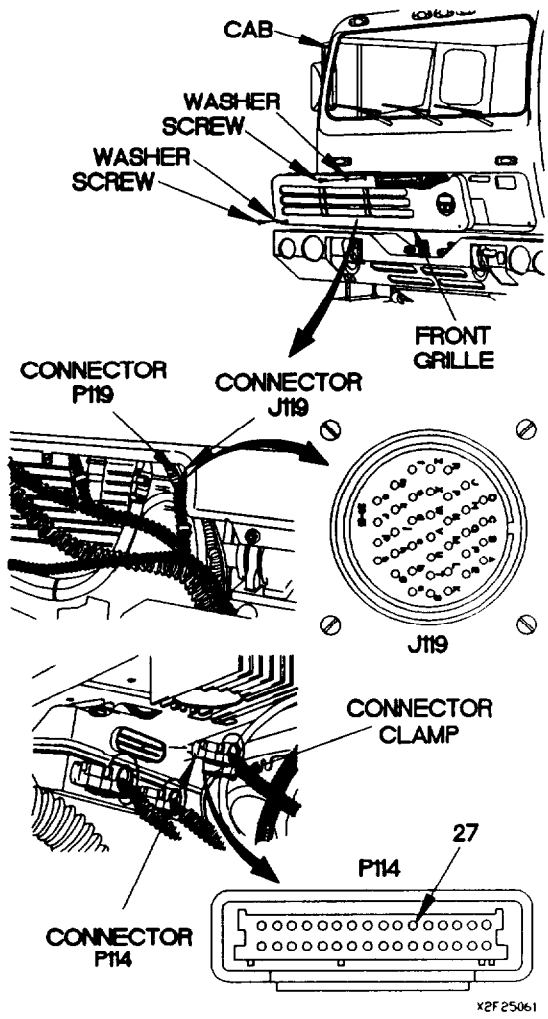
TRANSMISSION OIL FILTERS

X2F0404L

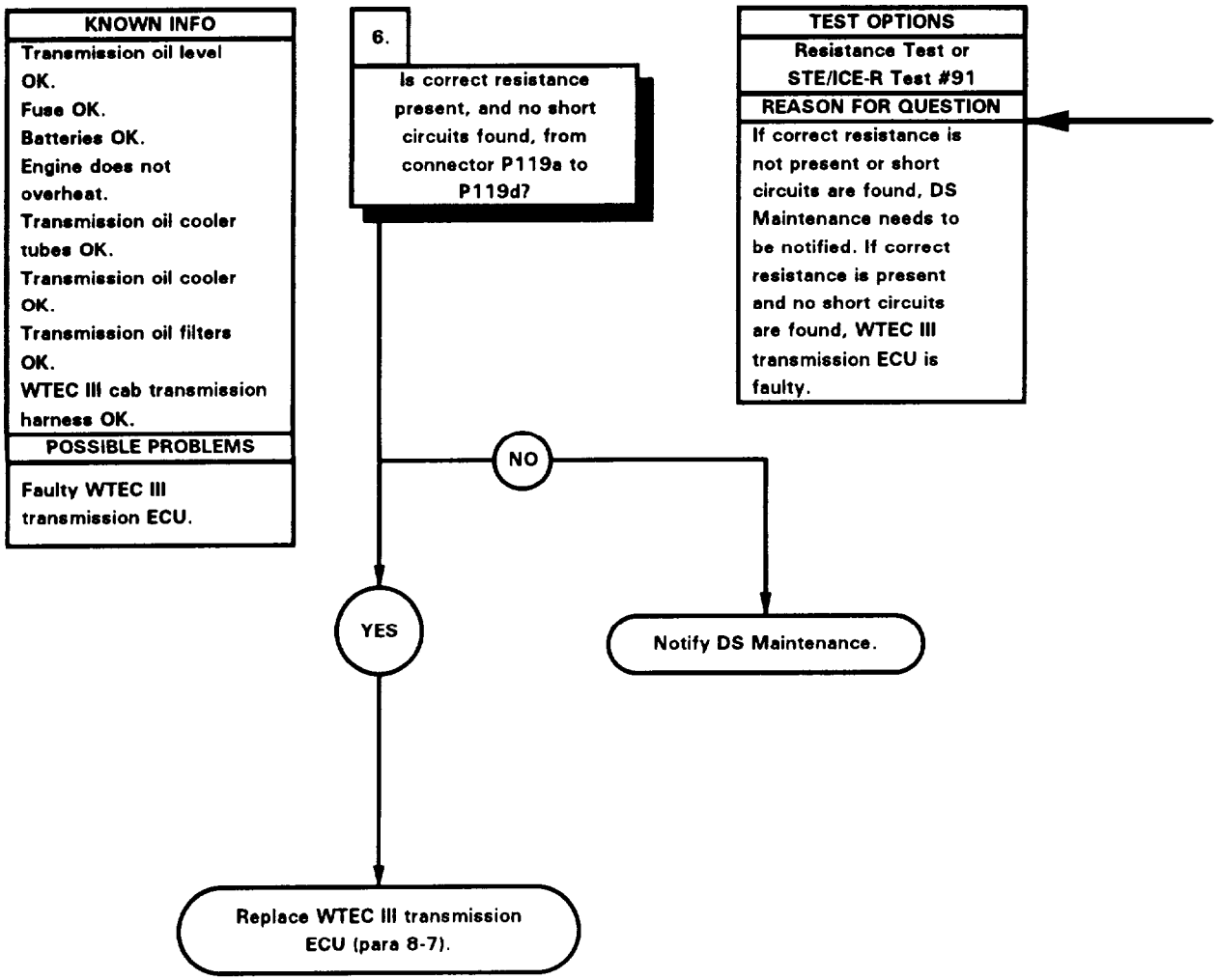
f25. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



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) Disconnect connector P119 from connector J119.
(5) Remove kick panel (para 16-3).
(6) Disconnect connector clamp from connector P114.
(7) Disconnect connector P114 from WTEC III transmission ECU.
(8) Install jumper wire from connector J119d to connector J119a.
(9) Set multimeter to ohms.
(10) Connect positive (+) probe of multimeter to P114-27.
(11) Connect negative (-) probe of multimeter to connector P114-25 and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note reading on multimeter.
(13) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(14) Connect positive (+) probe of multimeter to connector P114-25.
(15) Connect negative (-) probe of multimeter to all sockets in connector P114 (except P114-27), one at a time, and note reading on multimeter.
(16) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(17) If continuity is not present in step 11, or continuity is present in step 12, 13, 15, or 16, replace WTEC III cab transmission harness (para 7-86).
(18) Remove jumper wire from connector J119.
(19) Connect connector P114 to WTEC III transmission ECU.
(20) Connect connector clamp on connector P114.
(21) Install kick panel (para 16-3).



f25. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)



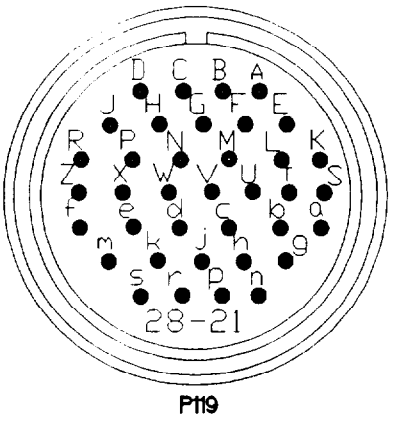
RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P119a.

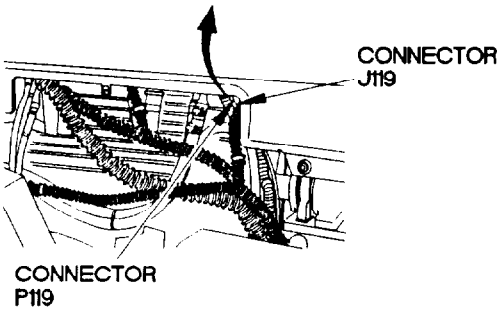
NOTE

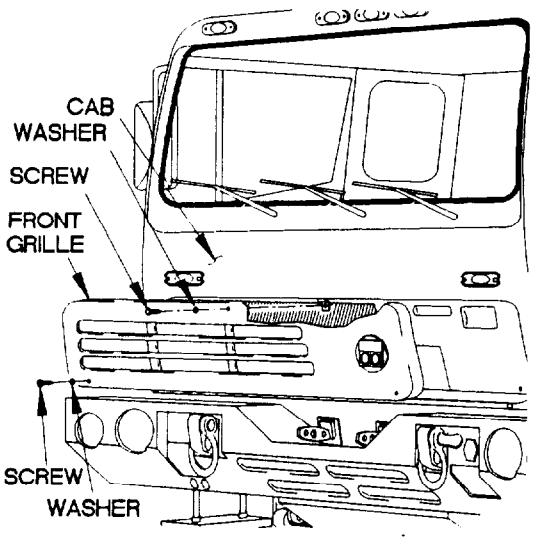
Transmission sump oil temperature sensor resistance reading is affected by temperature. Refer to Table 2-32. Transmission Sump Oil Temperature Sensor Resistance Readings for details.

(3) Connect negative (-) probe of multimeter to connector P119d and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector P119d.
(7) Connect negative (-) probe of multimeter to all other pins in connector P119 (except P119a), one at a time, and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(9) If correct resistance is not present in step 3, or continuity is present in step 4, 5, 7, or 8, notify DS Maintenance.
(10) If correct resistance is present in step 3 and continuity is not present in step 4, 5, 7, or 8, replace WTEC III transmission ECU (para 8-7).
(11) Connect connector P119 to connector J119.
(12) Position front grille on cab with washer and screw.
(13) Position two washers and screws in front grille.
(14) Tighten screw to 48-60 lb-in. (5-7 N·m).
(15) Tighten two screws to 24 lb-in. (3 N·m).
(16) Clear diagnostic codes (para 8-5).



P119



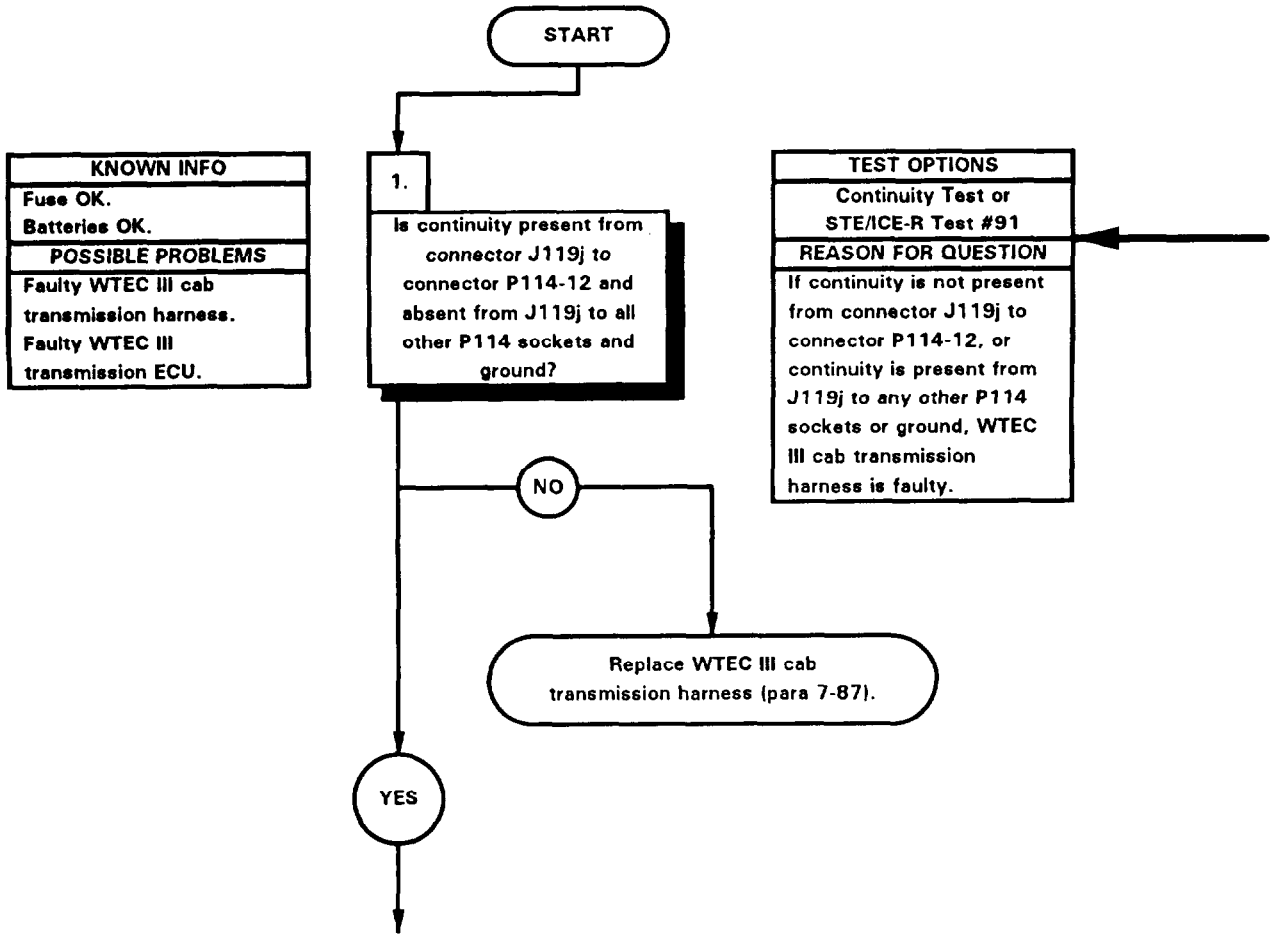


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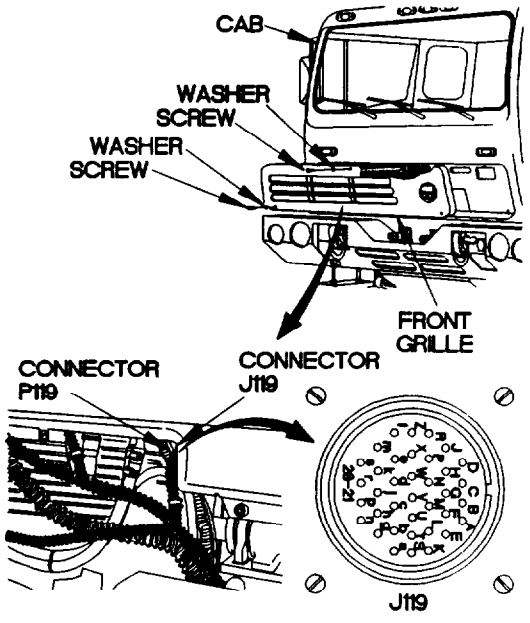
TABLE 2-32. TRANSMISSION SUMP OIL TEMPERATURE SENSOR RESISTANCE READINGS

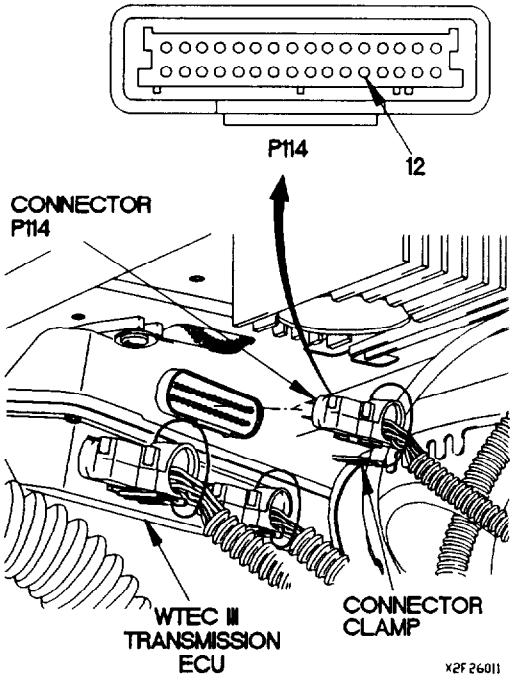
Temperature	Resistance
-4° to 14°F (-20° to -10°C)	691-754 ohms
14° to 32°F (-10° to 0°C)	754-820 ohms
32° to 50°F (0° to 10°C)	820-889 ohms
50° to 68°F (10° to 20°C)	889-962 ohms
68° to 86°F (20° to 30°C)	962-1039 ohms
86° to 104°F (30° to 40°C)	1039-1118 ohms
104° to 122°F (40° to 50°C)	1118-1202 ohms
122° to 140°F (50° to 60°C)	1202-1286 ohms

f26. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 32 AND ANY SUB CODE	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10). **References** TM 9-4910-571-12&P	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) *Multimeter, Digital (Item 22, Appendix C)* Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C) STE/ICE-R (Item 39, Appendix C)

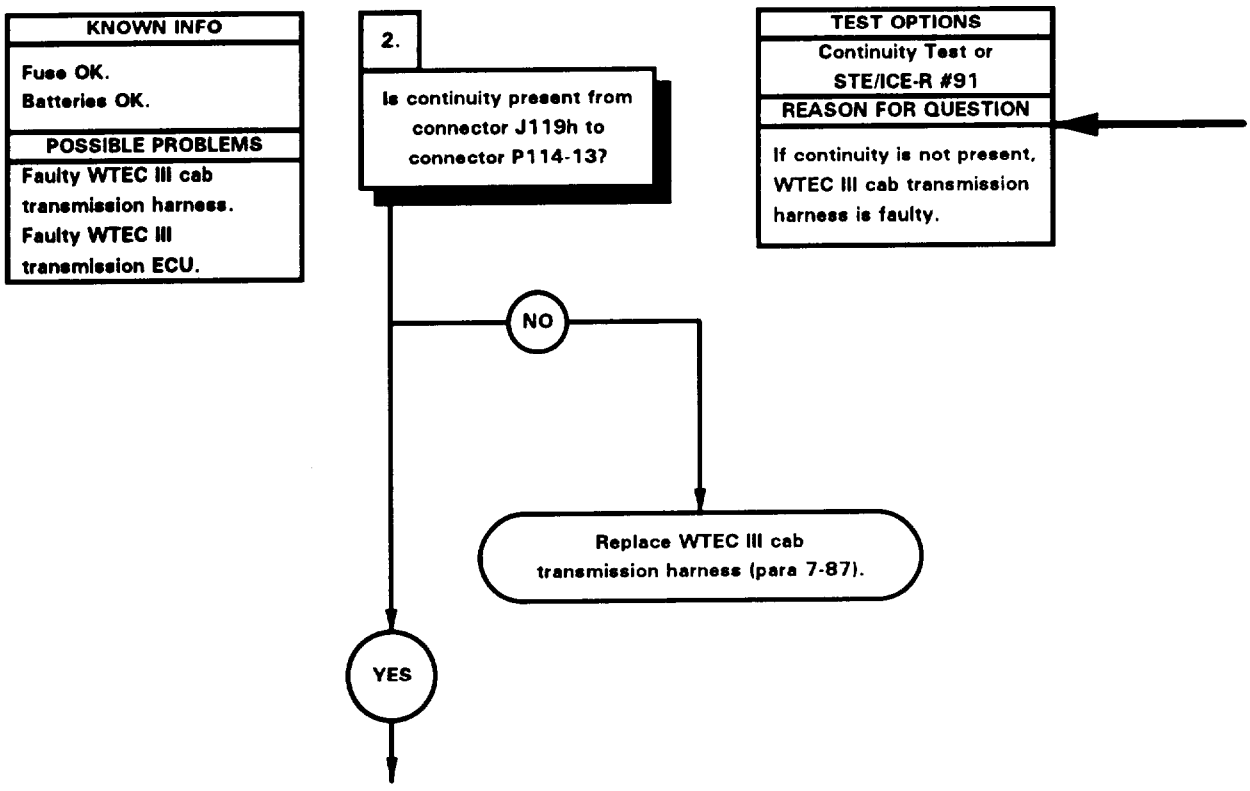


CONTINUITY TEST
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove kick panel (para 16-3).
(6) Disconnect connector clamp from connector P114.
(7) Disconnect connector P114 from WTEC III transmission ECU.
(8) Set multimeter to ohms.
(9) Connect positive (+) probe of multimeter to connector J119j.
(10) Connect negative (-) probe of multimeter to connector P114-12 and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note reading on multimeter.
(12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(13) If continuity is not present in step 10, or continuity is present in step 11 or 12, replace WTEC III cab transmission harness (para 7-87).

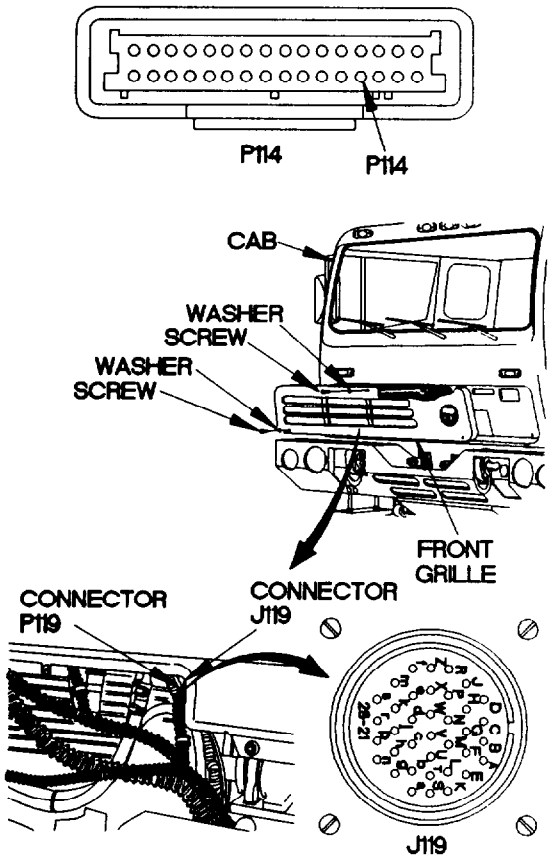




f26. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 32 AND ANY SUB CODE (CONT)

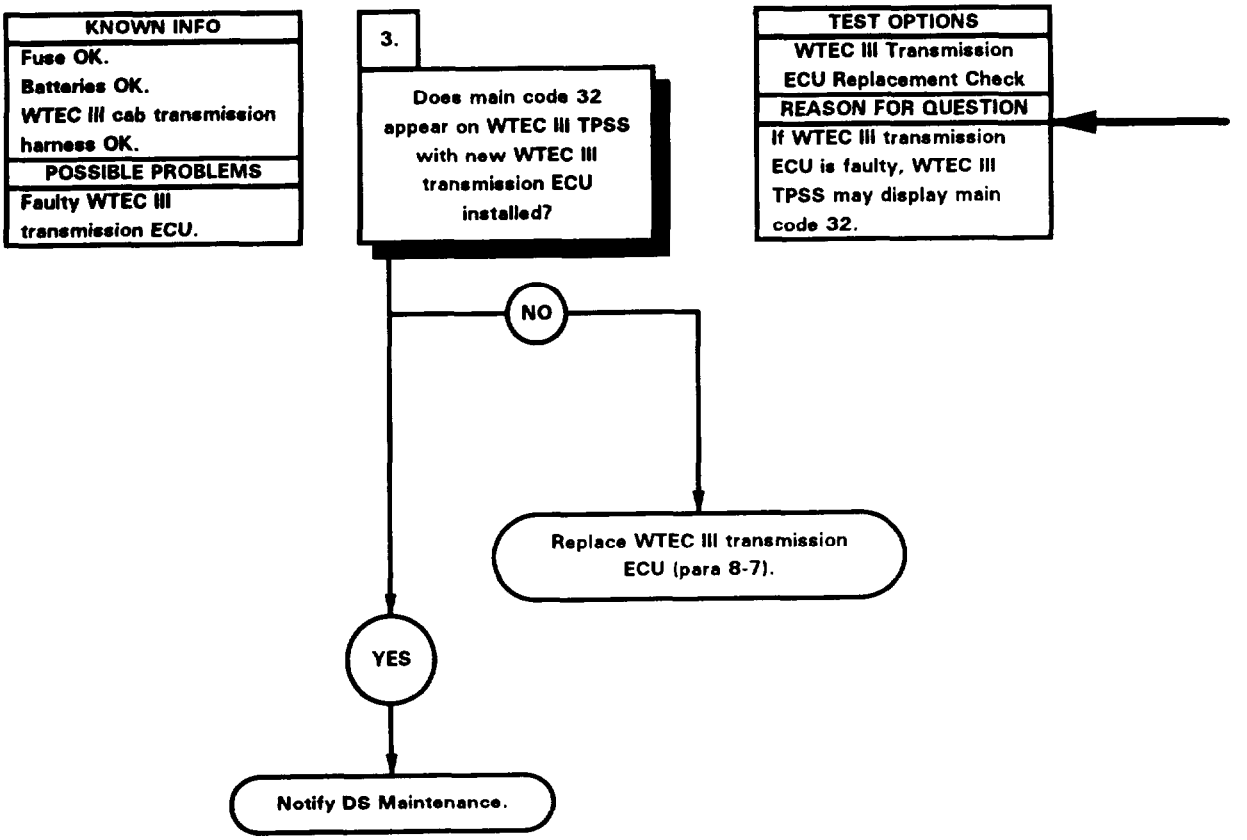


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J119h.
(3) Connect negative (-) probe of multimeter to connector P114-13 and note reading on multimeter.
(4) If continuity is not present, replace WTEC III cab transmission harness (para 7-87).
(5) Connect connector P119 to connector J119.
(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).



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f26. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 32 AND ANY SUB CODE (CONT)



WTEC III TRANSMISSION ECU REPLACEMENT CHECK
(1) Remove original WTEC III transmission ECU (para 8-7).
(2) Install replacement WTEC III transmission ECU (para 8-7).
(3) Install kick panel (para 16-3).
(4) Start engine (TM 9-2320-365-10).
(5) Road test vehicle and read WTEC III transmission ECU codes (para 8-5).
(6) If main code 32 does not appear with new WTEC III transmission ECU, replace WTEC III transmission ECU (para 8-7).
(7) If main code 32 does appear with new WTEC III transmission ECU, notify DS Maintenance.
(8) Shut down engine (TM 9-2320-365-10).
(9) Install original WTEC III transmission ECU (para 8-7).
(10) Clear diagnostic codes (para 8-5).

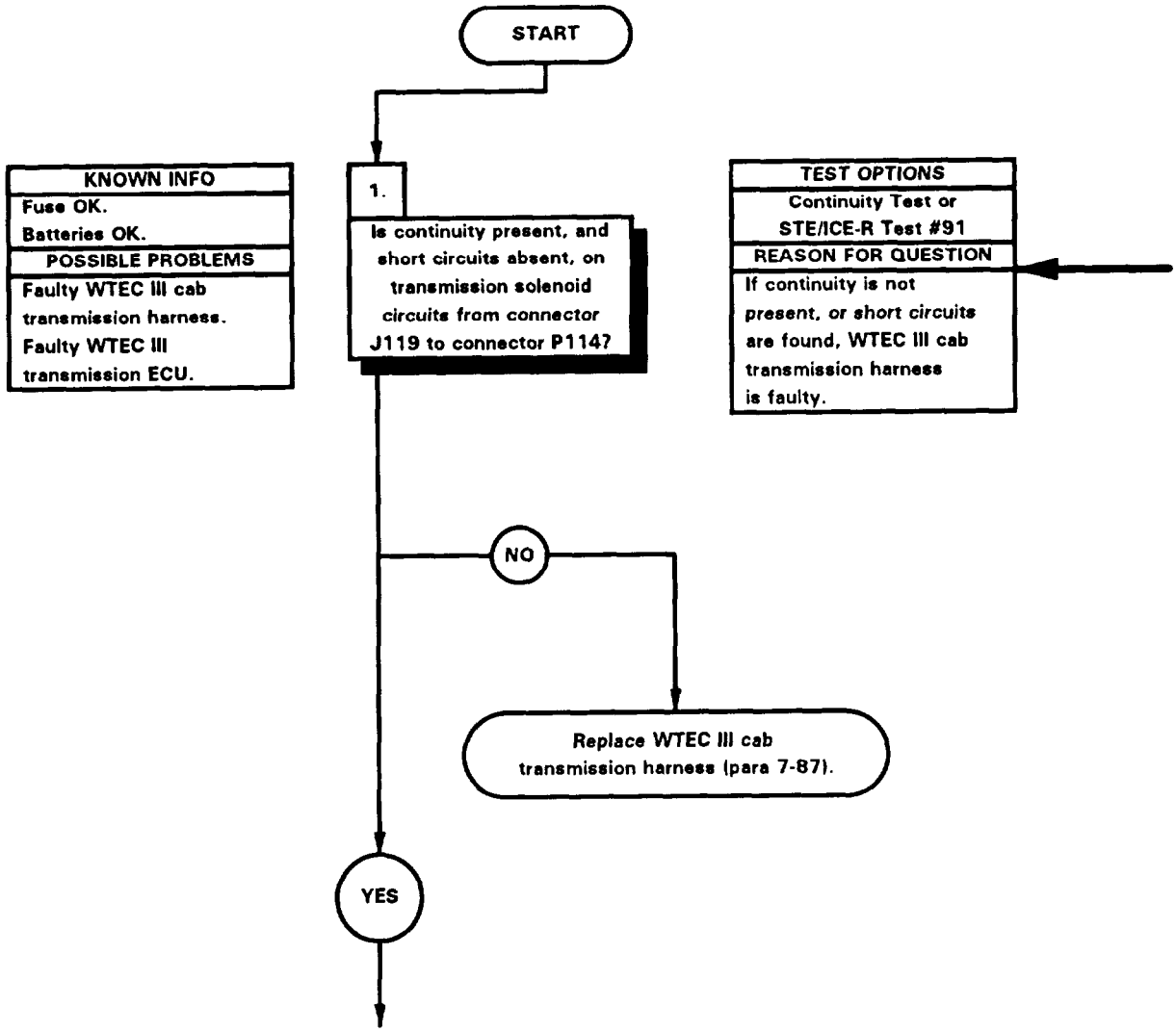
127. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 42, 44, and/or 45 AND ANY SUB CODE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)
STE/ICE-R (Item 39, Appendix C)

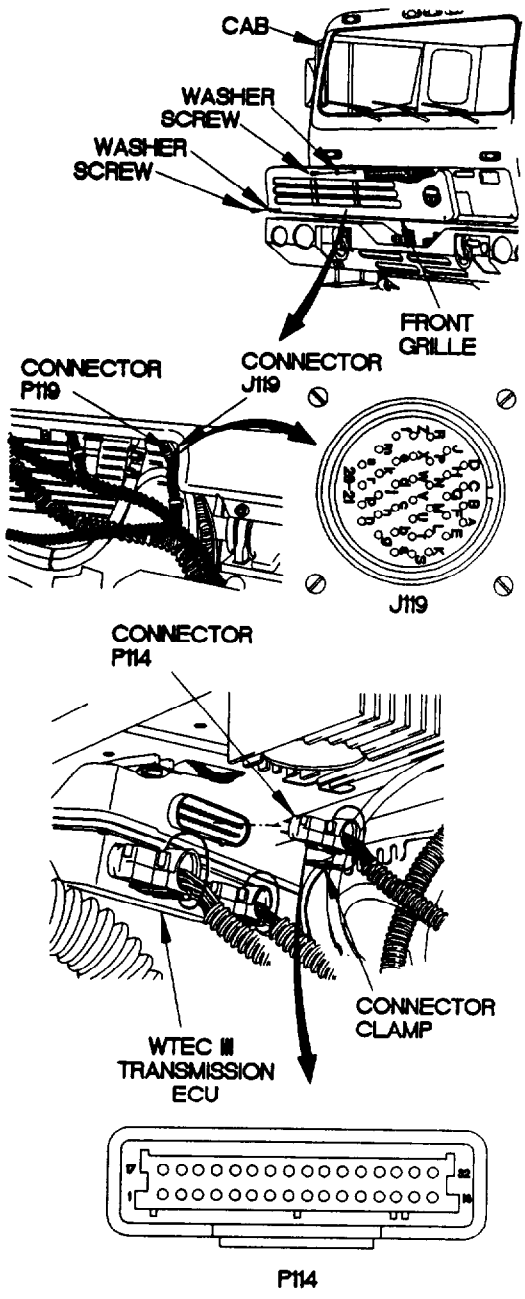


CONTINUITY TEST

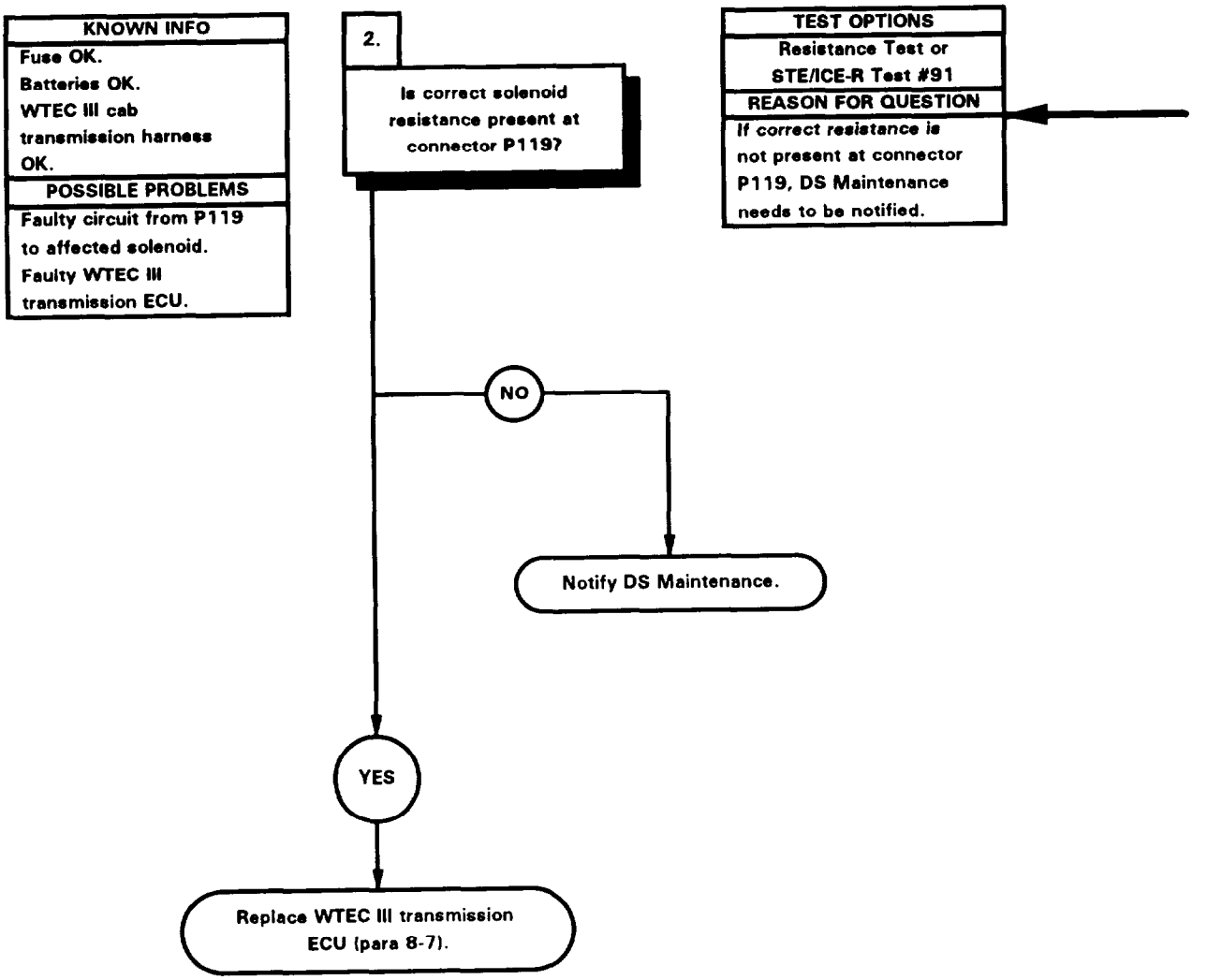
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove kick panel (para 16-3).
(6) Disconnect connector clamp from connector P114.
(7) Disconnect connector P114 from WTEC III transmission ECU.
(8) Install jumper wire on connector J119 for appropriate sub code. Refer to Table 2-33. WTEC III Cab Transmission Harness Transmission Solenoid Test Points.
(9) Set multimeter to ohms.
(10) Connect positive (+) probe of multimeter to connector P114. Refer to Table 2-33. WTEC III Cab Transmission Harness Transmission Solenoid Test Points.
(11) Connect negative (-) probe of multimeter to connector P114 and note reading on multimeter. Refer to Table 2-33. WTEC III Cab Transmission Harness Transmission Solenoid Test Points.
(12) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note reading on multimeter.
(13) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(14) If continuity is not present, in step 11, or continuity is present in step 12 or 13, replace WTEC III cab transmission harness (para 7-87).
(15) Remove jumper wire from connector J119.
(16) Connect connector P119 to connector J119.

TABLE 2-33. WTEC III CAB TRANSMISSION HARNESS TRANSMISSION SOLENOID TEST POINTS

SUB CODE	JUMPER ACROSS	CONNECTOR P114	
		POSITIVE (+) PROBE	NEGATIVE (-) PROBE
12	J119M to J119B	P114-1	P114-4
13	J119T to J119N	P114-2	P114-20
14	J119C to J119V	P114-5	P114-17
15	J119W to J119B	P114-1	P114-21
16	J119U to J119N	P114-2	P114-6
21	J119F to J119H	P114-3	P114-22
22	J119D to J119V	P114-7	P114-17
23	J119P to J119S	P114-19	P114-23
24	J119J to J119B	P114-1	P114-8
26	J119K to J119A	P114-19	P114-24



f27. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 42, 44, AND/OR 45 AND ANY SUB CODE (CONT)



RESISTANCE TEST
(1) Disconnect connector P119 from connector J119.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P119. Refer to Table 2-34. Connector P119 Transmission Solenoid Resistance Test Points for appropriate sub code(s) and connector P119 pin(s).
(4) Connect negative (-) probe of multimeter to connector P119 and note reading on multimeter. Refer to Table 2-34. Connector P119 Transmission Solenoid Resistance Test Points for appropriate sub code(s) and connector P119 pin(s).
NOTE Transmission solenoid resistance is affected by temperature. Refer to Table 2-35. Transmission Solenoid Resistance Readings.
(5) If resistance reading indicates transmission solenoid is good, replace WTEC III transmission ECU (para 8-7).
(6) If resistance reading indicates transmission solenoid is faulty, notify DS Maintenance.
(7) Connect connector P119 to connector J119.
(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).
(12) Clear diagnostic codes (para 8-5).

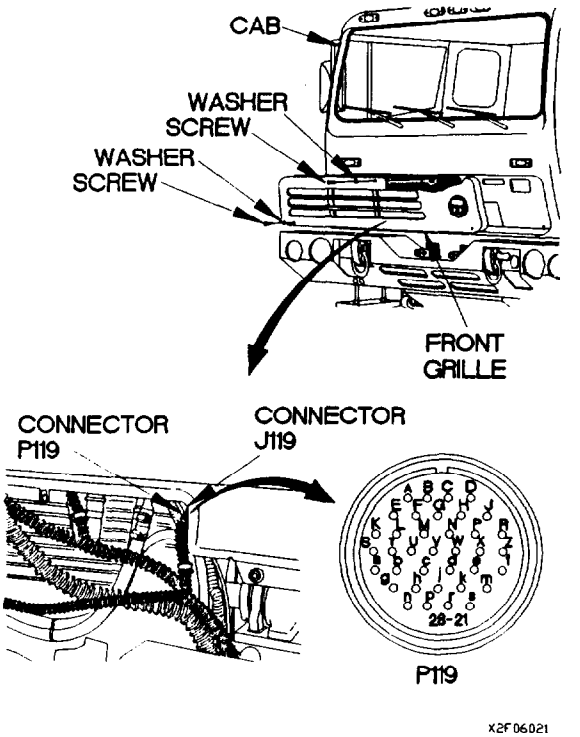


TABLE 2-34. CONNECTOR P119 TRANSMISSION SOLENOID RESISTANCE TEST POINTS

SUB CODE	CONNECTOR P119	
	positive (+) probe	negative (-) probe
12	P119M	P119B
13	P119T	P119N
14	P119C	P119V
15	P119W	P119B
16	P119U	P119N
21	P119F	P119H
22	P119D	P119V
23	P119P	P119S
24	P119J	P119B
26	P119K	P119A

TABLE 2-35. TRANSMISSION SOLENOID RESISTANCE READINGS

Temperature	Resistance
4° to 16°F (-20° to -10°C)	2.50-3.12 ohms
16° to 32°F (-10° to 0°C)	2.62-3.25 ohms
32° to 50°F (0° to 10°C)	2.74-3.38 ohms
50° to 68°F (10° to 20°C)	2.86-3.50 ohms
68° to 86°F (20° to 30°C)	2.98-3.62 ohms
86° to 104°F (30° to 40°C)	3.09-3.75 ohms
104° to 122°F (40° to 50°C)	3.21-3.88 ohms
122° to 140°F (50° to 60°C)	3.33-4.00 ohms

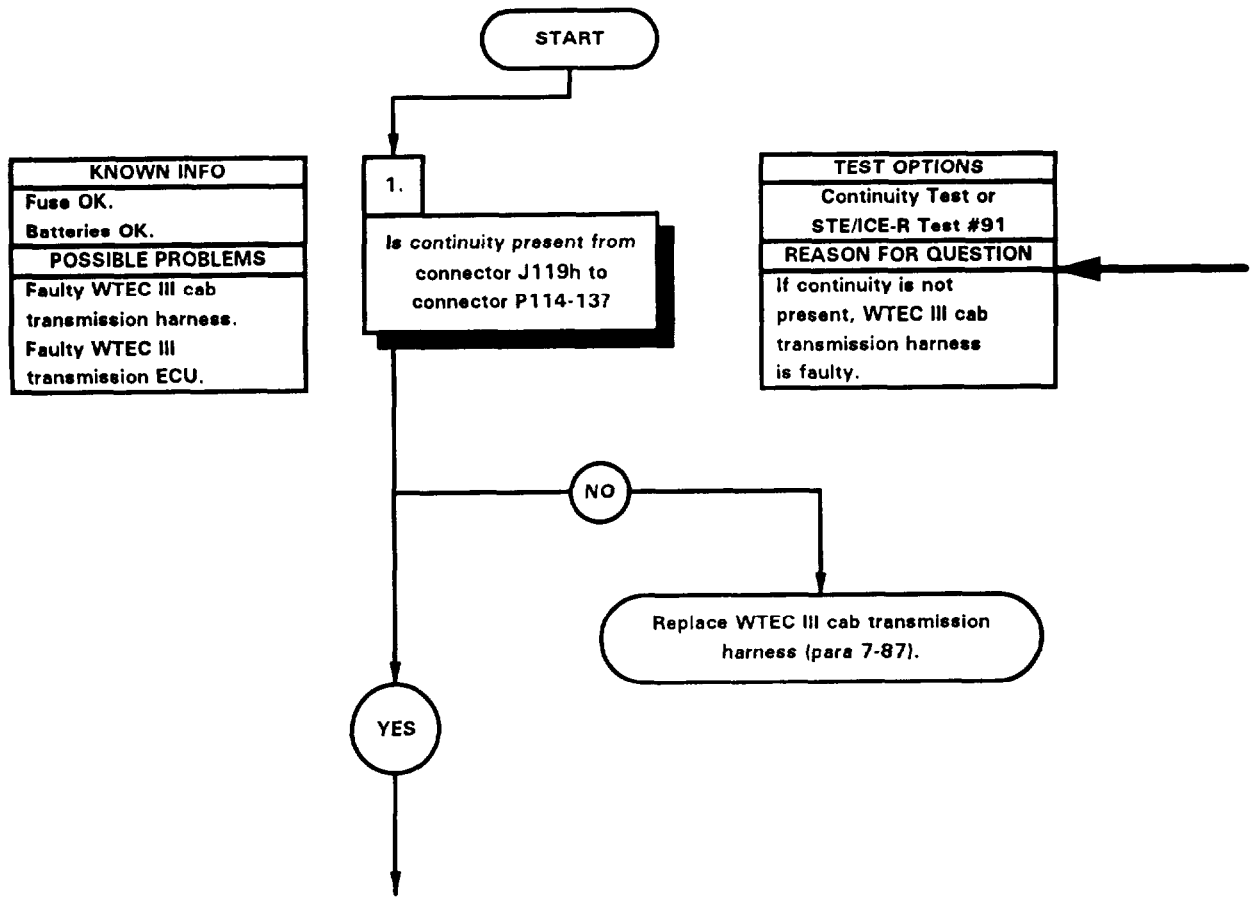
f28. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE

INITIAL SETUP

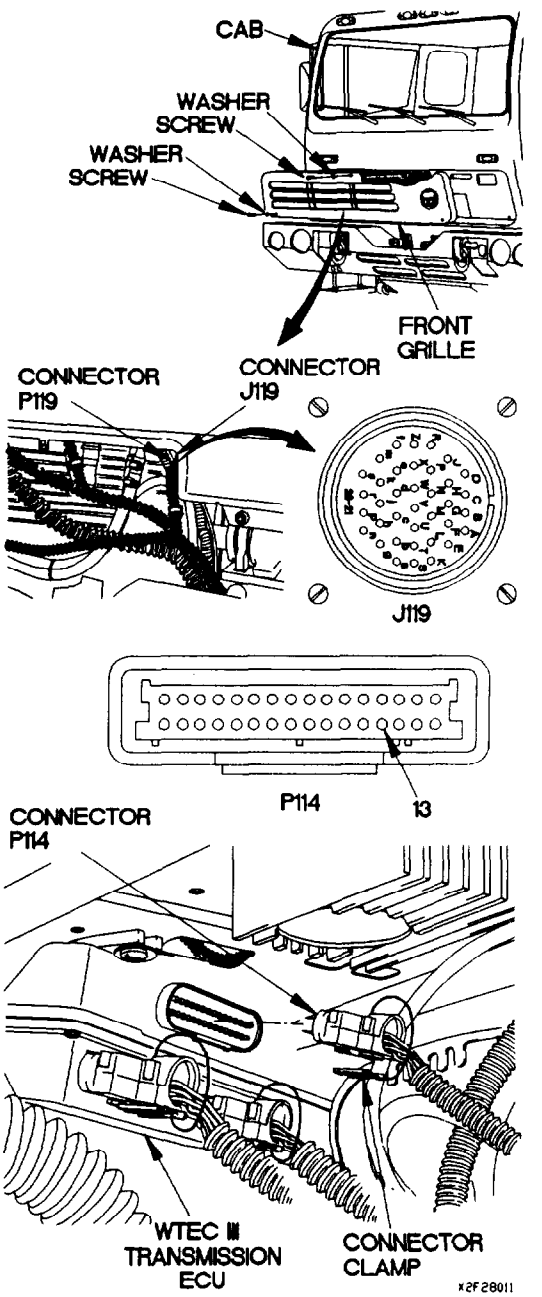
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

References
TM 9-4910-571-12&P

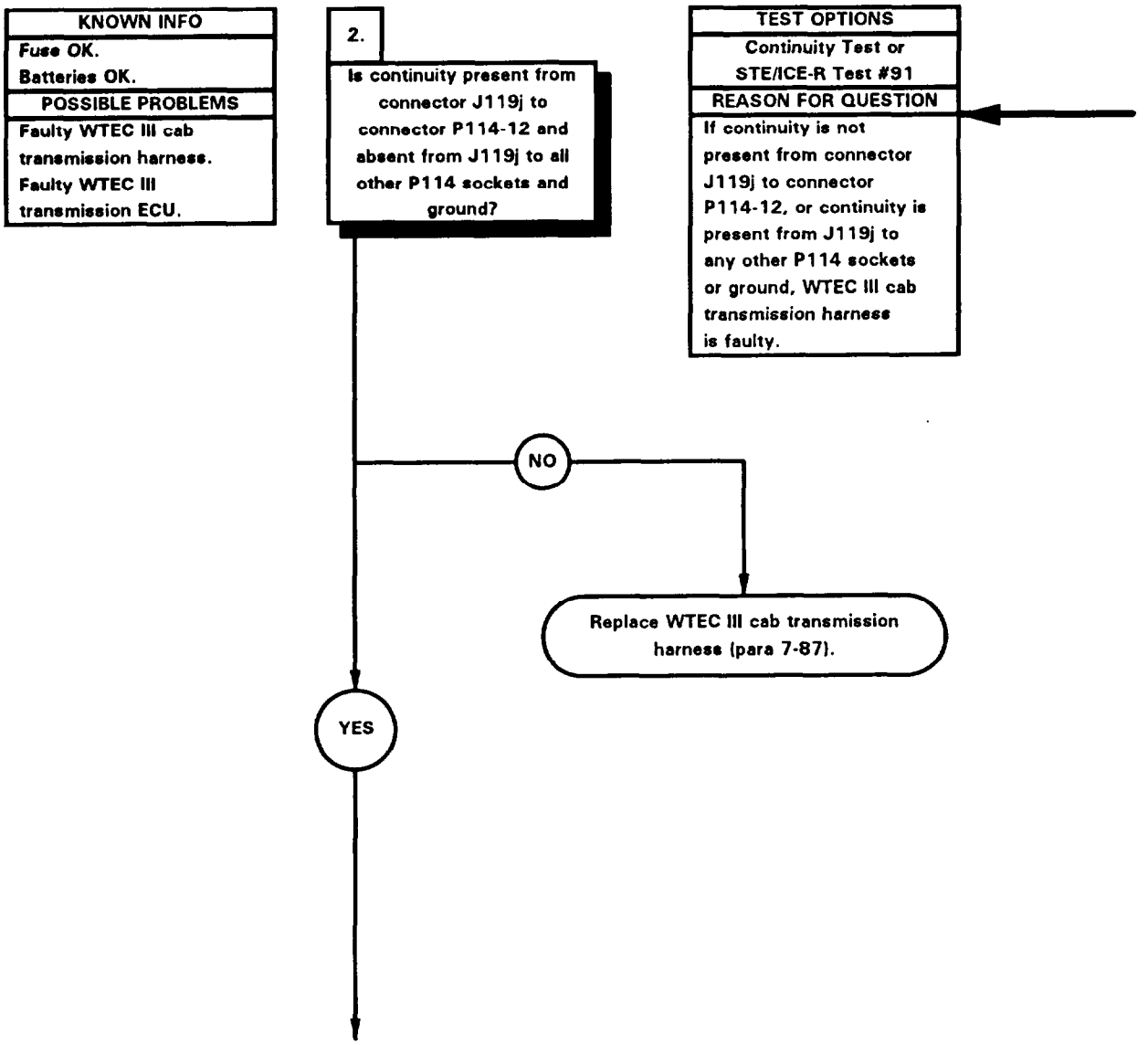
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)



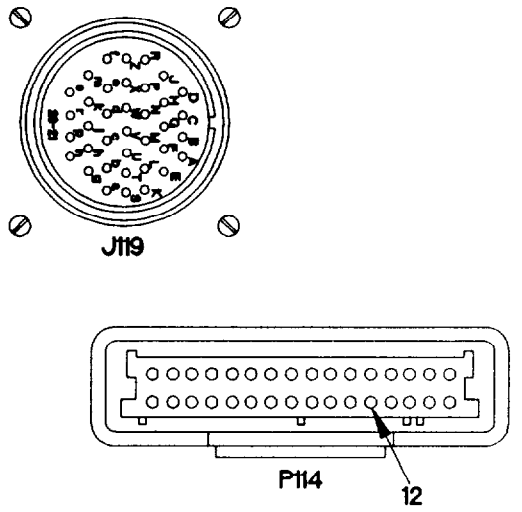
CONTINUITY TEST
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille on cab.
(4) Disconnect connector P119 from connector J119.
(5) Remove kick panel (para 16-3).
(6) Disconnect connector clamp from connector P114.
(7) Disconnect connector P114 from WTEC III transmission ECU.
(8) Set multimeter to ohms.
(9) Connect positive (+) probe of multimeter to connector J199h.
(10) Connect negative (-) probe of multimeter to connector P114-13 and note reading on multimeter.
(11) If continuity is not present, replace WTEC III cab transmission harness (para 7-87).



f28. TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)

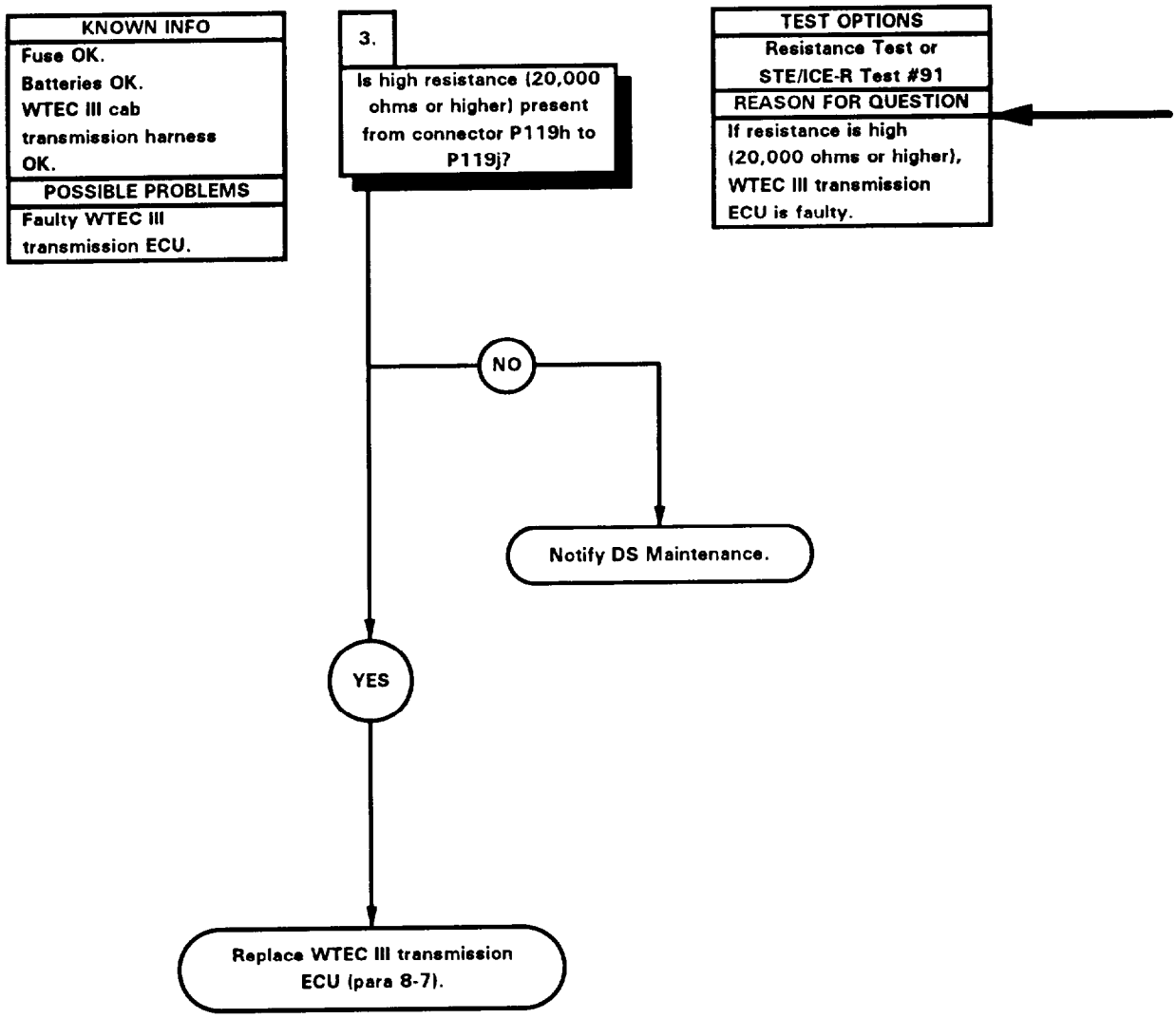


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J119j.
(3) Connect negative (-) probe of multimeter to connector P114-12 and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note reading on multimeter.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If continuity is not present in step 3, or continuity is present in step 4 or 5, replace WTEC III cab transmission harness (para 7-87).



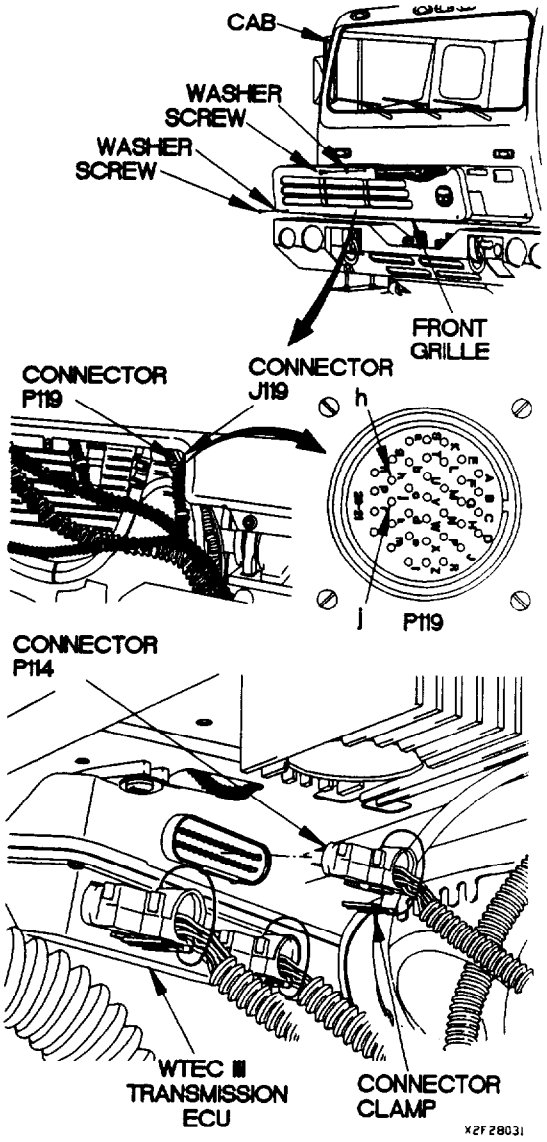
X2F2802J

f28. TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)



RESISTANCE TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) prove of multimeter to connector P119h.
(3) Connect negative (-) probe of multimeter to connector P119J and note reading on multimeter.
(4) If resistance is high (20,000 ohms or higher), replace WTEC III transmission ECU (para 8-7).
(5) If resistance is low (less than 20,000 ohms), notify DS maintenance.
(6) Install instrument panel assembly (para 7-18).
(7) Connect connector P119 to connector J119.
(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).
(12) Connect connector P114 to WTEC III transmission ECU.
(13) Connect connector clamp on connector P114.
(14) Install kick panel (para 16-3).
(15) Clear diagnostic codes (para 8-5).



f29. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 57 AND ANY SUB CODE

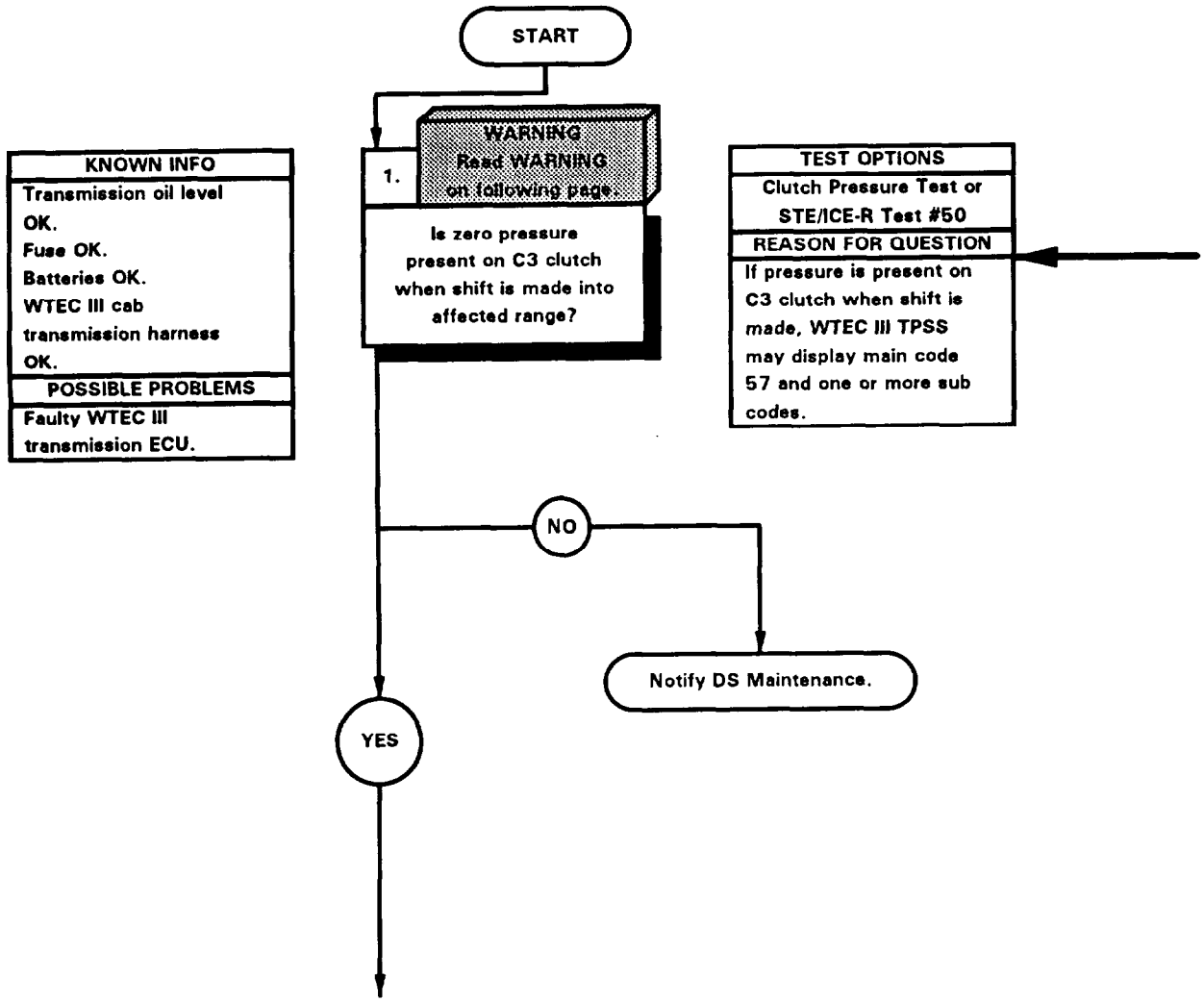
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Reference
TM 9-491-571-12&P

Materials/Parts
Packing, Preformed (Item 199, Appendix G)

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)



CLUTCH PRESSURE TEST

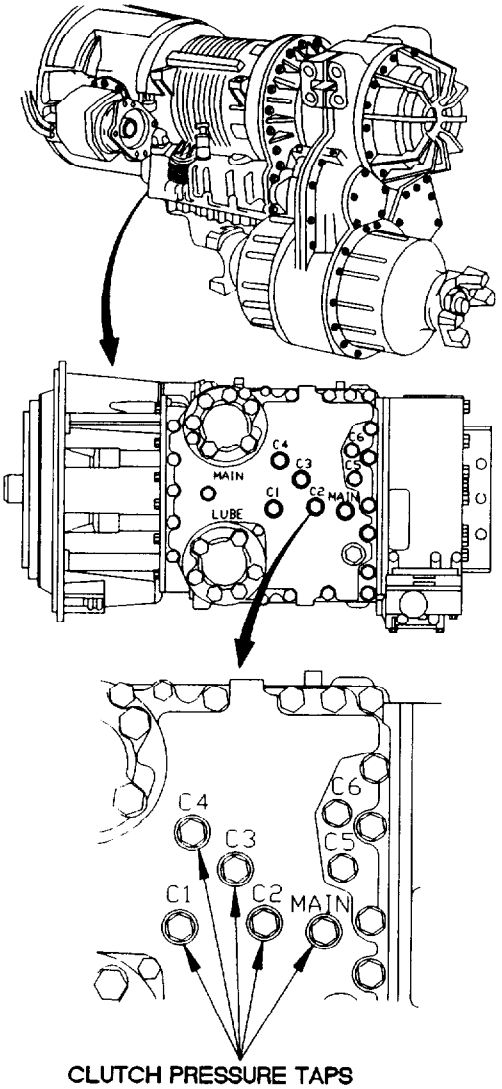
WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove tranemission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under C3 pressure tap plug.
(3) Remove C3 pressure tap plug and preformed packing from control valve module. Discard preformed packing.
(4) Connect adapter and snubber to C3 pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R. Refer to Table 2-36. Sub Code Range.
(8) If pressure does not drop to zero in selected range indicated by code values, notify DS Maintenance.
(9) Shut down engine (TM 9-2320-365-10).
(10) Remove adapter and snubber from C3 pressure tap.
(11) Position preformed packing and C3 pressure tap plug in control valve module.
(12) Tighten C3 pressure tap plug to 84-120 lb-in. (9-14 N·m).
(13) Remove drain pan under C3 pressure tap plug.
(14) Install transmission front and rear output propeller shafts (para 9-2).

TABLE 2-36. SUB CODE RANGE

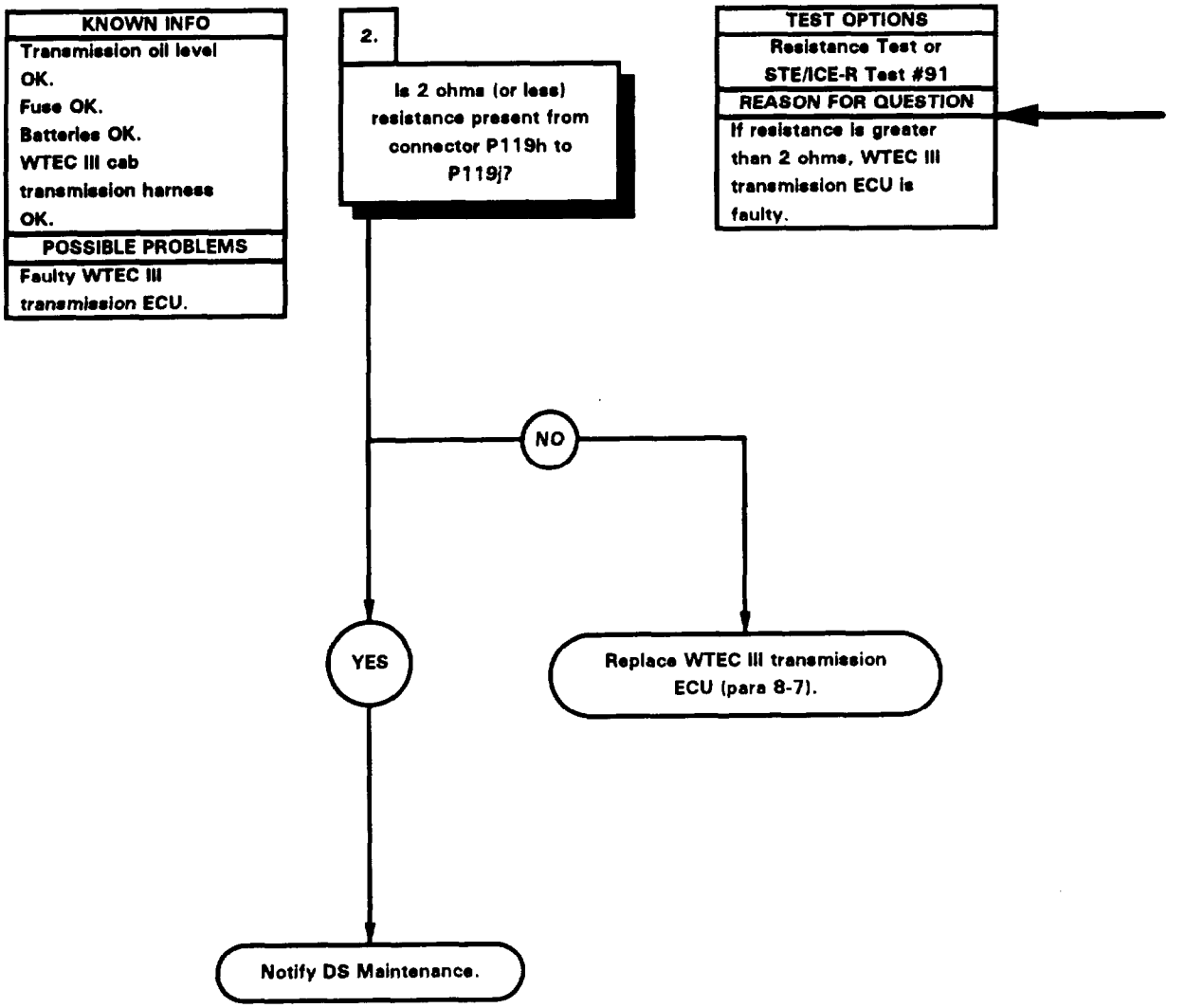
SUB CODE	SUB CODE MEANING
11	1st Range VER
22	2nd Range VER
44	4th Range VER
66	6th Range VER
88	N1 Range VER
99	N2/N4 Range VER



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

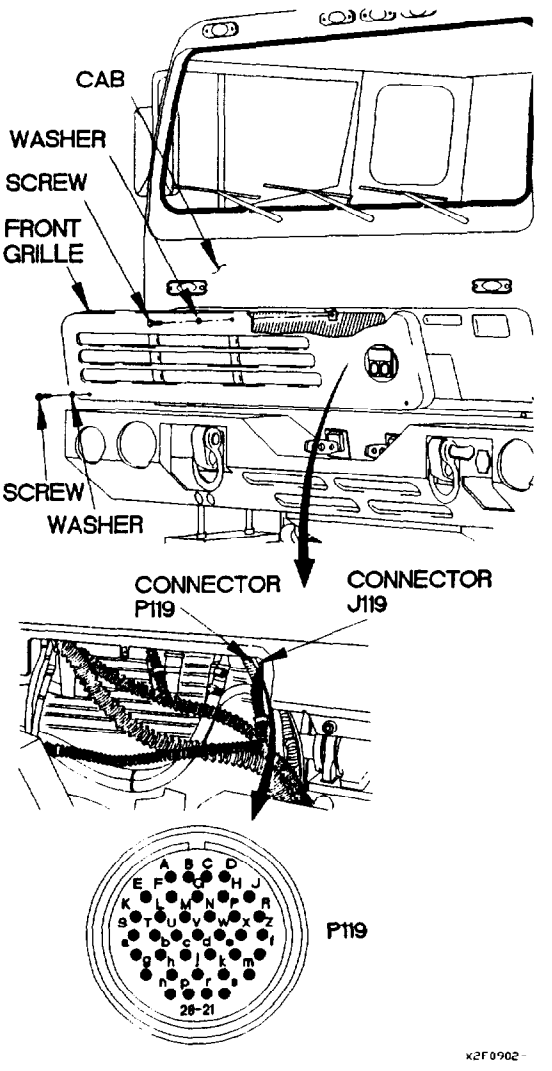
*2F0901-

f29. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 57 AND ANY SUB CODE (CONT)



RESISTANCE 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 P119 from connector J119.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter on P119h.
(7) Connect negative (-) probe of multimeter on P119j and note reading on multimeter.
(8) If 2 ohms (or less) resistance is present, notify DS Maintenance.
(9) If resistance is greater than 2 ohms, replace WTEC III transmission ECU (para 8-7).
(10) Connect connector P119 to connector J119.
(11) Position front grille on cab with washer and screw.
(12) Position two washers and screws in front grille.
(13) Tighten screw to 48-60 lb-in. (5-7 N·m).
(14) Tighten two screws to 24 lb-in. (3 N·m).
(15) Clear diagnostic codes (prar 8-5).



130. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE

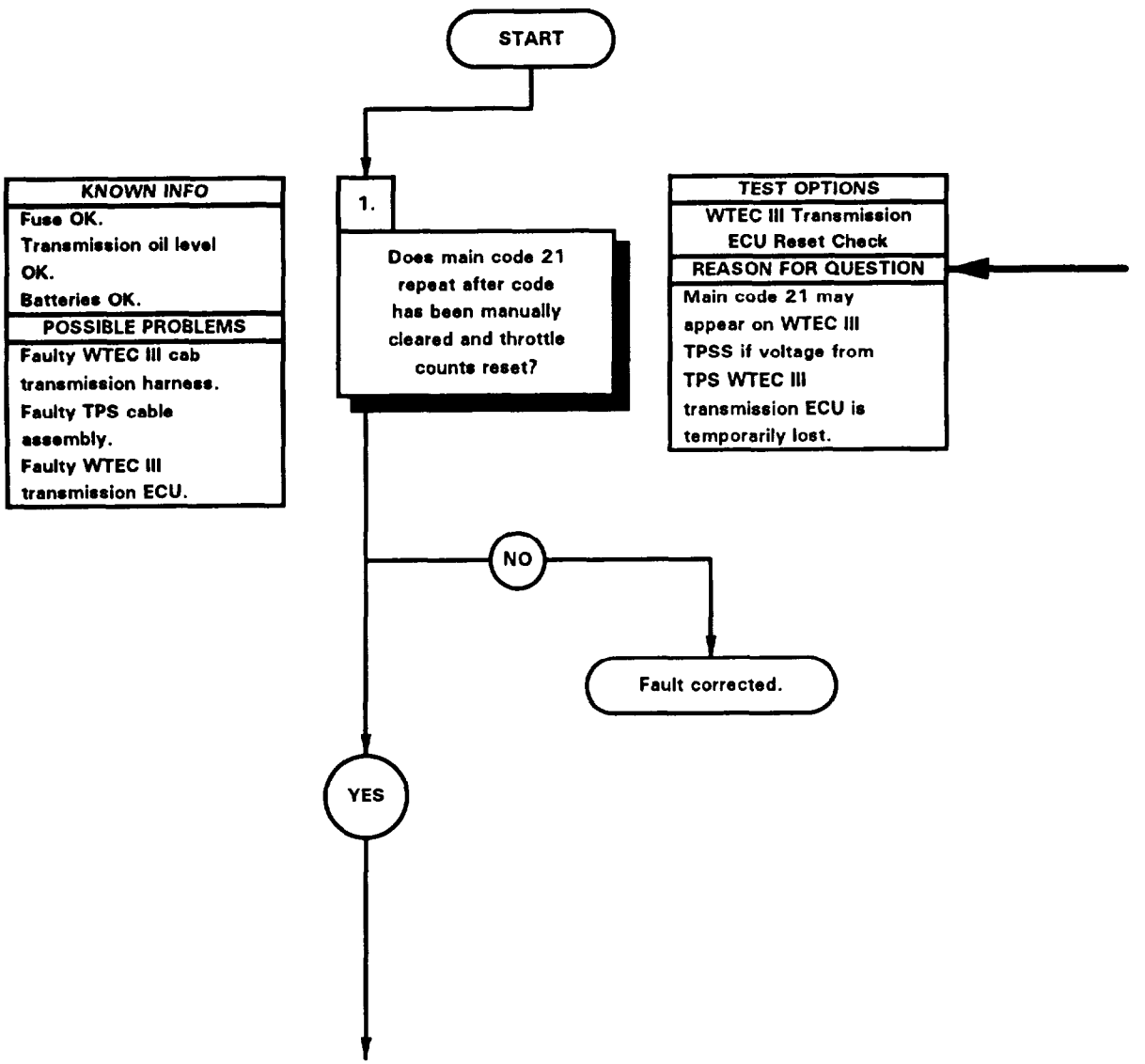
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References
TM 9-4910-571-12&P



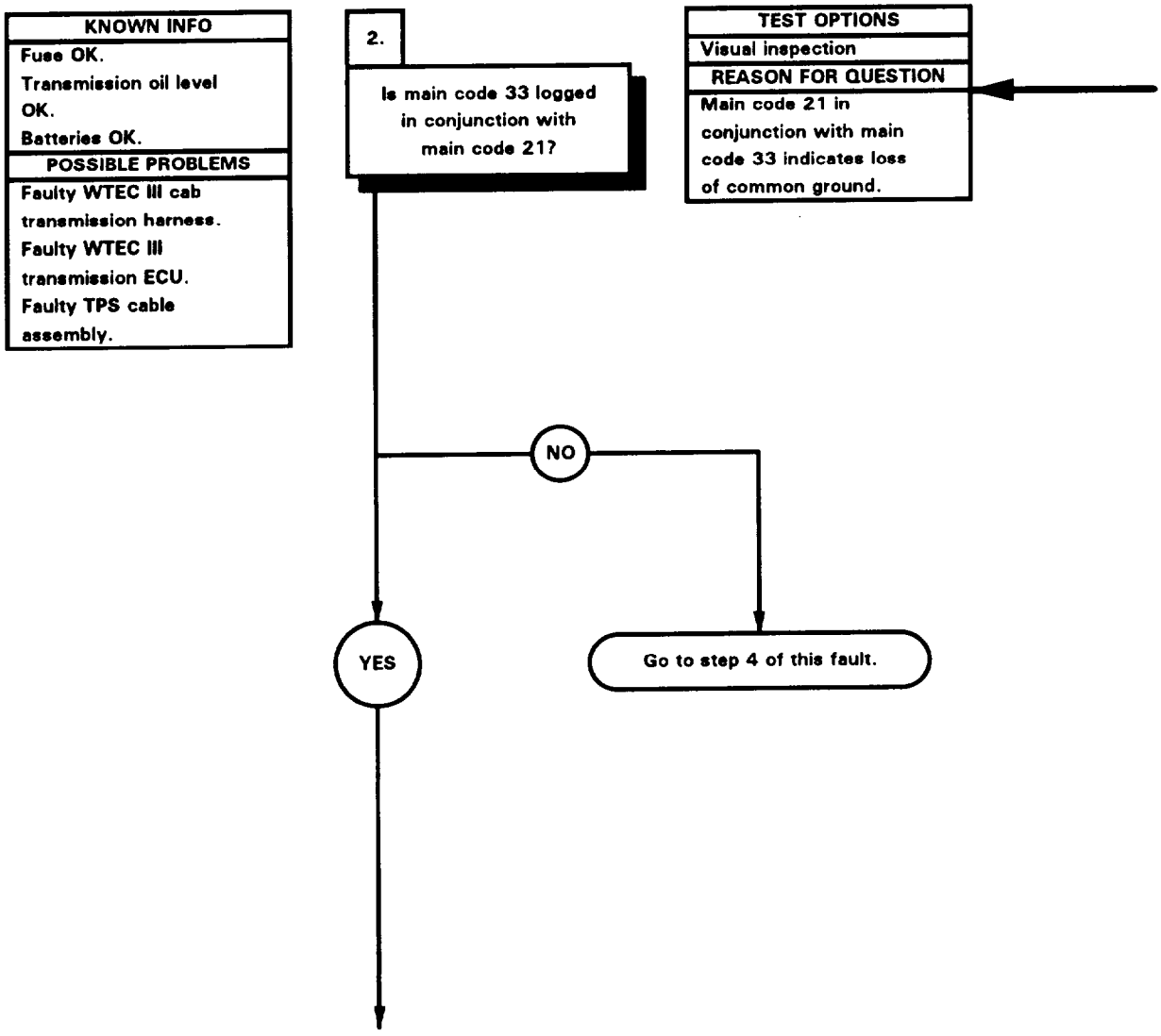
NOTE

Main display code 21 needs to be cleared manually from WTEC III transmission ECU after a maintenance task has been performed and before vehicle is returned to service (para 8-5).

WTEC III TRANSMISSION ECU RESET CHECK

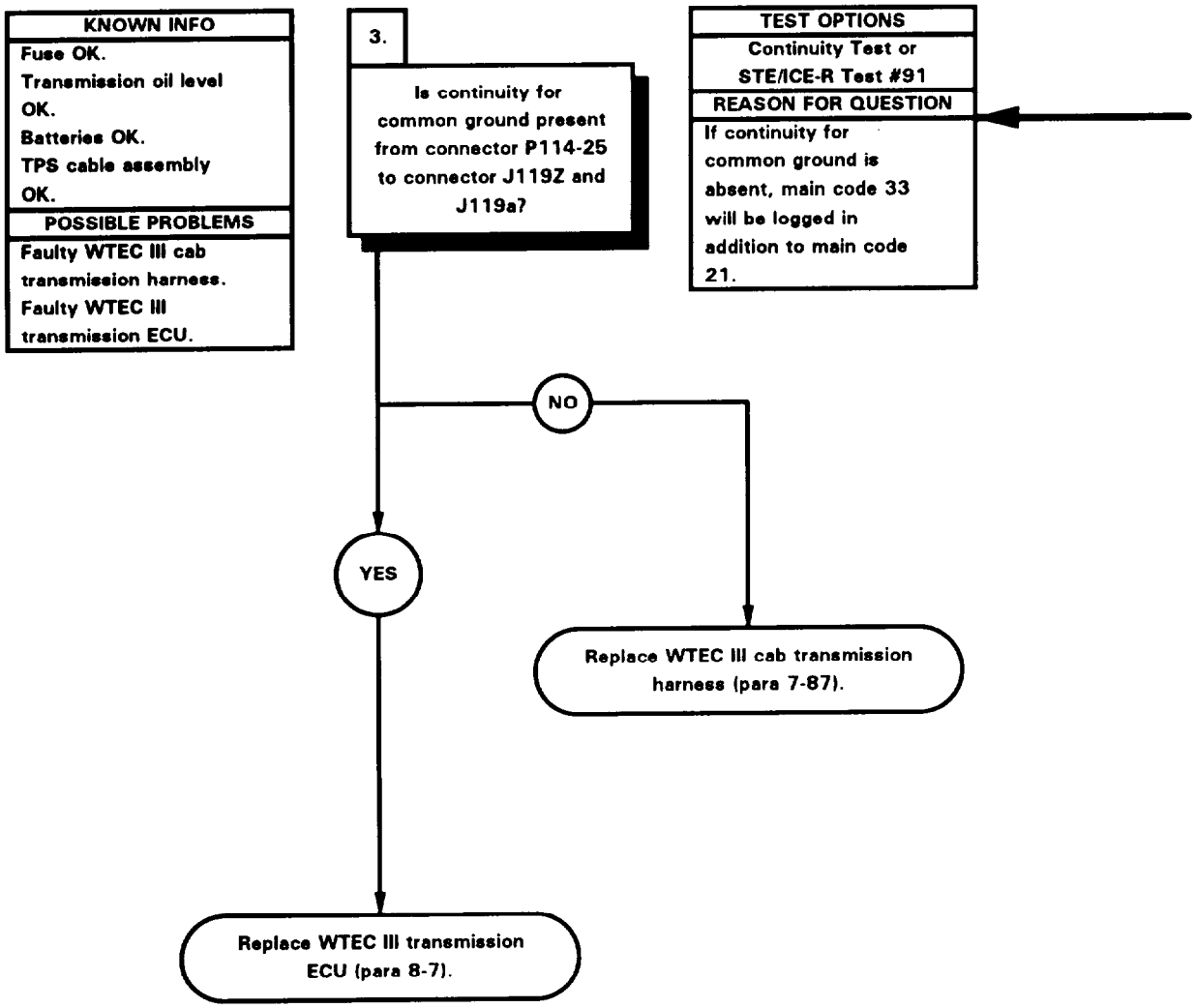
(1) Cycle master power switch to on (TM 9-2320-365-10), then to off five times to clear existing throttle count settings.
(2) Position master power switch to on (TM 9-2320-365-10).
(3) Depress accelerator pedal from idle position to full throttle position (TM 9-2320-365-10) to set new 0% and 100% throttle count values in WTEC III transmission ECU.
(4) Clear diagnostic code from WTEC III transmission ECU display (para 8-5).
(5) If main code 21 does not reappear, electrical communication between WTEC III transmission ECU and TPS may be faulty. If main code 21 reappears, TPS may be faulty.
(6) Position master power switch to off (TM 9-2320-365-10).

f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

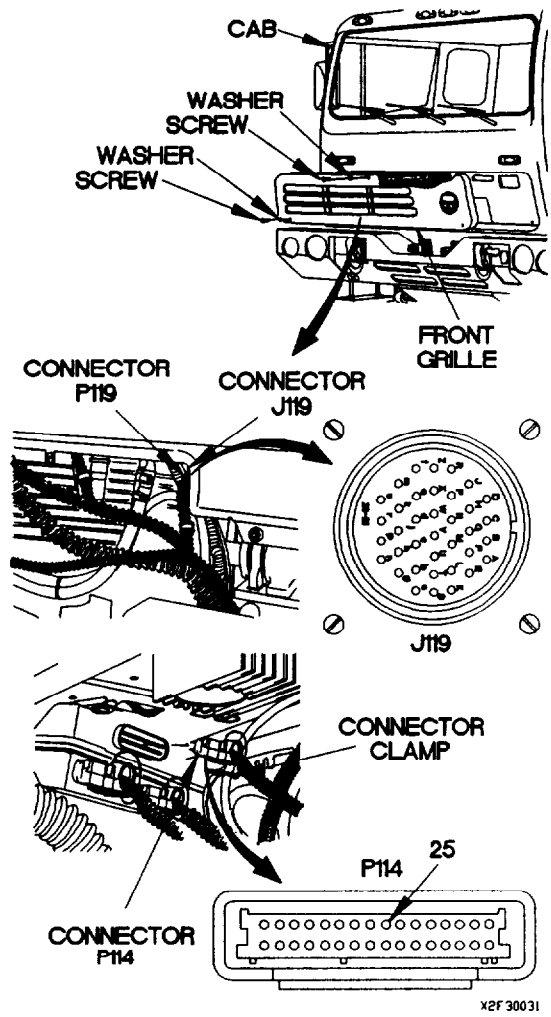


(1) Position master power switch to on (TM 9-2320-365-10).
(2) Press MODE button on WTEC III TPSS to bring up second code (if any) (para 8-5).
(3) If main code 33 displays on WTEC III TPSS, common ground may have been lost. If main code 21 is the only code displayed, TPS may be faulty. Go to step 4 of this fault.
(4) Position master power switch to off (TM 9-2320-365-10).

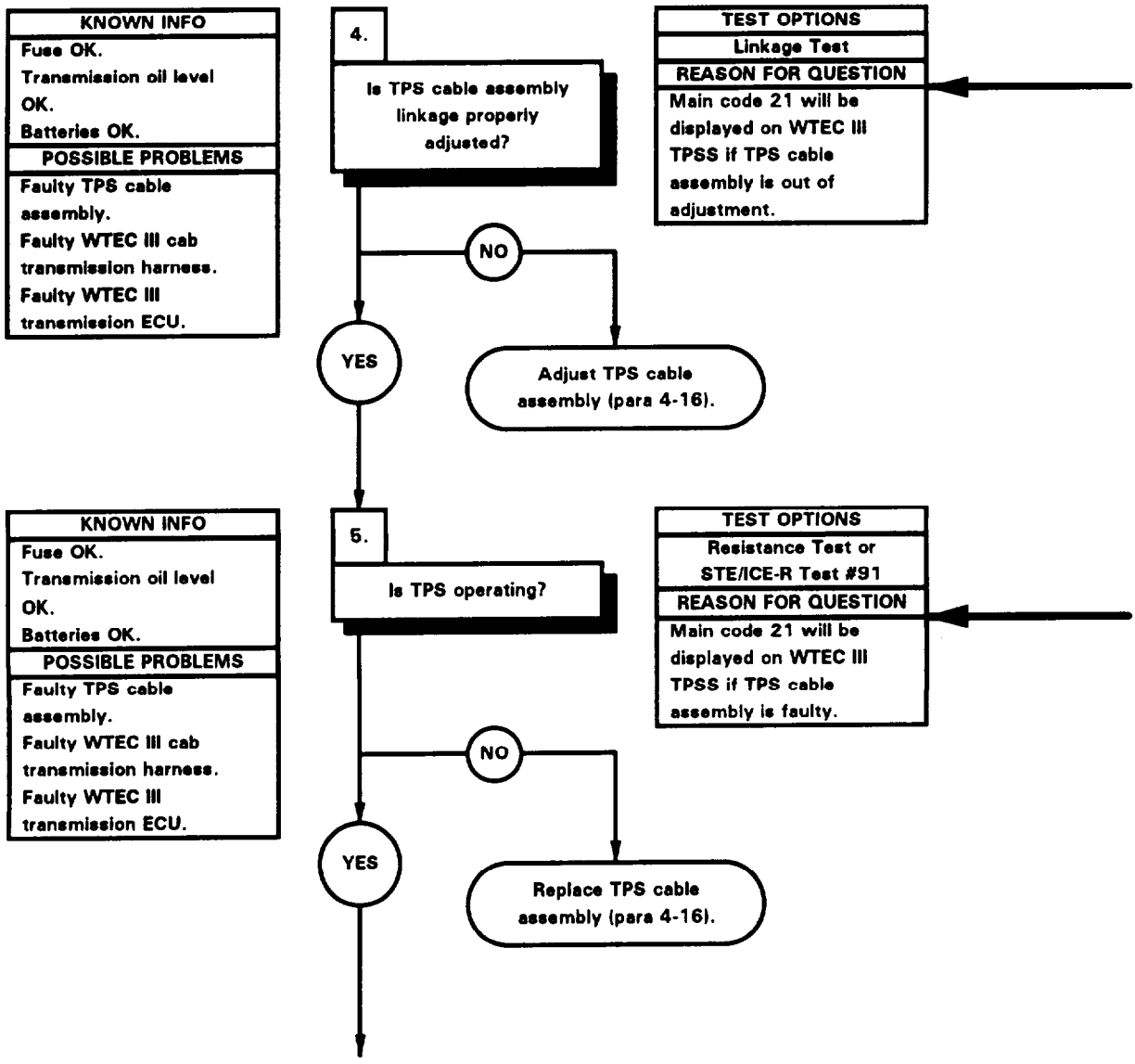
f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



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) Disconnect connector P119 from connector J119.
(5) Remove kick panel (para 16-3).
(6) Disconnect connector clamp from connector P114.
(7) Disconnect connector P114 from WTEC III transmission ECU.
(8) Set multimeter to ohms.
(9) Connect positive (+) probe of multimeter to connector P114-25.
(10) Connect negative (-) probe of multimeter to connector J119a and note reading on multimeter.
(11) Connect negative (-) probe of multimeter to connector J119Z and note reading on multimeter.
(12) If continuity is not present from connector P114-25 to connector J119a and J119Z, replace WTEC III cab transmission harness (para 7-87).
(13) If continuity is present, replace WTEC III transmission ECU (para 8-7).
(14) Connect connector P114 to WTEC III transmission ECU.
(15) Connect connector clamp on connector P114.
(16) Install kick panel (para 16-3).
(17) Connect connector P119 to connector J119.
(18) Position front grille on cab with washer and screw.
(19) Position two washers and screws in front grille.
(20) Tighten screw to 48-60 lb-in. (5-7 N·m).
(21) Tighten two screws to 24 lb-in. (3 N·m).
(22) Clear diagnostic codes (para 8-5).



f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

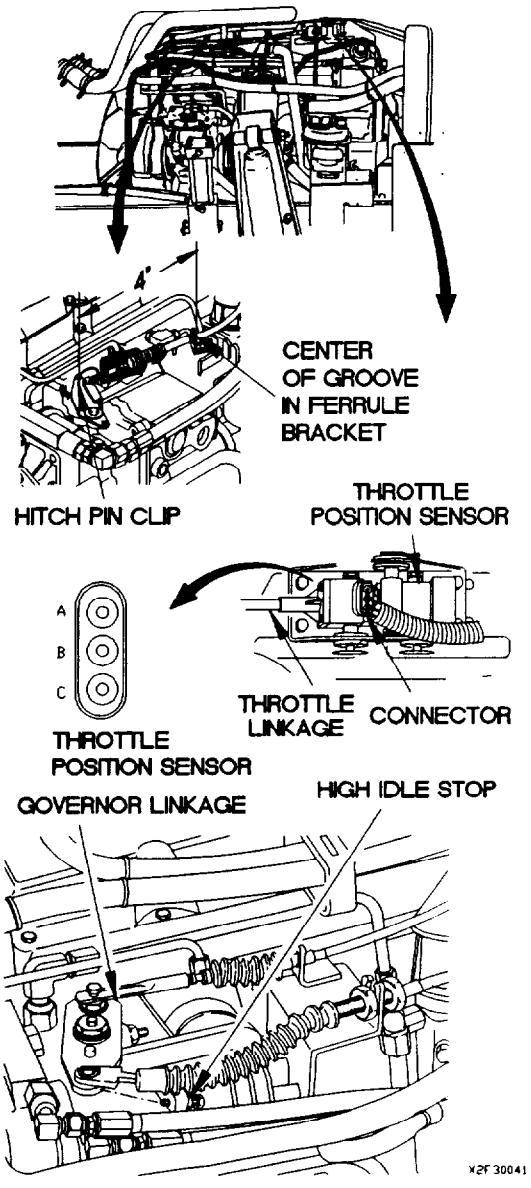


LINKAGE TEST

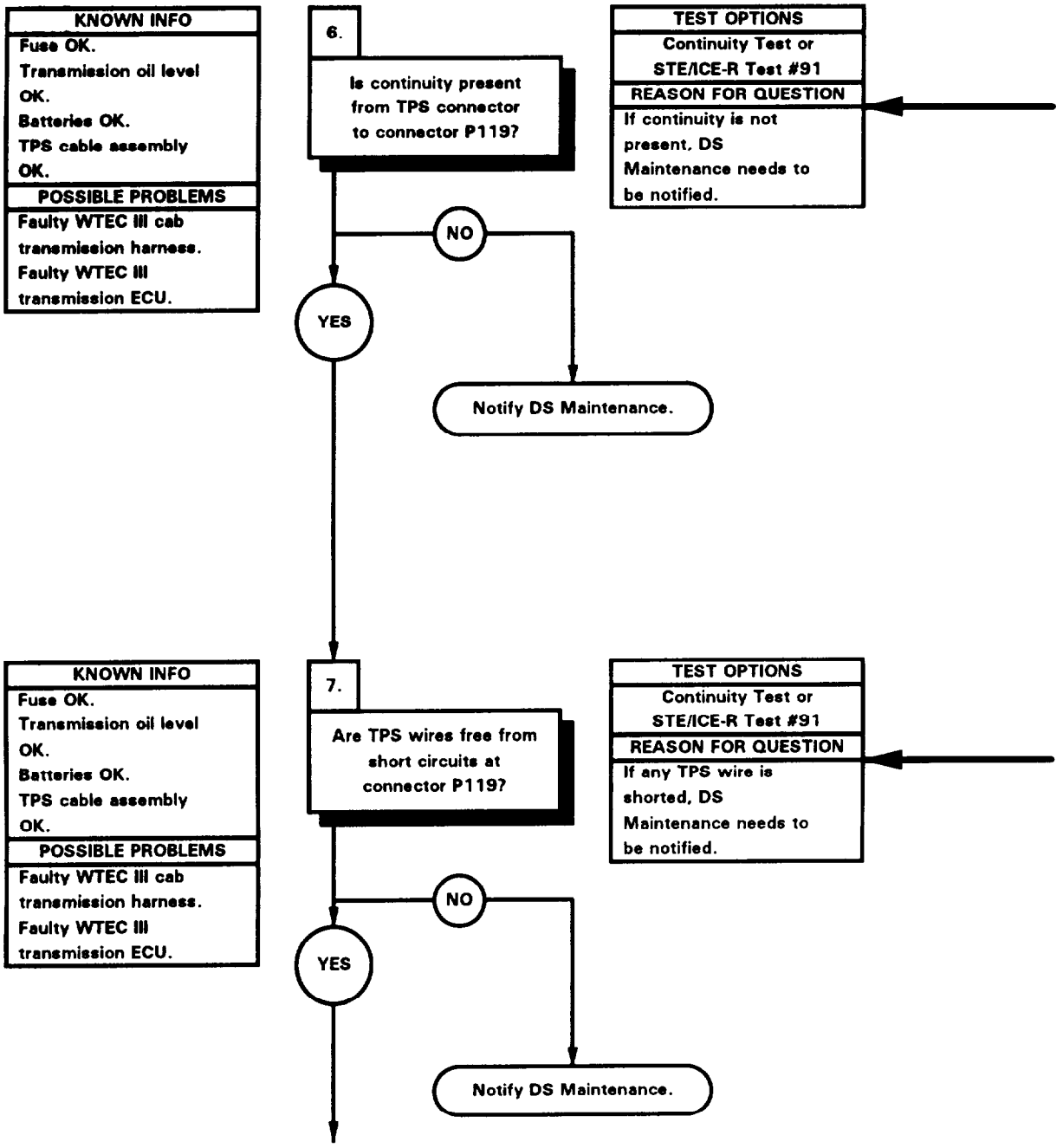
(1) Raise cab (TM 9-2320-365-10).
(2) Verify distance between hitch pin clip on end of sensor rod and center of cable groove in ferrule is 4 in. (10 cm).
(3) If distance is not 4 in. (10 cm), adjust TPS cable assembly (para 4-16).

RESISTANCE TEST

(1) Disconnect TPS connector from TPS.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to TPS terminal A.
(4) Connect negative (-) probe of multimeter to TPS terminal C and verify multimeter reads between 9,000- 15,000 ohms across terminals A and C.
(5) Disconnect negative (-) probe of multimeter from TPS terminal C.
(6) Connect negative (-) probe of multimeter to TPS terminal B and record reading on multimeter.
(7) Move governor linkage to high idle stop and record reading on multimeter.
(8) Return governor linkage to low idle stop.
(9) Verify that difference between highest (high idle) reading and lowest (low idle) reading is between 4,000 and 6,000 ohms.
(10) Verify that highest (high idle) reading does not exceed 15,000 ohms.
(11) If resistance readings are not within limits, replace TPS cable assembly (para 4-16).



f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

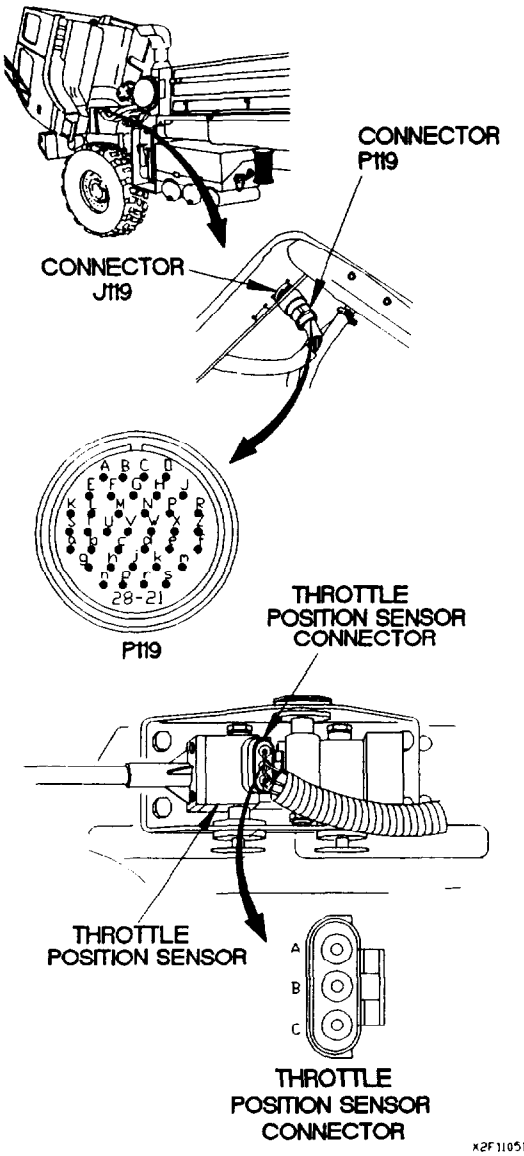


CONTINUITY TEST

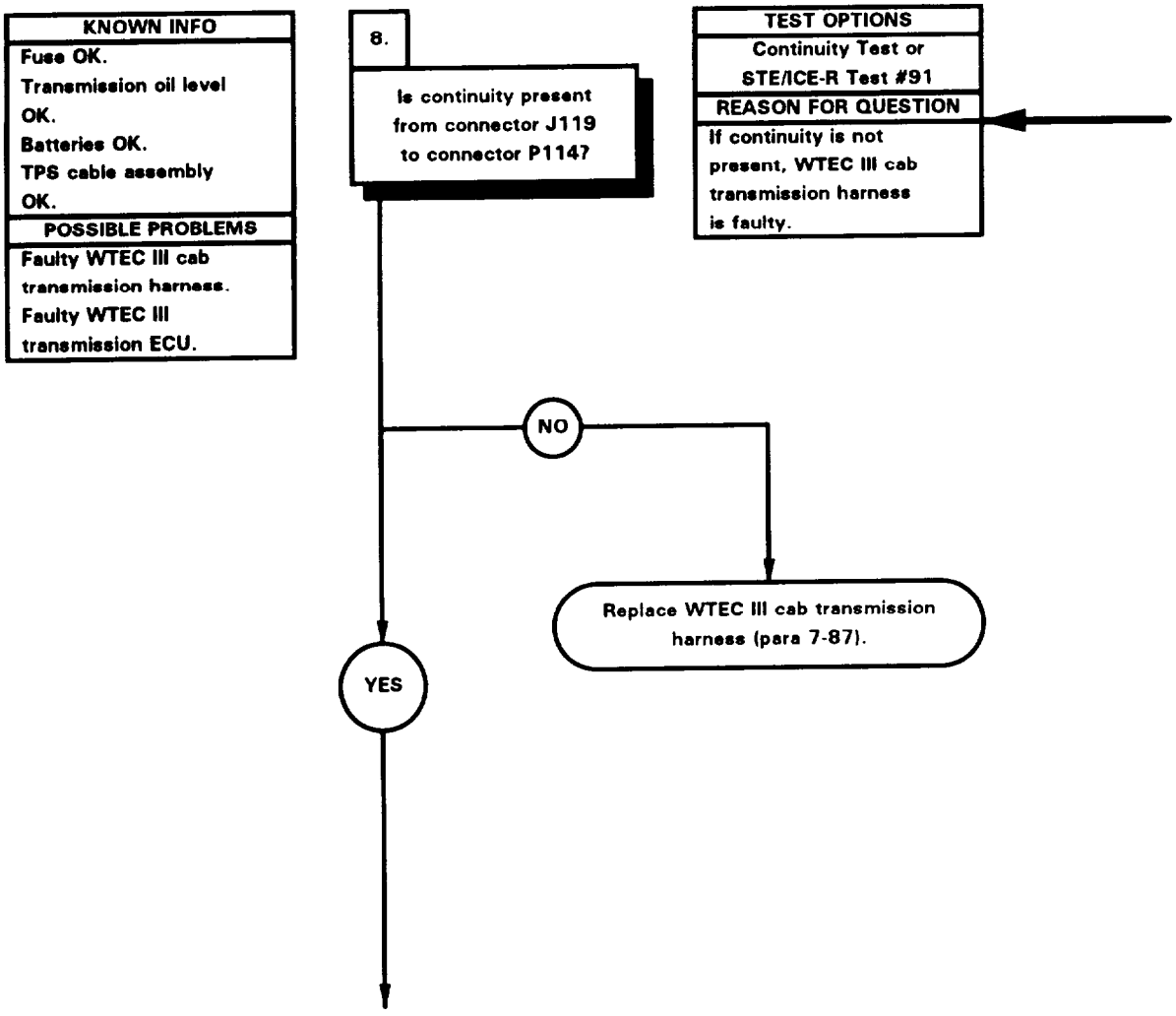
(1) Disconnect connector P119 from connector J119.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P119R.
(4) Connect negative (-) probe of multimeter to TPS connector pin C and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P119f.
(6) Connect negative (-) probe of multimeter to TPS connector pin B and note reading on multimeter.
(7) Connect positive (+) probe of multimeter to connector P119Z.
(8) Connect negative (-) probe of multimeter to TPS connector pin A and note reading on multimeter.
(9) If continuity is not present on one or more wires, notify DS Maintenance.

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P119R.
(3) Connect negative (-) probe of multimeter to all other pins in connector P119, one at a time, and note reading on multimeter.
(4) If continuity is found between pin R and any other pin, notify DS Maintenance.
(5) Perform steps (2) and (3) for P119f and P119Z.
(6) If continuity is found between pin f and any other pin, or between pin Z and any other pin, notify DS Maintenance.
(7) Connect TPS connector to TPS.



f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

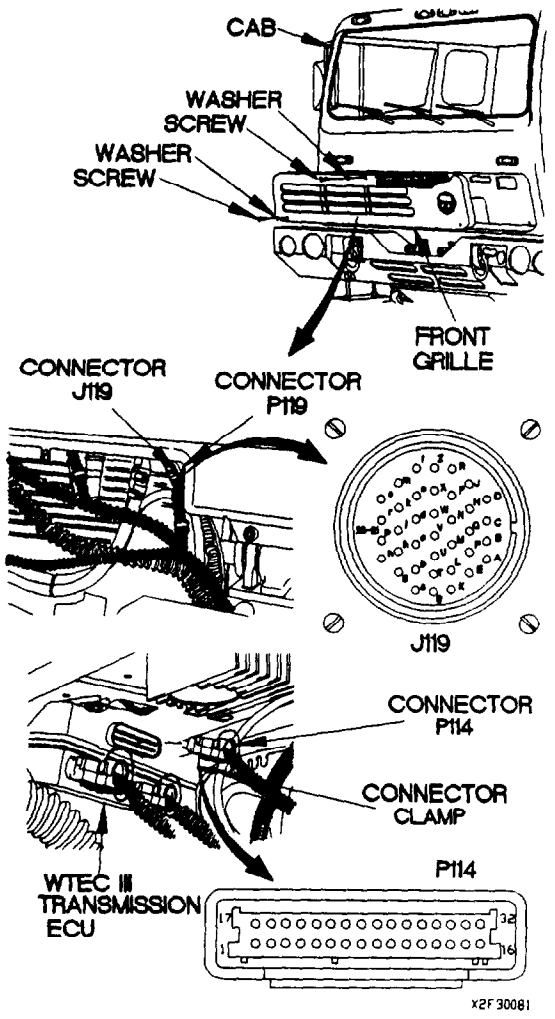


CONTINUITY TEST

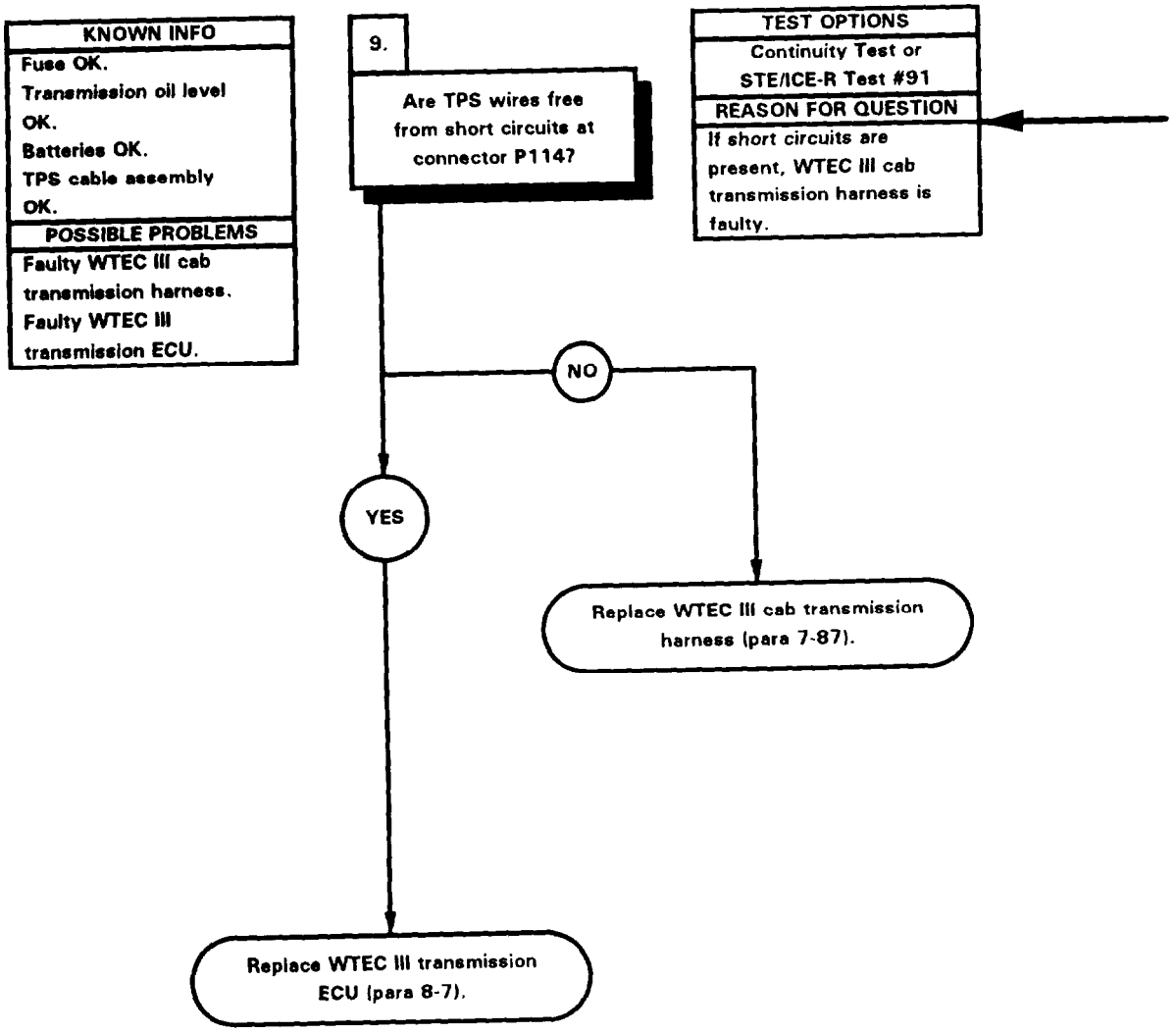
(1) Lower cab (TM 9-2320-365-10).
(2) Remove two screws and washers from front grille.
(3) Remove screw and washer from front grille.
(4) Remove front grille from cab.
(5) Remove kick panel (para 16-3).
(6) Disconnect connector clamp from connector P114.
(7) Disconnect connector P114 from WTEC III transmission ECU.
(8) Set multimeter to ohms.
(9) For each line of Table 2-37. Cab Transmission Harness Continuity Check:
  (a) Install jumper wire across sockets in column 1.
  (b) Connect positive (+) probe of multimeter to socket in column 2.
  (c) Connect negative (-) probe of multimeter to socket in column 3 and note reading on multimeter.
(10) If continuity is not present on any wire in Table 2-37. Cab Transmission Harness Continuity Check, replace WTEC III cab transmission harness (para 7-87).
(11) Remove jumper wire from connector J119.

TABLE 2-37. CAB TRANSMISSION HARNESS CONTINUITY CHECK

COLUMN 1 Jumper across:	COLUMN 2 Positive (+) probe to:	COLUMN 3 Negative (-) probe to:
J119f to J119Z	P114-10	P114-25
J119f to J119R	P114-10	P114-9
J119R to J119Z	P114-25	P114-9

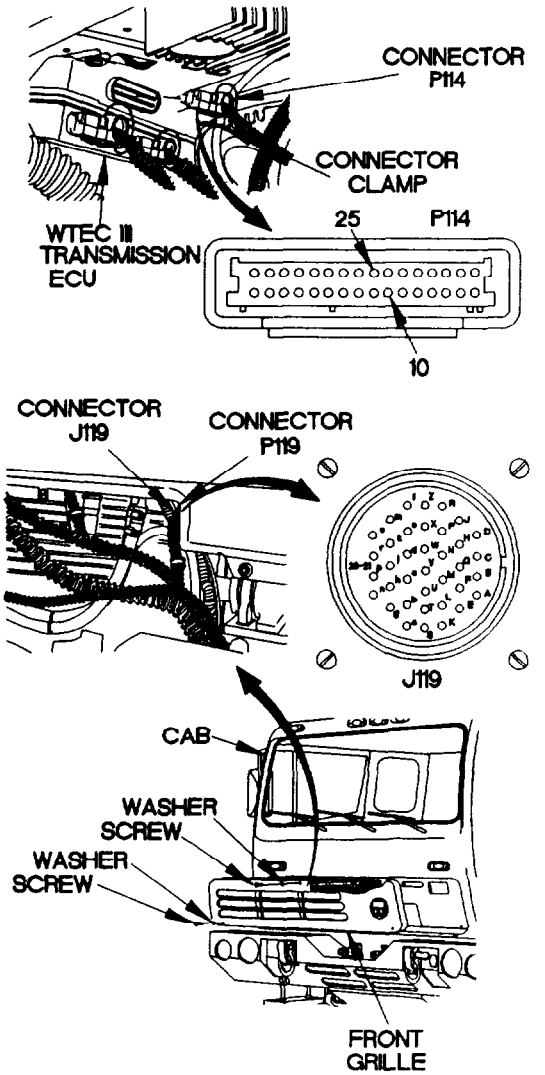


f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P114-9.
(3) Connect negative (-) probe of multimeter to all other sockets of connector P114, one at a time, and note reading on multimeter.
(4) Connect positive (+) probe of multimeter to connector P114-10.
(5) Connect negative (-) probe of multimeter to all other sockets of connector P114, one at a time, and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector P114-25.
(7) Connect negative (-) probe of multimeter to all other sockets of connector P114 (except P114-13), one at a time, and note reading on multimeter.
(8) If continuity is present in step 3, 5, or 7, replace WTEC III cab transmission harness (para 7-87).
(9) If no short circuits are found, replace WTEC III transmission ECU (para 8-7).
(10) Connect connector P114 to WTEC III transmission ECU.
(11) Connect connector clamp on connector P114.
(12) Install kick panel (para 16-3).
(13) Connect connector P119 to connector J119.
(14) Position front grille on cab with washer and screw.
(15) Position two washers and screws in front grille.
(16) Tighten screw to 48-60 lb-in. (5-7 N·m).
(17) Tighten two screws to 24 lb-in. (3 N·m).
(18) Clear diagnostic codes (para 8-5).



X2F 30091

f31. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 51 AND ANY SUB CODE

INITIAL SETUP

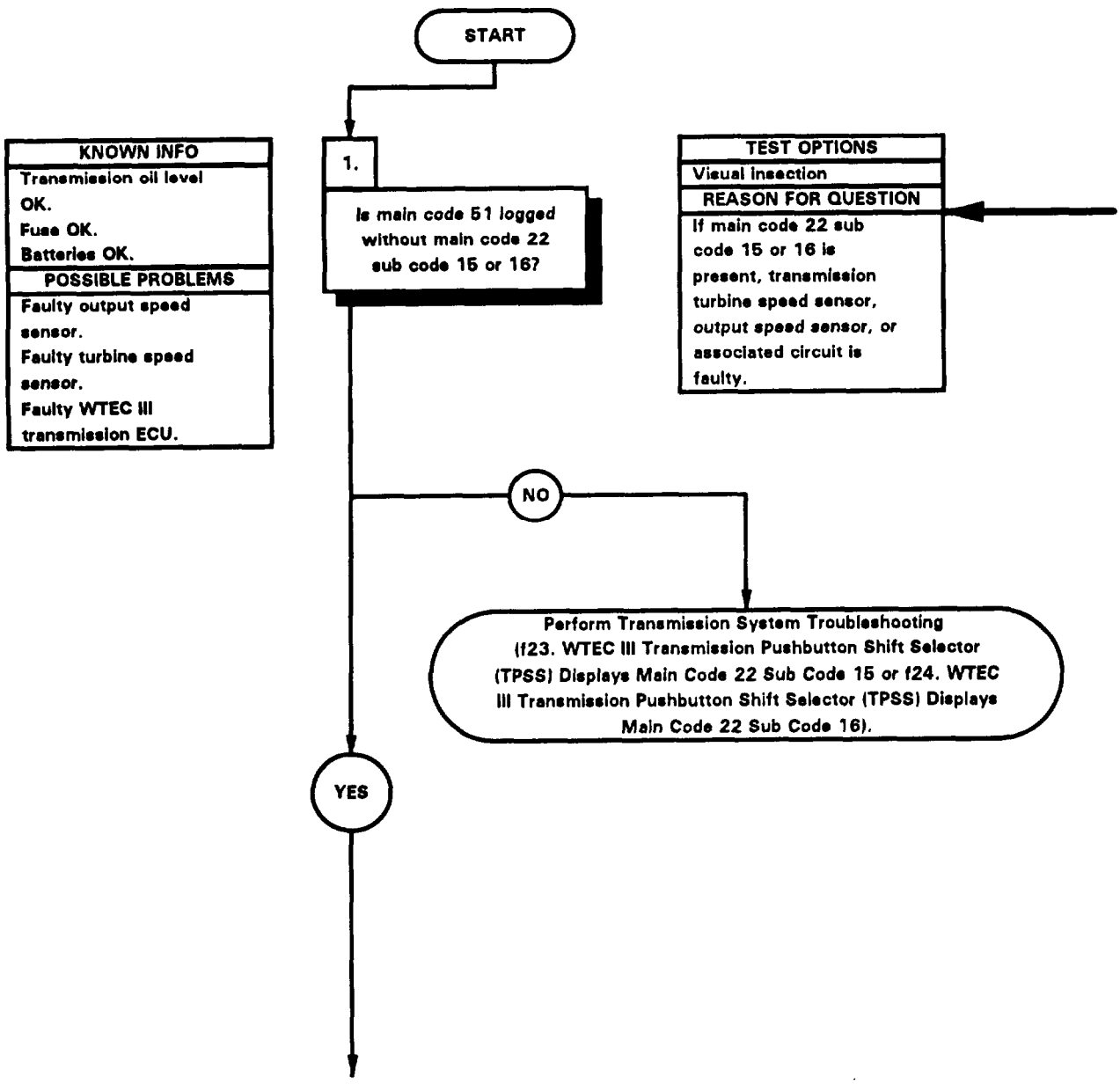
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

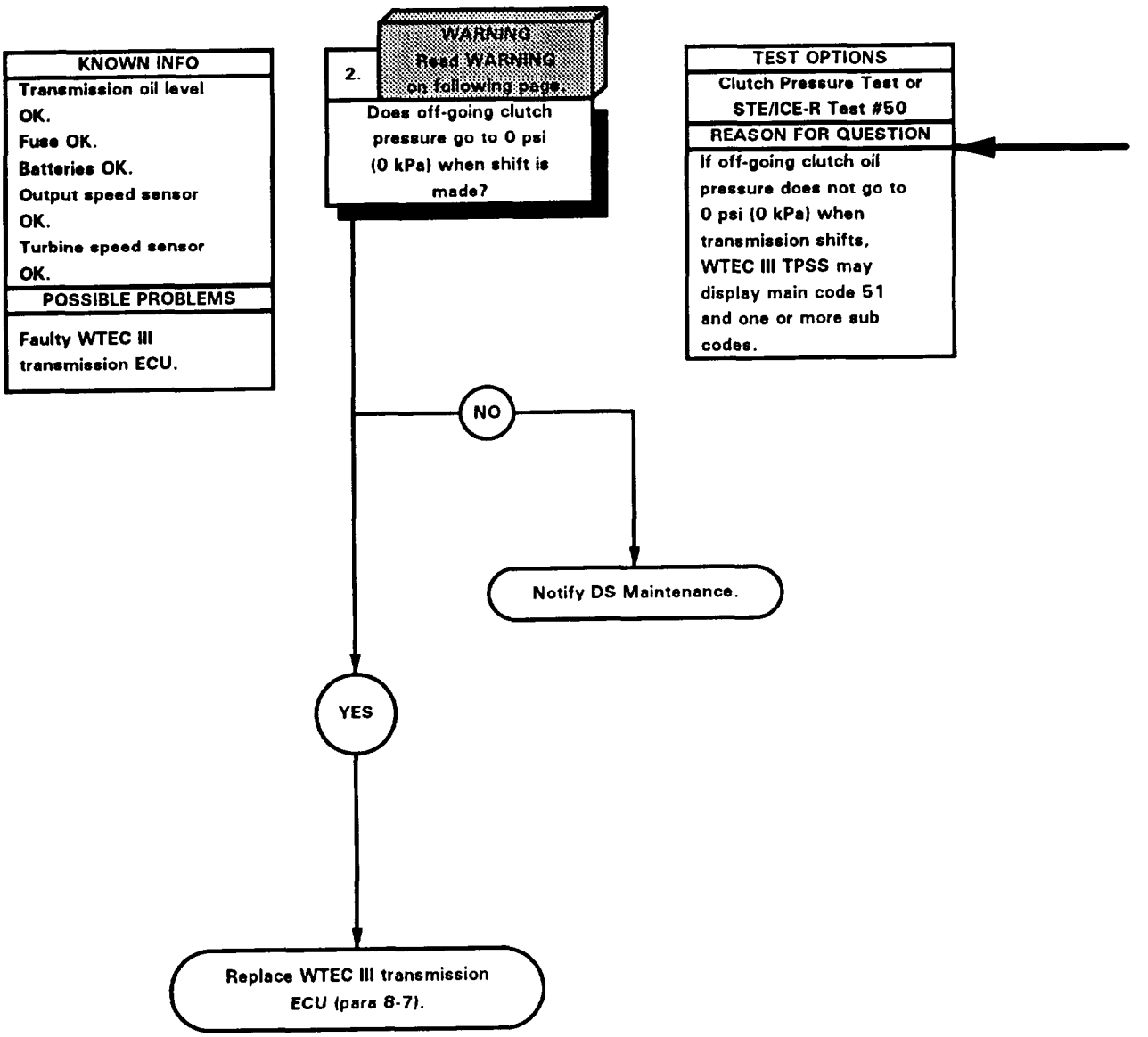
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 15 or 16 is logged in WTEC III TPSS (para 8-5).
(2) If main code 22 sub code 15 or 16 is logged, WTEC III transmission ECU has sensed a fault with the turbine speed sensor, output sensor, or associated circuits. Perform Transmission System Troubleshooting (f23. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 15 or f24. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code16).

f31. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 51 AND ANY SUB CODE (CONT)

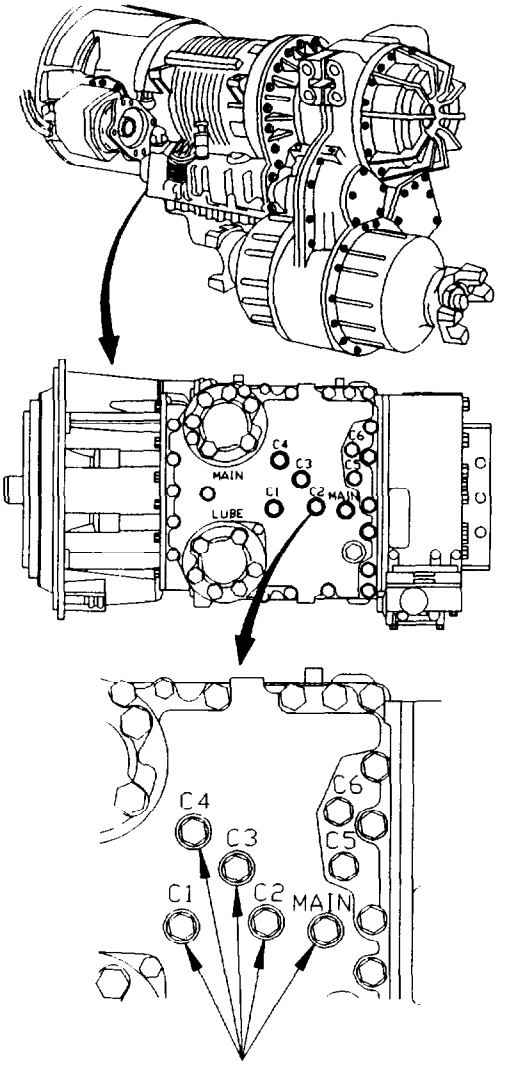


CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from off-going clutch indicated by the sub code, refer to Table 2-38. Off-Going Clutch Pressure Tap. Discard preformed packing.
(4) Connect reducer, STE/ICE-R adapter, and snubber to clutch pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R. Refer to Table 2-38. Off-Going Clutch Pressure Tap.
(8) If one or more off-going clutches fail to loose pressure, notify DS Maintenance.
(9) Shut down engine (TM 9-2320-365-10).
(10) Remove STE/ICE-R adapter, snubber, and reducer from clutch pressure tap.
(11) Position preformed packing and pressure tap plug in control valve module.
(12) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(13) Remove drain pan under pressure tap.
(14) Install transmission front and rear output propeller shaft (para 9-2).
(15) Clear diagnostic codes (para 8-5).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2F1101-

TABLE 2-38. OFF-GOING CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	OFF-GOING CLUTCH	SOLENOID ASSEMBLY LOCATION
10	2-1 Downshift	C5	Stationary Clutch
12	2-3 Upshift	C5	Stationary Clutch
21	3-2 Downshift	C4	Stationary Clutch
23	3-4 Upshift	C4	Stationary Clutch
43	5-4 Downshift	C2	Rotating Clutch
45	5-6 Upshift	C1	Rotating Clutch
65	7-6 Downshift	C4	Stationary Clutch

f32. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 25 AND ANY SUB CODE

INITIAL SETUP

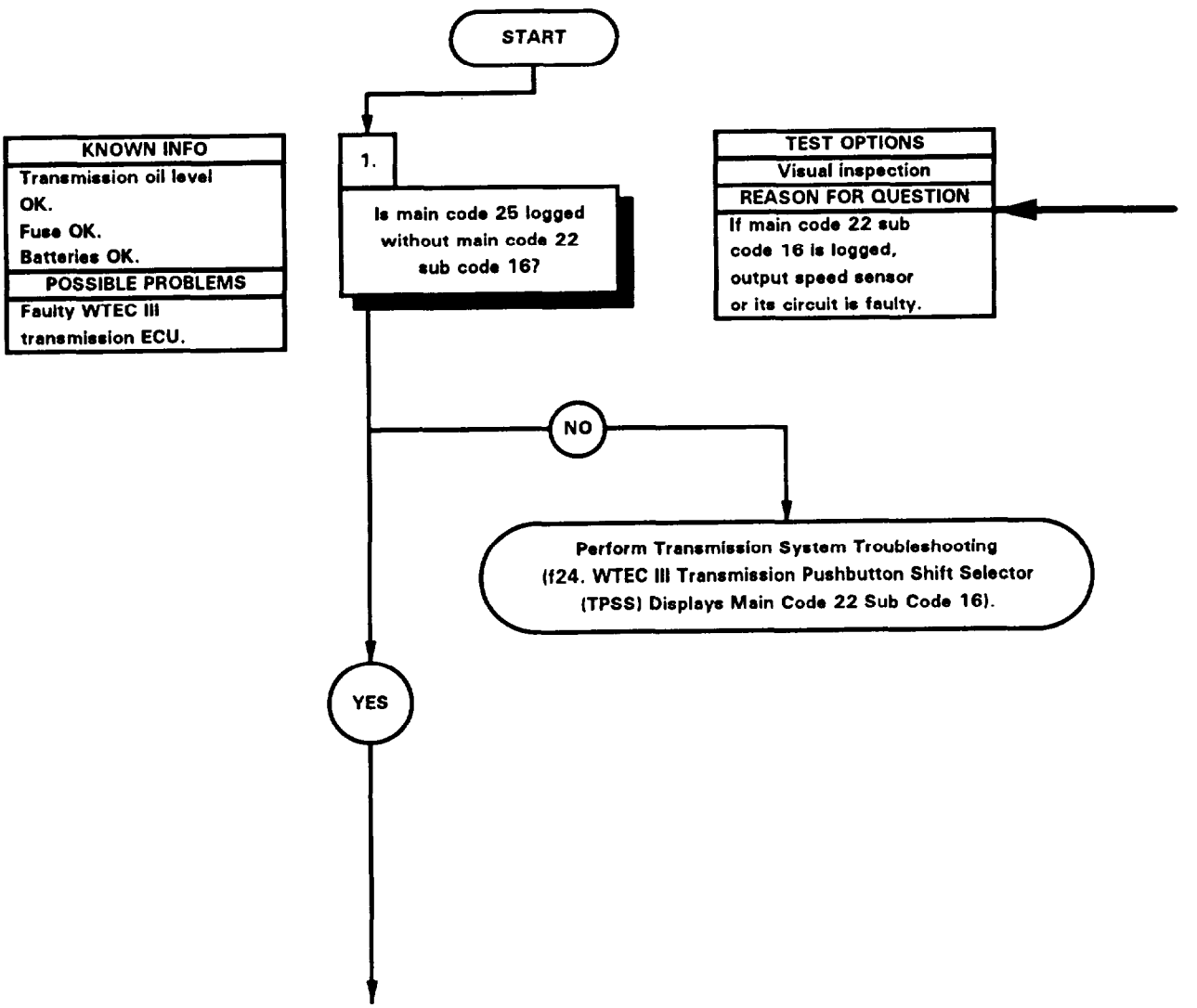
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

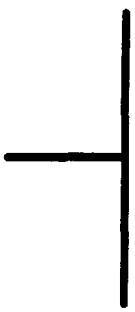
Personnel Required
(2)

Reference
TM 9-4910-571-12&P

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

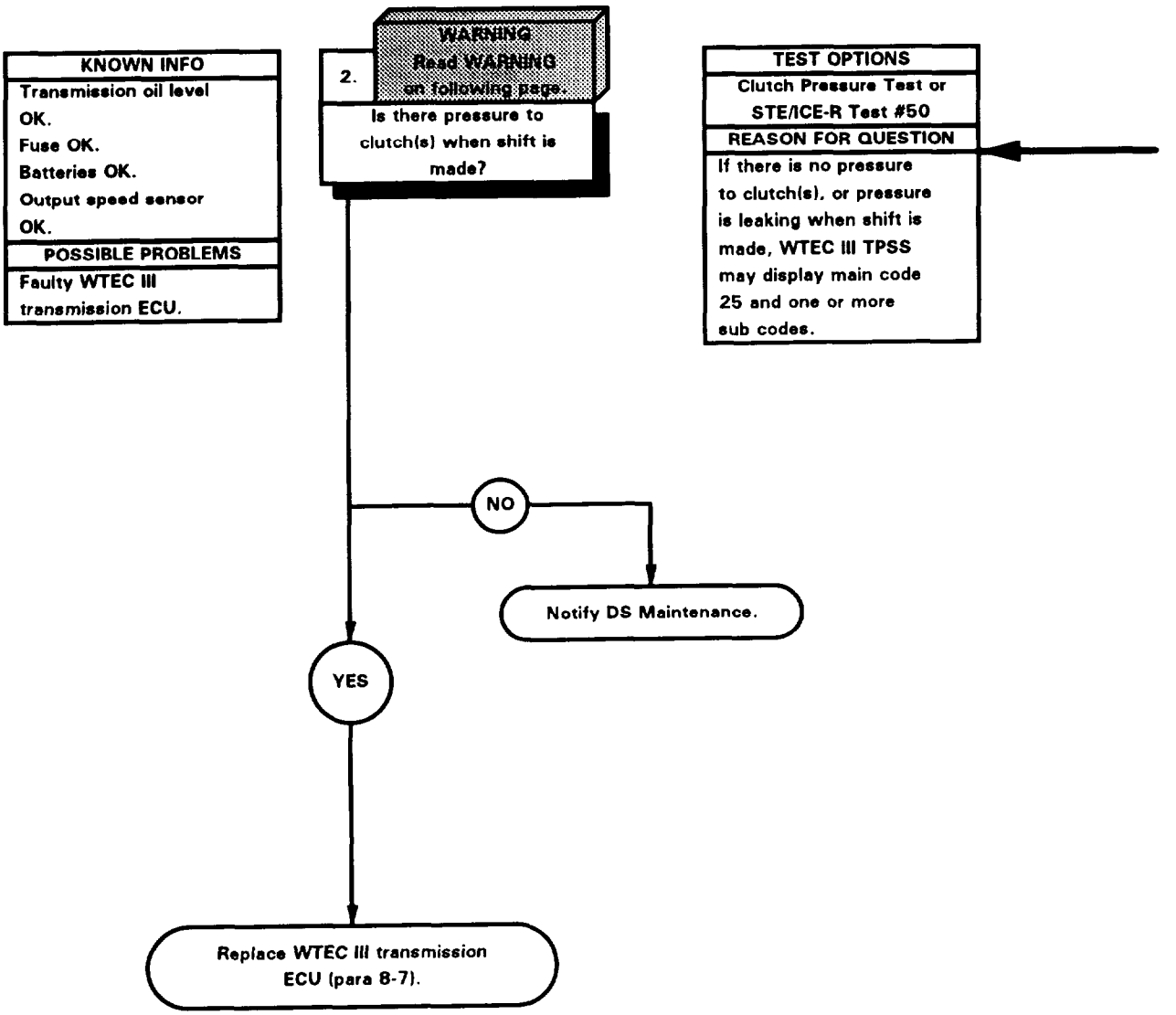
Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)





(1) Check if main code 22 sub code 16 is logged in the WTEC III TPSS (para 8-5).
(2) If main code 22 sub code 16 is logged, WTEC III transmission ECU has sensed a fault with the output speed sensor or its circuit. Perform Transmission System Troubleshooting (f24. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 16).

f32. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 25 AND ANY SUB CODE (CONT)

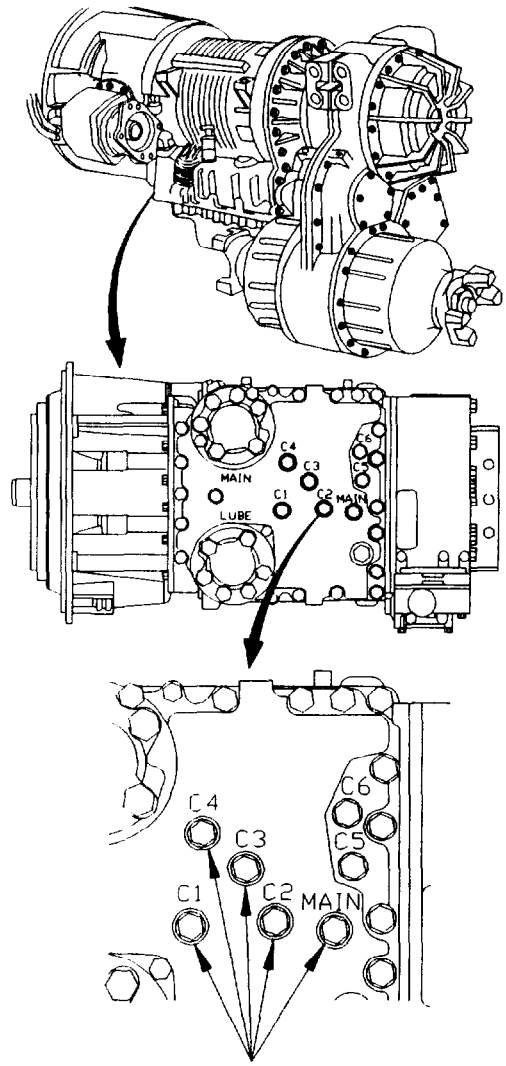


CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from clutch pressure tap indicated by the sub code. Refer to Table 2-39. Clutch Pressure Tap. Discard preformed packing.
(4) Connect reducer, STE/ICE-R adapter, and snubber to clutch pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10).
(7) With brake applied, make shift indicated by sub code. Refer to Table 2-39. Clutch Pressure Tap.
(8) Accelerate engine until WTEC III TPSS displays desired range. Refer to Table 2-39. Clutch Pressure Tap.
(9) Maintain engine speed to keep desired transmission range while assistant notes reading on STE/ICE-R.
(10) Let engine return to idle.
(11) Shift transmission into neutral.
(12) Shut down engine (TM 9-2320-365-10).
(13) Remove STE/ICE-R adapter, snubber, and reducer from pressure tap.
(14) Position preformed packing and pressure tap plug in control valve module.
(15) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(16) Remove drain pan under pressure tap.
(17) Install transmission front and rear output propeller shafts (para 9-2).
(18) If one or more clutches fail to indicate proper pressure, notify DS Maintenance.
(19) If all clutches indicate proper pressure, replace WTEC III transmission ECU (para 8-7).
(20) Clear diagnostic codes (para 8-5).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

X2FL101-

TABLE 2-39. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	PRESSURE at CLUTCH(S)	SOLENOID ASSEMBLY LOCATION	PRESSURE READINGS at TAPS
00	Speed Zero in 1st	C3 & C6	ROT & C6 Clutch	215-334 psi (1480-2300 kPa)
11	Speed Zero in 2nd	C1 & C5	ROT & STA Clutch	215-334 psi (1480-2300 kPa)
22	Speed Zero in 3rd	C1 & C4	ROT & STA Clutch	142-203 psi (980-1400 kPa)
33	Speed Zero in 4th	C1 & C3	ROT & STA Clutch	142-203 psi (980-1400 kPa)
44	Speed Zero in 5th	C1 & C2	Rotating Clutch	142-203 psi (980-1400 kPa)
55	Speed Zero in 6th	C2 & C3	ROT & STA Clutch	128-189 psi (880-1300 kPa)
66	Speed Zero in 7th	C2 & C4	ROT & STA Clutch	128-189 psi (880-1300 kPa)
77	Speed Zero in R	C3 & C5	Stationary Clutch	215-334 psi (1480-2300 kPa)

f33. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 53 AND ANY SUB CODE

INITIAL SETUP

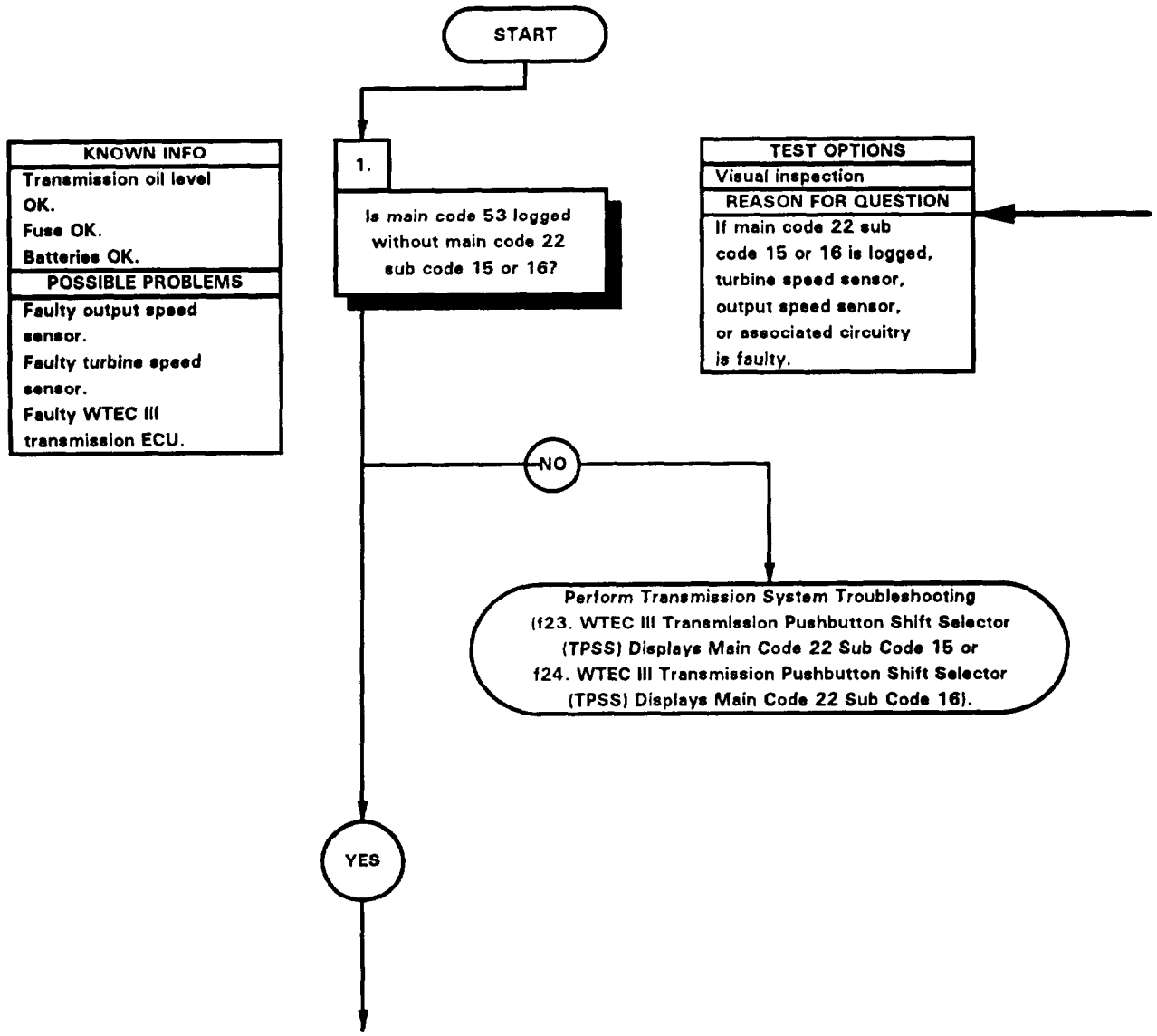
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

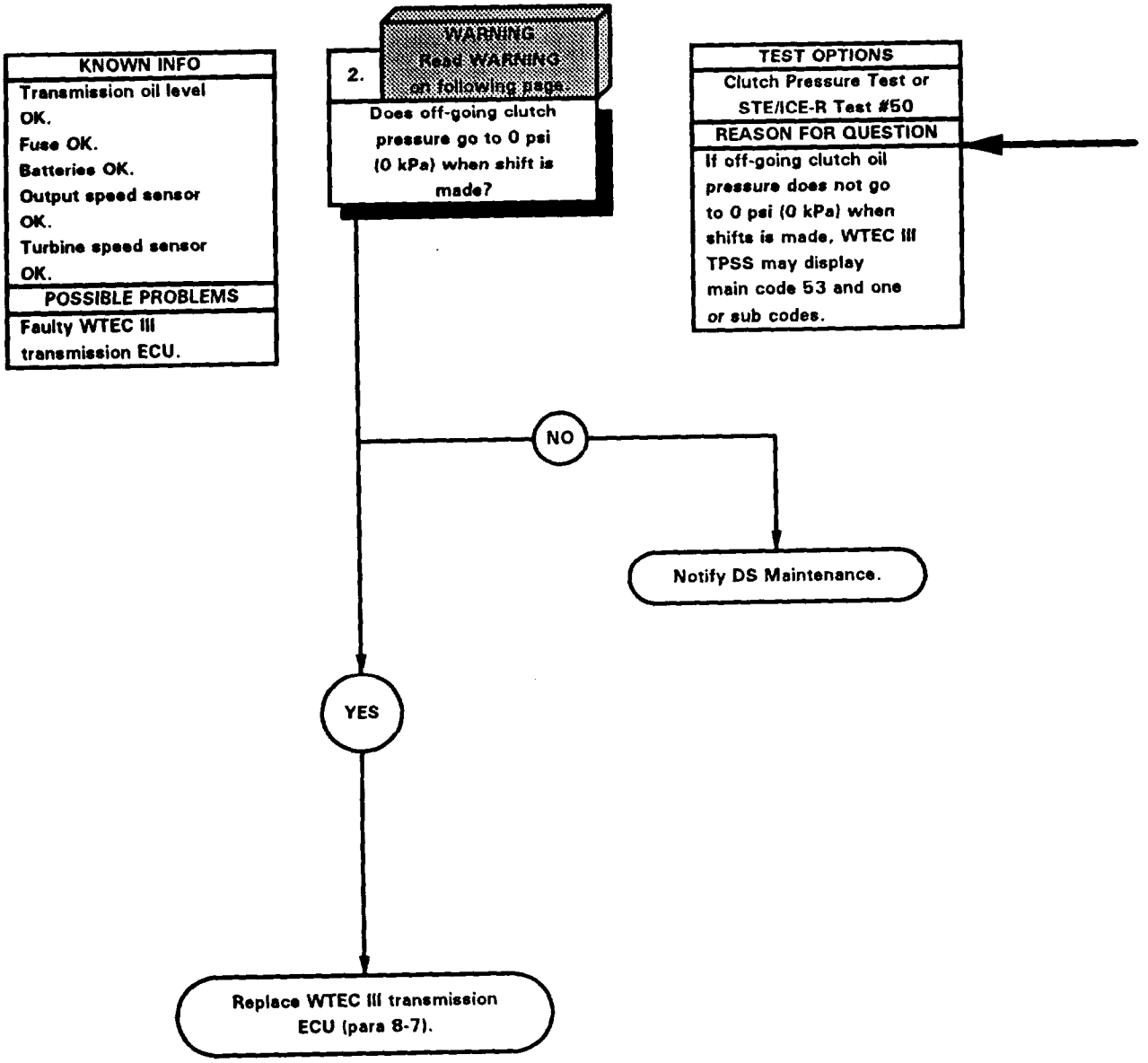
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 15 or 16 is logged in WTEC III TPSS (para 8-5).
(2) If main code 22 sub code 15 or 16 is logged, WTEC III transmission ECU has sensed a fault with turbine speed sensor, output speed sensor, or associated circuits. Perform Transmission System Troubleshooting (f23. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 15 or f24. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 16).

f33. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 53 AND ANY SUB CODE (CONT)

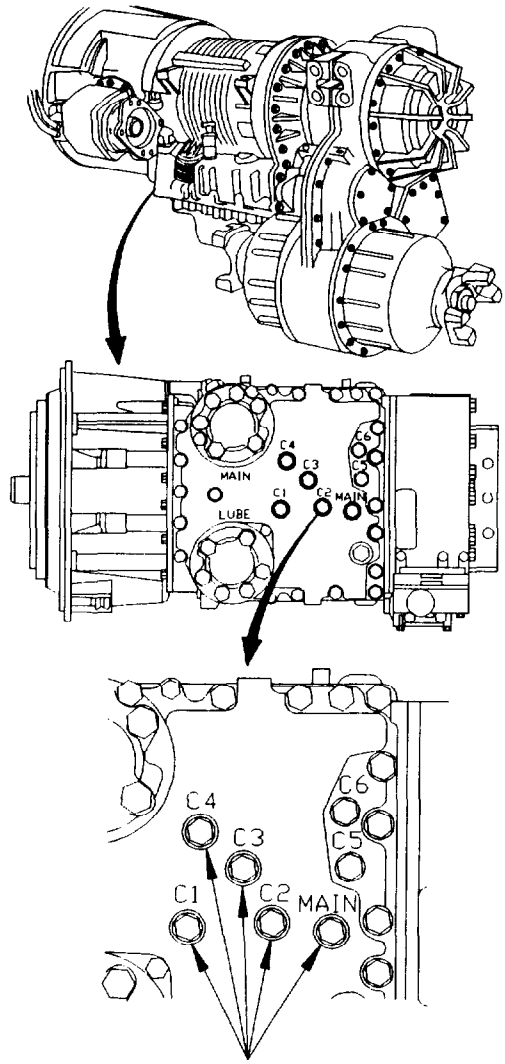


CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from off-going clutch indicated by the sub code. Refer to Table 2-40. Off-Going Clutch Pressure Tap. Discard preformed packing.
(4) Connect reducer, STE/ICE-R adapter, and snubber to clutch pressure tap.
(5) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R. Refer to Table 2-40. Off-Going Clutch Pressure Tap.
(8) If off-going clutch pressure does not go to 0 psi (0 kPa) when shift is made, notify DS Maintenance.
(9) If off-going clutch pressure does go to 0 psi (0 kPa) when shift is made, replace WTEC III transmission ECU (para 8-7).
(10) Shut down engine (TM 9-2320-365-10).
(11) Remove STE/ICE-R adapter, snubber, and reducer from pressure tap.
(12) Position preformed packing and pressure tap plug in control valve module.
(13) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(14) Remove drain pan under pressure tap.
(15) Install transmission front and rear output propeller shafts (para 9-2).
(16) Clear diagnostic codes (para 8-5).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

x2F1101-

TABLE 2-40. OFF-GOING CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	OFF-GOING CLUTCH(S)	SOLENOID ASSEMBLY LOCATION
08	L-N1 Shift	C3	Stationary Clutch
18	1-N1 Shift	C1	Rotating Clutch
28	2-N1 Shift	C1 & C4	ROT & STA Clutch
29	2-N2 Shift	C1	Rotating Clutch
38	3-N1 Shift	C1 & C3	ROT & STA Clutch
39	3-N3 Shift	C1	Rotating Clutch
48	4-N1 Shift	C1 & C2	Rotating Clutch
49	4-N3 Shift	C1 & C2	Rotating Clutch
58	5-N1 Shift	C2 & C3	ROT & STA Clutch
59	5-N3 Shift	C2	Rotating Clutch
68	6-N1 Shift	C2 & C4	ROT & STA Clutch
69	6-N4 Shift	C2	Rotating Clutch
78	R-N1 Shift	C3	Stationary Clutch
99	N3-N2 or N2-N3 Shift	C2 or C4	ROT or STA Clutch

134. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 54 AND ANY SUB CODE

INITIAL SETUP

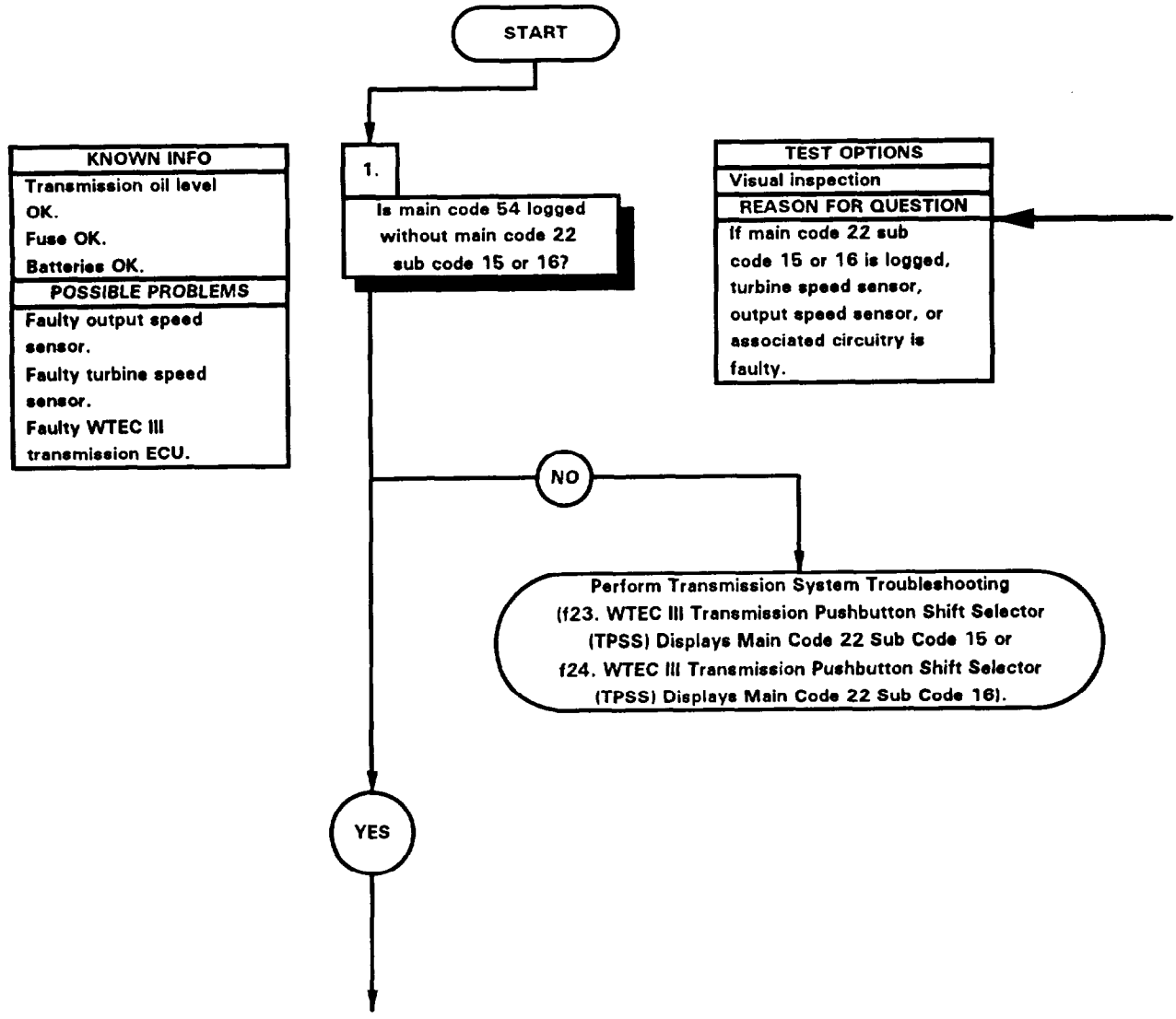
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

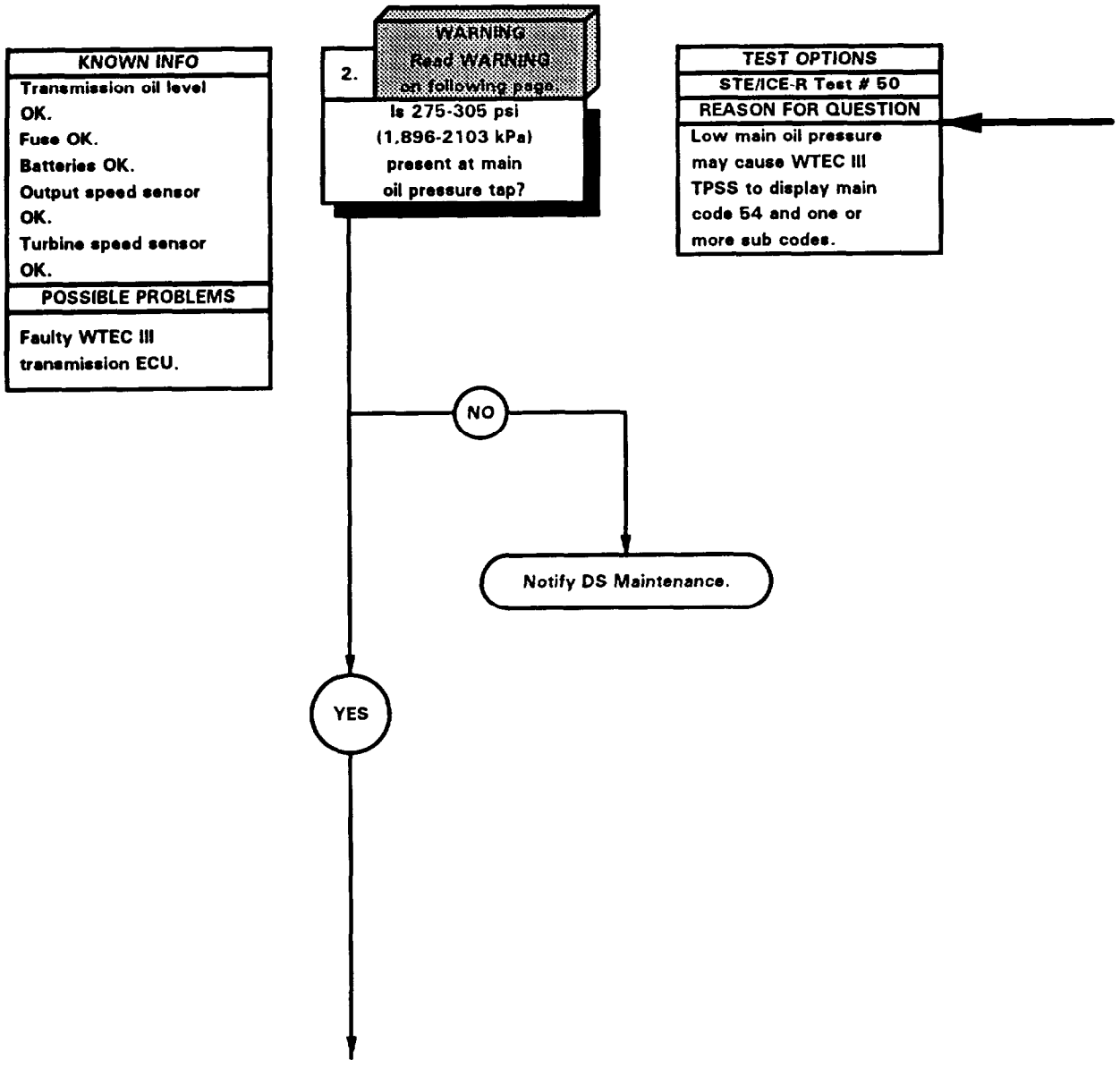
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 sub code 15 or 16 is logged in WTEC III TPSS (para 8-5).
(2) If main code 22 sub code 15 or 16 is logged, WTEC III transmission ECU has sensed a fault with the turbine speed sensor, output speed sensor, or associated circuits. Perform Transmission System Troubleshooting (f23. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 15 or f24. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 16).

f34. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 54 AND ANY SUB CODE (CONT)

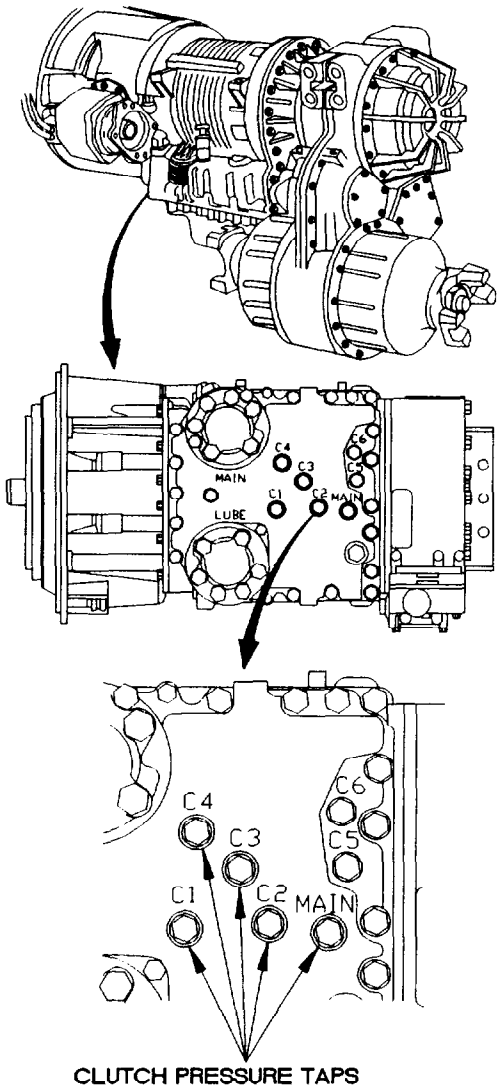


STE/ICE-R TEST #50

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

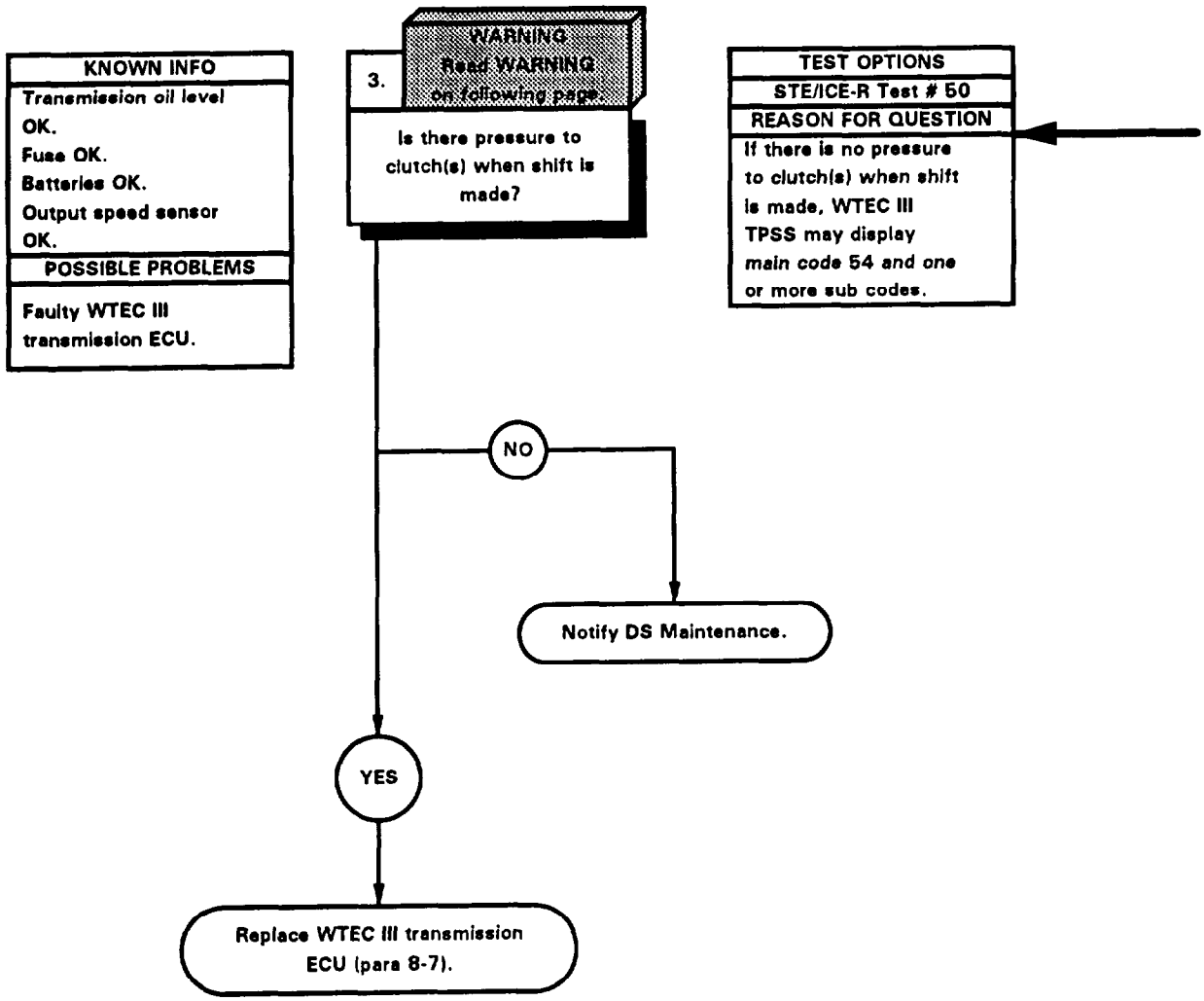
(1) Place drain pan under transmission tap.
(2) Remove main pressure tap plug and preformed packing from control valve assembly.
(3) Connect STE/ICE-R adapter, snubber, and reducer to clutch pressure tap.
(4) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(5) Start engine (TM 9-2320-365-10) and run at idle.
(6) With parking brake applied, position WTEC III TPSS to R position then to N position while assistant checks reading on STE/ICE-R.
(7) Shut down engine (TM 9-2320-365-10).
(8) If main oil pressure is low, notify DS Maintenance.
(9) Remove reducer, STE/ICE-R adapter, and snubber from main pressure tap.
(10) Position preformed packing and main pressure tap plug in control valve module.
(11) Tighten main pressure tap plug to 84-120 lb-in. (9-14 N·m).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

x2F1101-

f34. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 54 AND ANY SUB CODE (CONT)



CLUTCH PRESSURE TEST

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from clutch pressure tap indicated by the sub code. Refer to Table 2-41. Clutch Pressure Tap.
(4) Connect STE/ICE-R adapter, snubber, and reducer to clutch pressure tap.
(5) Start engine (TM 9-2320-365-10).
(6) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(7) With parking brake applied, make shift indicated by sub code. Refer to Table 2-41. Clutch Pressure Tap.
(8) Accelerate engine until WTEC III TPSS displays denied range. Refer to Table 2-41. Clutch Pressure Tap.
(9) Maintain sufficient engine speed to keep desired transmission range while assistant notes reading on STE/ICE-R.
(10) Let engine return to idle.
(11) Shift WTEC III TPSS into neutral.
(12) If one or more clutches failed to indicate proper pressure, notify DS Maintenance.
(13) If all clutches indicate proper pressure, replace WTEC III transmission ECU (para 8-7).
(14) Shut down engine (TM 9-2320-365-10).
(15) Remove reducer, STE/ICE-R adapter, and snubber from pressure tap.
(16) Position preformed packing and pressure tap plug in control valve module.
(17) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(18) Remove drain pan under pressure tap.
(19) Install transmission front and rear output propeller shafts (para 9-2).
(20) Clear diagnostic codes (para 8-5).

TABLE 2-41. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING		PRESSURE at CLUTCH(S)	SOLENOID ASSEMBLY LOCATION	PRESSURE READINGS at TAPS
01	L-1	Upshift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
07	L-R	Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)
10	1-L	Downshift	C3 & C6	ROT & C6 Clutch	235-265 psi (1620-1827 kPa)
12	1-2	Upshift	C1 & C4	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
17	1-R	Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)
21	2-1	Downshift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
23	2-3	Upshift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
27	2-R	Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)
32	3-2	Downshift	C1 & C4	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
34	3-4	Upshift	C1 & C2	Rotating Clutch	170-194 psi (1172-1338 kPa)
43	4-3	Downshift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
45	4-5	Upshift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
54	5-4	Downshift	C1 & C2	Rotating Clutch	170-194 psi (1172-1338 kPa)
56	5-6	Upshift	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
65	6-5	Downshift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
70	R-L	Shift	C3 & C6	ROT & C6 Clutch	235-265 psi (1620-1827 kPa)
71	R-1	Shift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
72	R-2	Shift	C1 & C4	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
80	N1-L	Shift	C3 & C6	ROT & C6 Clutch	235-265 psi (1620-1827 kPa)
81	N1-1	Shift	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
82	N1-2	Shift	C1 & C4	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
83	N1-3	Shift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
85	N1-5	Shift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
86	N1-6	Shift	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
92	N2-2	Shift	C1 & C4	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
93	N3-3	Shift	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
95	N3-5	Shift	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
96	N4-6	Shift	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
97	2-R	Shift	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)

f35. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE

INITIAL SETUP

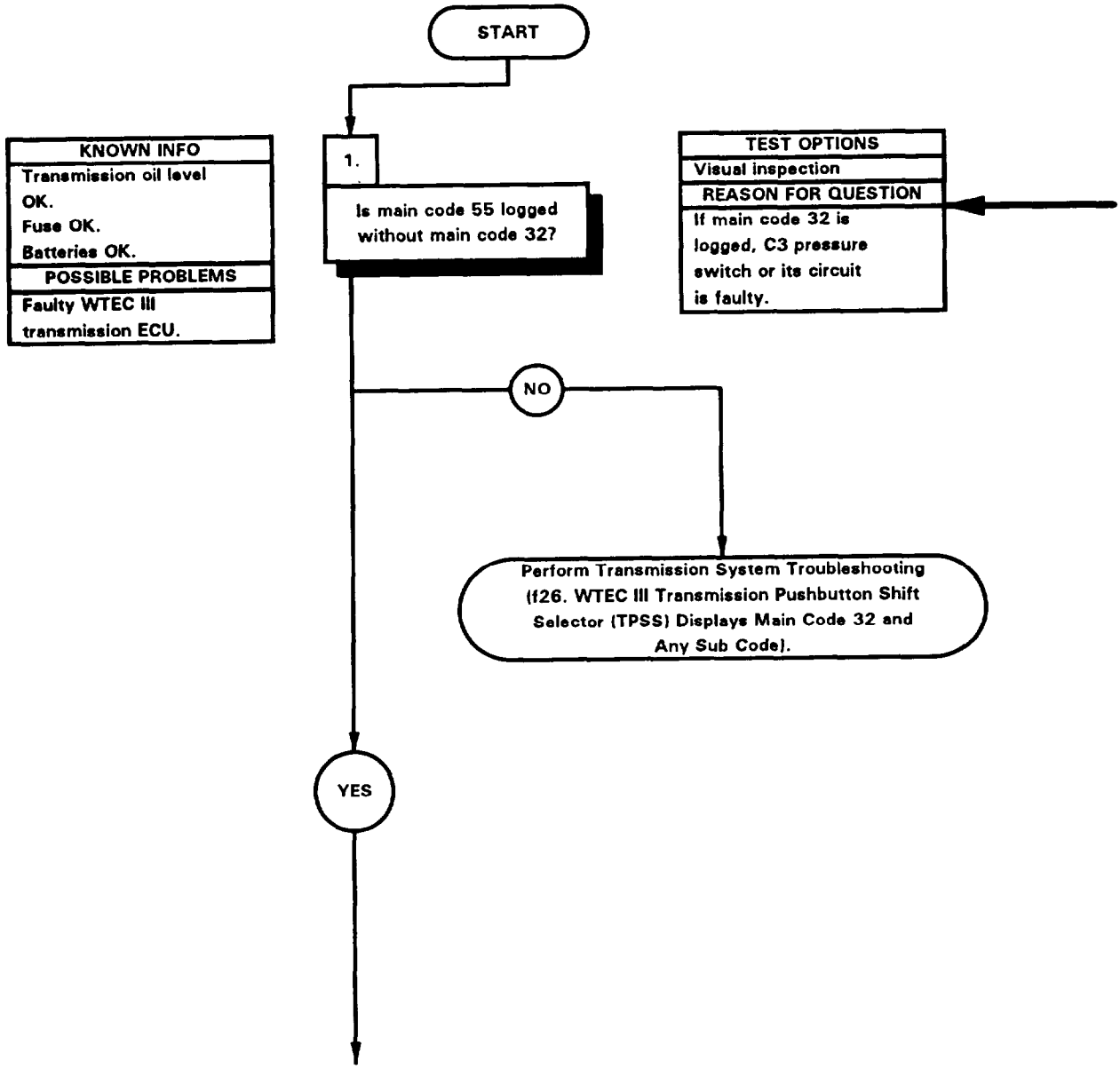
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

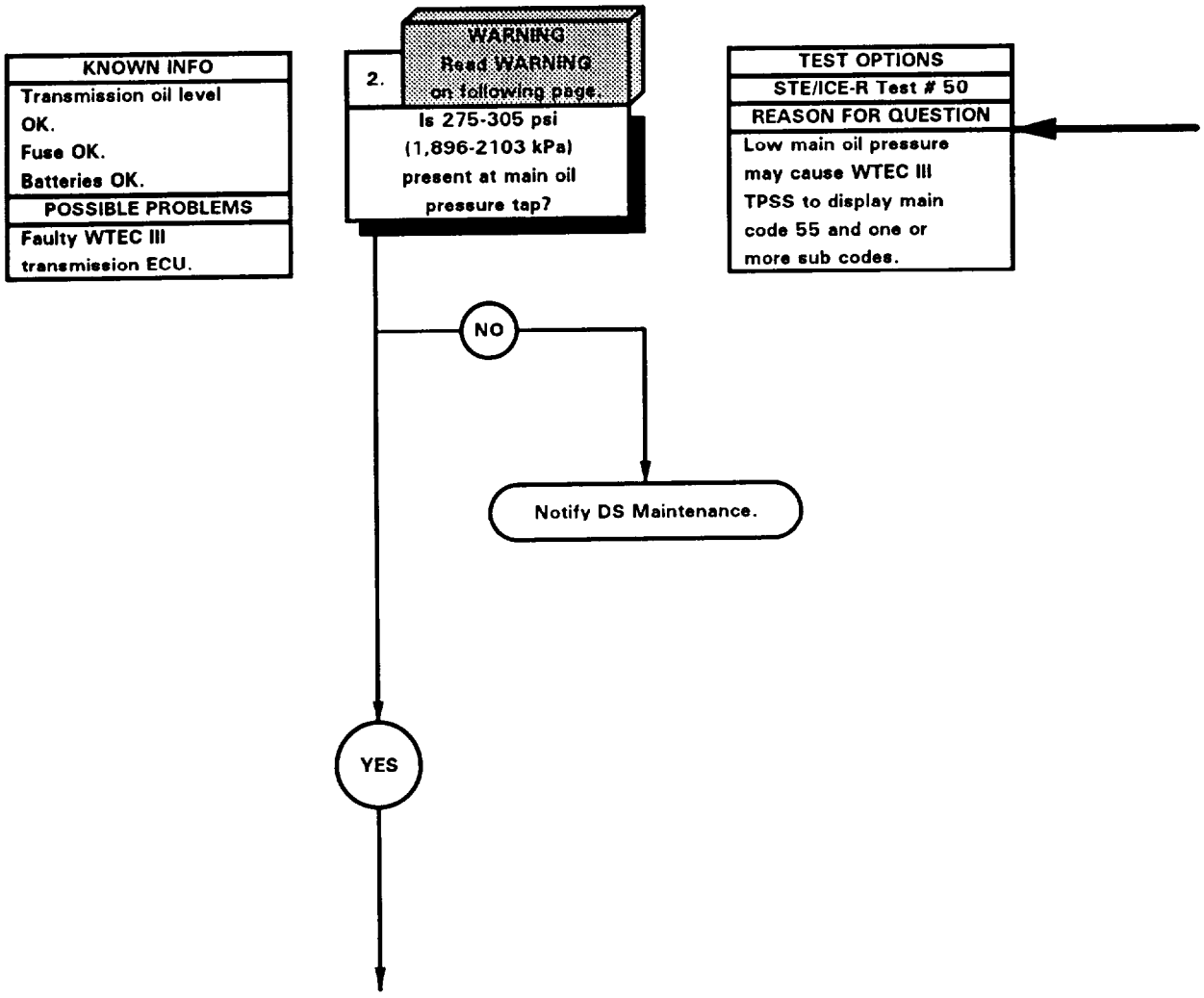
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 32 is logged in WTEC III TPSS (para 8-5).
(2) If main code 32 is logged, WTEC III transmission ECU has sensed a fault with the C3 pressure switch or its circuit. Perform Transmission System Troubleshooting (f26. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 32 and Any Sub Code).

f35. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE (CONT)

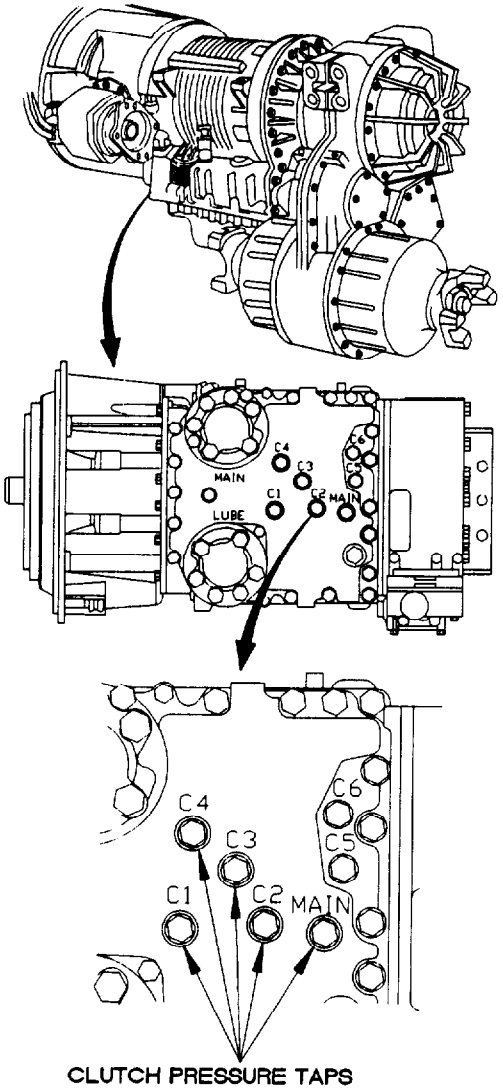


STE/ICE TEST # 50

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

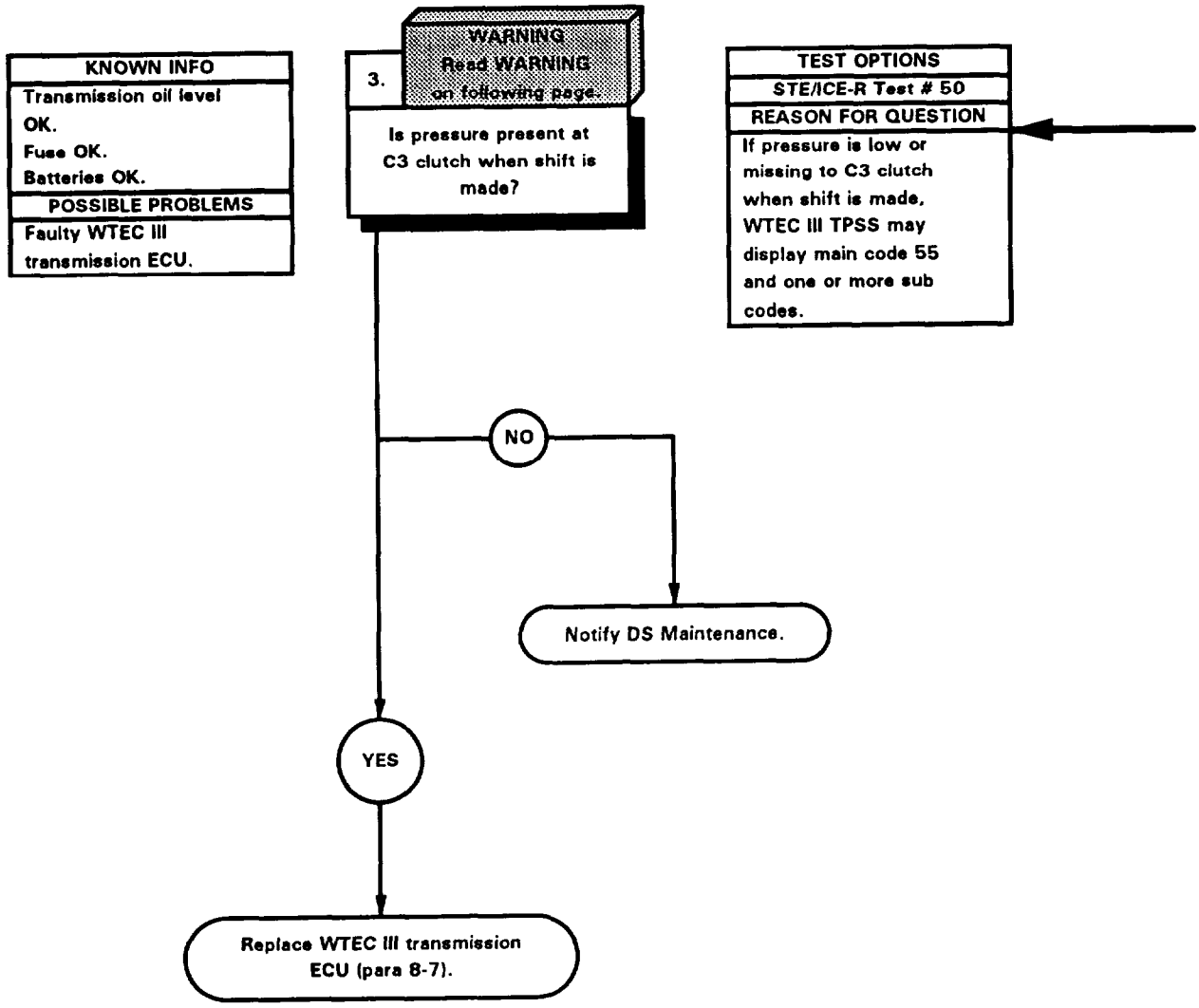
(1) Position drain pan under pressure tap.
(2) Remove main pressure tap plug and preformed packing from control valve module.
(3) Connect STE/ICE-R adapter, snubber, and reducer to main pressure tap.
(4) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
(5) Start engine (TM 9-2320-365-10) and run at idle.
(6) With parking brake applied, position WTEC III TPSS to R position then to N position while assistant checks reading on STE/ICE-R.
(7) Shut down engine (TM 9-2320-365-10).
(8) If main oil pressure is low, notify DS Maintenance.
(9) Remove reducer, STE/ICE-R adapter, and snubber from main pressure tap.
(10) Position preformed packing and main pressure tap plug in control valve module.
(11) Tighten main pressure tap plug to 84-120 lb-in. (9-14 N·m).
(12) Remove drain pan under pressure tap.



CLUTCH PRESSURE TAPS
C1-C6 AND MAIN

X2F1101-

f35. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE (CONT)



STE/ICE TEST # 50

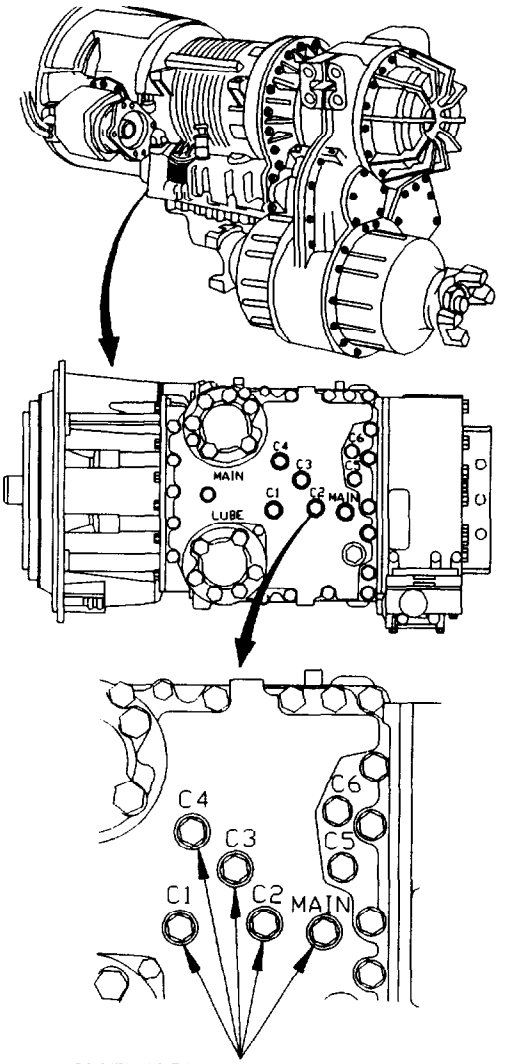
WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under C3 pressure tap.
(3) Remove C3 pressure tap plug and preformed packing from control valve module.
(4) Connect STE/ICE-R adapter, snubber, and reducer to C3 pressure tap.
(5) Perform STE/ICE-R test # 50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10) and run at idle.
(7) With parking brake applied, make shift indicated by sub code while assistant notes reading on STE/ICE-R.
(8) Shut down engine (TM 9-2320-365-10).
(9) If 275-305 psi pressure is not obtained for affected code, notify DS Maintenance.
(10) If 275-305 psi pressure is obtained, replace WTEC transmission ECU (para 8-7).
(11) Remove reducer, STE/ICE-R adapter, and snubber from C3 pressure tap.
(12) Position preformed packing and C3 pressure tap plug.
(13) Tighten C3 pressure tap plug to 84-120 lb-in. (9-14 N·m).
(14) Remove drain pan under pressure tap.
(15) Install transmission front and rear output propeller shafts (para 9-2).
(16) Clear diagnostic codes (para 8-5).

TABLE 2-42. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	PRESSURE READINGS C3 TAP
17	1-R Shift	275-305 psi (1896-2103 kPa)
27	2-R Shift	275-305 psi (1896-2103 kPa)
80	N1-L Shift	235-265 psi (1620-1827 kPa)
87	N1-R Shift	275-305 psi (1896-2103 kPa)
97	2-R Shift	275-305 psi (1896-2103 kPa)



CLUTCH PRESSURE TAPS
C1-C6 AND MAIN

f36. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE

INITIAL SETUP

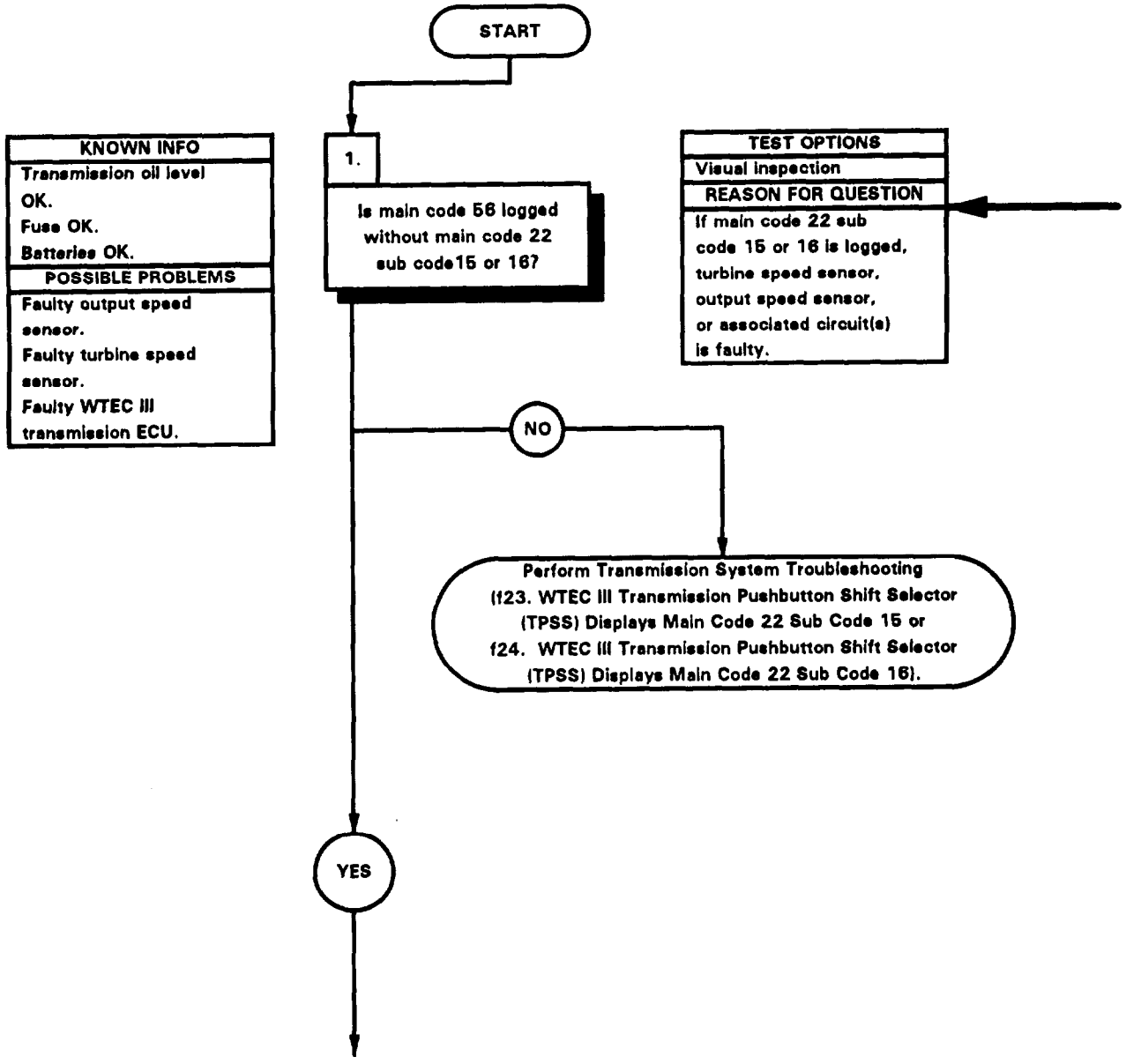
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Reference
TM 9-4910-571-12&P

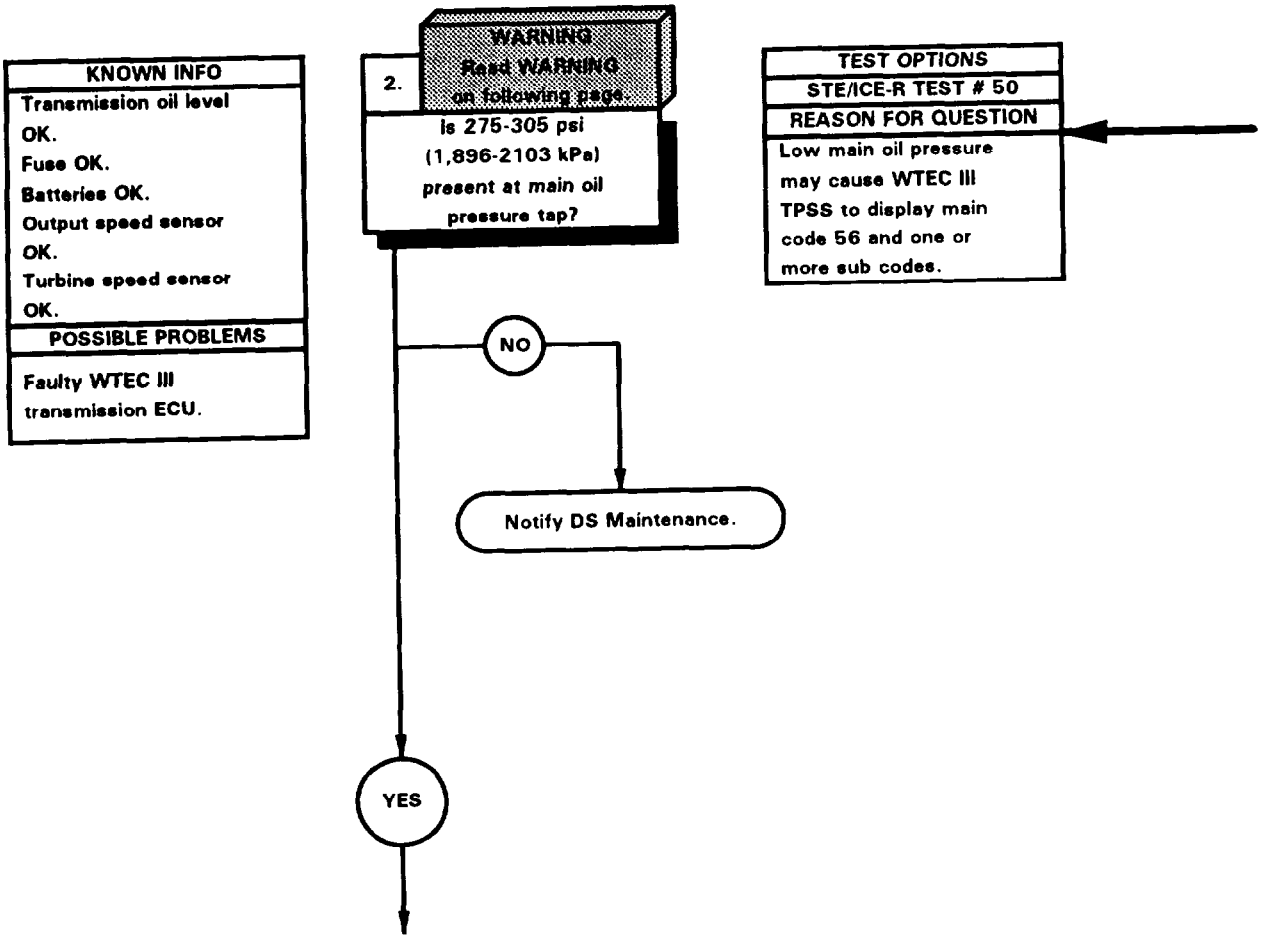
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Packing, Preformed (Item 199, Appendix G)
Reducer, Boss (Item 46, Appendix D)



(1) Check if main code 22 code 15 or 16 is logged in WTEC III TPSS (para 8-5).
(2) If main code 22 sub code 15 or 16 is logged, WTEC III transmission ECU has sensed a fault with the turbine speed sensor, output speed sensor, or associated circuit(s). Perform Transmission System Troubleshooting (f23. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 15 or f24. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 16).

f36. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE (CONT)

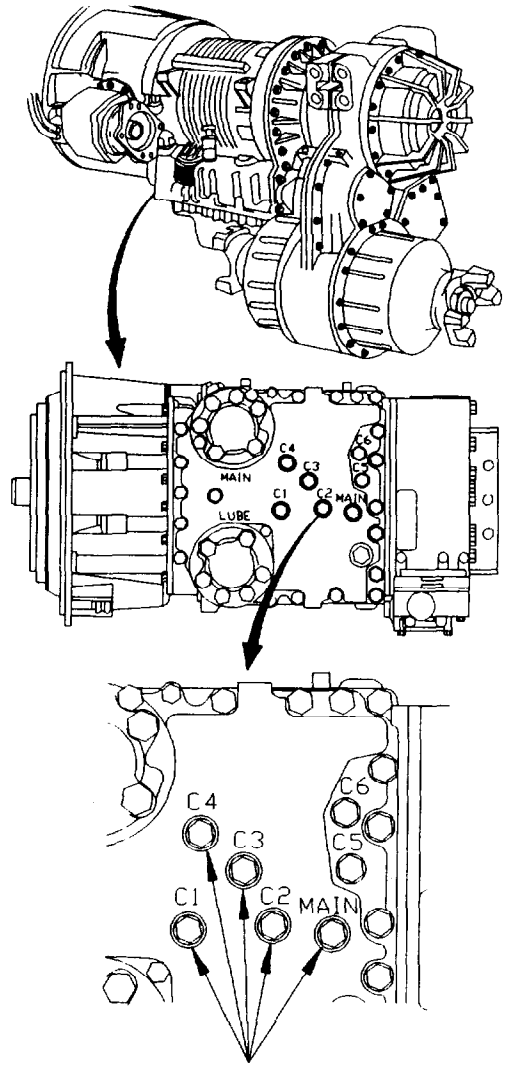


STE/ICE-R TEST #50

WARNING

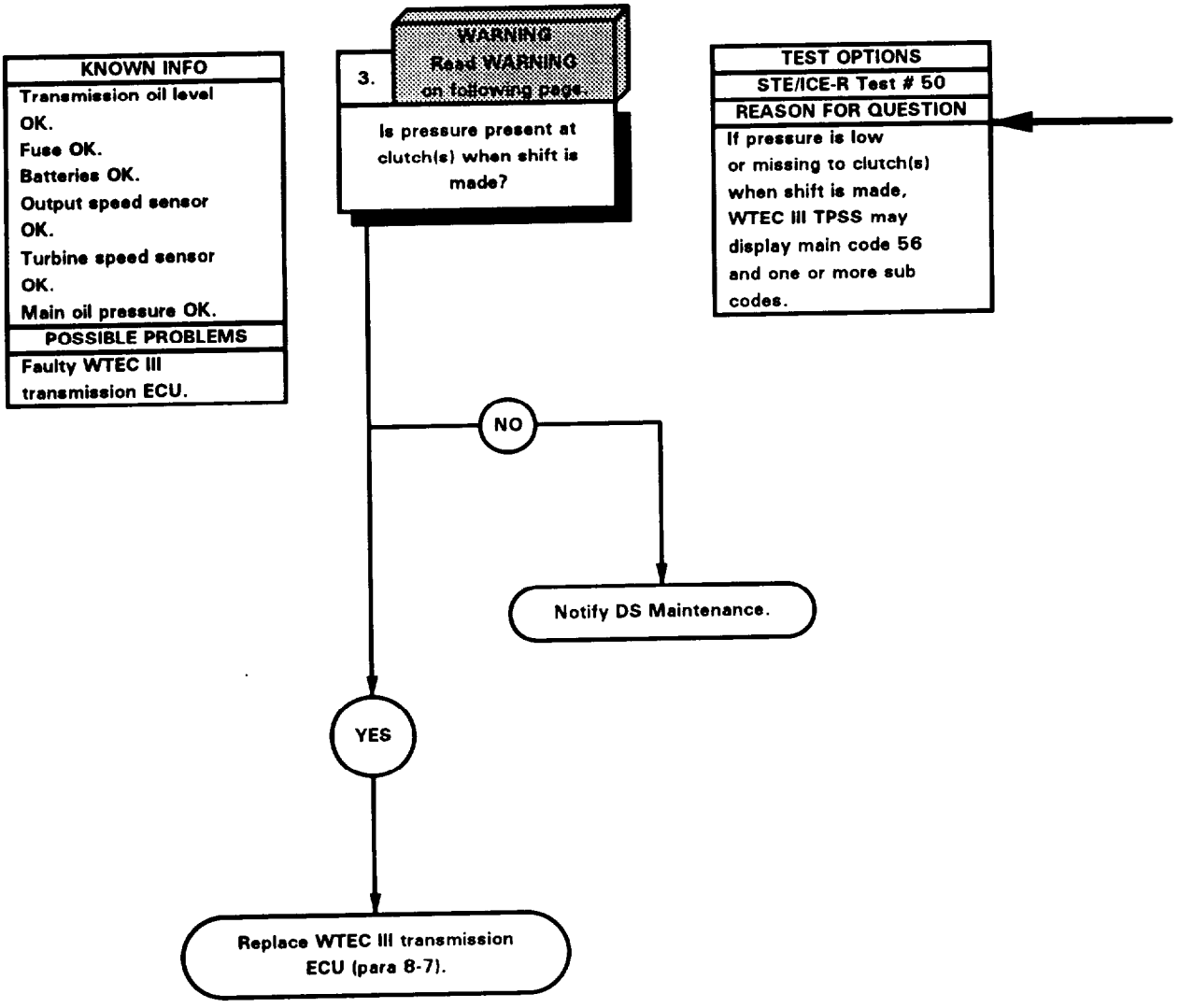
Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Position drain pan under pressure tap.
(2) Remove main pressure tap plug and preformed packing from control valve module.
(3) Install STE/ICE-R adapter, snubber, and reducer on main pressure tap.
(4) Perform STE/ICE-R test #50 (TM 9-4910-571-12&P).
(5) Start engine (TM 9-2320-365-10) and run at idle.
(6) With parking brake applied, position WTEC III TPSS to R position then to N position while assistant checks reading on STE/ICE-R.
(7) Shut down engine (TM 9-2320-365-10).
(8) If main oil pressure is low, notify DS Maintenance.
(9) Remove reducer, STE/ICE-R adapter, and snubber from main pressure tap.
(10) Position preformed packing and main pressure tap plug in control valve module.
(11) Tighten main pressure tap plug to 84-120 lb-in. (9-14 N·m).
(12) Remove drain pan under pressure tap.



CLUTCH PRESSURE TAPS
C1–C6 AND MAIN

f36. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE (CONT)

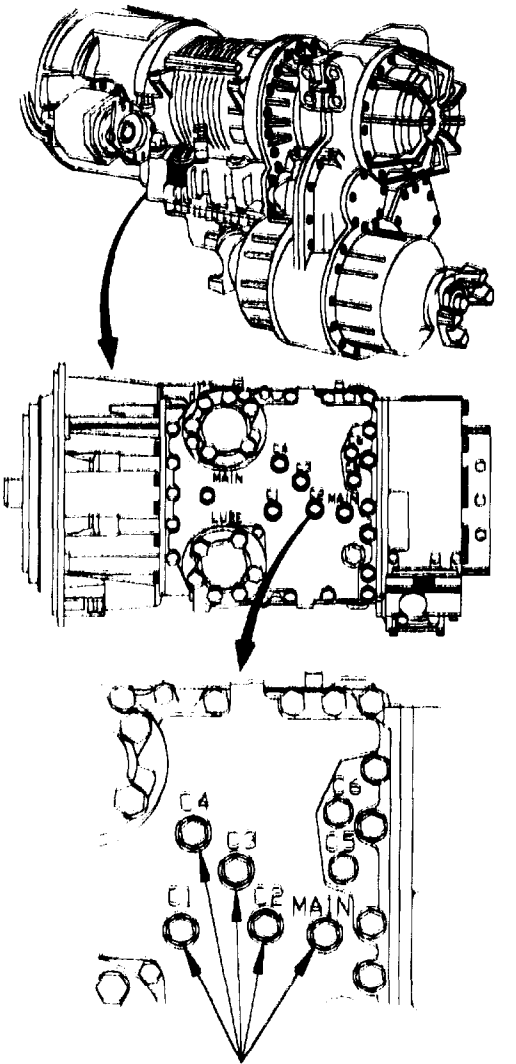


STE/ICE-R TEST #50

WARNING

Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

(1) Remove transmission front and rear output propeller shafts (para 9-2).
(2) Position drain pan under pressure tap.
(3) Remove pressure tap plug and preformed packing from clutch pressure tap indicated by the sub code. Refer to Table 2-43, Clutch Pressure Tap.
(4) Connect STE/ICE-R adapter, snubber, and reducer to clutch pressure tap.
(5) Perform STE/ICE-R test #50 (TM 9-4910-571-12&P).
(6) Start engine (TM 9-2320-365-10).
(7) Make shift indicated by sub code. Refer to Table 2-43, Clutch Pressure Tap.
(8) Accelerate engine until WTEC III TPSS displays desired range. Refer to Table 2-43, Clutch Pressure Tap.
(9) Maintain sufficient engine speed to keep desired transmission range while assistant notes reading on STE/ICE-R.
(10) Let engine return to idle.
(11) Shift transmission into neutral (TM 9-2320-365-10).
(12) Shut down engine (TM 9-2320-365-10).
(13) If one or more of clutches failed to indicate proper pressure, notify DS Maintenance.
(14) If all clutches indicate proper pressure, replace WTEC III transmission ECU (para 9-7).
(15) Remove reducer, STE/ICE-R adapter, and snubber from clutch pressure tap.
(16) Position preformed packing and pressure tap plug in control valve module.
(17) Tighten pressure tap plug to 84-120 lb-in. (9-14 N·m).
(18) Remove drain pan under pressure tap.
(19) Install transmission front and rear output propeller shafts (para 9-2).
(20) Clear diagnostic codes (para 9-5).



CLUTCH PRESSURE TAPS C1-C6 AND MAIN

TABLE 2-43. CLUTCH PRESSURE TAP

SUB CODE	SUB CODE MEANING	PRESSURE at CLUTCH(S)	SOLENOID ASSEMBLY LOCATION	PRESSURE READINGS at TAPS
00	L Range Test	C5 & C6	STA & C6 Clutch	235-265 psi (1620-1827 kPa)
11	1 Range Test	C1 & C5	ROT & STA Clutch	235-265 psi (1620-1827 kPa)
22	2 Range Test	C1 & C4	ROT & STA Clutch	170-265 psi (1172-1827 kPa)
33	3 Range Test	C1 & C3	ROT & STA Clutch	170-194 psi (1172-1338 kPa)
44	4 Range Test	C1 & C2	Rotating Clutch	170-194 psi (1172-1338 kPa)
55	5 Range Test	C2 & C3	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
66	6 Range Test	C2 & C4	ROT & STA Clutch	160-178 psi (1103-1227 kPa)
77	R Range Test	C3 & C5	Stationary Clutch	275-305 psi (1896-2103 kPa)

f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE

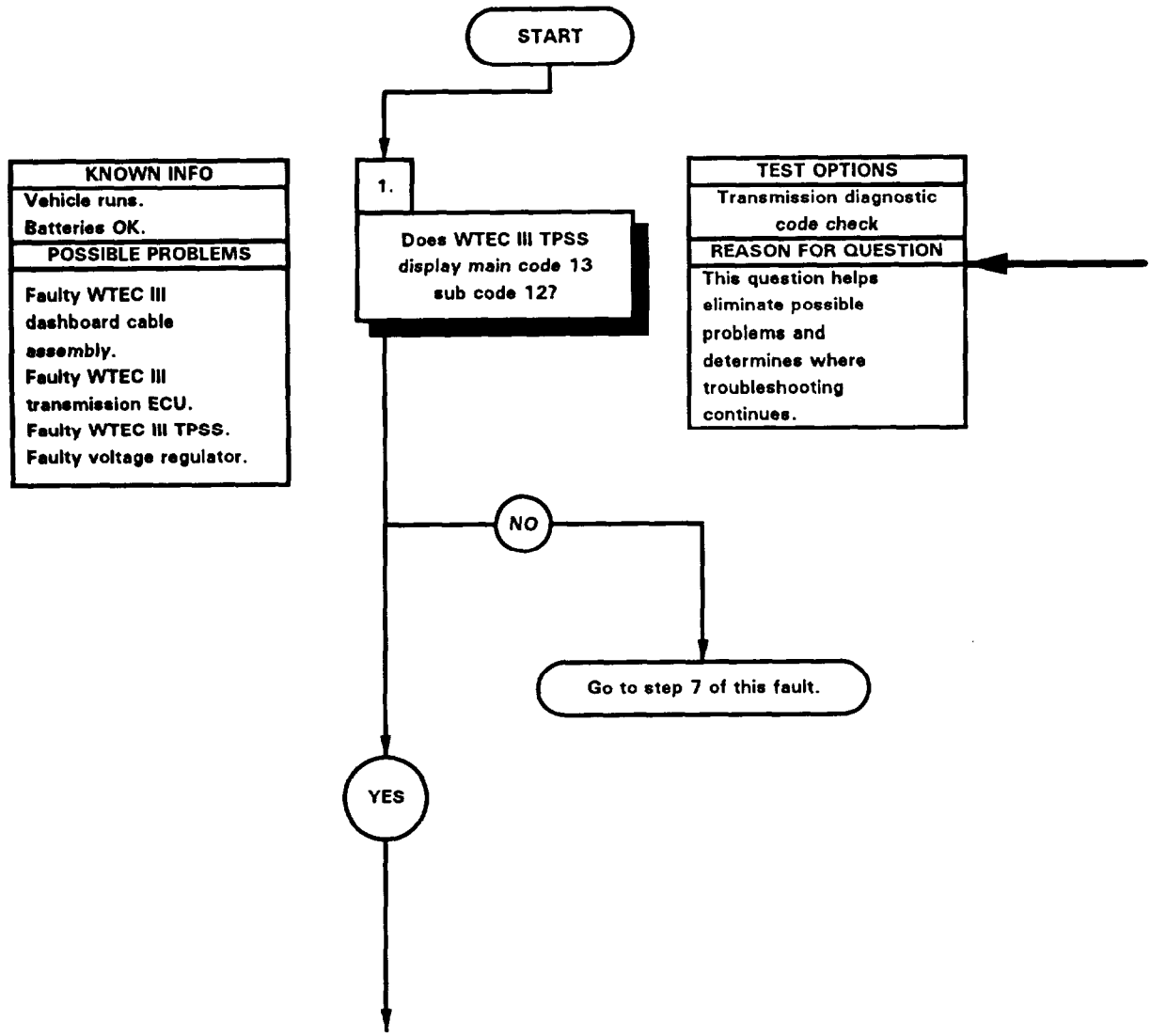
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

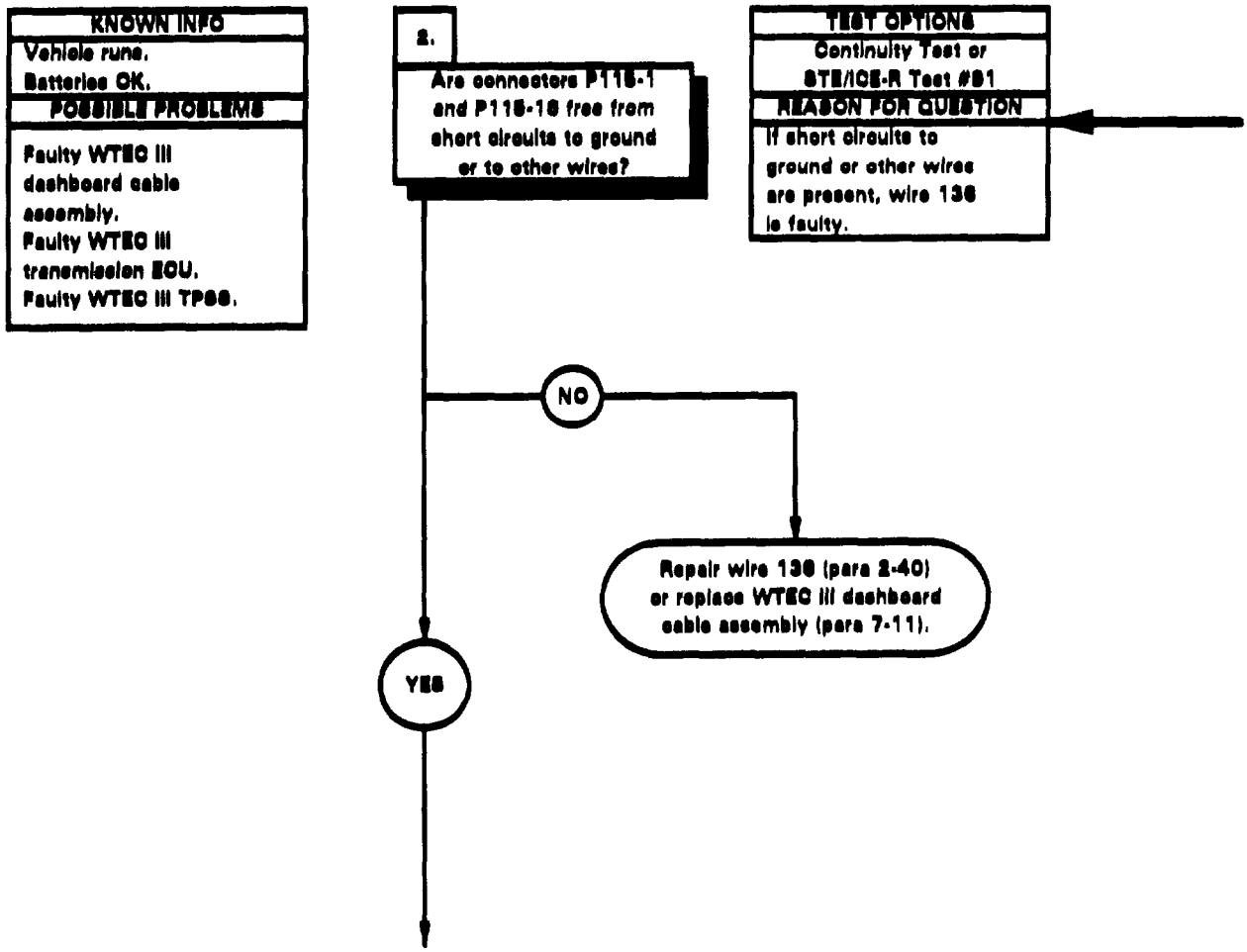
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References
TM 9-4910-571-12&P

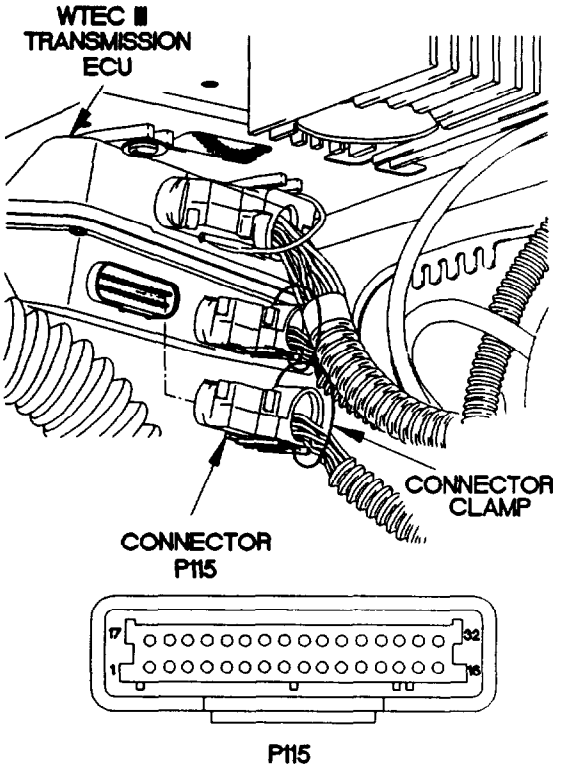


(1) Check to see if main code 13 sub code 12 is active in WTEC III TPSS (para 8-5).
(2) If main code 13 sub code 12 is not active in WTEC III TPSS, go to step 7 of this fault.

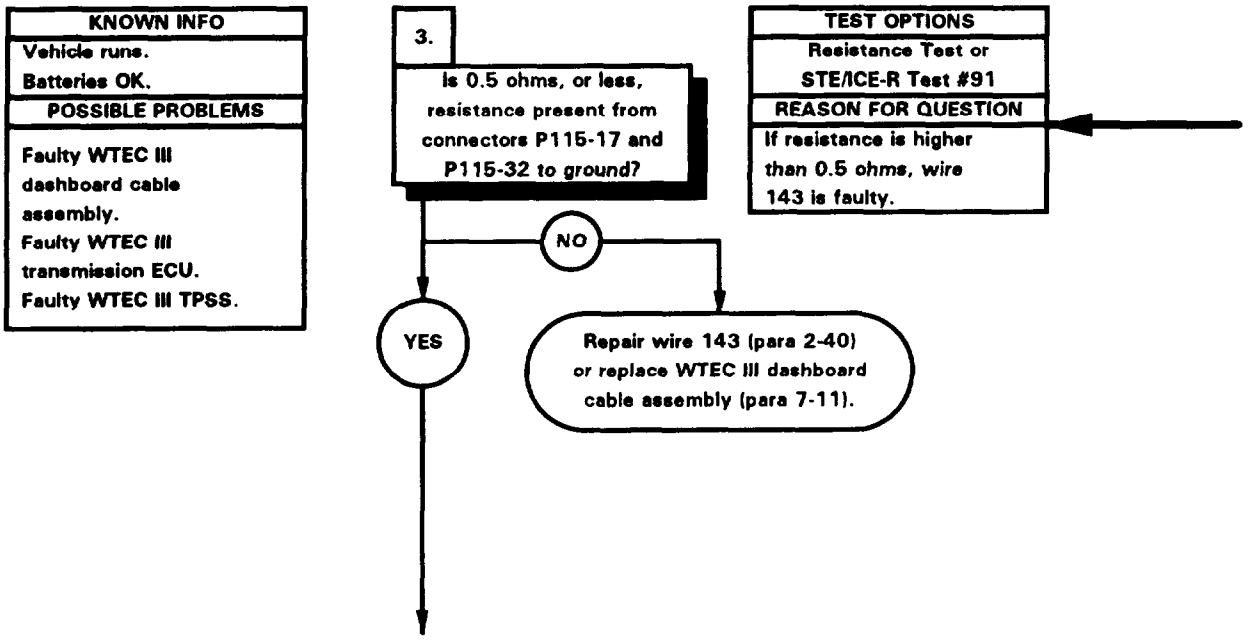
137. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



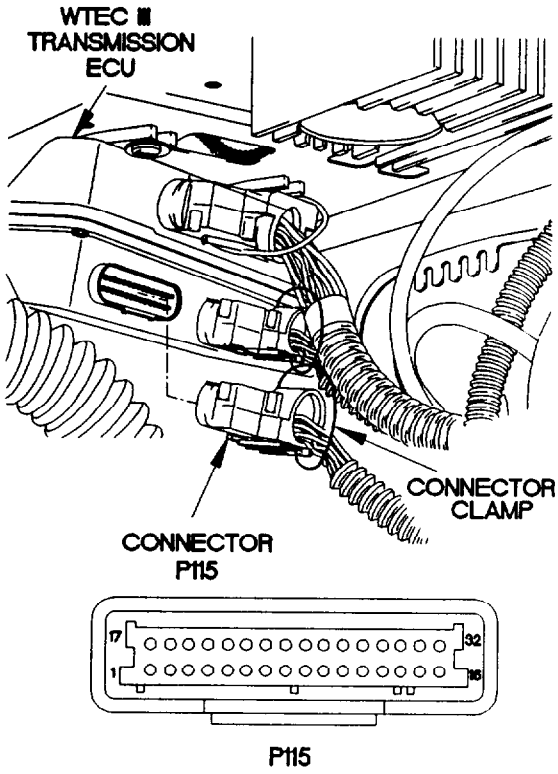
CONTINUITY TEST
(1) Remove kick panel (para 16-3).
(2) Disconnect connector clamp from connector P115.
(3) Disconnect connector P115 from WTEC III transmission ECU.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector P115-1.
(6) Connect negative (-) probe of multimeter to all other sockets in connector P115 (except P115-16), one at a time, and note reading on multimeter.
(7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(8) Connect positive (+) probe of multimeter to connector P115-16.
(9) Connect negative (-) probe of multimeter to all other sockets in connector P115 (except P115-1), one at a time, and note reading on multimeter.
(10) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(11) If continuity is present repair wire 136 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).



f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)

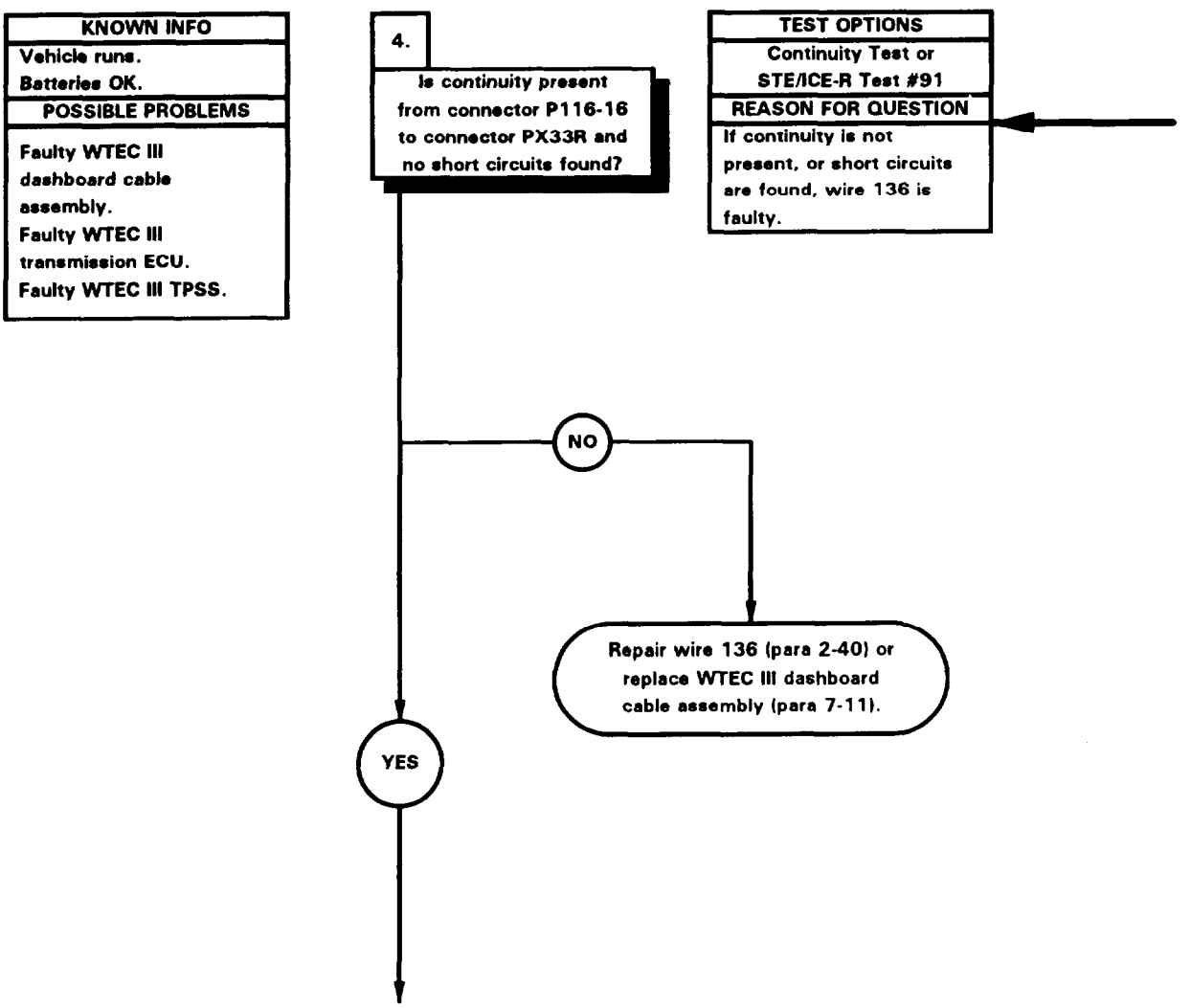


RESISTANCE TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P115-17.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) Connect positive (+) probe of multimeter to connector P115-32.
(5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(6) If resistance noted in step 3 or step 5 is higher than 0.5 ohms, repair wire 143 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
(7) Connect connector P115 to WTEC III transmission ECU.
(8) Connect connector clamp on connector P115.



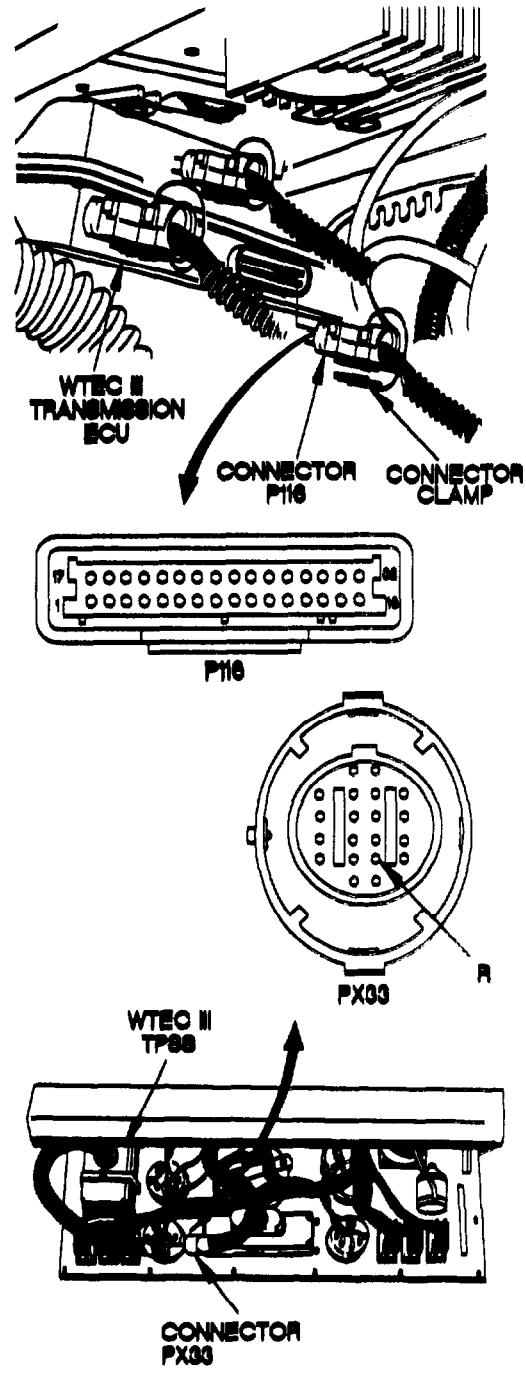
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f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)

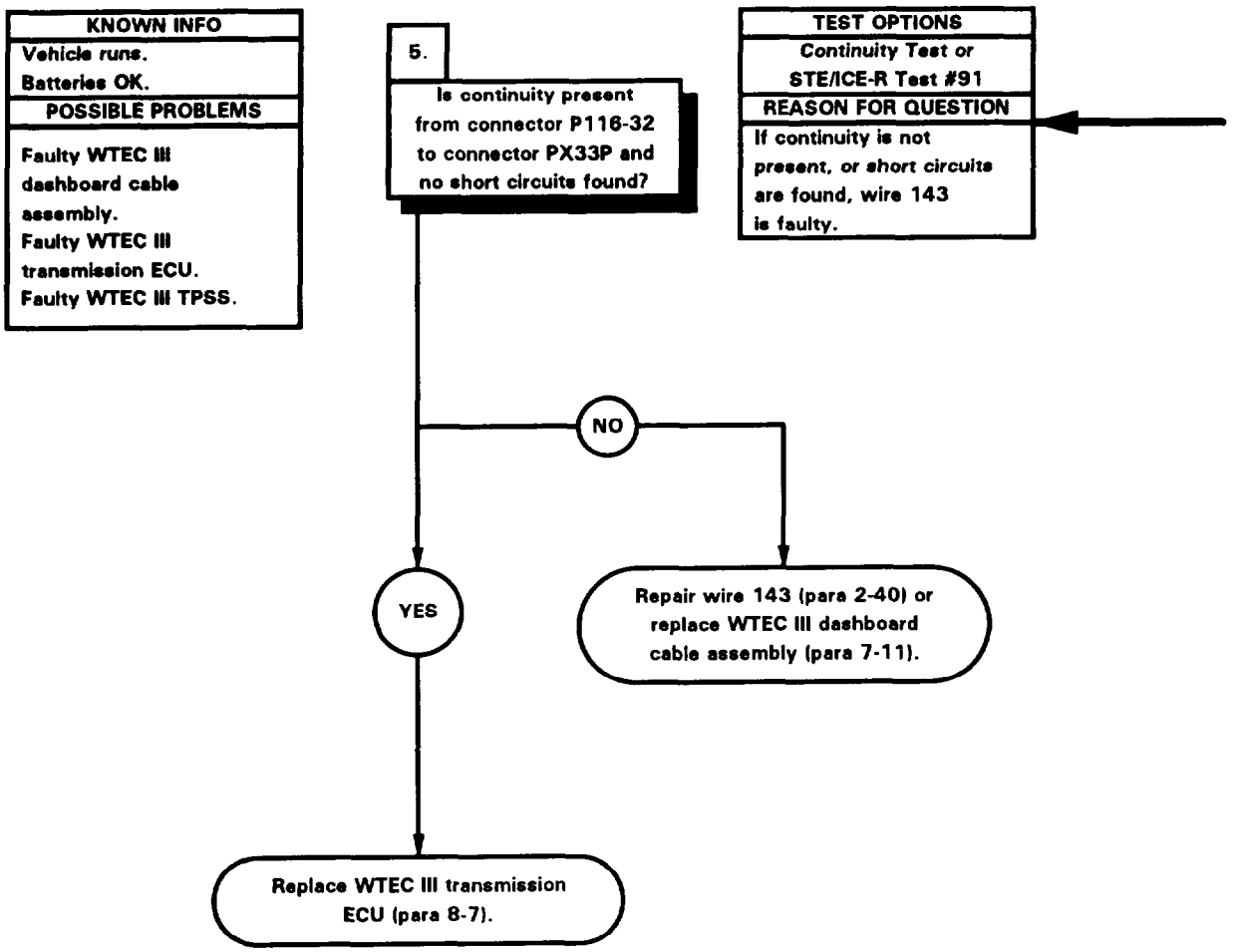


CONTINUITY TEST

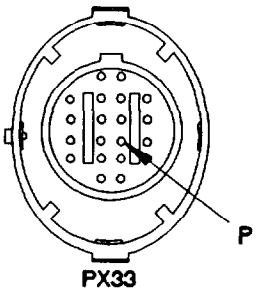
(1) Disconnect connector clamp from connector P116.
(2) Disconnect connector P116 from WTEC III transmission ECU.
(3) Remove instrument panel assembly for access (para 7-15).
(4) Disconnect connector PX33 from WTEC III TPS6.
(5) Set multimeter to ohms.
(6) Connect positive (+) probe of multimeter to connector P116-16.
(7) Connect negative (-) probe of multimeter to connector PX33R and note reading on multimeter.
(8) Connect negative (-) probe of multimeter to all other sockets in connector PX33, one at a time, and note reading on multimeter.
(9) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(10) If continuity is not present in step 7, or continuity is present in step 8 or step 9, repair wire 136 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).

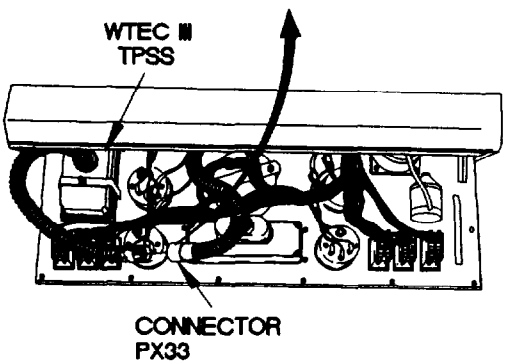


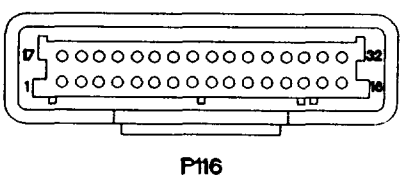
f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P116-32.
(3) Connect negative (-) probe of multimeter to connector PX33P and note reading on multimeter.
(4) Connect negative (-) probe of multimeter to all other sockets in connector PX33, one at a time, and note reading on multimeter.
(5) If continuity is not present in step 3, or continuity is present in step 4, repair wire 143 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
(6) Connect connector PX33 to WTEC III TPSS.
(7) Install instrument panel assembly (para 7-15).

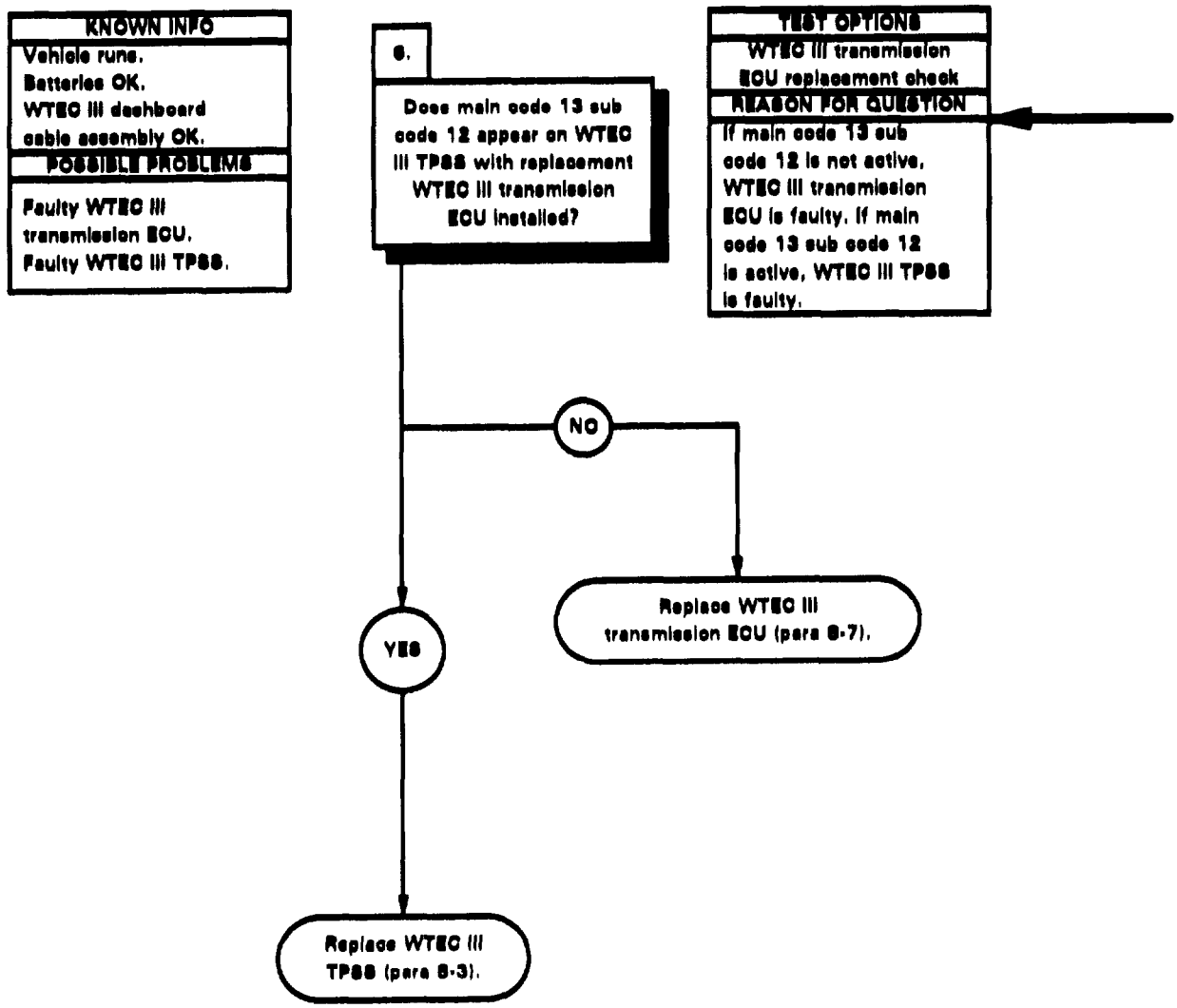






X2F37051

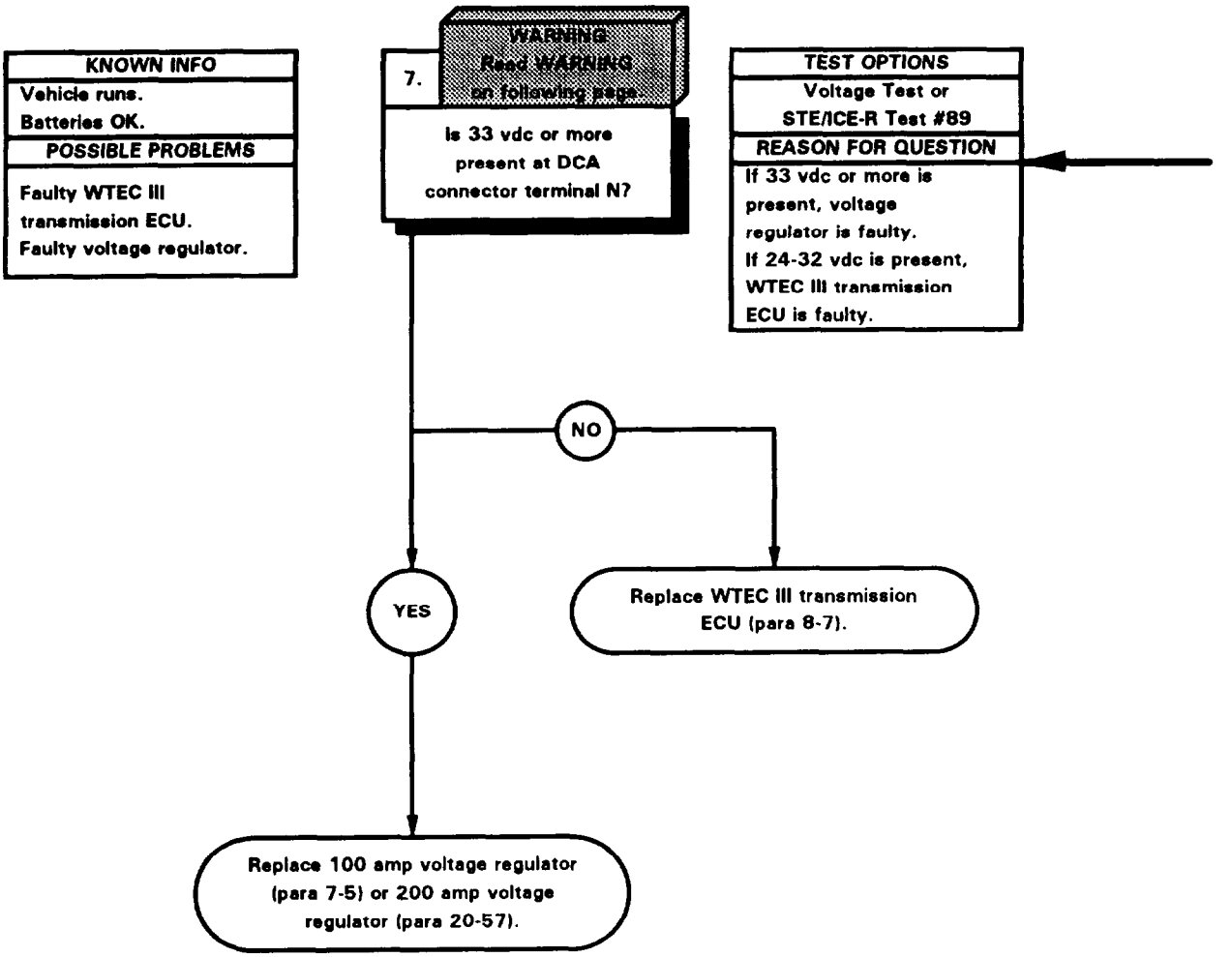
137. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



WTEC III TRANSMISSION ECU REPLACEMENT CHECK

(1) Install replacement WTEC III transmission ECU (para 8-7).
(2) Start engine (TM 9-2320-365-10).
(3) Check to see if main code 13 sub code 12 appears on WTEC III TPSS (para 8-5).
(4) If main code 13 sub code 12 does not appear, replace WTEC III transmission ECU (para 8-7).
(5) If main code 13 sub code 12 does appear, replace WTEC III TPSS (para 8-3).
(6) Shut down engine (TM 9-2320-365-10).
(7) Install original WTEC III transmission ECU (para 8-7).

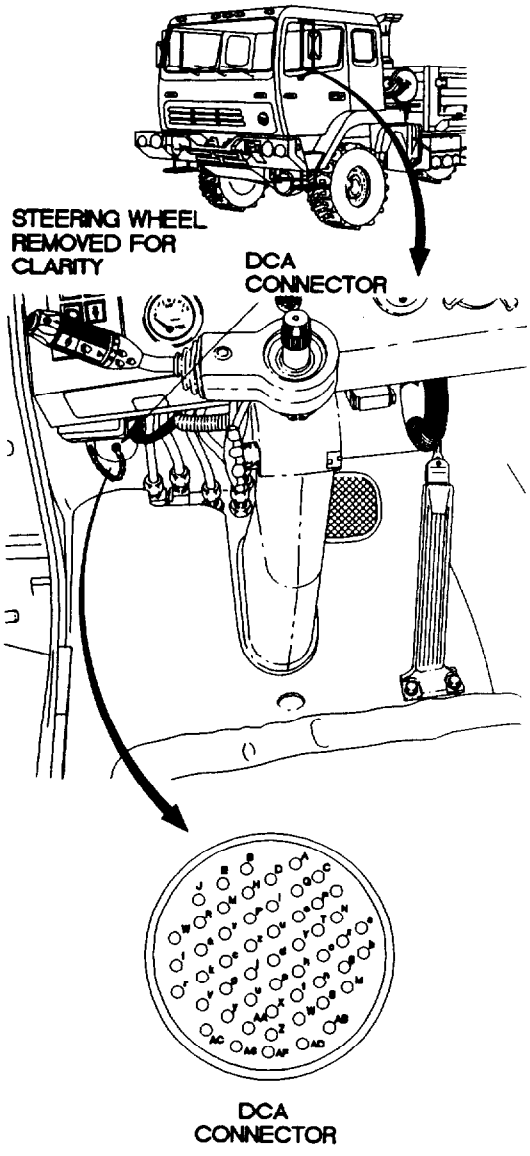
f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



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) Start engine (TM 9-2320-365-10).
(2) Remove dust cap from DCA connector.
(3) Set multimeter to volts dc.
(4) Connect positive (+) probe of multimeter to DCA connector terminal N.
(5) Connect negative (-) probe of multimeter to DCA connector terminal P and note reading on multimeter.
(6) If 33 vdc or more is present, replace 100 amp voltage regulator (para 7-5) or 200 amp voltage regulator (para 20-57).
(7) If 24-32 is present, replace WTEC III transmission ECU (para 8-7).
(8) Install dust cap on DCA connector.
(9) Shut down engine (TM 9-2320-365-10).

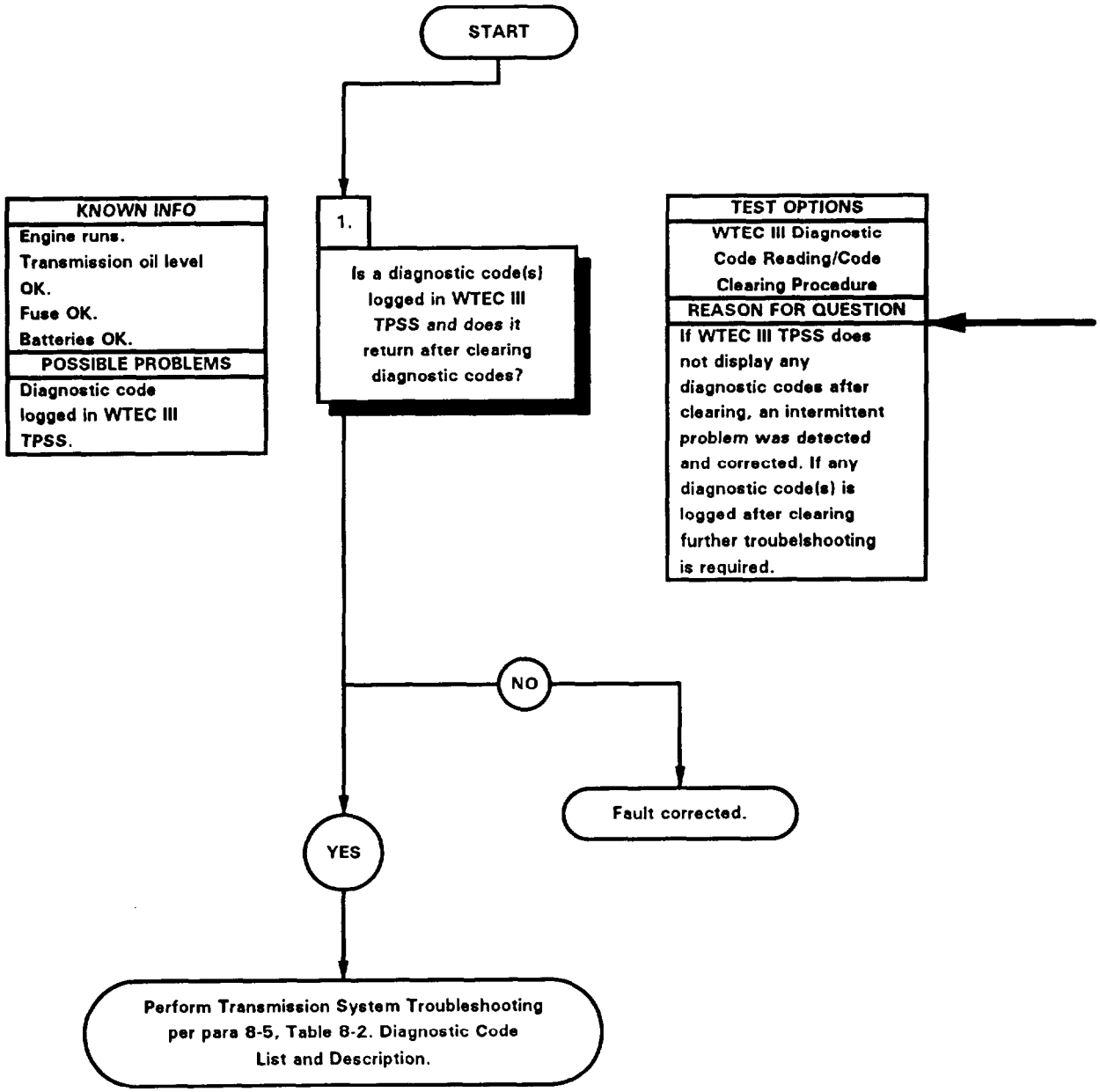


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138. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) LED DISPLAYS "- -" AND/OR TRANSMISSION DOES NOT SHIFT GEARS

INITIAL SETUP

Equipment Conditions
Engine running (TM 9-2320-365-10).



(1) Perform WTEC III Code Reading and Code Clearing (para 8-6).
(2) If no diagnostic codes are logged after clearing, fault is corrected.
(3) If diagnostic codes are still logged, perform Transmission System Troubleshooting of active diagnostic codes per para 8-25, Table 8-2. WTEC III Diagnostic Code List and Description.

2-18. PROPELLER SHAFT TROUBLESHOOTING

This paragraph covers Propeller Shaft Troubleshooting. The Propeller Shaft Fault Index, Table 2-27, lists faults for the propeller shafts of the vehicle.

Table 2-27. Propeller Shaft Fault Index

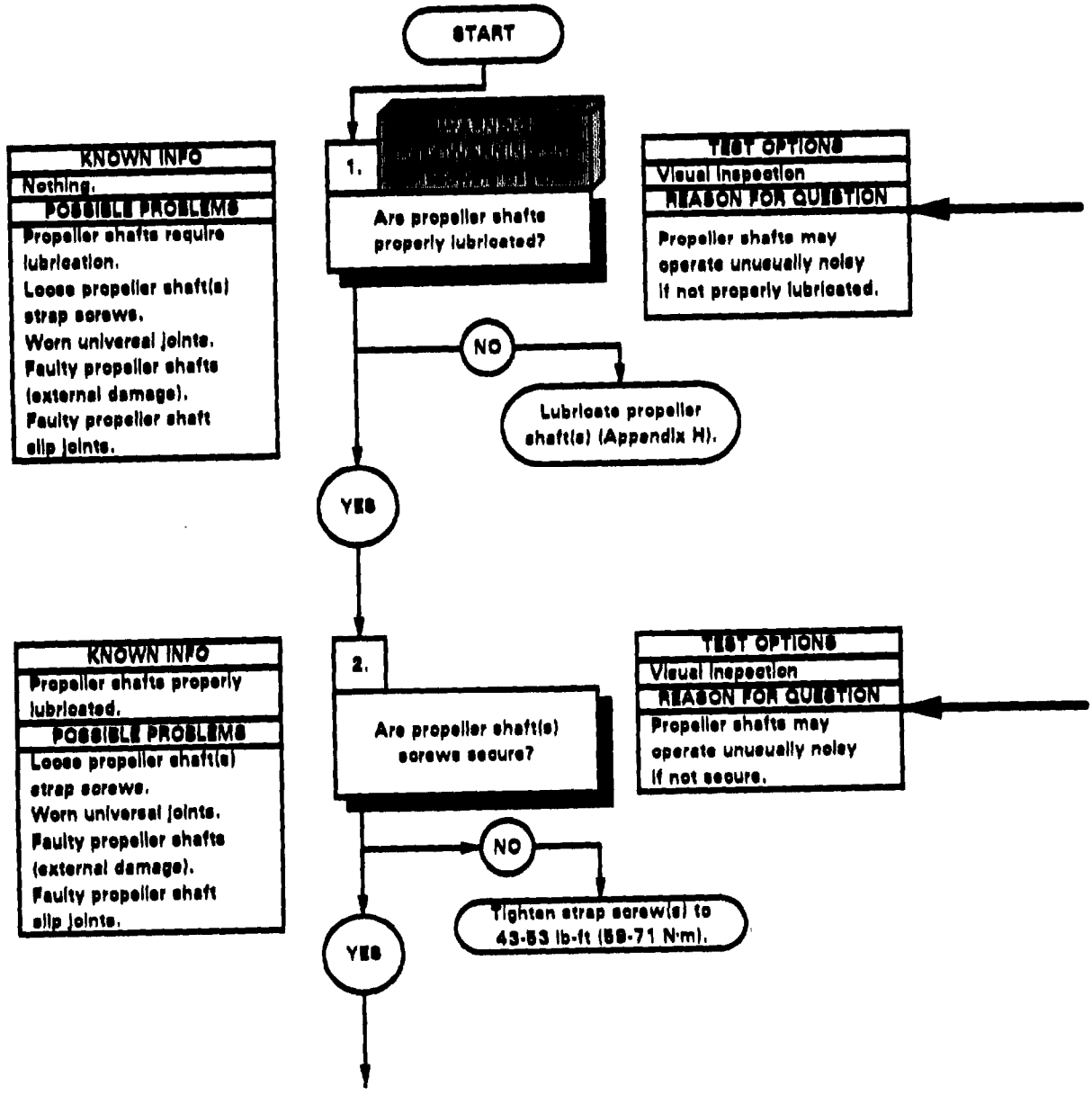
Fault No.	Description	Page
g1.	Propeller shafts or universal joints unusually noisy when operating	2-1598

1. PROPELLER SHAFT OR UNIVERSAL JOINTS UNUSUALLY NOISY WHEN OPERATING

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

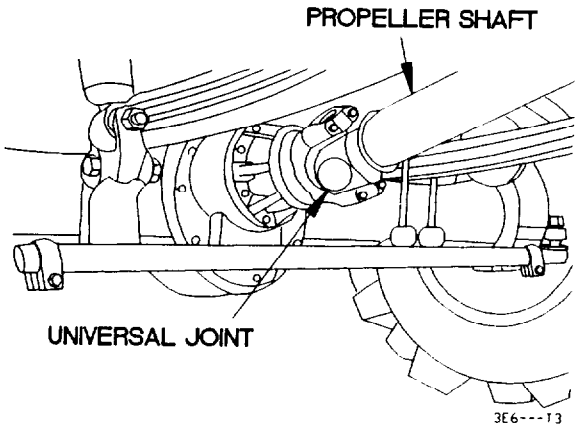
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Wrench, Torque, 0-175 lb-ft (Item 57, Appendix C)
Goggles, Industrial (Item 15, Appendix C)



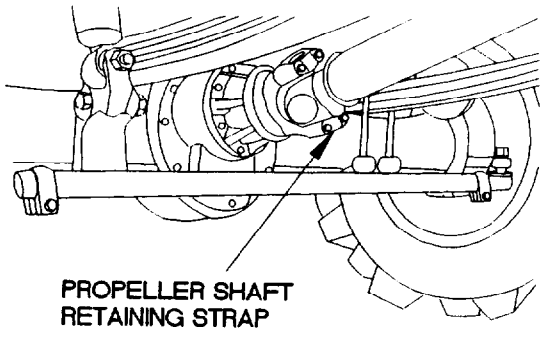
WARNING

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

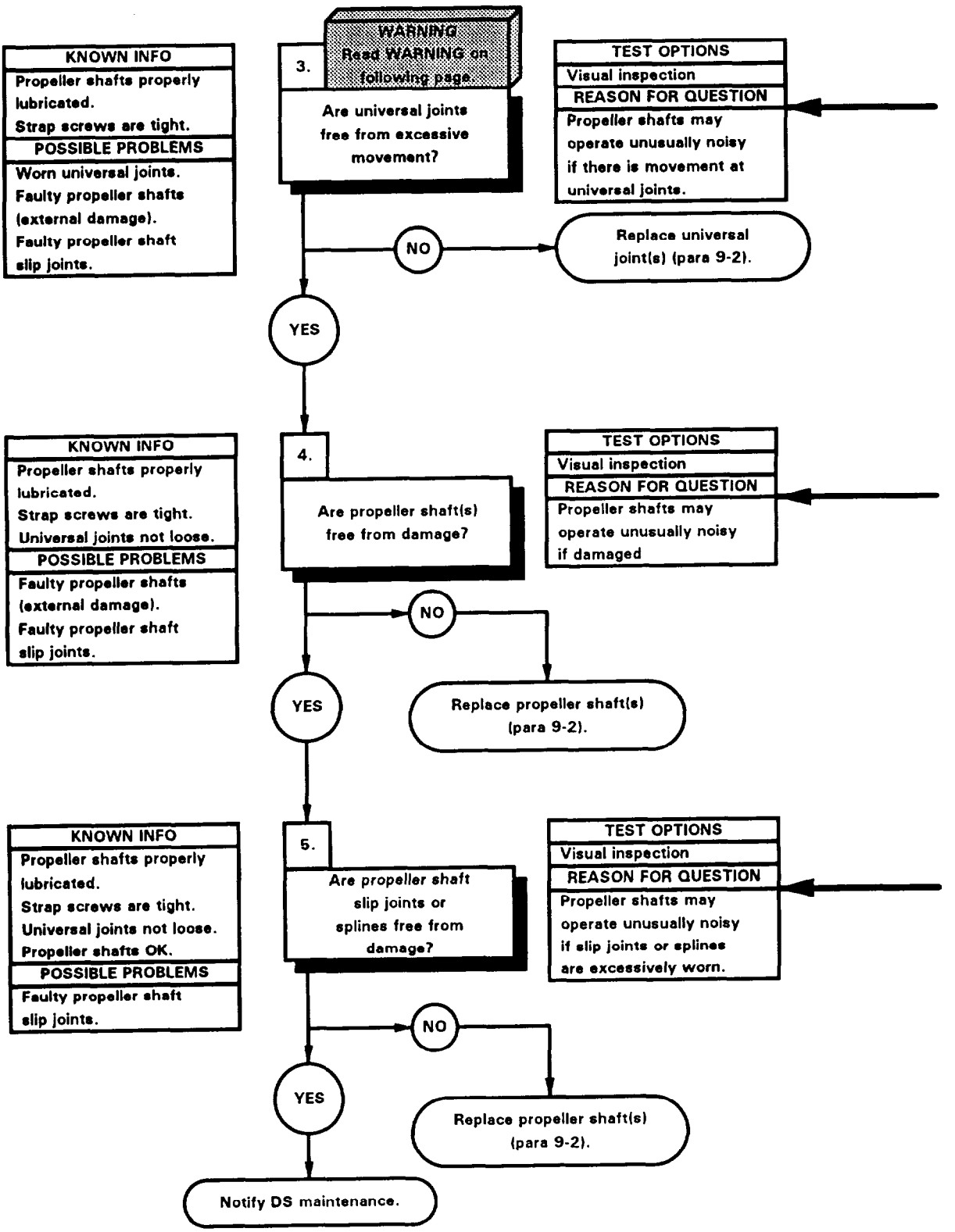
Lubricate propeller shaft lubrication fittings with grease.



Check propeller shaft(s) strap screws for tightness. Tighten all screws to 43-53 lb-ft (59-71 N·m).



g1. PROPELLER SHAFTS OR UNIVERSAL JOINTS UNUSUALLY NOISY WHEN OPERATING (CONT)

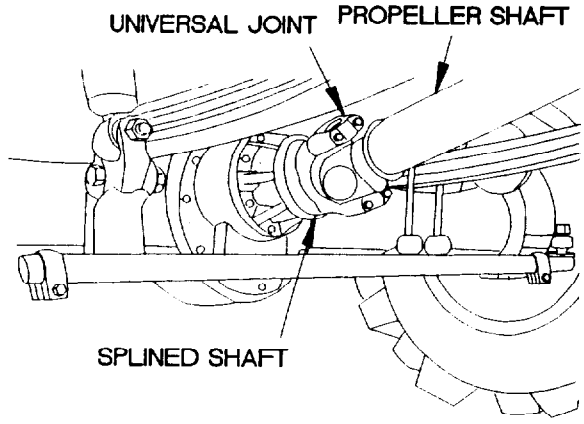


WARNING

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 propeller shaft(s) for excessive movement at universal joints.
(2) If universal joints show any movement, replace universal joint(s) (para 9-2).

(1) Check propeller shaft(s) for damaged spline shaft, bent tubing, or missing balance weights.
(2) If propeller shaft(s) is damaged, replace propeller shaft(s) (para 9-2).



(1) Inspect slip joints for broken, damaged, or missing teeth.
(2) Check universal joint cross for wear.
(3) If propeller shaft slip joints or splines are damaged, replace propeller shaft(s) (para 9-2).

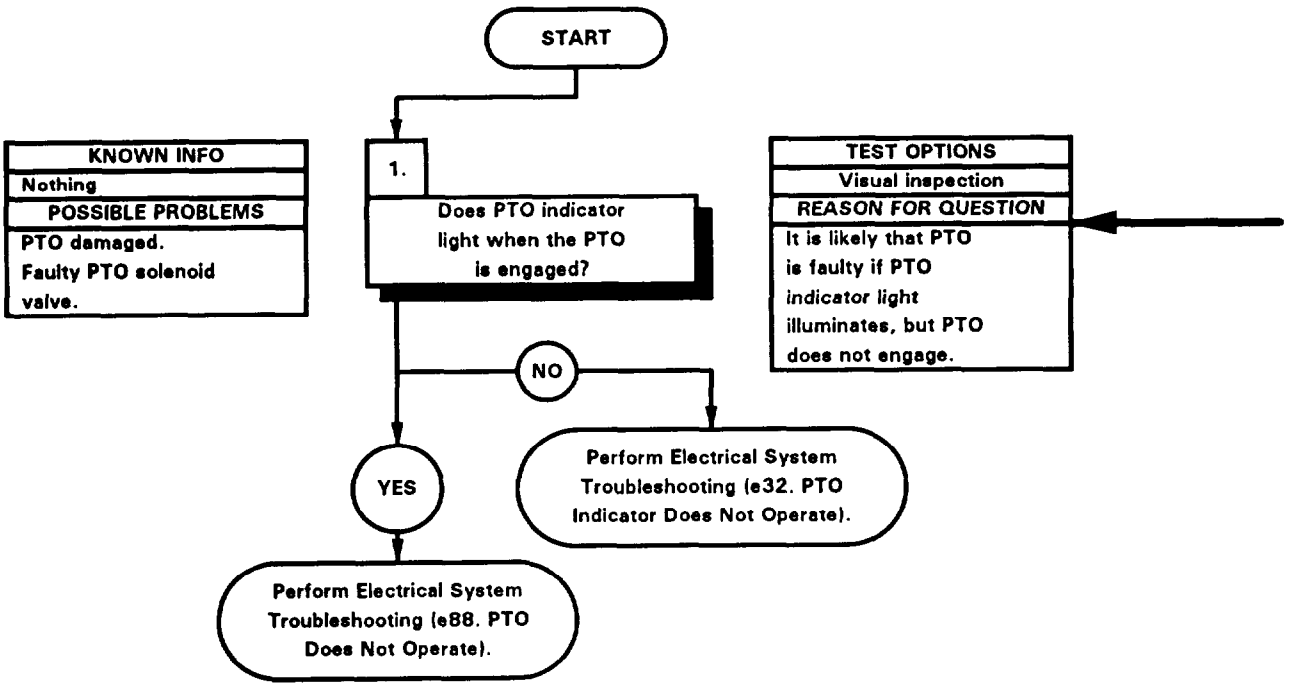
2-19. POWER TAKE OFF (PTO) TROUBLESHOOTING

This paragraph covers Power Take Off (PTO) Troubleshooting. The PTO Fault Index, Table 2-28, lists faults for the PTO of the vehicle.

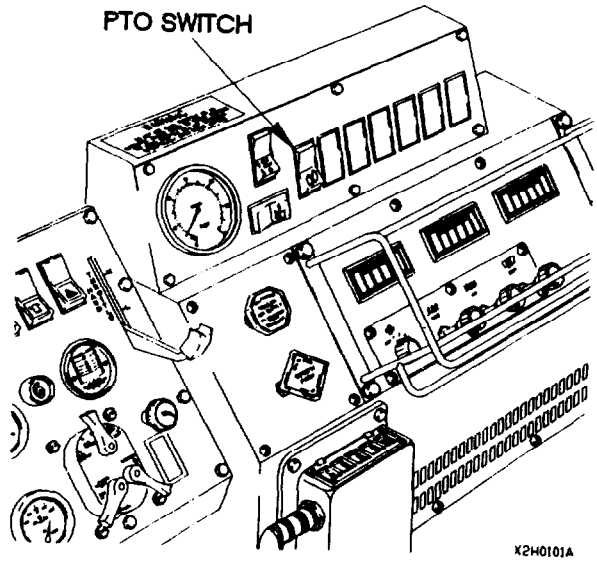
Table 2-28. PTO Fault Index

Fault No.	Description	Page
h1.	PTO does not engage	2-1604

h1. PTO DOES NOT ENGAGE	
INITIAL SETUP	
Equipment Conditions Engine running (TM 9-2320-365-10). Parking brake on (TM 9-2320-365-10). Wheels chocked (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C)



(1) Engage PTO (TM 9-2320-365-10).
(2) Check if PTO indicator lights.
(3) If PTO indicator does not light, perform Electrical System Troubleshooting (e32. PTO Indicator Does Not Operate).
(4) If PTO indicator does light, perform Electrical System Troubleshooting (e88. PTO Does Not Operate).
(5) Disengage PTO (TM 9-2320-365-10).
(6) Shut down engine (TM 9-2320-365-10).



2-20. BRAKE SYSTEM TROUBLESHOOTING

This paragraph covers Brake System Troubleshooting. The Brake System Fault Index, Table 2-29, lists faults for the Brake System of the vehicle.

Table 2-29. Brake System Fault Index

Fault No.	Description	Page
i1.	Excessive braking distance	2-1608
i2.	Rear brakes do not apply	2-1620
i3.	Parking brake(s) will not release	2-1644
i4.	Front brakes overheat	2-1670
i5.	Vehicle brakes unevenly, brakes pull to one side or grab	2-1676
i6.	Front brakes do not apply	2-1690
i7.	Rear brakes overheat	2-1700
i8.	Parking brake does not apply	2-1708

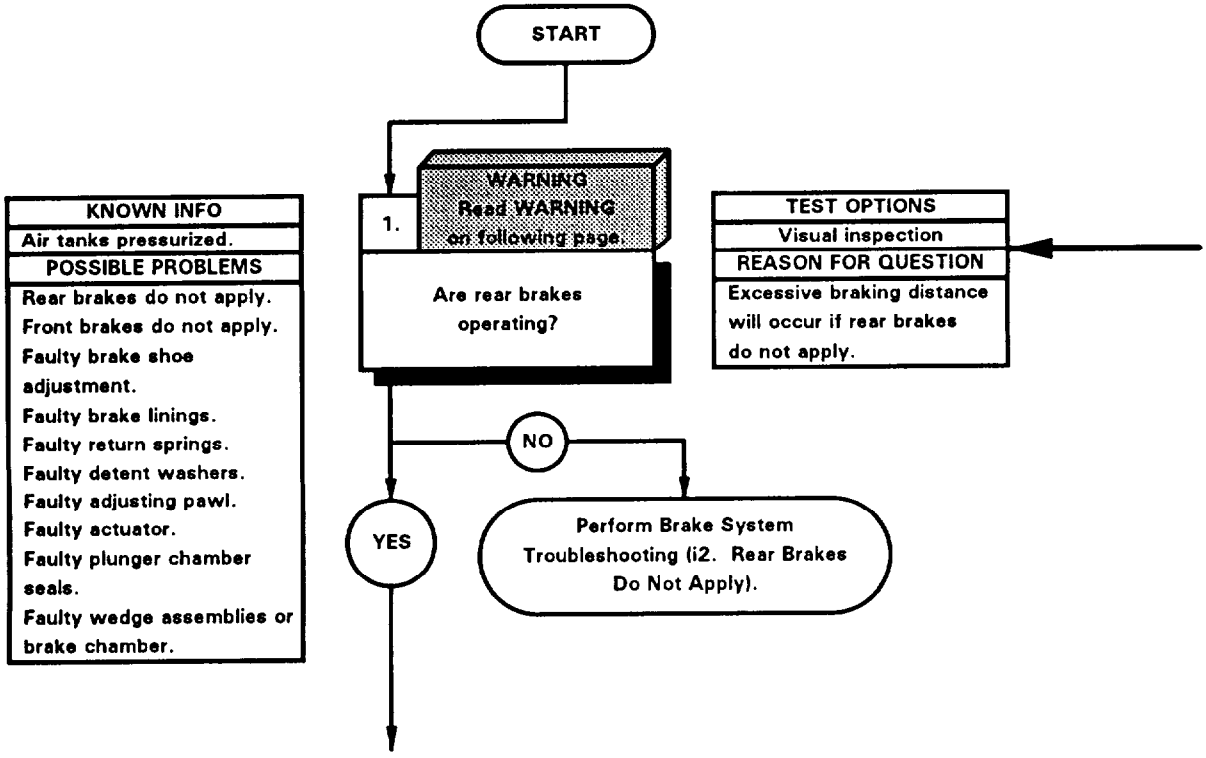
i1. EXCESSIVE BRAKING DISTANCE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

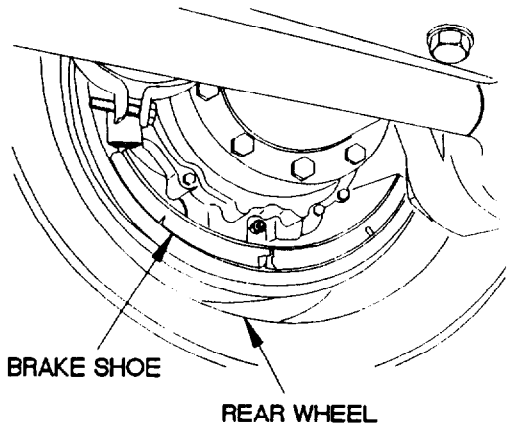
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Jack, Hydraulic, Hand (Item 21, Appendix C)
Trestle, Motor Vehicle Maintenance (2) (Item 45, Appendix C)
Tool, Spring Removal (Item 83, Appendix B)



WARNING

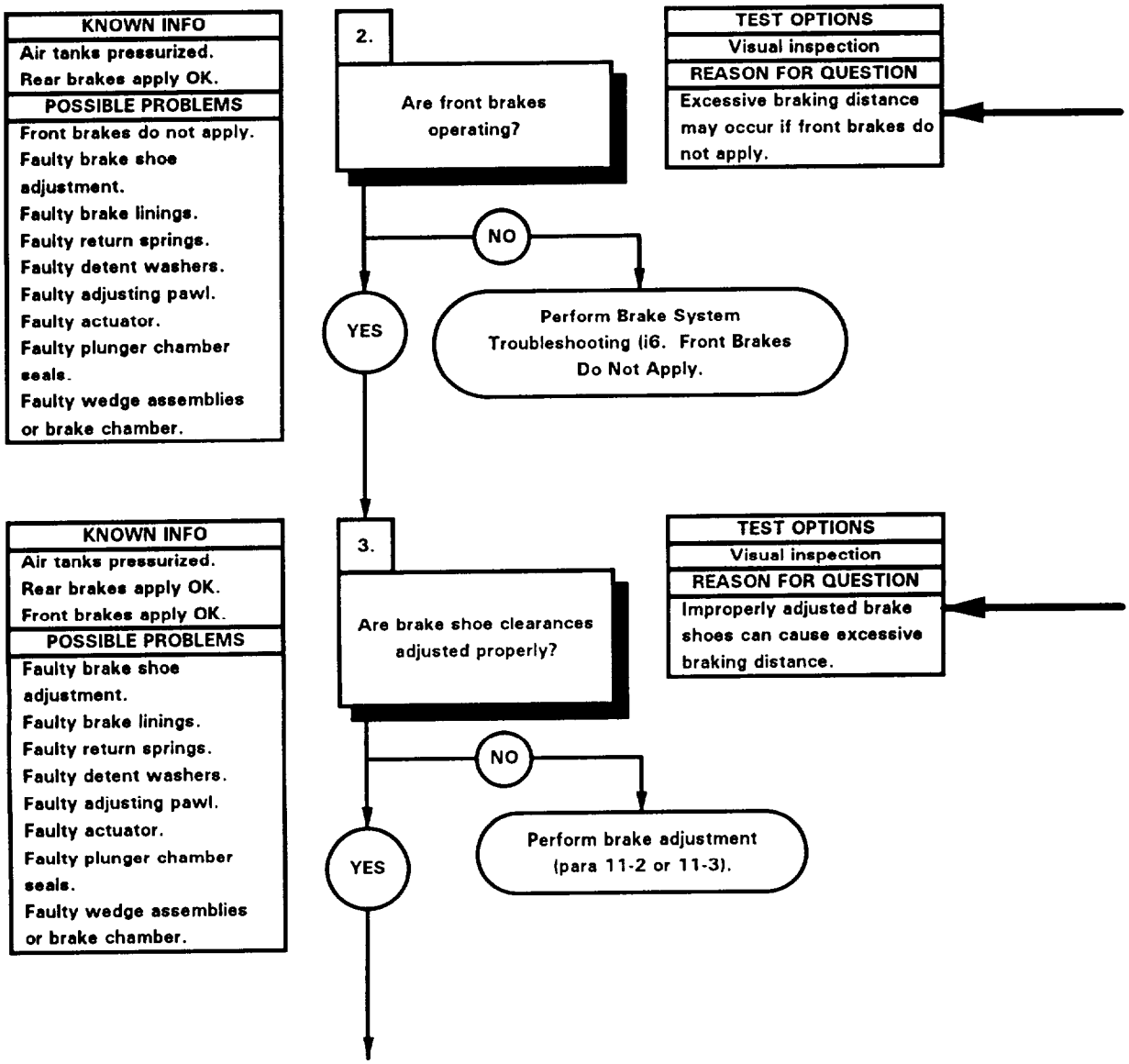
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

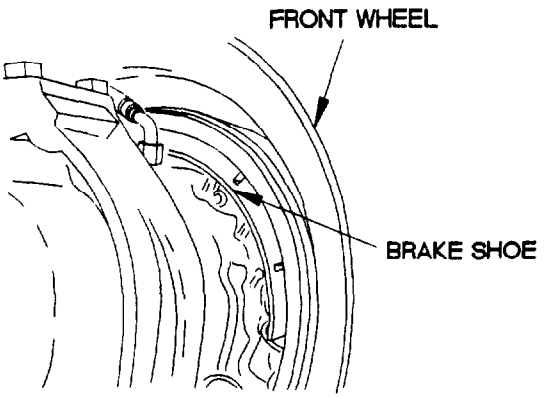
(1) Apply brakes and observe operation of brake shoes at all rear wheels.
(2) If brake shoes fail to apply at all rear wheels, rear brake system is faulty. Perform Brake System Troubleshooting (i2. Rear Brakes Do Not Apply).



x210101-

i1. EXCESSIVE BRAKING DISTANCE (CONT)





(1) Apply brakes and observe operation of brake shoes at each front wheel.
(2) If all shoes at front wheels fail to apply, front brake system is faulty. Perform Brake System Troubleshooting (i6. Front Brakes Do Not Apply).

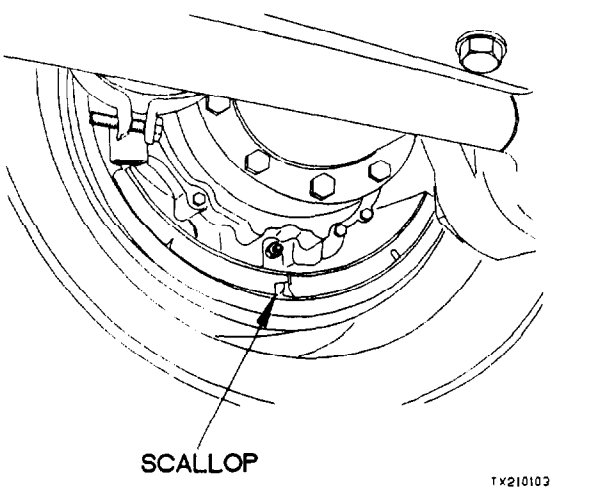
(1) Jack up axle with affected brakes and support with trestles.
(2) Make periodic brake applications to position floating shoes.

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.

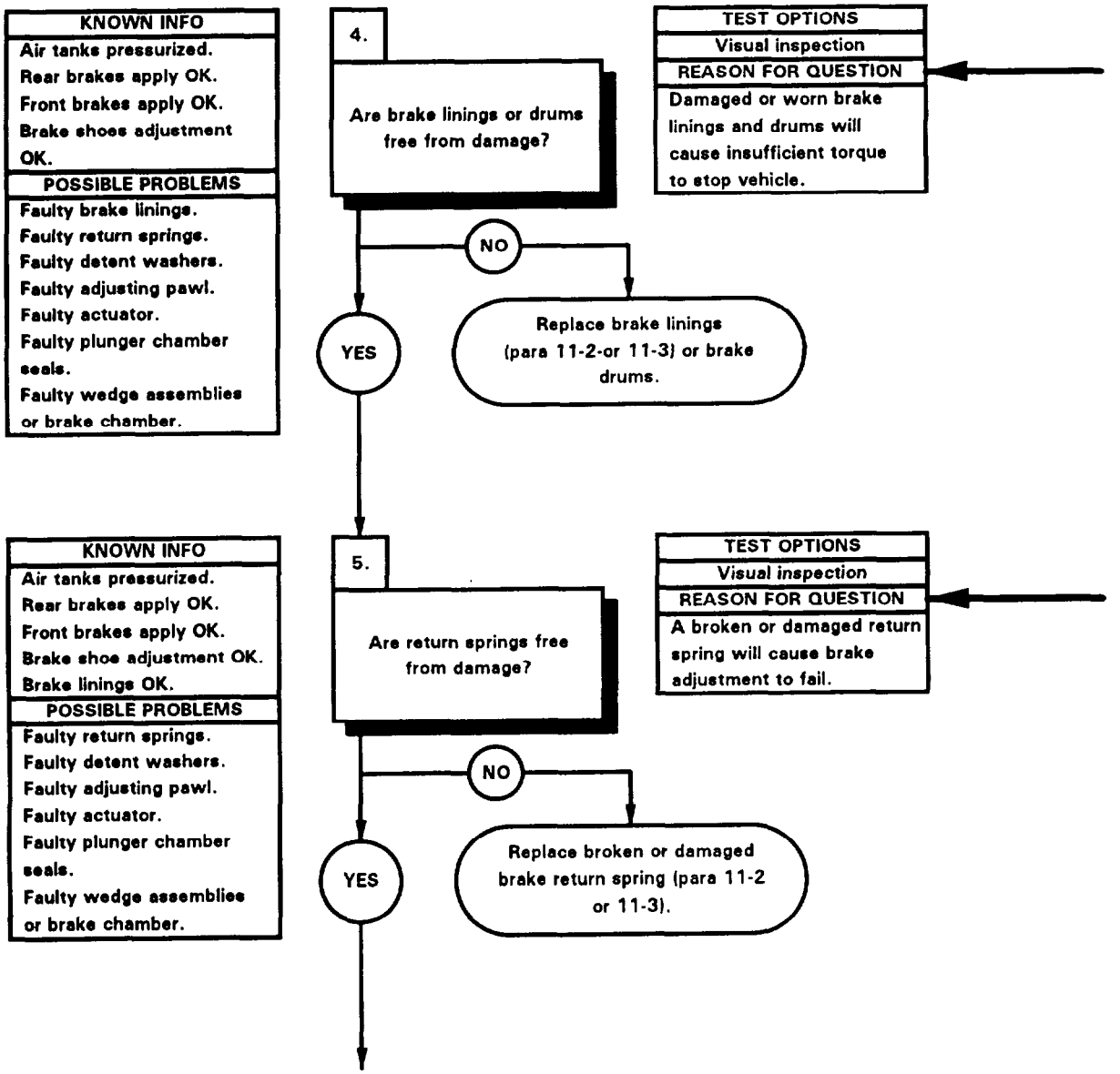
(3) Measure shoe clearance checking along centerline of shoe at scallop. Rotate wheel during check.
(4) If clearance is not between .020" and .040", adjust brakes (para 11-2 or 11-3).

X210102-

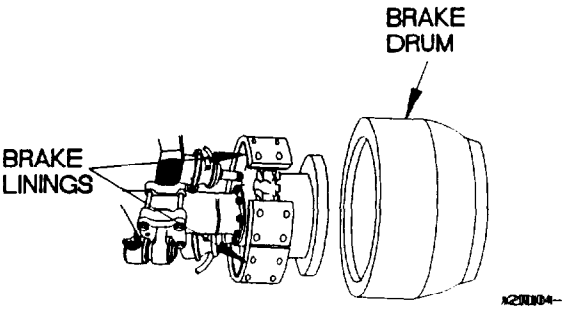


TX210103

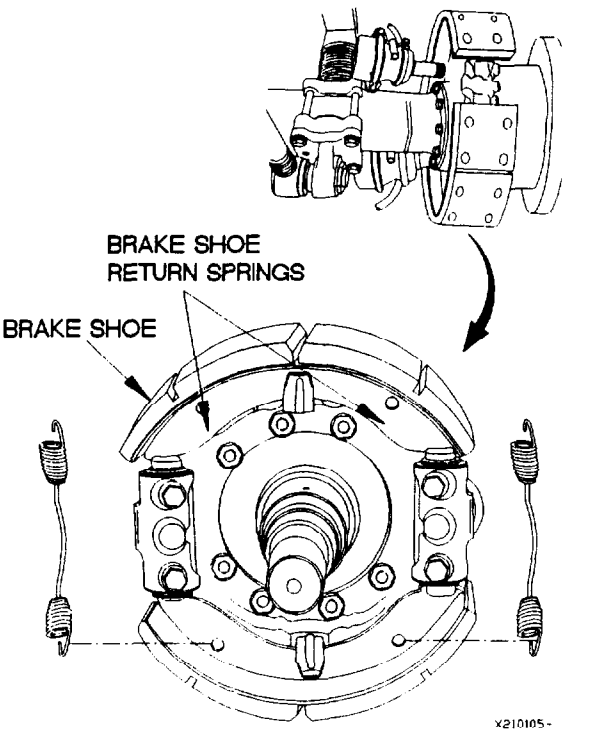
i1. EXCESSIVE BRAKING DISTANCE (CONT)



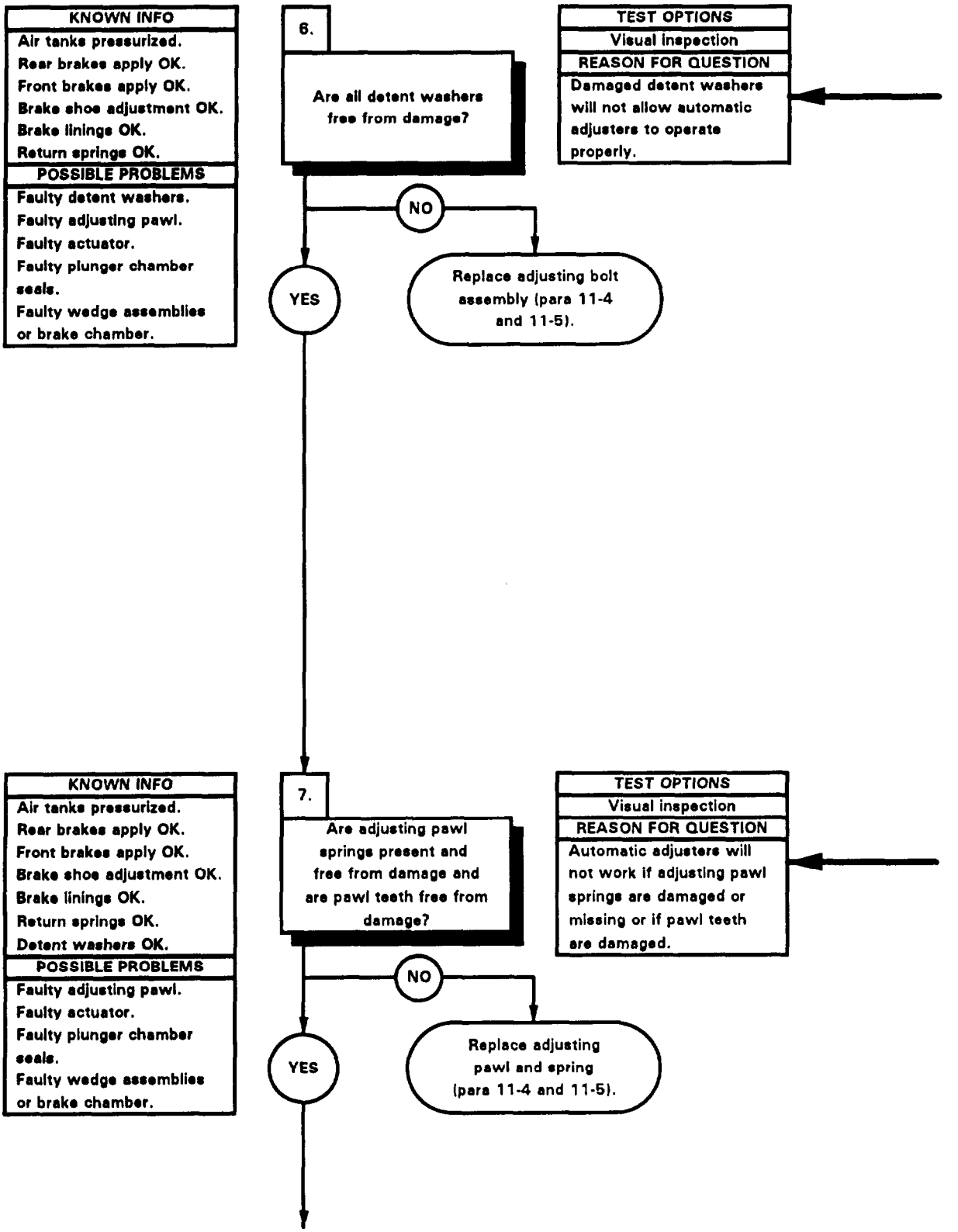
(1) Remove lugnuts and lift off wheel.
(2) Slide brake drum off axle.
(3) Inspect brake linings for worn, glazed, damaged condition, or contamination (para 11-2).
(4) Inspect brake drum for, out of round, scoring, pitting, heat cracks, and blue scorch marks.



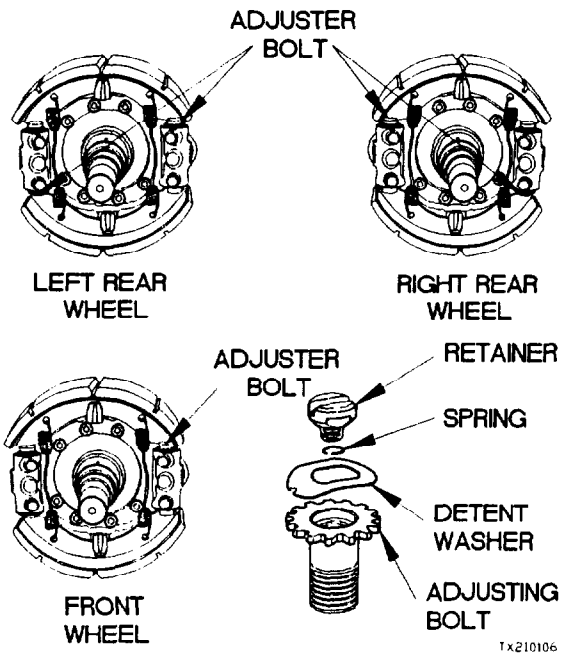
(1) Detach each return spring from brake shoe.
(2) Examine return spring for stretching, bluing, damage or breakage.
(3) If return spring(s) is damaged, replace broken or damaged return spring (s) (para 11-2 or 11-3).



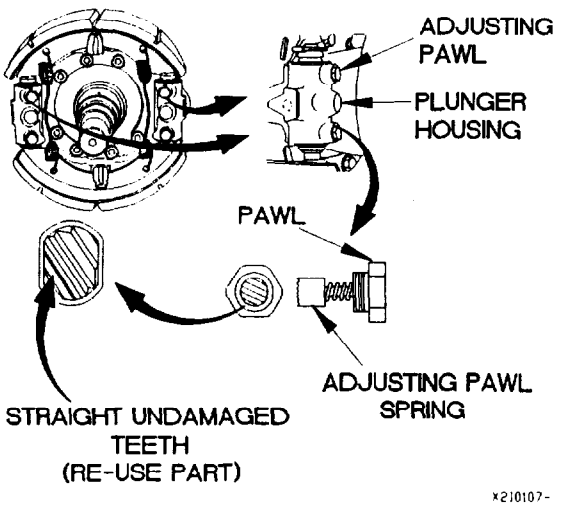
i1. EXCESSIVE BRAKING DISTANCE (CONT)



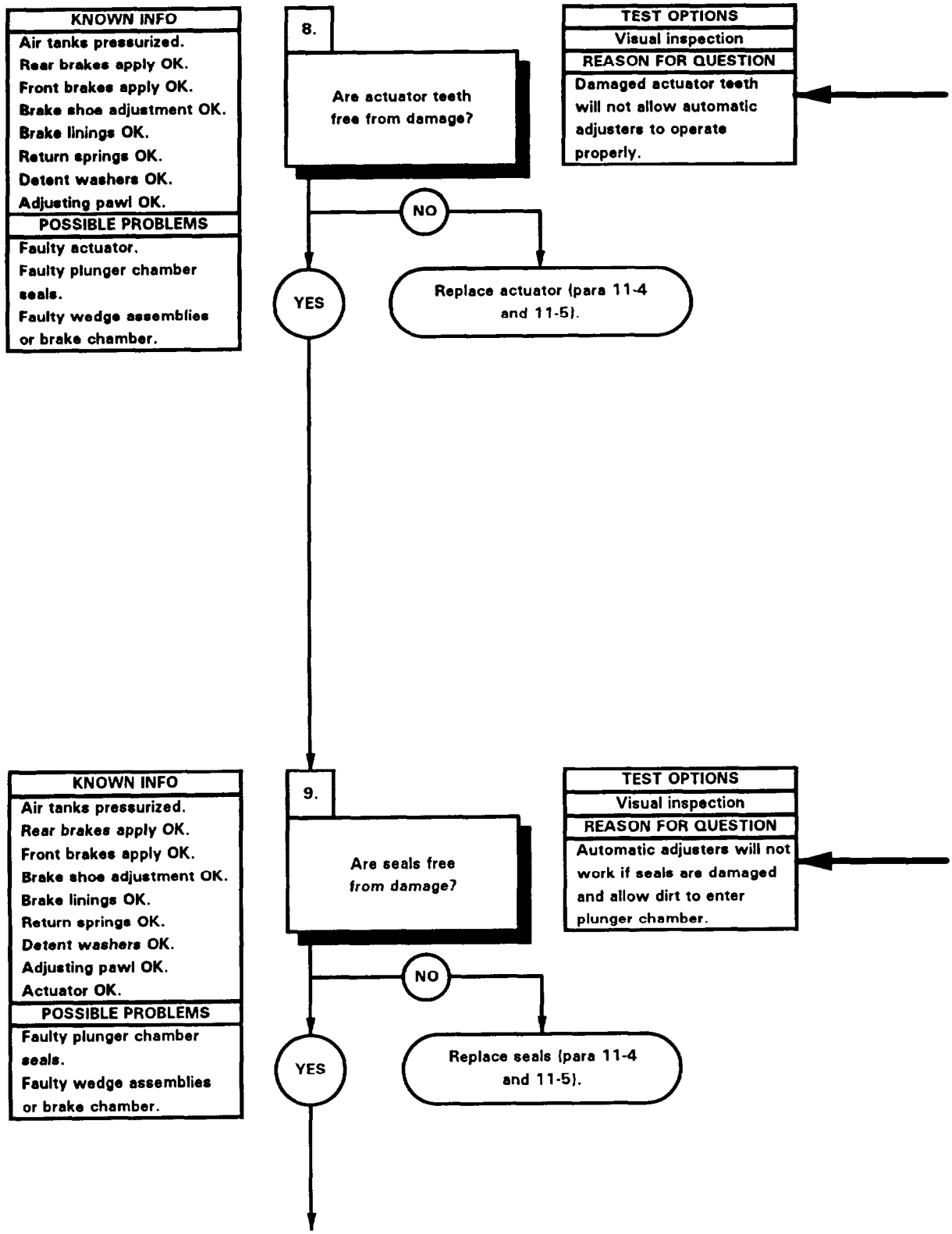
(1) Remove brake shoes from clips on wheel hub.
(2) Screw adjuster bolt out of plunger housing.
(3) Check if detent washer is damaged or broken.
(4) If detent washer is damaged, replace adjusting bolt assembly (para 11-4 or 11-5).



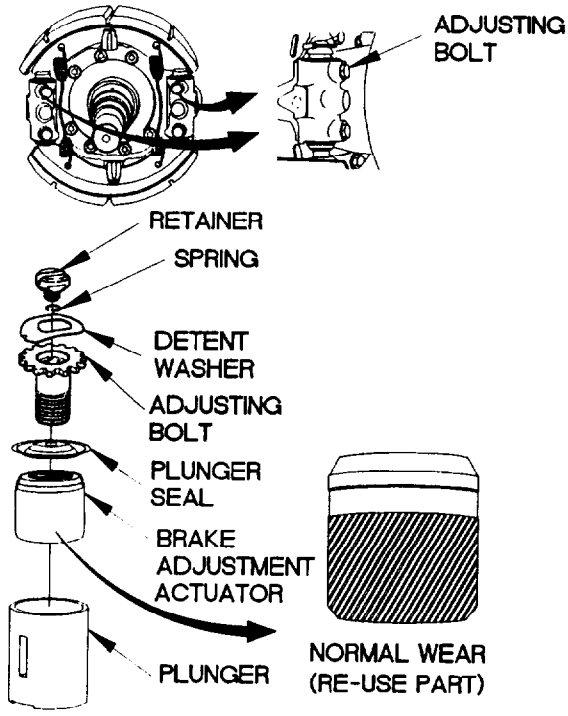
(1) Unscrew adjusting pawl from plunger housing.
(2) Check adjusting pawl springs for damage. Ensure that springs are not missing or broken.
(3) Check adjusting pawl teeth for damage and abrasion.



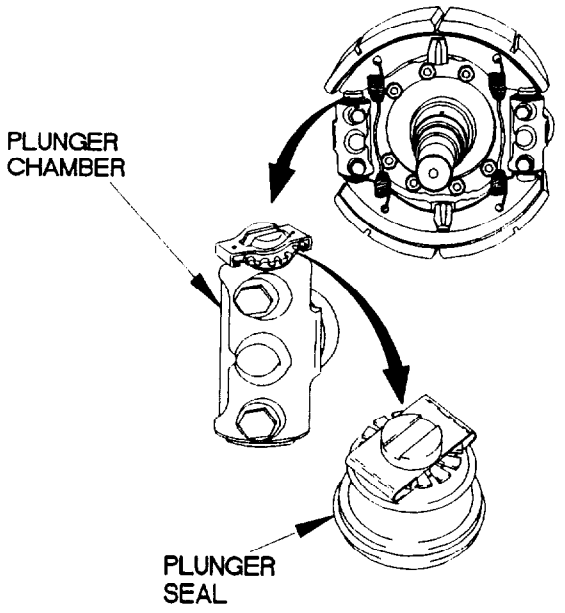
i1. EXCESSIVE BRAKING DISTANCE (CONT)



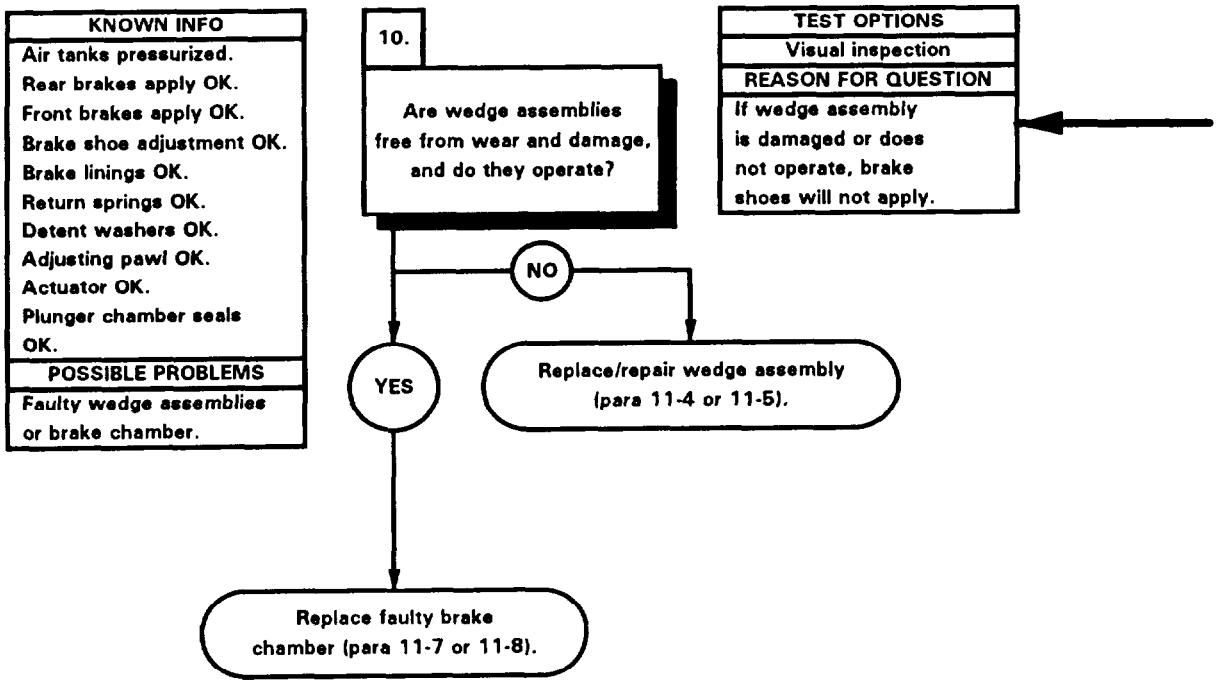
(1) Lift actuator from plunger housing.
(2) Check actuator teeth for damage.



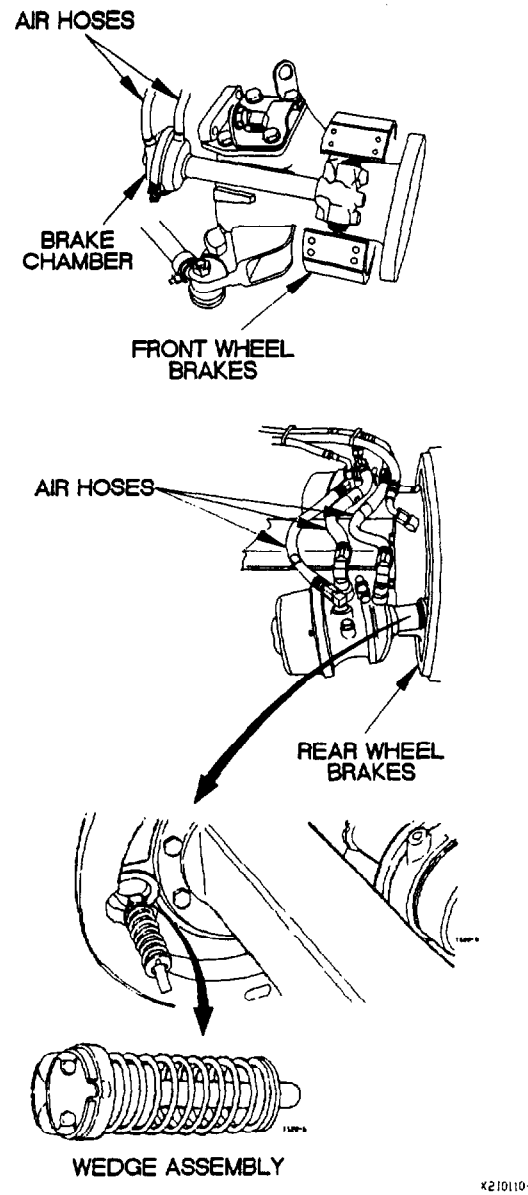
(1) Check that seal elements are not damaged or broken.
(2) A damaged seal may permit dirt to enter plunger chamber and interfere with adjustment.



i1. EXCESSIVE BRAKING DISTANCE (CONT)



(1) Disconnect and tag air hoses to brake chambers at wheel.
(2) Cage spring brakes on rear wheels (para 11-6).
(3) Unscrew brake chamber(s) from hub.
(4) Remove wedge assembly from wheel.
(5) Inspect wedge spring for damage.
(6) Inspect rollers for flattening or damage.
(7) Manually check operation of wedge assembly in plunger chamber.
(8) Insert wedge assembly into plunger chamber.
(9) Screw brake chamber onto wheel hub (para 11-7 or 11-8).
(10) Attach air hoses to brake chamber.
(11) Uncage rear spring brakes (para 11-6).
(12) Install plunger into plunger housing, open end up.
(13) Align slot to accept pawl (para 11-4 or 11-5).
(14) Install pawl and pawl spring into side of plunger housing.
(15) Install actuator, seal, and adjustment bolt into head of plunger housing (para 11-4 or 11-5).
(16) Install brake shoes into clips on wheel hub with leading (toe) edge of shoe fitting slot on head of adjusting bolt. Arrow stamped on shoe should point away from adjusting plunger (para 11-2 or 11-3).
(17) Install return springs on brake shoes (para 11-2 or 11-3).
(18) Install brake drum.
(19) Adjust brake shoes (para 11-2 or 11-3).
(20) Install wheel.
(21) Raise vehicle and remove trestle.



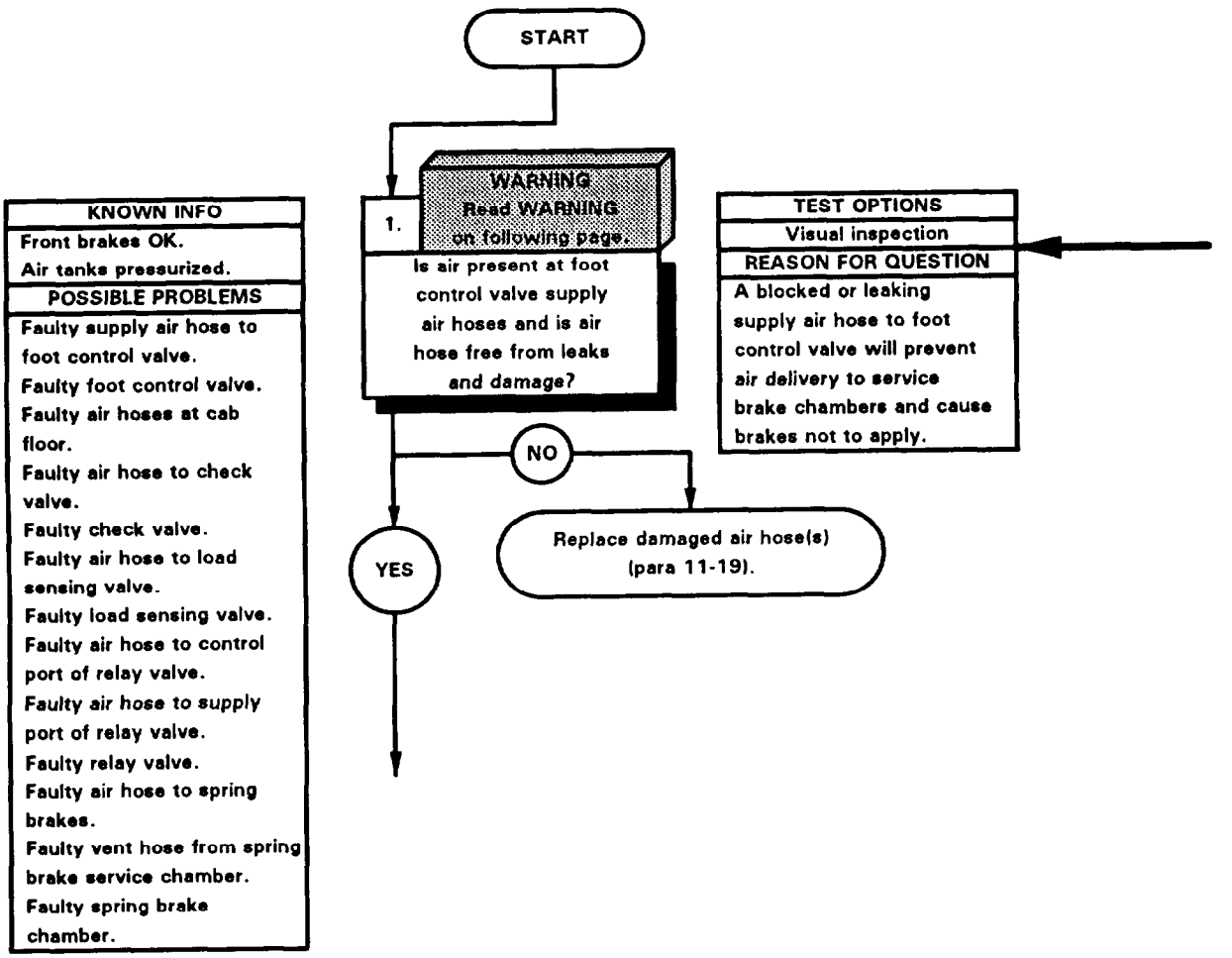
i2. REAR BRAKES DO NOT APPLY

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

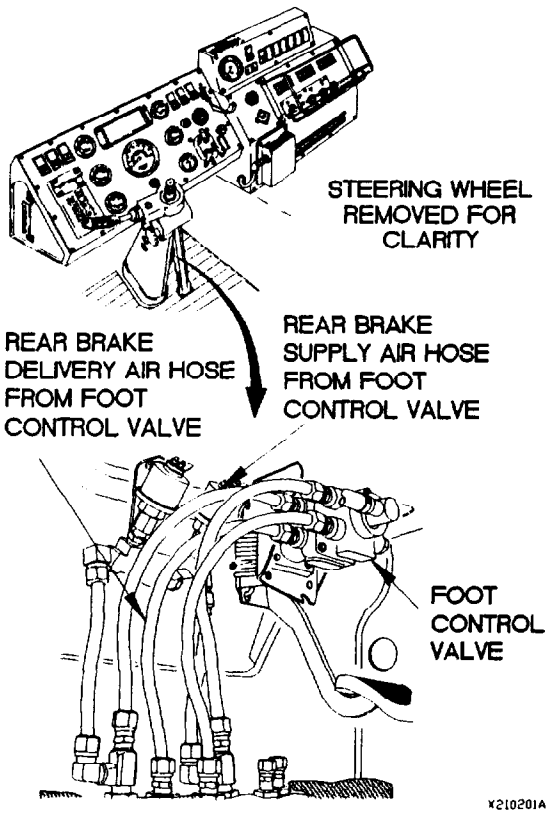
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)



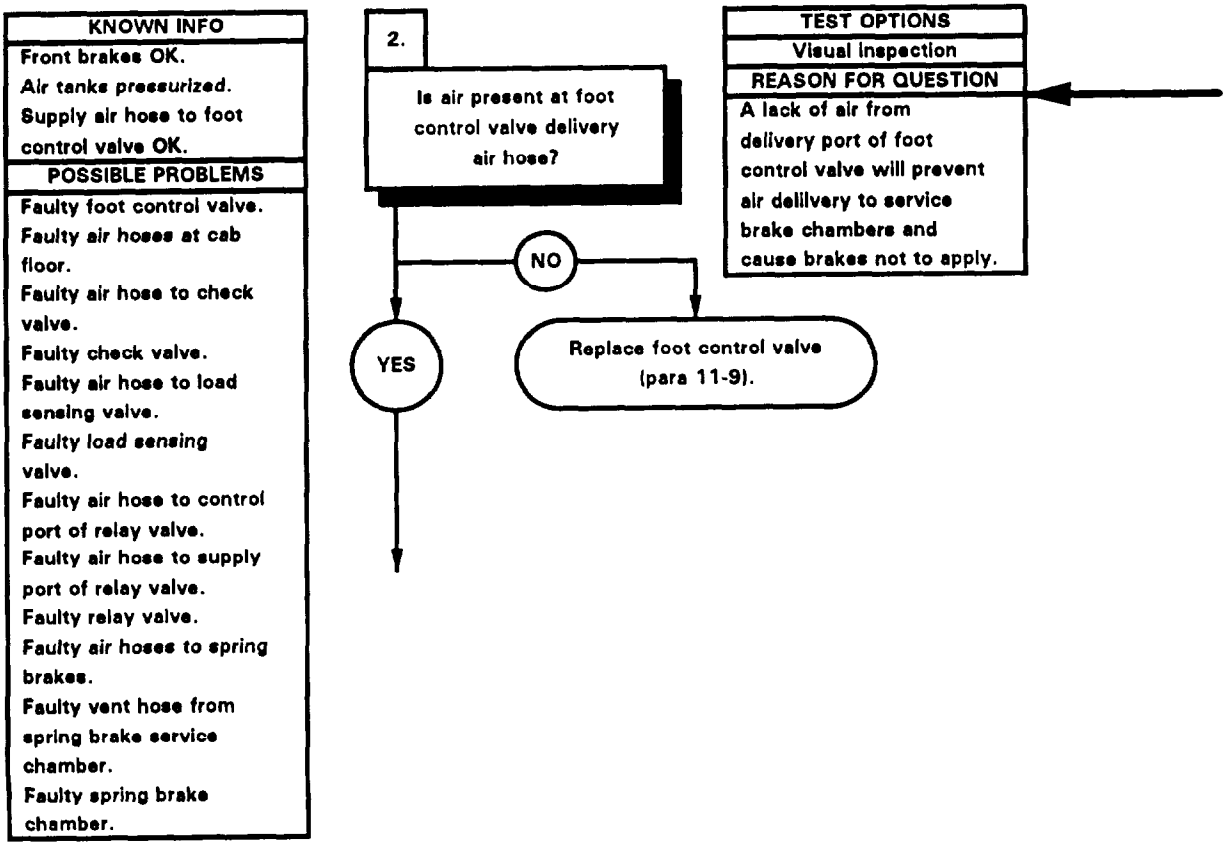
WARNING

- When working on parking brake control system vehicle may roll. Wheel shocks must be positioned in front of and behind one of the rear wheels to prevent it from rolling. Failure to comply may cause serious injury or death 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.

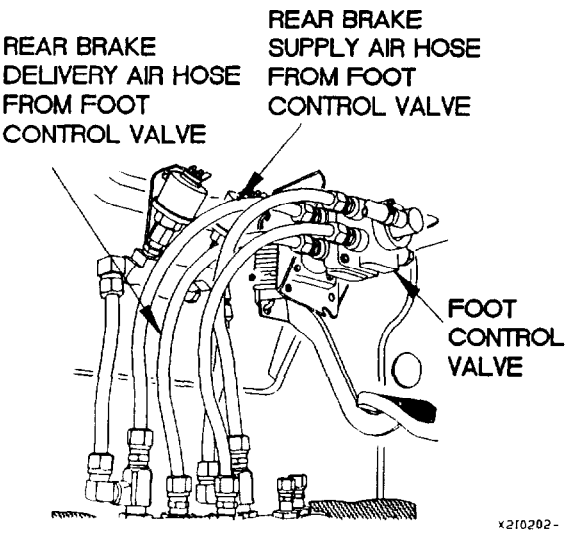
(1) Loosen supply air hose at foot control valve.
(2) Check for presence of air. If no air is present, replace air hose (para 11-19).
(3) Tighten supply air hose to foot control valve.



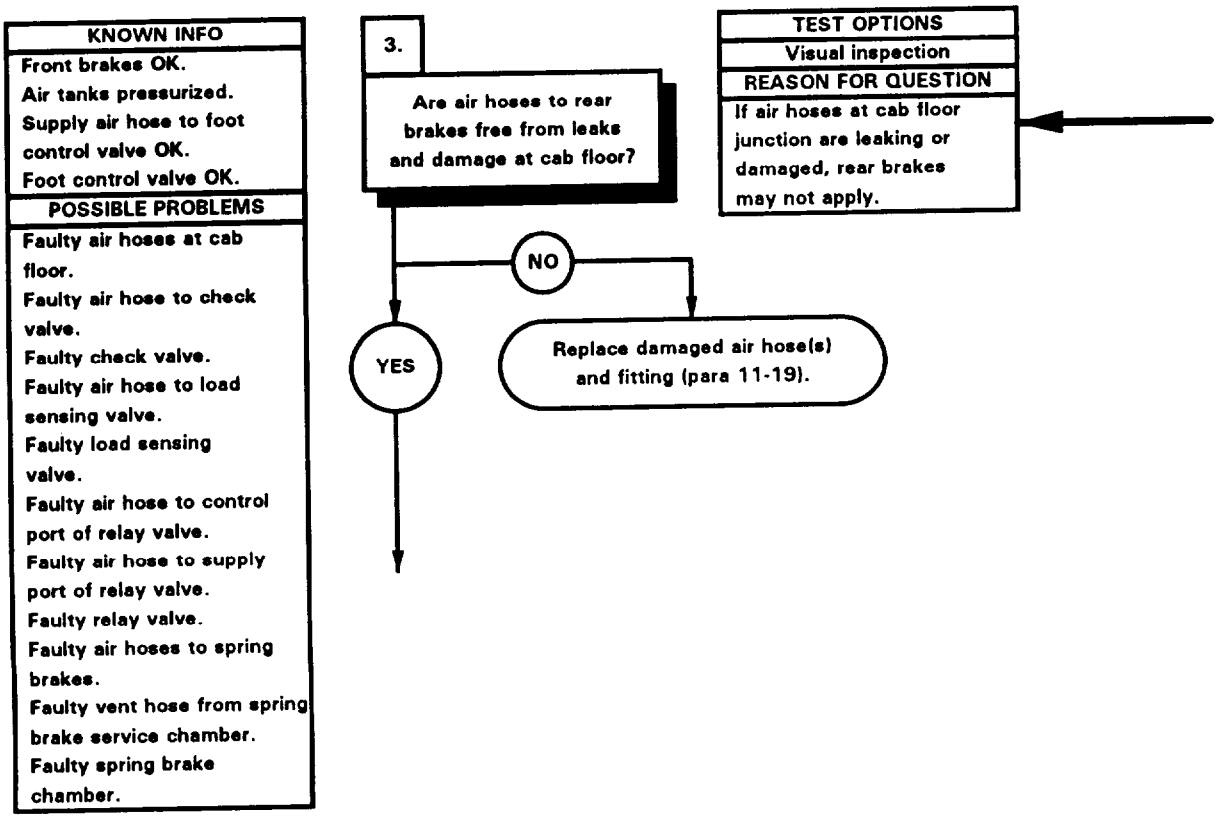
i2. REAR BRAKES DO NOT APPLY (CONT)



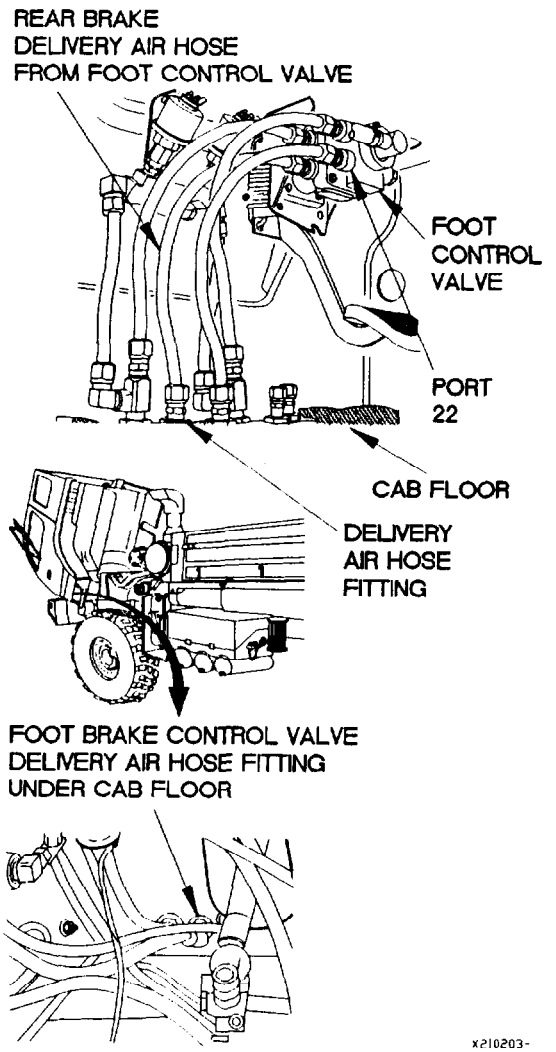
(1) Loosen delivery air hose at foot control valve.
(2) Apply brake and check for presence of air.
(3) If no air is present, replace foot control valve (para 11-9).
(3) Tighten delivery air hose on foot control valve.



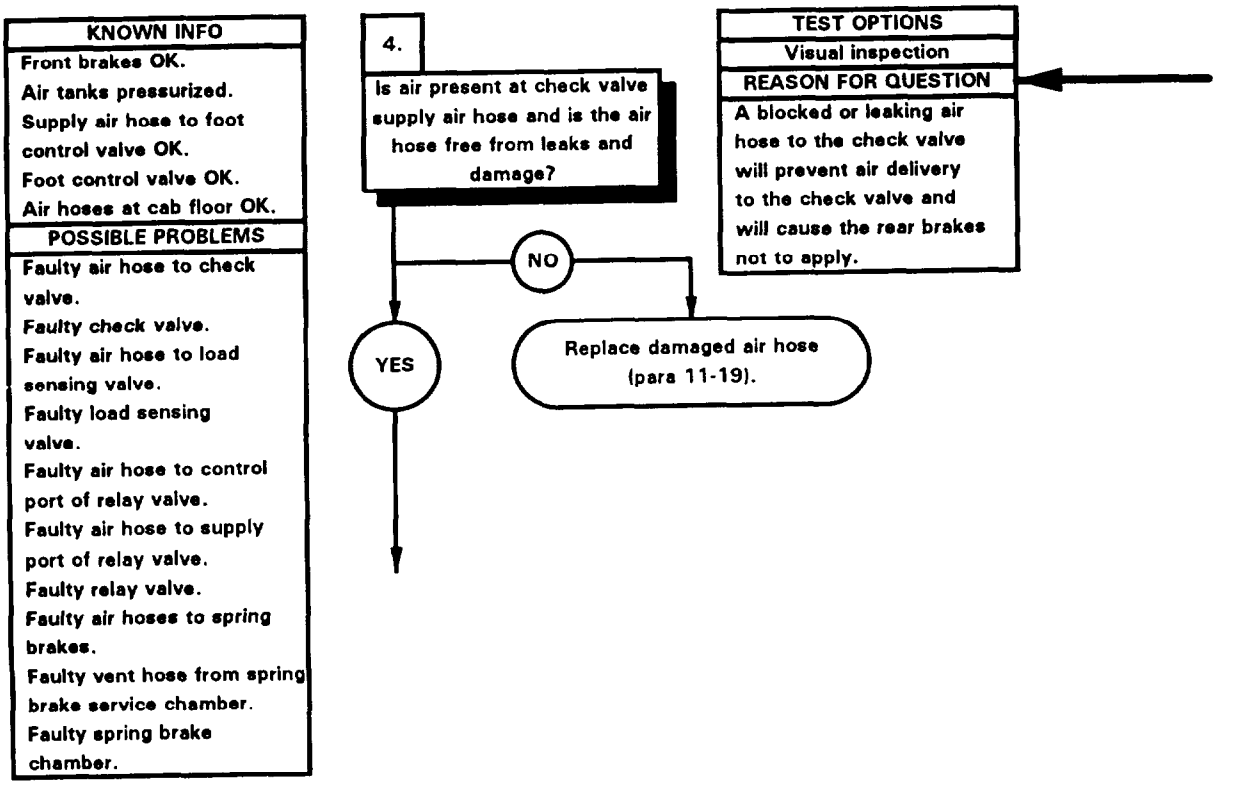
i2. REAR BRAKES DO NOT APPLY (CONT)



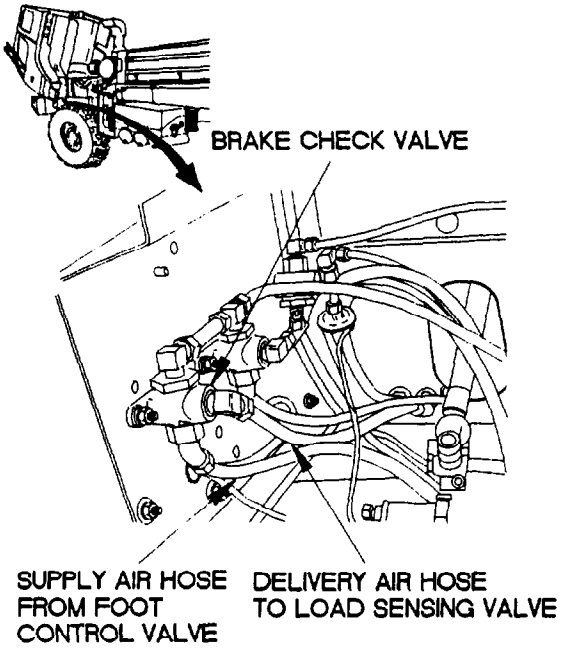
(1) Loosen delivery air hose at cab floor.
(2) Apply brakes.
(3) Check for presence of air from air hose when brake is applied.
(4) If no air is present, replace air hose (para 11-19).
(5) Tighten air hose at cab floor.
(6) Raise cab (TM 9-2320-365-10).
(7) Loosen delivery air hose under cab floor.
(8) Apply foot brake.
(9) Check for presence of air from fitting when brake is applied.
(10) If no air is present, replace air hose and fitting (para 11-19).
(11) Tighten air hose and fitting.



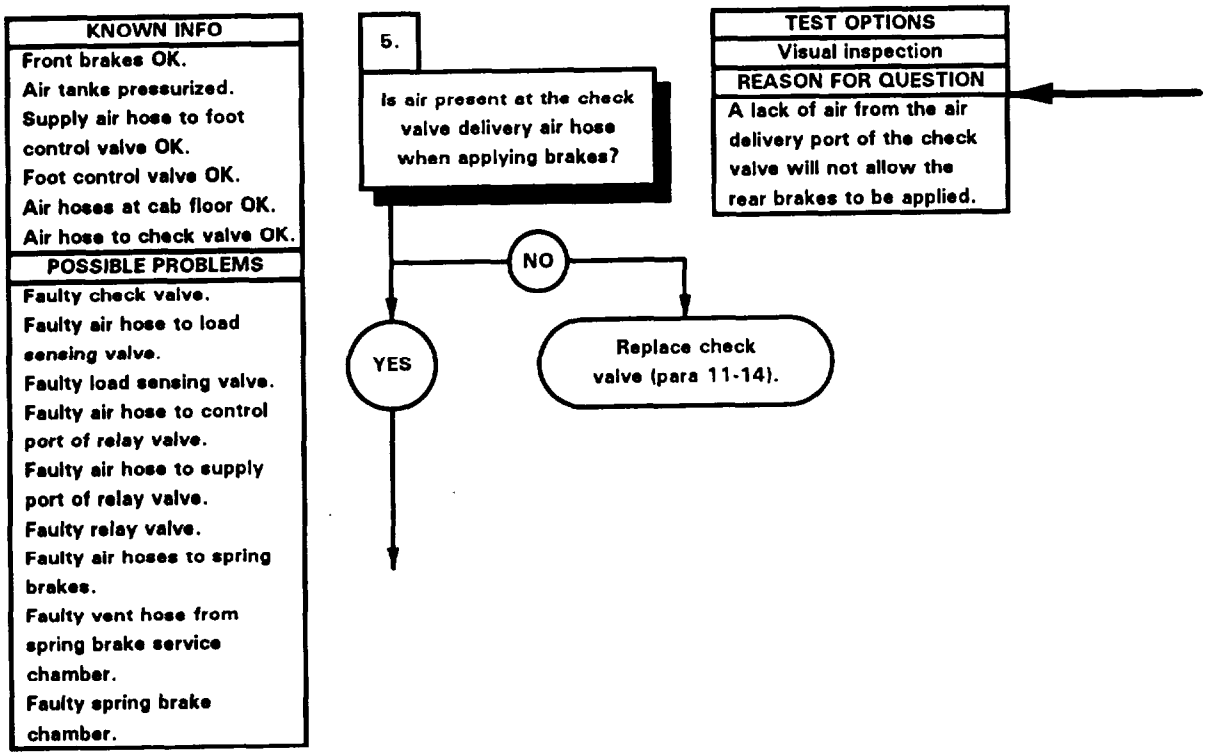
i2. REAR BRAKES DO NOT APPLY (CONT)



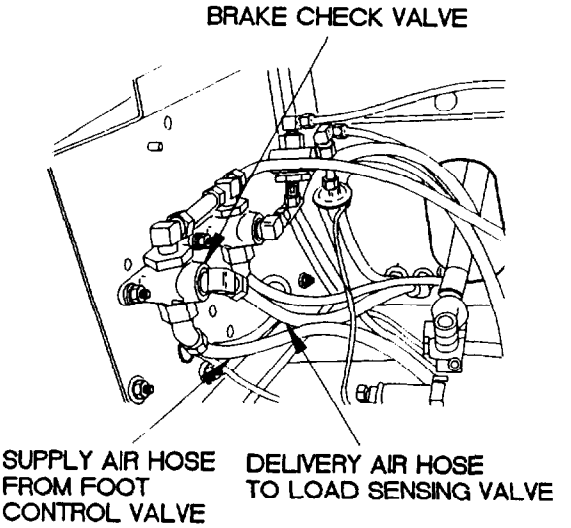
(1) Loosen supply air hose at check valve.
(2) Apply brakes.
(3) Check for presence of air at air hose when brake is applied.
(4) If no air is present, replace air hose (para 11-19).
(5) Tighten air hose at supply port of check valve.



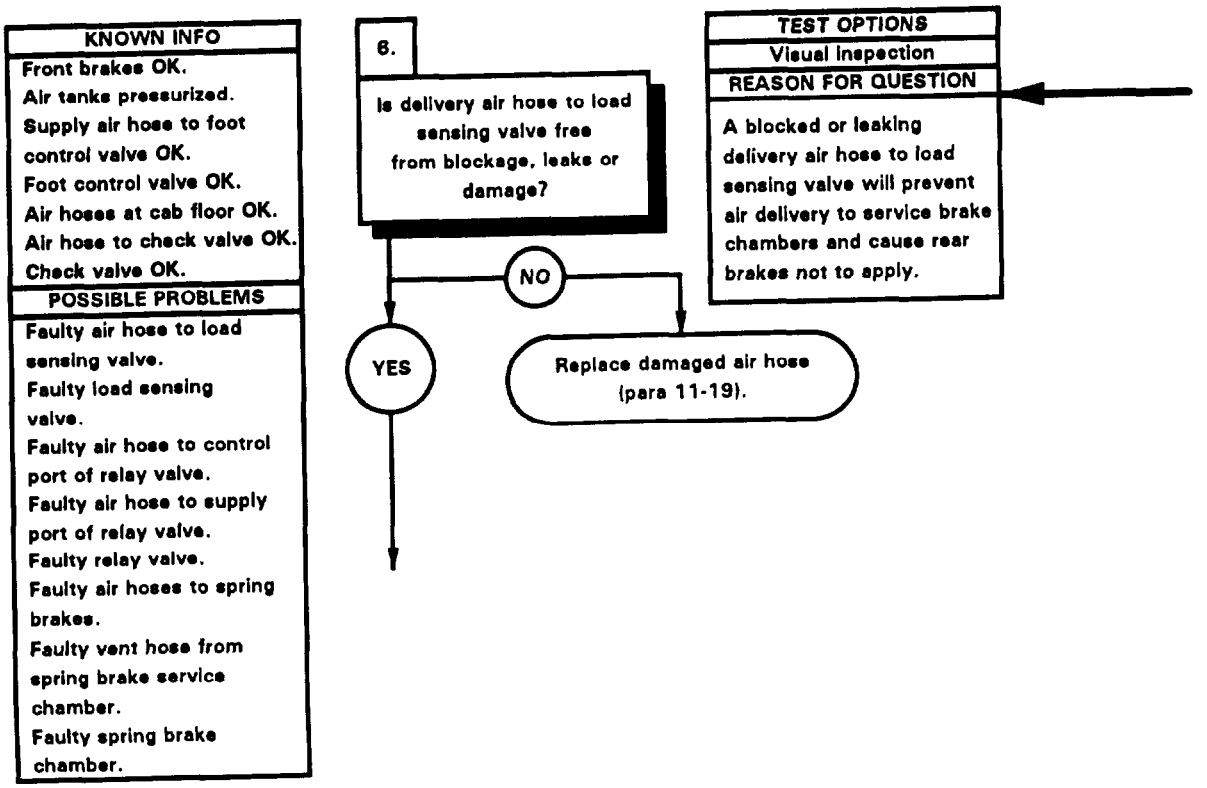
i2. REAR BRAKES DO NOT APPLY (CONT)



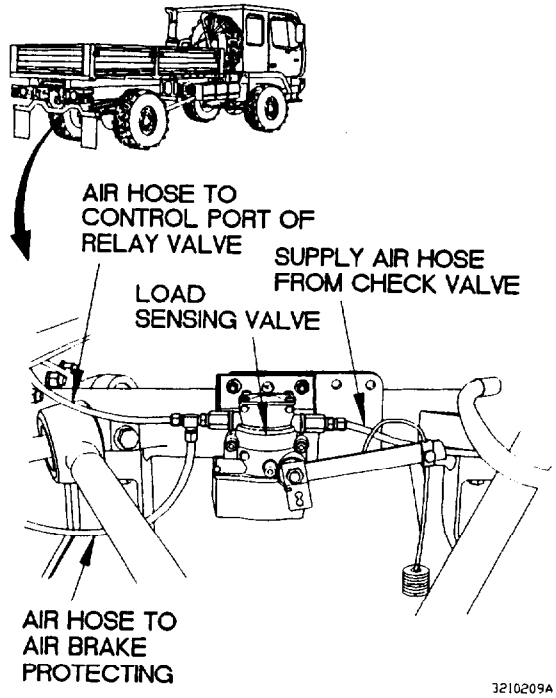
(1) Loosen delivery air hose on check valve.
(2) Apply brakes.
(3) Check for presence of air from air hose when brake is applied.
(4) If no air is present, replace check valve (para 11-14).
(5) Tighten delivery air hose on check valve.



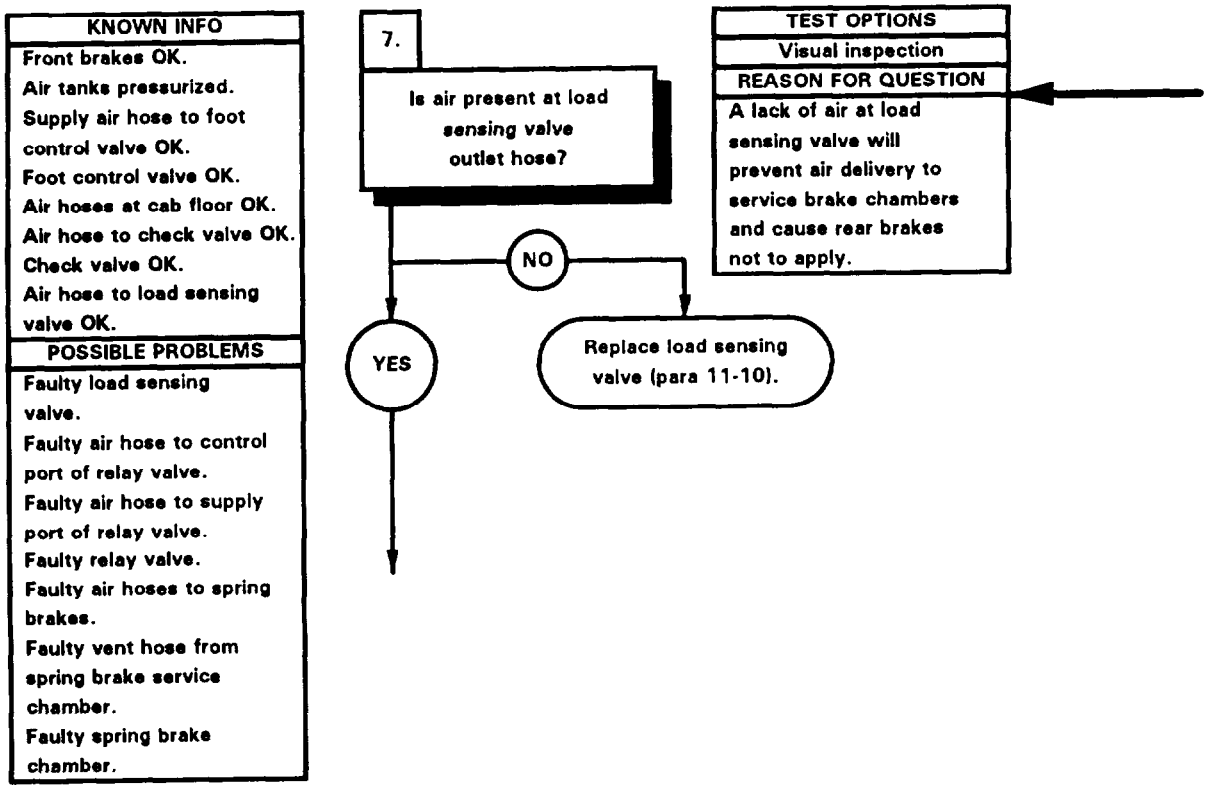
i2. REAR BRAKES DO NOT APPLY (CONT)



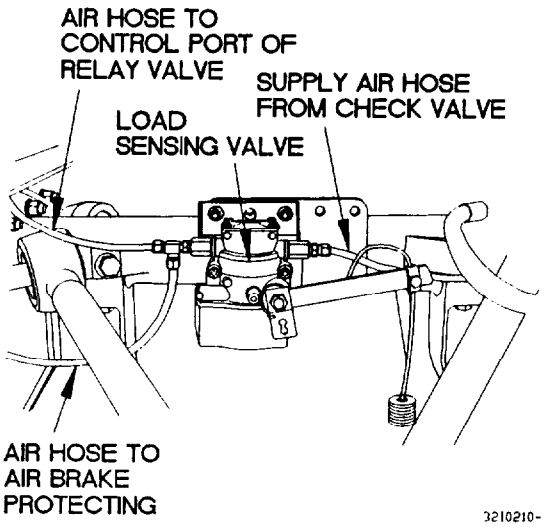
(1) Loosen delivery air hose at load sensing valve.
(2) Apply brakes.
(3) Check for presence of air.
(4) If no air is present, replace air hose (para 11-19).
(5) Tighten delivery air hose on load sensing valve.



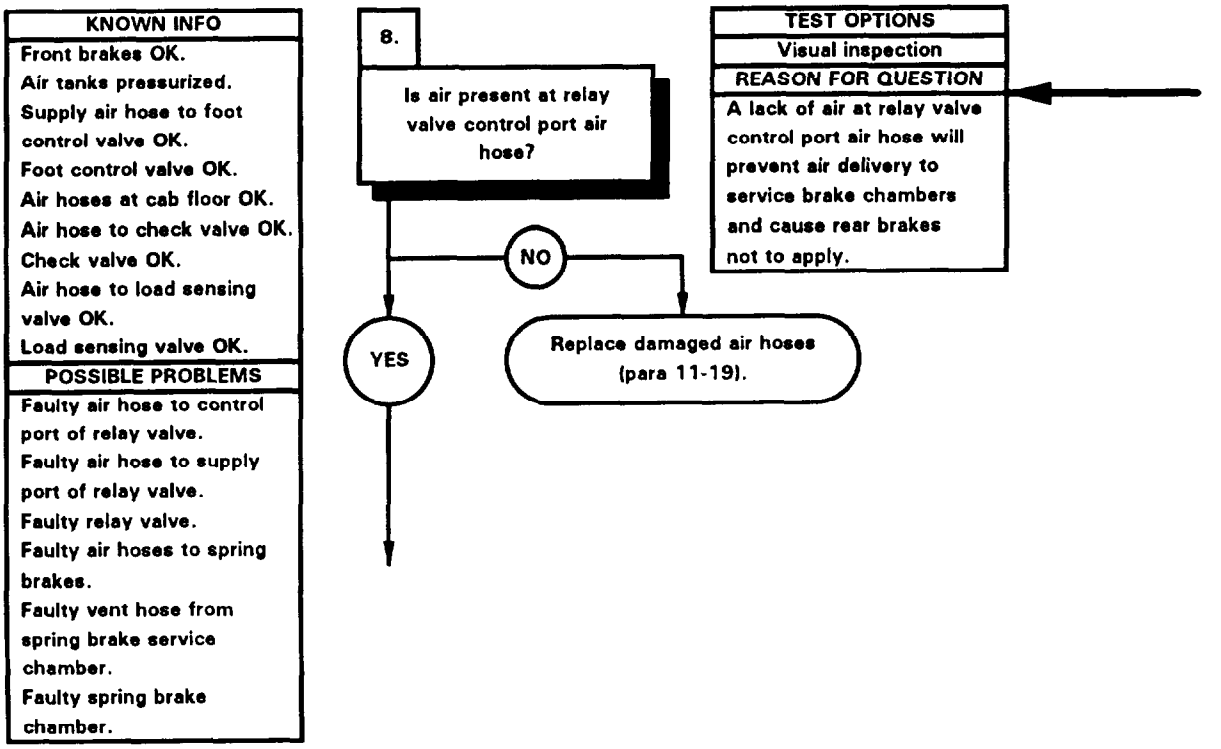
i2. REAR BRAKES DO NOT APPLY (CONT)



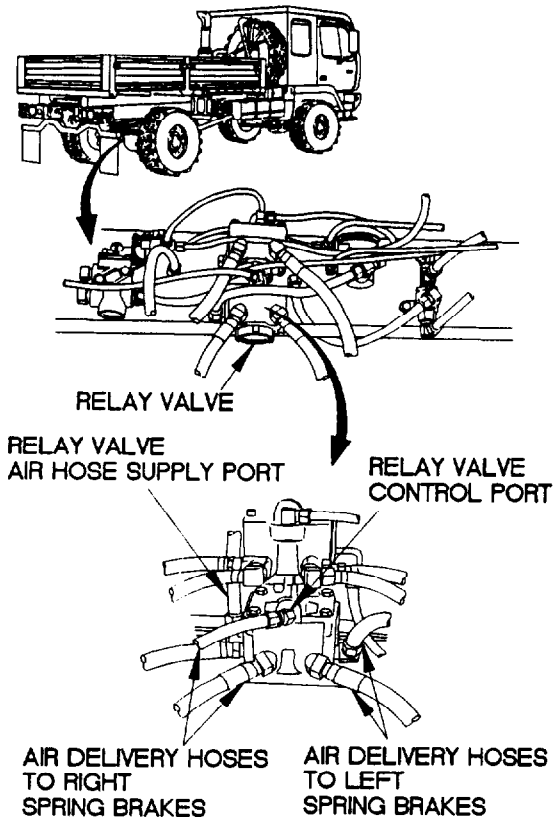
(1) Loosen outlet air hose at load sensing valve.
(2) Apply brakes.
(3) Check for presence of air.
(4) If no air is present, replace load sensing valve (para 11-10).
(5) Tighten outlet air hose on load sensing valve.



i2. REAR BRAKES DO NOT APPLY (CONT)

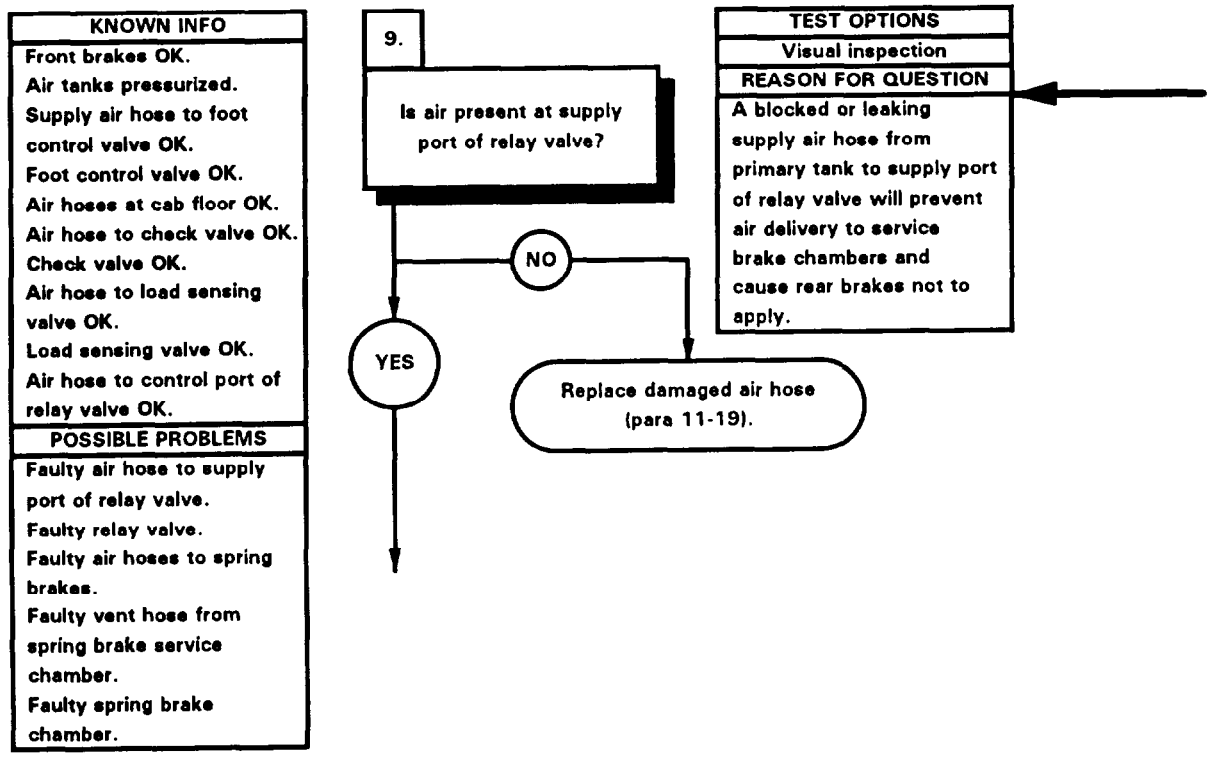


(1) Loosen control port air hoses at relay valve.
(2) Apply brakes.
(3) Check for presence of air.
(4) If no air is present, replace air hose(s) (para 11-19).
(5) Tighten inlet air hoses on relay valve.

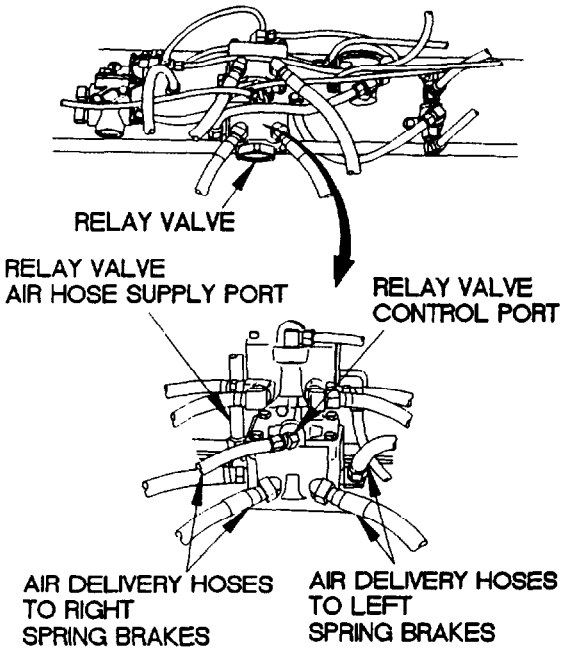


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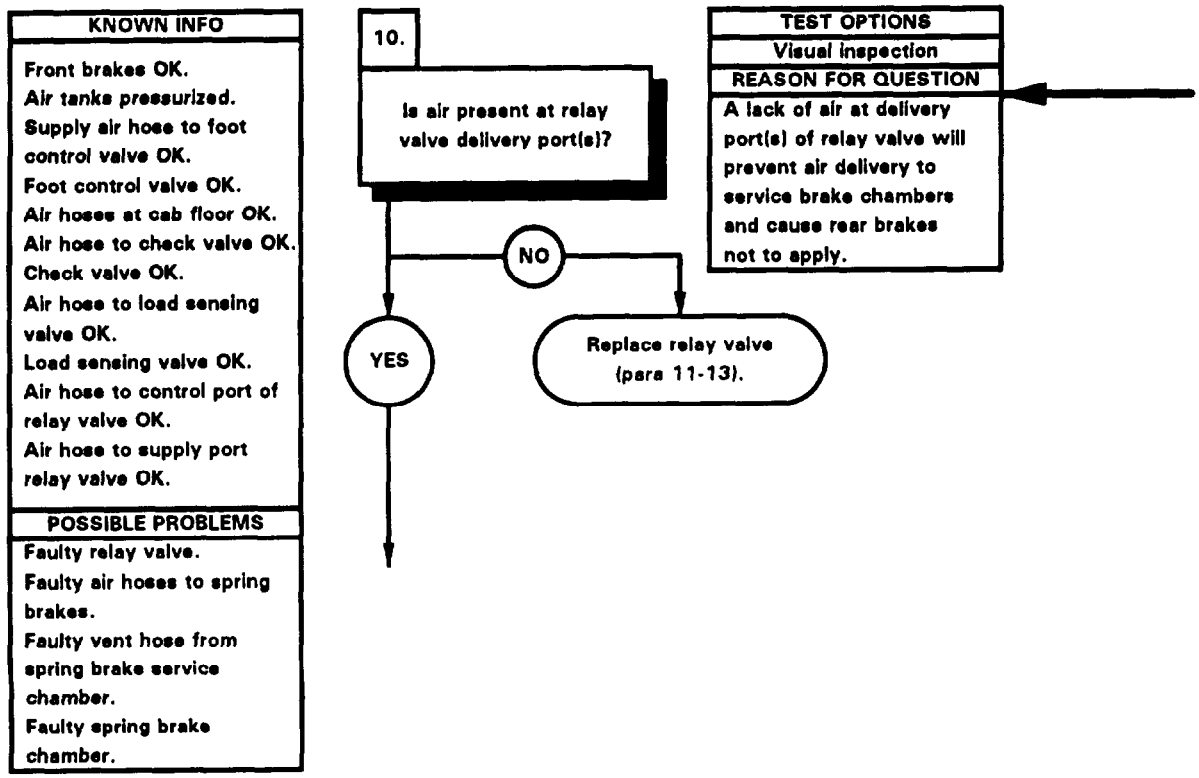
i2. REAR BRAKES DO NOT APPLY (CONT)



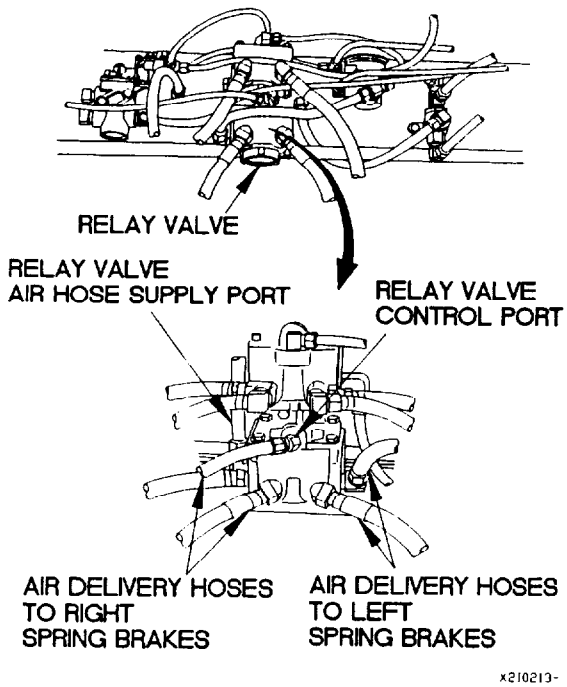
(1) Loosen supply air hose at supply port of relay valve.
(2) Apply brakes.
(3) Check for presence of air.
(4) If no air is present, replace air hose (para 11-19).
(5) Tighten supply air hose to relay valve.



i2. REAR BRAKES DO NOT APPLY (CONT)

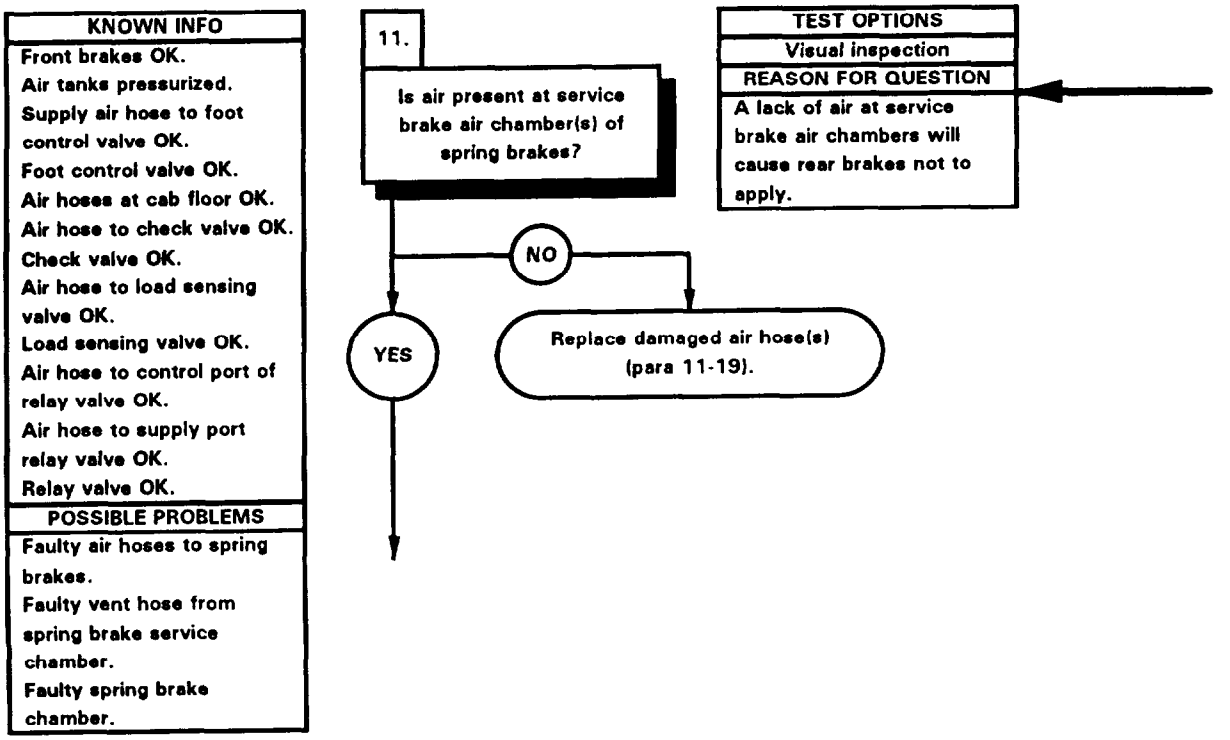


(1) Loosen delivery air hose(s) at relay valve.
(2) Apply brakes.
(3) Check for presence of air.
(4) If no air is present, replace relay valve (para 11-13).
(5) Tighten delivery air hose(s) to relay valve.

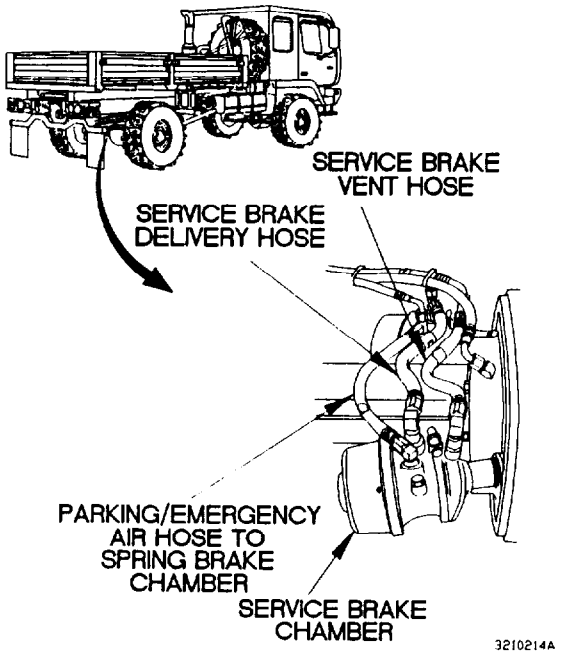


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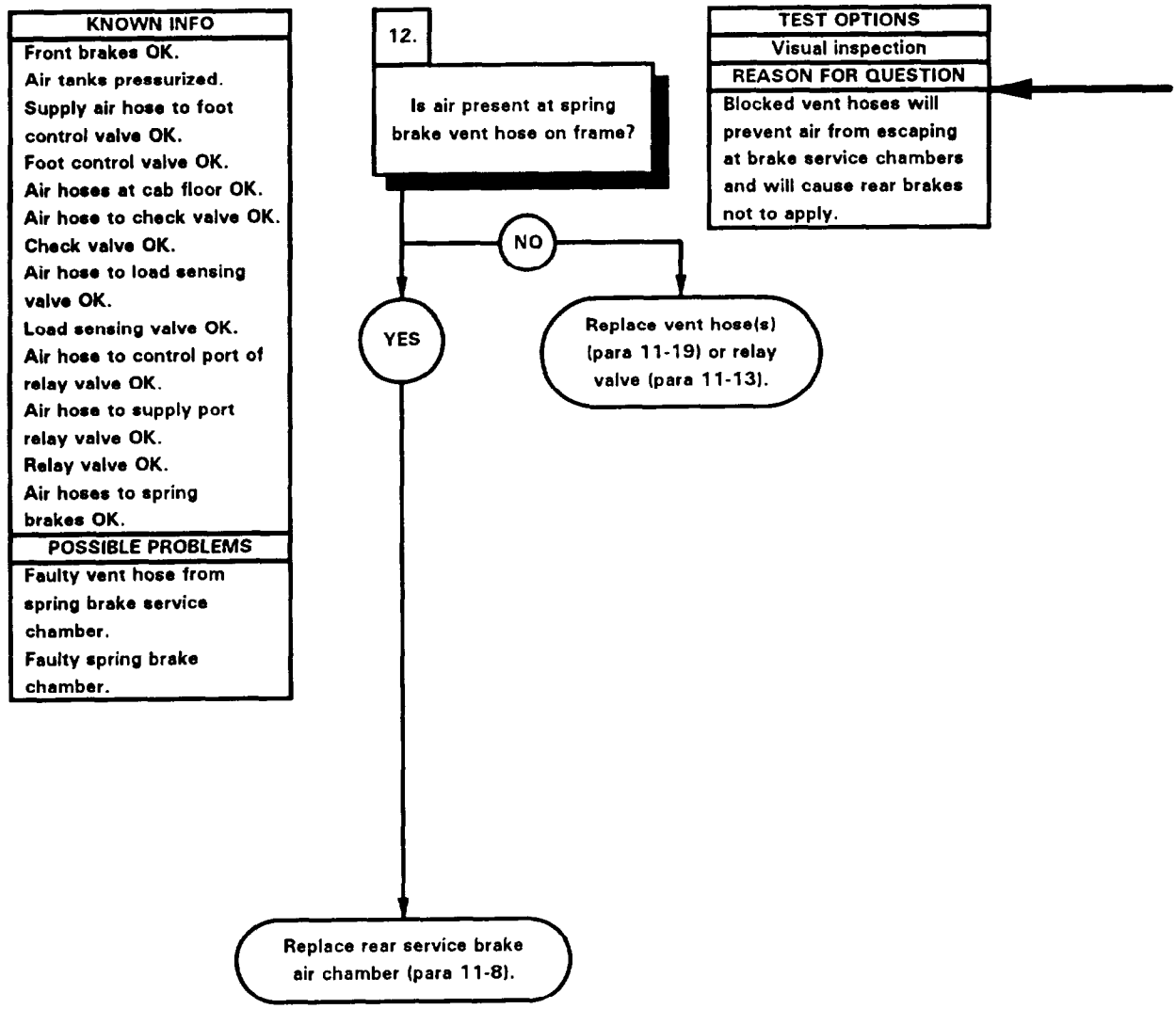
i2. REAR BRAKES DO NOT APPLY (CONT)



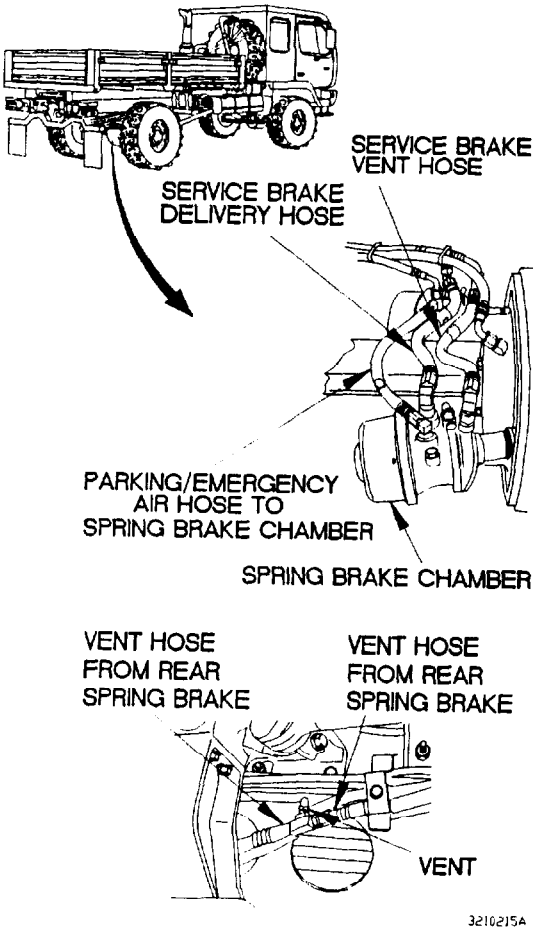
(1) Loosen service brake air hose at spring brake chamber.
(2) Apply brakes.
(3) Check for presence of air.
(4) If no air is present, replace air hose (para 11-19).
(5) Tighten service brake air hose on spring brake chamber.



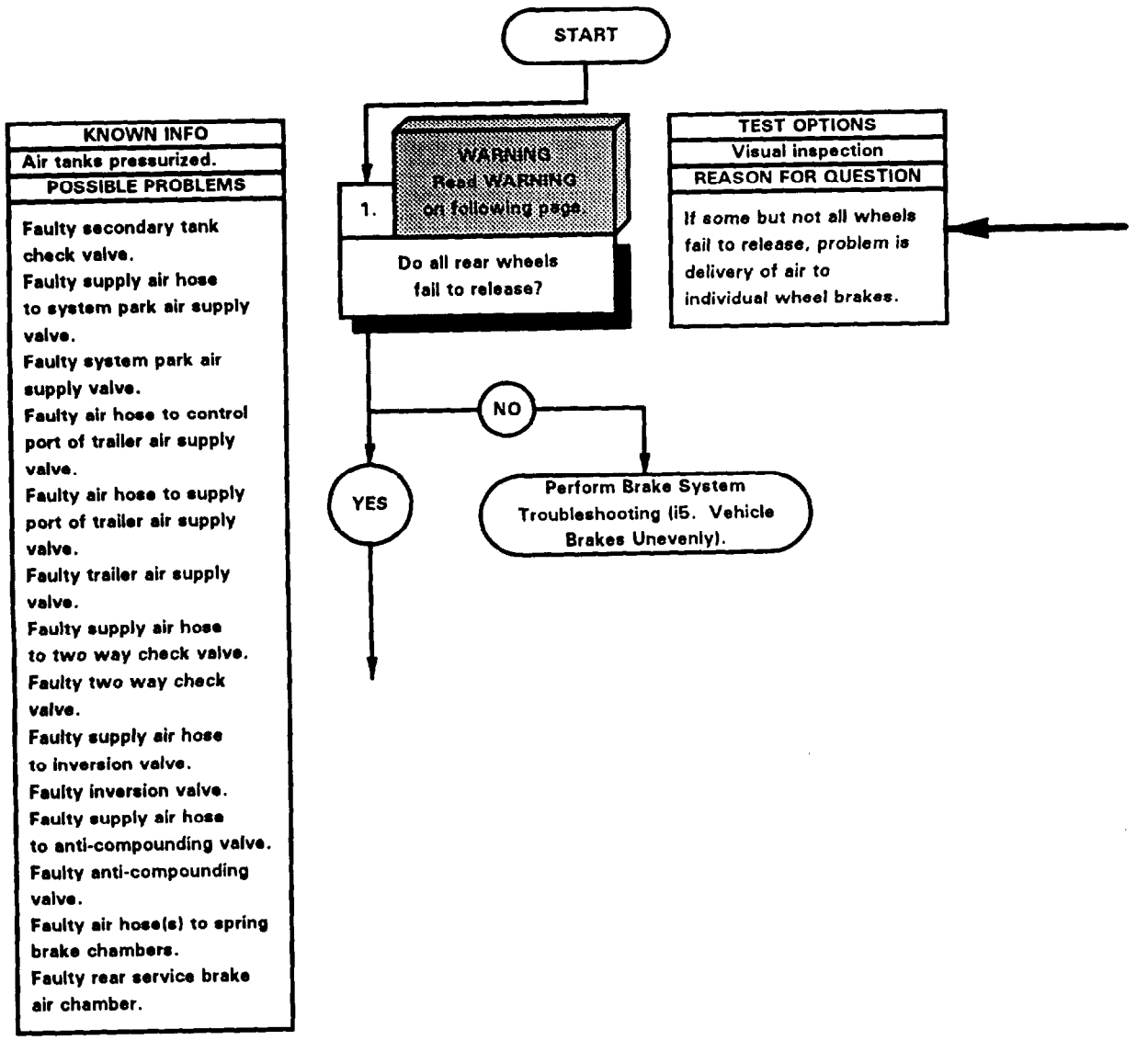
i2. REAR BRAKES DO NOT APPLY (CONT)



(1) Disconnect vent hose(s) at brake chamber(s).
(2) Blow compressed air through vent hoses.
(3) Check for air escaping at vent valve.
(4) If air does not escape from vent hose, replace vent hose(s) (para 11-19) or relay valve (para 11-13).
(5) If air does escape from vent hose, replace rear service brake air chamber (para 11-8).
(6) Connect vent hose(s) at brake chamber(s).
(7) Lower cab (TM 9-2320-365-10).



i3. PARKING BRAKE(S) WILL NOT RELEASE	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)

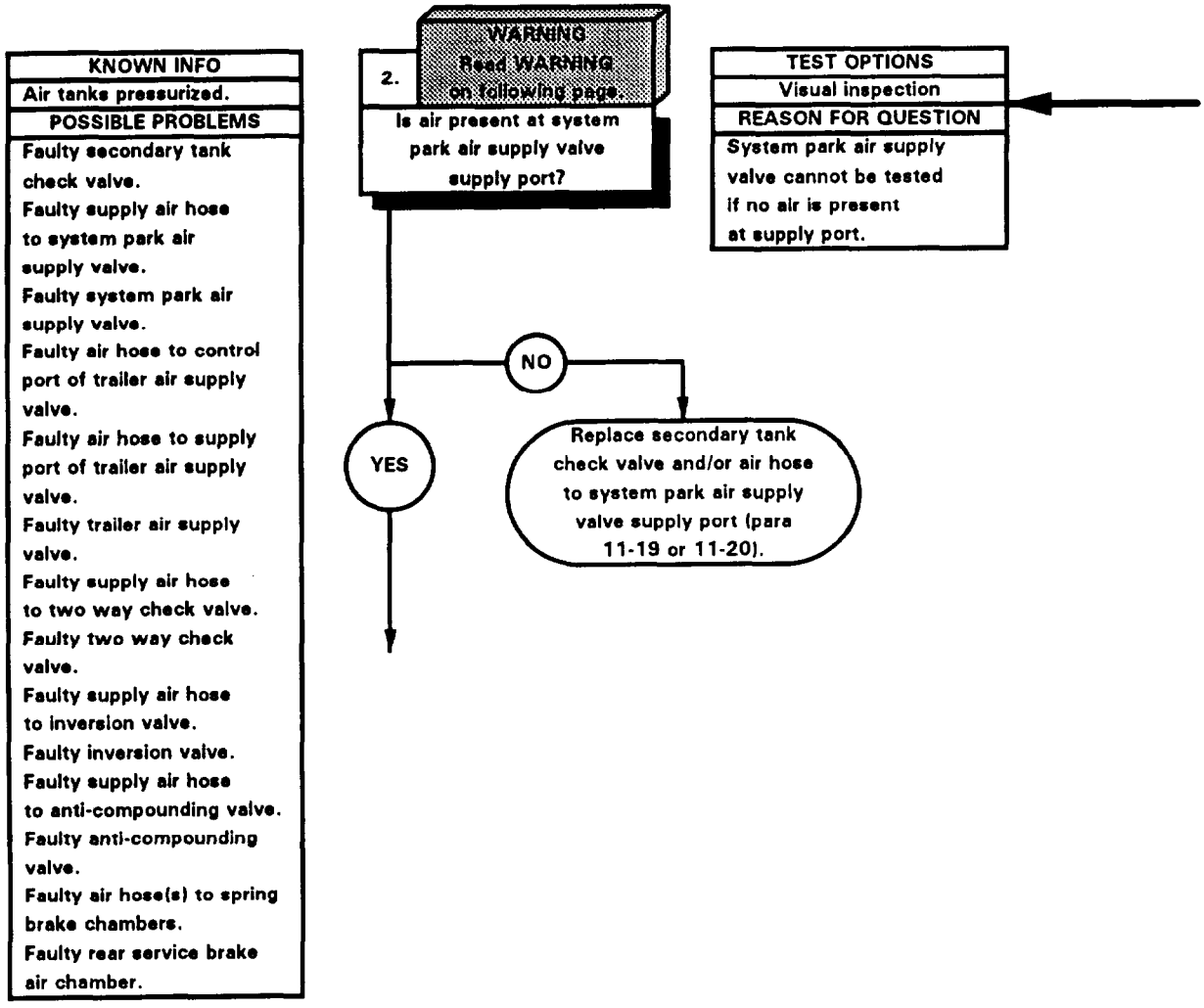


WARNING

When working on parking brake control system vehicle may roll. Wheel chocks must be positioned in front of and behind one of the rear wheels to keep it from rolling. Failure to comply may result in injury to personnel.

(1) Start engine (TM 9-2320-365-10).
(2) Release parking brake (TM 9-2320-365-10).
(3) Check if vehicle moves.
(4) If vehicle moves, locate locked wheel(s) and troubleshoot individual wheel(s).
(5) If vehicle does not move and all wheels are locked, perform Brake System Troubleshooting (I5. Vehicle Brakes Unevenly).

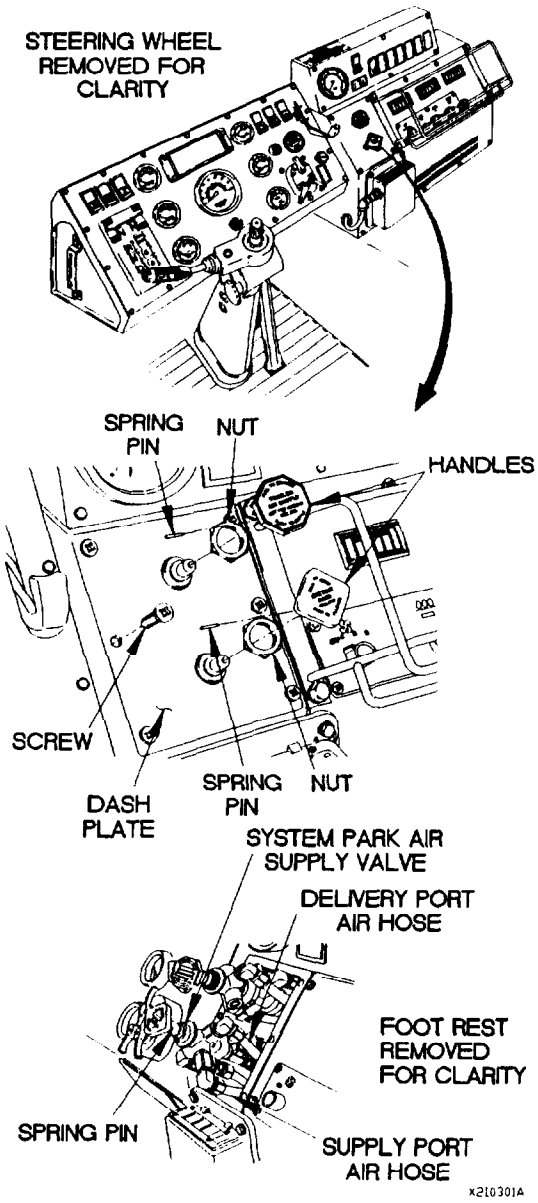
i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)



WARNING

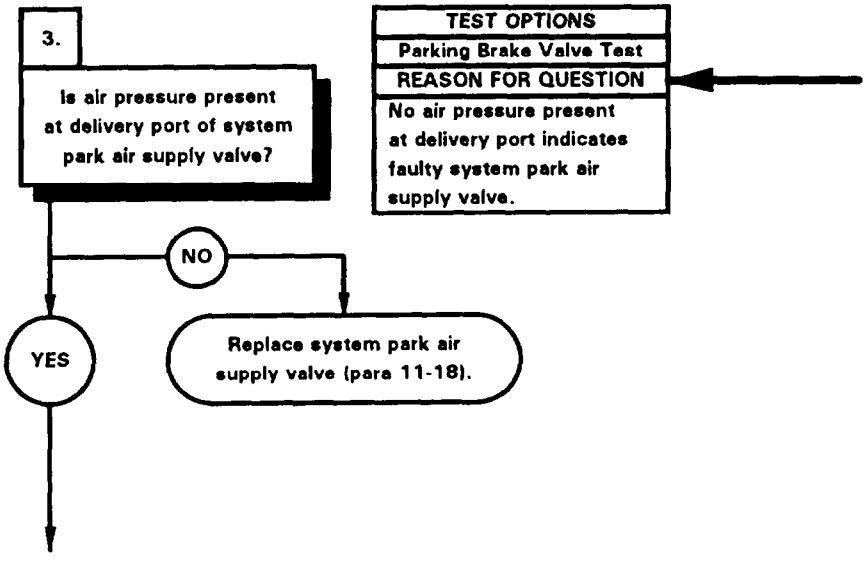
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

(1) Remove roll pins from handles of parking brake and trailer supply valves on dash.
(2) Remove parking brake and trailer supply valve handles.
(3) Unscrew nut at base of handle stem on each valve.
(4) Remove six screws securing dash plate.
(5) Remove dash plate.
(6) Pull out system park air supply valve from dashboard.
(7) Loosen air hose at system park air supply valve supply port.
(8) Check air hose for escaping air.
(9) If no air escapes, replace secondary tank check valve (para 11-20) or air hose (para 11-19).
(10) Tighten air hose at system park air supply valve supply port.

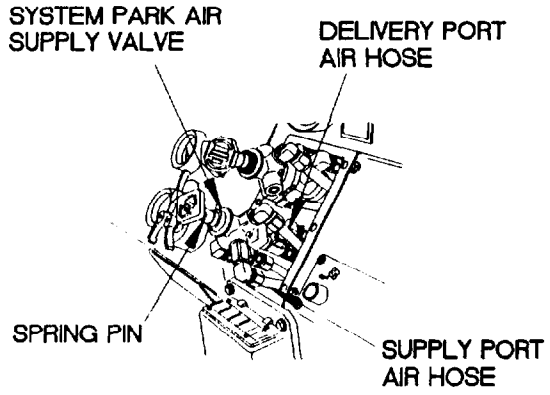


i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)

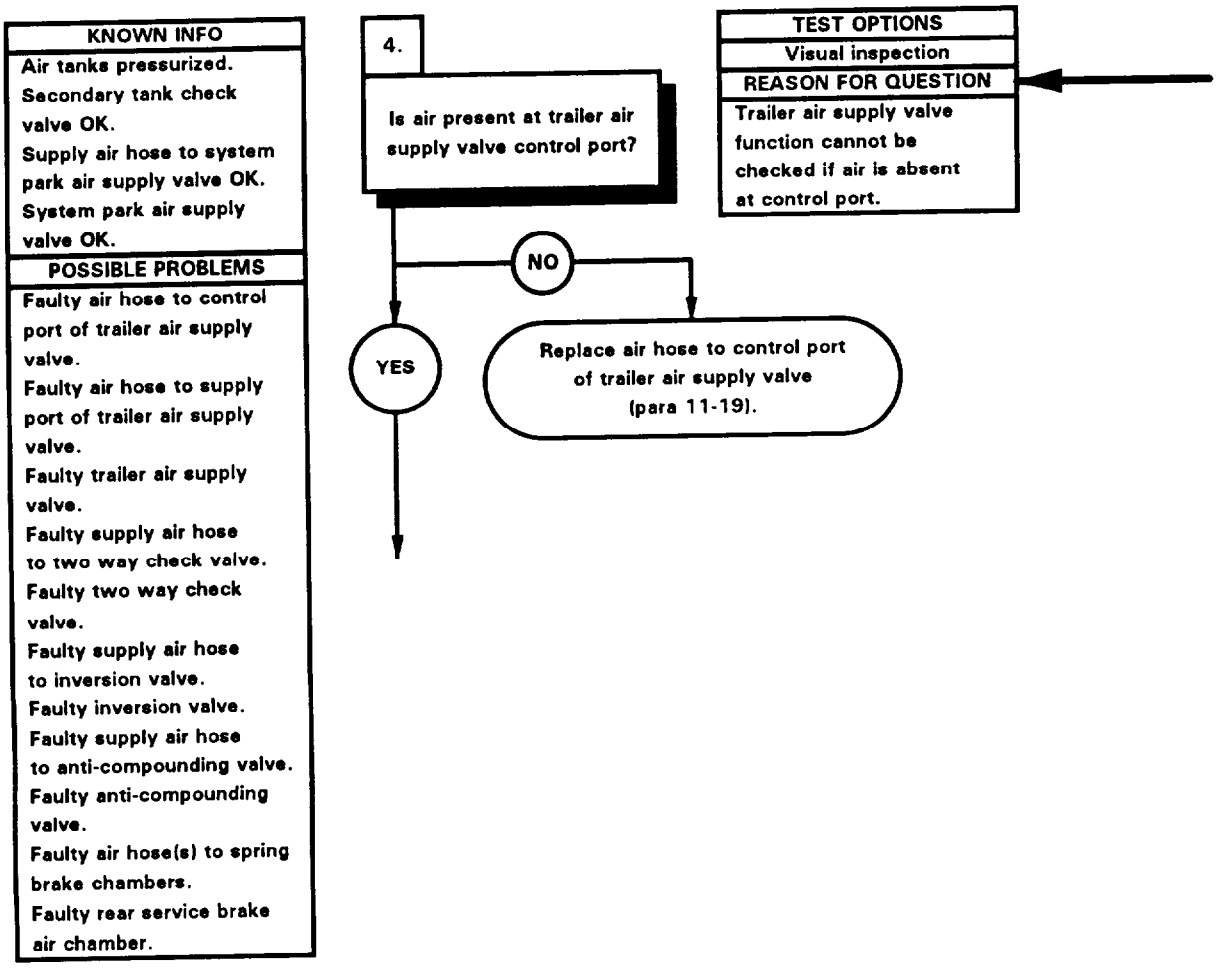
KNOWN INFO
Air tanks pressurized.
Secondary tank check valve OK.
Supply air hose to system park air supply valve OK.
POSSIBLE PROBLEMS
Faulty system park air supply valve.
Faulty air hose to control port of trailer air supply valve.
Faulty air hose to supply port of trailer air supply valve.
Faulty trailer air supply valve.
Faulty supply air hose to two way check valve.
Faulty two way check valve.
Faulty supply air hose to inversion valve.
Faulty inversion valve.
Faulty supply air hose to anti-compounding valve.
Faulty anti-compounding valve.
Faulty air hose(s) to spring brake chambers.
Faulty rear service brake air chamber.



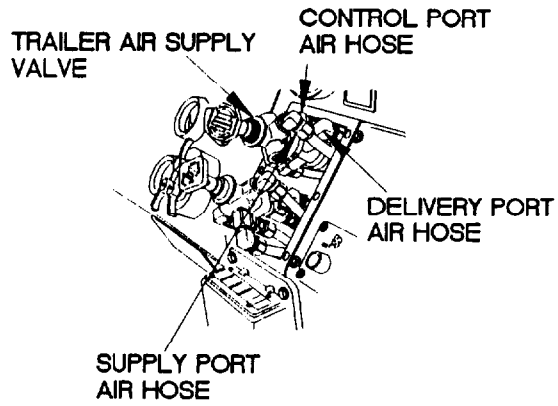
PARKING BRAKE VALVE TEST
(1) Loosen air hose at system park air supply valve delivery port.
(2) Check for presence of air from system park air supply valve.
(3) If no air escapes, replace system park air supply valve (para 11-18).
(4) Tighten system park air supply valve delivery air hose.



i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)

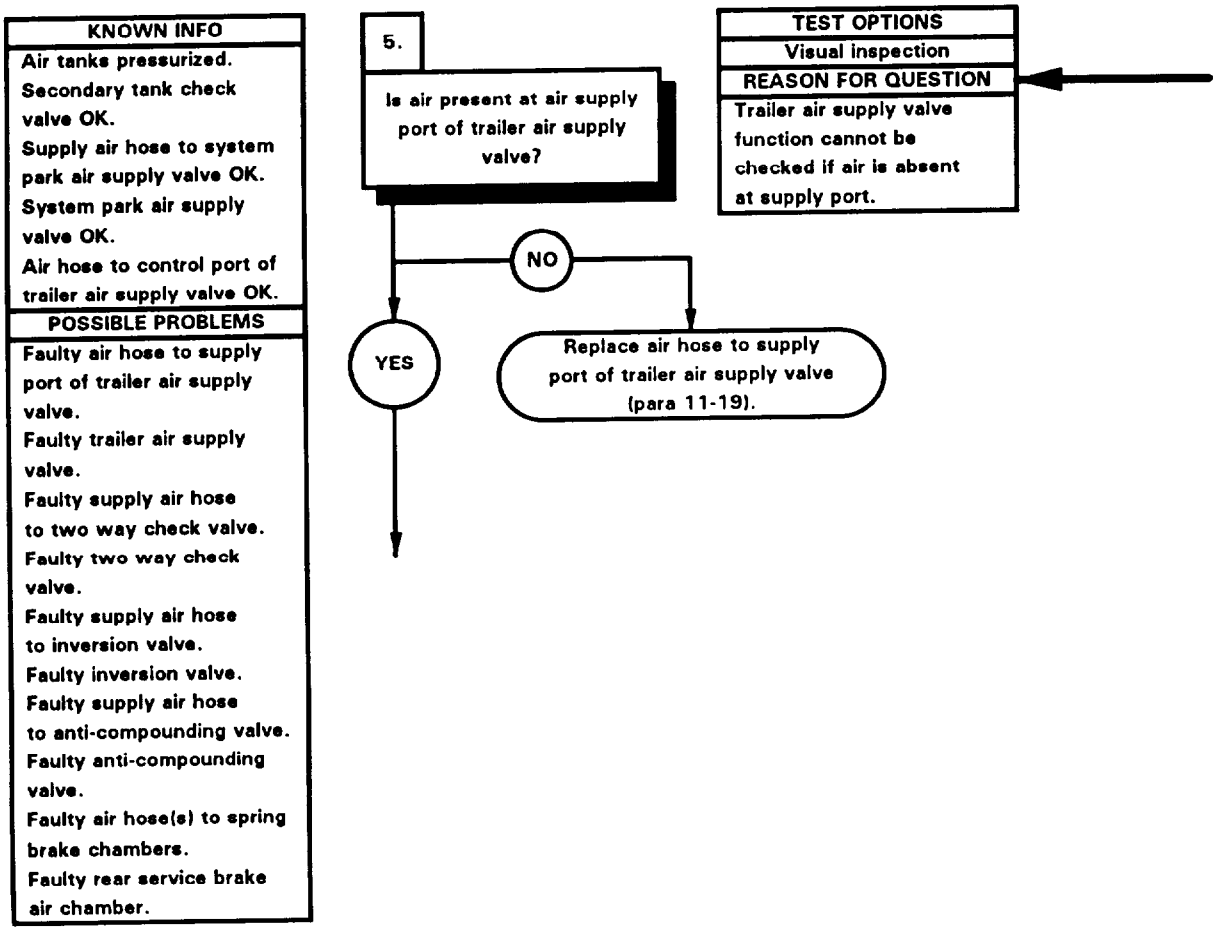


(1) Pull out trailer air supply valve.
(2) Loosen air hose at control port of trailer air supply valve.
(3) Check for presence of air at air hose.
(4) If no air escapes, replace air hose (para 11-19).
(5) Tighten air hose at control port of trailer air supply valve.

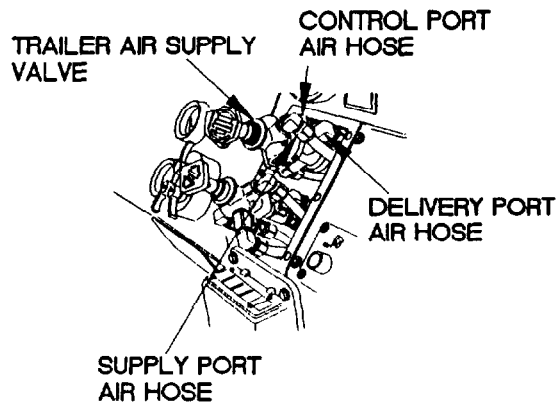


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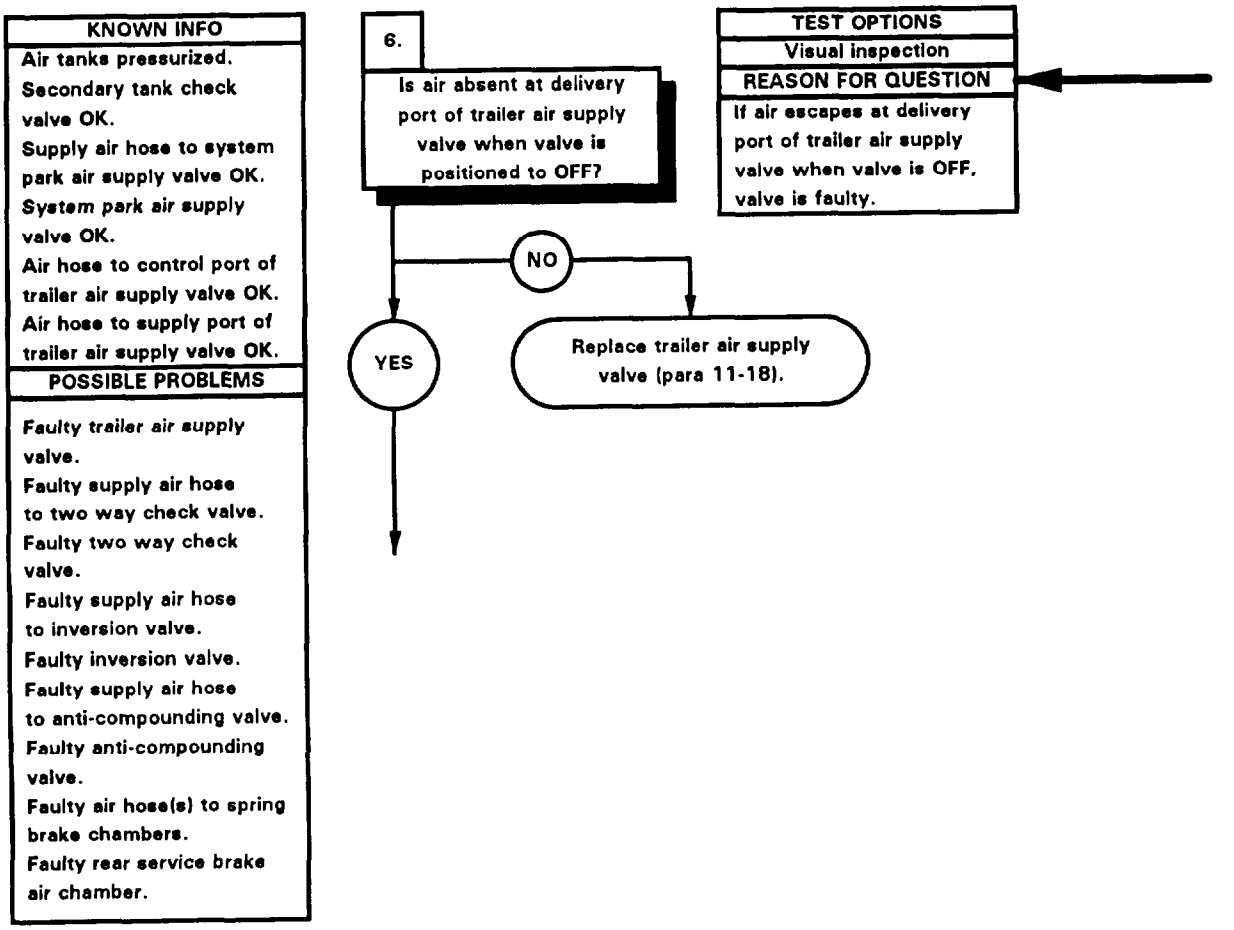
i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)



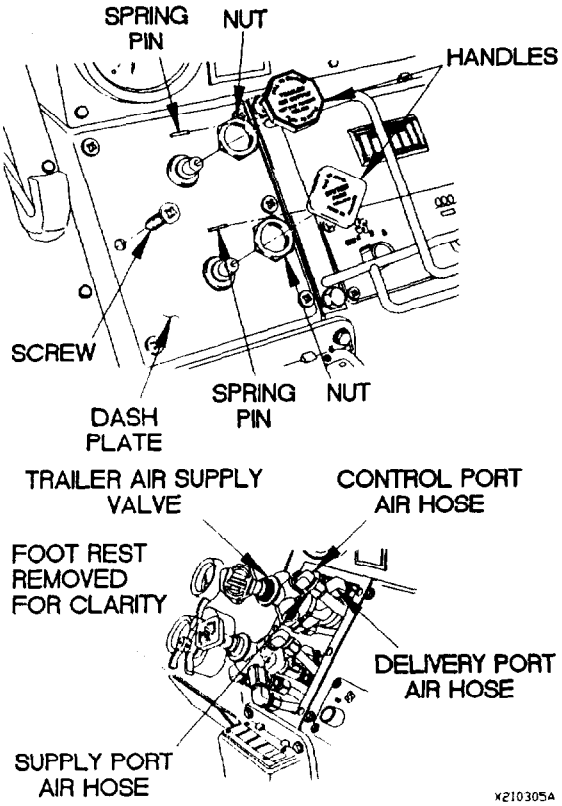
(1) Loosen air hose at supply port of trailer air supply valve.
(2) Check for presence of air at air hose.
(3) If no air escapes, replace air hose (para 11-19).
(4) Tighten air hose to supply port of trailer air supply valve.



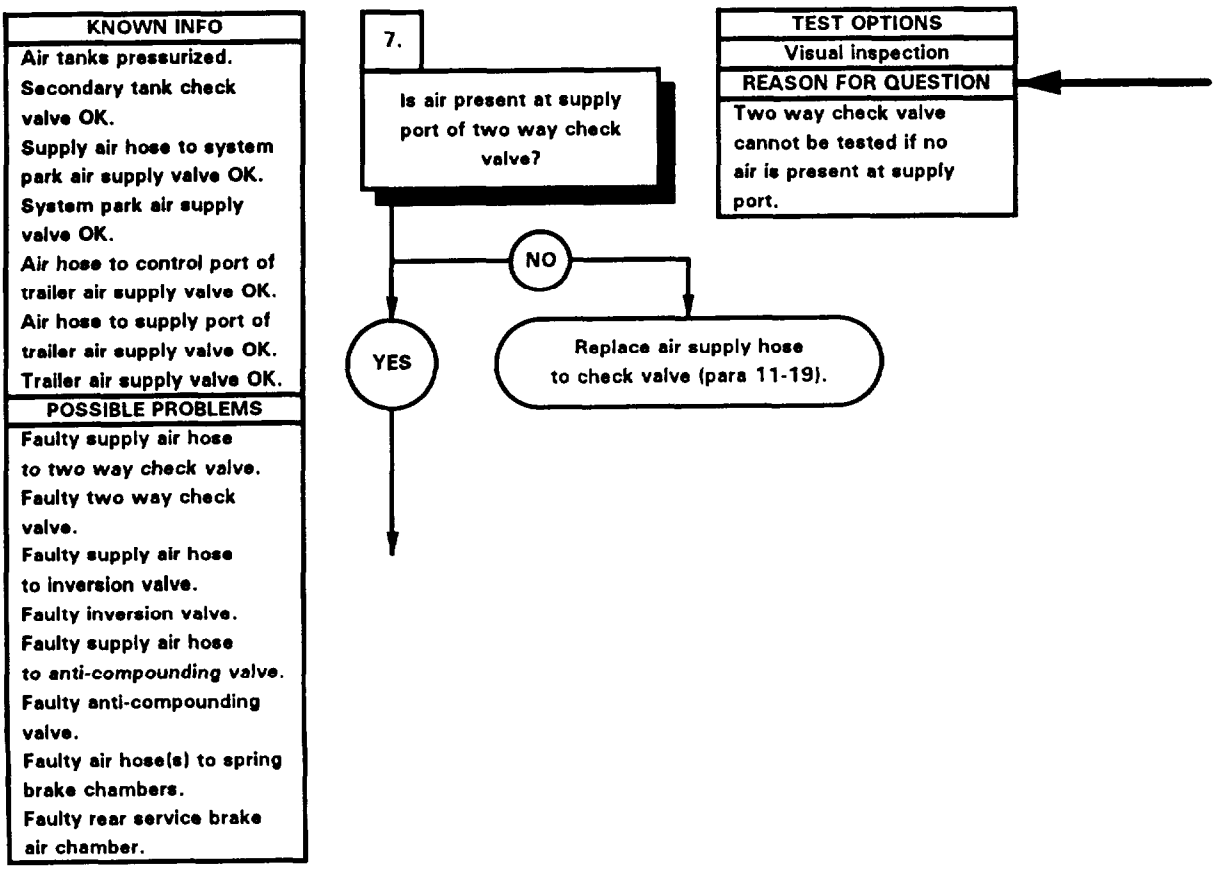
i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)



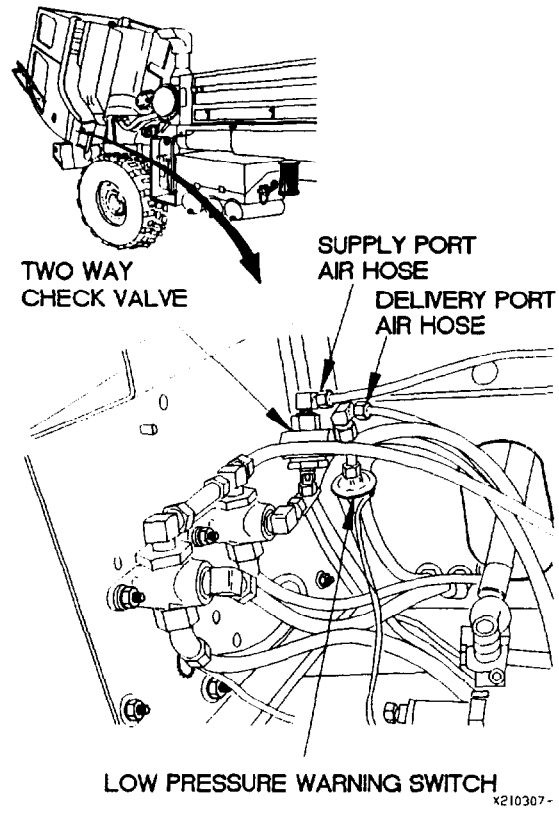
(1) Position trailer air supply valve to EXHAUST.
(2) Loosen air hose at delivery port of trailer air supply valve.
(3) Check for air escaping at port.
(4) If air escapes at delivery port, replace trailer air supply valve (para 11-18).
(5) Push system park and trailer air supply valves back into dash housing.
(6) Replace dash plate over valve stems and attach with six screws.
(7) Tighten locknuts onto valve stems at dash plate.
(8) Replace system park and trailer air supply valve handles.
(9) Secure handles with new spring pins.



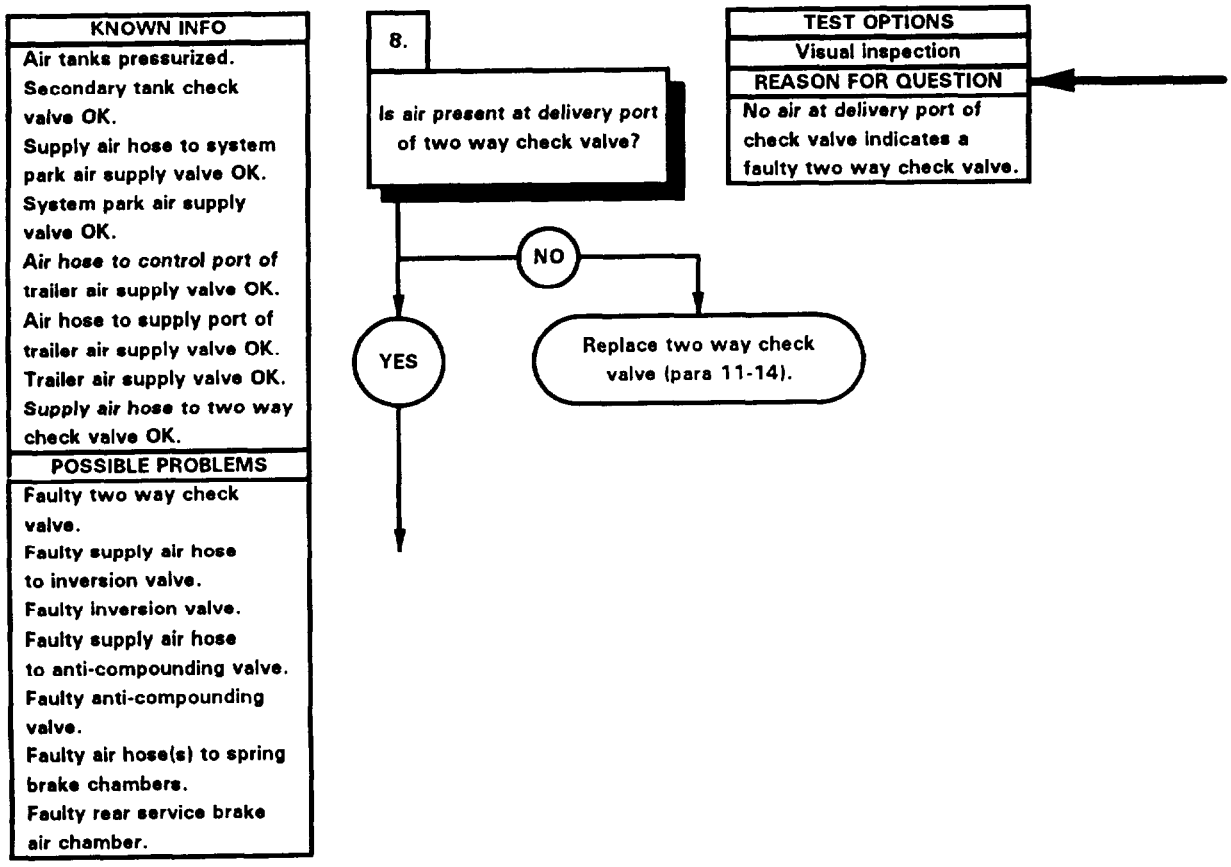
i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)



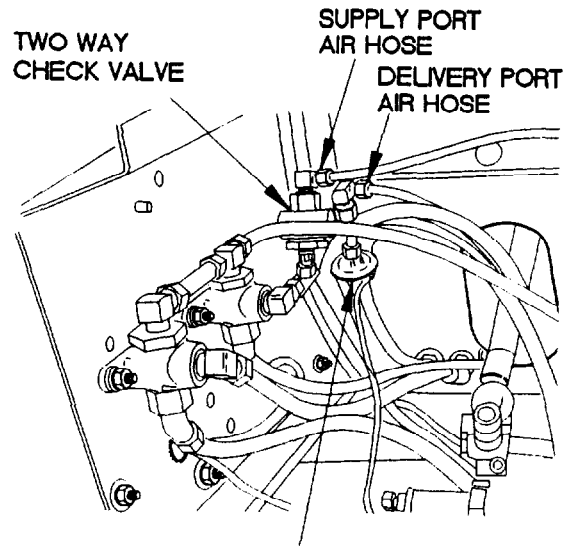
(1) Raise cab (TM 9-2320-365-10).
(2) Loosen air hose at supply port of two way check valve.
(3) Check air hose for presence of air.
(4) If not air escapes, replace air hose (para 11-19).
(5) Tighten air hose at two way check valve supply port.



i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)

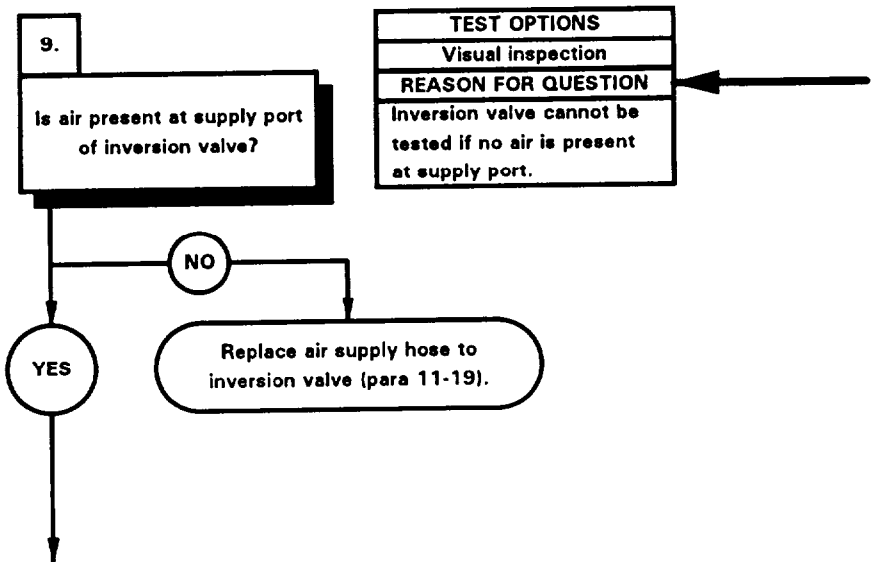


(1) Loosen air hose at delivery port of two way check valve.
(2) Check two way check valve for presence of air.
(3) If no air escapes, replace two way check valve (para 11-14).
(4) Tighten air hose at two way check valve delivery port.
(5) Lower cab (TM 9-2320-365-10).

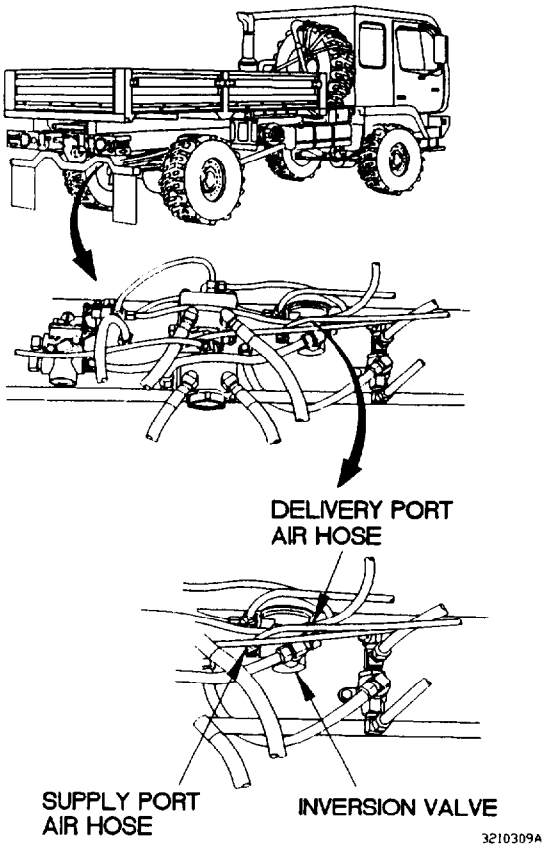


i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)

KNOWN INFO
Air tanks pressurized. Secondary tank check valve OK. Supply air hose to system park air supply valve OK. System park air supply valve OK. Air hose to control port of trailer air supply valve OK. Air hose to supply port of trailer air supply valve OK. Trailer air supply valve OK. Supply air hose to two way check valve OK. Two way check valve OK.
POSSIBLE PROBLEMS
Faulty supply air hose to inversion valve. Faulty inversion valve. Faulty supply air hose to anti-compounding valve. Faulty anti-compounding valve. Faulty air hose(s) to spring brake chambers. Faulty rear service brake air chamber.

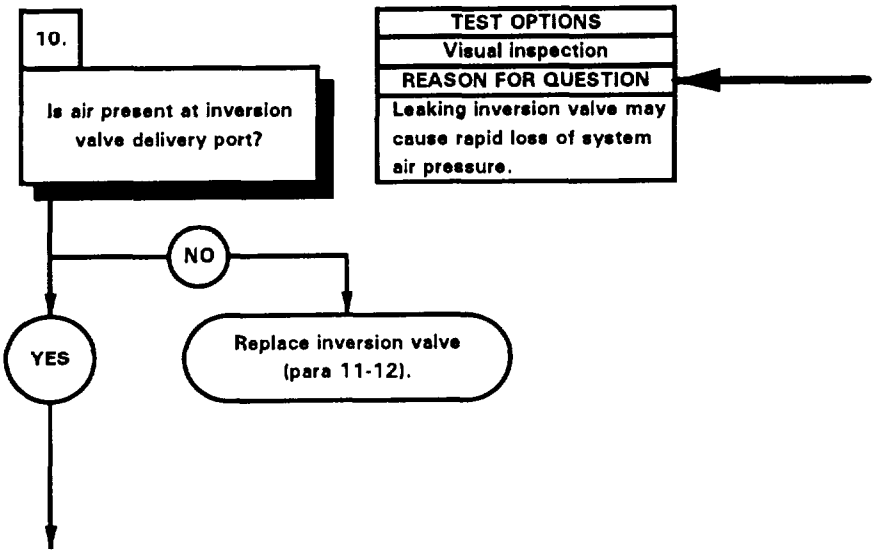


(1) Loosen air hose at inversion valve supply port.
(2) Check air hose for presence of air.
(3) If no air escapes, replace air hose (para 11-19).
(4) Tighten air hose at inversion valve supply port.

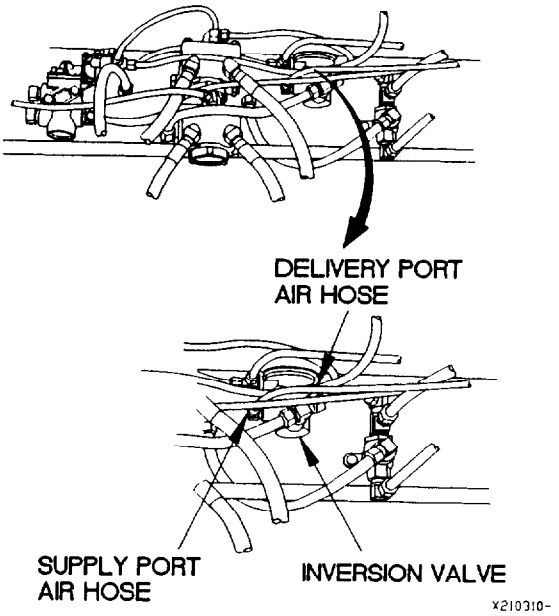


i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)

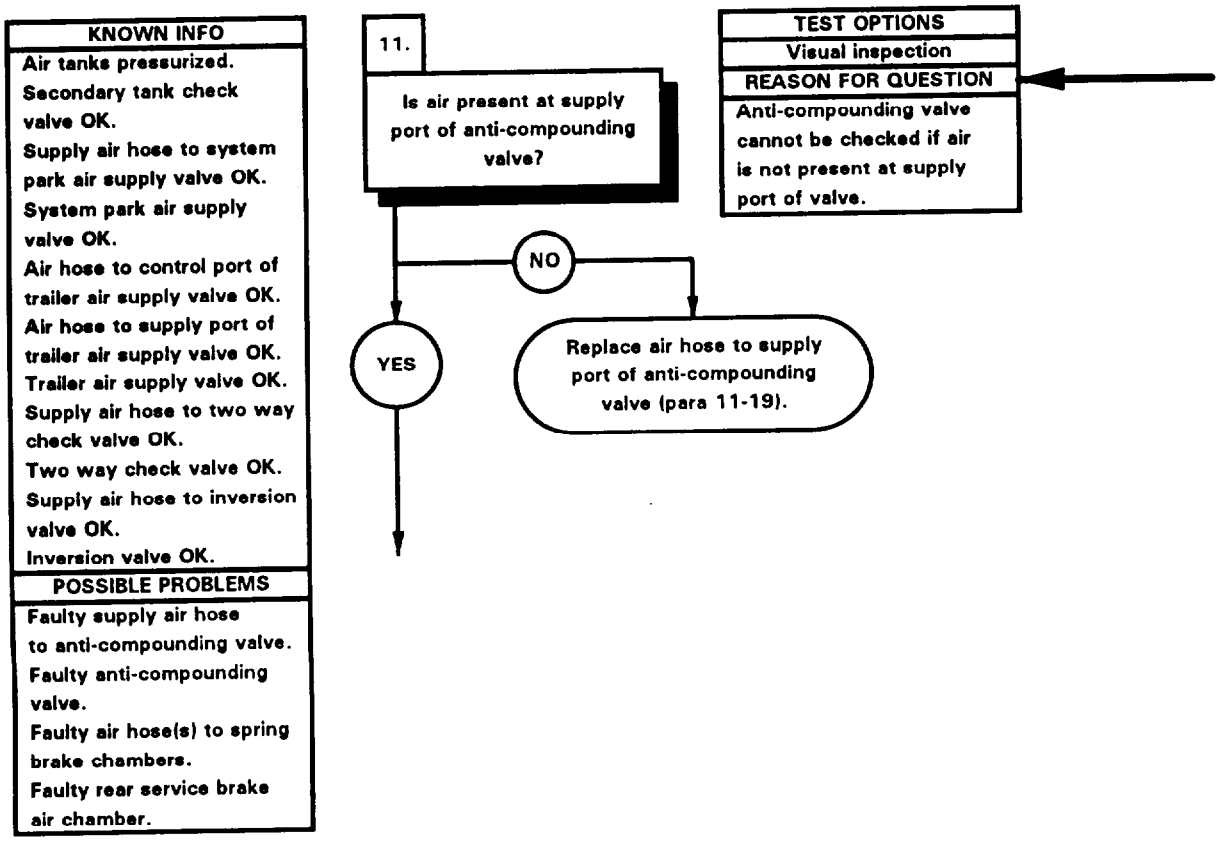
KNOWN INFO
Air tanks pressurized.
Secondary tank check valve OK.
Supply air hose to system park air supply valve OK.
System park air supply valve OK.
Air hose to control port of trailer air supply valve OK.
Air hose to supply port of trailer air supply valve OK.
Trailer air supply valve OK.
Supply air hose to two way check valve OK.
Two way check valve OK.
Supply air hose to inversion valve OK.
POSSIBLE PROBLEMS
Faulty inversion valve.
Faulty supply air hose to anti-compounding valve.
Faulty anti-compounding valve.
Faulty air hose(s) to spring brake chambers.
Faulty rear service brake air chamber.



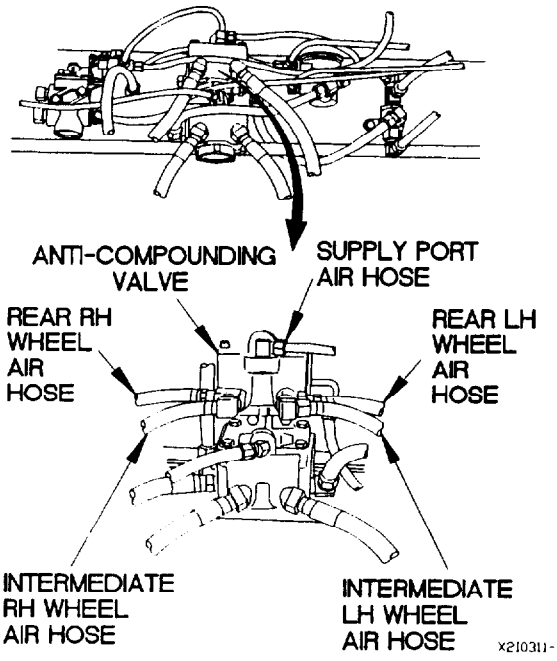
(1) Loosen air hose at inversion valve delivery port.
(2) Check delivery port for presence of air.
(3) If no air escapes, replace inversion valve (para 11-12).
(4) Tighten air hose at inversion valve delivery port.



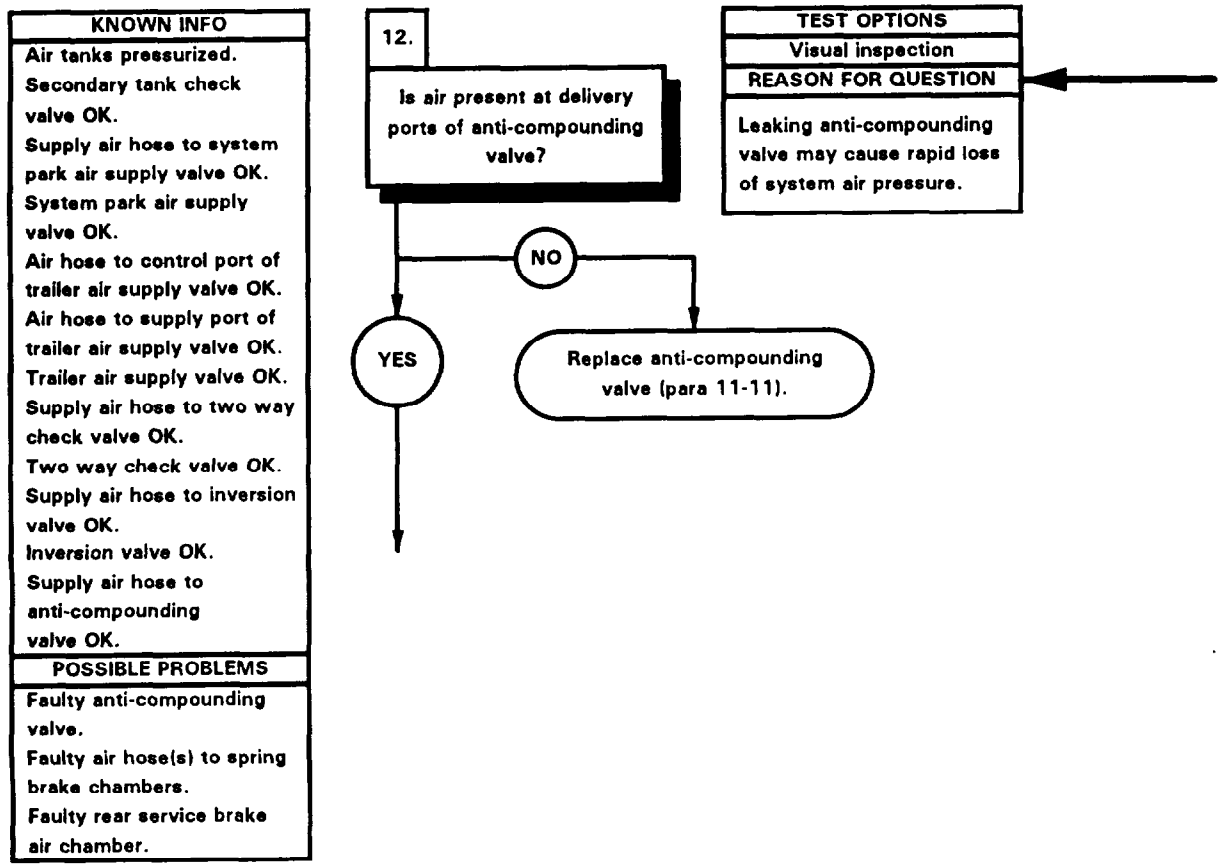
i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)



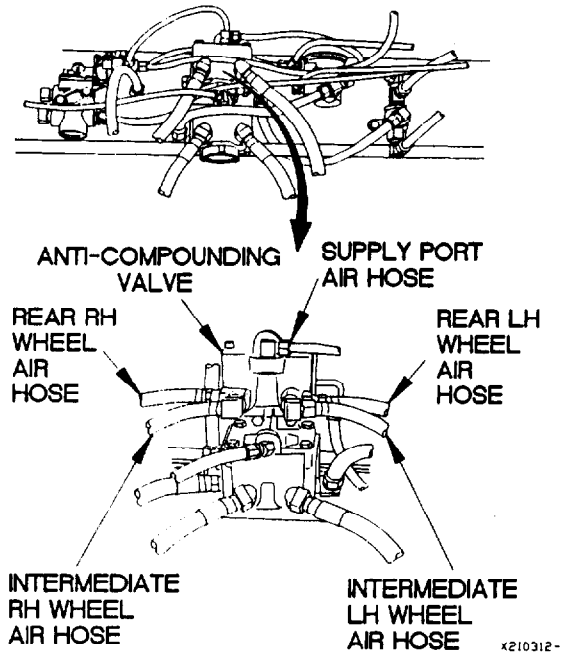
(1) Loosen air hose at supply port of anti-compounding valve.
(2) Check air hose for presence of air.
(3) If no air escapes, replace air hose (para 11-19).
(4) Tighten air hose at anti-compounding valve supply port.



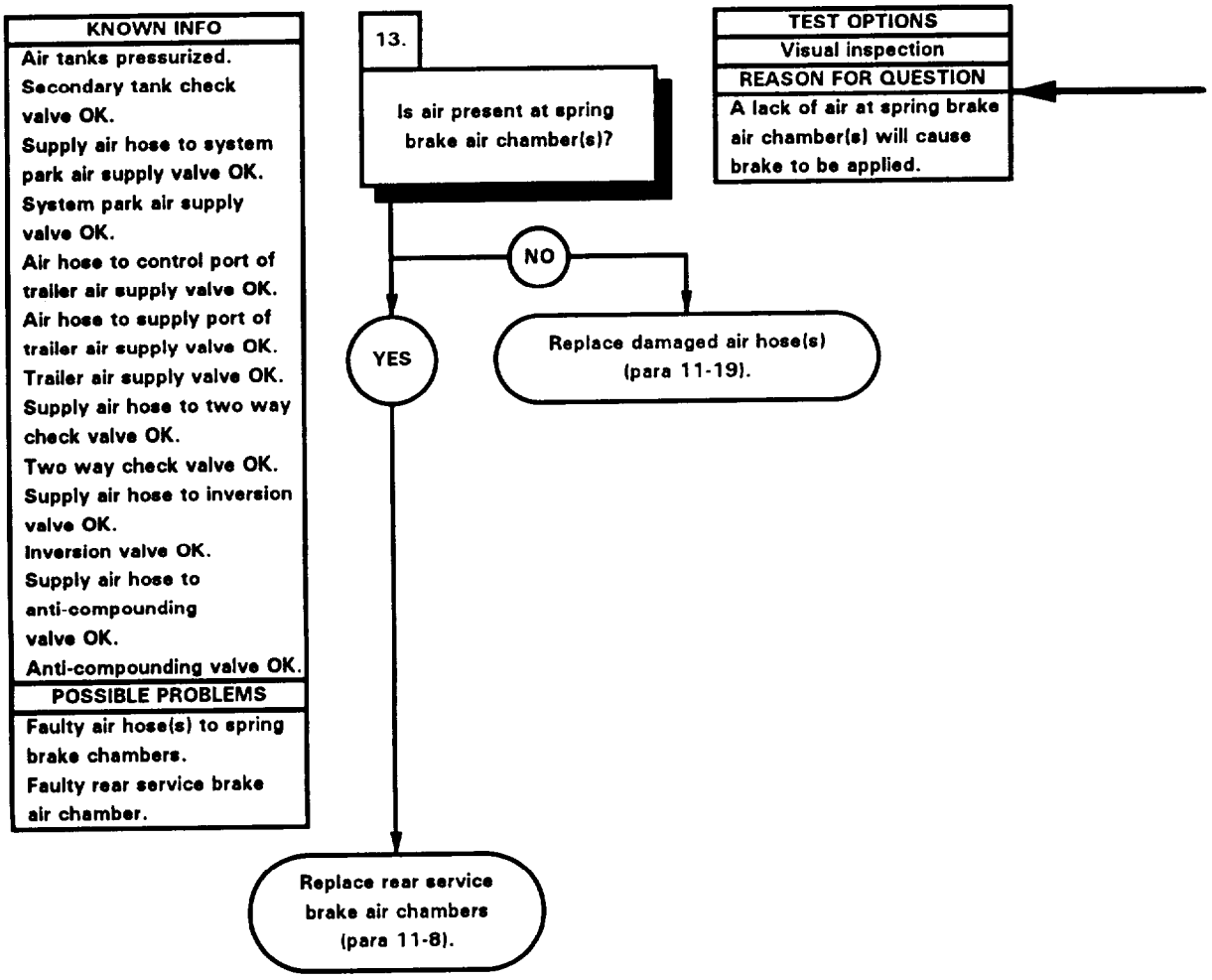
i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)



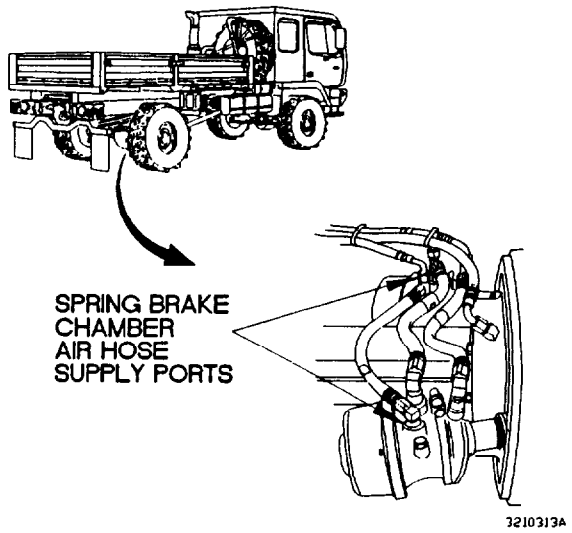
(1) Loosen air delivery hoses at anti-compounding valve and check for presence of air.
(2) If air does not escape from delivery ports, replace anti-compounding valve (para 11-11).
(3) Tighten air delivery hoses at anti-compounding valve.



i3. PARKING BRAKE(S) WILL NOT RELEASE (CONT)



(1) Loosen air hoses at each spring brake chamber and check for presence of air.
(3) If no air is present, replace air hose (para 11-19).
(4) Tighten air hoses on spring brake chambers.
(5) Apply parking brake.
(6) Shut down engine (TM 9-2320-365-10).



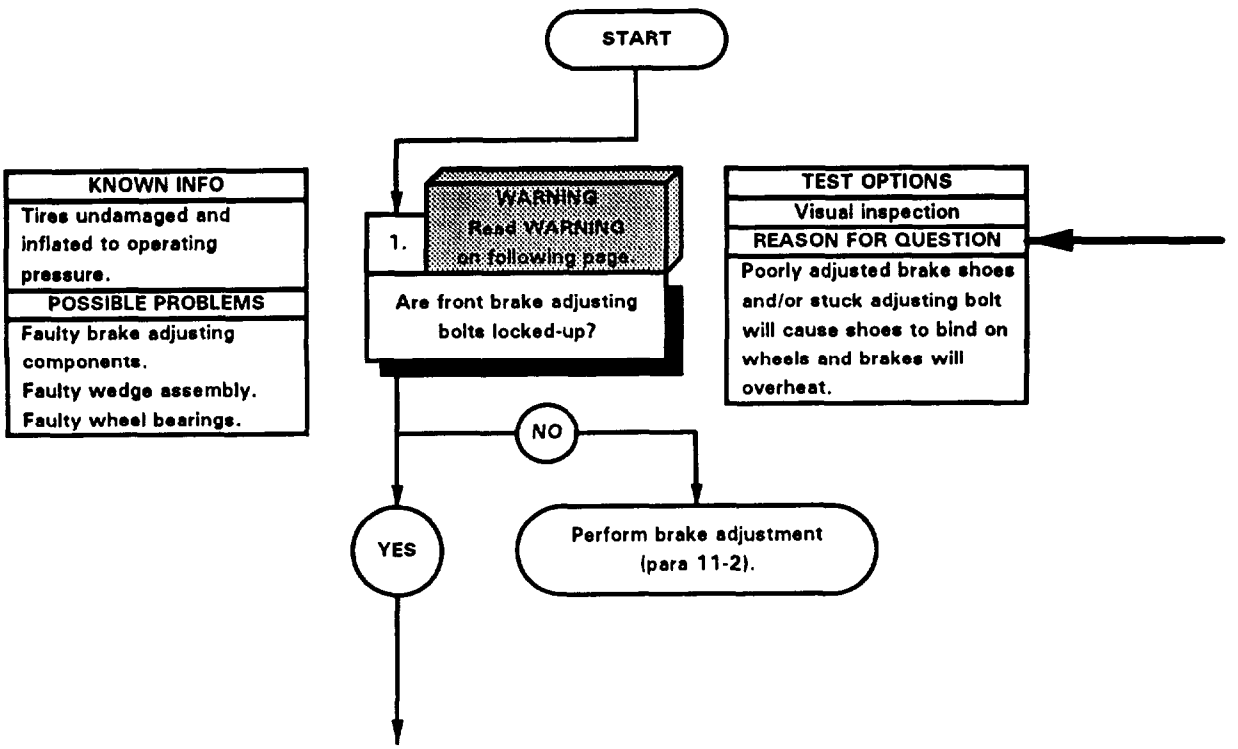
i4. FRONT BRAKES OVERHEAT

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

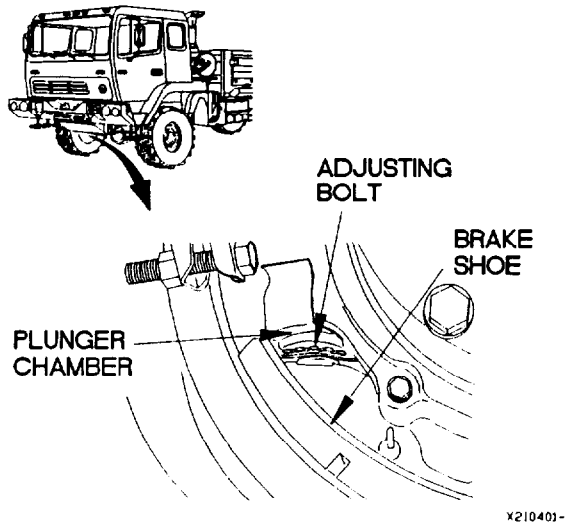
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Trestle, Motor Vehicle Maintenance (2) (Item 45, Appendix C)
Adjusting Tool, Brake Shoe (Item 2, Appendix C)



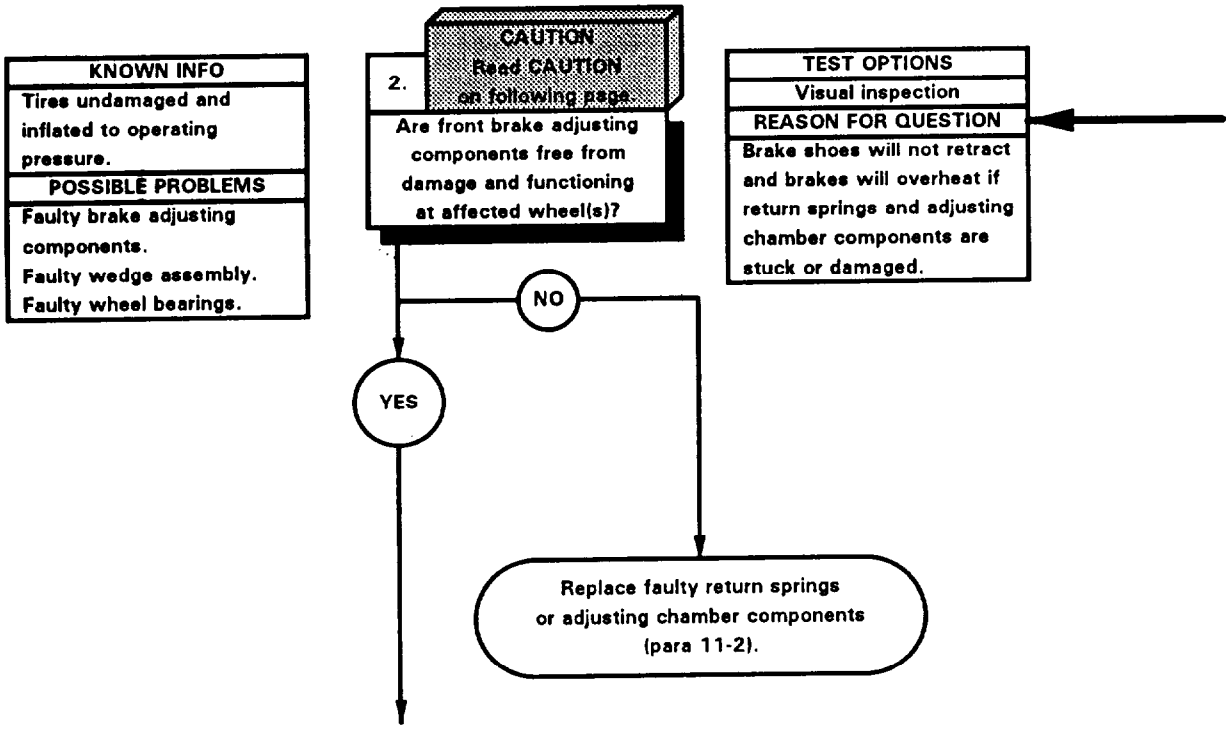
WARNING

Overheated brakes can cause severe burns. Perform task only when brakes have cooled. Failure to comply may result in injury to personnel.

(1) Jack up axle with overheated brakes, and support with trestle stands.
(2) Turn adjusting bolt clockwise with adjusting tool. If bolt will not turn or if brake shoes do not move away from wheel when adjuster is turned, adjust brakes (para 11-2).



i4. FRONT BRAKES OVERHEAT (CONT)

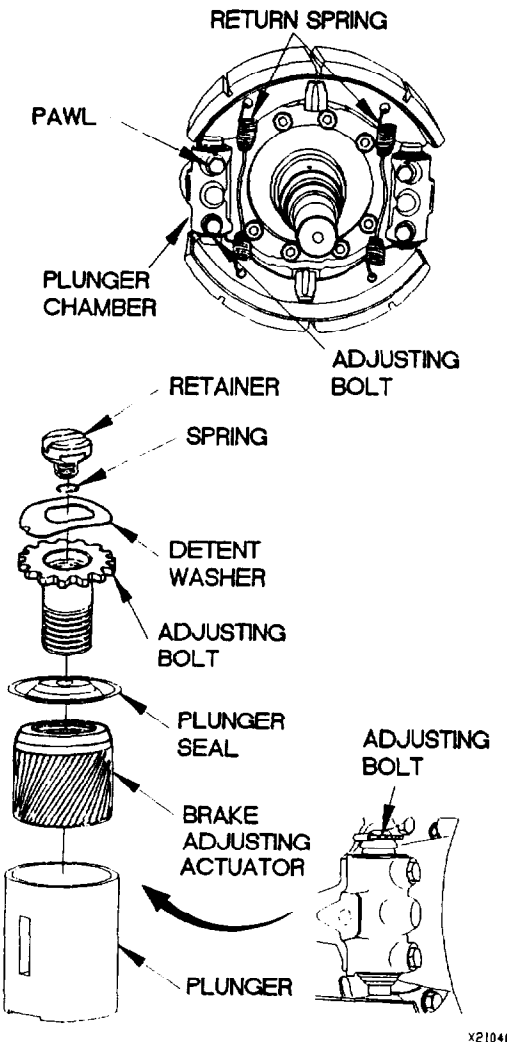


(1) Remove wheel(s) with affected brakes, and disassemble brake components (para 11-2).
(2) Inspect return springs for stretching, bluing, damage or breakage. If spring(s) is damaged, replace spring(s) (para 11-2).
(3) Check adjusting pawl spring for damage. Ensure spring is not missing or broken.
(4) Check adjusting pawl teeth for damage and abrasion.
(5) Ensure seal elements are not damaged or broken.

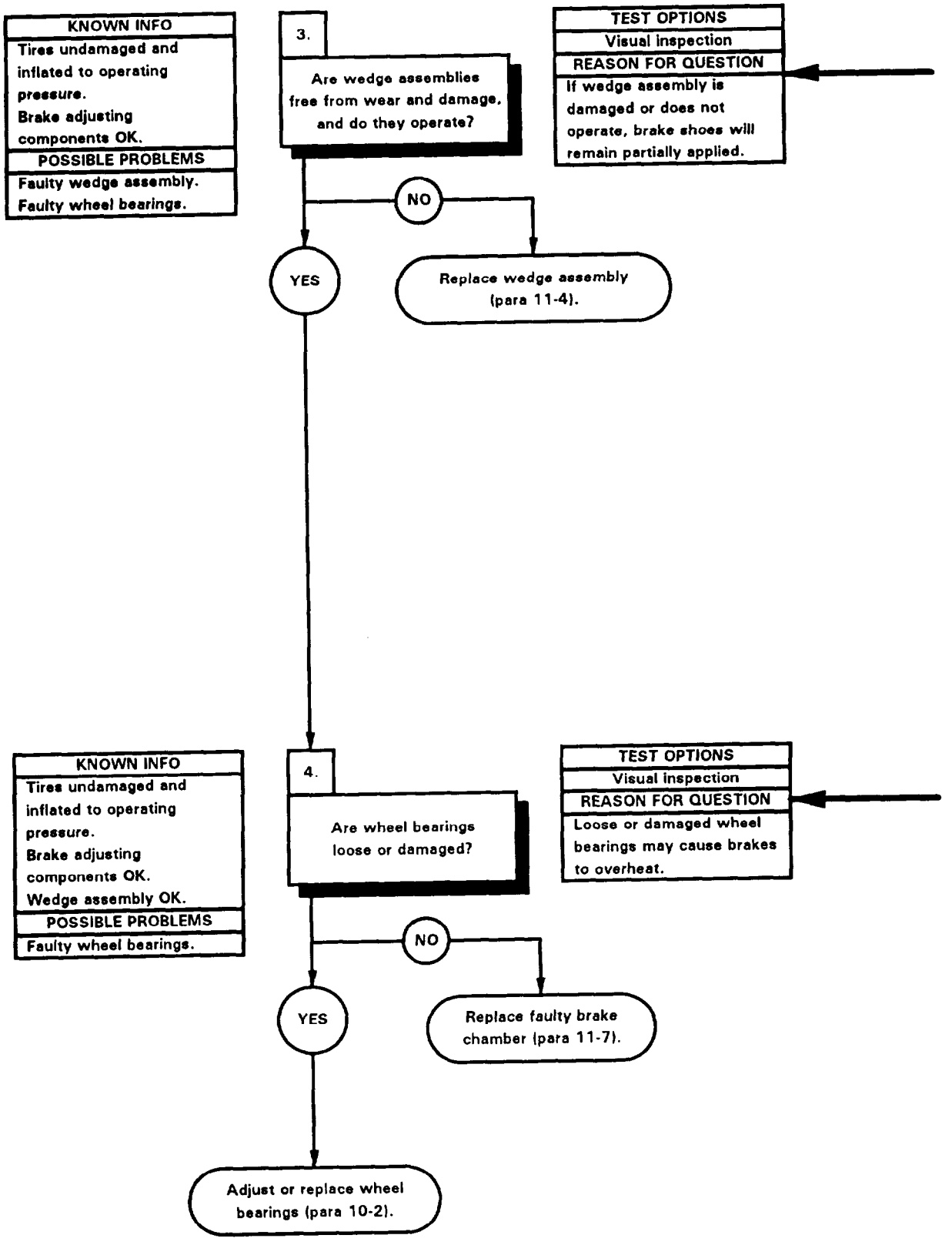
CAUTION

Ensure seal is free from damage. Failure to comply may result in dirt entering plunger chamber and interfering with adjustment.

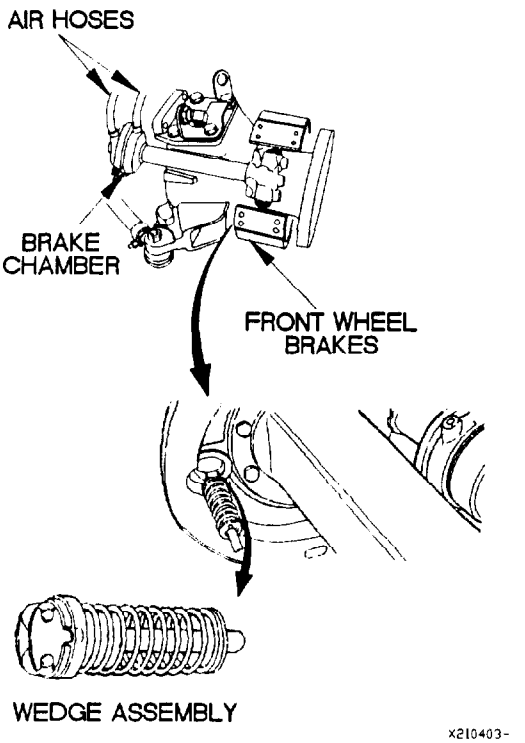
(6) Check actuator teeth for damage.
(7) Check plunger for freedom of movement inside plunger housing.



i4. FRONT BRAKES OVERHEAT (CONT)

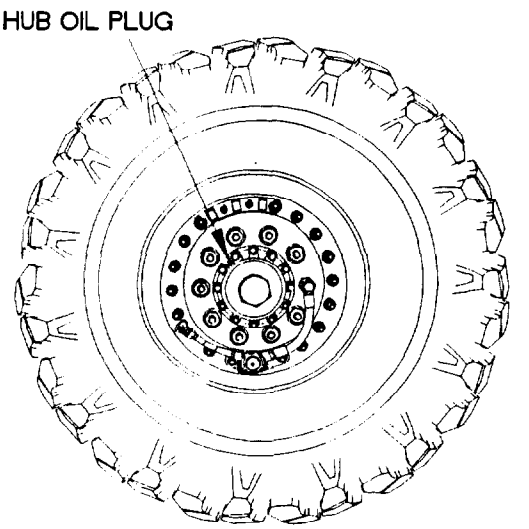


(1) Disconnect and tag air hoses to brake chambers at wheel.
(2) Unscrew brake chamber(s) from hub and remove wedge assembly from wheel (para 11-4).
(3) Inspect wedge spring for damage.
(4) Inspect rollers for flattening or damage.
(5) Manually check operation of wedge assembly in plunger chamber.
(6) Install wedge assembly and brake chamber (para 11-4).
(7) Install front wheel brake components and adjust brakes (para 11-2).



X210403-

(1) Install wheel(s) (TM 9-2320-365-10).
(2) Rotate affected wheel by hand and listen for loose or damaged bearings. If wheel makes grinding sound during rotation, replace wheel bearings (para 10-2).
(3) Grasp wheel on opposite sides top and bottom and pull in and out. If wheel has excessive play on the axle, replace wheel bearings (para 10-2).
(4) Check wheel hub oil level (Appendix H). If oil level is low, replace wheel bearings (para 10-2).
(5) Lower wheels to ground and remove trestle stands.



X210404-

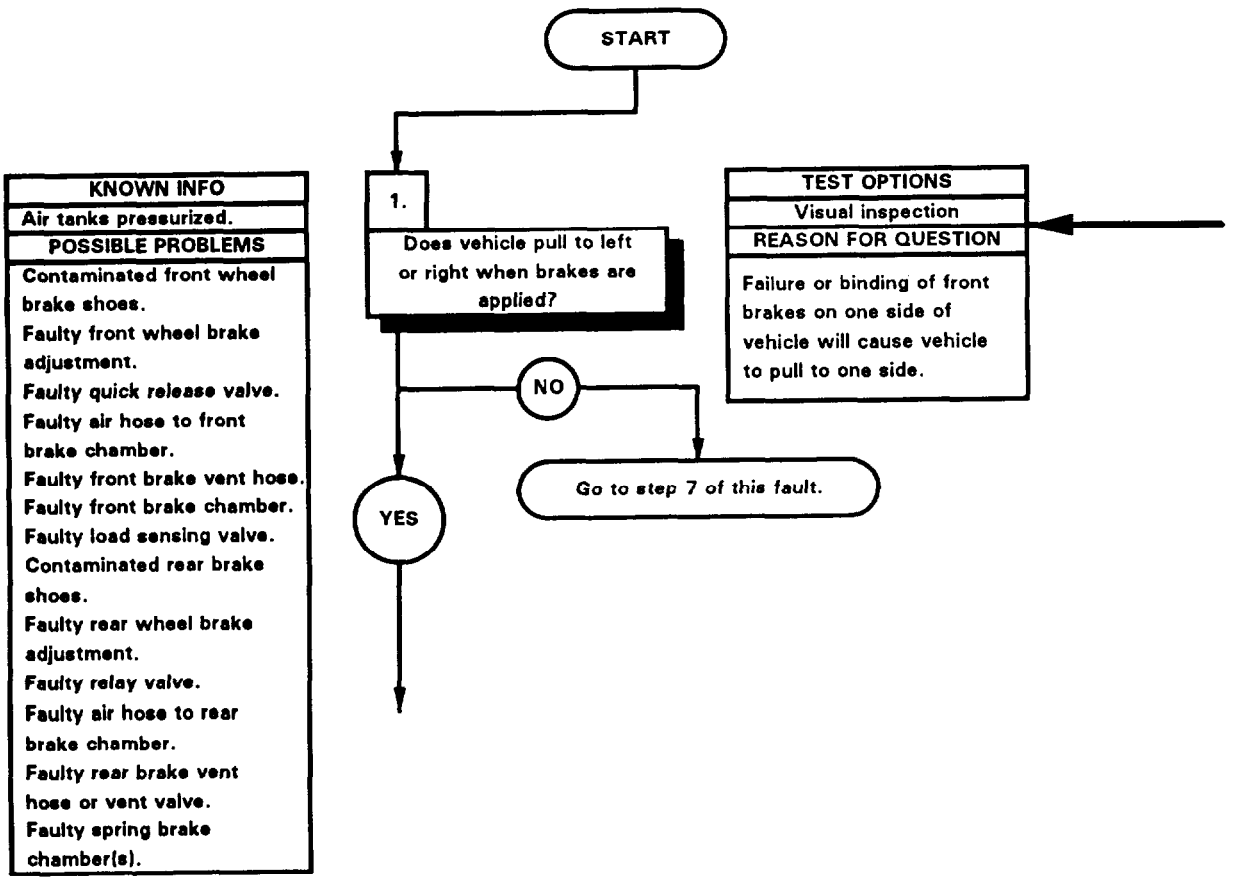
i5. VEHICLE BRAKES UNEVENLY, BRAKES PULL TO ONE SIDE OR GRAB

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

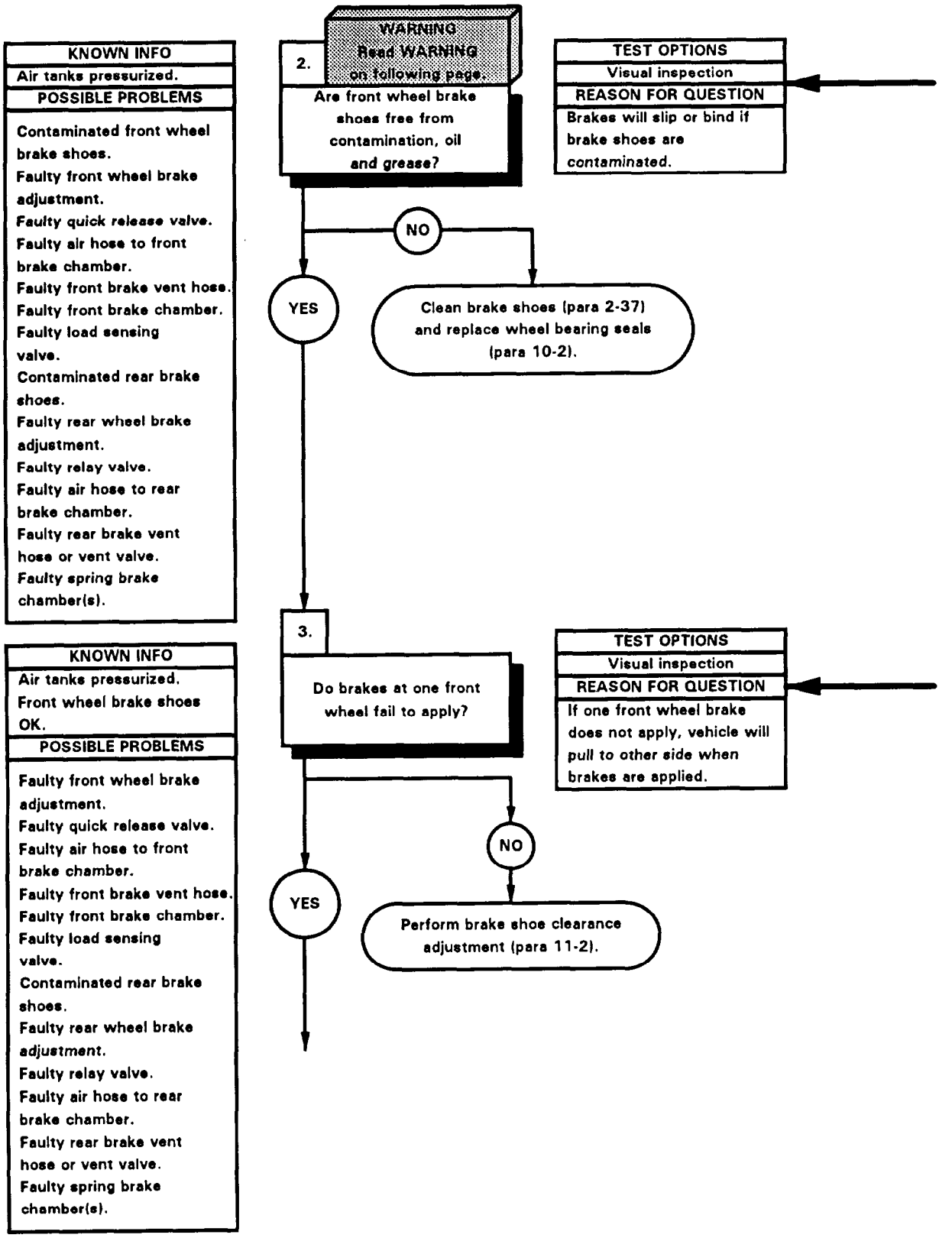
Personnel Required
(2)

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Trestle, Motor Vehicle Maintenance (2) (Item 45, Appendix C)
Wrench, Torque, 0-175 lb-ft (Item 57, Appendix C)



(1) Start engine (TM 9-2320-365-10).
(2) Test drive unloaded vehicle and apply brakes.
(3) Note response of brakes at each wheel.
(4) If vehicle pulls to one side when brakes are applied, front brakes are faulty.
(5) If all rear wheels lock up before front wheels, load sensing valve may need adjustment or is faulty.
(6) If individual rear wheels lock up or drag, individual rear wheel brakes may need adjustment.

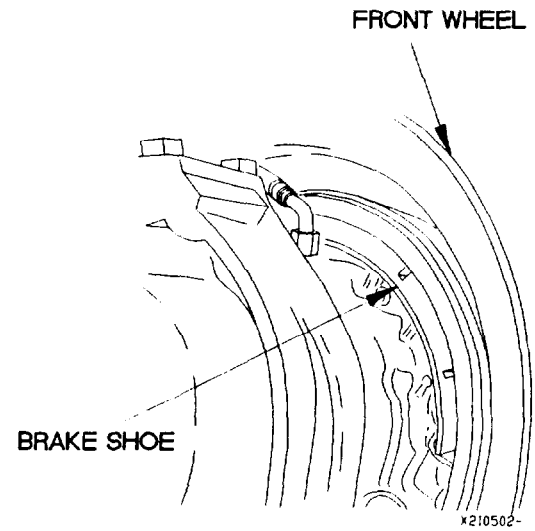
i5. VEHICLE BRAKES UNEVENLY, BRAKES PULLS TO ONE SIDE OR GRAB (CONT)



WARNING

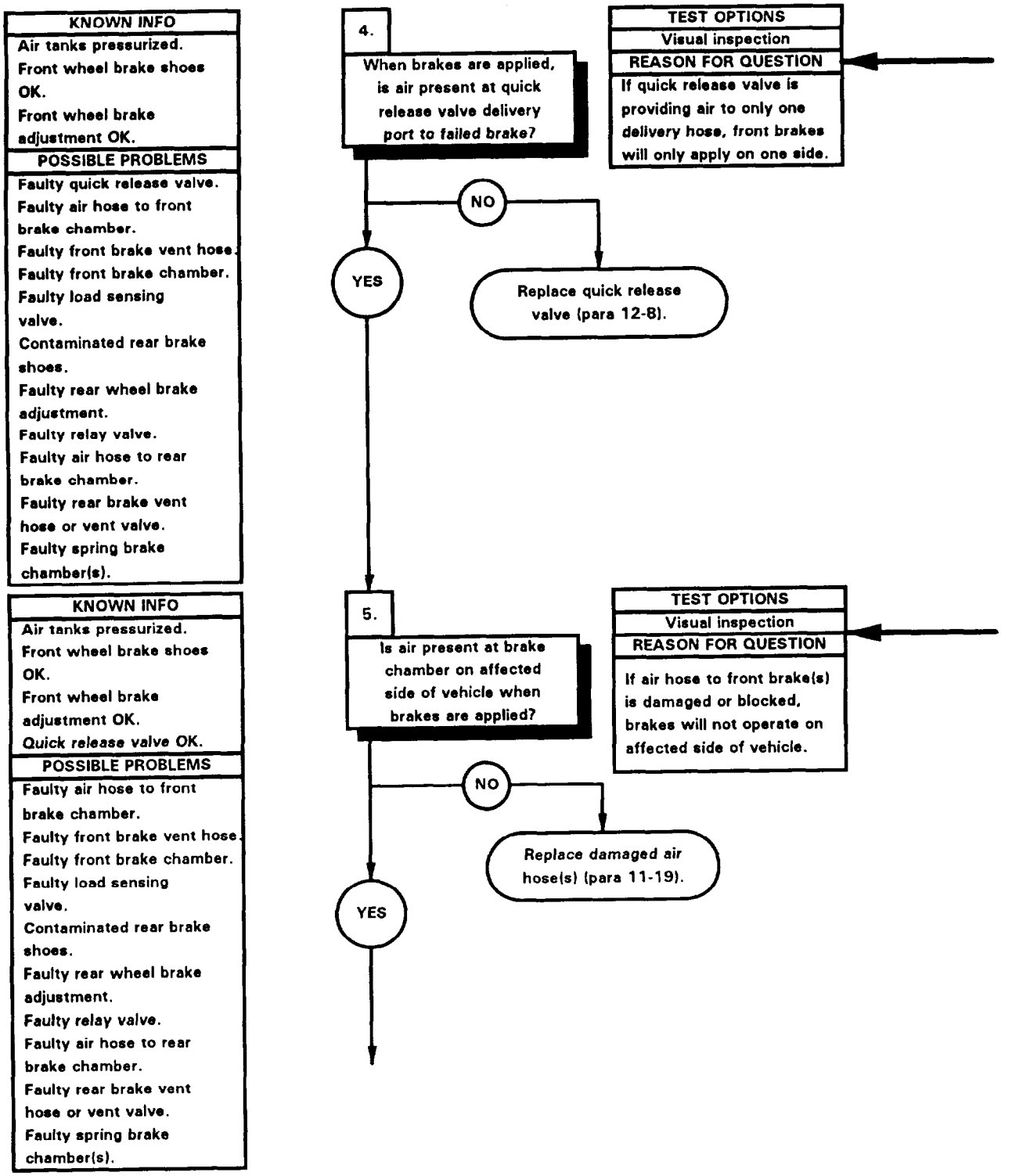
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

(1) Jack up axle of front wheels and support with trestle stands.
(2) Rotate wheel and check for contamination, oil or grease at brake shoe linings.
(3) If oil contamination is present replace wheel bearing seals (para 10-2).

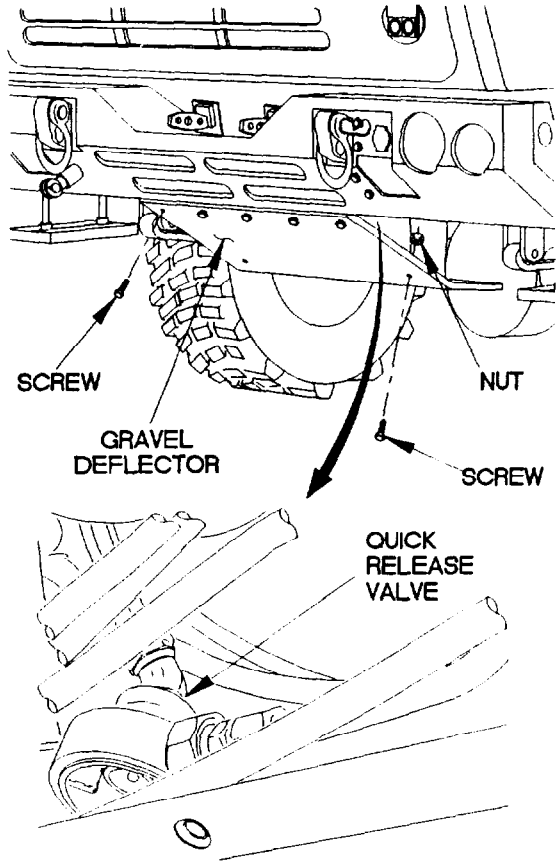


(1) Apply brakes and observe operation of brake shoes at both front wheels.
(2) If brake shoes fail to apply on one side, brake air delivery system or brake chamber is faulty on that side.
(3) If both wheel brakes apply, adjust brake shoe clearance (para 11-2).
(4) Rotate wheel on affected side by hand and check if wheel grabs or is hard to turn.
(5) If wheel resists turning by hand, adjust brake shoe clearance (para 11-2).

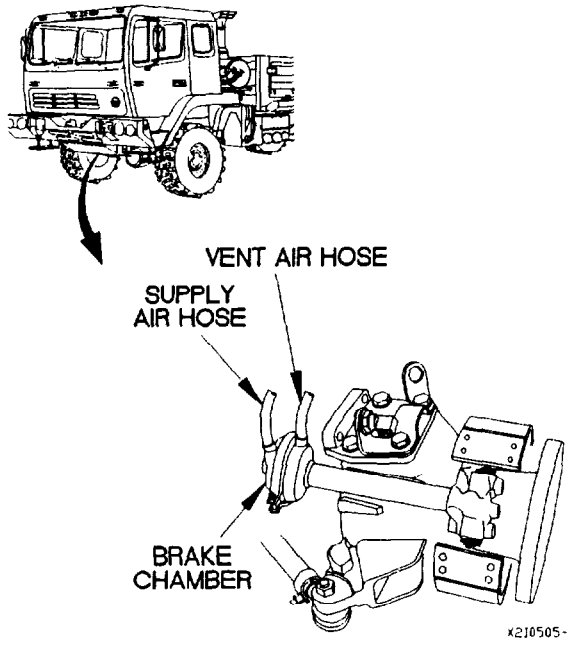
i5. VEHICLE BRAKES UNEVENLY, BRAKES PULLS TO ONE SIDE OR GRAB (CONT)



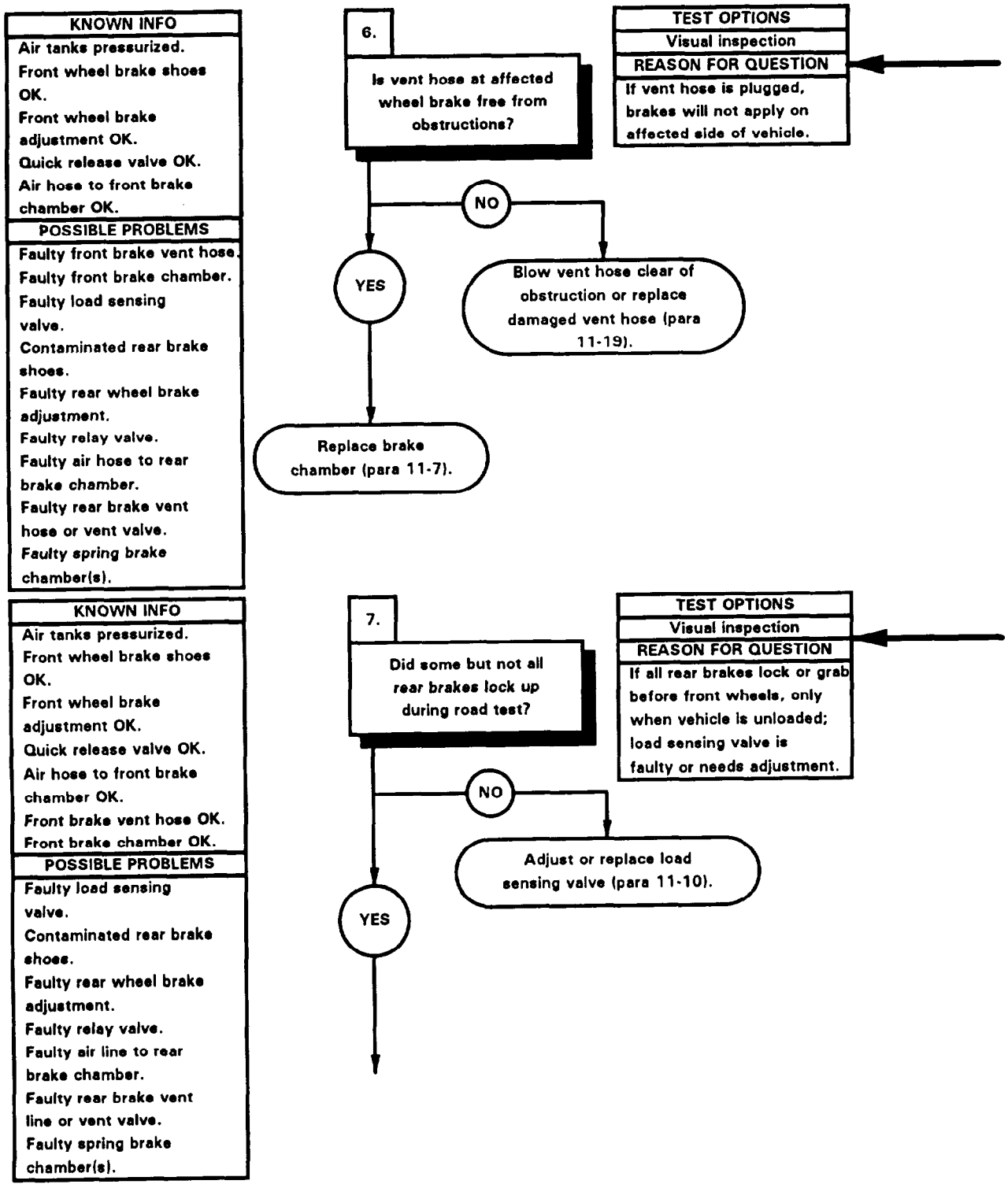
(1) Remove five screws from top edge of gravel deflector.
(2) Remove five screws and self-locking nuts from bottom edge of gravel deflector. Discard self-locking nuts.
(3) Loosen air delivery line on affected side of quick release valve.
(4) Apply brakes.
(5) Check for presence of air at delivery port when brake is applied.
(6) If air does not escape at delivery port for affected side, quick release valve is faulty.
(7) Tighten air delivery line at quick release valve.
(8) Position five screws to top edge of gravel deflector.
(9) Tighten five screws to 42-52 lb-ft (59-71 N·m).
(10) Position five screws and self-locking nuts to lower edge of gravel deflector.
(11) Tighten five self-locking nuts to 75-93 lb-ft (103-127 N·m).



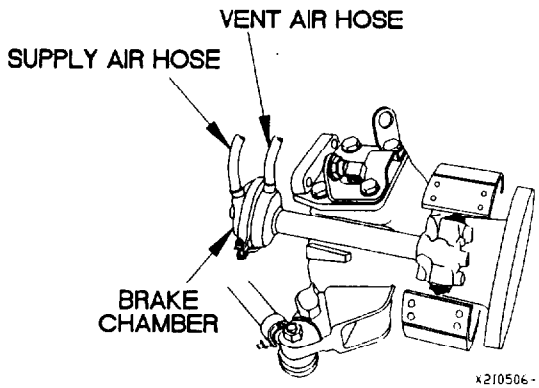
(1) Loosen supply air hose(s) at brake chamber(s).
(2) Apply brakes.
(3) Check for air escaping at supply air hose(s) when brakes are applied.
(4) Tighten supply air hose(s) at brake chamber(s).



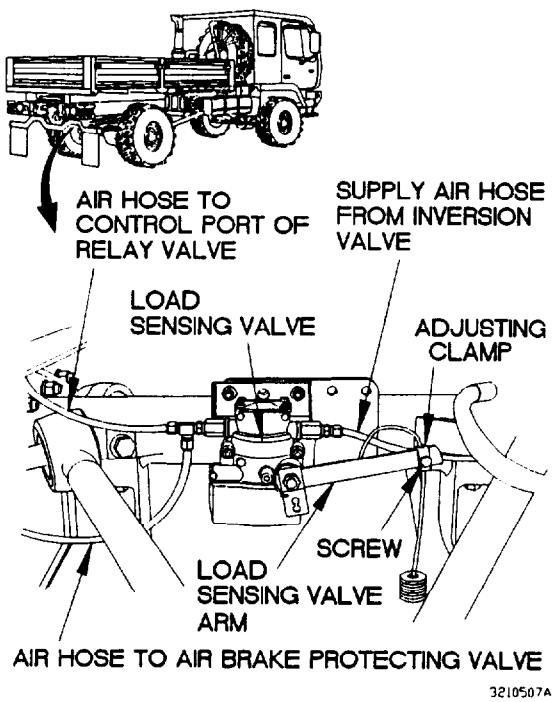
i5. VEHICLE BRAKES UNEVENLY, BRAKES PULLS TO ONE SIDE OR GRAB (CONT)



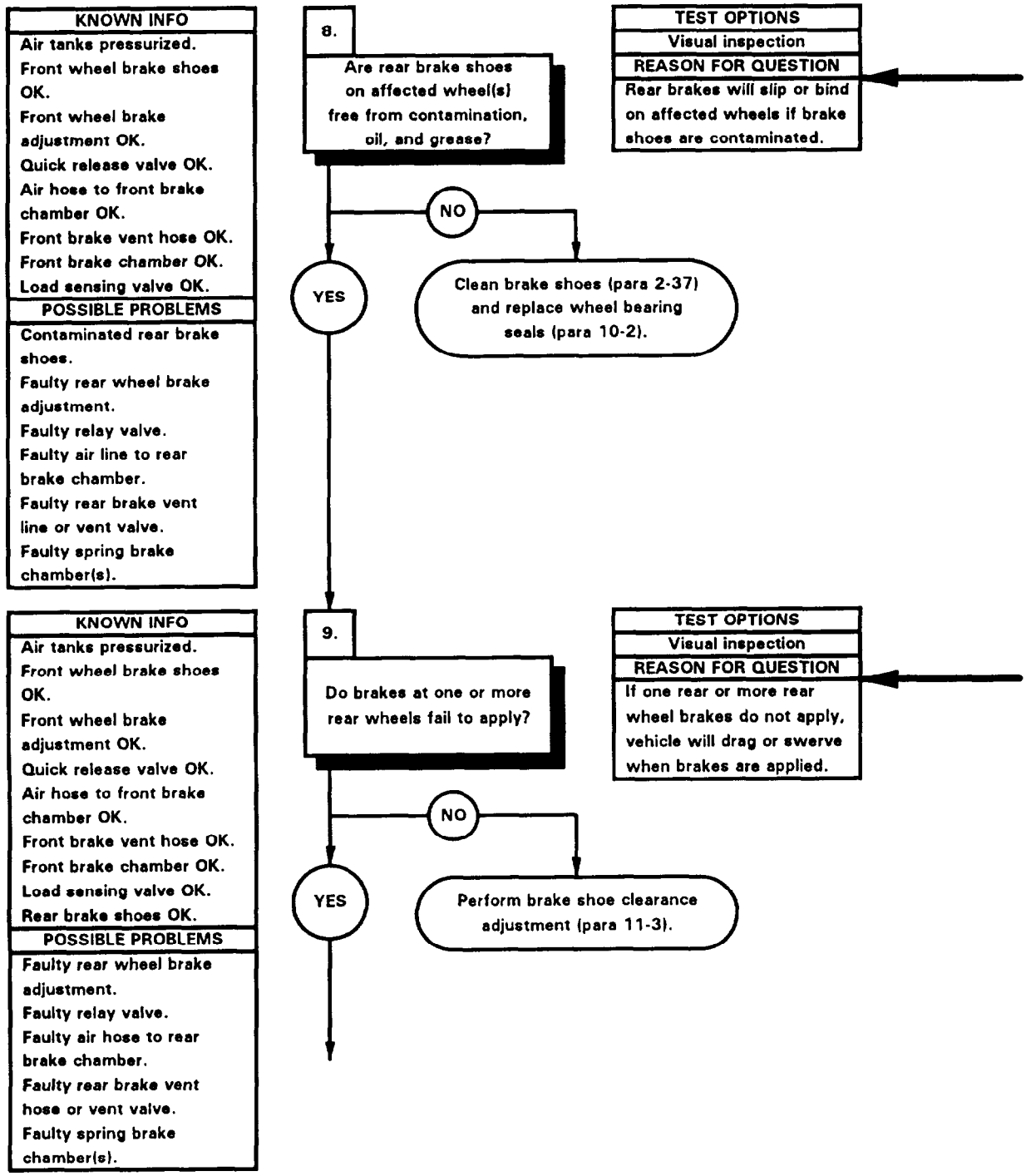
(1) Disconnect vent hose at brake chamber.
(2) Blow compressed air through vent hose.
(3) Check for air escaping at vent.
(4) Attach vent hose at brake chamber.
(5) Remove trestle and lower front wheels to ground.



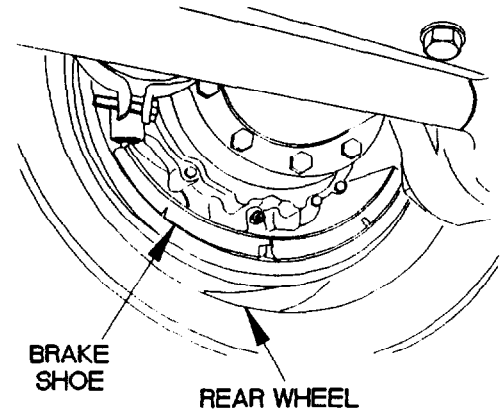
(1) If all rear wheels locked on road test of unloaded vehicle, check load sensing valve hardware components condition, arm position, adjusting clamp, and cable.
(2) If valve arm is in full up position (valve spring rest position), adjust or replace load sensing valve (para 11-10).



i5. VEHICLE BRAKES UNEVENLY, BRAKES PULLS TO ONE SIDE OR GRAB (CONT)



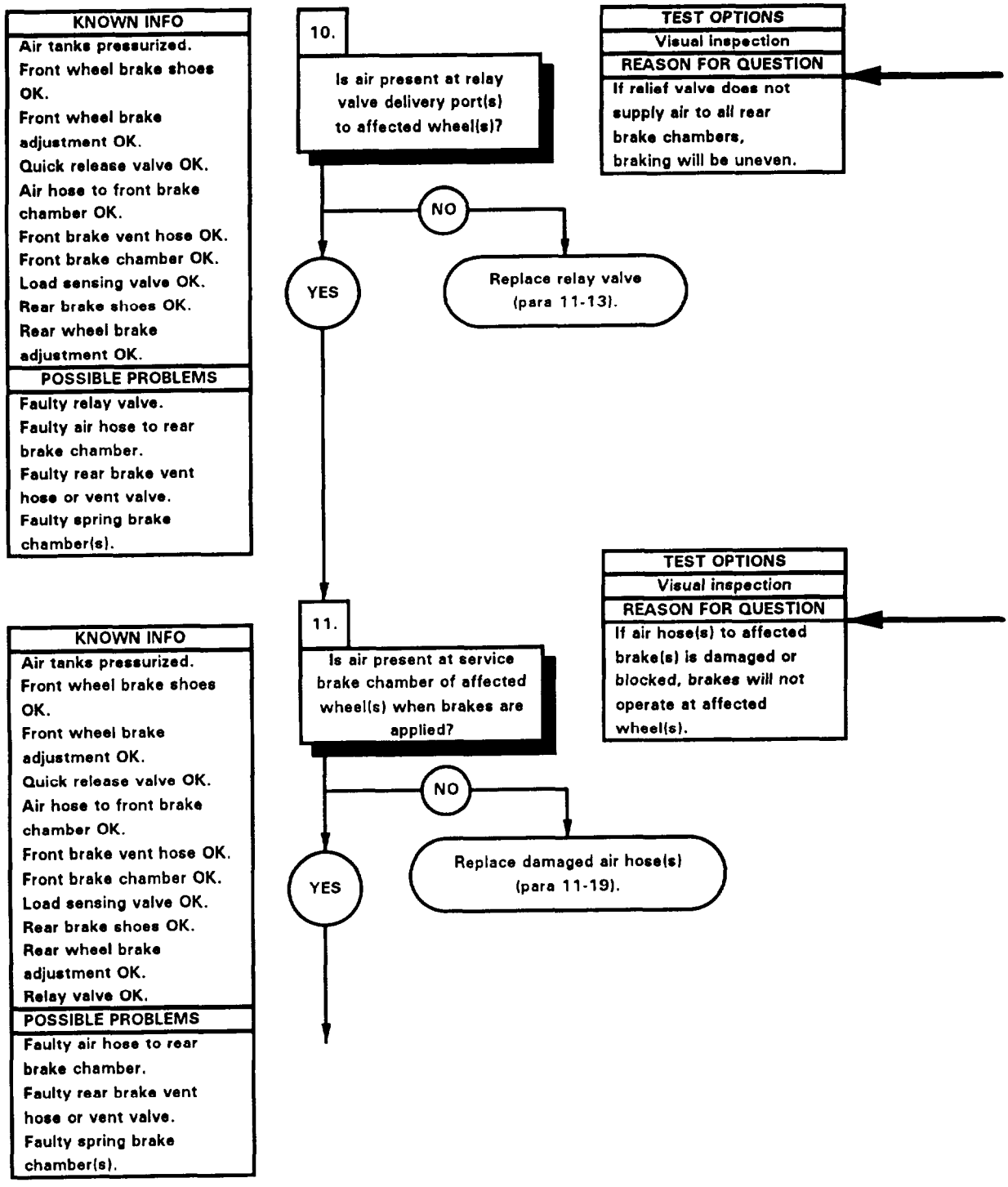
(1) Jack up axle of each affected rear wheel and support with trestle stands.
(2) Rotate affected wheel(s) and check for signs of contamination, oil, or grease at brake shoe linings.
(3) If oil contamination is present, replace wheel bearing seals (para 10-2).
(4) Remove trestle stands and lower wheels to ground.



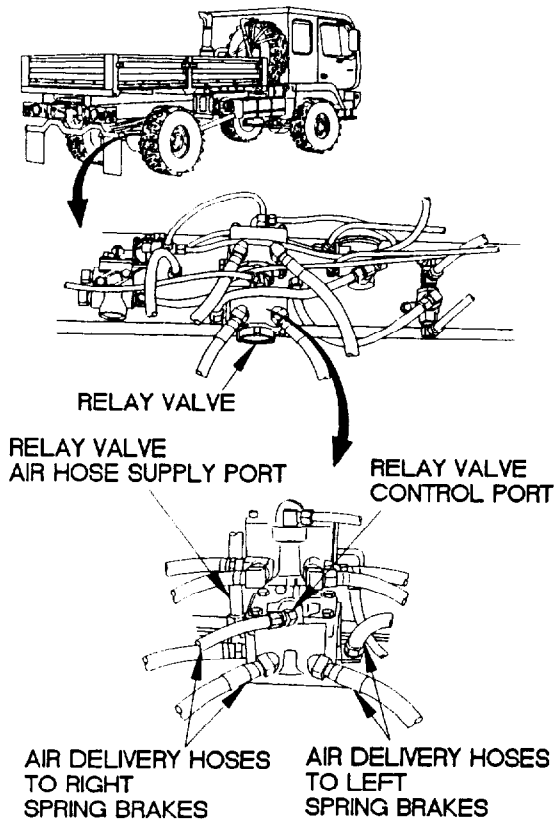
x210508-

(1) Chock wheels.
(2) Release parking brake (TM 9-2320-365-10).
(3) Apply brakes and observe operation of brake shoes at rear wheels.
(4) If brake shoes fail to apply on one side or at one wheel, brake air delivery system or brake chamber, is faulty on that side or at that wheel.
(5) If all rear wheel brakes apply, adjust brake shoe clearance (para 11-3).

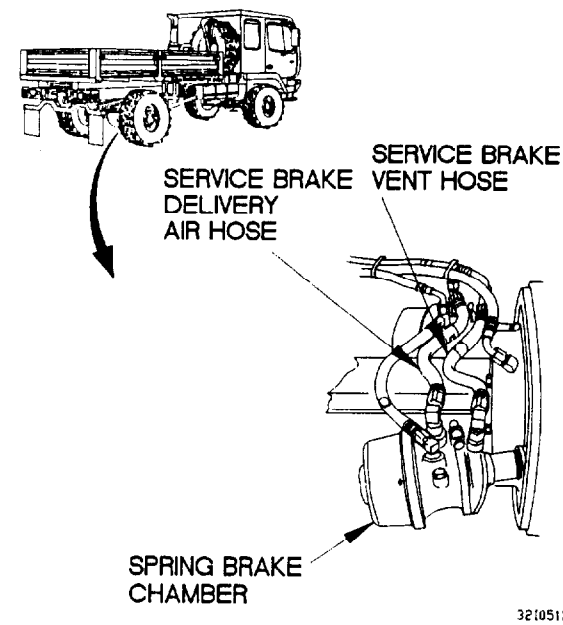
i5. VEHICLE BRAKES UNEVENLY, BRAKES PULLS TO ONE SIDE OR GRAB (CONT)



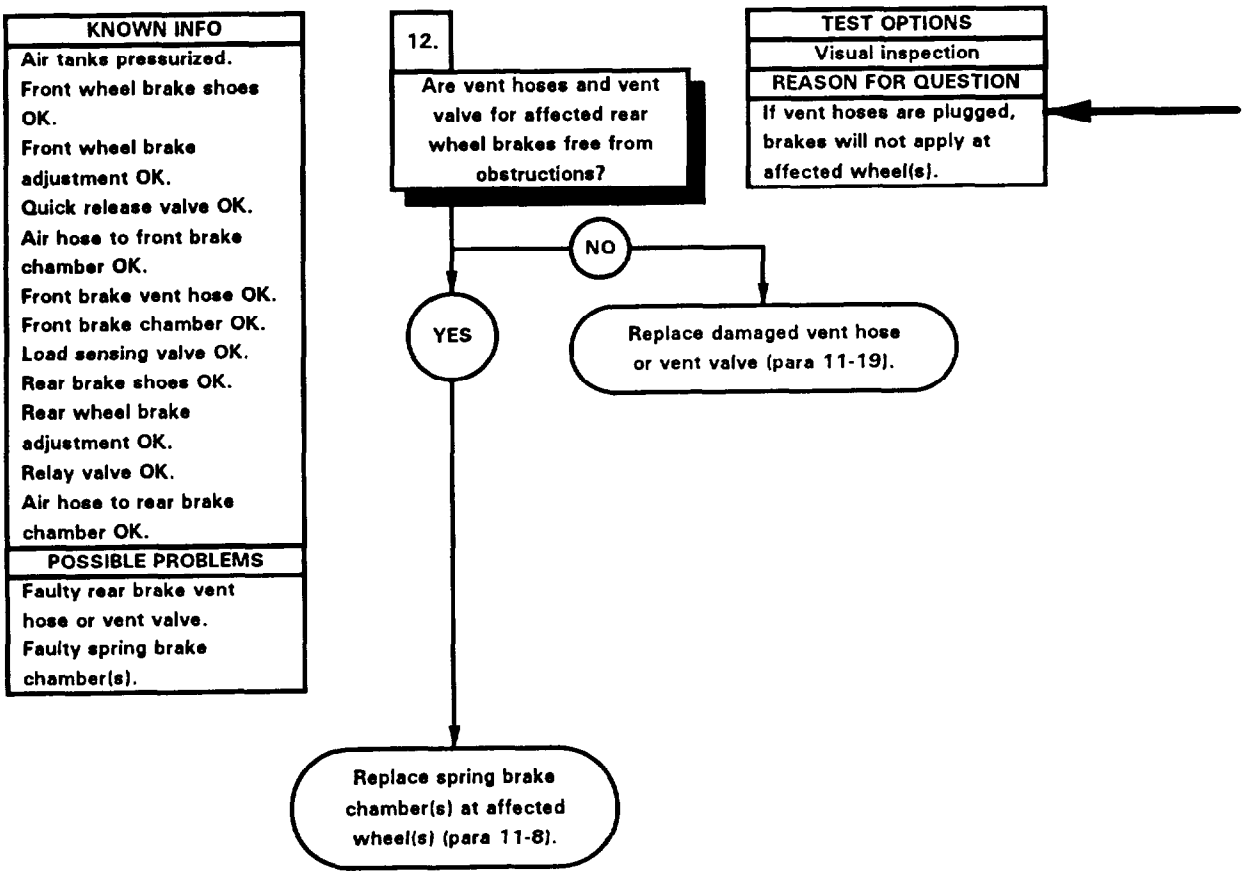
(1) Loosen delivery air hoses at delivery ports of relay valve.
(2) Apply brakes.
(3) Check for presence of air. If no air is present, replace relay valve (para 11-13).
(4) Tighten delivery air hoses to relay valve delivery ports.



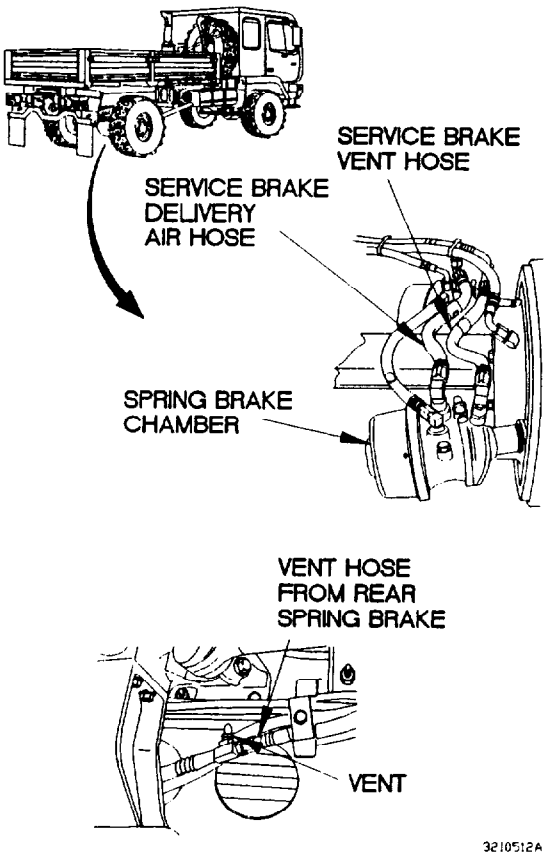
(1) Loosen service brake air hose at spring brake chamber.
(2) Apply brakes.
(3) Check for presence of air. If no air is present, replace air hose (para 11-19).
(4) Tighten air hose on spring brake chamber.
(5) Apply parking brake (TM 9-2320-365-10).



i5. VEHICLE BRAKES UNEVENLY, BRAKES PULLS TO ONE SIDE OR GRAB (CONT)



(1) Disconnect vent hose(s) at spring brake chamber(s).
(2) Blow compressed air through vent hoses.
(3) Check for presence of air at vent valve.
(4) Connect vent hose(s) at spring brake chamber(s).
(5) Remove wheel chocks (TM 9-2320-365-10).



i6. FRONT BRAKES DO NOT APPLY

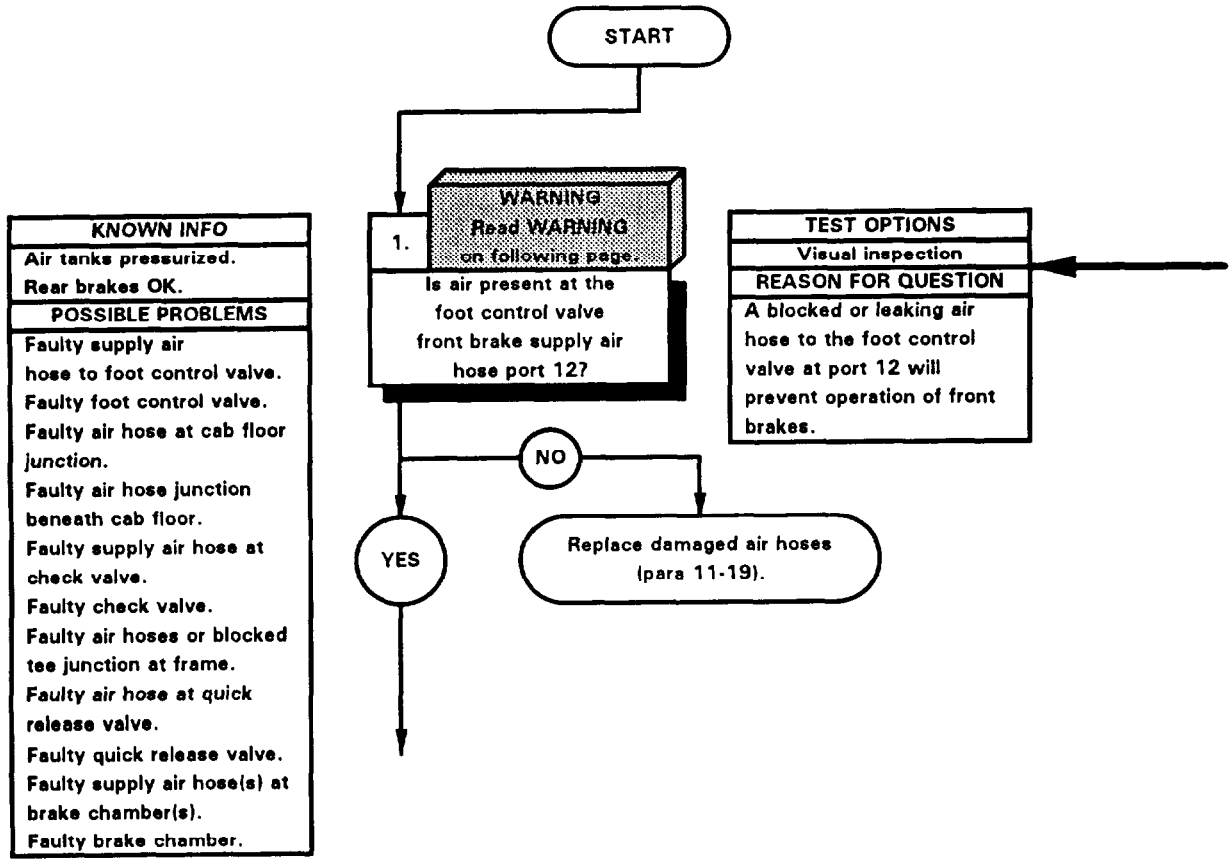
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Wrench, Torque, 0-175 lb-ft (Item 57, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Materials/Parts
Nut, Self-locking (5) (Item 141, Appendix G)



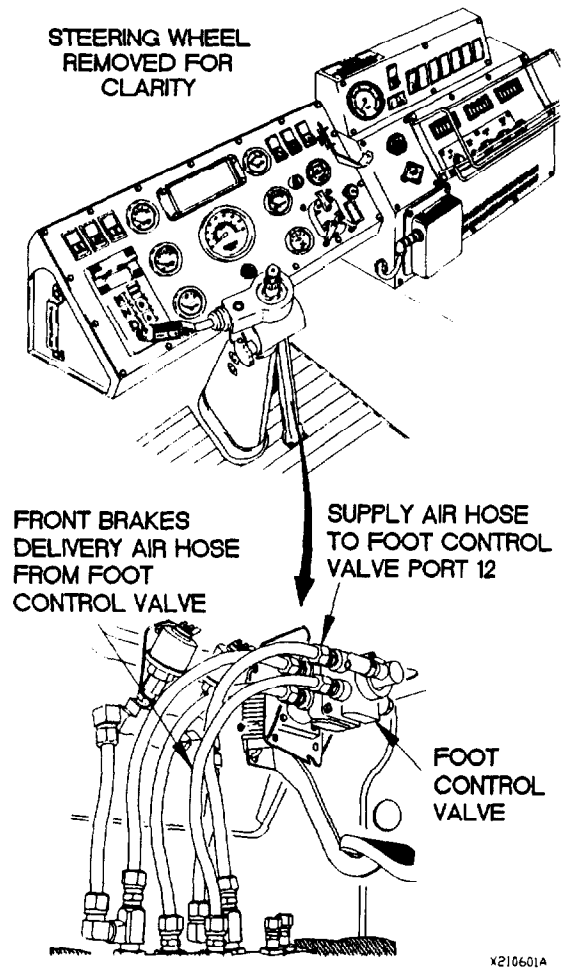
WARNING

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

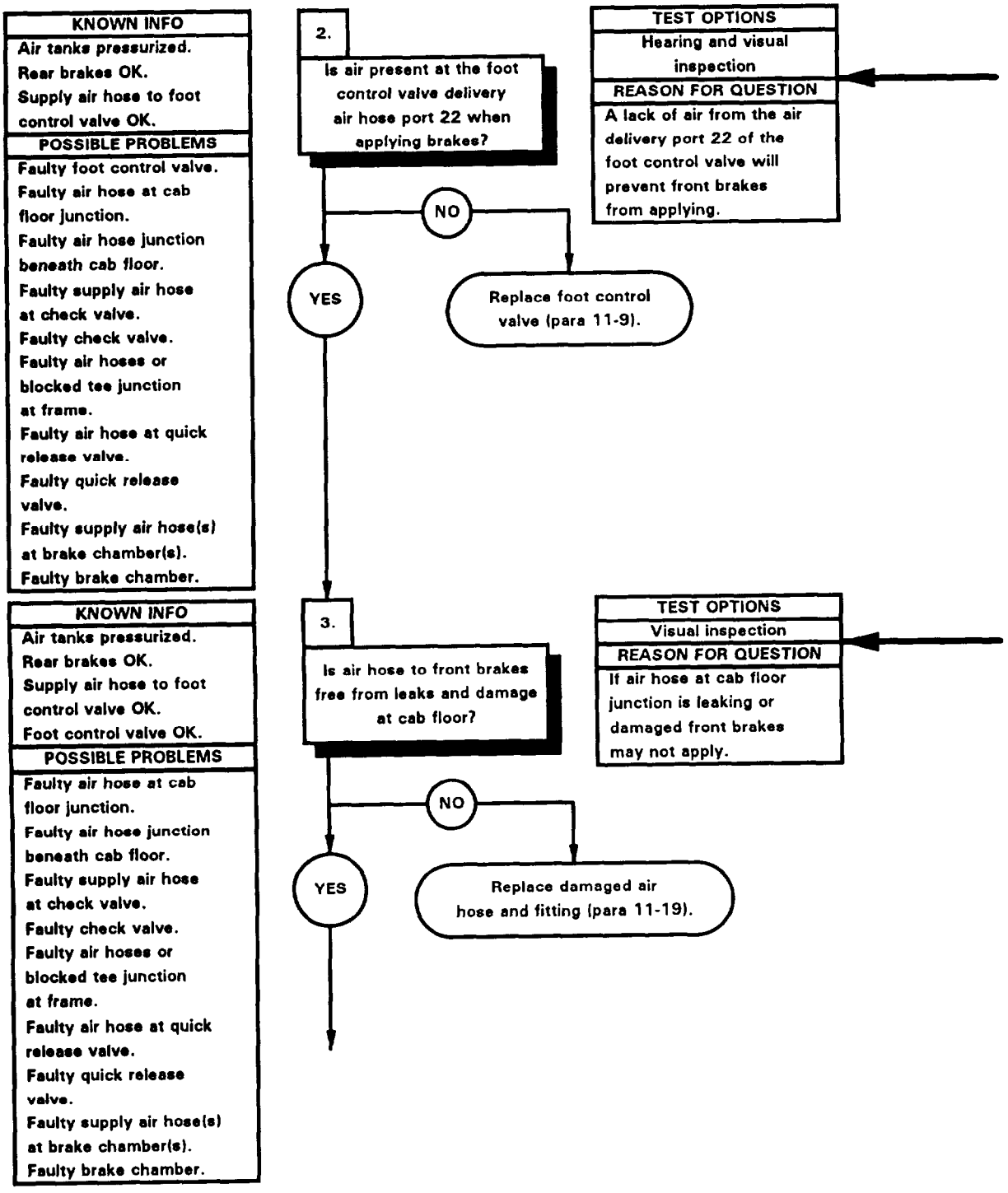
NOTE

Air system pressure must be in the 90-120 psi operating range to begin brake system troubleshooting. If the air pressure cannot be maintained within operating range, proceed to Air System Troubleshooting.

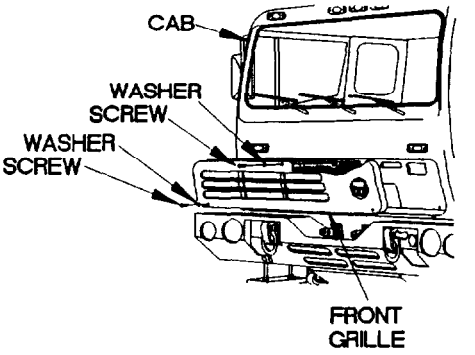
(1) Loosen supply air hose to the foot control valve and check for presence of air.
(2) Tighten supply air hose on the foot control valve.



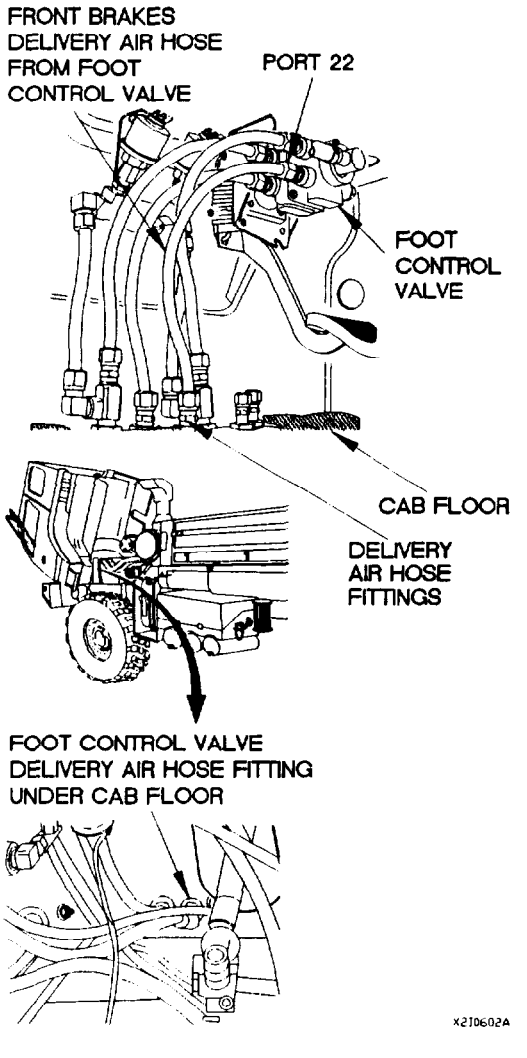
i6. FRONT BRAKES DO NOT APPLY (CONT)



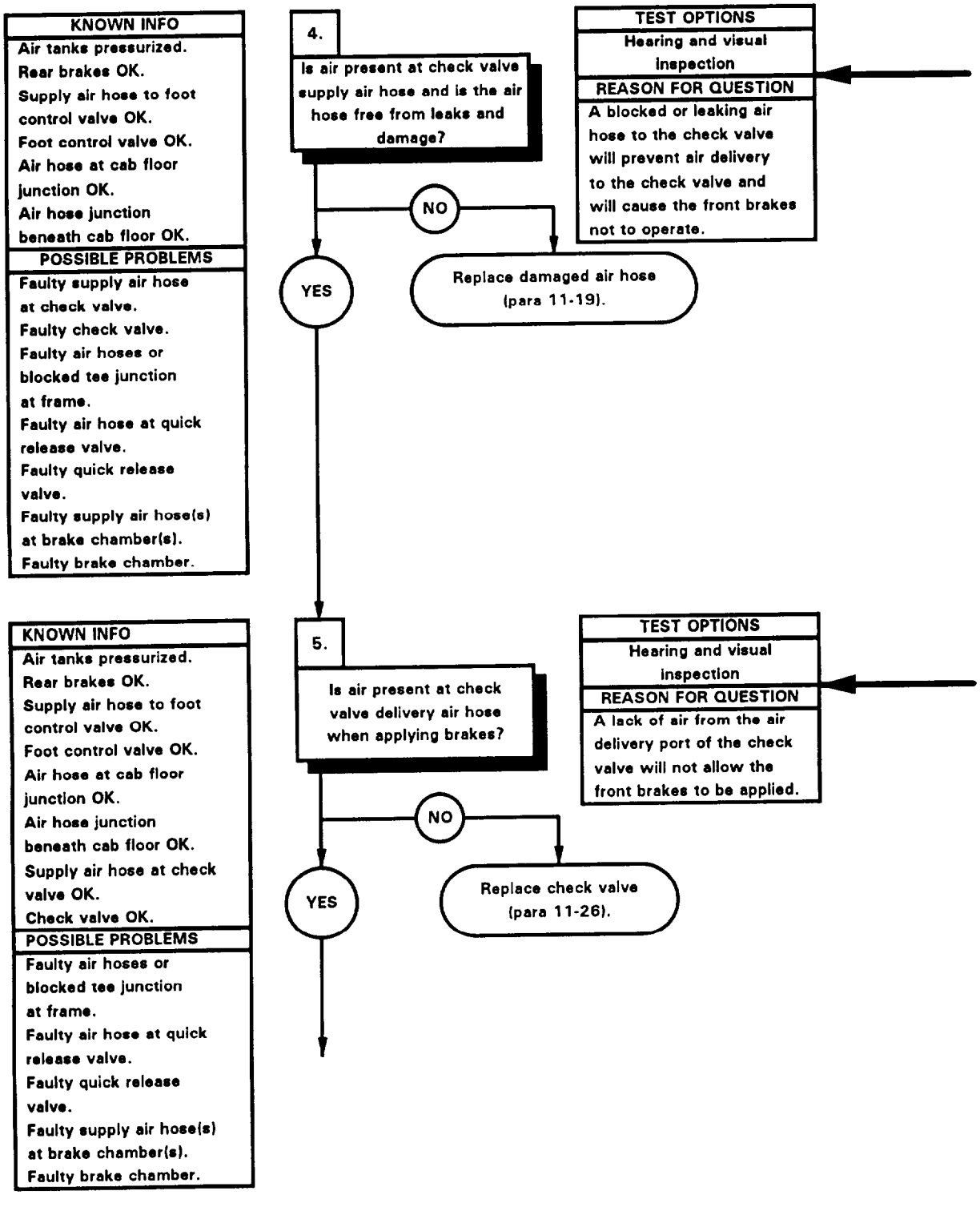
(1) Loosen delivery hose (port 22) on foot control valve and check for presence of air each time pedal is depressed.
(2) Tighten delivery hose on foot control valve.



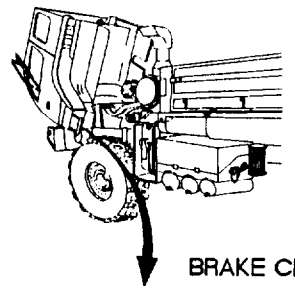
(1) Loosen air delivery hose (from port 22) at floor of cab.
(2) Apply foot brake.
(3) Check for presence of air at delivery hose when brake is applied.
(4) Tighten fittings.
(5) Remove two screws and washers from front grille.
(6) Remove screw and washer from front grille.
(7) Remove front grille from cab.
(8) Loosen air delivery hose at fitting beneath cab floor.
(9) Apply foot brake.
(10) Check for presence of air at air hose when brake is applied.
(11) Tighten fittings.
(12) Position front grille on cab with washer and screw.
(13) Position two washers and screws in front grille.
(14) Tighten screw to 48-60 lb-in. (5-7 N·m).
(15) Tighten two screws to 24 lb-in. (3 N·m).



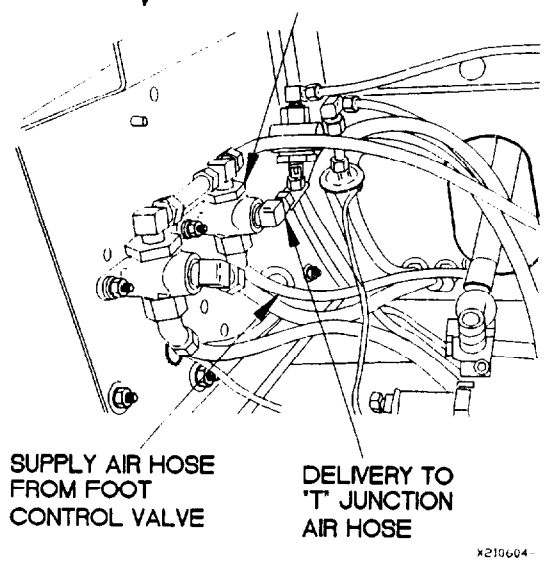
i6. FRONT BRAKES DO NOT APPLY (CONT)



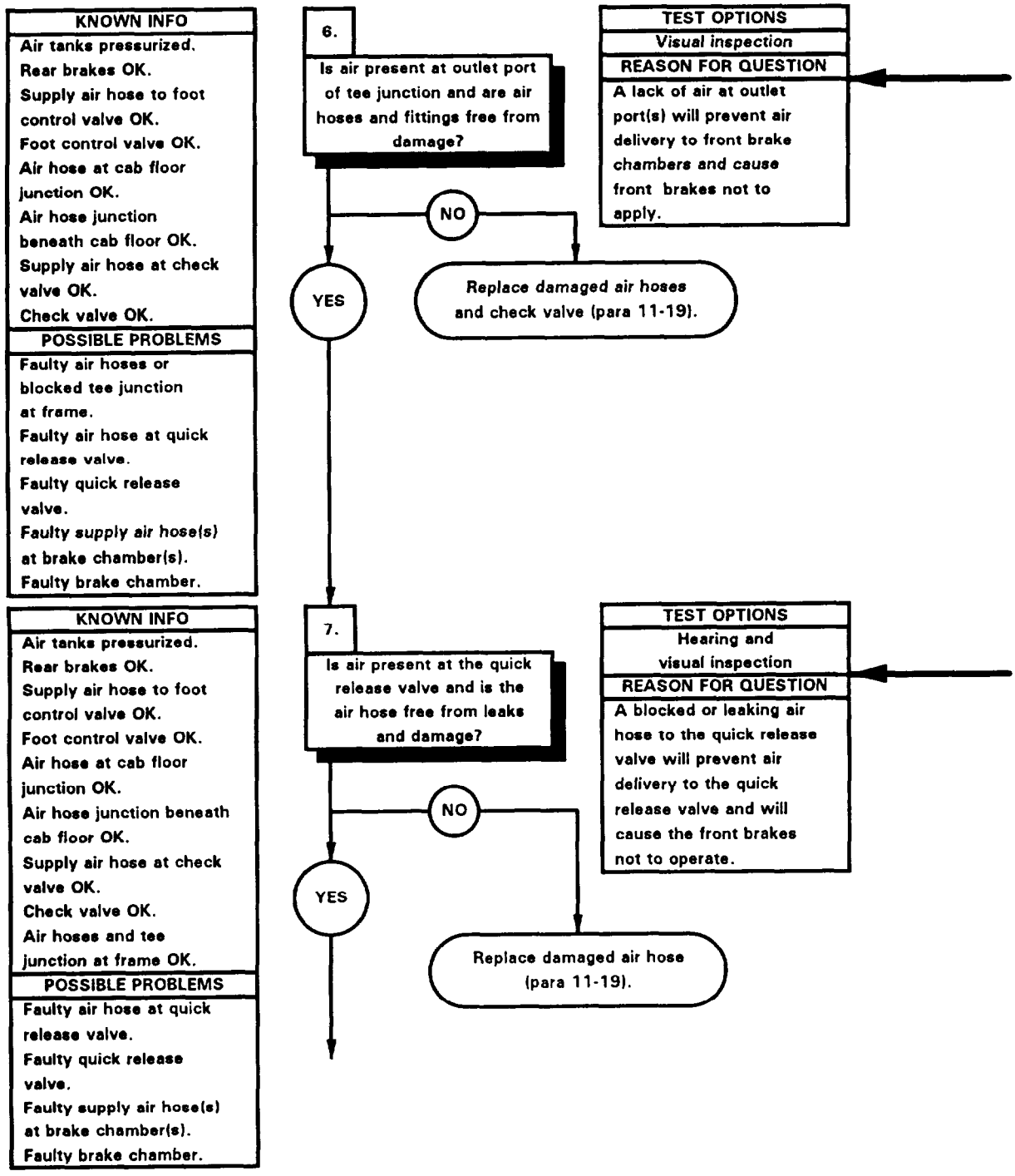
(1) Raise cab (TM 9-2320-365-10).
(2) Loosen air line at check valve supply port.
(3) Lower cab (TM 9-2320-365-10).
(4) Apply foot brake.
(5) Check for presence of air from air line when brake is applied.
(6) Raise cab (TM 9-2320-365-10).
(7) Tighten air line fitting.



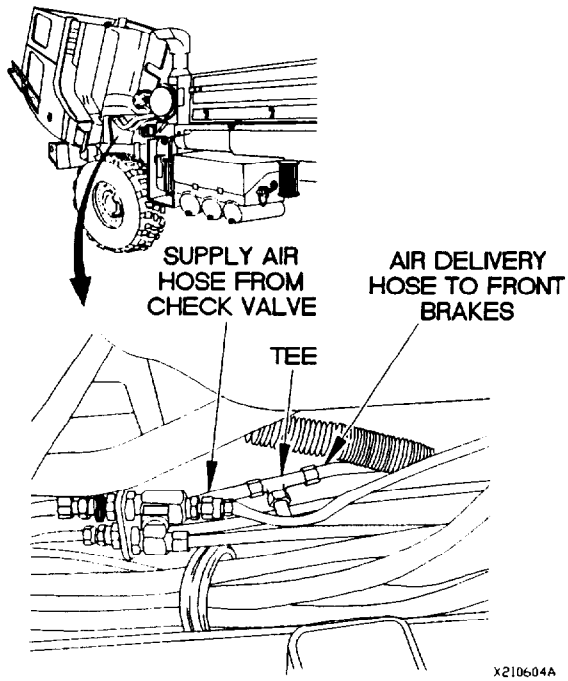
(1) Loosen delivery line on check valve.
(2) Lower cab (TM 9-2320-365-10).
(3) Apply brakes and check for presence of air.
(4) Raise cab (TM 9-2320-365-10).
(5) Tighten delivery line on check valve.



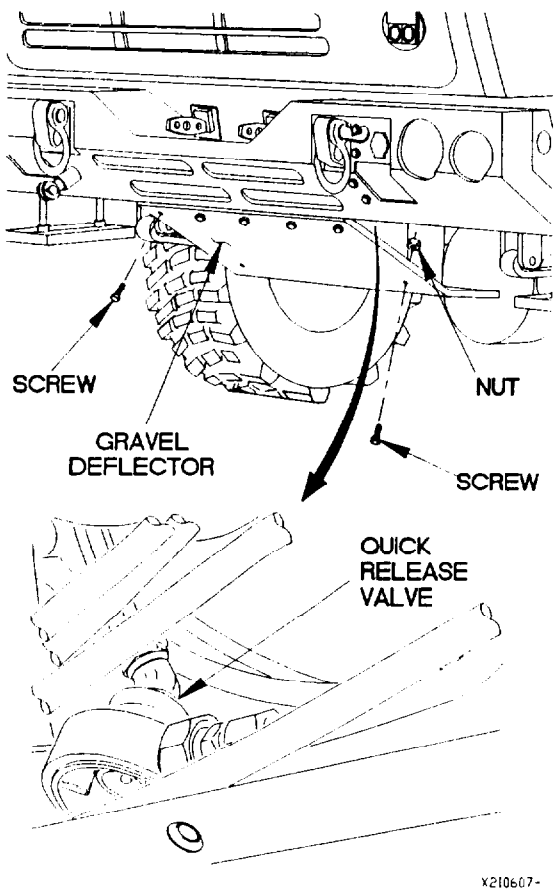
i6. FRONT BRAKES DO NOT APPLY (CONT)



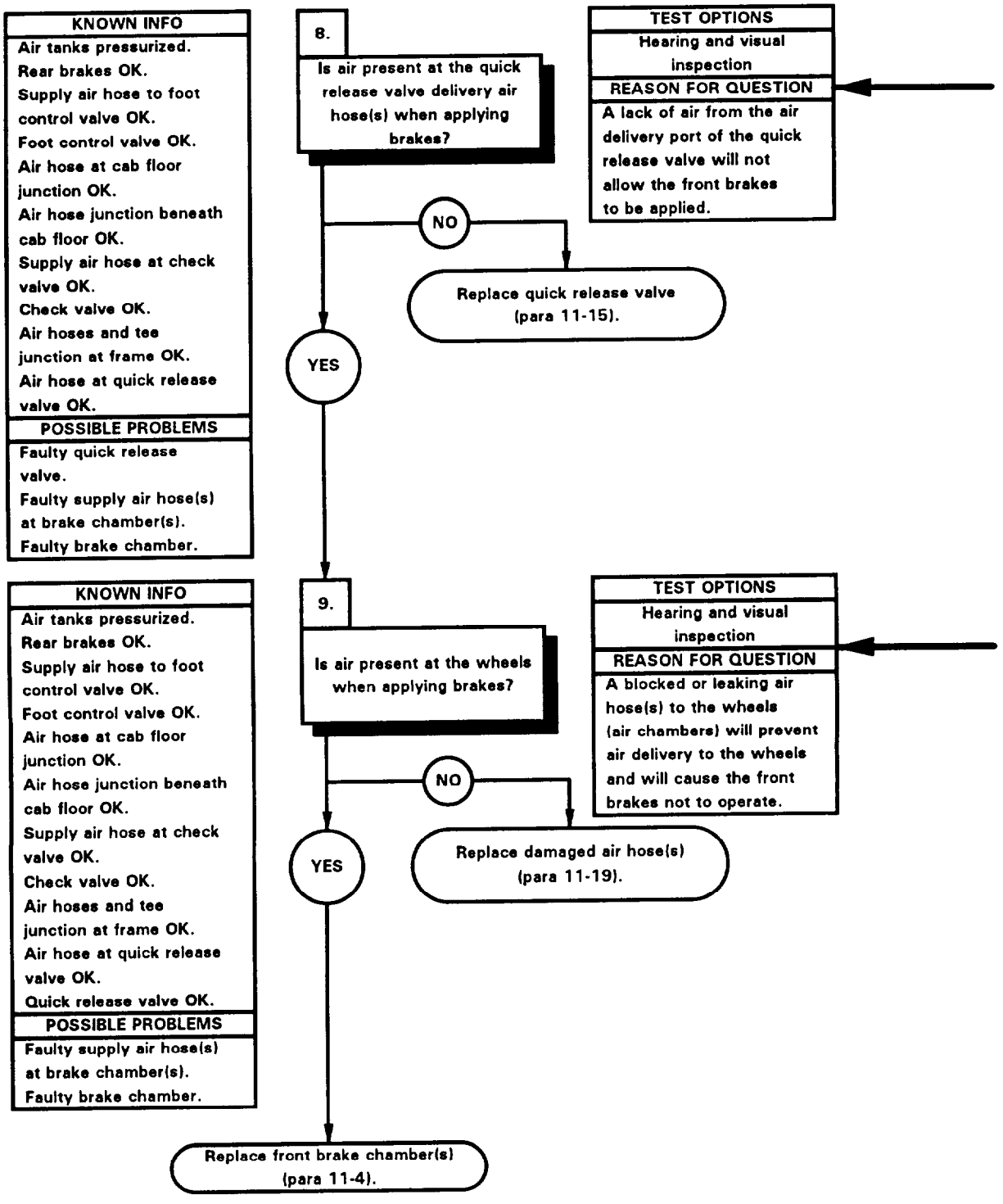
(1) Loosen delivery line at tee junction.
(2) Lower cab (TM 9-2320-365-10).
(3) Apply brakes.
(4) Check for presence of air when brake is applied.
(5) Raise cab (TM 9-2320-365-10).
(6) Tighten delivery line at tee junction.
(7) Lower cab (TM 9-2320-365-10).



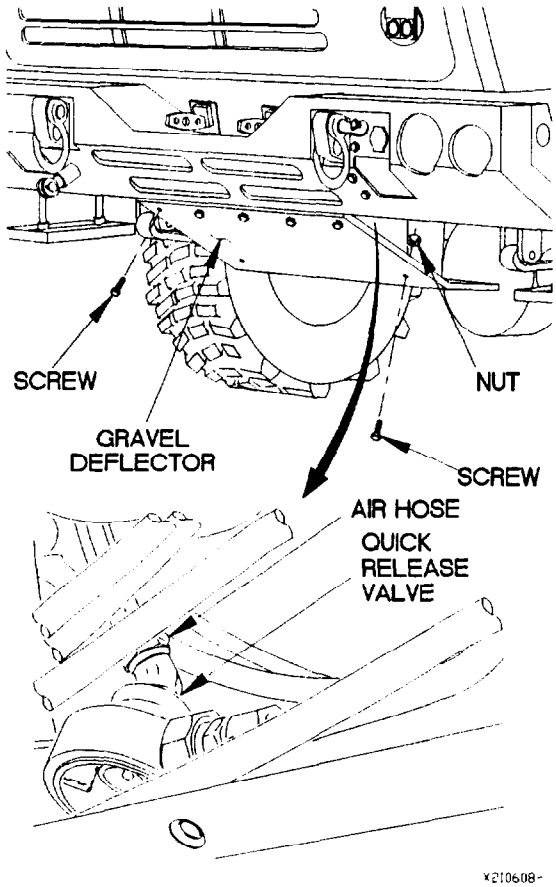
(1) Remove five screws from top edge of gravel deflector.
(2) Remove five self-locking nuts, screws, and gravel deflector. Discard self-locking nuts.
(3) Loosen air supply line at quick release valve.
(4) Apply brakes.
(5) Check for presence of air at supply line when brake is applied.
(6) Tighten air supply line at quick release valve.



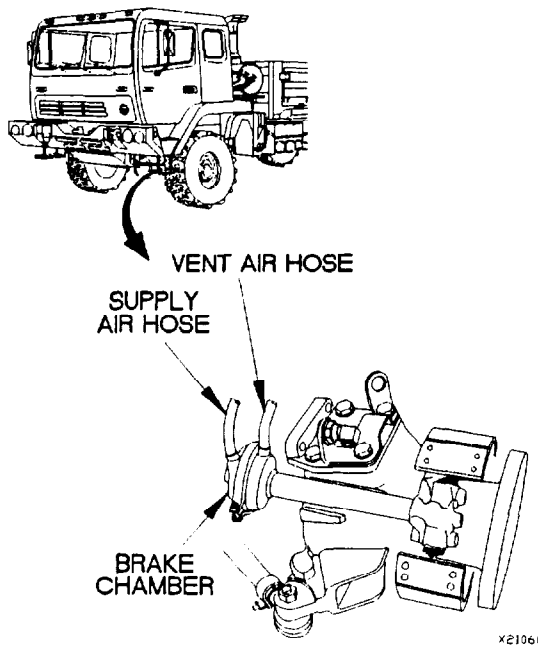
i6. FRONT BRAKES DO NOT APPLY (CONT)



(1) Loosen delivery hoses on quick release valve.
(2) Apply brakes.
(3) Check for presence of air at delivery ports of quick release valve when brakes are applied.
(4) Tighten delivery hoses on check valve.
(5) Position gravel deflector on vehicle with five screws and self-locking nuts.
(6) Tighten five self-locking nuts to 76-94 lb-ft (103-127 N·m).
(7) Position five screws in top edge of gravel deflector.
(8) Tighten five screws to 43-52 lb-ft (58-71 N·m).



(1) Loosen supply air hose(s) at brake chamber(s).
(2) Apply brakes.
(3) Check for presence of air at supply air hose(s) when brakes are applied.
(4) Tighten supply air hose(s) at brake chamber(s).



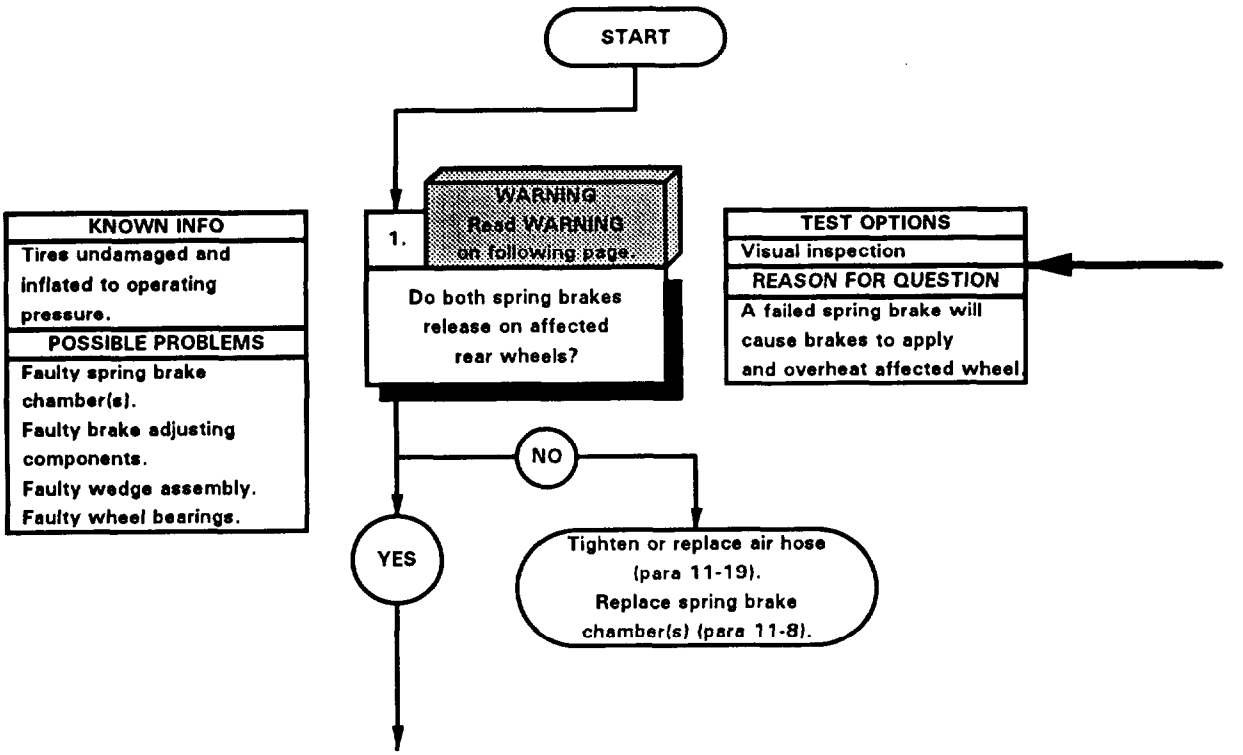
17. REAR BRAKES OVERHEAT

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Goggles, Industrial (Item 14, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Trestle, Motor Vehicle Maintenance (2) (Item 45, Appendix C)
Adjusting Tool, Brake Shoe (Item 2, Appendix C)



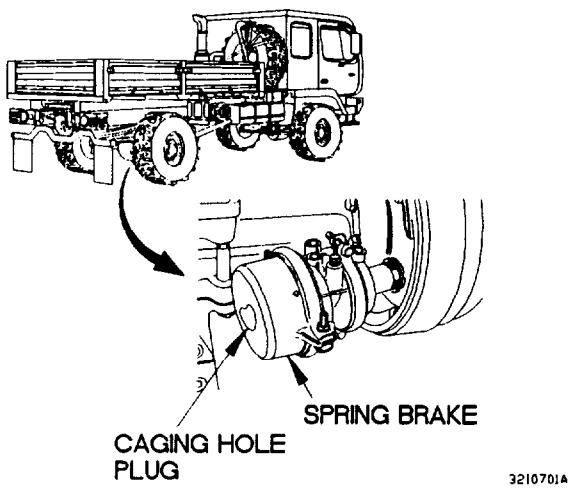
WARNING

- Overheated brakes can cause severe burns. Perform task only when brakes have cooled. 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.

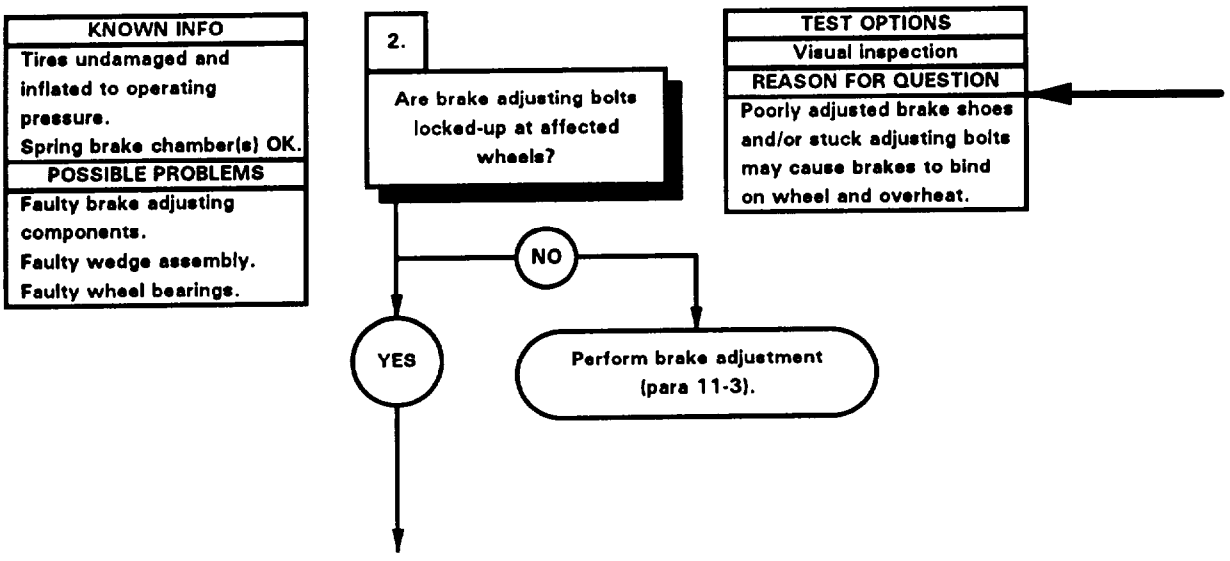
NOTE

If wheel drums are too hot for hand touch after road test of vehicle, brakes are overheated.

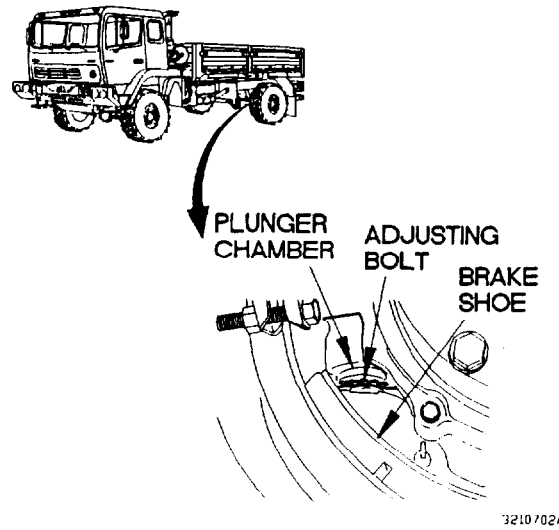
(1) Release parking brake (TM 9-2320-365-10).
(2) Check for presence of air at air hose to spring brake chamber. If air is present at spring brake chamber, replace fittings or air hose (para 11-19).
(3) Remove cover plug from caging hole at back of spring brake chamber (TM 9-2320-365-10).
(4) With flashlight directed at caging hole, apply and release parking brake. Check if spring retracts when air is supplied by releasing parking brake. If brake does not cage (retract) when air is supplied to spring brake chamber, replace spring brake chamber (para 11-8).
(5) Replace plug in caging hole of spring brake chamber (TM 9-2320-365-10).
(6) Apply parking brake (TM 9-2320-365-10).



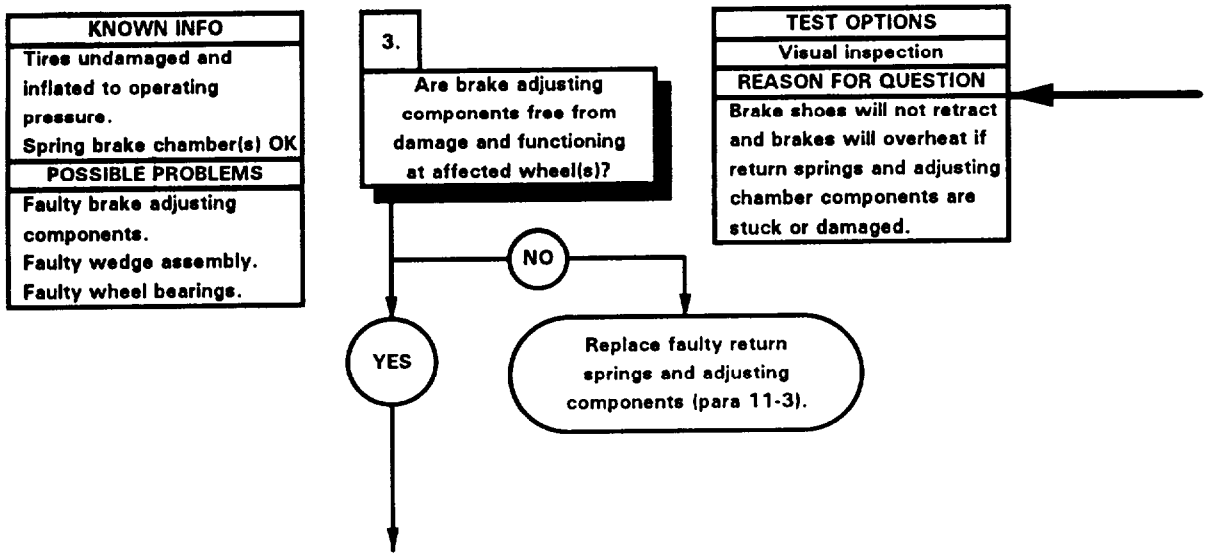
i7. REAR BRAKES OVERHEAT (CONT)



(1) Jack up axle with overheated brakes, and support with trestle stands.
(2) Release parking brake (TM 9-2320-365-10).
(3) Turn adjusting bolt clockwise with adjusting tool. If bolt will not turn or if brake shoes do not move away from wheel when adjuster is turned, perform brake adjustment (para 11-3).



i7. REAR BRAKES OVERHEAT (CONT)

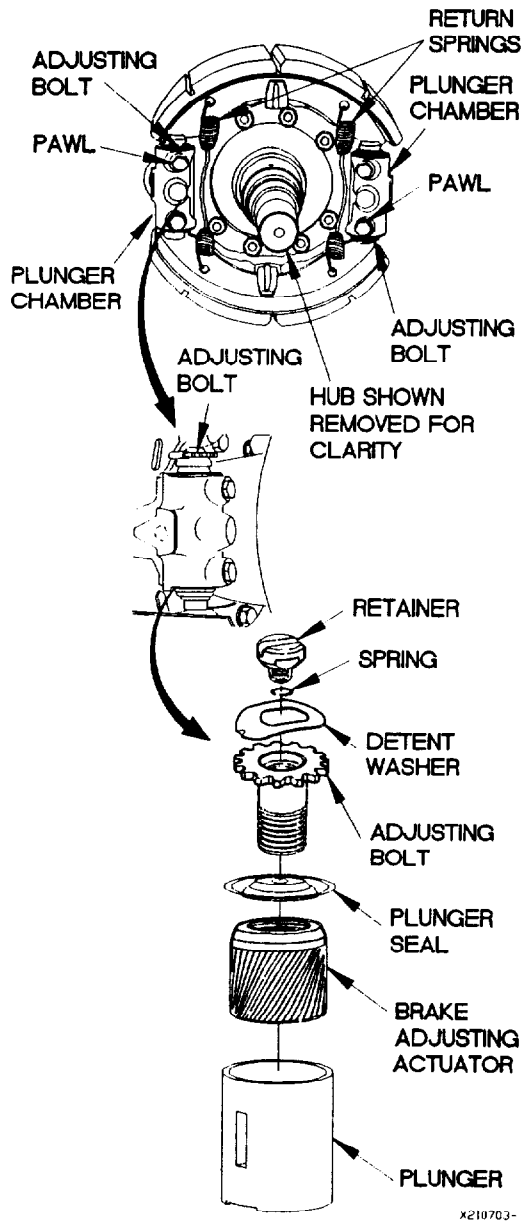


(1) Remove wheel(s) with affected brakes (TM 9-2320-365-10).
(2) Disassemble brakes (para 11-3).
(3) Inspect spring for stretching, bluing, damage, or breakage. If spring(s) is damaged, brake shoes will not retract from wheel.
(4) Check adjusting pawl spring for damage. Ensure springs are not missing or broken.
(5) Check adjusting pawl teeth for damage and abrasion.

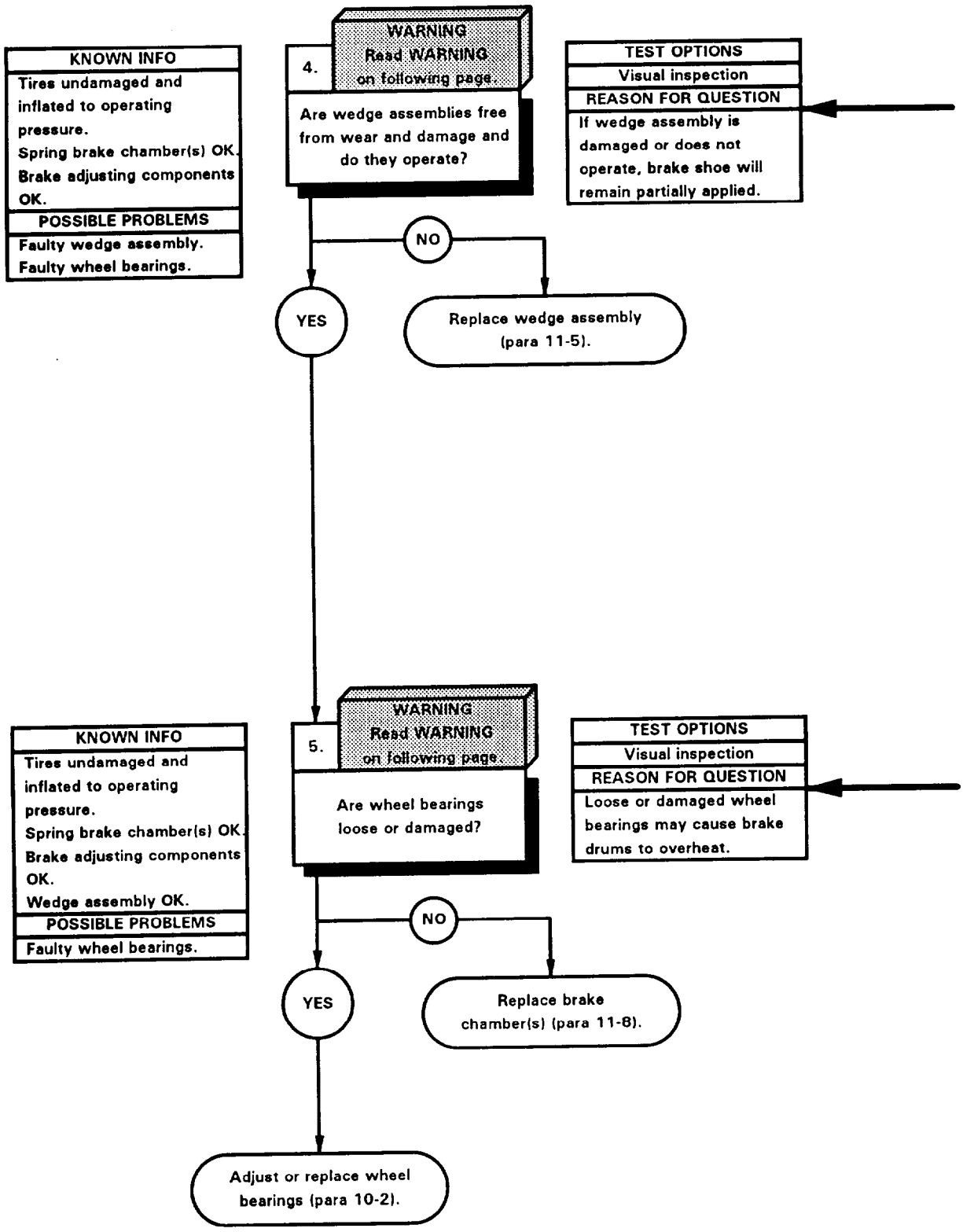
NOTE

A damaged seal may permit dirt to enter plunger chamber and interfere with adjustment.

(6) Ensure seal elements are not damaged or broken.
(7) Check actuator teeth for damage.
(8) Check plunger for freedom of movement inside plunger housing.



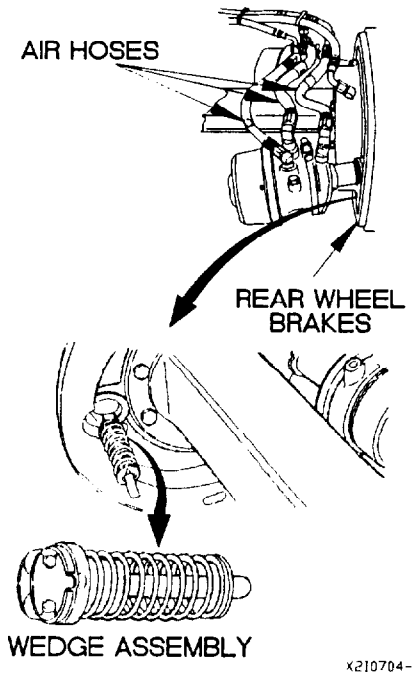
i7. REAR BRAKES OVERHEAT (CONT)



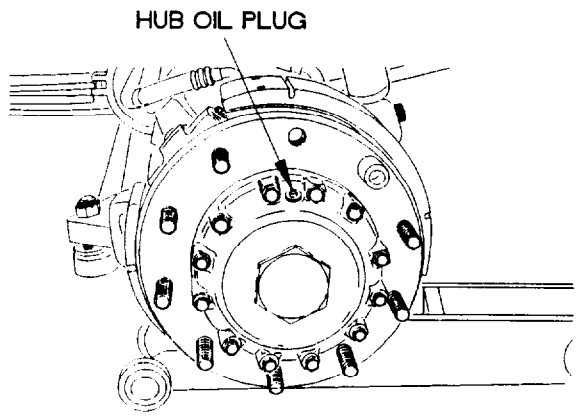
WARNING

Spring brake chambers are very powerful. Cage spring brakes before removing chambers. Failure to comply may result in injury to personnel.

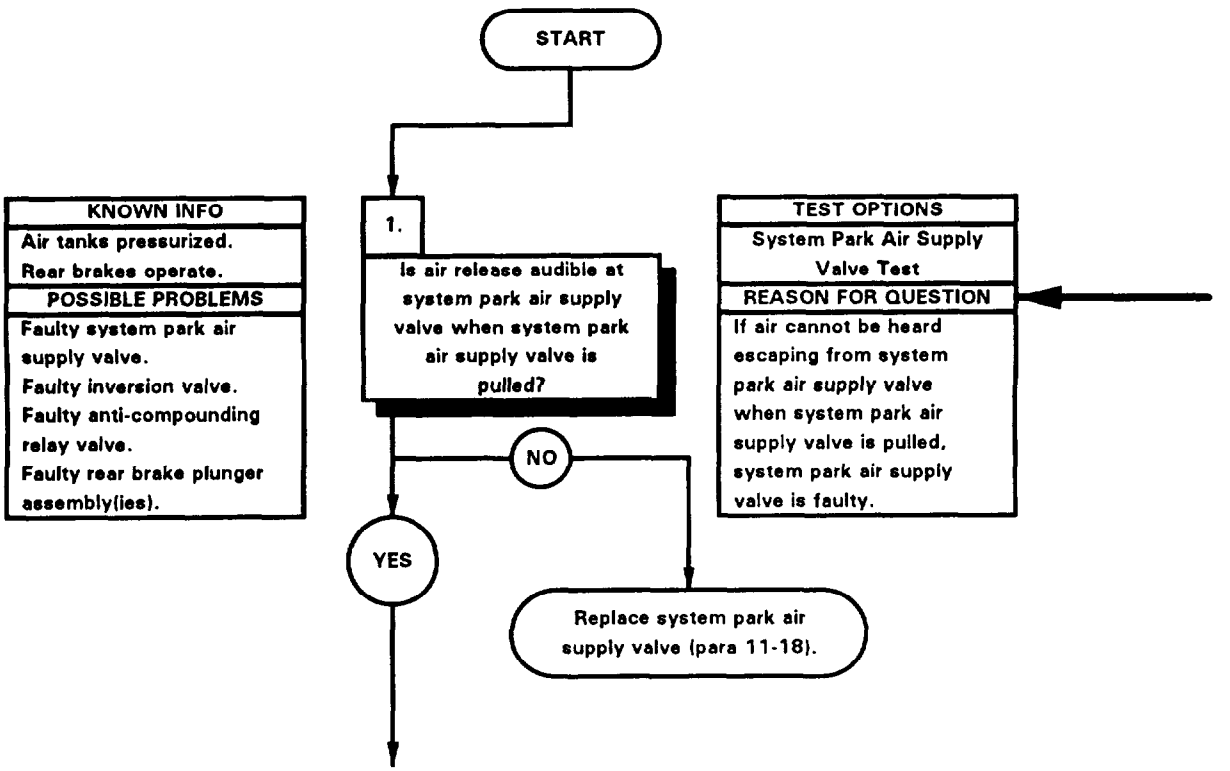
(1) Disconnect and tag air lines to spring brake chambers at wheel.
(2) Cage spring brakes on rear wheels (para 11-6).
(3) Unscrew brake chamber(s) from hub and remove wedge assembly from wheel (para 11-5).
(4) Inspect wedge spring for damage.
(5) Inspect rollers for flattening or damage.
(6) Manually check operation of wedge assembly in plunger chamber.
(7) Install wedge assembly and brake chambers (para 11-5).
(8) Install wheel brake components and adjust brakes (para 11-3).



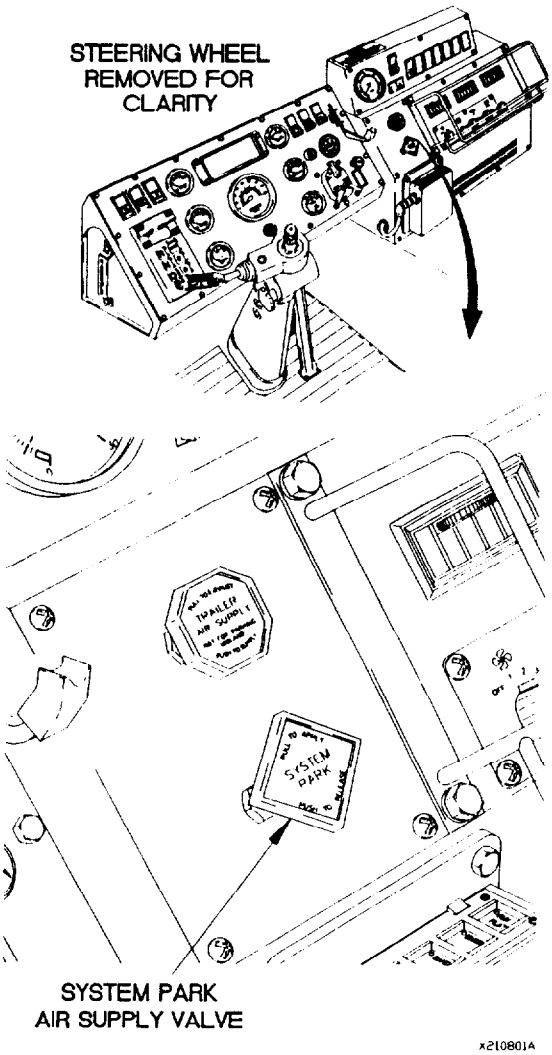
(1) Install wheels (TM 9-2320-365-10).
(2) Rotate affected wheel and listen for loose or damaged wheel bearings. If wheel makes grinding sound during rotation, adjust or replace wheel bearings (para 10-2).
(3) Grasp wheel on opposite sides, top and bottom, and pull in and out. If wheel has excessive play on the axle, adjust or replace wheel bearings (para 10-2).
(4) If wheel bearings are good, replace brake chamber(s) (para 11-8).
(5) Check wheel hub oil level (Appendix H). If oil level is low, replace wheel bearings (para 10-2).
(6) Set parking brake (TM 9-2320-365-10).
(7) Remove trestle stands and lower wheels to ground.



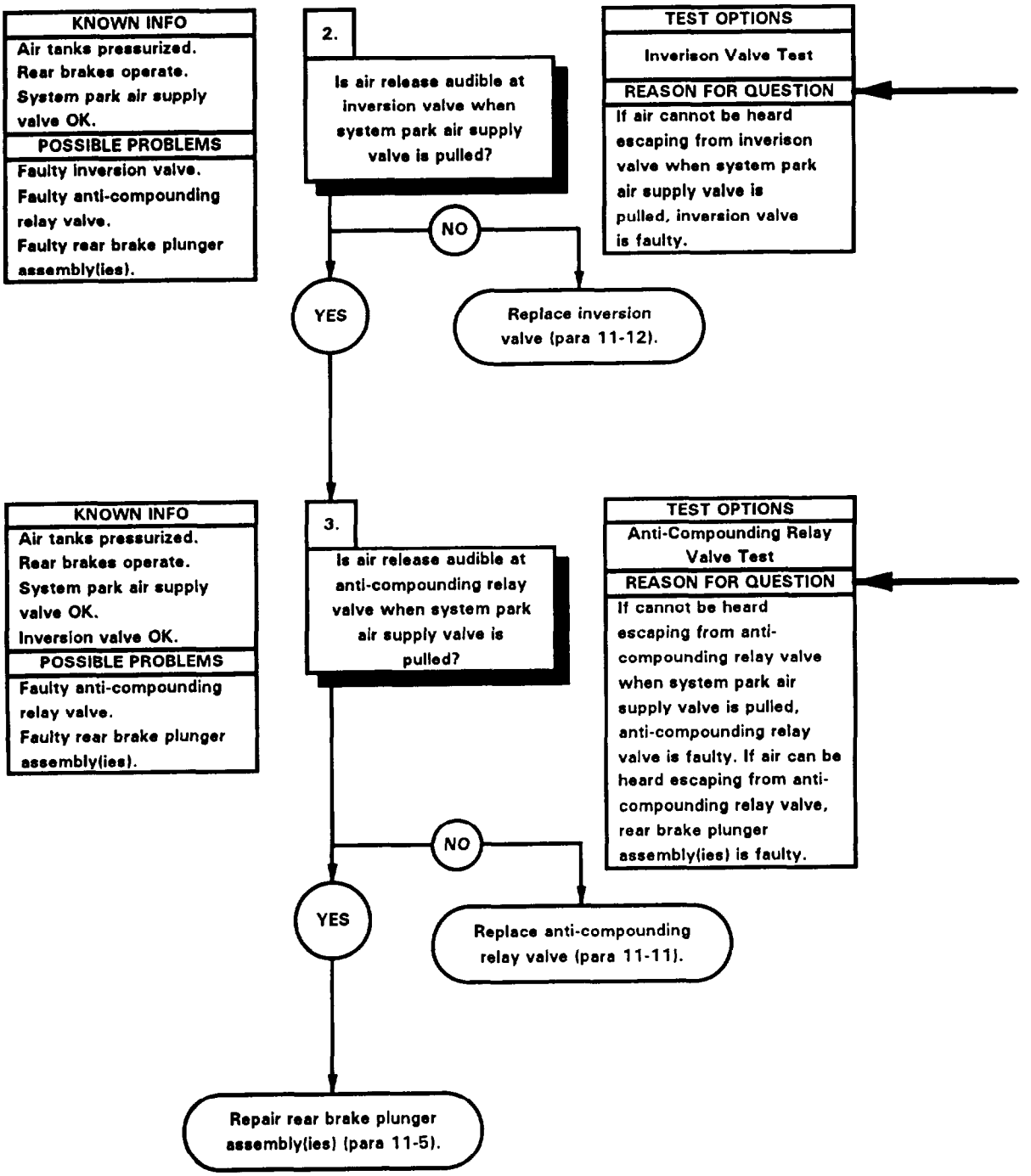
i8. PARKING BRAKE DOES NOT APPLY	
INITIAL SETUP	
Equipment Conditions Air tanks pressurized (TM 9-2320-365-10). Engine shut down (TM 9-2320-365-10).	*Tools and Special Tools* Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)
Personnel Required (2)	



SYSTEM PARK AIR SUPPLY VALVE TEST
(1) Push in system park air supply valve.
(2) Pull system park air supply valve out and note release of air.
(3) If air is not heard escaping from system park air supply valve, replace system park air supply valve (para 11-18).



i8. PARKING BRAKE DOES NOT APPLY (CONT)

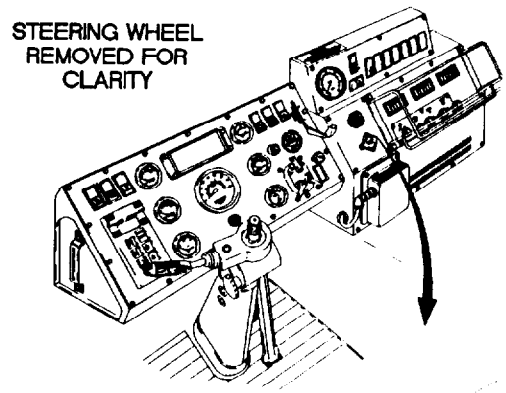


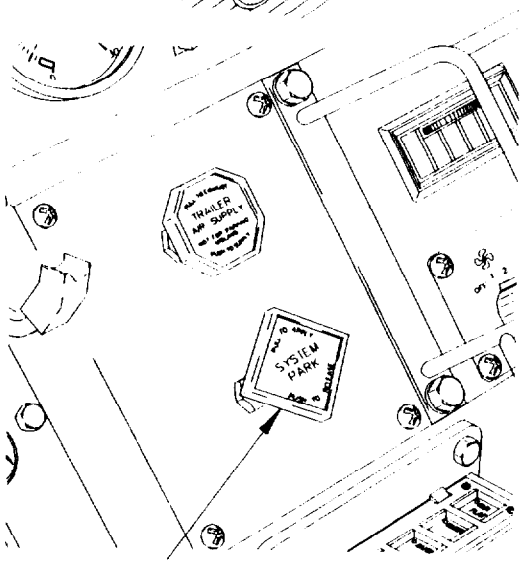
INVERSION VALVE TEST

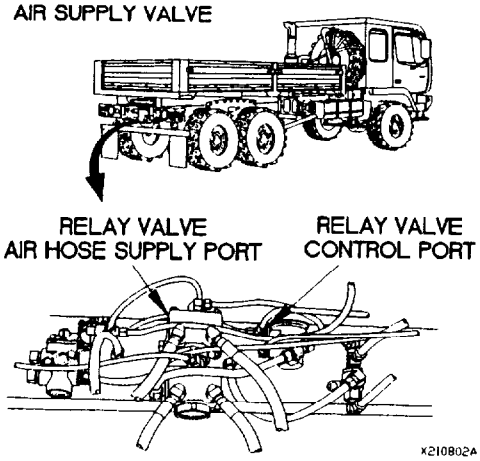
(1) Push in system park air supply valve.
(2) Pull system park air supply valve out and note release of air.
(3) If air is not heard escaping from inversion valve, replace inversion valve (para 11-12).

ANTI-COMPOUNDING RELAY VALVE TEST

(1) Push in system park air supply valve.
(2) Pull system park air supply valve out and note release of air.
(3) If air is not heard escaping from anti-compounding relay valve, replace anti-compounding relay valve (para 11-11).
(4) If air is heard escaping from anti-compounding relay valve, repair rear brake plunger assembly(ies) (para 11-5).
(5) Pull system park air supply valve out.







2-21. AIR SYSTEM TROUBLESHOOTING

This paragraph covers Air System Troubleshooting. The Air System Fault Index, Table 2-30, lists faults for the Air System of the vehicle.

Table 2-30. Air System Fault Index

Fault No.	Description	Page
j1.	Air system loses pressure during operation/slow air pressure buildup	2-1714
j2.	Large quantity of moisture expelled from air reservoirs	2-1730
j3.	Air dryer purges constantly	2-1734
j4.	No air pressure or low air pressure present at rear gladhands	2-1738
j5.	Air system pressure builds up more than 120 psi (827 kPa) (compressor fails to unload)	2-1744
j6.	Noisy air compressor operation	2-1748

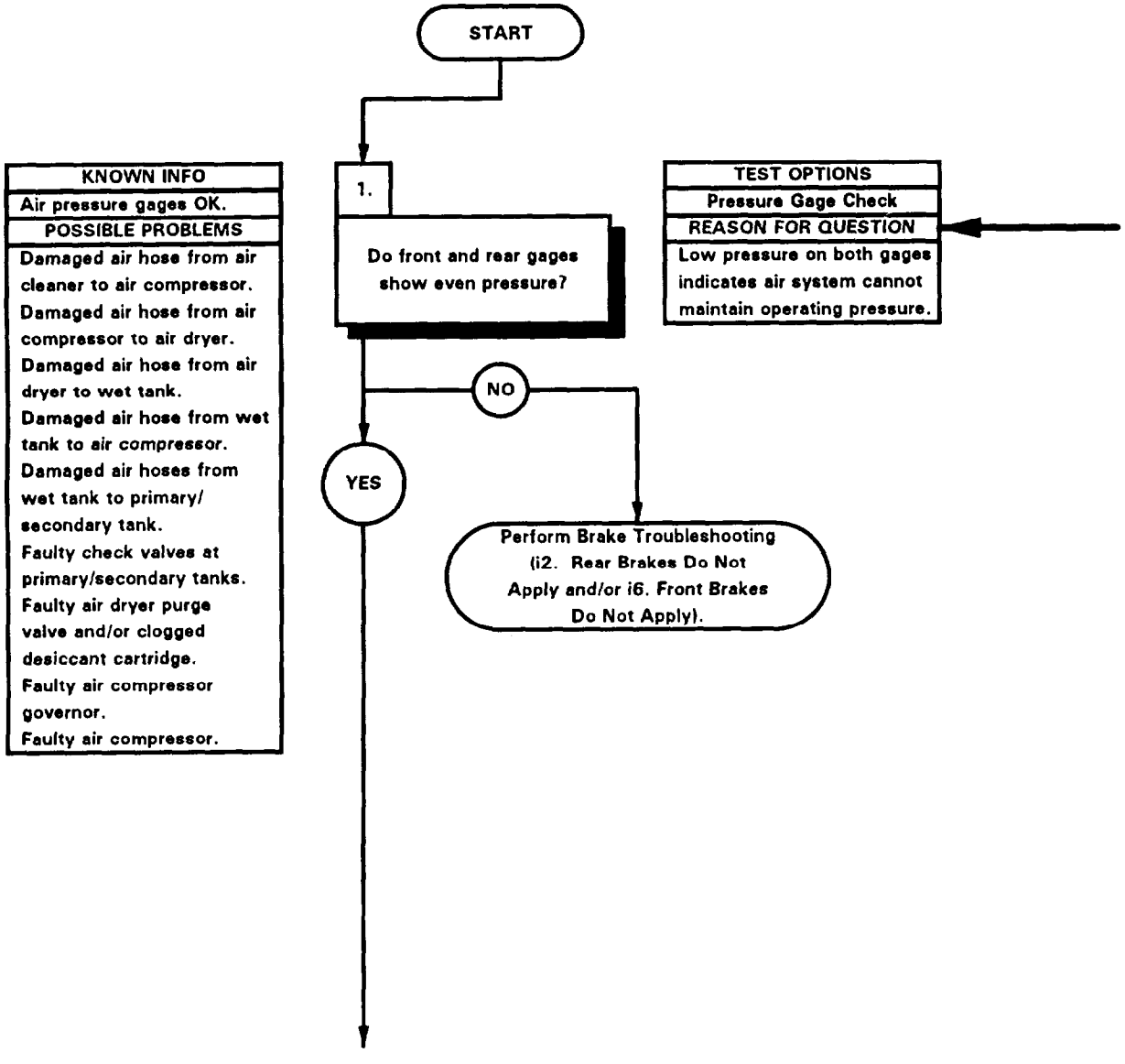
j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP

INITIAL SETUP

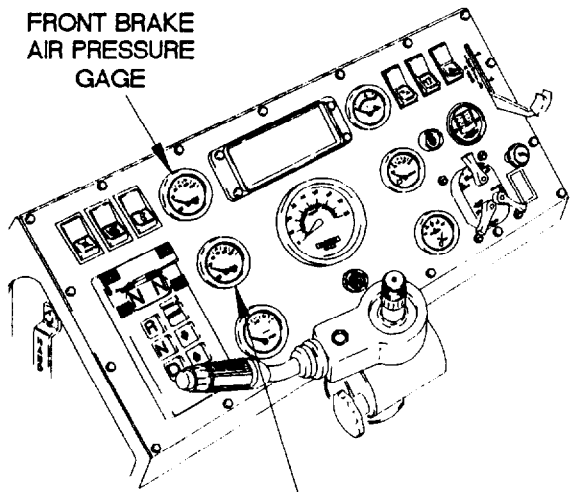
Equipment Conditions
- Engine running (TM 9-2320-365-10).
- Parking brake on (TM 9-2320-365-10).
- Wheels chocked (TM 9-2320-365-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Goggles, Industrial (Item 15, Appendix C)
- Pan, Wash (Item 25, Appendix C)

Materials/Parts
- Soap, Laundry (Item 69, Appendix D)

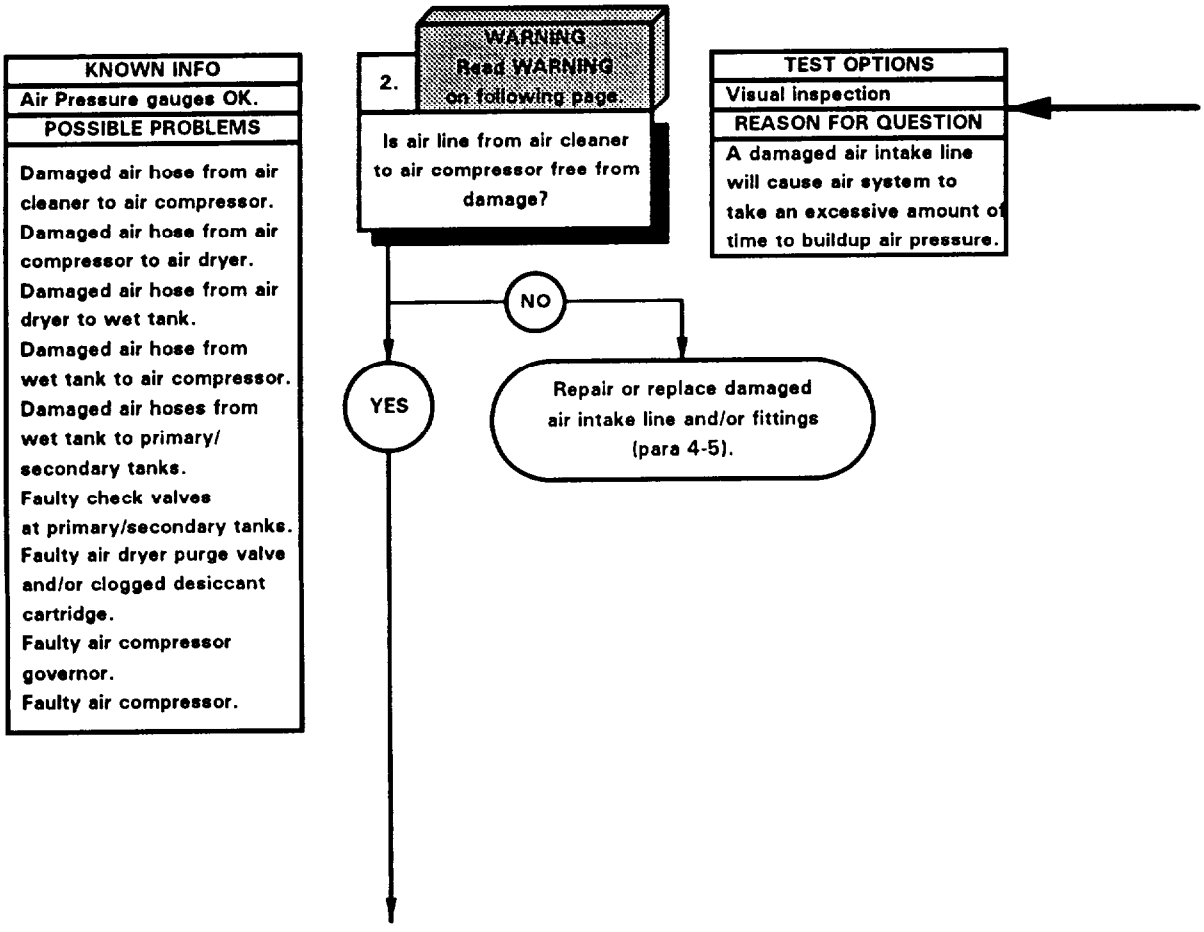


PRESSURE GAGE CHECK
(1) Check whether both pressure gages read below 120 psi.
(2) If both gages read low, the pneumatic air system is failing to maintain operating pressure.
(3) If only one of the gages reads low, brake lines are leaking.



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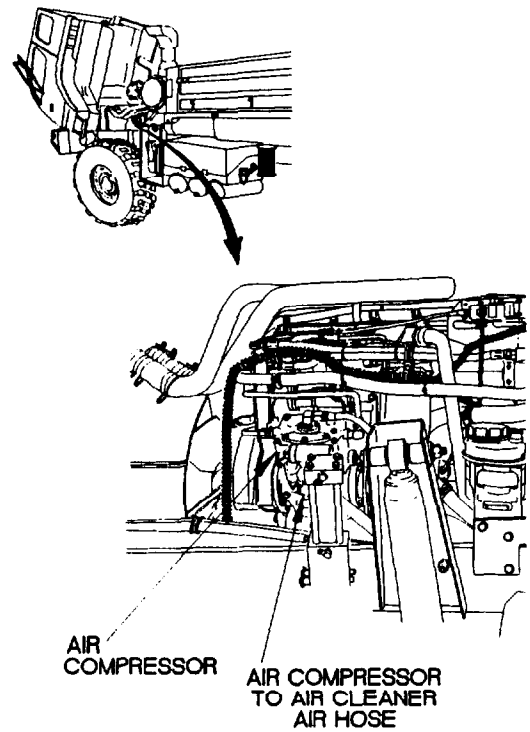
j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP (CONT)

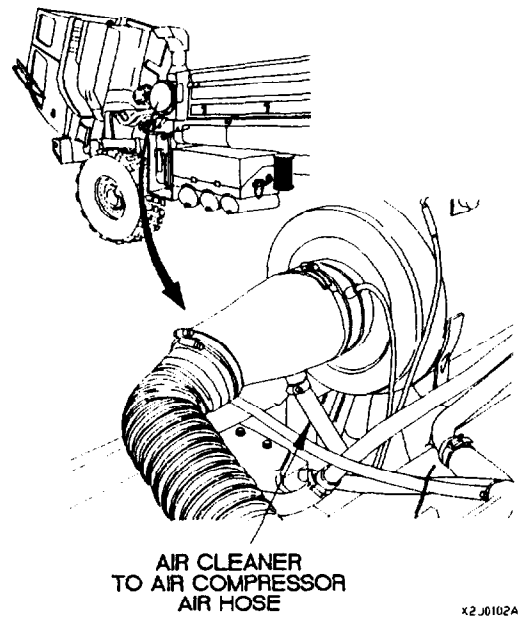


WARNING

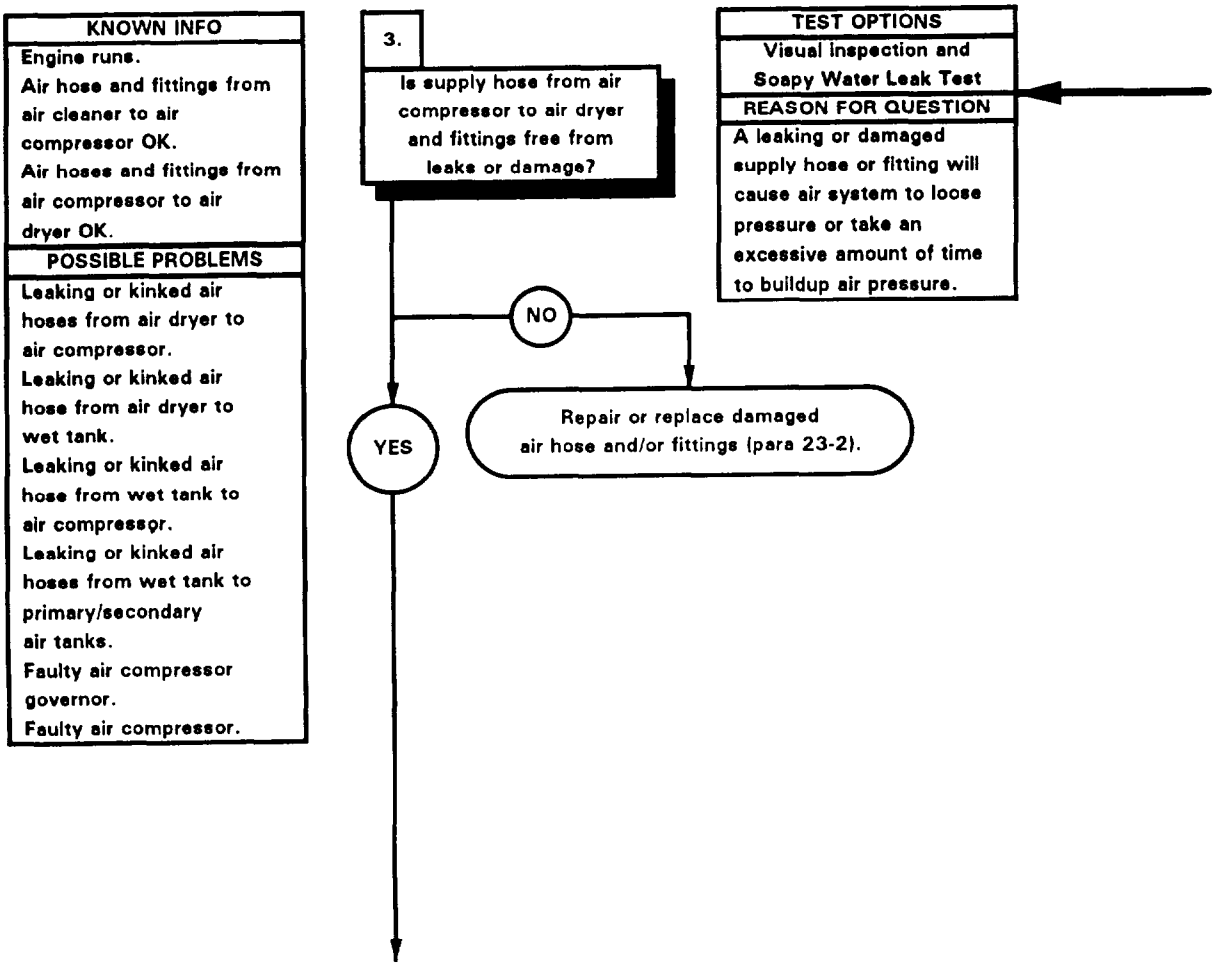
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

(1) Raise cab (TM 9-2320-365-10).
(2) Check air intake hose from air cleaner to air compressor and fittings for damage.





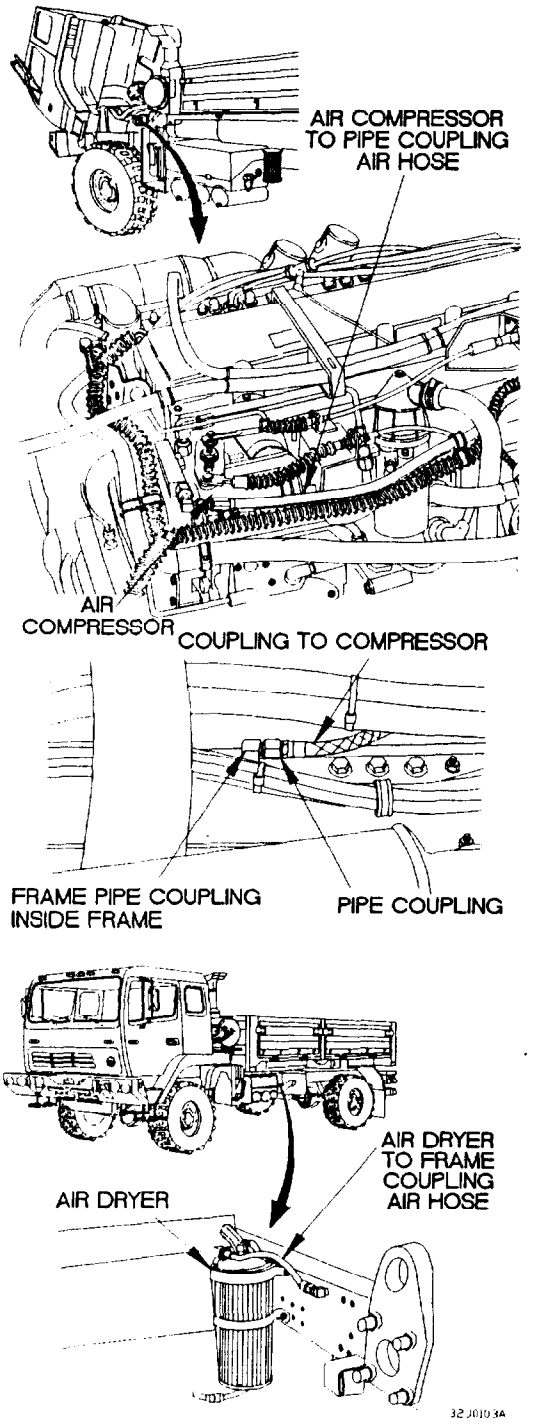
j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP (CONT)



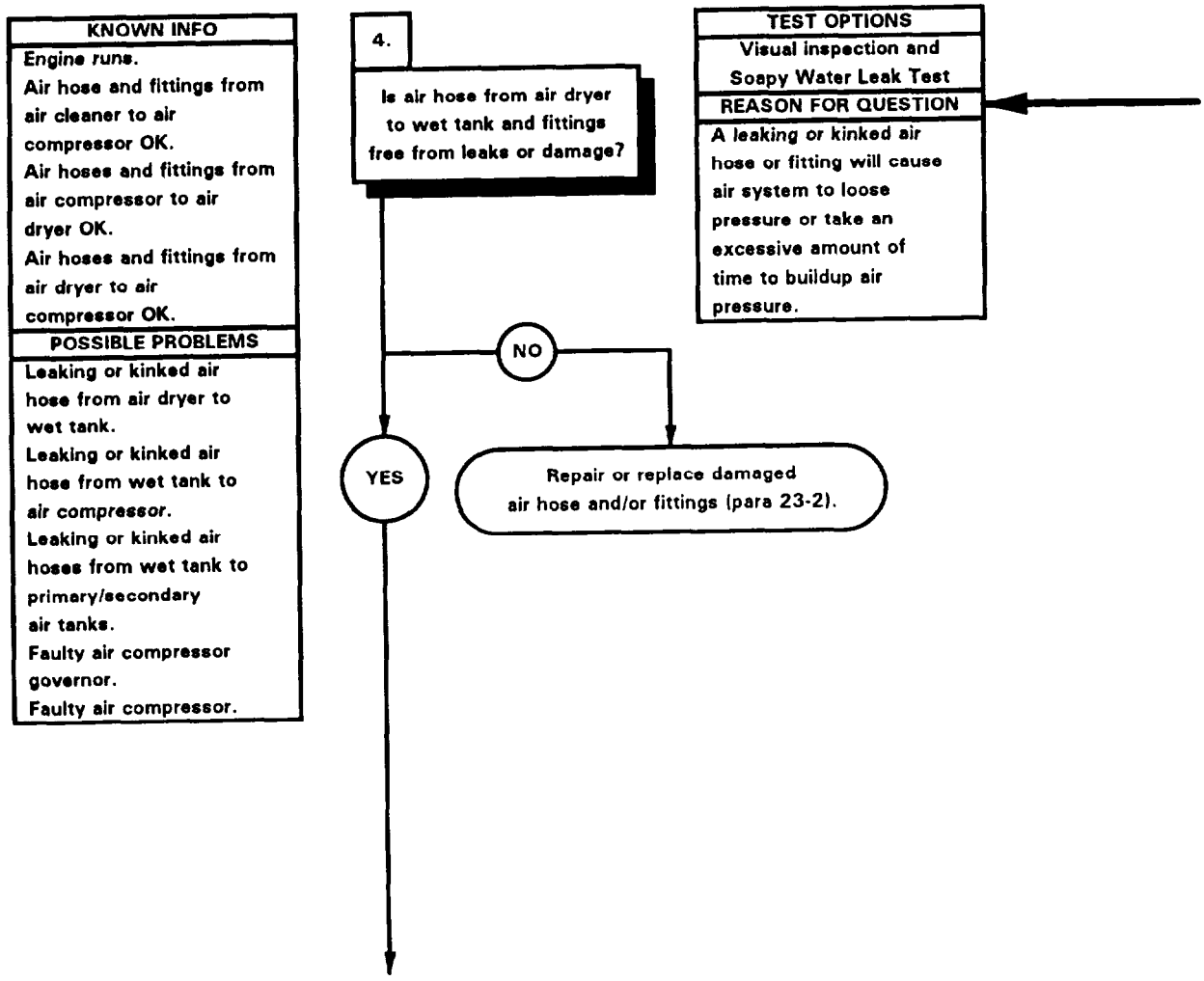
SOAPY WATER LEAK TEST

(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check hoses and fittings for bubbles, indicating leaks.

(1) Check air hose from air compressor to pipe coupling and fittings for leaks or damage.
(2) Check air hose from pipe coupling to frame pipe coupling and fittings for leaks or damage.
(3) Check air hose from frame pipe coupling to air dryer and fittings for leaks or damage.

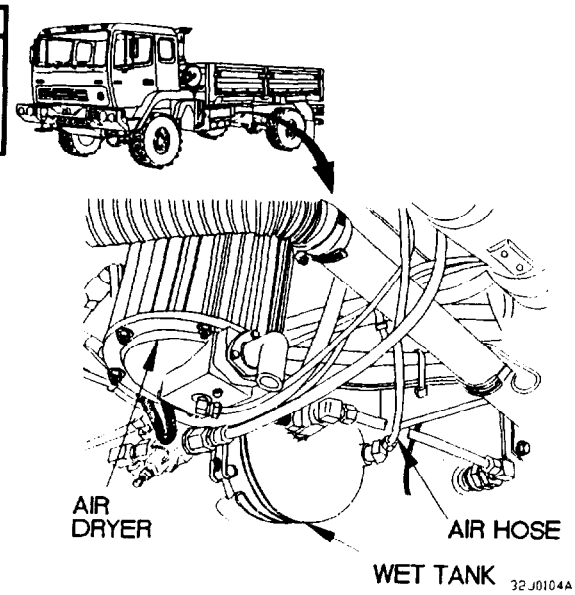


j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP (CONT)

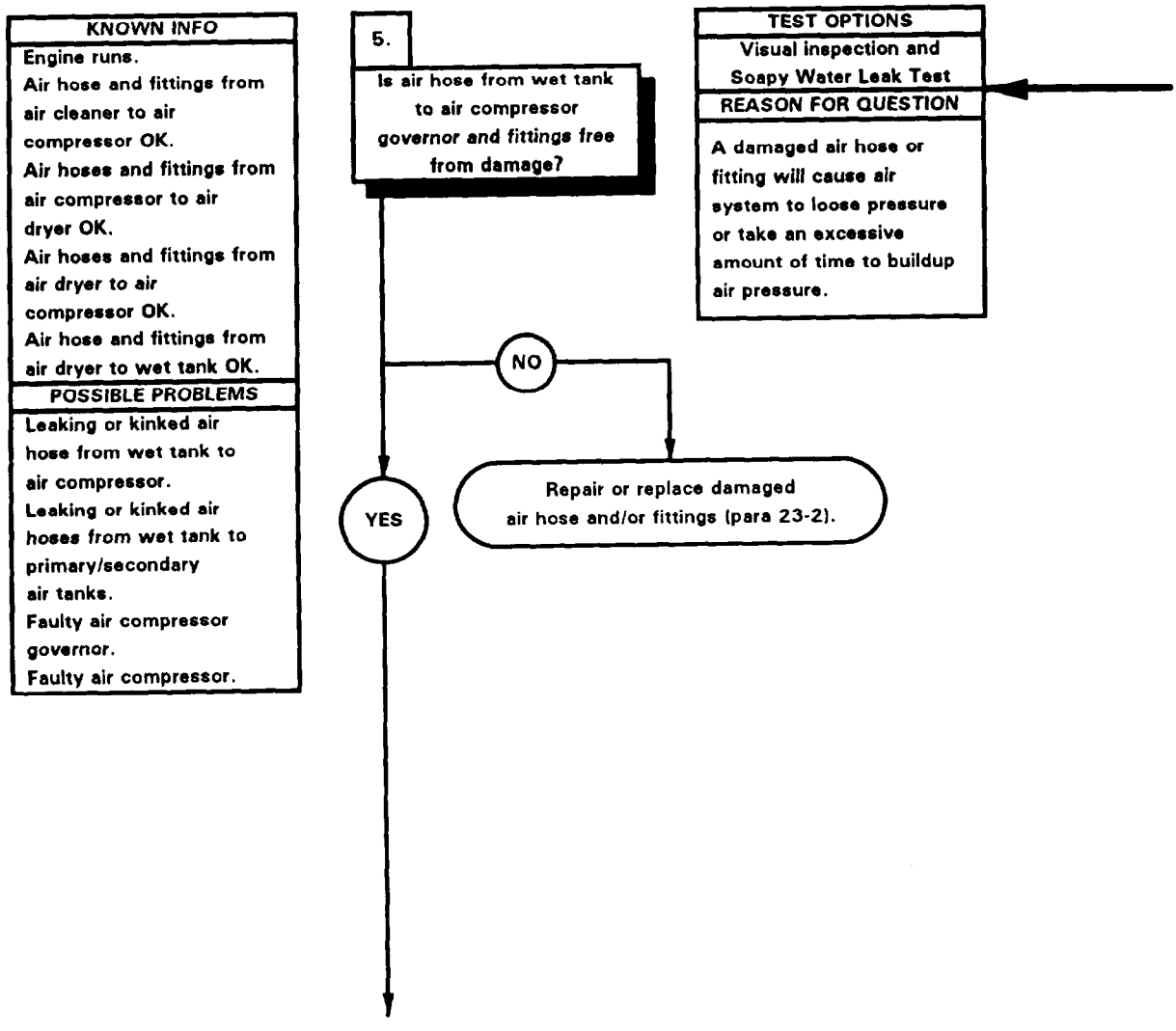


SOAPY WATER LEAK TEST
(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check hoses and fittings for bubbles, indicating leaks.

Check air hose from air dryer to wet tank and fittings for leaks and kinks.

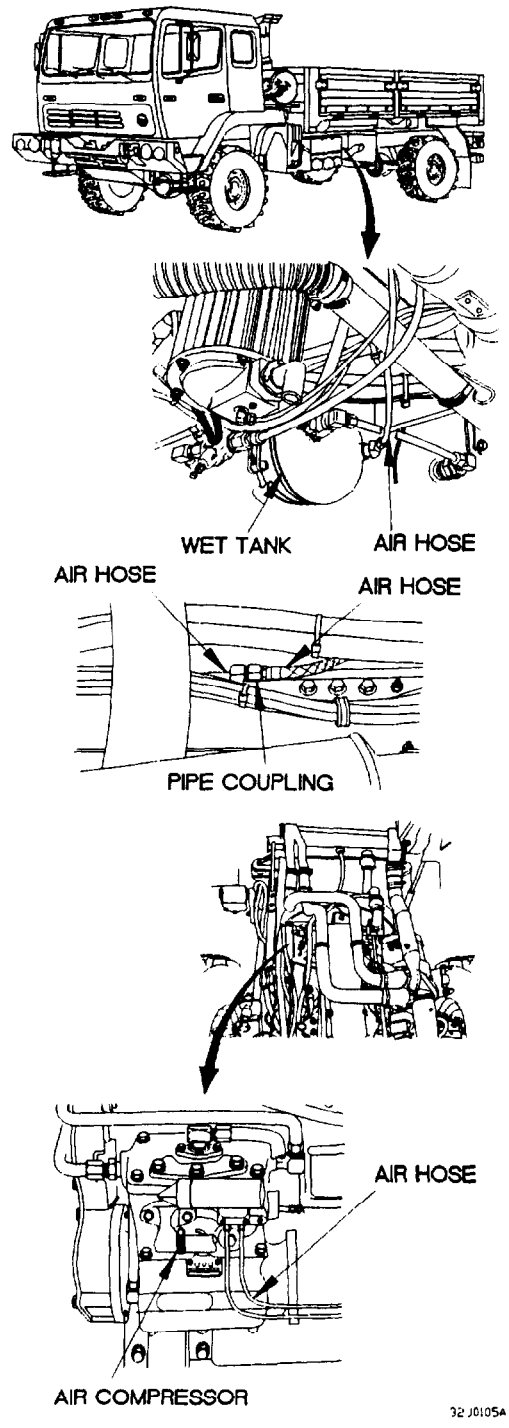


j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP (CONT)

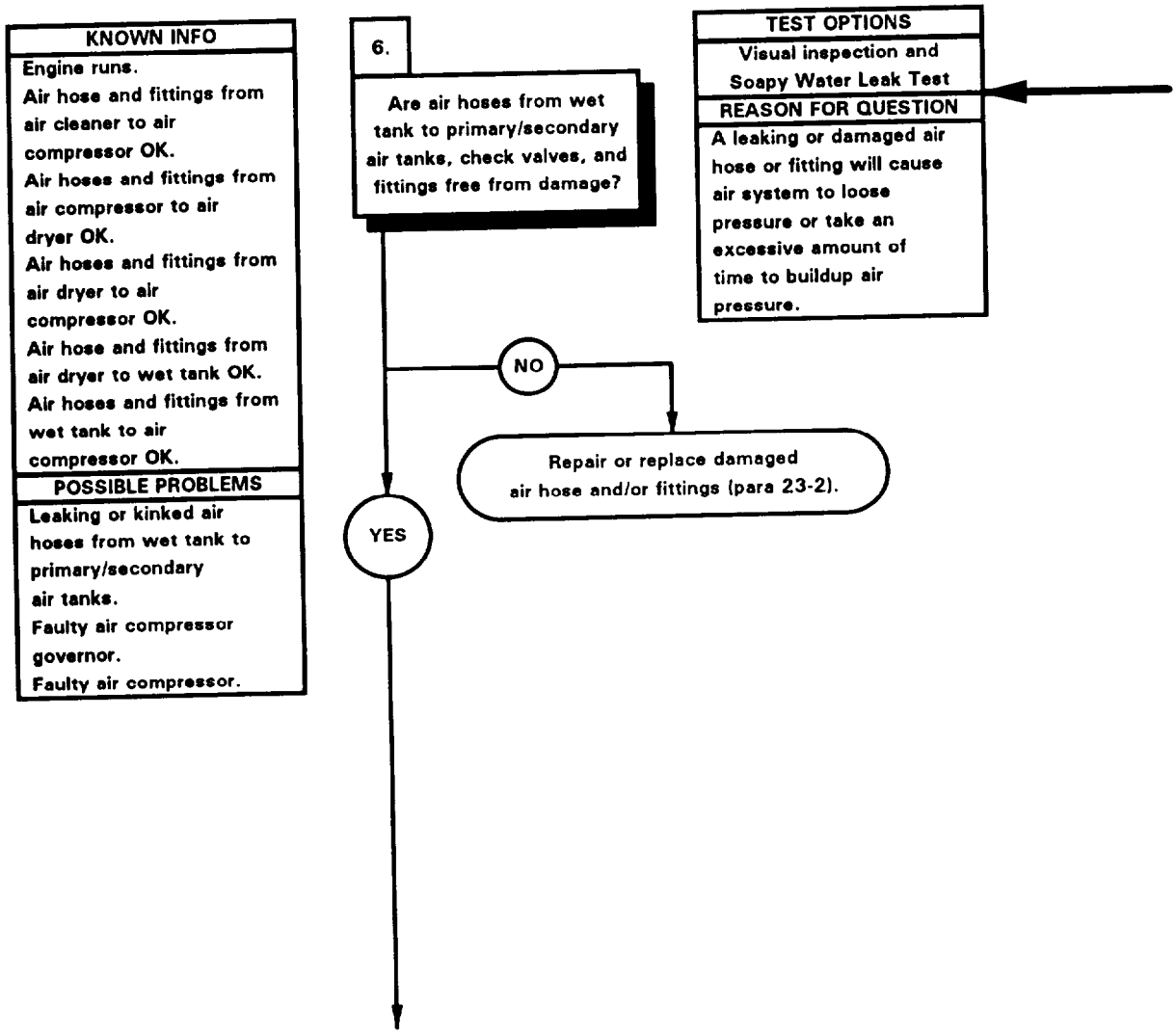


SOAPY WATER LEAK TEST
(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check hoses and fittings for bubbles, indicating leaks.

(1) Check air hose from wet tank to pipe coupling and fittings for leaks and damage.
(2) Check air hose from pipe coupling to air compressor and fittings for leaks and damage.
(3) Lower cab (TM 9-2320-365-10).



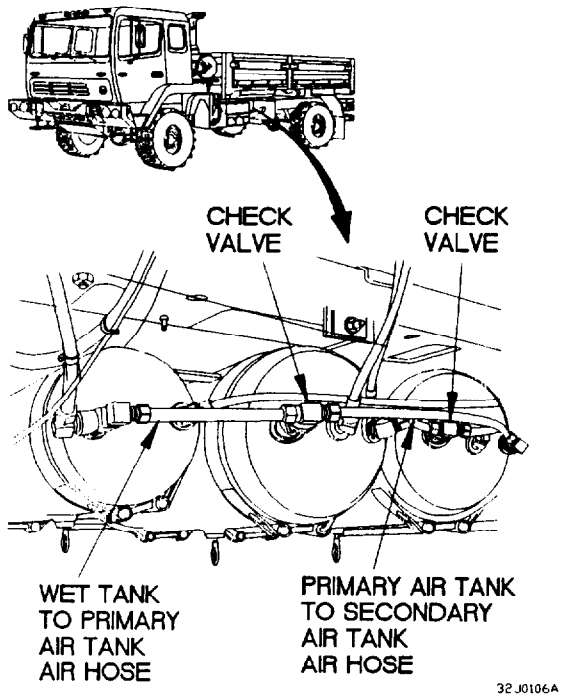
j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP (CONT)



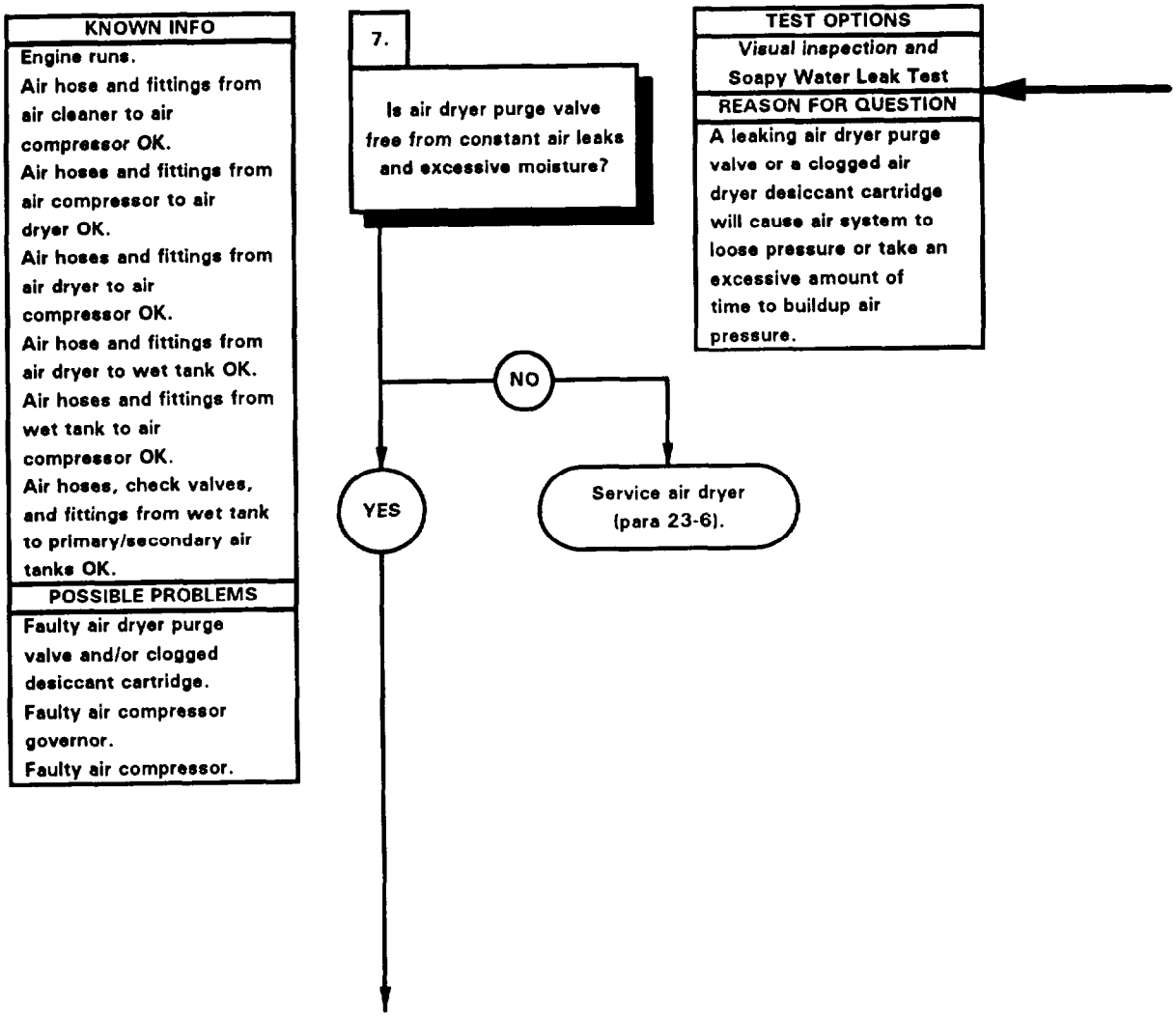
SOAPY WATER LEAK TEST

(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check hoses and fittings for bubbles, indicating leaks.

(1) Check air hose from wet tank to primary air tank check valve, and fittings for leaks and damage.
(2) Check air hose from primary air tank check valve to secondary air tank check valve, and fittings for leaks and damage.

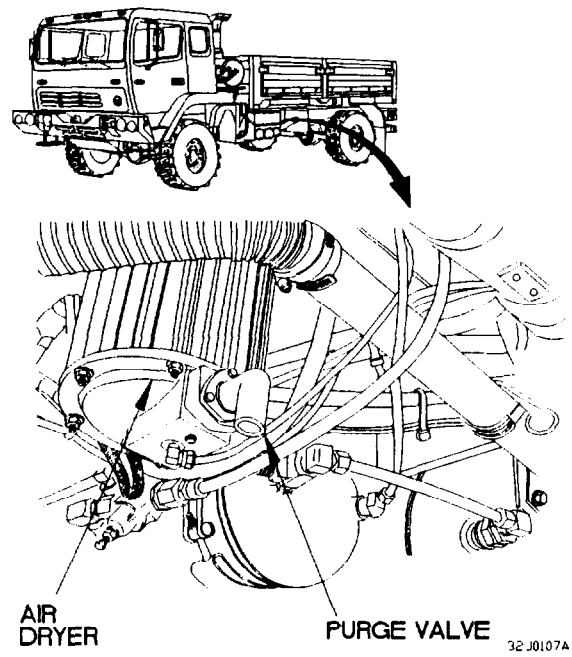


j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP (CONT)

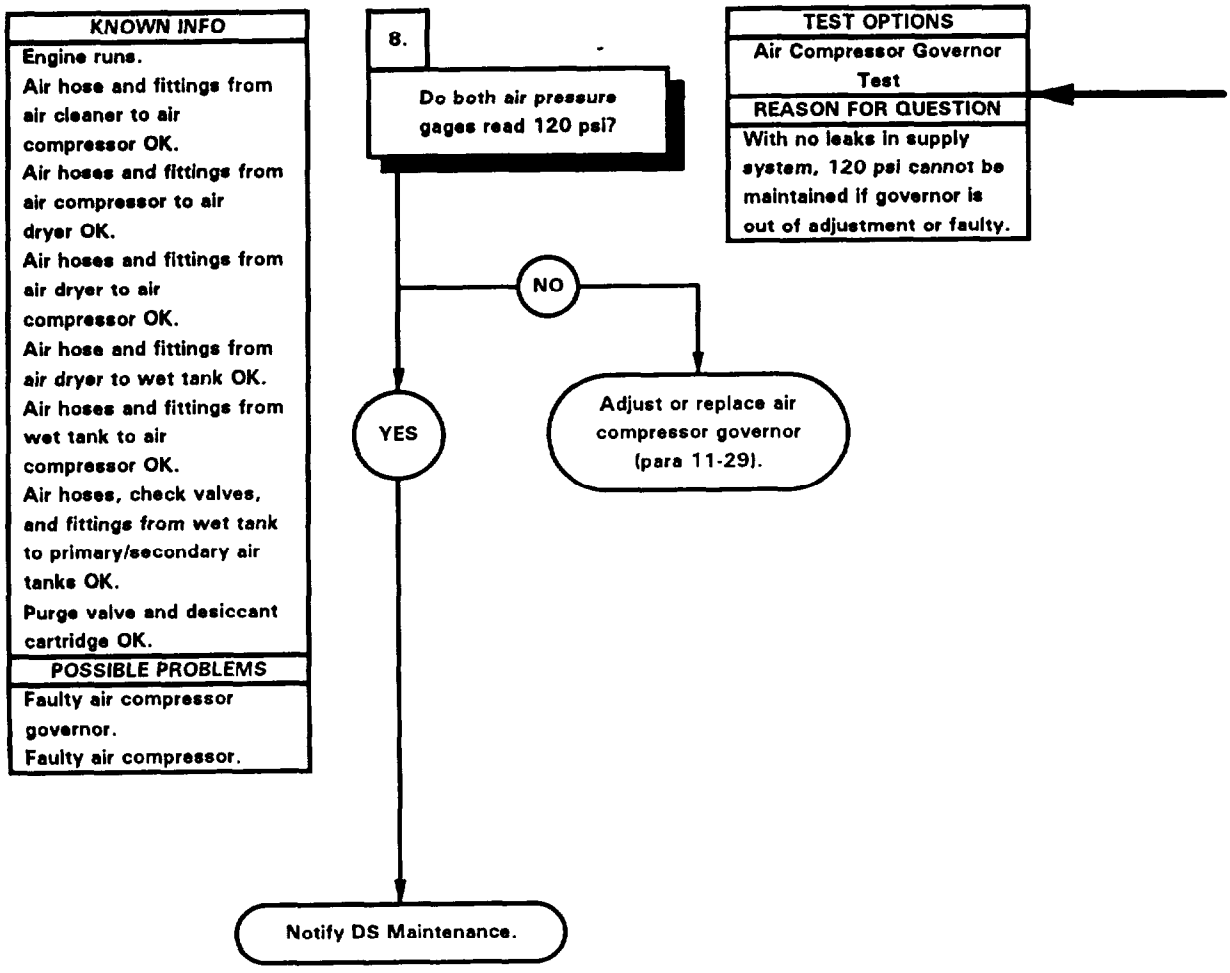


SOAPY WATER LEAK TEST
(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check hoses and fittings for bubbles, indicating leaks.

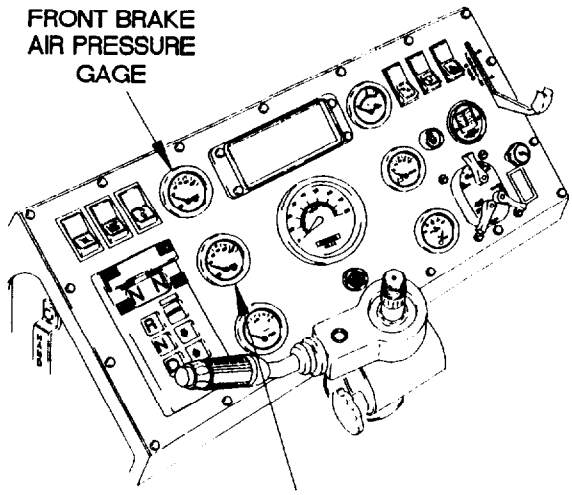
(1) Open drain cock to wet tank and check for excessive amounts of moisture. If moisture exists in wet tank, service air dryer desiccant cartridge due to clogging.
(2) Close drain cock to wet tank.



j1. AIR SYSTEM LOSES PRESSURE DURING OPERATION/SLOW AIR PRESSURE BUILDUP (CONT)

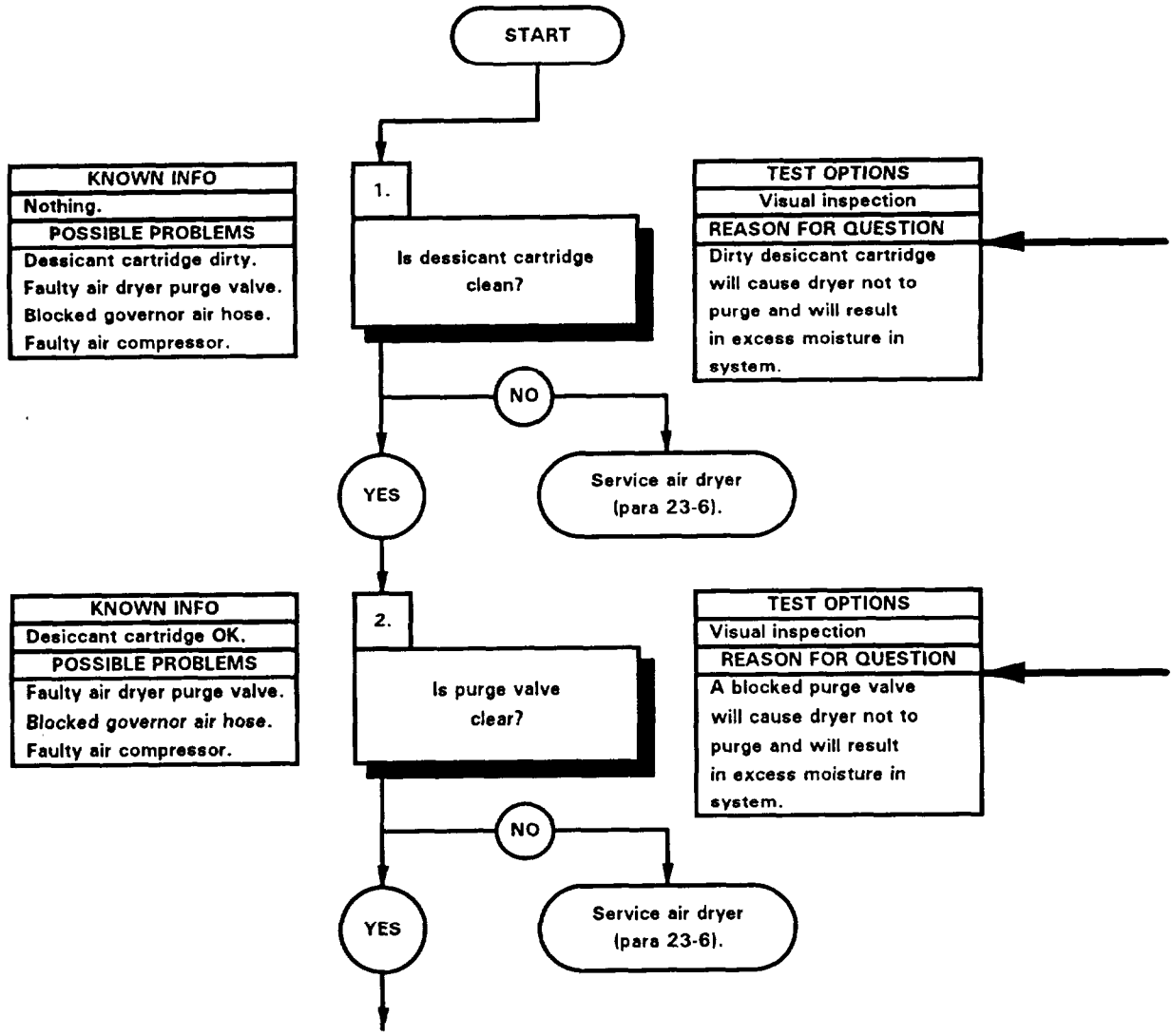


AIR COMPRESSOR GOVERNOR TEST
(1) Allow pneumatic system to build pressure and observe front brake/rear brake pressure gages without applying brakes or operating air system.
(2) Check if air pressure stabilizes at 120 psi.
(3) If air pressure remains below 120 psi, air compressor governor may need adjustment or is faulty.
(4) Shut down engine (TM 9-2320-365-10).

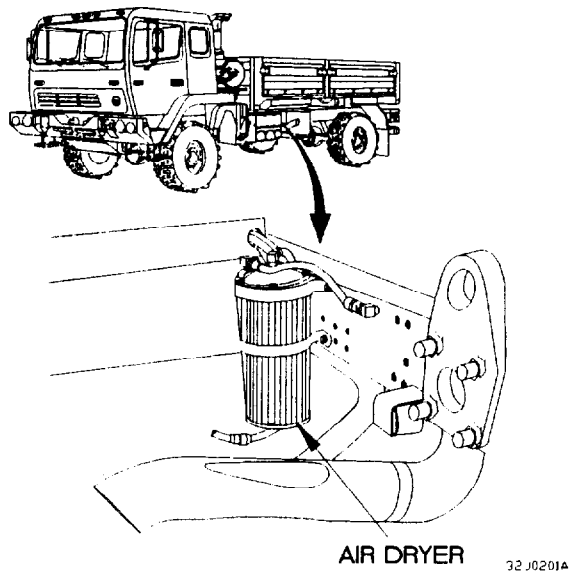


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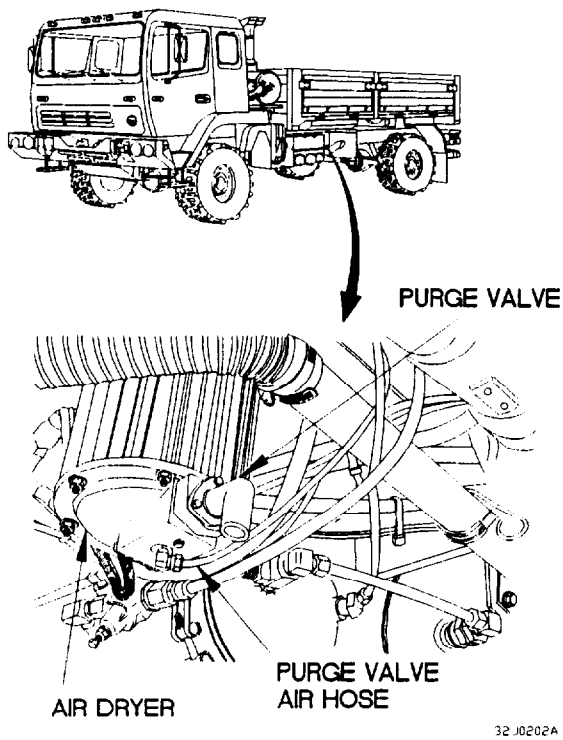
j2. LARGE QUANTITY OF MOISTURE EXPELLED FROM AIR RESERVOIRS	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)



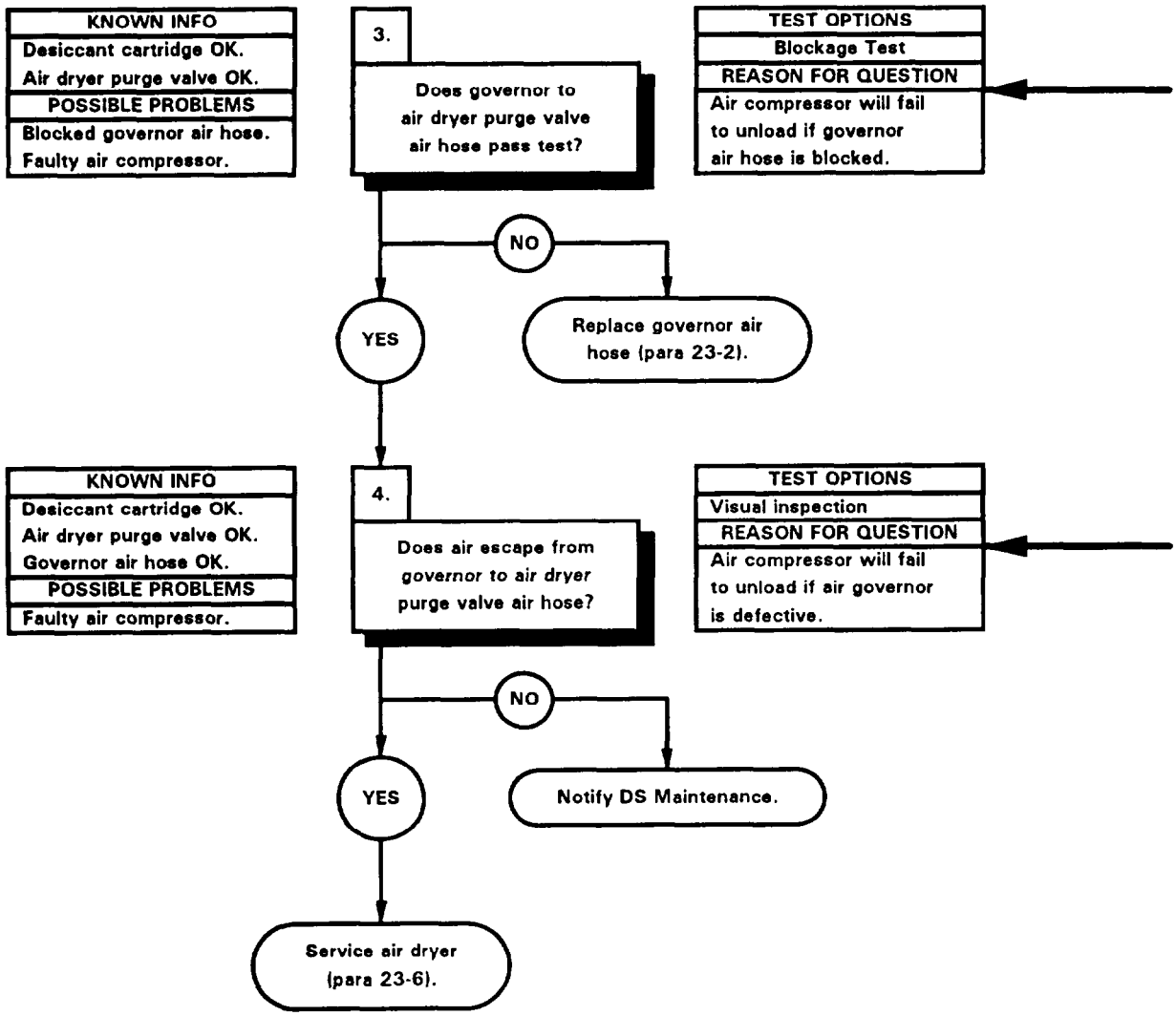
(1) Remove desiccant cartridge from air dryer (para 23-6).
(2) Inspect the desiccant cartridge for cleanliness.



(1) Remove three screws, purge valve, and exhaust boot.
(2) Check purge valve for blockage. If blocked, purge valve is faulty.
(3) Install exhaust boot, purge valve, and three screws.

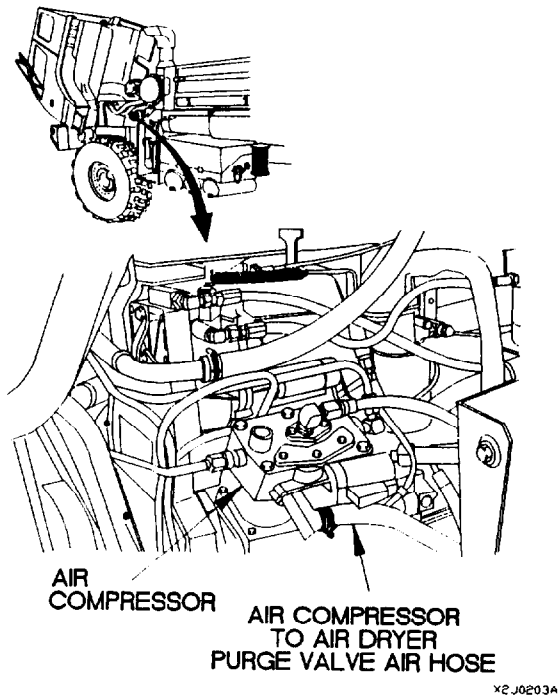


j2. LARGE QUANTITY OF MOISTURE EXPELLED FROM AIR RESERVOIRS (CONT)

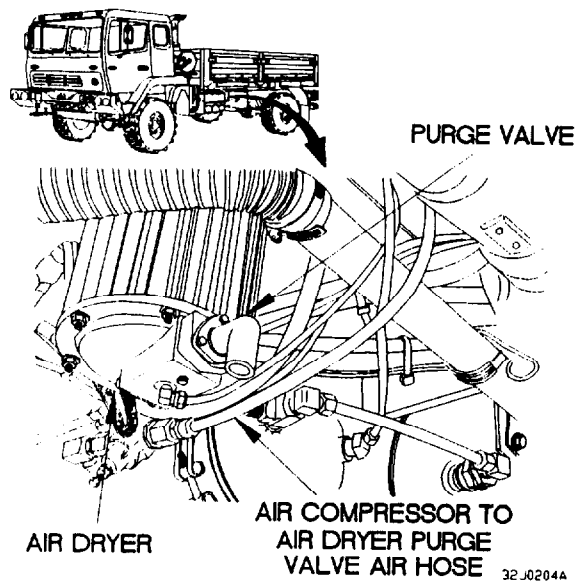


BLOCKAGE TEST

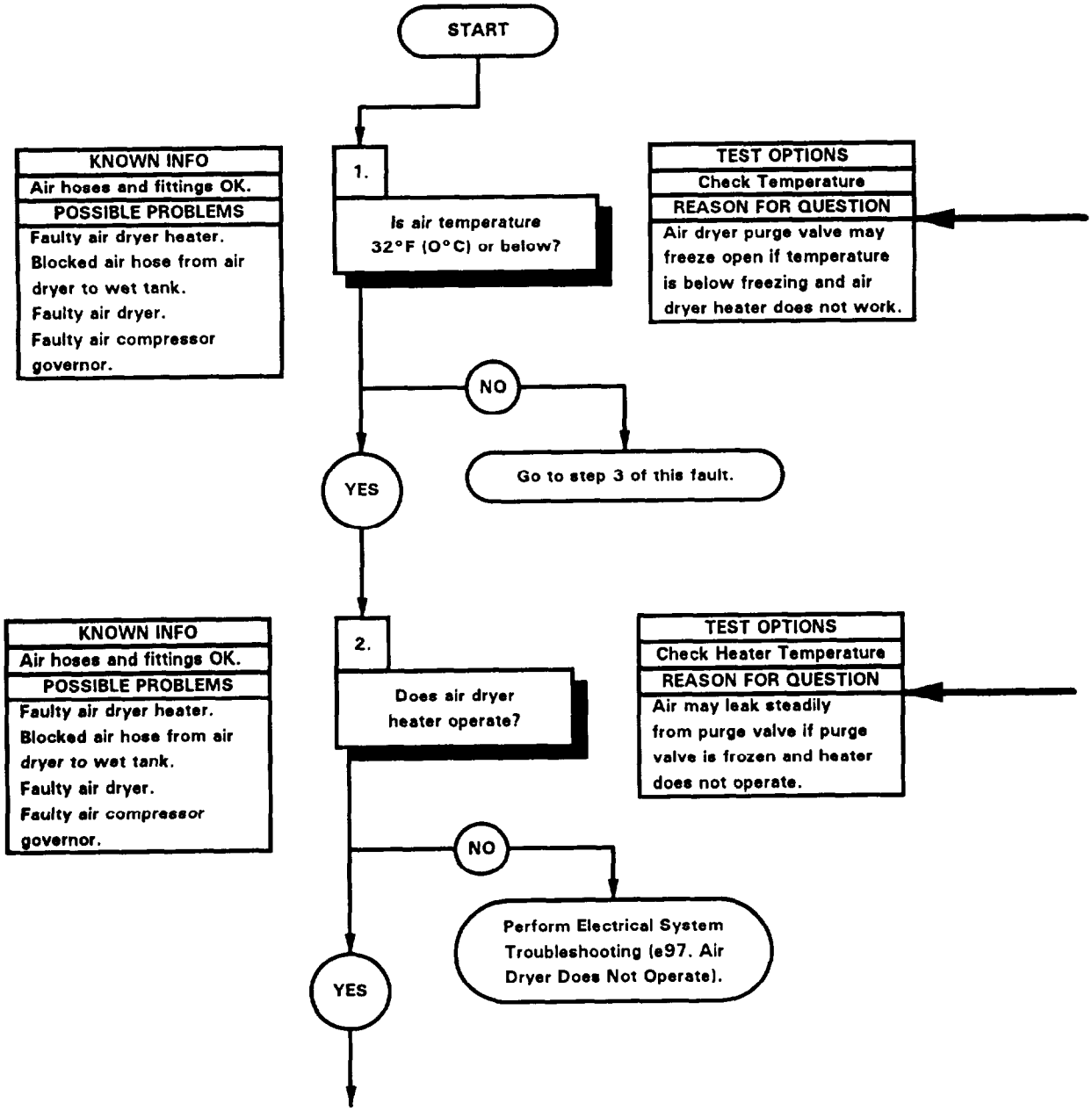
(1) Disconnect governor to air dryer air hose at governor and at purge valve.
(2) Blow through one end of air hose. If no air escapes from other end of air hose, air hose is blocked.
(3) Connect governor to air dryer air hose to governor and purge valve.



(1) Disconnect governor air hose at air dryer purge valve.
(2) Start engine (TM 9-2320-365-10).
(3) Check for presence of air at air hose. If no air escapes from air hose air compressor is defective. If air escapes, service air dryer for faulty purge valve.
(4) Shut down engine (TM 9-2320-365-10).
(5) Connect air compressor to air dryer air hose to air dryer.
(6) Install desiccant cartridge in air dryer (para 23-6).



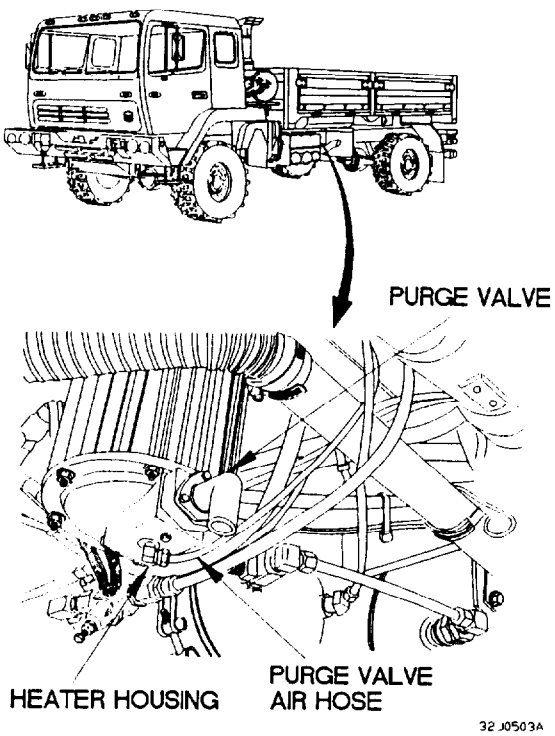
J3. AIR DRYER CONTINUALLY PURGES	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)



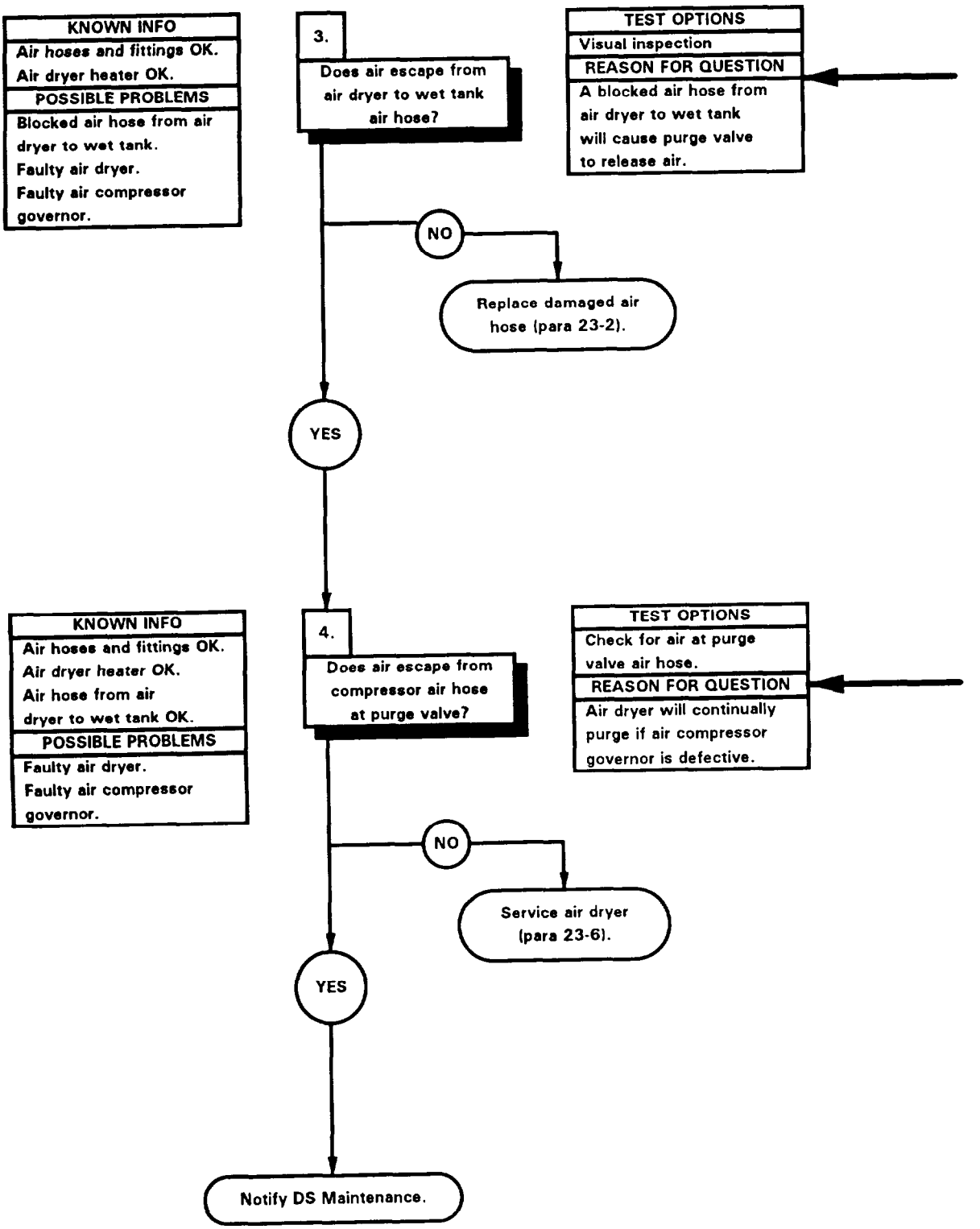
NOTE

- Air dryer heater cuts in at 32°F (0°C) and shuts off between 55-75°F (31-42°C).
- A failed air dryer heater will not affect operation of purge valve if vehicle is operating at temperature above freezing.

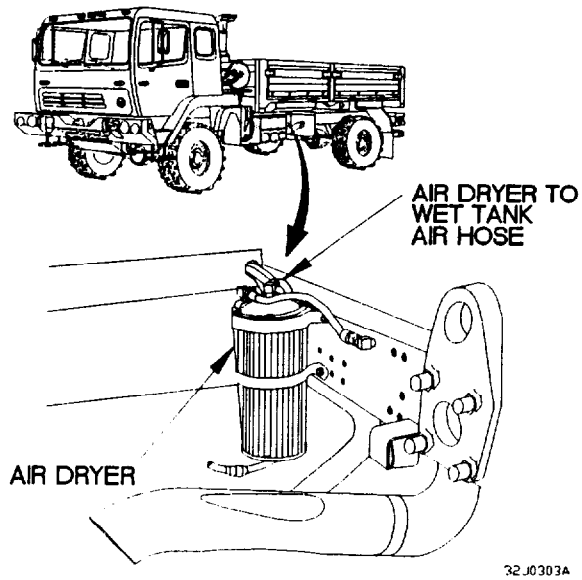
(1) Start engine (TM 9-2320-365-10).
(2) Bring engine to operating temperature.
(3) Check bottom (heater) housing on air dryer.
(4) If housing is not warm, heater is not receiving power or is faulty.
(5) Shut down engine (TM 9-2320-365-10).



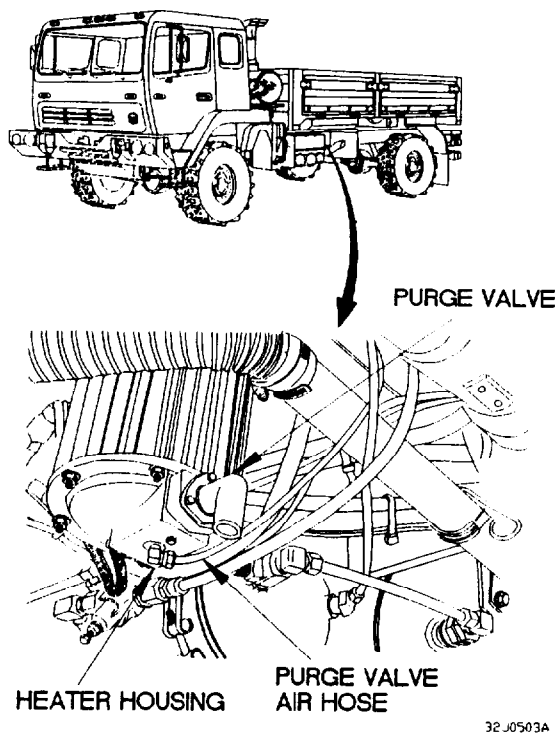
j3. AIR DRYER CONTINUALLY PURGES (CONT)



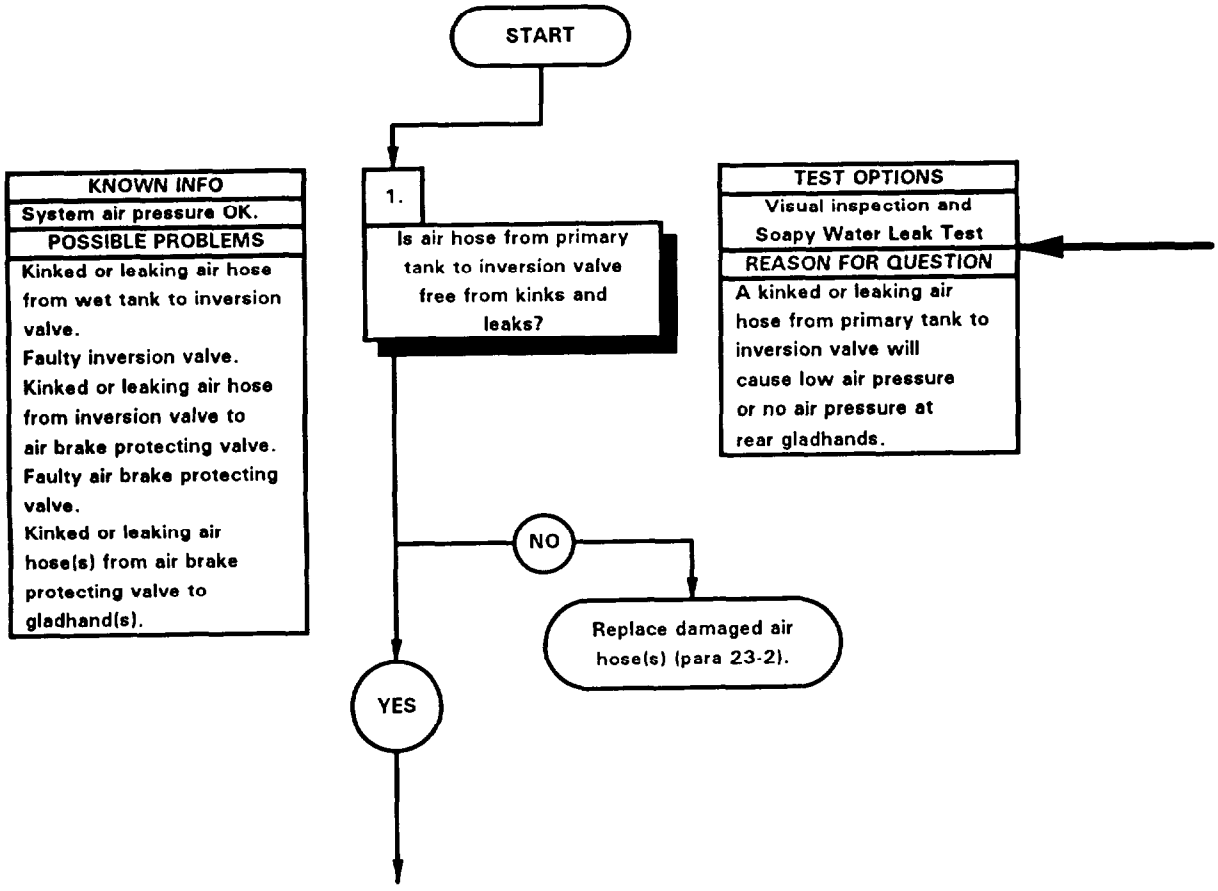
(1) Disconnect air hose on wet tank coming from air dryer.
(2) Start engine (TM 9-2320-365-10).
(3) Check for presence of air at air hose. If no air escapes from air hose, air hose is faulty.
(4) If air escapes, service air dryer (para 23-6).
(5) Shut down engine (TM 9-2320-365-10).



(1) Disconnect air hose from purge valve on air dryer.
(2) Start engine (TM 9-2320-365-10).
(3) Check for presence of air from air hose.
(4) If air is steadily present from air hose and purge valve air has stopped, air compressor governor is defective.
(5) Shut down engine (TM 9-2320-365-10).
(6) Connect air hose to purge valve on air dryer.

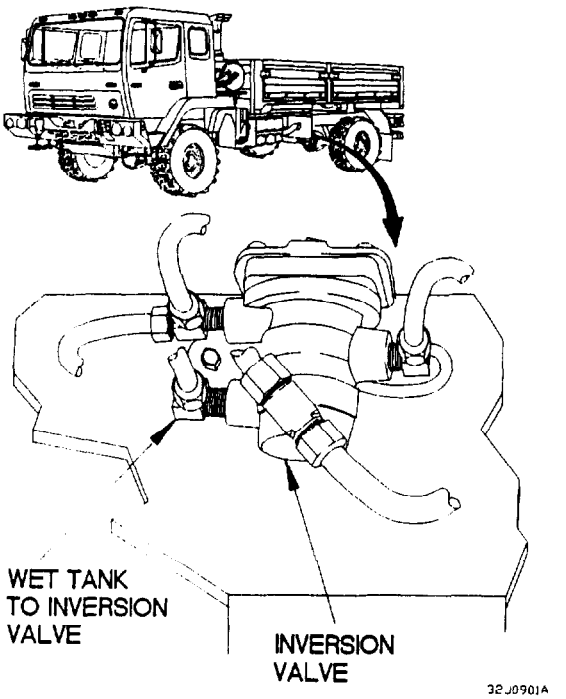


j4. NO AIR PRESSURE OR LOW AIR PRESSURE PRESENT AT REAR GLADHANDS	
INITIAL SETUP	
Equipment Conditions *Engine shut down (TM 9-2320-365-10).*	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C) Pan, Wash (Item 25, Appendix C)
Materials/Parts Soap, Laundry (Item 69, Appendix D)	



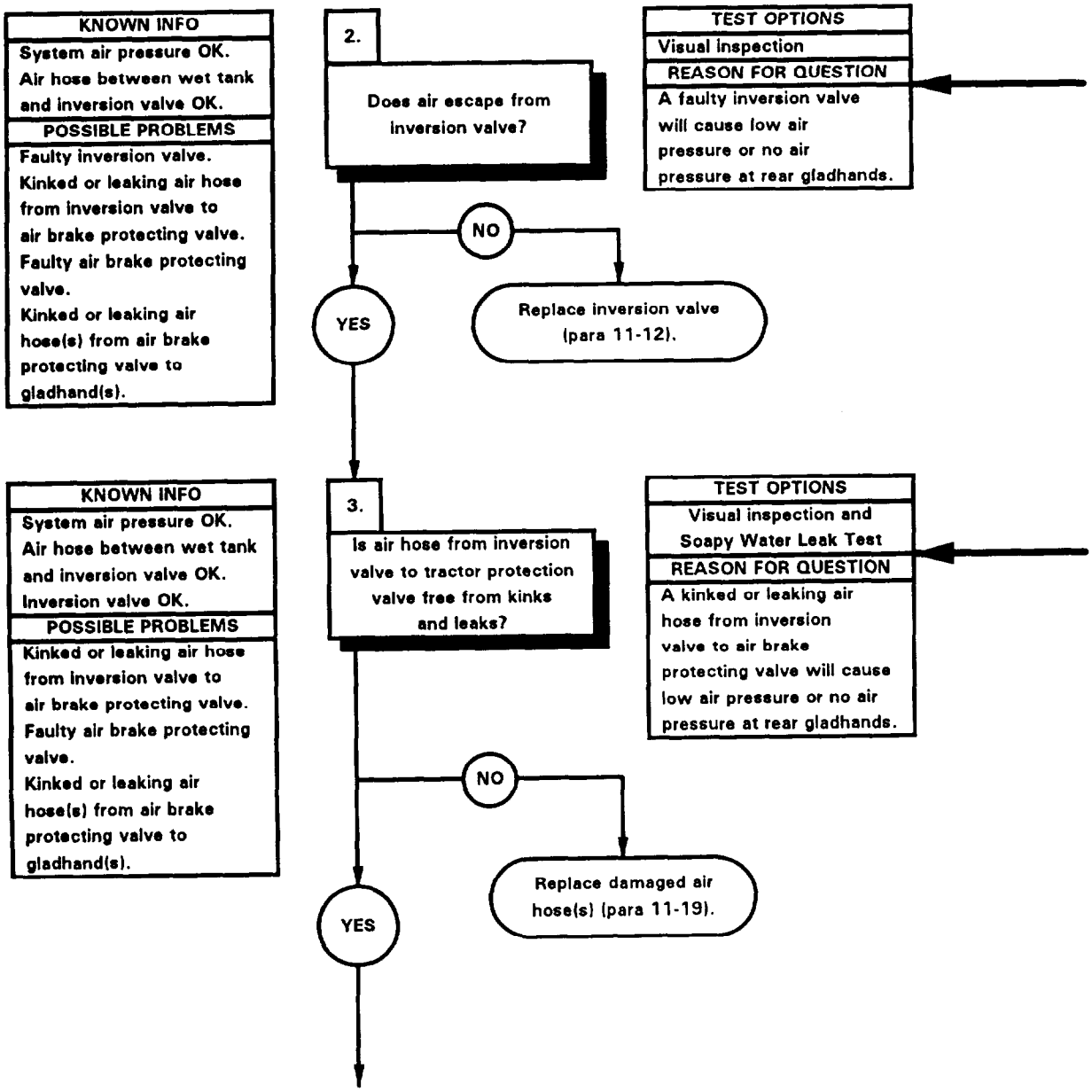
SOAPY WATER LEAK TEST

(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check air hose between primary tank and inversion valve for kinks and leaks. Tighten loose connections. If kinked, replace air hose.
(3) Check hoses and fittings for bubbles, indicating leaks.

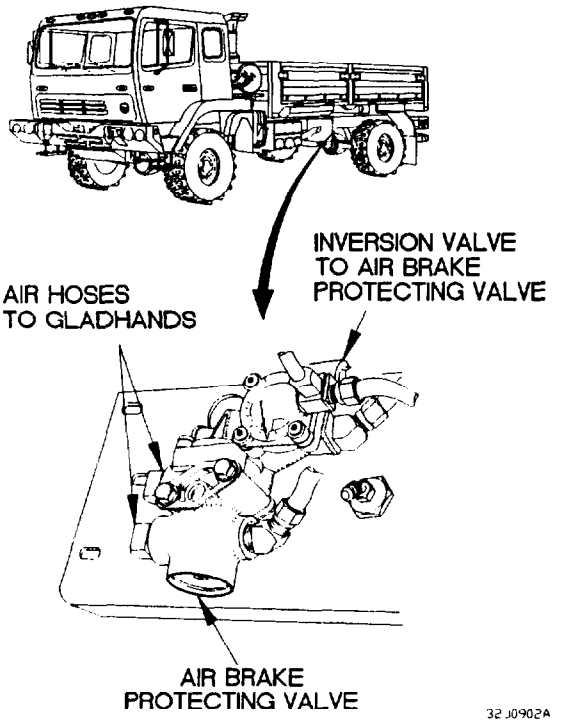


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j4. NO AIR PRESSURE OR LOW AIR PRESSURE PRESENT AT REAR GLADHANDS (CONT)



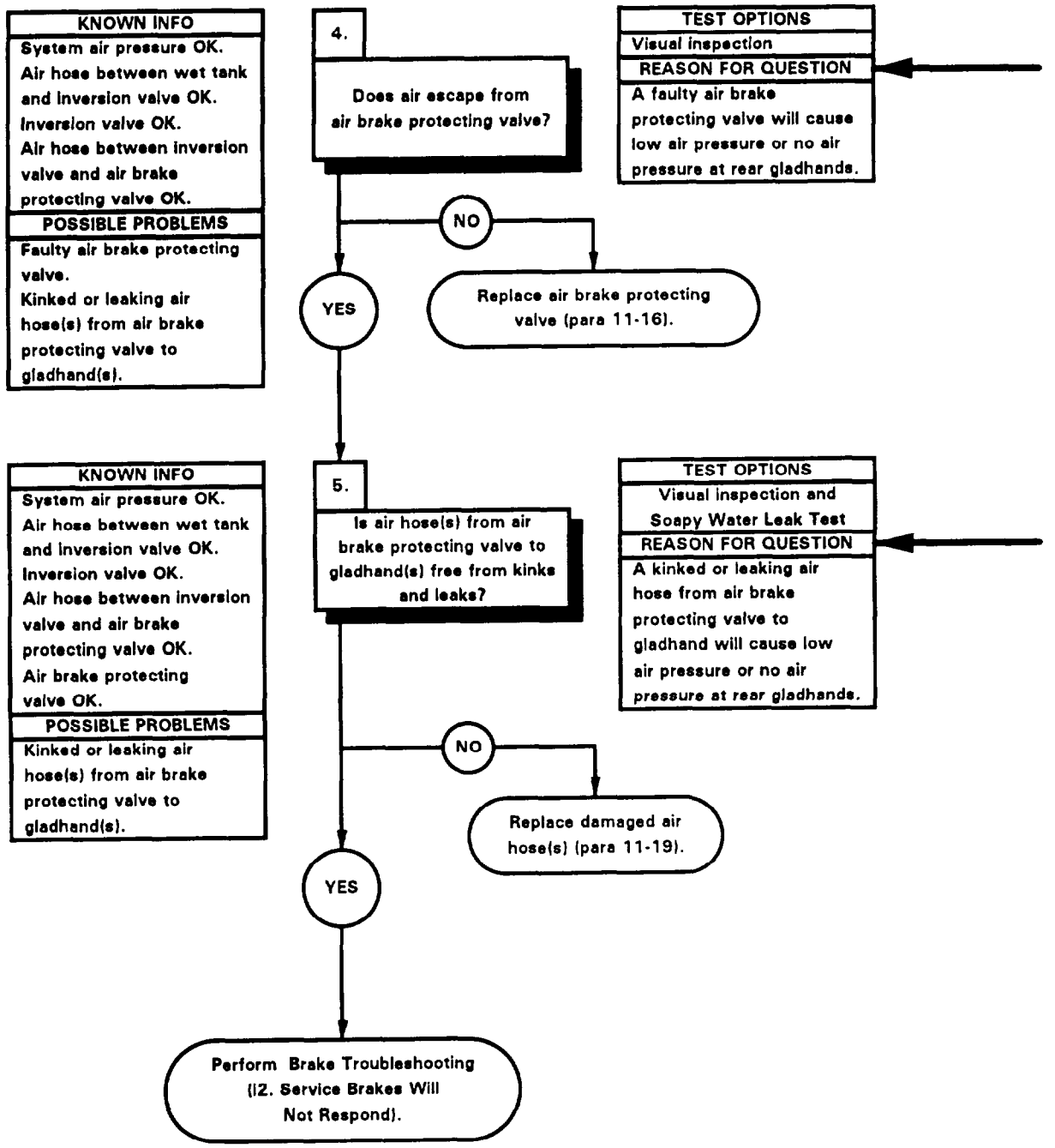
(1) Loosen delivery air hose on inversion valve.
(2) Check for presence of air at inversion valve delivery air hose. If no air is present, replace inversion valve.
(3) Tighten inversion valve delivery air hose.



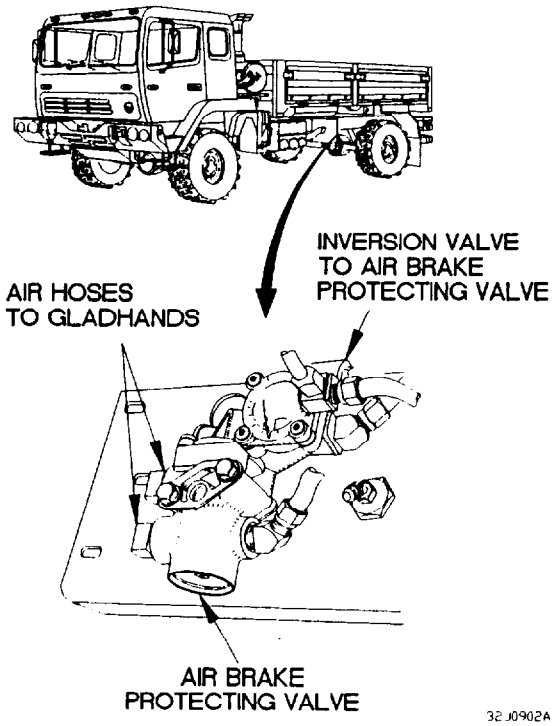
SOAPY WATER LEAK TEST

(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check air hose between inversion valve and air brake protecting valve for kinks and leaks. Tighten loose connections. If kinked, replace air hose.
(3) Check hoses and fittings for bubbles, indicating leaks.

j4. NO AIR PRESSURE OR LOW AIR PRESSURE PRESENT AT REAR GLADHANDS (CONT)

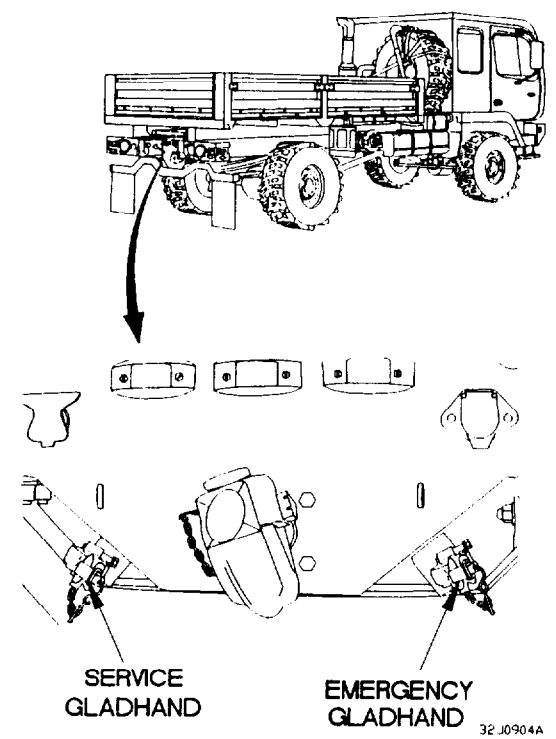


(1) Loosen delivery air hose(s) on air brake protecting valve.
(2) Check for presence of air at air brake protecting valve delivery air hose(s). If no air is present, replace air brake protecting valve.
(3) Tighten tractor protection valve delivery air hose(s).

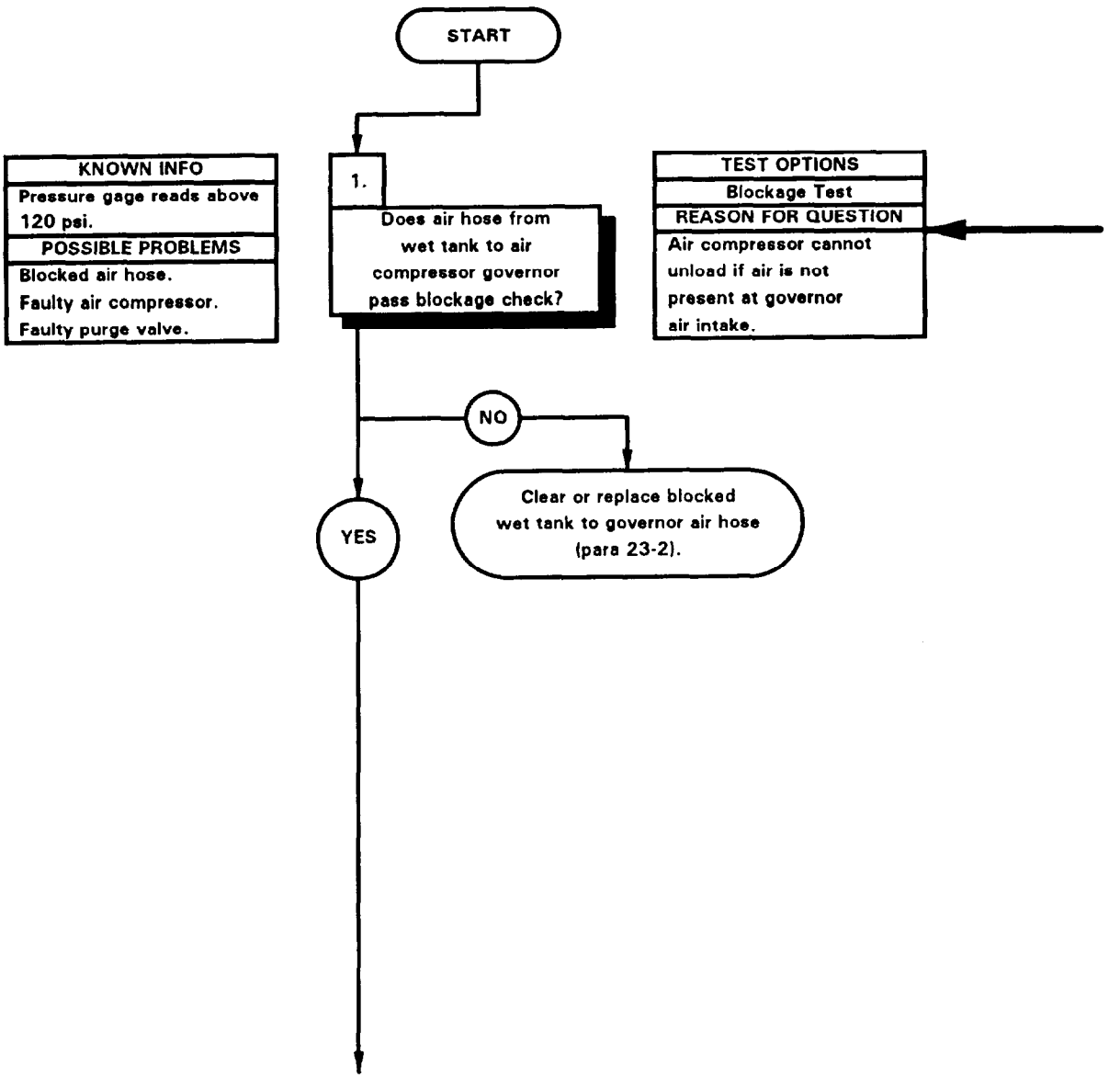


SOAPY WATER LEAK TEST

(1) Apply soapy water solution to hoses, fittings, and couplings.
(2) Check air hose(s) between air brake protecting valve and gladhand(s) for kinks and leaks. Tighten loose connections. If kinked, replace air hose(s).
(3) Check hoses and fittings for bubbles, indicating leaks.

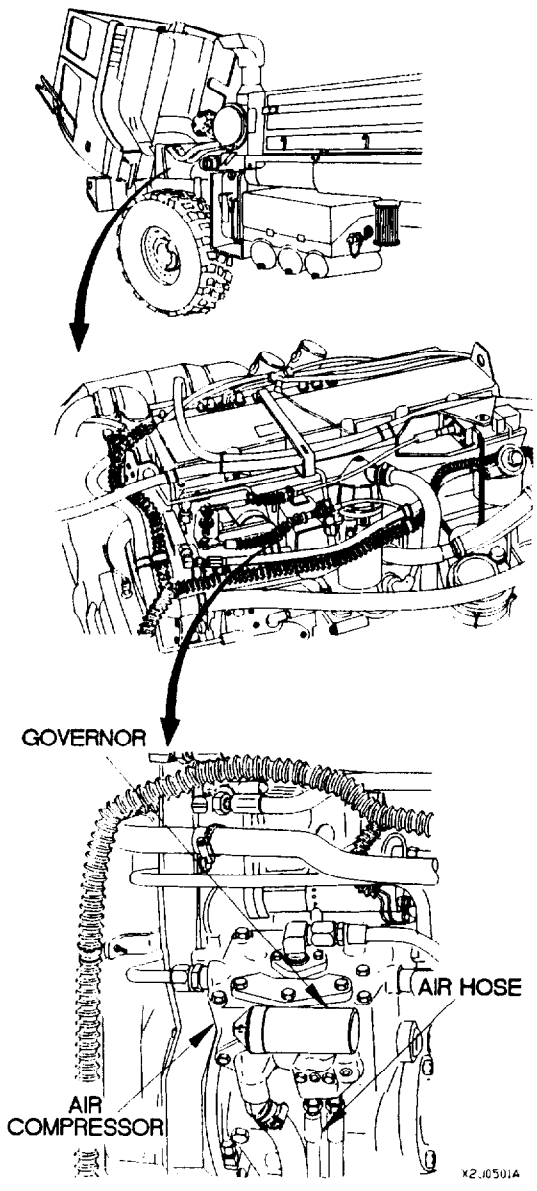


j5. AIR SYSTEM PRESSURE BUILDS UP TO MORE THAN 120 PSI (827 KPA) (COMPRESSOR FAILS TO UNLOAD)	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10). Air tanks drained (TM 9-2320-365-10).	Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C) *Goggles, Industrial* (Item 15, Appendix C)

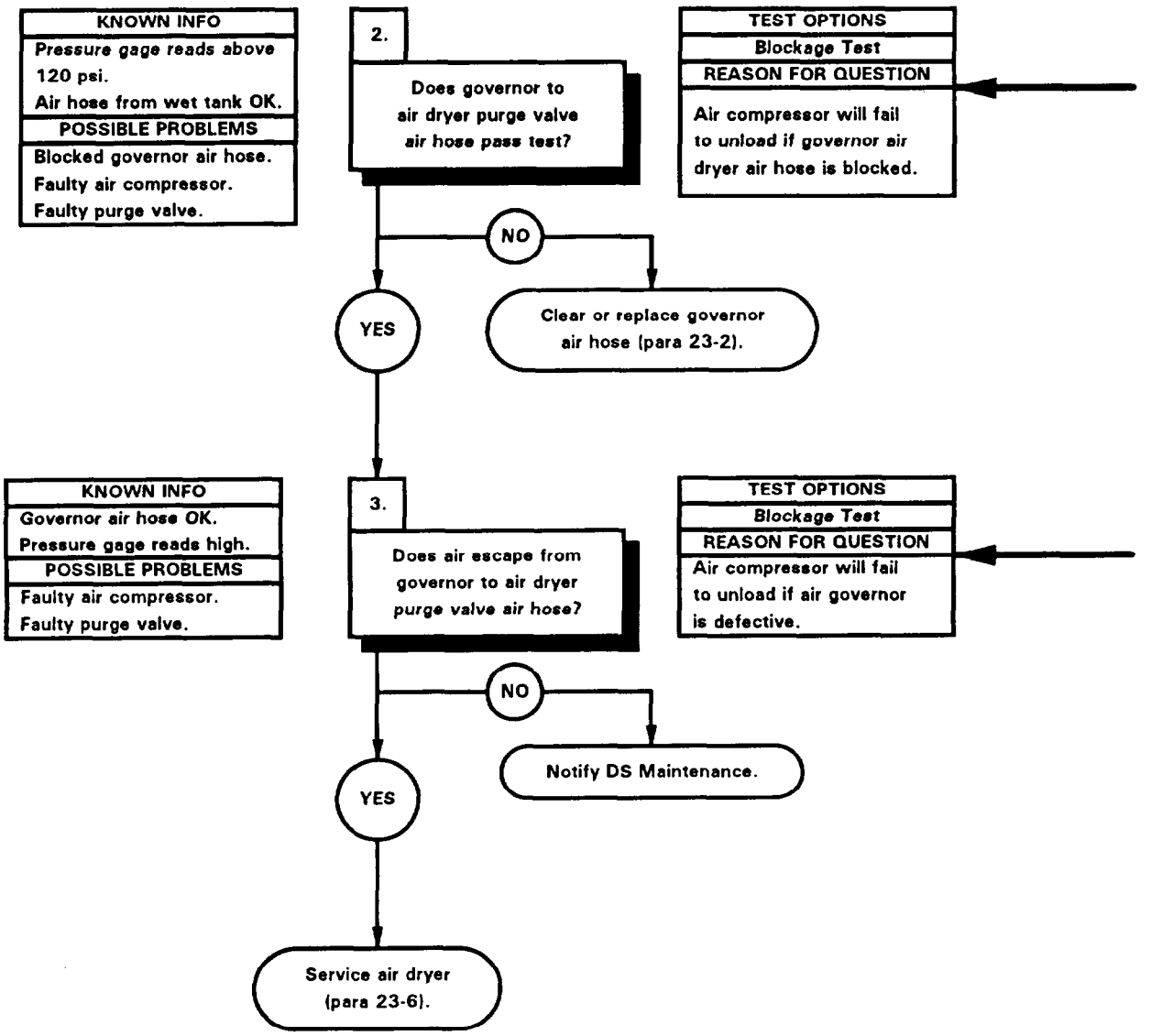


BLOCKAGE TEST

(1) Raise cab (TM 9-2320-365-10).
(2) Disconnect wet tank to governor air hose at governor.
(3) Start engine (TM 9-2320-365-10).
(4) Check for air escaping from air hose at governor end of hose.
(5) If no air escapes, air hose is blocked.
(6) Shut down engine (TM 9-2320-365-10).
(7) Connect wet tank to governor air hose at governor.

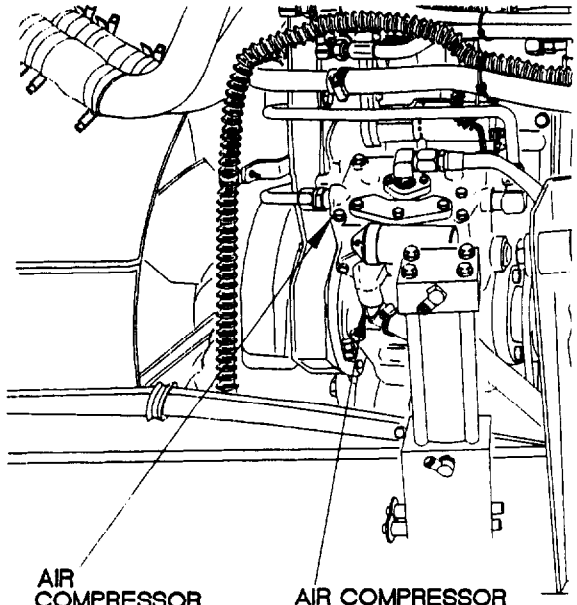


j5. AIR SYSTEM PRESSURE BUILDS UP TO MORE THAN 120 PSI (827 KPA) (COMPRESSOR FAILS TO UNLOAD) (CONT)



BLOCKAGE TEST

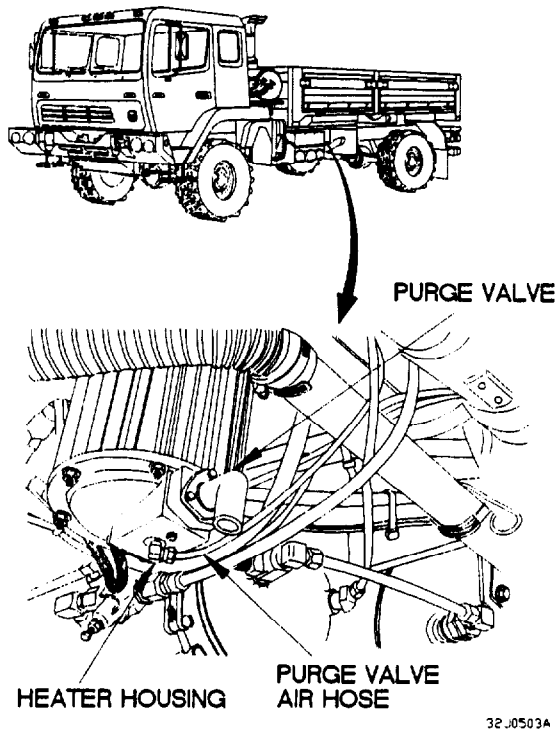
(1) Disconnect governor to air dryer air hose at governor and at purge valve.
(2) Blow through one end of air hose. If no air escapes from other end of air hose, air hose is blocked.
(3) Connect governor to air dryer air hose to governor and purge valve.
(4) Lower cab (TM 9-2320-365-10).



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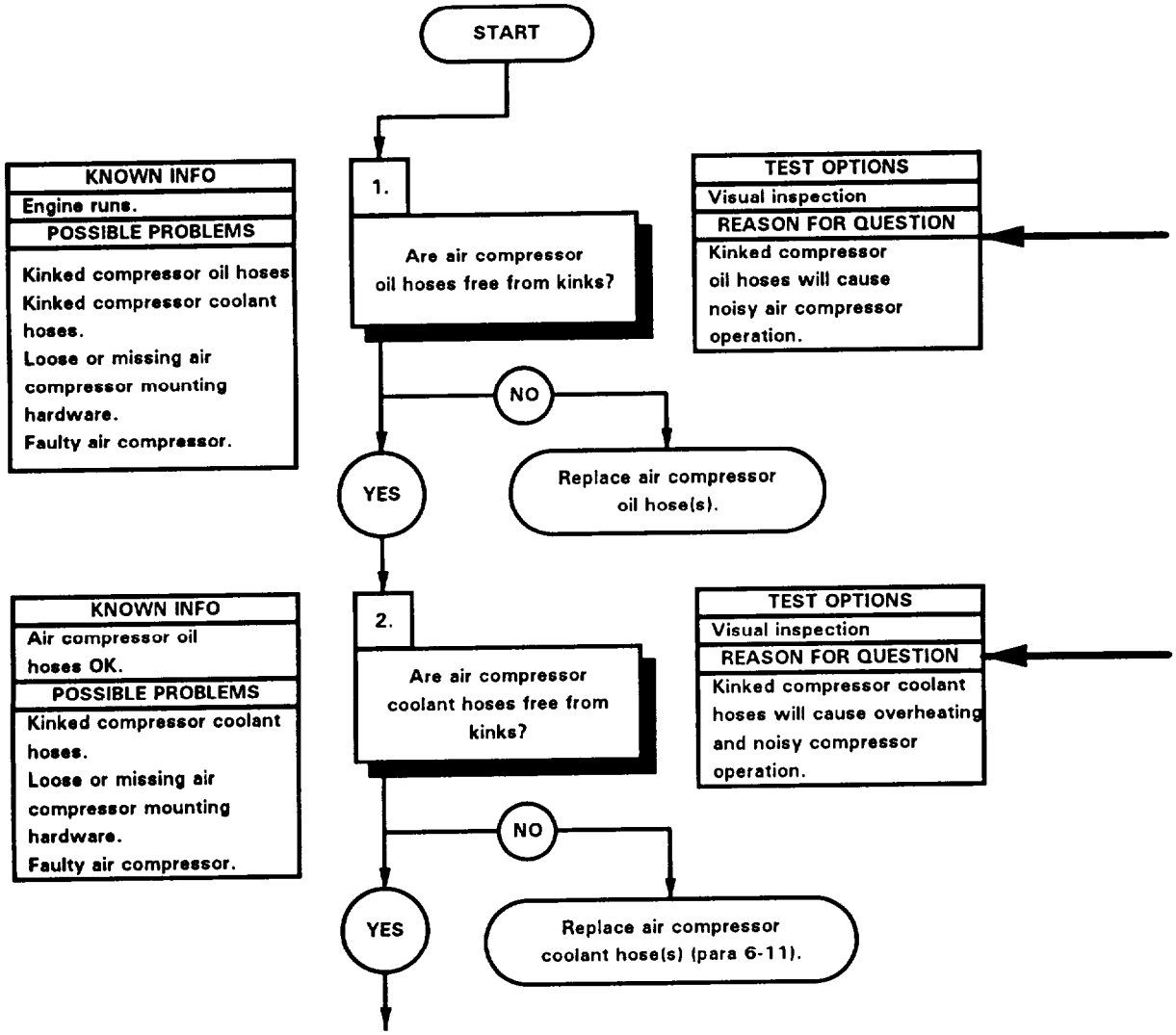
BLOCKAGE TEST

(1) Disconnect governor air hose at air dryer purge valve.
(2) Start engine (TM 9-2320-365-10).
(3) Check for presence of air at air hose. If no air escapes from air hose, air compressor is defective. If air escapes, service air dryer for faulty purge valve (para 23-6).
(4) Shut down engine (TM 9-2320-365-10).
(5) Connect governor to air dryer purge valve air hose.



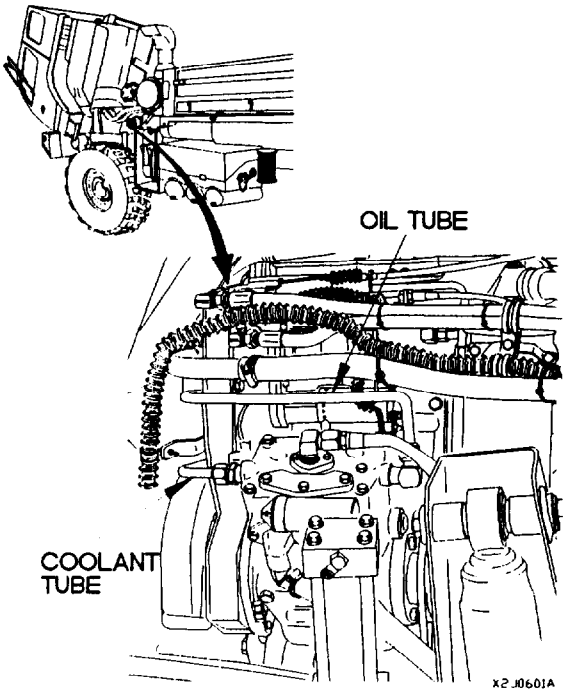
32J0503A

j6. NOISY AIR COMPRESSOR OPERATION	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C)

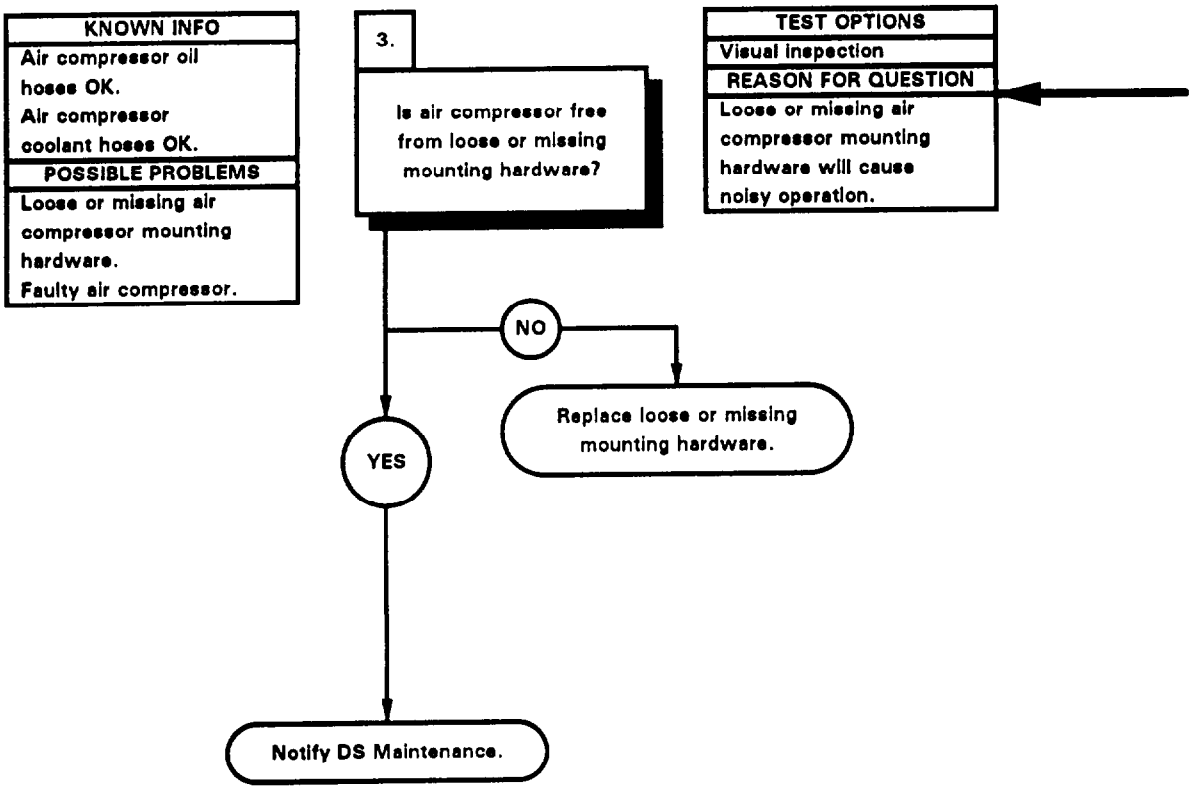


(1) Raise cab (TM 9-2320-365-10).
(2) Check air compressor oil hoses for kinks.

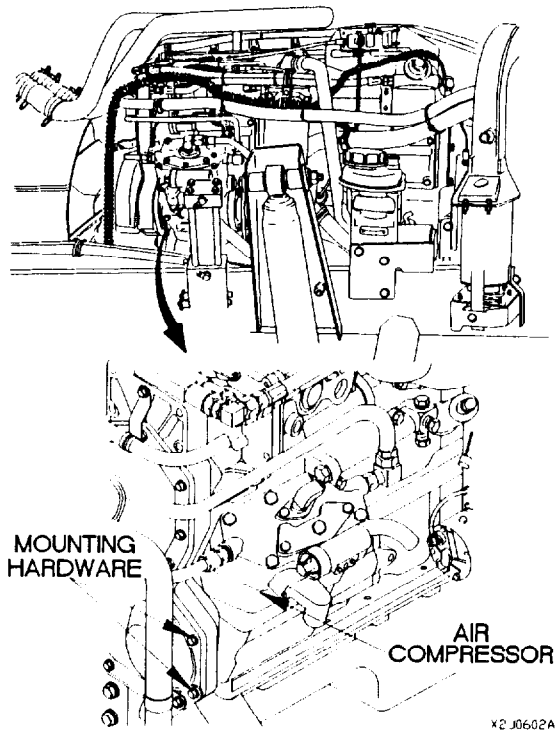
Check air compressor coolant hoses.



j6. NOISY AIR COMPRESSOR OPERATION (CONT)



(1) Check air compressor for loose or missing mounting hardware.
(2) Lower cab (TM 9-2320-365-10).



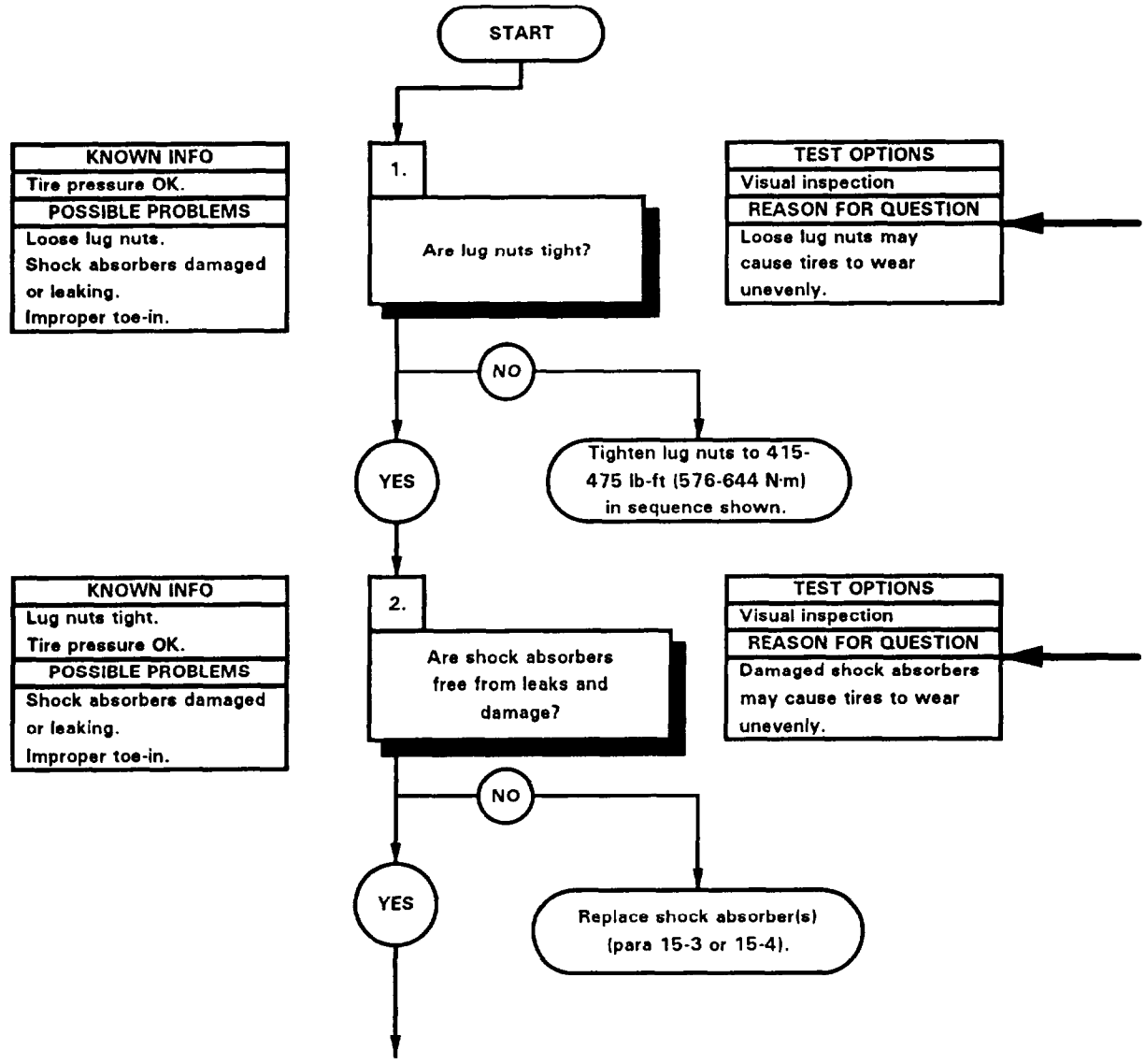
2-22. WHEEL TROUBLESHOOTING

This paragraph covers Wheel Troubleshooting. The Wheel Fault Index, Table 2-31, lists faults for the Wheel of the vehicle.

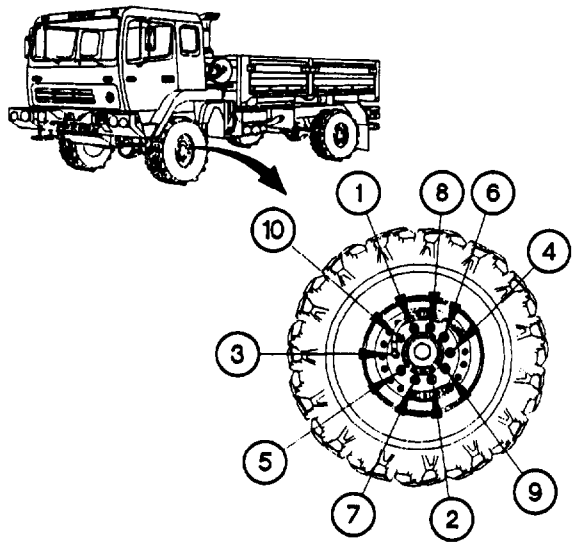
Table 2-31. Wheel Fault Index

Fault No.	Description	Page
k1.	Tires wear unevenly or excessively	2-1754
k2.	Wheel wobbles or shimmies	2-1758

k1. TIRES WEAR UNEVENLY OR EXCESSIVELY	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Multiplier, Torque Wrench (Item 23, Appendix C) Wrench, Torque, 0-600 lb-ft (Item 59, Appendix C)

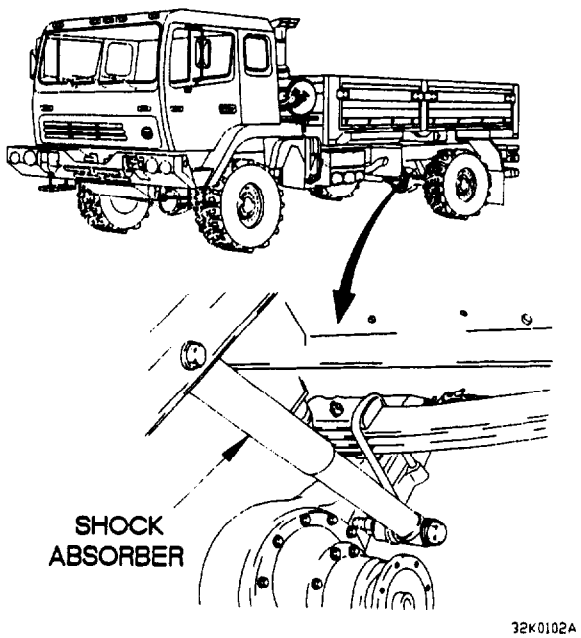


Inspect tires for excessive wear and for spacing between lug nuts and wheels. Tires that are worn unevenly may indicate that lug nuts need tightening.



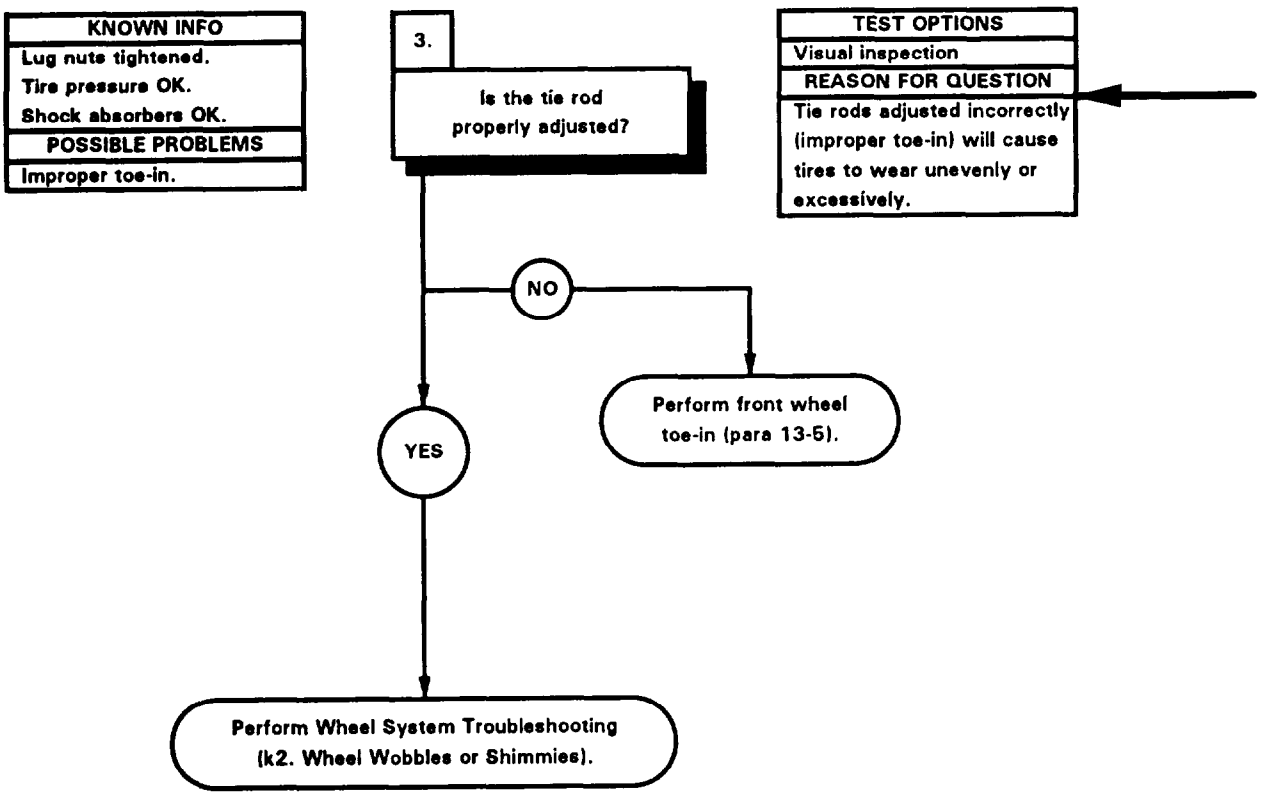
32K0101A

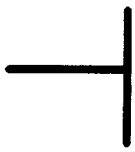
Inspect tires for excessive wear. Tires that have flat spots may indicate a defective shock absorber. Inspect shock absorbers for leaks or damage.



32K0102A

k1. TIRES WEAR UNEVENLY OR EXCESSIVELY (CONT)





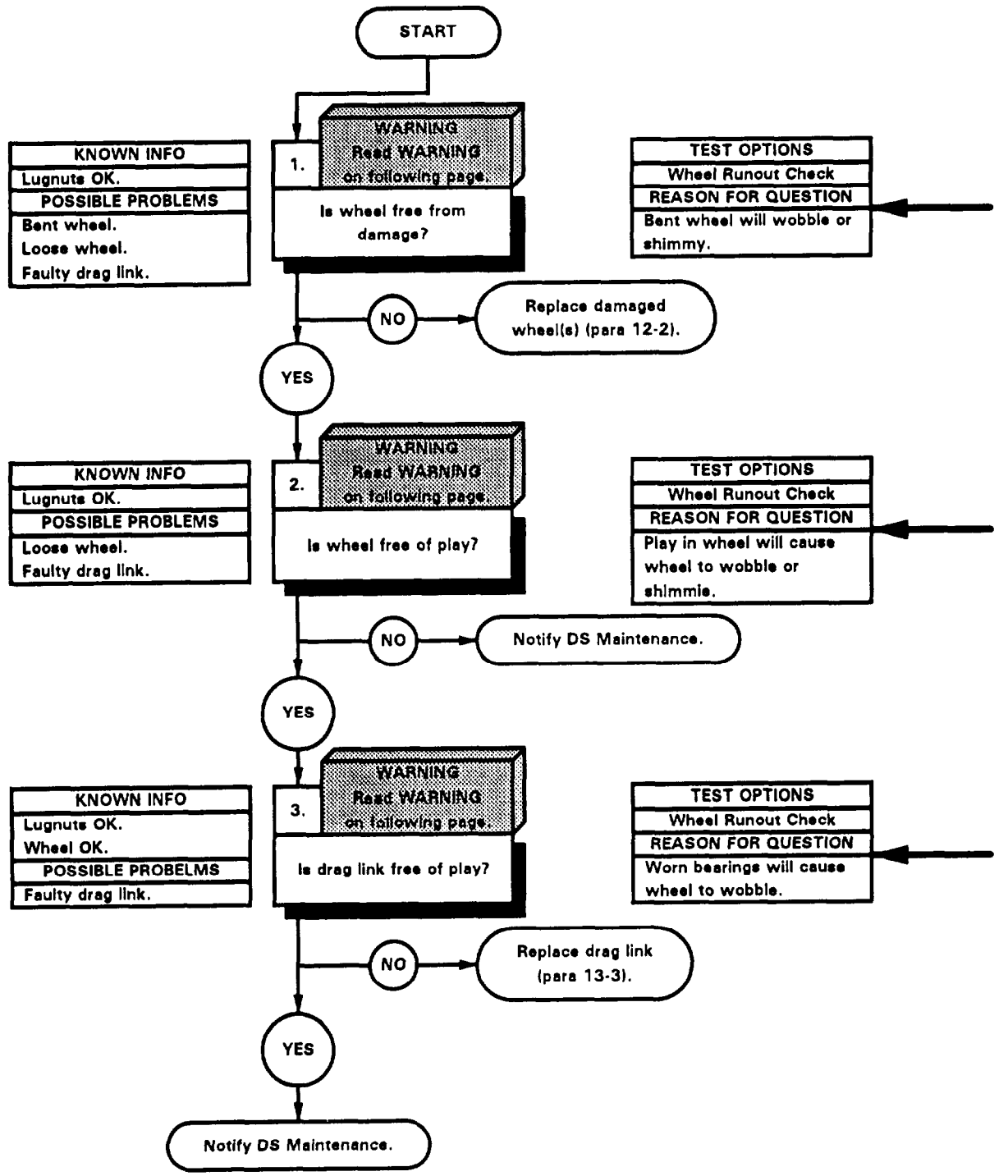
Check front wheel toe-in (para 13-5).

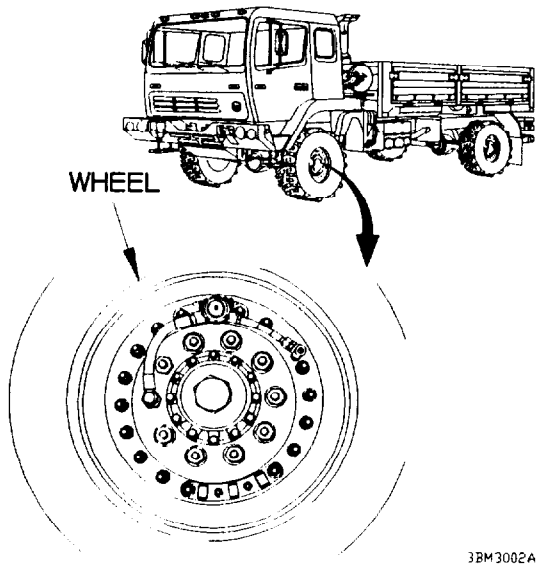
k2. WHEEL WOBBLES OR SHIMMIES

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Trestle, Motor Vehicle Maintenance (Item 45, Appendix C)



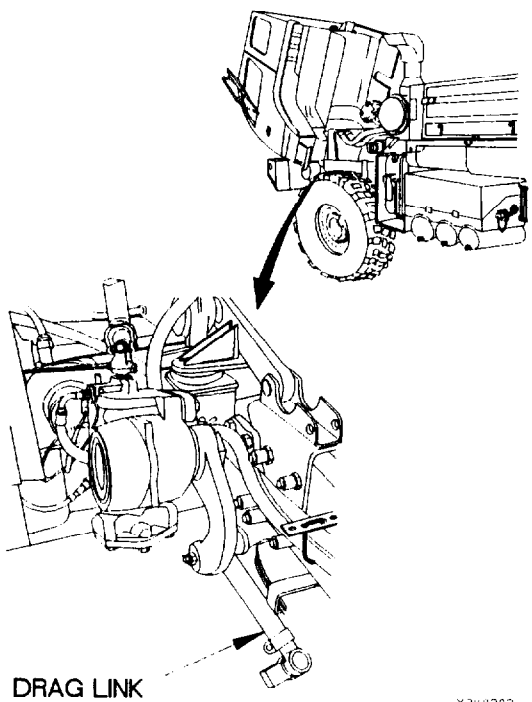


WHEEL RUNOUT CHECK

WARNING

Vehicle must be on level ground and wheels must be chocked. Failure to comply may result in injury to personnel.

(1) Jack up vehicle (TM 9-2320-365-10) one wheel at a time.
(2) Rotate tire to check for bent wheel.
(3) Insert pry bar under tire and lift while observing wheel play.
(4) Check drag link play.
(5) Lower vehicle (TM 9-2320-365-10).



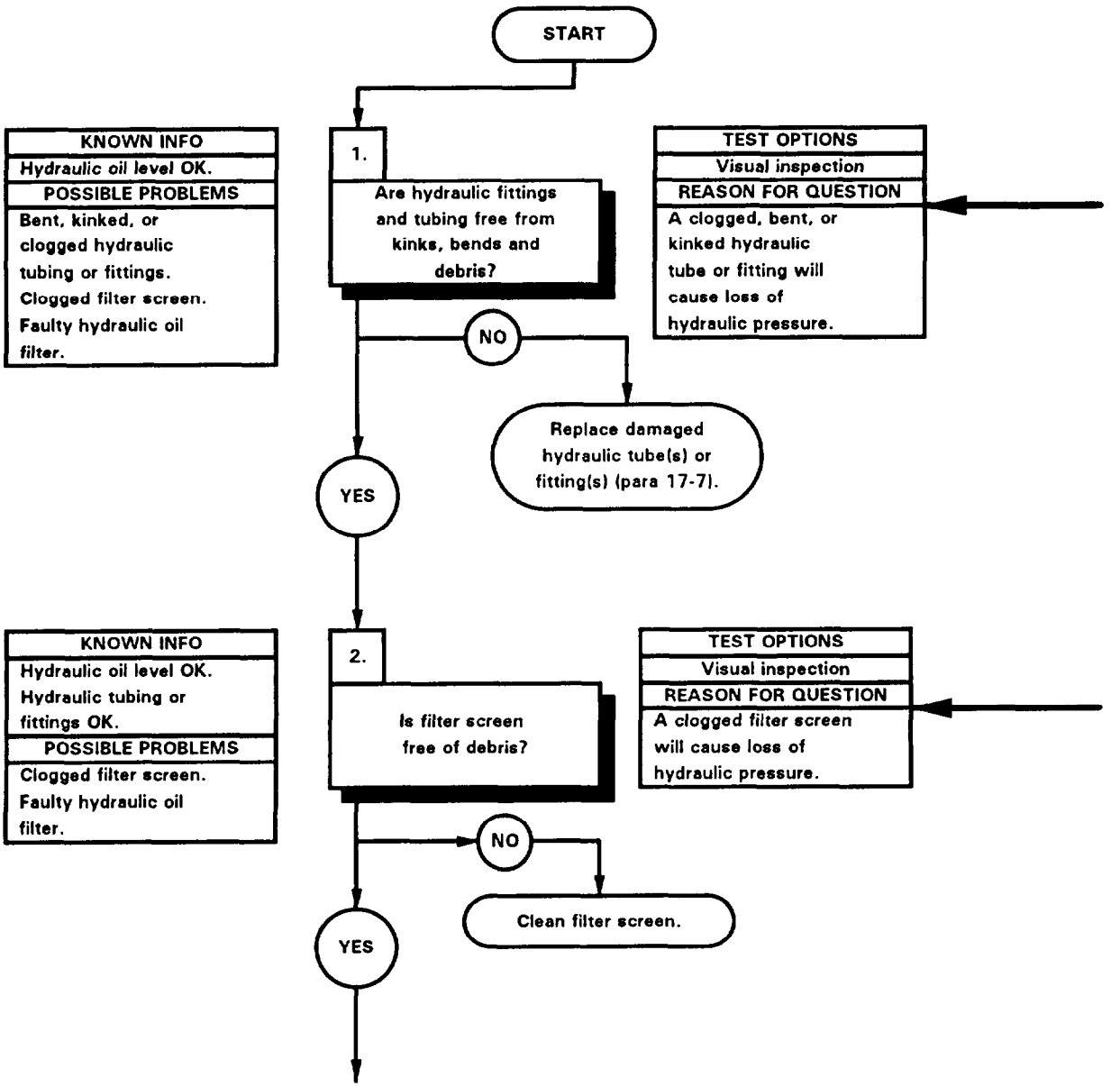
2-23. HYDRAULIC SYSTEM TROUBLESHOOTING

This paragraph covers Hydraulic System Troubleshooting. The Hydraulic System Fault Index, Table 2-32, lists faults for the Hydraulic System of the vehicle.

Table 2-32. Hydraulic System Fault Index

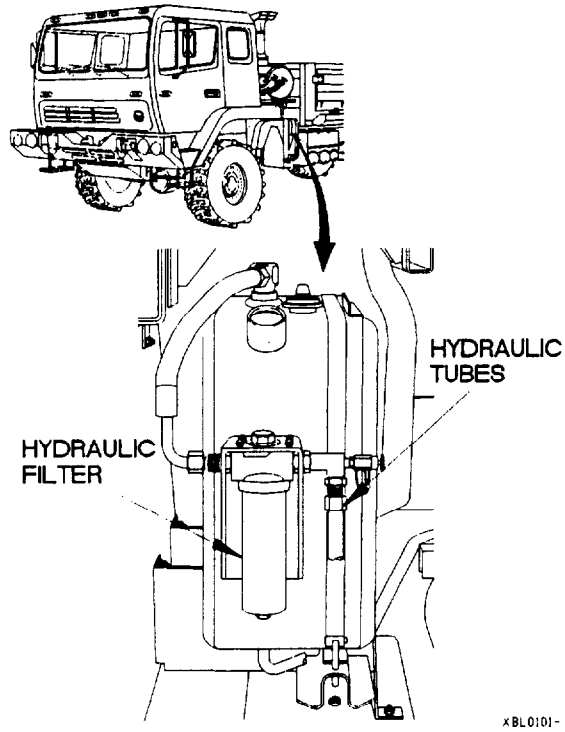
Fault No.	Description	Page
I1.	Loss of hydraulic pressure (single stage pump)	2-1762

I1. LOSS OF HYDRAULIC PRESSURE (SINGLE STAGE PUMP)	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C)

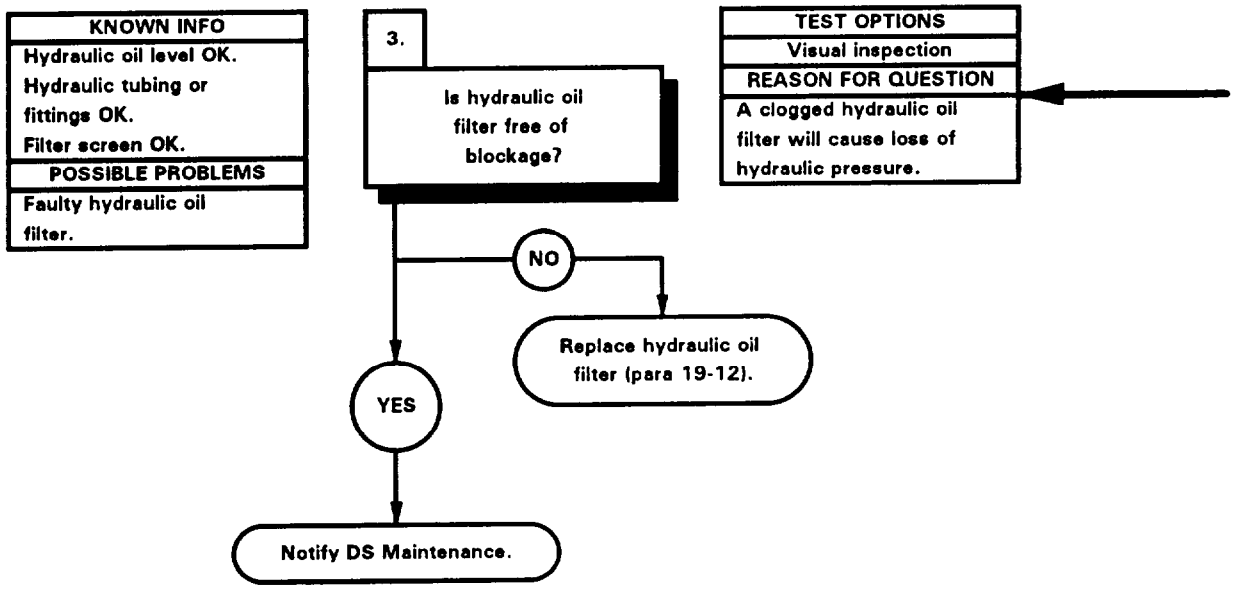


Check hydraulic tubes and fittings for kinks, bends, and debris.

Check filter screen for debris.



I1. LOSS OF HYDRAULIC PRESSURE (SINGLE STAGE PUMP) (CONT)



(1) Remove hydraulic oil filter (para 19-12).
(2) Check hydraulic oil filter for blockage.
(3) Install hydraulic oil filter (para 19-12).

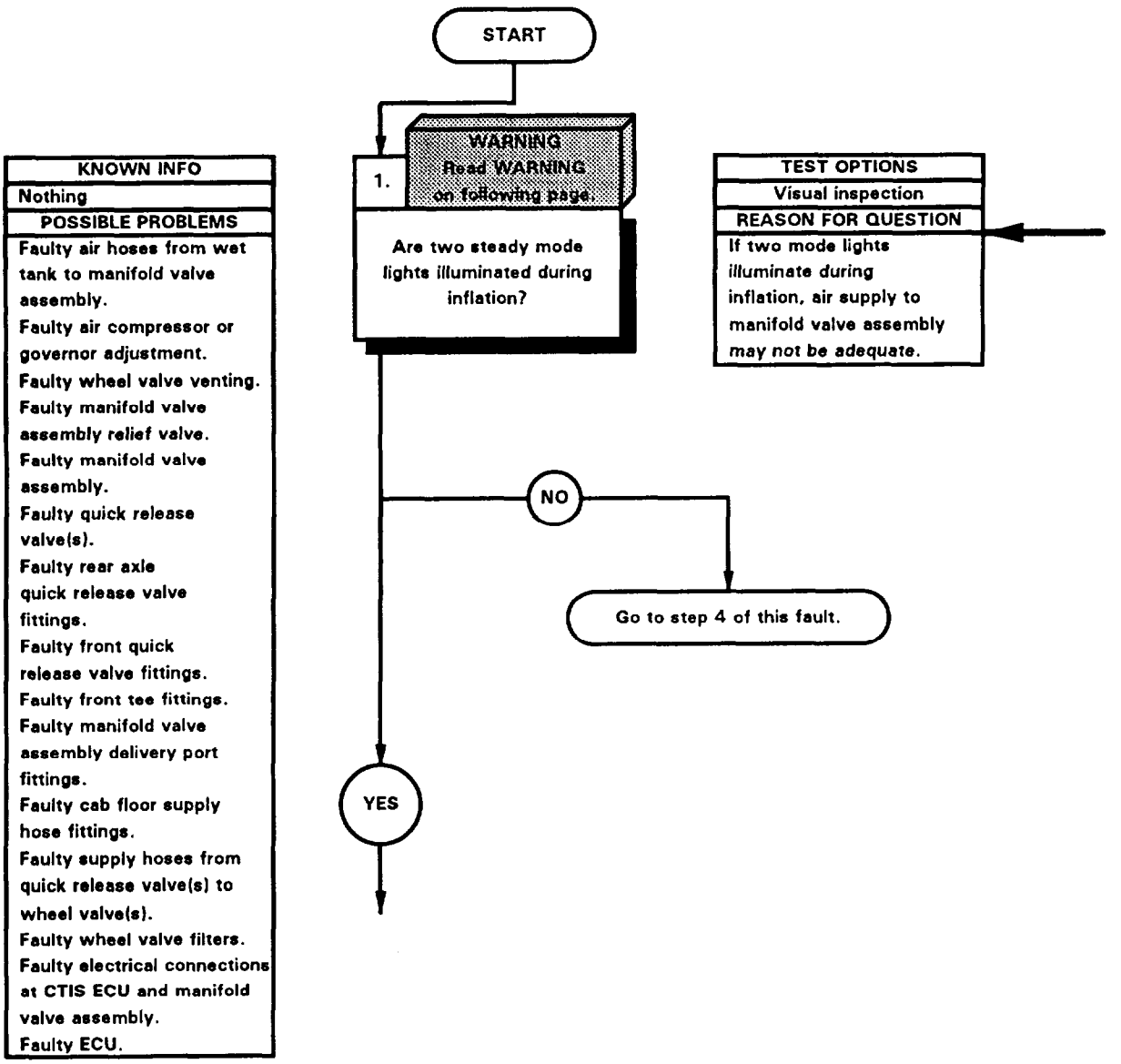
2-24. CENTRAL TIRE INFLATION SYSTEM (CTIS) TROUBLESHOOTING

This paragraph covers Central Tire Inflation System (CTIS) Troubleshooting. The Central Tire Inflation System (CTIS) Fault Index, Table 2-33, lists faults for the CTIS System of the vehicle.

Table 2-33. Central Tire Inflation System (CTIS) Fault Index

Fault No.	Description	Page
m1.	Two steady mode lights illuminate on CTIS ECU	2-1768
m2.	Four CTIS ECU indicator lights flashing	2-1798
m3.	Five CTIS ECU indicator lights flashing	2-1822
m4.	CTIS repeatedly resumes cycling 30 seconds after indicator lights stop flashing	2-1856
m5.	CTIS ECU lights work but CTIS fails to inflate or deflate	2-1862
m6.	No overspeed warning light and/or overspeed pressure change	2-1874

m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C) Gage, Pressure, 0-150 psi (Item 16, Appendix B) Trestle, Motor Vehicle Maintenance (2) (Item 45, Appendix C) Pan, Wash (Item 25, Appendix C) Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Personnel Required (2)	
Materials/Parts Soap, Laundry (Item 69, Appendix D)	



WARNING

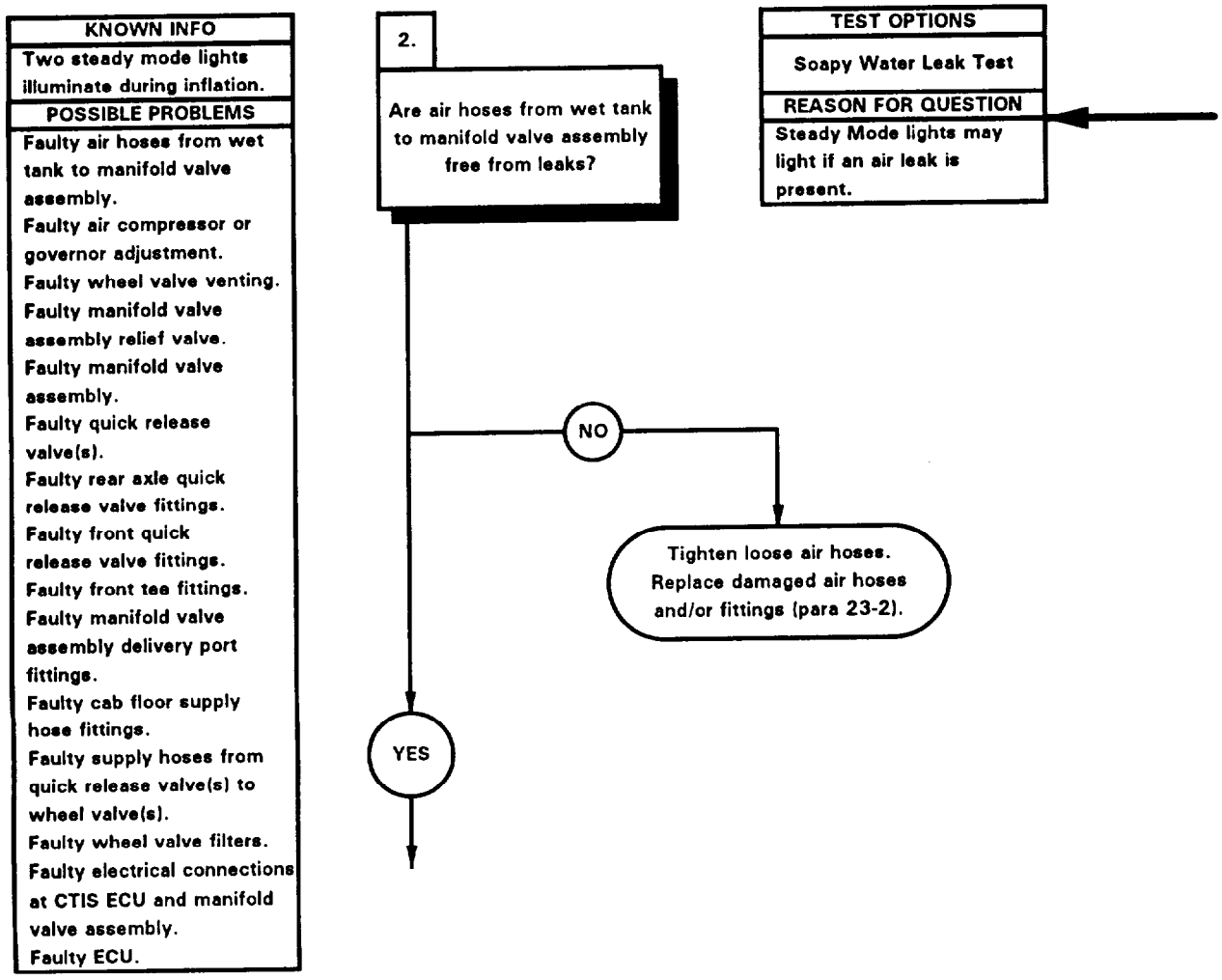
Wear appropriate eye protection when working under vehicle and around CTIS system due to the possibility of falling and/or blown debris. Failure to comply may result in injury to personnel.

NOTE

- **Two steady mode lights are an indication that the CTIS has discontinued operation because a particular inflate or deflate sequence has taken longer than limits allow (40 minutes for inflate; 20 minutes for deflate).**
- **Two steady mode lights indicate that system shut off with air pressure between modes.**
- **The CTIS may still operate including modes that are lit, by manually pressing the desired mode.**
- **To perform deflate or inflate checks throughout this task, it will be necessary to perform the opposite function first from time to time so that a desired mode selection is available.**

(1) Start engine (TM 9-2320-365-10).
(2) Select an inflation mode on CTIS ECU (TM 9-2320-365-10) and determine if two light mode is displayed.
(3) Select RUN FLAT mode or shut down engine (TM 9-2320-365-10) and start engine (TM 9-2320-365-10) again to reset ECU.
(4) Select a deflation mode on CTIS ECU (TM 9-2320-365-10) and determine if two light mode is displayed.
(5) Shut down engine (TM 9-2320-365-10).

m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)

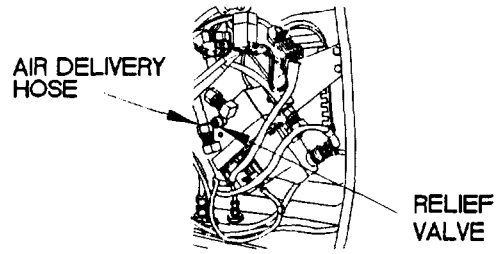


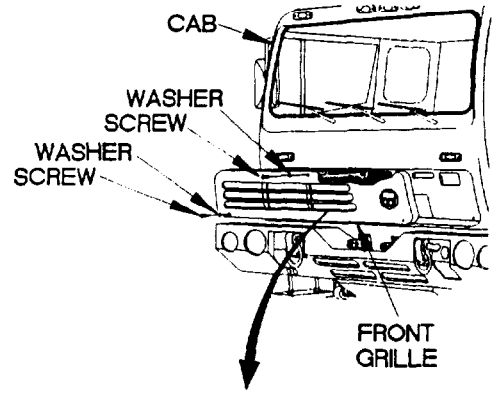
NOTE

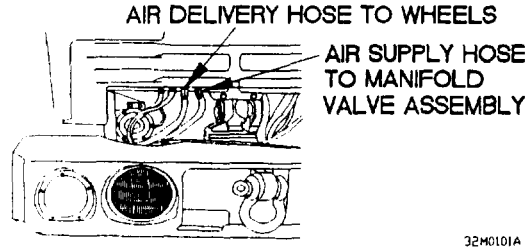
- Two steady mode lights are an indication that the CTIS has discontinued operation because a particular inflate or deflate sequence has taken longer than limits allow (40 minutes for inflate; 20 minutes for deflate).
- Two steady mode lights indicate that CTIS is shut off with air pressure between modes.
- The CTIS may still operate including modes that are lit, by manually pressing the desired mode.
- To perform deflate or inflate checks throughout this task, it may be necessary to perform the opposite function first so that a desired mode selection is available.

SOAPY WATER LEAK TEST

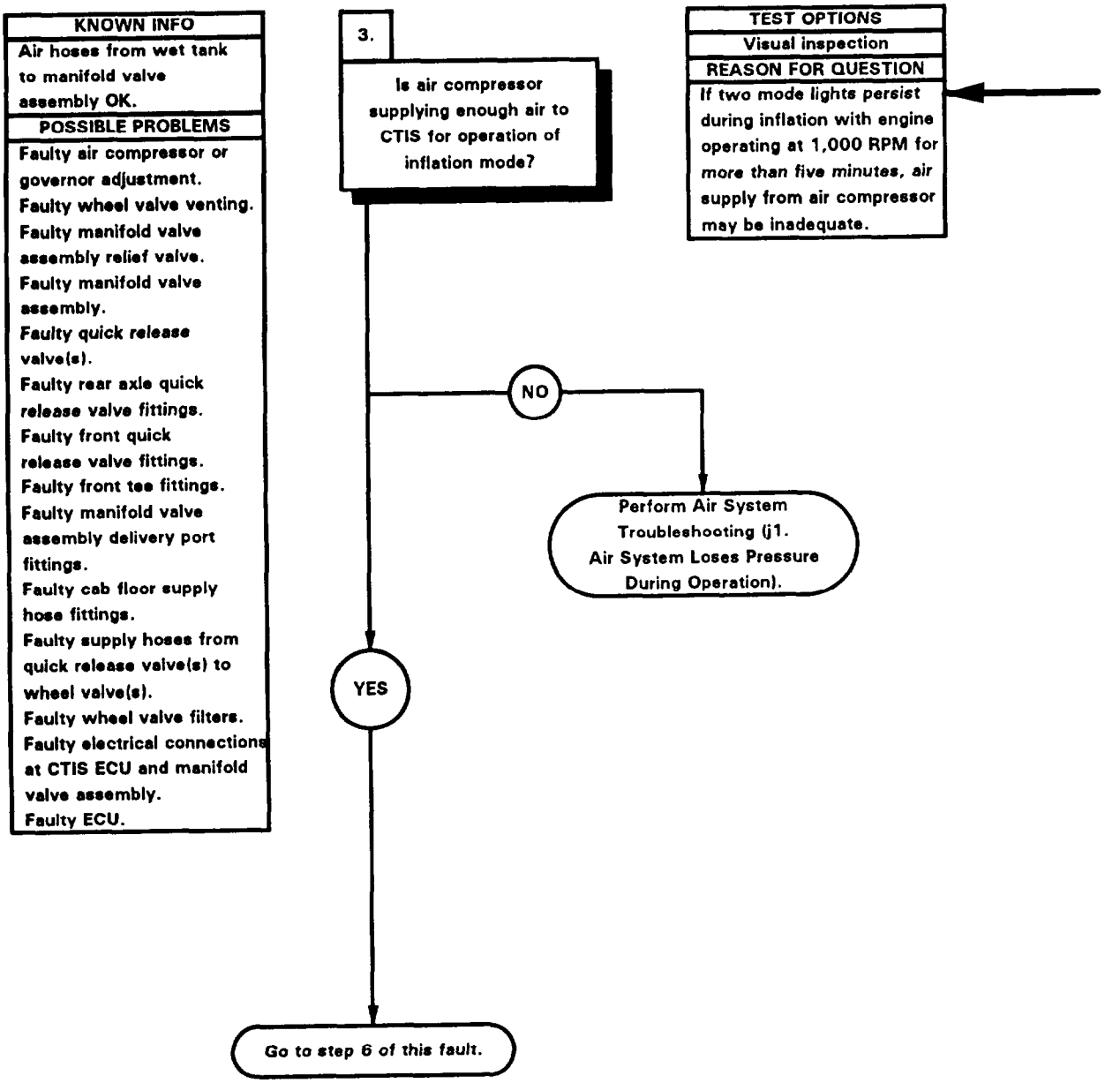
(1) Remove kick panel (para 16-3).
(2) Apply soapy water solution to supply air hose fitting at manifold valve assembly.
(3) Check for air escaping at manifold valve assembly, indicated by air bubbles.
(4) Remove two screws and washers from front grille.
(5) Remove screw and washer from front grille.
(6) Remove front grille from cab.
(7) Apply soapy water solution to supply air hose from wet tank at cab floor.
(8) Check for air escaping at cab floor fittings, indicated by air bubbles.



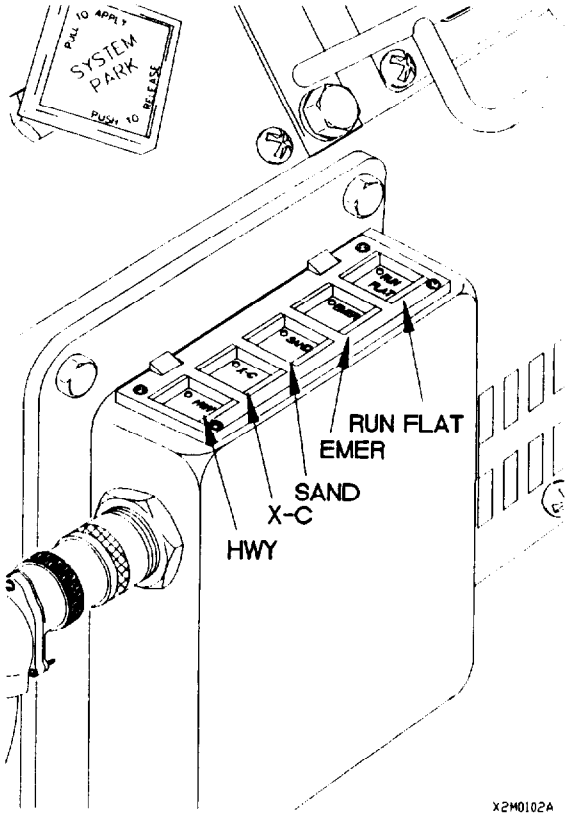




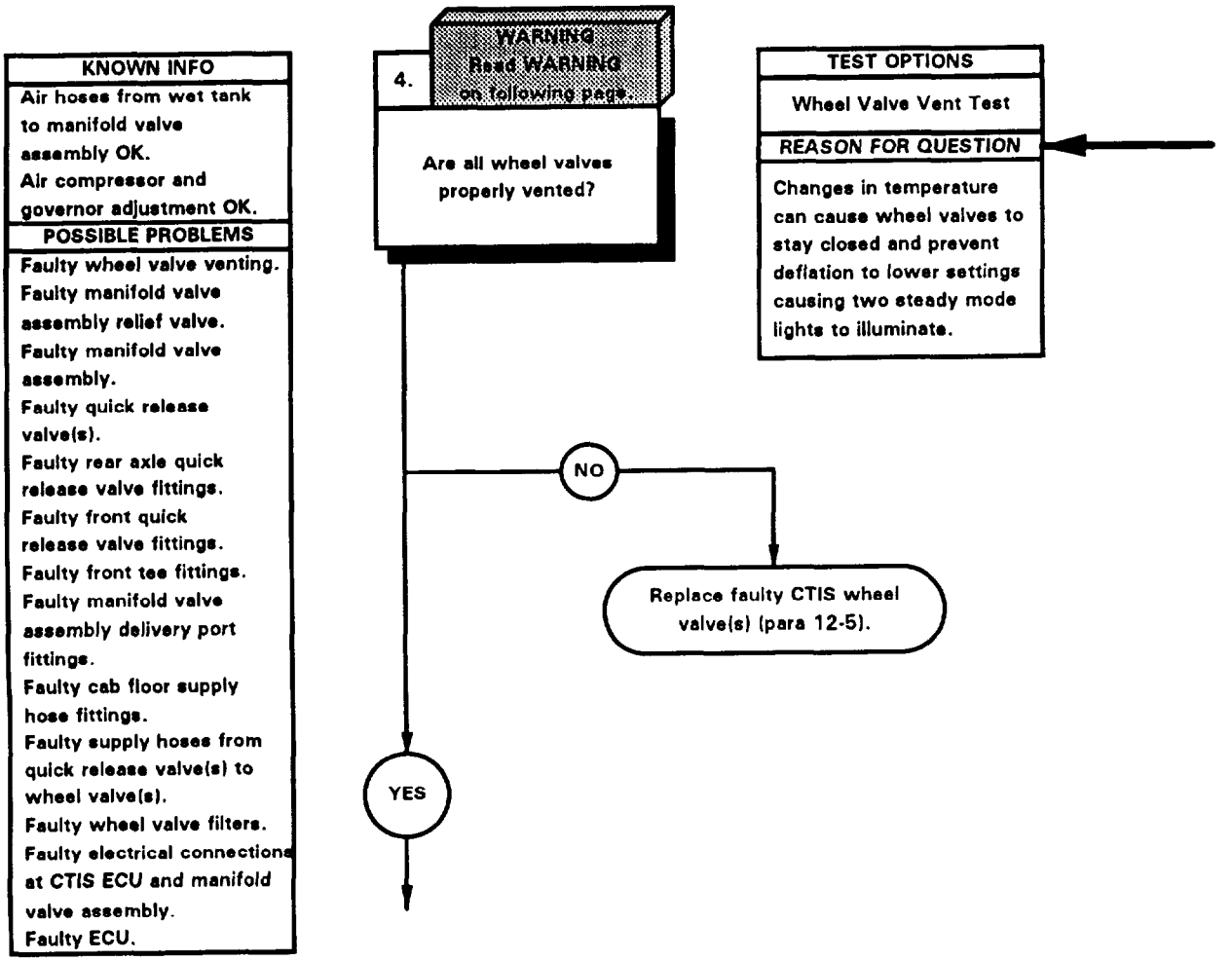
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



(1) Start engine (TM 9-2320-365-10) and operate at 1,000 RPM for five minutes.
(2) Select an inflation mode at CTIS ECU and check if two steady mode light returns.
(3) Apply and release brakes once or twice and check if pressure gages are slow to reach 120 psi.
(4) If two steady mode lights remain illuminated and brake air pressure gages are slow to reach 120 psi, Perform Air System Troubleshooting (j1. Air System Loses Pressure During Operation).
(5) Shut down engine (TM 9-2320-365-10).



m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



WARNING

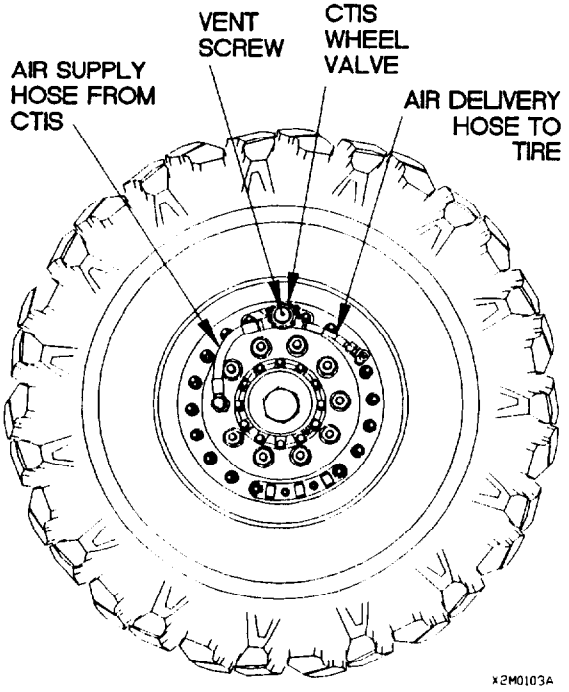
Do not loosen screw on wheel valve while CTIS is in use. Failure to comply may result in injury to personnel.

NOTE

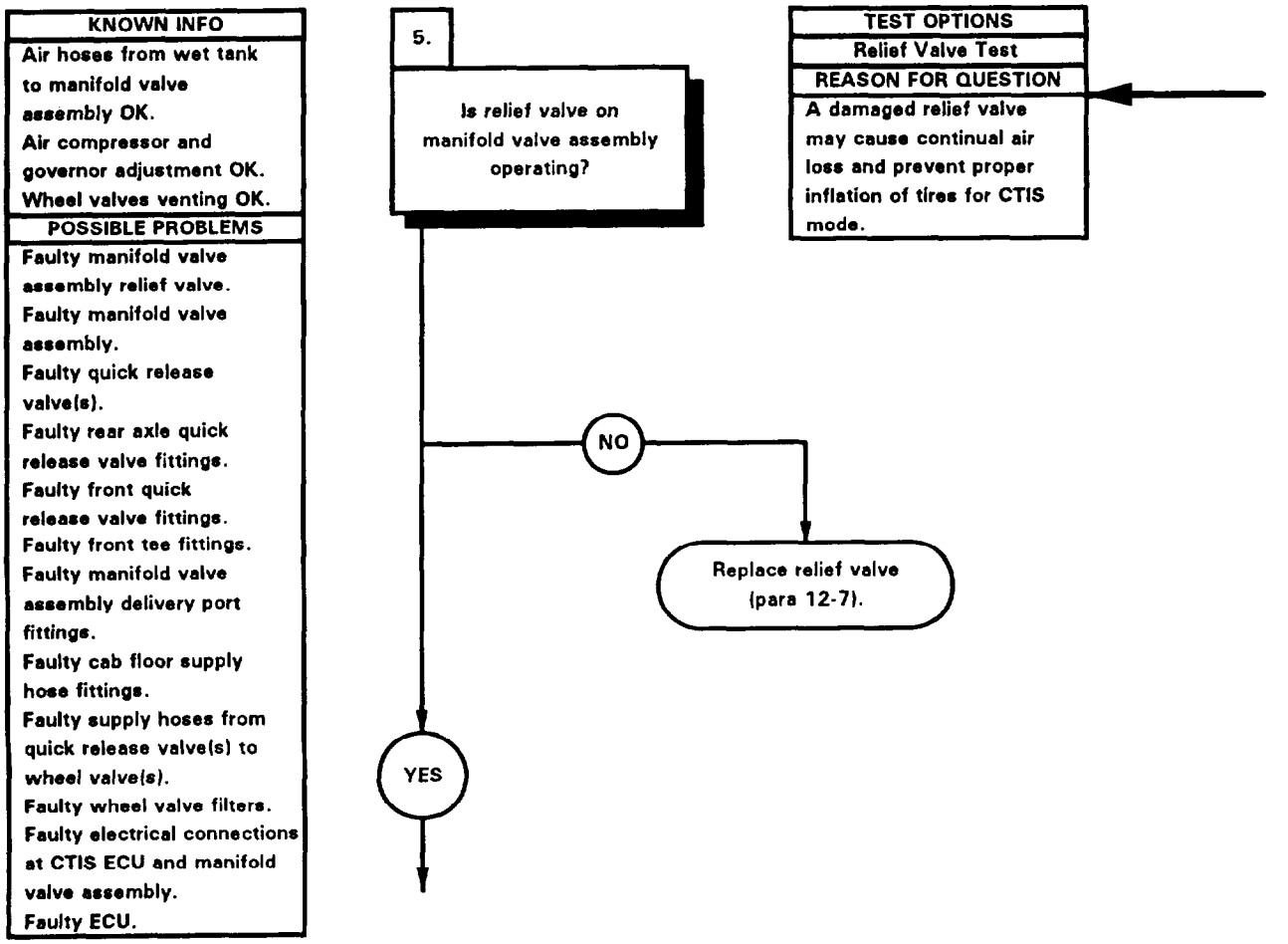
At high temperatures, air pressure increases in cap chamber of wheel valve, adding to spring pressure so that valve cannot open to allow tire deflation to lower settings.

WHEEL VALVE VENT TEST

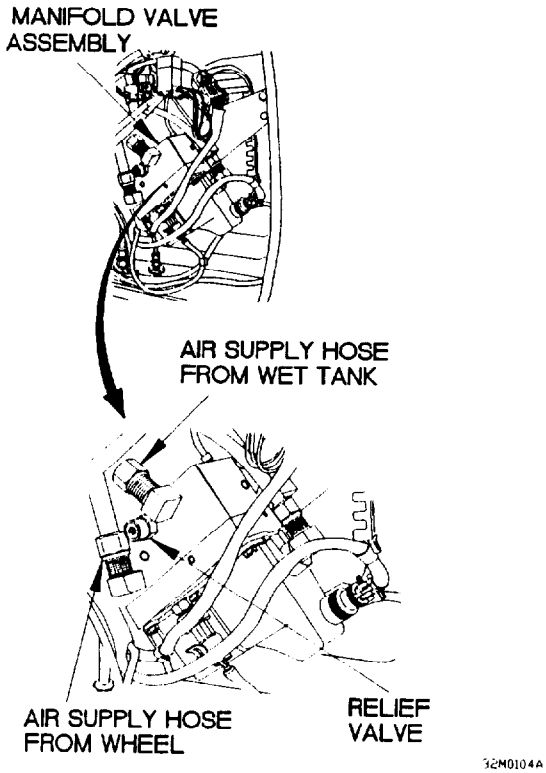
(1) Release air from all CTIS wheel valves by backing off vent screws approximately three turns.
(2) If CTIS wheel valve fails to release air, replace CTIS wheel valve (para 12-5).
(3) Tighten vent screws. Do not overtighten.



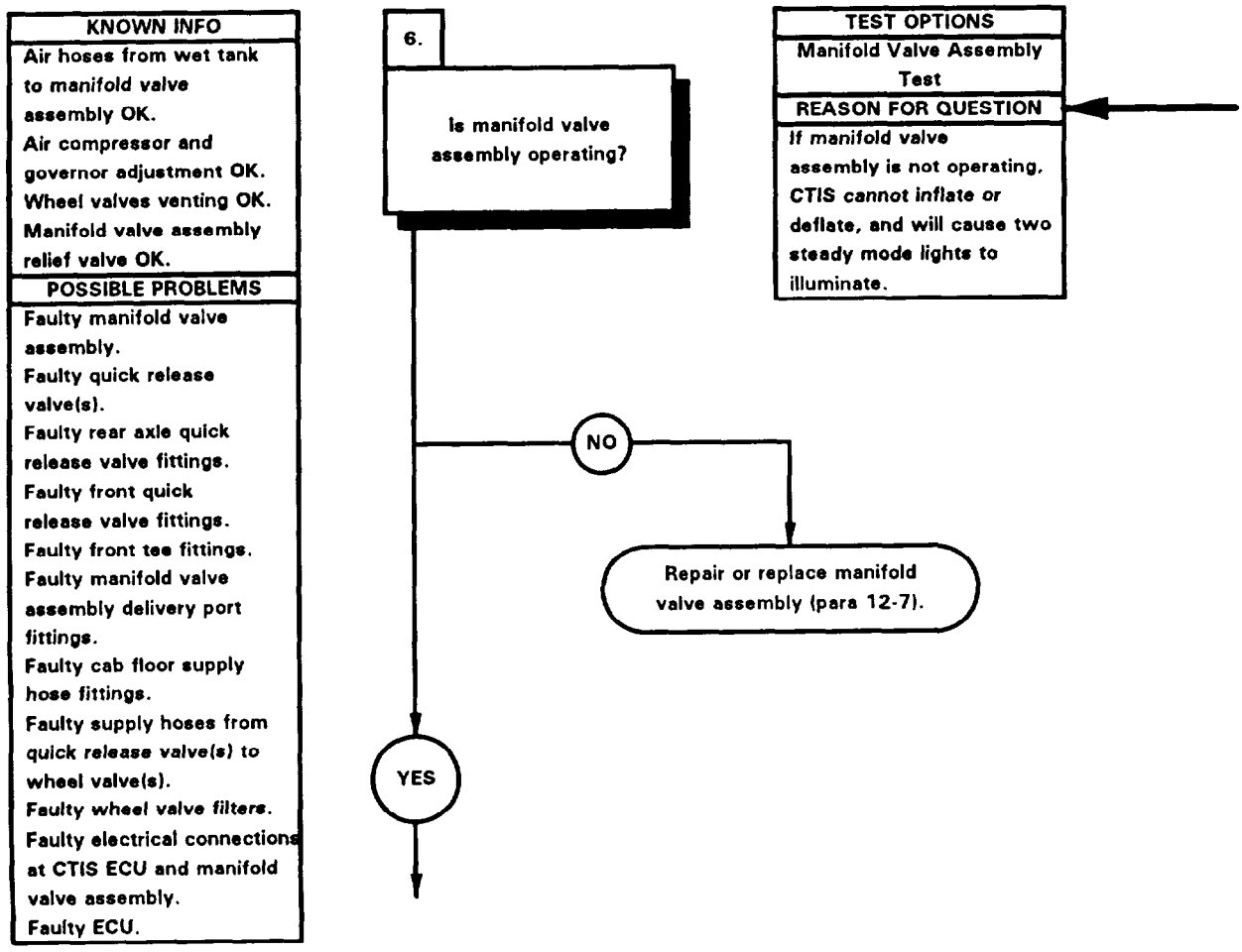
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



RELIEF VALVE TEST
(1) Remove kick panel (para 16-3).
(2) Check if relief valve poppet on manifold valve assembly is missing.
(3) Position master power switch to on (TM 9-2320-365-10).
(4) Select a mode that is lower on CTIS ECU (TM 9-2320-365-10).
(5) Check if air escapes continuously from relief valve during deflation sequence.
(6) If air escapes continuously, replace relief valve (para 12-7).
(7) Position master power switch to off (TM 9-2320-365-10).



m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



NOTE

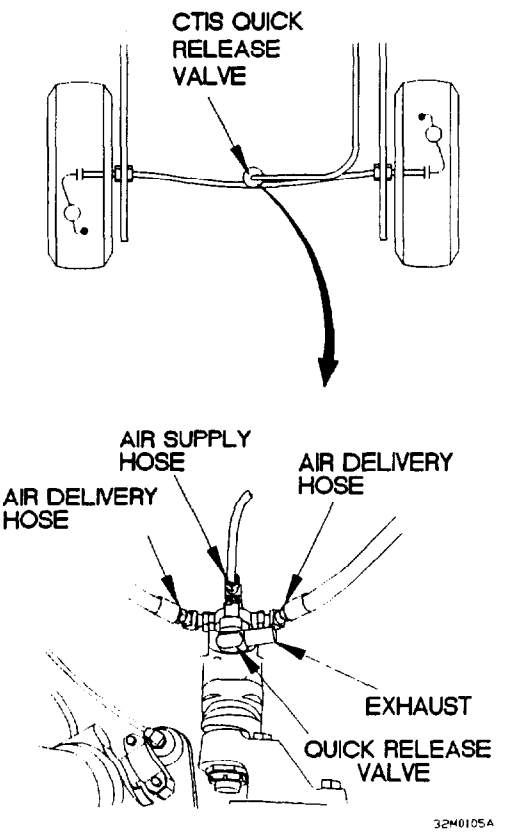
When checking manifold valve assembly, ensure air pressure in air tanks is 120 psi. Manifold valve assembly cannot be checked if air supply is not available to it.

MANIFOLD VALVE ASSEMBLY TEST

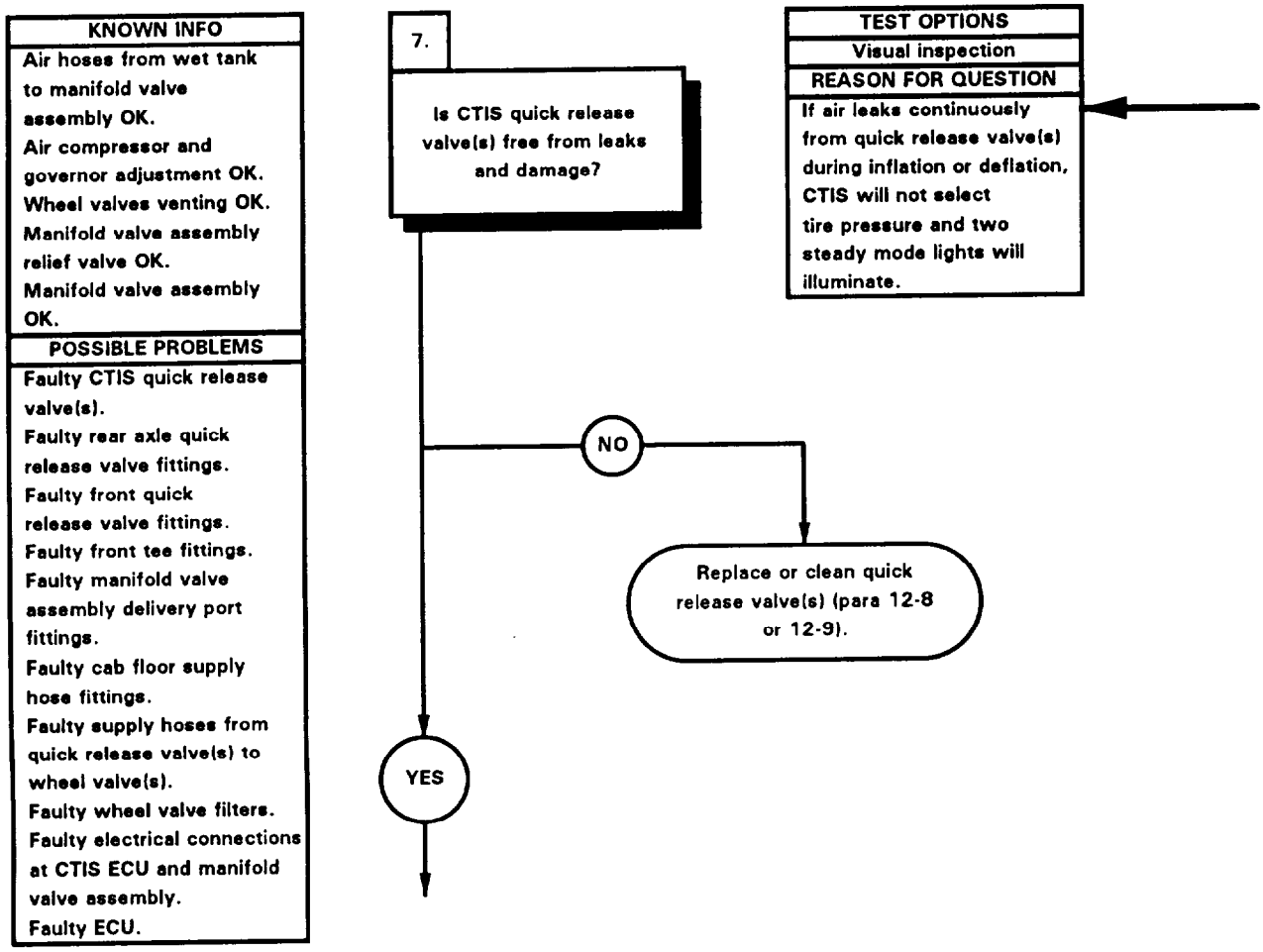
(1) Position master power switch to on (TM 9-2320-365-10).

(2) If two mode lights illuminate during deflation:
   (a) Select a mode that is lower on CTIS ECU (TM 9-2320-365-10).
   (b) Check if manifold valve assembly clicks when no air is escaping from relief valve.
   (c) If manifold valve assembly clicks and no air escapes at relief valve, replace manifold valve assembly (para 12-7).

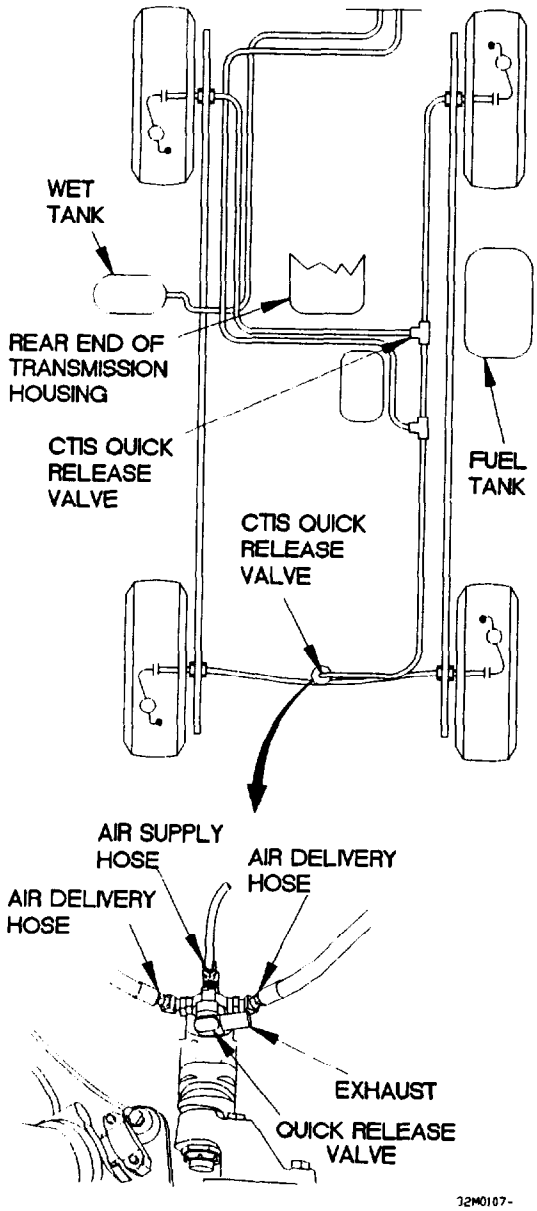
(3) If two mode lights illuminate during inflation:
   (a) Select a mode that is higher on CTIS ECU (TM 9-2320-365-10).
   (b) Disconnect air hose at delivery port of manifold valve assembly.
   (c) Check if manifold valve assembly clicks and no air escapes at delivery port.
   (d) If no air escapes at delivery port during inflation mode, replace manifold valve assembly (para 12-7).



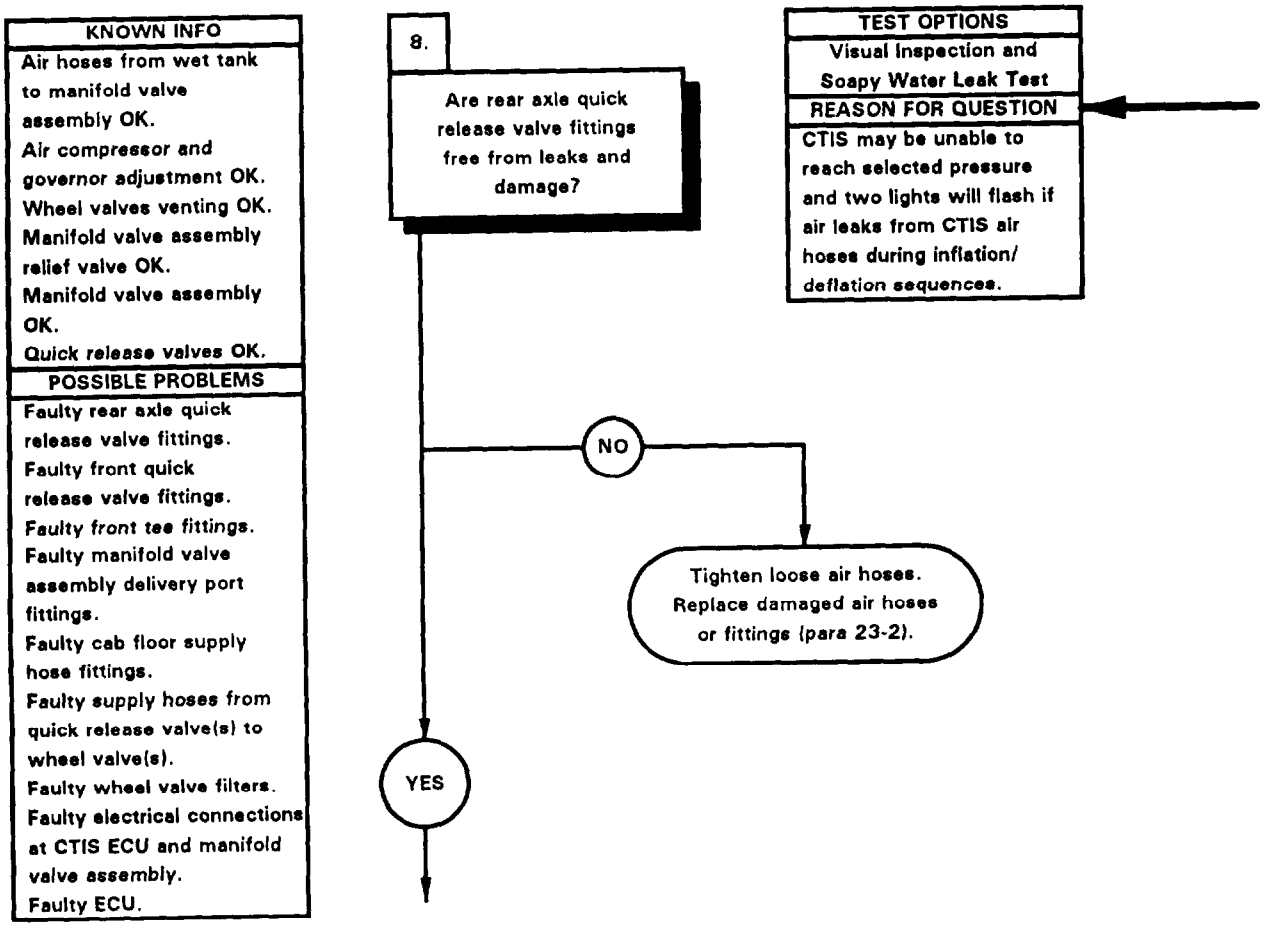
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



(1) Position CTIS ECU in a mode that is higher.
(2) Check for air escaping continuously from exhaust port of quick release valve(s).
(3) If air escapes continuously from quick release valve(s) during inflation, quick release valve diaphram is damaged, replace quick release valve(s) or clean quick release valve(s) (para 12-8 or 12-9).
(5) If foreign object is lodged in quick release valve(s), replace quick release valve(s) (para 12-8 or 12-9).

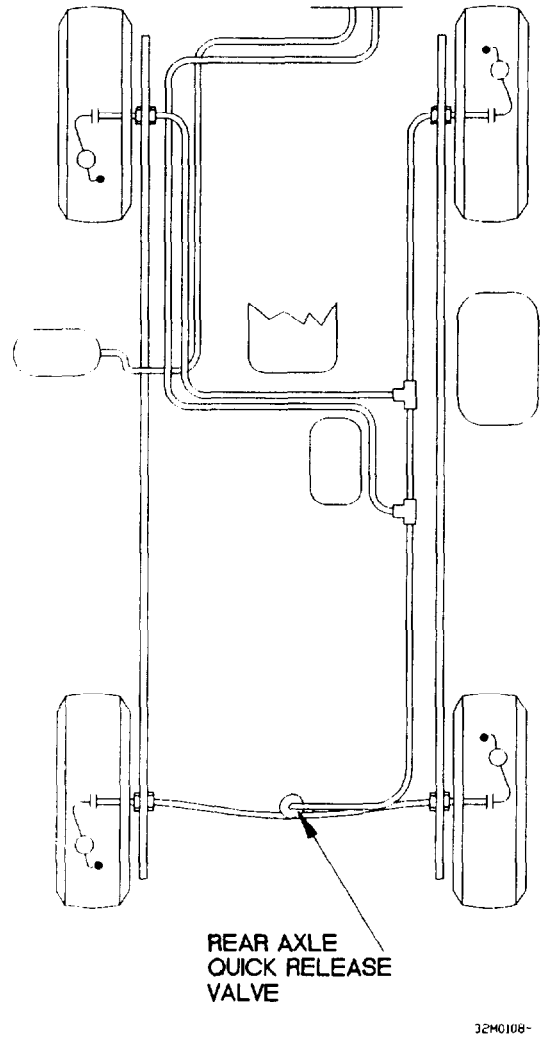


m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)

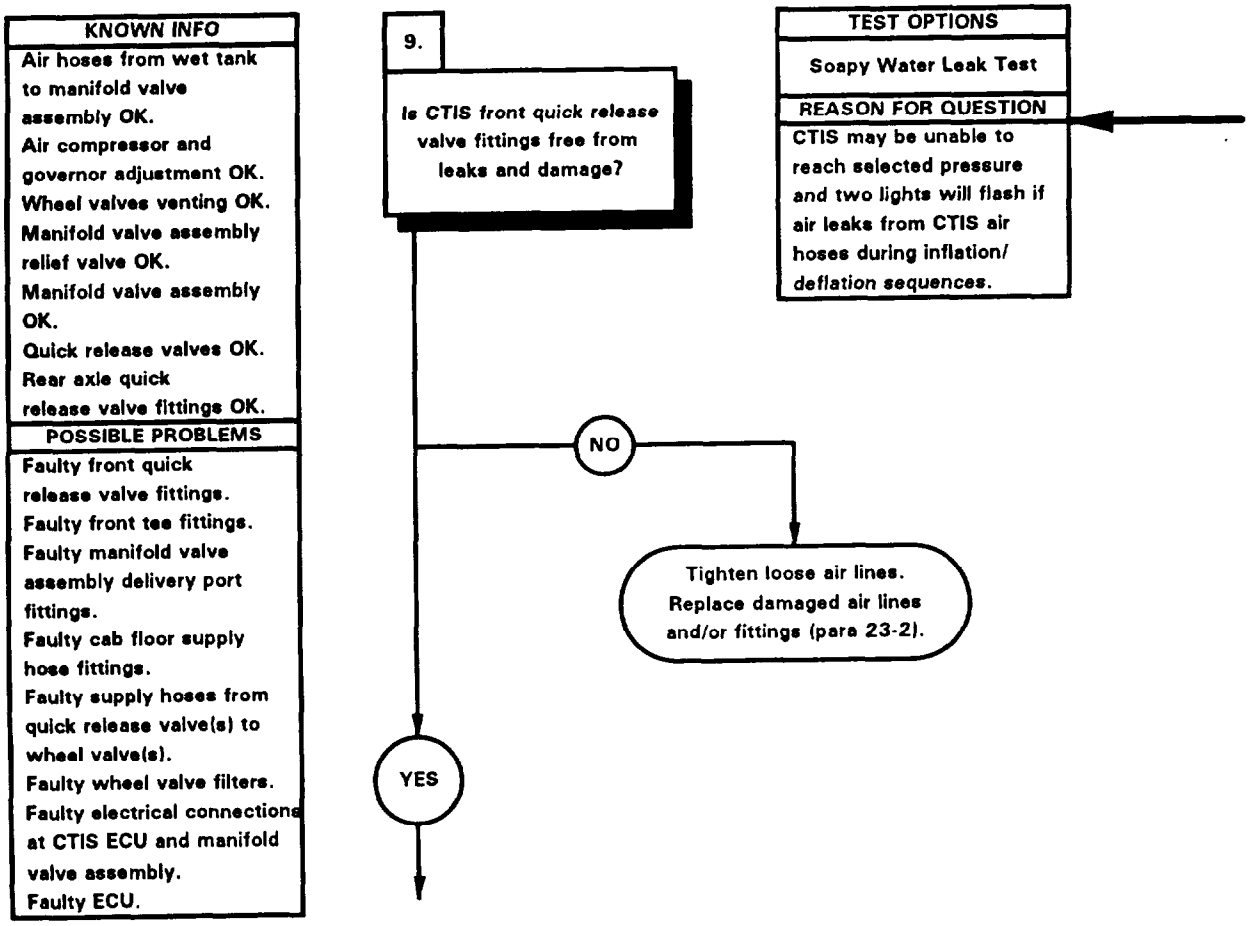


(1) Select an inflation mode at CTIS ECU (TM 9-2320-365-10).
(2) If obvious air escape is heard. Tighten loose air hoses or replace damaged air hoses and/or fittings (para 23-2).
(3) If no obvious air escape is heard, proceed to Soapy Water Leak Test.

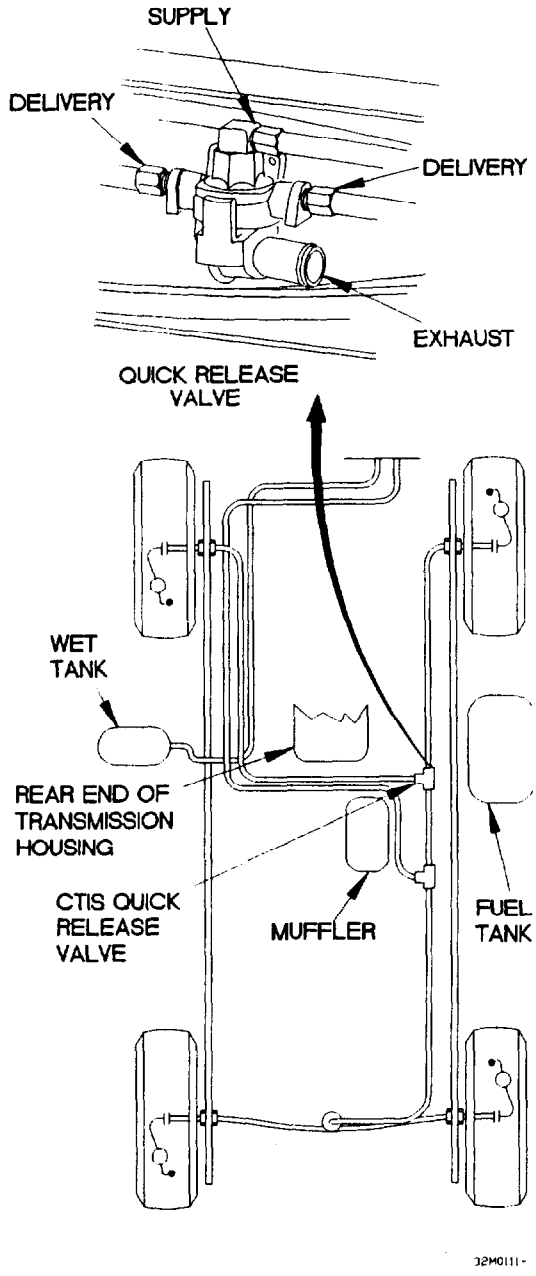
SOAPY WATER LEAK TEST
(1) Apply soapy water solution to quick release valve fittings at rear axle.
(2) Check for air bubbles indicating leaks.



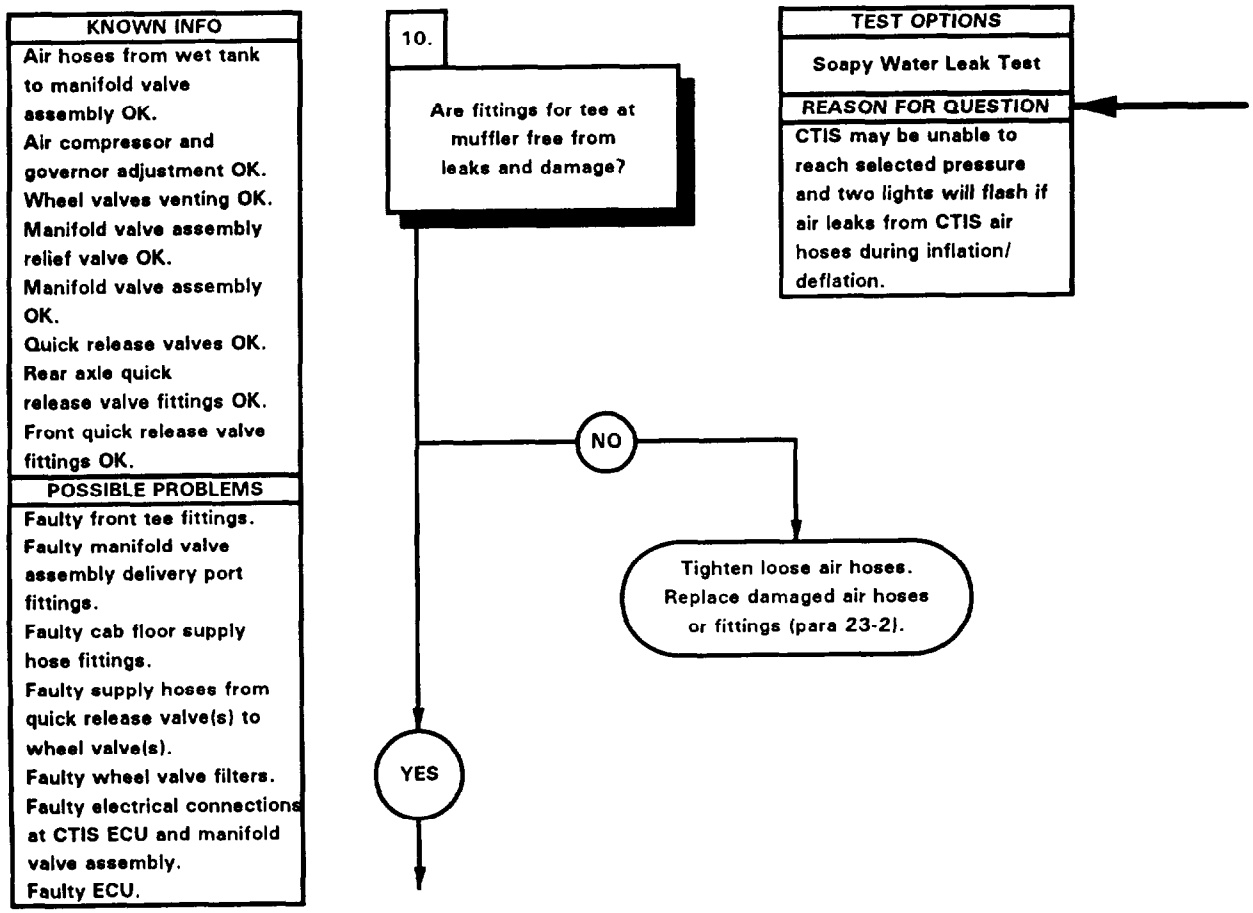
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



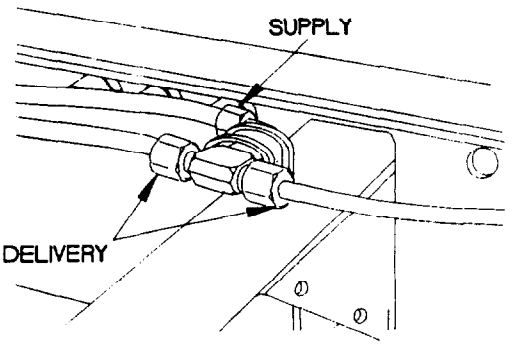
SOAPY WATER LEAK TEST
(1) Apply soapy water solution to front quick release valve fittings.
(2) Check for air bubbles indicating leake.

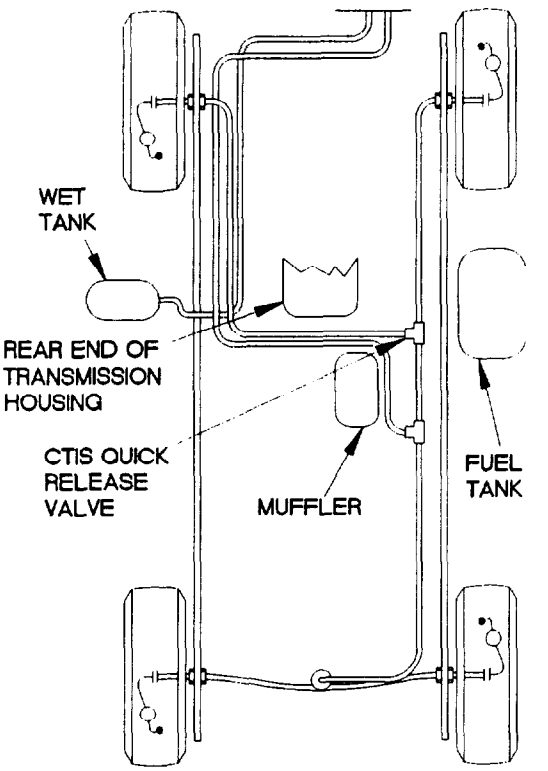


m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



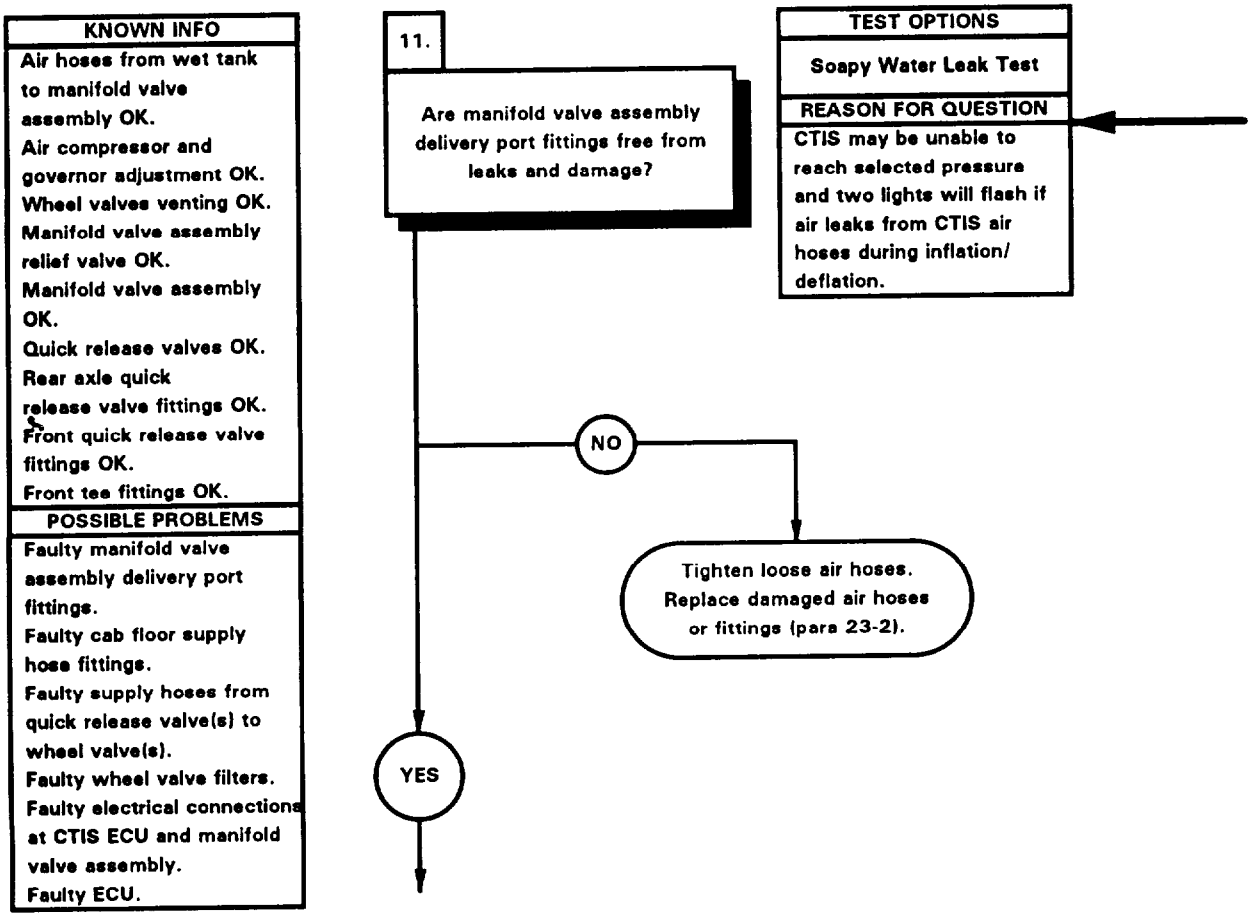
SOAPY WATER LEAK TEST
(1) Apply soapy water solution to fittings at tee above muffler.
(2) Check for air bubbles indicating leaks.



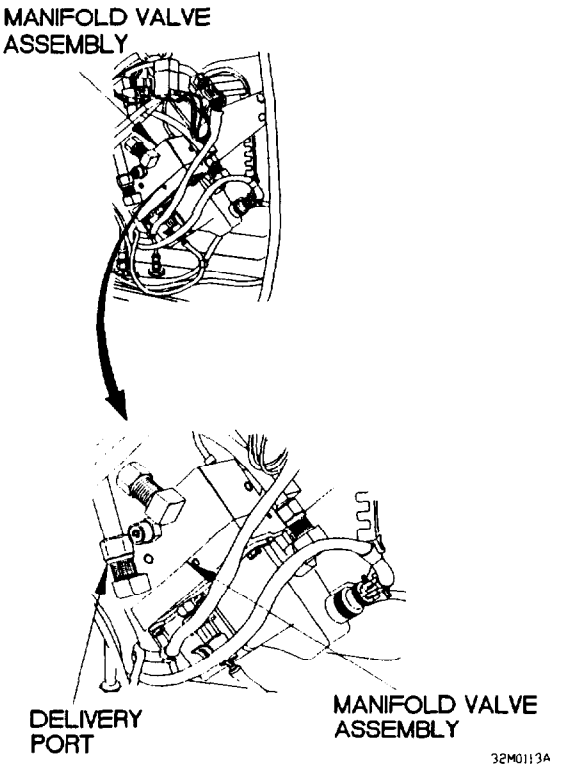


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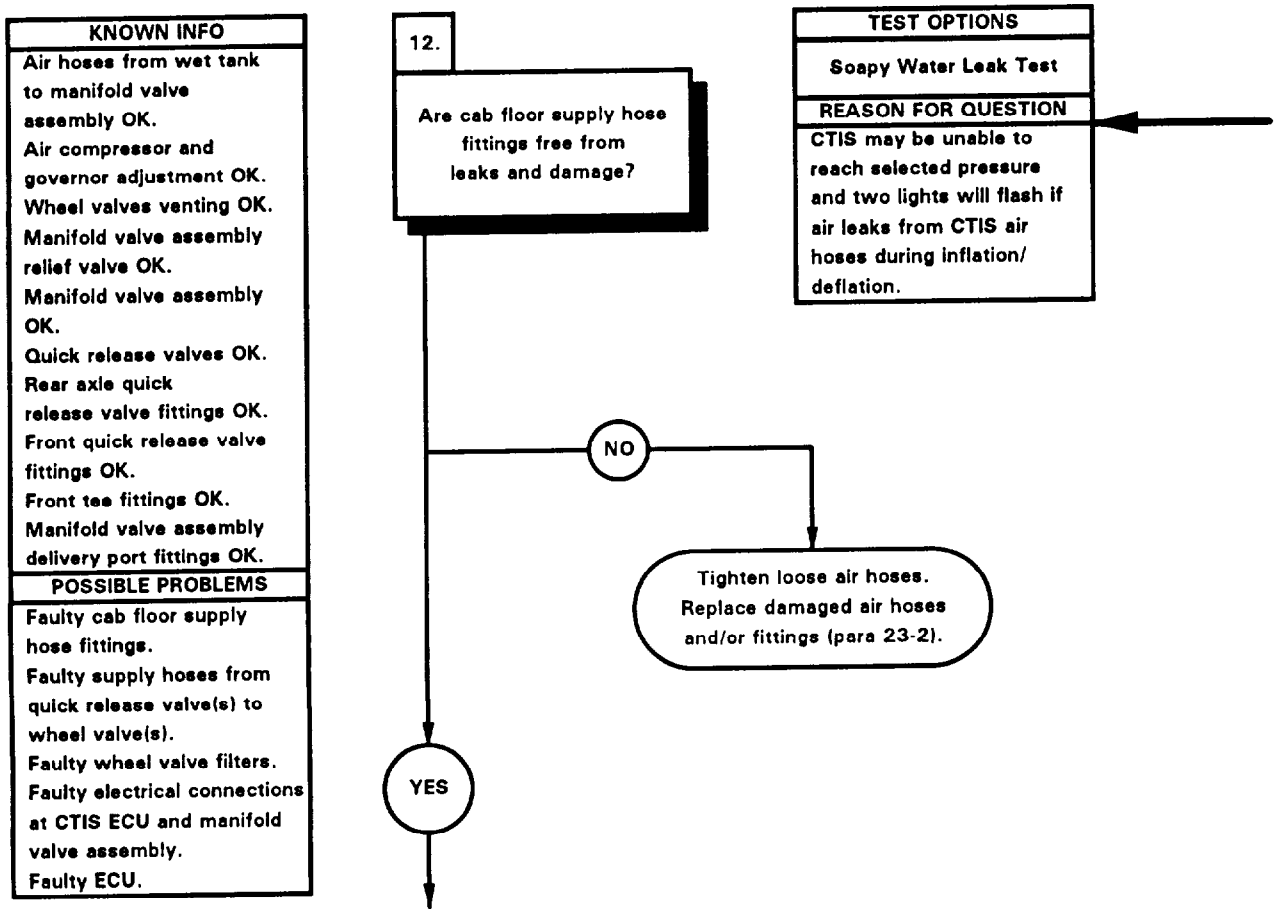
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



SOAPY WATER LEAK TEST
(1) Apply soapy water solution to manifold valve assembly delivery port fittings.
(2) Check for air bubbles indicating leaks.

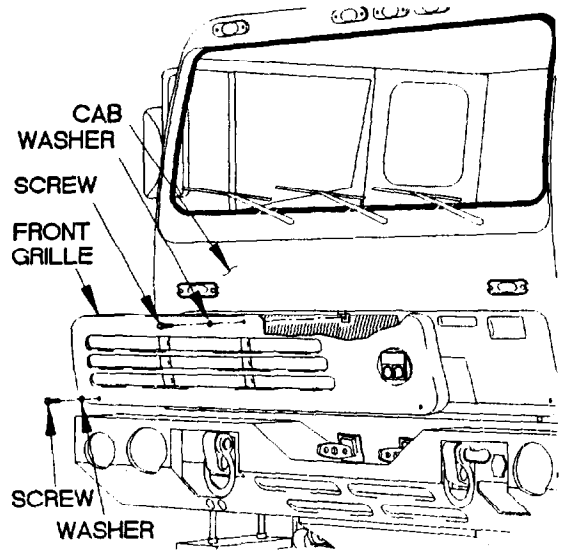


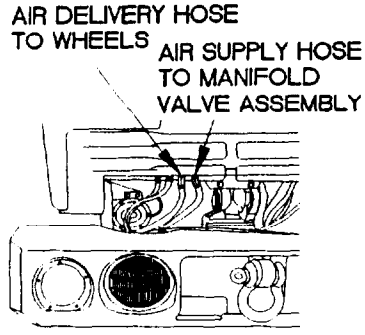
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



SOAPY WATER LEAK TEST

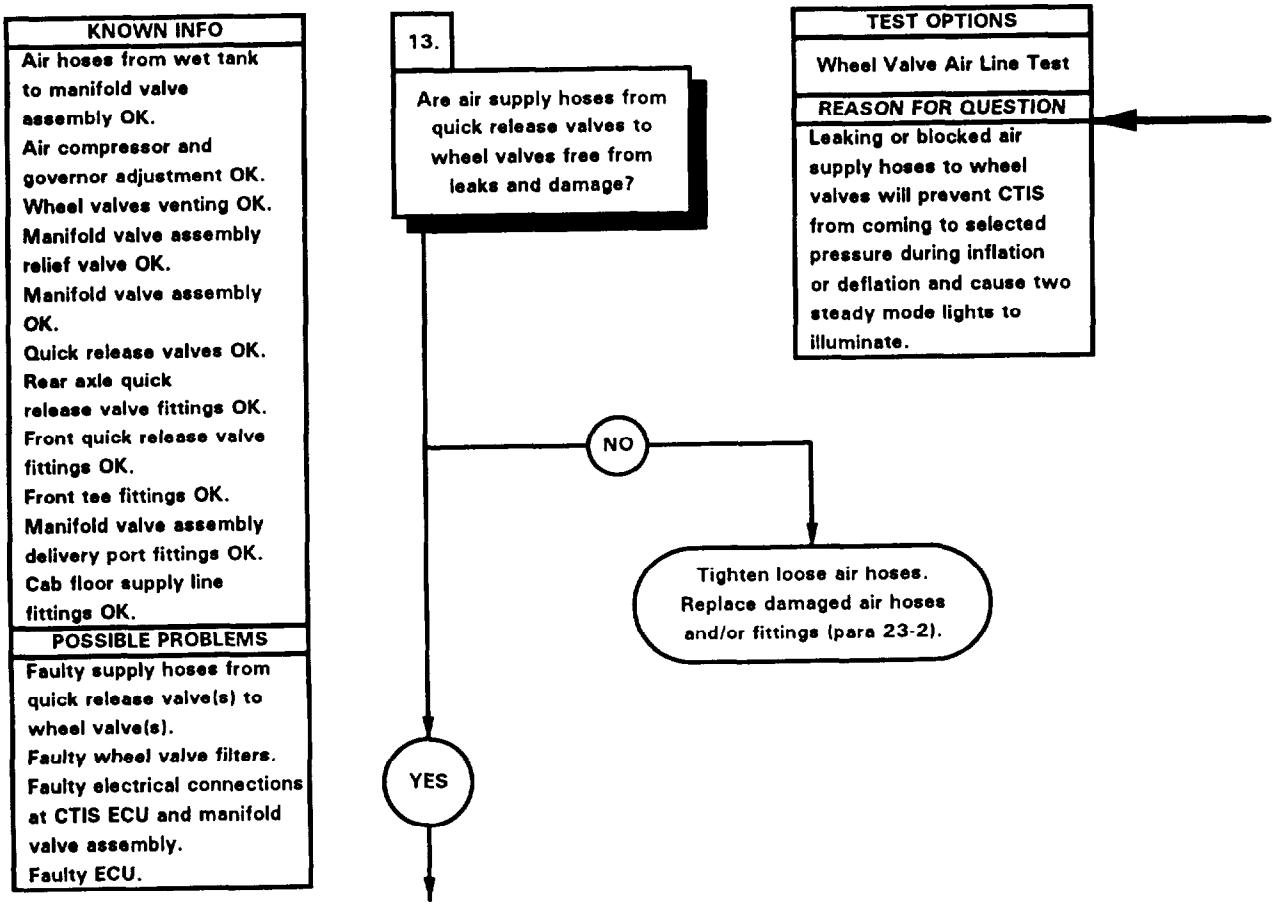
(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille from cab.
(4) Apply soapy water solution to cab floor supply hose fittings.
(5) Check for air bubbles indicating leaks.
(6) Position front grille on cab with washer and screw.
(7) 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).





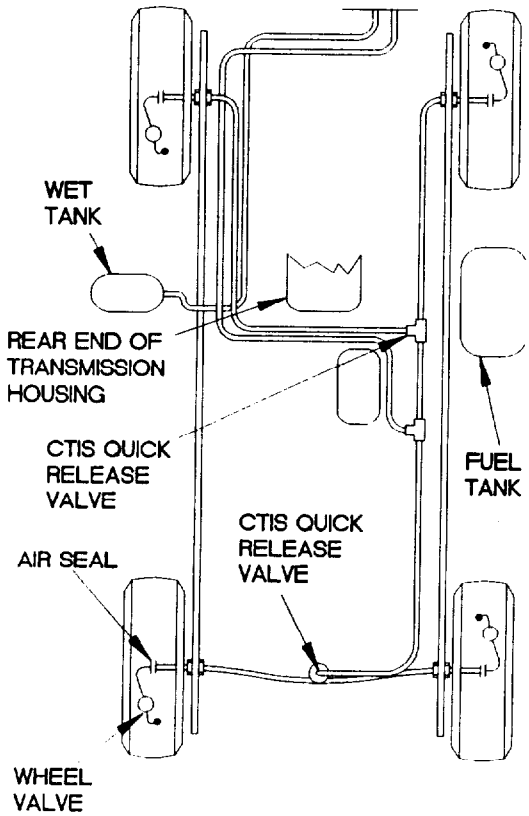
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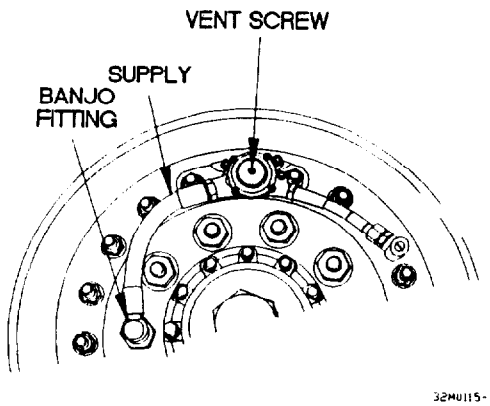
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



WHEEL VALVE AIR LINE TEST

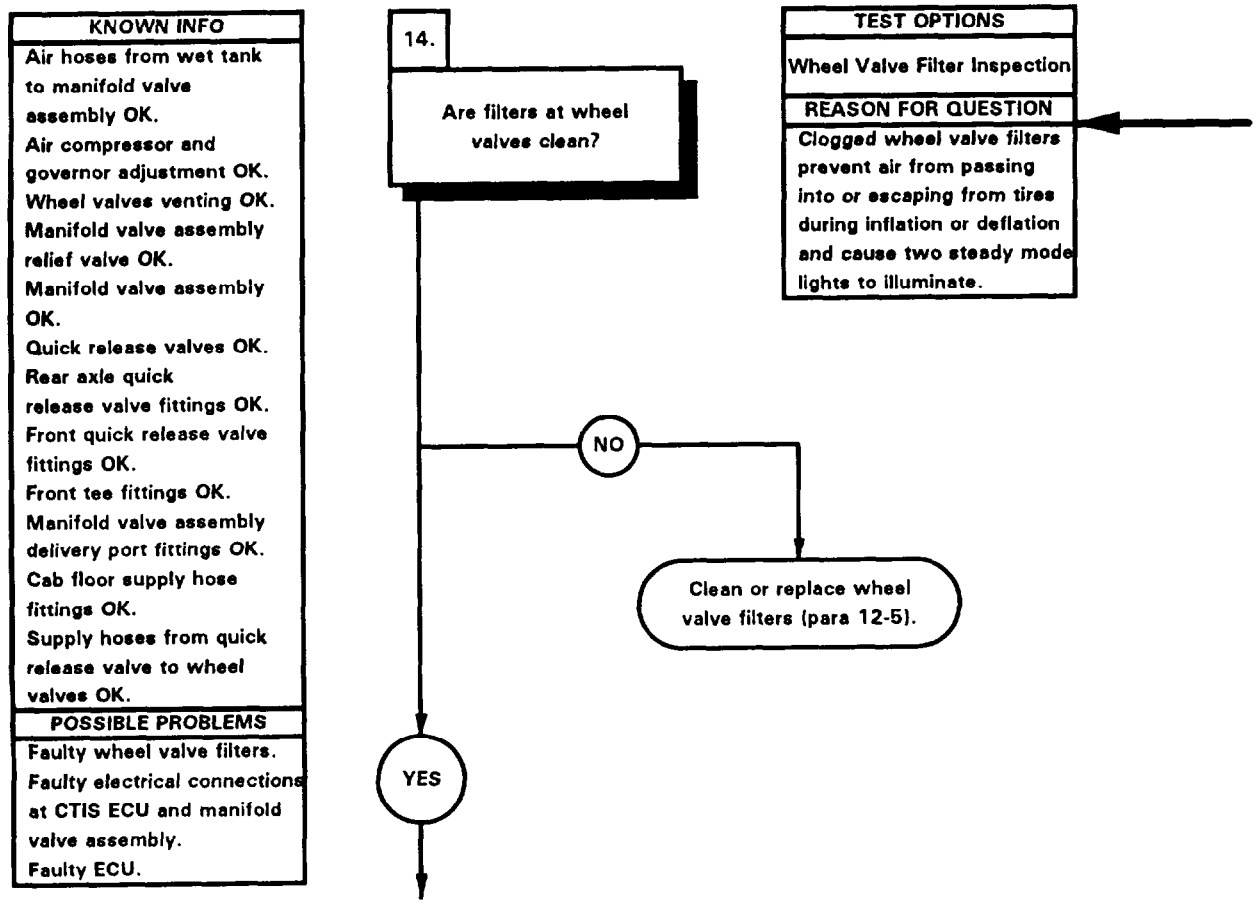
(1) Check tire pressures after a deflation or inflation sequence. If one or more tires are at a different pressure than the rest, air hose to affected wheel(s) may be faulty.
(2) Disconnect supply air hose at banjo fitting on affected wheel(s).
(3) Select an inflation sequence at CTIS ECU (TM 9-2320-365-10).
(4) Check if air escapes at wheel during inflation.
(5) If air does not escape, locate leak or blockage by tracing hose between quick release valve and affected wheel(s) (refer to pneumatic schematic).





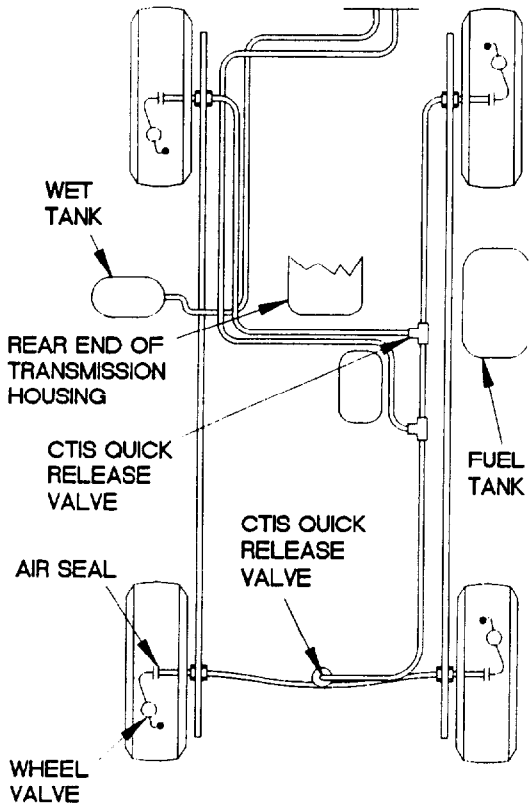
32M0115-

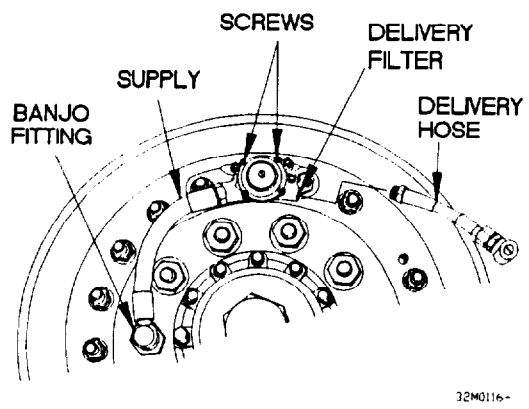
m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



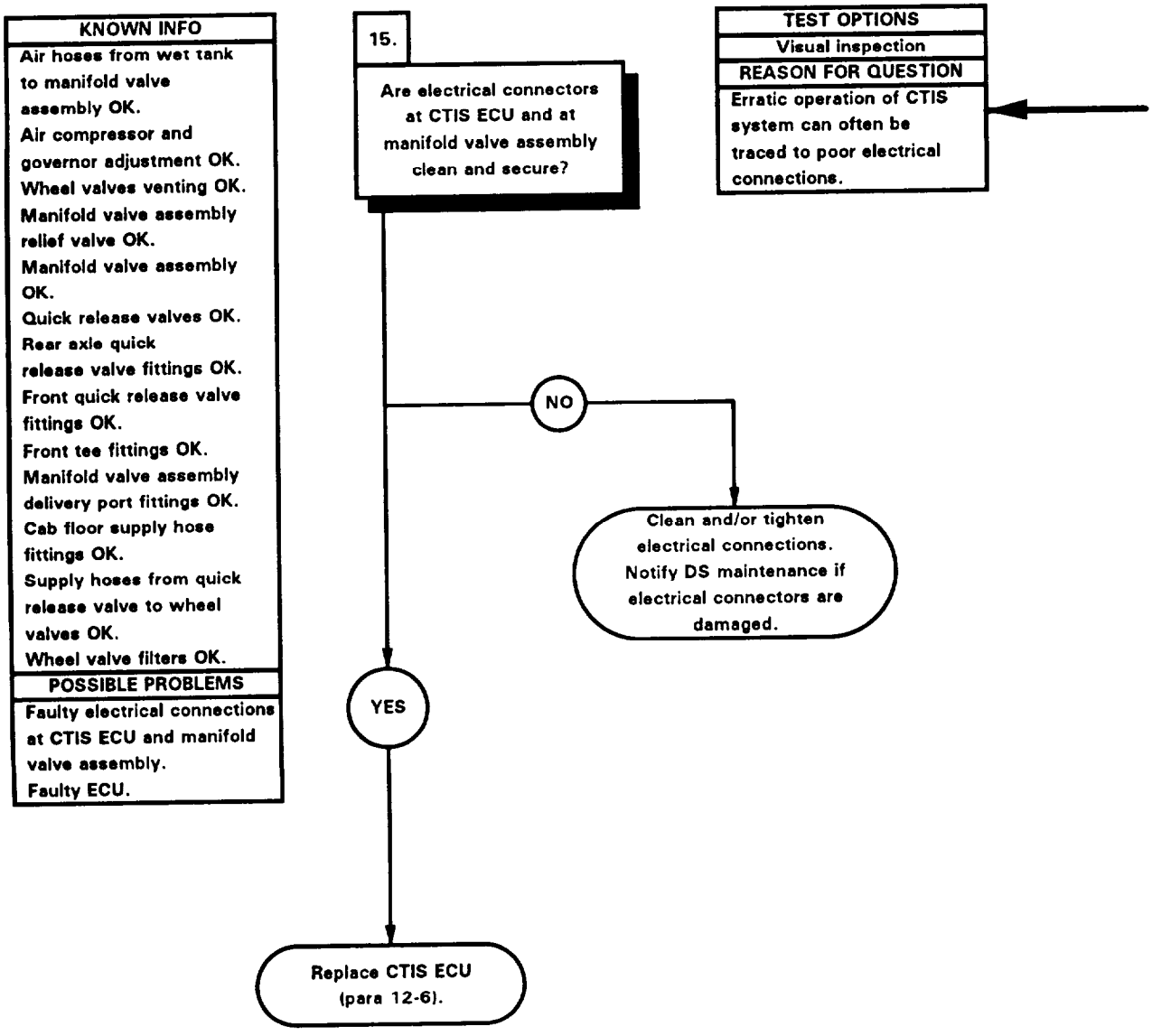
WHEEL VALVE FILTER INSPECTION

(1) Jack up axle at affected wheel and support with trestles.
(2) Remove two screws from wheel valve.
(3) Remove wheel valve and unscrew from delivery hose.
(4) Unscrew wheel valve filter from wheel valve.
(5) Check if filter is clean and free from obstruction.
(6) If filter is plugged with dirt, clean or replace wheel valve filters (para 12-5).
(7) Install wheel valve on delivery hose.
(8) Install wheel valve with two screws.
(9) Install supply air line on banjo fitting.

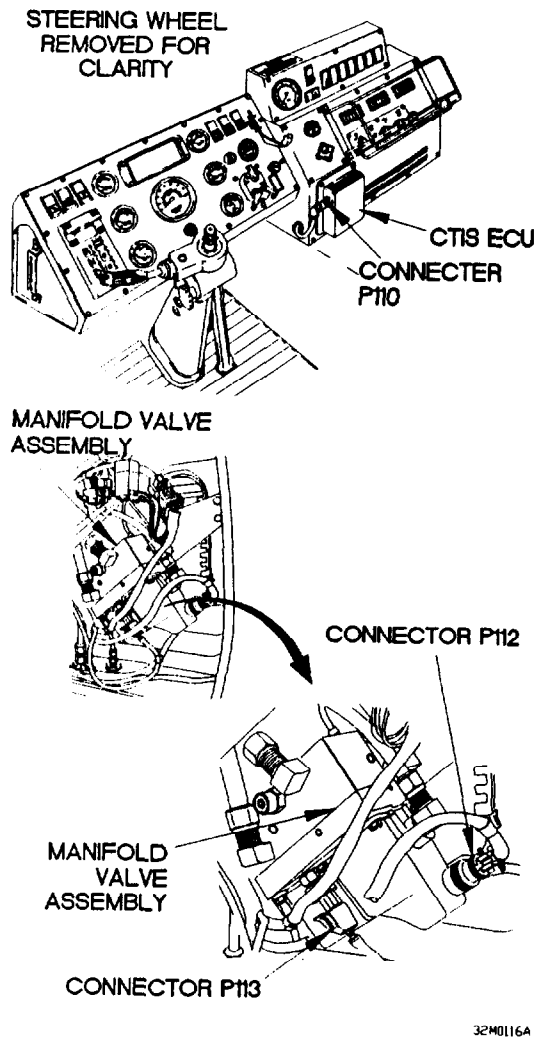




m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



(1) Disconnect connectors P110 at CTIS ECU, P112 at manifold valve assembly solenoid, and P113 at manifold valve assembly pressure transducer.
(2) Check if connectors are clean and pins are undamaged.
(3) Connect and tighten connectors P113, P112, and P110.
(4) Install kick panel (para 16-3).



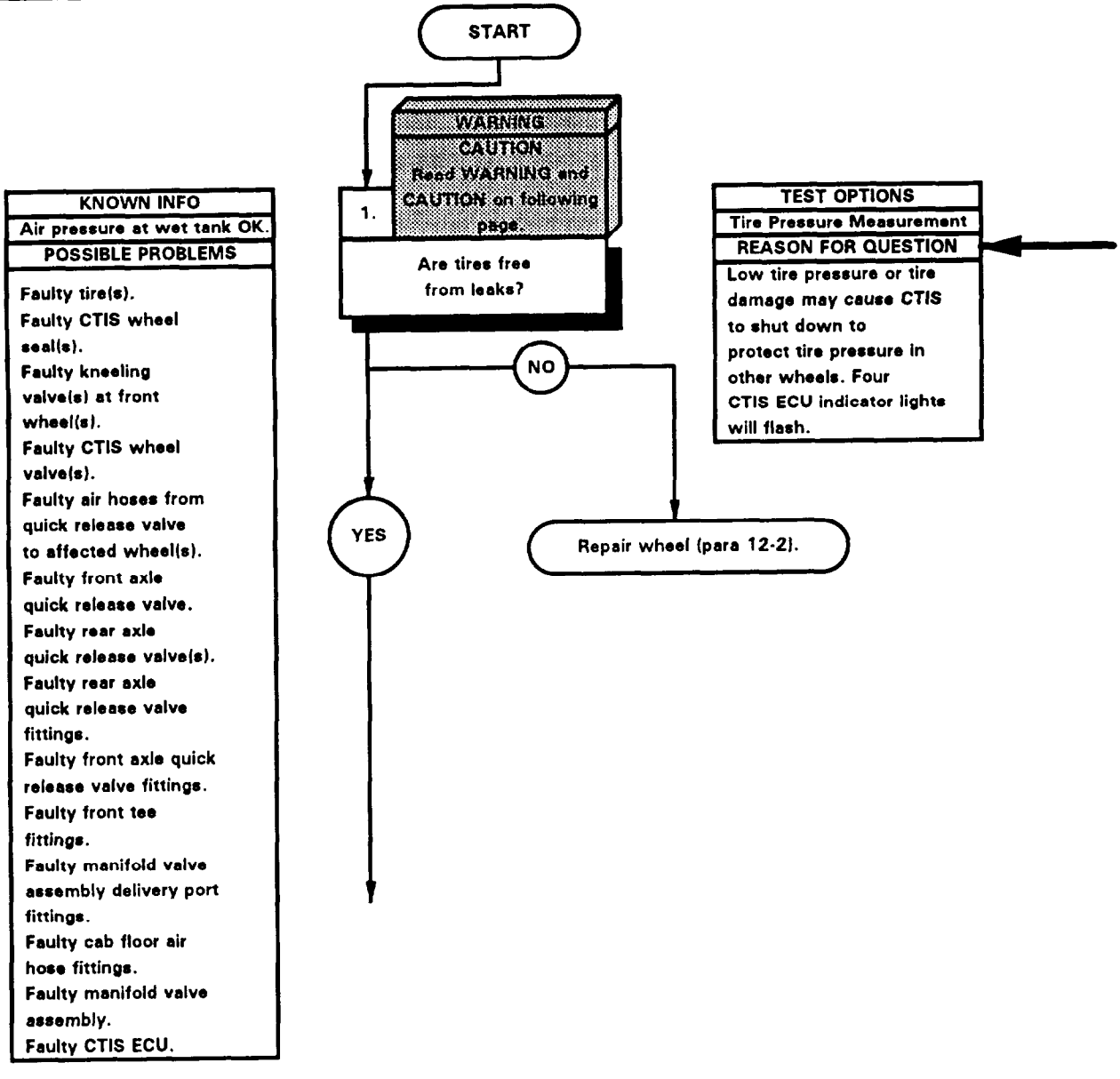
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING

INITIAL SETUP

Equipment Conditions
- Engine running (TM 9-2320-365-10).
- Parking brake on (TM 9-2320-365-10).
- Wheels chocked (TM 9-2320-365-10).

Materials/Parts
- Soap, Laundry (Item 69, Appendix D)

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Goggles, Industrial (Item 15, Appendix C)
- Gage, Tire Pressure (Item 11, Appendix C)
- Pan, Wash (Item 25, Appendix C)
- Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)



WARNING

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

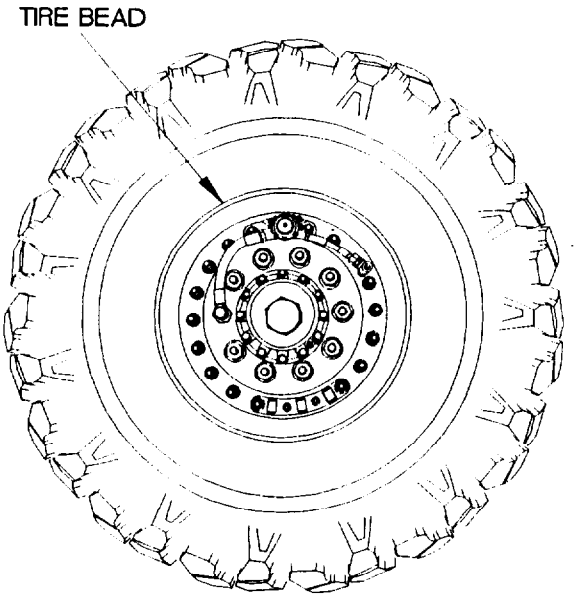
CAUTION

When RUN FLAT has been selected to perform a troubleshooting step, be sure to press RUN FLAT again when step is completed to terminate CTIS operation and prevent excessive air loss.

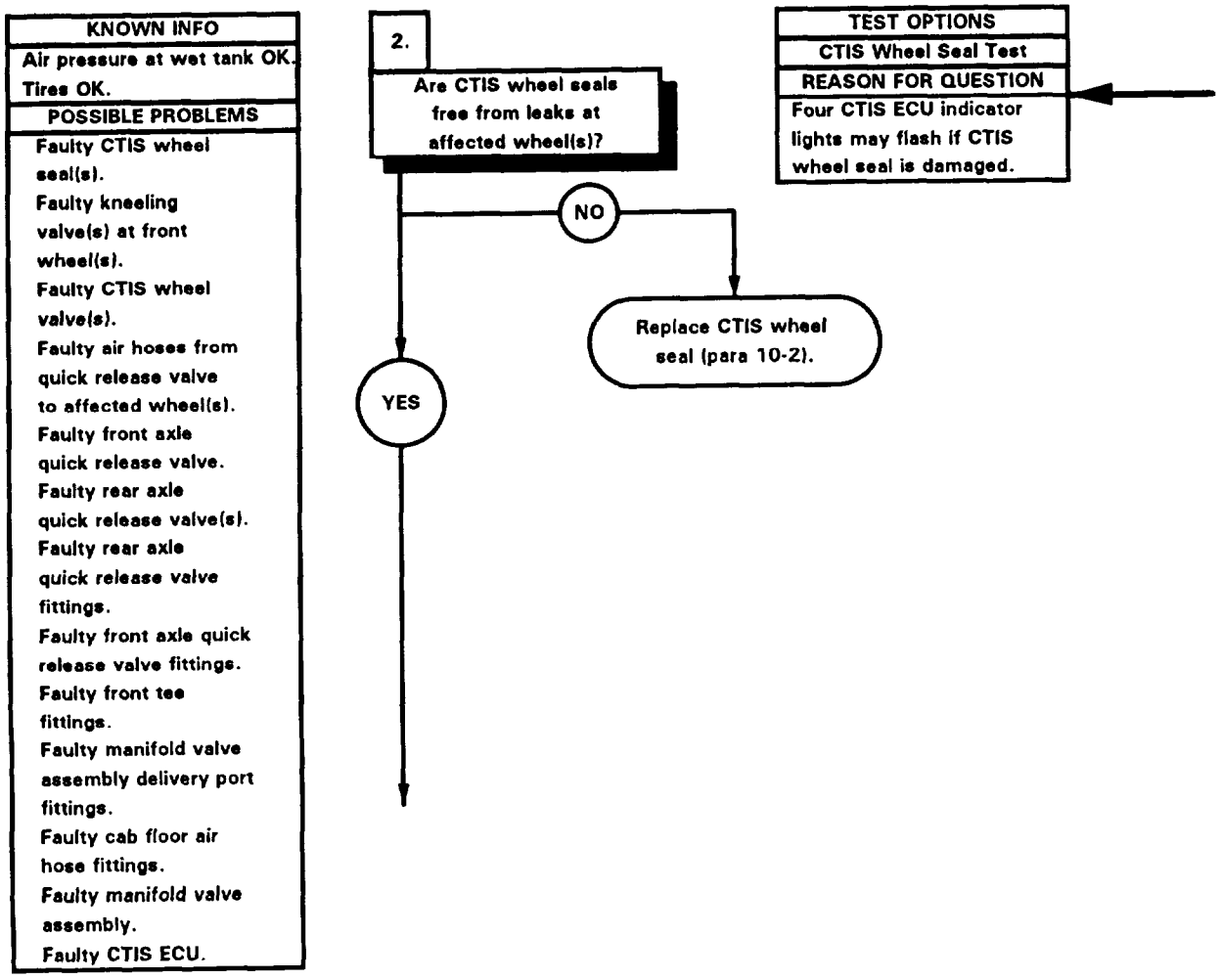
NOTE

Four mode lights flashing indicate CTIS has shut off due to uneven tire pressure (one tire 50 percent less than other pressures will do it), tire damage, or major leak. Operator can continue CTIS operation by pressing RUN FLAT on CTIS ECU. When RUN FLAT has been selected CTIS ECU checks pressures at 15 second intervals.

TIRE PRESSURE MEASUREMENT
(1) Measure and record the tire pressure of each tire (TM 9-2320-365-10).
(2) If any tire pressure is lower than the rest, visually inspect tire for damage.
(3) Apply soapy water solution to tire bead.
(4) Observe tire for bubbles indicating leaks.

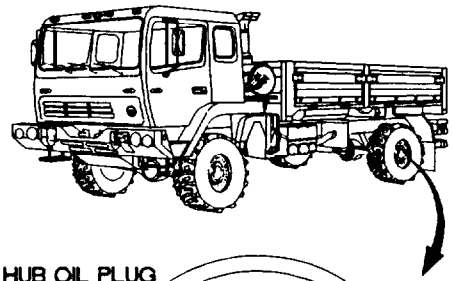


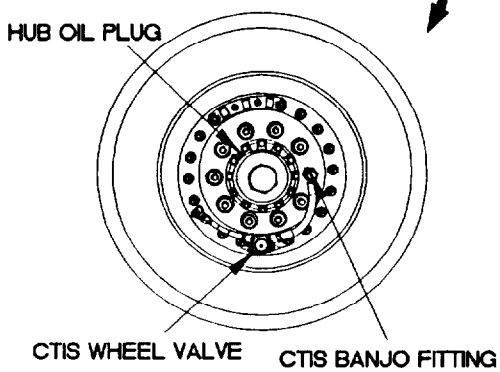
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

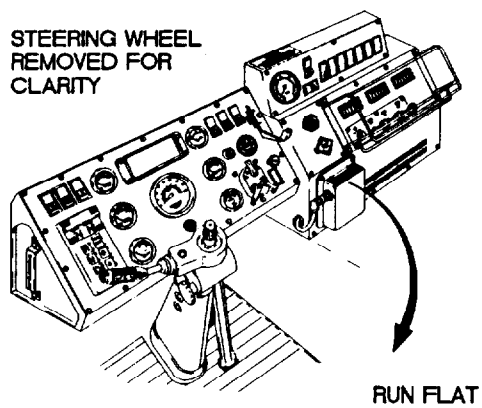


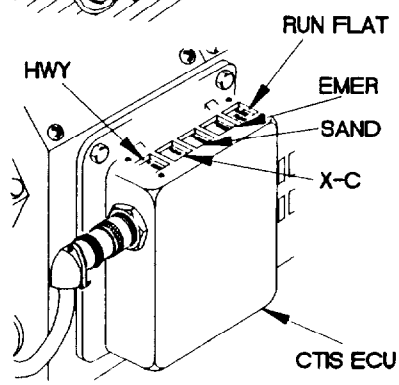
CTIS WHEEL SEAL TEST

(1) Check axle hubs for presence of oil leaks that indicate a damaged CTIS wheel seal.
(2) Ensure wheel is at rest with hub plug at top of hub.
(3) Remove hub oil plug.
(4) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(5) Determine if air is escaping from hub. If air escapes,replace CTIS wheel seal (para 10-3).
(6) Install hub oil plug on wheel hub.



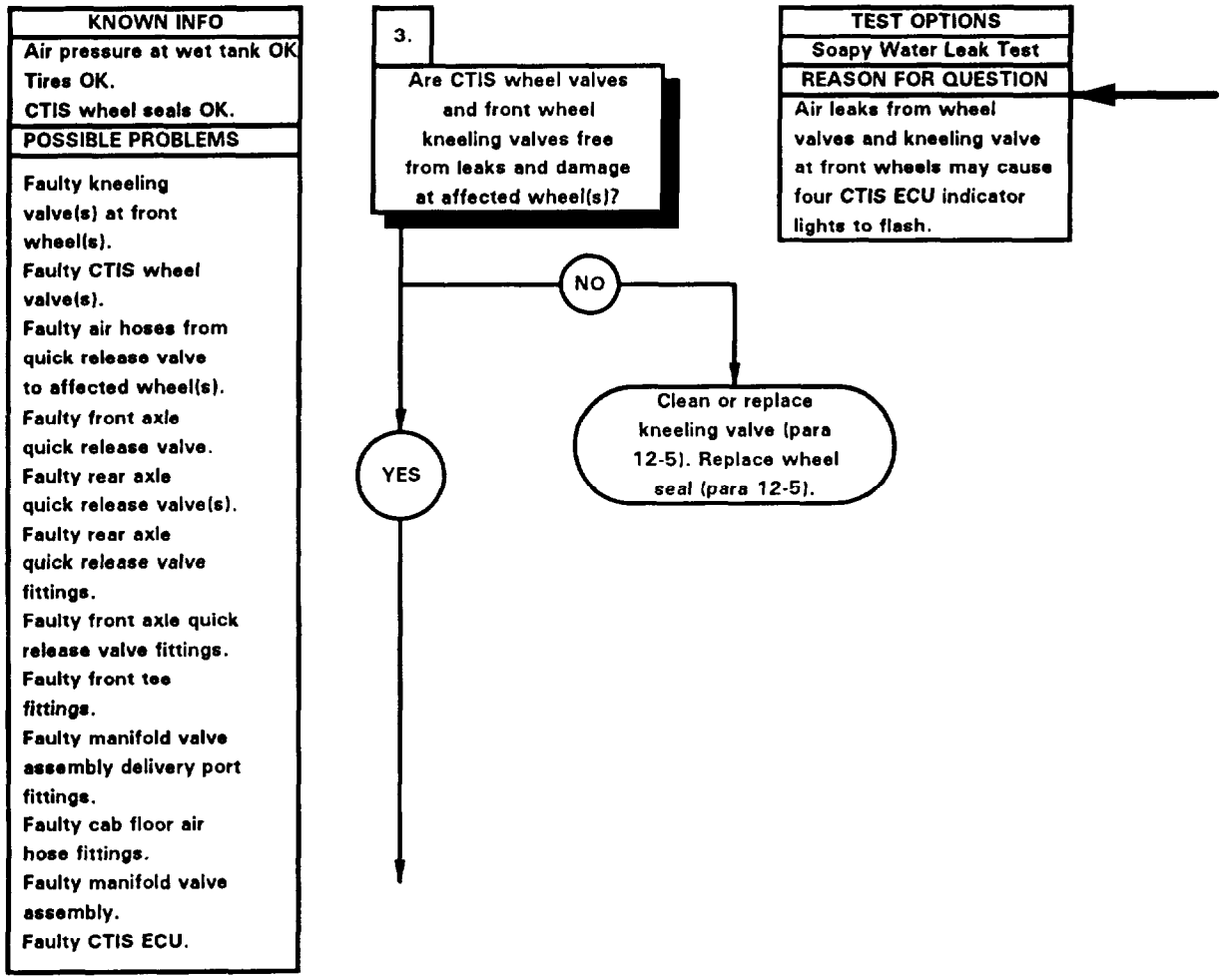






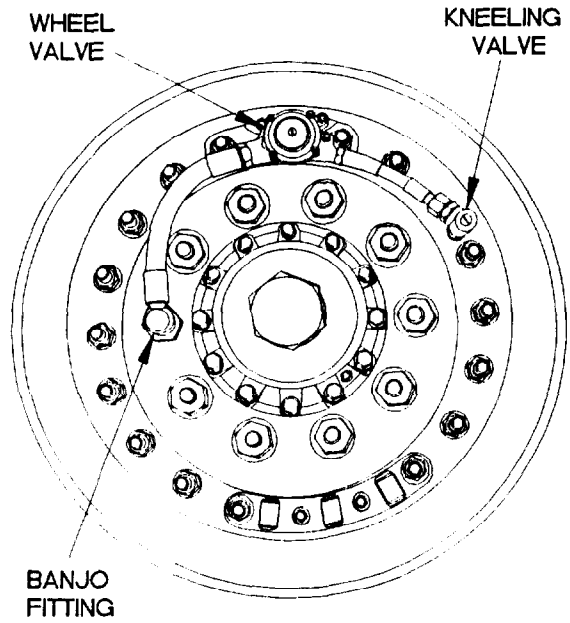
32M0202A

m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

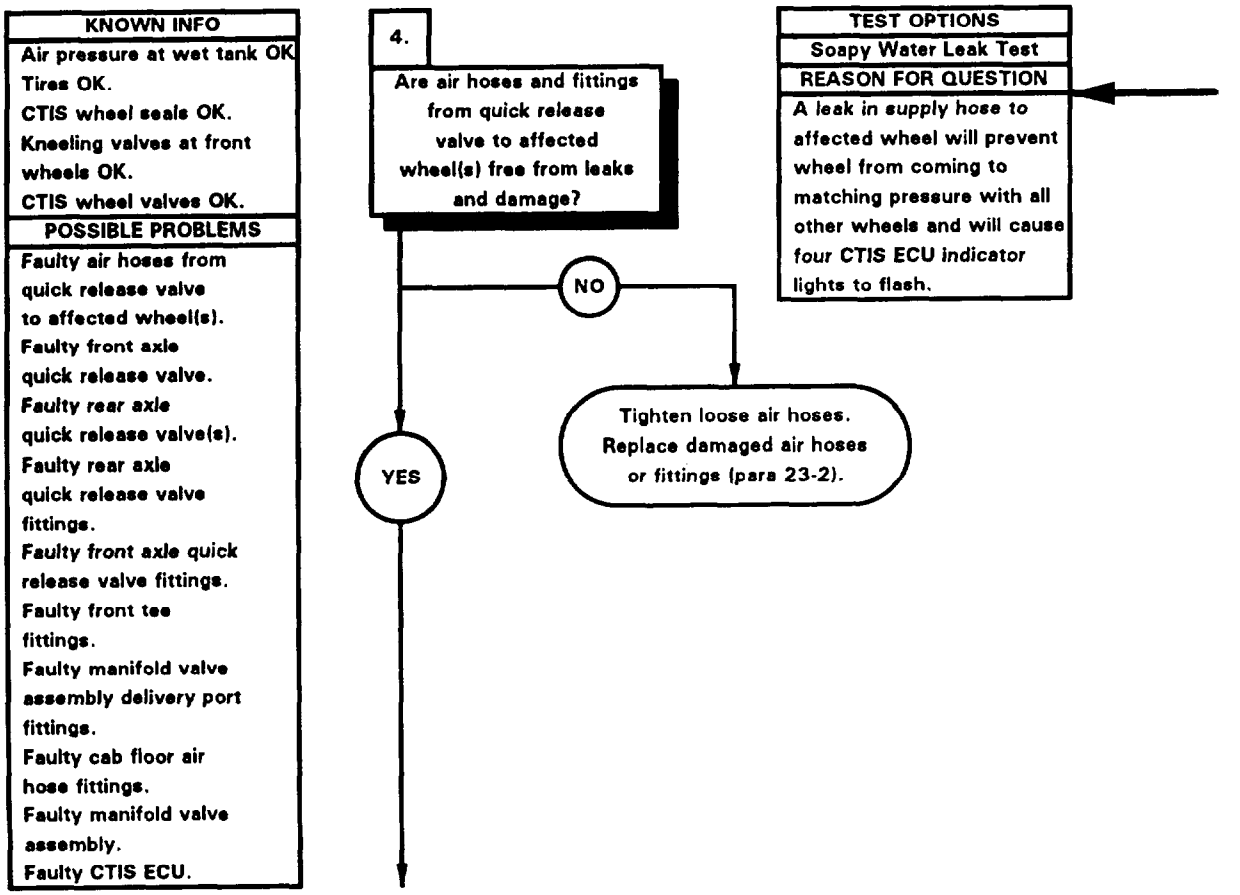


SOAPY WATER LEAK TEST

(1) If front wheel is leaking, ensure kneeling valve is tight and secure in valve seat.
(2) Apply soapy water to kneeling valve and check for leaks.
(3) Apply soapy water solution to fittings on either side of wheel valve and observe fittings for bubbles indicating leaks.
(4) With wheel valve still connected to tire, disconnect wheel valve air supply hose from hub at banjo fitting.
(5) Place open end of air supply hose in container of water. Look for bubbles. Persistent bubbles from air supply hose indicate leaking wheel valve.
(6) Connect air supply hose to hub at banjo fitting.



m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



SOAPY WATER LEAK TEST

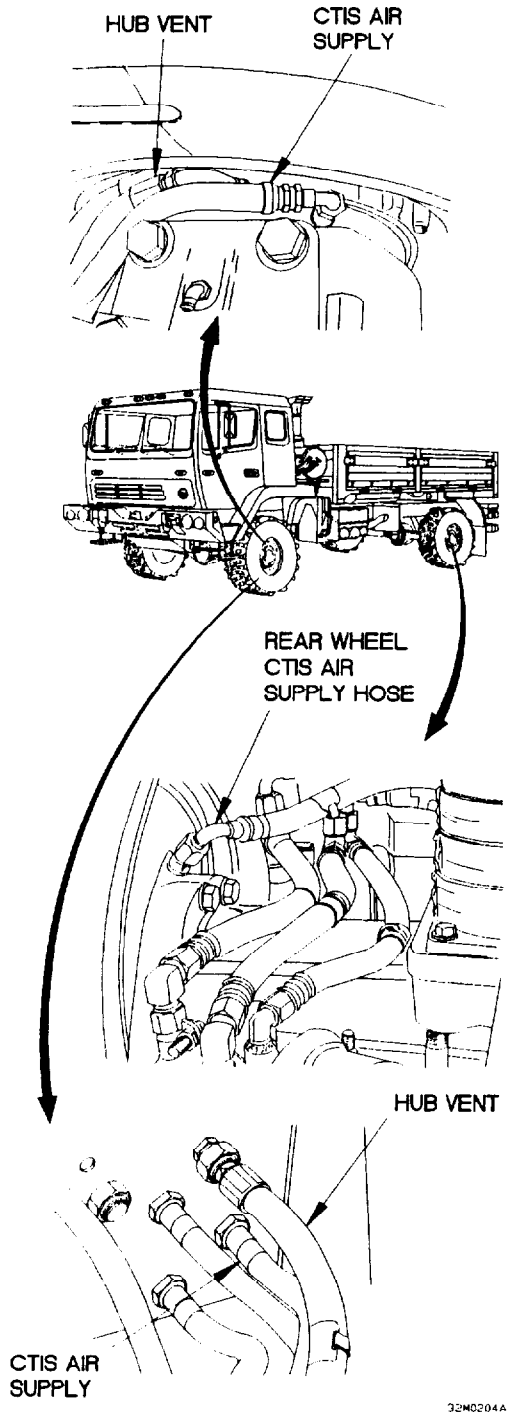
(1) If affected wheel is on intermediate axle:
  (a) Apply soapy water solution to air supply fittings at affected wheel(s).
  (b) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
  (c) Check for bubbles indicating leaks at fittings.
  (d) Inspect air hose from wheel to quick release valve for leaks and damage.

(2) If affected wheel is on front axle:
  (a) Apply soapy water solution to air supply fittings at affected wheel(s) and at frame adapter.

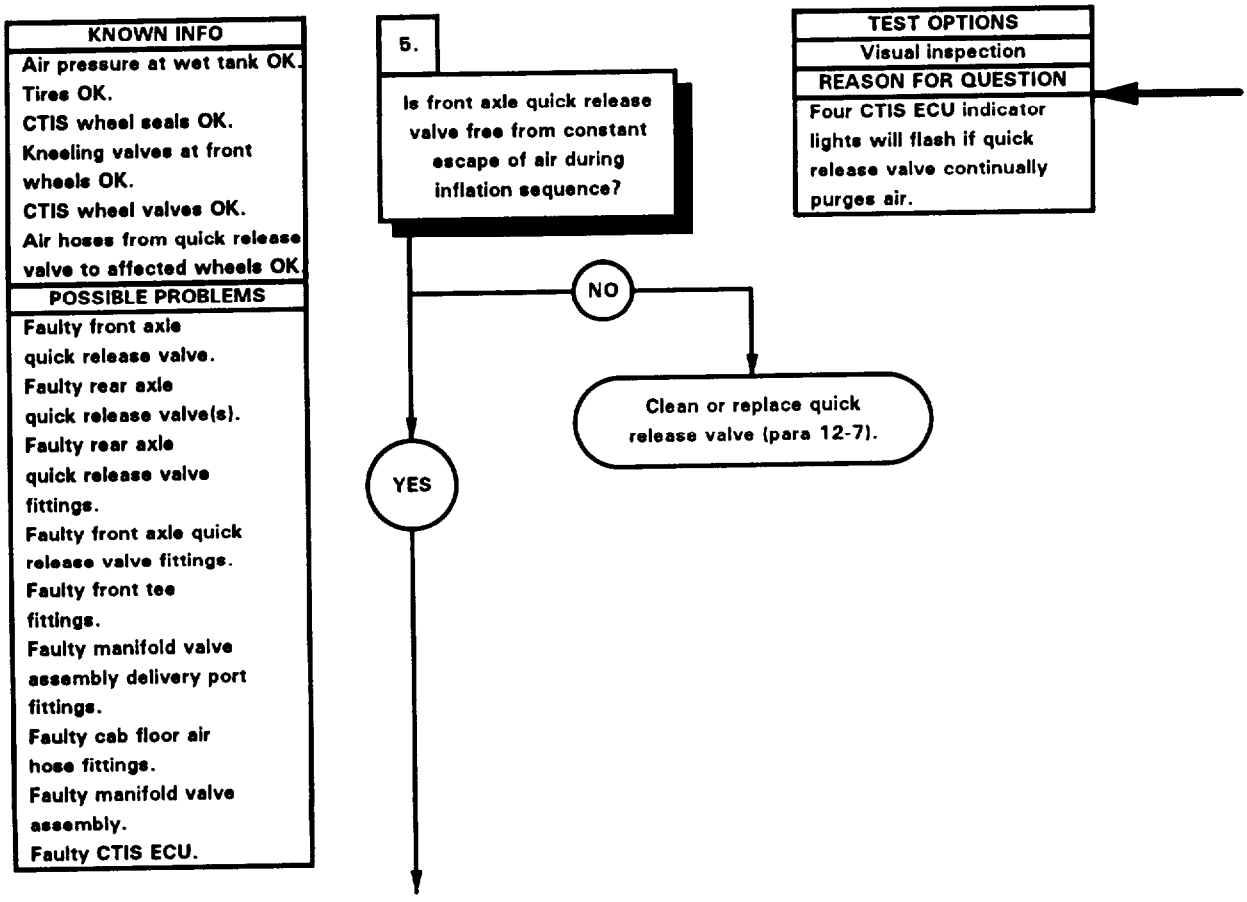
NOTE

CTIS air supply is front fitting on left front wheel; back fitting on right front wheel.

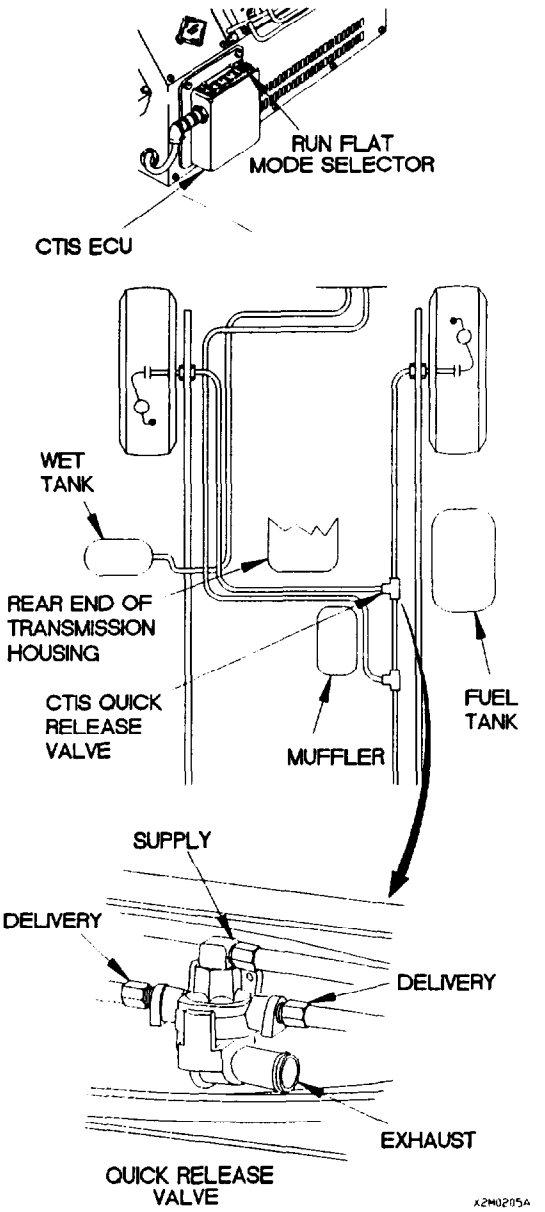
  (b) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
  (c) Check for bubbles indicating leaks at fittings.
  (d) Inspect air hose from frame adapter to quick release valve for leaks and damage.



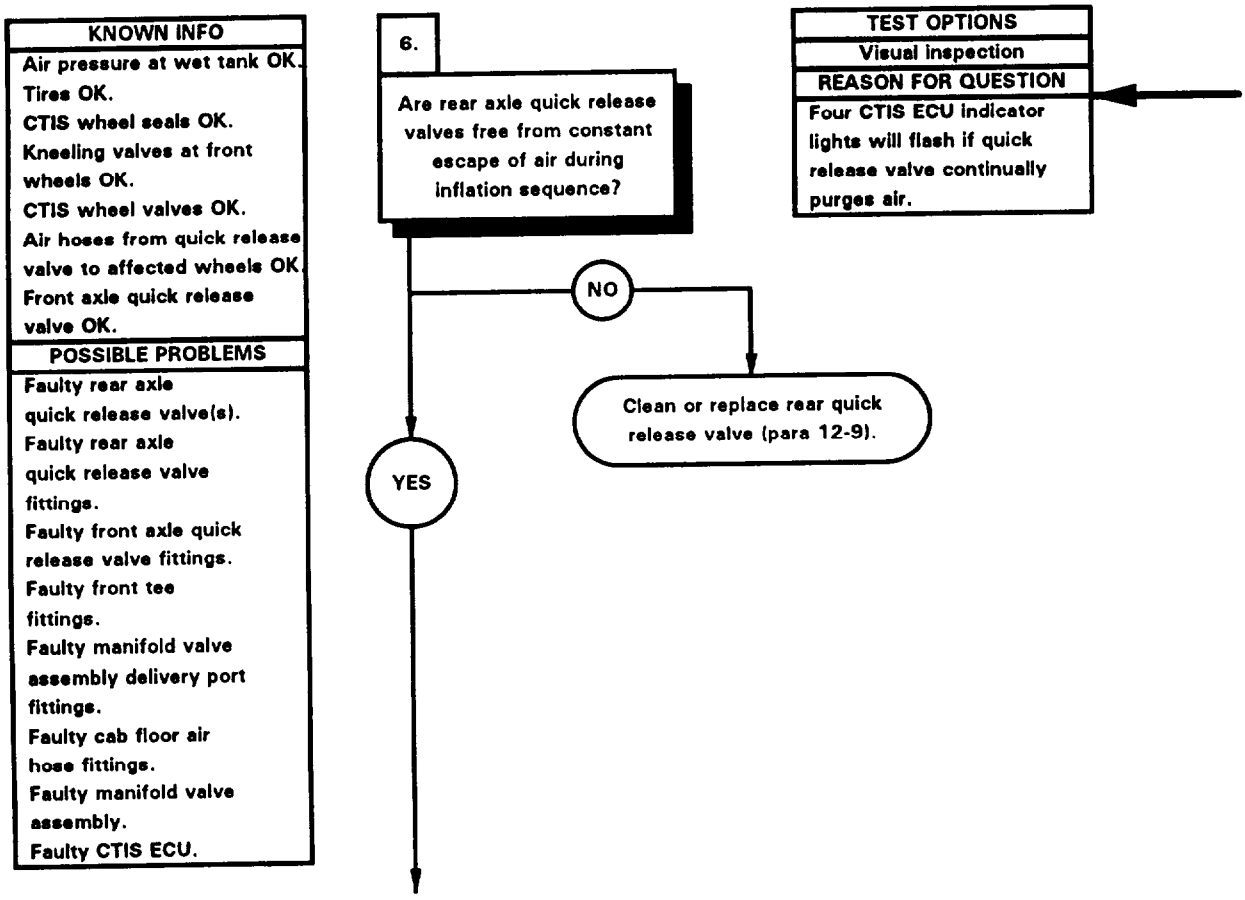
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



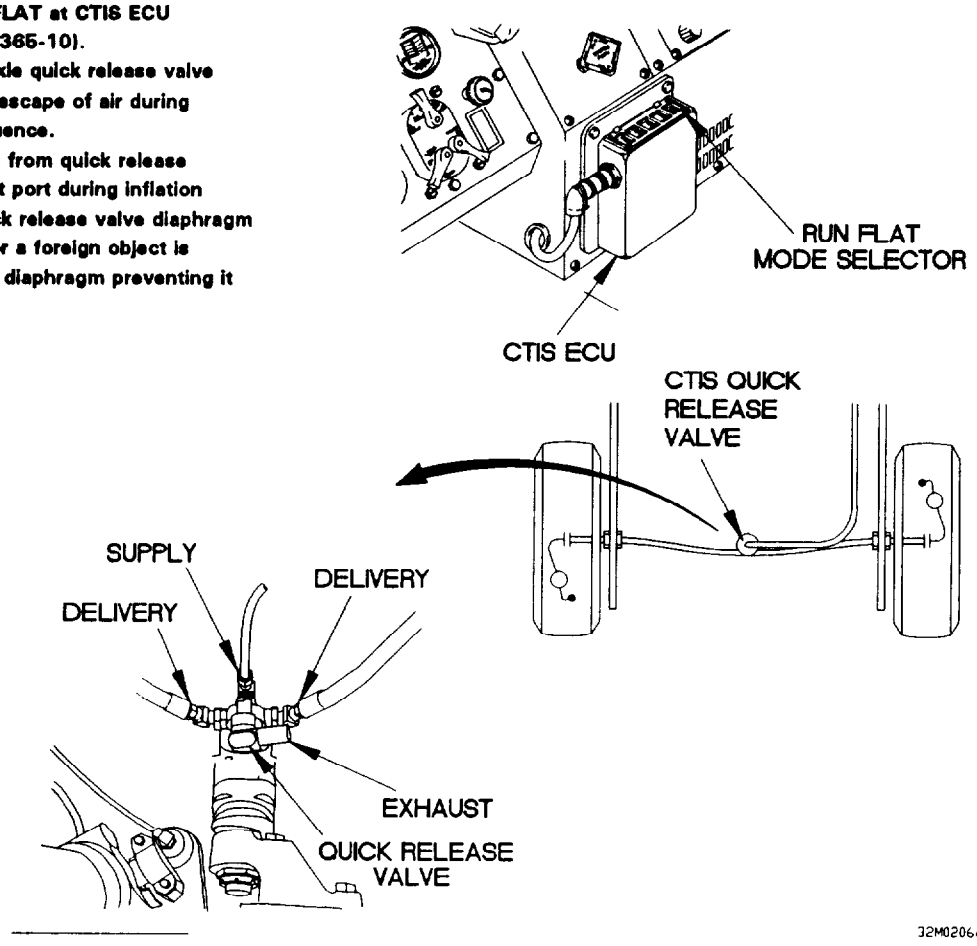
(1) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(2) Check front axle quick release valve for constant escape of air during inflation sequence.
(3) If air escapes from quick release valve exhaust port during inflation attempt, quick release valve diaphragm is damaged or a foreign object is lodged under diaphragm preventing it from closing.



m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

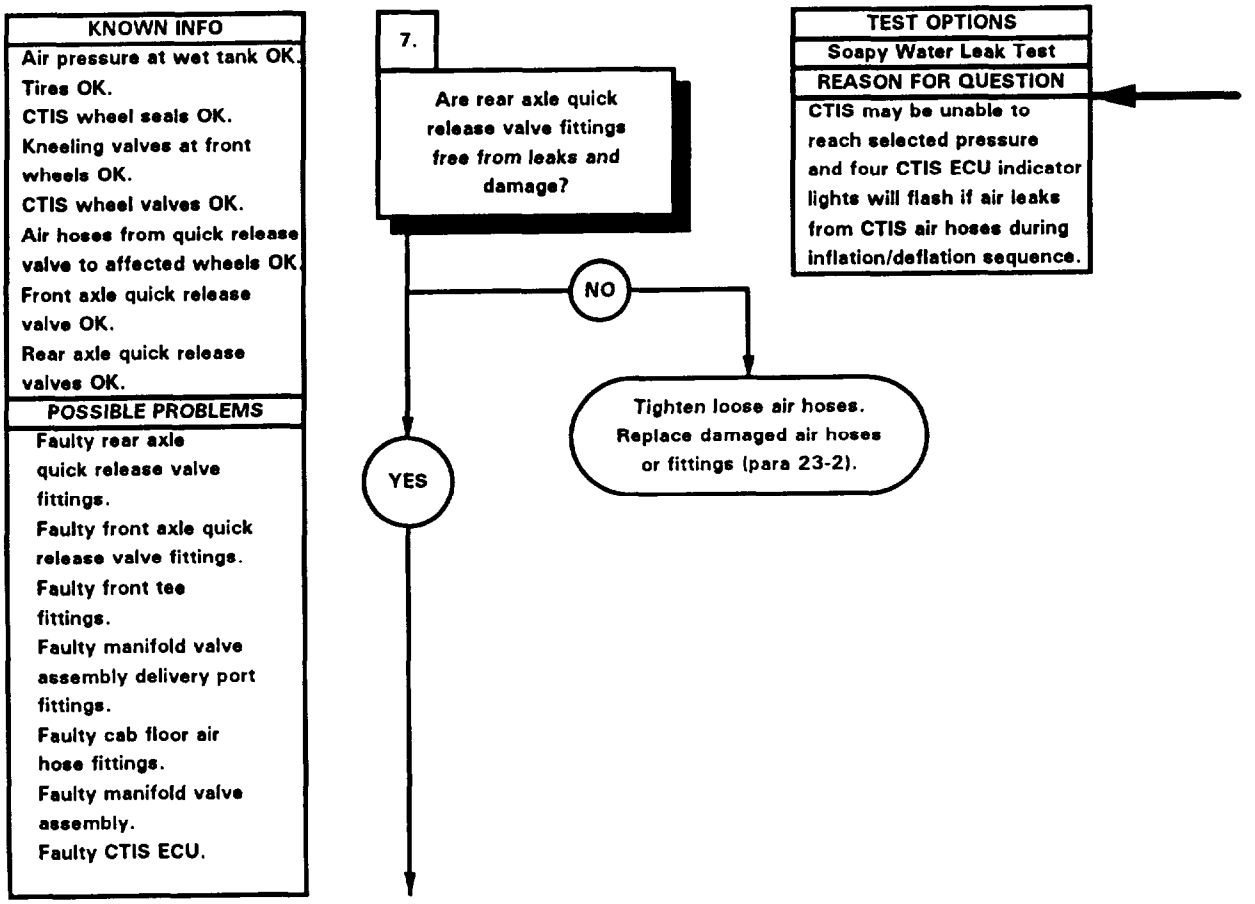


(1) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(2) Check rear axle quick release valve for constant escape of air during inflation sequence.
(3) If air escapes from quick release valve exhaust port during inflation attempt, quick release valve diaphragm is damaged or a foreign object is lodged under diaphragm preventing it from closing.

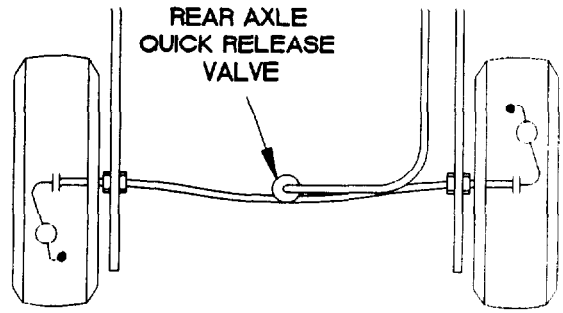


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m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

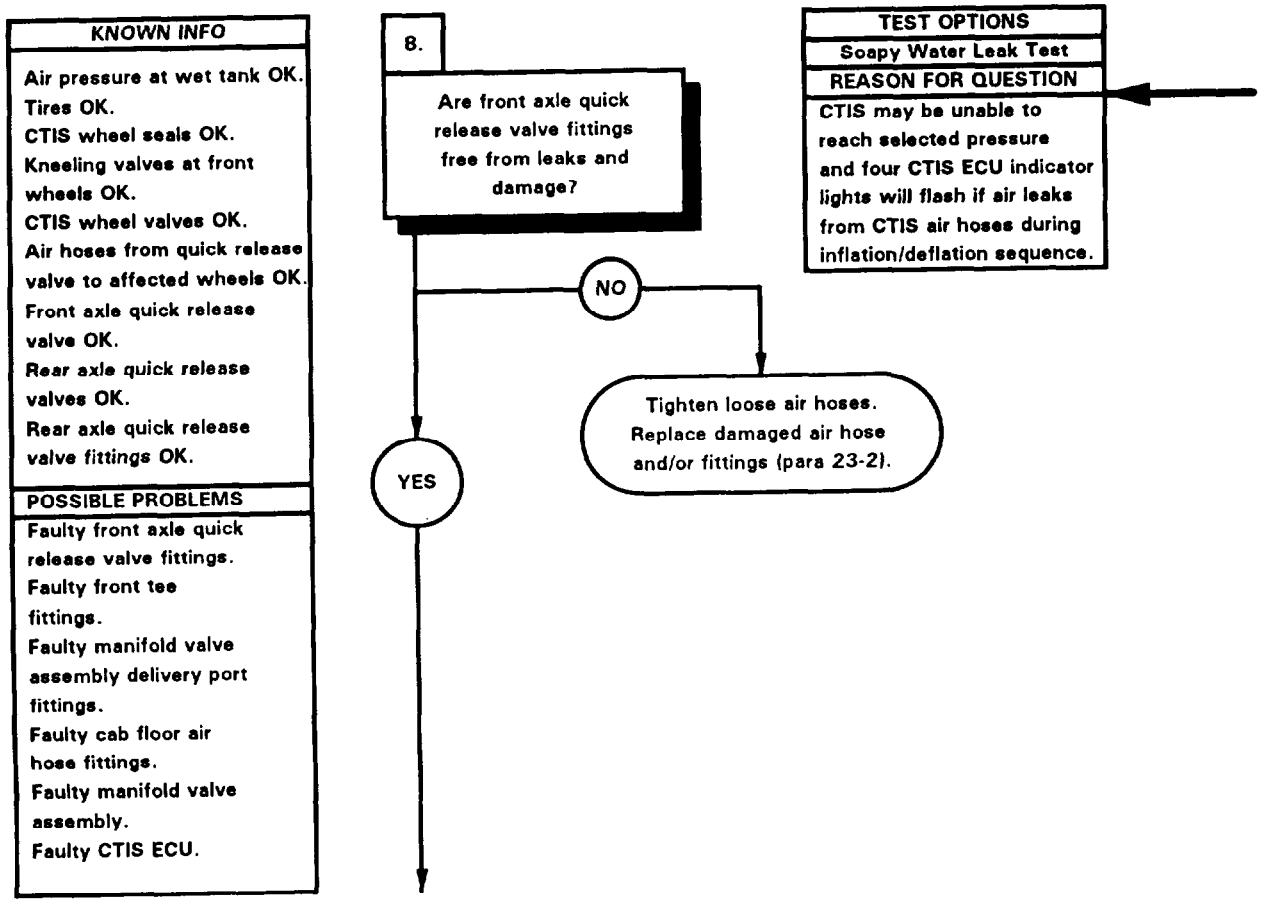


SOAPY WATER LEAK TEST
(1) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10) and listen for obvious air escape in CTIS system.
(2) If obvious air escape is heard, perform repair at damaged area. If no obvious air escape is heard, proceed to quick release valve leak check.
(3) Apply soapy water solution to quick release valve fittings at rear axle.
(4) Check for bubbles indicating leaks.

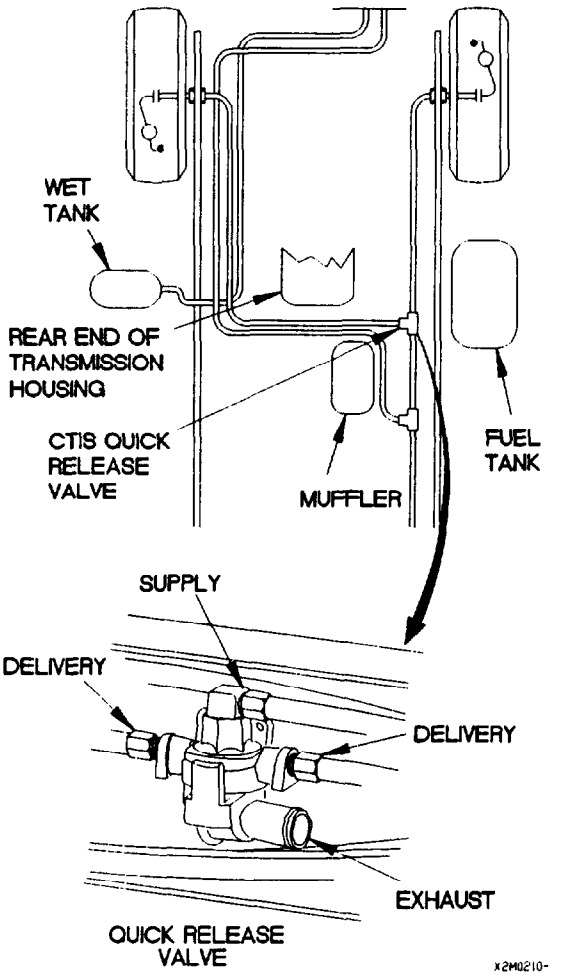


32M0207-

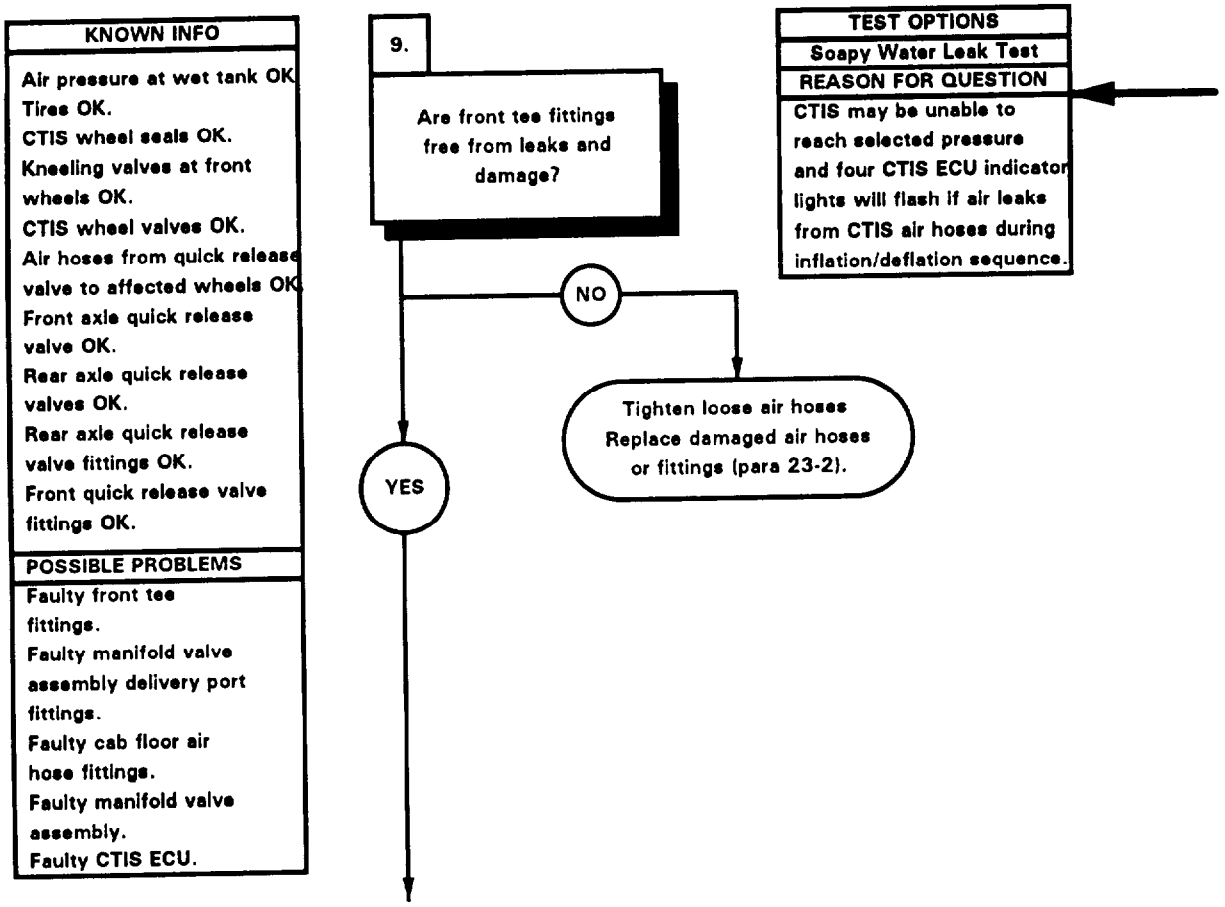
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



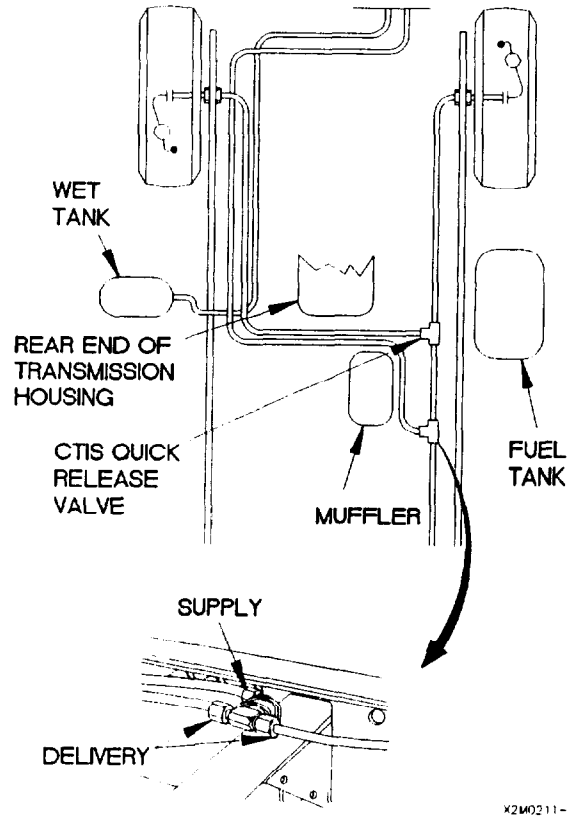
SOAPY WATER LEAK TEST
(1) Apply soapy water solution to front quick release valve fittings.
(2) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(3) Check for bubbles indicating leaks.



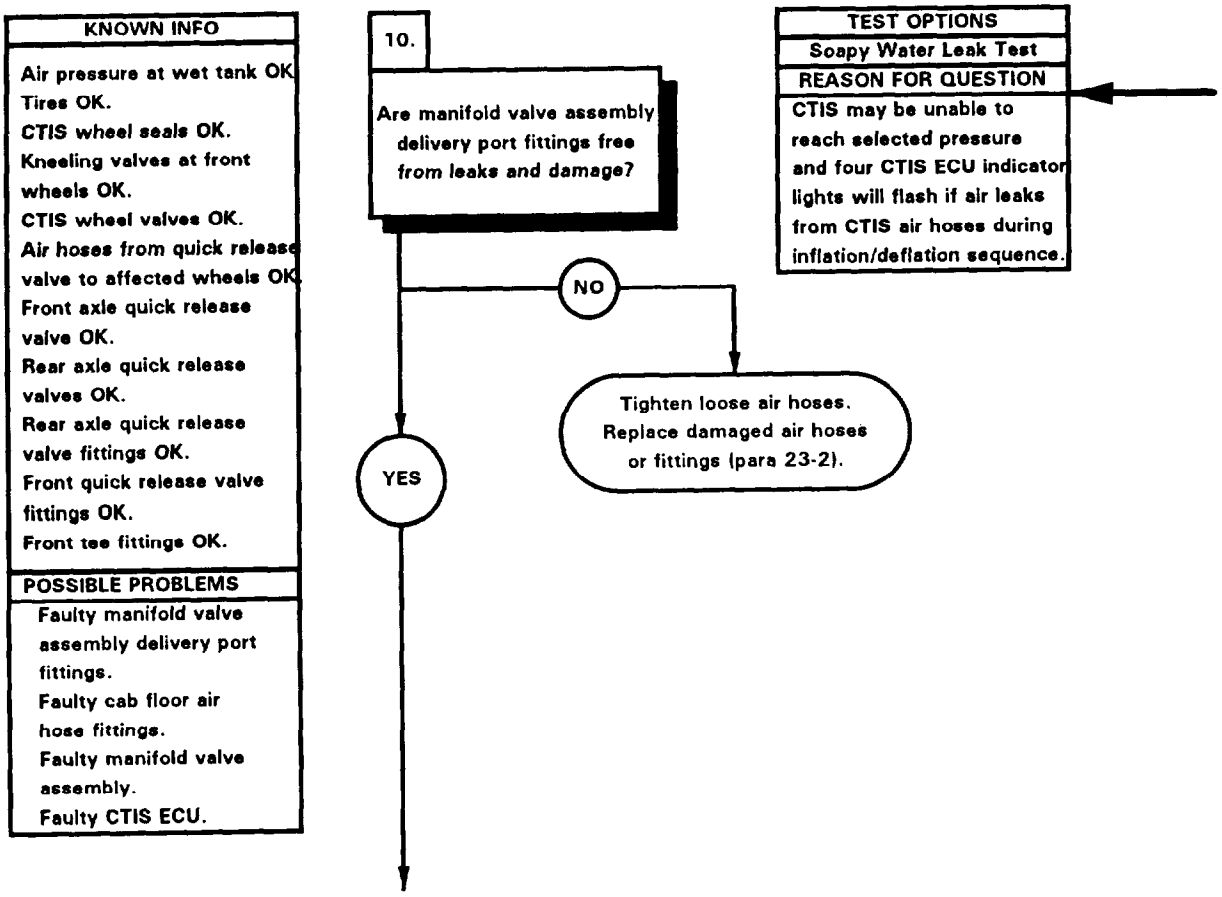
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



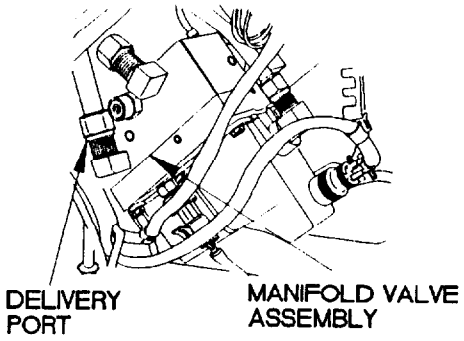
SOAPY WATER LEAK TEST
(1) Apply soapy water solution to tee fittings at muffler.
(2) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(3) Check for bubbles indicating leaks.



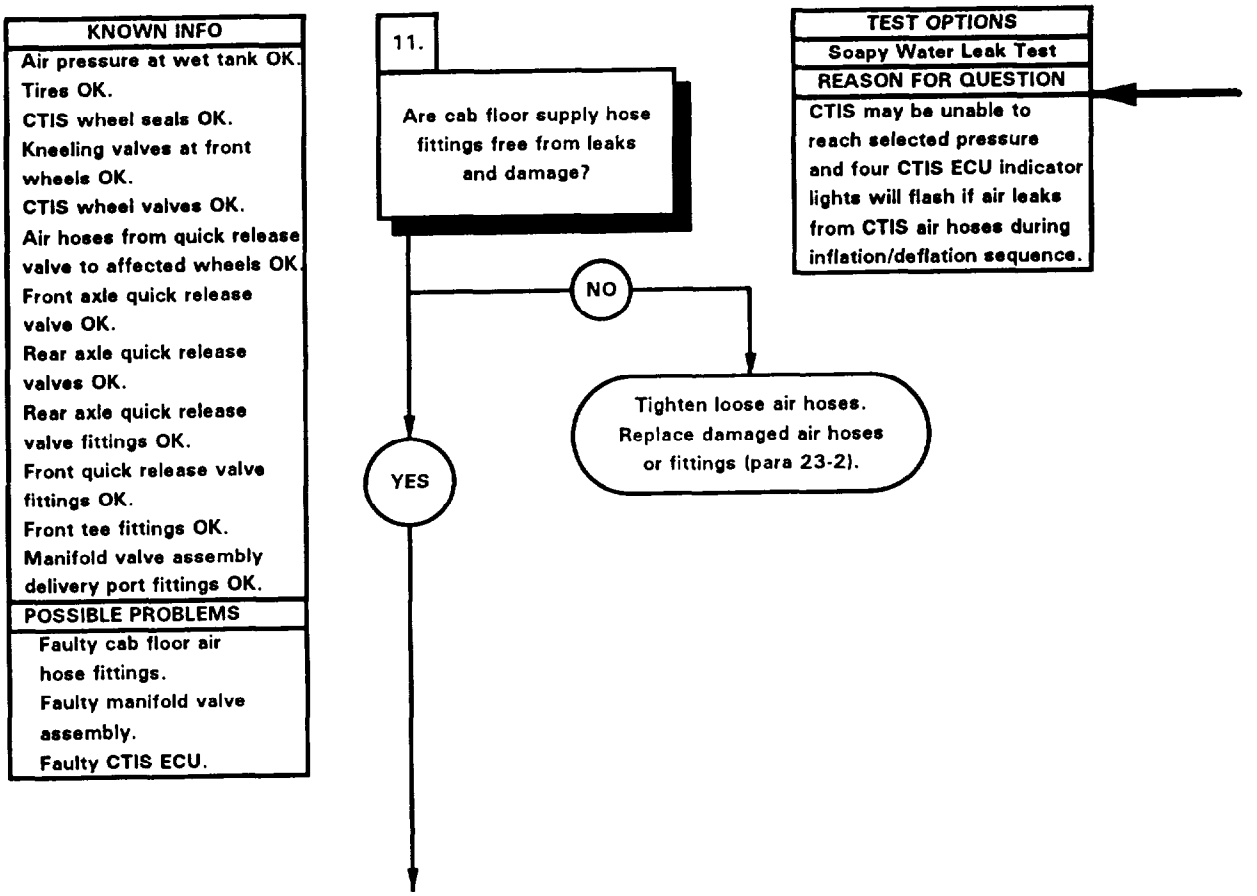
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



SOAPY WATER LEAK TEST
(1) Remove kick panel (para 16-3).
(2) Apply soapy water solution to manifold valve assembly delivery port fittings.
(3) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(4) Check for bubbles indicating leaks.

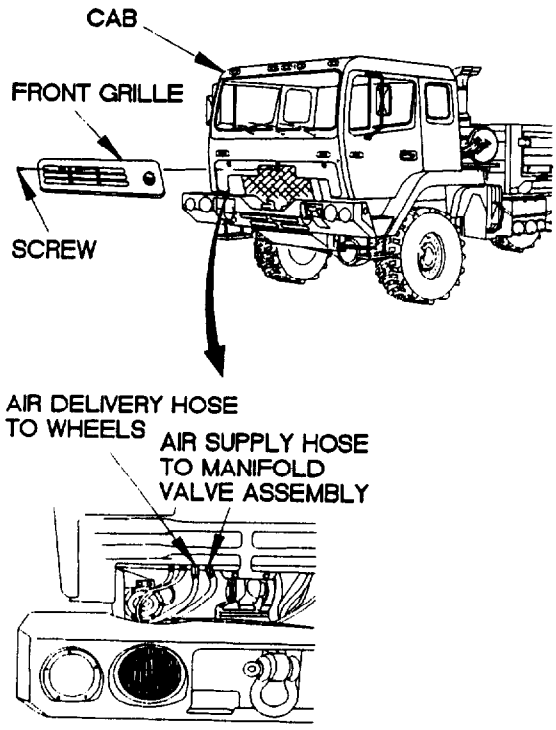


m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



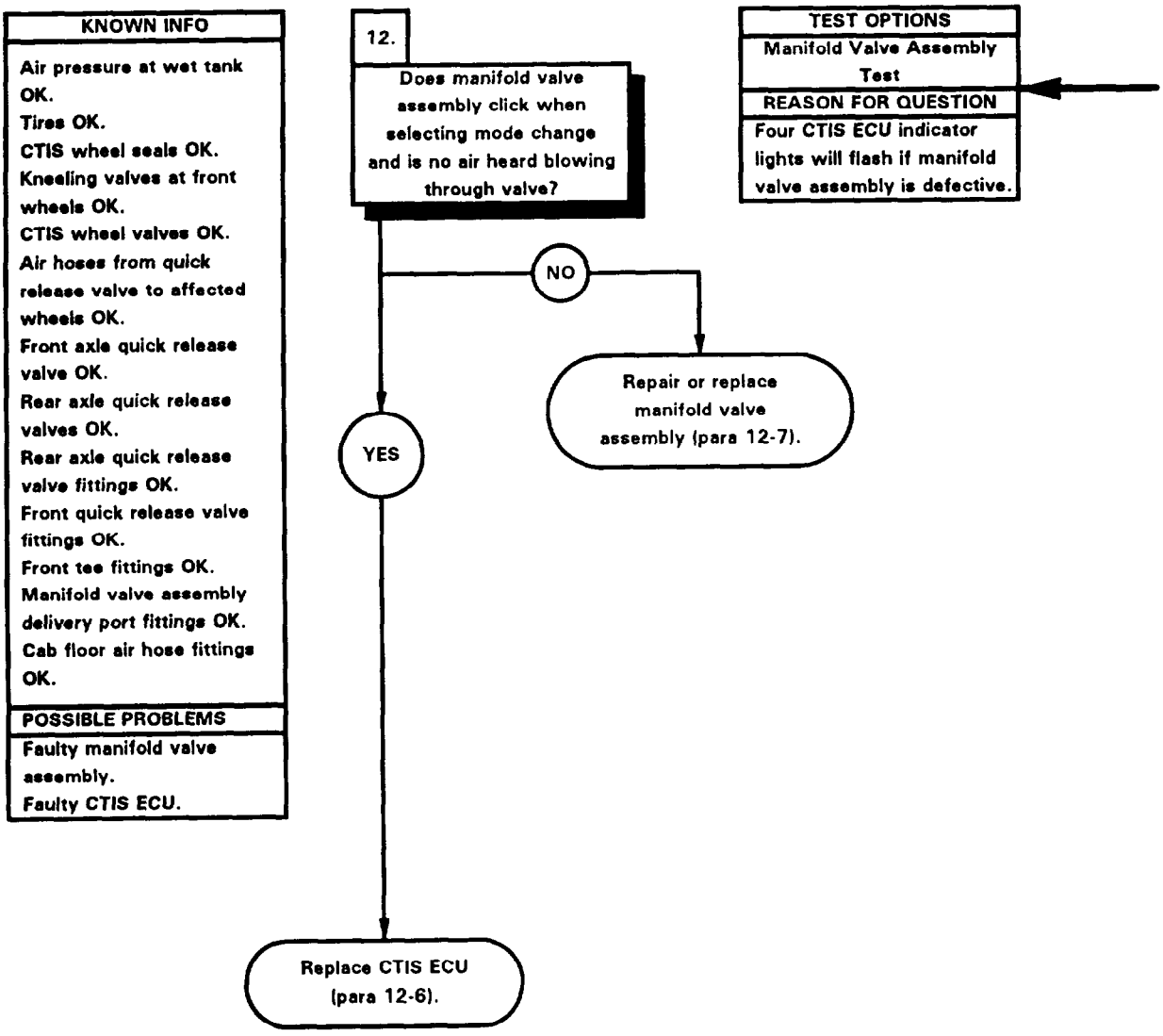
SOAPY WATER LEAK TEST

(1) Remove two screws and washers from front grille.
(2) Remove screw and washer from front grille.
(3) Remove front grille.
(4) Apply soapy water solution to cab floor supply hose fittings.
(5) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(6) Check for bubbles indicating leaks.
(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).



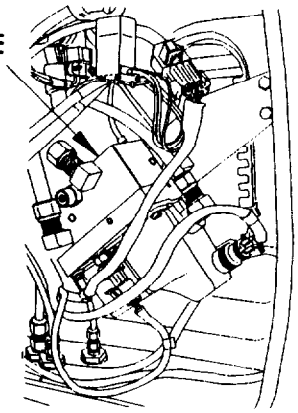
X2M0213-

m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



MANIFOLD VALVE ASSEMBLY TEST
(1) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
(2) Check manifold valve assembly by listening for clicking when selecting mode change. If no clicking is heard or if air blows through manifold valve assembly, replace manifold valve assembly (para 12-7).
(3) If manifold valve is ok, replace CTIS ECU (para 12-6).
(4) Install kick panel (para 16-3).

MANIFOLD VALVE ASSEMBLY



32M0214A

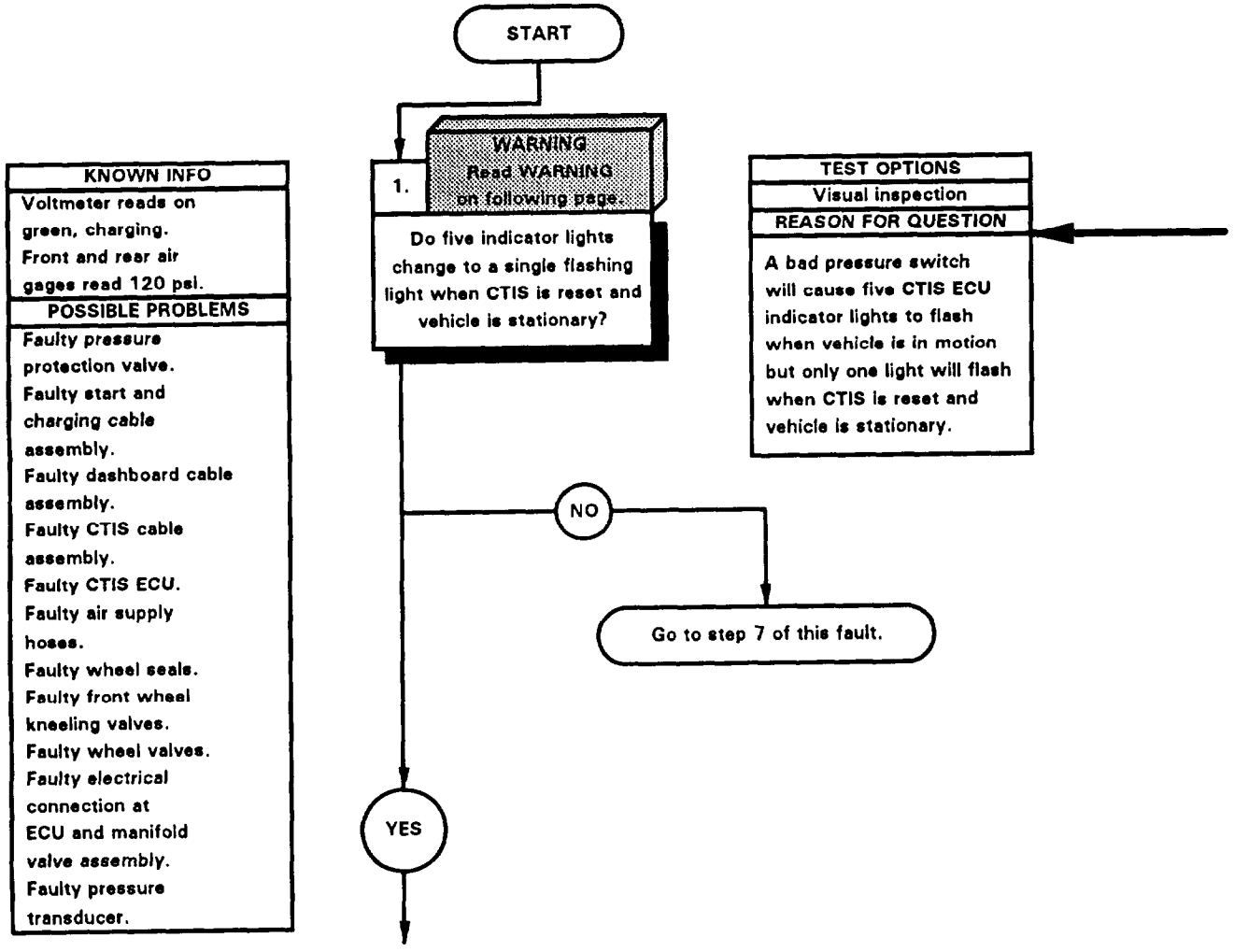
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING

INITIAL SETUP

Equipment Conditions
- Engine running (TM 9-2320-365-10).
- Parking brake on (TM 9-2320-365-10).
- Wheels chocked (TM 9-2320-365-10).

References
- TM 9-4910-571-12&P

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Goggles, Industrial (Item 15, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)
- Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
- STE/ICE-R (Item 39, Appendix C)



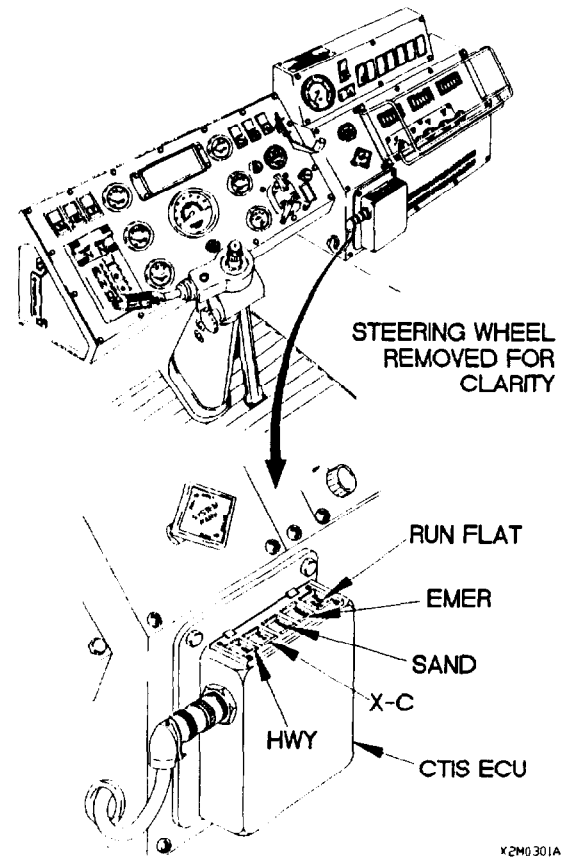
WARNING

Use eye protection when working under vehicle and around CTIS system. Failure to comply may result in eye injury.

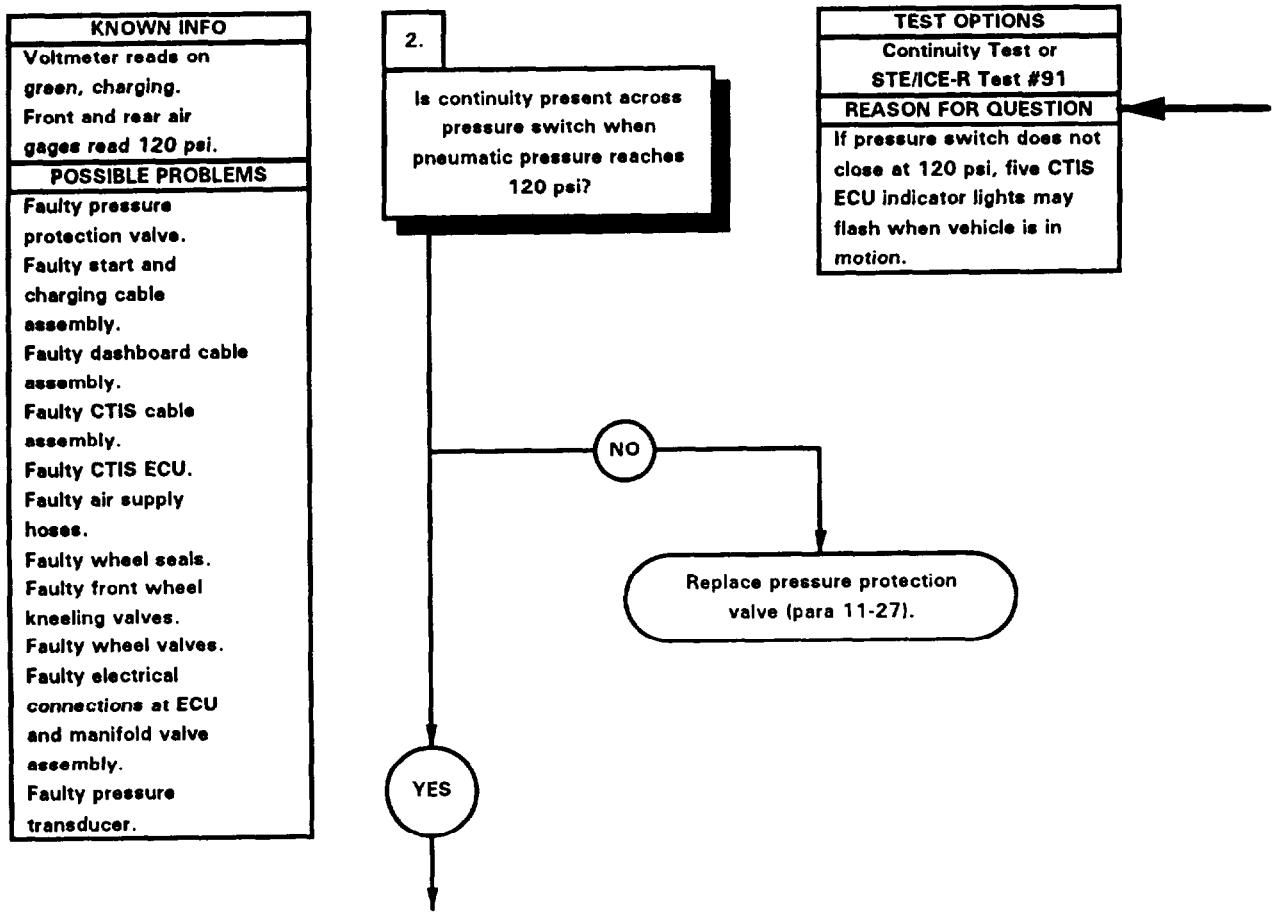
NOTE

- **Five flashing indicator lights indicate a defect in CTIS critical component(s) causing system to shut off. Override cannot be applied but system can be activated by turning vehicle off and then on again. This causes system to reset to allow check of problem correction procedure(s).**
- **To perform inflate or deflate checks in this task, it may be necessary to perform the opposite function first so that a desired selection is available.**

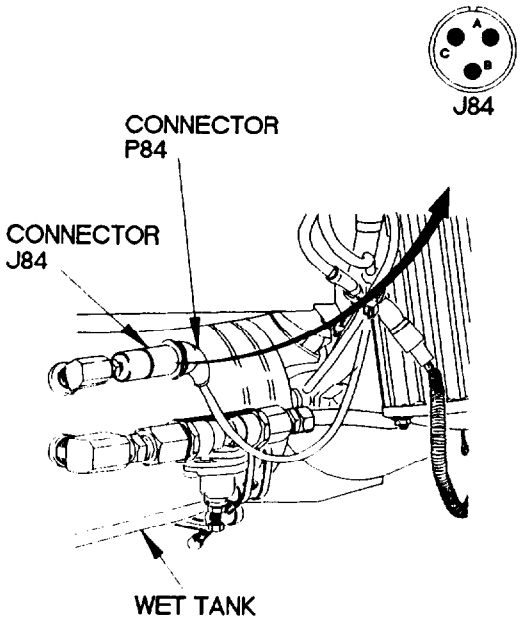
(1) Shut down engine (TM 9-2320-365-10).
(2) Start engine (TM 9-2320-365-10).
(3) Select a new mode at CTIS ECU and check if single light only flashes (TM 9-2320-365-10).
(4) While vehicle is stationary, a single light will flash if:
  (a) Air pressure at wet tank does not reach 120 psi,
  (b) CTIS pressure switch does not close at 120 psi.
(5) Shut down engine (TM 9-2320-365-10).



m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

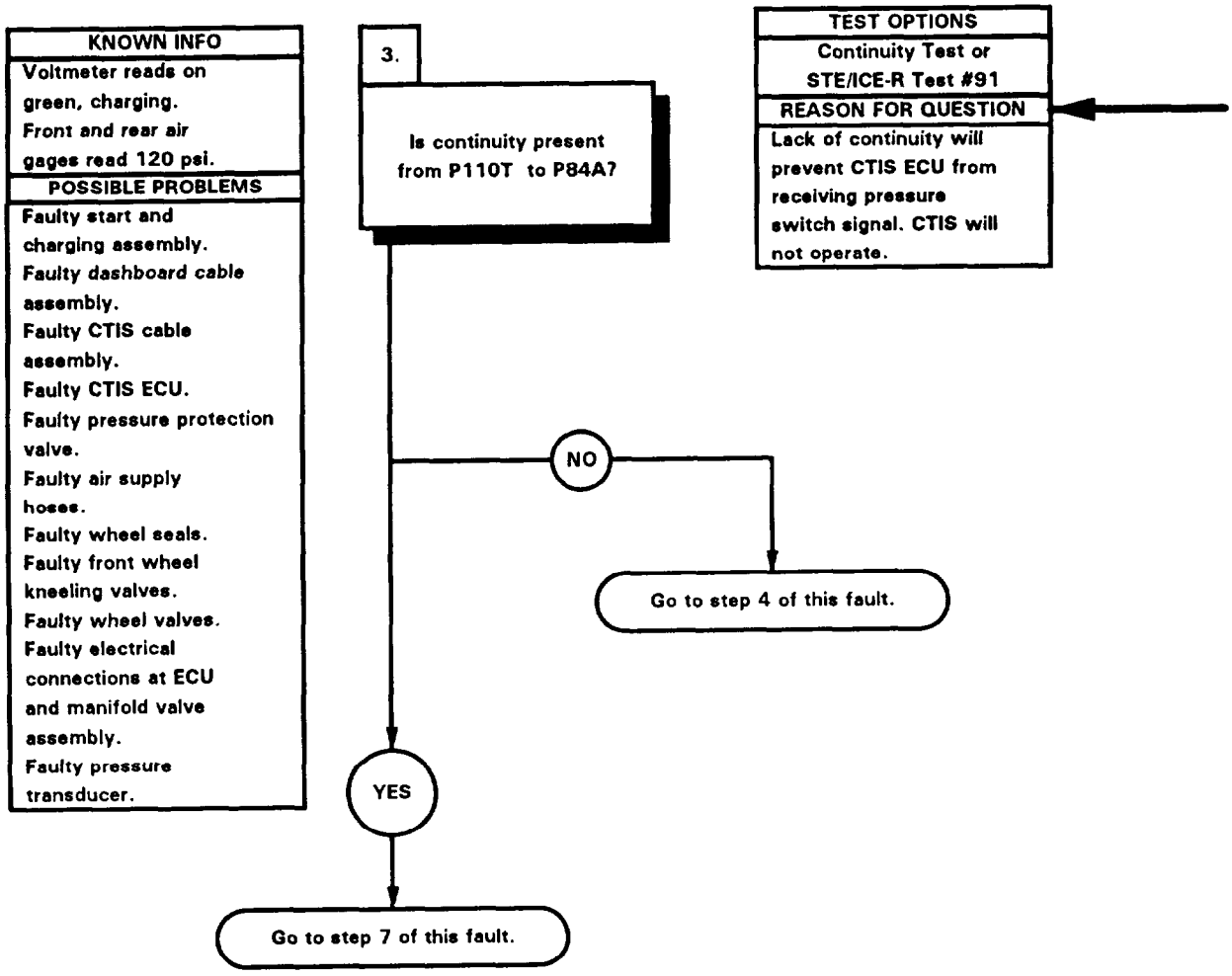


CONTINUITY TEST
(1) Disconnect connector P84 from J84 at wet tank.
(2) Start engine (TM 9-2320-365-10).
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to pressure protection valve, connector J84A.
(5) Connect negative (-) probe of multimeter to J84B and allow air pressure to build to 120 psi (827 kPa), and note reading on multimeter.
(6) If continuity is not present when air gages reach 120 psi, replace pressure protection valve (para 11-27).
(7) Shut down engine (TM 9-2320-365-10).

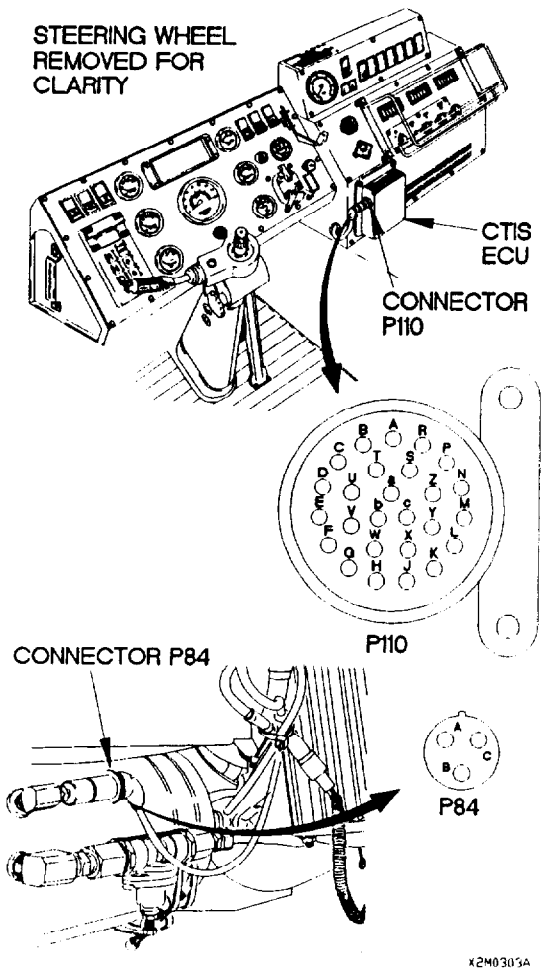


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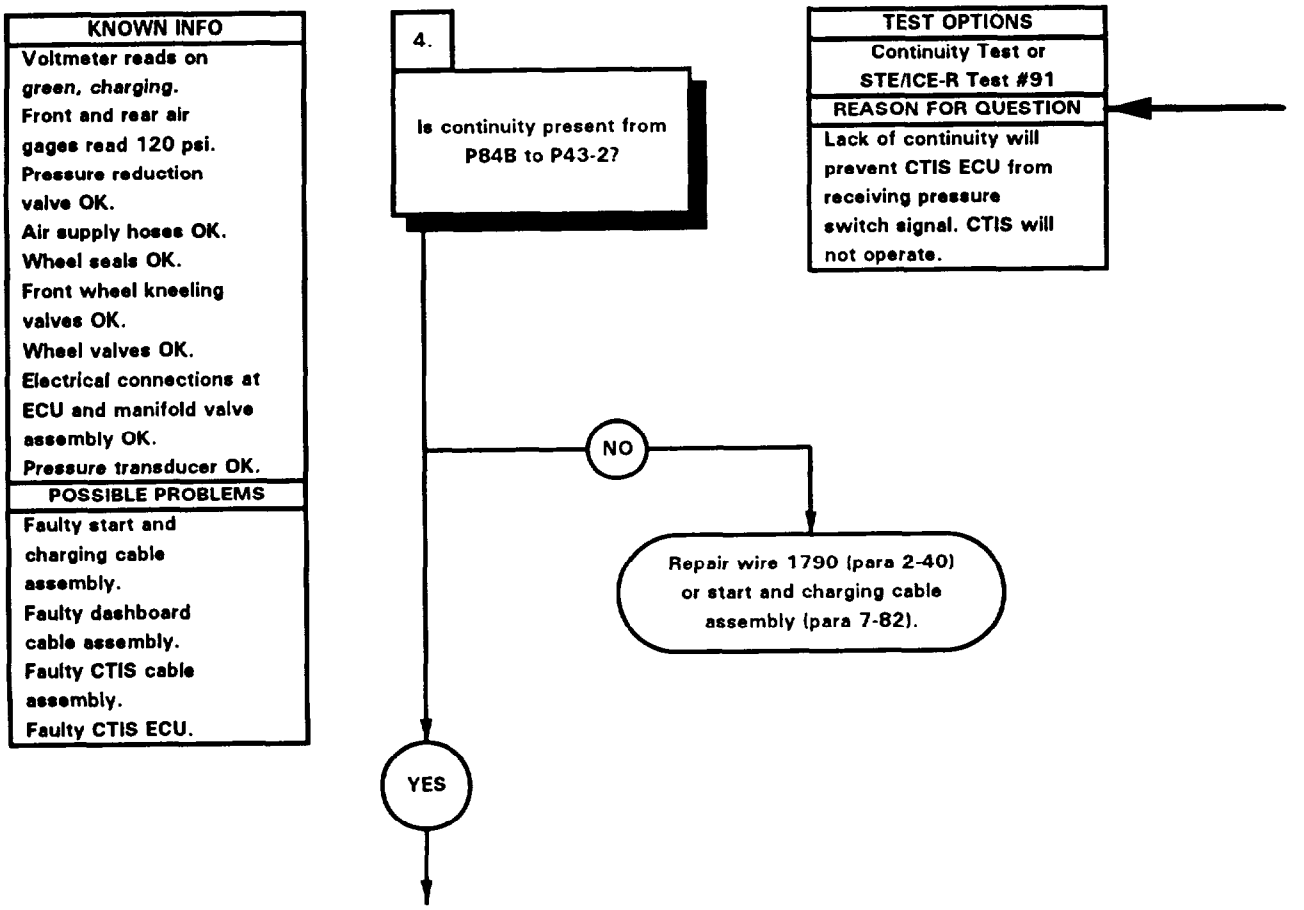
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



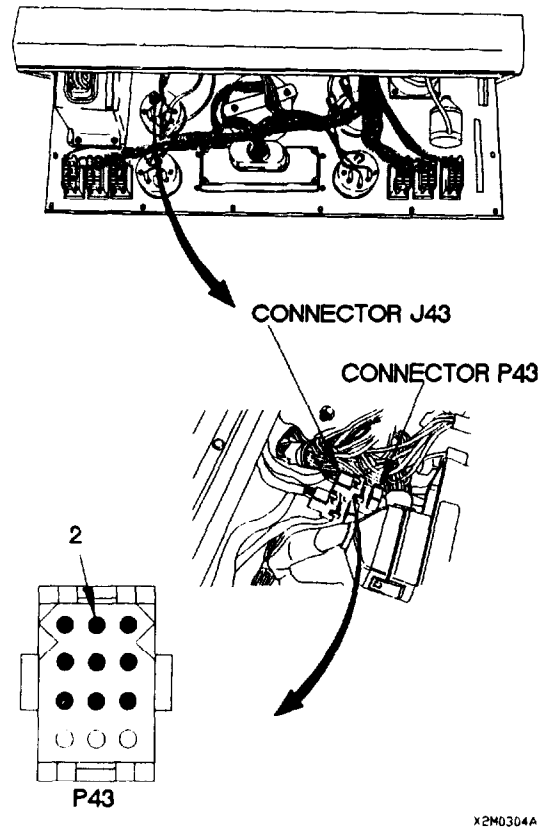
CONTINUITY TEST
(1) Disconnect connector P110 from CTIS ECU.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P110T.
(4) Connect negative (-) probe of multimeter to connector P84A and note reading on multimeter.
(5) If continuity is not present, go to step 4 of this fault.



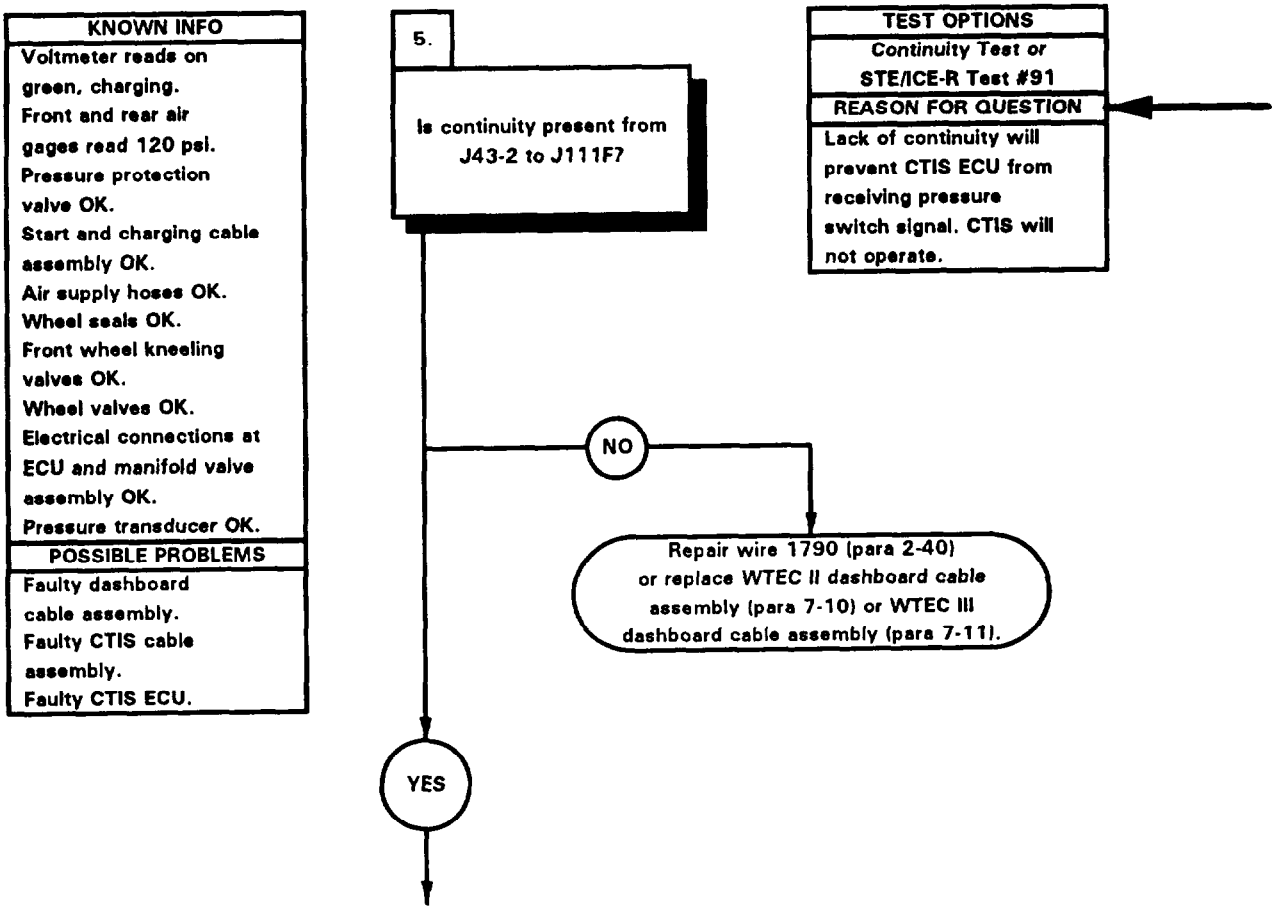
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



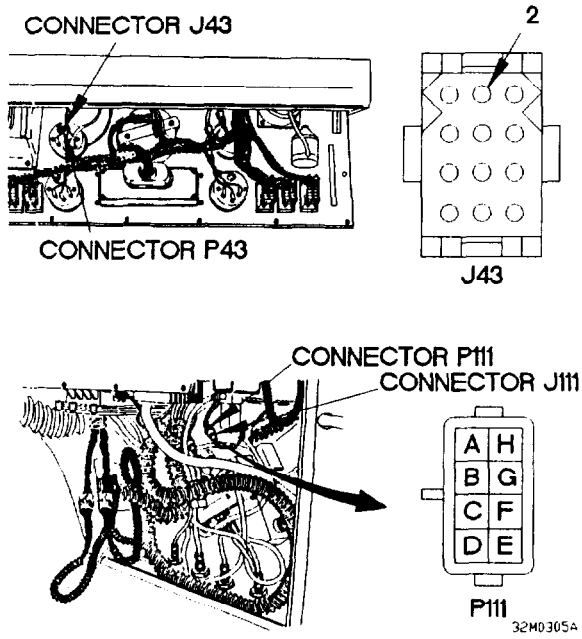
CONTINUITY TEST
(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector P43 from connector J43.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P84B.
(5) Connect negative (-) probe of multimeter to connector P43-2 and note reading on multimeter.
(6) If continuity is not present, repair wire 1790 (para 2-40) or replace start and charging cable assembly (para 7-82).



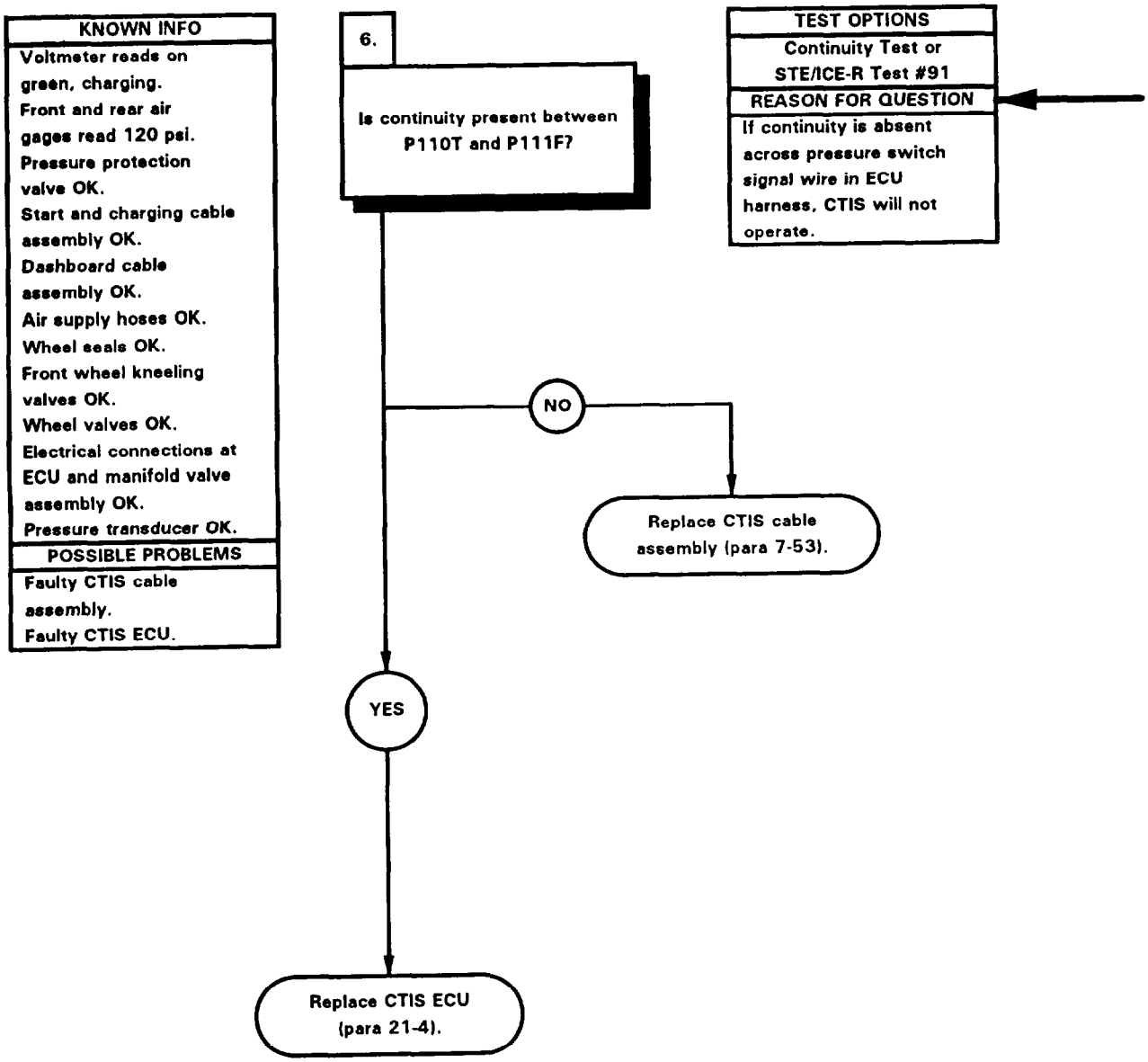
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



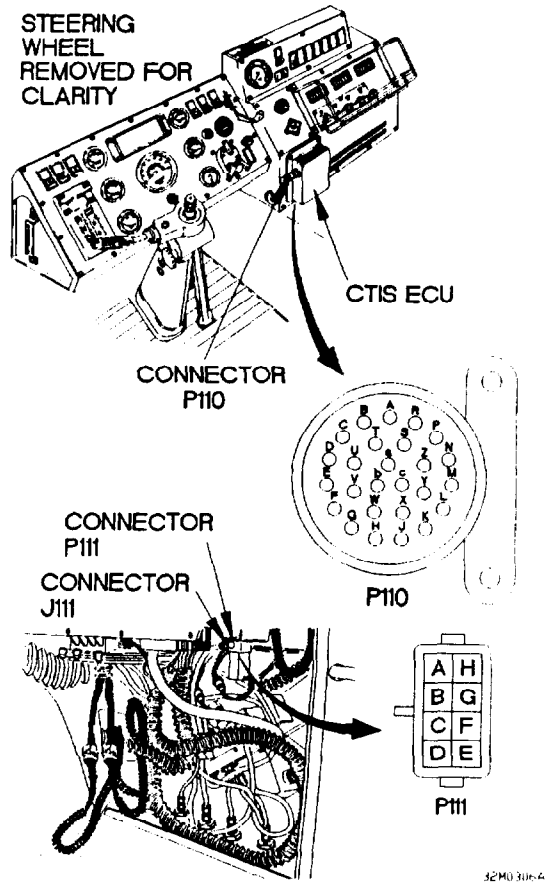
CONTINUITY TEST
(1) Remove kick panel (para 16-3).
(2) Disconnect connector P111 from connector J111.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J43-2.
(5) Connect negative (-) probe of multimeter to connector J111F and note reading on multimeter.
(6) If continuity is not present, repair wire 1790 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Connect connector P43 to connector J43.
(8) Install instrument panel assembly (para 7-15).



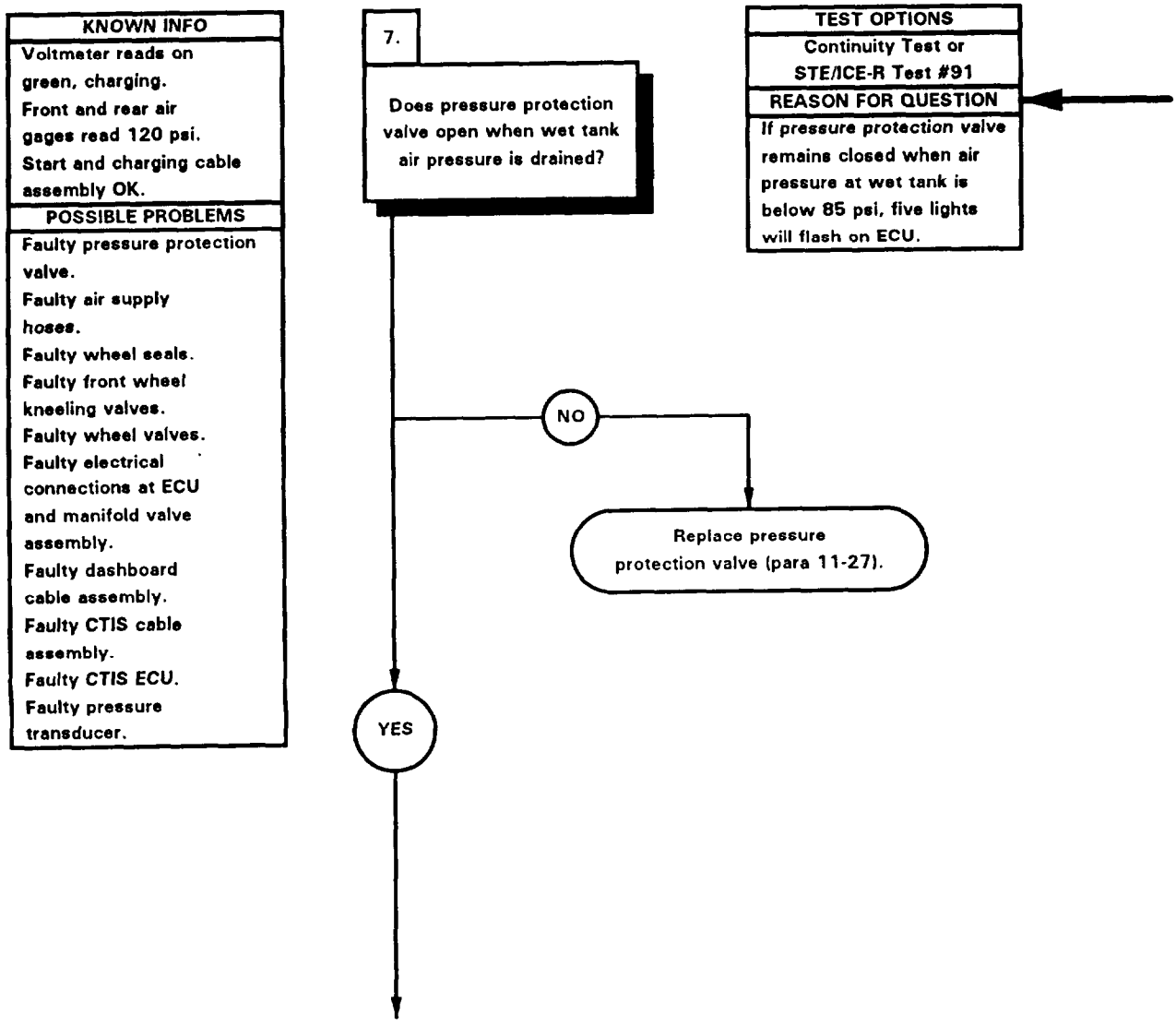
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



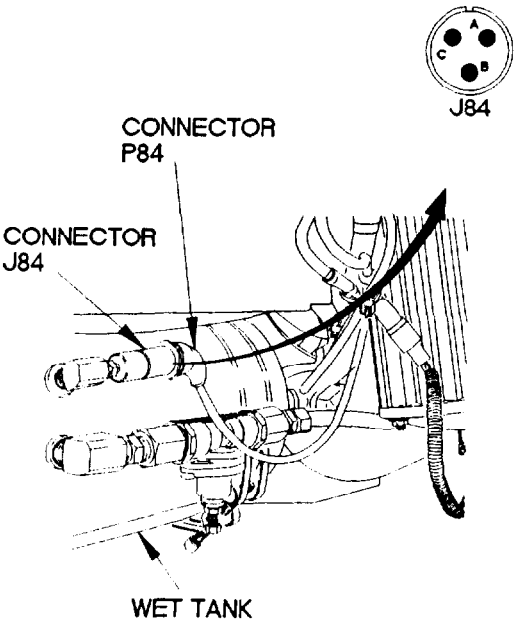
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P111F.
(3) Connect negative (-) probe of multimeter to connector P110T and note reading on multimeter.
(4) If continuity is not present, replace CTIS cable assembly (para 7-53).
(5) Connect connector P110 to CTIS ECU.
(6) Connect connector P111 to connector J111.
(7) Install kick panel (para 16-3).



m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

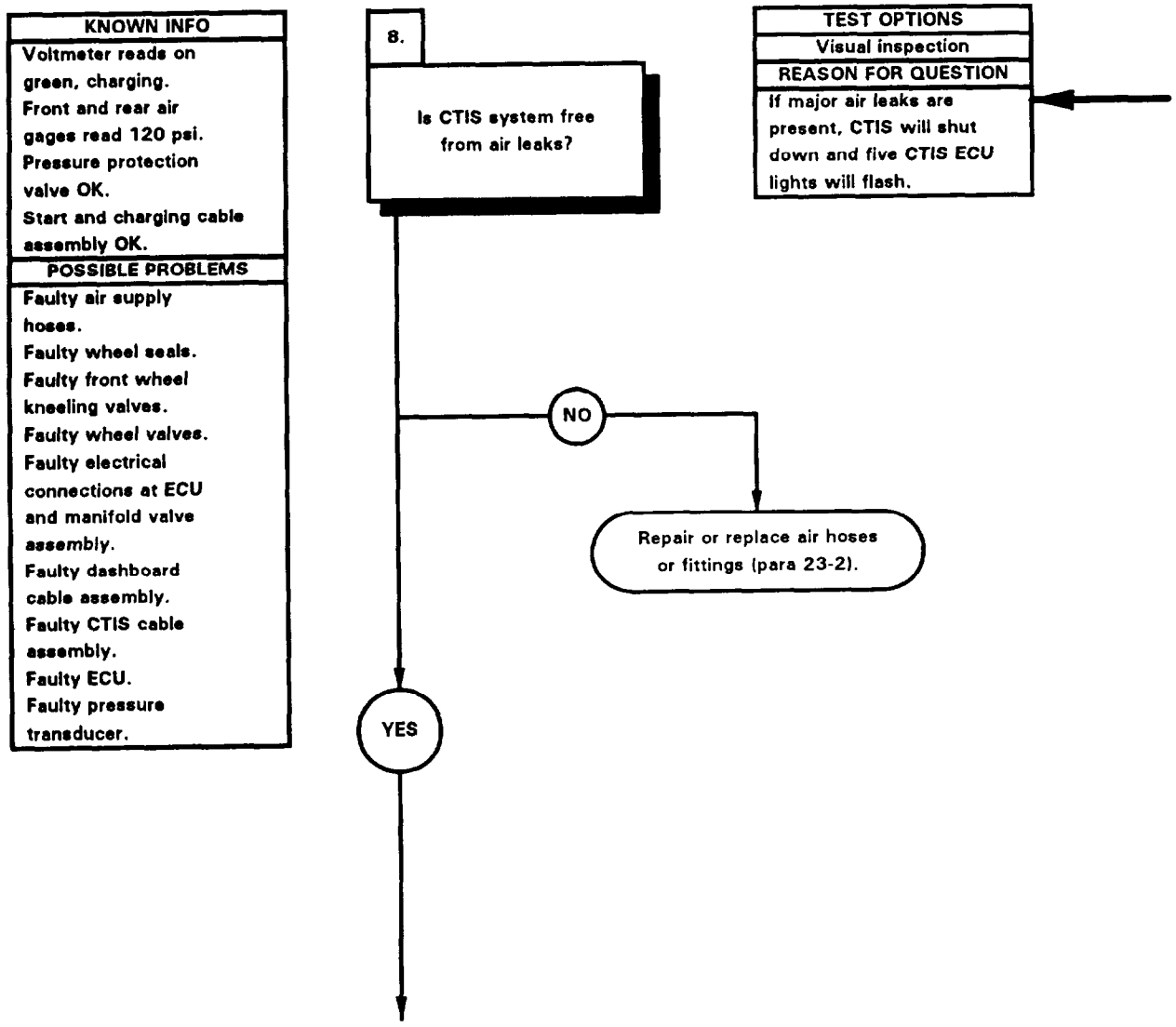


CONTINUITY TEST
(1) Ensure air pressure at front and rear tanks is 120 psi.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to pressure protection valve, connector J84A.
(4) Connect negative (-) probe of multimeter to J84B.
(5) Slowly exhaust air from wet tank.
(6) Verify pressure protection valve continuity opens as pressure falls.
(7) If continuity does not go open before air pressure in wet tank reaches zero psi, replace pressure protection valve (para 11-27).
(8) Connect connector P84 to J84.

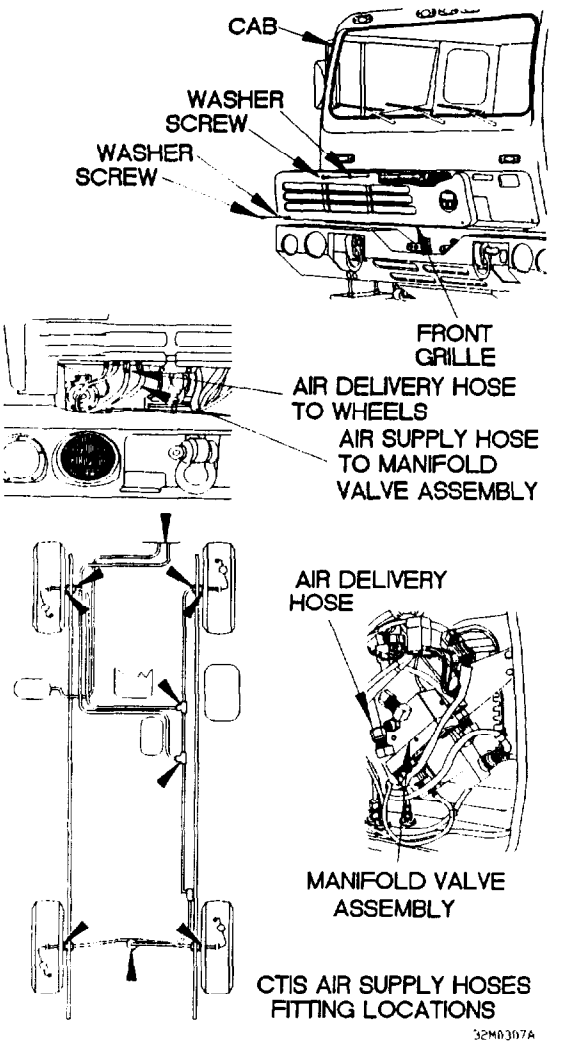


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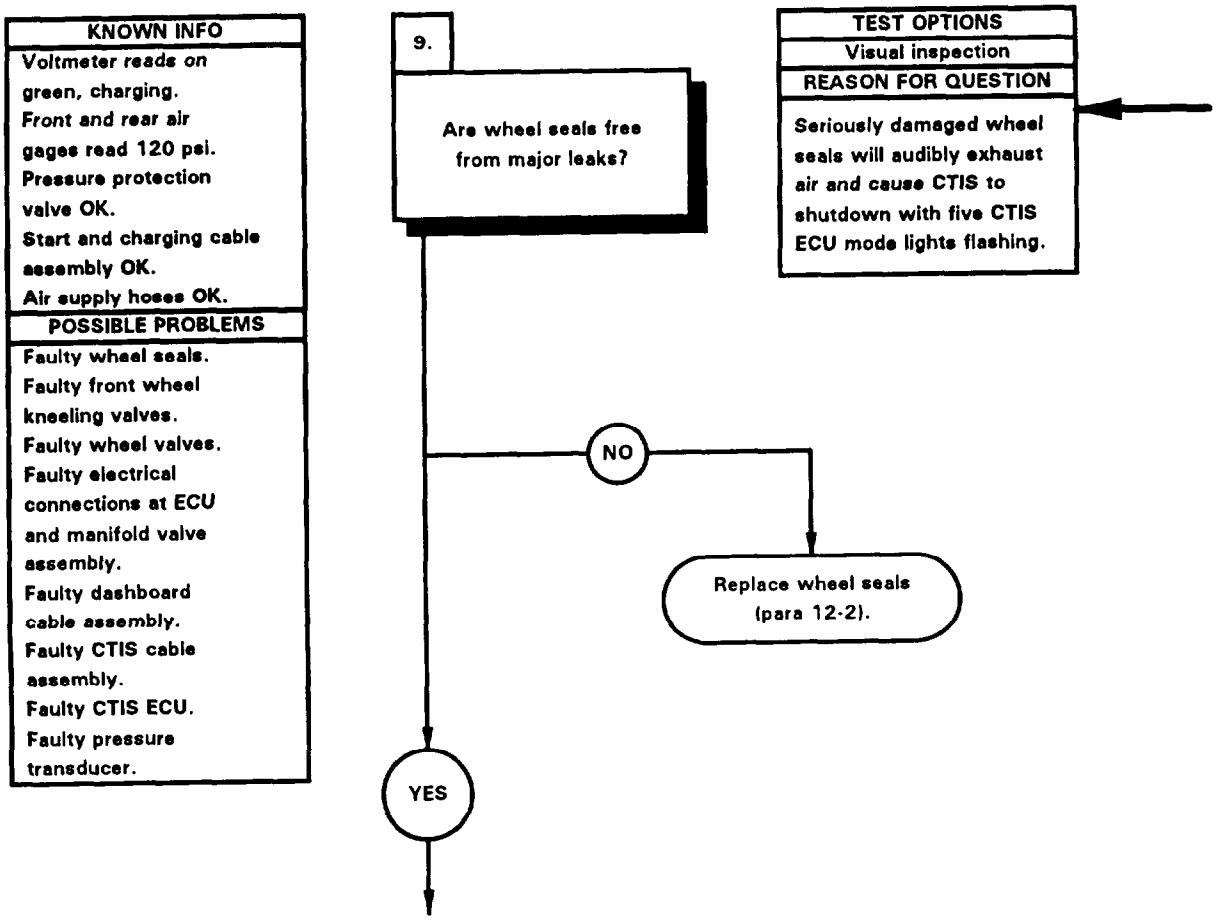
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



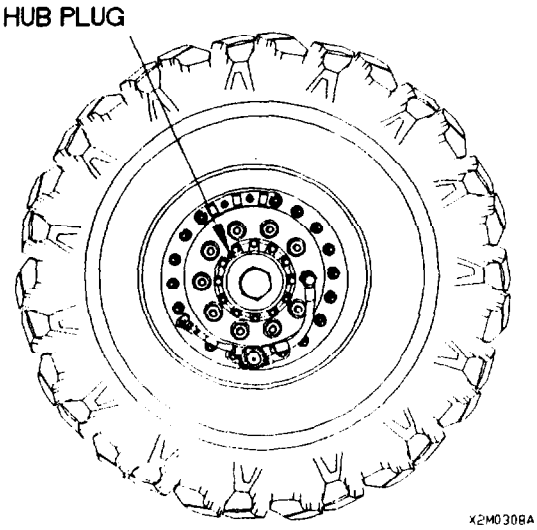
(1) Select an inflation mode and immediately listen for escaping air.
(2) If five CTIS ECU mode lights are caused by a damaged CTIS supply air system,
(3) Locate faulty air hose and fitting locations per illustration.
(4) To verify leaks at manifold valve assembly: Remove kick panel (para 16-3).
(5) To verify leaks at air supply hoses:
  (a) Remove two screws and washers from front grille.
  (b) Remove screw and washer from front grille.
  (c) Remove front grille from cab.
(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 kick panel (para 16-3).



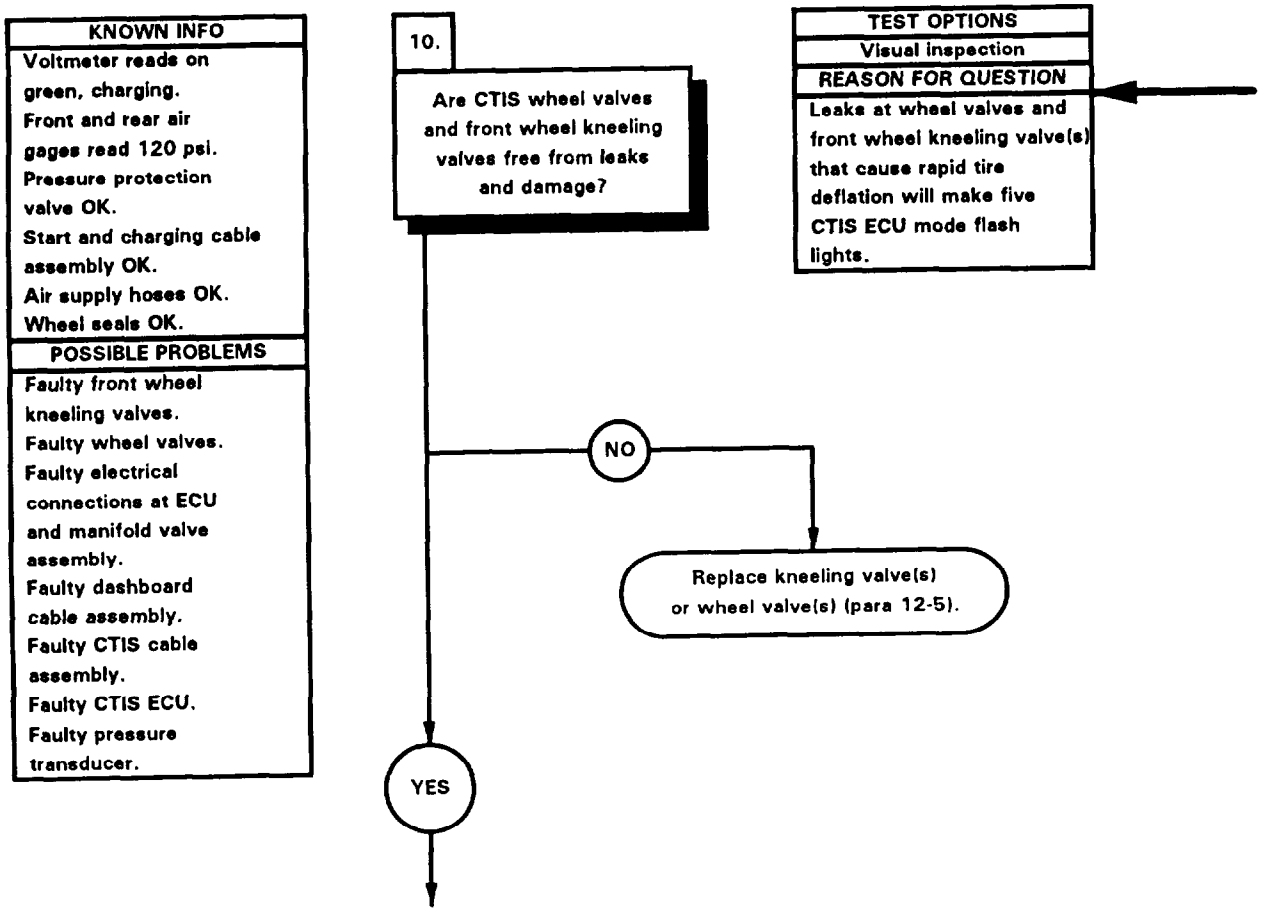
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



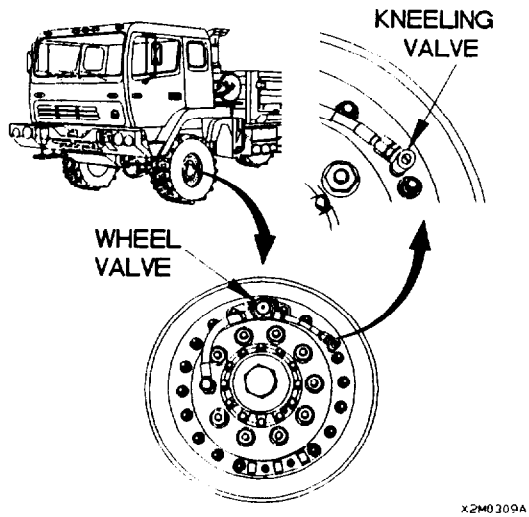
(1) Move vehicle until hub plug on affected wheel is in 12 o'clock position.
(2) Remove wheel hub plug.
(3) Select CTIS inflation mode and listen at wheel hubs for audible escape of air (TM 9-2320-365-10).
(4) If audible escape of air is present, replace wheel seal (para 12-2).
(5) Install wheel hub plug.



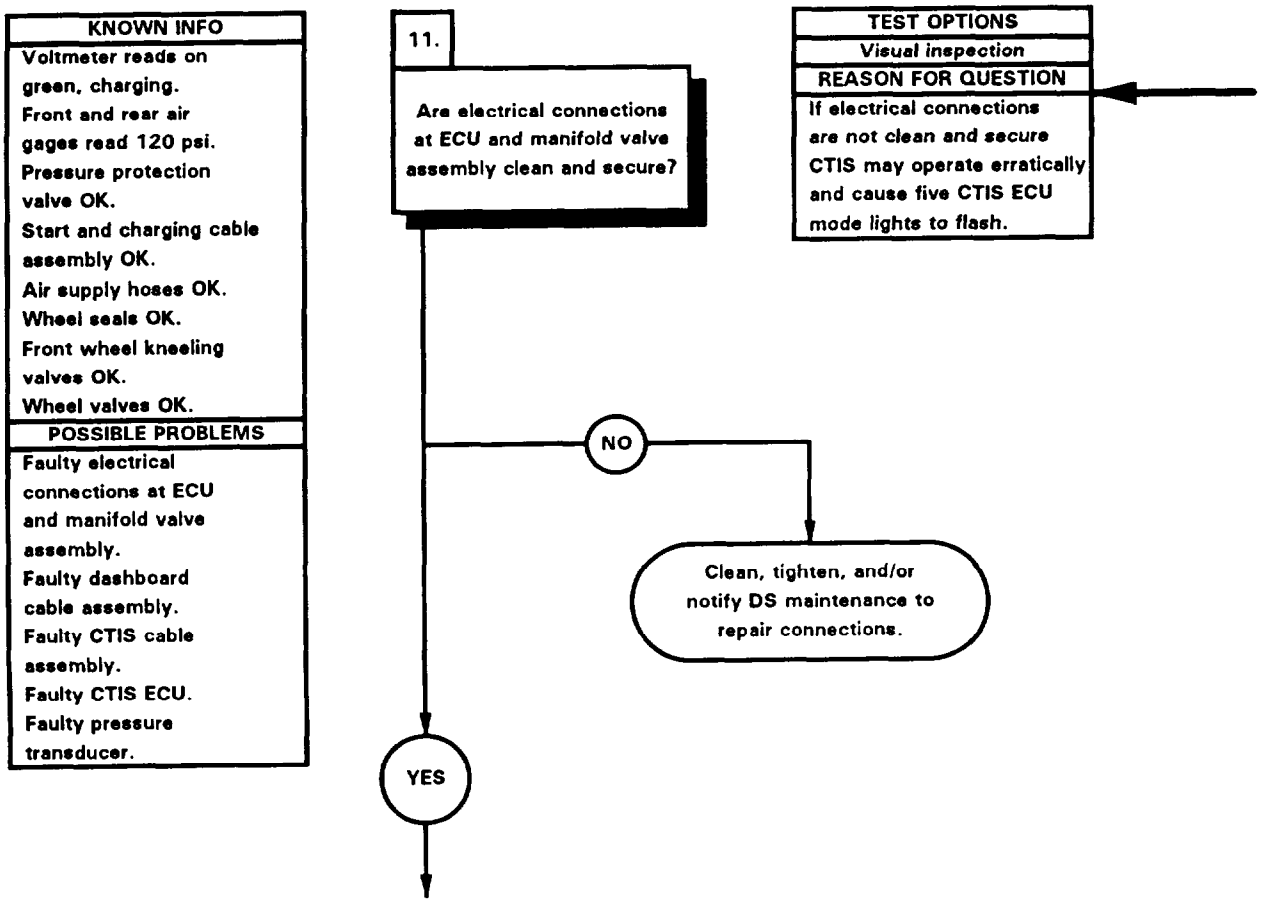
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



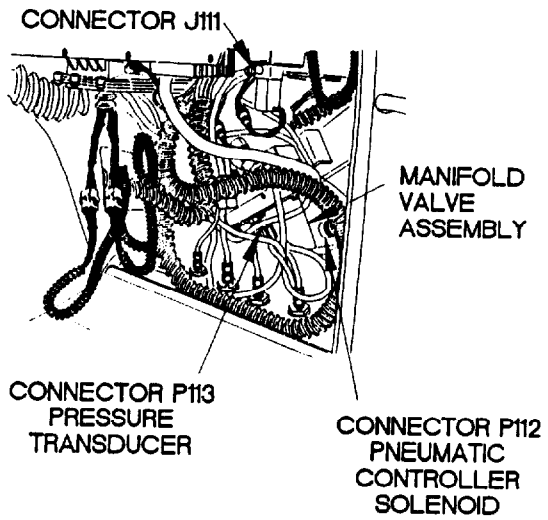
(1) Select an inflation mode at CTIS (TM 9-2320-365-10).
(2) Listen for audible air escape at kneeling valve (front wheels only) and CTIS wheel valve(s) on affected wheel(s).
(3) If air is escaping, replace kneeling valve(s) or wheel valve(s) (para 12-5).
(4) Shut down engine (TM 9-2320-365-10).



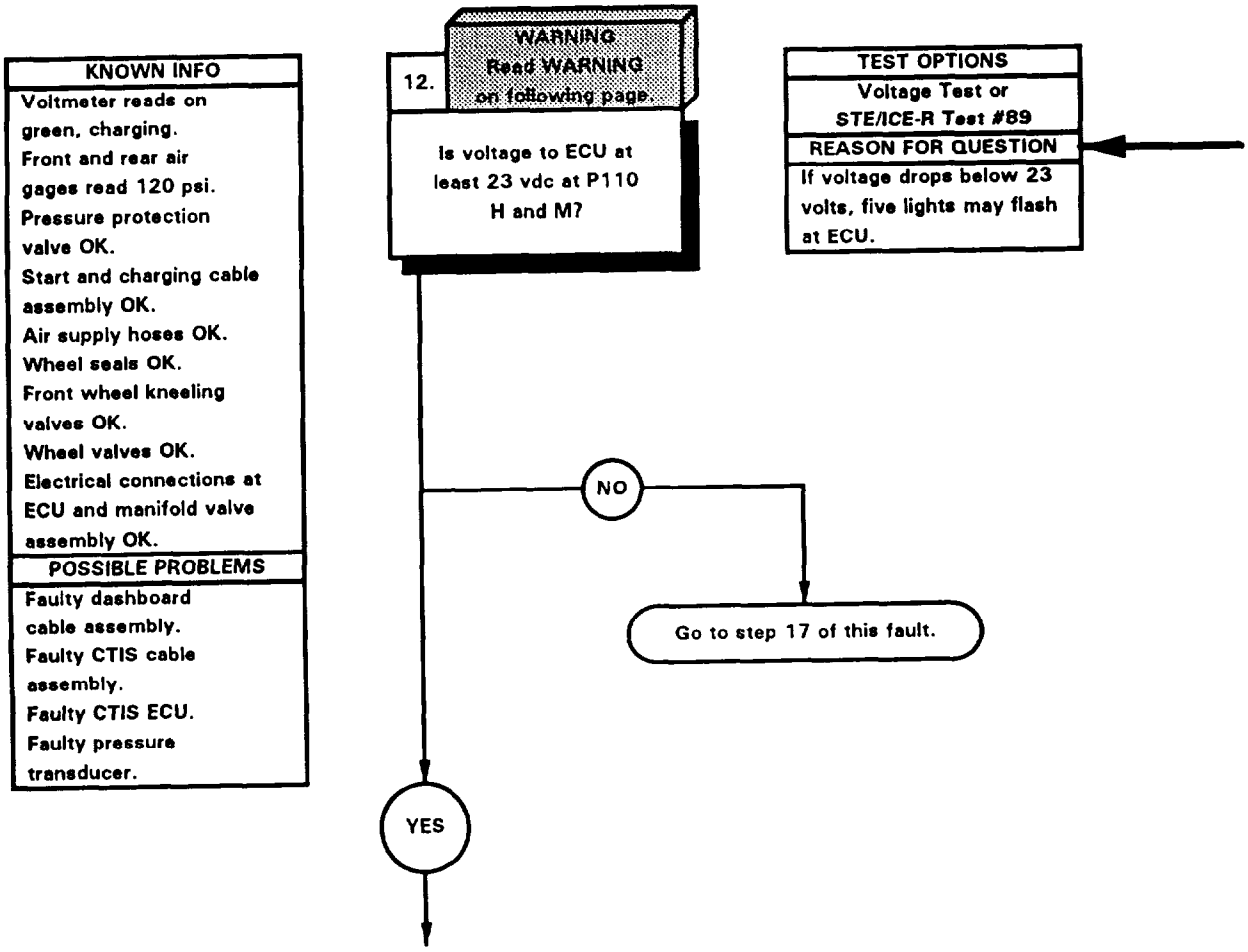
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



(1) Remove kick panel (para 16-3).
(2) Disconnect connectors at ECU and manifold valve assembly.
(3) Check that connectors are clean and free from damage.
(4) Connect and tighten connectors.



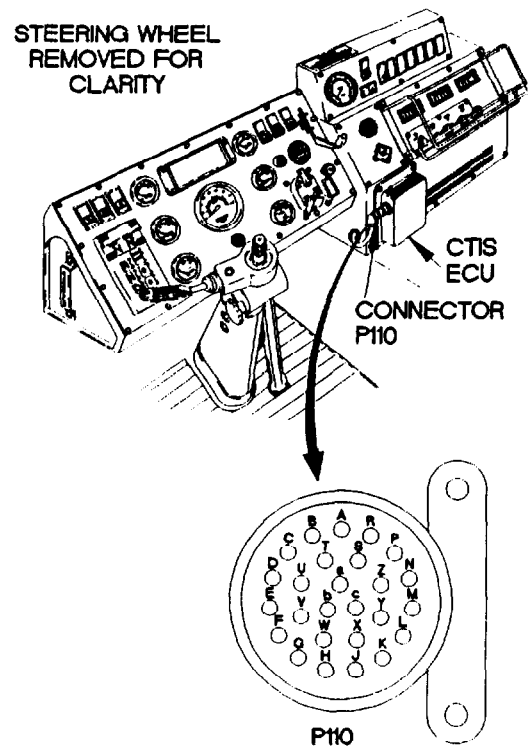
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



WARNING

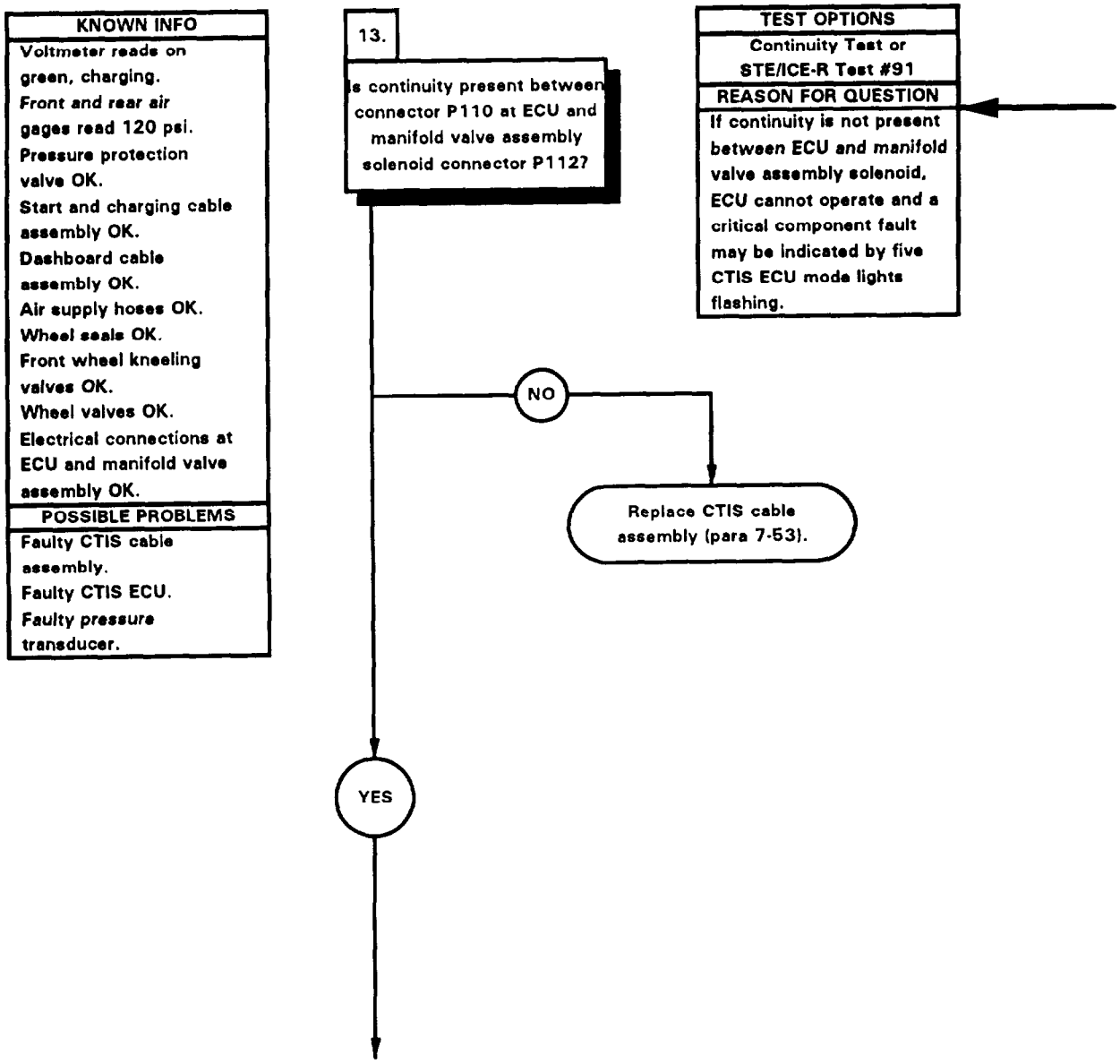
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST
(1) Disconnect connector P110 from CTIS ECU.
(2) Position master power switch to on (TM 9-2320-365-10).
(3) Connect positive (+) probe of multimeter to connector P110H.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P1110M.
(6) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(7) If voltage drops to between 6 and 18 vdc for 15 seconds or more, five flashing lights will be displayed on ECU. Go to step 17 of this fault.



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m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

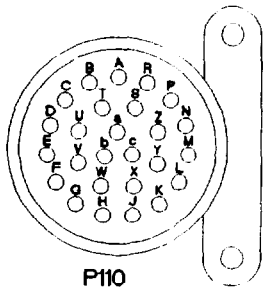


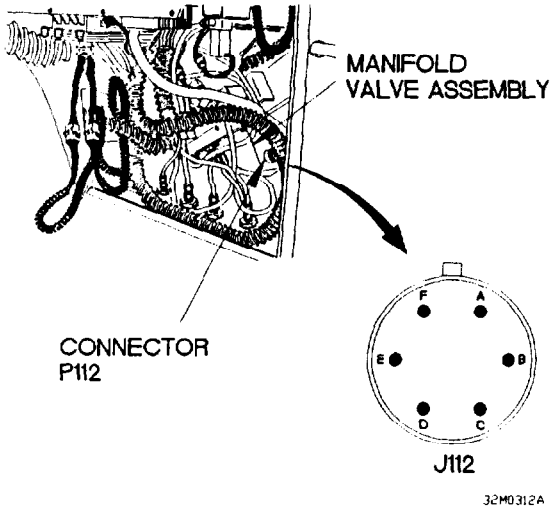
CONTINUITY TEST

NOTE

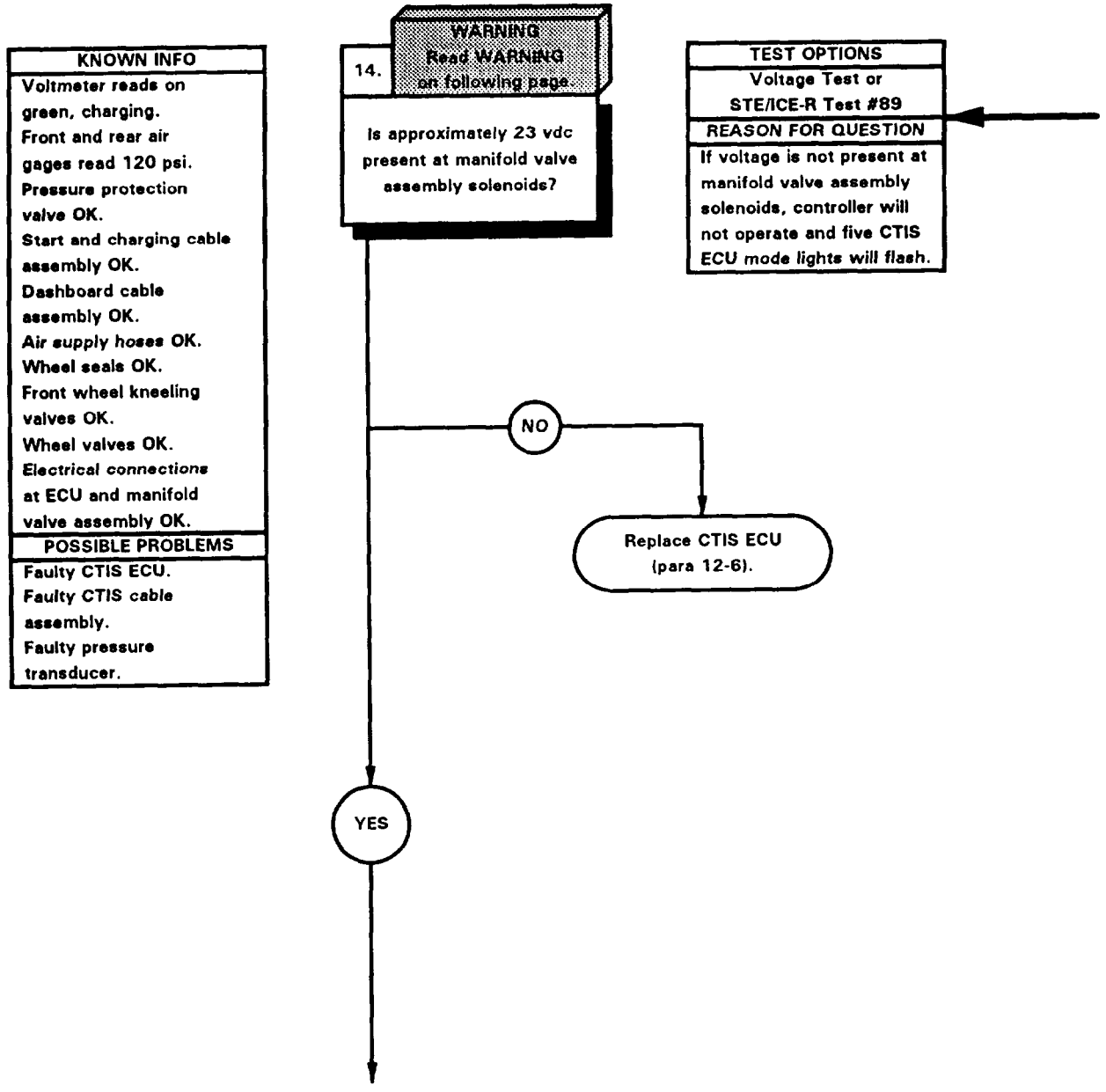
CTIS ECU continuously interrogates harness to CTIS ECU and illuminates five lights if short or brake in wires is discovered.

(1) Disconnect connector P112 at manifold valve assembly.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P110.
(4) Connect negative (-) probe of multimeter to connector P112E and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to connector P110F.
(6) Connect negative (-) probe of multimeter to connector P112A and note reading on multimeter.
(7) With positive (+) probe of multimeter still connected to connector P110F, connect negative (-) probe of multimeter to connector P112B and note reading on multimeter.
(8) Connect positive (+) probe of multimeter to connector P110R.
(9) Connect negative (-) probe of multimeter to connector P112D and note reading on multimeter.
(10) Connect positive (+) probe of multimeter to connector P110B.
(11) Connect negative (-) probe of multimeter to connector P112F and note reading on multimeter.
(12) If reading on multimeter indicates open, replace CTIS cable assembly (para 7-53).





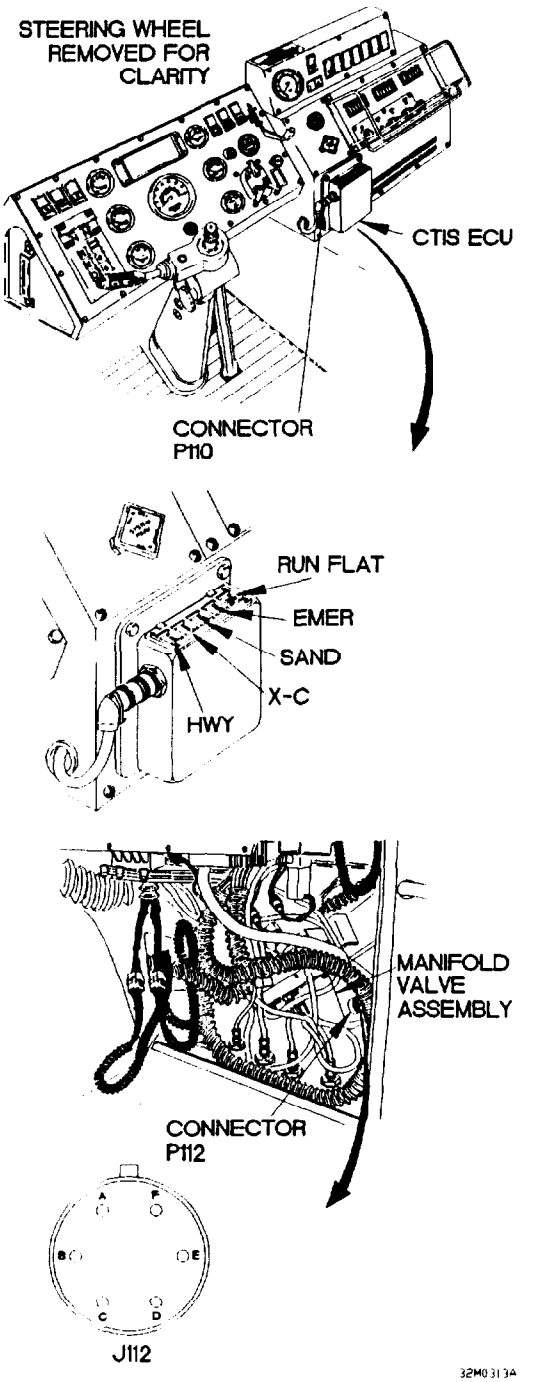
m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



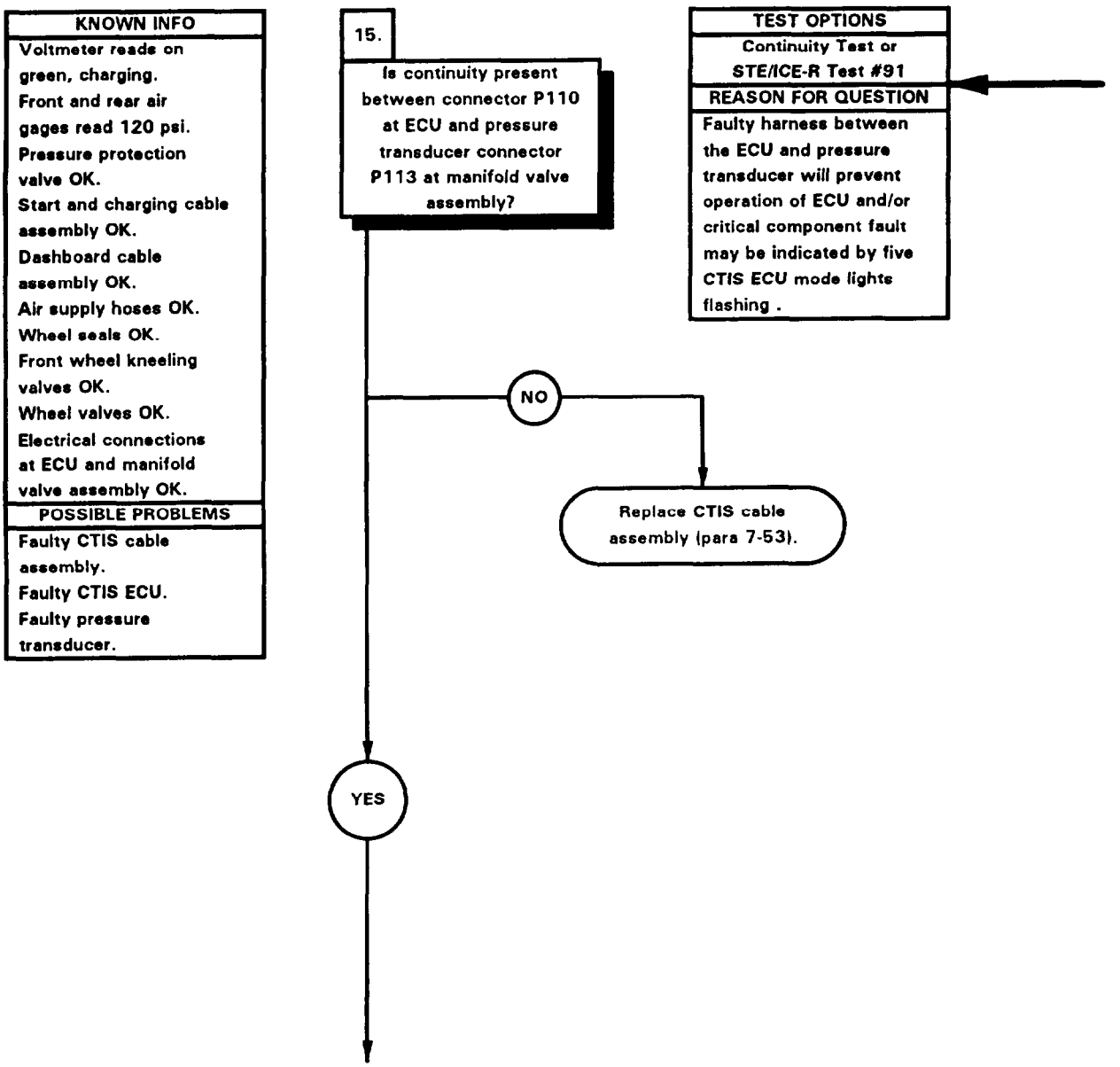
WARNING

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) Connect connector P110 to CTIS ECU.
(2) Position master power switch to on (TM 9-2320-365-10).
(3) Connect positive (+) probe of multimeter on connector P112D.
(4) Connect negative (-) probe of multimeter on ground.
(5) Select an inflation mode at CTIS ECU and note reading on multimeter.
(6) Connect positive (+) probe of multimeter on connector P112F.
(7) Connect negative (-) probe of multimeter on ground.
(8) Select an inflation mode at CTIS ECU and note reading on multimeter.
(9) Connect positive (+) probe of multimeter on connector P112E.
(10) Connect negative (-) probe of multimeter on ground.
(11) Select a deflation mode at CTIS ECU and note reading on multimeter.
(12) If voltage is not present at any of the manifold valve assembly solenoids, manifold valve assembly cannot operate replace CTIS ECU (para 12-6).
(13) Position master power switch to off (TM 9-2320-365-10).
(14) Connect connector P112 to manifold valve assembly.



m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

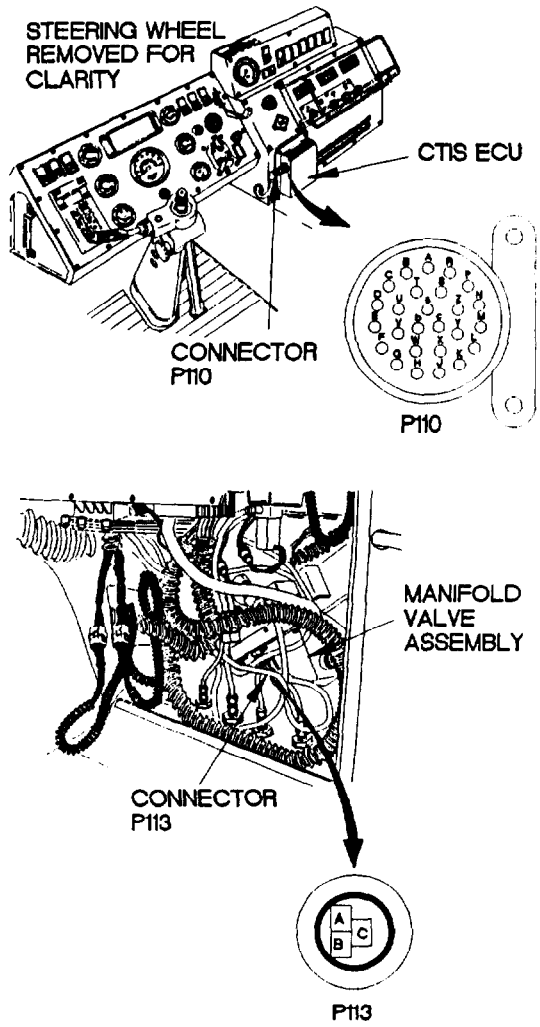


CONTINUITY TEST

NOTE

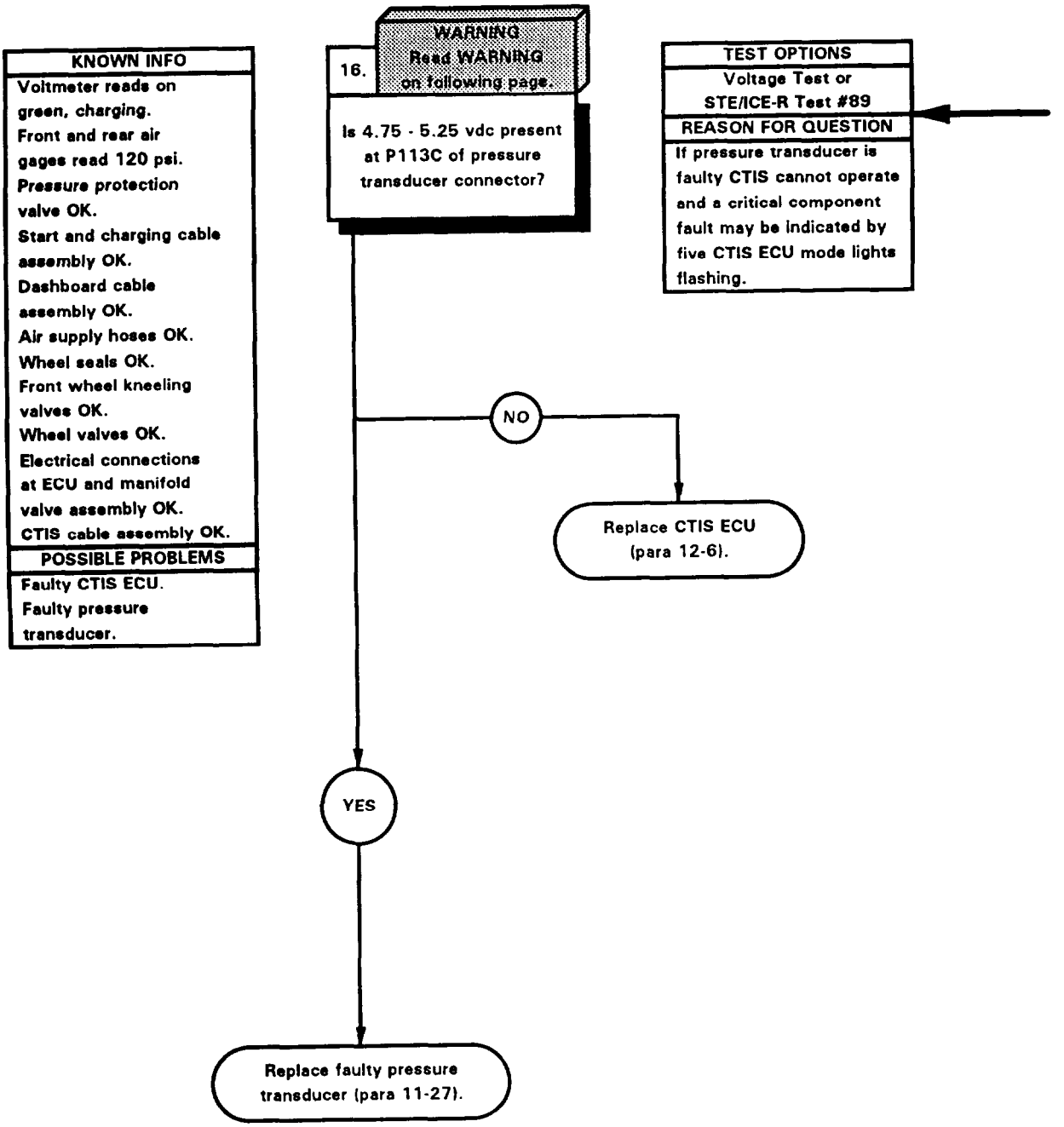
CTIS ECU continously interrogates harness to CTIS ECU and illuminates five lights if short or brake in wires is discovered.

(1) Disconnect connector P113 from manifold valve assembly.
(2) Disconnect connector P110 from CTIS ECU.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P110b.
(5) Connect negative (-) probe of multimeter to connector P113B and note reading on multimeter.
(6) Connect positive (+) probe of multimeter to connector P110c.
(7) Connect negative (-) probe of multimeter to connector P113C and note reading on multimeter.
(8) Connect positive (+) probe of multimeter to connector P110J.
(9) Connect negative (-) probe of multimeter to connector P113A and note reading on multimeter.
(10) If continuity is not present, replace CTIS cable assembly (para 7-53).
(11) Connect connector P110 to CTIS ECU.



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m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



WARNING

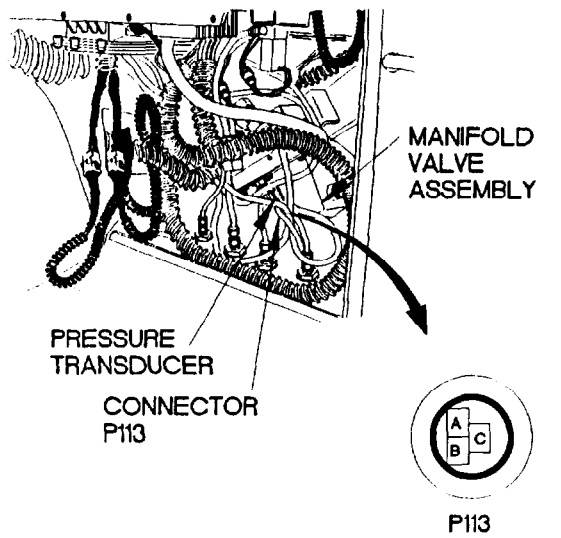
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

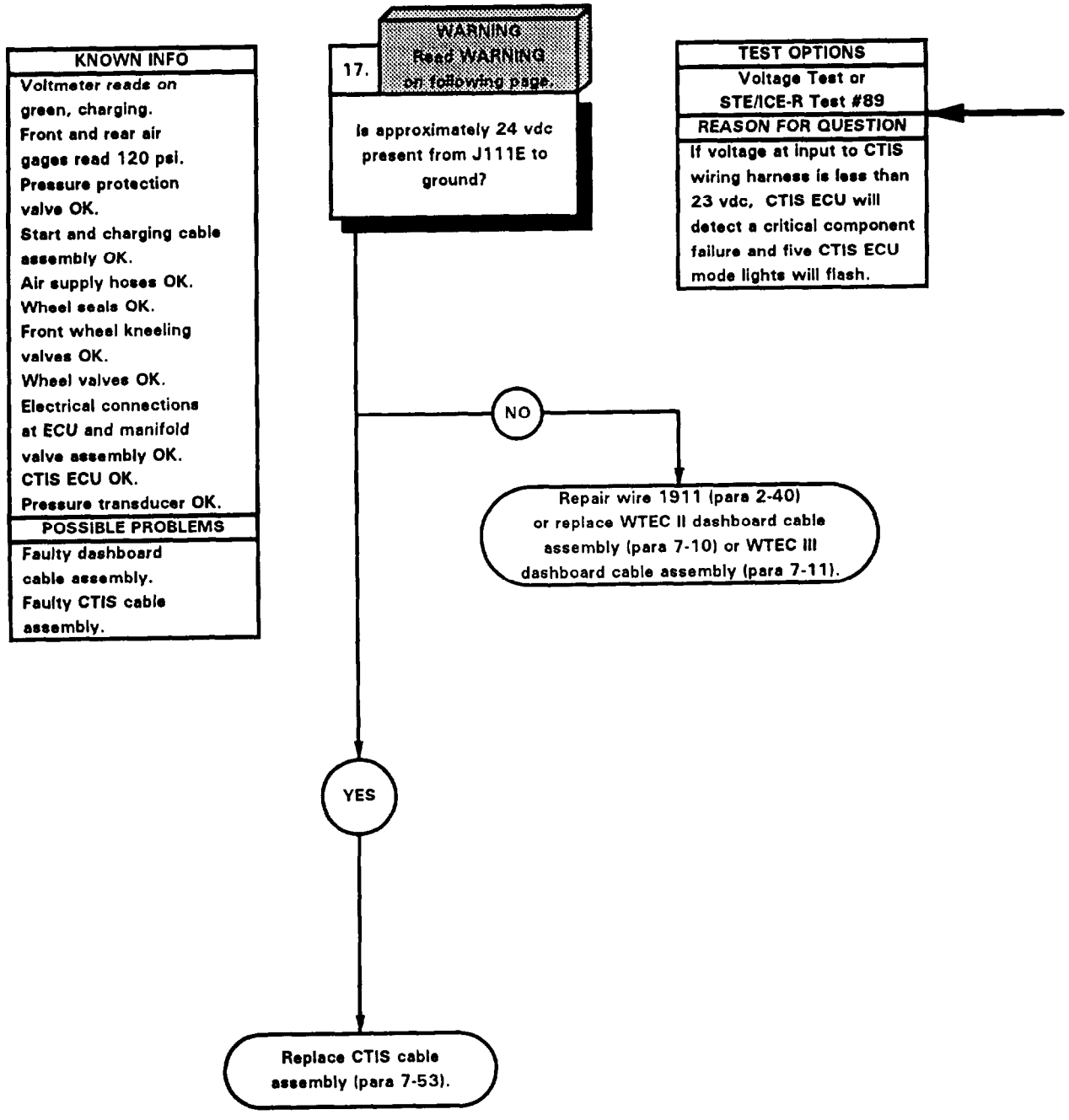
NOTE

If pressure transducer is faulty, five indicator lights will flash immediately. Transducer has failed to send CTIS ECU an acceptable atmospheric pressure reading (within range of 9.5 - 19.5 psi (66 - 134 kPa)).

(1) Disconnect connector P113 at pressure transducer on manifold valve assembly.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to connector J113C.
(4) Connect negative (-) probe of multimeter to ground.
(5) Position master power switch to on (TM 9-2320-365-10).
(6) Check if reading on multimeter is 4.75-5.25 vdc.
(7) If reading is less than 4.75 vdc, replace CTIS ECU (para 12-6).
(8) If reading is 4.75-5.25 vdc, replace pressure transducer (para 11-27).
(9) Position master power switch to off (TM 9-2320-365-10).
(10) Connect connector P113 to pressure transducer.
(11) Install kick panel (para 16-3).



m3. FIVE CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

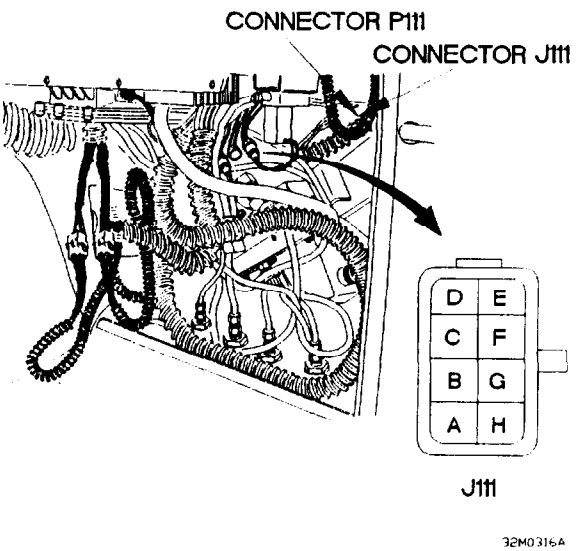


WARNING

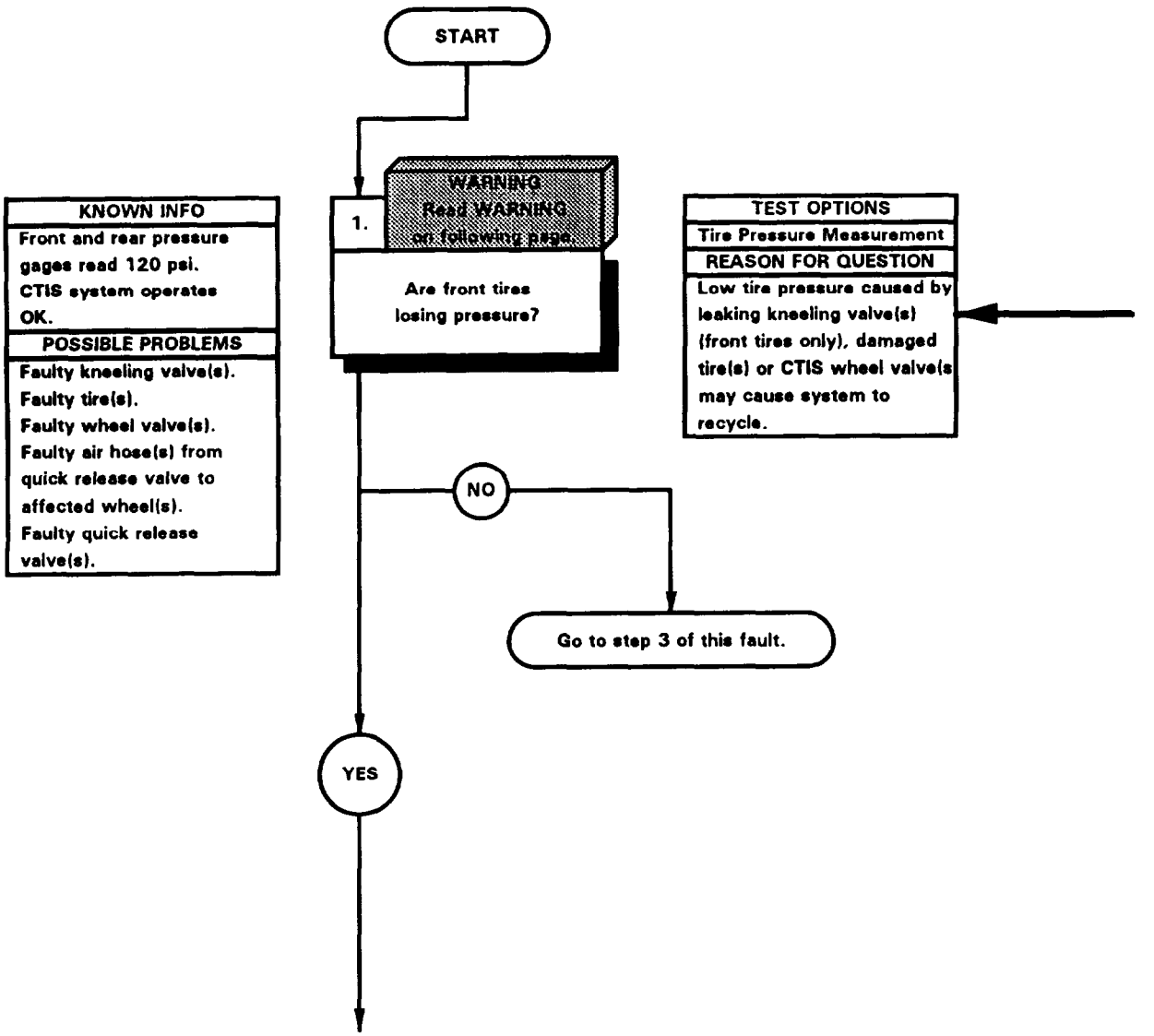
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Disconnect connector J111 from connector P111.
(2) Position master power switch to on (TM 9-2320-365-10).
(3) Connect positive (+) probe of multimeter to connector J111E.
(4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(5) If 23 to 24 volts are present, replace CTIS cable assembly (para 7-53).
(6) If 23 to 24 volts is not present, repair wire 1911 (para 2-40) 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 9-2320-365-10).
(8) Connect connector P111 to connector J111.
(9) Install kick panel (para 16-3).



m4. CTIS REPEATEDLY RESUMES CYCLING 30 SECONDS AFTER INDICATOR LIGHTS STOP FLASHING	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C) Gage, Tire Pressure (Item 11, Appendix C) Pan, Wash (Item 25, Appendix C)
Materials/Parts Soap, Laundry (Item 69, Appendix D)	



WARNING

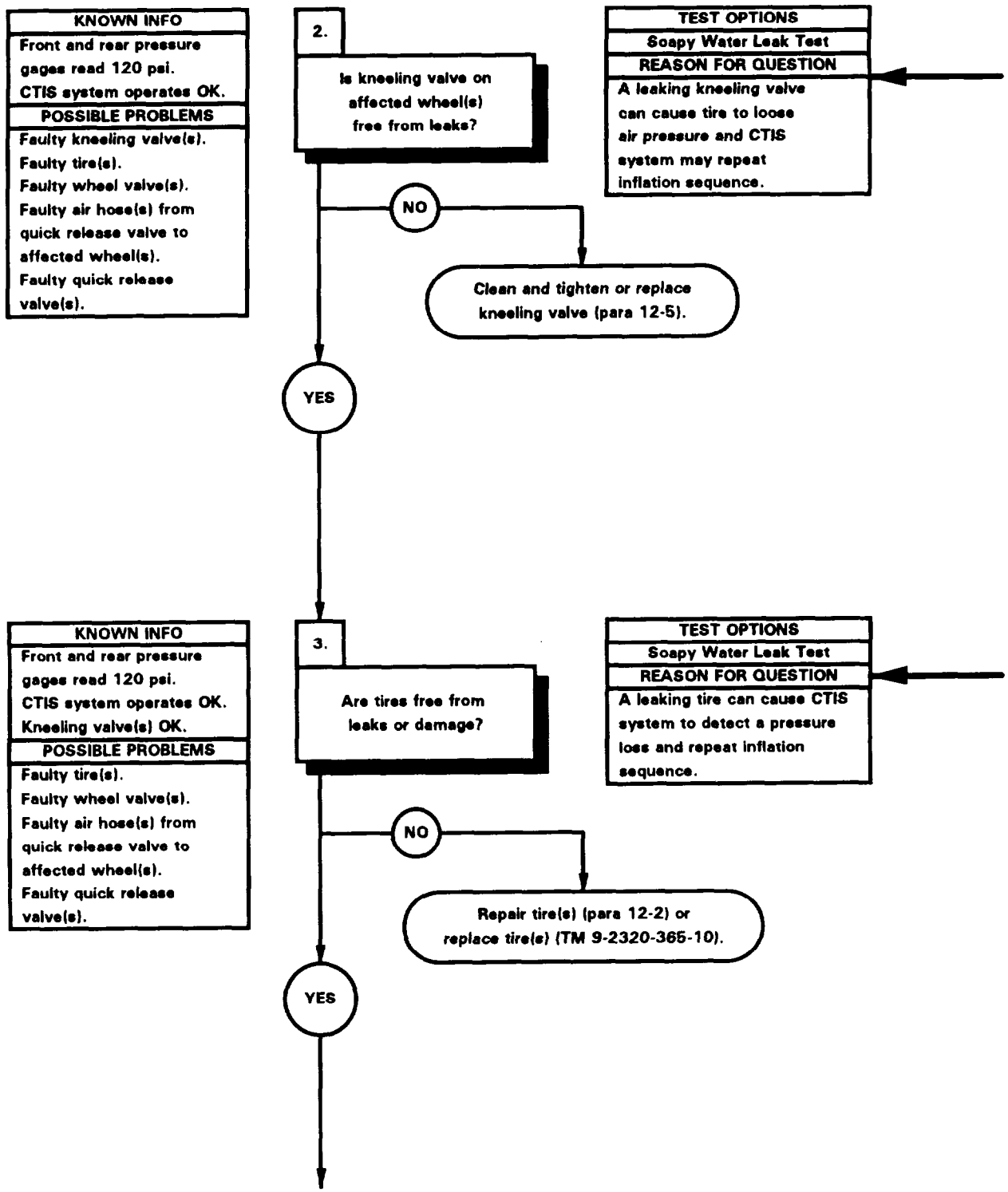
Wear appropriate eye protection when working under vehicle and around CTIS system due to the possibility of falling and/or blown debris. Failure to comply may result in injury to personnel.

NOTE

CTIS ECU checks tire pressure 30 seconds after completing a pressure change sequence. If tire pressures are the same, system reverts to checking pressure every 15 minutes. If tires are losing pressure, ECU inflates tires and checks pressure again in 30 seconds. If CTIS has to repeat this process more than 10 times, ECU will display four flashing lights.

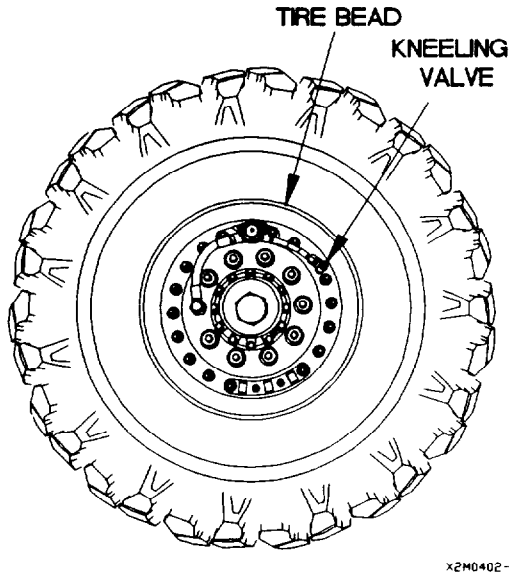
(1) **Measure and record the tire pressure of each tire (TM 9-2320-365-10).**
(2) **If front tire(s) have lower pressure than the rest, kneeling valve, tire or CTIS wheel valve is faulty.**
(3) **If rear tire(s) have lower pressure than the rest, tire or CTIS wheel valve is faulty.**

m4. CTIS REPEATEDLY RESUMES CYCLING 30 SECONDS AFTER INDICATOR LIGHTS STOP FLASHING (CONT)



SOAPY WATER LEAK TEST

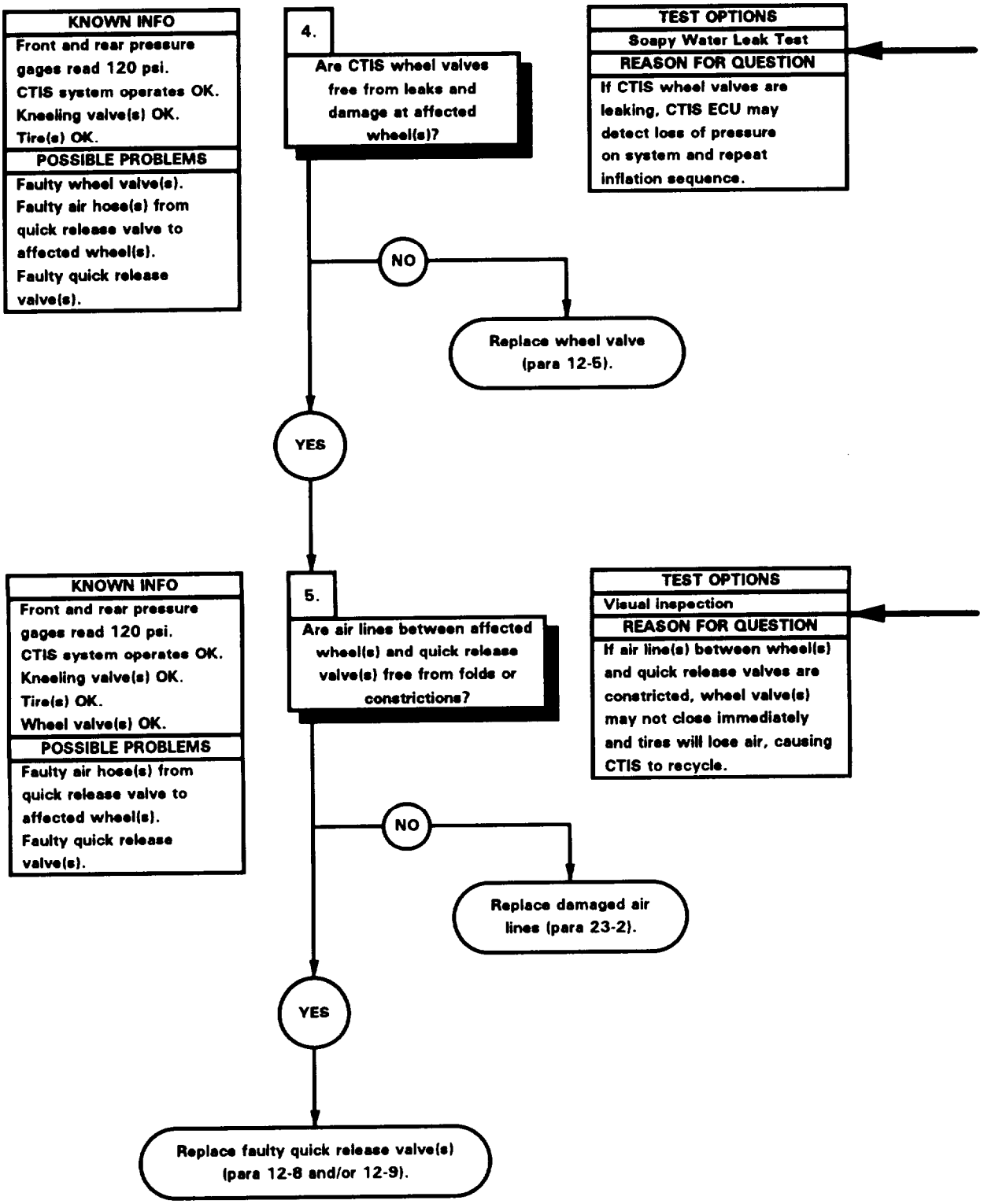
(1) Check kneeling valve is tight and secure in valve seat.
(2) Apply soapy water to valve and check for leaks.



SOAPY WATER LEAK TEST

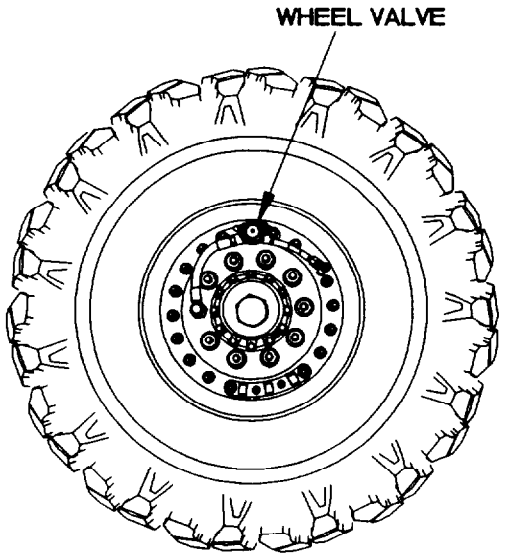
(1) Visually inspect tire for damage.
(2) Apply soapy water solution to tire bead.
(3) Observe tire for bubbles indicating leaks.

m4. CTIS REPEATEDLY RESUMES CYCLING 30 SECONDS AFTER INDICATOR LIGHTS STOP FLASHING (CONT)



SOAPY WATER LEAK TEST

(1) Apply soapy water solution to CTIS fittings on outside of wheel.
(2) Observe fittings for bubbles indicating leaks.
(3) With wheel valve still connected to tire, disconnect wheel valve air supply line from hub at banjo bolt.
(4) Place open end of air supply line in container of water. Look for air bubbles.
(5) Persistent bubbles from air line indicate faulty wheel valve.
(6) Connect wheel valve to hub at banjo bolt.

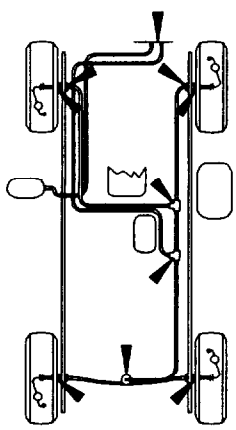


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NOTE

If air line from quick release valve to affected wheel is partially obstructed, air line to wheel cannot escape back to quick release valve immediately after tire is pressurized causing wheel valve to remain partially open and tire to lose pressure. System will cycle again when low pressure is checked after 30 seconds.

(1) Check air supply line(s) from quick release valve(s) to affected wheel(s) for constrictions. See illustration for fitting and quick release valve locations.
(2) If air supply line is not constricted, quick release valve for affected wheel is faulty.



AIR HOSE FITTINGS WHEELS TO QUICK RELEASE VALVES

J2M0405-

m5. CTIS ECU LIGHTS WORK, CTIS DOES NOT INFLATE OR DEFLATE

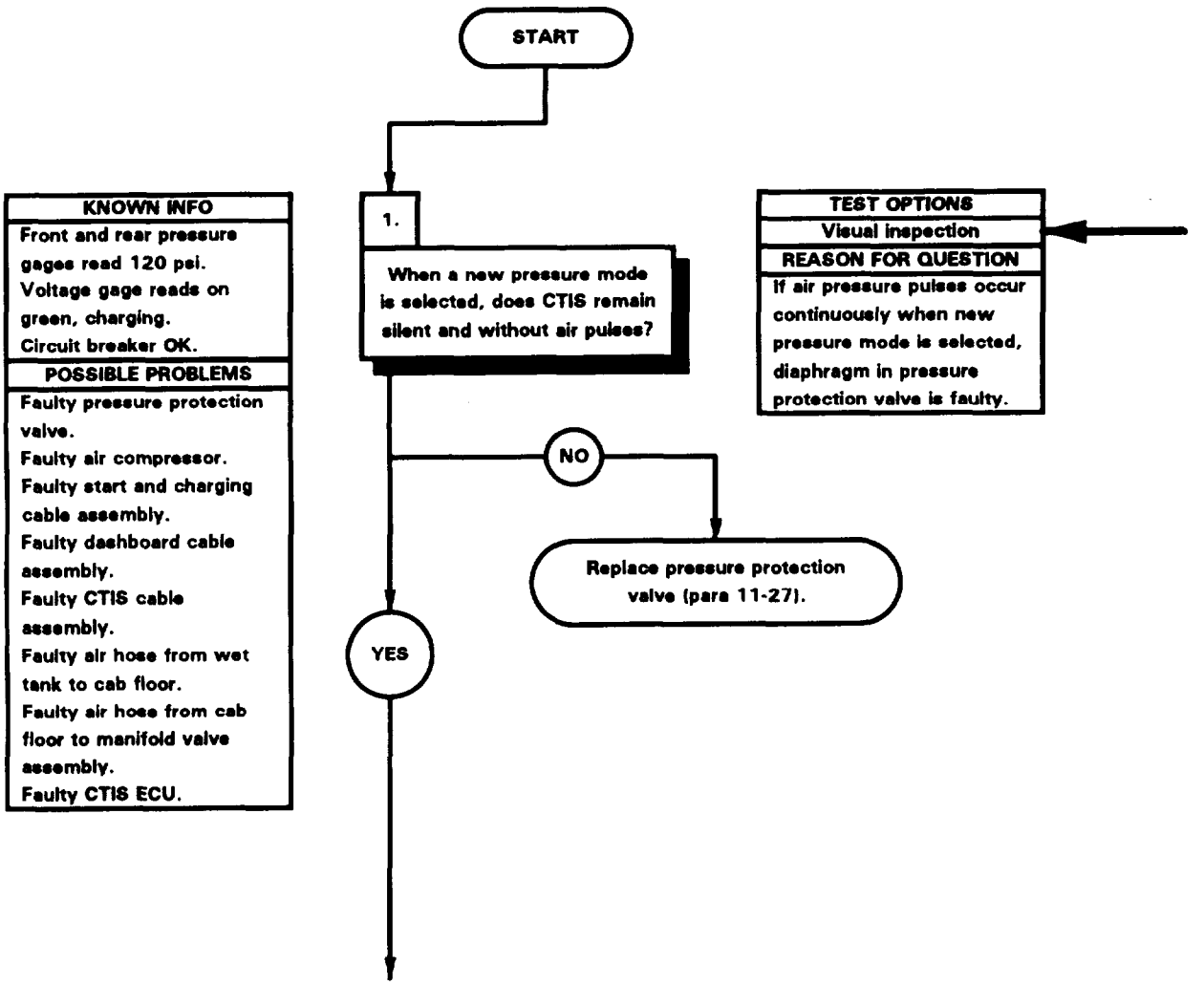
INITIAL SETUP

Equipment Conditions
Engine running (TM 9-2320-365-10).

Materials/Parts
Soap, Laundry (Item 69, Appendix D)

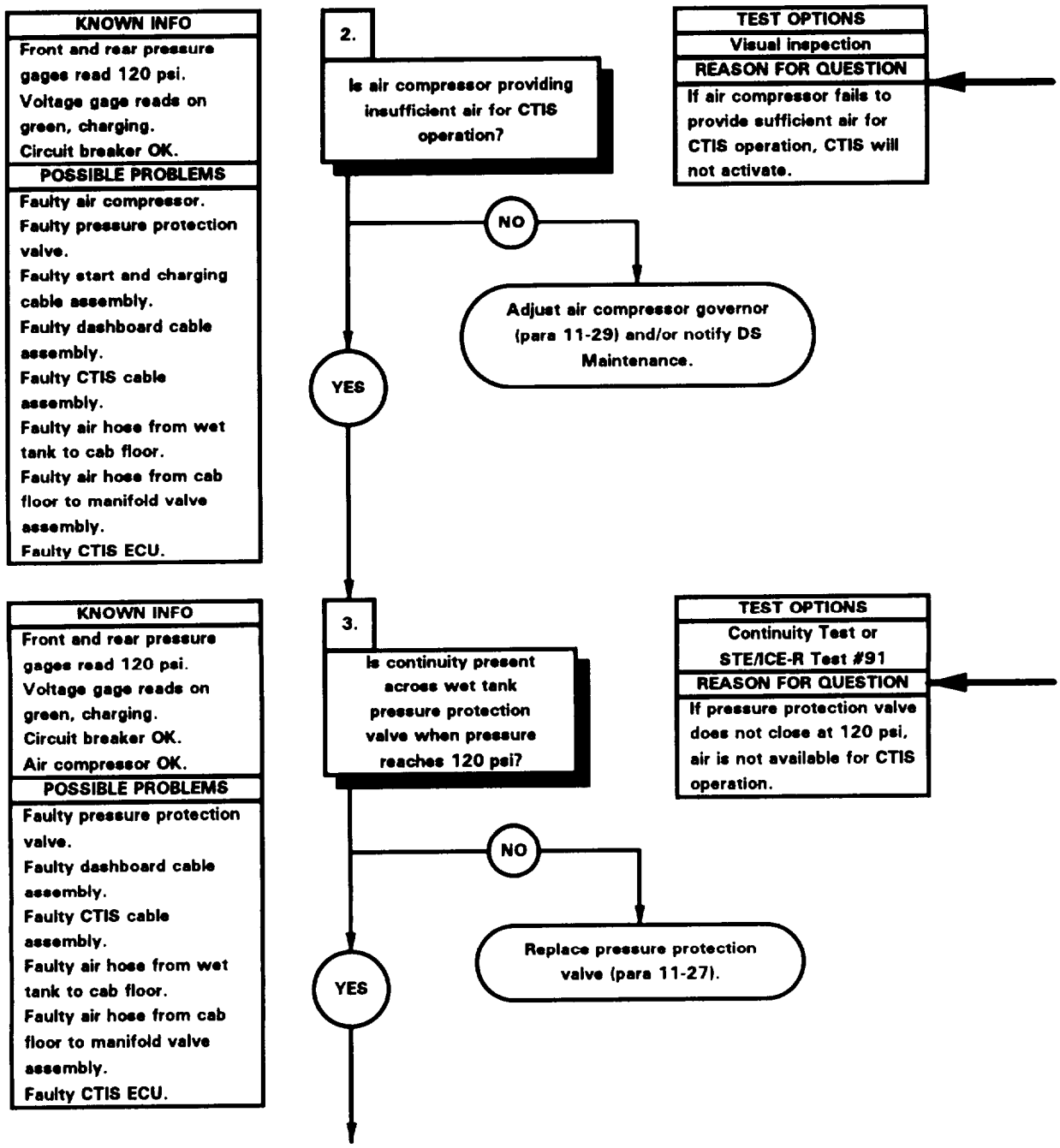
References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Pan, Wash (Item 25, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
STE/ICE-R (Item 39, Appendix C)

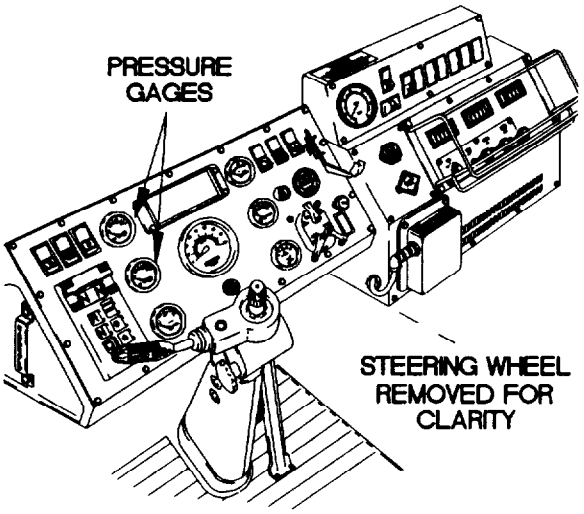


(1) With engine running, select a new mode on CTIS ECU (TM 9-2320-365-10).
(2) If CTIS pulses air every few seconds, replace pressure protection valve (para 11-27).

m5. CTIS ECU LIGHTS WORK, CTIS DOES NOT INFLATE OR DEFLATE (CONT)



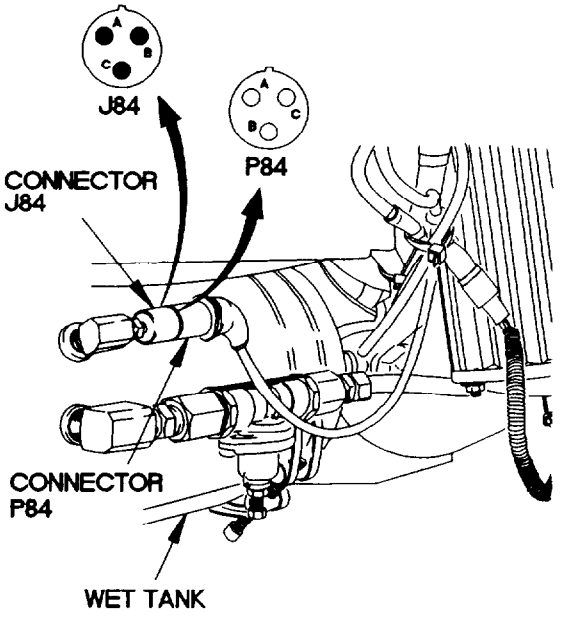
(1) With engine running at 1000 rpm, drain wet tank until air gage indicates less than 80 psi (552 kPa).
(2) Allow air pressure to build up.
(3) If air gages do not reach 120 psi (827 kPa), adjust air compressor (para 11-29) or notify DS Maintenance.



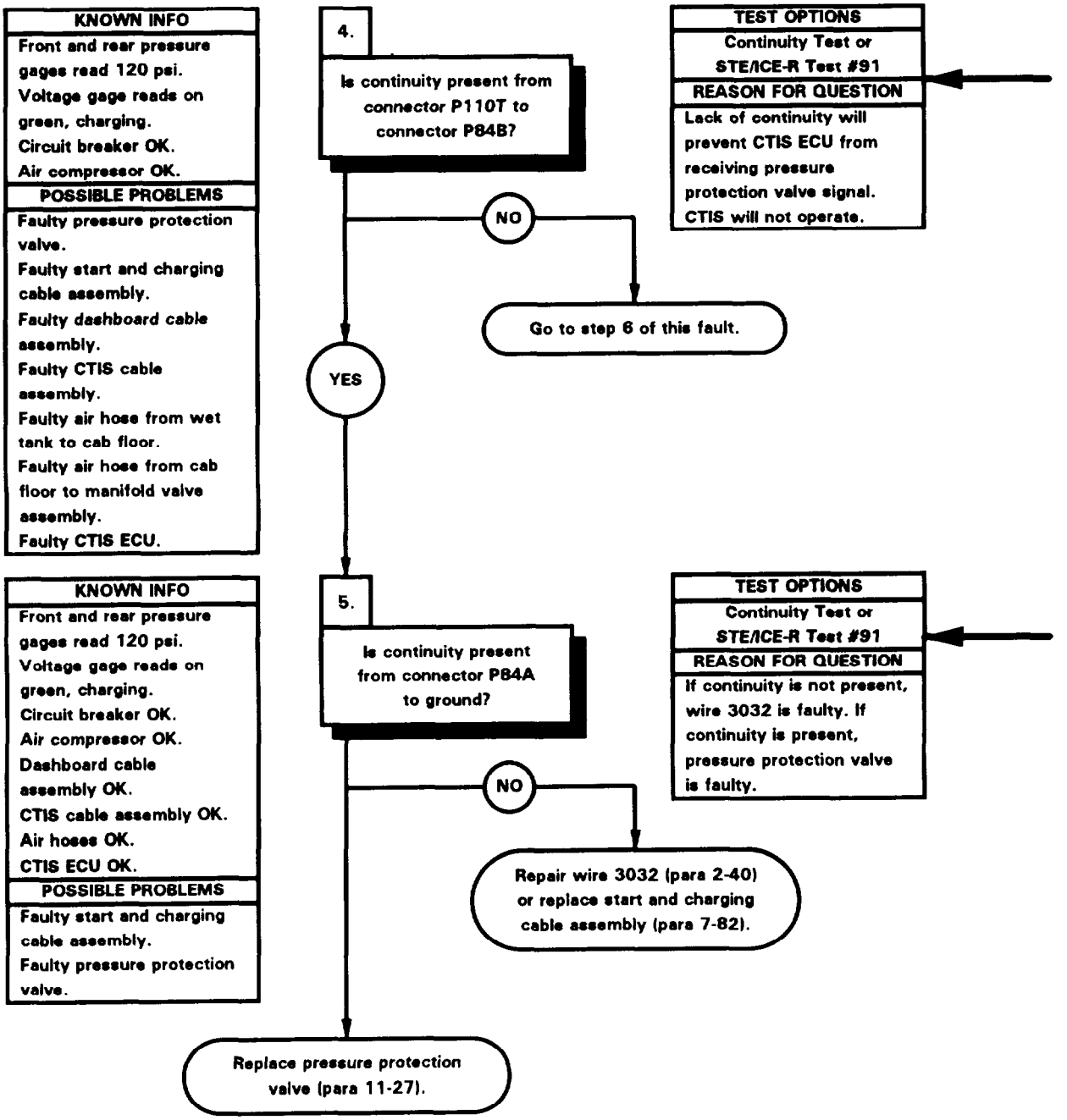
X2M0501A

CONTINUITY TEST

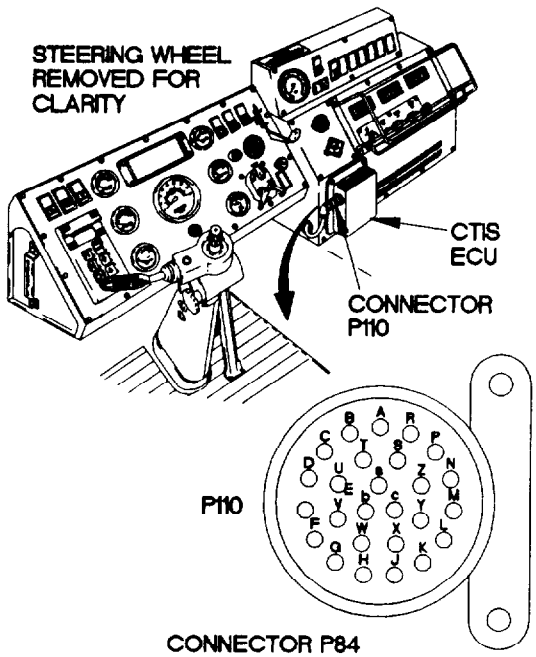
(1) Shut down engine (TM 9-2320-365-10).
(2) Disconnect connector P84 from J84 at wet tank.
(3) Start engine (TM 9-2320-365-10).
(4) Set multimeter to ohms position.
(5) Connect positive (+) probe of multimeter to pressure protection valve connector J84A.
(6) Connect negative (-) probe of multimeter to pressure protection valve connector J84B and allow air pressure to build to 120 psi (827 kPa), and note reading on multimeter.
(7) If continuity is not present, replace pressure protection valve (para 11-27).
(8) Shut down engine (TM 9-2320-365-10).



m5. CTIS ECU LIGHTS WORK, CTIS DOES NOT INFLATE OR DEFLATE (CONT)

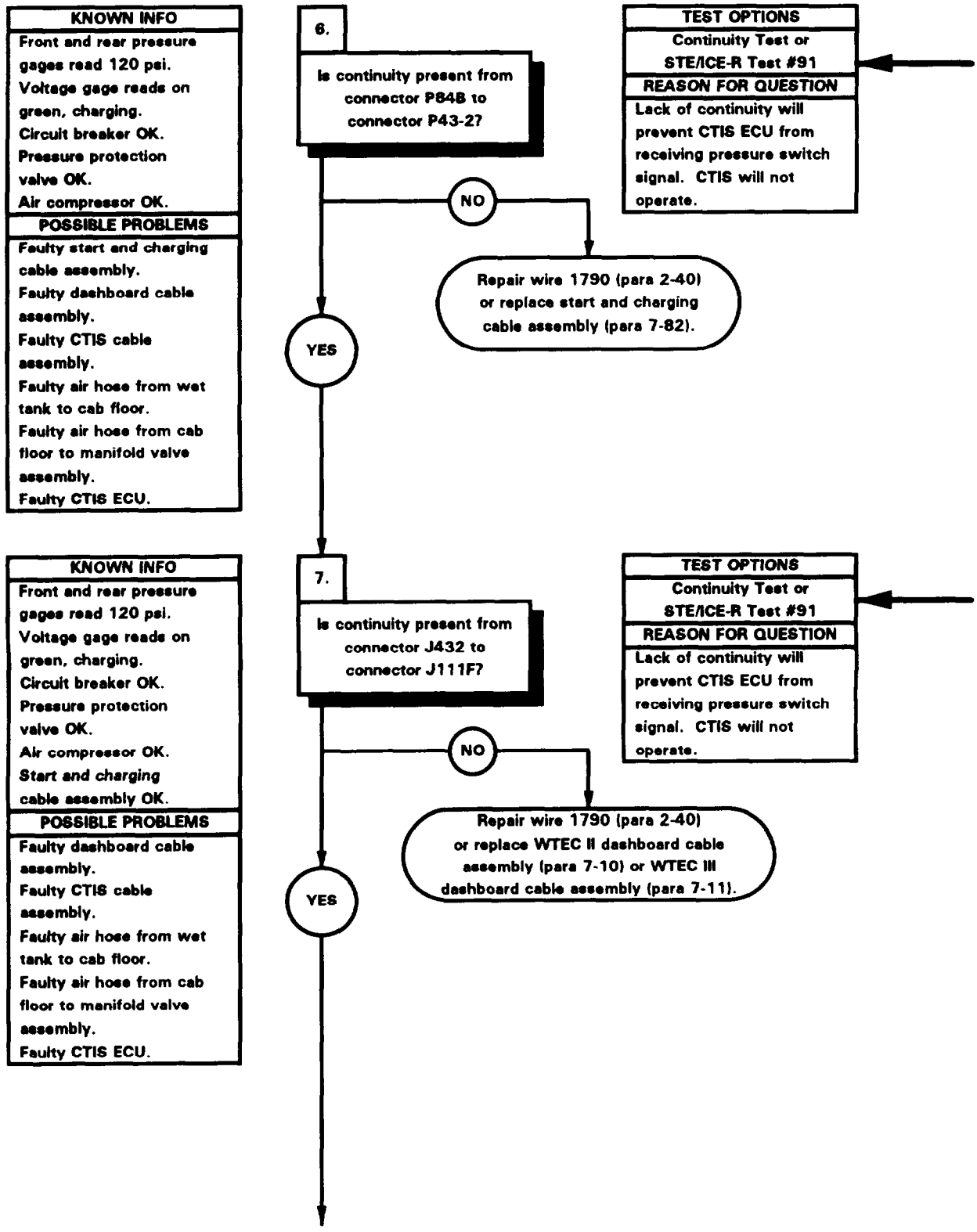


CONTINUITY TEST
(1) Disconnect connector P110 from CTIS ECU.
(2) Set multimeter to ohms position.
(3) Connect positive (+) probe of multimeter to connector P110T.
(4) Connect negative (-) probe of multimeter to connector P84B and note reading on multimeter.
(5) If continuity is not present, go to step 6 of this fault.
(6) Connect connector P110 to CTIS ECU.

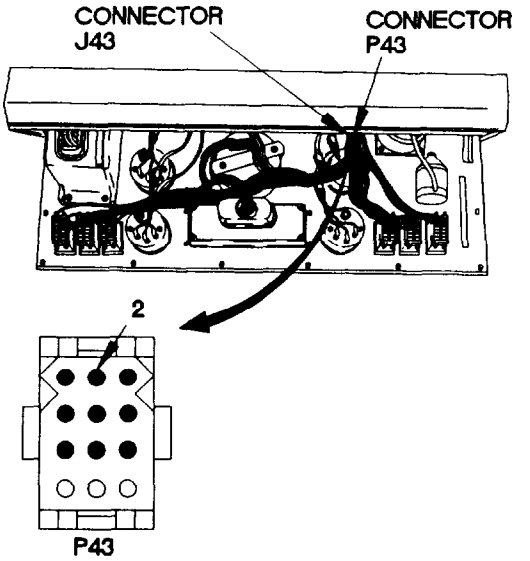


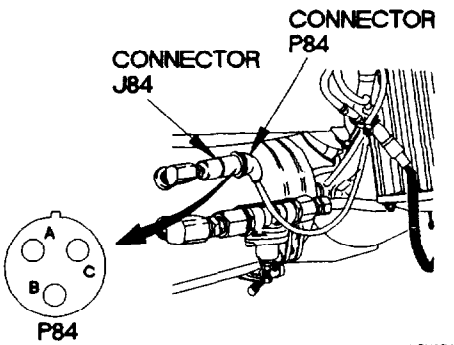
CONTINUITY TEST
(1) Set multimeter to ohms position.
(2) Connect positive (+) probe of multimeter to connector P84A.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3032 (para 2-40) or replace start and charging cable assembly (para 7-82).
(5) If continuity is present, replace pressure protection valve (para 11-27).
(6) Connect connector P84 to connector J84 at wet tank.

m5. CTIS ECU LIGHTS WORK, CTIS DOES NOT INFLATE OR DEFLATE (CONT)



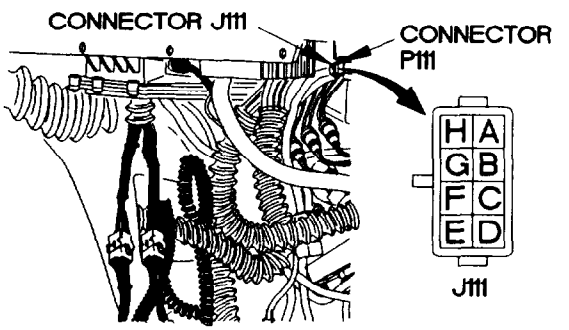
CONTINUITY TEST
(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector P43 from connector J43.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P84B.
(5) Connect negative (-) probe of multimeter to connector P43-2 and note reading on multimeter.
(6) If continuity is not present, repair wire 1790 (para 2-40) or replace start and charging cable assembly (para 7-82).
(7) Connect connector P84 to connector J84 at wet tank.

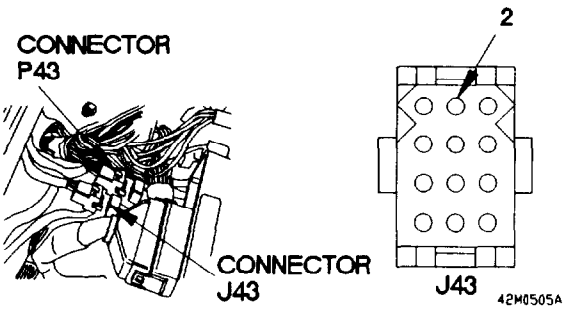




X2M0504A

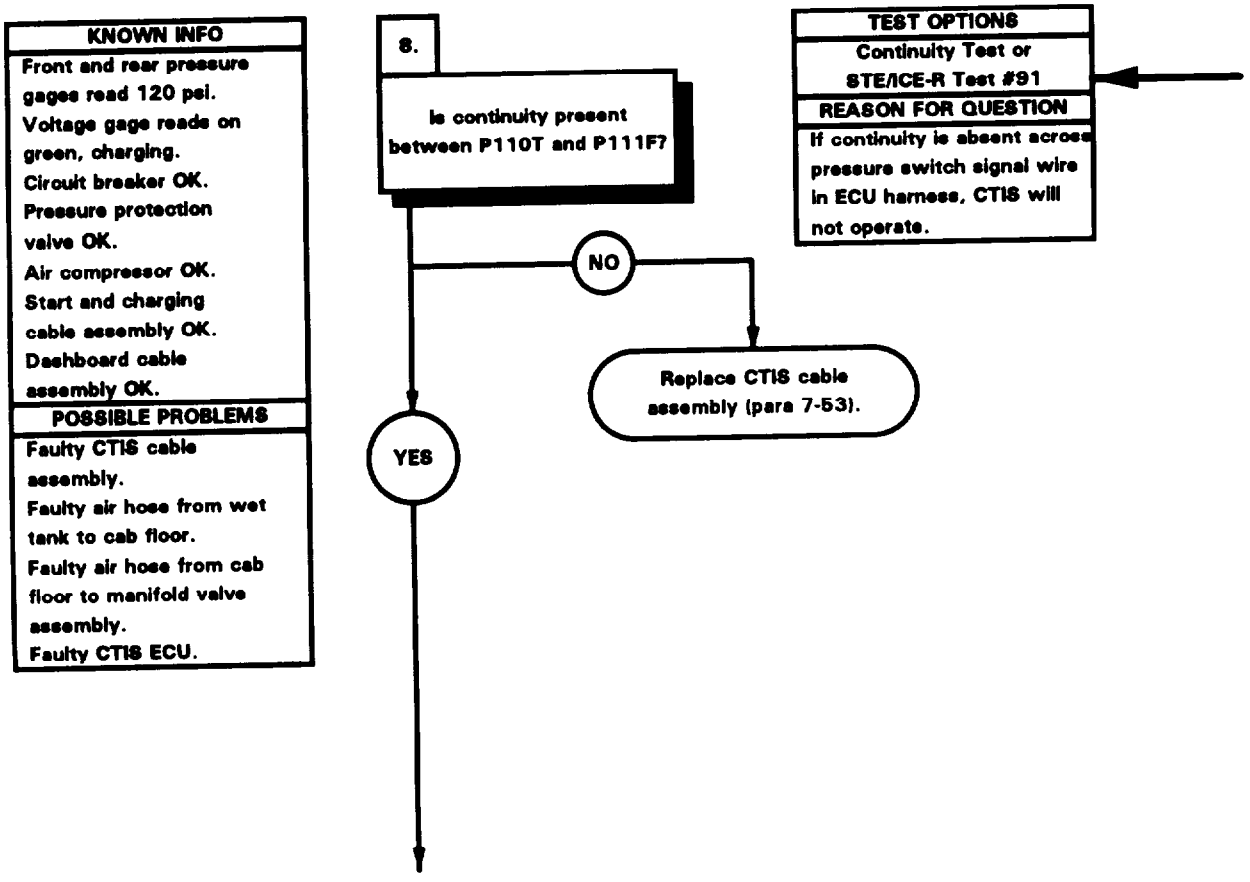
CONTINUITY TEST
(1) Remove kick panel (para 16-3).
(2) Disconnect connector P111 from connector J111.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector J43-2.
(5) Connect negative (-) probe of multimeter to connector J111F and note reading on multimeter.
(6) If continuity is not present, repair wire 1790 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(7) Connect connector J43 to connector P43.
(8) Install instrument panel assembly (para 7-15).



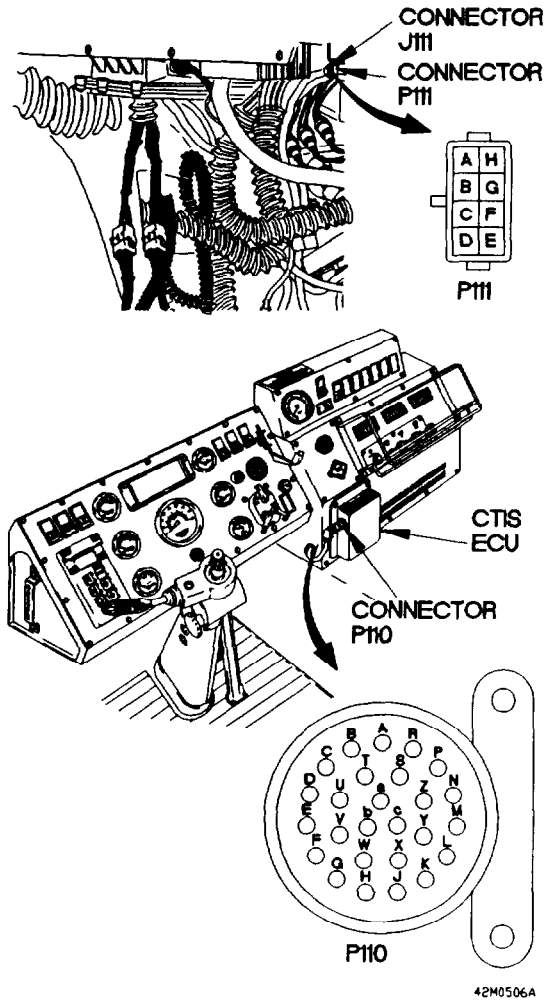


42M0505A

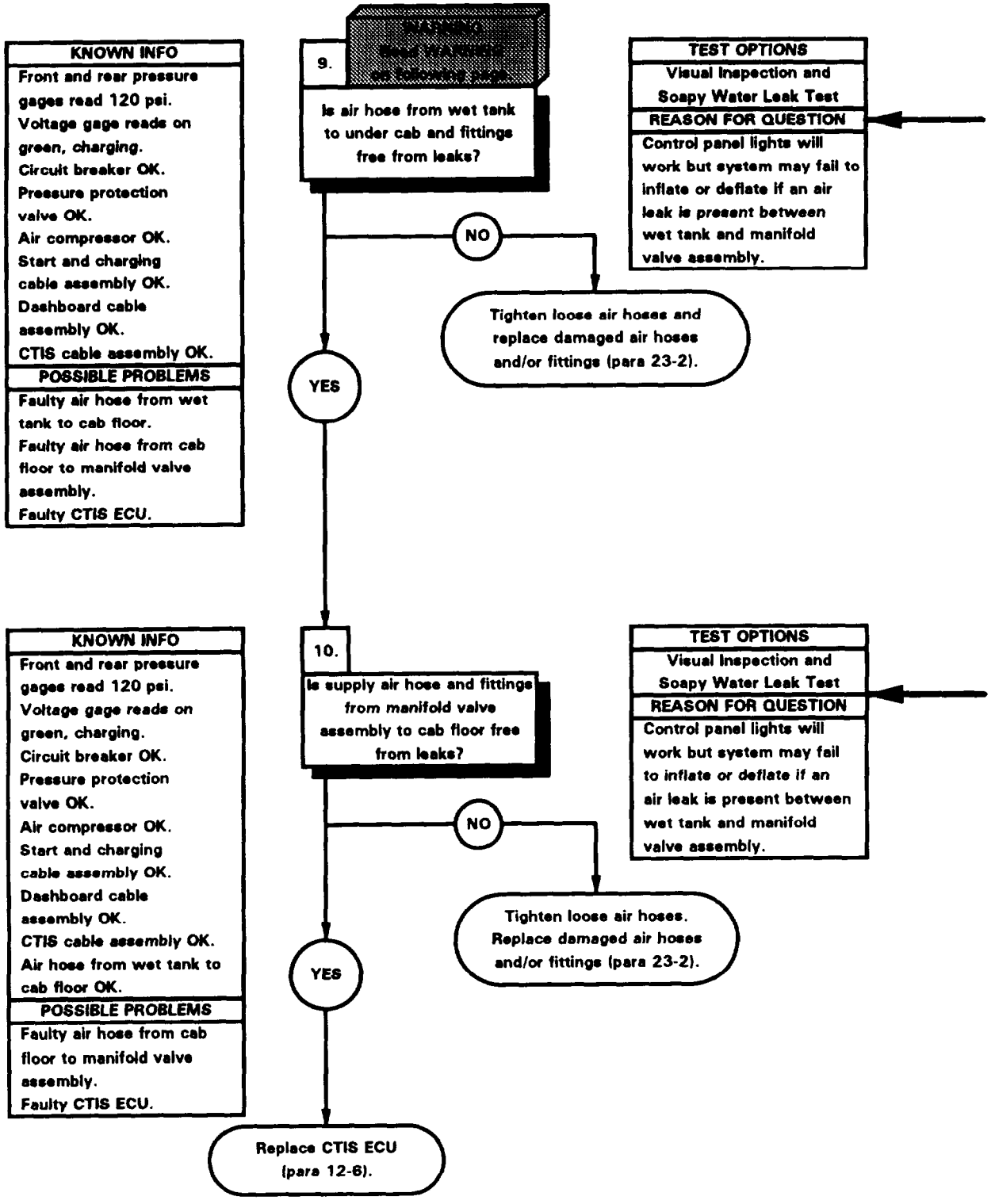
m5. CTIS ECU LIGHTS WORK, CTIS DOES NOT INFLATE OR DEFLATE (CONT)



CONTINUITY TEST
(1) Disconnect connector P110 from CTIS ECU.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P111F.
(4) Connect negative (-) probe of multimeter to connector P110T and note reading on multimeter.
(5) If continuity is not present, replace CTIS cable assembly (para 7-53).
(6) Connect connector P110 to CTIS ECU.
(7) Connect connector J111 to connector P111.



m5. CTIS ECU LIGHTS WORK, CTIS DOES NOT INFLATE OR DEFLATE (CONT)

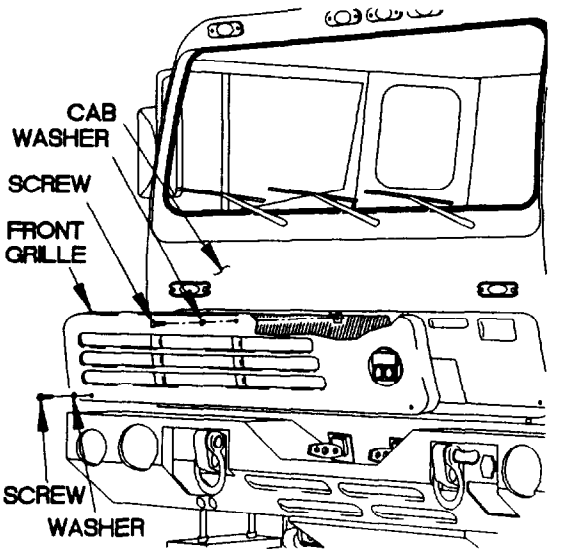


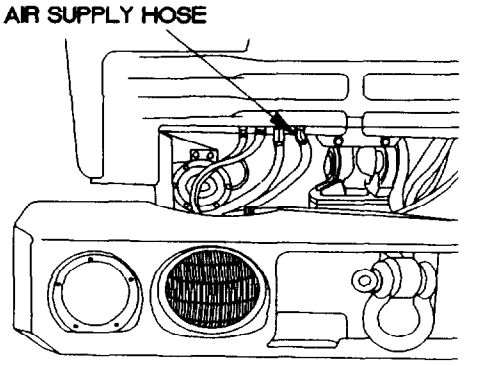
WARNING

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

SOAPY WATER LEAK TEST

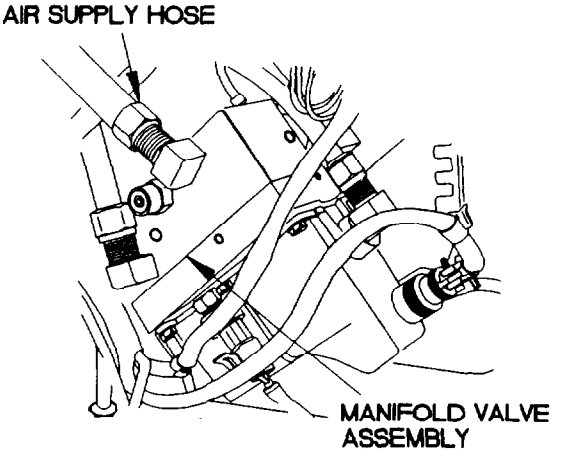
(1) Start engine (TM 9-2320-365-10).
(2) Remove two screws and washers from front grille.
(3) Remove screw and washer from front grille.
(4) Remove front grille from cab.
(5) Check supply air hose between wet tank and manifold valve assembly at fittings under cab floor.
(6) Apply soapy water solution to fittings.
(7) Observe fittings for bubbles indicating leaks.
(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).





SOAPY WATER LEAK TEST

(1) Check for leaks in air hose and fittings between manifold valve assembly and cab floor.
(2) Apply soapy water solution to fittings.
(3) Observe fittings for bubbles indicating leaks.
(4) If air compressor provides sufficient air to CTIS, air supply hoses are free from leaks and pressure switch closes at 120 psi, CTIS ECU is faulty.
(5) Shut down engine (TM 9-2320-365-10).
(6) Install kick panel (para 16-3).



m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE

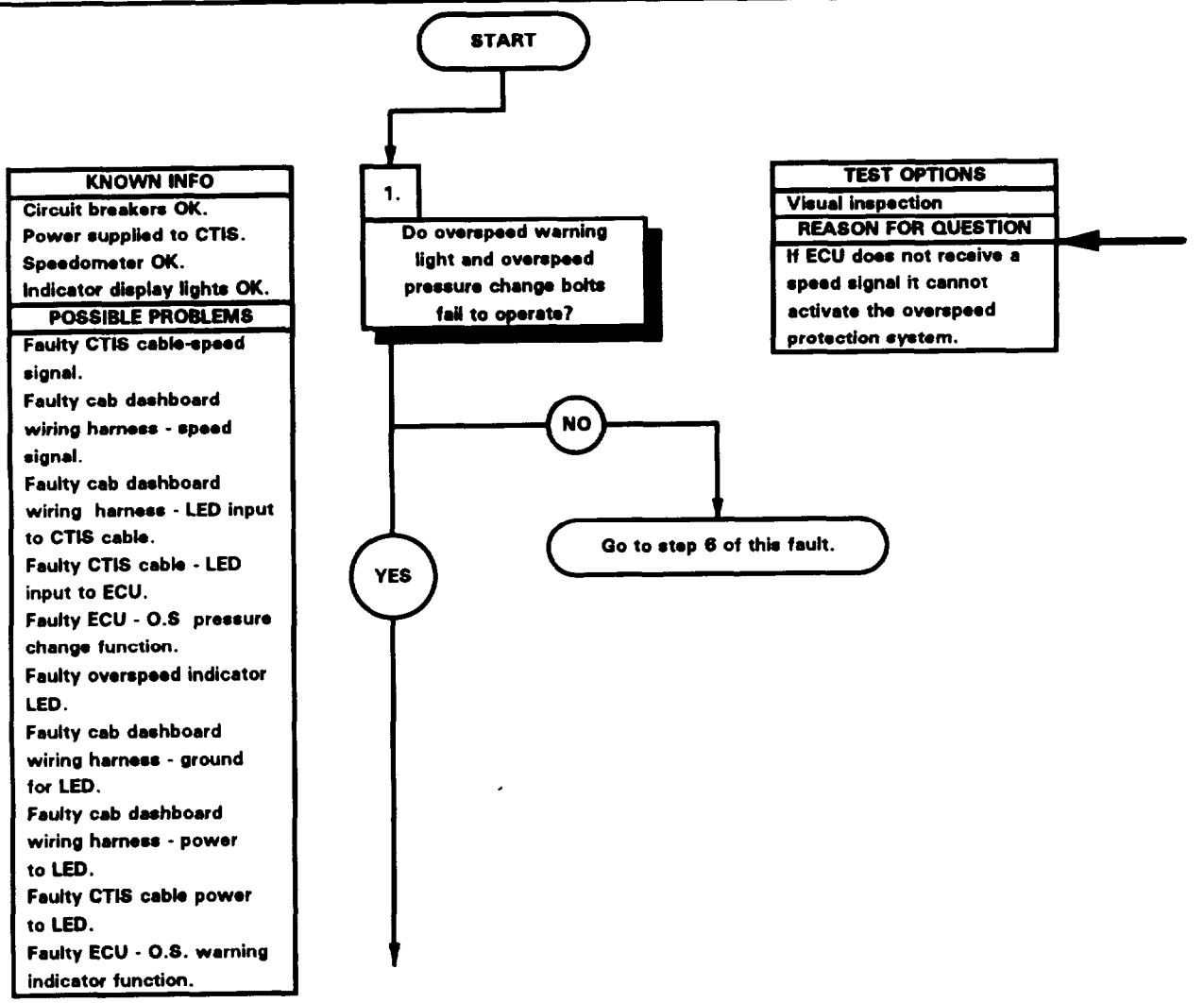
INITIAL SETUP

Equipment Conditions
Engine running (TM 9-2320-365-10).

Personnel Required
(2)

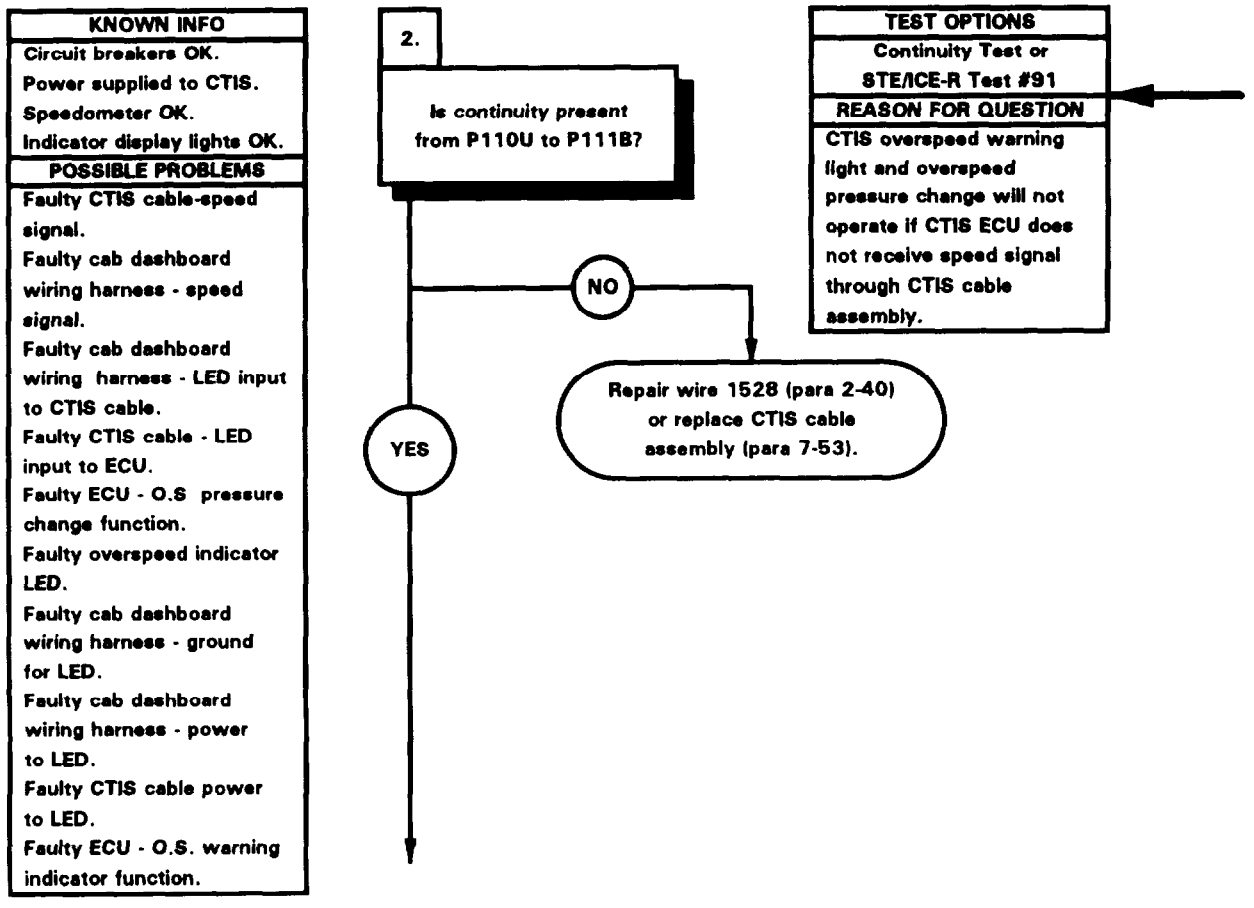
References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)
STE/ICE-R (Item 39, Appendix C)



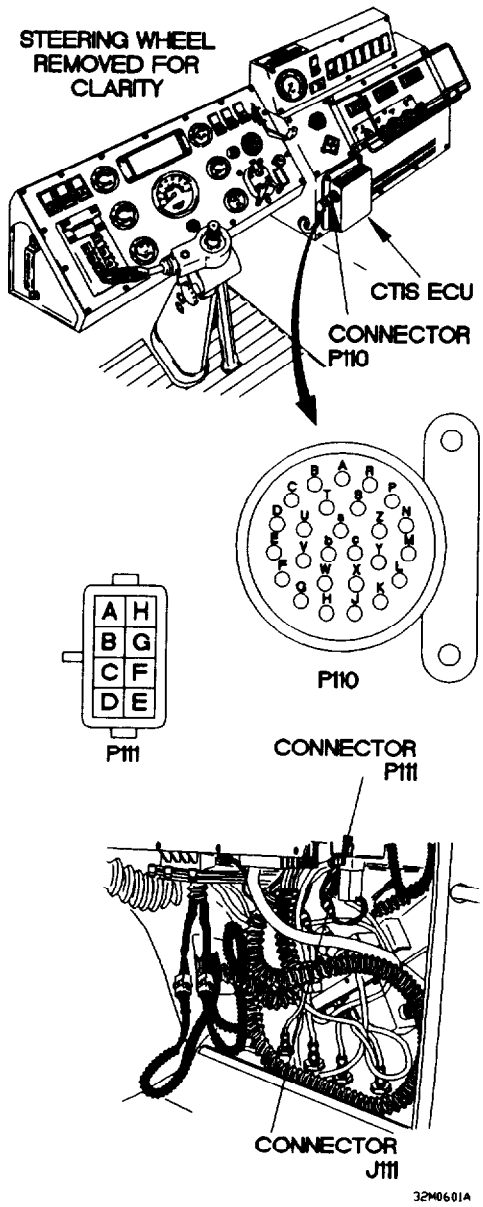
(1) Select X-C mode at CTIS ECU (TM 9-2320-365-10).
(2) Turn on headlights (TM 9-2320-365-10).
(3) Perform road test.
(4) Increase speed to 40 mph.
(5) Check if overspeed warning light flashes.
(6) After about one minute, check if overspeed pressure change is activated to raise tire pressure to HWY mode.
(7) If both functions fail to activate, speed signal to ECU is faulty or ECU may be faulty.
(8) Shut down engine (TM 9-2320-365-10).

m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)

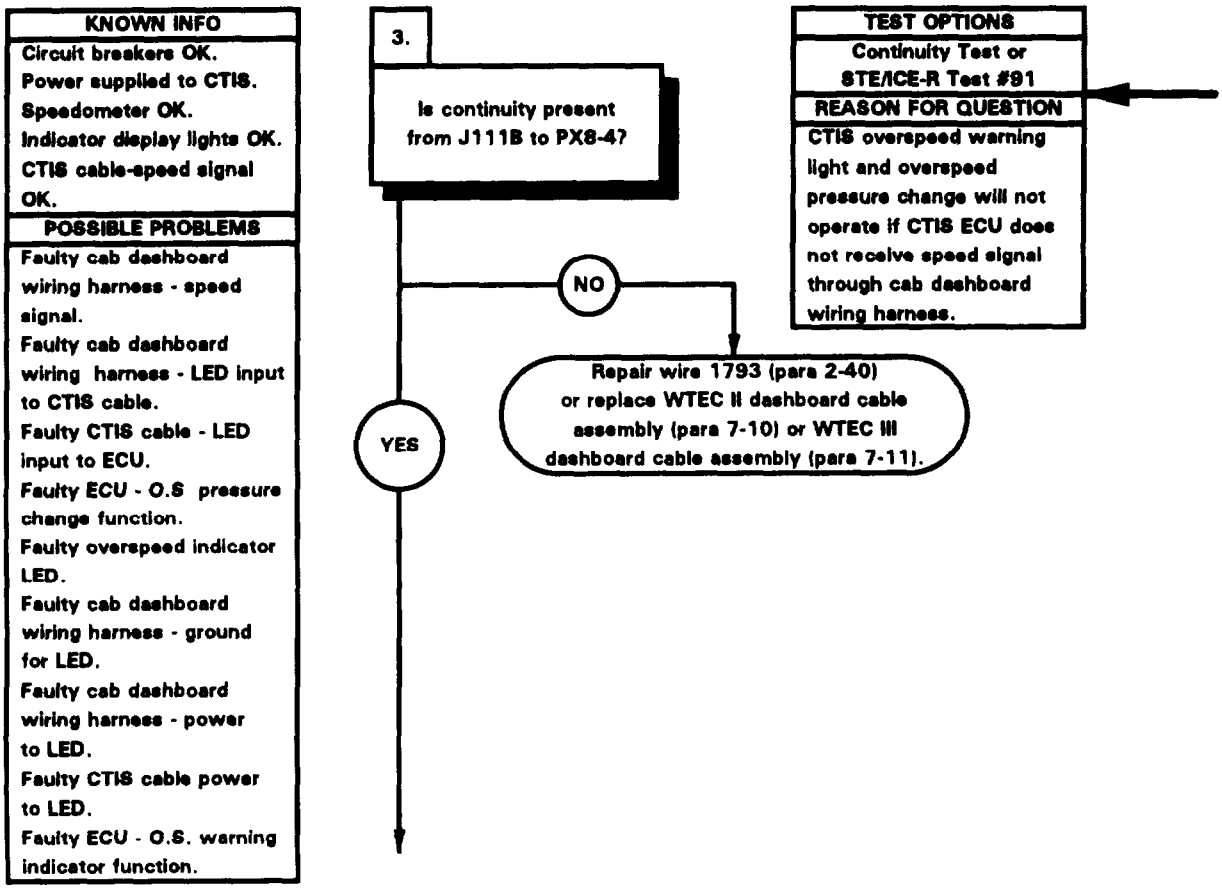


CONTINUITY TEST

(1) Remove kick panel (para 16-3).
(2) Disconnect connector P110 from CTIS ECU.
(3) Disconnect connector P111 from connector J111.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to connector P110U.
(6) Connect negative (-) probe of multimeter to connector P111B and note reading on multimeter.
(7) If continuity is not present, repair wire 1528 (para 2-40) or replace CTIS cable assembly (para 7-53).

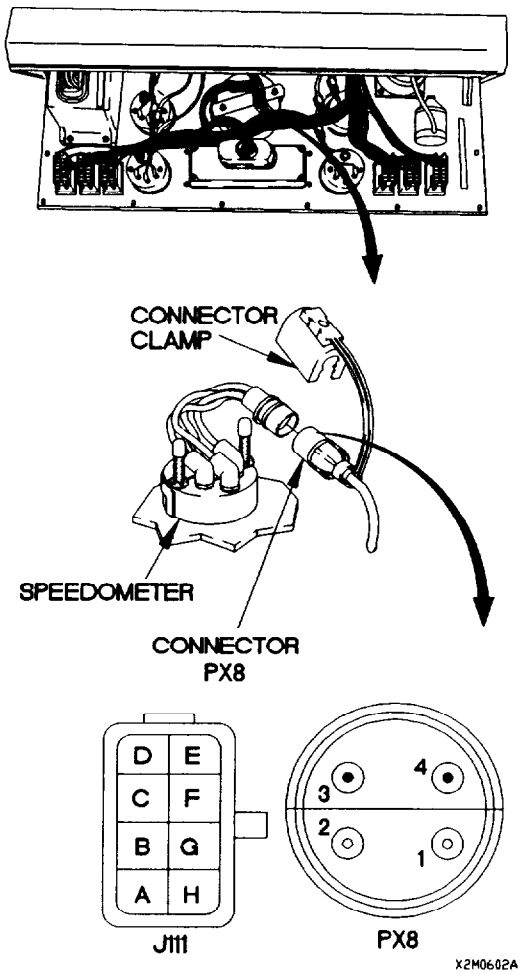


m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)

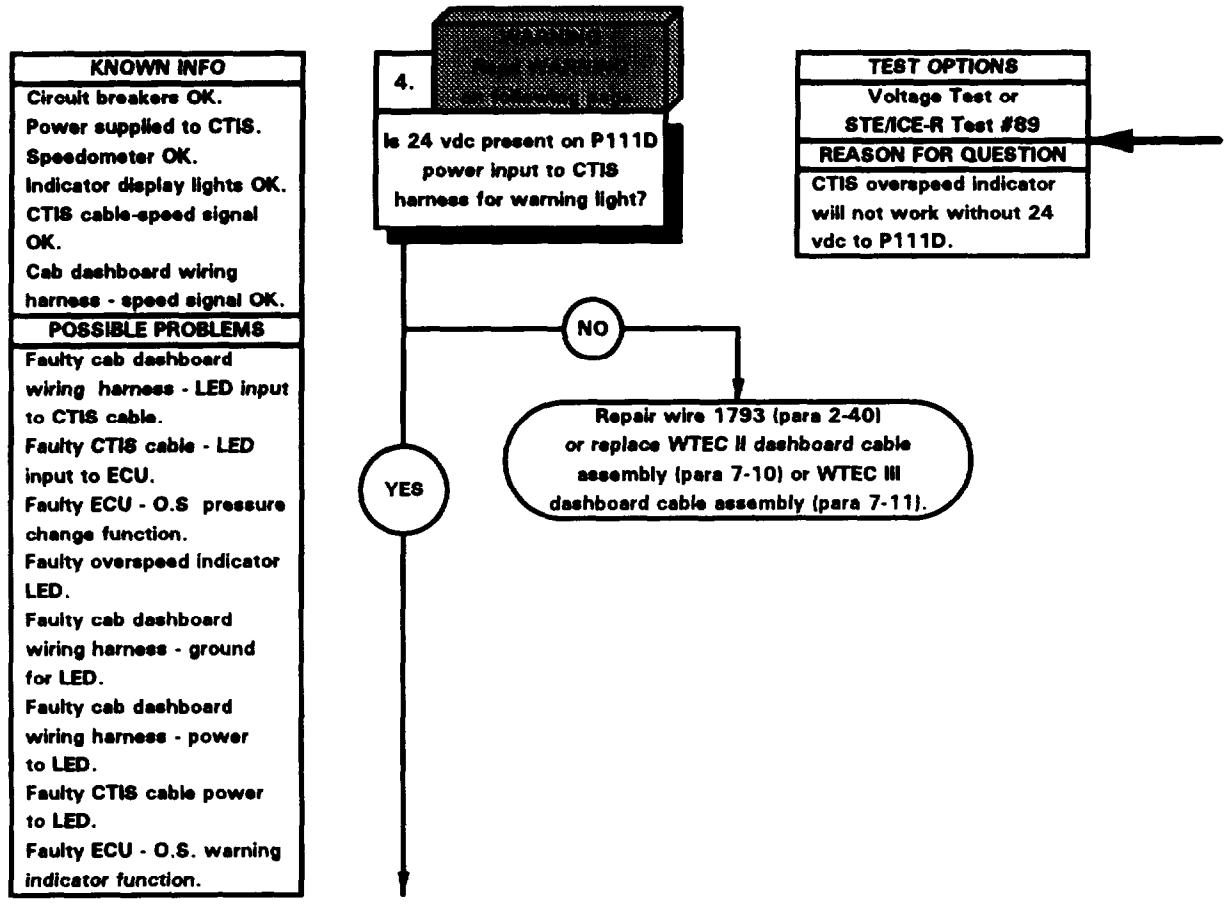


CONTINUITY TEST

(1) Remove instrument panel assembly for access (para 7-15).
(2) Disconnect connector clamp from speedometer connector.
(3) Disconnect connector PX8 from speedometer.
(4) Set multimeter to ohms position.
(5) Connect positive (+) probe of multimeter to connector J111B.
(6) Connect negative (-) probe of multimeter to connector PX8-4 and note reading on multimeter.
(7) If continuity is not present, repair wire 1793 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(8) Connect connector PX8 to speedometer.
(9) Connect connector clamp to speedometer connector.
(10) Install instrument panel assembly (para 7-15).



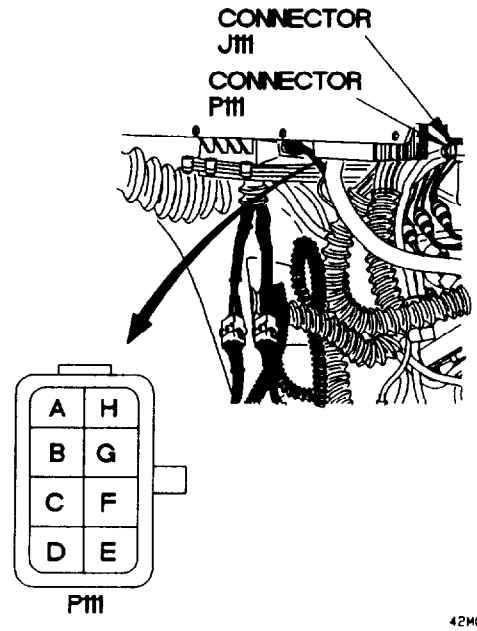
m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)



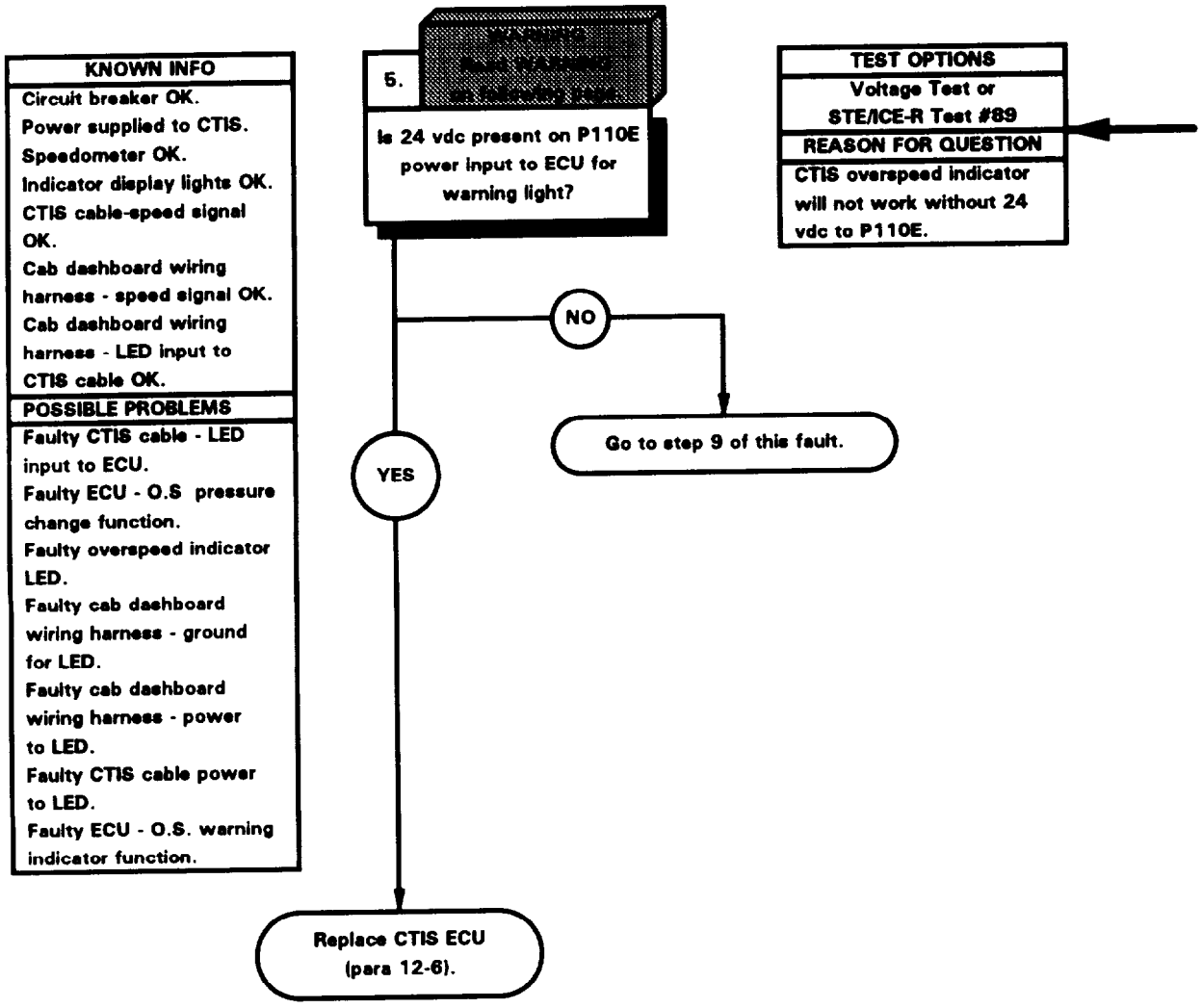
WARNING

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) Position master power switch to on (TM 9-2320-365-10).
(2) Connect positive (+) probe of multimeter to connector P111D.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If 24 vdc is not present, repair wire 1793 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) Position master power switch to off (TM 9-2320-365-10).
(6) Connect connector P111 to connector J111.



m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)

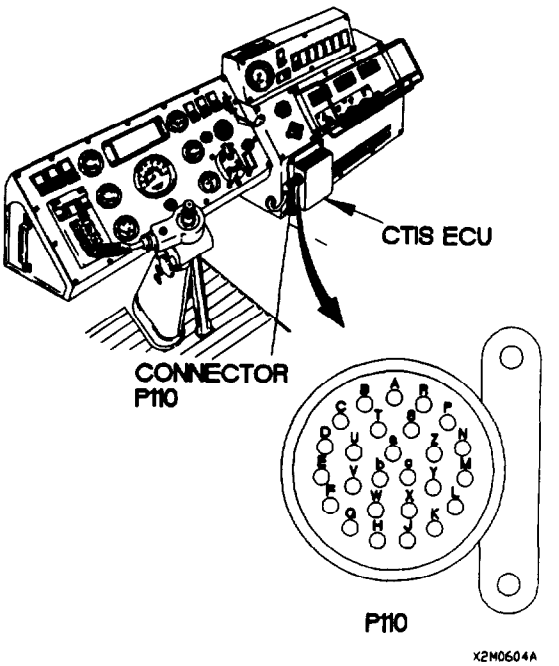


WARNING

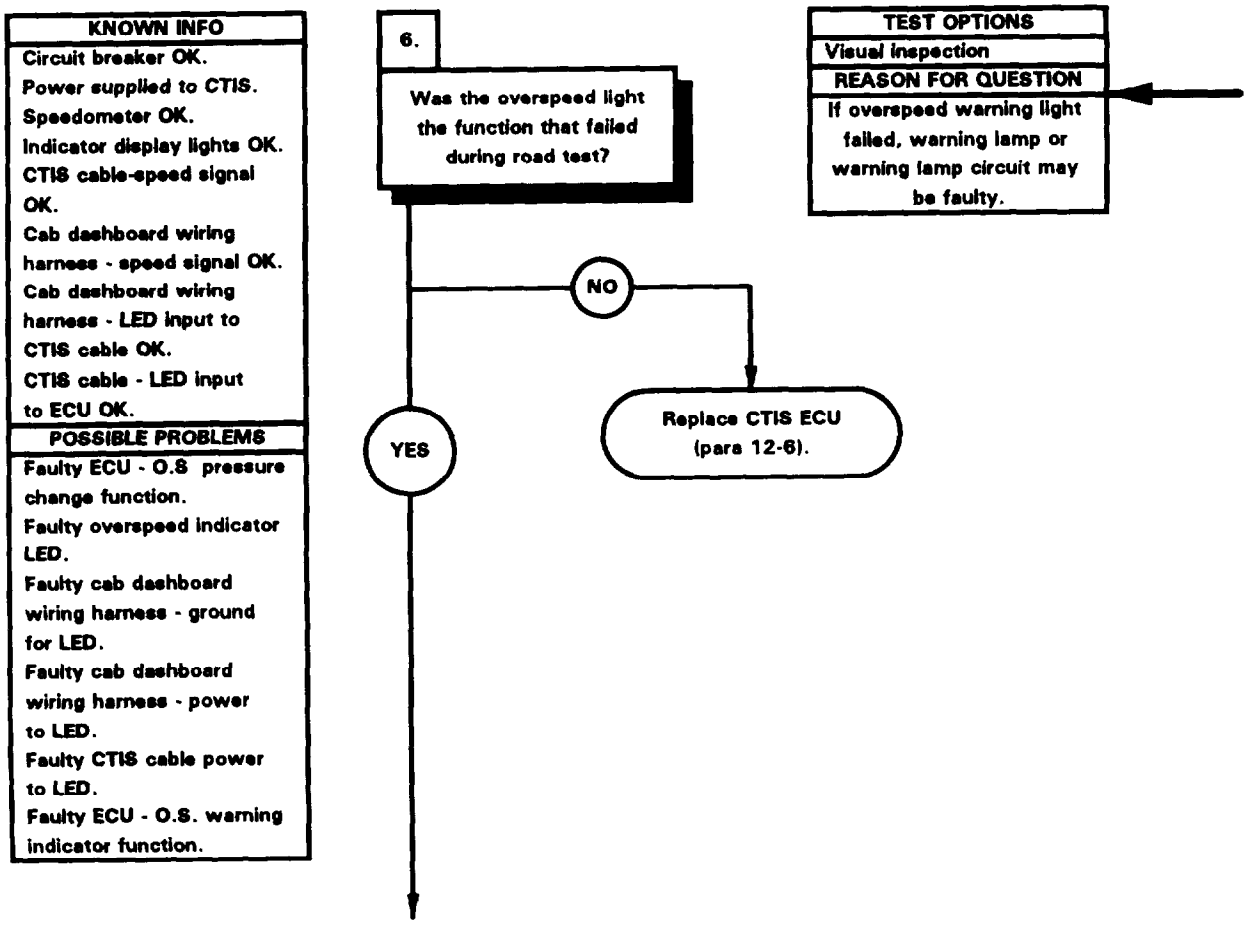
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Position master power switch to on (TM 9-2320-365-10).
(2) Connect positive (+) probe of multimeter to connector P110E.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If 24 vdc is not present, CTIS wiring harness is faulty.
(5) If 24 vdc is present, replace CTIS ECU (para 12-6).
(6) Position master power switch to off (TM 9-2320-365-10).
(7) Connect connector P110 to CTIS ECU.

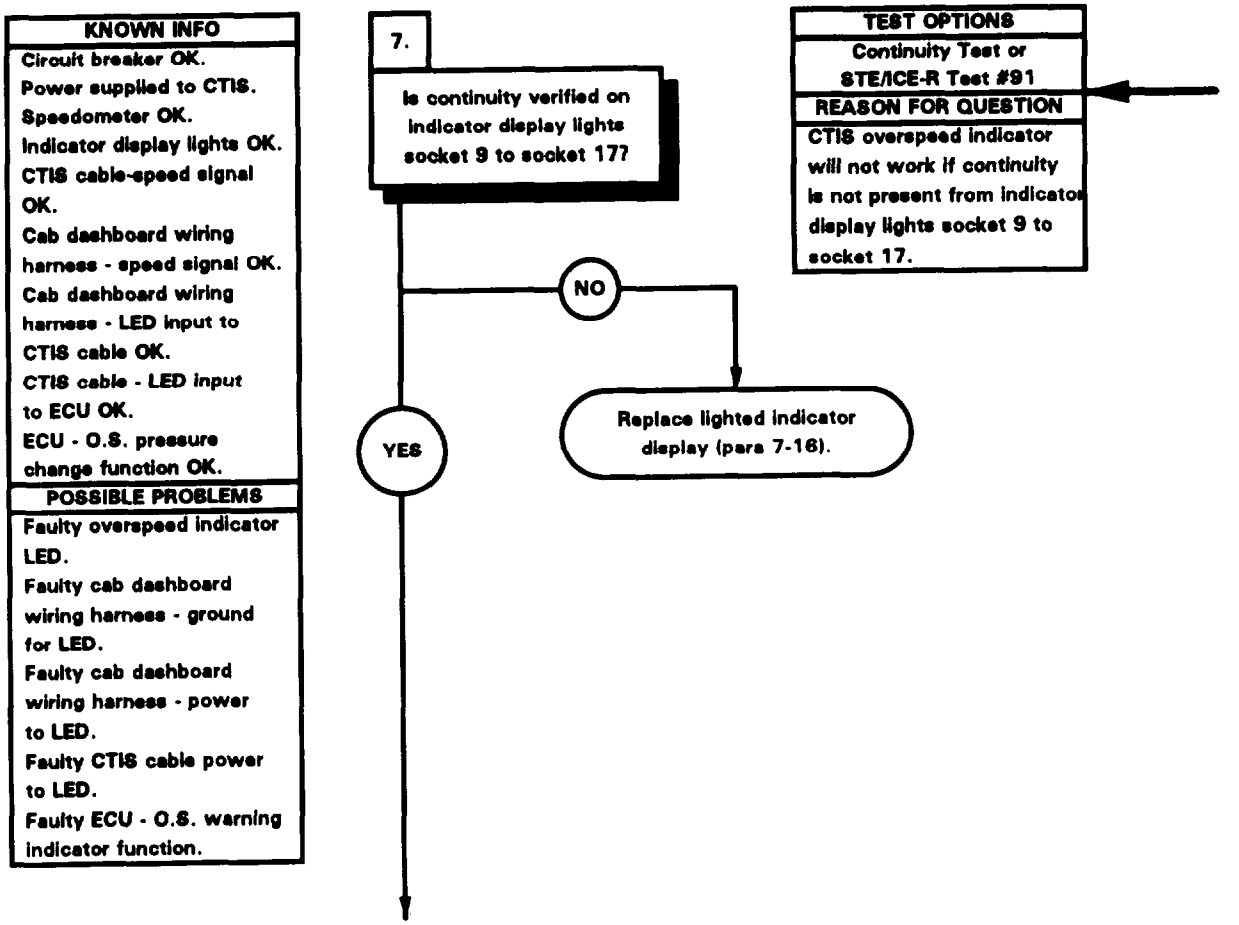


m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)

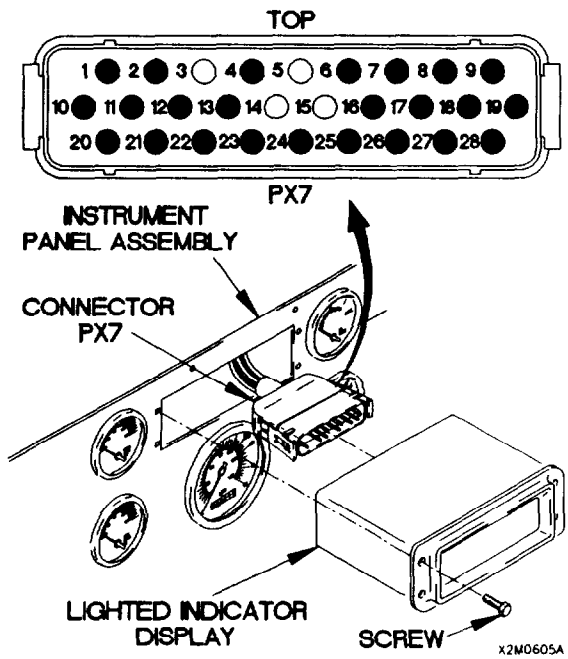


(1) If overspeed warning light failed on road test while overspeed pressure change occurred;
   (a) Warning lamp may be faulty.
   (b) Wiring from CTIS ECU to lamp or lamp to ground may be faulty.
   (c) CTIS ECU may be faulty.
(2) If overspeed warning light flashed on road test while overspeed pressure change did not occur, CTIS ECU has received a good speed signal but has not translated the signal into an overspeed inflation. CTIS ECU is faulty.

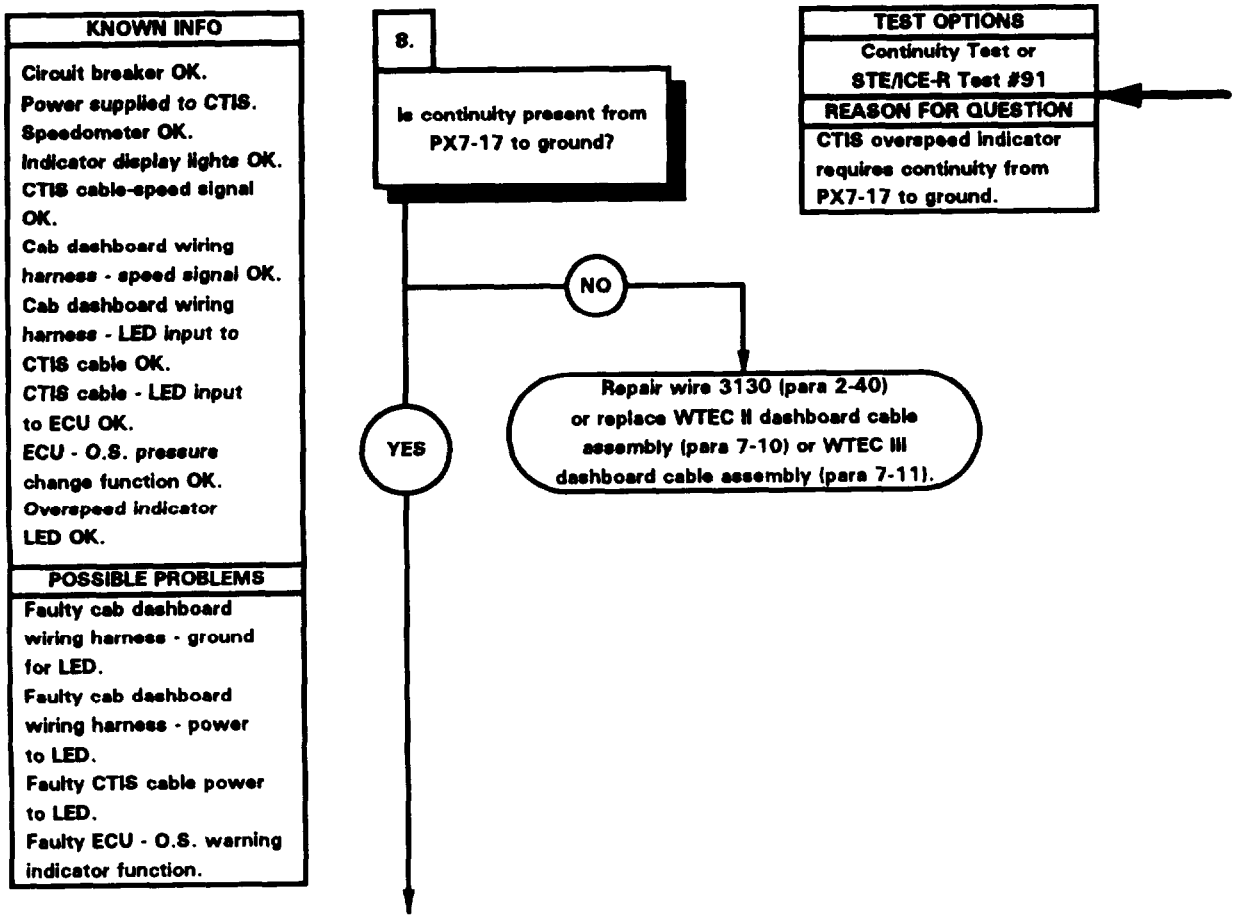
m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)



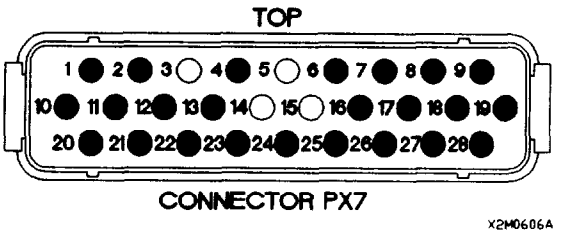
CONTINUITY TEST
(1) Remove four screws from lighted indicator display.
(2) Remove lighted indicator display from instrument panel assembly.
(3) Disconnect connector PX7 from lighted indicator display.
(4) Set multimeter to ohms.
(5) Connect positive (+) probe of multimeter to lighted indicator display terminal 17.
(6) Connect negative (-) probe of multimeter to lighted indicator terminal 9 and note reading on multimeter.
(7) If continuity is not present, replace lighted indicator display (para 7-16).



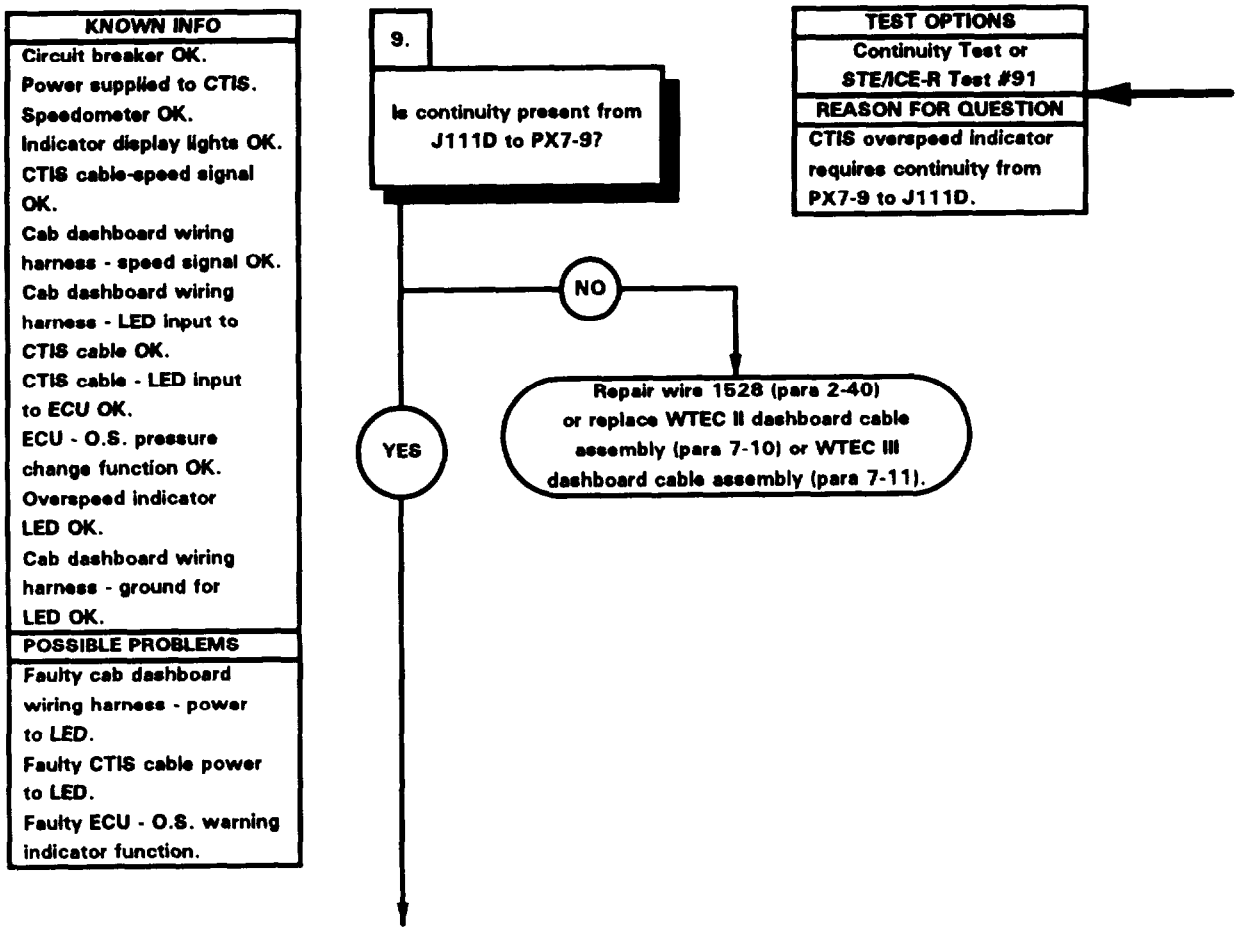
m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)



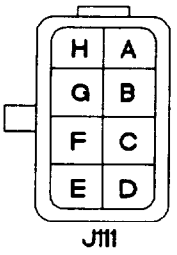
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX7-17.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3130 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

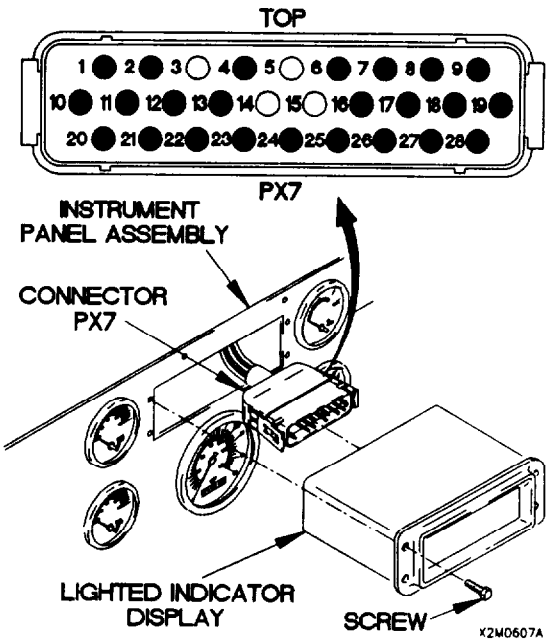


m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)

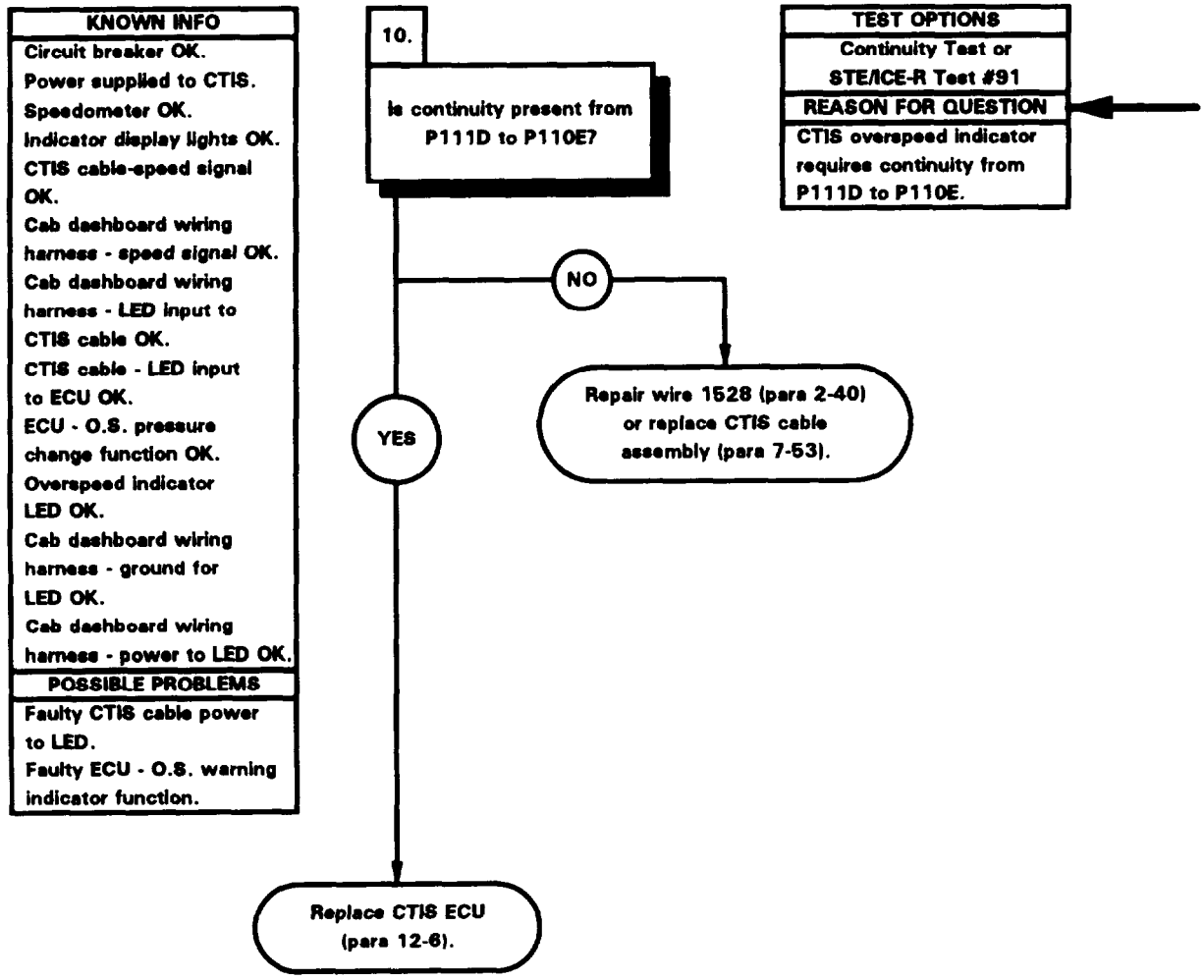


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector PX7-9.
(3) Connect negative (-) probe of multimeter to connector J111D and note reading on multimeter.
(4) If continuity is not present, repair wire 1528 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
(5) Connect lighted indicator display to connector PX7.
(6) Position lighted indicator display in instrument panel assembly with four screws.
(7) Tighten four screws to 6-10 lb-in. (1 N·m).

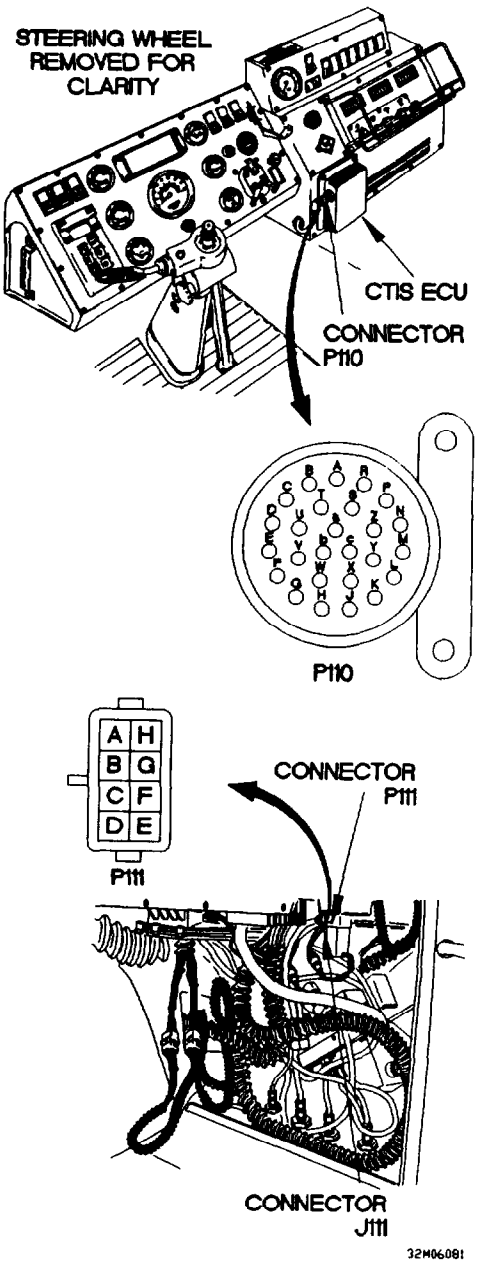




m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)



CONTINUITY TEST
(1) Disconnect connector P110 from CTIS ECU.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector P111D.
(4) Connect negative (-) probe of multimeter to connector P110E and note reading on multimeter.
(5) If continuity is not present, repair wire 1528 (para 2-40) or replace CTIS cable assembly (para 7-53).
(6) If continuity is present, replace CTIS ECU (para 12-6).
(7) Connect connector P110 to CTIS ECU.
(8) Connect connector P111 to connector J111.
(9) Install kick panel (para 16-3).



2-25. AXLE TROUBLESHOOTING

This paragraph covers Axle Troubleshooting. The Axle Fault Index, Table 2-34, lists faults for the axles of the vehicle.

Table 2-34. Axle Fault Index

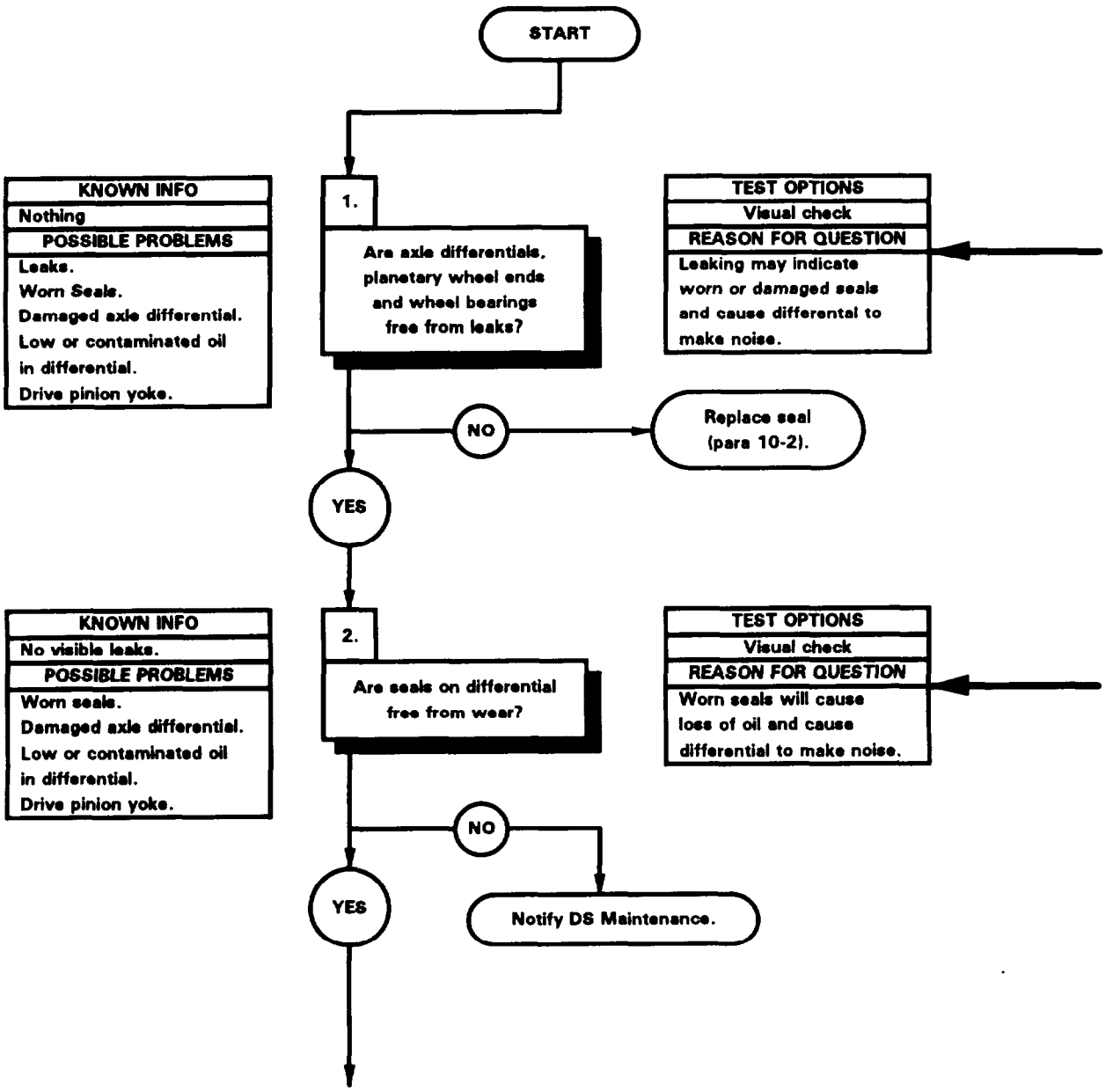
Fault No.	Description	Page
n1.	Axle differential(s) noisy	2-1896

n1. AXLE DIFFERENTIAL(S) NOISY

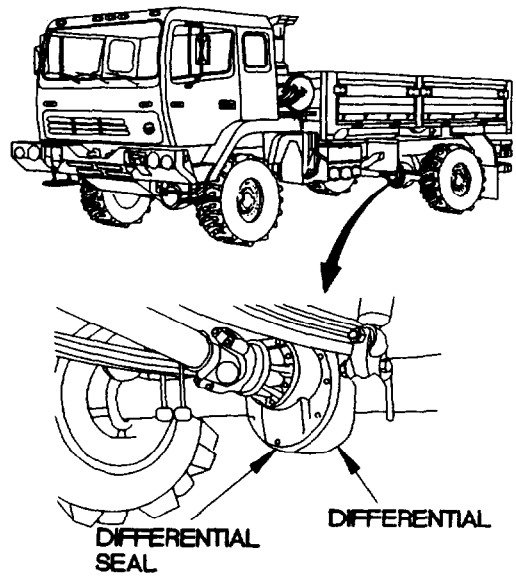
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

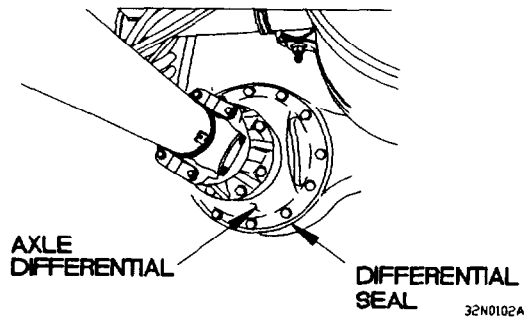
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Pan, Drain (Item 24, Appendix C)



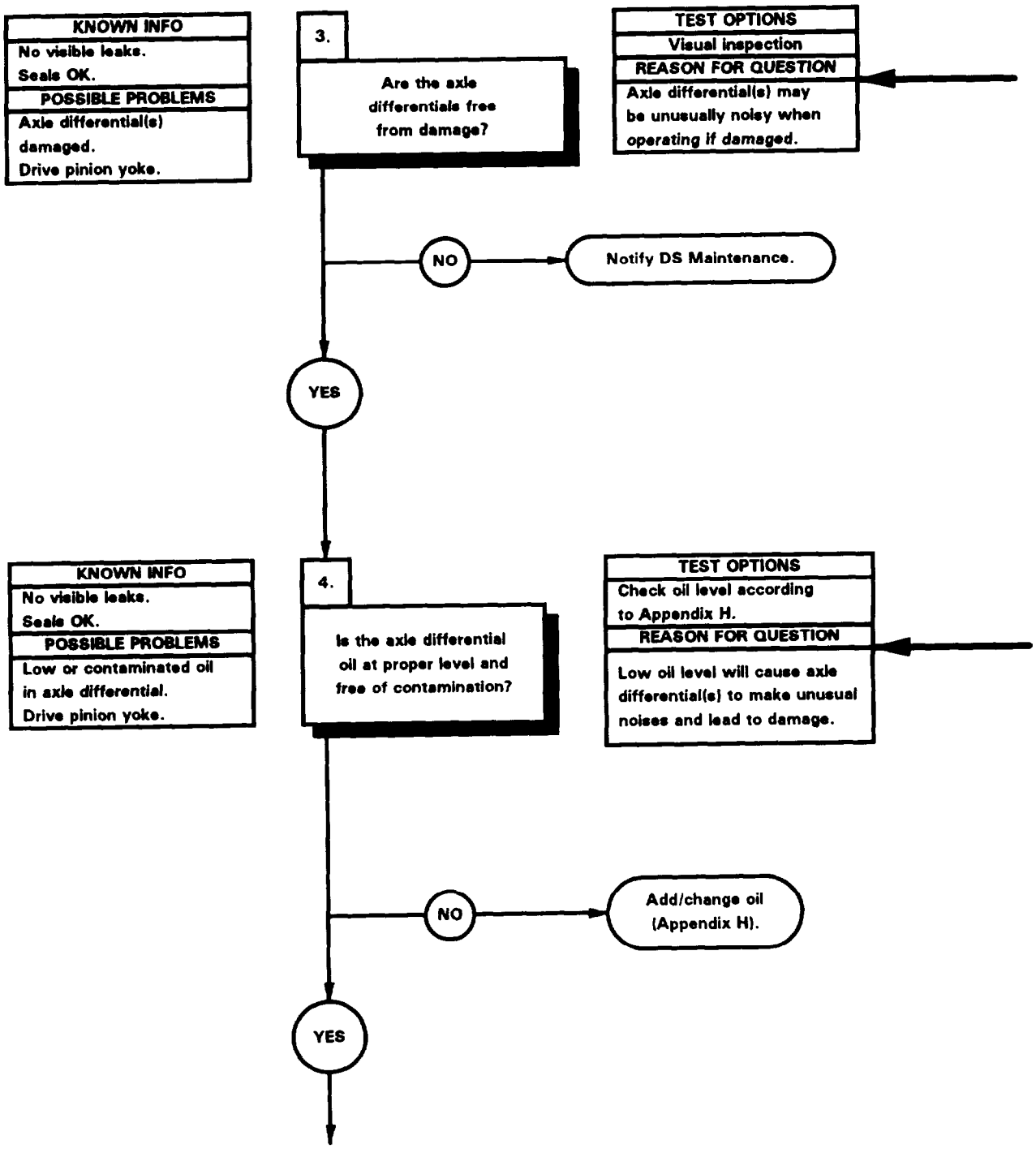
(1) Check differential for leaks.
(2) Check planetary wheel ends for leaks (para 10-2).
(3) Check wheel bearings for leaks (para 10-2).



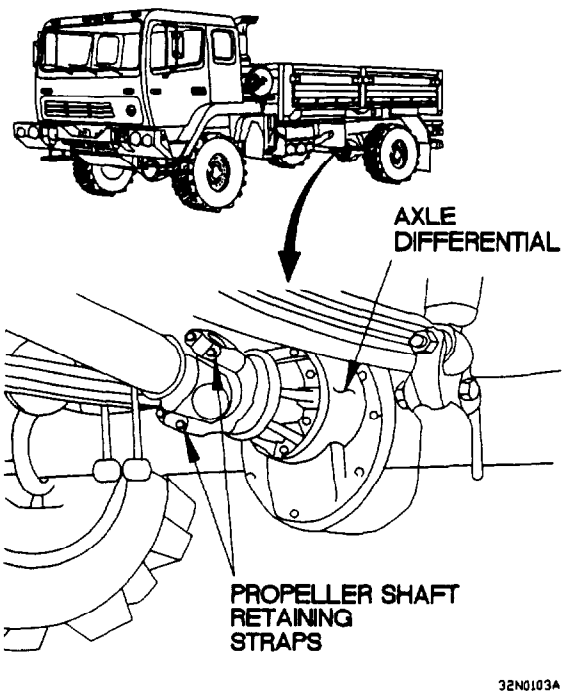
Check seals on axle differential for wear.



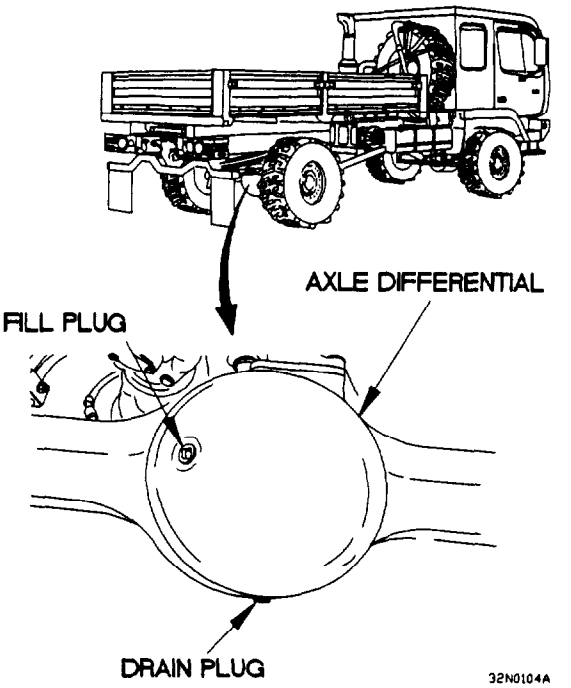
n1. AXLE DIFFERENTIAL(S) NOISY (CONT)



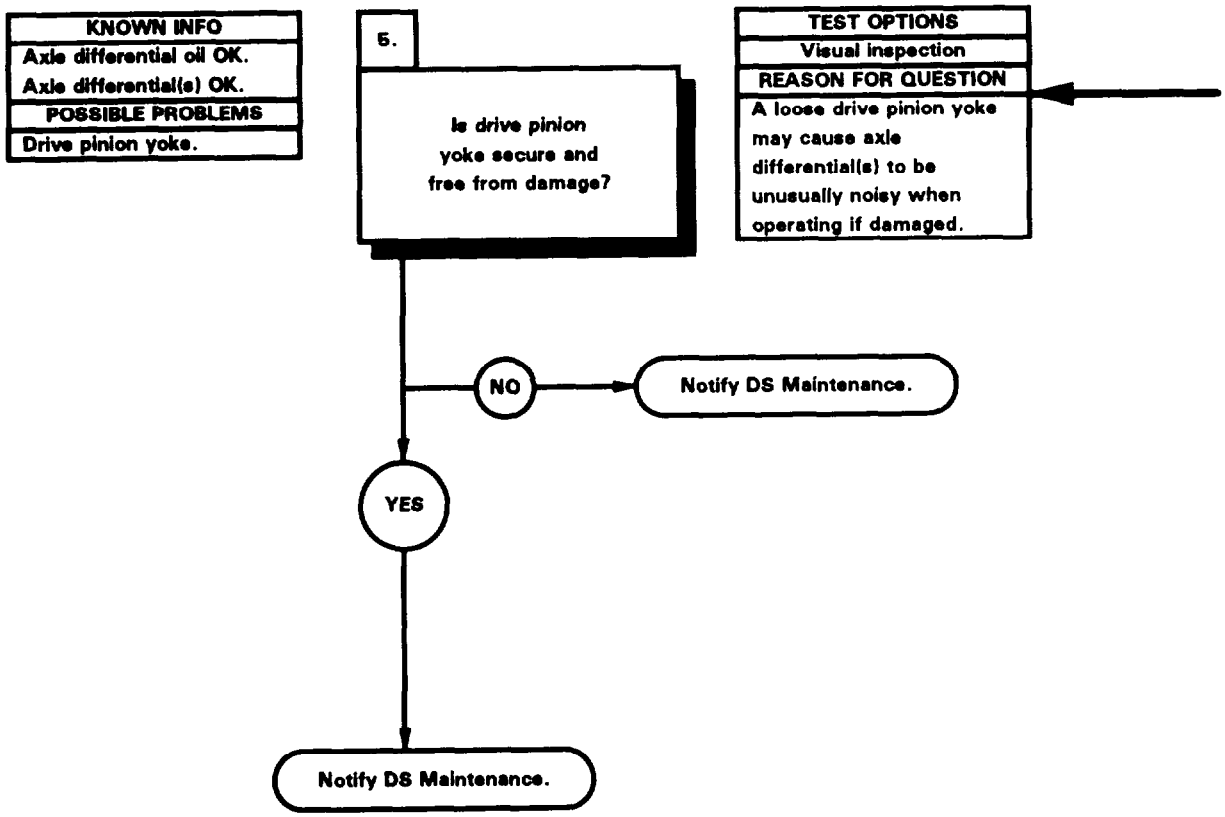
(1) Check axle for loose, missing, or damaged hardware.
(2) Check input and ouput shafts for leaks and damage.
(3) Check for loose propeller shaft universal straps.



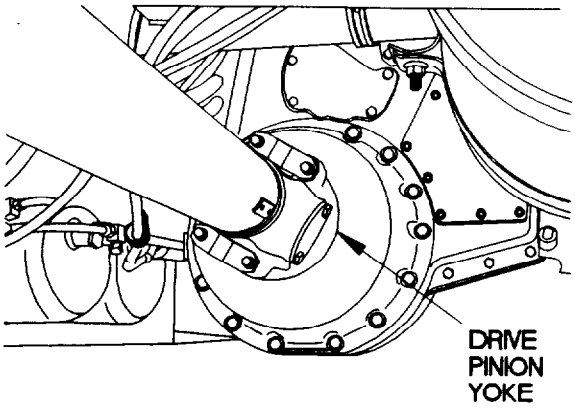
(1) Remove axle differential fill plug.
(2) Insert finger into axle differential to check oil level.
(3) Remove differential drain plug.
(4) Allow differential oil to drain into pan.
(5) Check oil for contamination. If metal chips are present, notify DS maintenance.
(6) Install axle differential drain plug.
(7) Fill differential with oil (Appendix H).
(8) Install axle differential fill plug.



n1. AXLE DIFFERENTIAL(S) NOISY (CONT)



Check drive pinion yoke for looseness, and for missing or damaged hardware.



2-26. STEERING TROUBLESHOOTING

This paragraph covers Steering Troubleshooting. The Steering Fault Index, Table 2-35, lists faults for the steering of the vehicle.

Table 2-35. Steering Fault Index

Fault No.	Description	Page
p1.	Hard to steer	2-1904
p2.	Wanders, pulls to one side, or shimmies	2-1910
p3.	Excessive play when turning steering wheel	2-1916
p4.	No response when turning steering wheel	2-1920

p1. HARD TO STEER

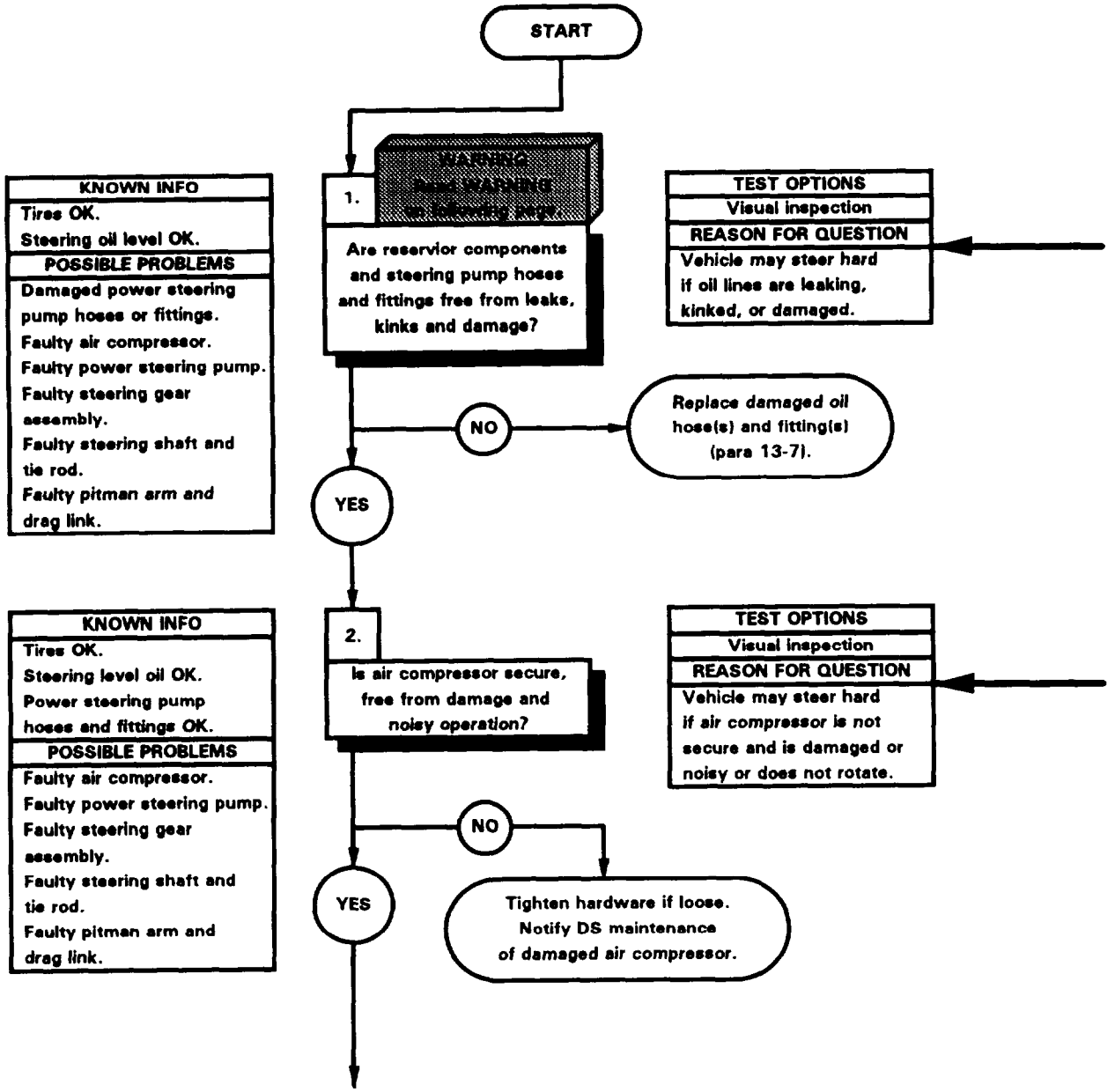
INITIAL SETUP

Equipment Conditions
Engine running (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)

Materials/Parts
Locknut (Item 60, Appendix G)



WARNING

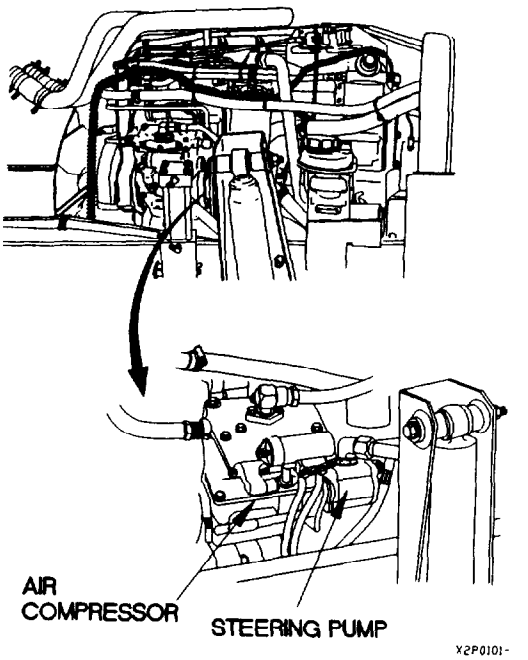
- Engine compartment and its components may be hot to the touch. Extreme care should be taken when checking for leaks in the engine compartment. Failure to comply may result in burns or injury to personnel.
- Engine compartment includes a partially covered fan blade. Extreme care should be taken when working in the engine compartment. Failure to comply may cause injury to personnel.

NOTE

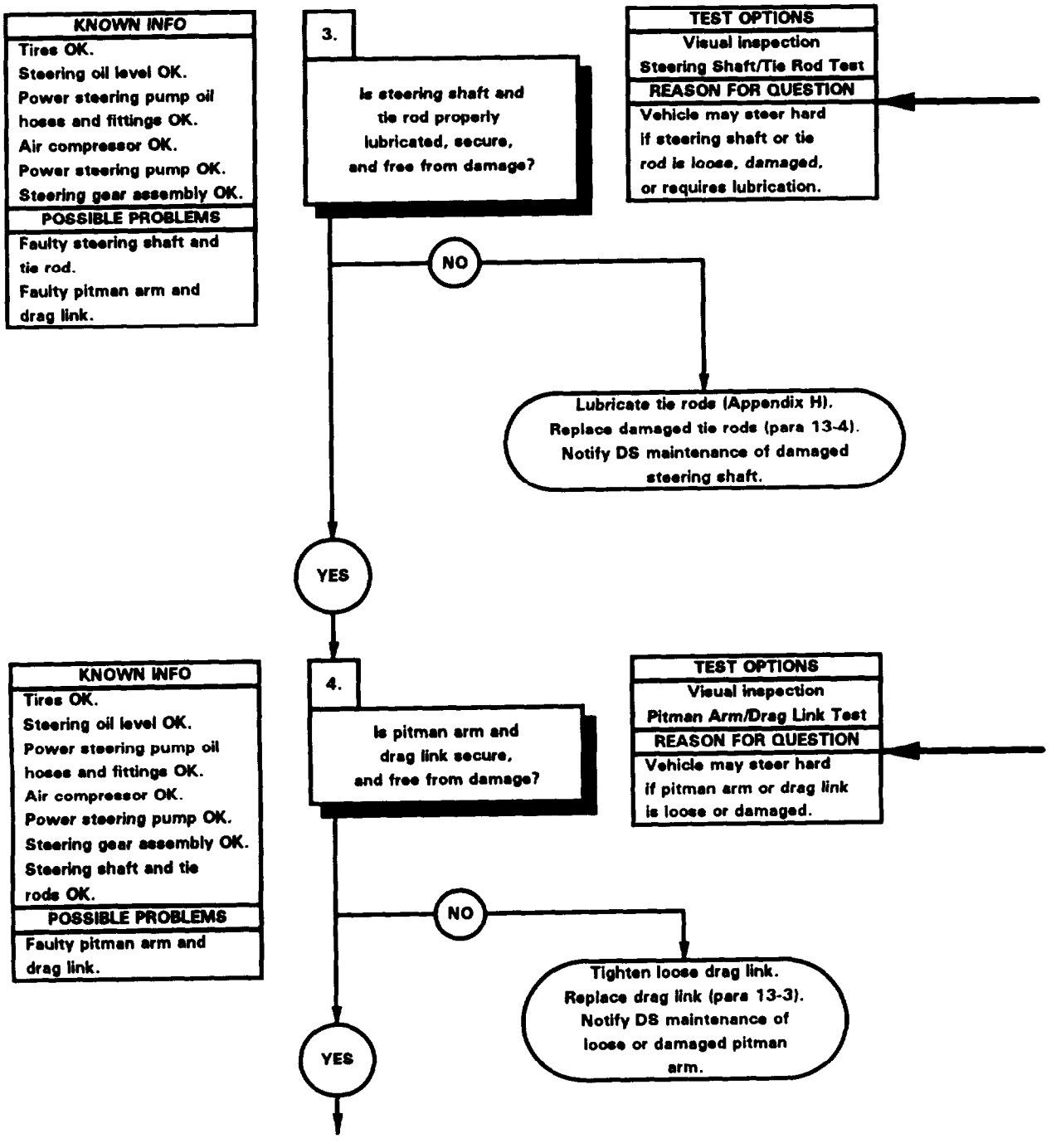
Refer to steering hydraulic hose schematic for steering hose locations.

Check reservoir components and steering hoses and fittings for leakage, kinks and damage.

Check air compressor for loose or missing mounting hardware, damage and noisy operation and rotation.

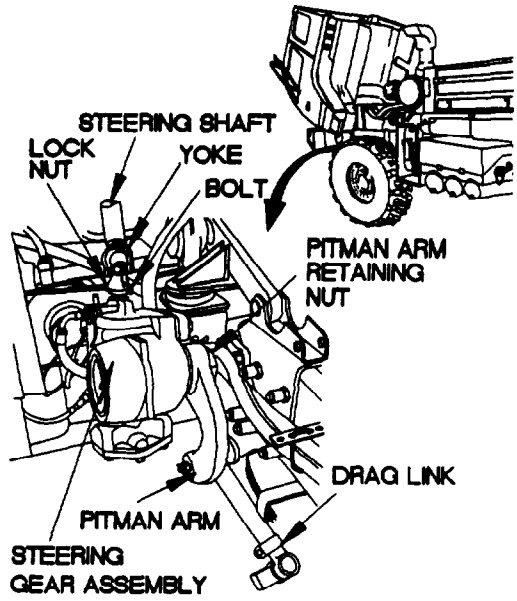


p1. HARD TO STEER (CONT)



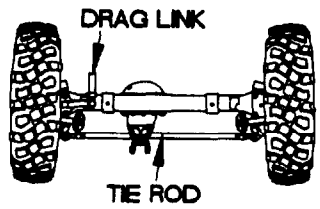
Check steering shaft and tie rod for damage, and loose or missing mounting hardware. Refer to Appendix H to lubricate tie rods.

STEERING SHAFT/TIE ROD TEST
(1) Grasp steering shaft to ensure there is no up and down play.
(2) Grasp tie rod to ensure there is no up and down or left and right play.



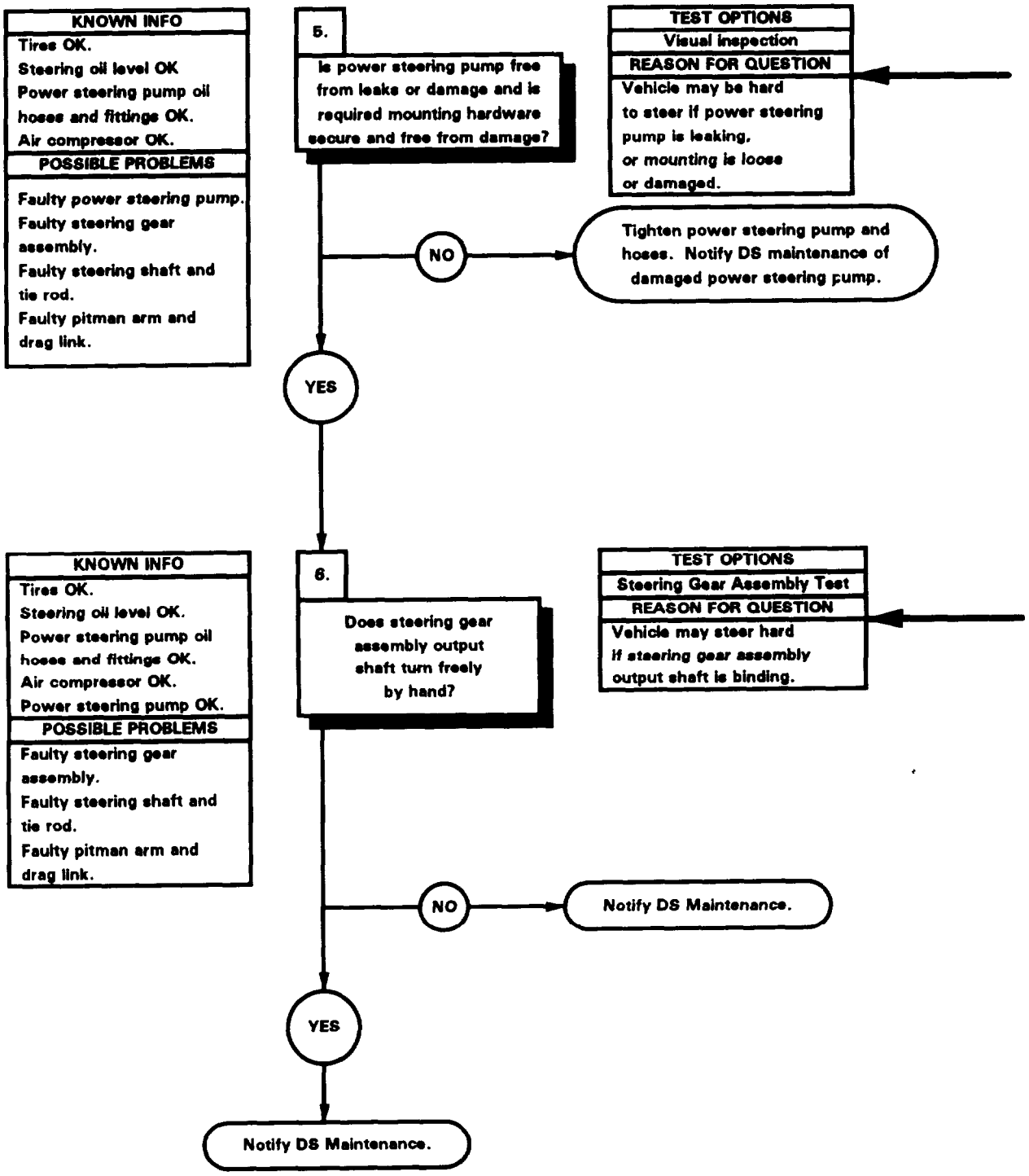
Check pitman arm and drag link for damage, and loose or missing mounting hardware.

PITMAN ARM/DRAG LINK TEST
(1) Check nut securing pitman arm to steering gear assembly. Ensure there is no play.
(2) Grasp drag link and ensure there is no play left and right or up and down.
(3) Check for loose bolts, nuts, and clamps on drag link.

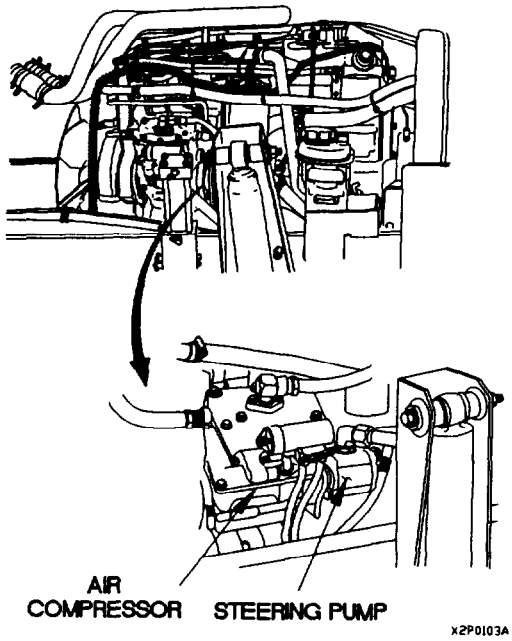


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p1. HARD TO STEER (CONT)



(1) Check power steering pump for leaks, and for loose, missing, or damaged mounting hardware.
(2) Lower cab (TM 9-2320-365-10).
(3) Shut down engine (TM 9-2320-365-10).
(4) Raise cab (TM 9-2320-365-10).

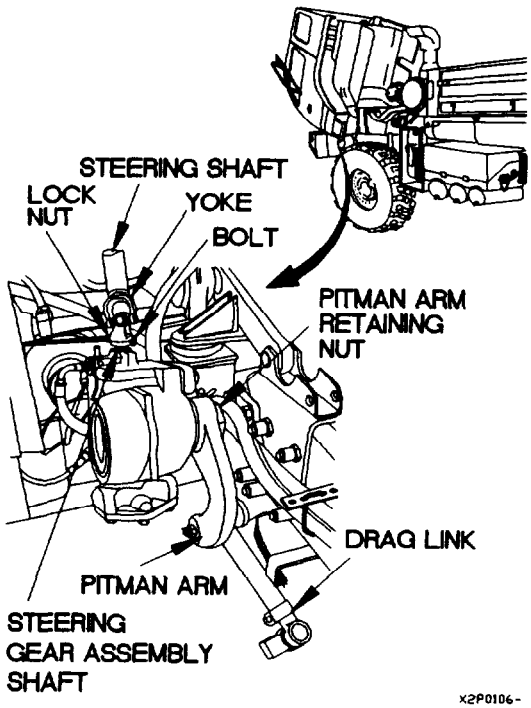


NOTE

An alignment mark shall be marked on yoke and steering gear assembly to ensure ease during installation.

STEERING GEAR TEST

(1) Remove bolt and self-locking nut from lower yoke of steering gear arm. Discard self-locking nut.
(2) Remove yoke from top steering gear assembly shaft.
(3) Remove drag link (para 13-3).
(4) Turn top steering gear assembly shaft to check for binding and proper output. Notify DS maintenance if steering gear assembly fails to turn smoothly or if it binds when top shaft is turned.
(5) Install drag link (para 13-3).
(6) Position yoke onto top steering gear assembly shaft.
(7) Install bolt and self-locking nut into yoke to secure yoke to top steering gear assembly shaft.

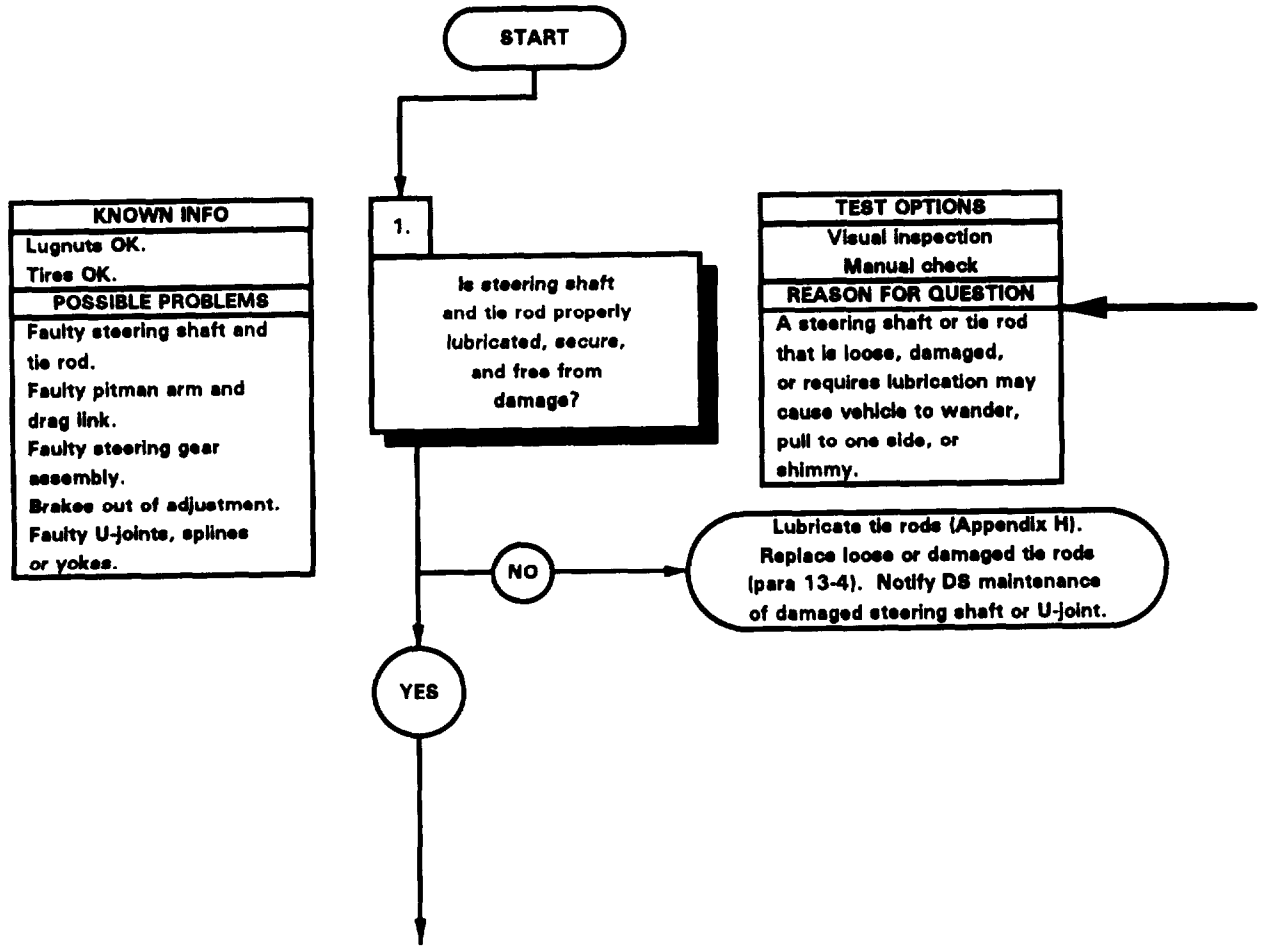


p2. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES

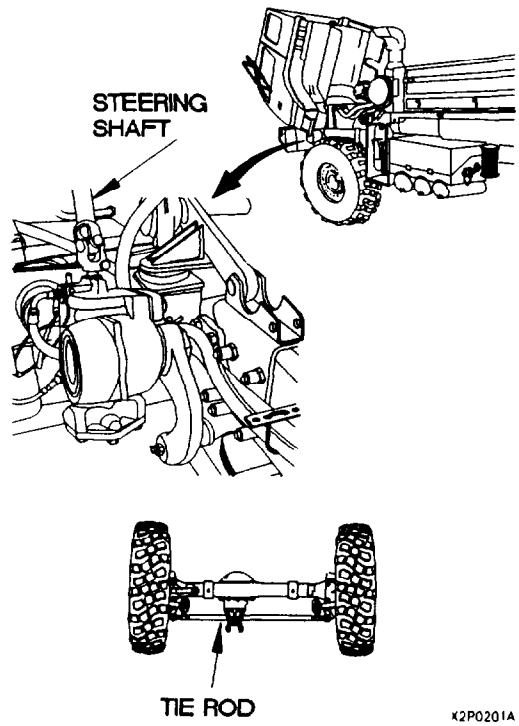
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

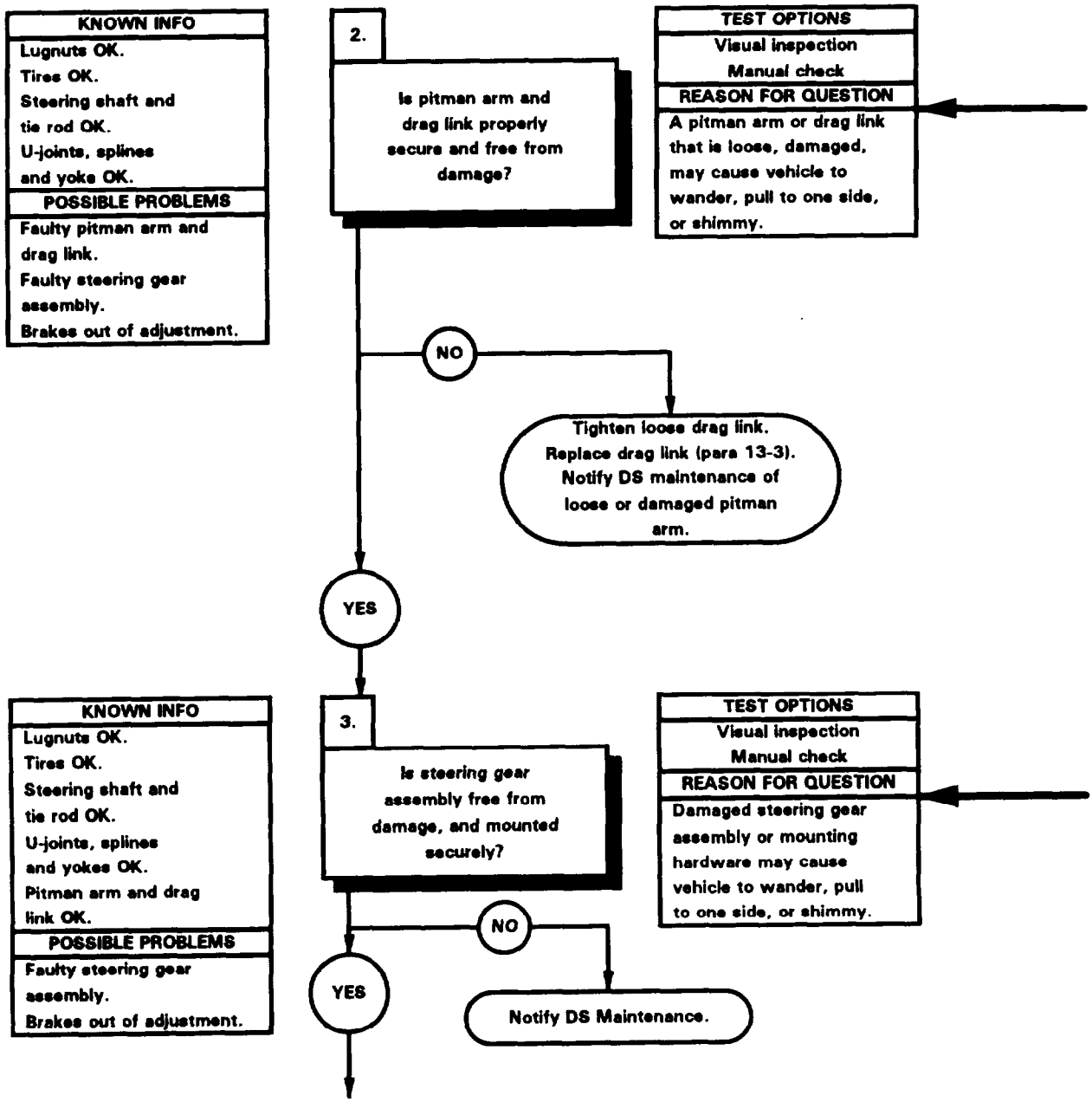
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)



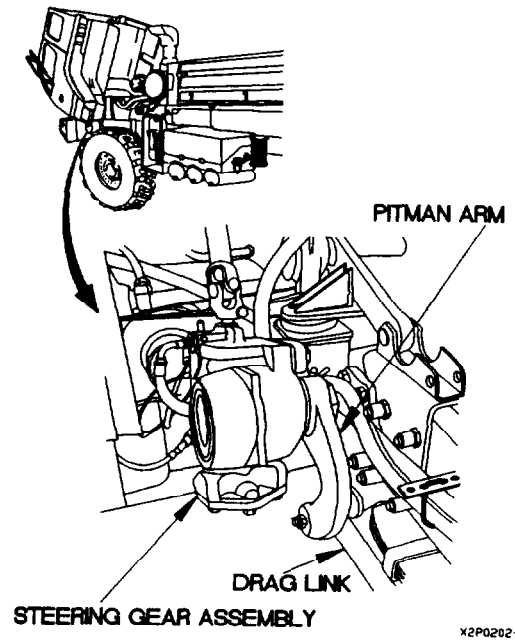
(1) Raise cab (TM 9-2320-365-10).
(2) Check steering shaft and tie rods for damage, and loose or missing mounting hardware. Refer to Appendix H to lubricate tie rods.
(3) Grasp the steering gear shaft and ensure there is no up and down play.
(4) Grasp the tie rod and ensure there is no up and down or sideways play.



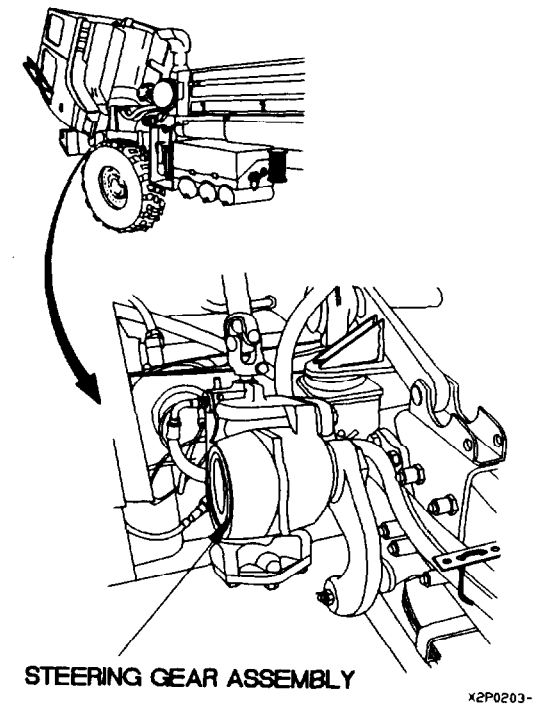
p2. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



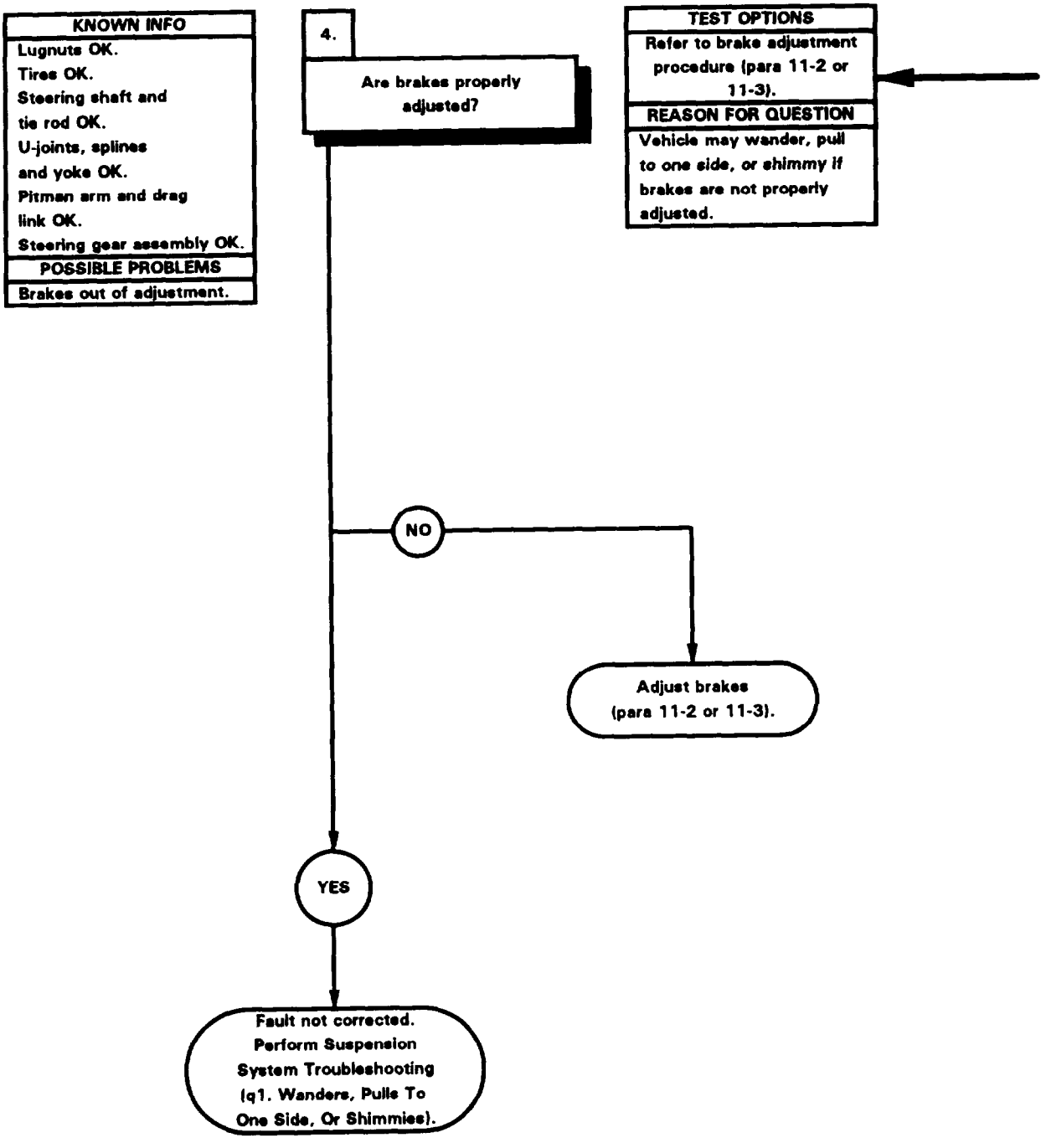
(1) Check pitman arm and drag link for damage, and loose or missing mounting hardware.
(2) Grasp pitman arm and ensure it and drag link are free of play.

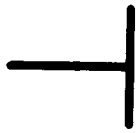


(1) Check steering gear assembly for damage, and loose or missing mounting hardware.
(2) Lower cab (TM 9-2320-365-10).



p2. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)





Refer to para 11-2 or 11-3 to adjust brakes.

p3. EXCESSIVE PLAY WHEN TURNING STEERING WHEEL

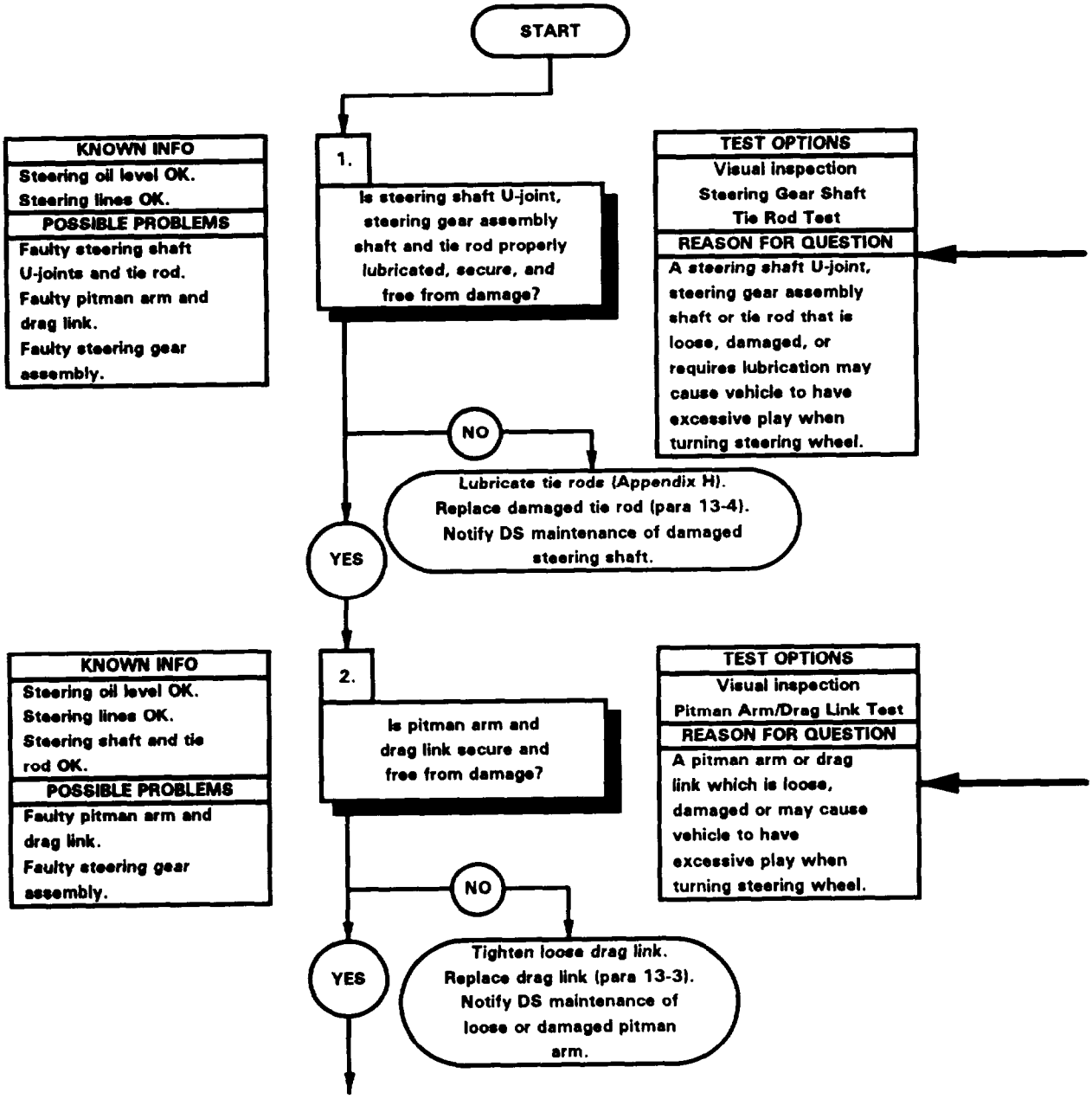
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab raised (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)

Materials/Parts
Locknut (Item 60, Appendix G)



Check steering shaft U-joint, steering gear assembly shafts, and tie rod for damage and loose or missing mounting hardware. Refer to Appendix H to lubricate tie rods.

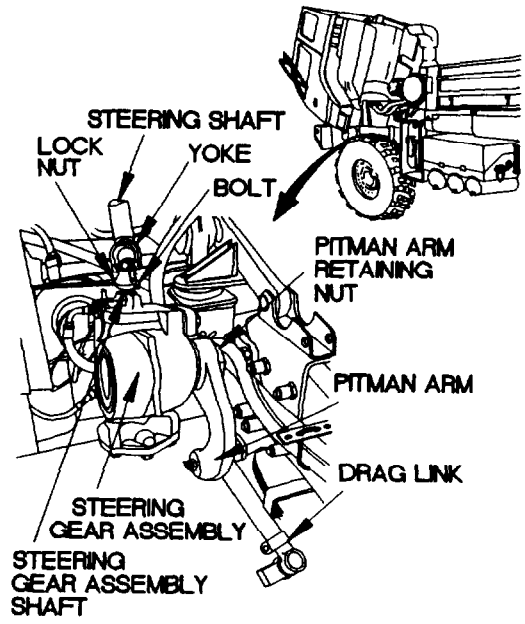
NOTE

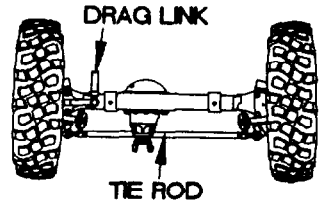
An aligment mark shall be used on yoke and steering gear assembly to ensure ease during installation.

STEERING GEAR SHAFT TIE ROD TEST
(1) Grasp steering shaft and ensure there is no up and down play.
(2) Remove self-locking nut and bolt securing yoke of top steering shaft to steering gear assembly shaft. Discard self-locking nut.
(3) Remove yoke from top steering gear assembly shaft.
(4) Ensure spline shaft of steering gear assembly and yoke of steering shaft are not damaged.
(5) Grasp tie rod and ensure there is no up and down or left or right play.

Check pitman arm and drag link for damage and loose or missing mounting hardware.

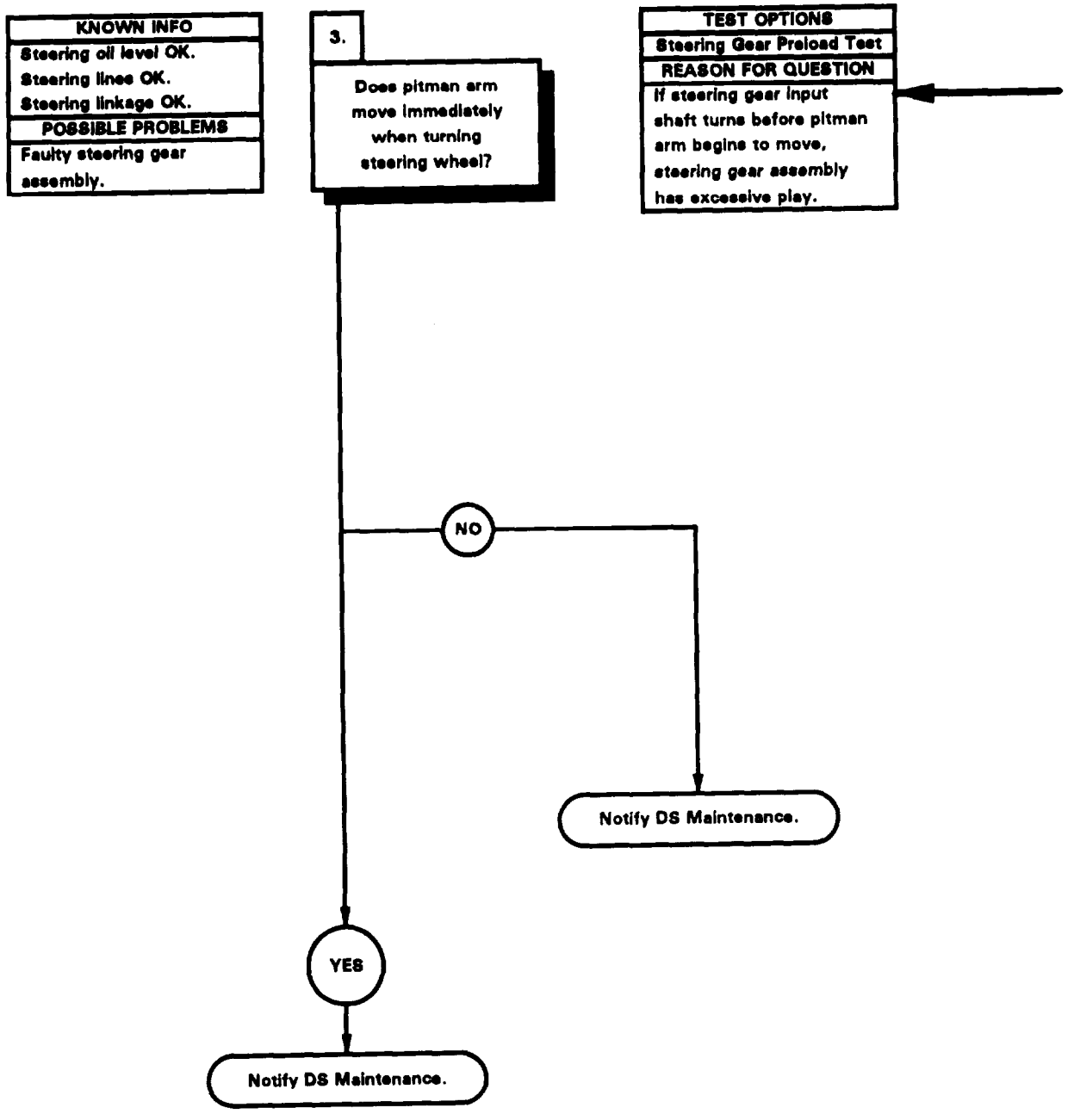
PITMAN ARM/DRAG LINK TEST
(1) Check nut securing pitman arm to steering gear assembly. Ensure there is no play.
(2) Grasp drag link and ensure there is no play left or right and up or down.
(3) Check for loose bolts, nuts, and clamps on drag link.





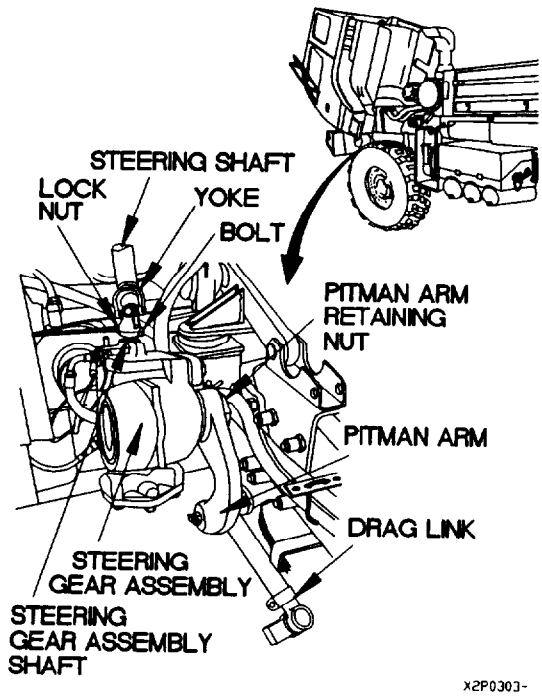
X2P0301-

p3. EXCESSIVE PLAY WHEN TURNING STEERING WHEEL (CONT)



STEERING GEAR PRELOAD TEST

(1) Remove drag link (para 13-3).
(2) Pull pitman arm back and forth to check for binding and proper output. If pitman arm fails to turn smoothly or if it binds and top shaft does not turn immediately, steering gear assembly is damaged.
(3) Install drag link (para 13-3).
(4) Position yoke onto top steering gear assembly shaft.
(5) Install bolt and self-locking nut onto yoke to secure yoke to top steering gear assembly shaft.
(6) Lower cab (TM 9-2320-365-10).



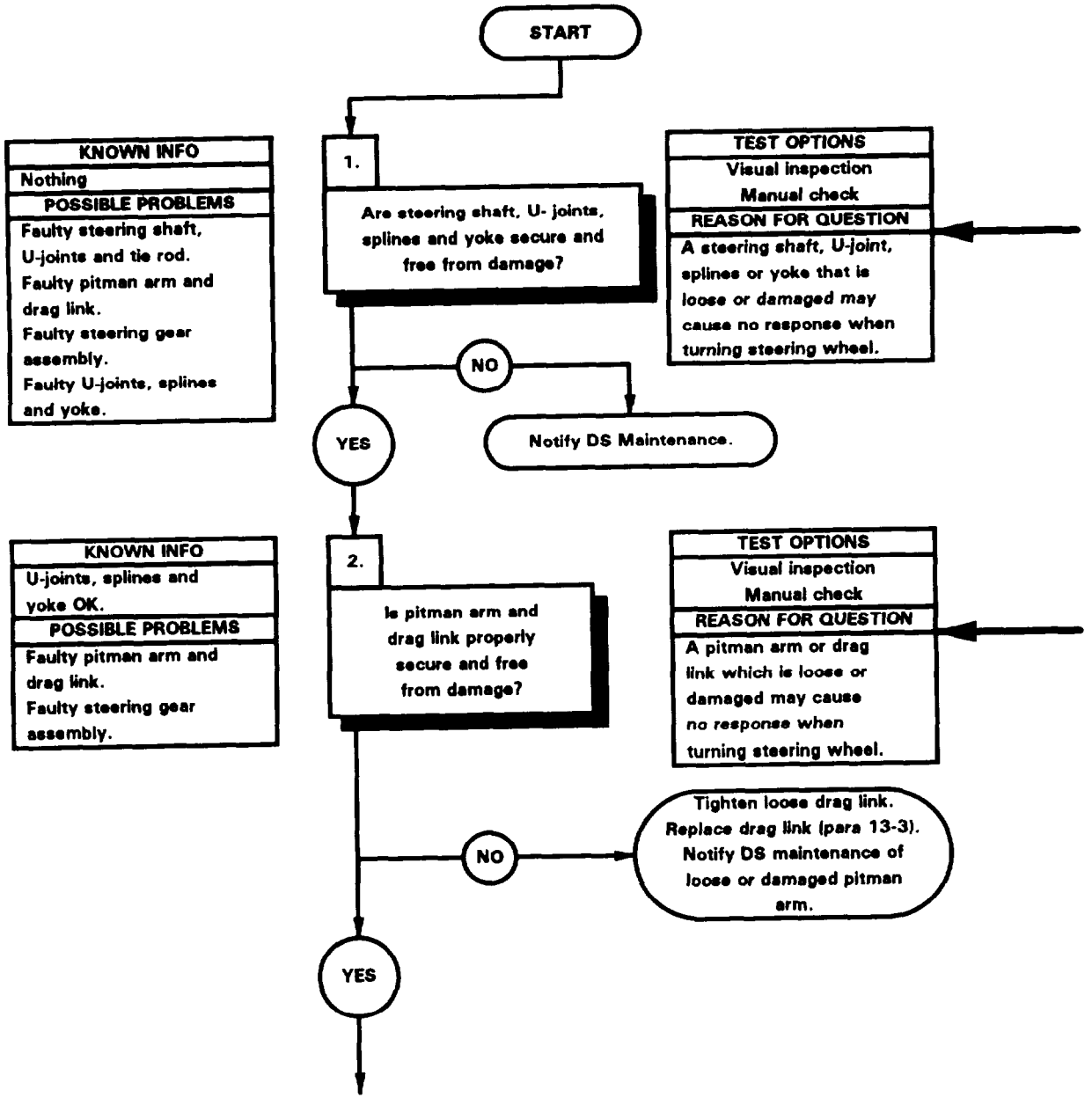
p4. NO RESPONSE WHEN TURNING STEERING WHEEL

INITIAL SETUP

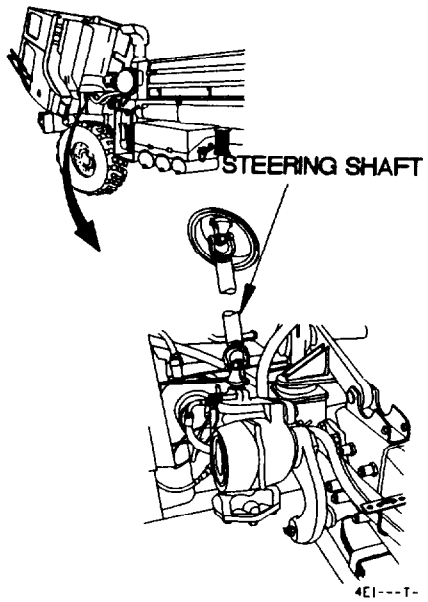
Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab raised (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 43, Appendix C)

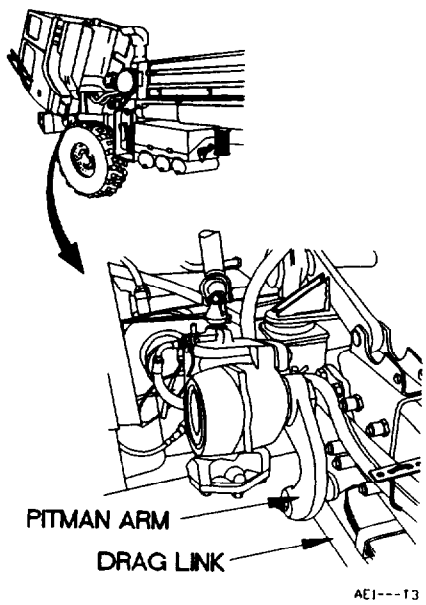
Materials/Parts
Locknut (Item 63, Appendix G)



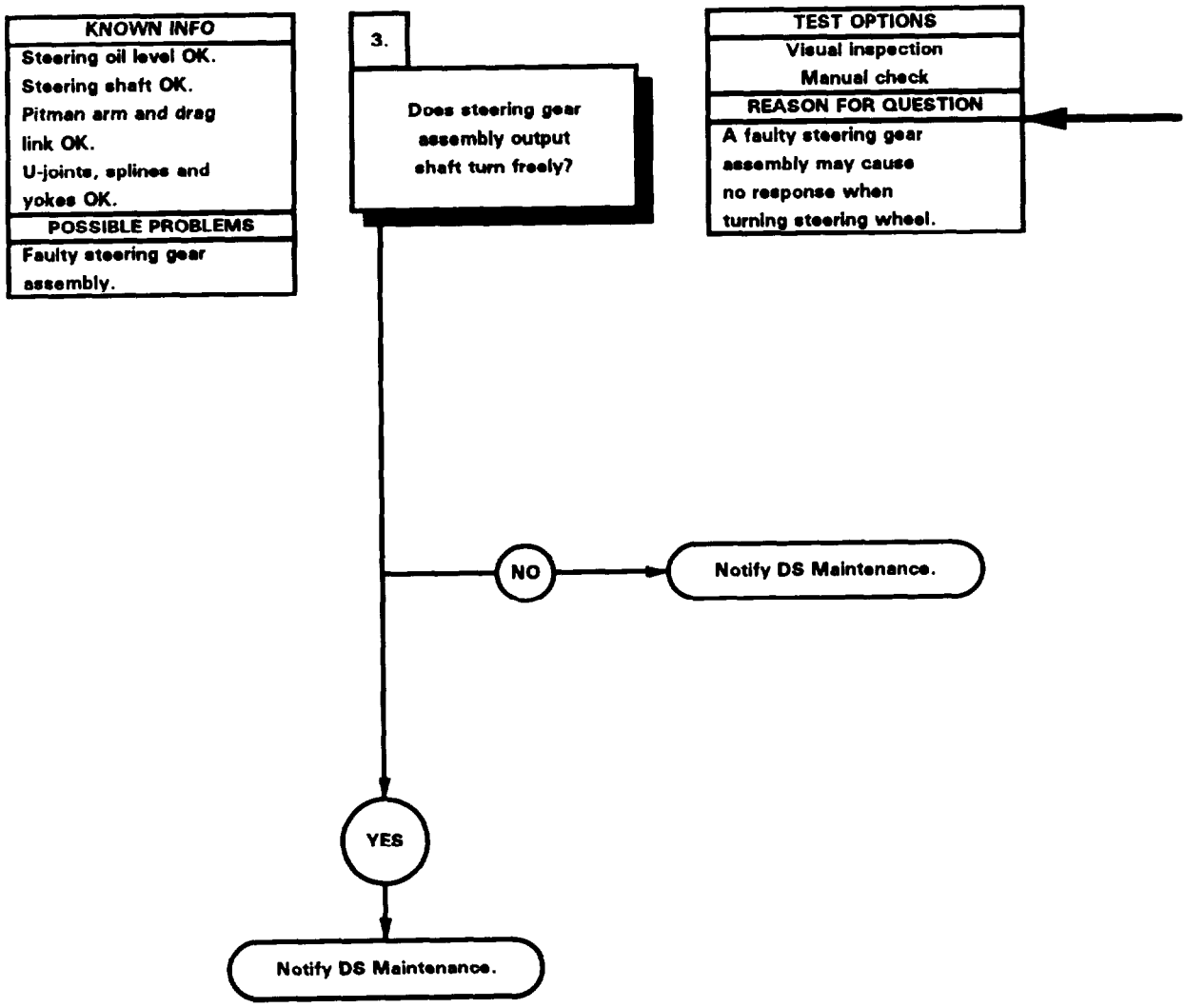
(1) Raise cab (TM 9-2320-365-10).
(2) Check steering shaft for looseness and damage.
(3) Grasp steering shaft and ensure it is free of play.
(4) Repeat step (3) while observing yoke, U-joint and locknuts.



(1) Check pitman arm and drag link for damage and loose or missing mounting hardware.
(2) Grasp pitman arm and ensure it and drag link are free of play.



p4. NO RESPONSE WHEN TURNING STEERING WHEEL (CONT)

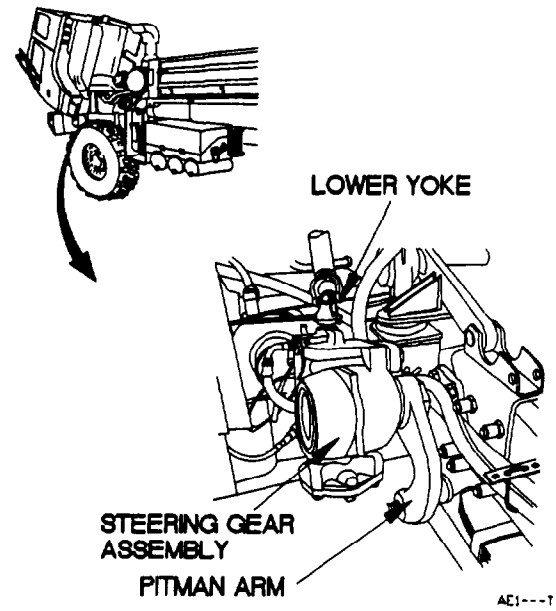


NOTE

An alignment mark shall be made on yoke and steering gear assembly shaft prior to disassembly to ensure proper alignment during installation.

STEERING GEAR TEST

(1) Remove bolt and locknut from lower yoke of steering gear arm. Discard locknut.
(2) Remove yoke from top steering gear assembly shaft.
(3) Remove drag link (para 13-3).
(4) Turn pitman arm to check for binding and proper output. Notify DS maintenance if steering gear assembly fails to turn smoothly or if it binds when top shaft is turned.
(5) Install drag link (para 13-3).
(6) Position yoke on to steering gear assembly.
(7) Install bolt and locknut into yoke to top steering gear assembly shaft.
(8) Lower cab (TM 9-2320-365-10).



2-27. SUSPENSION SYSTEM TROUBLESHOOTING

This paragraph covers Suspension System Troubleshooting. The Suspension System Fault index, Table 2-36, lists faults for the suspension system of the vehicle.

Table 2-36. Suspension System Fault Index

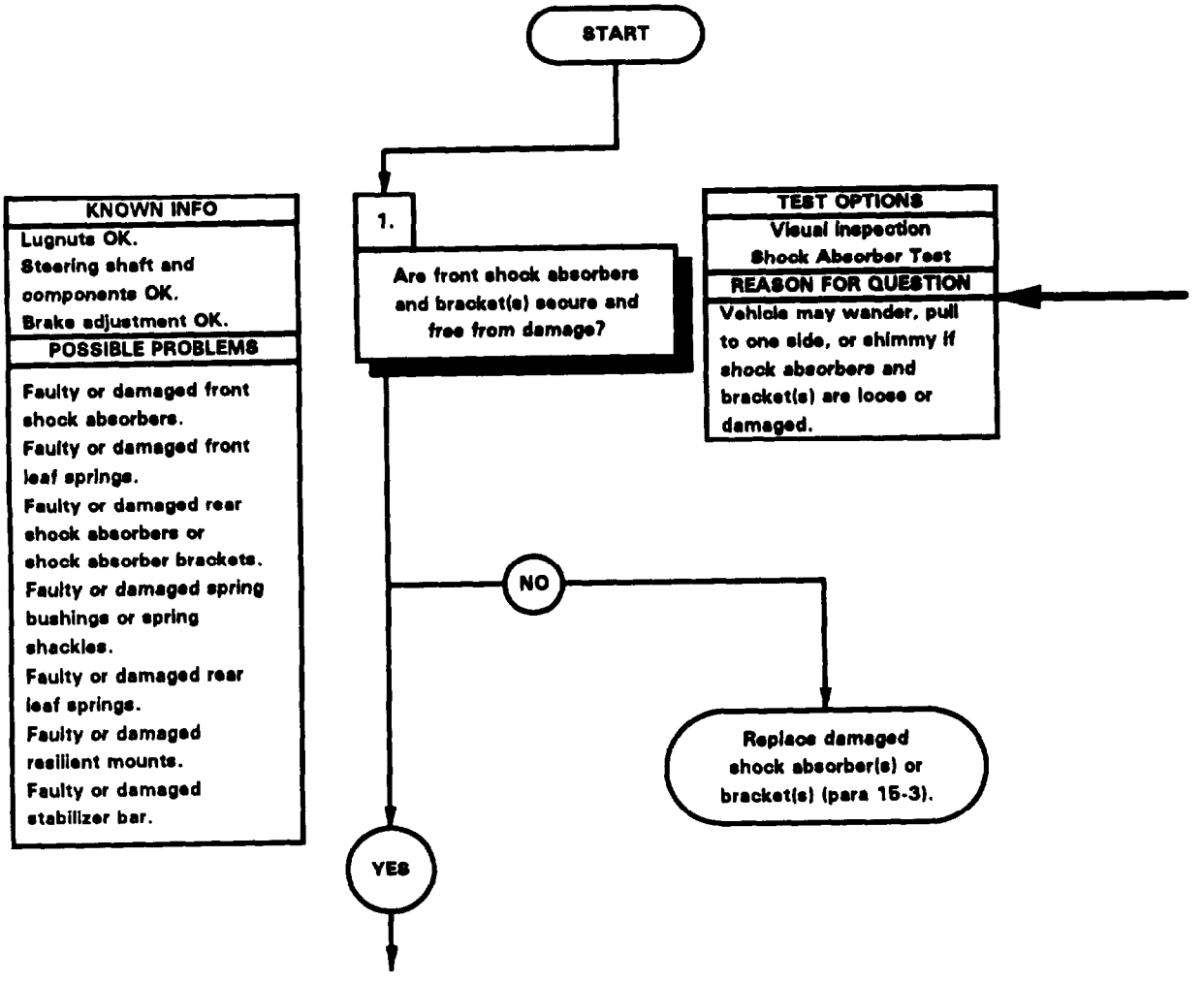
Fault No.	Description	Page
q1.	Wanders, pulls tooneside, or shimmies	2-1926
q2.	Leans to one side or rear of vehicle sags	2-1940

q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Iron, Tire (Item 20, Appendix C)

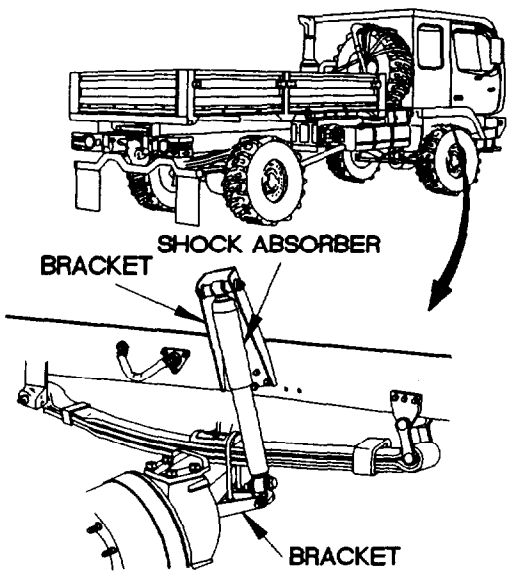


NOTE

Perform Steering System Troubleshooting (p2, Wanders, Pulls To One Side, Or Shimmies) before starting the steps given below.

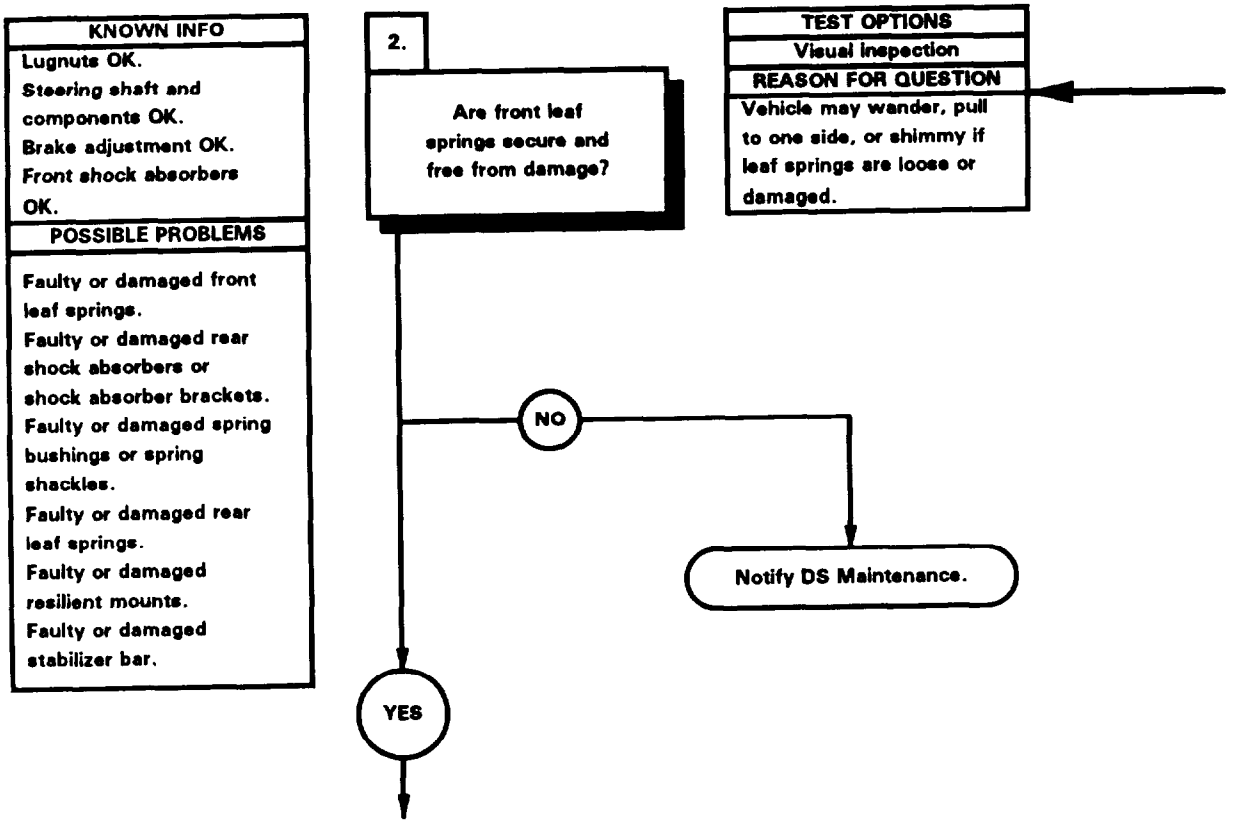
(1) Check shock absorbers for damage or leaks, and for missing mounting hardware.
(2) Check shock absorbers bushings for movement.
(3) Check shock absorber brackets for damage and for missing mounting hardware.

SHOCK ABSORBER TEST
(1) Grasp shock absorber and ensure there is no excessive play.
(2) Replace worn bushings.

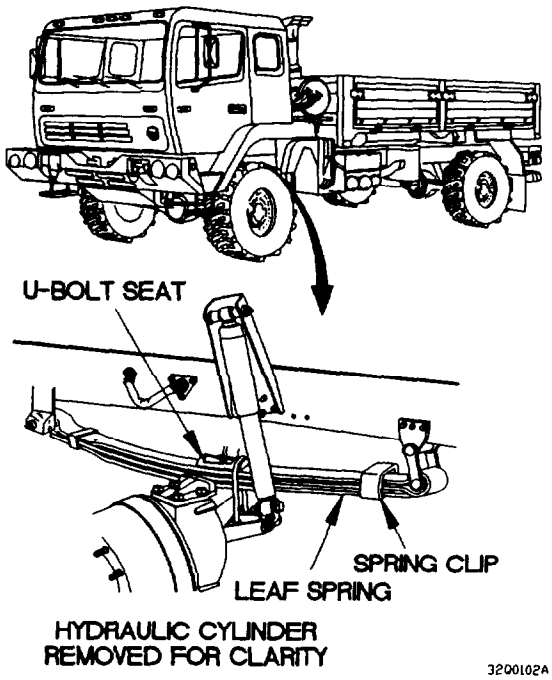


3200101A

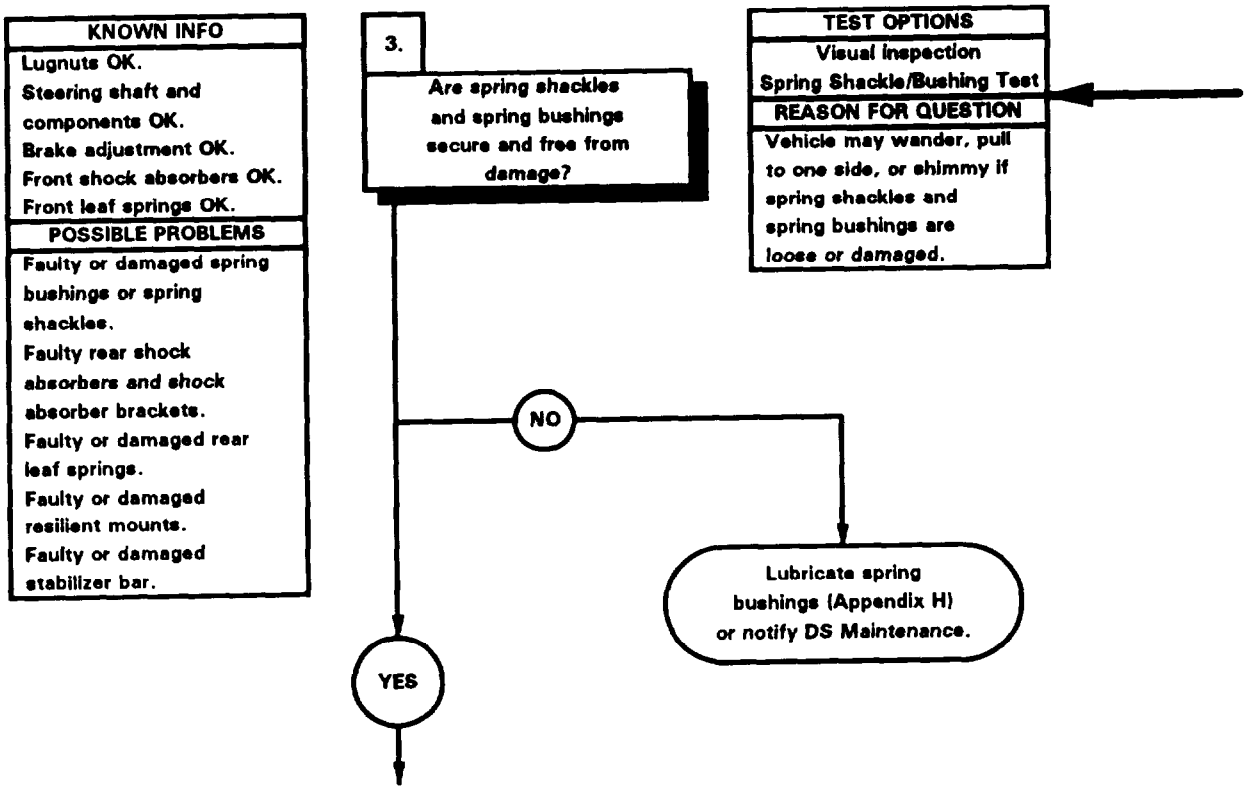
q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



(1) Check leaf springs for cracked or broken leaves or missing spring clips and U-bolts.
(2) Check seats for looseness or damage.

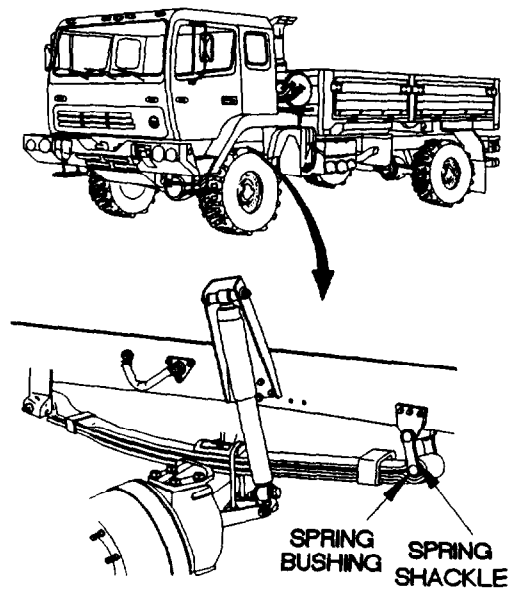


q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



Check spring shackles and spring bushings for damage and for missing mounting hardware. Refer to Appendix H for lubrication of spring bushings.

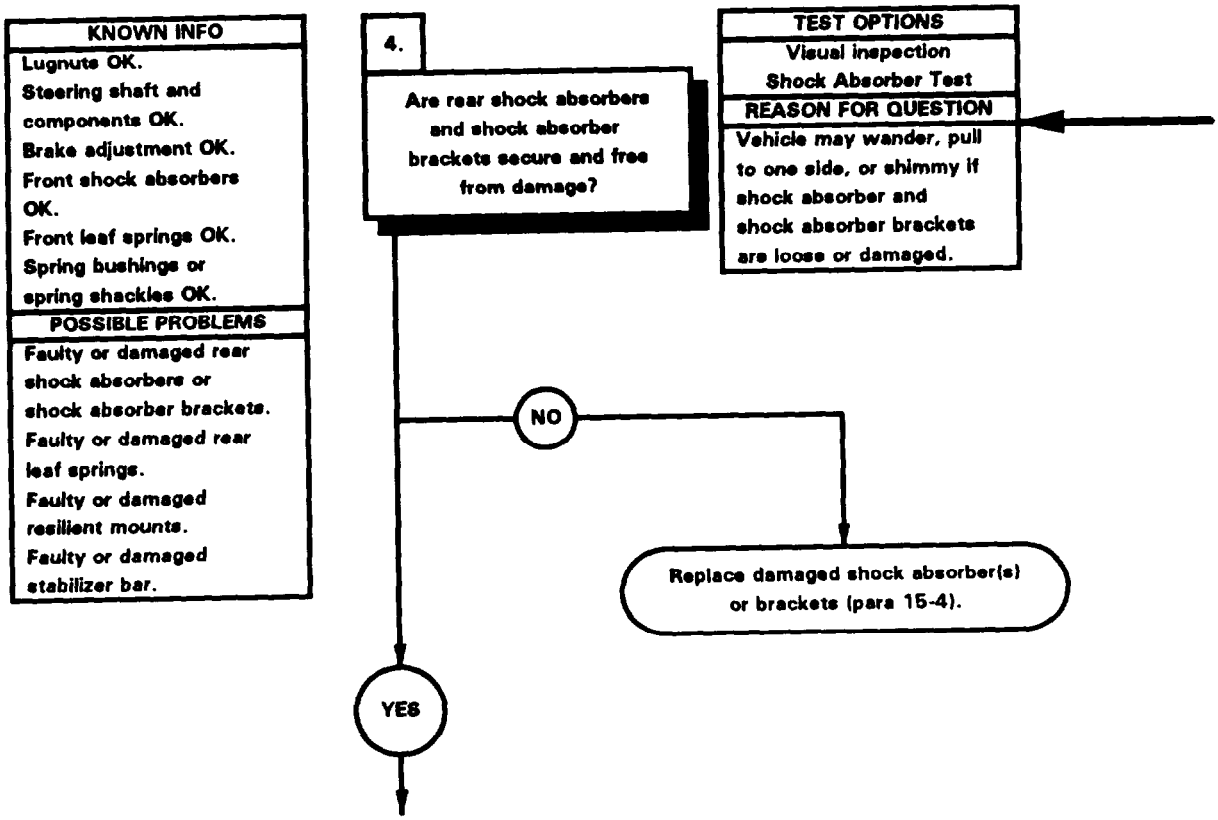
SPRING SHACKLE/BUSHING TEST
(1) Position tire iron between spring assembly and frame.
(2) Pry up and down and ensure there is no movement.
(3) Shackles or bushings are damaged if movement occurs.



HYDRAULIC CYLINDER REMOVED FOR CLARITY

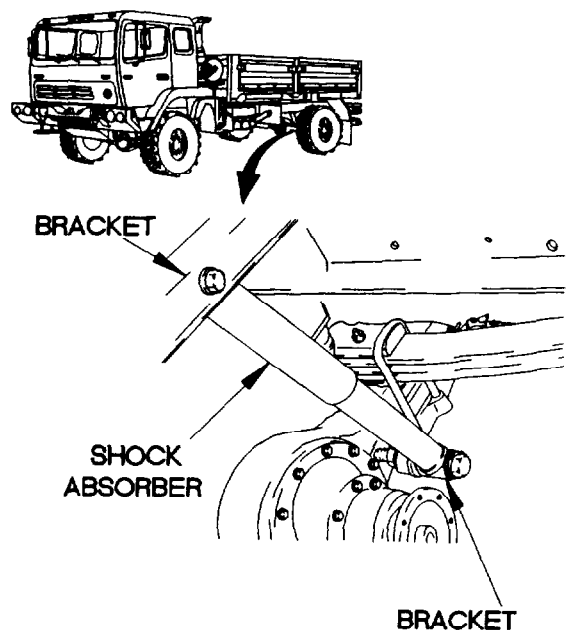
3200103A

q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



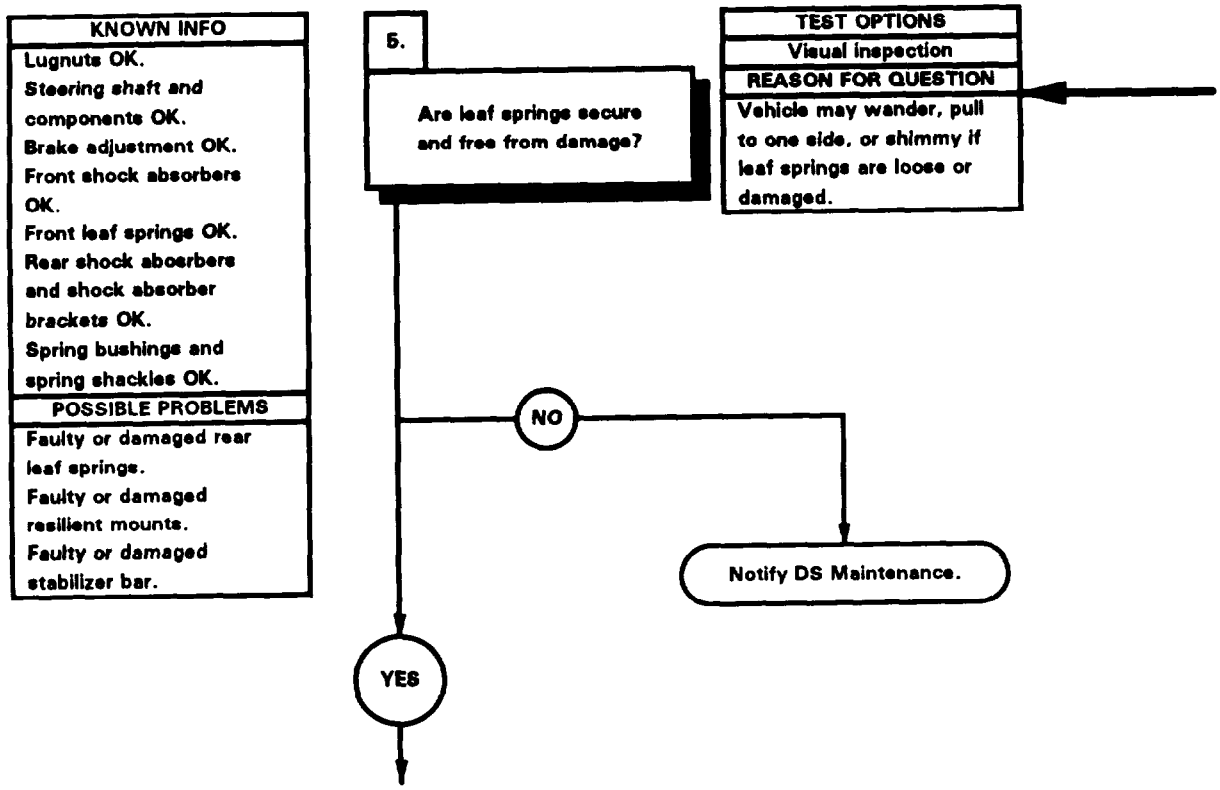
(1) Check shock absorbers for damage or leaks, and for missing mounting hardware.
(2) Check shock absorber brackets for damage and for missing mounting hardware.
(3) Check shock absorber bushings for movement.

SHOCK ABSORBER TEST
(1) Grasp shock absorber and ensure there is no excessive play.
(2) Replace worn bushings.

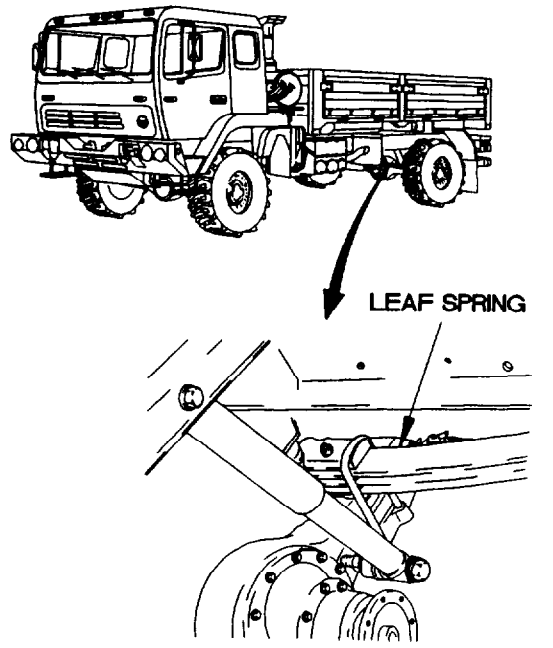


3200104A

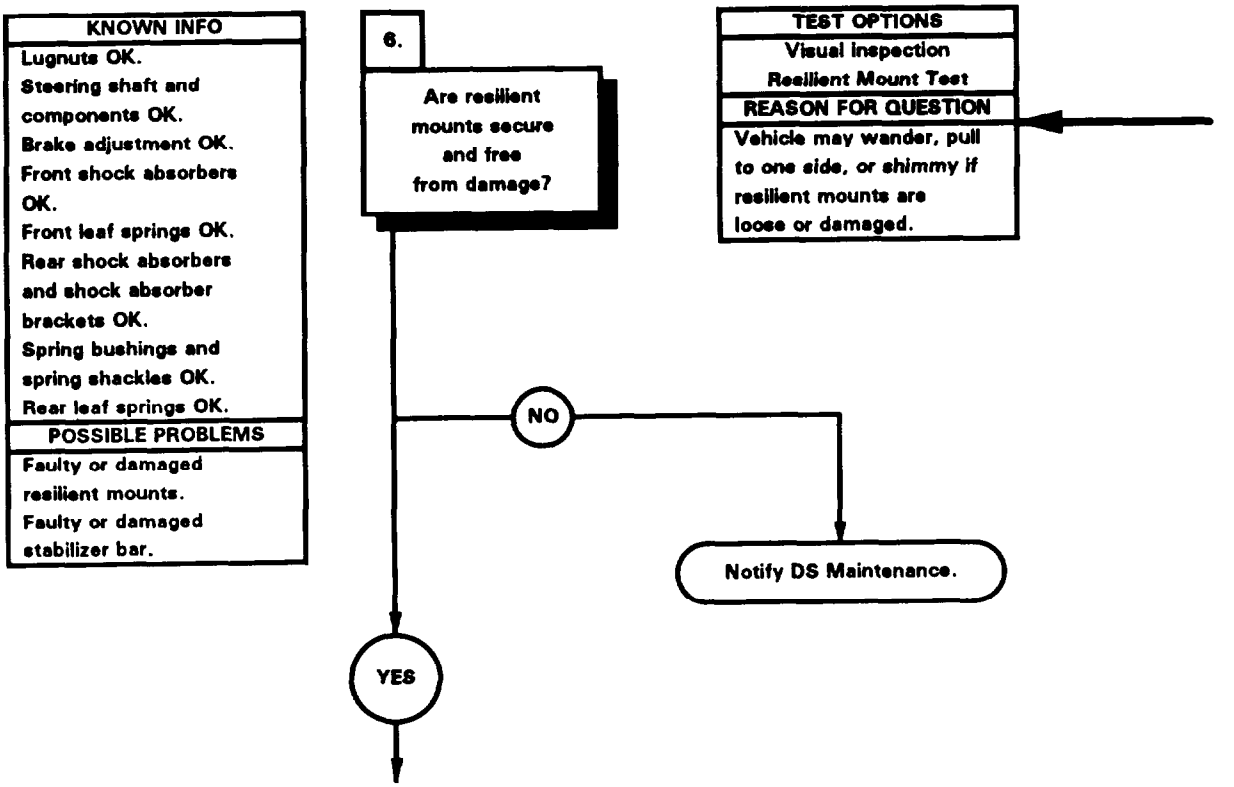
q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



Check rear leaf springs for damage and for missing mounting hardware.

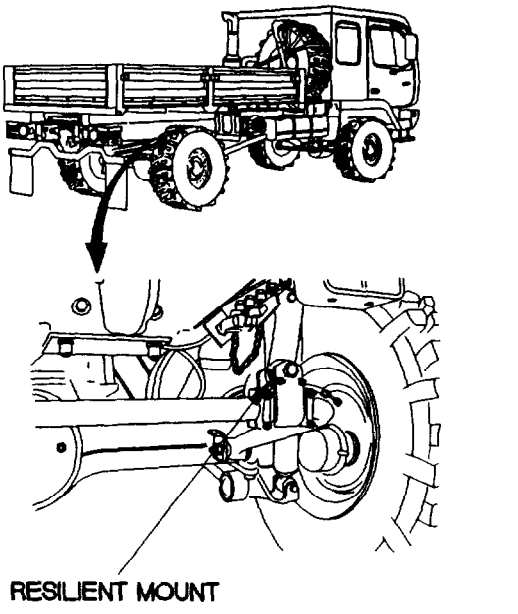


q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



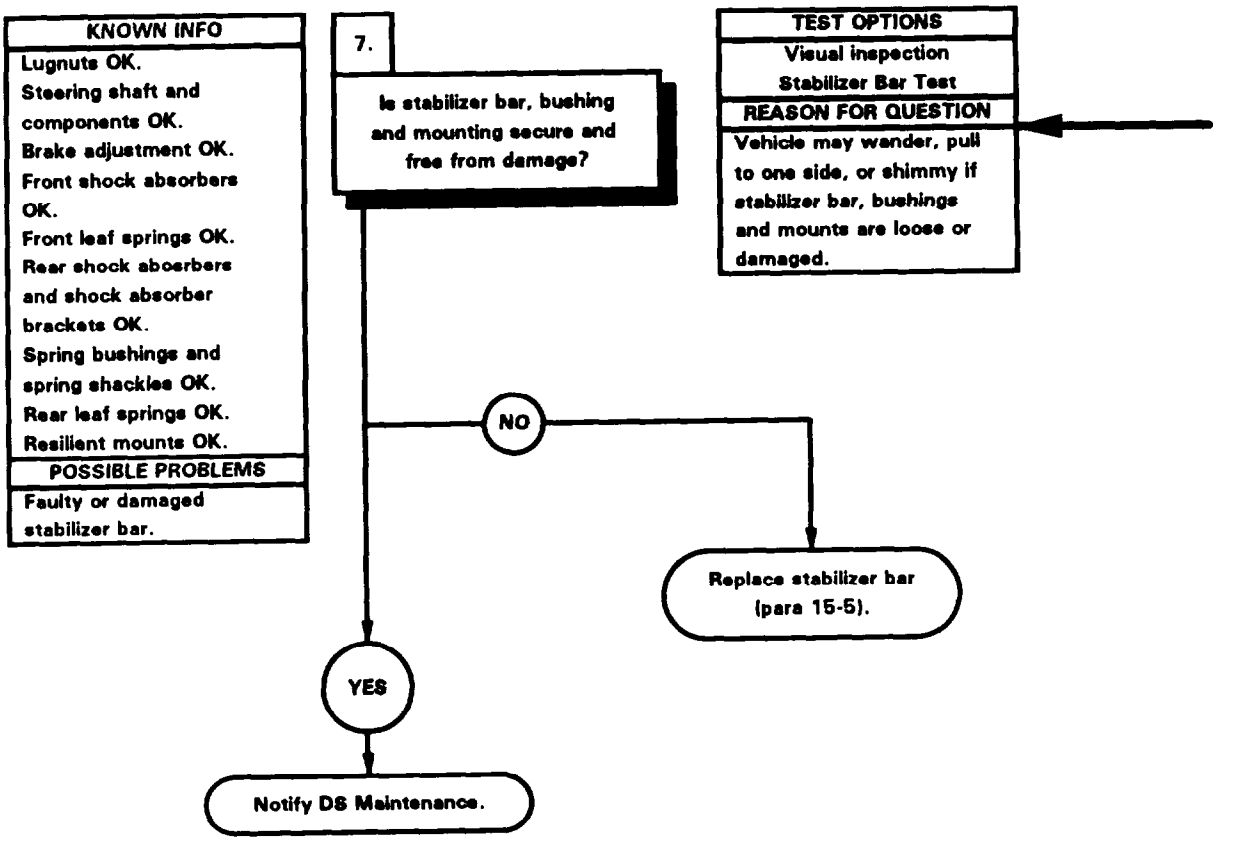
Check resilient mounts for damage and for missing mounting hardware.

RESILIENT MOUNT TEST
(1) Position tire iron between spring near resilient mount and tire.
(2) Pry up and down to ensure there is no movement.
(3) Resilient mount is damaged if movement occure.



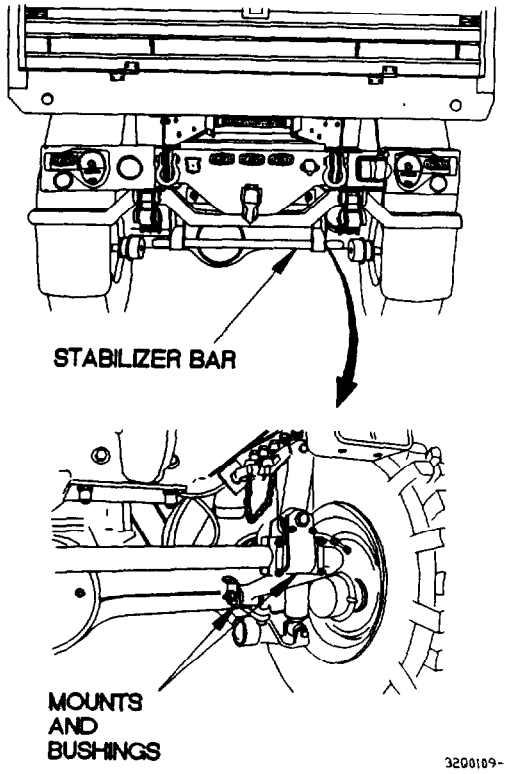
3200107A

q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)

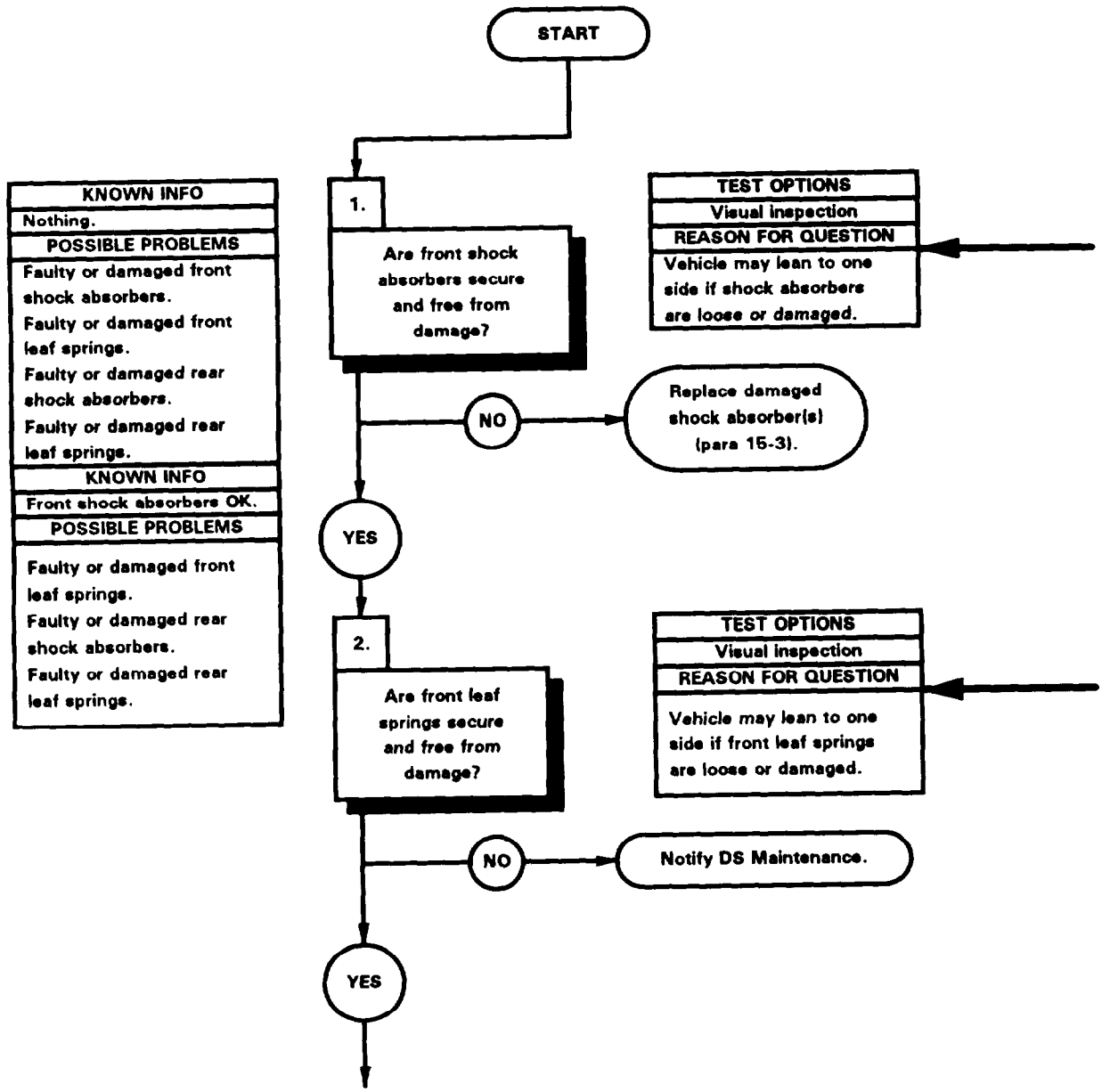


Check stabilizer bar, bushings and mounts for damage and for missing mounting hardware.

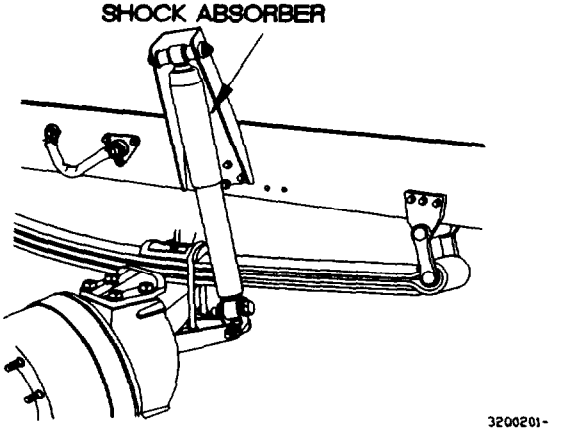
STABILIZER BAR TEST
(1) Position tire iron between bottom of pintle hook mount and top of stabilizer bar.
(2) Pry up to ensure there is no movement.
(3) Replace stabilizer bar or mounts if movement occurs or damaged.



q2. LEANS TO ONE SIDE OR REAR OF VEHICLE SAGS	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10).	Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C)

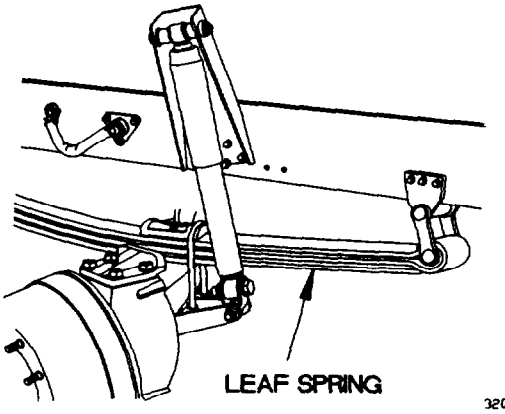


Check shock absorbers for damage or leaks, and for missing or cracked mounting hardware.



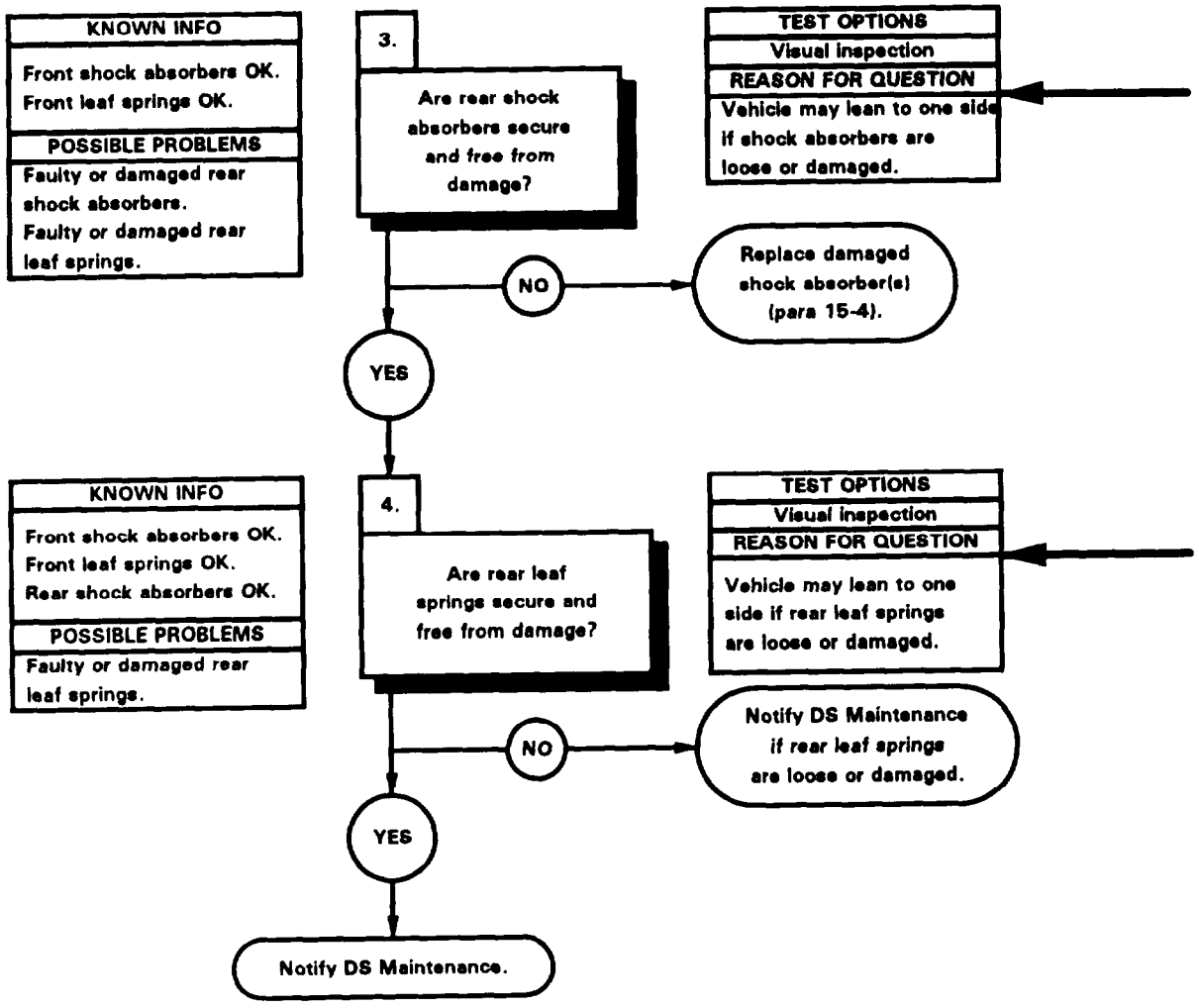
3200201-

Check front leaf springs for damage and for loose or missing mounting hardware.

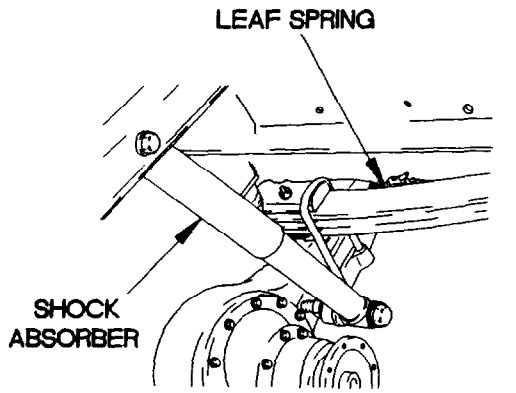


3200202-

q2. LEANS TO ONE SIDE OR REAR OF VEHICLE SAGS (CONT)



Check shock absorbers for damage or leaks, and for missing or cracked mounting hardware.



3200203-

Check rear leaf springs for damage or leaks, and for missing mounting hardware.

2-28. 11K SELF-RECOVERY WINCH (SRW) SYSTEM TROUBLESHOOTING

This paragraph covers 11K Self-Recovery Winch (SRW) System Troubleshooting. The 11K Self-Recovery Winch (SRW) System Fault Index, Table 2-37, lists faults for the 11K SRW system of the vehicle.

Table 2-37. 11K Self-Recovery Winch (SRW) System Fault Index

Fault No.	Description	Page
r1.	11K Self-Recovery Winch (SRW) does not work	2-1946

r1. 11K SELF-RECOVERY WINCH DOES NOT WORK

INITIAL SETUP

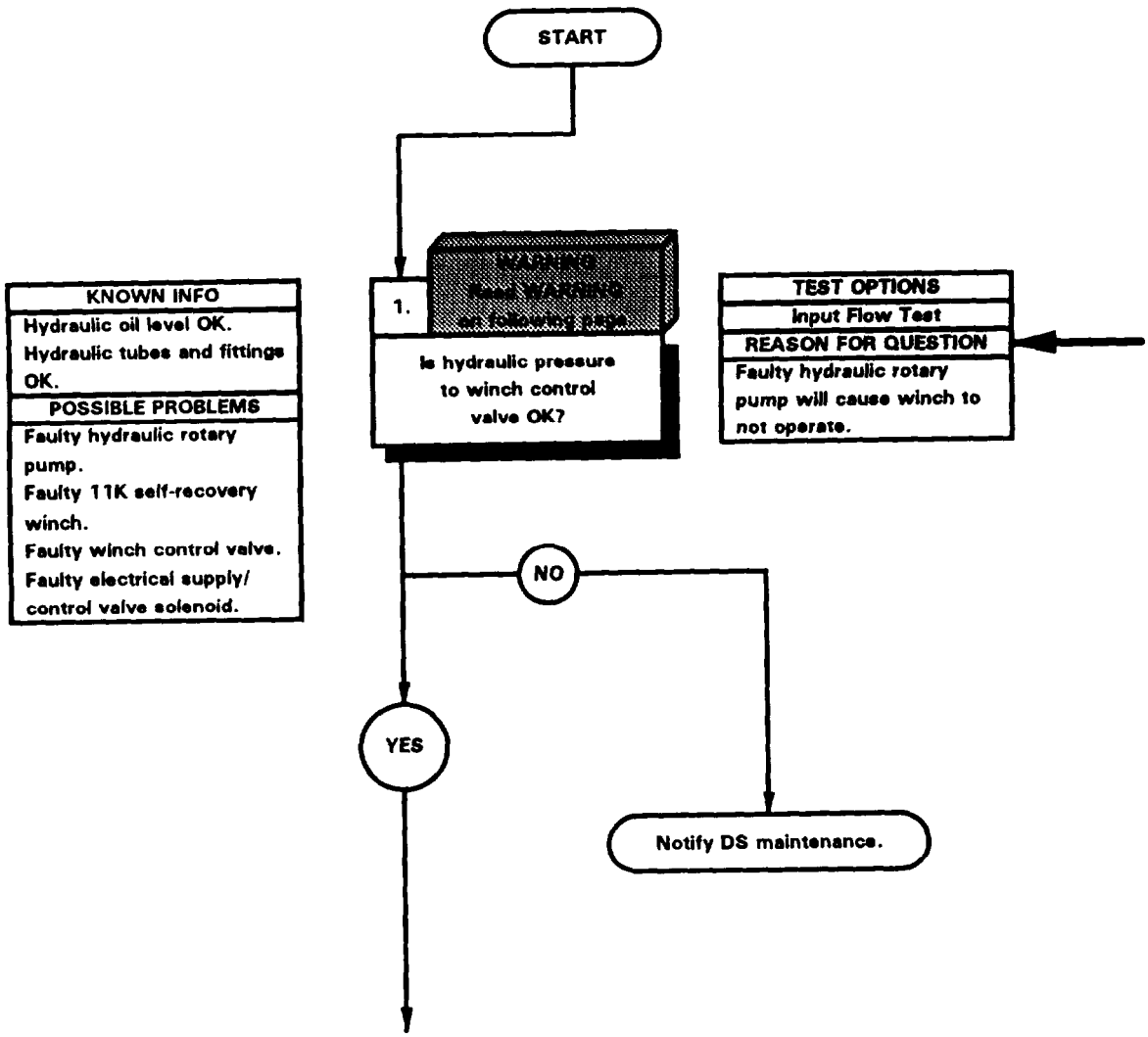
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Transducer, STE/ICE-R (Item 1, Appendix J)
Goggles, Industrial (Item 15, Appendix C)

Materials/Parts
Rag, Wiping (Item 51, Appendix D)

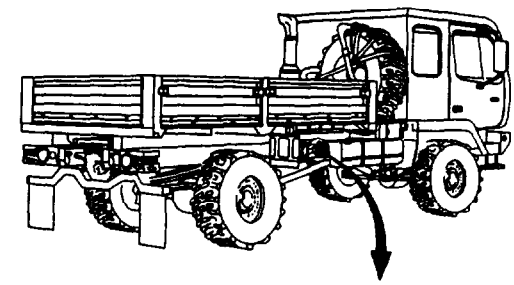


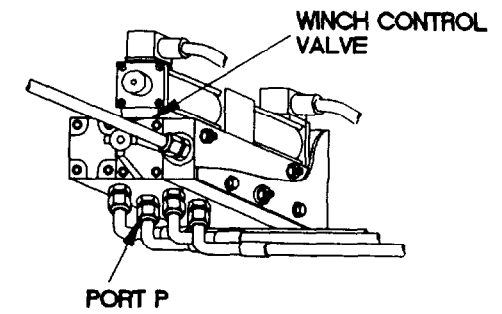
WARNING

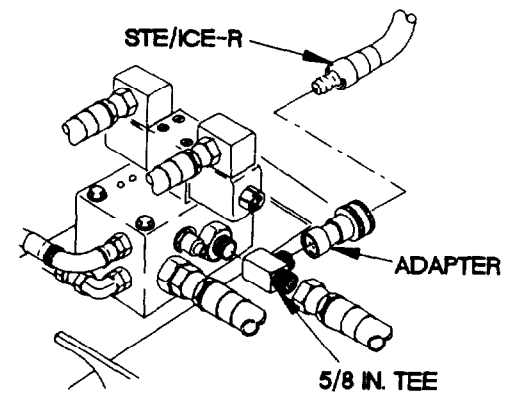
- Drop hydraulic pressure to zero before disconnecting any hydraulic hoses, tubes or fittings. Failure to comply may result in injury to personnel.
- Wear approved eye protection when performing pressure checks. Failure to comply may result in oil getting into eyes. If oil contacts eyes, seek medical attention immediately.
- Fuel and oil are slippery and can cause falls. Wipe up spilled fuel or oil with rags. Failure to comply may result in injury to personnel.

INPUT FLOW TEST

(1) Place drain pan under control valve.
(2) Disconnect hose from port P of winch control valve.
(3) Connect STE/ICE-R with 5/8 in. tee and adapter kit between hose fitting and port P.
(4) Start engine (TM 9-2320-365-10).
(5) Position PTO switch to on (TM 9-2320-365-10).
(6) Attach stall load to winch cable (TM 9-2320-365-10).
(7) Position WINCH POWER switch to on (TM 9-2320-365-10).
(8) Engage winch clutch (TM 9-2320-365-10).
(9) Toggle WINCH IN/OUT switch to IN (TM 9-2320-365-10) and perform STE/ICE-R test #51 (TM 9-4910-674-12&P) and note pressure reading.
(10) Check if pressure is 2000-2100 psi (13790-14480 kPa), if pressure is lower than 2000 psi (13790 kPa), notify DS Maintenance.
(11) Position WINCH POWER and PTO switches to off (TM 9-2320-365-10).
(12) Shut down engine (TM 9-2320-365-10).
(13) Disconnect STE/ICE-R, tee, and adapter kit.
(14) Connect hose fitting to port P.
(15) Remove drain pan.

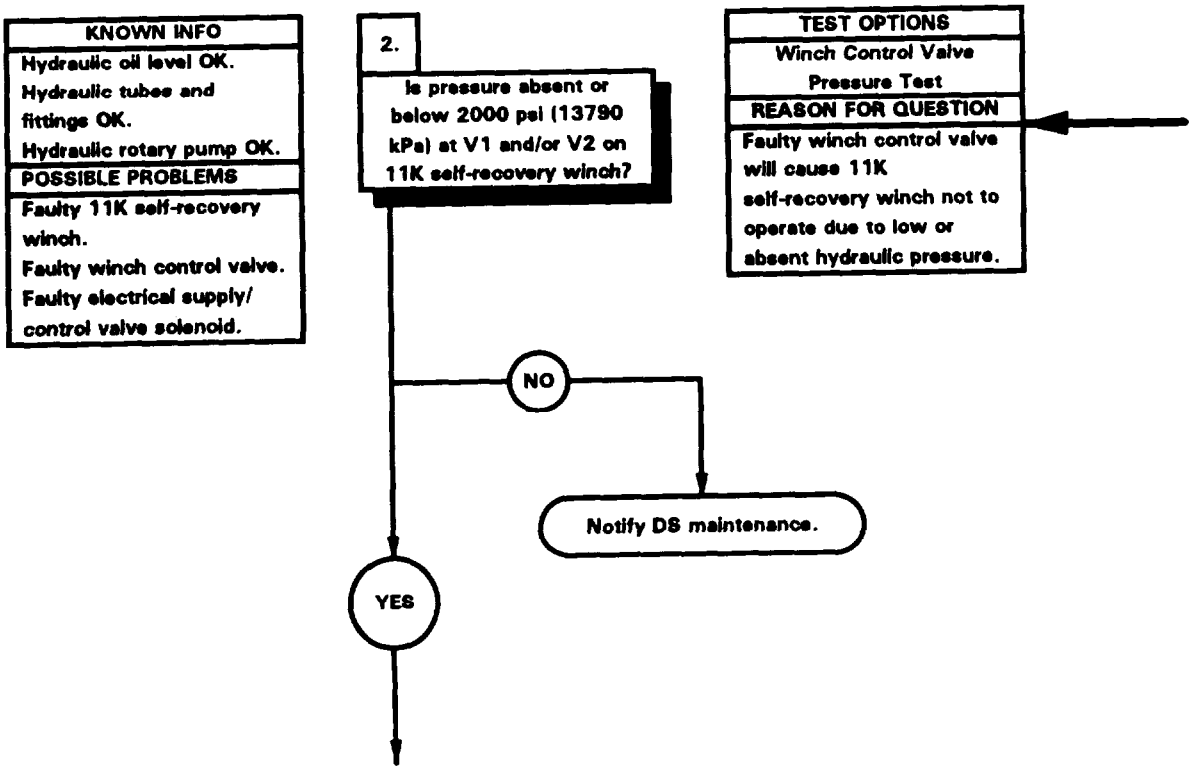






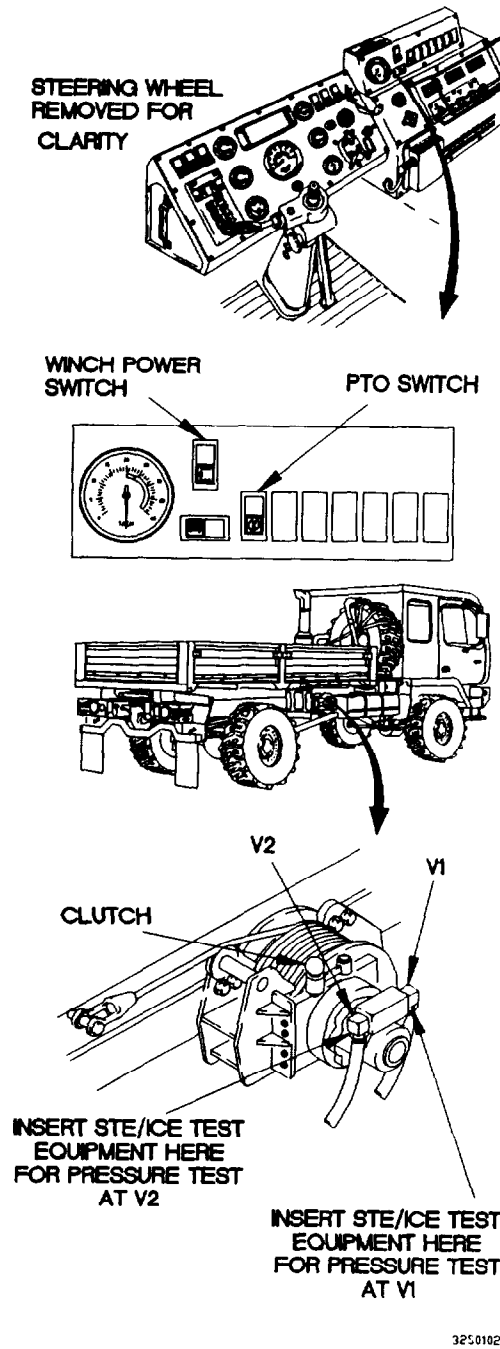
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r1. 11K SELF-RECOVERY WINCH DOES NOT WORK (CONT)

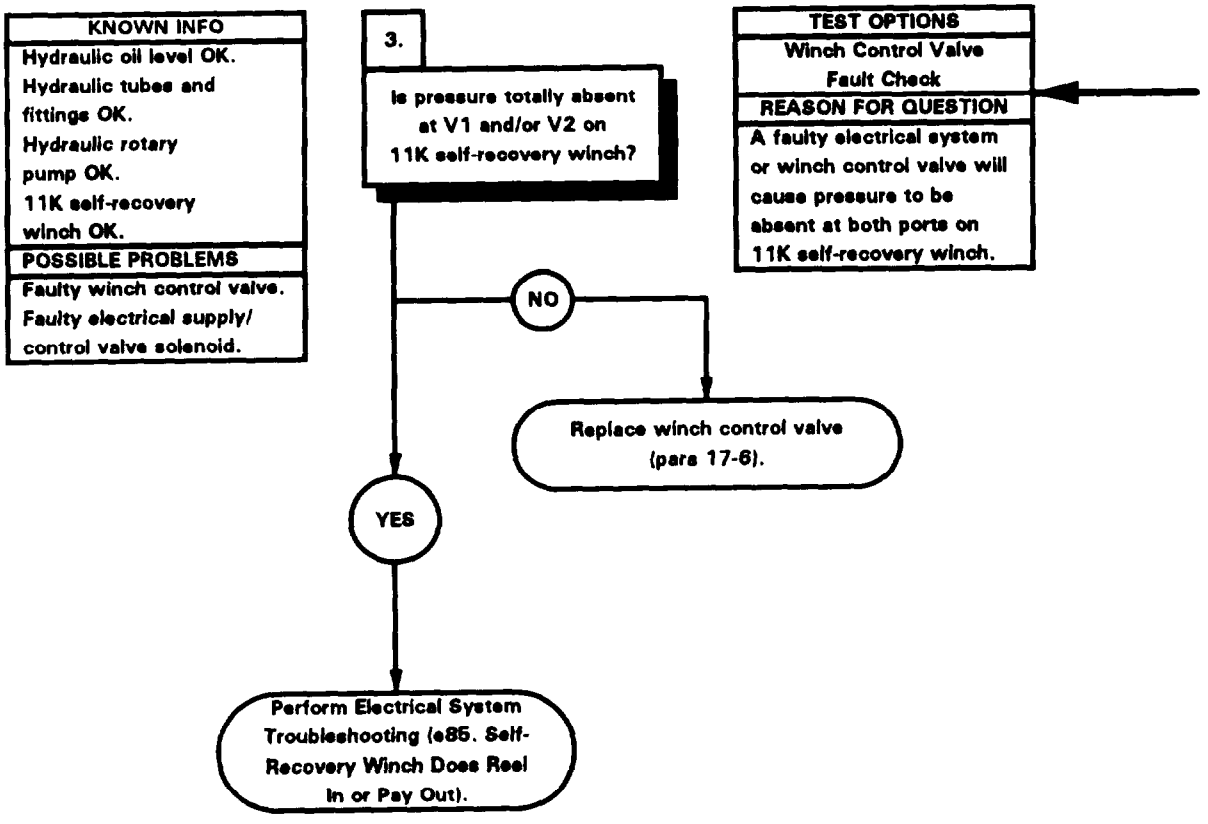


WINCH CONTROL VALVE PRESSURE TEST

(1) Disconnect hose from fitting below elbow at port V1 (on side of 11K self-recovery winch toward front of vehicle).
(2) Connect STE/ICE-R with tee between port V1 and hose.
(3) Start engine (TM 9-2320-365-10).
(4) Attach stall load to winch cable (TM 9-2320-365-10).
(5) Position PTO switch and WINCH POWER switch to ON (TM 9-2320-365-10).
(6) Engage winch clutch (TM 9-2320-365-10).
(7) Perform STE/ICE-R test #51 and toggle WINCH IN/OUT switch to IN position and hold (TM 9-4910-571-12&P).
(8) Check if pressure reading is between 2000-2100 psi (13790-14480 kPa) on STE/ICE-R.
(9) If pressure is less than 2000 psi (13790 kPa), notify DS Maintenance.
(10) Position WINCH POWER and PTO switches to off (TM 9-2320-365-10).
(11) Shut down engine (TM 9-2320-365-10).
(12) Disconnect STE/ICE-R and tee.
(13) Connect hose fitting to port V1.
(14) Disconnect hose (below elbow) from port V2.
(15) Connect STE/ICE-R with tee between hose and port V2.
(16) Start engine (TM 9-2320-365-10).
(17) Position PTO and WINCH POWER switches to on (TM 9-2320-365-10).
(18) Perform STE/ICE-R test #51 and toggle WINCH IN/OUT switch to OUT (TM 9-4910-571-12&P).
(19) Check if pressure reading is between 2000-2100 psi (13790-14480 kPa).
(20) If pressure is lower than 2000 psi, notify DS Maintenance.
(21) Release load and retrieve cable (TM 9-2320-365-10).
(22) Position WINCH POWER and PTO switches to off (TM 9-2320-365-10).
(23) Disengage winch clutch (TM 9-2320-365-10).
(24) Shut down engine (TM 9-2320-365-10).
(25) Disconnect STE/ICE-R and tee.
(26) Connect hose fitting to port V2.



r1. 11K SELF-RECOVERY WINCH DOES NOT WORK (CONT)



WINCH CONTROL VALVE FAULT CHECK
(1) If hydraulic pressure was absent in winch control valve pressure test (step 2.), perform Electrical System Troubleshooting (e85. 11K Self-Recovery Winch Does Not Reel In or Pay Out).
(2) If hydraulic pressure was low in winch control valve pressure test (step 2.), replace winch control valve (para 17-6).

2-29. STEERING HYDRAULIC SYSTEM TROUBLESHOOTING

This paragraph covers Steering Hydraulic System Troubleshooting. The Steering Hydraulic System Fault Index, Table 2-38, lists faults for the steering hydraulic system of the vehicle.

Table 2-38. Steering Hydralic System Fault Index

Fault No.	Description	Page
s1.	Steering hard or does not work	2-1954

s1. STEERING HARD OR DOES NOT WORK

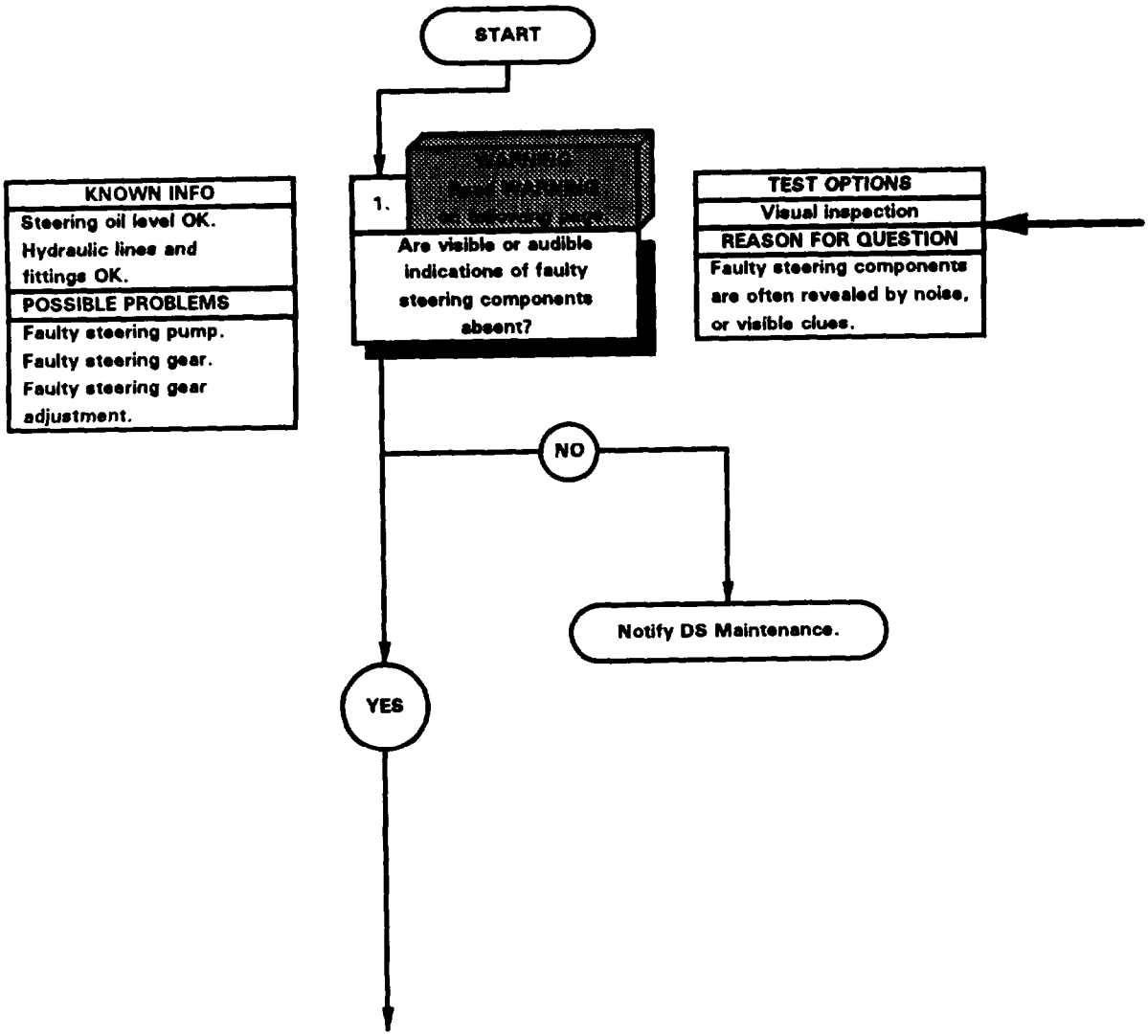
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)

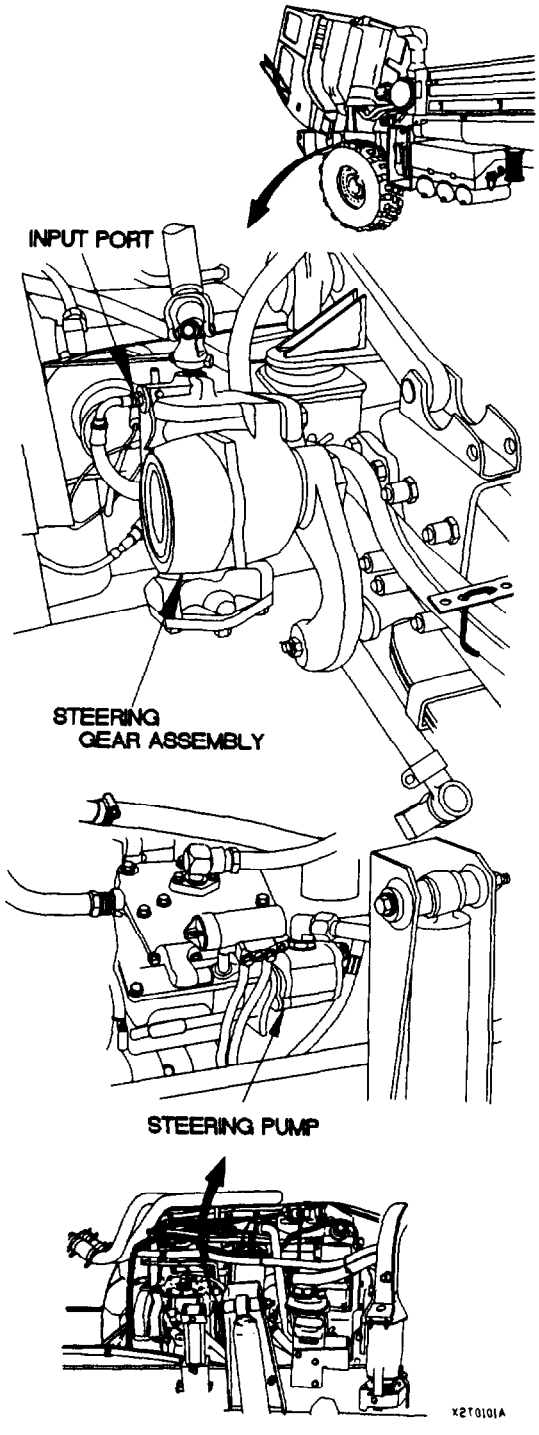
Materials/Parts
Rag, Wiping (Item 51, Appendix D)



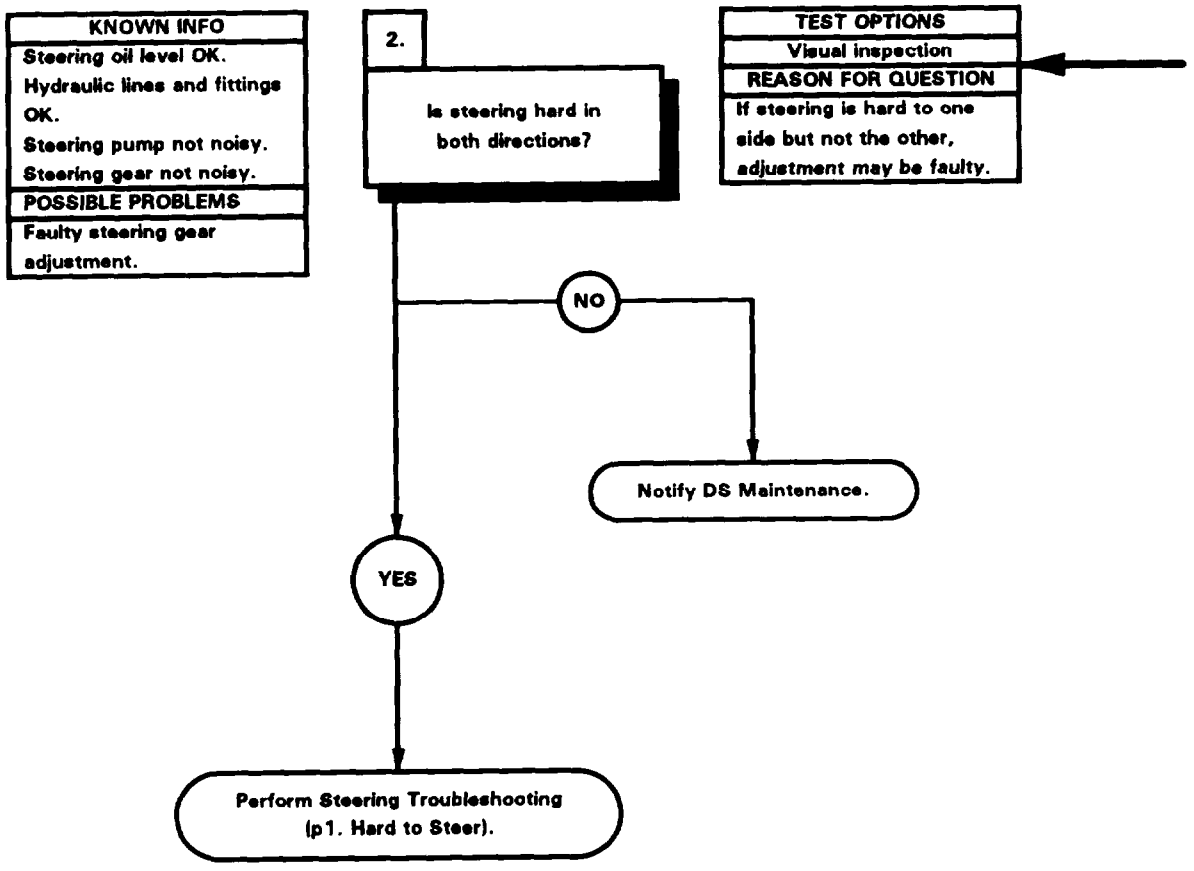
WARNING

- Drop hydraulic pressure to zero before disconnecting any hydraulic line. Failure to comply may result in injury to personnel.
- Wear approved eye protection when performing pressure checks. Failure to comply may result in oil getting into eyes. If oil contacts eyes, seek medical attention immediately.
- Fuel and oil are slippery and can cause falls. Wipe up spilled fuel or oil with rags. Failure to comply may result in injury to personnel.

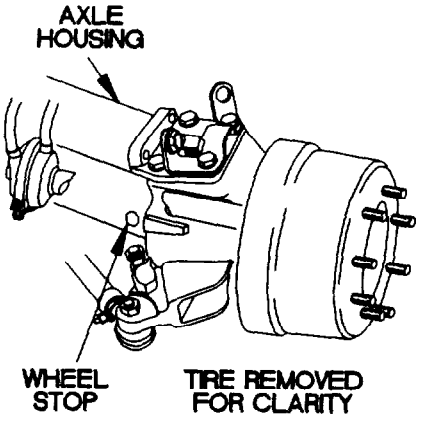
(1) Check steering oil level and fill as required (Appendix H).
(2) Start engine (TM 9-2320-365-10).
(3) Turn steering wheel from lock-to-lock.
(4) Listen for unusual sounds. Faulty steering pump or steering gear may be noisy.
(5) Shut down engine (TM 9-2320-365-10).



s1. STEERING HARD OR DOES NOT WORK (CONT)



(1) Raise cab (TM 9-2320-365-10).
(2) Inspect point on each end of front axle housing where wheel stop contacts axle. If this spot is gouged or peened or if steering is harder in one direction than the other, steering adjustment may be faulty.
(3) Lower cab (TM 9-2320-365-10).



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2-30. AIR TRANSPORT TROUBLESHOOTING

This paragraph covers Air Transport Troubleshooting. The Air Transport Fault Index, Table 2-39, lists faults for the air transport components of the vehicle.

Table 2-39. Air Transport Fault Index

Fault No.	Description	Page
t1.	Cab tilt, spare tire retainer, and suspension compression do not work	2-1960
t2.	Suspension does not compress or return to normal properly	2-1970
t3.	Cab leveling air springs do not work properly	2-1972

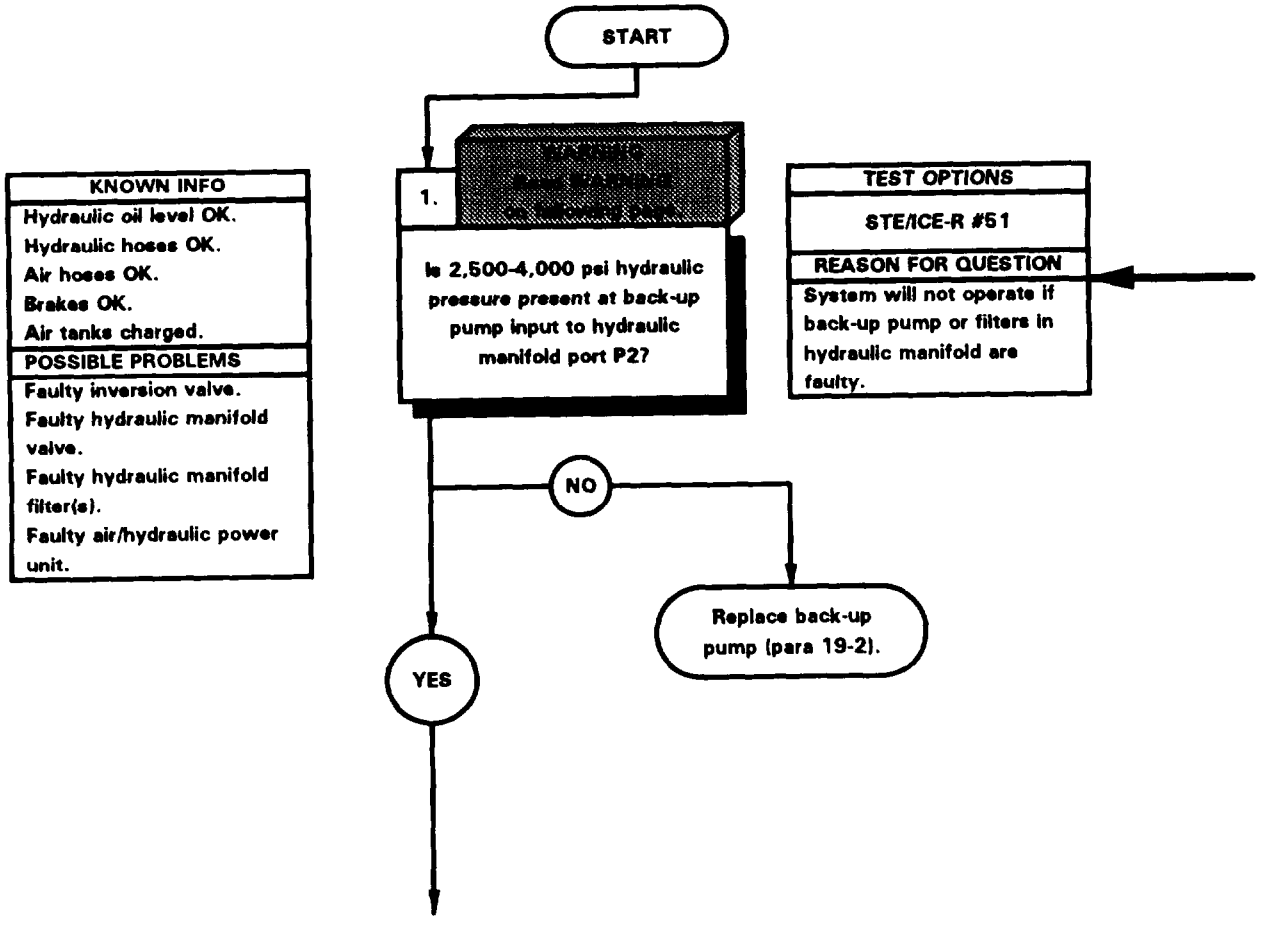
t1. CAB TILT, SPARE TIRE RETAINER AND SUSPENSION COMPRESSION DO NOT WORK

INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Air pressure gages between 75-120 psi (TM 9-2320-365-10).

References
- TM 9-4910-571-12&P

Tools and Special Tools
- Tool Kit Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Pan, Drain (Item 24, Appendix C)
- Goggles, Industrial (Item 15, Appendix C)
- Transducer, 10,000 PSI (Item 1, Appendix J)

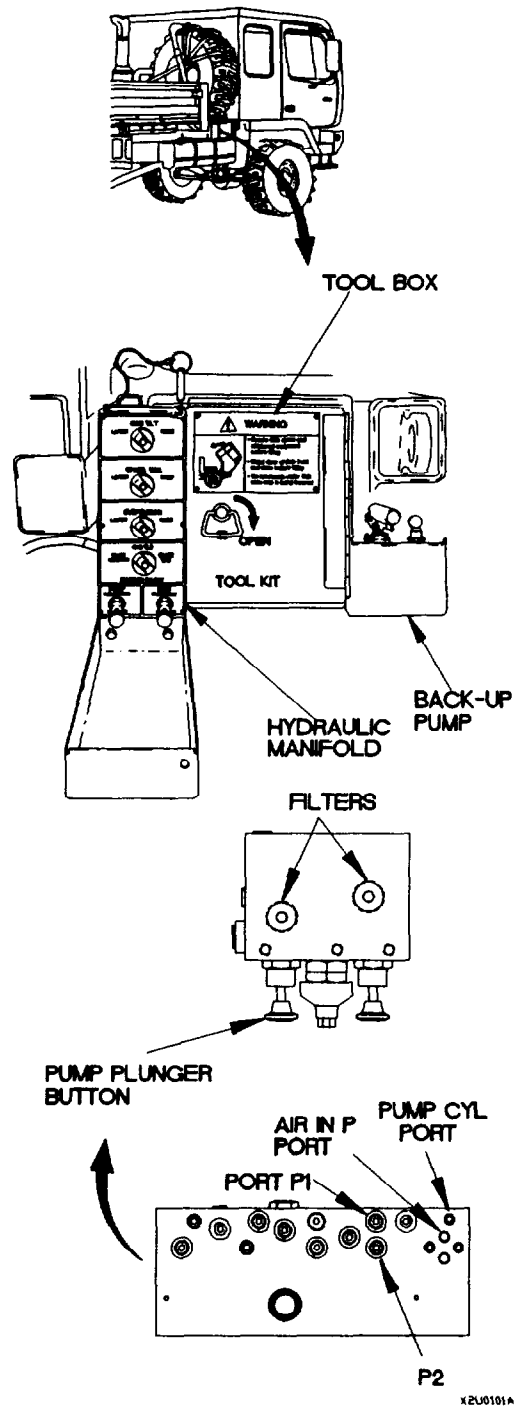


WARNING

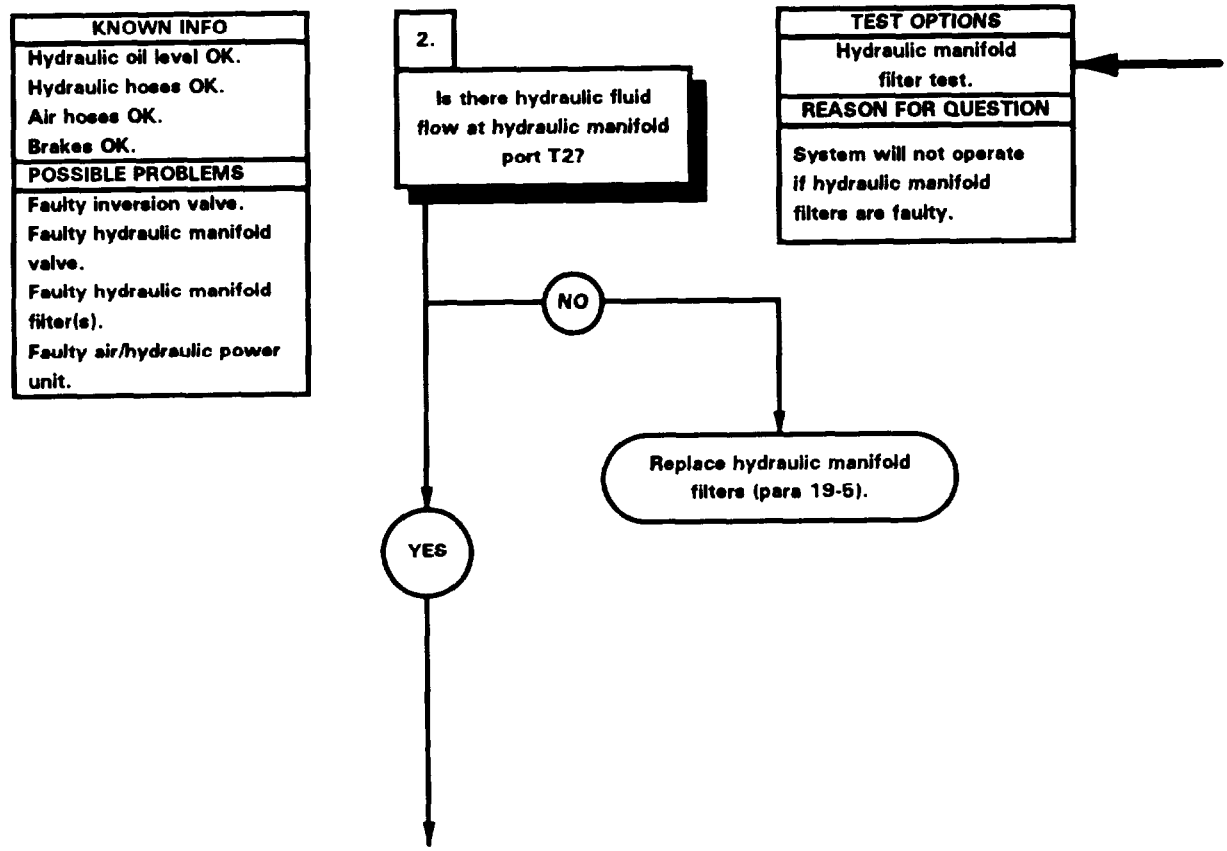
- Hydraulic fluid (MIL-H-5606) is TOXIC. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that comes in contact with hydraulic oil should be washed immediately. Saturated clothing should be removed immediately. Failure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

BACKUP PUMP PRESSURE TEST

(1) Remove four screws, washers, two spacers, and hydraulic pump from tool box.
(2) Position drain pan under hydraulic manifold.
(3) Disconnect backup pump pressure hose from port P2 of hydraulic manifold.
(4) Connect STE/ICE-R to backup pump pressure hose (test #51) (TM 9-4910-571-12&P).
(5) Operate backup pump (TM 9-2320-365-10) and note reading on multimeter.
(6) If pressure is not 2,500-4,000 psi, replace backup pump (para 19-2).
(7) Disconnect STE/ICE-R from backup pump pressure hose and port P2 of hydraulic manifold.
(8) Connect backup pump pressure hose to port P2 of hydraulic manifold.
(9) Install hydraulic manifold on tool box with two spacers, four washers, and screws.
(10) Drain air tanks (TM 9-2320-365-10).

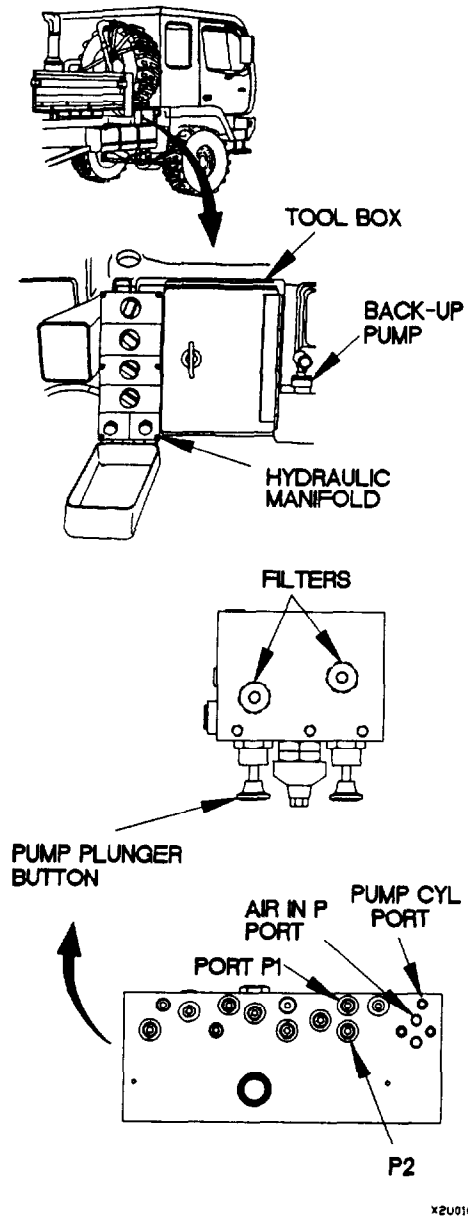


t1. CAB TILT, SPARE TIRE RETAINER, AND SUSPENSION COMPRESSION DO NOT WORK (CONT)

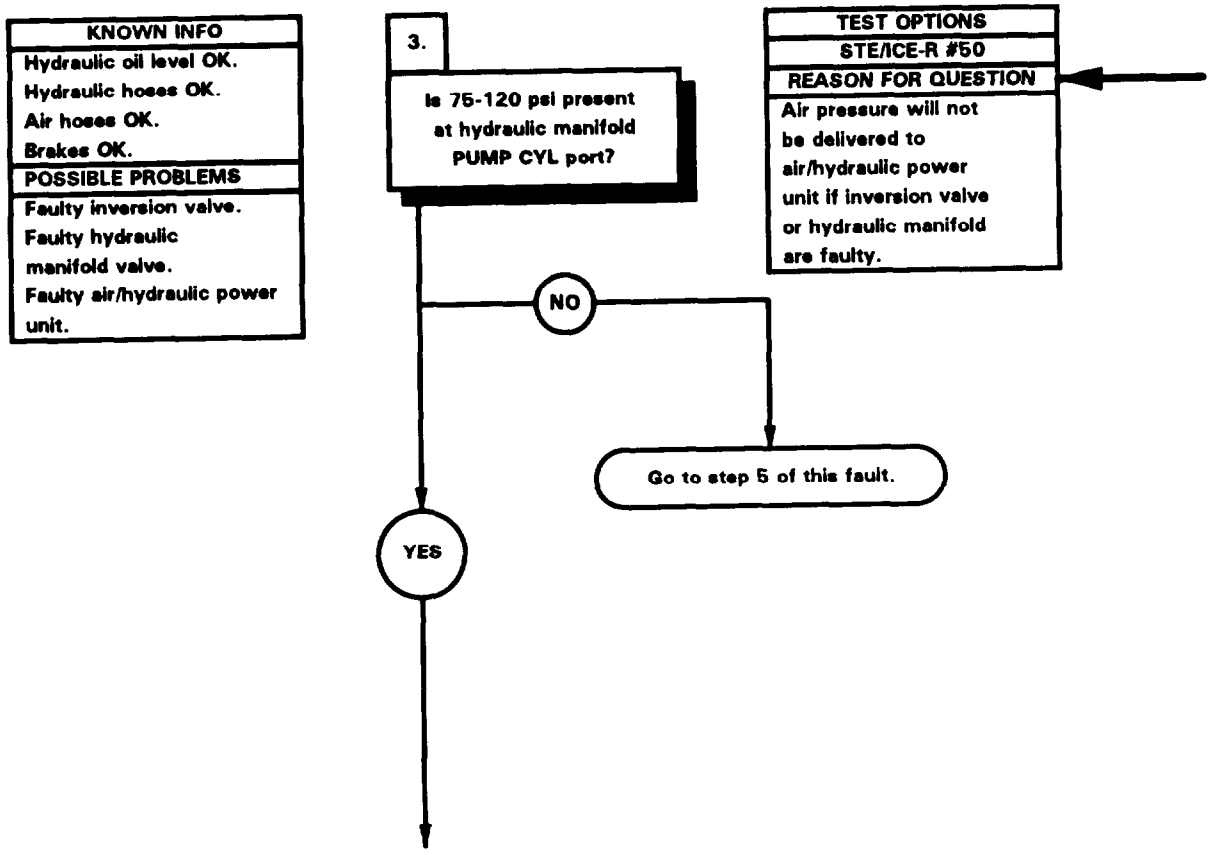


HYDRAULIC MANIFOLD FILTER TEST

(1) Position drain pan under hydraulic manifold.
(2) Disconnect backup pump return hose from port T2 of hydraulic manifold.
(3) Turn suspension selector knob to the LOWER position.
(4) Operate backup pump (TM 9-2320-365-10) and check for flow and clear fluid.
(5) If flow is not constant and/or clear, replace hydraulic manifold filters (para 19-5).
(6) Connect backup pump return hose to port T2 of hydraulic manifold.
(7) Install hydraulic manifold on tool box with two spacers, four washers, and screws.
(8) Remove drain pan.



t1. CAB TILT, SPARE TIRE RETAINER, AND SUSPENSION COMPRESSION DO NOT WORK (CONT)

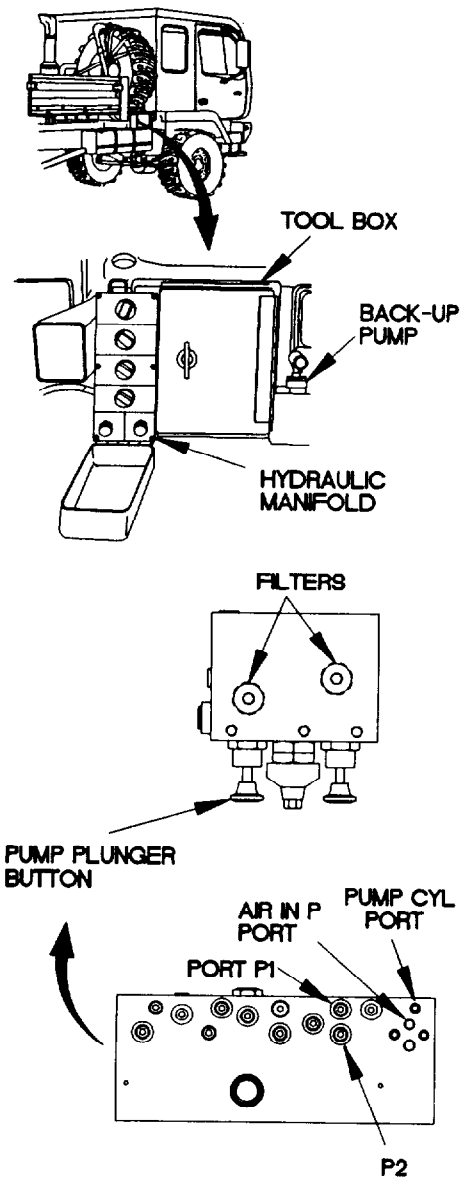


WARNING

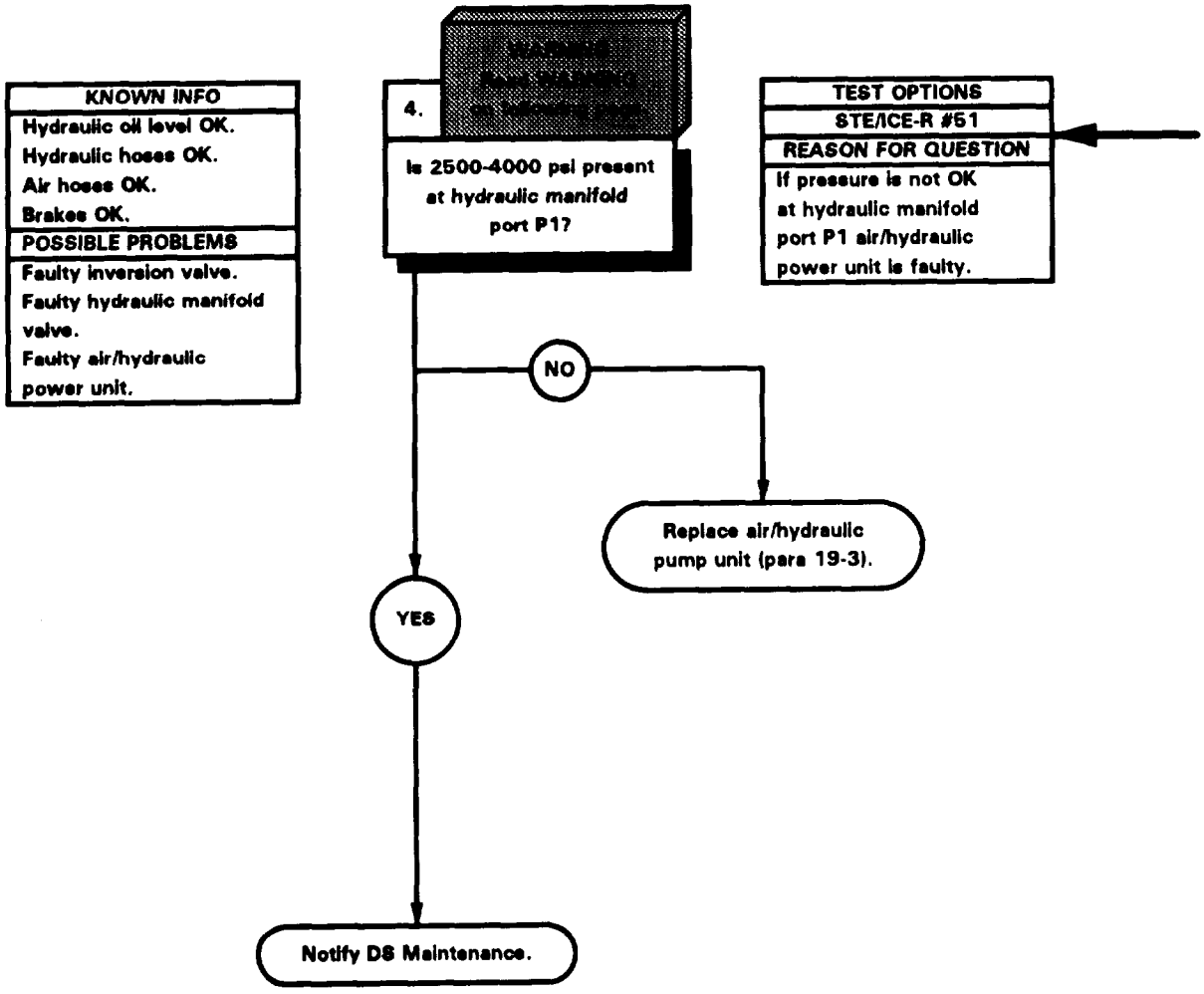
- Drop pneumatic pressure to zero before disconnecting any air hoses. Failure to comply may result in injury to personnel.
- Wear approved eye protection when performing pressure checks. Failure to comply may result in injury to personnel.

AIR PRESSURE TEST

(1) Disconnect air pressure hose from PUMP CYL port of hydraulic manifold.
(2) Connect STE/ICE-R between air pressure hose and PUMP CYL port of hydraulic manifold (TEST #50) (TM 9-4910-571-12&P).
(3) Start engine and charge air tanks (TM 9-2320-365-10).
(4) Push and hold PUMP plunger button on hydraulic manifold and note reading on STE/ICE-R.
(5) If 75-120 psi air pressure is not present, go to step 5 of this fault.
(6) Shut down engine (TM 9-2320-365-10).
(7) Drain air tanks (TM 9-2320-365-10).
(8) Disconnect STE/ICE-R from air pressure hose and PUMP CYL port of hydraulic manifold.
(9) Connect air pressure hose to PUMP CYL port of hydraulic manifold.



t1. CAB TILT, SPARE TIRE RETAINER, AND SUSPENSION COMPRESSION DO NOT WORK (CONT)

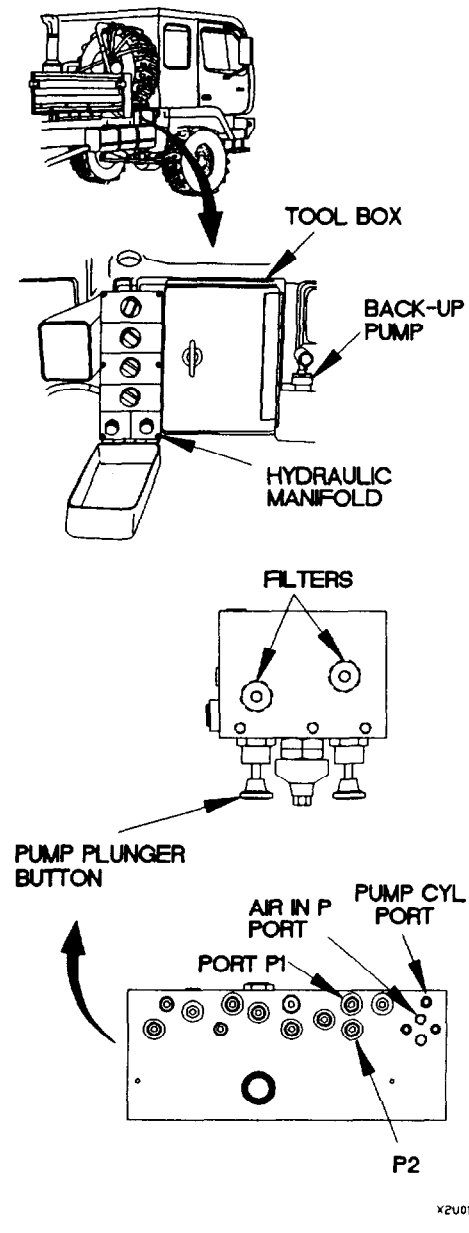


WARNING

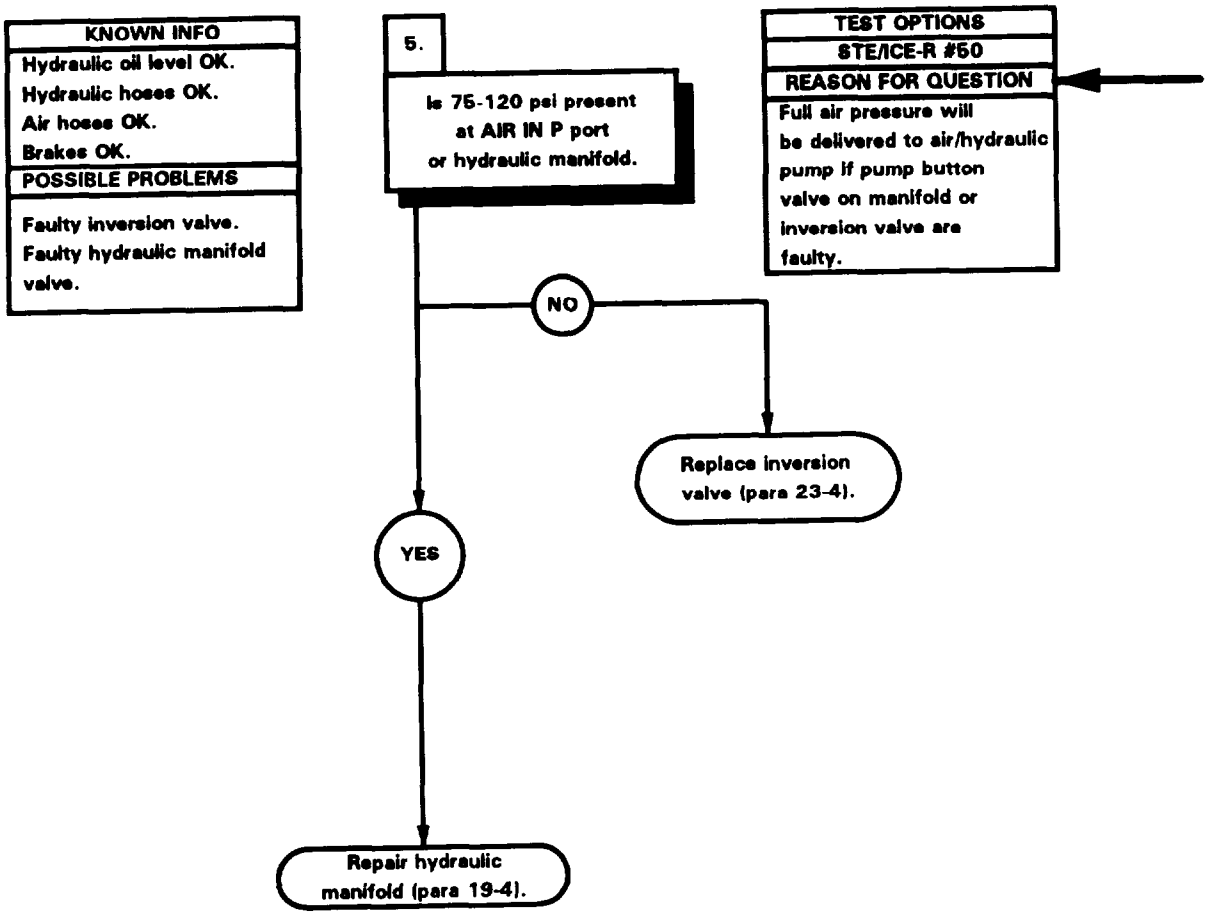
- **Hydraulic fluid (MIL-H-5606) is TOXIC. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that comes in contact with hydraulic oil should be washed immediately. Saturated clothing should be removed immediately. Failure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

STE/ICE-R #51

(1) Position drain pan under hydraulic manifold.
(2) Disconnect backup pump return hose from port P1of hydraulic manifold.
(3) Operate backup pump (TM 9-2320-365-10) and check for flow and clear fluid.
(4) Connect STE/ICE-R to backup pump return hose.
(5) Start engine and charge air tanks (TM 9-2320-365-10).
(6) Push and hold PUMP plunger button and note reading on STE/ICE-R.
(7) If 2,500-4,000 psi pressure is OK, notify DS Maintenance.
(8) If 2,500-4,000 psi pressure is low, high, or unstable, replace air/hydraulic power unit (para 19-3).
(9) Shut down engine (TM 9-2320-365-10).
(10) Drain air tanks (TM 9-2320-365-10).
(11) Disconnect STE/ICE-R from air/hydraulic power unit pressure hose and port P1 of hydraulic manifold.
(12) Connect air/hydraulic power unit pressure hose to port P1 of hydraulic manifold.
(13) Install hydraulic manifold on tool box with two spacers, four washers, and screws.

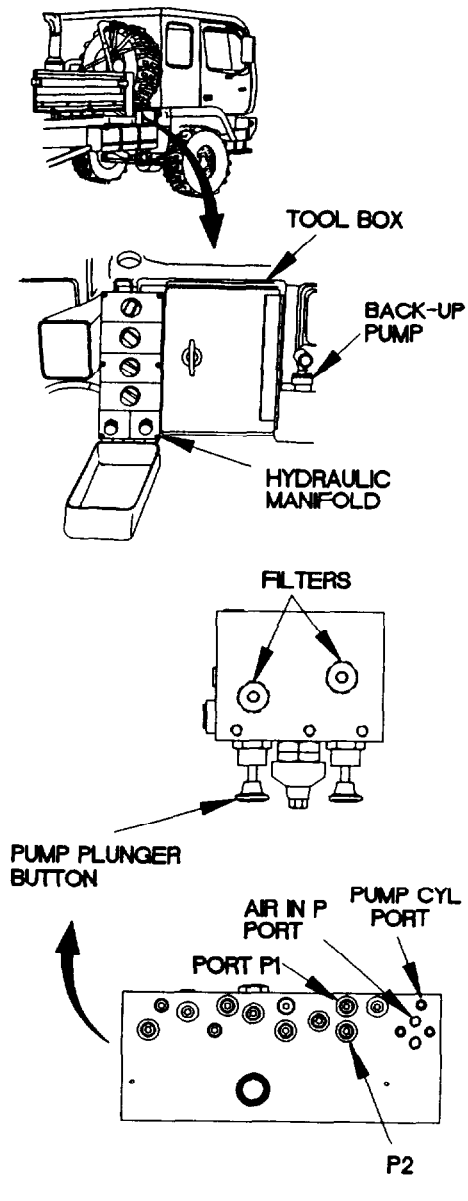


t1. CAB TILT, SPARE TIRE RETAINER, AND SUSPENSION COMPRESSION DO NOT WORK (CONT)



STE/ICE-R #50

(1) Disconnect air pressure hose from port AIR IN P on hydraulic manifold.
(2) Connect STE/ICE-R between air pressure hose and AIR IN P port of hydraulic manifold.
(3) Start engine and charge air tanks (TM 9-2320-365-10).
(4) Note air pressure reading on STE/ICE-R after air tanks are charged.
(5) If 75-120 psi air pressure is OK, replace hydraulic manifold valve (para 19-4).
(6) If 75-120 psi air pressure is not present, replace inversion valve (para 23-4).
(7) Drain air tanks (TM 9-2320-365-10).
(8) Disconnect STE/ICE-R from air pressure hose and port AIR IN P of hydraulic manifold.
(9) Connect air pressure hose to AIR IN P port of hydraulic manifold.
(10) Install hydraulic manifold on tool box with two spacers, four washers, and screws.



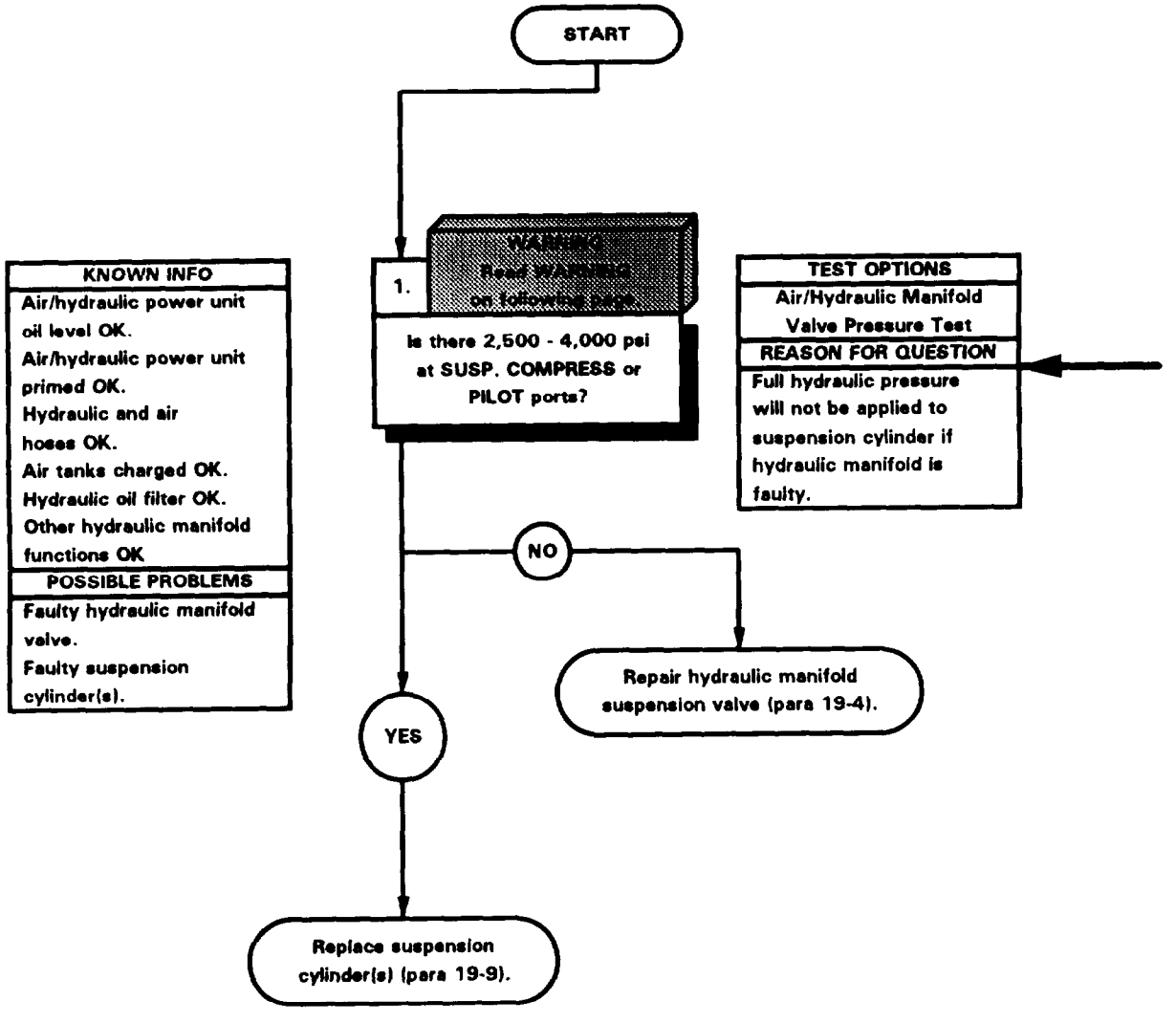
t2. SUSPENSION DOES NOT COMPRESS OR RETURN TO NORMAL PROPERLY

INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Air tanks drained (TM 9-2320-365-10).

References
- TM 9-4910-571-12&P

Tools and Special Tools
- Tool Kit Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Pan, Drain (Item 24, Appendix C)
- Goggles, Industrial (Item 15, Appendix C)
- Gloves, Rubber (Item 13, Appendix C)
- Transducer, 10,000 PSI (Item 1, Appendix J)



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.

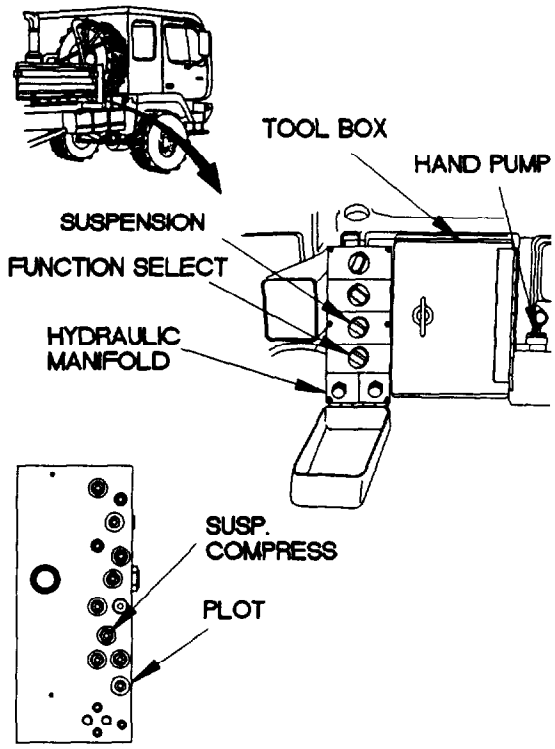
HYDRAULIC MANIFOLD VALVE PRESSURE TEST

(1) Remove four screws, washers, two spacers, and hydraulic manifold from inside tool box.
(2) Position drain pan under hydraulic manifold.
(3) If springs are not compressed, disconnect SUSP. COMPRESS pressure hose from hydraulic manifold.
(4) If springs are compressed, disconnect PILOT pressure hose from hydraulic manifold.
(5) Connect STE/ICE-R between SUSP COMPRESS or PILOT pressure hose and SUSP COMPRESS or PILOT port on hydraulic manifold (TEST #51) (TM 9-4910-571012&P).
(6) Start engine, charge air tanks (TM 9-2320-365-10).
(7) Position SUSPENSION to LOWER (if raised) or RAISE (if lowered).
(8) Position FUNCTION SELECT to TRUCK SUSPENSION.
(9) Push and hold PUMP plunger button and note reading on STE/ICE-R.
(10) If pressure is lower than 2500 psi, replace hydraulic manifold valve (para 19-4).
(11) If pressure is OK, replace suspension cylinder(s) (para 19-9).
(12) Drain air tanks (TM 9-2320-365-10).
(13) Shut down engine (TM 9-2320-365-10).

WARNING

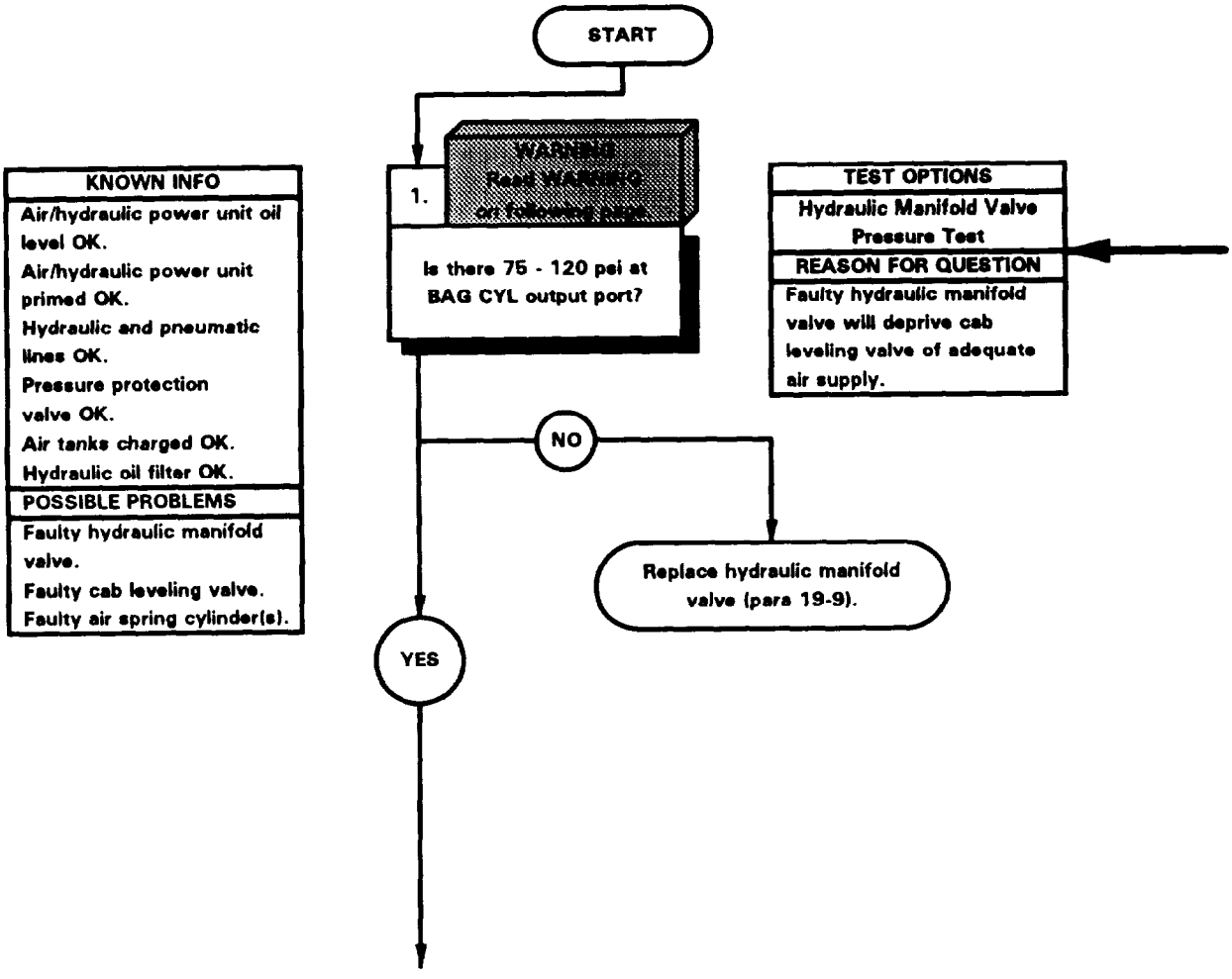
Ensure there is no pressure on STE/ICE-R transducer hose prior to disconnecting. Failure to comply may result in injury to personnel.

(14) Position SUSPENSION to RAISE (if lowered) or LOWER (if raised) to relieve pressure on STE/ICE-R hose.
(15) Disconnect STE/ICE-R from pressure hose and hydraulic manifold.
(16) Connect pressure hose to suspension output port on hydraulic manifold.
(17) Install hydraulic manifold on tool box with two spacers, washers, and four screws.



X2U0201-

13. CAB LEVELING AIR SPRINGS DO NOT WORK PROPERLY	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10). Air pressure gages between 75 - 120 psi (TM 9-2320-365-10).	Tools and Special Tools Tool Kit Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Pan, Drain (Item 24, Appendix C) Goggles, Industrial (Item 15, Appendix C)
References TM 9-4910-571-12&P	

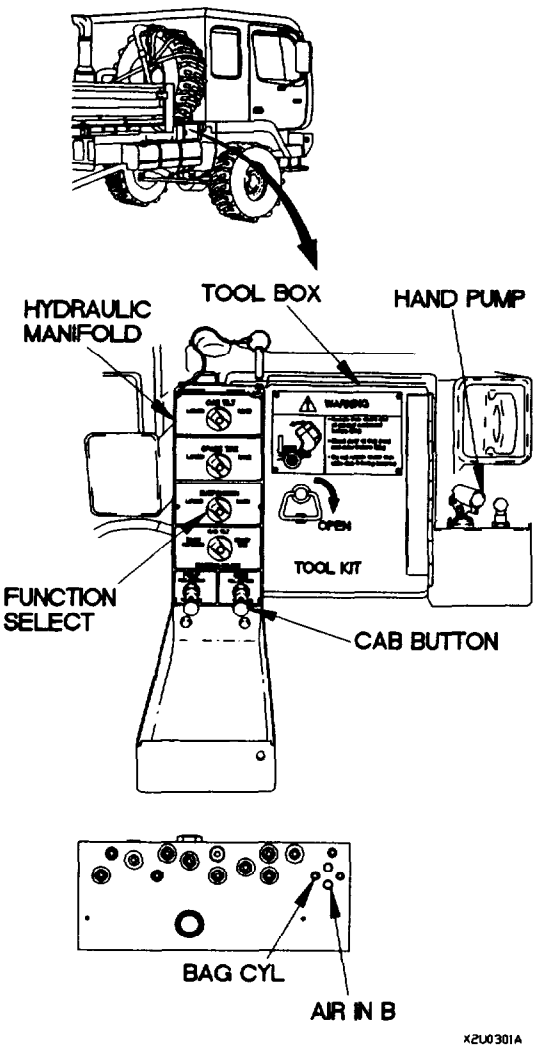


WARNING

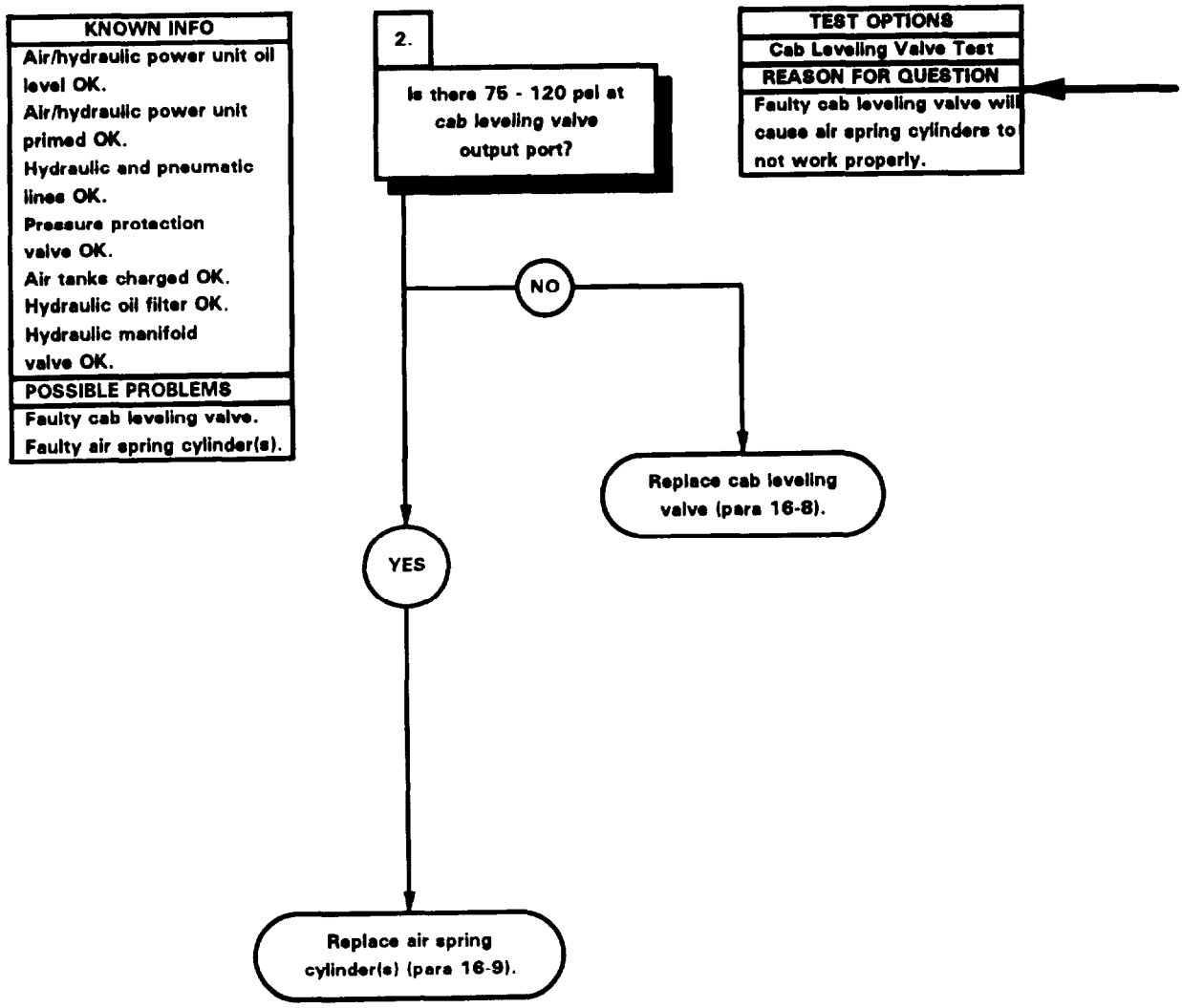
- Drop pneumatic pressure to zero before disconnecting any pneumatic line. Failure to comply may result in injury to personnel.
- Wear approved eye protection when performing pressure checks. Failure to comply may result in oil getting into eyes. If oil contacts eyes, seek medical attention immediately.

HYDRAULIC MANIFOLD VALVE PRESSURE TEST

(1) Remove four bolts and washers, from tool box. Remove hydraulic manifold to access rear-mounted hose connections.
(2) Position CAB button to off.
(3) Disconnect hose from BAG CYL output port of hydraulic manifold valve.
(4) Connect STE/ICE-R BAG CYL port (TM 9-4910-571-12&P).
(5) Position CAB button to on.
(6) Note reading on STE/ICE-R, if pressure is lower than 75 psi, replace hydraulic manifold valve (para 19-9).
(7) Position CAB button to off.
(8) Disconnect STE/ICE-R and adapters.
(9) Connect hose to BAG CYL output port.

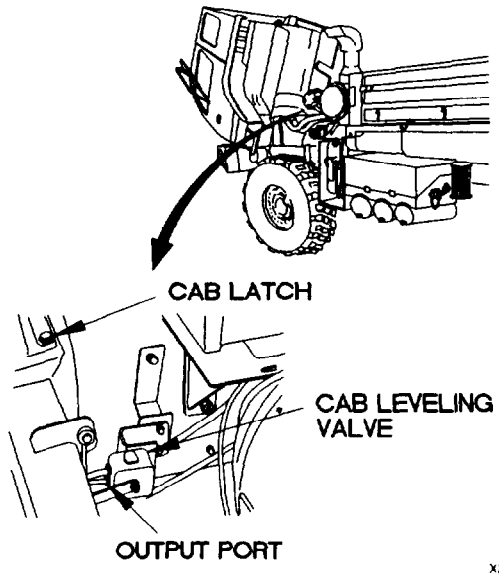


13. CAB LEVELING AIR SPRINGS DO NOT WORK PROPERLY (CONT)



CAB LEVELING VALVE TEST

(1) Position CAB button to off.
(2) Disconnect hose from one of the output ports of cab leveling valve.
(3) Connect STE/ICE-R to port (TM 9-4910-571-12&P).
(4) Position CAB button to on and note reading on STE/ICE-R.
(5) If pressure is lower than 75 psi, replace cab leveling valve (para 16-8).
(6) If pressure is OK, replace air spring cylinder(s) (para 16-9).
(7) Position CAB button to off.
(8) Disconnect STE/ICE-R and adapters.
(9) Connect hose to cab leveling output port.
(10) Install hydraulic manifold to tool box with four washers and bolts.
(11) Position CAB button to on.



X2U0302A

2-31. SPECIAL PURPOSE KIT TROUBLESHOOTING

This paragraph covers Special Purpose Kit Troubleshooting. The Special Purpose Kit Fault Index, Table 2-40, lists faults for the special purpose kits of the vehicle.

Table 2-40. Special Purpose Kit Fault Index

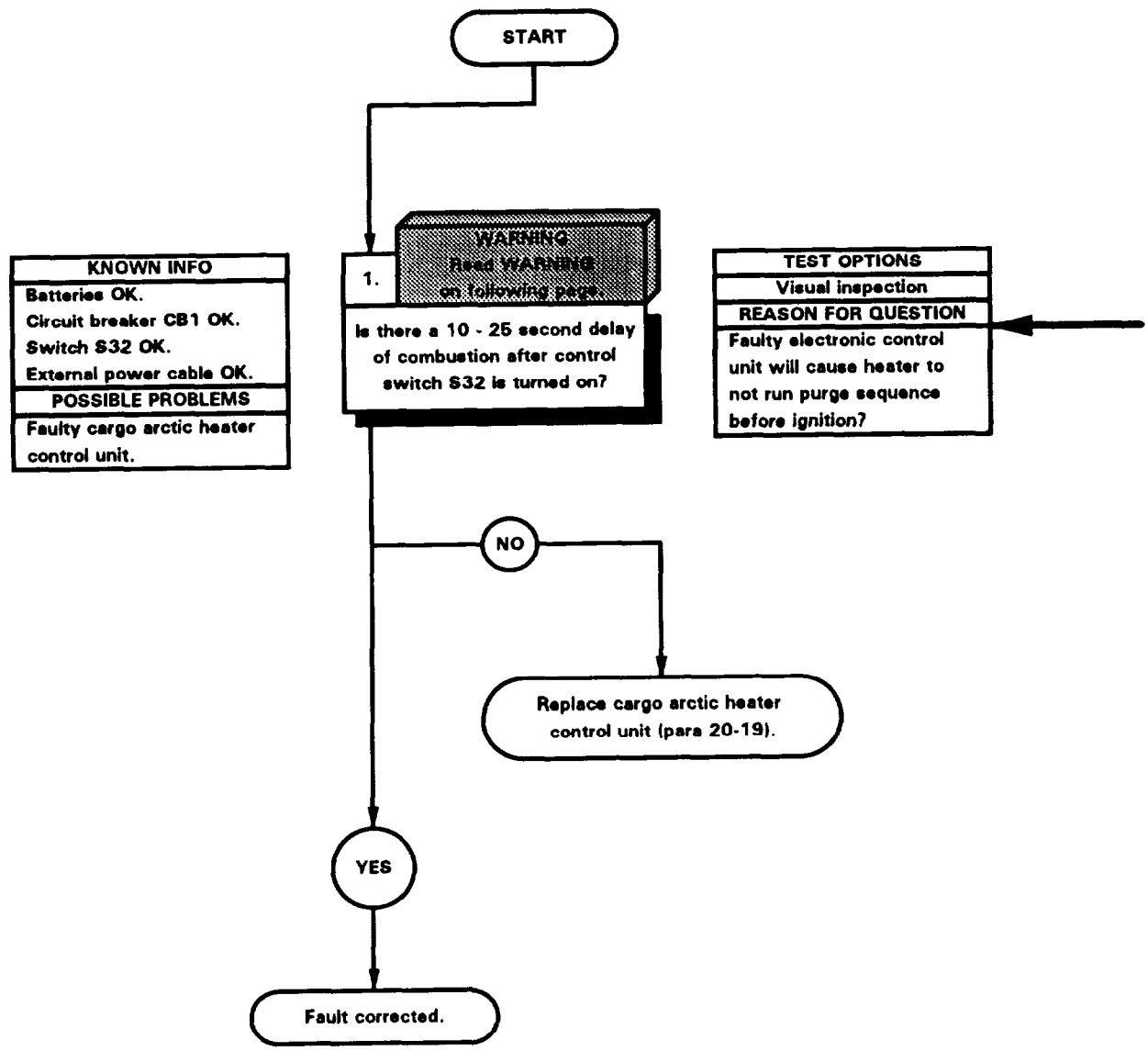
Fault No.	Description	Page
u1.	Cargo arctic heater combustion starts immediately when switched on	2-1978
u2.	Cargo arctic heater does not start	2-1980
u3.	After cargo arctic heater is switched on, heater switches on and off repeatedly	2-1986
u4.	Cargo arctic heater hard to start	2-1996
u5.	Cargo arctic heater turns itself off	2-2002
u6.	Cargo arctic heater emits black smoke	2-2004
u7.	Cargo arctic heater emits white smoke more than 20 seconds after start-up	2-2010
u8.	Cargo arctic heater cannot be switched off	2-2016
u9.	Cargo and cab arctic heater diagnostic procedure with testing apparatus 440.280	2-2020
u10.	Cab arctic heater combustion starts immediately when switched on	2-2030
u11.	Cab arctic heater does not start	2-2032
u12.	After cab arctic heater is switched on, heater switches on and off repeatedly	2-2038
u13.	Cab arctic heater hard to start	2-2050
u14.	Cab arctic heater turns itself off	2-2060
u15.	Cab arctic heater emits black smoke	2-2062
u16.	Cab arctic heater emits white smoke more than 20 seconds after start-up	2-2068
u17.	Cab arctic heater cannot be switched off	2-2074
u18.	Troop transport alarm does not operate	2-2078
u19.	Light material handling crane (LMHC) does not operate	2-2088
u20.	Light material handling crane (LMHC) hoist IN does not operate	2-2106
u21.	Light material handling crane (LMHC) hoist OUT does not operate	2-2110

u1. CARGO ARCTIC HEATER COMBUSTION STARTS IMMEDIATELY WHEN SWITCHED ON

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cargo arctic heater cover removed (TM 9-2320-365-10).

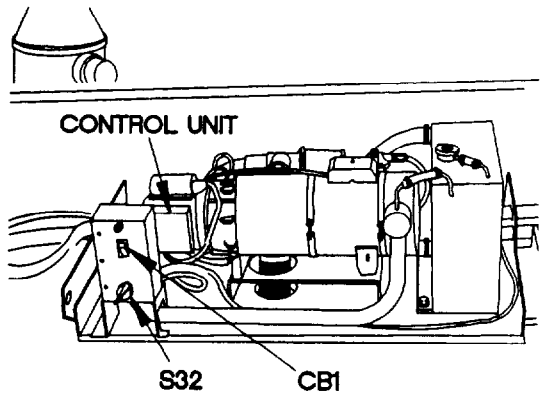
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)



WARNING

When cover is removed from cargo arctic heater for maintenance, carefully aviod contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Turn external power on (TM 9-2320-365-10).
(2) Position circuit breaker CB1 to ON.
(3) Position control switch S32 to ON.
(4) Note delay for purge cycle before heater combuestion.
(5) If heater fails to purge for 10 - 25 seconds, cargo arctic heater control unit is faulty.
(6) Position control switch S32 to OFF.
(7) Position circuit breaker CB1 to OFF.
(8) Turn external power off (TM 9-2320-365-10).



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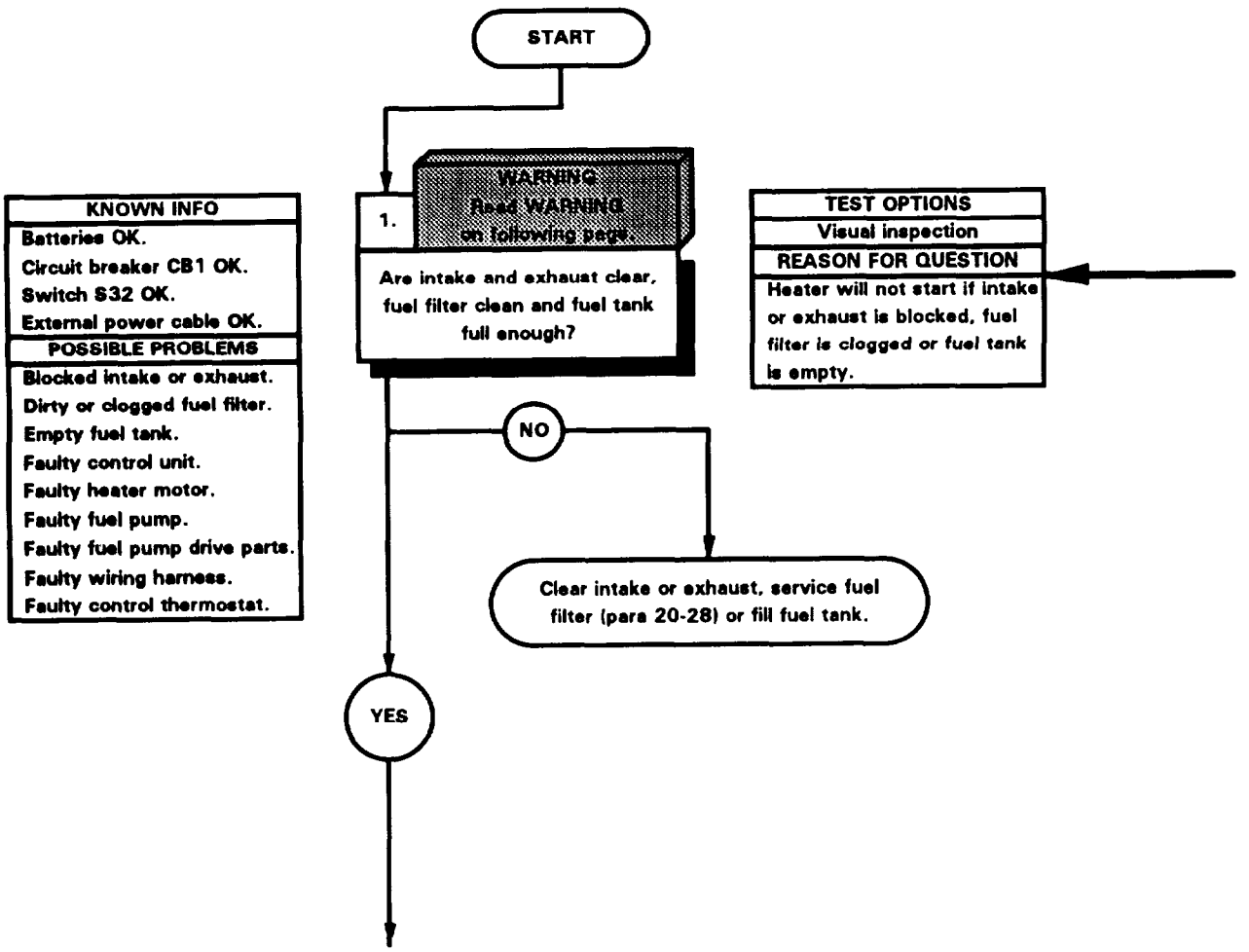
u2. CARGO ARCTIC HEATER DOES NOT START

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cargo arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

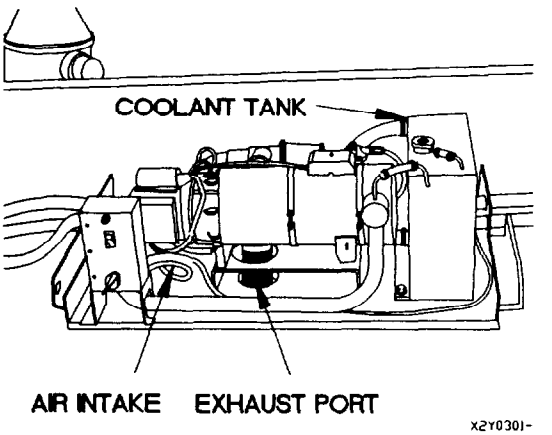
Material/Parts
Lockwasher (4) (Item 98, Appendix G)



WARNING

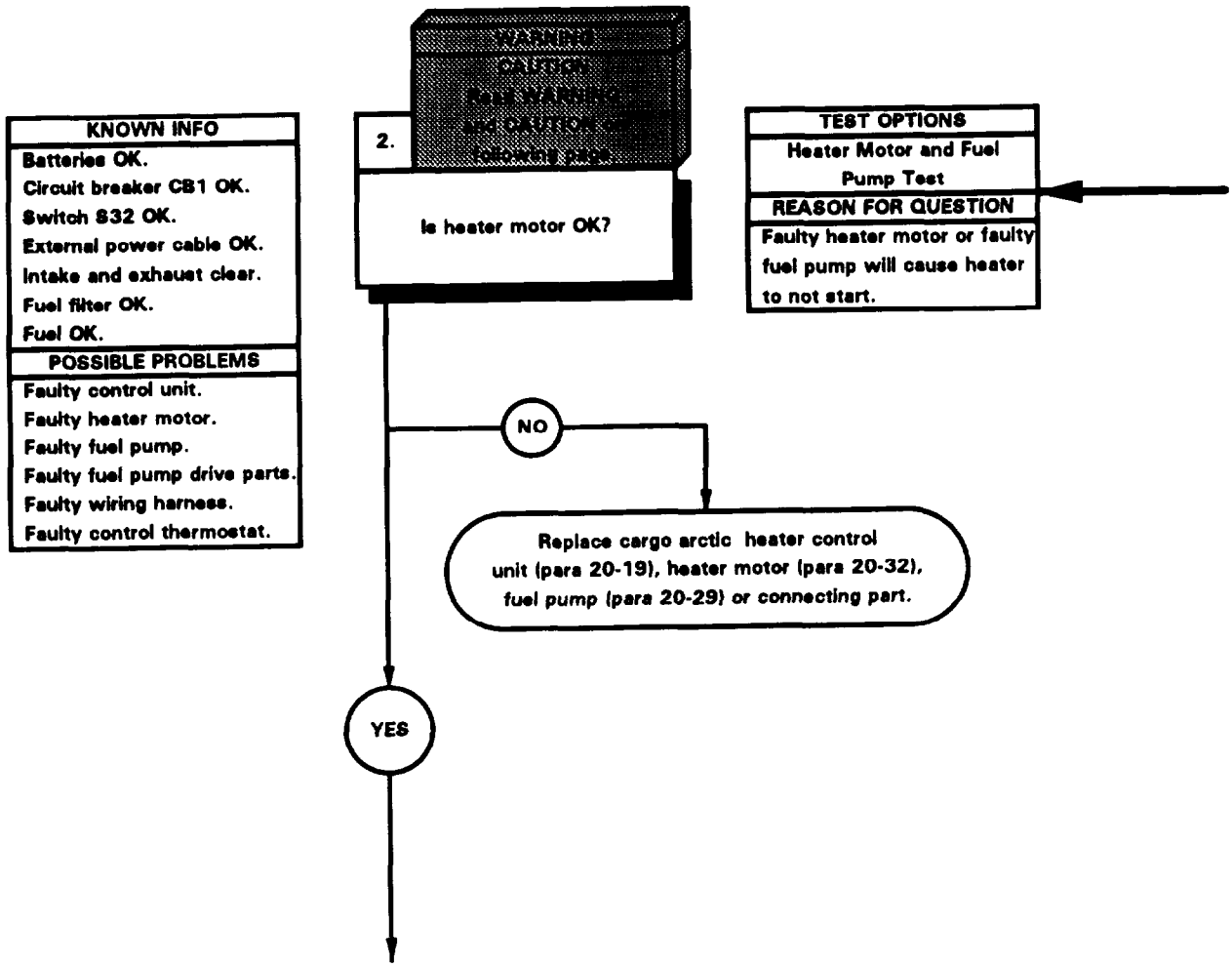
When cover is removed from cargo arctic heater for maintenance, aviod contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check coolant level and fill if required (TM 9-2320-365-10).
(4) Check level of fuel in tank (TM 9-2320-365-10).
(5) If fuel is gelled, drain and fill with correct low temperature mixture.
(6) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.



X2Y0301-

u2. CARGO ARCTIC HEATER DOES NOT START (CONT)



WARNING

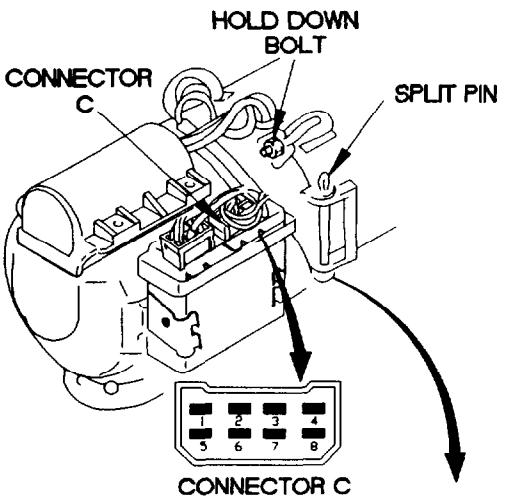
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

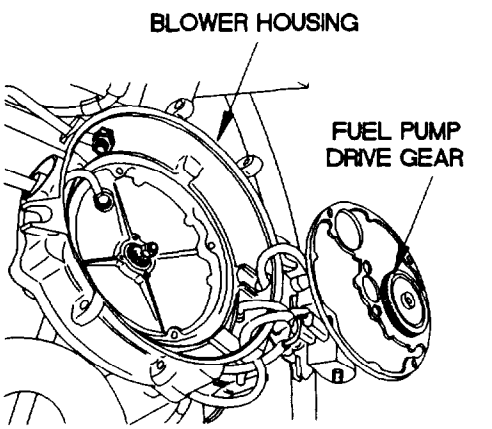
CAUTION

Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

HEATER MOTOR AND FUEL PUMP TEST

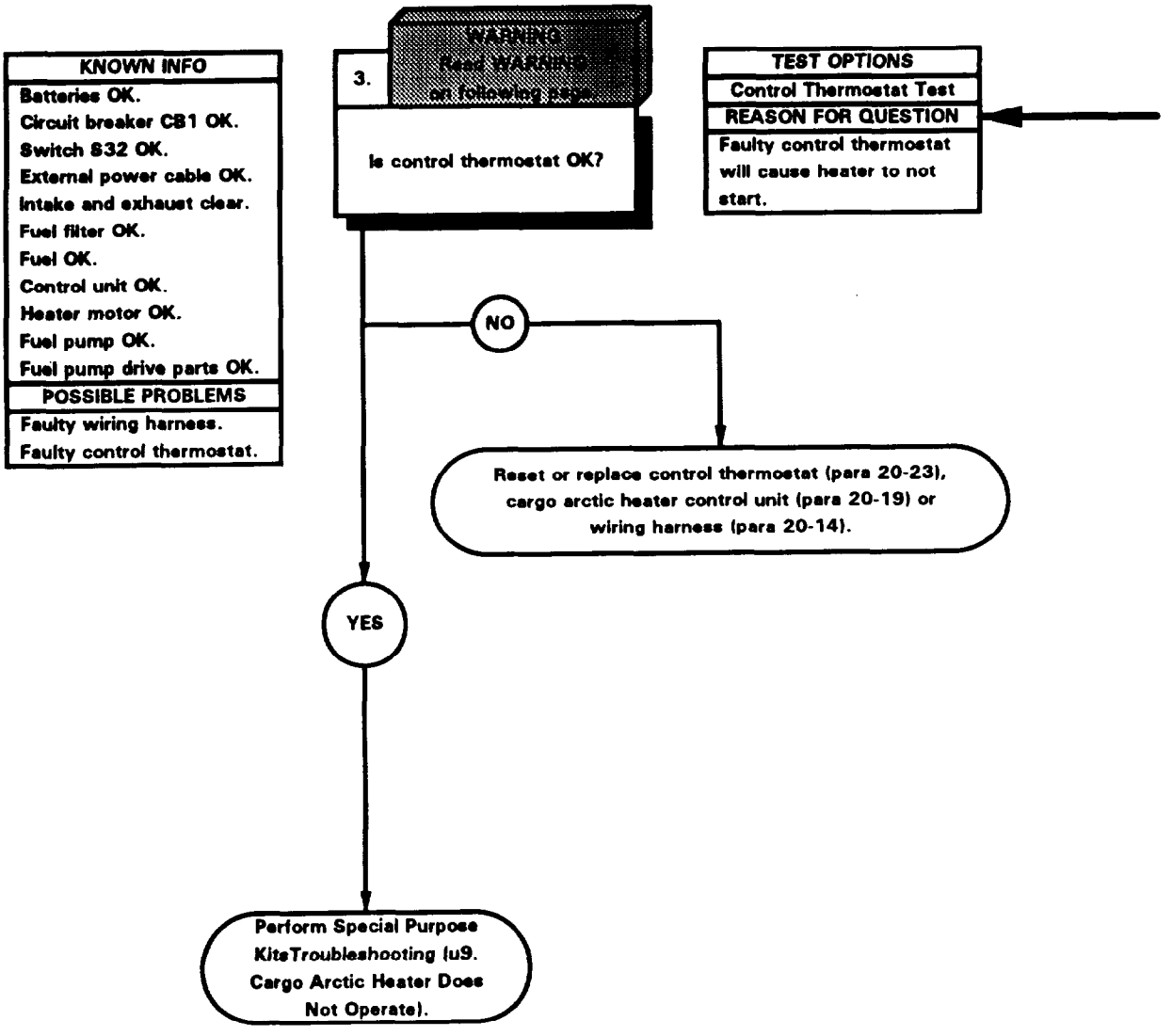
(1) Remove control unit from spring clip, invert and rest on clip. Ensure connectors are firmly seated.
(2) Start cargo arctic heater (TM 9-2320-365-10).
(3) Set multimeter to vdc position.
(4) Place negative (-) probe of multimeter on pin 5 of connector C.
(5) Place positive (+) probe of multimeter on pin 2 of connector C and note reading on multimeter.
(6) If voltage is not 20 volts or more, control unit is faulty.
(7) Shut down cargo arctic heater (TM 9-2320-365-10).
(8) Disconnect batteries (para 7-48).
(9) Disconnect connector C from control unit.
(10) Set multimeter to ohms position.
(11) Place positive (+) probe of multimeter on pin 2 of connector C.
(12) Place negative (-) probe of multimeter on pin 5 of connector C and note reading on multimeter.
(13) If resistance is not 30 - 40 ohms, heater motor is faulty.
(14) Connect connector C.
(15) Remove heater motor (para 20-32).
(16) Spin motor shaft. If motor binds, replace motor.
(17) Install heater motor (para 20-32).
(18) Open combustion chamber by removing split pin and loosening two hold down bolt nuts.
(19) Remove four screws and lockwashers securing blower housing cover. Discard lockwashers.
(20) Spin fuel pump drive gear. If fuel pump is binding, replace fuel pump.
(21) Check pump drive parts. Replace faulty part(s).
(22) Secure blower housing cover with four screws and lockwashers.
(23) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(24) Connect batteries (para 7-48).





X2Y0302-

u2. CARGO ARCTIC HEATER DOES NOT START (CONT)

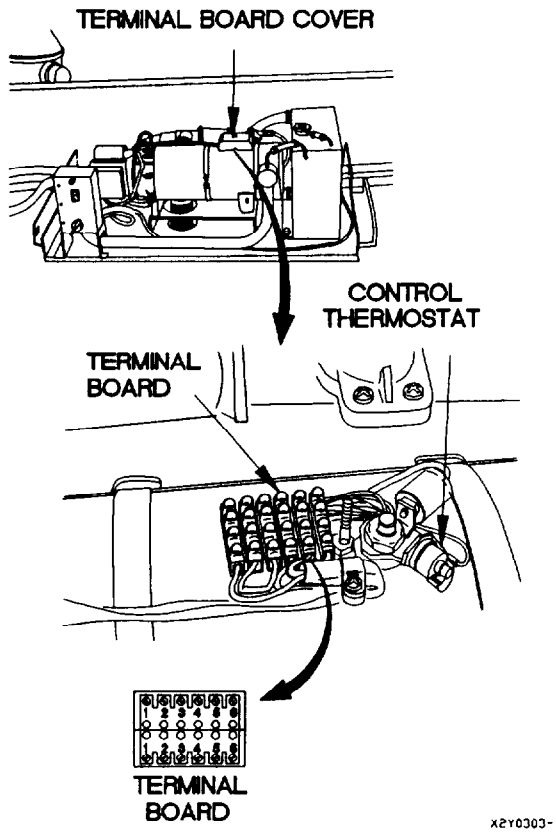


WARNING

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.

CONTROL THERMOSTAT TEST

(1) Start cargo arctic heater (TM 9-2320-365-10).
(2) Set multimeter to vdc position.
(3) Place negative (-) probe of multimeter on pin 5 of connector C.
(4) Place positive (+) probe of multimeter on pin 1 of connector C and note reading on multimeter.
(5) If voltage is not 20 volts or more, control unit is faulty.
(6) Move positive (+) probe to pin 7 of connector C and note reading on multimeter.
(7) If voltage is not 20 volts or more, go to step 8, of this task. If voltage is OK, go to step 16, of this task.
(8) Remove terminal board cover.
(9) Place negative (-) probe of multimeter on pin 5 of connector C.
(10) Place positive (+) probe of multimeter on terminal 6 of terminal board.
(11) If voltage is not present wiring harness is faulty.
(12) Move positive (+) probe of multimeter to terminal 5 of terminal board.
(13) If reading is 20 vdc or more, wiring harness is faulty.
(14) If voltage is zero, press reset on control thermostat.
(15) If voltage is still zero, control thermostat is faulty.
(16) Shut down cargo arctic heater (TM 9-2320-365-10).
(17) Install terminal board cover.
(18) Remove control unit from spring clip invert and install in spring clip.
(19) Install cargo arctic heater cover (TM 9-2320-365-10).



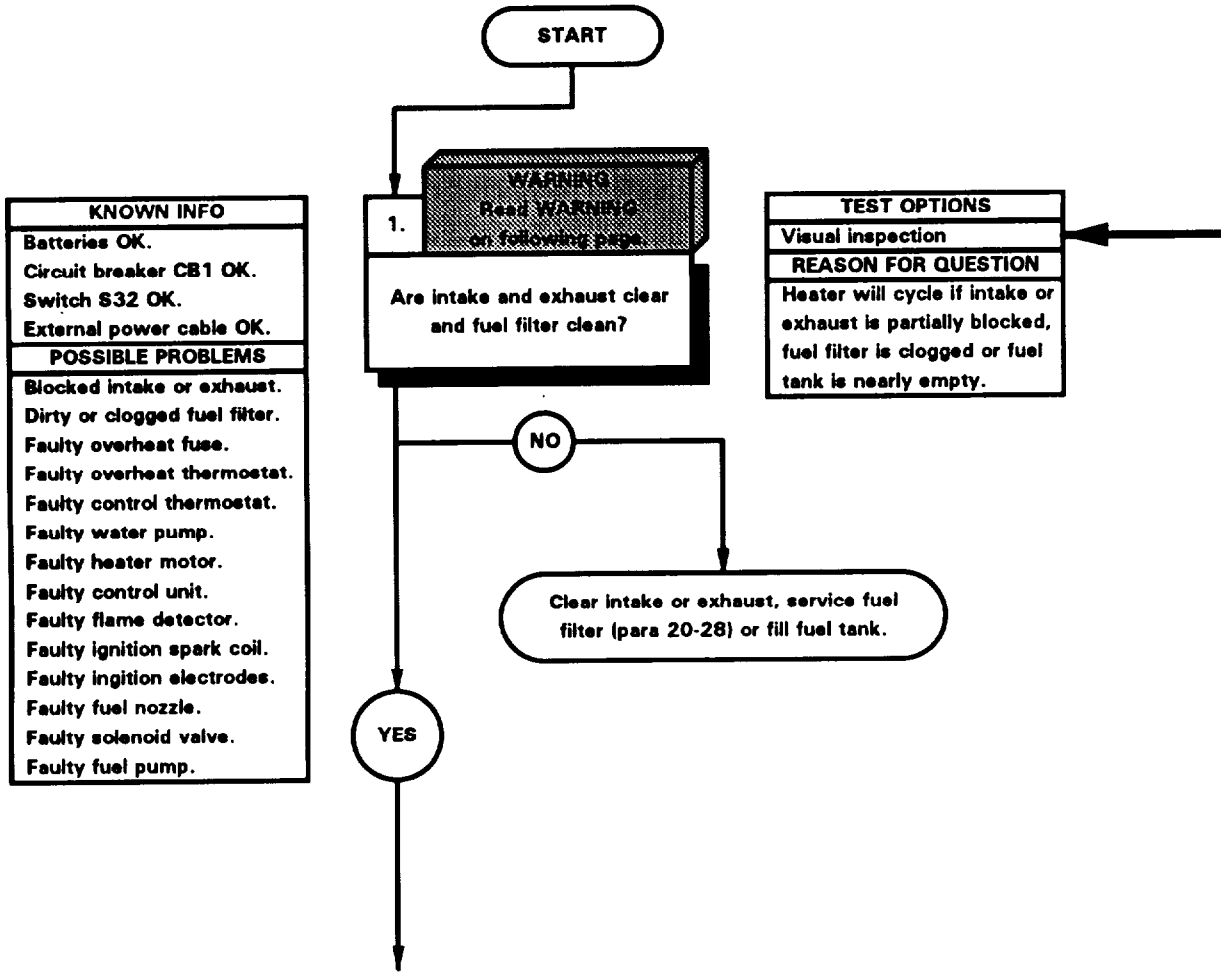
u3. AFTER CARGO ARCTIC HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cargo arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

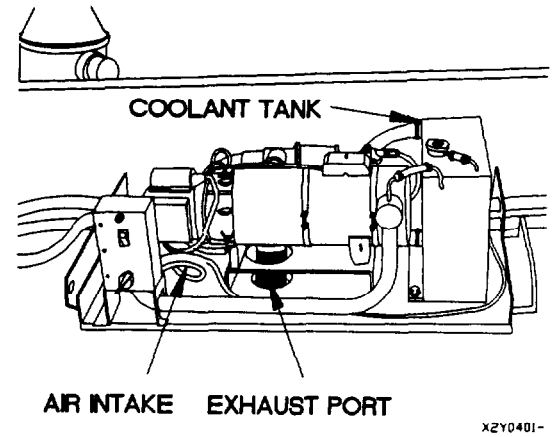
Material/Parts
Lockwasher (4) (Item 98, Appendix G)



WARNING

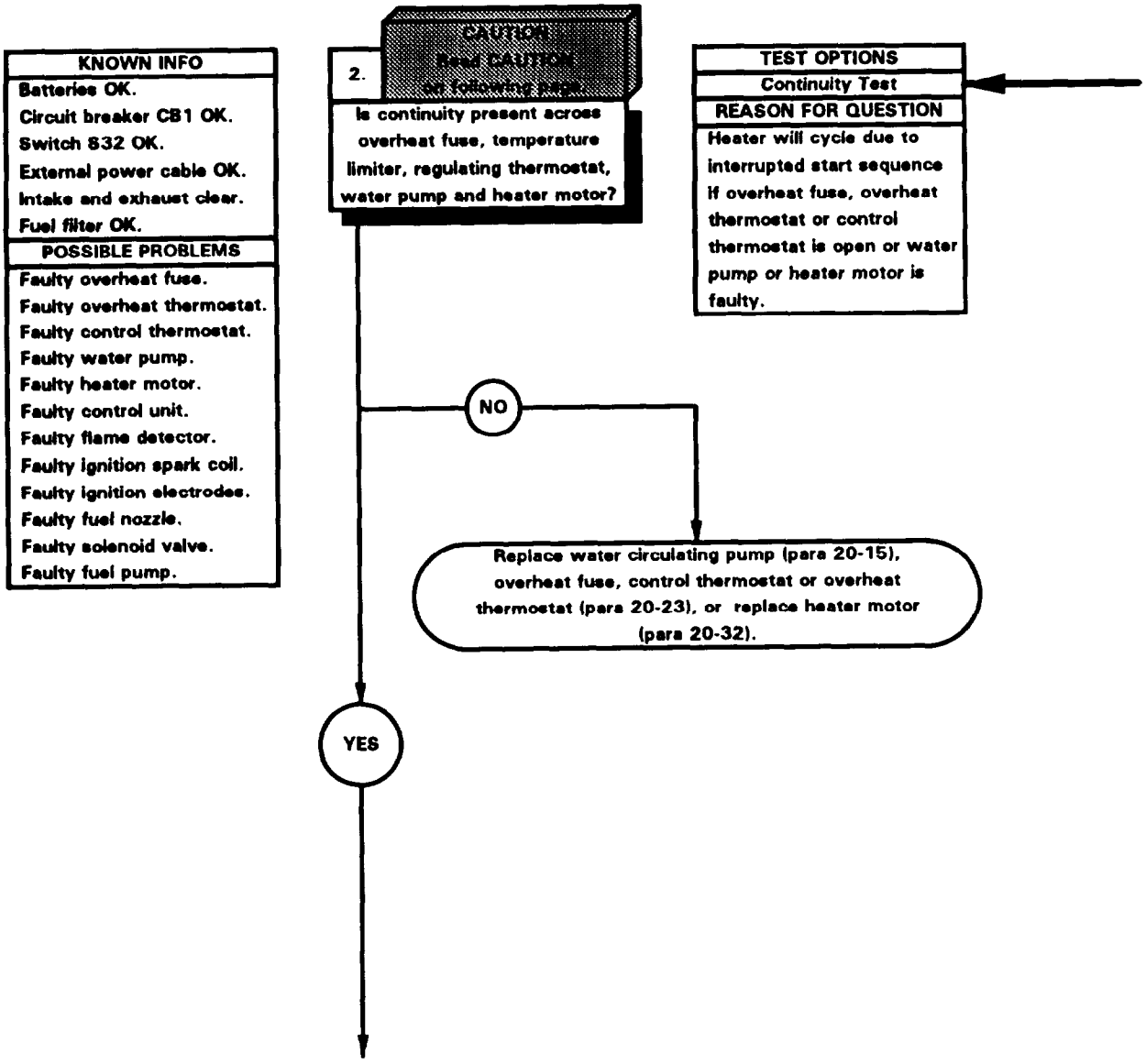
When cover is removed from cargo arctic heater for maintenance, aviod contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check level of fuel in tank (TM 9-2320-365-10).
(4) If fuel is gelled, drain and fill with correct low temperature mixture.
(5) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.



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u3. AFTER CARGO ARCTIC HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)

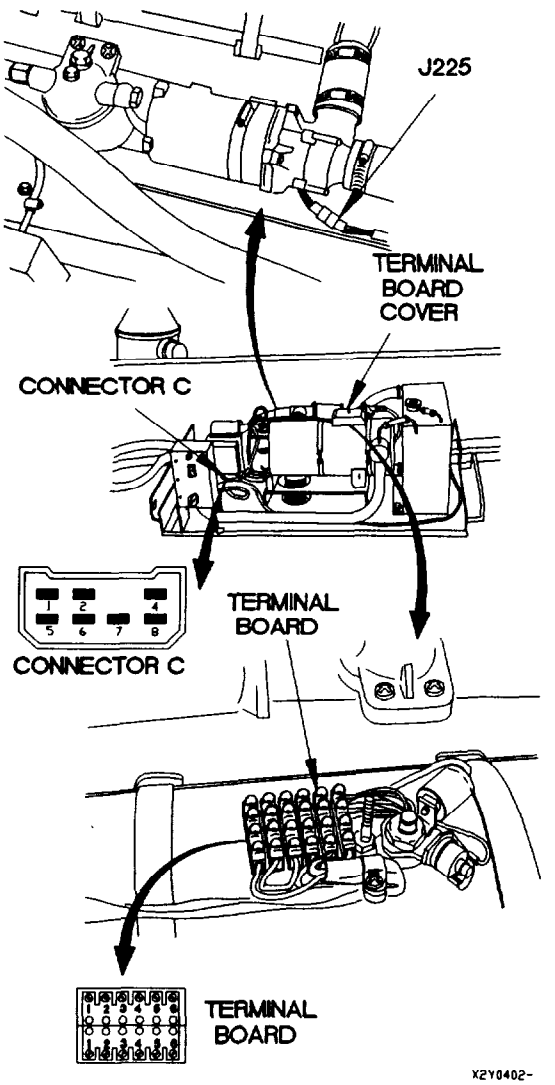


CAUTION

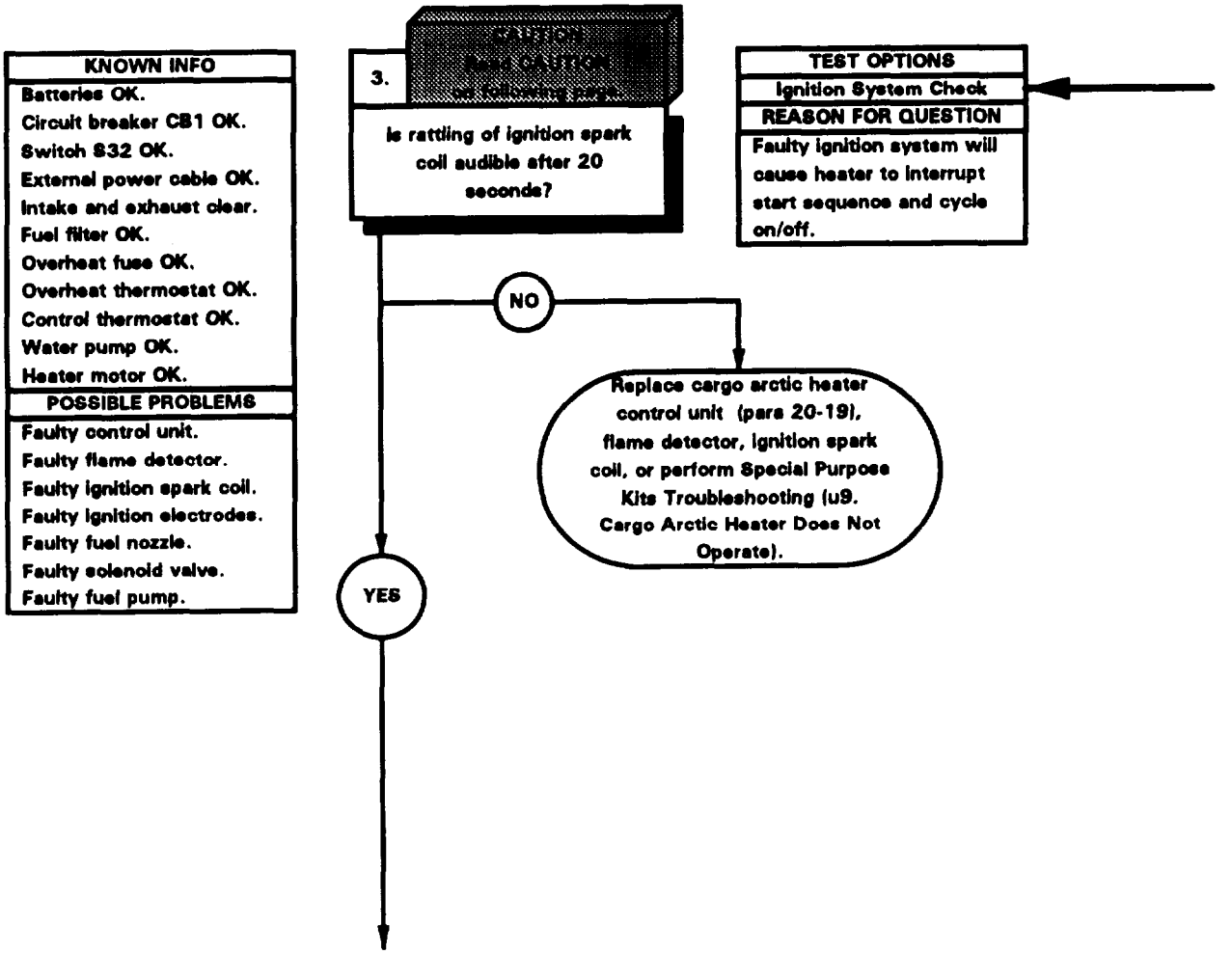
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

CONTINUITY TEST

(1) Disconnect batteries (para 7-48).
(2) Remove (pull up) terminal board cover.
(3) Set multimeter to ohms position.
(4) Place positive (+) probe of multimeter on terminal 1 of terminal board.
(5) Place negative (-) probe of multimeter on terminal 2 of terminal board and note reading on multimeter.
(6) If resistance is not .3-.5 ohms, overheat fuse is faulty.
(7) Place positive (+) probe of multimeter on terminal 3 of terminal board.
(8) Place negative (-) probe of multimeter on terminal 4 of terminal board and note reading on multimeter.
(9) If circuit is open, overheat thermostat (labeled Temp. Limiter is faulty.
(10) Place positive (+) probe of multimeter on terminal 5 of terminal board.
(11) Place negative (-) probe of multimeter on terminal 6 of terminal board and note reading on multimeter.
(12) If circuit is open, control thermostat (labeled Regulating Thermostat) is faulty.
(13) Disconnect connector from C on control unit.
(14) Place positive (+) probe of multimeter on pin 5 of connector C.
(15) Place negative (-) probe of multimeter on pin 2 of connector C and note reading on multimeter.
(16) If resistance is not 30-40 ohms, heater motor is faulty.
(17) Disconnect connector P225 from J225 on circulating pump.
(18) Place positive (+) probe of multimeter on pin 1 of connector J225.
(19) Place negative (-) probe of multimeter on pin 2 of connector J225 and note reading on multimeter.
(20) If resistance is not 40-60 ohms, circulating pump is faulty.
(21) Connect connector J225.
(22) Connect connector C.
(23) Connect batteries (para 7-48).



u3. AFTER CARGO ARCTIC HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)

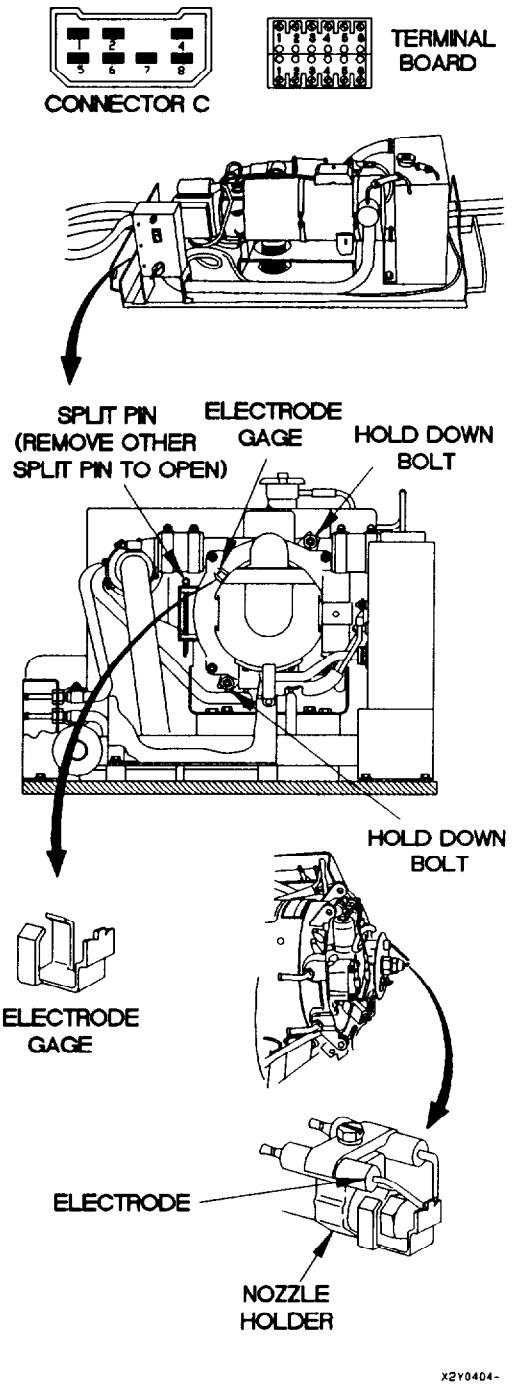


CAUTION

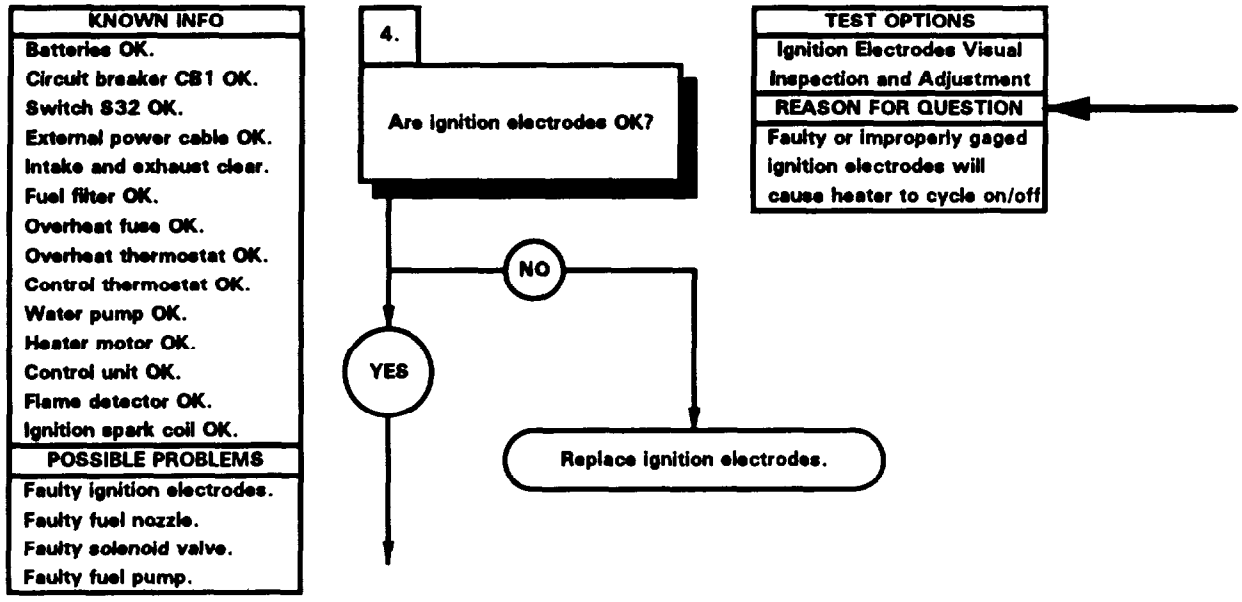
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

IGNITION SYSTEM CHECK

(1) Pry control unit from spring clips, invert and rest in clips to access connectors. Ensure connectors are firmly seated.
(2) Start cargo arctic heater (TM 9-2320-365-10).
(3) Note audible rattling of ignition spark coil. If ignition is working, proceed to next test. If ignition is not working, go to step (4).
(4) Set multimeter to vdc position.
(5) Place negative (-) probe of multimeter on pin 5 of connector C.
(6) Place positive (+) probe of multimeter on pin 8, of connector C and note reading on multimeter.
(7) Move positive (+) probe of multimeter to pin 4, of connector C and note reading on multimeter.
(8) Move positive (+) probe of multimeter to pin 2, of connector C and note reading on multimeter.
(9) If voltage is less than 20 volts, control unit is faulty.
(10) If voltage is 20-24 volts, perform Special Purpose Kits Troubleshooting (u9. Cargo Arctic Heater Does Not Operate).
(11) Shut down cargo arctic heater (TM 9-2320-365-10).
(12) Disconnect batteries (para 7-48).
(13) Open combustion chamber by removing split pin and loosening nuts on holdown bolts.
(14) Remove cover from overheat fuse terminal board.
(15) Disconnect connector C from control unit.
(16) Set multimeter to ohms position.
(17) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(18) Place positive (+) probe of multimeter on pin 6 of connector C.
(19) If resistance is not between 300 ohms - 100 k-ohms, flame detector is faulty.
(20) Place negative (-) probe of multimeter on pin 5 of connector C.
(21) Place positive (+) probe of multimeter on pin 8 of connector C and note reading on multimeter.
(22) If resistance is not 45 - 65 ohms, ignition spark coil is faulty.

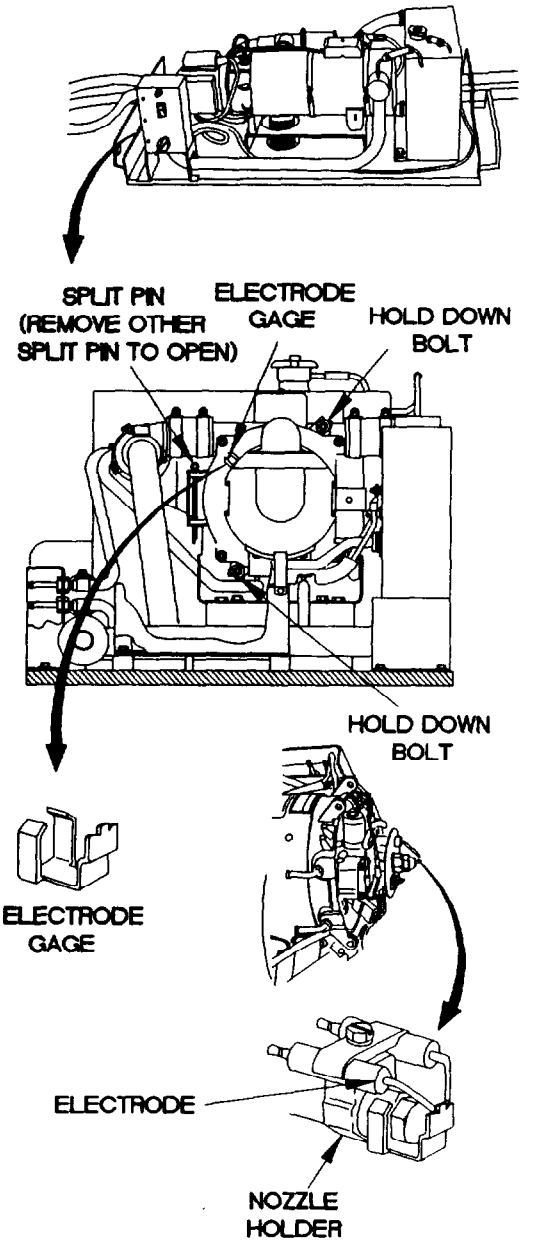


u3. AFTER CARGO ARCTIC HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)



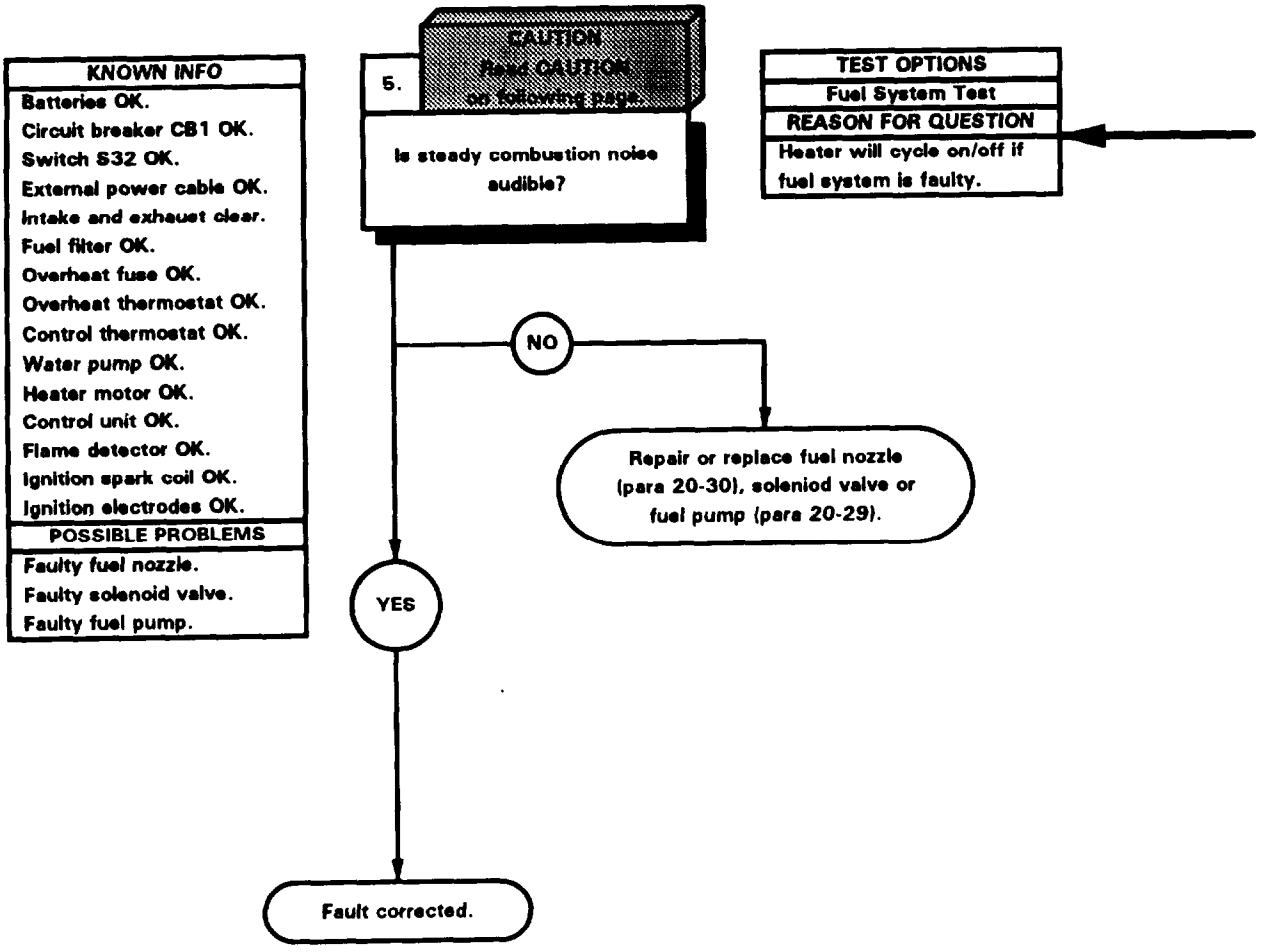
IGNITION ELECTRODES VISUAL INSPECTION AND ADJUSTMENT

(1) Inspect ignition electrodes for cracked insulators, pitting and damage.
(2) Remove electrode gage by removing screw holding it to end cap.
(3) Loosen electrode clamp hold down bolt and position gage as illustrated with front against fuel nozzle.
(4) Lay electrode tips in notches in gage.
(5) Tighten hold down bolt, while ensuring electrodes stay correctly positioned.
(6) Return electrode gage to its storage position and install screw.
(7) Connect connector C.
(8) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(9) Connect batteries (para 7-48).



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u3. AFTER CARGO ARCTIC HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)

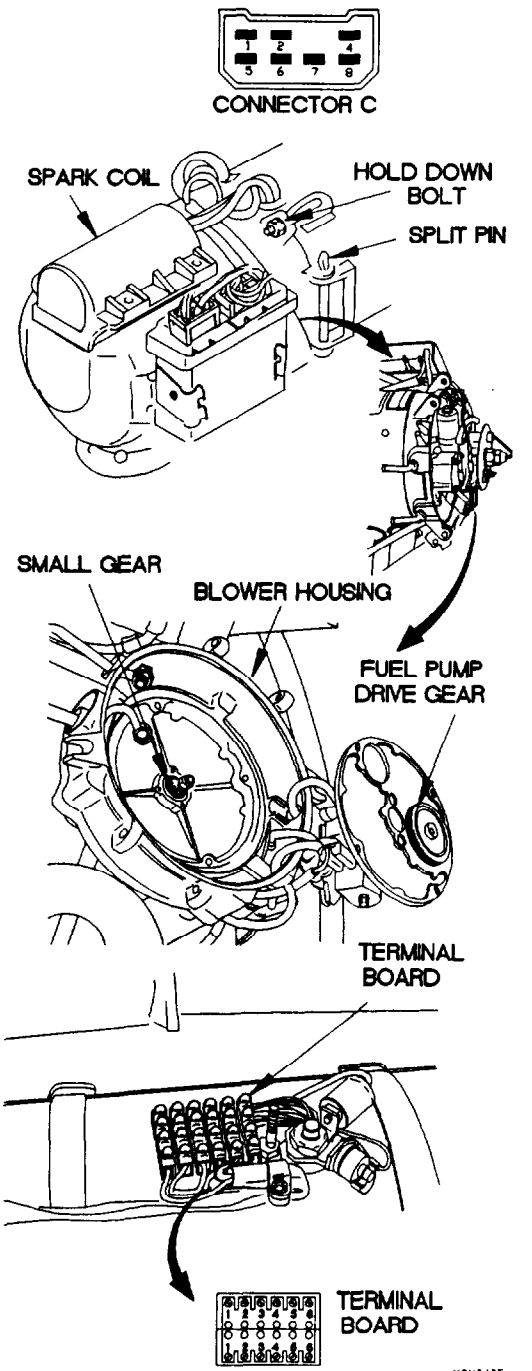


CAUTION

Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

FUEL SYSTEM TEST

(1) Start cargo arctic heater (TM 9-2320-365-10).
(2) Listen for steady combustion noise.
  (a) If combustion noise is steady, this test is concluded.
  (b) If combustion noise is not steady, continue testing at step (3) of this task.
(3) Shut down cargo arctic heater (TM 9-2320-365-10).
(4) Remove four screws on ignition spark coil and disconnect ground wires.
(5) Open combustion chamber by removing split pin and loosening nuts on hold down bolts.
(6) Start heater, observe that atomized fuel is sprayed evenly into combustion chamber.
(7) If spray pattern is OK, perform Special Purpose Kits Troubleshooting (u9. Cargo Arctic Heater Does Not Operate).
(8) If fuel spray is weak or off-center, examine fuel nozzle and clean or replace.
(9) Disconnect batteries (para 7-48).
(10) Disconnect connector C from control unit.
(11) Set multimeter to ohms position.
(12) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(13) Place positive (+) probe of multimeter on pin 5 of connector C.
(14) If resistance is not 50 - 60 ohms, solenoid valve is faulty.
(15) Remove four screws and lockwashers holding blower housing together. Discard lockwashers.
(16) Spin large gear that drives fuel pump.
(17) If gear fails to spin or is hard to spin fuel pump is faulty.
(18) Spin small gear to check drive parts and replace faulty components.
(19) Fit blower housing parts together and secure with four lockwashers and screws.
(20) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(21) Install ignition spark coil to hood by connecting ground wires and securing to hood with four washers and screws.
(22) Connect connector C.
(23) Remove control unit from spring clip invert and install in spring clip.
(24) Install cover on overheat fuse terminal board.
(25) Install cargo arctic heater cover (TM 9-2320-365-10).
(26) Connect batteries (para 7-48).



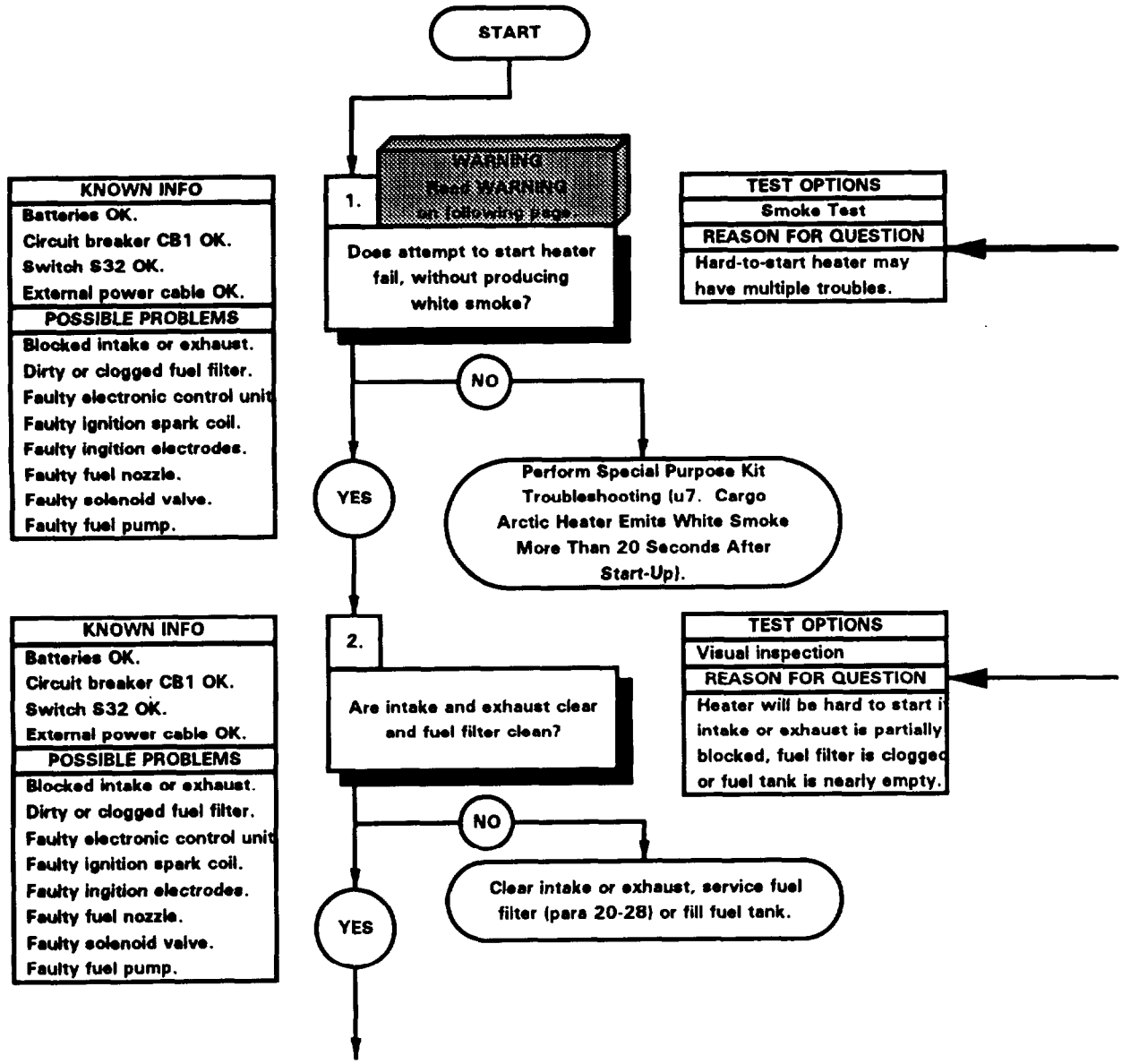
u4. CARGO ARCTIC HEATER HARD TO START

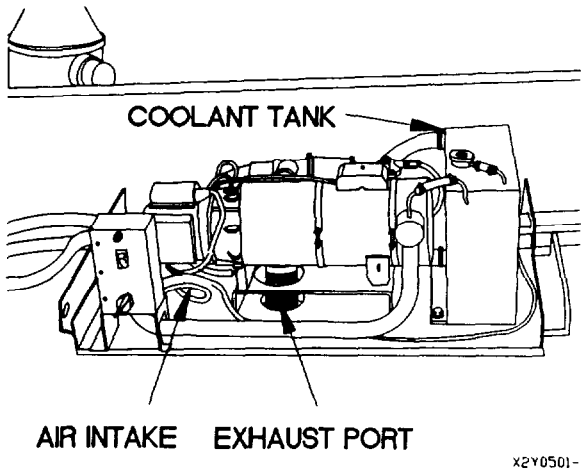
INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Cargo arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

Material/Parts
- Lockwasher (4) (Item 98, Appendix G)





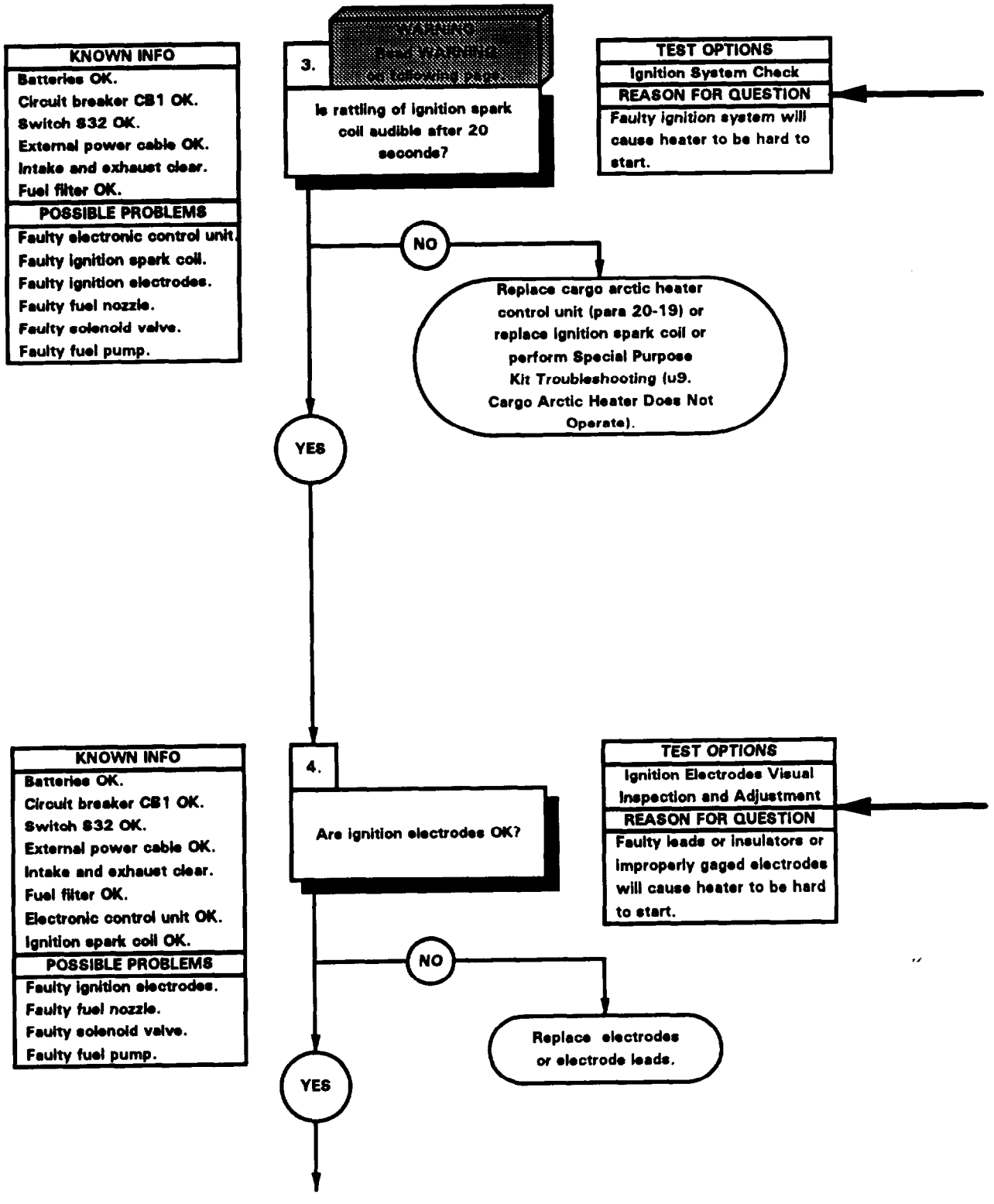
WARNING

When cover is removed from cargo arctic heater for maintenance, aviod contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

SMOKE TEST
(1) Attempt to start cargo arctic heater (TM 9-2320-365-10).
(2) Obeserve exhaust port for smoke, when heater fails to start. If heater emits white smoke, perform Special Purpose Kit Troubleshooting (u7. Cargo Arctic Heater Emits White Smoke More Than 20 Seconds After Start-Up).

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check level of fuel in tank (TM 9-2320-365-10).
(4) If fuel is gelled, drain and fill with correct low temperature mixture.
(5) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.

u4. CARGO ARCTIC HEATER HARD TO START (CONT)

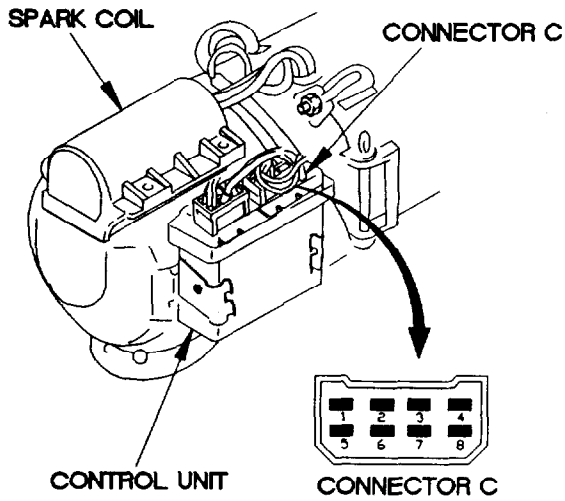


WARNING

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.

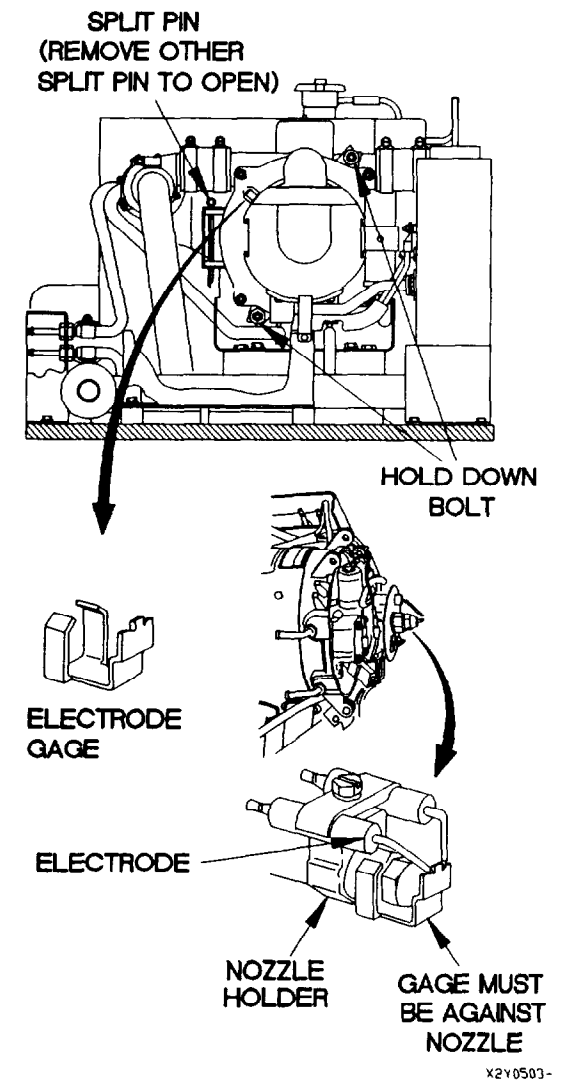
IGNITION SYSTEM CHECK

(1) Pry control unit from spring clips, invert and rest in clips to access connectors. Ensure connectors are firmly seated.
(2) Start cargo arctic heater (TM 9-2320-365-10).
(3) Note audible rattling of ignition spark coil. If ignition is working, proceed to next test. If ignition is not working, go to step (4).
(4) Set multimeter to vdc position.
(5) Place negative (-) probe of multimeter on pin 5 of connector C.
(6) Place positive (+) probe of multimeter on pin 8, of connector C and note reading on multimeter.
(7) Move positive (+) probe of multimeter to pin 4, of connector C and note reading on multimeter.
(8) If voltage is less than 20 volts, control unit is faulty.
(9) Shut down cargo arctic heater (TM 9-2320-365-10).
(10) Disconnect connector C from control unit.
(11) Set multimeter to ohms position.
(12) Place negative (-) probe of multimeter on pin 5 of connector C.
(13) Place positive (+) probe of multimeter on pin 8 of connector C and note reading on multimeter.
(14) If resistance is not 45 - 65 ohms, ignition spark coil is faulty.

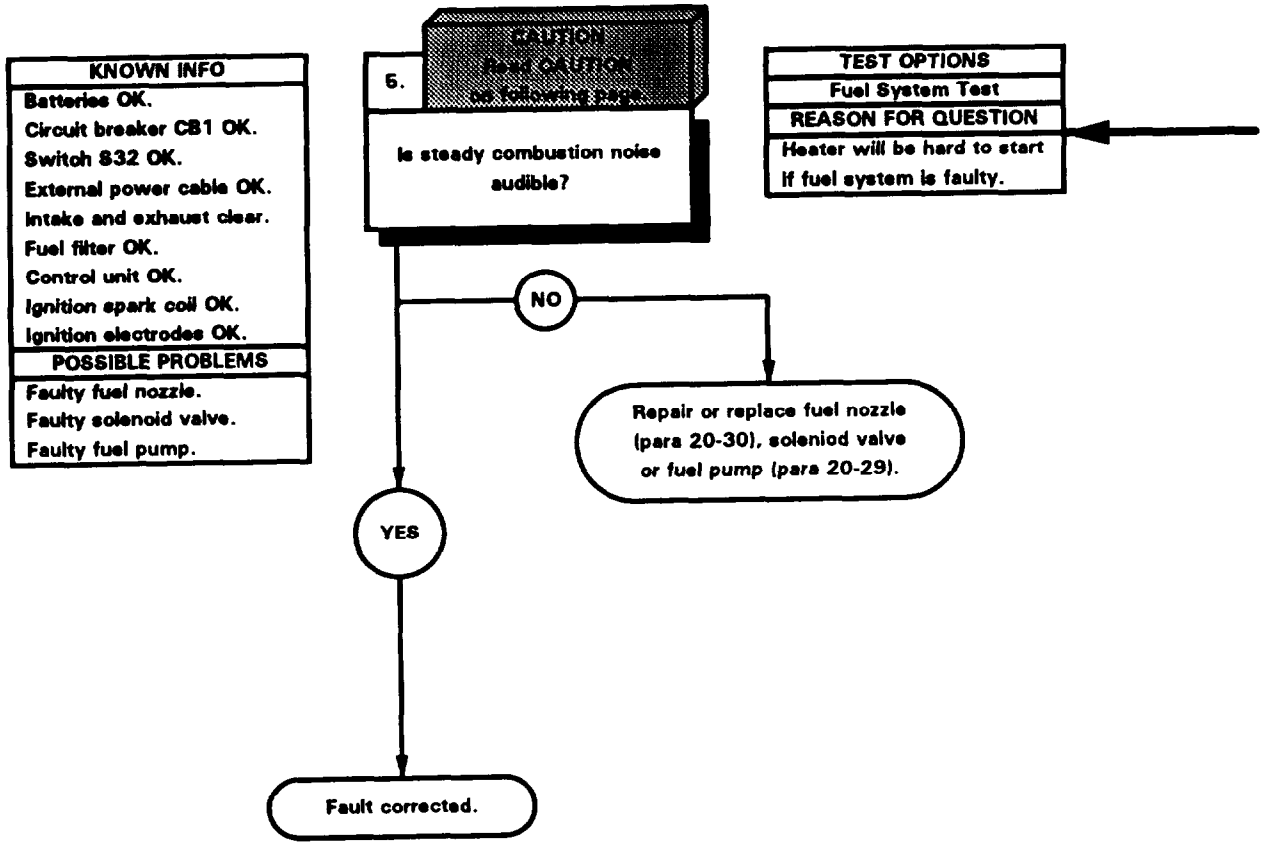


IGNITION ELECTRODES VISUAL INSPECTION AND ADJUSTMENT

(1) Open combustion chamber by removing split pin and loosening nuts on two holdown bolts.
(2) Inspect ignition electrodes and for cracked insulators, pitting and damage and check electrode leads for damage.
(3) Remove electrode gage by removing screw holding it to hood.
(4) Loosen electrode clamp hold down bolt and position gage as illustrated with front against fuel nozzle.
(5) Lay electrode tips in notches in gage.
(6) Tighten hold down bolt, while ensuring electrodes stay correctly positioned.
(7) Return electrode gage to its storage position and install screw.
(8) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(9) Connect connector C.



u4. CARGO ARCTIC HEATER HARD TO START (CONT)

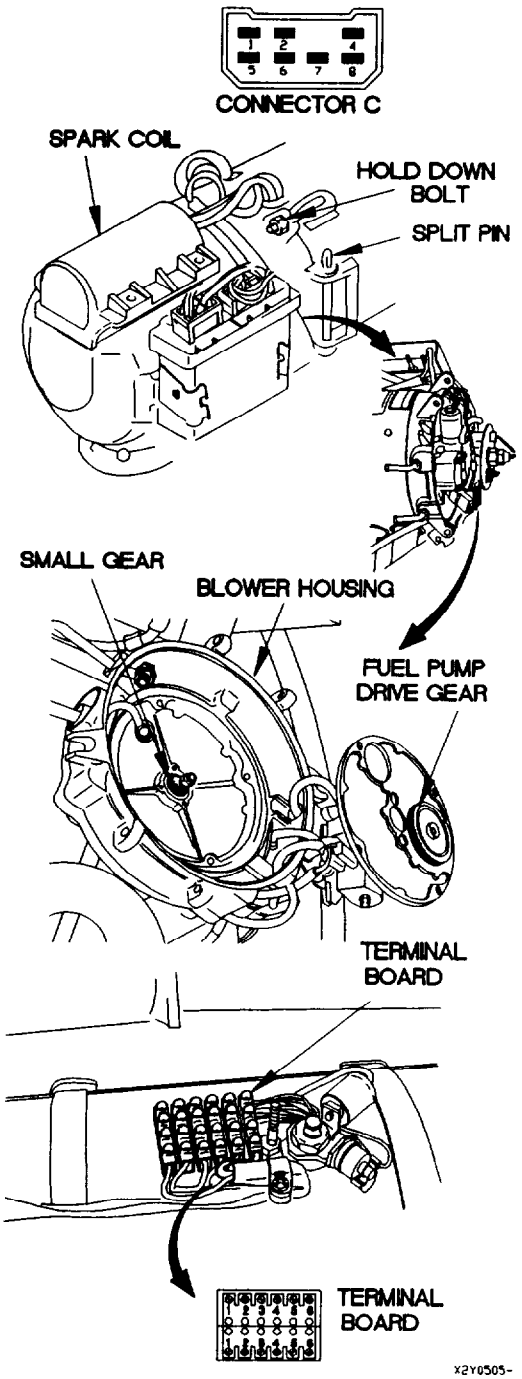


CAUTION

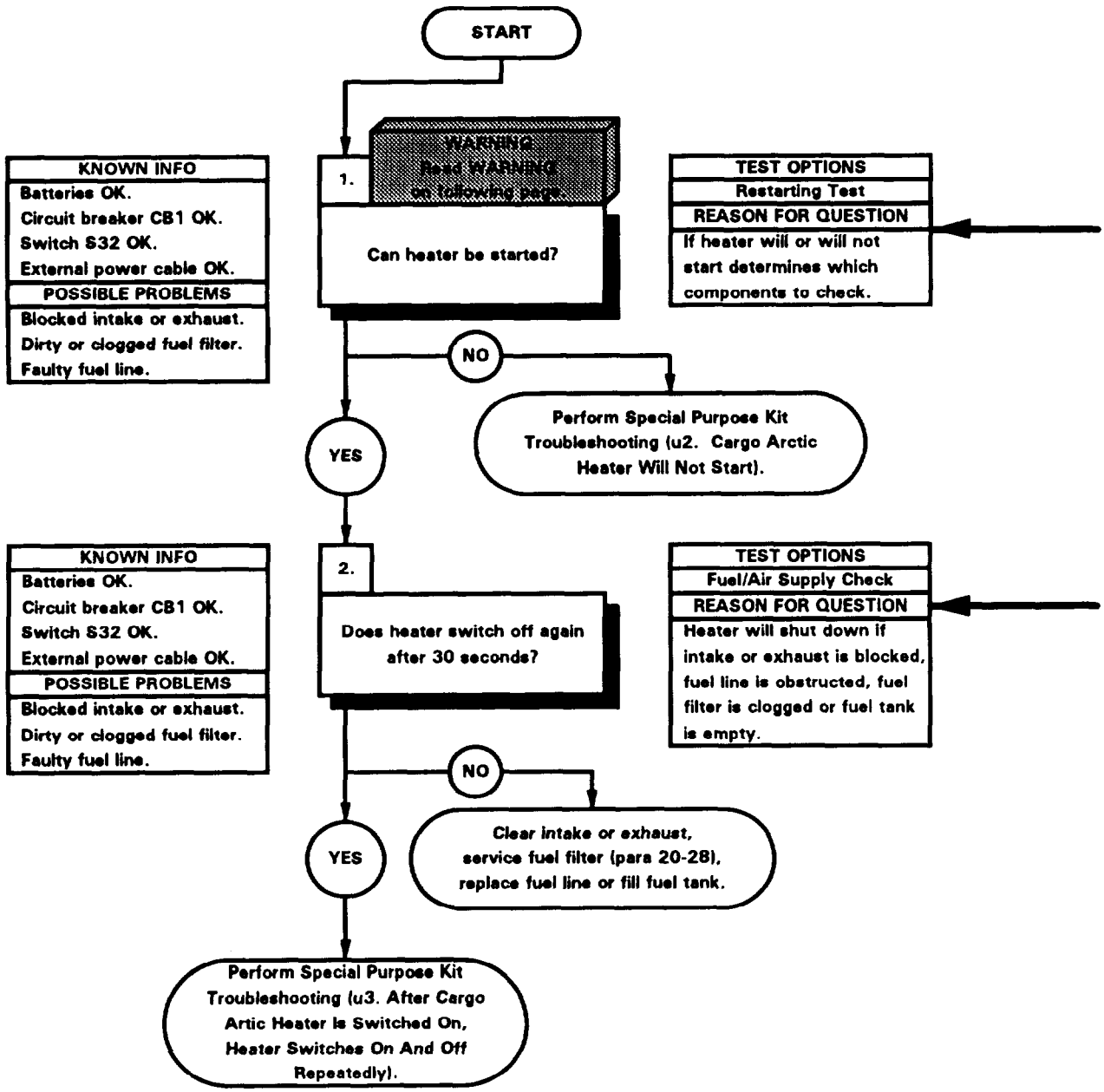
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

FUEL SYSTEM TEST

(1) Start cargo arctic heater (TM 9-2320-365-10).
(2) Listen for steady combustion noise.
  (a) If combustion noise is steady, this test is concluded.
  (b) If combustion noise is not steady, continue testing at step (3) of this task.
(3) Shut down cargo arctic heater (TM 9-2320-365-10).
(4) Remove four screws on ignition spark coil and disconnect ground wires.
(5) Open combustion chamber by removing split pin and loosening nuts on hold down bolts.
(6) Start cargo arctic heater (TM 9-2320-365-10).
(7) Observe that atomized fuel is sprayed evenly into combustion chamber.
(8) If spray pattern is OK, perform Special Purpose Kits Troubleshooting (u9. Cargo Arctic Heater Does Not Operate).
(9) If fuel spray is weak or off-center, examine fuel nozzle and clean or replace.
(10) Disconnect batteries (para 7-48).
(11) Remove cover from overheat fuse terminal board.
(12) Disconnect connector C from control unit.
(13) Set multimeter to ohms position.
(14) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(15) Place positive (+) probe of multimeter on pin 5 of connector C and note reading on multimeter.
(16) If resistance is not 50 - 60 ohms, solenoid coil is faulty.
(17) Remove four screws and lockwashers holding blower housing together. Discard lockwashers.
(18) Spin large gear that drives fuel pump.
(19) If gear fails to spin or is hard to spin fuel pump is faulty.
(20) Spin small gear to check drive parts and replace faulty components.
(21) Fit blower housing parts together and secure with four lockwashers and screws.
(22) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(23) Install ignition spark coil to hood by connecting ground wires and securing to hood with four washers and screws.
(24) Connect connector C.
(25) Remove control unit from spring clip invert and install in spring clip.
(26) Install cover on overheat fuse terminal board.
(27) Install cargo arctic heater cover (TM 9-2320-365-10).
(28) Connect batteries (para 7-48).



u5. CARGO ARCTIC HEATER TURNS ITSELF OFF	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10). Cargo arctic heater cover removed (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C)



WARNING

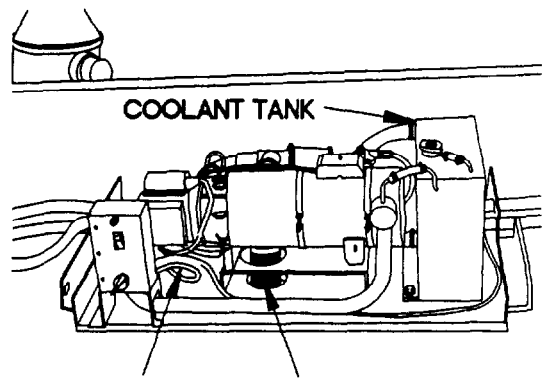
When cover is removed from cargo arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

RESTARTING TEST

(1) Attempt to start cargo arctic heater (TM 9-2320-365-10).
(2) If heater will not start, perform Special Purpose Kit Troubleshooting (u2. Cargo Arctic Heater Will Not Start).

FUEL/AIR SUPPLY TEST

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check level of fuel in tank (TM 9-2320-365-10).
(4) If fuel is gelled, drain and fill with correct low temperature mixture.
(5) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.
(6) Check fuel lines and hoses from tank to heater and return. Ensure that lines are not kinked, punctured or crushed. Repair or replace fuel line. Pinch hoses and fuel lines to check for obstructions.
(7) Install cargo arctic heater cover (TM 9-2320-365-10).



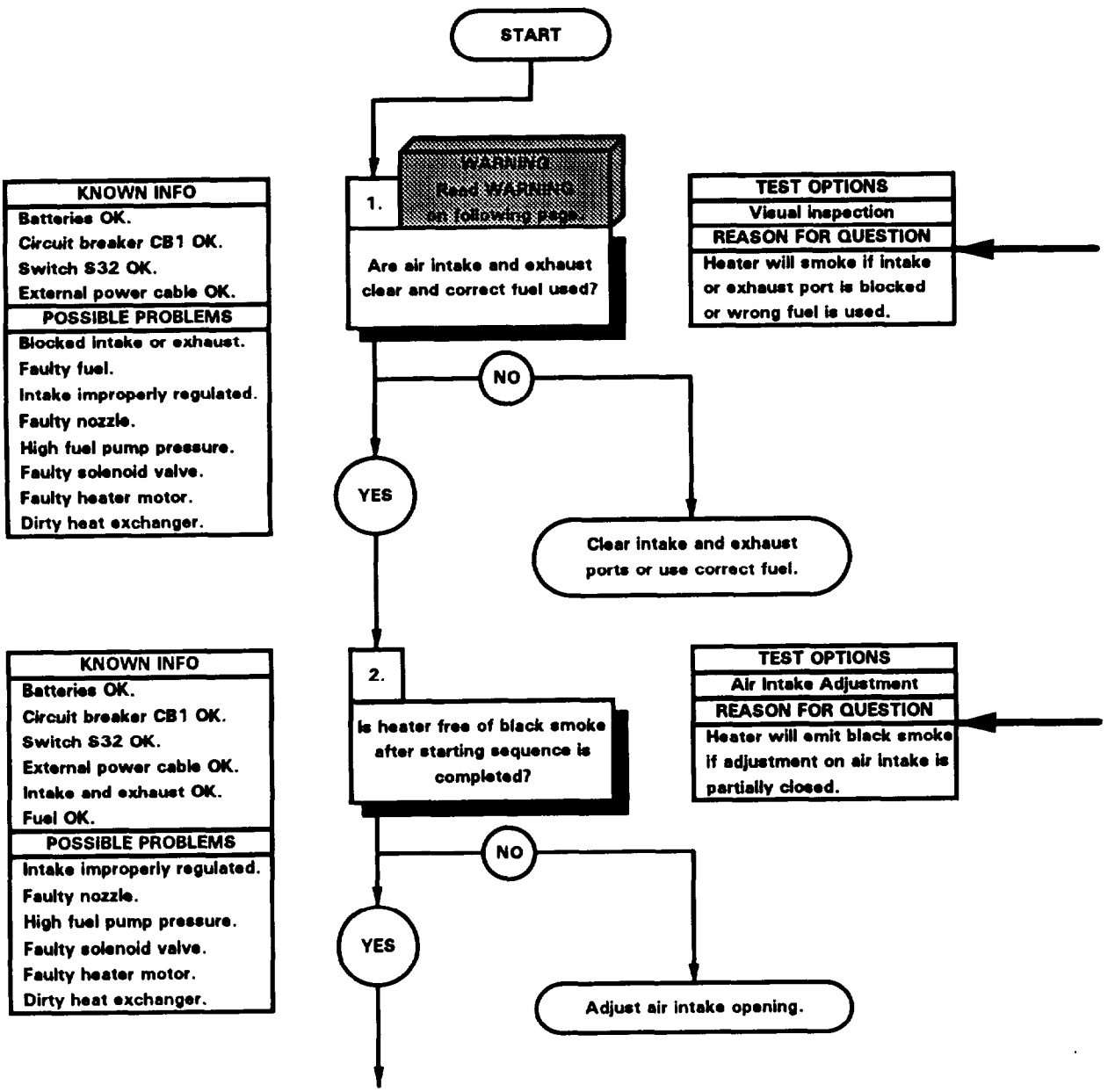
u6. CARGO ARCTIC HEATER EMITS BLACK SMOKE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cargo arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)

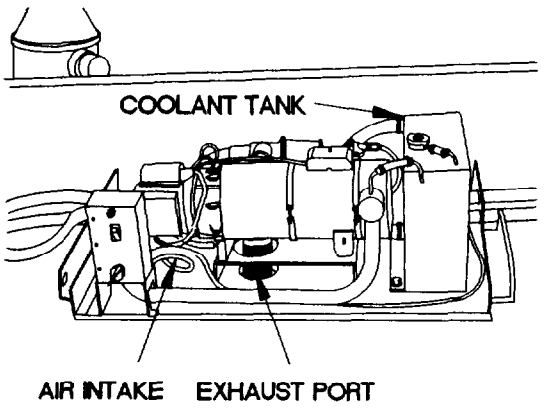
Material/Parts
Lockwasher (4) (Item 98, Appendix G)



WARNING

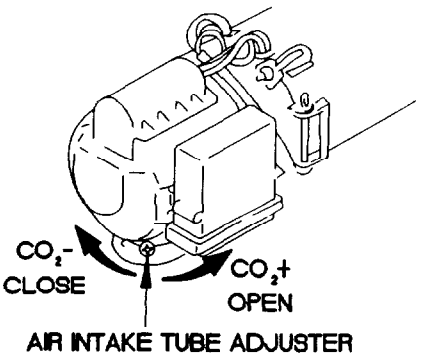
When cover is removed from cargo arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel in tank. If fuel is gelled, drain and fill with correct low temperature mixture (TM 9-2320-365-10).
(3) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.
(4) Check fuel lines and hoses from tank to heater and return. Ensure that lines are not kinked, punctured or crushed. Repair or replace fuel line.



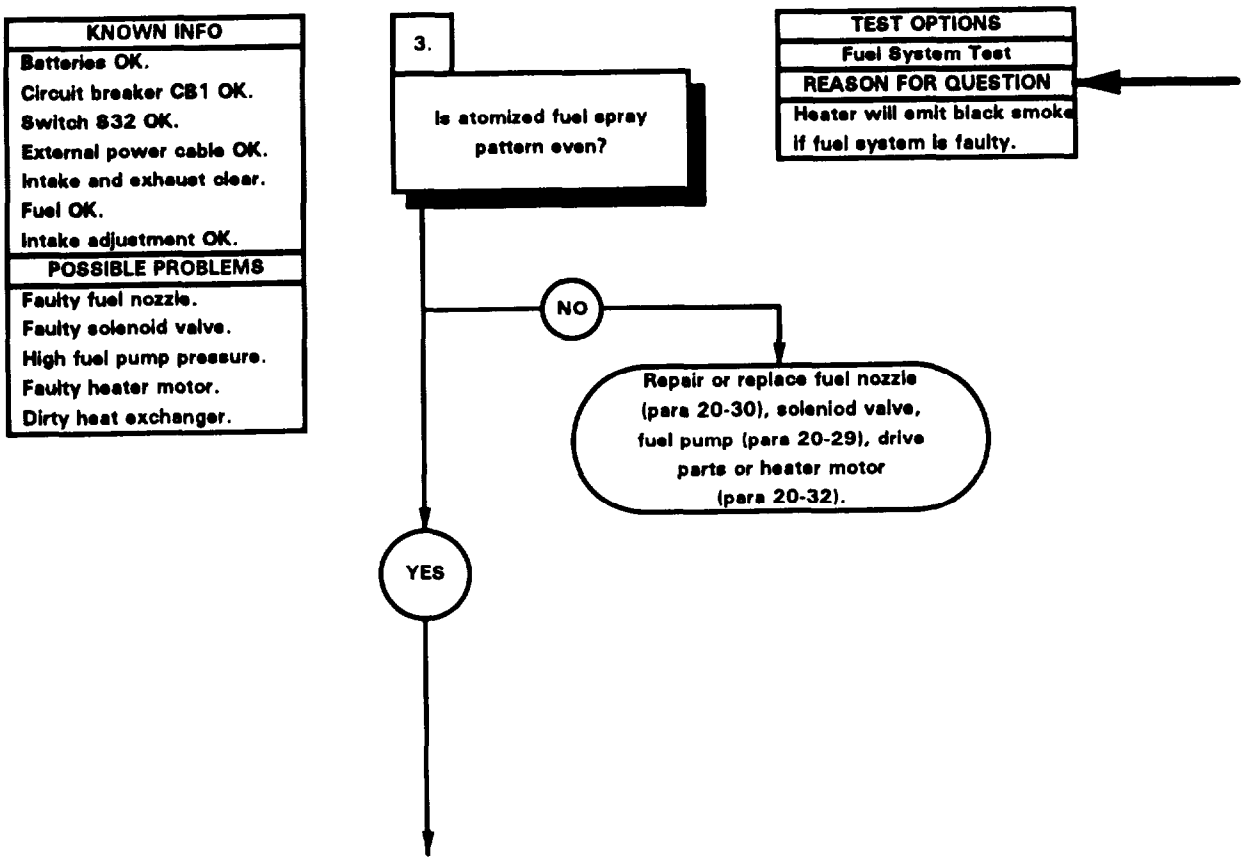
AIR INTAKE ADJUSTMENT

(1) Start cargo arctic heater (TM 9-2320-365-10).
(2) Observe black smoke. If smoke stops after start-up, reset adjustment on air intake tube by opening slightly.



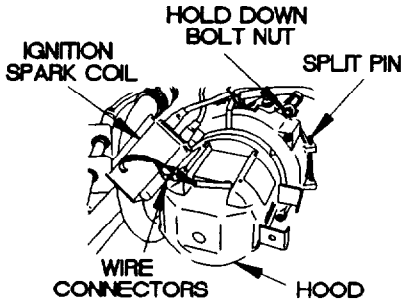
X2Y0701-

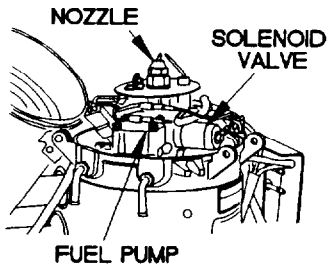
u6. CARGO ARCTIC HEATER EMITS BLACK SMOKE (CONT)

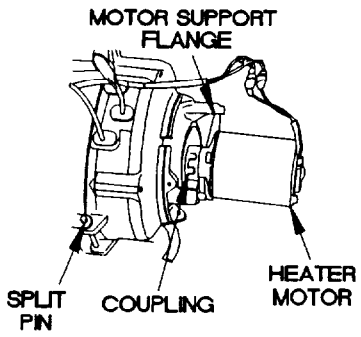


FUEL SYSTEM TEST

(1) Shut down cargo arctic heater (TM 9-2320-365-10).
(2) Remove four screws on ignition spark coil and disconnect ground wires.
(3) Open combustion chamber by removing one split pin and loosening nuts on hold down bolts.
(4) Start cargo arctic heater (TM 9-2320-365-10).
(5) Observe that atomized fuel is sprayed evenly into combustion chamber.
(6) If fuel drips from nozzle before spraying, solenoid valve is faulty.
(7) If fuel spray is not atomized or spray pattern is irregular, examine fuel nozzle and clean or replace.
(8) Check solenoid valve for leaking fuel. If fuel is leaking from fuel pump, solenoid valve is faulty.
(9) Shut down cargo arctic heater (TM 9-2320-365-10).
(10) Remove hood by unscrewing four screws and lockwashers. Discard lochwashers.
(11) Spin couplings to check free movement of motor and drive parts on shaft. If shaft is not free, replace binding or draging part.
(12) Ensure spark coil ground wires are disconnected and start cargo arctic heater (TM 9-2320-365-10).
(13) Observe motor rotational speed. If slow, heater motor is faulty.
(14) Shut down cargo arctic heater (TM 9-2320-365-10).
(15) Install hood with four screws and lockwashers.
(16) Connect ignition spark coil wires and secure ignition spark coil to hood with four screws and washers.

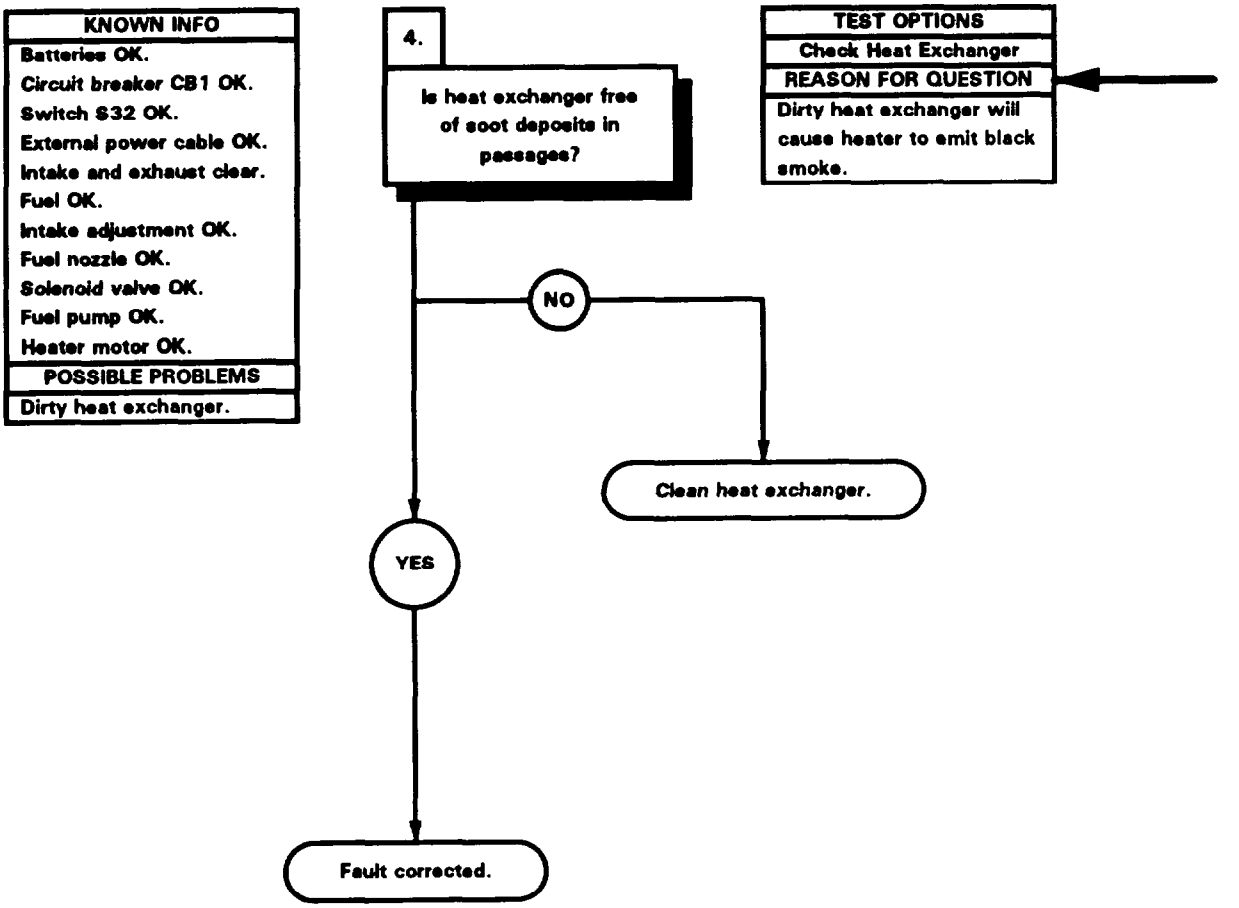






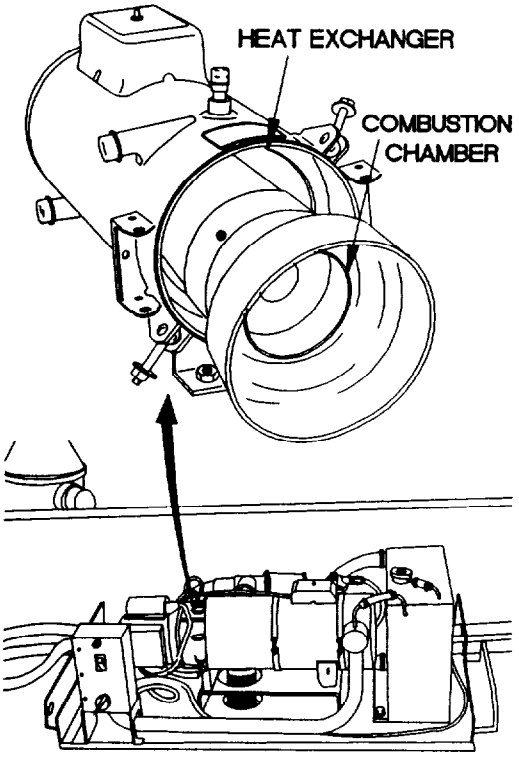
X2Y0703-

u6. CARGO ARCTIC HEATER EMITS BLACK SMOKE (CONT)



CHECK HEAT EXCHANGER

(1) Remove second split pin and set heater head out of the way.
(2) Remove combustion chamber from heater and set aside.
(3) Check heat exchanger for soot clogged passages. If passages are clogged clean heat exchanger.
(4) Install combustion chamber.
(5) Install heater head and two split pins. Tighten nuts on hold down bolts.
(6) Install cargo arctic heater cover (TM 9-2320-365-10).



X2Y0704-

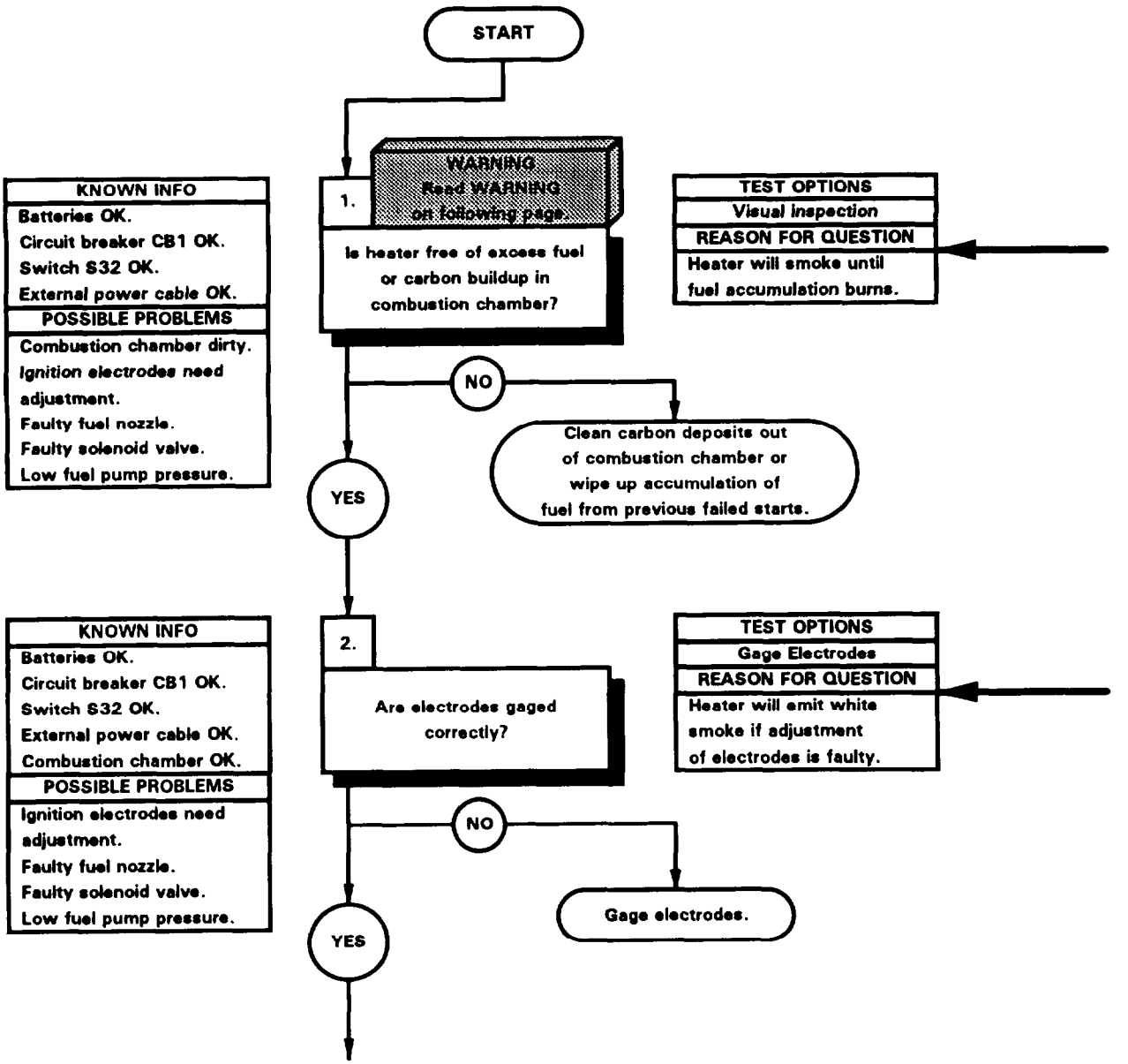
u7. CARGO ARCTIC HEATER EMITS WHITE SMOKE MORE THAN 20 SECONDS AFTER START-UP

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cargo arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Material/Parts
Lockwasher (4) (Item 98, Appendix G)
Rag, Wiping (Item 51, Appendix D)



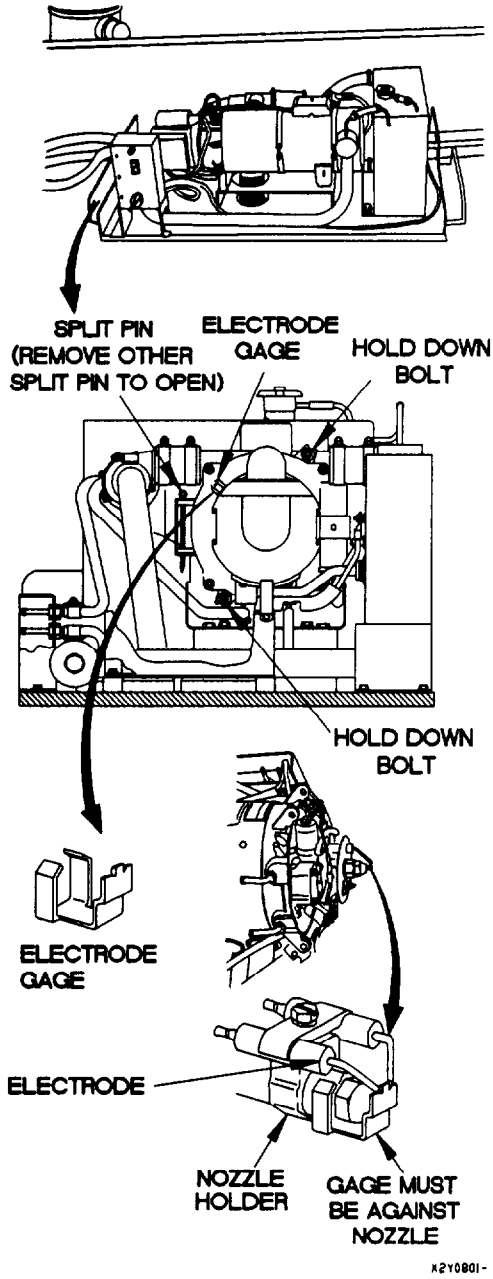
WARNING

- When cover is removed from cargo arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.
- Make sure combustion chamber has cooled before reaching inside.

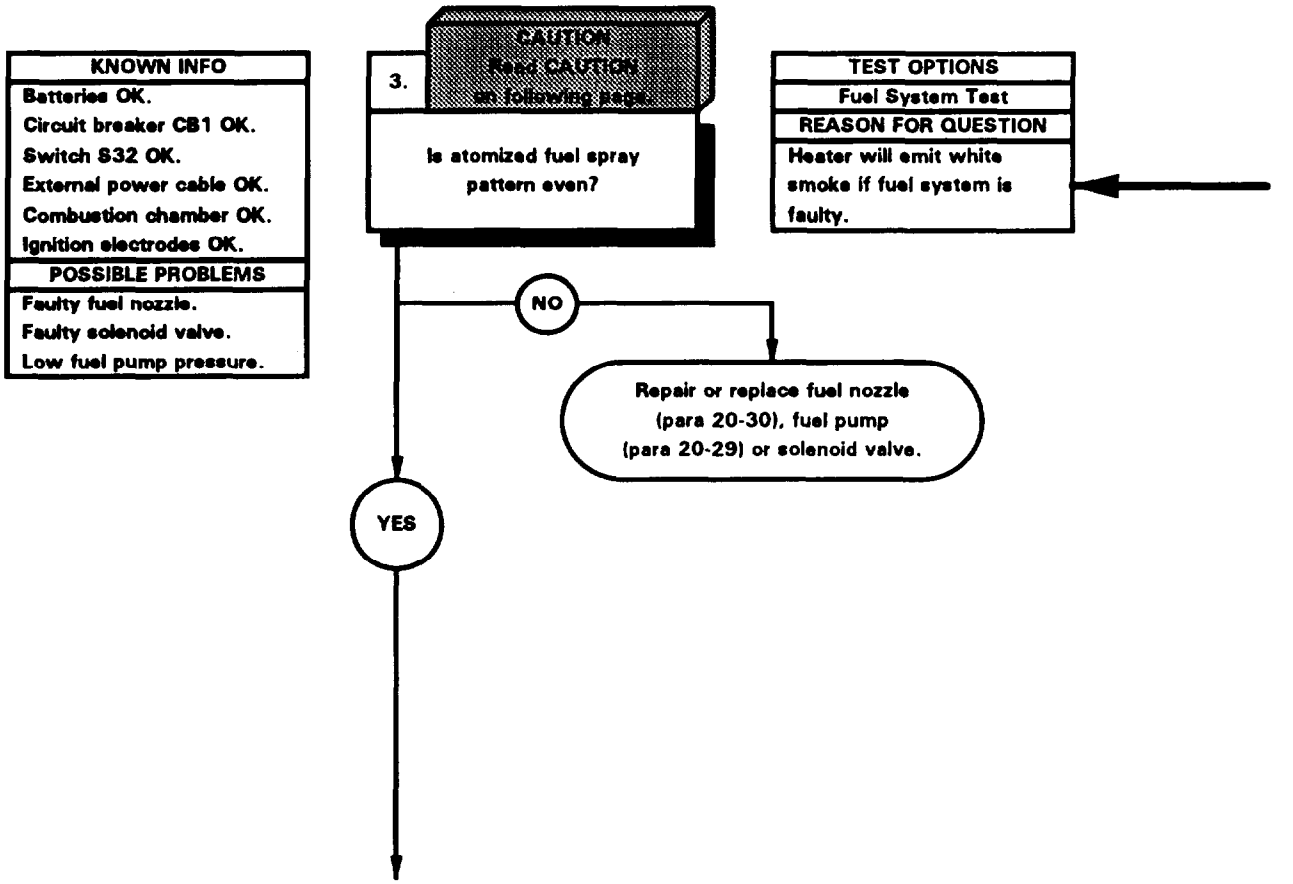
(1) Remove split pin and loosen nuts on two hold down bolts. Open combustion chamber and observe interior. If deposits of carbon are visible, proceed to step (2). If raw fuel is visible, skip step (2) and go to step (3).
(2) Ensure combustion chamber has cooled down, then clean carbon deposits from chamber.
(3) Use rags to wipe up accumulation of fuel in combustion chamber.

GAGE ELECTRODES

(1) Check electrodes for pitting, cracking of insulators and damage. If faulty replace.
(2) Remove screw securing electrode gage to hood.
(3) Loosen electrode clamp bolt and position gage as shown with front against fuel nozzle.
(4) Lay electrode tips in notches in gage.
(5) Ensure electrodes are correctly positioned and tighten clamp bolt.
(6) Return electrode gage to its storage position, on hood, and install screw.



u7. CARGO ARCTIC HEATER EMITS WHITE SMOKE MORE THAN 20 SECONDS AFTER START-UP (CONT)

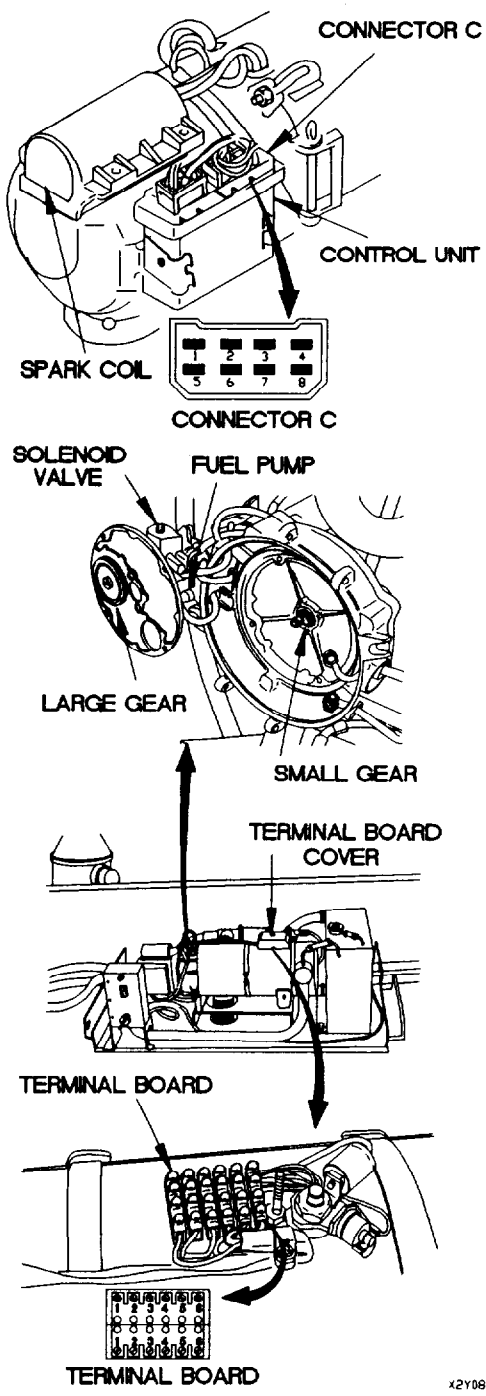


CAUTION

Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

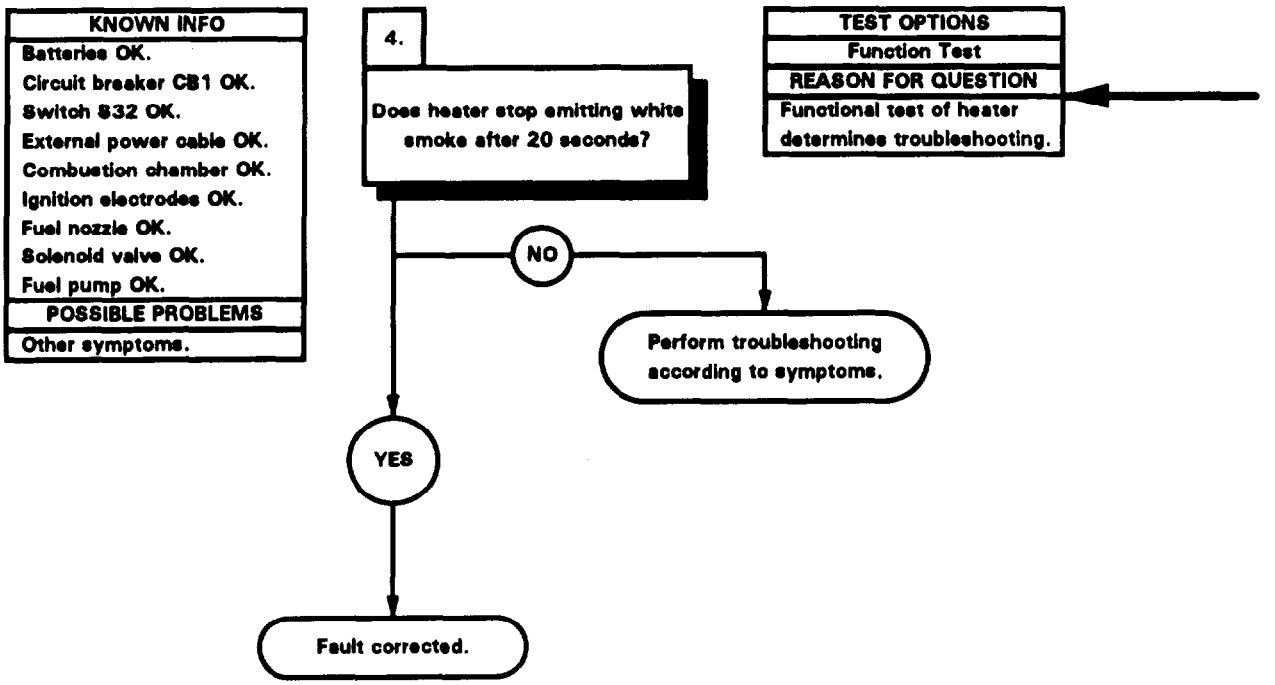
FUEL SYSTEM TEST

(1) Remove four screws on ignition spark coil, lift coil aside and disconnect (brown) ground wires.
(2) Start cargo arctic heater (TM 9-2320-365-10).
(3) Observe that atomized fuel is sprayed evenly into combustion chamber.
(4) Shut down cargo arctic heater (TM 9-2320-365-10).
(5) If fuel spray was OK, skip steps (6 through 17) of this task.
(6) If fuel spray was weak or off-center:
  (a) Check fuel nozzle and clean or replace.
  (b) Check fuel pump for leaks. If leaking, repair or replace.
  (c) Check solenoid valve for sticking or leaks. If sticking or leaking replace.
(7) Disconnect batteries (para 7-48).
(8) Remove cover from overheat fuse terminal board.
(9) Disconnect connector C from control unit.
(10) Set multimeter to ohms position.
(11) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(12) Place positive (+) probe of multimeter on pin 5 of connector C and note reading.
(13) If resistance is not 50 - 60 ohms, solenoid coil is faulty.
(14) Remove four screws and lockwashers holding blower housing together. Discard lockwashers.
(15) Spin large gear that drives fuel pump.
(16) If gear fails to spin or is hard to spin fuel pump is faulty.
(17) Spin small gear to check drive parts and replace faulty components.
(18) Fit blower housing parts together and secure with four screws and lockwashers.
(19) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(20) Install ignition spark coil to hood by connecting ground wires and securing to hood with four washers and screws.
(21) Connect connector C.
(22) Install cover on overheat fuse terminal board.
(23) Connect batteries (para 7-48).



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u7. CARGO ARCTIC HEATER EMITS WHITE SMOKE MORE THAN 20 SECONDS AFTER START-UP (CONT)



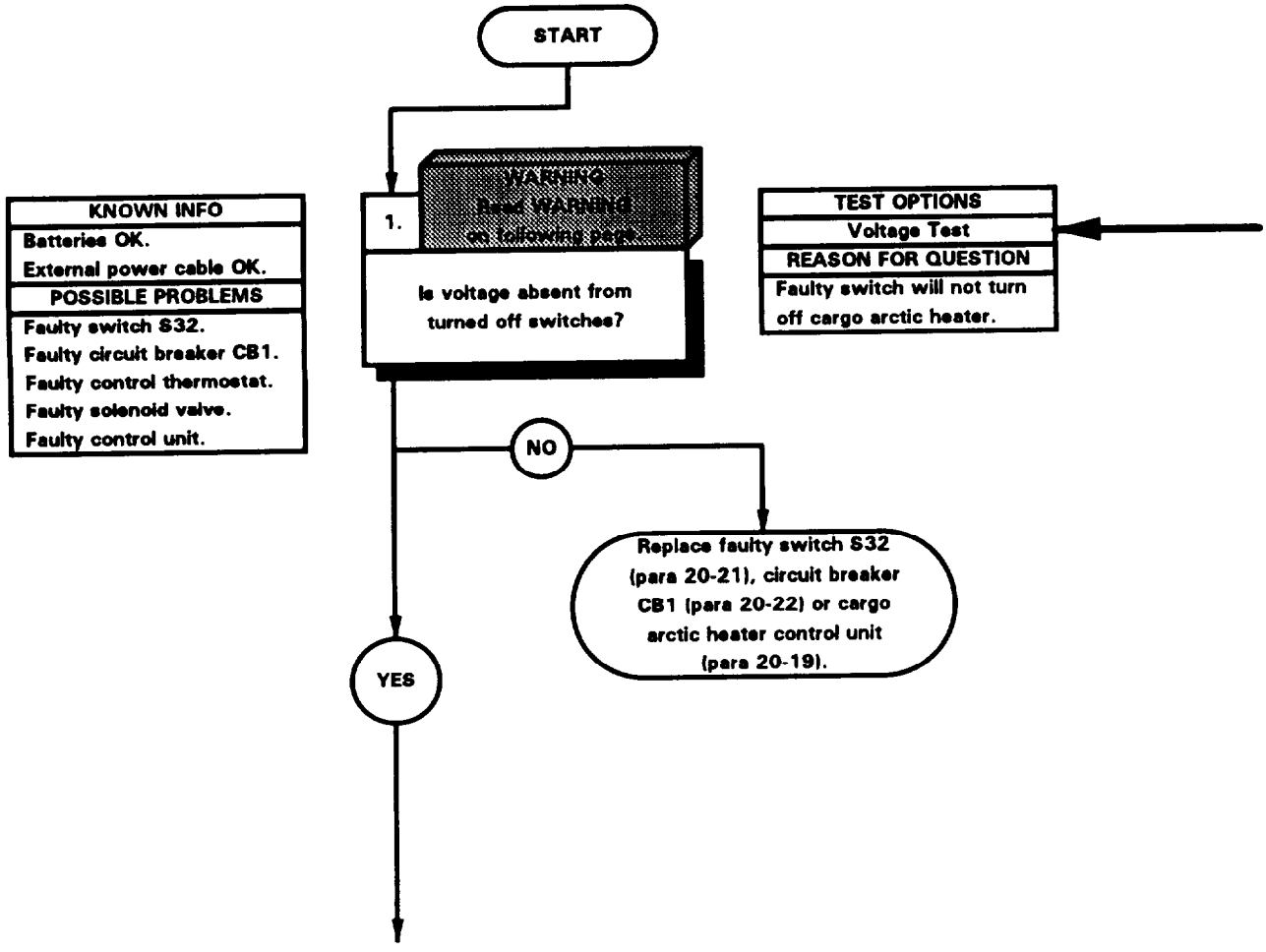
FUNCTION TEST
(1) Start cargo arctic heater (TM 9-2320-365-10).
(2) Observe exhaust for white smoke. If white smoke stops after about 20 seconds, fault is corrected.
(3) If heater did not start on first try, perform Special Purpose Kit Troubleshooting (u4. Cargo Arctic Heater Hard To Start).
(4) If heater stops emitting white smoke after several minutes, repeat test 3 of this task.
(5) If heater emits white smoke in cycles (smokes, then stops, smokes and stops), recheck setting of electrodes (test 2 of this task), then look for dripping fuel nozzle (test 3 of this task).
(6) Shut down cargo arctic heater (TM 9-2320-365-10).
(7) Observe exhaust for white smoke. If heater smokes after switching off, solenoid valve is faulty.
(8) Install cargo arctic heater cover (TM 9-2320-365-10).

u8. CARGO ARCTIC HEATER CANNOT BE SWITCHED OFF

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cargo arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

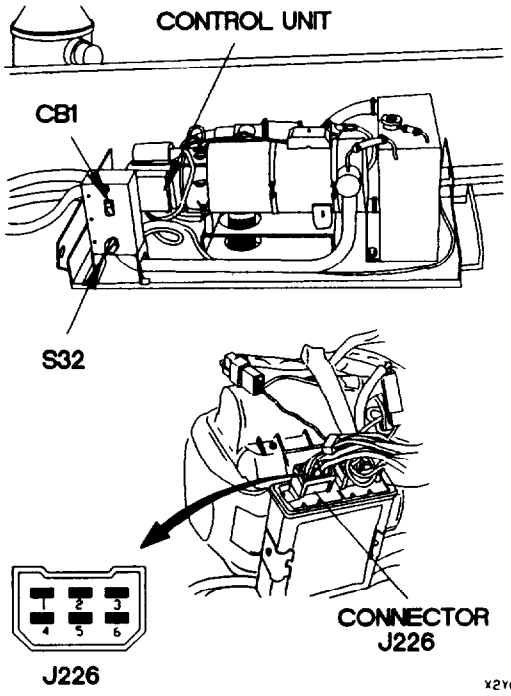


WARNING

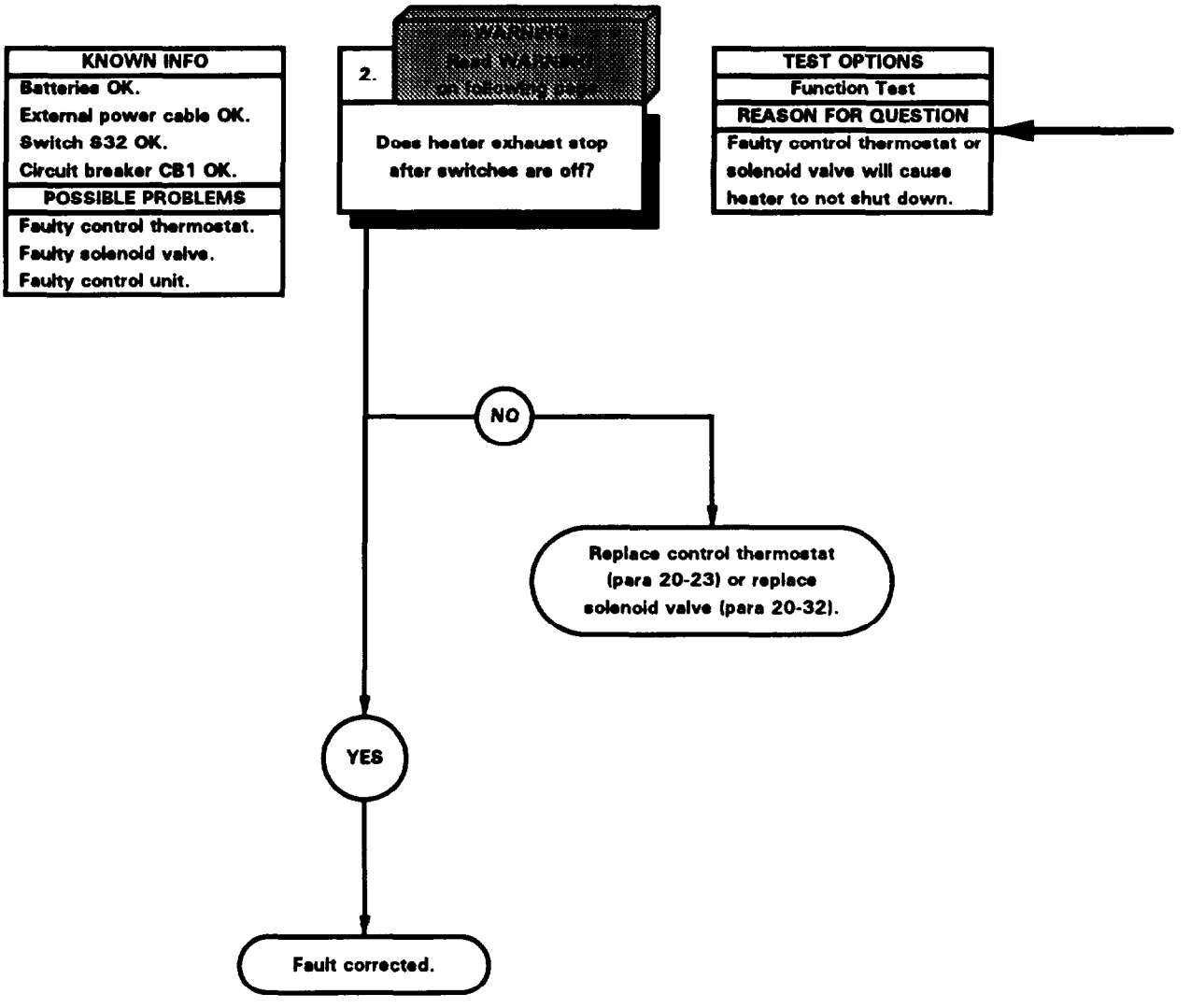
- When cover is removed from cargo arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.
- Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Invert control unit for access to heater test points.
(2) Start cargo arctic heater (TM 9-2320-365-10).
(3) Allow completion of purge, ignition and combustion cycles, then position control switch S32 to OFF. If indicator DS2 does not extinguish within three (3) minutes, replace control unit.
(4) Set multimeter to vdc position.
(5) Place negative (-) probe of multimeter on pin 2 of J226 connector.
(6) Place positive (+) probe of multimeter on pin 1 of J226 connector and note reading on multimeter.
(7) If voltage is present switch S32 is faulty.
(8) Move positive (+) probe of multimeter to pin 4 of J226 and note reading on multimeter.
(9) Position CB1 to OFF.
(10) If multimeter reading did not drop to zero, CB1 is faulty.



u8. CARGO ARCTIC HEATER CANNOT BE SWITCHED OFF (CONT)

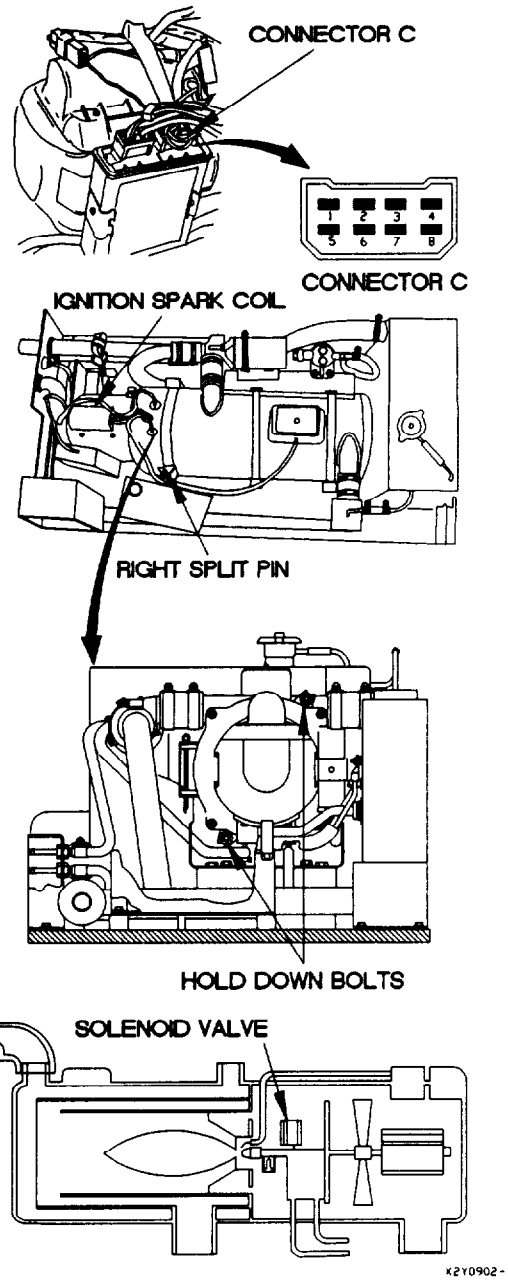


WARNING

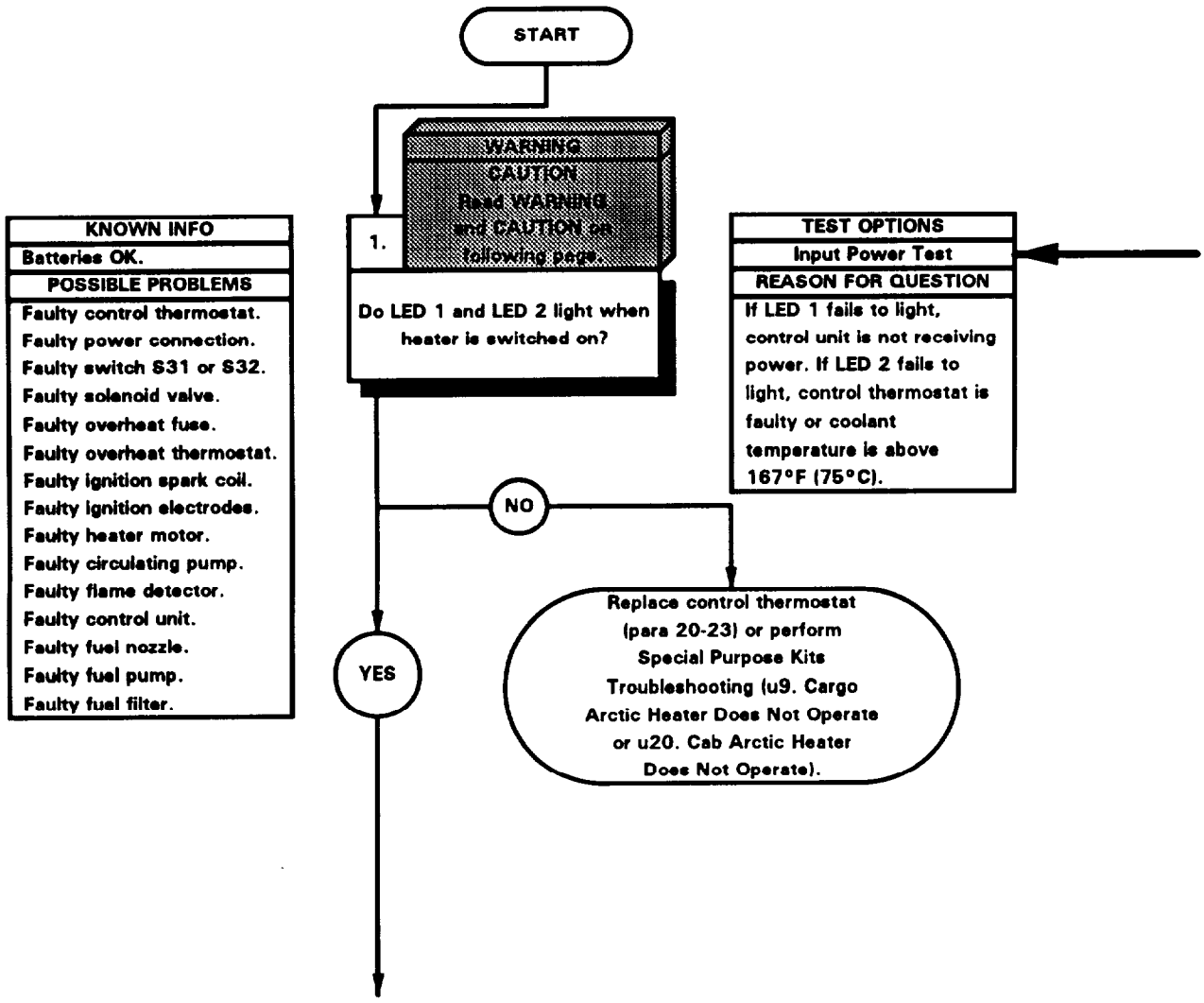
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

FUNCTION TEST

(1) Start cargo arctic heater (TM 9-2320-365-10).
(2) Allow completion of purge, ignition and combustion cycles.
(3) Set multimeter to vdc position.
(4) Place negative (-) probe of multimeter on pin 5 of connector C.
(5) Place positive (+) probe of multimeter on pin 7 of connector C and note reading on multimeter.
(6) If voltage is not 20 - 28 volts, control unit is faulty.
(7) When heater reaches upper temperature setting, thermostat opens and voltage at socket 7 turns off. If voltage does not drop, control thermostat is faulty.
(8) Shut down cargo arctic heater (TM 9-2320-365-10) and observe exhaust. If burning stops (no exhaust), fault is corrected.
(9) Remove four screws from ignition spark coil and disconnect brown wires.
(10) Remove split pin, loosen two nuts on hold down bolts and open combustion chamber.
(11) Start heater, until fuel starts to spray, then shut down cargo arctic heater.
(12) Observe that fuel turns on and off.
(13) If fuel does not turn off completely, solenoid valve is faulty.
(14) If fuel does not turn on, perform Special Purpose Kit Troubleshooting (u3. After Cargo Heater is Switched On, Heater Switches On And Off Repeatedly), test 5, Fuel System Test.
(15) Close combustion chamber, tighten nuts on hold down bolts and install split pin.
(16) Connect brown wires on ignition spark coil and secure coil to hood with four screws.
(17) Remove control unit from spring clip invert and install in spring clip.
(18) Install cargo arctic heater cover (TM 9-2320-365-10).



u9. CARGO AND CAB ARCTIC HEATER DIAGNOSTIC PROCEDURE WITH TESTING APPARATUS 440.280	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10). Cargo or cab arctic heater cover removed (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C) Testing Apparatus (440.280) (Item 70, Appendix B) Multimeter, Digital (Item 22, Appendix C)
Personnel Required (2)	**Material/Parts** Lockwasher (4) (Item 98, Appendix G)



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.

CAUTION

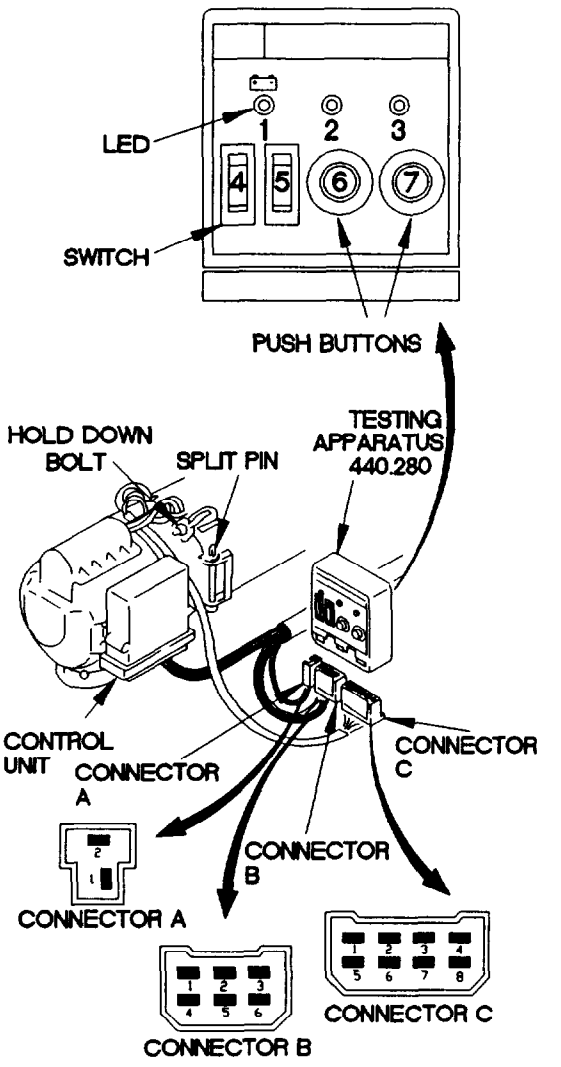
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

INPUT POWER TEST

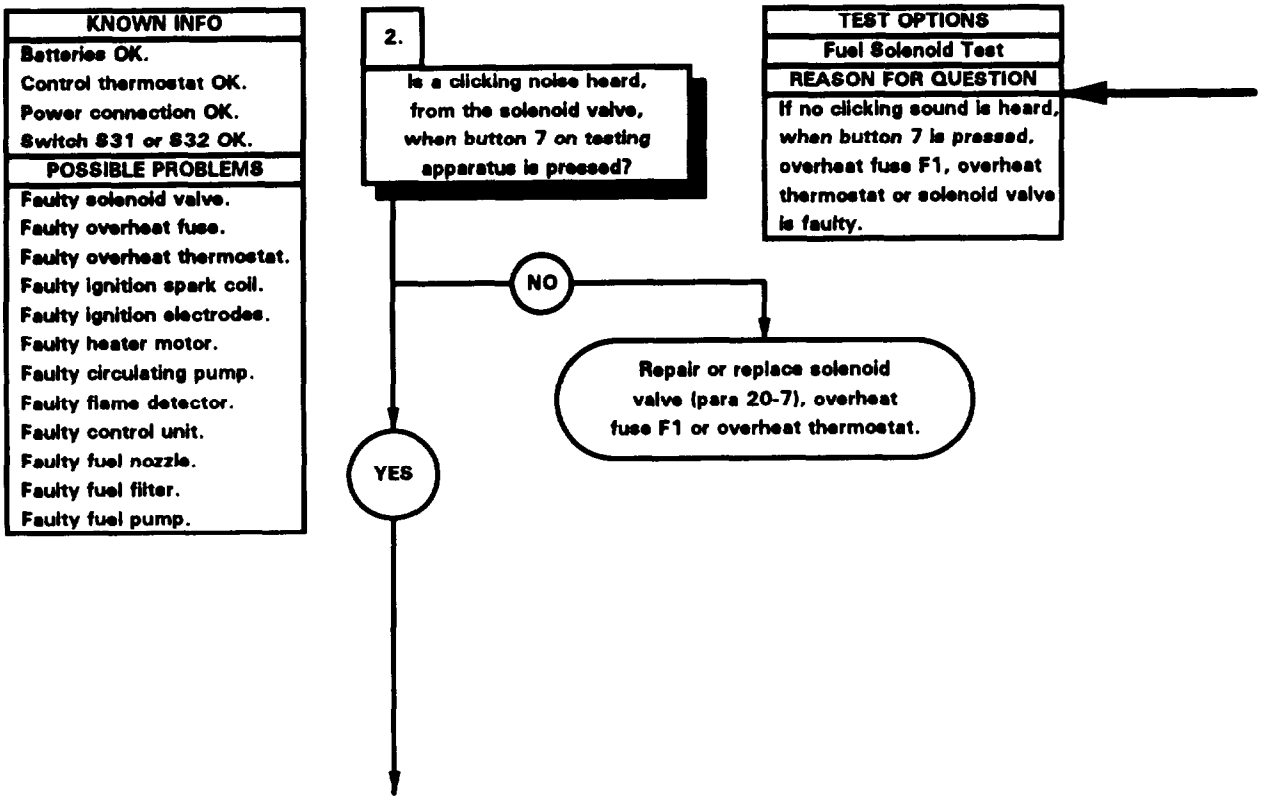
CAUTION

Cargo arctic heater does NOT use connector A. To prevent damage, DO NOT attempt to insert connector A into control unit or testing apparatus on cargo arctic heater.

(1) Disconnect electrical power from heater (TM 9-2320-365-10).
(2) Disconnect connectors from A, B and C of control unit.
(3) Connect connectors from A, B and C to testing apparatus 440.280.
(4) Start cab or cargo arctic heater (TM 9-2320-365-10).
(5) Observe that LED 1 and LED 2 illuminate.
(6) If LED 1 lights but LED 2 does not:
  (a) Set multimeter to vdc position.
  (b) Place negative (-) probe of multimeter on pin 5 of connector C.
  (c) Place positive (+) probe of multimeter on pin 1, of connector C and note reading on multimeter.
  (d) If no voltage is present go to step (7) of this task.
  (e) Move positive lead to pin 7 of connector C.
  (f) If no voltage is present, control thermostat is faulty.
(7) If LED 1 does not light, shut down cab or cargo arctic heater (TM 9-2320-365-10).
(8) Install control unit and perform applicable troubleshooting test:
  (a) For cargo arctic heater, (u9. Cargo Arctic Heater Installation Does Not Operate), test 1.
  (b) For cab arctic heater, (u20. Cab Arctic Heater Installation Does Not Operate), test 1.

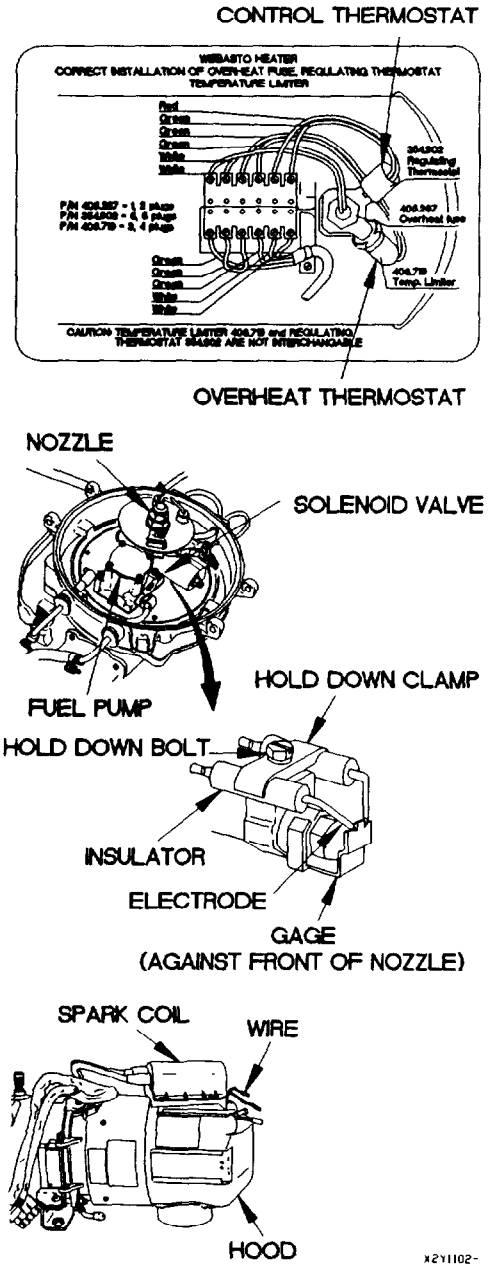


u9. CARGO AND CAB ARCTIC HEATER DIAGNOSTIC PROCEDURE WITH TESTING APPARATUS 440.280 (CONT)

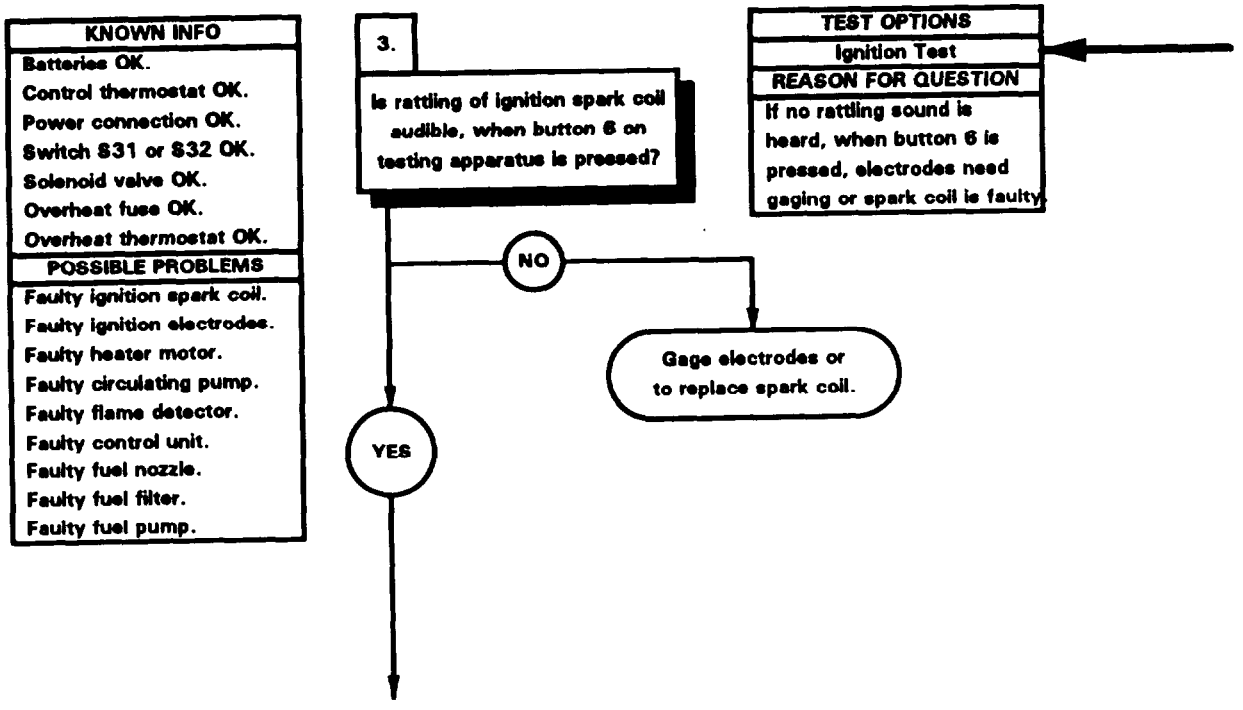


FUEL SOLENOID TEST

(1) Press and hold button 7.
(2) Listen for clicking of solenoid valve until button 7 is released.
  (a) If clicking sound is heard this test is concluded.
  (b) If no clicking sound is heard, release button 7 and shut down cab or cargo arctic heater (TM 9-2320-365-10).
(3) Remove cover from overheat fuse terminal board.
(4) Disconnect connector C from control unit.
(5) Set multimeter to ohms position.
(6) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(7) Place positive (+) probe of multimeter on pin 5 of connector C and note reading on multimeter.
(8) If short or open is noted solenoid valve is faulty.
(9) Move probe from pin 5 to terminal 2 of terminal board and note reading on multimeter.
(10) If reading is open, overheat fuse F1 is faulty.
(11) Place probes on terminals 3 and 4 of terminal board and note reading.
(12) If reading is open, overheat thermostat is faulty.
(13) Connect connector C.
(14) Start cab or cargo arctic heater (TM 9-2320-365-10).

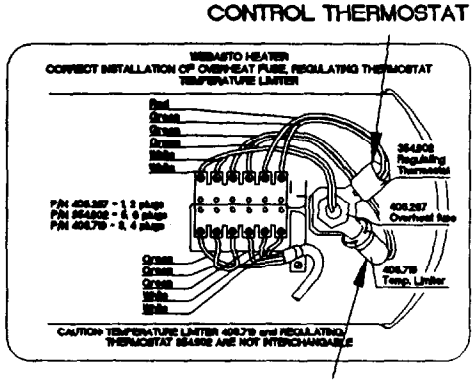


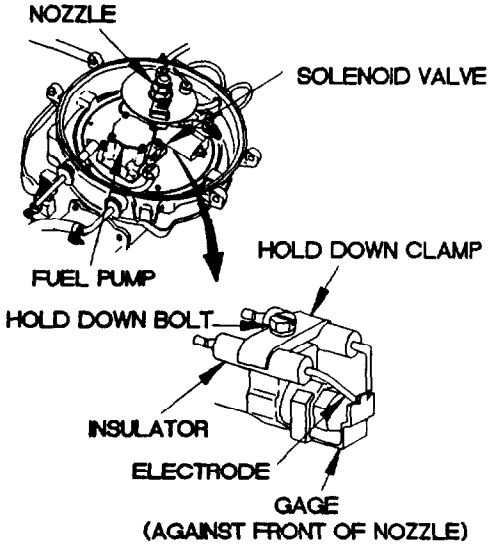
u9. CARGO AND CAB ARCTIC HEATER DIAGNOSTIC PROCEDURE WITH TESTING APPARATUS 440.280 (CONT)

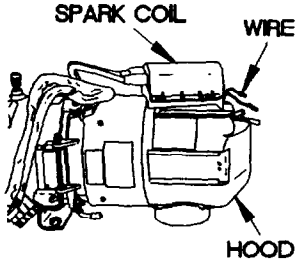


IGNITION TEST

(1) Press and hold button 6.
(2) Listen for rattling of ignition spark coil, until button 6 is released.
  (a) If rattling sound is heard this test is concluded.
  (b) If rattling sound is not heard, release button 6 and shut down cab or cargo arctic heater (TM 9-2320-365-10).
(3) Open combustion chamber by loosening nuts on two hold down bolts, removing one split pin (on cargo arctic heater) or two split pins (on cab arctic heater) and moving aside burner head.
(4) Inspect ignition electrodes for pitting, cracking of electrodes and damage. If faulty replace.
(5) Remove electrode gage by removing screw holding it to hood.
(6) Loosen electrode clamp hold down bolt and position gage as illustrated with front against fuel nozzle.
(7) Lay electrode tips in notches on gage.
(8) Tighten hold down bolt, while ensuring electrodes are correctly positioned.
(9) Return electrode gage to its storage position and install screw.
(10) Start cab or cargo arctic heater (TM 9-2320-365-10).
(11) Press button 6 and observe spark across spark gap of electrodes. If spark is not present, ignition spark coil is faulty.
(12) Close chamber by tightening nuts on two hold down bolts and installing split pin(s).

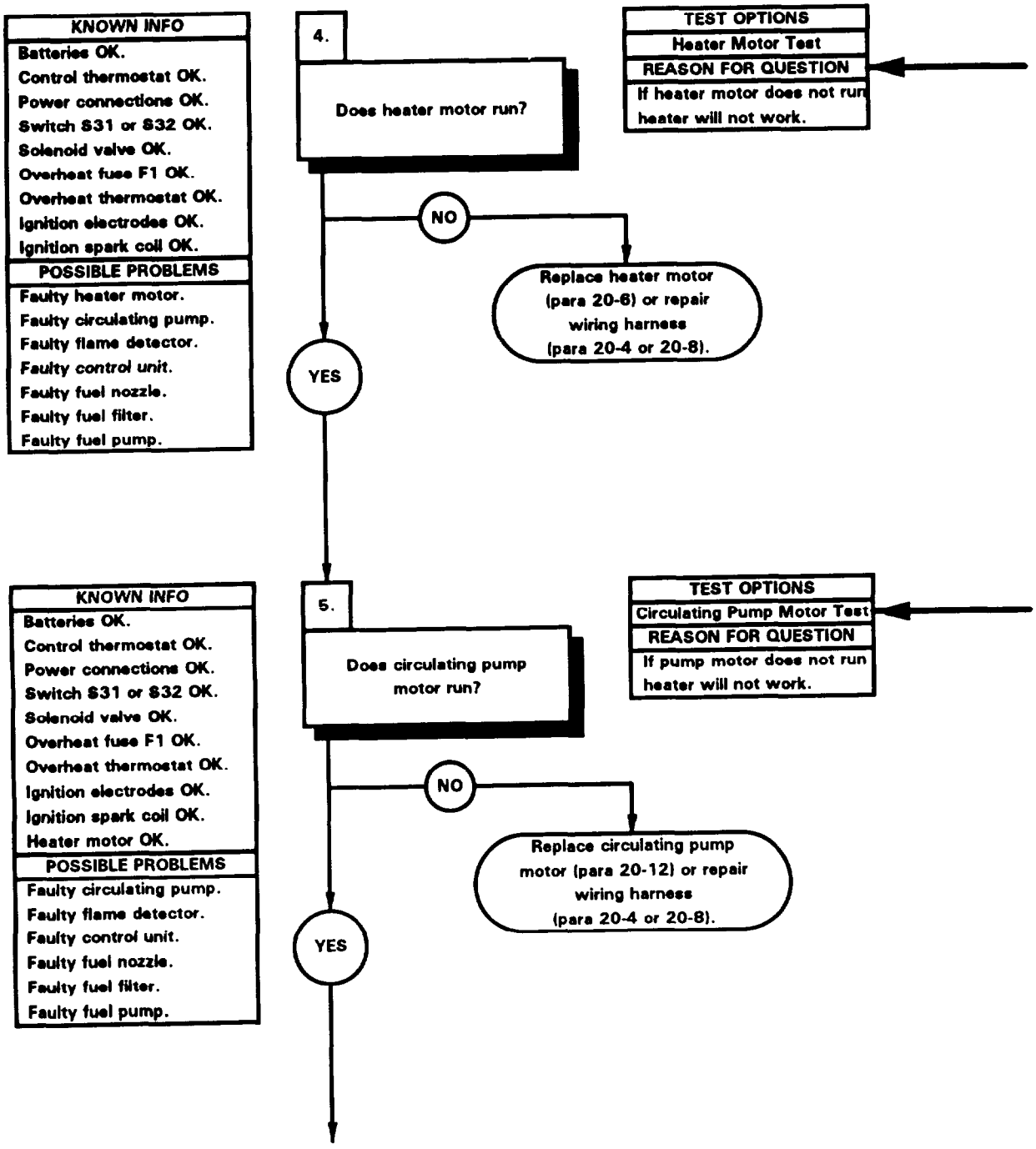






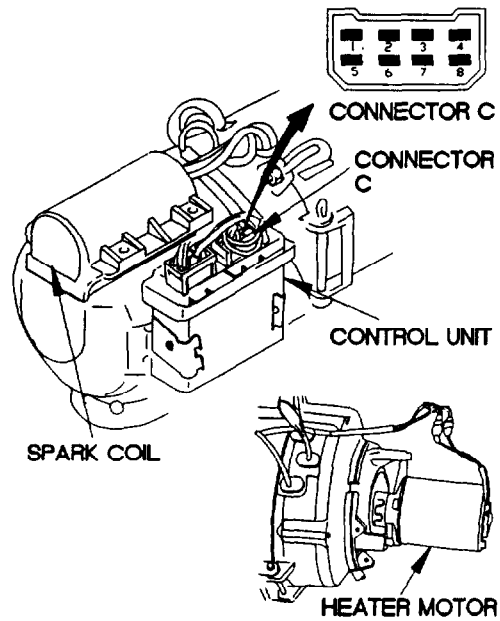
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u9. CARGO AND CAB ARCTIC HEATER DIAGNOSTIC PROCEDURE WITH TESTING APPARATUS 440.280 (CONT)



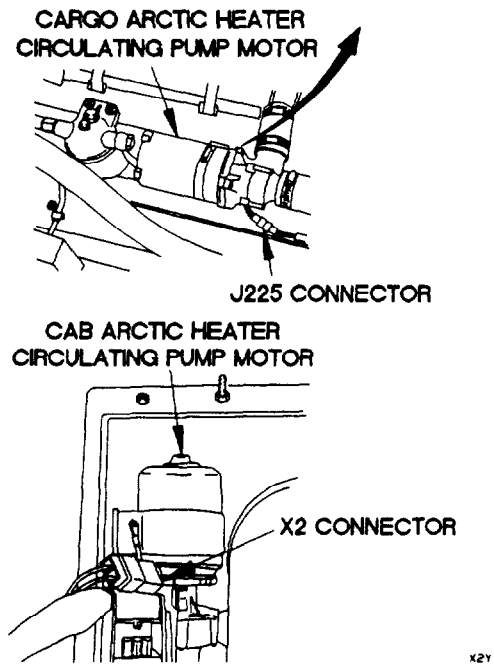
HEATER MOTOR TEST

(1) Start cargo or cab arctic heater (TM 9-2320-365-10).
(2) Position switch 5 of testing apparatus to ON.
(3) Observe (by vibration and sound) that heater motor runs, after switch 5 is activated.
  (a) If heater motor runs, this test is concluded;
  (b) If heater motor does not run, position switch 5 to OFF.
(4) Shut down cab or cargo arctic heater (TM 9-2320-365-10).
(5) Disconnect connector C.
(6) Set multimeter to ohms.
(7) Place negative (-) probe of multimeter on pin 5 of connector C.
(8) Place positive (+) probe of multimeter on pin 2 of connector C and note reading on multimeter.
(9) If open or short is noted heater motor is faulty; otherwise wiring harness is faulty.
(10) Connect connector C.

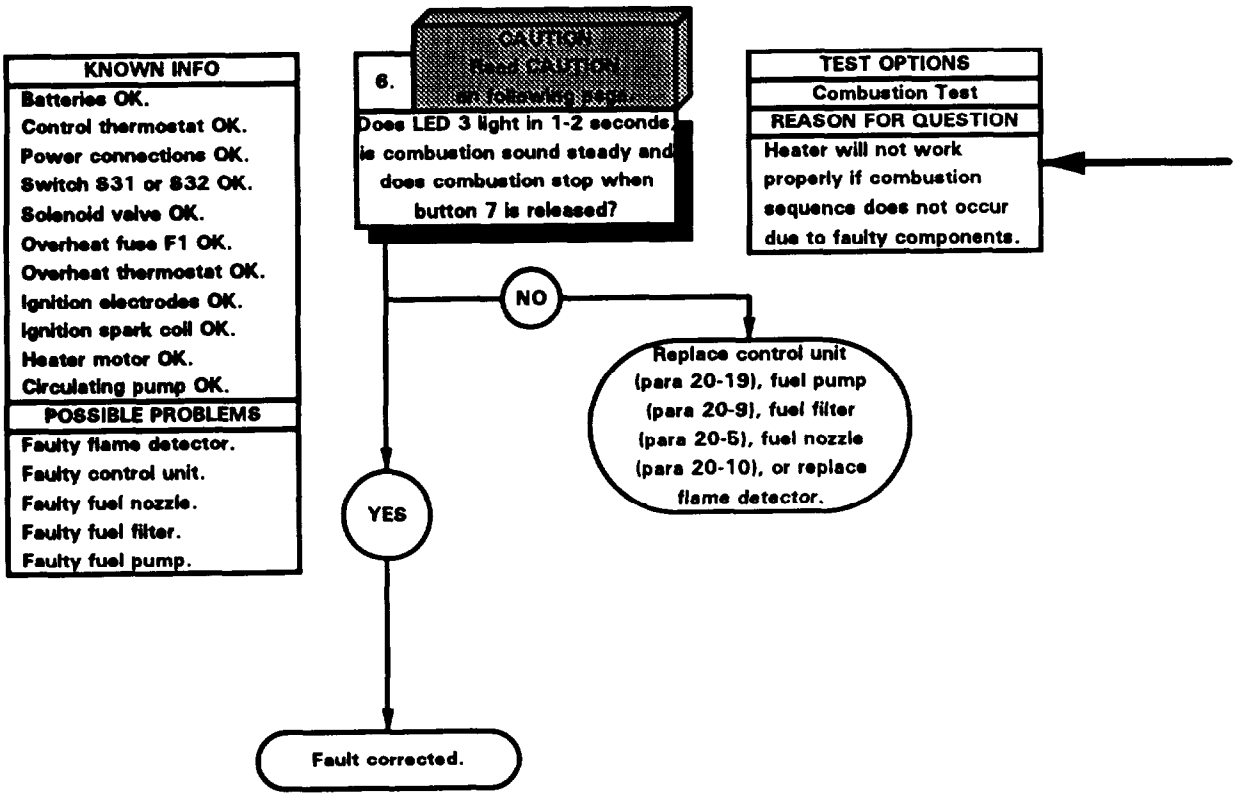


CIRCULATING PUMP MOTOR TEST

(1) Start cab or cargo arctic heater (TM 9-2320-365-10).
(2) Switch circulating pump power on.
(3) On cargo arctic heater, heater motor starts when CB1 is activated. Switch 4 is not used.
(4) On cab arctic heater, heater motor starts when switch 4 is positioned to ON.
(5) Observe (by vibration and sound) that pump motor is running.
(6) If pump motor runs, this test is concluded.
(7) Shut down cab or cargo arctic heater (TM 9-2320-365-10).
(8) Disconnect connector at pump motor (X2 on cab arctic heater or J225 on cargo arctic heater).
(9) Set multimeter to ohms.
(10) Place probes of multimeter on contacts of short cable connected to motor and measure resistance of pump motor. If reading is open or short, replace pump motor; otherwise repair wiring harness.
(11) Connect connector at pump motor (X2 on cab arctic heater or J225 on cargo arctic heater).



u9. CARGO AND CAB ARCTIC HEATER DIAGNOSTIC PROCEDURE WITH TESTING APPARATUS 440.280 (CONT)

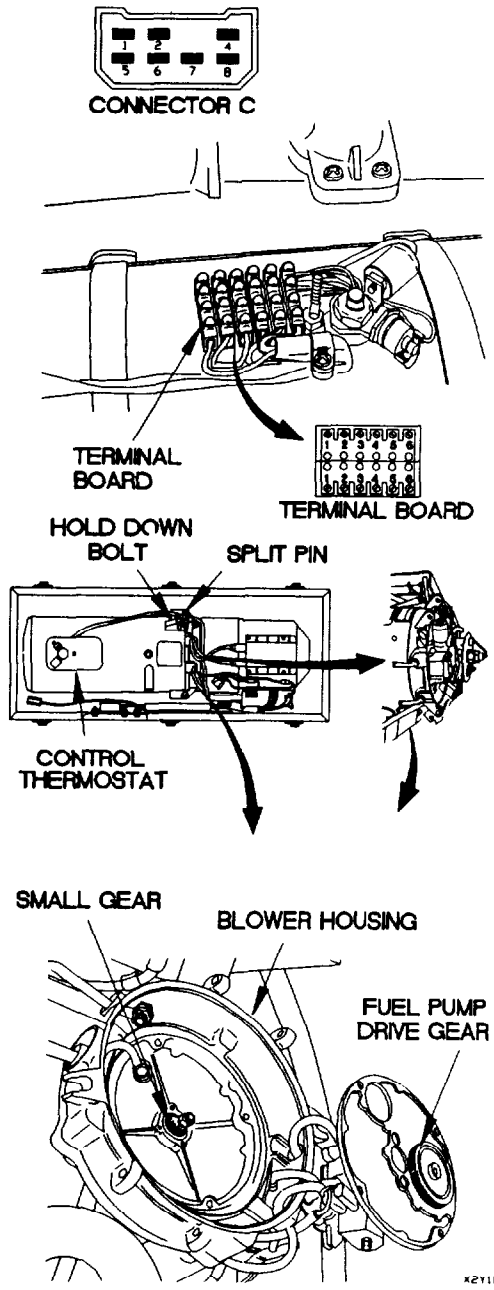


CAUTION

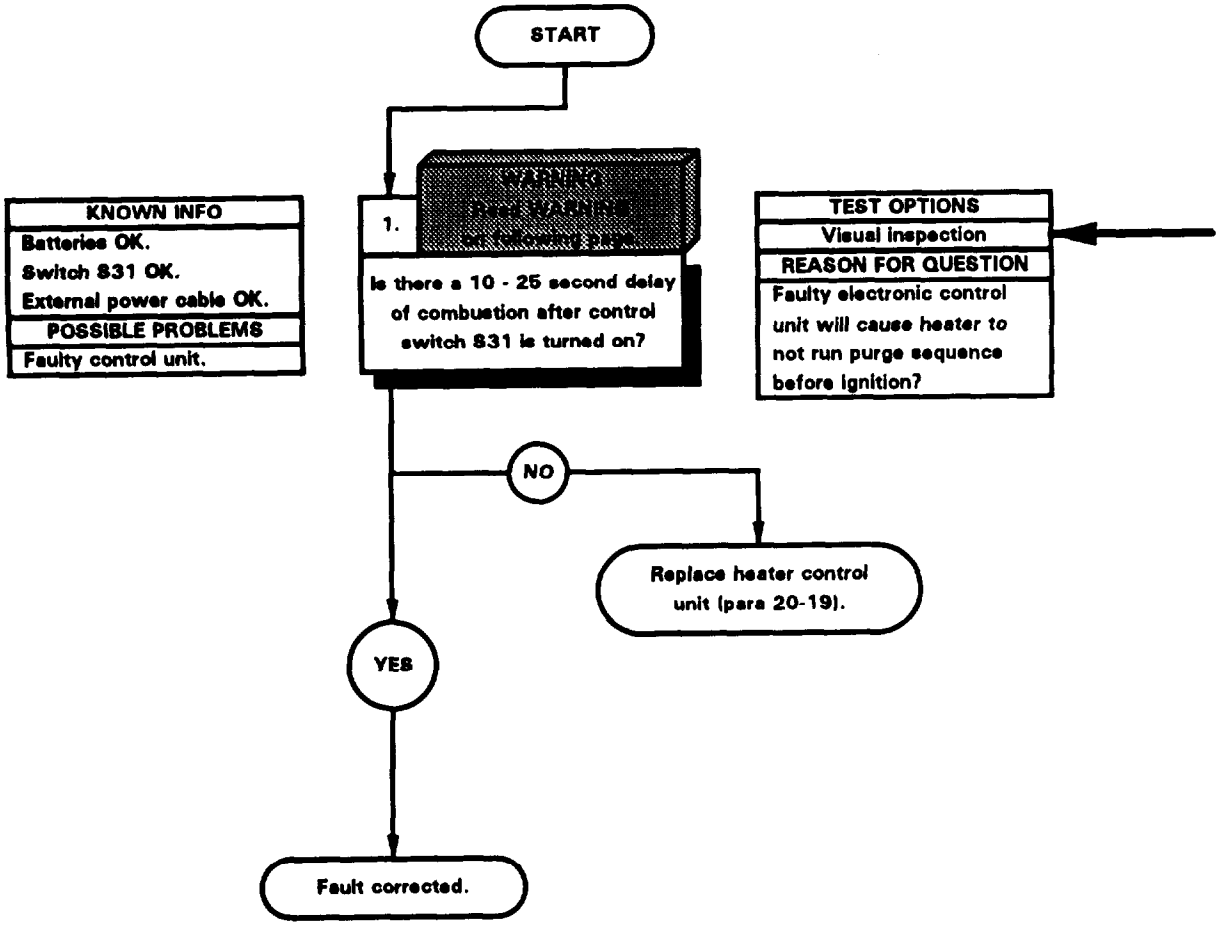
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

COMBUSTION TEST

(1) Start cab or cargo arctic heater (TM 9-2320-365-10).
(2) Position test apparatus switches 4 and 5 to ON.
(3) Press test apparatus button 6 and 7 and note that combustion starts and LED 3 lights after 1-2 seconds. If LED 3 does not light, flame detector is faulty.
(4) Release button 6 when LED lights.
(5) Listen for steady combustion noise.
(6) If combustion noise is steady, this test is concluded.
(7) If heater started combustion only with testing apparatus installed, control unit is faulty.
(8) Release button 7. If combustion does not stop immediately, solenoid valve is faulty.
(9) Open combustion chamber by removing one split pin (cargo heater) or two split pins (cab heater) and loosening nuts on two hold down bolts.
(10) Press button 7 and observe that atomized fuel is sprayed evenly into combustion chamber. Release button 7.
(11) If fuel spray is OK, this test is concluded.
(12) If fuel spray is weak or off-center, examine fuel nozzle and clean or replace.
(13) Disconnect batteries (para 7-48).
(14) Disconnect connector C from control unit.
(15) Set multimeter to ohms position.
(16) Place negative (-) probe of multimeter on terminal 1 of overheat fuse terminal board.
(17) Place positive (+) probe of multimeter on pin 5 of connector C and note reading.
(18) If resistance is not 50 - 60 ohms, solenoid coil is faulty.
(19) Remove four screws and lockwashers holding blower housing together. Discard lockwashers.
(20) Spin large gear that drives fuel pump.
(21) If gear fails to spin or is hard to spin fuel pump is faulty.
(22) Spin small gear to check drive parts and replace faulty components.
(23) Fit blower housing parts together and secure with four screws and lockwashers.
(24) Close combustion chamber by tightening nuts on two hold down bolts and installing one or two split pins.
(25) Disconnect connectors A and B from testing apparatus (440.280).
(26) Connect connectors A, B and C to control unit.
(27) Install cab or cargo arctic heater cover (TM 9-2320-365-10).
(28) Connect batteries (para 7-48).



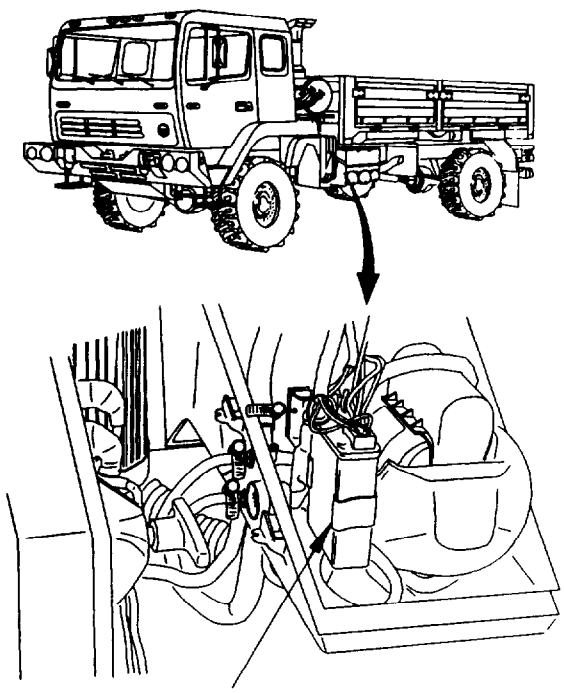
u10. CAB ARCTIC HEATER COMBUSTION STARTS IMMEDIATELY WHEN SWITCHED ON	
INITIAL SETUP	
Equipment Conditions Engine shut down (TM 9-2320-365-10). Cab arctic heater cover removed (TM 9-2320-365-10).	**Tools and Special Tools** Tool Kit, Genl Mech (Item 44, Appendix C)



WARNING

When cover is removed from cab arctic heater for maintenance, carefully avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Note delay for purge cycle before heater combustion.
(3) If heater fails to purge for 10 - 25 seconds, cab arctic heater control unit is faulty.
(4) Shut down cab arctic heater (TM 9-2320-365-10).



32X1201A

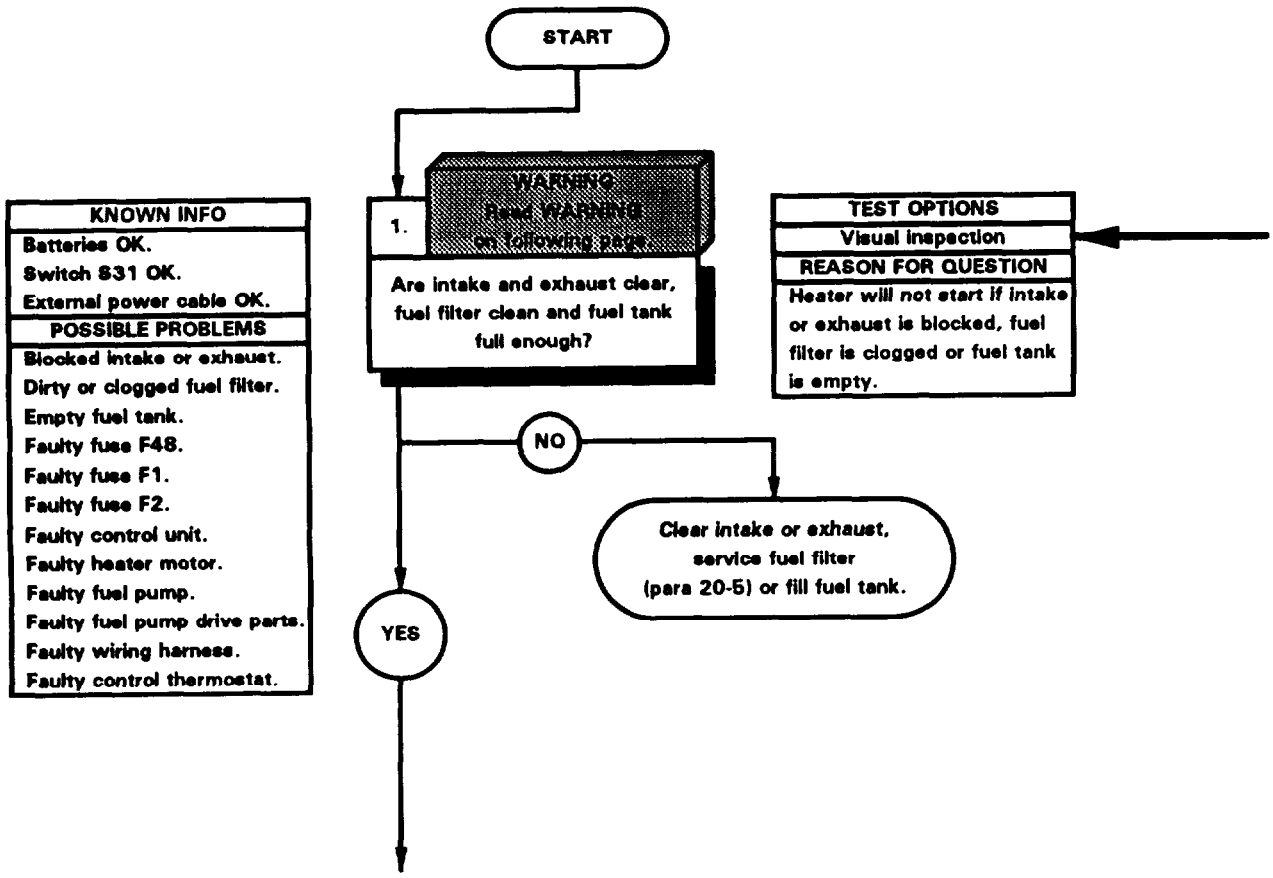
u11. CAB ARCTIC HEATER DOES NOT START

INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Cab arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

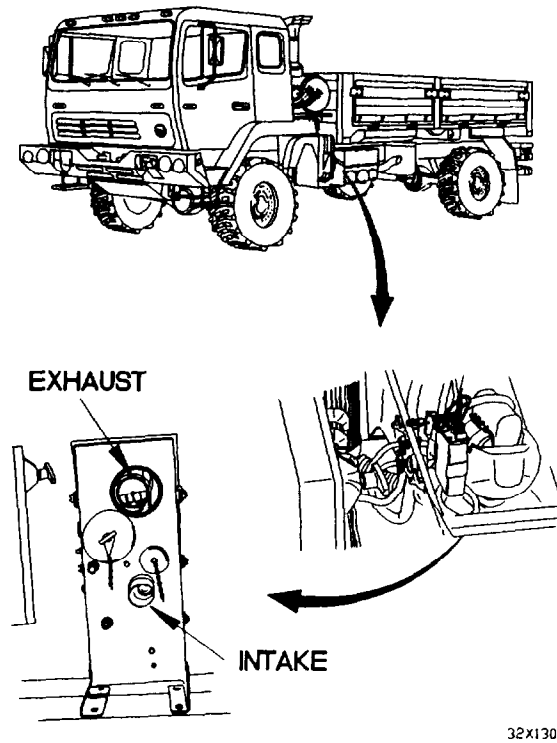
Material/Parts
- Lockwasher (4) (Item 98, Appendix G)



WARNING

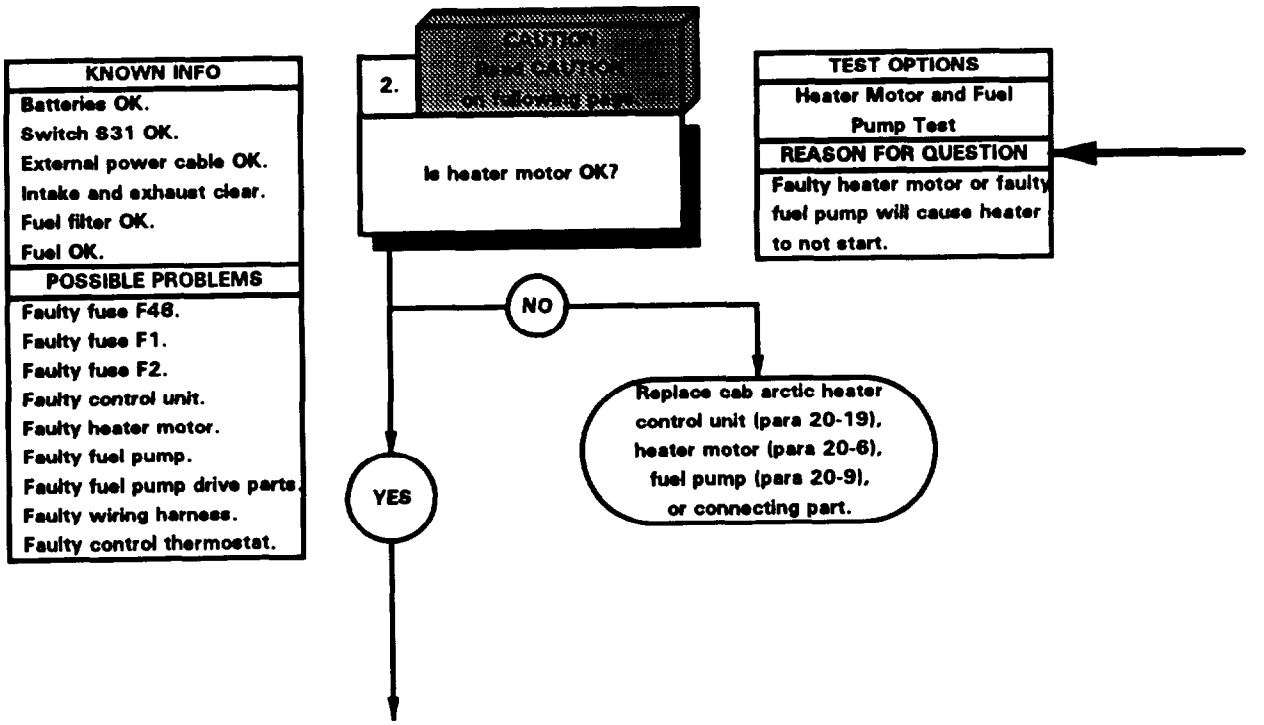
When cover is removed from cab arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check coolant level and fill if required (TM 9-2320-365-10).
(4) Check level of fuel in tank (TM 9-2320-365-10).
(5) If fuel is gelled, drain and fill with correct low temperature mixture.
(6) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.



32X130IA

u11. CAB ARCTIC HEATER DOES NOT START (CONT)

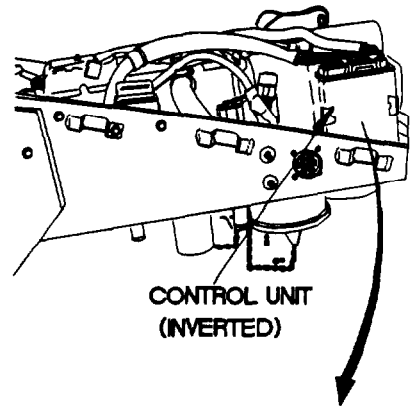


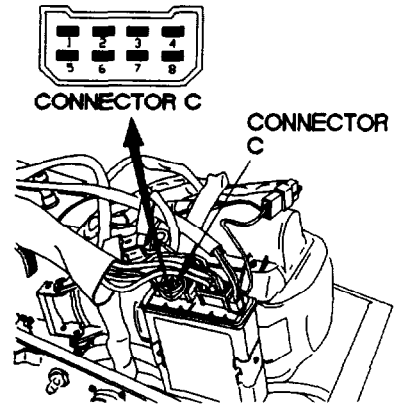
CAUTION

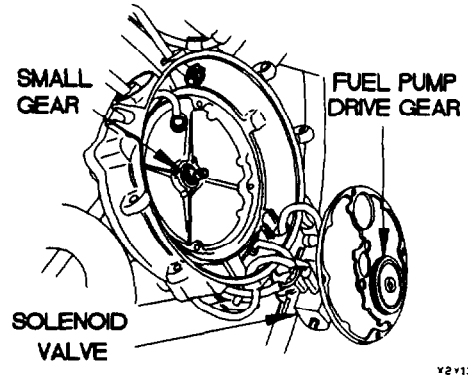
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

HEATER MOTOR AND FUEL PUMP TEST

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Set multimeter to vdc.
(3) Place negative (-) probe of multimeter on pin 5 of connector C.
(4) Place positive (+) probe of multimeter on pin 2 of connector C and note reading on multimeter.
(5) If voltage is not present, check fuses F1, F2 and F48.
(6) If voltage is still not present or less than 20 volts, control unit is faulty.
(7) Shut down cab arctic heater (TM 9-2320-365-10).
(8) Disconnect batteries (para 7-48).
(9) Disconnect connector C from control unit.
(10) Set multimeter to ohms position.
(11) Place positive (+) probe of multimeter on pin 2 of connector C.
(12) Place negative (-) probe of multimeter on pin 5 of connector C and note reading on multimeter.
(13) If resistance is not 30 - 40 ohms, heater motor is faulty.
(14) Connect connector C.
(15) Remove heater motor (para 20-6).
(16) Spin motor shaft. If motor binds, replace motor.
(17) Install heater motor (para 20-6).
(18) Open combustion chamber by removing two split pins and loosening two hold down bolt nuts.
(19) Remove four screws and lockwashers securing blower housing cover. Discard lockwashers.
(20) Spin fuel pump drive gear. If fuel pump is binding, replace fuel pump.
(21) Check pump drive parts. Replace faulty part(s).
(22) Secure blower housing cover with four screws and lockwashers.
(23) Close combustion chamber and tighten nuts on hold down bolts and install two split pins.
(24) Connect batteries (para 7-48).

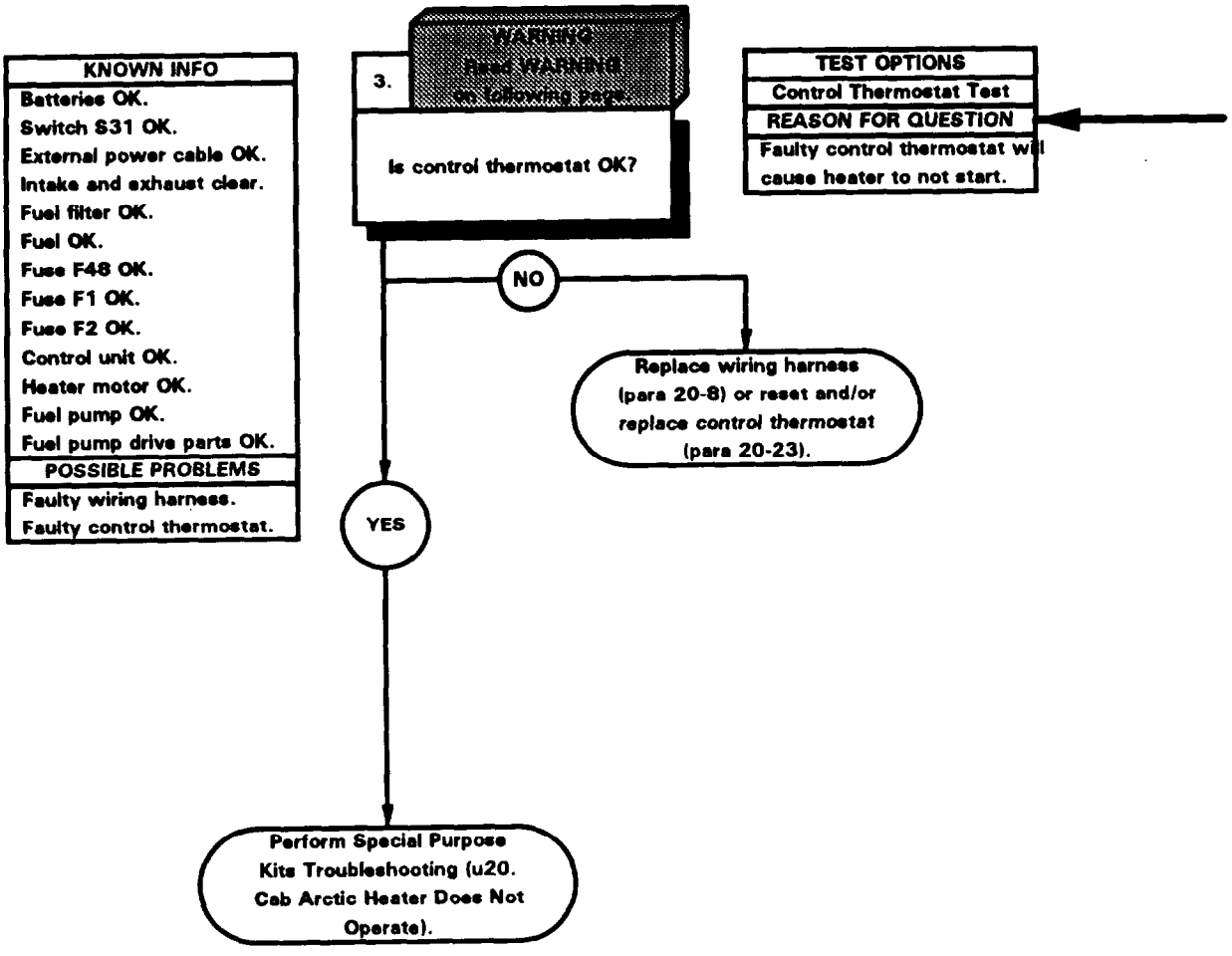






Y2Y1302-

u11. CAB ARCTIC HEATER DOES NOT START (CONT)

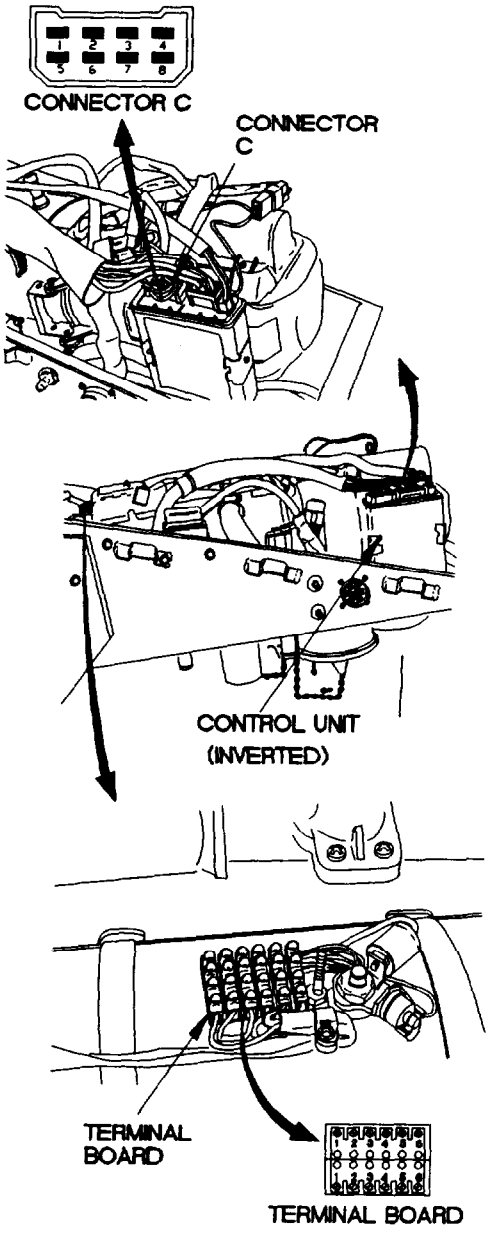


WARNING

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.

CONTROL THERMOSTAT TEST

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Set multimeter to vdc position.
(3) Place negative (-) probe of multimeter on pin 5 of connector C.
(4) Place positive (+) probe of multimeter on pin 1 of connector C and note reading on multimeter.
(5) If voltage is not 20 volts or more, control unit is faulty.
(6) Move positive (+) probe to pin 7 of connector C and note reading on multimeter.
(7) If voltage is not 20 volts or more, go to step 8, of this task. If voltage is OK, go to step 16, of this task.
(8) Remove top-mounted terminal board cover.
(9) Place negative (-) probe of multimeter on pin 5 of connector C.
(10) Place positive (+) probe of multimeter on terminal 6 of terminal board.
(11) If voltage is not present wiring harness is faulty.
(12) Move positive (+) probe of multimeter to terminal 5 of terminal board.
(13) If reading is 20 volts or more, wiring harness is faulty.
(14) If voltage is zero, press reset on control thermostat.
(15) If voltage is still zero, control thermostat is faulty.
(16) Shut down cargo arctic heater (TM 9-2320-365-10).
(17) Install terminal board cover.
(18) Install cab arctic heater cover (TM 9-2320-365-10).



X2Y1303-

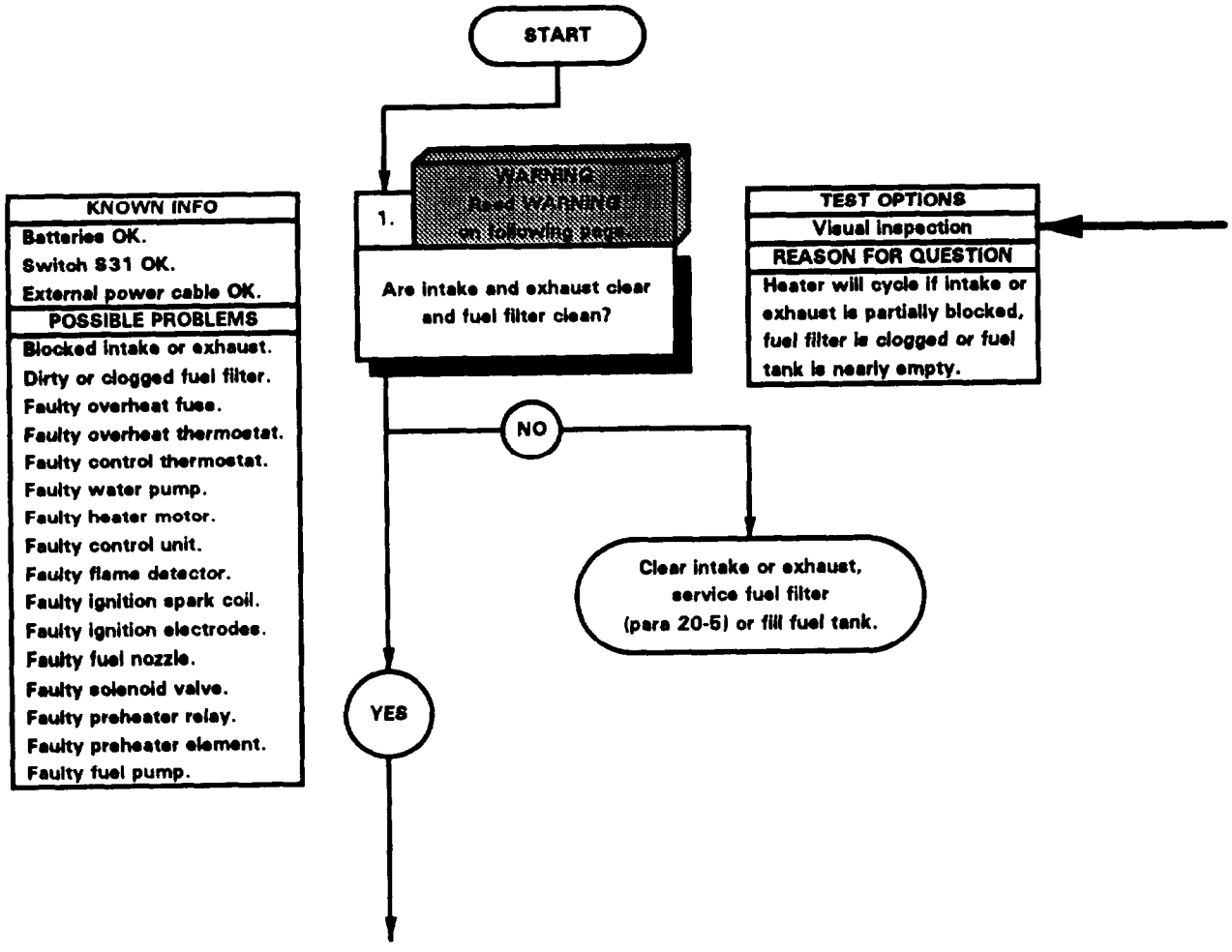
u12. AFTER CAB HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

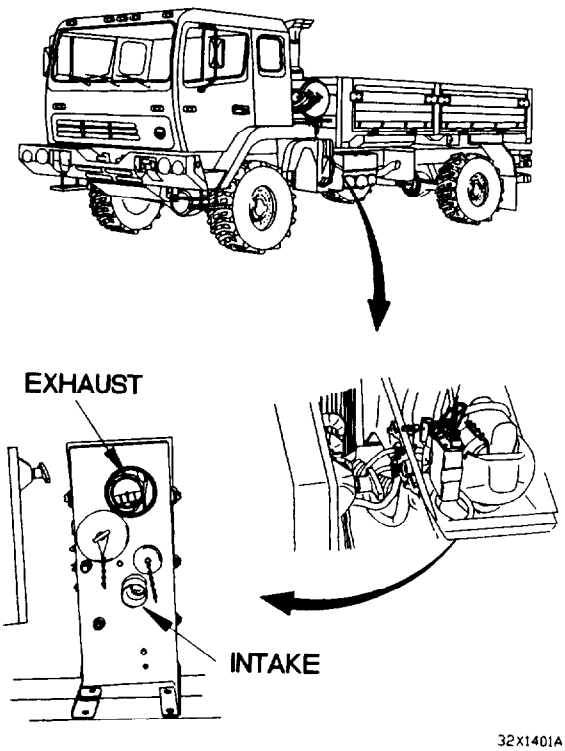
Material/Parts
Lockwasher (4) (Item 98, Appendix G)



WARNING

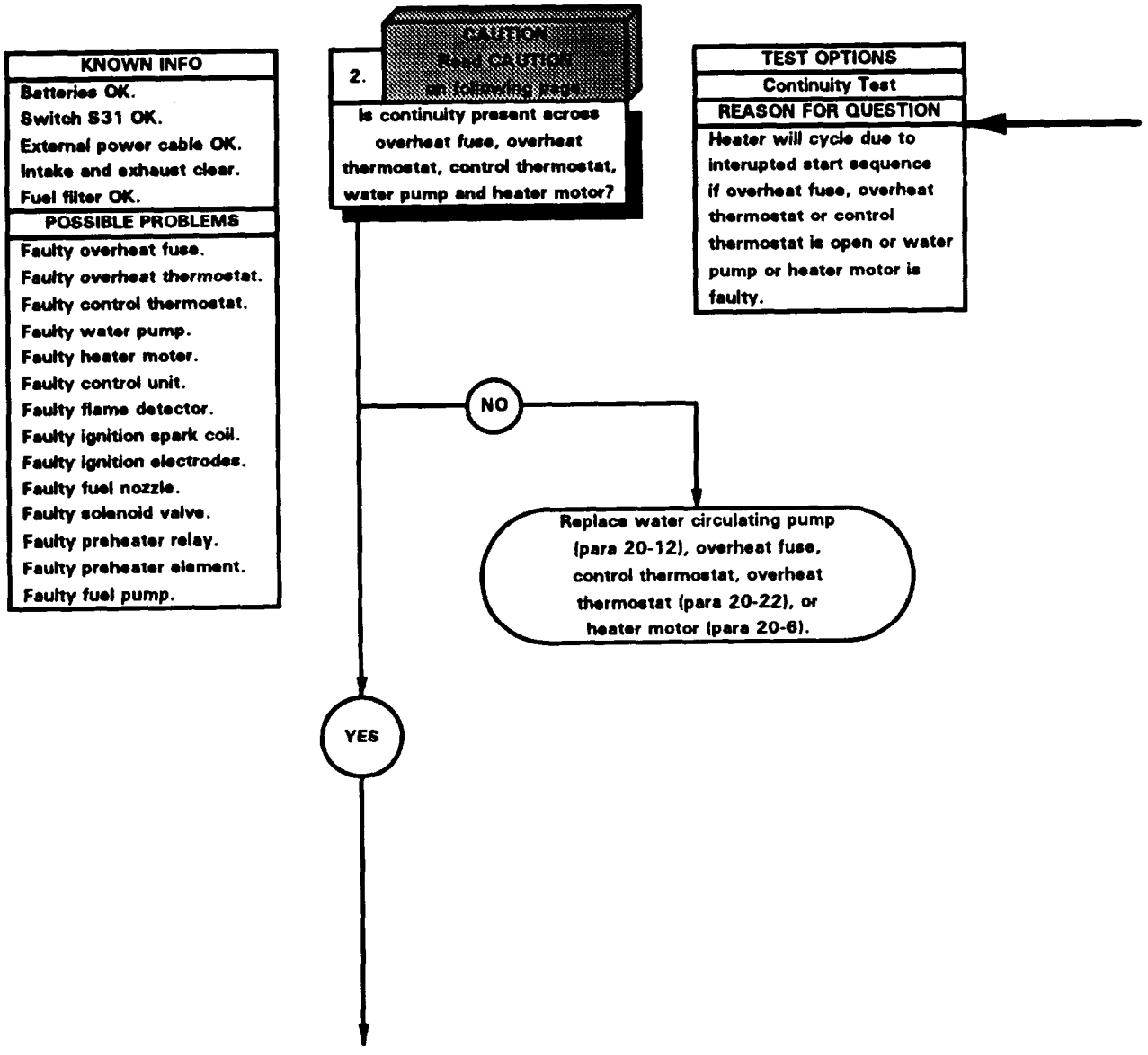
When cover is removed from cab arctic heater for maintenance, aviod contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check level of fuel in tank (TM 9-2320-365-10).
(4) If fuel is gelled, drain and fill with correct low temperature mixture.
(5) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.



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u12. AFTER CAB HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)

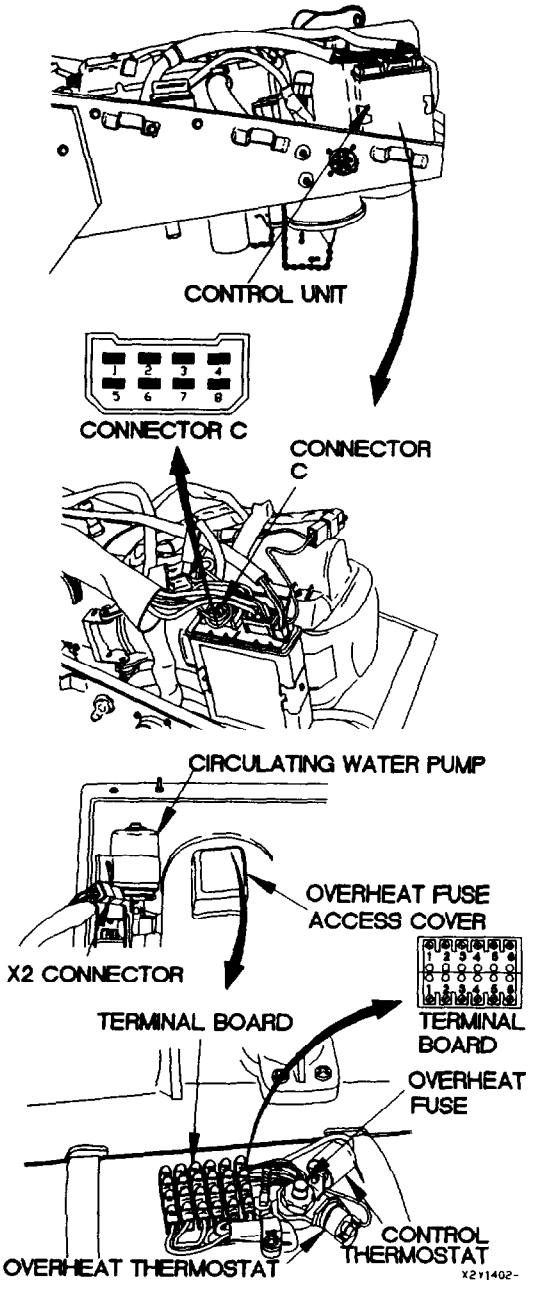


CAUTION

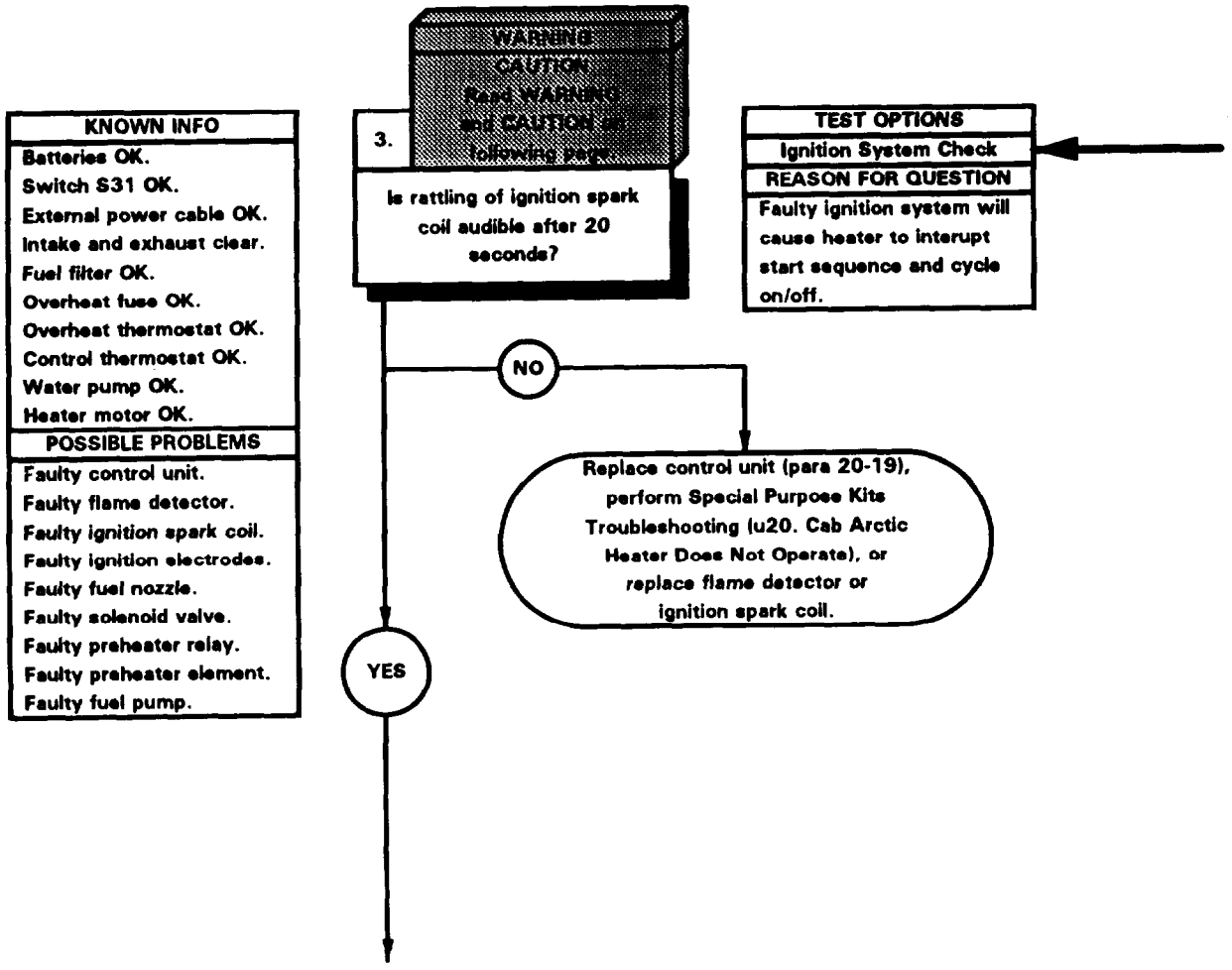
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

CONTINUITY TEST

(1) Disconnect batteries (para 7-48).
(2) Remove (pull up) overheat fuse access cover.
(3) Set multimeter to ohms.
(4) Place positive (+) probe of multimeter on terminal 1 of terminal board.
(5) Place negative (-) probe of multimeter on terminal 2 of terminal board and note reading on multimeter.
(6) If resistance is not .3-.5 ohms, overheat fuse is faulty.
(7) Place positive (+) probe of multimeter on terminal 3 of terminal board.
(8) Place negative (-) probe of multimeter on terminal 4 of terminal board and note reading on multimeter.
(9) If circuit is open, overheat thermostat (labeled Temp. Limiter) is faulty.
(10) Place positive (+) probe of multimeter on terminal 5 of terminal board.
(11) Place negative (-) probe of multimeter on terminal 6 of terminal board and note reading on multimeter.
(12) If circuit is open, control thermostat (labeled Regulating Thermostat) is faulty.
(13) Disconnect connector from C on control unit.
(14) Place positive (+) probe of multimeter on pin 5 of connector C.
(15) Place negative (-) probe of multimeter on pin 2 of connector C and note reading on multimeter.
(16) If resistance is not 30 - 40 ohms, heater motor is faulty.
(17) Disconnect connector X2 from circulating pump.
(18) Place positive (+) probe of multimeter on pin 1 of connector X2.
(19) Place negative (-) probe of multimeter on pin 2 of connector X2 and note reading on multimeter.
(20) If resistance is not 40 - 60 ohms, circulating pump is faulty.
(21) Connect connector X2.
(22) Connect connector C.
(23) Connect batteries (para 7-48).



u12. AFTER CAB HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)



WARNING

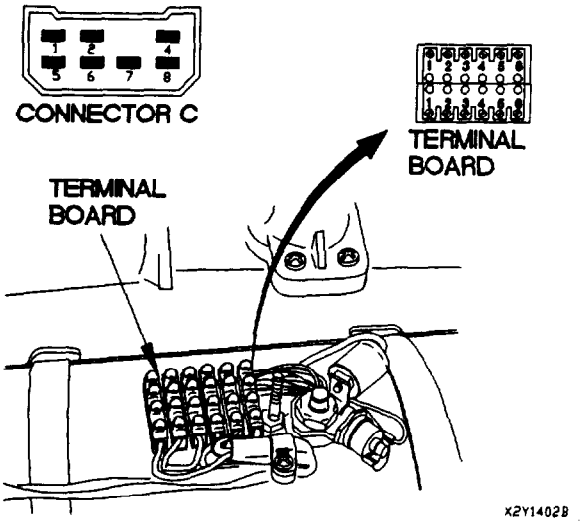
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

CAUTION

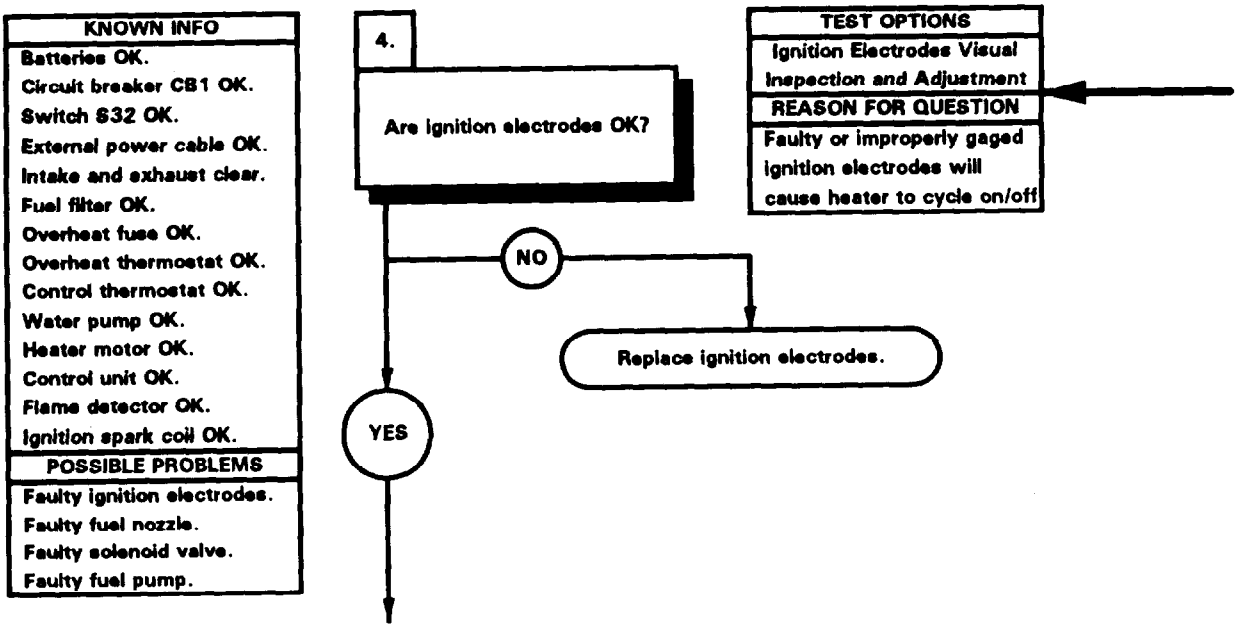
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

IGNITION SYSTEM CHECK

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Note audible rattling of ignition spark coil.
If ignition is working, proceed to next test.
If ignition is not working, go to step (4).
(3) Set multimeter to vdc position.
(4) Place negative (-) probe of multimeter on pin 5 of connector C.
(5) Place positive (+) probe of multimeter on pin 8, of connector C and note reading on multimeter.
(6) Move positive (+) probe of multimeter to pin 4, of connector C and note reading on multimeter.
(7) Move positive (+) probe of multimeter to pin 2, of connector C and note reading on multimeter.
(8) If voltage is less than 20 volts, control unit is faulty.
(9) If voltage is 20 - 24 volts, perform Special Purpose Kits Troubleshooting (u20. Cab Arctic Heater Does Not Operate).
(10) Shut down cab arctic heater (TM 9-2320-365-10).
(11) Open combustion chamber by removing split pin and loosening nuts on holdown bolts.
(12) Disconnect batteries (para 7-48).
(13) Remove cover from overheat fuse terminal board.
(14) Disconnect connector C from control unit.
(15) Set multimeter to ohms position.
(16) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(17) Place positive (+) probe of multimeter on pin 6 of connector C.
(18) If resistance is not between 300 ohms - 100 k-ohms, flame detector is faulty.
(19) Place negative (-) probe of multimeter on pin 5 of connector C.
(20) Place positive (+) probe of multimeter on pin 8 of connector C and note reading on multimeter.
(21) If resistance is not 45 - 65 ohms, ignition spark coil is faulty.
(22) Connect batteries (para 7-48).

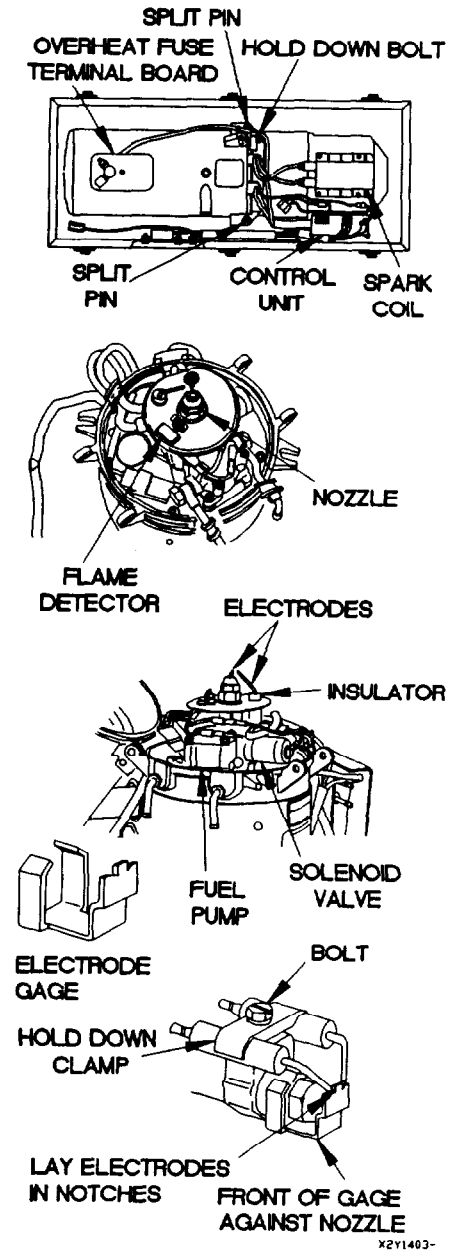


u12. AFTER CAB HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)

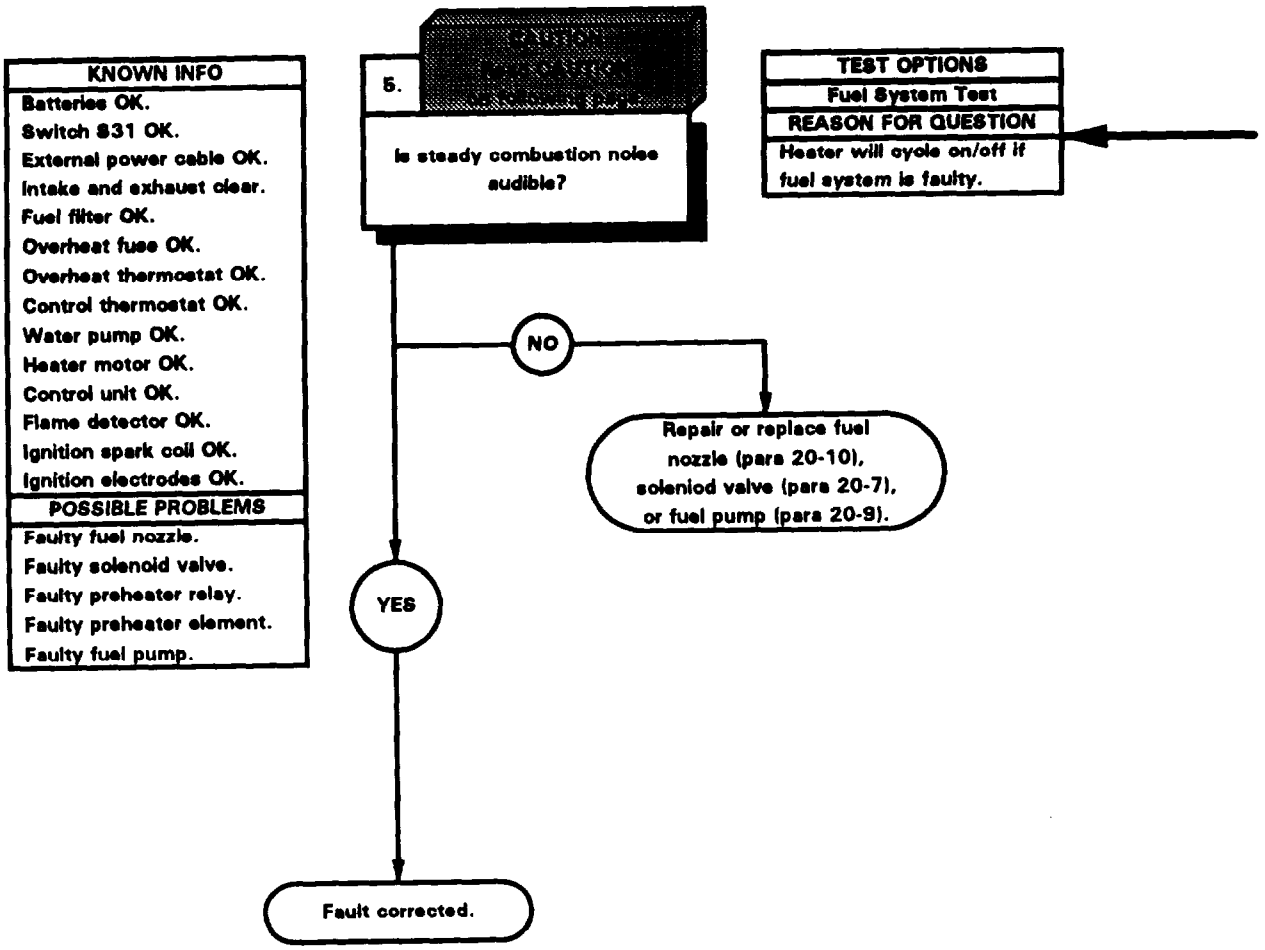


IGNITION ELECTRODES VISUAL INSPECTION AND ADJUSTMENT

(1) Inspect ignition electrodes for cracked insulators, pitting and damage.
(2) Remove electrode gage by removing screw holding it to end cap.
(3) Loosen electrode clamp hold down bolt and position gage as illustrated with front against fuel nozzle.
(4) Lay electrode tips in notches in gage.
(5) Tighten hold down bolt, while ensuring electrodes stay correctly positioned.
(6) Return electrode gage to its storage position and install screw.
(7) Connect connector C.
(8) Close combustion chamber and tighten nuts on hold down bolts and install split pin.



u12. AFTER CAB HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)



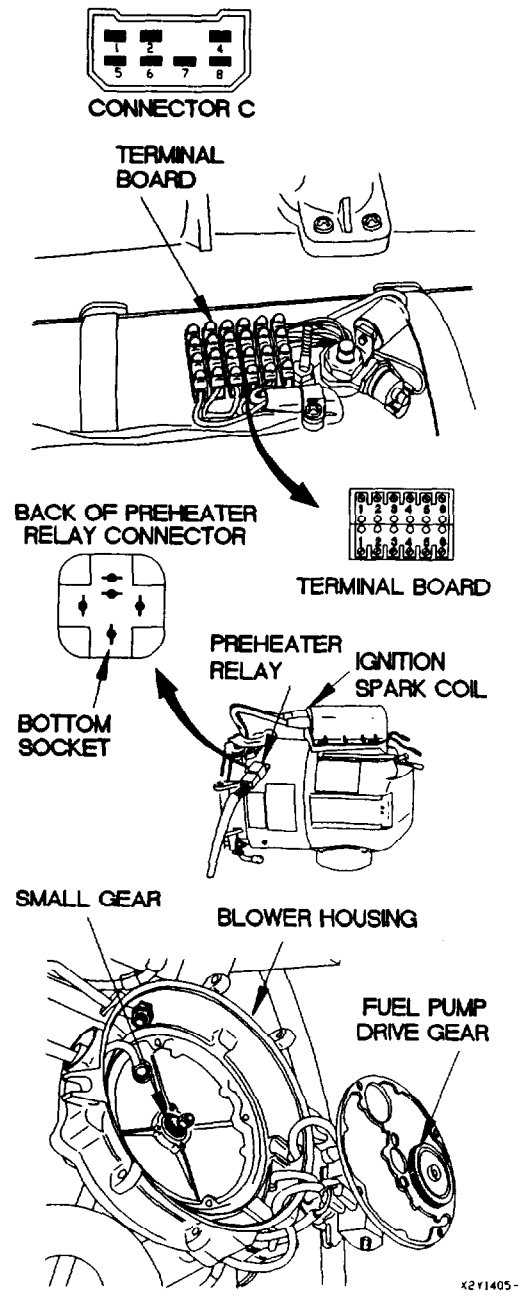
CAUTION

Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

FUEL SYSTEM TEST

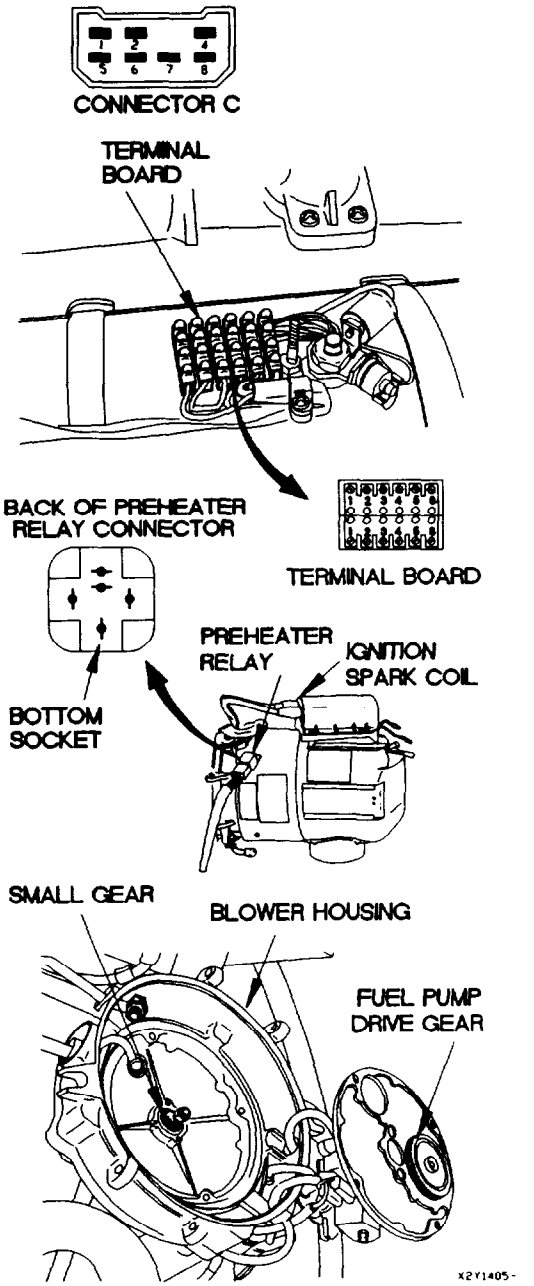
(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Listen for steady combustion noise.
(3) If combustion noise is steady, this test is concluded.
(4) If combustion noise is not steady, continue testing at step (3) of this task.
(5) Shut down cab arctic heater (TM 9-2320-365-10).
(6) Remove four screws on ignition spark coil and disconnect ground wires.
(7) Open combustion chamber by removing split pin and loosening nuts on hold down bolts.
(8) Start heater, observe that atomized fuel is sprayed evenly into combustion chamber.
(9) If spray pattern is OK, perform Special Purpose Kits Troubleshooting (u20. Cab Arctic Heater Does Not Operate).
(10) If fuel spray is weak or off-center, examine fuel nozzle and clean or replace.
(11) Disconnect batteries (para 7-48).
(12) Disconnect connector C from control unit.
(13) Set multimeter to ohms position.
(14) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(15) Place positive (+) probe of multimeter on pin 5 of connector C.
(16) If resistance is not 50 - 60 ohms, solenoid valve is faulty.
(17) Place negative (-) probe of multimeter on preheater relay top connector socket (red and yellow striped red wires).
(18) Place positive (+) probe of multimeter on left socket (brown wire) and note reading on multimeter.
(19) If resistance is not 310-330 ohms, preheater relay is faulty.
(20) Place negative (-) probe of multimeter on preheater relay bottom connector socket (red wire).
(21) Place positive (+) probe of multimeter on pin 2 of connector B and note reading on multimeter.
(22) If resistance is not 4.4-4.6 ohms, heating element is faulty.

(Continued on next page)



u12. AFTER CAB HEATER IS SWITCHED ON, HEATER SWITCHES ON AND OFF REPEATEDLY (CONT)

FUEL SYSTEM TEST (CONT)
(Continued from previous page)
(23) Remove four screws and lockwashers holding blower housing together. Discard lockwashers.
(24) Spin large gear that drives fuel pump.
(25) If gear fails to spin or is hard to spin fuel pump is faulty.
(26) Spin small gear to check drive parts and replace faulty components.
(27) Fit blower housing parts together and secure with four lockwasl ers and screws.
(28) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(29) Install ignition spark coil to hood by connecting ground wires and securing to hood with four washers and screws.
(30) Connect connector C.
(31) Install cover on overheat fuse terminal board.
(32) Install cab arctic heater cover (TM 9-2320-365-10).
(33) Connect batteries (para 7-48).



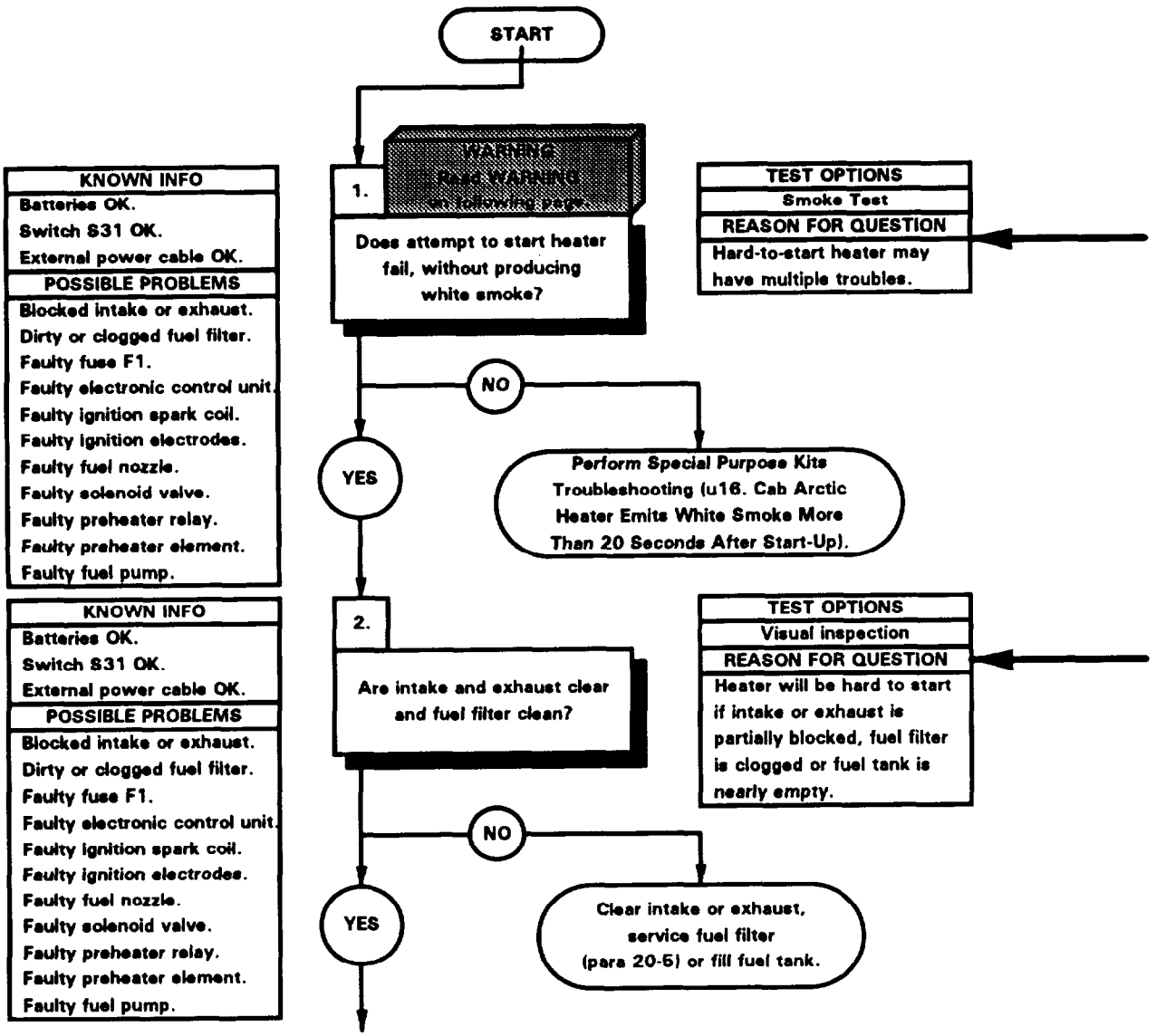
u13. CAB ARCTIC HEATER HARD TO START

INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Cab arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

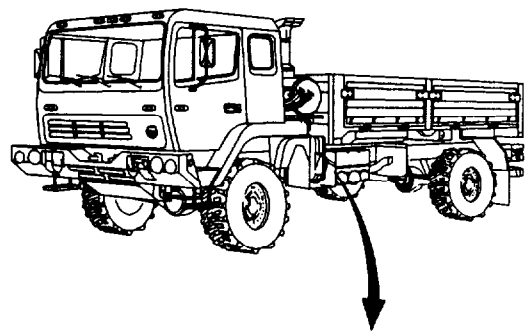
Material/Parts
- Lockwasher (4) (Item 98, Appendix G)

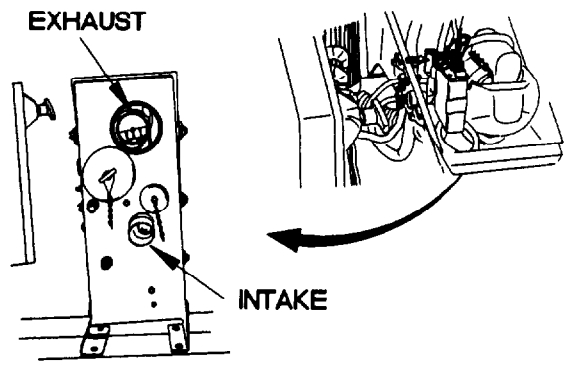


WARNING

When cover is removed from cab arctic heater for maintenance, aviod contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

SMOKE TEST
(1) Attempt to start cab arctic heater (TM 9-2320-365-10).
(2) Observe exhaust port for smoke, when heater fails to start. If heater emits white smoke, perform Special Purpose Kit Troubleshooting (u16. Cab Arctic Heater Emits White Smoke More Than 20 Seconds After Start-Up).

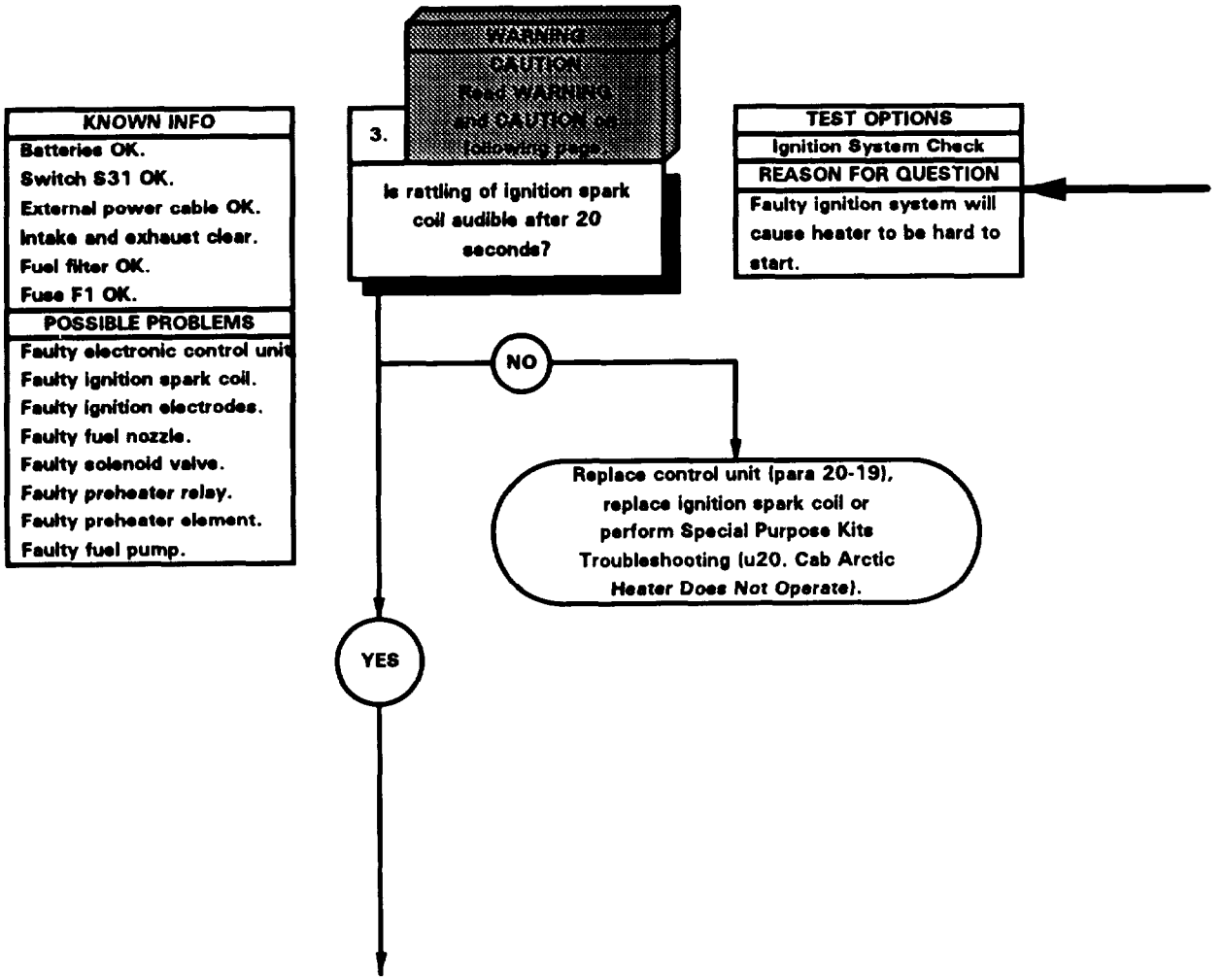




32X1501A

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check level of fuel in tank (TM 9-2320-365-10).
(4) If fuel is gelled, drain and fill with correct low temperature mixture.
(5) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.
(6) Check fuse F1 and replace as needed.

u13. CAB ARCTIC HEATER HARD TO START (CONT)



WARNING

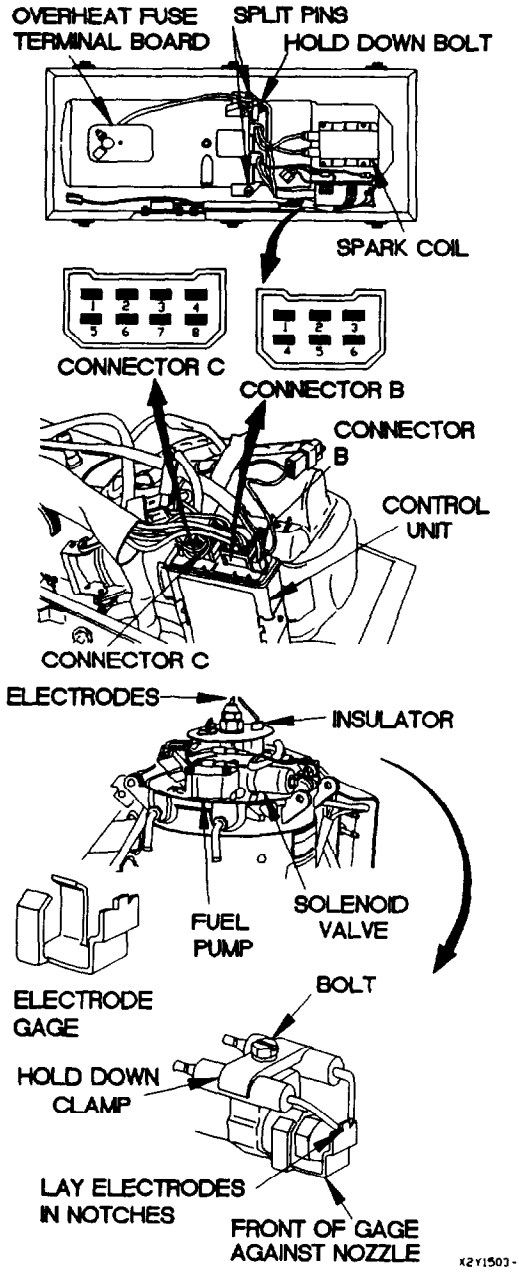
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

CAUTION

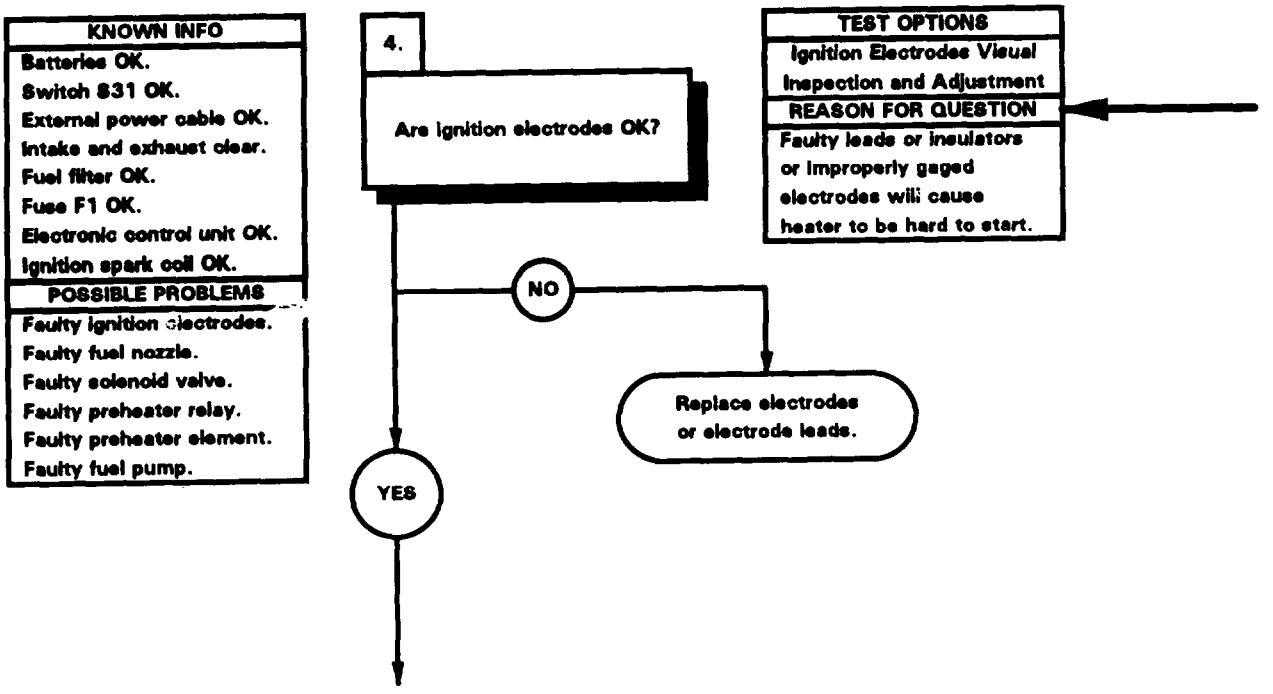
Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

IGNITION SYSTEM CHECK

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Note audible rattling of ignition spark coil.
If ignition is working, proceed to next test.
If ignition is not working, go to step (4) of this task.
(3) Set multimeter to vdc position.
(4) Place negative (-) probe of multimeter on pin 5 of connector C.
(5) Place positive (+) probe of multimeter on pin 8, of connector C and note reading on multimeter.
(6) Move positive (+) probe of multimeter to pin 4, of connector C and note reading on multimeter.
(7) If voltage is less than 20 volts, control unit is faulty.
(8) Shut down cab arctic heater (TM 9-2320-365-10).
(9) Disconnect batteries (para 7-48).
(10) Disconnect connector C from control unit.
(11) Set multimeter to ohms position.
(12) Place negative (-) probe of multimeter on pin 5 of connector C.
(13) Place positive (+) probe of multimeter on pin 8 of connector C and note reading on multimeter.
(14) If resistance is not 45 - 65 ohms, ignition spark coil is faulty.
(15) Connect batteries (para 7-48).

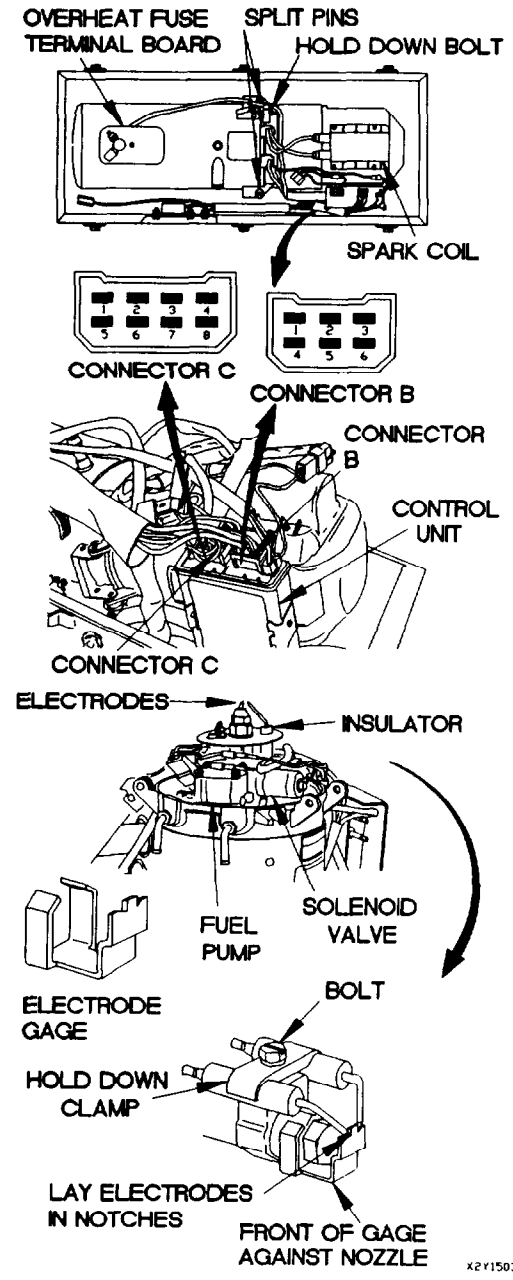


u13. CAB ARCTIC HEATER HARD TO START (CONT)

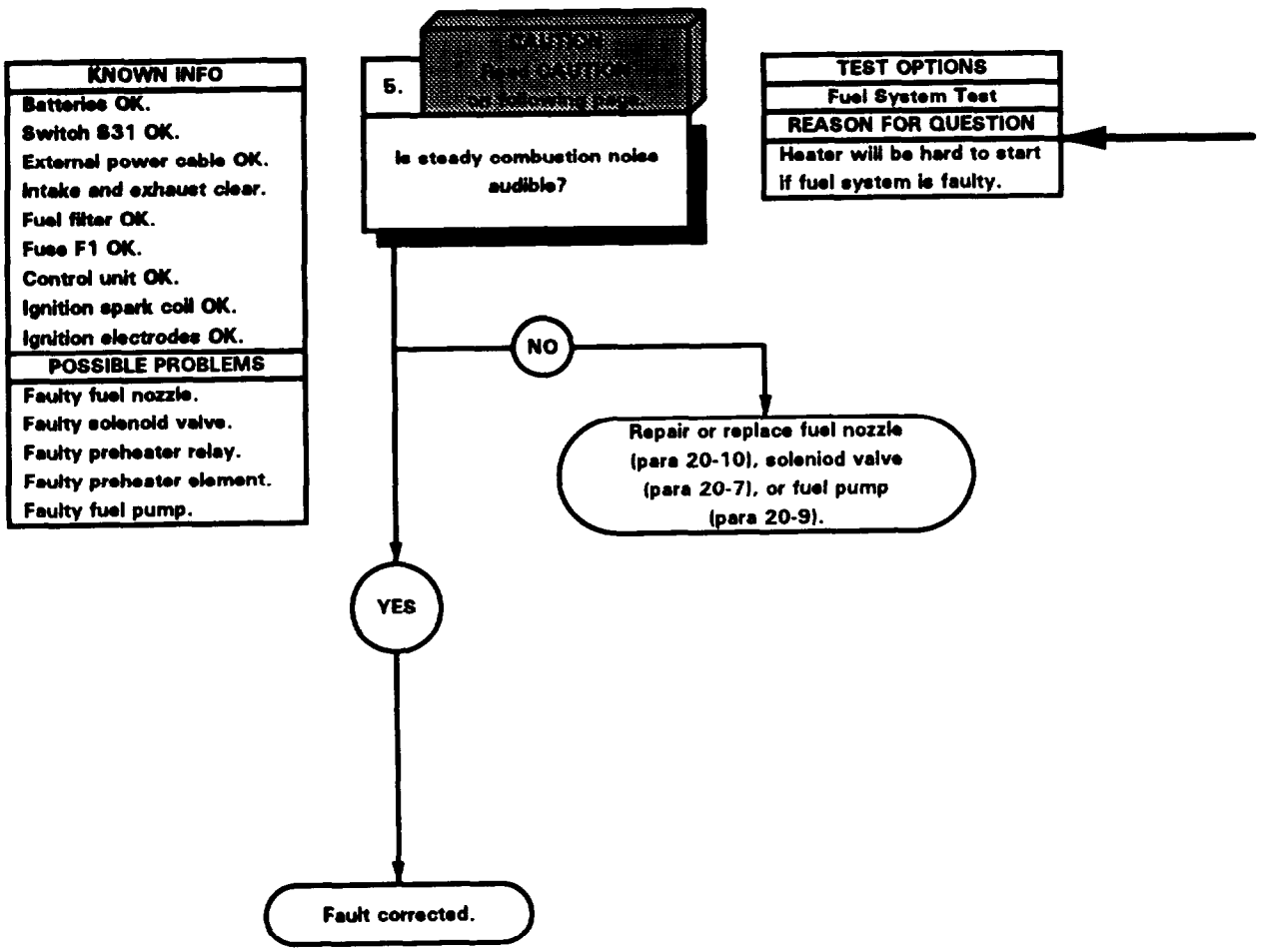


IGNITION ELECTRODES VISUAL INSPECTION\ AND ADJUSTMENT

(1) Open combustion chamber by removing split pin and loosening nuts on two holdown bolts.
(2) Inspect ignition electrodes and for cracked insulators, pitting and damage and check electrode leads for damage.
(3) Remove electrode gage by removing screw holding it to hood.
(4) Loosen electrode clamp hold down bolt and position gage as illustrated with front against fuel nozzle.
(5) Lay electrode tips in notches in gage.
(6) Tighten hold down bolt, while ensuring electrodes stay correctly positioned.
(7) Return electrode gage to its storage position and install screw.
(8) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(9) Connect connector C.



u13. CAB ARCTIC HEATER HARD TO START (CONT)



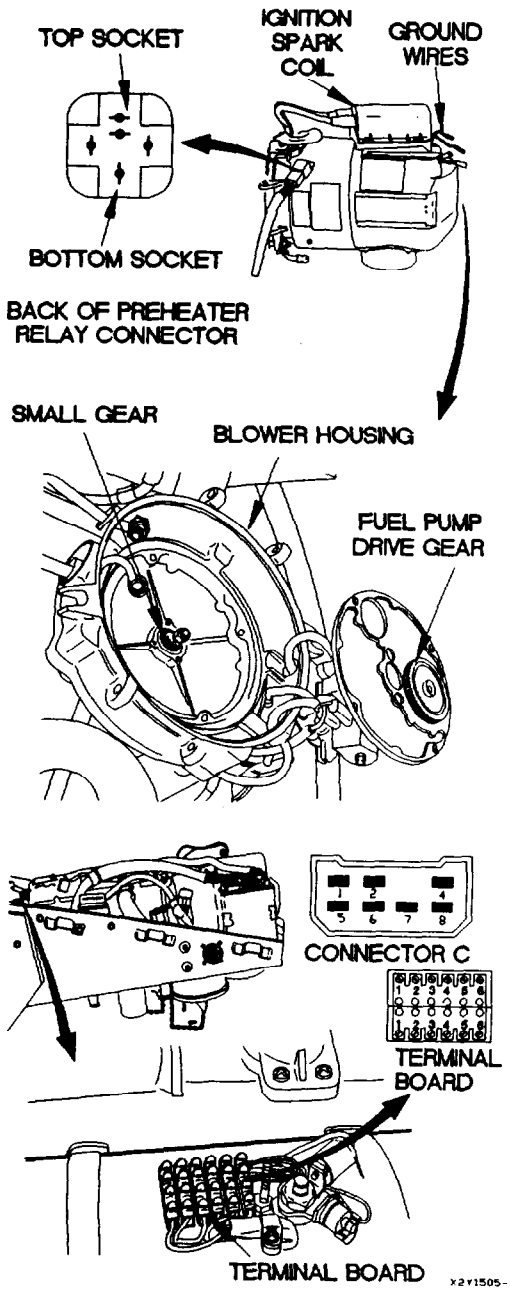
CAUTION

Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

FUEL SYSTEM TEST

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Listen for steady combustion noise.
(3) If combustion noise is steady, this test is concluded.
(4) If combustion noise is not steady, continue testing at step (3) of this task.
(5) Shut down cab arctic heater (TM 9-2320-365-10).
(6) Remove four screws on ignition spark coil and disconnect ground wires.
(7) Open combustion chamber by removing split pin and loosening nuts on hold down bolts.
(8) Start heater, observe that atomized fuel is sprayed evenly into combustion chamber.
(9) If spray pattern is OK, perform Special Purpose Kits Troubleshooting (u20. Cab Arctic Heater Does Not Operate).
(10) If fuel spray is weak or off-center, examine fuel nozzle and clean or replace.
(11) Disconnect batteries (para 7-48).
(12) Remove terminal board cover.
(13) Set multimeter to ohms position.
(14) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(15) Place positive (+) probe of multimeter on pin 5 of connector C.
(16) If resistance is not 50-60 ohms, solenoid valve is faulty.
(17) Place negative (-) probe of multimeter on preheater relay top connector socket (red and yellow striped red wires).
(18) Place positive (+) probe of multimeter on left socket (brown wire) and note reading on multimeter.
(19) If resistance is not 310-330 ohms, preheater relay is faulty.
(20) Place negative (-) probe of multimeter on preheater relay bottom connector socket (red wire).
(21) Place positive (+) probe of multimeter on pin 2 of connector B and note reading on multimeter.
(22) If resistance is not 4.4-4.6 ohms, heating element is faulty.

(Continued on next page)

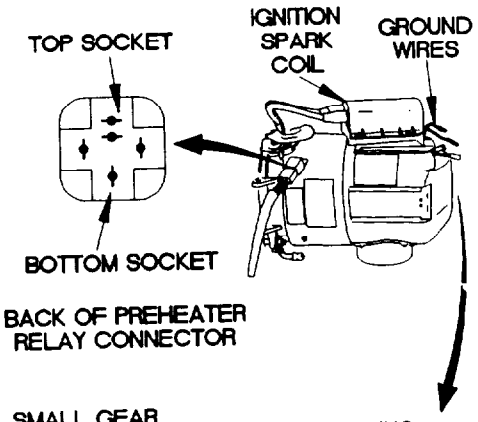


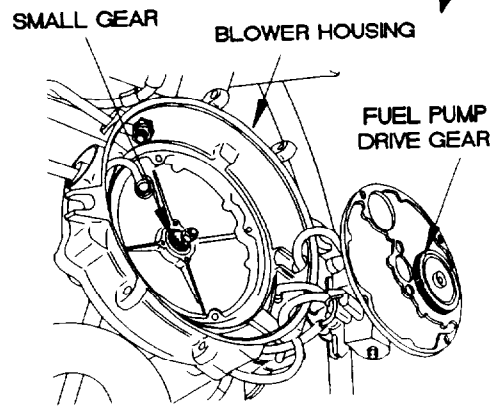
u13. CAB ARCTIC HEATER HARD TO START (CONT)

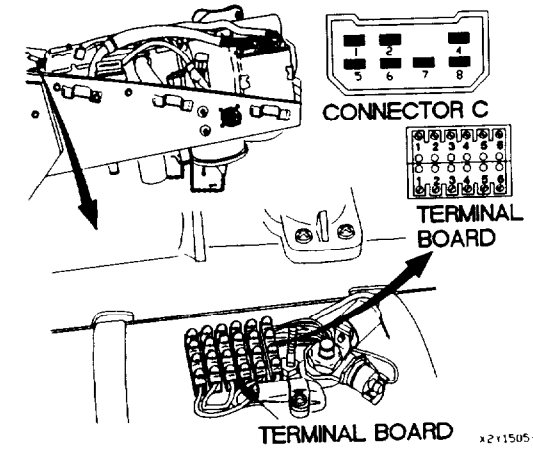
FUEL SYSTEM TEST (CONT)

(Continued from previous page)

(23) Remove four screws and lockwashers holding blower housing together. Discard lockwashers.
(24) Spin large gear that drives fuel pump.
(25) If gear fails to spin or is hard to spin fuel pump is faulty.
(26) Spin small gear to check drive parts and replace faulty components.
(27) Fit blower housing parts together and secure with four lockwashers and screws.
(28) Close combustion chamber and tighten nuts on hold down bolts and install split pin.
(29) Install ignition spark coil to hood by connecting ground wires and securing to hood with four washers and screws.
(30) Install cover on terminal board.
(31) Install cab arctic heater cover (TM 9-2320-365-10).
(32) Connect batteries (para 7-48).





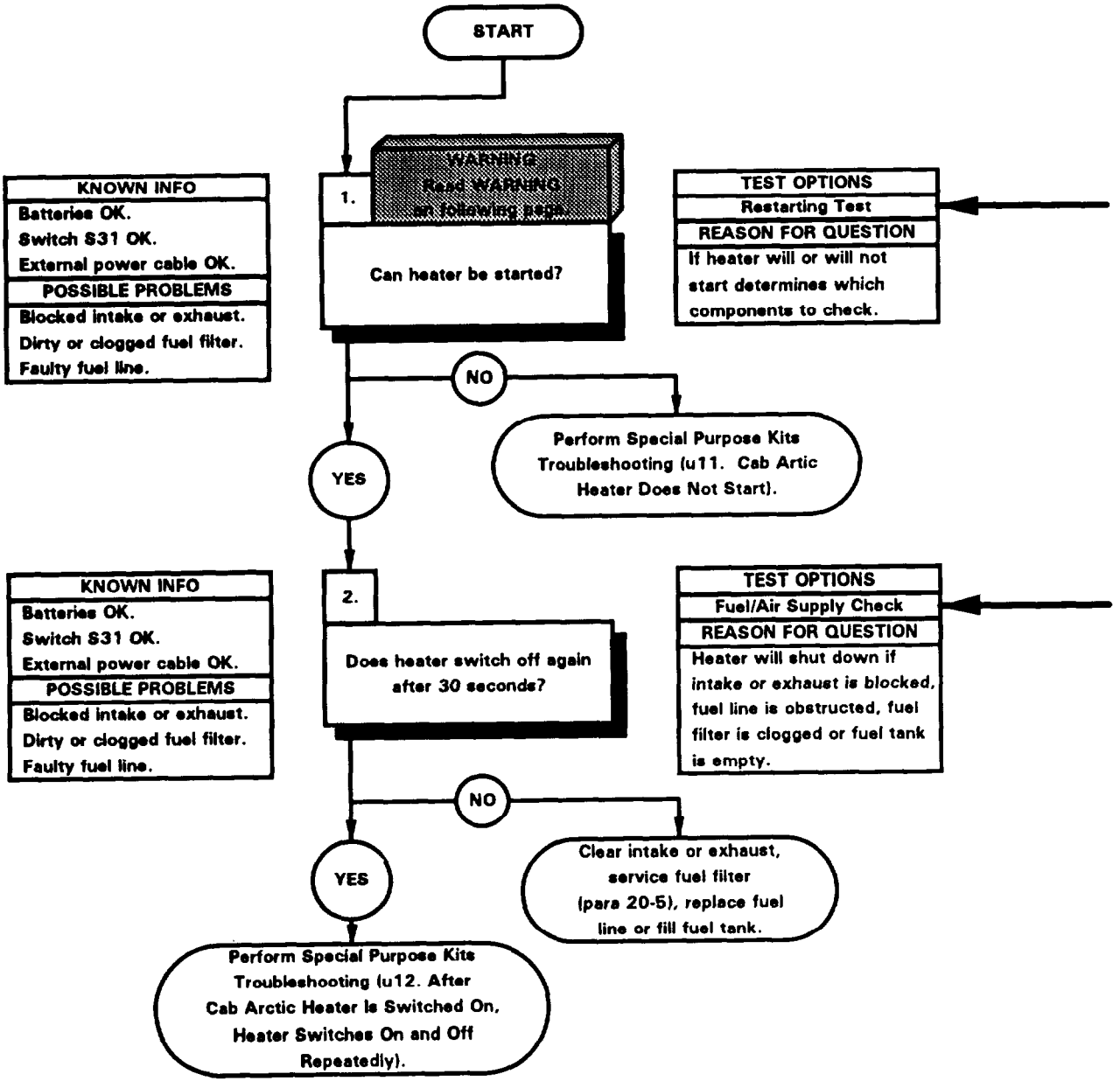


u14. CAB ARCTIC HEATER TURNS ITSELF OFF

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)



WARNING

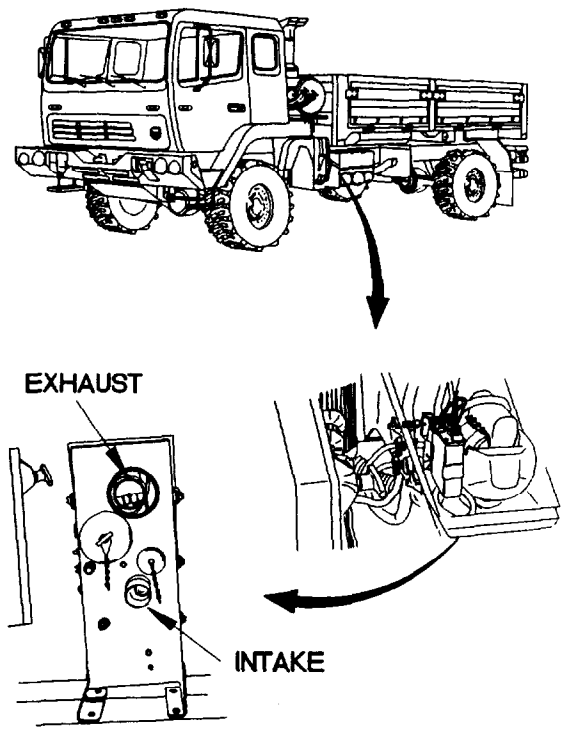
When cover is removed from cab arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

RESTARTING TEST

(1) Attempt to start cab arctic heater (TM 9-2320-365-10).
(2) If heater will not start, perform Special Purpose Kits Troubleshooting (u11. Cab Arctic Heater Does Not Start).

FUEL/AIR SUPPLY TEST

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check level of fuel in tank (TM 9-2320-365-10).
(4) If fuel is gelled, drain and fill with correct low temperature mixture.
(5) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.
(6) Check fuel lines and hoses from tank to heater and return. Ensure that lines are not kinked, punctured or crushed. Repair or replace fuel line. Pinch hoses and fuel lines to check for obstructions.
(7) Install cargo arctic heater cover (TM 9-2320-365-10).



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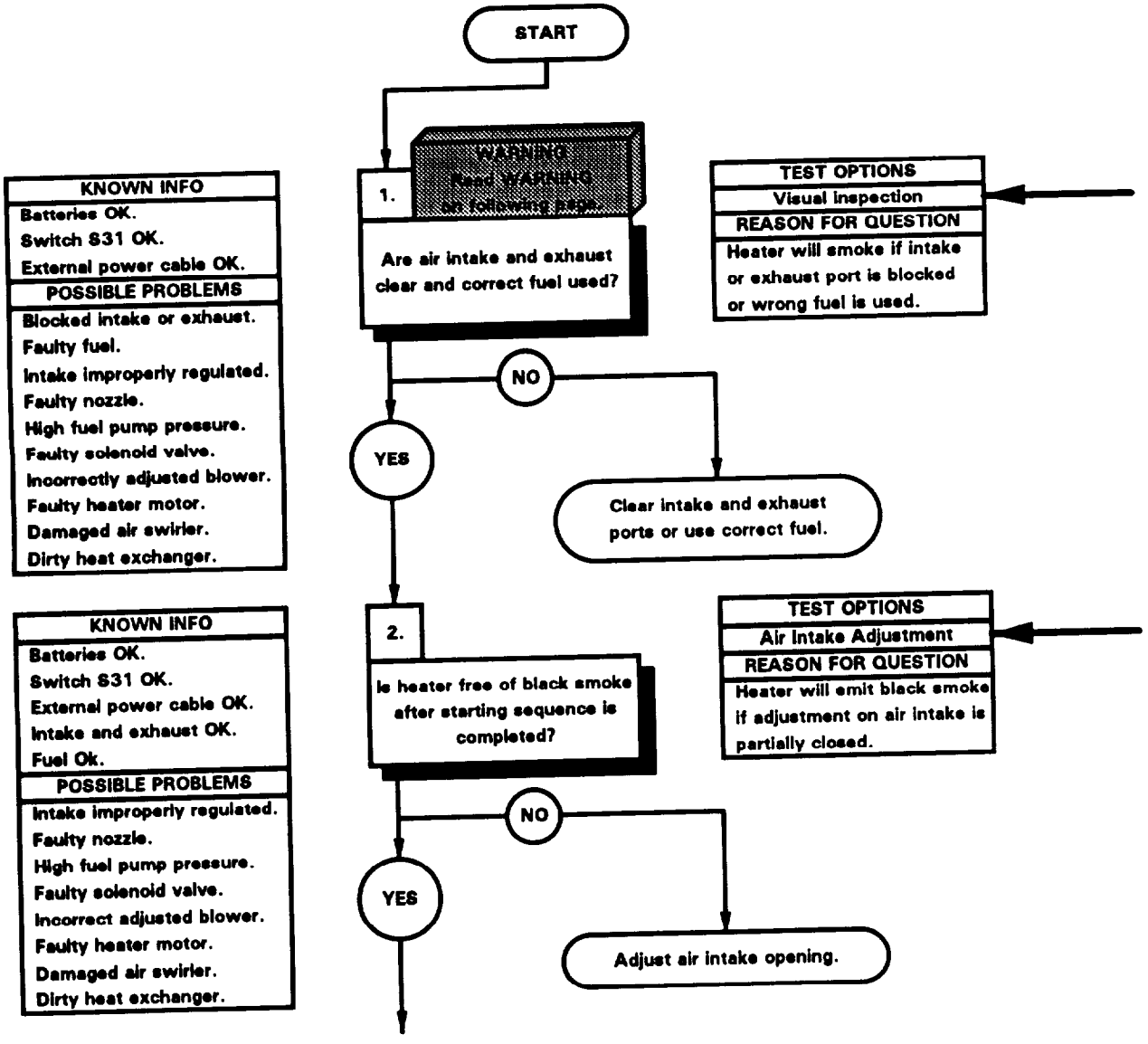
u15. CAB ARCTIC HEATER EMITS BLACK SMOKE

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)

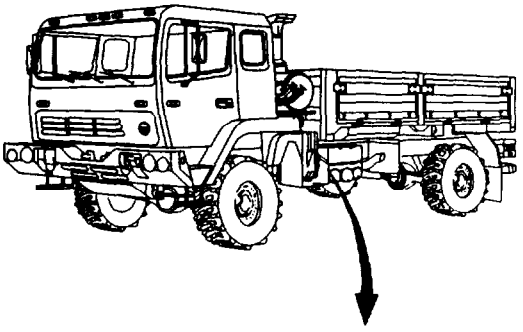
Material/Parts
Lockwasher (4) (Item 98, Appendix G)

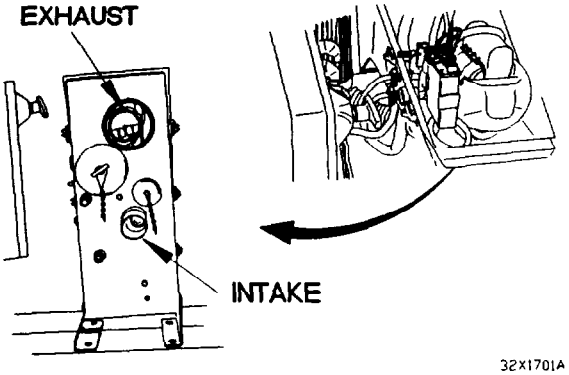


WARNING

When cover is removed from cab arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.

(1) Examine air intake and exhaust ports to ensure clear passage. Remove snow and debris.
(2) Check fuel filter and service if required (TM 9-2320-365-10).
(3) Check level of fuel in tank (TM 9-2320-365-10).
(4) If fuel is gelled, drain and fill with correct low temperature mixture.
(5) If fuel is contaminated, replace contaminated fuel. Drain and flush contamination from heater lines and filter.



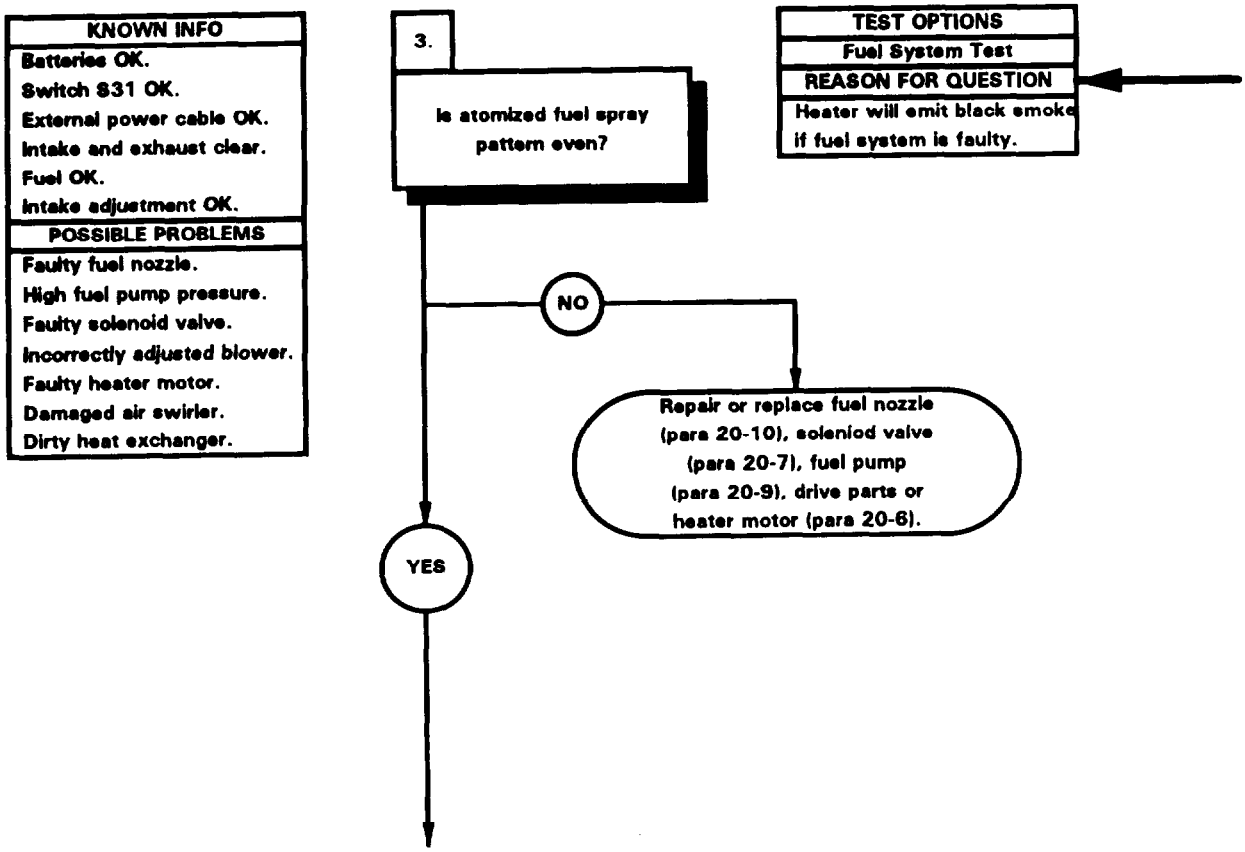


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AIR INTAKE ADJUSTMENT

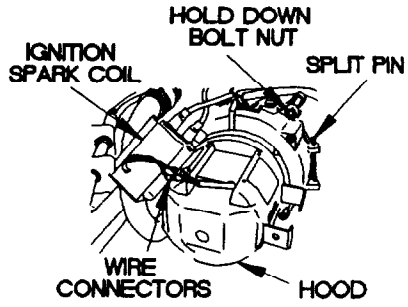
(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Observe black smoke. If smoke stops after start-up, reset adjustment on air intake tube by opening slightly.

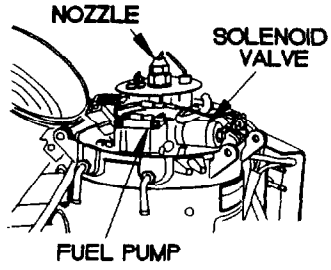
u15. CAB ARCTIC HEATER EMITS BLACK SMOKE (CONT)

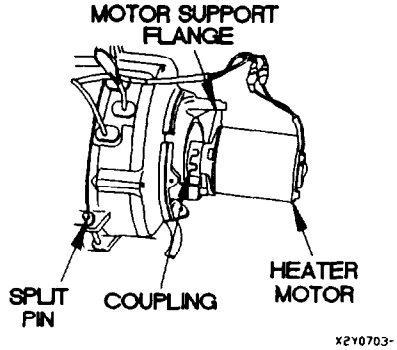


FUEL SYSTEM TEST

(1) Shut down cab arctic heater (TM 9-2320-365-10).
(2) Remove four screws on ignition spark coil and disconnect ground wires.
(3) Open combustion chamber by removing two split pins and loosening nuts on hold down bolts.
(4) Start cab arctic heater (TM 9-2320-365-10).
(5) Observe that atomized fuel is sprayed evenly into combustion chamber.
  (a) If fuel drips from nozzle before spraying solenoid valve is faulty.
  (b) If fuel spray is not atomized or spray pattern is irregular, examine fuel nozzle and clean or replace.
(6) Check solenoid valve for leaking fuel. If fuel is leaking from fuel pump, solenoid valve is faulty.
(7) Shut down cab arctic heater (TM 9-2320-365-10).
(8) Remove hood by unscrewing four screws and lockwashers. Discard lockwashers.
(9) Spin couplings to check free movement of motor and drive parts on shaft. If shaft is not free, replace binding or draging part.
(10) Ensure spark coil ground wires are disconnected and start cab arctic heater (TM 9-2320-365-10).
(11) Observe motor rotational speed. If slow, heater motor is faulty.
(12) Shut down cab arctic heater (TM 9-2320-365-10).
(13) Install hood with four screws and lockwashers.
(14) Connect ignition spark coil wires and secure ignition spark coil to hood with four screws and washers.

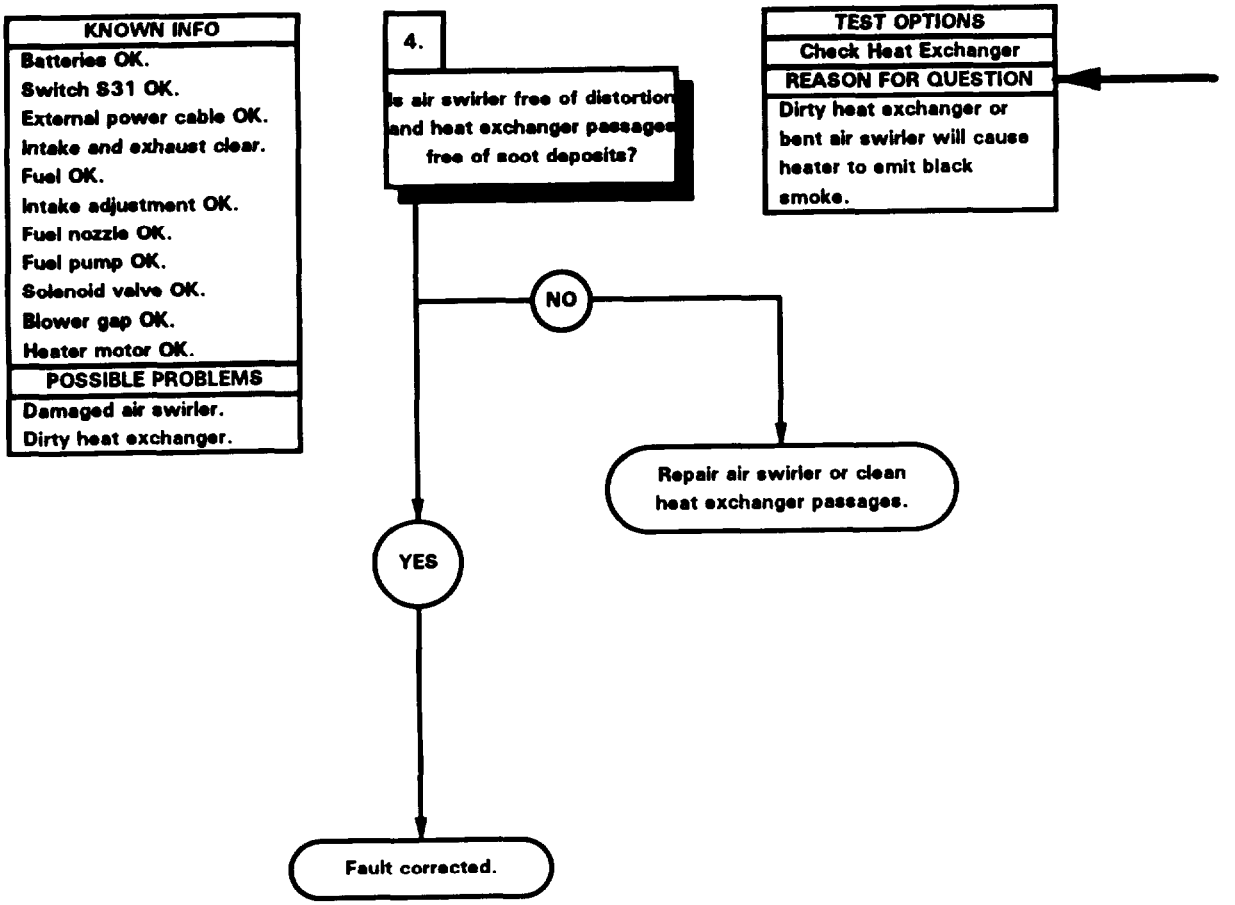






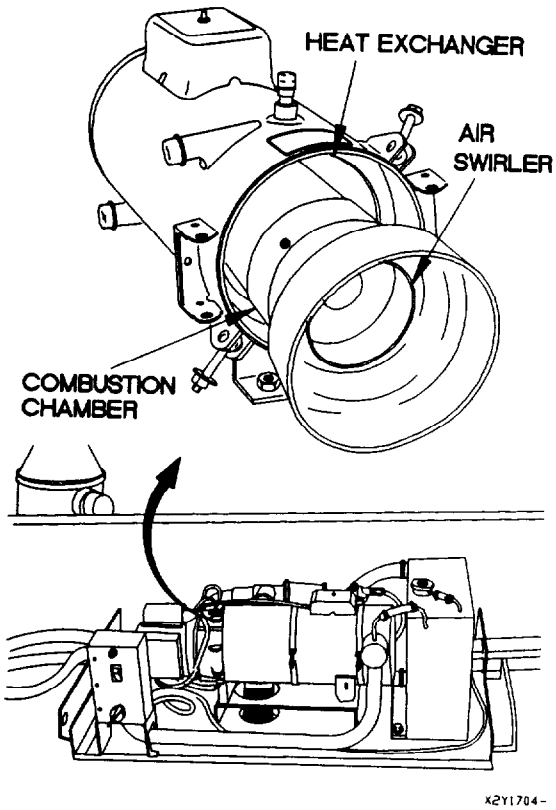
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u15. CAB ARCTIC HEATER EMITS BLACK SMOKE (CONT)



CHECK HEAT EXCHANGER

(1) Remove combustion chamber from heater and check air swirler for distortion caused by overheating.
(2) Check heat exchanger for soot clogged passages. If passages are clogged clean heat exchanger.
(3) Install combustion chamber.
(4) Install heater head with two split pins, and tighten nuts on hold down bolts.
(5) Install cab arctic heater cover (TM 9-2320-365-10).



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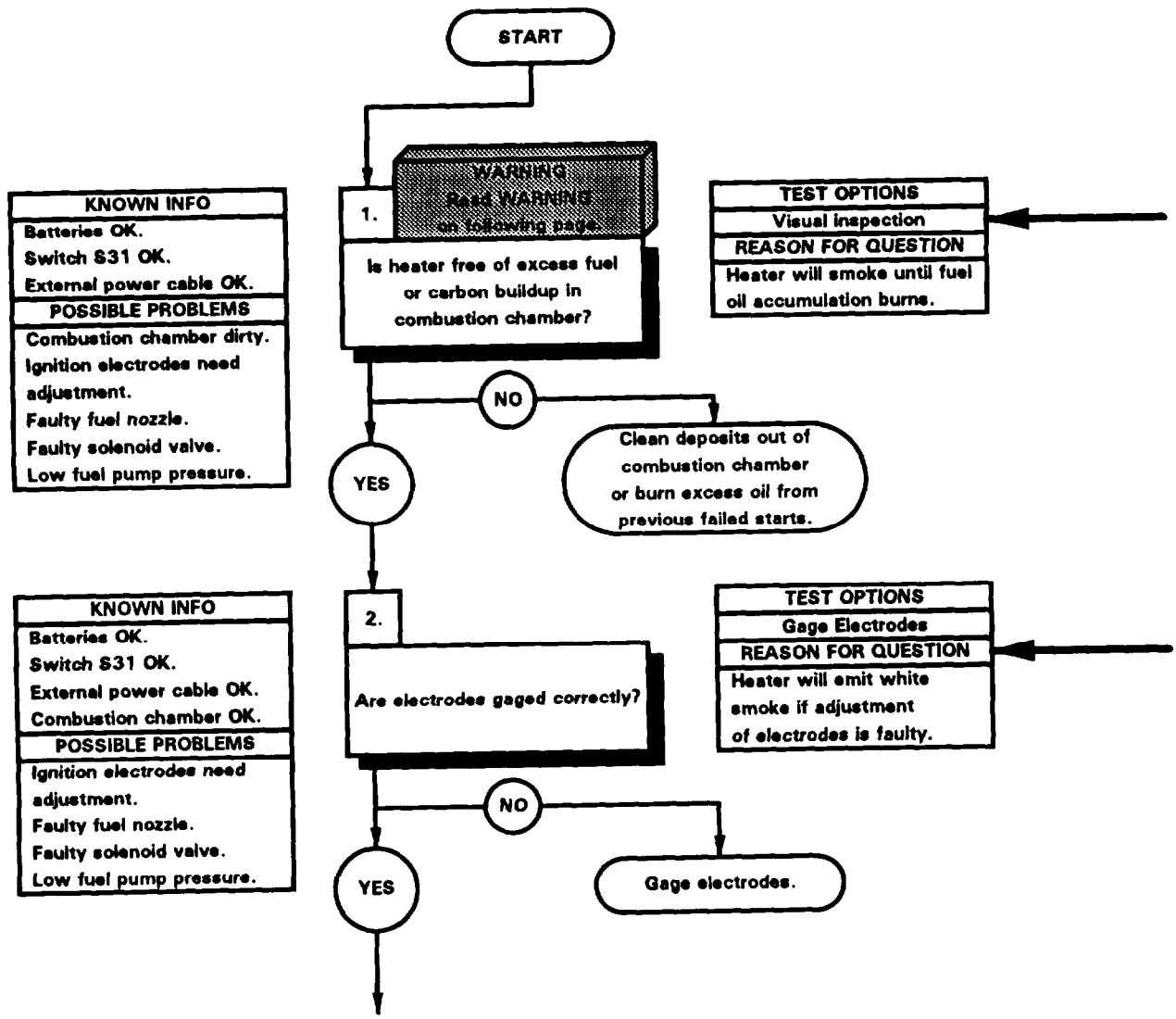
u16. CAB ARCTIC HEATER EMITS WHITE SMOKE MORE THAN 20 SECONDS AFTER START-UP

INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Cab arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

Material/Parts
- Lockwasher (4) (Item 98, Appendix G)
- Rag, Wiping (Item 46, Appendix D)



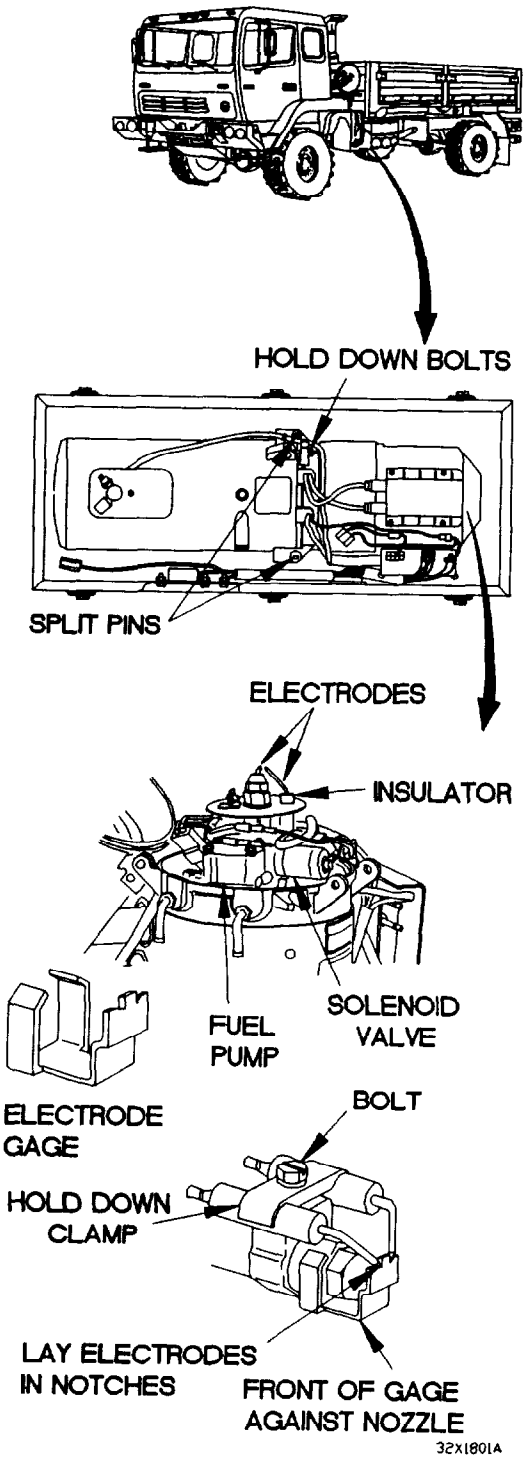
WARNING

- When cover is removed from cab arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.
- Make sure combustion chamber has cooled before reaching inside.

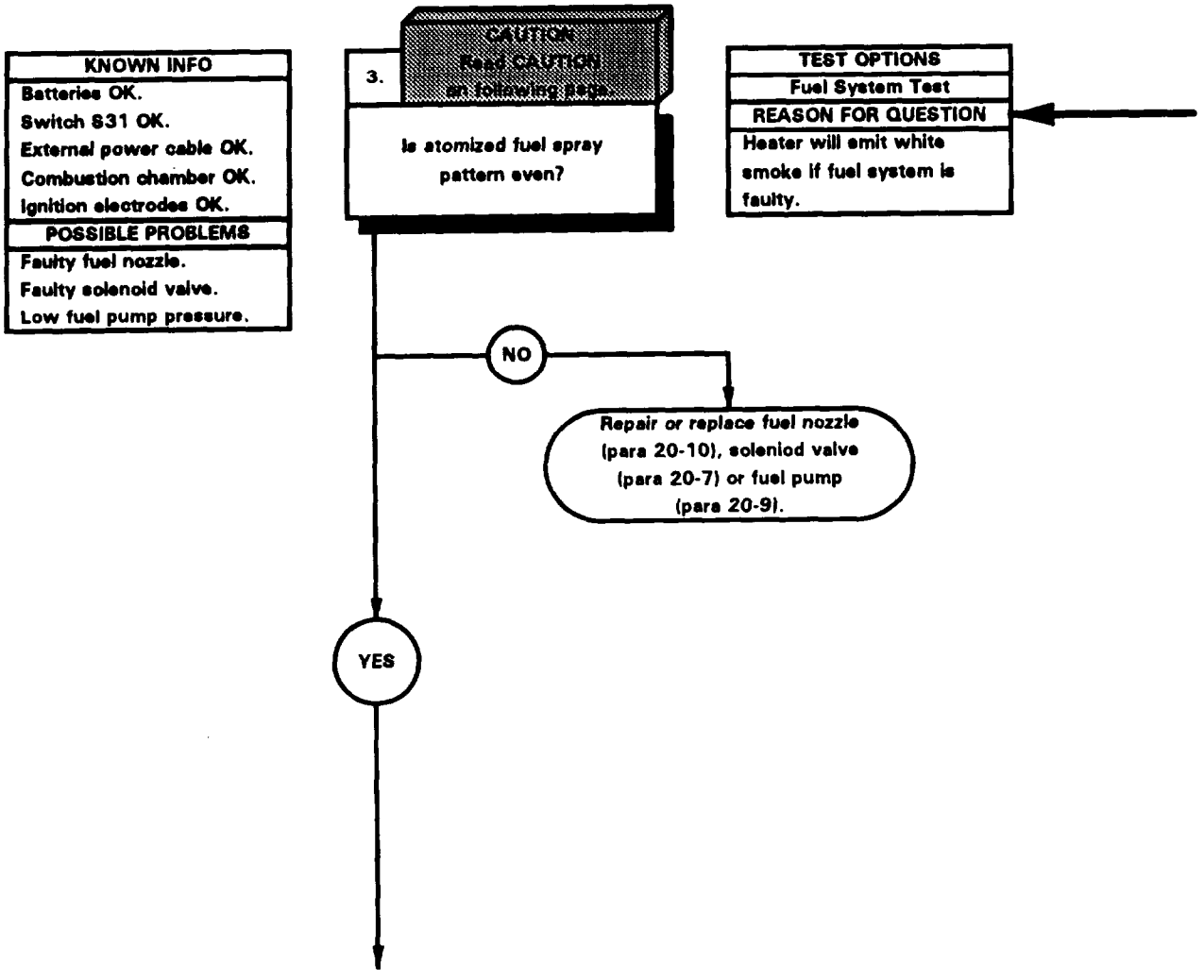
(1) Remove two split pins and loosen nuts on two hold down bolts. Open combustion chamber and observe interior. If deposits of carbon are visible, proceed to step (2). If raw fuel is visible, skip step (2) and go to step (3).
(2) Ensure combustion chamber has cooled down, then clean carbon deposits from chamber.
(3) Use rags to wipe up accumulation of fuel in combustion chamber.

GAGE ELECTRODES

(1) Check electrodes for pitting, cracking of insulators and damage. If faulty replace.
(2) Remove screw securing electrode gage to hood.
(3) Loosen electrode clamp bolt and position gage as shown with front against fuel nozzle.
(4) Lay electrode tips in notches in gage.
(5) Ensure electrodes are correctly positioned and tighten clamp bolt.
(6) Return electrode gage to its storage position, on hood, and install screw.



u16. CAB ARCTIC HEATER EMITS WHITE SMOKE MORE THAN 20 SECONDS AFTER START-UP (CONT)

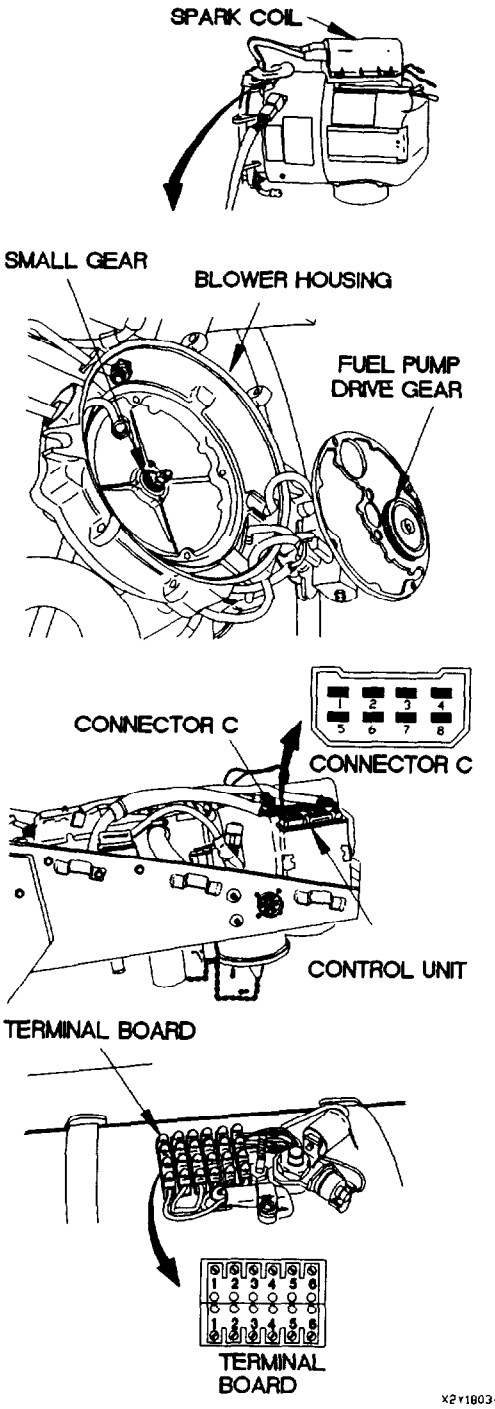


CAUTION

Electrical power must be disconnected from circuit before continuity can be checked. Failure to comply may result in damage to test equipment or electrical system.

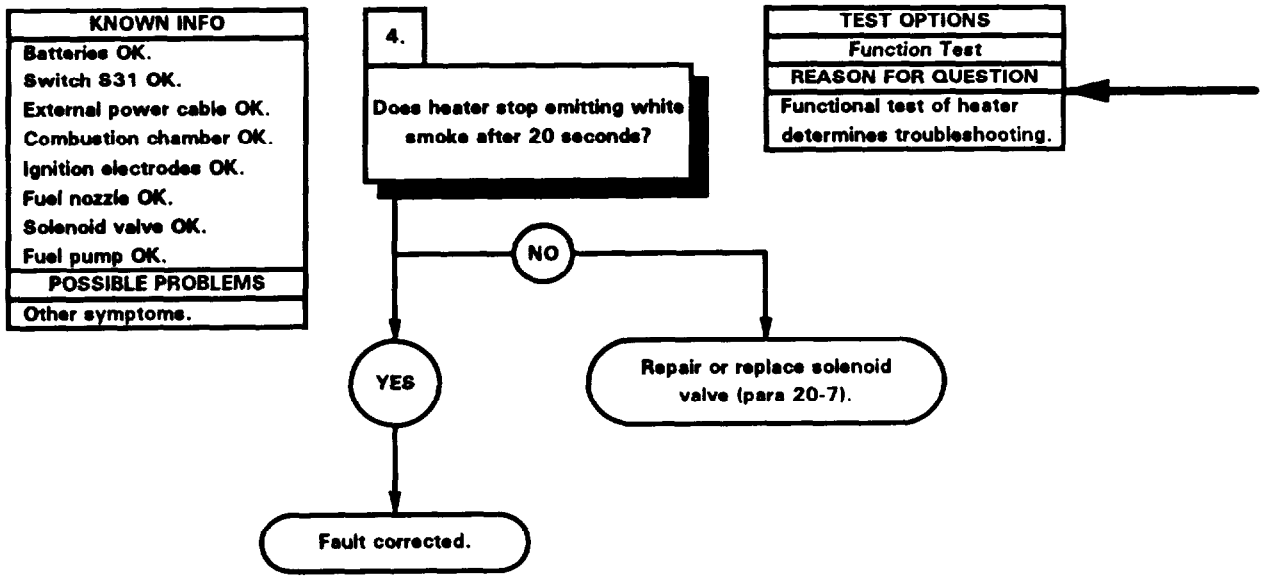
FUEL SYSTEM TEST

(1) Remove four screws on ignition spark coil, lift coil aside and disconnect (brown) ground wires.
(2) Start cab arctic heater (TM 9-2320-365-10).
(3) Observe that atomized fuel is sprayed evenly into combustion chamber.
(4) Shut down cab arctic heater (TM 9-2320-365-10).
(5) If fuel spray was OK, skip steps (6) through (18) of this task.
(6) If fuel spray was weak or off-center:
  (a) Check fuel nozzle and clean or replace.
  (b) Check fuel pump for leaks. If leaking, repair or replace.
  (c) Check solenoid valve for sticking or leaks. If sticking or leaking replace.
(7) Disconnect batteries (para 7-48).
(8) Remove cover from overheat fuse terminal board.
(9) Disconnect connector C from control unit.
(10) Set multimeter to ohms position.
(11) Place negative (-) probe of multimeter on terminal 1 of terminal board.
(12) Place positive (+) probe of multimeter on pin 5 of connector C and note reading.
(13) If resistance is not 50 - 60 ohms, solenoid coil is faulty.
(14) Remove four screws and lockwashers holding blower housing together. Discard lockwashers.
(15) Spin large gear that drives fuel pump.
(16) If gear fails to spin or is hard to spin fuel pump is faulty.
(17) Spin small gear to check drive parts and replace faulty components.
(18) Fit blower housing parts together and secure with four screws and lockwashers.
(19) Close combustion chamber and tighten nuts on hold down bolts and install two split pins.
(20) Install ignition spark coil to hood by connecting ground wires and securing to hood with four washers and screws.
(21) Connect connector C.
(22) Install cover on overheat fuse terminal board.
(23) Connect batteries (para 7-48).



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u16. CAB ARCTIC HEATER EMITS WHITE SMOKE MORE THAN 20 SECONDS AFTER START-UP (CONT)



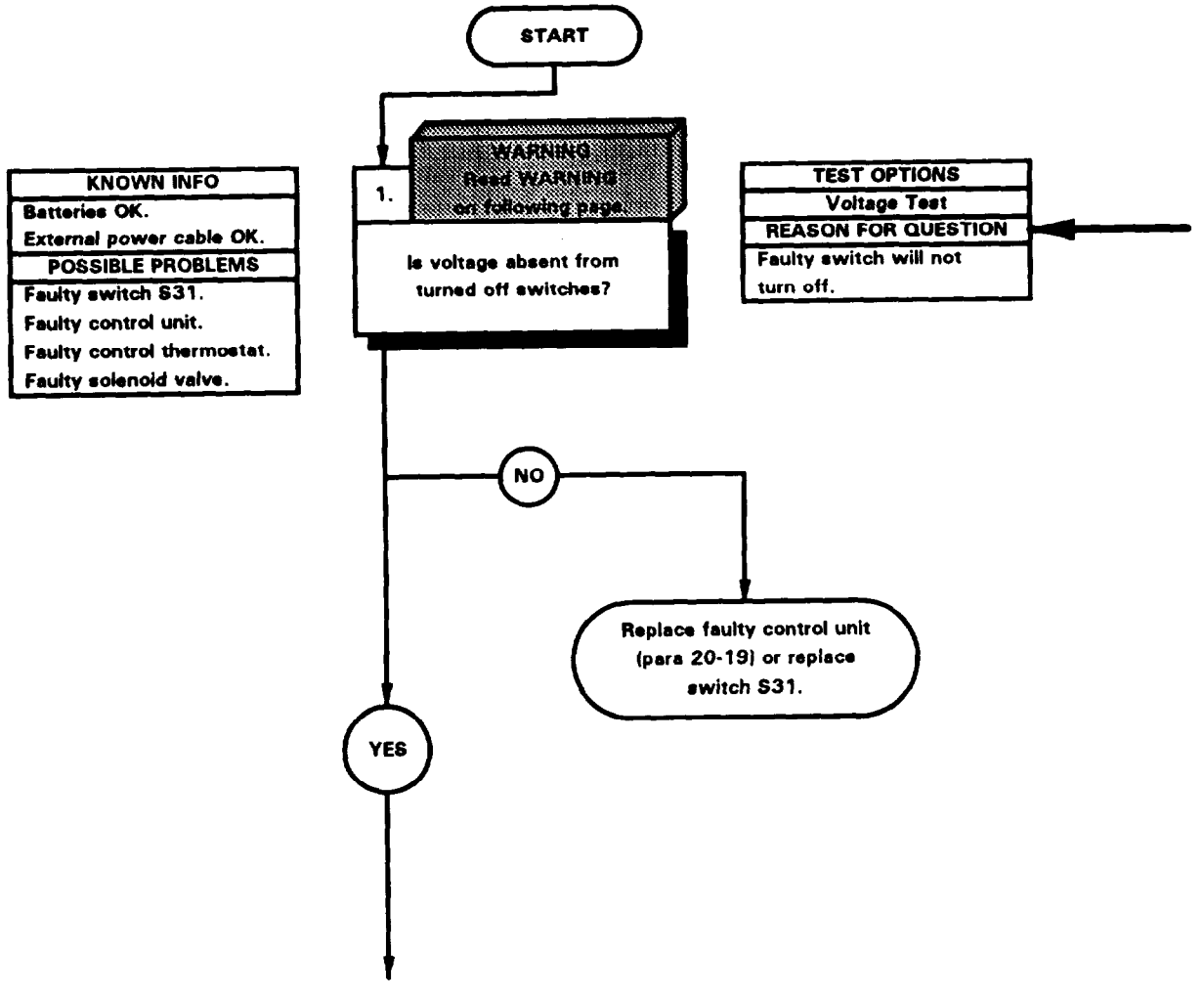
FUNCTION TEST
(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Observe exhaust for white smoke. If white smoke stops after about 20 seconds, fault is corrected.
(3) If heater did not start on first try, perform Special Purpose Kit Troubleshooting (u13. Cab Arctic Heater Hard To Start).
(4) If heater stops emitting white smoke after several minutes, repeat test 3 of this task.
(5) If heater emits white smoke in cycles (smokes, then stops, smokes and stops), recheck setting of electrodes (test 2 of this task), then look for dripping fuel nozzle (test 3 of this task).
(6) Shut down cab arctic heater (TM 9-2320-365-10).
(7) Observe exhaust for white smoke. If heater smokes after switching off, solenoid valve is faulty.
(8) Install cab arctic heater cover (TM 9-2320-365-10).

u17. CAB ARCTIC HEATER CANNOT BE SWITCHED OFF

INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Cab arctic heater cover removed (TM 9-2320-365-10).

Tools and Special Tools
- Tool Kit, Genl Mech (Item 44, Appendix C)
- Multimeter, Digital (Item 22, Appendix C)

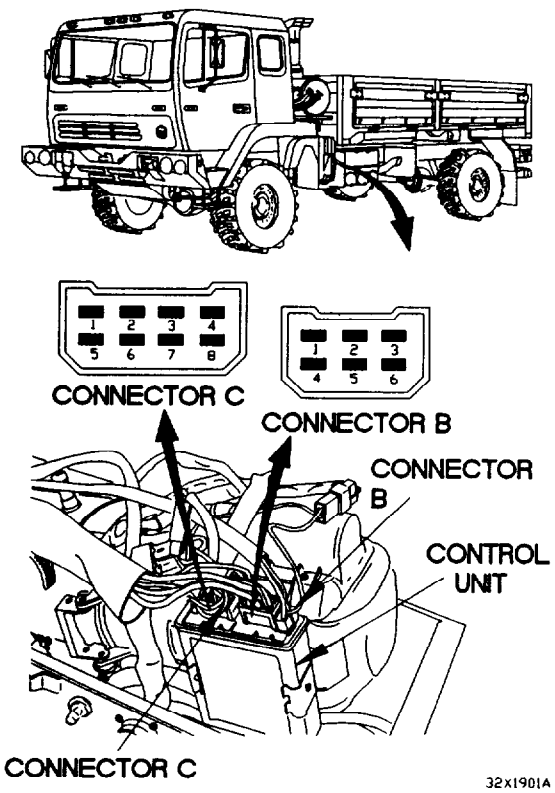


WARNING

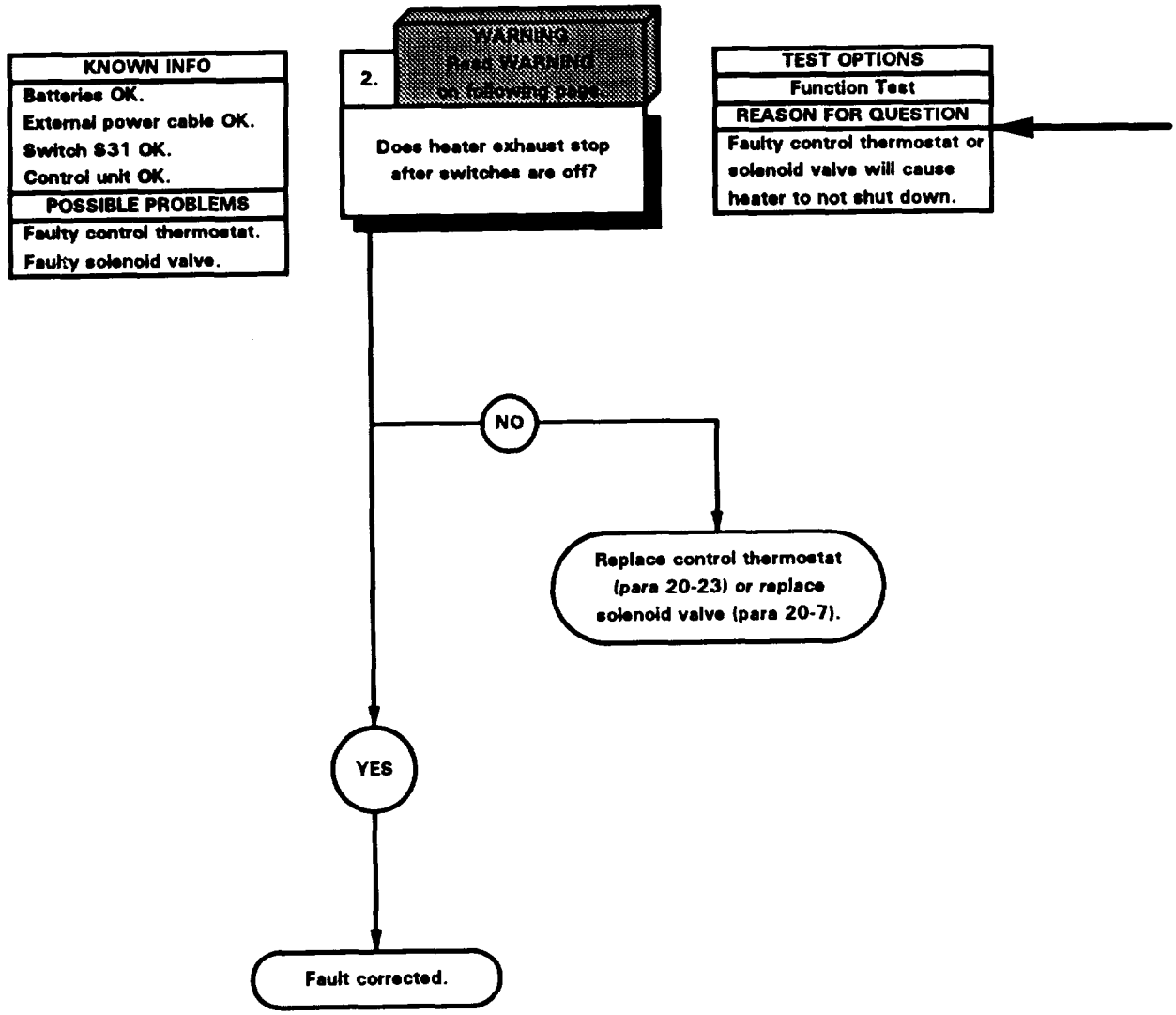
- When cover is removed from cab arctic heater for maintenance, avoid contacting exposed hot metal parts. Failure to comply may result in injury to personnel.
- Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Allow completion of purge, ignition and combustion cycles, then position control switch S31 to OFF (TM 9-2320-365-10). If indicator does not extinguish within three (3) minutes, replace control unit.
(3) Set multimeter to vdc.
(4) Place negative (-) probe of multimeter on back of connector B, pin 2.
(5) Place positive (+) probe of multimeter on back of connector C, pin 1.
(6) If voltage is present, switch S31 is faulty.



u17. CAB ARCTIC HEATER CANNOT BE SWITCHED OFF (CONT)

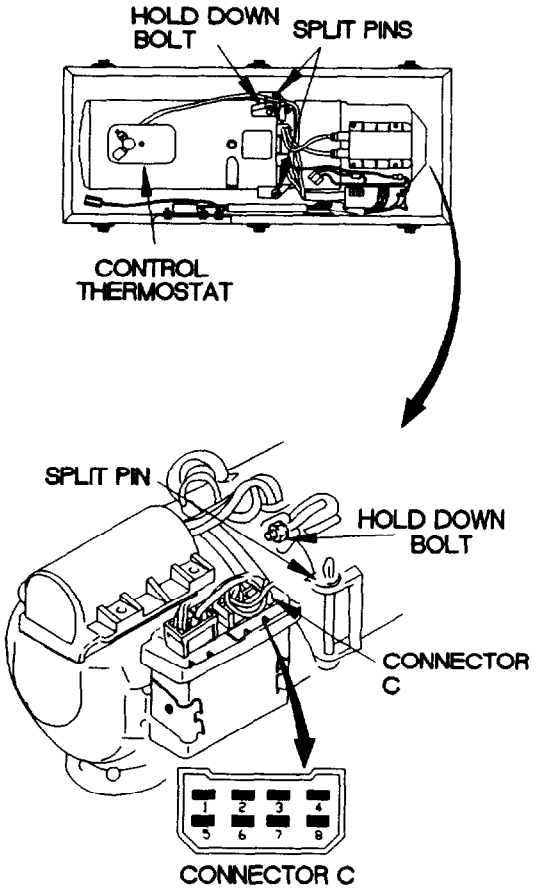


WARNING

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.

FUNCTION TEST

(1) Start cab arctic heater (TM 9-2320-365-10).
(2) Allow completion of purge, ignition and combustion cycles.
(3) Set multimeter to vdc position.
(4) Place negative (-) probe of multimeter on pin 5 of connector C.
(5) Place positive (+) probe of multimeter on pin 7 of connector C and note reading on multimeter.
(6) If voltage is not 20-28 volts, control unit is faulty.
(7) When heater reaches upper temperature setting, thermostat opens and voltage at socket 7 turns off. If voltage does not drop, control thermostat is faulty.
(8) Shut down cab arctic heater (TM 9-2320-365-10) and observe exhaust. If burning stops (no exhaust), fault is corrected.
(9) Remove four screws from ignition spark coil and disconnect brown wires.
(10) Remove two split pins, loosen two nuts on hold down bolts and open combustion chamber.
(11) Start heater, until fuel starts to spray, then shut down cab arctic heater.
(12) Observe that fuel turns on and off.
  (a) If fuel does not turn off completely, solenoid valve is faulty.
  (b) If fuel does not turn on, perform Special Purpose Kit Troubleshooting (u12. After Cab Heater Is Switched On, Heater Switches On And Off Repeatedly), test 5, Fuel System Test.
(13) Close combustion chamber, tighten nuts on hold down bolts and install two split pins.
(14) Connect brown wires on ignition spark coil and secure coil to hood with four screws.
(15) Install cab arctic heater cover (TM 9-2320-365-10).



X2Y1902-

u18. TROOP TRANSPORT ALARM DOES NOT OPERATE

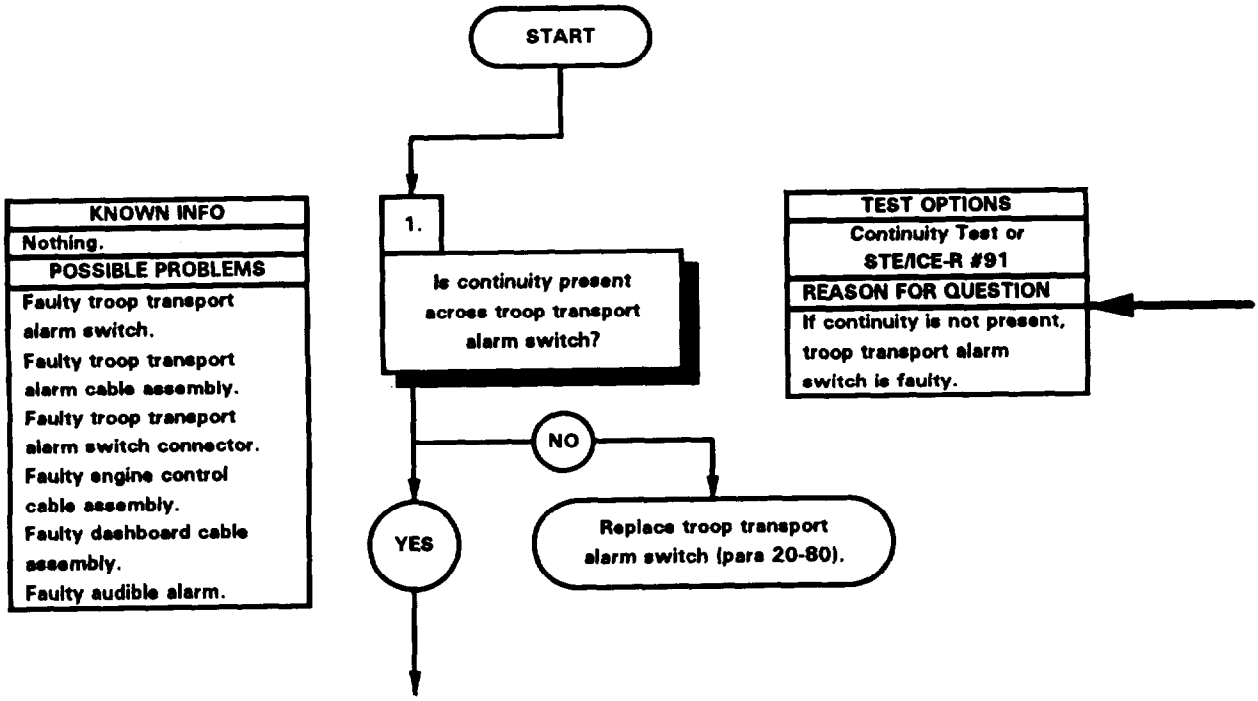
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

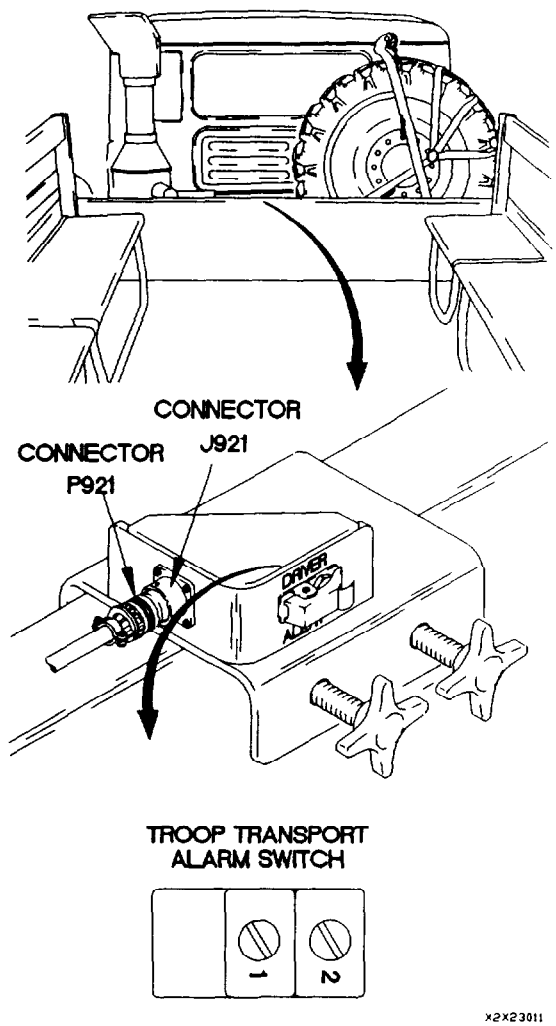
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wire, Elect, 50 ft (Item 77, Appendix D)

References
TM 9-4910-571-12&P

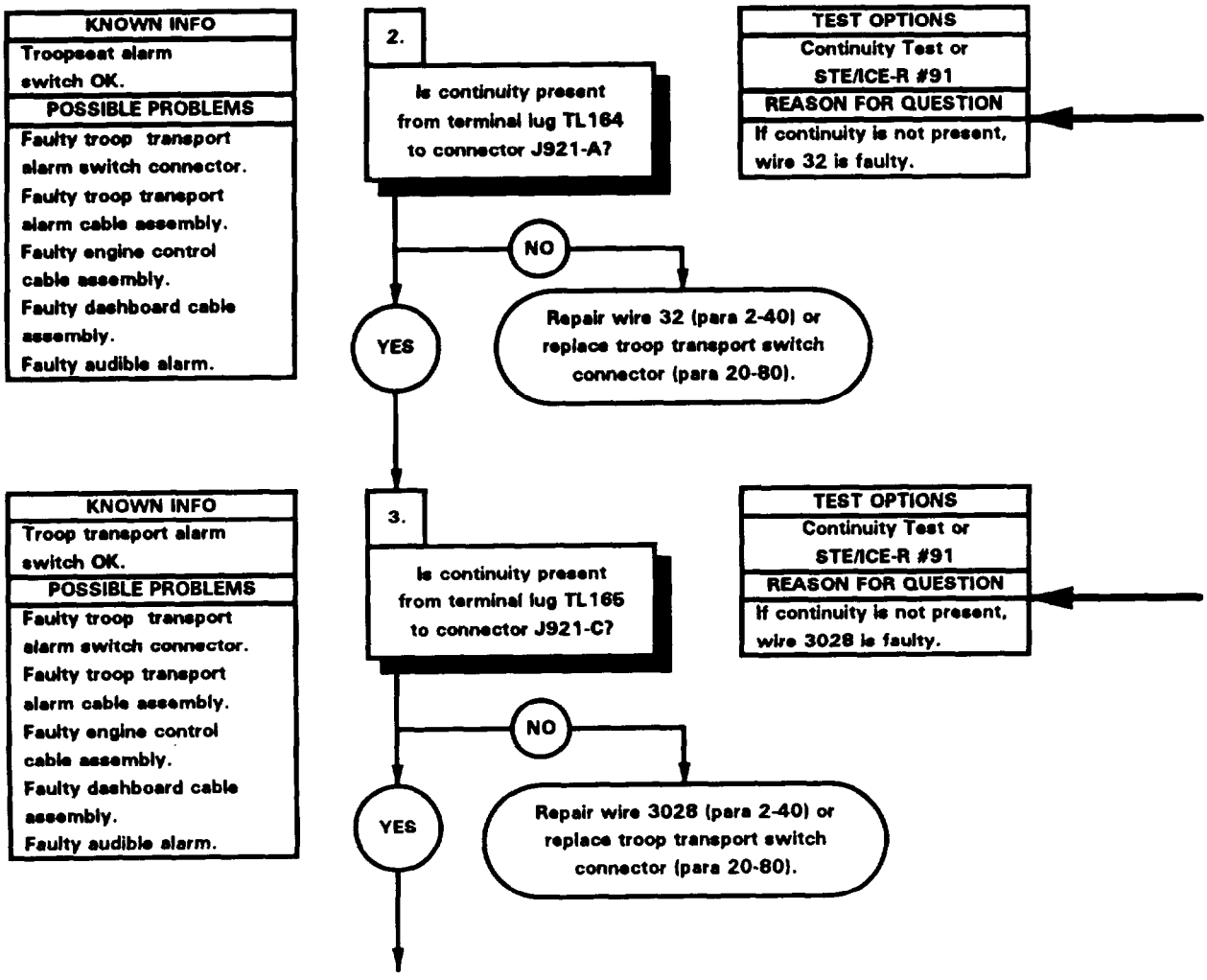


CONTINUITY TEST

(1) Disconnect connector P921 from connector J921.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to pin 1 of troop transport alarm switch.
(4) Connect negative (-) probe of multimeter to pin 2 of troop transport alarm switch.
(5) Press troop transport alarm switch and note reading on multimeter.
(6) If continuity is not present, replace troop transport alarm switch (para 20-80).

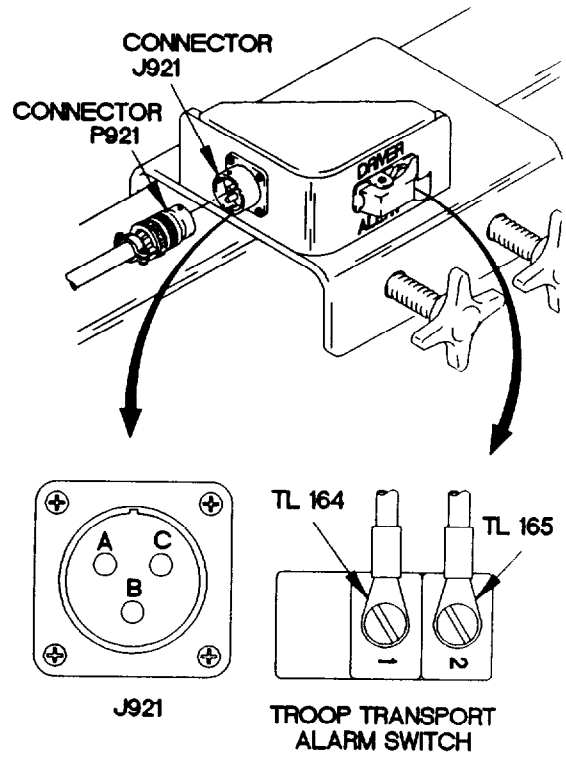


u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)



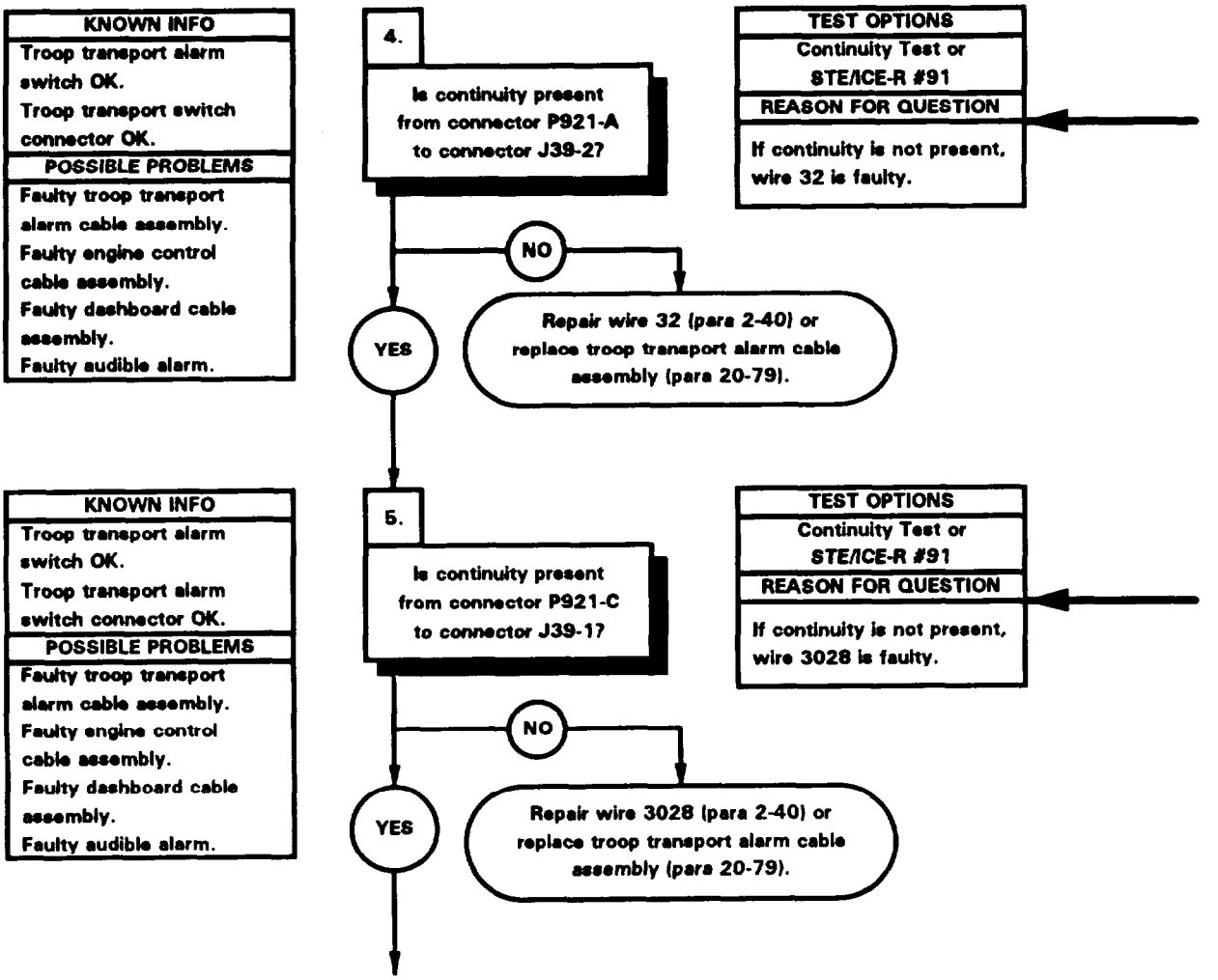
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL164.
(3) Connect negative (-) probe of multimeter to connector J921-A and note reading on multimeter.
(4) If continuity is not present, repair wire 32 (para 2-43) or replace troop transport alarm switch connector (para 20-80).

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to terminal lug TL165.
(3) Connect negative (-) probe of multimeter to connector J921-C and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 (para 2-43) or replace troop transport alarm switch connector (para 20-80).



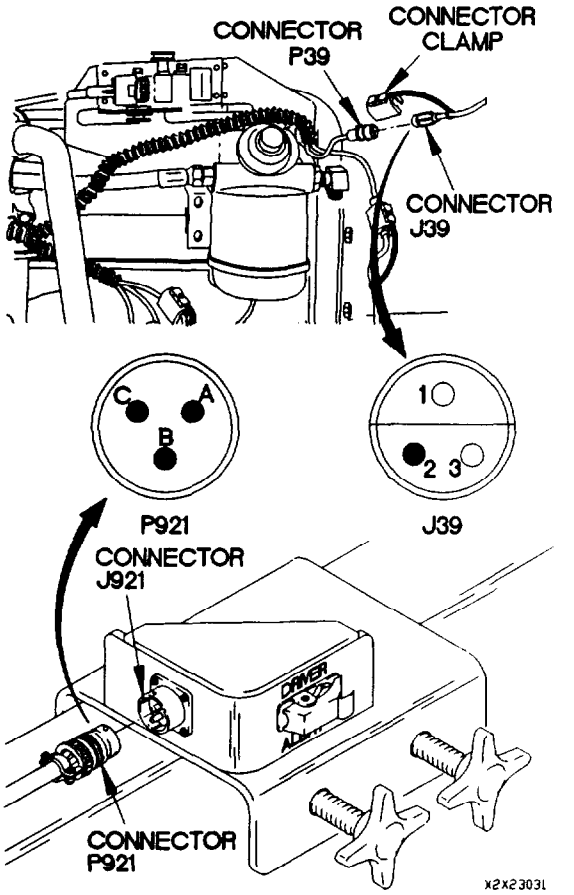
x2x23021

u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)

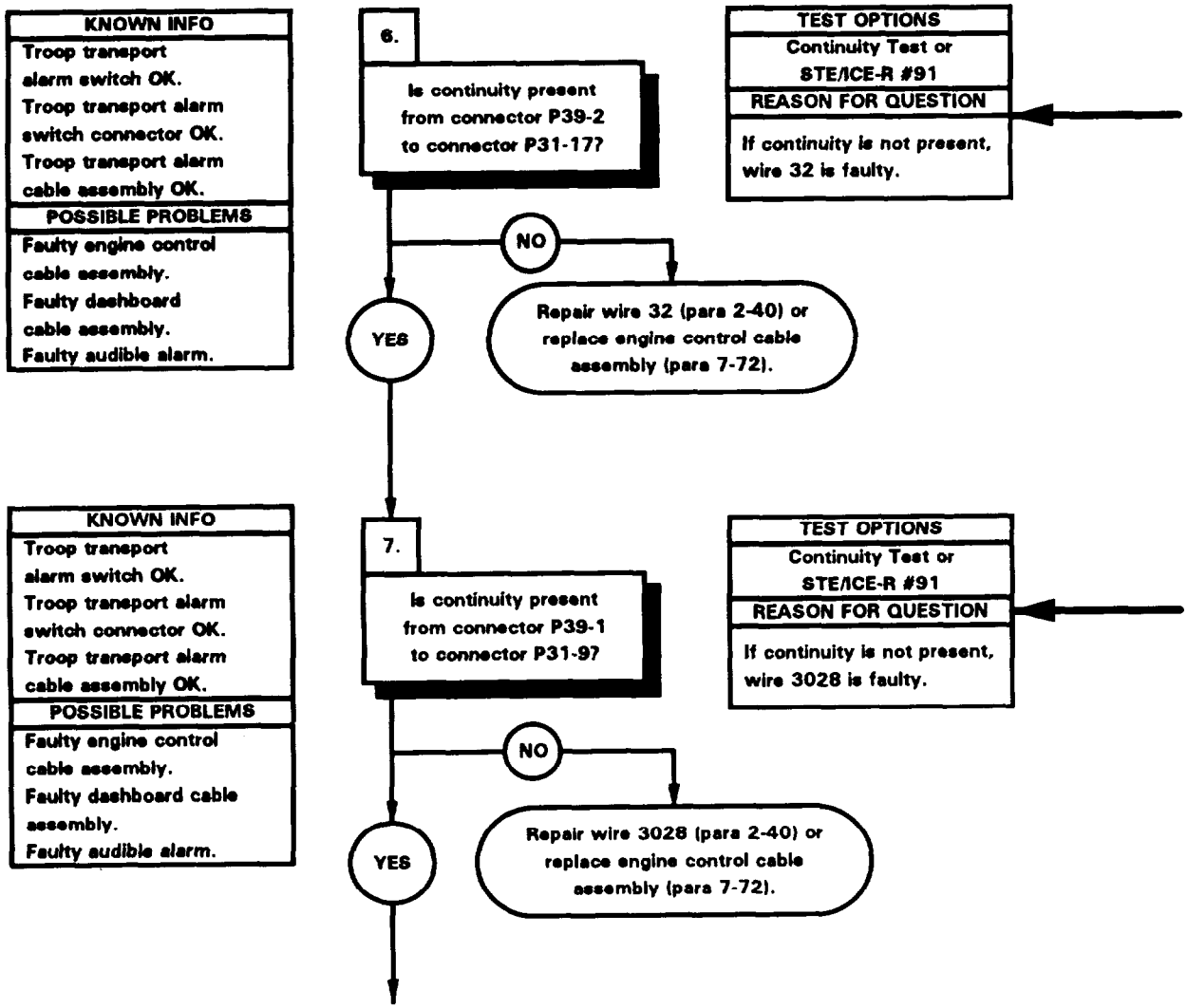


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Disconnect connector clamp from connector J39.
(3) Disconnect connector J39 from connector P39.
(4) Connect positive (+) probe of multimeter to connector P921-A.
(5) Connect negative (-) probe of multimeter to connector J39-2 and note reading on multimeter.
(6) If continuity is not present, repair wire 32 (para 2-40) or replace troop transport alarm cable assembly (para 20-79).

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P921-C.
(3) Connect negative (-) probe of multimeter to connector J39-1 and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 (para 2-40) or replace troop transport alarm cable assembly (para 20-79).
(5) Connect connector P921 to connector J921.

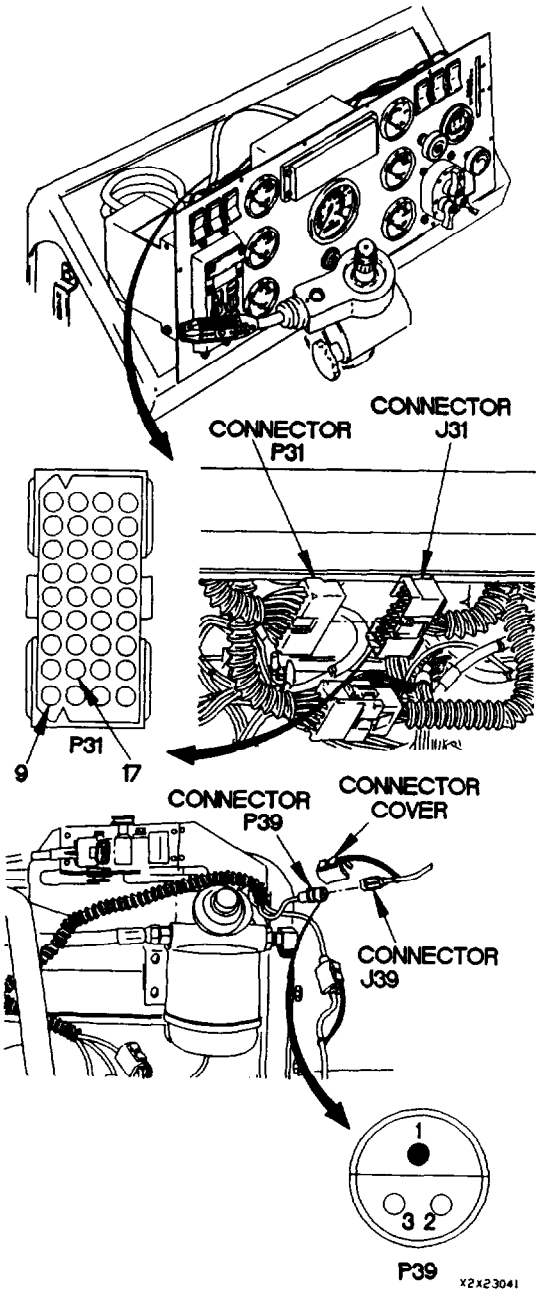


u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)

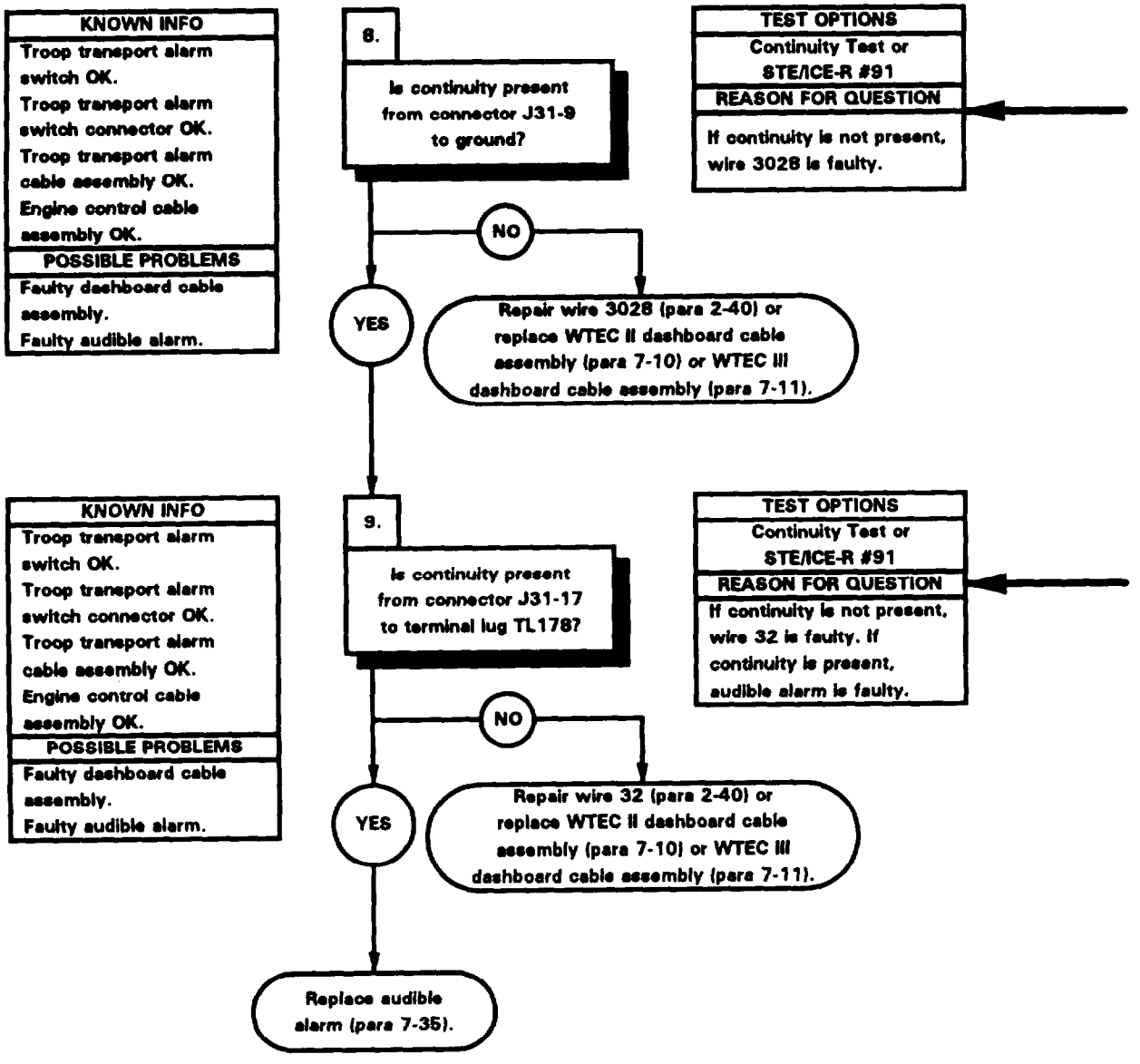


CONTINUITY TEST
(1) Lift instrument panel assembly outward to gain access (para 7-15).
(2) Disconnect connector P31 from connector J31.
(3) Set multimeter to ohms.
(4) Connect positive (+) probe of multimeter to connector P39-2.
(5) Connect negative (-) probe of multimeter to connector P31-17 and note reading on multimeter.
(6) If continuity is not present, repair wire 32 (para 2-40) or replace engine control cable assembly (para 7-72).

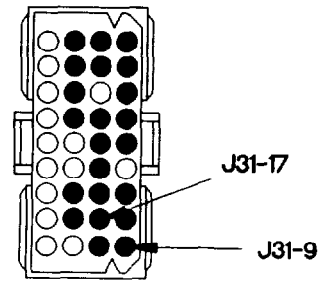
CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector P39-1.
(3) Connect negative (-) probe of multimeter to connector P31-9 and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 (para 2-40) or replace engine control cable assembly (para 7-72).
(5) Connect connector P39 to connector J39.
(6) Connect connector clamp to connector J39.



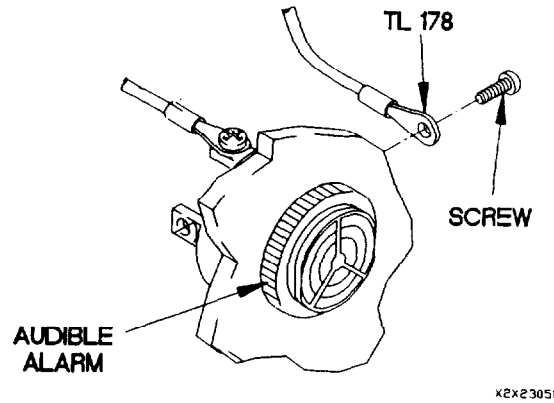
u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to connector J31-9.
(3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
(4) If continuity is not present, repair wire 3028 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).



CONTINUITY TEST
(1) Remove screw and terminal lug TL178 from audible alarm.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to connector J31-17.
(4) Connect negative (-) probe of multimeter to terminal lug TL178 and note reading on multimeter.
(5) If continuity is not present, repair wire 32 (para 2-40) 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 audible alarm (para 7-35).
(7) Install terminal lug TL178 on audible alarm with screw.
(8) Connect connector P31 to connector J31.
(9) Install instrument panel assembly (para 7-15).



u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE

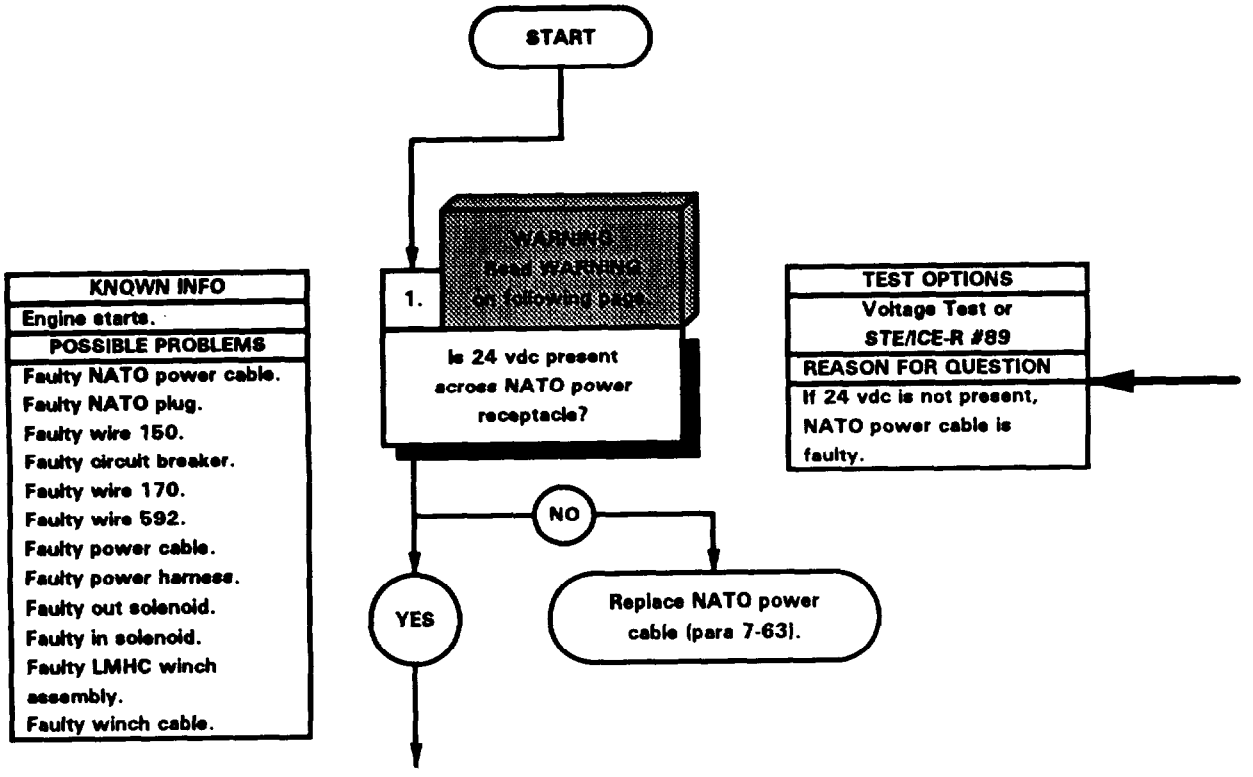
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

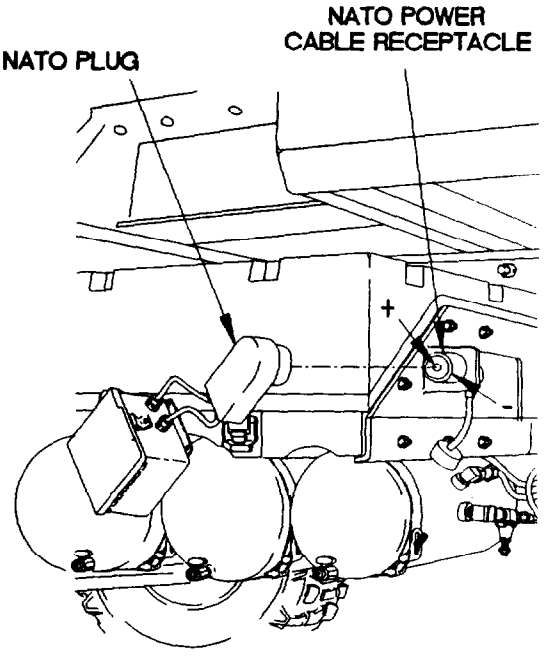
References
TM 9-4910-571-12&P



WARNING

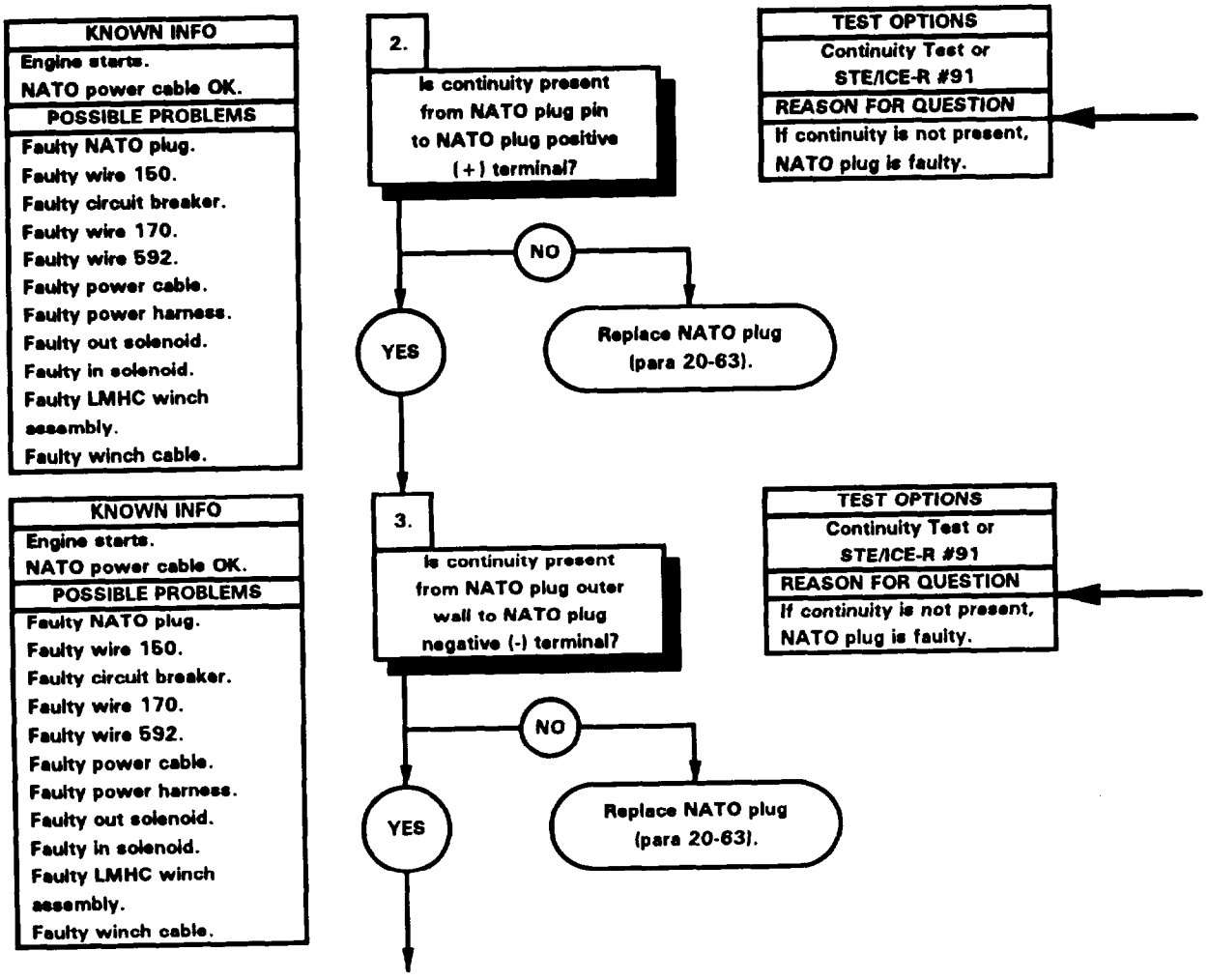
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes.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

VOLTAGE TEST
(1) Disconnect NATO plug from NATO power cable receptacle.
(2) Set multimeter to volts dc.
(3) Connect positive (+) probe of multimeter to inside of NATO power cable receptacle.
(4) Connect negative (-) probe of multimeter to outside of NATO power cable receptacle and note reading on multimeter.
(5) If 24 vdc is not present, replace NATO power cable (para 7-63).



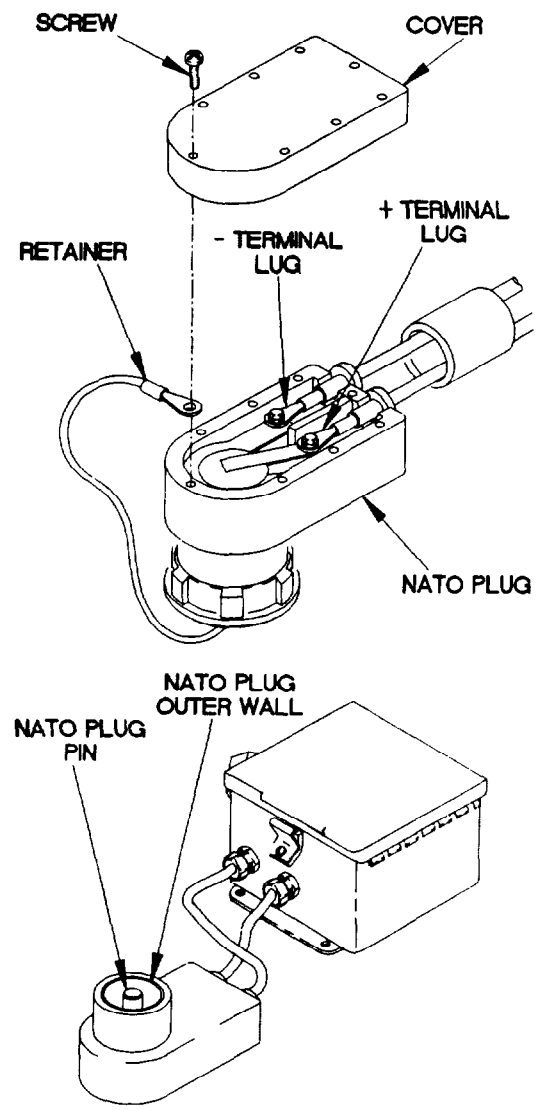
X2X2401I

u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)



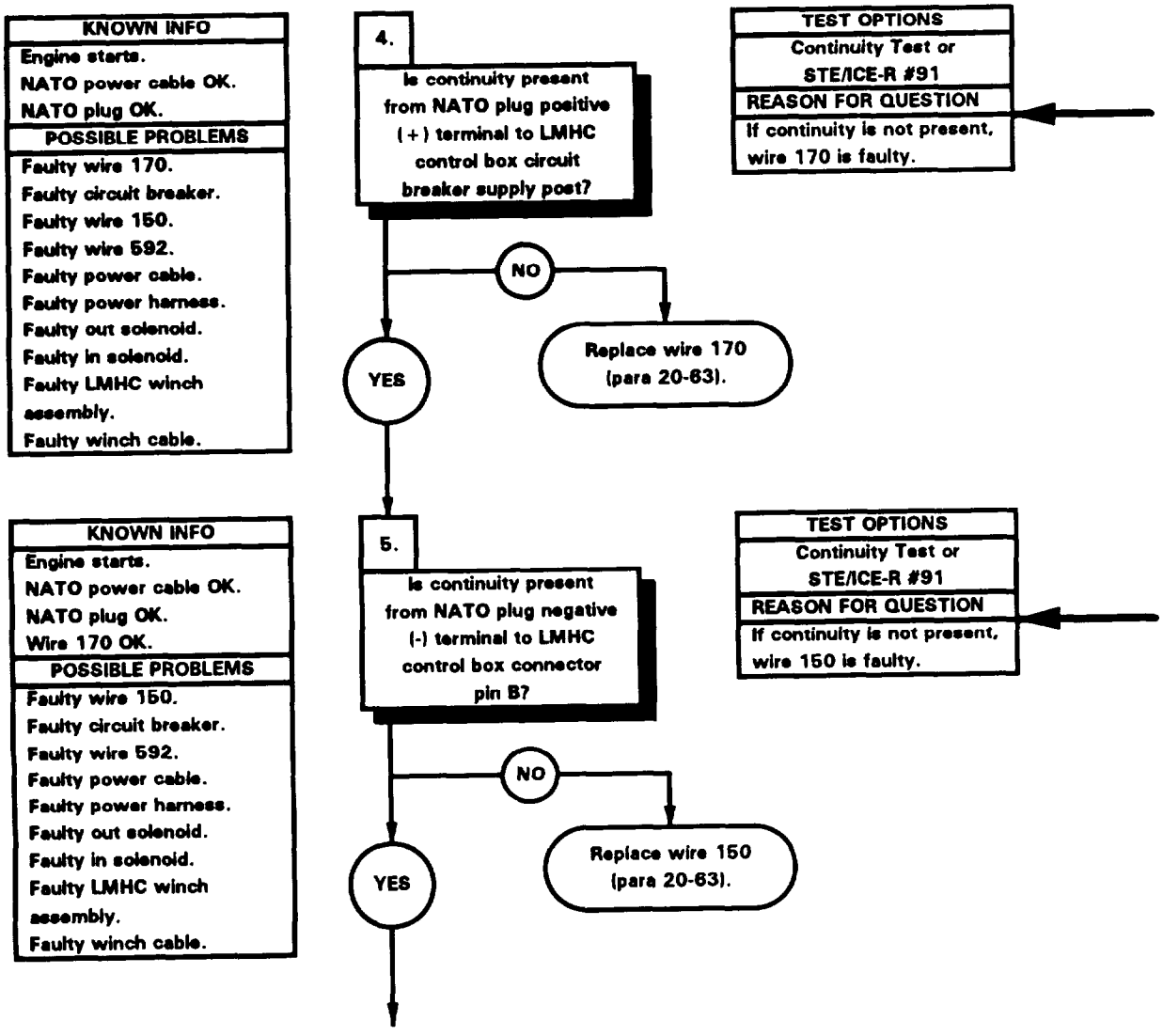
CONTINUITY TEST
(1) Remove eight screws, cover, and retainer from NATO plug.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to NATO plug pin.
(4) Connect negative (-) probe of multimeter to NATO plug positive (+) terminal lug and note reading on multimeter.
(5) If continuity is not present, replace NATO plug (para 20-63).

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to NATO plug outer wall.
(3) Connect negative (-) probe of multimeter to NATO plug negative (-) terminal lug and note reading on multimeter.
(4) If continuity is not present, replace NATO plug (para 20-63).



K2X24021

u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)

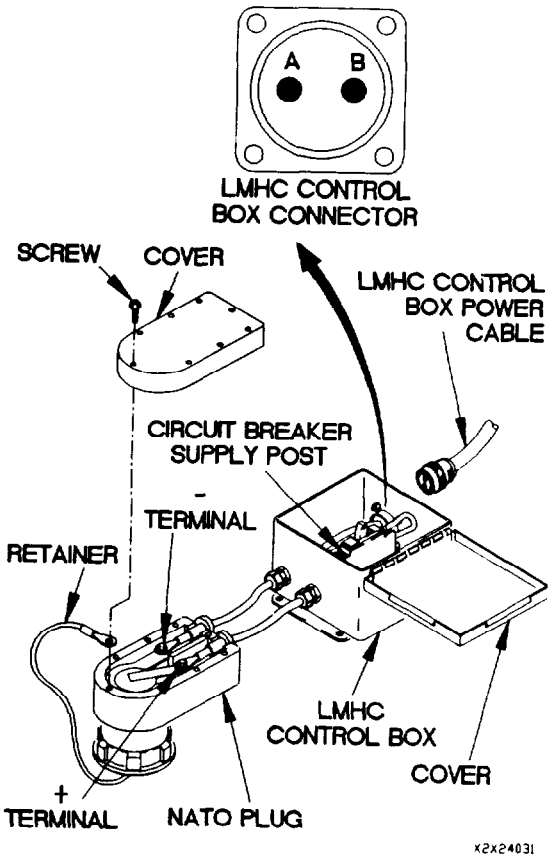


CONTINUITY TEST

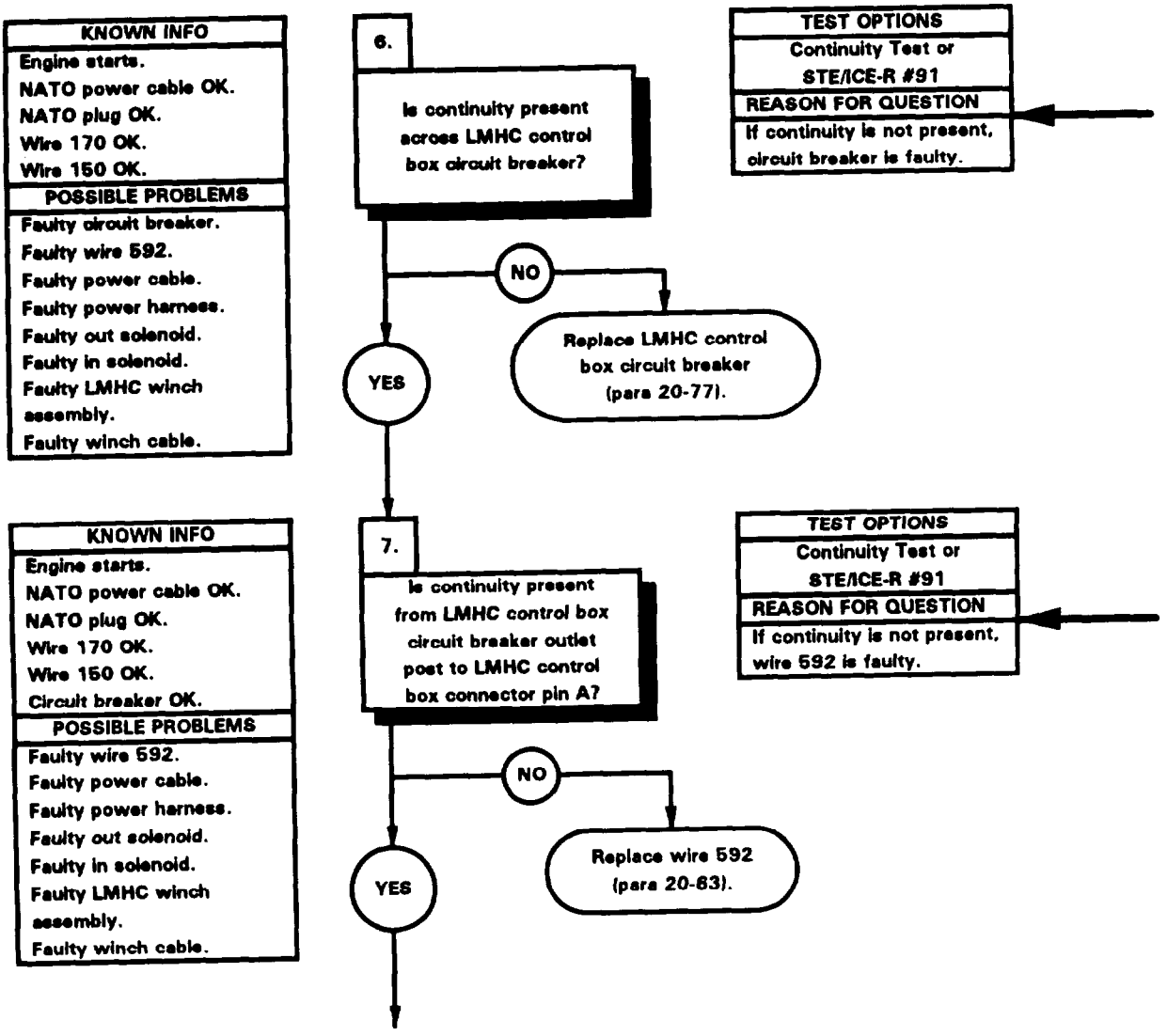
(1) Open cover on LMHC control box.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to NATO plug positive (+) terminal.
(4) Connect negative (-) probe of multimeter to LMHC control box circuit breaker supply post and note reading on multimeter.
(5) If continuity is not present, replace wire 170 (para 20-63).

CONTINUITY TEST

(1) Disconnect LMHC control box power cable from LMHC control box connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to NATO plug negative (-) terminal.
(4) Connect negative (-) probe of multimeter to LMHC control box connector pin B and note reading on multimeter.
(5) If continuity is not present, replace wire 150 (para 20-63).
(6) Install cover and retainer on NATO plug with eight screws.

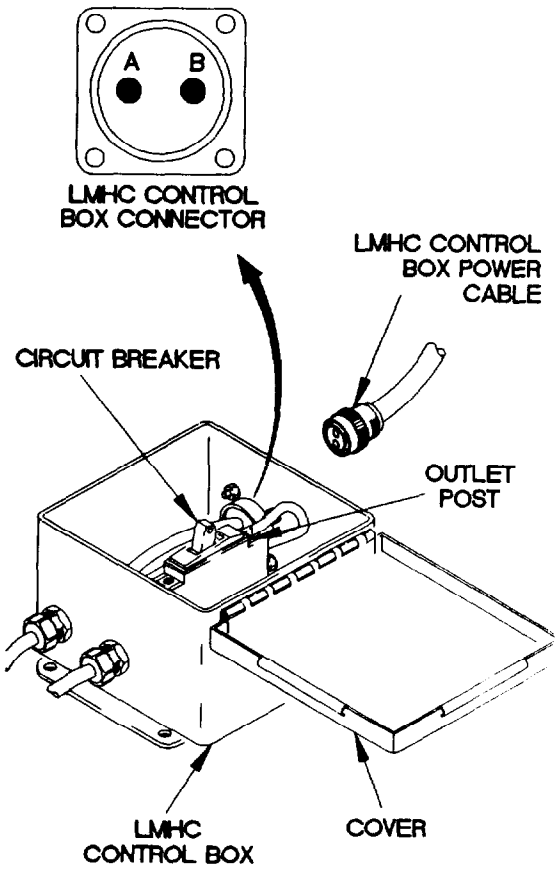


u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)

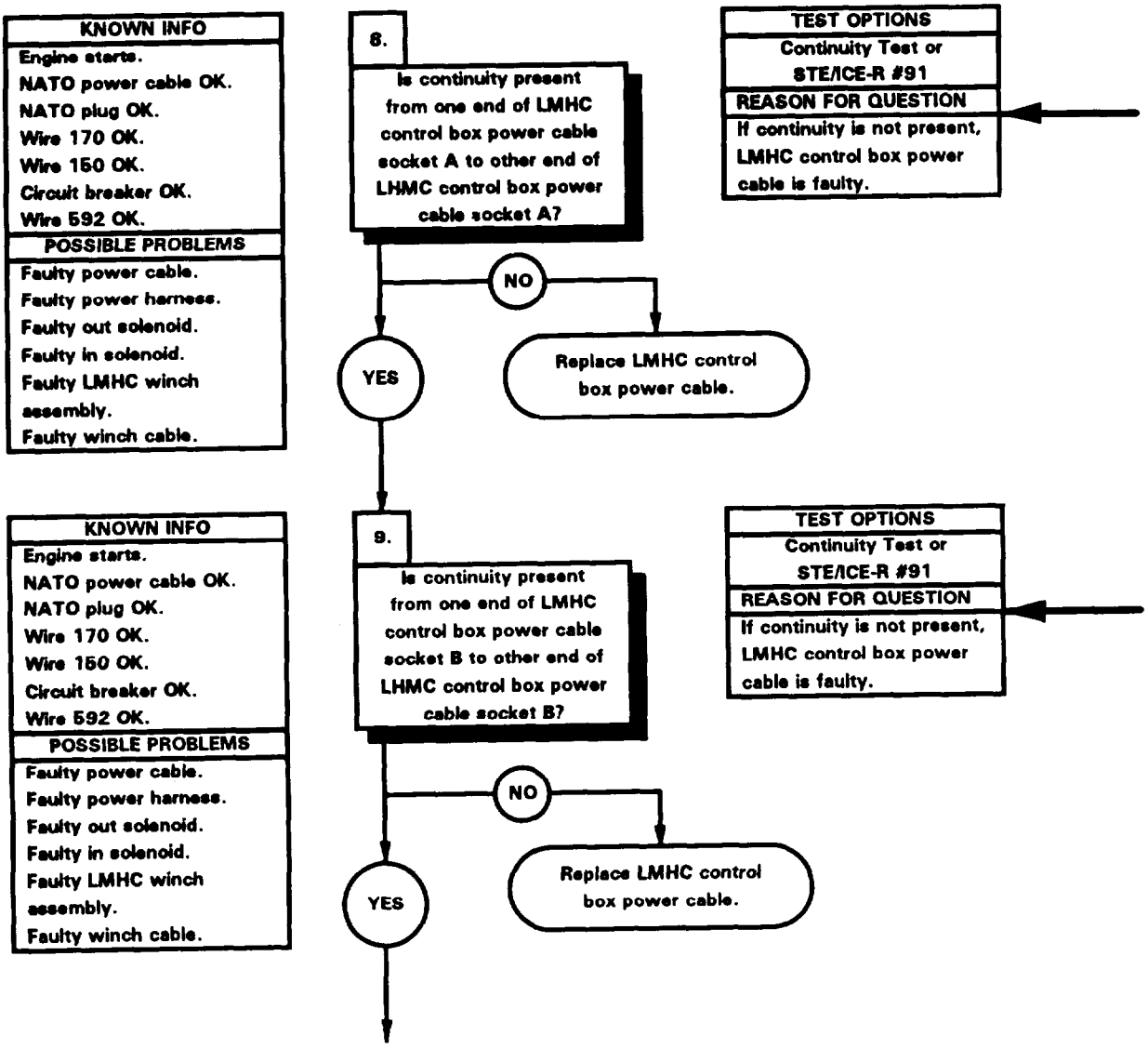


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to one end of LMHC control box circuit breaker.
(3) Connect negative (-) probe of multimeter to other end of LMHC control box circuit breaker.
(4) Position LMHC control box circuit breaker to ON and note reading on multimeter.
(5) If continuity is not present, replace LMHC control box circuit breaker (para 20-77).
(6) Position LMHC control box circuit breaker to OFF.

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to LMHC control box circuit breaker outlet post.
(3) Connect negative (-) probe of multimeter to LMHC control box connector pin A and note reading on multimeter.
(4) If continuity is not present, replace wire 592 (para 20-63).
(5) Close cover on LMHC control box.
(6) Connect LMHC control box power cable to LMHC control box connector.

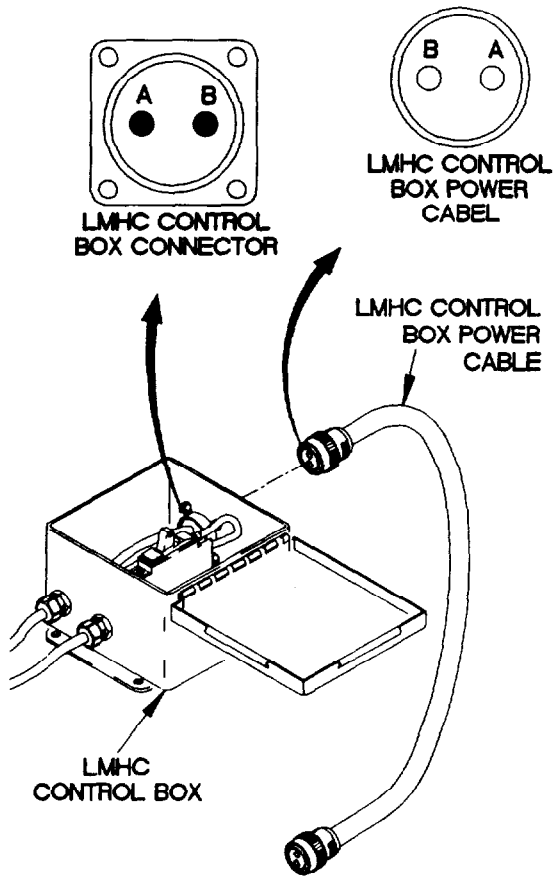


u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)



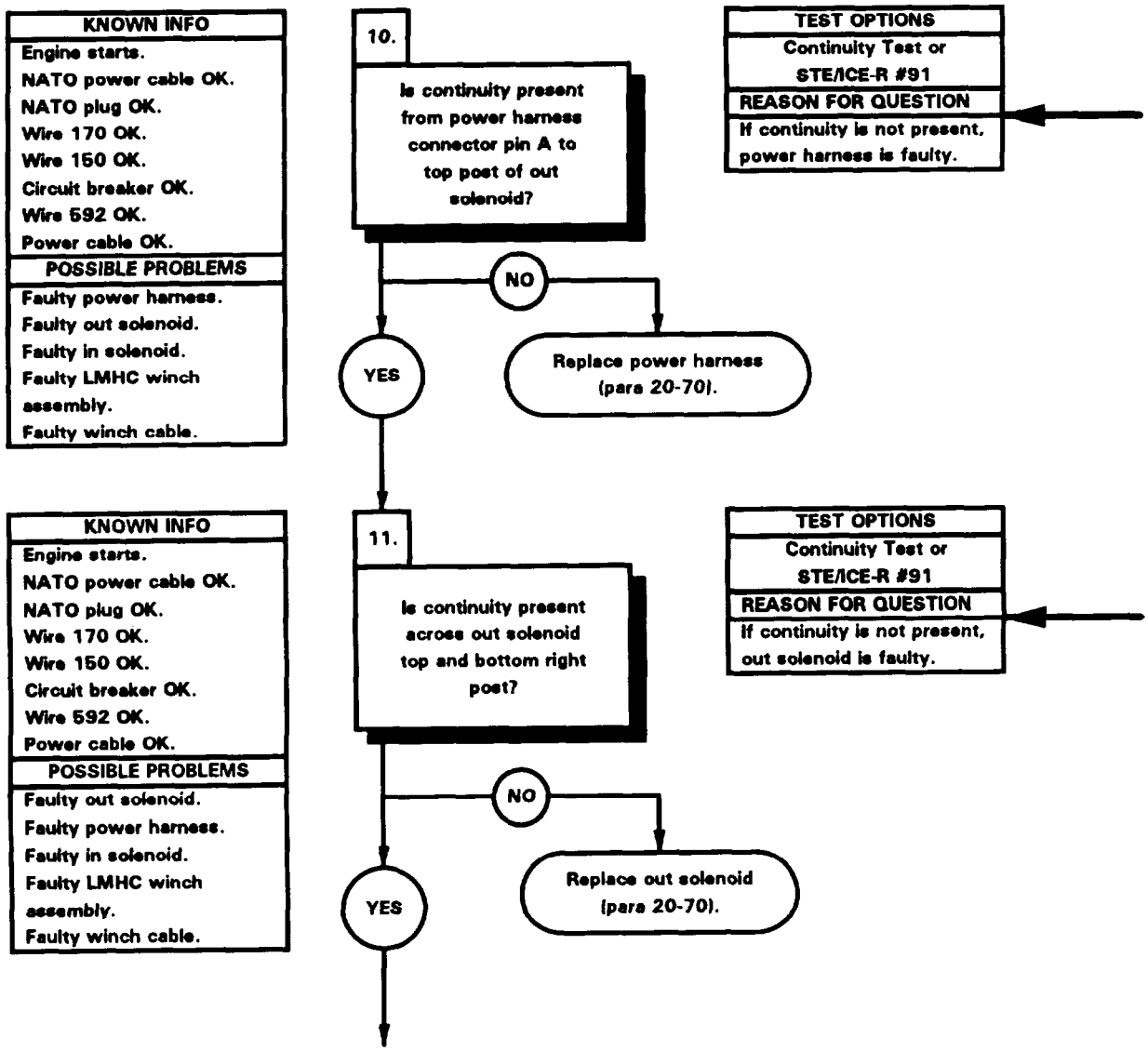
CONTINUITY TEST
(1) Disconnect LMHC control power cable from LMHC winch assembly power connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to one end of LMHC control box power cable socket A.
(4) Connect negative (-) probe of multimeter to other end of LMHC control box power cable socket A and note reading on multimeter.
(5) If continuity is not present, replace LMHC control box power cable.

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to LMHC control box power cable socket B.
(4) Connect negative (-) probe of multimeter to LMHC control box power cable socket B and note reading on multimeter.
(5) If continuity is not present, replace LMHC control box power cable.



K2X24041

u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)

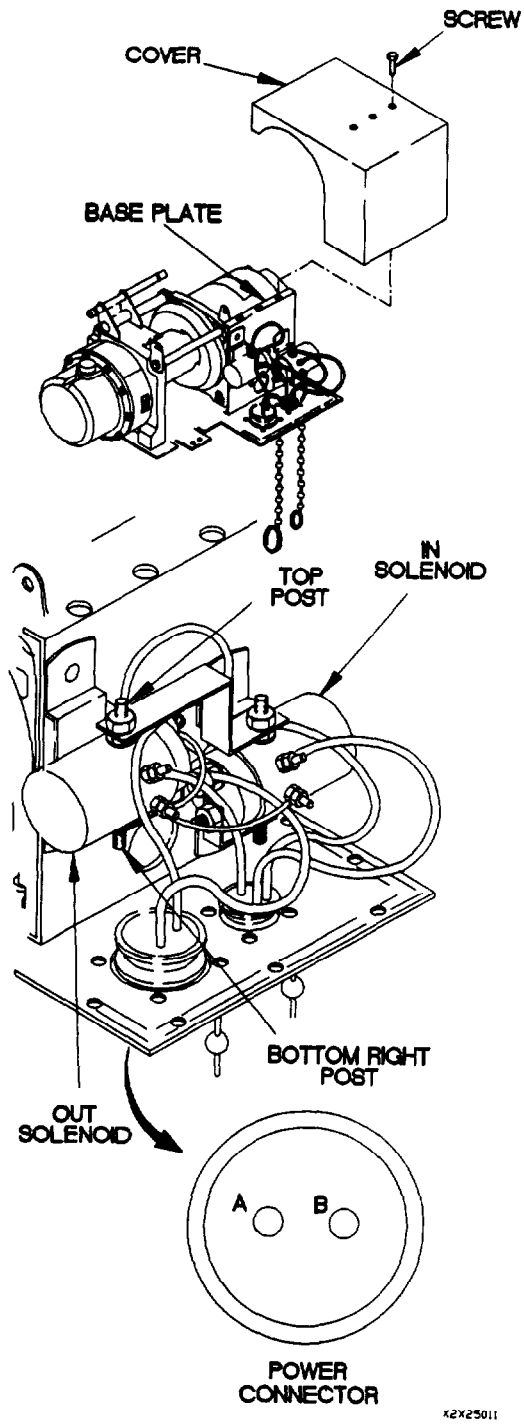


CONTINUITY TEST

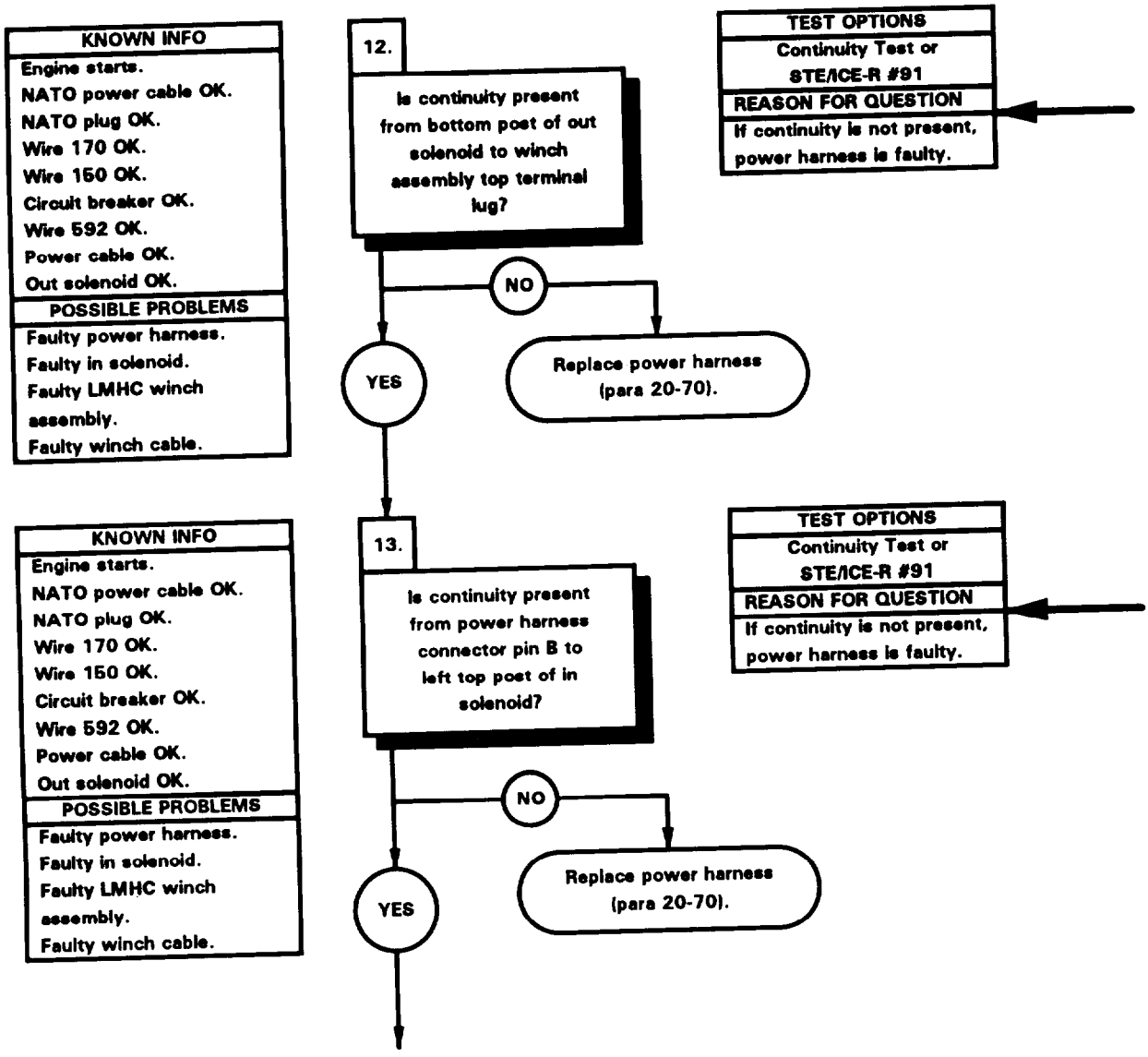
(1) Remove 18 screws and cover from base plate.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to power harness connector pin A.
(4) Connect negative (-) probe of multimeter to top post of out solenoid and note reading on multimeter.
(5) If continuity is not present, replace power harness (para 20-70).

CONTINUITY TEST

(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to top right post of out solenoid.
(3) Connect negative (-) probe of multimeter to bottom right post of out solenoid and note reading on multimeter.
(4) If continuity is not present, replace out solenoid (para 20-70).



u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)

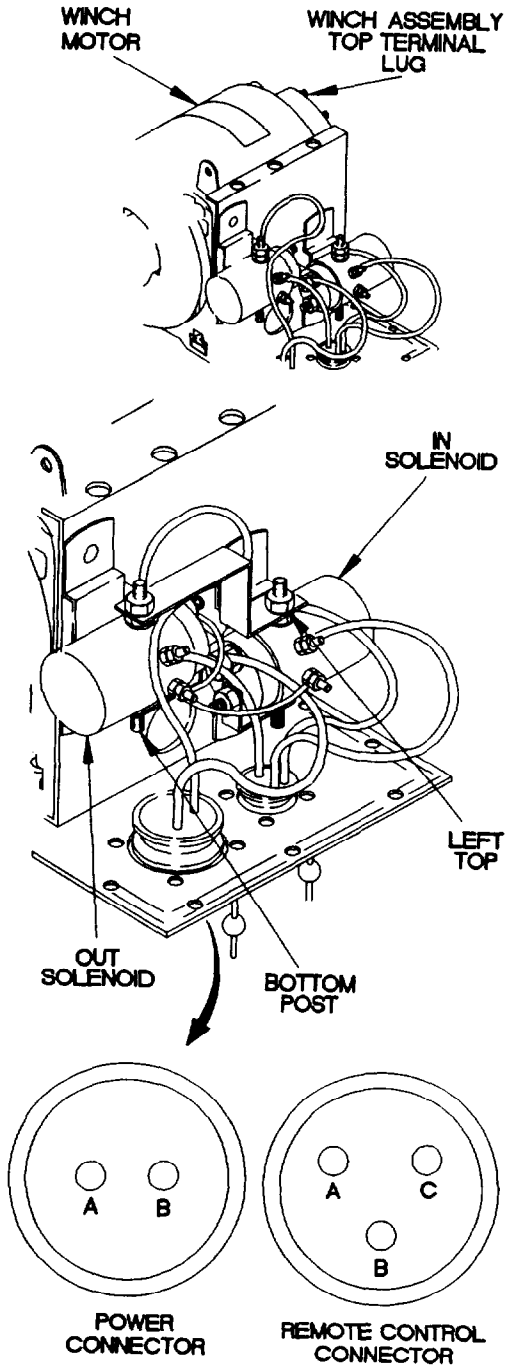


CONTINUITY TEST

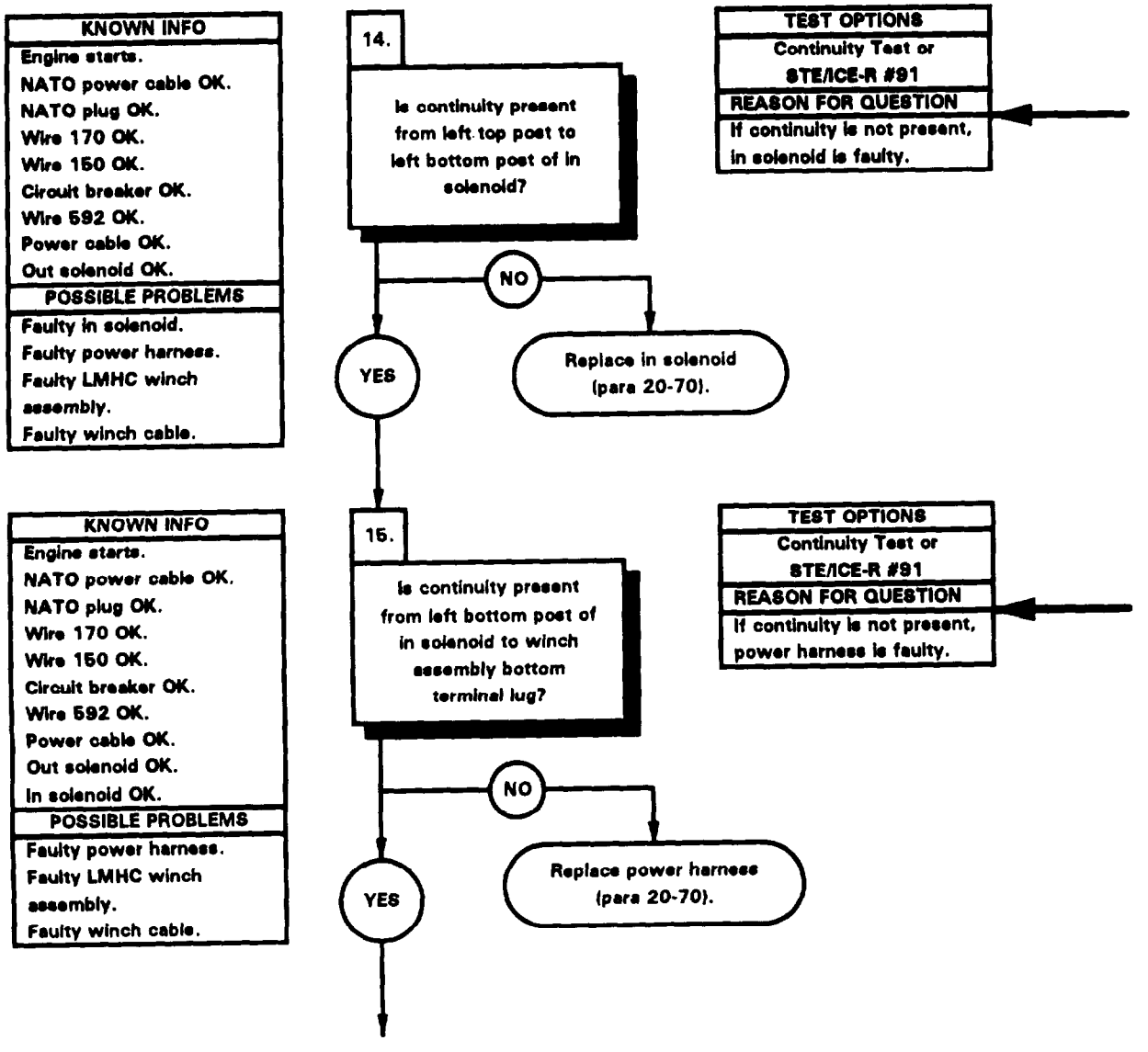
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to bottom post of out solenoid.
(3) Connect negative (-) probe of multimeter to winch assembly top terminal lug and note reading on multimeter.
(4) If continuity is not present, replace power harness (para 20-70).

CONTINUITY TEST

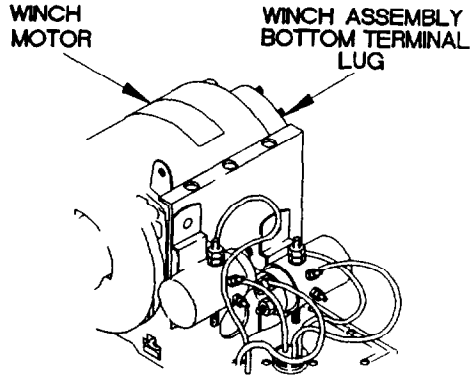
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to power harness connector pin B.
(3) Connect negative (-) probe of multimeter to left top post of in solenoid and note reading on multimeter.
(4) If continuity is not present, replace power harness (para 20-70).



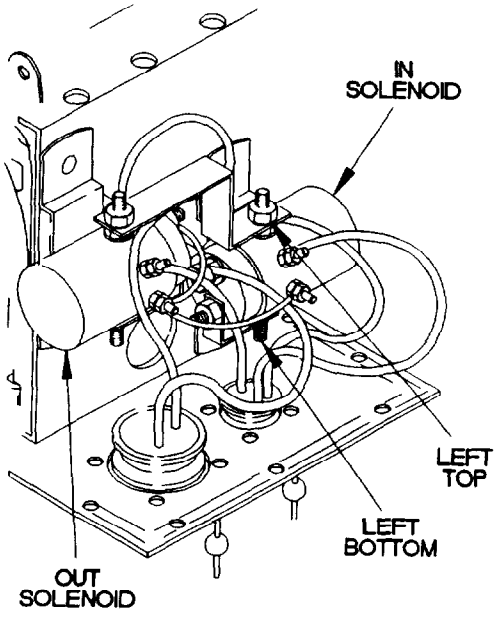
u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to left top post of in solenoid.
(3) Connect negative (-) probe of multimeter to left bottom post of in solenoid and note reading on multimeter.
(4) If continuity is not present, replace in solenoid (para 20-70).

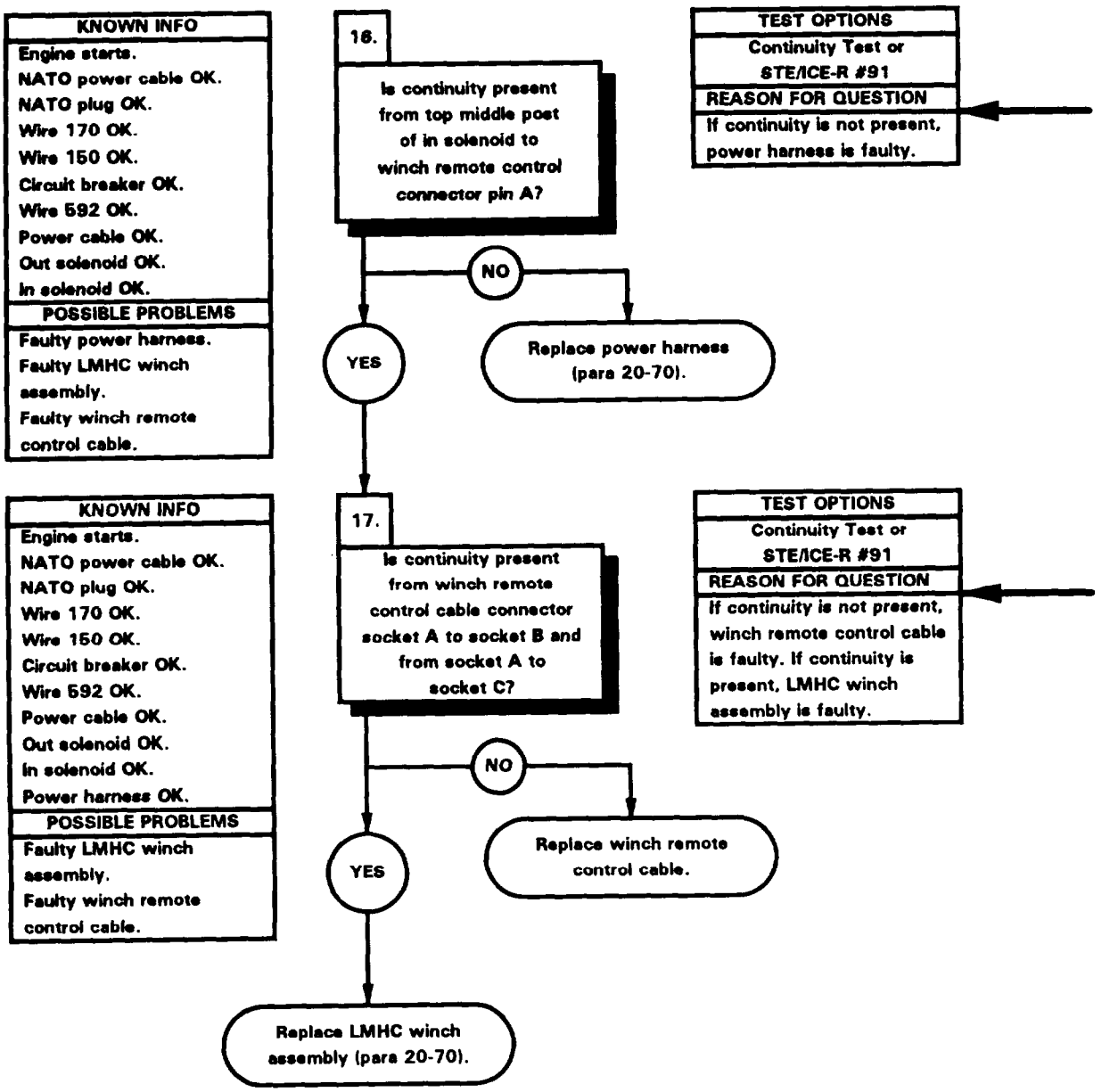


CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to left bottom post of in solenoid.
(3) Connect negative (-) probe of multimeter to winch assembly bottom terminal lug and note reading on multimeter.
(4) If continuity is not present, replace power harness (para 20-70).



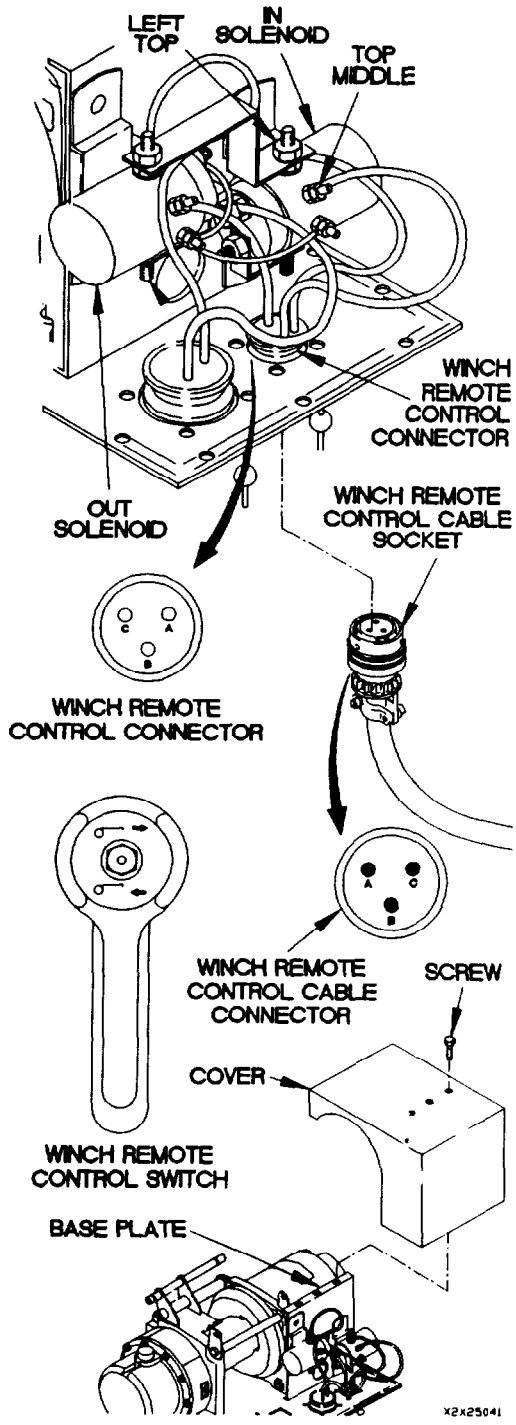
K2X25031

u19. LIGHT MATERIAL HANDLING CRANE (LMHC) DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Disconnect winch remote control cable from winch remote control connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to top middle post of in solenoid.
(4) Connect negative (-) probe of multimeter to winch remote control connector pin A and note reading on multimeter.
(5) If continuity is not present, replace power harness (para 20-70).

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to winch remote control cable connector socket A.
(3) Connect negative (-) probe of multimeter to winch remote control cable connector socket B.
(4) Position winch remote control switch to OUT and note reading on multimeter.
(5) Connect positive (+) probe of multimeter to winch remote control cable connector socket A.
(6) Connect negative (-) probe of multimeter to winch remote control cable connector socket C.
(7) Position winch remote control switch to in and note reading on multimeter.
(8) If continuity is not present, replace winch remote control cable.
(9) If continuity is present, replace LMHC winch assembly (para 20-70).
(10) Connect LMHC control power cable to LMHC winch assembly power connector.
(11) Connect winch remote control cable to winch remote control connector.
(12) Install cover on base plate with 18 screws.



u20. LIGHT MATERIAL HANDLING CRANE (LMHC) HOIST IN DOES NOT OPERATE

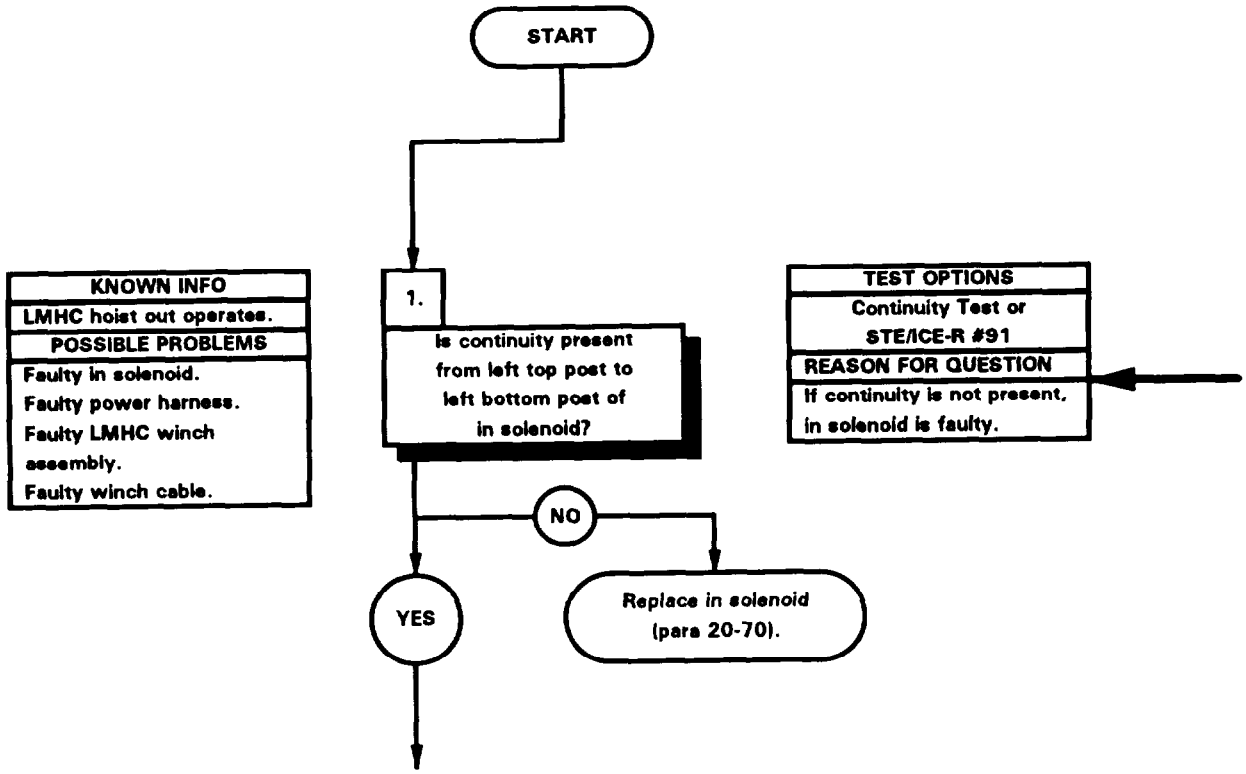
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

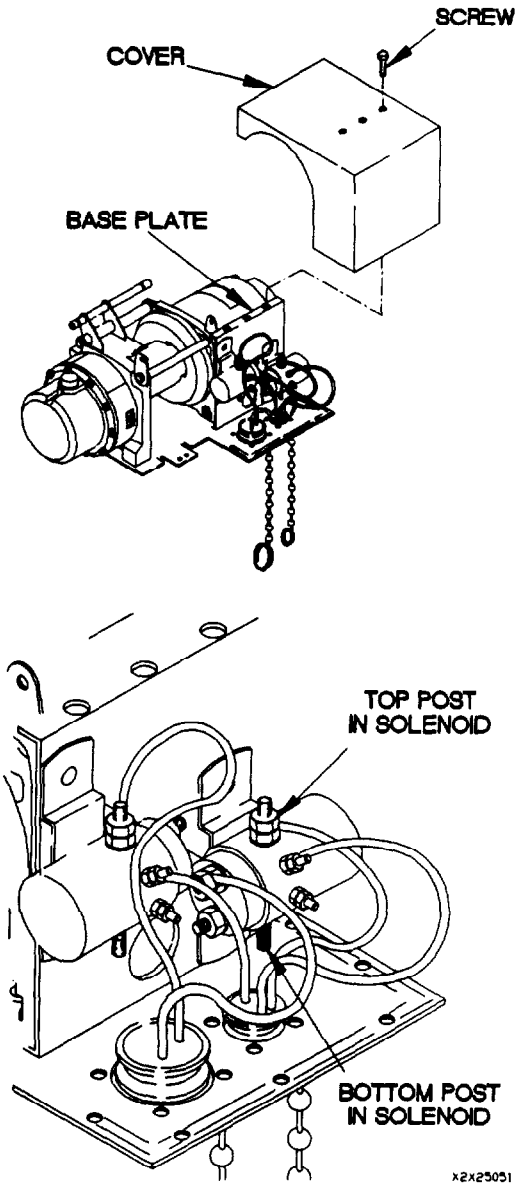
Personnel Required
(2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

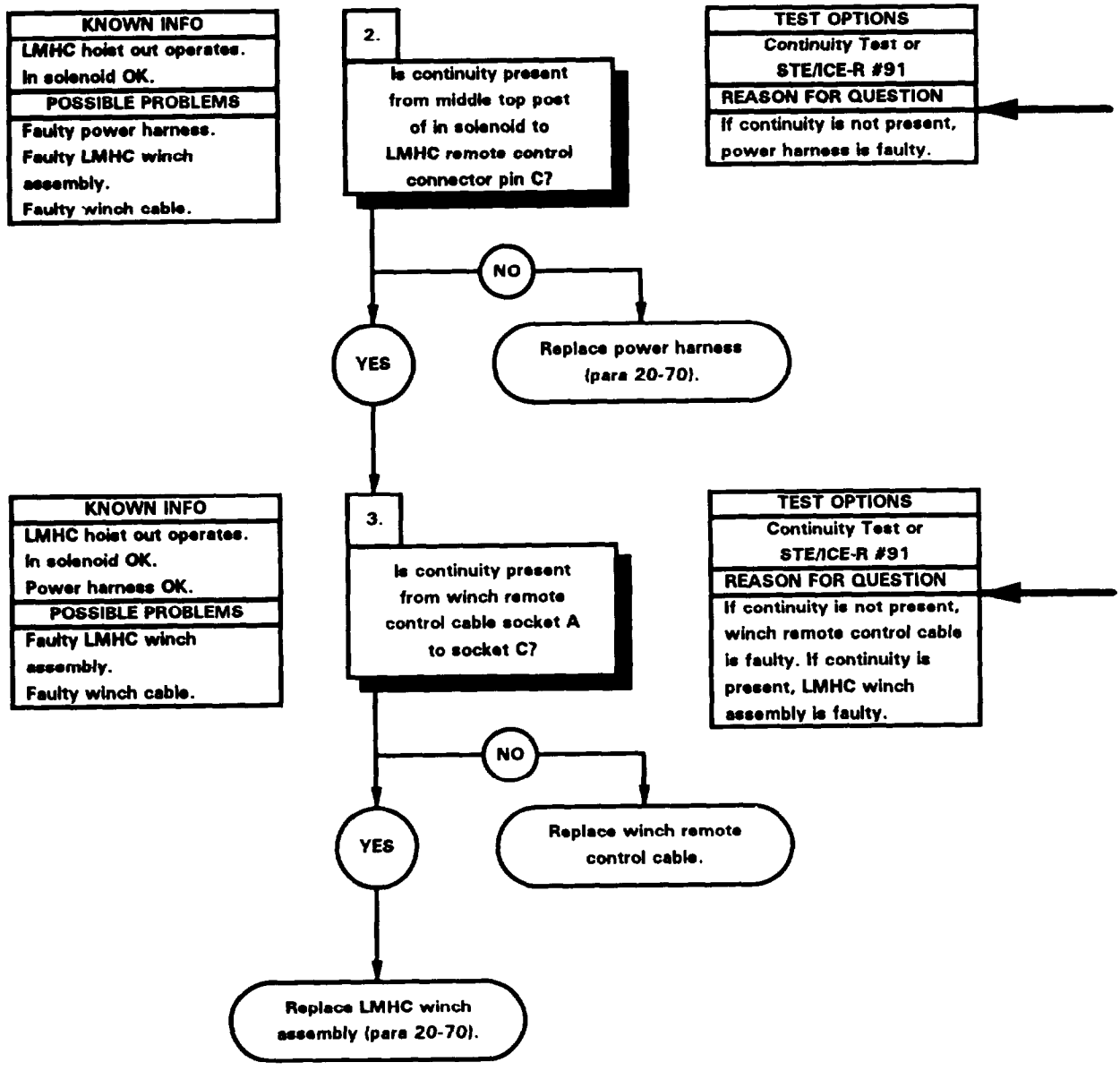
References
TM 9-4910-571-12&P



CONTINUITY TEST
(1) Remove 18 screws and cover from base plate.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to left top post of in solenoid.
(4) Connect negative (-) probe of multimeter to left bottom post of in solenoid and note reading on multimeter.
(5) If continuity is not present, replace in solenoid (para 20-70).

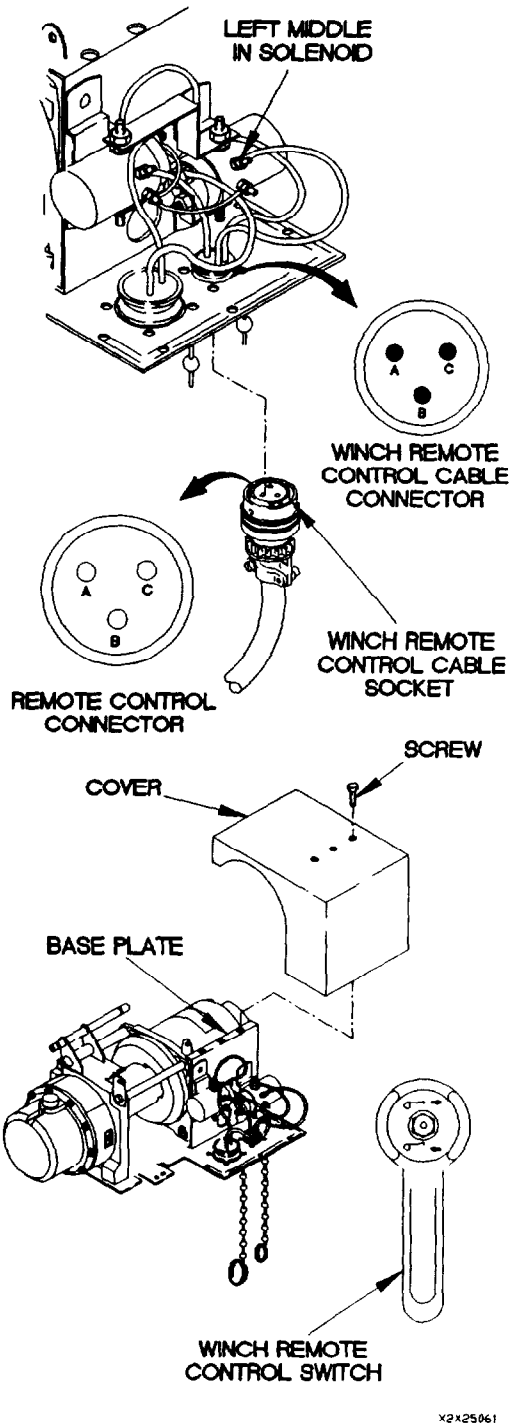


u20. LIGHT MATERIAL HANDLING CRANE (LMHC) HOIST IN DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Disconnect winch remote control cable from winch remote control connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to left middle post of in solenoid.
(4) Connect negative (-) probe of multimeter to winch remote control connector pin C and note reading on multimeter.
(5) If continuity is not present, replace power harness (para 20-70).

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to winch remote control cable socket A.
(3) Connect negative (-) probe of multimeter to winch remote control cable socket C.
(4) Position winch remote control switch to in and note reading on multimeter.
(5) If continuity is not present, replace winch remote control cable.
(6) If continuity is present, replace LMHC winch assembly (para 20-70).
(7) Connect winch remote control cable to winch remote control connector.
(8) Install cover on base plate with 18 screws.



u21. LIGHT MATERIAL HANDLING CRANE (LMHC) HOIST OUT DOES NOT OPERATE

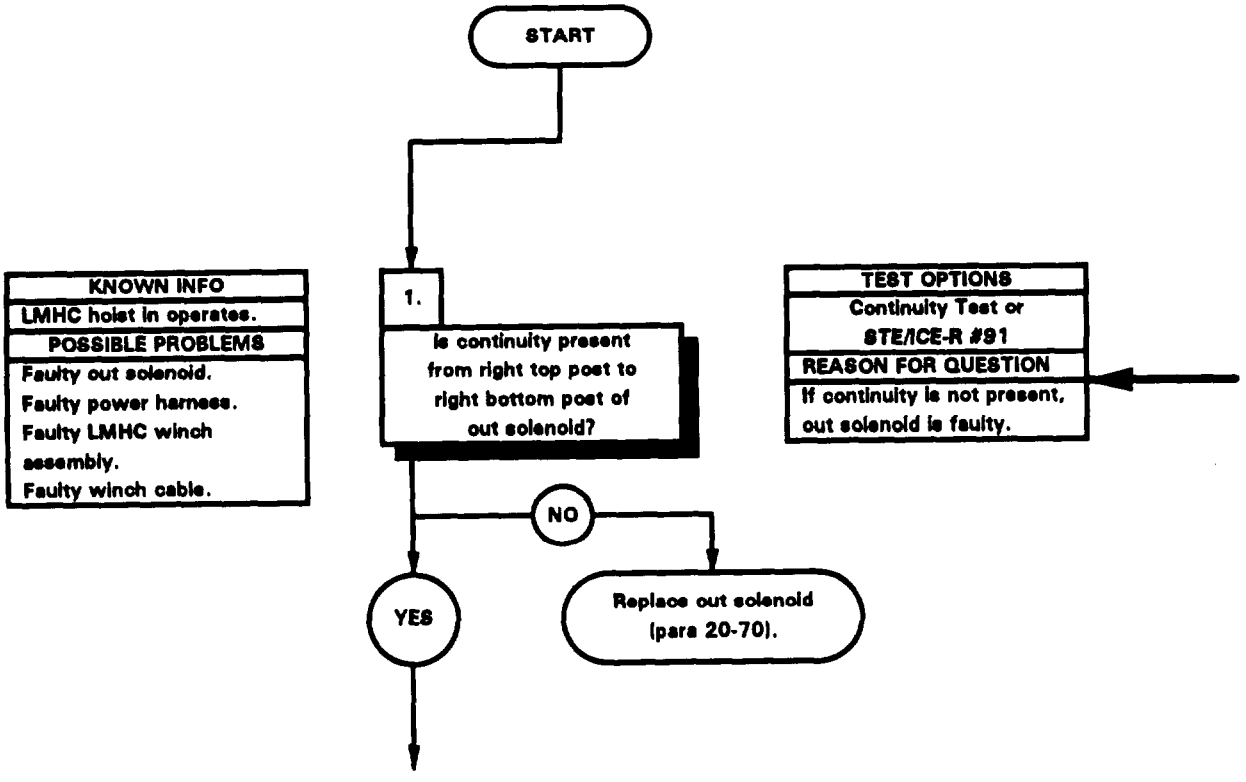
INITIAL SETUP

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

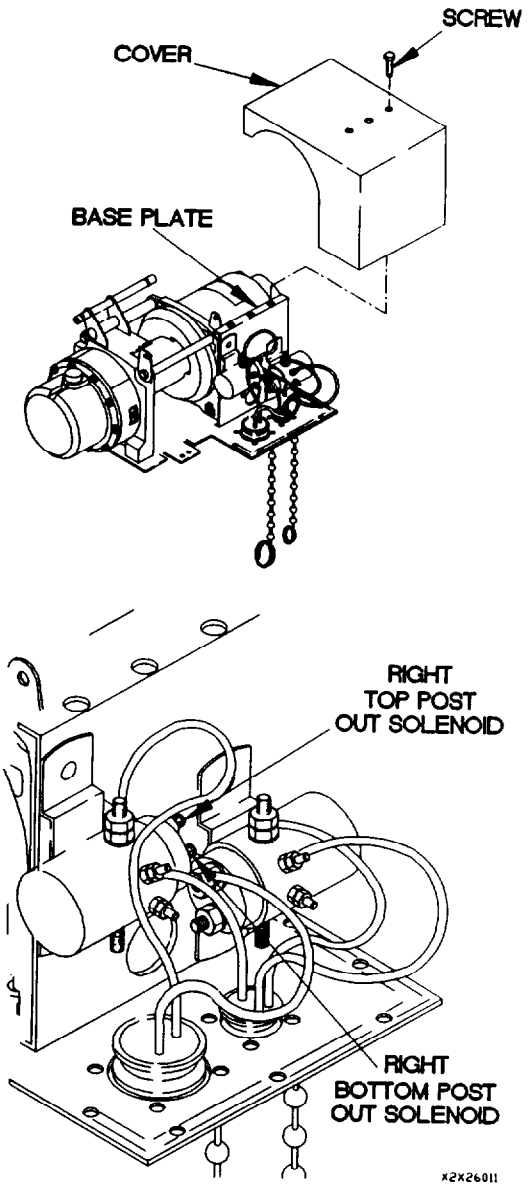
Personnel Required
(2)

Tools and Special Tools
Tool Kit, Gen! Mech (Item 46, Appendix C)
STE/ICE-R (Item 41, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

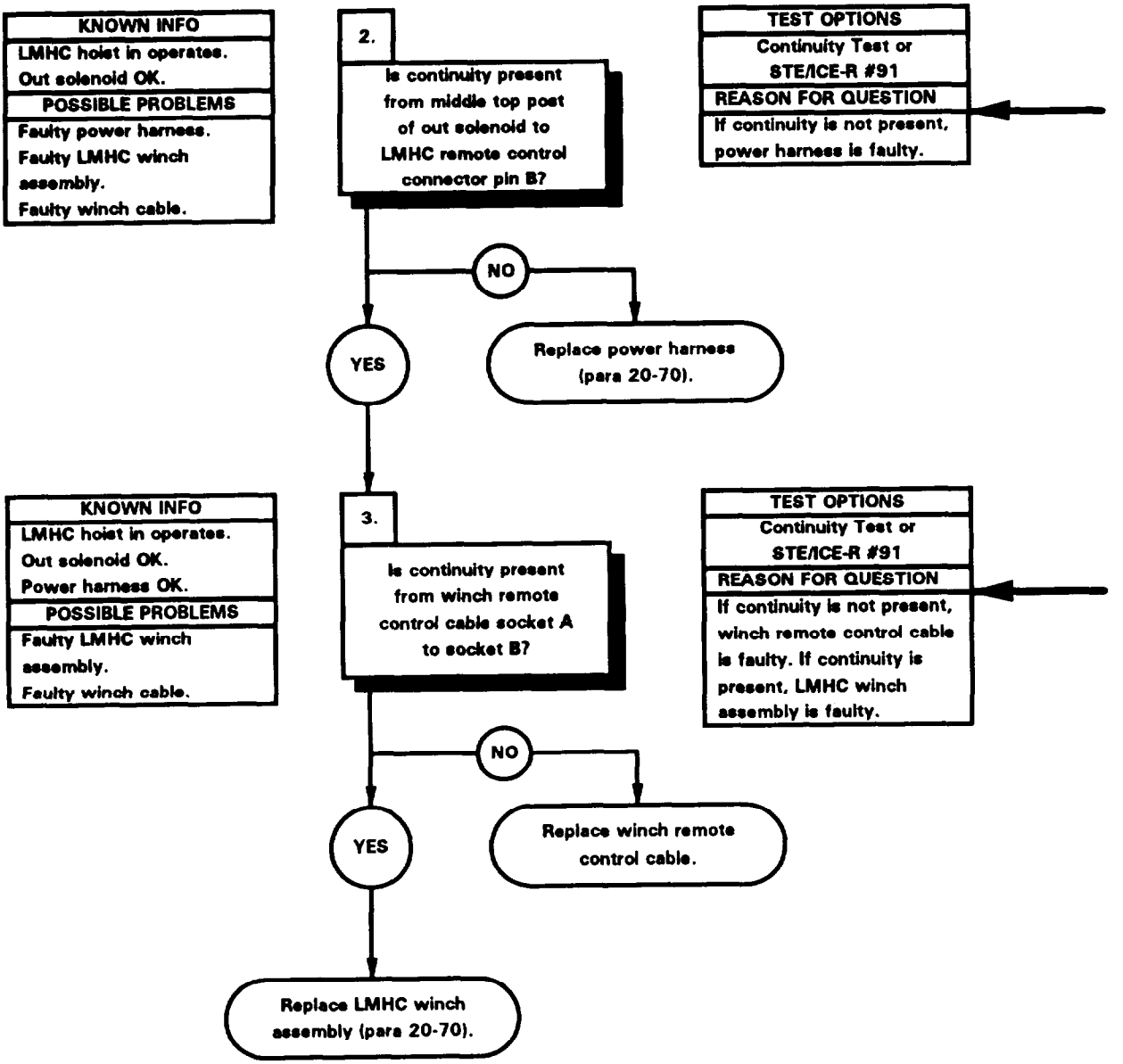
References
TM 9-4910-571-12&P



CONTINUITY TEST
(1) Remove 18 screws and cover from base plate.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to right top post of out solenoid.
(4) Connect negative (-) probe of multimeter to right bottom post of out solenoid and note reading on multimeter.
(5) If continuity is not present, replace out solenoid (para 20-70).

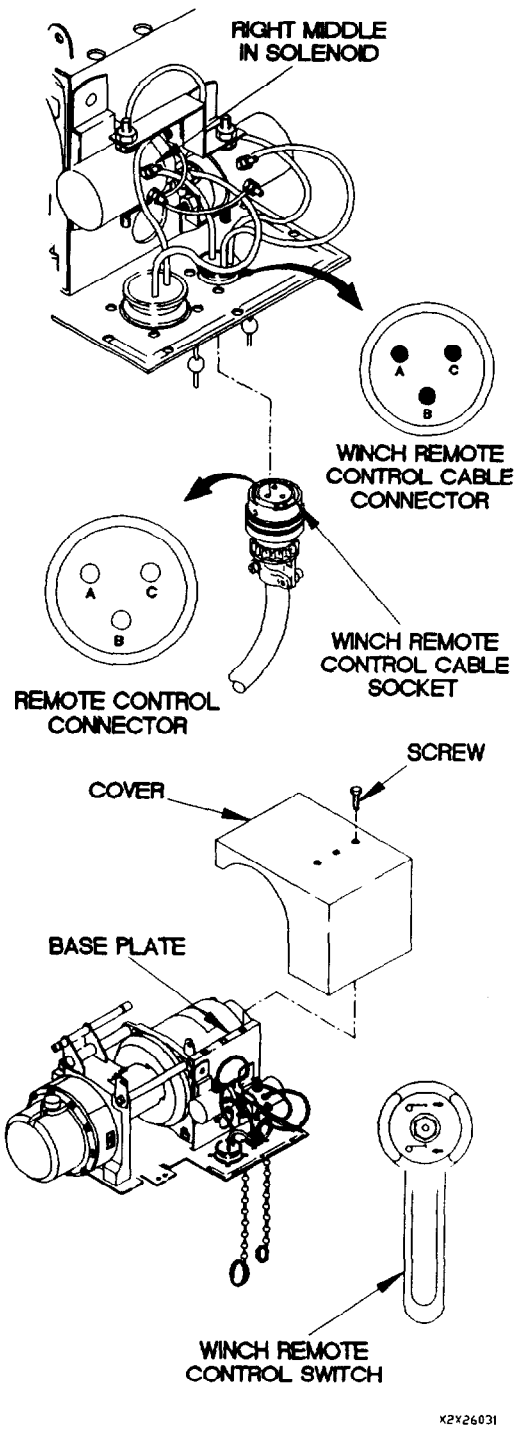


u21. LIGHT MATERIAL HANDLING CRANE (LMHC) HOIST OUT DOES NOT OPERATE (CONT)



CONTINUITY TEST
(1) Disconnect winch remote control cable from winch remote control connector.
(2) Set multimeter to ohms.
(3) Connect positive (+) probe of multimeter to right middle post of out solenoid.
(4) Connect negative (-) probe of multimeter to winch remote control connector pin B and note reading on multimeter.
(5) If continuity is not present, replace power harness (para 20-70).

CONTINUITY TEST
(1) Set multimeter to ohms.
(2) Connect positive (+) probe of multimeter to winch remote control cable socket A.
(3) Connect negative (-) probe of multimeter to winch remote control cable socket B.
(4) Position winch remote control switch to out and note reading on multimeter.
(5) If continuity is not present, replace winch remote control cable.
(6) If continuity is present, replace LMHC winch assembly (para 20-70).
(7) Connect winch remote control cable to winch remote control connector.
(8) Install cover on base plate with 18 screws.



2-32. CAB TILT AND SPARE TIRE RETAINER ASSEMBLY TROUBLESHOOTING

This paragraph covers Cab Tilt and Spare Tire Retainer Assembly Troubleshooting. The Cab Tilt and Spare Tire Retainer Assembly Fault Index, Table 2-41, lists faults for the cab tilt and spare tire retainer assembly of the vehicle.

Table 2-41. Cab Tilt and Spare Tire Retainer Assembly Fault Index

Fault No.	Description	Page
v1.	Cab does not raise or lower properly	2-2116
v2.	Spare tire does not raise or lower properly	2-2118

v1. CAB TILT DOES NOT RAISE OR LOWER PROPERLY

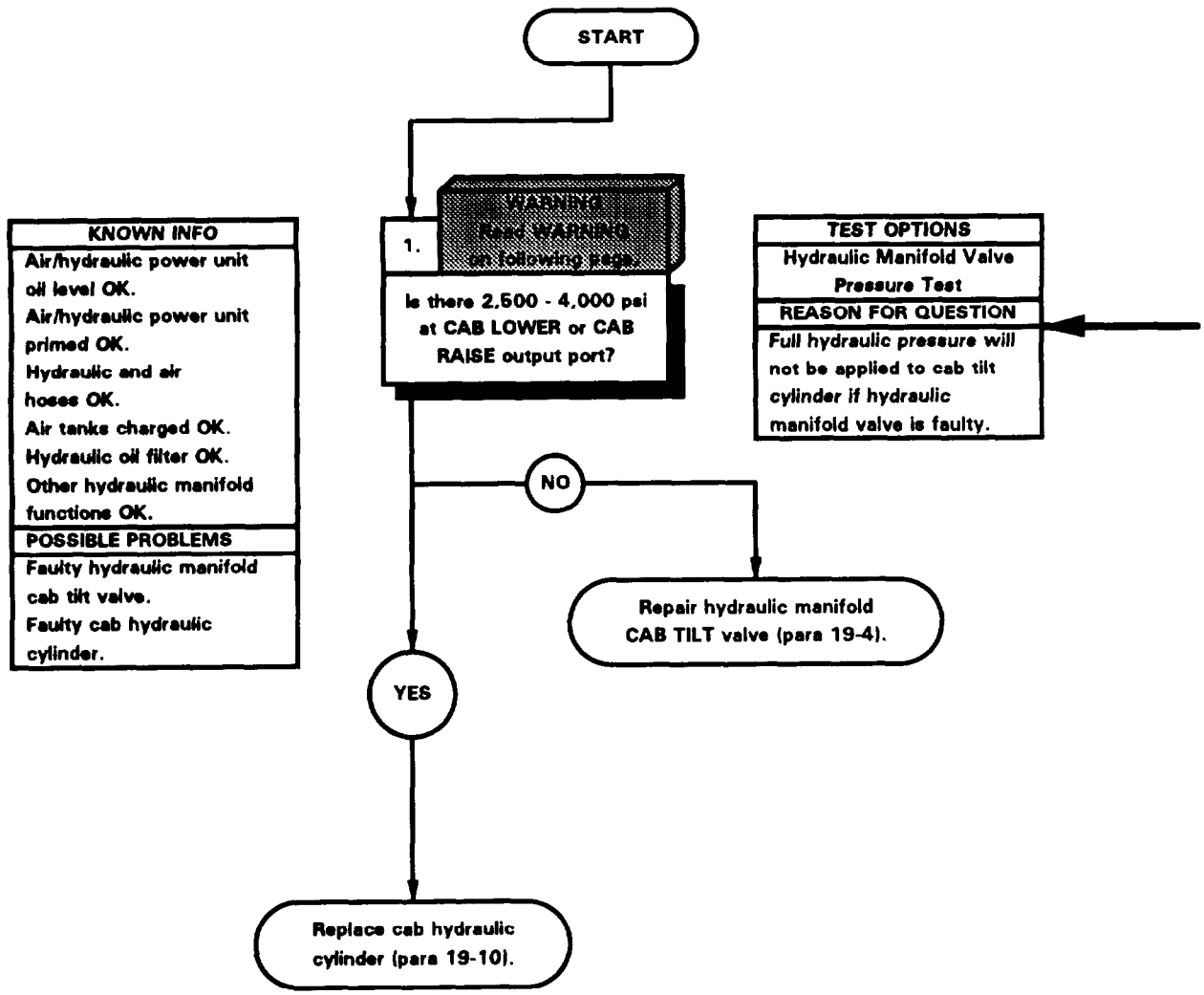
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Air tanks, drained (TM 9-2320-365-10).

Materials/Parts
Rag, Wiping (Item 51, Appendix D)

References
TM 9-4910-571-12&P

Tools and Special Tools
Tool Kit Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Gloves, Rubber (Item 13, Appendix C)
Transducer, STE-ICE (Item 1, Appendix J)

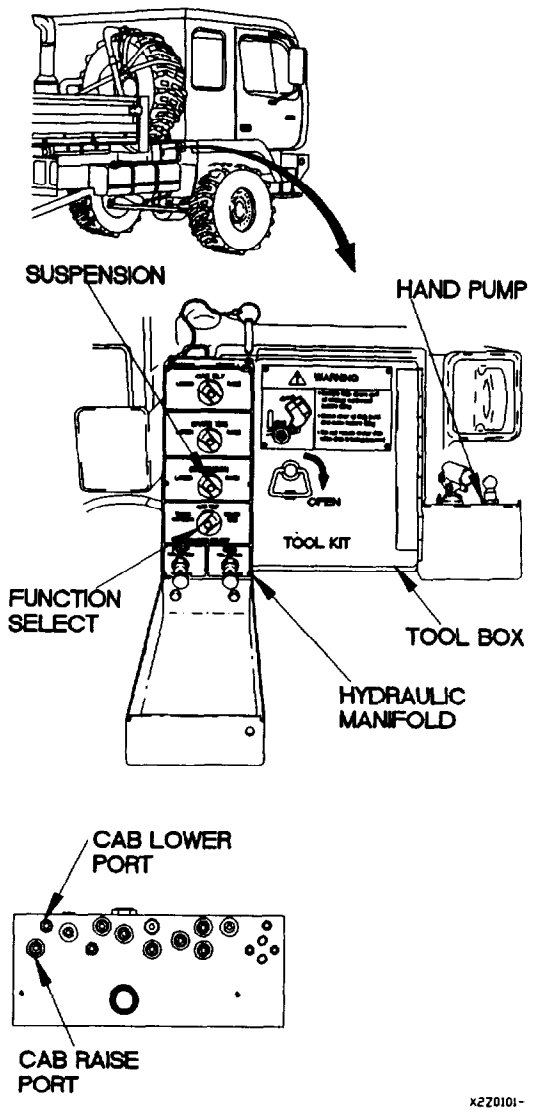


WARNING

- Drop hydraulic pressure to zero before disconnecting any hydraulic hose. Failure to comply may result in injury to personnel.
- 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.

HYDRAULIC MANIFOLD VALVE PRESSURE TEST

(1) Remove four screws, washers, spacers, and hydraulic manifold from tool box.
(2) Position drain pan under hydraulic manifold.
(3) If cab is lowered, disconnect CAB RAISE pressure hose from hydraulic manifold.
(4) If cab is raised, disconnect CAB LOWER pressure hose from hydraulic manifold.
(5) Connect STE/ICE-R between cab raise or cab lower pressure hose and cab raise or cab lower port on hydraulic manifold. (TEST #51) (TM 9-4910-571012&P).
(6) Start engine, charge air tanks (TM 9-2320-365-10).
(7) Position CAB TILT to LOWER (if raised) or RAISE (if lowered).
(8) Position FUNCTION SELECT to CAB TILT.
(9) Push and hold PUMP plunger button and note reading on STE/ICE-R.
(10) If pressure is lower than 2500 psi, replace hydraulic manifold valve (para 19-4).
(11) If pressure is OK, replace cab hydraulic cylinder (para 19-10).
(12) Disconnect STE/ICE-R from pressure hose and hydraulic manifold.
(13) Connect pressure hose to cab tilt output port from hydraulic manifold.
(14) Install hydraulic manifold on tool box with four spacers, washers, and screws.



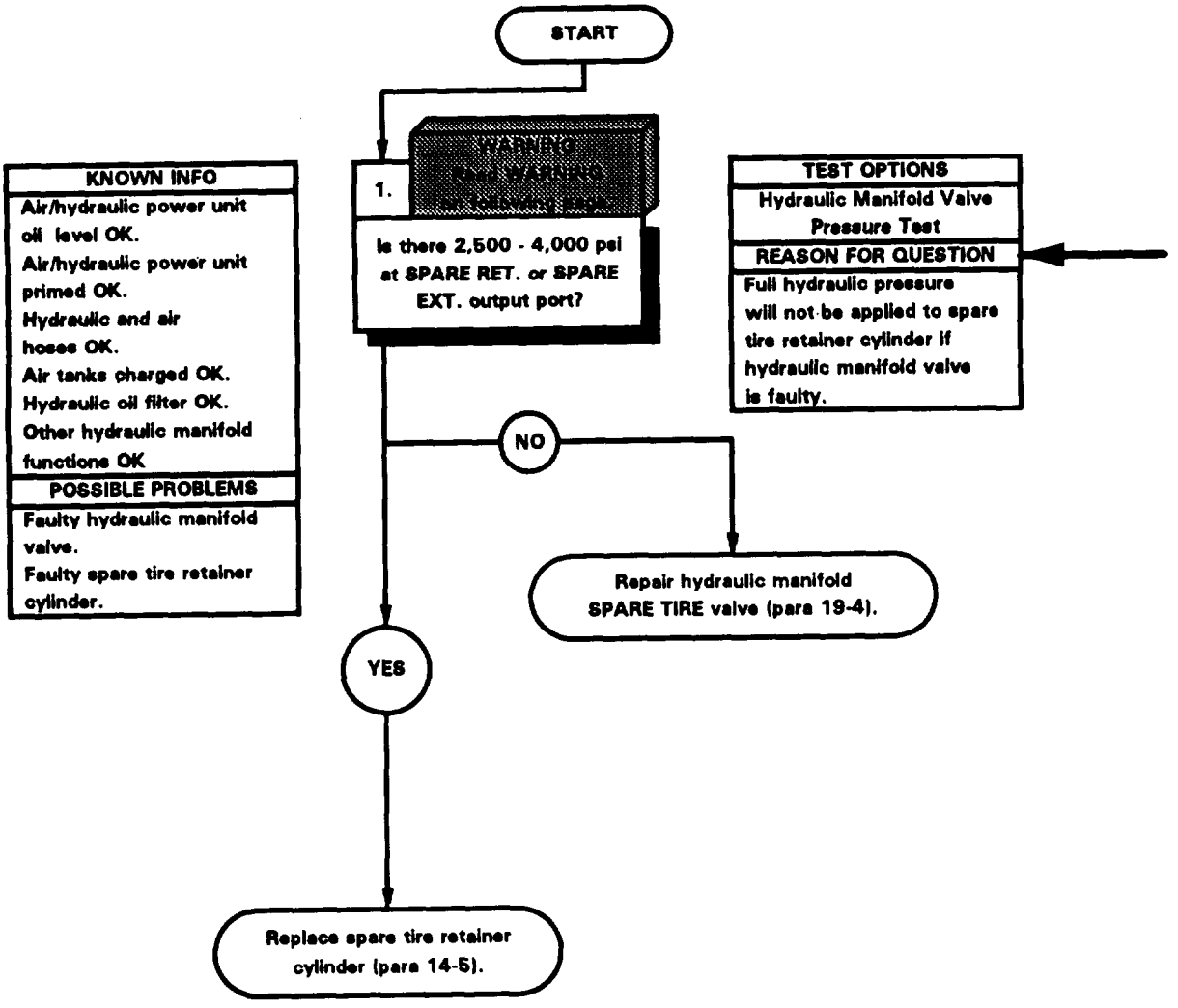
v2. SPARE TIRE DOES NOT RAISE OR LOWER PROPERLY

INITIAL SETUP

Equipment Conditions
- Engine shut down (TM 9-2320-365-10).
- Air tanks drained (TM 9-2320-365-10).

References
- TM 9-4910-571-12&P

Tools and Special Tools
- Tool Kit Genl Mech (Item 44, Appendix C)
- STE/ICE-R (Item 39, Appendix C)
- Pan, Drain (Item 24, Appendix C)
- Goggles, Industrial (Item 15, Appendix C)
- Gloves, Rubber (Item 13, Appendix C)
- Transducer, 10,000 PSI (Item 1, Appendix J)

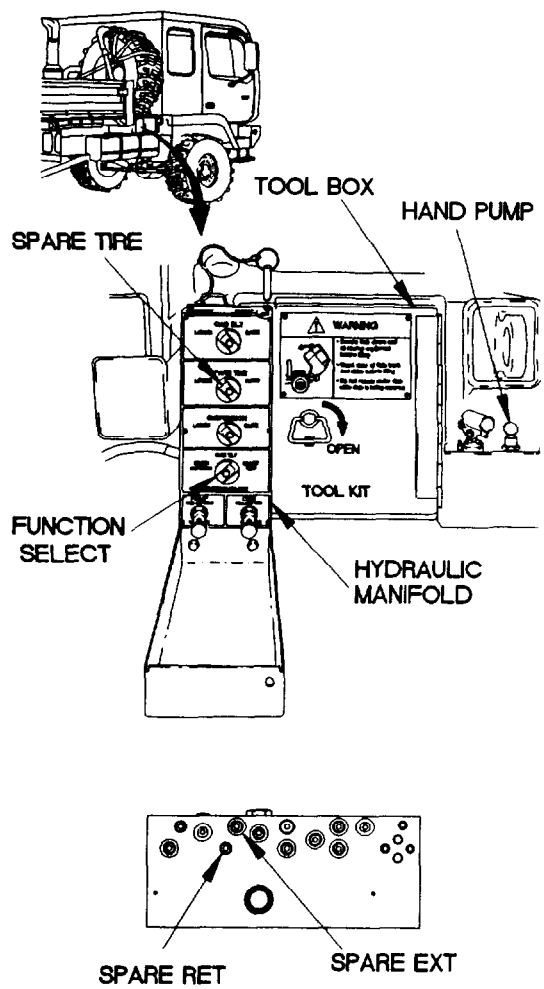


WARNING

- **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 comes in contact with hydraulic oil should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.**
- **Drop hydraulic pressure to zero before disconnecting any hydraulic hose. Failure to comply may result in injury to personnel.**

HYDRAULIC MANIFOLD VALVE PRESSURE TEST

(1) Remove four screws, washers, two spacers, and hydraulic manifold from tool box.
(2) Position drain pan under hydraulic manifold.
(3) If spare tire is lowered, disconnect SPARE RET pressure hose from SPARE RET port on hydraulic manifold.
(4) If spare tire is raised, disconnect SPARE EXT pressure hose from SPARE EXT port on hydraulic manifold.
(5) Connect STE/ICE-R between SPARE RET or SPARE EXT pressure hose and SPARE RET or SPARE EXT port on hydraulic manifold (TEST #51) (TM 9-4910-571-12&P).
(6) Start engine and charge air tanks (TM 9-2320-366-10).
(7) Position SPARE TIRE selector valve to LOWER (if raised) or RAISE (if lowered).
(8) Position FUNCTION SELECT valve to SPARE TIRE.
(9) Push and hold PUMP plunger button and note reading on STE/ICE-R.
(10) If pressure is lower than 2500 psi, replace hydraulic manifold valve (para 19-4).
(11) If pressure is OK, replace spare tire retainer hydraulic cylinder (para 14-5).
(12) Drain air tanks (TM 9-2320-365-10).
(13) Disconnect STE/ICE-R from pressure hose and hydraulic manifold port.
(14) Connect pressure hose to hydraulic manifold port.
(15) Install hydraulic manifold on tool box with two spacers, washers, and four screws.



X270201-

2-33. FRAME TROUBLESHOOTING

This paragraph covers Frame Troubleshooting. The Frame Fault Index, Table 2-42, lists faults for the frame of the vehicle.

Table 2-42. Frame Fault Index

Fault No.	Description	Page
w l .	Tires continue to wear after front end alignment and/or vehicle drives sideways down road	2-2122

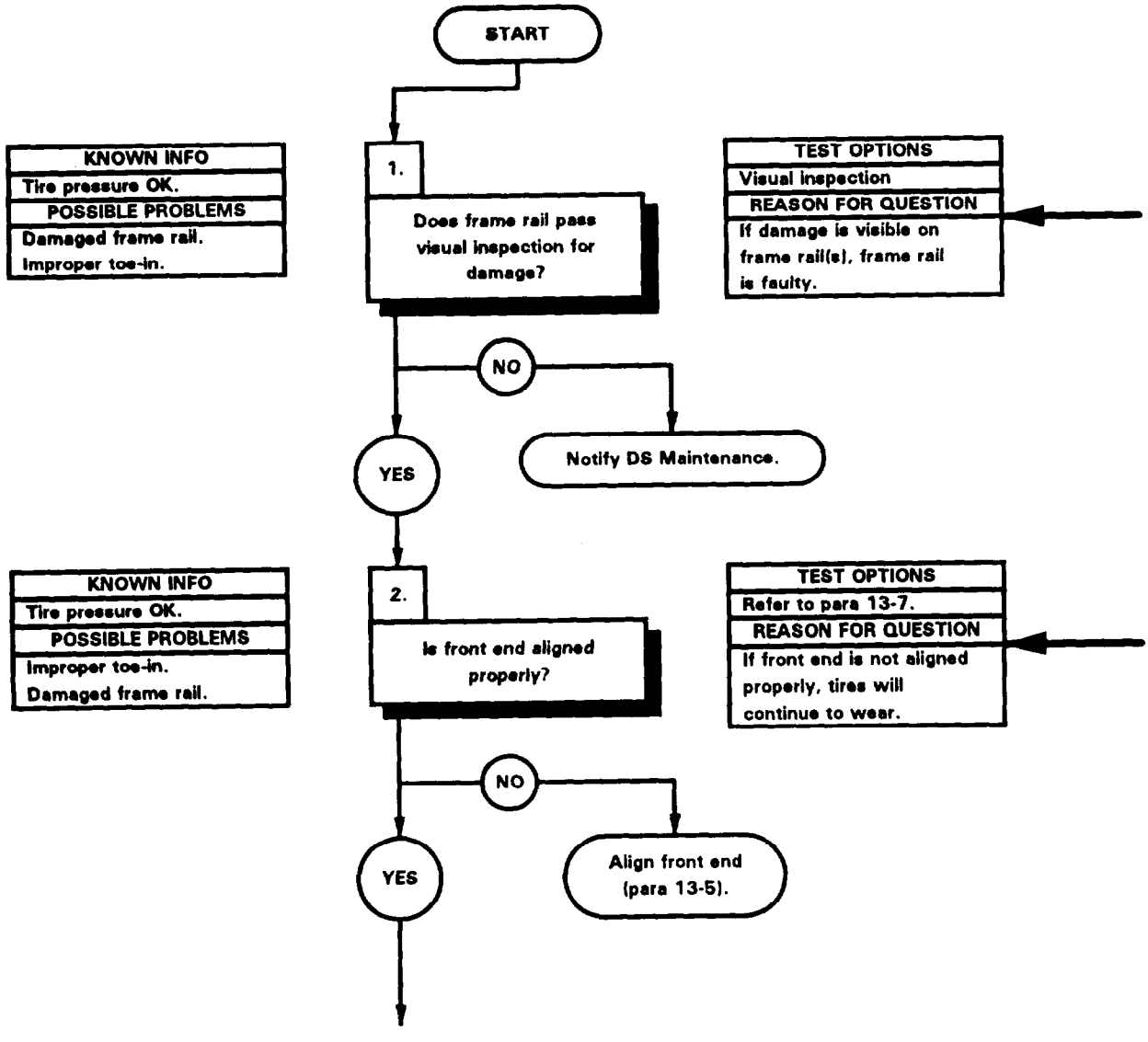
w1. TIRES CONTINUE TO WEAR AFTER FRONT END ALIGNMENT AND/OR VEHICLE DRIVES SIDEWAYS DOWN ROAD

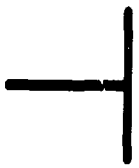
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).

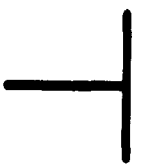
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required
(4)



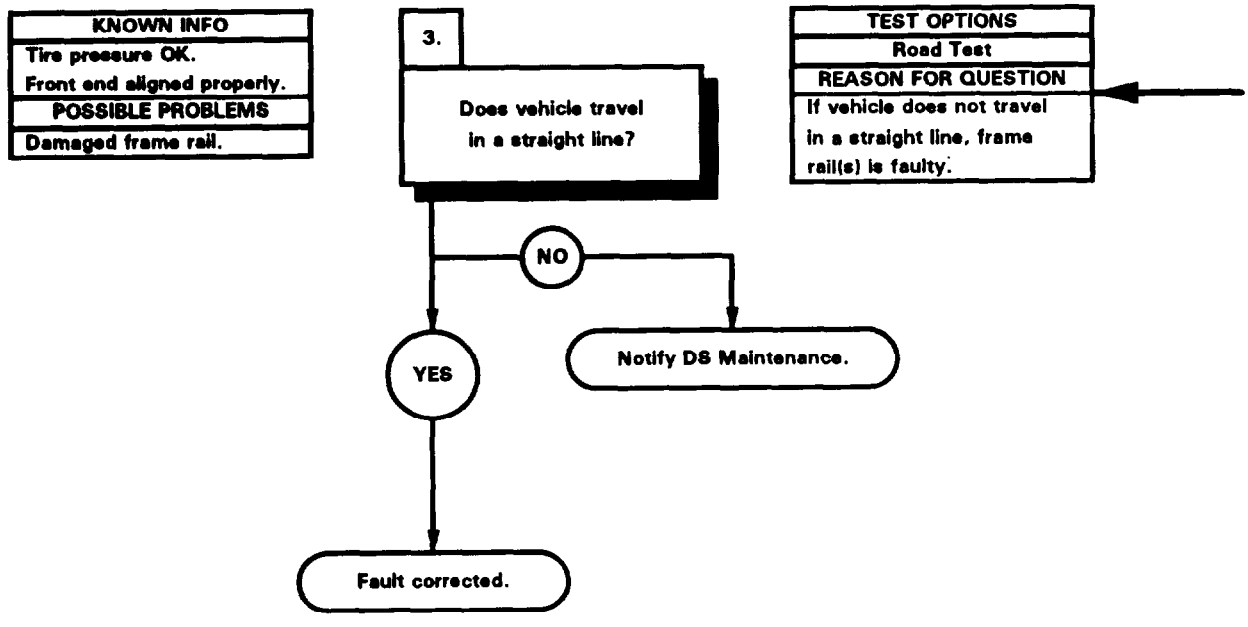


Inspect frame rails and cross members for visible damage. If frame rail(s) and/or cross member(s) show any evidence of damage or bends, notify DS Maintenance.



Perform front end alignment and verify proper toe-in (para 13-6).

w1. TIRES CONTINUE TO WEAR AFTER FRONT END ALIGNMENT AND/OR VEHICLE DRIVES SIDEWAYS DOWN ROAD (CONT)



ROAD TEST
(1) Road test vehicle with additional vehicle following.
(2) Have following vehicle monitor path of lead vehicle.
(3) If front of vehicle can be seen while in direct line of rear of vehicle, notify DS Maintenance.

Section V. MAINTENANCE PROCEDURES

2-34. MAINTENANCE INTRODUCTION

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

2-35. GROUND HANDLING

a. **Towing.** Two towing eyes are located at front and two located at rear of vehicle.

b. **Parking.** Parking brakes are designed to hold GVW on a minimum of 7-9 percent grade, pointing either uphill or downhill per Federal Motor Carrier Safety Regulation 393.41.

c. **Mooring and Transporting.** For forward, aft, lateral and upward movements, vehicle has four tiedown rings. Refer to TM 9-2320-365-10 for mooring condition and tiedown locations.

d. **Hoisting.** Sling assemblies and towing eyes used for hoisting are found on the vehicle.

2-36. GENERAL REMOVAL INSTRUCTIONS

a. Work Required. Remove parts if repair or replacement is required. Do not disassemble a component any further than needed.

b. Preparation. Before removal of any electrical, hydraulic, or air system components, ensure system component is not energized or pressurized. Disconnect battery ground cables. Relieve air system pressure. Before removal of fasteners (nuts, self-locking nuts) remove any paint on threads to prevent binding of fastener.

c. Identification. To ease assembly and installation, tag and mark shims, connectors, wires and mating ends of lines before disconnecting them. Identify similar parts to ensure correct assembly.

d. Position of Valves. Before removing valve handles, mark or diagram their positions when open and closed. This will help during assembly.

e. Tire Removal. Before removing any tires, position jackstands under axles, walking beams or frame. This will secure the vehicle for safe tire removal.

f. Location. Before removing cable ties, cushion clamps, hoses, tubing, wiring etc., note the location, position and routing to ensure correct assembly.

2-36. GENERAL REMOVAL INSTRUCTIONS (CONT)

g. Data Plate Removal.

WARNING

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

CAUTION

Use appropriate size drill bit when removing rivets. Failure to comply may cause damage to equipment.

Remove rivets and data plate from vehicle.

h. Blind Rivet Nut Removal.

WARNING

Wear appropriate eye protection when removing blind rivet nuts. Failure to comply may result in injury to personnel.

CAUTION

Use appropriate size drill bit when removing blind rivet nuts. Failure to comply may cause damage to equipment.

Remove blind rivet nut from vehicle.

2-37. GENERAL DISASSEMBLY INSTRUCTIONS

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

CAUTION

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

b. Locking Parts. Replace all lockwashers, cotter pins and self-locking nuts at time of reassembly.

c. Expendable Parts. All gaskets, preformed packings, and seals removed during repair must be discarded and replaced with new parts.

d. Removing Seals. Be sure all traces of oil, gaskets and sealants are removed from components. When possible, use wood or plastic probes and scrapers to prevent damage to machined surfaces.

CAUTION

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

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

2-38. GENERAL CLEANING INSTRUCTIONS

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 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.**

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

a. Cleaning Solvents. Use only approved cleaning solvents to clean parts. Dry Cleaning Solvent P-D-680 (Item 71, Appendix D) is commonly used. Always work in a well-ventilated area.

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.

b. Removing Deposits. Soak parts in Dry Cleaning Solvent P-D-680 (Item 71, Appendix D), and wash away deposits by flushing or spraying. When necessary, brush with a soft bristle brush (not wire) moistened in solvent. Use compressed air to dry parts, except bearings, after cleaning. Bearings must drip and air dry.

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

d. Ball and Roller Bearings. When cleaning ball or roller bearings, place them in a basket and suspend them in a container of Dry Cleaning Solvent P-D-680 (Item 71, Appendix D). If needed, use a brush to remove caked grease, chips, etc. Avoid rotating bearing before solid particles are removed to prevent damaging races and balls. When bearings have been cleaned, coat them lightly with lubricating oil (Item 43, Appendix D) to remove Dry Cleaning Solvent.

CAUTION

Do not clean tires, lubricant seals, rubber hoses, or electrical components with solvent mixture. Failure to comply may result in damage to equipment.

e. Rubber Parts. Do not clean preformed packings or other rubber parts in Dry Cleaning Solvent. Wipe parts clean with a dry wiping rag (Item 51, Appendix D).

WARNING

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

CAUTION

Steam cleaning may cause water to enter the transmission Electronic Control Unit (ECU) connector. Failure to dry off connector after steam cleaning may result in bad ECU codes.

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

WARNING

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

g. Engine, Cab, and Body. Use a spray gun and solvent mixture for cleaning exterior of engine, cab, and body. Allow mixture to remain on item surface for 10 minutes before rinsing. Rinse with hot water under 80 to 120 psi (550 to 830 Kpa), if available. An ordinary garden hose with nozzle may be used if other equipment is not available. Rinse thoroughly.

CAUTION

To prevent corrosion, parts should be dipped in rust preventive within two hours of degreasing. Failure to comply may result in damage to equipment.

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

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 whan using solvent; the flashpoint for Type I Dry Cleaning Solvent is l00°F (38° C) and for Type II Is 13O° 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 got trash air and medical help. If solvent contacts skin or clothes, flush with cold watar. If solvent contacts eyes, Immediately flush eyes with water and get immediate medical attention. Failure to comply may result in injury to personnel.**

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

i. Passages. After degreasing, check all oil passages and cavities for dirt or blockage before coating with lubricating oil (Item 43, Appendix D). Run a thin, flexible wire through oil passages to make sure they are not clogged, Use a pressure spray gun and Dry Cleaning Solvent P-D-680 (Item 71, Appendix D) to clean dirty passages.

j. Electrical Parts. Electrical parts, such as coils, junction blocks, and switches should not be soaked or sprayed with cleaning solutions. Clean these parts with a clean wiping rag (Item 51, Appendix D) moistened with Dry Cleaning Solvent P-D-680 (Item 71, Appendix D).

CAUTION

Do not use soap or alkalies for cleaning tank interiors. Failure to comply may result In damage to equipment.

k. Fuel Tank. Pay special attention to all warnings and cautions when working on vehicle's fuel tank. Fuel tanks should be flushed, using a spray gun and Dry Cleaning Solvent P-D-680 (Item 71, Appendix D).

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 bring damaged.

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

m. Hydraulic System. When cleaning hydraulic system parts use Dry Cleaning Solvent P-D-680 (Item 71, Appendix D). Clean end dry parts thoroughly to make sure no residue remains, If a coating of preservative is required before assembly, apply a light film of lubricating oil (Item 43, Appendix D).

2-39. GENERAL INSPECTION INSTRUCTIONS

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

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

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

(1) Cuts or grooves parallel to ball or roller rotation.

(2) Fatigue pits (not minor machine marks or scratches).

(3) Cracks.

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

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

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

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

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

2-40. GENERAL REPAIR INSTRUCTIONS

a. Burrs. Remove burrs from surface teeth with a fine-cut file or crocus cloth.

b. Exterior Parts. Chassis and exterior painted parts may be resurfaced when paint is damaged, or where parts have been repaired (TB 43-0242).

NOTE

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

c. Protecting Parts. Protect bare steel surfaces from rust when not actually undergoing repair work. Dip parts in, or spray them with, corrosion preventive compound (Item 18, Appendix D). Aluminum parts may require protection in atmospheres having a high salt content.

d. Screws, Nuts and Fittings. Replace any screw, nut, or fitting with damaged threads. Inspect tapped holes for thread damage. if cross-threading is evident retap the hole for the next oversize screw or stud. If the retapping will weaken the part, or if the cost of the part makes retapping impractical, replace the part. Chasing the threads with proper size tap or die may be adequate.

e. Stud Installation. When installing studs use a proper driver. A worn stud driver may damage the end thread. Then a chasing die must be used before a nut can be screwed on. This procedure will remove cadmium plating and allow corrosion. Before installing a stud, inspect the hole for chips. Blow out foreign matter and start stud by hand. Before final insertion, coat thread with a film of antiseize compound (Item 14, Appendix D). Install stud to proper “setting height”, which is the total projecting length.

f. Dents. Straighten minor body dents by tapping with a soft-faced hammer while using a wooden block backing.

g. Sheet Metal Repair. Repair minor skin cracks by installing patches.

h. Wire Repair. Replace all broken, worn, or burned electrical wiring. Wires with several broken strands must be replaced. Broken strands will increase the resistance of the wire and impair efficiency of electrical components, especially the ignition system. Wire numbers must be permanently identified on any new wiring.

2-41. GENERAL ASSEMBLY INSTRUCTIONS

a. Preparation. Remove protective grease coatings from new parts before installation.

b. Preformed Packing Installation. Lubricate all preformed packings with a thin coat of lubricating oil (Item 43, Appendix D) before installing. To install a preformed packing, first clean the groove, then stretch packing and place into position. Place component on flat surface and uniformly press packing into position.

c. Pipe Joints and Fittings. Use nonhardening sealing compound (Item 64, Appendix D) or antiseizing tape (Item 73, Appendix D) to join piping and fittings.

d. Oil Seals. Coat oil seals evenly with oil or grease before installing. Install oil seals with seal lip facing toward lubricant, applying an even force to outer edge of seal. If oil seals are to be installed over keyed or splined shafts, use a guide to prevent sharp edge of keyway or splines from cutting the leather or neoprene seal. Construct guides of very thin gauge sheet metal and shape to the required diameter. Make certain guide edges are not sharp and are bent slightly inward so they do not cut the seal.

e. Bearings and Shafts. When mounting bearings on shafts always apply force to the inner races. When mounting bearings into housing always apply the force to the outer race.

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

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water. Failure to comply may result in injury to personnel.

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

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

2-42. GENERAL INSTALLATION INSTRUCTIONS

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

CAUTION

Use sealing compound sparingly and only on threads. Do not apply compound to hose connections, Failure to comply may result in damage to equipment.

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

c. Torquing. Tighten nuts, bolts, screws, and fittings as required in Appendix F or in each maintenance task.

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

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

f. Data Plate Installation.

Install data plate on vehicle with rivets.

g. Blind Rivet Nut Installation.

Install blind rivet nut on vehicle using blind rivet tool kit.

2-43. PREPARATION FOR STORAGE OR SHIPMENT INTRODUCTION

a. This section gives instructions for making the vehicle ready for shipment or storage.

b. Refer to AR 750-l for detailed administrative storage instructions,

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

2-44. PREPARATION FOR STORAGE OR SHIPMENT

a. Perform Preventive Maintenance Checks and Services (PMCS) listed in Table 2-1.

WARNING

- **Heavy objects/loads, such as tool boxes and heavy parts, must always be carried on the floor with the weight distributed as equally as possible between left and right aides of M1079 van. Failure to comply decreases the stability of the M1079 van and will increase the likelihood of a rollover.**
- **Heavy cabinets must always be mounted as low as possible with the weight distributed as equally as possible between left and right aides of M1079 van. Remember to consider the weight of the items that will be stored in the cabinets. Failure to comply decreases the stability of the M1079 van and will increase the likelihood of a rollover.**
- **Always keep in mind, when placing items inside the M1079 van, that heavier items must always be positioned as low as possible and the weight distributed as equally as possible between left and right sides of M1079 van. Failure to comply decreases the stability of the M1079 van and will increase the likelihood of a rollover.**

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

2-45. STORAGE MAINTENANCE PROCEDURES

a. Provide access to the vehicle during storage.

CAUTION

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

b. Do not block wheels, but do be sure tires are not resting on surfaces containing grease or oil.

c. Perform complete lubrication in accordance with TM 9-2320-365-10 and Appendix H.

d. If possible, store vehicles close together, out of direct sunlight and away from electrical or generating equipment.

e. Ensure the fuel tank contains at least 20 gallons (75.7 liters) of treated fuel. The fuel should be treated with Biobor J.F. The addition of 3 teaspoons of Biobor to 20 gallons of fuel will provide adequate protection against fungus growth. When storing a vehicle in freezing conditions, the addition of 3 ounces of isopropyl alcohol to every 20 gallons of diesel fuel will help prevent fuel-line freeze up.

f. Monthly Storage Maintenance Instructions.

(1) Conduct visual inspection of vehicle. Check lubricant, battery electrolyte, coolant level and tire pressures, Correct any discrepancies.

(2) Inspect oil can points. Lubricate if necessary.

2-45. STORAGE MAINTENANCE PROCEDURES (CONT)

(3) Start engine and idle for 10 minutes. After 10 minutes of engine idle, operate engine for 5 minutes at 1500 rpm or until engine water temperature reaches 180°F. Shift transmission slowly through all gear selector positions. Return transmission to neutral.

(4) Move vehicle 30 feet forward and reverse.

(5) Idle engine 10 minutes before shutdown.

(6) Check grease coating on all chromium plated and unpainted surfaces. If grease was wiped from chromium plates or unpainted surfaces when vehicle was moved, recoat these surfaces.

q. Quarterly Storage Maintenance Instructions.

(1) Move vehicle at least 1/4 mile. While driving, shift transmission through all gear ranges.

(2) Exercise all auxiliary equipment and winch. While operating winch or crane, lubricate hoist and cables.

h. Yearly Storage Maintenance Instructions.

(1) Clean exterior, engine and undercarriage. Clean interior of cab. Wash any oil or grease from tires.

(2) Visually inspect vehicle. Check lubricant levels and tire pressures. Correct all discrepancies.

(3) Lubricate chassis, auxiliary equipment, winch and hoist cable and oil can points.

CHAPTER 3
ENGINE MAINTENANCE

Section I. INTRODUCTION 3-1
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3-3. VALVE COVER AND GASKET REPLACEMENT 3-6
3-4. ENGINE OIL FILTER REPLACEMENT 3-10
3-5. CRANKCASE BREATHER REPLACEMENT 3-13
3-6. ENGINE AND TRANSMISSION OIL SAMPLING VALVES REPLACEMENT 3-15
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Section 1. INTRODUCTION

3-1. INTRODUCTION

This chapter contains maintenance instructions for replacing engine components authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

Section II. MAINTENANCE PROCEDURES

3-2. LIFTING PLATE REPLACEMENT

This task covers:

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

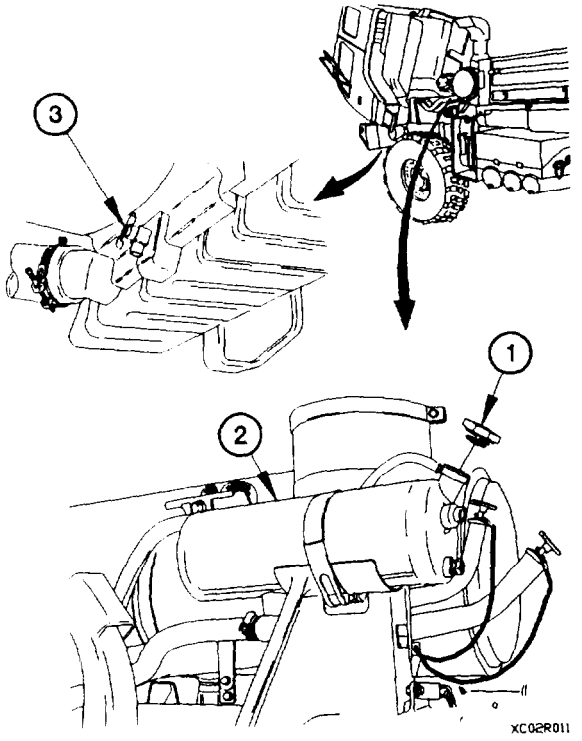
INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab raised (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Wrench, Torque, 0-175 lb-ft (Item 57, Appendix C)
Container (40 qt (38 L) capacity)

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.**
- **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. Removal.

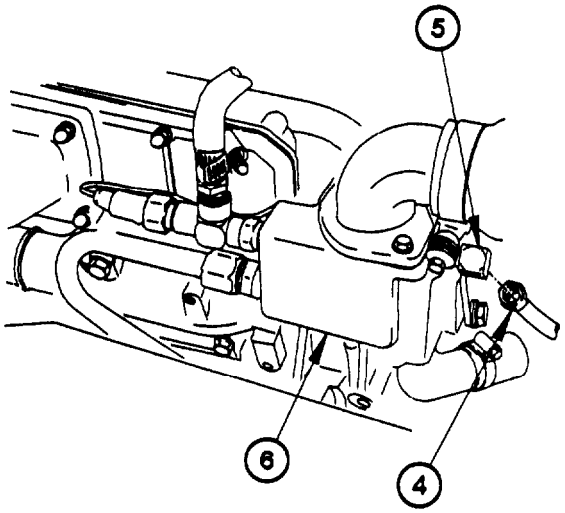
(1) Remove radiator cap (1) from radiator overflow tank (2).

(2) Position container under radiator draincock (3).

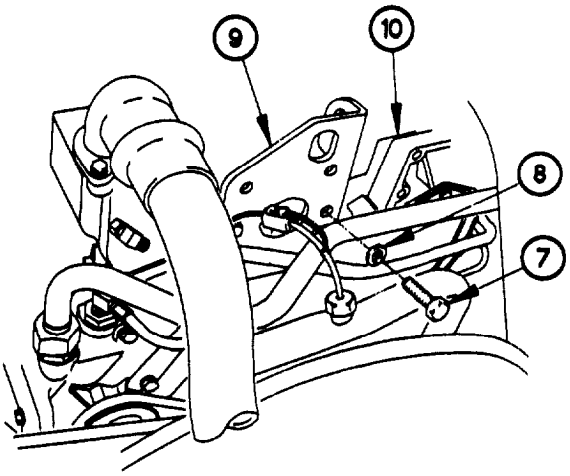
(3) Open radiator draincock (3) and drain approximately five gallons (19 L) of coolant.

(4) Close radiator draincock (3).

(5) Disconnect air compressor inlet coolant tube (4) from fitting (5) on thermostat housing (6).



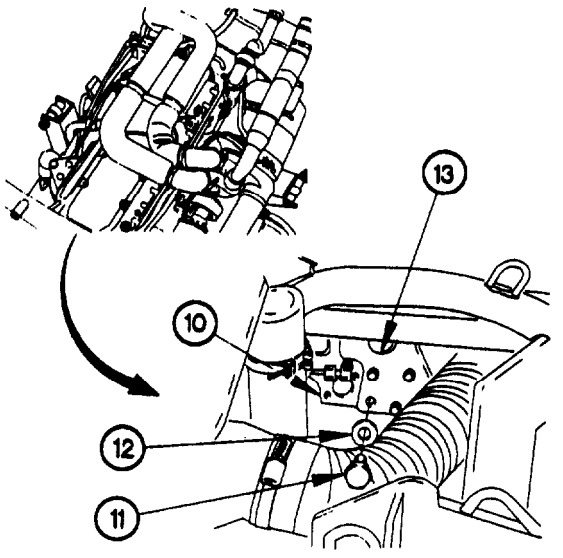
XC02R021



XC02R031

(6) Remove five screws (7), washers (8), and front lifting plate (9) from engine (10).

(7) Remove four screws (11), washers (12), and rear lifting plate (13) from engine (10).



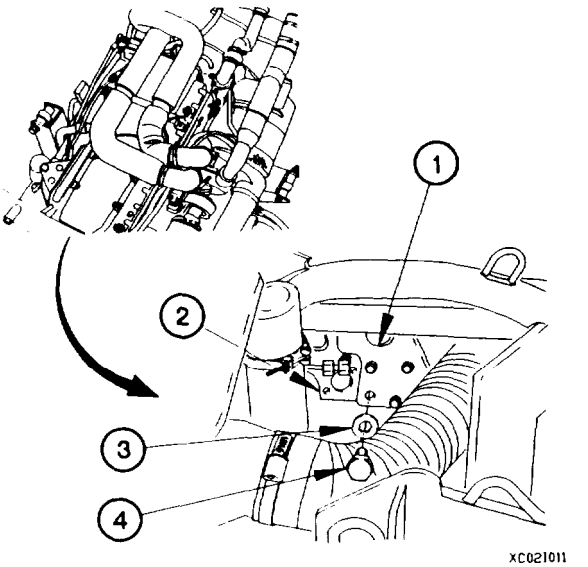
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3-2. LIFTING PLATE REPLACEMENT (CONT)

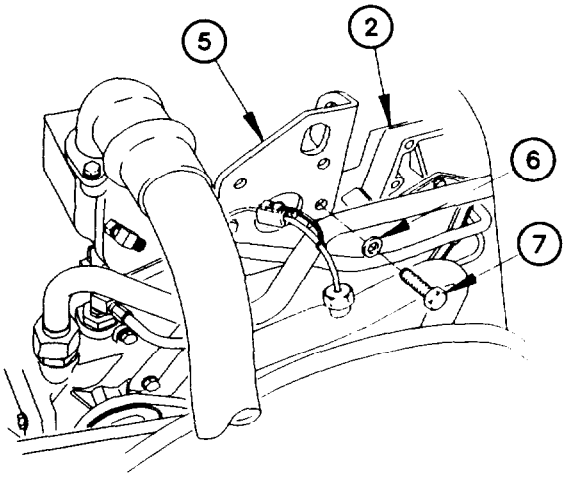
b. Installation.

(1) Position rear lifting plate (1) on engine (2) with four washers (3) and screws (4).

(2) Tighten four screws (4) to 47 lb-ft (64 N•m).



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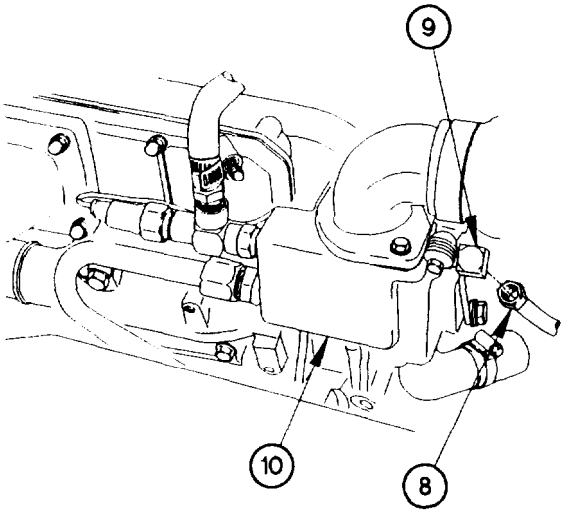


XC021021

(3) Position front lifting plate (5) on engine (2) with five washers (6) and screws (7).

(4) Tighten five screws (7) to 47 lb-ft (64 N•m).

(5) Connect air compressor inlet coolant tube (8) to fitting (9) on thermostat housing (10).



XC021031

c. Follow-On Maintenance.

(1) Lower cab (TM 9-2320-365-10).

(2) Start engine (TM 9-2320-365-10).

(3) Check for coolant leaks under vehicle.

(4) Add coolant to radiator overflow tank (TM 9-2320-365-10).

(5) Check coolant level after normal operating temperature is reached.

(6) Check for coolant leaks under vehicle.

(7) Raise cab (TM 9-2320-365-10).

(8) Check around thermostat housing for coolant leaks.

(9) Lower cab (TM 9-2320-365-10).

(10) Shut down engine (TM 9-2320-365-10).

End of Task.

3-3. VALVE COVER AND GASKET REPLACEMENT

This task covers:

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

INITIAL SETUP

Equipment Conditions
Charge air cooler to air inlet elbow tubes/hoses removed (para 4-5).

Tool and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 68, Appendix C)
Socket Set, Socket Wrench (Item 36, Appendix C)

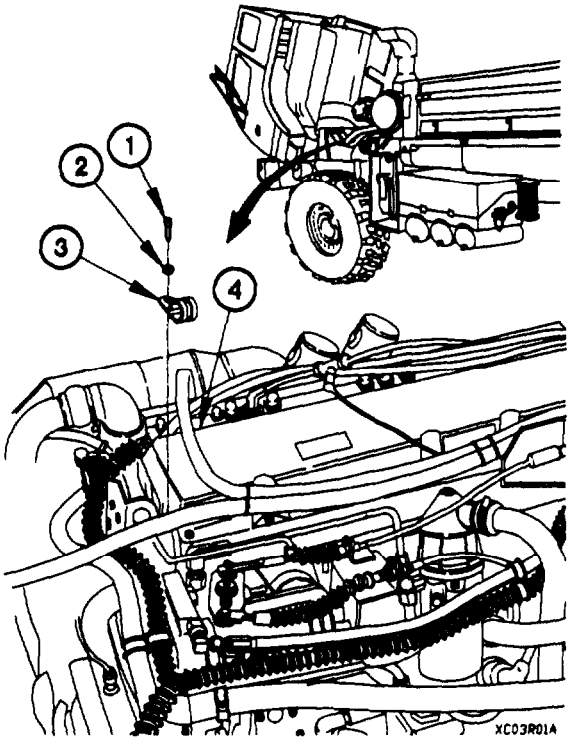
Materials/Parts
Rag, Wiping (Item 51, Appendix D)
Sealing Compound (Item 64, Appendix D)
Gasket (for valve cover 7W5627) (Item 42, Appendix G)
Gasket (for valve cover 119 -2960) (Item 27, Appendix G)
Adhesive (Item 7, Appendix D)
Screw, Cap (14) (for replacement of valve cover 7W5627 with valve cover 119-2960) (Item 239, Appendix G)

a. Removal.

NOTE

Position hoses to allow access to valve cover.

(1) Remove screw (1), washer (2), and clamp (3) from valve cover (4).



CAUTION

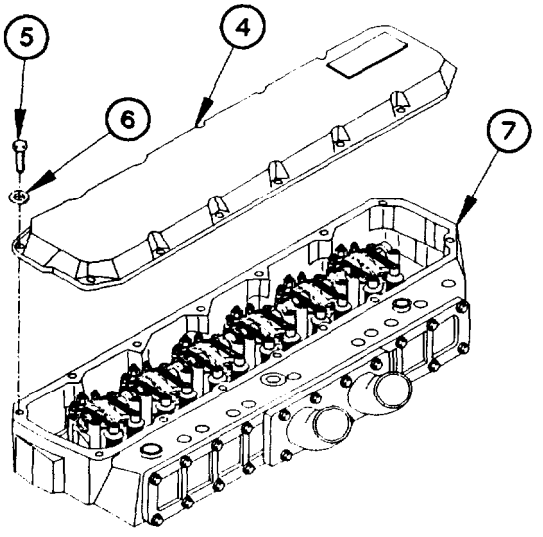
Area around valve cover must be clean before removing valve cover from inlet manifold to prevent contaminants from entering inlet manifold. Failure to comply may result in damage to equipment.

(2) Remove 13 screws (5) and washers (6) from valve cover (4).

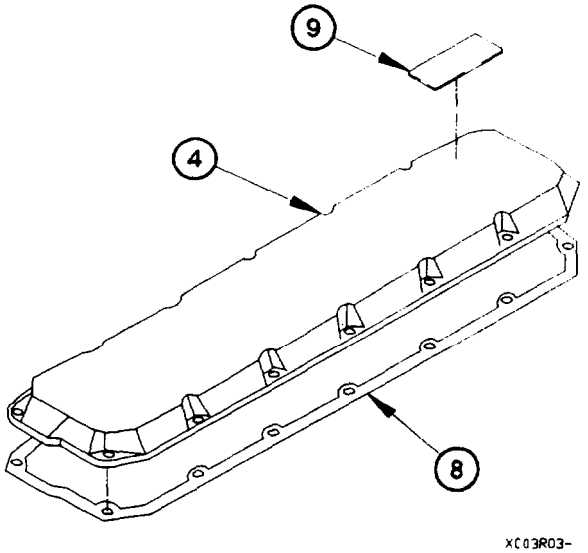
CAUTION

Cover inlet manifold with wiping rags after valve cover is removed to prevent contamination of engine. Failure to comply may result in damage to equipment.

(3) Remove valve cover (4) from inlet manifold (7).



XC03R02-



XC03R03-

(4) Remove valve cover gasket (8) from valve cover (4). Discard gasket.

CAUTION

Engine data plate must remain with original engine. It contains engine serial number and other data for this engine. Failure to comply may result in damage to equipment.

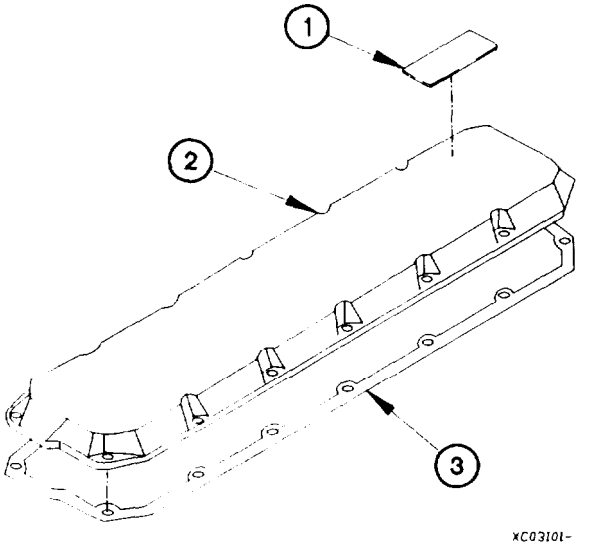
(5) Remove engine data plate (9) from valve cover (4).

3-3. VALVE COVER AND GASKET REPLACEMENT (CONT)

b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. 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.

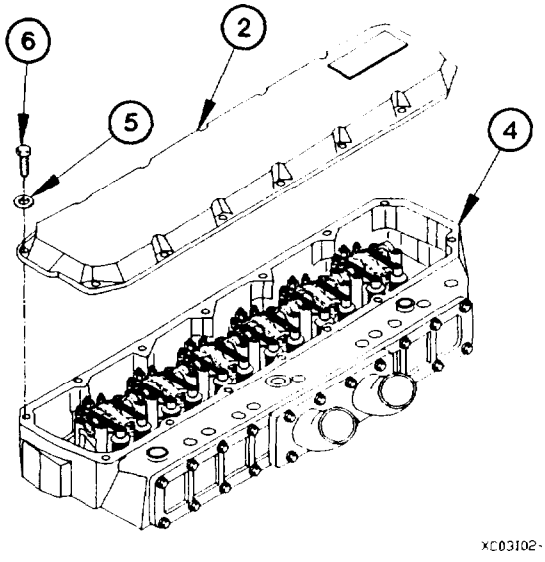


XC03101-

(1) Install engine data plate (1) on valve cover (2) with adhesive.

(2) Apply sealing compound between screw holes of valve cover (2).

(3) Position valve cover gasket (3) on valve cover (2).



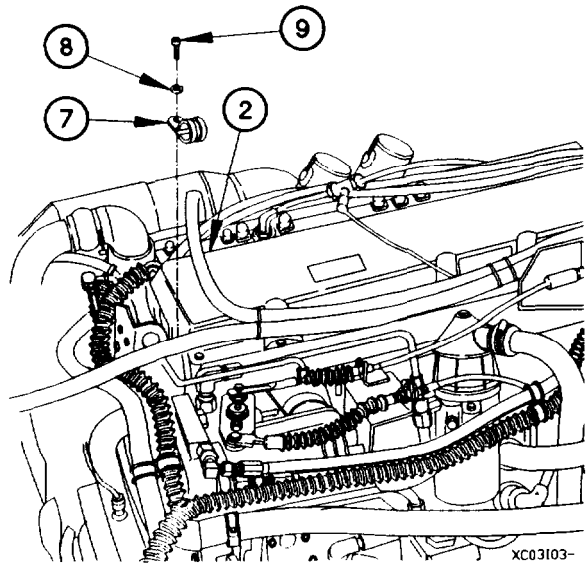
XC03102-

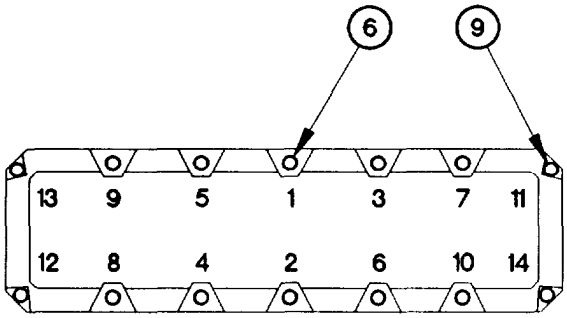
NOTE

Vehicle serial numbers 0001 through 3091 were originally equipped with valve cover part number 7W5627. Vehicle serial numbers 3092 and higher serial numbers were originally equipped with valve cover part number 119-2960. If replacing valve cover part number 7W5627 with valve cover part number 119-2960, it will be necessary to use the longer screws.

(4) Position valve cover (2) on inlet manifold (4) with 13 washers (5) and screws (6).

(5) Position clamp (7) on valve cover (2) with washer (8) and screw (9).





TIGHTENING SEQUENCE

XC03104-

(6) Tighten 13 screws (6) and screw (9) to 84-132 lb-in. (9-15 N•m) in sequence shown.

c. Follow-On Maintenance.

(1) Install charge air cooler to air inlet elbow tubes/hoses (para 4-5).

(2) Lower cab (TM 9-2320-365-10).

(3) Start engine (TM 9-2320-365-10).

(4) Raise cab (TM 9-2320-365-10).

(5) Check for oil leaks around valve cover gasket.

(6) Lower cab (TM 9-2320-365-10).

(7) Shut down engine (TM 9-2320-365-10).

End of Task.

3-4. ENGINE OIL FILTER REPLACEMENT

This task covers:

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

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab raised (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Wrench, Strap, Adjustable (Item 56, Appendix C)
Container (40 qt (38 L) capacity)

Materials/Parts
Oil, Lubricating, OE/HDO 30 (Item 46, Appendix D)
Filter, Oil (Item 22, Appendix G)
Packing, Preformed (Item 180, Appendix G)

WARNING

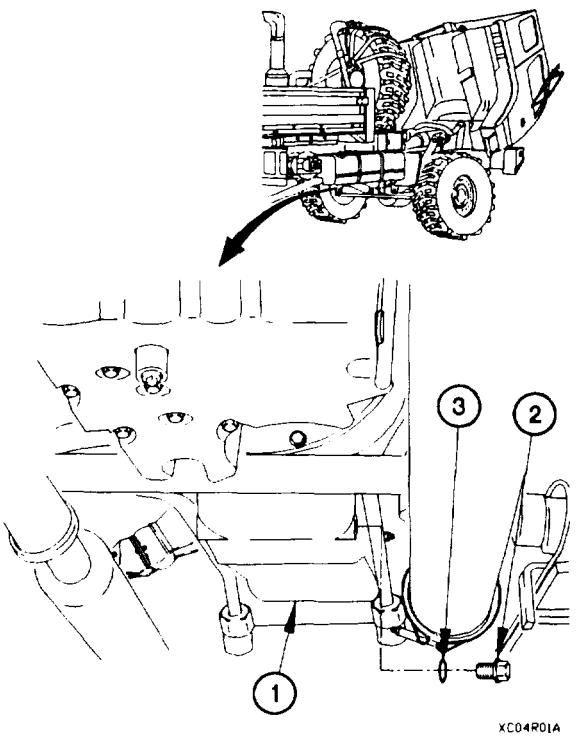
- **Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.**
- **Do not remove oil filter while engine is hot. Failure to comply may result in injury to personnel.**

a. Removal.

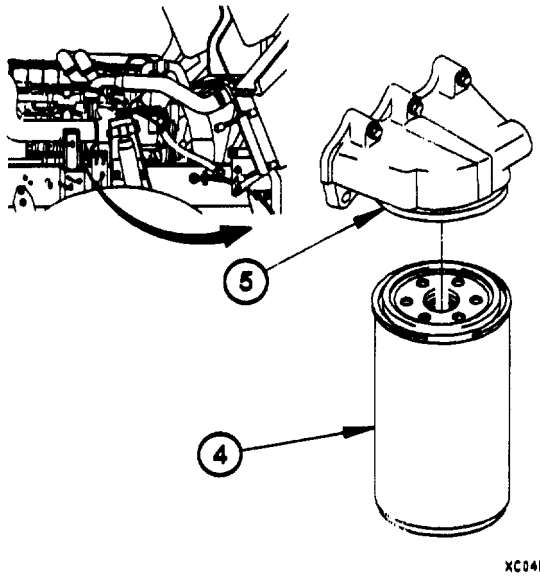
(1) Position container under oil pan (1).

(2) Remove oil pan plug (2) from oil pan (1).

(3) Remove preformed packing (3) from oil pan drain plug (2). Discard preformed packing.

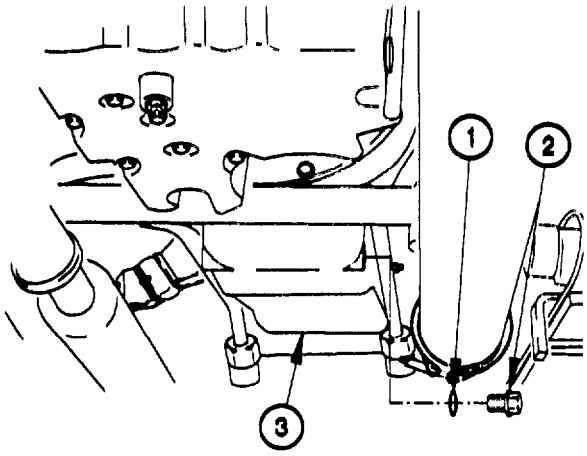


(4) Remove oil filter (4) from oil filter base (5). Discard oil filter.



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b. Installion.



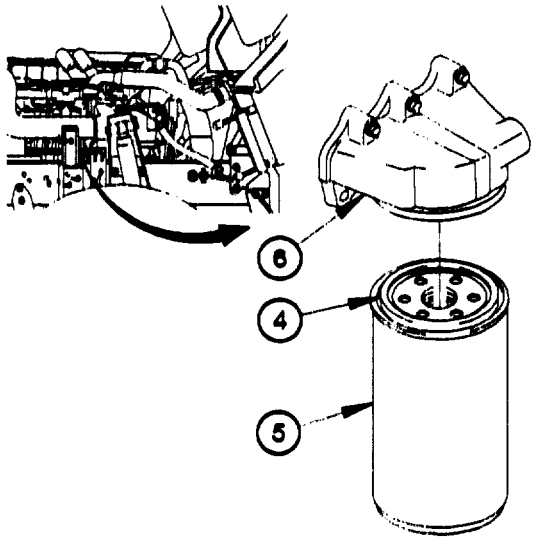
XC04101A

(1) Install preformed packing (1) on oil pan drain plug (2),

(2) Install oil pan drain plug (2) in oil pan (3).

(3) Apply a thin coat of lubricating oil to oil filter gasket (4)

(4) Install oil filter (5) on oil filter bare (6), hand tight.



XC04102A

3-4. ENGINE OIL FILTER REPLACEMENT (CONT)

c. Follow-On Maintenance.

(1) Add oil to engine (Appendix H).

(2) Lower cab (TM 9-2320-365-10).

(3) Check for oil leaks under vehicle.

(4) Start engine (TM 9-2320-365-10).

(5) Raise cab (TM 9-2320-365-10).

(6) Check for oil leaks around oil filter and oil pan drain plug.

(7) Check engine oil level (TM 9-2320-365-10); if low, add oil (Appendix H).

(8) Lower cab (TM 9-2320-365-10).

(9) Shut down engine (TM 9-2320-365-10).

End of Task.

3-5. CRANKCASE BREATHER REPLACEMENT

This task covers:

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

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab raised (TM 9-2320-365-10).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Socket Set, Socket Wrench (Item 35, Appendix C)

Materials/Parts
Rag, Wiping (Item 51, Appendix D)
Packing, Preformed (Item 184, Appendix G)
Oil, Lubricating, OE/HDO 30 (Item 46, Appendix D)

a. Removal.

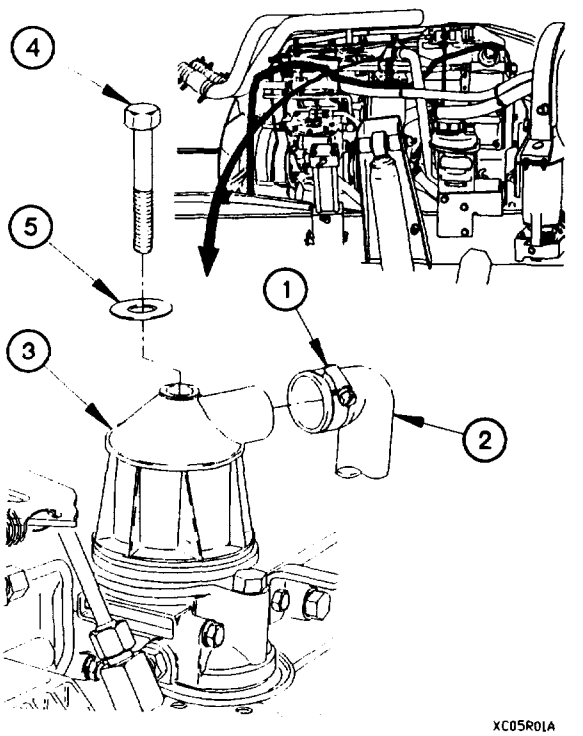
CAUTION

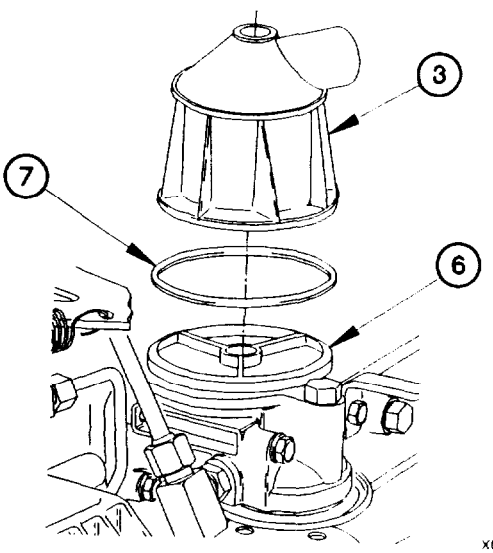
Wipe around fuel filter base before removing crankcase breather housing. Failure to comply may result in damage to equipment.

(1) Loosen hose clamp (1) on hose (2).

(2) Remove hose (2) from crankcase breather housing (3).

(3) Remove screw (4) and washer (5) from crankcase breather housing (3).





(4) Remove crankcase breather housing (3) from fuel filter base (6).

(5) Remove preformed packing (7) from fuel filter base (6). Discard preformed packing.

3-5. CRANKCASE BREATHER REPLACEMENT (CONT)

b. Installation.

(1) Apply a thin coat of lubricating oil to both rider of preformed packing (1).

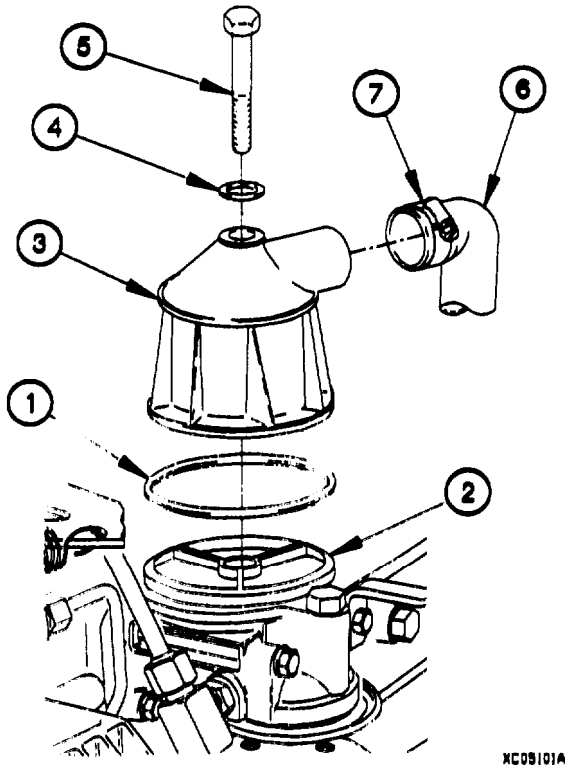
(2) Install preformed packing (1) on fuel filter base (2).

(3) Position crankcase breather housing (3) on fuel filter base (2) with washer (4) and screw (5).

(4) Tighten screw (5) to 96-144 lb-in. (11-16 N•m).

(6) Position hose (6) on crankcase breather housing (3) wlth clamp (7),

(6) Tighten clamp (7) to 35-45 lb-in. (4-5 N•m).



c. Follow-On Maintenance

(1) Lower cab (TM 9-2320-365-10).

(2) Start engine (TM 9-2320-365-10).

(3) Check for oil leaks under vehicle.

(4) Raise cab (TM 9-2320-365-10).

(6) Check for oil leaks around breather housing gasket.

(7) Lower cab (TM 9-2320-365-10).

(7) Shut down engine (TM 9-2320-365-10).

End of Task.

3-6. ENGINE AND TRANSMISSION OIL SAMPLING VALVES REPLACEMENT

This task covers:

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

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab raised (TM 9-2320-365-10).

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Pan, Drain (Item 24, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts
Dispenser, Pressure Sensitive Adhesive Tape (Item 21, Appendix D)
Packing, Preformed (Item 166, Appendix G)
Antiseize Compound (Item 14, Appendix D)

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. Removal.

(1) Position drain pan under transmission oil sampling valve (1) and engine oil sampling valve (2).

NOTE

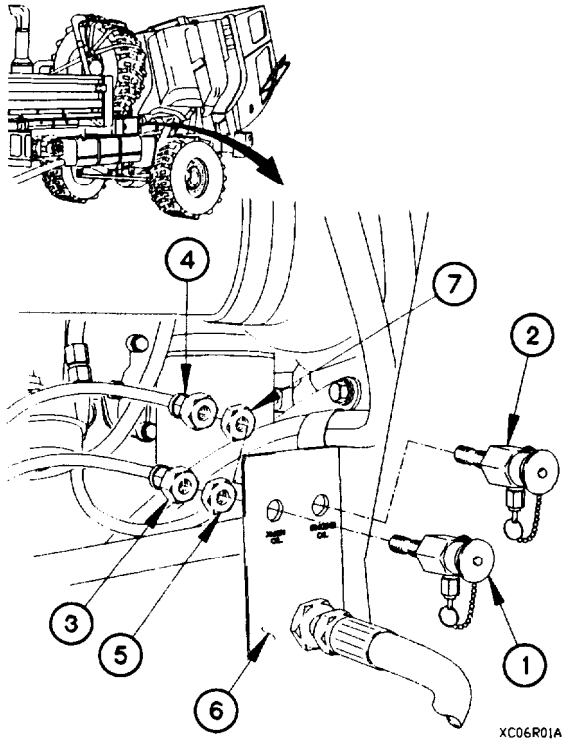
Tag hoses and connection points prior to disconnecting.

(2) Disconnect transmission oil sampling hose (3) from transmission oil sampling valve (1) .

(3) Disconnect engine oil sampling hose (4) from engline oil sampling valve (2).

(4) Remove nut (5) and transmission oil sampling valve (1) from bracket (6).

(50 Remove nut (7) and engine oil sampling valve (2) from bracket (6).



3-6. ENGINE AND TRANSMISSION SAMPLING VALVE REPLACEMENT (CONT)

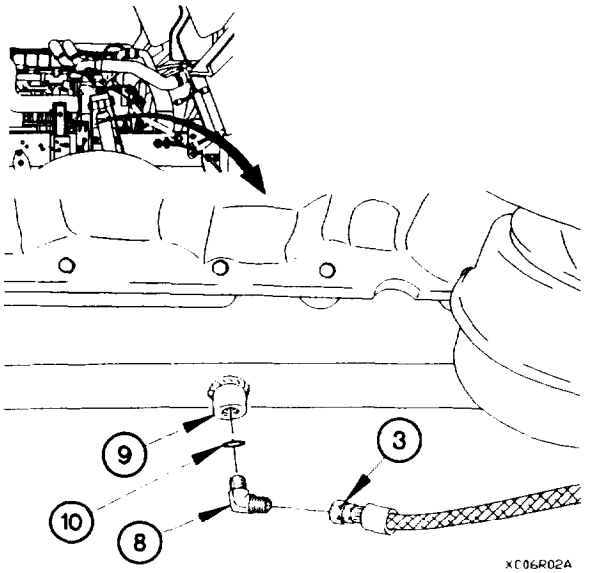
(6) Remove transmission oil sampling hose (3) from 45-degree fitting (8).

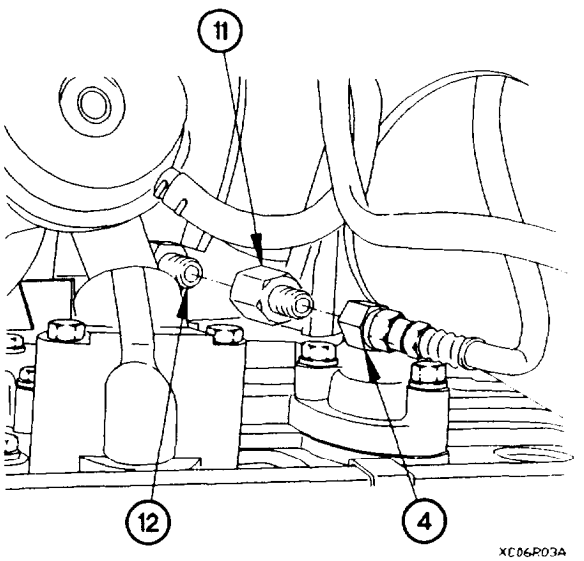
NOTE

Note orientation of fitting prior to removal.

(7) Remove 45-degree fitting (8) from transmission oil cooler tube (9).

(8) Remove preformed packing (10) from 45-degree fitting (8). Discard preformed packing.





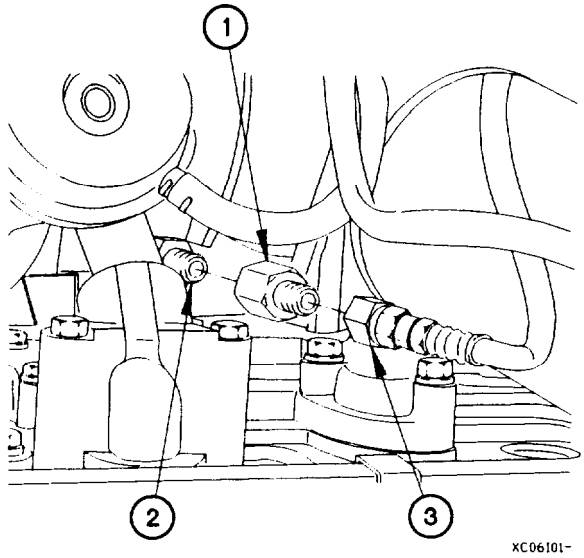
(9) Remove engine oil sampling hose (4) from adapter (11).

(10) Remove adapter (11) from 90-degree fitting (12).

b. Installation.

WARNING

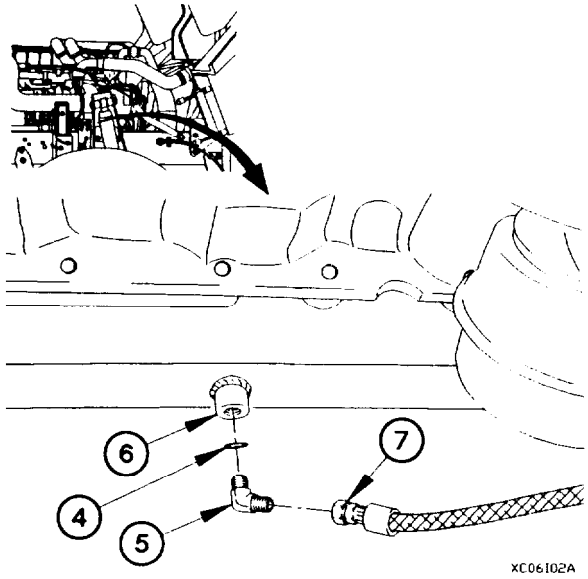
Adhesive, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. Keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to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



(1) Apply antiseize compound to threads of adapter (1).

(2) Install adapter (1) on 90-degree fitting (2).

(3) Install engine oil sampling hose (3) on adapter (1).



(4) Install preformed packing (4) on 45-degree fitting (5).

(5) Install 45-degree fitting (5) in transmission oil cooler tube (6).

(6) Install transmission oil sampling hose (7) on 45-degree fitting (5).

3-6. ENGINE AND TRANSMISSION SAMPLING VALVE REPLACEMENT (CONT)

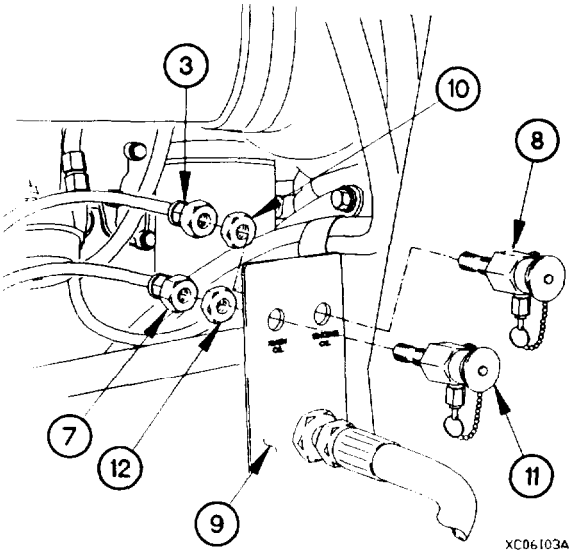
(7) Position engine oil sampling valve (8) on bracket (9) with nut (10).

(8) Position transmission oil sampling valve (11) on bracket (9) with nut (12).

(9) Tighten nuts (10 and 12) to 67 lb-in. (8 N•m).

(10) Install engine oil sampling hose (3) on engine oil sampling valve (8).

(11) Install transmission oil sampling hose (7) on transmission oil sampling valve (11).



c. Follow-On Maintenance.

(1) Lower cab (TM 9-2320-365-10).

(2) Check for oil leaks under vehicle.

(3) Start engine (TM 9-2320-365-10).

(4) Raise cab (TM 9-2320-365-10).

(5) Check for oil leaks around transmission and engine oil sampling hoses and valves.

(6) Lower cab (TM 9-2320-365-10).

(7) Shut down engine (TM 9-2320-365-10).

End of Task.

3-7. ENGINE OIL FILL TUBE REPLACEMENT

This task covers:

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

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Cab raised (TM 9-2320-365-10).
Transmission oil fill tube removed (para 8-13).

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Wrench, Torque, 0-175 lb-ft (Item 57, Appendix C)
Screwdriver Attachment, Socket Wrench (Item 46, Appendix B)

Tools and Special Tools (Cont)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Socket Set, Socket Wrench (Item 35, Appendix C)

Materials/Parts
Nut, Self-Locking (2) (all models except M1081) (Item 148, Appendix G)
Nut, Self-Locking (M1081) (Item 148, Appendix G)

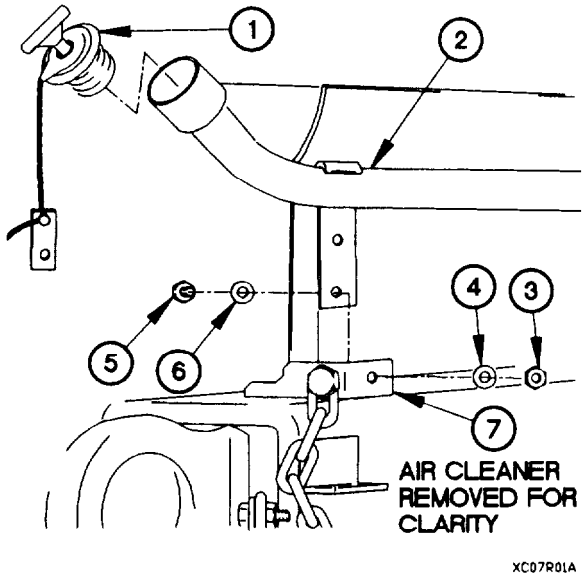
a. Removal.

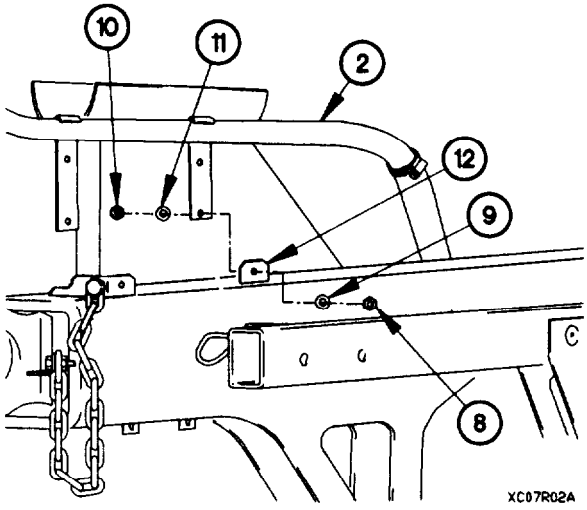
(1) Remove cap (1) from engine oil fill tube (2).

NOTE

Perform steps (2) and (3) on all models except M1081.

(2) Remove self-locking nut (3), washer (4), engine oil fill tube (2), screw (5), and washer (6) from radiator overflow tank bracket (7). Discard self-locking nut.





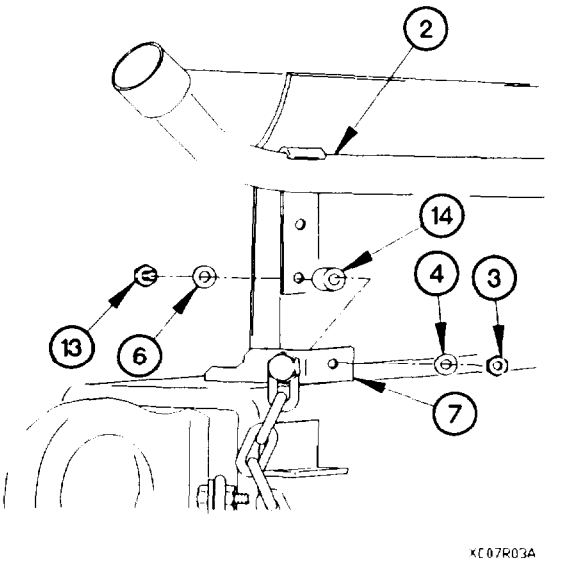
(3) Remove self-locking nut (8), washer (9), engine oil fill tube (2), screw (10), and washer (11) from front lifting beam (12). Discard self-locking nut.

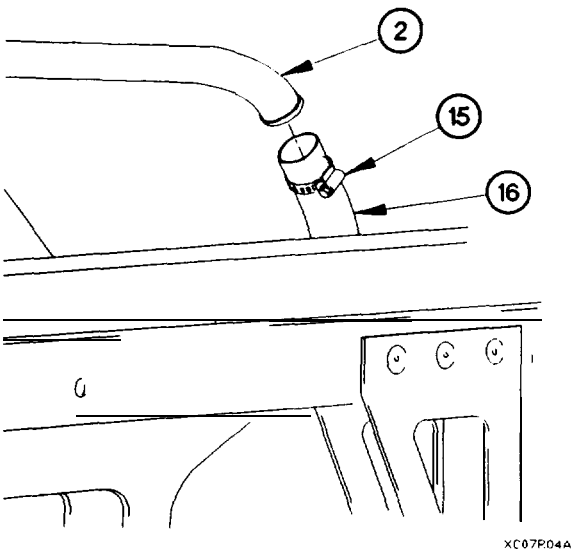
3-7. ENGINE OIL FILL TUBE REPLACEMENT (CONT)

NOTE

Perform step (4) on M1081.

(4) Remove self-locking nut (3), washer (4), engine oil fill tube (2), screw (13), washer (6), and spacer (14) from radiator overflow tank bracket (7). Discard self-locking nut.





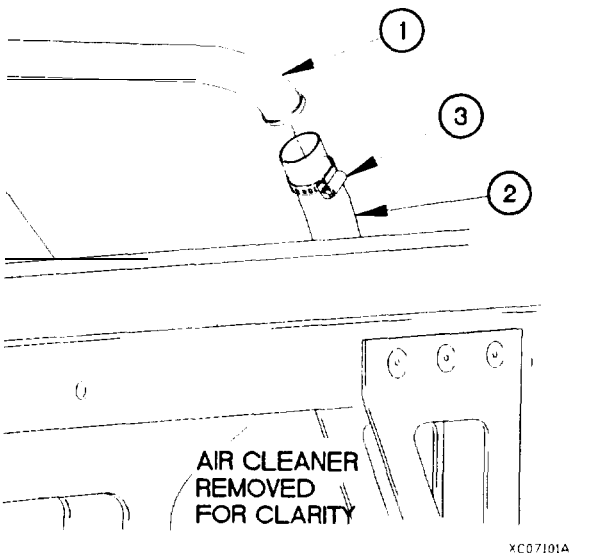
(5) Loosen clamp (15) on engine oil fill hose (16).

(6) Remove engine oil fill tube (2) from engine oil fill hose (16).

b. Installation.

(1) Position engine oil fill tube (1) in engine oil fill hose (2) with clamp (3).

(2) Tighten clamp (3) to 27-44 lb-in. (3-5 N•m).

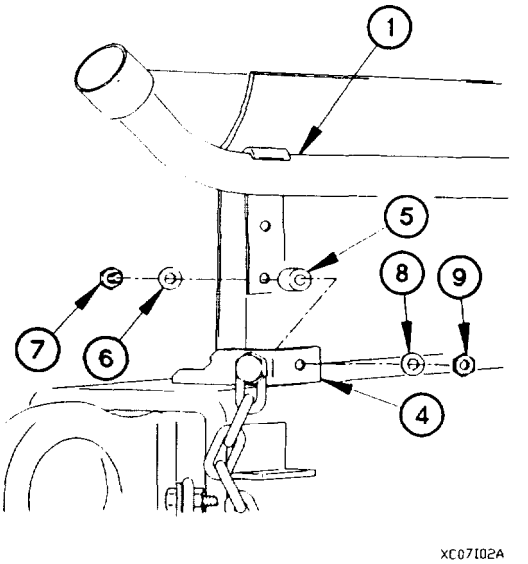


NOTE

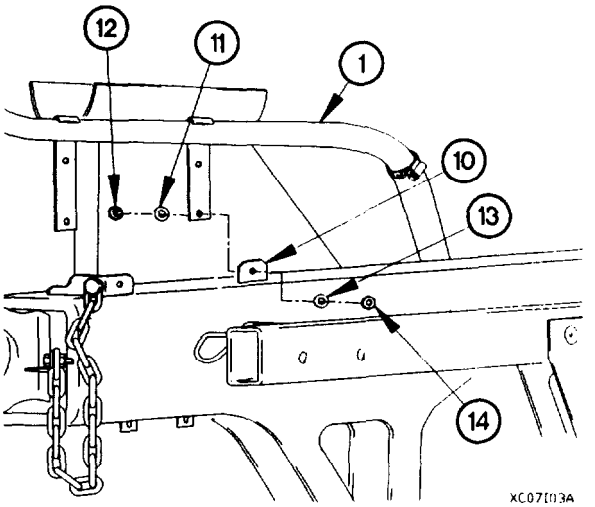
Perform steps (3) and (4) on M1081.

(3) Position engine oil fill tube (1) on radiator overflow tank bracket (4) with spacer (5), washer (6), screw (7), washer (8), and self-locking nut (9).

(4) Tighten self-locking nut (9) to 21-26 lb-ft (29-35 N•m.



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XC07I03A

NOTE

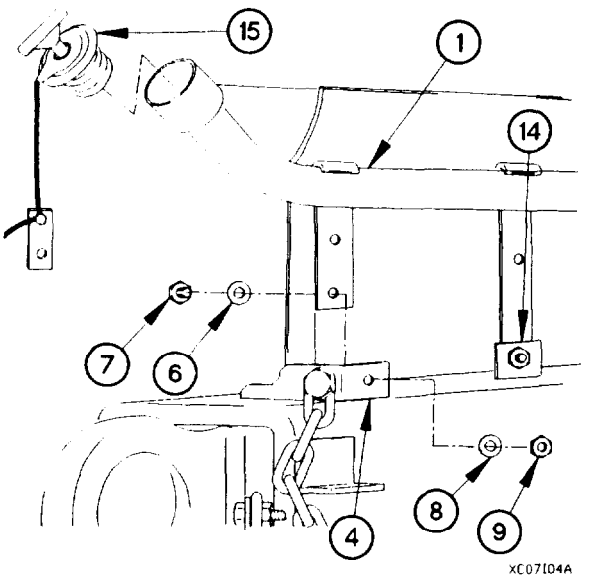
Perform steps (5) through (7) on all models except M1081.

(5) Position engine oil fill tube (1) on front lifting beam (10) with washer (11), screw (12), washer (13), and self-locking nut (14).

(6) Position engine oil fill tube (1) on radiator overflow tank bracket (4) with washer (6), screw (15), washer (8), and self-locking nut (9).

(7) Tighten self-locking nuts (9 and 14) to 21-26 lb-ft (29-35 N•m).

(8) Install cap (15) on engine oil fill tube (1).



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c. Follow-On Maintenance.

(1) Install transmission oil fill tube (para 8-13).

(2) Lower cab (TM 9-2320-365-10).

End of Task.

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.

Equipment Control Record . . . . . DA Form 2408-9
Equipment Inspection and Maintenance Worksheet . . . . . DA Form 2404
Maintenance Request . . . . . DA Form 2407
Packaging Improvement Report . . . . . DD Form 6
Processing and Deprocessing Record of Shipping, Storage, and Issue of Vehicles and SpareEngines . . . . . DDForm 1397
Product Quality Deficiency Report . . . . . SF 368
Recommended Changes to DA Publications and Blank Forms . . . . . DA Form 2028-2
Report of Item Discrepancy (ROID) . . . . . SF 364

A-4. OTHER PUBLICATIONS

The following publications contain information pertinent to the LMTV and associated equipment.

a. Safety.

First Aid for Soldiers FM21-11
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. LMTV.

Direct Support and General Support Maintenance Manual for M1078 Series, 2 1/2-Ton, 4x4, Light Medium Tactical Vehicle (LMTV) . . . . . TM 9-2320-365-34
Hand Receipt Covering Contents of Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL), for M1078 Series, 2 1/2-Ton, 4x4, Light Medium Tactical Vehicles (LMTV) . . . . . TM 9-2320-365-10-HR
Operator's Manual for M1078 Series, 2 1/2-Ton, 4x4, Light Medium Tactical Vehicle (LMTV) . . . . . TM 9-2320-365-10
Unit, Direct Support, and General Support Repair Parts and Special Tools List for M1078 Series, 2 1/2-Ton, 4x4, Light Medium Tactical Vehicle (LMTV) . . . . . TM 9-2320-365-34P
Warranty Program for M1078 Series, 2 1/2-Ton, 4x4, Light Medium Tactical Vehicle (LMTV). . . . . TB 9-2300-365-15

c. General Vehicle Operation.

Army Motor Transport Units and Operations . . . . . FM 55-30
Deepwater Fording of Ordnance Material . . . . . TM 9-238
Manual for the Wheeled Vehicle Driver . . . . . FM 21-305
Safety Prevention of Motor Vehicle Accidents . . . . . AR 385-55
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
Metal Body Repair and Related Operations . . . . . FM 43-2
Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materials Including Chemicals . . . . . TM 9-247
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 9-491 0-571-12&P
Operator's Manual, Radio Set, AN/VRC-46 . . . . . TM 11-5820-401-10-1

Operator's Manual, Radio Set, AN/VRC-9OA . . . . . 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.. . . . . FM5-125
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 Protection . . . . . FM 3-4
NBC Decontamination . . . . . FM 3-5

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's, 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
Operator's, Organizational, Direct Support, and General Support Maintenance Manual, Air Conditioner, Horizontal Compact, 18,000 BTU/HR, 208 Volt, 3 Phase, 50/60 Hertz, Model F18H-3S . . . . . TM 5-4120-384-14
Unit and Direct Support Maintenance, Repair Parts and Special Tools List for Heater, Space, Multifuel with Blower, 60,000 BTU/HR, 12OV, Model UH-68G, NSN 4520-01-203-4410, and Model UH-68GI, NSN 4520-01-297-6803 . . . . . TM 5-4520-253-23P

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

A-4. OTHER PUBLICATIONS (CONT)

i. Land, Sea, and Air Shipment.

Airdrop of Supplies and Equipment: Rigging 2 1/2-Ton Trucks . . . . . FM 10-520
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
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' including fault location/troubleshooting', 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.

'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 Ill.

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 Ill.

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.

[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 LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
0100	ENGINE ASSEMBLY	Inspect		0.1				78	
		Test		1.5	0.3			78,79	
		Adjust			3.0			56,60,78,80	
		Service		0.8				57,59,78	
		Replace			7.0			16,56,59,61,78,79	
		Repair		0.4	1.6	3.3		16,31,32,44,56,59,60,61,78,79	
0101	CYLINDER HEAD ASSEMBLY	Inspect			0.1			78	
		Replace			2.0			44,56,59,60,78	
		Repair				2.5		56,59,60,61,62,78,81	
0102	CRANKSHAFT	Replace				16.0		56,57,60,71,78	
		Repair			3.8	16.0		16,31,32,56,59,60,61,78	
0103	FLEXPLATE, ENGINE	Replace			6.5			56,59,78	
		Repair			1.0			56,49,78	
0104	PISTON ASSEMBLY	Replace				9.0		56,57,59,60,62,78,79	
		Repair				0.6		78	
0105	CAMSHAFT ASSEMBLY	Replace				3.1		14,56,57,49,60,78	
		Repair				1.2		56,78	
0105	ROCKER ARM AND PUSH RODS	Replace			2.0			44,59,60,61,78	
		Repair			0.3			44,78	
0105	COOLER, ENGINE OIL	Replace			1.3			56,78	
		Repair			0.3			56,78	
0108	MANIFOLDS, INLET AND EXHAUST	Replace			1.5			56,60,61,78,79	
0301	INJECTOR ASSEMBLY, FUEL	Replace			2.1			44,57,78,80	
		Adjust			1.6			56,78,79,80	
0304	AIR INTAKE SYSTEM	Service		0.3					
		Repair		0.3				46,57	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Direct	General		Tools and	
Group Number	Component/Assembly	Maintenance Function	C	O	Support F	Support H	Depot D	Equipment Ref Code	Remarks Code
0304	INTAKE AIR CLEANER	Service		0.2					
		Replace		0.8				6,46,57, 78	
		Repair		0.4				57,78	
0305	TURBOCHARGER	Replace			0.8			56,61,78, 79	
0306	FUEL TANK	Inspect	0.1						
		Replace		1.5				57,59,78	
0308	GOVERNOR, ENGINE SPEED	Replace			1.0			57,60,76, 78,79	
		Repair		0.5	0.7			57,78	
0309	FILTER, FUEL/WATER SEPARATOR	Inspect	0.2						
		Service	0.2	0.3				78	
		Replace		0.5				57,78	
0311	ETHER STARTING AID	Replace		0.6				57,59,78	
0312	ACCELERATOR/HAND THROTTLE	Replace		0.5				57,58	
		Adjust		0.2				57,78	
0401	EXHAUST MUFFLER/PIPES	Inspect	0.1	0.2					
		Replace		0.9				57,59,78	
0501	RADIATOR/CHARGER AIR COOLER	Inspect	0.1						
		Replace		2.5				2,27,53, 59,78	
		Service		1.5				59,78	
		Repair		0.6	2.0			2,27,56, 59,78	
0501	RADIATOR OVERFLOW TANK	Replace		0.5				46,57,78	
		Repair		0.3				78	
0502	SHROUD, FAN	Replace		1.0				57,59,78, 86	
0503	HOSES, WATER	Replace		0.5				57,59,78, 86	
0504	PUMP, WATER	Replace		0.8				15,57,59, 78,86	
0505	CLUTCH, ENGINE FAN	Inspect		1.0				57	
		Service		0.2				59	
		Replace		1.5				2,53,57, 78	
		Repair			1.2			56,59,60, 61,78,79	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Direct	General		Tools and	
Group Number	Component/Assembly	Maintenance Function	C	O	Support F	Support H	Depot D	Equipment Ref Code	Remarks Code
0601	ALTERNATOR, 100 AMP	Inspect		0.2					
		Test		0.5	1.5			59,63,78	
		Replace		1.0				59,78	
		Repair		0.2	0.5			38,56,57, 59,63,78, 79	
0603	STARTING MOTOR, ENGINE	Inspect		0.1					
		Test		0.5	0.5			57,63	
		Replace		1.5				2,9,57, 59,78	
		Repair			2.1			52,56,59, 60,76,78	
0606	SOLENOID, FUEL SHUTOFF	Replace			1.0			60,78,80	
0607	CABLE ASSEMBLY, DASHBOARD	Test		0.5				56	
		Replace		2.9				57,59,76, 78	
		Repair		1.0	0.6			56,57,61, 78	
0607	DISPLAY, LIGHTED INDICATOR	Test		0.3					
		Replace		0.5				78,86	
		Repair		0.3				78	
0609	LIGHT ASSEMBLY, BACKUP	Inspect	0.1						
		Replace		0.8				57,78	
		Repair		0.3				78	
0609	LIGHT, BACKOUT DRIVE	Inspect	0.1						
		Replace		0.8				57,59,78	
		Repair		0.5				78	
0609	TAILIGHT ASSEMBLY, COMPOSITE	Inspect	0.1						
		Replace		0.8				57,59,78	
		Repair		0.5				78	
0609	LIGHT ASSEMBLY, FRONT TURN SIGNAL AND PARK	Inspect	0.1						
		Replace		0.8				57,59,78	
		Repair		0.5				78	
0609	HEADLIGHT	Inspect	0.1						
		Adjust		0.4				78	
		Replace		1.0				57,59,78	
0610	AUDIBLE ALARM	Inspect	0.1						
		Replace		0.6				78	
0611	HORN, CAB	Inspect	0.1						

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Direct	General		Tools and	
Group		Maintenance			Support	Support	Depot	Equipment	Remarks
Number	Component/Assembly	Function	C	O	F	H	D	Ref Code	Code
		Replace		0.4				57,78	
0612	BOX ASSEMBLY, BATTERY	Inspect	0.1						
		Test		0.5				57,78	
		Service		0.3				57	A
		Replace		1.0				57,59,78	
		Repair		0.2				63	
0613	CABLE ASSEMBLY, LH/RH CAB AND DOOR MARKER LIGHTS	Inspect	0.1						
		Replace		0.8				78	
		Repair		0.7				63	
0613	CABLE ASSEMBLY, LOWER, CAB MARKER LIGHTS, M1081	Inspect	0.1						
		Replace		0.6				78,86	
		Repair		0.5				63	
0613	CABLE ASSEMBLY, UPPER, CAB CLEARANCE AND MARKER LIGHTS, M1081	Inspect	0.1						
		Replace		0.8				78,86	
		Repair		0.5				63	
0613	CABLE ASSEMBLY, STE/ICE-R	Replace		1.0				78	
		Repair		0.5	0.8			63	
0613	CABLE ASSEMBLY, CAB CLEARANCE AND MARKER LIGHTS	Inspect	0.1						
		Replace		1.2				57,78	
		Repair		0.5	0.8			63	
0613	CABLE ASSEMBLY, WARNING LIGHT	Replace		0.5				48,78,86	
		Repair		0.3	0.5			63	
0613	CABLE ASSEMBLY, WINDSHIELD WASHER PUMP/EMI	Replace		0.5				78	
		Repair		0.3				63	
0613	CABLE ASSEMBLY, ENGINE CONTROL	Inspect	0.1						
		Replace		2.3				57,78	
		Repair		0.5	0.5			63	
0613	CABLE ASSEMBLY, FRONT INTERVEHICULAR, 12 VDC	Replace		0.8				59,78	
		Repair		0.2				63	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4)					(5)	(6)
			Maintenance Level						
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
0613	CABLE ASSEMBLY, FRONT LIGHTS	Replace		2.0				57,59,78 86	
		Repair		0.5	0.5			63	
0613	CABLE ASSEMBLY, REAR LIGHTS	Replace		2.8				57,59,78	
		Repair		0.5	0.5			63	
0613	CABLE ASSEMBLY, PTO	Replace		1.6				57,59,78	
		Repair		0.5	0.8			63	
0613	CABLE ASSEMBLY, REAR INTERVEHICULAR, 24 VDC	Replace		0.6				59.78	
		Repair		0.5	0.8			63	
0613	CABLE ASSEMBLY, START AND CHARGING	Replace		2.0				57,78	
		Repair		0.5	0.8			63	
0613	CABLE ASSEMBLY, WINCH CONTROL VALVE	Replace		1.8				57,59,78	
		Repair		0.5	0.8			63	
0705	WTEC II VEHICLE INTERFACE MODULE (VIM)	Replace		0.6				78	
		Repair		0.8				78	
0708	TORQUE CONVERTER	Adjust			0.9			18,59,60, 78	
		Remove/ Install			0.8			56,59,60, 61,78	
		Repair			1.3			30,56,59, 60,62,78	
0710	TRANSMISSION	Inspect		0.4				78	
		Service		1.5				57,59,78	
		Replace			7.0			56,59,60, 61,78,79, 84	
		Repair		0.4	2.7	1.9		3,18,19, 24,25,27, 41,56,57, 59,60,61, 78,79,84	
0710	MODULE, FRONT SUPPORT	Remove/ Install				2.0		56,57,59, 60,61,78	
		Repair				0.7		30,56,57, 59,60,61, 78	
0710	MODULE, PLANETARY GEAR (P1)	Remove/ Install				2.0		59,60,71, 78	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
		Repair				1.5		59,60,71, 78	
0710	MODULE, PLANETARY (P2)	Remove/ Install				2.0		3, 56, 59, 60, 61, 78	
		Repair				1.9		3, 19, 56, 59, 60, 61, 71, 78	
0710	PLANETARY CARRIER (P3)	Remove/ Install				2.0		3, 56, 60, 78	
		Repair				1.9		3, 27, 56, 60, 78	
0710	MODULE, MAIN SHAFT	Remove/ Install				2.0		59, 60, 78	
		Repair				0.4		59, 60, 78	
0710	MODULE, CONVERTER HOUSING	Remove/ Install				4.3		3, 56, 57, 59, 60, 78	
		Repair				2.0		3, 19, 25, 56, 57, 59, 60, 78	
0713	CLUTCH ASSEMBLY C3/C4/C5, TRANSMISSION	Remove/ Install				2.0		56, 57, 59, 60, 78	
		Repair				1.0		41, 56, 57, 59, 60, 78	
0713	MODULE, ROTATING CLUTCH	Remove/ Install				2.0		3, 56, 59, 60, 78	
		Repair				2.4		3, 19, 24, 56, 59, 60, 78	
0714	VALVE ASSEMBLY, CONTROL MODULE	Remove/ Install			2.0			56, 59, 60, 61, 78, 79	
		Repair		1.0	2.5			59, 61, 78, 79	
0714	BODY ASSEMBLY, MAIN VALVE	Service		1.5				57, 59, 78	
		Remove/ Install			2.0			56, 59, 60, 61, 78, 79	
		Repair		1.5	2.5			56, 59, 60, 61, 78, 79	
0801	MODULE, TRANSFER CASE	Adjust				1.0			
		Remove/ Install				2.0		21, 56, 57, 59, 60, 61, 71, 74, 78, 79	
		Repair				1.1		23, 27, 33, 50, 56, 57, 60, 78	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
0802	HOUSING ASSEMBLY, C6 AND C7 CLUTCH	Remove/ Install				2.0		56, 59, 60, 61, 78	
		Repair				0.8		19, 23, 26, 27, 28, 29, 56, 59, 60, 61, 62, 71, 78	
0802	CONTROL VALVE ASSEMBLY	Remove/ Install				2.0		56, 59, 61 78, 79	
		Repair				1.0		56, 59, 61 78, 79	
0804	PUMP ASSEMBLY, OIL	Replace				1.0		79	
		Repair				0.8		79	
0900	PROPELLER SHAFT	Inspect				0.1			
		Service				0.5		59	
		Repair				0.6		57, 59, 78	
		Replace				0.5		57, 59, 78	
1000	AXLE ASSEMBLY, FRONT	Inspect	0.1	0.3	0.7			78	
		Adjust			1.0			57, 79	
		Service		0.5				59, 78	
		Replace			4.5			56, 57, 59, 60, 61, 70, 78	
		Repair		2.3	2.2	6.0		56, 57, 59, 60, 61, 78	
1002	CARRIER ASSEMBLY, DIFFERENTIAL	Inspect		0.1	0.1	0.1		78, 79	
		Service			0.3			78	
		Replace				4.6		21, 56, 57, 59, 60, 78, 79	
		Repair				2.7		56, 57, 59, 60, 78, 79	
1004	STEERING KNUCKLE, AXLE	Inspect			0.2				
		Adjust			2.5			79	
		Service			0.3			79	
		Replace			5.1			56, 57, 59, 60, 71, 78	
1100	AXLE ASSEMBLY, REAR	Inspect	0.1	0.4	0.7				
		Service		0.8				57, 59, 78	
		Replace			4.5			34, 56, 57, 59, 60, 78 84	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
		Repair			0.9	6.0		21,56,57, 59,60,78 84,85,	
1102	CARRIER ASSEMBLY, DIFFERENTIAL	Inspect		0.1	0.1	1.0		78,79	
		Service			0.3			78	
		Replace				4.6		21,56,57 59,60,78, 79,85	
		Repair				2.7		21,37,56, 57,59,60, 71,73,78	
1202	BRAKE ASSEMBLY, FRONT AXLE	Inspect		0.1	1.0			59,78,79	
		Adjust		0.4				57,59,78	
		Repair		1.5	0.5			57,59,78, 83	
1202	BRAKE ASSEMBLY, REAR AXLE	Inspect		0.1	1.0			59,78,79	
		Adjust		0.4				57,59,78	
		Repair		1.5	0.5			57,59,78, 83	
1208	BRAKE AIR CHAMBER	Inspect		0.1					
		Replace		0.5				57,59,78	
1209	AIR COMPRESSOR	Adjust		0.6				59,78	
		Replace			1.2			56,60,61, 78,79	
1311	WHEEL ASSEMBLY, PNEUMATIC TIRE	Inspect	0.1					57	B
		Replace	1.0	1.2				57,59	
		Repair		2.0				57,59	
1313	TIRE, PNEUMATIC	Replace		2.0				57,59	
1401	STEERING SYSTEM	Inspect		0.2					
		Adjust			1.0			56,60,78	
		Repair		1.0	1.5			54,56,57, 59,60,61, 78,79	
1407	STEERING GEAR ASSEMBLY	Replace			4.0			56,60,78	
1410	PUMP, POWER STEERING	Replace			1.5			47,56,59, 60,78	
1411	HOSES, POWER STEERING	Replace		0.3				57,59,78, 88	
1413	HYDRAULIC RESERVOIR, POWER STEERING	Service	0.1	0.5				78	
		Replace		0.8				59,78,86	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
1501	FRAME ASSEMBLY	Inspect	0.1	0.3					
		Repair		0.8	14.0			56, 57, 59, 60, 61, 78, 79	
1504	RETAINER, SPARE TIRE	Inspect	0.1	0.1					
		Replace		3.0				57, 59, 78	
		Repair		0.6				57, 59, 78	
1601	LEAF SPRING ASSEMBLIES	Inspect	0.1	0.2					
		Service		0.3				57	
		Replace			2.7			56, 57, 59, 60, 78, 79	
1604	SHOCK ABSORBERS	Inspect	0.1	0.3					
		Replace		0.5				57, 59, 78	
1605	STABILIZER BAR, REAR	Inspect		0.2					
		Replace		2.0				57, 59, 68, 78	
		Repair		1.5				57, 78	
1801	CAB BODY, STANDARD	Inspect	0.1						
		Replace			60.0			56, 57, 60, 61, 78, 79	
		Repair		0.6				57, 59, 78	
1801	CAB BODY, AIR DROP	Inspect	0.1						
		Replace			60.0			56, 57, 60, 61, 78, 79	
		Repair		0.6				57, 59, 78	
1801	CAB DOORS, STANDARD	Inspect	0.1						
		Replace			1.0			55, 59, 78	
		Repair		2.7				49, 57, 78	
1801	CAB DOORS, AIR DROP	Inspect	0.1						
		Replace			1.0			55, 59, 78	
		Repair		2.7				49, 57, 78	
1801	SUPPORT ASSEMBLY, CAB FRONT	Inspect	0.1						
		Repair		1.1				57, 59, 78	
		Replace			3.0			8, 13, 57, 59, 60, 78, 79	
1801	SUPPORT ASSEMBLY, CAB REAR	Inspect	0.1						
		Replace		1.0				57, 59, 78	
		Repair		0.8				57, 78	
1802	WINDSHIELD	Replace			0.6			55, 59, 78	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
1802	FENDER, VEHICULAR, FRONT	Inspect	0.1						
		Replace		2.0				57, 59, 78	
		Repair		0.5				57, 78	
1803	ROOF, CAB, M1081	Replace		1.0				45, 50, 57, 59, 78	
1805	FLOOR COVERING, CAB	Replace		1.0				57, 78	
1806	SEATS	Replace							
1808	TOOL BOX ASSEMBLY	Inspect	0.1						
		Replace		0.5				47, 57, 59, 78	
		Repair		0.5				57, 59, 78	
1808	STOWAGE BOX, CAB	Replace		0.8				57, 78	
		Repair		0.5				57, 78	
1810	BODY, CARGO	Inspect	0.1						
		Replace			4.0			56, 57, 59, 60, 78	
		Repair		0.5				20, 35, 36, 42, 43, 47, 57, 59, 64, 72, 76, 78	
1812	BODY ASSEMBLY, VAN	Inspect	0.1	0.1					
		Repair		0.5				20, 35, 36, 42, 43, 47, 57, 59, 64, 72, 76, 78	
1812	DOOR, ACCESS, LEFT	Inspect	0.1						
		Replace		2.3				78	
		Repair		0.1				57, 59, 78	
1812	DOOR, ACCESS, RIGHT	Inspect	0.1						
		Replace		1.4				78	
		Repair		0.4				57, 59, 78	
1812	WINDOW SASH ASSEMBLY	Inspect	0.1						
		Replace		0.2				78	
		Repair		0.4				57, 59, 78	
1812	BOX ASSEMBLY, RELAY	Inspect	0.1	0.1					
		Replace		0.6				78	
		Repair		0.1				78	
		Test	0.1	0.5				59, 78	
1812	FAN ASSEMBLY	Inspect	0.1						
		Replace		1.8				20, 76, 78	
		Repair		0.5				78	
2001	WINCH, 11K SELF-RECOVERY (SRW)	Inspect	0.1	4.0					

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
		Service		0.2				59	
		Replace			1.0			59, 60, 78	
		Repair			0.9			59, 60, 78	
2004	POWER TAKEOFF	Inspect	0.1						
	ASSEMBLY (PTO)	Replace			1.0			56, 57, 59, 60, 78	
		Repair			0.8			56, 57, 59, 60, 78	
2202	MOTOR, WIPER,	Test		0.5					
	WINDSHIELD	Replace		1.0				78	
2207	HEATER ASSEMBLY,	Replace		2.0				57, 59, 78	
	PERSONNEL	Repair		1.0				57, 59, 78	
2210	DECALS	Inspect	0.1						
		Replace		1.0				78	
2401	POWER UNIT,	Inspect	0.1						
	AIR/HYDRAULIC	Test		0.2					
		Service		1.0					
		Replace		3.0				57, 59, 78	
		Repair			2.0			57, 59, 60, 69, 78, 79	
2402	MANIFOLD, HYDRAULIC	Inspect	0.1						
		Test		0.2					
		Replace		1.5				51, 57, 59, 78	
		Repair		1.0				51, 57, 59, 78	
2402	LATCH, HYDRAULIC, CAB	Inspect	0.1						
		Adjust		0.5				57, 59, 78	
		Replace		0.5				57, 59, 78	
2404	SUSPENSION CYLINDER	Inspect							
		Replace							
2406	FILTER, HYDRAULIC	Service		0.3				59, 78	
		Replace		0.2				59, 78	
2408	RESERVOIR, HYDRAULIC	Replace		1.0				57, 59, 78	
		Repair		0.5				57, 59, 78	
3303	CAB ARCTIC KIT	Inspect	0.2						
		Test		1.0					

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
		Remove/ Install			6.0			56, 57, 59, 60, 78, 79, 86	
		Replace		1.0				57, 59, 78, 86	
		Repair		1.7				57, 59, 78, 86	
3303	CABLE ASSEMBLY, ARCTIC KIT WITH PTO	Replace		1.8				57, 59, 78	
		Repair		0.5	0.5			63	
3303	CARGO ARCTIC KIT	Inspect	0.2						
		Test		1.0					
		Remove/ Install			12.0			56, 57, 59, 60, 78, 79, 86	
		Replace		1.0				57, 59, 78, 86	
		Repair		1.7				57, 59, 78, 86	
3303	FURNACE ASSEMBLY, CARGO	Replace		3.0				57, 59, 78, 86	
		Repair		0.5				57, 59, 78, 86	
3303	CABLE ASSEMBLY, FURNACE, CARGO	Inspect	0.1						
		Replace		0.5				57, 59, 78	
		Repair		0.7				57, 59, 78	
3303	CONTROL UNIT ASSEMBLY, FURNACE	Replace		1.5				57, 59, 78	
		Repair		0.5				4, 20, 22, 39, 57, 78	
3303	HEATER ASSEMBLY, VEHICULAR	Inspect	0.1						
		Test		0.5					
		Service		0.5				59, 78	
		Replace		1.5				57, 78, 86	
		Repair		1.5				57, 78, 86	
3303	SWINGFIRE ADAPTER KIT	Inspect	0.2						
		Test		1.0					
		Remove/ Install		3.0	7.0			57, 59, 78, 86	
		Replace		1.0				57, 59, 78, 86	
		Repair		1.7				57, 59, 78, 86	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
3303	HEATER KIT, M1079	Inspect	0.1						
		Remove/ Install		2.5				78	
3305	FORDING KIT, DEEP WATER	Inspect	0.1						
		Remove/ Install		4.0				57, 59, 78	
3307	ALTERNATOR KIT, 200 AMP	Inspect	0.1	0.2					
		Test		0.5				59	
		Remove/ Install		2.0				57, 59, 78	
		Replace		1.0				57, 59, 78	
		Repair			0.5			56, 57, 60, 62, 78	
3307	ALTERNATOR, 200 AMP	Inspect		0.2					
		Test		0.5	1.5			59, 63, 78	
		Replace		1.0				57, 59, 78	
		Repair		0.2	0.5			56, 57, 60, 61, 63, 78	
3307	CRANE (LMHC), MATERIAL HANDLING, LIGHT	Inspect	0.1	0.1					
		Repair		0.5				59, 76, 78	
		Replace		0.5					
		Test		0.5					
3307	WEIGHT BLOCK AND WIRE ROPE, LMHC	Inspect	0.1						
		Replace		0.1				59, 78	
		Repair		0.5				59, 78	
		Test			0.5				
3307	WINCH, LMHC	Inspect	0.1						
		Replace			0.5			59, 78	
		Repair			1.0			59, 78	
		Test		0.5					
3307	MAST/SWING ASSEMBLY, LMHC	Inspect	0.1						
				0.1					
		Repair		0.5				76, 78	
		Test	0.1	0.5					
3307	TROOPSEAT KIT	Remove/ Install	1.0						

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
		Inspect	0.1						
		Replace		1.0					
		Repair		0.5				78	
3307	COVER KIT, CARGO SOFT TOP	Remove/ Install	1.5						
		Inspect	0.1						
		Replace		2.0					
		Repair		0.5					
3307	AIR CONDITIONER KIT, M1079	Inspect	0.1						
		Remove/ Install		1.5				59, 78	
3307	WARNING LIGHT ASSEMBLY, AMBER	Inspect	0.1						
		Repair		0.4				78	
		Test		0.2					
3401	MACHINE GUN RING KIT	Inspect	0.1						
		Remove/ Install			4.0			56, 57, 60, 78, 79, 84	
		Repair		1.1				10, 57, 78	
3402	MOUNT, SMALL ARMS	Inspect	0.1						
		Replace		0.3				78	
3909	CABLE ASSEMBLY, WARNING LIGHT	Inspect	0.1						
		Replace		0.5				78	
4316	AIR HOSE, CTIS	Inspect	0.1						
		Replace		0.4				59, 78	
4317	VALVE, INVERSION	Replace		0.5				59, 78	
4321	AIR DRYER	Inspect	0.1	0.1					
		Replace		1.0				57, 59, 78	
		Repair		0.6				57, 59, 78	
4702	GAUGE, AIR FILTER RESTRICTION	Replace		0.5				78	

Section III. TOOLS AND TEST EQUIPMENT FOR LMTV 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
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	5120-00-181-6754	GGG-C-1507
8	F	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-074-7557	FCOM19
9	O	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-236-9996	FCOM15
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
13	F	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-348-9473	AN8508-19A
14	H	DRIVER KIT, BEARING	4910-01-032-3128	8S0602
15	O	GAGE, BELT TENSION	6635-01-092-7462	0755-0101
16	O,F	GAGE, BELT TENSION	6635-01-143-2237	GA-424
17	O,F	GAGE, PRESSURE, 0-150 psi	6685-00-474-5721	111T1D05A01
18	F,H	GAGE, PROFILE	5220-01-388-1460	J-38548-1
19	H	HANDLE, DRIVE	5120-00-377-2259	J8092
20	O	HEATER, GUN TYPE, ELECTRIC	4940-00-561-1002	500A
21	F,H	HOLDING BAR, PINION	5120-01-166-0573	J3453
22	O	INSERTER AND REMOVER ELECTRICAL CONTACT	5120-00-915-4588	MS3447-16
23	H	INSERTER AND REMOVER, SPRING	5120-01-388-3660	J38573
24	H	INSERTER AND REMOVER, SPRING	5120-01-388-4436	J35923
25	H	INSERTER, BEARING AND BUSHING	5120-01-388-7841	J-38565
26	H	INSERTER, BEARING AND BUSHING	5120-01-389-0658	J35921-1
27	H	INSERTER, BEARING AND BUSHING	5120-01-390-1104	J 38569
28	H	INSERTER, BEARING AND BUSHING	5120-01-390-1105	J 38568-3
29	H	INSERTER, BEARING AND BUSHING	5120-01-391-5133	J 38579
30	F,H	INSERTER, BEARING AND BUSHING	5120-01-414-7398	J38566
31	F	INSERTER, SEAL	5120-01-362-2026	1U7430
32	F	INSERTER, SEAL	5120-01-362-2027	1U7598
33	F	INSTALLER, SEAL	N/A	J38574

Section III. TOOLS AND TEST EQUIPMENT FOR LMTV VEHICLES

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
34	F	JACK, LEVELING SUPPORT, VEHICLE	2590-00-231-7418	10876244
35	O	KEY, SOCKET HEAD SCREW	5120-00-984-0247	58010
36	O	LINK, CHAIN, END	4010-00-932-5013	NAS1049-16
37	H	PULLER KIT, UNIVERSAL	5180-00-089-3660	A57QB
38	F	PULLER KIT, UNIVERSAL	5180-01-124-1903	1P3075
39	O	REMOVER, ELECTRICAL CONTACT	5120-00-148-9844	MS3448-001B
40	F	RIVETER, BLIND, HAND	5120-01-289-4310	HP-2
41	H	RIVETER, YOKE, HAND	5120-01-415-3558	J-39354
42	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-00-180-0881	5120-00-180-0881
43	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-053-4158	FAM5A
44	O,F,H	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-079-8032	ANSIB18.3.2M
45	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-079-8032	SAM8A
46	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-160-8862	S 6 HBS
47	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3462	SA10A
48	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3497	TMP12A
49	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3519	F23D
50	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3526	FP24
51	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3527	FP32A
52	F,H	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3536	FTX40A
53	O	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3574	GFA8A
54	O	SEPARATOR, BALL JOINT	5120-01-255-8238	2287
55	F	SETTING TOOL, WINDSHIELD	5120-01-316-4995	CRL216
56	O,F	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-348-7696	SCK4910-95CLA02
57	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0654	SC4910-95CLA72
58	O	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0653	SC4910-95CLA73
59	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0654	SC4910-95CLA74
60	F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0705	SC4910-95CLA31
61	F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0706	SC4910-95CLA62

Section III. TOOLS AND TEST EQUIPMENT FOR LMTV VEHICLES

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
62	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0707	SC 4910-95CLA63
63	O,F	SHOP EQUIPMENT, FUEL AND ELECTRICAL	4910-00-754-0714	SC 4910-95CLA01
64	O	SLING, EYE	3940-01-334-0749	EE1-202
65	F	SLING, MULTIPLE LEG	3940-00-777-5744	A170
66	H	SOCKET SET, SOCKET WRENCH	5120-01-195-0640	208FA
67	F,H	SOCKET, SOCKET WRENCH	5120-01-068-5643	5555M
68	O	SOCKET, SOCKET WRENCH	5120-01-161-5907	GLDH382
69	F	SOCKET, SOCKET WRENCH	5120-01-335-0784	TW321
70	O	SOCKET, SOCKET WRENCH	5120-01-359-9521	TV940009
71	F	SOLDERING AND BRAZING OUTFIT, RESISTANCE HEATING	3439-00-460-7198	SC4940-95-CLB20
72	O	SOLDERING IRON, ELECTRIC	3439-01-036-3308	3112-S3-40W
73	H	STAND, DIFFERENTIAL CARRIER REPAIR	4910-01-085-7729	J3409-D
74	H	STAND, MAINTENANCE AUTOMOTIVE ENGINE	4910-00-808-3372	J29108
75	O	TESTING APPARATUS	4910-01-426-3974	440.28
76	O,F	TOOL KIT, AUTO FUEL AND ELECTRICAL SYSTEM REPAIR	5180-00-754-0655	SC4910-95CLA50
77	F	TOOL KIT, BODY AND FENDER	5180-00-754-0643	SC5180-90-N34
78	O,F,H	TOOL KIT, GENERAL MECHANIC'S	5180-00-177-7033	SC5180-90-CL-N26
79	F,H	TOOL KIT, GENERAL MECHANIC'S	5180-00-699-5273	SC5180-90-CL-N05
80	F	TOOL KIT, INTERNAL COMBUSTION ENGINE	5180-01-356-8155	1U6680
81	H	TOOL KIT, SLEEVE REPAIR	5180-01-415-5896	4C4462
82	F	TOOL OUTFIT, HYDRAULIC	4940-01-036-5784	SC4940-95-CL-B07
83	O	TOOL, SPRING REMOVAL	5120-01-360-1918	TV940010
84	F	WRENCH SET, CROWFOOT, RATCHETING	5120-00-293-0013	GGG-W-646
85	F	WRENCH SET, SOCKET	5120-00-148-3706	ANSI-B107.5
86	O	WRENCH, TORQUE, 0-75 LB-IN.	5120-01-112-9532	TQSC6A

Section IV. REMARKS FOR THE LMTV 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	5120-00-154-3029	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-A74

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	5210-00-529-1205	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-A72
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	4240-00-255-2524	GGG-M-125/6	SC 4910-95-CL-A72
30	SCALE,WEIGHING	6670-00-254-4634	AAA-5-133	SC 4910-95-CL-A72
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-A72

TOOLS IDENTIFICATION LIST (CONT)

(1) Item Number	(2) Item Name	(3) National Stock Number	(4) Part Number	(5) Reference
35	SOCKET SET, SOCKET WRENCH	5120-01-117-3876	221FSMY	SC 4910-95-CL-A02
36	SOCKET, SOCKET WRENCH	5120-00-181-6813	5530	SC 4910-95-CL-A74
37	SOCKET, SOCKET WRENCH	5120-00-232-5681	1242	SC 4910-95-CL-A74
38	SOCKET, SOCKET WRENCH	5120-01-112-0581	SIMM190	SC 4910-95-CL-A74
39	STE/ICE-R	4910-01-222-6589	12259266	SC 4910-95-CL-A74
40	TAPE, MEASURING	5210-00-081-4719	GA508A	CTA 50-970
41	TESTER, ANTIFREEZE AND BATTERY	6630-00-105-1418	10425	SC 4910-95-CL-A74
42	TOOL KIT, AUTO FUEL	5780-00-754-0655		SC 5180-95-CL-A50
43	TOOL KIT, BLIND RIVET	5180-01-201-4978	D-100-MIL-1	SC 4910-95-CL-A72
44	TOOL KIT, GENERAL MECHANIC'S	5180-00-177-7033		SC 5180-90-N26
45	TRESTLE, MOTOR VEHICLE MAINTENANCE	4910-00-251-8013	306	SC 4910-95-CL-A72
46	VISE, MACHINIST	5120-00-293-1439	504M2	SC 4910-95-CL-A74
47	WRENCH SET, SOCKET	5120-00-081-2305	GGG-W-641	SC 4910-95-CL-A74
48	WRENCH SET, SOCKET	5120-00-204-1999	GGG-W-641	SC 4910-95-CL-A74
49	WRENCH SET, SOCKET	5120-00-322-6231	51200017510	SC 4910-95-CL-A74
50	WRENCH, ADJUSTABLE	5120-00-264-3793	2117080	SC 4910-95-CL-A72
51	WRENCH , ADJUSTABLE, AUTOMOTIVE	5120-00-449-8083	1B7536	SC 4910-95-CL-A74
52	WRENCH, BOX AND OPEN END	5120-00-277-8833	1244	SC 4910-95-CL-A74
53	WRENCH, BOX AND OPEN END	5120-00-277-8834	GGG-W-636	SC 4910-95-CL-A74
54	WRENCH, PIPE	5120-00-277-1461		SC 4910-95-CL-A74
55	WRENCH, PIPE	5120-00-277-1485		SC 4910-95-CL-A74
56	WRENCH, STRAP, ADJUSTABLE	5120-00-020-2947	A91C	SC 4910-95-CL-A74
57	WRENCH, TORQUE, 0-175 lb-ft	5120-00-640-6364	1753LDF	SC 4910-95-CL-A72
58	WRENCH, TORQUE, 0-200 lb-in.	5120-00-853-4538	F2001	SC 4910-95-CL-A72

TOOLS IDENTIFICATION LIST (CONT)

(1) Item Number	(2) Item Name	(3) National Stock Number	(4) Part Number	(5) Reference
59	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 LMTV 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
2	O	8040-00-273-8717	Adhesive (81348) MMM-A-121	pt
3	O	8040-00-152-0063	Adhesive (81348) MMM-A-1617 TY 3	bt
4	O	8040-01-250-3969	Adhesive (05972) 242	ea
5	O	8040-01-117-7872	Adhesive (04963) 08031	tu
6	O	8040-00-117-8510	Adhesive (71984) 3145 RTV Clear	tu
7	O	8040-00-776-9602	Adhesive (73168) 80055-31	kt
8	O	8040-00-118-2695	Adhesive (72799) RTV162	kt
9	O	8040-01-239-6828	Adhesive (01139) RTV123	tu
10	O	8040-01-331-7473	Adhesive (81349) (MIL-A-46106 GP3TY 1)	tu
11	O	8040-01-331-7470	Adhesive (81349) (MIL-A-46106 GP1TY1)	tu

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
12	C	6850-00-174-1806	Antifreeze,Arctic Type (81349) (MIL-A-11755) 55 gl drum	dr
13	C	6850-00-181-7940	Antifreeze,Ethylene Glycol,Permanent (81349) (MIL-A-46153) 55 gl drum	dr
14	O	8030-00-597-5367	Antiseize Compound (81349) (MIL-A-907)	lb
15	O	5340-00-450-5718	Cap and Plug Set 10935405	ea
16	O	6850-00-926-2275	Cleaning Compound, Windshield (81349) O-C 1901 16 0z bottle	bt
17	O	7920-00-044-9281	Cloth,Cleaning (81349) (MIL-C-85043)	
18	O		Corrosion Preventive Compound (81349) (MIL-C-16173)	
		8030-00-062-6950	Grade 1-1 qt can	qt
		9030-01-149-1731	Grade 2-1 qt can	qt
		8030-00-837-6557	Grade 3-1 qt can	pt
		9030-00-903-0931	Grade 4-1 qt can	pt
19	O	9030-00-033-4291	Corrosion Preventive Compound (MIL-C-82594) 8 oz can	bt
20	C	9150-00-664-0047	Damping Fluid (81348) VV-D-1078 1 lb can	lb
21	O	7520-01-209-1152	Dispenser,Pressure Sensitive Adhesive Tape (75037) STD-0-9	ea
22	O	5330-01-325-6993	Gasket Forming Compound (05972) 515	ea
23	C		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
24		9150-00-530-6814	Grease,Wire Rope-Exposed Gear 981349) (MIL-G-18458) 35 lb can	cn
25		9150-00-935-4018	Grease,Molybenum Disulfide (81349) (MIL-G-21164) 14 oz cartridge	ca
26	C		Hydraulic Fluid A (MIL-H-5606)	
		9150-00-252-6383	1 qt can	cn
		9150-00-223-4134	1 gl can	cn
27	O	7510-00-145-0559	Ink,Marking Stencil (MIL-I-43553)	oz
28	O	7510-01-386-0787	Inking Pad,Rubber Stamp	ea

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
29	O	9150-01-360-1905	Insulating Compound,Electrical	tu
30	O	5970-00-838-5951	Insulation Sleeving,Electrical (06090) CRN3-16BLACK	ft
31	O	5970-01-422-3579	Insulation Sleeving,Electrical (06090) ATUM 1/2 4ft length	lg
32	O	1650-00-166-4834	Lockwire (90166) 68A32	ea
33	O	9150-01-360-1905	Lubricant,Solid Film (MIL-L-46147) 16 oz can	cn
34	O	4730-00-019-0608	Nipple, Pipe	ea
35	O	4730-00-825-7304	Nipple, Tube Ms51501B4	ea
36	O	5310-00-059-4265	Nut,Plain,Hex	ea
37	C		Oil,Fuel Diesel, DF-A, Arctic (VV-F-800) (81348)	
		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
38	C		Oil,Fuel Diesel, DF-1, Winter (VV-F-800) (81348)	
		9140-00-286-5286	Bulk	gl
		9140-00-286-5288	55 gl drum, 16 gauge	dr
		9140-00-286-5289	55 gl drum, 18 gauge	dr
39	C		Oil,Fuel Diesel,DF-2,Regular (VV-F-800) (81348)	
		9140-00-2868294	Bulk	gl
		9140-00-286-5296	55 gl drum, 16 gauge	dr
		9140-00-286-5297	55 gl drum, 18 gauge	dr
40	C		Oil,Lubricating,Arctic (MIL-L-46167)	
		9150-00-402-2372	5 gl can	cn
		9150-00-491-7197	55 gl can	cn
41	C		Oil,Lubricating,Gear, GO 75W (MIL-L-2105C)	
		9150-00-035-5390	1 qt can	cn
		9150-00-035-5391	5 gl can	cn
42	C		Oil,Lubricating,Gewar, 80W-90 (MIL-L2105C)	
		9150-00-035-5392	1 qt can	qt
		9150-00-035-5393	5 gl can	cn
		9150-00-035-5394	55 gl drum, 16 gauge	dr
43	C		Oil,Lubricating,OE/HDO 10 (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
44	C		Oil,Lubricating,OE/HDO 10W (MIL-L2104)	
		9150-00-189-6727	1 qt can	cn

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
45	C		Oil,Lubricating,OE/HDO 15W-40 (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
46	C		Oil,Lubricating,OE/HDO 30 (SAE 30) (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
47	C		Oil,Lubricating,OE/HDO 40 (MIL-L-2104)	
		9150-00-405-2987	Bulk	gl
		9150-00-189-6730	1 qt can	cn
		9150-00-188-9862	55 gl can	cn
48	O	5350-00-067-7639	Paper,Abrasive (28124) 02347 pg contains 100 sheets	pg
49	O	8010-01-146-2650	Polyurethane Coating (MIL-C-46168)	kt
50	O	8030-00-181-8372	Primer,Sealing Compound (05972) 747-56	cn
51	C	7920-00-205-1711	Rag,Wiping A-A-531	be
52	O	4730-00-021-1788	Reducer,Boxx 4-6F50G5	ea
53	O	4020-00-855-2767	Rope,Fibrous (MIL-R-17343) 75 ft	cl
54	O	7520-00-634-2442	Rubber Stamp Set,Fixed Type	ea
55	O	5330-01-337-1108	Rubber Strip (12624) V4062	ft
56	O	5330-01-181-6482	Rubber Strip (19207) 12328583-3	ft
57	O	5305-01-286-0019	Screw,Cap,Socket Head (06888) SHCM75275 50 ct box	bx
58	O	1015-01-255-4144	Sealant,Pipe,Teflon (19207) 12297953 50 ml tube	tu
59	O	8030-00-081-2327	Sealing Compound (05972) 079-21	bx
60	O	8030-00-0111-2762	Sealing Compound (05972) 290-31	bt
61	O	8030-00-133-3164	Sealing Compound (05972) 571-31	bt
62	O	8030-00-148-9833	Sealing Compound (05972) 271-21	bx
63	O	8030-00-204-9149	Sealing Compound (05972) 592-41	tu
64	O	8030-00-656-1426	Sealing Compound (81349) (MIL-S-45180)	pt
65	O	8030-01-025-1692	Sealing Compound (05972) 242-41	bt
66	O	8030-01-088-8140	Sealing Compound (52571) 9001512-0011	bt

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS (CONT)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
67	O		Sealing Compound (81349) (MIL-S-8802TY2CLB-2)	
		8030-00-753-5006	2 oz cartridge	ca
		8030-00-753-4599	6 oz can	kt
		8030-00-723-2746	12 oz can	kt
			24 oz can	kt
68		8030-01-155-3238	Sealing Compound (11083) 6V6640	ml
69		7930-00-634-3935	Soap,Laundry (81348) P-S-1792	lb
70		3439-00-006-7764	Solder, Tin Alloy (81348) SN63WRAP3	sl
71			Solvent,Dry Cleaning SD (P-D-680)	
		6850-00-281-1985	1 gl can	cn
		6850-00-664-5685	1 qt can	cn
72			Tape,Adhesive (0SHR6) 70P00002	ea
73		8030-00-889-3534	Tape, Antiseizing (81349) 1791K70	ea
74		5640-00-103-2254	Tape,Duct (39428) 1791K70	ea
75		5970-00-644-3167	Tape, Insulation,Electrical (80063) TL83	ro
76		5975-01-379-4997	Ties,Cable,Plastic (06383) PLT 35-C-O	hd
77		6145-01-148-2263	Wire,Electrical (80009) 175-0825-00 50 ft	ft

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
Headlight Adjustment Screen		E-5
M1079 Blackout Shield Seals		E-6
M1079 Door Gaskets		E-7
M1079 Window Sash Glazing Seals		E-8
Relay Test Wire		E-9
Wheel Bearing Shim Tool Rest		E-10
12414690-001	Pneumatic Tube	E-11
12414690-002	Pneumatic Tube	E-11
12414690-004	Pneumatic Tube	E-11
12414690-005	Pneumatic Tube	E-11
12414690-010	Pneumatic Tube	E-11
12414660-101	Pneumatic Tube	E-11
12414690-102	Pneumatic Tube	E-11
12414690-103	Pneumatic Tube	E-11
12414690-104	Pneumatic Tube	E-11
12414690-105	Pneumatic Tube	E-11
12414690-106	Pneumatic Tube	E-11
12414690-107	Pneumatic Tube	E-11
12414690-108	Pneumatic Tube	E-11
12414690-109	Pneumatic Tube	E-11
12414690-112	Pneumatic Tube	E-11
12414690-113	Pneumatic Tube	E-11
12414690-115	Pneumatic Tube	E-11
12414690-117	Pneumatic Tube	E-11
12414690-118	Pneumatic Tube	E-11
12414690-119	Pneumatic Tube	E-11
12414690-120	Pneumatic Tube	E-11
12414690-121	Pneumatic Tube	E-11
12414690-122	Pneumatic Tube	E-11
12414690-123	Pneumatic Tube	E-11
12414690-124	Pneumatic Tube	E-11
12414690-125	Pneumatic Tube	E-11
12414690-126	Pneumatic Tube	E-11
12414690-127	Pneumatic Tube	E-11
12414690-201	Pneumatic Tube	E-11
12414690-202	Pneumatic Tube	E-11

Section II. MANUFACTURED ITEMS INDEX (CONT)

ITEM NAME/PART NUMBER	ITEM DESCRIPTION	PARA NO.
12414690-203	Pneumatic Tube	E-11
12414690-205	Pneumatic Tube	E-11
12414690-206	Pneumatic Tube	E-11
12414690-207	Pneumatic Tube	E-11
12414690-208	Pneumatic Tube	E-11
12414690-209	Pneumatic Tube	E-11
12414690-210	Pneumatic Tube	E-11
12414690-211	Pneumatic Tube	E-11
12414690-212	Pneumatic Tube	E-11
12414690-213	Pneumatic Tube	E-11
12414690-214	Pneumatic Tube	E-11
12414690-215	Pneumatic Tube	E-11
12414690-216	Pneumatic Tube	E-11
12414690-217	Pneumatic Tube	E-11
12414690-218	Pneumatic Tube	E-11
12414690-219	Pneumatic Tube	E-11
12414690-220	Pneumatic Tube	E-11
12414690-221	Pneumatic Tube	E-11
12414690-222	Pneumatic Tube	E-11
12414690-223	Pneumatic Tube	E-11
12414690-224	Pneumatic Tube	E-11
12414690-225	Pneumatic Tube	E-11
12414690-226	Pneumatic Tube	E-11
12414690-227	Pneumatic Tube	E-11
12414690-228	Pneumatic Tube	E-11
12414690-229	Pneumatic Tube	E-11
12414690-230	Pneumatic Tube	E-11
12414690-231	Pneumatic Tube	E-11
12414690-301	Pneumatic Tube	E-11
12414690-302	Pneumatic Tube	E-11
12414690-303	Pneumatic Tube	E-11
12416381P1	Non-Metallic Electrical Cable Conduit	E-12
12416381P10	Non-Metallic Electrical Cable Conduit	E-12
12416381P11	Non-Metallic Electrical Cable Conduit	E-12
12416381P12	Non-Metallic Electrical Cable Conduit	E-12
12416381P13	Non-Metallic Electrical Cable Conduit	E-12
12416381P14	Non-Metallic Electrical Cable Conduit	E-12
12416381P15	Non-Metallic Electrical Cable Conduit	E-12
12416381P16	Non-Metallic Electrical Cable Conduit	E-12
12416381P17	Non-Metallic Electrical Cable Conduit	E-12
12416381P2	Non-Metallic Electrical Cable Conduit	E-12
12416381P20	Non-Metallic Electrical Cable Conduit	E-12
12416381P21	Non-Metallic Electrical Cable Conduit	E-12
12416381P22	Non-Metallic Electrical Cable Conduit	E-12
12416381P23	Non-Metallic Electrical Cable Conduit	E-12
12416381P26	Non-Metallic Electrical Cable Conduit	E-12
12416381P3	Non-Metallic Electrical Cable Conduit	E-12
12416381P30	Non-Metallic Electrical Cable Conduit	E-12
12416381P32	Non-Metallic Electrical Cable Conduit	E-12
12416381P34	Non-Metallic Electrical Cable Conduit	E-12
12416381P35	Non-Metallic Electrical Cable Conduit	E-12

ITEM NAME/PART NUMBER	ITEM DESCRIPTION	PARA NO.
12416381P36	Non-Metallic Electrical Cable Conduit	E-12
12416381P37	Non-Metallic Electrical Cable Conduit	E-12
12416381P38	Non-Metallic Electrical Cable Conduit	E-12
12416381P4	Non-Metallic Electrical Cable Conduit	E-12
12416381P5	Non-Metallic Electrical Cable Conduit	E-12
12416381P6	Non-Metallic Electrical Cable Conduit	E-12
12416381P7	Non-Metallic Electrical Cable Conduit	E-12
12416381P8	Non-Metallic Electrical Cable Conduit	E-12
12416381P9	Non-Metallic Electrical Cable Conduit	E-12
12418037	Steering Gear Return Hose	E-13
12418460-001	Transmission Oil Cooler Hose	E-13
12418460-002	Transmission Oil Cooler Hose	E-13
12418763	Lanyard Assembly	E-14
12420196	Lanyard Assembly	E-14
12420197-001	Non-Metallic Vent Air Hose	E-15
12420197-002	Non-Metallic Vent Air Hose	E-15
12420197-003	Non-Metallic Vent Air Hose	E-15
12420197-004	Non-Metallic Vent Air Hose	E-15
12420197-005	Non-Metallic Vent Air Hose	E-15
12420197-006	Non-Metallic Vent Air Hose	E-15
12420198-001	Non-Metallic Vent Air Hose	E-15
12420198-002	Non-Metallic Vent Air Hose	E-15
12420308-457	Personnel Heater Air Duct Hose	E-16
12420308-760	Personnel Heater Air Duct Hose	E-16
12420489	Block Seal	E-17
3256-H-1048	CTIS Seal Driver	E-18
3256-K-1051	Wheel Hub Grease Seal Driver	E-19

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

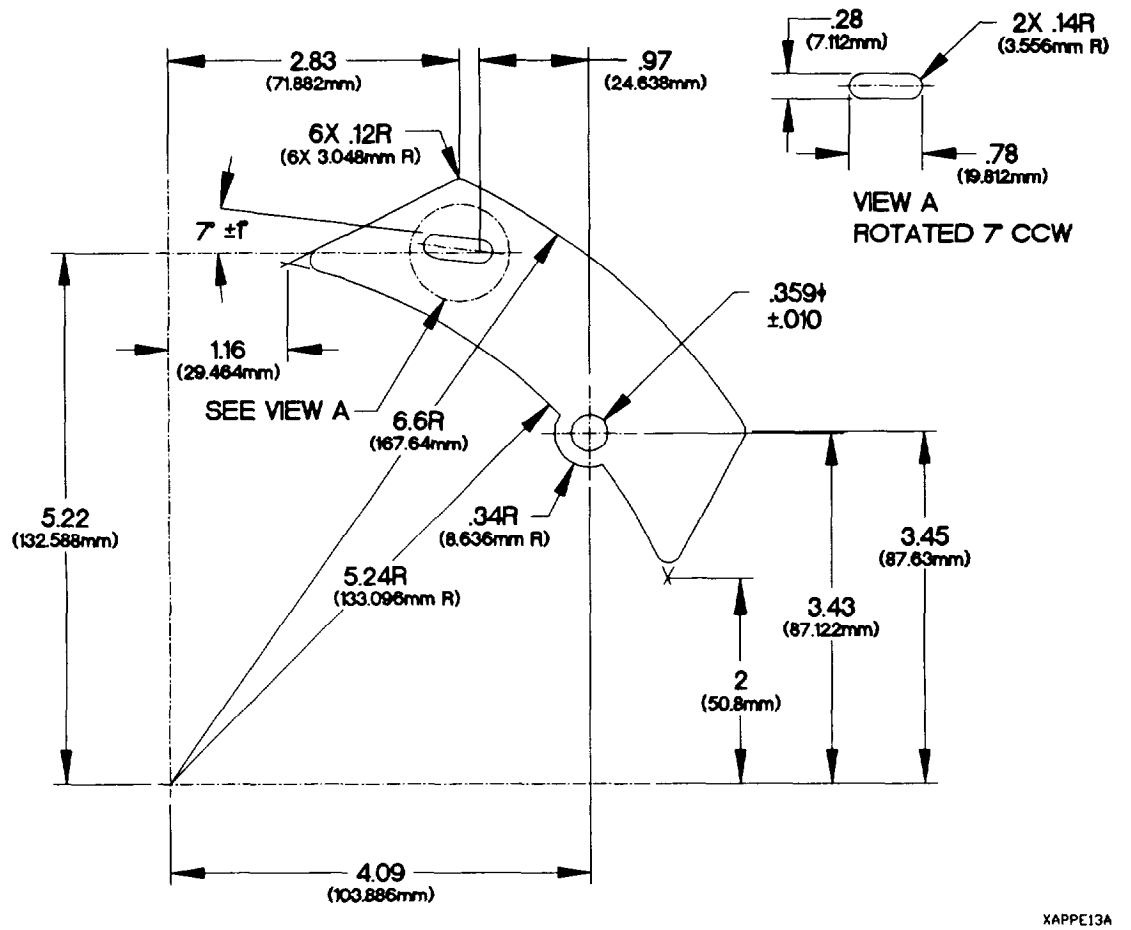


Figure E-1. Brake Adjusting Tool Support

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

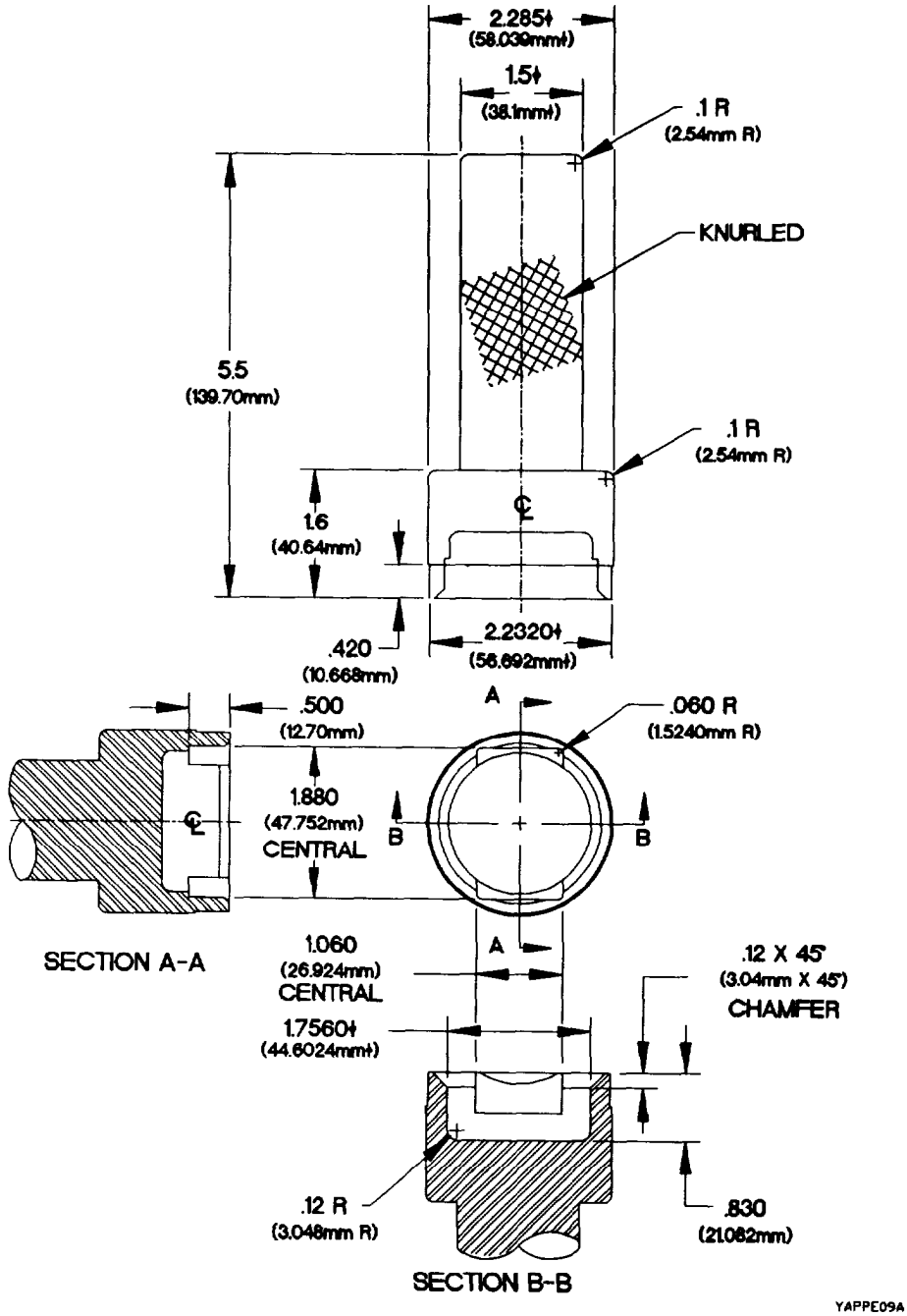


Figure E-2. Brake Plunger Seal Driver

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		

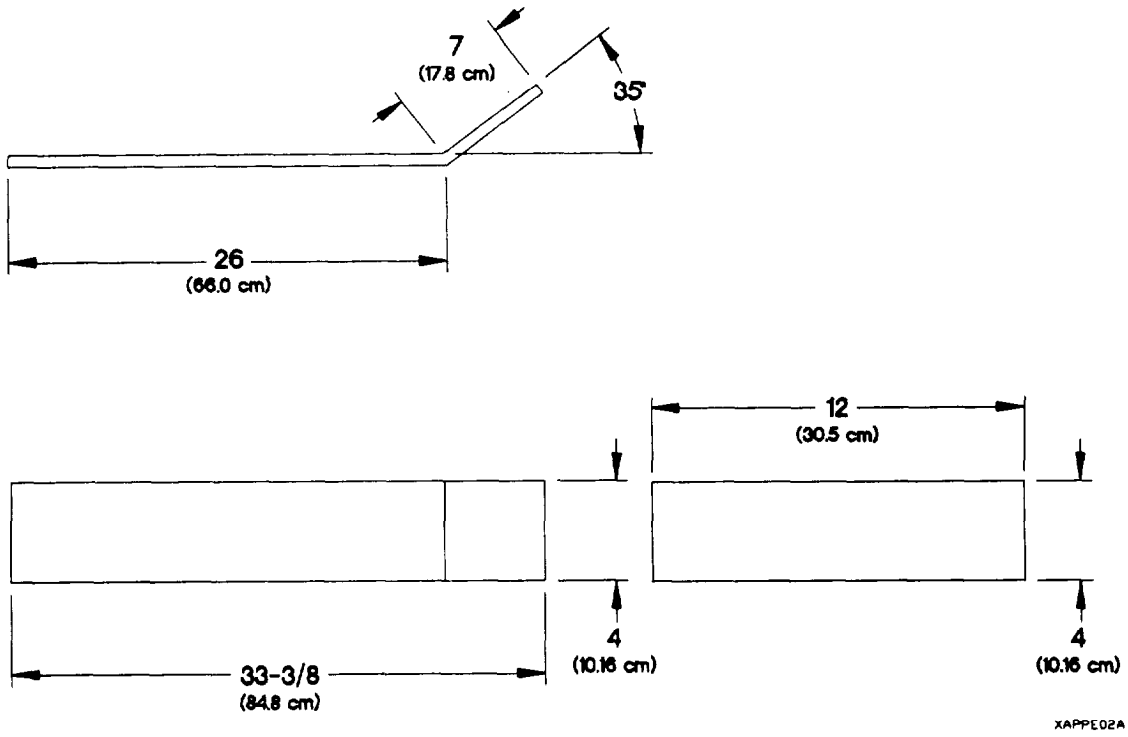


Figure E-3. Cab Support Tool Strut and Cab Rest

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.

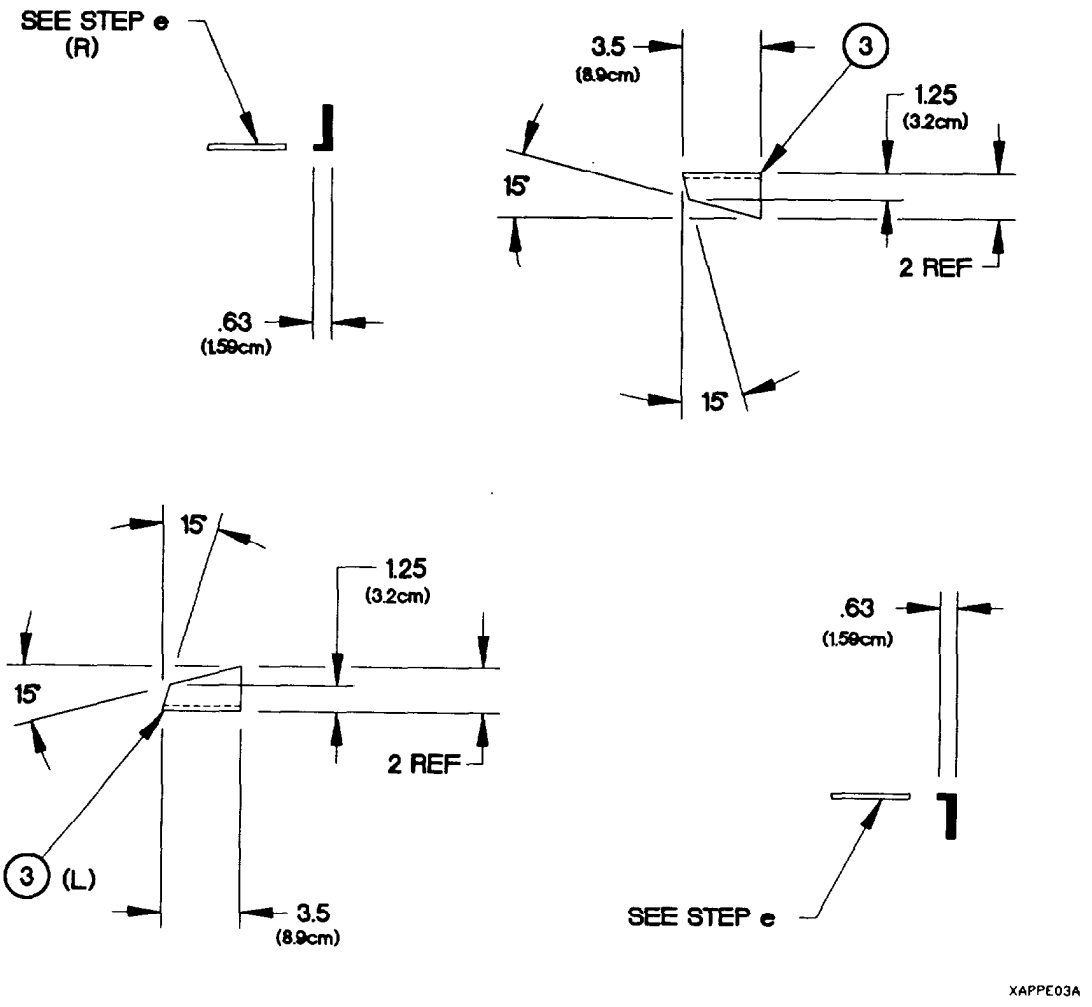


Figure E-4. Cab Support Tool Seat

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.

E-4. CAB SUPPORT TOOL (CONT)

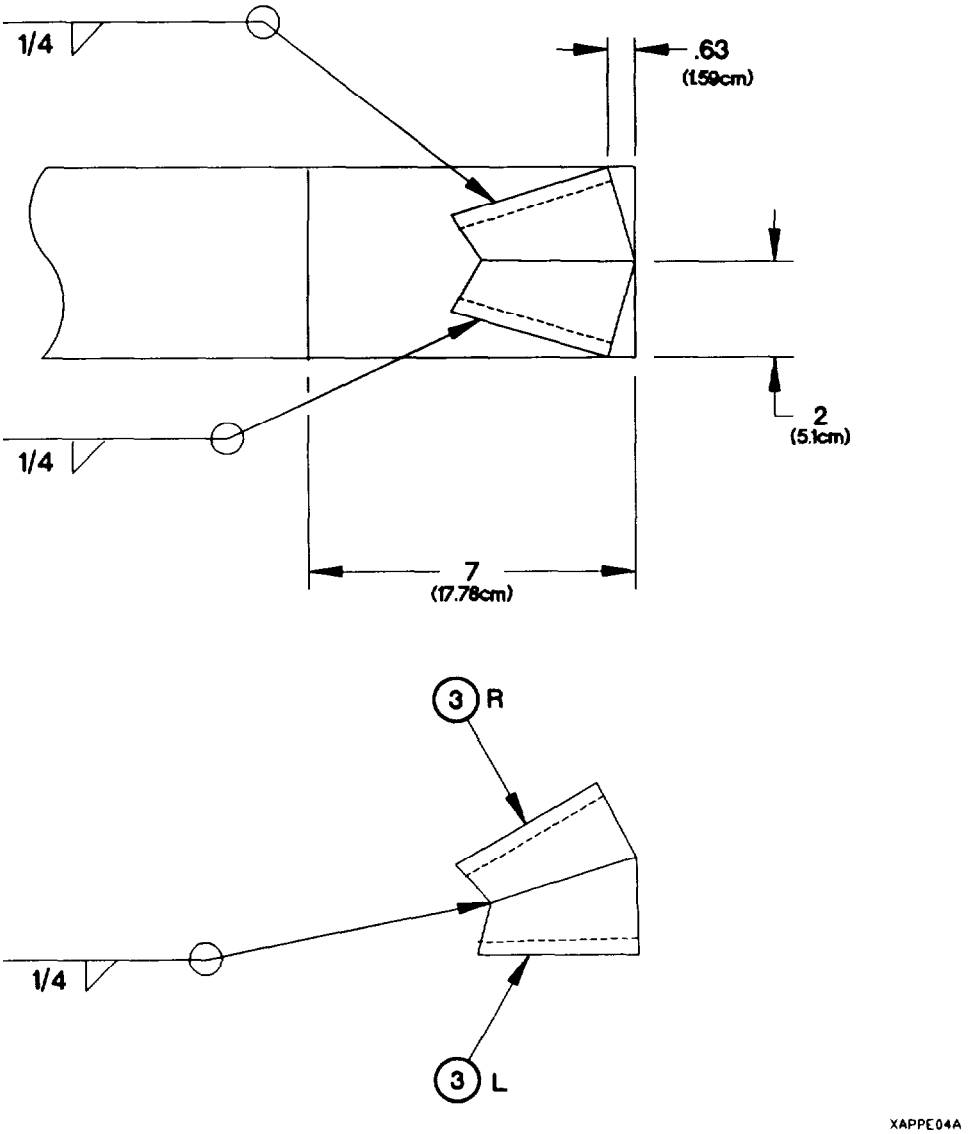


Figure E-5. Cab Support Tool Seat Layout

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.**
I. De-burr and remove sharp edges.

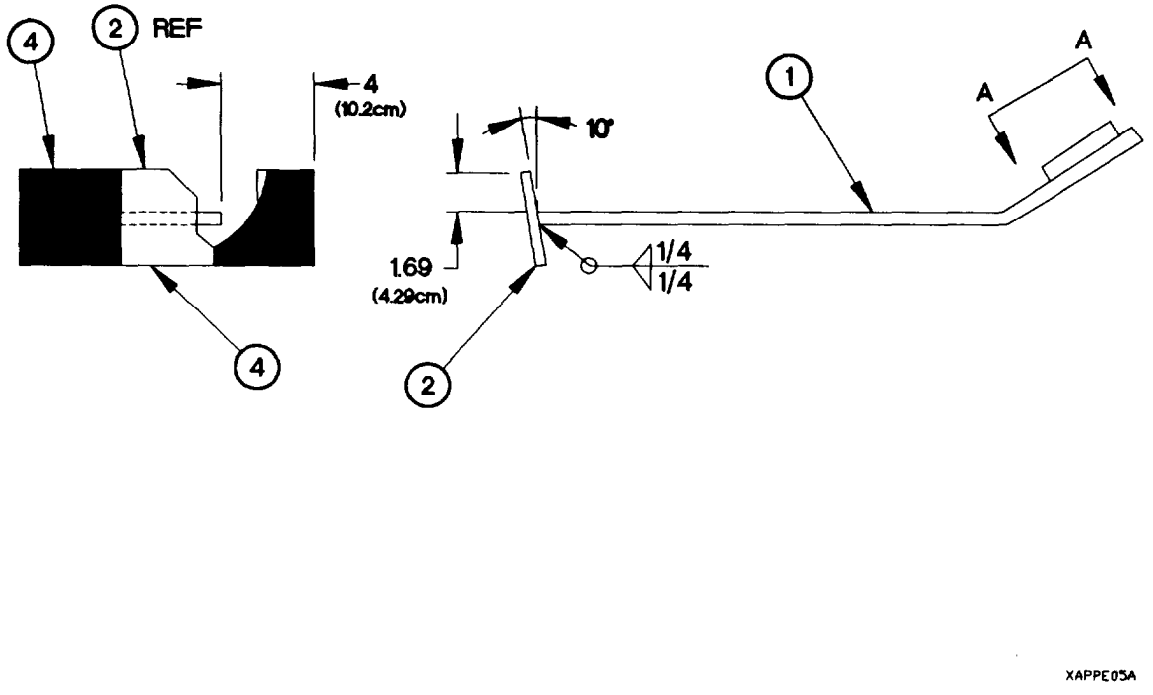


Figure E-6. Cab Support Tool Assembly

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. 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).

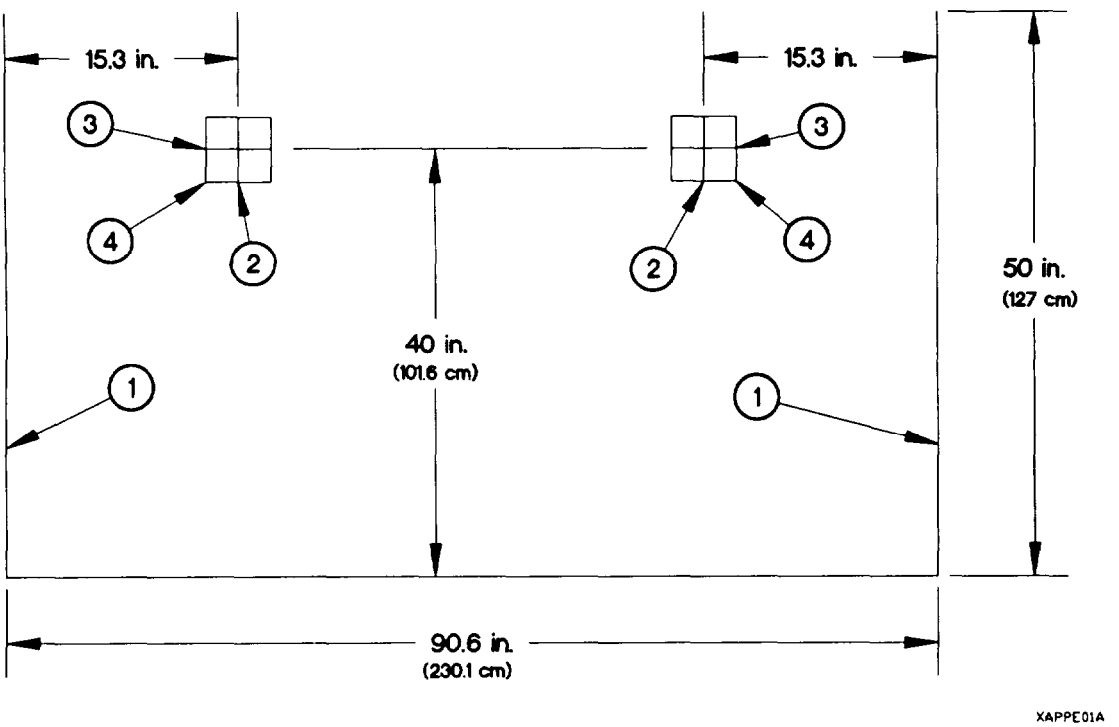


Figure E-7. Headlight Adjustment Screen

E-6. M1079 BLACKOUT SHIELD SEALS

Fabricate the M1079 blackout shield seals according to the following steps. Refer to the following parts list for materials.

Description	Material Part Number	CAGE Code	Cut Length
Blackout Shield Header Seal	942P00001	0SHR6	28-3/4 in. (730 mm)
Blackout Shield Jamb Seal (van body serial numbers 001 through 190)	942P00001	0SHR6	63-3/8 in. (1610 mm)
Blackout Shield Jamb Seal (van body serial number 191 and higher)	942P00001	0SHR6	33 in. (838 mm)

a. Dimensions are in inches (millimeters).
b. Cut seal material to the specified length using a fine-toothed hacksaw or other suitable cutting tool.

E-7. M1079 DOOR GASKETS

Fabricate the M1079 door gaskets according to the following steps. Refer to the following parts list for materials.

Description	Material Part Number	CAGE Code	Cut length
LH Door Gasket	12416417	19207	214 in. (5435 mm)
RH Door Gasket	12416417	19207	197 in. (5004 mm)

a. Dimensions are in inches (millimeters).
b. Cut seal material to the specified length using a fine-toothed hacksaw or other suitable cutting tool.
c. Glue ends of gasket to each other using adhesive MIL-A-40106 GP1TY1 (Item 11, Appendix D).

E-8. M1079 WINDOW SASH GLAZING SEALS

Fabricate the M1079 window sash glazing seals according to the following steps. Refer to the following parts list for materials.

Description	Material Part Number	CAGE Code	Cut Length
Window Sash Top/Bottom Seal	941P00001	0SHR6	26-13/16 in. (681 mm)
Window Sash Side Seal (van body serial numbers 001 through 190)	941P00001	0SHR6	28-1/2 in. (724 mm)
Window Sash Side Seal (van body serial number 191 and higher)	941P00001	0SHR6	12-11/16 in. (322 mm)

a. Dimensions are in inches (millimeters).
b. Cut seal material to the specified length using a fine-toothed hacksaw or other suitable cutting tool.

NOTE

Cut miters so that short side of seal faces toward glass.

c. Cut 45-degree miters on ends of window sash seals.

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. 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-11. PNEUMATIC TUBES FABRICATION

Cut pneumatic tubes from bulk tubing stock listed **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
12414690-004	NT-100-4 (79470)	74.8	190.0
12414690-005	NT-100-4 (79470)	69.7	177.0
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
12414690-117	J844TYBSIZE 3/8 (81343)	156.5	397.5
12414690-118	J844TYBSIZE 3/8 (81343)	11.8	30.0
12414690-119	J844TYBSIZE 3/8 (81343)	269.5	684.5
12414690-120	J844TYBSIZE 3/8 (81343)	11.9	30.2
12414690-121	J844TYBSIZE 3/8 (81343)	43.0	109.2
12414690-122	J844TYBSIZE 3/8 (81343)	44.1	112.0
12414690-123	J844TYBSIZE 3/8 (81343)	259.4	659.0
12414690-124	J844TYBSIZE 3/8 (81343)	288.2	732.0
12414690-125	J844TYBSIZE 3/8 (81343)	10.8	27.3
12414690-126	J844TYBSIZE 3/8 (81343)	17.0	43.2
12414690-127	J844TYBSIZE 3/8 (81343)	17.0	43.2

E-11. PNEUMATIC TUBES FABRICATION (CONT)

Table E-1. Pneumatic Tube Lengths (Cont)

Tube Part Number	Bulk Tubing Part Number	Cut Length	
		inches	cm
12414690-201	C608-100BLK (13174)	14.8	37.5
12414690-202	C608-100BLK (13174)	14.0	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)	14.9	37.7
12414690-207	C608-100BLK (13174)	15.5	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)	16.9	43.0
12414690-213	C608-100BLK (13174)	118.5	301.0
12414690-214	C608-100BLK (13174)	124.0	315.0
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
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
12414690-226	C608-100BLK (13174)	103.5	263.0
12414690-227	C608-100BLK (13174)	32.8	83.2
12414690-228	C608-100BLK (131741	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
12414690-301	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-12. 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
12416361P11	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
12416361P35	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-13. 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	MS5213028110360 (96906)	17.5	44.4
12418460-002	MS521301A206R (96906)	16.0	40.6

E-14. 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-8. 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

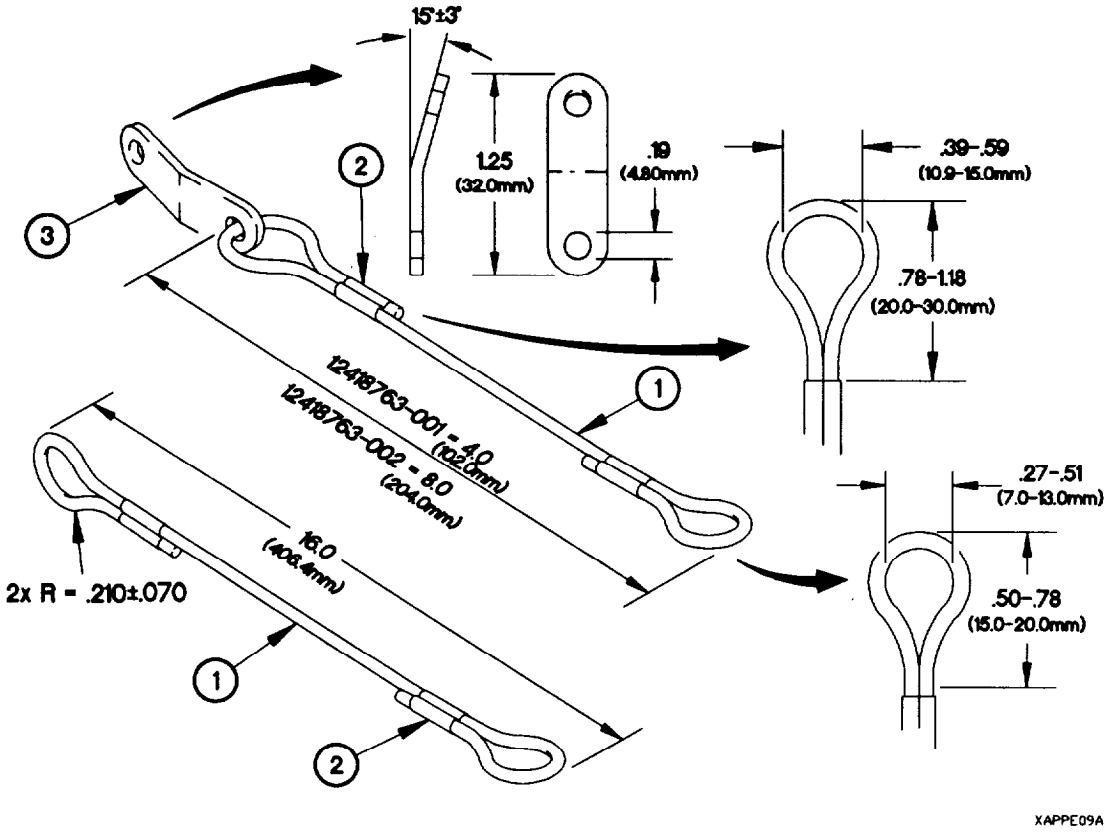


Figure E-8. Lanyard Assembly

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-15. 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-16. 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-17. BLOCK SEAL 12420489 FABRICATION

Make block seal from P/N (OVXY8) STN2.38X.5. Use a suitable cutting tool to cut seal to 0.52 inch (1.3 cm) long.

E-18. CTIS SEAL DRIVER 3256-H-1048

Used on Front 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

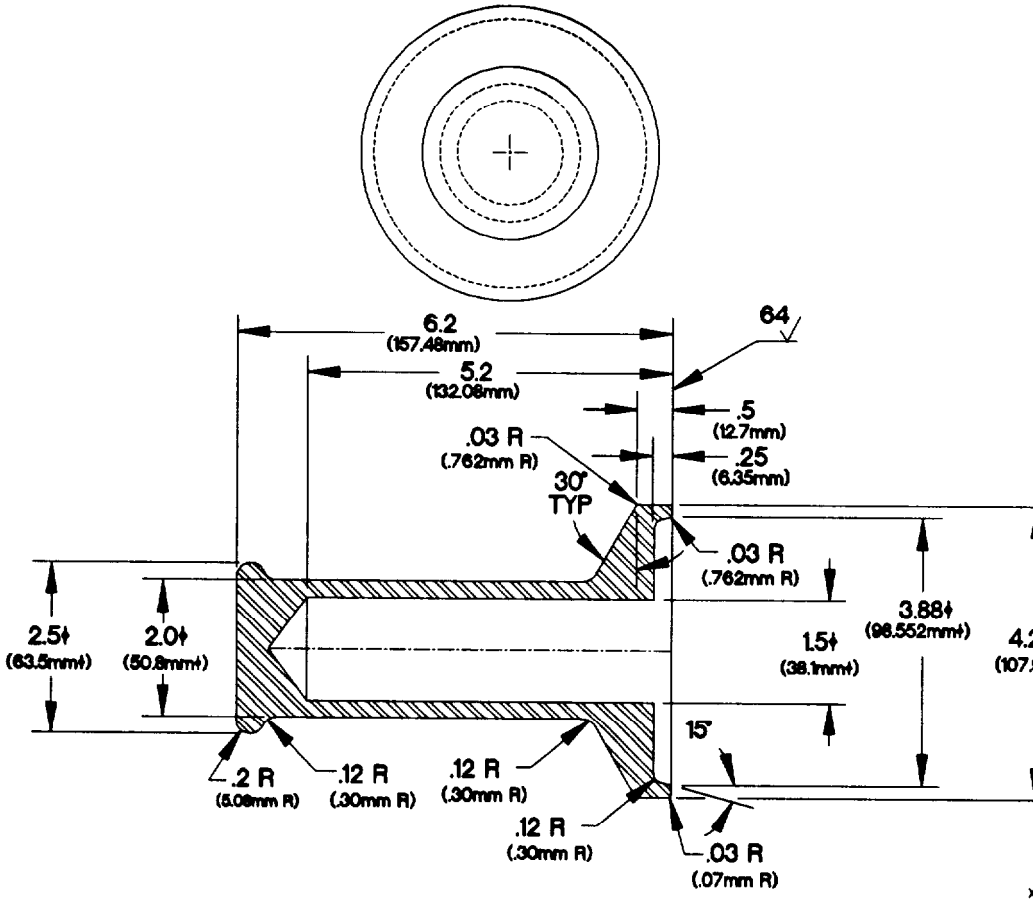


Figure E-9. CTIS Seal Driver

a. All dimensions are in inches (millimeters).
b. Manufacture from round steel stock.
c. De-burr and remove sharp edges.

E-19. 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

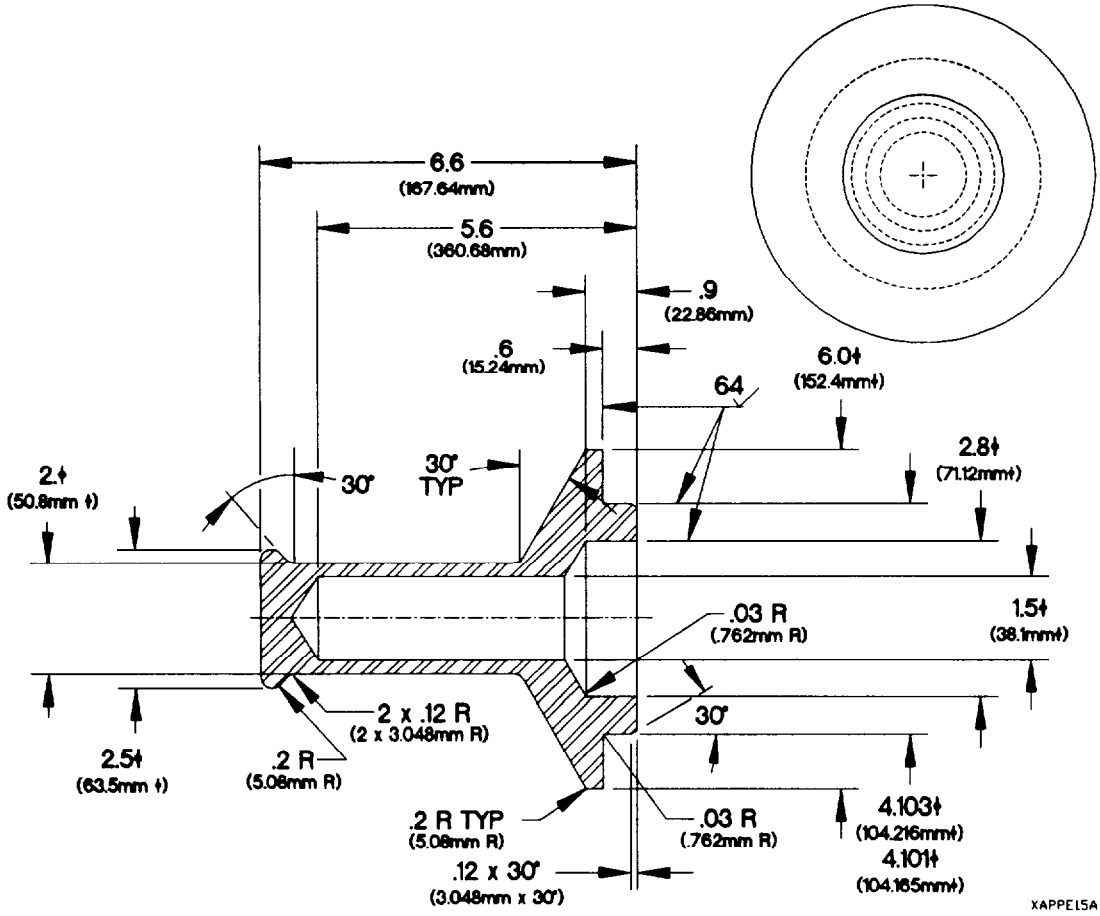


Figure E-10. Wheel Hub Grease Seal Driver

a. All dimensions are in inches (millimeters).
b. Manufacture from round steel stock.
c. De-burr and remove sharp edges.

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.

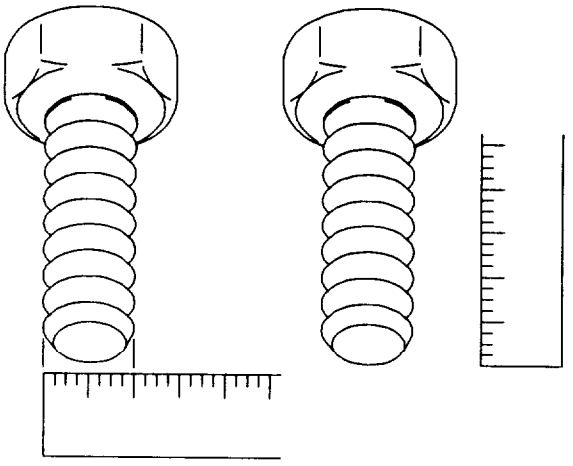
(2) Count the number of threads per inch.

(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.

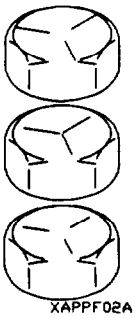
(6) Look down the column under the picture found in step (5) until the torque limit (lb-ft or N•m) for the diameter and threads per inch (or thread pitch, in the case of metric fasteners) of the screw are located.



XAPPF01A

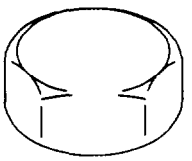
APPENDIX F
TORQUE LIMITS

Table F-1. Dry Torque Limits for SAE and ANSI Screws and Free Spinning Nuts

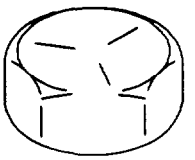


NOTE
Manufacturer's marks may vary. These are all SAE Grade 5.

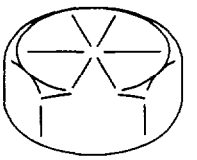
Material Grade Markings



SAE Grade 2



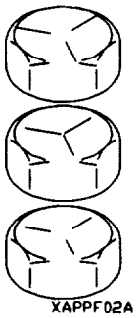
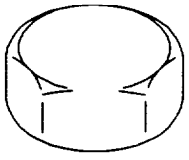
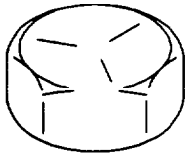
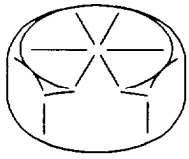
SAE Grade 5



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 very. These are all SAE Grade 5	Material Grade Markings					
	 XAPPF03A SAE Grade 2		 XAPPF04A SAE Grade 5		 XAPPF06A 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

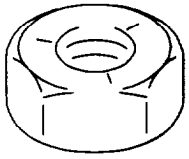
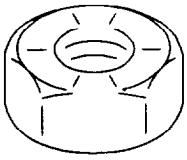
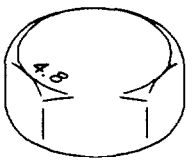
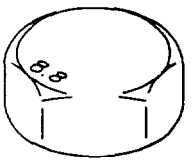
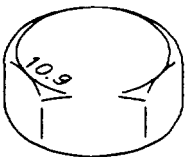
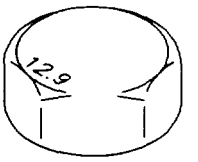
		Material Grade Markings			
		 XAPPF07A		 XAPPF08A	
		SAE Grade 5		SAE Grade 8	
Hole Diameter	Threads per inch	Torque			
inch		lb-ft	N•m	lb-ft	N•m
1/4	20	10-12	14-16	15-17	20-24
1/4	28	12-14	16-18	14-18	21-25
5/16	18	20-24	27-33	26-32	36-44
5/16	24	22-26	30-36	29-35	40-48
3/8	16	35-41	47-55	48-58	65-77
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							
		 XAPPF09A		 XAPPF10A		 XAPPF11A		 XAPPF12A	
		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

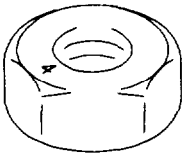
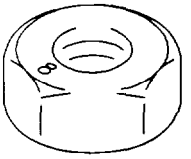
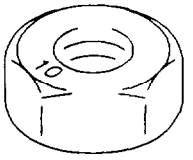
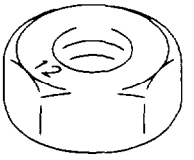
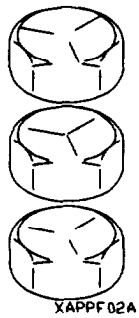
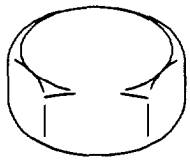
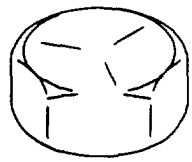
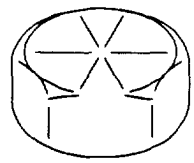
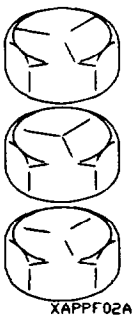
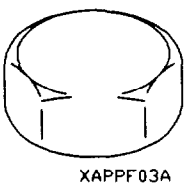
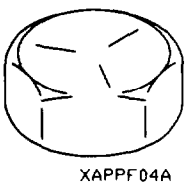
		Material Grade Markings							
		 XAPPF13A		 XAPPF14A		 XAPPF15A		 XAPPF16A	
		Metric Grade 4.8		Metric Grade 8.8		Metric Grade 10.9		Metric Grade 12.9	
Diameter	Thread Pitch	Torque							
mm		lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m
6	1	5-6	7-8	7-9	10-12	10-12	14-17	11-14	15-19
8	1.25	12-14	16-18	18-22	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

 XAPPF02A **NOTE** Manufacturer's marks may vary. These are all SAE Grade 5.		Material Grade Markings					
		 XAPPF03A SAE Grade 2		 XAPPF04A SAE Grade 5		 XAPPF06A 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

 XAPPF02A Manufacturer's marks may very. These are all SAE Grade 5		Material Grade Markings					
		 XAPPF03A SAE Grade 2		 XAPPF04A SAE Grade 5		 XAPPF06A SAE Grade 8	
Diameter	Threads per inch	Torque					
inch		lb-ft	N•m	lb-ft	N•m	lb-ft	N•m
1-1/4	7	320	434	840	1139	1360	1844
1-1/4	12	360	488	920	1248	1500	2034
1-3/8	6	420	570	1100	1492	1780	2414
1-3/8	12	460	624	1260	1709	2040	2766

APPENDIX G
MANDATORY REPLACEMENT PARTS

Section I. INTRODUCTION

G-1. SCOPE

This appendix lists mandatory replacement parts you will need to maintain the LMTV 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	5366-01-382-5054
3	BOOT KIT, EXHAUST	DQ6025	4730-01-417-3197
4	BUMPER, RUBBER	12419182	5340-01-410-8397
5	BUSHING, SLEEVE	7-199-002668	3120-01-367-6894
6	CHANNEL, RUBBER	ZZR765/2-001A7	9390-01-420-4560
7	CLAMP	024S9	
8	CLAMP	032S9	
9	DECAL	12340917	7690-01-256-4909
10	FASTENER TAPE	MIL-F-21840	8315-00-006-9855
11	FASTENER TAPE	50-534718-19	8315-00-935-6762
12	FILTER ASSEMBLY	75223-11	2940-01-417-9333
13	FILTER ELEMENT	1048011	2940-01-385-8931
14	FILTER ELEMENT, FLUID	R22146	2910-01-360-6366
15	FILTER ELEMENT, FLUID	29507750	2940-01-361-2406
16	FILTER ELEMENT, FLUID	599791	4460-01-284-2344
17	FILTER ELEMENT, FLUID	931558	2940-01-363-4377

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
18	FILTER ELEMENT,INTAKE AIR CLEANER	P52-7750	2940-01-361-2407
19	FILTER, AIR	12416539	
20	FILTER, AIR	12416563	
21	FILTER, FUEL	7E9763	2940-01-363-3089
22	FILTER, OIL	1R0739	2940-00-029-0388
23	GASKET	F337576M6	
24	GASKET	M28840/24HA	5935-01-421-9754
25	GASKET	QS-1181	5330-01-058-3788
26	GASKET	10-36675-18	5330-00-298-0190
27	GASKET	119-2940	5330-01-424-7905
28	GASKET	12421469	
29	GASKET	12422254	
30	GASKET	13848	5330-01-211-0717
31	GASKET	350700	5330-01-295-3053
32	GASKET	350903	5330-00-576-4626
33	GASKET	352200	5330-01-421-6105
34	GASKET	352302	5330-01-421-6107
35	GASKET	353400	5330-01-421-6102
36	GASKET	353806	5330-01-421-6103
37	GASKET	353810	
38	GASKET	355148	5330-01-423-0596
39	GASKET	355175	5330-01-423-0623
40	GASKET	3K3257	5330-01-305-6550
41	GASKET	4P1624	5330-01-360-5934
42	GASKET	9Y8103	5330-01-360-5931
43	GASKET, FUEL FILTER	7C1159	5330-01-360-5941
44	GASKET, RING	331.406	5330-01-395-4645
45	GASKET, THERMOSTAT	2W7212	5330-01-347-3206
46	GROMMET, NONMETALLIC	MS35489-6	5325-00-263-6632
47	GROMMET, NONMETALLIC	12417598	5325-01-375-1299
48	GROMMET, NONMETALLIC	12421402	5325-01-440-2178

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
49	GROMMET, NONMETALLIC	4082-36734-01	5325-01-194-3076
50	GROMMET, NONMETALLIC	50S12-1-1AA	5325-01-145-0105
51	GROMMET, NONMETALLIC	8741442	5325-00-088-6147
52	INSULATOR, TANK	A1394J	5970-01-385-7317
53	INSULATOR, TANK	A1394K	5970-01-385-7262
54	KIT, FILTER	29503829	
55	KIT, FILTER	29526899	
56	KIT, PROPELLER SHAFT	KT-16SB	2520-01-370-1360
57	LAMP, INCANDESCENT	CM7-7373	6240-00-270-6824
58	LAMP, INCANDESCENT	CM7376	6270-00-499-6278
59	LATCH, BAIL HEAD	68-20-101-10	2540-01-232-2470
60	LOCKNUT	0770-023-003	5310-01-423-3725
61	LOCKWASHER	ABCH207-LW-1/2	
62	LOCKWASHER	ABCH207-LW-3/8	
63	LOCKWASHER	B7949000161	
64	LOCKWASHER	D70336/1-20	5310-01-110-7933
65	LOCKWASHER	D70336/3-50	5310-01-439-2542
66	LOCKWASHER	D70336/3-52	5310-01-438-2543
67	LOCKWASHER	MS35335-30	5310-00-209-0788
68	LOCKWASHER	MS35335-31	5310-00-596-7693
69	LOCKWASHER	MS35335-33	5310-00-209-0786
70	LOCKWASHER	MS35335-36	5310-00-550-3503
71	LOCKWASHER	MS35335-38	5310-00-616-6354
72	LOCKWASHER	MS35335-58	5310-00-209-1366
73	LOCKWASHER	MS35335-61	5310-00-527-3634
74	LOCKWASHER	MS35335-62	5310-00-184-9562
75	LOCKWASHER	MS35337-25	5310-00-013-8502
76	LOCKWASHER	MS35338-100	5310-00-261-8278
77	LOCKWASHER	MS35338-102	5310-00-167-0671
78	LOCKWASHER	MS35338-103	5310-00-184-8971
79	LOCKWASHER	MS35338-135	5310-00-933-8118

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
80	LOCKWASHER	MS35338-136	5310-00-929-6395
81	LOCKWASHER	MS35338-137	5310-00-933-8119
82	LOCKWASHER	MS35338-138	5310-00-933-8120
83	LOCKWASHER	MS35338-139	5310-00-933-8121
84	LOCKWASHER	MS35338-140	5310-00-974-6623
85	LOCKWASHER	MS35338-141	5310-00-984-7042
86	LOCKWASHER	MS35338-143	5310-00-933-8778
87	LOCKWASHER	MS35338-158	5310-00-883-9417
88	LOCKWASHER	MS35338-171	5310-01-130-9066
89	LOCKWASHER	MS35338-42	5310-00-045-3299
90	LOCKWASHER	MS35338-43	5310-00-045-3296
91	LOCKWASHER	MS35338-45	5610-00-407-9566
92	LOCKWASHER	MS35338-46	5310-01-334-4710
93	LOCKWASHER	MS35338-51	5310-00-584-7888
94	LOCKWASHER	MS35340-44	5310-00-682-5930
95	LOCKWASHER	MS51414-1	5310-01-235-2057
96	LOCKWASHER	MS51414-2	5310-01-310-1098
97	LOCKWASHER	MS51848-50	5310-01-033-8615
98	LOCKWASHER	N9015	5310-01-369-6073
99	LOCKWASHER	N9018	5310-01-032-4827
100	LOCKWASHER	N9459	5310-01-348-8393
101	LOCKWASHER	N9461	5310-01-348-8392
102	LOCKWASHER	1229-S-513C	5310-01-062-3384
103	LOCKWASHER	12414570-015	5310-01-388-2043
104	LOCKWASHER	12414570-021	5310-01-374-4516
105	LOCKWASHER	152.269	5310-01-407-4764
106	LOCKWASHER	152.522	
107	LOCKWASHER	152.544	5340-01-395-0823
108	LOCKWASHER	1729B262	5310-00-964-7811
109	LOCKWASHER	488.671	
110	NUT, BLIND RIVET	MS27130-S136	5310-01-409-4435

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
111	NUT,BLIND RIVET	MS237130-S148	5310-01-370-5548
112	NUT,BLIND RIVET	12421403-060	
113	NUT,BLIND RIVET	12421403-065	
114	NUT,BLIND RIVET	12421634-017	
115	NUT,BLIND RIVET	12442158-5	
116	NUT,SELF-LOCKING	DIN-934STM6	5310-01-342-2739
117	NUT,SELF-LOCKING	MS16228-10C	5310-00-245-8826
118	NUT,SELF-LOCKING	MS16228-5C	5310-00-584-7992
119	NUT,SELF-LOCKING	MS20500-524	5310-00-208-4023
120	NUT,SELF-LOCKING	MS21042-04	5310-00-811-6419
121	NUT,SELF-LOCKING	MS21042-5	5310-00-807-1469
122	NUT,SELF-LOCKING	MS21044C08	5310-00-982-6814
123	NUT,SELF-LOCKING	MS21083N08	5310-00-941-6019
124	NUT,SELF-LOCKING	MS21083N6	5310-00-926-1852
125	NUT,SELF-LOCKING	MS51922-1	5310-00-088-1251
126	NUT,SELF-LOCKING	MS51922-2	5310-00-929-1807
127	NUT,SELF-LOCKING	MS5192-33	5310-00-225-6993
128	NUT,SELF-LOCKING	MS51922-5	5310-00-959-7600
129	NUT,SELF-LOCKING	N9406	5310-01-362-6171
130	NUT,SELF-LOCKING	N9410	5310-01-348-8398
131	NUT,SELF-LOCKING	N9467	5310-01-350-4257
132	NUT,SELF-LOCKING	12301125	5310-01-241-0199
133	NUT,SELF-LOCKING	12412476-04	
134	NUT,SELF-LOCKING	12414305-002	5310-01-381-2819
135	NUT,SELF-LOCKING	12414308-003	5310-01-377-1549
136	NUT,SELF-LOCKING	12414308-004	5310-01-369-5703
137	NUT,SELF-LOCKING	12414308-007	5310-01-046-0186
138	NUT,SELF-LOCKING	12414308-017	5310-01-381-9830
139	NUT,SELF-LOCKING	12414308-018	5310-01-369-3337
140	NUT,SELF-LOCKING	12414308-019	5310-01-369-9522
141	NUT,SELF-LOCKING	12414308-020	5310-01-381-9849

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
142	NUT,SELF-LOCKING	12414308-021	5310-01-369-3338
143	NUT,SELF-LOCKING	12414308-022	5310-01-417-1262
144	NUT,SELF-LOCKING	12414308-025	5310-01-367-6706
145	NUT,SELF-LOCKING	12414308-027	5310-01-369-3339
146	NUT,SELF-LOCKING	12414315-003	5310-01-374-1382
147	NUT,SELF-LOCKING	12414315-005	5310-01-372-3023
148	NUT,SELF-LOCKING	12414315-006	5310-01-369-3332
149	NUT,SELF-LOCKING	12414315-009	5310-01-365-7236
150	NUT,SELF-LOCKING	12414315-012	5310-01-369-3331
151	NUT,SELF-LOCKING	12414315-017	5310-01-368-8065
152	NUT,SELF-LOCKING	12414420-004	5310-01-370-0010
153	NUT,SELF-LOCKING	12419003	5310-01-376-0773
154	NUT,SELF-LOCKING	270W10000	
155	NUT,SELF-LOCKING	259514660	
156	NUT,SELF-LOCKING	7951286	5310-00-789-0398
157	PACKING,PREFORMED	A82777	5330-00-579-6495
158	PACKING,PREFORMED	F4001-16	
159	PACKING,PREFORMED	J515-8-1	5330-00-292-8171
160	PACKING,PREFORMED	MK0012510	
161	PACKING,PREFORMED	MS28775-011	5330-00-582-2133
162	PACKING,PREFORMED	MS28775-227	5330-00-576-9731
163	PACKING,PREFORMED	MS28778-10	5330-00-285-9842
164	PACKING,PREFORMED	MS28778-12	5330-00-251-8839
165	PACKING,PREFORMED	MS28778-16	5330-00-816-3546
166	PACKING,PREFORMED	MS28778-4	5330-00-805-2966
167	PACKING,PREFORMED	MS9955-113	5330-01-374-2325
168	PACKING,PREFORMED	M25988/1-246	5330-01-189-6351
169	PACKING,PREFORMED	OR42OA	5330-01-389-6028
170	PACKING,PREFORMED	11639519-1	5330-00-463-0200
171	PACKING,PREFORMED	1509	5330-00-172-1919
172	PACKING,PREFORMED	2M4453	5330-00-074-3768

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
173	PACKING, PREFORMED	22617-16	5330-01-168-0885
174	PACKING, PREFORMED	23043446	5330-01-424-6629
175	PACKING, PREFORMED	29500969	5330-01-360-7852
176	PACKING, PREFORMED	29503383	5330-01-360-6017
177	PACKING, PREFORMED	3-906N522-90	5330-01-104-1093
178	PACKING, PREFORMED	3-906N522-90	5330-00-929-8171
179	PACKING, PREFORMED	3D2824	5330-00-944-8281
180	PACKING, PREFORMED	3J1907	5330-01-333-6444
181	PACKING, PREFORMED	3J7354	5330-00-954-8008
182	PACKING, PREFORMED	3K0360	5330-00-948-6482
183	PACKING, PREFORMED	4J5477	5330-00-855-8059
184	PACKING, PREFORMED	4L9564	5330-00-828-8639
185	PACKING, PREFORMED	5-X-1155	5330-01-392-1637
186	PACKING, PREFORMED	5F7054	5330-00-339-6224
187	PACKING, PREFORMED	5P7813	5330-01-335-0042
188	PACKING, PREFORMED	6V8397	5330-01-579-6495
189	PACKING, PREFORMED	673268	
190	PACKING, PREFORMED	673269	5330-01-395-1252
191	PACKING, PREFORMED	7F8267	5330-01-291-7353
192	PACKING, PREFORMED	7320658	5330-00-297-7106
193	PACKING, PREFORMED		5330-01-429-3089
194	PAD,CUSHIONING	9604792-001	2590-01-397-7844
195	PAD,CUSHIONING	12416479-002	2590-01-412-2663
196	PARTS KIT, DEHYDRATOR	RN-60-A	4440-01-337-7324
197	PARTS KIT, SEAL REPLACEMENT	SK10-2	5330-01-350-4474
198	PARTS KIT,SEAL REPLACEMENT	SK10-3	5330-01-350-4472
199	PARTS KIT,SEAL REPLACEMENT	SK10-4	5330-01-343-2745
200	PIN,COTTER	K2412-Z	5315-01-179-9882
201	PIN,COTTER	MS171659	5315-00-846-8337
202	PIN,COTTER	MS24665-151	5315-00-815-1405
203	PIN,COTTER	MS24665-298	5315-00-234-1861

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
204	PIN,COTTER	MS24665-385	5315-00-187-9382
205	PIN,COTTER	MS24665-423	5315-00-013-7228
206	PIN,COTTER	MS24665-457	5315-00-187-9393
207	PIN,COTTER	MS24665-459	5315-00-187-9394
208	PIN,COTTER	MS24665-69	5315-00-828-8190
209	PIN,COTTER	352.497	5315-01-394-3546
210	PIN,SPRING	MS16562-142	5315-00-058-6115
211	PIN,SPRING	MS16562-146	5315-00-853-3814
212	PLASTIC STRIP	352700	5330-01-296-2109
213	RFCEPTACLE	50R4-1-1AA	5325-01-049-2049
214	RING,BUSHING	152.157	
215	RIVET,BLIND	AK42H	5320-00-874-4477
216	RIVET,BLIND	AK43H	5320-00-143-6149
217	RIVET,BLIND	MS20600AD5W12	5320-01-047-0467
218	RIVET,BLIND	MS20604B3W2	5320-00-721-9075
219	RIVET,BLIND	M2423/1-A806	5320-00-850-3256
220	RIVET,BLIND	M24243/1-B302	5320-00-999-0397
221	RIVET,BLIND	M24243/1-D502	5320-00-850-3248
222	RIVET,BLIND	M24243/1-D608	5320-00-850-3246
223	RIVET,BLIND	M24243/1-F402	5320-00-129-9706
224	RIVET,BLIND	M24243/6-A403H	5320-00-882-8388
225	RIVET,BLIND	M24243/6-A405H	5320-01-291-9121
226	RIVET,BLIND	M24243/6-A406H	5320-01-421-0484
227	RIVET,BLIND	M24243/6-A602H	5320-00-956-7362
228	RIVET,BLIND	M24243/6-A604H	5320-00-956-7355
229	RIVET,BLIND	M24243/6-A606H	5320-00-882-8385
230	RIVET,BLIND	M24243/6-A608H	5320-01-032-6534
231	RIVET,BLIND	M24243/7-A402H	5320-00-874-4477
232	RIVET,BLIND	M24243/7-A403H	5320-00-143-6149
233	RIVET,BLIND	M24243/7-A604H	5320-00-420-2165
234	RIVET,BLIND	M24243/7-A606H	5320-00-490-5523

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
235	RIVET,BLIND	SD64BSLF	5320-01-397-3347
236	RIVET,BLIND	205057	5320-01-411-0081
237	RIVET,COMPRESSION	12418469	5320-01-376-0699
238	SCREW,CAP	12414475-131	5303-01-363-0703
239	SCREW,CAP	6V-2315	5306-01-433-4753
240	SCREW,MACHINE	MS24693-144	
241	SCREW,MACHINE	MS51958-83	5305-00-071-2095
242	SCREW,SELF-LOCKING	MS16998-61L	5305-01-211-3097
243	SEAL	VC08G1R0B	5305-01-211-3097
244	SEAL	12421431	5330-01-389-6109
245	SEAL	125128-5	
246	SEAL	125128-6	
247	SEAL	355150	5330-01-423-0689
248	SEAL ASSEMBLY,CTIS	A1205-Q-2435	5330-01-360-7753
249	SEAL ASSEMBLY,HUB	A1205-R-2254	5330-01-360-5252
250	SEAL,DOOR	12416467	5330-01-385-3769
251	SEAL RING,METAL	29505809	5330-01-360-5329
252	SEAL,NONMETALLIC	CC3550	
253	SEAL,NONMETALLIC	12417725	5330-01-423-0689
254	SEAL,NONMETALLIC	2418974-1	5330-01-360-7753
255	SEAL,NONMETALLIC	673267	5330-01-395-1251
256	SEAL,URETHANE FOAM	12420420-001	
257	SEAL,URETHANE FOAM	12420420-002	
258	SEAL,URETHANE FOAM	12420420-003	
259	SEAL,WEATHER	147P00039	
260	SPACER,RING	4P2987	5365-01-433-8407
261	SPLICE,CONDUCTOR	12420927-001	
262	SPLICE,CONDUCTOR	12420927-002	5940-01-421-6955
263	STRAIN RELIEF	10280870-3	5975-00-376-1585
264	TERMINAL,LUG	MS20659-163	5940-00-113-3145
265	TERMINAL,LUG	MS20659-164	5940-00-113-3148

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
266	TERMINAL,LUG	MS25036-108	5940-00-143-4780
267	TERMINAL,LUG	MS25036-122	5940-00-113-8190
268	TERMINAL,LUG	12414275-001	
269	TERMINAL,LUG	12416409-006	
270	WASHER,FLAT	MS27183-10	5310-00-809-4058
271	WASHER,FLAT	12417948-004	5365-01-436-8308
272	WASHER,FLAT RUBBER	900.032	5330-01-378-7541
273	WASHER,NYLON	MS51859-16	5310-00-964-7811
274	WASHER,SPRING	D634774/1-30	5310-01-413-8475
275	WASHER,SPRING	WW579S18	
276	WASHER,SPRING	110 7289	5310-01-246-1387
277	WASHER,SPRING	12414559-021	5310-01-374-4517
278	WASHER,SPRING	12414560-017	5310-01-395-0820
279	WASHER,SPRING	12414560-018	5310-01-381-3281
280	WASHER,SPRING	12414560-019	5310-01-369-6074
281	WASHER,SPRING	12417503	5310-01-406-6326
282	WASHER,SPRING	12418220	5310-01-372-3495

APPENDIX H
LUBRICATION ORDER

SECTION I. INTRODUCTION

H-1. GENERAL

The information contained in this appendix provides the lubrication requirements for the LMTV 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 are based on mileage/calendar, and in some cases mileage alone, An example of a mileage/calendar interval is: Cl, 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 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 71, 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-9.

H-1. GENERAL (CONT)

g. Interval Symbols. The lubrications 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-biannually/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.**

Engine/transmission oil must be sampled every 90 days as prescribed by DA Pam 738-750. Hydraulic fluids must be sampled annually as prescribed by DA Pam 738-750.

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 CHART

H-5. LUBRICATION 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	SAE 10W30 OR OE/HDO-10	OEA
Transmission (total system)	43.3 qt (41 L)	OE/HDO-15/40	OE/HDO-10	OEA
Transmission (at oil change)	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	27 gal (102.2 L)	OE/HDO-10	OE/HDO-10	OEA
Front axle differential (maximum capacity)	9.5 qt (9.0 L)	GO-80/90	GO-80/90	SAE 75W90 OR GO-75
Rear axle differential (maximum capacity)	18.05 qt (17.1 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
11K Self-Recovery Winch (SRW)	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
Spring bolts and spring shackles	As Required	GAA	GAA	GAA
Front axle shaft U-joints and steering knuckles	As Required	GAA	GAA	GAA

H-5. LUBRICATION 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)
Front 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
11K Self-Recovery Winch (SRW) cable	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
MIL-A-46153	Antifreeze, Ethylene Glycol, Inhibited, Heavy Duty, Single Package
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)	MIL-A-46153	MIL-A-46153	N/A
Cooling system (total system)	43.8 qt (41.5 L)	MIL-A-46153	MIL-A-46153	N/A
Cooling system, Arctic (total system)	58.3 qt (55.2 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

H-6. LUBRICATION 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).*	2.5
Annually (A)	Lubrication performed once every year or every 12,000 mi (19,308 km).*	1.5
Bi-annually (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).**	4.0
24K	Lubrication performed once every 24,000 mi (38,616 km).**	0.5

* Whichever occurs first.
** No calendar interval.

H-7. LUBRICATION LOCATOR VIEWS

LUBRICANT INTERVAL

INTERVAL LUBRICANT

Engine Crankcase Breather (O)
(See note 17 and view A)

Fuel Filter (O)
(See note 6 and view A)

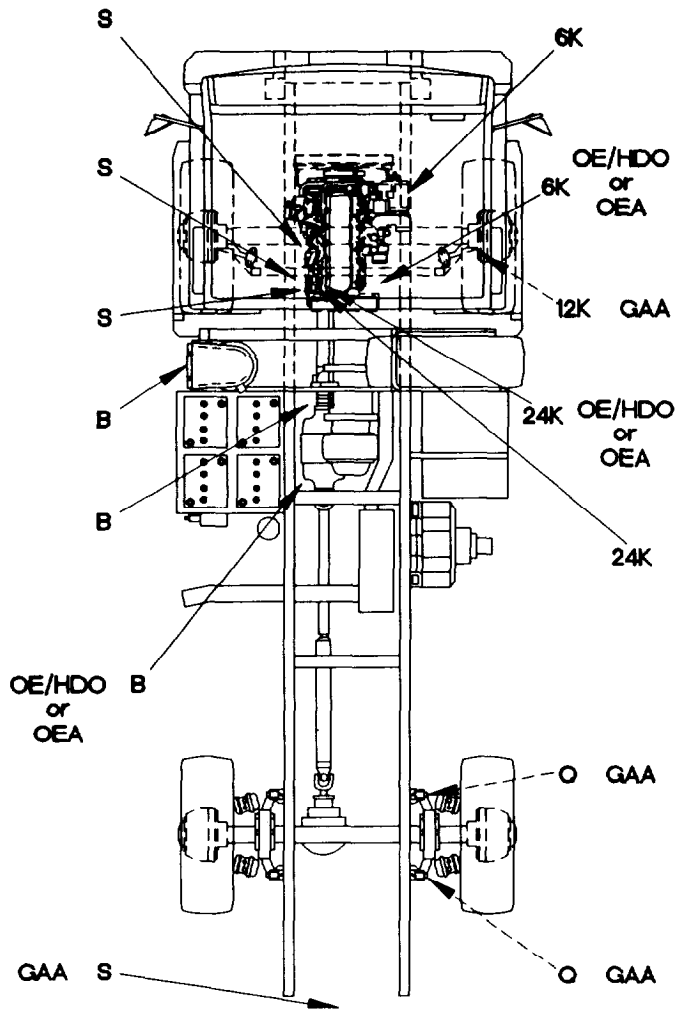
Fuel/Water Separator (O)
(See note 5 and view B)

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)

Towing Pintle Fill (O)
(See note 16 and views J and K)



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 22)

Power Steering Reservoir Drain and Fill (O)
(See note 4 and view G)

Power Steering Filter (O)
(See note 4 and view G)

Spring Bolt Fill (O)
(See note 18 and view H)

Spring Shackle Fill (O)
(See note 18 and view AE)

CHASSIS

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

LUBRICANT INTERVAL

Spring Bolt
Fill (O)
(See note 18 and view H)

Spring Shackle
Fill (O)
(See note 18 and view I)

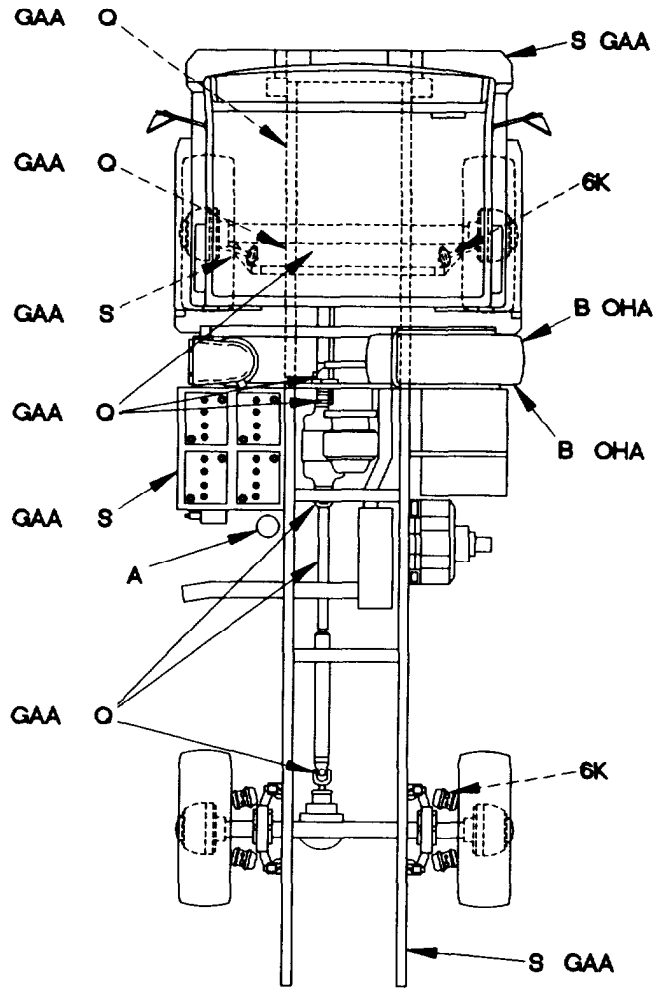
Tie Rod Ends
Fill (O)
(See note 13 and view N)

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 25 and view AF)

Universal and Slip Joints
Fill (O)
(See note 9 and view P)



INTERVAL LUBRICANT

11K Self-Recovery Winch (SRW) Cable Front Roller Fairlead
Fill (O)
(See note 23 and views Z and AA)

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)

11K Self-Recovery Winch (SRW) Cable Rear Roller Fairlead
Fill (O)
(See note 23 and views AB and AC)

CHASSIS

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

H-7. LUBRICATION LOCATOR VIEWS (CONT)

LUBRICANT INTERVAL

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 Fill (O)
(See note 24 and view AD)

Hydraulic Reservoir and Filter
Drain and Fill (O)
(See note 8 and view X)

Rear Axle Inner Wheel Bearing Repack (O)
(See note 22)

Rear Axle
Check and Fill (O)
(See note 11 and view T)

INTERVAL LUBRICANT

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)

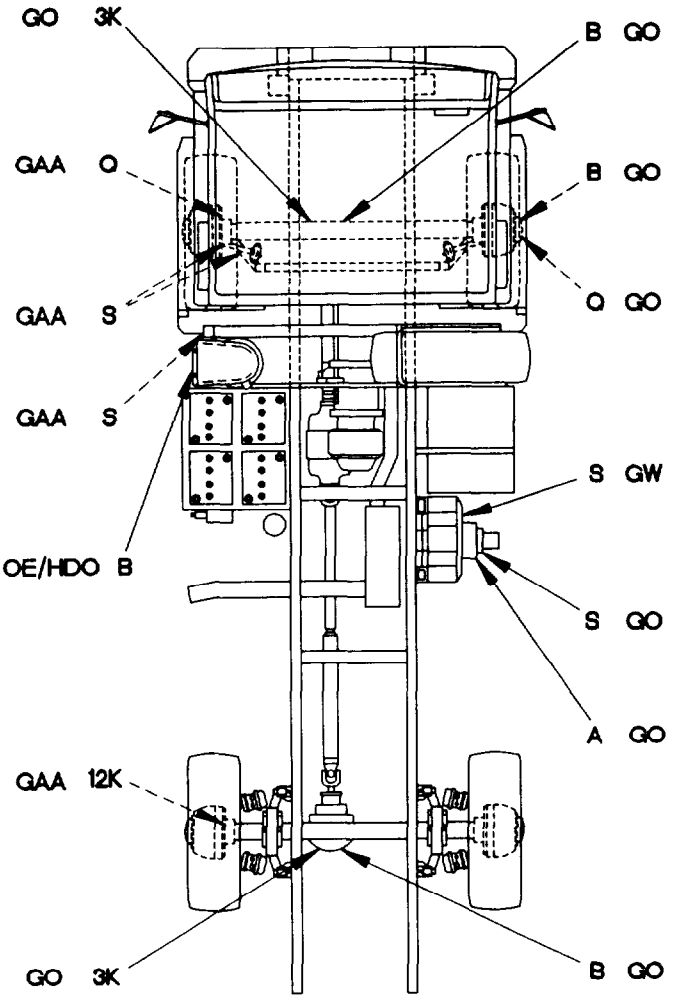
Wheel End Planetary Hubs
Check and Fill (O)
(See note 12 and view V)

11K Self-Recovery Winch (SRW) Cable
Fill (O)
(See note 14 and view W)

11K Self-Recovery Winch (SRW)
Check and Fill (O)
(See note 15 and view Y)

11K Self-Recovery Winch (SRW)
Drain and Fill (O)
(See note 15 and view Y)

Rear Axle
Drain and Fill (O)
(See note 11 and view T)

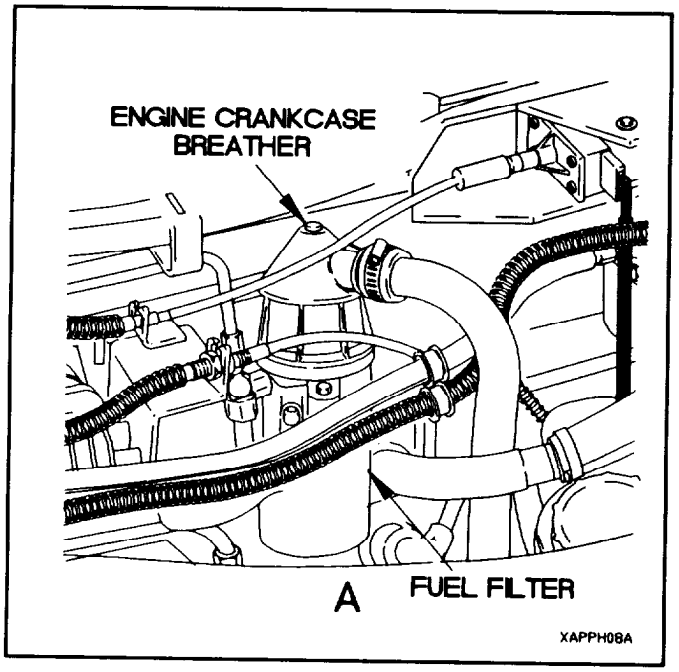


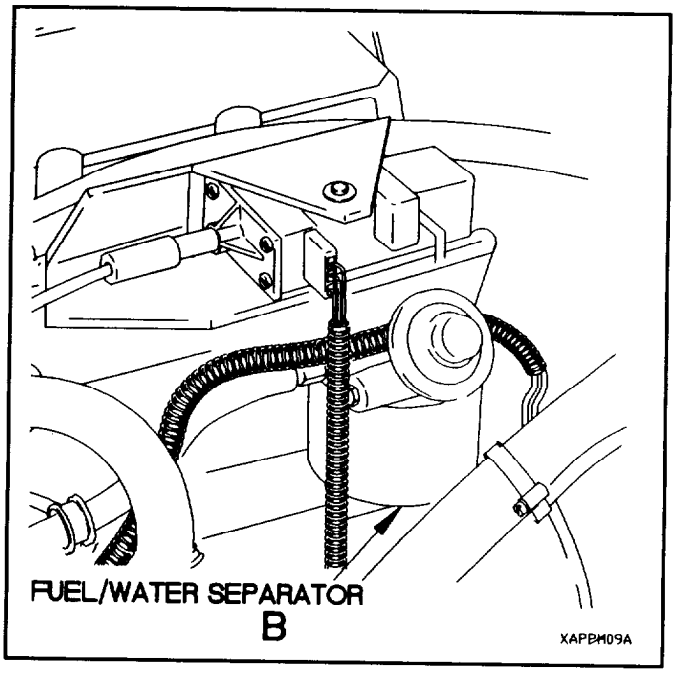
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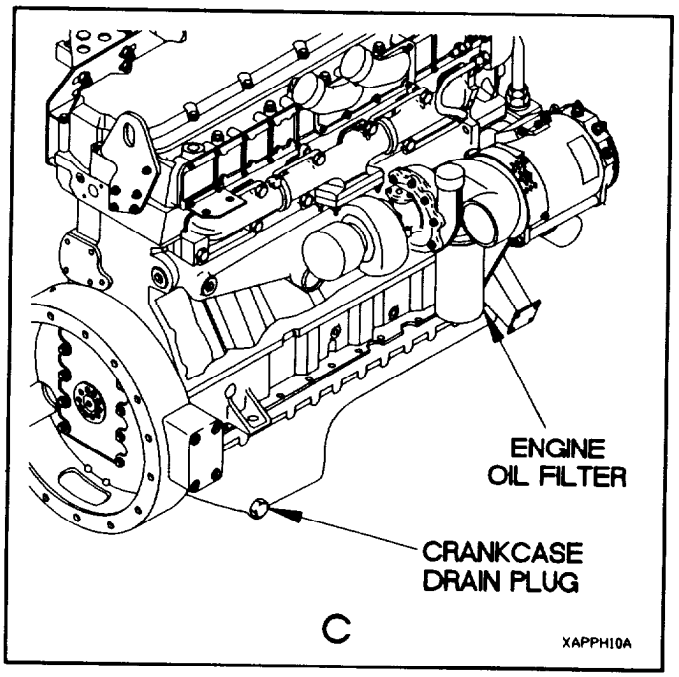
CHASSIS

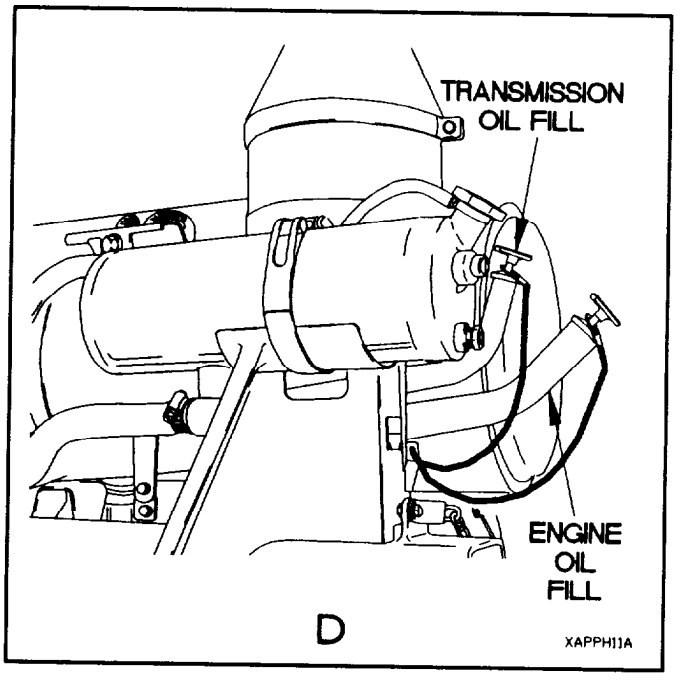
NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

H-8. LUBRICATION LOCAL VIEWS

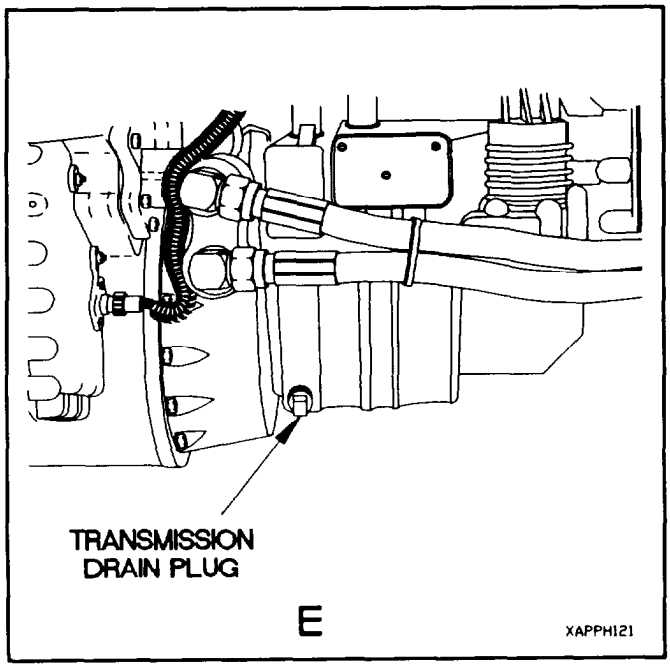


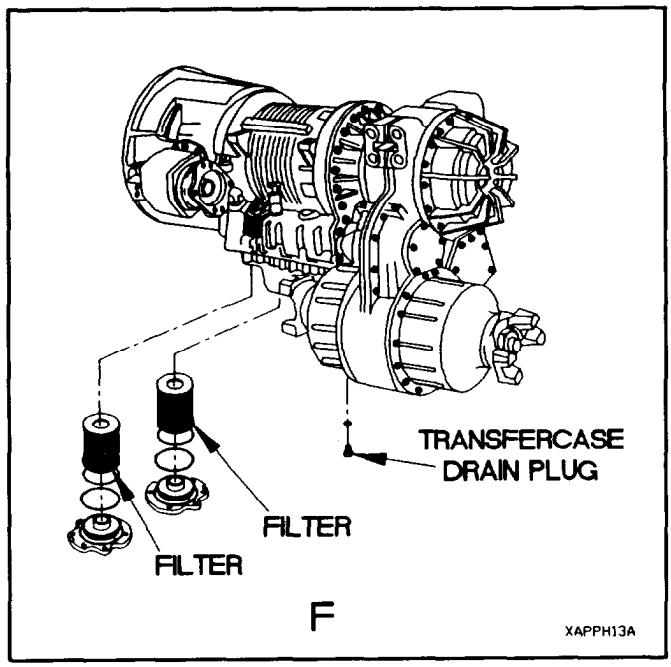


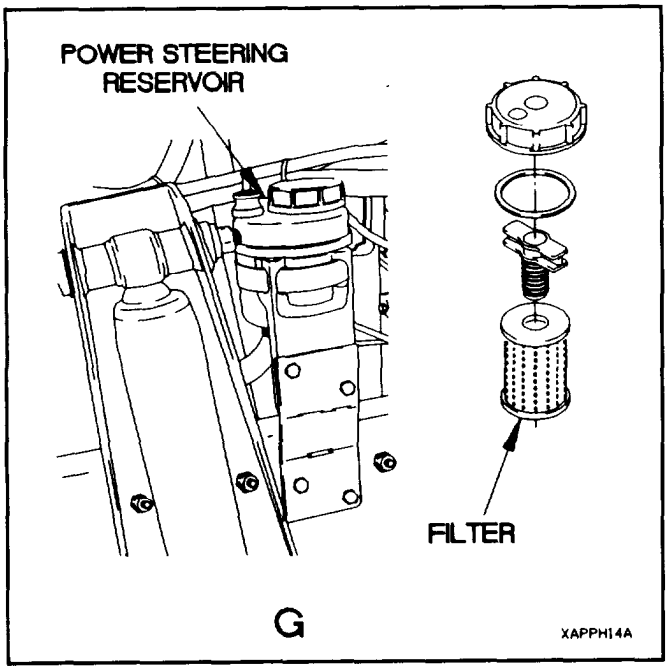


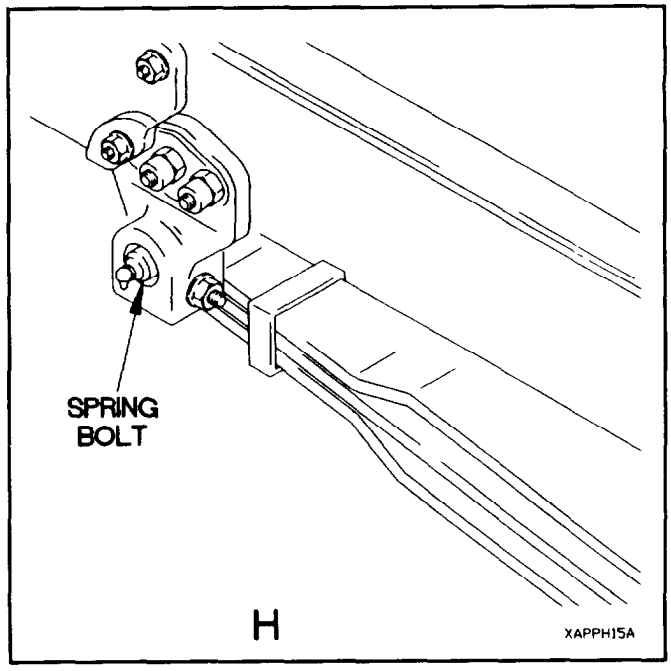


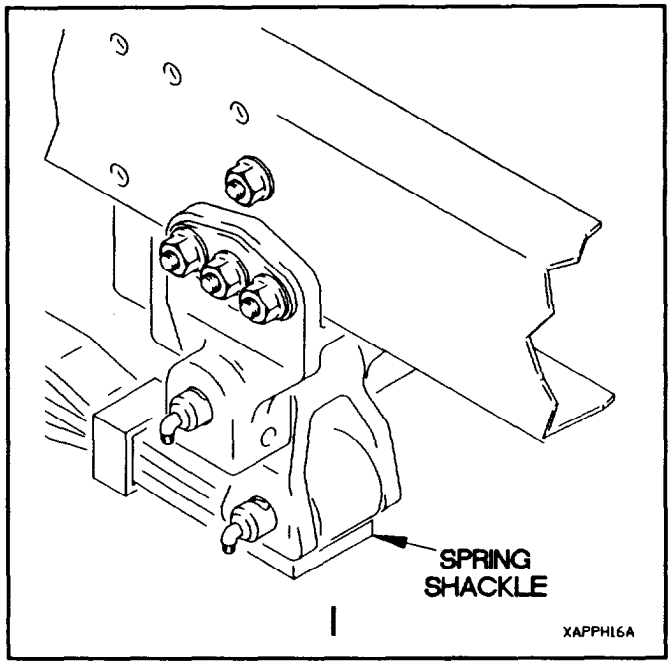
H-8. LUBRICATION LOCAL VIEWS (CONT)



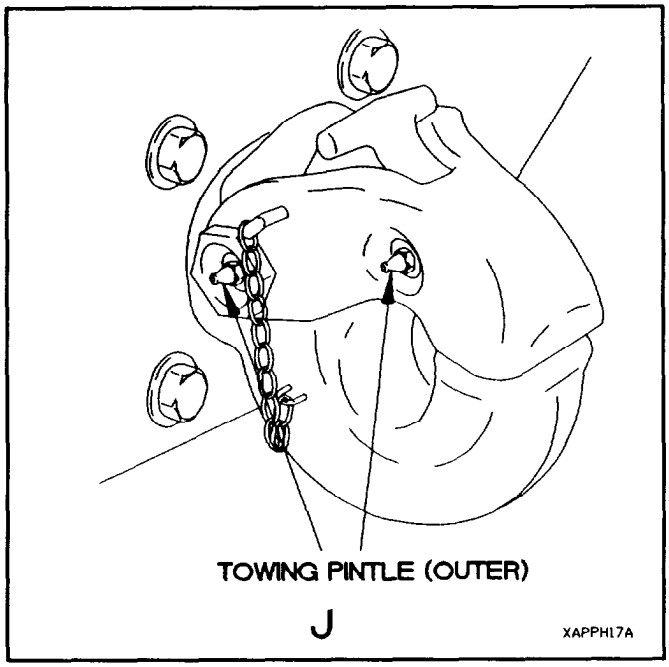




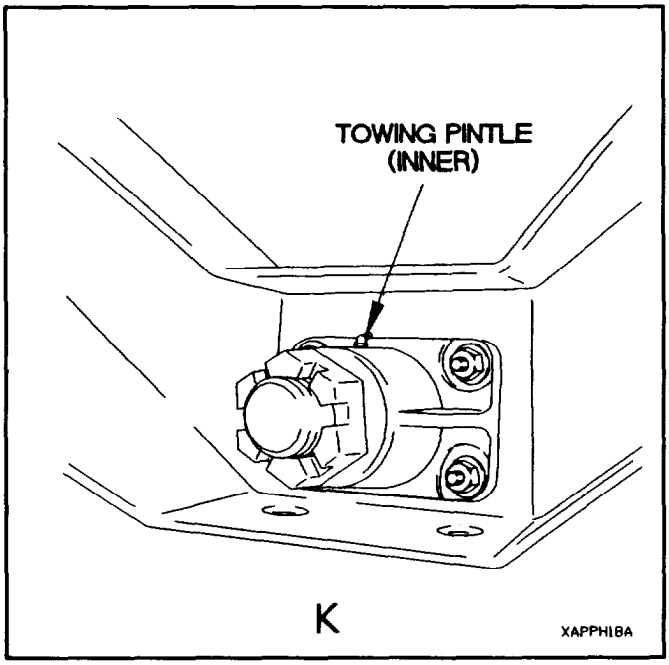




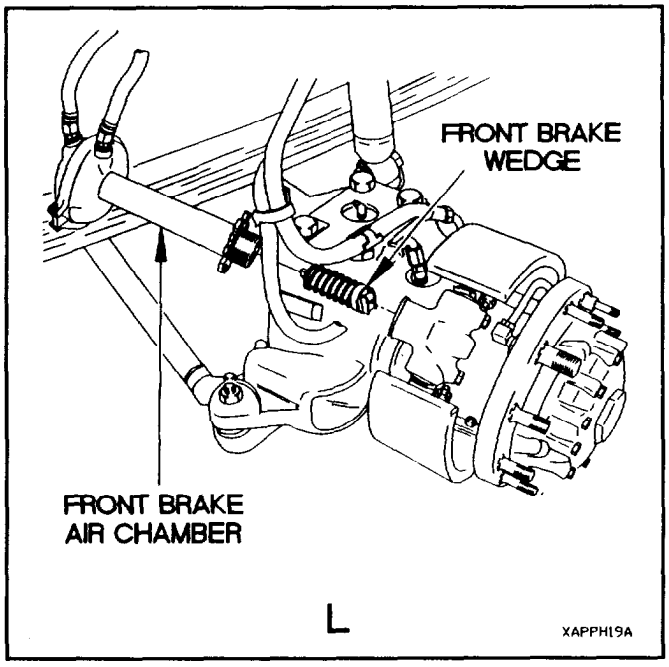
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J XAPPH17A

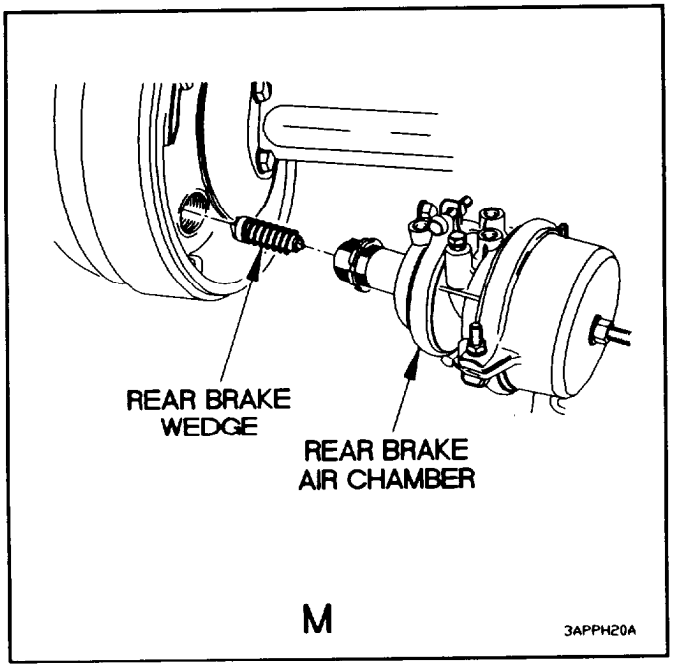


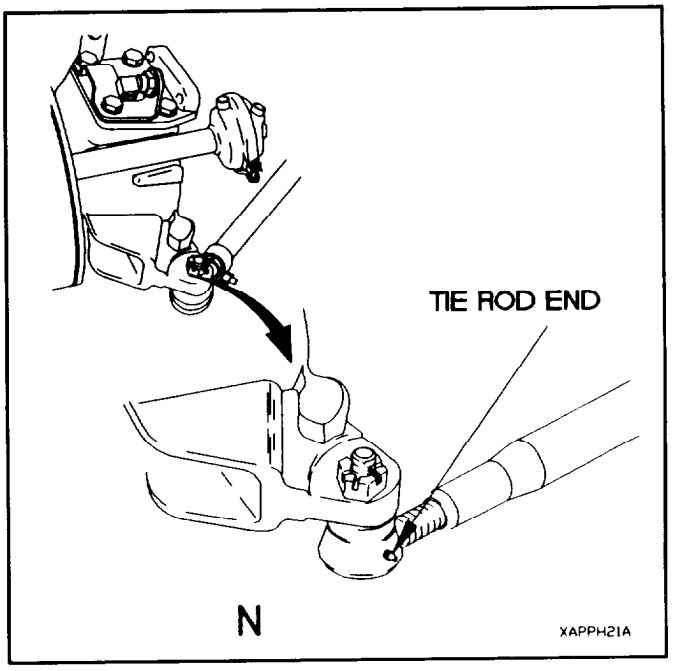
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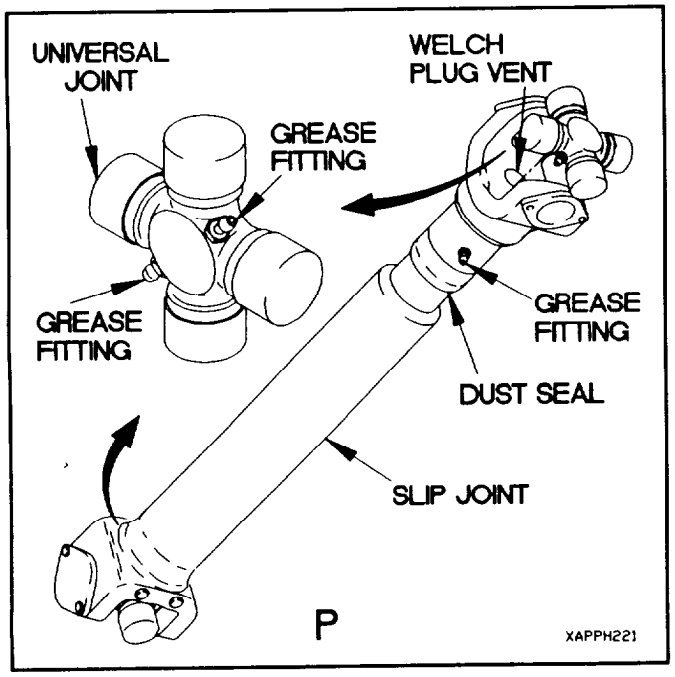


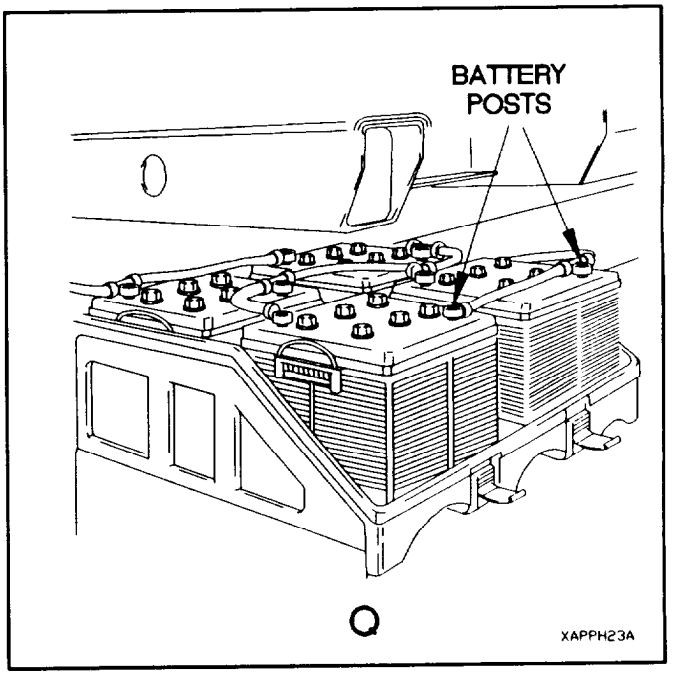
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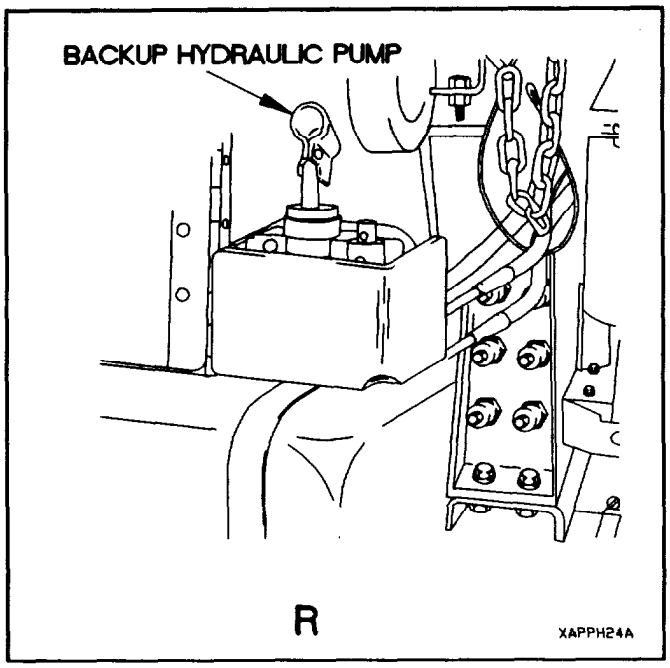
H-8. LUBRICATION LOCAL VIEWS (CONT)

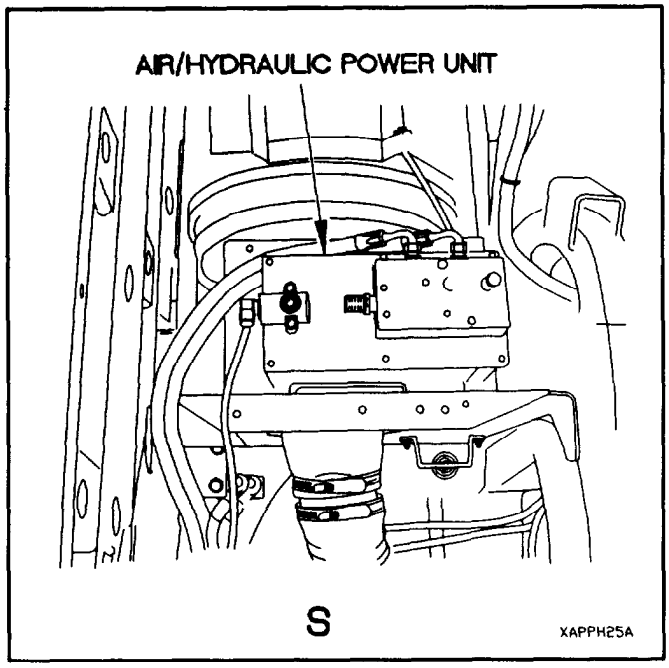


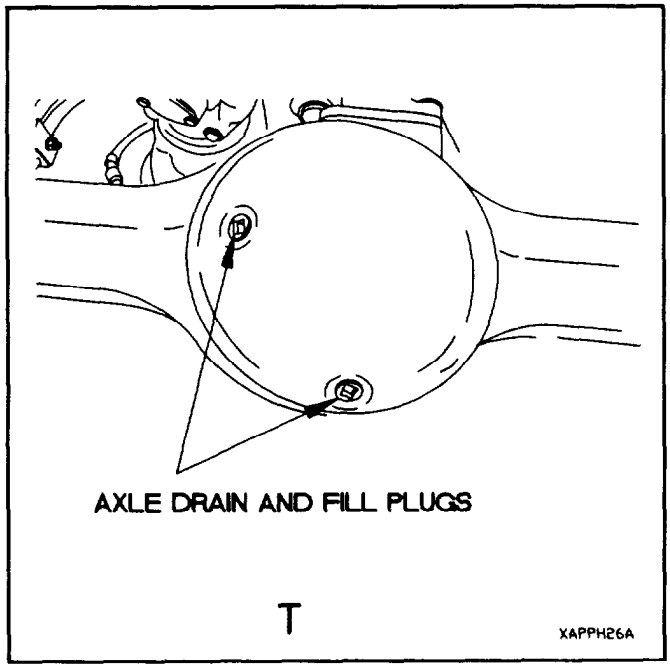


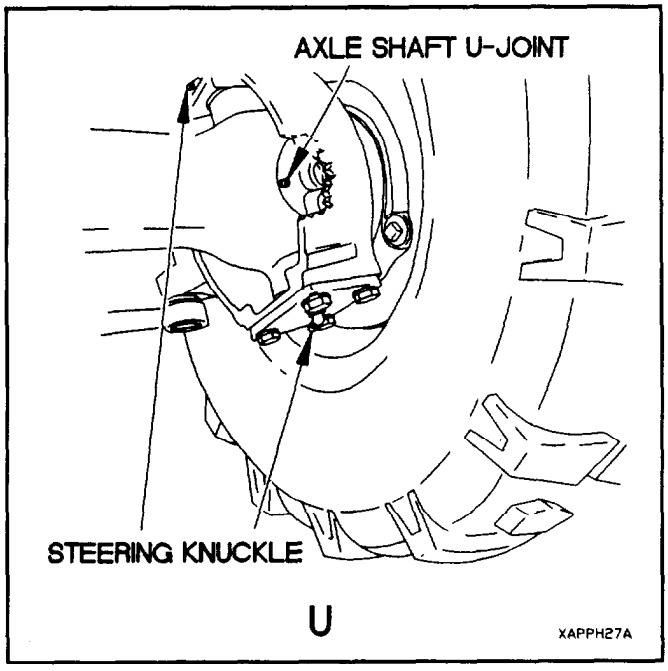




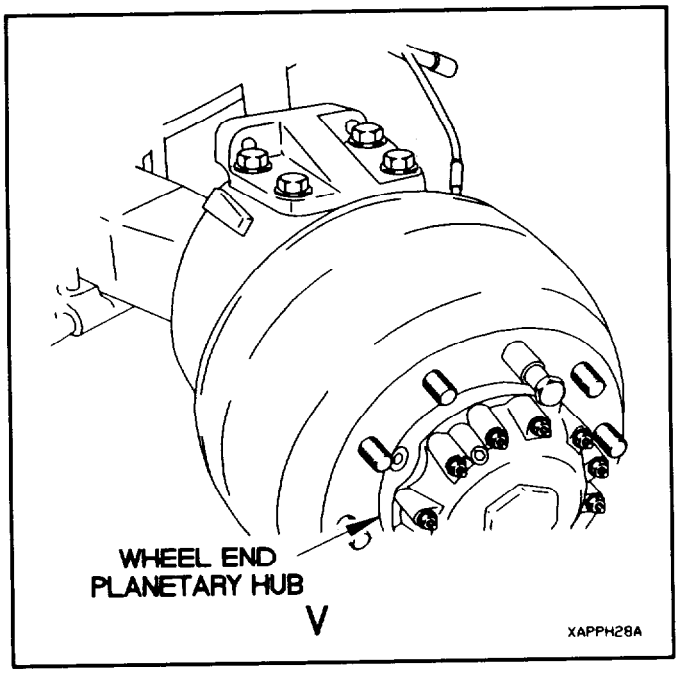

BACKUP HYDRAULIC PUMP
R
XAPPH24A

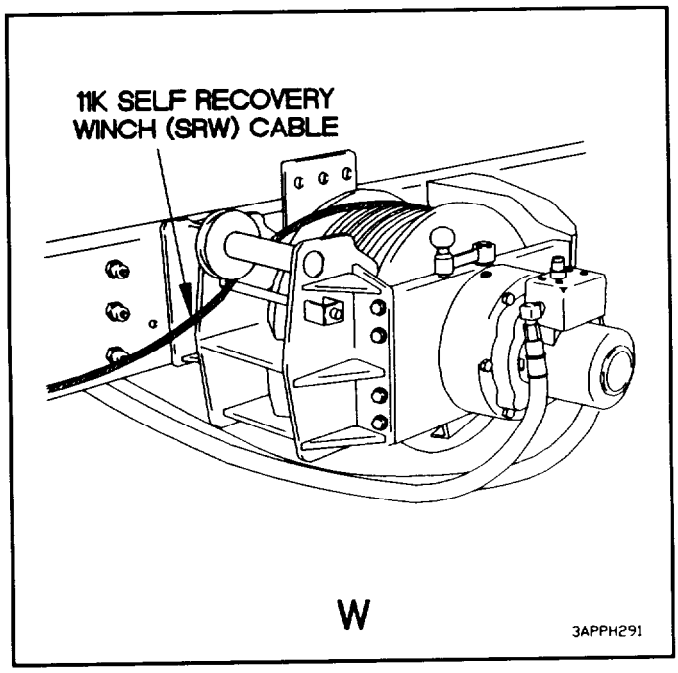

AIR/HYDRAULIC POWER UNIT
S
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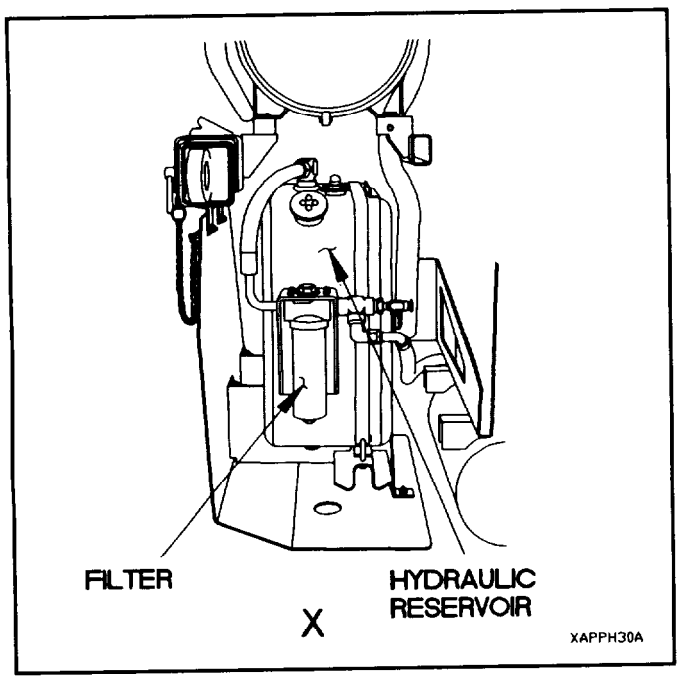

AXLE DRAIN AND FILL PLUGS
T
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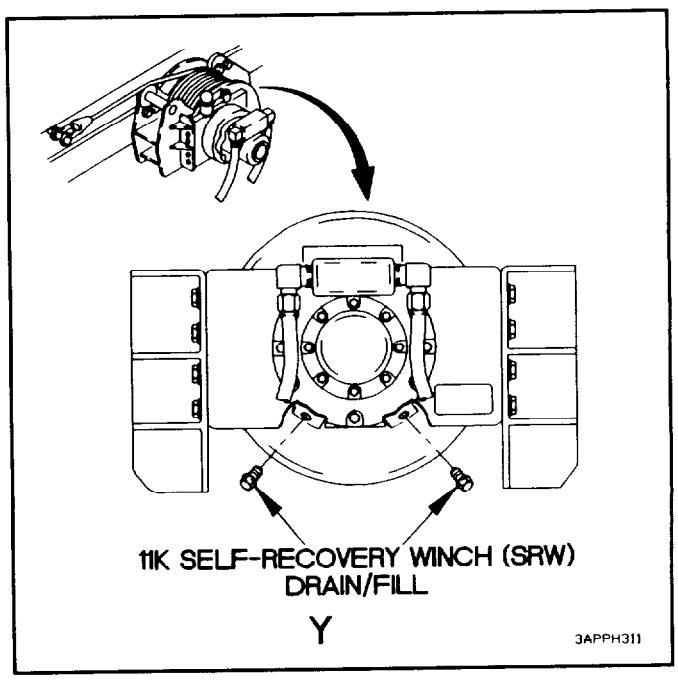

AXLE SHAFT U-JOINT
STEERING KNUCKLE
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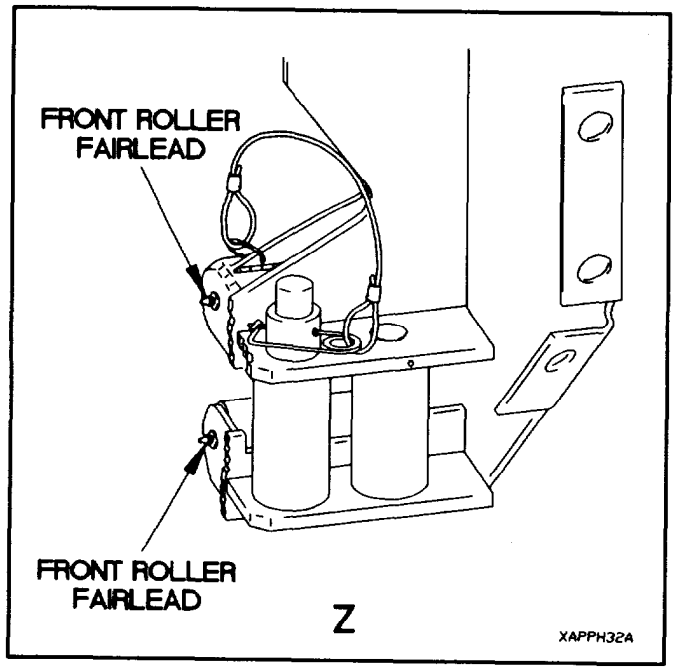
H-8. LUBRICATION LOCAL VIEWS (CONT)



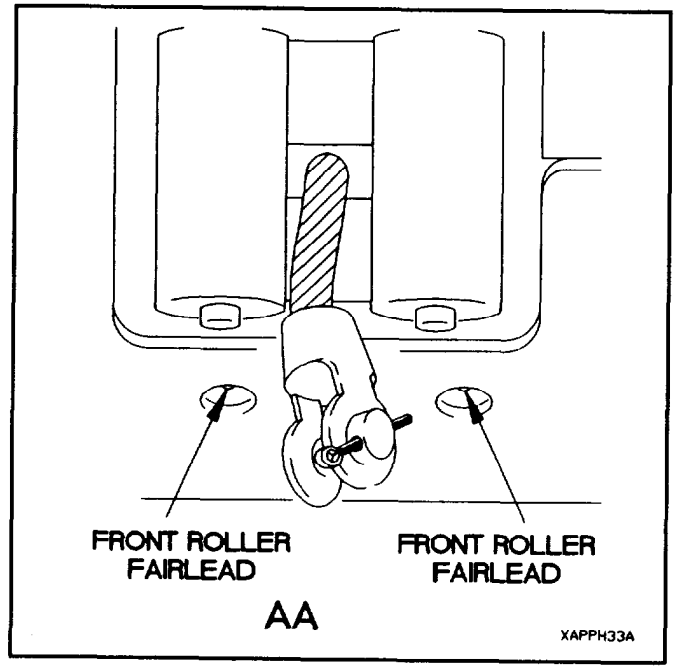




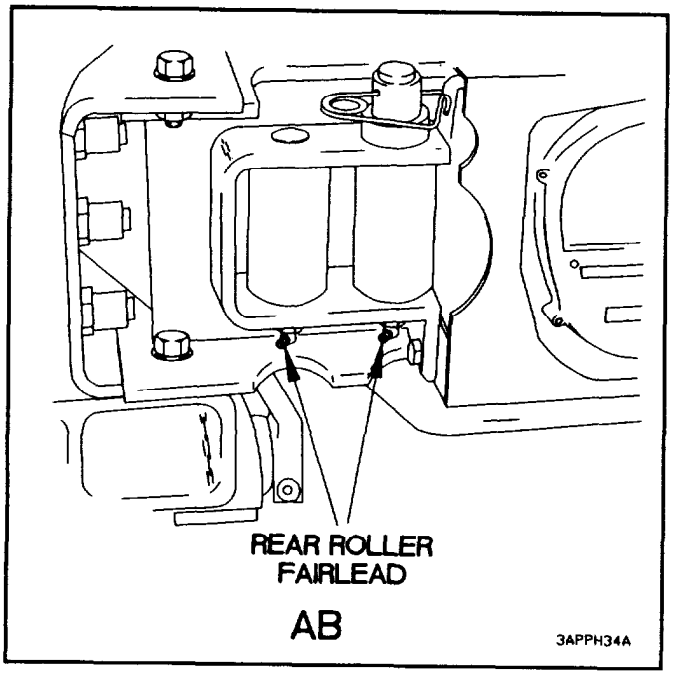



FRONT ROLLER FAIRLEAD
FRONT ROLLER FAIRLEAD
XAPPH32A

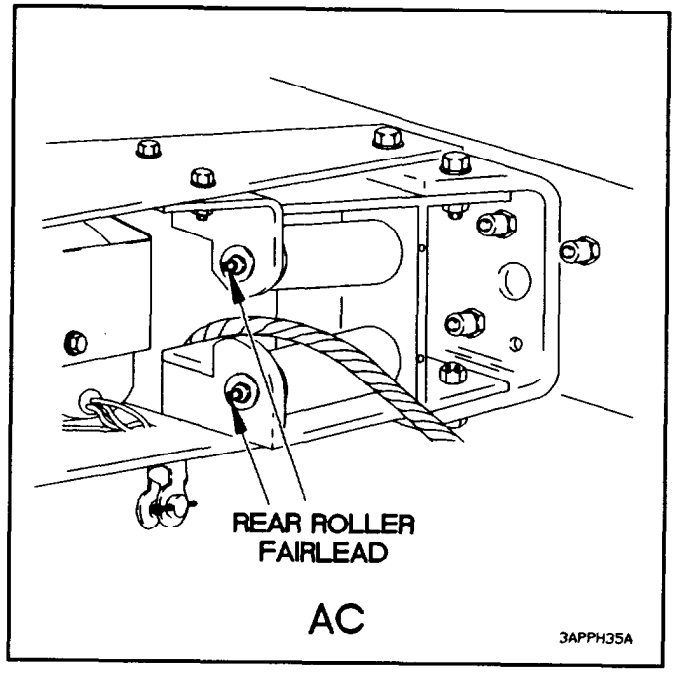
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FRONT ROLLER FAIRLEAD
FRONT ROLLER FAIRLEAD
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AA

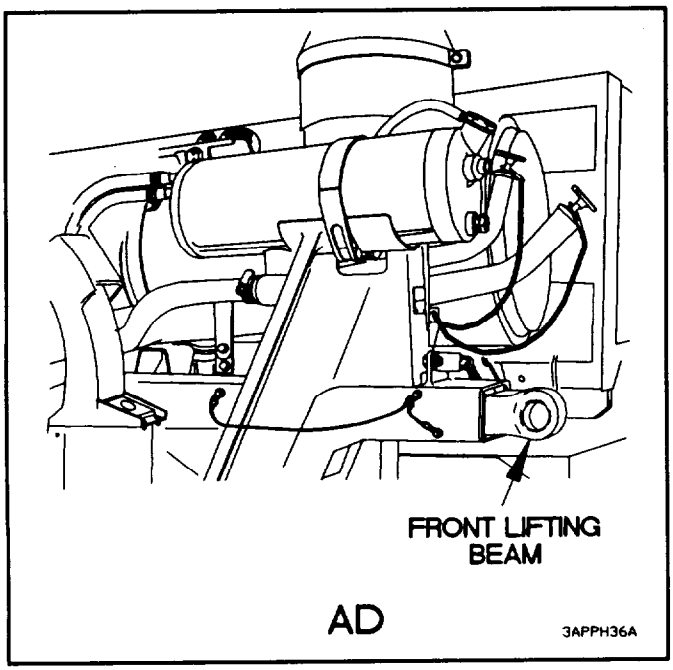

REAR ROLLER FAIRLEAD
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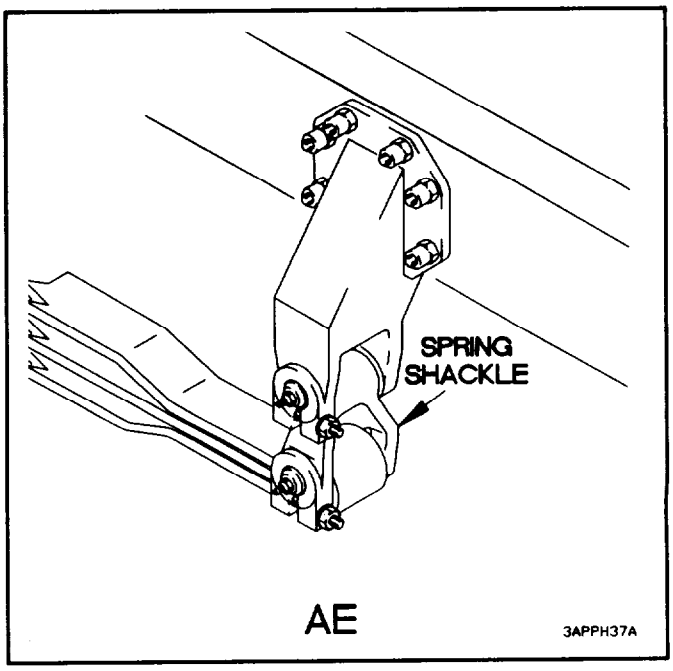
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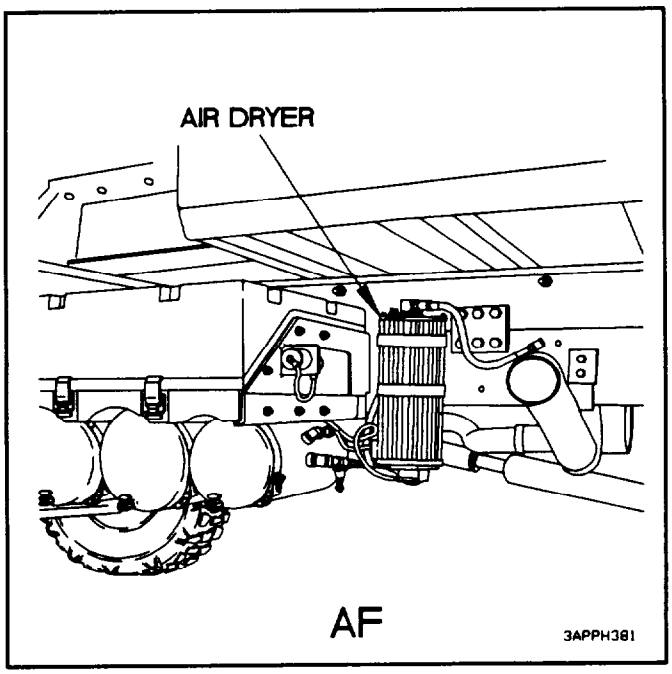

REAR ROLLER FAIRLEAD
3APPH35A

AC

H-8. LUBRICATION LOCAL VIEWS (CONT)







H-9. LUBRICATION 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 change engine oil every 6,000 miles (9,654 km). 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.

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 perform transmission oil change 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 9-2320-365-10). Do not overfill. Replace oil filters each time transmission oil is changed.

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.

5. FUEL/WATER SEPARATOR. Replace filter element every 6,000 miles (9,654 km) or once every six months, whichever occurs first.

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.

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 O-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. 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.

H-9. LUBRICATION NOTES (CONT)

9. PROPELLER SHAFT UNIVERSAL end SLIP JOINTS.
Lubricate propeller 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.

- 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, replace the complete U-joint.

- 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, replace propeller shaft.

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 paragraph number 19-7. 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.

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. 11K SELF-RECOVERY WINCH (SRW) CABLE:

CAUTION

Do not use dry cleaning solvent to clean 11K Self-Recovery Winch (SRW) cables. Use of dry cleaning solvent will remove lubricant from inner strands of 11K SRW cables. Failure to comply may result in damage to equipment.

a. After each operation:

Clean and lubricate length of 11K SRW cable reeled out with new OE/HDO 30.

b. Infrequent use or in very damp conditions:

Lubricate 11K SRW cable with GW.

c. Dry or dusty conditions:

Do not lubricate 11K SRW cable.

d. Every six months:

(1) Unwind entire length of 11K SRW cable (TM 9-2320-365-10).
(2) Soak and clean 11K SRW cable with new OE/HDO 30.
(3) Wipe off excess OE/HDO 30.
(4)Coat 11K SRW cable with GW.
(5) Rewind 11K SRW cable (TM 9-2320-365-10).

15. 11K SRW. Check 11K SRW gear oil level every 6,000 miles (9,654 km) or once every six months, whichever occurs first. Refill 11K 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 11K 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 11K 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 2, Appendix D) to plug and position plug in top hole.
(6) Rotate drum until open hole is at top.
(7) Apply adhesive (Item 2, Appendix D) to plug and position plug in top hole.
(8) Tighten plugs to 13-15 lb-ft (18-20 N•m).

H-9. LUBRICATION NOTES (CONT)

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 11K 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 11K SRW. Remove the plug.
(4) Position drain pan (Item 17, Appendix C) under 11K SRW.
(5) Rotate the drum until either hole is straight down to the bottom of the 11K 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 2, Appendix D) to plug and position plug in top hole.
(9) Rotate drum until open hole is at top.
(10) Apply adhesive (Item 2, 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.

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 71, Appendix D) or equivalent, and replace o-ring seal every 6,000 miles (9,654 km) or once every six months, whichever occurs first.

18. FRONT and REAR AXLE SPRING BOLT and SPRING SHACKLE. Lubricate front and rear axle spring bolts and spring shackles 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, 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 end 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:

- Seals are replaced
- Plungers are removed
- Brakes are relined
- Grease becomes contaminated or hardened

22. FRONT end 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.

23. 11K 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.

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.**

24. FRONT LIFTING BEAM. Remove left and right lifting beams and clean with Dry Cleaning Solvent (SD P-D-680) (Item 71, 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.

25. AIR DRYER. Service air dryer (para 23-6) every 12,000 miles (19,308 km) or annually, whichever occurs first.

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 LMTV.

J-2. GENERAL

This list identifies items that do not have to accompany the LMTV 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

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GLOSSARY
ABBREVIATIONS

A/C	Air Conditioner
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
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, or Chemical
NO/NC	Normally Open/Normally Closed
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
TPS	Throttle Position Sensor
TPSS	Transmission Pushbutton Shift Selector
VDC	Volts Direct Current
VIM	Vehicle Interface Module

WTECII	World Transmission Electronic Controls (version 2)
WTEC III	World Transmission Electronic Controls (version 3)

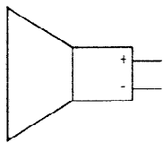
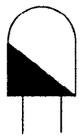
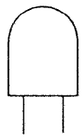
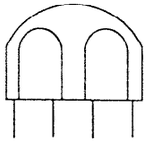
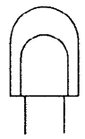
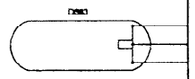
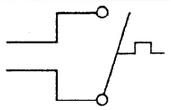
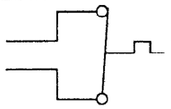
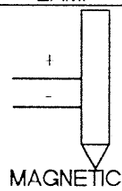
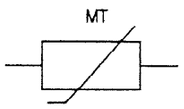
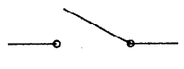
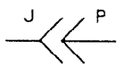
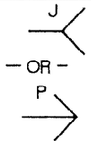
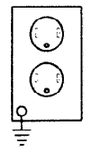
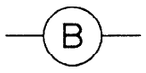
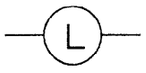
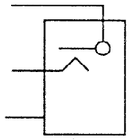
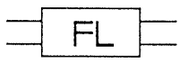
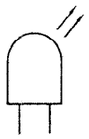
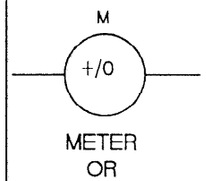
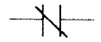
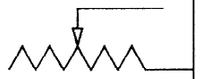
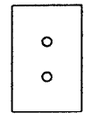
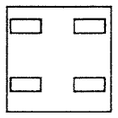
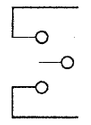
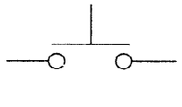
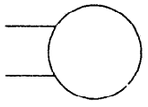
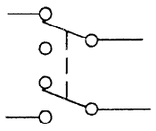
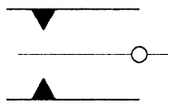
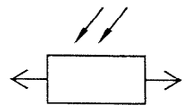
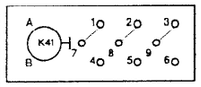
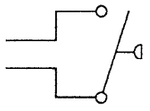
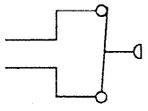
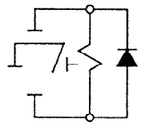
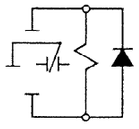
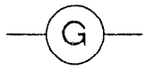
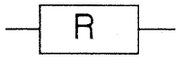
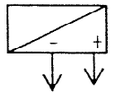
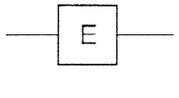
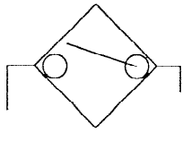
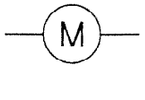
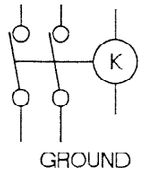
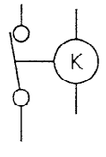
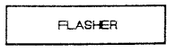
 HORN	 BLACKOUT MARKER	 LAMP	 DUALBEAM LAMP	 GROUND	 POWER LAMP	 OPEN CONTACT	 BATTERY	 FLOURESCENT LIGHT
 TEMPERATURE SWITCH OPEN	 TEMPERATURE SWITCH CLOSED	 MAGNETIC PICKUP	 SENSOR	 NORMALLY OPEN	 NORMALLY CLOSED	 CONNECTOR	 RECEPTACLE	 ELECTRICAL OUTLET
 MOTOR	 SOLENOID	 LEVEL SENSOR	 FILTER	 LED	 METER OR GAUGE	 CLOSED CONTACT	 DIMMER MODULE	 TELEPHONE RECEPTACLE
 CIRCUIT BREAKER	 TWO WAY SWITCH	 PUSHBUTTON	 CIRCULATING PUMP	 DPDT SWITCH	 DPST SWITCH	 PHOTOCELL	 FUSE	 RELAY
 PRESSURE SWITCH OPEN	 PRESSURE SWITCH CLOSED	 NORMALLY OPEN	 NORMALLY CLOSED	 ALTERNATOR	 RESISTOR	 TERMINAL LUG	 ELECTRONIC IGNITION UNIT	
 DIODE	 SPLICE	 SENSING SWITCH	 MOTOR	 GROUND RELAY	 RELAY	 CIRCUT BREAKER	 FLASHER	

FIGURE FO-1 ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 1 OF 34

SIZE B | ILL. NO. 5WD01L11 | FP-1/FP-2 BLANK

CONNECTORS			
NUMBER	ZONE	SH	DESCRIPTION
A	C258	29	ELECTRONIC CONTROL UNIT
A	D265	30	ELECTRONIC CONTROL UNIT
A13	A66	8	WTEC II TRANSMISSION CONNECTOR A
A13	A70	8	WTEC II TRANSMISSION CONNECTOR B
A13	A74	9	WTEC II TRANSMISSION CONNECTOR C
B	E258	29	ELECTRONIC CONTROL UNIT
B	F265	30	ELECTRONIC CONTROL UNIT
C	E260	29	ELECTRONIC CONTROL UNIT
C	F266	29	ELECTRONIC CONTROL UNIT
J1	D285	32	VAN 110 VAC POWER ENTRY
J2	A185	21	EMI FILTER
J2	E285	32	VAN 110 VAC POWER ENTRY
J3	D205	23	AIRDROP ONLY
J5	A38	5	VEHICLE HORN
J6	A38	5	VEHICLE HORN
J7	A188	21	WTEC II TRANSMISSION DIMMER MODULE
J8	B38	5	BLACKOUT MARKER RIGHT FRONT
J9	C38	5	FRONT RIGHT TURN SIGNAL
J10	B38	5	PARKING LIGHT FRONT RIGHT
J12	D38	5	RIGHT HEADLIGHT
J13	C38	5	RIGHT HEADLIGHT
J14	C38	5	RIGHT HEADLIGHT
J17	H38	5	BLACKOUT DRIVE LIGHT
J18	D38	5	LEFT HEADLIGHT
J19	E38	5	LEFT HEADLIGHT
J19	C177	20	CAB - DASH - LEFT - UNDERDASH
J20	D38	5	LEFT HEADLIGHT
J22	G38	5	PARKING LIGHT FRONT LEFT
J23	F38	5	FRONT LEFT TURN SIGNAL
J24	H38	5	BLACKOUT MARKER LEFT FRONT
J25	G85	10	WINDSHIELD WASHER ROTARY PUMP (B3)
J27	A43	5	CHASSIS - FRONT
J31	E55	7	ENGINE
J31X	F175	20	CAB - DASH - LEFT - UNDERDASH
J39	G61	7	ENGINE
J43	G42	5	CHASSIS - FRONT
J43X	F42	5	CHASSIS - FRONT
J43X	G175	20	CAB - DASH - LEFT - UNDERDASH
J50	E85	10	CAB MARKER LIGHT FRONT UPPER LEFT
J51	D42	5	CHASSIS - FRONT
J52	E38	5	CHASSIS - FRONT BUMPER
J52	B203	23	CHASSIS - FRONT
J53	F200	23	AIRDROP ONLY
J55	C85	10	CAB MARKER LIGHT FRONT UPPER RIGHT
J57	D85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE LEFT
J59	C85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
J60	D85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE
J62	E88	10	ROTARY WARNING LIGHT CONNECTOR
J65	E186	21	ROTARY WARNING LIGHT CONNECTOR
J78	F185	21	CAB RADIO CONNECTOR
J93	B50	6	CHASSIS - SPARE TIRE
J95	E38	5	12V INTERVEHICULAR
J95	B206	23	ENGINE
J99	E187	21	CHEMICAL ALARM CONNECTOR
J106	F50	6	CHEMICAL DETECTOR RECEPTACLE
J108	B222	25	CAB DASH CENTER OPTIONS PANEL
J111	E122	14	CTIS ELECTRONIC CONTROL UNIT
J113	G186	21	CTIS PRESSURE TRANSDUCER
J114	B165	21	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
J115	C154	18	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
J116	C159	18	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
J117	F161	18	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
J117	B289	33	WTEC III DIAGNOSTIC CONNECTOR
J118	D161	18	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
J119	B169	19	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
J119	C298	34	WTEC III CAB FLOOR LEFT
J129	F85	10	CAB MARKER LIGHT FRONT LOWER LEFT
J129	F85	10	CAB MARKER LIGHT LEFT DOOR
J130	F202	23	12 PIN CONNECTOR
J131	B85	10	CAB MARKER LIGHT RIGHT DOOR
J132	B85	10	CAB MARKER LIGHT FRONT LOWER RIGHT
J150	B271	31	VAN FRONT MARKER LIGHT
J151	B271	31	VAN FRONT MARKER LIGHT

CONNECTORS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
J152	B271	31	VAN FRONT MARKER LIGHT
J153	A271	31	VAN FRONT MARKER LIGHT
J154	A271	31	VAN FRONT MARKER LIGHT
J155	B287	32	VAN CURBSIDE MARKER LIGHT
J156	B287	32	VAN CURBSIDE MARKER LIGHT
J157	C287	32	VAN ROADSIDE MARKER LIGHT
J158	C287	32	VAN ROADSIDE MARKER LIGHT
J159	D287	32	VAN REAR CENTER MARKER LIGHT
J160	E287	32	VAN REAR CENTER MARKER LIGHT
J161	E287	32	VAN REAR CENTER MARKER LIGHT
J162	B273	31	VAN CURBSIDE BLACKOUT LIGHT
J163	B274	31	VAN CURBSIDE EMERGENCY LIGHT
J164	H274	31	VAN ROADSIDE BLACKOUT LIGHT
J165	H275	31	VAN ROADSIDE EMERGENCY LIGHT
J166	C271	31	VAN FRONT EMERGENCY LIGHT
J167	D287	32	VAN REAR EMERGENCY LIGHT
J173	G272	31	VAN 12/24 VDC POWER RECEPTACLE
J204	D254	29	HEATER SWITCH
J204	B254	29	TROOP HEATER
J205	D254	29	HEATER SWITCH
J205	B254	29	TROOP HEATER
J206	D253	29	HEATER SWITCH
J206	B253	29	TROOP HEATER
J207	F255	29	FURNACE ASSEMBLY
J209	C256	29	WEBASTO CONTROL UNIT
J209A	C230	26	PTO EQUIPPED
J209A	A239	27	ARCTIC KIT W/PTO EQUIPPED
J209B	D230	26	PTO EQUIPPED
J209B	B239	27	ARCTIC KIT W/PTO EQUIPPED
J210	F222	25	CAB DASH CENTER OPTIONS PANEL
J210	C255	29	FURNACE ASSEMBLY
J211	B255	29	FURNACE ASSEMBLY
J214	F246	28	SWINGFIRE HEATER
J215	E230	26	PTO EQUIPPED
J215	C239	27	ARCTIC KIT W/PTO EQUIPPED
J225	B258	29	FURNACE ASSEMBLY
J226	E258	29	WEBASTO CONTROL UNIT
J230	A282	32	VAN CURBSIDE 110 VAC OUTLET
J231	A283	32	VAN CURBSIDE 110 VAC OUTLET
J232	A284	32	VAN CURBSIDE 110 VAC OUTLET
J233	H282	32	VAN ROADSIDE 110 VAC OUTLET
J234	H283	32	VAN ROADSIDE 110 VAC OUTLET
J235	H284	32	VAN ROADSIDE 110 VAC OUTLET
J236	H275	31	VAN ROADSIDE 24 VDC OUTLET
J237	275	31	VAN CURBSIDE 24 VDC OUTLET
J242	D271	31	VAN A/C
J244	F271	31	VAN THERMOSTAT
J245	E271	31	VAN HEATER
J912	B124	14	CAB DASH CENTER HEATER / CTIS ECU
J912	D209	24	CAB DASH CENTER OPTIONS PANEL
J913	B122	14	CAB DASH CENTER HEATER / CTIS ECU
J921	G62	7	TROOP TRANSPORT ALARM
J410	E262	30	CAB ARCTIC HEATER
MT9	F66	8	WTEC II TRANSMISSION (A)
MT9	F70	8	WTEC II TRANSMISSION (B)
MT9	E74	9	WTEC II TRANSMISSION (C)
MT11	F66	8	WTEC II TRANSMISSION (A)
MT11	F70	8	WTEC II TRANSMISSION (B)
MT11	F74	9	WTEC II TRANSMISSION (C)
P2	A185	21	EMI FILTER
P2	G246	28	SWINGFIRE HEATER
P3	D204	23	AIRDROP ONLY
P5	A38	5	VEHICLE HORN
P6	A38	5	VEHICLE HORN
P8	B38	5	BLACKOUT MARKER RIGHT FRONT
P9	C38	5	FRONT RIGHT TURN SIGNAL
P10	B38	5	PARKING LIGHT FRONT RIGHT
P12	D38	5	RIGHT HEADLIGHT
P13	C38	5	RIGHT HEADLIGHT
P14	C38	5	RIGHT HEADLIGHT
P17	H38	5	BLACKOUT DRIVE LIGHT
P18	D38	5	LEFT HEADLIGHT
P18	A177	20	CAB - DASH - LEFT - UNDERDASH

CONNECTORS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
P19	E38	5	LEFT HEADLIGHT
P20	D38	5	LEFT HEADLIGHT
P22	G38	5	PARKING LIGHT FRONT LEFT
P23	F38	5	FRONT LEFT TURN SIGNAL
P24	H38	5	BLACKOUT MARKER LEFT FRONT
P25	G85	10	WINDSHIELD WASHER ROTARY PUMP (B3)
P27	A43	5	CHASSIS - FRONT
P31	E56	7	ENGINE
P31X	D56	7	ENGINE
P32	F59	7	ENGINE OIL PRESSURE SENSOR
P33	H59	7	FUEL/WATER SEPARATOR
P34	E59	7	OIL PRESSURE WARNING LIGHT SWITCH
P36	A57	7	WATER COOLER TEMPERATURE
P37	C57	7	WATER TEMPERATURE SWITCH
P38	F61	7	ENGINE SPEED MAGNETIC PICKUP
P39	G61	7	ENGINE
P41	B57	7	WATER TEMPERATURE SENSOR
P410	E240	27	ARCTIC KIT W/PTO EQUIPPED
P42	F57	7	ETHER SENSOR SWITCH
P43	G42	5	CHASSIS FRONT
P43X	F42	5	CHASSIS FRONT
P50	E85	10	CAB MARKER LIGHT FRONT UPPER LEFT
P50	F206	23	LH FRONT TOP CAB MARKER LIGHT
P51	D190	22	CAB DASH RIGHT POWER DISTRIBUTION PANEL
P52F	E38	5	CHASSIS FRONT
P52R	E196	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
P53R	D196	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
P54	D198	22	LEFT REAR MARKER
P55	C85	10	CAB MARKER LIGHT FRONT UPPER RIGHT
P55	D206	23	RH FRONT TOP CAB MARKER LIGHT
P56	E198	22	MIDDLE REAR MARKER
P57	D85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE LEFT
P57	F206	23	LH FRONT TOP CAB CLEARANCE LIGHT
P58	E198	22	RIGHT REAR MARKER
P59	C85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
P59	D206	23	RH FRONT TOP CAB CLEARANCE LIGHT
P60	D85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE
P60	E206	23	MIDDLE FRONT TOP CLEARANCE LIGHT
P61	F198	22	RH COMPOSITE LIGHT
P62	F198	22	RH COMPOSITE LIGHT
P63	G198	22	RH COMPOSITE LIGHT
P64	F198	22	RH COMPOSITE LIGHT
P65	E186	21	ROTARY WARNING LIGHT CONNECTOR
P67	D301	34	WTEC III TRANSMISSION
P69	D59	7	ENGINE
P71	H301	34	WTEC III TRANSFER CASE
P72	G301	34	WTEC III ENGINE SPEED SENSOR
P73	G300	34	WTEC III THROTTLE POSITION SENSOR
P74	B198	22	LH COMPOSITE LIGHT
P76	C198	22	LH COMPOSITE LIGHT
P77	C198	22	LH COMPOSITE LIGHT
P78	B198	22	LH COMPOSITE LIGHT
P80	G51	6	CHASSIS - REAR
P80	D78	9	AIR DRYER (EXCEPT DUMP)
P81	C47	6	CHASSIS - FRONT
P81	D62	7	STARTER THERMO SWITCH
P82	B51	6	FUEL TANK LEVEL SENSOR
P83	B172	20	CAB - DASH - LEFT - UNDERDASH
P84	F51	6	CHASSIS - REAR
P85	A198	22	LH SIDE MARKER LIGHT
P86	A198	22	LH REAR MARKER LIGHT
P87	C198	22	BACKUP LIGHT
P88	H198	22	RH SIDE MARKER LIGHT
P89	G198	22	RH REAR MARKER LIGHT
P99	F186	21	CHEMICAL ALARM CONNECTOR
P10	B38	5	PARKING LIGHT FRONT RIGHT
P110	E119	14	CTIS ELECTRONIC CONTROL UNIT
P111	E122	14	CTIS ELECTRONIC CONTROL UNIT
P112	G123	14	CAB DASH CENTER HEATER / CTIS ECU
P113	F123	14	CTIS ELECTRONIC CONTROL UNIT
P114	C296	33	WTEC III CAB DASH RIGHT KICK PANEL
P115	C290	33	WTEC III CAB DASH RIGHT KICK PANEL
P116	C185	21	CAB - DASH - RIGHT - UNDERDASH

CONNECTORS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
P118	D161	18	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
P116	E291	33	WTEC III CAB DASH RIGHT KICK PANEL
P119	A64	8	WTEC II TRANSMISSION (A)
P119	A69	8	WTEC II TRANSMISSION (SERIAL # 29517497)
P119	A73	9	WTEC II TRANSMISSION (SERIAL # 29513233)
P119	B169	19	CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS
P125	G84	10	WINDSHIELD WASHER ROTARY PUMP (B3)
P129	F85	10	CAB MARKER LIGHT FRONT LOWER LEFT
P129	F85	10	CAB MARKER LIGHT LEFT DOOR
P131	A85	10	CAB MARKER LIGHT RIGHT DOOR
P132	B85	10	CAB MARKER LIGHT FRONT LOWER RIGHT
P150	B272	31	VAN FRONT MARKER LIGHT
P151	B272	31	VAN FRONT MARKER LIGHT
P152	B272	31	VAN FRONT MARKER LIGHT
P153	A272	31	VAN FRONT MARKER LIGHT
P154	A272	31	VAN FRONT MARKER LIGHT
P155	B287	32	VAN CURBSIDE MARKER LIGHT
P156	B287	32	VAN CURBSIDE MARKER LIGHT
P157	C287	32	VAN ROADSIDE MARKER LIGHT
P158	C287	32	VAN ROADSIDE MARKER LIGHT
P159	D287	32	VAN REAR CENTER MARKER LIGHT
P160	E287	32	VAN REAR CENTER MARKER LIGHT
P161	D287	32	VAN REAR CENTER MARKER LIGHT
P162	B273	31	VAN CUBSIDE BLACKOUT LIGHT
P163	B274	31	VAN CURBSIDE EMERGENCY LIGHT
P164	G274	31	VAN ROADSIDE BLACKOUT LIGHT
P165	G275	31	VAN ROADSIDE EMERGENCY LIGHT
P166	C272	32	VAN FRONT EMERGENCY LIGHT
P167	D287	31	VAN REAR EMERGENCY LIGHT
P172	E264	30	DUMP BODY CONNECTOR
P173	G271	31	VAN 12/24 VDC POWER
P200	B255	29	TROOP HEATER
P200	C255	29	TROOP HEATER
P201	G61	7	ENGINE
P202	A240	27	ARCTIC KIT W/PTO EQUIPPED
P208	F255	29	TROOP HEATER
P209	C256	29	FURNACE ASSEMBLY
P210	F222	25	CAB DASH CENTER OPTIONS PANEL
P210	C227	26	PTO EQUIPPED
P210	A235	27	ARCTIC KIT W/PTO EQUIPPED
P211	D238	27	ARCTIC KIT W/PTO EQUIPPED
P211A	D239	27	ARCTIC KIT W/PTO EQUIPPED
P212	E238	27	ARCTIC KIT W/PTO EQUIPPED
P214	G241	27	ARCTIC KIT W/PTO EQUIPPED
P215	E230	26	PTO EQUIPPED
P215	C239	27	ARCTIC KIT W/PTO EQUIPPED
P216	E229	26	PTO EQUIPPED
P216	B238	27	ARCTIC KIT W/PTO EQUIPPED
P217	C229	26	PTO EQUIPPED
P217	B268	30	PTO EQUIPPED
P217	B238	27	ARCTIC KIT W/PTO EQUIPPED
P901	A209	24	CAB DASH CENTER OPTIONS PANEL
P902	C214	24	CAB DASH CENTER OPTIONS PANEL
P902A	D214	24	CAB DASH CENTER OPTIONS PANEL
P903	C212	24	CAB DASH CENTER OPTIONS PANEL
P903A	D212	24	CAB DASH CENTER OPTIONS PANEL
P904	C211	24	CAB DASH CENTER OPTIONS PANEL
P904A	D211	24	CAB DASH CENTER OPTIONS PANEL
P905	A211	24	CAB DASH CENTER OPTIONS PANEL
P905A	B211	24	CAB DASH CENTER OPTIONS PANEL
P906	A212	24	CAB DASH CENTER OPTIONS PANEL
P906A	B212	24	CAB DASH CENTER OPTIONS PANEL
P908	A215	24	CAB DASH CENTER OPTIONS PANEL
P908A	B215	24	CAB DASH CENTER OPTIONS PANEL
P909	A220	25	CAB DASH CENTER OPTIONS PANEL
P909A	B220	25	CAB DASH CENTER OPTIONS PANEL
P910	C215	24	CAB DASH CENTER OPTIONS PANEL
P910A	D215	24	CAB DASH CENTER OPTIONS PANEL
P911	C220	25	CAB DASH CENTER OPTIONS PANEL

FIGURE FO-1 ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 2 OF 34

SIZE	I.I. NO.	
B	5WD01L21	FP-3/FP-4 BLANK

CONNECTORS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
P911A	D220	25	CAB DASH CENTER OPTIONS PANEL
P912	B124	14	CAB DASH CENTER HEATER / CTIS ECU
P913	B122	14	CAB DASH CENTER HEATER / CTIS ECU
P913	F209	24	CAB DASH CENTER OPTIONS PANEL
P914	A214	24	CAB DASH CENTER OPTIONS PANEL
P914A	B214	24	CAB DASH CENTER OPTIONS PANEL
P921	G62	7	TROOP TRANSPORT ALARM
PBSS	C93	11	WTEC II PUSHBUTTON SHIFT SELECTOR
PX1	A92	11	ENGINE FAN OFF SWITCH
PX10	D107	12	CAB DASH LEFT INSTRUMENT PANEL
PX11	G107	12	CAB DASH LEFT INSTRUMENT PANEL
PX12	C112	13	ROTATING WARNING LIGHT SWITCH
PX12A	E112	13	CAB DASH LEFT INSTRUMENT PANEL
PX13	F92	11	ETHER STARTER SWITCH
PX13A	G92	11	CAB - DASH - LEFT - INSTRUMENT PANEL
PX14	F112	13	FULL HAZARD WARNING SWITCH
PX14A	H112	13	CAB DASH LEFT INSTRUMENT PANEL
PX15	C115	13	MAIN LIGHT SWITCH
PX17	A112	13	IGNITION SWITCH
PX17A	C112	13	CAB DASH LEFT INSTRUMENT PANEL
PX1A	R92	11	CAB - DASH - LEFT - INSTRUMENT PANEL
PX2	D92	11	LAMP TEST SWITCH
PX20	C188	21	TURN SIGNAL FLASHER
PX21	A134	15	WIPER DELAY MODULE
PX22	A184	21	EMI FILTER
PX24	G115	13	INSTRUMENT PANEL LIGHTS DIMMER MODULE
PX25	C119	14	CAB DASH CENTER HEATER / CTIS ECU
PX26	B179	20	CAB - DASH - LEFT - UNDERDASH
PX2A	E92	11	CAB - DASH - LEFT - INSTRUMENT PANEL
PX33	B182	21	CAB - DASH - RIGHT - UNDERDASH
PX33	G292	33	WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR
PX34	E188	21	FRONT AIR PRESSURE METER
PX4	F97	11	FAN SOLENOID
PX5	B97	11	REAR AIR PRESSURE METER
PX6	B107	12	CAB DASH LEFT INSTRUMENT PANEL
PX7	A104	12	CAB DASH LEFT INSTRUMENT PANEL
PX8	G102	12	CAB DASH LEFT INSTRUMENT PANEL
PX8	F289	33	WTEC III SPEEDOMETER SIGNAL
PX9	D97	11	FUEL LEVEL METER
X1	D263	30	CAB ARCTIC HEATER
X1	A250	30	CAB ARCTIC HEATER
X2	D264	30	CAB ARCTIC HEATER
X2	B250	30	CAB ARCTIC HEATER
X3	E263	30	CAB ARCTIC HEATER
X3	C250	30	CAB ARCTIC HEATER
X4	D263	30	CAB ARCTIC HEATER
X4	C250	30	CAB ARCTIC HEATER

LIGHTS			
NUMBER	ZONE	SH	DESCRIPTION
DS1	D96	11	CAB DASH LEFT INSTRUMENT PANEL
DS2	G106	12	CAB DASH LEFT INSTRUMENT PANEL
DS3	F96	11	CAB DASH LEFT INSTRUMENT PANEL
DS4	B96	11	CAB DASH LEFT INSTRUMENT PANEL
DS5	B106	12	CAB DASH LEFT INSTRUMENT PANEL
DS6	G101	12	CAB DASH LEFT INSTRUMENT PANEL
DS7	D106	12	CAB DASH LEFT INSTRUMENT PANEL
DS8	C91	11	CAB DASH LEFT INSTRUMENT PANEL
DS9	B101	12	DUMP BODY UP
DS10	E111	13	CAB DASH LEFT INSTRUMENT PANEL
DS11	G91	11	CAB DASH LEFT INSTRUMENT PANEL
DS12	H111	13	CAB DASH LEFT INSTRUMENT PANEL
DS13	C111	13	CAB DASH LEFT INSTRUMENT PANEL
DS14	B101	12	LEFT TURN SIGNAL
DS15	B101	12	RIGHT TURN SIGNAL
DS16	E101	12	HIGH BEAM
DS17	D119	14	HEATER CONTROL PANEL ILLUMINATION
DS18	A208	24	CAB DASH CENTER OPTIONS PANEL
DS19	E101	12	RADIATOR FAN OFF
DS21	C101	12	EMERGENCY BRAKE

LIGHTS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
DS22	D101	12	PARKING BRAKE
DS23	C101	12	PTO ON
DS24	D101	12	OIL PRESSURE
DS25	C101	12	WATER TEMPERATURE
DS27	C101	12	REAR BRAKE AIR
DS28	E101	12	FRONT AIR BRAKE
DS29	D101	12	ENGINE OIL LEVEL
DS30	F101	12	MASTER STOP
DS31	D213	24	CAB DASH CENTER OPTIONS PANEL
DS32	B101	12	CHEMICAL DETECT
DS34	C101	12	CTIS OVERSPEED
DS35	C198	22	REAR LH COMPOSITE LIGHT
DS36	G198	22	REAR RH COMPOSITE LIGHT
DS37	B198	22	REAR LH COMPOSITE LIGHT
DS38	F198	22	REAR RH COMPOSITE LIGHT
DS39	F37	5	FRONT LEFT TURN SIGNAL
DS41	D101	12	TRANSMISSION OIL TEMPERATURE
DS42	C38	5	FRONT RIGHT TURN SIGNAL
DS43	D212	24	CAB DASH CENTER OPTIONS PANEL
DS44	D37	5	RIGHT HEADLIGHT
DS45	C198	22	BACKUP LIGHT
DS46	D210	24	CAB DASH CENTER OPTIONS PANEL
DS47	G37	5	PARKING LIGHT FRONT LEFT
DS48	B38	5	PARKING LIGHT FRONT RIGHT
DS49	G37	5	BLACKOUT MARKER LEFT FRONT
DS50	B38	5	BLACKOUT MARKER RIGHT FRONT
DS51	C198	22	REAR LH COMPOSITE LIGHT
DS52	F198	22	REAR RH COMPOSITE LIGHT
DS53	H37	5	BLACKOUT DRIVE LIGHT
DS54	D84	10	CAB MARKER LIGHT FRONT UPPER MIDDLE LEFT
DS54	F206	23	LH FRONT TOP CAB CLEARANCE LIGHT
DS55	D84	10	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE
DS55	E206	23	MIDDLE FRONT TOP CLEARANCE LIGHT
DS56	C84	10	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
DS56	D206	23	RH FRONT TOP CAB CLEARANCE LIGHT
DS57	C84	10	CAB MARKER LIGHT FRONT UPPER RIGHT
DS57	D206	23	RH FRONT TOP CAB MARKER LIGHT
DS58	E84	10	CAB MARKER LIGHT FRONT UPPER LEFT
DS58	F206	23	LH FRONT TOP CAB MARKER LIGHT
DS59	B84	10	CAB MARKER LIGHT RIGHT DOOR
DS60	F84	10	CAB MARKER LIGHT FRONT LOWER LEFT
DS61	A84	10	CAB MARKER LIGHT RIGHT DOOR
DS62	F84	10	CAB MARKER LIGHT LEFT DOOR
DS63	B210	24	CAB DASH CENTER OPTIONS PANEL
DS64	B212	24	CAB DASH CENTER OPTIONS PANEL
DS65	A198	22	LH SIDE MARKER LIGHT
DS66	A198	22	LH REAR MARKER LIGHT
DS67	H198	22	RH SIDE MARKER LIGHT
DS68	G198	22	RH REAR MARKER LIGHT
DS69	D198	22	LEFT REAR MARKER
DS70	E198	22	MIDDLE REAR MARKER
DS71	E198	22	RIGHT REAR MARKER
DS72	R198	22	REAR LH COMPOSITE LIGHT
DS73	F198	22	REAR RH COMPOSITE LIGHT
DS74	D37	5	LEFT HEADLIGHT
DS75	A273	31	VAN CURBSIDE BLACKOUT LIGHT
DS76	H274	31	VAN ROADSIDE BLACKOUT LIGHT
DS78	A274	31	VAN CURBSIDE EMERGENCY LIGHT
DS79	H275	31	VAN ROADSIDE EMERGENCY LIGHT
DS80	H284	32	VAN ROADSIDE FLOURESCENT LIGHT
DS81	H286	32	VAN ROADSIDE FLOURESCENT LIGHT
DS82	A286	32	VAN CURBSIDE FLOURESCENT LIGHT
DS83	A284	32	VAN CURBSIDE FLOURESCENT LIGHT
DS84	B271	31	VAN FRONT MARKER LIGHT
DS85	B271	31	VAN FRONT MARKER LIGHT
DS86	B271	31	VAN FRONT MARKER LIGHT
DS87	A271	31	VAN FRONT MARKER LIGHT
DS88	A271	31	VAN FRONT MARKER LIGHT
DS89	B288	32	VAN CURBSIDE MARKER LIGHT
DS90	B288	32	VAN CURBSIDE MARKER LIGHT
DS91	C288	32	VAN ROADSIDE MARKER LIGHT
DS92	C288	32	VAN ROADSIDE MARKER LIGHT
DS93	D288	32	VAN REAR CENTER MARKER LIGHT

LIGHTS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
DS94	E288	32	VAN REAR CENTER MARKER LIGHT
DS95	E288	32	VAN REAR CENTER MARKER LIGHT
DS96	B215	24	CAB DASH CENTER OPTIONS PANEL
DS96	C271	31	VAN FRONT EMERGENCY LIGHT
DS97	B219	25	CAB DASH CENTER OPTIONS PANEL
DS97	C271	32	VAN REAR EMERGENCY LIGHT
DS100	B213	24	CAB DASH CENTER OPTIONS PANEL
DS101	D119	14	HEATER CONTROL PANEL ILLUMINATION
DS108	E91	11	CAB DASH LEFT INSTRUMENT PANEL

TERMINAL LUGS			
NUMBER	ZONE	SH	DESCRIPTION
CB1	C285	32	VAN 110 VAC MAIN CIRCUIT BREAKER
CB2	C284	32	VAN A/C
CB3	D284	32	VAN 110 VAC POWER OUT
CB4	D284	32	VAN NOT USED
CB5	E284	32	VAN BLACKOUT OVERRIDE
CB6	E284	32	VAN LIGHTS
CB7	E284	32	VAN 110 VAC OUTLETS
CB8	E284	32	VAN THERMOSTAT/FAN
CB9	E284	32	VAN 110 VAC OUTLETS
CB10	D277	31	VAN BLACKOUT LIGHTS
CB11	D277	31	VAN EMERGENCY/BLACKOUT LIGHTS
CB20	C140	16	CAB RADIO
CB21	C149	17	WTEC II VIM STE/ICE
CB22	C149	17	FAN/ETHER
CB23	C147	17	HEATER BLOWER
CB30	C139	16	CHEMICAL ALARM
CB35	D149	17	WTEC II VIM POWER
CB36	C147	17	HORN POWER
CB37	C151	17	WINDSHIELD WIPER/WASHER
CB38	D147	17	ROTATING BEACON
CB39	C146	17	TRAILER BO STOP
CB40	C150	17	CTIS COOLER
CB41	C142	16	TRAILER REAR LIGHTS POWER
CB42	C142	16	BO MARKER LIGHTS POWER
CB43	C143	16	REAR COMPOSITE LIGHTS
CB43	D289	33	WTEC III ECU
CB44	C143	16	REAR COMPOSITE LIGHTS
CB45	C139	16	FUEL PREHEAT
CB48	C140	16	ARCTIC CAB/ENGINE KILL
CB49	C151	17	PTO POWER
CB50	F256	29	MAIN POWER CUIRCUIT BREAKER SWITCH
CB/50	C146	17	SWINGFIRE PUMP POWER
CB53	D140	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB54	D142	16	BO HEADLIGHT
CB61	D153	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB62	D153	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB63	D151	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB64	D151	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB65	D140	16	PARKING LIGHTS
CB66	D143	16	BO MARKER POWER
CB67	D139	16	MARKER LIGHTS
CB68	C152	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB70	D146	17	IGNITION/MAIN LIGHT SWITCH
CB71	D149	17	HAZARD/FLASHER WORKLIGHTS
CB72	D139	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB73	D150	17	BACK-UP LIGHT POWER
CB74	D150	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
CB76	D143	16	BO STOP RELAY POWER
CB77	C152	17	ENGINE INSTR POWER
CB78	D147	17	HEADLIGHTS
CB79	C150	17	WTEC II VIM POWER
CB80	D142	16	TAILLIGHTS
TL1	B54	6	POLARITY PROTECTION
TL1	E60	7	ALTERNATOR
TL1	F254	29	TROOP HEATER
TL1	D258	29	WEBASTO CONTROL UNIT
TL2	B53	6	POLARITY PROTECTION
TL2	D60	7	ALTERNATOR
TL2	F254	29	TROOP HEATER
TL2	D258	29	WEBASTO CONTROL UNIT
TL2	D53	6	POLARITY PROTECTION (P/P)

TERMINAL LUGS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
TL3	C85	10	CAB MARKER LIGHT FRONT UPPER RIGHT
TL3	D206	23	RH FRONT TOP CAB MARKER LIGHT
TL3	F256	29	FURNACE ASSEMBLY
TL3	D258	29	WEBASTO CONTROL UNIT
TL4	C85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE RIGHT
TL4	D206	23	RH FRONT TOP CAB CLEARANCE LIGHT
TL4	F256	29	FURNACE ASSEMBLY
TL4	D258	29	WEBASTO CONTROL UNIT
TL5	D60	7	ALTERNATOR
TL5	D258	29	WEBASTO CONTROL UNIT
TL6	D60	7	ALTERNATOR
TL6	D258	29	WEBASTO CONTROL UNIT
TL7	D258	29	WEBASTO CONTROL UNIT
TL8	D85	10	CAB MARKER LIGHT FRONT UPPER MIDDLE MIDDLE
TL8	E206	23	MIDDLE FRONT TOP CLEARANCE LIGHT
TL8	E258	29	WEBASTO CONTROL UNIT
TL9	D47	6	24V AUXILIARY STARTER SOLENOID
TL9	E258	29	WEBASTO CONTROL UNIT
TL10	C52	6	CHASSIS - REAR (REF E1)
TL10	E258	29	WEBASTO CONTROL UNIT
TL11	C258	29	WEBASTO CONTROL UNIT
TL12	C49	6	BATTERIES
TL12	C62	7	STARTER/STARTER SOLENOID
TL12	C258	29	WEBASTO CONTROL UNIT
TL13	C258	29	WEBASTO CONTROL UNIT
TL14	E88	10	ROTARY WARNING LIGHT CONNECTOR
TL14	C258	29	WEBASTO CONTROL UNIT
TL15	A198	22	LH SIDE MARKER LIGHT
TL15	C258	29	WEBASTO CONTROL UNIT
TL16	A198	22	LH REAR MARKER LIGHT
TL16	C258	29	WEBASTO CONTROL UNIT
TL17	C198	22	BACKUP LIGHT
TL17	C258	29	WEBASTO CONTROL UNIT
TL18	C198	22	LONG WHEEL BASE
TL18	C258	29	WEBASTO CONTROL UNIT
TL19	H198	22	RH SIDE MARKER LIGHT
TL19	C258	29	WEBASTO CONTROL UNIT
TL20	G198	22	RH REAR MARKER LIGHT
TL20	C258	29	WEBASTO CONTROL UNIT
TL21	G198	22	RH COMPOSITE LIGHT
TL22	D85	10	CAB MARKER LIGHTS
TL22	E206	23	LH FRONT TOP CAB CLEARANCE LIGHT
TL23	D47	6	24V AUXILIARY STARTER SOLENOID
TL24	D47	6	24V AUXILIARY STARTER SOLENOID
TL25	C47	6	CHASSIS - FRONT
TL25	C62	7	STARTER/STARTER SOLENOID
TL26	C47	6	CHASSIS - FRONT
TL26	C62	7	STARTER/STARTER SOLENOID
TL27	E85	10	CAB MARKER LIGHT FRONT UPPER RIGHT
TL27	F206	23	CAB MARKER LIGHTS FRONT UPPER RIGHT
TL28	G57	7	FUEL SOLENOID
TL29	H57	7	FUEL SOLENOID
TL30	D198	22	LEFT REAR MARKER
TL31	E198	22	MIDDLE REAR MARKER
TL32	E198	22	RIGHT REAR MARKER
TL33	E47	6	24V AUXILIARY STARTER SOLENOID
TL35	D61	7	ALTERNATOR
TL36	B54	6	POLARITY PROTECTION
TL37	F54	6	POLARITY PROTECTION
TL37	C54	6	POLARITY PROTECTION
TL38	E50	6	SHUNT
TL39	C52	6	CHASSIS - REAR (REF E1)
TL41	C53	6	POLARITY PROTECTION
TL42	B54	6	POLARITY PROTECTION
TL44	B54	6	POLARITY PROTECTION
TL44	E54	6	POLARITY PROTECTION
TL45	D50	6	SHUNT

TERMINAL LUGS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
TL46	D49	6	SHUNT
TL46	D62	7	STARTER/STARTER SOLENOID
TL47	C54	6	POLARITY PROTECTION
TL48	E52	6	CHASSIS - REAR (REF E2)
TL49A	D52	6	CHASSIS - REAR (REF E1)
TL49A	F52	6	NATO SLAVE RECEPTACLE
TL50	G121	14	CHASSIS GROUND
TL50A	F52	6	NATO SLAVE RECEPTACLE
TL51	E50	6	SHUNT
TL52	E50	6	SHUNT
TL53	B47	6	CHASSIS - FRONT
TL53	B62	7	STARTER/STARTER SOLENOID
TL55	B47	6	CHASSIS - FRONT
TL55	C62	7	STARTER/STARTER SOLENOID
TL56	F136	16	X3 GROUND
TL57	F136	16	CAB GROUND
TL58	D60	7	ALTERNATOR
TL59	C61	7	ALTERNATOR
TL60	C53	6	POLARITY PROTECTION
TL60	D60	7	ALTERNATOR
TL61	C54	6	POLARITY PROTECTION
TL61	E60	7	ALTERNATOR
TL62	C47	6	CHASSIS - FRONT
TL63	C47	6	CHASSIS - FRONT
TL63	B62	7	STARTER/STARTER SOLENOID
TL66	H61	7	ENGINE (REF P201)
TL68	D224	25	CAB DASH CENTER OPTIONS PANEL
TL69	E224	25	CAB DASH CENTER OPTIONS PANEL
TL70	B38	5	BLACKOUT MARKER RIGHT FRONT
TL70	B38	5	PARKING LIGHT FRONT RIGHT
TL70	R38	5	FRONT RIGHT TURN SIGNAL
TL71	A85	10	CAB MARKER LIGHT RIGHT DOOR
TL72	H38	5	BLACKOUT DRIVE LIGHT
TL73	B86	10	CAB MARKER LIGHTS
TL74	D86	10	CAB MARKER LIGHTS
TL74	E204	23	AIRDROP ONLY
TL75	F87	10	CAB MARKER LIGHTS
TL76	D229	26	PTO EQUIPPED
TL79	F38	5	FRONT LEFT TURN SIGNAL
TL79	G38	5	PARKING LIGHT FRONT LEFT
TL79	G38	5	BLACKOUT MARKER LEFT FRONT
TL80	C54	6	POLARITY PROTECTION
TL80	F54	6	200 AMP
TL81	A39	5	CHASSIS - FRONT (REF J13)
TL81	C38	5	CHASSIS - FRONT
TL82	A38	5	CHASSIS - FRONT
TL82	F38	5	FRONT LEFT TURN SIGNAL
TL83	B52	6	FUEL TANK LEVEL SENSOR
TL84	B49	6	CHASSIS - SPARE TIRE (REF J93)
TL85	G52	6	CHASSIS - REAR
TL86	C86	10	CAB MARKER LIGHTS
TL86	D204	23	AIRDROP ONLY
TL87	F86	10	CAB MARKER LIGHTS
TL92	F195	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
TL93	G194	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
TL94	G85	10	WINDSHIELD WASHER ROTARY PUMP (B3)
TL96	H271	31	VAN BODY GROUND
TL97	B88	10	CHEMICAL ALARM CONNECTOR
TL98	B88	10	CHEMICAL ALARM CONNECTOR
TL99	D52	6	CHASSIS - REAR (REF E2)
TL100	E54	6	POLARITY PROTECTION
TL101	R239	27	ARCTIC KIT W/PTO EQUIPPED
TL102	F239	27	ARCTIC KIT W/PTO EQUIPPED
TL103	G239	27	ARCTIC KIT W/PTO EQUIPPED
TL110	D61	7	ALTERNATOR
TL111	D230	26	PTO EQUIPPED
TL123	E38	5	CHASSIS - FRONT (REF J19)

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 3 OF 34

SIZE	ILL. NO.	
B	5WD01L3A	FP-5/FP-6 BLANK

28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36

TERMINAL LUGS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
TL126	G86	10	WINDSHIELD WASHER ROTARY PUMP (B3)
TL126	E126	14	PARKING BRAKE SWITCH
TL130	F85	10	CAB MARKER LIGHTS
TL131	A85	10	CAB MARKER LIGHTS
TL133	F85	10	CAB MARKER LIGHTS
TL134	B85	10	CAB MARKER LIGHTS
TL150	F177	20	SENSOR/FRONT AIR PRESSURE TRANSMITTER
TL151	G177	20	SENSOR/REAR AIR PRESSURE TRANSMITTER
TL152	C179	20	STOPLIGHT SWITCH
TL153	C179	20	STOPLIGHT SWITCH
TL154	D179	20	STOPLIGHT SWITCH
TL154	D179	20	STOPLIGHT SWITCH
TL155	D179	20	STOPLIGHT SWITCH
TL156	F177	20	SWITCH/FRONT AIR PRESSURE TRANSMITTER
TL157	G177	20	SWITCH/REAR AIR PRESSURE TRANSMITTER
TL158	E137	16	START INHIBIT PUSHBUTTON
TL159	E136	16	START INHIBIT PUSHBUTTON
TL160	H102	12	AUDIBLE ALARM
TL161	H102	12	AUDIBLE ALARM
TL162	B114	13	STARTER PUSHBUTTON
TL163	B114	13	STARTER PUSHBUTTON
TL164	G62	7	ENGINE (REF J921)
TL165	G62	7	ENGINE (REF J921)
TL166	F54	6	TERMINAL BLOCK
TL167	E54	6	TERMINAL BLOCK
TL169	D53	6	POLARITY PROTECTION (P/P)
TL170	F248	28	SWINGFIRE HEATER
TL171	F54	6	TERMINAL BLOCK
TL172	F54	6	TERMINAL BLOCK
TL173	E54	6	POLARITY PROTECTION (P/P)
TL174	D54	6	POLARITY PROTECTION (P/P)
TL190	D290	33	WTEC III PRESSURE SWITCH GROUND
TL201	E125	14	PARKING BRAKE SWITCH
TL202	E125	14	PARKING BRAKE SWITCH
TL320	E232	26	PTO EQUIPPED
TL320	C241	27	ARCTIC KIT W/PTO EQUIPPED

SWITCHES			
NUMBER	ZONE	SH	DESCRIPTION
S3	A177	20	COLUMN SWITCH
S3	C177	20	COLUMN SWITCH
S4	D114	13	MAIN LIGHT SWITCH
S5/1	B111	13	IGNITION SWITCH
S5/11	A91	11	ENGINE FAN OFF SWITCH
S5/14	C213	24	WINCH ON OFF
S5/15	B212	24	WINCH IN-OUT
S5/16	F91	11	ETHER STARTER SWITCH
S5/2	D91	11	LAMP TEST SWITCH
S5/2	D111	13	ROTATING WARNING LIGHT SWITCH
S5/22	G111	13	FULL HAZARD WARNING SWITCH
S5/25	A219	25	SWINGFIRE PUMP SWITCH
S5/6	E210	24	PTO ON/OFF SWITCH
S5/8	A213	24	BLACKOUT OVERRIDE SWITCH
S5/9	A214	24	FUEL PRE-HEAT SWITCH
S6	A114	13	STARTER PUSHBUTTON
S7	F137	16	START INHIBIT PUSHBUTTON
S10A	C179	20	STOPLIGHT SWITCH
S10B	D179	20	STOPLIGHT SWITCH
S11	A287	32	VAN CURBSIDE WINDOW BLACKOUT SWITCH
S12	A287	32	VAN CURBSIDE WINDOW BLACKOUT SWITCH
S13	G288	32	VAN ROADSIDE WINDOW BLACKOUT SWITCH
S14	G288	32	VAN ROADSIDE WINDOW BLACKOUT SWITCH
S15	G288	32	VAN ROADSIDE WINDOW BLACKOUT SWITCH
S17	G288	32	VAN DOOR WINDOW BLACKOUT SWITCH (S/N 191 AND HIGHER)
S17	G288	32	VAN CURBSIDE WINDOW BLACKOUT SWITCH (S/N 001 THROUGH 190)
S18	D269	30	PTO PRESSURE SWITCH
S20	E177	20	SWITCH/FRONT AIR PRESSURE TRANSMITTER
S23	F52	6	AIR PRESSURE SWITCH FOR CTIS
S24	E125	14	PARKING BRAKE SWITCH
S26	C57	7	WATER TEMPERATURE SENSOR

SWITCHES (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
S27	E59	7	OIL PRESSURE WARNING LIGHT SWITCH
S29	G77	20	SWITCH/REAR AIR PRESSURE TRANSMITTER
S31	A216	24	ARCTIC TROOP HEATER SWITCH
S32	F288	32	VAN LIGHTS ON/OFF SWITCH
S33	E277	31	VAN BLACKOUT SWITCH
S34	D278	31	VAN BLACKOUT SWITCH
S35	H273	31	VAN BLACKOUT OVERRIDE SWITCH
S40	F58	7	ETHER SENSOR SWITCH
S45	E62	7	TROOP ALARM SWITCH
S45	G62	31	VAN FAN ON/OFF SWITCH
S56	A57	7	WATER TEMPERATURE SWITCH
S57	G77	9	LMHC IN/OUT SWITCH

GAGES			
NUMBER	ZONE	SH	DESCRIPTION
M2	D106	12	VOLTMETER
M3	B106	12	ENGINE OIL PRESSURE METER
M4	F96	11	FRONT AIR PRESSURE METER
M5	B96	11	REAR AIR PRESSURE METER
M6	G107	12	WATER TEMPERATURE METER
M7	D96	11	FUEL LEVEL METER
M8	G102	12	SPEEDOMETER
M9	A210	24	TACHOMETER

RELAYS			
NUMBER	ZONE	SH	DESCRIPTION
K1	F256	30	GROUND RELAY
K1	F149	17	STARTER RELAY
K1	E259	29	GROUND RELAY
K1	B291	33	WTEC II STARTER RELAY
K2	D259	29	HEATER MOTOR RELAY
K2	E266	30	HEATER MOTOR RELAY
K2	B143	16	CONTROL PANEL RELAY
K3	D260	29	CONTROL THERMOSTAT RELAY
K3	E266	30	CONTROL THERMOSTAT RELAY
K4	D260	29	IGNITION RELAY
K4	E266	30	IGNITION RELAY
K5	D261	29	FLAME CONTROL RELAY
K5	E267	30	FLAME CONTROL RELAY
K6	F144	16	STOPLIGHT RELAY
K7	G153	17	HEADLIGHT RELAY
K8	G151	17	HEADLIGHT LO/HI-BEAM RELAY
K9	A142	16	HAZARD FLASHER BO OVERIDE
K10	F150	17	STOP HAZARD FLASHER RELAY
K11	F146	17	ALTERNATOR EXCITATION RELAY
K12	B139	16	WORKLIGHT RELAY
K13	B149	17	ROTATING BEACON BO OVRD RELAY
K15	B140	16	AUXILIARY COOLER RELAY
K19	B150	17	START INHIBIT RELAY
K20	H138	16	MARKER LIGHTS RELAY
K24	B151	17	CRANKING LOCKOUT RELAY
K25	B292	33	WTEC III REVERSE WARNING RELAY
K26	B290	33	WTEC III NEUTRAL START RELAY
K27	H143	16	BO STOP RELAY
K28	H142	16	TRAILER REAR LIGHTS RELAY
K29	F142	16	BO MARKER RELAY
K29	B295	33	WTEC III BLACKOUT DRIVE RELAY
K30	H147	17	REAR LEFT COMPOSITE LAMP RELAY
K31	H149	17	REAR RGHT COMPOSITE LAMP RELAY
K32	B147	17	HORN RELAY
K35	E277	31	VAN 110 VAC OUTLETS
K36	F277	31	VAN FLOURESCENT LIGHTS
K37	B294	33	WTEC II PTO ENABLE OUTPUT RELAY
K52	H139	16	CTIS OVERSPEED INDICATION RELAY
K53	H140	16	RADIO POWER RELAY

RESISTORS			
NUMBER	ZONE	SH	DESCRIPTION
R2	E172	20	CAB - DASH - LEFT - UNDERDASH
R4	D175	20	CAB - DASH - LEFT - UNDERDASH
R5	C175	20	CAB - DASH - LEFT - UNDERDASH
R6	F172	20	CAB - DASH - LEFT - UNDERDASH

SOLENOIDS			
NUMBER	ZONE	SH	DESCRIPTION
KS	D47	6	24V AUXILIARY STARTER SOLENOID
L1	E189	21	FAN SOLENOID
L2	H57	7	FUEL SOLENOID
L3	D269	30	PTO SOLENOID
L4	E233	26	WINCH IN SOLENOID
L4	F232	26	SOLENOID
L4	C242	27	WINCH IN SOLENOID
L4	D241	27	WINCH IN SOLENOID
L5	D233	26	SOLENOID
L5	232	26	SOLENOID
L5	B242	27	WINCH OUT SOLENOID
L5	B241	27	WINCH OUT SOLENOID
L15	B51	6	CHASSIS - SPARE TIRE
L16	E239	27	WATER SOLENOID
L17	D240	27	WATER PUMP
	E80	9	LMHC IN SOLENOID
	F80	9	LMHC OUT SOLENOID
	A304	34	WTEC III A SOLENOID
	B304	34	WTEC III H SOLENOID
	C304	34	WTEC III N SOLENOID
	D304	34	WTEC III J SOLENOID
	E304	34	WTEC III G SOLENOID
	F304	34	WTEC III E SOLENOID
	F304	34	WTEC III D SOLENOID
	G304	34	WTEC III C SOLENOID
	G304	34	WTEC III B SOLENOID
	H304	34	WTEC III A SOLENOID

HORNS AND ALARMS			
NUMBER	ZONE	SH	DESCRIPTION
LS1	A37	5	VEHICLE HORN
LS2	H101	12	AUDIBLE ALARM

MOTORS			
NUMBER	ZONE	SH	DESCRIPTION
B2	A183	21	WINDSHIELD WIPER MOTOR
B4	C118	14	FAN MOTOR
	F81	9	LMHC HOIST MOTOR

BATTERYS			
NUMBER	ZONE	SH	DESCRIPTION
BT1	C52	6	BATTERY
BT2	D52	6	BATTERY
BT3	D52	6	BATTERY
BT4	E52	6	BATTERY

MISCELLANEOUS			
NUMBER	ZONE	SH	DESCRIPTION
10A	C183	21	WTECII VEHICLE INTERFACE MODULE
10A	E183	21	WTECII VEHICLE INTERFACE MODULE
A2	F118	14	CTIS ELECTRONIC CONTROL UNIT
A3	G114	13	INSTRUMENT PANEL LIGHTS DIMMER MODULE
A5	A135	15	WIPER DELAY MODULE
A7	B179	20	FREQUENCY DIVIDER
A18	A103	12	LIGHTED INDICATOR DISPLAY
A20	H59	7	FUEL/WATER SEPARATOR
B1	C63	7	STARTER/STARTER SOLENOID
B3	G83	10	WINDSHIELD WASHER ROTARY PUMP
B10	E67	8	WTEC II TRANSFER CASE (SERIAL # 29513233)
B10	E70	8	WTEC II TRANSFER CASE (SERIAL # 29513233)
B10	E66	8	WTEC II TRANSMISSION (SERIAL # 29513233)
B10	E71	8	WTEC II TRANSFER CASE (SERIAL # 29517497)
B10	E70	8	WTEC II TRANSMISSION (SERIAL # 29517497)
B10	E76	9	WTEC II TRANSFER CASE (SERIAL # 29513233)
B10	E74	9	WTEC II TRANSMISSION (SERIAL # 29513233)
BJ1	A175	20	JUNCTION BOX
BL1	F257	29	FURNACE CONTROL UNIT
BL2	F256	29	FURNACE CONTROL UNIT
BL3	F256	29	FURNACE CONTROL UNIT
D1A	C138	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D1B	C138	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D2A	D138	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL

MISCELLANEOUS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
D2B	D138	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D3A	B138	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
D3B	B138	16	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
E1	C52	6	BATTERY
E1	D52	6	BATTERY
E1	D52	6	BATTERY
E1	E52	6	BATTERY
E2	C43	5	CHASSIS FRONT BUMPER (REF J27)
E2	C52	6	BATTERY
E2	D52	6	BATTERY
E2	E52	6	BATTERY
E2	E52	6	BATTERY
E3	H148	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
E4	H150	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
E5	B151	17	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
E14	E194	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E15	E197	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E16	A197	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E17	G195	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E18	G194	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E19	F194	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E20	E194	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E21	D195	22	ALL MODELS EXCEPT WRECKER, TRACTOR, AND LONG WHEEL BASE
E22	B86	10	CAB MARKER LIGHTS
E23	D86	10	CAB MARKER LIGHTS
E23	D205	23	AIRDROP ONLY
E24	C85	10	CAB MARKER LIGHTS
E24	D205	23	AIRDROP ONLY
E25	F86	10	CAB MARKER LIGHTS
E60	B41	31	24 VDC VAN POWER
E65	B41	5	CHASSIS - FRONT
E66	C41	5	CHASSIS - FRONT
E66	E298	34	WTEC III TRANSMISSION HARNESS
E67	D38	5	CHASSIS - FRONT
E68	D40	5	CHASSIS - FRONT
E70	C229	26	PTO EQUIPPED
E70	A238	27	ARCTIC KIT W/PTO EQUIPPED
E71	F173	20	CAB - DASH - LEFT - UNDERDASH
E73	G238	27	ARCTIC KIT W/PTO EQUIPPED
E74	B238	27	ARCTIC KIT W/PTO EQUIPPED
E76	E239	27	ARCTIC KIT W/PTO EQUIPPED
E88	B106	12	CAB DASH LEFT INSTRUMENT PANEL
E89	C106	12	CAB DASH LEFT INSTRUMENT PANEL
E90	F298	34	WTEC III TRANSMISSION HARNESS
E91	D298	34	WTEC III TRANSMISSION HARNESS
E501	B275	31	VAN EMERGENCY/BLACKOUT LIGHT/24 VDC OUTLET
E502	G274	31	VAN EMERGENCY/BLACKOUT LIGHT
E503	B273	31	VAN MARKER LIGHT
E504	B272	31	VAN MARKER LIGHT
E505	B287	32	VAN REAR MARKER LIGHTS
E506	C287	32	VAN REAR MARKER LIGHTS
E514	C274	31	VAN EMERGENCY LIGHT
E516	H272	31	VAN 24 VDC
F1	F256	29	FURNACE CONTROL UNIT
F2	H271	31	VAN 24 VDC POWER
FL	E183	21	WTEC II VEHICLE INTERFACE MODULE
FL1	G85	10	EMI FILTER
FL2	A184	21	EMI FILTER
FL3	C118	14	FAN MOTOR

MISCELLANEOUS (CONTINUED)			
NUMBER	ZONE	SH	DESCRIPTION
F310A	E262	30	ARTIC CAB HEATER
F210A	E263	30	ARTIC CAB HEATER
F110A	E263	30	ARTIC CAB HEATER
G1	D50	7	ALTERNATOR
MPU	F61	7	ENGINE SPEED MAGNETIC PICKUP
MT3	F60	7	ENGINE OIL PRESSURE SENSOR
MT4	E177	20	SENSOR/FRONT AIR PRESSURE TRANSMITTER
MT5	G177	20	SENSOR/REAR AIR PRESSURE TRANSMITTER
MT6	B57	7	WATER COOLER TEMPERATURE
MT7	B52	6	FUEL TANK LEVEL SENSOR
MT11	A63	7	THROTTLE POSITION SENSOR
NS	E183	21	WTEC II VEHICLE INTERFACE MODULE
NS	F183	21	WTEC II VEHICLE INTERFACE MODULE
P/P	B54	6	POLARITY PROTECTION
P/P	D54	6	POLARITY PROTECTION
R11	D50	6	SHUNT
R1	D79	9	AIR DRYER
TB1	B257	29	WEBASTO CONTROL UNIT
TB1	C128	15	CAB DASH RIGHT POWER
TB2	F130	15	CAB - DASH - RIGHT - POWER DISTRIBUTION PNL
TB2	D257	29	WEBASTO CONTROL UNIT
X1	C137	16	24 VDC
X11	F52	6	NATO SLAVE RECEPTACLE
X2	D137	16	24 VDC
X3	F137	16	GROUND
X5	D137	16	24 VDC
X7	D137	16	24 VDC
PHONE 1	A285	32	VAN PHONE 1
PHONE 2	H287	32	VAN PHONE 2
	E77	9	LIGHT MATERIAL HANDLING CRANE (LMHC)
	E77	9	LMHC REMOTE CONTROL BOX
	E77	9	LMHC POWER CABLE
	G78	9	LMHC REMOTE CONTROL IN/OUT
	G302	34	WTEC II TRANSMISSION PRESSURE SWITCH
	B304	34	WTEC II OUTPUT SPEED SENSOR
	C304	34	WTEC II ENGINE SPEED SENSOR
	E304	34	WTEC II SUMP TEMP SENSOR

TRANSMISSION			
NUMBER	ZONE	SH	DESCRIPTION
A10	B183	21	WTEC II VEHICLE INTERFACE MODULE
A13	B67	8	WTEC II TRANSMISSION A13 (SERIAL # 29513233)
A13	A72	8	WTEC II TRANSMISSION A13 (SERIAL # 29517497)
A13	A76	9	WTEC II TRANSMISSION A13 (SERIAL # 29513233)
MT9	F67	8	WTEC II ENGINE SPEED SENSOR (SERIAL # 29513233)
MT9	F72	8	WTEC II ENGINE SPEED SENSOR (SERIAL # 29517497)
MT9	E76	9	WTEC II ENGINE SPEED SENSOR (SERIAL # 29513233)
MT11	A62	7	THROTTLE POSITION SENSOR
REV	C183	21	WTEC II VEHICLE INTERFACE MODULE
RW	D183	21	WTEC II VEHICLE INTERFACE MODULE
S02	F183	21	WTEC II VEHICLE INTERFACE MODULE
S03	F183	21	WTEC II VEHICLE INTERFACE MODULE
SF01	D183	21	WTEC II VEHICLE INTERFACE MODULE
SF01	D183	21	WTEC II VEHICLE INTERFACE MODULE
SF02	C183	21	WTEC II VEHICLE INTERFACE MODULE
SF02	D183	21	WTEC II VEHICLE INTERFACE MODULE
SF04	C183	21	WTEC II VEHICLE INTERFACE MODULE
SF3	F183	21	WTEC II VEHICLE INTERFACE MODULE
SF4	D183	21	WTEC II VEHICLE INTERFACE MODULE

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 4 OF 34

SIZE B | ILL. NO. 5WD01L41 | FP-7/FP-8 BLANK

37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45

CHASSIS - FRONT BUMPER

CHASSIS - FRONT

VEHICLE HORN (LS1) + 26 − 3035 P5 J5 P6 J6 TL81

DS50 BLACKOUT MARKER RIGHT FRONT 3091 TL70 3091 TL82 P8 J8 20

DS48 PARKING LIGHT FRONT RIGHT 3091 TL70 P10 J10 491

DS42 FRONT RIGHT TURN SIGNAL 3091 TL70 P9 J9 460

DS44 RIGHT HEADLIGHT 3051 P13 J13 TL81 E67 (HIGH) P14 J14 17 P12 J12 18

DS74 LEFT HEADLIGHT P18 J18 P20 J20 17 P19 J19 3052 TL123

12V CONNECTOR INTERVEHICULAR J95 J52 P52F

GROUND	1	3045	3045
MARKER LIGHTS	2	489	489F
LEFT TURN SIGNAL	3	461B	461B
STOP LIGHTS	4	22C	22C
RIGHT TURN SIGNAL	5	460B	460B
TAIL LIGHTS	6	21	21A
AUXILIARY	7	489G	489G

DS39 FRONT LEFT TURN SIGNAL 3091 TL79 3091 TL82 P23 J23 461

DS47 PARKING LIGHT FRONT LEFT 3091 TL79 P22 J22 491

DS49 BLACKOUT MARKER LEFT FRONT 3091 TL79 P24 J24 20

DS53 BLACKOUT DRIVE LIGHT 3091 TL72 P17 J17 19

E65 E66 18 E68 (LOW)

P27 J27

26	1	26	to K32-87 (A148)
489G	2	489G	to TB1-24 (C127)
20	3	20	to TB1-52 (D129)
to P25-2 (H86) 1424	4	1424	to PX21-5 (B133)
461B	5	461B	to K30-86 (H148)
17	6	17	to K8-87 (G152)
19	7	19	to CB54/4 (E142)
489F	8	489F	to tb1-22 (C127)
491	9	491	to CB65/8 (E141)
460B	10	460B	to K31 86 (H150)
460	11	460	to TB1-42 (F129)
21A	12	21A	to TB1-23 (C127)
18	13	18	to K8-87A (F151)
461	14	461	to TB1-47 (D128)
22C	15	22C	to TB1-28 (B128)
to TL202 (E124)	16	1616 E2	to PX7-11 (B105) to PX7-22 (D105)

J51 D190

to K12-87 (B139)	2002	1
to PX33-A1 (B181)	490	2
to CB80/2 (E141)	21	3
to K31-86 (H149)	460B	4
to K30-86 (H148)	461B	5
to K27-86 (G144)	23	6
to TB1-11 (E127)	489	7
to K27-87 (H144)	23T	8
to K28-87 (H142)	489T	9
to K29-87 (F142)	484T	10
to K31-86 (H149)	460B	11
to K30-86 (H148)	461B	12
to TB1-31 (B127)	22C	13
to K6-87 (F144)	1404	14
to K30-87 (H147)	461T	15
to K31-87 (H149)	460T	16
to TB1-54 (C129)	24	17

J43X P43X G175 E46

1	1471	1471
2	1472	1472
3	1474	1474
4	1480	1480
5	1479	1479
6	1478	1478
7	1475	1475
8	1476	1476
9	1477	1477

J43 P43 F46 G46

to J31-15 (G55)	1403	1	1403
to J111-F (F122)	1790	2	1790
to PX9-4 (D97)	28	3	28
to TB2-32 (F134)	3029	4	3029
to CB30/2 (C139)	1802	5	1802
to P99-1 (F186)	1803	6	1803
to PX7-2 (A105)	1803	7	1804
to P99-2 (F186)	1804	8	74 1481
to K1-87 (F149)	74	9	
to TB1-35 (G128)	1481		

FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC FOLDOUT 5 OF 34

SIZE	ILL. NO.	
B	5WD0101A	FP-9/FP-10 BLANK

A B C D E F G H

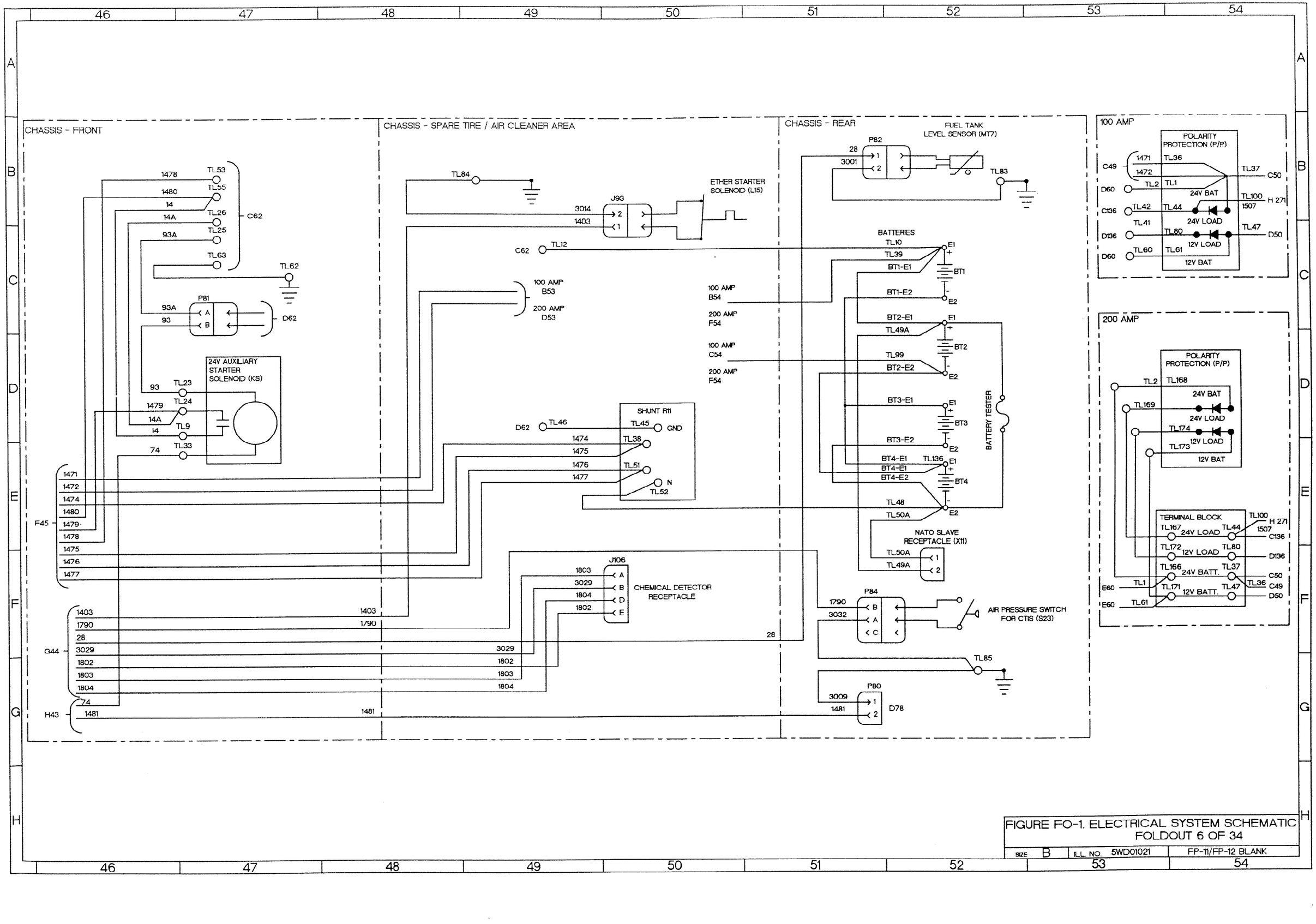


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 6 OF 34

SIZE	ILL NO.	
B	5WD01021	FP-11/FP-12 BLANK

ENGINE

WATER COOLER TEMPERATURE (S56)

P36
1807
1805

WATER TEMPERATURE SENSOR (MT6)

P41
33
MT6

WATER TEMPERATURE SWITCH (S26)

P37
3026
35

MT11
F66 124
F70 135A
F75 156
THROTTLE POSITION SENSOR (MT11)

STARTER/STARTER SOLENOID (B1)

B47
TL63
TL53
TL55
TL26
TL25
L
B1
C49 TL12
D49 TL46

P31X
F176
1 1441
2 1452
3 3A
4 1432
5 1433
6 1430
7 1435
8 1434
9 1428
10 1453

P69
1430 1
1435 4
1434 2
1428 3
Not Used

TL59
100 AMP ALTERNATOR (G1)
1452
TL6
TL2
TL58
3A
TL5
VOLTAGE REGULATOR
24V
GND G1
12V
TL35
TL110
TL60
1453
568A
F226
TL61 F53
TL1 F53

STARTER THERMO SWITCH

P81
C47 A
B

J31 P31
to K11-87A (F146) 568A 1 568A
to PX13-3 (F92) 1402 2 1402
to TB1-38 (F129) 1807 3 1807
to PX1-1 (A92) 1806 4 1805
to TB2-18 (F132) 3015 5 3015
to TB2-10 (F131) 3006 7 3006
to PX26-1 (B180) 1444 8 1444
to TB2-36 (F135) 3028 9 3028
to TB2-28 (F134) 3026 10 3026
to PX6-4 (B107) 36 11 36
to CB49/3 (C152) 1460 13 1460
to K19-87B (B151) 54 14 54
to J43-1 (G42) 1403 15 1403
to PX26-4 (B180) 3083 16 3083
to TL178 (D102) 32 17 32
to K11-87 (F146) 1538 18 1538
to PX7-1 (A105) 1523 19 1523
to PX11-4 (H107) 33 20 33
to K11-85 (H146) 34 21 34
to PX7-12 (C106) 35 22 35
to PX26-5 (B180) 1432 25 1432
to PX26-2 (B180) 1433 26 1433

P42
1402 2
1403 1
ETHER SENSE SWITCH (S40)

P34
34 2
3006 1
OIL PRESSURE WARNING LIGHT SWITCH (S27)

ENGINE SPEED MAGNETIC PICKUP (MPU1)

P38
3083 2 (-)
1444 1 (+)

P32
36 2
P
ENGINE OIL PRESSURE SENSOR (MT3)

TROOP TRANSPORT ALARM

P39 J39
3028 1 1 3028
32 2 2 32
1538 3

P921 J921
A A 3028 TL164 1
C C 32 TL165 2
TROOP ALARM SWITCH (S45)

1441 TL28
54
3015 TL29
3017 TL29
L
FUEL SOLENOID (L2)

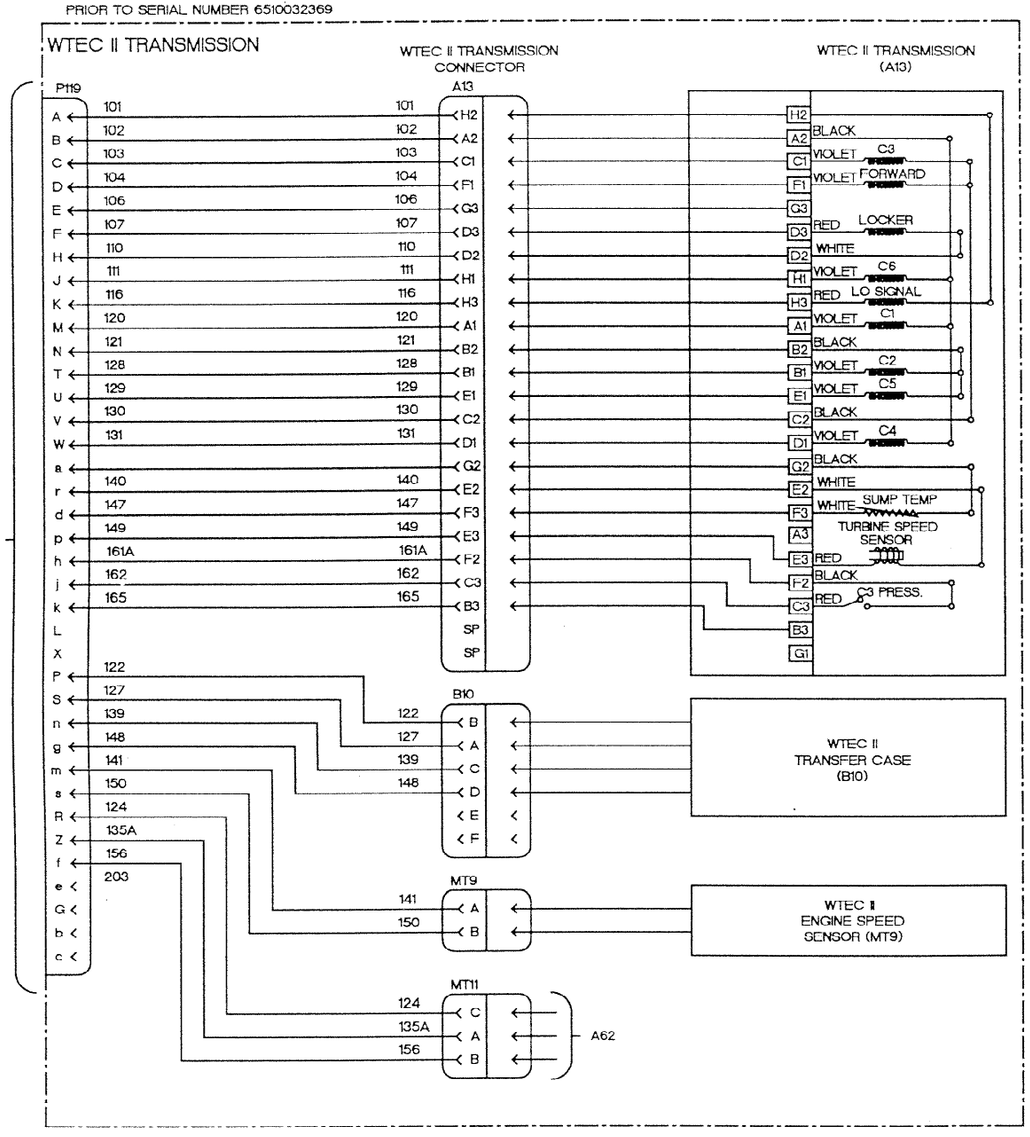
P33
1460 2
3017 1
FUEL/WATER SEPARATOR (A20)

P201
1523 2
TL66 3027 1
NOT USED

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 7 OF 34

SIZE B | ILL NO. 5WD01031 | FP-13/FP-14 BLANK

PRIOR TO SERIAL NUMBER 6510032369



SERIAL NUMBER 6510032369 AND HIGHER

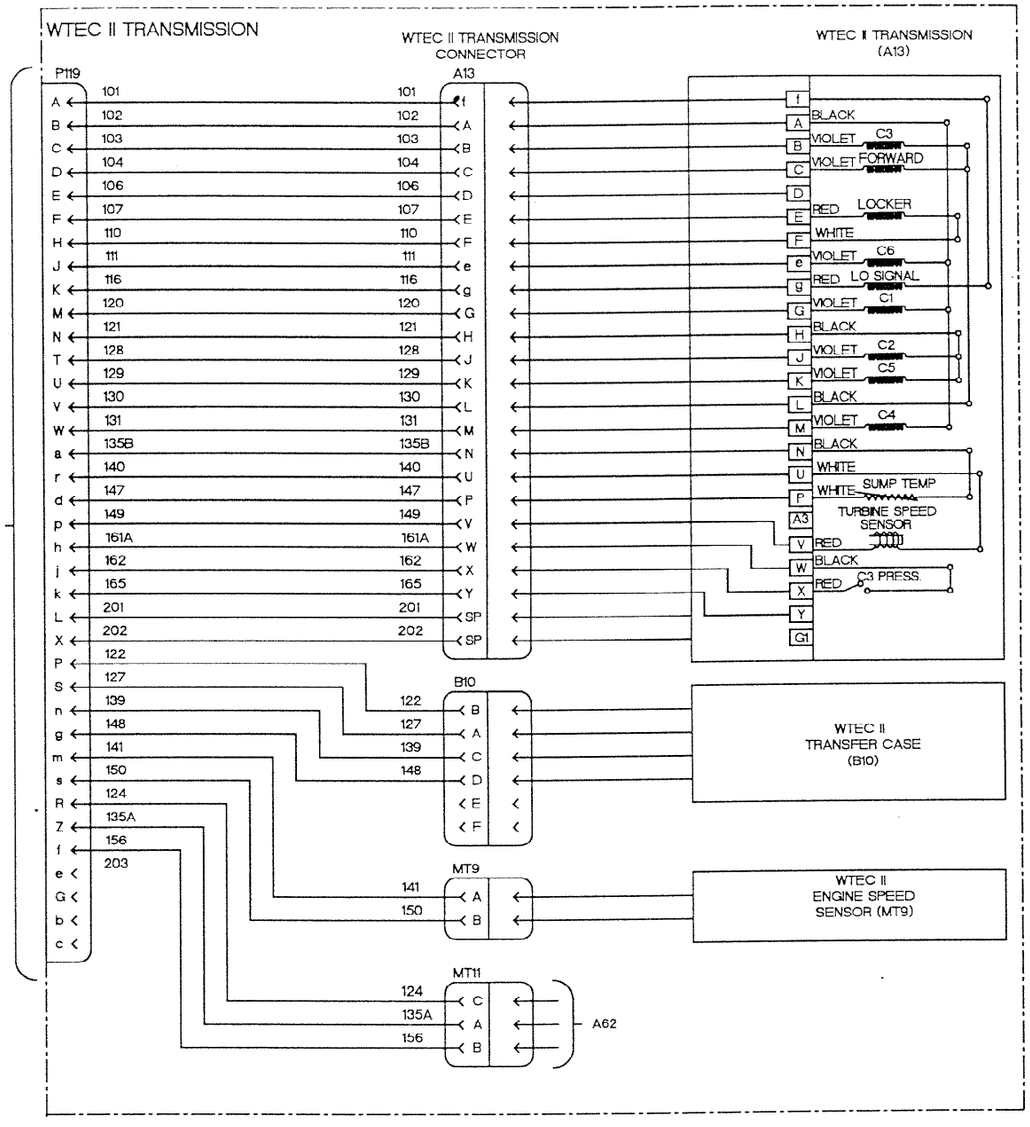


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 8 OF 34

SIZE B | ILL NO. 5WD0104A | FP-15/FP-16 BLANK

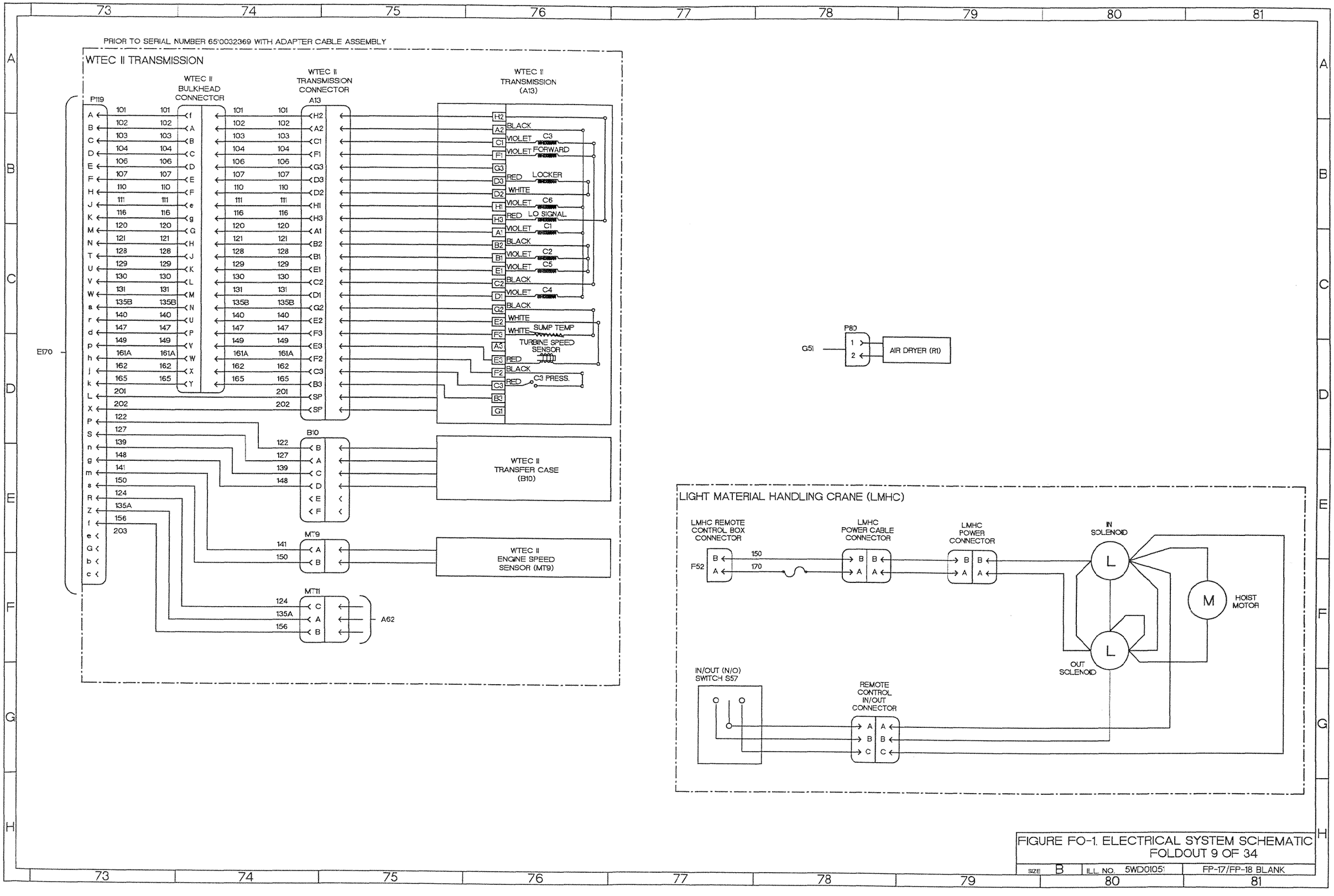


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 9 OF 34

SIZE B | ILL NO. 5WD0105' | FP-17/FP-18 BLANK

CAB - MARKER LIGHTS

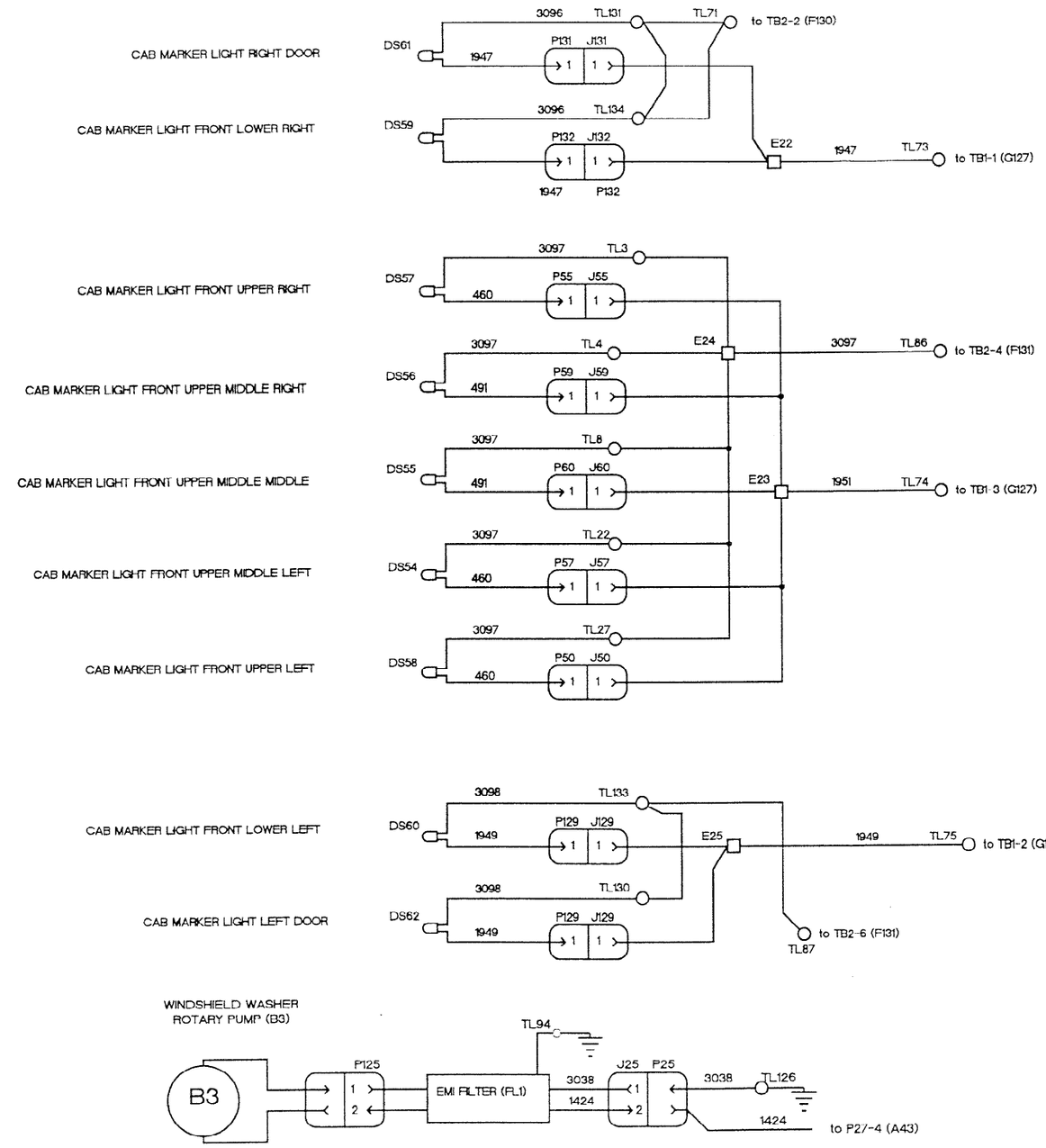


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 10 OF 34

SIZE	ILL. NO.	
B	5WD0106A	FP-19/FP-20 BLANK

CAB - DASH - LEFT - INSTRUMENT PANEL

1814 A100

ENGINE FAN OFF SWITCH (S5/11)

PX1
1 1806 to PX34-1 (E188)
2 1806 to J31-4 (F55)
3 3023 to TB2-24 (F133)
5 1812 to TB1-40 (F129)
6 1814

PX1A
DS8
1 1908
2 1908 3020 3020

LAMP TEST SWITCH (S5/2)

PX2
1 35 to PX7-12 (C106)
2 1537 to PX7-20 (D106)
3 3020
4 3020

PX2A
DS108
1 1908
2 1908 3020 3020

ETHER STARTER SWITCH (S5/16)

PX13
1 1401 to TB1-39 (F129)
3 1402 to J31-2 (E55)

PX13A
DS11
1 1908
2 1908 3020 3020

WTEC II PUSHBUTTON SHIFT SELECTOR

R MODE
N ⇧
D ⇩

E154

E164

REAR AIR PRESSURE METER (M5)

DS4
P
PX5
1 3020
2 3020 1908 1908
3 1546
4 1792 to TL151 (G178)

FUEL LEVEL METER (M7)

DS1
I
PX9
1 3020
2 3020 1908 1908
3 1546
4 1546 28 to J43-3 (G42)

FRONT AIR PRESSURE METER (M4)

DS3
P
PX4
1 3020
2 3020 1908 1908
3 1546
4 1546 1791 to TL150 (F178)

1546 1908 3020 F100

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 11 OF 34

SIZE B | ILL. NO. 5WD0107A | FP-21/FP-22 BLANK

CAB - DASH - LEFT - INSTRUMENT PANEL

A99 — 1814

LIGHTED INDICATOR DISPLAY (A18)

		PX7	
CHEM DETECT	DS32	1	1523 to J31-19 (G55)
RIGHT TURN SIGNAL	DS15	2	1803 to J43-G (H42)
LEFT TURN SIGNAL	DS14	4	1580 to TB1-41 (F129)
	DS9	6	1570
CTIS OVRSPD	DS34	7	3021 to TB2-25 (G133)
PTO ON	DS23	8	2034 to P912-9 (C124)
EMER BRAKE	DS21	9	1528 to J111-D (F122)
WATER TEMPERATURE	DS25	10	2021 to J913-13 (C121)
REAR BRAKE AIR	DS27	11	1616 to J27-16 (C43)
TRANS OIL TEMP	DS41	12	35
ENGINE OIL LEVEL	DS29	13	1525 to TL157 (H178)
PARK BRAKE	DS22	16	1532
OIL PRESSURE	DS24	17	3030 to TB2-33 (G134)
HIGH BEAM	DS16	19	1536
FRONT AIR BRAKE	DS28	20	1537
RADIATOR FAN OFF	DS19	22	1616 to J27-16 (C43)
		23	34A to D3B-4 (A138)
MASTER STOP	DS30	24	1681 to K6-87 (F152)
		25	1530 to TL156 (F178)
		26	1814
		27	1658 to TB1-61 (B129)
		28	2010 to P912-7 (B124)

ENGINE OIL PRESSURE METER (M3)

DS5 — OP — PX6

1	3020	B109
2	3020	
3	1908	
4	1908	
	1546	
	1546	
	36	to J31-11 (F55)

E88: 35 to PX2-1 (D92); 35 to J31-22 (H55)

E89: 1537 to PX2-2 (D92); 1537 to J118-1 (D162)

VOLTMETER (M2)

DS7 — V — PX10

1	3020	D109
2	3020	
3	1908	
4	1908	
	1546	
	1546	to J913-9 (C121) — E109
	3004	to TB2-9 (G131)

F99 — 1546, 1908, 3020 — 3020, 1908 — F109

SPEEDOMETER (M8)

DS6 — KM — PX8

1	3020	
2	3020	
3	1908	
4	1908	
	1546	
	1546	
	1793	to PX33-H2 (E181)
	1793	to J111-B (F122)

WATER TEMPERATURE METER (M6)

DS2 — t° — PX11

1	3020	G109
2	3020	
3	1908	
4	1908	
	1546	
	1546	
	33	to J31-20 (G55)

AUDIBLE ALARM (LS2)

32 — TL178 — 32 — to J31-17 (G55)

1536 — TL160 (−)

1532 — TL161 (+)

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 12 OF 34

SIZE	ILL. NO.	
B	5WD01081	FP-23/FP-24 BLANK

CAB - DASH - LEFT - INSTRUMENT PANEL

IGNITION SWITCH (S5/1)

PX17

1548 to K2-86 (A143)

1586 to CB70/4 (E146)

PX17A

DS13

1908
1908
3020
3020

STARTER PUSHBUTTON (S6)

TL163 — TL162 — 1405 to K24-87 (A152)

3007 to TB2-11 (G131)

ROTATING WARNING LIGHT SWITCH (S5/2)

PX12

1559 to K13-86 (A149)

1575
1575 to K20-86 (G138)

PX12A

DS10

1908
1908
3020
3020

MAIN LIGHT SWITCH (S4)

PX15

B	1542	
C	22	to D1A-2 (C138)
D	19	to CB54/3 (D142)
E	1572	to CB66/1 (D143)
F	1586	to CB70/4 (D146)
H	1575	
J	1577	to CB74/5 (D150)
K	1404	to K6-87 (F143)
L	491	to CB65/7 (D141)
M	16	to P18-3 (B178)
N	23	to K27-86 (G143)

B108: 3020, 3020, 1908, 1908, 1546, 1546

D108: 3020, 3020, 1908, 1908, 1546

E108: 1546

F108: 3020, 1908

G108: 3020, 3020, 1908, 1908, 1546

FULL HAZARD WARNING SWITCH (S5/22)

PX14

1565 to K9-87 (B142)

1566 to J19-5 (D177)

1566 to K10-87A (F150)

1567 to PX20-B (C188)

1568 to J19-12 (E177)

1568 to PX20-A (C188)

1514 to CB74/6 (E150)

PX14A

DS12

1908
1908 to J913-11 (C121)
3020
3020 to J913-10 (C121)

INSTRUMENT PANEL LIGHTS DIMMER MODULE (A3)

PX24

1908
1908
1542

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 13 OF 34

SIZE	ILL. NO.	
B	5WD0109A	FP-25/FP-26 BLANK

CAB - DASH - CENTER - HEATER / CTIS ECU

PERSONNEL HEATER

FAN MOTOR
B4
FL3
3 HIGH
2 MED
1 LOW
OFF

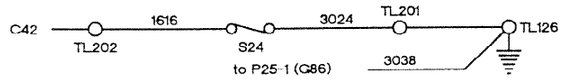
PX25
1 1601 to CB23/7 (C147)
2 1908
3 3003
4 3003 to TB2-8 (F131)

DS17
DS101
HEATER CONTROL PANEL ILLUMINATION

J913 P913
1673 to K12-86 (A139)
1674 to CB72/2 (D139)
1672 to D28-3 (D138)
1670 to CB45/4 (C139)
1925 to CB49/3 (C152)
1954 to J118-9 (E162)
161 to PX33-A3 (C181)
161 to J118-13 (E162)
153 to J118-8 (D162)
1546 to PX10-3 (E107)
1546 to TB1-61 (B129)
3020 to TB2-31 (G134)
3020 to PX14A-2 (H112)
1908 to PX14A-1 (H112)
1550 to PX26-1 (B179)
2021 to PX7-10 (B105)
2019 to PX33-E2 (D181)
1904 to PX33-E3 (D181)
1673 1674 1672 1670 1925 1954 161 161 153 1546 1546 3020 1908 1550 2021 2019 1904
G208

P912 J912
2006 to CB50/2 (C145)
2069 to CB48/8 (C141)
2004 to K12-87 (B139)
1328 to CB63/1 (D151)
2010 to PX7-28 (D105)
2033 to CB53/6 (C140)
2034 to PX7-8 (B105)
2040 to TB1-20 (D127)
2041 to TB1-50 (D129)
1650 to X1 (C136)
1653 to X1 (C136)
2037 to K19-87 (B150)
1811 to K15-87A (A140)
2006 2006 2069 2069 2012 2004 1328 2010 2033 2033 2034 2040 2041 1650 1653 2037 1811
E208

PARKING BRAKE SWITCH



CTIS ELECTRONIC CONTROL UNIT (A2)

P110
H 01
F 02
Z
M 01
U 03
S 04
E 05
T 06
P 07
b 08
c 09
j 10
R 11
B 12
C 13

P111 J111
01 E E 1911 to CB40/7 (C150)
02 A A 3031 to TB2-35 (G135)
03 B B 1793 to PX8-4 (G103)
04 G G 1911 to K52-87A (G139)
05 D D 1528 to PX7-9 (B105)
06 F F 1790 to J43-2 (G42)

P113
B
C
A

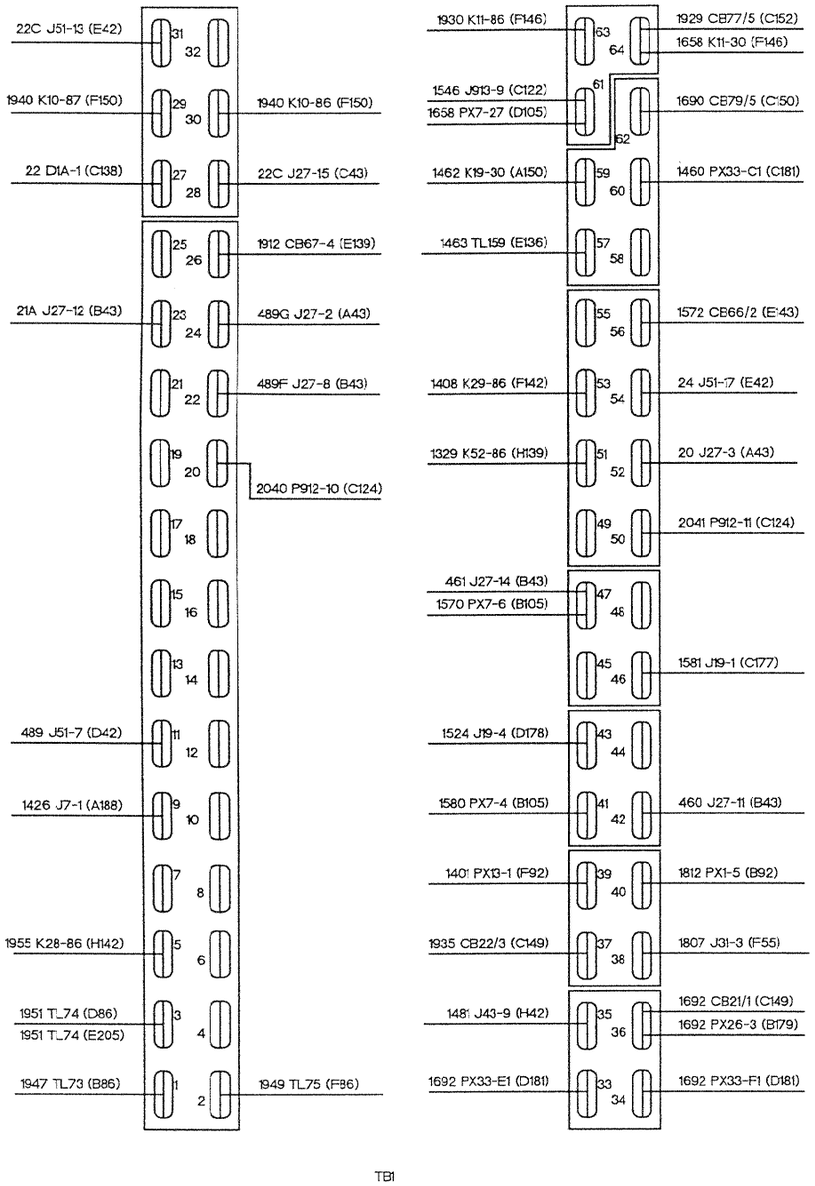
P112
D
F
E
A
B
G186

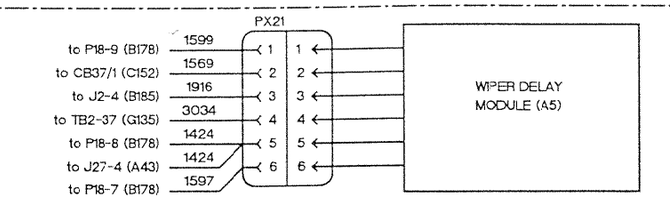
TL50
CHASSIS GROUND

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 14 OF 34

SIZE B | ILL. NO. 5WD0110A | FP-27/FP-28 BLANK

CAB - DASH - RIGHT - POWER DISTRIBUTION PANEL





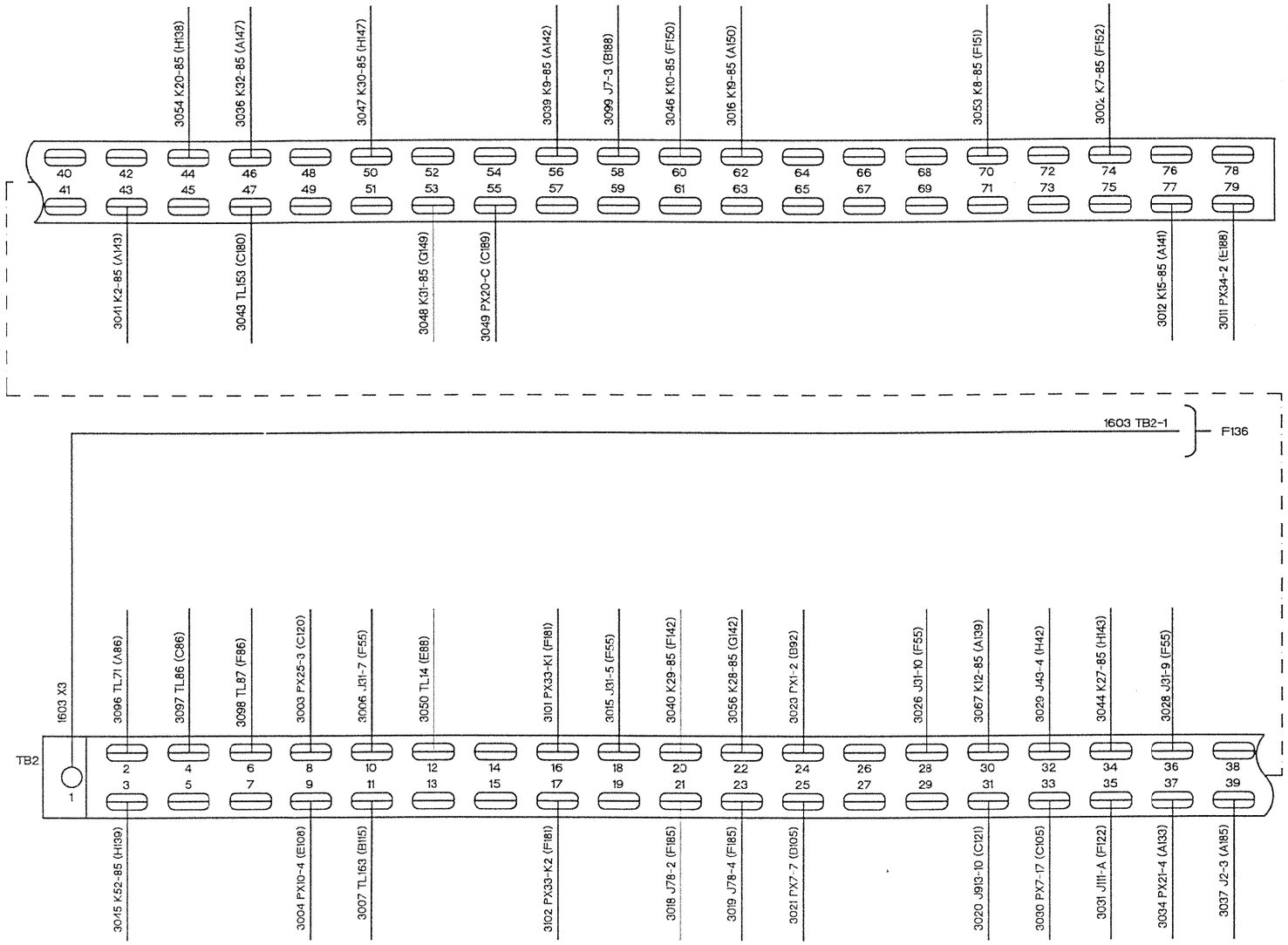


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 15 OF 34

SIZE B | ILL. NO. 5WD0111A | FP-29/FP-30 BLANK

CAB - DASH - RIGHT
POWER DISTRIBUTION PANEL

34 K24-85 (A151)
34A PX7-23 (D105)
D3B
D3A
74 K24-30 (A151)

1674 CB72/2
3067 TB2-30 (F134)
2004 P912-4 (B124)
K12
WORKLIGHT RELAY
2002 J51-1 (D42)
1673 J913-1 (B121)

1808 CB68/7
1806 PX34-1 (E187)
1811 P912-15 (C134)
3039 TB2-56 (B132)
3012 TB2-77 (C135)
K15
AUX. COOLER RELAY

1566 CB71/4
1514 CB74/6
1565 D2B-4
1565 PX14-1 (F112)
K9
HAZARD FLASHER BO OVERIDE

1602 X1
1637
A145
1548 PX17-1 (A112)
3041 TB2-43 (C130)
K2
CONTROL PANEL RELAY
1604 X6
1548 CB76/3
B145

to CB43 (C289)
to CB79 (B289)
to P912-12 (C124)
1650
to P912-13 (C124)
1653
to TL44 (E49)
to TL44 (B53)
X4 1602 K2-30
X1
+24 VDC
1602 K1-30

461B J19-2 (C178)
22 PX15-C (D115)
D1B
D1A
461B K30-86
22 TB1-27 (B127)

+24V
CHEMICAL ALARM
CB30
CB45
FUEL PREHEAT
1670 J913-4 (B121)
1802 J43-5 (H42)

+24V
CAB RADIO
CB20
CB48
ARCTIC CAB/ ENGINE KILL
1906 K53-30
2069 P912-2 (B124)

+24V
TRAILER REAR LIGHTS POWER
CB41
CB42
BO MARKER LIGHTS POWER
1957 K28-30
1958 K29-30

+24V
REAR COMPOSITE LIGHTS
CB44
CB43
REAR COMPOSITE LIGHTS
1956 K31-30
1922 K30-30
1956
3054
1566
C145

X7 1601
X5 1601
1601
D145

to TL41 (E49)
to TL80 (F54)
X2
+12 VDC

1565 K9-87
460B J19-3 (D178)
D2B
D2A
460B K31-86
1672 J913-3 (B121)

1674 K12-30
1914 K20-87
CB72
CB67
MARKER LIGHTS
1674 J913-2 (B121)
1912 TB1-26 (C128)

+12V
491 PX15-L (E116)
2033 P912-8 (C124)
CB53
CB65
PARKING LIGHTS
491 J27-9 (B43)

19 PX15-D (D115)
1914A K20-87
TAIL LIGHTS
CB80
CB54
BO HEADLIGHT
21 J51-3 (D42)
19 J27-7 (B43)

1572 PX15-E (D115)
1548 K2-86
BO MARKER POWER
CB66
CB76
BO STOP RELAY POWER
1572 TB1-56 (C129)
1641 K6-30

1514
1514
1808
1911
E145

TL159
TL158
to TB1-57 (C129)
1463
1637 K19-86
START INHIBIT PUSHBUTTON (S7)

1911

1958 CB42/4
1408 J7-2 (B188)
1408 TB1-53 (C129)
3040 TB2-20 (F133)
484T J51-10 (D42)
K29
BO MARKER RELAY

1641 CB76-4
1404 PX15-K (D115)
1404 J51-14 (E42)
1594 TL152 (C180)
K6
STOP LIGHT RELAY

D135
1603 TB2-1
TL57
TL56
CAB GND
X3
GROUND

1602
461B D1B-3
460B
1691
74
G145

1601
3054 K13-85
1575 PX12-5 (D113)
3054 TB2-44 (B131)
1914 CB67/3
1914A CB80/1
K20
MARKER LIGHTS RELAY

1691 K1-86
1911 CB40/7
1906 CB20/6
74 K1-85
1329 TB1-51 (D129)
1911 J111-G (F123)
3045 TB2-3 (C130)
K52
CTIS OVERSPEED INDICATION RELAY

1906 J78-3 (F185)
K53
RADIO POWER RELAY

3044 TB2-34 (F135)
1959 CB39/4
1957 CB41/2
3056 TB2-22 (F133)
1955 TB1-5 (F127)
489T J51-9 (D42)
K28
TRAILER REAR LIGHTS RELAY

23 PX15-N (E115)
23 J51-6 (D42)
23T J51-8 (D42)
BO STOP RELAY
K27

FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 16 OF 34

SIZE B | ILL. NO. 5WD01121 | FP-31/FP-32 BLANK

CAB - DASH - RIGHT
POWER DISTRIBUTION PANEL

A144 — 1637
B144 — 1604 X6
C144 — 3054, 1566
D144 — 1922, 1956, 1601
E144 — 1514, 1808, 1911
G145 — 1602, 461B D1B-3, 460B, 1691, 74, 1959

1637 TL158

26 CB36/5 — 3036 TB2-46 (B131) — 25 P18-12 (C178) — 26 J27-1 (A43) — K32 — HORN RELAY

509 CB38/8 — 3054 K20-85 — K13 — ROTATING BEACON BO OVRD RELAY — 509 P65-1 (E186) — 1559 PX12-1 (C113)

1462 TB1-59 (B129) — 3016 TD2-62 (B133) — K19 — START INHIBIT RELAY — 2037 P912-14 (C124) — 54 J31-14 (G55)

1658 K11-30 — 74 D3B-3(B137) — 74 K1-85 — 34 K11-85 — 34 D3B-4 (B138) — K24 — CRANKING LOCKOUT RELAY — 1405 TL162 (B115)

E5 — 1569 J2-2 (A185) — 1569 P18-4 (B177) — 1569 PX21-2 (A133)

+24V — SWING FIRE PUMP POWER — CB50 / CB39 — TRAILER BO STOP LIGHTS — 2006 P912-1 (B124) — 1959 K27-30

26 K32-30 — 1601 PX25-1 (C120) — HORN POWER — CB36 / CB23 — HEATER BLOWER

1692 TB1-36 (C129) — WTEC II VIM STE/ICE — CB21 / CB22 — FAN/ ETHER — 1935 TB1-37 (F129)

1690 TB1-62 (B129) — 1911 J111-E (E123) — 1911 K52-30 — WTEC II VIM POWER — CB79 / CB40 — CTIS COOLER

WINDSHIELD WIPER/WASHER — CB37 / CB49 — PTO POWER — 1925 J913-5 (B121) — 1460 J31-13 (F55)

1929 TB1-64 (B129) — 1808 K15-30 — ENGINE INSTR POWER — CB77 / CB68

+12V — IGNITION/MAIN LIGHT SWITCH — CB70 — 1586 PX15-F (D115) — 1586 PX17-5 (B112)

HEAD LIGHTS — CB78 / CB38 — ROTATING BEACON — 509 K13-30

VIM POWER — CB35 / CB71 — HAZARD/ FLASHER WORKLIGHTS — 1566 K9-30 — 1900 PX33-J1 (E182) — 1900 PX33-J2 (E182)

1577 PX15-J (D115) — CB74 / CB73 — BACK-UP LIGHT POWER — 1514 PX14-7 (G113) — 1903 PX33-B1 (C181)

1328 P912-5 (B124) — CB63 / CB64

CB61 / CB62

1416 K7-30 — 1514 K9-86 — 1416 — 1911

34 K24-85 — 1658 K24-86 — 1658 TB1-64 (B129) — 1930 TB1-63 (B129) — 568A J31-1 (E55) — 1538 J31-18 (G55) — 34 J31-21 (G55) — K11 — ALTERNATOR EXCITATION RELAY

74 K24-30 — 74 K53-85 — 1602 X1 — 1691 PX33-G1 (E181) — 1691 K53-86 — 74 J43-8 (H42) — K1 — STARTER RELAY

1594 J19-6 (D178) — 1940 TB1-30 (B128) — 3046 TB2-60 (B133) — K10 — STOP/HAZARD FLASHER RELAY — 1940 TB1-29 (B127) — 1566 PX14-2 (G113)

18 J27-13 (B43) — 3053 TB2-70 (B134) — 1417 K7-87 — 16A P18-2 (B178) — K8 — HEADLIGHT LO/HI-BEAM RELAY — 17 J27-6 (B43) — 1681 PX7-24 (D105)

3002 TE2-74 (B135) — 1416 CB78/6 — 16 P18-3 (B178) — 1417 K8-30 — K7 — HEADLIGHT RELAY

1922 CB43/8 — 3047 TB2-50 (B131) — 461T J51-15 (E42) — K30 — REAR LEFT COMPOSITE LAMP RELAY — 461B — E3 — 461B J51-12 (E42) — 461B J27-5 (B43) — 461B J51-5 (D42) — 461B D1B-3

1956 CB44/6 — 3048 TB2-53 (C132) — K31 — REAR RIGHT COMPOSITE LAMP RELAY — 460T J51-16 (E42) — E4 — 460B D2A-1 — 460B J51-4 (D42) — 460B J51-11 (E42) — 460B J27-10 (B43)

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 17 OF 34

SIZE B | ILL. NO. 5WD01131 | FP-33/FP-34 BLANK

CAB - DASH - LEFT - WTEC II TRANSMISSION HARNESS

G166: 123 118 115 113 105 / 125 119 117 114 112

H168: 135A/B 156 147 149 161A/B / 162 148 150 165

G167 G167 G167 G165

J115
1 135A/B
2 136A/D
3 137
4 <
5 139
6 140
7 141
8 142A/B
9 143A/D
10 144
11 136C/D
12 146
13 147
14 148
15 149
16 150
17 151A/B
18 143C/D
19 153
20 154
21 155
22 156
23 157
24 158
25 <
26 <
27 161A/B
28 162
29 163
30 <
31 165
32 <
33 <
34 <

C95

J116
143A A1
132 B1
C1
123 D1
136A E1
146 F1
143C A2
157 B2
125 C2
112 D2
136C E2
113 F2
115 A3
B3
158 C3
D3
E3
114 F3

D185

P118 J118
105 1 1537 PX7-20 (C106)
118 2 <
119 3 <
4 <
137 5 <
142B 6 <
151B 7 <
153 8 153 J913-8 (B121)
155 9 1954 J913-6 (B121)
10 <
11 <
154 12 <
161B 13 161 J913-7 (B121)
163 14 163 PX33-A2 (C181)
15 <
117 16 <

J117
143D A
B
C
D
E
WTEC II DIAGNOSTIC CONNECTOR
F
G
136D H
142A J
151A K
L
M

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 18 OF 34

SIZE B | ILL. NO. 5WD0114A | FP-35/FP-36 BLANK

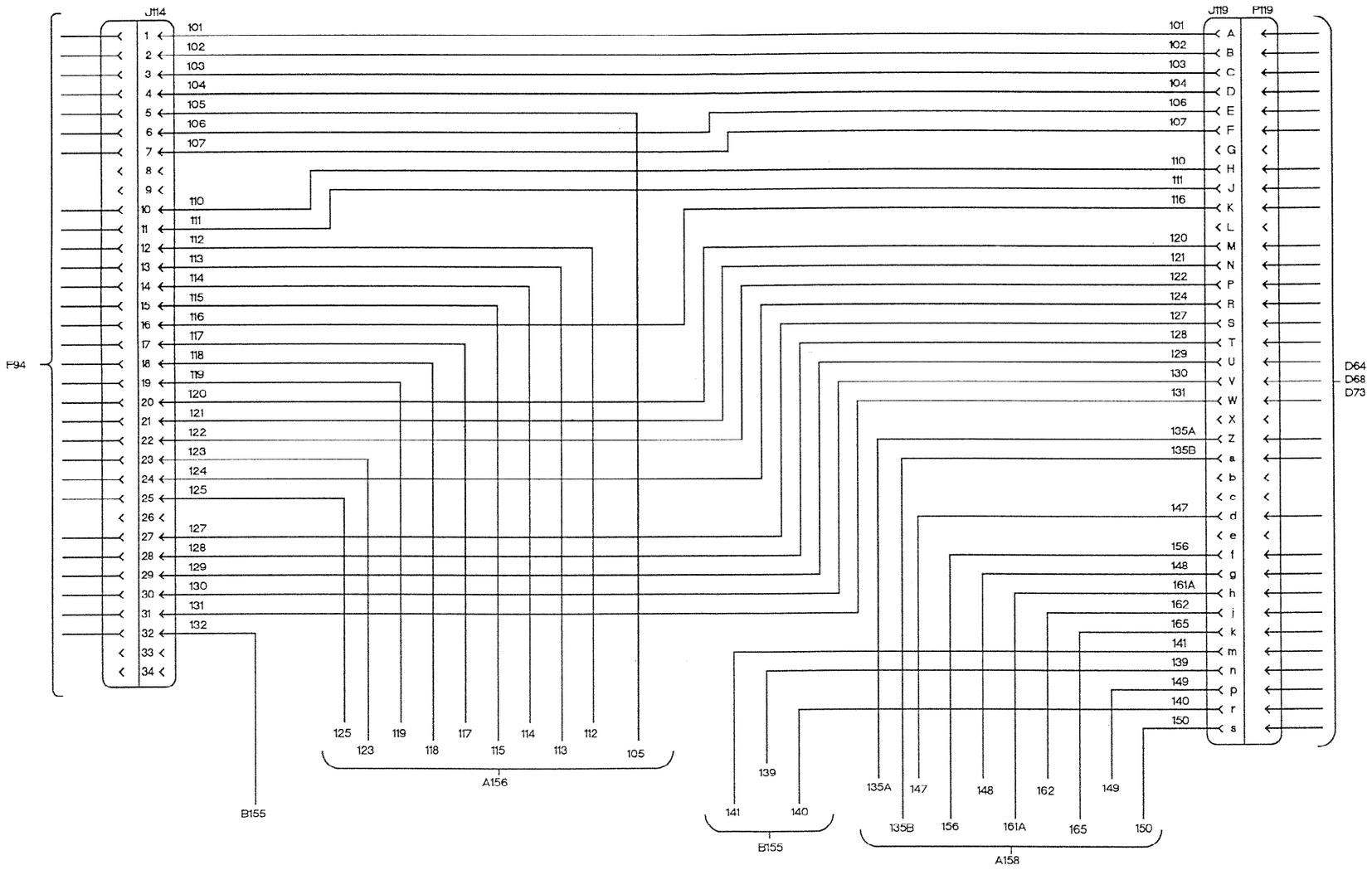


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 19 OF 34

SIZE	ILL NO.	
B	5WD0115A	FP-37/FP-38 BLANK

CAB - DASH - LEFT - UNDERDASH

STE / ICE RECEPTACLE

P83

JUNCTION BOX (BJ1)

R5

R4

R2

R6

E71

J31X

D55

J43X

F42

COLUMN SWITCH (S3)

P18

BLUE
BROWN
GREEN
RED
YELLOW
BLACK
WHITE

COLUMN SWITCH (S3)

J19

FREQUENCY DIVIDER (A7)

PX26

INPUT (+)
OUTPUT (+)
+24V POWER
INPUT (-)
OUTPUT (-)
GROUND

STOP LIGHT SWITCH (S10A)

STOP LIGHT SWITCH (S10B)

TL152
TL153
TL154
TL155

FRONT AIR PRESSURE TRANSMITTER

SENSOR (MT4) / SWITCH (S20)

TL150
TL156

REAR AIR PRESSURE TRANSMITTER

SENSOR (MT5) / SWITCH (S29)

TL151
TL157

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 20 OF 34

SIZE B | ILL NO. 5WD0116A | FP-39/FP-40 BLANK

CAB - DASH - RIGHT - UNDERDASH

WINDSHIELD WIPER MOTOR (B2)

B2

PX22

EMI FILTER (FL2)

P2 J2

1590 to P18-6 (B178)
1569 to CB37/1 (B152)
3037 to TB2-39 (G135)
1916 to PX21-3 (A133)
1527 to P18-5 (B178)

TRANSMISSION DIMMER MODULE

J7

1426 to TB1-9 (F127)
1408 to K29-86 (F142)
3099 to TB2-58 (B132)
158

WTEC II VEHICLE INTERFACE MODULE (A10)

PX33

to J51-2 (D42)
to J118-14 (E162)
to J913-7 (B121)
to CB73/8 (E150)
to TB1-60 (B129)
to TB1-33 (G129)
to J913-14 (D121)
to J913-15 (D121)
to TB1-34 (G129)
to K1-86 (F149)
to PX8-4 (G103)
to CB35/2 (E149)
to CB35/2 (E149)
to TB2-16 (F132)
to TB2-17 (G132)

REV
SF02
SF04
RW
SF01
10A
SF01
SF4
SF02
NS
FL
10A
S02
S03
NS
SF3

P116

D159

TURN SIGNAL FLASHER (A1)

OUTPUT
INPUT
GROUND

PX20

1568 to PX14-6 (G113)
1567 to PX14-5 (G113)
3049 to TB2-55 (C132)

ROTARY WARNING LIGHTS CONNECTION

to K13-87 (B149)

P65 J65

509 to J62-B (E88)

CHEMICAL ALARM CONNECTION

P99 J99

to J43-6 (H42)
to J43-7 (H42)

1803 to TL88 (B88)
1804 to TL98 (B88)

CAB RADIO CONNECTION

J78

to TB2 21 (G133)
to K53-87A (H141)
to TB2-23 (G133)

3018
1906
3019

FAN SOLENOID (L1)

to K15-86 (A141)
to PX1-1 (A92)
to TB2-79 (C135)

1806
1806
3011

PX34

L

J113

G123

CTIS PRESSURE TRANSDUCER

CTIS PNEUMATIC CONTROLLER

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 21 OF 34

SIZE B | ILL. NO. 5WD0117A | FP-41/FP-42 BLANK

REAR LIGHTS

CAB-DASH-RIGHT-POWER DISTRIBUTION PANEL

D43 — P51

1	
2	490
3	21
4	460B
5	461B
6	23
7	489
8	23T
9	489T
10	484T
11	460B
12	461B
13	22C
14	1404
15	461T
16	460T
17	24

E16
- P85 — 489 — DS65 — LH SIDE MARKER LIGHT
- 3094 — TL15
- P86 — 489 — DS66 — LH REAR MARKER LIGHT
- 3094 — TL16
- P74 — 461B — DS37
- P78 — 21 — DS72
- P76 — 24 — DS51 — LH COMPOSITE LIGHT
- P77 — 23 — DS35
- 3094 — TL18
- 3094 — TL86
- P87 — 490 — DS45 — BACKUP LIGHT
- 3094 — TL17

E21 — P53R — F200

3094	1
489T	2
3094	3
1404	4
460T	5
23T	6
484T	7
461T	8
484T	9
484T	10

E14

E20 — P52R — B203

21	1
	2
489	3
3045	4
461B	5
22C	6
460B	7

3095 — TL92

E19

E18

TL93

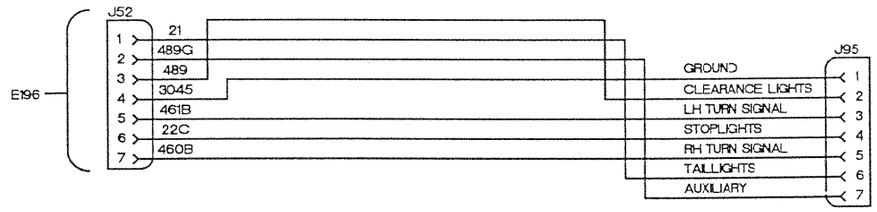
E15
- P54 — 489 — DS69 — LEFT REAR MARKER
- 3094 — TL30
- P56 — 489 — DS70 — MIDDLE REAR MARKER
- 3094 — TL31
- P58 — 489 — DS71 — RIGHT REAR MARKER
- 3094 — TL32
- P61 — 460B — DS38
- P64 — 21 — DS73 — RH COMPOSITE LIGHT
- P62 — 24 — DS52
- P63 — 23 — DS36
- 3095 — TL21
- 3095
- P89 — 489 — DS68 — RH REAR MARKER LIGHT
- 3095 — TL20
- P88 — 489 — DS67 — RH SIDE MARKER LIGHT
- 3095 — TL19

E17

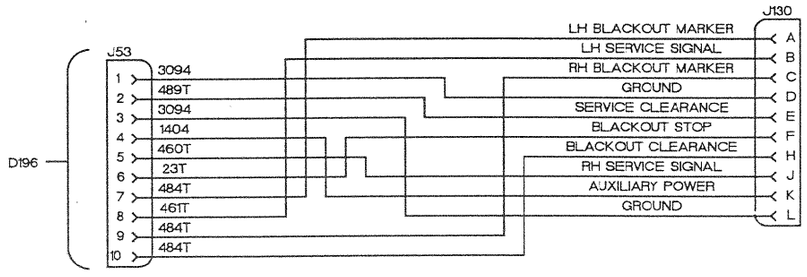
FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 22 OF 34

SIZE B | ILL. NO. 5WD0118A | FP-43/FP-44 BLANK

12 VDC INTERVEHICULAR CABLE



24 VDC INTERVEHICULAR CABLE



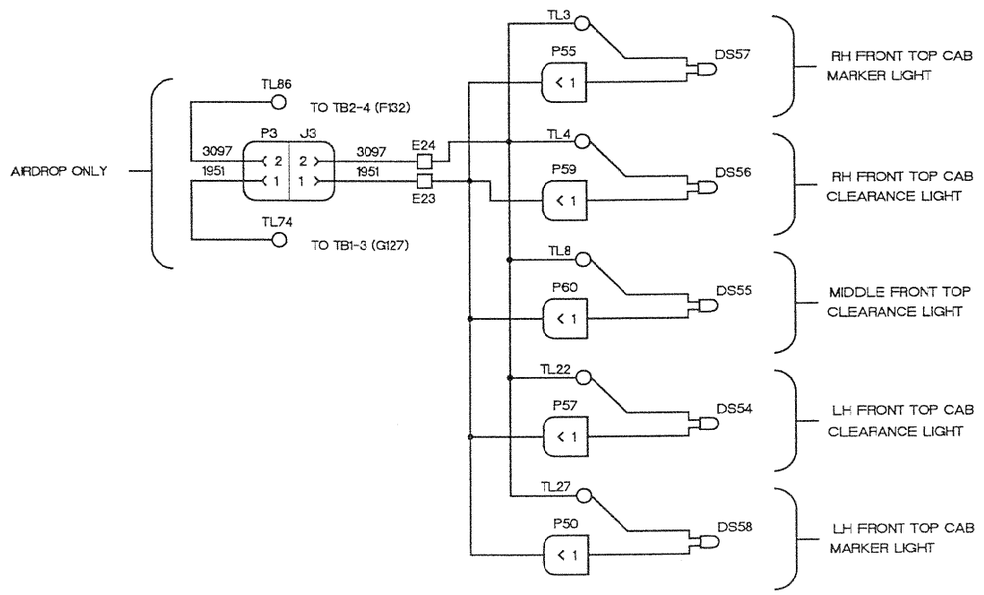


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 23 OF 34

SIZE	ILL. NO.	
B	5WD0119A	FP-45/FP-46 BLANK

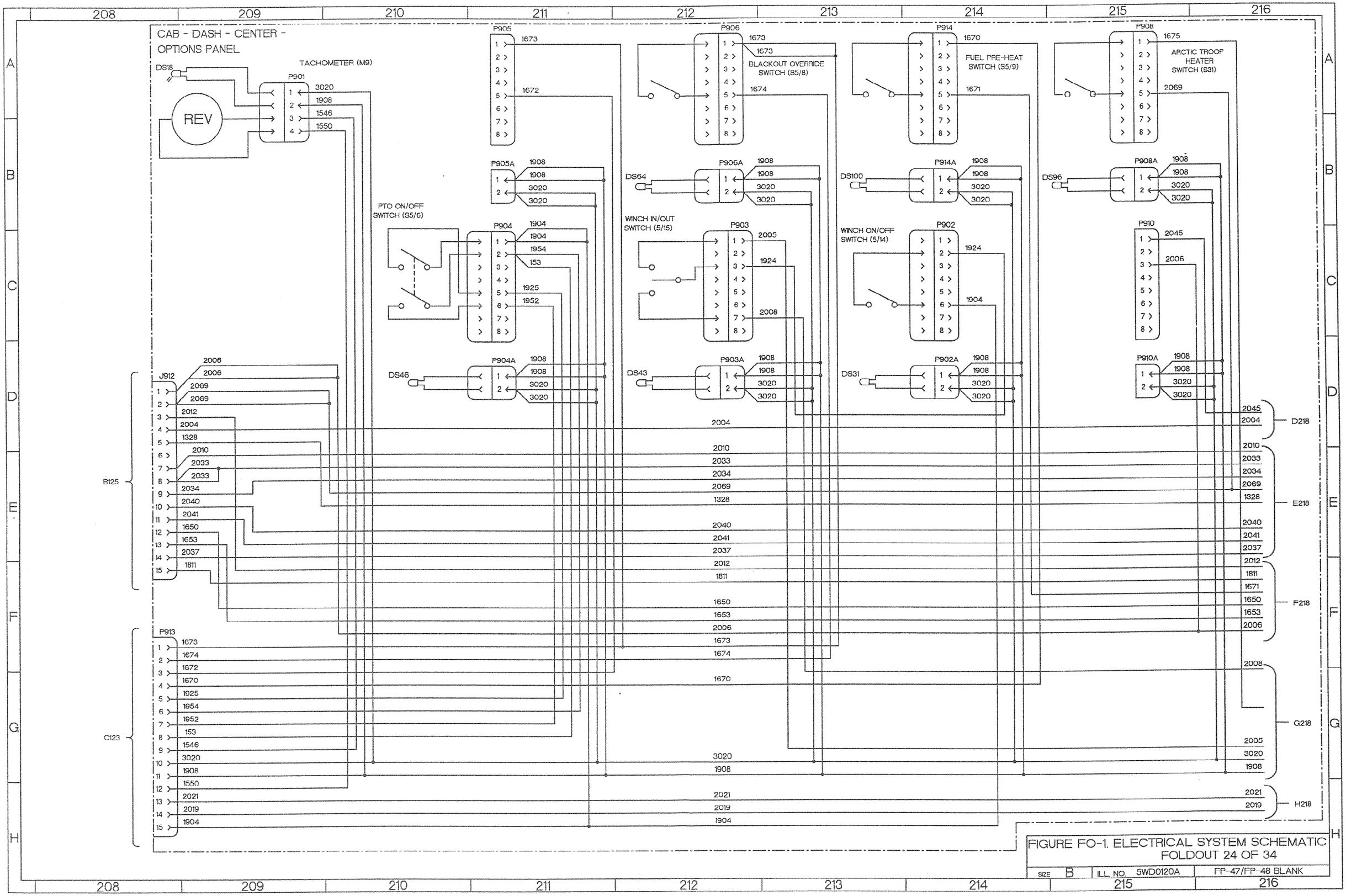


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 24 OF 34

SIZE	ILL. NO.	
B	5WD0120A	FP-47/FP-48 BLANK

CAB - DASH - CENTER - OPTIONS PANEL

SWING FIRE PUMP SWITCH (S5/25)

P909
2007
2006
2006

DS97

P909A
1908
1908
3020
3020

P911
2044
2006
2006
2043

P911A
1908
1908
3020
3020

D216
2045
2004

E216
2010
2033
2034
2069
1328
2040
2041
2037

F216
2012
1811
1671
1650
1653
2006

G216
2008
1675
2005
3020
1908

H216
2021
2019

J108 P108

1328	1		
2040	4	2040	H 271
2041	5	2041	H 271
2043	6		
2044	7		
2045	8		
2033	9		
2010	12	2010	H 271
2037	13		
2033	14		
2069	15		
2006	16	2006	H 271
2034	18		
2004	19		

J210 P210

1811	1	
1671	2	
1650	3	
2019	4	MODELS W/O ARCTIC KIT C226
2021	6	
2008	8	MODELS WITH ARCTIC KIT B235
1675	11	
2012	12	
1653	13	
2005	14	
2007	15	

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 25 OF 34

SIZE B | ILL. NO. 5WD0121A | FP-49/FP-50 BLANK

PTO EQUIPPED

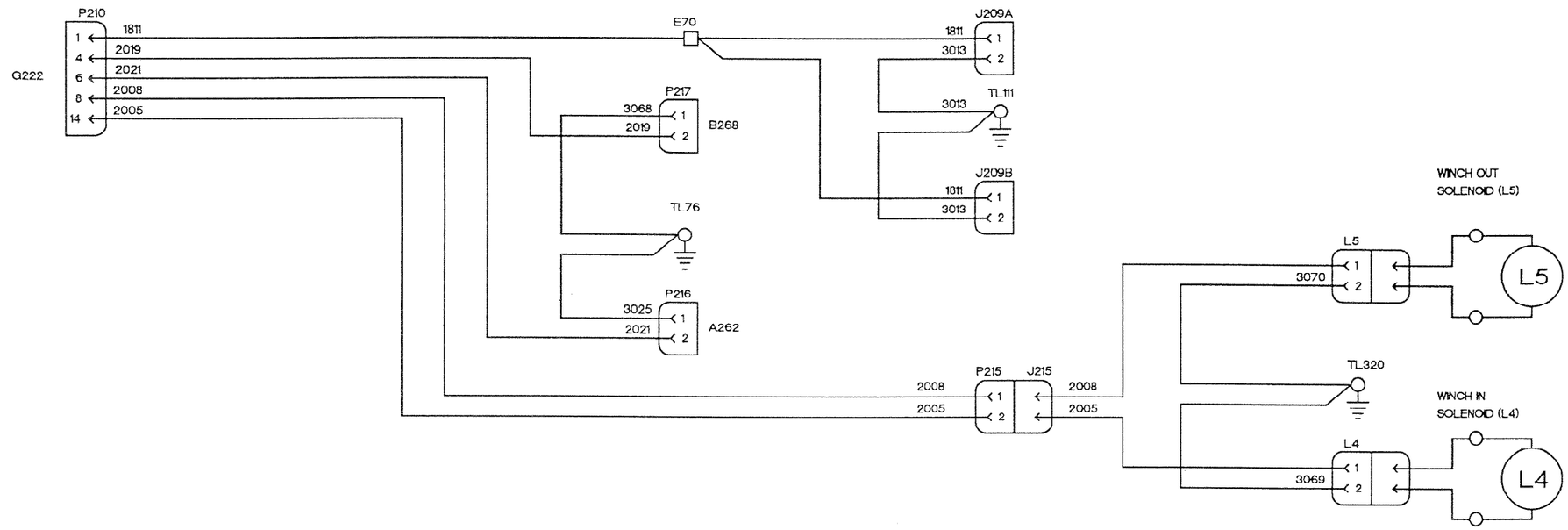


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 26 OF 34

SIZE	ILL NO	
B	5WD0122A	FP-51/FP-52 BLANK

ARCTIC KIT W/PTO EQUIPPED

P210
1 1811
2 1671
3 1650
4 2019
6 2021
8 2008
11 1675
12 2012
13 1653
14 2005
15 2007
16 2018
17 2011
G222

E70
J209A 1811 1, 3013 2
P202 3082 1, 1671 2
P217 3068 1, 2019 2 E268
E74 3072 TL101
P216 3025 1, 2021 2 D268
J209B 1811 1, 3013 2

WINCH OUT SOLENOID (L5)
L5 1, 3070 2
L5

TL320

WINCH IN SOLENOID (L4)
L4 1, 3069 2
L4

P215 J215
2008 1 2008
2005 2 2005

P211 2014 1, 3073 2
P211A 2014 1, 3073 2
L17
ARCTIC KIT WATER PUMP

P212 2016 1, 3072 2
E76
L16
ARCTIC KIT WATER SOLENOID

P410
1650 a
3075 b
3074 c
1675 d
2012 e
3071 f
2018 g
TL102 3076 K
2011 L
2016 N
1653 p
2014 Z
F252

E73 3074 TL103

P214 3081 1, 2007 2 F246

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 27 OF 34

SIZE B | ILL NO. 5WD0123A | FP-53/FP-54 BLANK

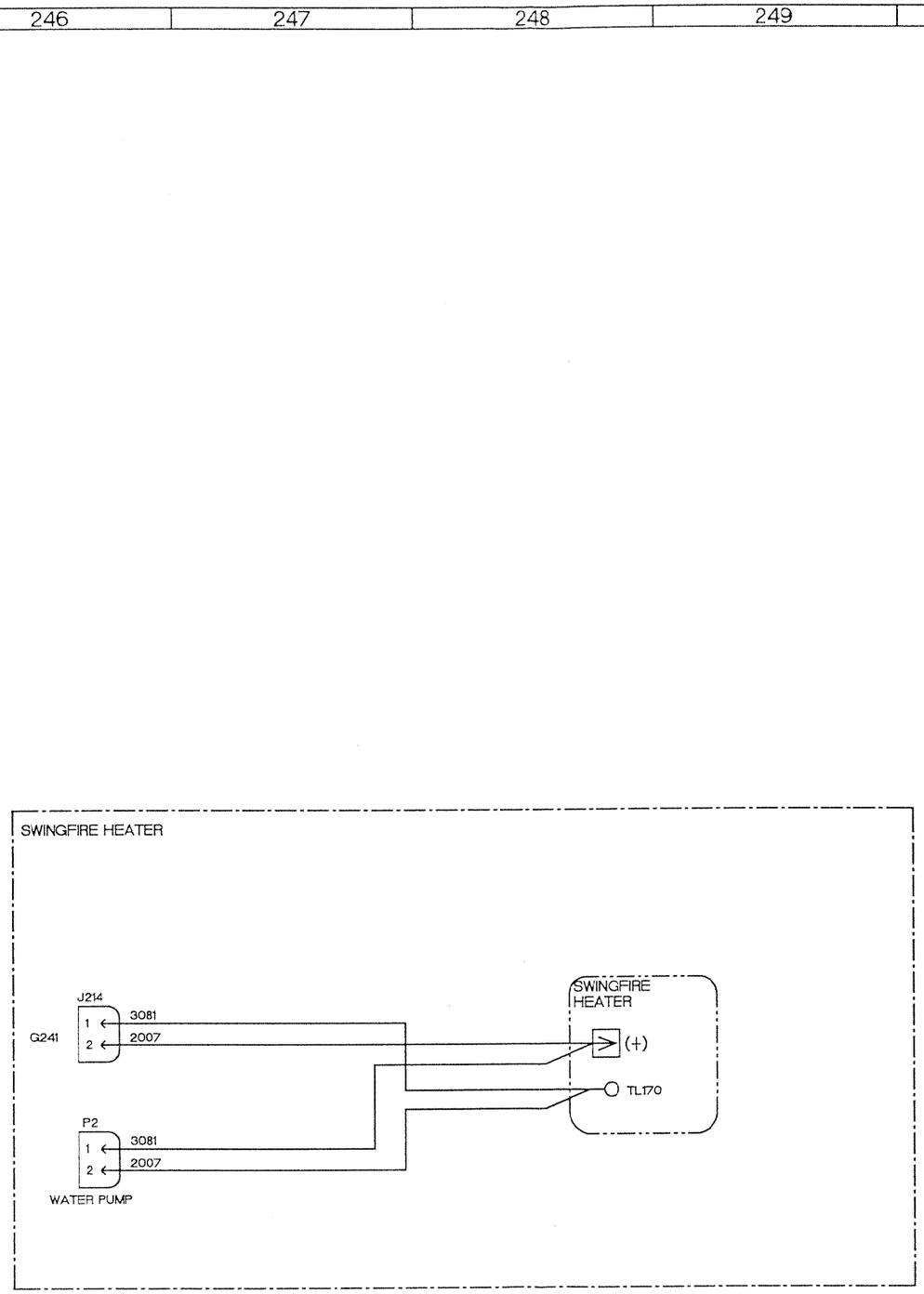


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 28 OF 34

SIZE	ILL. NO.	
B	5WD0124A	FP-55/FP-56 BLANK

TROOP HEATER

FURNACE ASSEMBLY

FURNACE CONTROL UNIT

ELECTRONIC CONTROL UNIT

HEATER MOTOR

HEATER SWITCH

BLK

BRN

J206 (MTV LWB)

J205

J204

J204 (MTV LWD)

P200 J211

P200 J210

P209 J209

WHT

WHT/BLK

WHT/BRN

WHT/RED

WHT/ORG

WHT/YEL

POWER LAMP

D52

D51

TB1 (-)

TL11

TL12

TL13

TL14

TL15

TL16

TL17

TL18

TL19

TL20

TB2 (+)

TL1

TL2

TL3

TL4

TL5

TL6

TL7

TL8

TL9

TL10

J225

CIRCULATING PUMP

J226

K1

K2

K3

K4

K5

HEATER MOTOR RELAY

GROUND RELAY

CONTROL THERMOSTAT RELAY

IGNITION RELAY

FLAME CONTROL RELAY

F1

T2(+)

BL2

MAIN POWER CIRCUIT BREAKER SWITCH

CB/50

BL1

T1(-)

BL3

P208 J207

TO BATTERY +24V

TO BATTERY -24V

HEATER SWITCH

YEL

WHT

BLU

ORG

GRN

BRN

BLK

OVERHEAT FUSE

OVERHEAT THERMOSTAT

CONTROL THERMOSTAT

SOLENOID VALVE

FLAME DETECTION PHOTOCELL

ELECTRONIC IGNITION UNIT

HEATER MOTOR

FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 29 OF 34

SIZE	ILL NO.	
B	5WD0125A	FP-57/FP-58 BLANK

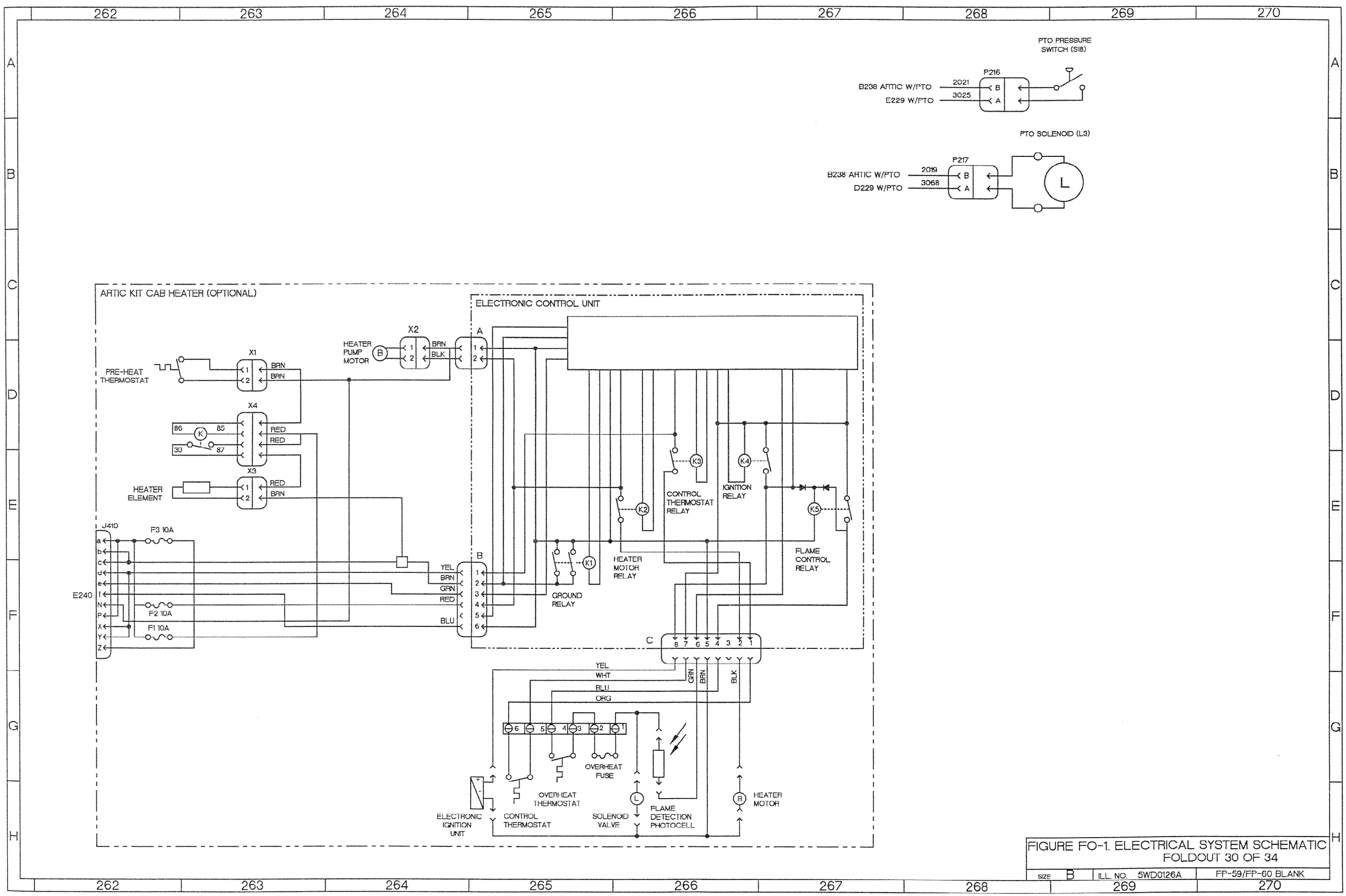


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 30 OF 34

SIZE	ILL. NO.	
B	5WD0126A	FP-59/FP-60 BLANK

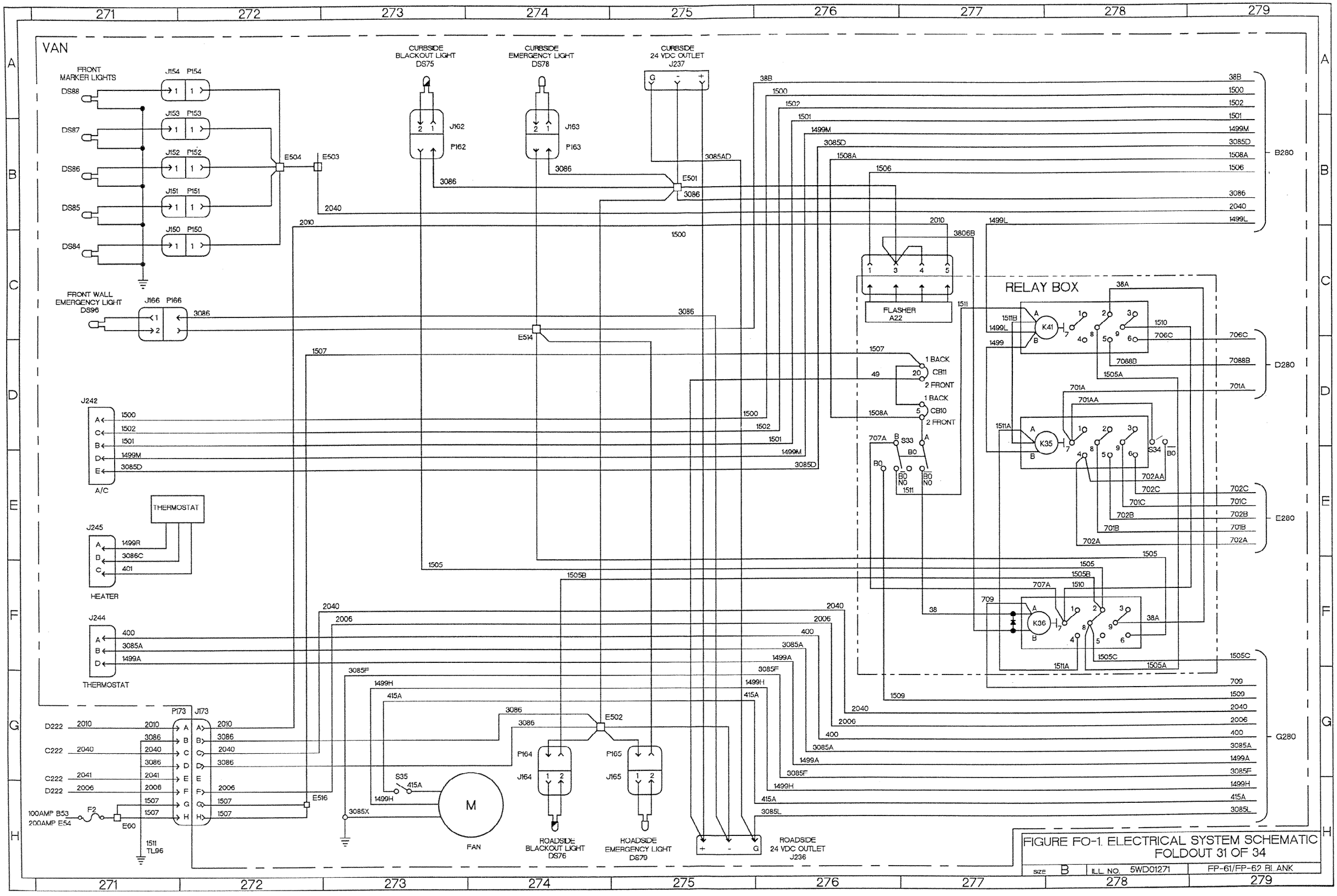


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 31 OF 34

size	ILL NO.	
B	5WD01271	FP-61/FP-62 BLANK

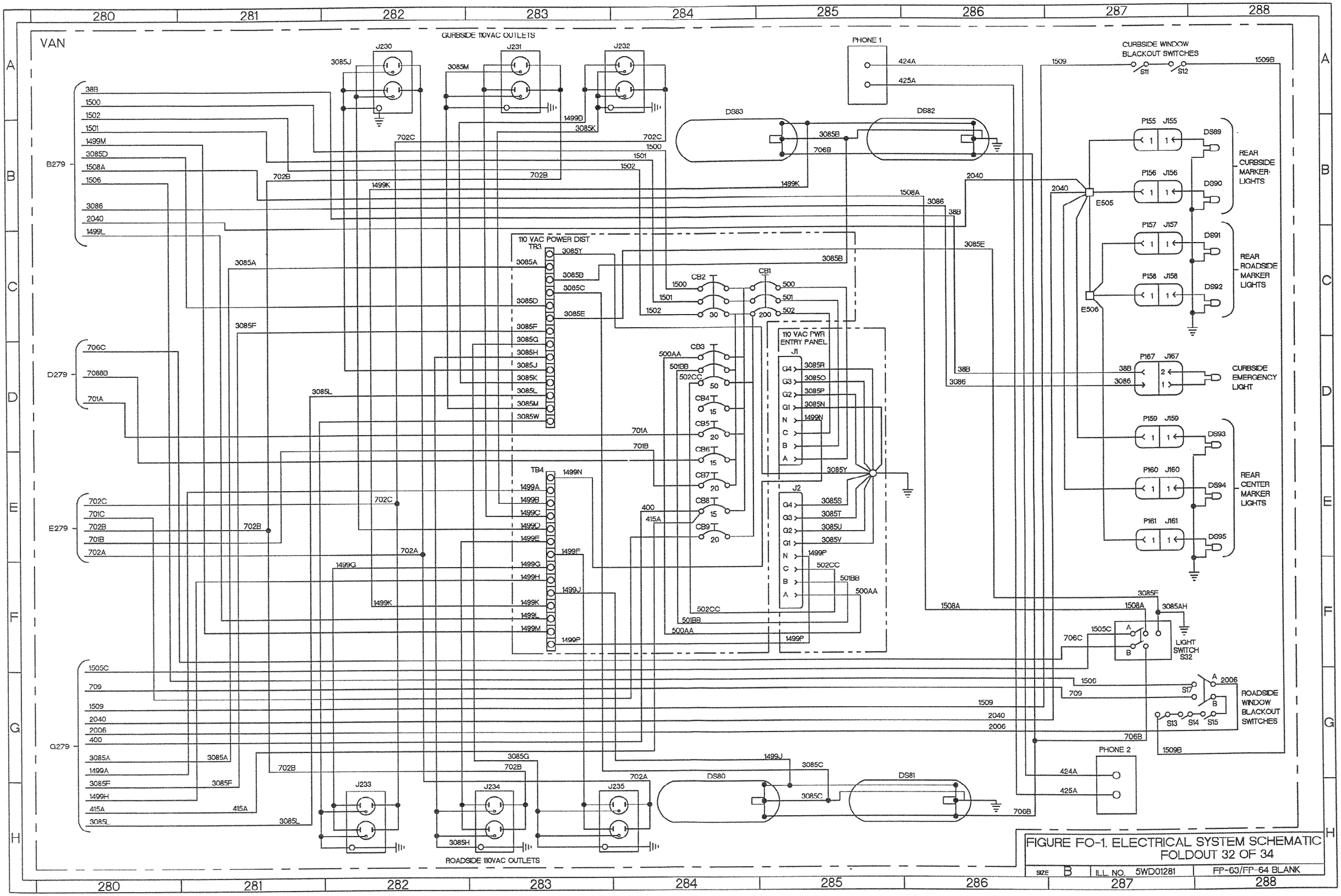


FIGURE FO-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 32 OF 34

SIZE	ILL NO.	
B	5WD01281	FP-63/FP-64 BLANK

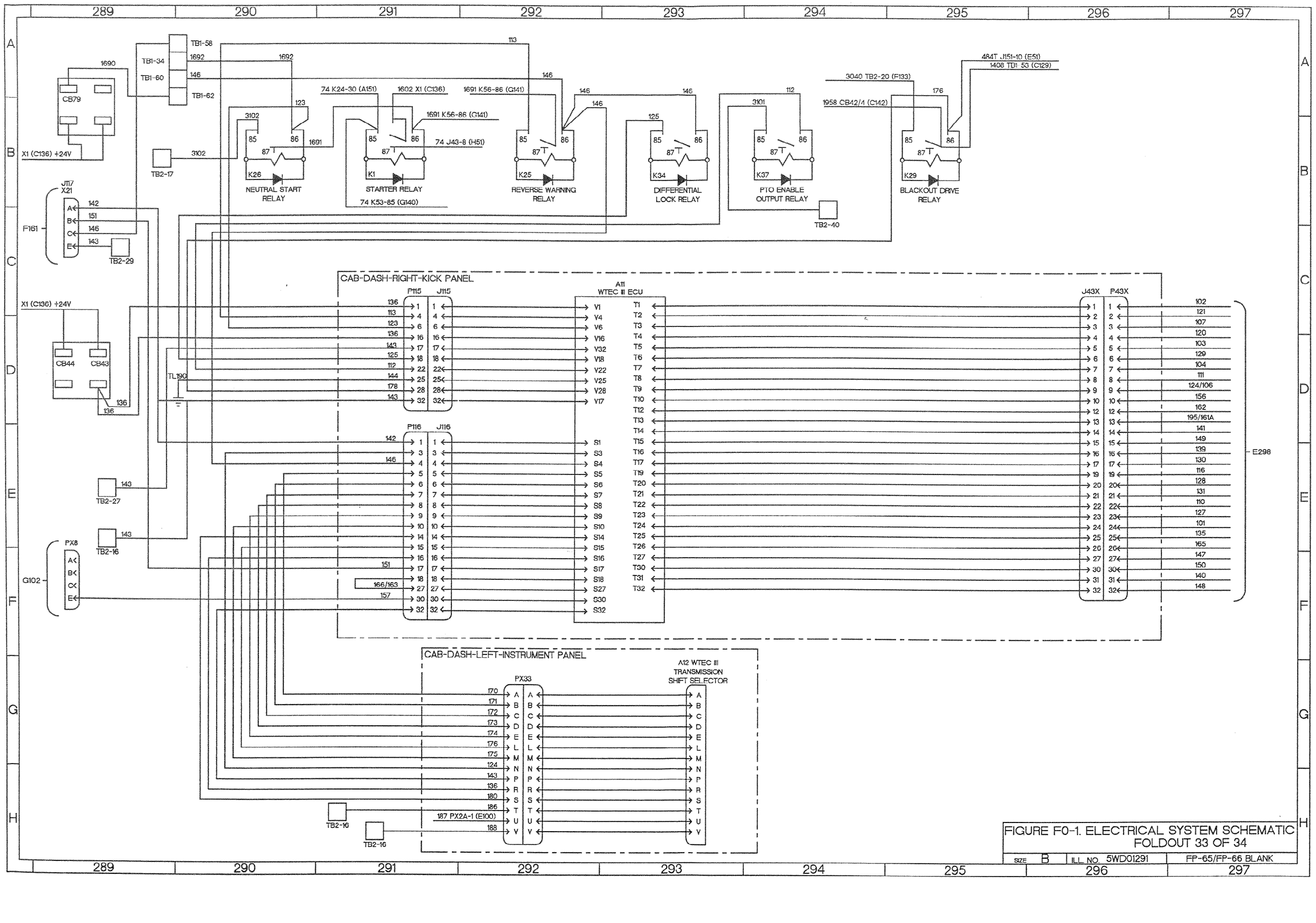


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 33 OF 34

SIZE	ILL NO.	
B	5WD01291	FP-65/FP-66 BLANK

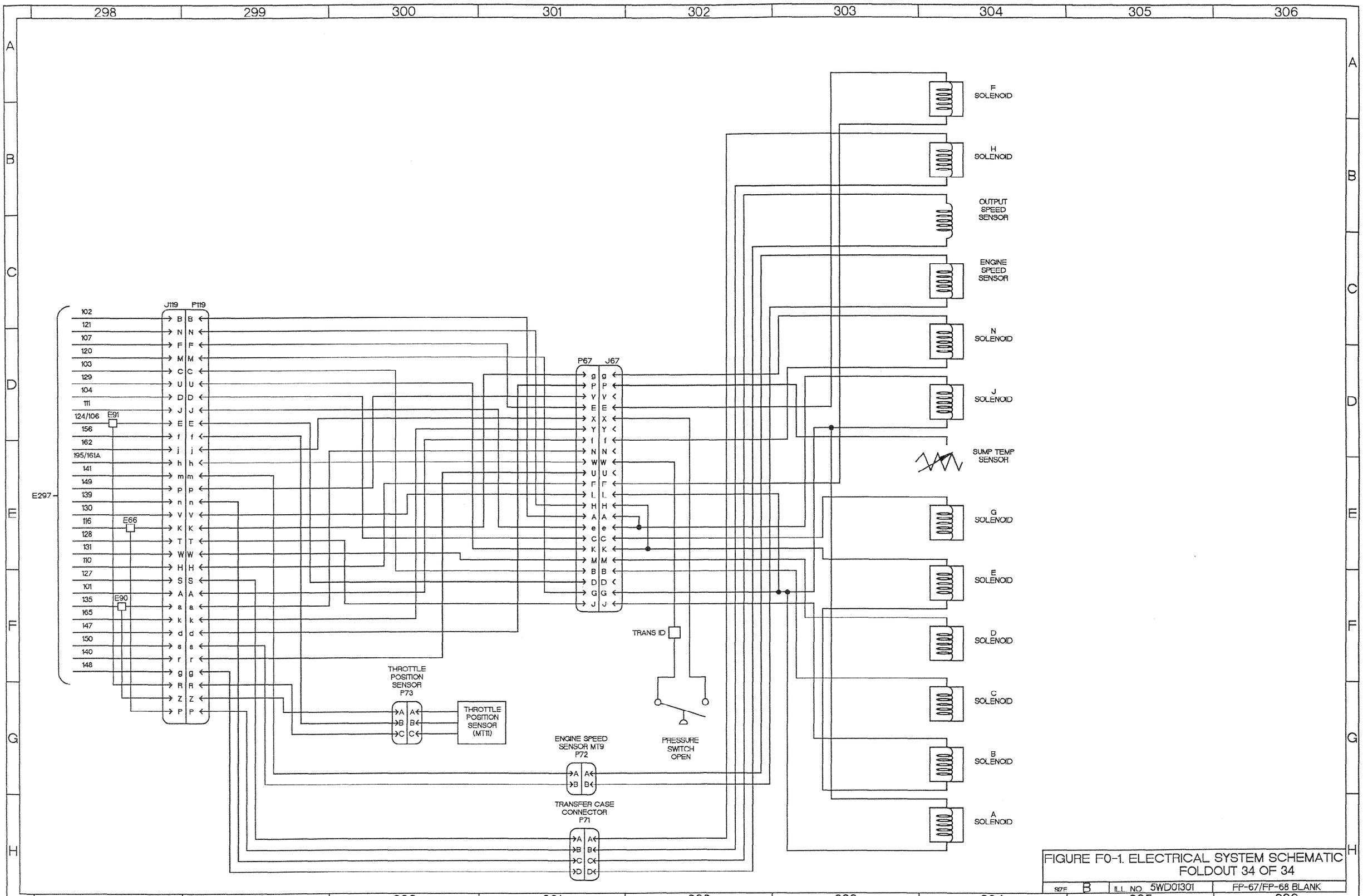


FIGURE F0-1. ELECTRICAL SYSTEM SCHEMATIC
FOLDOUT 34 OF 34

SIZE	ILL. NO.	
B	5WD01301	FP-67/FP-68 BLANK

REAR AXLE BRAKE CHAMBER	FRONT AXLE BRAKE CHAMBER	COUPLER AIR BRAKE	AIR DRYER	AIR CLEANER INTAKE	AIR COMPRESSOR WITH GOVERNOR	AIR TANKS	DASH GAUGE
MANUAL VALVE	ONE WAY CHECK VALVE	FAN CLUTCH	MODULATED CONTROL VALVE	QUICK RELEASE VAVLE	TWO WAY CHECK VALVE	TIRE	PRESSURE SWITCH
PRESSURE RELIEF VALVE	FOOT CONTROL VALVE	PARK CONTROL VALVE (HAND OPERATED)	TRAILER AIR SUPPLY VALVE (HAND OPERATED)	LOAD SENSING VALVE (MECHANICALLY CONTROLLED)	DIRECTIONAL RELAY VALVE	CONTROL VALVE WITH TWO WAY CHECK VALVE	STOPLIGHT SWITCH
CONNECTION	SUPPLY AIR HOSE	NO CONNECTION	DELIVERY AIR HOSE	PARK/EMERGENCY AIR HOSE	AIR BRAKE PROTECTING VALVE	CTIS MANIFOLD VALVE	AIR BR AKE PRESSURE TRANSMITTER
EXH KNEELING VALVE	AIR/HYDRAULIC INVERSION VALVE	DELIVERY AIR HOSE NO CONNECTION	WHEEL VALVE	EXH BLEED VALVE			

FIGURE F0-2 PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 1 OF 4

SIZE B | ILL. NO. 5PD01AI_1 | FP-1/FP-2 BLANK

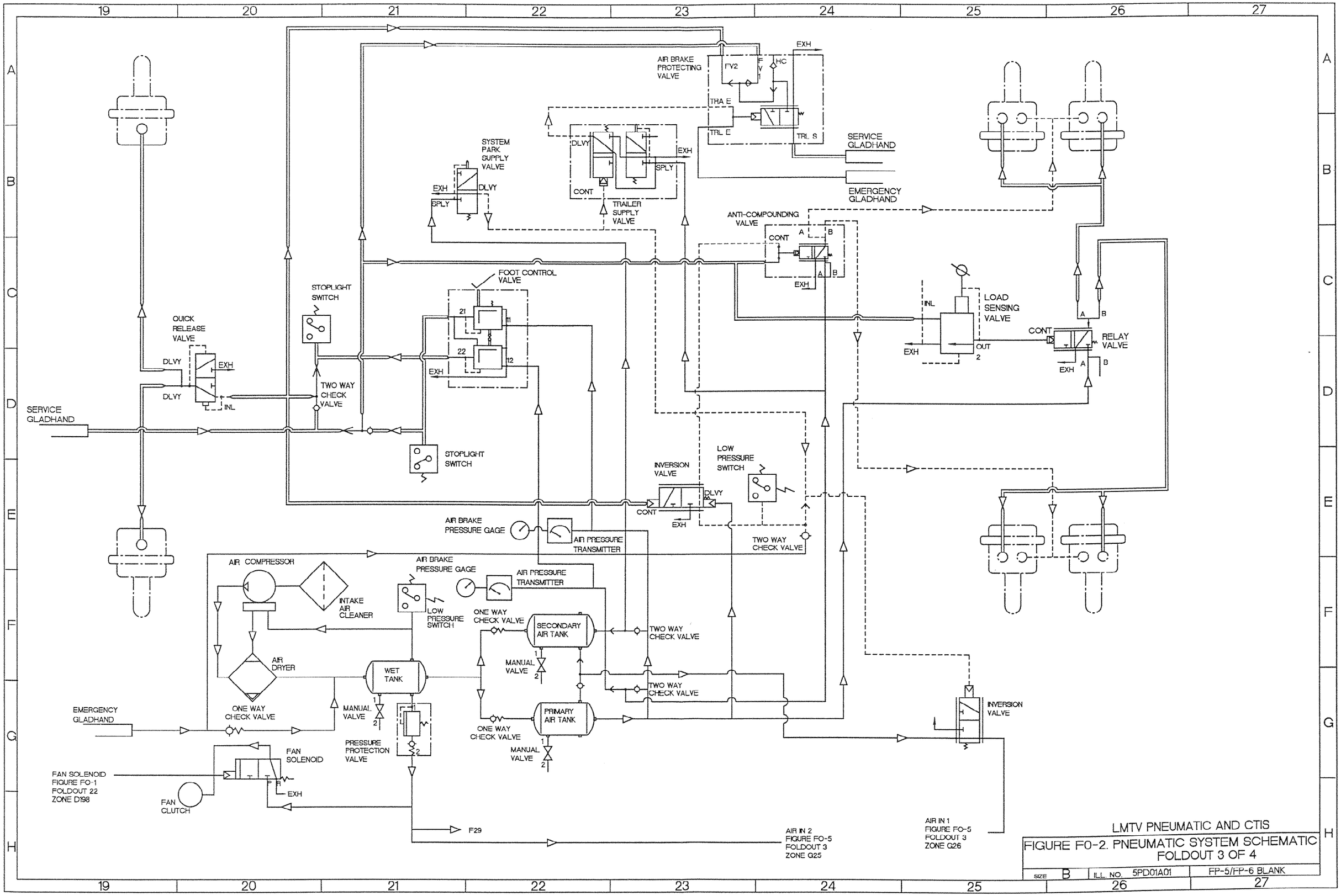
SH	ZONE	DESCRIPTION
3	E22	AIR BRAKE PRESSURE GAGE
3	F22	AIR BRAKE PRESSURE GAGE
3	A23	AIR BRAKE PROTECTING VALVE
3	F20	AIR COMPRESSOR
3	F20	AIR DRYER
3	E22	AIR PRESSURE TRANSMITTER
3	E22	AIR PRESSURE TRANSMITTER
3	C24	ANTI-COMPOUNDING VALVE
4	E31	CONTROL VALVE
4	E31	CTIS MANIFOLD VALVE
4	E32	DEFLATE VALVE
3	G19	EMERGENCY GLADHAND
3	B24	EMERGENCY GLADHAND
3	H20	FAN CLUTCH
3	G20	FAN SOLENOID
3	C22	FOOT CONTROL VALVE
3	F20	INTAKE AIR CLEANER
3	G25	INVERSION VALVE
3	E23	INVERSION VALVE
4	C28	KNEELING VALVE
4	E28	KNEELING VALVE
3	C25	LOAD SENSING VALVE
3	E23	LOW PRESSURE SWITCH
3	F21	LOW PRESSURE SWITCH
3	F22	MANUAL VALVE
3	G22	MANUAL VALVE
3	G21	MANUAL VALVE
3	F22	ONE WAY CHECK VALVE
3	G22	ONE WAY CHECK VALVE
3	G20	ONE WAY CHECK VALVE
3	G21	PRESSURE PROTECTION VALVE
3	G22	PRIMARY AIR TANK
3	C20	QUICK RELEASE VALVE
4	C34	QUICK RELEASE VALVE
4	D30	QUICK RELEASE VALVE
3	D26	RELAY VALVE
3	F22	SECONDARY AIR TANK

SH	ZONE	DESCRIPTION
3	D19	SERVICE GLADHAND
3	B24	SERVICE GLADHAND
3	C20	STOPLIGHT SWITCH
3	E21	STOPLIGHT SWITCH
4	F32	SUPPLY VALVE
3	B21	SYSTEM PARK SUPPLY VALVE
3	B22	TRAILER SUPPLY VALVE
3	D21	TWO WAY CHECK VALVE
3	E24	TWO WAY CHECK VALVE
3	F23	TWO WAY CHECK VALVE
3	G23	TWO WAY CHECK VALVE
3	F21	WET TANK
4	C29	WHEEL VALVE
4	C33	WHEEL VALVE
4	E29	WHEEL VALVE
4	E33	WHEEL VALVE

LMTV PNEUMATIC AND CTIS

FIGURE F0-2. PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 2 OF 4

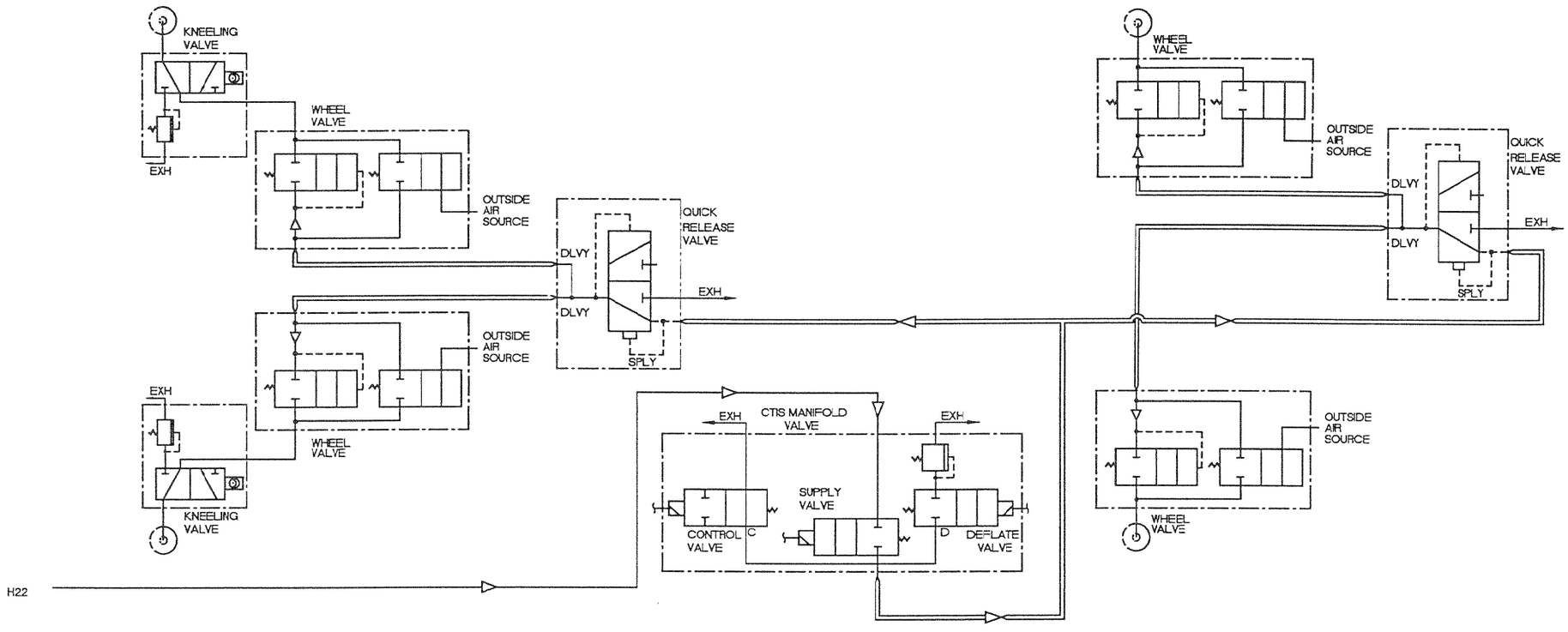
SIZE B | ILL. NO. 5PD01AL2 | FP-3/FP-4 BLANK



LMTV PNEUMATIC AND CTIS

FIGURE FO-2. PNEUMATIC SYSTEM SCHEMATIC FOLDOUT 3 OF 4

SIZE	ILL. NO.	
B	5PD01A01	FP-5/FP-6 BLANK



LMTV PNEUMATIC AND CTIS

FIGURE F0-2. PNEUMATIC SYSTEM SCHEMATIC FOLDOUT 4 OF 4

SIZE B | ILL. NO. 5PD01A02 | FP-7/FP-8 BLANK

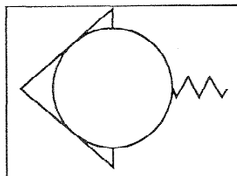
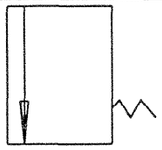
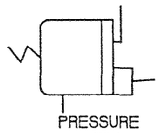
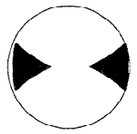
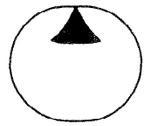
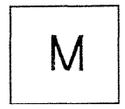
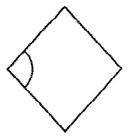
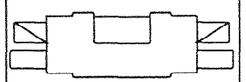
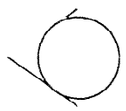
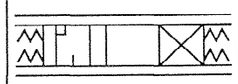
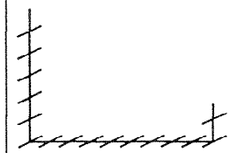
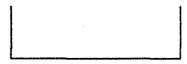
 CHECK VALVE	 BYPASS VALVE	 PRESSURE CONTROL VALVE	 AIR OR OIL FILTER	 MOTOR	 PUMP	 PTO
 AIR LINE LUBRICATOR	 CYLINDER	 CHECK VALVE	 FLOW CONTROL VALVE	 SUCTION LINE	 RESERVOIR	

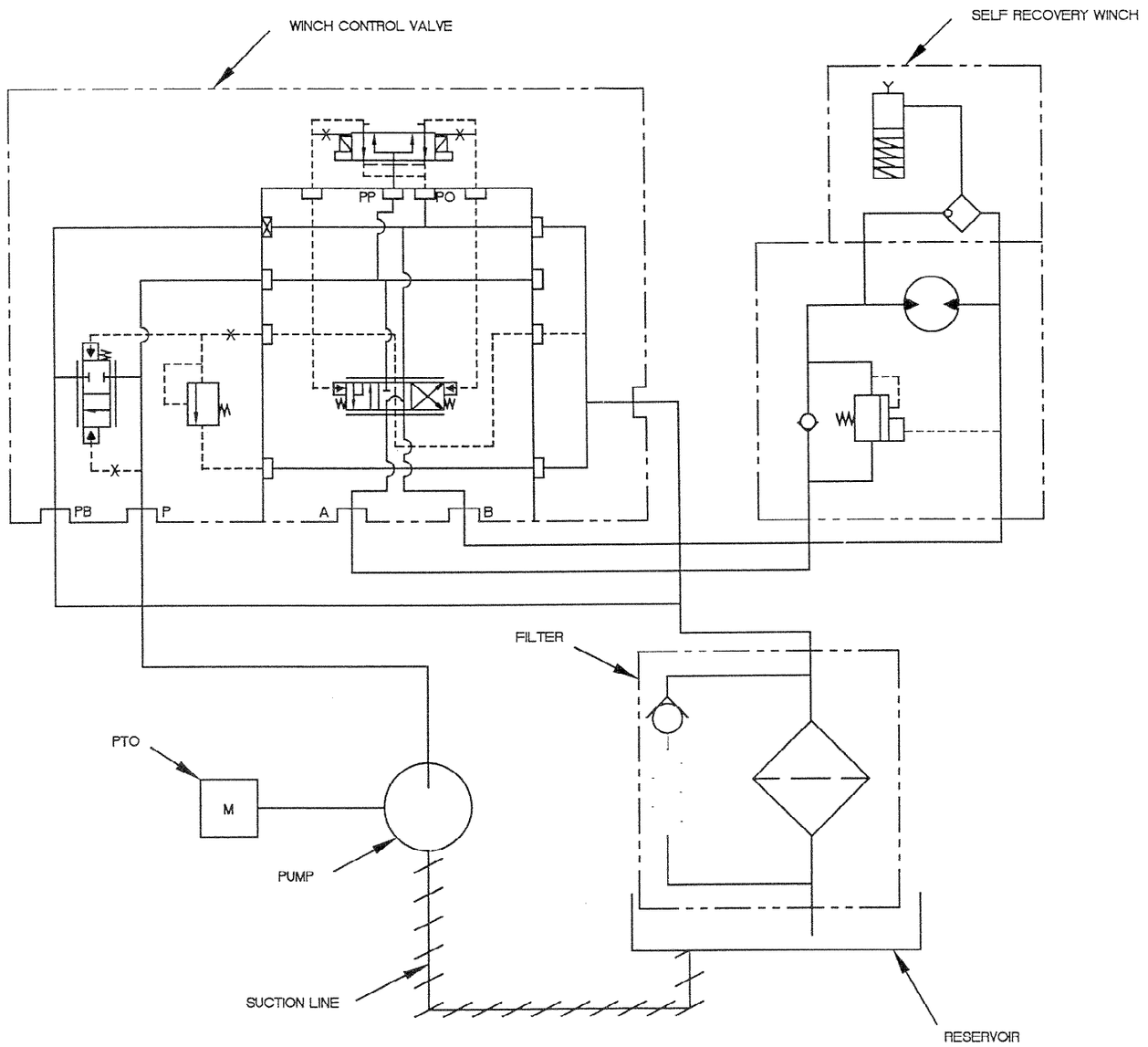
FIGURE FO-3 HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 1 OF 3

SIZE B | ILL. NO. 5HD01AL1 | FP-1/FP-2 BLANK

SHEET	ZONE	DESCRIPTION
3	B21	WINCH CONTROL VALVE
3	B24	SELF RECOVERY WINCH
3	F21	PTO
3	F22	PUMP
3	E23	FILTER
3	G23	RESERVOIR
3	G22	SUCTION LINE

FIGURE FO-3 HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 2 OF 3

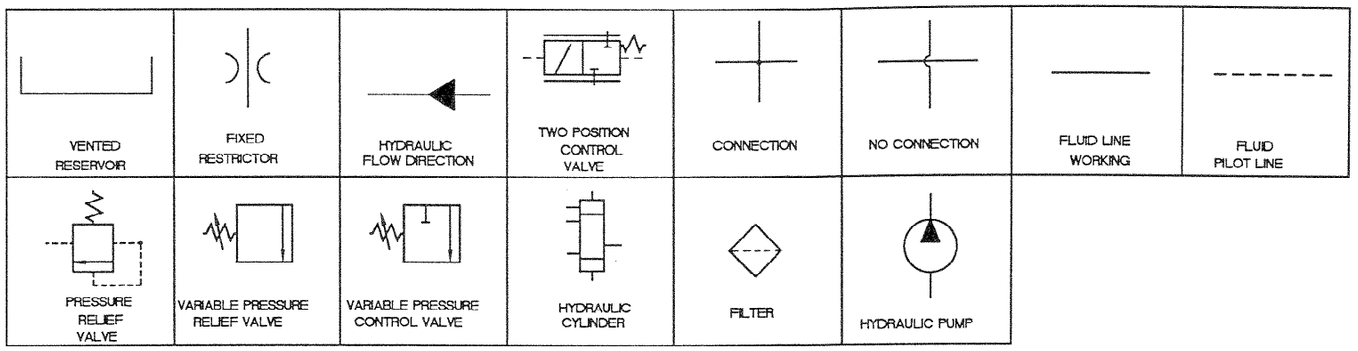
SIZE B | ILL. NO. 5HD01-L2 | FP-3/FP-4 BLANK



LMTV TRUCK W/WINCH

FIGURE F0-3. HYDRAULIC SYSTEM SCHEMATIC
FOLDOUT 3 OF 3

SIZE	ILL. NO.	
B	5HD01-01	FP-5/FP-6 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

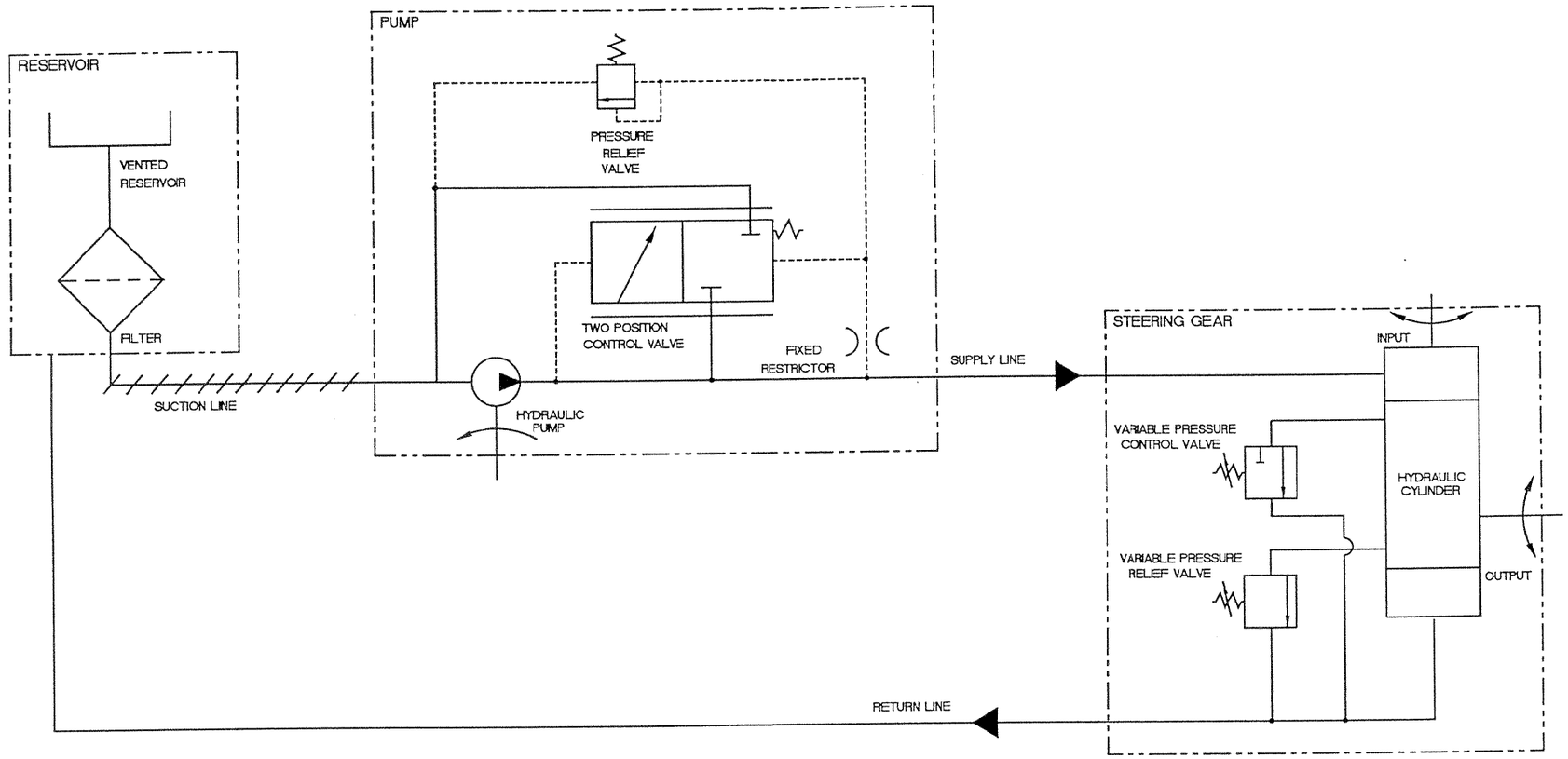


FIGURE FO-4 HYDRAULIC STEERING SYSTEM

FOLDOUT 2 OF 2

SIZE	ILL. NO.	
B	YSD01A01	FP-3/FP-4 BLANK

VENTED RESERVOIR	ABOVE FLUID LEVEL RESERVOIR	HYDRAULIC FLOW DIRECTION	PNEUMATIC FLOW DIRECTION	CONNECTION	NO CONNECTION	FLUID LINE WORKING	FLUID PILOT LINE
FIXED RESTRICTOR	CHECK VALVE	VARIABLE CONTROL CHECK VALVE	CHECK PILOT	PRESSURE RELIEF VALVE	FILTER	HAND PUMP	DETENT
TWO POSITION CAB SUSPENSION VALVE	MUFFLER	HYDRAULIC CYLINDER	CAB AIR SUSPENSION W/DAMPER	REAR CAB LATCH	TWO POSITION AIR PUMP VALVE	PRESSURE INTENSIFIER	HEIGHT CONTROL VALVE
TWO POSITION CAB TILT VALVE	TWO POSITION SUSPENSION VALVE	TWO POSITION SPARE TIRE VALVE	THREE POSITION SELECTION VALVE				

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

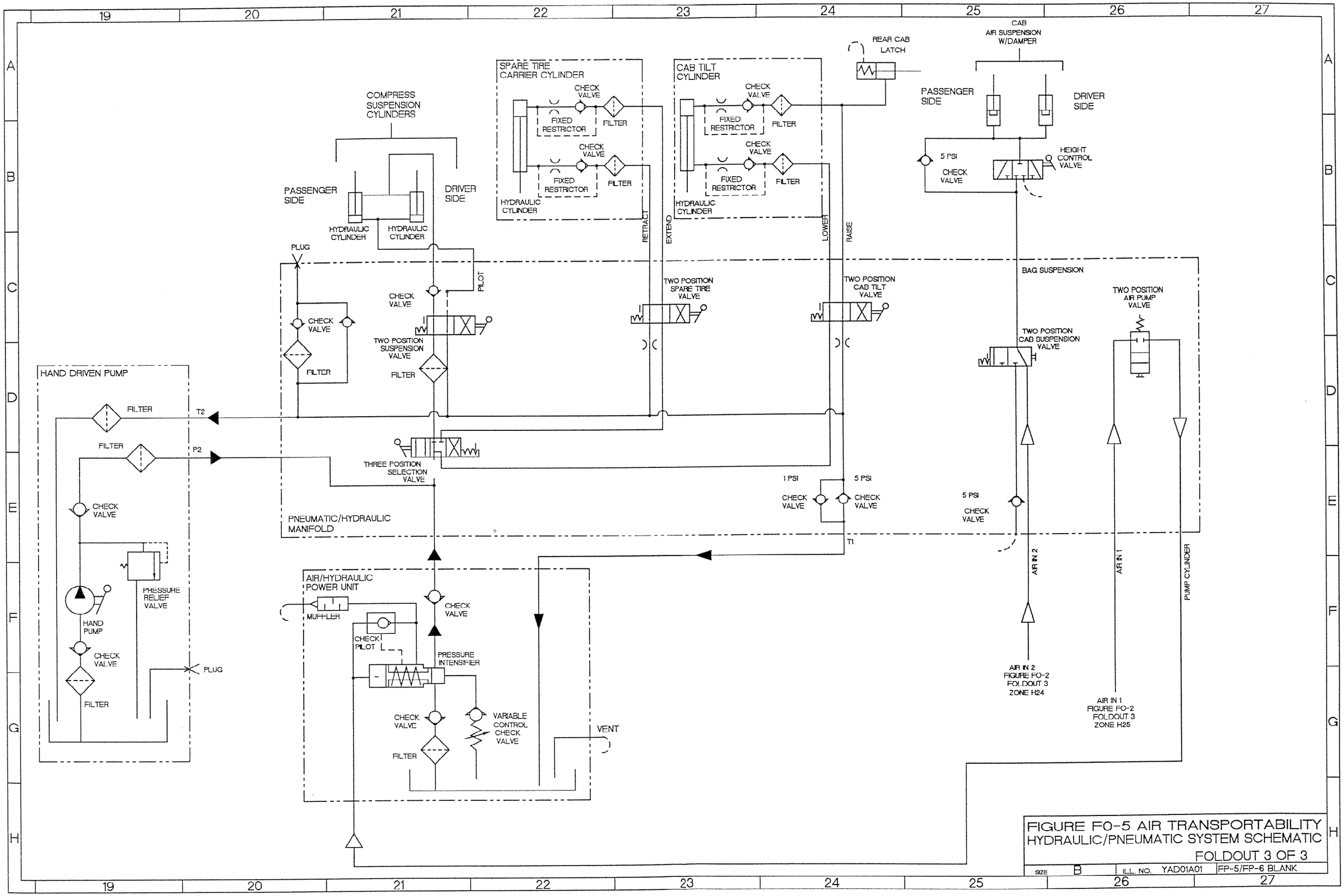


FIGURE FO-5 AIR TRANSPORTABILITY
HYDRAULIC/PNEUMATIC SYSTEM SCHEMATIC
FOLDOUT 3 OF 3

SIZE B | ILL. NO. YAD01A01 | FP-5/FP-6 BLANK

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the Secretary of the Army
05144

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15-33	15-7	4	
19-6	19-2		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Item 10. Change illustration. Reason: Text calls out 90-degree fitting, art shows straight fitting. Text is correct.

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.

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

SQUARE MEASURE
1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

WEIGHTS
1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

CUBIC MEASURE
1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

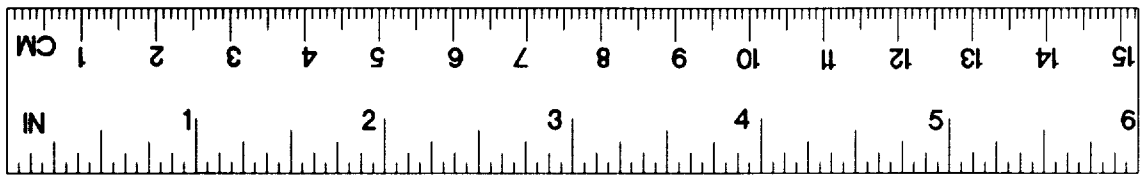
LIQUID MEASURE
1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE
5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 C° + 32 = F°

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Inches	Millimeters	0.254
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Pounds (force)	Newtons	4.448
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds/Sq Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Hour	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Millimeters	Inches	3.937
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Sq Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Sq Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Newtons	Pounds (force)	0.2248
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Sq Inch	0.145
Km per Liter	Miles per Gallon	2.354
Km per Hour	Miles per Hour	0.621



YMET001A

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