ENGINE MAINTENANCE

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

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			11K SELF-RECOVERY WINCH (SRW) SYSTEM TROUBLESHOOTING

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

HEADQUARTERS, DEPARTMENTS OF THE ARMY AND THE AIR FORCE

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

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

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

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.

CHANGE NO. 3 HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, D.C., 10 February 2006

TECHNICAL MANUAL
MAINTENANCE INSTRUCTIONS
UNIT MAINTENANCE
M1078 SERIES, 2 1/2-TON, 4x4,
LIGHT MEDIUM TACTICAL VEHICLE
(LMTV)

VOLUME NO. 2 OF 5

TM 9-2320-365-20-2, 17 June 1998, is changed as follows:

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

Remove Pages

None

Change 3 Transmittal/ Change 3 Authentication

A thru C/(D Blank)

i thru ii

B-1 thru B-19/(B-20 Blank)

Insert Pages

Change 3 Transmittal/ Change 3 Authentication

A thru C/(D Blank)

i thru ii

B-1 thru B-19/(B-20 Blank)

By Order of the Secretary of the Army:

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By Order of the Secretary of the Air Force:

RONALD R. FOGLEMAN General, United States Air Force Chief of Staff

Official:

HENRY VICCELLIO, JR. General, United States Air Force Commander, Air Force Materiel Command

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 380934, requirements for Family of Medium Tactical Vehicles (FMTV) TM 9-2320-365-20-2.

CHANGE NO. 2 HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, D.C., 20 AUGUST 2005

TECHNICAL MANUAL
MAINTENANCE INSTRUCTIONS
UNIT MAINTENANCE
M1078 SERIES, 2 1/2-TON, 4x4,
LIGHT MEDIUM TACTICAL VEHICLE
(LMTV)

VOLUME NO. 2 OF 5

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Remove Pages Insert Pages

e thru h A thru C/(D Blank) none	e thru h A thru C/(D Blank) Change 2 Authentication Sheet
2-1359 and 2-1360	2-1359 and 2-1360
2-1399 thru 2-1402	2-1399 thru 2-1402
2-1441 and 2-1442	2-1441 and 2-1442
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2-1643 thru 2-1664	2-1643 thru 2-1664
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(2-1853 Blank)/2-1854	(2-1853 Blank)/2-1854
2-1977/(2-1978 Blank)	2-1977 and 2-1978
none	2-1979 thru 2-2013/
	(2-2014 Blank)
B-5 and B-6	B-5 and B-6
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(B-20 Blank)	(B-20 Blank)
C-1 thru C-4	C-1 thru C-4
D-1 and D-2	D-1 and D-2
D-5 and D-6	D-5 and D-6
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(G-12 Blank)	(G-12 Blank)
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(H-22 Blank)	(H-22 Blank)
K-1 thru K-4	K-1 thru K-4
INDEX-1 thru INDEX-12	INDEX-1 thru INDEX-12
FO-1 FP-3/(FP-4 Blank)	FO-1 FP-3/(FP-4 Blank)
FO-1 FP-61/(FP-62 Blank)	FO-1 FP-61/(FP-62 Blank)
Metric Conversion Chart /PIN	Metric Conversion Chart /PIN

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

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER General, United States Army Chief of Staff

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JOHN P. JUMPER General, United States Air Force Chief of Staff

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Distribution:

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CHANGE NO. 1

HEADQUARTERS DEPARTMENTS OF THE ARMY AND THE AIR FORCE

Washington, D.C., 1 JULY 2003

TECHNICAL MANUAL MAINTENANCE INSTRUCTIONS UNIT MAINTENANCE M1078 SERIES, 2 1/2-TON, 4x4, LIGHT MEDIUM TACTICAL VEHICLE (LMTV)

VOLUME NO. 2 OF 5

TM 9-2320-365-20-2, 17 June 1998, is changed as follows:

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Remove Pages	Insert Pages	Remove Pages	Insert Pages
i and j	i and j	2-1699 and 2-1700	2-1699 and 2-1700
none	A and C/(D Blank)	2-1711/(2-1712 Blank)	2-1711 and 2-1712
i thru iv	i thru iv	none	2-1712.1/(2-1712.2 Blank)
none	v and vi	2-1713 thru 2-1730	2-1713 thru 2-1730
none	2-1086.1/(2-1086.2 Blank)	2-1737 thru 2-1742	2-1737 thru 2-1742
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2-1463 thru 2-1482	2-1463 thru 2-1482	2-1833 thru 2-1852	none
none	2-1482.1 thru 2-1482.42	2-1853 and 2-1854	(2-1853 Blank)/2-1854
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2-1667 and 2-1668	none	none	2-1970.1 thru 2-1970.14
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2-1697 and 2-1698	(2-1697 Blank)/2-1698	2-1977 and 2-1978	2-1977/(2-1978 Blank)

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

Remove Pages	Insert Pages
2-1979 thru 2-2076	none
2-2077 and 2-2078	(2-2077 Blank)/2-2078
2-2115 and 2-2116	2-2115 and 2-2116
none	2-2116.1/(2-2116.2 Blank)
	ru 2-2116.9/(2-2116.10 Blank)
none 2-2110.5 till	2-2116.11 and 2-2116.12
2-2117 and 2-2118	2-2116.11 and 2-2116.12 2-2117 and 2-2118
	2-2117 and 2-2118 2-2118.1/(2-2118.2 Blank)
none	nru 2-2118.7/(2-2118.8 Blank)
	2-2118.9 and 2-2118.10
none	
2-2119/(2-2120 Blank)	2-2119/(2-2120 Blank)
2-2121 and 2-2122	2-2121 and 2-2122
none	2-2132.1/(2-2132.2 Blank)
2-2133 and 2-2134	2-2133 and 2-2134
3-1 and 3-2	3-1 and 3-2
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B-13 thru B-20	B-13 thru B-19/(B-20 Blank)
C-3 and C-4	C-3 and C-4
D-1 thru D-5/(D-6 Blank)	D-1 thru D-6
E3 and E4	E3 and E4
none	E-21 and E-22
G-1 thru G-10	G-1 thru G-10
none	G-11/(G-12 Blank)
H-1 thru H-8	H-1 thru H-8
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none	K-1 thru K-4
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DA Form 2028-2	DA Form 2028
DA Form 2028-2	DA Form 2028
DA Form 2028-2	DA Form 2028
FO-1 FP-1/(FP-2 Blank)	FO-1 FP-1/(FP-2 Blank)
thru FP-19/(FP-20 Blank)	thru FP-19/(FP-20 Blank)
FO-1 FP-23/(FP-24 Blank)	FO-1 FP-23/(FP-24 Blank)
FO-1 FP-27/(FP-28 Blank)	FO-1 FP-27/(FP-28 Blank)
thru FP-61/(FP-62 Blank)	thru FP-61/(FP-62 Blank)
FO-1 FP-65/(FP-66 Blank)	FO-1 FP-65/(FP-66 Blank)
and FP-67/(FP-68 Blank)	and FP-67/(FP-68 Blank)
Metric Conversion Chart	Metric Conversion Chart
Cover	Cover
20101	Cover

Remove Pages

Insert Pages

By Order of the Secretary of the Army:

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

Official:

JOEL B. HUDSON Administrative Assistant to the Secretary of the Army 0110103

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LIST OF EFFECTIVE PAGES

Insert latest changed pages. Destroy superseded pages.

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

Dates of issue for original and changed pages are:					
Original	0	17 June 1998			
Change	1	1 July 2003			
Change	2	20 August 2005			
		. 10 February 2006			

THE TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 1412, CONSISTING OF THE FOLLOWING:

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f	2	2-1486.1 thru			
g		Added	1		1
й			-15211		668 Deleted 1
i	1		-15252		1
i			-15681		6951
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D Blank			-15931		1
i	1		0		699 1
ii	0		-15961		7110
iii and iv		2-1596.1 thru			1
v and vi Added			1		11
2-1086.1 Added			ank Added1		Added1
2-1086.2 Blank Added.			-16011		729 1
2-1087			0		737 0
2-1088 thru 2-1103			1		7421
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2-1244 thru 2-1357			1		7590
2-1358 Blank			2		0
2-1359 and 2-1360			1		1
2-1361 Blank		2-1648	2		7650
2-1362 and 2-1363			1	2-1766 Blank	0
2-1364 thru 2-1399	1	2-1650	2		7691
2-1400	2	2-1651	1		8210
2-1401			2		8262
2-1402			1		1
2-1403 thru 2-1440			2		2
2-1441			1	2-1829	1
2-1442 thru 2-1462			2		2
2-1462.1 and 2-1462.2			1		
Added	1		2		
2-1463 thru 2-1482			1		852 Deleted 1
2-1482.1 thru 2-1482.42			2		1
Added			1		2

^{*} Zero in this column indicates an original page.

LIST OF EFFECTIVE PAGES

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No.	No.	No.	No.	No.	No.
2-1855	1	2-2118.1 Added	4	H-13 thru H-15	0
2-1856 thru 2-1861		2-2118.2 Blank Added		H-16 thru H-18	
2-1862 thru 2-1869 2-1870 Blank		2-2118.3 thru 2-2118.7 Added	1	H-19 H-20 and H-21	
		2-2118.8 Blank Added		H-20 and H-21 H-22 Blank	
2-1871 Blank			1		
2-1872 and 2-1873 2-1874 thru 2-1893		2-2118.9 and 2-2118.10 Added	4	J-1	
				J-2 Blank	
2-1894 Blank		2-2119		K-1 Added	
2-1895 thru 2-1901		2-2120 Blank		K-2 and K-3	
2-1902 Blank		2-2121		K-4 Added	
2-1903		2-2122 thru 2-2125		INDEX-1	
2-1904 thru 2-1923		2-2126 Blank		INDEX-2 thru INDEX-4	
2-1924 Blank		2-2127 thru 2-2132		INDEX-5	
2-1925		2-2132.1 Added		INDEX-6 thru INDEX-11	
2-1926 thru 2-1943		2-2132.2 Blank Added		INDEX-12	
2-1944 Blank		2-2133		Glossary-1 and Glossary	
2-1945		2-2134 thru 2-2136		FO-1 FP-1	
2-1946 thru 2-1951		3-1		FO-1 FP-2 Blank	
2-1952 Blank		3-2 thru 3-14		FO-1 FP-3	
2-1953		3-15 thru 3-17		FO-1 FP-4 Blank	
2-1954 thru 2-1957		3-18 thru 3-21		FO-1 FP-5	
2-1958 Blank		3-22 Blank	0	FO-1 FP-6 Blank	0
2-1959 thru 2-1968	1	A-1		FO-1 FP-7	
2-1968.1 thru 2-1968.18		A-2 and A-3	1	FO-1 FP-8 Blank	
Added		A-4		FO-1 FP-9	
2-1969 and 2-1970	1	B-1		FO-1 FP-10 Blank	0
2-1970.1 thru 2-1970.14.	1	B-2	0	FO-1 FP-11	1
2-1971 thru 2-1974	1	B-3 thru B-20	3	FO-1 FP-12 Blank	0
2-1974.1 thru 2-1974.22		C-1	0	FO-1 FP-13	1
Added	1	C-2 thru C-4	2	FO-1 FP-14 Blank	0
2-1975	1	D-1	1	FO-1 FP-15	1
2-1976 Blank	0	D-2	2	FO-1 FP-16 Blank	0
2-1977 and 2-1978	2	D-3 thru D-5	1	FO-1 FP-17	1
2-1979 thru 2-2013 Adde	d 2	D-6	2	FO-1 FP-18 Blank	0
2-2014 Blank Added	2	E-1 and E-2	0	FO-1 FP-19	1
2-2015 thru 2-2076 Delet	ed 1	E-3 and E-4	1	FO-1 FP-20 Blank	0
2-2077 Blank	1	E-5 thru E-20		FO-1 FP-21	0
2-2078	1	E-21 and E-22 Added		FO-1 FP-22 Blank	0
2-2079 thru 2-2113		F-1 thru F-8		FO-1 FP-23	
2-2114 Blank		G-1		FO-1 FP-24 Blank	
2-2115 and 2-2116		G-2		FO-1 FP-25	
2-2116.1 Added		G-3 thru G-7		FO-1 FP-26 Blank	
2-2116.2 Blank Added		G-8		FO-1 FP-27	
2-2116.3 thru 2-2116.9		G-9 thru G-11		FO-1 FP-28 Blank	
Added	1	G-12 Blank Added		FO-1 FP-29	
2-2116.10 Blank Added		H-1 thru H-6		FO-1 FP-30 Blank	
2-2116.11 and 2-2116.12		H-7		FO-1 FP-31	
Added		H-8 thru H-10		FO-1 FP-32 Blank	
2-2117 and 2-2118	1 1	H-11		1 U-1 FF-32 Dialik	
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110.	110.	140.	110.	140.	140.
FO-1 FP-33	1	FO-4 FP-1	0		
FO-1 FP-34 Blank	0	FO-4 FP-2 Blank	0		
FO-1 FP-35	1	FO-4 FP-3	0		
FO-1 FP-36 Blank		FO-4 FP-4 Blank			
FO-1 FP-37		FO-5 FP-1			
FO-1 FP-38 Blank	0	FO-5 FP-2 Blank	0		
FO-1 FP-39	1	FO-5 FP-3			
FO-1 FP-40 Blank	0	FO-5 FP-4 Blank	0		
FO-1 FP-41	1	FO-5 FP-5	0		
FO-1 FP-42 Blank	0	FO-5 FP-6 Blank	0		
FO-1 FP-43	1				
FO-1 FP-44 Blank	0				
FO-1 FP-45	1				
FO-1 FP-46 Blank	0				
FO-1 FP-47					
FO-1 FP-48 Blank					
FO-1 FP-49					
FO-1 FP-50 Blank	0				
FO-1 FP-51					
FO-1 FP-52 Blank	0				
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FO-1 FP-54 Blank					
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FO-1 FP-56 Blank					
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FO-1 FP-58 Blank	0				
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FO-1 FP-61					
FO-1 FP-62 Blank	0				
FO-1 FP-63	0				
FO-1 FP-64 Blank	0				
FO-1 FP-65	1				
FO-1 FP-66 Blank	0				
FO-1 FP-67	1				
FO-1 FP-68 Blank	0				
FO-2 FP-1					
FO-2 FP-2 Blank	0				
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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	внс
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

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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.
- APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).
- APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.
- **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 through 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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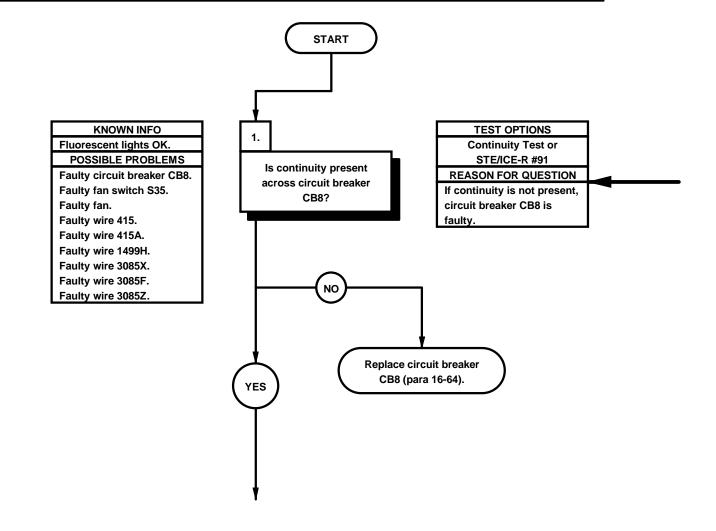
2-16. ELECTRICAL SYSTEM TROUBLESHOOTING (CONT)

Table 2-7. Electrical System Fault Index (Cont)

Fault No. **Description Page** e99. M1079 Fan Does Not Operate e100. All M1079 Van Body Marker Lights Do Not Operate e101. M1079 Van Body Clearance Marker Light Does Not Illuminate All M1079 Fluorescent Lights Do Not Operate e102. e103. e104. e105. e106. e107. e108. M1079 110 VAC Outlet J232 Does Not Operate in Normal Mode e109. M1079 110 VAC Outlet J232 and J233 Do Not Operate in Blackout Override Mode e110. e111. e112. M1079 Blackout Light(s) Does Not Operate e113. e114. M1079 Field Phone 1 and/or 2 Binding Post Does Not Operate 2-1244 e115. M1079 Air Conditioner Does Not Operate e116. M1079 Heater Does Not Operate e117. M1079 Van Door Open Light Does Not Illuminate and Audible Alarm Does Not Operate 2-1324 e118. e119. M1079 110 VAC Power Does Not Operate e120.

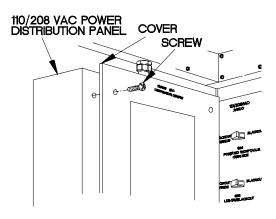
TM 9-4910-571-12&P

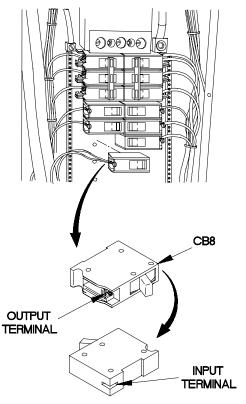
e99. M1079 FAN DOES NOT OPERATE INITIAL SETUP Equipment Condition Engine shut down (TM 9-2320-365-10). AC power disconnected (TM 9-2320-365-10). Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C) Personnel Required (2) References



CONTINUITY TEST

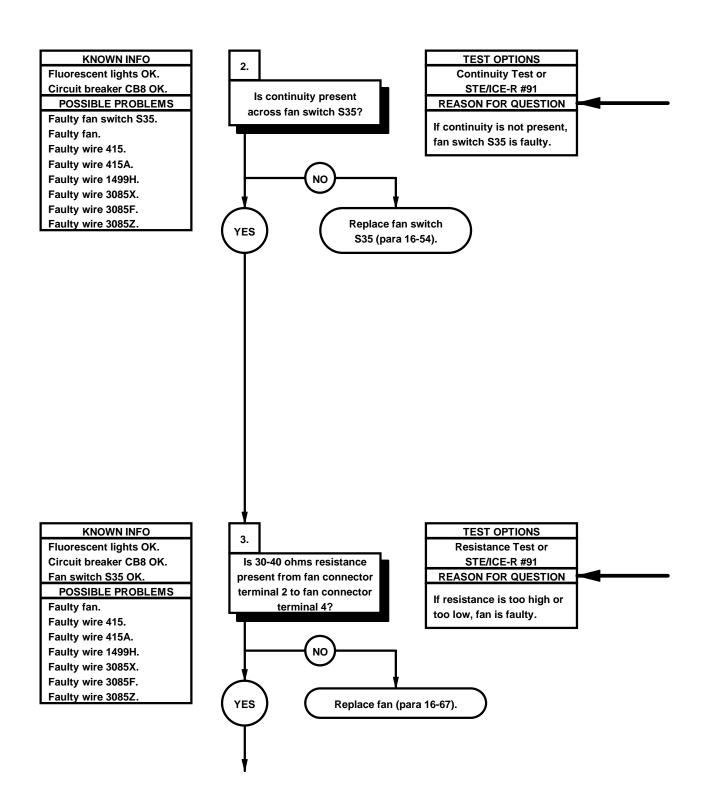
- (1) Remove six screws and 110/208 VAC POWER DISTRIBUTION PANEL cover from power distribution panel.
- (2) Remove circuit breaker CB8 from power distribution panel.
- (3) Position circuit breaker CB8 to ON.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to output terminal 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.



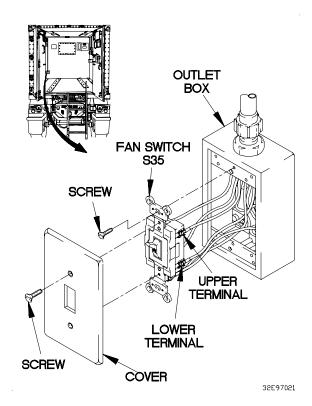


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e99. M1079 FAN DOES NOT OPERATE (CONT)

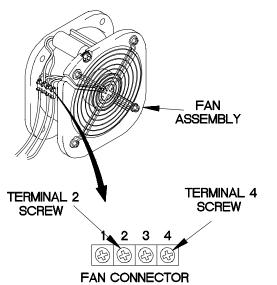


- (1) Remove two screws and cover from outlet
- (2) Remove two screws and fan switch S35 from outlet box.
- (3) Position fan switch S35 to ON.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to lower terminal of fan switch S35.
- (6) Connect negative (-) probe of multimeter 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).



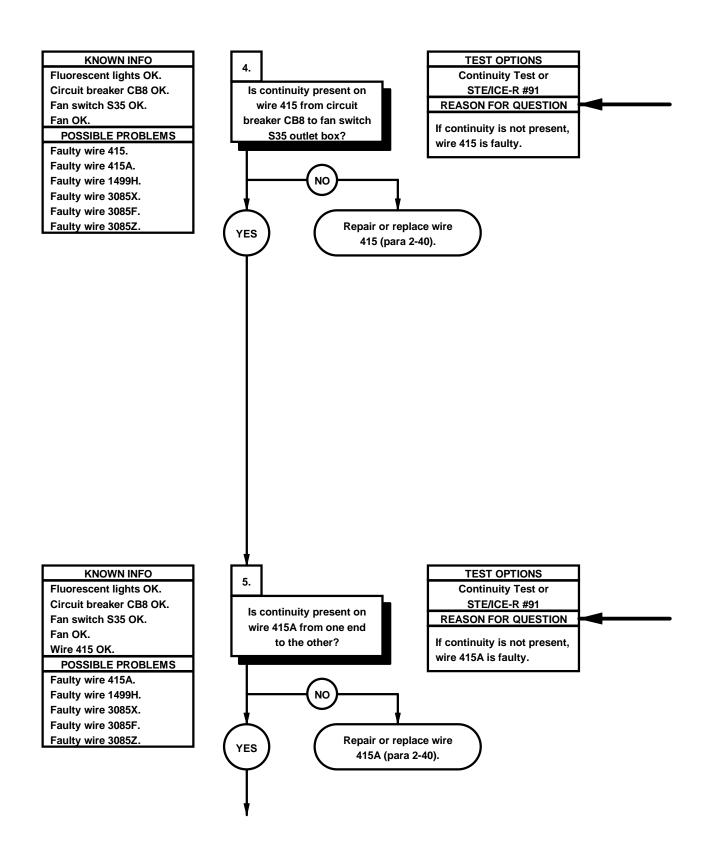
RESISTANCE TEST

- (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).

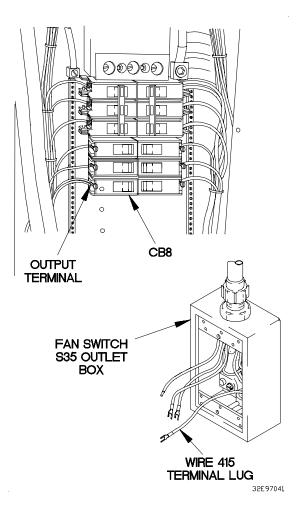


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e99. M1079 FAN DOES NOT OPERATE (CONT)

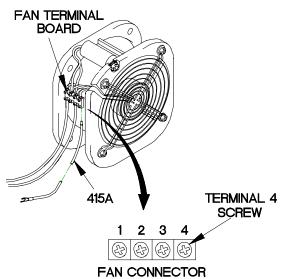


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB8.
- (3) Connect negative (-) probe of multimeter to wire 415 terminal lug in fan switch S35 outlet box and note reading on multimeter.
- (4) If continuity is not present, repair or replace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



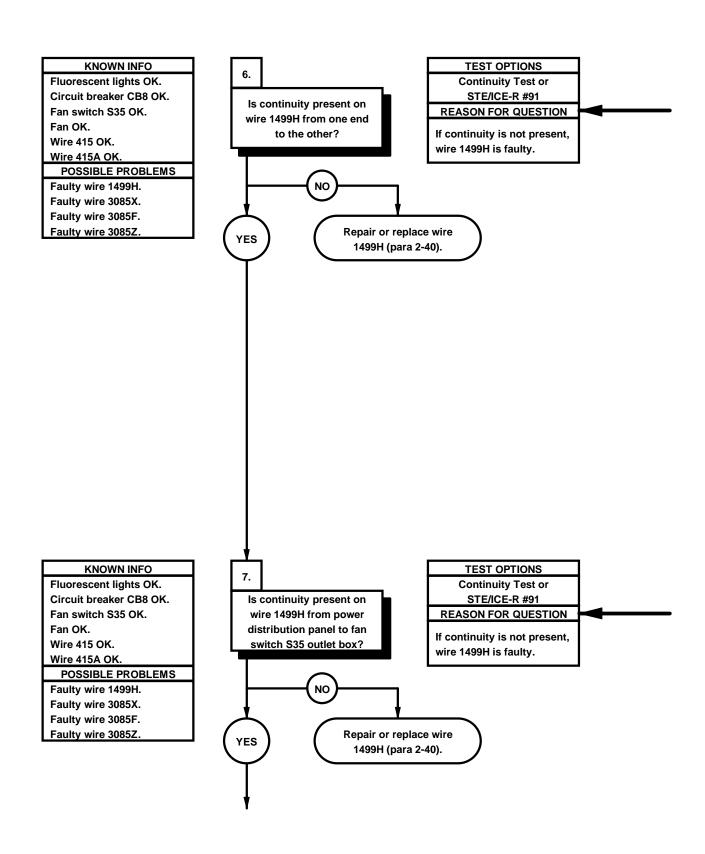
CONTINUITY TEST

- (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.

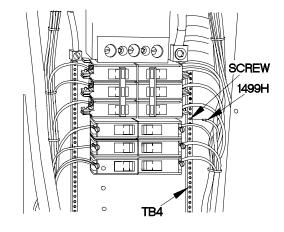


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e99. M1079 FAN DOES NOT OPERATE (CONT)

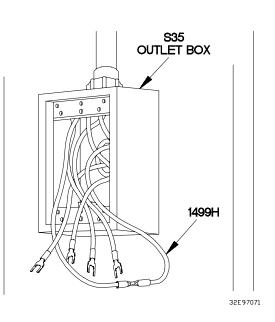


- (1) Loosen screw on fan terminal board.
- (2) Remove wire 1499H from fan terminal board.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) multimeter to wire 1499H.
- (5) Connect negative (-) probe of multimeter to wire 1499H and note reading on multimeter.
- (6) If continuity is not present,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

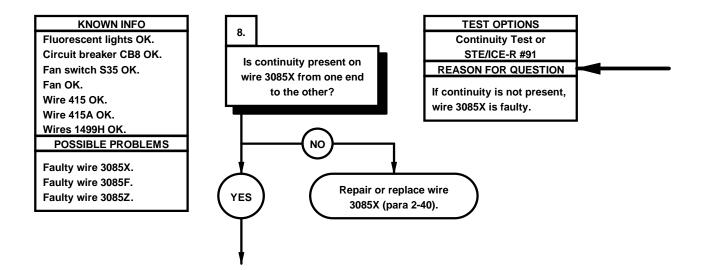




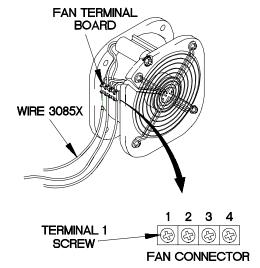
- (1) Loosen screw in terminal board TB4.
- (2) Remove wire 1499H from terminal board TB4.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 1499H in power distribution panel.
- (5) Connect negative (-) probe of multimeter to wire 1499H in fan switch S35 outlet box 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.

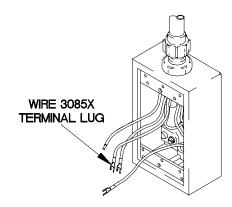


e99. M1079 FAN DOES NOT OPERATE (CONT)



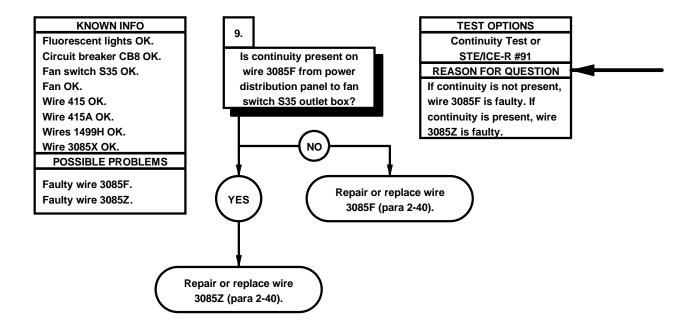
- (1) Loosen terminal 1 screw on fan terminal board.
- (2) Remove wire 3085X from fan terminal board.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085X terminal lug.
- (5) Connect negative (-) probe of multimeter to other end of wire 3085X and note reading on 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.



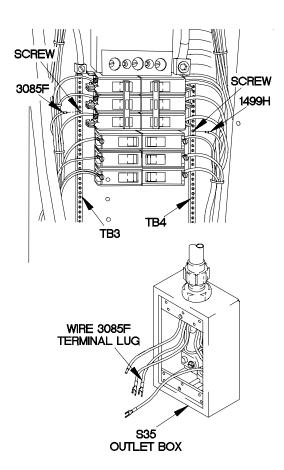


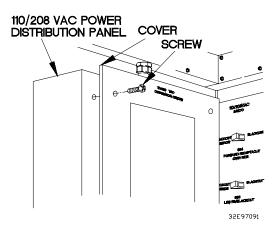
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e99. M1079 FAN DOES NOT OPERATE (CONT)



- (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).





e100. 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

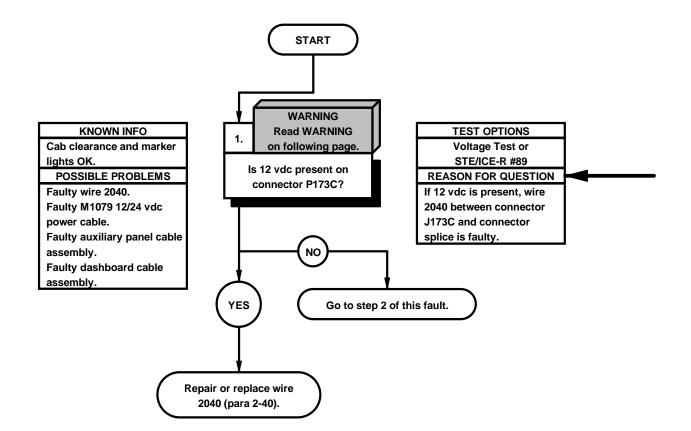
Tool Kit, Genl Mech (Item 44, Appendix C)

STE/ICE-R (Item 39, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

References

TM 9-4910-571-12&P



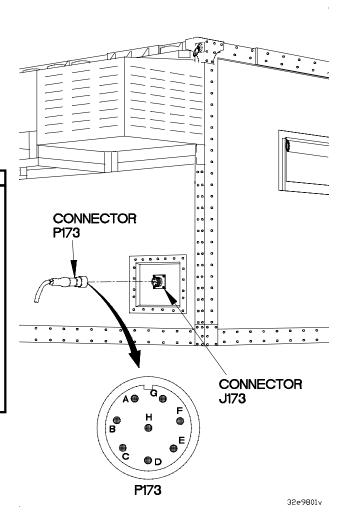
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

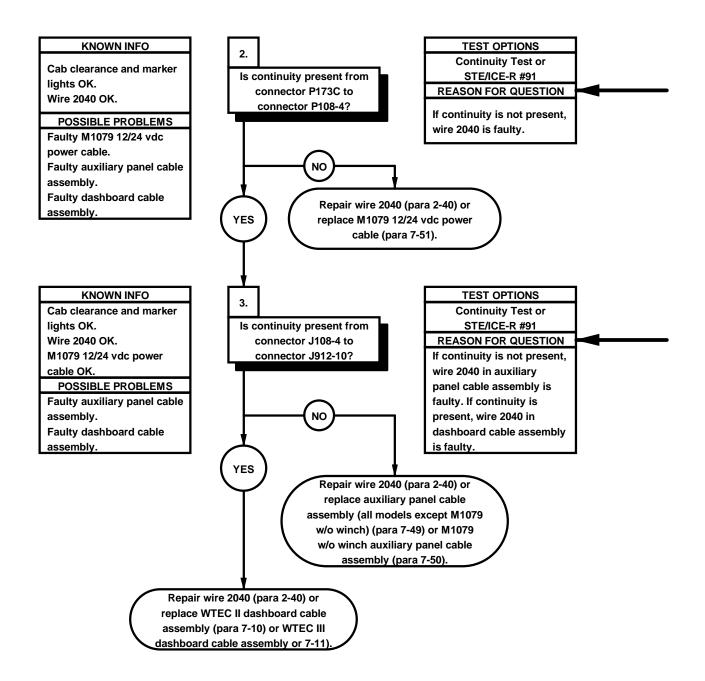
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

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).

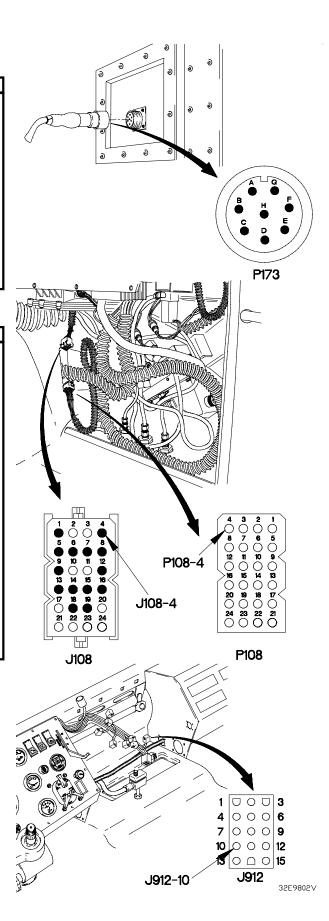


e100. ALL M1079 VAN BODY CLEARANCE AND MARKER LIGHTS DO NOT OPERATE (CONT)



- (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.

- (1) Remove personnel heater (para 18-9).
- (2) Disconnect connector J912 from connector
- (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).



e101. M1079 VAN BODY CLEARANCE/MARKER LIGHT DOES NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
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)

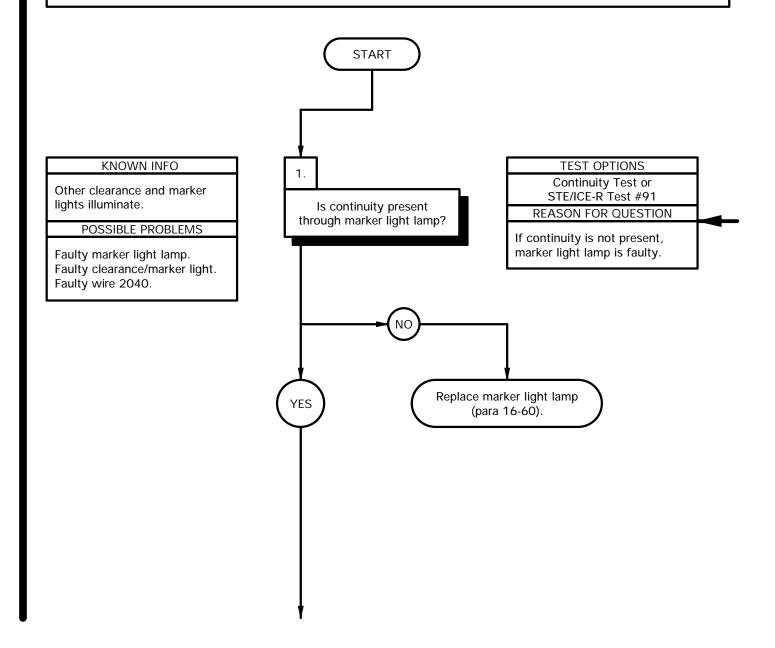
Multimeter, Digital (Item 22, Appendix C)

Materials/Parts

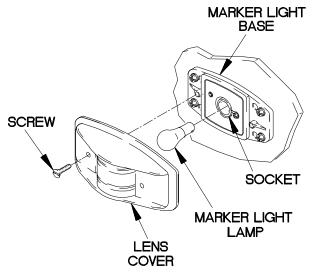
Lockwasher (4) (Item 77, Appendix G) Gasket (2) (Item 28, Appendix G)

Personnel Required (2)

References TM 9-4910-571-12&P

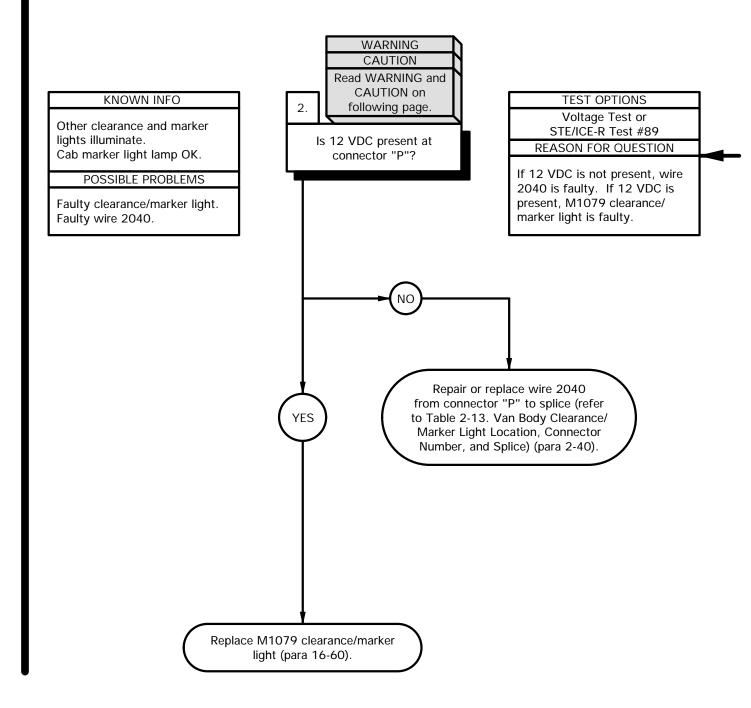


- (1) Remove two screws and lens cover from marker light base.
- (2) Remove marker light lamp from socket.
- (3) Set multimeter to ohms.
- (4) Check continuity through marker light lamp and note reading on multimeter.
- (5) If continuity is not present, replace marker light lamp (para 16-60).
- (6) Install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



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



WARNING

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

CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- Remove four screws, lockwashers, and marker light base from van body. Discard lockwashers.
- (2) Disconnect connector "P" from connector 489.
- (3) Remove gasket from marker light base. Discard gasket.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to connector "P" (refer to Table 2-13. Van Body Clearance/Marker Light Location, Connector Number, and Splice).
- (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 from connector "P" to splice (refer to Table 2-13. Van Body Clearance/ Marker Light Location, Connector Number, and Splice) (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 marker light base.
- (12) Connect connector "P" (refer to Table 2-13. Van Body Clearance/Marker Light Location, Connector Number, and Splice) to connector 489.

VOLTAGE TEST (Cont)

- (13) Install marker light base on van body with four lockwashers and screws.
- (14) Install lens cover on marker light base with two screws.

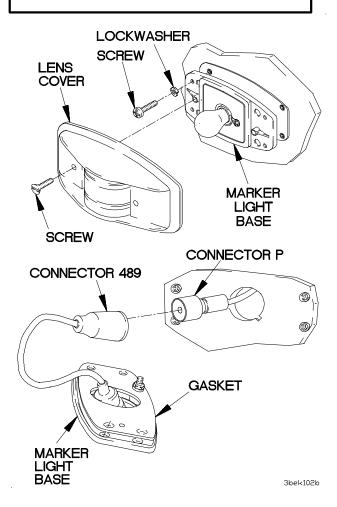


Table 2-13. Van Body Clearance/Marker Light Location, Connector Number, and Splice

Location	Connector Number	Splice
Left Front	P150	E504
Left Front Center	P151	E504
Front Center	P152	E504
Right Front Center	P153	E504
Right Front	P154	E504
Left Side Rear	P155	E505
Left Rear	P156	E505
Left Rear Center	P157	E506
Rear Center	P158	E506
Right Rear Center	P159	E505
Right Rear	P160	E505
Right Side Rear	P161	E506

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

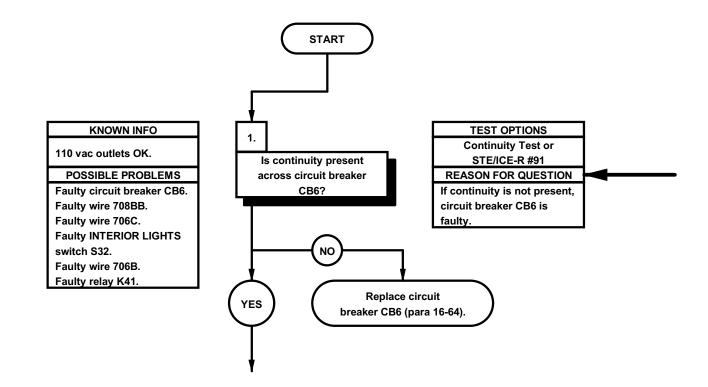
Tool Kit, Genl Mech (Item 44, Appendix C)

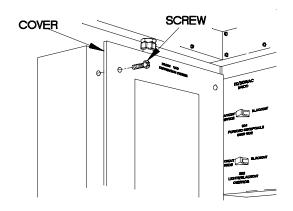
STE/ICE-R (Item 39, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

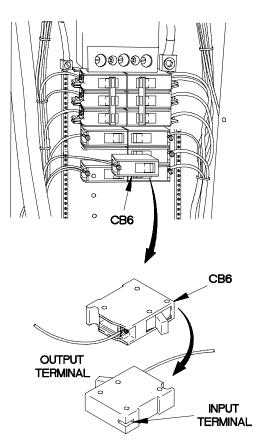
References

TM 9-4910-571-12&P



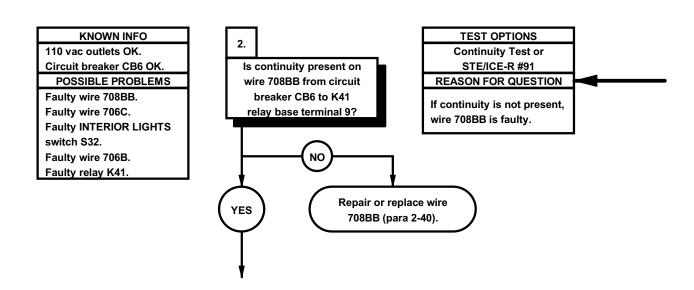


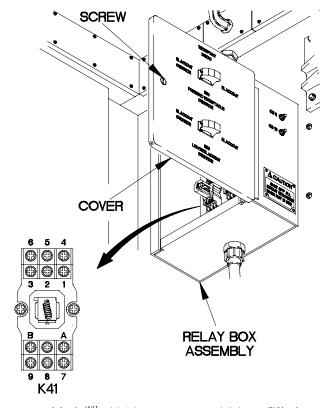
- (1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Remove circuit breaker CB6 from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Position circuit breaker CB6 to ON.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to output terminal of circuit 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.



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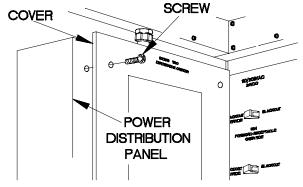
e102. ALL M1079 FLOURESCENT LIGHTS DO NOT OPERATE (CONT)





OUTPUT TERMINAL °

CB6

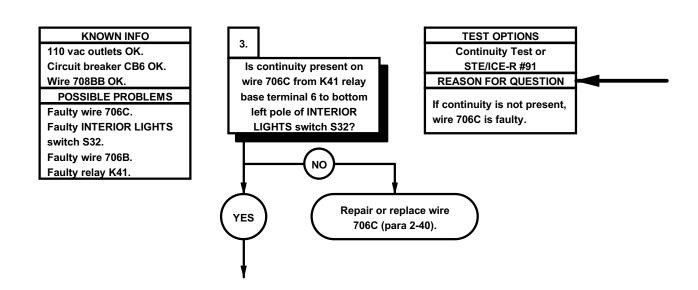


CONTINUITY TEST

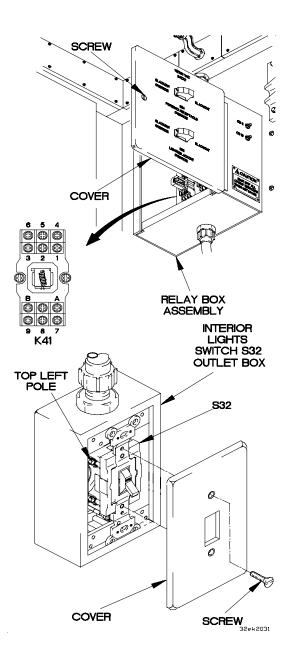
- (1) Loosen screw in cover.
- (2) Open cover on relay box assembly.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to output terminal of circuit breaker CB6.
- (5) Connect negative (-) probe of multimeter to K41 relay base terminal 9 and note reading on multimeter.
- (6) If continuity is not present, repair or replace wire 708BB (para 2-40).
- (7) Install cover on 110/208 VAC POWER DISTRIBUTION PANEL with six screws.

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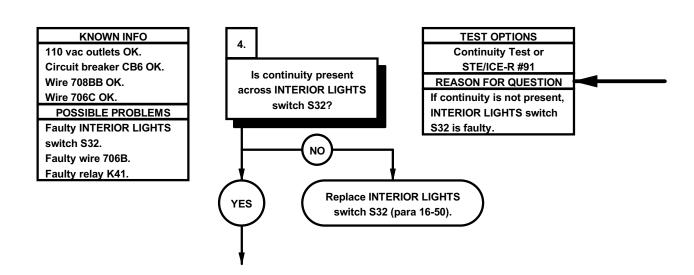
e102. ALL M1079 FLOURESCENT LIGHTS DO NOT OPERATE (CONT)



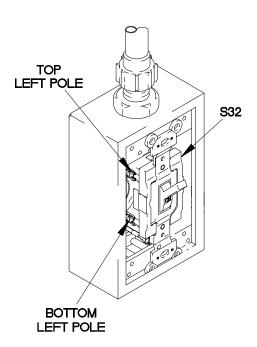
- (1) Remove two screws and cover from INTERIOR LIGHTS switch S32 outlet box.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to K41 relay base terminal 6.
- (4) Connect negative (-) probe of multimeter to top left pole of INTERIOR LIGHTS switch S32 and note reading on multimeter.
- (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)

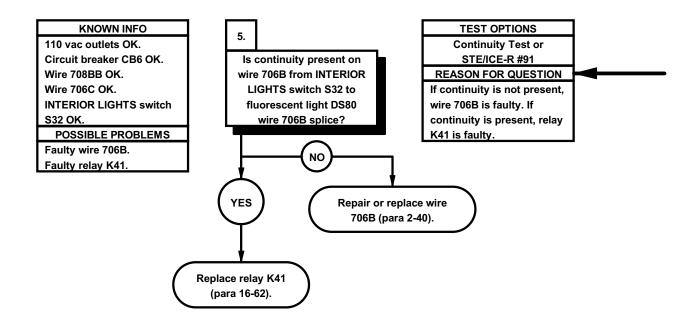


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to bottom left pole of INTERIOR LIGHTS switch S32.
- (3) Connect negative (-) probe of multimeter to top left pole of INTERIOR LIGHTS switch S32.
- (4) Position INTERIOR LIGHTS switch S32 to ON and note reading on multimeter.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

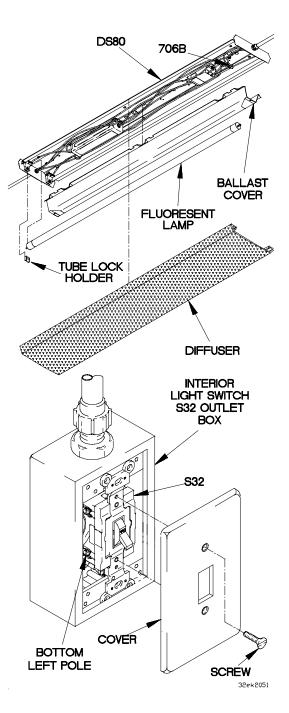


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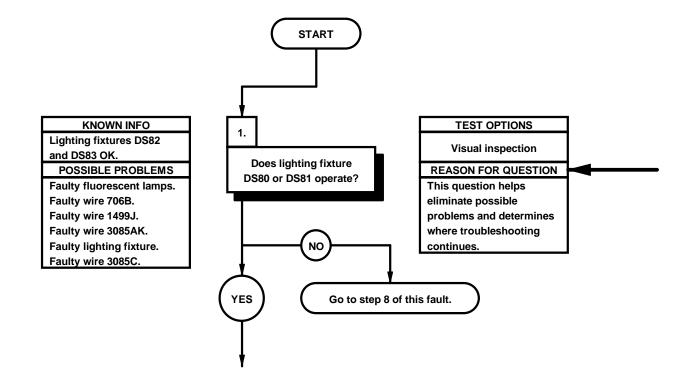
e102. ALL M1079 FLOURESCENT LIGHTS DO NOT OPERATE (CONT)



- (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.

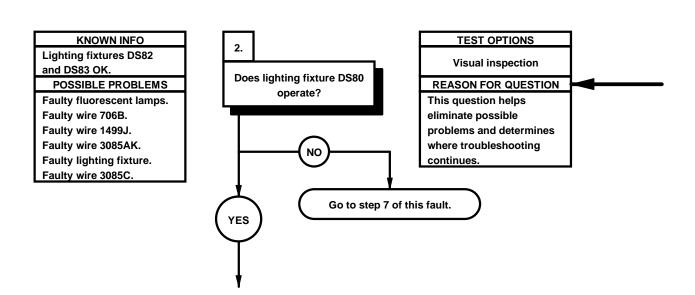


e103. M1079 LIGHTING FI TURE(S) DS80 AND/OR DS81 DO NOT OPERATE INITIAL SETUP Equipment Condition Tools and Special Tools Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) AC power connected (TM 9-2320-365-10). STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22,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



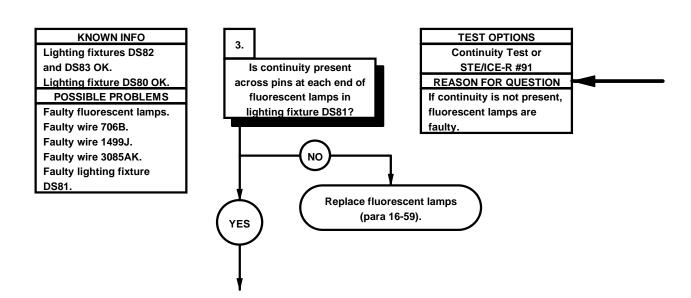
- (1) Turn on interior lights (TM 9-2320-365-10).(2) Check to see if lighting fixture DS80 or DS81 operates.
- (3) If lighting fixtures DS80 and DS81 do not operate, go to step 8 of this fault.
- (4) Turn off interior lights (TM 9-2320-365-10).

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

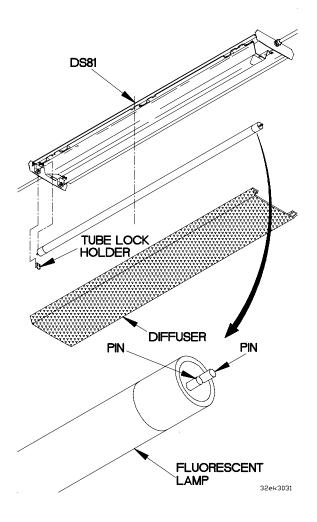


- (1) Turn on interior lights (TM 9-2320-365-10).
 (2) Check to see if lighting fixture DS80 operates.
 (3) If lighting fixture DS80 does not operate, go to step 7 of this fault.
 (4) Turn off interior lights (TM 9-2320-365-10).

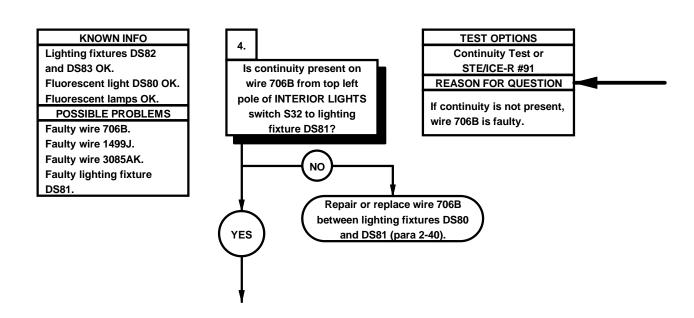
e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)



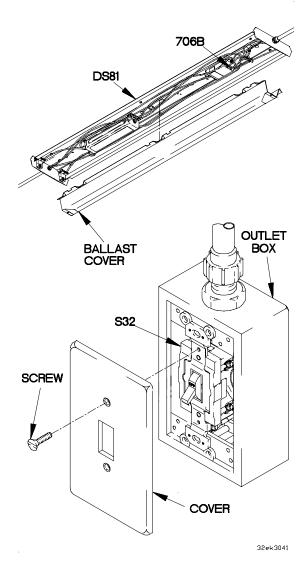
- (1) Remove diffuser from lighting fixture DS81.
- (2) Remove tube lock holder from each end of two fluorescent lamps.
- (3) Remove two fluorescent lamps from lighting fixture DS81.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
- (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.



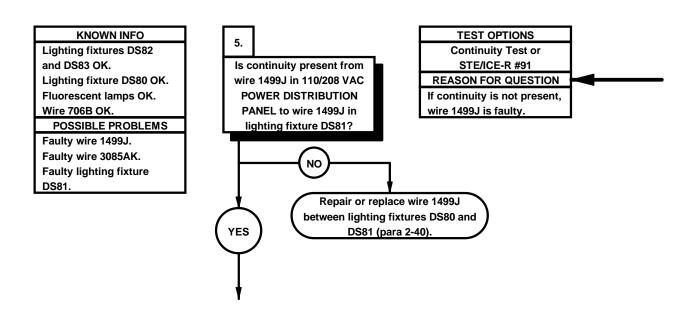
e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)

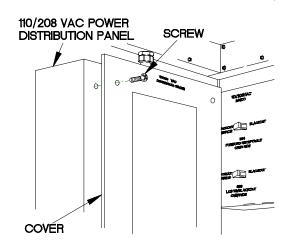


- (1) Open door on 110/208 VAC POWER
 DISTRIBUTION PANEL (TM 9-2320-365-10).
- (2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
- (3) Remove two screws and cover from outlet box.
- (4) Remove ballast cover from lighting fixture DS81.
- (5) Set multimeter to ohms.
- (6) Connect positive (+) 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).

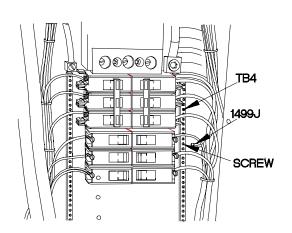


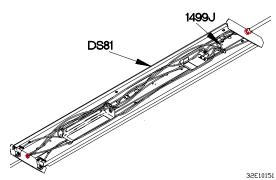
e103. M1079 LIGHTING FIXTURE(S) DS80 AND/OR DS81 DO NOT OPERATE (CONT)

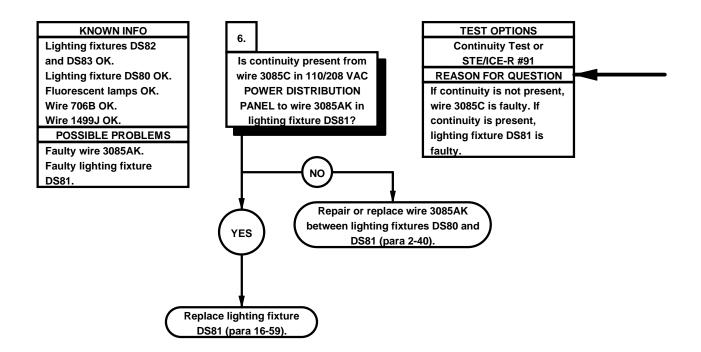


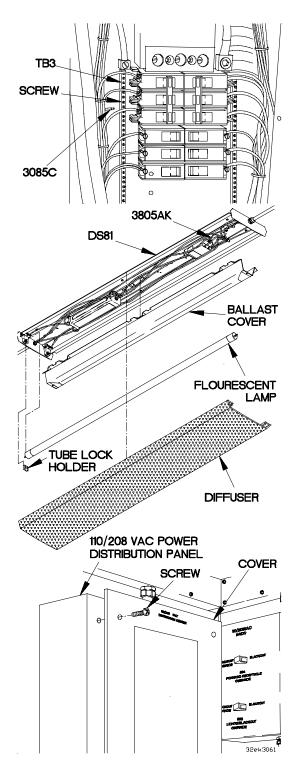


- (1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Loosen screw in terminal board TB4.
- (3) Remove wire 1499J from terminal board TB4.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to wire 1499J in 110/208 VAC POWER DISTRIBUTION PANEL.
- (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.

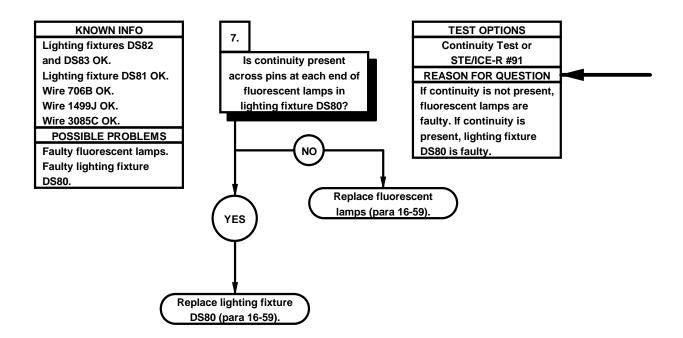




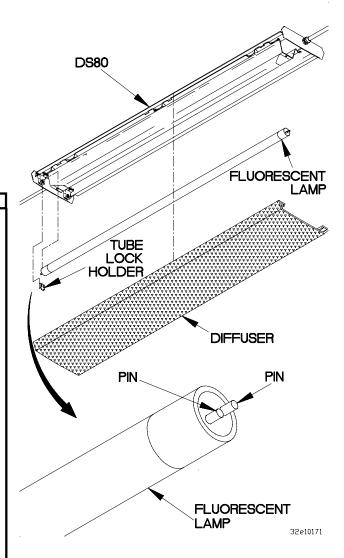


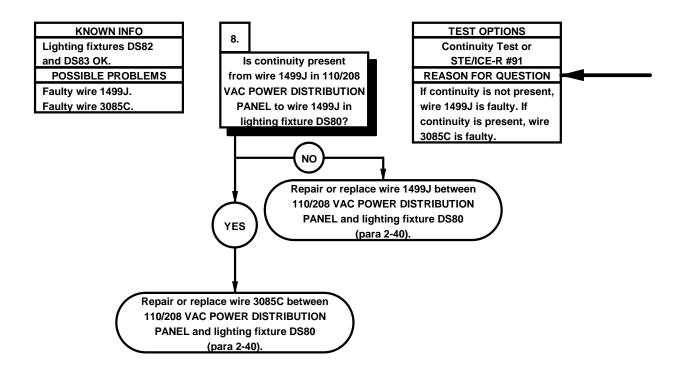


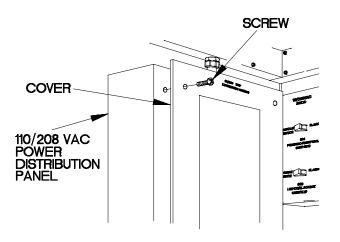
- (1) Loosen screw in terminal board TB3.
- (2) Remove wire 3085C from terminal board TB3.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085C.
- (5) Connect negative (-) probe of multimeter to wire 3085AK and note reading on multimeter.
- (6) If continuity is not 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.



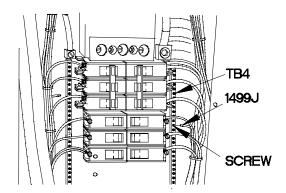
- (1) Remove diffuser from lighting fixture DS80.
- (2) Remove tube lock holder from each end of two fluorescent lamps.
- (3) Remove two fluorescent lamps from lighting fixture DS80.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
- (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.

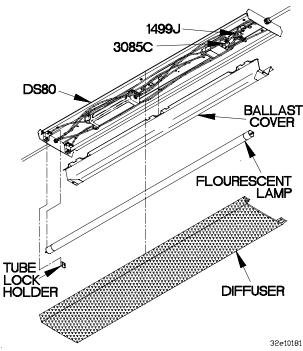






- (1) Open door on 110/208 VAC POWER
 DISTRIBUTION PANEL (TM 9-2320-365-10).
- (2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
- (3) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (4) Loosen screw in terminal board TB4.
- (5) Remove wire 1499J from terminal board 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.





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)

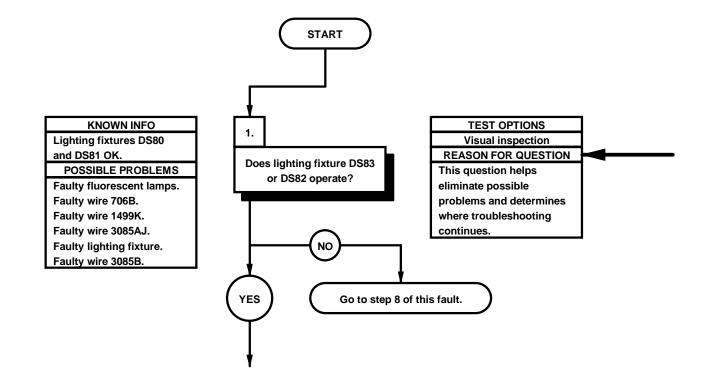
STE/ICE-R (Item 39, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

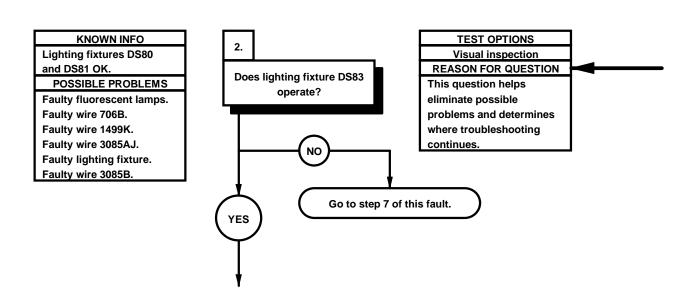
Personnel Required

(2)

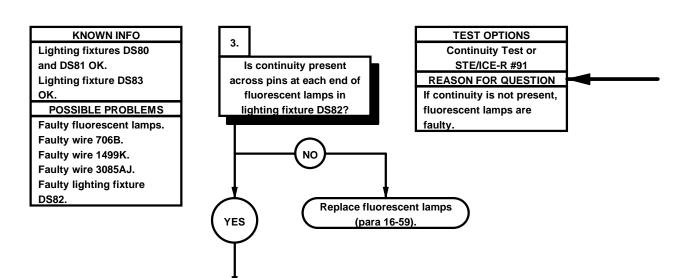
References TM 9-4910-571-12&P



- (1) Turn on interior lights (TM 9-2320-365-10).(2) Check to see if lighting fixture 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).

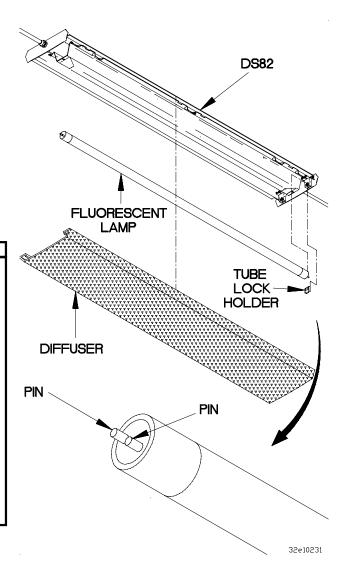


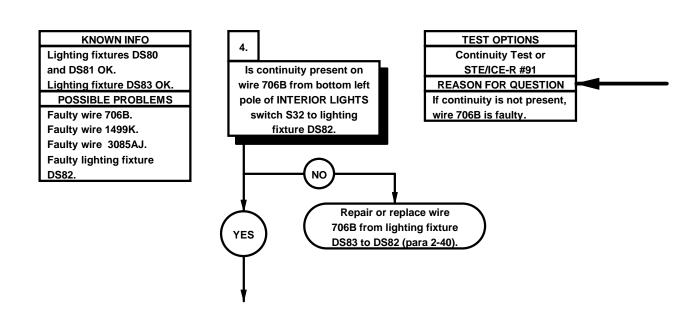
- (1) Turn on interior lights (TM 9-2320-365-10).
- (2) Check to see if lighting fixture DS83 operates.
- (3) If lighting fixture DS83 does not operate, go to step 7 of this fault.
 (4) Turn off interior lights (TM 9-2320-365-10).



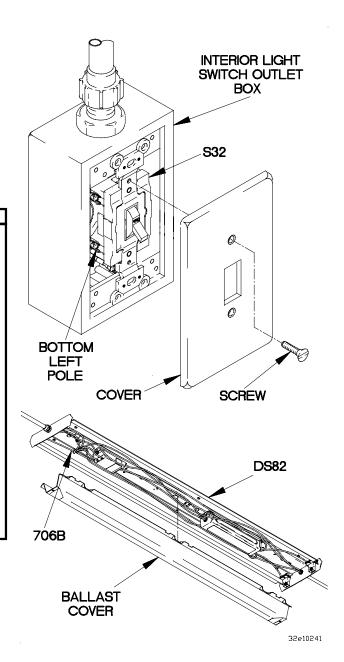


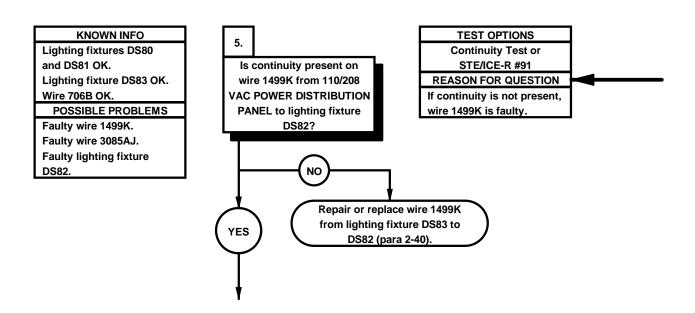
- (1) Remove diffuser from lighting fixture DS82.
- (2) Remove tube lock holder from each end of two fluorescent lamps.
- (3) Remove two fluorescent lamps from lighting fixture DS82.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
- (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.



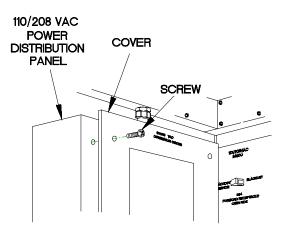


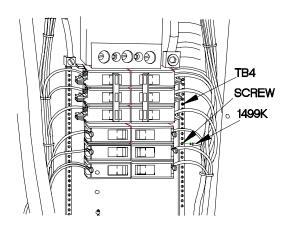
- (1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
- (2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
- (3) Remove two screws and cover from INTERIOR LIGHTS switch outlet box.
- (4) Remove ballast cover from lighting fixture DS82.
- (5) Set multimeter to ohms.
- (6) 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).

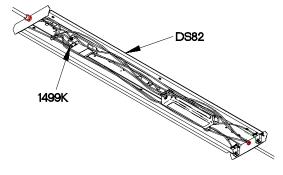




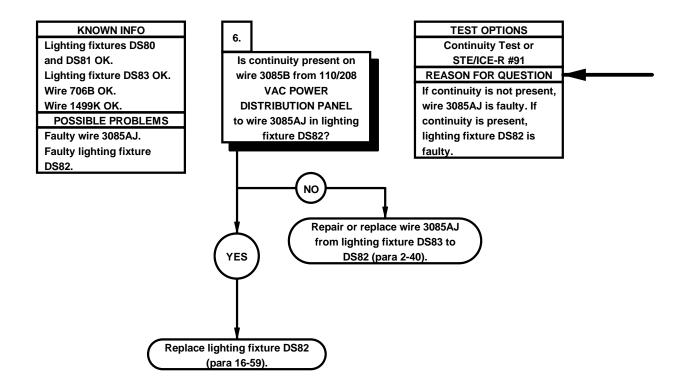
- (1) Disconnect AC power (TM 9-2320-365-10).
- (2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Loosen screw in terminal board TB4.
- (4) Remove wire 1499K from terminal board TB4.
- (5) Set multimeter to ohms.
- (6) Connect positive (+) probe of multimeter to wire 1499K 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).

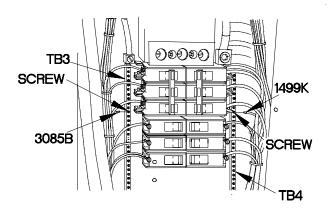




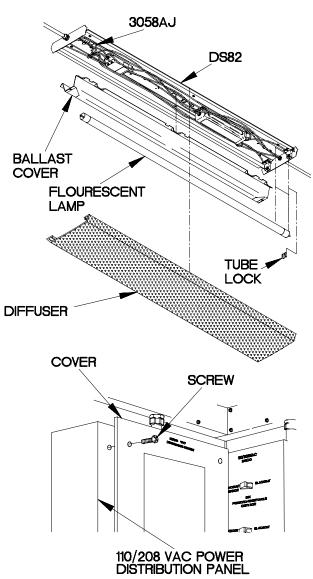


32E10251

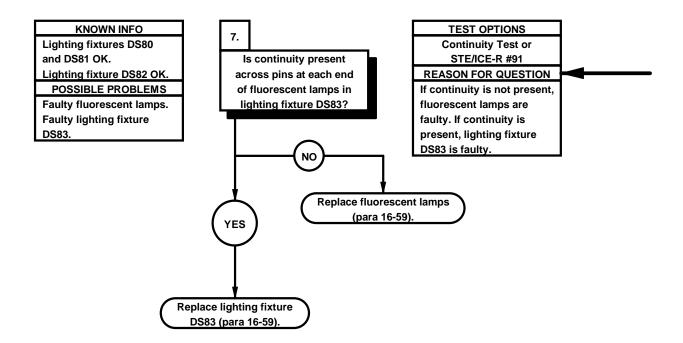




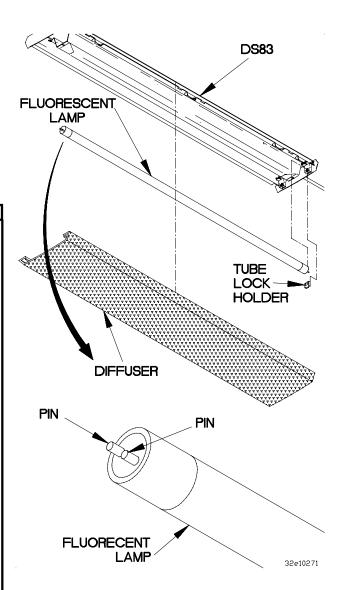
- (1) Loosen screw in terminal board TB3.
- (2) Remove wire 3085B from terminal board TB3
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085B.
- (5) Connect negative (-) probe of multimeter to wire 3085AJ and note reading on multimeter.
- (6) If continuity is not 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).

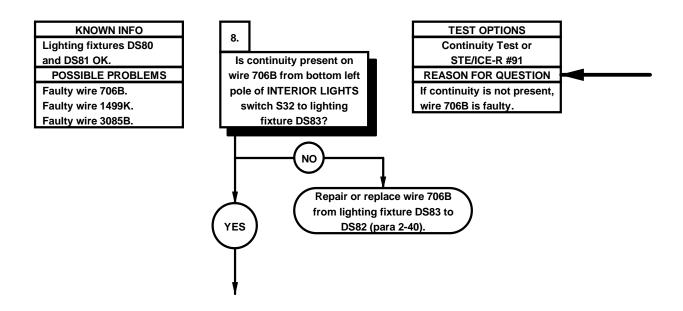


32e10261

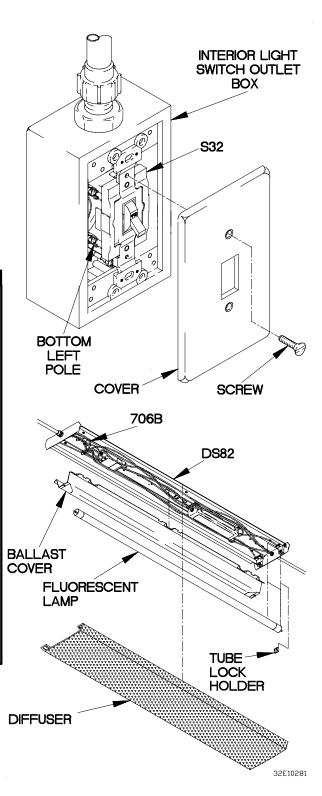


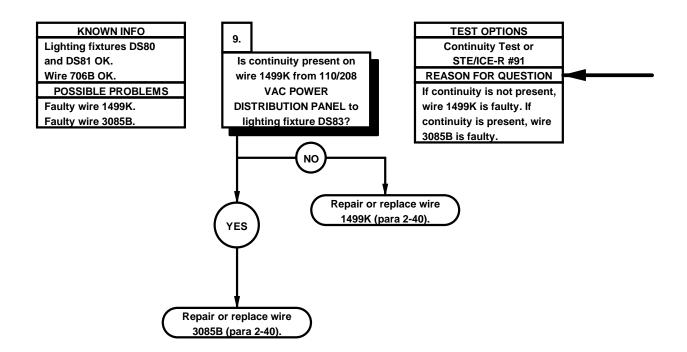
- (1) Remove diffuser from lighting fixture DS83.
- (2) Remove tube lock holder from each end of two fluorescent lamps.
- (3) Remove two fluorescent lamps from lighting fixture DS83.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one pin on end of fluorescent lamp.
- (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.

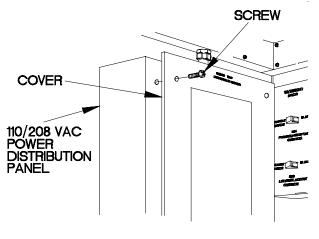


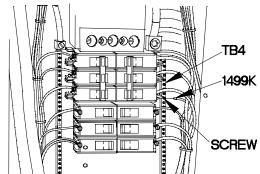


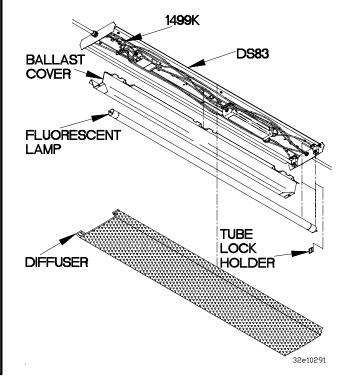
- (1) Open door on 110/208 VAC POWER
 DISTRIBUTION PANEL (TM 9-2320-365-10).
- (2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
- (3) Remove two screws and cover from INTERIOR LIGHTS switch outlet box.
- (4) Remove diffuser from lighting fixture DS83.
- (5) Remove tube lock holder from each 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.





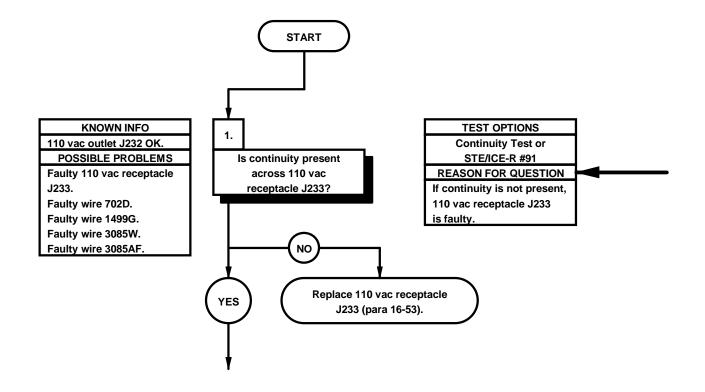






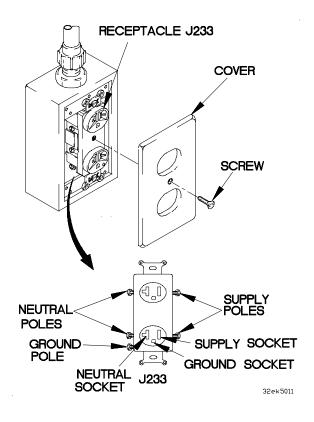
- (1) Disconnect AC power (TM 9-2320-365-10).
- (2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Loosen screw in terminal board TB4.
- (4) Remove wire 1499K from terminal board TB4.
- (5) Set multimeter to ohms.
- (6) Connect positive (+) probe of multimeter to wire 1499K 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).

e105. 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). 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

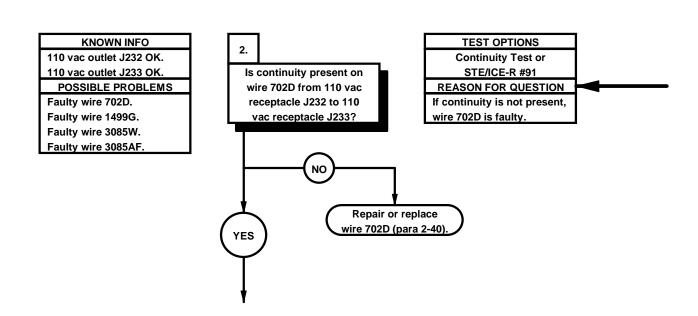


TM 9-4910-571-12&P

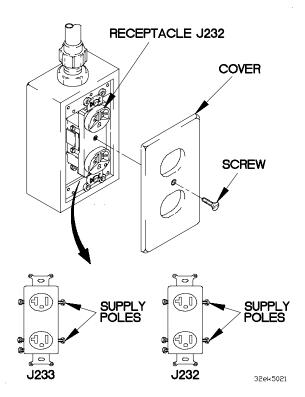
- (1) Remove screw and cover from 110 vac outlet J233.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J233.
- (4) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J233 and note reading on multimeter.
- (5) 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).



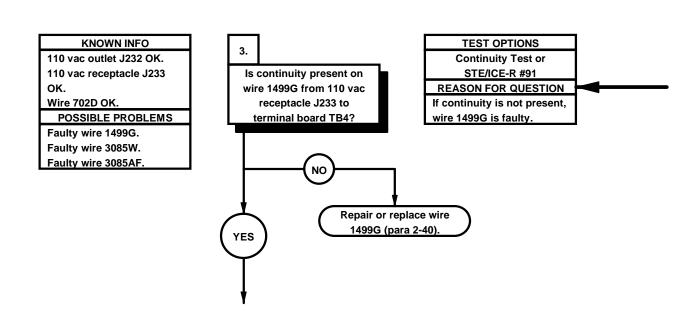
e105. M1079 110 VAC OULET J233 DOES NOT OPERATE (CONT)



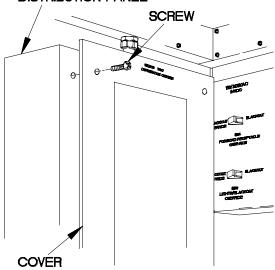
- (1) Remove screw and cover from 110 vac outlet J232.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J232.
- (4) Connect negative (-) probe of multimeter to supply pole of 110 vac receptacle J233 and note reading on multimeter.
- (5)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



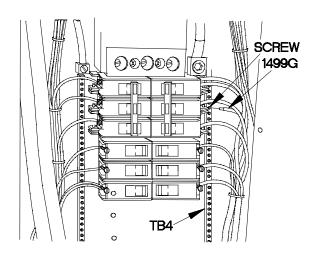
e105. M1079 110 VAC OULET J233 DOES NOT OPERATE (CONT)

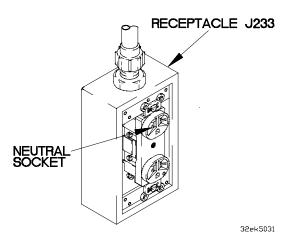


110/208 VAC POWER DISTRIBUTION PANEL

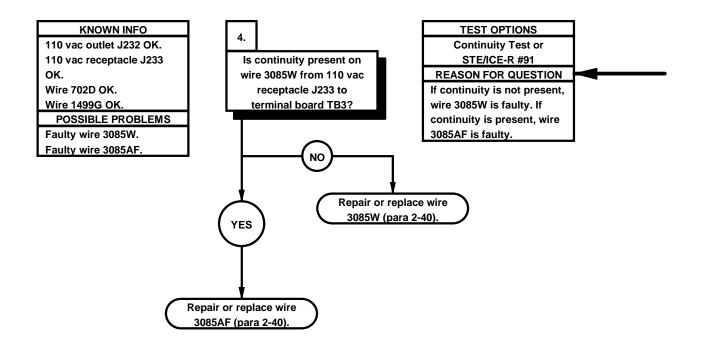


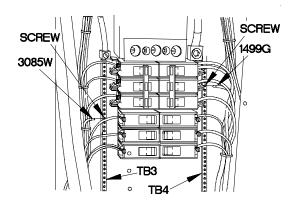
- (1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Loosen screw in terminal board TB4.
- (3) Remove wire 1499G from terminal board TB4.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to wire 1499G.
- (6) Connect negative (-) probe of multimeter 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).



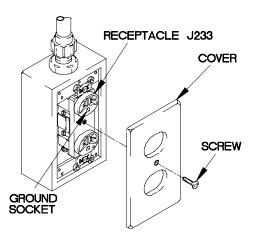


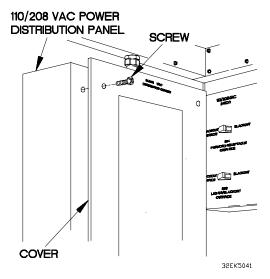
e105. M1079 110 VAC OULET J233 DOES NOT OPERATE (CONT)



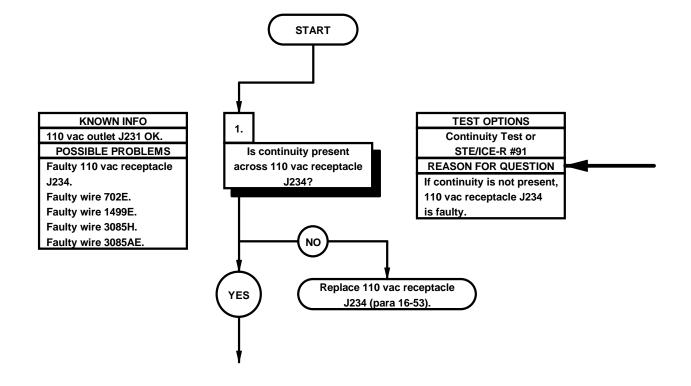


- (1) Loosen screw in terminal board TB3.
- (2) Remove wire 3085W from terminal board TB3.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085W.
- (5) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J233 and note multimeter.
- (6) 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.

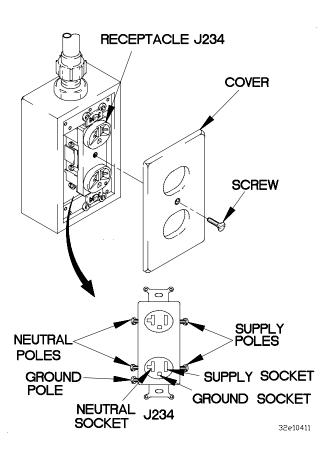




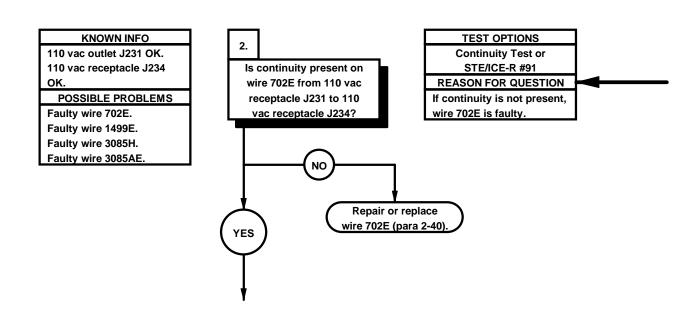
e106. M1079 110 VAC OUTLET J234 DOES NOT OPERATE INITIAL SETUP Equipment Condition Tools and Special Tools Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) AC power disconnected (TM 9-2320-365-10). STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C) Personnel Required (2) References TM 9-4910-571-12&P



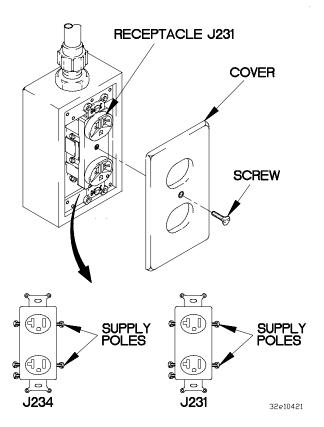
- (1) Remove screw and cover from 110 vac outlet J234.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J234.
- (4) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J234 and note reading on multimeter.
- (5) 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).



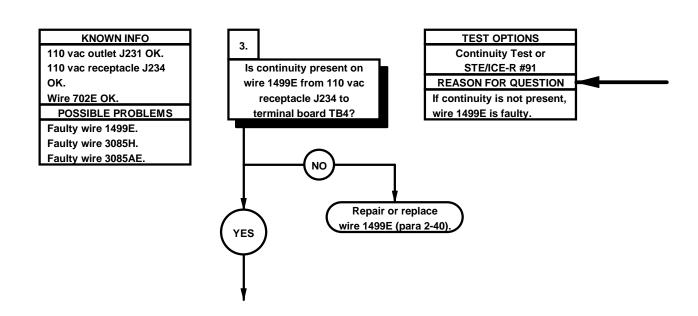
e106. M1079 110 VAC OULET J234 DOES NOT OPERATE (CONT)



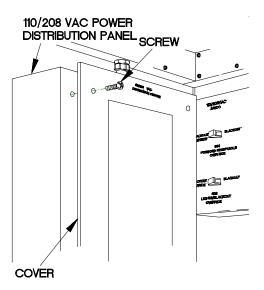
- (1) Remove screw and cover from 110 vac outlet J231.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J231.
- (4) Connect negative (-) probe of multimeter to supply pole of 110 vac receptacle J234 and note reading on multimeter.
- (5)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

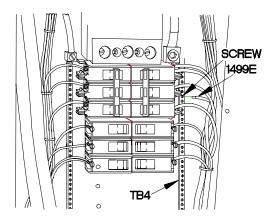


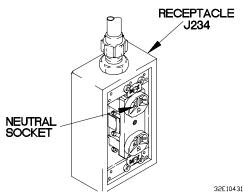
e106. M1079 110 VAC OULET J234 DOES NOT OPERATE (CONT)



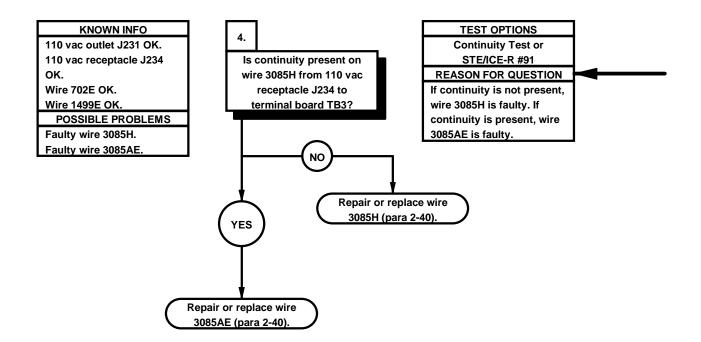
- (1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Loosen screw in terminal board TB4.
- (3) Remove wire 1499E from terminal board TB4.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to wire 1499E.
- (6) Connect negative (-) probe of multimeter 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).



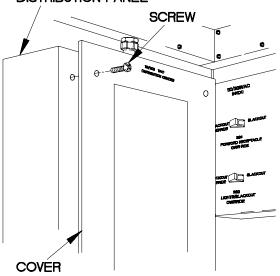




e106. M1079 110 VAC OULET J234 DOES NOT OPERATE (CONT)

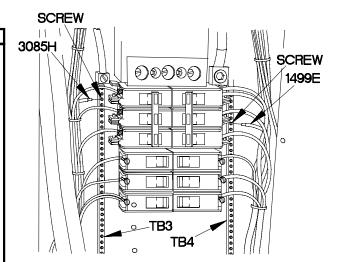


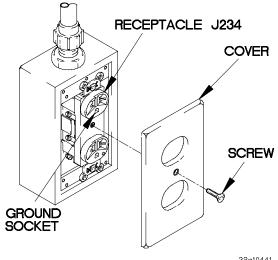
110/208 VAC POWER DISTRIBUTION PANEL



CONTINUITY TEST

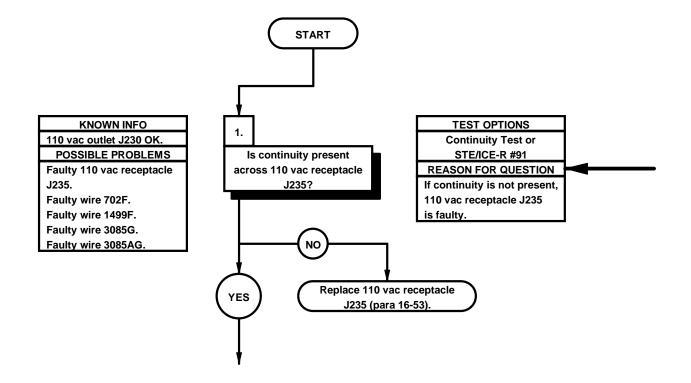
- (1) Loosen screw in terminal board TB3.
- (2) Remove wire 3085H from terminal board TB3.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085H.
- (5) Connect negative (-) probe of multimeter to ground socket of 110 vac receptacle J234 and note multimeter.
- (6) 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.



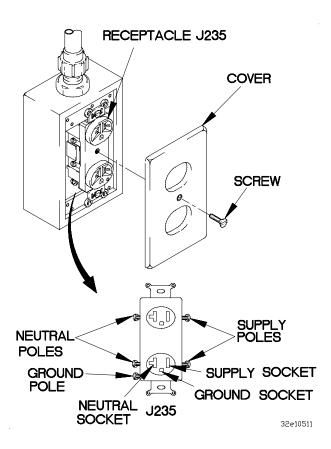


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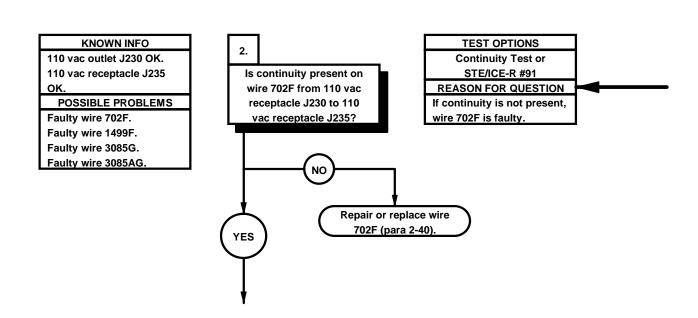
e107. M1079 110 VAC OUTLET J235 DOES NOT OPERATE INITIAL SETUP Equipment Condition Tools and Special Tools Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) AC power disconnected (TM 9-2320-365-10). STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C) Personnel Required (2) References TM 9-4910-571-12&P



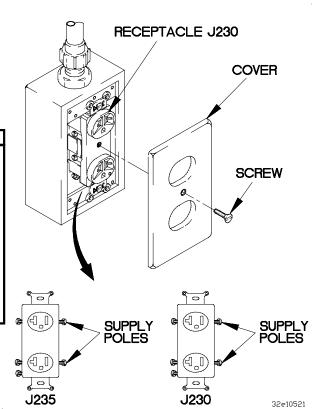
- (1) Remove screw and cover from 110 vac outlet
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J235.
- (4) Connect negative (-) probe of multimeter to supply socket of 110 vac receptacle J235 and note reading on multimeter.
- (5) Connect 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).



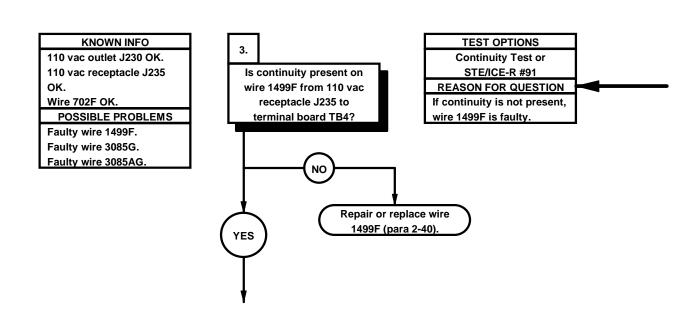
e107. M1079 110 VAC OULET J235 DOES NOT OPERATE (CONT)



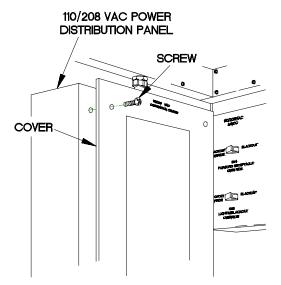
- (1) Remove screw and cover from 110 vac outlet J230.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to supply pole of 110 vac receptacle J230.
- (4) Connect negative (-) probe of multimeter to supply pole of 110 vac receptacle J235 and note reading on multimeter.
- (5)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

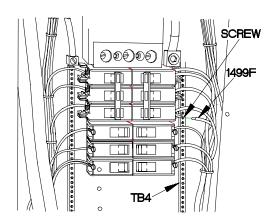


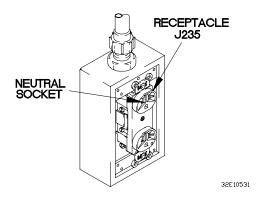
e107. M1079 110 VAC OULET J235 DOES NOT OPERATE (CONT)



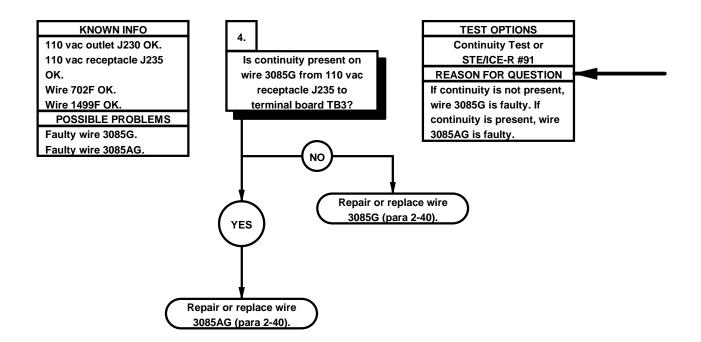
- (1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Loosen screw in terminal board TB4.
- (3) Remove wire 1499F from terminal board TR4
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to wire 1499F.
- (6) Connect negative (-) probe of multimeter 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).

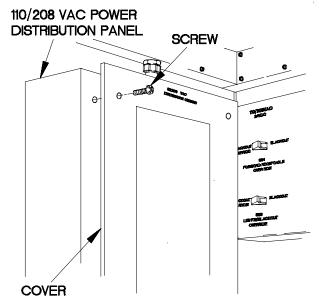




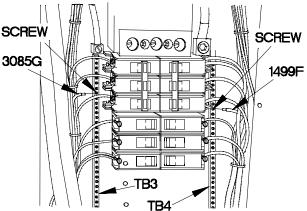


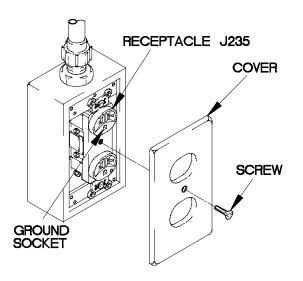
e107. M1079 110 VAC OULET J235 DOES NOT OPERATE (CONT)





- (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.





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e108. M1079 110 VDC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE

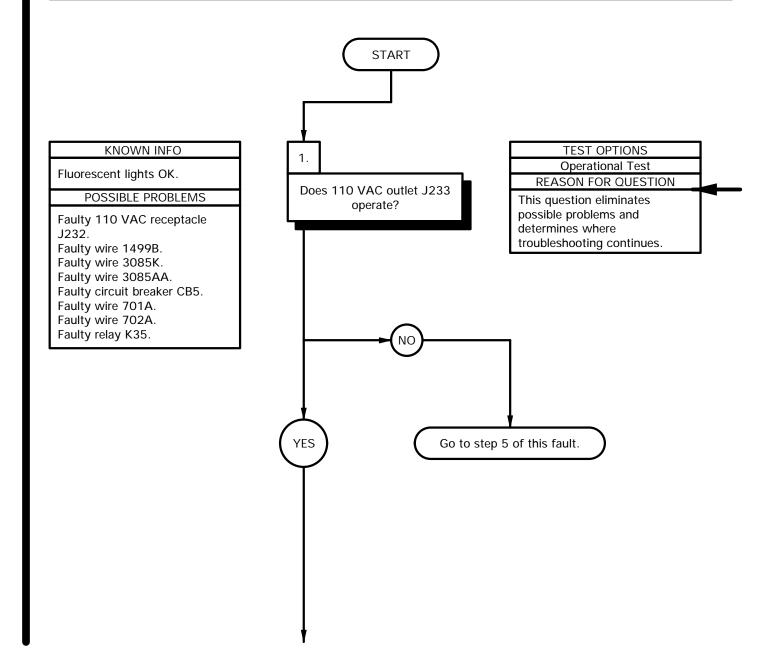
INITIAL SETUP

Equipment Conditions
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)

Personnel Required (2)

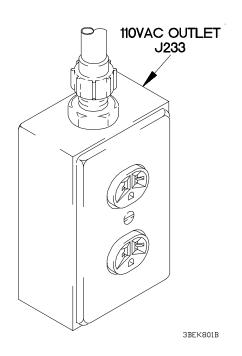
References TM 9-4910-571-12&P



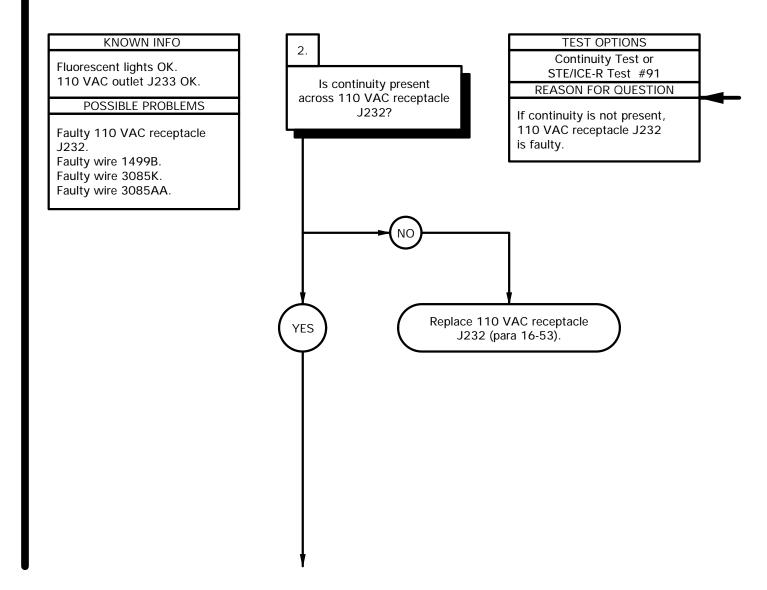
OPERATIONAL TEST

- (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.

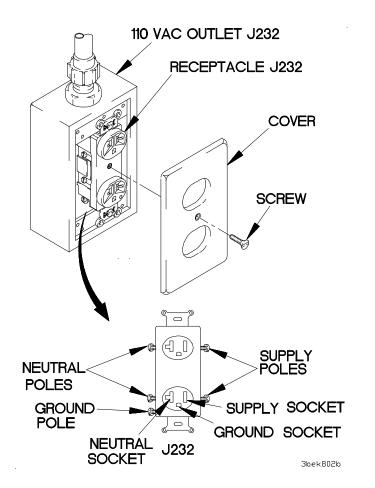
 (3) Disconnect 110 VAC appliance from 110 VAC outlet J233.



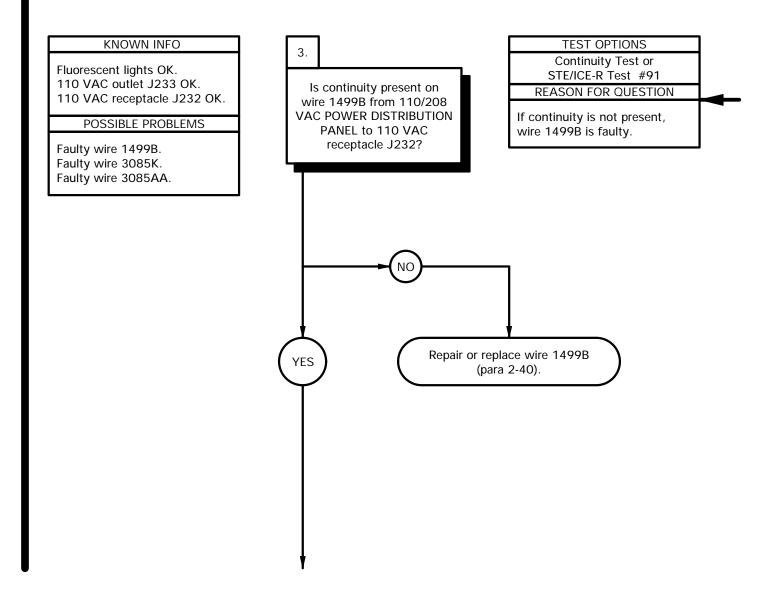
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



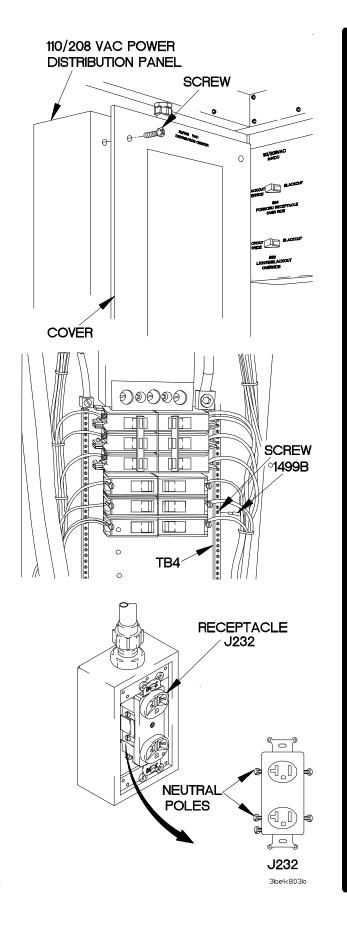
- Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
- (2) Position circuit breaker CB1 to OFF (TM 9-2320-365-10).
- (3) Remove screw and cover from 110 VAC outlet J232.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to supply pole of 110 VAC receptacle 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 receptacleJ232 (para 16-53).



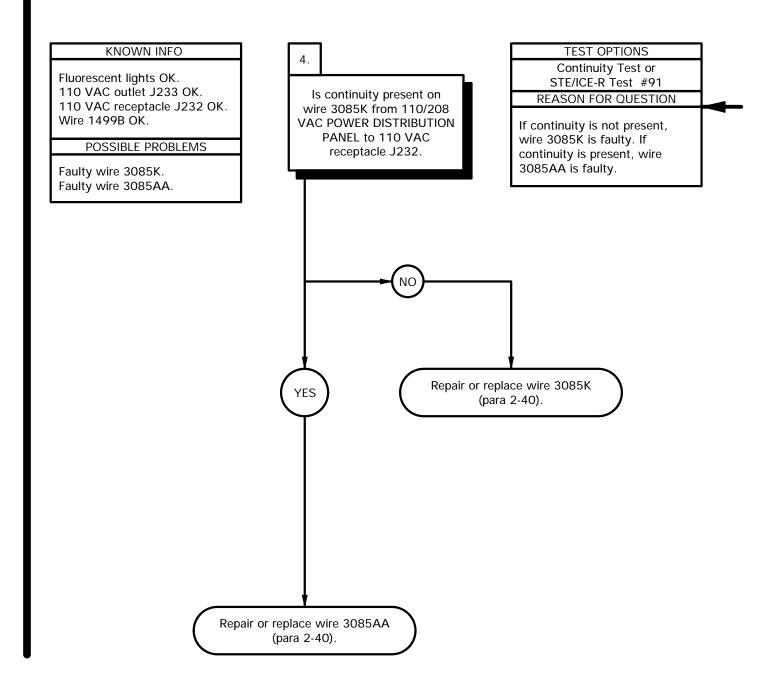
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



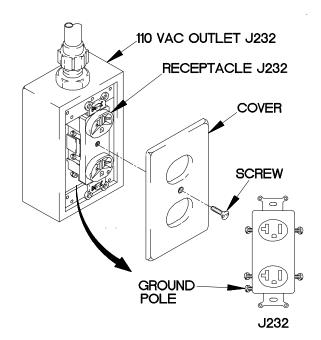
- (1) Disconnect AC power (TM 9-2320-365-10).
- (2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Loosen screw in terminal board TB4.
- (4) Remove wire 1499B from terminal board TB4.
- (5) Set multimeter to ohms.
- (6) Connect positive (+) probe of multimeter to wire 1499B.
- (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).

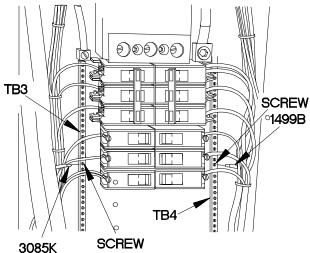


e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)

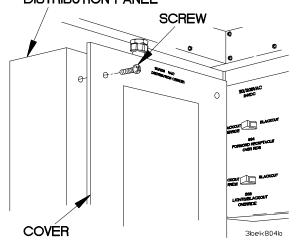


- (1) Loosen screw in terminal board TB3.
- (2) Remove wire 3085K from terminal board TB3.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085K.
- (5) Connect negative (-) probe of multimeter to ground pole of 110 VAC receptacle J232 and note reading on multimeter.
- (6) If continuity is not present, repair or replace wire 3085K (para 2-40).
- (7) If continuity is present, repair or replace wire 3085AA (para 2-40).
- (8) Position wire 3085K on terminal board TB3.
- (9) Tighten screw in terminal board TB3.
- (10) Position wire 1499B 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 J232 with screw.
- (14) Connect AC power (TM 9-2320-365-10).
- (15) Position circuit breaker CB1 to ON (TM 9-2320-365-10).

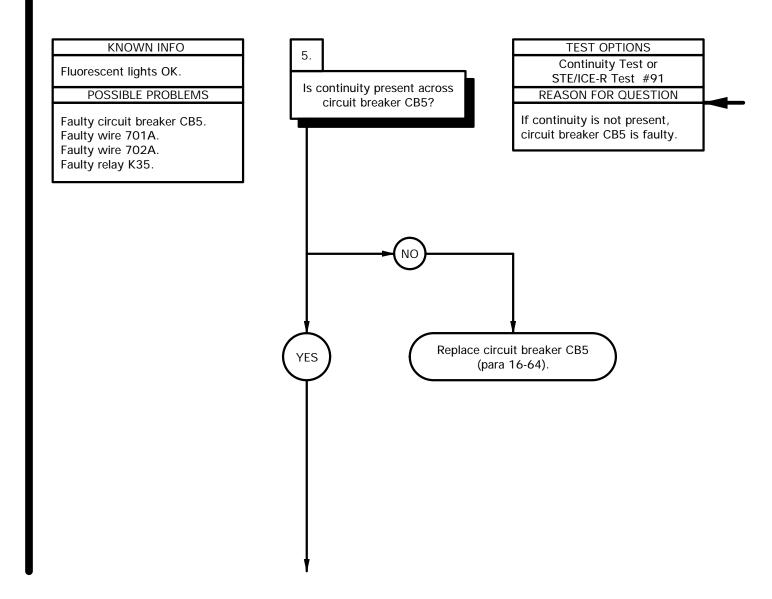




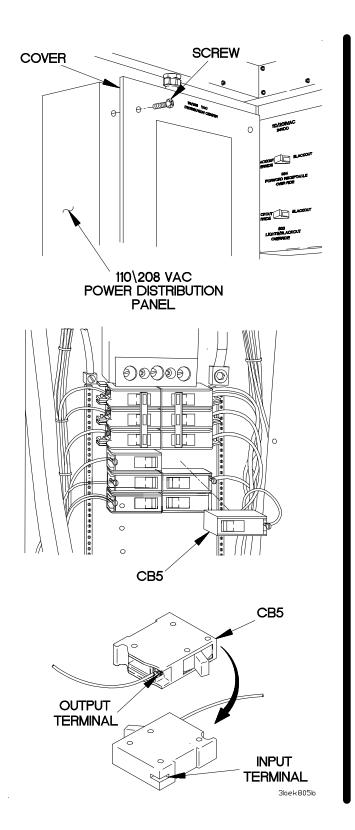
110/208 VAC POWER DISTRIBUTION PANEL



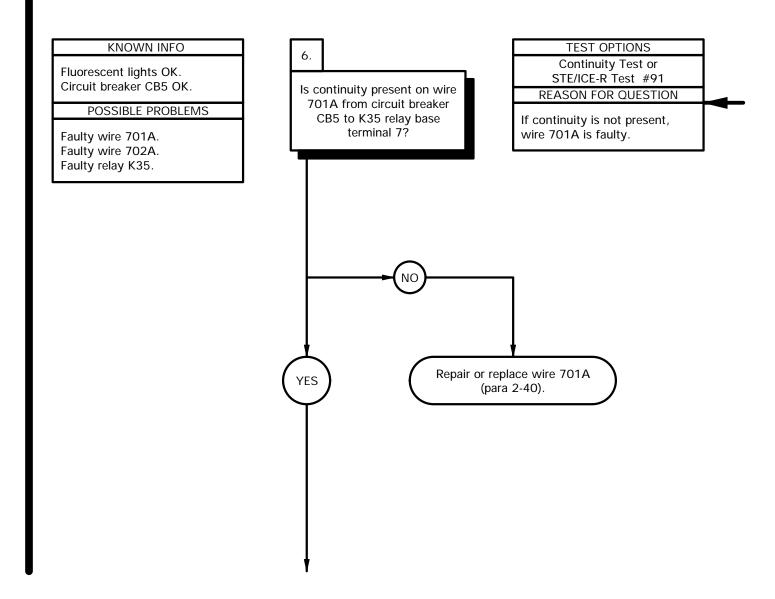
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



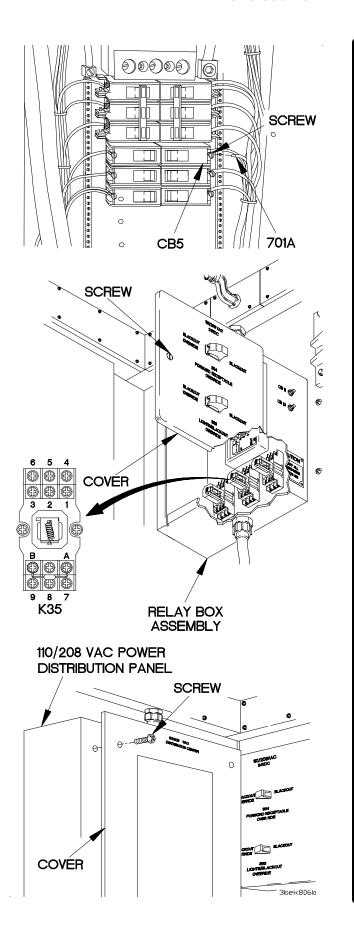
- (1) Disconnect AC power (TM 9-2320-365-10).
- (2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Remove circuit breaker CB5 from 110/208 VAC POWER DISTRIBUTION PANEL.
- (4) Position circuit breaker CB5 to ON (TM 9-2320-365-10).
- (5) Set multimeter to ohms.
- (6) Connect 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.



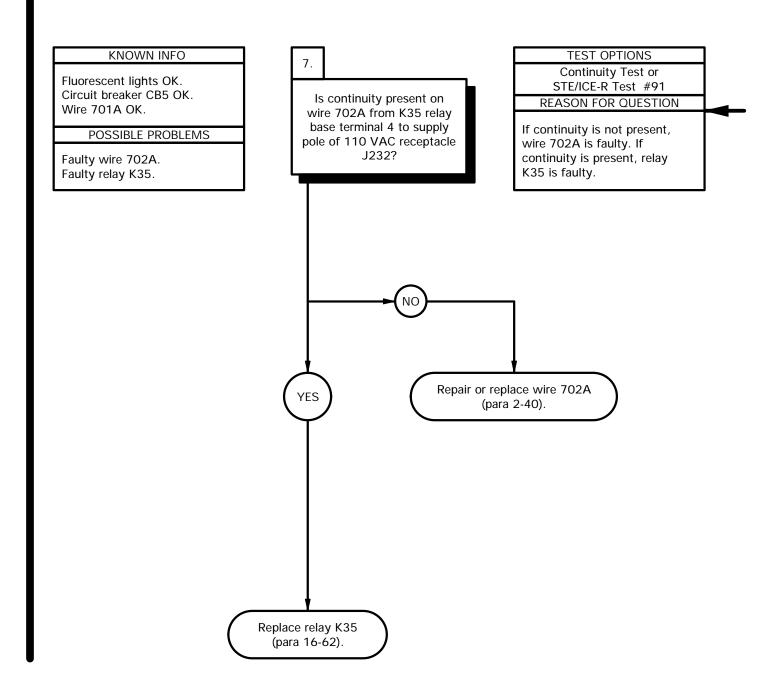
e108. M1079 110 VAC OUTLET J232 DOES NOT OPERATE IN NORMAL MODE (CONT)



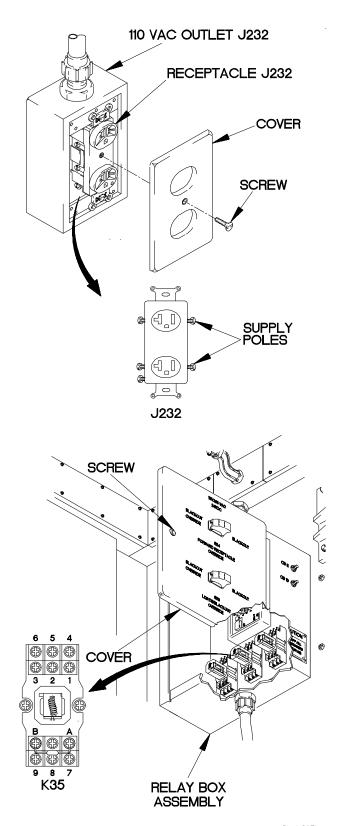
- (1) Loosen screw in circuit breaker CB5.
- (2) Remove wire 701A from circuit breaker CB5.
- (3) Loosen screw in cover.
- (4) Open cover on relay box assembly.
- (5) Set multimeter to ohms.
- (6) Connect positive (+) probe of multimeter to wire 701A.
- (7) Connect negative (-) probe of multimeter to 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)



- (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).



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

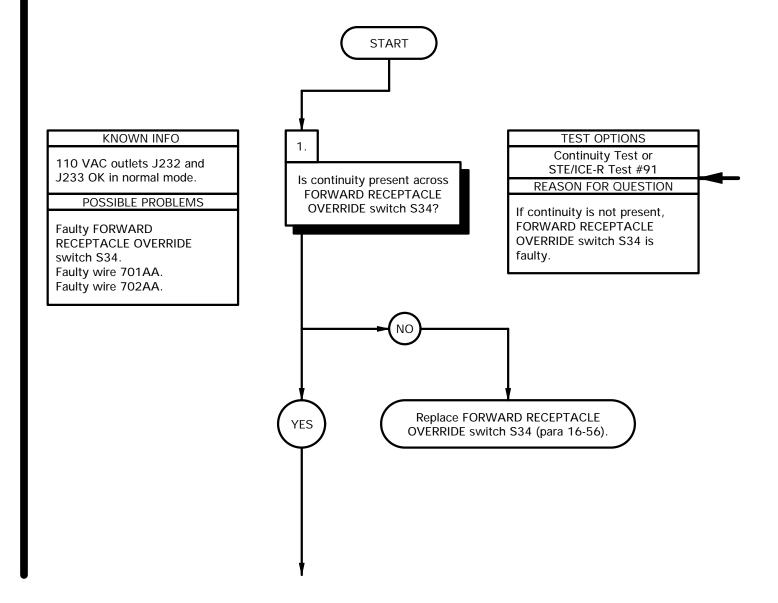
INITIAL SETUP

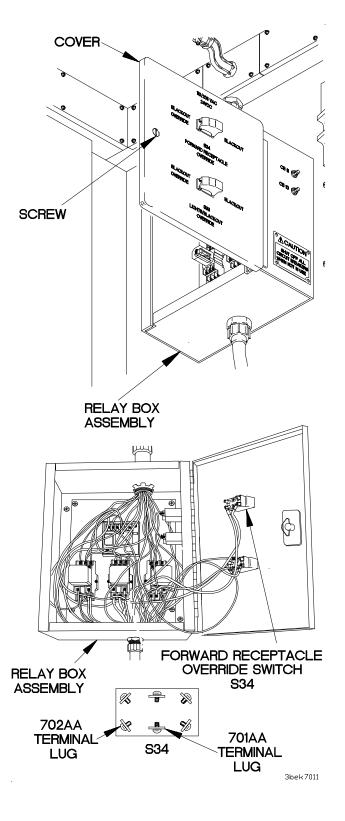
Equipment Conditions
Engine shut down (TM 9-2320-365-10).
AC power disconnected (TM 9-2320-365-10).

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)

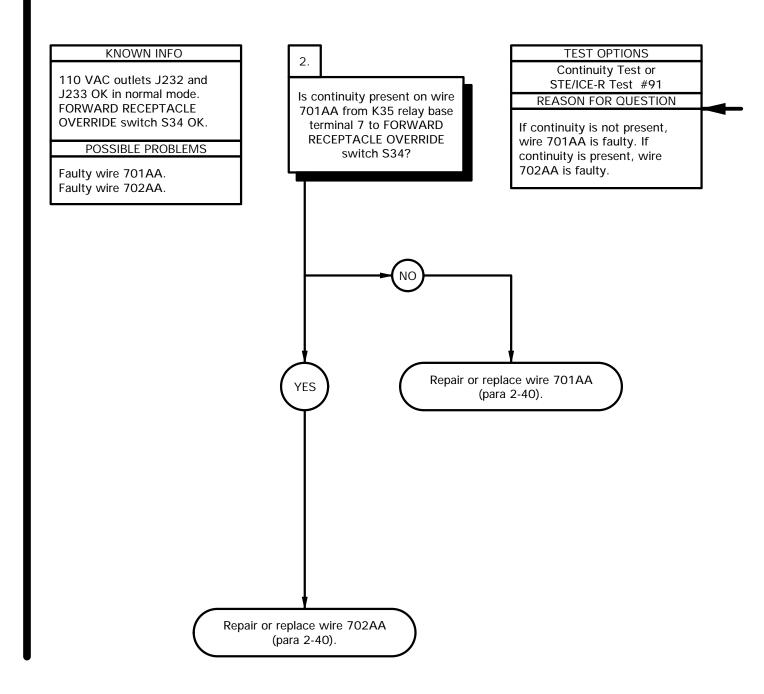
References TM 9-4910-571-12&P



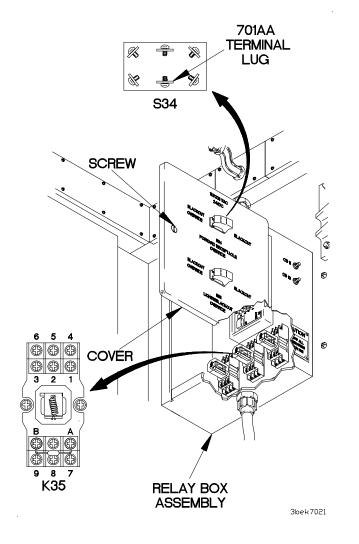


- (1) Loosen screw in cover.
- (2) Open cover on relay box assembly.
- (3) Position FORWARD RECEPTACLE OVERRIDE switch S34 to BLACKOUT OVERRIDE.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to wire 702AA terminal lug on FORWARD RECEPTACLE OVERRIDE switch S34.
- (6) Connect negative (-) probe of multimeter to wire 701AA terminal lug on 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)



- (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.



e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE

INITIAL SETUP

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

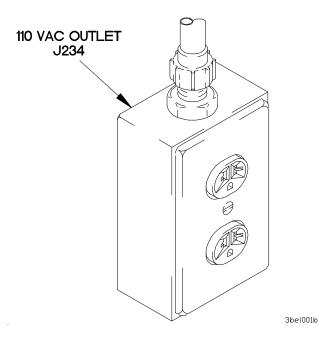
Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C) Personnel Required (2)

References TM 9-4910-571-12&P

START KNOWN INFO TEST OPTIONS Operational Test 110 VAC outlets J230, **REASON FOR QUESTION** J232, J233, and J235 OK. Does 110 VAC outlet J234 This question eliminates operate? POSSIBLE PROBLEMS possible problems and determines where Faulty circuit breaker CB7. troubleshooting continues. Faulty wire 701B. Faulty wire 702B. Faulty relay K35. Faulty 110 VAC receptacle J231. Faulty wire 1499C. Faulty wire 3085M. Faulty wire 3085AB. YES Go to step 5 of this fault.

OPERATIONAL TEST

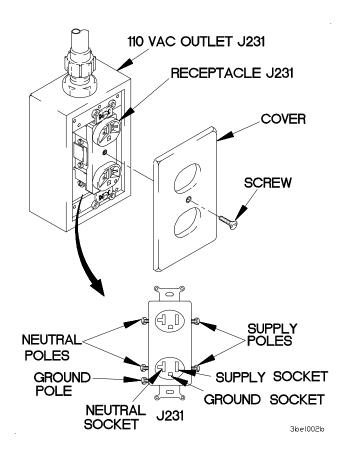
- (1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
- (2) Position circuit breaker CB7 to ON (TM 9-2320-365-10).
- (3) Plug any 110 vac appliance in 110 VAC receptacle J234.
- (4) Check to see if 110 VAC appliance operates.
- (5) If 110 VAC appliance does not operate, go to step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



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

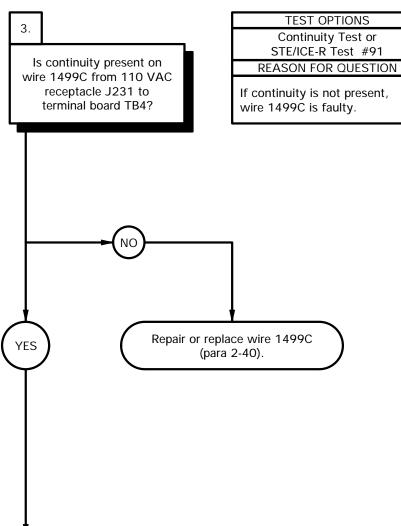
KNOWN INFO **TEST OPTIONS** 2. Continuity Test or 110 VAC outlets J230, STE/ICE-R Test #91 J232, J233, and J235 OK. Is continuity present across **REASON FOR QUESTION** 110 VAC outlet J234 OK. 110 VAC receptacle J231? Circuit breaker CB7 OK. If continuity is not present, Wire 701B OK. 110 VAC receptacle J231 Wire 702B OK. is faulty. Relay K35 OK. POSSIBLE PROBLEMS Faulty 110 VAC receptacle J231. Faulty wire 1499C. Faulty wire 3085M. Faulty wire 3085AB. Replace 110 VAC receptacle J231 YES (para 16-53).

- (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).

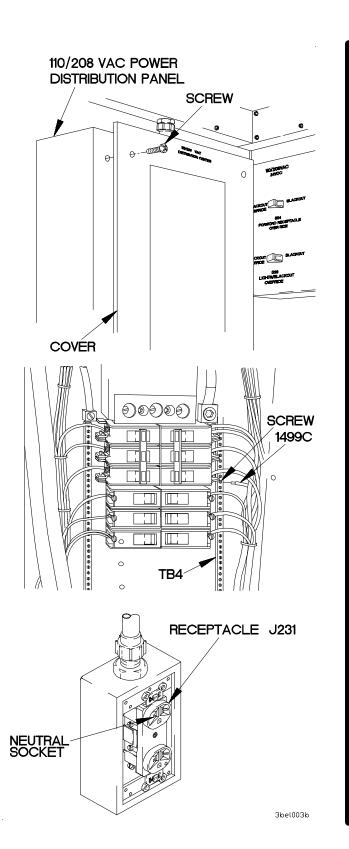


e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)

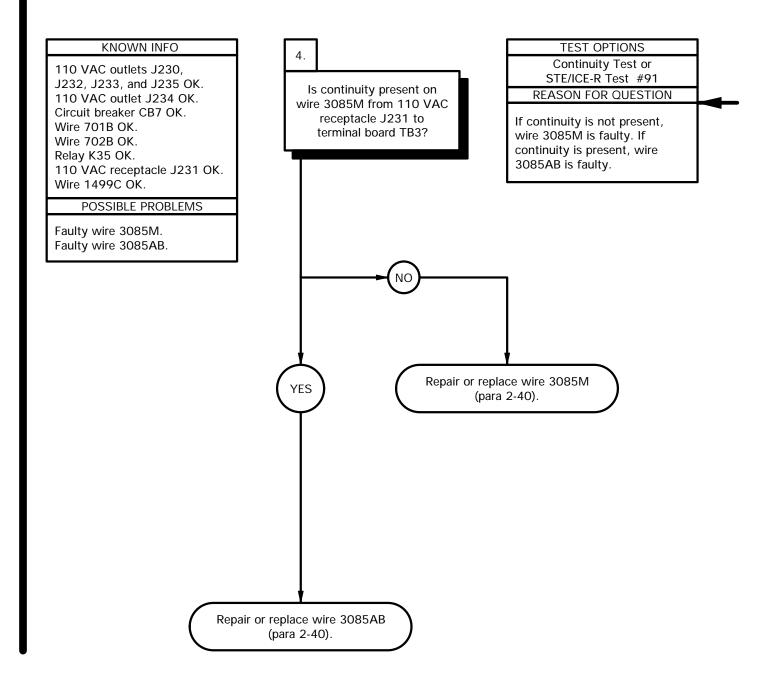
KNOWN INFO 110 VAC outlets J230, J232, J233, and J235 OK. 110 VAC outlet J234 OK. Circuit breaker CB7 OK. Wire 701B OK. Wire 702B OK. Relay K35 OK. 110 VAC receptacle J231 OK. POSSIBLE PROBLEMS Faulty wire 1499C. Faulty wire 3085M. Faulty wire 3085AB.



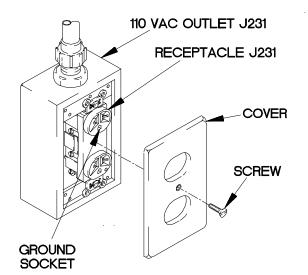
- (1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Loosen screw in terminal board TB4.
- (3) Remove wire 1499C from terminal board TB4.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to wire 1499C.
- (6) Connect negative (-) probe of multimeter 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).

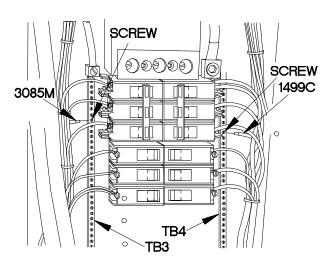


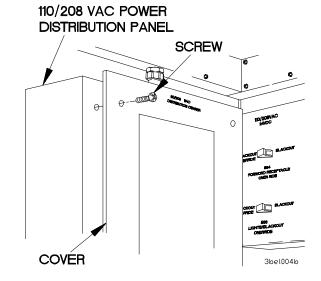
e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)



- (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 TR3
- (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.



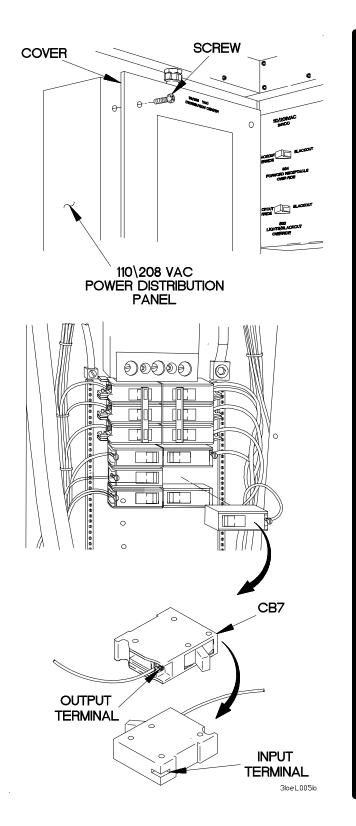




e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)

KNOWN INFO TEST OPTIONS 5. Continuity Test or 110 VAC outlets J230, STE/ICE-R Test #91 Is continuity present across J232, J233, and J235 OK. REASON FOR QUESTION 110 VAC outlet J234 does circuit breaker CB7? not operate. If continuity is not present, circuit breaker CB7 is POSSIBLE PROBLEMS faulty. Faulty circuit breaker CB7. Faulty wire 701B. Faulty wire 702B. Faulty relay K35. Replace circuit breaker CB7 YES (para 16-64).

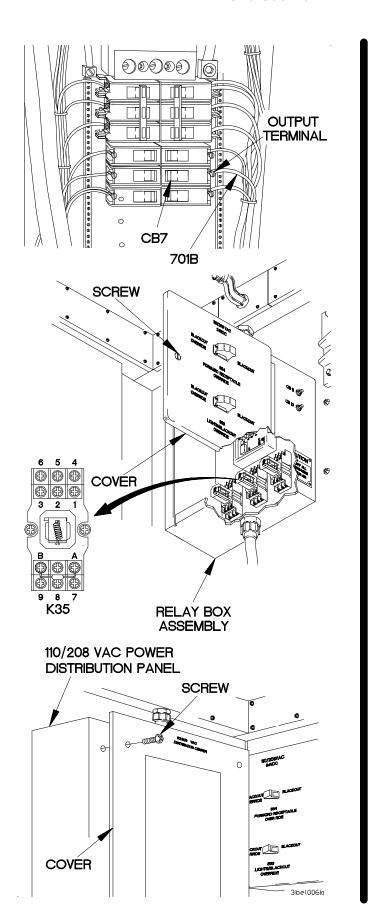
- (1) Disconnect AC power (TM 9-2320-365-10).
- (2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Remove circuit breaker CB7 from 110/208 VAC POWER DISTRIBUTION PANEL.
- (4) Position circuit breaker CB7 to ON (TM 9-2320-365-10).
- (5) Set multimeter to ohms.
- (6) Connect 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.



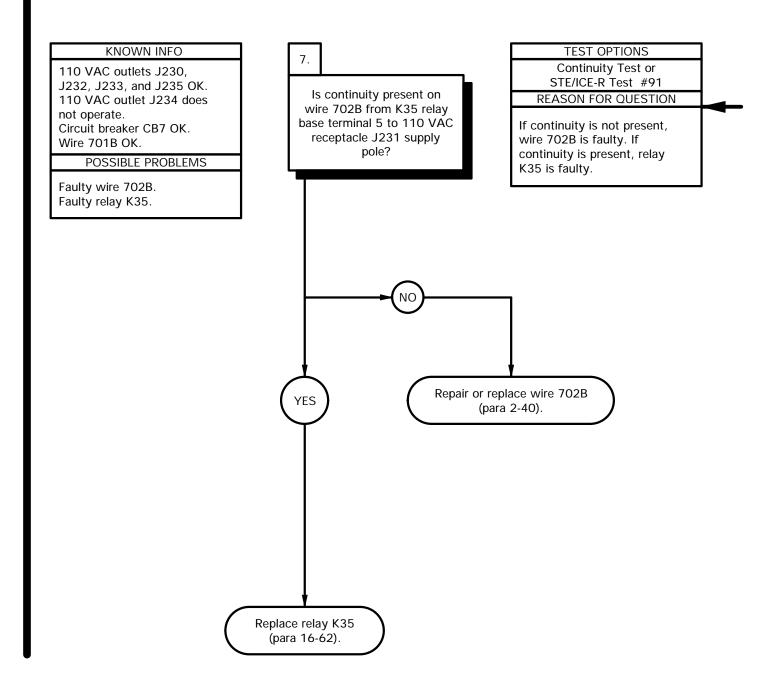
e110. M1079 110 VAC OUTLET J231 DOES NOT OPERATE (CONT)

KNOWN INFO TEST OPTIONS 6. Continuity Test or 110 VAC outlets J230, STE/ICE-R Test #91 J232, J233, and J235 OK. Is continuity present on wire REASON FOR QUESTION 110 VAC outlet J234 does 701B from circuit breaker CB7 to K35 relay base not operate. If continuity is not present, Circuit breaker CB7 OK. terminal 8? wire 701B is faulty. POSSIBLE PROBLEMS Faulty wire 701B. Faulty wire 702B. Faulty relay K35. Repair or replace wire 701B YES (para 2-40).

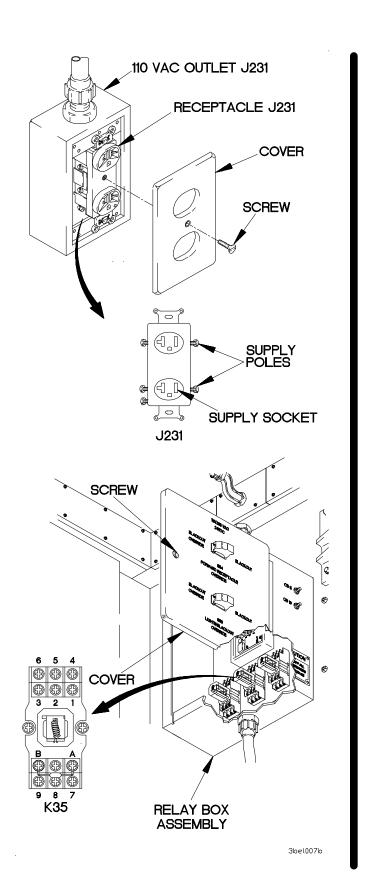
- (1) Loosen screw in cover.
- (2) Open cover on relay box assembly.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to K35 relay base terminal 8.
- (5) Connect negative (-) probe of multimeter to output terminal on circuit breaker CB7 and note reading on multimeter.
- (6) 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)



- (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 Conditions 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

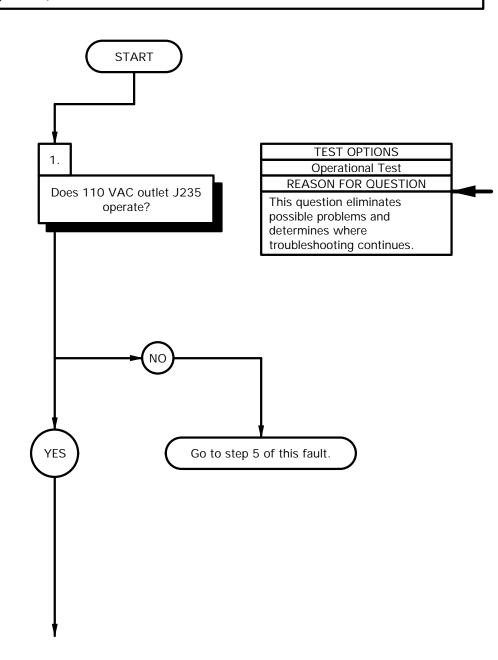
KNOWN INFO

110 VAC outlets J231, J232, J233, and J234 OK.

POSSIBLE PROBLEMS

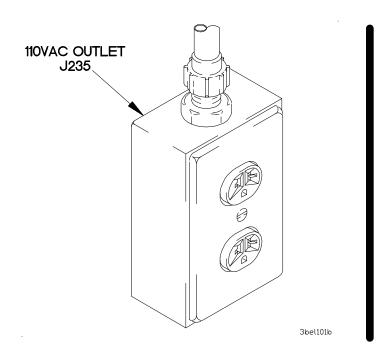
Faulty circuit breaker CB9. Faulty wire 701C. Faulty wire 702C. Faulty relay K35. Faulty 110 VAC receptacle J230. Faulty wire 1499D.

Faulty wire 3085J. Faulty wire 3085AC.



OPERATIONAL TEST

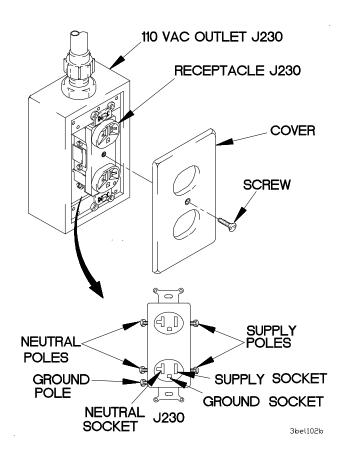
- (1) Open door on 110/208 VAC POWER DISTRIBUTION PANEL (TM 9-2320-365-10).
- (2) Position circuit breaker CB9 to ON
- (TM 9-2320-365-10). (3) Plug any 110 VAC appliance in 110 VAC receptacle J235.
- (4) Check to see if 110 VAC appliance operates.
- (5) If 110 VAC appliance does not operate, go to step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



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

KNOWN INFO **TEST OPTIONS** 2. Continuity Test or 110 VAC outlets J231, STE/ICE-R Test #91 J232, J233, and J234 OK. Is continuity present across **REASON FOR QUESTION** 110 VAC outlet J235 OK. 110 VAC receptacle J230? Circuit breaker CB9 OK. If continuity is not present, Wire 701C OK. 110 VAC receptacle J230 Wire 702C OK. is faulty. Relay K35 OK. POSSIBLE PROBLEMS Faulty 110 VAC receptacle J230. Faulty wire 1499D. Faulty wire 3085J. Faulty wire 3085AC. NO Replace 110 VAC receptacle YES J230 (para 16-53).

- (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).



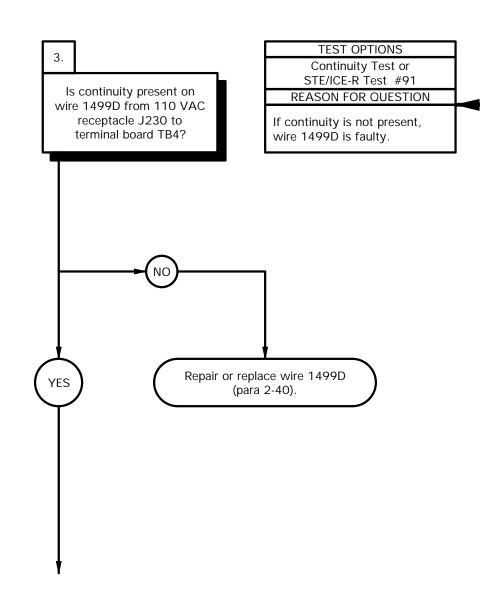
e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)

KNOWN INFO

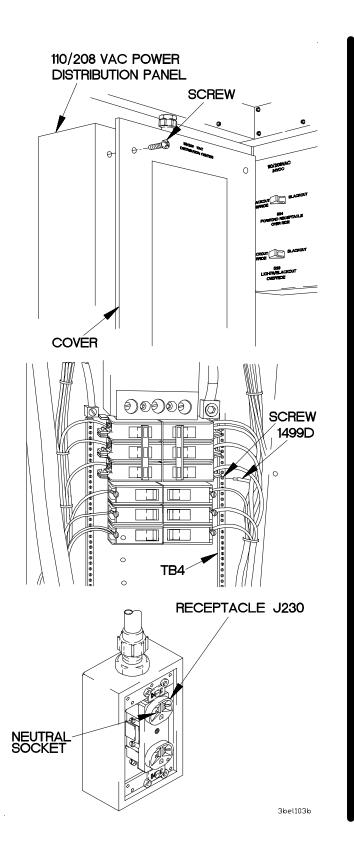
110 VAC outlets J231, J232, J233, and J234 OK. 110 VAC outlet J235 OK. Circuit breaker CB9 OK. Wire 701C OK. Wire 702C OK. Relay K35 OK. 110 VAC receptacle J230 OK.

POSSIBLE PROBLEMS

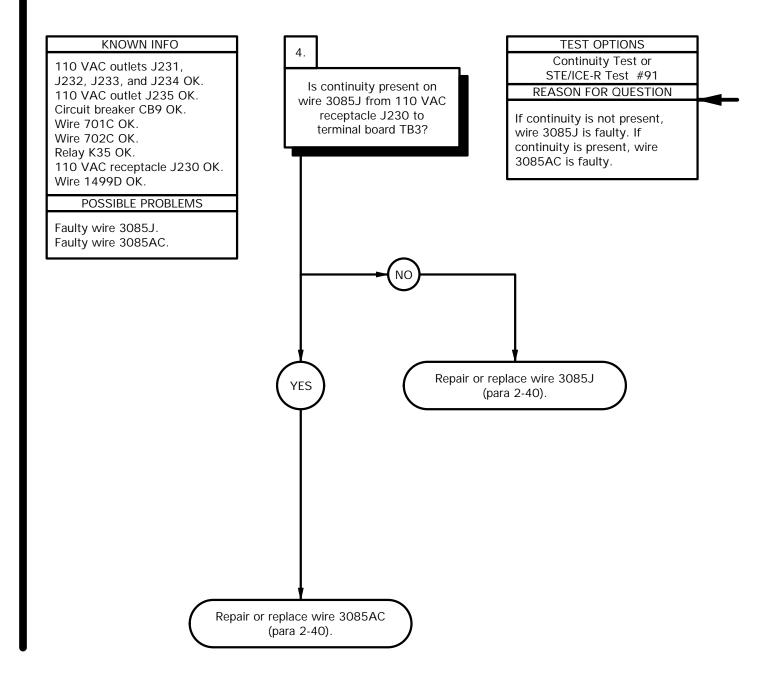
Faulty wire 1499D. Faulty wire 3085J. Faulty wire 3085AC.



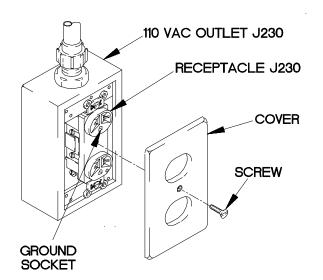
- Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Loosen screw in terminal board TB4.
- (3) Remove wire 1499D from terminal board
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to wire 1499D.
- (6) Connect negative (-) probe of multimeter to 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).

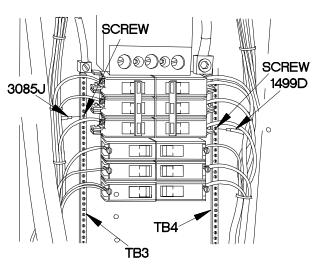


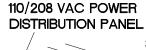
e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)

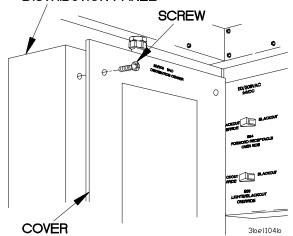


- (1) Loosen screw in terminal board TB3.
- (2) Remove wire 3085J from terminal board TB3.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085J.
- (5) Connect negative (-) probe of multimeter to ground socket of 110 VAC receptacle J230 and note reading on multimeter.
- (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 screw.





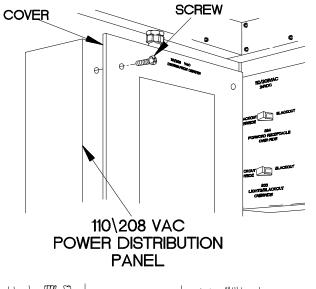


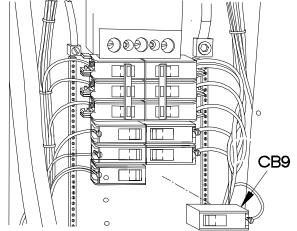


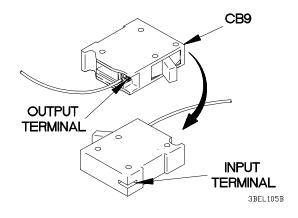
e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)

KNOWN INFO TEST OPTIONS 5. Continuity Test or 110 VAC outlets J231, STE/ICE-R Test #91 Is continuity present across J232, J233, and J234 OK. REASON FOR QUESTION 110 VAC outlet J235 does circuit breaker CB9? not operate. If continuity is not present, circuit breaker CB9 is POSSIBLE PROBLEMS faulty. Faulty circuit breaker CB9. Faulty wire 701C. Faulty wire 702C. Faulty relay K35. Replace circuit breaker CB9 YES (para 16-64).

- (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 VAC 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.



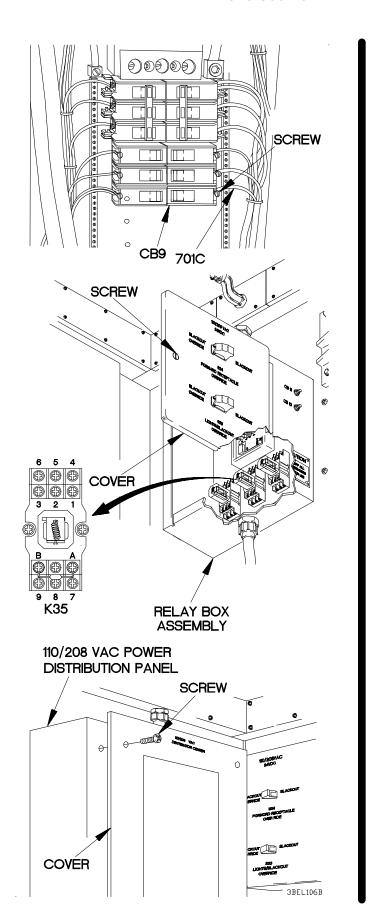




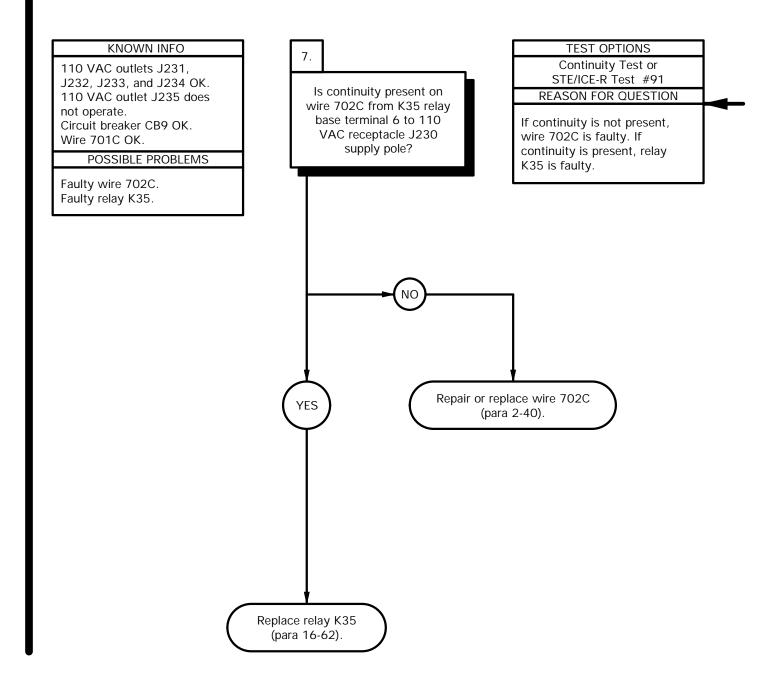
e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)

KNOWN INFO TEST OPTIONS 6. Continuity Test or 110 VAC outlets J231, STE/ICE-R Test #91 J232, J233, and J234 OK. Is continuity present on wire REASON FOR QUESTION 110 VAC outlet J235 does 701C from circuit breaker not operate. CB9 to K35 relay base If continuity is not present, Circuit breaker CB9 OK. terminal 9? wire 701C is faulty. POSSIBLE PROBLEMS Faulty wire 701C. Faulty wire 702C. Faulty relay K35. Repair or replace wire 701C YES (para 2-40).

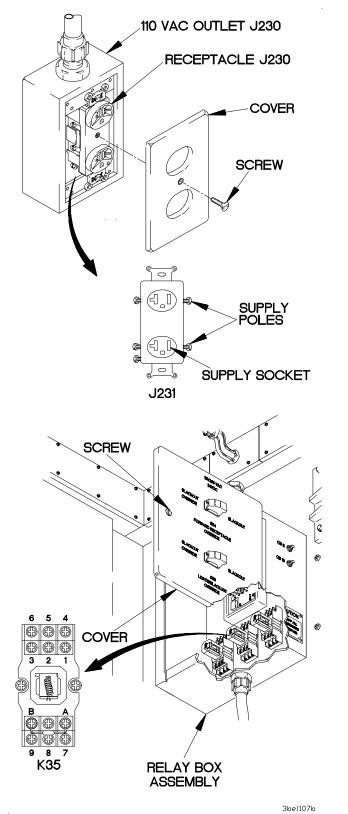
- (1) Loosen screw in cover.
- (2) Open cover on relay box assembly.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to K35 relay base terminal 9.
- (5) Connect negative (-) probe of multimeter to output terminal on circuit breaker CB9 and note reading on multimeter.
- (6) 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.

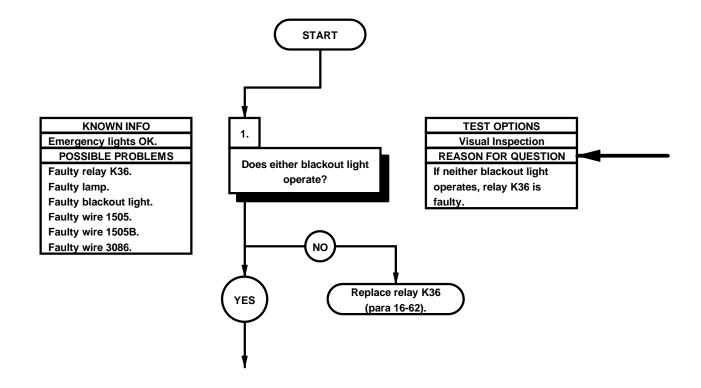


e111. M1079 110 VAC OUTLET J230 DOES NOT OPERATE (CONT)



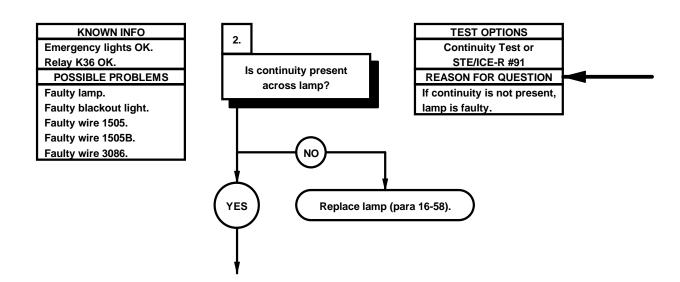
- (1) Remove screw and cover from 110 VAC outlet J230.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to K35 relay base terminal 6.
- (4) Connect negative (-) probe of multimeter to supply pole on 110 VAC receptacle J230 and note reading on multimeter.
- (5) If continuity 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.





- (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)



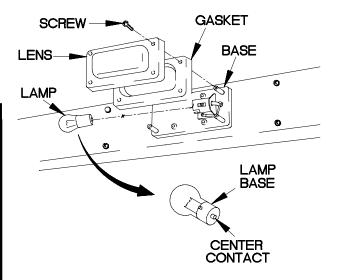
NOTE

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.

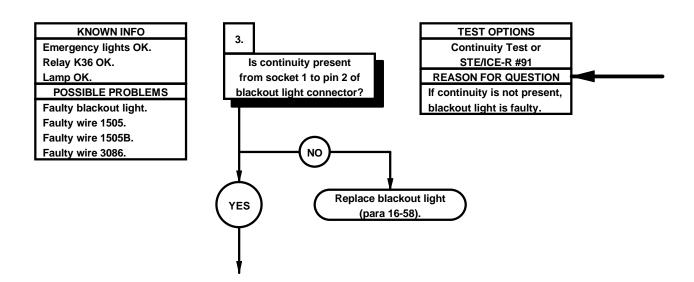
Table 2-14. M1079 Blackout Light Locations and Connector Numbers

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



32ek4021

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

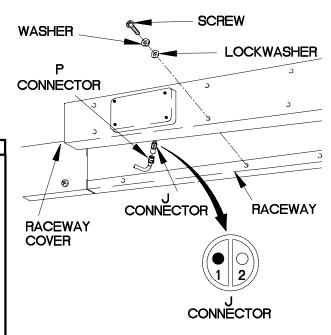


- (1) Remove 12 screws, lockwashers, and washers from raceway cover. Discard lockwashers.
- (2) Remove raceway cover from raceway.

NOTE

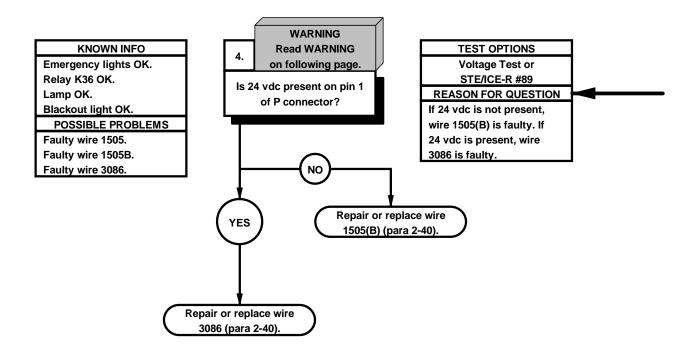
Both blackout lights are tested the same way. Refer to Table 2-14. M1079 Blackout Light Locations and Connector Numbers for details. Blackout Light DS75 shown.

- (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).



32EK4041

e113. M1079 EMERGENCY LIGHTS(S) DO NOT ILLUMINATE

INITIAL SETUP

Equipment Conditions
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)

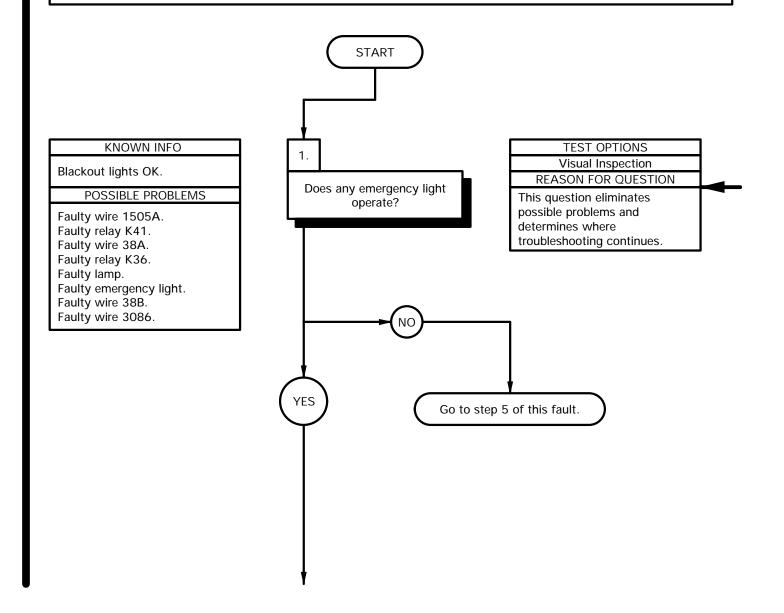
Materials/Parts

Lockwasher (12) (emergency lights DS78, DS79, and DS97) (Item 81, Appendix G)

Lockwasher (16) (emergency light DS96) (Item 81, Appendix G)

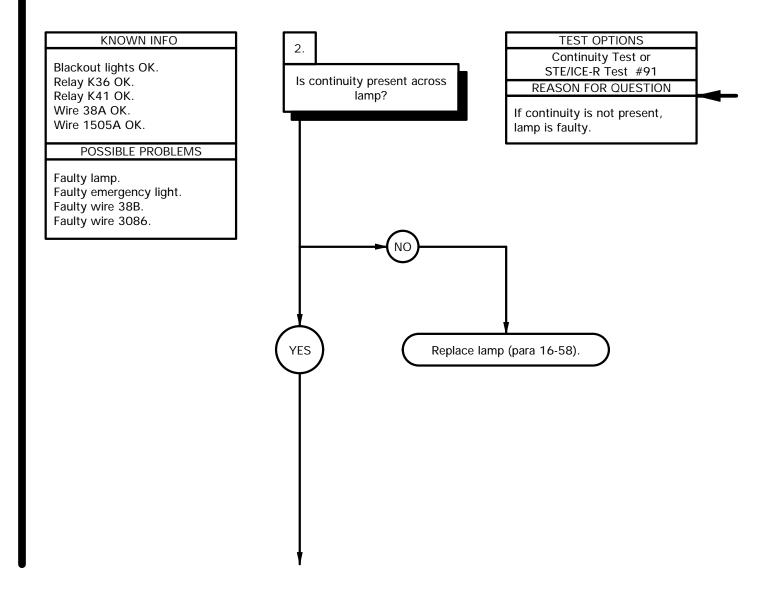
Personnel Required (2)

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 illuminates.
- (7) If all emergency lights do not illuminate, 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 ILLUMINATE (CONT)



NOTE

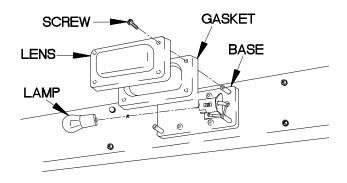
All emergency light lamps are tested the same way. Refer to Table 2-15. M1079 Emergency Light Locations and Connector Numbers for details. Emergency light DS78 shown.

CONTINUITY TEST

- (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.

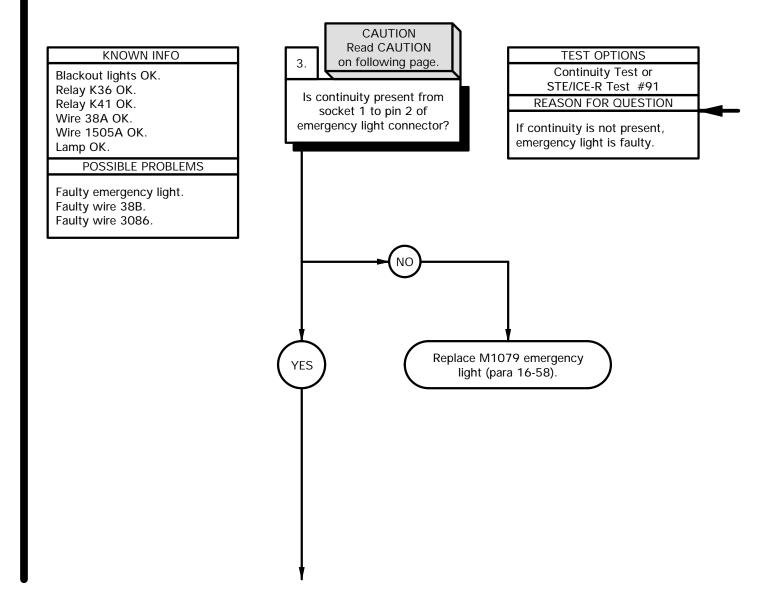
Table 2-15. M1079 Emergency Light Locations and Connector Numbers

and connector runners		
Location	Number	Connector
RH Side	DS78	J163,P163
LH Side	DS79	J165, P165
Front	DS96	J166, P166
Rear	DS97	J167, P167



3BEL301B

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



CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

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.

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

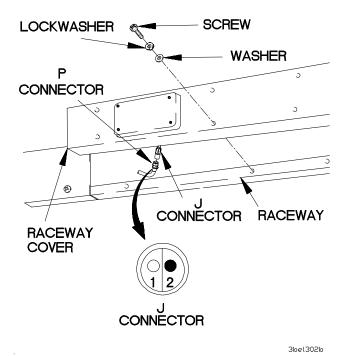
CONTINUITY TEST

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

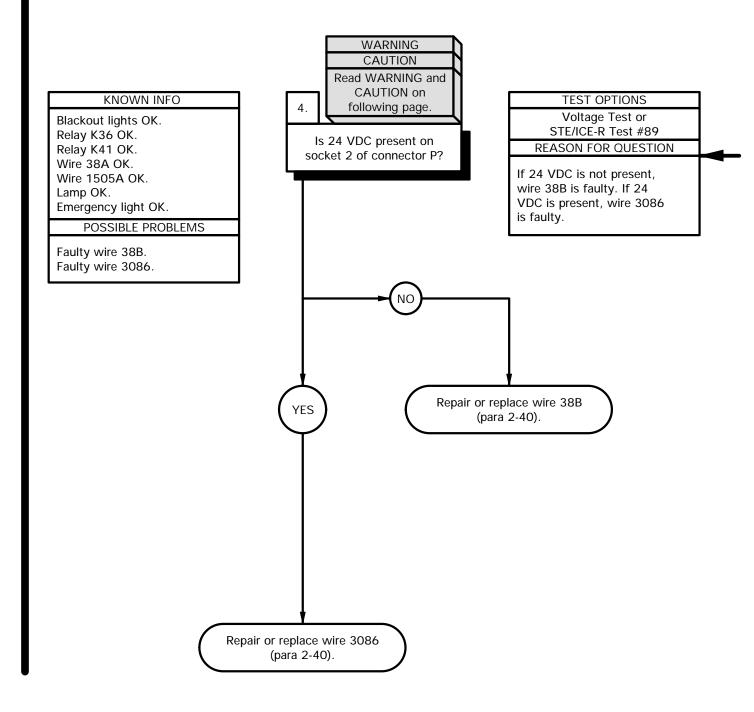
NOTE

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.
- (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 ILLUMINATE (CONT)



WARNING

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

CAUTION

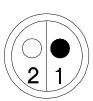
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- (1) 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 socket 2 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).



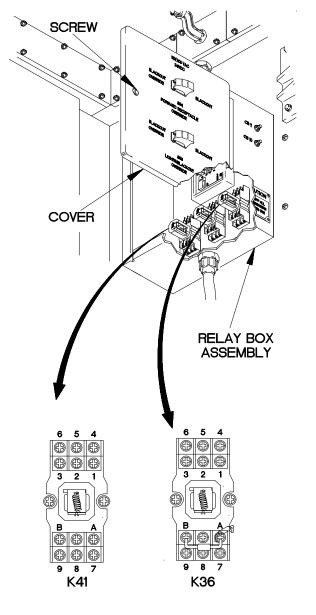
P CONNECTOR

3BEL303B

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

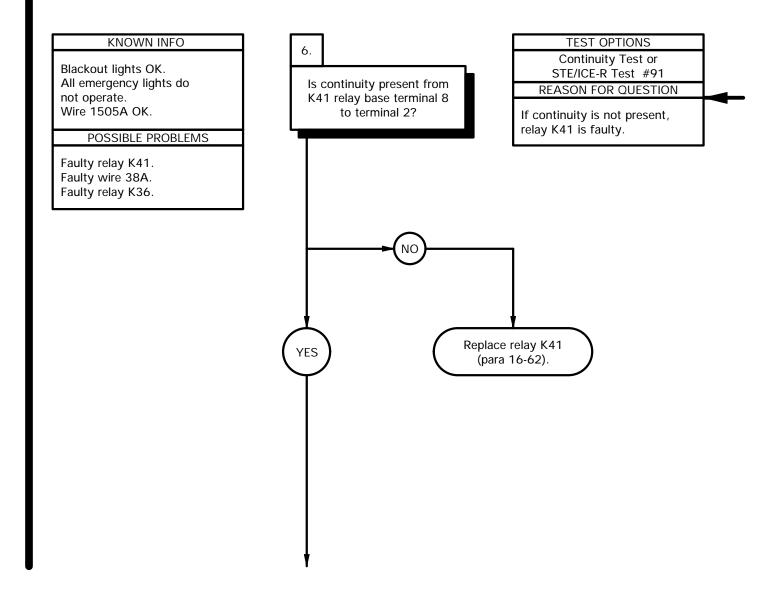
KNOWN INFO **TEST OPTIONS** 5. Continuity Test or Blackout lights OK. STE/ICE-R Test #91 All emergency lights do not Is continuity present on REASON FOR QUESTION operate. wire 1505A from K36 relay base terminal 8 to If continuity is not present, POSSIBLE PROBLEMS K41 relay base terminal 8? wire 1505A is faulty. Faulty wire 1505A. Faulty relay K41. Faulty wire 38A. Faulty relay K36. Repair or replace YES wire 1505A (para 2-40).

- (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).

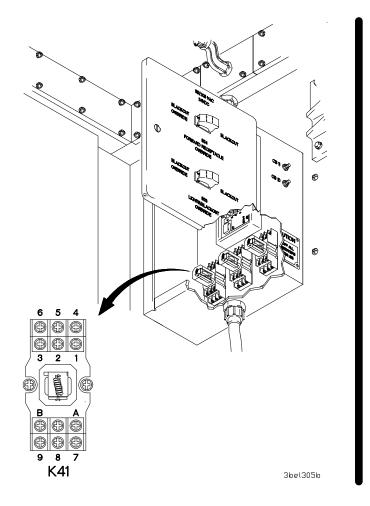


3BEL304B

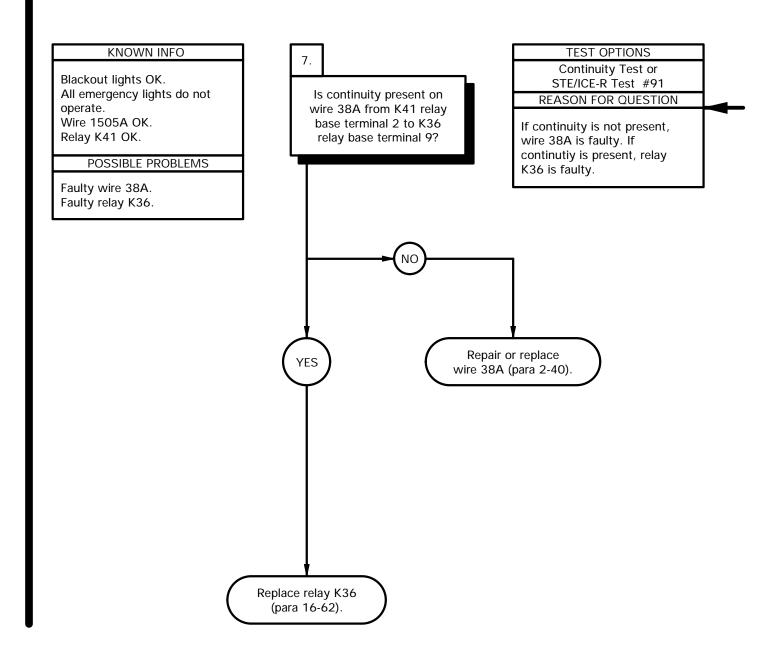
e113. M1079 EMERGENCY LIGHT(S) DOES NOT ILLUMINATE (CONT)



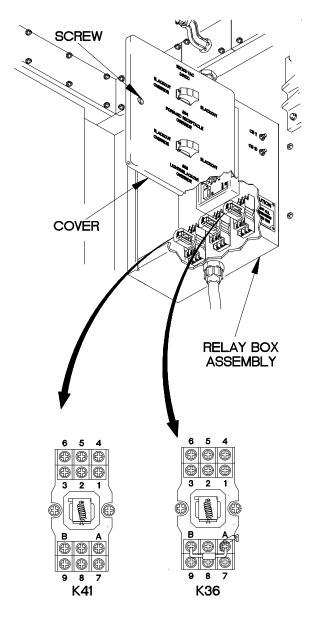
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to
- K4 relay base terminal 8.
 (3) Connect negative (-) probe of multimeter to K41 relay base terminal 2 and note reading on multimeter.
- (4) If continuity is not present, replace relay K41 (para 16-62).



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

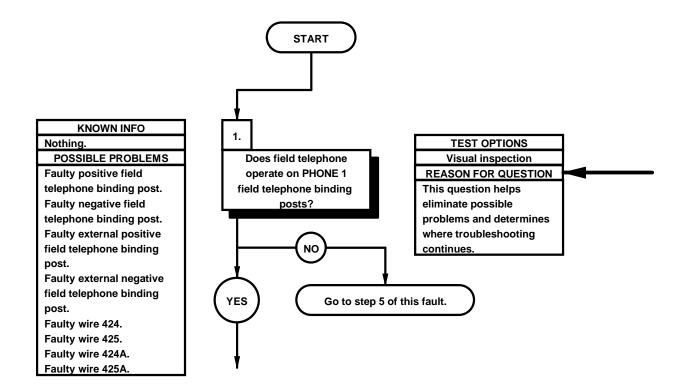


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to K4 relay base terminal 2.
- (3) Connect negative (-) probe of multimeter to K36 relay base terminal 9 and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 38A (para 2-40).
- (5) If continuity is present, replace relay K36 (para 16-62).
- (6) Close cover on relay box assembly.
- (7) Tighten screw in cover.

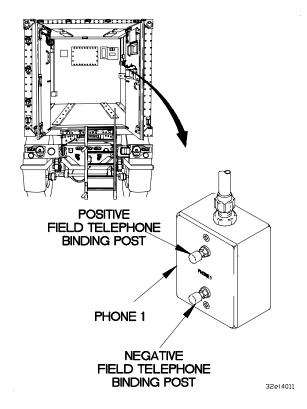


3BEL306B

e114. M1079 PHONE 1 AND/OR 2 BINDING POST DOES NOT OPERATE INITIAL SETUP Equipment Condition Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Personnel Required Multimeter, Digital (Item 22, Appendix C) (2) References



TM 9-4910-571-12&P



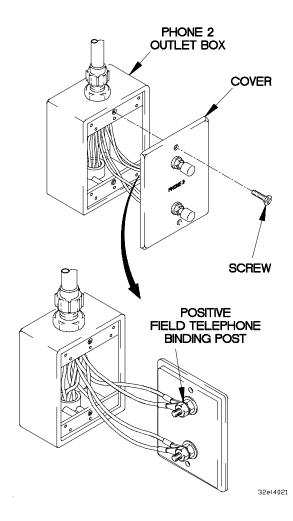
- (1) Install field telephone on PHONE 1 field telephone binding posts.
- (2) Operate field telephone.
- (3) If field telephone does not operate, go to step 5 of this fault.
- (4) Remove field telephone from PHONE 1 field telephone binding posts.

KNOWN INFO 2. **TEST OPTIONS** Field telephone operates **Continuity Test or** on PHONE 1 field tele-Is continuity present STE/ICE-R Test #91 phone binding posts. across PHONE 2 positive **REASON FOR QUESTION** POSSIBLE PROBLEMS field telephone binding If continuity is not present, Faulty PHONE 2 positive post? PHONE 2 positive field field telephone binding telephone binding post is faulty. NO Faulty PHONE 2 negative field telephone binding post. Replace PHONE 2 positive field Faulty external positive YES telephone binding post field telephone binding (para 16-51). Faulty external negative field telephone binding Faulty wire 424A.

Faulty wire 425A.



- (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).



KNOWN INFO

Field telephone operates on PHONE 1 field telephone binding posts. PHONE 2 positive field telephone binding post OK.

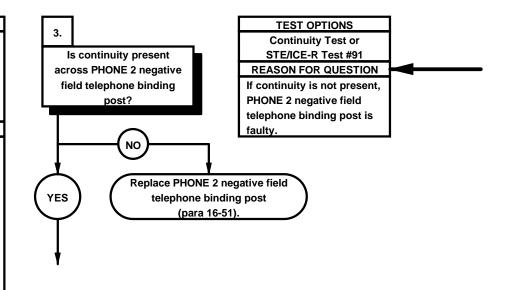
POSSIBLE PROBLEMS

Faulty PHONE 2 negative field telephone binding post.

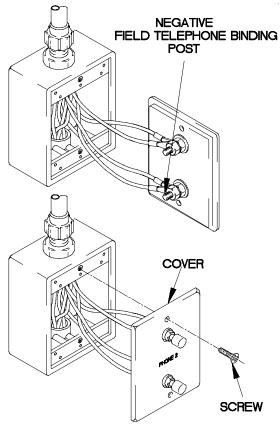
Faulty external positive field telephone binding post.

Faulty external negative field telephone binding nost

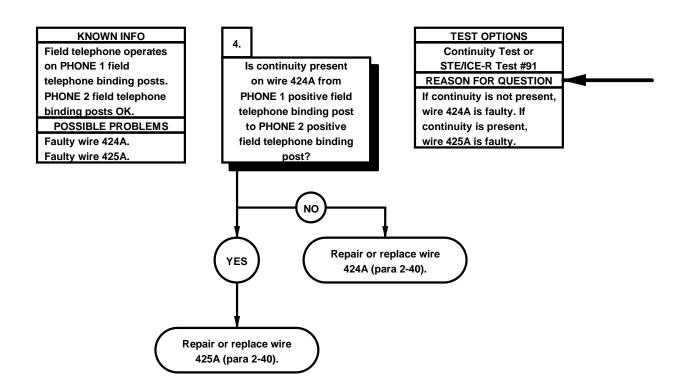
Faulty wire 424A. Faulty wire 425A.

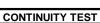


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to one side of PHONE 2 negative field telephone binding post.
- (3) Connect negative (-) probe of multimeter to other side of PHONE 2 negative field telephone binding post and note reading on multimeter.
- (4) If continuity 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.

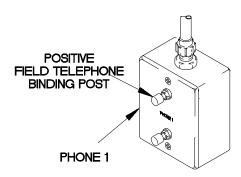


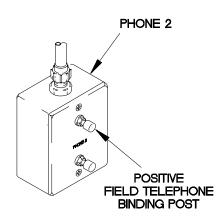
32el4031



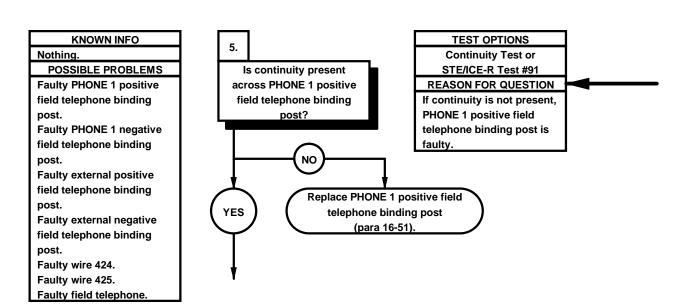


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to PHONE 1 positive field telephone binding post.
- (3) Connect negative (-) probe of multimeter to PHONE 2 positive field telephone binding post and note reading on multimeter.
- (4) If continuity is not present, repair or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

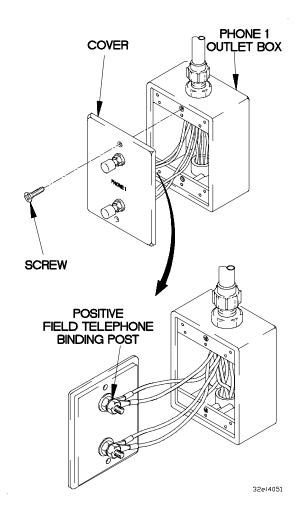


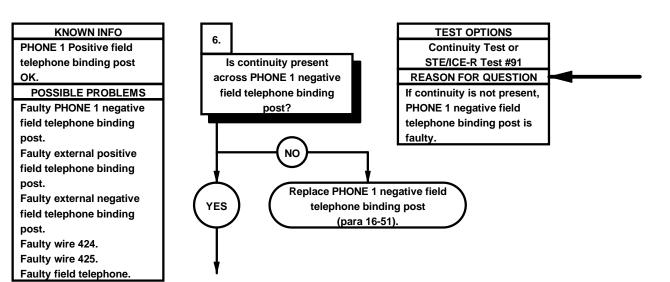


32EK2041

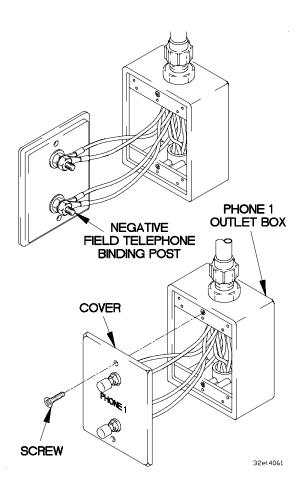


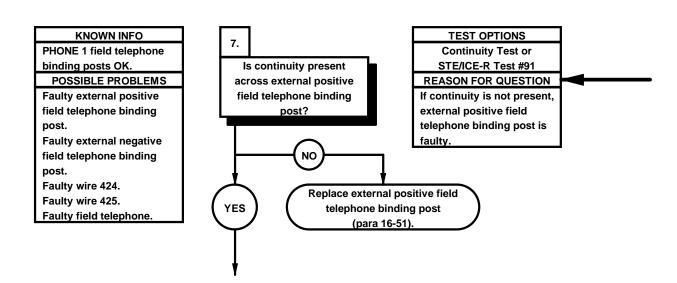
- (1) Remove two screws and cover from PHONE 1 outlet box.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one side of PHONE 1 positive field telephone binding post.
- (4) Connect negative (-) probe of multimeter to other side of PHONE 1 positive field telephone binding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





- (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.





NOTE

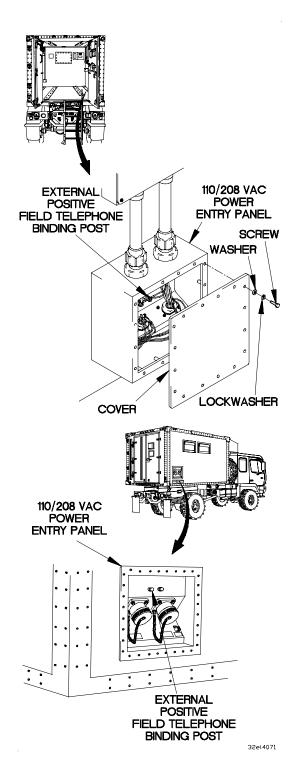
Perform step (1) on van body serial numbers 001 through 190.

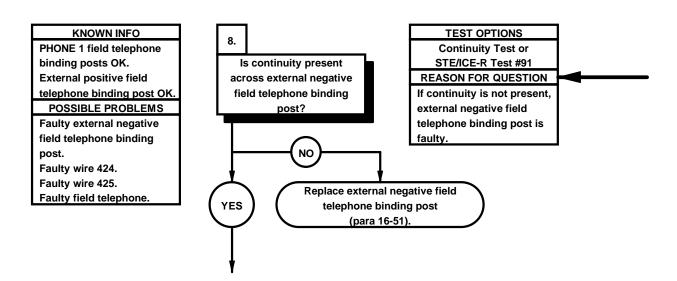
(1) Remove 28 screws, lockwashers, washers, and cover from 110/208 vac power entry panel. Discard lockwashers.

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).





- (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

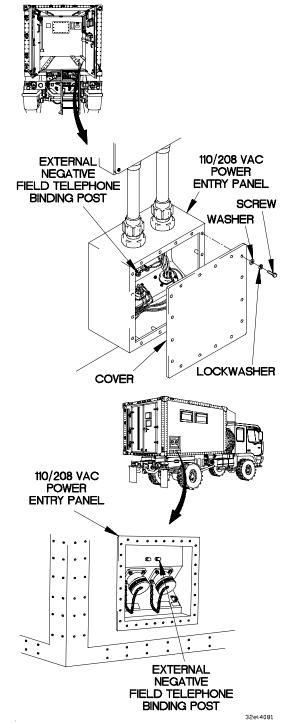
Perform step (5) on van bodies serial number 191 and higher.

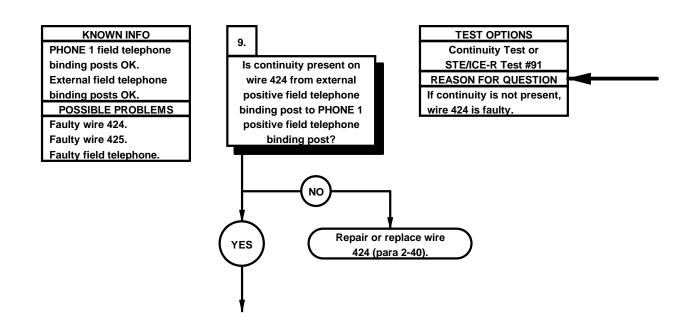
(5) Install cover on 110/208 vac power entry panel with 16 washers, lockwashers, and screws.

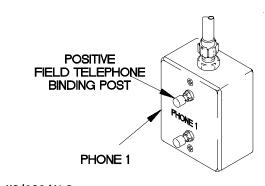
NOTE

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

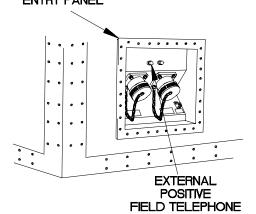
(6) Install cover on 110/208 vac power entry panel with 28 washers, lockwashers, and screws.







110/208 VAC POWER ENTRY PANEL

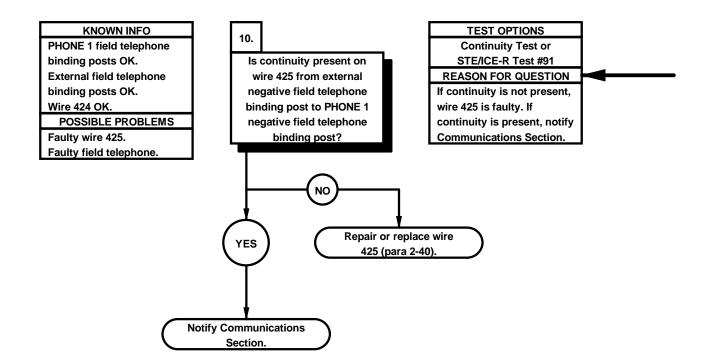


BINDING POST

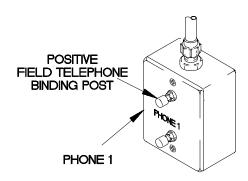
CONTINUITY TEST

- (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).

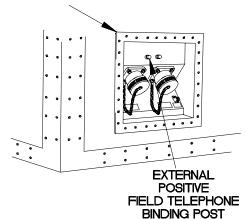
32EK2091



- (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.



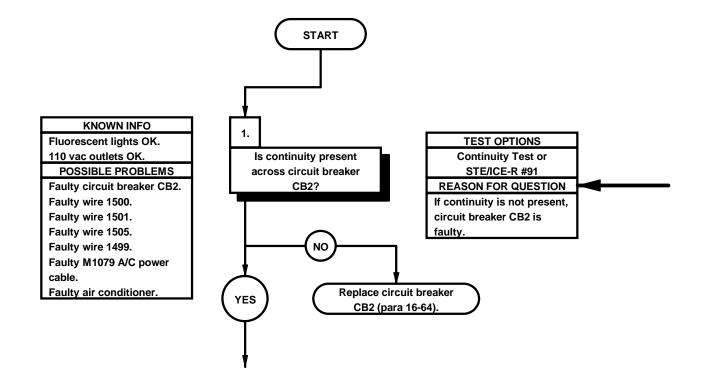
110/208 VAC POWER ENTRY PANEL



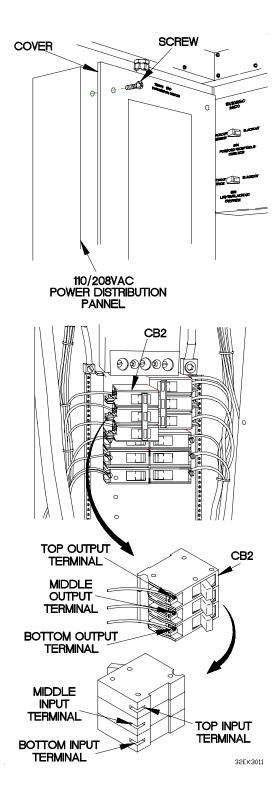
32EK2101

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). 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

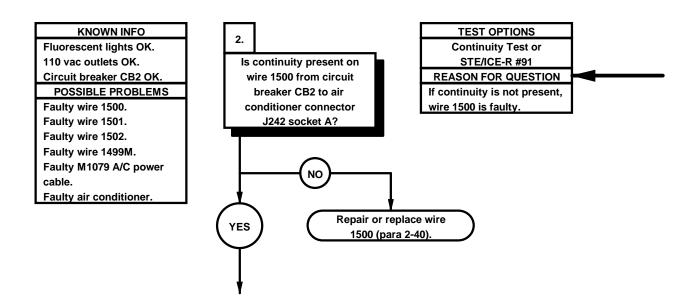
TM 5-4120-384-14



- (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.

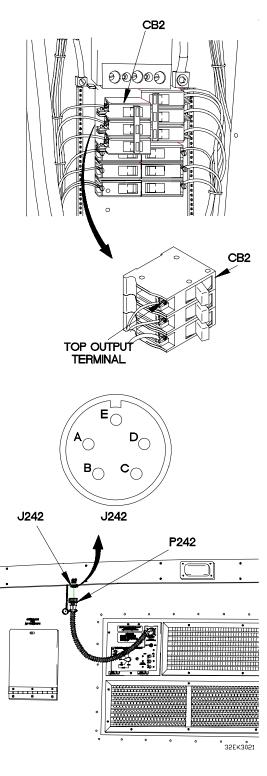


e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)

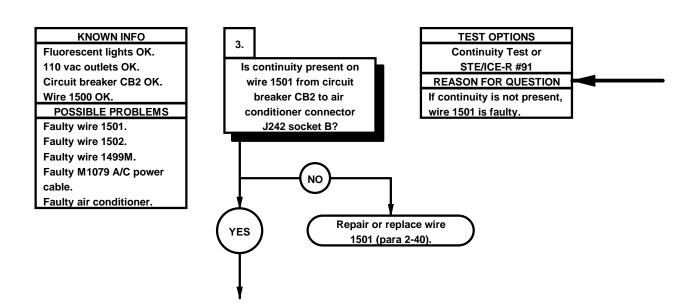


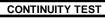


- (1) Disconnect connector P242 from air conditioner connector J242.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to top output terminal on circuit breaker CB2.
- (4) Connect negative (-) probe of multimeter to air conditioner connector J242 socket A and note reading on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

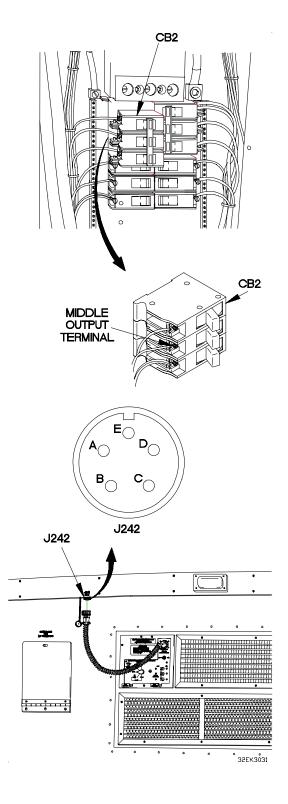


e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)

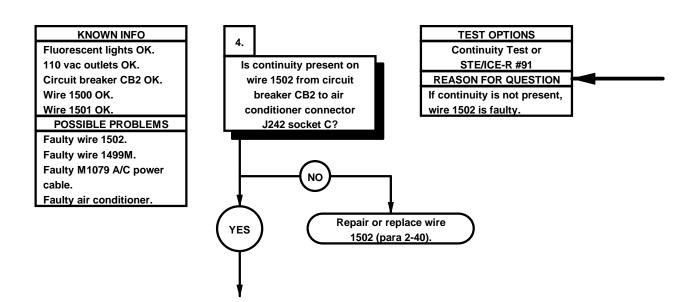


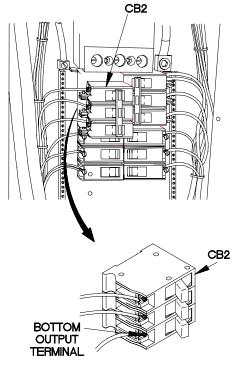


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to middle output terminal on circuit breaker CB2.
- (3) Connect negative (-) probe of multimeter to air conditioner connector J242 socket B and note reading on multimeter.
- (4) If continuity is not present, repair or replace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

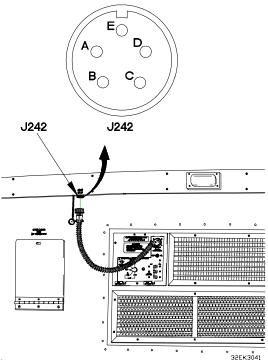


e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)

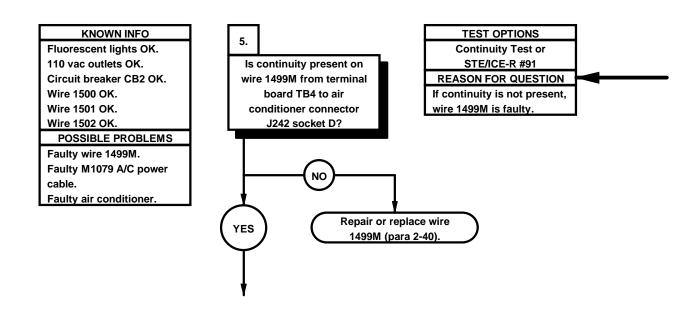


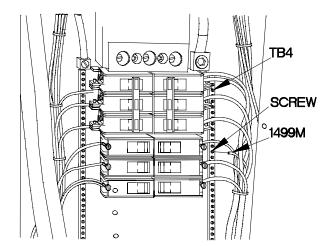


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to bottom output terminal on circuit breaker CB2.
- (3) Connect negative (-) probe of multimeter to air conditioner connector J242 socket C and note reading on multimeter.
- (4) If continuity is not present, repair or replace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

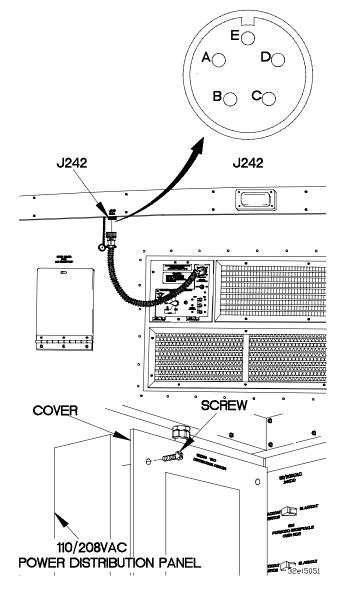


e115. M1079 AIR CONDITIONER DOES NOT OPERATE (CONT)

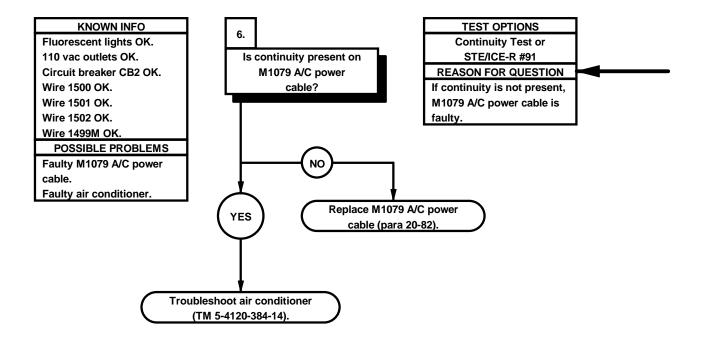




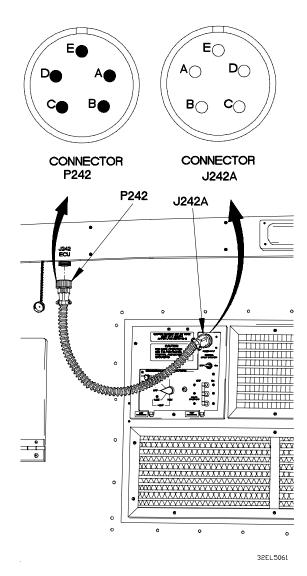
- (1) Loosen screw in terminal board TB4.
- (2) Remove wire 1499M from terminal board TB4.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 1499M.
- (5) Connect negative (-) probe of multimeter to air conditioner connector J242 socket D and note reading on multimeter.
- (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)



- (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.



Equipment Condition

INITIAL SETUP

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)

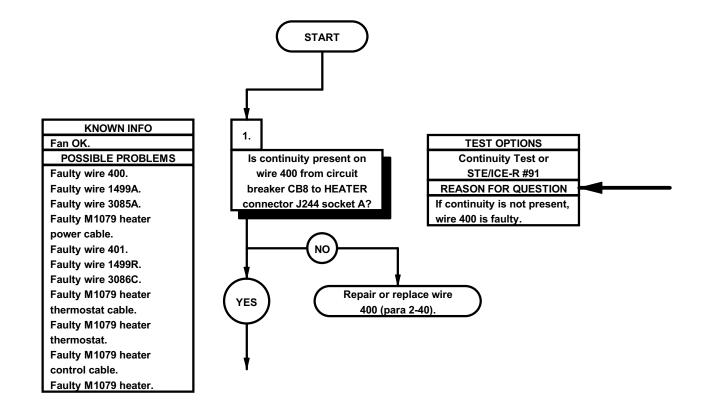
STE/ICE-R (Item 39, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

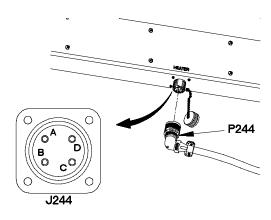
References

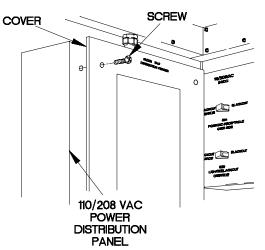
TM 9-4910-571-12&P

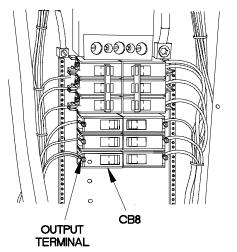
TM 5-4520-253-13



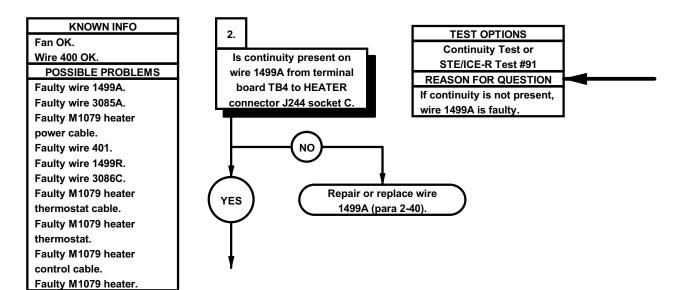
- (1) Disconnect connector P244 from HEATER connector J244.
- (2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to output terminal on circuit breaker CB8.
- (5) Connect negative (-) probe of multimeter 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).



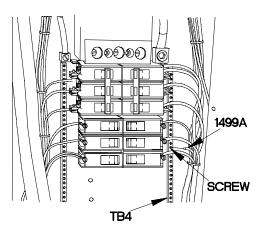


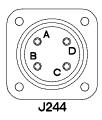


32e11401

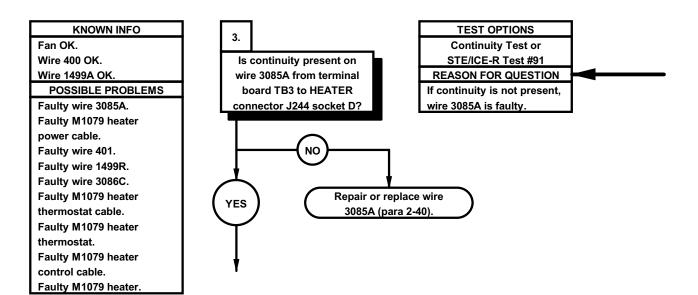


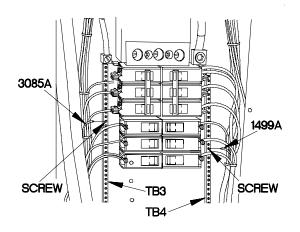
- (1) Loosen screw in terminal board TB4.
- (2) Remove wire 1499A from terminal board TB4.
- (3) Set multimeter to ohms.
- (4) Connect positve (+) probe of multimeter to wire 1499A.
- (5) Connect negative (-) probe of multimeter to HEATER connector J244 socket C and note reading on multimeter.
- (6)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



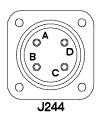


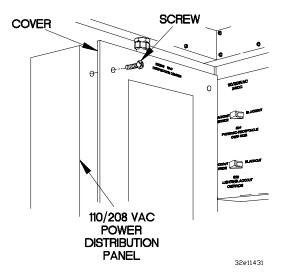
32EL6021

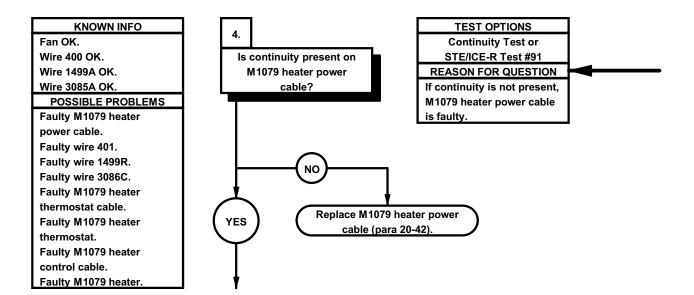




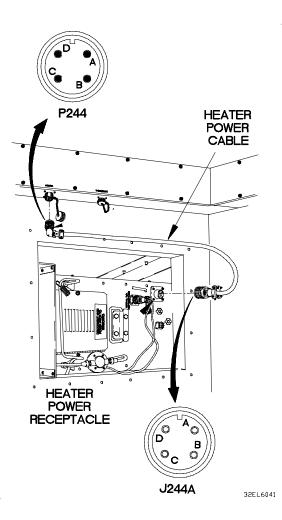
- (1) Loosen screw in terminal board TB3.
- (2) Remove wire 3085A from terminal board TB3.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to wire 3085A.
- (5) Connect negative (-) probe of multimeter to HEATER connector J244 socket D and note reading on multimeter.
- (6) 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.

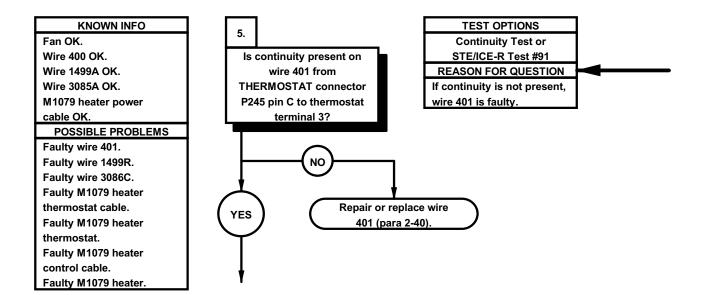


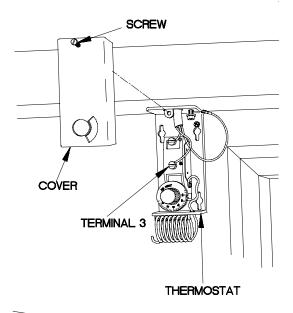




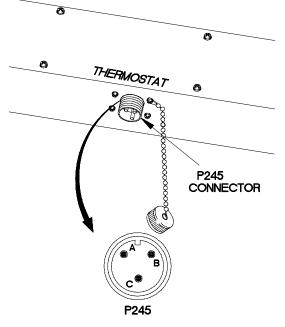
- (1) Remove heater deflector/duct and hood (para 20-50).
- (2) Disconnect connector J244A from heater POWER RECEPTACLE connector.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to connector P244 pin A.
- (5) Connect negative (-) probe of multimeter to connector J244A socket 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.



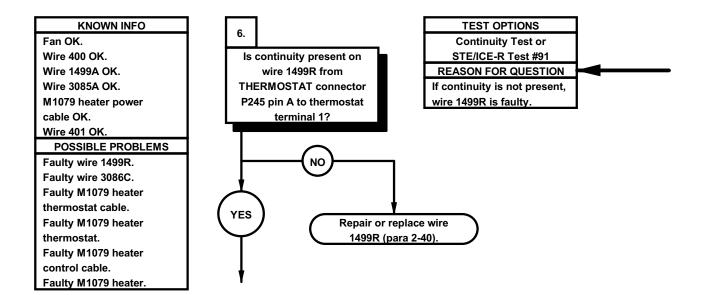


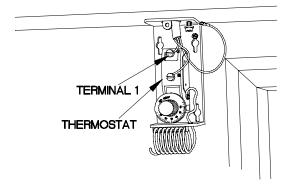


- (1) Loosen screw in thermostat cover.
- (2) Remove thermostat cover from thermostat.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to thermostat terminal 3.
- (5) Connect negative (-) probe of multimeter to THERMOSTAT connector P245 pin C and note reading on multimeter.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

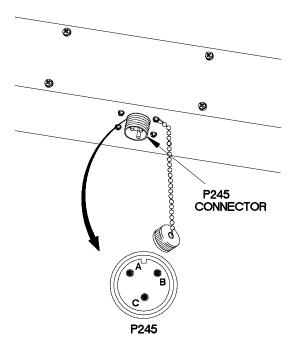


32EL6051

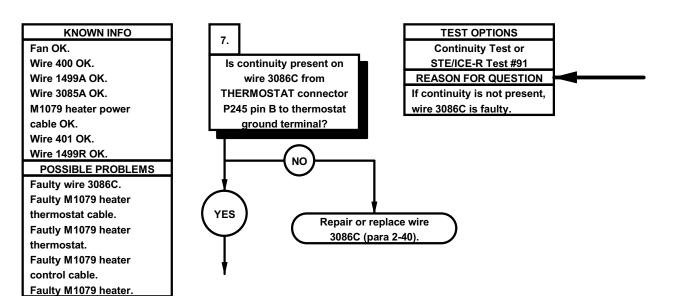


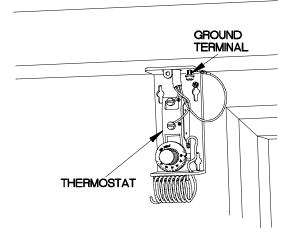


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to thermostat terminal 1.
- (3) Connect negative (-) probe of multimeter to THERMOSTAT connector P245 pin A and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 1499R (para 2-40).

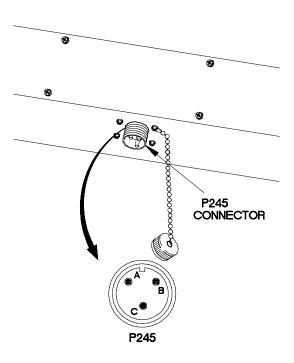


32EL6061

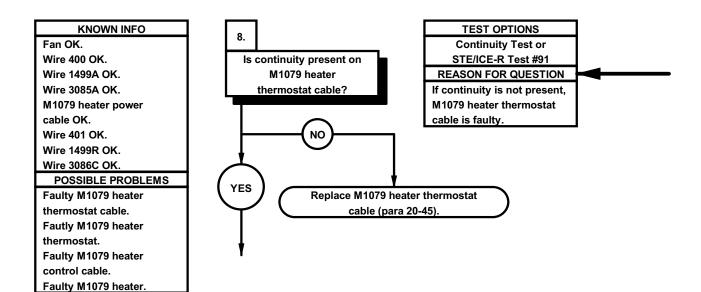




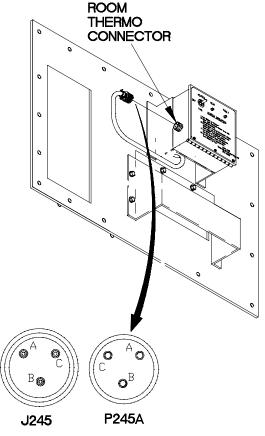
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to thermostat ground terminal.
- (3) Connect negative (-) probe of multimeter to THERMOSTAT connector P245 pin B and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 3086C (para 2-40).



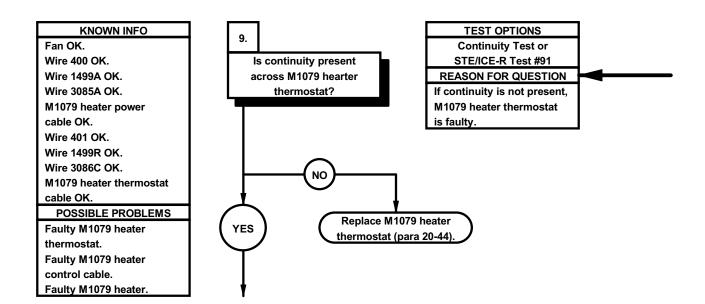
32EL6071



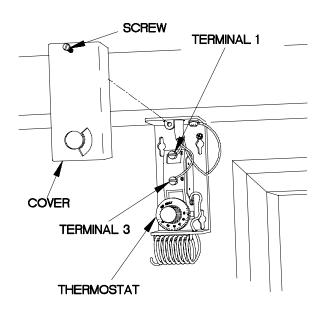
- (1) Disconnect connector P245A from ROOM THERMO connector.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to connector P245A pin A.
- (4) Connect negative (-) probe of multimeter to connector J245 socket A and note reading on multimeter.
- (5) Connect positive (+) probe 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.



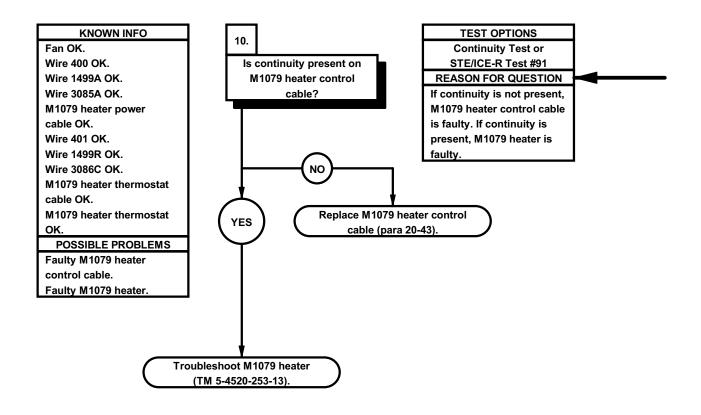
32e11481



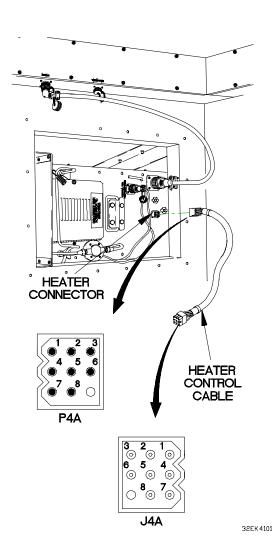
- (1) Set multimeter to ohms.
- (2) Set M1079 heater thermostat to highest setting (TM 9-2320-365-10).
- (3) Connect positive (+) probe of multimeter to thermostat terminal 3.
- (4) Connect negative (-) probe of multimeter to thermostat terminal 1 and note reading on multimeter.
- (5) If continuity is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



32EL6091



- 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).



e117. 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

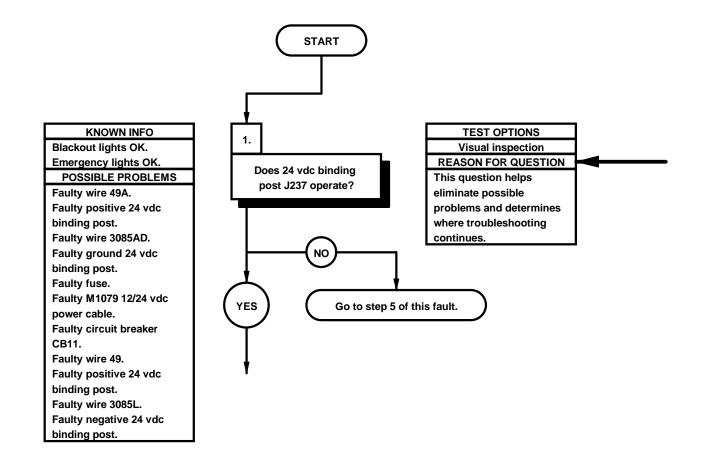
Tool Kit, Genl Mech (Item 44, Appendix C)

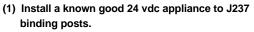
STE/ICE-R (Item 39, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

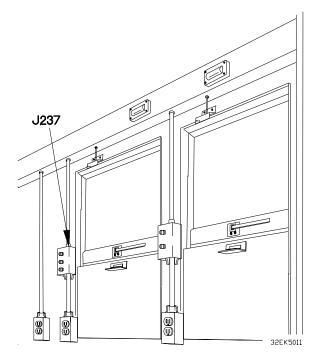
References

TM 9-4910-571-12&P

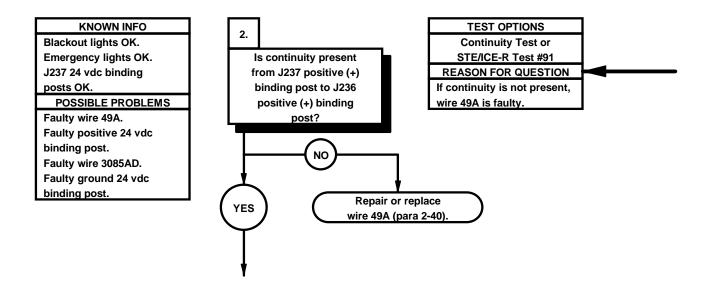




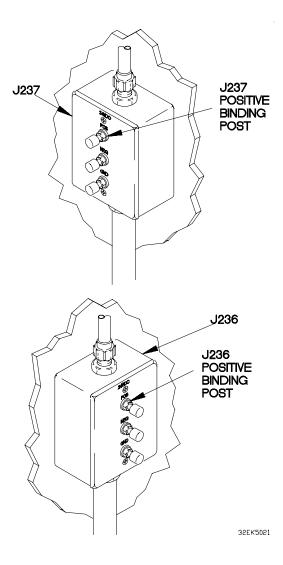
- (2) Operate 24 vdc appliance.
- (3) If 24 vdc appliance does not operate, go to step 5 of this fault.
- (4) Remove 24 vdc appliance from J237 binding posts.



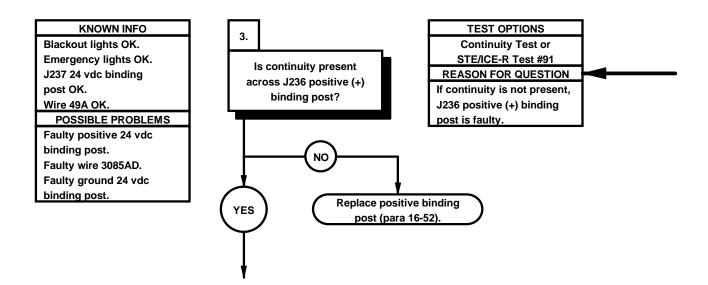
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



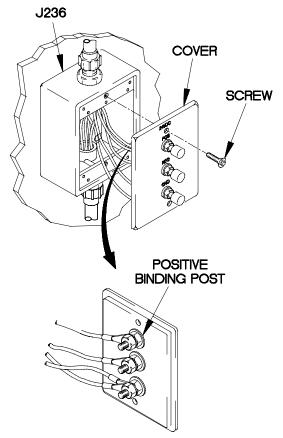
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to J237 positive (+) binding post.
- (3) Connect negative (-) probe of multimeter to J236 positive (+) binding post and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 49A (para 2-40).



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

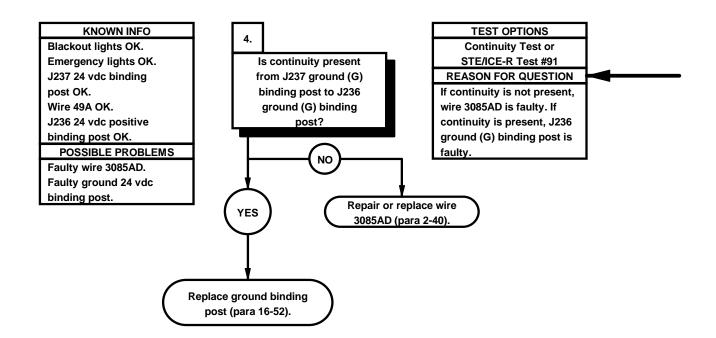


- (1) Disconnect M1079 12/24 vdc power cable from van body (TM 9-2320-365-10).
- (2) Remove two screws and cover from J236 24 vdc outlet box.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to inside of J236 positive (+) binding post.
- (5) Connect negative (-) probe of multimeter 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.

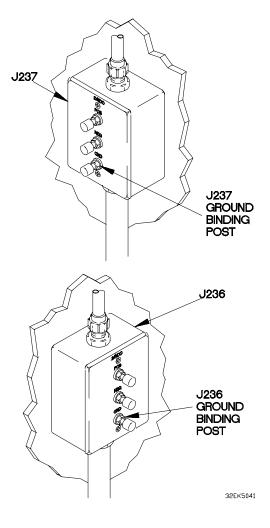


32eK5031

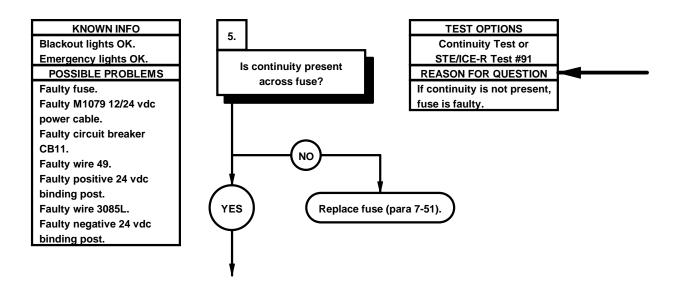
e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)

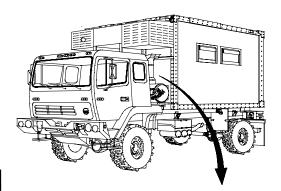


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to J237 ground (G) binding post.
- (3) Connect negative (-) probe of multimeter to J236 ground (G) binding post and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 3085AD (para 2-40).
-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

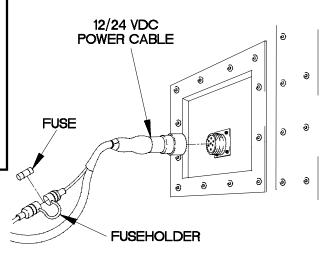


e117. M1079 24 VDC BINDING POST(S) DOES NOT OPERATE (CONT)



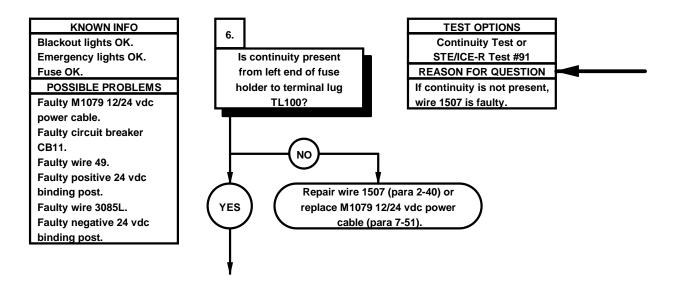


- (1) Disconnect M1079 12/24 vdc power cable from van body (TM 9-2320-365-10).
- (2) Open fuse holder on M1079 12/24 vdc power cable.
- (3) Remove fuse from fuse holder.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one end of fuse.
- (6) Connect negative (-) probe of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

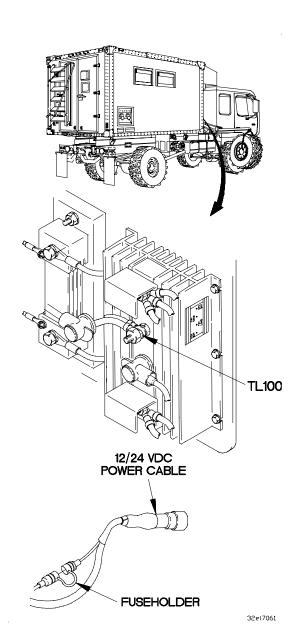


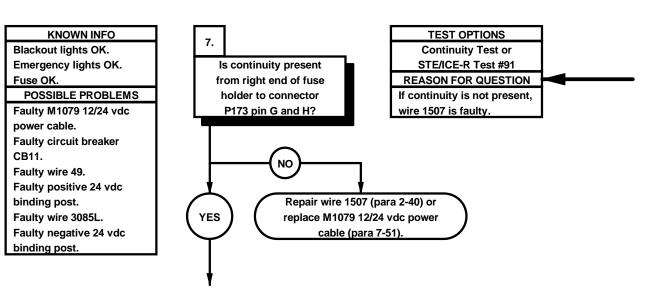
32el7051

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

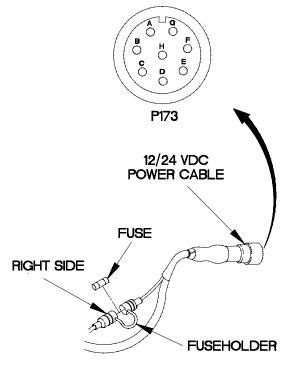


- (1) Lower spare tire (TM 9-2320-365-10).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to left end of fuse holder.
- (4) Connect negative (-) probe of multimeter to terminal lug TL100 and note reading on multimeter.
- (5) If continuity is not present, repair wire 1507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

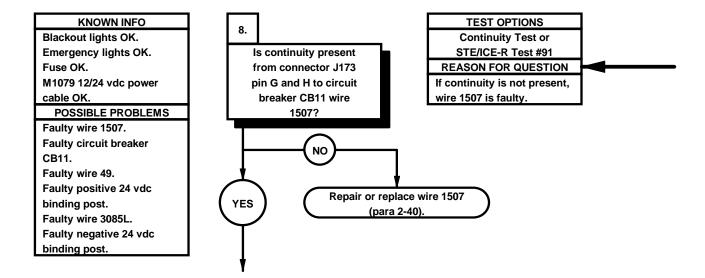


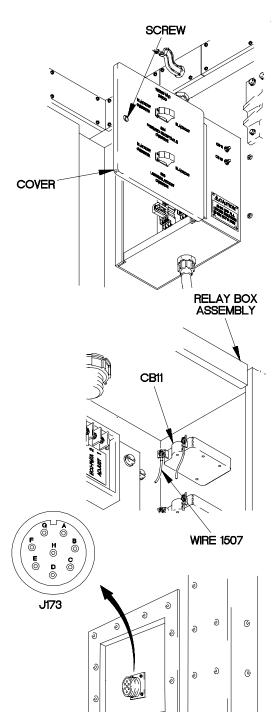


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to right end of fuse holder.
- (3) Connect negative (-) probe of multimeter to connector P173-G and note reading on multimeter.
- (4) Connect negative (-) probe of multimeter to connector P173-H and note reading on multimeter.
- (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.



32el7071



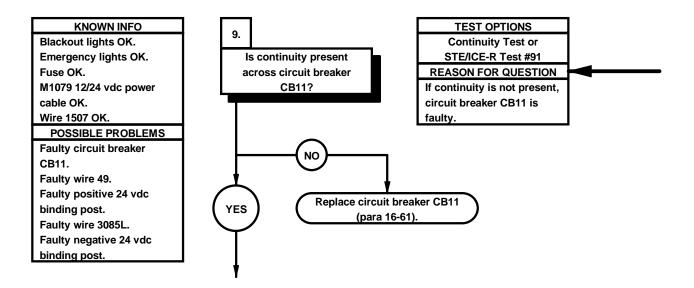


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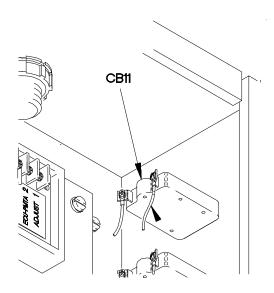
CONTINUITY TEST

- (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).

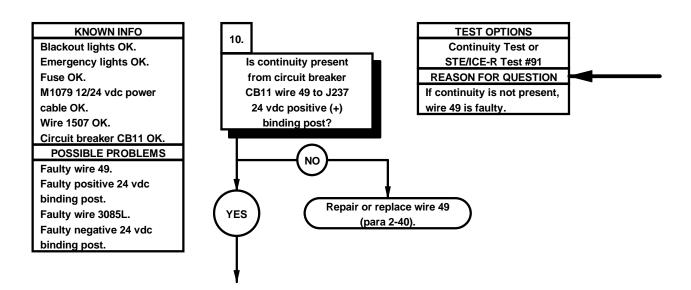
32EK5081

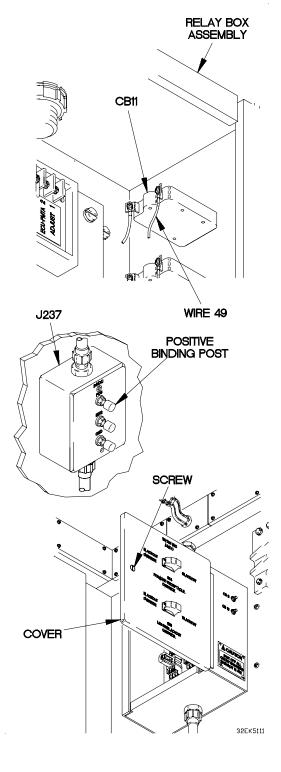


- (1) Push in circuit breaker CB11.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one end of circuit breaker CB11.
- (4) Connect negative (-) probe of multimeter to other end of circuit breaker CB11 and note reading on multimeter.
- (5) If continuity is not present,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

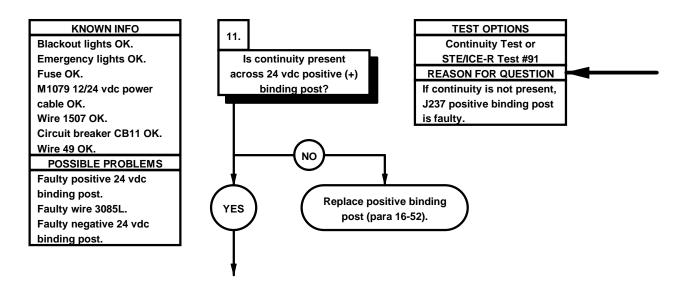


32EK5091

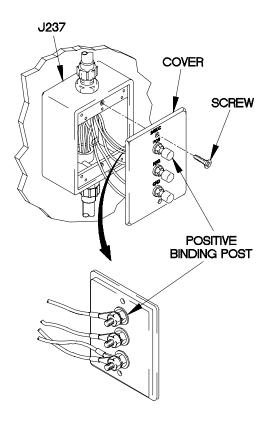




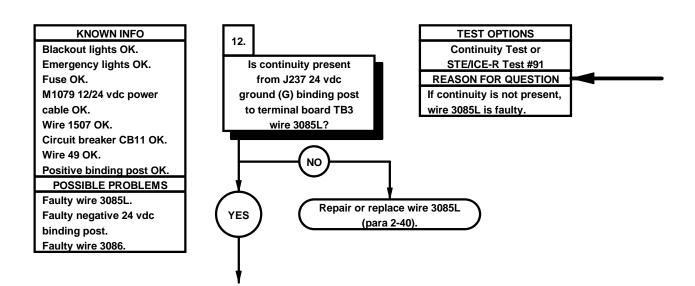
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to circuit breaker CB11 wire 49.
- (3) Connect negative (-) probe of multimeter to J237 24 vdc positive (+) binding post and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 49 (para 2-40).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

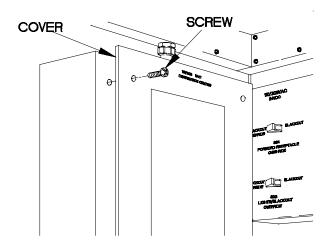


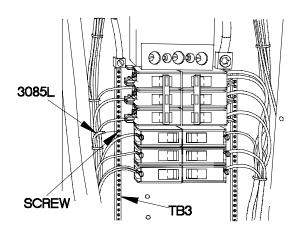
- (1) Remove two screws and cover from J237 24 vdc outlet box.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one side of J237 positive (+) binding post.
- (4) Connect negative (-) probe of multimeter to other side of J237 positive (+) binding post and note reading on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



32EK5121



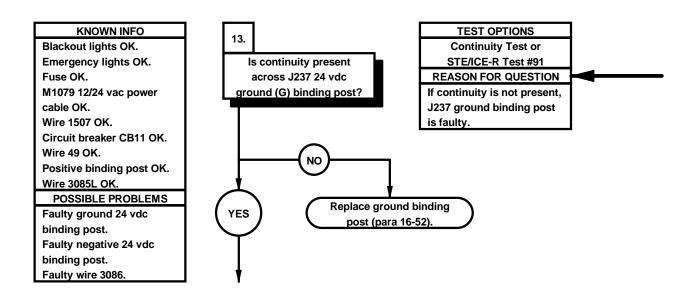




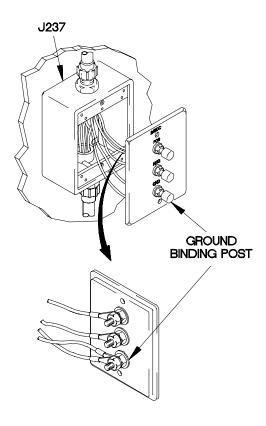
COVER GROUND BINDING POST 32et7121

CONTINUITY TEST

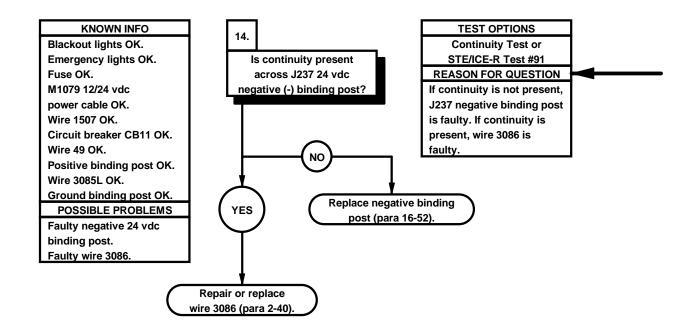
- (1) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (2) Loosen screw in terminal board TB3.
- (3) Remove wire 3085L from terminal board TB3.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to J237 24 vdc ground (G) binding post.
- (6) Connect negative (-) 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.



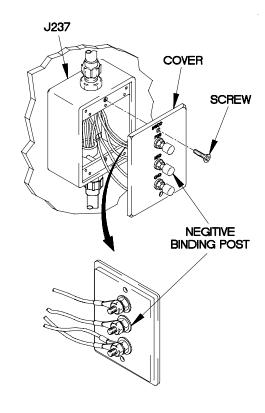
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to inside of J237 ground (G) binding post.
- (3) Connect negative (-) probe of multimeter to front side of J237 ground (G) binding post and note reading on multimeter.
- (4) If continuity is not present, replace J237 24 vdc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

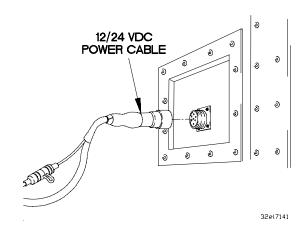


32EK5141



- (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).





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)

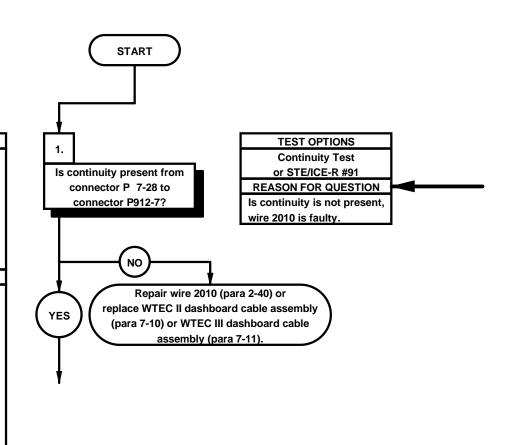
STE/ICE-R (Item 39, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)

References

TM 9-4910-571-12&P



KNOWN INFO

Other indicator lights illuminate.

Audible alarm sounds when FRONT BRAKE AIR or REAR BRAKE AIR pressure gage reads less than 65 psi.

Circuit breaker CB50 OK.

POSSIBLE PROBLEMS

Faulty dashboard cable assembly.

Faulty lighted indicator display.

Faulty auxiliary panel cable assembly.

Faulty M1079 12/24 vdc power cable.

Faulty door ajar switch.

Faulty wire 2006.

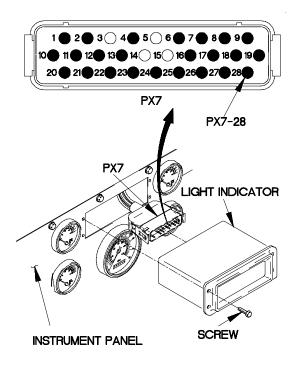
Faulty wire 1506.

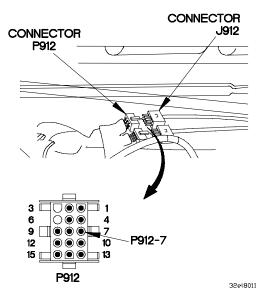
Faulty wire 3086.

Faulty wire 2010.

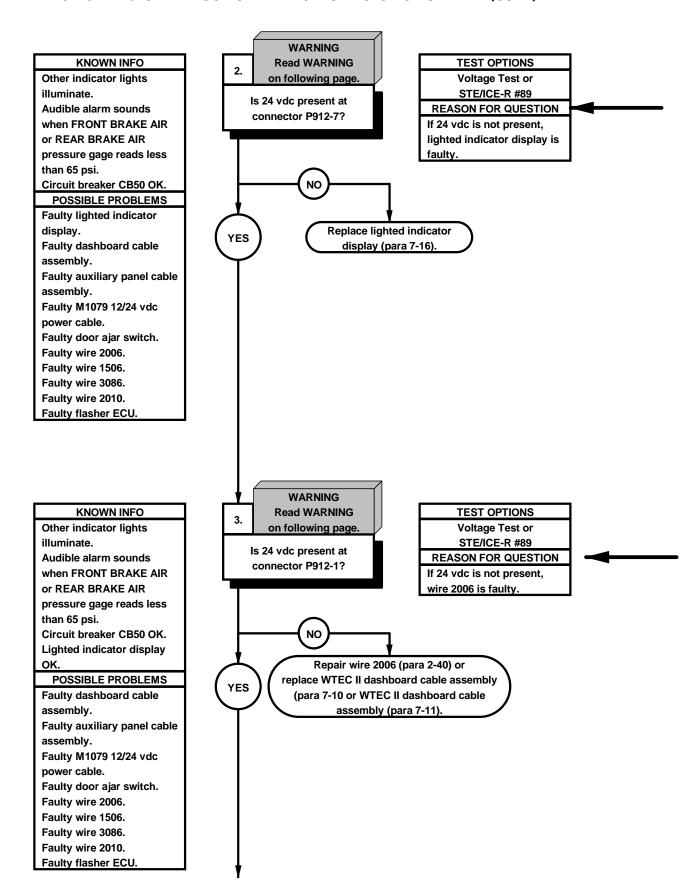
Faulty flasher ECU.

- (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 P 7 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 P 7-28.
- (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 P 7 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)



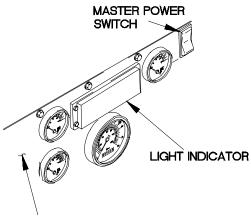
WARNING

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).



INSTRUMENT PANEL

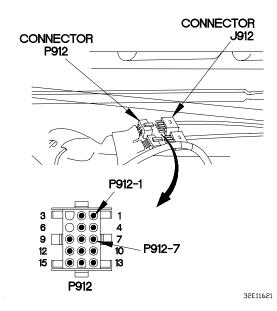
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

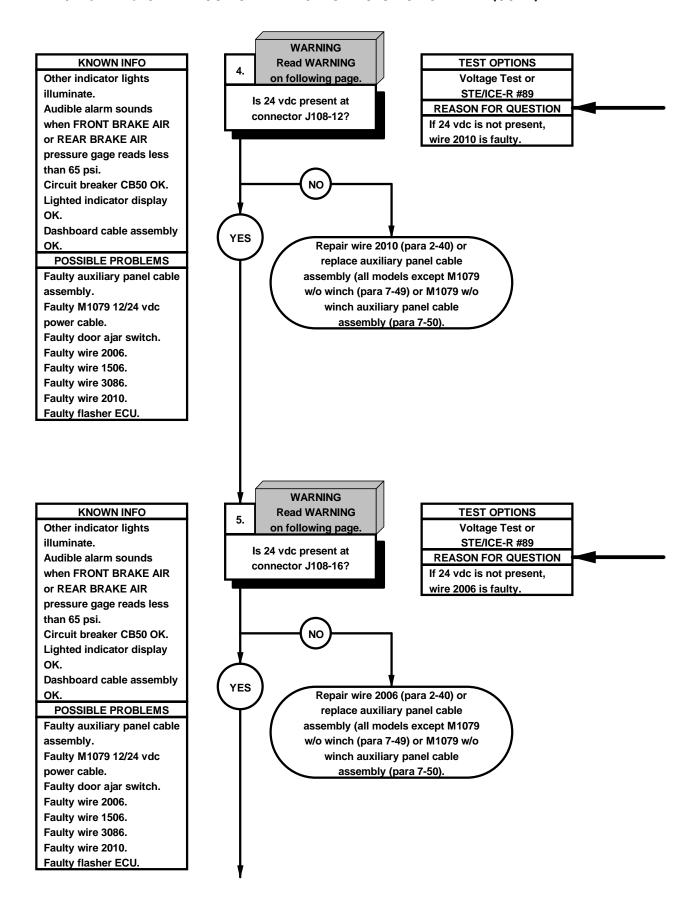
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

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).

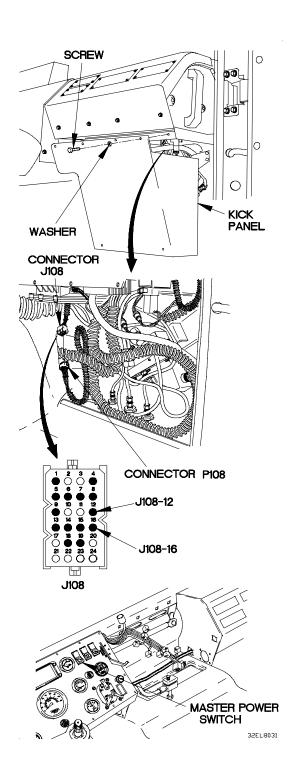
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

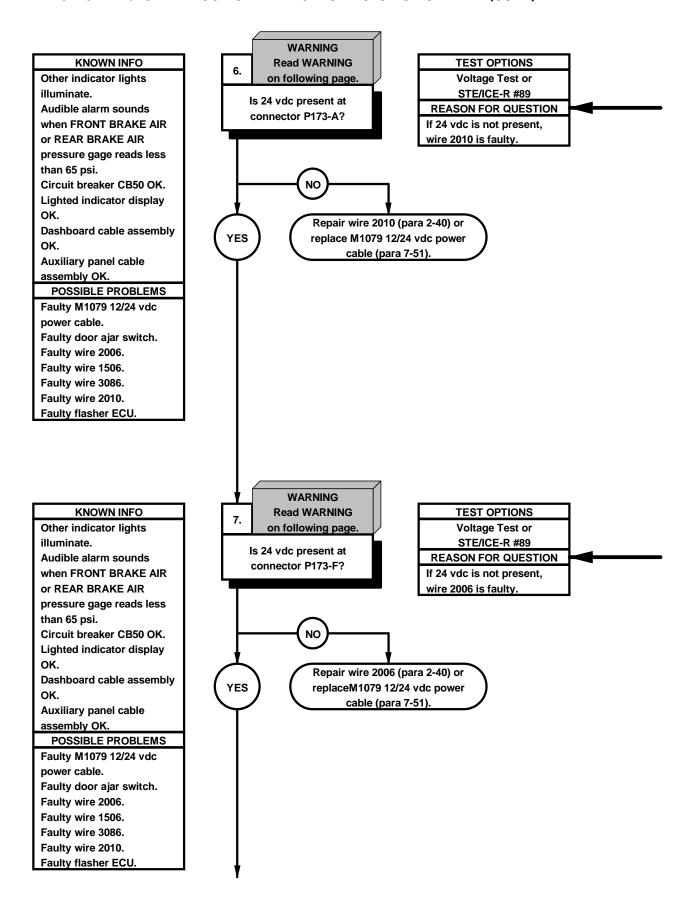
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

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).

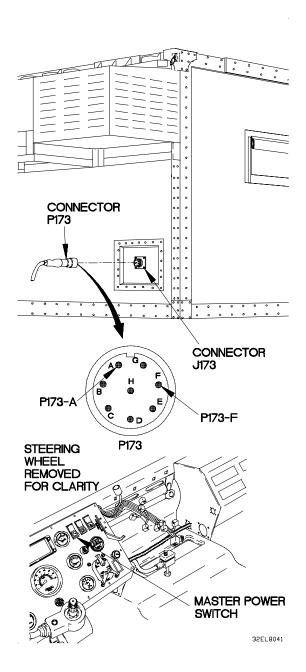
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

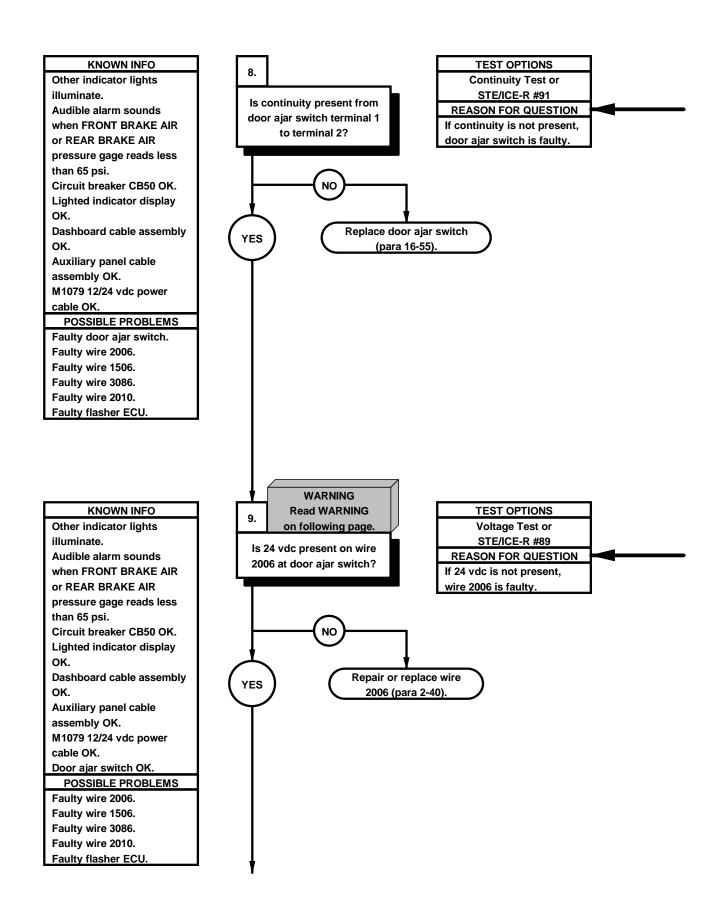
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

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)



- 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).

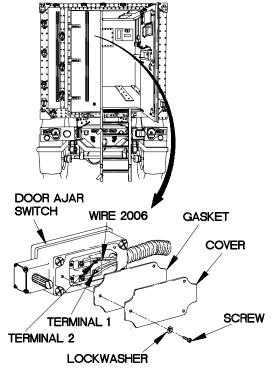
WARNING

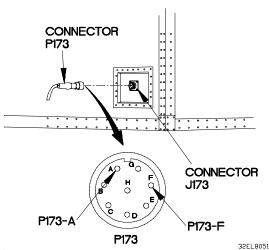
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

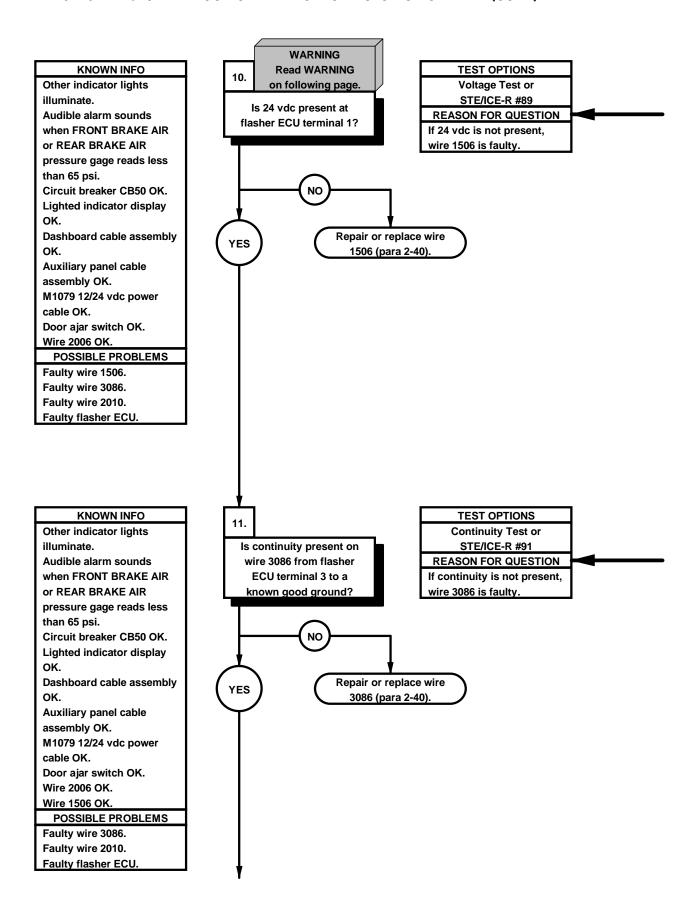
VOLTAGE TEST

- (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.

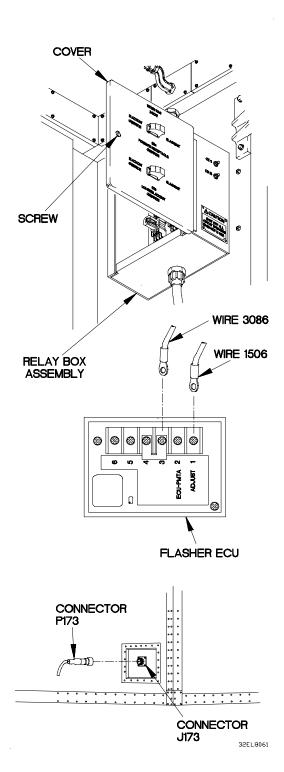
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

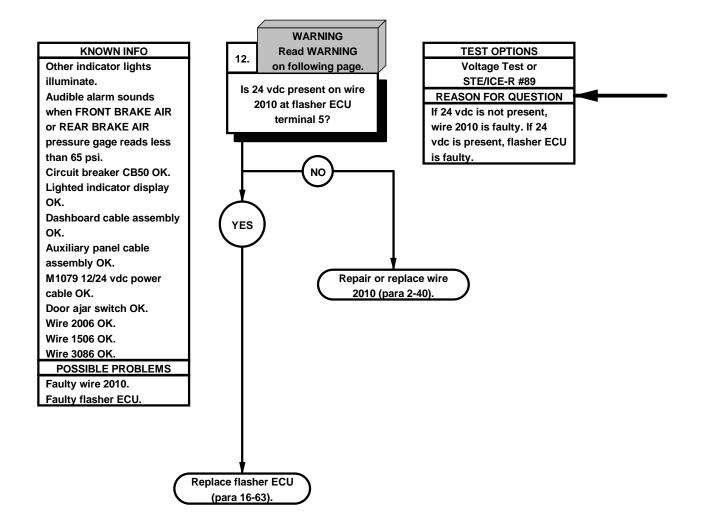
- (1) Loosen screw in cover.
- (2) Open cover on relay box assembly.
- (3) Set multimeter to volts dc.
- (4) Connect positive (+) probe of multimeter to flasher ECU terminal 1.
- (5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (6) If 24 vdc is not present, repair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

VOLTAGE TEST

- (1) Disconnect connector P173 from connector
- (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)



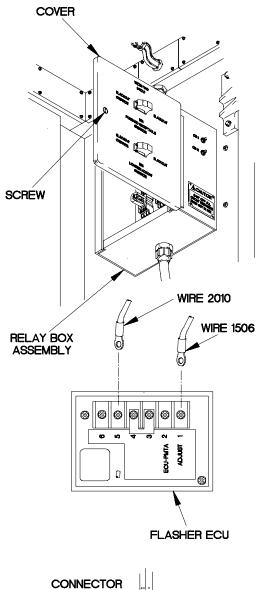
WARNING

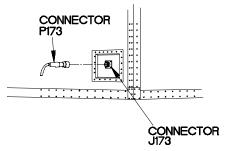
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

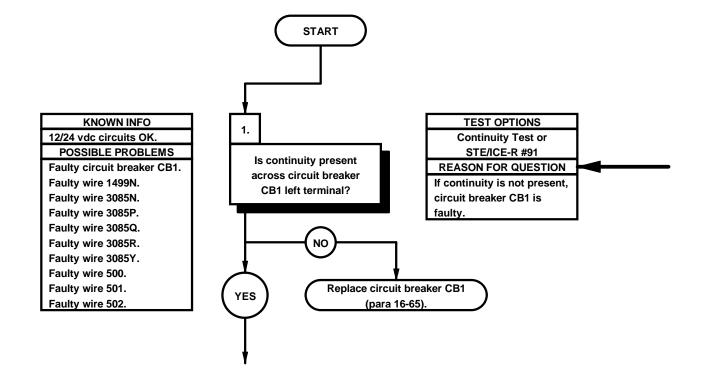
- (1) Loosen screw 1 in flasher ECU.
- (2) Remove wire 1506 from flasher ECU terminal 1.
- (3) Loosen screw 5 in flasher ECU.
- (4) Remove wire 2010 from flasher ECU terminal 5.
- (5) Connect connector P173 to connector J173.
- (6) Position master power switch to on (TM 9-2320-365-10).
- (7) Set multimeter 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).

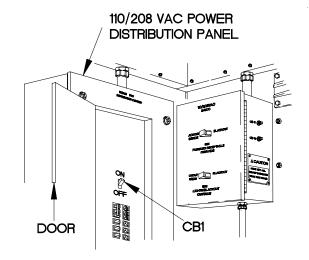




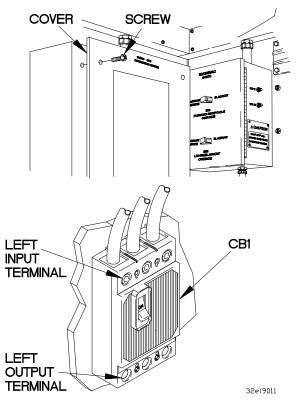
32EL8071

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). Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C) Materials/Parts Wire, Electrical, 50 ft (Item 77, Appendix C) Personnel Required (2)

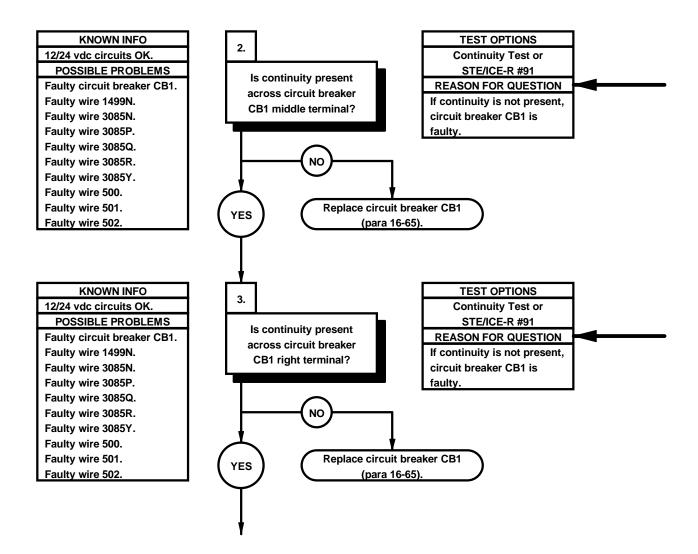




- (1) Position circuit breaker CB1 to OFF.
- (2) Remove six screws and cover from 110/208 VAC POWER DISTRIBUTION PANEL.
- (3) Position circuit breaker CB1 to ON.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to left output terminal of circuit breaker CB1.
- (6) Connect 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).



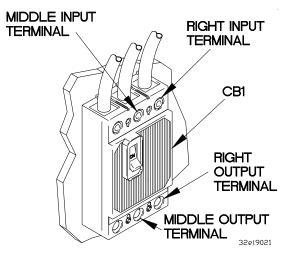
e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



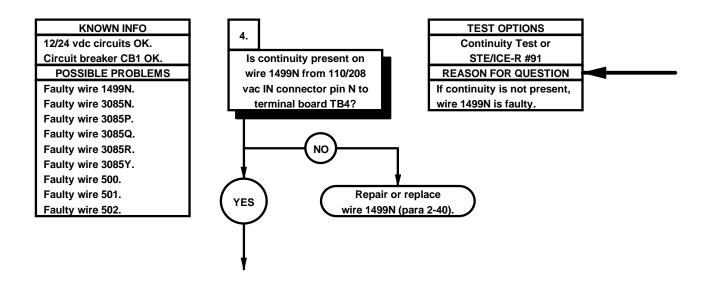
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to middle output terminal of circuit breaker CB1.
- (3) Connect negative (-) probe of multimeter to middle input terminal of circuit breaker CB1 and note reading on multimeter.
- (4) If continuity is not present, replace circuit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



- (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).

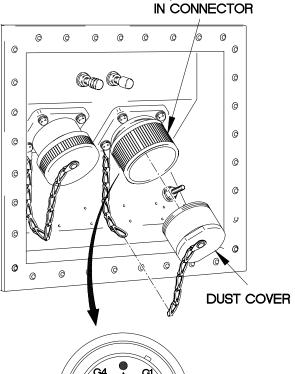


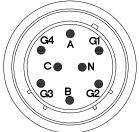
e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



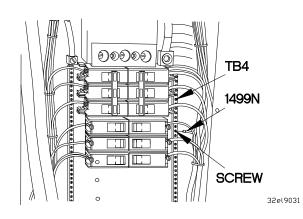
110/208 VAC POWER

- (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.

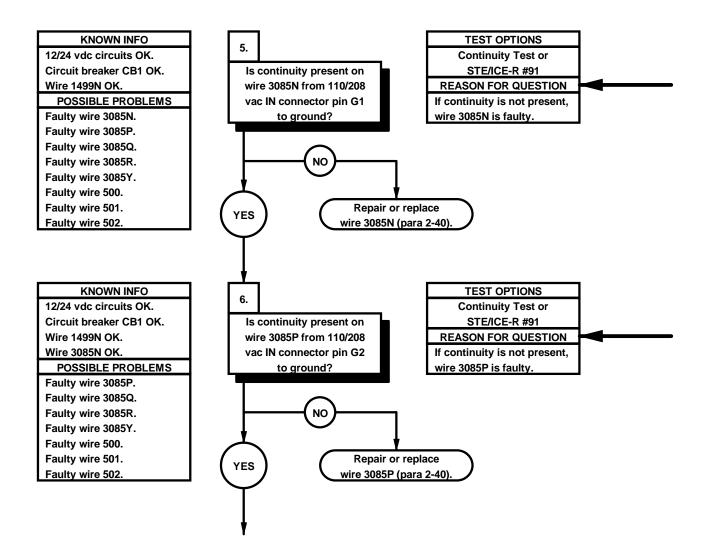




110/208 VAC IN



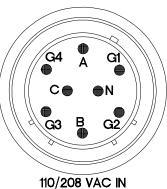
e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



- (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).

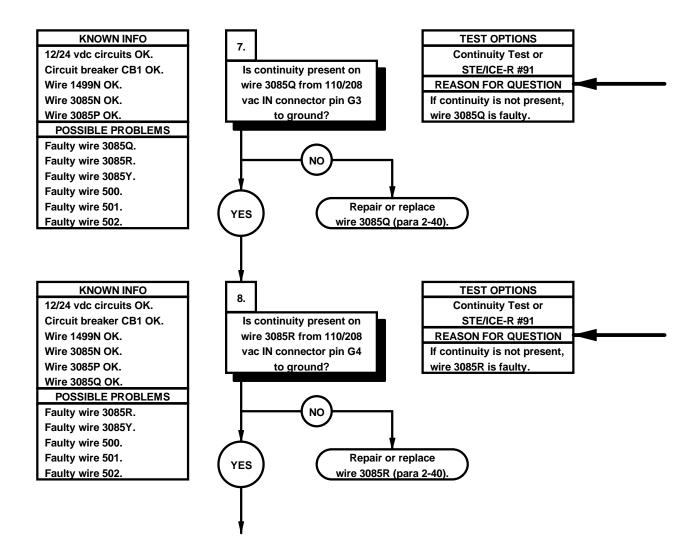
CONTINUITY TEST

- (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).



32E11704

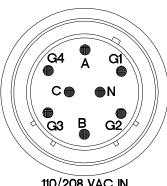
e119. M1079 110 VAC POWER DOES NOT OPERATE (CONT)



- (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

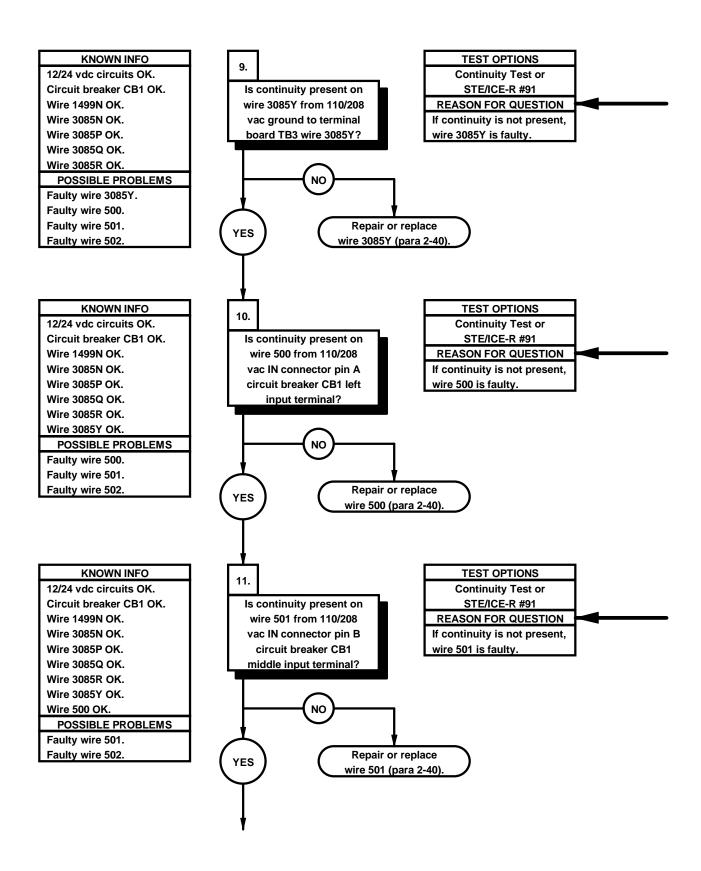
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin G4.
- (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 3085R (para 2-40).



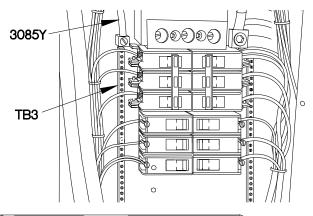
110/208 VAC IN

32E11705

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

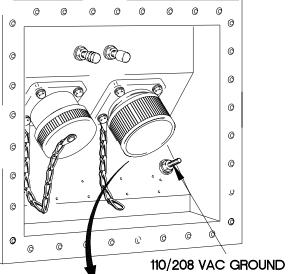


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to 110/208 vac ground.
- (3) Connect negative (-) probe of multimeter to terminal board TB3 wire 3085Y and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 3085Y (para 2-40).



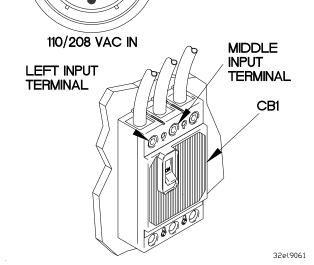
CONTINUITY TEST

- (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).

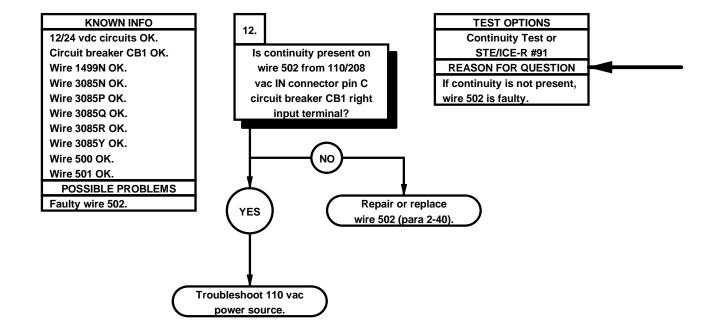


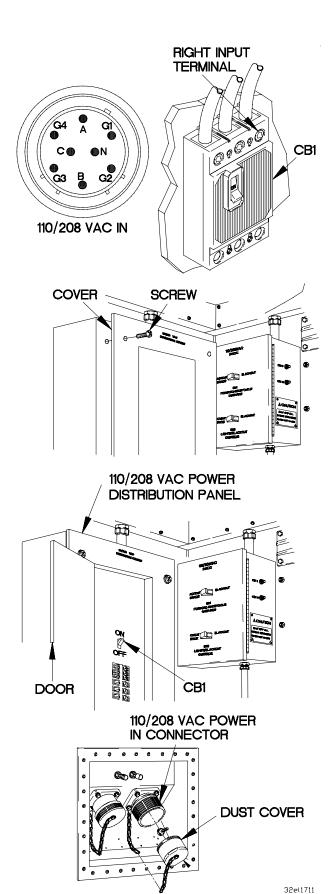
Gì

- (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).



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





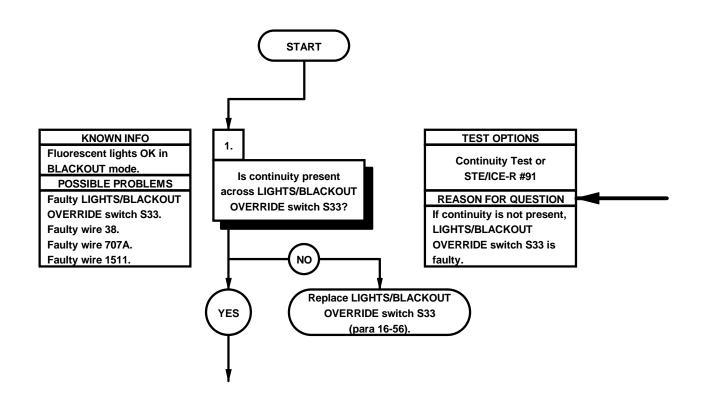
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to 110/208 vac IN connector pin C.
- (3) Connect negative (-) probe of multimeter to circuit breaker CB1 right input terminal and note reading on multimeter.
- (4) If continuity is not present, repair or replace wire 502 (para 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.

(2)

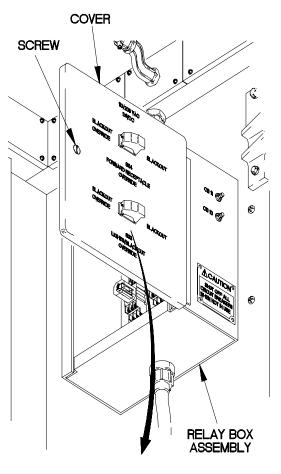
e120. M1079 FLUORESCENT LIGHTS DO NOT OPERATE IN BLACKOUT OVERRIDE MODE INITIAL SETUP Equipment Condition Engine shut down (TM 9-2320-365-10). AC power disconnected (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Multimeter, Digital (Item 22, Appendix C) Personnel Required

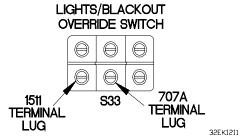
References

TM 9-4910-571-12&P

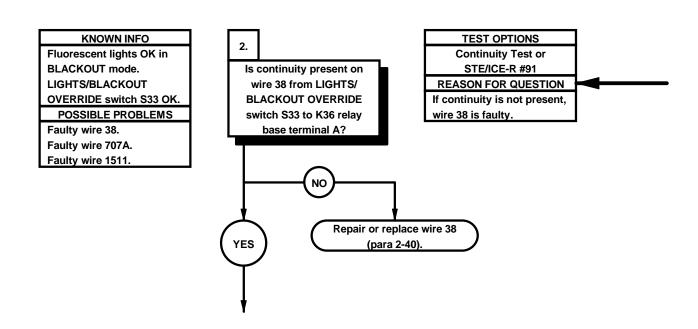


- (1) Pull out circuit breaker CB10 (TM 9-2320-365-10).
- (2) Loosen screw in cover.
- (3) Open cover on relay box assembly.
- (4) Set multimeter to ohms.
- (5) Position LIGHTS/BLACKOUT OVERRIDE switch S33 to BLACKOUT OVERRIDE (TM 9-2320-365-10).
- (6) Connect positive (+) probe of multimeter to wire 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).

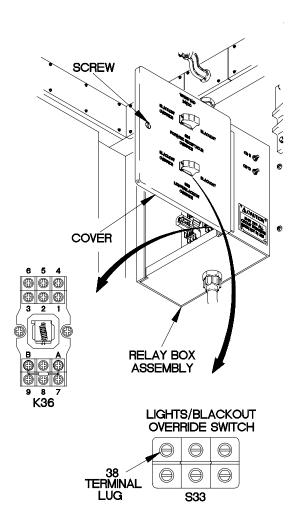




e120. M1079 FLUORESCENT LIGHTS DO NOT OPERATE IN BLACKOUT OVERRIDE MODE (CONT)

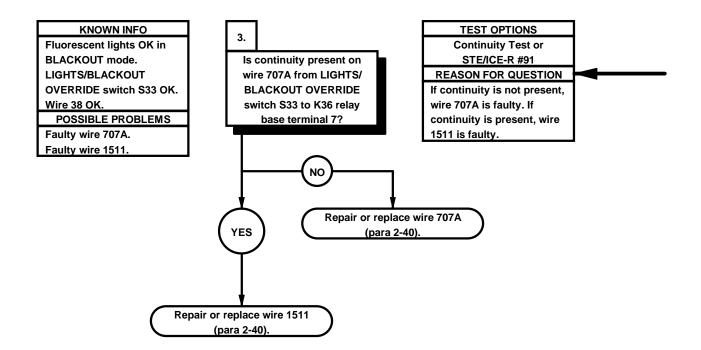


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to wire 38 terminal lug on LIGHTS/BLACKOUT OVERRIDE switch S33.
- (3) Connect negative (-) probe of multimeter to K36 relay base terminal A and note reading on multimeter.
- (4) If continuity is not present, repair or replace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

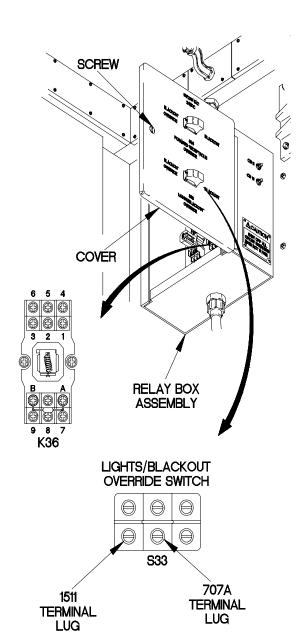


32EK1221

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



- (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 2-16, lists faults for the transmission system of the vehicle.

Table 2-16. 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 . W	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	
	Main Code 22 Sub Code 14 WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	2-1364
f3.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	0.4070
f4.	Main Code 22 Sub Code 15 WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays Main Code 22 Sub Code 16	2-1372
	Main Code 22 Sub Code 16	2-1378
f5.	Main Code 22 Sub Code 16 WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	Z-1070
	Main Code 24 and/or 33 and Any Sub Code	2-1384
f6. W	Main Code 24 and/or 33 and Any Sub Code WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	
	Main Code 32 and Any Sub Code	2-1396
f7.	Main Code 32 and Any Sub Code WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	
	Main Code 41, 42, 44, 45, 66, and/or 69 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.	WIEC II Transmission ECO Pushbutton Shirt Selector (TEP33) Displays	
640	Main Code 52 and Any Sub Code	2-1410
f10.	WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	0.1416
f11.	Main Code 57 and Any Sub Code Transmission Universally Noisy Whon Operating	2-1410 2 1420
f12.	Transmission Unusually Noisy When Operating WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	2-1420
112.	Main Code 21 and Any Sub Code	2-1430
f13.	Main Code 21 and Any Sub Code WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	2 1100
	Main Code 51 Sub Code 10, 12, 21, 43, 45, or 65	2-1444
f14.	Main Code 51 Sub Code 10, 12, 21, 43, 45, or 65 WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	
	Main Code 25 and Any Sub Code WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	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,	
647	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	0.4400
f4.0	Main Code 55 and Any Sub Code WTEC II Transmission ECU Pushbutton Shift Selector (TEPSS) Displays	2-1462
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2-17. TRANSMISSION SYSTEM TROUBLESHOOTING (CONT)

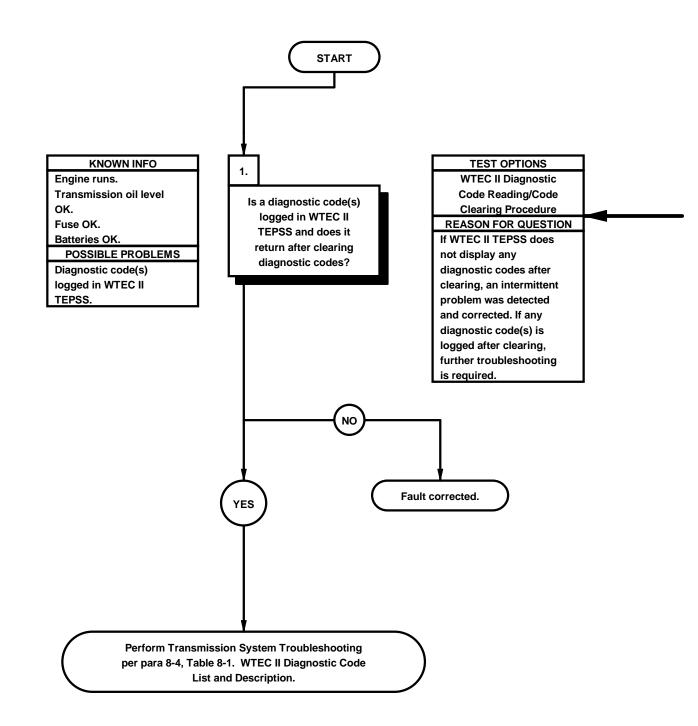
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f1. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) EMITS EIGHT SECONDS OF BEEPS AND/OR TRANSMISSION DOES NOT SHIFT GEARS

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

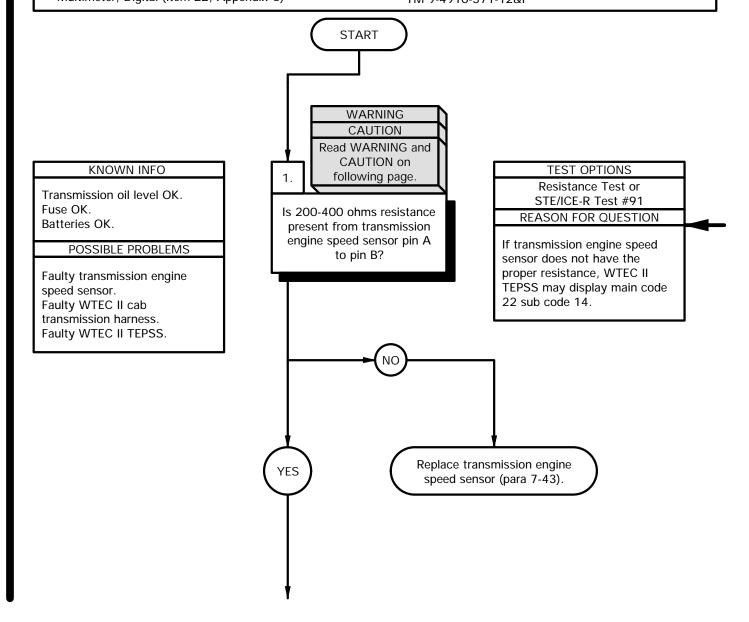
INITIAL SETUP

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

Tools and Special Tools Goggles, Industrial (Item 15, Appendix C) Tool Kit, Genl Mech (Item 44, Appendix C) Multimeter, Digital (Item 22, Appendix C) Tools and Special Tools (Cont)

Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C) Wrench Set, Socket (Item 49, Appendix C) STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P



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.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

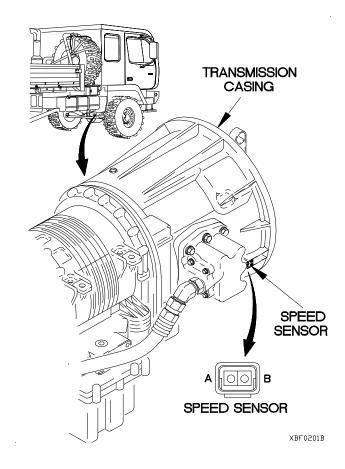
RESISTANCE TEST

- 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.

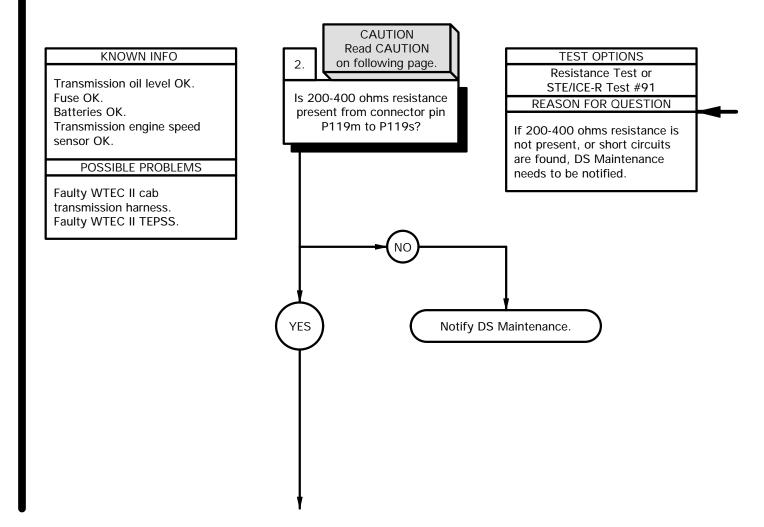
NOTE

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.



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



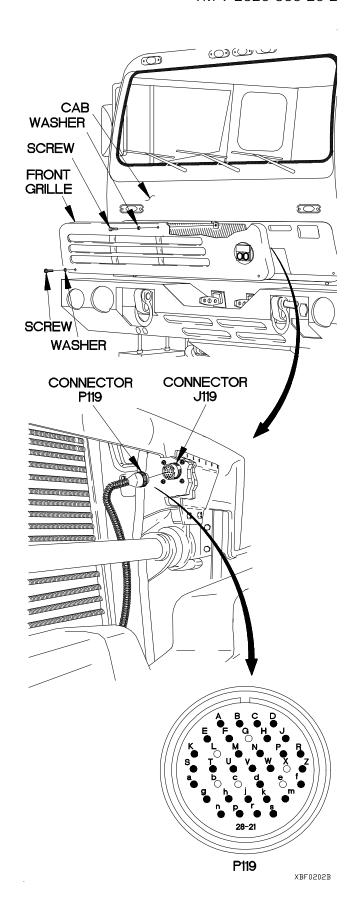
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

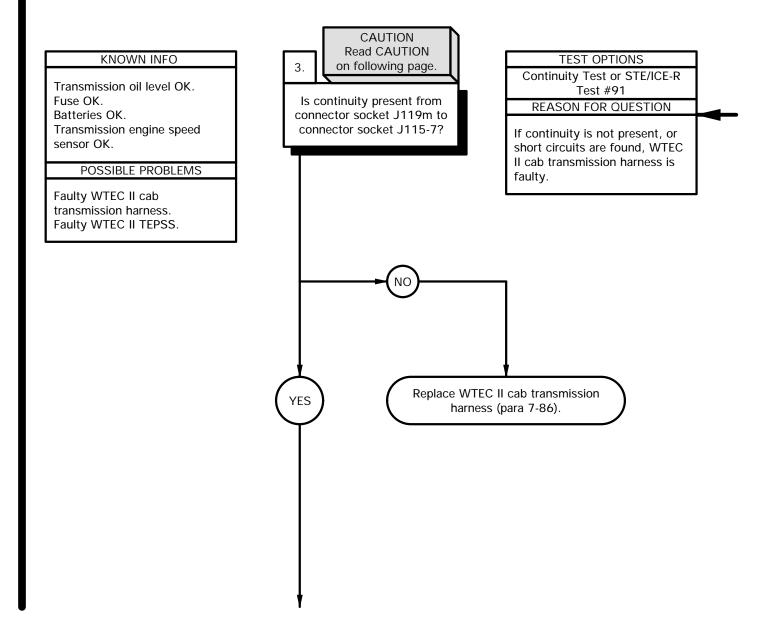
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (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 P119 pin m.
- (7) Connect negative (-) probe of multimeter to connector P119 pin s 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 200-400 ohms resistance is not present in step 7, or continuity is present in step 8 or step 9, notify DS Maintenance.



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



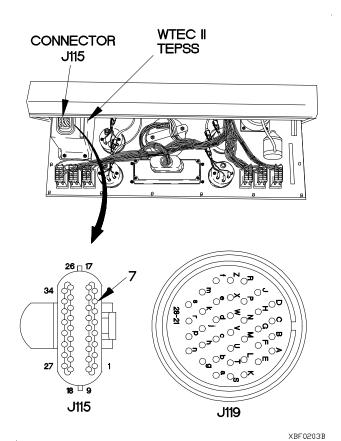
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

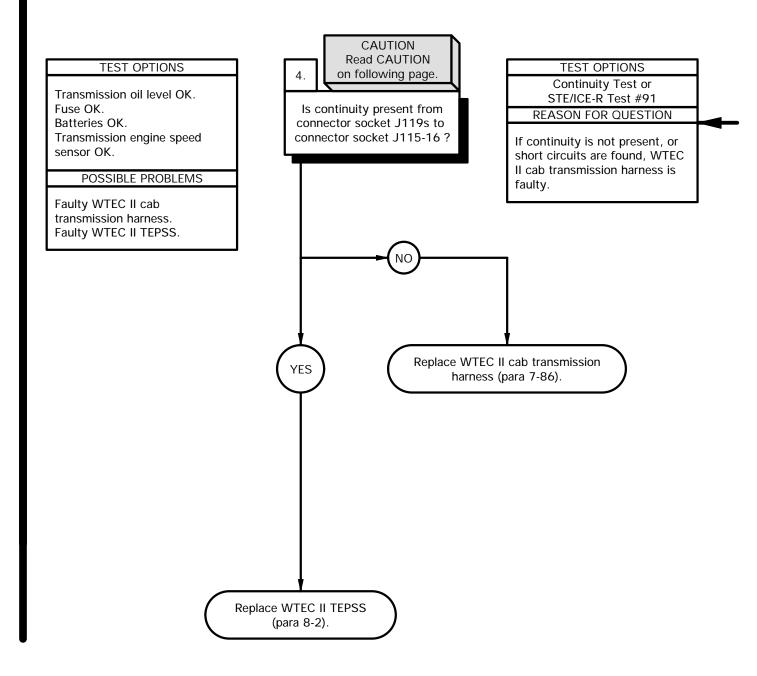
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (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 socket J115-7.
- (5) Connect negative (-) probe of multimeter to connector socket J119m and note reading on multimeter.
- (6) Connect negative (-) probe of multimeter to all other sockets in connector J119 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)



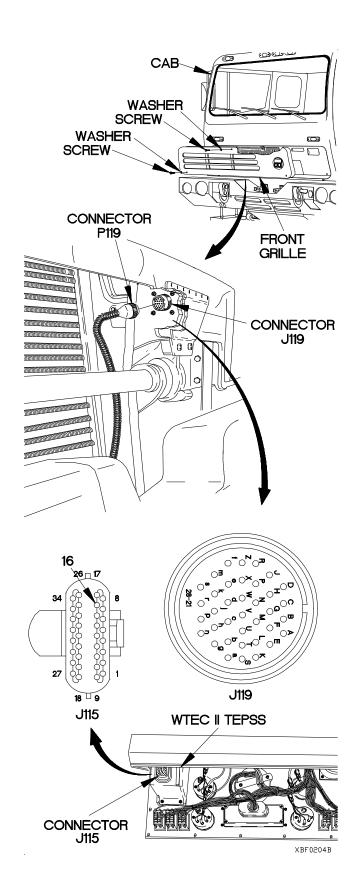
CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Set multimeter to ohms position.
- (2) Connect positive (+) probe of multimeter to connector socket J115-16.
- (3) Connect negative (-) probe of multimeter to connector socket J119s 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).

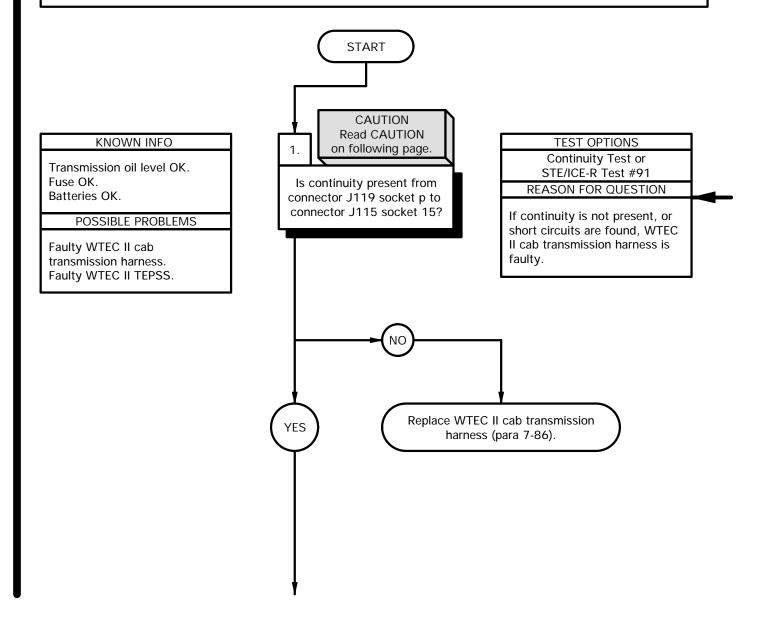
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Tools and Special Tools (Cont)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49 Appendix C)

STE/ICE-R (Item 39, Appendix C)

References

TM 9-4910-571-12&P



CAUTION

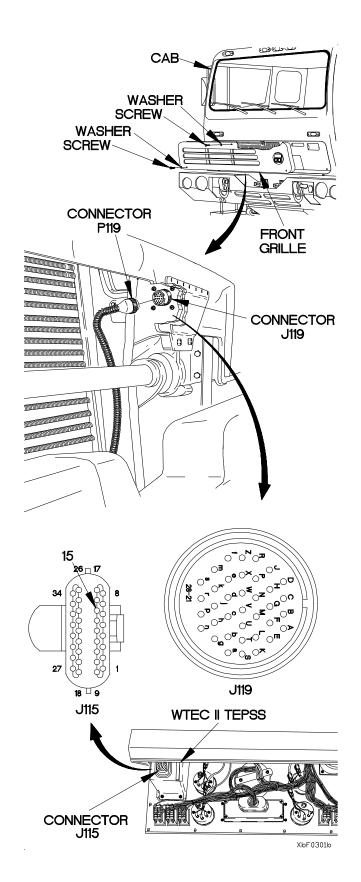
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

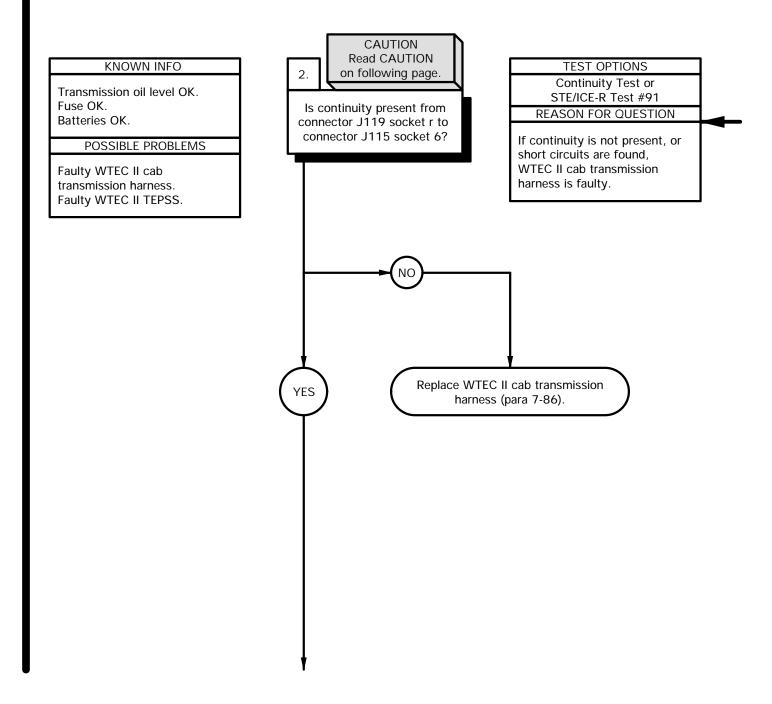
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (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)



CAUTION

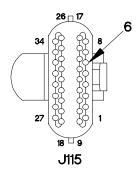
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

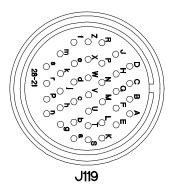
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

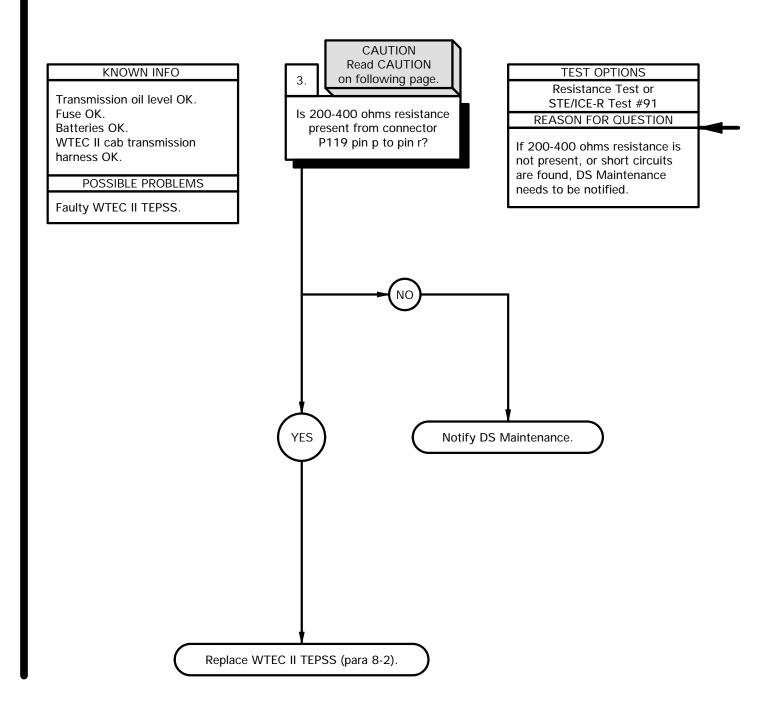
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector J115 socket 6.
- (3) Connect negative (-) probe of multimeter to connector J119 socket r and note reading on multimeter.
- (4) Connect negative (-) probe of multimeter to all other sockets in connector J119 and 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).





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



CAUTION

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

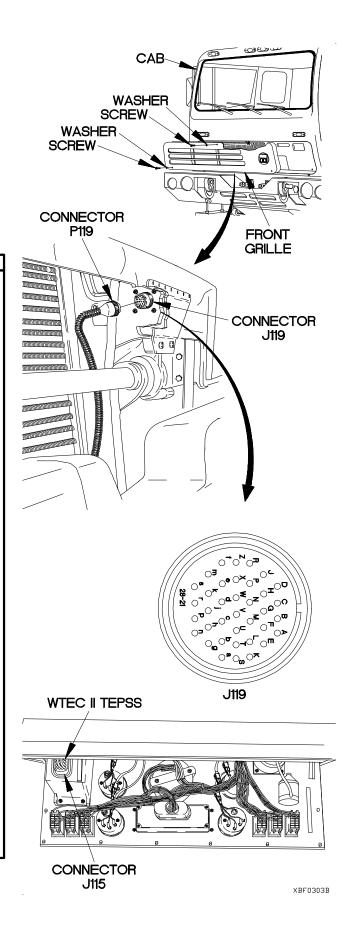
RESISTANCE TEST

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector P119 pin p.
- (3) Connect negative (-) probe of multimeter to connector P119 pin r 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 and note reading on multimeter.
- (5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (6) If 200-400 ohms resistance is not present in step 4, or continuity is present in step 5 or step 6, notify DS Maintenance.
- (7) If 200-400 ohms resistance is present 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).



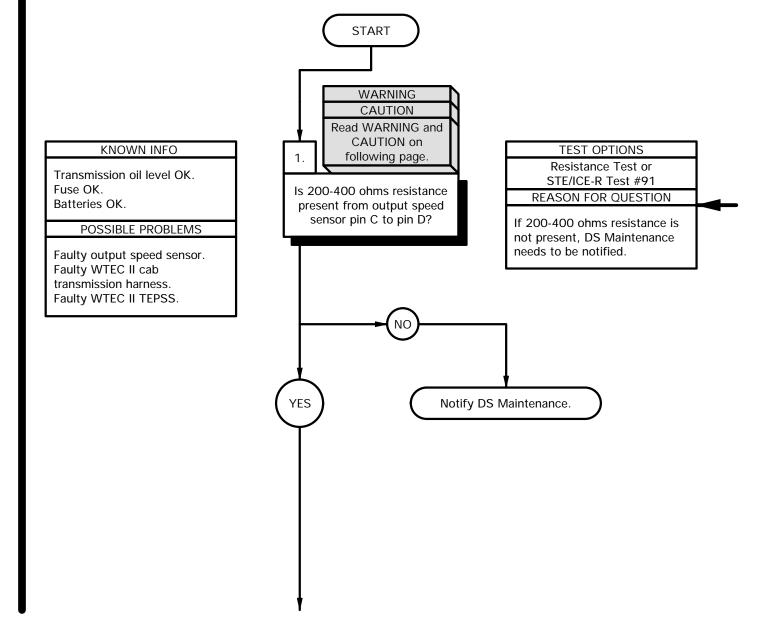
f4. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 22 SUB CODE 16

INITIAL SETUP

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

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

References TM 9-4910-571-12&P



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.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

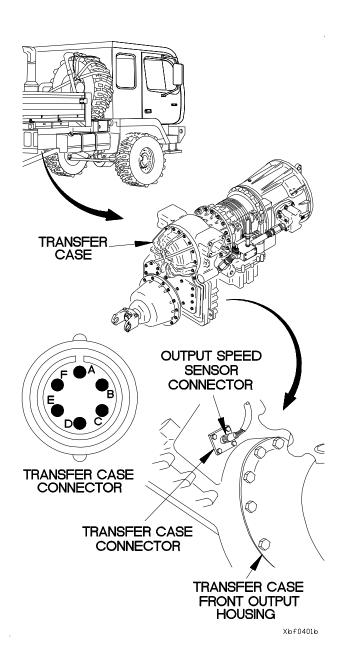
RESISTANCE TEST

- 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.

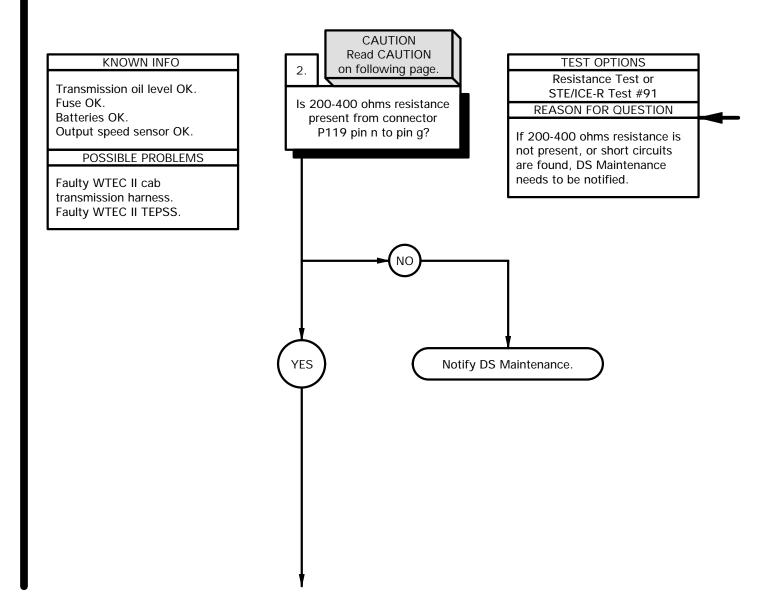
NOTE

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 200-400 ohms resistance is not present, 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)

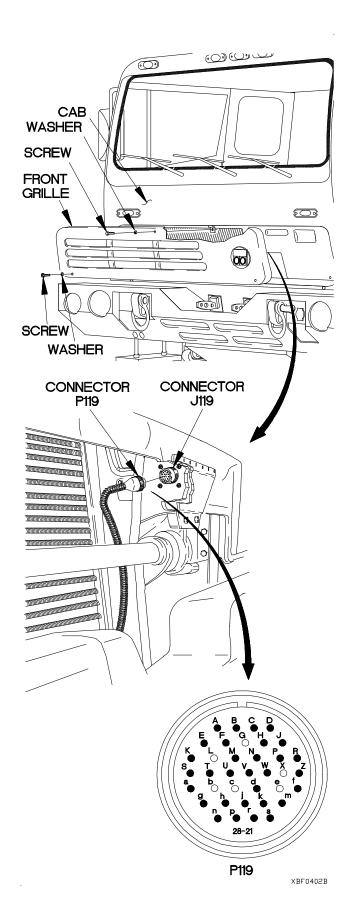


Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

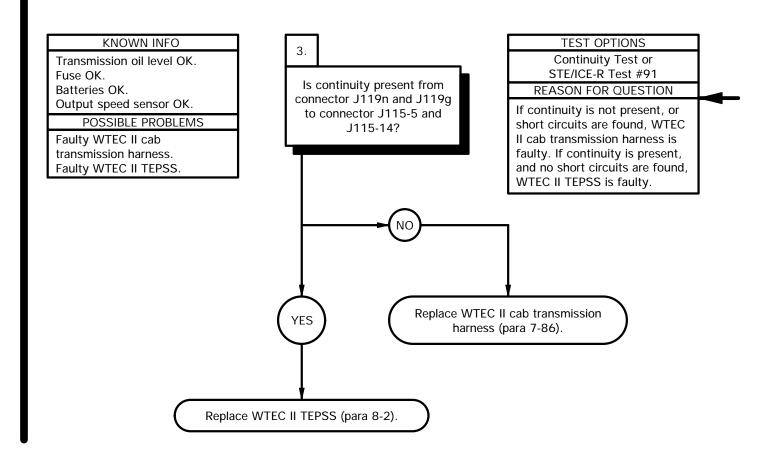
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

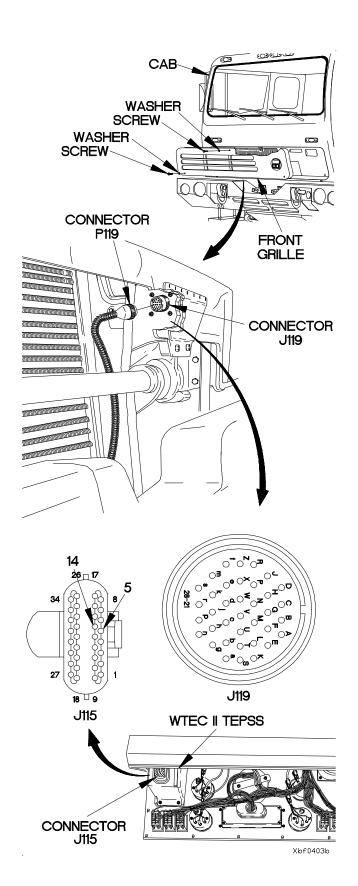
- (1) Remove two screws and washers from front grille.
- (2) Remove screw and washer from front grille.
- (3) Remove front grille from cab.
- (4) Disconnect connector P119 from connector J119.
- (5) Set multimeter to ohms.
- (6) Connect positive (+) probe of multimeter to connector P119 pin n.
- (7) Connect negative (-) probe of multimeter to connector P119 pin g 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 P119 pin g.
- (11) Connect negative (-) probe of multimeter to all other pins in connector P119 (except pin n), one at a time, and note reading on multimeter.
- (12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (13) If 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)



- 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).



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).

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Tools and Special Tools
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P

START **CAUTION Read CAUTION** KNOWN INFO **TEST OPTIONS** on following page. 1. Transmission oil level OK. Visual inspection Fuse OK. Does WTEC II TEPSS Batteries OK. **REASON FOR QUESTION** display main code 24? Engine does not overheat. If main code 24 is logged, POSSIBLE PROBLEMS WTEC II TEPSS has detected Faulty transmission oil cooler an unacceptable sump oil tubes. temperature. Faulty transmission oil cooler hoses. Faulty transmission oil cooler. Faulty transmission oil filters. Faulty WTEC II cab transmission harness. Faulty transmission external wiring harness. Faulty WTEC II TEPSS. YES Go to step 8 of this fault.

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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 (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 logged:
 - (a) WTEC II TEPSS has detected a fault with sump oil temperature sensor or its circuit.
 - (b) Go to step 8 of this fault.
- (5) Position master power switch to off (TM 9-2320-365-10).

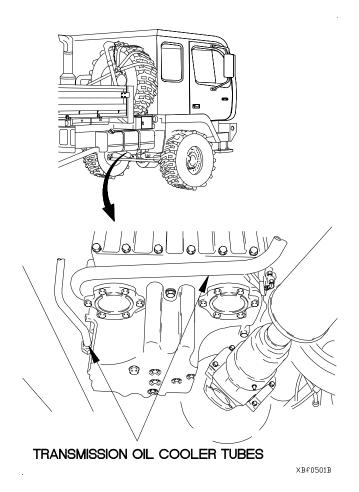
f5. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)

WARNING Read WARNING KNOWN INFO TEST OPTIONS 2. on following page. Transmission oil level OK. Visual inspection Fuse OK. Are transmission oil cooler REASON FOR QUESTION Batteries OK. tubes/hoses free of Engine does not overheat. Damaged oil cooler damage? POSSIBLE PROBLEMS tubes/hoses may cause WTEC Faulty transmission oil cooler II TEPSS to display main code 24 and/or 33. tubes. Faulty transmission oil cooler hoses. Faulty transmission oil cooler. Faulty transmission oil filters. Faulty WTEC II cab transmission harness. Faulty transmission external wiring harness. Faulty WTEC II TEPSS. Replace transmission oil cooler YES tubes/hoses (paras 8-11 or 8-14).

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/hoses for damage and restrictions.
- (2) If damage or restriction are present, replace transmission oil cooler tubes/hose (paras 8-11 or 8-14).



Change 1

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

WARNING CAUTION Read WARNING and CAUTION on KNOWN INFO TEST OPTIONS following page. 3. Transmission oil level OK. Transmission Oil Inspection Fuse OK. Is transmission oil free from REASON FOR QUESTION Batteries OK. coolant contamination? Engine does not overheat. Contaminated transmission oil Transmission oil cooler tubes may cause WTEC II TEPSS to display main code 24 and/or Transmission oil cooler hoses OK. POSSIBLE PROBLEMS Faulty transmission oil cooler. Faulty transmission oil filters. Faulty WTEC II cab transmission harness. Faulty transmission external wiring harness. Faulty WTEC II TEPSS. Replace transmission oil cooler (para 8-10) and change transmission YES oil (Appendix H).

WARNING

Do not drain transmission oil when transmission is hot. Failure to comply may result in injury to personnel.

CAUTION

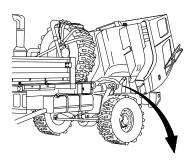
Transmission oil must be changed whenever there is evidence of oil breakdown or contamination. Oil breakdown or contamination may be caused from overheating transmission and/or oil cooler internal failure and is indicated by discoloration, strong odor, or oil analysis.

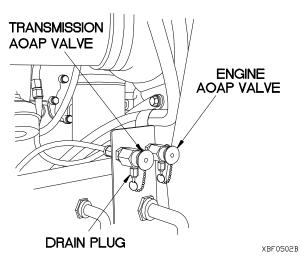
TRANSMISSION OIL INSPECTION

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)

KNOWN INFO

Transmission oil level OK. Fuse OK.

Batteries OK.

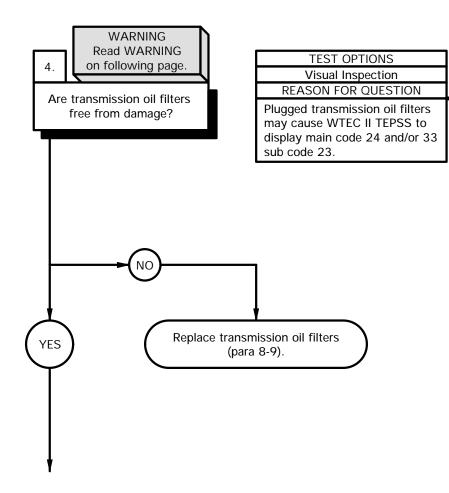
Engine does not overheat. Transmission oil cooler tubes OK.

Transmission oil cooler hoses OK.

Transmission oil cooler OK.

POSSIBLE PROBLEMS

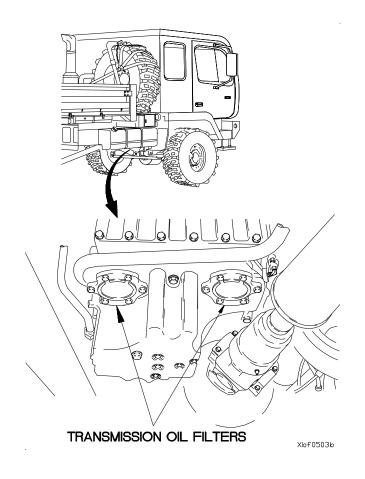
Faulty transmission oil filters. Faulty WTEC II cab transmission harness. Faulty transmission external wiring harness. Faulty WTEC II TEPSS.



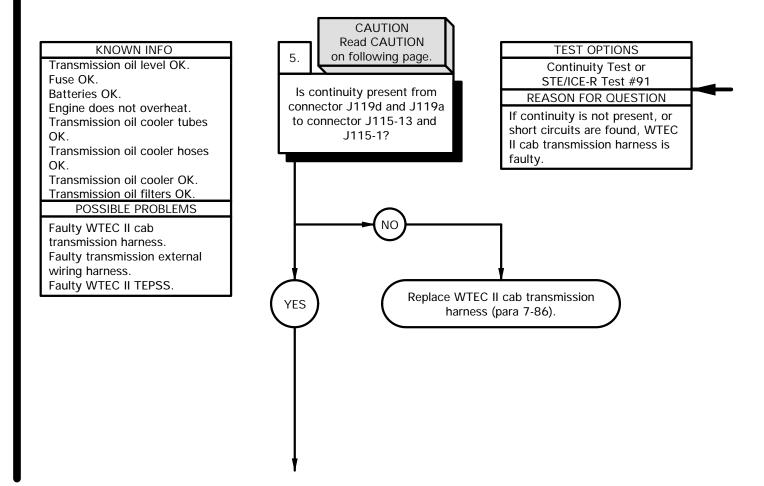
WARNING

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 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)

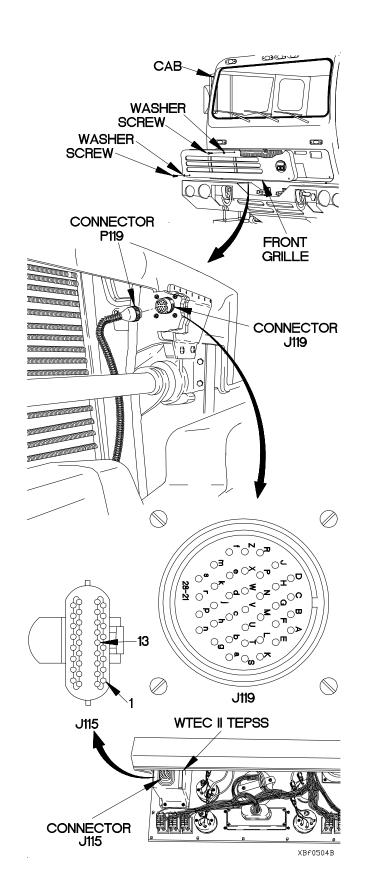


Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

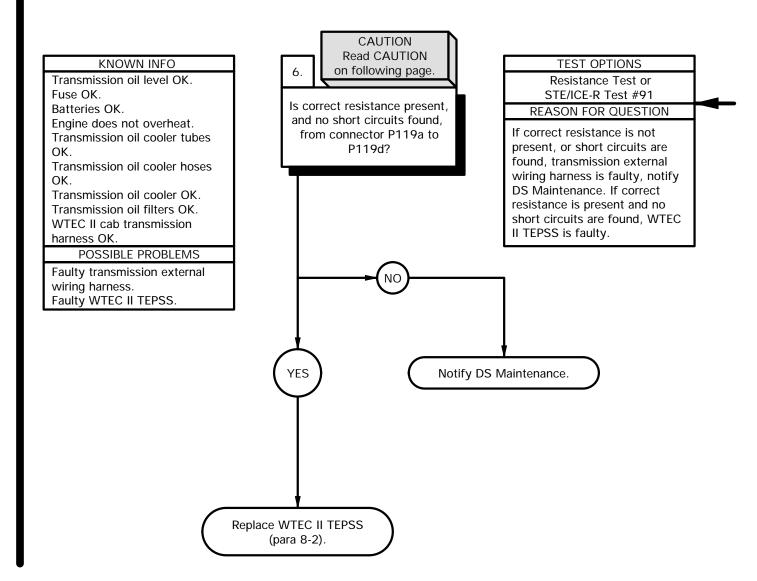
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

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



Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back or not capable of making good contact.

RESISTANCE TEST

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

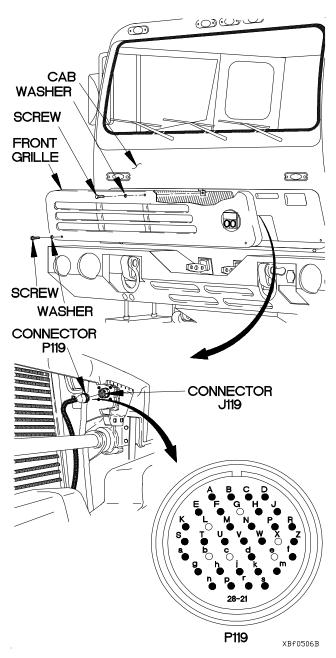


Table 2-17. Transmission Sump Oil Temperature Sensor Resistance Readings

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	

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

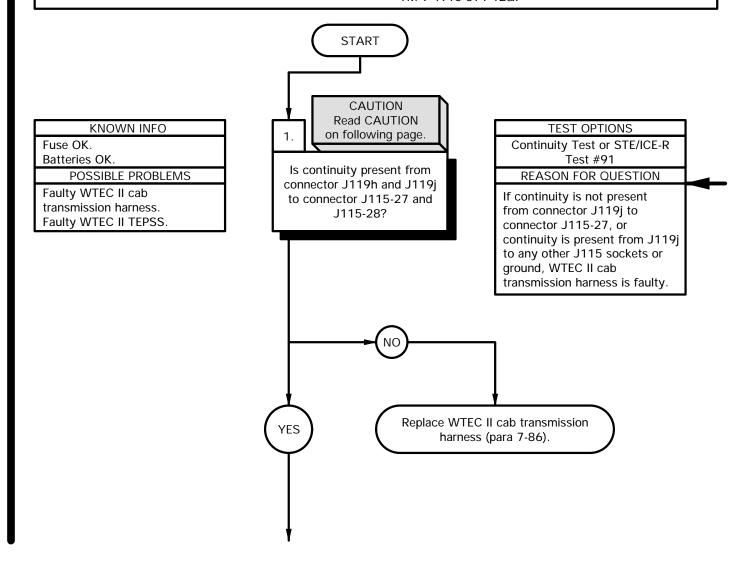
INITIAL SETUP

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

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Tools and Special Tools (Cont)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P



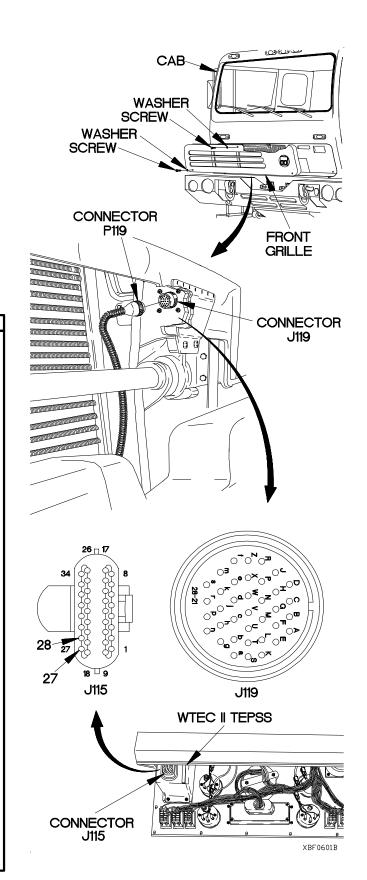
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

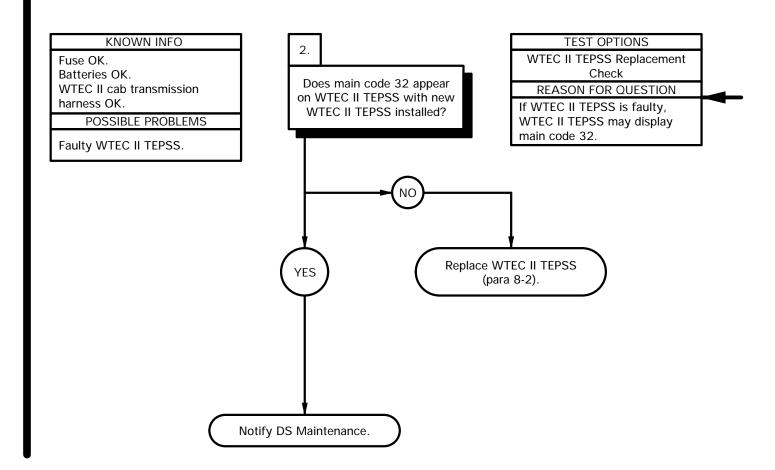
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (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).

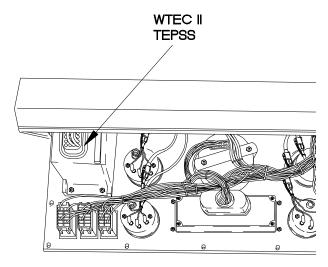


f6. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 32 AND ANY SUB CODE (CONT)



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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f7. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 41, 42, 44, 45, 66, AND/OR 69 AND ANY SUB CODE

INITIAL SETUP

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

Tools and Special Tools

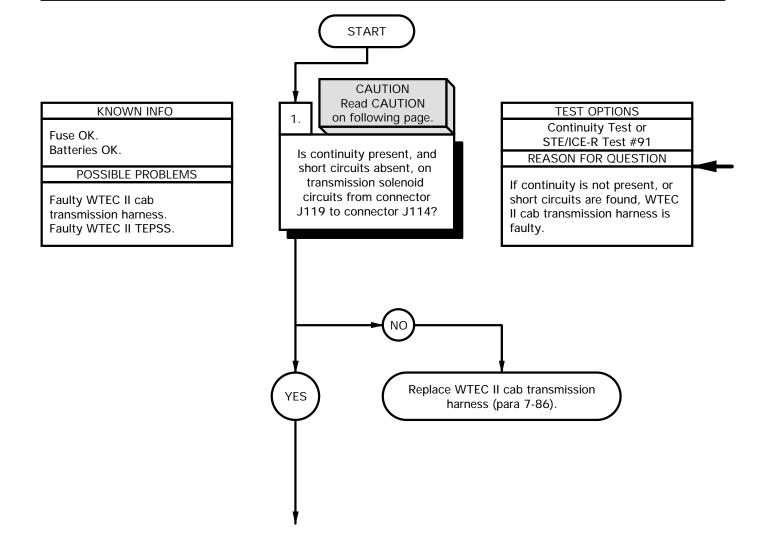
Tool Kit, Genl Mech (Item 44, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)

Tools and Special Tools STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P



Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- 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).

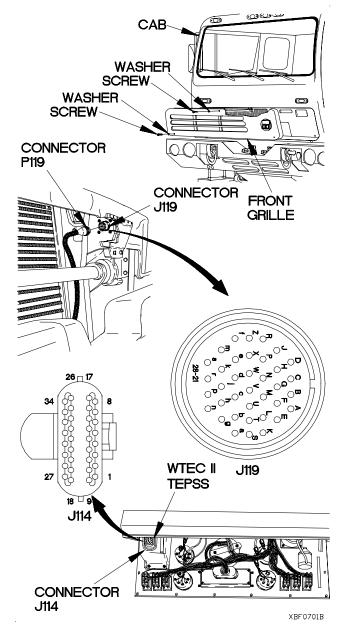
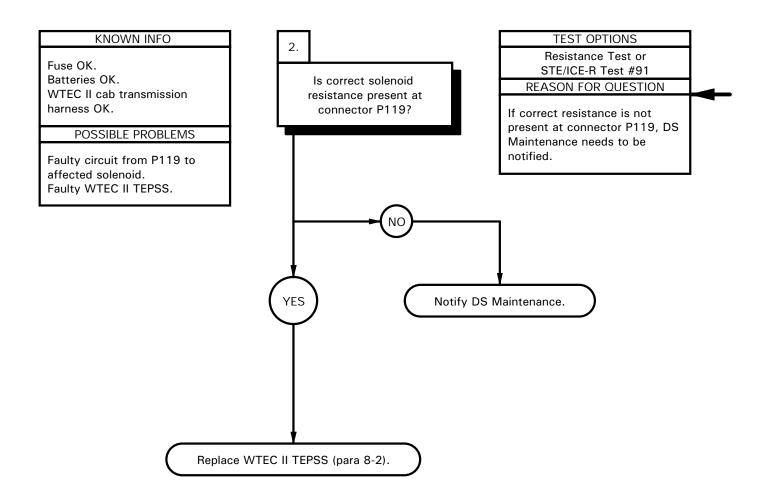


Table 2-18. WTEC II Cab Transmission Harness Transmission Solenoid Test Points

Cuda	luman an	Connect	or J114
Sub Code	Jumper Across	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, 45, 66, AND/OR 69 AND ANY SUB CODE (CONT)



RESISTANCE TEST

- 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

Cub	Connector P119	
Sub Code	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

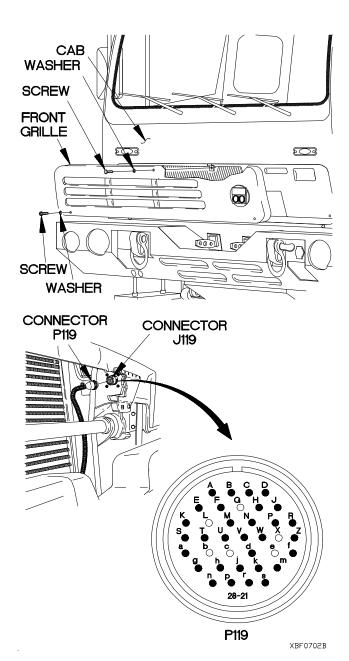


Table 2-20. Transmission Solenoid Resistance Readings

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).

Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Tools and Special Tools (Cont)
Wrench Torque 0-200 lb-in (Iter

Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C) Wrench Set, Socket (Item 49, Appendix C) STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P

START CAUTION KNOWN INFO TEST OPTIONS Read CAUTION on following page. 1. Continuity Test or Transmission oil level OK. STE/ICE-R Test #91 Fuse OK. Batteries OK. **REASON FOR QUESTION** Is continuity present, and POSSIBLE PROBLEMS short circuits absent, on If continuity is not present, or transmission solenoid short circuits are found, WTEC Faulty WTEC II cab circuits from connector J119 II cab transmission harness is transmission harness. to connector J114? faulty. Faulty WTEC II TEPSS. Replace WTEC II cab transmission YES harness (para 7-86).

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (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 I119
- (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).

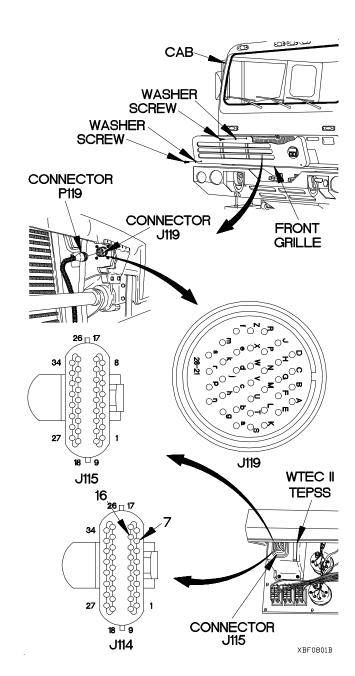
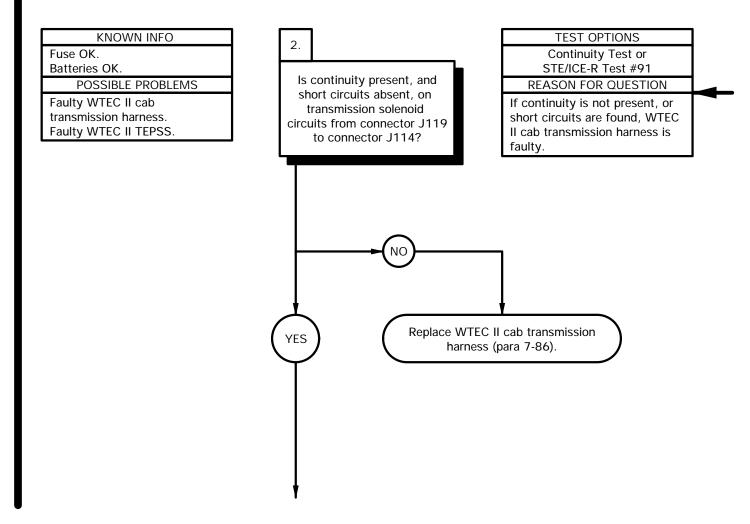


Table 2-21. Main Code 43 Sub Code 21 and 26 High Side Test Points

Sub Code	Connector J114	Connector J119	
21	7	F	
26	16	K	

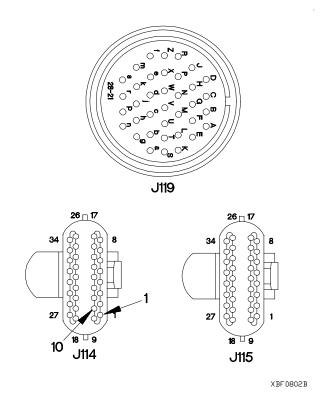
f8. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 43 AND ANY SUB CODE (CONT)



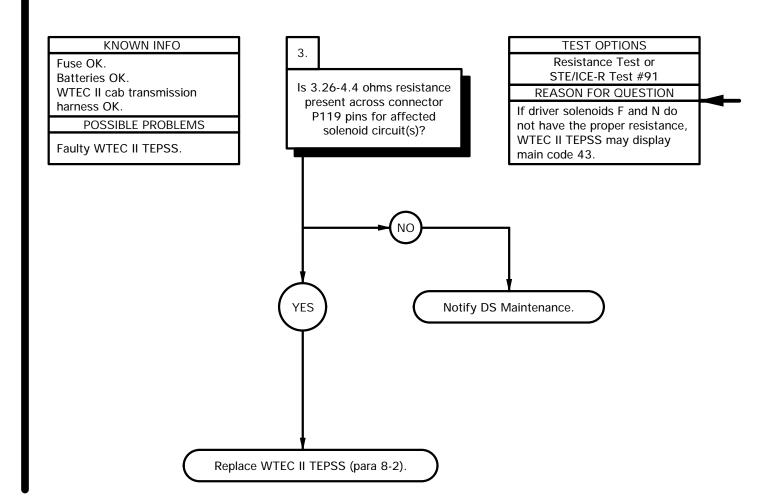
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector J119. Refer to Table 2-22. Main Code 43 Sub Code 21 and 26 Low Side Test Points.
- (3) Connect negative (-) probe of multimeter to connector J114 and note reading on multimeter. Refer to Table 2-22. Main Code 43 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	Н	
26	1	A	



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

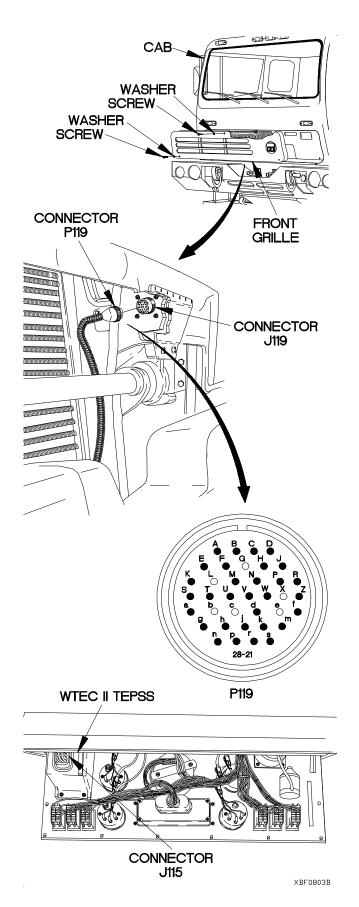


RESISTANCE TEST

- (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.
- (3) Connect negative (-) probe of multimeter to connector P119 and note reading on multimeter. Refer to Table 2-23. Transmission Solenoid F and G Resistance Test Points.
- (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) If good resistance is not noted in step 3, or continuity is present in step 4 or step 5, replace WTEC II cab transmission harness (para 7-86).
- (7) If good resistance is noted in step 3, and continuity is not present in step 4 or step 5, replace WTEC II TEPSS (para 8-2).
- (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) Connect connectors J114 and J115 to WTEC II TEPSS.
- (14) Install instrument panel assembly (para 7-15).
- (15) 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	K	Н
26	N	F	Α



f9. 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).

Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C) Multimeter, Digital (Item 22, Appendix C)

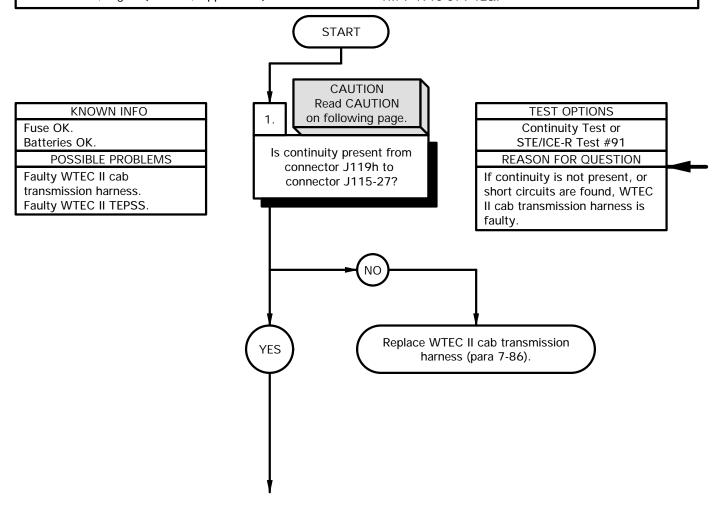
Tools and Special Tools (Cont)

Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)

STE/ICE-R (Item 39, Appendix C)

References

TM 9-4910-571-12&P



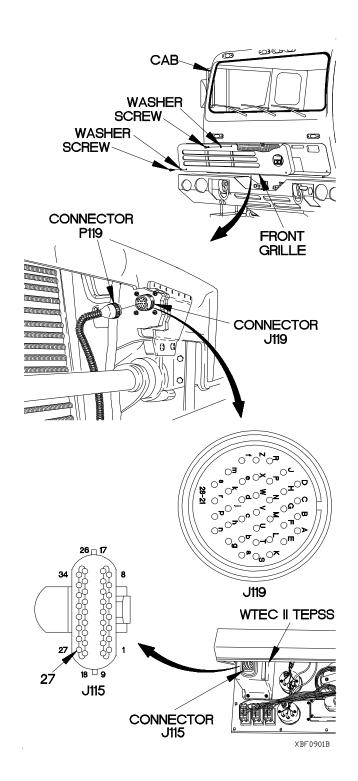
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

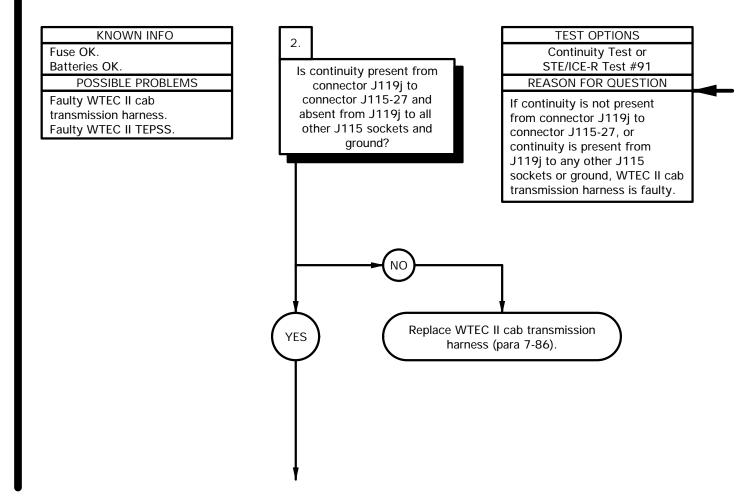
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (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).

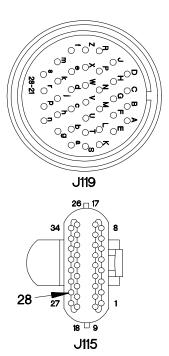


f9. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)



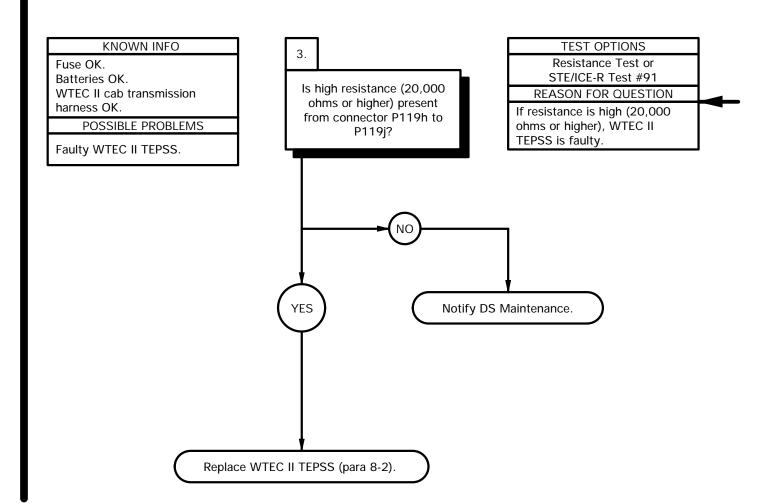
CONTINUITY TEST

- (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 7-86).



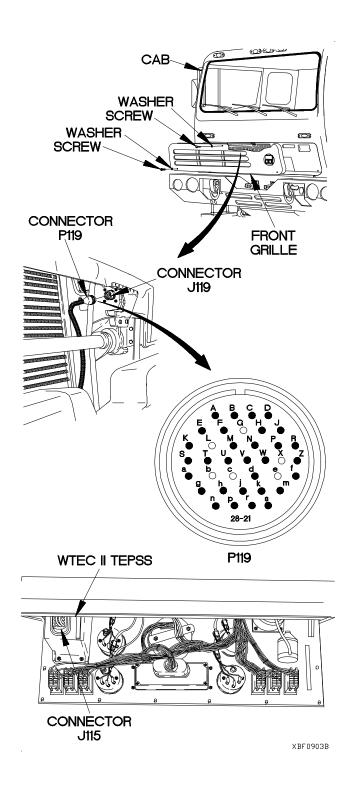
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f9. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)



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).



f10. 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).

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)

Wrench Set, Socket (Item 49 Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Staight, Pipe to Tube (Item 1,2, Appendix D)

Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)

Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Reference

TM 9-491-571-12&P

Personnel Required

(2)

START WARNING CAUTION Read WARNING and **CAUTION** on KNOWN INFO **TEST OPTIONS** following page. Clutch Pressure Test or Transmission oil level OK. STE/ICE-R Test #50 Fuse OK. Is zero pressure present on Batteries OK. **REASON FOR QUESTION** C3 clutch when shift is WTEC II cab transmission If there is pressure to C3 made into affected range? harness OK. clutch when shift is made, DS Maintenance needs to be POSSIBLE PROBLEMS notified. Faulty WTEC II TEPSS. YES Notify DS Maintenance.

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.

CAUTION

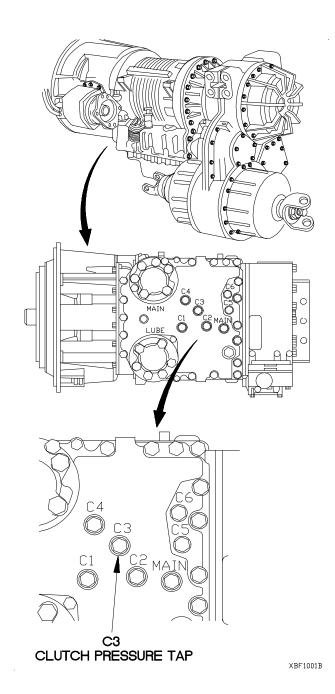
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

CLUTCH PRESSURE TEST

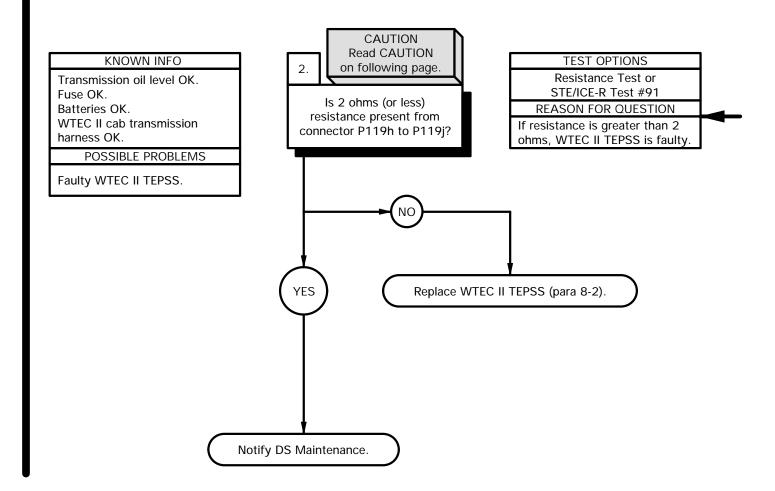
- (1) Remove front and rear propeller shafts (para 9-2).
- (2) Position drain pan under C3 pressure tap plug.
- (3) Remove C3 pressure tap plug and preformed packing from control valve module. Discard preformed packing.
- (4) Connect tube to boss adapter, hose, and pipe to tube adapter to C3 pressure 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 pipe to tube adapter, hose, and tube to boss adapter 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 front and rear 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	



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



CAUTION

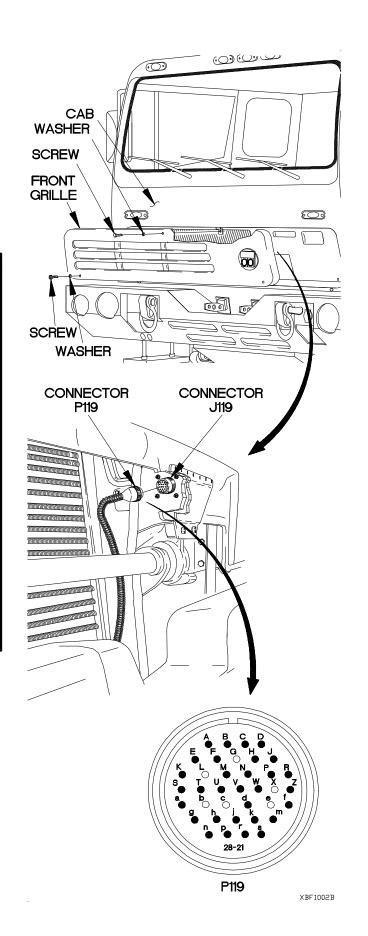
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

RESISTANCE TEST

- (1) 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).

Tools and Special Tools

Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)

Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Wrench Set, Socket (Item 49, Appendix C)

Wrench, Torque, 0-175 lb ft (Item 57, Appendix C)

Tools and Special Tools

STE/ICE-R (Item 39, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

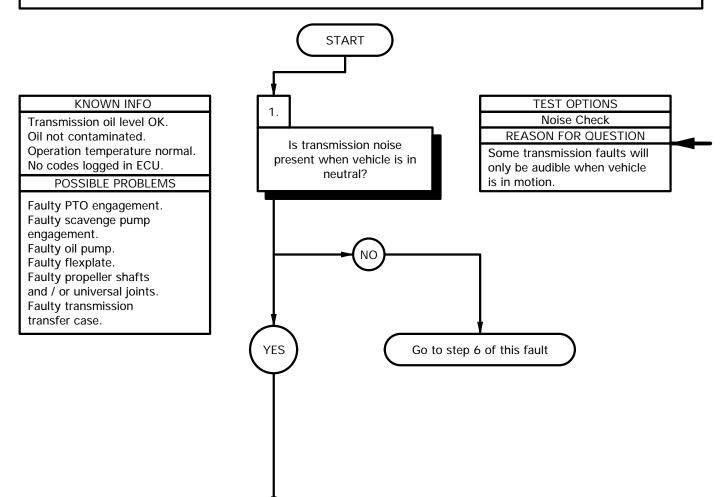
Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)

Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)

Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

References

TM 9-4910-571-12&P



NOISE CHECK

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

f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)

KNOWN INFO

Transmission oil level OK.
Oil not contaminated.
Operating temperature normal.
No codes logged in ECU.

POSSIBLE PROBLEMS

Faulty PTO engagement. Faulty scavenge pump engagement.

Faulty oil pump.

Faulty flexplate bolts.

Faulty flexplate.

Faulty propeller shafts and / or universal joints.

Faulty transmission transfer case,

KNOWN INFO

Transmission oil level OK.
Oil not contaminated.
Operating temperature normal.
No codes logged in ECU.
PTO engagement OK.

POSSIBLE PROBLEMS

Faulty scavenge pump engagement.

Faulty oil pump.

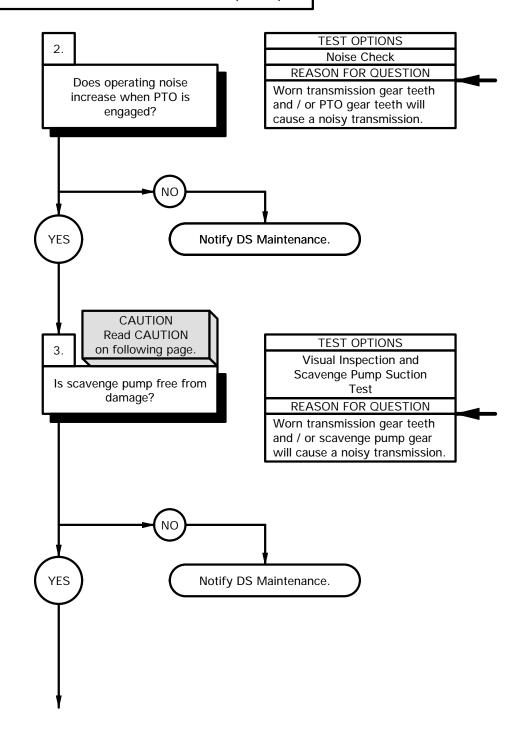
Faulty flexplate bolts.

Faulty flexplate.

Faulty propeller shafts and / or universal joints.

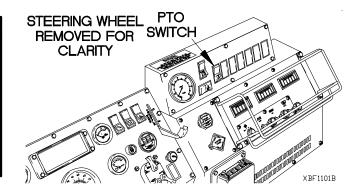
Faulty transmission transfer

case,



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).



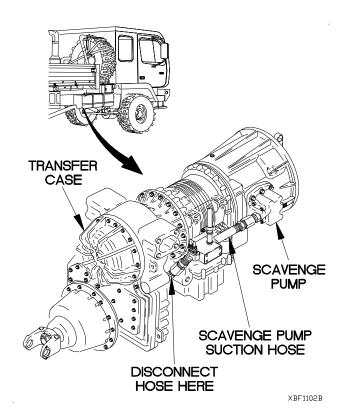
- (1) Place drain pan under transfer case.
- (2) Disconnect scavenge pump suction hose at transfer case.
- (3) Start engine (TM 9-2320-365-10).
- (4) If oil drips or runs from fitting on transfer case, scavenge is not picking up oil from transmission transfer case causing it to overflow.
- (5) Perform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

CAUTION

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

SCAVENGE PUMP SUCTION TEST

- (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 suction hose to transfer case.
- (7) Remove drain pan under transfer case.



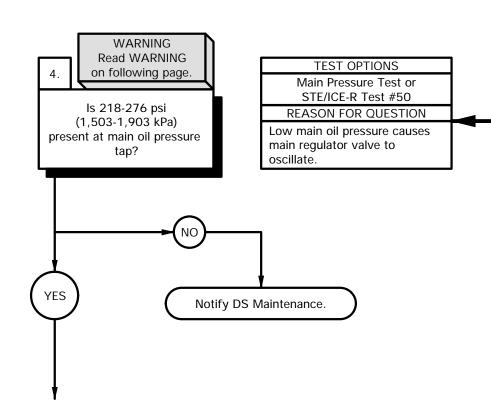
f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)

KNOWN INFO

Transmission oil level OK.
Oil not contaminated.
Operating temperature normal.
No codes logged in ECU.
PTO engagement OK.
Scavenge pump engagement
OK.

POSSIBLE PROBLEMS

Faulty oil pump.
Faulty flexplate bolts.
Faulty flexplate.
Faulty propeller shafts and / or universal joints.
Faulty transmission transfer case,

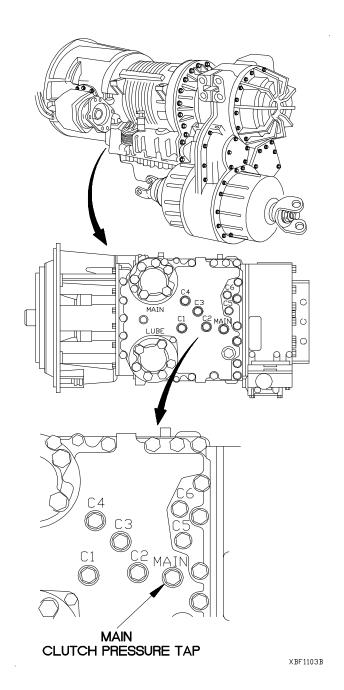


WARNING

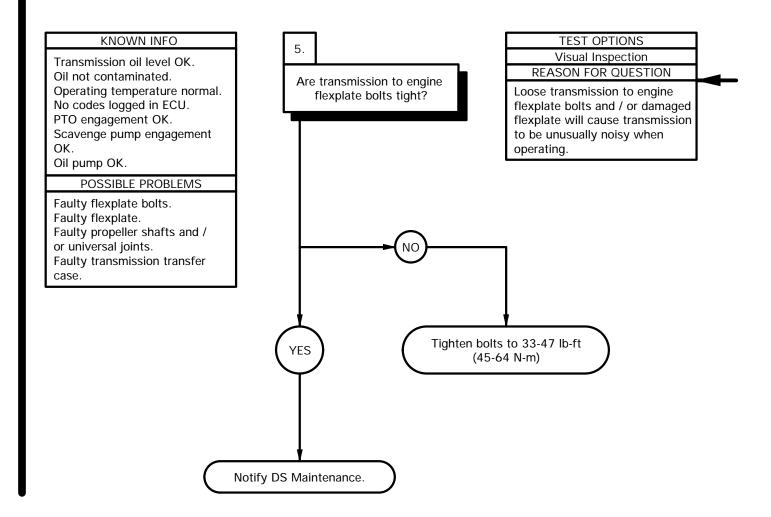
Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

MAIN OIL PRESSURE TEST

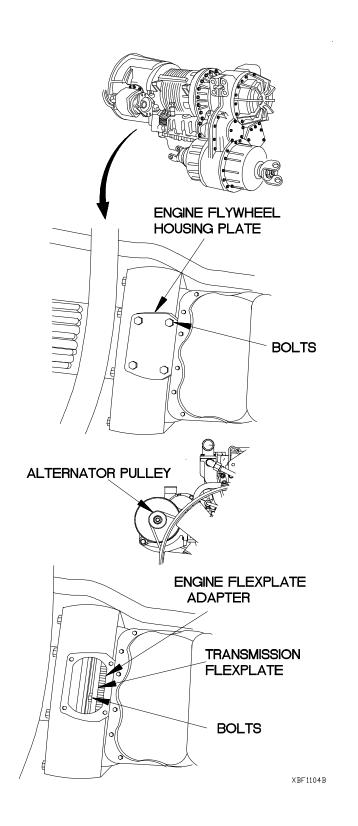
- (1) Position drain pan under pressure tap.
- (2) Remove main pressure tap plug and preformed packing from control valve module. Discard preformed packing.
- (3) Connect tube to boss adapter, hose, and pipe to tube adapter to main pressure tap.
- (4) Perform STE/ICE-R Test # 50 (TM 9-4910-571-12&P).
- (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 notes 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 pipe to tube adapter, hose, and tube to boss adapter from main pressure tap.
- (11) Position preformed packing and main 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.



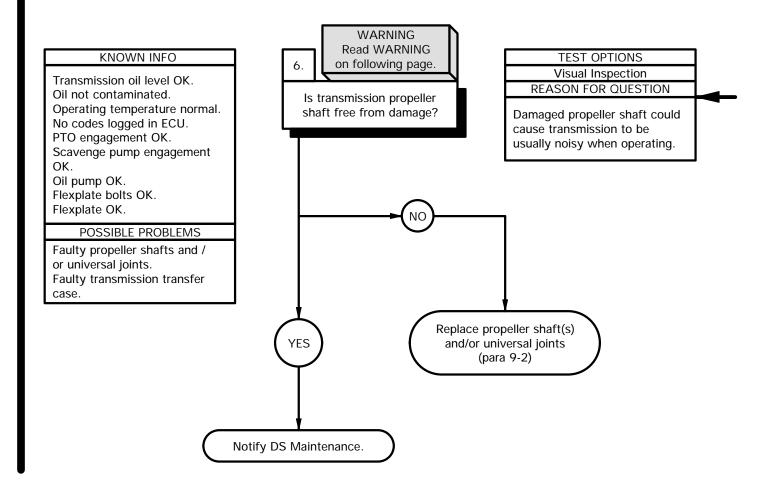
f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)



- (1) Remove four bolts from engine flywheel housing plate.
- (2) Turn engine alternator pulley in clockwise direction to reposition transmission flexplate for transmission to engine flexplate bolt inspection.
- (3) Inspect bolts in flexplate for looseness.
- (4) Inspect flexplace 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.



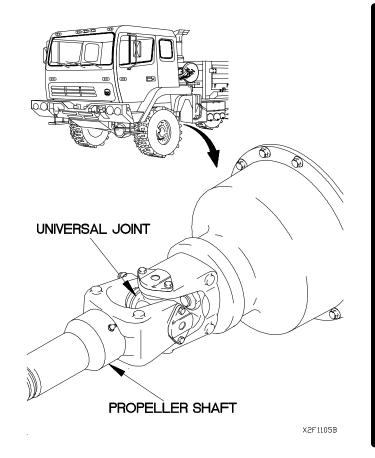
f11. TRANSMISSION UNUSUALLY NOISY WHEN OPERATING (CONT)



WARNING

Wear approved 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 shaft 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).

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

Personnel Required (2)

START CAUTION Read CAUTION KNOWN INFO TEST OPTIONS on following page. Fuse OK. WTEC II TEPSS Reset Check Transmission oil level OK. Does main code 21 repeat Batteries OK. REASON FOR QUESTION after code has been POSSIBLE PROBLEMS Main code 21 may appear on manually cleared and WTEC II TEPSS if voltage from Faulty WTEC II cab throttle counts reset? TPS to WTEC II TEPSS is transmission harness. temporarily lost. Faulty TPS cable assembly. Faulty WTEC II TEPSS. NO YES Fault corrected.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

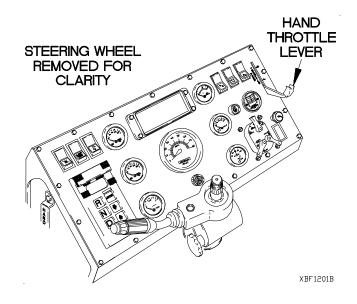
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

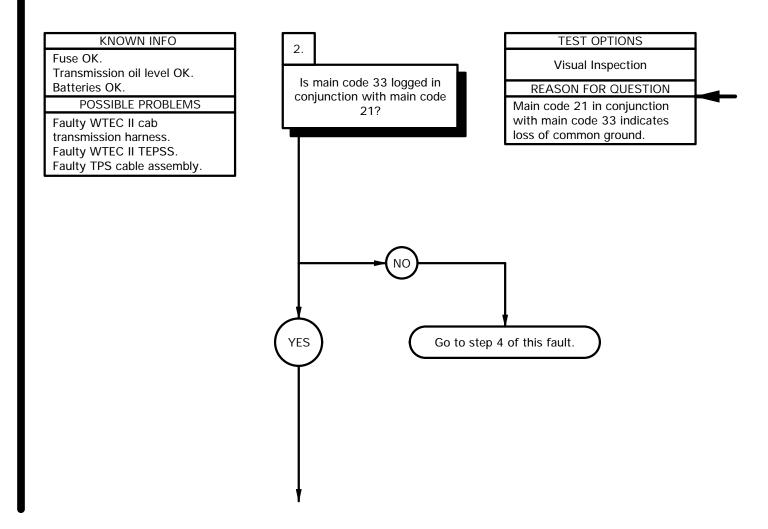
Main display code 21 needs to be cleared manually from WTEC II TEPSS after a maintenance task has been performed and before vehicle is returned to service (para 8-4).

WTEC II TEPSS RESET CHECK

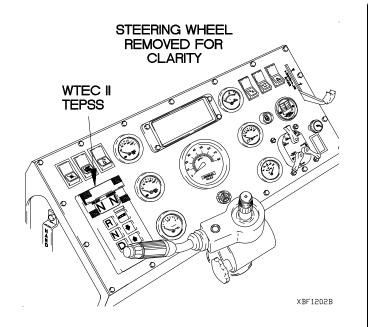
- Cycle master power switch to on (TM 9-2320-365-10), then to off five times to clear existing throttle count settings.
- (2) Position master power switch to on (TM 9-2320-365-10).
- (3) Depress accelerator pedal from idle position to full throttle position (TM 9-2320-365-10) to set new 0% and 100% throttle 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).



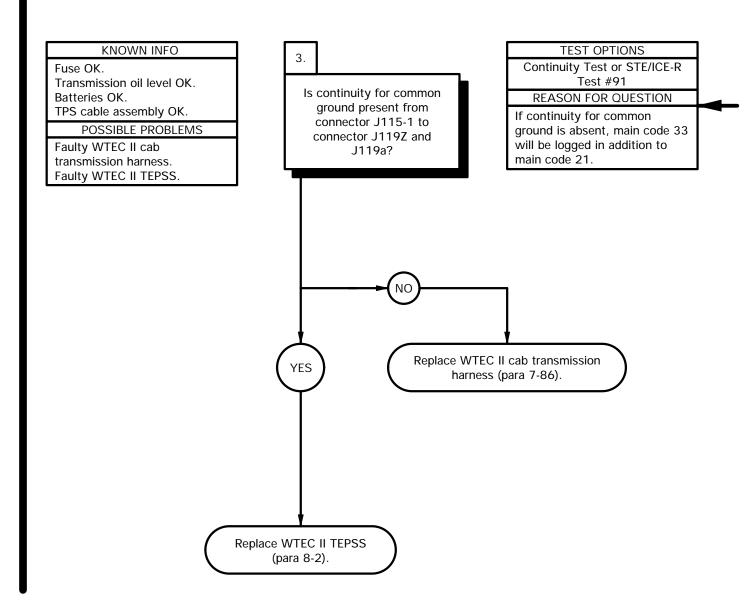
f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



- (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).

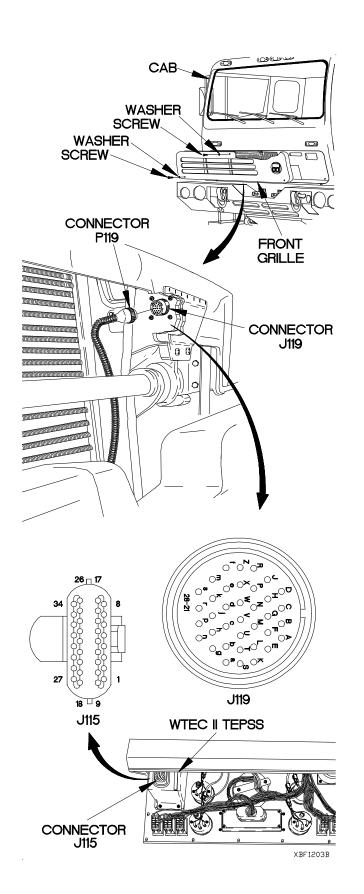


f12. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)

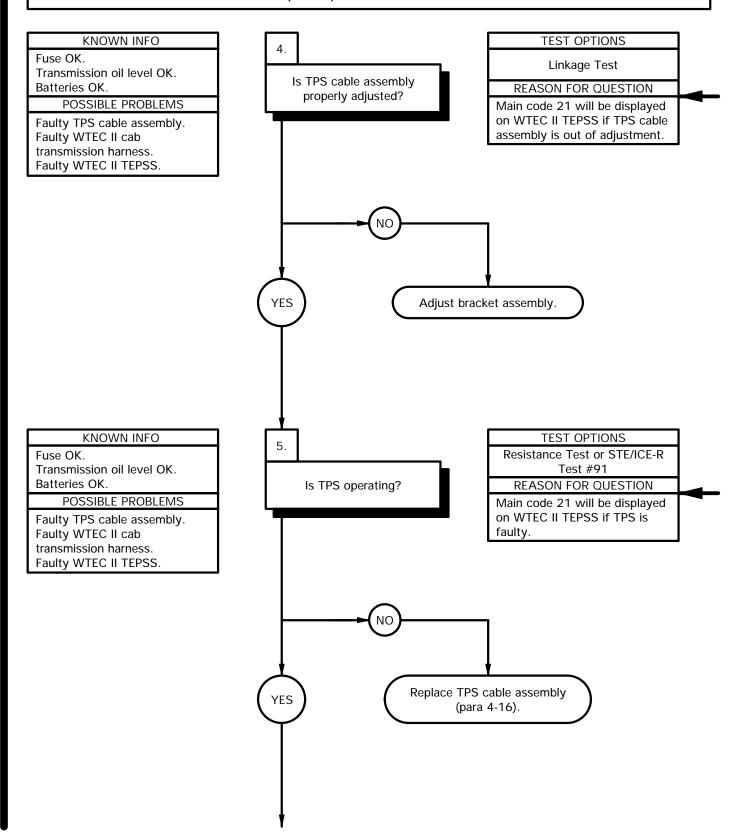


CONTINUITY TEST

- (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)

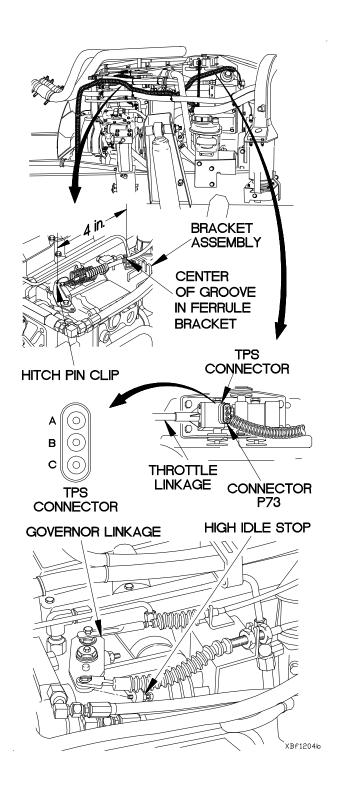


LINKAGE TEST

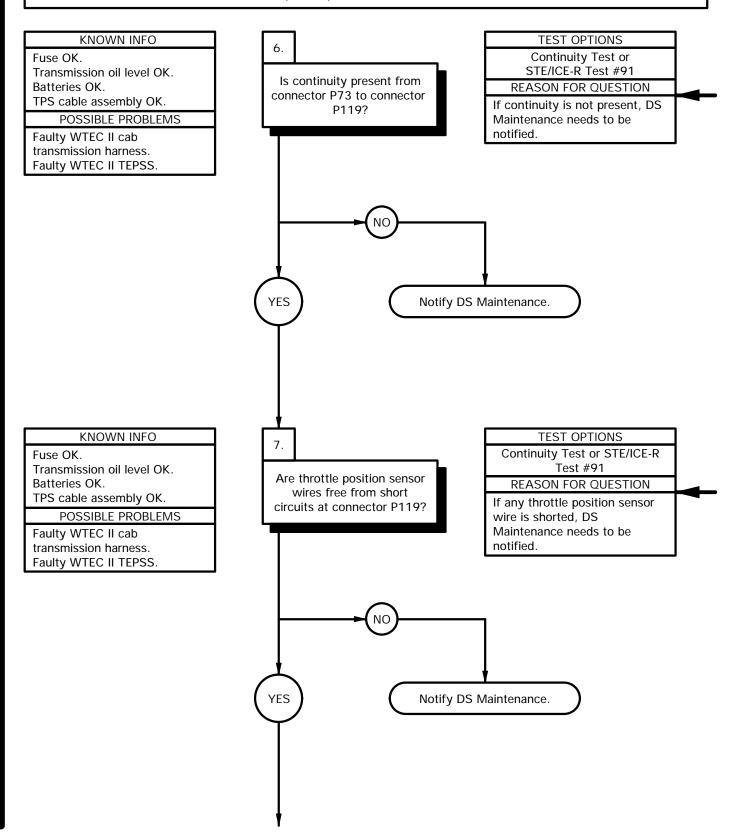
- (1) Raise cab (TM 9-2320-365-10).
- (2) Verify distance between hitch pin clip on end of sensor rod and center of cable groove in ferrule is 4 in. (10 cm).
- (3) If distance is not 4 in. (10 cm), adjust bracket assembly to obtain correct measurement.

RESISTANCE TEST

- (1) Disconnect connector P73 from TPS connector.
- (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)

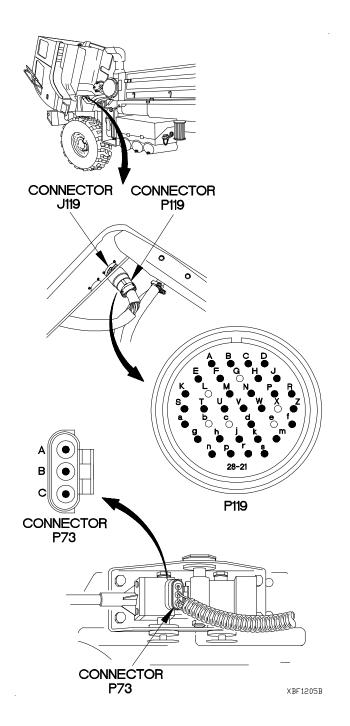


CONTINUITY TEST

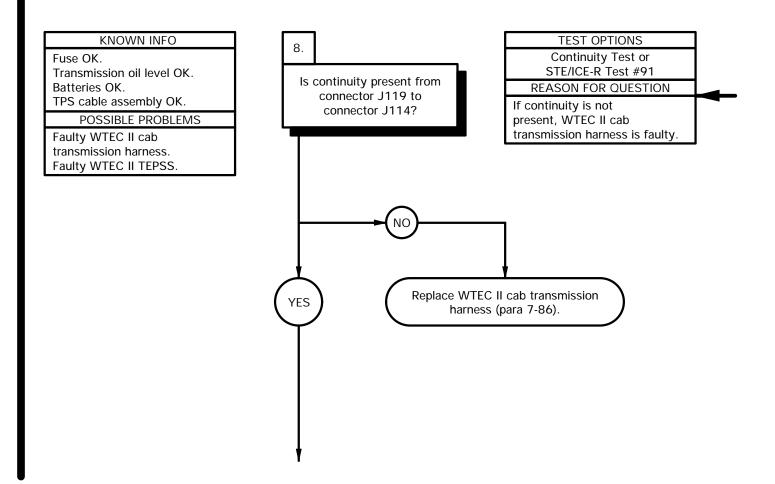
- (1) Disconnect connector P119 from connector J119.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to connector P119R.
- (4) Connect negative (-) probe of multimeter to connector P73 pin C and note reading on multimeter.
- (5) Connect positive (+) probe of multimeter to connector P119f.
- (6) Connect negative (-) probe of multimeter to connector P73 pin B and note reading on multimeter.
- (7) Connect positive (+) probe of multimeter to connector P119Z.
- (8) Connect negative (-) probe of multimeter to connector P73 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 connector P73 to TPS connector.



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

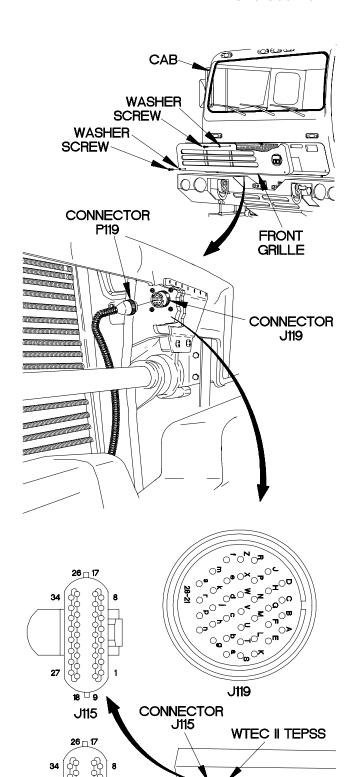


CONTINUITY TEST

- (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



CONNECTOR

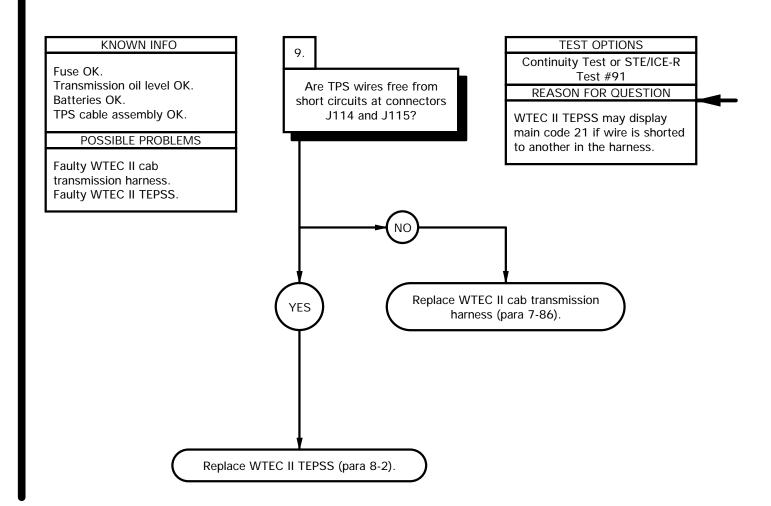
J114

18 9

J114

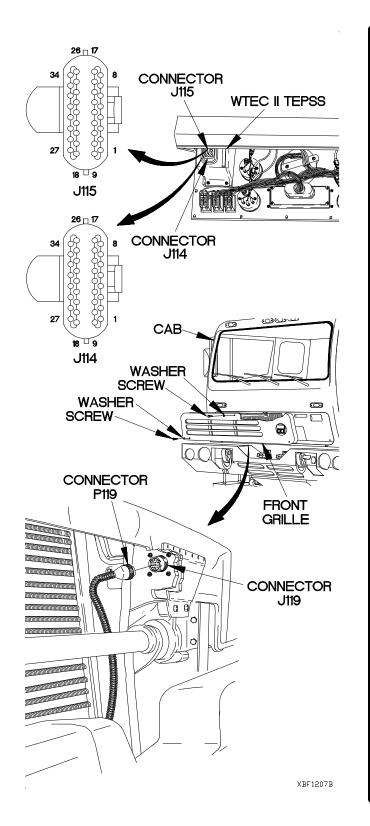
XBF1206B

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



CONTINUITY TEST

- 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 TEPSS.
- (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).

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)

Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D) Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)

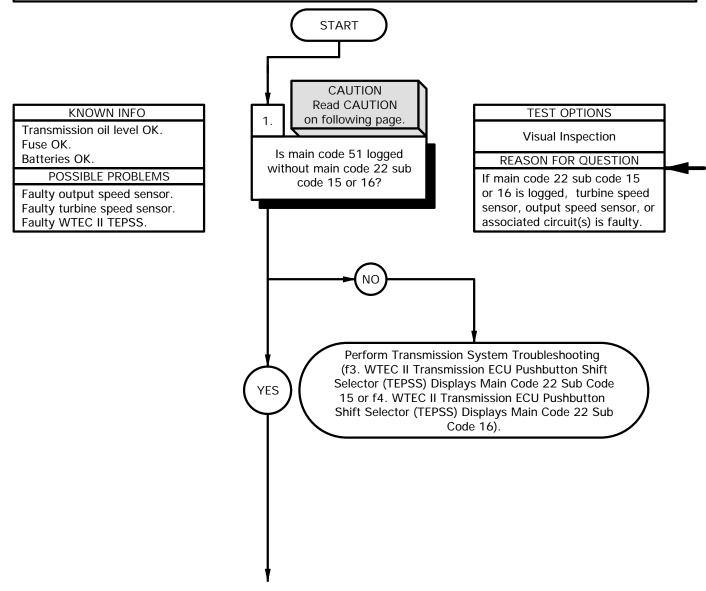
Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required

(2)

Reference

TM 9-4910-571-12&P

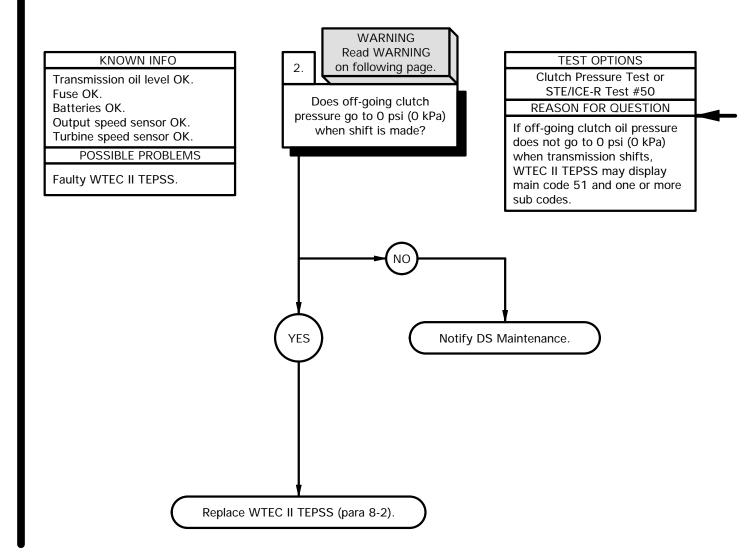


CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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)



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.

CLUTCH PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter to clutch presure 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 pipe to tube adapter, hose, and tube to boss adapter 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 front and rear propeller shaft (para 9-2).
- (15) Clear diagnostic codes (para 8-4).

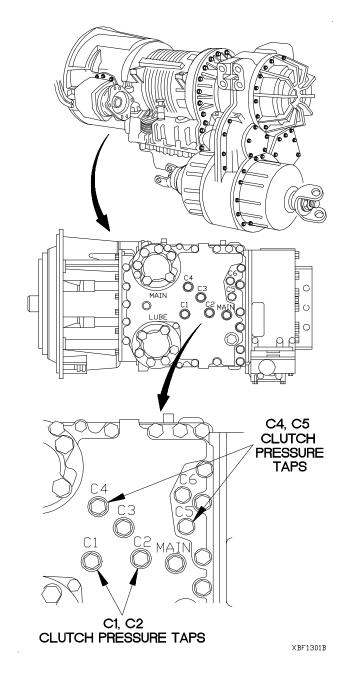


Table 2-26. Off-Going Clutch Pressure Tap

Sub Code	Sub Code Meaning	Off-Going Cluth	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).

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)

Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Pipe to Tube (Item 1.2, Appandix D)

Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)

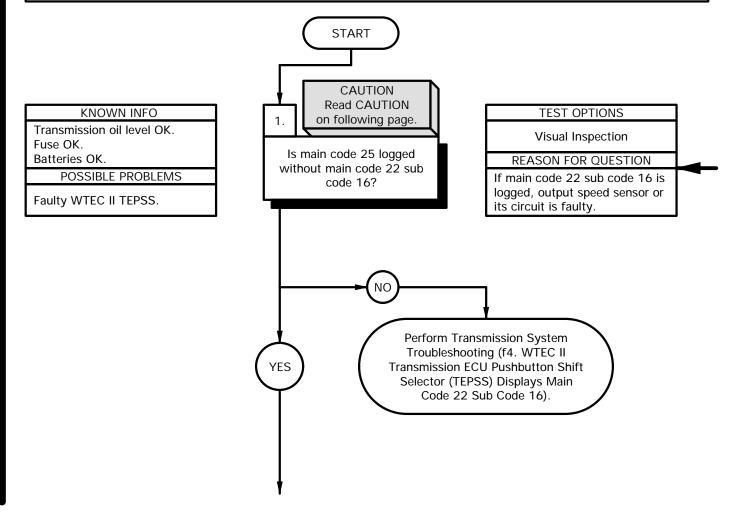
Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required

(2)

Reference

TM 9-4910-571-12&P

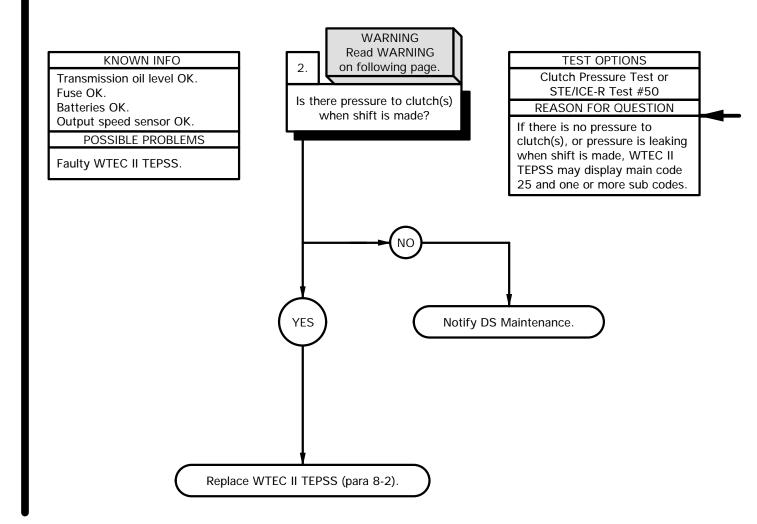


CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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)



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.

CLUTCH PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter from clutch 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 $N \cdot m$).
- (16) Remove drain pan.
- (17) Install front and rear propeller shafts (para 9-2).
- (18) If one or more clutches failed to indicate proper pressure, notify DS Maintenance.

CLUTCH PRESSURE TEST (CONT)

- (19) If all clutches indicate proper pressure, replace WTEC II TEPSS (para 8-2).
- (20) Clear diagnostic codes (para 8-4).

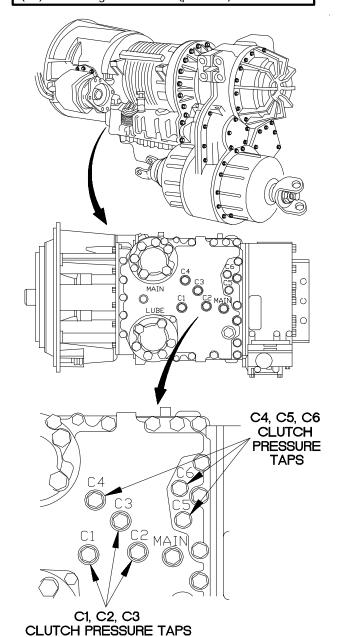


Table 2-27. Clutch Pressure Tap

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Sub	Sub Code	Pressure	Pressure Readings
Code	Meaning	at Clutch(s)	at Taps
00	Speed Zero in 1st	C3 & C6	215-334 psi (1480-2300 kPa)
11	Speed Zero in 2nd	C1 & C5	215-305 psi (1480-2103 kPa)
22	Speed Zero in 3rd	C1 & C4	142-203 psi (980-1400 kPa)
33	Speed Zero in 4th	C1 & C3	142-203 psi (980-1400 kPa)
44	Speed Zero in 5th	C1 & C2	142-203 psi (980-1400 kPa)
55	Speed Zero in 6th	C2 & C3	128-189 psi (880-1300 kPa)
66	Speed Zero in 7th	C2 & C4	128-189 psi (880-1300 kPa)
77	Speed Zero in R	C3 & C5	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).

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)

Wrench Set, Socket (item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)

Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)

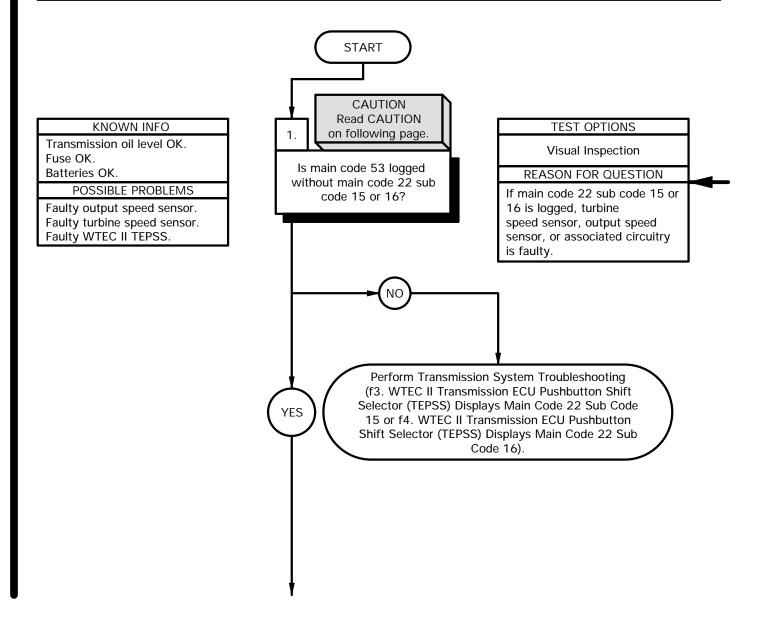
Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required

(2)

Reference

TM 9-4910-571-12&P

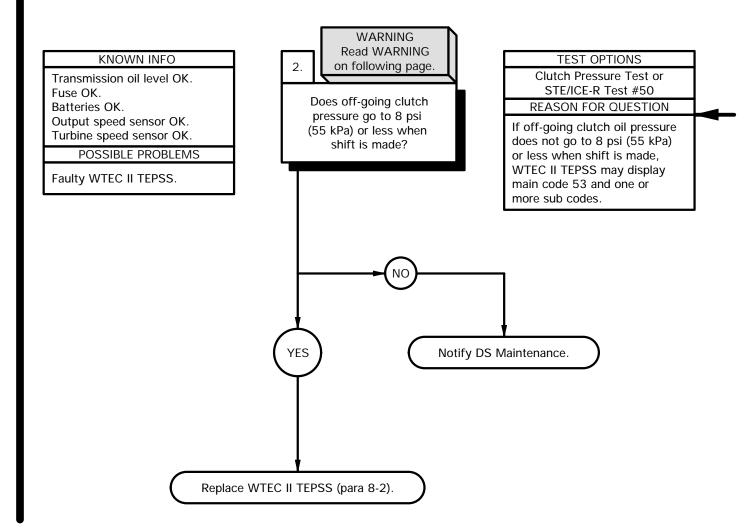


CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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)



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.

CLUTCH PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 8 psi (55 kPa) or less when shift is made, notify DS Maintenance.
- (9) If off-going clutch pressure does go to 8 psi (55 kPa) or less when shift is made, replace WTEC III TEPSS (para 8-2).
- (10) Shut down engine (TM 9-2320-365-10).
- (11) Remove pipe to tube adapter, hose, and tube to boss adapter from clutch 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 front and rear propeller shafts (para 9-2).
- (16) Clear diagnostic codes (para 8-4).

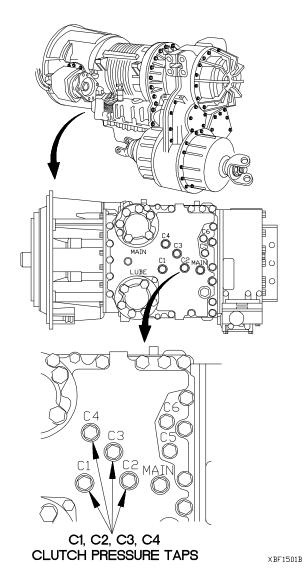


Table 2-28. Off-Going Clutch Pressure Tap

Sub Code	Sub Code Meaning	Off-Going Clutch(s)
80	L-N1	C3
18	1-N1	C1
28	2-N1	C1 & C4
29	2-N2	C1
38	3-N1	C1 & C3
39	3-N3	C1
48	4-N1	C1 & C2
49	4-N3	C1 & C2
58	5-N1	C2 & C3
59	5-N3	C2
68	6-N1	C2 & C4
69	6-N4	C2
78	R-N1	C3
99	N3-N2 or N2-N3 Shift	C2 & C4

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

INITIAL SETUP

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

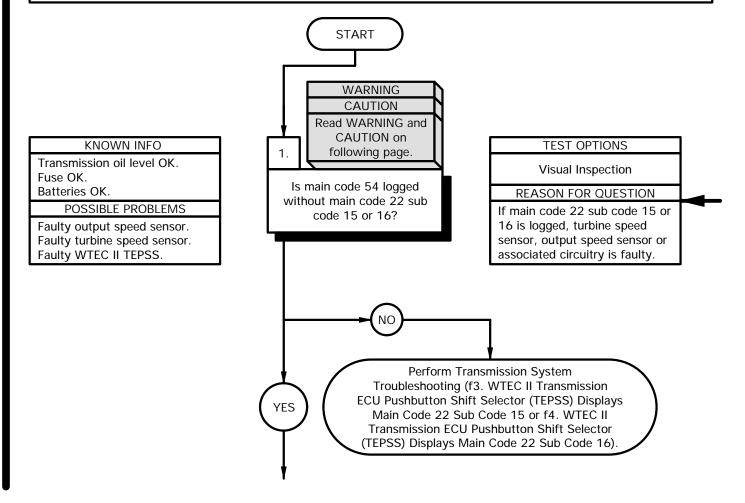
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)
Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)
Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)
Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required (2)

Reference TM 9-4910-571-12&P



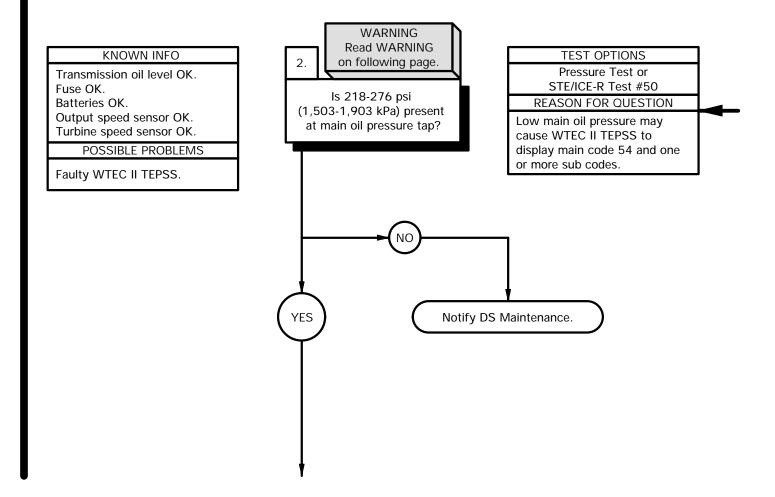
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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).

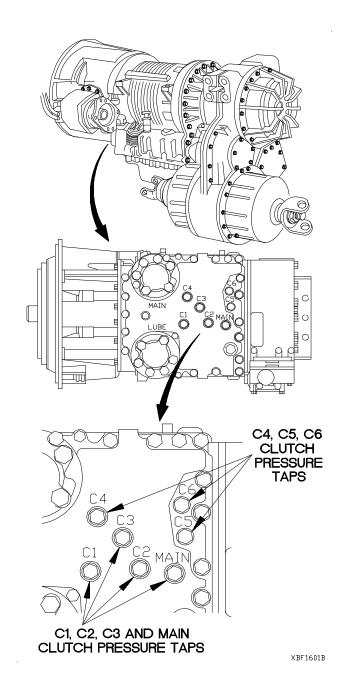
f16. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 54 SUB CODE 01, 07, 10, 12, 17, 21, 23, 27, 32, 34, 43, 45, 54, 56, 65, 70, 71, 72, 80, 81, 82, 83, 85, 86, 92, 93, 95, 96, or 97 (CONT)



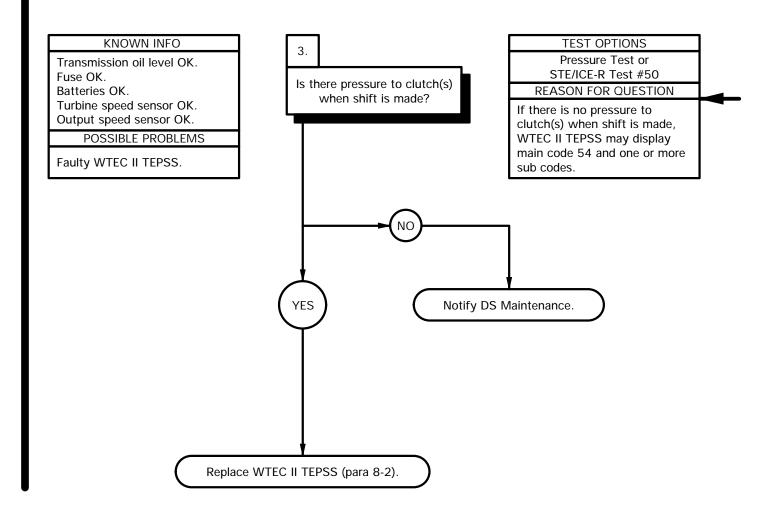
Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

- (1) Position drain pan under pressure tap.
- (2) Remove main pressure tap plug and preformed packing from control valve module.
- (3) Connect tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter 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.



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

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter 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 front and rear propeller shafts (para 9-2).
- (19) Clear diagnostic codes (para 8-4).

Table 2-29. Clutch Pressure Tap

Sub Code		b Code eaning	Pressure at Clutch(s)	Pressure Readings at Taps
01	L-R	Upshift	C1 & C5	187-305 psi (1280-2100 kPa)
07	L-1	Shift	C3 & C5	215-276 psi (1480-1900 kPa)
10	1-L	Downshift	C3 & C6	215-334 psi (1480-2300 kPa)
12	1-2	Upshift	C1 & C4	142-203 psi (980-1400 kPa)
17	1-R	Shift	C3 & C5	215-276 psi (1480-1900 kPa)
21	2-1	Downshift	C1 & C5	186-305 psi (1280-2100 kPa)
23	2-3	Upshift	C1 & C3	142-203 psi (980-1400 kPa)
27	2-R	Shift	C3 & C5	215-334 psi (1480-2300 kPa)
32	3-2	Downshift	C1 & C4	142-203 psi (980-1400 kPa)
34	3-4	Upshift	C1 & C2	142-203 psi (980-1400 kPa)
43	4-3	Downshift	C1 & C3	142-203 psi (980-1400 kPa)
45	4-5	Upshift	C2 & C3	128-189 psi (880-1300 kPa)
54	5-4	Downshift	C1 & C2	142-203 psi (980-1400 kPa)
56	5-6	Upshift	C2 & C4	128-189 psi (880-1300 kPa)
65	6-5	Downshift	C2 & C3	128-189 psi (880-1300 kPa)
70	R-L	Shift	C3 & C6	215-276 psi (1480-1900 kPa)
71	R-1	Shift	C1 & C5	186-305 psi (1280-2100 kPa)
72	R-2	Shift	C1 & C4	142-203 psi (980-1400 kPa)
80	N1-L	Shift	C3 & C6	215-276 psi (1480-1900 kPa)
81	N1-1	Shift	C1 & C5	215-305 psi (1480-1900 kPa)
82	N1-2	Shift	C1 & C4	186-305 psi (1280-2100 kPa)
83	N1-3	Shift	C1 & C3	215-305 psi (1480-1900 kPa)
85	N1-5	Shift	C2 & C3	164-239 psi (1130-1650 kPa)
86	N1-6	Shift	C2 & C4	164-239 psi (1130-1650 kPa)
92	N2-2	Shift	C1 & C4	215-305 psi (1480-1900 kPa)
93	N3-3	Shift	C1 & C3	215-305 psi (1480-1900 kPa)
95	N3-5	Shift	C2 & C3	164-239 psi (1130-1650 kPa)
96	N4-6	Shift	C2 & C4	164-239 psi (1130-1650 kPa)
97	2-R	Shift	C3 & C5	215-305 psi (1480-1900 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).

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)

Wrench Set, Socket (Item 49 Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Tube to Boss (Item 1.3, Appendix D) Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

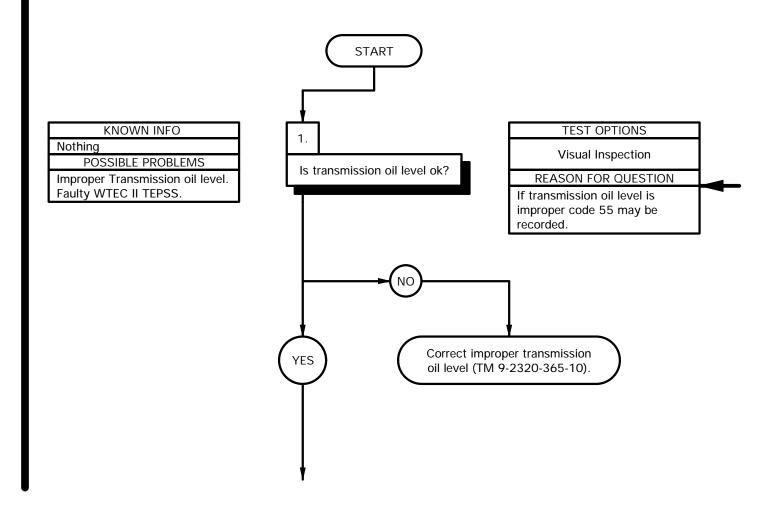
Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)

Reference

TM 9-4910-571-12&P

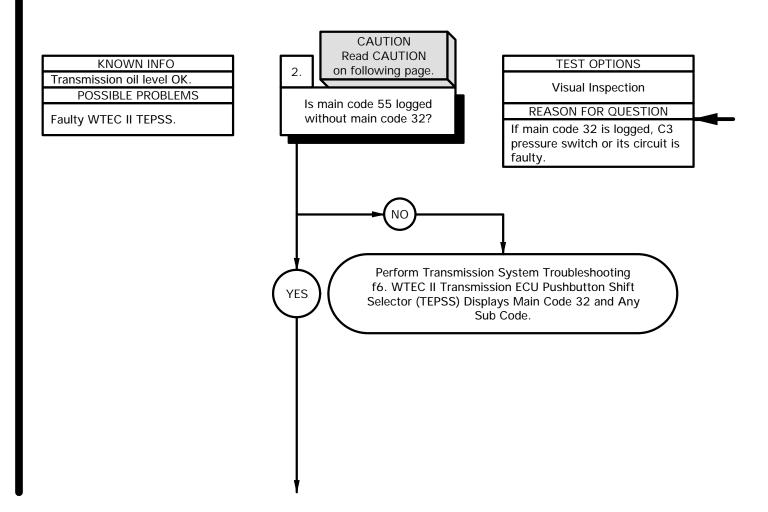
Personnel Required

(2)



- (1) Check transmission oil level (TM 9-2320-365-10).
- (2) If transmission oil level is improper, correct as required (TM 9-2320-365-10).

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

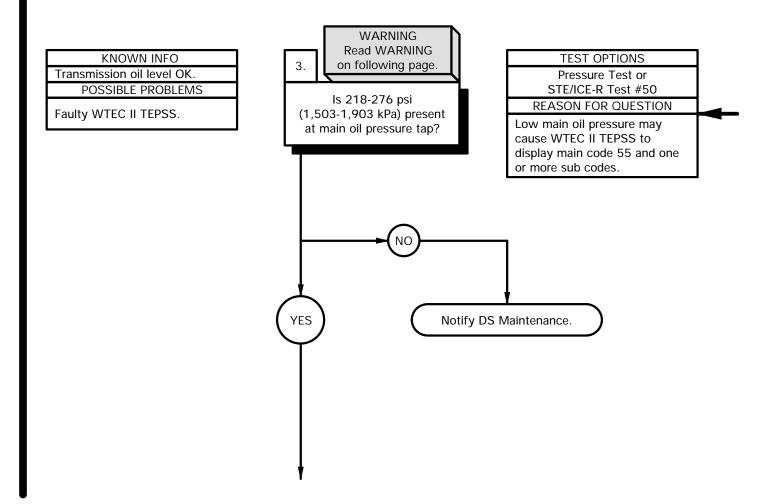


CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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 faulty 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).

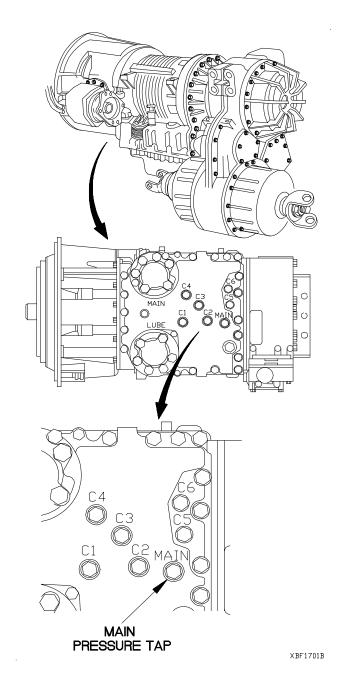
f17. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE (CONT)



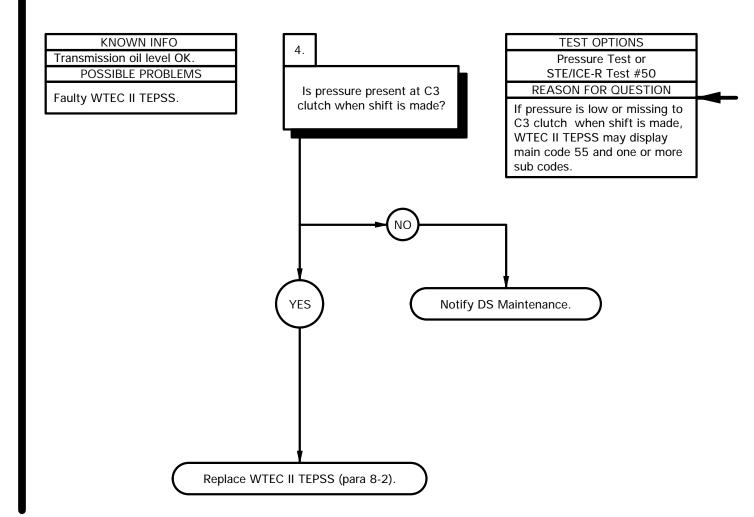
Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

- (1) Position drain pan under pressure tap.
- (2) Remove main pressure tap plug and preformed packing from control valve module.
- (3) Connect tube to boss adapter, hose, and pipe to tube adapter to clutch pressure tap.
- (4) Start engine (TM 9-2320-365-10) and run at idle.
- (5) Perform STE/ICE-R Test #50 (TM 9-4910-571-12&P).
- (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 pipe to tube adapter, hose, and tube to boss adapter 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.



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



PRESSURE TEST

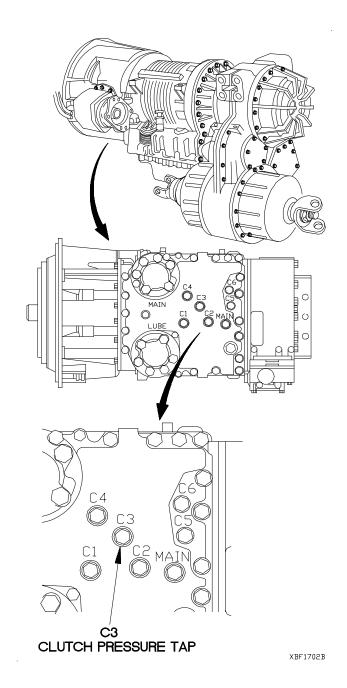
- Remove front and rear propeller shafts (para 9-2).
- (2) Position drain pan under C3 pressure tap.
- (3) Remove C3 pressure tap plug and preformed packing from control valve module.
- (4) Connect tube to boss adapter, hose, and pipe to tube adapter to C3 pressure tap.
- (5) Perform STE/ICE-R test #50 (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 215-276 psi (1,480-1,900 kPa) pressure is not obtained for affected code, notify
- DS Maintenance.
 (10) If 215-276 psi (1,480- 1,900 kPa) pressure is obtained, replace WTEC II TEPSS
- (11) Remove pipe to tube adapter, hose, and tube to boss adapter from C3 pressure tap.
- (12) Position preformed packing and C3 pressure tap plug in control valve module.

(para 8-2).

- (13) Tighten C3 pressure tap plug to 84-120 lb-in. (9-14 N·m).
- (14) Remove drain pan under pressure tap.
- (15) Install front and rear propeller shafts (para 9-2).
- (16) Clear diagnostic codes (para 8-4).

Table 2-30. Clutch Pressures

Sub Code	Sub Code Meaning	Pressure Readings C3 Tap
17	1-R	215-276 psi (1,480-1,900 kPa)
27	2-R	215-276 psi (1,480-1,900 kPa)
80	N1-L	215-276 psi (1,480-1,900 kPa)
87	N1-R	215-276 psi (1,480-1,900 kPa)
97	2-R	215-276 psi (1,480-1,900 kPa)



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

INITIAL SETUP

Fuse OK.

Batteries OK.

speed sensor.

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

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)

Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D) Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)

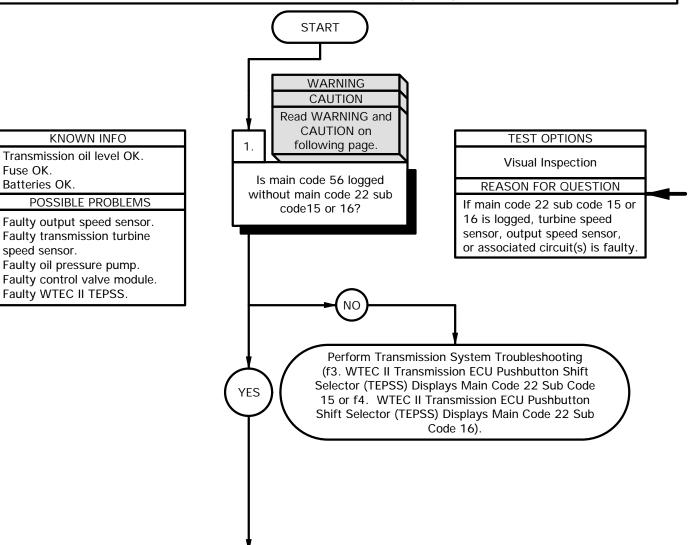
Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required

(2)

Reference

TM 9-4910-571-12&P



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.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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).

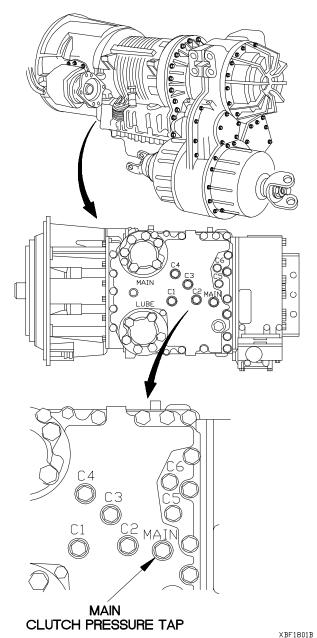
f18. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE (CONT)

WARNING Read WARNING KNOWN INFO KNOWN INFO 2. on following page. Pressure Test or Transmission oil level OK. STE/ICE-R TEST #50 Fuse OK. Is 218-276 psi Batteries OK. POSSIBLE PROBLEMS (1,503-1,903 kPa) present Output speed sensor OK. Low main oil pressure may at main oil pressure tap? Transmission turbine speed cause WTEC II TEPSS to sensor OK. display main code 56 and one or more sub codes. POSSIBLE PROBLEMS Faulty oil pressure pump. Faulty control valve module. Faulty WTEC II TEPSS. YES Notify DS Maintenance.

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.

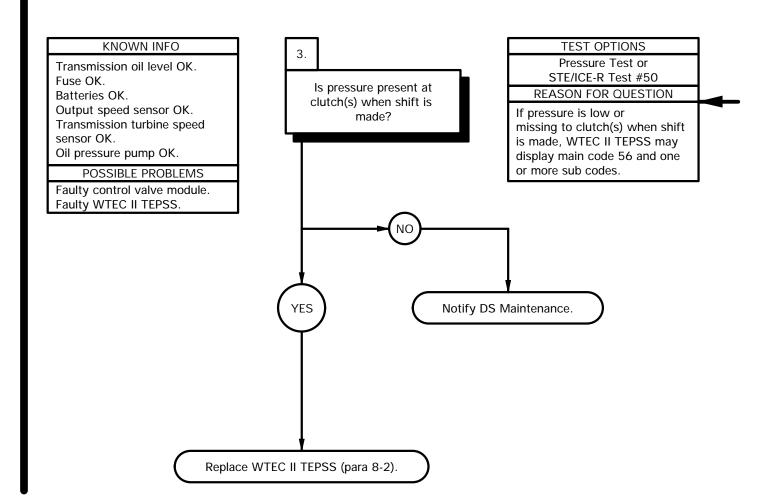
PRESSURE TEST

- (1) Position drain pan under pressure tap.
- (2) Remove main pressure tap plug and preformed packing from control valve module.
- (3) Connect tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter 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.



// TO 1001

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



PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter 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 front and rear propeller shafts (para 9-2).
- (19) Clear diagnostic codes (para 8-4).

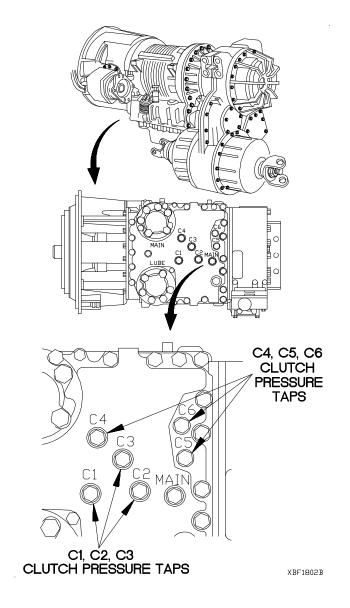


Table 2-31. Clutch Pressure Tap

Sub Code	Sub Code Meaning	Pressure at Clutch(s)	Pressure Readings at Taps
00	L Range Test	C3 & C6	215-334 psi (1480-2300 kPa)
11	1 Range Test	C1 & C5	215-305 psi (1480-2100 kPa)
22	2 Range Test	C1 & C4	142-203 psi (980-1400 kPa)
33	3 Range Test	C1 & C3	142-203 psi (980-1400 kPa)
44	4 Range Test	C1 & C2	142-203 psi (980-1400 kPa)
55	5 Range Test	C2 & C3	128-189 psi (880-1300 kPa)
66	6 Range Test	C2 & C4	128-189 psi (880-1300 kPa)
77	R Range Test	C3 & C5	215-276 psi (1480-1900 kPa)

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

INITIAL SETUP

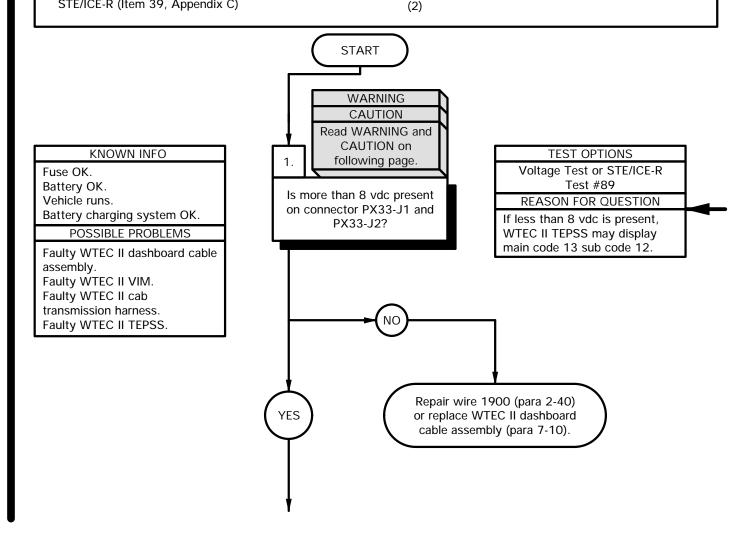
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

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)

Tools and Special Tools (Cont)
Wrench Set, Socket (Item 49, Appendix C)

References TM 9-4910-571-12&P

Personnel Required



Remove 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

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

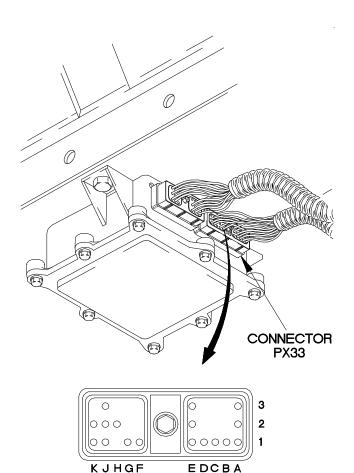
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

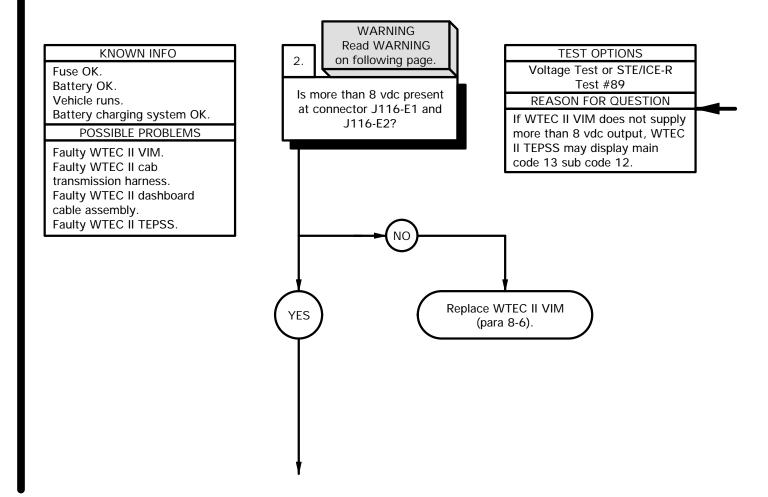
- (1) Remove kick panel (para 16-3).
- (2) Set multimeter to volts dc.
- (3) Start engine (TM 9-2320-365-10).
- (4) Connect positive (+) probe of multimeter to connector PX33-J1.
- (5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (6) Connect positive (+) probe 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).



PX33

XBf1901B

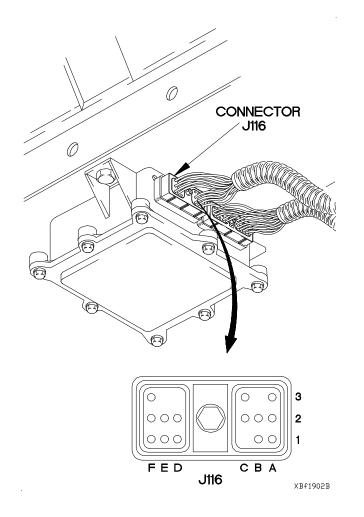
f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



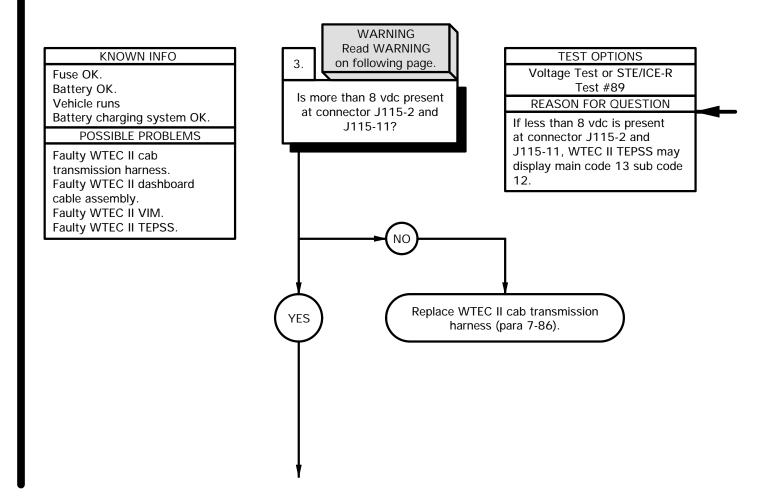
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

- (1) Start engine (TM 9-2320-365-10).
- (2) Set multimeter to volts DC.
- (3) Connect positive (+) probe of multimeter to connector J116-E1.
- (4) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (5) Connect positive (+) probe of multimeter to connector J116-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).



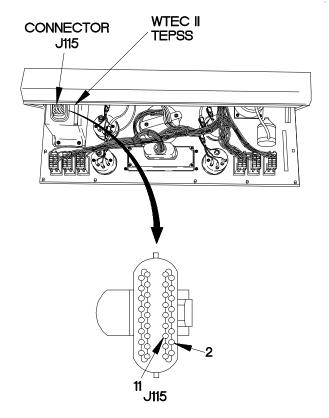
f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



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

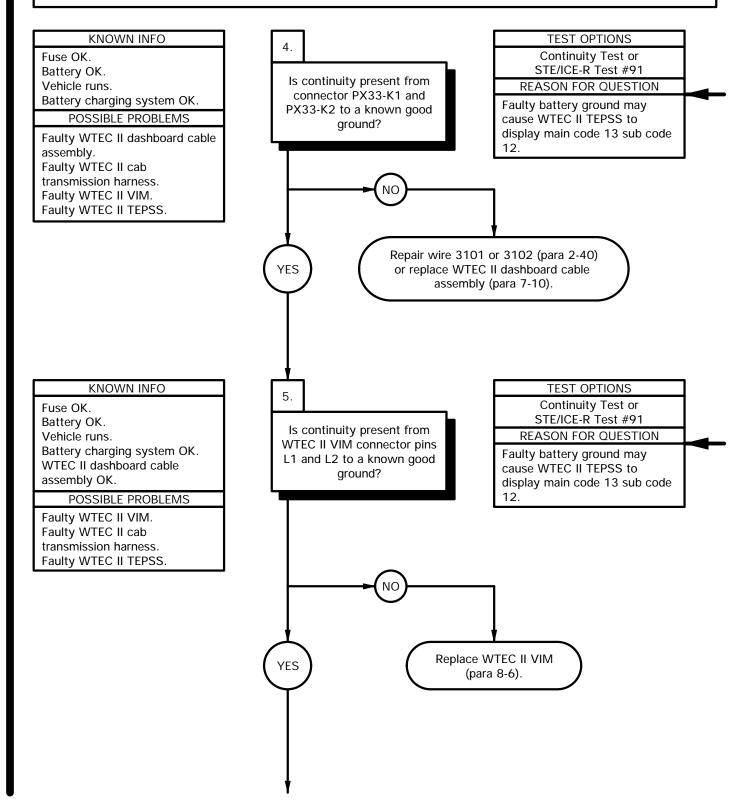
VOLTAGE TEST

- (1) Remove instrument panel assembly for access (para 7-15).
- (2) 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 at connector J115-2 and J115-11, replace WTEC II cab transmission harness (para 7-86).
- (10) Shut down engine (TM 9-2320-365-10).



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

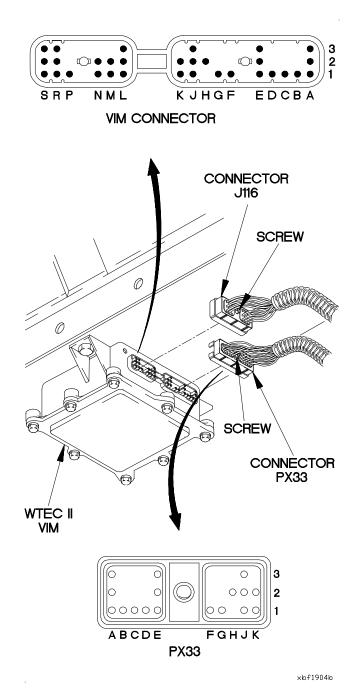


CONTINUITY TEST

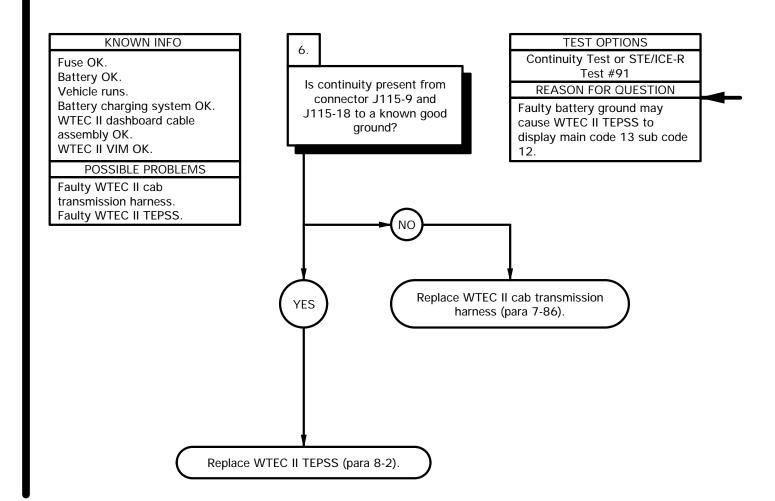
- (1) Loosen screw in connector PX33.
- Disconnect connector PX33 from WTEC II VIM.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to connector PX33-K1.
- (5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (6) Connect positive (+) probe of multimeter to connector PX33-K2.
- (7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (8) 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).
- (9) 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).
- (10) Connect connector PX33 to WTEC II VIM.
- (11) Tighten screw in connector PX33.

CONTINUITY TEST

- (1) Loosen screw in connector J116.
- (2) Disconnect connector J116 from WTEC II VIM.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to WTEC II VIM connector pin L1.
- (5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (6) Connect positive (+) probe of multimeter to WTEC II VIM connector pin L2.
- (7) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (8) If continuity is not present in steps (5) and (7), replace WTEC II VIM (para 8-6).
- (9) Connect connector J116 to WTEC II VIM.
- (10) Tighten screw in connector J116.
- (11) Install kick panel (para 16-3).

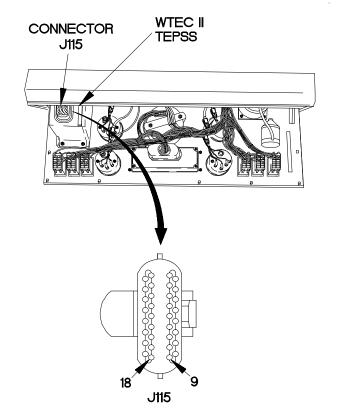


f19. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



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).



XBf1905B

f19A. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE

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)

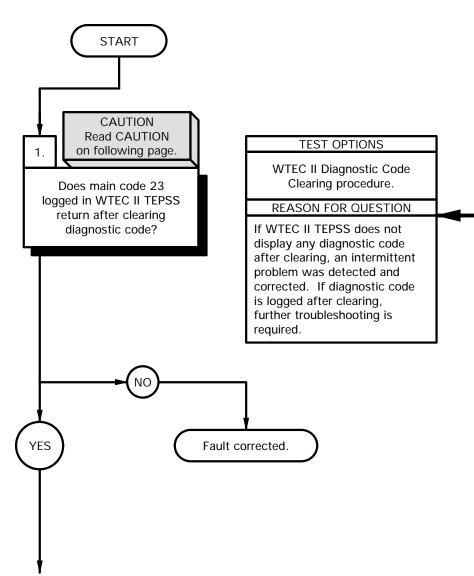
STE/ICE-R (Item 39, Appendix C)

Personnel Required (2)

References TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breaker C35 prior to begining this task.



KNOWN INFO

Circuit breaker CB35 OK.

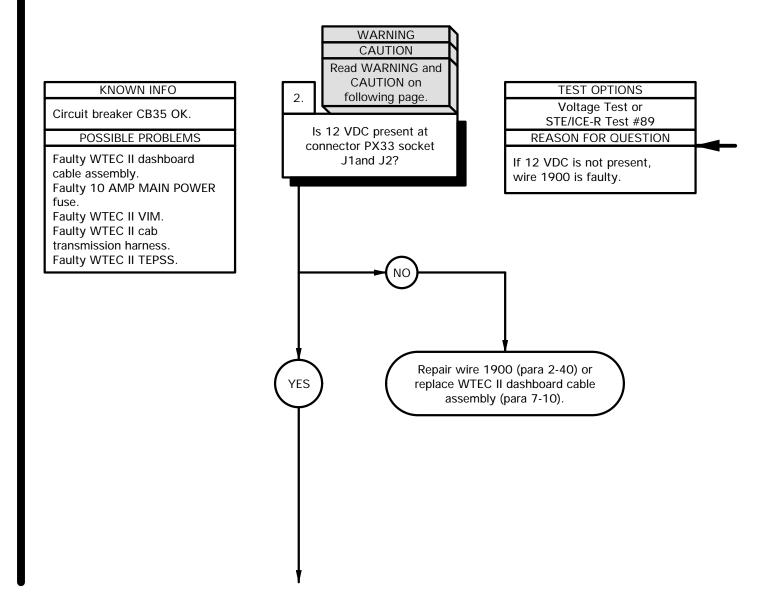
POSSIBLE PROBLEMS

Faulty WTEC II dashboard cable assembly.
Faulty 10 AMP MAIN POWER fuse.
Faulty WTEC II vehicle interface module (VIM).
Faulty WTEC II cab transmission harness.
Faulty WTEC II TEPSS.

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (1) Perform WTEC II Code Reading and Code Clearing (para 8-4).
- (2) If diagnostic code 23 is not logged after clearing, fault is corrected.
- (3) If diagnostic code 23 is logged after clearing, further troubleshooting is required.

f19A. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 23 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 circuits and cause severe burns or electrical shock.

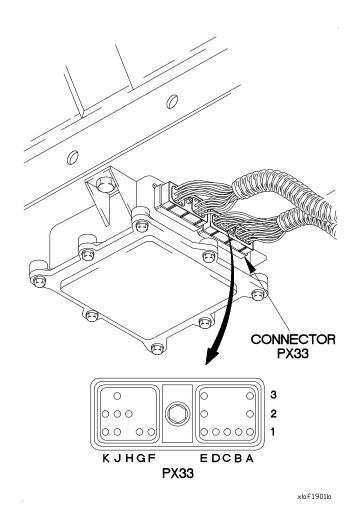
CAUTION

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

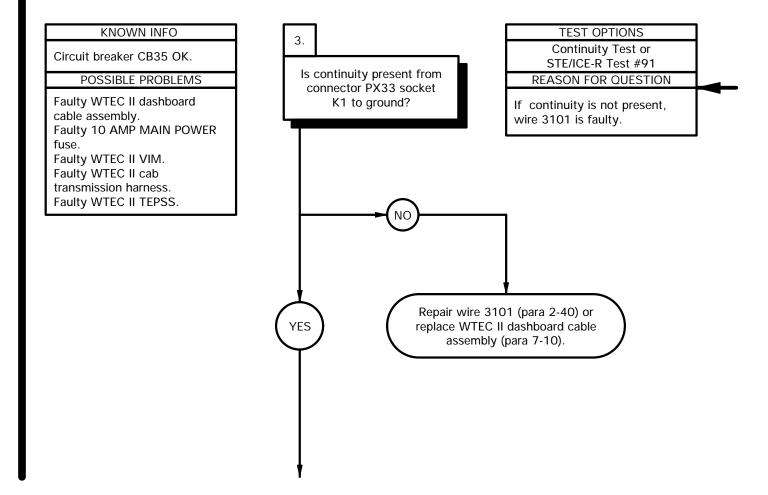
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

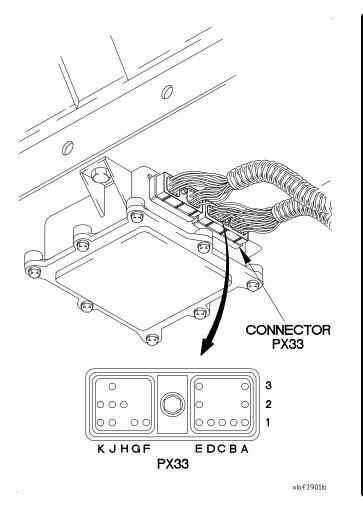
- (1) Remove kick panel (para 16-3).
- (2) Loosen screw in PX33 connector.
- (3) Disconnect connector PX33 from VIM connector.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to connector PX33 socket J1.
- (6) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (7) Connect positive (+) probe of multimeter to connector PX33 socket J2.
- (8) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (9) If 12 VDC is not present in steps (5) and (7), repair wire 1900 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).



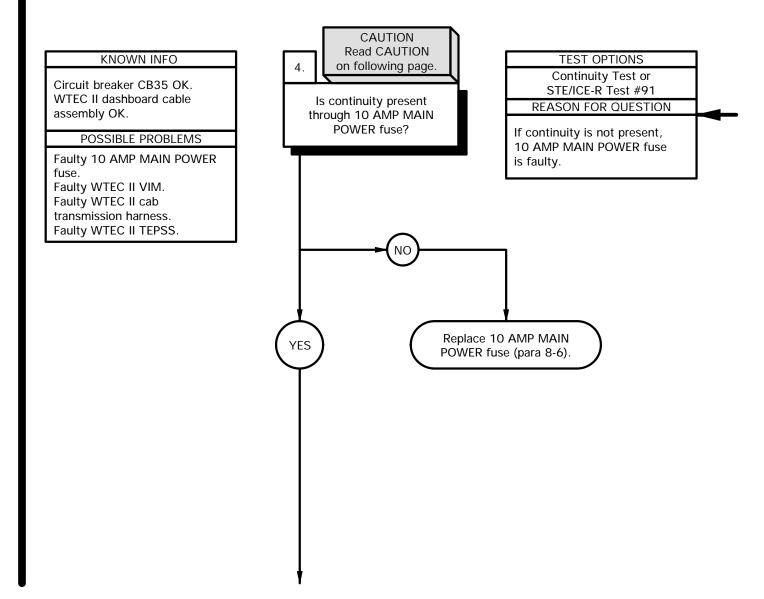
f19A. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)



- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector PX33 socket K1.
- (3) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (4) If continuity is not present, repair wire 3101 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).



f19A. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)

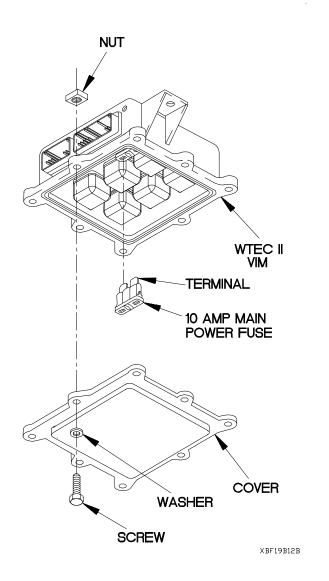


Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

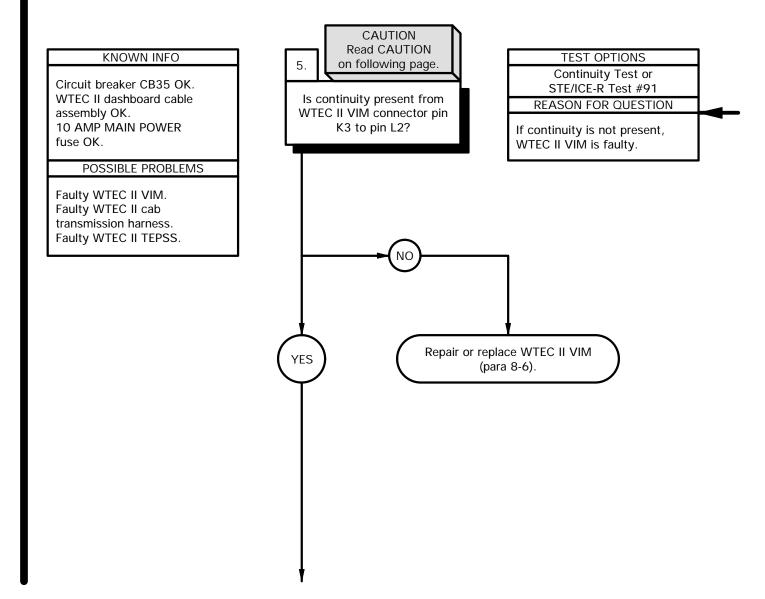
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Remove seven screws and washers from WTEC II VIM cover.
- (2) Remove screw, washer, WTEC II VIM cover, and nut from WTEC II VIM.
- (3) Remove 10 AMP MAIN POWER fuse from WTEC II VIM.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one terminal on 10 AMP MAIN POWER fuse.
- (6) Connect negative (-) probe of multimeter to other terminal on 10 AMP MAIN POWER fuse and note reading on multimeter.
- (7) If continuity is not present, replace 10 AMP MAIN POWER fuse (para 8-6).
- (8) Position WTEC II VIM cover on WTEC II VIM with washer, screw, and nut.
- (9) Install seven washers, and screws in WTEC II VIM cover.



f19A. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)

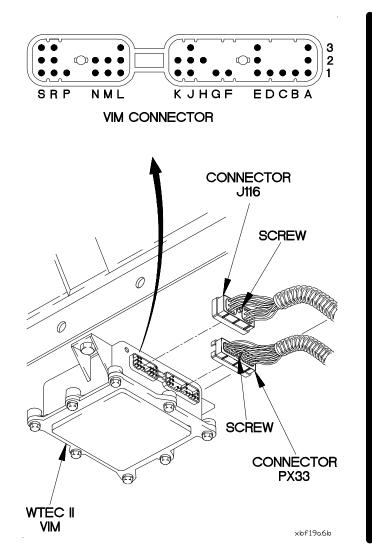


Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

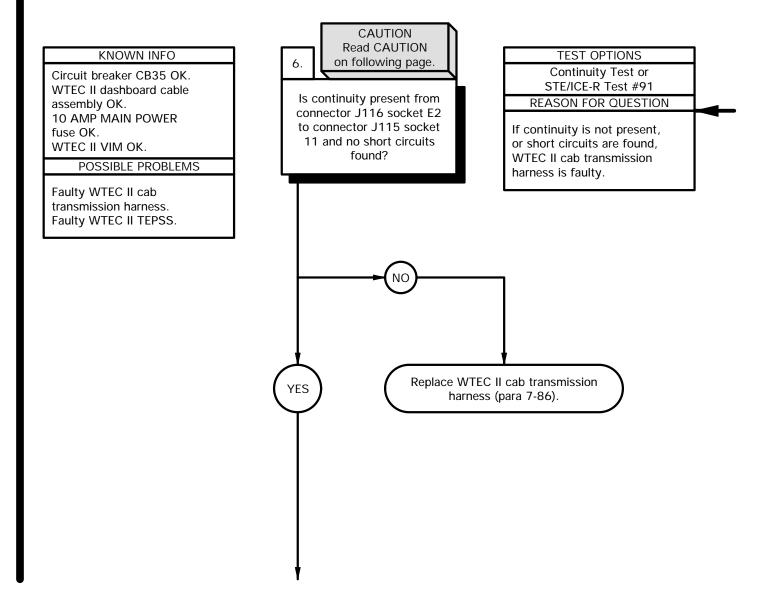
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Loosen screw in connector J116.
- (2) Disconnect connector J116 from WTEC II VIM.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to WTEC II VIM connector pin K3.
- (5) Connect negative (-) probe of multimeter to WTEC II VIM connector pin L2 and note reading on multimeter.
- (6) If continuity is not present, repair or replace WTEC II VIM (para 8-6).
- (7) Connect connector PX33 to WTEC II VIM connector.
- (8) Tighten screw in connector PX33.



f19A. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)

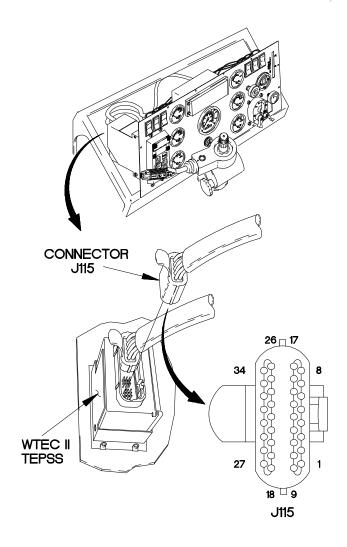


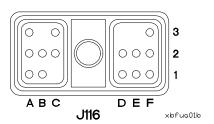
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

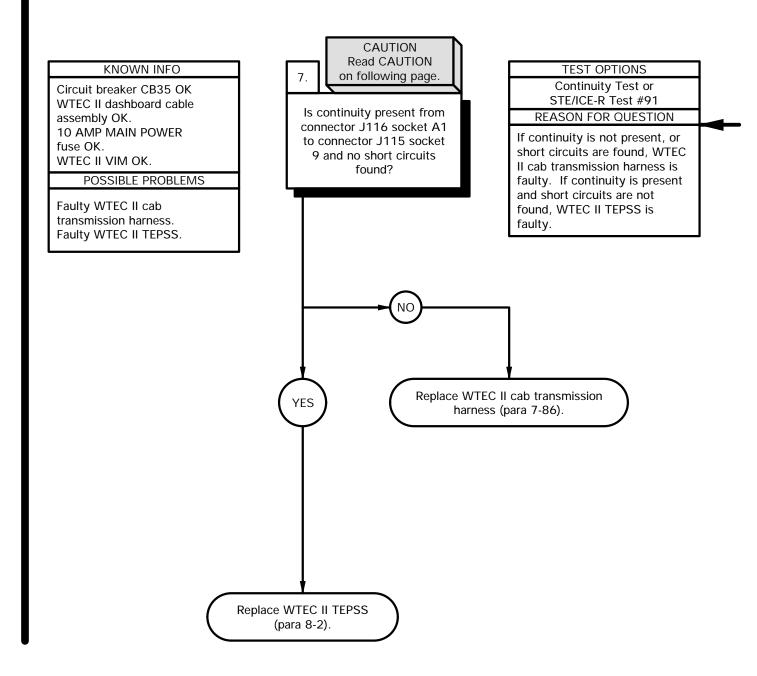
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Remove instrument panel assembly for access (para 7-15).
- (2) Disconnect connector J115 from WTEC II TEPSS connector.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to connector J116 socket E2.
- (5) Connect negative (-) probe of multimeter to connector J115 socket 11 and note reading on multimeter.
- (6) Connect negative probe (-) of multimeter to all other sockets in connector J115 and note reading on multimeter.
- (7) Connect negative probe (-) of multimeter to ground 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).





f19A. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)

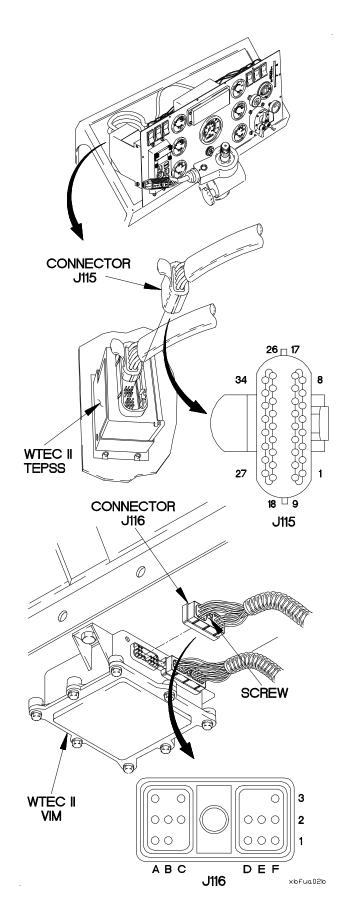


Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector J116 socket A1.
- (3) Connect negative (-) probe of multimeter to connector J115 socket 9 and note reading on multimeter.
- (4) Connect negative probe (-) of multimeter to all other sockets in connector J115 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 continuity is not present in step (4) or (5), replace WTEC II TEPSS (para 8-2).
- (8) Connect connector J116 to VIM connector.
- (9) Tighten screw in connector J116.
- (10) Connect connector J115 to WTEC II TEPSS connector.
- (11) Install kick panel (para 16-3).
- (12) Install instrument panel assembly (para 7-15).
- (13) Clear diagnostic codes (para 8-4).



INITAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Kick panel removed (para 16-3).

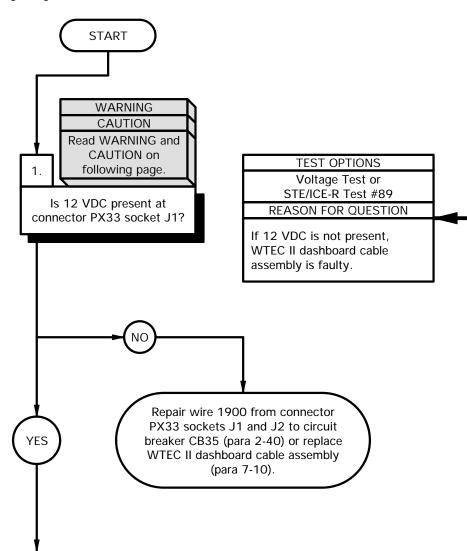
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required

References TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breakers CB35 and CB79 prior to beginning this task.



KNOWN INFO

12 VDC and 24 VDC circuits operate.

Circuit breaker CB35 OK. Circuit breaker CB79 OK.

POSSIBLE PROBLEMS

Faulty WTEC II dashboard cable assembly.
Faulty terminal board TB1.
Faulty 10 AMP MAIN POWER fuse.

Faulty 10 AMP IGNITION fuse. Faulty WTEC II VIM. Faulty WTEC II cab transmission harness. Faulty WTEC II TEPSS.

WARNING

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

CAUTION

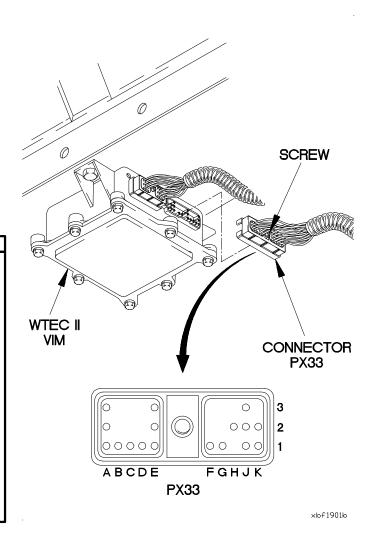
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- (1) Loosen screw in connector PX33.
- (2) Disconnect connector PX33 from WTEC II VIM.
- (3) Set multimeter to volts DC.
- (4) Connect positive (+) probe of multimeter to connector PX33 socket J1.
- (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) Position master power switch to off (TM 9-2320-365-10).
- (8) If 12 VDC is not present, repair wire 1900 from connector PX33 sockets J1 and J2 to circuit breaker CB35 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).



WARNING **CAUTION** Read WARNING and CAUTION on KNOWN INFO TEST OPTIONS 2. following page. Voltage Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #89 Is 24 VDC present at operate. REASON FOR QUESTION Circuit breaker CB35 OK. connector PX33 socket C1? This question eliminates Circuit breaker CB79 OK. possible problems and POSSIBLE PROBLEMS determines where troubleshooting continues. Faulty WTEC II dashboard cable assembly. Faulty terminal board TB1. Faulty 10 AMP MAIN POWER Faulty 10 AMP IGNITION fuse. Faulty WTEC II VIM. Faulty WTEC II cab transmission harness. Faulty WTEC II TEPSS. YES Go to step 10 of this fault.

WARNING

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

CAUTION

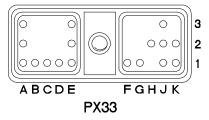
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- (1) Set multimeter to volts DC.
- (2) Connect positive (+) probe of multimeter to connector PX33 socket C1.
- (3) Connect negative (-) probe of multimeter to ground.
- (4) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
- (5) Position master power switch to off (TM 9-2320-365-10).
- (6) If 24 VDC is not present, go to step 10 of this fault.



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CAUTION Read CAUTION KNOWN INFO TEST OPTIONS on following page. 3. Continuity Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #91 operate. Is continuity present from REASON FOR QUESTION Circuit breaker CB35 OK. connector PX33 socket K1 Circuit breaker CB79 OK. to connector PX33 socket If continuity is not present, Terminal board TB1 OK. K2? WTEC II dashboard cable assembly is faulty. POSSIBLE PROBLEMS Faulty WTEC II dashboard cable assembly. Faulty 10 AMP MAIN POWER Faulty 10 AMP IGNITION fuse. Faulty WTEC II VIM. Faulty WTEC II cab transmission harness. Repair wires 3101 and 3102 from Faulty WTEC II TEPSS. connector PX33 sockets K1 and K2 to terminal board TB2 position YES 16 and 17 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).

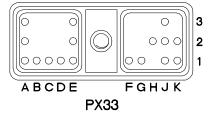
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

- (1) Disconnect batteries (para 7-48).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to connector PX33 socket K1.
- (4) Connect negative (-) probe of multimeter to connector PX33 socket K2 and note reading on multimeter.
- (5) If continuity is not present, Repair wires 3101 and 3102 from connector PX33 sockets K1 and K2 to terminal board TB2 position 16 and 17 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).



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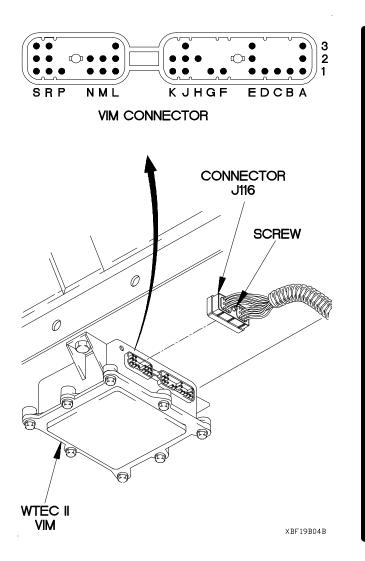
CAUTION Read CAUTION KNOWN INFO TEST OPTIONS on following page. Continuity Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #91 operate. Is continuity present from REASON FOR QUESTION Circuit breaker CB35 OK. WTEC II VIM connector pin Circuit breaker CB79 OK. This question eliminates J1 to WTEC II VIM connector Terminal board TB1 OK. possible problems and pin R1? WTEC II dashboard cable determines where assembly OK. troubleshooting continues. POSSIBLE PROBLEMS Faulty 10 AMP MAIN POWER Faulty 10 AMP IGNITION fuse. Faulty WTEC II VIM. Faulty WTEC II cab transmission harness. Faulty WTEC II TEPSS. YES Go to step 12 of this fault.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Loosen screw in connector P116.
- (2) Disconnect connector P116 from WTEC II VIM.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to WTEC II connector pin J1.
- (5) Connect negative (-) probe of multimeter to WTEC II connector pin R1 and note reading on multimeter.
- (6) If continuity is not present, go to step 12 of this fault.



CAUTION Read CAUTION KNOWN INFO TEST OPTIONS on following page. 5. Continuity Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #91 operate. Is continuity present from REASON FOR QUESTION Circuit breaker CB35 OK. WTEC II VIM connector pin Circuit breaker CB79 OK. This question eliminates C1 to WTEC II VIM connector Terminal block TB1 OK. possible problems and pin S1? WTEC II dashboard cable determines where assembly OK. troubleshooting continues. 10 AMP MAIN POWER fuse OK. POSSIBLE PROBLEMS Faulty 10 AMP IGNITION fuse. Faulty WTEC II VIM. Faulty WTEC II cab transmission harness. Faulty WTEC II TEPSS. YES Go to step 13 of this fault.

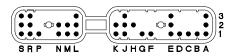
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to WTEC II connector pin C1.
- (3) Connect negative (-) probe of multimeter to WTEC II connector pin S1 and note reading on multimeter.
- (4) If continuity is not present, go to step 13 of this fault.



VIM CONNECTOR PINS

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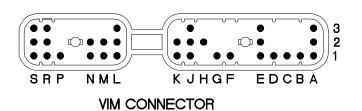
CAUTION Read CAUTION KNOWN INFO TEST OPTIONS on following page. Continuity Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #91 operate. Is continuity present from REASON FOR QUESTION Circuit breaker CB35 OK. WTEC II VIM connector pin Circuit breaker CB79 OK. L2 to WTEC II VIM connector If continuity is not present, Terminal board TB1 OK. pin K2? WTEC II VIM is faulty. WTEC II dashboard cable assembly OK. 10 AMP MAIN POWER fuse OK. 10 AMP IGNITION fuse OK. POSSIBLE PROBLEMS Faulty WTEC II VIM. Faulty WTEC II cab transmission harness. Faulty WTEC II TEPSS. YES Replace WTEC II VIM (para 8-6).

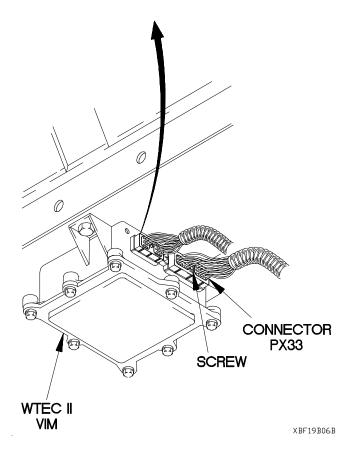
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to WTEC II connector pin L2.
- (3) Connect negative (-) probe of multimeter to WTEC II connector pin K2 and note reading on multimeter.
- (4) If continuity is not present, replace WTEC II VIM (para 8-6).
- (5) Connect connector PX33 to WTEC II VIM.
- (6) Tighten screw in connector PX33.



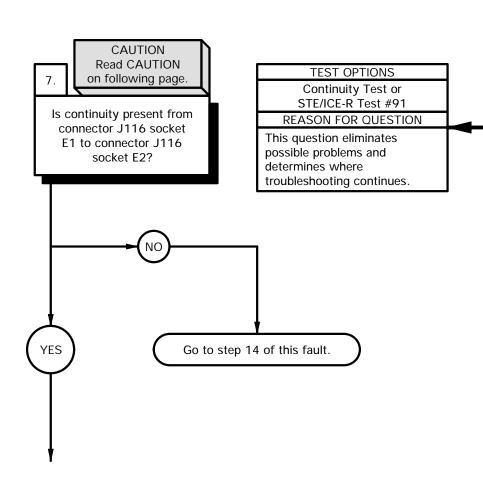


KNOWN INFO 12 VDC and 24 VDC circuits operate

operate.
Circuit breaker CB35 OK.
Circuit breaker CB79 OK.
Terminal board TB1 OK.
WTEC II dashboard cable
assembly OK.
10 AMP MAIN POWER fuse OK.
10 AMP IGNITION fuse OK.
WTEC II VIM OK.

POSSIBLE PROBLEMS

Faulty WTEC II cab transmission harness. Faulty WTEC II TEPSS.

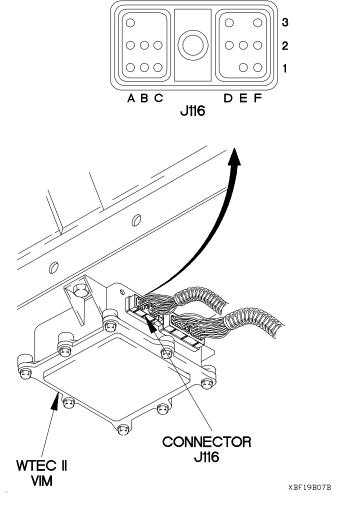


Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector J116 socket E1.
- (3) Connect negative (-) probe of multimeter to connector J116 socket E2 and note reading on multimeter.
- (4) If continuity is not present, go to step 14 of this fault.



KNOWN INFO

12 VDC and 24 VDC circuits operate.
Circuit breaker CB35 OK.
Circuit breaker CB79 OK.
Terminal board TB1 OK.

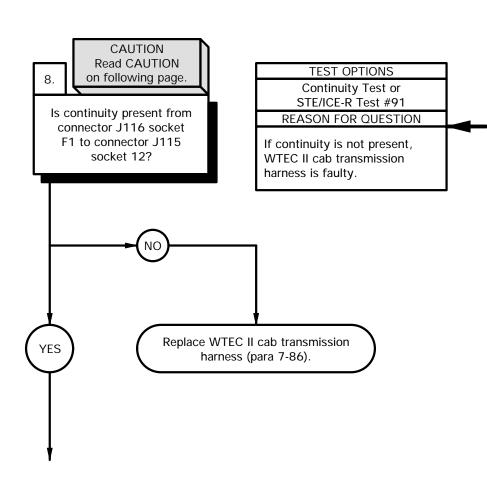
WTEC II dashboard cable assembly OK.

10 AMP MAIN POWER fuse OK.

10 AMP MAIN POWER fuse OK 10 AMP IGNITION fuse OK. WTEC II VIM OK.

POSSIBLE PROBLEMS

Faulty WTEC II cab transmission harness. Faulty WTEC II TEPSS.

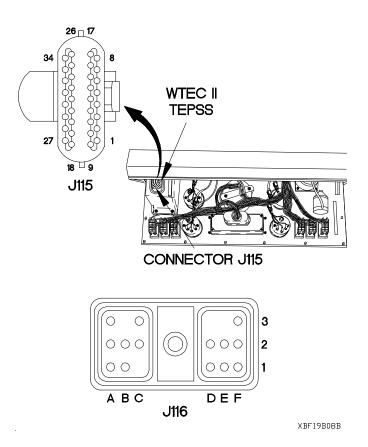


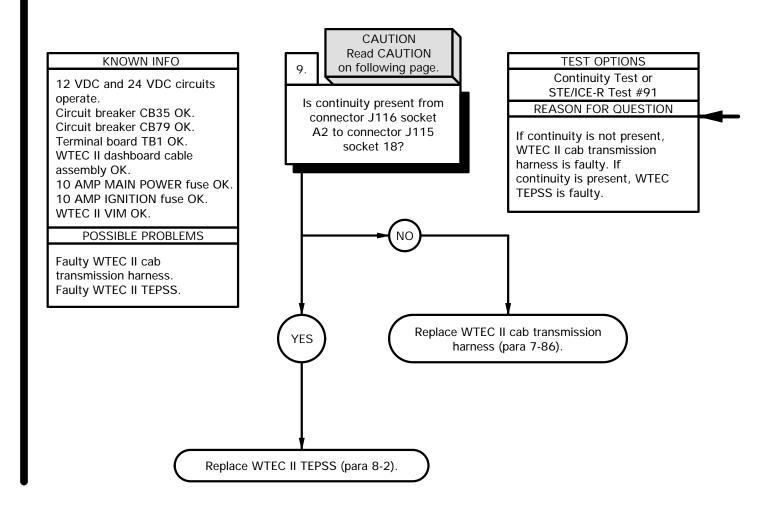
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Remove instrument panel assembly for access (para 7-15).
- (2) Disconnect connector J115 from WTEC II TEPSS.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to connector J116 socket F1.
- (5) Connect negative (-) probe of multimeter to connector J115 socket 12 and note reading on multimeter.
- (6) If continuity is not present, replace WTEC II cab transmission harness (para 7-86).



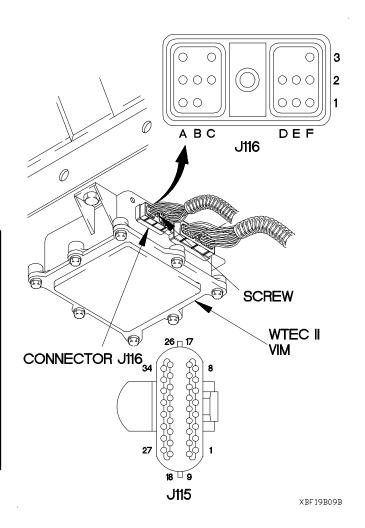


Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector J116 socket A2.
- (3) Connect negative (-) probe of multimeter to connector J115 socket 18 and note reading on multimeter.
- (4) If continuity is not present, replace WTEC II cab transmission harness (para 7-86).
- (5) If continuity is present, replace WTEC II TEPSS (para 8-2).
- (6) Connect connector J116 to WTEC II VIM connector.
- (7) Tighten screw in connector P116.
- (8) Install kick panel (para 16-3).

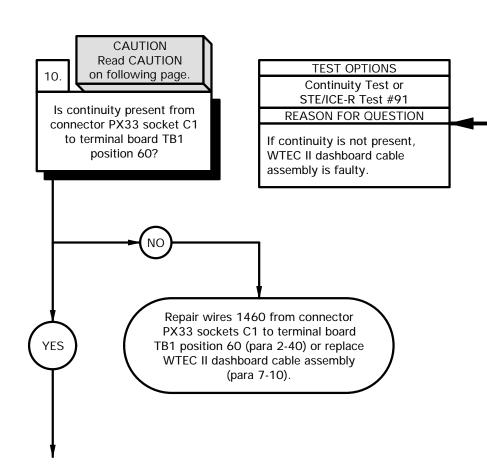


KNOWN INFO

12 VDC and 24 VDC circuits operate.
Circuit breaker CB35 OK.
Circuit breaker CB79 OK.
10 AMP MAIN POWER fuse OK.
10 AMP IGNITION fuse OK.
WTEC II VIM OK.
WTEC II cab transmission harness OK.
WTEC II TEPSS OK.

POSSIBLE PROBLEMS

Faulty WTEC II dashboard cable assembly.
Faulty terminal board TB1.

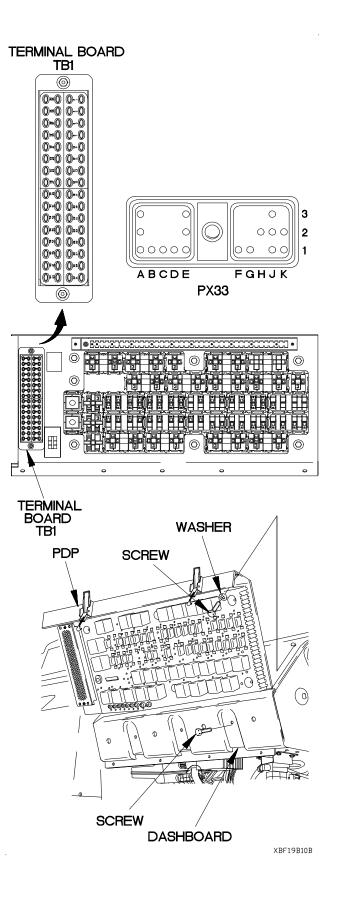


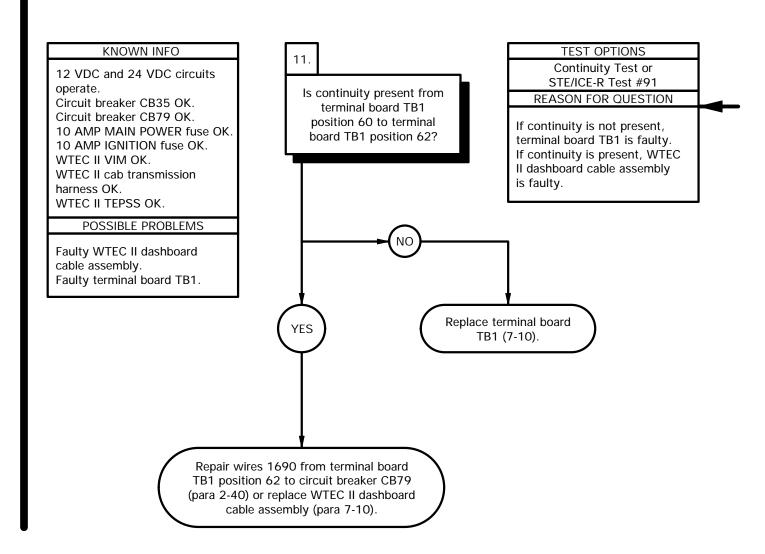
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (1) Disconnect batteries (para 7-48).
- (2) Remove PDP cover (para 16-2).
- (3) Remove three screws from PDP.
- (4) Remove three screws and washers from PDP.
- (5) Lift PDP outward to gain access.
- (6) Set multimeter to ohms.
- (7) Connect positive (+) probe of multimeter to connector PX33 socket C1.
- (8) Connect negative (-) probe of multimeter to terminal board TB1 position 60 and not reading on multimeter.
- (9) If continuity is not present, Repair wire 1460 from connector PX33 sockets C1 to terminal board TB1 position 60 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).
- (10) Connect connector PX33 to WTEC II VIM.
- (11) Tighten screw in connector PX33.
- (12) Install kick panel (para 16-3).



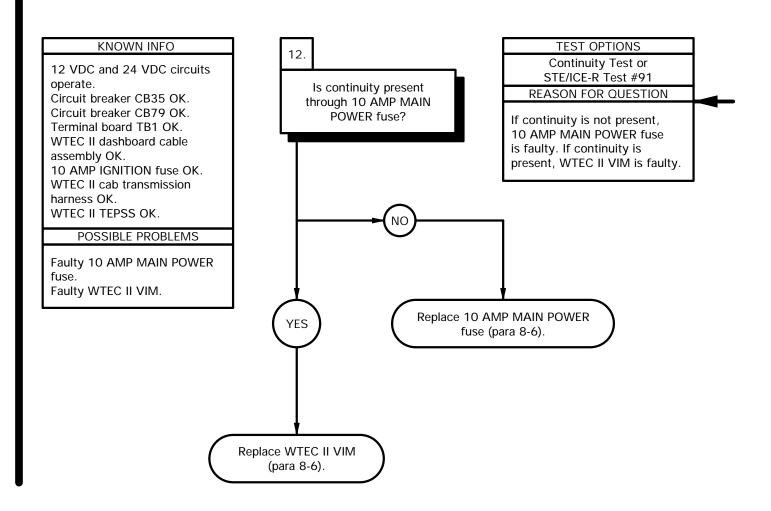


TERMINAL BOARD TB₁ 0 0**0 0--0 0=0 0-0 0-0 0-0 0-0 0=0 0=0 0-0 0-0 0 0 0 0 O==0 O==0 0=0 0=0 0=:0 0=0 0=0 0=0 0=0 0=0 0::0 0::0 **TERMINAL** BOARD TB1 WASHER **PDP SCREW** SCREW **DASHBOARD**

CONTINUITY TEST

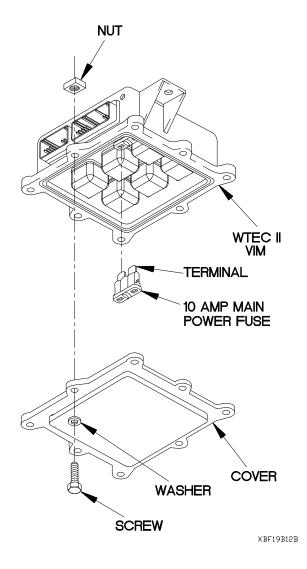
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to terminal board TB1 position 60.
- (3) Connect negative (-) probe of multimeter to terminal board TB1 position 62 and note reading on multimeter.
- (4) If continuity is not present, replace terminal board TB1 (para 7-10).
- (5) If continuity is present, Repair wire 1690 from terminal board TB1 position 62 to circuit breaker CB79 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10).
- (6) Install PDP on dashboard with three screws.
- (7) Install three washers and screws in PDP.
- (8) Install PDP cover (para 16-2).
- (9) Connect batteries (para 7-48).

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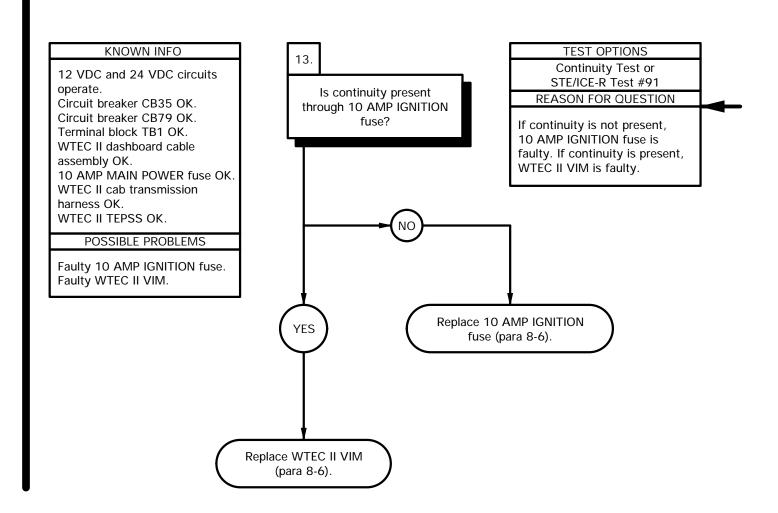


CONTINUITY TEST

- (1) Remove seven screws and washers from WTEC II VIM cover.
- (2) Remove screw, washer, cover, and nut from WTEC II VIM.
- (3) Remove 10 AMP MAIN POWER fuse from WTEC II VIM.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one terminal on 10 AMP MAIN POWER fuse.
- (6) Connect negative (-) probe of multimeter to other terminal on 10 AMP MAIN POWER fuse and note reading on multimeter.
- (7) If continuity is not present, replace 10 AMP MAIN POWER fuse (para 8-6).
- (8) If continuity is present replace WTEC II VIM (para 8-6).

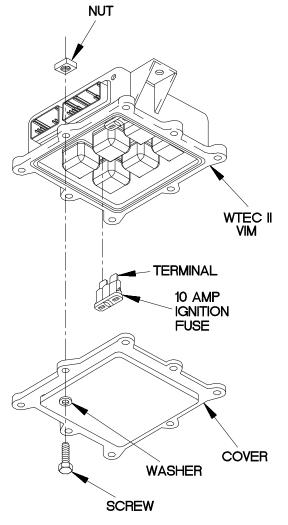


f19B. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DOES NOT ILLUMINATE (CONT)



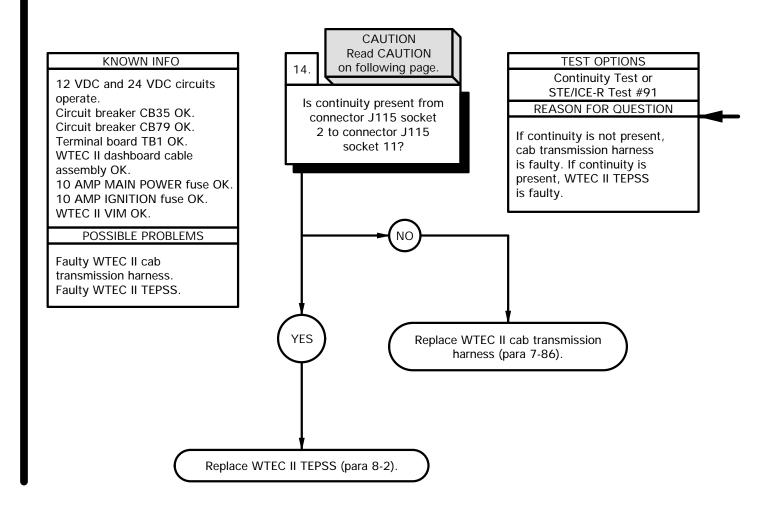
CONTINUITY TEST

- (1) Remove seven screws and washers from WTEC II VIM cover.
- (2) Remove screw, washer, cover, and nut from WTEC II VIM.
- (3) Remove 10 AMP IGNITION fuse from WTEC II VIM.
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to one terminal on 10 AMP IGNITION fuse.
- (6) Connect negative (-) probe of multimeter to other terminal on 10 AMP IGNITION fuse and note reading on multimeter.
- (7) If continuity is not present, replace 10 AMP IGNITION fuse (para 8-6).
- (8) If continuity is present replace WTEC II VIM (para 8-6).



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f19B. WTEC II TRANSMISSION ECU PUSHBUTTON SHIFT SELECTOR (TEPSS) DOES NOT ILLUMINATE (CONT)



CAUTION

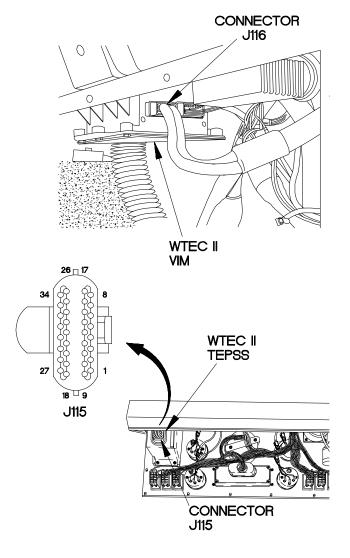
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

- (1) Connect connector P116 to WTEC II VIM.
- (2) Tighten screw in connector P116.
- (3) Remove instrument panel assembly for access (para 7-15).
- (4) Disconnect connector J115 from WTEC II TEPSS.
- (5) Set multimeter ohms.
- (6) Connect positive (+) probe of multimeter to connector P115 socket 2.
- (7) Connect negative (-) probe of multimeter to connector J115 socket 11 and note reading on multimeter.
- (8) If continuity is not present, replace WTEC II cab transmission harness (para 7-86).
- (9) If continuity is present, replace WTEC II TEPSS (para 8-2).
- (10) Install kick panel (para 16-3).
- (11) Connect batteries (para 7-48).



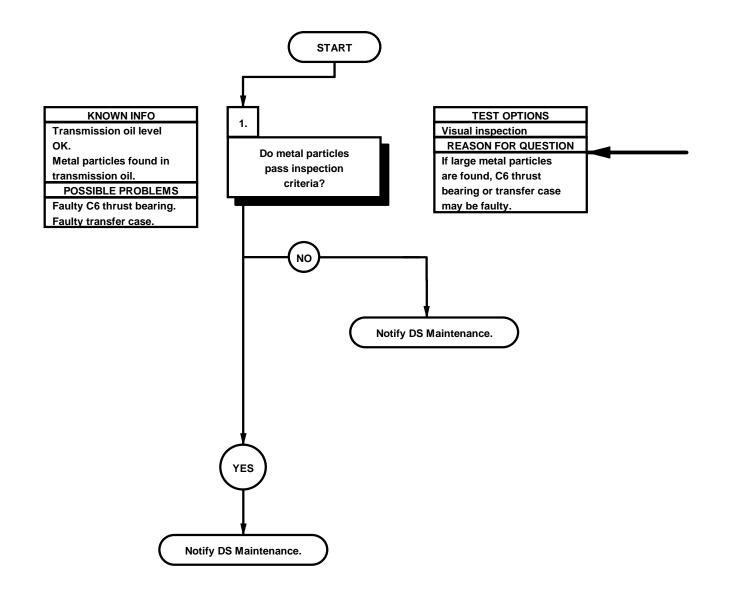
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f20. METAL PARTICLES FOUND DURING TRANSMISSION OIL CHANGE

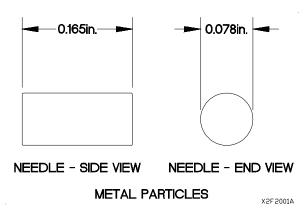
INITIAL SETUP

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.



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)

Goggles, Industrial (Item 15, Appendix C)

Materials/Parts

Tools and Special Tools

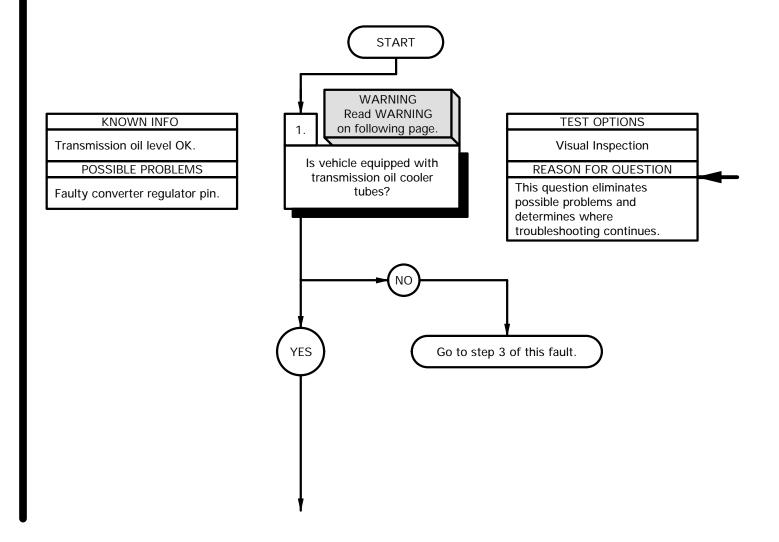
Adapter, Pipe to Tube (Item 1, Appendix D)

Tool Kit, Genl, Mech (Item 44, Appendix C)

STE/ICE-R (Item 39, Appendix C)

References

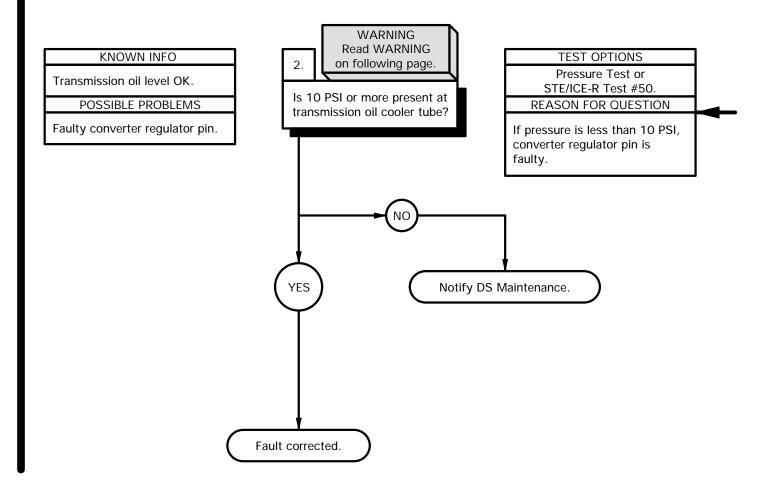
(TM 9-4910-571-12&P) Packing, Preformed (Item 177, Appendix G)



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 to see if vehicle is equipped with transmission oil cooler tubes.
- (2) If vehicle is not equipped with transmission oil cooler tubes, go to step 3 of this fault.

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



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.

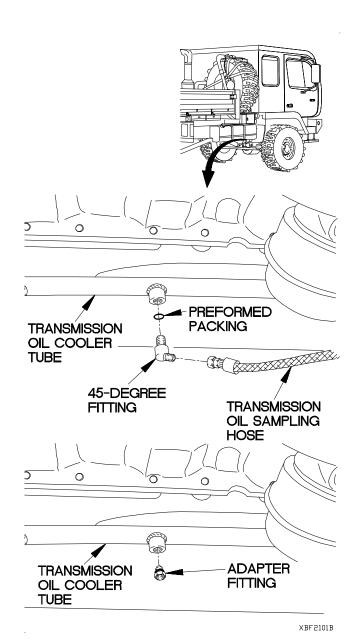
PRESSURE TEST

- Place drain pan under transmission oil cooler tube.
- (2) Disconnect transmission oil sampling hose from 45 degree fitting.

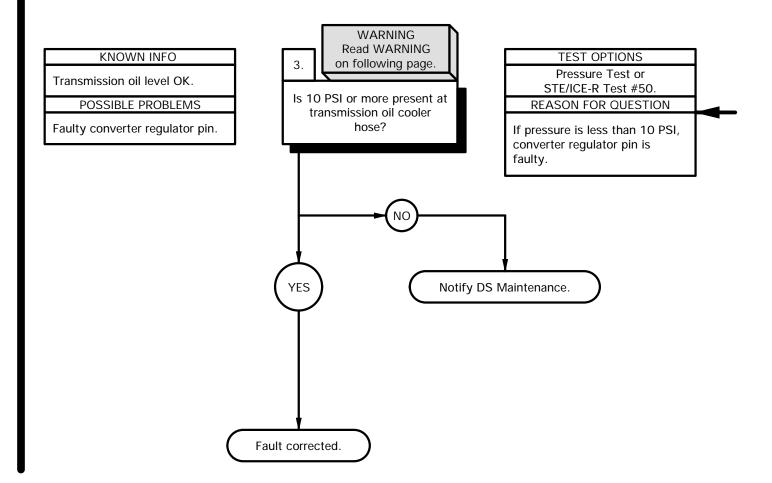
NOTE

Note orientation of 45 degree fitting prior to removal.

- (3) Remove 45 degree fitting from transmission oil cooler tube.
- (4) Remove preformed packing from 45 degree fitting. Discard preformed packing.
- (5) Install adapter fitting in transmission oil cooler tube.
- (6) Install STE/ICE-R 0-1000 PSI transducer in adapter fitting.
- (7) Start engine (TM 9-2320-365-10).
- (8) Perform STE/ICE-R Test # 50 and note reading on STE/ICE-R.
- (9) If pressure is less than 10 PSI, notify DS Maintenance.
- (10) Shut down engine (TM 9-2320-365-10).
- (11) Remove STE/ICE-R 0-1000 PSI transducer from adapter fitting.
- (12) Remove adapter fitting from transmission oil cooler tube
- oil cooler tube.
 (13) Install preformed packing on 45 degree fitting.
- (14) Install 45 degree fitting in transmission oil cooler tube.
- (15) Connect transmission oil sampling hose to 45 degree fitting.
- (16) Remove drain pan from under oil cooler tube.



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



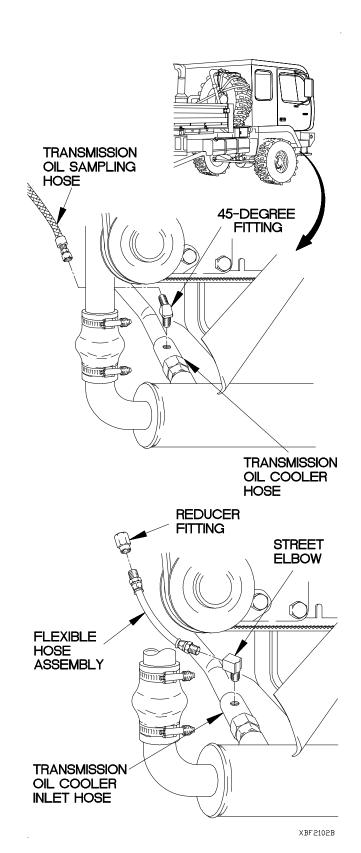
Prolonged contact with lubricating oil (MIL-L-2104) may cause a skin rash. Skin and clothing that come in contact with lubricating oil should be thoroughly washed immediately. Saturated clothing should be removed immediately. Areas in which lubricating oil is used should be well ventilated to keep fumes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

PRESSURE TEST

- (1) Place drain pan under transmission oil cooler hose.
- (2) Disconnect transmission oil sampling hose from 45 degree fitting.

NOTE Note orientation of 45 degree fitting prior to removal.

- (3) Remove 45 degree fitting from transmission oil cooler hose.
- (4) Install street elbow on transmission oil cooler hose.
- (5) Connect flexible hose assembly to street elbow.
- (6) Install reducer fitting on flexible hose assembly.
- (7) Install STE/ICE-R 0-1000 PSI transducer on reducer fitting.
- (8) Start engine (TM 9-2320-365-10).
- (9) Perform STE/ICE-R Test # 50 and note reading on STE/ICE-R.
- (10) If pressure is less than 10 PSI, notify DS Maintenance.
- (11) Shut down engine (TM 9-2320-365-10).
- (12) Remove STE/ICE-R 0-1000 PSI transducer from reducer fitting.
- (13) Remove reducer fitting from flexible hose assembly.
- (14) Disconnect flexible hose assembly from street elbow.
- (15) Remove street elbow from transmission oil cooler hose.
- (16) Install 45 degree fitting on transmission oil cooler hose.
- (17) Connect transmission oil sampling hose to 45 degree fitting.
- (18) Remove drain pan from under oil cooler hose.



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).

Tools and Special Tools

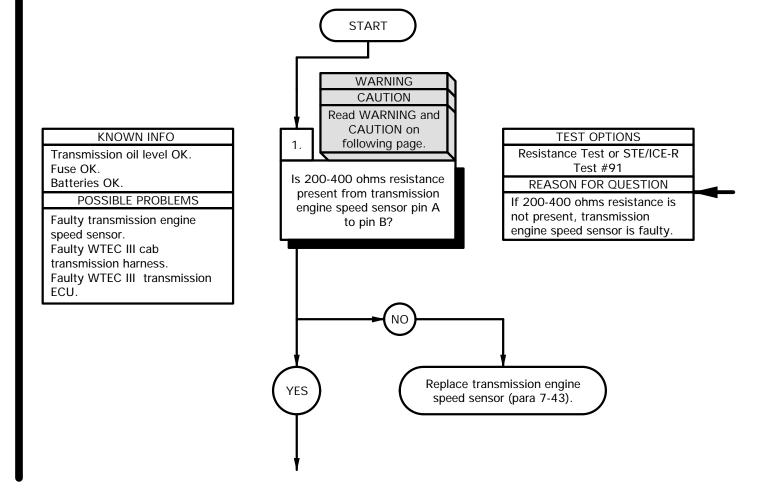
Tool Kit, Genl Mech (Item 44, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

Wrench, Torque, 0-75 lb-in. (Item 81, Appendix B)

Tools and Special Tools STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P



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

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

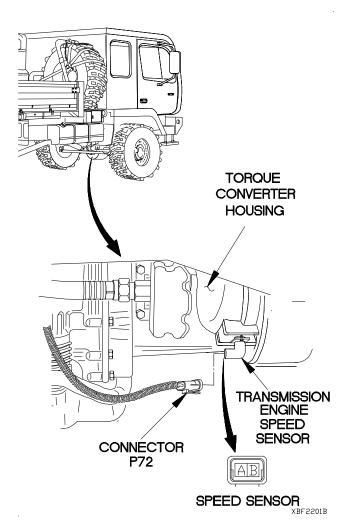
RESISTANCE TEST

- (1) 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.

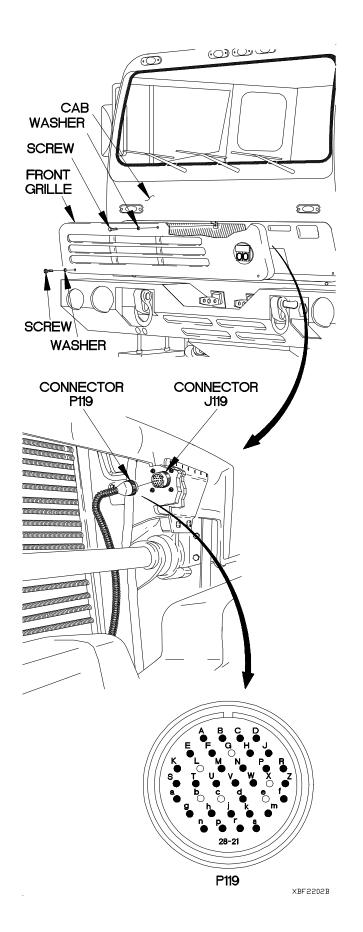


f22. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 14 (CONT)

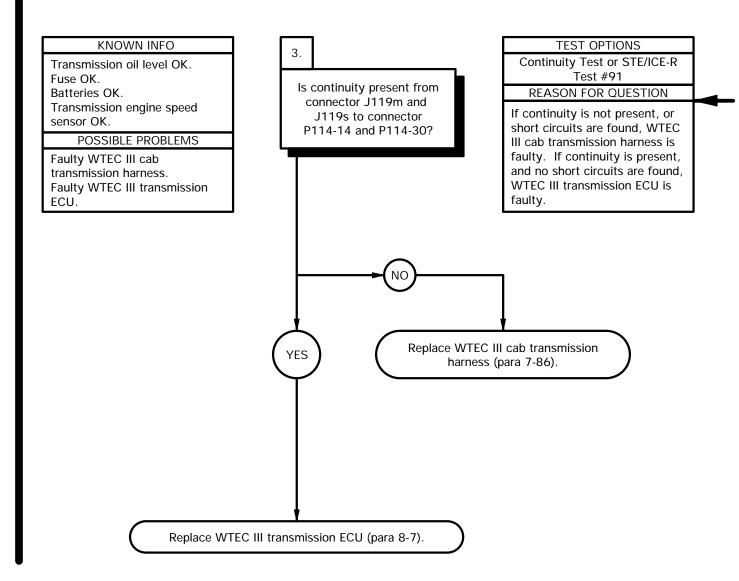
KNOWN INFO TEST OPTIONS 2. Resistance Test or STE/ICE-R Transmission oil level OK. Test #91 Fuse OK. Is 200-400 ohms resistance **REASON FOR QUESTION** Batteries OK. present from connector Transmission engine speed P119m to P119s? If 200-400 ohms resistance is sensor OK. not present, or short circuits POSSIBLE PROBLEMS are found, DS Maintenance Faulty WTEC III cab needs to be notified. transmission harness. Faulty WTEC III transmission ECU. YES Notify DS Maintenance.

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 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.

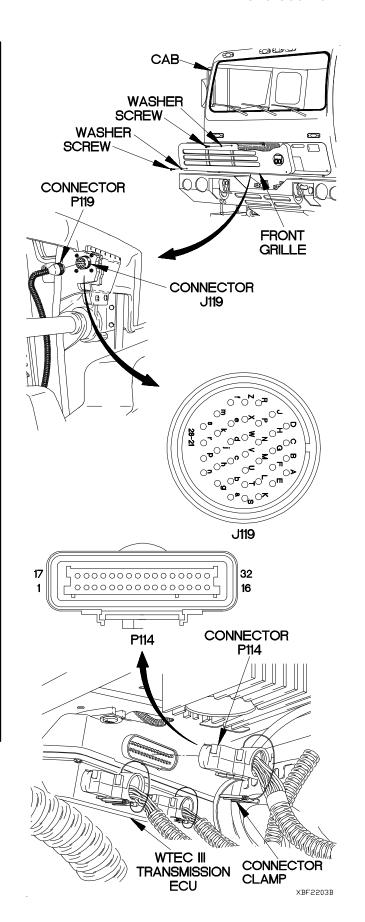


f22. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 14 (CONT)



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
- (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 9-2320-366-10-1).

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)

Tools and Special Tools (Cont) STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P

START CAUTION Read CAUTION TEST OPTIONS **KNOWN INFO** on following page. 1. Continuity Test or Transmission oil level OK. STE/ICE-R Test #91 Fuse OK. Is continuity present from Batteries OK. **REASON FOR QUESTION** connector J119p and J119r POSSIBLE PROBLEMS If continuity is not present, or to connector P114-15 and shorts are found, WTEC III cab Faulty WTEC III cab P114-31? transmission harness is faulty. transmission harness. Faulty WTEC III transmission ECU. Replace WTEC III cab transmission YES harness (para 7-138).

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

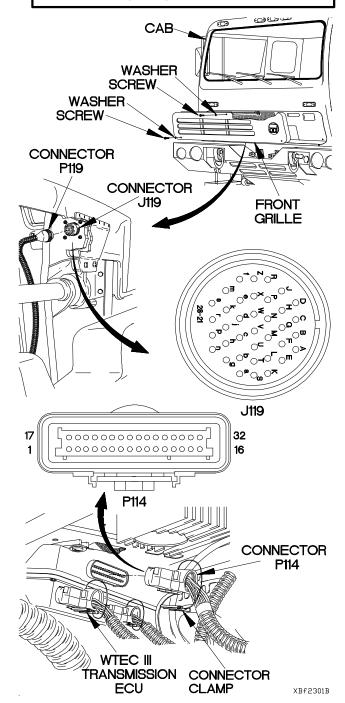
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

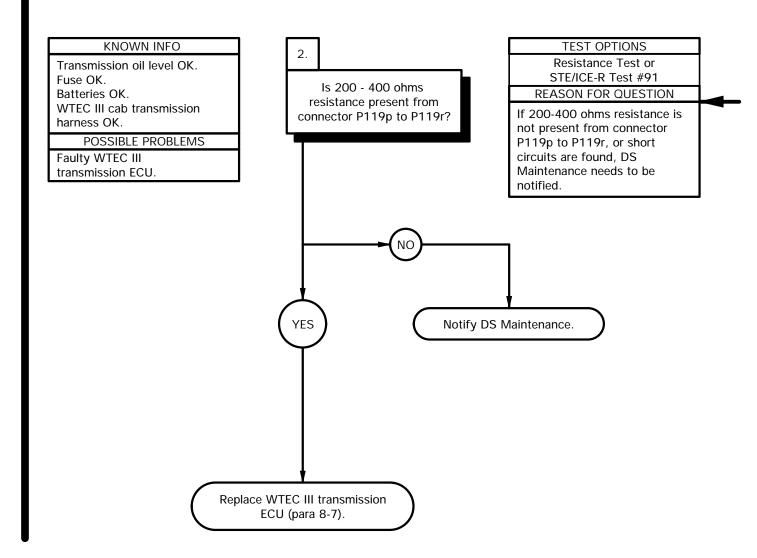
- (1) Remove two screws and washers from front grille.
- (2) Remove screw and washer from front grille.
- (3) Remove front grille from cab.
- (4) Disconnect connector P119 from connector J119.
- (5) Remove kick panel (para 16-3).
- (6) Disconnect connector clamp from connector P114.
- (7) Disconnect 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.

CONTINUITY TEST (CONT)

- (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 7-138).
- (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)



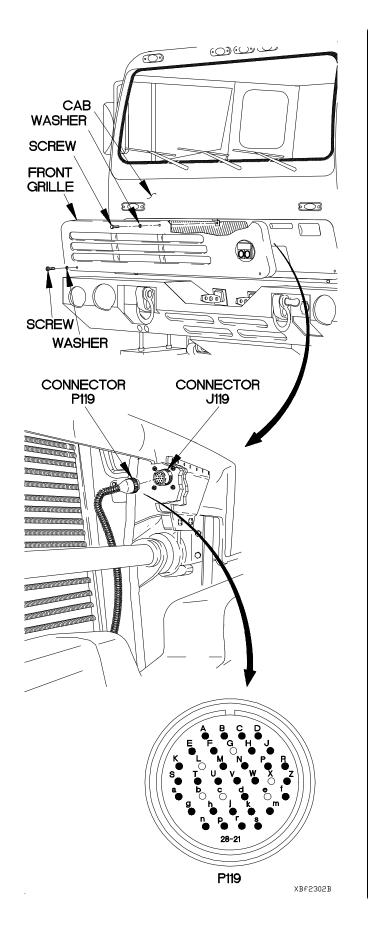
RESISTANCE TEST

- (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).



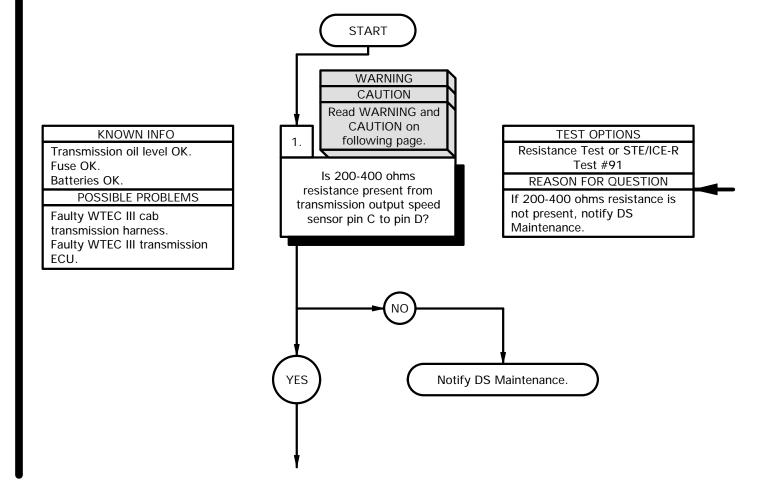
f24. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 16

INITIAL SETUP

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

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

References TM 9-4910-571-12&P



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

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

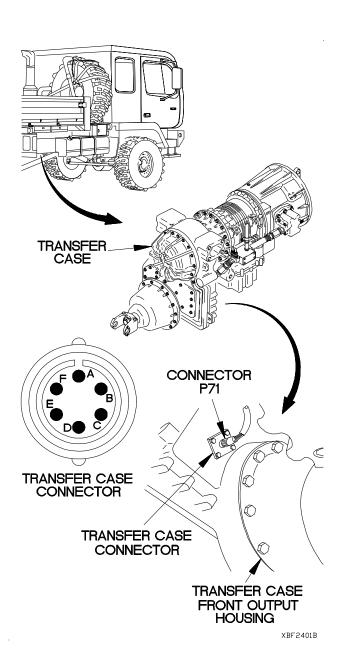
RESISTANCE TEST

- 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.

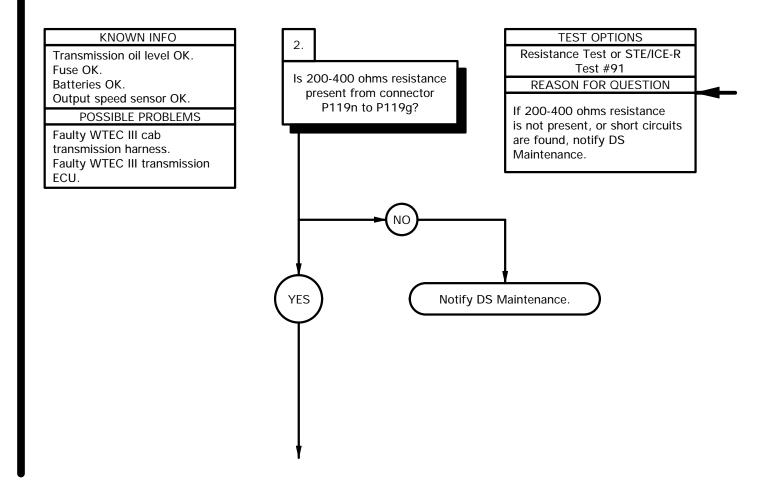
NOTE

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.

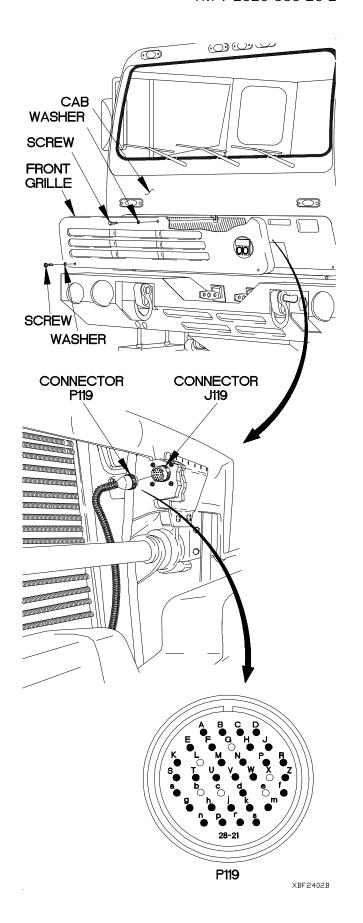


f24. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 16 (CONT)

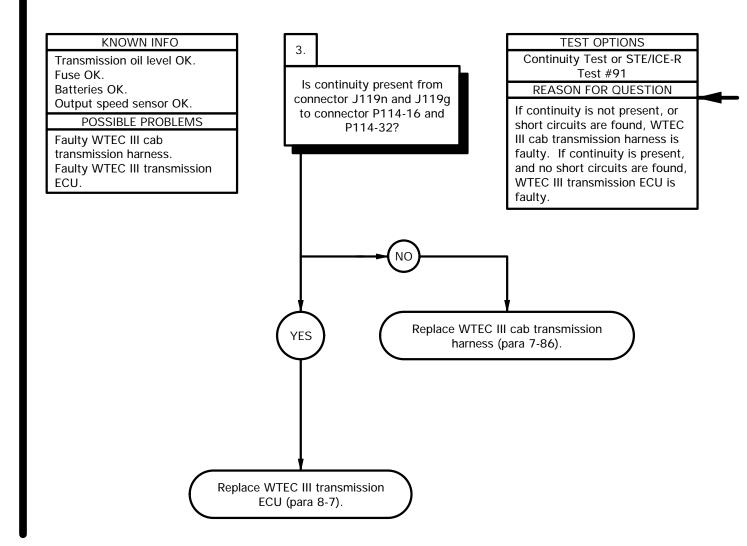


RESISTANCE TEST

- 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.
- reading on multimeter.
 (12) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (13) If 200-400 ohms resistance is not present in step 7, or continuity is present in step 8, 9, 11, or 12, notify DS Maintenance.

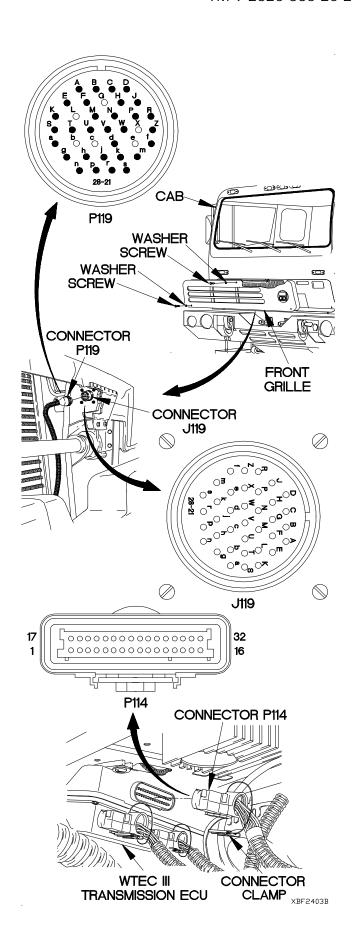


f24. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 22 SUB CODE 16 (CONT)



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).



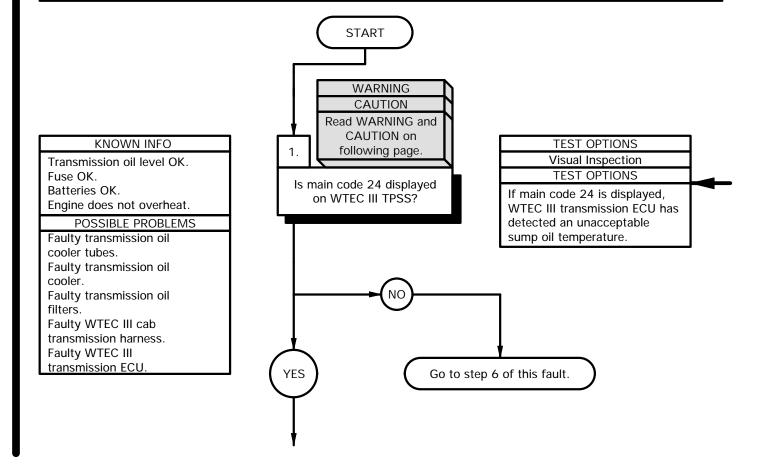
f25. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE

INITIAL SETUP

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

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) Tools and Special Tools (Cont)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 48, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P



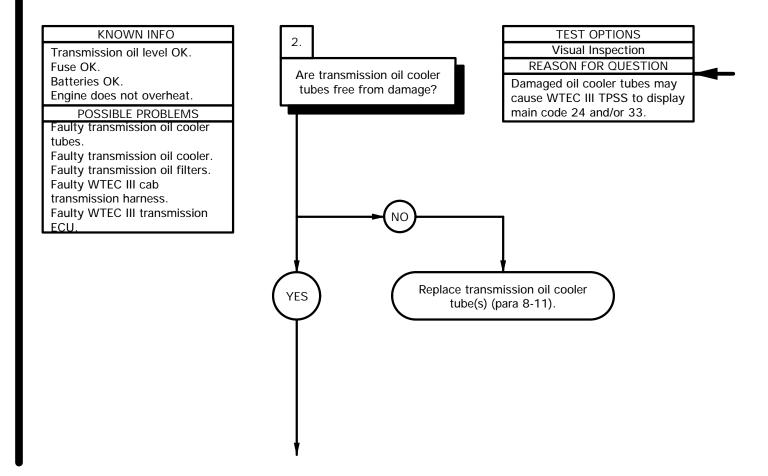
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

CAUTION

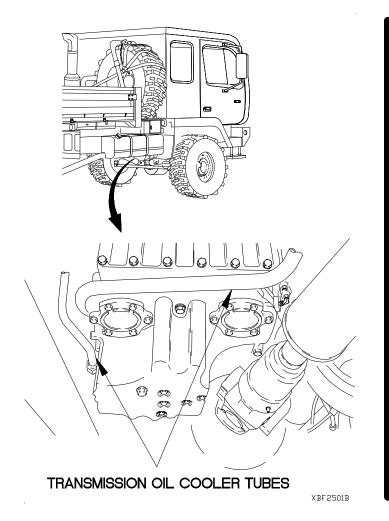
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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)



- (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).



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

WARNING CAUTION Read WARNING and CAUTION on KNOWN INFO TEST OPTIONS following page. 3. Transmission Oil Inspection Transmission oil level OK. **REASON FOR QUESTION** Fuse OK. Is transmission oil free from Batteries OK. Contaminated transmission oil coolant contamination? Engine does not overheat. may cause WTEC III TPSS to Transmission oil cooler tubes display main code 24 and/or POSSIBLE PROBLEMS Faulty transmission oil cooler. Faulty transmission oil filters. Faulty WTEC III cab transmission harness. Faulty WTEC III transmission Replace transmission oil cooler YES (para 8-10) and change transmission oil (Appendix H).

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

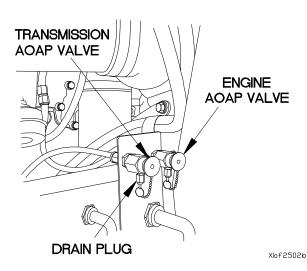
TRANSMISSION OIL INSPECTION

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
- (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).

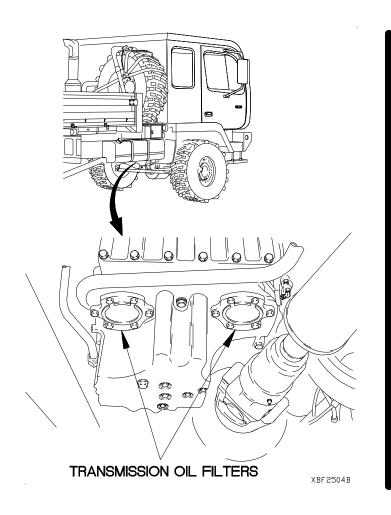




f25. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 24 AND/OR 33 AND ANY SUB CODE (CONT)

KNOWN INFO TEST OPTIONS 4. Visual Inspection Transmission oil level OK. **REASON FOR QUESTION** Fuse OK. Are transmission oil filters Batteries OK. Plugged transmission oil filters free from damage? Engine does not overheat. may cause WTEC III TPSS to Transmission oil cooler tubes display main code 24 and/or Transmission oil cooler OK. POSSIBLE PROBLEMS Faulty transmission oil filters. Faulty WTEC III cab transmission harness. Faulty WTEC III transmission ECU. Replace transmission YES oil filters (para 8-9).

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



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

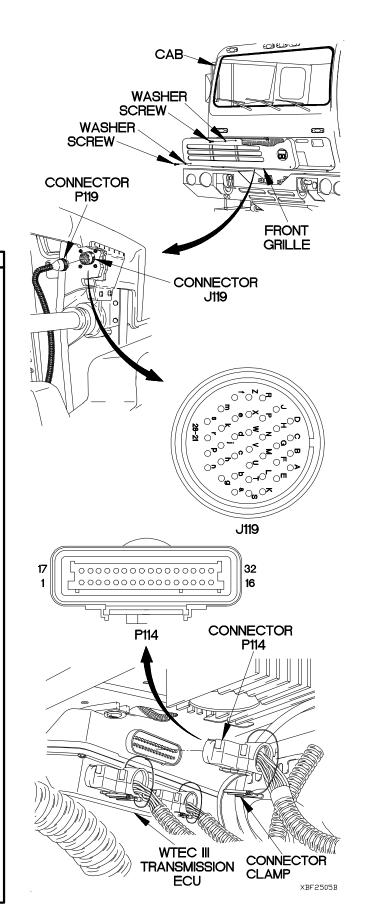
CAUTION Read CAUTION KNOWN INFO TEST OPTIONS on following page. 5. Continuity Test or STE/ICE-R Transmission oil level OK. Test #91 Fuse OK. Is continuity present from **REASON FOR QUESTION** Batteries OK. connector J119d and J119a Engine does not overheat. If continuity is not present, or to connector P114-27 and Transmission oil cooler tubes short circuits are found, WTEC P114-25? III cab transmission harness Transmission oil cooler OK. is faulty. Transmission oil filters OK. POSSIBLE PROBLEMS Faulty WTEC III cab transmission harness. Faulty WTEC III transmission ECU. Replace WTEC III cab transmission YES harness (para 7-86).

Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

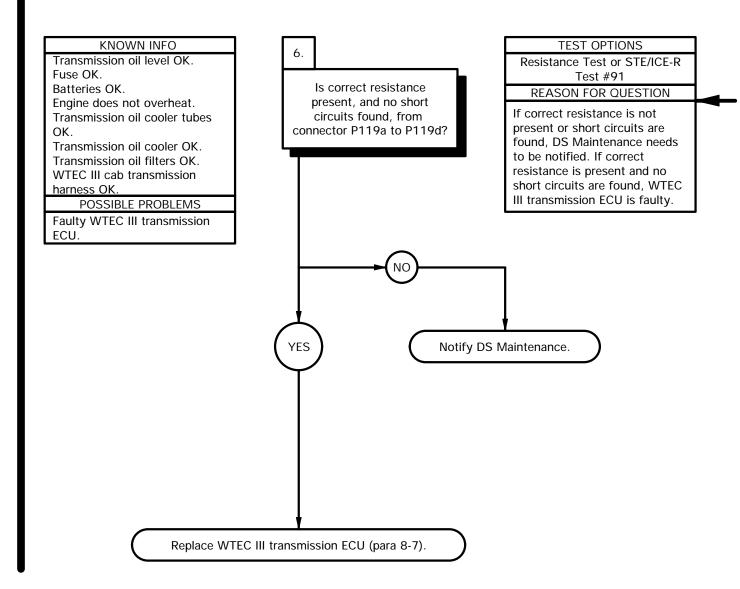
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- (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)



Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

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).

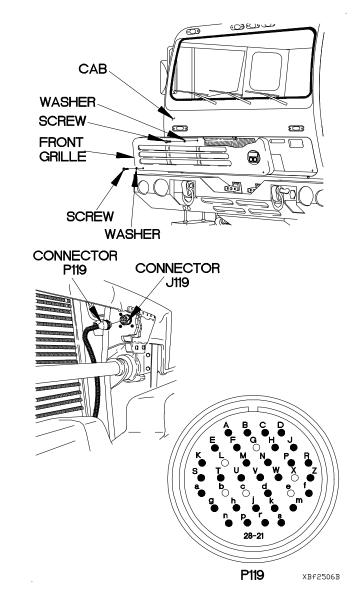


Table 2-32. Transmission Sump Oil Temperature Sensor Resistance Readings

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).

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)

Tools and Special Tools Wrench Set, Socket (Item 49, Appendix C) STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P

START CAUTION Read CAUTION KNOWN INFO TEST OPTIONS on following page. Fuse OK. Continuity Test or STE/ICE-R Batteries OK. Test #91 Is continuity present from POSSIBLE PROBLEMS **REASON FOR QUESTION** connector J119j to connector P114-12 and Faulty WTEC III cab If continuity is not present absent from J119j to all transmission harness. from connector J119j to other P114 sockets and Faulty WTEC III transmission connector P114-12, or ground? ECU. continuity is present from J119j to any other P114 sockets or ground, WTEC III cab transmission harness is faulty. Replace WTEC III cab YES transmission harness (para 7-87).

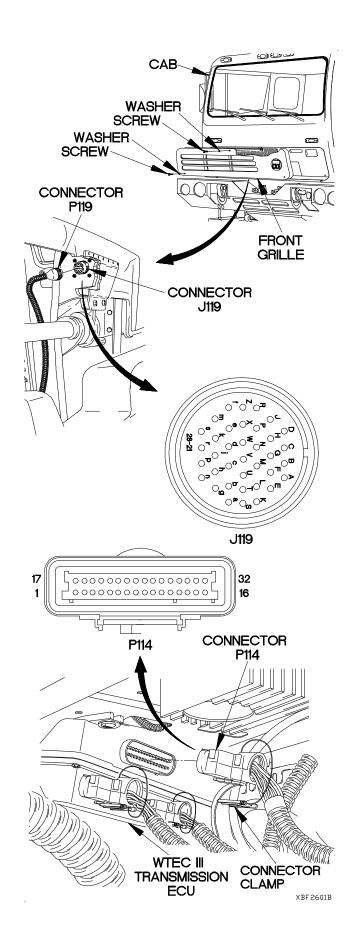
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

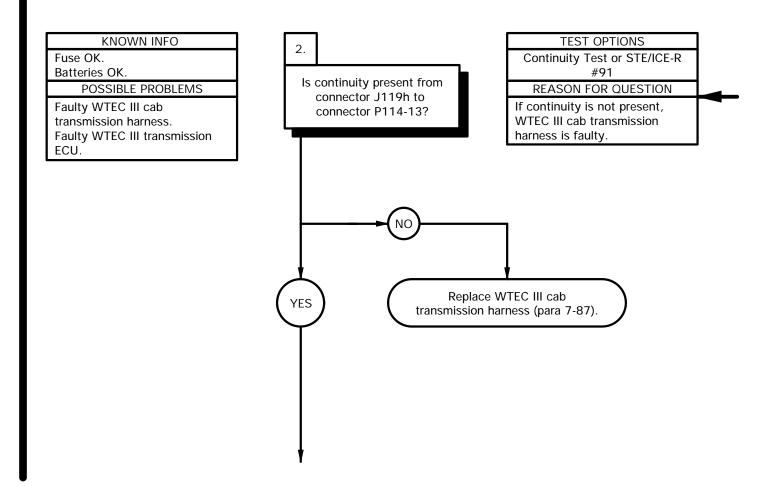
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

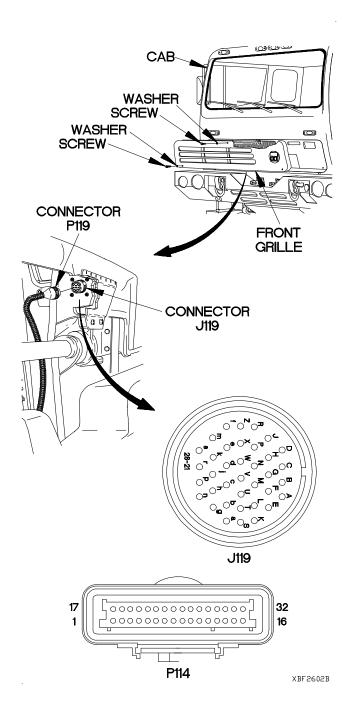
- (1) Remove two screws and washers from front grille.
- (2) Remove screw and washer from front grille.
- (3) Remove front grille from cab.
- (4) Disconnect connector P119 from connector J119.
- (5) Remove kick panel (para 16-3).
- (6) Disconnect connector clamp from connector P114.
- (7) Disconnect 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).



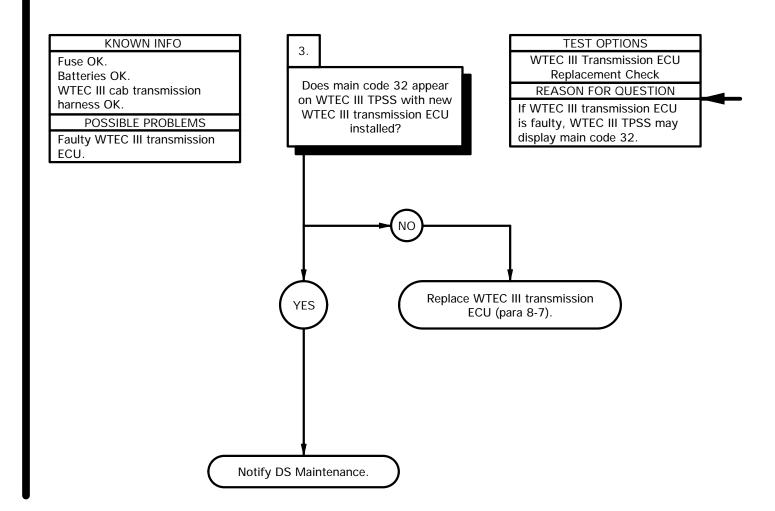
f26. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 32 AND ANY SUB CODE (CONT)



- (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).



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).

f27. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 42, 44, 45, 46, 66, AND/OR 69 AND ANY SUB CODE

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)

Tools and Special Tools (Cont)
Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B)
STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P

START CAUTION Read CAUTION KNOWN INFO **TEST OPTIONS** on following page. Continuity Test or STE/ICE-R Fuse OK. Test #91 Batteries OK. Is continuity present, and **REASON FOR QUESTION** short circuits absent, on POSSIBLE PROBLEMS transmission solenoid If continuity is not present, or circuits from connector short circuits are found, WTEC Faulty WTEC III cab J119 to connector P114? III cab transmission harness is transmission harness. faulty. Faulty WTEC III transmission ECU. Replace WTEC III cab YES transmission harness (para 7-87).

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- 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.

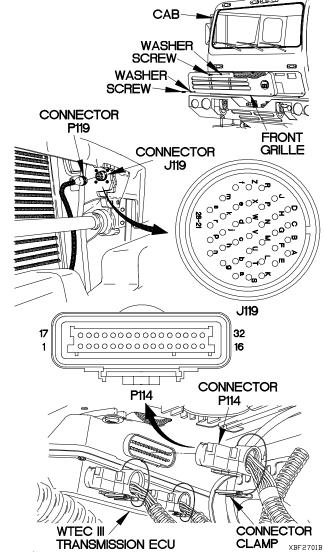
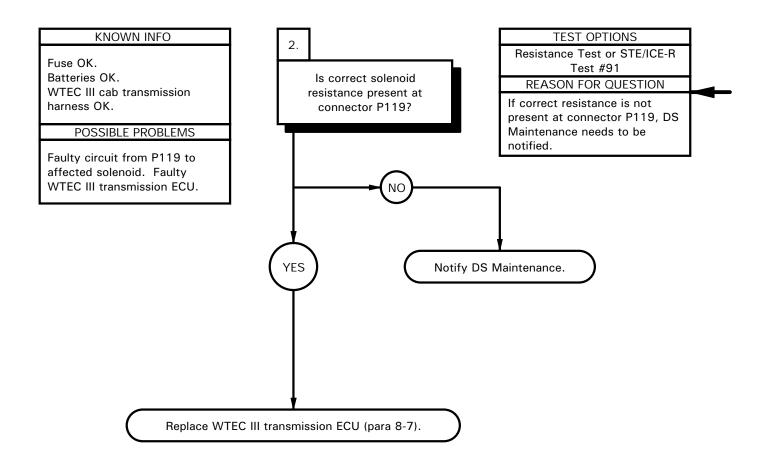


Table 2-33. WTEC III Cab Transmission Harness
Transmission Solenoid Test Points

Code	Sub Jumper Code Across	Connector P114	
		Positive (+) Probe	Negative (-) Probe
12	J119M to J119B	P114-1	P114-4
13	J119Tto 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
27	J119M to J119B	P114-1	P114-4

f27. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 42, 44, 45, 46, 66, AND/OR 69 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

Cub	Connector P119	
Sub Code	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
27	P119M	P119B

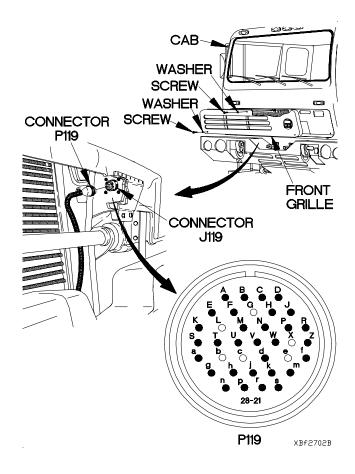


Table 2-35. Transmission Solenoid Resistance Readings

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

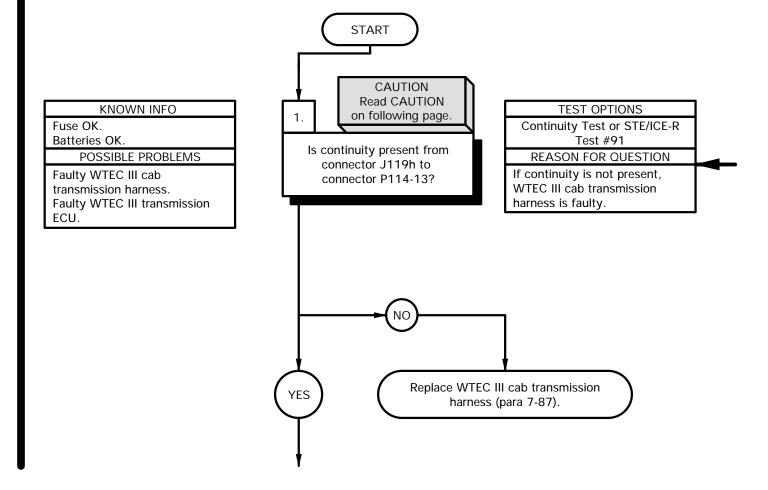
INITIAL SETUP

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

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Tools and Special Tools (Cont)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49, Appendix C)
STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P



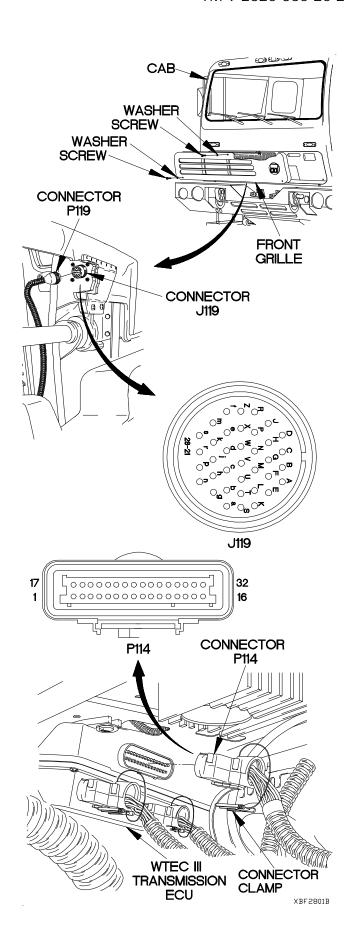
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

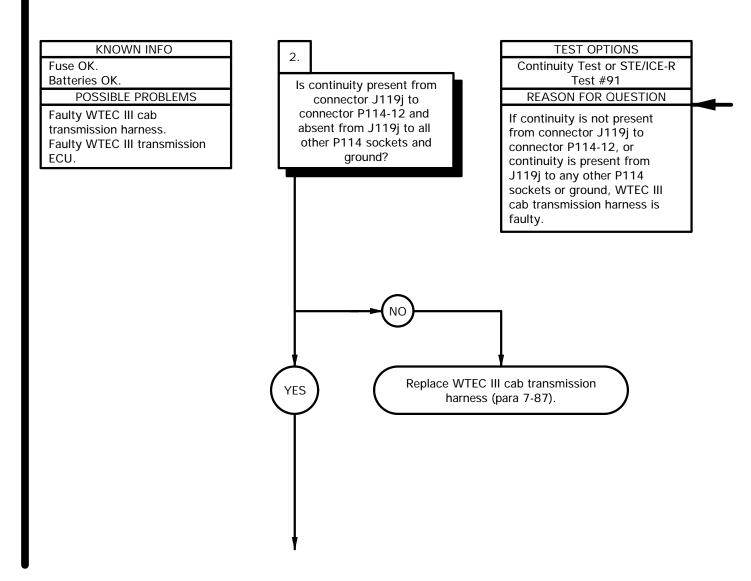
NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

- 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).

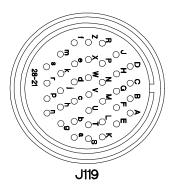


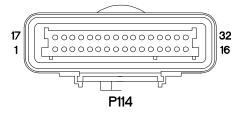
f28. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)



CONTINUITY TEST

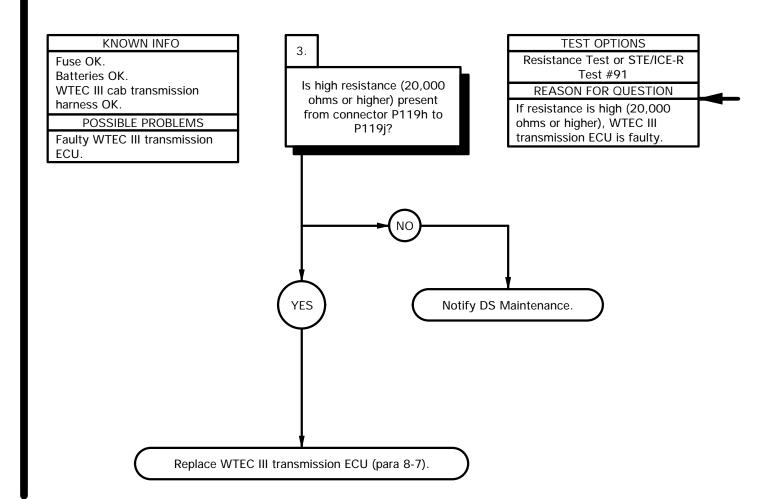
- (1) Set multimeter to ohms.
- Connect positive (+) probe of multimeter to connector J119j.
- (3) Connect negative (-) probe of multimeter to connector P114-12 and note reading on multimeter.
- (4) Connect negative (-) probe of multimeter to all other sockets in connector P114, one at a time, and note 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).





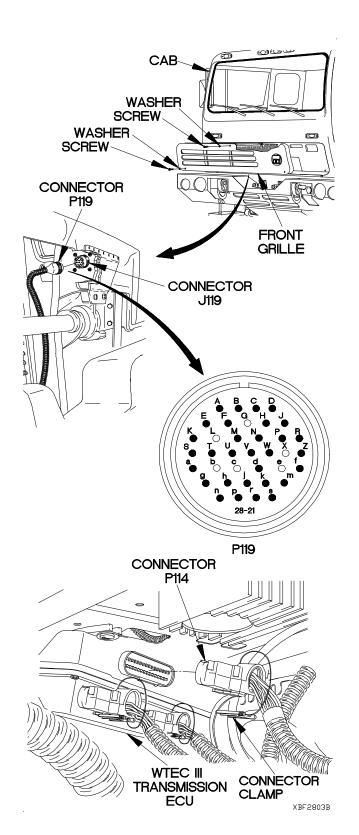
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f28. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 52 AND ANY SUB CODE (CONT)



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).

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)

Tools and Special Tools (Cont)

Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

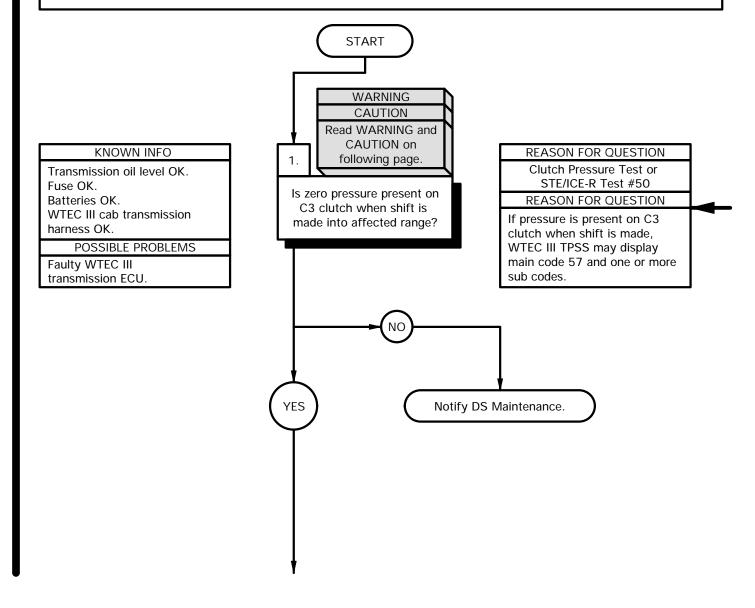
Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)

Adapter, Straight, Tube to Boss (Item 1.3, Appendix D) Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Reference

TM 9-491-571-12&P



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.

CAUTION

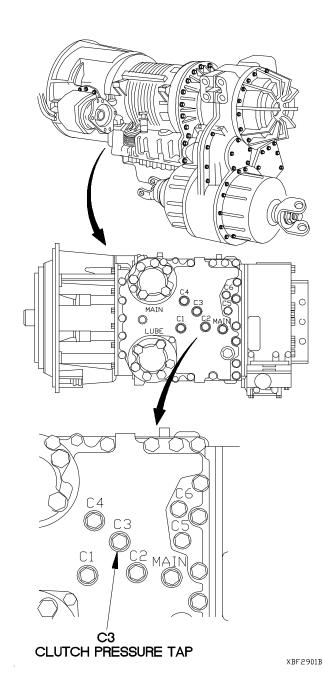
Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

CLUTCH PRESSURE TEST

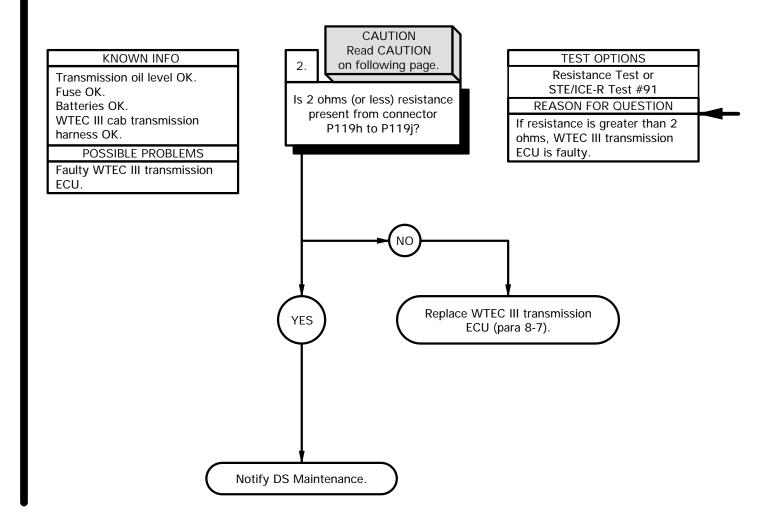
- (1) Remove front and rear propeller shafts (para 9-2).
- (2) Position drain pan under C3 pressure tap plug.
- (3) Remove C3 pressure tap plug and preformed packing from control valve module. Discard preformed packing.
- (4) Connect tube to boss adapter, hose, and pipe to tube adapter to C3 pressure 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 pipe to tube adapter, hose, and tube to boss adapter from C3 pressure tap.
- (11) Position preformed packing and C3 pressure tap plus 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 front and rear propeller shafts (para 9-2).

Table 2-36. Sub Code Range

Sub Code	S	ub 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



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

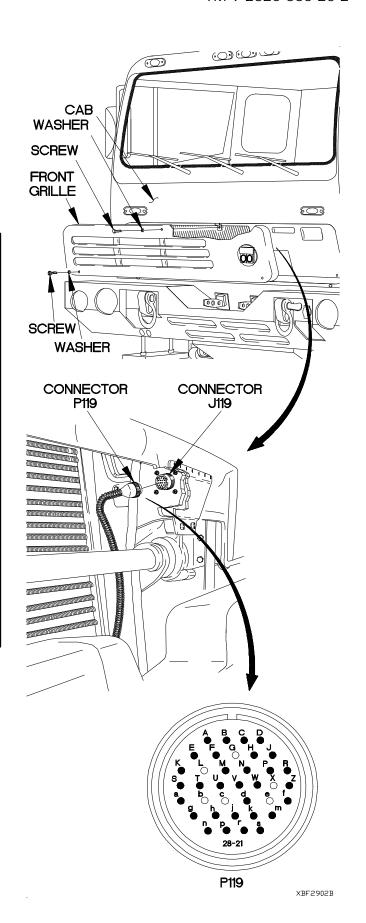


Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

RESISTANCE TEST

- (1) 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 (para 8-5).



f30. 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).

Tools and Special Tools

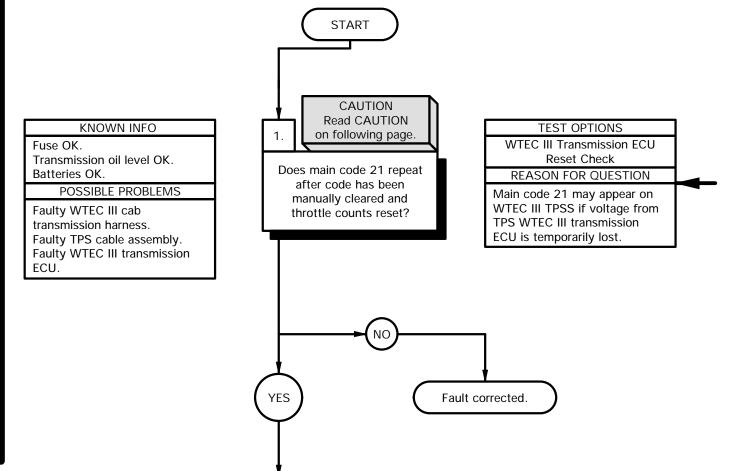
Tool Kit, Genl Mech (Item 44, Appendix C)

Multimeter, Digital (Item 22, Appendix C)

STE/ICE-R (Item 39, Appendix C)

References TM 9-4910-571-12&P

Personnel Required (2)



Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

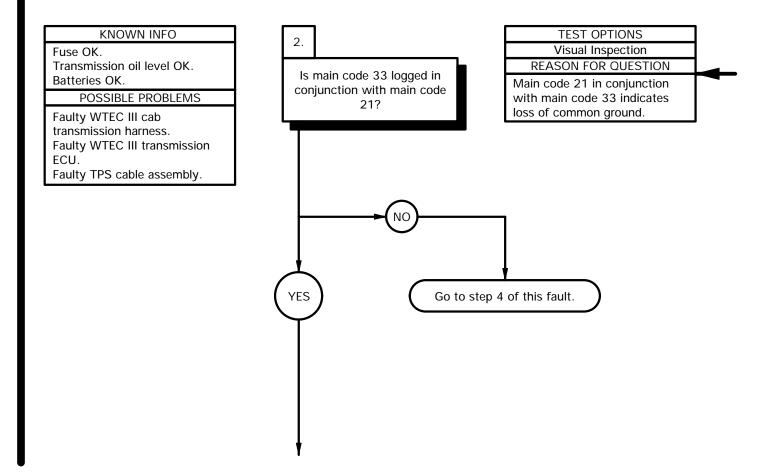
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

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

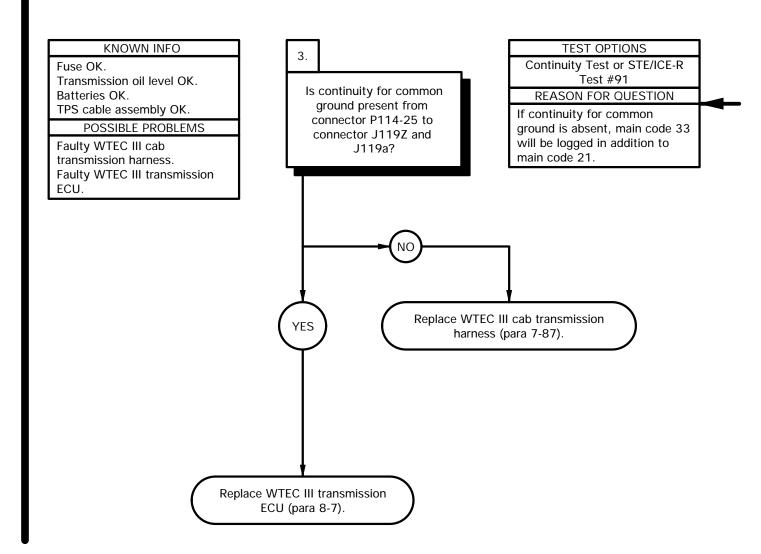
- Cycle master power switch to on (TM 9-2320-365-10), then to off five times to clear existing throttle count settings.
- (2) Position master power switch to on (TM 9-2320-365-10).
- (3) Depress accelerator pedal from idle position to full throttle position (TM 9-2320-365-10) to set new 0% and 100% throttle 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)

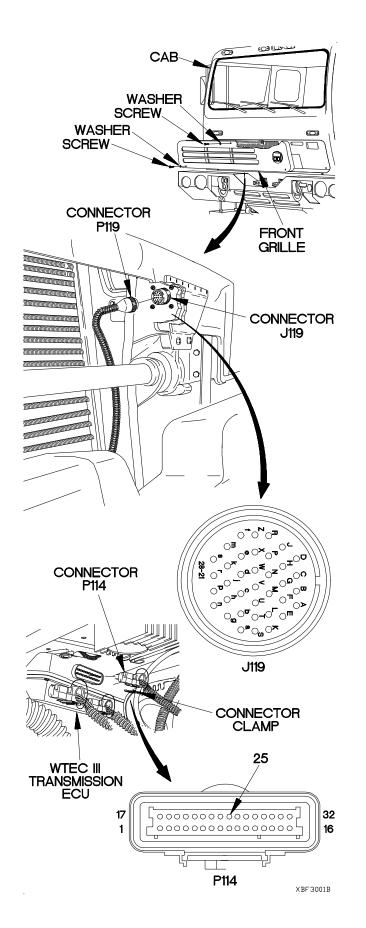


- (1) Position master power switch to on (TM 9-2320-365-10).
- (2) Press MODE button on WTEC III TPSS to bring up second code (if any) (para 8-5).
- (3) If main code 33 displays on WTEC III TPSS, common ground may have been lost. If main code 21 is the only code displayed, TPS may be faulty. Go to step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

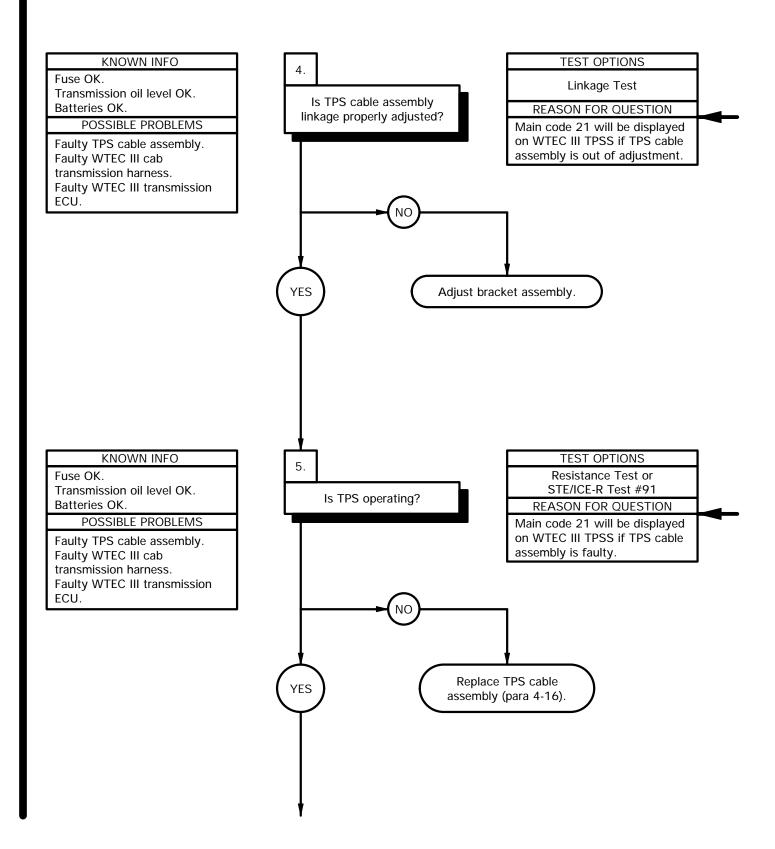
f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



- (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)

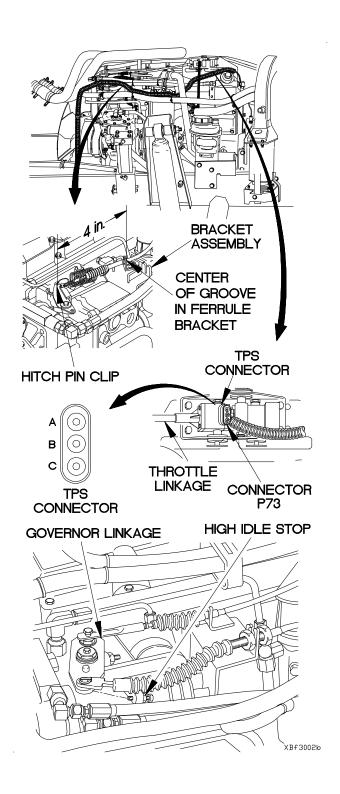


LINKAGE TEST

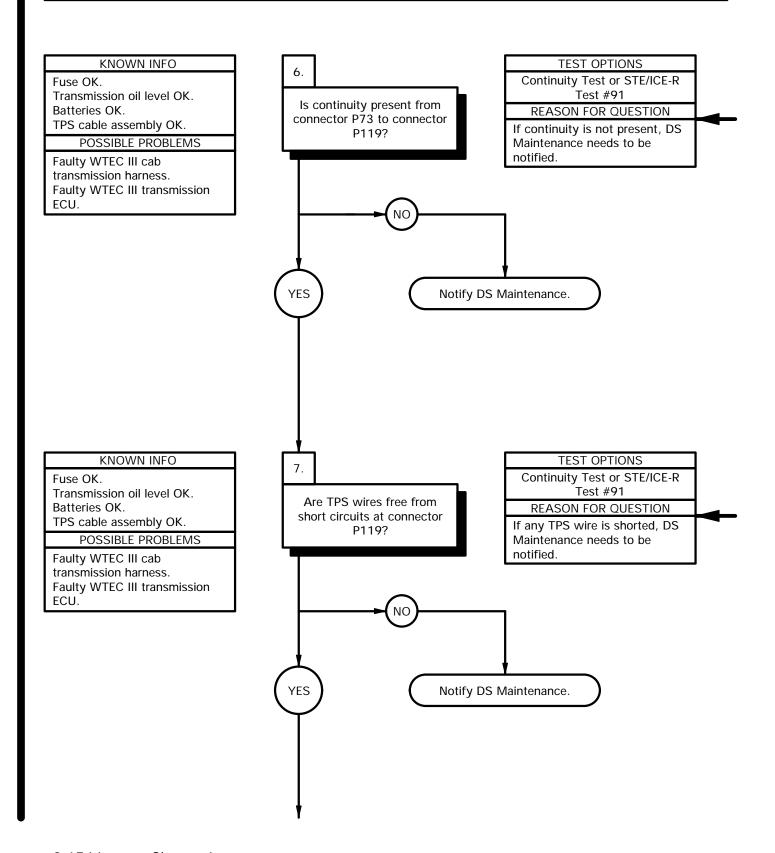
- (1) Raise cab (TM 9-2320-365-10).
- (2) Verify distance between hitch pin clip on end of sensor rod and center of cable groove in ferrule is 4 in. (10 cm).
- (3) If distance is not 4 in. (10 cm), adjust bracket assembly to obtain correct measurement.

RESISTANCE TEST

- Disconnect connector P73 from TPS connector.
- (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).



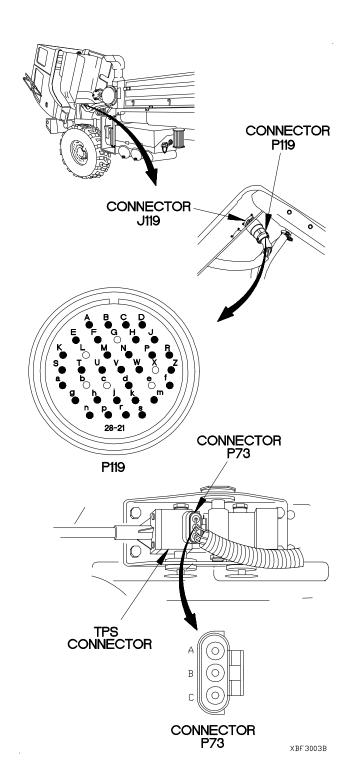
f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



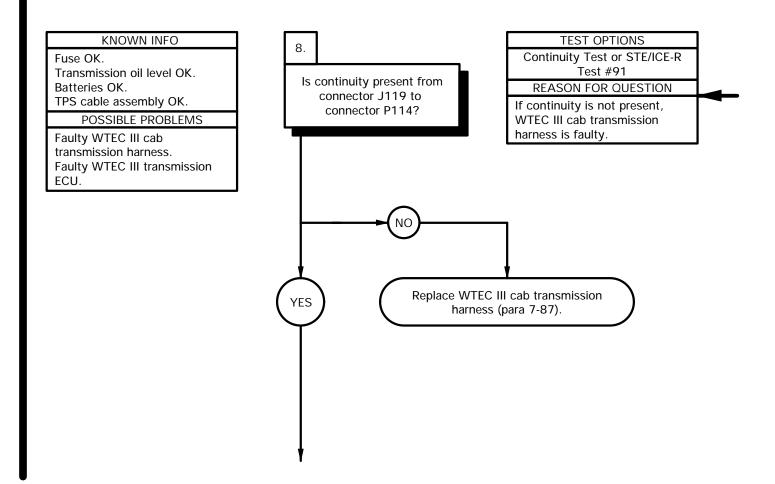
CONTINUITY TEST

- 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 connector P73 pin C and note reading on multimeter.
- (5) Connect positive (+) probe of multimeter to connector P119f.
- (6) Connect negative (-) probe of multimeter to connector P73 pin B and note reading on multimeter.
- Connect positive (+) probe of multimeter to connector P119Z.
- (8) Connect negative (-) probe of multimeter to connector P73 pin A and note reading on multimeter.
- (9) If continuity is not present on one or more wires, notify DS Maintenance.

- (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 connector P73 to TPS connector.



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

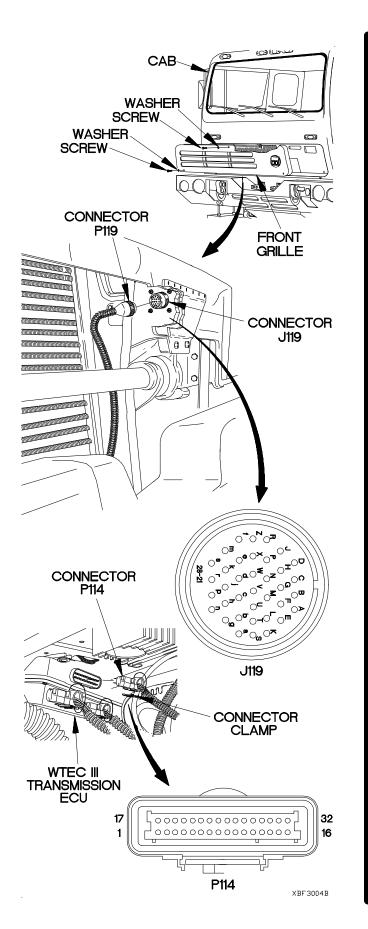


CONTINUITY TEST

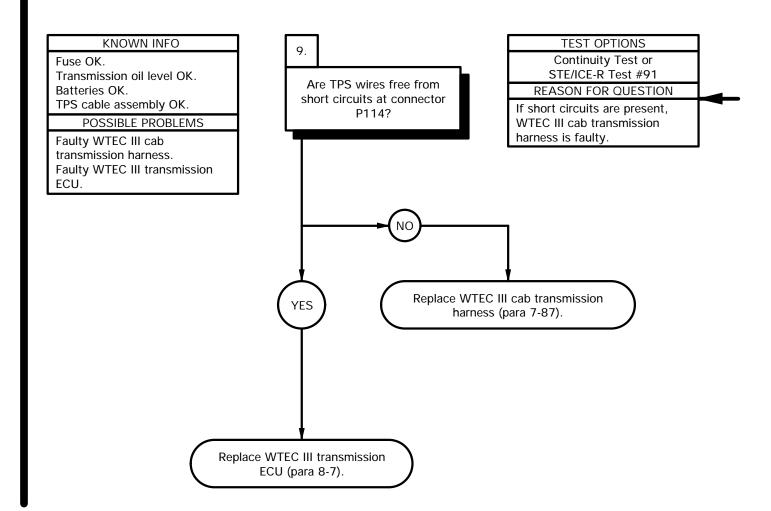
- (1) Lower cab (TM 9-2320-365-10).
- (2) Remove two screws and washers from front grille.
- (3) Remove screw and washer from front grille.
- (4) Remove front grille from cab.
- (5) Remove kick panel (para 16-3).
- (6) Disconnect connector clamp from connector P114.
- (7) Disconnect connector P114 from 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	

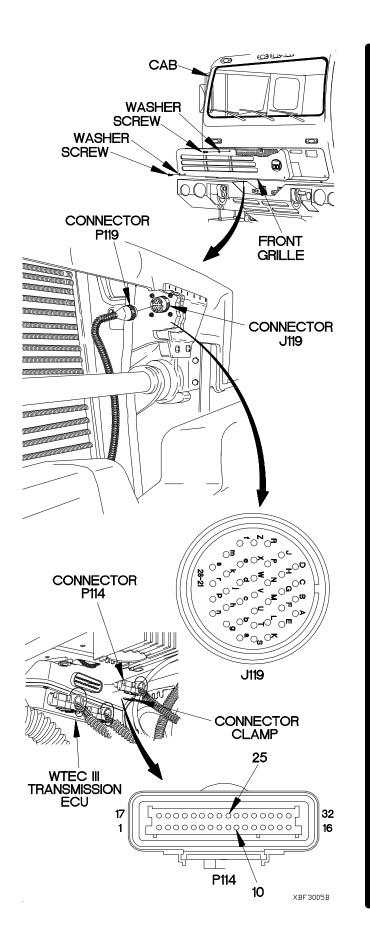


f30. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 21 AND ANY SUB CODE (CONT)



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).



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).

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)
Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)
Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)
Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)
Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required (2)

Reference TM 9-4910-571-12&P

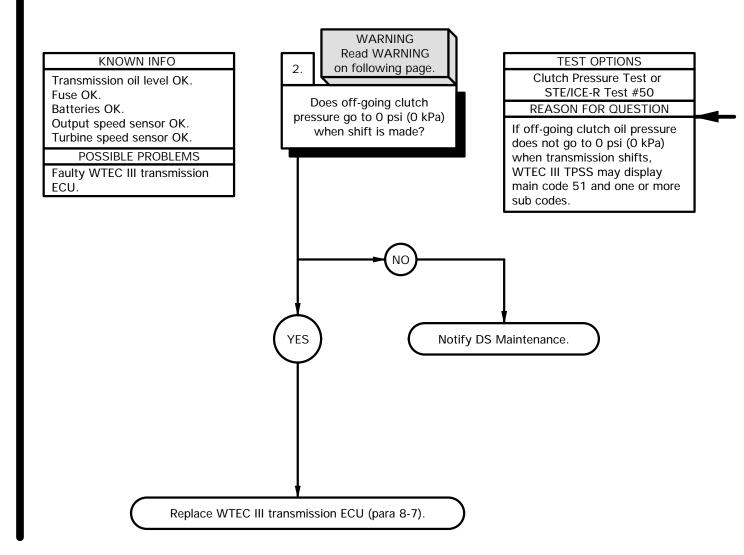
START CAUTION **Read CAUTION** KNOWN INFO TEST OPTIONS on following page. 1. Transmission oil level OK. Visual Inspection Fuse OK. Is main code 51 logged Batteries OK. **REASON FOR QUESTION** without main code 22 sub POSSIBLE PROBLEMS If main code 22 sub code 15 or code 15 or 16? Faulty output speed sensor. 16 is present, transmission turbine speed sensor, output Faulty turbine speed sensor. Faulty WTEC III transmission speed sensor, or associated ECU. circuit is faulty. Perform Transmission System Troubleshooting (f23. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code YES 15 or f24. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 16).

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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)



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.

CLUTCH PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter 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 front and rear propeller shaft (para 9-2).
- (15) Clear diagnostic codes (para 8-5).

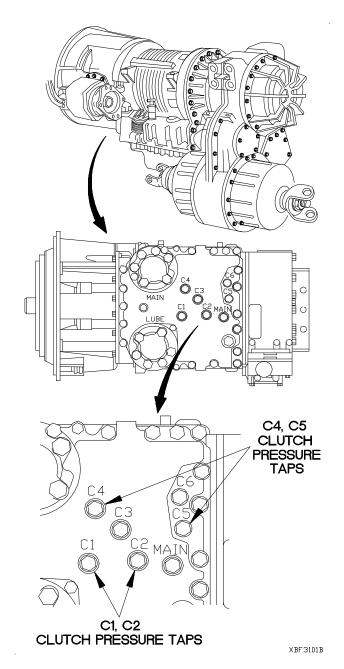


Table 2-38. Off-Going Clutch Pressure Tap

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).

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)

Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)

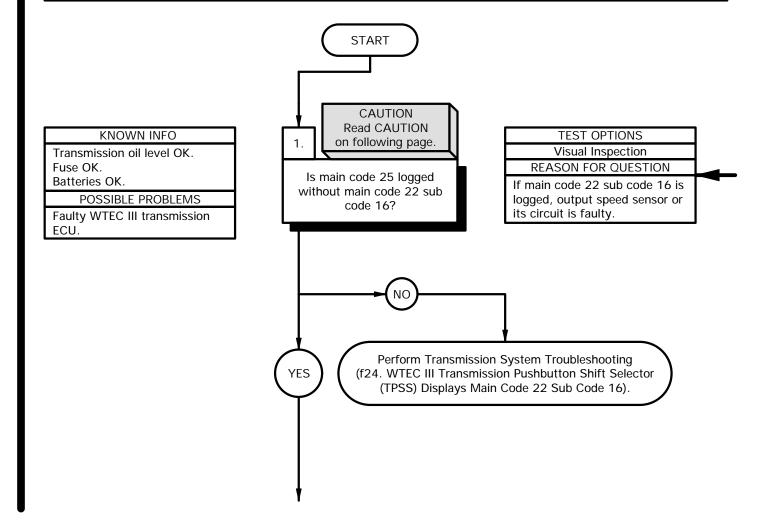
Adapter, Straight, Tube to Boss (Item 1.3, Appendix D) Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required

(2)

Reference

TM 9-4910-571-12&P

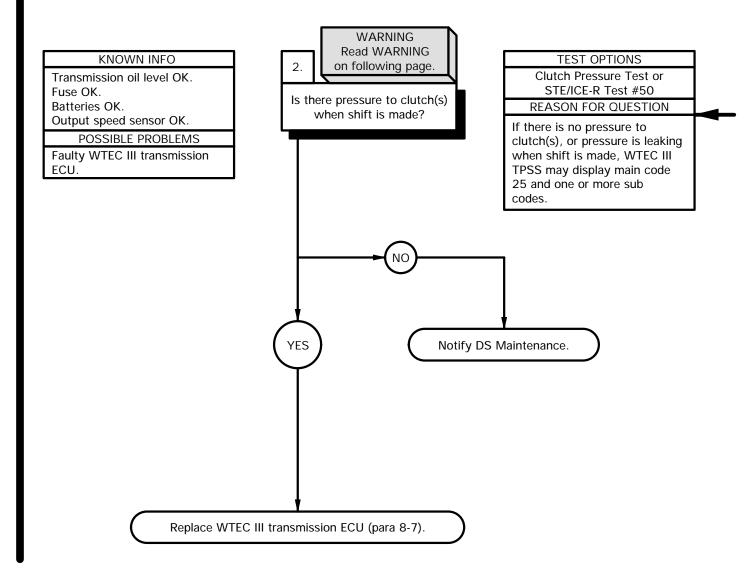


CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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)



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.

CLUTCH PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter from clutch 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 front and rear propeller shafts (para 9-2).

Sub Code

Meaning

Speed Zero in 1st

Speed Zero in 2nd

Speed Zero in 3rd

Speed Zero in 4th

Speed Zero in 5th

Sub Code

00

11

22 33

44

(18) If one or more clutches fail to indicate proper pressure, notify DS Maintenance.

CLUTCH PRESSURE TEST (CONT)

- (19) If all clutches indicate proper pressure, replace WTEC III transmission ECU (para 8-7).
- (20) Clear diagnostic codes (para 8-5).

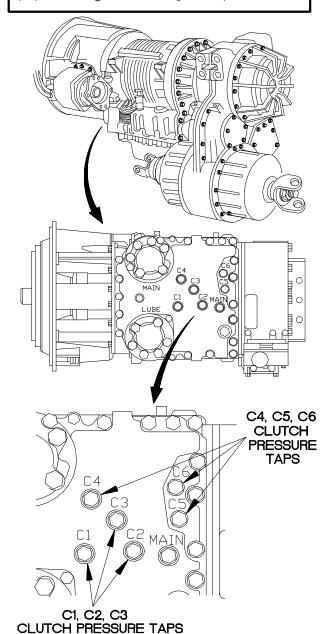


Table 2-39. Clutch Pressure Tap

Pr

C'

Pressure	Pressure Readings
at Clutch(s)	at Taps
C3 & C6	215-334 psi (1480-2300 kPa)
C1 & C5	215-305 psi (1480-2103 kPa)
C1 & C4	142-203 psi (980-1400 kPa)
C1 & C3	142-203 psi (980-1400 kPa)

142-203 psi (980-1400 kPa)

55 Speed Zero in 6th C2 & C3 128-189 psi (880-1300 kPa) 66 Speed Zero in 7th C2 & C4 128-189 psi (880-1300 kPa) 77 Speed Zero in R C3 & C5 215-334 psi (1480-2300 kPa)

C1 & C2

XBF3201B

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).

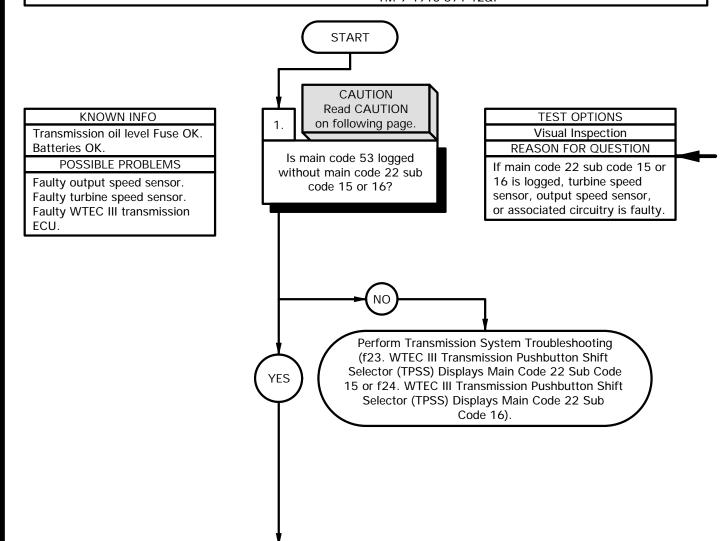
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G) Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D) Adapter, Straight, Tube to Boss (Item 1.3, Appendix D) Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required (2)

Reference TM 9-4910-571-12&P

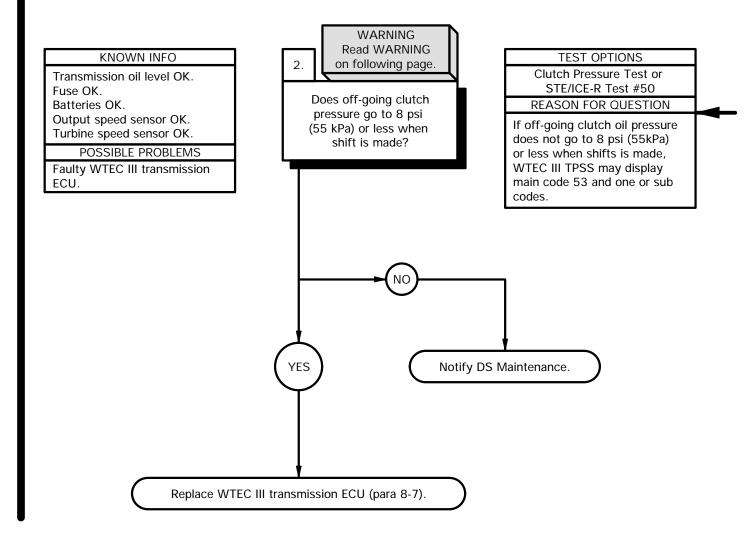


CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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)



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.

CLUTCH PRESSURE TEST

- Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 8 psi (55 kPa) or less when shift is made, notify DS Maintenance.
- (9) If off-going clutch pressure does go to 8 psi (55 kPa) or less when shift is made, replace WTEC III transmission ECU (para 8-7).
- (10) Shut down engine (TM 9-2320-365-10).
- (11) Remove pipe to tube adapter, hose, and tube to boss adapter 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 front and rear propeller shafts (para 9-2).
- (16) Clear diagnostic codes (para 8-5).

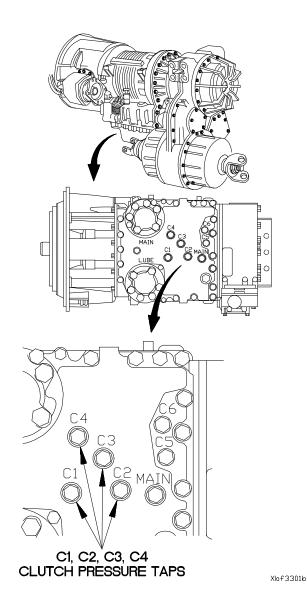


Table 2-40. Off-Going Clutch Pressure Tap

Sub Code	Sub Code Meaning	Off-Going Clutch(s)
08	L-N1 Shift	C3
18	1-N1 Shift	C1
28	2-N1 Shift	C1 & C4
29	2-N2 Shift	C1
38	3-N1 Shift	C1 & C3
39	3-N3 Shift	C1
48	4-N1 Shift	C1 & C2
49	4-N3 Shift	C1 & C2
58	5-N1 Shift	C2 & C3
59	5-N3 Shift	C2
68	6-N1 Shift	C2 & C4
69	6-N4 Shift	C3
78	R-N1 Shift	C2
99	N3-N2 or N2-N3 Shift	C2 & C4

f34. 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).

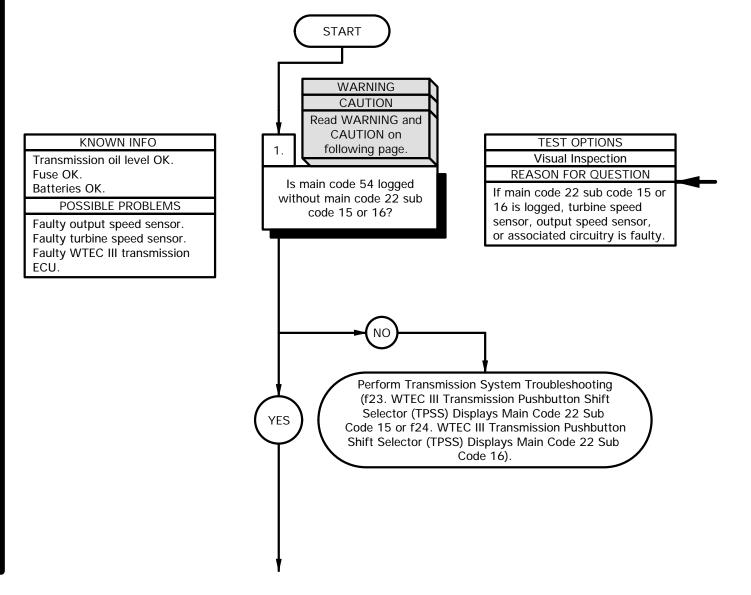
Tools and Special Tools
Goggles, Industrial (Item 15, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)
Adapter, Straight, Pipe to Tube (Item 1,2, Appendix D)
Adapter, Straight, Tube to Boss (Item 1.3, Appendix D)
Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required (2)

Reference TM 9-4910-571-12&P



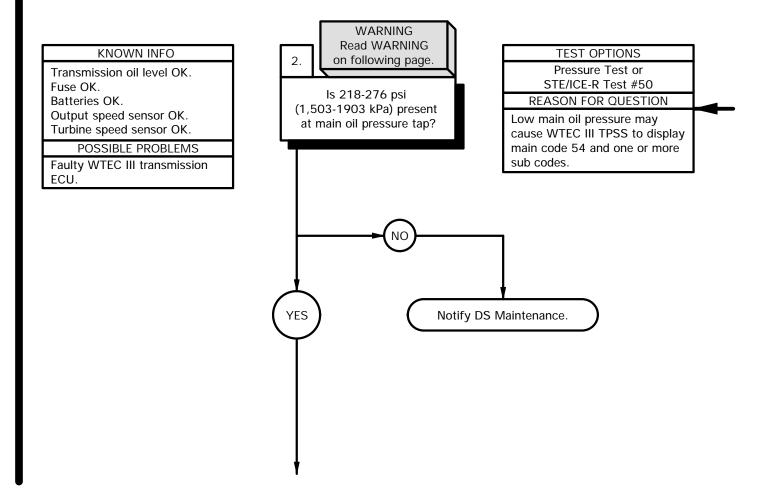
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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).

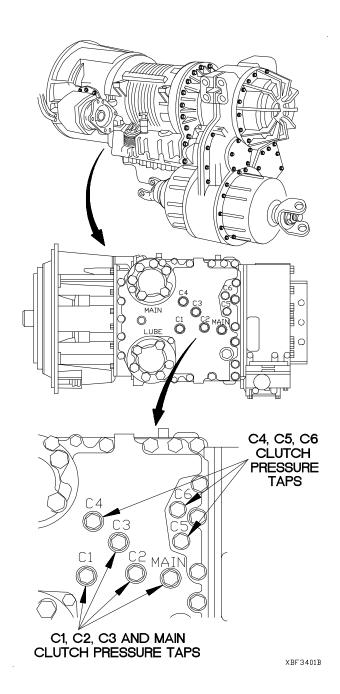
f34. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 54 AND ANY SUB CODE (CONT)



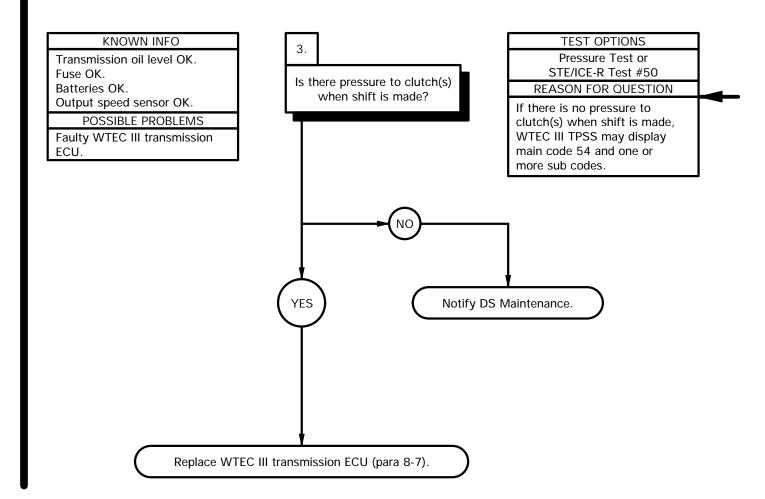
Wear approved eye protection when performing transmission pressure checks. If oil contacts eyes, seek medical attention immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

- (1) Place drain pan under transmission tap.
- (2) Remove main pressure tap plug and preformed packing from control valve assembly.
- (3) Connect tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss 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).



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



PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter 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 8-5).

Table 2-41. Clutch Pressure Tap

Sub Code		b Code eaning	Pressure at Clutch(s)	Pressure Readings at Taps
01	L-1	Upshift	C1 & C5	187-305 psi (1280-2100 kPa)
07	L-R	Shift	C3 & C5	215-276 psi (1480-1900 kPa)
10	1-L	Downshift	C3 & C6	215-334 psi (1480-2300 kPa)
12	1-2	Upshift	C1 & C4	142-203 psi (980-1400 kPa)
17	1-R	Shift	C3 & C5	215-276 psi (1480-1900 kPa)
21	2-1	Downshift	C1 & C5	186-305 psi (1280-2100 kPa)
23	2-3	Upshift	C1 & C3	142-203 psi (980-1400 kPa)
27	2-R	Shift	C3 & C5	215-334 psi (1480-2300 kPa)
32	3-2	Downshift	C1 & C4	142-203 psi (980-1400 kPa)
34	3-4	Upshift	C1 & C2	142-203 psi (980-1400 kPa)
43	4-3	Downshift	C1 & C3	142-203 psi (980-1400 kPa)
45	4-5	Upshift	C2 & C3	128-189 psi (880-1300 kPa)
54	5-4	Downshift	C1 & C2	142-203 psi (980-1400 kPa)
56	5-6	Upshift	C2 & C4	128-189 psi (880-1300 kPa)
65	6-5	Downshift	C2 & C3	128-189 psi (880-1300 kPa)
70	R-L	Shift	C3 & C6	215-276 psi (1480-1900 kPa)
71	R-1	Shift	C1 & C5	186-305 psi (1280-2100 kPa)
72	R-2	Shift	C1 & C4	142-203 psi (980-1400 kPa)
80	N1-L	Shift	C3 & C6	215-276 psi (1480-1900 kPa)
81	N1-1	Shift	C1 & C5	215-305 psi (1480-1900 kPa)
82	N1-2	Shift	C1 & C4	186-305 psi (1280-2100 kPa)
83	N1-3	Shift	C1 & C3	215-305 psi (1480-1900 kPa)
85	N1-5	Shift	C2 & C3	164-239 psi (1130-1650 kPa)
86	N1-6	Shift	C2 & C4	164-239 psi (1130-1650 kPa)
92	N2-2	Shift	C1 & C4	215-305 psi (1480-1900 kPa)
93	N3-3	Shift	C1 & C3	215-305 psi (1480-1900 kPa)
95	N3-5	Shift	C2 & C3	164-239 psi (1130-1650 kPa)
96	N4-6	Shift	C2 & C4	164-239 psi (1130-1650 kPa)
97	2-R	Shift	C3 & C5	215-305 psi (1480-1900 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).

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)

Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G)

Adapter, Straight, Tube to Boss (Item 1.3, Appendix D) Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

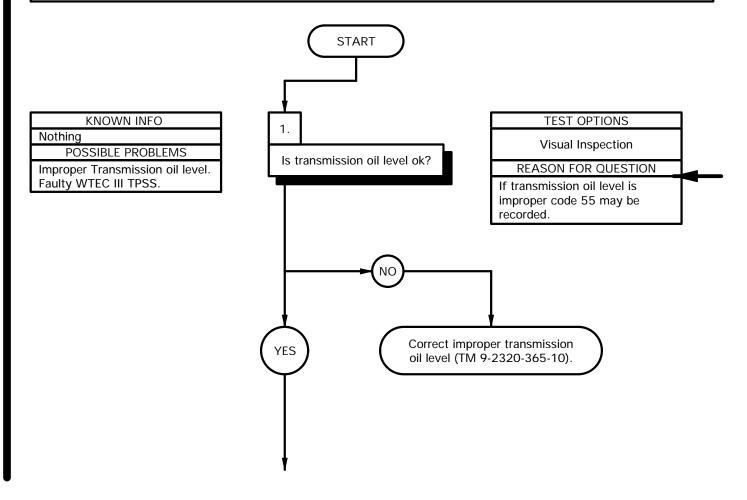
Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D)

Personnel Required

(2)

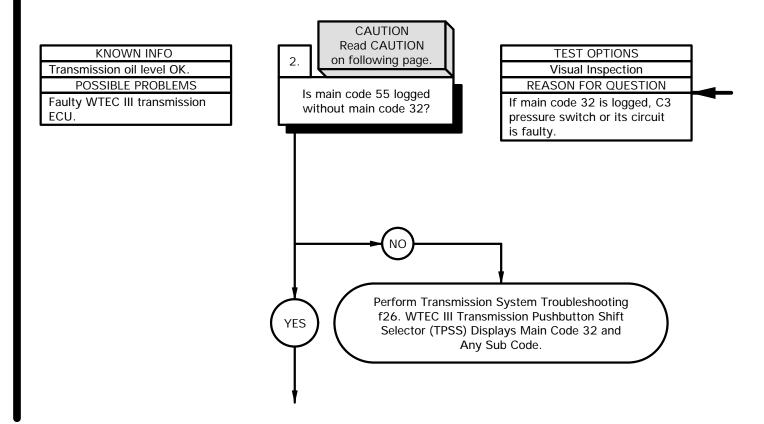
Reference

TM 9-4910-571-12&P



- (1) Check transmission oil level (TM 9-2320-
- 365-10).(2) If transmission oil level is improper, correct as required (TM 9-2320-365-10).

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

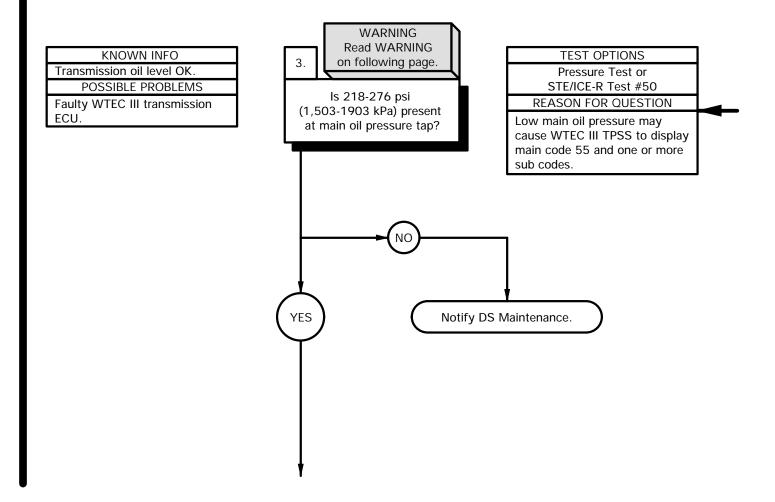


CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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).

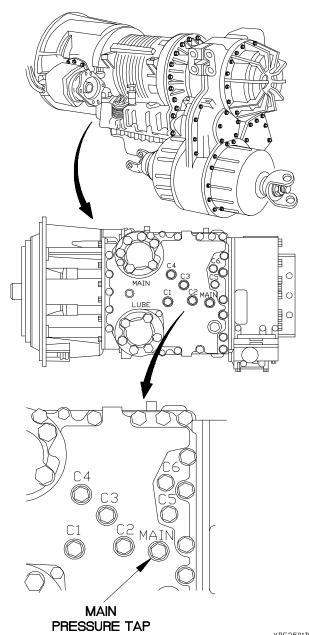
f35. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 55 AND ANY SUB CODE (CONT)



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.

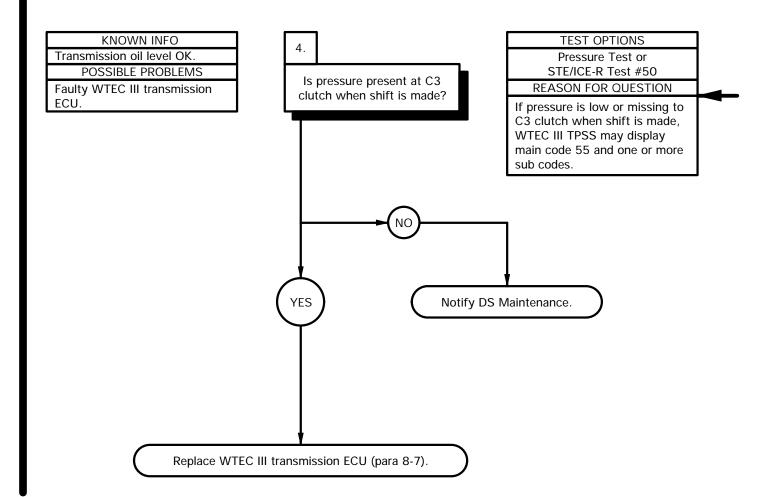
PRESSURE TEST

- (1) Position drain pan under pressure tap.
- (2) Remove main pressure tap plug and preformed packing from control valve module.
- (3) Connect tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter from main pressure
- (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.



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

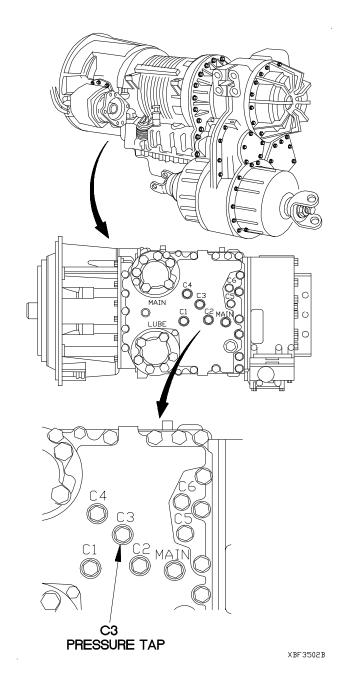


PRESSURE TEST

- (1) Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 215-276 psi (1480-1900 kPa) pressure is not obtained for affected code, notify DS Maintenance.
- (10) If 215-276 psi (1480-1900 kPa) pressure is obtained, replace WTEC transmission ECU (para 8-7).
- (11) Remove pipe to tube, adapter, hose, and tube to boss adapter from C3 pressure tap.
- (12) Position performed packing and C3 pressure tap plug on 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 front and rear propeller shafts (para 9-2).
- (16) Clear diagnostic codes (para 8-5).

Table 2-42. Clutch Pressure Tap

14515 2 121 014(01111000410 145			
Sub Code	Sub (Mea		Pressure Readings C3 Tap
4-			045.07/ 1/4400.4000.15.
17	1-R	Shift	215-276 psi (1480-1900 kPa)
27	2-R	Shift	215-276 psi (1480-1900 kPa)
21	Z-IX		
80	N1-L	Shift	215-276 psi (1480-1900 kPa)
87	N1-R	Shift	215-276 psi (1480-1900 kPa)
97	2-R	Shift	215-276 psi (1480-1900 kPa)



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).

KNOWN INFO

Transmission oil level OK.

Fuse OK.

ECU.

Batteries OK.

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) Wrench Set, Socket (Item 49, Appendix C)

Materials/Parts

Packing, Preformed (Item 199, Appendix G) Adapter, Straight, Pipe to Tube (Item 1.2, Appendix D) Adapter, Straight, Tube to Boss (Item 1.3, Appendix D) Hose Assembly, Nonmetallic (Item 25.1, Appendix D)

Personnel Required (2)

Reference TM 9-4910-571-12&P

START WARNING **CAUTION** Read WARNING and CAUTION on **TEST OPTIONS** following page. 1. Visual Inspection **REASON FOR QUESTION** Is main code 56 logged If main code 22 sub code 15 or without main code 22 sub POSSIBLE PROBLEMS 16 is logged, turbine speed code15 or 16? sensor, output speed sensor, or Faulty output speed sensor. associated circuit(s) is faulty. Faulty turbine speed sensor. Faulty WTEC III transmission Perform Transmission System Troubleshooting (f23. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code YES 15 or f24. WTEC III Transmission Pushbutton Shift Selector (TPSS) Displays Main Code 22 Sub Code 16).

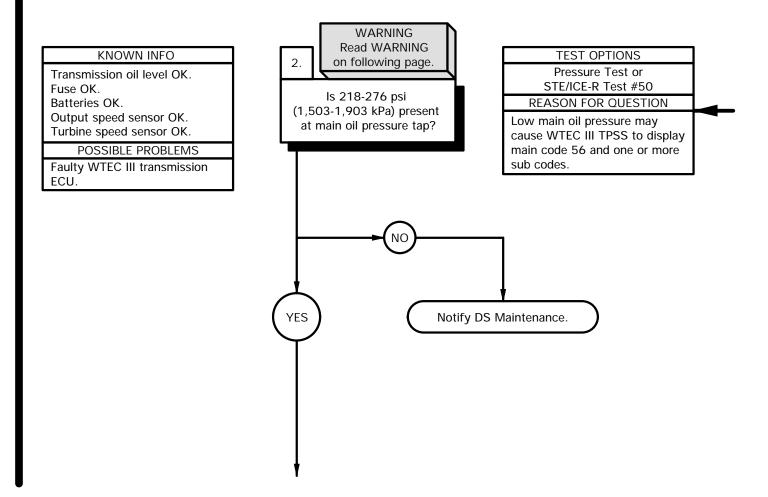
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (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).

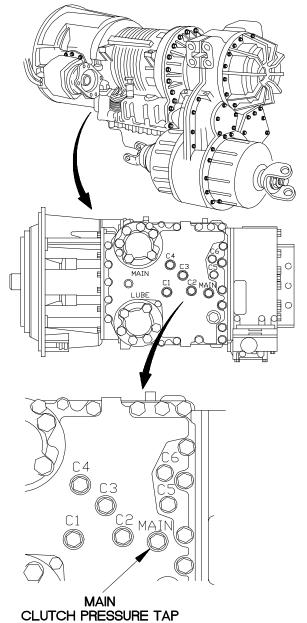
f36. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 56 AND ANY SUB CODE (CONT)



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.

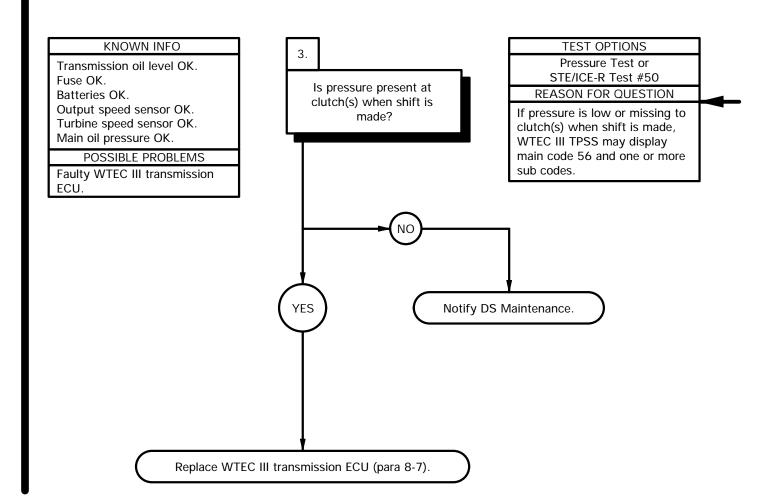
PRESSURE TEST

- (1) Position drain pan under pressure tap.
- (2) Remove main pressure tap plug and preformed packing from control valve module.
- (3) Connect tube to boss adapter, hose, and pipe to tube adapter 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 pipe to tube adapter, hose, and tube to boss adapter 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.



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



PRESSURE TEST

- Remove front and rear 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 tube to boss adapter, hose, and pipe to tube adapter 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 8-7).
- (15) Remove pipe to tube adapter, hose, and tube to boss adapter 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 front and rear propeller shafts (para 9-2).
- (20) Clear diagnostic codes (para 8-5).

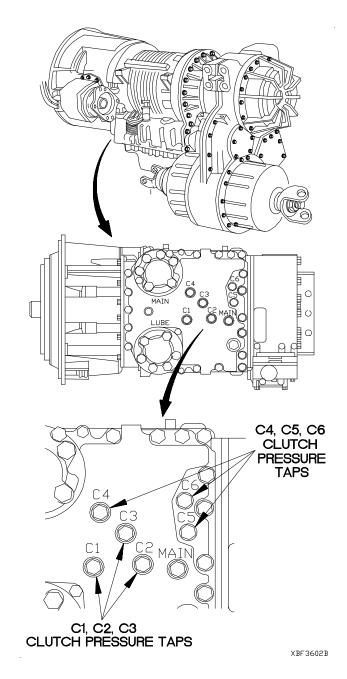


Table 2-43. Clutch Pressure Tap

Sub Code	Sub Code Meaning	Pressure at Clutch(s)	Pressure Readings at Taps
00	L Range Test	C3 & C6	215-334 psi (1480-2300 kPa)
11	1 Range Test	C1 & C5	215-305 psi (1480-2100 kPa)
22	2 Range Test	C1 & C4	142-203 psi (980-1400 kPa)
33	3 Range Test	C1 & C3	142-203 psi (980-1400 kPa)
44	4 Range Test	C1 & C2	142-203 psi (980-1400 kPa)
55	5 Range Test	C2 & C3	128-189 psi (880-1300 kPa)
66	6 Range Test	C2 & C4	128-189 psi (880-1300 kPa)
77	R Range Test	C3 & C5	215-276 psi (1480-1900 kPa)

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

INITIAL SETUP

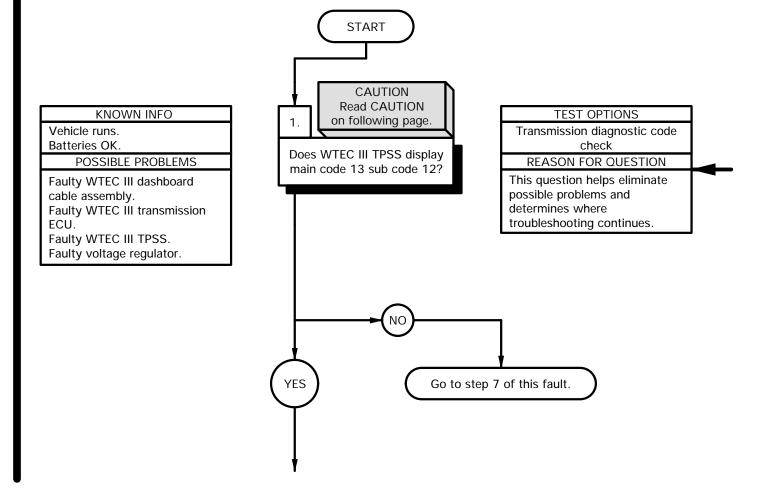
Equipment Conditions
Engine shut down (TM 9-2320-365-10).

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

Personnel Required (2)



CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

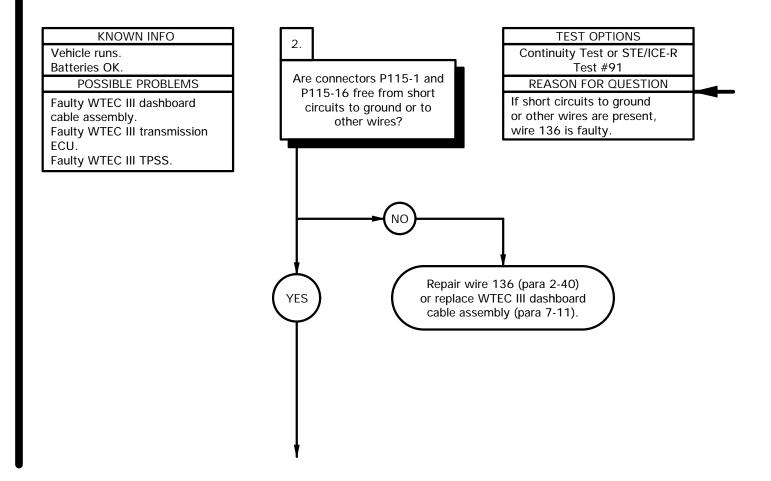
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

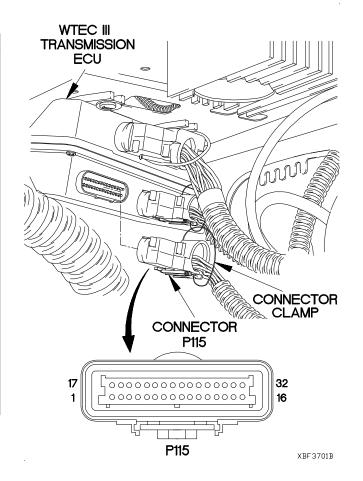
- (1) Check to see if main code 13 sub code 12 is active in WTEC III TPSS (para 8-5).
- (2) If main code 13 sub code 12 is not active in WTEC III TPSS, go to step 7 of this fault.

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

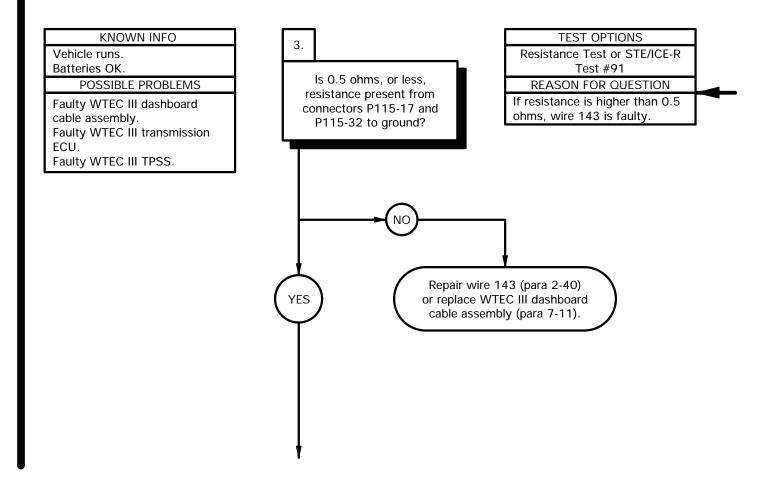


CONTINUITY TEST

- (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).

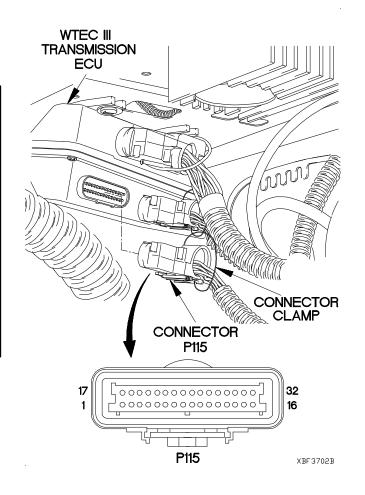


f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)

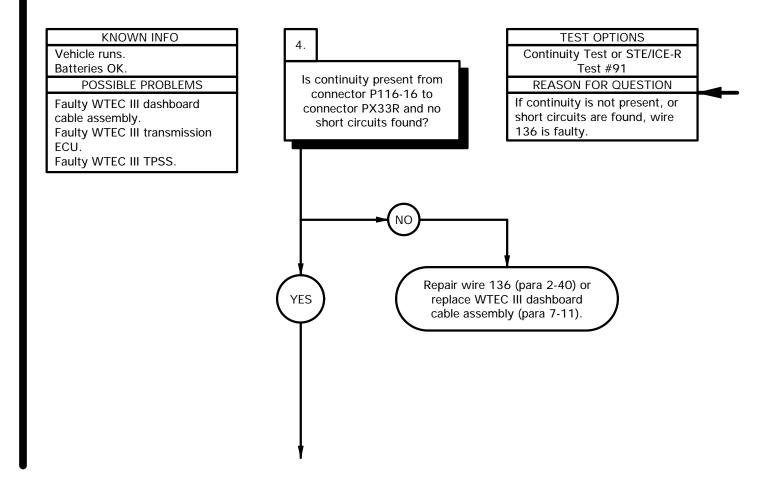


RESISTANCE TEST

- (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.
- Connect connector clamp on connector P115.

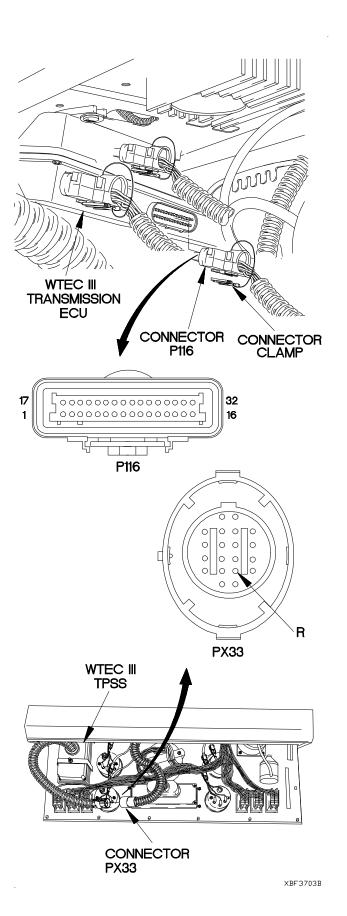


f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)

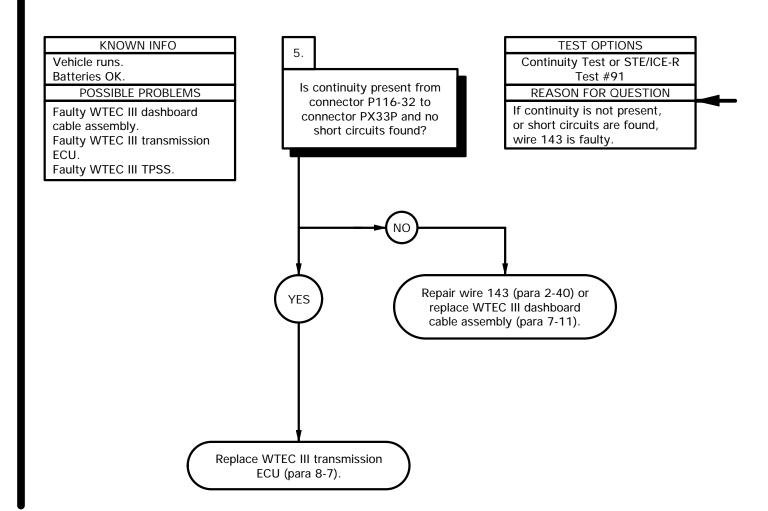


CONTINUITY TEST

- (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 TPSS.
- (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).

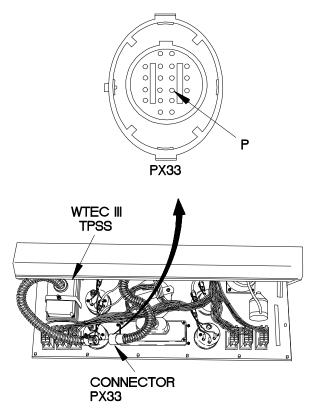


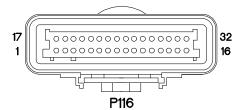
f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



CONTINUITY TEST

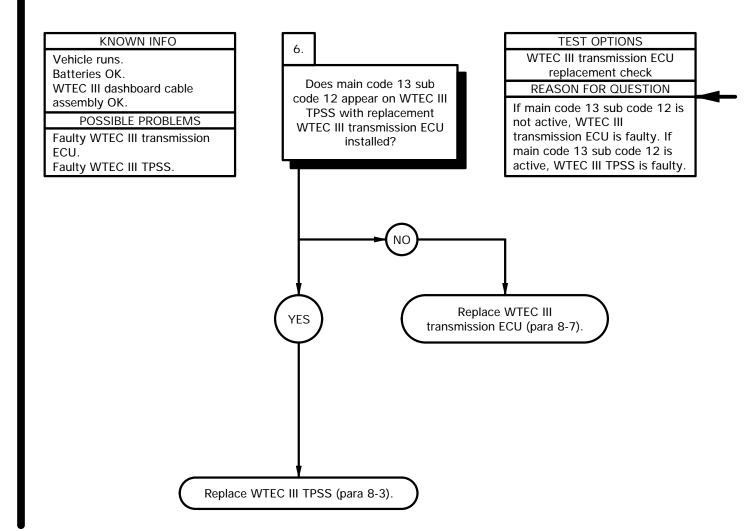
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector P116-32.
- (3) Connect negative (-) probe of multimeter to connector PX33P and note reading on multimeter.
- (4) Connect negative (-) probe of multimeter to all other sockets in connector PX33, one at a time, and 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).
- (8) Clear diagnostic codes (para 8-5).





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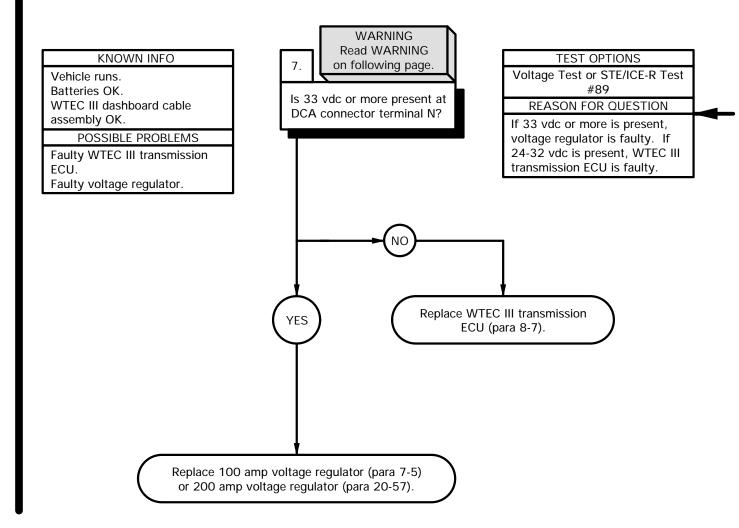
f37. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 13 AND ANY SUB CODE (CONT)



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).
- (8) Clear diagnostic codes (para 8-5).

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

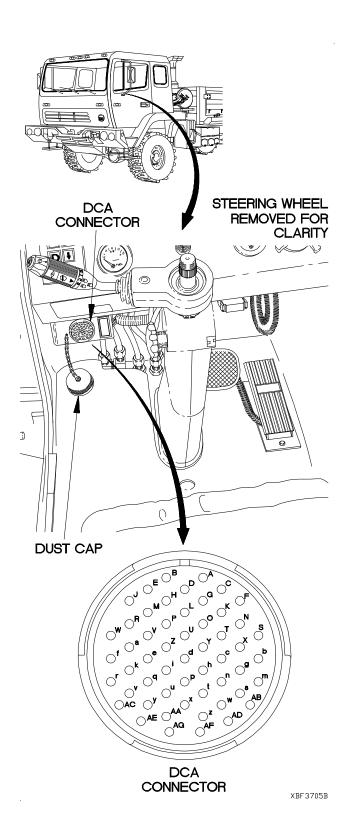


WARNING

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

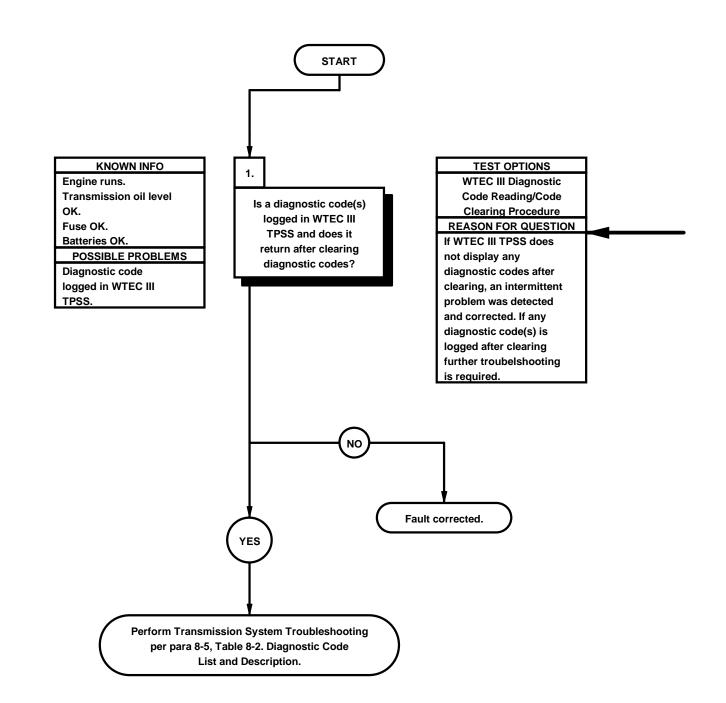
- (1) Start engine (TM 9-2320-365-10).
- (2) Remove dust cap from DCA connector.
- (3) Set multimeter to volts dc.
- (4) Connect positive (+) probe of multimeter to DCA connector terminal N.
- (5) Connect negative (-) probe of multimeter to DCA connector terminal P and note reading on multimeter.
- (6) 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) Clear diagnostic codes (para 8-5).
- (10) Shut down engine (TM 9-2320-365-10).



f38. 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 8-5).
- (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.

f39. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE

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)

STE/ICE-R (Item 39, Appendix C)

Wrench Set, Socket (Item 49, Appendix C)

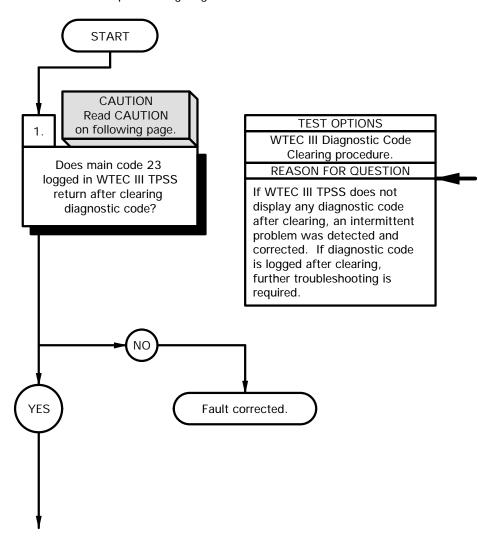
Tools and Special Tools (Cont) Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

Personnel Required (2)

References TM 9-4910-571-12&P

NOTE

Perform electrical system troubleshooting e1. Circuit Breaker Does Not Operate on circuit breakers C43 and CB79 prior to begining this task.



KNOWN INFO

Circuit Breakers CB43 and CB79 OK.

POSSIBLE PROBLEMS

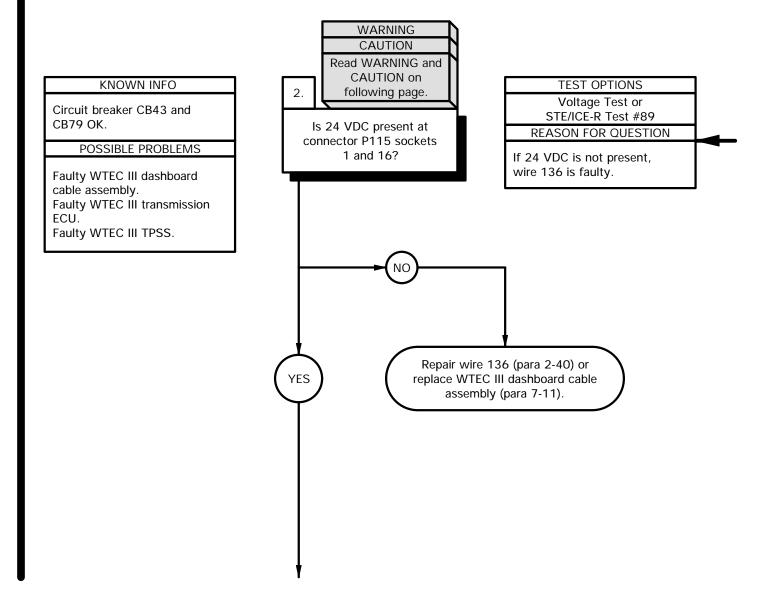
Faulty WTEC III dashboard cable assembly.
Faulty WTEC III TPSS.
Faulty WTEC III transmission ECU.

CAUTION

Loose or dirty connectors may cause intermittent loss of power to transmission ECU and diagnostic codes to be logged. Ensure that all connectors are clean and tight before performing troubleshooting. Failure to comply may result in incorrect test results.

- (1) Perform WTEC III Code Reading and Code Clearing (para 8-5).
- (2) If diagnostic code 23 is not logged after clearing, fault is corrected.
- (3) If diagnostic code 23 is logged after clearing, further troubleshooting is required.

f39. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 23 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 circuits and cause severe burns or electrical shock.

CAUTION

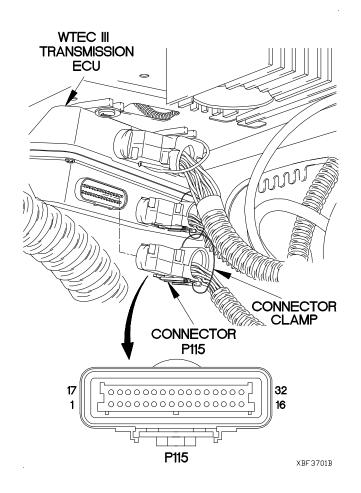
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

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 connector.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to connector P115 socket 1.
- (6) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (7) Connect positive (+) probe of multimeter to connector P115 socket 16.
- (8) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (9) If 24 VDC is not present in steps (6) and (8), repair wire 136 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).

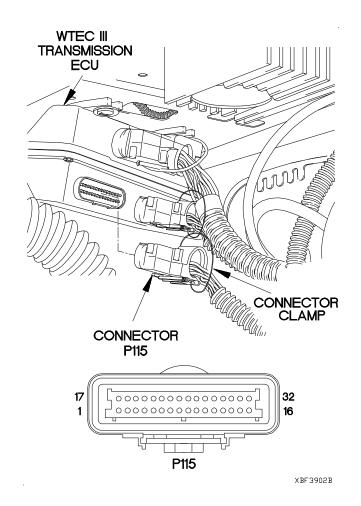


f39. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)

KNOWN INFO TEST OPTIONS 3. Continuity Test or Circuit breaker CB43 and STE/ICE-R Test #91 CB79 OK. Is continuity present from REASON FOR QUESTION connector P115 sockets POSSIBLE PROBLEMS 17, 25, and 32 to ground? If continuity is not present, wire 143 is faulty. Faulty WTEC III dashboard cable assembly. Faulty WTEC III transmission ECU. Faulty WTEC III TPSS. NO Repair wire 143 (para 2-40) or YES replace WTEC III dashboard cable assembly (para 7-11).

CONTINUITY TEST

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector P115 socket 17.
- (3) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (4) If continuity is not present in step (3), repair wire 143 from connector P115-17 to terminal board 2 pin 27 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
- (5) Connect positive (+) probe of multimeter to connector P115 socket 25.
- (6) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (7) If continuity is not present in step (6), repair wire 144 from connector P115-25 to chassis ground (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
- (8) Connect positive (+) probe of multimeter to connector P115 socket 32.
- (9) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (10) If continuity is not present in step (9), repair wire 143 from connector P115-32 to terminal board 2 pin 16 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
- (11) Connect connector P115 to WTEC III Transmission ECU.
- (12) Connect connector clamp on connector P115.



f39. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)

CAUTION Read CAUTION KNOWN INFO **TEST OPTIONS** on following page. Continuity Test or Circuit Breakers CB 43 and STE/ICE-R Test #91 CB79 OK. Is continuity present from **REASON FOR QUESTION** connector P116 socket 3 to POSSIBLE PROBLEMS connector PX33 socket N If continuity is not present, and no short circuits found? or short circuits are found, Faulty WTEC III dashboard wire 124 is faulty. cable assembly. Faulty WTEC III TPSS. Faulty WTEC III transmission ECU. NO Repair wire 124 (para 2-40) or YES replace WTEC III dashboard cable assembly (para 7-11).

CAUTION

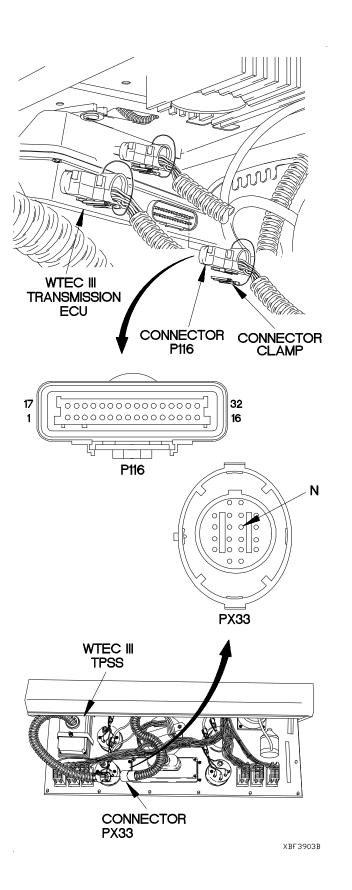
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

- 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 TPSS.
- (5) Connect positive (+) probe of multimeter to connector P116 socket 3.
- (6) Connect negative (-) probe of multimeter to connector PX33 socket N and note reading on multimeter.
- (7) Connect negative probe (-) of multimeter to all other sockets in connector PX33, one at a time, and note reading on multimeter.
- (8) Connect negative probe (-) of multimeter to ground and note reading on multimeter.
- (9) If continuity is not present in step 6, or continuity is present in step 7 or step 8, repair wire 124 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).



f39. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)

CAUTION Read CAUTION KNOWN INFO **TEST OPTIONS** 5. on following page. Continuity Test or Circuit Breakers CB 43 and STE/ICE-R Test #91 CB79 OK. Is continuity present from **REASON FOR QUESTION** connector P116 socket 32 POSSIBLE PROBLEMS to connector PX33 socket P If continuity is not present, and no short circuits found? or short circuits are found, Faulty WTEC III dashboard wire 143 is faulty. cable assembly. Faulty WTEC III TPSS. Faulty WTEC III transmission ECU. Repair wire 143 (para 2-40) or YES replace WTEC III dashboard cable assembly (para 7-11).

CAUTION

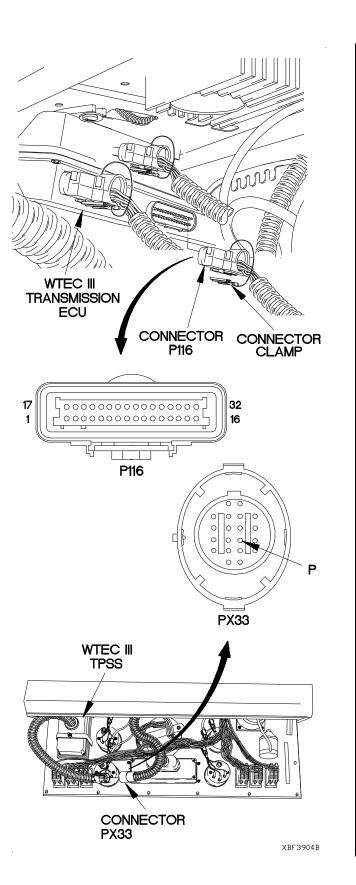
Use care when testing electrical connectors not to bend connector pins or damage connector sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

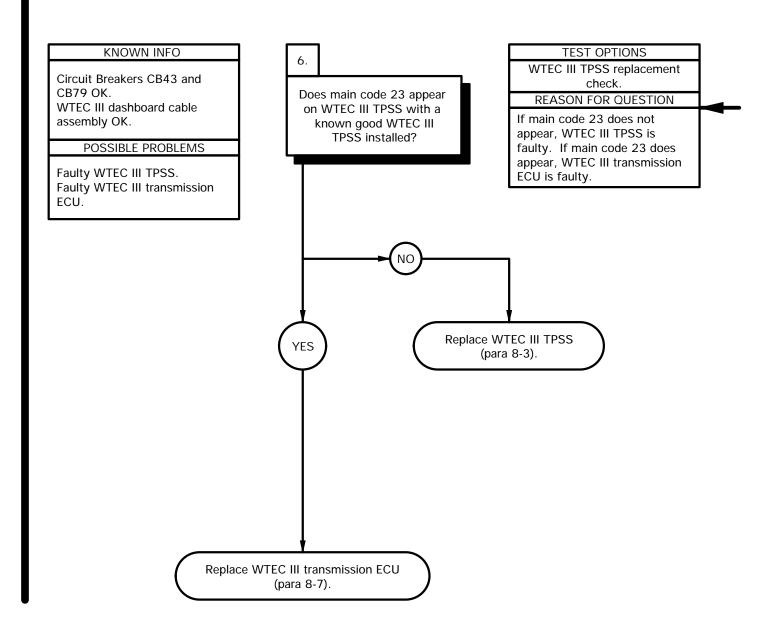
Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

- (1) Connect positive (+) probe of multimeter to connector P116 socket 32.
- (2) Connect negative (-) probe of multimeter to connector PX33 socket P and note reading on multimeter.
- (3) Connect negative probe (-) of multimeter to all other sockets in connector PX33, one at a time, and note reading on mutimeter.
- (4) Connect negative probe (-) of multimeter to ground and note reading on multimeter.
- (5) If continuity is not present in step 2, or continuity is present in step 3 or step 4, repair wire 143 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
- (6) Connect connector P116 to WTEC III transmission ECU.
- Connect connector clamp on connector P116.

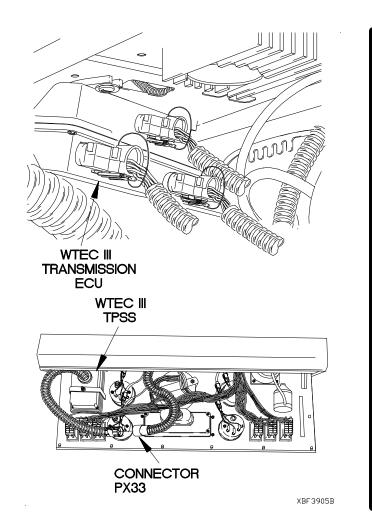


f39. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DISPLAYS MAIN CODE 23 AND ANY SUB CODE (CONT)



WTEC III TPSS REPLACEMENT CHECK

- (1) Replace WTEC III TPSS with a known good WTEC III TPSS (para 8-3).
- (2) Start engine (TM 9-2320-365-10).
- (3) Observe if main code 23 appears on WTEC III TPSS (para 8-5).
- (4) If main code 23 does not appear, replace WTEC III TPSS (para 8-3).
- (5) If main code 23 does appear, replace WTEC III transmission ECU (para 8-7).
- (6) Shut down engine (TM 9-2320-365-10).
- (7) Install original WTEC III TPSS (para 8-3).
- (8) Connect connnector PX33 to WTEC III TPSS.
- (9) Install instrument panel assembly (para 7-15).
- (10) Install kick panel (para 16-3).
- (11) Clear diagnostic codes (para 8-5).



f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE

INITAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Kick panel removed (para 16-3).

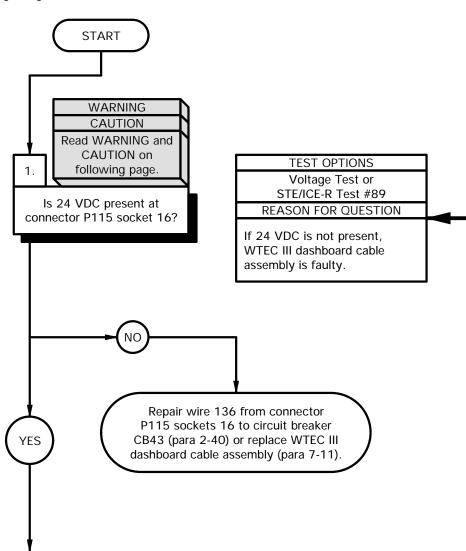
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Multimeter, Digital (Item 22, Appendix C)

Personnel Required

References TM 9-4910-571-12&P

NOTE

Perform Electrical System Troubleshooting e1. Circuit Breaker Does Not Operate on circuit breakers CB43 and CB79 prior to beginning this task.



KNOWN INFO

12 VDC and 24 VDC circuits operate.

Circuit breaker CB43 OK. Circuit breaker CB79 OK.

POSSIBLE PROBLEMS

Faulty WTEC III dashboard cable assembly.
Faulty terminal board TB1.
Faulty WTEC III ECU.
Faulty WTEC III TPSS.

WARNING

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

CAUTION

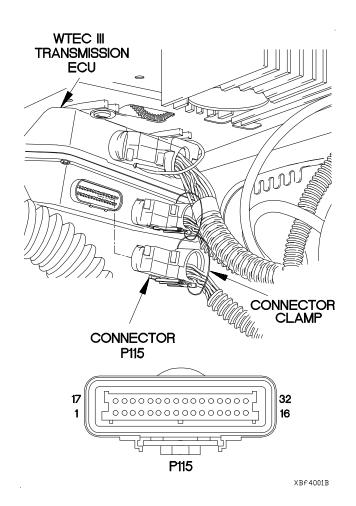
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- (1) Disconnect connector clamp from connector P115.
- (2) Disconnect connector P115 from WTEC III ECU.
- (3) Set multimeter to volts DC.
- (4) Connect positive (+) probe of multimeter to connector P115 socket 16.
- (5) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (6) If 24 VDC is not present, repair wire 136 from connector P115 sockets 16 to circuit breaker CB43 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).



f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)

WARNING **CAUTION** Read WARNING and CAUTION on KNOWN INFO TEST OPTIONS 2. following page. Voltage Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #89 Is 24 VDC present at operate. REASON FOR QUESTION connector P115 socket 1? Circuit breaker CB43 OK. Circuit breaker CB79 OK. If 24 VDC is not present, WTEC III dashboard cable POSSIBLE PROBLEMS assembly is faulty. Faulty WTEC III dashboard cable assembly. Faulty terminal board TB1. Faulty WTEC III ECU. Faulty WTEC III TPSS. Repair wire 136 from connector P115 sockets 1 to circuit breaker YES CB43 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).

WARNING

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

CAUTION

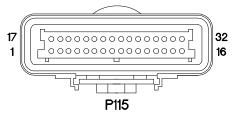
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- (1) Set multimeter to volts DC.
- (2) Connect positive (+) probe of multimeter to connector P115 socket 1.
- (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (4) If 24 VDC is not present, repair wire 136 from connector P115 sockets 1 to circuit breaker CB43 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).



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f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)

WARNING **CAUTION** Read WARNING and CAUTION on KNOWN INFO TEST OPTIONS following page. 3. Voltage Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #89 Is 24 VDC present at operate. REASON FOR QUESTION connector P116 socket 4? Circuit breaker CB43 OK. This question eliminates Circuit breaker CB79 OK. possible problems and POSSIBLE PROBLEMS determines where troubleshooting continues. Faulty WTEC III dashboard cable assembly. Faulty terminal board TB1. Faulty WTEC III ECU. Faulty WTEC III TPSS. YES Go to step 7 of this fault.

WARNING

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

CAUTION

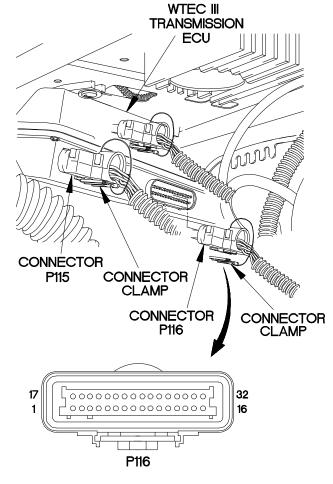
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- (1) Connect connector P115 to WTEC III ECU.
- (2) Connect connector clamp to connector P115.
- (3) Disconnect connector clamp from connector P116.
- (4) Disconnect connector P116 from WTEC III ECU.
- (5) Set multimeter to volts DC.
- (6) Connect positive (+) probe of multimeter to connector P116 socket 4.
- (7) Connect negative (-) probe of multimeter to ground.
- (8) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
- (9) Position master power switch to off (TM 9-2320-365-10).
- (10) If 24 VDC is not present, go to step 7 of this fault.



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f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)

WARNING **CAUTION** Read WARNING and CAUTION on KNOWN INFO TEST OPTIONS following page. 4. Voltage Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #89 Is 24 VDC present at operate. REASON FOR QUESTION connector PX33 socket R? Circuit breaker CB43 OK. This question eliminates Circuit breaker CB79 OK. possible problems and Terminal board TB1 OK. determines where troubleshooting continues. POSSIBLE PROBLEMS Faulty WTEC III dashboard cable assembly. Faulty WTEC III ECU. Faulty WTEC III TPSS. YES Go to step 9 of this fault.

WARNING

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

CAUTION

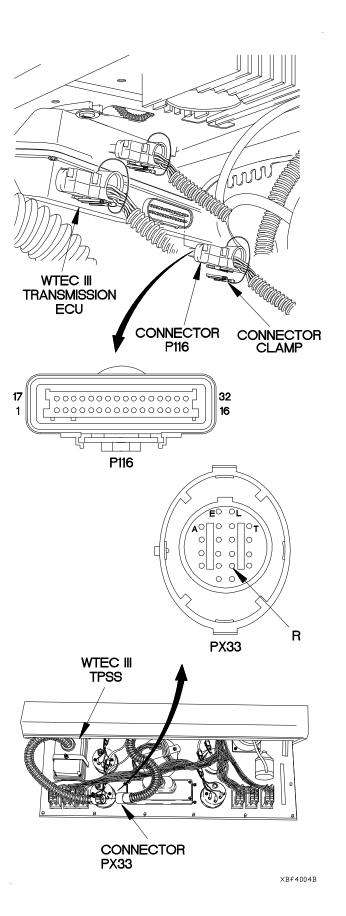
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

VOLTAGE TEST

- (1) Connect connector P116 to WTEC III ECU.
- (2) Connect connector clamp to connector P116.
- (3) Remove instrument panel for access (para 7-15).
- (4) Disconnect connector PX33 from WTEC III TPSS.
- (5) Set multimeter to volts DC.
- (6) Connect positive (+) probe of multimeter to connector PX33 socket R.
- (7) Connect negative (-) probe of multimeter to ground.
- (8) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
- (9) Position master power switch to off (TM 9-2320-365-10).
- (10) If 24 VDC is not present, go to step 9 of this fault.



f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)

CAUTION Read CAUTION KNOWN INFO TEST OPTIONS 5. on following page. Continuity Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #91 operate. Is continuity present from REASON FOR QUESTION Circuit breaker CB43 OK. connector PX33 socket T Circuit breaker CB79 OK. to known good ground? If continuity is not present, Terminal board TB1 OK. WTEC III dashboard cable WTEC III ECU OK. assembly is faulty. POSSIBLE PROBLEMS Faulty WTEC III dashboard cable assembly. Faulty WTEC III TPSS. Repair wire 186 from connector PX33 socket T to terminal board YES TB2 position 15 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).

CAUTION

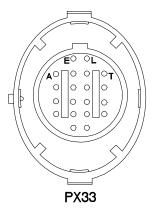
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

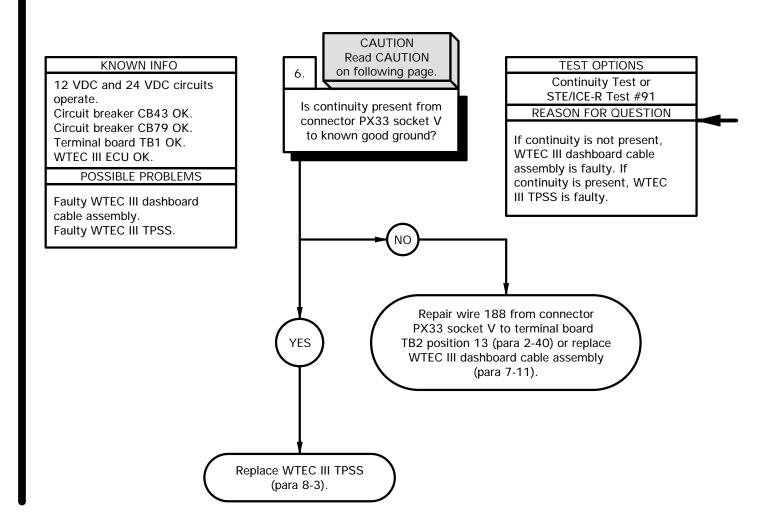
CONTINUITY TEST

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector PX33 socket T.
- (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (4) If continuity is not present, Repair wire 186 from connector PX33 socket T to terminal board TB2 position 15 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).



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f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)



CAUTION

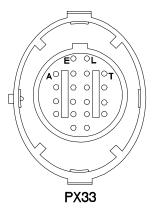
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector PX33 socket V.
- (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (4) If continuity is not present, Repair wire 188 from connector PX33 socket V to terminal board TB2 position 13 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
- (5) If continuity is present, replace WTEC III TPSS (para 8-3).



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f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)

CAUTION Read CAUTION KNOWN INFO TEST OPTIONS 7. on following page. Continuity Test or 12 VDC and 24 VDC circuits STE/ICE-R Test #91 operate. Is continuity present from REASON FOR QUESTION Circuit breaker CB43 OK. connector P116 socket 4 Circuit breaker CB79 OK. to terminal board TB1 If continuity is not present, WTEC III ECU OK. position 60? WTEC III dashboard cable WTEC III TPSS OK. assembly is faulty. POSSIBLE PROBLEMS Faulty WTEC III dashboard cable assembly. Faulty terminal board TB1. Repair wire 146 from connector P116 socket 4 to terminal board YES TB1 position 60 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).

CAUTION

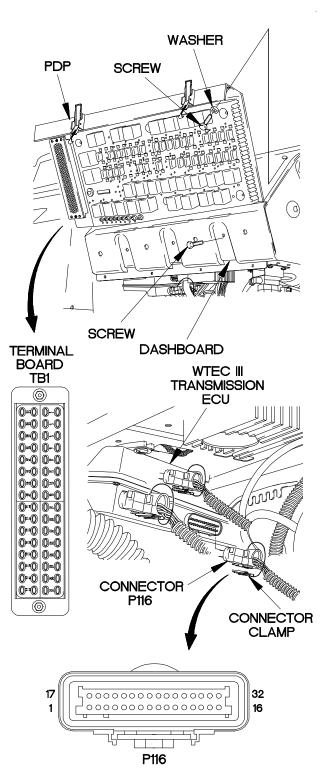
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

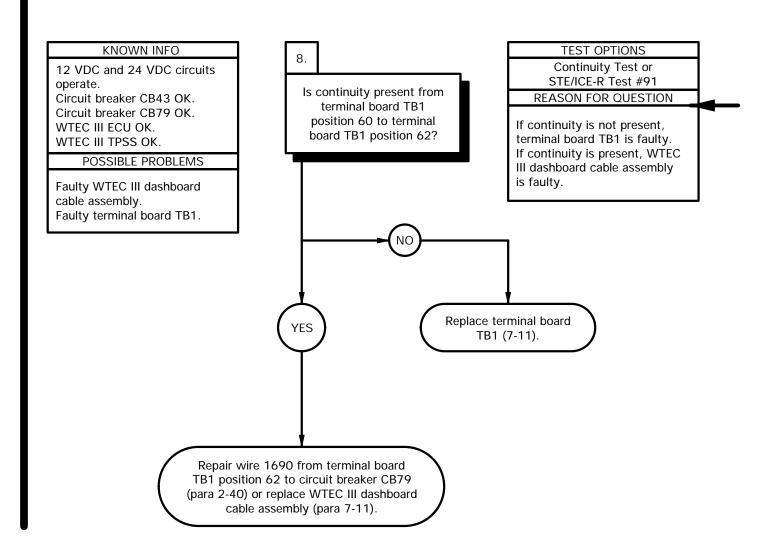
CONTINUITY TEST

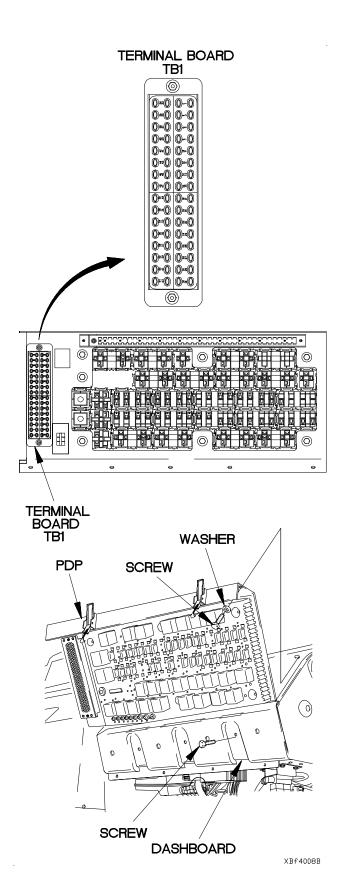
- (1) Disconnect batteries (para 7-48).
- (2) Remove PDP cover (para 16-2).
- (3) Remove three screws from PDP.
- (4) Remove three screws and washers from PDP.
- (5) Lift PDP outward to gain access.
- (6) Set multimeter to ohms.
- (7) Connect positive (+) probe of multimeter to connector P116 socket 4.
- (8) Connect negative (-) probe of multimeter to terminal board TB1 position 60 and note reading on multimeter.
- (9) If continuity is not present, Repair wire 146 from connector P116 socket 4 to terminal board TB1 position 60 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
- (10) Connect connector P116 to WTEC III ECU.
- (11) Connect connector clamp to connector P116.
- (12) Install kick panel (para 16-3).



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f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)

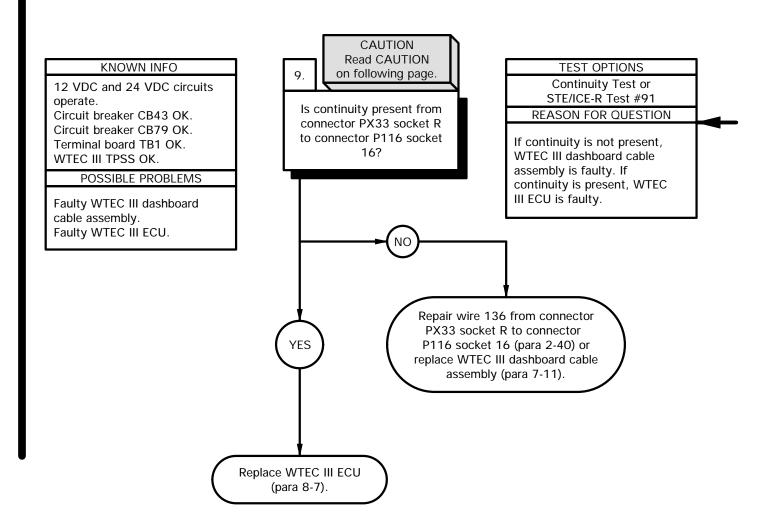




CONTINUITY TEST

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to terminal board TB1 position 60.
- (3) Connect negative (-) probe of multimeter to terminal board TB1 position 62 and note reading on multimeter.
- (4) If continuity is not present, replace terminal board TB1 (para 7-11).
- (5) If continuity is present, Repair wire 1690 from terminal board TB1 position 62 to circuit breaker CB79 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-11).
- (6) Install PDP on dashboard with three screws.
- (7) Install three washers and screws in PDP.
- (8) Install PDP cover (para 16-2).
- (9) Connect batteries (para 7-48).

f40. WTEC III TRANSMISSION PUSHBUTTON SHIFT SELECTOR (TPSS) DOES NOT ILLUMINATE (CONT)



CAUTION

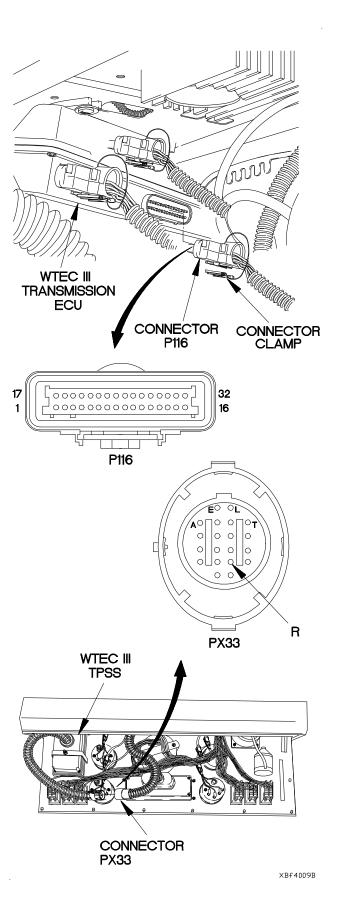
Use care when testing electrical connectors. Do not damage connector pins or sockets with multimeter probes. Failure to comply may result in damage to equipment.

NOTE

Inspect connector pins/sockets for damage, corrosion, and serviceability. Check that connector pins are not pushed back and are capable of making good contact.

CONTINUITY TEST

- Disconnect connector clamp from connector P116.
- (2) Disconnect connector P116 from WTEC III ECU.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to connector PX33 socket R.
- (5) Connect negative (-) probe of multimeter to connector P116 socket 16 and note reading on multimeter.
- (6) If continuity is not present, repair wire 136 from connector PX33 socket R to connector P116 socket 16 (para 2-40) or replace WTEC III dashboard cable assembly (para 7-11).
- (7) If continuity is present, replace WTEC III ECU (para 8-7).
- (8) Connect connector PX33 to WTEC III TPSS.
- (9) Install instrument panel assembly (para 7-15).



2-18. PROPELLER SHAFT TROUBLESHOOTING

This paragraph covers Propeller Shaft Troubleshooting. The Propeller Shaft Fault Index, Table 2-44, lists faults for the propeller shafts of the vehicle.

Table 2-44. Propeller Shaft Fault Index

Fault No.	Description	Page	
a1.	Drive Shaft or Universal Joint Unusually Noisy When Operating	2-1598	

g1. DRIVE SHAFT OR UNIVERSAL JOINT UNUSUALLY NOISY WHEN OPERATING

INITIAL SETUP

Nothing.

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)

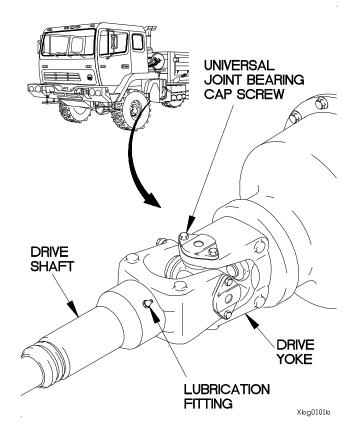
START WARNING Read WARNING **TEST OPTIONS KNOWN INFO** 1. on following page. Visual inspection REASON FOR QUESTION Is drive shaft properly POSSIBLE PROBLEMS lubricated? Drive shaft may operate unusually noisy if not properly Drive shaft requires lubrication. lubricated. Loose universal joint(s) bearing cap screws. Worn universal joints. Faulty drive shaft. Lubricate drive shaft YES (Appendix H). KNOWN INFO **TEST OPTIONS** 2. Visual inspection Drive shaft properly lubricated. **REASON FOR QUESTION** Are universal joint(s) bearing POSSIBLE PROBLEMS cap screws secure? Drive shaft may operate unusually noisy if not secure. Loose universal joint(s) bearing cap screws. Worn universal joints. Faulty drive shaft. Replace universal joint(s) bearing cap YES screws (para 9-2).

WARNING

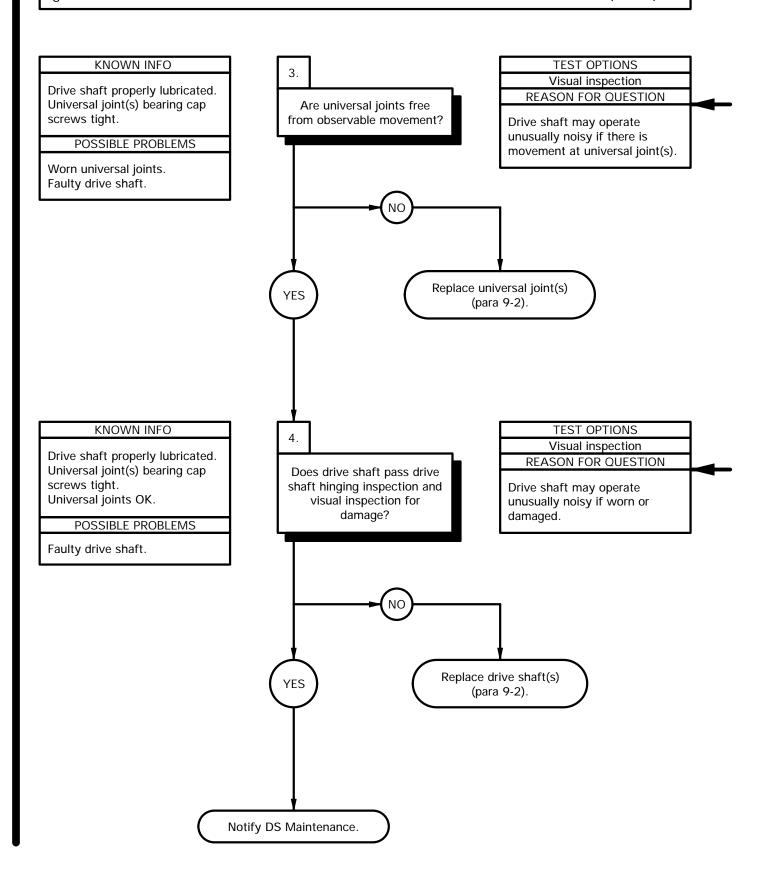
Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

Lubricate drive shaft lubrication fittings (Appendix H).

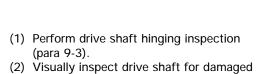
- (1) Visually inspect universal joint(s) bearing cap screws for tightness.
- (2) Replace any screw(s) that appears to be loose (para 9-2).



g1. DRIVE SHAFT OR UNIVERSAL JOINT UNUSUALLY NOISY WHEN OPERATING (CONT)

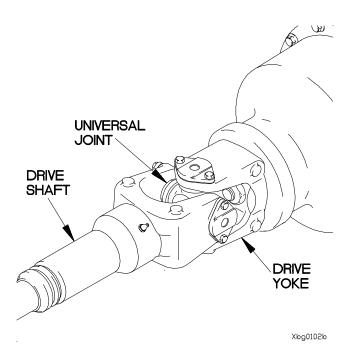


- (1) Check drive shaft for excessive movement at universal joints.
- (2) If universal joint(s) shows any movement, replace universal joint(s) (para 9-2).



balance weights.(3) If drive shaft does not pass hinging inspection or visual inspection, replace drive shaft (para 9-2).

slip yoke, bent/dented tubing, or missing



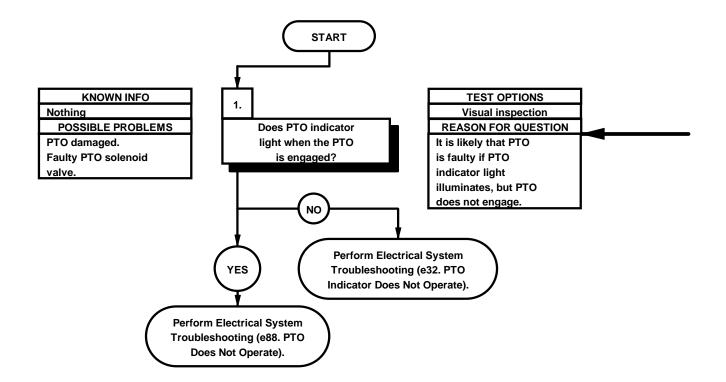
2-19. POWER TAKE OFF (PTO) TROUBLESHOOTING

This paragraph covers Power Take Off (PTO) Troubleshooting. The PTO Fault Index, Table 2-45, lists faults for the PTO of the vehicle.

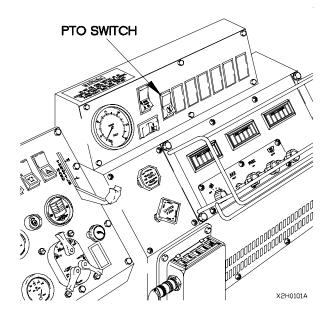
Table 2-45. PTO Fault Index

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).



- (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

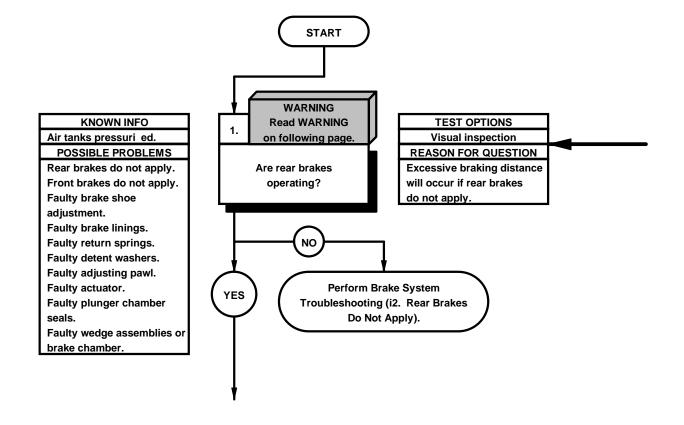
This paragraph covers Brake System Troubleshooting. The Brake System Fault Index, Table 2-46, lists faults for the Brake System of the vehicle.

Table 2-46. 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 Does Not Release	2-1644
i4.	Front Brakes Overheat and/or Do Not Release	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
i9.	Brake System Loses Air When Service Brakes Are Applied	2-1712

i1. E CESSIVE BRAKING DISTANCE INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Goggles, Industrial (Item 15, Appendix C) Tool Kit, Genl Mech (Item 44, Appendix C) Personnel Required Jack, Hydraulic, Hand (Item 21, Appendix C) (2) Trestle, Motor Vehicle Maintenance (2) (Item 45, Appendix C)

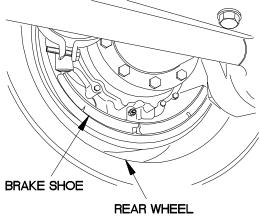
Tool, Spring Removal (Item 83, Appendix B)



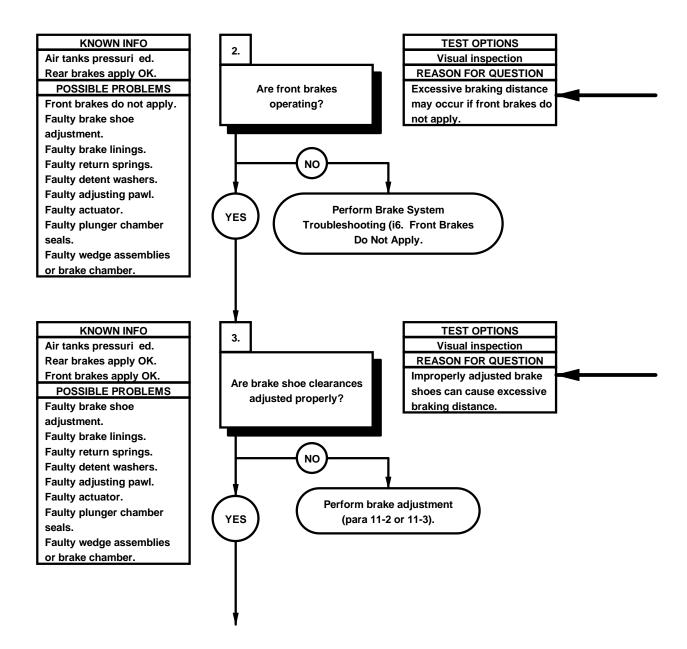
WARNING

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

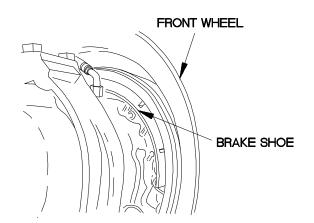
- (1) Apply brakes and observe operation of brake shoes at all rear wheels.
- (2) If brake shoes fail to apply at all rear wheels, rear brake system is faulty. Perform Brake System Troubleshooting (i2. Rear Brakes Do Not Apply).



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- (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).



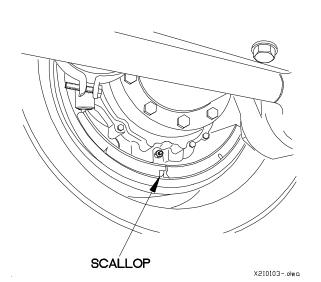
- (1) Jack up axle with affected brakes and support with trestles.
- (2) Make periodic brake applications to position floating shoes.

NOTE

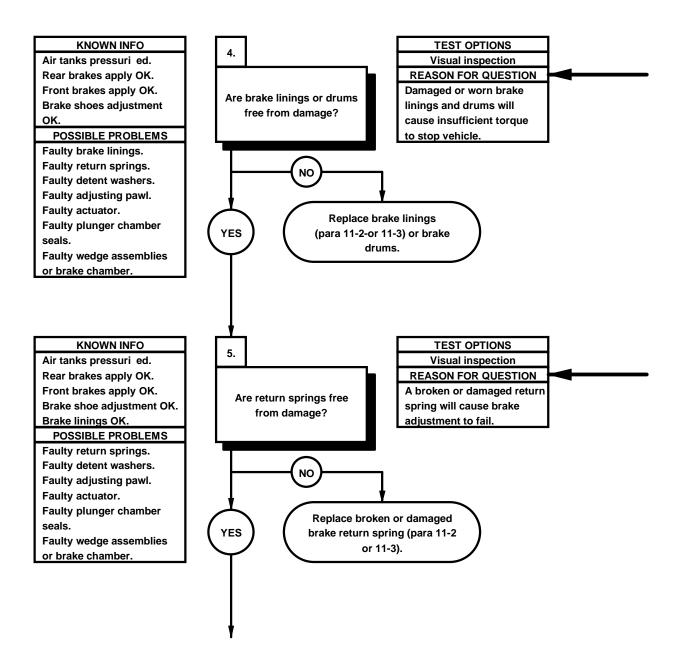
Over time a ridge will form on the outer edge of the brake shoes.

This is normal and does not affect brake shoe serviceability.

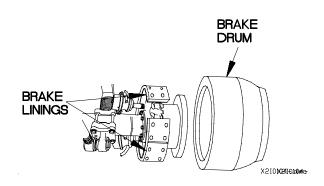
- (3) Measure shoe clearance checking along centerline of shoe at scallop. Rotate wheel during check.
- (4) If clearance is not between .020 $\,$ and .040 $\,$, adjust brakes (para 11-2 or 11-3).



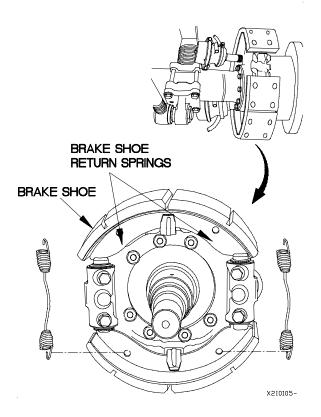
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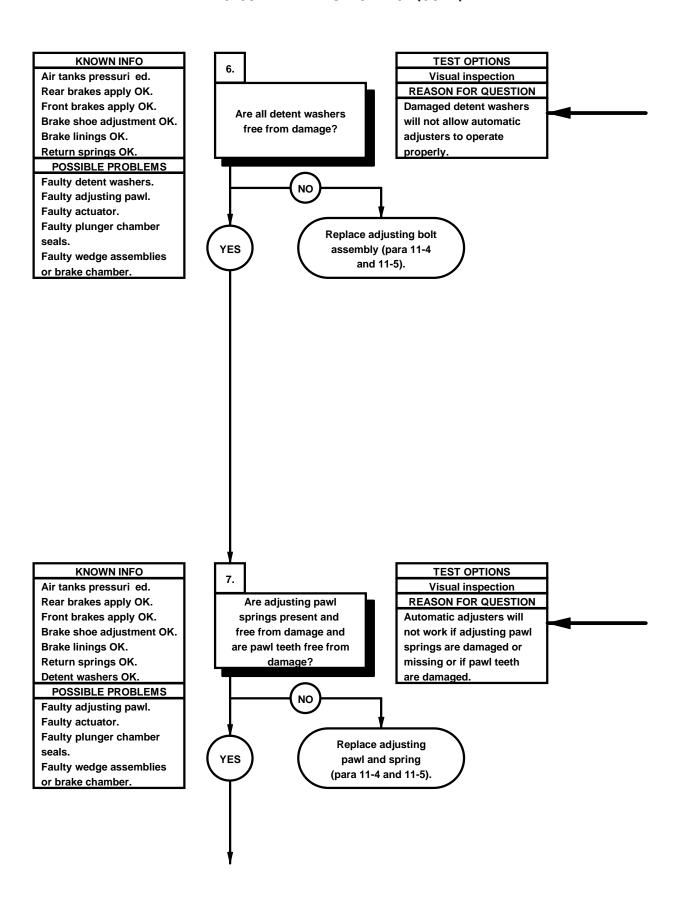


- (1) Remove lugnuts and lift off wheel.
- (2) Slide brake drum off axle.
- (3) Inspect brake linings for worn, gla ed, damaged condition, or contamination (para 11-2).
- (4) Inspect brake drum for, out of round, scoring, pitting, heat cracks, and blue scorch marks.

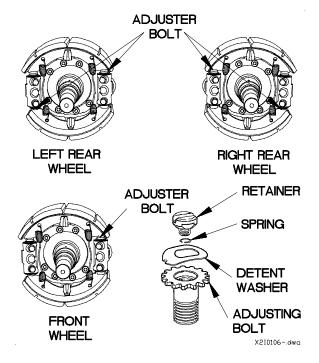


- (1) Detach each return spring from brake shoe.
- (2) Examine return spring for stretching, bluing, damage or breakage.
- (3) If return spring(s) is damaged, replace broken or damaged return spring (s) (para 11-2 or 11-3).

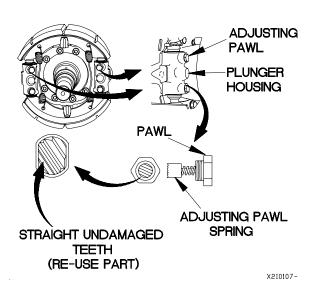


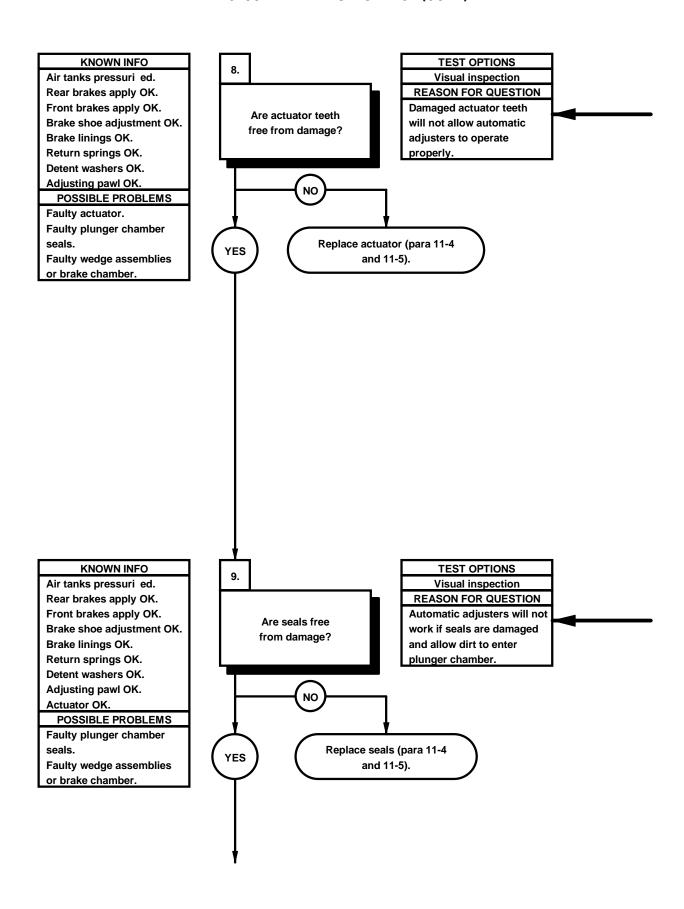


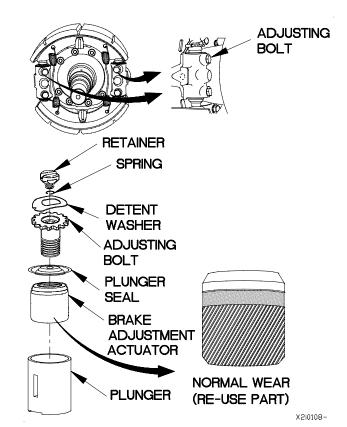
- (1) Remove brake shoes from clips on wheel hub.
- (2) Screw adjuster bolt out of plunger housing.
- (3) Check if detent washer is damaged or broken.
- (4) If detent washer is damaged, replace adjusting bolt assembly (para 11-4 or 11-5).



- (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.





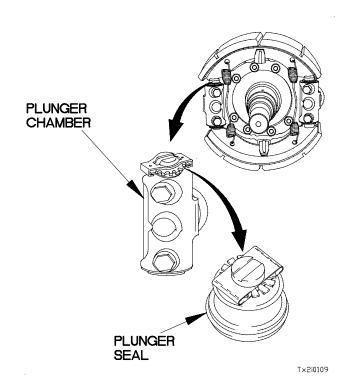


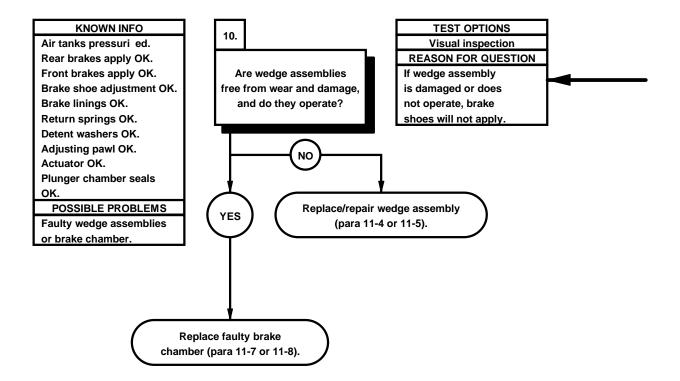


(2) Check actuator teeth for damage.

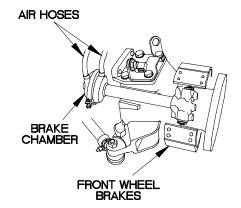


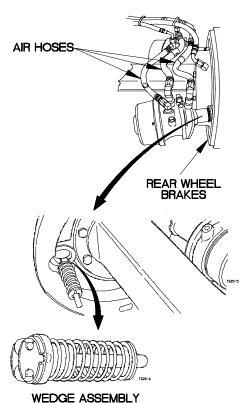
(2) A damaged seal may permit dirt to enter plunger chamber and interfere with adjustment.





- (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.





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i2. REAR BRAKES DO NOT APPLY

INITIAL SETUP

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

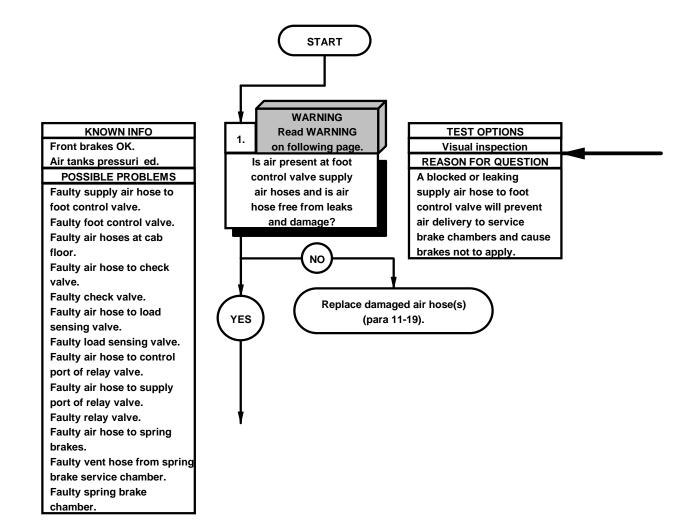
Tools and Special Tools

Tool Kit, Genl Mech (Item 44, Appendix C)

Goggles, Industrial (Item 15, Appendix C)

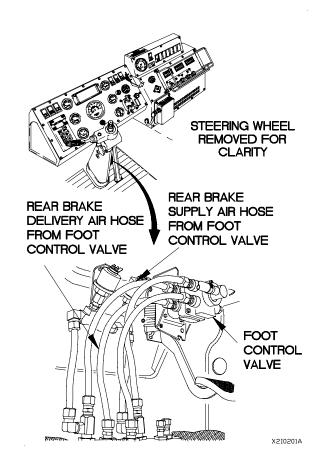
Personnel Required

(2)



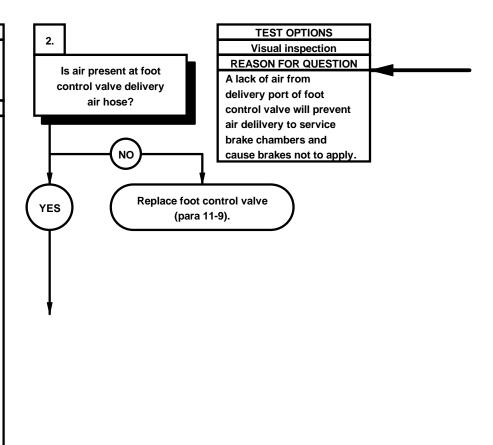
WARNING

- 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.

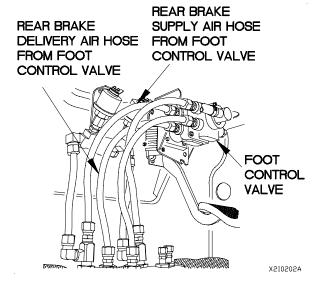


i2. REAR BRAKES DO NOT APPLY (CONT)

KNOWN INFO Front brakes OK. Air tanks pressuri ed. Supply air hose to foot control valve OK. POSSIBLE PROBLEMS Faulty foot control valve. Faulty air hoses at cab floor. Faulty air hose to check valve. Faulty check valve. Faulty air hose to load sensing valve. Faulty load sensing valve. Faulty air hose to control port of relay valve. Faulty air hose to supply port of relay valve. Faulty relay valve. Faulty air hoses to spring brakes. Faulty vent hose from spring brake service chamber. Faulty spring brake chamber.



- (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.



KNOWN INFO

Front brakes OK.
Air tanks pressuri ed.
Supply air hose to foot
control valve OK.
Foot control valve OK.

POSSIBLE PROBLEMS

Faulty air hoses at cab floor.

Faulty air hose to check valve.

Faulty check valve. Faulty air hose to load sensing valve.

Faulty load sensing valve.

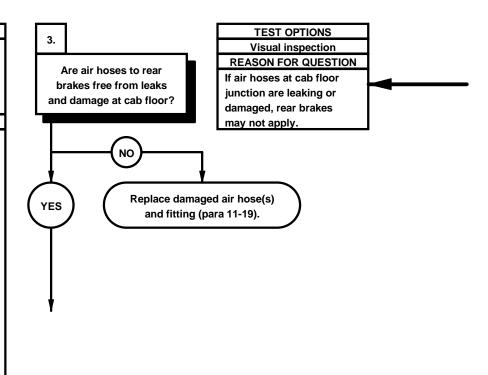
Faulty air hose to control port of relay valve.

Faulty air hose to supply port of relay valve.

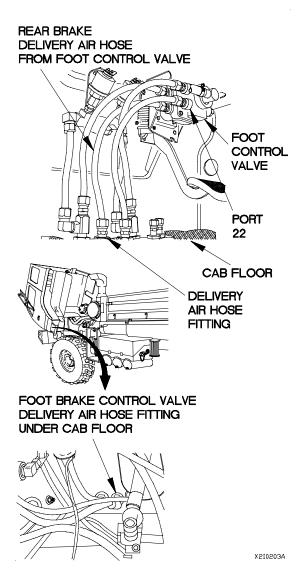
Faulty relay valve.

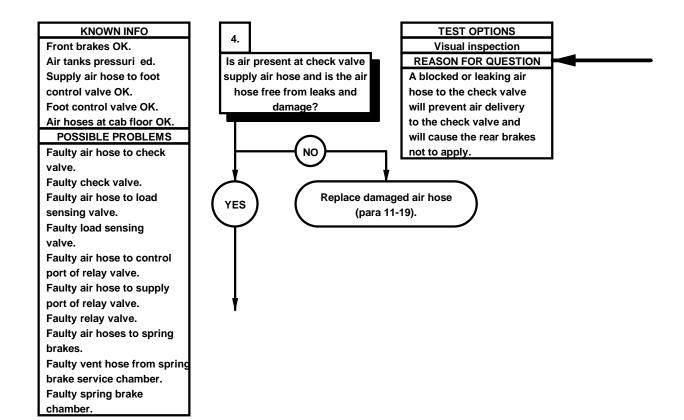
Faulty air hoses to spring brakes.

Faulty vent hose from spring brake service chamber.
Faulty spring brake

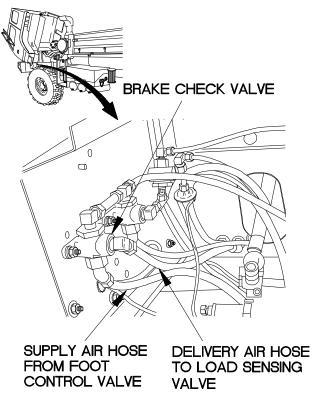


- (1) Loosen delivery air hose at cab floor.
- (2) Apply brakes.
- (3) Check for presence of air from air hose when brake is applied.
- (4) If no air is present, replace air hose (para 11-19).
- (5) Tighten air hose at cab floor.
- (6) Raise cab (TM 9-2320-365-10).
- (7) Loosen delivery air hose under 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.





- (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.



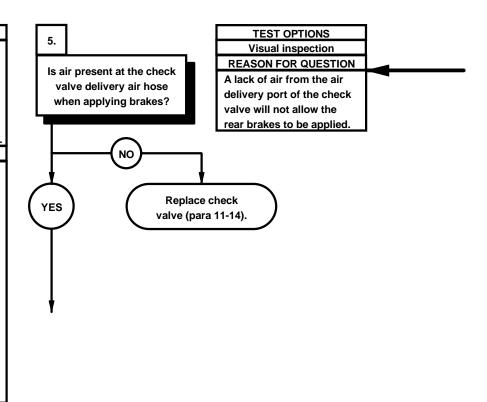
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KNOWN INFO

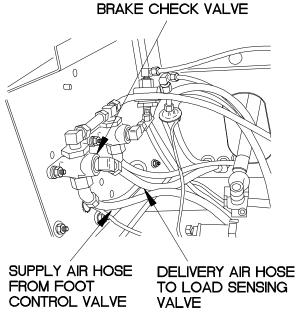
Front brakes OK.
Air tanks pressuri ed.
Supply air hose to foot control valve OK.
Foot control valve OK.
Air hoses at cab floor OK.
Air hose to check valve OK.

POSSIBLE PROBLEMS

Faulty check valve. Faulty air hose to load sensing valve. Faulty load sensing valve. Faulty air hose to control port of relay valve. Faulty air hose to supply port of relay valve. Faulty relay valve. Faulty air hoses to spring brakes. Faulty vent hose from spring brake service chamber. Faulty spring brake chamber.



- (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.



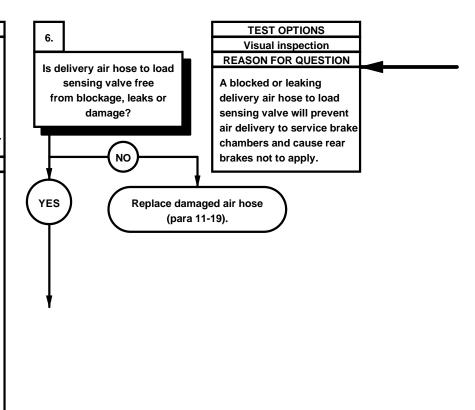
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KNOWN INFO

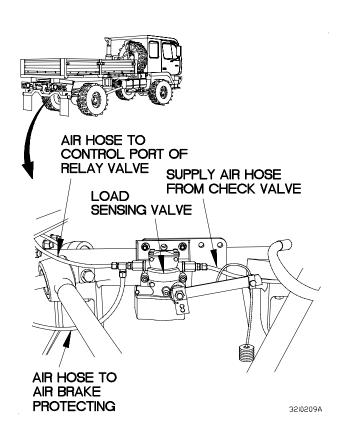
Front brakes OK.
Air tanks pressuri ed.
Supply air hose to foot
control valve OK.
Foot control valve OK.
Air hoses at cab floor OK.
Air hose to check valve OK.
Check valve OK.

POSSIBLE PROBLEMS

Faulty air hose to load sensing valve.
Faulty load sensing valve.
Faulty air hose to control port of relay valve.
Faulty air hose to supply port of relay valve.
Faulty relay valve.
Faulty air hoses to spring brakes.
Faulty vent hose from spring brake service chamber.
Faulty spring brake



- (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.



KNOWN INFO Front brakes OK. Air tanks pressuri ed. Supply air hose to foot control valve OK. Foot control valve OK. Air hoses at cab floor OK. Air hose to check valve OK. Check valve OK. Air hose to load sensing valve OK. POSSIBLE PROBLEMS Faulty load sensing valve. Faulty air hose to control port of relay valve. Faulty air hose to supply port of relay valve. Faulty relay valve.

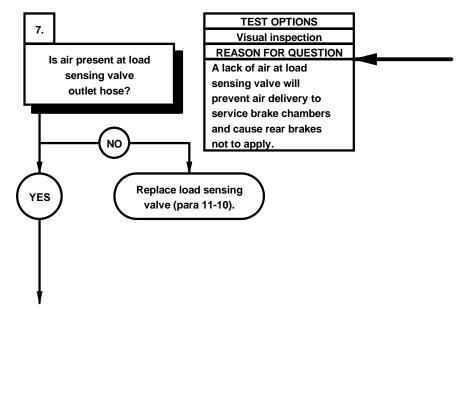
Faulty air hoses to spring

Faulty vent hose from spring brake service

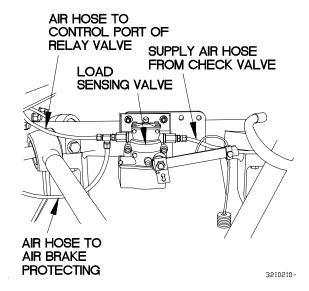
Faulty spring brake

brakes.

chamber.



- (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.



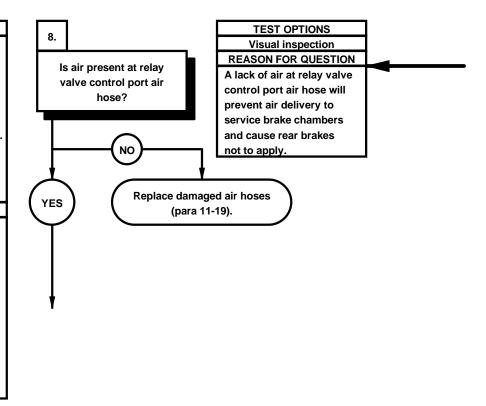
KNOWN INFO

Front brakes OK.
Air tanks pressuri ed.
Supply air hose to foot
control valve OK.
Foot control valve OK.
Air hoses at cab floor OK.
Air hose to check valve OK.
Check valve OK.
Air hose to load sensing
valve OK.

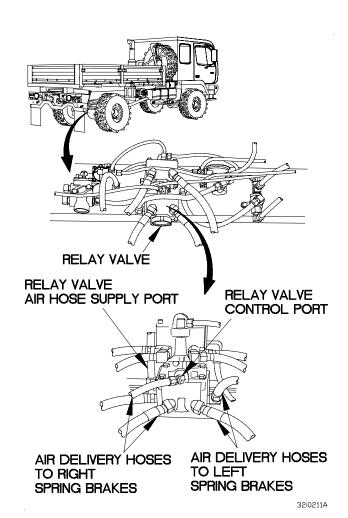
Load sensing valve OK.

POSSIBLE PROBLEMS

Faulty air hose to control port of relay valve.
Faulty air hose to supply port of relay valve.
Faulty relay valve.
Faulty air hoses to spring brakes.
Faulty vent hose from spring brake service chamber.
Faulty spring brake



- (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.

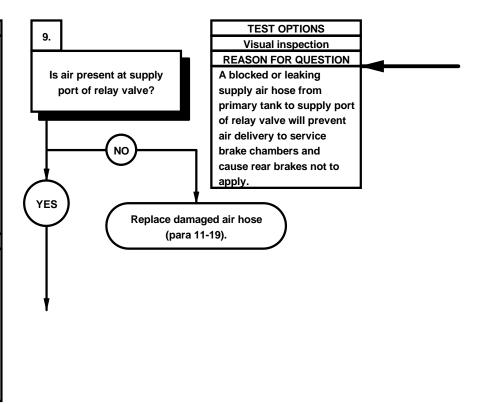


2-1635

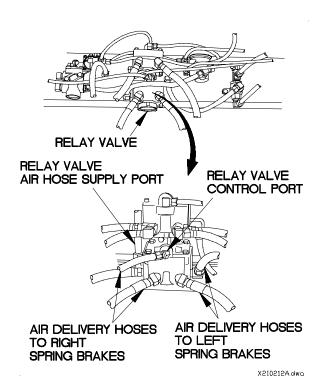
KNOWN INFO Front brakes OK. Air tanks pressuri ed. Supply air hose to foot control valve OK. Foot control valve OK. Air hoses at cab floor OK. Air hose to check valve OK. Check valve OK. Air hose to load sensing valve OK. Load sensing valve OK. Air hose to control port of relay valve OK.

POSSIBLE PROBLEMS

Faulty air hose to supply port of relay valve.
Faulty relay valve.
Faulty air hoses to spring brakes.
Faulty vent hose from spring brake service chamber.
Faulty spring brake chamber.



- (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.



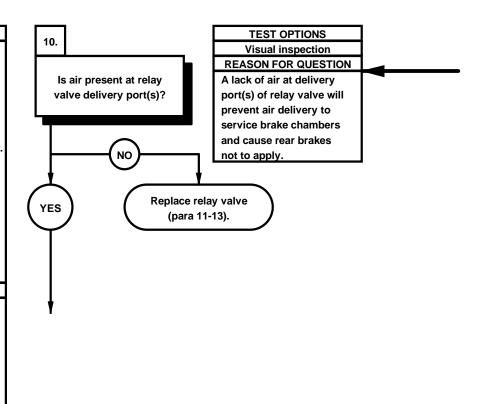
KNOWN INFO

Front brakes OK.

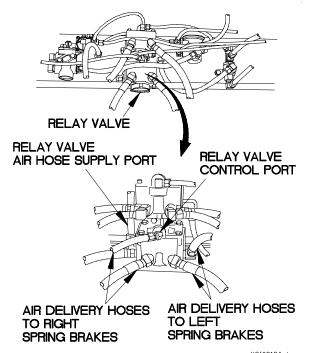
Air tanks pressuri ed.
Supply air hose to foot
control valve OK.
Foot control valve OK.
Air hoses at cab floor OK.
Air hose to check valve OK.
Check valve OK.
Air hose to load sensing
valve OK.
Load sensing valve OK.
Air hose to control port of
relay valve OK.
Air hose to supply port
relay valve OK.

POSSIBLE PROBLEMS

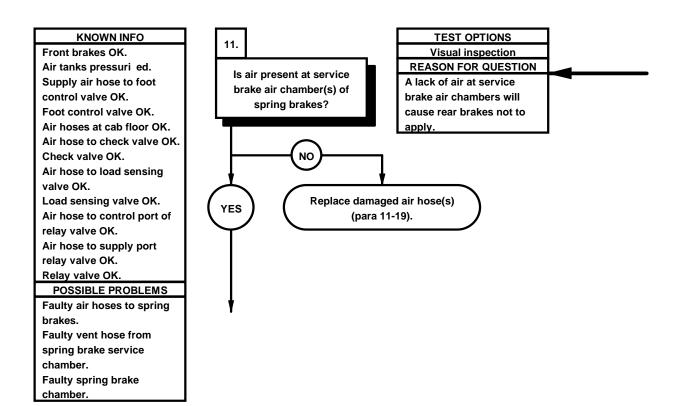
Faulty relay valve.
Faulty air hoses to spring brakes.
Faulty vent hose from spring brake service chamber.
Faulty spring brake chamber.



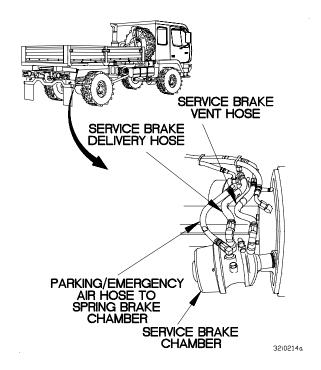
- (1) Loosen delivery air hose(s) at relay valve.
- (2) Apply brakes.
- (3) Check for presence of air.
- (4) If no air is present, replace relay valve (para 11-13).
- (5) Tighten delivery air hose(s) to relay valve.

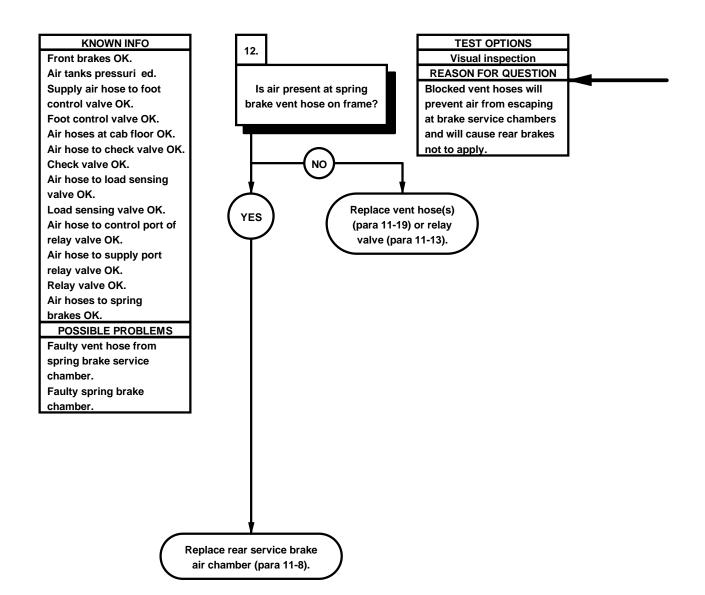


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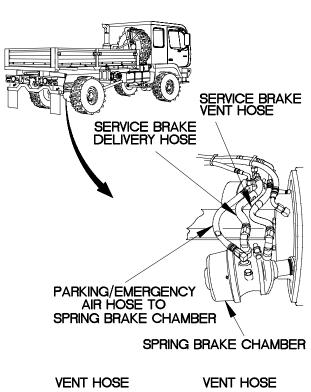


- (1) Loosen service brake air hose at spring brake chamber.
- (2) Apply brakes.
- (3) Check for presence of air.
- (4) If no air is present, replace air hose (para 11-19).
- (5) Tighten service brake air hose on spring brake chamber.





- (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).



VENT HOSE
FROM REAR
SPRING BRAKE
SPRING BRAKE



VENT

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)

KNOWN INFO

Air tanks pressurized. Gladhands OK.

POSSIBLE PROBLEMS

Faulty air hose 107. Faulty park control two-way check valve. Faulty SYSTEM PARK air supply valve.

Faulty air hose 103.

Faulty air hose 109.

Faulty two-way check valve.

Faulty air hose 119.

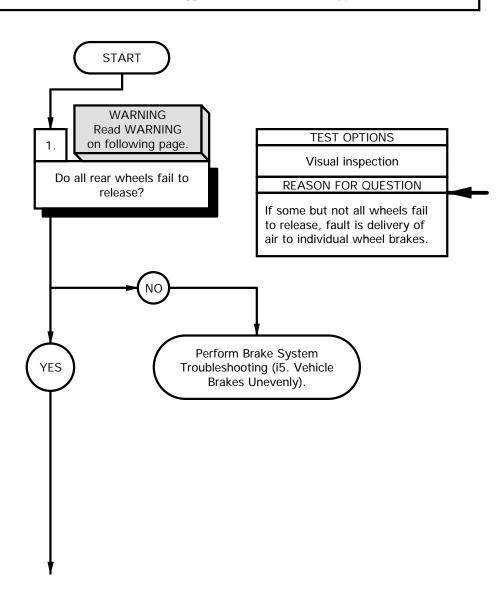
Faulty inversion valve.

Faulty air hose 221.

Faulty anti-compounding

valve.

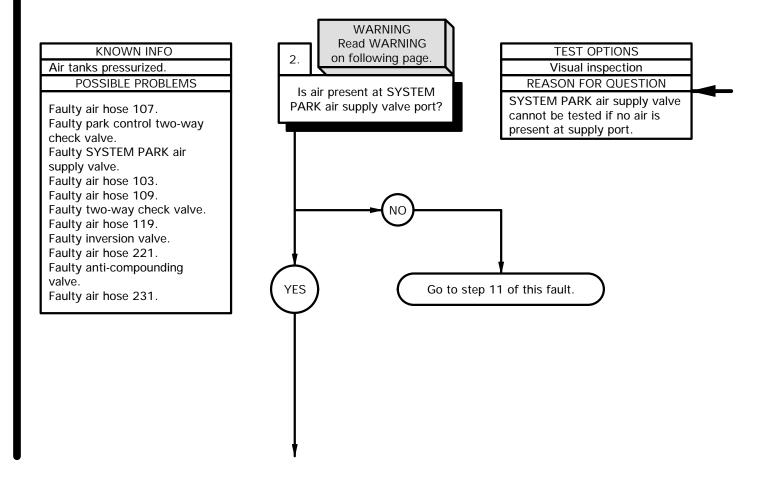
Faulty air hose 231.



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 serious injury or death to personnel.

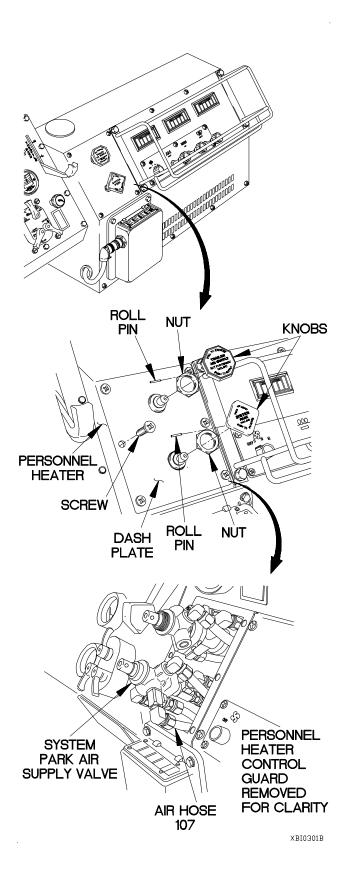
- (1) Start engine (TM 9-2320-365-10).
- (2) Release SYSTEM PARK control (TM 9-2320-365-10).
- (3) Check if vehicle moves.
- (4) If vehicle moves, locate locked wheel(s) and troubleshoot individual wheel(s).
- (5) Shut down engine (TM 9-2320-365-10).



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.

- Remove roll pins from knobs of SYSTEM PARK and TRAILER AIR SUPPLY valves.
- (2) Remove SYSTEM PARK and TRAILER AIR SUPPLY valve knobs.
- (3) Unscrew nuts at base of knob stem on each valve.
- (4) Remove six screws from dash plate.
- (5) Remove dash plate from personnel heater.
- (6) Pull out SYSTEM PARK air supply valve from personnel heater.
- (7) Loosen air hose 107 at SYSTEM PARK air supply valve supply port.
- (8) Check air hose 107 for escaping air.
- (9) If no air escapes from air hose 107, go to step 11 of this fault.



KNOWN INFO

Air tanks pressurized. Air hose 107 OK. Park control two-way check valve OK.

POSSIBLE PROBLEMS

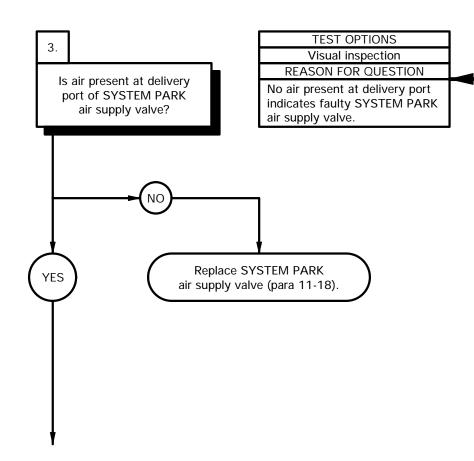
Faulty SYSTEM PARK air supply valve. Faulty air hose 103. Faulty air hose 109. Faulty two-way check valve.

Faulty air hose 119. Faulty inversion valve.

Faulty air hose 221.

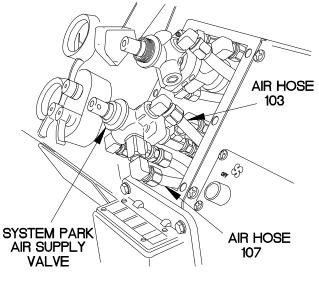
Faulty anti-compounding valve.

Faulty air hose 231.



- (1) Tighten air hose 107 at SYSTEM PARK air supply valve supply port.
- (2) Loosen air hose 103 at SYSTEM PARK air
- supply valve delivery port.

 (3) Check for presence of air from SYSTEM PARK air supply valve.
- (4) If no air is present, replace SYSTEM PARK air supply valve (para 11-18).

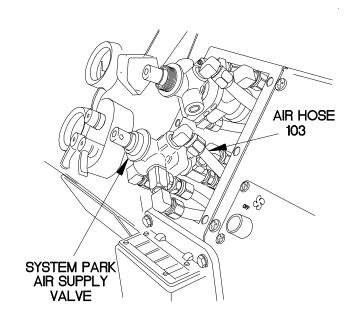


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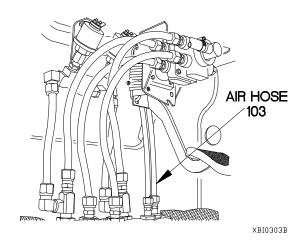
KNOWN INFO TEST OPTIONS 4. Visual inspection Air tanks pressurized. REASON FOR QUESTION Air hose 107 OK. Is air present at air hose Park control two-way check No air present at air hose 103 103? valve OK. indicates faulty air hose. POSSIBLE PROBLEMS Faulty air hose 103. Faulty air hose 109. Faulty two-way check valve. Faulty air hose 119. NO Faulty inversion valve. Faulty air hose 221. Faulty anti-compounding Faulty air hose 231. Replace air hose 103 YES (para 11-19).

- (1) Tighten air hose 103 at SYSTEM PARK air supply valve delivery port.

 (2) Loosen air hose 103 at cab floor fitting.
- (3) Check for presence of air from air hose 103.
- (4) If no air is present, replace air hose 103 (para 11-19).



STEERING COLUMN REMOVED FOR CLARITY



KNOWN INFO Air tanks pressurized. Air hose 107 OK.

Park control two-way check valve OK.

Air hose 103 OK.

POSSIBLE PROBLEMS

Faulty air hose 109.

Faulty two-way check valve.

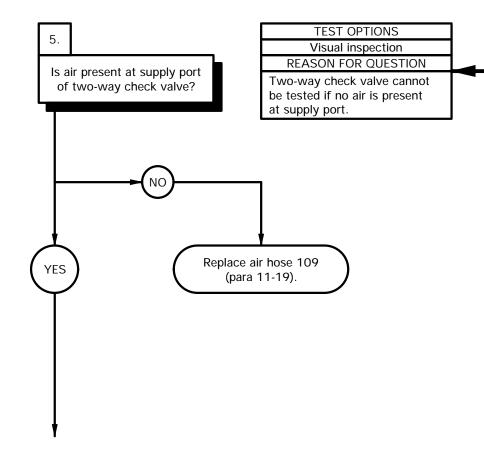
Faulty air hose 119.

Faulty inversion valve.

Faulty air hose 221.

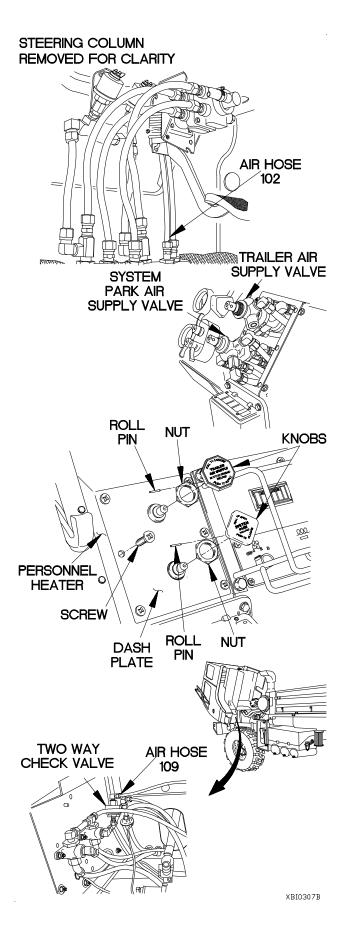
Faulty anti-compounding valve.

Faulty air hose 231.





- (2) Push SYSTEM PARK and TRAILER AIR SUPPLY valves back into personnel heater.
- (3) Install dash plate over valve stems with six screws.
- (4) Install nuts on knob stems.
- (5) Install SYSTEM PARK and TRAILER AIR SUPPLY knobs on stems with roll pins.
- (6) Raise cab (TM 9-2320-365-10).
- (7) Loosen air hose 109 at supply port of two-way check valve.
- (8) Check for presence of air at air hose 109.
- (9) If no air is present, replace air hose 109 (para 11-19).



KNOWN INFO

Air tanks pressurized. Air hose 107 OK. Park control two-way check valve OK.

Air hose 103 OK. Air hose 109 OK.

POSSIBLE PROBLEMS

Faulty air hose 119. Faulty inversion valve. Faulty air hose 221. Faulty anti-compounding valve.

Faulty two-way check valve. Faulty air hose 231. Replace two-way check YES valve (para 11-14).

6.

Is air present at delivery

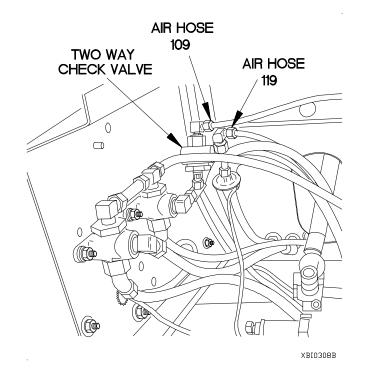
port of two-way check

valve?

Visual inspection REASON FOR QUESTION

No air at delivery port of two-way check valve indicates a faulty two-way check valve.

- (1) Tighten air hose 109 at two-way check valve supply port.
- (2) Loosen air hose 119 at delivery port of two-way check valve.
- (3) Release SYSTEM PARK (TM 9-2320-365-10) and check for presence of air at air hose 119.
- (4) If no air is present, replace two-way check valve (para 11-14).



KNOWN INFO

Air tanks pressurized. Air hose 107 OK. Park control two-way check valve OK.

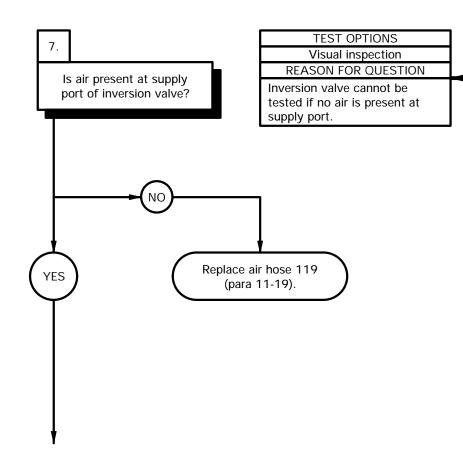
Air hose 103 OK. Air hose 109 OK.

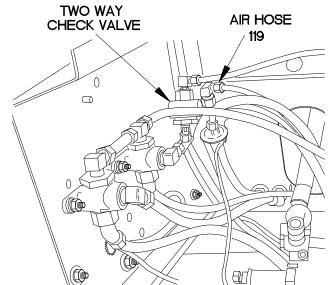
Two-way check valve OK.

POSSIBLE PROBLEMS

Faulty air hose 119. Faulty inversion valve. Faulty air hose 221. Faulty anti-compounding valve.

Faulty air hose 231.





- AIR HOSE

 INVERSION VALVE

 3BI0308B
- (1) Tighten air hose 119 at two-way check valve delivery port.
- (2) Lower cab (TM 9-2320-365-10).
- (3) Loosen air hose 119 at inversion valve supply port.
- (4) Check for presence of air at air hose 119.
- (5) If no air is present, replace air hose 119 (para 11-19).

KNOWN INFO

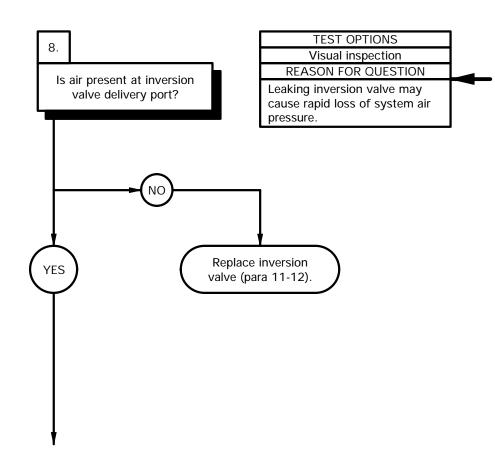
Air tanks pressurized. Air hose 107 OK. Park control two-way check valve OK.

Air hose 103 OK.
Air hose 109 OK.
Two-way check valve OK.
Air hose 119 OK.

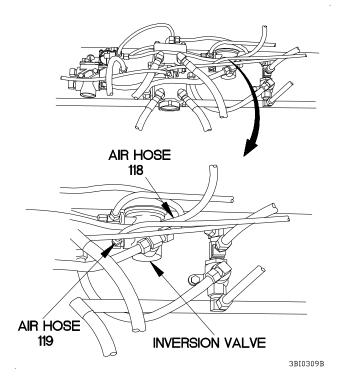
POSSIBLE PROBLEMS

Faulty inversion valve. Faulty air hose 221. Faulty anti-compounding valve.

Faulty air hose 231.



- (1) Tighten air hose 119 at inversion valve supply port.
- (2) Loosen air hose 118 at inversion valve delivery port.
- (3) Check for presence of air at air hose 118.
- (4) If no air is present, replace inversion valve (para 11-12).



i3. PARKING BRAKE DOES NOT RELEASE (CONT)

KNOWN INFO

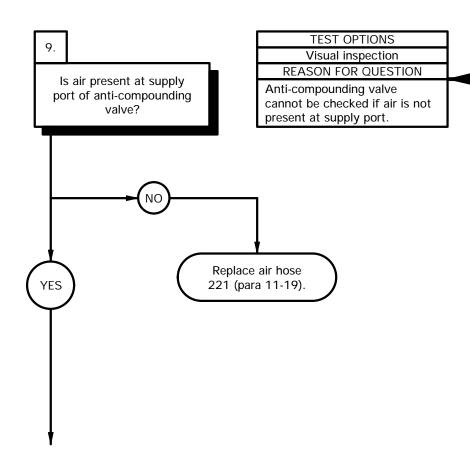
Air tanks pressurized. Air hose 107 OK. Park control two-way check valve OK.

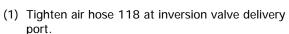
Air hose 103 OK. Air hose 109 OK. Two-way check valve OK. Air hose 119 OK. Inversion valve OK.

POSSIBLE PROBLEMS

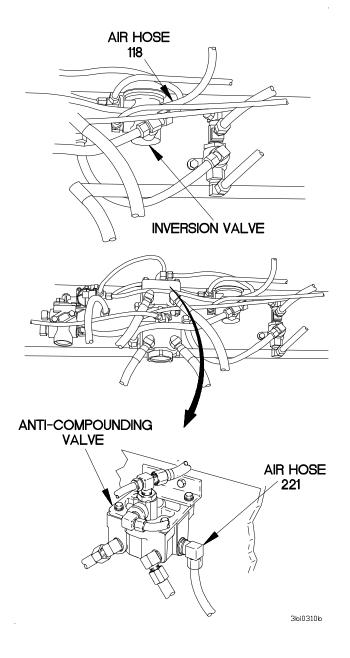
Faulty air hose 221. Faulty anti-compounding valve.

Faulty air hose 231.

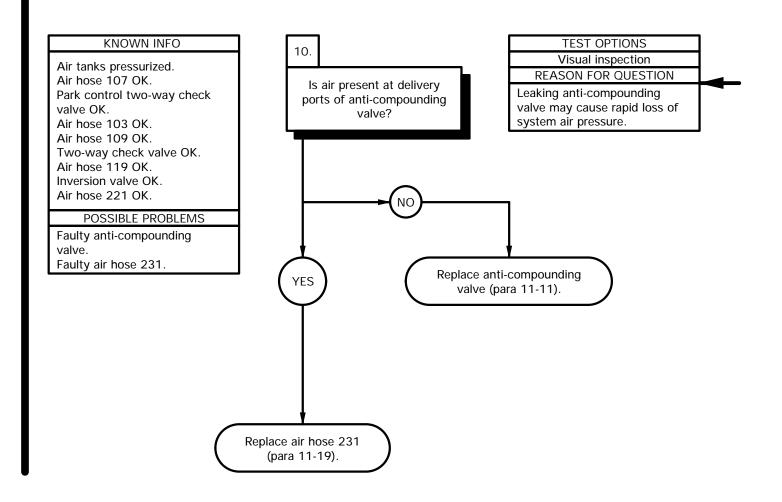




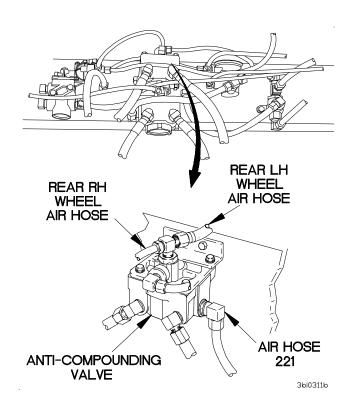
- (2) Loosen air hose 221 at supply port of anti-compounding valve.
- (3) Check for presence of air at air hose 221.
- (4) If no air is present, replace air hose 221 (para 11-19).



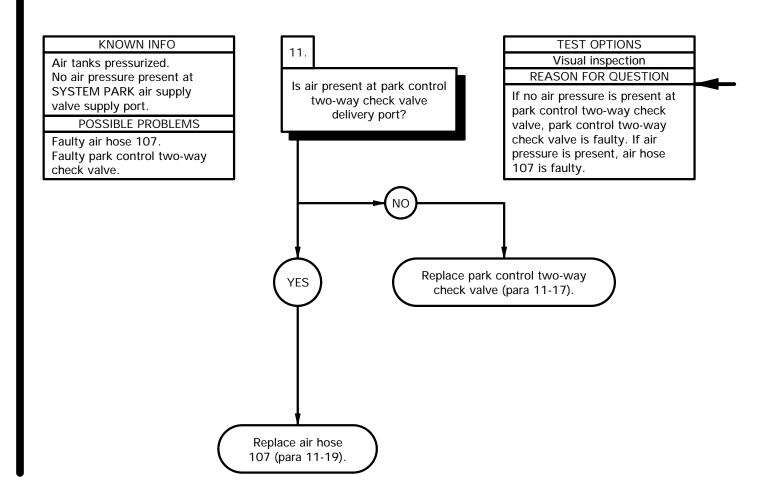
i3. PARKING BRAKE DOES NOT RELEASE (CONT)



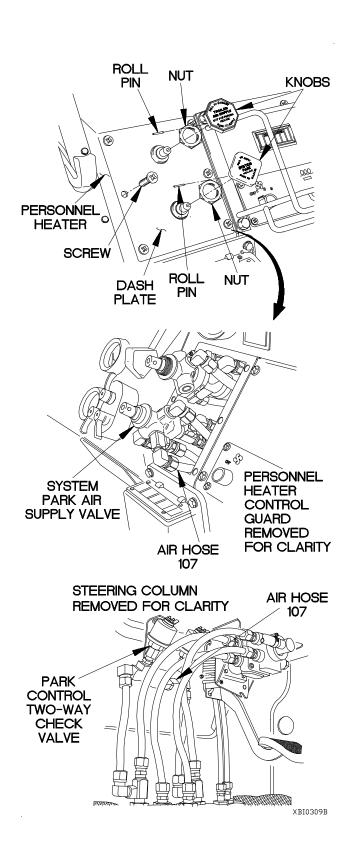
- (1) Tighten air hose 221 at anti-compounding valve supply port.
- (2) Loosen air delivery hoses at delivery ports of anti-compounding valve.
- (3) Check for presence of air at anti-compounding valve air hoses.
- (4) If no air is present, replace anti-compounding valve (para 11-11).
- (5) If air is present, replace air hose 231 (para 11-19).
- (6) Tighten air delivery hoses at delivery ports of anti-compounding valve.



i3. PARKING BRAKE DOES NOT RELEASE (CONT)



- (1) Tighten air hose 107 at SYSTEM PARK air supply valve supply port.
- (2) Push SYSTEM PARK and TRAILER AIR SUPPLY valves back into personnel heater.
- (3) Install dash plate over valve stems with six screws.
- (4) Install nuts on knob stems.
- (5) Install SYSTEM PARK and TRAILER AIR SUPPLY knobs on stems with roll pins.
- (6) Loosen air hose 107 at park control two-way check valve delivery port.
- (7) Check for presence of air at air hose 107.
- (8) If no air is present, replace park control two-way check valve (para 11-17).
- (9) If air is present, replace air hose (para 11-19).
- (10) Tighten air hose 107 at park control two-way check valve.



i4. FRONT BRAKES OVERHEAT AND/OR DO NOT RELEASE

INITIAL SETUP

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

Personnel (2)

Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Trestle, Motor Vehicle Maintenance (2)
(Item 45, Appendix C)
Adjusting Tool, Brake Shoe (Item 2, Appendix C)

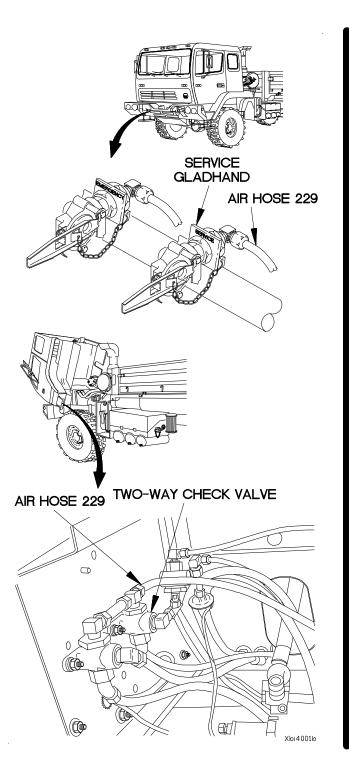
START WARNING Read WARNING KNOWN INFO TEST OPTIONS on following page. 1. Soapy Water Leak Test and Tires undamaged and Visual Inspection inflated to proper operating Are air hose 229 and pressure. **REASON FOR QUESTION** fittings free from leaks or Front gladhands OK. damage? If leaks or damage are present, POSSIBLE PROBLEMS air hose 229 and/or fittings are Faulty air hose 229. faulty. Faulty brake adjusting components. Faulty wedge assembly. Faulty wheel bearings. Faulty brake chamber(s). Replace air hose 229 YES and/or fittings (para 11-19).

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.

SOAPY WATER LEAK TEST

- (1) Apply soapy water solution to air hose 229 and fittings.
- (2) Check air hose 229 and fittings for bubbles, indicating leaks.
- (1) Check air hose 229 from front service gladhand to two-way check valve for leaks and damage.
- (2) If air hose 229 and/or fittings are faulty, replace damaged air hose 229 and/or fittings (para 11-19).



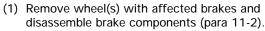
i4. FRONT BRAKES OVERHEAT AND/OR DO NOT RELEASE (CONT)

WARNING Read WARNING KNOWN INFO **TEST OPTIONS** on following page. 2. Visual inspection Tires undamaged and **REASON FOR QUESTION** inflated to proper operating Are front brake adjusting Poorly adjusted brake shoes pressure. bolts locked-up? and/or stuck adjusting bolts Front gladhands OK. may cause shoes to bind on Air hose 229 OK. wheels and brakes may overheat or not release. POSSIBLE PROBLEMS Faulty brake adjusting components. Faulty wedge assembly. Faulty wheel bearings. Faulty brake chamber(s). YES Adjust brakes (para 11-2). **CAUTION Read CAUTION** KNOWN INFO **TEST OPTIONS** on following page. 3. Visual inspection Tires undamaged and **REASON FOR QUESTION** inflated to proper operating Are front brake adjusting Brake shoes will not retract pressure. components functioning and brakes will overheat if Front gladhands OK. and free from damage and return springs and/or adjusting Air hose 229 OK. at affected wheel(s)? chamber components are stuck or damaged. POSSIBLE PROBLEMS Faulty brake adjusting components. Faulty wedge assembly. Faulty wheel bearings. Faulty brake chamber(s). Replace faulty return springs YES and/or adjusting chamber components (para 11-2).

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 side with overheated or non-releasing brakes, and support with trestle stands.
- (2) Turn adjusting bolt clockwise with adjusting tool.
- (3) If bolt will not turn or if brake shoes do not move away from wheel when adjuster is turned, adjust brakes (para 11-2).

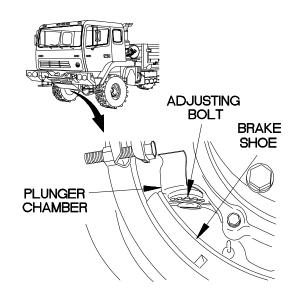


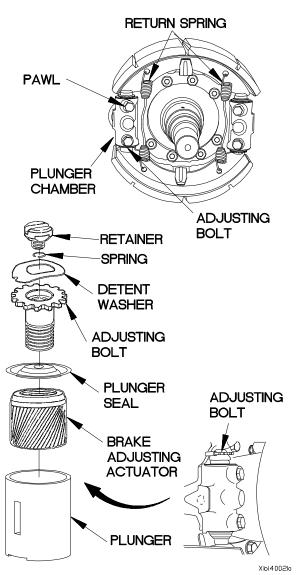
- (2) Inspect return springs for stretching, bluing, damage, or breakage.
- (3) If spring(s) is damaged, replace spring(s) (para 11-2).
- (4) Check adjusting pawl spring for damage.
- (5) Ensure adjusting pawl spring is not missing or broken.
- (6) Check adjusting pawl teeth for damage and abrasion.
- (7) Ensure seal elements are not damaged or broken.

CAUTION

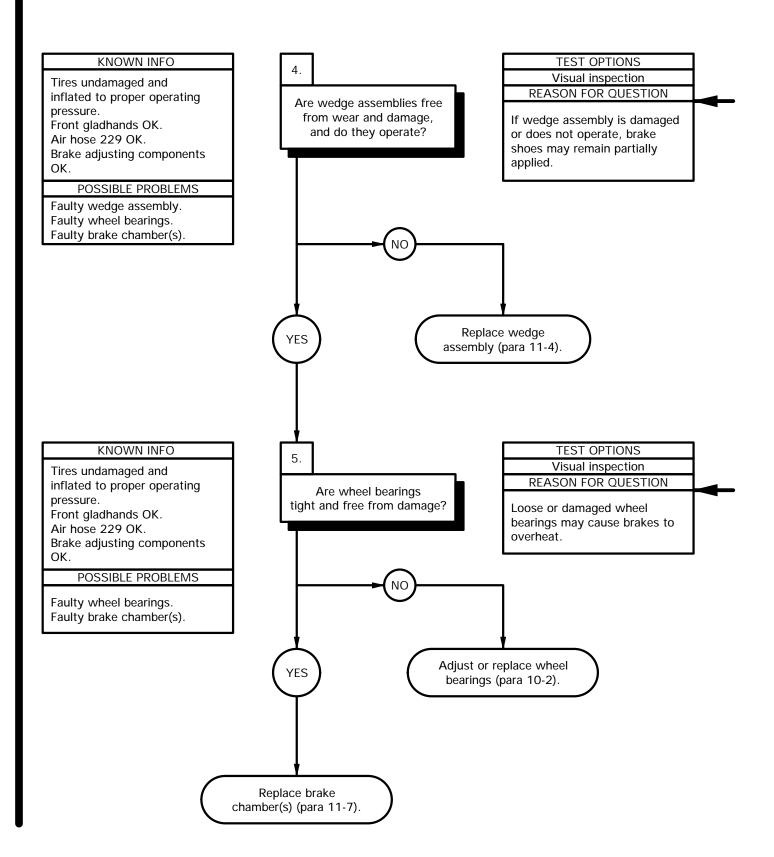
Ensure seal is free from damage. Failure to comply may result in dirt entering plunger chamber and interfering with adjustment.

- (8) Check actuator teeth for damage.
- (9) Check plunger for freedom of movement inside plunger housing.



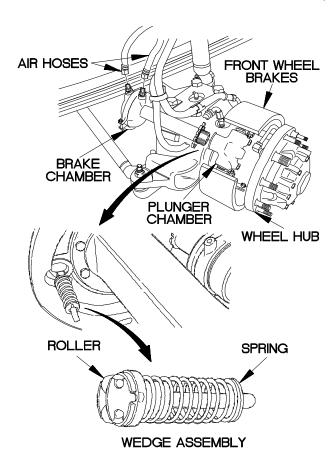


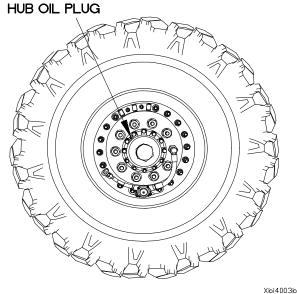
i4. FRONT BRAKES OVERHEAT AND/OR DO NOT RELEASE (CONT)



- (1) Disconnect and tag air hoses from brake chambers at affected wheel(s).
- (2) Unscrew brake chambers from hub and remove wedge assembly from wheels (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).

- (1) Install wheel(s) (TM 9-2320-365-10).
- (2) Rotate affected wheel(s) by hand and listen for loose or damaged bearings.
- (3) If wheel makes grinding sound during rotation, replace wheel bearings (para 10-2).
- (4) Grasp wheel on opposite sides of top and bottom and pull in and out.
- (5) If wheel has excessive play on the axle, replace wheel bearings (para 10-2).
- (6) Check wheel hub oil level (Appendix H).
- (7) If oil level is low, replace wheel bearings (para 10-2).
- (8) Lower wheels to ground and remove trestle stands.





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)

KNOWN INFO

Air tanks pressurized.

POSSIBLE PROBLEMS

Contaminated front wheel brake shoes.

Faulty front wheel brake adjustment.

Faulty front axle quick release valve.

Faulty air hose to front brake air chamber.

Faulty front brake vent hose.

Faulty front brake air chamber. Faulty load sensing valve.

Contaminated rear brake shoes.

Faulty rear wheel brake

adjustment.

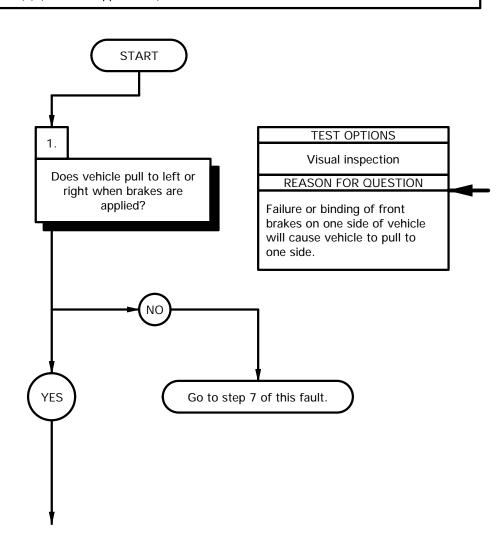
Faulty relay valve. Faulty air hose to rear

brake air chamber. Faulty rear brake vent

hose or vent valve.

Faulty rear brake air

chamber(s).



- (1) Start engine (TM 9-2320-365-10).
- (2) Test drive unloaded vehicle and apply brakes.
- (3) Note response of brakes on both sides of vehicle and on each axle.
- (4) Shut down engine (TM 9-2320-365-10).
- (5) If vehicle pulls to one side when brakes are applied, front brakes are faulty.
- (6) If both rear wheels lock up before front wheels, load sensing valve may need adjustment or is faulty.
- (7) If individual rear wheel locks up or drags, individual rear wheel brakes may need adjustment or are faulty.

KNOWN INFO

Air tanks pressurized.

POSSIBLE PROBLEMS

Contaminated front wheel brake shoes.

Faulty front wheel brake adjustment.

Faulty front axle quick release valve.

Faulty air hose to front brake air chamber.

Faulty front brake vent hose.

Faulty front brake air chamber.

Faulty load sensing valve. Contaminated rear brake

Contaminated rear brake shoes.

Faulty rear wheel brake adjustment.

Faulty relay valve.

Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.

Faulty rear brake air chamber(s).

KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK.

POSSIBLE PROBLEMS

Faulty front wheel brake adjustment.

Faulty front axle quick release valve.

Faulty air hose to front brake air chamber.

Faulty front brake vent hose.

Faulty front brake air chamber.

Faulty load sensing valve.

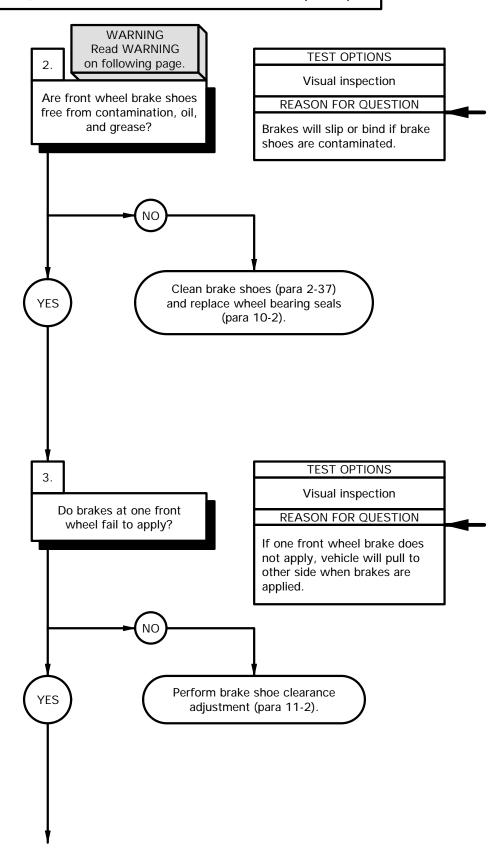
Contaminated rear brake shoes.

Faulty rear wheel brake adjustment.

Faulty relay valve.

Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.

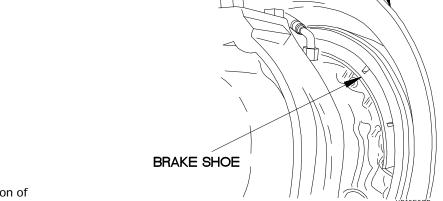


FRONT WHEEL

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.

- Lift front axle so that front wheels are off the ground and support with maintenance trestles.
- (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 air 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).

KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK. Front wheel brake adjustment OK.

POSSIBLE PROBLEMS

Faulty front axle quick release valve.

Faulty air hose to front brake air chamber.

Faulty front brake vent hose.
Faulty front brake air chamber.
Faulty load sensing valve.
Contaminated rear brake

Contaminated rear brake shoes.

Faulty rear wheel brake adjustment.

Faulty relay valve.

Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.

Faulty rear brake air chamber(s).

KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK.

Front wheel brake adjustment OK.

Front axle quick release valve

POSSIBLE PROBLEMS

Faulty air hose to front brake air chamber.

Faulty front brake vent hose.

Faulty front brake air chamber.

Faulty load sensing valve.

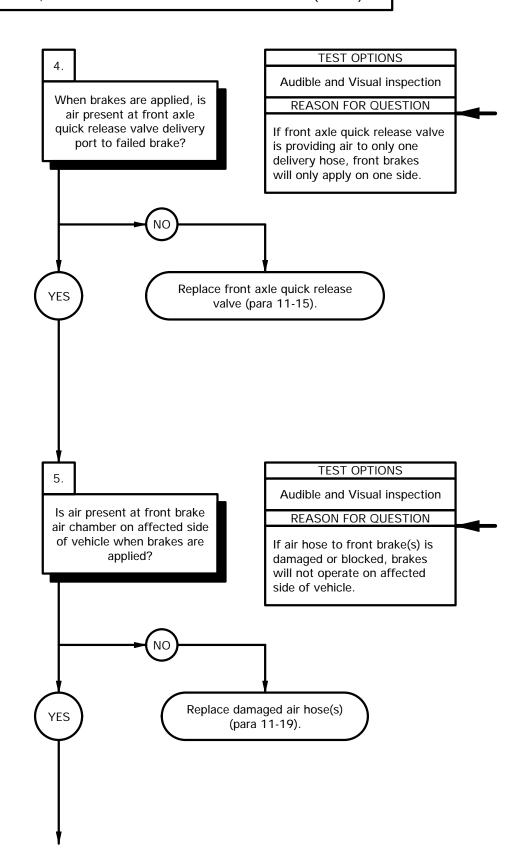
Contaminated rear brake shoes.

Faulty rear wheel brake adjustment.

Faulty relay valve.

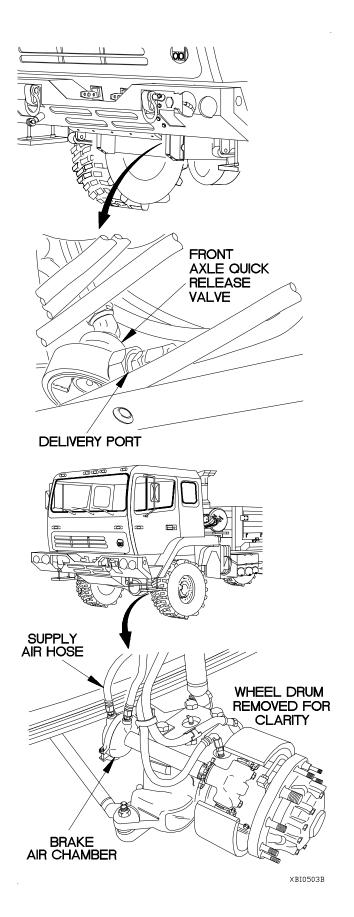
Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.



- (1) Remove gravel deflector extension and gravel deflector (para 14-7).
- (2) Loosen delivery air hose on affected side of front axle quick release valve.
- (3) Apply brakes.
- (4) Listen for escaping air at delivery port of front axle quick release valve when brake is applied.
- (5) If escaping air cannot be heard at delivery port for affected side, replace front axle quick release valve (para 11-15).
- (6) Tighten delivery air hose on front axle quick release valve.
- (7) Install gravel deflector and gravel deflector extension (para 14-7).

- (1) Loosen supply air hose(s) at front brake air chamber(s).
- (2) Apply brakes.
- (3) Listen for escaping air at supply air hose(s) when brakes are applied.
- (4) If escaping air cannot be heard, replace supply air hose(s) (para 11-19).
- (5) Tighten supply air hose(s) at front brake air chamber(s).



KNOWN INFO TEST OPTIONS 6. Air tanks pressurized. Audible and Visual inspection Front wheel brake shoes OK. Is vent hose at affected **REASON FOR QUESTION** Front wheel brake adjustment wheel brake free from obstructions? If vent hose is plugged, brakes Front axle quick release valve will not apply on affected side OK. of vehicle. Air hose to front brake air chamber OK. POSSIBLE PROBLEMS Faulty front brake vent hose. Faulty front brake air chamber. Faulty load sensing valve. Contaminated rear brake Blow vent hose clear of obstruction shoes. YES or replace damaged vent hose (para Faulty rear wheel brake 11-19). adjustment. Faulty relay valve. Faulty air hose to rear brake air chamber. Faulty rear brake vent hose or vent valve. Faulty rear brake air chamber(s).

KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK. Front wheel brake adjustment

Front axle quick release valve OK

Air hose to front brake air chamber OK.

Front brake vent hose OK. Front brake air chamber OK.

POSSIBLE PROBLEMS

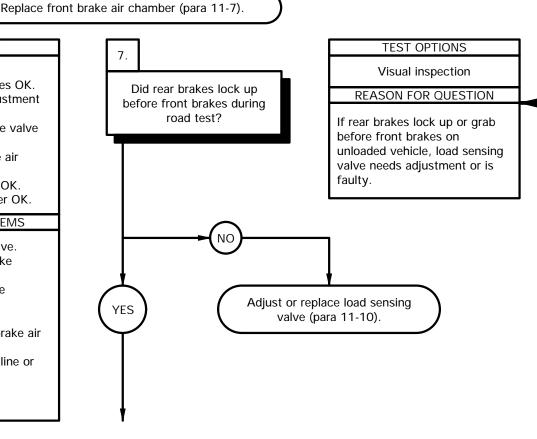
Faulty load sensing valve. Contaminated rear brake shoes.

Faulty rear wheel brake adjustment.

Faulty relay valve.

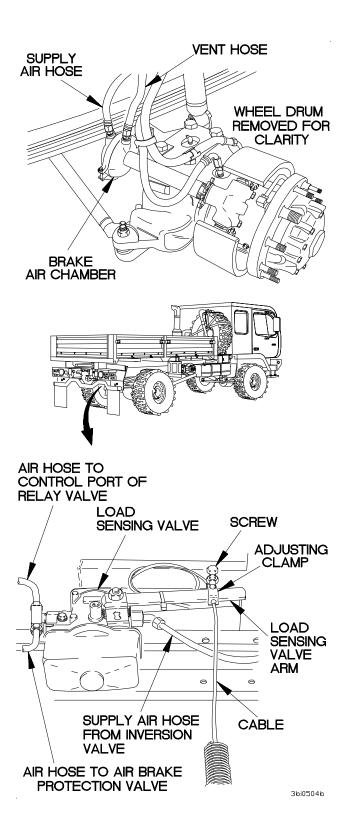
Faulty air line to rear brake air chamber.

Faulty rear brake vent line or vent valve.



- Disconnect vent hose from front brake air chamber.
- (2) Blow compressed air through vent hose.
- (3) Check for air escaping at vent.
- (4) Connect vent hose to front brake air chamber.
- (5) Raise front axle off maintenance trestles.
- (6) Remove maintenance trestles and lower front wheels to ground.

- (1) If rear brakes locked up before front brakes on road test of unloaded vehicle, check load sensing valve hardware, 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).



KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK. Front wheel brake adjustment

Front axle quick release valve OK.

Air hose to front brake air chamber OK.

Front brake vent hose OK. Front brake air chamber OK. Load sensing valve OK.

POSSIBLE PROBLEMS

Contaminated rear brake shoes.

Faulty rear wheel brake adjustment.

Faulty relay valve.

Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.

Faulty rear brake air chamber(s).

KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK. Front wheel brake adjustment OK.

Front axle quick release valve OK.

Air hose to front brake air chamber OK.

Front brake vent hose OK. Front brake air chamber OK. Load sensing valve OK.

Rear brake shoes OK.

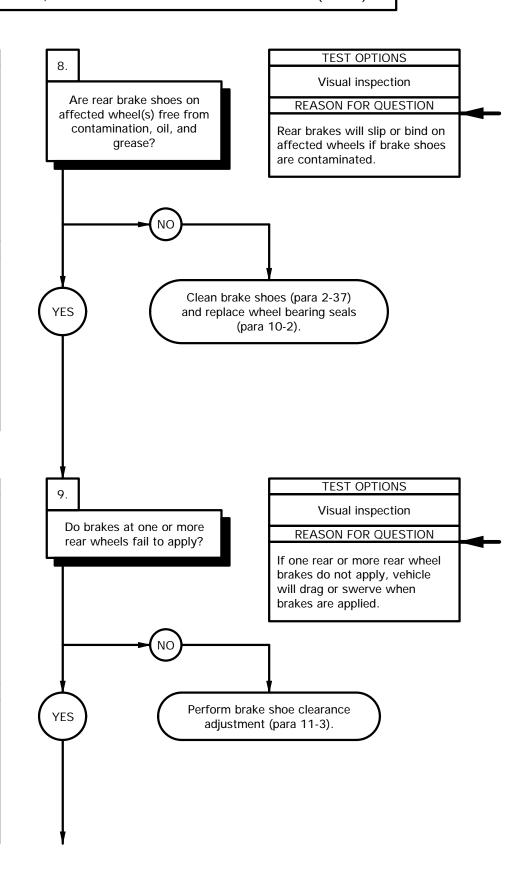
POSSIBLE PROBLEMS

Faulty rear wheel brake adjustment.

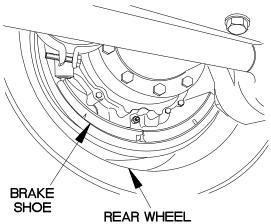
Faulty relay valve.

Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.



- Lift rear axle so that rear wheels are off the ground and support with maintenance trestles.
- (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) Lift rear axle off maintenance trestles.
- (5) Remove maintenance trestles and lower wheels to ground.



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- (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, brake air delivery system or brake air chamber is faulty on that side.
- (5) If both rear wheel brakes apply, adjust brake shoe clearance (para 11-3).

KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK. Front wheel brake adjustment

Front axle quick release valve OK.

Air hose to front brake air chamber OK.

Front brake vent hose OK. Front brake air chamber OK. Load sensing valve OK. Rear brake shoes OK. Rear wheel brake adjustment OK.

POSSIBLE PROBLEMS

Faulty relay valve.

Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.

Faulty rear brake air chamber(s).

KNOWN INFO

Air tanks pressurized. Front wheel brake shoes OK.

Front wheel brake adjustment OK.

Front axle quick release valve OK.

Air hose to front brake air chamber OK.

Front brake vent hose OK. Front brake air chamber OK.

Load sensing valve OK. Rear brake shoes OK.

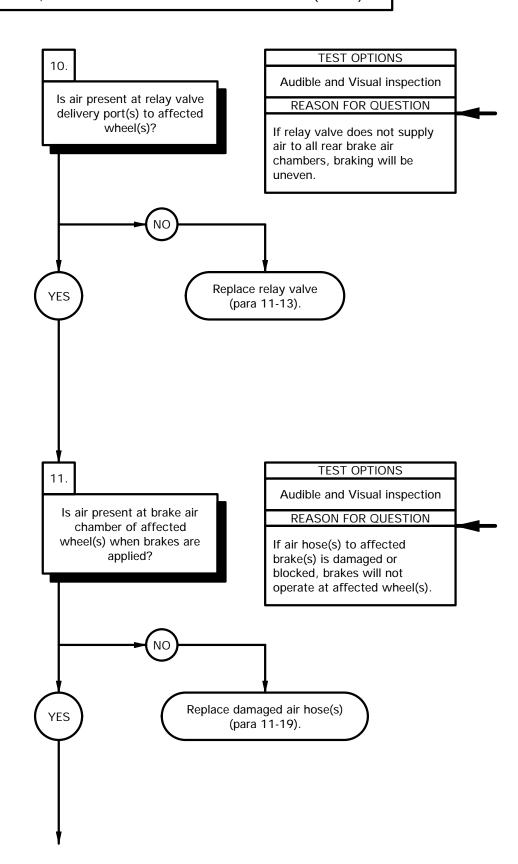
Rear wheel brake adjustment OK.

Relay valve OK.

POSSIBLE PROBLEMS

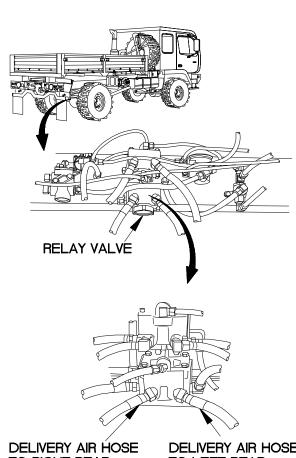
Faulty air hose to rear brake air chamber.

Faulty rear brake vent hose or vent valve.



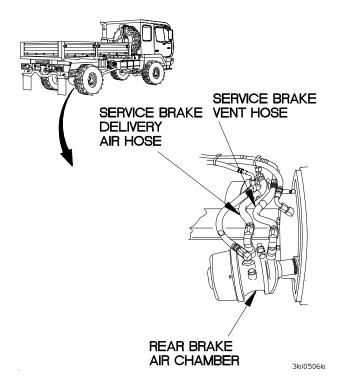
- (1) Loosen delivery air hoses on relay valve delivery ports.
- (2) Apply brakes.
- (3) Listen for escaping air from relay valve delivery ports when brakes are applied.
- (4) If escaping air cannot be heard, replace relay valve (para 11-13).
- (5) Tighten delivery air hoses on relay valve delivery ports.

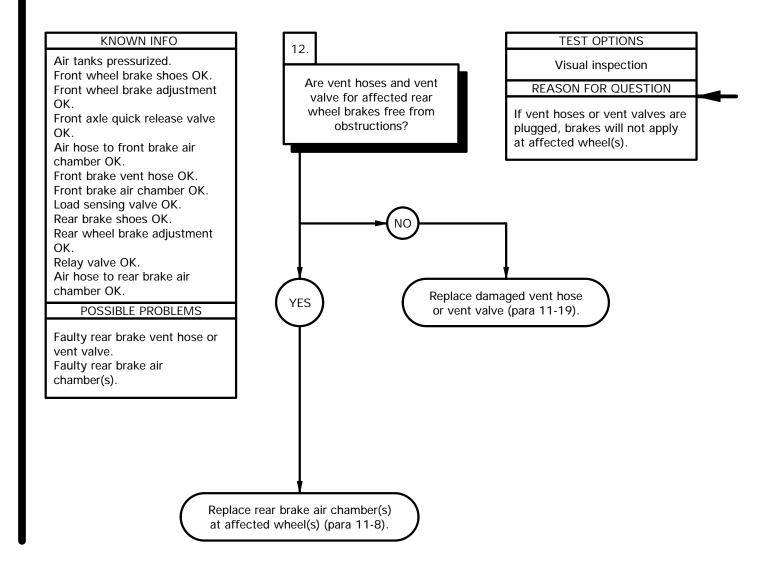
- (1) Loosen service brake air hose on rear brake air chamber.
- (2) Apply brakes.
- (3) Listen for escaping air when brakes are applied.
- (4) If escaping air cannot be heard, replace air hose (para 11-19).
- (5) Tighten service brake air hose on rear brake air chamber.
- (6) Apply parking brake (TM 9-2320-365-10).



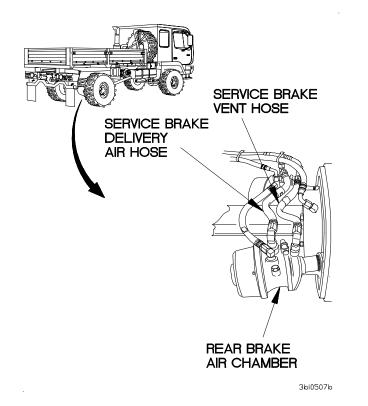
TO RIGHT REAR

DELIVERY AIR HOSE TO LEFT REAR BRAKES AIR CHAMBER BRAKES AIR CHAMBER





- (1) Disconnect vent hose(s) on rear brake air chamber(s).
- (2) Blow compressed air through vent hoses.
- (3) Check for presence of air at vent valve.
- (4) Connect vent hose(s) on rear brake air chamber(s).
- (5) Remove wheel chocks (TM 9-2320-365-10).



Change 1

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)

KNOWN INFO

Air tanks pressurized. Rear brakes OK.

POSSIBLE PROBLEMS

Faulty air hose 208.

Faulty foot control valve.

Faulty air hose 206.

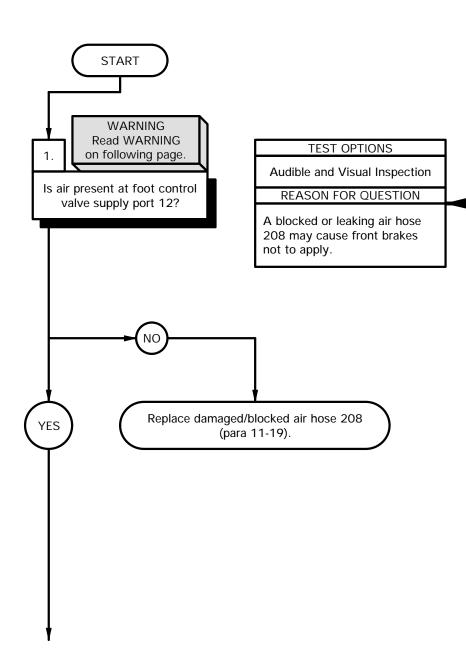
Faulty air hose 202.

Faulty front brake two-way

Faulty air hose 218.

Faulty front axle quick release

check valve. Faulty air hose 217. valve.



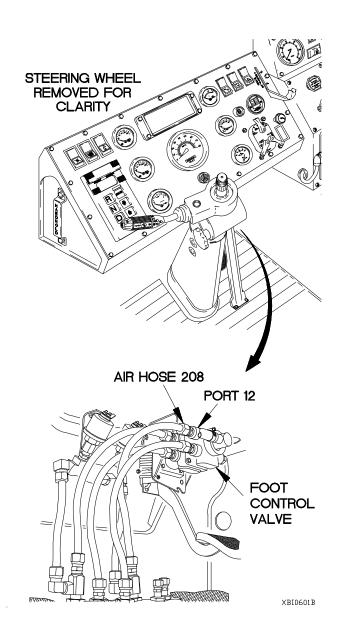
WARNING

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 air pressure cannot be maintained within operating range, proceed to Air System Troubleshooting.

- (1) Loosen air hose 208 at foot control valve supply port 12 and listen for presence of escaping air.
- (2) If escaping air cannot be heard, replace air hose 208 (para 11-19).
- (3) Tighten air hose 208 on foot control valve supply port 12.



i6. FRONT BRAKES DO NOT APPLY (CONT)

KNOWN INFO Air tanks pressurized. Rear brakes OK. Air hose 208 OK. POSSIBLE PROBLEMS Faulty foot control valve. Faulty air hose 206. Faulty air hose 202. Faulty front brake two-way

Faulty air hose 202.
Faulty front brake two-way check valve.
Faulty air hose 218.
Faulty air hose 217.
Faulty front axle quick release valve.

KNOWN INFO

POSSIBLE PROBLEMS

Faulty front axle quick release

Air tanks pressurized. Rear brakes OK.

Foot control valve OK.

Faulty air hose 206. Faulty air hose 202. Faulty front brake two-way

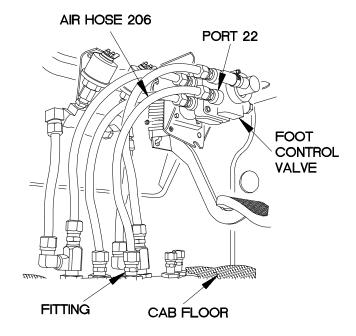
check valve. Faulty air hose 218. Faulty air hose 217.

valve.

Air hose 208 OK.

TEST OPTIONS 2. Audible and Visual Inspection Is air present at foot control REASON FOR QUESTION valve delivery port 22 when applying brakes? Lack of air from foot control valve delivery port 22 will prevent front brakes from applying. Replace foot control valve YES (para 11-9). **TEST OPTIONS** 3. Audible and Visual Inspection Is air hose 206 free from **REASON FOR QUESTION** leaks and damage? A blocked or leaking air hose 206 may cause front brakes not to apply. Replace damaged/blocked air hose 206 YES (para 11-19).

- (1) Loosen air hose 206 on foot control valve delivery port 22.
- (2) Apply foot brake.
- (3) Listen for escaping air from air hose 206 when brakes are applied.
- (4) If escaping air cannot be heard when brakes are applied, replace foot control valve (para 11-9).
- (5) Tighten air hose 206 on foot control valve delivery port 22.



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- (1) Loosen air hose 206 at fitting on cab floor.
- (2) Apply foot brake.
- (3) Listen for air escaping from air hose 206 when brakes are applied.
- (4) If escaping air cannot be heard when brakes are applied, replace air hose 206 (para 11-19).
- (5) Tighten air hose 206 at fitting on cab floor.

i6. FRONT BRAKES DO NOT APPLY (CONT)

KNOWN INFO Air tanks pressurized. Rear brakes OK. Air hose 208 OK. Foot control valve OK. Air hose 206 OK. POSSIBLE PROBLEMS Faulty air hose 202. Faulty front brake two-way

check valve.
Faulty air hose 218.
Faulty air hose 217.
Faulty front axle quick release valve.

Audible and Visual Inspection Is air present at front brake REASON FOR QUESTION two-way check valve supply port when applying brakes? A blocked or leaking air hose 202 may cause front brakes not to apply. Replace damaged/blocked air hose 202 YES (para 11-19). **TEST OPTIONS** 5. Audible and Visual Inspection Is air present at front brake REASON FOR QUESTION two-way check valve delivery port when applying If air is not present at front brakes? brake two-way check valve delivery port when applying brakes, front brake two-way check valve is faulty. Replace front brake two-way YES check valve (para 11-24).

TEST OPTIONS

KNOWN INFO

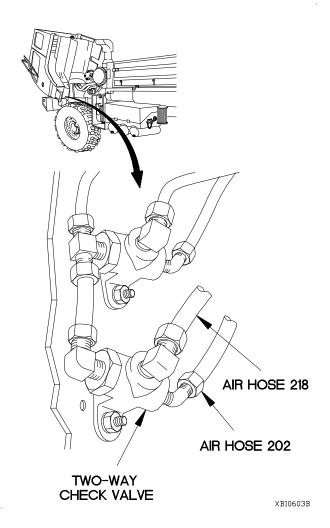
Air tanks pressurized. Rear brakes OK. Air hose 208 OK. Foot control valve OK. Air hose 206 OK. Air hose 202 OK.

POSSIBLE PROBLEMS

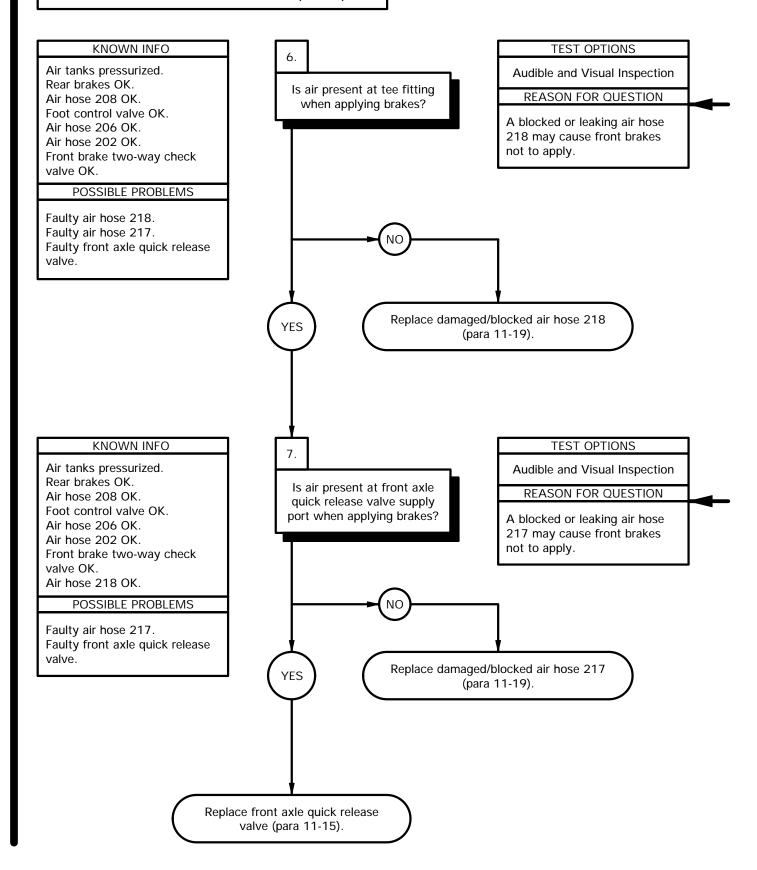
Faulty front brake two-way check valve.
Faulty air hose 218.
Faulty air hose 217.
Faulty front axle quick release valve.

- (1) Loosen air hose 202 on front brake two-way check valve supply port.
- (2) Apply foot brake.
- (3) Listen for escaping air from air hose 202 when brakes are applied.
- (4) If escaping air cannot be heard when brakes are applied, replace air hose 202 (para 11-19).
- (5) Tighten air hose 202 on front brake two-way check valve supply port.

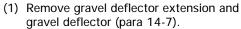
- Loosen air hose 218 on front brake two-way check valve delivery port.
- (2) Apply foot brake.
- (3) Listen for air escaping from front brake two-way check valve delivery port when brakes are applied.
- (4) If escaping air cannot be heard when brakes are applied, replace front brake two-way check valve (para 11-24).
- (5) Tighten air hose 218 on front brake two-way check valve delivery port.



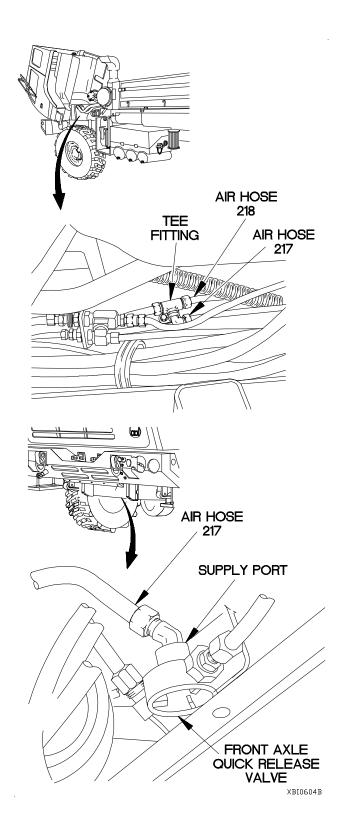
i6. FRONT BRAKES DO NOT APPLY (CONT)



- (1) Loosen air hose 218 on tee fitting.
- (2) Apply foot brake.
- (3) Listen for escaping air from air hose 218 when brakes are applied.
- (4) If escaping air cannot be heard when brakes are applied, replace air hose 218 (para 11-19).
- (5) Tighten air hose 218 on tee fitting.



- (2) Loosen air hose 217 on front axle quick release valve supply port.
- (3) Apply foot brake.
- (4) Listen for air escaping from air hose 217 when brakes are applied.
- (5) If escaping air cannot be heard when brakes are applied, replace air hose 217 (para 11-19).
- (6) If air can be heard escaping when brakes are applied, replace front axle quick release valve (para 11-15).
- (7) Tighten air hose 217 on front axle quick release valve supply port.
- (8) Install gravel deflector and gravel deflector extension (para 14-7).



17. REAR BRAKES OVERHEAT

INITIAL SETUP

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

Personnel Required (2)

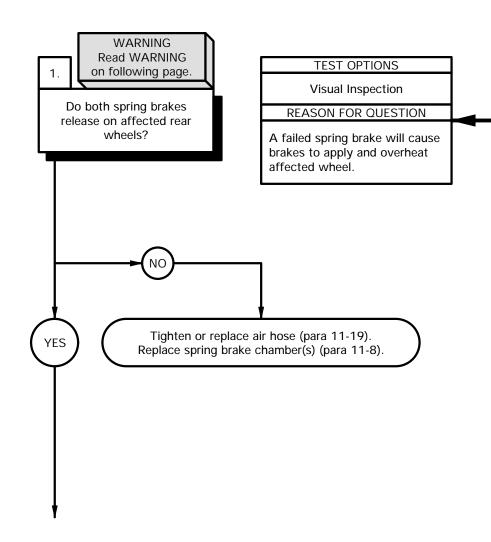
Tools and Special Tools
Goggles, Industrial (Item 14, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)
Trestle, Motor Vehicle Maintenance (2) (Item 45, Appendix C)
Adjusting Tool, Brake Shoe (Item 2, Appendix C)

KNOWN INFO

Tires undamaged and inflated to operating pressure.

POSSIBLE PROBLEMS

Faulty spring brake chamber(s). Faulty brake adjusting components. Faulty wedge assembly. Faulty wheel bearings.



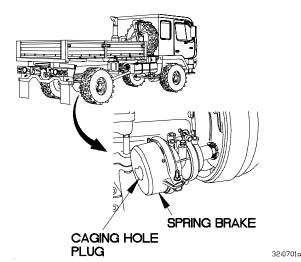
WARNING

- 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.

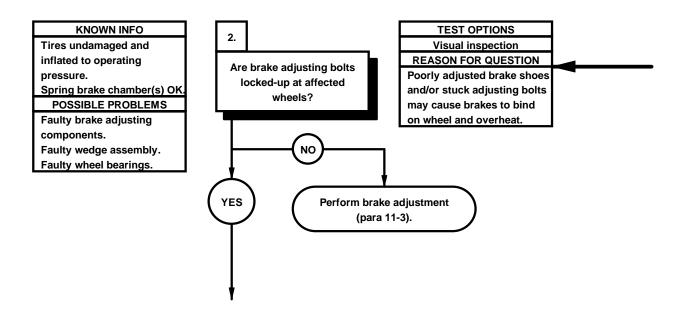
NOTE

If wheel drums are too hot for hand touch after road test of vehicle, brakes are overheated.

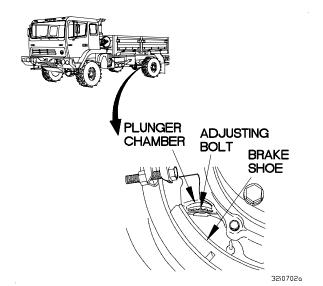
- (1) Release parking brake (TM 9-2320-365-10).
- (2) Check for presence of air at air hose to spring brake chamber. If air is present at spring brake chamber, replace fittings or air hose (para 11-19).
- (3) Remove cover plug from caging hole at back of spring brake chamber (TM 9-2320-365-10).
- (4) 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).



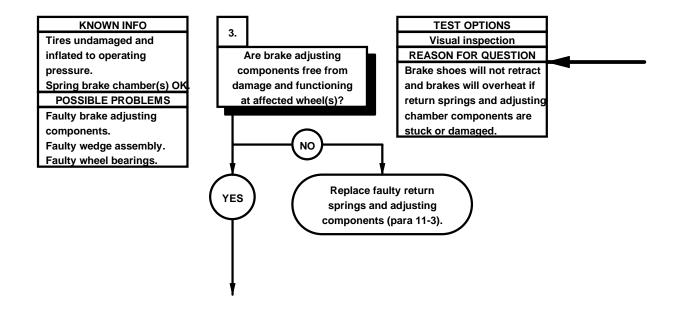
i7. REAR BRAKES OVERHEAT (CONT)



- (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)

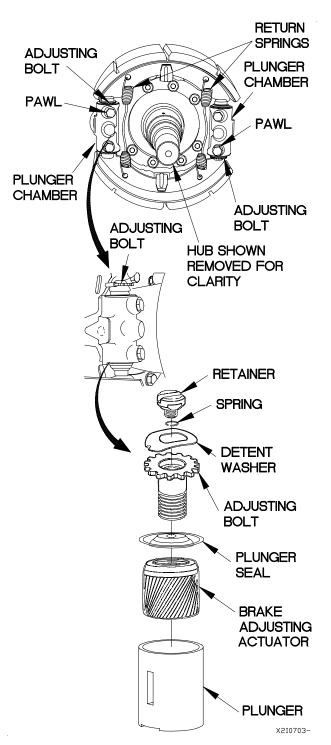


- (1) Remove wheel(s) with affected brakes (TM 9-2320-365-10).
- (2) Disassemble brakes (para 11-3).
- (3) Inspect spring for stretching, bluing, damage, or breakage. If spring(s) is damaged, brake shoes will not retract from wheel.
- (4) Check adjusting pawl spring for damage. Ensure springs are not missing or broken.
- (5) Check adjusting pawl teeth for damage and abrasion.

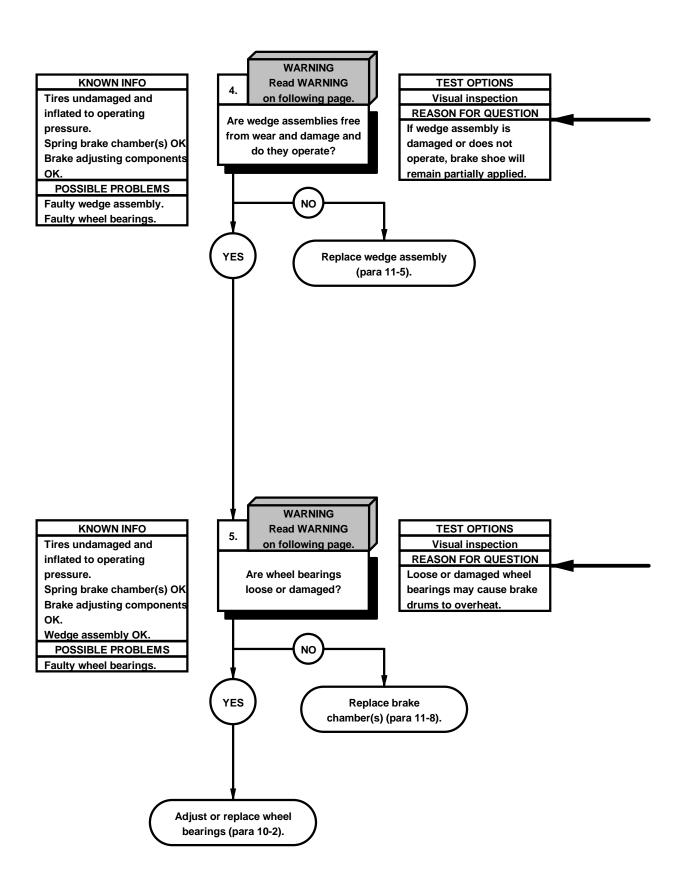
NOTE

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.



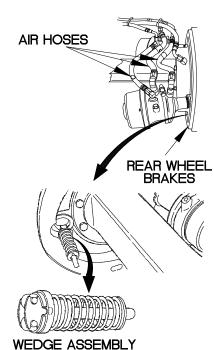
i7. REAR BRAKES OVERHEAT (CONT)



WARNING

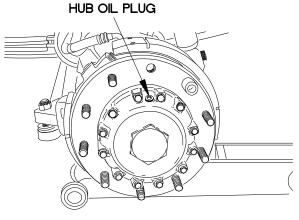
Spring brake chambers are very powerful. Cage spring brakes before removing chambers. Failure to comply may result in injury to personnel.

- (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).



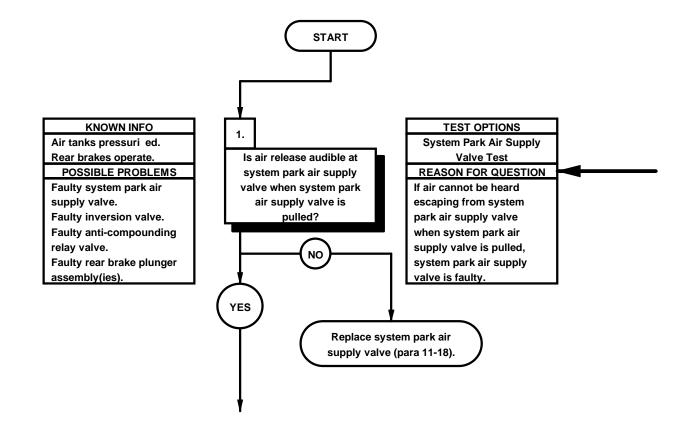
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- (1) Install wheels (TM 9-2320-365-10).
- (2) Rotate affected wheel and listen for loose or damaged wheel bearings. If wheel makes grinding sound during rotation, adjust or replace wheel bearings (para 10-2).
- (3) Grasp wheel on opposite sides, top 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.



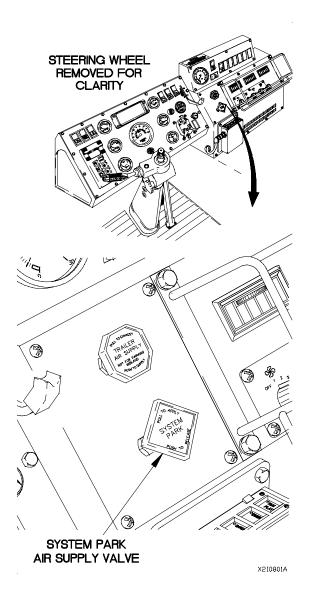
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i8. PARKING BRAKE DOES NOT APPLY INITIAL SETUP Equipment Conditions Air tanks pressuri ed (TM 9-2320-365-10). Engine shut down (TM 9-2320-365-10). Personnel Required Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)

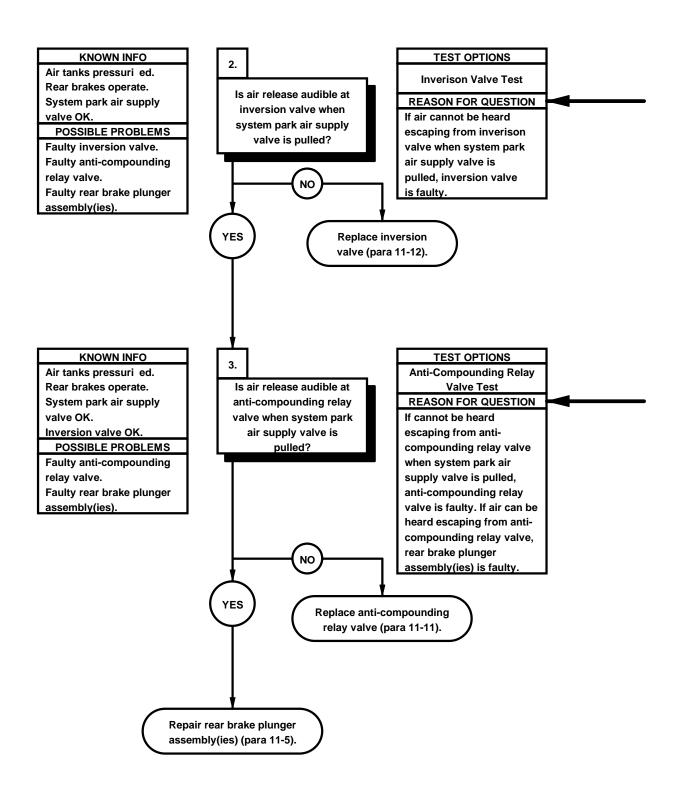


SYSTEM PARK AIR SUPPLY VALVE TEST

- (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)

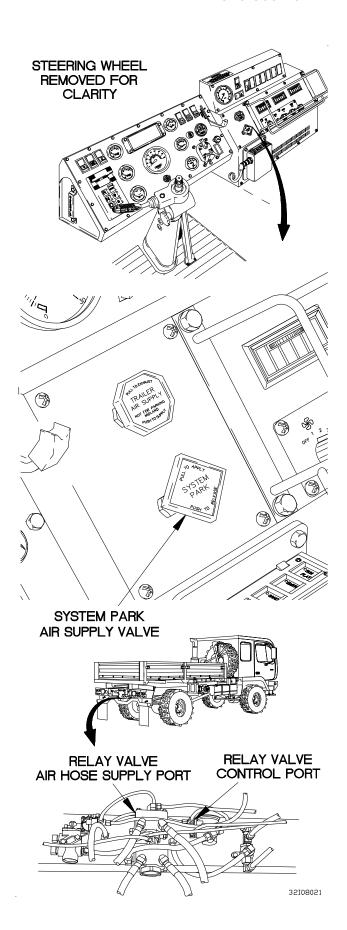


INVERSION VALVE TEST

- (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-COMPONDING 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 anticompounding relay valve, replace anticompounding relay valve (para 11-11).
- (4) If air is heard escaping from anticompounding relay valve, repair rear brake plunger assembly(ies) (para 11-5).
- (5) Pull SYSTEM PARK air supply valve out.



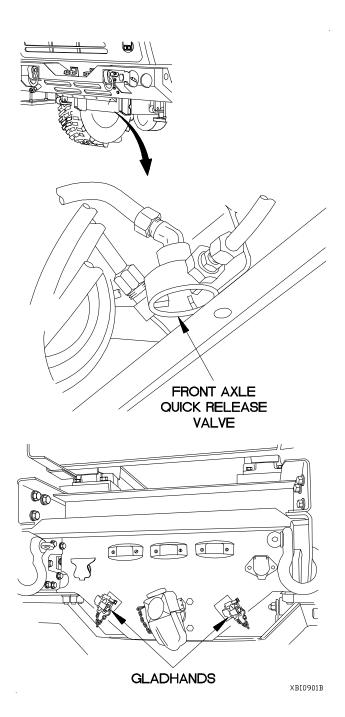
i9. BRAKE SYSTEM LOSES AIR WHEN SERVICE BRAKES ARE APPLIED **INITIAL SETUP** Tools and Special Tools **Equipment Conditions** Tool Kit, Genl Mech (Item 44 Appendix C) Engine shut down (TM 9-2320-365-10). Goggles, Industrial (Item 15, Appendix C) **START WARNING** Read WARNING KNOWN INFO **TEST OPTIONS** on following page. 1. Visual inspection Air tanks pressurized. POSSIBLE PROBLEMS **REASON FOR QUESTION** Does air escape from front If leak is present, front axle Faulty front axle quick release axle quick release valve when quick release valve is faulty. service brakes are applied? Faulty rear gladhand(s). Replace front axle quick YES release valve (para 11-15). KNOWN INFO **TEST OPTIONS** Visual inspection Air tanks pressurized. **REASON FOR QUESTION** Front axle quick release valve Does air escape from front OK. If leak is present, front axle rear gladhand(s) when POSSIBLE PROBLEMS quick release valve is faulty. service brakes are applied? Faulty rear gladhand(s). Replace rear YES gladhand(s) (para 11-22). Perform Air System Troubleshooting J1. Air System Loses Pressure During Operation/Slow Air Pressure Buildup.

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) Have assistant apply service brakes (TM 9-2320-365-10).
- (2) Listen for air escaping from front axle quick release valve.
- (3) If air leak is present, replace front axle quick release valve (para 11-15).

- (1) Have assistant apply service brakes (TM 9-2320-365-10).
- (2) Listen for air escaping from rear gladhand(s).
- (3) If air leak is present, replace rear gladhand(s) (para 11-15).
- (4) If air leak is not present, perform Air System Troubleshooting J1. Air System Loses Pressure During Operation/Slow Air Pressure Buildup.



2-21. AIR SYSTEM TROUBLESHOOTING

This paragraph covers Air System Troubleshooting. The Air System Fault Index, Table 2-47, lists faults for the Air System of the vehicle.

Table 2-47. Air System Fault Index

Fault No.	Description	Page
j1.	Air System Loses Pressure During Operation/Slow, No, or Incorrect Air Pressure Buildup	2-1714
j2.	Large quantity of moisture Expelled From Air Reservoirs	2-1730
j3.	Air Dryer Purges Contstantly	2-1734
j4.	No Air Pressure Present at Rear Gladhand(s)	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

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).

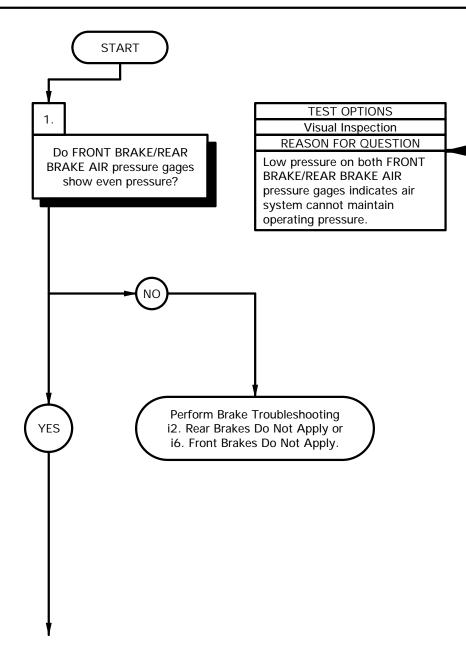
Materials/Parts Soap, Laundry (Item 69, Appendix D). Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Pan, Wash (Item 25, Appendix C)

KNOWN INFO

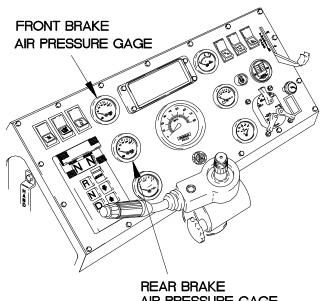
Nothing.

KNOWN INFO

Faulty FRONT BRAKE/REAR BRAKE AIR pressure gages. Damaged air hose from air cleaner to air compressor. Damaged air hose from air compressor to air dryer. Damaged air hose from air dryer to wet tank. Damaged air hose from wet tank to air compressor. Damaged air hoses from wet tank to primary and secondary air tanks. Faulty check valves at primary and secondary air tanks. Faulty air dryer purge valve and/or clogged desiccant cartridge. Faulty air compressor governor.



- (1) Check to see if both FRONT BRAKE/REAR BRAKE AIR pressure gages indicate less than 120 psi.
- (2) If only FRONT BRAKE AIR pressure gage indicates less than 120 psi, perform Brake Troubleshooting i6. Front Brakes Do Not Apply.
- (3) If only REAR BRAKE AIR pressure gage indicates less than 120 psi, perform Brake Troubleshooting i2. Rear Brakes Do Not Apply.



AIR PRESSURE GAGE

STEERING WHEEL REMOVED FOR **CLARITY**

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KNOWN INFO

FRONT BRAKE/REAR BRAKE AIR pressure gages OK.

Damaged air hose from air

POSSIBLE PROBLEMS

cleaner to air compressor.

Damaged air hose from air compressor to air dryer.

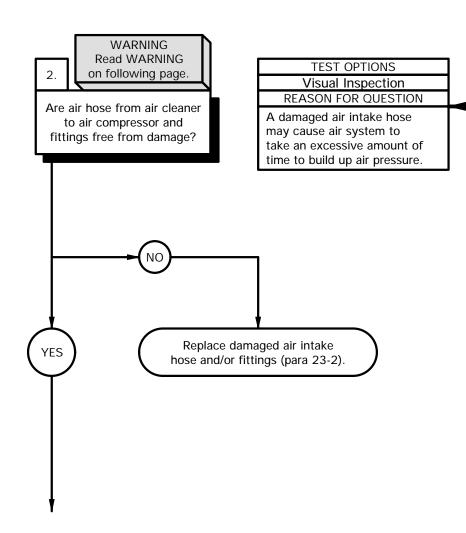
Damaged air hose from air dryer to wet tank.

Damaged air hose from wet tank to air compressor.

Damaged air hoses from wet tank to primary and secondary air tanks.

Faulty check valves at primary and secondary air tanks. Faulty air dryer purge valve and/or clogged desiccant cartridge.

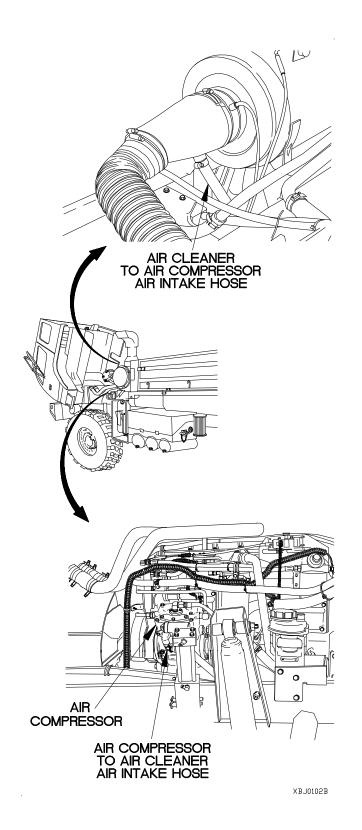
Faulty air compressor governor.



WARNING

Wear apprpriate 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.
- (3) If air intake hose and/or fittings are faulty, replace damaged air intake hose and/or fittings (para 23-2).



KNOWN INFO

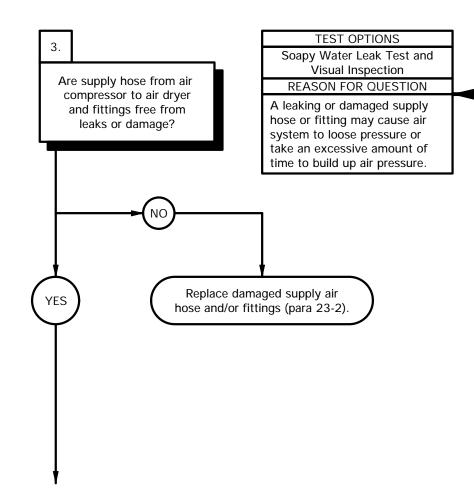
FRONT BRAKE/REAR BRAKE AIR pressure gages OK. Air hoses and fittings from air cleaner to air compressor OK.

POSSIBLE PROBLEMS

Damaged air hose from air compressor to air dryer.
Damaged air hose from air dryer to wet tank.
Damaged air hose from wet tank to air compressor.
Damaged air hoses from wet tank to primary and secondary air tanks.
Faulty check valves at primary and secondary air tanks.
Faulty air dryer purge valve

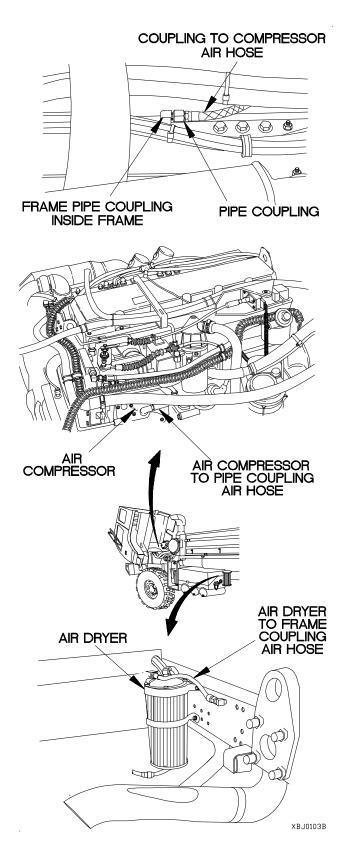
cartridge. Faulty air compressor governor.

and/or clogged desiccant



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 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.
- (4) If supply air hose and/or fittings are faulty, replace damaged supply air hose and/or fittings (para 23-2).



KNOWN INFO

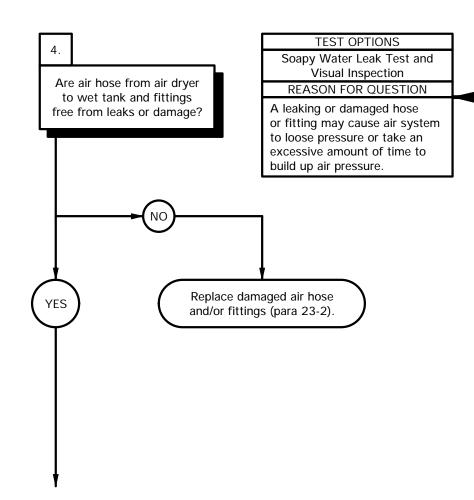
FRONT BRAKE/REAR BRAKE AIR pressure gages OK. Air hoses and fittings from air cleaner to air compressor OK. Air hoses and fittings from air compressor to air dryer OK.

POSSIBLE PROBLEMS

Damaged air hose from air dryer to wet tank. Damaged air hose from wet tank to air compressor. Damaged air hoses from wet tank to primary and secondary air tanks.

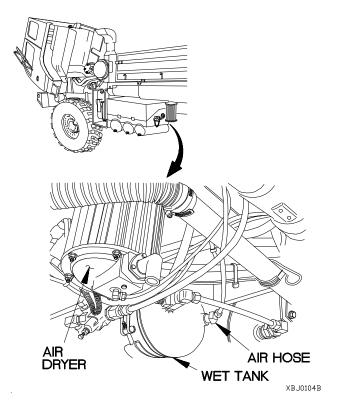
Faulty check valves at primary and secondary air tanks. Faulty air dryer purge valve and/or clogged desiccant cartridge.

Faulty air compressor governor.



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 dryer to wet tank and fittings for leaks or damage.
- (2) If air hose and/or fittings are faulty, replace damaged air hose and/or fittings (para 23-2).



KNOWN INFO

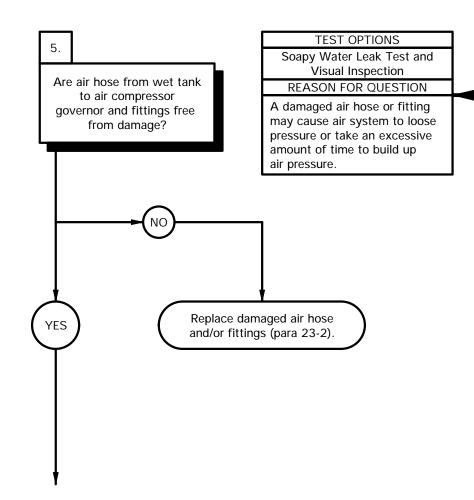
FRONT BRAKE/REAR BRAKE AIR pressure gages OK. Air hoses and fittings from air cleaner to air compressor OK. Air hoses and fittings from air compressor to air dryer OK. Air hose and fittings from air dryer to wet tank OK.

POSSIBLE PROBLEMS

Damaged air hose from wet tank to air compressor. Damaged air hoses from wet tank to primary and secondary air tanks.

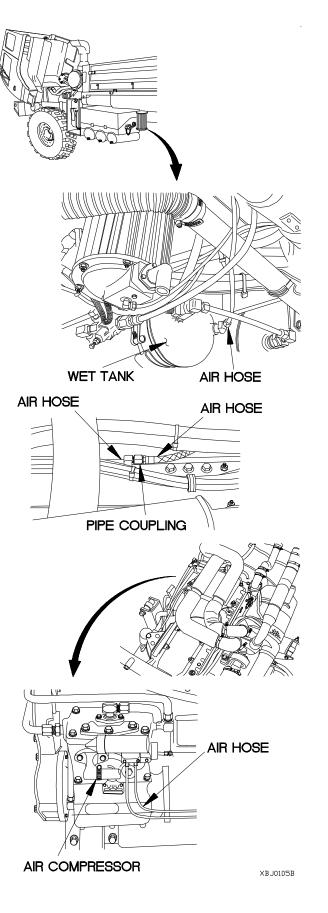
Faulty check valves at primary and secondary air tanks. Faulty air dryer purge valve and/or clogged desiccant cartridge.

Faulty air compressor governor.



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) If air hose and/or fittings are faulty, replace damaged air hose and/or fittings (para 23-2).
- (4) Lower cab (TM 9-2320-365-10).



KNOWN INFO

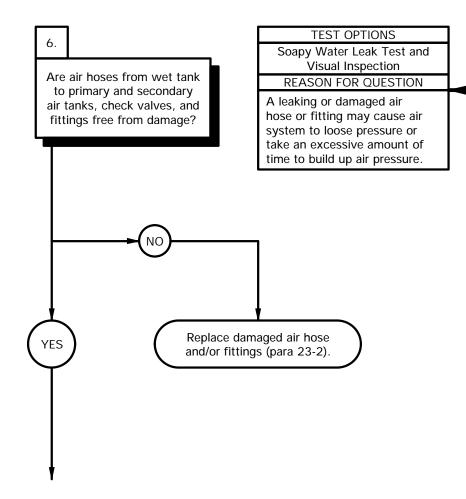
FRONT BRAKE/REAR BRAKE AIR pressure gages OK. Air hoses and fittings from air cleaner to air compressor OK. Air hoses and fittings from air compressor to air dryer OK. Air hose and fittings from air dryer to wet tank OK. Air hoses and fittings from wet tank to air compressor OK.

POSSIBLE PROBLEMS

Damaged air hoses from wet tank to primary and secondary air tanks.

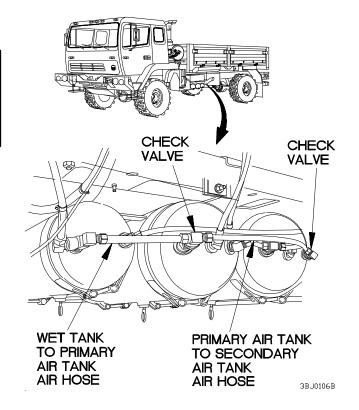
Faulty check valves at primary and secondary air tanks. Faulty air dryer purge valve and/or clogged desiccant cartridge.

Faulty air compressor governor.



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.
- (3) If air hose and/or fittings are faulty, replace damaged air hose and/or fittings (para 23-2).



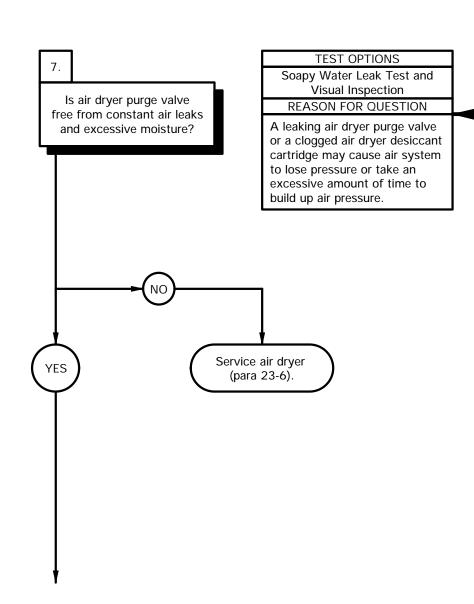
KNOWN INFO

FRONT BRAKE/REAR BRAKE AIR pressure gages OK. Air hoses and fittings from air cleaner to air compressor OK. Air hoses and fittings from air compressor to air dryer OK. Air hose and fittings from air dryer to wet tank OK. Air hoses and fittings from wet tank to air compressor OK. Air hoses, check valves, and fittings from wet tank to primary and secondary air tanks OK.

POSSIBLE PROBLEMS

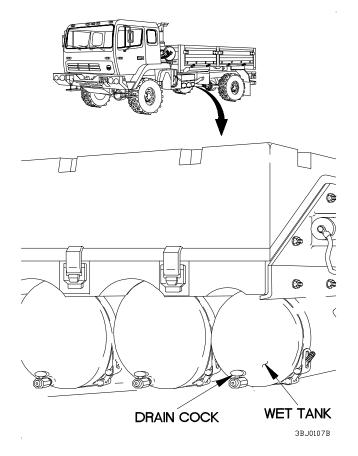
Faulty air dryer purge valve and/or clogged desiccant cartridge.

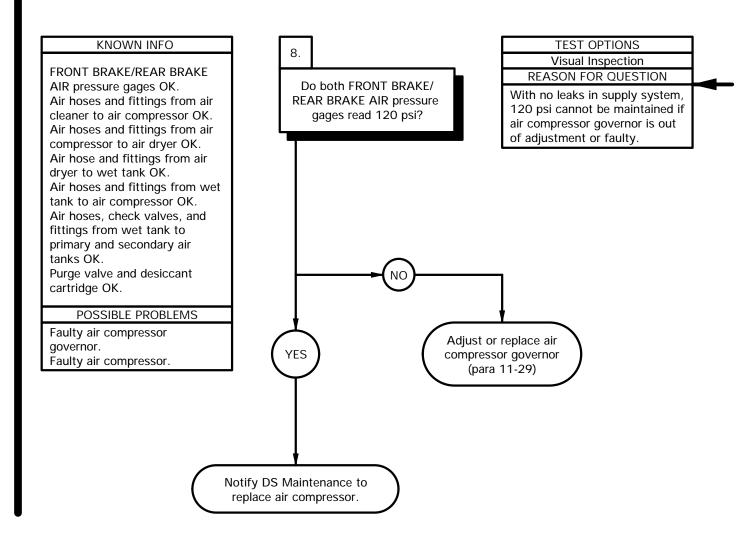
Faulty air compressor governor.



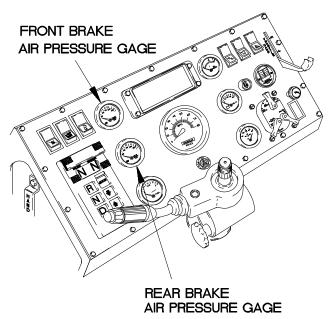
SOAPY WATER LEAK TEST

- (1) Apply soapy water solution to hoses, fittings, and couplings.
- (2) Check hoses and fittings for bubbles, indicating leaks.
- (1) Open wet tank drain cock and check for excessive amounts of moisture.
- (2) If moisture exists in wet tank, service air dryer desiccant (para 23-6).
- (3) Close wet tank drain cock.





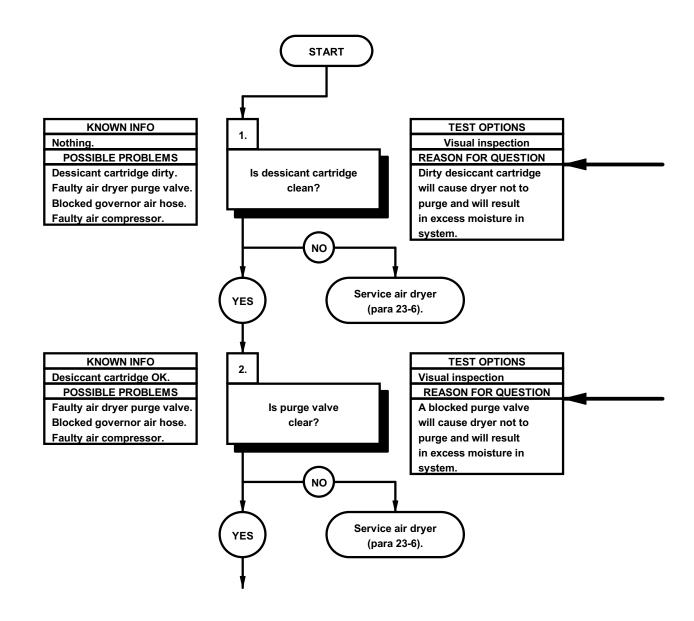
- (1) Allow pneumatic system to build pressure and observe FRONT BRAKE/REAR BRAKE AIR pressure gages without applying brakes or operating air system.
- (2) Check to see if air pressure stabilizes at 120 psi.
- (3) If air pressure remains below 120 psi, adjust or replace air compressor governor (para 11-29).
- (4) If air pressure continues to remain below 120 psi, notify DS Maintenance to replace air compressor.
- (5) Shut down engine (TM 9-2320-365-10).

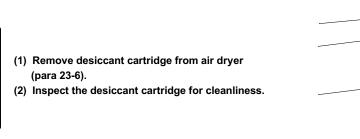


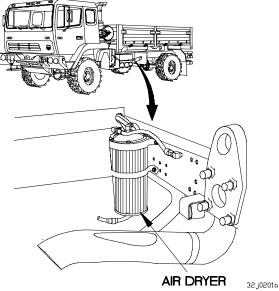
STEERING WHEEL REMOVED FOR CLARITY

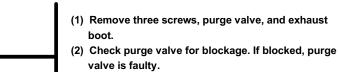
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j2. LARGE QUANTITY OF MOISTURE EXPELLED FROM AIR RESERVOIRS INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)

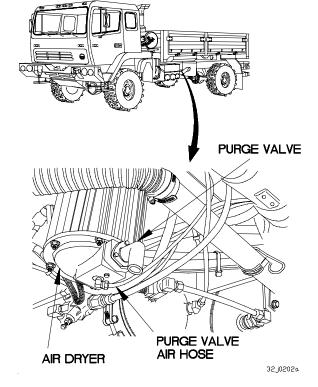




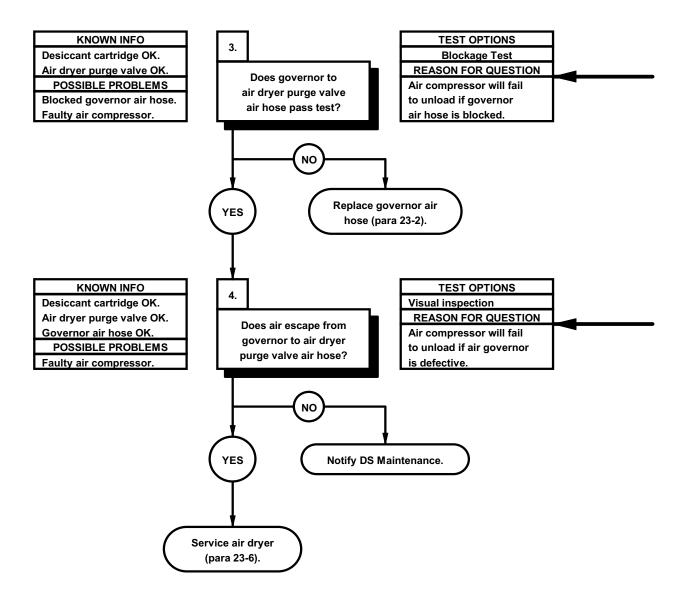




(3) Install exhaust boot, purge valve, and three screws.



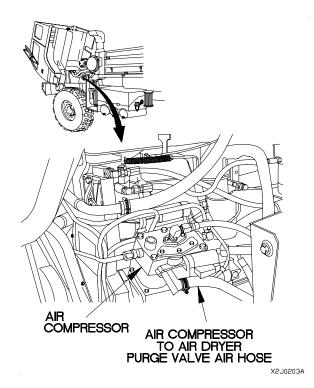
j2. LARGE QUANTITY OF MOISTURE EXPELLED FROM AIR RESERVOIRS (CONT)

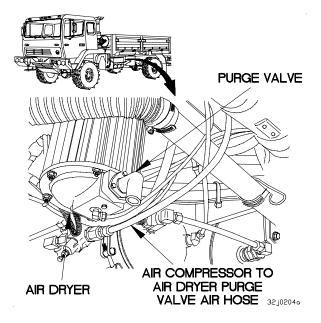


BLOCKAGE TEST

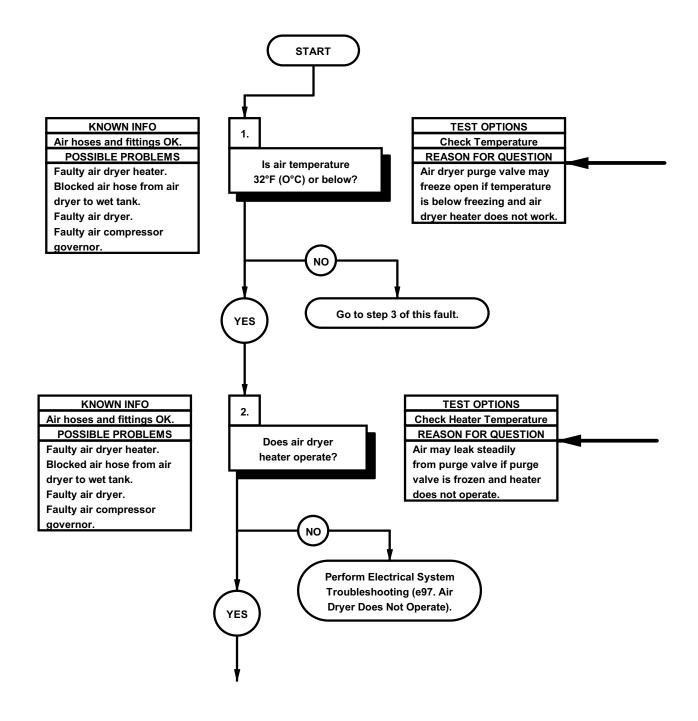
- (1) Disconnect governor to air dryer air hose at governor and at purge valve.
- (2) Blow through one end of air hose. If no air escapes from other end of air hose, air hose is blocked.
- (3) Connect governor to air dryer air hose to governor and purge valve.

- (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).





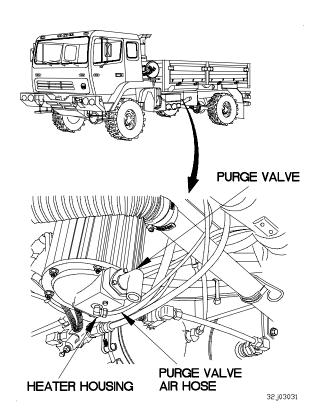
j3. AIR DRYER CONTINUALLY PURGES INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)



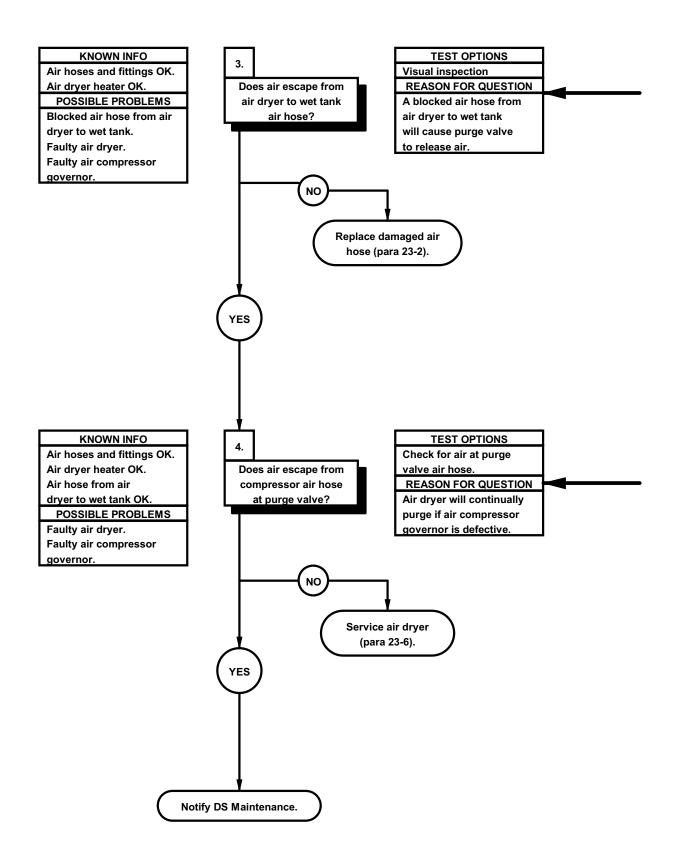
NOTE

- 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.

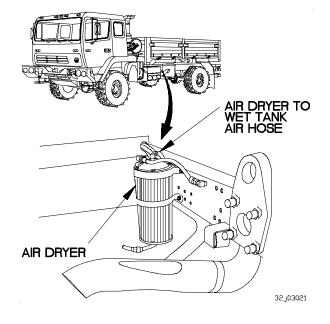
- (1) Start engine (TM 9-2320-365-10).
- (2) Bring engine to operating temperature.
- (3) Check bottom (heater) housing on air dryer.
- (4) If housing is not warm, heater is not receiving power or is faulty.
- (5) Shut down engine (TM 9-2320-365-10).



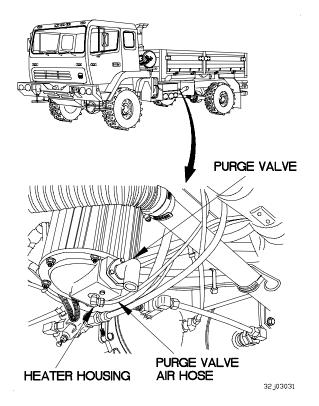
j3. AIR DRYER CONTINUALLY PURGES (CONT)



- (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.



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)

KNOWN INFO

Vehicle park and service brakes OK.

Air hoses free from kinks.

POSSIBLE PROBLEMS

Faulty emergency gladhand.

Faulty air hose 126.

Faulty air hose 124.

Faulty air hose 102.

Faulty air hose 108.

Faulty TRAILER AIR SUPPLY valve.

Faulty air hose 104.

Faulty service gladhand.

Faulty air hose 265.

Faulty air brake protecting valve.

vaive.

Faulty air hose 247.

Faulty load sensing valve

control port tee fitting.

Faulty service gladhand

two-way check valve.

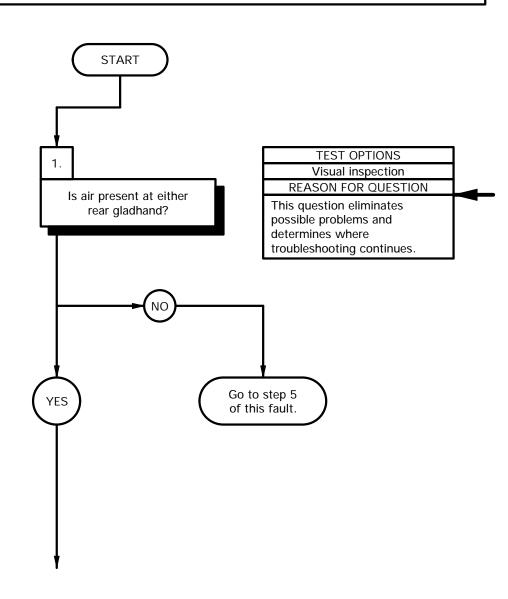
Faulty air hose 244.

Faulty air hose 120.

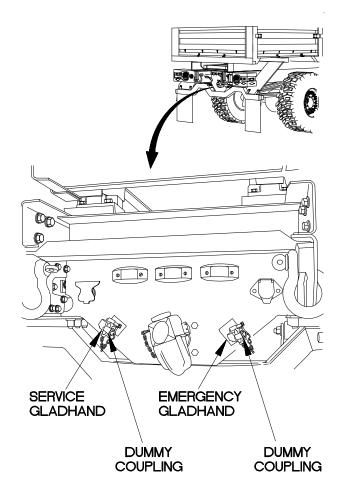
Faulty inversion valve control

port 90-degree fitting.

Faulty air hose 117.



- (1) Disconnect dummy coupling from emergency gladhand.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Check for presence of air at emergency gladhand.
- (5) Connect dummy coupling to emergency gladhand.
- (6) Disconnect dummy coupling from service gladhand.
- (7) Apply service brakes (TM 9-2320-365-10).
- (8) Check for presence of air at service gladhand.
- (9) Shut down engine (TM 9-2320-365-10).
- (10) Connect dummy coupling to service gladhand.
- (11) If air is not present at both rear gladhands, go to step 5 of this fault.



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KNOWN INFO

Vehicle park and service brakes

Air hoses free from kinks.

Air hose 124 OK.

Air hose 102 OK.

Air hose 108 OK.

TRAILER AIR SUPPLY valve

OK.

Air hose 104 OK.

POSSIBLE PROBLEMS

Faulty emergency gladhand.

Faulty air hose 126.

Faulty service gladhand.

Faulty air hose 265.

Faulty air brake protecting

valve.

Faulty air hose 247.

Faulty load sensing valve control port tee fitting.

Faulty service gladhand

two-way check valve.

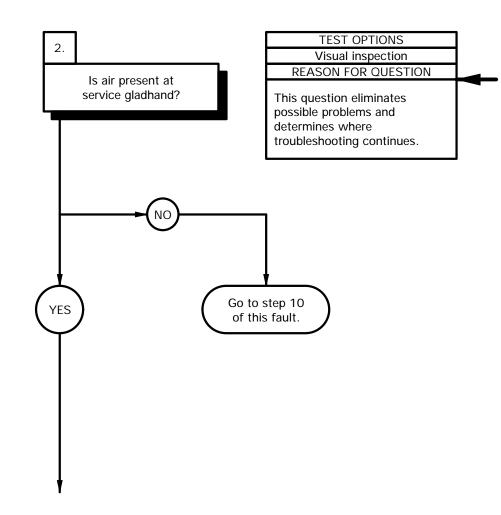
Faulty air hose 244.

Faulty air hose 120.

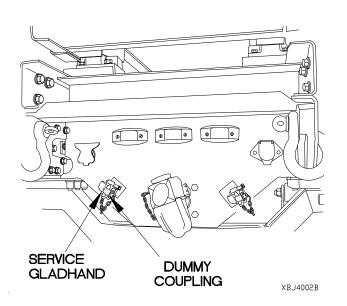
Faulty inversion valve control

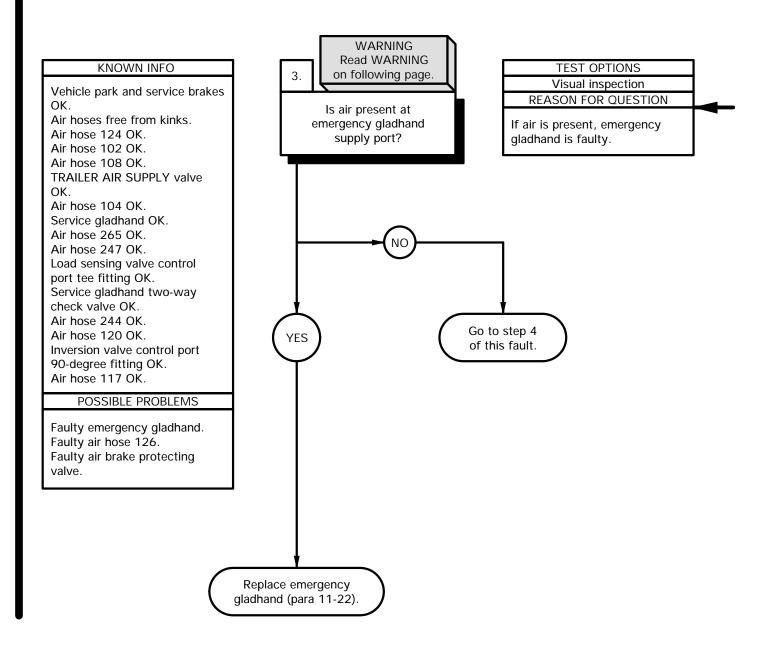
port 90-degree fitting.

Faulty air hose 117.



- (1) Disconnect dummy coupling from service gladhand.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Apply service brakes (TM 9-2320-365-10).
- (5) Check for presence of air at service gladhand.
- (6) Shut down engine (TM 9-2320-365-10).
- (7) Connect dummy coupling to service gladhand.
- (8) If air is not present, go to step 10 of this fault.

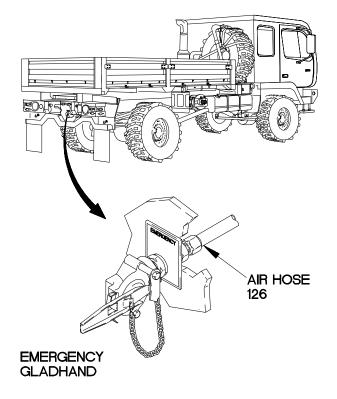




WARNING

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

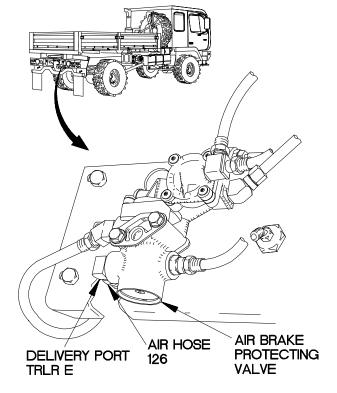
- (1) Loosen air hose 126 at emergency gladhand.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 126.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 4 of this fault.
- (7) If air is present, replace emergency gladhand (para 11-22).
- (8) Tighten air hose 126 at emergency gladhand.



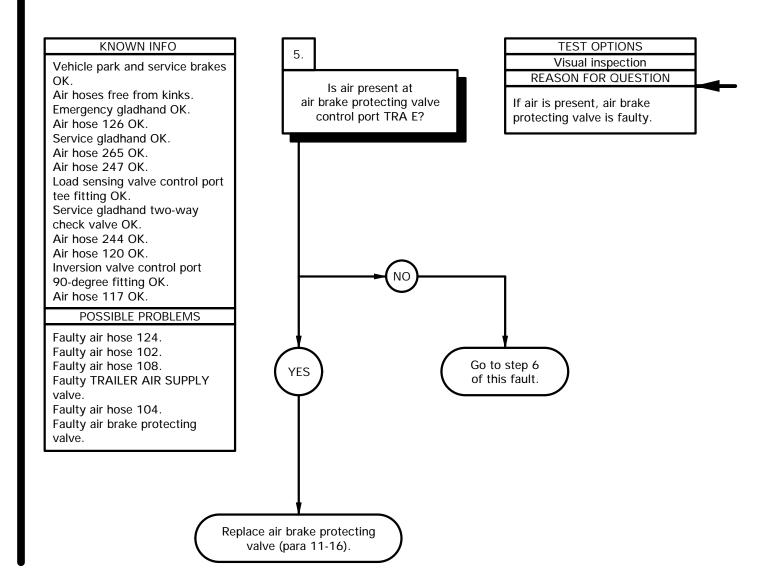
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KNOWN INFO TEST OPTIONS 4. Visual inspection Vehicle park and service brakes **REASON FOR QUESTION** Is air present at Air hoses free from kinks. air brake protecting valve If air is not present, air brake Emergency gladhand OK. delivery port TRLR E? protecting valve is faulty. If air Air hose 124 OK. is present, air hose 126 is Air hose 102 OK. faulty. Air hose 108 OK. TRAILER AIR SUPPLY valve Air hose 104 OK. Service gladhand OK. Air hose 265 OK. Air hose 247 OK. Load sensing valve control port tee fitting OK. NO Service gladhand two-way check valve OK. Air hose 244 OK. Air hose 120 OK. Inversion valve control port 90-degree fitting OK. Replace air brake protecting Air hose 117 OK. YES valve (para 11-16). POSSIBLE PROBLEMS Faulty air hose 126. Faulty air brake protecting valve. Replace air hose 126 (para 11-19).

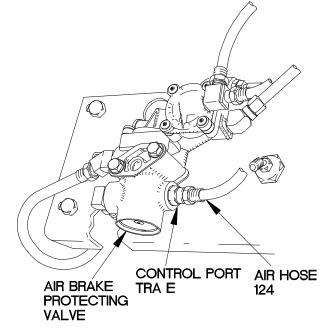
- (1) Loosen air hose 126 at air brake protecting valve delivery port TRLR E.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Check for presence of air at air brake protecting valve delivery port TRLR E.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, replace air brake protecting valve (para 11-16).
- (7) If air is present, replace air hose 126 (para 11-19).
- (8) Tighten air hose 126 at air brake protecting valve delivery port TRLR E.



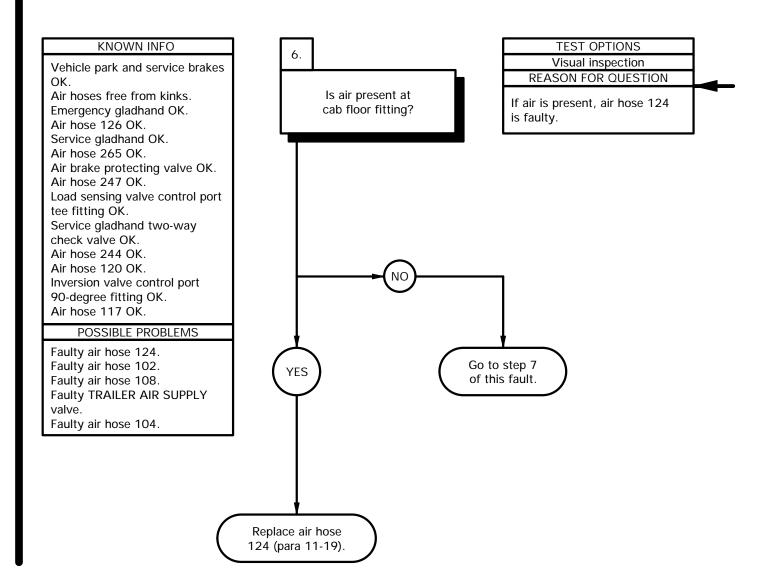
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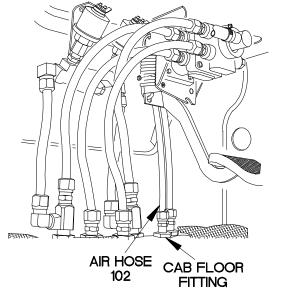
- (1) Loosen air hose 124 at air brake protecting valve control port TRA E.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 124.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 6 of this fault.
- (7) If air is present, replace air brake protecting valve (para 11-16).
- (8) Tighten air hose 124 at air brake protecting valve control port TRA E.



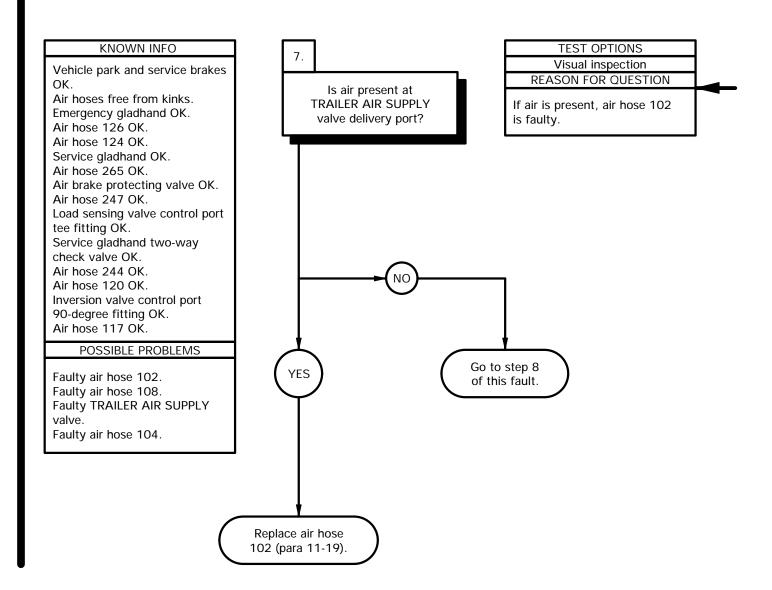
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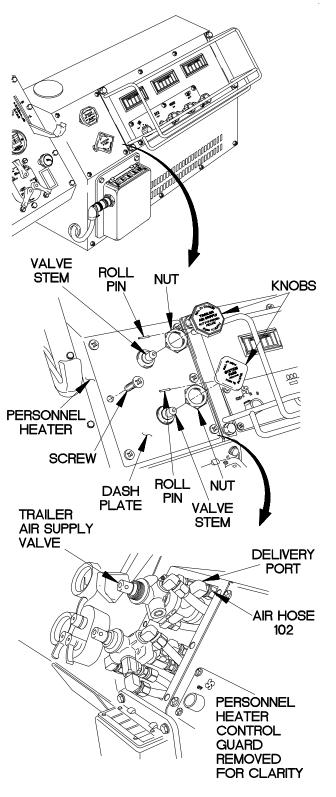
- (1) Loosen air hose 102 at cab floor fitting.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 102.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 7 of this fault.
- (7) If air is present, replace air hose 124 (para 11-19).
- (8) Tighten air hose 102 at cab floor fitting.



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- Remove roll pins from knobs of SYSTEM PARK and TRAILER AIR SUPPLY valves.
- (2) Remove SYSTEM PARK and TRAILER AIR SUPPLY valve knobs.
- (3) Unscrew nuts at base of valve stem on each valve.
- (4) Remove six screws and dash plate from personnel heater.
- (5) Pull out TRAILER AIR SUPPLY valve from personnel heater.
- (6) Loosen air hose 102 at TRAILER AIR SUPPLY valve delivery port.
- (7) Start engine (TM 9-2320-365-10).
- (8) Push in SYSTEM PARK control (TM 9-2320-365-10).
- (9) Push in TRAILER AIR SUPPLY valve stem.
- (10) Check for presence of air at TRAILER AIR SUPPLY valve delivery port.
- (11) If air is not present, go to step 8 of this fault.
- (12) If air is present, replace air hose 102 (para 11-19).
- (13) Shut down engine (TM 9-2320-365-10).
- (14) Tighten air hose 102 at TRAILER AIR SUPPLY valve delivery port.



KNOWN INFO

Vehicle park and service brakes

Air hoses free from kinks. Emergency gladhand OK.

Air hose 126 OK.

Air hose 124 OK.

Air hose 102 OK.

Service gladhand OK.

Air hose 265 OK.

Air brake protecting valve OK.

Air hose 247 OK.

Load sensing valve control port tee fitting OK.

Service gladhand two-way check valve OK.

Air hose 244 OK.

Air hose 120 OK.

Inversion valve control port

90-degree fitting OK.

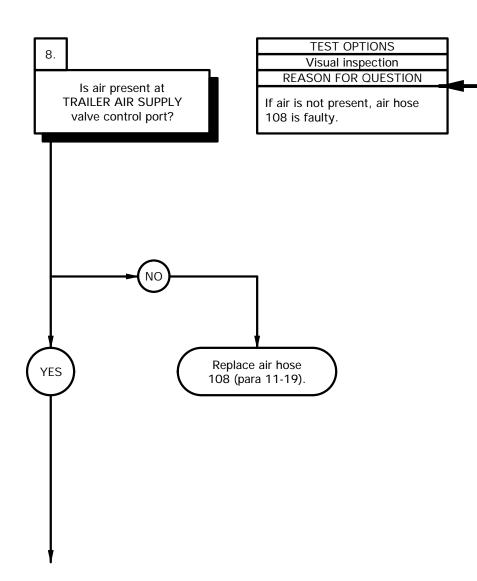
Air hose 117 OK.

POSSIBLE PROBLEMS

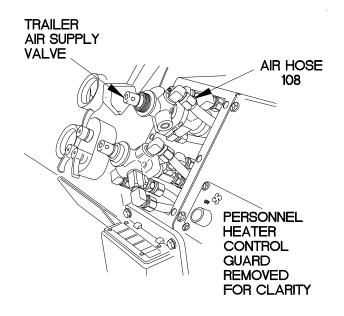
Faulty air hose 108. Faulty TRAILER AIR SUPPLY

valve.

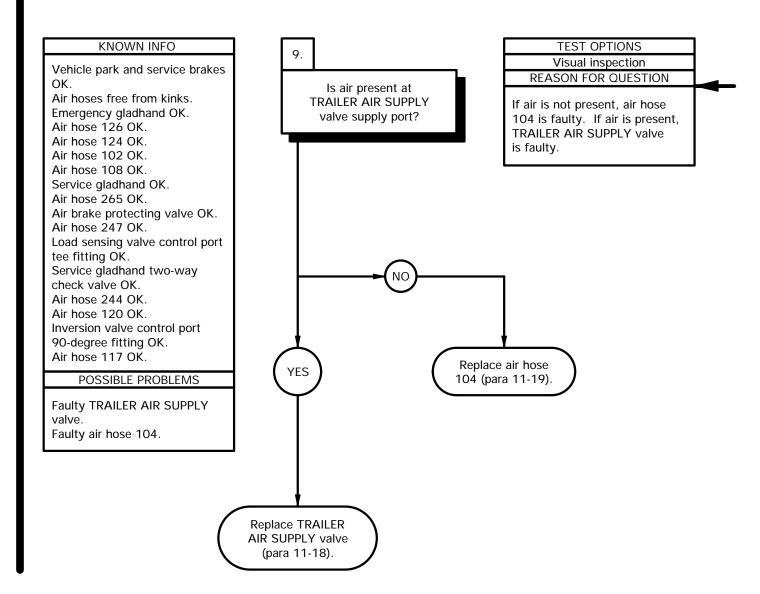
Faulty air hose 104.



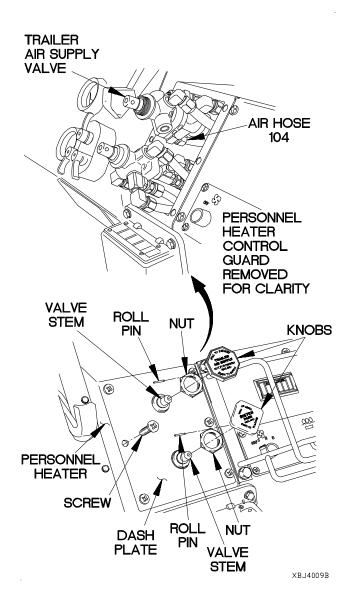
- (1) Loosen air hose 108 at TRAILER AIR SUPPLY valve control port.
- (2) Start engine (TM (9-2320-365-10).
- (3) Push in SYSTEM PARK control (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 108.
- (5) If air is not present, replace air hose 108 (para 11-19).
- (6) Shut down engine (TM 9-2320-365-10).
- (7) Tighten air hose 108 at TRAILER AIR SUPPLY valve control port.

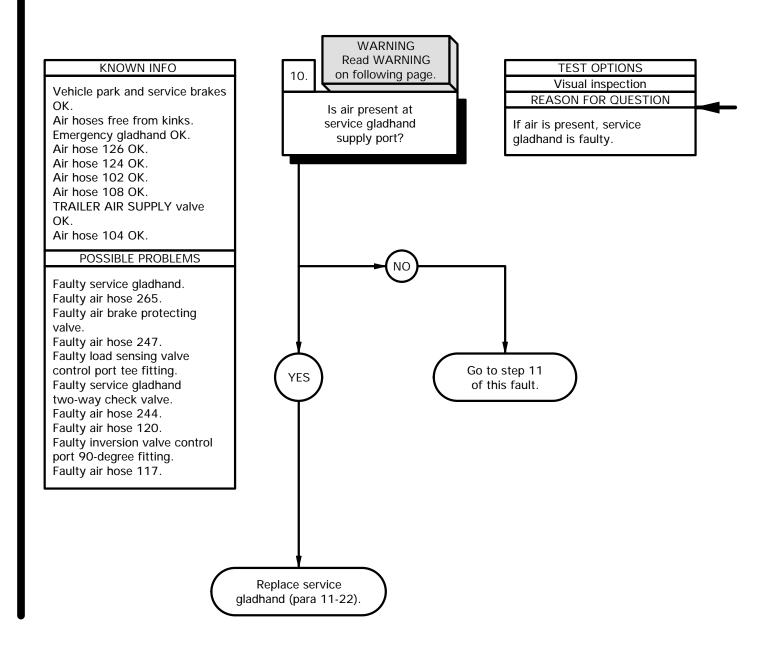


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- (1) Loosen air hose 104 at TRAILER AIR SUPPLY valve supply port.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in SYSTEM PARK control (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 104.
- (5) If air is not present, replace air hose 104 (para 11-19).
- (6) If air is present, replace TRAILER AIR SUPPLY valve (para 11-18).
- (7) Shut down engine (TM 9-2320-365-10).
- (8) Tighten air hose 104 at TRAILER AIR SUPPLY valve supply port.
- (9) Push SYSTEM PARK and TRAILER AIR SUPPLY valves back into personnel heater.
- (10) Install dash plate on personnel heater with six screws.
- (11) Install nuts on valve stems.
- (12) Install SYSTEM PARK and TRAILER AIR SUPPLY knobs on valve stems with roll pins.

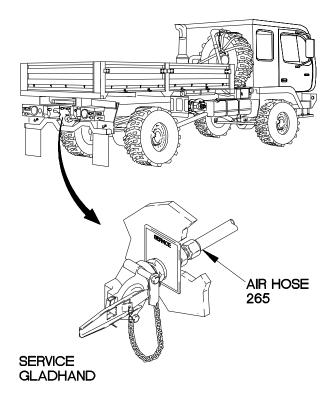




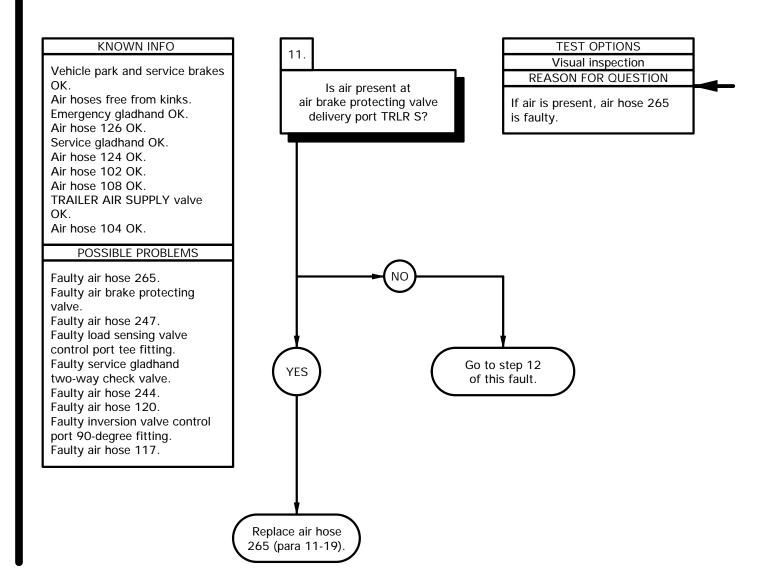
WARNING

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

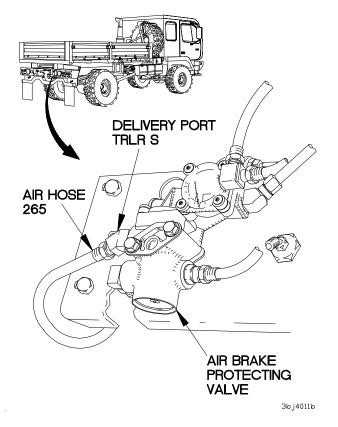
- (1) Loosen air hose 265 at service gladhand.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Apply service brakes (TM 9-2320-365-10).
- (5) Check for presence of air at air hose 265.
- (6) Shut down engine (TM 9-2320-365-10).
- (7) If air is not present, go to step 11 of this fault.
- (8) If air is present, replace service gladhand (para 11-22).
- (9) Tighten air hose 265 at service gladhand.



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- (1) Loosen air hose 265 at air brake protecting valve delivery port TRLR S.
- (2) Start engine (TM 9-2320-365-10).
- (3) Push in TRAILER AIR SUPPLY control (TM 9-2320-365-10).
- (4) Apply service brakes (TM 9-2320-365-10).
- (5) Check for presence of air at air brake protecting valve delivery port TRLR S.
- (6) Shut down engine (TM 9-2320-365-10).
- (7) If air is not present, go to step 12 of this fault.
- (8) If air is present, replace air hose 265 (para 11-19).
- (9) Tighten air hose 265 at air brake protecting valve delivery port TRLR S.



12.

KNOWN INFO

Vehicle park and service brakes OK.

Air hoses free from kinks. Emergency gladhand OK.

Air hose 126 OK.

 $Service\ gladhand\ OK.$

Air hose 124 OK.

Air hose 102 OK.

Air hose 108 OK. TRAILER AIR SUPPLY valve

OK.

Air hose 104 OK.

Air hose 265 OK.

POSSIBLE PROBLEMS

Faulty air brake protecting

valve.
Faulty air hose 247.
Faulty load sensing valve

control port tee fitting. Faulty service gladhand two-way check valve.

Faulty air hose 244.

Faulty air hose 120.

Faulty inversion valve control port 90-degree fitting

port 90-degree fitting. Faulty air hose 117.

Is air present at air brake protecting valve supply port FV1?

REASON FOR QUESTION

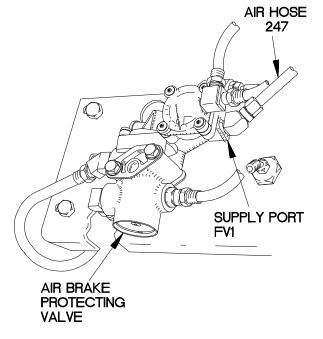
This question eliminates possible problems and determines where troubleshooting continues.

Go to step 14 of this fault.

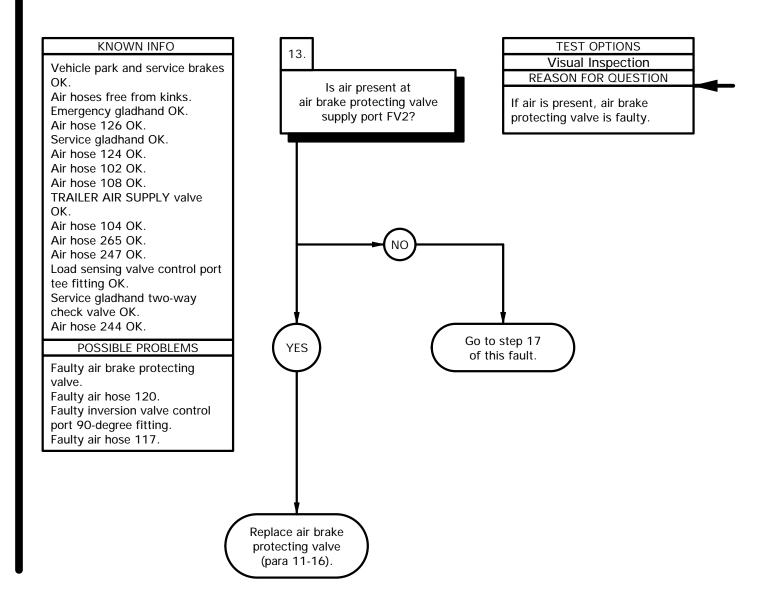
TEST OPTIONS

Visual inspection

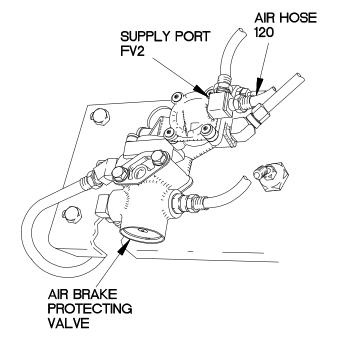
- (1) Loosen air hose 247 at air brake protecting valve supply port FV1.
- (2) Start engine (TM 9-2320-365-10).
- (3) Apply service brakes (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 247.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 14 of this fault.
- (7) Tighten air hose 247 at air brake protecting valve supply port FV1.



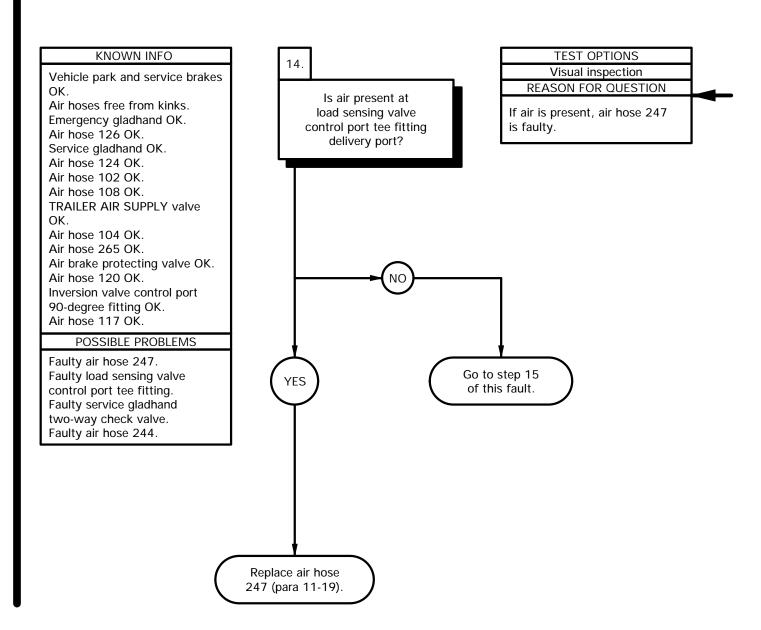
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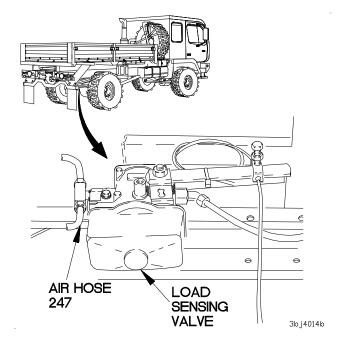
- (1) Loosen air hose 120 at air brake protecting valve supply port FV2.
- (2) Start engine (TM 9-2320-365-10).
- (3) Apply service brakes (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 120.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 17 of this fault.
- (7) If air is present, replace air brake protecting valve (para 11-16).
- (8) Tighten air hose 120 at air brake protecting valve supply port FV2.

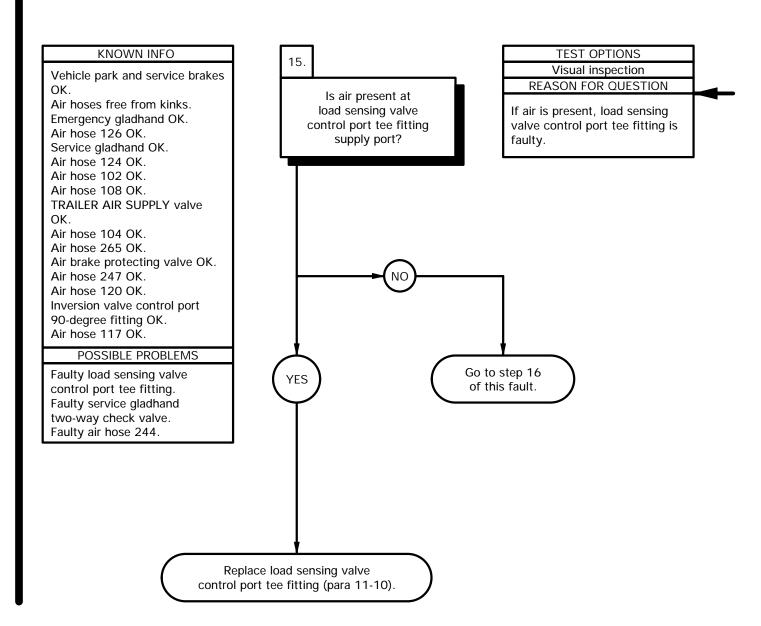


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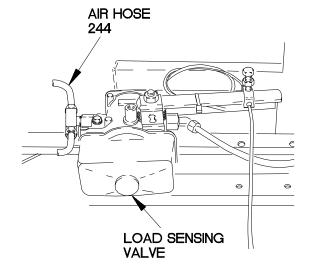


- (1) Loosen air hose 247 at load sensing valve control port tee fitting delivery port.
- (2) Start engine (TM 9-2320-365-10).
- (3) Apply service brakes (TM 9-2320-365-10).
- (4) Check for presence of air at load sensing valve control port tee fitting delivery port.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 15 of this fault.
- (7) If air is present, replace air hose 247 (para 11-19).
- (8) Tighten air hose 247 at load sensing valve control port tee fitting delivery port.



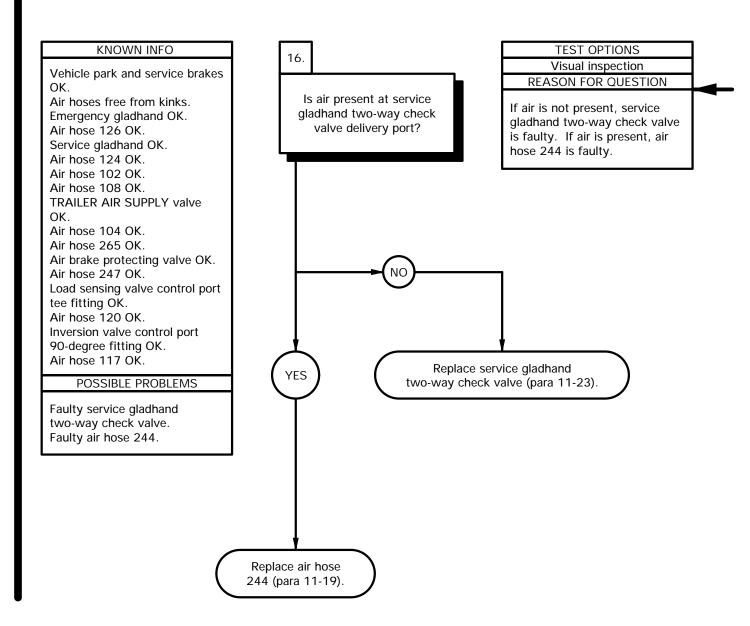


- (1) Loosen air hose 244 at load sensing valve control port tee fitting supply port.
- (2) Start engine (TM 9-2320-365-10).
- (3) Apply service brakes (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 244.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 16 of this fault.
- (7) If air is present, replace load sensing valve control port tee fitting (para 11-10).
- (8) Tighten air hose 244 at load sensing valve control port tee fitting supply port.

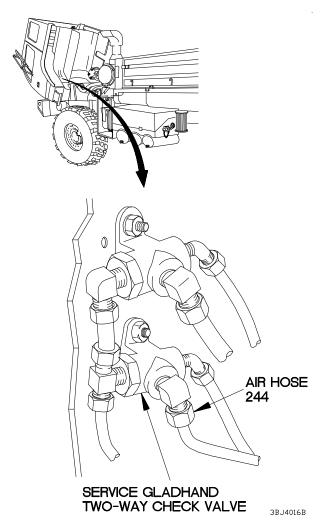


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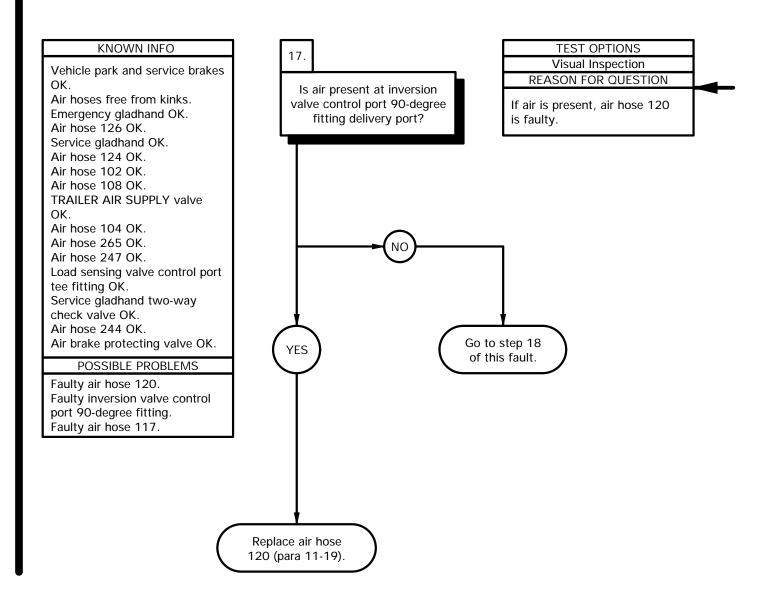
j4. NO AIR PRESSURE PRESENT AT REAR GLADHAND(S) (CONT)



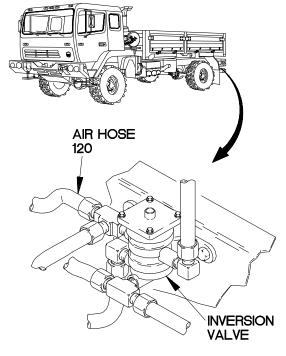
- (1) Raise cab (TM 9-2320-365-10).
- (2) Loosen air hose 244 at service gladhand two-way check valve delivery port.
- (3) Start engine (TM 9-2320-365-10).
- (4) Apply service brakes (TM 9-2320-365-10).
- (5) Check for presence of air at service gladhand two-way check valve delivery port.
- (6) Shut down engine (TM 9-2320-365-10).
- (7) If air is not present, replace service gladhand two-way check valve (para 11-23).
- (8) If air is present, replace air hose 244 (para 11-19).
- (9) Tighten air hose 244 at service gladhand two-way check valve delivery port.
- (10) Lower cab (TM 9-2320-365-10).



j4. NO AIR PRESSURE PRESENT AT REAR GLADHAND(S) (CONT)

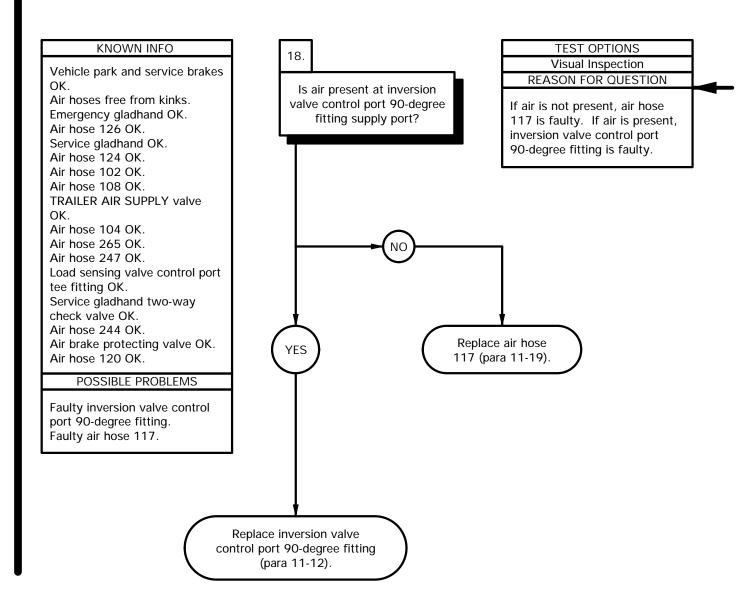


- Loosen air hose 120 at inversion valve control port 90-degree fitting delivery port.
- (2) Start engine (TM 9-2320-365-10).
- (3) Apply service brakes (TM 9-2320-365-10).
- (4) Check for presence of air at inversion valve control port 90-degree fitting delivery port.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, go to step 18 of this fault.
- (7) If air is present, replace air hose 120 (para 11-19).
- (8) Tighten air hose 120 at inversion valve control port 90-degree fitting delivery port.

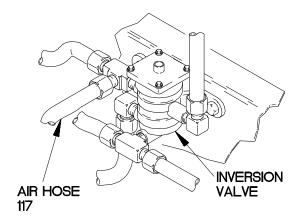


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j4. NO AIR PRESSURE PRESENT AT REAR GLADHAND(S) (CONT)



- (1) Loosen air hose 117 at inversion valve control port 90-degree fitting supply port.
- (2) Start engine (TM 9-2320-365-10).
- (3) Apply service brakes (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 117.
- (5) Shut down engine (TM 9-2320-365-10).
- (6) If air is not present, replace air hose 117 (para 11-19).
- (7) If air is present, replace inversion valve control port 90-degree fitting (para 11-12).
- (8) Tighten air hose 117 at inversion valve control port 90-degree fitting supply port.



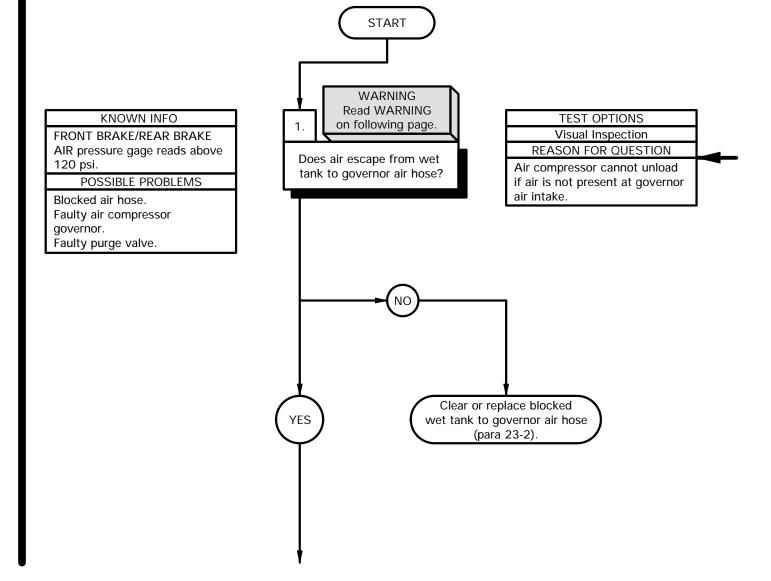
3bJ4018b

j5. AIR SYSTEM PRESSURE BUILDS UP 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).

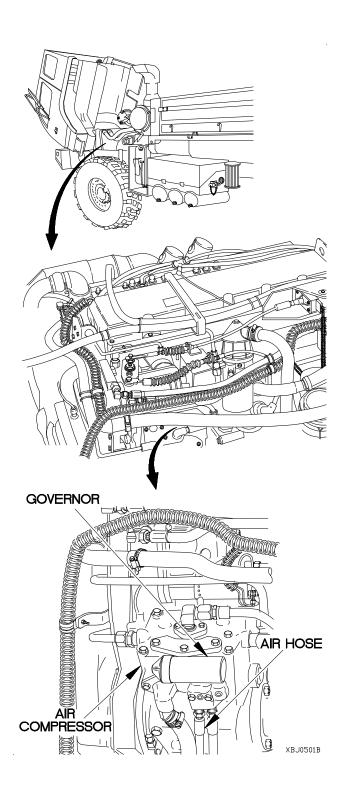
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
Goggles, Industrial (Item 15, Appendix C)



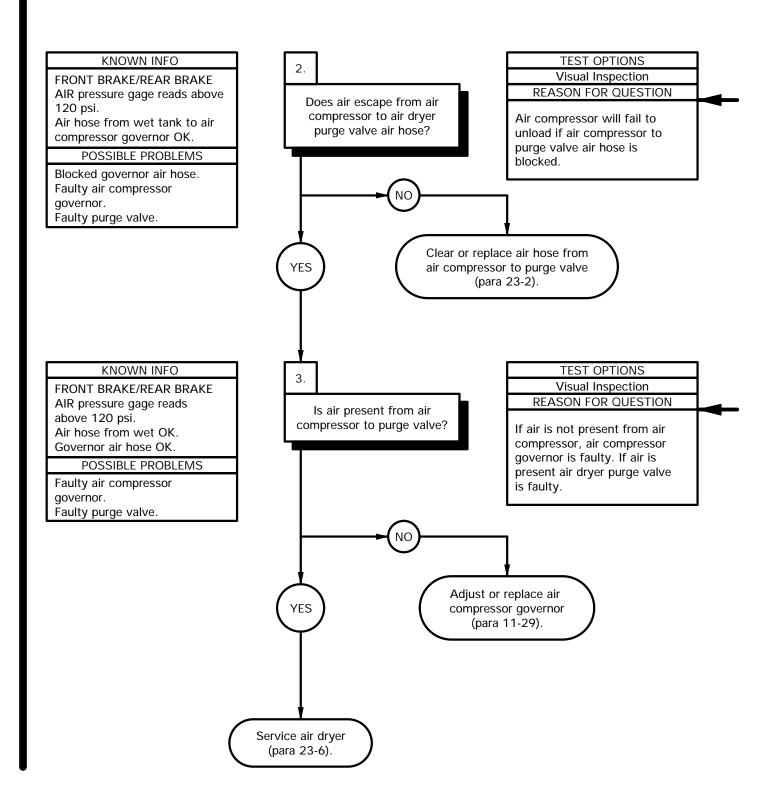
WARNING

Engine compartment includes a partially covered fan blade. Extreme care should be taken when working in the engine compartment. Failure to comply may result in injury to personnel.

- (1) Raise cab (TM 9-2320-365-10).
- (2) Disconnect (wet tank to governor) air hose from air compressor governor.
- (3) Lower cab (TM 9-2320-365-10).
- (4) Start engine (TM 9-2320-365-10).
- (5) Raise cab (TM 9-2320-365-10).
- (6) Check for air escaping from (wet tank to to governor) air hose.
- (7) If no air escapes, clear or replace air hose from wet tank to air compressor governor (para 23-2).
- (8) Lower cab (TM 9-2320-365-10).
- (9) Shut down engine (TM 9-2320-365-10).
- (10) Raise cab (TM 9-2320-365-10).
- (11) Connect (wet tank to governor) air hose to air compressor governor.

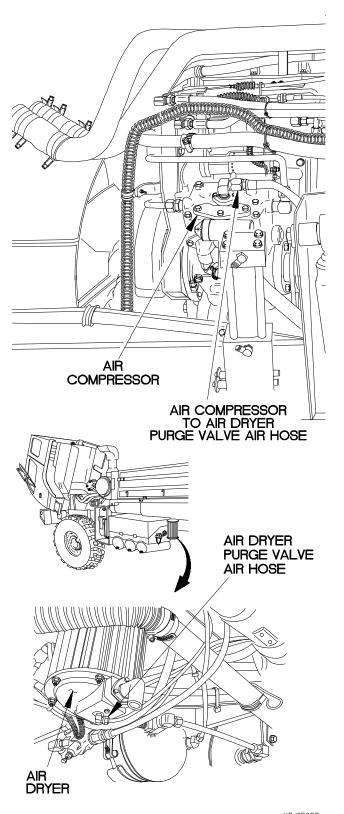


j5. AIR SYSTEM PRESSURE BUILDS UP MORE THAN 120 PSI (827 KPA) (COMPRESSOR FAILS TO UNLOAD) (CONT)



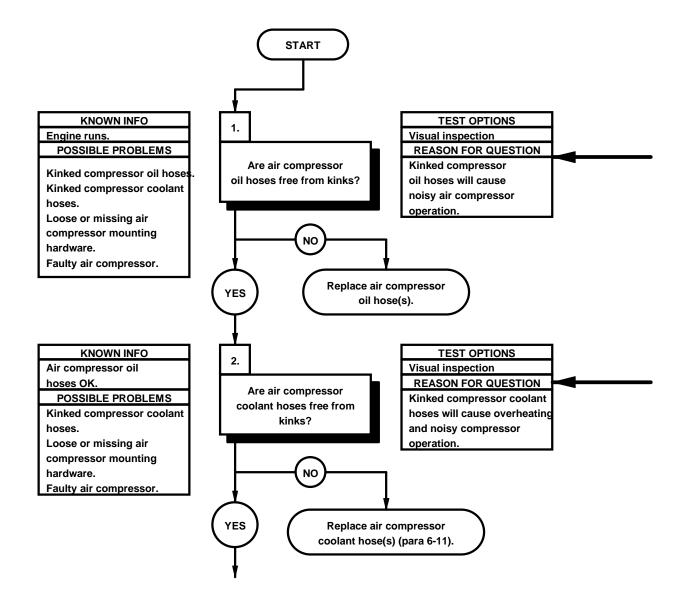
- (1) Disconnect (air compressor to purge valve) air hose form air compressor and purge valve.
- (2) Blow through one end of air hose. If no air escapes from other end of air hose, air hose is blocked.
- (3) Connect (air compressor to purge valve) air hose to air compressor.
- (4) Lower cab (TM 9-2320-365-10).

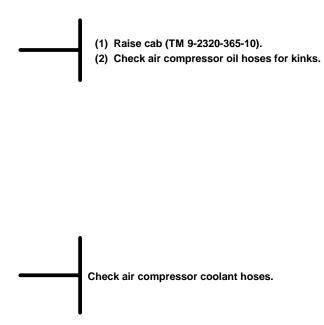
- (1) Start engine (TM 9-2320-365-10).
- (2) Check for presence of air at (air compressor to purge valve) air hose.
- (3) If no air escapes from air hose, Adjust or replace air compressor governor (para 11-29).
- (4) If air escapes from air hose, service air dryer for faulty purge valve (para 23-6).
- (5) Shut down engine (TM 9-2320-365-10).
- (6) Connect (air compressor to purge valve) air hose to air dryer purge valve.

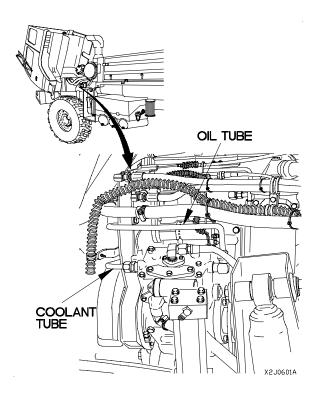


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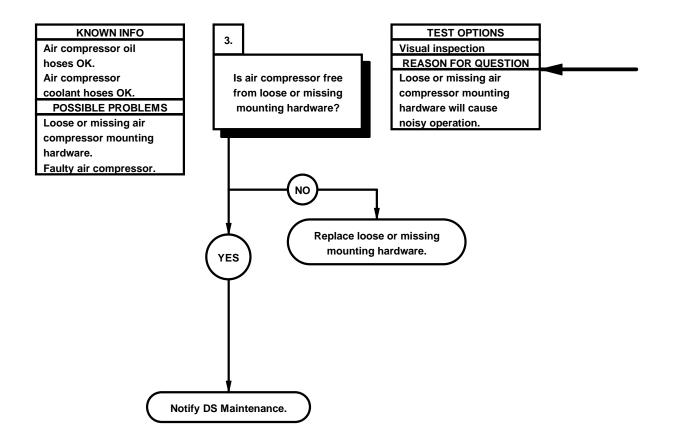
j6. NOISY AIR COMPRESSOR OPERATION INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C)



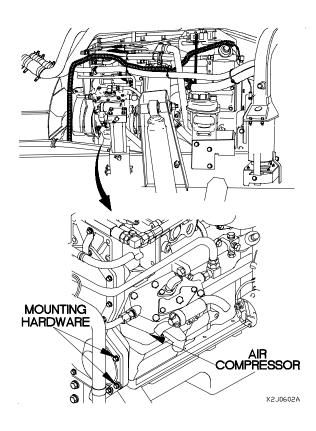




j6. NOISY AIR COMPRESSOR OPERATION (CONT)



- (1) Check air compressor for loose or missing mounting hardware.
- (2) Lower cab (TM 9-2320-365-10).



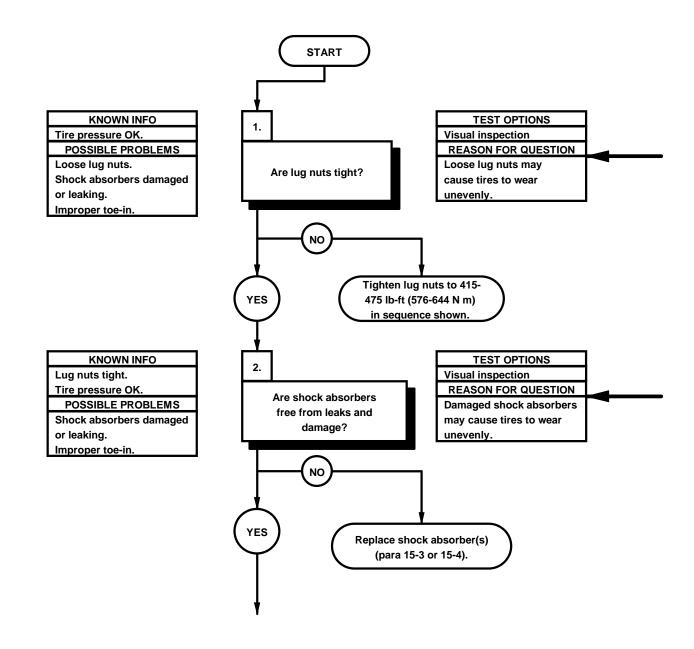
2-22. WHEEL TROUBLESHOOTING

This paragraph covers Wheel Troubleshooting. The Wheel Fault Index, Table 2-48, lists faults for the Wheel of the vehicle.

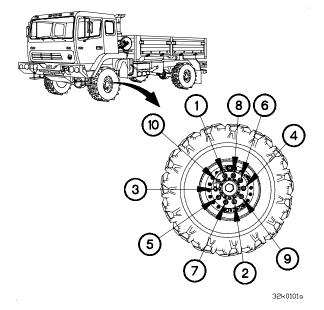
Table 2-48. Wheel Fault Index

Fault No.	Description	Page
k1. k2		

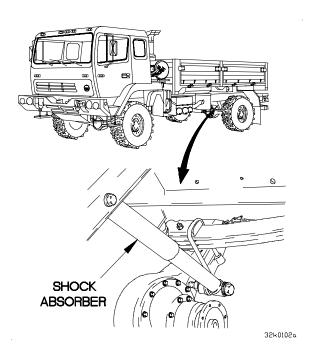
k1. TIRES WEAR UNEVENLY OR E CESSIVELY INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C) Multiplier, Torque Wrench (Item 23, Appendix C) Wrench, Torque, 0-600 lb-ft (Item 59, Appendix C)



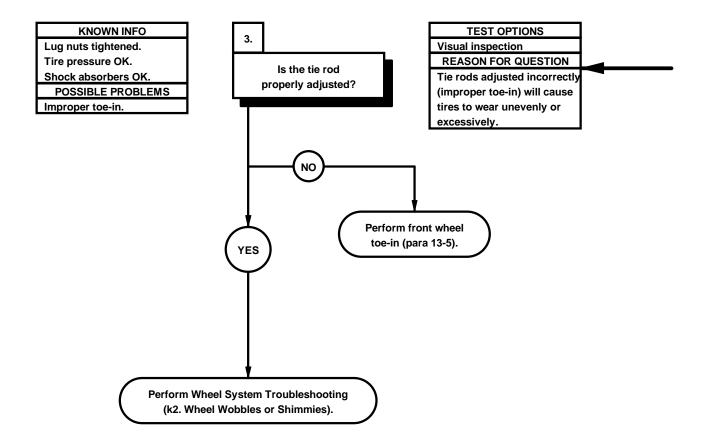
Inspect tires for excessive wear and for spacing between lug nuts and wheels. Tires that are worn unevenly may indicate that lug nuts need tightening.



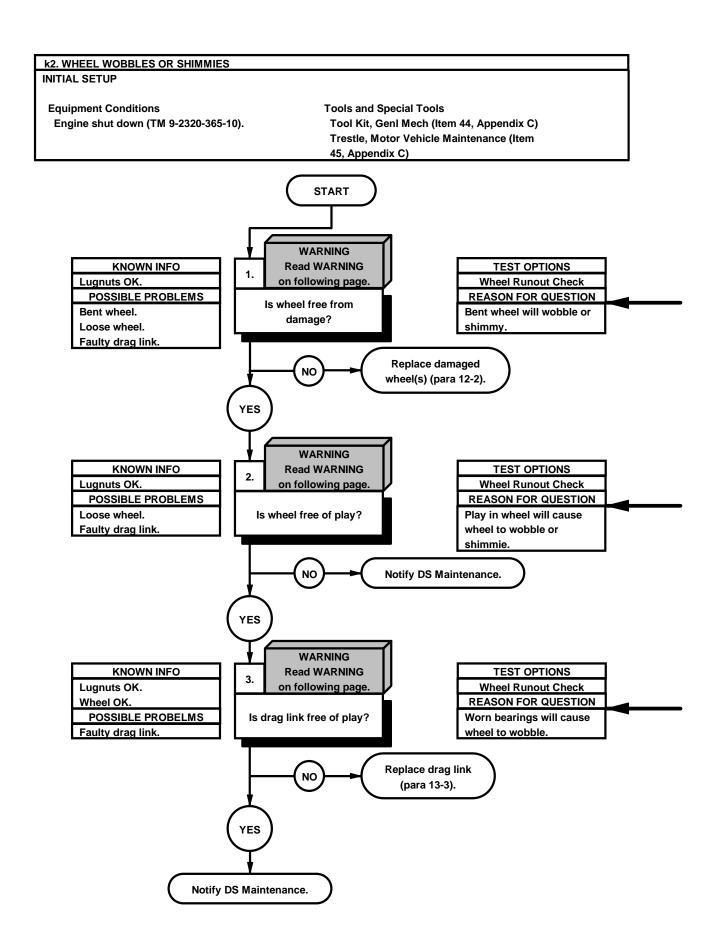
Inspect tires for excessive wear. Tires that have flat spots may indicate a defective shock absorber. Inspect shock absorbers for leaks or damage.

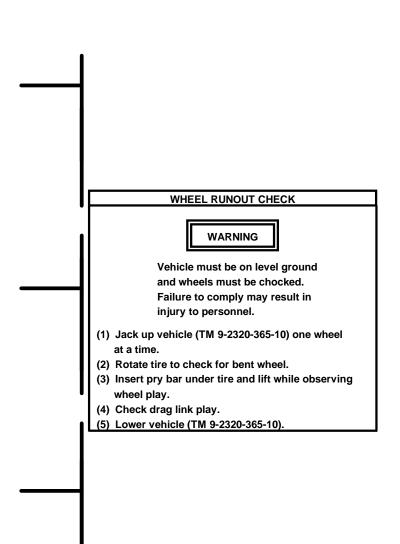


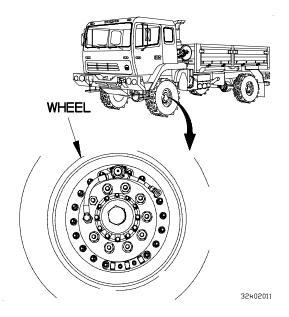
k1. TIRES WEAR UNEVENLY OR EXCESSIVELY (CONT)

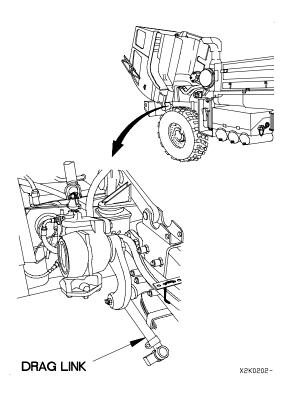












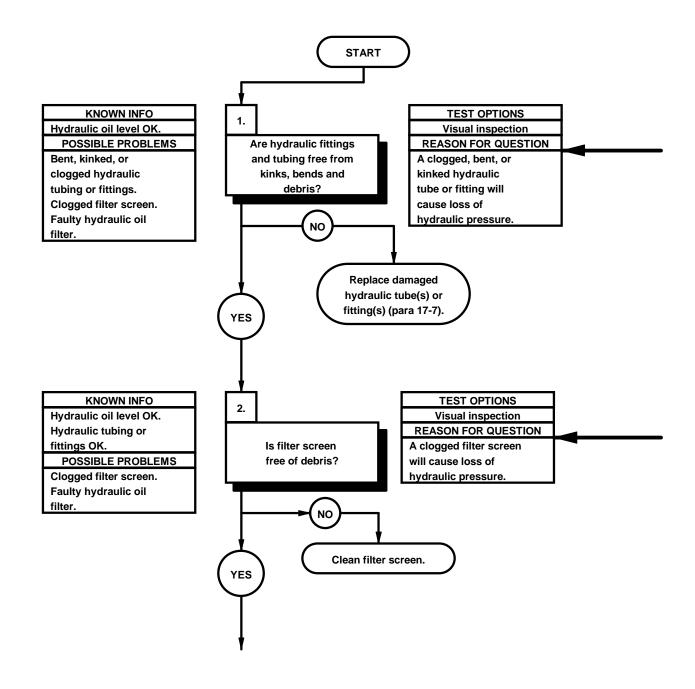
2-23. HYDRAULIC SYSTEM TROUBLESHOOTING

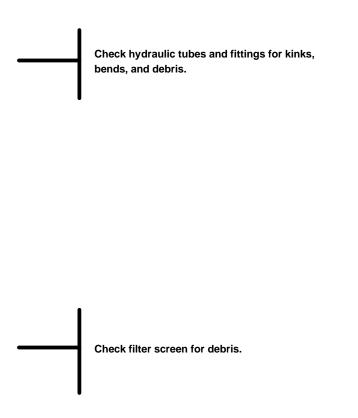
This paragraph covers Hydraulic System Troubleshooting. The Hydraulic System Fault Index, Table 2-49, lists faults for the Hydraulic System of the vehicle.

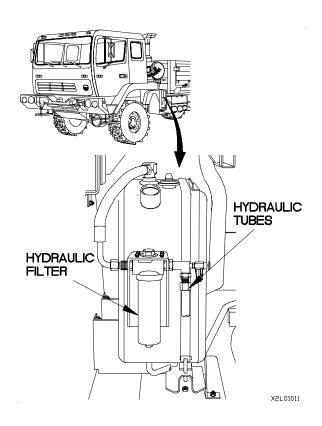
Table 2-49. Hydraulic System Fault Index

Fault No.	Description	Page
11.	Loss of Hydraulic Pressure (Single Stage Pump)	2-1762

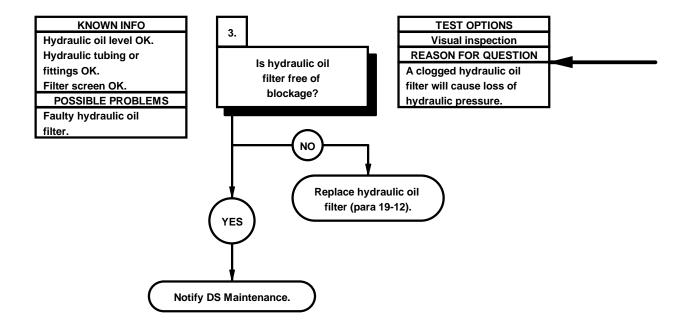
INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tools and Special Tools Tool Kit, Genl Mech (Item 44, Appendix C)







11. 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 2-50, lists faults for the CTIS System of the vehicle.

Table 2-50. Central Tire Inflation System (CTIS) Fault Index

Fault No.	Description	Page
m1.	Two Steady Mode Lights Illuminate on Central Tire Inflation System (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.	Central Tire Inflation System (CTIS) ECU Indicates No Fault Code But System 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 CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU

INITIAL SETUP

Equipment Conditions

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

Materials/Parts

Soap, Laundry (Item 69, Appendix D)

Personnel Required

(2)

Tools and Special Tools

Materials/Parts

Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C)

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)

KNOWN INFO

Nothing

POSSIBLE PROBLEMS

Faulty air hose from wet tank to manifold valve assembly. Faulty air compressor or governor adjustment.

Faulty wheel valve venting. Faulty manifold valve assembly relief valve.

Faulty manifold valve assembly.

Faulty quick release valve(s). Faulty rear axle quick release valve fittings.

Faulty front quick release valve fittings.

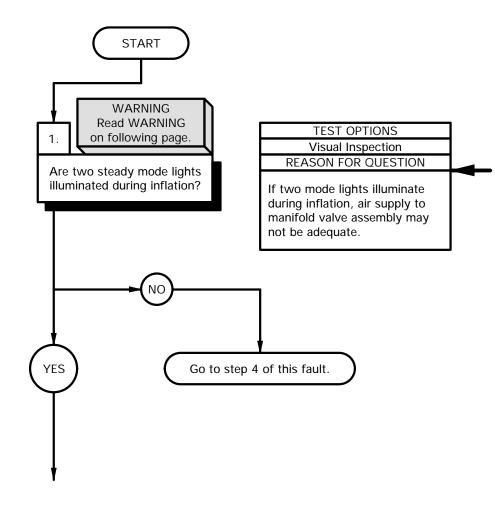
Faulty front tee fittings.
Faulty manifold valve assembly delivery port fittings.
Faulty cap floor curply bace.

Faulty cab floor supply hose fittings.

Faulty supply hoses from quick release valve(s) to wheel valve(s).

Faulty wheel valve filters. Faulty electrical connections at CTIS ECU and manifold valve assembly.

Faulty CTIS ECU.



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

Two steady mode lights are an indication that the CTIS has disconnected operation because of particular inflation or deflation sequence has taken longer than limits allow (40 minutes for inflate; 20 minutes for deflate).

Two steady mode lights indicates that system shut off with air pressure between modes.

The CTIS may still operate including modes that are illuminated by manually pressing the desired mode.

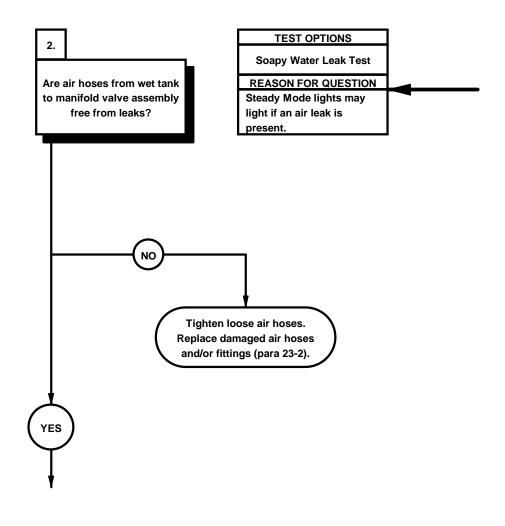
To perform deflate or inflate checks throughout this task, it will be necessary to perform the opposite function first from time to time so that a desired mode selection is available.

- (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 and restart 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 9-2320-265-10).
- (6) If two steady light mode lights do not illuminate during inflation, go to step 4 of this fault.

m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)

KNOWN INFO Two steady mode lights illuminate during inflation. POSSIBLE PROBLEMS Faulty air hoses from wet tank to manifold valve assembly. Faulty air compressor or governor adjustment. Faulty wheel valve venting. Faulty manifold valve assembly relief valve. Faulty manifold valve assembly. Faulty quick release valve(s). Faulty rear axle quick release valve fittings. Faulty front quick release valve fittings. Faulty front tee fittings. Faulty manifold valve assembly delivery port fittings. Faulty cab floor supply hose fittings. Faulty supply hoses from quick release valve(s) to wheel valve(s). Faulty wheel valve filters. Faulty electrical connections at CTIS ECU and manifold

valve assembly. Faulty CTIS ECU.

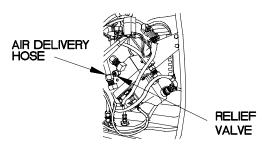


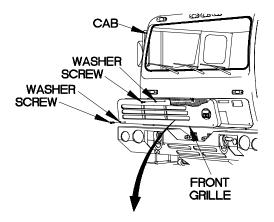
NOTE

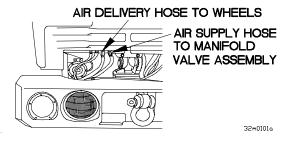
- Two steady mode lights are an indication that the CTIS has discontinued operation because a particular inflate or deflate sequence has taken longer than limits allow (40 minutes for inflate 20 minutes for deflate).
- Two steady mode lights indicate that CTIS is shut off with air pressure between modes.
- 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

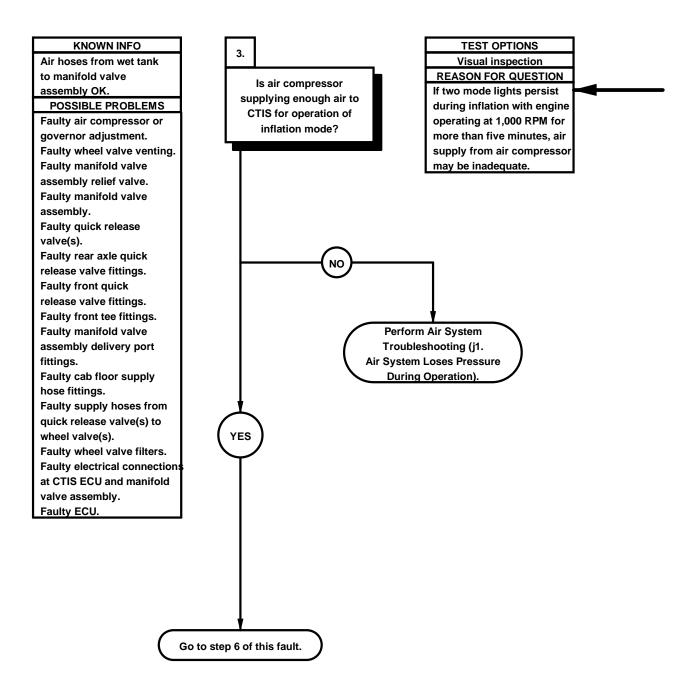
- (1) Remove kick panel (para 16-3).
- (2) Apply soapy water solution to supply air hose fitting at manifold valve assembly.
- (3) Check for air escaping at manifold valve assembly, indicated by air bubbles.
- (4) Remove two screws and washers from front grille.
- (5) Remove screw and washer from front 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.



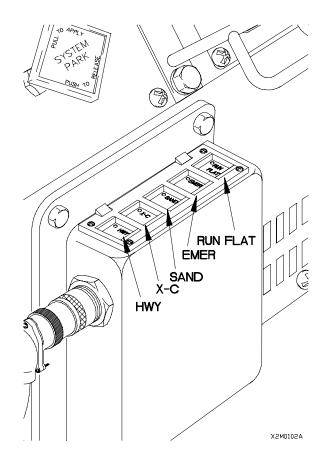




m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)



- (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).



KNOWN INFO Air hoses from wet tank to manifold valve assembly OK. Air compressor and governor adjustment OK. POSSIBLE PROBLEMS Faulty wheel valve venting. Faulty manifold valve assembly relief valve. Faulty manifold valve assembly. Faulty quick release valve(s). Faulty rear axle quick release valve fittings. Faulty front quick release valve fittings. Faulty front tee fittings. Faulty manifold valve assembly delivery port fittings. Faulty cab floor supply

hose fittings.

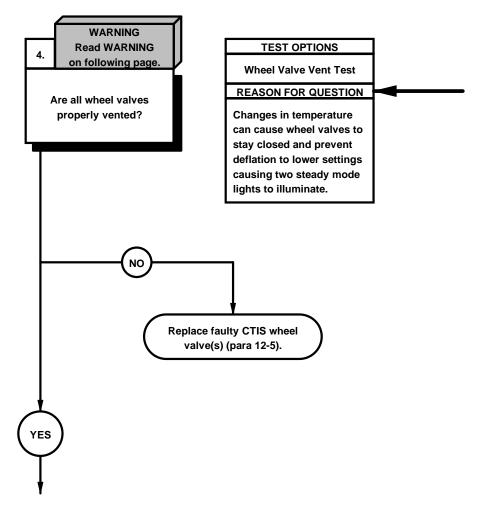
wheel valve(s).

valve assembly. Faulty ECU.

Faulty supply hoses from quick release valve(s) to

Faulty wheel valve filters.

Faulty electrical connections at CTIS ECU and manifold



WARNING

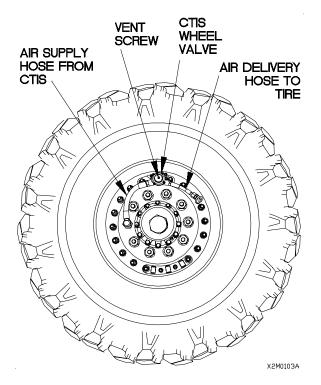
Do not loosen screw on wheel valve while CTIS is in use. Failure to comply may result in injury to personnel.

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.



KNOWN INFO

Air hoses from wet tank to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK.

POSSIBLE PROBLEMS

Faulty manifold valve assembly relief valve. Faulty manifold valve assembly. Faulty quick release valve(s).

valve(s).
Faulty rear axle quick release valve fittings.
Faulty front quick release valve fittings.
Faulty front tee fittings.
Faulty manifold valve assembly delivery port fittings.

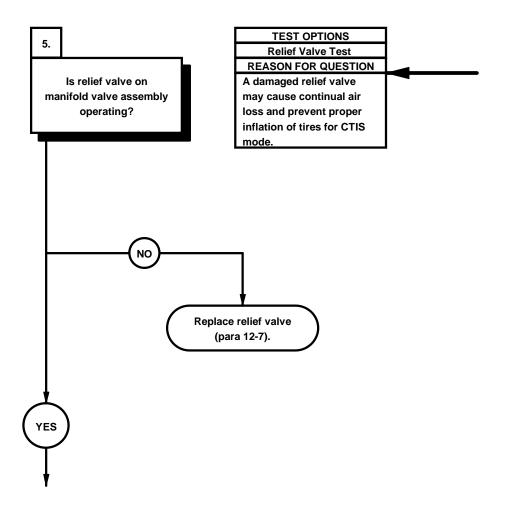
Faulty cab floor supply hose fittings.

Faulty supply hoses from quick release valve(s) to wheel valve(s).

Faulty wheel valve filters.

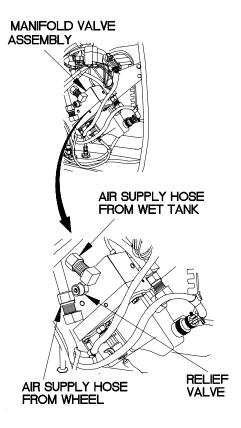
Faulty electrical connections at CTIS ECU and manifold valve assembly.

Faulty ECU.



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).



32M0104A

KNOWN INFO

Air hoses from wet tank to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK. Manifold valve assembly relief valve OK.

POSSIBLE PROBLEMS

Faulty manifold valve

assembly.
Faulty quick release valve(s).
Faulty rear axle quick release valve fittings.
Faulty front quick release valve fittings.
Faulty front tee fittings.
Faulty manifold valve assembly delivery port

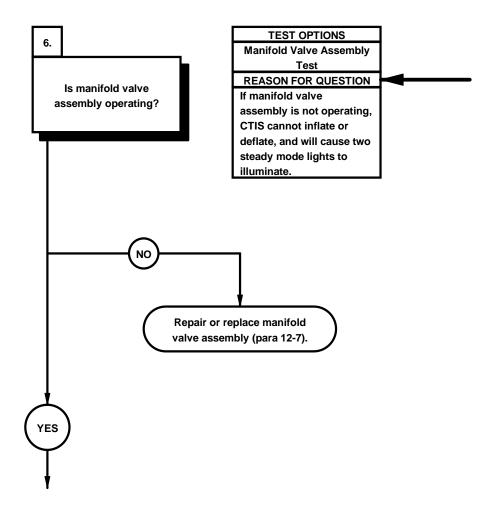
Faulty cab floor supply hose fittings.

Faulty supply hoses from quick release valve(s) to wheel valve(s).

Faulty wheel valve filters.
Faulty electrical connections at CTIS ECU and manifold valve assembly.

Faulty ECU.

fittings.

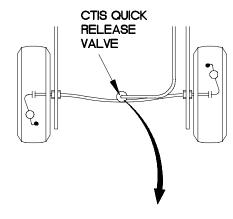


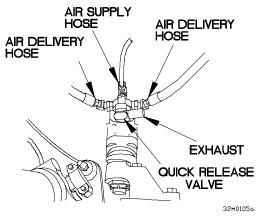
NOTE

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).



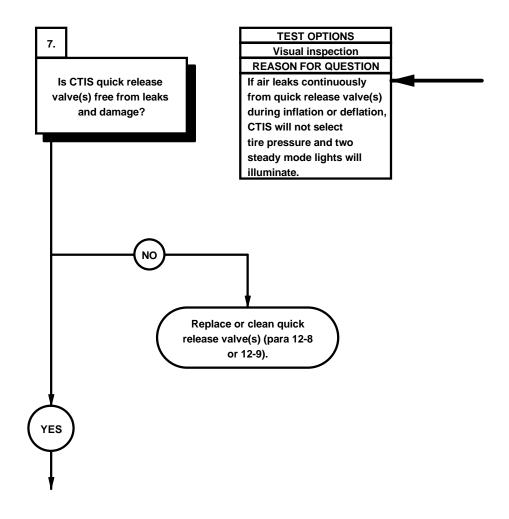


KNOWN INFO

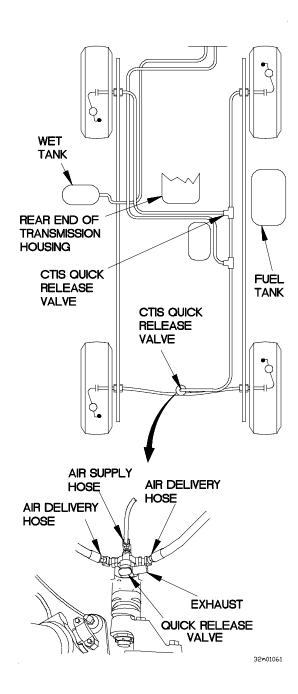
Air hoses from wet tank to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK. Manifold valve assembly relief valve OK. Manifold valve assembly OK.

POSSIBLE PROBLEMS Faulty CTIS quick release

valve(s). Faulty rear axle quick release valve fittings. Faulty front quick release valve fittings. Faulty front tee fittings. Faulty manifold valve assembly delivery port fittings. Faulty cab floor supply hose fittings. Faulty supply hoses from quick release valve(s) to wheel valve(s). Faulty wheel valve filters. Faulty electrical connections at CTIS ECU and manifold valve assembly. Faulty ECU.



- (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).



KNOWN INFO

Air hoses from wet tank to manifold valve assembly OK.
Air compressor and governor adjustment OK.
Wheel valves venting OK.
Manifold valve assembly relief valve OK.
Manifold valve assembly OK.

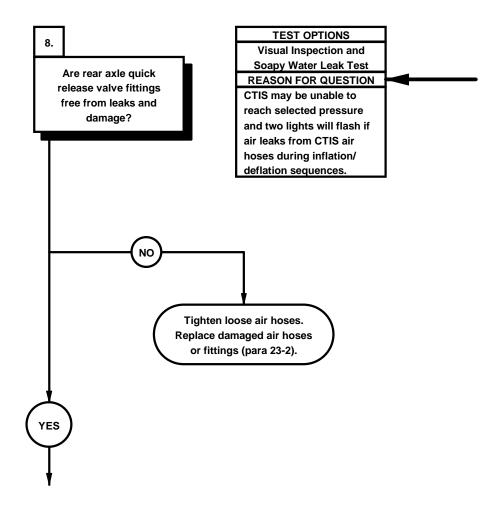
Quick release valves OK.

POSSIBLE PROBLEMS

Faulty rear axle quick release valve fittings.
Faulty front quick release valve fittings.
Faulty front tee fittings.
Faulty manifold valve assembly delivery port fittings.
Faulty cab floor supply hose fittings.
Faulty supply hoses from

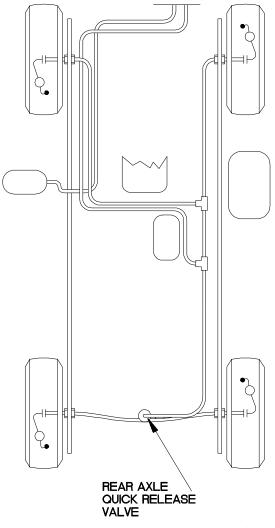
quick release valve(s) to wheel valve(s). Faulty wheel valve filters. Faulty electrical connections at CTIS ECU and manifold valve assembly.

Faulty ECU.



- (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

- (1) Apply soapy water solution to quick release valve fittings at rear axle.
- (2) Check for air bubbles indicating



at CTIS ECU and manifold

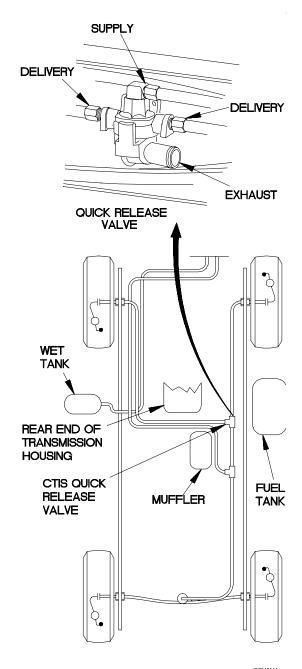
valve assembly. Faulty ECU.

m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CTIS ECU (CONT)

KNOWN INFO TEST OPTIONS 9. Air hoses from wet tank **Soapy Water Leak Test** to manifold valve assembly OK. Is CTIS front quick release **REASON FOR QUESTION** Air compressor and valve fittings free from CTIS may be unable to governor adjustment OK. leaks and damage? reach selected pressure Wheel valves venting OK. and two lights will flash if Manifold valve assembly air leaks from CTIS air relief valve OK. hoses during inflation/ deflation sequences. Manifold valve assembly OK. Quick release valves OK. Rear axle quick release valve fittings OK. POSSIBLE PROBLEMS NO Faulty front quick release valve fittings. Faulty front tee fittings. Faulty manifold valve assembly delivery port Tighten loose air lines. Replace damaged air lines fittings. Faulty cab floor supply and/or fittings (para 23-2). hose fittings. Faulty supply hoses from quick release valve(s) to wheel valve(s). YES Faulty wheel valve filters. Faulty electrical connections

2-1784

- (1) Apply soapy water solution to front quick release valve fittings.
- (2) Check for air bubbles indicating



32M0111-

KNOWN INFO

Air hoses from wet tank to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK. Manifold valve assembly relief valve OK.

Manifold valve assembly OK.

Quick release valves OK. Rear axle quick release valve fittings OK. Front quick release valve fittings OK.

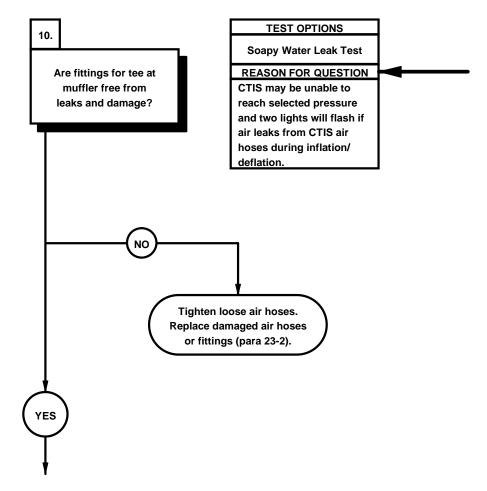
POSSIBLE PROBLEMS

Faulty front tee fittings. Faulty manifold valve assembly delivery port fittings.

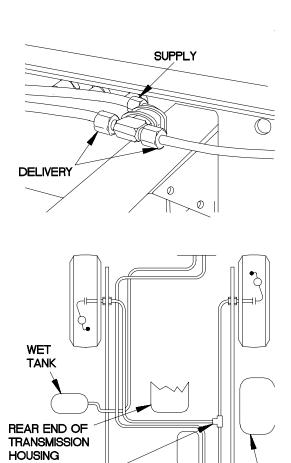
Faulty cab floor supply hose fittings.

Faulty supply hoses from quick release valve(s) to wheel valve(s).

Faulty wheel valve filters.
Faulty electrical connections at CTIS ECU and manifold valve assembly.
Faulty ECU.



- (1) Apply soapy water solution to fittings at tee above muffler.
- (2) Check for air bubbles indicating leaks



MUFFLER

CTIS QUICK RELEASE

VALVE

32M0112-

FUEL TANK

11.

KNOWN INFO

Air hoses from wet tank to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK. Manifold valve assembly relief valve OK.

Manifold valve assembly OK.

Quick release valves OK. Rear axle quick release valve fittings OK. Front quick release valve fittings OK.

Front tee fittings OK.

POSSIBLE PROBLEMS

Faulty manifold valve assembly delivery port fittings.

Faulty cab floor supply hose fittings.

Faulty supply hoses from quick release valve(s) to wheel valve(s).

Faulty wheel valve filters.
Faulty electrical connections at CTIS ECU and manifold valve assembly.
Faulty ECU.

Are manifold valve assembly delivery port fittings free from leaks and damage?

REASON FOR QUESTION

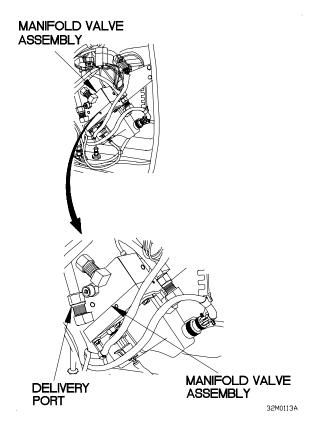
CTIS may be unable to reach selected pressure and two lights will flash if air leaks from CTIS air hoses during inflation/ deflation.

Tighten loose air hoses.
Replace damaged air hoses or fittings (para 23-2).

TEST OPTIONS

Soapy Water Leak Test

- (1) Apply soapy water solution to manifold valve assembly delivery port fittings.
- (2) Check for air bubbles indicating



KNOWN INFO Air hoses from wet tank

to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK. Manifold valve assembly relief valve OK.

Manifold valve assembly OK.

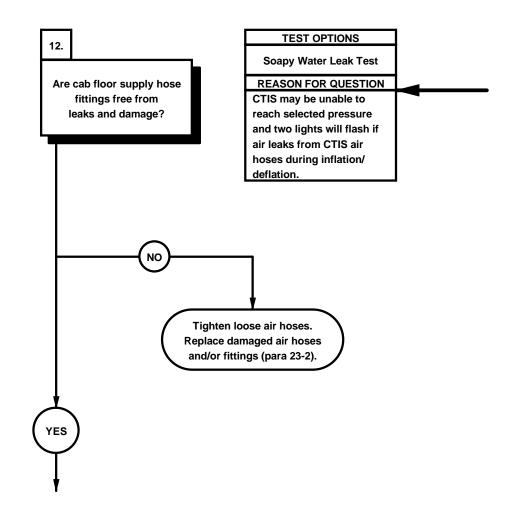
Quick release valves OK. Rear axle quick release valve fittings OK. Front quick release valve fittings OK.

Front tee fittings OK. Manifold valve assembly delivery port fittings OK.

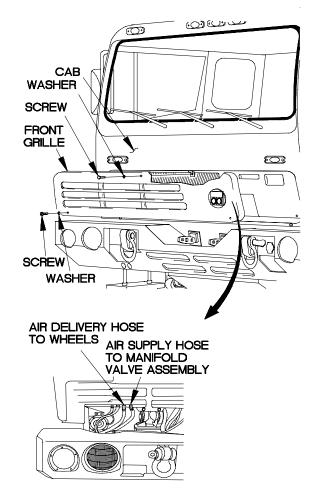
POSSIBLE PROBLEMS

Faulty cab floor supply hose fittings.
Faulty supply hoses from quick release valve(s) to wheel valve(s).
Faulty wheel valve filters.
Faulty electrical connections at CTIS ECU and manifold valve assembly.

Faulty ECU.



- (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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KNOWN INFO Air hoses from wet tank

to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK. Manifold valve assembly relief valve OK. Manifold valve assembly

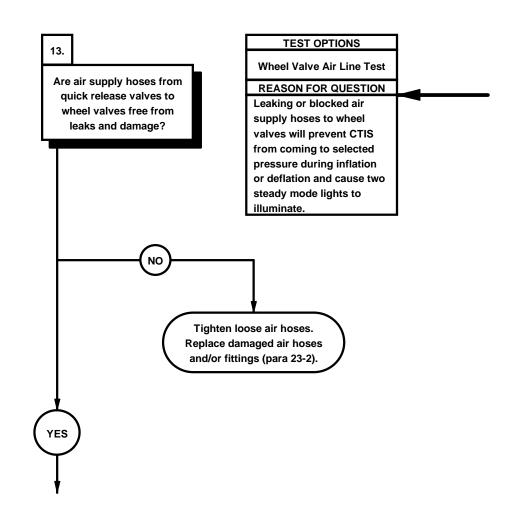
OK.

Quick release valves OK.
Rear axle quick
release valve fittings OK.
Front quick release valve
fittings OK.

Front tee fittings OK.
Manifold valve assembly
delivery port fittings OK.
Cab floor supply line
fittings OK.

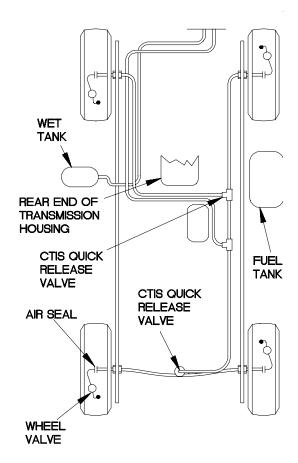
POSSIBLE PROBLEMS

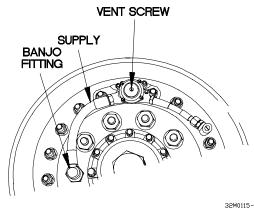
Faulty supply hoses from quick release valve(s) to wheel valve(s).
Faulty wheel valve filters.
Faulty electrical connections at CTIS ECU and manifold valve assembly.
Faulty ECU.



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).



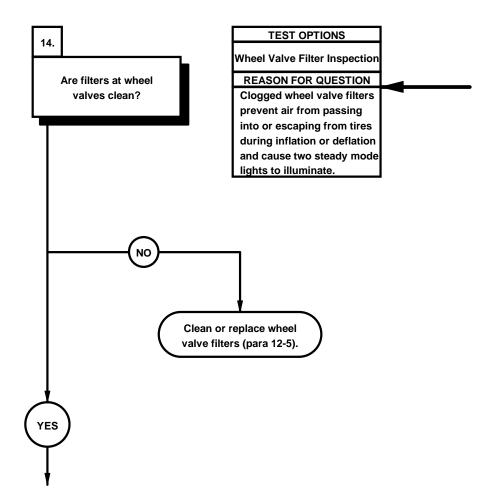


KNOWN INFO Air hoses from wet tank

to manifold valve assembly OK. Air compressor and governor adjustment OK. Wheel valves venting OK. Manifold valve assembly relief valve OK. Manifold valve assembly OK. Quick release valves OK. Rear axle quick release valve fittings OK. Front quick release valve fittings OK. Front tee fittings OK. Manifold valve assembly delivery port fittings OK. Cab floor supply hose fittings OK. Supply hoses from quick release valve to wheel valves OK.

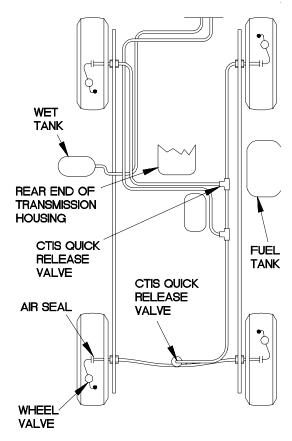
POSSIBLE PROBLEMS

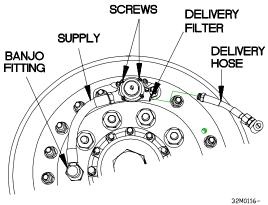
Faulty wheel valve filters.
Faulty electrical connections at CTIS ECU and manifold valve assembly.
Faulty ECU.

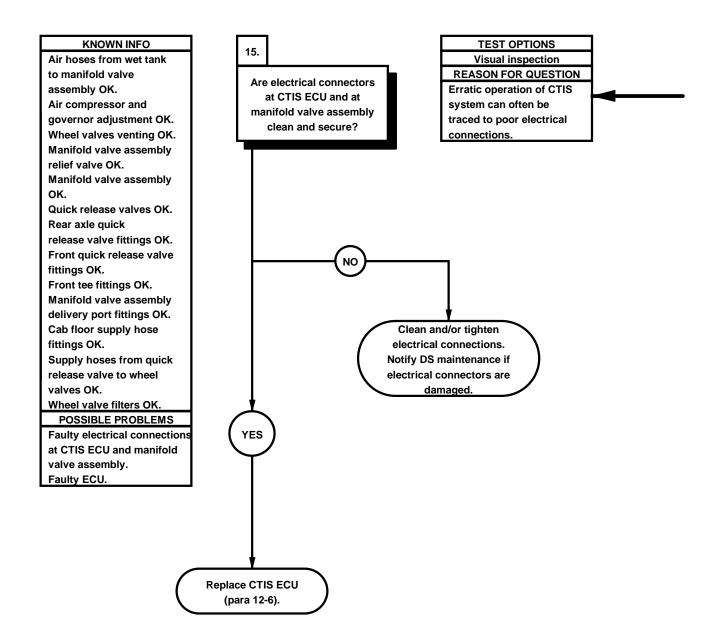


WHEEL VALVE FILTER INSPECTION

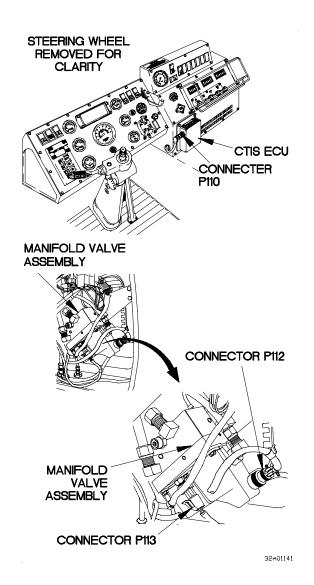
- (1) Jack up axle at affected wheel and support with trestles.
- (2) Remove two screws from wheel valve.
- (3) Remove wheel valve and unscrew from delivery hose.
- (4) Unscrew wheel valve filter from wheel valve.
- (5) Check if filter is clean and free from obstruction.
- (6) If filter is plugged with 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.







- (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)

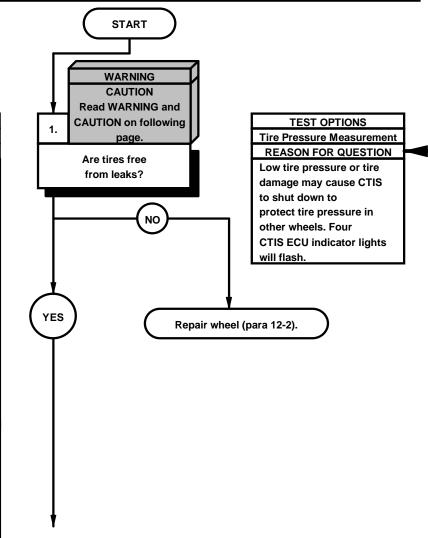
Tools and Special Tools

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)



KNOWN INFO Air pressure at wet tank OK. POSSIBLE PROBLEMS

Faulty tire(s).
Faulty CTIS wheel seal(s).

Faulty kneeling valve(s) at front wheel(s).

Faulty CTIS wheel valve(s).

Faulty air hoses from quick release valve to affected wheel(s).

Faulty front axle

quick release valve.

Faulty rear axle

quick release valve(s).

Faulty rear axle

quick release valve

fittings.

Faulty front axle quick release valve fittings.

Faulty front tee

fittings.

Faulty manifold valve assembly delivery port

fittings.

Faulty cab floor air

hose fittings.

Faulty manifold valve assembly.

Faulty CTIS ECU.

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

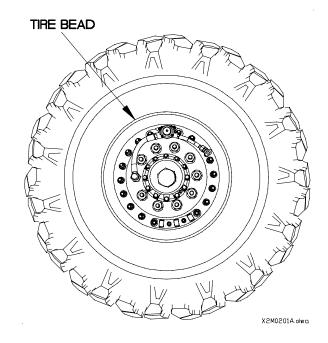
When RUN FLAT has been selected to perform a troubleshooting step, be sure to press RUN FLAT again when step is completed to terminate CTIS operation and prevent excessive air loss.

NOTE

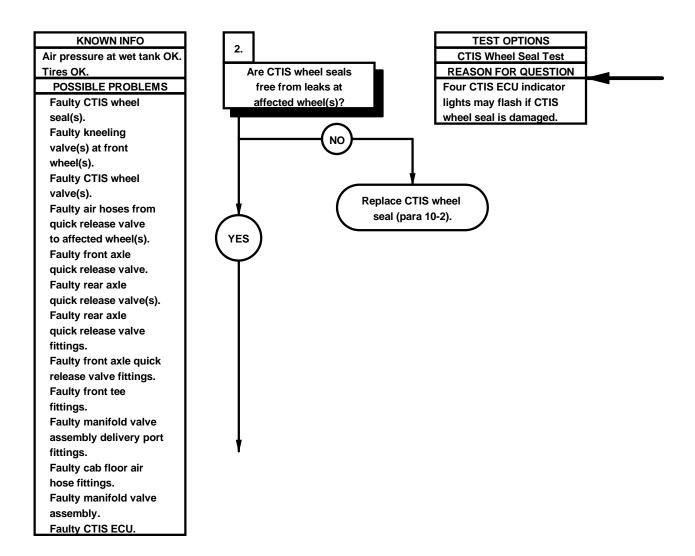
Four mode lights flashing indicate CTIS has shut off due to uneven tire pressure (one tire 50 percent less than other pressures will do it), tire damage, or major leak. Operator can continue CTIS operation by pressing RUN FLAT on CTIS ECU. When RUN FLAT has been selected CTIS ECU checks pressures at 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.

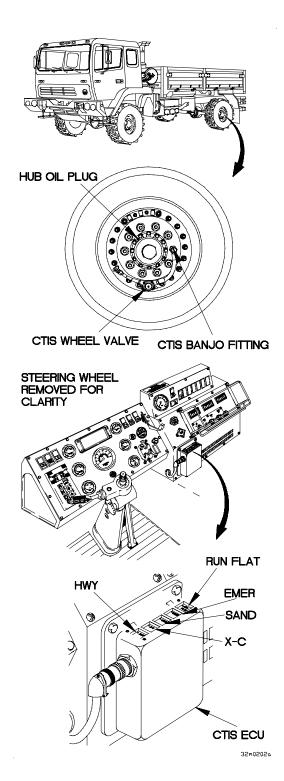


m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

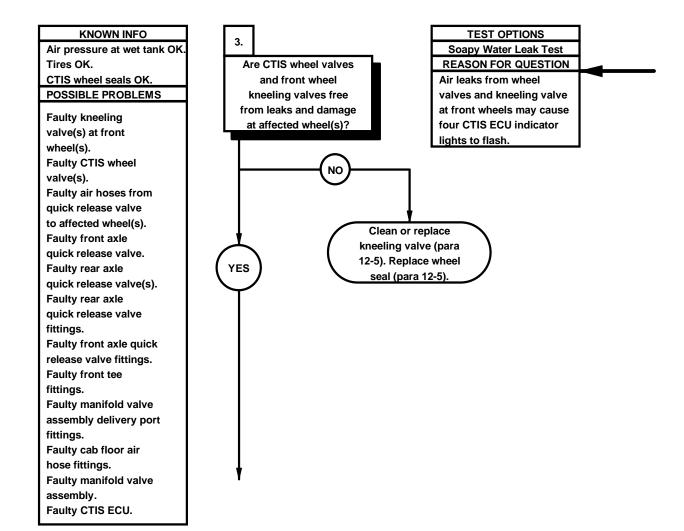


CTIS WHEEL SEAL TEST

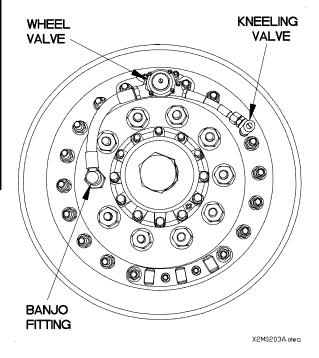
- (1) Check axle hubs for presence of oil leaks that indicate a damaged CTIS wheel seal.
- (2) Ensure wheel is at rest with hub plug at top of hub.
- (3) Remove hub oil plug.
- (4) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
- (5) Determine if air is escaping from hub. If air escapes,replace CTIS wheel seal (para 10-3).
- (6) Install hub oil plug on wheel hub.



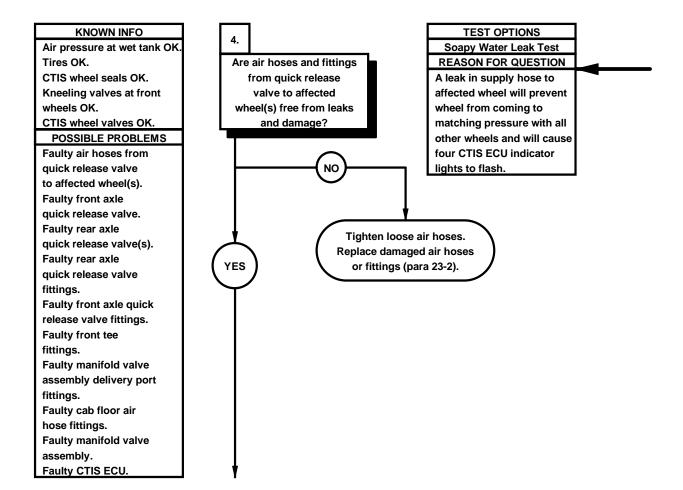
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



- (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)

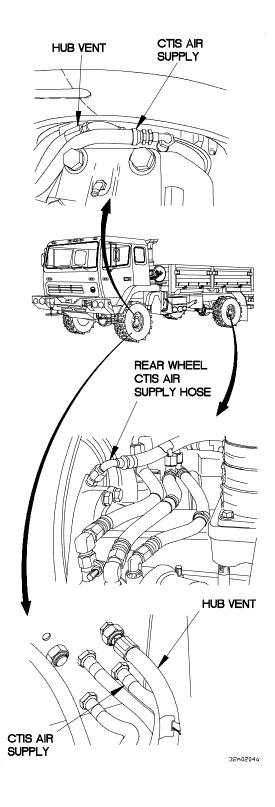


- (1) If affected wheel is on intermediate axle
 - (a) Apply soapy water solution to air supply fittings at affected wheel(s).
 - (b) Select RUN FLAT at CTIS ECU (TM 9-2320-365-10).
 - (c) Check for bubbles indicating leaks at fittings.
 - (d) Inspect air hose from wheel to quick release valve for leaks 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)

KNOWN INFO

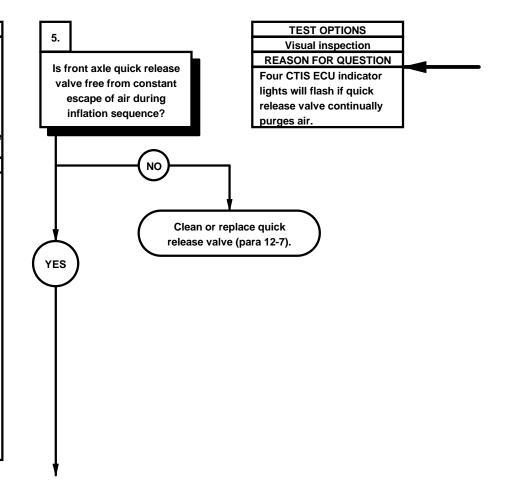
Air pressure at wet tank OK. Tires OK.

CTIS wheel seals OK. Kneeling valves at front wheels OK.

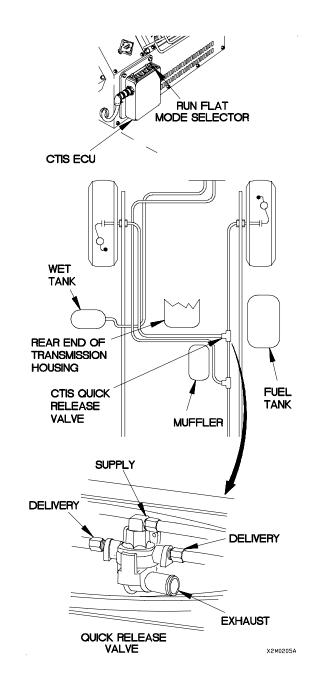
CTIS wheel valves OK.
Air hoses from quick release valve to affected wheels OK.

POSSIBLE PROBLEMS

Faulty front axle quick release valve. Faulty rear axle quick release valve(s). Faulty rear axle quick release valve fittings. Faulty front axle quick release valve fittings. Faulty front tee fittings. Faulty manifold valve assembly delivery port fittings. Faulty cab floor air hose fittings. Faulty manifold valve assembly. Faulty CTIS ECU.



- (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)

KNOWN INFO

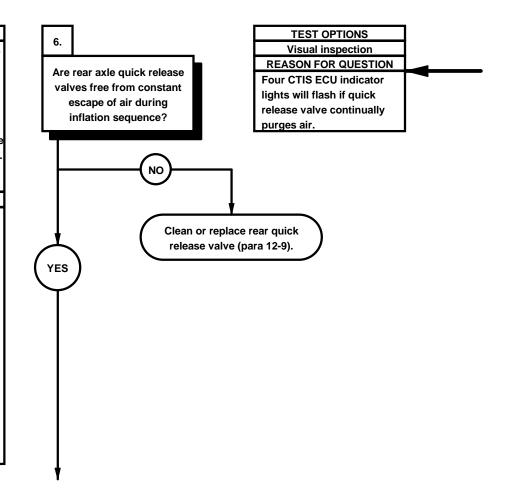
Air pressure at wet tank OK. Tires OK.

CTIS wheel seals OK. Kneeling valves at front wheels OK.

CTIS wheel valves OK.
Air hoses from quick release valve to affected wheels OK.
Front axle quick release valve OK.

POSSIBLE PROBLEMS

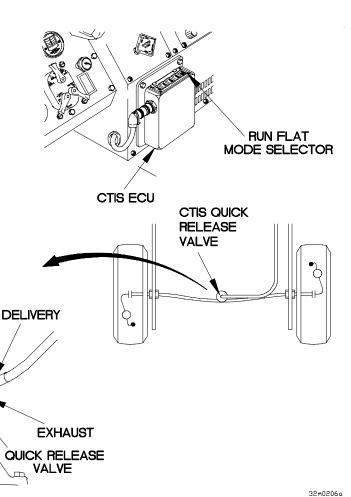
Faulty rear axle quick release valve(s). Faulty rear axle quick release valve fittings. Faulty front axle quick release valve fittings. Faulty front tee fittings. Faulty manifold valve assembly delivery port fittings. Faulty cab floor air hose fittings. Faulty manifold valve assembly. Faulty CTIS ECU.



- (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.

SUPPLY

DELIVERY

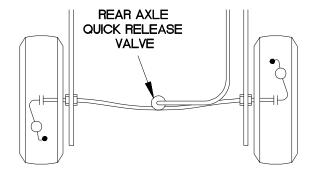


Faulty CTIS ECU.

m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

KNOWN INFO **TEST OPTIONS** Air pressure at wet tank OK. Soapy Water Leak Test **REASON FOR QUESTION** Tires OK. Are rear axle quick CTIS wheel seals OK. CTIS may be unable to release valve fittings Kneeling valves at front reach selected pressure free from leaks and wheels OK. and four CTIS ECU indicator damage? CTIS wheel valves OK. lights will flash if air leaks Air hoses from quick release from CTIS air hoses during valve to affected wheels OK. inflation/deflation sequence. NO Front axle quick release valve OK. Rear axle quick release valves OK. POSSIBLE PROBLEMS Tighten loose air hoses. Faulty rear axle Replace damaged air hoses quick release valve or fittings (para 23-2). YES fittings. Faulty front axle quick release valve fittings. Faulty front tee fittings. Faulty manifold valve assembly delivery port fittings. Faulty cab floor air hose fittings. Faulty manifold valve assembly.

- (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)

KNOWN INFO

Air pressure at wet tank OK.
Tires OK.
CTIS wheel seals OK.

Kneeling valves at front wheels OK.

CTIS wheel valves OK.
Air hoses from quick release valve to affected wheels OK.
Front axle quick release valve OK.

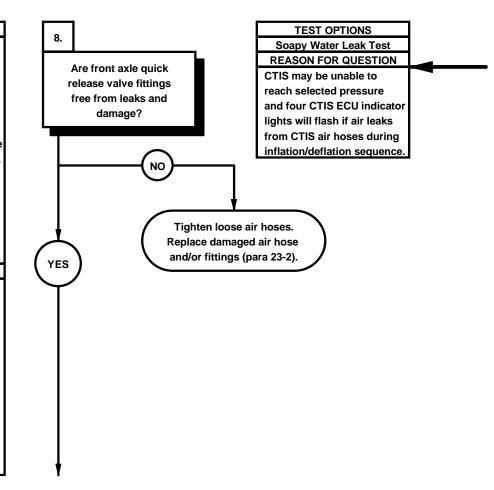
Rear axle quick release valves OK.

Rear axle quick release valve fittings OK.

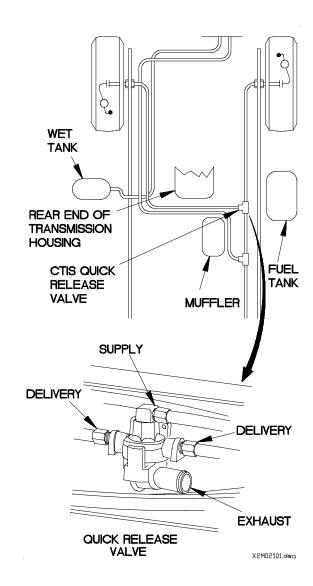
POSSIBLE PROBLEMS

Faulty front axle quick release valve fittings.
Faulty front tee fittings.
Faulty manifold valve assembly delivery port fittings.
Faulty cab floor air hose fittings.
Faulty manifold valve assembly.

Faulty CTIS ECU.



- (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)

KNOWN INFO

Air pressure at wet tank OK. Tires OK.

CTIS wheel seals OK. Kneeling valves at front wheels OK.

CTIS wheel valves OK.
Air hoses from quick release
valve to affected wheels OK.
Front axle quick release
valve OK.

Rear axle quick release valves OK.

Rear axle quick release valve fittings OK.
Front quick release valve fittings OK.

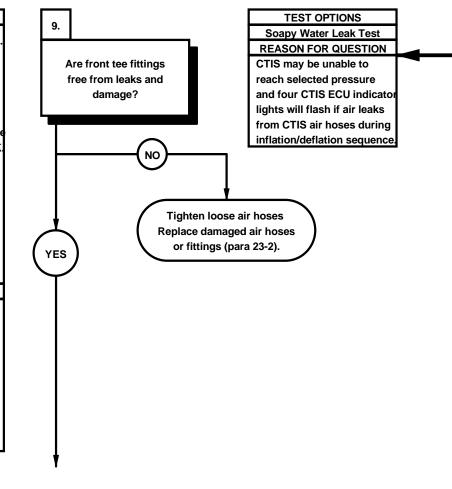
POSSIBLE PROBLEMS

Faulty front tee fittings.

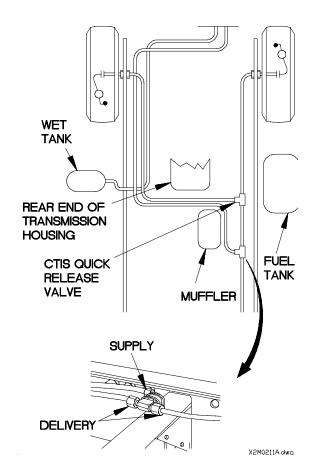
Faulty manifold valve assembly delivery port fittings.

Faulty cab floor air hose fittings.
Faulty manifold valve

assembly.
Faulty CTIS ECU.



- (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.



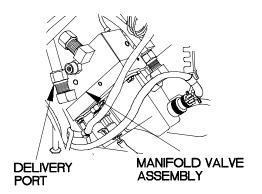
Faulty cab floor air hose fittings.
Faulty manifold valve

assembly.
Faulty CTIS ECU.

m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

KNOWN INFO **TEST OPTIONS** 10. **Soapy Water Leak Test** Air pressure at wet tank OK. **REASON FOR QUESTION** Tires OK. Are manifold valve assembly CTIS may be unable to CTIS wheel seals OK. delivery port fittings free reach selected pressure Kneeling valves at front from leaks and damage? and four CTIS ECU indicator wheels OK. lights will flash if air leaks CTIS wheel valves OK. from CTIS air hoses during Air hoses from quick release inflation/deflation sequence. valve to affected wheels OK NO Front axle quick release valve OK. Rear axle quick release valves OK. Tighten loose air hoses. Rear axle quick release Replace damaged air hoses valve fittings OK. or fittings (para 23-2). YES Front quick release valve fittings OK. Front tee fittings OK. **POSSIBLE PROBLEMS** Faulty manifold valve assembly delivery port fittings.

- (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.

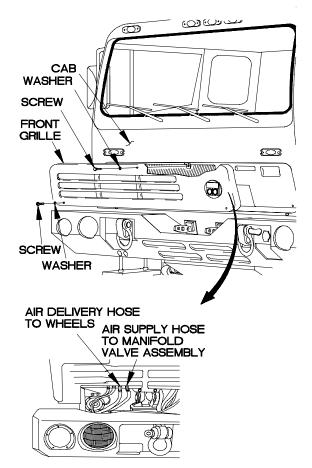


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m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)

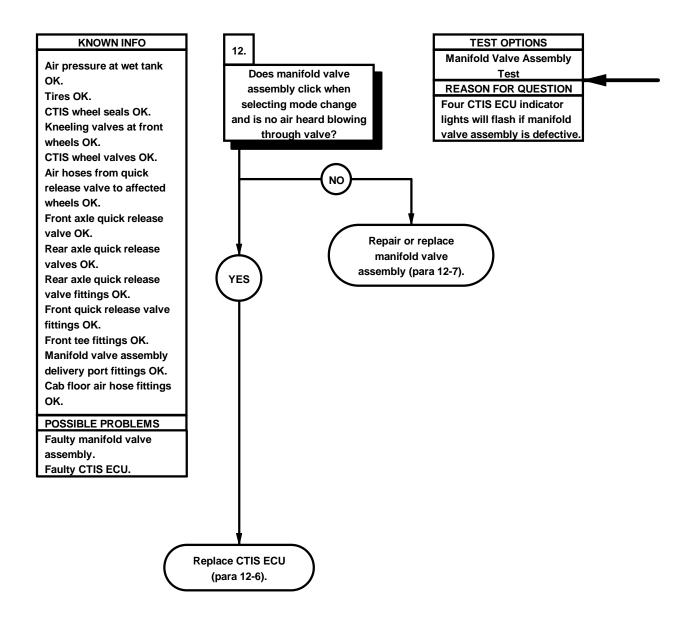
KNOWN INFO **TEST OPTIONS** 11. Air pressure at wet tank OK. **Soapy Water Leak Test REASON FOR QUESTION** Tires OK. CTIS wheel seals OK. Are cab floor supply hose CTIS may be unable to Kneeling valves at front fittings free from leaks reach selected pressure wheels OK. and four CTIS ECU indicator and damage? CTIS wheel valves OK. lights will flash if air leaks Air hoses from quick release from CTIS air hoses during valve to affected wheels OK. inflation/deflation sequence. NO Front axle quick release valve OK. Rear axle quick release valves OK. Rear axle quick release Tighten loose air hoses. Replace damaged air hoses valve fittings OK. Front quick release valve or fittings (para 23-2). YES fittings OK. Front tee fittings OK. Manifold valve assembly delivery port fittings OK. **POSSIBLE PROBLEMS** Faulty cab floor air hose fittings. Faulty manifold valve assembly. Faulty CTIS ECU.

- (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).



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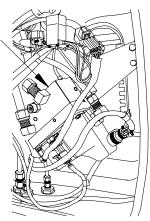
m2. FOUR CTIS ECU INDICATOR LIGHTS FLASHING (CONT)



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



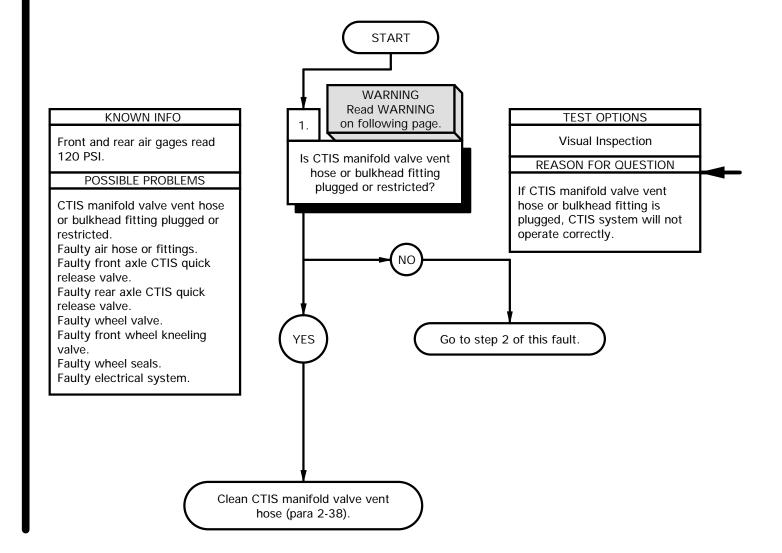
32M0214A

INITIAL SETUP

Equipment Conditions
Engine shut down (TM 9-2320-365-10).
Kick panel removed (para 16-3).

Personnel Required (2)

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



WARNING

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

- (1) Check to see if vehicles is equipped vent cover and vent cover is in good condition.
- (2) If vehicle is not equipped with vent cover or vent cover is damaged perform steps (4) through (18) of this test.
- (3) If vehicle is equipped with vent cover and vent cover is in good condition, go to step 2 of this fault.
- (4) Disconnect CTIS manifold valve vent hose from CTIS manifold valve assembly.
- (5) Disconnect CTIS manifold valve vent hose from bulkhead fitting in cab floor.
- (6) Check to see if CTIS manifold valve vent hose or bulkhead fitting is plugged or restricted.
- (7) If CTIS manifold vale vent hose and bulkhead fitting are not plugged or restricted, go to step 2 of this fault.
- (8) If CTIS manifold valve vent hose or bulkhead fitting is plugged or restricted, clean CTIS manifold valve vent hose and bulkhead fitting (para 2-38).
- (9) Connect CTIS manifold valve vent hose to CTIS manifold valve assembly.
- (10) Connect CTIS manifold valve vent hose to bulkhead fitting in cab floor.
- (11) Remove two screws and washer from front grille.
- (12) Remove screw, washer, and front grille from cab.

NOTE

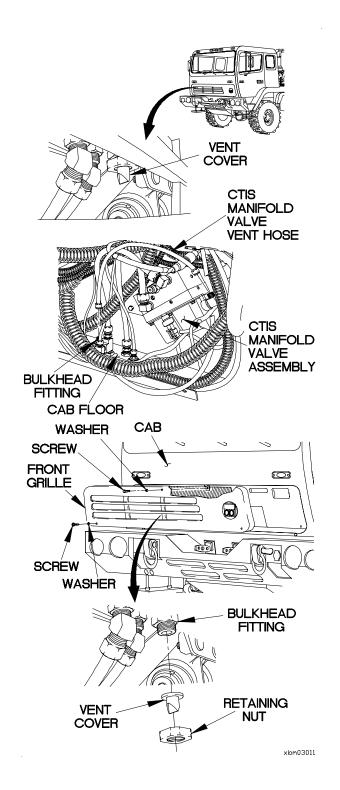
Perform step (13) if vent cover is damaged.

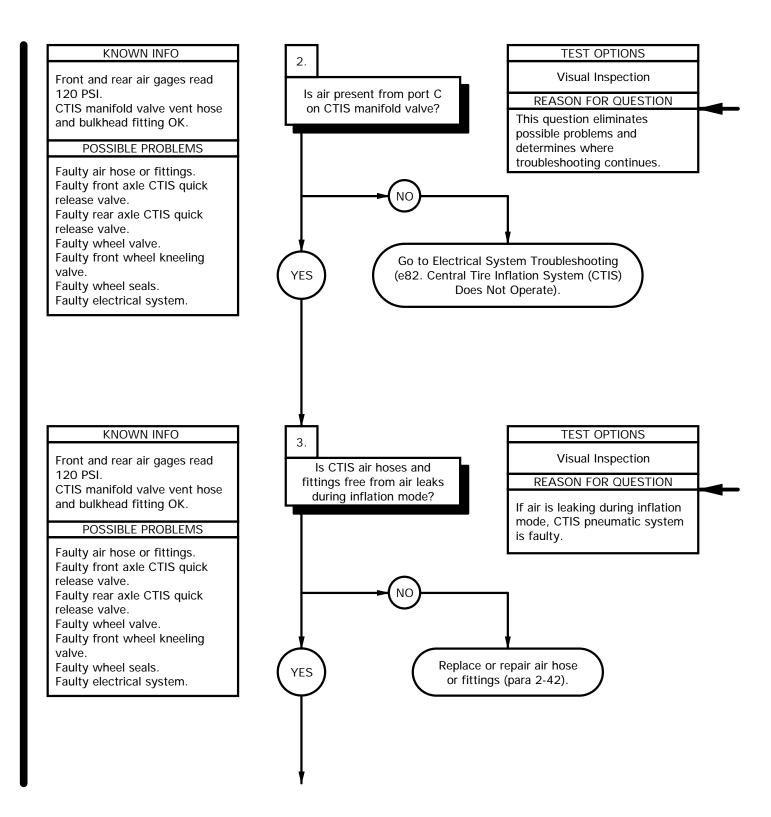
(13) Remove retaining nut and vent cover from bulkhead fitting. Discard retaining nut and vent cover.

NOTE

Part number 12422659 is required for step (14).

- (14) Install vent cover on bulkhead fitting with retaining nut.
- (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).



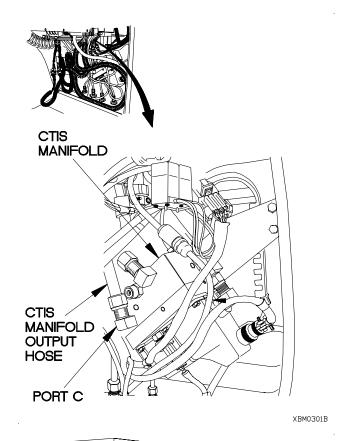


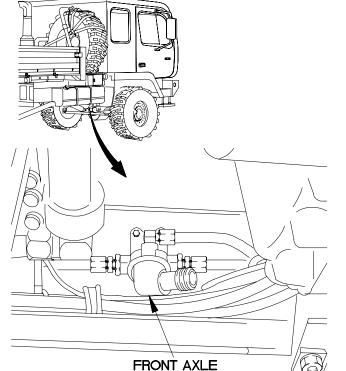
- Disconnect CTIS manifold output hose from CTIS manifold valve assembly port C.
- (2) Start engine (TM 9-2320-365-10).
- (3) Select CTIS inflation mode (TM 9-2320-365-10).
- (4) Wait for CTIS to cycle and check for quick bursts of air to expel from CTIS manifold valve assembly port C.
- (5) Check for five CTIS ECU indicator lights flashing.
- (6) If air does not expel from CTIS manifold valve assembly or CTIS ECU does not have five flashing indicator lights, go to Electrical System Troubleshooting (e82. Central Tire Inflation System (CTIS) Does Not Operate).
- (7) Shut down engine (TM 9-2320-365-10).
- (8) Connect CTIS manifold output hose to CTIS manifold valve assembly port C.
- (9) Install kick panel (para 16-3).



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.

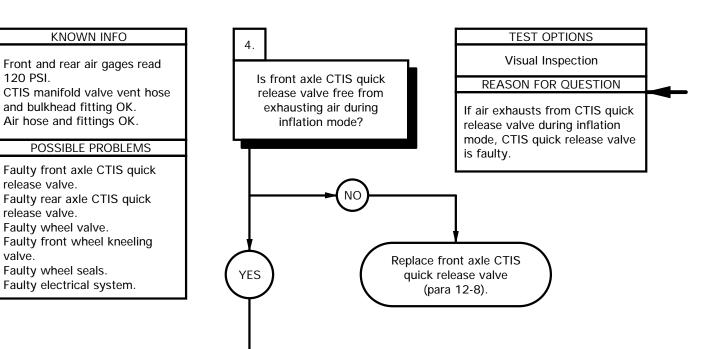
- (1) Start engine (TM 9-2320-365-10).
- (2) Set CTIS ECU to RUN FLAT mode (TM 9-2320-365-10).
- (3) Check CTIS air hoses and fittings for leaks (Table 23-2 Central Tire Inflation System (CTIS) Air Hose Locations).
- (4) If any leaks are found, repair or replace CTIS air hose and/or fittings (para 2-42).
- (5) Shut down engine (TM 9-2320-365-10).



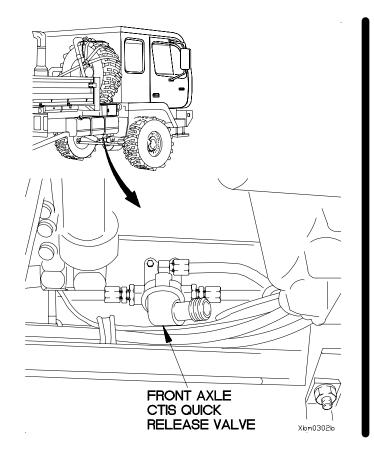


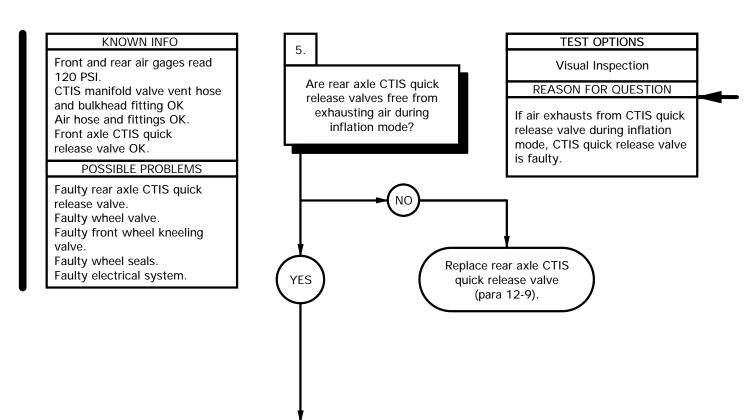
CTIS QUICK RELEASE VALVE

Xbm0302b

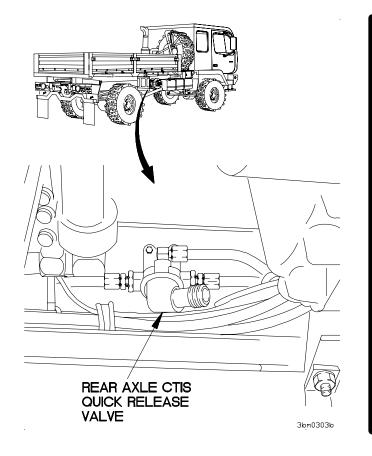


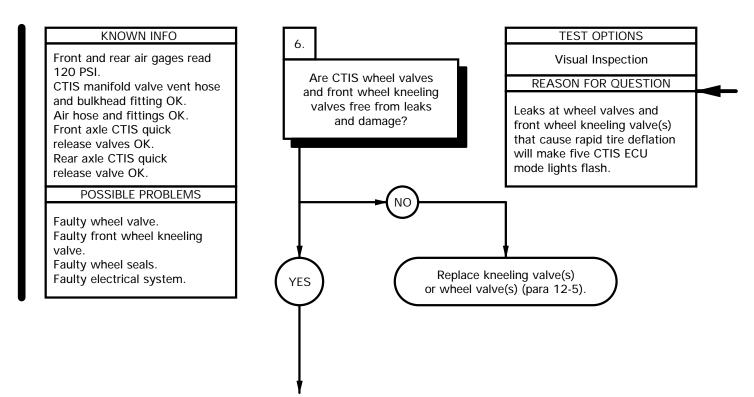
- (1) Start engine (TM 9-2320-365-10).
- (2) Select CTIS inflation mode (TM 9-2320-365-10).
- (3) Check for air escaping from front axle CTIS quick release valve during inflation mode.
- (4) If air is escaping from front axle CTIS quick release valve during inflation mode, replace front axle CTIS quick release valve (para 12-8).
- (5) Shut down engine (TM 9-2320-365-10).



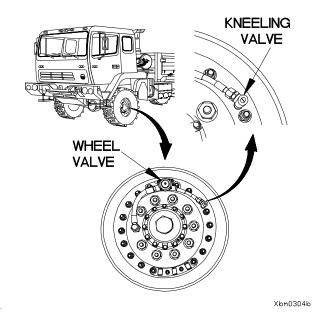


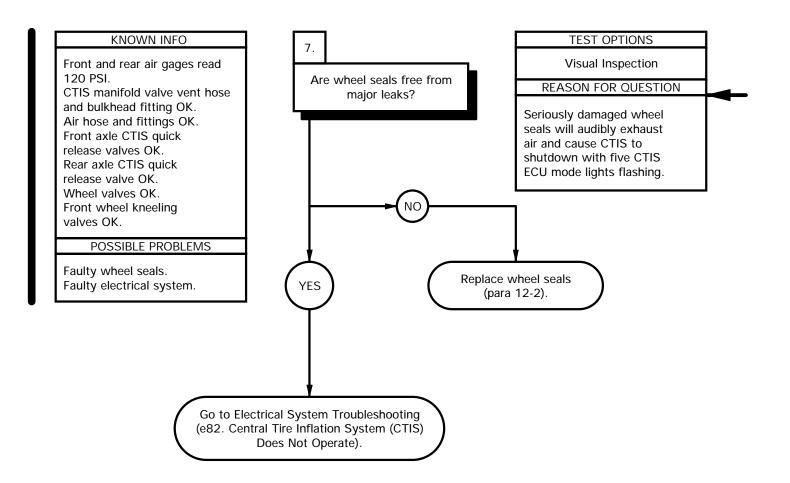
- (1) Start engine (TM 9-2320-365-10).
- (2) Select CTIS inflation mode (TM 9-2320-365-10).
- (3) Check for air escaping from rear axle CTIS quick release valves during inflation mode.
- (4) If air is escaping from rear axle CTIS quick release valves during inflation mode, replace rear axle CTIS quick release valve (para 12-9).
- (5) Shut down engine (TM 9-2320-365-10).



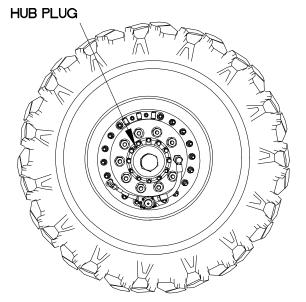


- (1) Start engine (TM 9-2320-365-10).
- (2) Select CTIS inflation mode (TM 9-2320-365-10).
- (3) Listen for audible escape of air at kneeling valve (front wheels only) and CTIS wheel valves on each wheel.
- (4) If audible escape of air is present, replace wheel kneeling valve(s) or wheel valve(s) (para 12-5). (5) Shut down engine (TM 9-2320-365-10).





- (1) Move vehicle until hub plug on wheel is in 12 o'clock position.
- (2) Remove wheel hub plug.
- (3) Start engine (TM 9-2320-365-10).
- (4) Select CTIS inflation mode (TM 9-2320-365-10).
- (5) Listen at wheel hub for audible escape of air.
- (6) If audible escape of air is present, replace wheel seal (para 12-2).
- (7) Install wheel hub plug.
- (8) Perform steps 1 thru 5 on remaining wheels.
- (9) If no air is audibly present from wheel hub, perform Electrical System Troubleshooting (e82. Central Tire Inflation System (CTIS) Does Not Operate).
- (10) Shut down engine (TM 9-2320-365-10).



Xbm0305b

m4. CTIS REPEATEDLY RESUMES CYCLING 30 SECONDS AFTER INDICATOR LIGHTS STOP FLASHING

INITIAL SETUP

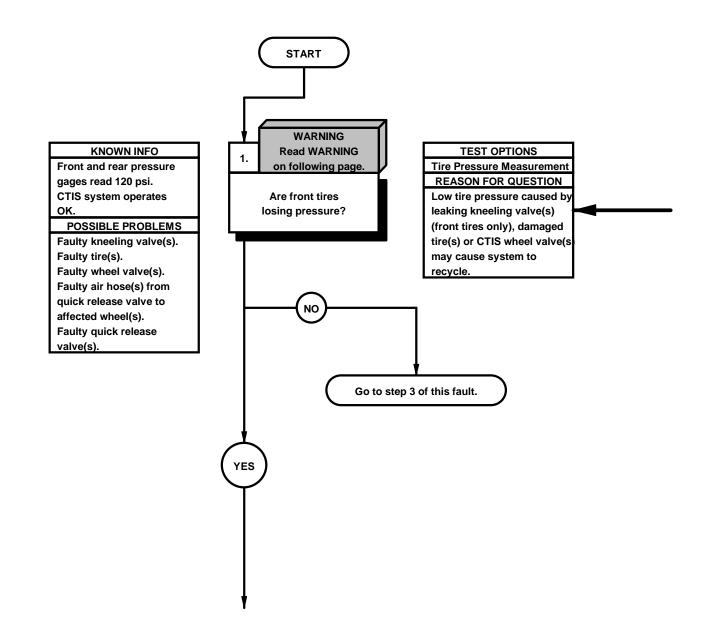
Equipment Conditions Tools and Special Tools

Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C)

Goggles, Industrial (Item 15, Appendix C)

Materials/Parts Gage, Tire Pressure (Item 11, Appendix C)

Soap, Laundry (Item 69, Appendix D) Pan, Wash (Item 25, Appendix C)



WARNING

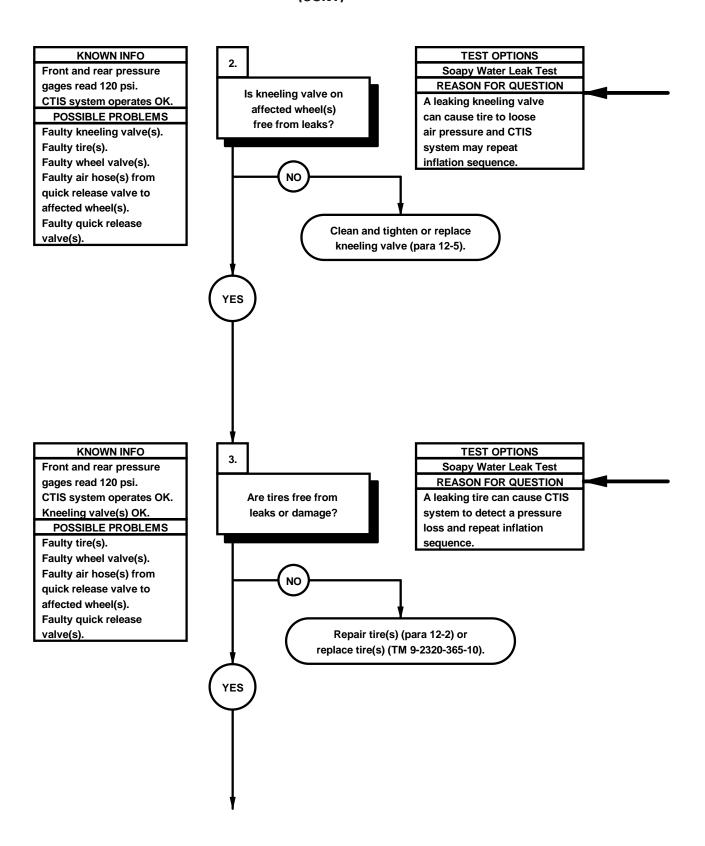
Wear appropriate eye protection when working under vehicle and around CTIS system due to the possibility of falling and/or blown debris. Failure to comply may result in injury to personnel.

NOTE

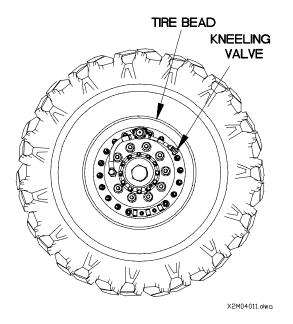
CTIS ECU checks tire pressure 30 seconds after completing a pressure change sequence. If tire pressures are the same, system reverts to checking pressure every 15 minutes. If tires are losing pressure, ECU inflates tires and checks pressure again in 30 seconds. If CTIS has to repeat this process more 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)



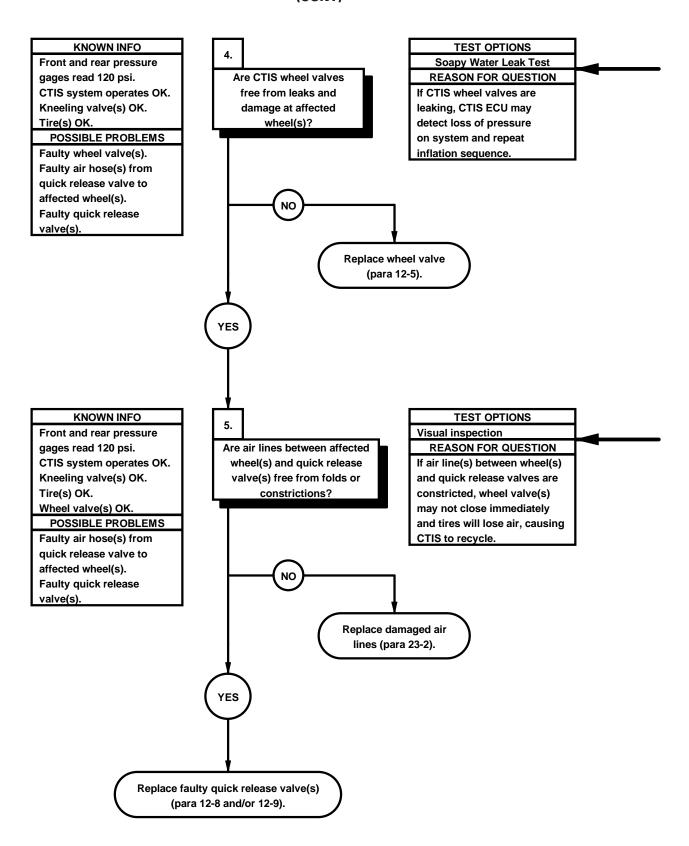
- (1) Check kneeling valve is tight and secure in valve seat.
- (2) Apply soapy water to valve and check for leaks.



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)

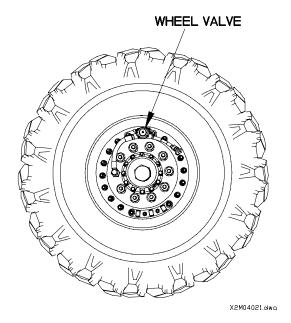


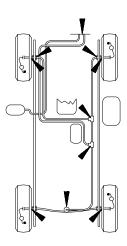
- (1) Apply soapy water solution to CTIS fittings on outside of wheel.
- (2) Observe fittings for bubbles indicating leaks.
- (3) With wheel valve still connected to tire, disconnect wheel valve air supply line from hub at banjo bolt.
- (4) Place open end of air supply line in container of water. Look for air bubbles.
- (5) Persistent bubbles from air line indicate faulty wheel valve.
- (6) Connect wheel valve to hub at banjo bolt.

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 pressuri ed causing wheel valve to remain partially open and tire to lose pressure. System will cycle again when low pressure is checked after 30 seconds.

- 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

32M0405

m5. CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU INDICATES NO FAULT CODE BUT SYSTEM FAILS TO INFLATE OR DEFLATE

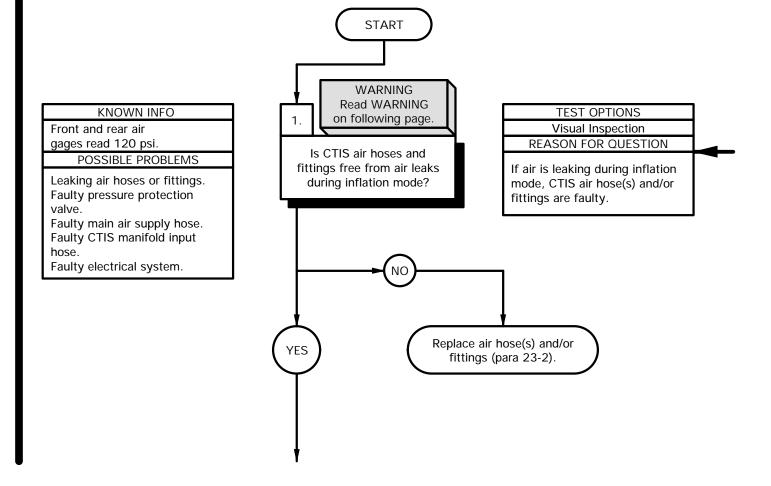
INITIAL SETUP

Equipment Conditions
Engine shut down (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)
Pan, Wash (Item 25, Appendix C)
Goggles, Industrial (Item 15, Appendix C)

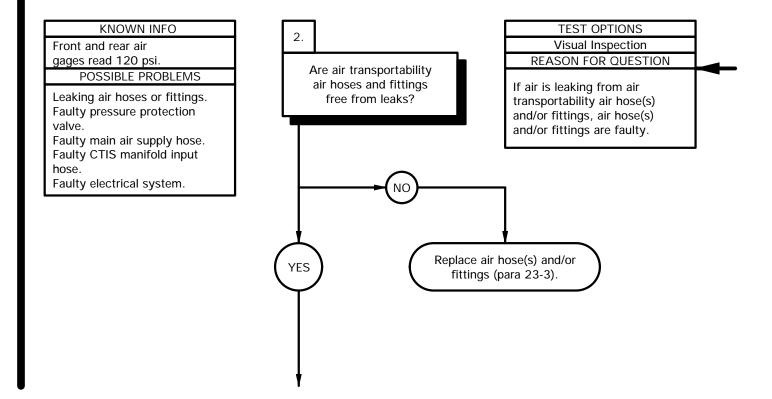


WARNING

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

- (1) Start engine (TM 9-2320-365-10).
- (2) Set CTIS ECU to RUN FLAT mode (TM 9-2320-365-10).
- (3) Apply soapy water solution to CTIS air hoses and fittings (Table 23-2 Central Tire Inflation System (CTIS) Air Hose Locations).
- (4) Check for soap bubbles indicating leaks.
- (5) If any leaks are found, replace CTIS air hose and/or fittings (para 23-2).
- (6) Shut down engine (TM 9-2320-365-10).

m5. CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU INDICATES NO FAULT CODE BUT SYSTEM FAILS TO INFLATE OR DEFLATE (CONT)

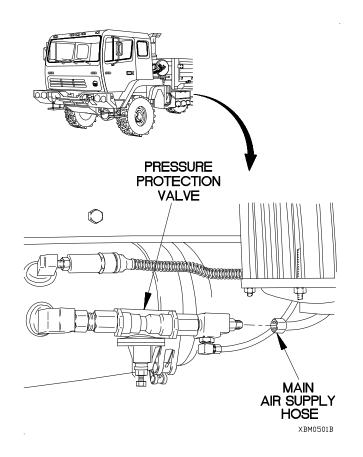


- (1) Start engine (TM 9-2320-365-10).
- (2) Apply soapy water solution to air transportability air hoses and fittings (Table 23-3. Air Transportability Air Hose Locations).
- (3) Check for soap bubbles indicating leaks.
- (4) If any leaks are found, replace air transportability air hose and/or fittings (para 23-3).
- (5) Shut down engine (TM 9-2320-365-10).

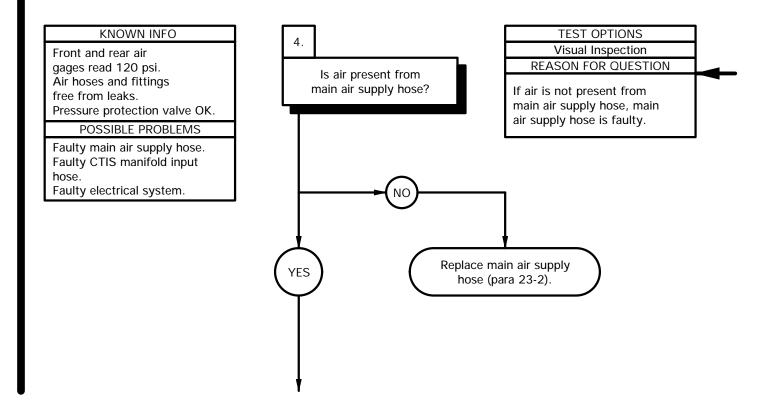
m5. CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU INDICATES NO FAULT CODE BUT SYSTEM FAILS TO INFLATE OR DEFLATE (CONT)

KNOWN INFO **TEST OPTIONS** 3. Visual Inspection Front and rear air gages read 120 psi. **REASON FOR QUESTION** Is air present from Air hoses and fittings pressure protection If air is not present from free from leaks. valve? pressure protection valve, POSSIBLE PROBLEMS pressure protection valve Faulty pressure protection is faulty. Faulty main air supply hose. Faulty CTIS manifold input hose. Faulty electrical system. Replace pressure YES protection valve (para 11-27).

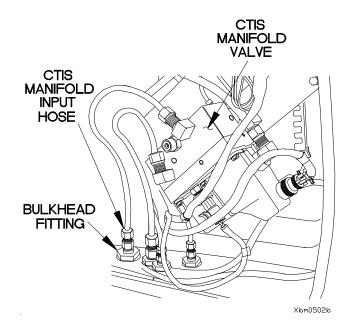
- (1) Disconnect main air supply hose from pressure protection valve.
- (2) Start engine (TM 9-2320-365-10).
- (3) If air is not present from pressure protection valve, replace pressure protection valve (para 11-27).
- (4) Shut down engine (TM 9-2320-365-10).
- (5) Connect main air supply hose to pressure protection valve.



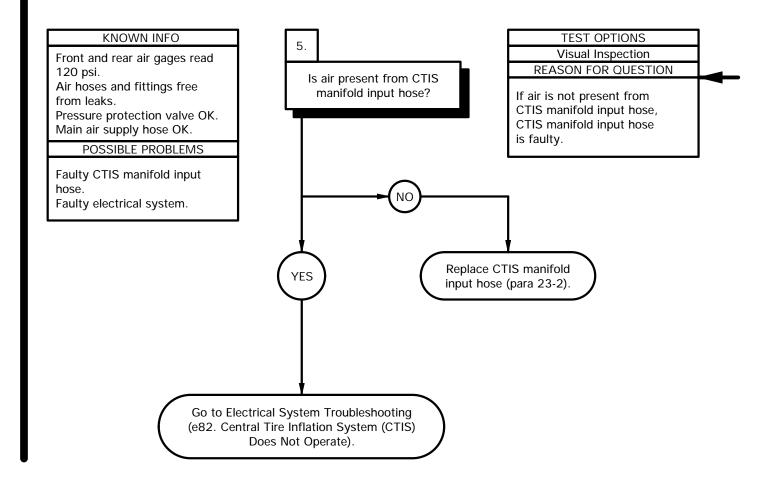
m5. CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU INDICATES NO FAULT CODE BUT SYSTEM FAILS TO INFLATE OR DEFLATE (CONT)



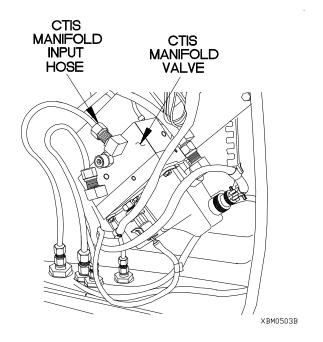
- (1) Remove kick panel (para 16-3).
- (2) Disconnect CTIS manifold input hose from cab bulkhead fitting.
- (3) Start engine (TM 9-2320-365-10).
- (4) If air is not present from cab bulkhead fitting, replace main air supply hose (para 23-2).
- (5) Shut down engine (TM 9-2320-365-10).
- (6) Connect CTIS manifold input hose to cab bulkhead fitting.



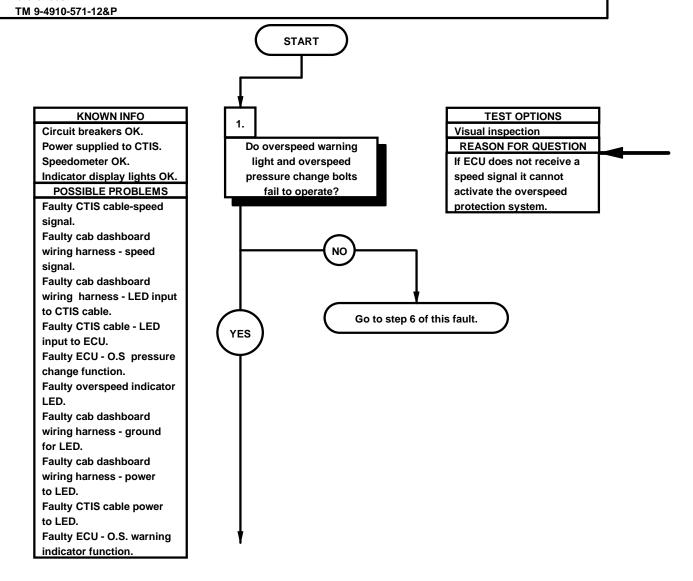
m5. CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU INDICATES NO FAULT CODE BUT SYSTEM FAILS TO INFLATE OR DEFLATE (CONT)



- (1) Disconnect CTIS manifold input hose from CTIS manifold valve.
- (2) Start engine (TM 9-2320-365-10).
- (3) If air is not present from CTIS manifold input hose, replace CTIS manifold input hose (para 23-2).
- (4) If air is present from CTIS manifold input hose go to Electrical Troubleshooting (e82. Central Tire Inflation System (CTIS) Does Not Operate).
- (5) Shut down engine (TM 9-2320-365-10).
- (6) Connect CTIS manifold input hose to CTIS manifold valve.
- (7) Install kick panel (para 16-3).



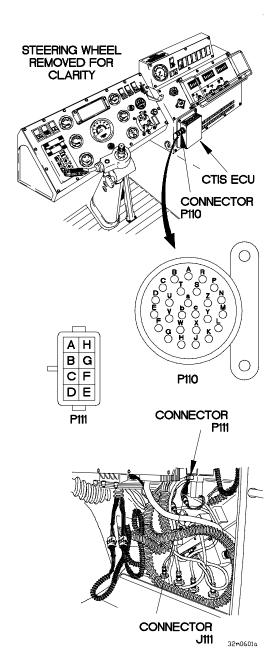
m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE INITIAL SETUP Equipment Conditions Engine running (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) Multimeter, Digital (Item 22, Appendix C) Personnel Required Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C) (2) Wrench, Torque, 0-75 lb-in. (Item 86, Appendix B) STE/ICE-R (Item 39, Appendix C)

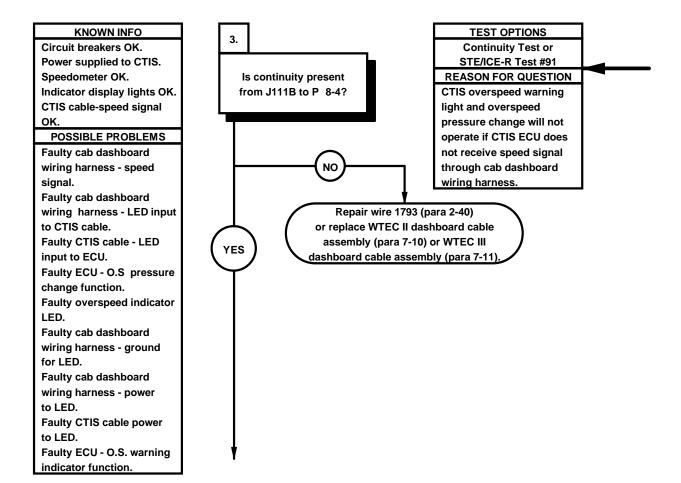


- (1) Select -C mode at CTIS ECU (TM 9-2320-365-10).
- (2) Turn on headlights (TM 9-2320-365-10).
- (3) Perform road test.
- (4) Increase speed to 40 mph.
- (5) Check if overspeed warning light flashes.
- (6) After about one minute, check if overspeed pressure change is activated to raise tire pressure 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).

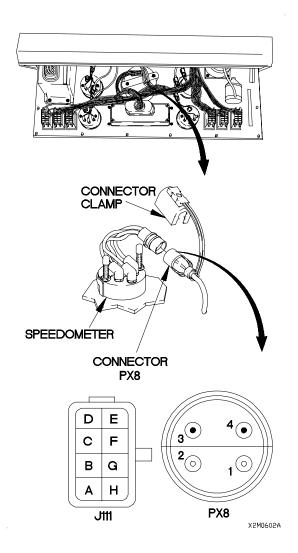
KNOWN INFO TEST OPTIONS 2. Circuit breakers OK. **Continuity Test or** Power supplied to CTIS. STE/ICE-R Test #91 Speedometer OK. Is continuity present **REASON FOR QUESTION** Indicator display lights OK. from P110U to P111B? CTIS overspeed warning POSSIBLE PROBLEMS light and overspeed Faulty CTIS cable-speed pressure change will not operate if CTIS ECU does signal. Faulty cab dashboard not receive speed signal wiring harness - speed through CTIS cable signal. assembly. Faulty cab dashboard wiring harness - LED input Repair wire 1528 (para 2-40) to CTIS cable. or replace CTIS cable Faulty CTIS cable - LED YES assembly (para 7-53). input to ECU. Faulty ECU - O.S pressure change function. Faulty overspeed indicator LED. Faulty cab dashboard wiring harness - ground for LED. Faulty cab dashboard wiring harness - power to LED. Faulty CTIS cable power to LED. Faulty ECU - O.S. warning indicator function.

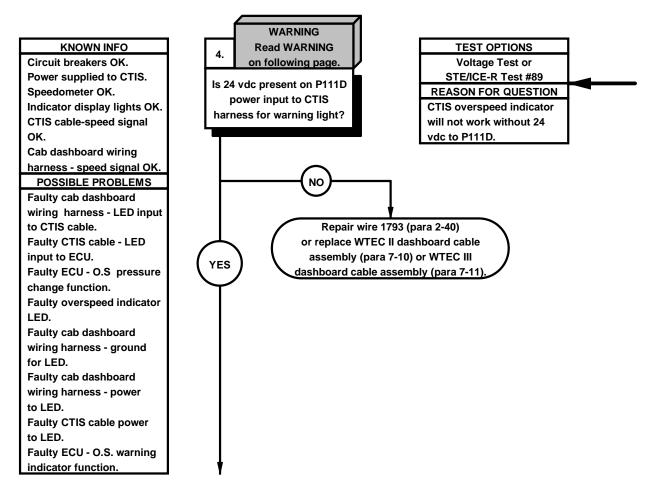
- (1) Remove kick panel (para 16-3).
- (2) Disconnect connector P110 from CTIS ECU.
- (3) Disconnect connector P111 from connector
- (4) Set multimeter to ohms.
- (5) Connect positive (+) probe of multimeter to connector P110U.
- (6) Connect negative (-) probe of multimeter to connector P111B and note reading on multimeter.
- (7) If continuity is not present, repair wire 1528 (para 2-40) or replace CTIS cable assembly (para 7-53).





- (1) Remove instrument panel assembly for access (para 7-15).
- (2) Disconnect connector clamp from speedometer connector.
- (3) Disconnect connector P 8 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 P 8-4 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 P 8 to speedometer.
- (9) Connect connector clamp to speedometer connector.
- (10) Install instrument panel assembly (para 7-15).





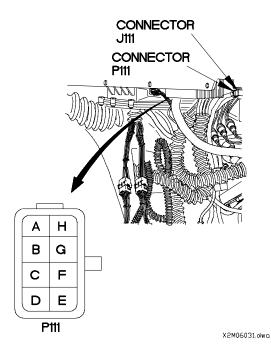
WARNING

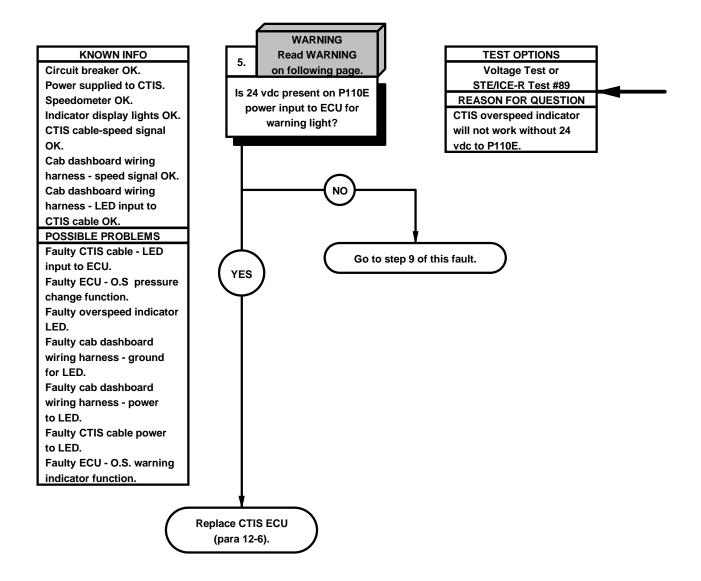
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock.

VOLTAGE TEST

- (1) 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.





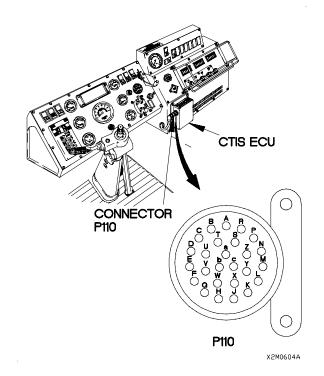
WARNING

Remove 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.



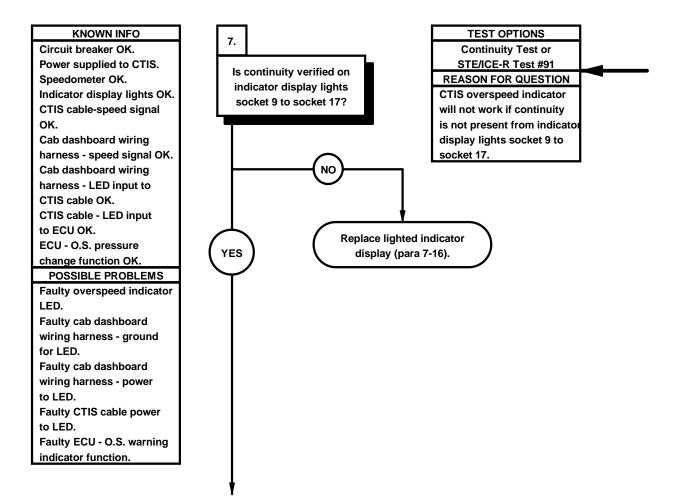
to LED.

Faulty ECU - O.S. warning indicator function.

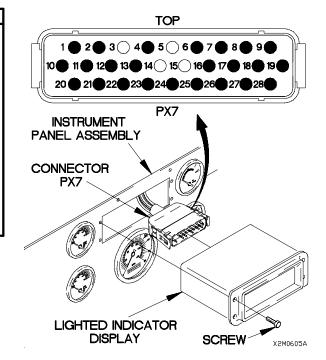
m6. CTIS OVERSPEED WARNING LIGHT DOES NOT ILLUMINATE AND/OR OVERSPEED PRESSURE CHANGE (CONT)

KNOWN INFO **TEST OPTIONS** 6. Circuit breaker OK. Visual inspection Power supplied to CTIS. **REASON FOR QUESTION** Was the overspeed light Speedometer OK. If overspeed warning light the function that failed Indicator display lights OK. failed, warning lamp or during road test? CTIS cable-speed signal warning lamp circuit may be faulty. Cab dashboard wiring harness - speed signal OK. Cab dashboard wiring NO harness - LED input to CTIS cable OK. CTIS cable - LED input to ECU OK. Replace CTIS ECU POSSIBLE PROBLEMS YES (para 12-6). Faulty ECU - O.S pressure change function. Faulty overspeed indicator LED. Faulty cab dashboard wiring harness - ground for LED. Faulty cab dashboard wiring harness - power to LED. Faulty CTIS cable power

- (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.



- (1) Remove four screws from lighted indicator display.
- (2) Remove lighted indicator display from instrument panel assembly.
- (3) Disconnect connector P 7 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).



KNOWN INFO

Circuit breaker OK.

Power supplied to CTIS.

Speedometer OK.

Indicator display lights OK.

CTIS cable-speed signal

OK.

Cab dashboard wiring harness - speed signal OK.
Cab dashboard wiring harness - LED input to
CTIS cable OK.
CTIS cable - LED input to ECU OK.
ECU - O.S. pressure

ecu - O.S. pressure change function OK. Overspeed indicator LED OK.

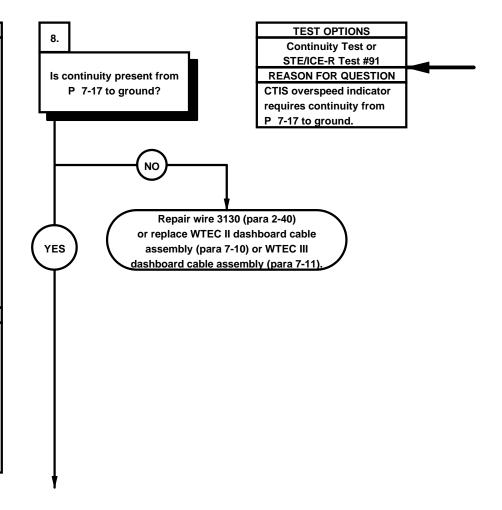
POSSIBLE PROBLEMS

Faulty cab dashboard wiring harness - ground for LED.

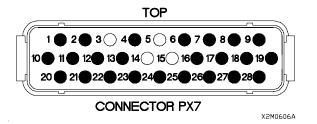
Faulty cab dashboard wiring harness - power to LED.

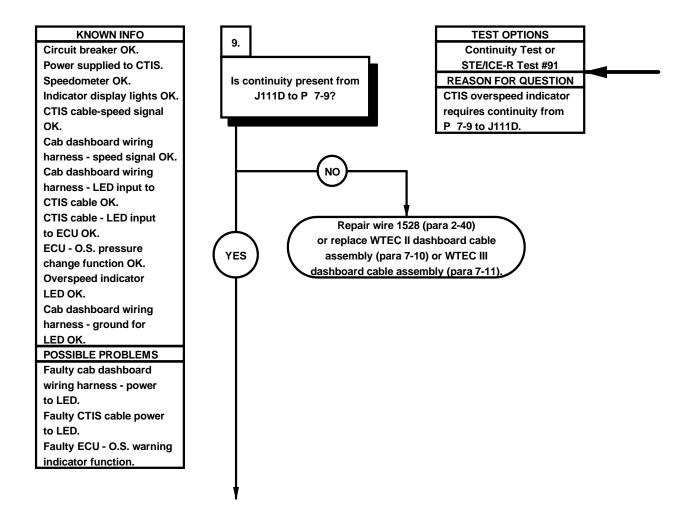
Faulty CTIS cable power to LED.

Faulty ECU - O.S. warning indicator function.

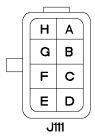


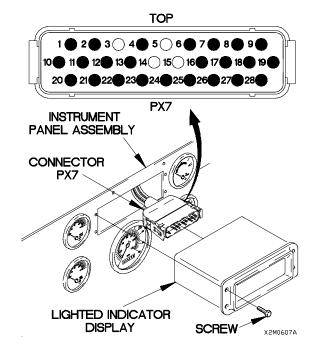
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector P 7-17.
- (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (4) If continuity is not present, repair wire 3130 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

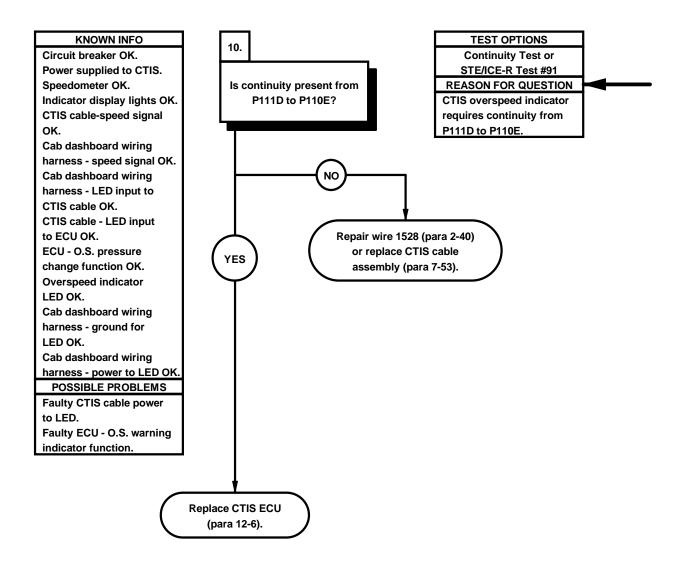




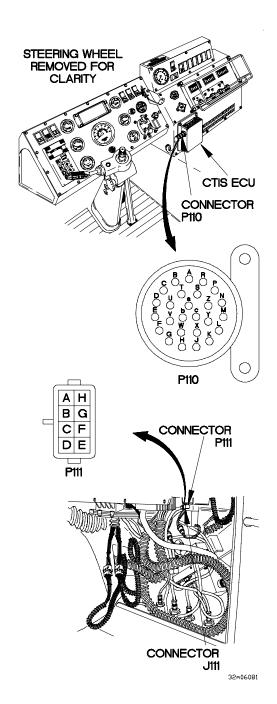
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector P 7-9.
- (3) Connect negative (-) probe of multimeter to connector J111D and note reading on multimeter.
- (4) If continuity is not present, repair wire 1528 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).
- (5) Connect lighted indicator display to connector P 7.
- (6) Position lighted indicator display in instrument panel assembly with four screws.
- (7) Tighten four screws to 6-10 lb-in. (1 N m).







- (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 2-51, lists faults for the axles of the vehicle.

Table 2-51. Axle Fault Index

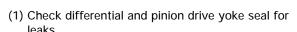
Fault No.		Description	Page
	xle Differential(s) Noisy		2-1896

n1. AXLE DIFFERENTIAL(S) NOISY **INITIAL SETUP Equipment Conditions** Tools and Special Tools Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) START WARNING Read WARNING KNOWN INFO TEST OPTIONS on following page. 1. Nothing Visual inspection Are planetary wheel ends, POSSIBLE PROBLEMS **REASON FOR QUESTION** and wheel bearings free Leaking planetary wheel ends from leaks? Leaks may indicate worn and/or wheel bearings. or damaged seals and cause Leaking axle differential and/or planetary wheel ends or wheel pinion drive yoke. bearings to make noise. Damaged axle differential. Low or contaminated oil in differential. Faulty pinion drive yoke. YES Replace seal (para 10-2). KNOWN INFO **TEST OPTIONS** No visible leaks of planetary Visual inspection wheel ends or wheel bearings. Are axle differentials and **REASON FOR QUESTION** pinion drive yoke free POSSIBLE PROBLEMS from leaks? Leaks may indicate worn Leaking axle differential and/or or damaged seals and cause pinion drive yoke. axle differential or pinion drive Damaged axle differential. yoke to make noise. Low or contaminated oil in differential. Faulty pinion drive yoke. YES Notify DS Maintenance.

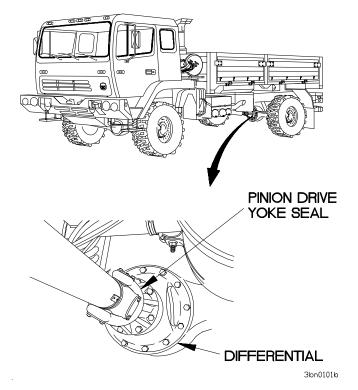
WARNING

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

- (1) Check planetary wheel ends for leaks (para 10-2).
- (2) Check wheel bearings for leaks (para 10-2).
- (3) If leaks are found replace seal(s) (para 10-2).



(2) If leaks are found, notify DS maintenance.



n1. AXLE DIFFERENTIAL(S) NOISY (CONT)

KNOWN INFO

No visible leaks of planetary wheel ends or wheel bearings. No visible leaks of axle differential or pinion drive yoke.

POSSIBLE PROBLEMS

Damaged axle differential. Low or contaminated oil in axle differential. Faulty pinion drive yoke.

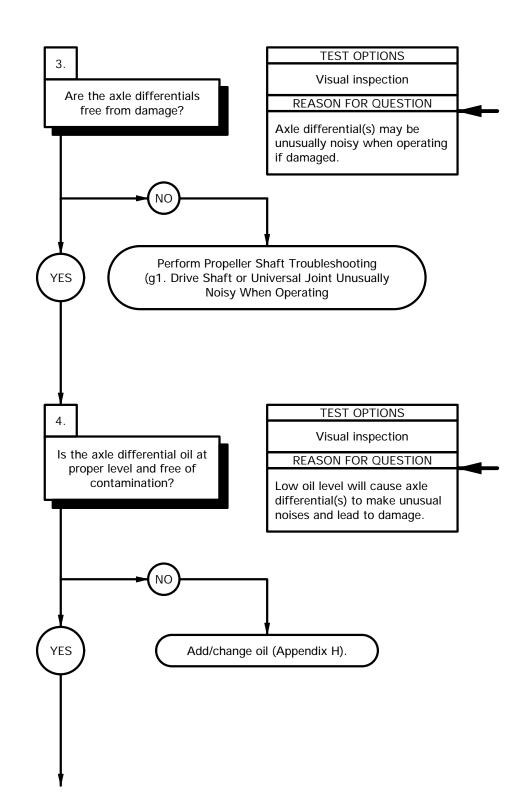
KNOWN INFO

No visible leaks of planetary wheel ends or wheel bearings. No visible leaks of axle differential or pinion drive yoke.

Axle differential(s) free from damage.

POSSIBLE PROBLEMS

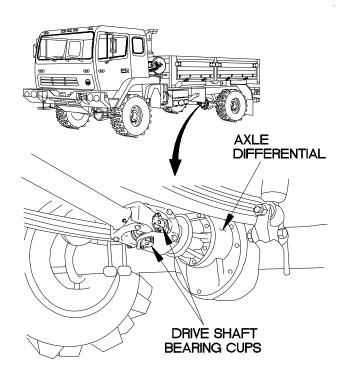
Low or contaminated oil in axle differential.
Faulty pinion drive yoke.

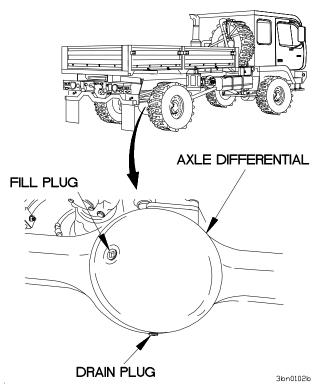


- (1) Check axle differential for loose, missing, or damaged hardware.
- (2) If axle differential is damaged, Notify DS Maintenance.
- (3) Check drive shaft and bearing caps for looseness.
- (4) If drive shaft is loose, perform Propeller Shaft Troubleshooting (g1. Drive Shaft or Universal Joint Unusually Noisy When Operating).

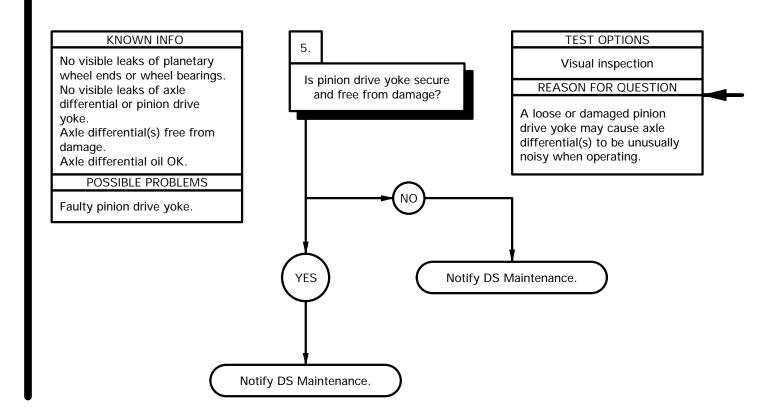


- (2) Remove axle differential fill plug.
- (3) Insert finger into axle differential to check oil level.
- (4) Remove axle differential drain plug.
- (5) Allow differential oil to drain into pan.
- (6) Check oil for contamination. If metal chips are present, notify DS Maintenance.
- (7) Install axle differential drain plug.
- (8) Fill axle differential with oil (Appendix H).
- (9) Install axle differential fill plug.

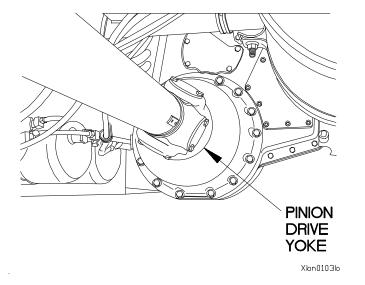




n1. AXLE DIFFERENTIAL(S) NOISY (CONT)



- (1) Check pinion drive yoke for looseness by attempting to rotate pinion drive yoke in both directions and listening for unusual backlash noise.
- (2) If pinion drive yoke is damaged, notify DS Maintenance.
- (3) If pinion drive yoke is not damaged, notify DS Maintenance.



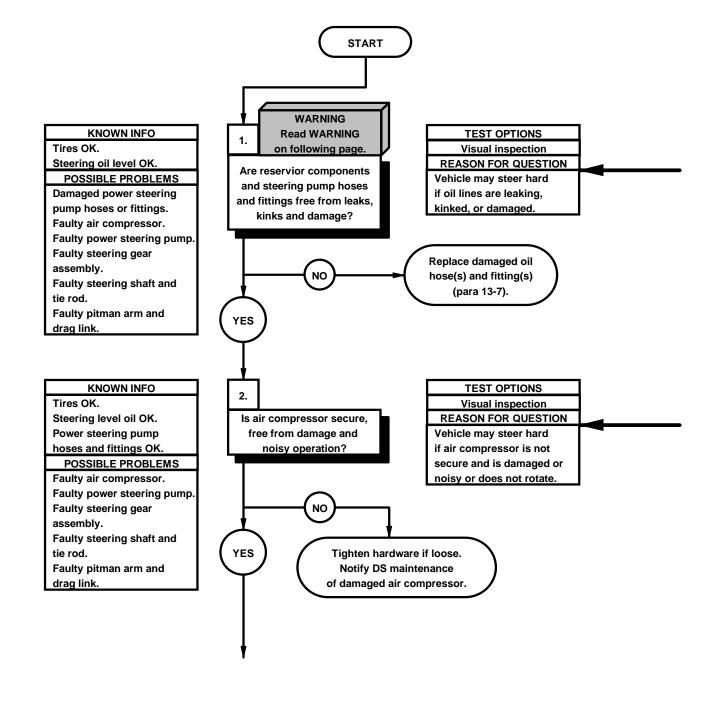
2-26. STEERING TROUBLESHOOTING

This paragraph covers Steering Troubleshooting. The Steering Fault Index, Table 2-52, lists faults for the steering of the vehicle.

Table 2-52. 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 Tools and Special Tools Engine running (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) Materials/Parts Personnel Required Locknut (Item 60, Appendix G) (2)



WARNING

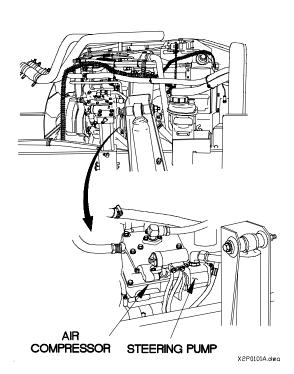
- Engine compartment and its components may be hot to the touch. Extreme care should be taken when checking for leaks in the engine compartment. Failure to comply may result in burns or injury to personnel.
- Engine compartment includes a partially covered fan blade. Extreme care should be taken when working in the engine compartment. Failure to comply may cause injury to personnel.

NOTE

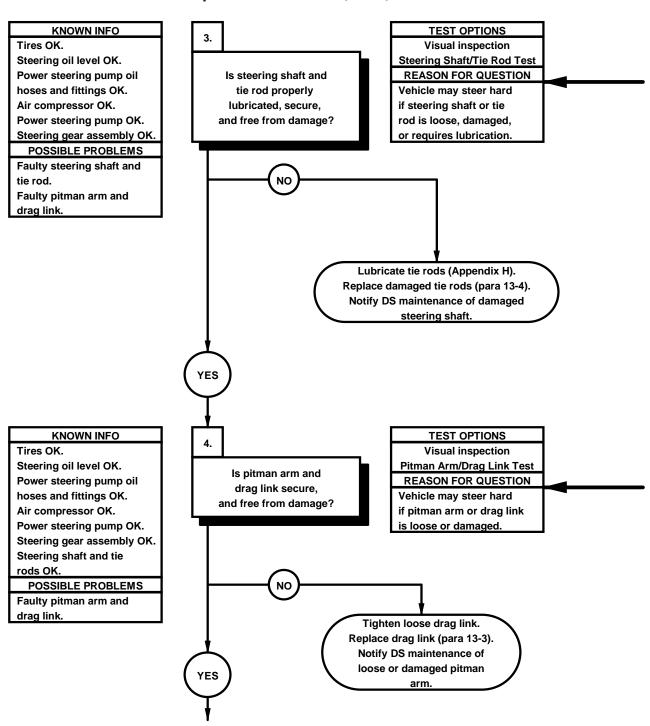
Refer to steering hydraulic hose schematic for steering hose locations.

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.



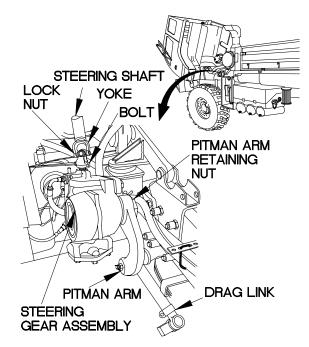
p1. HARD TO STEER (CONT)



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

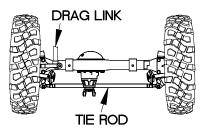
- (1) Grasp steering shaft to ensure there is no up and down play.
- (2) Grasp tie rod to ensure there is no up and down or left and right play.



Check pitman arm and drag link for damage, and loose or missing mounting hardware.

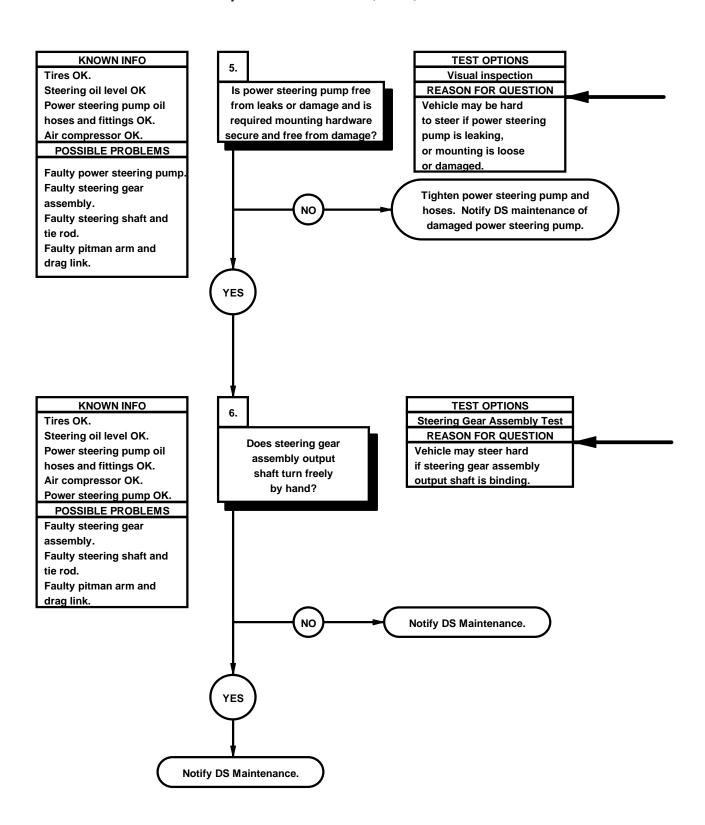
PITMAN ARM/DRAG LINK TEST

- (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.



X2p0104-

p1. HARD TO STEER (CONT)



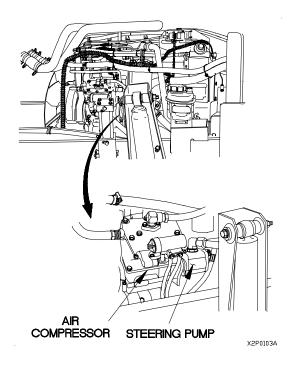
- (1) Check power steering pump for leaks, and for loose, missing, or damaged mounting hardware.
- (2) Lower cab (TM 9-2320-365-10).
- (3) Shut down engine (TM 9-2320-365-10).
- (4) Raise cab (TM 9-2320-365-10).

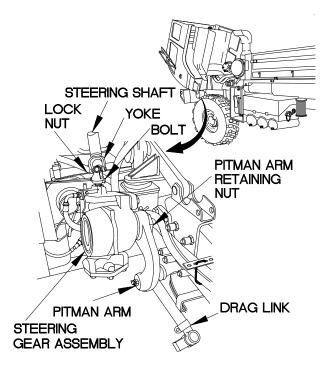
NOTE

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 selflocking 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.





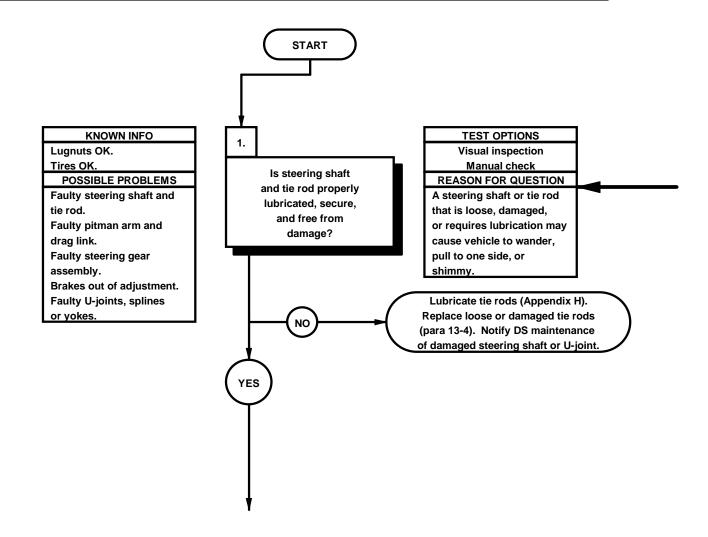
X2p0106-

p2. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES

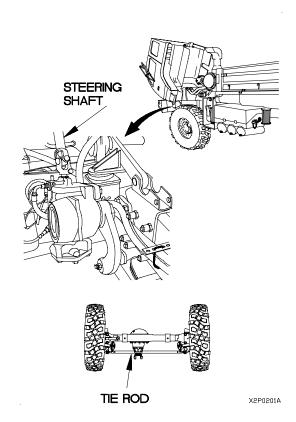
INITIAL SETUP

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

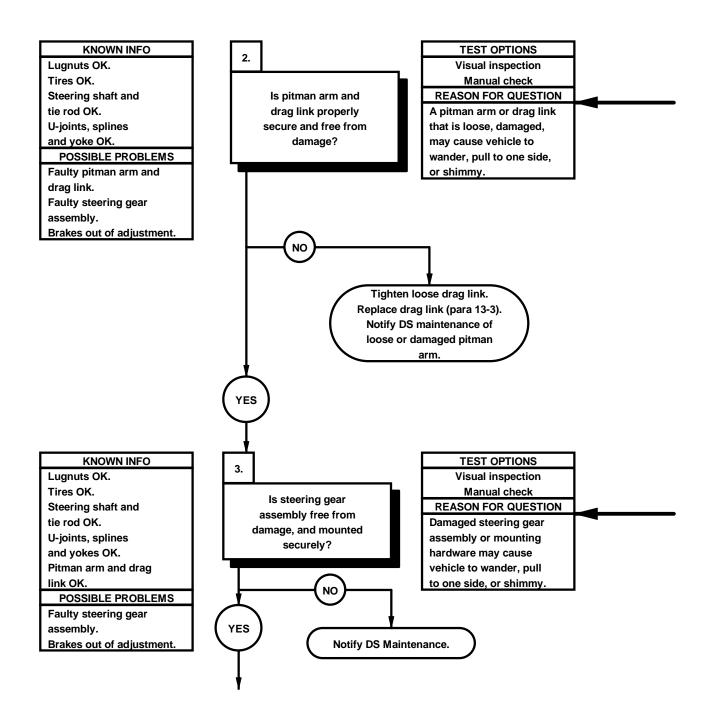
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)



- (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.

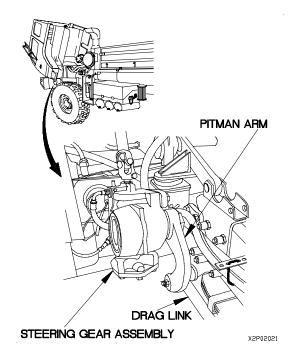


p2. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



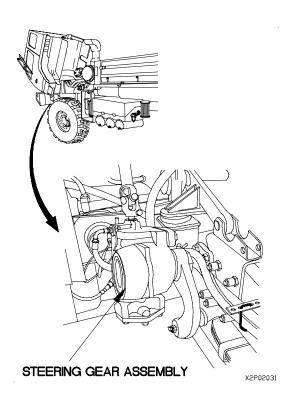


- (1) Check pitman arm and drag link for damage, and loose or missing mounting hardware.
- (2) Grasp pitman arm and ensure it and drag link are free of play.

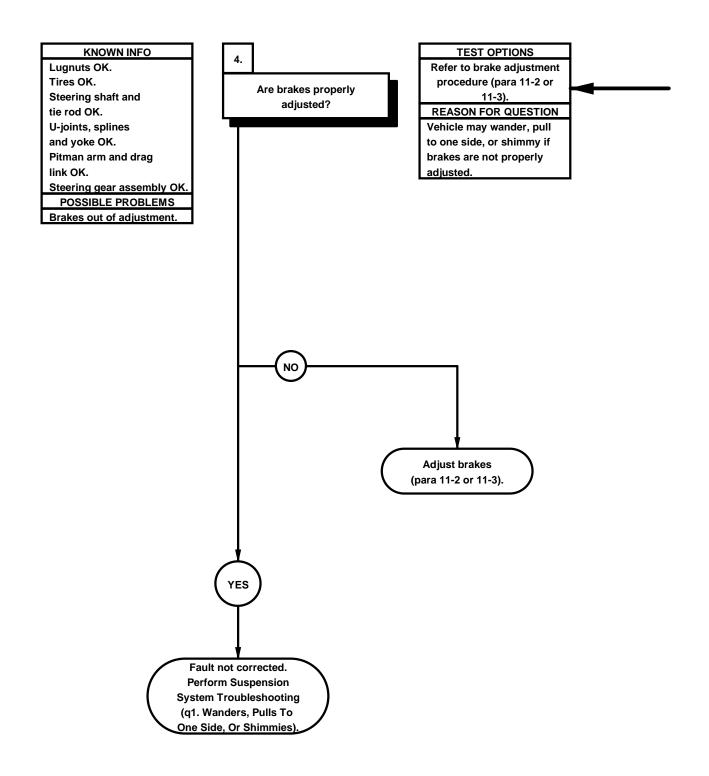




- (1) Check steering gear assembly for damage, and loose or missing mounting hardware.
- (2) Lower cab (TM 9-2320-365-10).



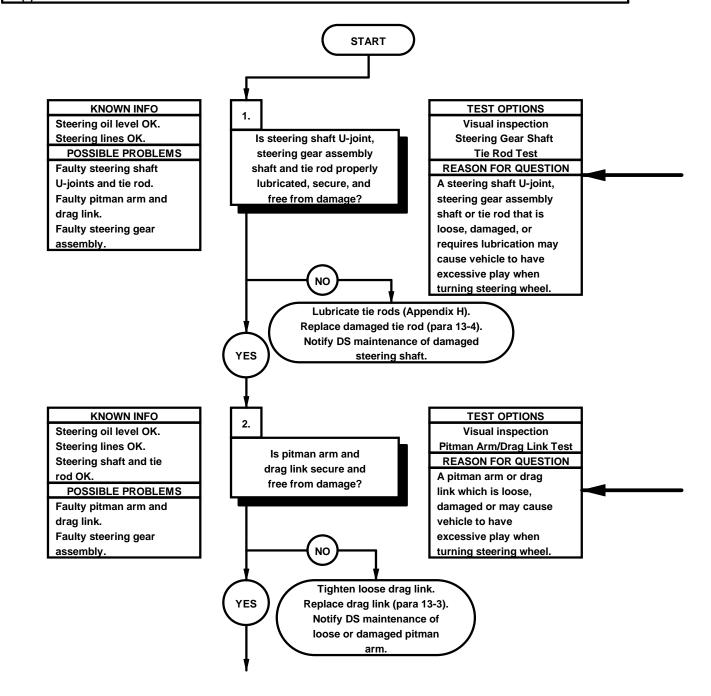
p2. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)





Refer to para 11-2 or 11-3 to adjust brakes.

p3. E CESSIVE PLAY WHEN TURNING STEERING WHEEL INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Cab raised (TM 9-2320-365-10). Materials/Parts Personnel Required Locknut (Item 60, Appendix G) (2)



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.

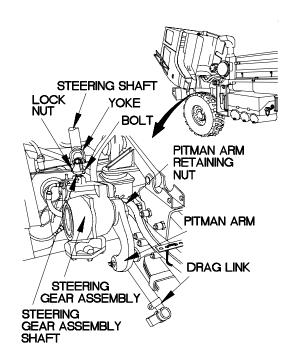
STEERING GEAR SHAFT TIE ROD TEST

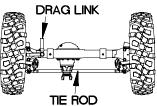
- (1) Grasp steering shaft and ensure there is no up and down play.
- (2) Remove self-locking nut and bolt securing yoke of top steering shaft to steering gear assembly shaft. Discard self-locking nut.
- (3) Remove yoke from top steering gear assembly shaft.
- (4) Ensure spline shaft of steering gear 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

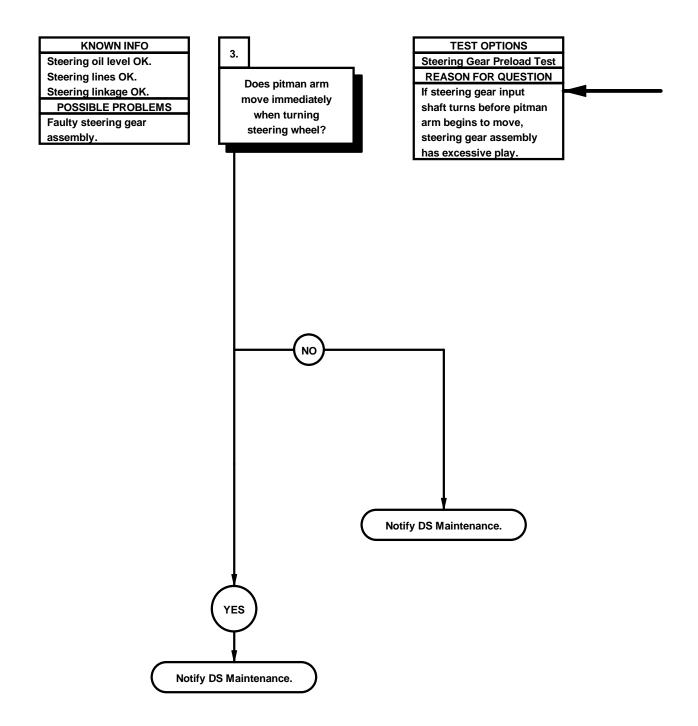
- (1) Check nut securing pitman arm to steering gear assembly. Ensure there is no play.
- (2) Grasp drag link and ensure there is no play left or right and up or down.
- (3) Check for loose bolts, nuts, and clamps on drag link.





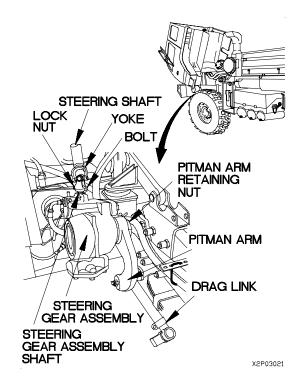
X2P0301-

p3. EXCESSIVE PLAY WHEN TURNING STEERING WHEEL (CONT)

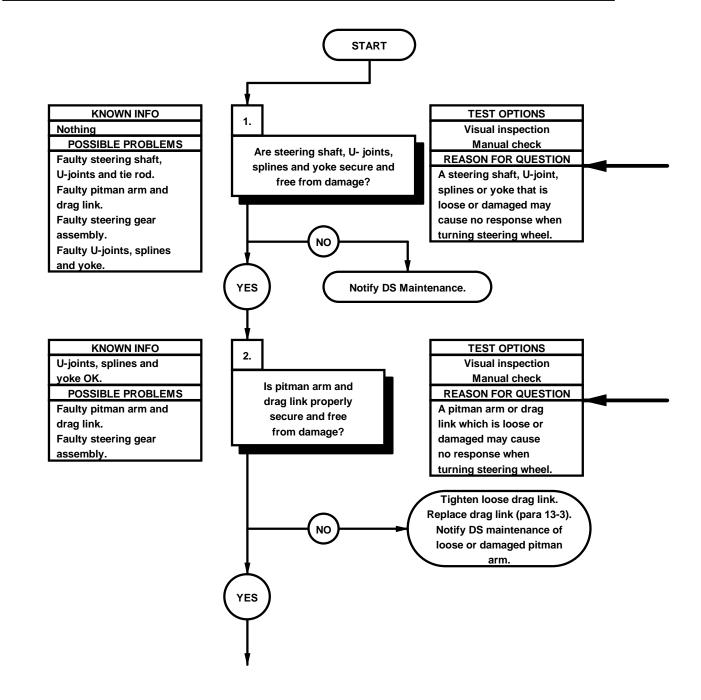


STEERING GEAR PRELOAD TEST

- (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).

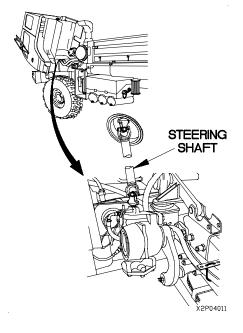


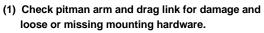
p4. NO RESPONSE WHEN TURNING STEERING WHEEL INITIAL SETUP Equipment Conditions Tools and Special Tools Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 43, Appendix C) Cab raised (TM 9-2320-365-10). Materials/Parts Locknut (Item 63, Appendix G)



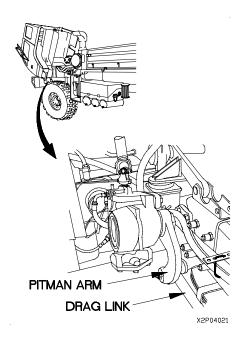


- (2) Check steering shaft for looseness and damage.
- (3) Grasp steering shaft and ensure it is free of play.
- (4) Repeat step (3) while observing yoke, U-joint and locknuts.

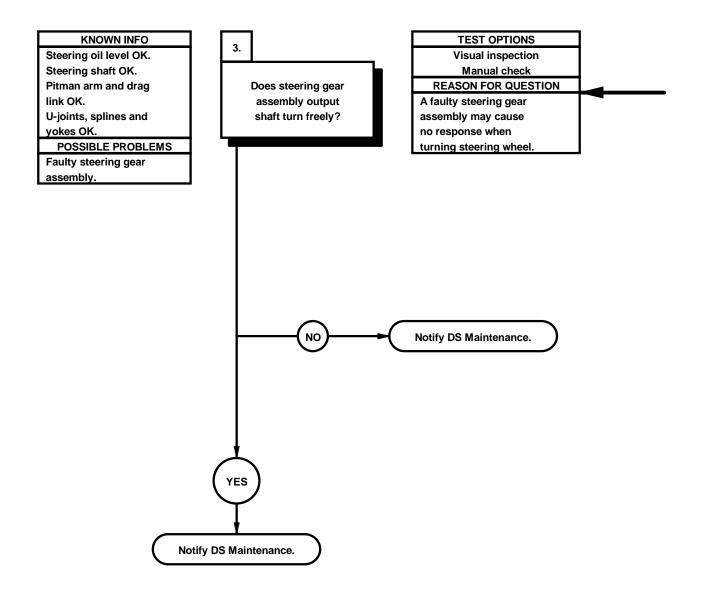




(2) Grasp pitman arm and ensure it and drag link are free of play.



p4. NO RESPONSE WHEN TURNING STEERING WHEEL (CONT)

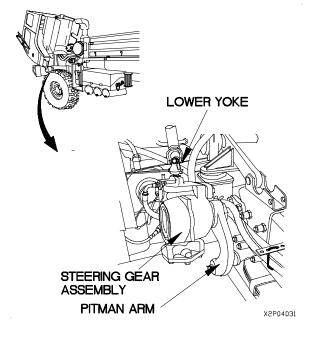


NOTE

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 2-53, lists faults for the suspension system of the vehicle.

Table 2-53. Suspension System Fault Index

Fault No.	Description		
q1. q2.	Wanders, Pulls To One Side, or Shimmies		

q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES

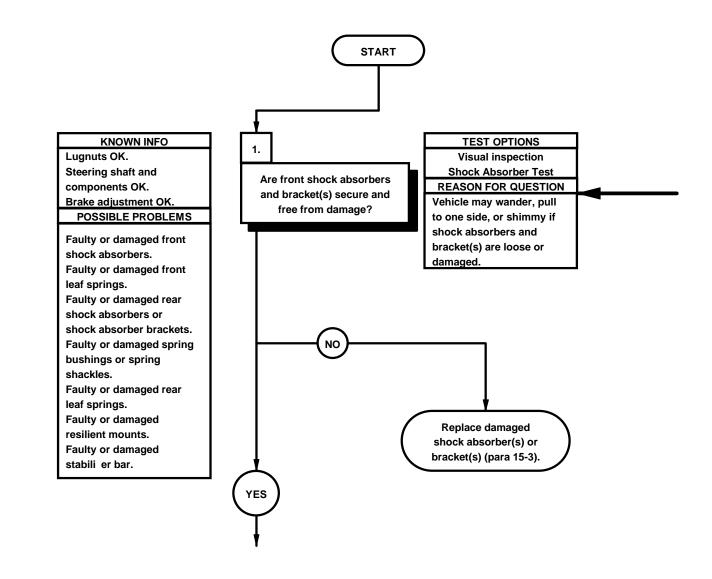
INITIAL SETUP

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)



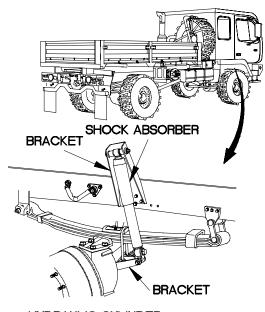
NOTE

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

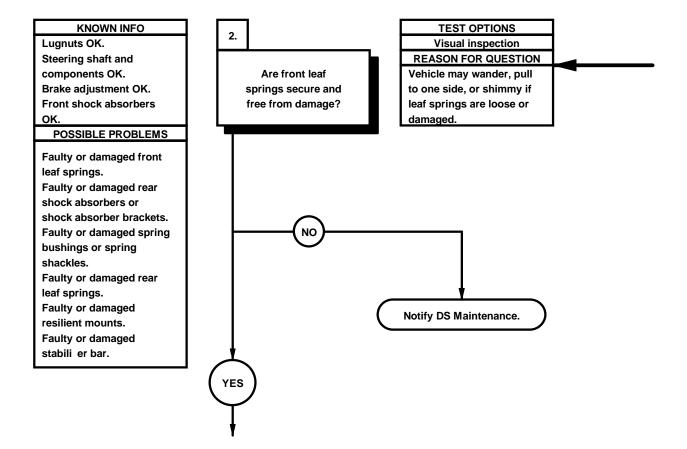
- (1) Grasp shock absorber and ensure there is no excessive play.
- (2) Replace worn bushings.



HYDRAULIC CYLINDER REMOVED FOR CLARITY

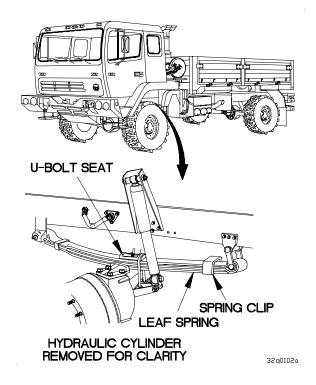
32q0101a

q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)

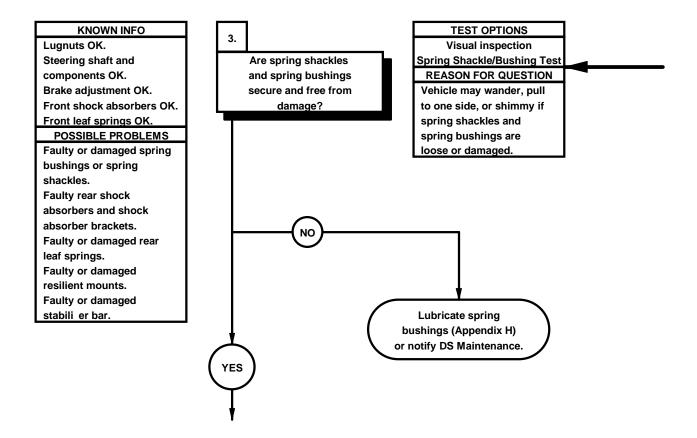




- (1) Check leaf springs for cracked or broken leaves or missing spring clips and U-bolts.
- (2) Check seats for looseness or damage.



q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)

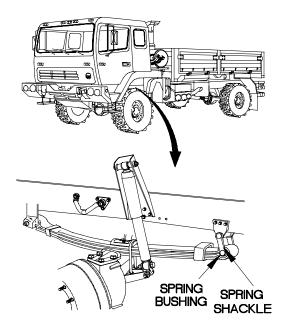


Check spring shackles and spring bushings for damage and for missing mounting hardware.

Refer to Appendix H for lubrication of spring bushings.

SPRING SHACKLE/BUSHING TEST

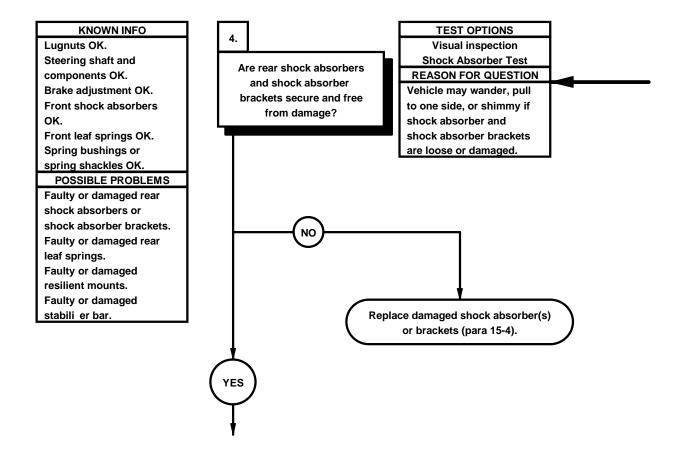
- (1) Position tire iron between spring assembly and frame
- (2) Pry up and down and ensure there is no movement.
- (3) Shackles or bushings are damaged if movement occurs.



HYDRAULIC CYLINDER REMOVED FOR CLARITY

32q0103a

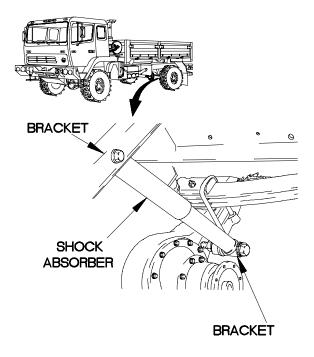
q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



- (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.

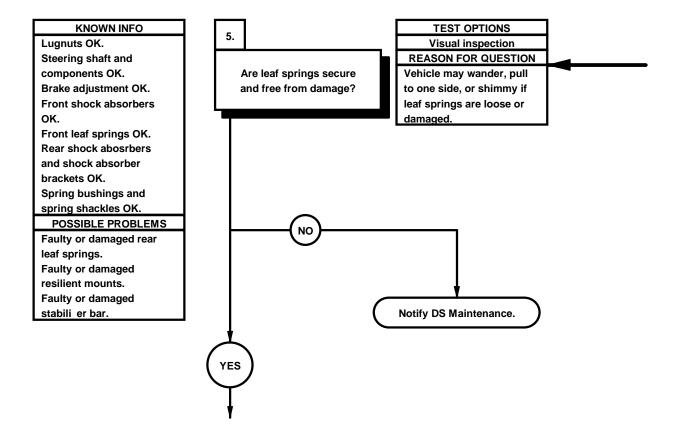
SHOCK ABSORBER TEST

- (1) Grasp shock absorber and ensure there is no excessive play.
- (2) Replace worn bushings.

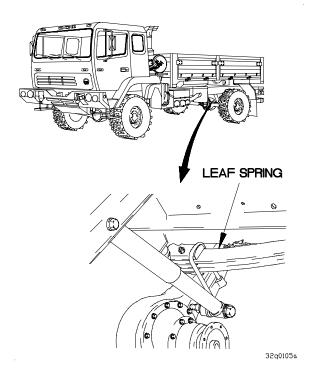


32q0104a

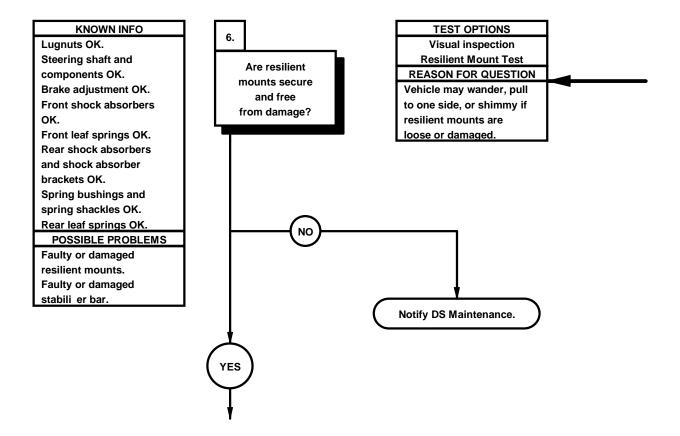
q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



Check rear leaf springs for damage and for missing mounting hardware.



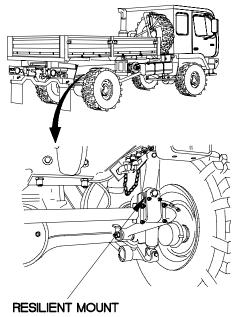
q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



Check resilient mounts for damage and for missing mounting hardware.

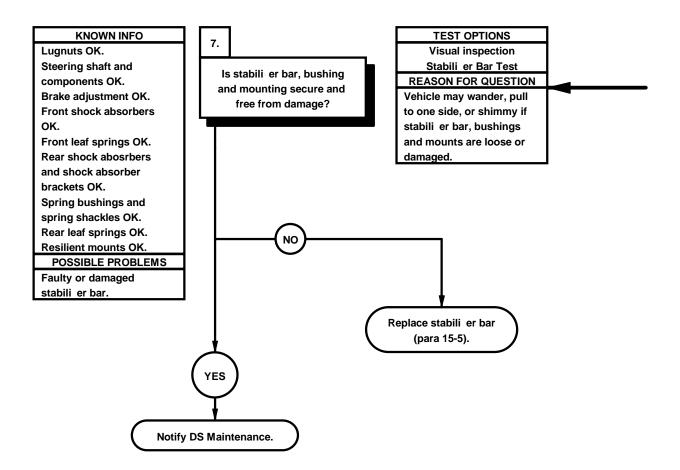
RESILIENT MOUNT TEST

- (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



32q01061

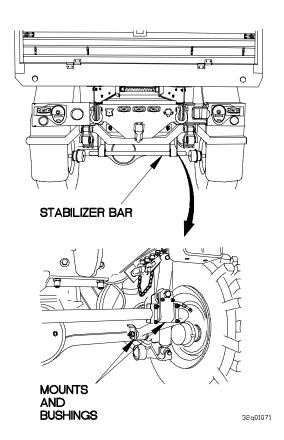
q1. WANDERS, PULLS TO ONE SIDE, OR SHIMMIES (CONT)



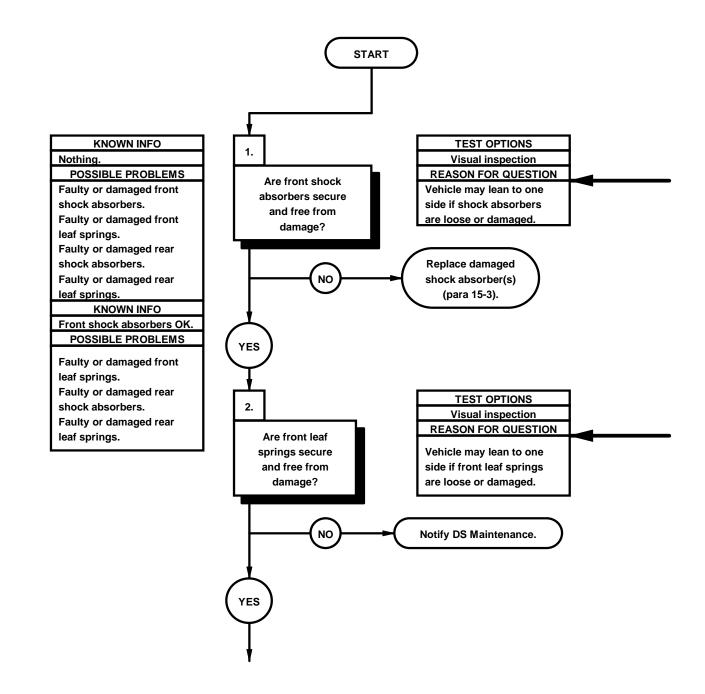
Check stabili er bar, bushings and mounts for damage and for missing mounting hardware.

STABILI ER BAR TEST

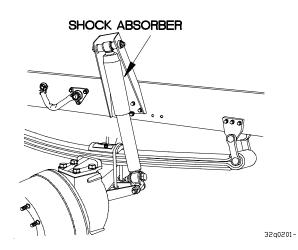
- (1) Position tire iron between bottom of pintle hook mount and top of stabili er bar.
- (2) Pry up to ensure there is no movement.
- (3) Replace stabili er bar or mounts if movement occurs or damaged.



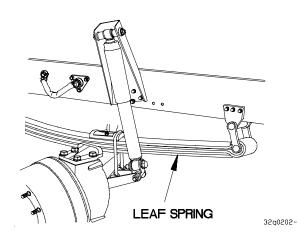
q2. LEANS TO ONE SIDE OR REAR OF VEHICLE SAGS INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C)



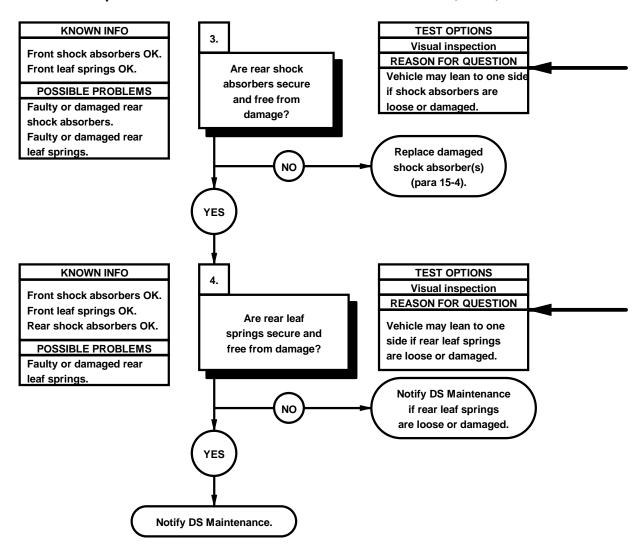
Check shock absorbers for damage or leaks, and for missing or cracked mounting hardware.



Check front leaf springs for damage and for loose or missing mounting hardware.



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.	SHOCK ABSORBER	3200203
Check rear leaf springs for damage or leaks, and for missing mounting hardware.		

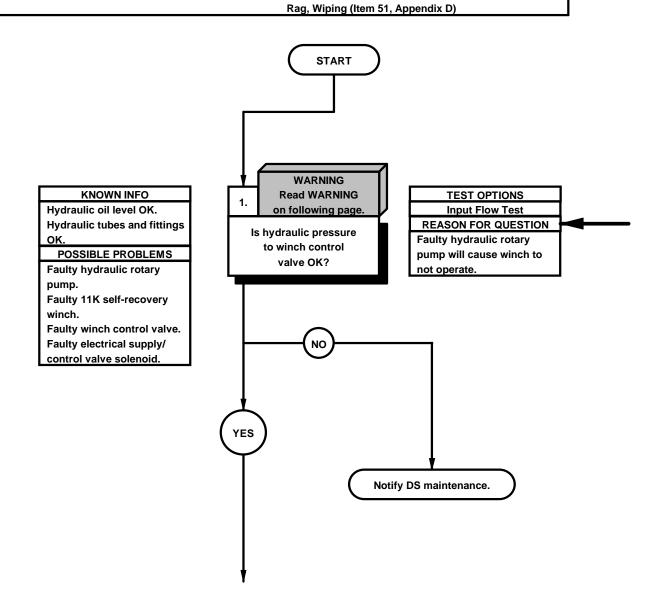
2-28. 11K SELF-RECOVERY WINCH (SRW) SYSTEM TROUBLESHOOTING

This paragraph covers 11K Self-Recovery Winch (SRW) System Troubleshooting. The 11K Self-Recovery Winch (SRW) System Fault Index, Table 2-54, lists faults for the 11K SRW system of the vehicle.

Table 2-54. 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). 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) (2) Pan, Drain (Item 24, Appendix C) Transducer, STE/ICE-R (Item 1, Appendix J) Goggles, Industrial (Item 15, Appendix C) References TM 9-4910-571-12&P Materials/Parts

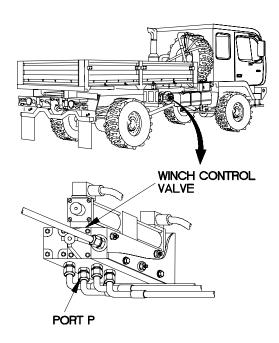


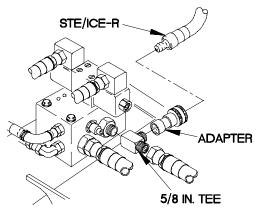
WARNING

- Drop hydraulic pressure to ero 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

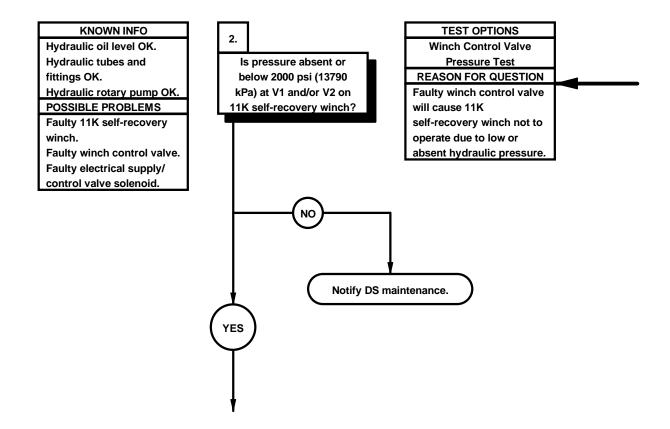
- (1) Place drain pan under control valve.
- (2) Disconnect hose from port P of winch control valve.
- (3) Connect STE/ICE-R with 5/8 in. tee and adapter kit between hose fitting and port P.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position PTO switch to on (TM 9-2320-365-10).
- (6) Attach stall 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 9-4910-574-12&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.





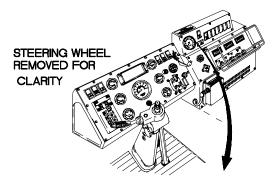
32r01011

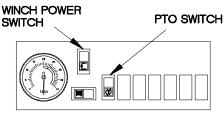
r1. 11K SELF-RECOVERY WINCH DOES NOT WORK (CONT)

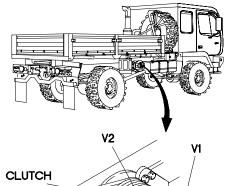


WINCH CONTROL VALVE PRESSURE TEST

- (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.





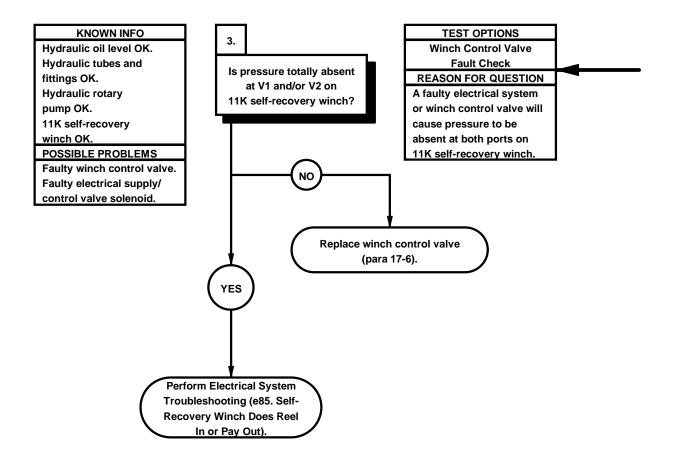


INSERT STE/ICE TEST EQUIPMENT HERE FOR PRESSURE TEST AT V2

INSERT STE/ICE TEST EQUIPMENT HERE FOR PRESSURE TEST AT VI

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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).

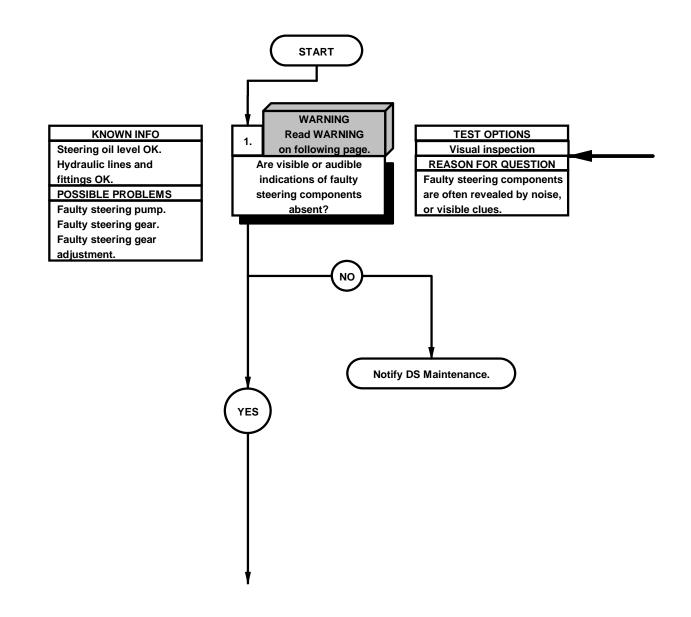
2-29. STEERING HYDRAULIC SYSTEM TROUBLESHOOTING

This paragraph covers Steering Hydraulic System Troubleshooting. The Steering Hydraulic System Fault Index, Table 2-55, lists faults for the steering hydraulic system of the vehicle.

Table 2-55. Steering Hydraulic System Fault Index

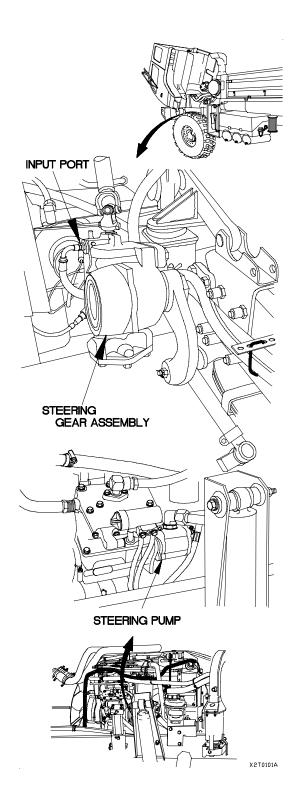
Fault No.	Description	Page
s1.	Steering Hard or Does Not Work	2-1954

s1. STEERING HARD OR DOES NOT WORK INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C) Personnel Required (2) Materials/Parts Rag, Wiping (Item 51, Appendix D)

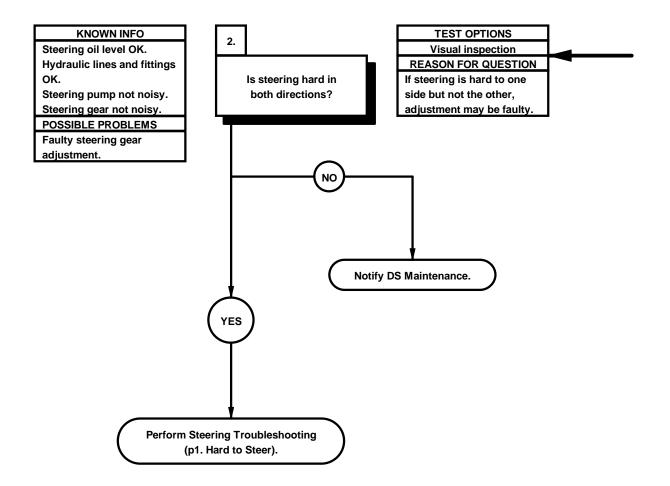


WARNING

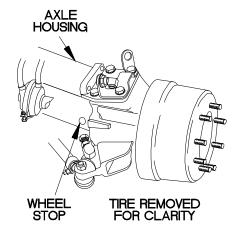
- Drop hydraulic pressure to ero before disconnecting any hydraulic line. Failure to comply may result in injury to personnel.
- Wear approved eye protection when performing pressure checks. Failure to comply may result in oil getting into eyes. If oil contacts eyes, seek medical attention immediately.
- 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 2-56, lists faults for the air transport components of the vehicle.

Table 2-56. Air Transport Fault Index

Fault No.	Description	Page
t1.	Cab Tilt, Spare Tire Retainer, and Suspension Compression Do Not Operate	2-1960
t2.	Suspension Does Not Compress and/or Return To Normal	2-1970
t3.	Cab Leveling Air Springs Do Not Operate	2-1972

INITIAL SETUP

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

Personnel Required (2)

Material/Parts
Filter Assembly (2) (Item 12, Appendix G)
Rag, Wiping (Item 51, Appendix D)

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)
Gloves, Rubber (Item 13, Appendix C)

References TM 9-4910-571-12&P

KNOWN INFO

Hydraulic hoses free from leaks.

POSSIBLE PROBLEMS

Faulty air/hydraulic manifold filter(s).

Faulty hydraulic hose 515. Faulty air/hydraulic power unit. Faulty air hose 507.

Faulty secondary air tank inversion valve.

Faulty air hose 502.

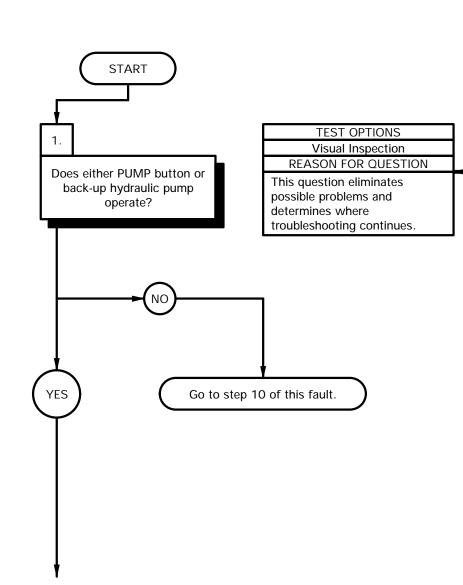
Faulty hydraulic hose 514.

Faulty back-up hydraulic pump.

Faulty hydraulic hose 521.

Faulty hydraulic hose 520.

Faulty air/hydraulic manifold.



- Attempt to raise cab using PUMP button (TM 9-2320-365-10).
 Attempt to raise cab using back-up hydraulic pump (TM 9-2320-365-10).
 If cab does not raise in both steps (1) and (2),
- go to step 10 of this fault.

KNOWN INFO

Hydraulic hoses free from leaks.

Air/hydraulic manifold filters OK.

POSSIBLE PROBLEMS

Faulty hydraulic hose 515.
Faulty air/hydraulic power unit.
Faulty air hose 507.
Faulty secondary air tank inversion valve.
Faulty air hose 502.
Faulty hydraulic hose 514.
Faulty back-up hydraulic pump.
Faulty hydraulic hose 521.
Faulty hydraulic hose 520.
Faulty air/hydraulic manifold.

KNOWN INFO

Hydraulic hoses free from leaks.

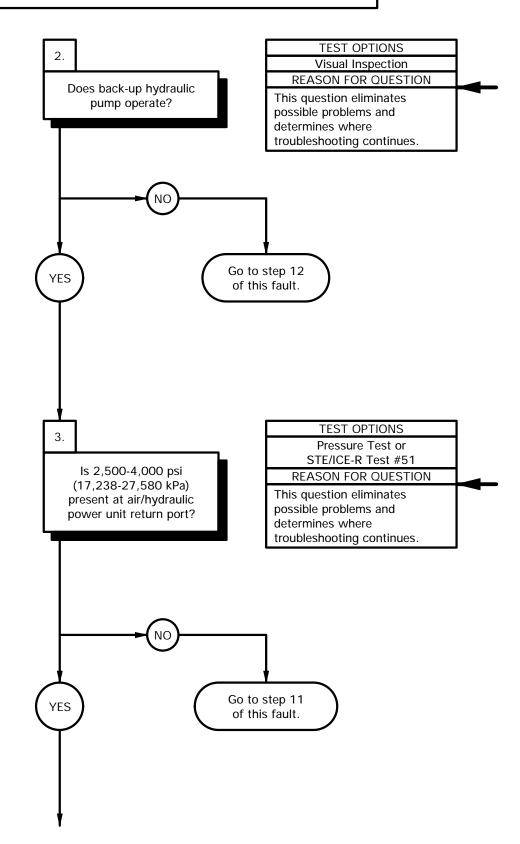
Air/hydraulic manifold filters OK.

Back-up hydraulic pump OK. Hydraulic hose 521 OK. Hydraulic hose 520 OK.

POSSIBLE PROBLEMS

Faulty hydraulic hose 515.
Faulty air/hydraulic power unit.
Faulty air hose 507.
Faulty secondary air tank inversion valve.
Faulty air hose 502.
Faulty hydraulic hose 514.

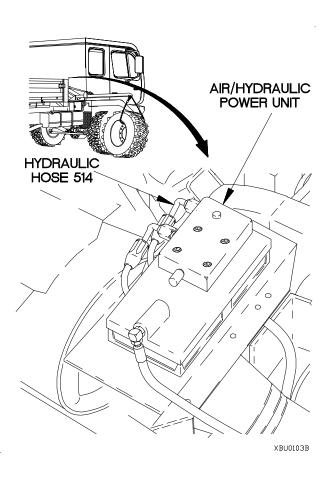
Faulty air/hydraulic manifold.

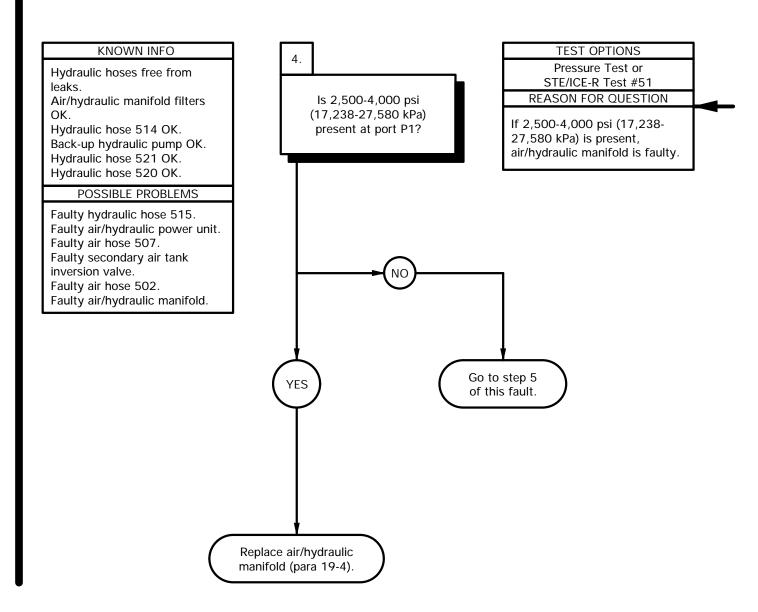


- (1) Attempt to raise cab using back-up hydraulic pump (TM 9-2320-365-10).
- (2) If cab does not raise, go to step 12 of this fault.
- (3) Lower cab (TM 9-2320-365-10).

PRESSURE TEST

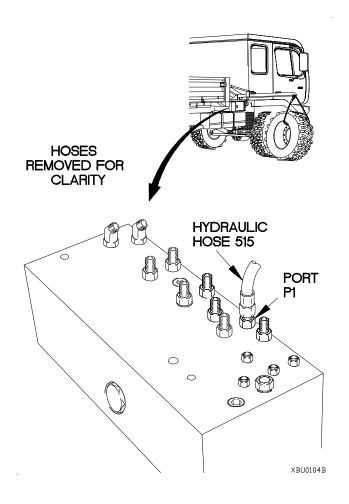
- (1) Position drain pan under air/hydraulic power unit.
- (2) Disconnect hydraulic hose 514 from air/hydraulic power unit return port.
- (3) Connect STE/ICE-R between hydraulic hose 514 and return port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 11 of this fault.
- (9) Disconnect STE/ICE-R from hydraulic hose 514 and return port.
- (10) Connect hydraulic hose 514 to return port.

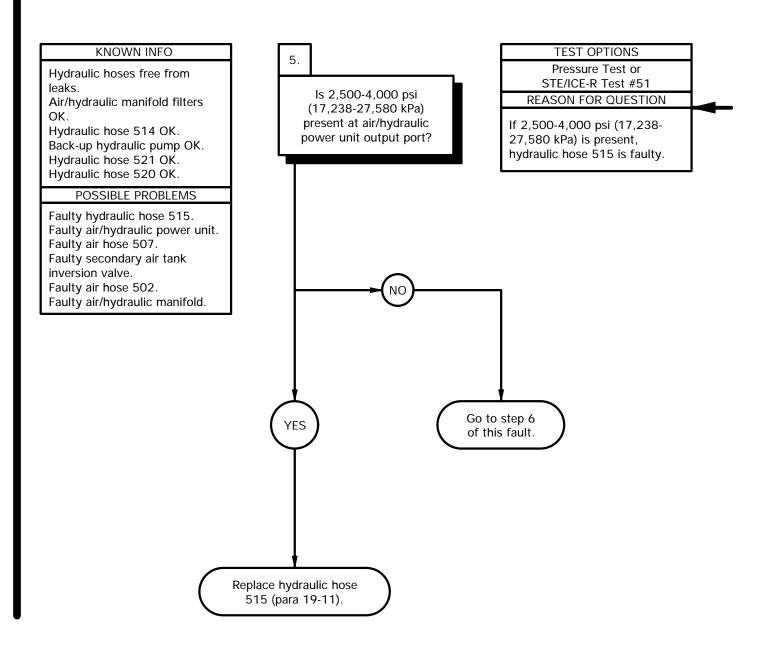




PRESSURE TEST

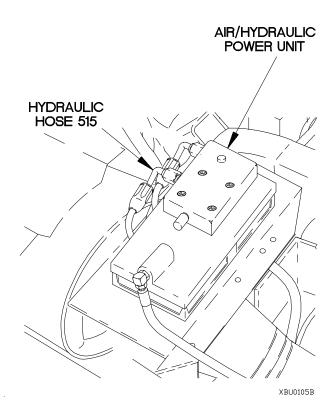
- (1) Position drain pan under air/hydraulic manifold.
- (2) Disconnect hydraulic hose 515 from port P1.
- (3) Connect STE/ICE-R between hydraulic hose 515 and port P1.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 5 of this fault.
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace air/hydraulic manifold (para 19-4).
- (10) Disconnect STE/ICE-R from hydraulic hose 515 and port P1.
- (11) Connect hydraulic hose 515 to port P1.

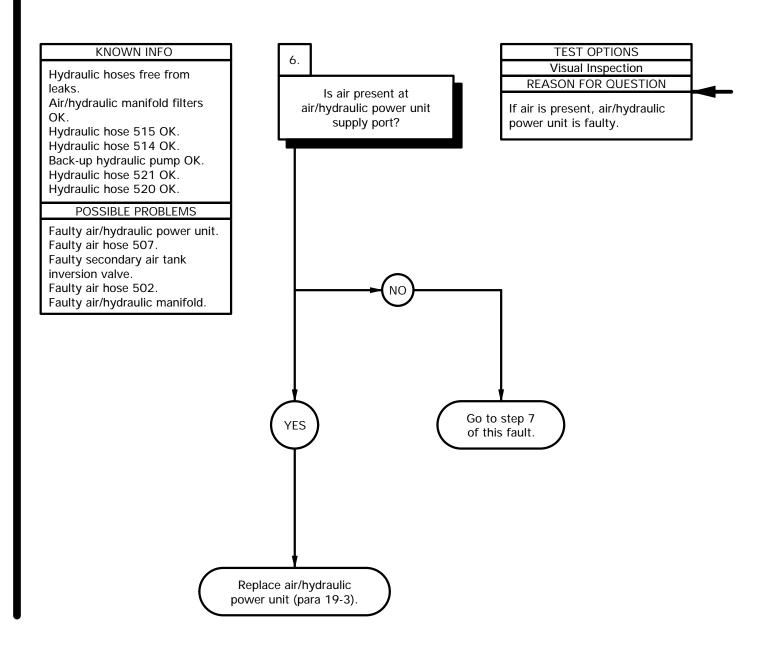




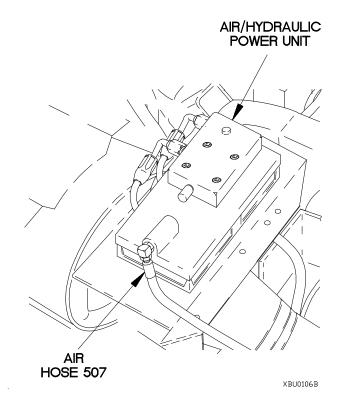
PRESSURE TEST

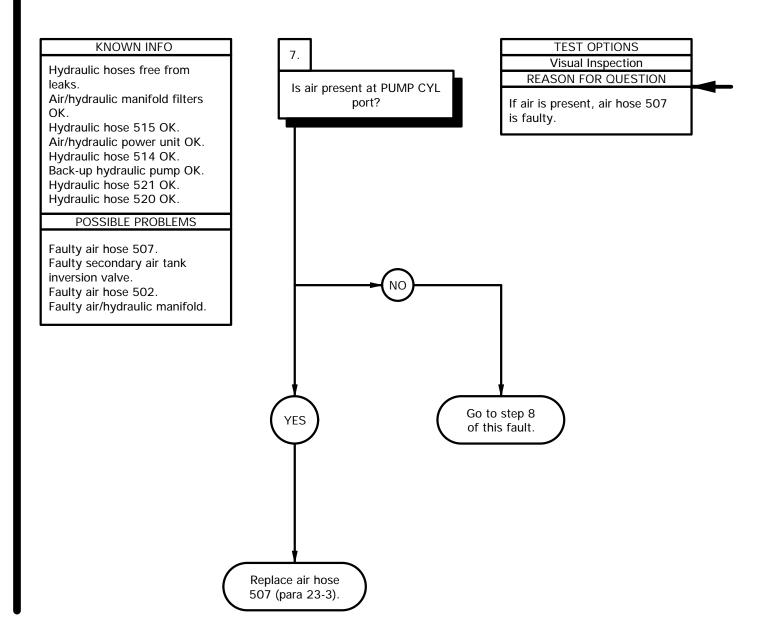
- (1) Position drain pan under air/hydraulic power unit.
- (2) Disconnect hydraulic hose 515 from output port.
- (3) Connect STE/ICE-R between hydraulic hose 515 and output port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 6 of this fault.
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 515 (para 19-11).
- (10) Disconnect STE/ICE-R from hydraulic hose 515 and output port.
- (11) Connect hydraulic hose 515 to output port.



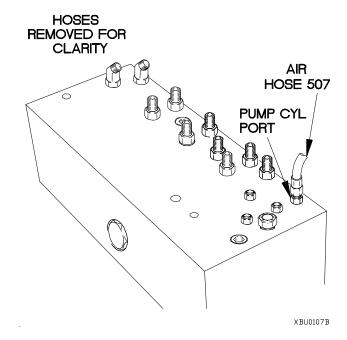


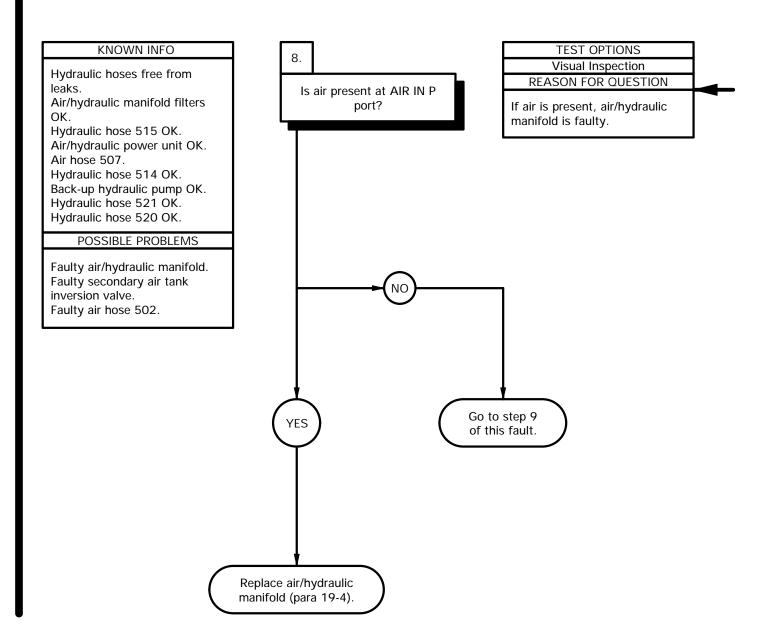
- (1) Drain air tanks (TM 9-2320-365-10).
- (2) Loosen air hose 507 at air/hydraulic power unit.
- (3) Start engine and charge air tanks (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 507.
- (5) If air is not present, go to step 7 of this fault.
- (6) If air is present, replace air/hydraulic power unit (para 19-3).
- (7) Drain air tanks (TM 9-2320-365-10).
- (8) Tighten air hose 507 at air/hydraulic power unit.



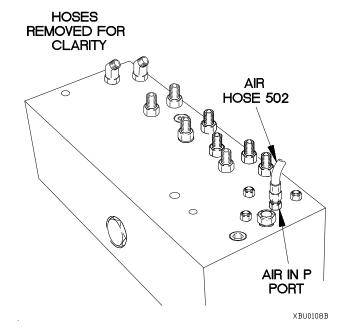


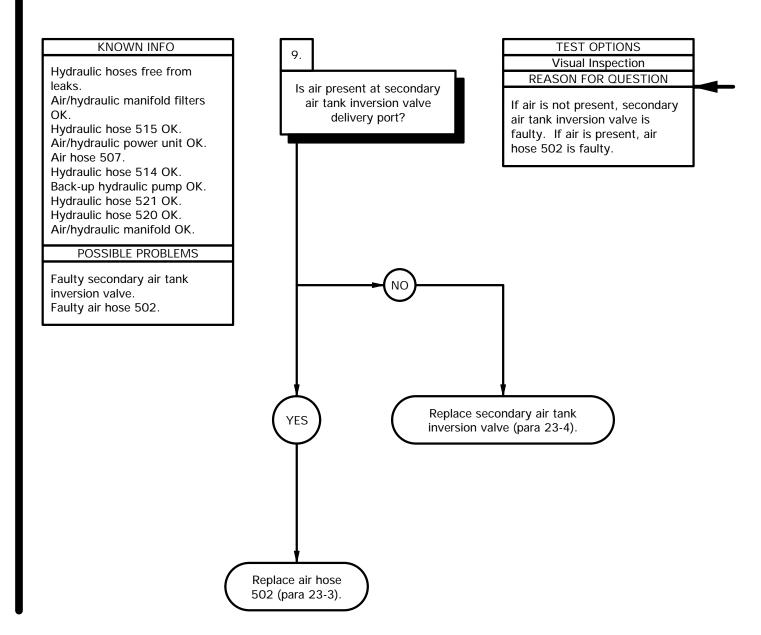
- (1) Drain air tanks (TM 9-2320-365-10).
- (2) Loosen air hose 507 at PUMP CYL port.
- (3) Start engine and charge air tanks (TM 9-2320-365-10).
- (4) Check for presence of air at PUMP CYL port.
- (5) If air is not present, go to step 8 of this fault.
- (6) If air is present, replace air hose 507 (para 23-3).
- (7) Drain air tanks (TM 9-2320-365-10).
- (8) Tighten air hose 507 at PUMP CYL port.



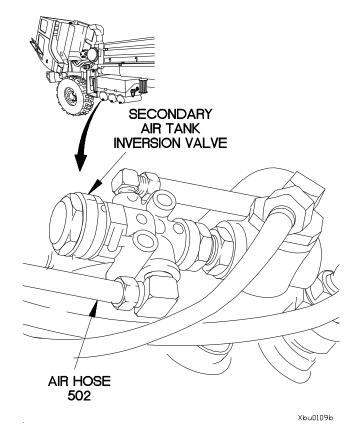


- (1) Drain air tanks (TM 9-2320-365-10).
- (2) Loosen air hose 502 at AIR IN P port.
- (3) Start engine and charge air tanks (TM 9-2320-365-10).
- (4) Check for presence of air at air hose 502.
- (5) If air is not present, go to step 9 of this fault.
- (6) If air is present, replace air/hydraulic manifold (para 19-4).
- (7) Drain air tanks (TM 9-2320-365-10).
- (8) Tighten air hose 502 at AIR IN P port.

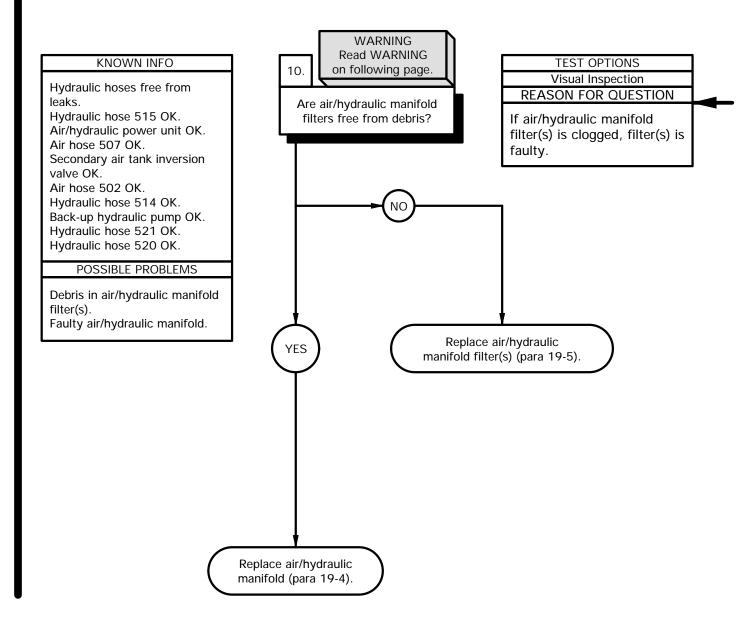




- (1) Drain air tanks (TM 9-2320-365-10).
- (2) Loosen air hose 502 at secondary air tank inversion valve delivery port.
- (3) Start engine and charge air tanks (TM 9-2320-365-10).
- (4) Check for presence of air at secondary air tank inversion valve delivery port.
- (5) If air is not present, replace secondary air tank inversion valve (para 23-4).
- (6) If air is present, replace air hose 502 (para 23-3).
- (7) Drain air tanks (TM 9-2320-365-10).
- (8) Tighten air hose 502 at secondary air tank inversion valve delivery port.



Change 1



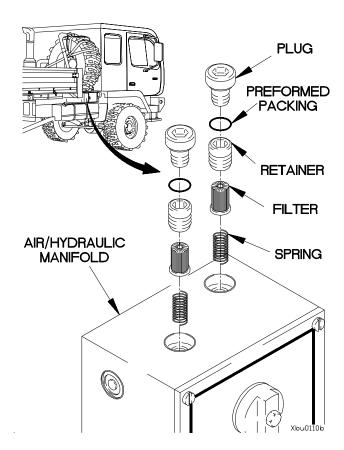
WARNING

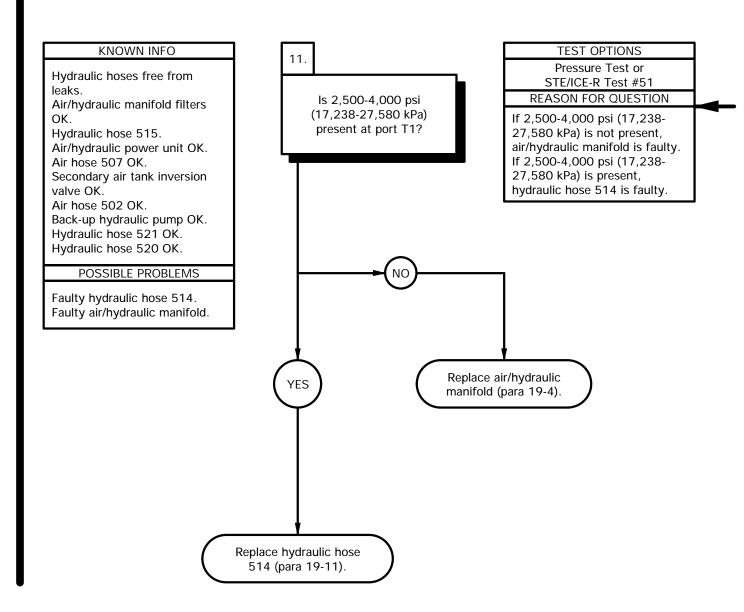
Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

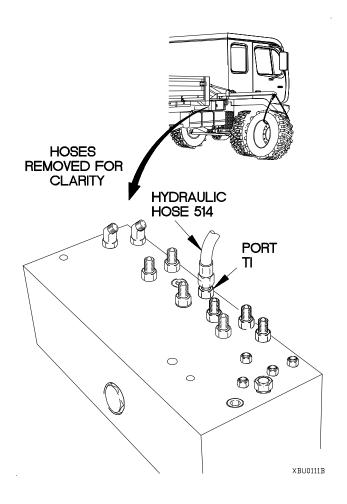
Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

- (1) Remove two plugs from air/hydraulic manifold. Discard plugs.
- (2) Remove two retainers, filters, and springs from air/hydraulic manifold. Discard retainers and springs.
- (3) Inspect filters for debris or signs of damage.
- (4) Discard filters.
- (5) If filters are free from debris and damage, repair or replace air/hydraulic manifold (para 19-4).
- (6) Position two springs and filters in hydraulic manifold with two retainers.
- (7) Install two preformed packings on plugs.
- (8) Install two plugs in air/hydraulic manifold.





- (1) Position drain pan under air/hydraulic manifold.
- (2) Disconnect hydraulic hose 514 from port T1.
- (3) Connect STE/ICE-R between hydraulic hose 514 and port T1.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, replace air/hydraulic manifold (para 19-4).
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 514 (para 19-11).
- (10) Disconnect STE/ICE-R from hydraulic hose 514 and port T1.
- (11) Connect hydraulic hose 514 to port T1.

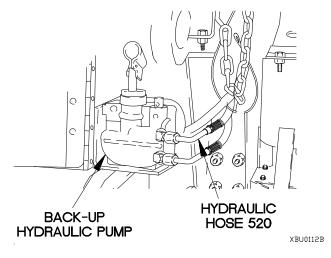


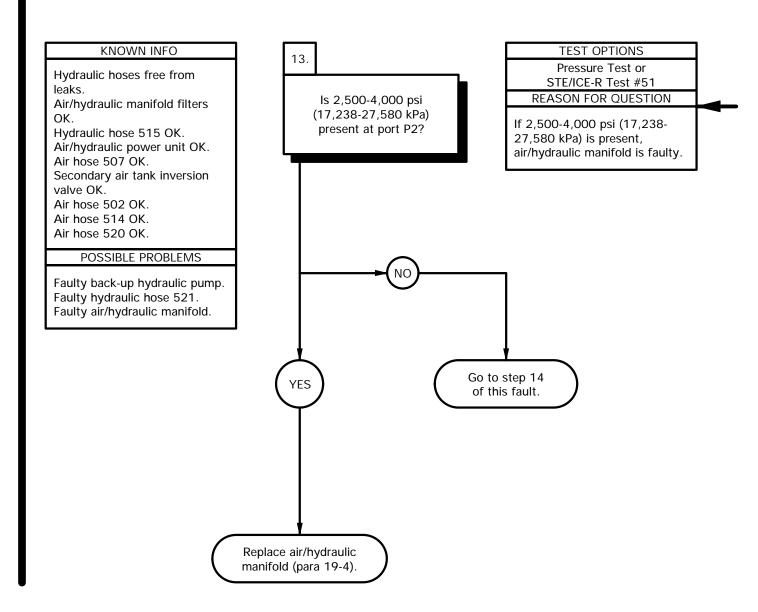
KNOWN INFO TEST OPTIONS 12. Pressure Test or Hydraulic hoses free from STE/ICE-R Test #51 leaks. Is 2,500-4,000 psi REASON FOR QUESTION Air/hydraulic manifold filters (17,238-27,580 kPa) This question eliminates present at back-up hydraulic possible problems and Hydraulic hose 515 OK. pump return port? Air/hydraulic power unit OK. determines where Air hose 507 OK. troubleshooting continues. Secondary air tank inversion valve OK. Air hose 502 OK. Air hose 514 OK. POSSIBLE PROBLEMS Faulty back-up hydraulic pump. Faulty hydraulic hose 521. Faulty hydraulic hose 520. Faulty air/hydraulic manifold. Go to step 15 YES of this fault.

- (1) Position drain pan under back-up hydraulic pump.
- (2) Disconnect hydraulic hose 520 from back-up hydraulic pump return port.
- (3) Connect STE/ICE-R between hydraulic hose 520 and return port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 15 of this fault.
- (9) Disconnect STE/ICE-R from hydraulic hose 520 and return port.
- (10) Connect hydraulic hose 520 to return port.

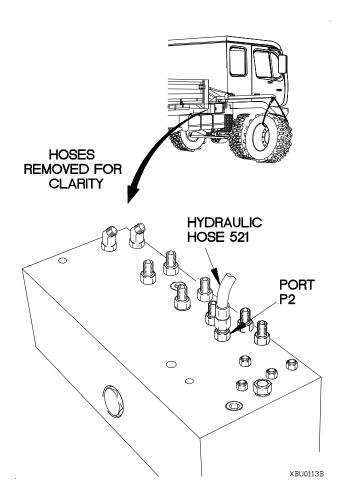


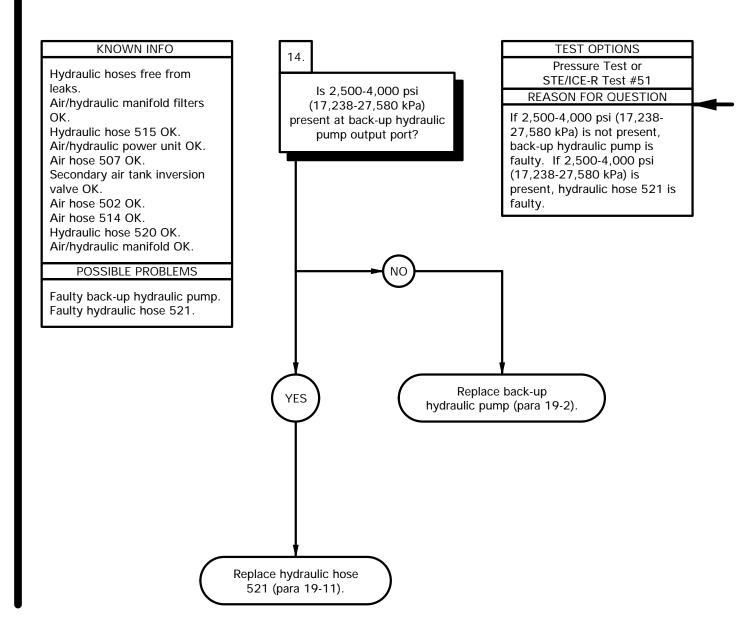
BACK-UP HYDRAULIC PUMP COVER REMOVED FOR CLARITY





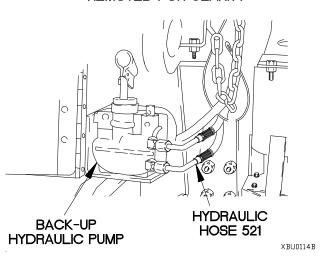
- (1) Position drain pan under air/hydraulic manifold.
- (2) Disconnect hydraulic hose 521 from port P2.
- (3) Connect STE/ICE-R between hydraulic hose 521 and port P2.
- (4) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (5) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (6) Operate back-up hydraulic pump (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (7) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 14 of this fault.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace air/hydraulic manifold (para 19-4).
- (9) Disconnect STE/ICE-R from hydraulic hose 521 and port P2.
- (10) Connect hydraulic hose 521 to port P2.

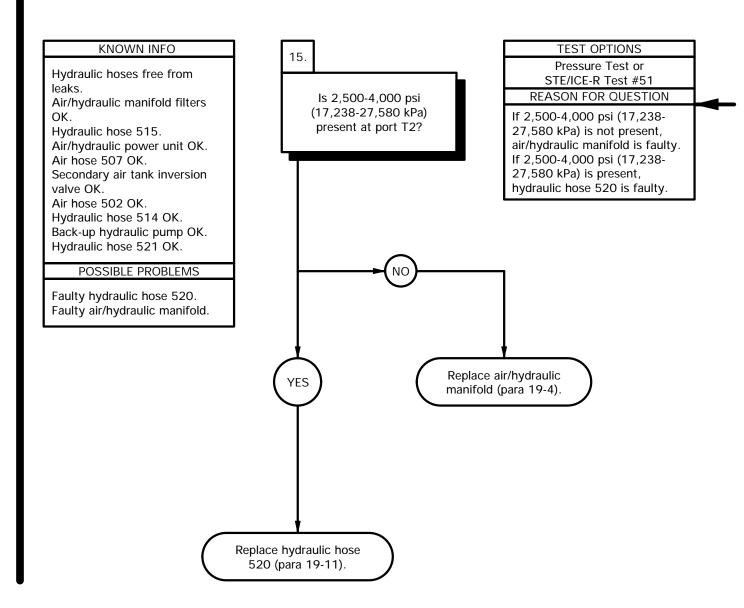




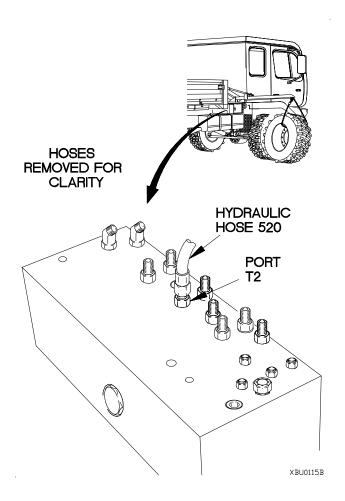
- (1) Position drain pan under back-up hydraulic pump.
- (2) Disconnect hydraulic hose 521 from back-up hydraulic pump output port.
- (3) Connect STE/ICE-R between hydraulic hose 521 and output port.
- (4) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (5) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (6) Operate back-up hydraulic pump (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (7) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, replace back-up hydraulic pump (para 19-2).
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 521 (para 19-11).
- (9) Disconnect STE/ICE-R from hydraulic hose 521 and output port.
- (10) Connect hydraulic hose 521 to output port.

BACK-UP HYDRAULIC PUMP COVER REMOVED FOR CLARITY





- (1) Position drain pan under air/hydraulic manifold.
- (2) Disconnect hydraulic hose 520 from port T2.
- (3) Connect STE/ICE-R between hydraulic hose 520 and port T2.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, replace air/hydraulic manifold (para 19-4).
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 520 (para 19-11).
- (10) Disconnect STE/ICE-R from hydraulic hose 520 and port T2.
- (11) Connect hydraulic hose 520 to port T2.



INITIAL SETUP

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

Personnel Required (2)

Material/Parts Rag, Wiping (Item 51, Appendix D) 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) Gloves, Rubber (Item 13, Appendix C)

References TM 9-4910-571-12&P

KNOWN INFO

Other hydraulic manifold functions OK. Hydraulic hoses free from leaks.

POSSIBLE PROBLEMS

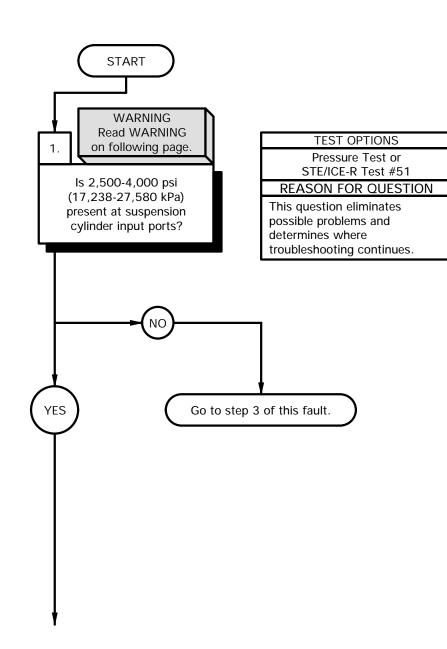
Faulty hydraulic hose(s) 508 and/or 510.

Faulty suspension compression tee fitting.

Faulty air/hydraulic manifold. Faulty hydraulic hose 512. Faulty hydraulic hose 513. Faulty suspension release tee

fitting.
Faulty suspension cylinder(s).

Faulty hydraulic hose(s) 509 and/or 511.



WARNING

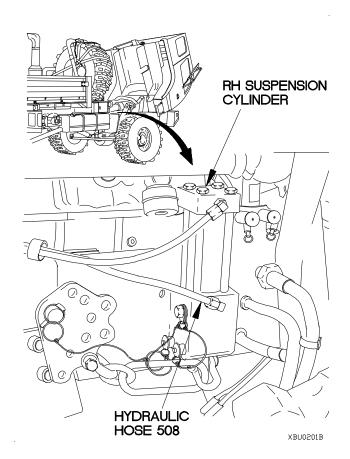
Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

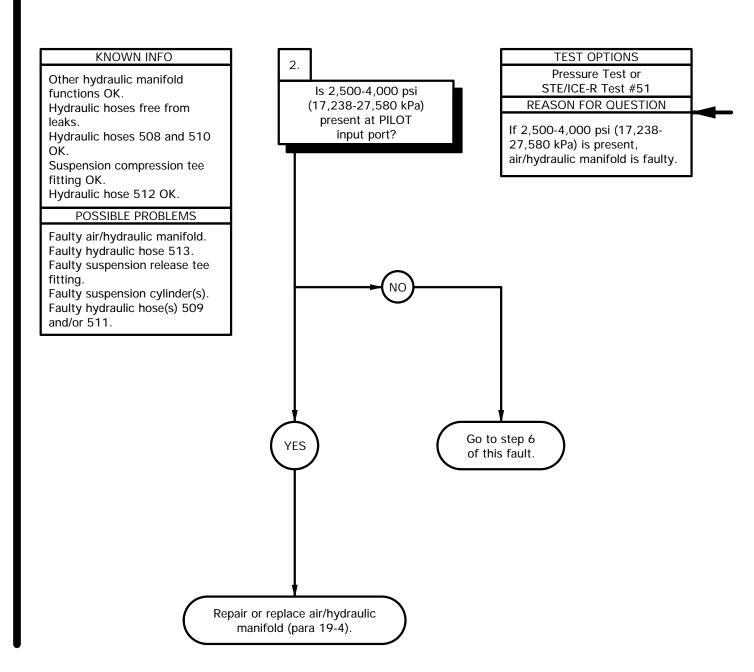
Hydraulic oil (MIL-H 5605) is TOXIC. Wear protective goggles and gloves. Use only in well ventilated area. Avoid contract with skin, eyes, and clothes. Skin and clothing that come into contact with hydraulic oil should be washed immediately. Failure to comply may result in injury to personnel.

NOTE

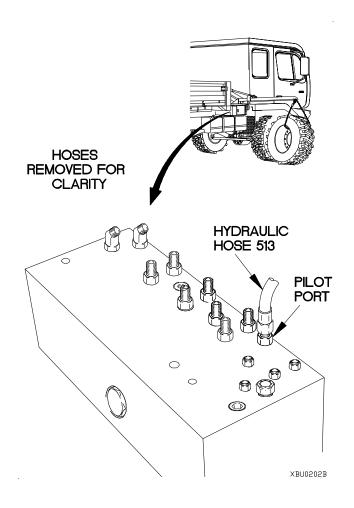
SYSTEM PARK control must be engaged (TM 9-2320-365-10) before operating SUSPENSION compression.

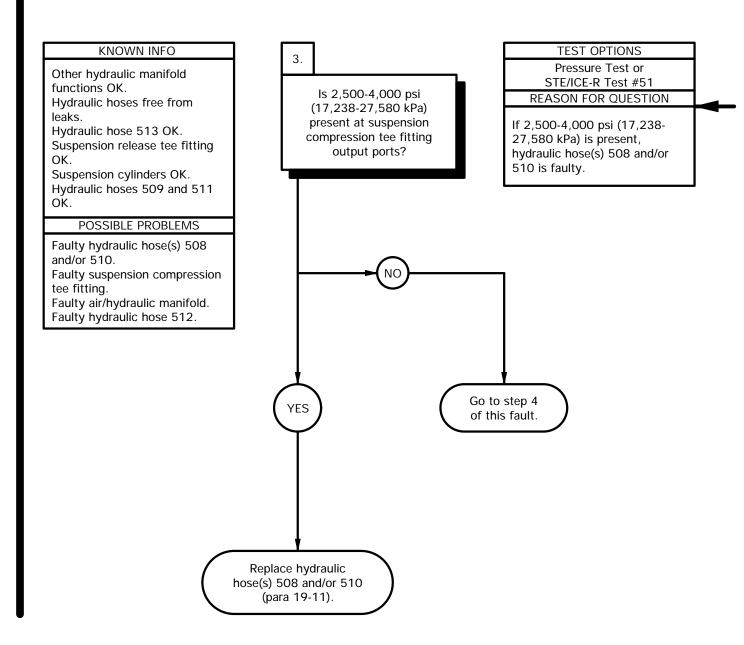
- (1) Position drain pan under RH suspension cylinder.
- (2) Disconnect hydraulic hose 508 from RH suspension cylinder input port.
- (3) Connect STE/ICE-R between hydraulic hose 508 and RH suspension cylinder input port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (6) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (7) Shut down engine (TM 9-2320-365-10).
- (8) Disconnect STE/ICE-R from RH suspension cylinder input port and hydraulic hose 508.
- (9) Connect hydraulic hose 508 to RH suspension cylinder input port.
- (10) Repeat steps (1) through (9) on LH suspension cylinder and hydraulic hose 510.
- (11) If 2,500-4,000 psi (17,238-27,580 kPa) is not present at either suspension cylinder, go to step 3 of this fault.



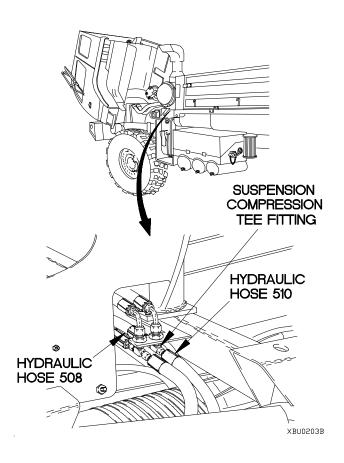


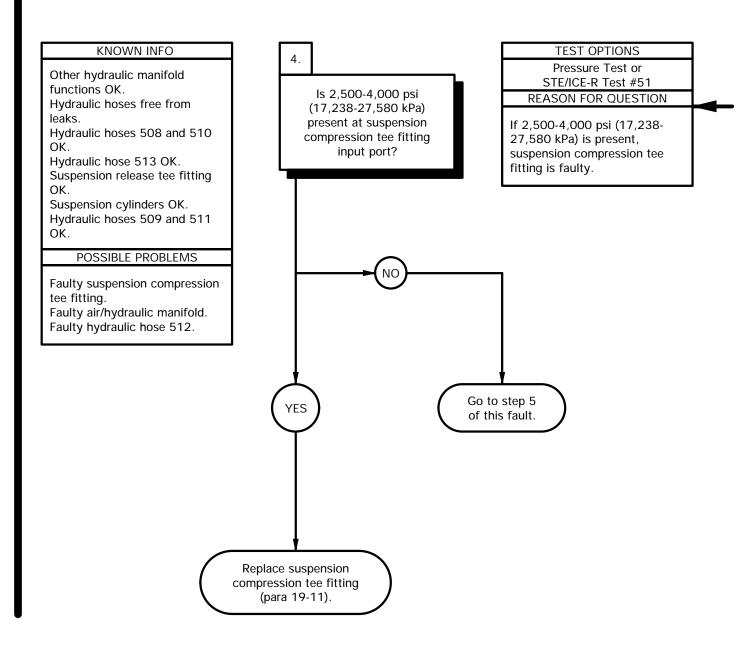
- (1) Position drain pan under air/hydraulic manifold
- (2) Disconnect hydraulic hose 513 from PILOT port.
- (3) Connect STE/ICE-R between hydraulic hose 513 and PILOT port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 6 of this fault.
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, repair or replace air/hydraulic manifold (para 19-4).
- (10) Disconnect STE/ICE-R from hydraulic hose 513 and PILOT port.
- (11) Connect hydraulic hose 513 to PILOT port.



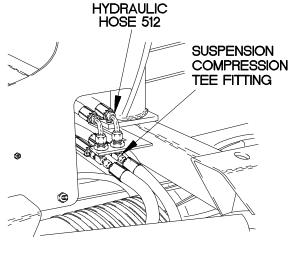


- (1) Position drain pan under suspension compression tee fitting.
- (2) Disconnect hydraulic hose 510 from suspension compression tee fitting LH output port.
- (3) Connect STE/ICE-R between hydraulic hose 510 and suspension compression tee fitting LH output port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to RAISE (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 4 of this fault.
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 510 (para 19-11).
- (10) Disconnect STE/ICE-R from hydraulic hose 510 and suspension compression tee fitting LH output port.
- (11) Connect hydraulic hose 510 to suspension compression tee fitting LH output port.
- (12) Repeat steps (2) through (12) on hydraulic hose 508 and suspension compression tee fitting RH output port.

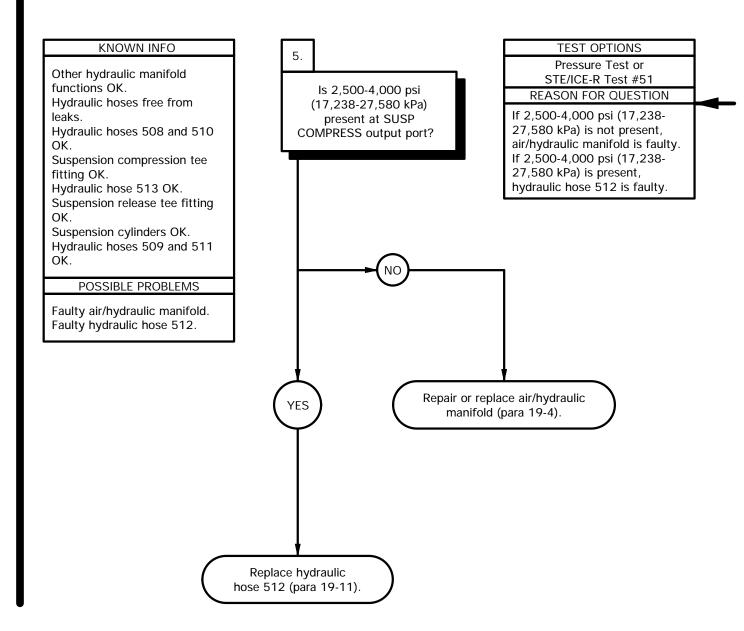




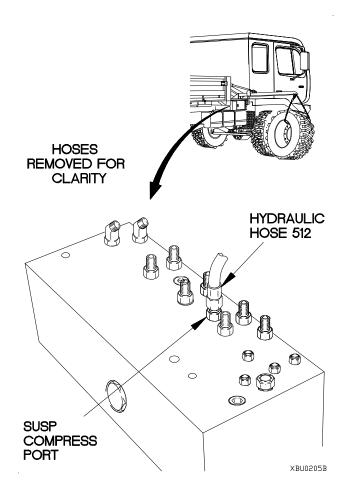
- Disconnect hydraulic hose 512 from suspension compression tee fitting input port.
- (2) Connect STE/ICE-R between hydraulic hose 512 and suspension compression tee fitting input port.
- (3) Start engine (TM 9-2320-365-10).
- (4) Position SUSPENSION knob to RAISE (TM 9-2320-365-10).
- (5) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (6) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (7) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 5 of this fault.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace suspension compression tee fitting (para 19-11).
- (9) Disconnect STE/ICE-R from hydraulic hose 512 and suspension compression tee fitting input port.
- (10) Connect hydraulic hose 512 to suspension compression tee fitting input port.

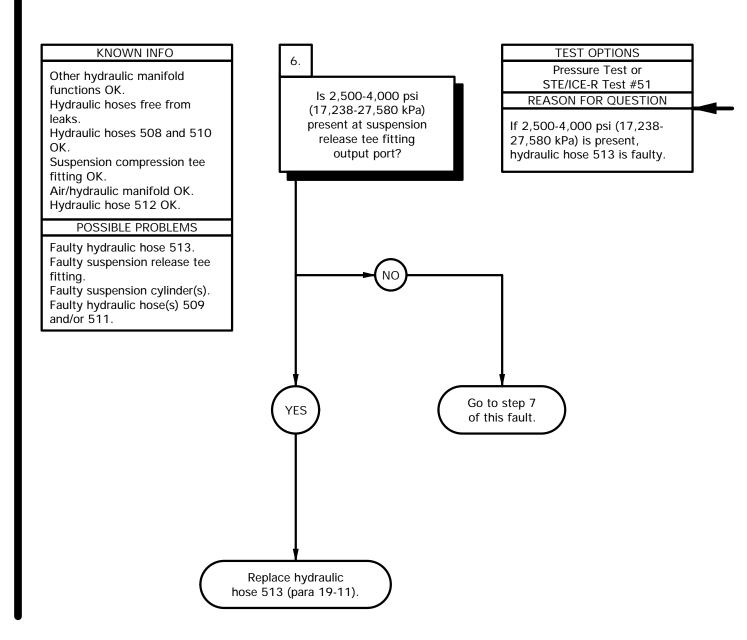


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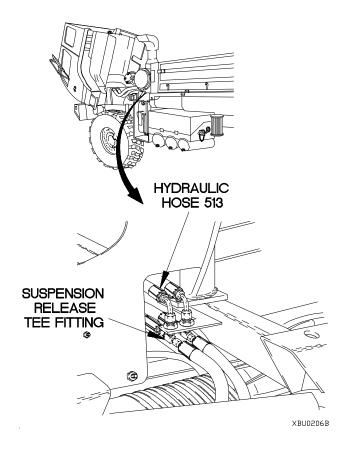


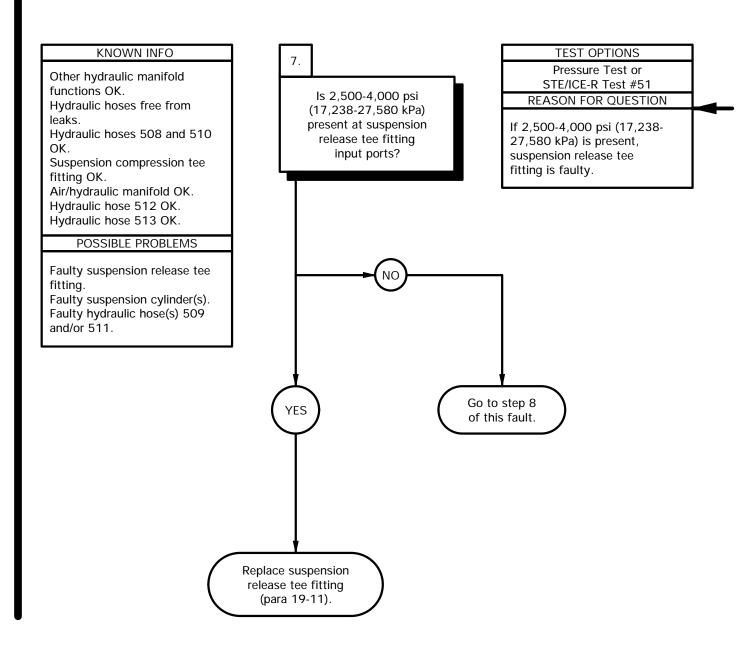
- (1) Position drain pan under air/hydraulic manifold
- (2) Disconnect hydraulic hose 512 from SUSP COMPRESS port.
- (3) Connect STE/ICE-R between hydraulic hose 512 and SUSP COMPRESS port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to RAISE (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, repair or replace air/hydraulic manifold (para 19-4).
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 512 (para 19-11).
- (10) Disconnect STE/ICE-R from hydraulic hose 512 and SUSP COMPRESS port.
- (11) Connect hydraulic hose 512 to SUSP COMPRESS port.



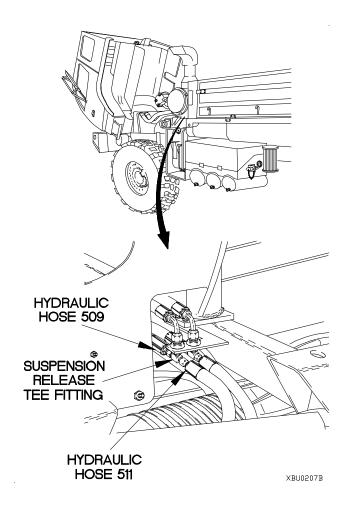


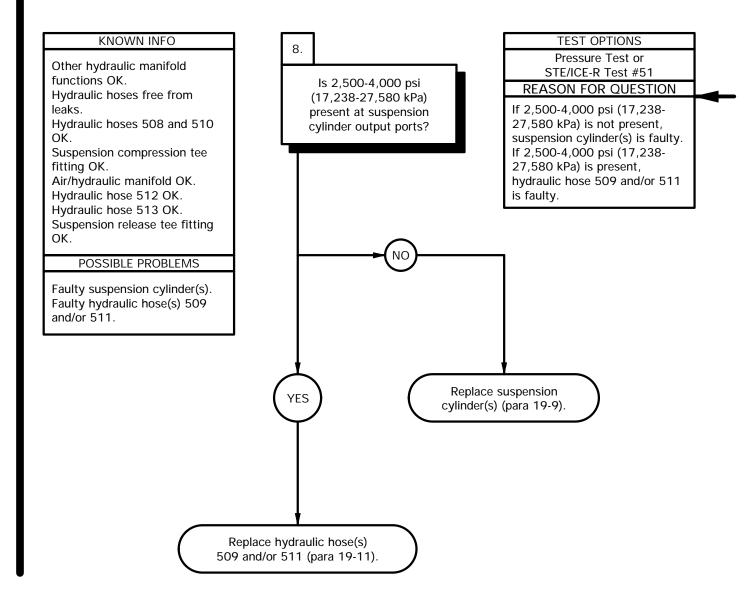
- (1) Position drain pan under suspension release tee fitting.
- (2) Disconnect hydraulic hose 513 from suspension release tee fitting output port.
- (3) Connect STE/ICE-R between hydraulic hose 513 and suspension release tee fitting output port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 7 of this fault.
- (9) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 513 (para 19-11).
- (10) Disconnect STE/ICE-R from hydraulic hose 513 and suspension release tee fitting output port.
- (11) Connect hydraulic hose 513 to suspension release tee fitting output port.



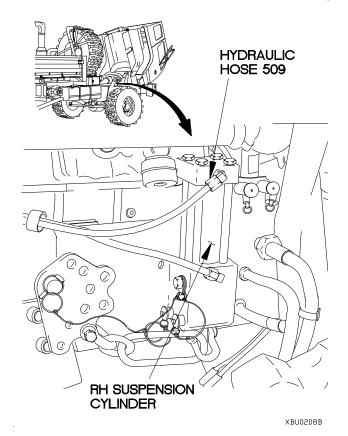


- Disconnect hydraulic hose 511 from suspension release tee fitting LH input port.
- (2) Connect STE/ICE-R between hydraulic hose 511 and suspension release tee fitting LH input port.
- (3) Start engine (TM 9-2320-365-10).
- (4) Position SUSPENSION knob to LOWER (TM 9-2320-365-10).
- (5) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (6) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (7) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, go to step 5 of this fault.
- (8) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose 511 (para 19-11).
- (9) Disconnect STE/ICE-R from hydraulic hose 511 and suspension release tee fitting LH input port.
- (10) Connect hydraulic hose 511 to suspension release tee fitting LH input port.
- (11) Repeat steps (2) through (12) on hydraulic hose 509 and suspension release tee fitting RH input port.





- (1) Position drain pan under RH suspension cylinder.
- (2) Disconnect hydraulic hose 509 from RH suspension cylinder output port.
- (3) Connect STE/ICE-R between hydraulic hose 509 and RH suspension cylinder output port.
- (4) Start engine (TM 9-2320-365-10).
- (5) Position SUSPENSION knob to RAISE (TM 9-2320-365-10).
- (6) Position FUNCTION SELECT knob to SUSPENSION (TM 9-2320-365-10).
- (7) Push and hold PUMP plunger button (TM 9-2320-365-10) and perform STE/ICE-R Test #51.
- (8) Shut down engine (TM 9-2320-365-10).
- (9) Disconnect STE/ICE-R from RH suspension cylinder output port and hydraulic hose 509.
- (10) Connect hydraulic hose 509 to RH suspension cylinder output port.
- (11) Repeat steps (1) through (10) on LH suspension cylinder and hydraulic hose 511.
- (12) If 2,500-4,000 psi (17,238-27,580 kPa) is not present, replace suspension cylinder(s) (para 19-9).
- (13) If 2,500-4,000 psi (17,238-27,580 kPa) is present, replace hydraulic hose(s) 509 and/or 511.



t3. CAB LEVELING AIR SPRINGS 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)

Goggles, Industrial (Item 15, Appendix C)

References TM 9-4910-571-12&P

KNOWN INFO

CTIS operates.

Air hoses free from kinks and leaks.

POSSIBLE PROBLEMS

Faulty variable control check valve.

Faulty air hose 503.

Faulty air hose 522.

Faulty cab leveling valve tee fitting.

Faulty air hose 506.

Faulty air/hydraulic manifold.

Faulty pressure protection valve.

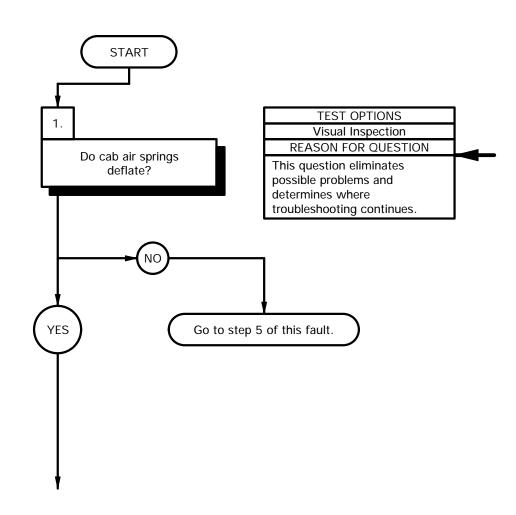
Faulty air hose 501.

Faulty cab leveling valve.

Faulty air spring cylinder(s).

Faulty air hose(s) 504 and/or

505.



NOTE

SYSTEM PARK control must be engaged (TM 9-2320-365-10) before operating SUSPENSION compression.

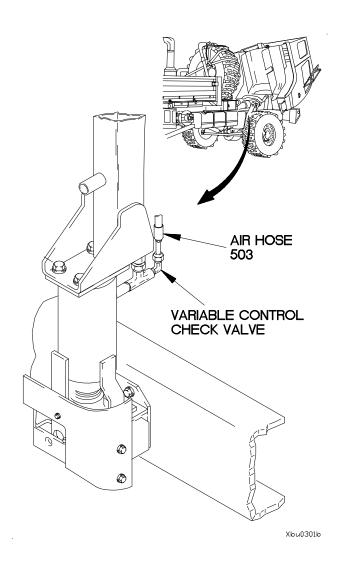
- (1) Attempt to deflate cab air springs (TM 9-2320-365-10).(2) If cab as springs do not deflate, go to step 5
- of this fault.

t3. CAB LEVELING AIR SPRINGS DO NOT OPERATE (CONT)

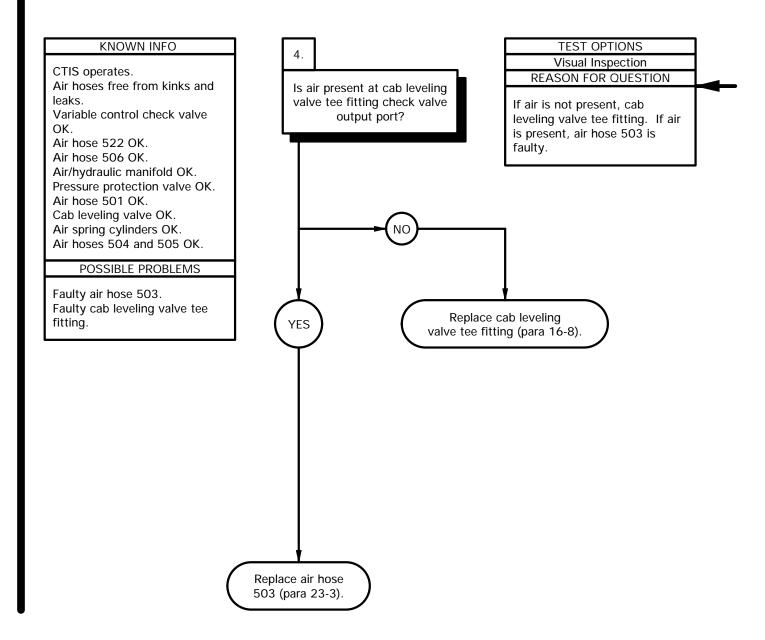
KNOWN INFO **TEST OPTIONS** 2. Visual Inspection CTIS operates. **REASON FOR QUESTION** Air hoses free from kinks and Do cab air springs leaks. This question eliminates inflate? Air hose 522 OK. possible problems and Air hose 506 OK. determines where troubleshooting continues. Air/hydraulic manifold OK. Pressure protection valve OK. Air hose 501 OK. POSSIBLE PROBLEMS Faulty variable control check valve. Faulty air hose 503. Faulty cab leveling valve tee fitting. Faulty cab leveling valve. Go to step 13 YES Faulty air spring cylinder(s). of this fault. Faulty air hose(s) 504 and/or 505. KNOWN INFO TEST OPTIONS 3. Visual Inspection CTIS operates. **REASON FOR QUESTION** Air hoses free from kinks and Is air present at variable leaks. control check valve input If air is present, variable Air hose 522 OK. port? control check valve is faulty. Air hose 506 OK. Air/hydraulic manifold OK. Pressure protection valve OK. Air hose 501 OK. Cab leveling valve OK. Air spring cylinders OK. Air hoses 504 and 505 OK. POSSIBLE PROBLEMS Faulty variable control check Go to step 4 valve. YES of this fault. Faulty air hose 503. Faulty cab leveling valve tee fitting. Replace variable control check valve (para 16-9).

- (1) Attempt to inflate cab air springs (TM 9-2320-365-10).
- (2) If cab air springs do not inflate, go to step 13 of this fault.

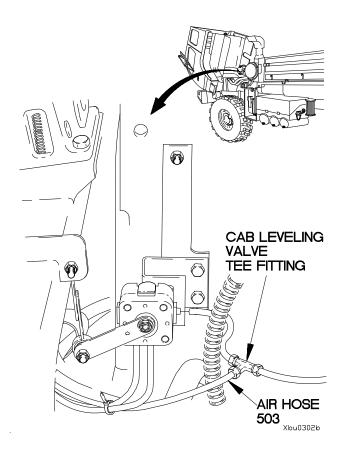
- (1) Start engine and allow air tanks to pressurize (TM 9-2320-365-10).
- (2) Shut down engine (TM 9-2320-365-10).
- (3) Raise cab (TM 9-2320-365-10).
- (4) Loosen air hose 503 at variable control check valve input port.
- (5) Check for pressure of air at air hose 503.
- (6) Tighten air hose 503 to variable control check valve.
- (7) If air is not present, go to step 4 of this fault.
- (8) If air is present, replace variable control check valve (para 16-9).

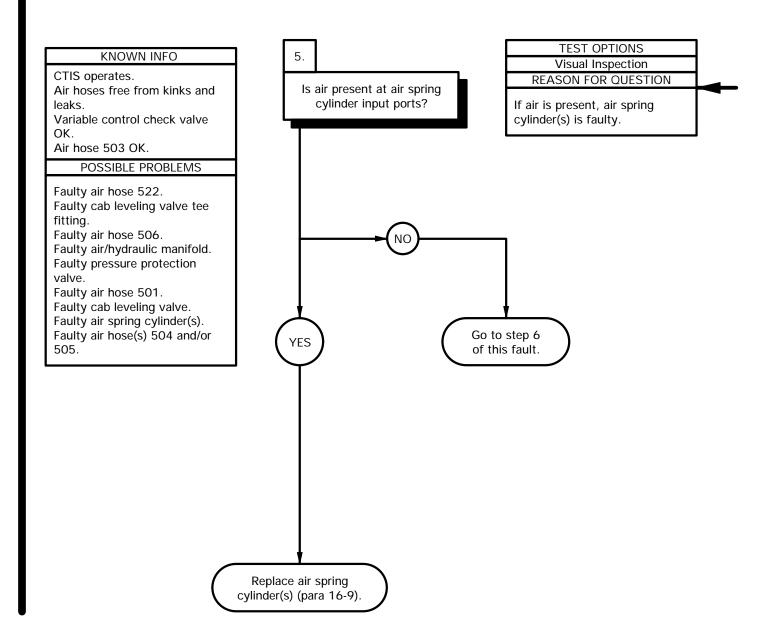


t3. CAB LEVELING AIR SPRINGS DO NOT OPERATE (CONT)

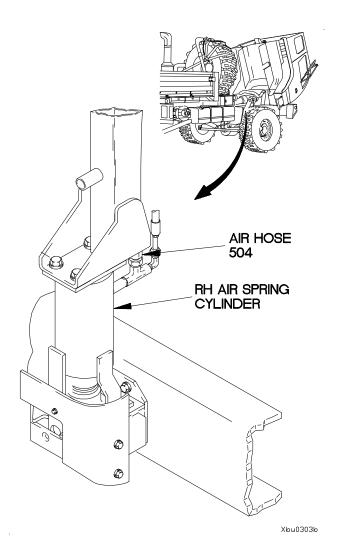


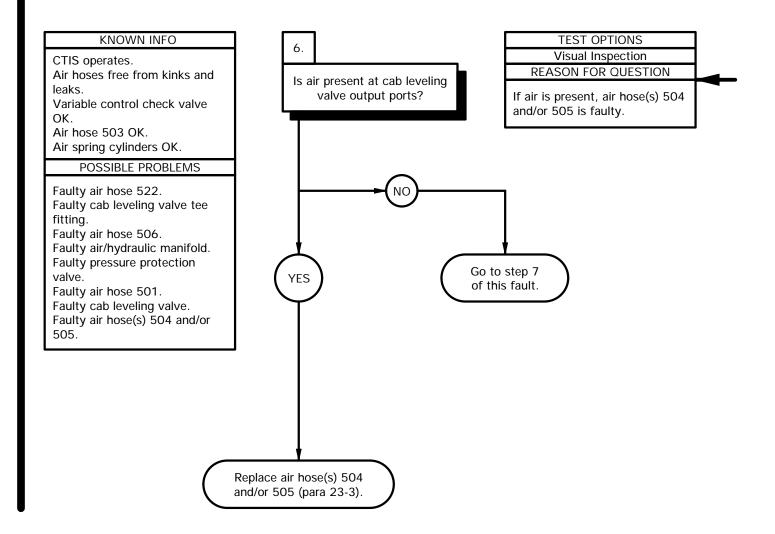
- (1) Loosen air hose 503 at cab leveling valve tee fitting check valve output port.
- (2) Check for pressure of air at cab leveling valve tee fitting check valve output port.
- (3) Tighten air hose 503 at cab leveling valve tee fitting check valve output port.
- (4) Lower cab (TM 9-2320-365-10).
- (5) If air is not present, replace cab leveling valve tee fitting (para 16-8).
- (6) If air is present, replace air hose 503 (para 23-3).



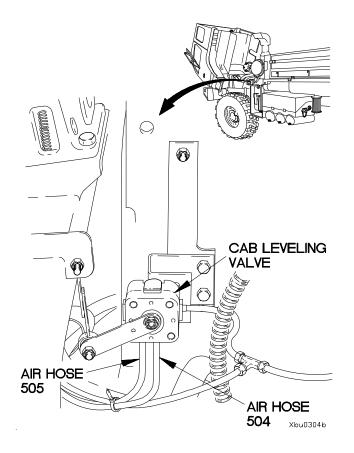


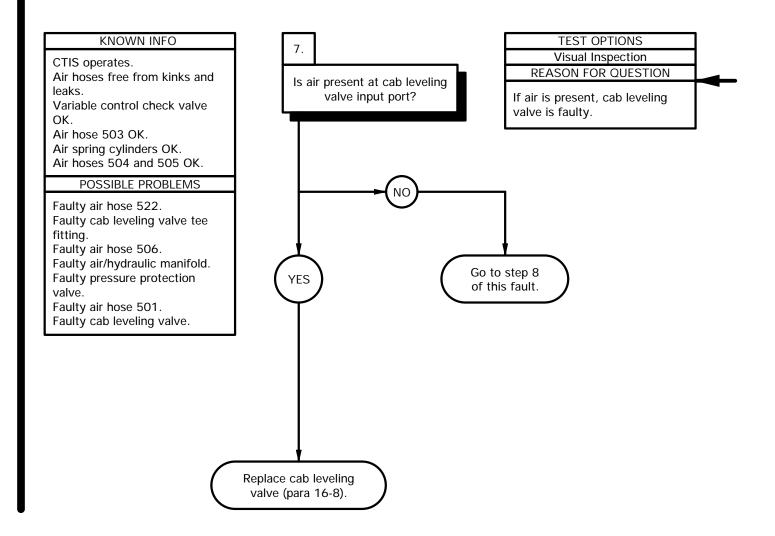
- (1) Start engine and allow air tanks to pressurize (TM 9-2320-365-10).
- (2) Shut down engine (TM 9-2320-365-10).
- (3) Raise cab (TM 9-2320-365-10).
- (4) Loosen air hose 504 at RH air spring cylinder.
- (5) Turn CAB knob to the right and push in (TM 9-2320-365-10).
- (6) Check for presence of air at air hose 504.
- (7) Turn CAB knob to the left (TM 9-2320-365-10).
- (8) Tighten air hose 504 at RH air spring cylinder.
- (9) Repeat steps (4) through (8) on LH air spring cylinder and air hose 505.
- (10) If air is not present, go to step 6 of this fault.
- (11) If air is present, replace air spring cylinder(s) (para 16-9).



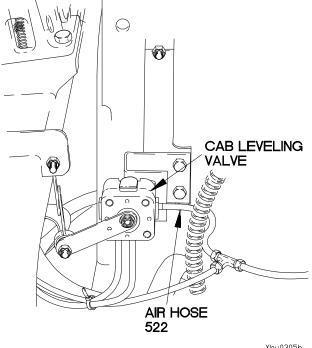


- (1) Loosen air hoses 504 and 505 at cab leveling valve output ports.
- (2) Turn CAB knob to the right and push in
- (TM 9-2320-365-10).(3) Check for presence of air at cab leveling valve output ports.
- (4) Turn CAB knob to the left (TM 9-2320-365-10).
- (5) Tighten air hoses 504 and 505 at cab leveling valve output ports.
- (6) If air is not present, go to step 7 of this fault.
- (7) If air is present, replace air hose(s) 504 and/or 505 (para 23-3).

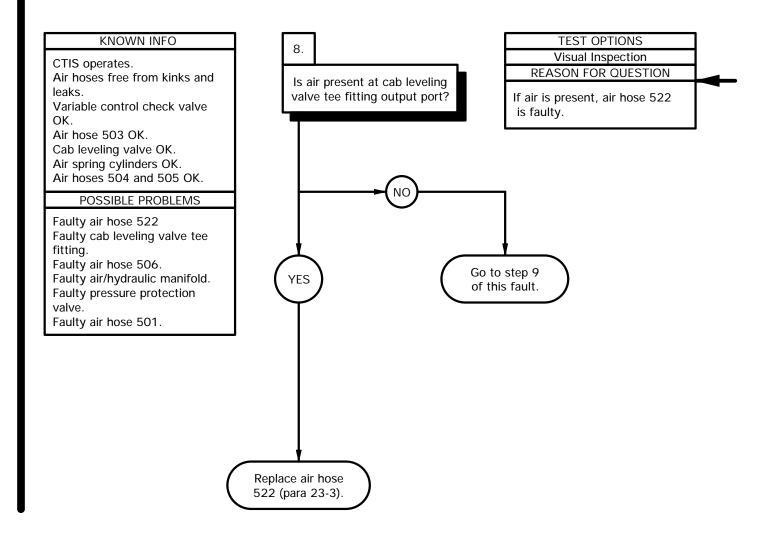




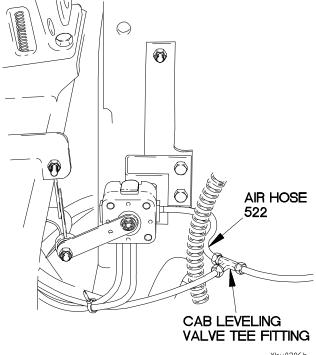
- (1) Loosen air hose 522 at cab leveling valve input port.
- (2) Turn CAB knob to the right and push in (TM 9-2320-365-10).
- (3) Check for presence of air at air hose 522.
- (4) Turn CAB knob to the left (TM 9-2320-365-10).
- (5) Tighten air hose 522 at cab leveling valve input port.
- (6) If air is not present, go to step 8 of this fault.
- (7) If air is present, replace cab leveling valve (para 16-8).



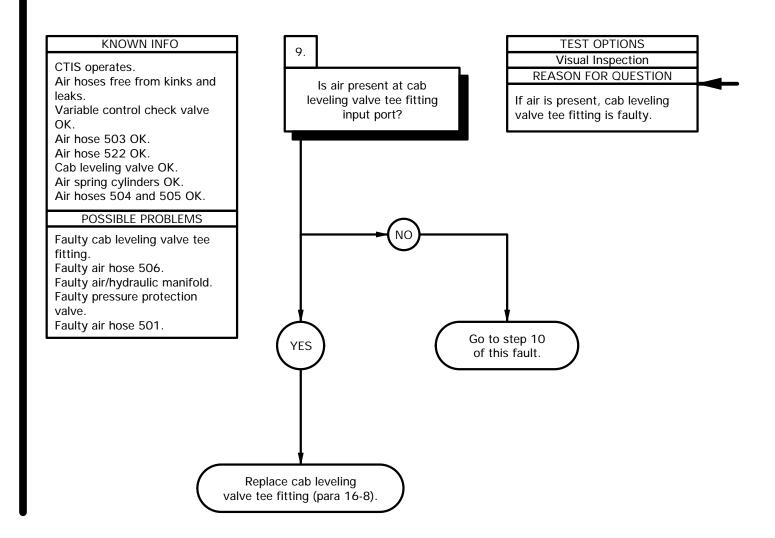
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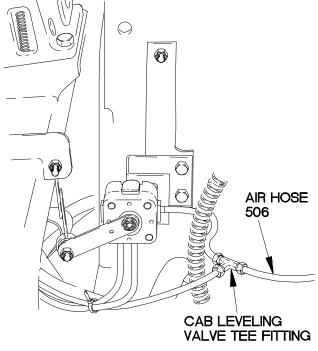
- (1) Loosen air hose 522 at cab leveling valve tee fitting output port.
- (2) Turn CAB knob to the right and push in (TM 9-2320-365-10).
- (3) Check for presence of air at cab leveling valve tee fitting output port.
- (4) Turn CAB knob to the left (TM 9-2320-365-10).
- (5) Tighten air hose 522 at cab leveling valve tee fitting output port.
- (6) If air is not present, go to step 9 of this fault.
- (7) If air is present, replace cab leveling valve tee fitting (para 16-8).



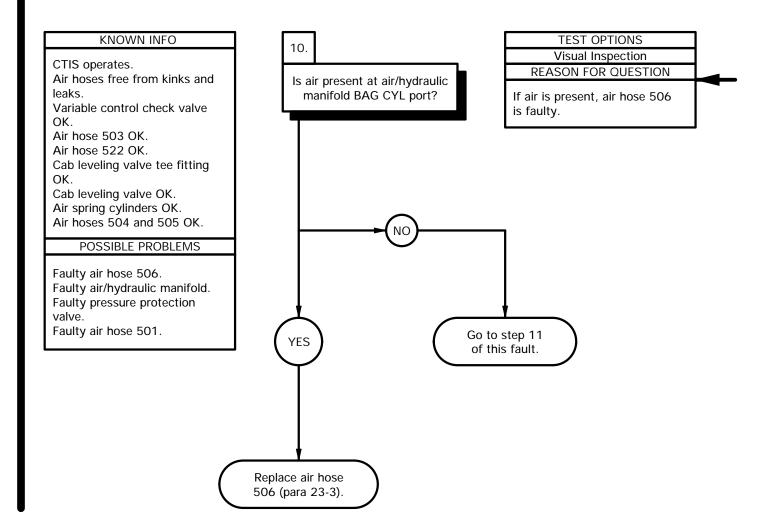
Xbu0306b



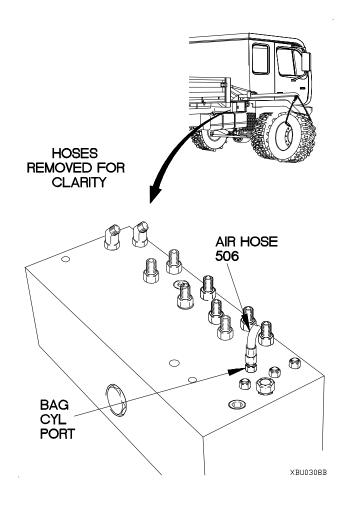
- (1) Loosen air hose 506 at cab leveling valve tee fitting input port.
- (2) Turn CAB knob to the right and push in (TM 9-2320-365-10).
- (3) Check for presence of air at air hose 506.
- (4) Turn CAB knob to the left (TM 9-2320-365-10).
- (5) Tighten air hose 506 at cab leveling valve tee fitting input port.
- (6) Lower cab (TM 9-2320-365-10).
- (7) If air is not present, go to step 10 of this fault.
- (8) If air is present, replace cab leveling valve tee fitting (para 16-8).

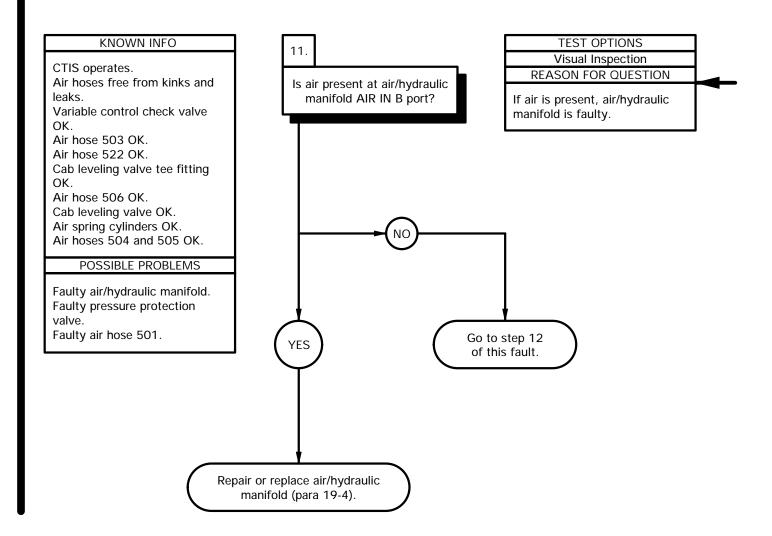


Xbu0307b

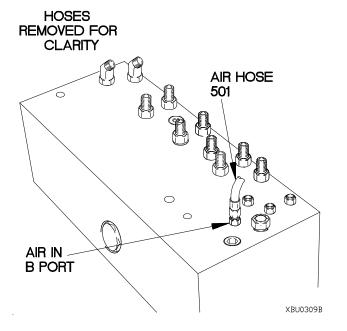


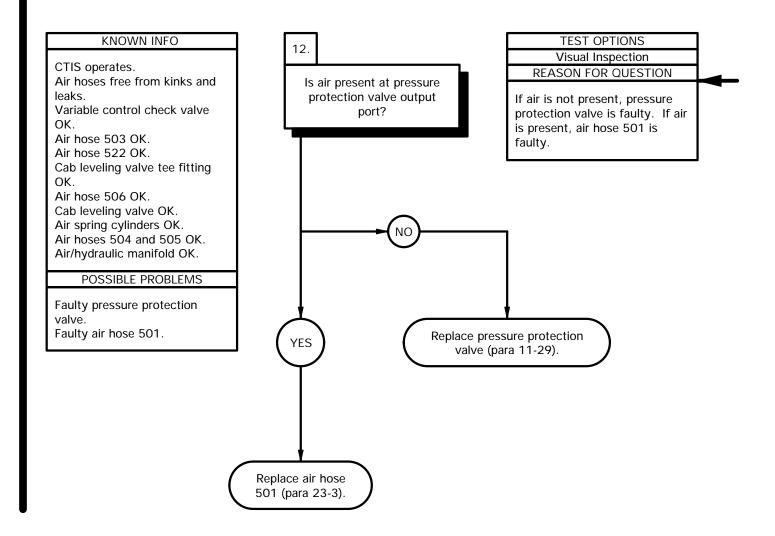
- (1) Loosen air hose 506 at air/hydraulic manifold BAG CYL port.
- (2) Turn CAB knob to the right and push in (TM 9-2320-365-10).
- (3) Check for presence of air at air/hydraulic manifold BAG CYL port.
- (4) Turn CAB knob to the left (TM 9-2320-365-10).
- (5) Tighten air hose 506 at air/hydraulic manifold BAG CYL port.
- (6) If air is not present, go to step 11 of this fault.
- (7) If air is present, replace air hose 506 (para 23-3).



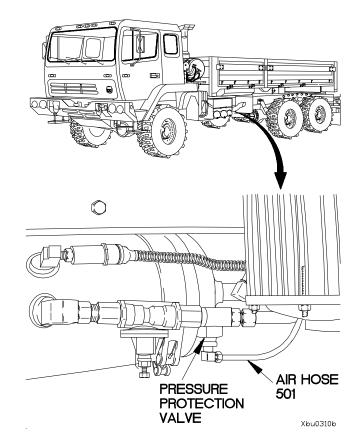


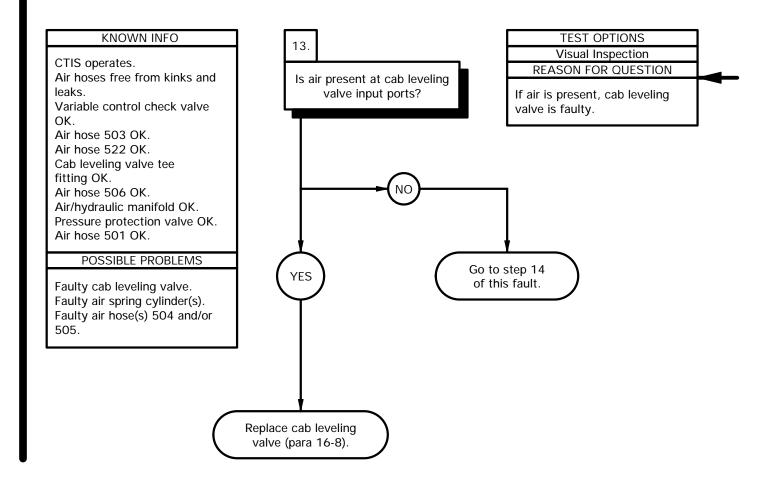
- (1) Loosen air hose 501 at air/hydraulic manifold AIR IN B port.
- (2) Check for presence of air at air hose 501.
- (3) Tighten air hose 501 at air/hydraulic manifold AIR IN B port.
- (4) If air is not present, go to step 12 of this fault.
- (5) If air is present, repair or replace air/hydraulic manifold (para 19-4).



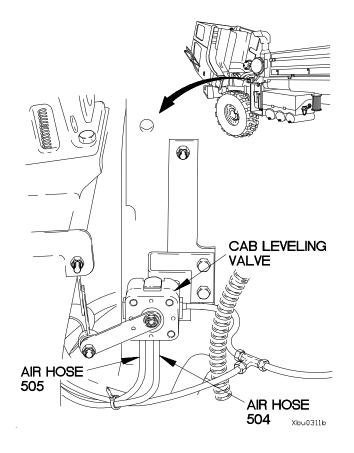


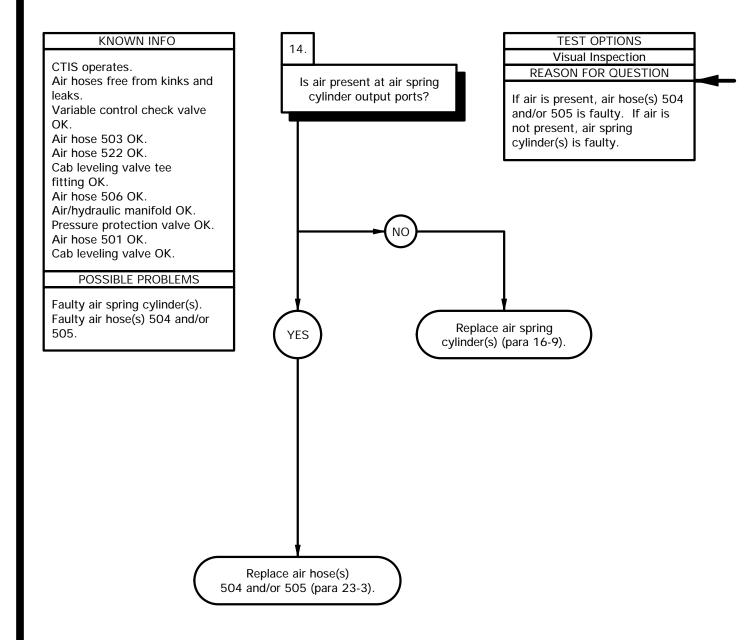
- (1) Loosen air hose 501 at pressure protection valve output port.
- (2) Check for presence of air at pressure protection valve output port.
- (3) Tighten air hose 501 at pressure protection valve output port.
- (4) If air is not present, replace pressure protection valve (para 11-29).
- (5) If air is present, replace air hose 501 (para 23-3).



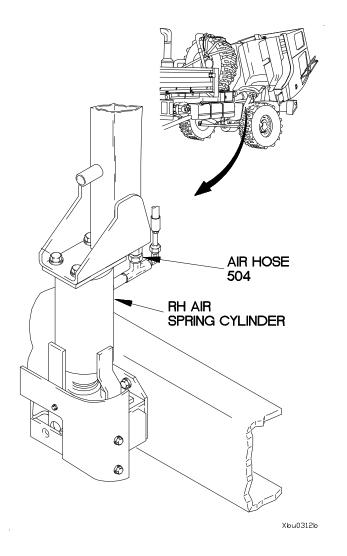


- (1) Start engine and allow air tanks to pressurize (TM 9-2320-365-10).
- (2) Shut down engine (TM 9-2320-365-10).
- (3) Raise cab (TM 9-2320-365-10).
- (4) Loosen air hoses 504 and 505 at cab leveling valve input ports.
- (5) Turn CAB knob to the left (TM 9-2320-365-10).
- (6) Check for presence of air at air hoses 504 and 505.
- (7) Tighten air hoses 504 and 505 at cab leveling valve input ports.
- (8) If air is not present, go to step 14 of this fault.
- (9) If air is present, replace cab leveling valve (para 16-8).





- (1) Loosen air hose 504 at RH air spring cylinder.
- (2) Turn CAB knob to the right (TM 9-2320-365-10).
- (3) Check for presence of air at RH air spring cylinder.
- (4) Tighten air hose 504 at RH air spring cylinder.
- (5) Repeat steps (1) through (4) on LH air spring cylinder and air hose 505.
- (6) Lower cab (TM 9-2320-365-10).
- (7) If air is not present, replace air spring cylinder(s) (para 16-9).
- (8) If air is present, replace air hose(s) 504 and/or 505 (para 23-3).



2-31. SPECIAL PURPOSE KIT TROUBLESHOOTING

This paragraph covers Special Purpose Kit Troubleshooting. The Special Purpose Kit Fault Index, Table 2-57, lists faults for the special purpose kits of the vehicle.

Table 2-57. Special Purpose Kit Fault Index

Fault No.	Description	Page
u1.	No Power to Digitization Rack	2-1978
u2.	No Power to Mobile Tracking System (MTS) Sense	
u3.	No Power to Enhanced Position Location Reporting System (EPLRS)	
u4.	No Power to Precision Lightweight Global Positioning System Receiver (PLGR)	
u5.	No Power to Drive Visual Enhancement (DVE)	
u6.	No Power to SINCGAR/Force XXI Battle Command Brigade and Below (FBCB)	
u7.	No Power to Mobile Tracking System (MTS)	
u8.	Deleted	
u9.	Deleted	
u10.	Deleted	
u11.	Deleted	
u12.	Deleted	2-2038
u13.	Deleted	2-2050
u14.	Deleted	2-2060
u15.	Deleted	2-2062
u16.	Deleted	
u17.	Deleted	
u18.	Troop Transport Alarm Does Not Operate	
u19.	Light Material Handling Crane (LMHC) Does Not Operate	
u20.	Light Material Handling Crane (LMHC) Hoist IN Does Not Operate	
u21.	Light Material Handling Crane (LMHC) Hoist OUT Does Not Operate	2-2110

u1. NO POWER TO DIGITIZATION RACK

INITIAL SETUP

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

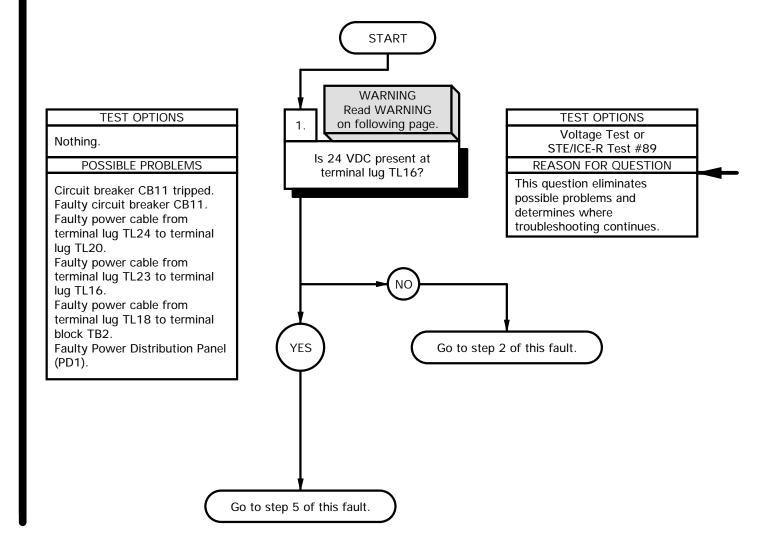
Materials/Parts
Ties, Cable, Plastic (Item 76, Appendix D)

Tools/Special Tools

Multimeter, Digital (Item 22, Appendix C)

Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required (2)

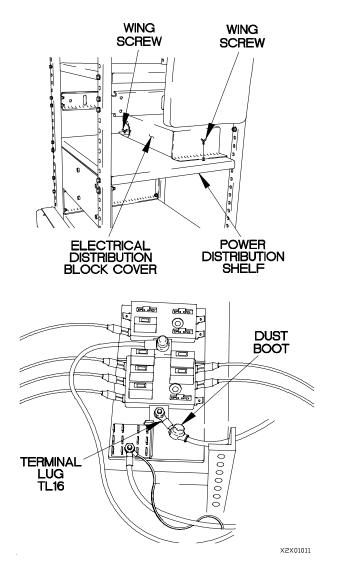


WARNING

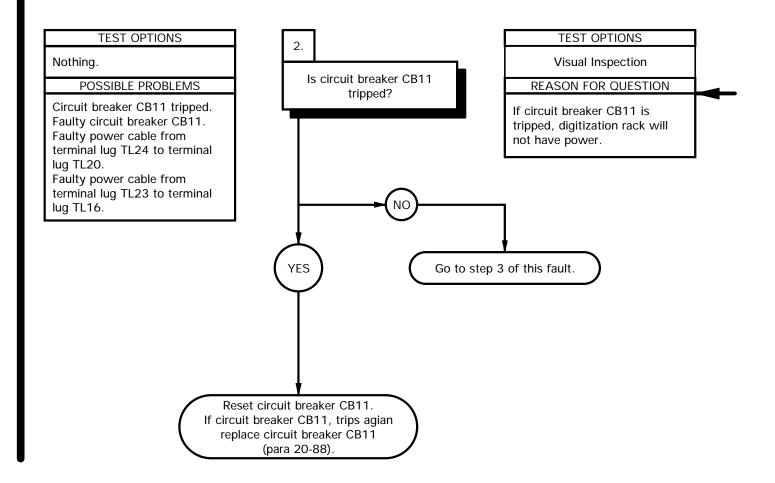
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

- (1) Remove wing screw from power distribution shelf.
- (2) Loosen wing screw on electrical distribution block cover.
- (3) Remove electrical distribution block cover from power distribution shelf.
- (4) Remove dust boot from terminal lug TL16.
- (5) Set multimeter to volts DC.
- (6) Connect positive (+) probe of multimeter to terminal lug TL16.
- (7) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
- (8) If 24 VDC is not present, go to step 2 of this fault.
- (9) If 24 VDC is present, go to step 5 of this fault.
- (10) Install dust boot on terminal lug TL16.



u1. NO POWER TO DIGITIZATION RACK (CONT)

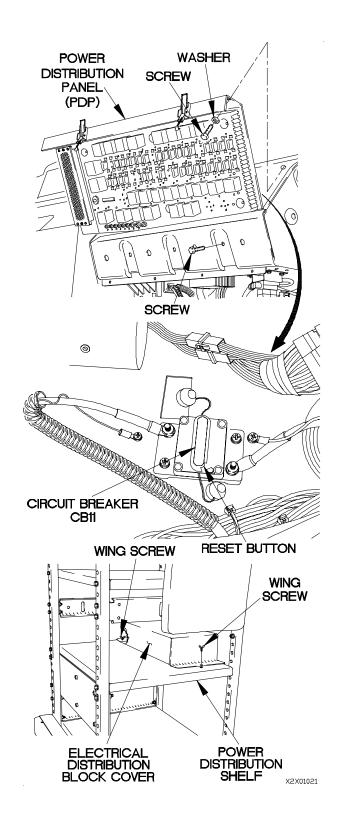


- (1) Remove three screws and washers from Power Distribution Panel (PDP).
- (2) Remove three screws from Power Distribution Panel (PDP).
- (3) Lift Power Distribution Panel (PDP) to gain access.
- (4) Push in reset button on circuit breaker CB11 to see if it is tripped.
- (5) If circuit breaker CB11 is not tripped, go to step 3 of this fault.
- (6) If circuit breaker CB11 trips agian, replace circuit breaker CB11 (para 20-88).

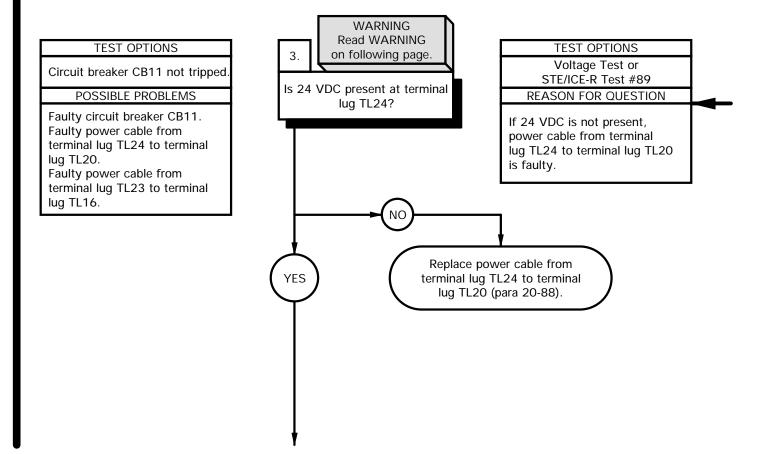
NOTE

Perform steps (7) through (9) if circuit breaker CB11 is faulty.

- (7) Position electrical distribution block cover on power distribution shelf.
- (8) Tighten wing screw on electrical distribution block cover.
- (9) Install wing screw in power distribution shelf.



u1. NO POWER TO DIGITIZATION RACK (CONT)

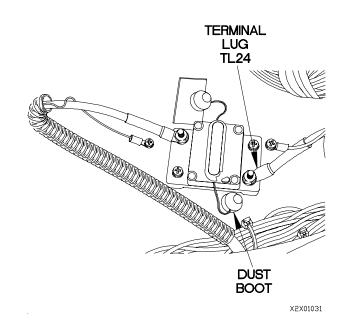


WARNING

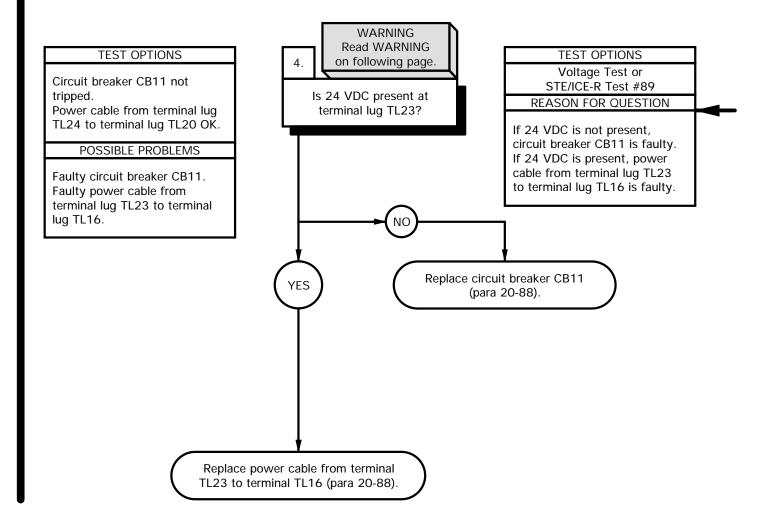
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

- (1) Remove dust boot from terminal lug TL24.
- (2) Set multimeter to volts DC.
- (3) Connect positive (+) probe of multimeter to terminal lug TL24.
- (4) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (5) If 24 VDC is not present, replace power cable from terminal lug TL24 to terminal lug TL20 (para 20-88).
- (6) Install dust boot on terminal lug TL24.



u1. NO POWER TO DIGITIZATION RACK (CONT)



WARNING

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

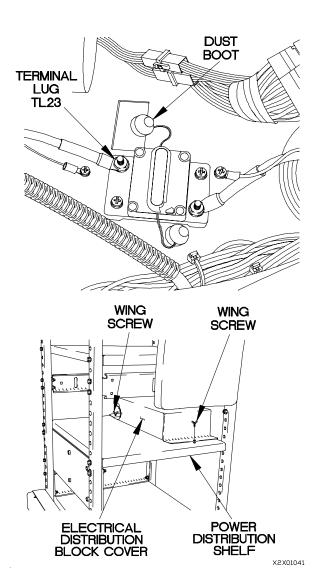
VOLTAGE TEST

- (1) Remove dust boot from terminal lug TL23.
- (2) Set multimeter to volts DC.
- (3) Connect positive (+) probe of multimeter to terminal lug TL23.
- (4) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (5) If 24 VDC is not present, replace circuit breaker CB11 (para 20-88).
- (6) If 24 VDC is present, replace power cable from terminal lug TL23 to terminal lug TL16 (para 20-88).

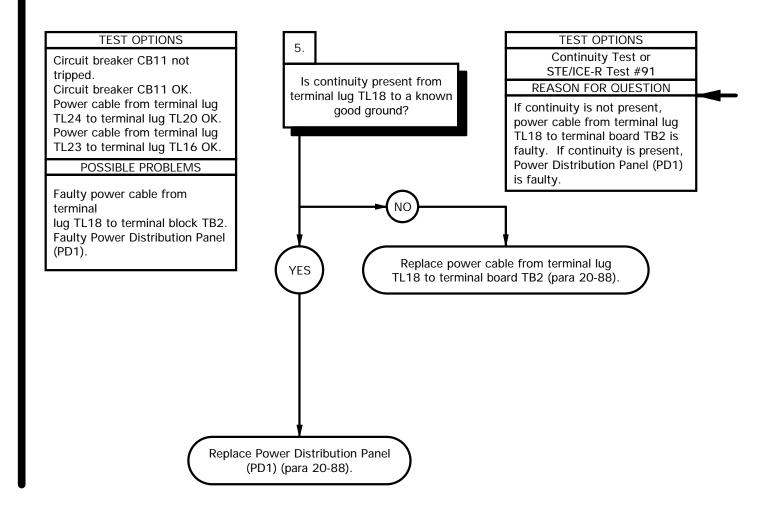
NOTE

Perform steps (7) through (9) if circuit breaker CB11 is faulty.

- (7) Position electrical distribution block cover on power distribution shelf.
- (8) Tighten wing screw on electrical distribution block cover.
- (9) Install wing screw on power distribution shelf.

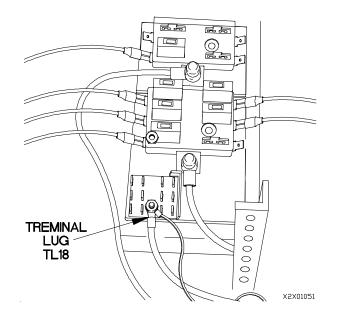


u1. NO POWER TO DIGITIZATION RACK (CONT)



CONTINUITY TEST

- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to terminal lug TL18.
- (3) Connect negative (-) probe of multimeter to a known good ground and note reading on multimeter.
- (4) If continuity is not present, replace power cable from terminal lug TL18 to terminal board TB2 (para 20-88).
- (5) If continuity is present, replace Power Distribution Panel (PD1) (para 20-88).



u2. NO POWER TO MOBILE TRACKING SYSTEM (MTS) SENSE

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-365-10)

Materials/Parts

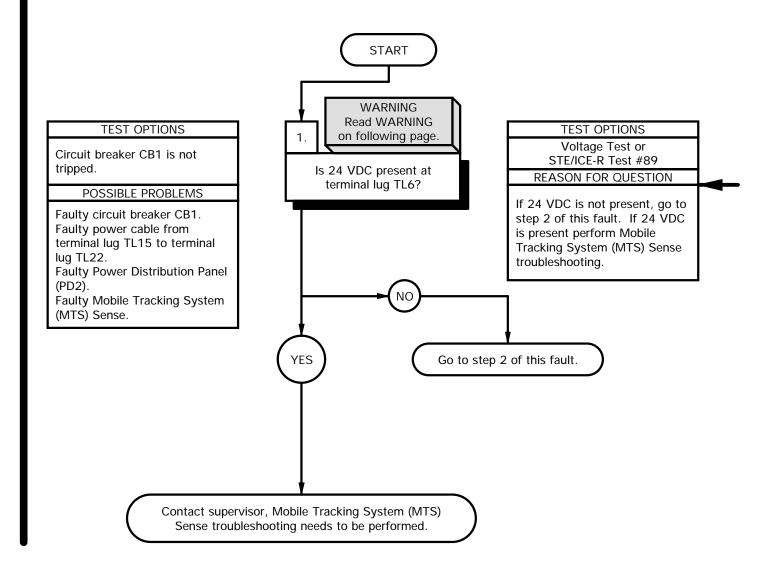
Ties, Cable, Plastic (Item 76, Appendix D)

Tools/Special Tools

Multimeter, Digital (Item 22, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required

(2)

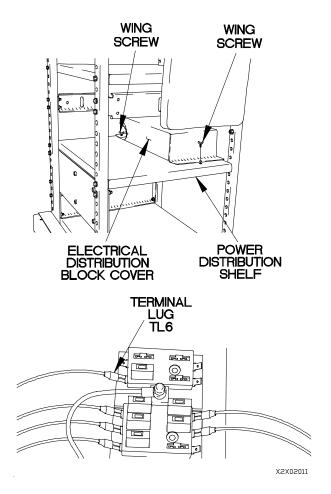


WARNING

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

VOLTAGE TEST

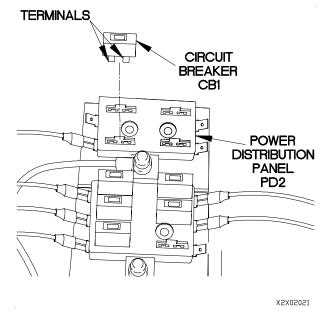
- (1) Remove wing screw from power distribution shelf.
- (2) Loosen wing screw on electrical distribution block cover.
- (3) Remove electrical distribution block cover from power distribution shelf.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to terminal lug TL6.
- (6) Connect negative (-) probe of multimeter to known good ground.
- (7) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
- (8) Position master power switch to off (TM 9-2320-365-10).
- (9) If 24 VDC is not present, go to step 2 of this fault.
- (10) If 24 VDC is present, contact supervisor, Mobile Tracking System (MTS) Sense troubleshooting needs to be performed.



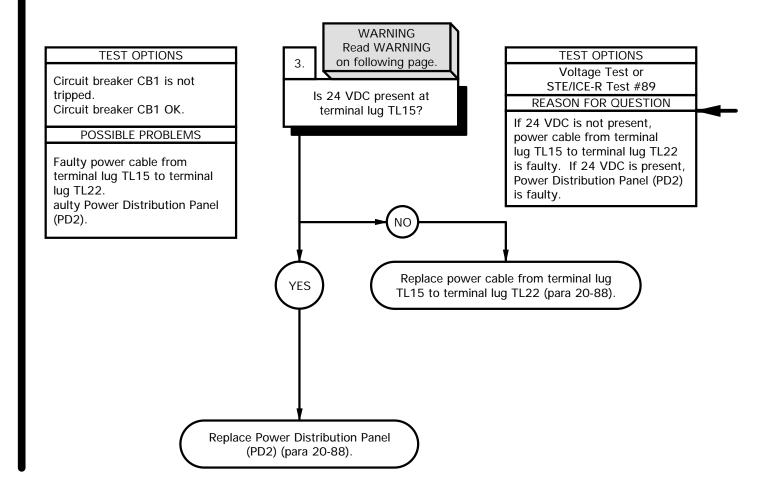
u2. NO POWER TO MOBILE TRACKING SYSTEM (MTS) SENSE (CONT)

TEST OPTIONS TEST OPTIONS 2. Continuity Test or Circuit breaker CB1 is not STE/ICE-R Test #91 tripped. Is continuity present through REASON FOR QUESTION circuit breaker CB1? POSSIBLE PROBLEMS If continuity is not present, Faulty circuit breaker CB1. circuit breaker CB1 isfaulty. Faulty power cable from terminal lug TL15 to terminal lug TL22. **Faulty Power Distribution** Panel (PD2). NO Replace circuit breaker YES CB1 (para 20-87).

- (1) Remove circuit breaker CB1 from Power Distribution Panel (PD2).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one terminal of circuit breaker CB1.
- (4) Connect negative (-) probe of multimeter to other terminal of circuit breaker CB1 and note reading on multimeter.
- (5) If continuity is not present, replace circuit breaker CB1 (para 20-87).
- (6) Install circuit breaker CB1 in Power Distribution Panel (PD2).



u2. NO POWER TO MOBILE TRACKING SYSTEM (MTS) SENSE (CONT)

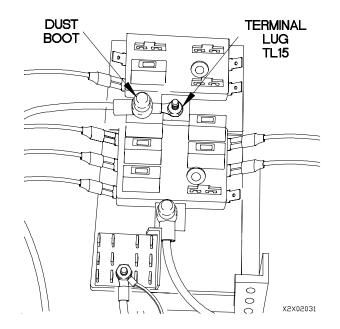


WARNING

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

VOLTAGE TEST

- (1) Remove dust boot from terminal lug TL15.
- (2) Set multimeter to volts DC.
- (3) Connect positive (+) probe of multimeter to terminal lug TL15.
- (4) Connect negative (-) probe of multimeter to known good ground.
- (5) Position master power switch to on (TM 9-2320-365-10) and note reading on multimeter.
- (6) Position master power switch to off (TM 9-2320-365-10).
- (7) If 24 VDC is not present, replace power cable from terminal lug TL15 to terminal lug TL22 (para 20-88).
- (8) If 24 VDC is present, replace Power Distribution Panel (PD2) (para 20-88).



u3. NO POWER TO ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-365-10)

Materials/Parts

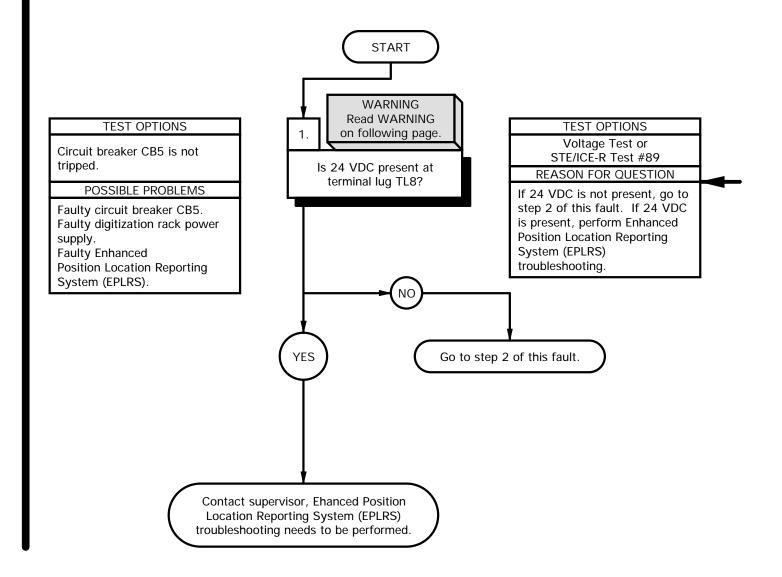
Ties, Cable, Plastic (Item 76, Appendix D)

Tools/Special Tools

Multimeter, Digital (Item 22, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required

(2)

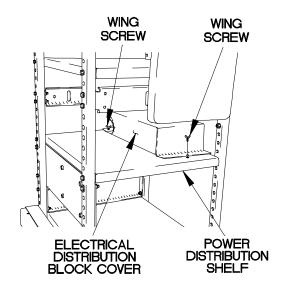


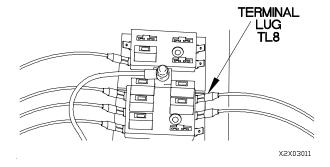
WARNING

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

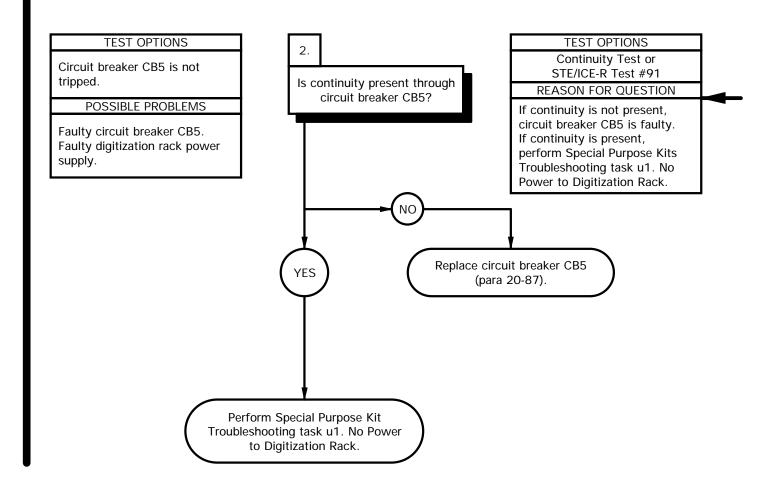
VOLTAGE TEST

- Remove wing screw from power distribution shelf.
- (2) Loosen wing screw on electrical distribution block cover.
- (3) Remove electrical distribution block cover from power distribution shelf.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to terminal lug TL8.
- (6) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
- (7) If 24 VDC is not present, go to step 2 of this fault
- (8) If 24 VDC is present, contact supervisor, Enhanced Position Location Reporting System (EPLRS) troubleshooting needs to be performed.





u3. NO POWER TO ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS) (CONT)

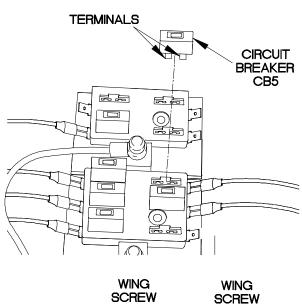


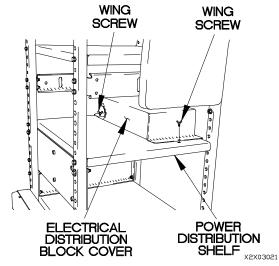
- (1) Remove circuit breaker CB5 from Power Distribution Panel (PD1).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one terminal of circuit breaker CB5.
- (4) Connect negative (-) probe of multimeter to other probe of circuit breaker CB5 and note reading on multimeter.
- (5) If continuity is not present, replace circuit breaker CB5 (para 20-87).
- (6) If continuity is present, perform Special Purpose Kit Troubleshooting task u1. No Power to Digitization Rack.

NOTE

Perform steps (7) through (10), if continuity is present through circuit breaker CB5.

- (7) Install circuit breaker CB5 in Power Distribution Panel (PD1)
- (8) Position electrical distribution block cover on power distribution shelf.
- (9) Tighten wing nut on electrical distribution block cover.
- (10) Install wing screw on power distribution shelf.





u4. NO POWER TO PRECISION LIGHTWEIGHT GLOBAL POSITIONING SYSTEM RECEIVER (PLGR)

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-365-10)

Materials/Parts

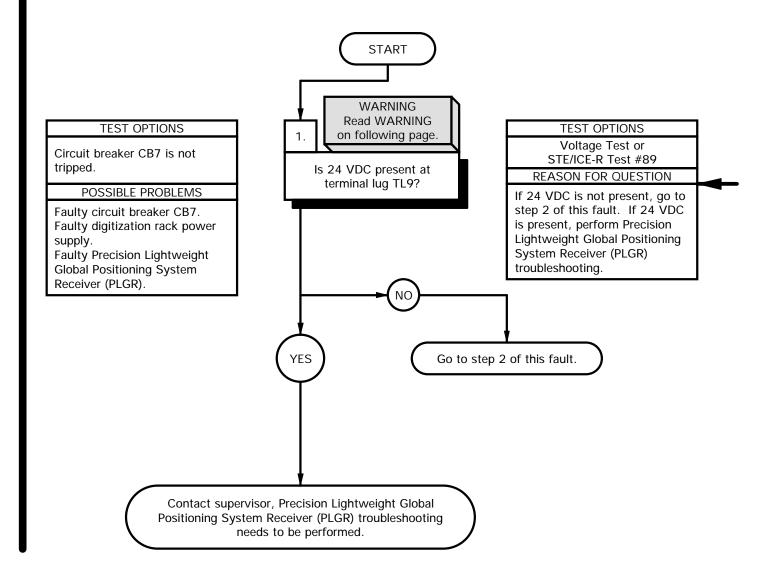
Ties, Cable, Plastic (Item 76, Appendix D)

Tools/Special Tools

Multimeter, Digital (Item 22, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required

(2)

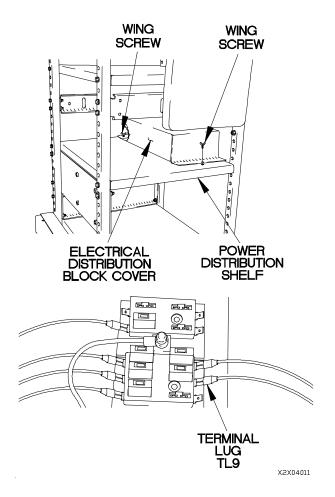


WARNING

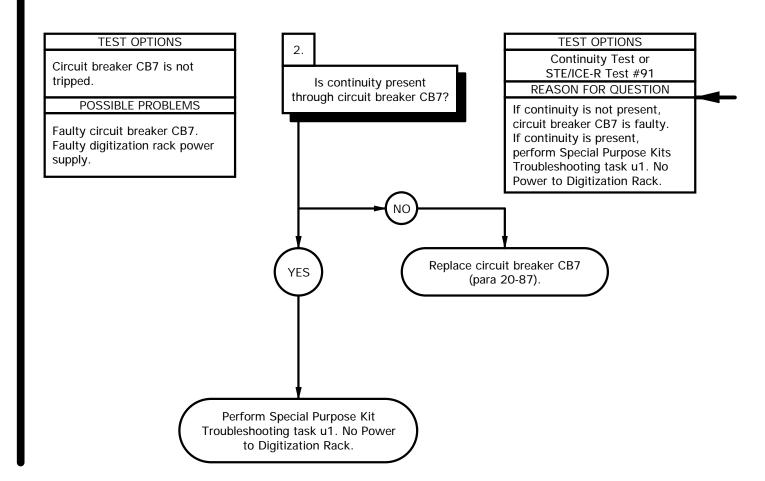
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

- (1) Remove wing screw from power distribution shelf.
- (2) Loosen wing screw on electrical distribution block cover.
- (3) Remove electrical distribution block cover from power distribution shelf.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to terminal lug TL9.
- (6) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
- (7) If 24 VDC is not present, go to step 2 of this fault.
- (8) If 24 VDC is present, contact supervisor, Precision Lightweight Global Positioning System Receiver (PLGR) troubleshooting needs to be performed.



u4. NO POWER TO PRECISION LIGHTWEIGHT GLOBAL POSITIONING SYSTEM RECEIVER (PLGR) (CONT)

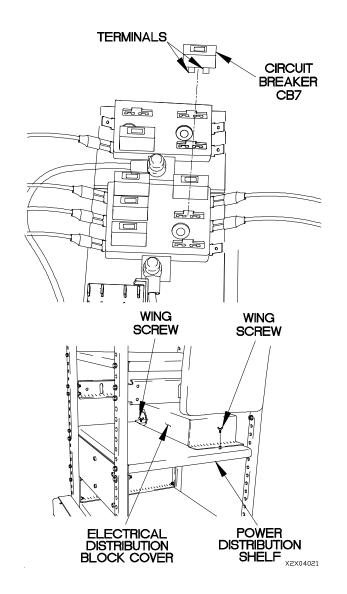


- (1) Remove circuit breaker CB7 from Power Distribution Panel (PD1).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one terminal of circuit breaker CB7.
- (4) Connect negative (-) probe of multimeter to other probe of circuit breaker CB7 and note reading on multimeter.
- (5) If continuity is not present, replace circuit breaker CB7 (para 20-87).
- (6) If continuity is present, perform Special Purpose Kit Troubleshooting task u1. No Power to Digitization Rack.

NOTE

Perform steps (7) through (10), if continuity is present through circuit breaker CB7.

- (7) Install circuit breaker CB7 in Power Distribution Panel (PD1)
- (8) Position electrical distribution block cover on power distribution shelf.
- (9) Tighten wing nut on electrical distribution block cover.
- (10) Install wing screw on power distribution shelf.



u5. NO POWER TO DRIVER VISUAL ENHANCEMENT (DVE)

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-365-10)

Materials/Parts

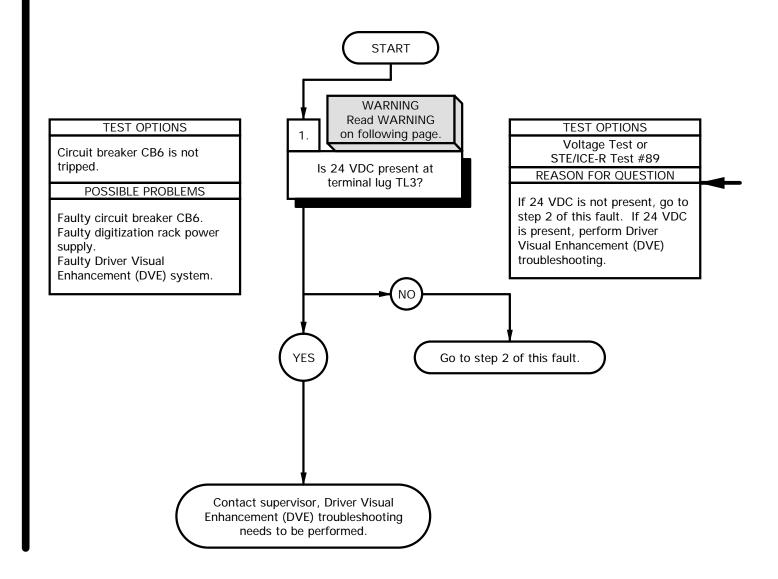
Ties, Cable, Plastic (Item 76, Appendix D)

Tools/Special Tools

Multimeter, Digital (Item 22, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required

(2)

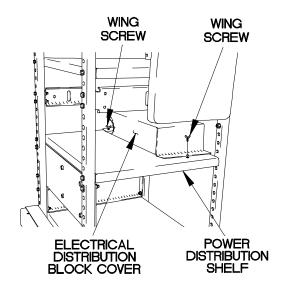


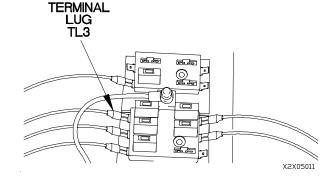
WARNING

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

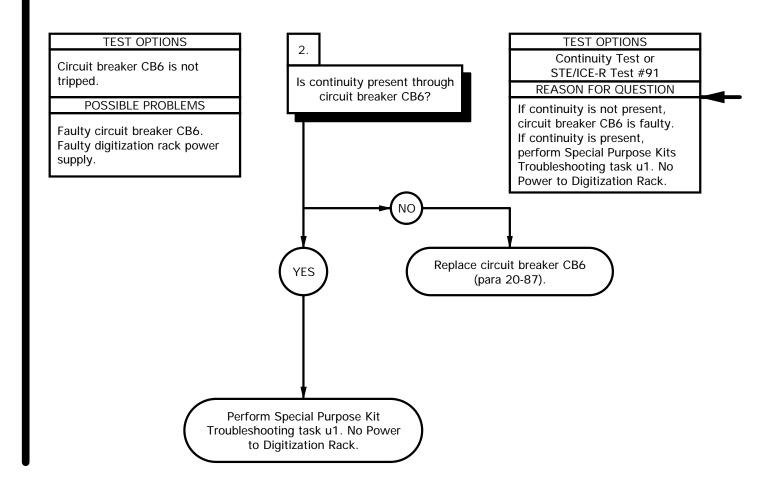
VOLTAGE TEST

- (1) Remove wing screw from power distribution shelf.
- (2) Loosen wing screw on electrical distribution block cover.
- (3) Remove electrical distribution block cover from power distribution shelf.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to terminal lug TL3.
- (6) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
- (7) If 24 VDC is not present, go to step 2 of this fault.
- (8) If 24 VDC is present, contact supervisor, Driver Visual Enhancement (DVE) troubleshooting needs to be performed.





u5. NO POWER TO DRIVER VISUAL ENHANCEMENT (DVE) (CONT)

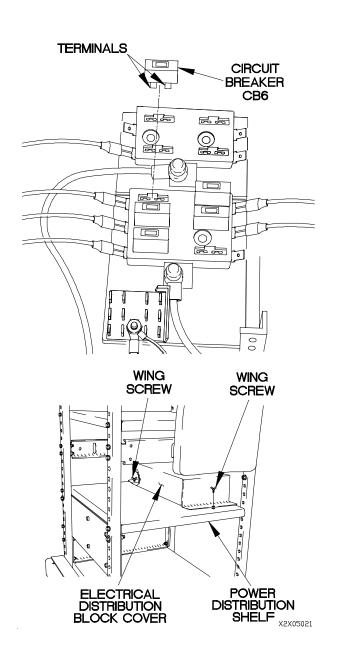


- (1) Remove circuit breaker CB6 from Power Distribution Panel (PD1).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one terminal of circuit breaker CB6.
- (4) Connect negative (-) probe of multimeter to other probe of circuit breaker CB6 and note reading on multimeter.
- (5) If continuity is not present, replace circuit breaker CB6 (para 20-87).
- (6) If continuity is present, perform Special Purpose Kit Troubleshooting task u1. No Power to Digitization Rack.

NOTE

Perform steps (7) through (10), if continuity is present through circuit breaker CB6.

- (7) Install circuit breaker CB6 in Power Distribution Panel (PD1)
- (8) Position electrical distribution block cover on power distribution shelf.
- (9) Tighten wing nut on electrical distribution block cover.
- (10) Install wing screw on power distribution shelf.



u6. NO POWER TO SINGLE CHANNEL GROUND & AIRBORNE RADIO (SINCGAR)/FORCE XXI BATTLE COMMAND BRIGADE OR BELOW (FBCB)

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-365-10)

Materials/Parts

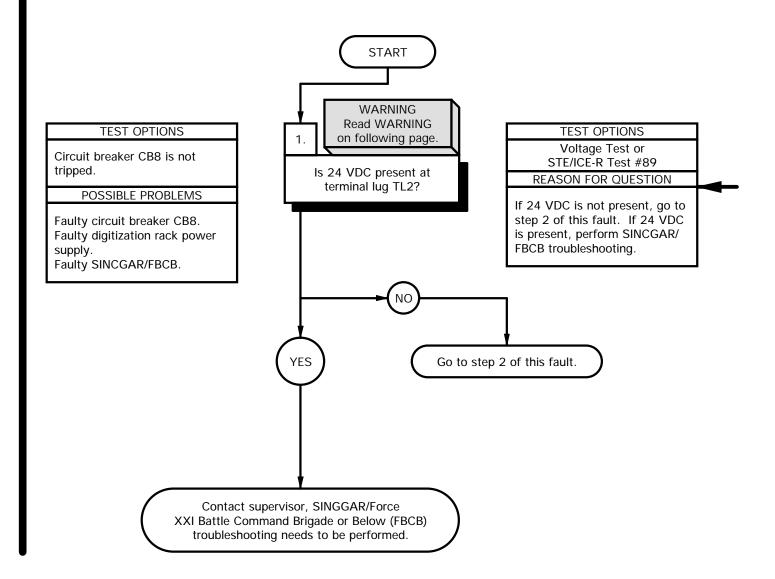
Ties, Cable, Plastic (Item 76, Appendix D)

Tools/Special Tools

Multimeter, Digital (Item 22, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required

(2)

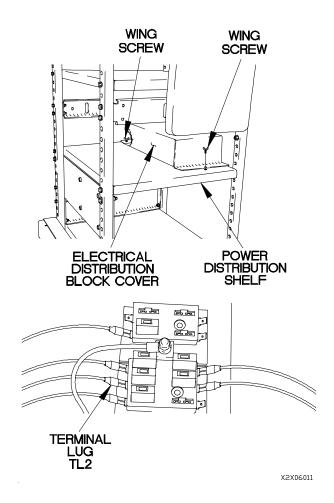


WARNING

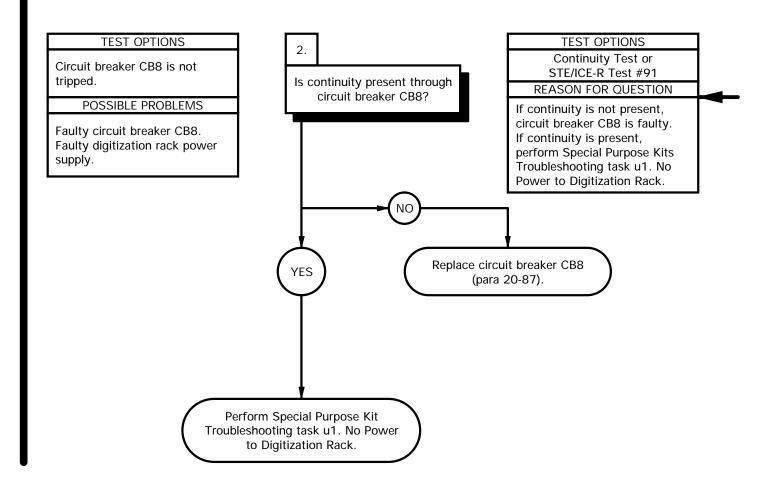
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

- (1) Remove wing screw from power distribution shelf.
- (2) Loosen wing screw on electrical distribution block cover.
- (3) Remove electrical distribution block cover from power distribution shelf.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to terminal lug TL2.
- (6) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
- (7) If 24 VDC is not present, go to step 2 of this fault.
- (8) If 24 VDC is present, contact supervisor, SINCGAR/FBCB troubleshooting needs to be performed.



u6. NO POWER TO SINGLE CHANNEL GROUND & AIRBORNE RADIO (SINCGAR)/FORCE XXI BATTLE COMMAND BRIGADE OR BELOW (FBCB) (CONT)

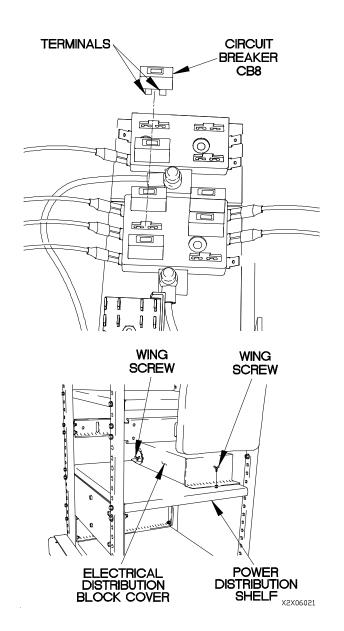


- (1) Remove circuit breaker CB8 from Power Distribution Panel (PD1).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one terminal of circuit breaker CB8.
- (4) Connect negative (-) probe of multimeter to other probe of circuit breaker CB8 and note reading on multimeter.
- (5) If continuity is not present, replace circuit breaker CB8 (para 20-87).
- (6) If continuity is present, perform Special Purpose Kit Troubleshooting task u1. No Power to Digitization Rack.

NOTE

Perform steps (7) through (10), if continuity is present through circuit breaker CB8.

- (7) Install circuit breaker CB8 in Power Distribution Panel (PD1)
- (8) Position electrical distribution block cover on power distribution shelf.
- (9) Tighten wing nut on electrical distribution block cover.
- (10) Install wing screw on power distribution shelf.



u7. NO POWER TO MOBILE TRACKING SYSTEM (MTS)

INITIAL SETUP

Equipment Conditions

Engine shut down (TM 9-2320-365-10)

Materials/Parts

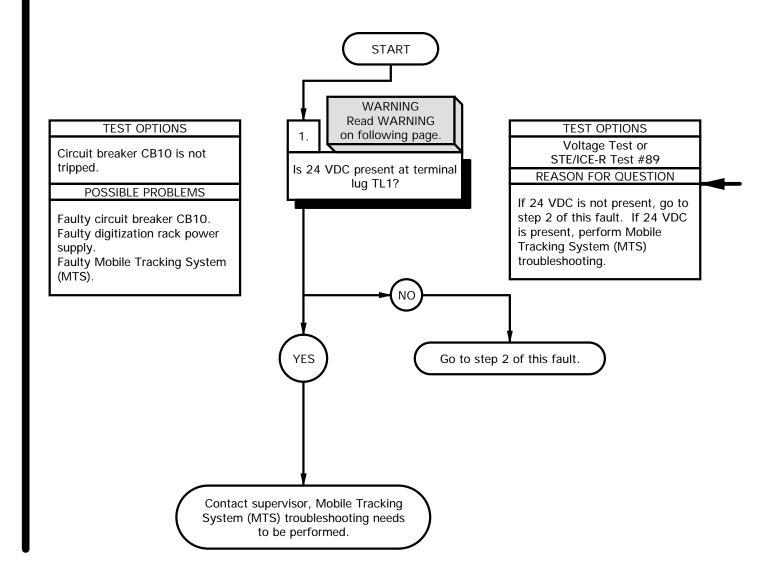
Ties, Cable, Plastic (Item 76, Appendix D)

Tools/Special Tools

Multimeter, Digital (Item 22, Appendix C)
Tool Kit, Genl Mech (Item 44, Appendix C)

Personnel Required

(2)

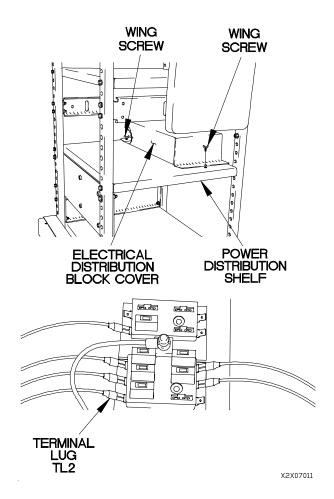


WARNING

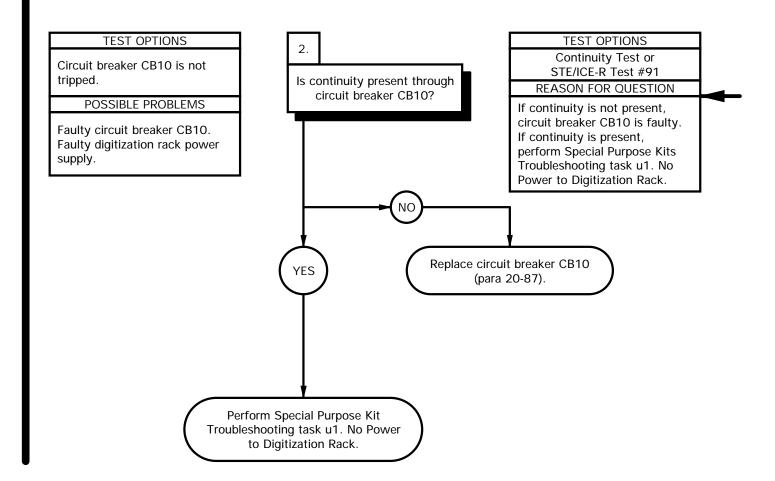
Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle. Jewelry can catch on equipment and cause injury or short across electrical circuits and cause severe burns or electrical shock.

VOLTAGE TEST

- (1) Remove wing screw from power distribution shelf.
- (2) Loosen wing screw on electrical distribution block cover.
- (3) Remove electrical distribution block cover from power distribution shelf.
- (4) Set multimeter to volts DC.
- (5) Connect positive (+) probe of multimeter to terminal lug TL1.
- (6) Connect negative (-) probe of multimeter to known good ground and note reading on multimeter.
- (7) If 24 VDC is not present, go to step 2 of this fault.
- (8) If 24 VDC is present, contact supervisor, Mobile Tracking System (MTS) troubleshooting needs to be performed.



u7. NO POWER TO MOBILE TRACKING SYSTEM (MTS) (CONT)

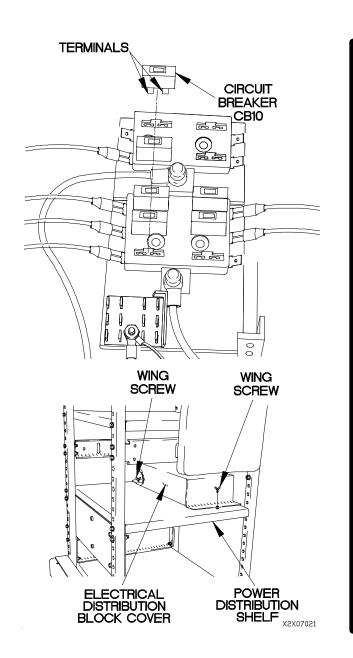


- Remove circuit breaker CB10 from Power Distribution Panel (PD1).
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one terminal of circuit breaker CB10.
- (4) Connect negative (-) probe of multimeter to other probe of circuit breaker CB10 and note reading on multimeter.
- (5) If continuity is not present, replace circuit breaker CB10 (para 20-87).
- (6) If continuity is present, perform Special Purpose Kit Troubleshooting task u1. No Power to Digitization Rack.

NOTE

Perform steps (7) through (10), if continuity is present through circuit breaker CB10.

- (7) Install circuit breaker CB10 in Power Distribution Panel (PD1)
- (8) Position electrical distribution block cover on power distribution shelf.
- (9) Tighten wing nut on electrical distribution block cover.
- (10) Install wing screw on power distribution shelf.



u18. TROOP TRANSPORT ALARM DOES NOT OPERATE

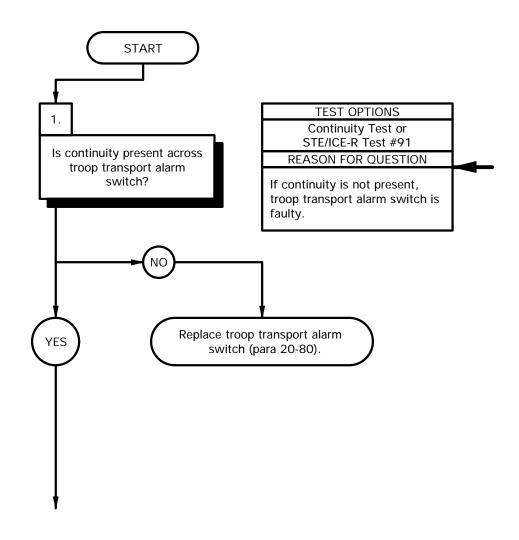
INITIAL SETUP

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

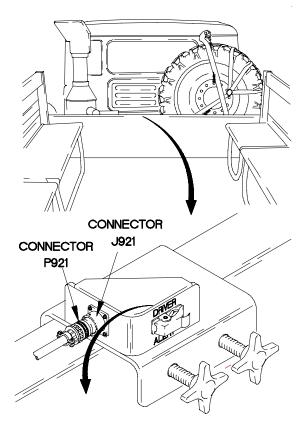
Personnel Required (2)

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)
Multimeter, Digital (Item 22, Appendix C)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Wire, Elect, 50 ft (Item 77, Appendix D)

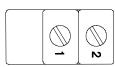
KNOWN INFO Nothing. POSSIBLE PROBLEMS Faulty troop transport alarm switch. Faulty troop transport alarm cable assembly. Faulty troop transport alarm switch connector. Faulty engine control cable assembly. Faulty dashboard cable assembly. Faulty audible alarm.



- (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).

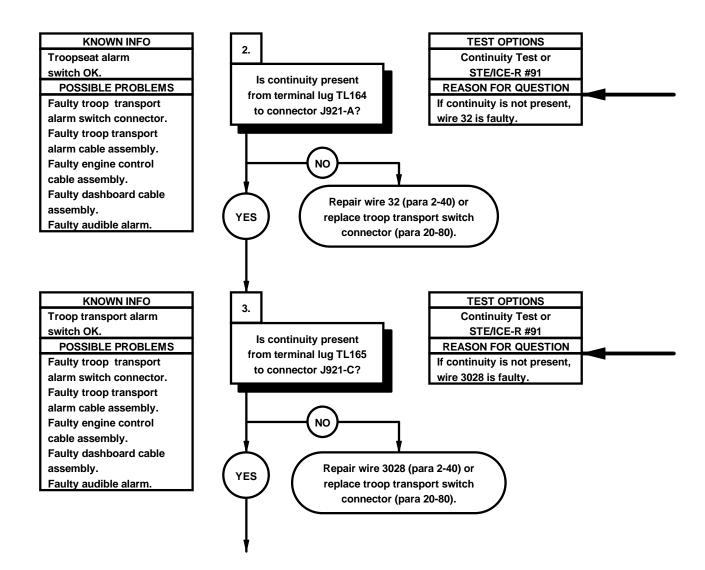


TROOP TRANSPORT ALARM SWITCH

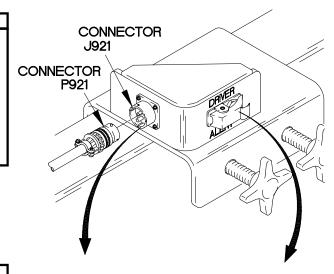


X2X18011.dwa

u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)

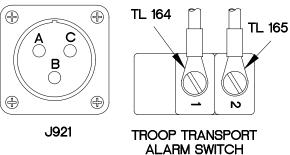


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to terminal lug TL164.
- (3) Connect negative (-) probe of multimeter to connector J921-A and note reading on multimeter.
- (4) If continuity is not present, repair wire 32 (para 2-43) or replace troop transport alarm switch connector (para 20-80).



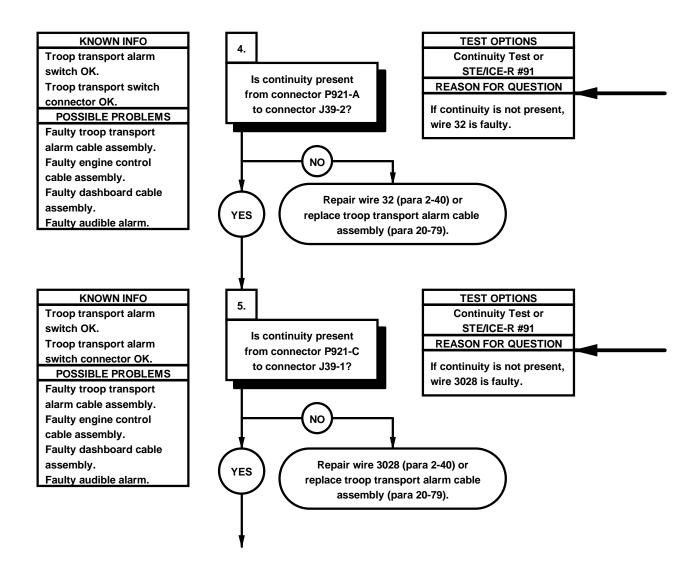
CONTINUITY TEST

- (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).



X2X18021

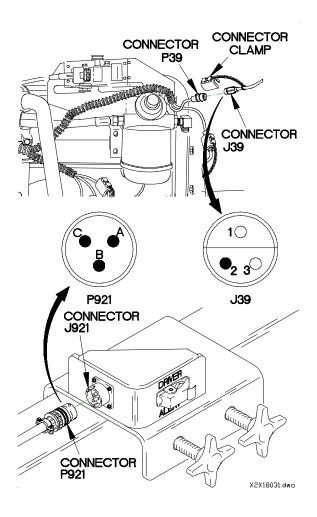
u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)



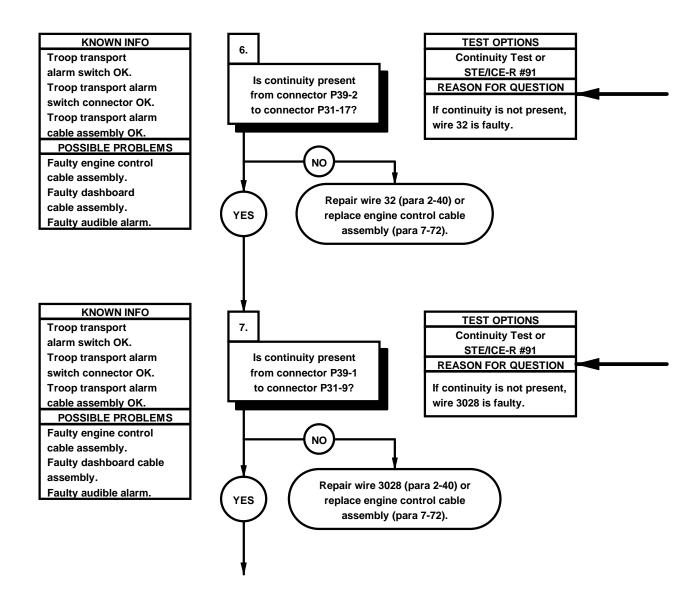
- (1) Set multimeter to ohms.
- (2) Disconnect connector clamp from connector J39.
- (3) Disconnect connector J39 from connector P39
- (4) Connect positive (+) probe of multimeter to connector P921-A.
- (5) Connect negative (-) probe of multimeter to connector J39-2 and note reading on multimeter.
- (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.



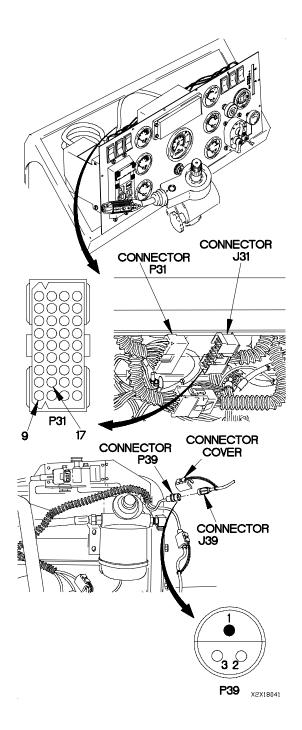
u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)



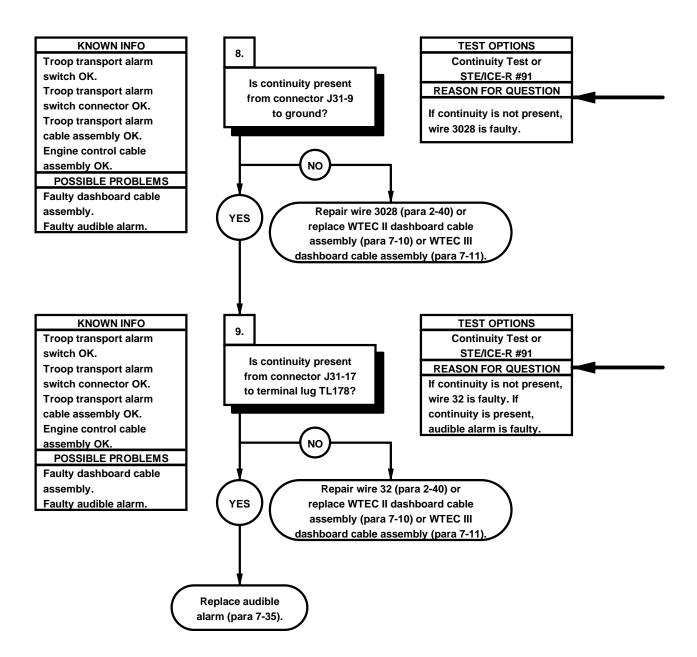
- (1) Lift instrument panel assembly outward to gain access (para 7-15).
- (2) Disconnect connector P31 from connector J31.
- (3) Set multimeter to ohms.
- (4) Connect positive (+) probe of multimeter to connector P39-2.
- (5) Connect negative (-) probe of multimeter to connector P31-17 and note reading 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.



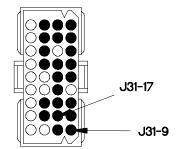
u18. TROOP TRANSPORT ALARM DOES NOT OPERATE (CONT)

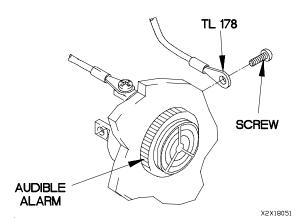


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to connector J31-9.
- (3) Connect negative (-) probe of multimeter to ground and note reading on multimeter.
- (4) If continuity is not present, repair wire 3028 (para 2-40) or replace WTEC II dashboard cable assembly (para 7-10) or WTEC III dashboard cable assembly (para 7-11).

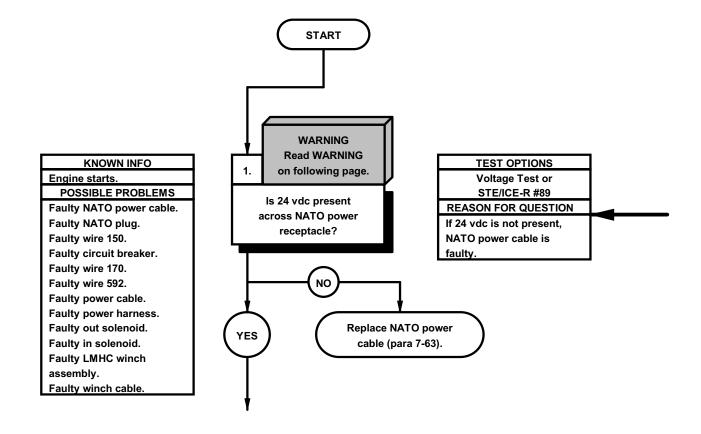
CONTINUITY TEST

- (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). Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Personnel Required Multimeter, Digital (Item 22, Appendix C) (2) References TM 9-4910-571-12&P



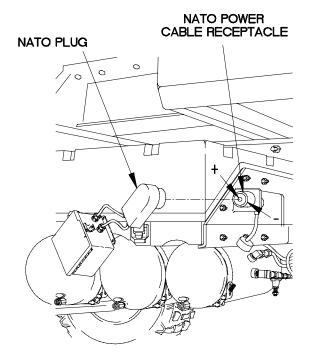
WARNING

Remove rings, bracelets, watches, necklaces, and any other jewelry before working around vehicle.

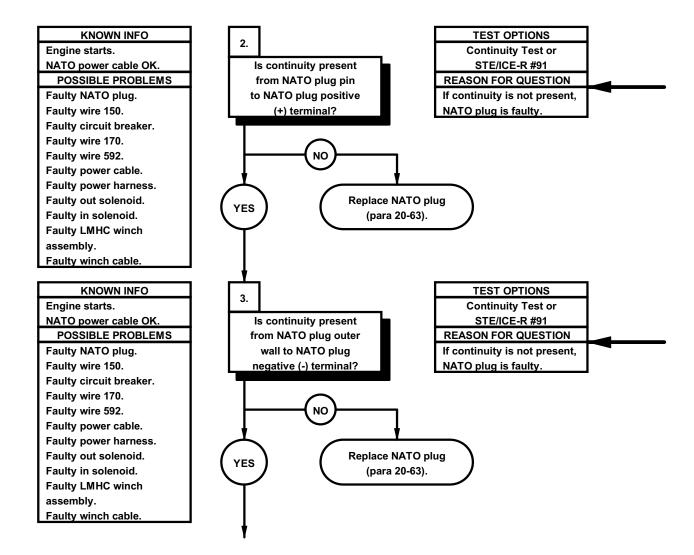
Jewelry can catch on equipment and cause injury or short across electrical circuit and cause severe burns or electrical shock. Batteries can explode from a spark. Battery acid is harmful to skin and eyes. Always wear eye protection when working with batteries.

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).



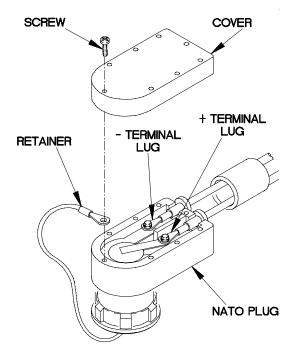
X2X19011

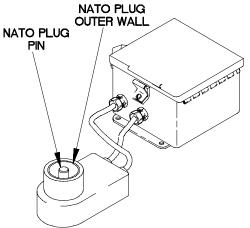


- (1) Remove eight screws, cover, and retainer from NATO plug.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to NATO plug pin.
- (4) Connect negative (-) probe of multimeter to NATO plug positive (+) terminal lug and note reading on multimeter.
- (5) If continuity is not present, replace NATO plug (para 20-63).

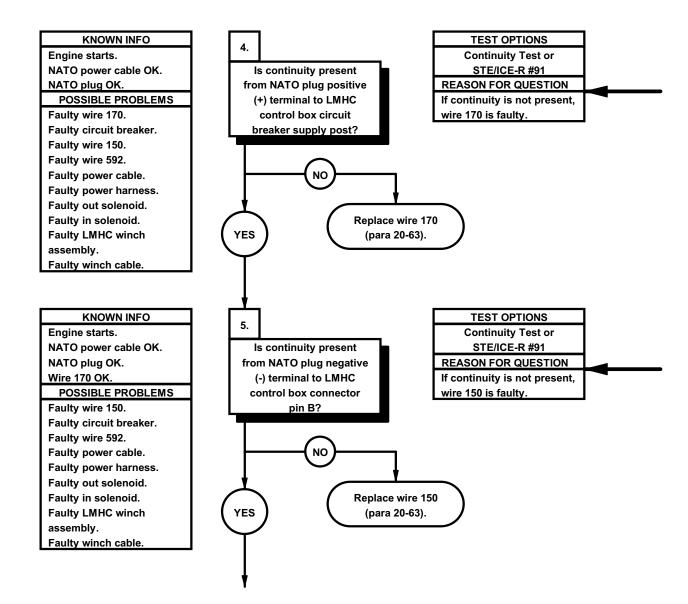
CONTINUITY TEST

- (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).





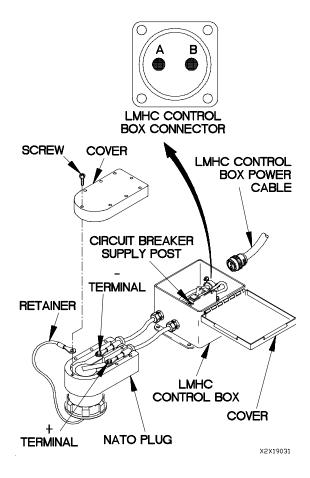
X2X19021

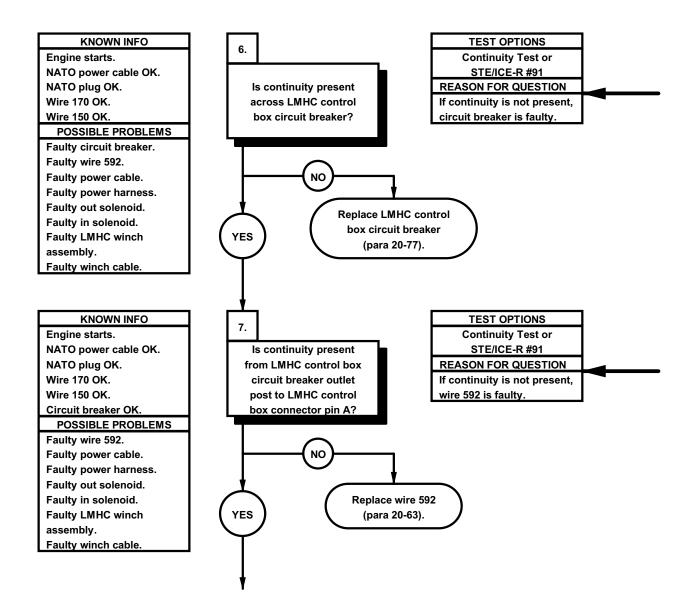


- (1) Open cover on LMHC control box.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to NATO plug positive (+) terminal.
- (4) Connect negative (-) probe of multimeter to LMHC control box circuit breaker supply post and note reading on multimeter.
- (5) If continuity is 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.



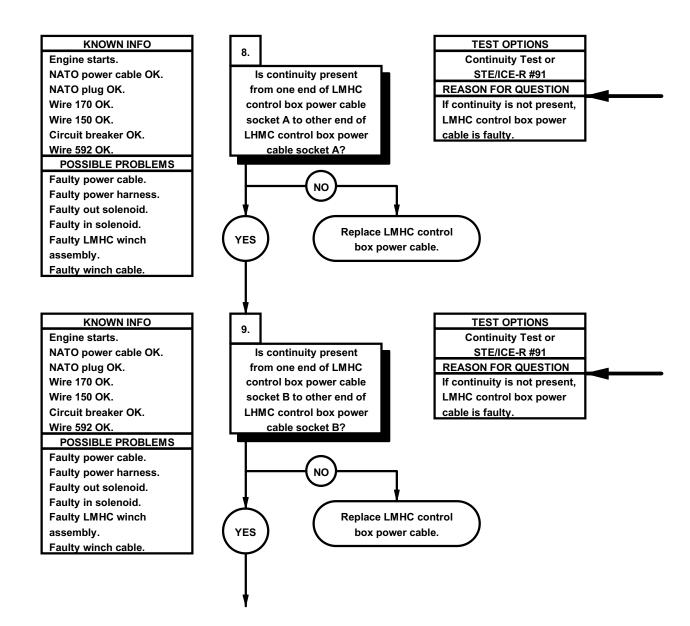


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to one end of LMHC control box circuit breaker.
- (3) Connect negative (-) probe of multimeter to other end of LMHC control box circuit breaker.
- (4) Position LMHC control box circuit breaker to ON and note reading on multimeter.
- (5) If continuity is not present, replace LMHC control box circuit breaker (para 20-77).
- (6) Position LMHC control box circuit breaker to OFF.

LMHC CONTROL BOX CONNECTOR LMHC CONTROL BOX POWER CABLE CIRCUIT BREAKER OUTLET POST COVER COVER COVER

CONTINUITY TEST

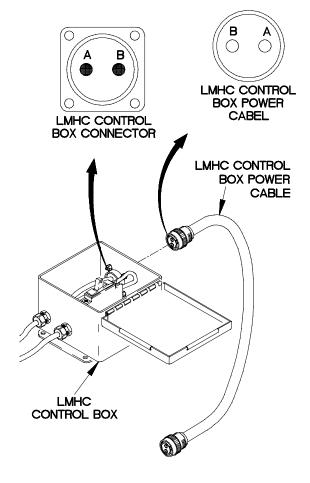
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to LMHC control box circuit breaker outlet post.
- (3) Connect negative (-) probe of multimeter to LMHC control box connector pin A and note reading on multimeter.
- (4) If continuity is not present, replace wire 592 (para 20-63).
- (5) Close cover on LMHC control box.
- (6) Connect LMHC control box power cable to LMHC control box connector.



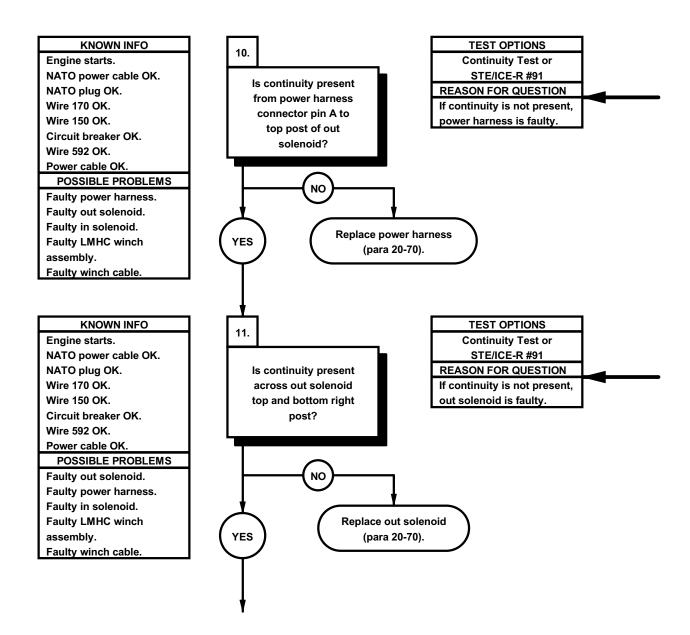
- (1) Disconnect LMHC control power cable from LMHC winch assembly power connector.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to one end of LMHC control box power cable socket A.
- (4) Connect negative (-) probe of multimeter to other end of LMHC control box power cable 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.



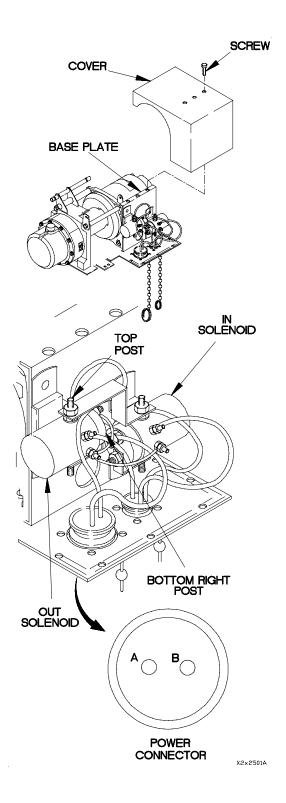
X2X19051

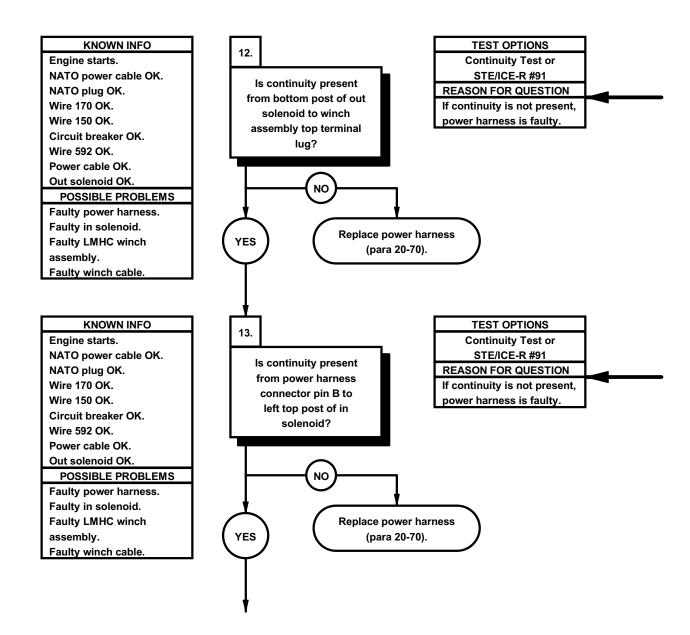


- (1) Remove 18 screws and cover from base plate.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to power harness connector pin A.
- (4) Connect negative (-) probe of multimeter to top post of out solenoid and note reading on multimeter.
- (5) If continuity is not present, 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).

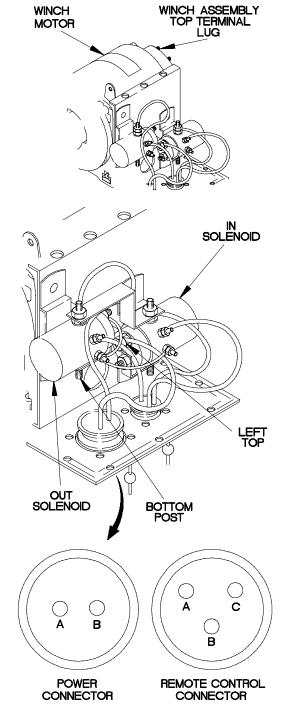




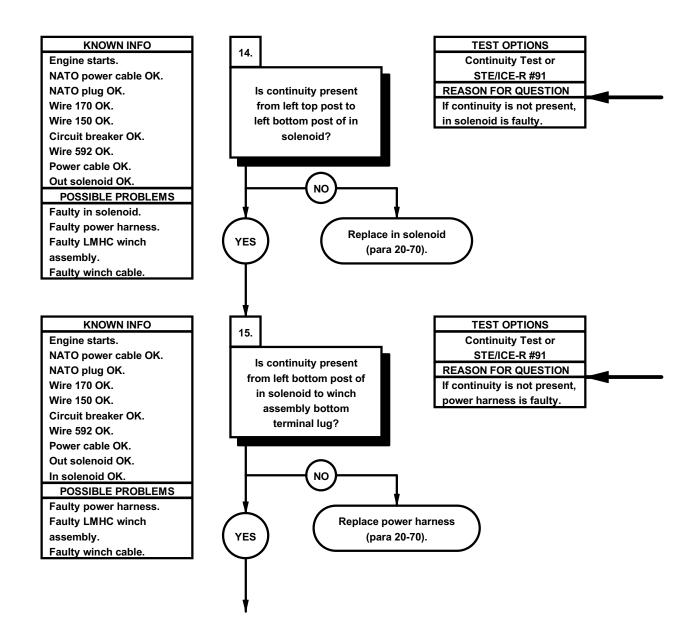
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to bottom post of out solenoid.
- (3) Connect negative (-) probe of multimeter to winch assembly top terminal lug and note reading on multimeter.
- (4) If continuity is not present, replace power harness (para 20-70).

CONTINUITY TEST

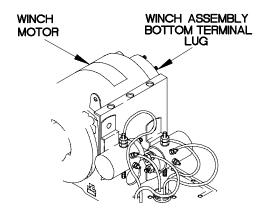
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to power harness connector pin B.
- (3) Connect negative (-) probe of multimeter to left top post of in solenoid and note reading on multimeter.
- (4) If continuity is not present, replace power harness (para 20-70).



X2×19071

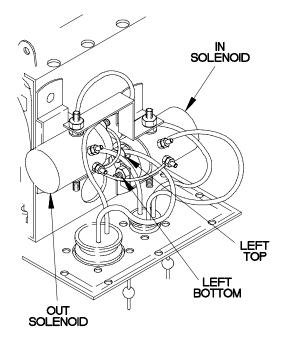


- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to left top post of in solenoid.
- (3) Connect negative (-) probe of multimeter to left bottom post of in solenoid and note reading on multimeter.
- (4) If continuity is not present, replace in solenoid (para 20-70).

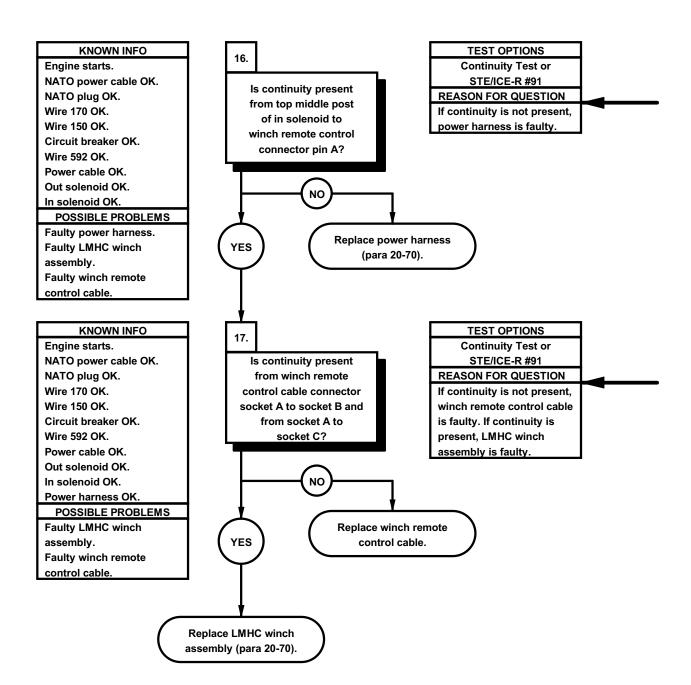


CONTINUITY TEST

- (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).



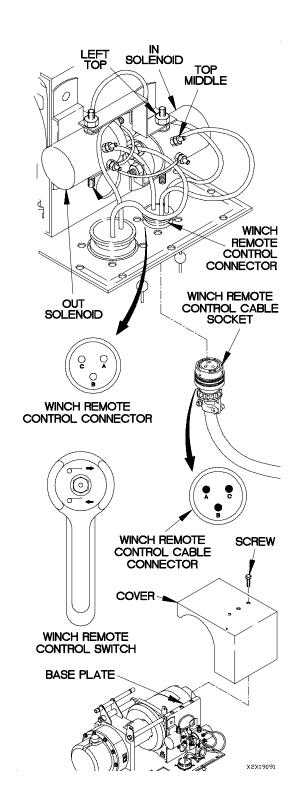
X2X19081



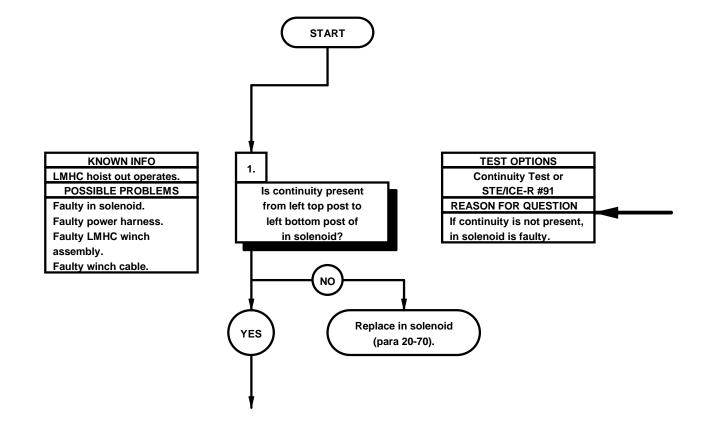
- Disconnect winch remote control cable from winch remote control connector.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to top middle post of in solenoid.
- (4) Connect negative (-) probe of multimeter to winch remote control connector pin A and note reading on multimeter.
- (5) If continuity is not present, replace power harness (para 20-70).

CONTINUITY TEST

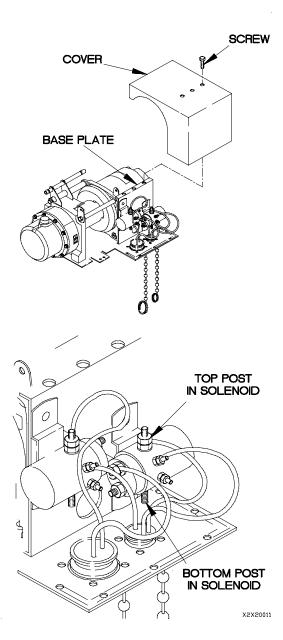
- (1) Set multimeter to ohms.
- (2) Connect positive (+) probe of multimeter to winch remote control cable connector socket A.
- (3) Connect negative (-) probe of multimeter to winch remote control cable connector socket B.
- (4) Position winch remote control switch to OUT and note reading on multimeter.
- 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.

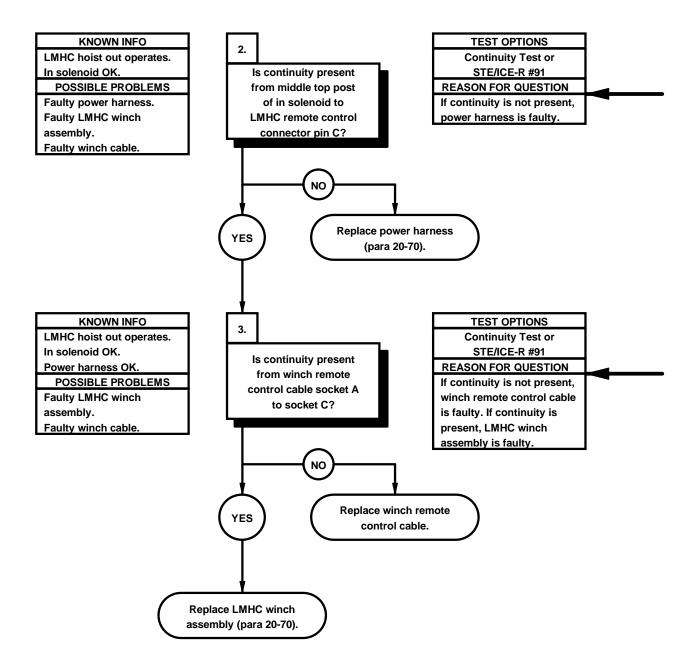


U20. LIGHT MATERIAL HANDLING CRANE (LMHC) HOIST IN DOES NOT OPERATE INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Tool Kit, Genl Mech (Item 44, Appendix C) STE/ICE-R (Item 39, Appendix C) Personnel Required Multimeter, Digital (Item 22, Appendix C) (2) References TM 9-4910-571-12&P



- (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).

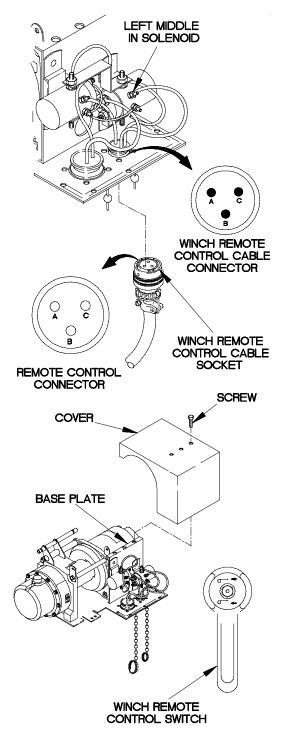




- (1) Disconnect winch remote control cable from winch remote control connector.
- (2) Set multimeter to ohms.
- (3) Connect positive (+) probe of multimeter to left middle post of in solenoid.
- (4) Connect negative (-) probe of multimeter to winch remote control connector pin C and note reading on multimeter.
- (5) If continuity is not present, replace power harness (para 20-70).

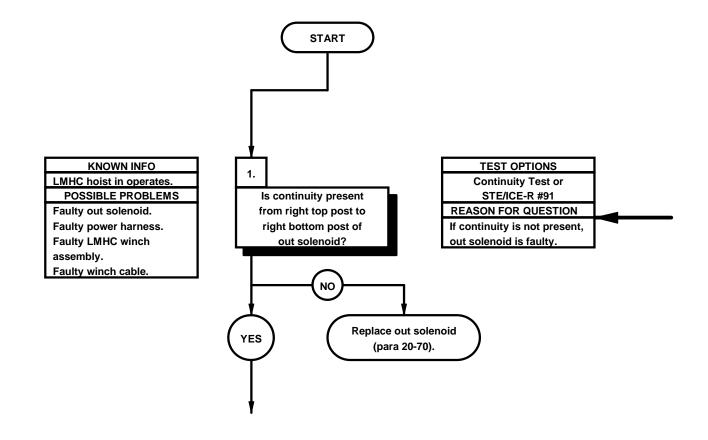
CONTINUITY TEST

- (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.

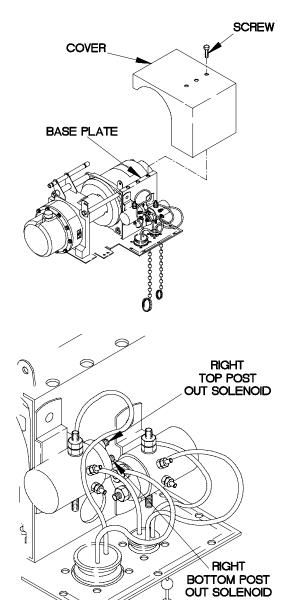


X2X20021

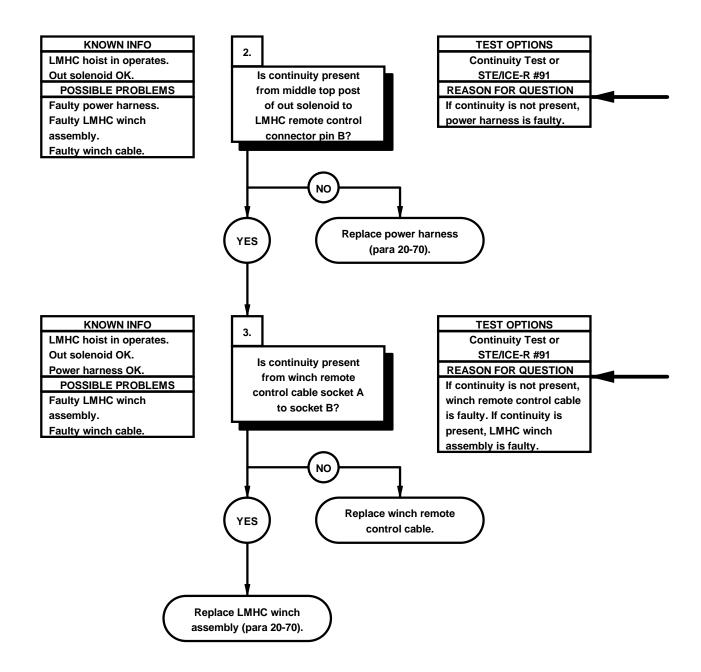
U21. LIGHT MATERIAL HANDLING CRANE (LMHC) HOIST OUT DOES NOT OPERATE INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-366-10-1). Tool Kit, Genl Mech (Item 46, Appendix C) STE/ICE-R (Item 41, Appendix C) Personnel Required Multimeter, Digital (Item 22, Appendix C) (2) References TM 9-4910-571-12&P



- (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).



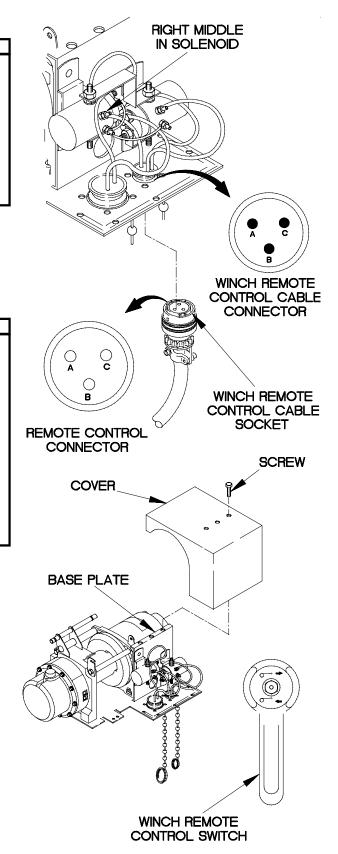
X2X21011



- (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.



X2×26031

2-32. CAB AND SPARE TIRE RETAINER TROUBLESHOOTING

This paragraph covers Cab and Spare Tire Retainer Troubleshooting. The Cab and Spare Tire Retainer Fault Index, Table 2-58, lists faults for the cab and spare tire retainer of the vehicle.

Table 2-58. Cab and Spare Tire Retainer Fault Index

Fault No.	Description Page
v1.	Cab Does Not Raise
v2.	Cab Does Not Lower
v3.	Spare Tire Retainer Does Not Raise 2-2118
v4.	Spare Tire Retainer Does Not Lower

v1. CAB DOES NOT RAISE

INITIAL SETUP

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

Personnel Required (2)

Material/Parts

Rag, Wiping (Item 51, Appendix D)
Filter Element, Fluid (Item 14.1, Appendix G)

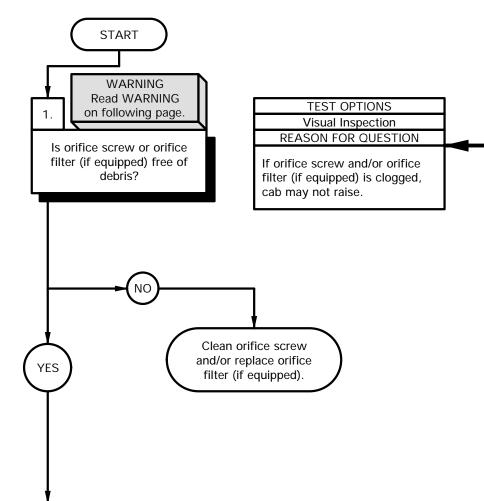
Tools and Special Tools
Tool Kit, Genl Mech (Item 44, Appendix C)
STE/ICE-R (Item 39, Appendix C)
Pan, Drain (Item 24, Appendix C)
Goggles, Industrial (Item 15, Appendix C)
Transmitter, Pressure (Item 1, Appendix J)
Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)
Key, Socket Head Screw (Item 35.1, Appendix B)

References

TM 9-4910-571-12&P

NOTE

Vehicles S/N 0001 through 7558, with hydraulic manifold P/N HFC32598, were not originally equipped with an orifice filter. However, an orifice filter may have been installed during previous maintenance to the hydraulic manifold.



KNOWN INFO

Air/hydraulic power unit oil level OK.

Air/hydraulic power unit primed.

Hydraulic and air hoses OK.
Air tanks charged.
Hydraulic oil filter OK.
Other hydraulic manifold

functions OK.

POSSIBLE PROBLEMS

Debris in orifice filter (if equipped).

Debris in orifice screw. Faulty cab hydraulic latch. Faulty hydraulic manifold CAB TILT valve.

Faulty cab hydraulic cylinder.

WARNING

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. 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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

NOTE

Perform steps (1) through (11) on hydraulic manifolds P/N HFC32598.

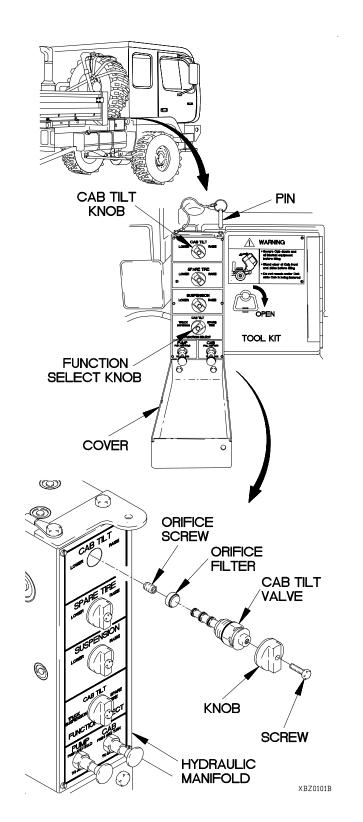
- (1) Remove pin from hydraulic manifold cover and lower cover.
- (2) Cycle FUNCTION SELECT knob through all settings.
- (3) Cycle CAB TILT knob through both selector settings.
- (4) Remove screw, knob, and CAB TILT valve from hydraulic manifold.
- (5) Remove orifice filter (if equipped) from hydraulic manifold.
- (6) If debris is present in orifice filter, replace orifice filter.
- (7) Remove orifice screw from hydraulic manifold.
- (8) If debris is present in orifice screw, clean orifice screw with compressed air.

NOTE

If no orifice filter was previously installed, install orifice filter at this time.

- (9) Install orifice screw and orifice filter in hydraulic manifold.
- (10) Position CAB TILT valve and knob on hydraulic manifold with screw.
- (11) Tighten screw to 5-15 lb-in. (1-2 N·m).

Cont. on page 2-2116.3.



Cont. from page 2-2116.1.

WARNING

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

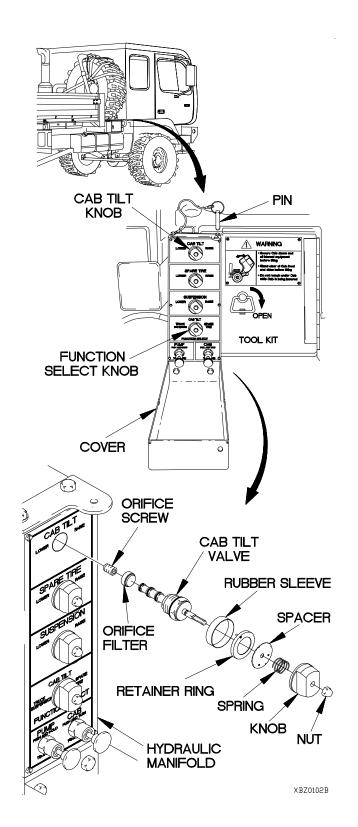
Hydraulic fluid (MIL-H-5606) is TOXIC. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that come into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure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

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

NOTE

Perform steps (12) through (23) on hydraulic manifolds P/N 65234.

- (12) Remove pin from hydraulic manifold cover and lower cover.
- (13) Cycle FUNCTION SELECT knob through all settings.
- (14) Cycle CAB TILT knob through both selector settings.
- (15) Remove nut, knob, spring, spacer, retainer ring, and rubber sleeve from CAB TILT valve.
- (16) Remove CAB TILT valve from hydraulic manifold.
- (17) Remove orifice filter from hydraulic manifold.
- (18) If debris is present in orifice filter, replace orifice filter.
- (19) Remove orifice screw from hydraulic manifold.
- (20) If debris is present in orifice screw, clean orifice screw with compressed air.
- (21) Install orifice screw and orifice filter in hydraulic manifold.
- (22) Install CAB TILT valve in hydraulic manifold.
- (23) Install rubber sleeve, retainer ring, spacer, spring, knob, and nut on hydraulic manifold.



v1. CAB DOES NOT RAISE (CONT)

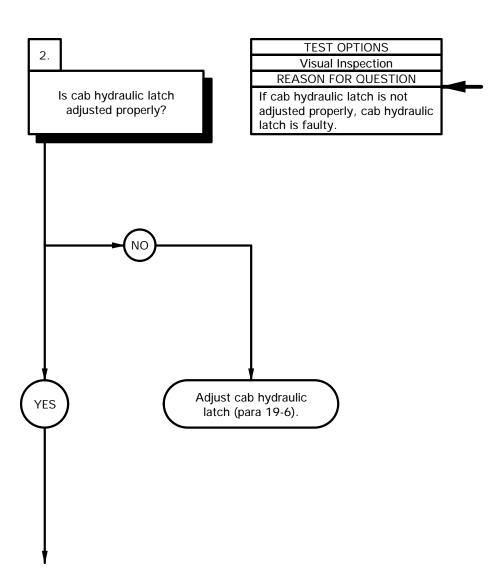
KNOWN INFO

Air/hydraulic power unit oil level OK.
Air/hydraulic power unit primed.
Hydraulic and air hoses OK.
Air tanks charged.
Hydraulic oil filter OK.
Other hydraulic manifold functions OK.
Orifice filter OK.

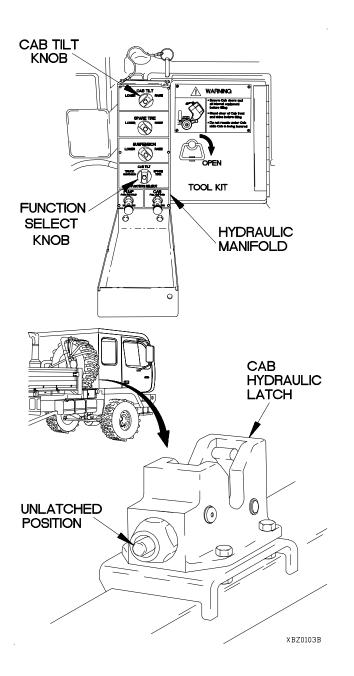
POSSIBLE PROBLEMS

Orifice screw OK.

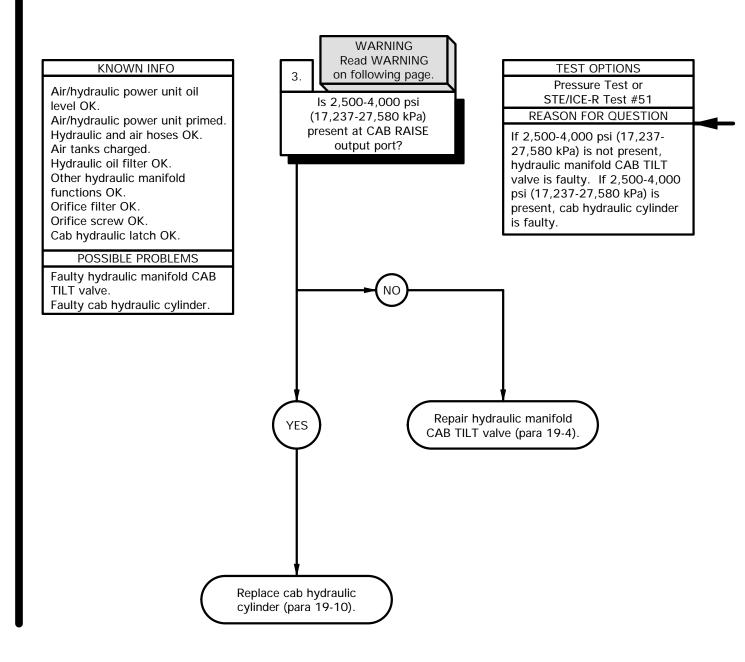
Faulty cab hydraulic latch.
Faulty hydraulic manifold CAB
TILT valve.
Faulty cab hydraulic cylinder.



- (1) Start engine and charge air tanks (TM 9-2320-365-10).
- (2) Position CAB TILT knob to RAISE.
- (3) Position FUNCTION SELECT knob to CAB TILT.
- (4) Check to see if cab hydraulic latch indicator button is in the unlatched position.
- (5) If cab hydraulic latch indicator button does not unlatch, adjust cab hydraulic latch (para 19-6).



v1. CAB DOES NOT RAISE (CONT)



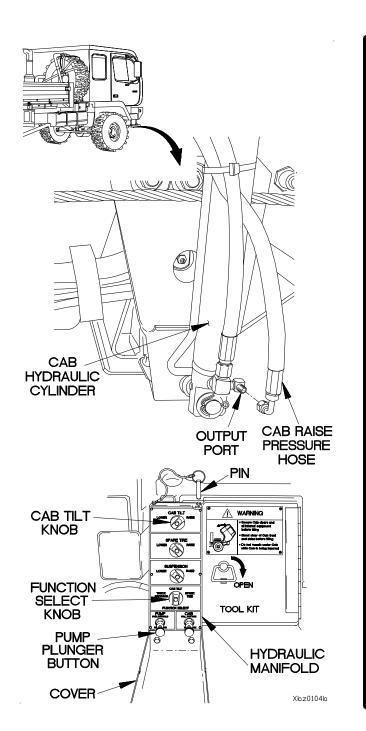
WARNING

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. 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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

- (1) Position drain pan under cab hydraulic cylinder.
- (2) Disconnect CAB RAISE pressure hose from cab hydraulic cylinder output port.
- (3) Connect STE/ICE-R to CAB RAISE pressure hose.
- (4) Start engine and charge air tanks (TM 9-2320-365-10).
- (5) Position CAB TILT knob to RAISE.
- (6) Position FUNCTION SELECT knob to CAB TILT.
- (7) Push and hold PUMP plunger button and perform STE-ICE-R Test #51 (TM 9-4910-571-12&P).
- (8) If pressure is not 2,500-4,000 psi (17,237-27,580 kPa), repair hydraulic manifold CAB TILT valve (para 19-4).
- (9) If pressure is 2,500-4,000 psi (17,237-27,580 kPa), replace cab hydraulic cylinder (para 19-10).
- (10) Drain air tanks (TM 9-2320-365-10).
- (11) Disconnect STE/ICE-R from pressure hose.
- (12) Connect pressure hose to cab hydraulic cylinder output port.
- (13) Close hydraulic manifold cover and install pin.



v2. CAB DOES NOT LOWER

INITIAL SETUP

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

Personnel Required (2)

Material/Parts

Rag, Wiping (Item 51, Appendix D) Filter Element, Fluid (Item 14.1, Appendix G) 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)

Transmitter, Pressure (Item 1, Appendix J)

Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

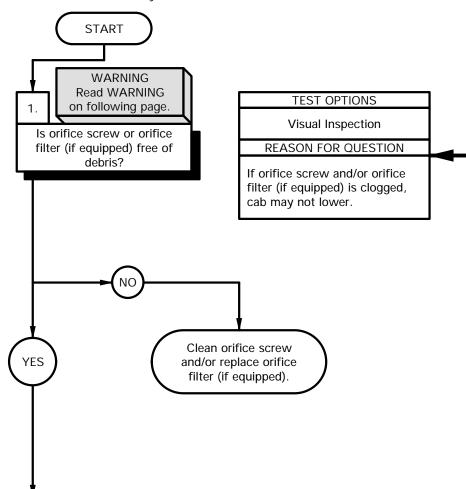
Key, Socket Head Screw (Item 35.1, Appendix B)

References

TM 9-4910-571-12&P

NOTE

Vehicles S/N 0001 through 7558, with hydraulic manifold P/N HFC32598, were not originally equipped with an orifice filter. However, an orifice filter may have been installed during previous maintenance to the hydraulic manifold.



KNOWN INFO

Air/hydraulic power unit oil level OK.

Air/hydraulic power unit

primed.

Hydraulic and air hoses O

Hydraulic and air hoses OK. Air tanks charged. Hydraulic oil filter OK.

Other hydraulic manifold functions OK.

POSSIBLE PROBLEMS

Debris in orifice filter (if equipped).

Debris in orifice screw.

Faulty hydraulic manifold CAB TILT valve.

Faulty cab hydraulic cylinder.

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. 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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

NOTE

Perform steps (1) through (11) on hydraulic manifolds P/N HFC32598.

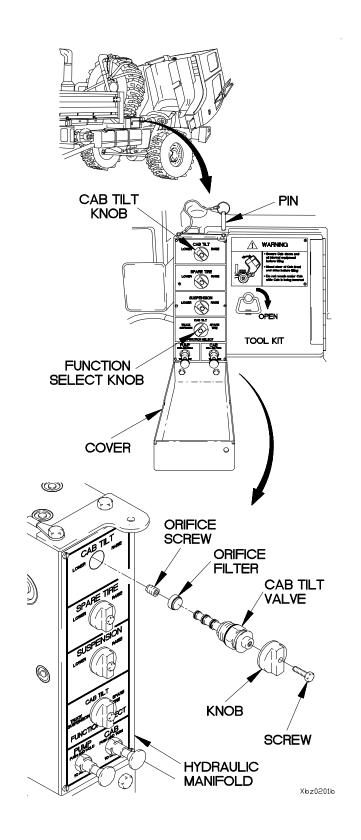
- Remove pin from hydraulic manifold cover and lower cover.
- (2) Cycle FUNCTION SELECT knob through all settings.
- (3) Cycle CAB TILT knob through both selector settings.
- (4) Remove screw, knob, and CAB TILT valve from hydraulic manifold.
- (5) Remove orifice filter (if equipped) from hydraulic manifold.
- (6) If debris is present in orifice filter, replace orifice filter.
- (7) Remove orifice screw from hydraulic manifold.
- (8) If debris is present in orifice screw, clean orifice screw with compressed air.

NOTE

If no orifice filter was previously installed, install orifice filter at this time.

- (9) Install orifice screw and orifice filter in hydraulic manifold.
- (10) Position CAB TILT valve and knob on hydraulic manifold with screw.
- (11) Tighten screw to 5-15 lb-in. (1-2 N·m).

Cont. on page 2-2116.11.



Cont. from page 2-2116.9.

WARNING

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

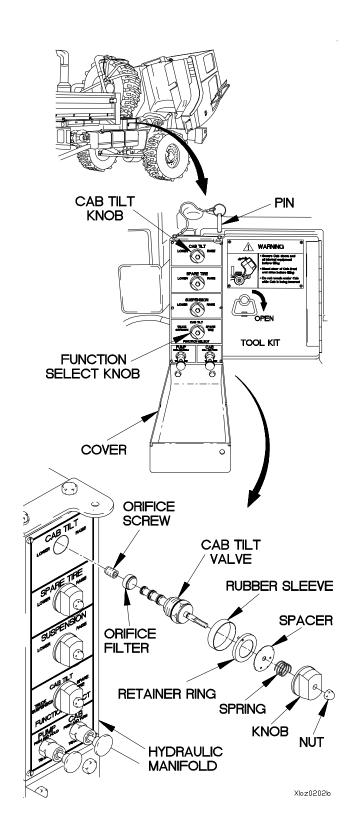
Hydraulic fluid (MIL-H-5606) is TOXIC. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that come into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure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

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

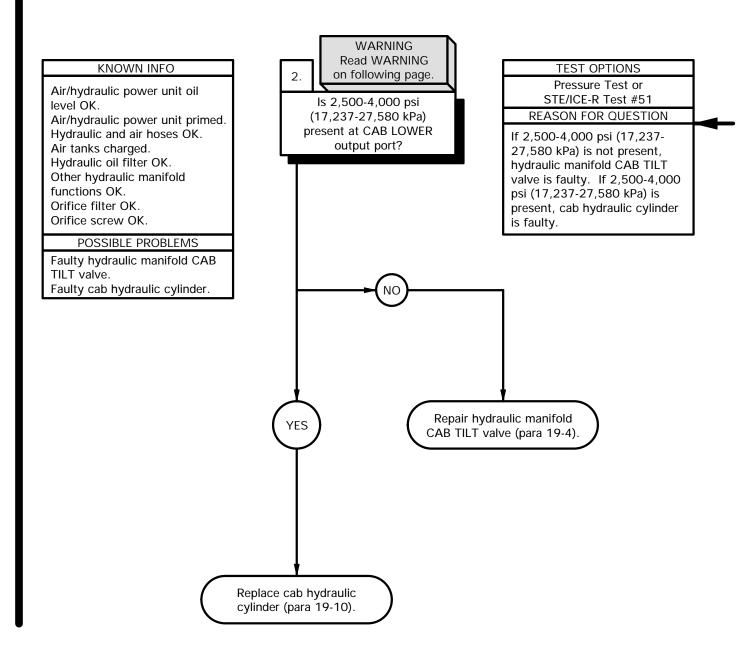
NOTE

Perform steps (12) through (23) on hydraulic manifolds P/N 65234.

- (12) Remove pin from hydraulic manifold cover and lower cover.
- (13) Cycle FUNCTION SELECT knob through all settings.
- (14) Cycle CAB TILT knob through both selector settings.
- (15) Remove nut, knob, spring, spacer, retainer ring, and rubber sleeve from CAB TILT valve.
- (16) Remove CAB TILT valve from hydraulic manifold.
- (17) Remove orifice filter from hydraulic manifold.
- (18) If debris is present in orifice filter, replace orifice filter.
- (19) Remove orifice screw from hydraulic manifold.
- (20) If debris is present in orifice screw, clean orifice screw with compressed air.
- (21) Install orifice screw and orifice filter in hydraulic manifold.
- (22) Install CAB TILT valve in hydraulic manifold.
- (23) Install rubber sleeve, retainer ring, spacer, spring, knob, and nut on hydraulic manifold.



v2. CAB DOES NOT LOWER (CONT)

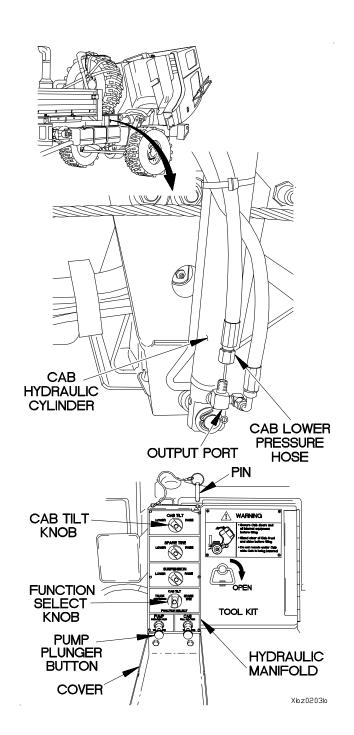


Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

- (1) Position drain pan under cab hydraulic cylinder.
- (2) Disconnect CAB LOWER pressure hose from cab hydraulic cylinder output port.
- (3) Connect STE/ICE-R to CAB LOWER pressure hose.
- (4) Start engine and charge air tanks (TM 9-2320-365-10).
- (5) Position CAB TILT knob to LOWER.
- (6) Position FUNCTION SELECT knob to CAB TILT.
- (7) Push and hold PUMP plunger button and perform STE-ICE-R Test #51 (TM 9-4910-571-12&P).
- (8) If pressure is not 2,500-4,000 psi (17,237-27,580 kPa), repair hydraulic manifold CAB TILT valve (para 19-4).
- (9) If pressure is 2,500-4,000 psi (17,237-27,580 kPa), replace cab hydraulic cylinder (para 19-10).
- (10) Drain air tanks (TM 9-2320-365-10).
- (11) Disconnect STE/ICE-R from pressure hose.
- (12) Connect pressure hose to cab hydraulic cylinder output port.
- (13) Close hydraulic manifold cover and install pin.



v3. SPARE TIRE RETAINER DOES NOT RAISE

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
Air tanks drained (TM 9-232-365-10).

Personnel Required (2)

Material/Parts

Rag, Wiping (Item 51, Appendix D)
Filter Element, Fluid (Item 14.1, Appendix G)

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)

Transmitter, Pressure (Item 1, Appendix J)

Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

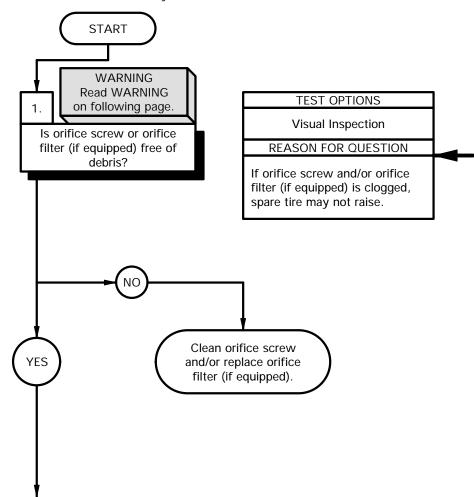
Key, Socket Head Screw (Item 35.1, Appendix B)

References

TM 9-4910-571-12&P

NOTE

Vehicles S/N 0001 through 7558, with hydraulic manifold P/N HFC32598, were not originally equipped with an orifice filter. However, an orifice filter may have been installed during previous maintenance to the hydraulic manifold.



KNOWN INFO

Air/hydraulic power unit oil level OK.

Air/hydraulic power unit

primed. Hydraulic and air hoses OK.

Air tanks charged.
Hydraulic oil filter OK.
Other hydraulic manifold

 $functions \ OK.$

POSSIBLE PROBLEMS

Debris in orifice filter (if equipped).

Debris in orifice screw. Faulty hydraulic manifold SPARE TIRE valve. Faulty spare tire retainer cylinder.

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. 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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

NOTE

Perform steps (1) through (11) on hydraulic manifolds HFC32598.

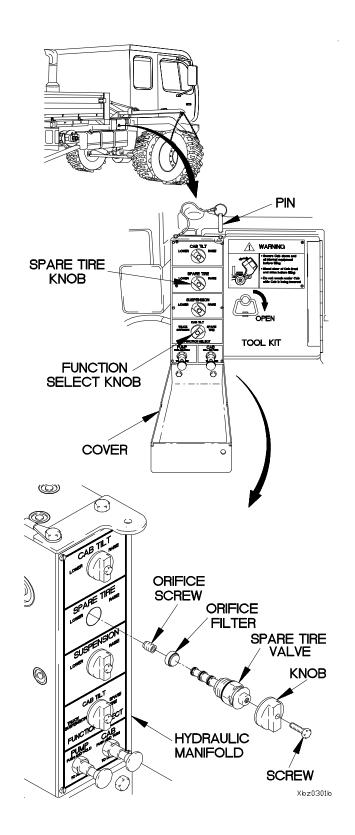
- Remove pin from hydraulic manifold cover and raise cover.
- (2) Cycle FUNCTION SELECT knob through all settings.
- (3) Cycle SPARE TIRE knob through both selector settings.
- (4) Remove screw, knob, and SPARE TIRE valve from hydraulic manifold.
- (5) Remove orifice filter (if equipped) from hydraulic manifold.
- (6) If debris is present in orifice filter, replace orifice filter.
- (7) Remove orifice screw from hydraulic manifold.
- (8) If debris is present in orifice screw, clean orifice screw with compressed air.

NOTE

If no orifice filter was previously installed, install orifice filter at this time.

- (9) Install orifice screw and orifice filter in hydraulic manifold.
- (10) Position SPARE TIRE valve and knob on hydraulic manifold with screw.
- (11) Tighten screw to 5-15 lb-in. (1-2 N·m).

Cont. on page 2-2118.3.



Cont. from page 2-2118.1.

WARNING

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

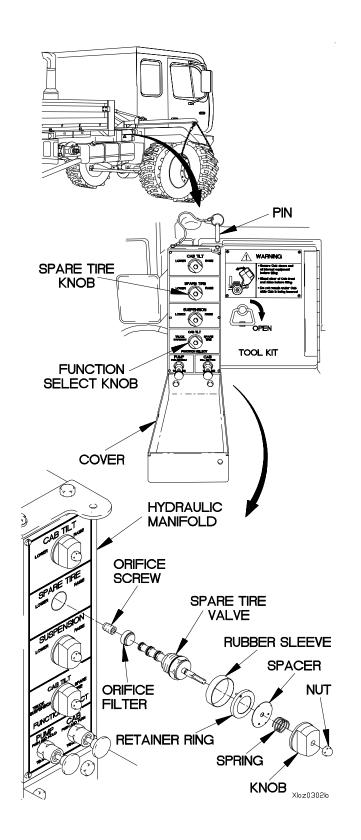
Hydraulic fluid (MIL-H-5606) is TOXIC. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that come into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure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

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

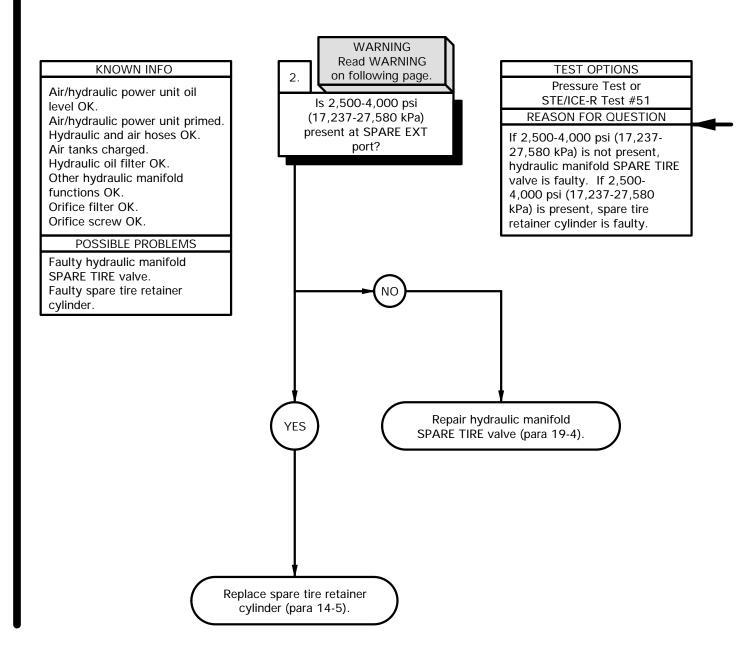
NOTE

Perform steps (12) through (23) on hydraulic manifolds P/N 65234.

- (12) Remove pin from hydraulic manifold cover and lower cover.
- (13) Cycle FUNCTION SELECT knob through all settings.
- (14) Cycle SPARE TIRE knob through both selector settings.
- (15) Remove nut, knob, spring, spacer, retainer ring, and rubber sleeve from SPARE TIRE valve.
- (16) Remove SPARE TIRE valve from hydraulic manifold.
- (17) Remove orifice filter from hydraulic manifold.
- (18) If debris is present in orifice filter, replace orifice filter.
- (19) Remove orifice screw from hydraulic manifold.
- (20) If debris is present in orifice screw, clean orifice screw with compressed air.
- (21) Install orifice screw and orifice filter in hydraulic manifold.
- (22) Install SPARE TIRE valve in hydraulic manifold.
- (23) Install rubber sleeve, retainer ring, spacer, spring, knob, and nut on hydraulic manifold.



v3. SPARE TIRE RETAINER DOES NOT RAISE (CONT)

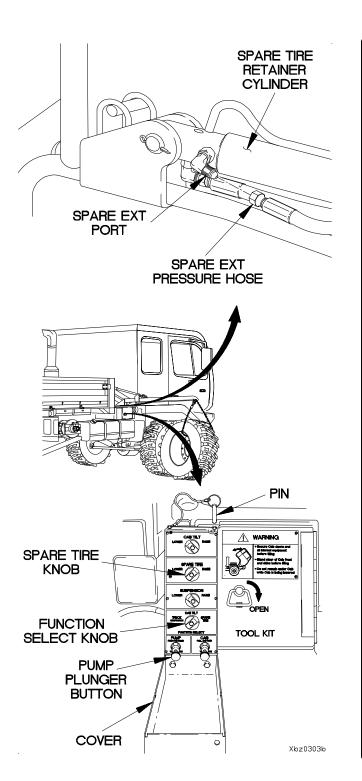


Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

- Position drain pan under spare tire retainer cylinder.
- (2) Disconnect SPARE EXT pressure hose from spare tire retainer cylinder port.
- (3) Connect STE/ICE-R to SPARE EXT pressure hose.
- (4) Start engine and charge air tanks (TM 9-2320-365-10).
- (5) Position SPARE TIRE knob to RAISE.
- (6) Position FUNCTION SELECT knob to SPARE TIRE.
- (7) Push and hold PUMP plunger button and perform STE-ICE-R Test #51 (TM 9-4910-571-12&P).
- (8) If pressure is not 2,500-4,000 psi (17,237-27,580 kPa), repair hydraulic manifold SPARE TIRE valve (para 19-4).
- (9) If pressure is 2,500-4,000 psi (17,237-27,580 kPa), replace spare tire retainer cylinder (para 14-5).
- (10) Drain air tanks (TM 9-2320-365-10).
- (11) Disconnect STE/ICE-R from pressure hose.
- (12) Connect pressure hose to spare tire retainer cylinder port.
- (13) Close hydraulic manifold cover and install pin.



v4. SPARE TIRE RETAINER DOES NOT LOWER

INITIAL SETUP

Equipment Condition
Engine shut down (TM 9-2320-365-10).
Air tanks drained (TM 9-232-365-10).

Personnel Required (2)

Material/Parts

Rag, Wiping (Item 51, Appendix D)
Filter Element, Fluid (Item 14.1, Appendix G)

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)

Transmitter, Pressure (Item 1, Appendix J)

Wrench, Torque, 0-200 lb-in. (Item 58, Appendix C)

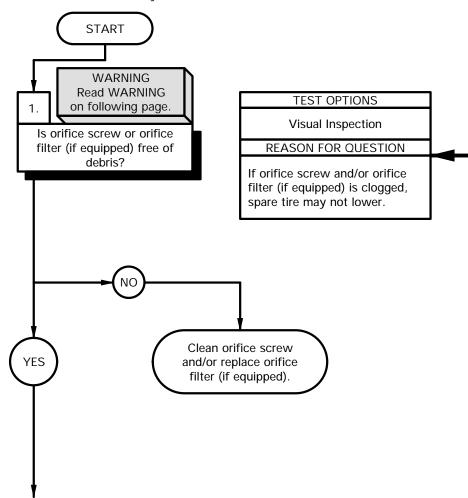
Key, Socket Head Screw (Item 35.1, Appendix B)

References

TM 9-4910-571-12&P

NOTE

Vehicles S/N 0001 through 7558, with hydraulic manifold P/N HFC32598, were not originally equipped with an orifice filter. However, an orifice filter may have been installed during previous maintenance to the hydraulic manifold.



KNOWN INFO

Air/hydraulic power unit oil level OK.

Air/hydraulic power unit

primed. Hydraulic and air hoses OK.

Air tanks charged. Hydraulic oil filter OK. Other hydraulic manifold

functions OK.

POSSIBLE PROBLEMS

Debris in orifice filter (if equipped).
Debris in orifice screw.
Faulty hydraulic manifold SPARE TIRE valve.

Faulty spare tire retainer cylinder.

2-2118.6

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. 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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

NOTE

Perform steps (1) through (11) on hydraulic manifolds P/N HFC32598.

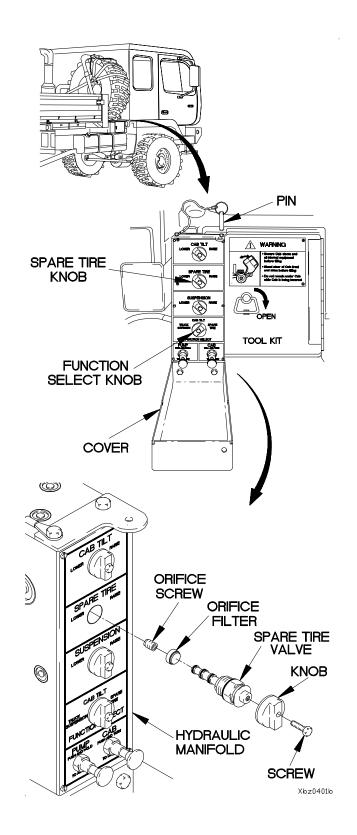
- Remove pin from hydraulic manifold cover and lower cover.
- (2) Cycle FUNCTION SELECT knob through all settings.
- (3) Cycle SPARE TIRE knob through both selector settings.
- (4) Remove screw, knob, and SPARE TIRE valve from hydraulic manifold.
- (5) Remove orifice filter (if equipped) from hydraulic manifold.
- (6) If debris is present in orifice filter, replace orifice filter.
- (7) Remove orifice screw from hydraulic manifold.
- (8) If debris is present in orifice screw, clean orifice screw with compressed air.

NOTE

If no orifice filter was previously installed, install orifice filter at this time.

- (9) Install orifice screw and orifice filter in hydraulic manifold.
- (10) Position SPARE TIRE valve and knob on hydraulic manifold with screw.
- (11) Tighten screw to 5-15 lb-in. (1-2 N·m).

Cont. on page 2-2118.9.



Cont. from page 2-2118.7.

WARNING

Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

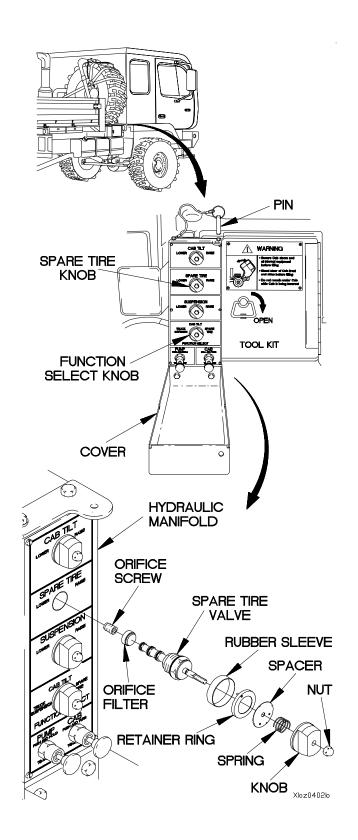
Hydraulic fluid (MIL-H-5606) is TOXIC. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes. Skin and clothing that come into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure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

Compressed air used for cleaning purposes will not exceed 30 psi (270 kPa). Use only with effective chip guarding and personal protective equipment (goggles, shields, gloves, etc.). Failure to comply may result in injury to personnel.

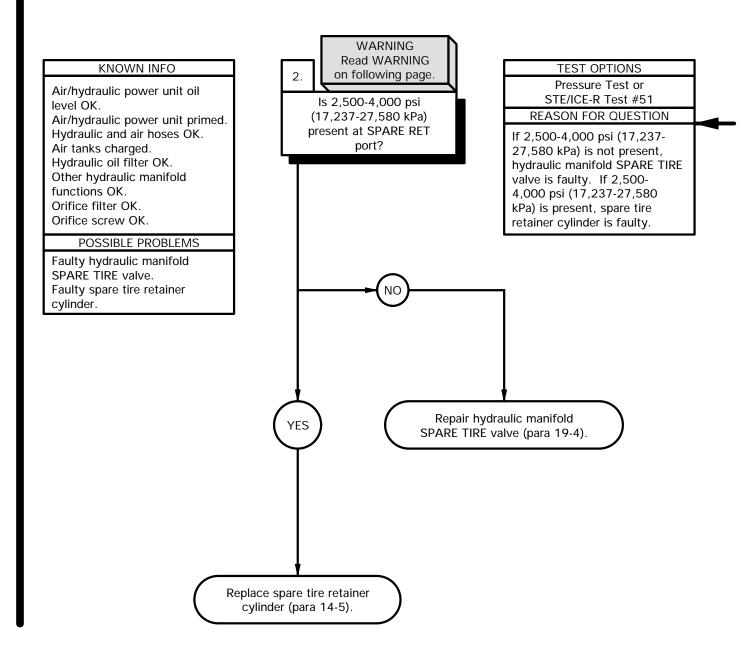
NOTE

Perform steps (12) through (23) on hydraulic manifolds P/N 65234.

- (12) Remove pin from hydraulic manifold cover and lower cover.
- (13) Cycle FUNCTION SELECT knob through all settings.
- (14) Cycle SPARE TIRE knob through both selector settings.
- (15) Remove nut, knob, spring, spacer, retainer ring, and rubber sleeve from SPARE TIRE valve.
- (16) Remove SPARE TIRE valve from hydraulic manifold.
- (17) Remove orifice filter from hydraulic manifold.
- (18) If debris is present in orifice filter, replace orifice filter.
- (19) Remove orifice screw from hydraulic manifold.
- (20) If debris is present in orifice screw, clean orifice screw with compressed air.
- (21) Install orifice screw and orifice filter in hydraulic manifold.
- (22) Install SPARE TIRE valve in hydraulic manifold.
- (23) Install rubber sleeve, retainer ring, spacer, spring, knob, and nut on hydraulic manifold.



v4. SPARE TIRE RETAINER DOES NOT LOWER (CONT)

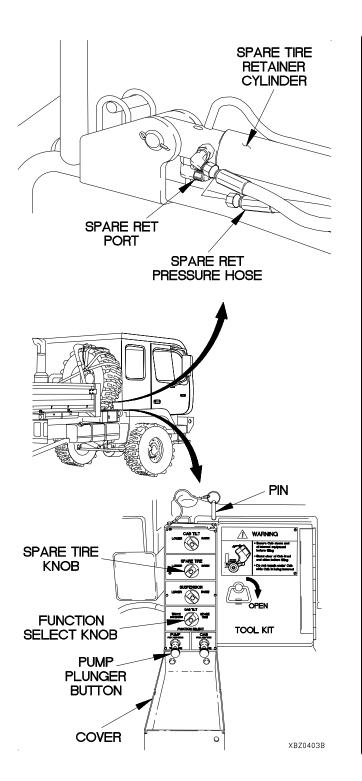


Drop hydraulic pressure to zero before disconnecting any hydraulic hoses. Failure to comply may result in injury to personnel.

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 into contact with hydraulic fluid should be washed immediately. Saturated clothing should be removed immediately. Failure to comply may result in injury to personnel.

PRESSURE TEST

- Position drain pan under spare tire retainer cylinder.
- (2) Disconnect SPARE RET pressure hose from spare tire retainer cylinder port.
- (3) Connect STE/ICE-R to SPARE RET pressure hose.
- (4) Start engine and charge air tanks (TM 9-2320-365-10).
- (5) Position SPARE TIRE knob to LOWER.
- (6) Position FUNCTION SELECT knob to SPARE TIRE.
- (7) Push and hold PUMP plunger button and perform STE-ICE-R Test #51 (TM 9-4910-571-12&P).
- (8) If pressure is not 2,500-4,000 psi (17,237-27,580 kPa), repair hydraulic manifold SPARE TIRE valve (para 19-4).
- (9) If pressure is 2,500-4,000 psi (17,237-27,580 kPa), replace spare tire retainer cylinder (para 14-5).
- (10) Drain air tanks (TM 9-2320-365-10).
- (11) Disconnect STE/ICE-R from pressure hose.
- (12) Connect pressure hose to spare tire retainer cylinder port.
- (13) Close hydraulic manifold cover and install pin.



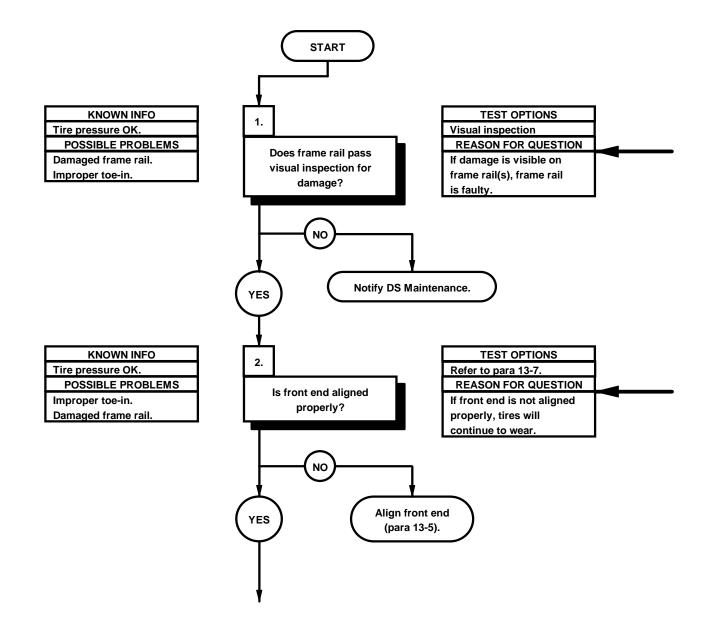
2-33. FRAME TROUBLESHOOTING

This paragraph covers Frame Troubleshooting. The Frame Fault Index, Table 2-59, lists faults for the frame of the vehicle.

Table 2-59. Frame Fault Index

Fault No.	Description	Page
w1.	Tires Continue To Wear After Front End Alignment and/or Vehicle Drives Sideways	2-2122

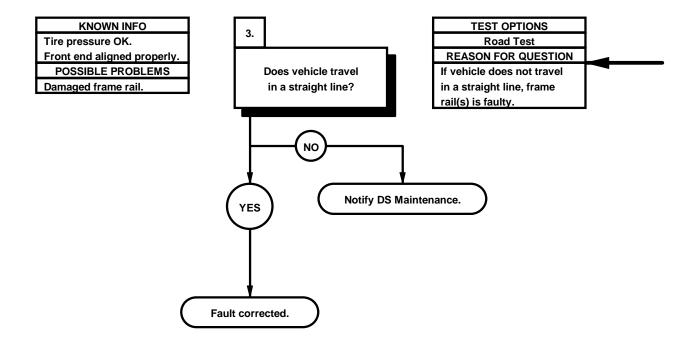
w1. TIRES CONTINUE TO WEAR AFTER FRONT END ALIGNMENT AND/OR VEHICLE DRIVES SIDEWAYS DOWN ROAD INITIAL SETUP Equipment Conditions Engine shut down (TM 9-2320-365-10). Personnel Required (4)



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 13-5).

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.

- 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.
- 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 being 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 and 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.
- i. Repair of Wires with Female Sockets. Strip insulation from wire to equal depth of terminal well. Slide shell and sleeve over wire insulation. Insert wire into terminal well. Crimp terminal well on wire. Slide sleeve and shell over terminal.
- j. Repair of Wires with Male Plugs. Strip insulation from wire to equal depth of terminal well. Slide shell over wire insulation. Insert wire into terminal well. Crimp terminal well on wire. Place slotted washer over crimped terminal well. Slide shell over slotted washer and terminal.
- k. Repair of Wires with Terminals of Various Configurations. Strip insulation from wire to equal depth of terminal well. Slide insulator over insulation. Insert wire into terminal well. Crimp terminal well on wire. Slide insulator over crimped terminal well.
- I. Repair of Cables with Multiple Conductor Receptacle Connectors. Remove insulation sleeving from cable. Discard insulation sleeving. Extract electrical contact from receptacle body. Strip insulation from wire to equal depth of well in electrical contact. Position insulation sleeving on cable. Crimp electrical contact on wire. Install electrical contact in receptacle body. Heat shrink insulation sleeving.
- m. Repair of Cables with Multiple Conductor Plug Connectors. Remove insulation sleeving from cable. Discard insulation sleeving. Extract electrical contact from plug body. Strip insulation from wire to equal depth of well in electrical contact. Position insulation sleeving on cable. Crimp electrical contact on wire. Install electrical contact in plug body. Heat shrink insulation sleeving.
- n. Repair of Cables with Multiple Conductor Mate-N-Lock Series Connectors. Remove electrical contact from connector body. Strip insulation equal to depth of well on electrical contact. Position wire end in electrical contact. Crimp electrical contact on wire end. Install electrical contact in connector body. Remove electrical contact from connector body. Strip insulation equal to depth of well on electrical contact. Position wire end in electrical contact. Crimp electrical contact on wire end. Install electrical contact in connector body.
- o. Repair of Cables with Multi-Conductor Metri-Pack Series Connectors. Extract electrical contact from connector body. Strip insulation from wire to equal depth of well in electrical contact. Crimp electrical contact on wire. Install electrical contact in connector body.
- p. Repair of Cables with Multi-Conductor Sure-Seal Series Plug and Receptacle Connectors. Remove insulation sleeving from connector body. Discard insulation sleeving. Extract electrical contact from connector body. Strip insulation from wire to equal depth of well in electrical contact. Position insulation sleeving on cable. Crimp electrical contact in connector body. Heat shrink insulation sleeving.

q. Repair of Cables with MIL-SPEC Solder-Type Terminal Connectors. Loosen two retaining screws on cable clamp. Remove cable clamp from connector body. Desolder wire from electrical contact. Remove wire from electrical contact. Strip insulation from wire to equal depth of well in electrical contact. Position wire in electrical contact. Solder wire to electrical contact. Install cable clamp on connector body with two retaining screws.

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 coatings. 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 750-1 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 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.
- **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.

g. 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

RESTRICTED MAINTENANCE NOTICE

Units not authorized SC 4910-95-CL-A72 (SHOP EQUIPMENT, COMMON NO. 2) in their T.O.E. may be unable to perform some of the maintenance in this chapter. If the required tools are not authorized, the equipment must be submitted to DS Maintenance for repair.

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Section I. 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

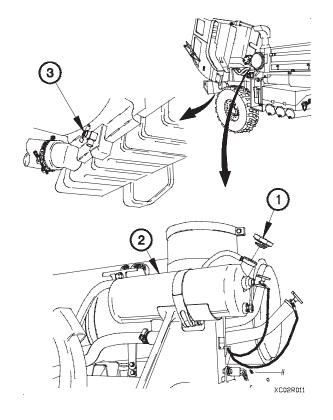
Tool Kit, Genl Mech (Item 44, Appendix C) Goggles, Industrial (Item 15, Appendix C) Wrench, Torque, 0-175 lb-ft (Item 57, Appendix C) Container (40 qt (38 L) capacity)

WARNING

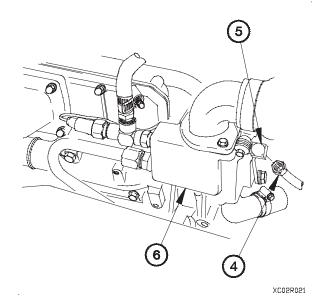
- Coolant may be very hot and under pressure from engine operation. Ensure engine is cool before performing maintenance. Failure to comply may result in injury to personnel.
- Wear appropriate eye protection when working under vehicle due to the possibility of falling debris. Failure to comply may result in injury to personnel.

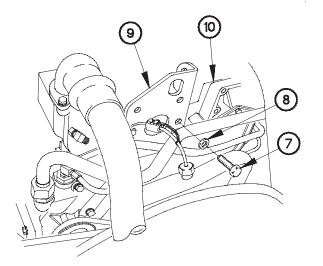
a. Removal.

- (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).

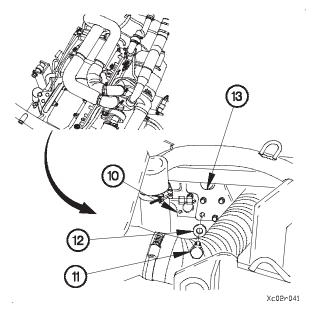




(6) Remove five screws (7), washers (8), and front lifting plate (9) from engine (10).



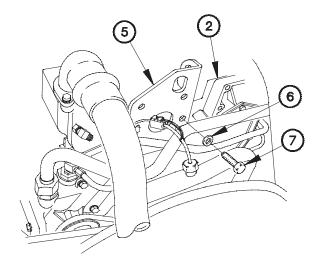
(7) Remove four screws (11), washers (12), and rear lifting plate (13) from engine (10).

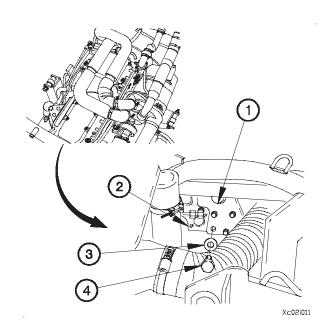


3-2. LIFTING PLATE REPLACEMENT (CONT)

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).

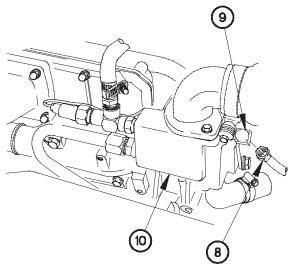




- (3) Position front lifting plate (5) on engine (2) with five washers (6) and screws (7).
- (4) Tighten five screws (7) to 47 lb-ft (64 N·m).

XC02I021

(5) Connect air compressor inlet coolant tube (8) to fitting (9) on thermostat housing (10).



XC02I031

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 58, Appendix C) Socket Set, Socket Wrench (Item 35, Appendix C)

Materials/Parts

Appendix G)

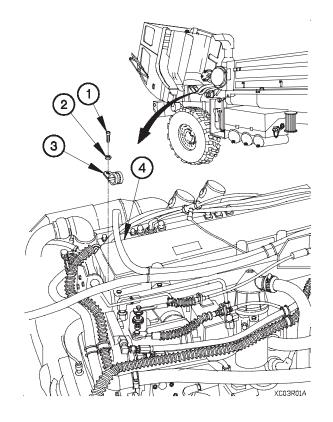
Rag, Wiping (Item 51, Appendix D)
Sealing Compound (Item 64, Appendix D)
Gasket (for valve cover 7W5627) (Item 42,
Appendix G)
Gasket (for valve cover 119-2960) (Item 27,
Appendix G)
Adhesive (Item 7, Appendix D)
Screw, Cap (14) (for replacement of valve cover 7W5627 with valve cover 119-2960) (Item 239,

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

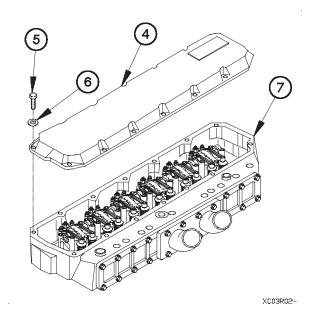
Area around valve cover must be clean before removing valve cover from inlet manifold to prevent contaminants from entering inlet manifold. Failure to comply may result in damage to equipment.

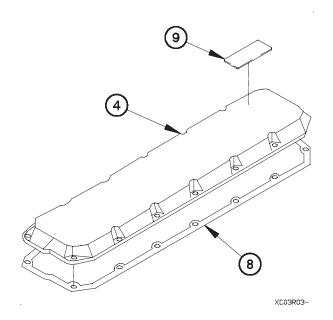
(2) Remove 13 screws (5) and washers (6) from valve cover (4).

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).





(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).

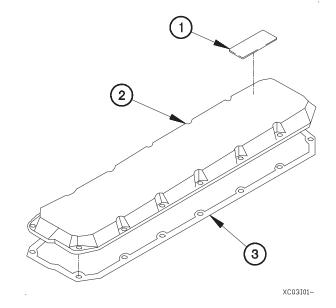
3-3. VALVE COVER AND GASKET REPLACEMENT (CONT)

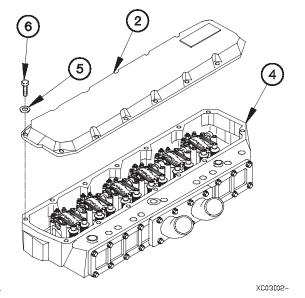
b. Installation.

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.

- (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).



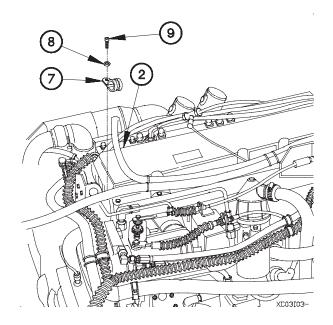


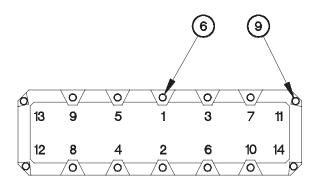
NOTE

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

XC03I04-

- (6) Tighten 13 screws (6) and screw (9) to 84-132 lb-in. (9- $15 \text{ N} \cdot \text{m}$) 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

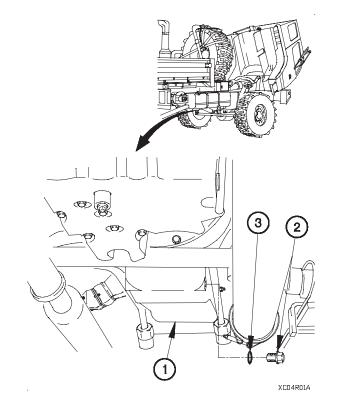
Oil, Lubricating, OE/HDO 30 (Item 46, Appendix D) Filter, Oil (Item 22, Appendix G) Packing, Preformed (Item 180, Appendix G)

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.

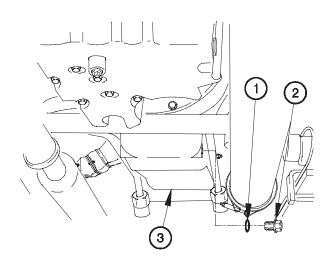
- (1) Position container under oil pan (1).
- (2) Remove oil pan plug (2) from oil pan (1).
- (3) Remove preformed packing (3) from oil pan drain plug (2). Discard preformed packing.



(4) Remove oil filter (4) from oil filter base (5). Discard oil filter.

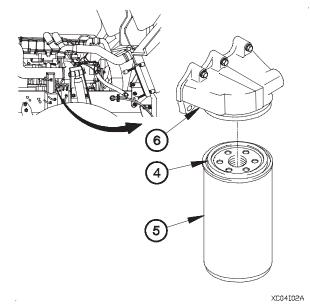
4 XC04R02A

b. Installation.



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- (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 base (6), hand tight.

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

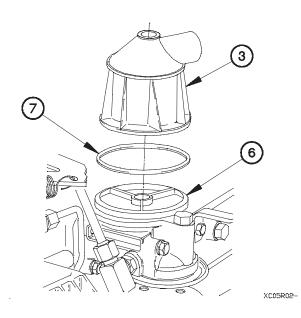
Rag, Wiping (Item 51, Appendix D)
Packing, Preformed (Item 184, Appendix G)
Oil, Lubricating, OE/HDO 30 (Item 46, Appendix D)

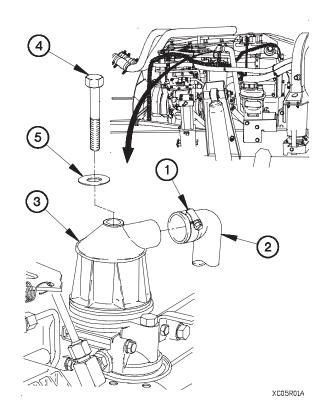
a. Removal.

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)

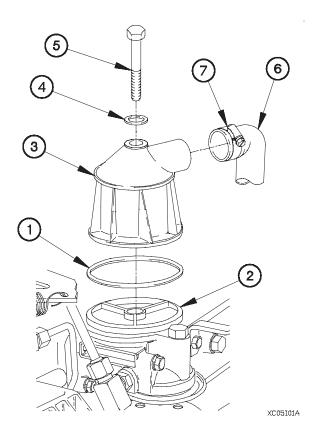
b. Installation.

- (1) Apply a thin coat of lubricating oil to both sides 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).
- (5) Position hose (6) on crankcase breather housing (3) with 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).
- (5) Check for oil leaks around breather housing gasket.
- (6) 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 63, 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.

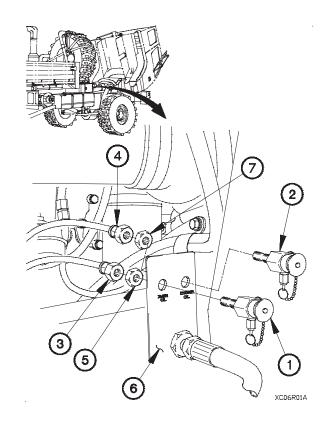
a. Removal.

(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 engine oil sampling valve (2).
- (4) Remove nut (5) and transmission oil sampling valve (1) from bracket (6).
- (5) Remove nut (7) and engine oil sampling valve (2) from bracket (6).

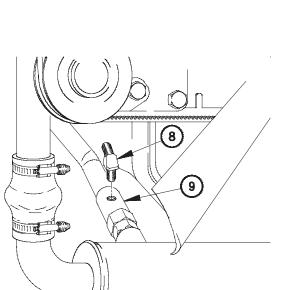


3-6. ENGINE AND TRANSMISSION OIL SAMPLING VALVE REPLACEMENT (CONT)

(6) Remove transmission oil sampling hose (3) from 45-degree fitting (8).

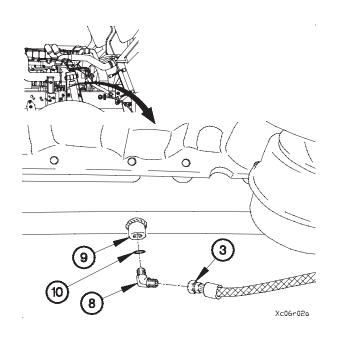
NOTE

- Note orientation of fitting prior to removal.
- Perform steps (7) and (8) on vehicles equipped with transmission oil cooler tubes.
- (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.



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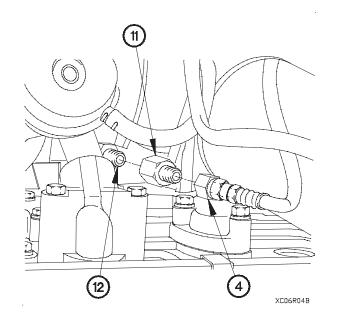
- (10) Remove engine oil sampling hose (4) from adapter (11).
- (11) Remove adapter (11) from 90-degree fitting (12).



NOTE

Perform step (9) on vehicles equipped with transmission oil cooler hoses.

(9) Remove 45-degree fitting (8) from transmission oil cooler hose (9).

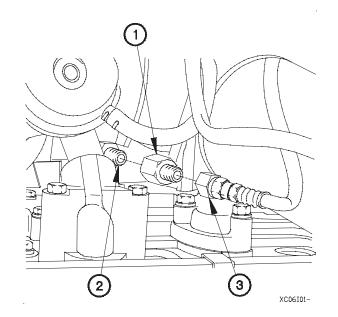


b. Installation.

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.

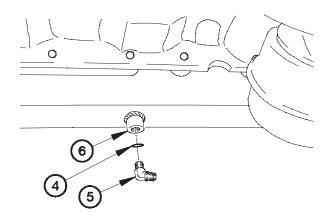
- (1) Apply antiseize compound to threads of adapter (1).
- (2) Install adapter (1) on 90-degree fitting (2).
- (3) Install engine oil sampling hose (3) on adapter (1).



NOTE

Perform steps (4) and (5) on vehicles equipped with transmission oil cooler tubes.

- (4) Install preformed packing (4) on 45-degree fitting (5).
- (5) Install 45-degree fitting (5) in transmission oil cooler tube (6).

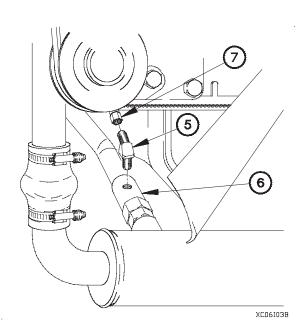


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NOTE

Perform step (5.1) and (5.2) on vehicles equipped with transmission oil cooler hoses.

- (5.1) Apply antiseize compound to threads of 45-degree fitting (5).
- (5.2) Install 45-degree fitting (5) in transmission oil cooler hose (6).
 - (6) Install transmission oil sampling hose (7) on 45-degree fitting (5).



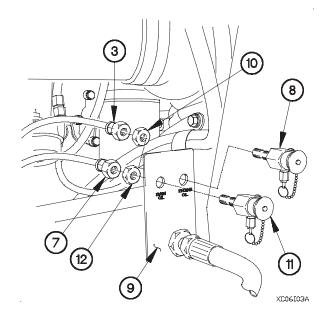
3-6. ENGINE AND TRANSMISSION SAMPLING VALVE REPLACEMENT (CONT)

- (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).



- (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 Socket Set, Socket Wrench (Item 35, Appendix

Materials/Parts

Nut, Self-Locking (2) (all models except M1081) (Item 148, Appendix G) Nut, Self-Locking (M1081) (Item 148, Appendix G)

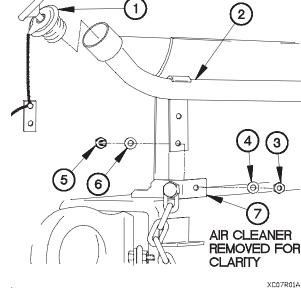
a. Removal.

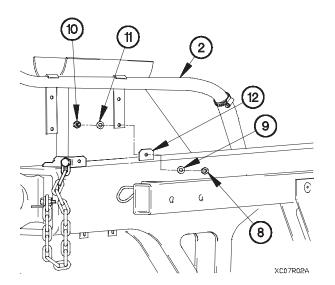
(1) Remove cap (1) from engine oil fill tube (2).

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.





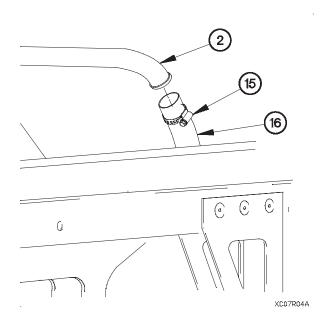
(3) Remove self-locking nut (8), washer (9), engine oil fill tube (2), screw (10), and washer (11) from front lifting beam (12). Discard self-locking nut.

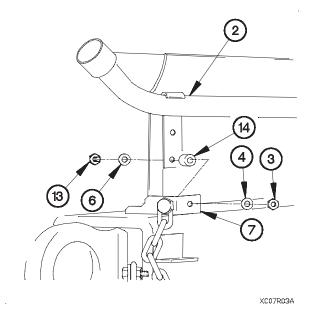
3-7. ENGINE OIL FILL TUBE REPLACEMENT (CONT)

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.

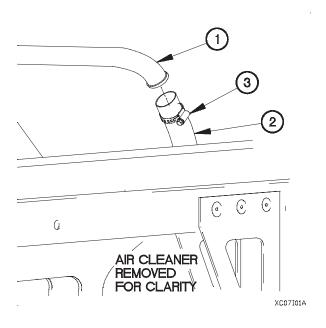




- (5) Loosen clamp (15) on engine oil fill hose (16).
- (6) Remove engine oil fill tube (2) from engine oil fill hose



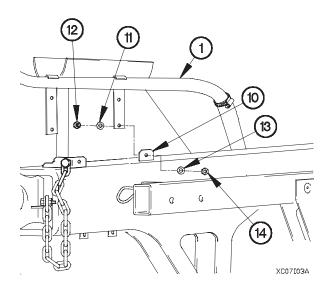
- (1) Position engine oil fill tube (1) in engine oil fill hose (2) with clamp (3).
- (2) Tighten clamp (3) to 27-44 lb-in. (3-5 N·m).



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).

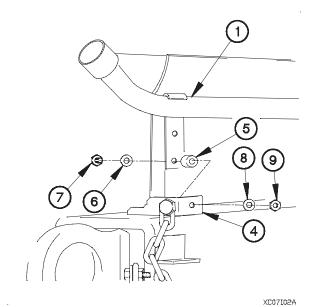


- (6) Position engine oil fill tube (1) on radiator overflow tank bracket (4) with washer (6), screw (15), washer (8), and self-locking nut (9).
- (7) Tighten self-locking nuts (9 and 14) to 21-26 lb-ft (29-35 N·m).
- (8) Install cap (15) on engine oil fill tube (1).

c. Follow-On Maintenance.

- (1) Install transmission oil fill tube (para 8-13).
- (2) Lower cab (TM 9-2320-365-10).

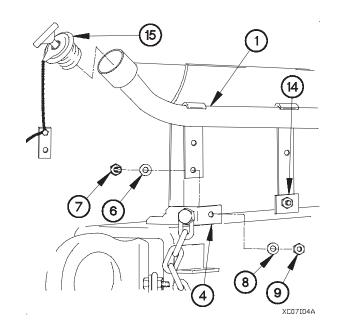
End of Task.



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).



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.

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
Maintenance Request
Packaging Improvement Report
Processing and Deprocessing Record of Shipping, Storage, and Issue of Vehicles and
Spare Engines
Product Quality Deficiency Report
Recommended Changes to DA Publications and Blank Forms DA Form 2028-2
Report of Item Discrepancy (ROID)

A-4. OTHER PUBLICATIONS

The following publications contain information pertinent to the LMTV and associated equipment.

a. Safety.

First Aid for Soldiers	-11
Security of Tactical Wheeled Vehicles TB 9-2300-422	-20
Safety Inspection and Testing of Lifting Devices TB 43-0	142

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)
Operator's Manual for M1078 Series, 2 1/2-Ton, 4x4, Light Medium Tactical Vehicle (LMTV)
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)
(LMTV) TB 9-2300-365-15
c. General Vehicle Operation.
Army Motor Transport Units and Operations
Manual for the Wheeled Vehicle DriverFM 21-305Safety Prevention of Motor Vehicle AccidentsAR 385-55Vehicle Recovery OperationsFM 20-22
d. General Maintenance and Repair.
Army Oil Analysis Program
Vehicles and Trailers
M1086, M1088-M1094 and M1096 Family of Medium Tactical Vehicles
M1086, M1088-M1094 and M1096 Family of Medium Tactical Vehicles
and Related Materials Including Chemicals
Special Tools List Simplified Test Equipment for Internal Combustion Engines Reprogrammable (STE/ICE-R) (NSN 4910-01-222-6589)

Operator's Manual, Radio Set, AN/VRC-90A	TM 11-5820-890-10-1
for Lead-Acid Storage Batteries	TB ORD 650 TM 9-2610-200-14 TM 43-0139 TB 43-0212
Rigging Techniques, Procedures, and Applications Use and Care of Hand Tools and Measuring Tools Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems Welding Theory and Application	FM 5-125 TM 9-243 TB 750-651
e. Cold Weather Operation.	
Basic Cold Weather Manual	FM 31-71
f. Decontamination.	
Decontamination Operations Facilities & Equipment NBC Protection	FM 3-4
g. Maintenance of Special Purpose Kits.	
Operator and Organizational Maintenance Manual for Chemical Alarm	TM 3-6665-225-12
Operator's and Unit Maintenance Manual Including Repair Parts and Special Tools	
List for Decontaminating Apparatus: M13	TM 3-4230-214-12&P
List for Decontaminating Apparatus: M13	TM 3-4230-214-12&P
List for Decontaminating Apparatus: M13	TM 3-4230-214-12&P
List for Decontaminating Apparatus: M13	TM 3-4230-214-12&P TM 9-1005-245-14 TM 5-4120-384-14
List for Decontaminating Apparatus: M13	TM 3-4230-214-12&P TM 9-1005-245-14 TM 5-4120-384-14
List for Decontaminating Apparatus: M13	TM 3-4230-214-12&P TM 9-1005-245-14 TM 5-4120-384-14 TM 5-4520-253-23P TM 9-2320-280-10 TM 9-2320-289-10 TM 9-2320-361-10 TM 9-2320-272-10 TM 9-8000 TM 750-244-6

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/Field - includes two subcolumns, C (Operator/Crew) and O (Unit) maintenance.

Direct Support/Field - includes an F subcolumn.

General Support/Sustainment - includes an H subcolumn.

Depot/Sustainment - 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.

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- g.**Remove/Install**. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
- h.**Replace**. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the 3d position code of the SMR code.
- i. **Repair**. The application of maintenance services ¹ including fault location/troubleshooting ², removal/installation, and disassembly/assembly ³ procedures, and maintenance actions ⁴ to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.
- j. **Overhaul**. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
- k.**Rebuild**. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

B-3. Explanation of Columns in the MAC, Section II.

- a.**Column 1, Group Number.** Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.
- b.Column 2, Component/Assembly. Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.
- c.**Column 3, Maintenance Function.** Column 3 lists the functions to be performed on the items listed in Column 2. (For detailed explanation of these functions, see Paragraph B-2.)
- d.Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed in man-hours in whole hours or decimals) in the appropriate subcolumn. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work-time figures are to be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions.

¹Services - Inspect, test, service, adjust, align calibrate, and/or replace.

²Fault 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).

³Disassembly/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
	Unit/Field maintenance
	Direct Support/Field maintenance
	Specialized Repair Activity (SRA) ₅
	Depot/Sustainment maintenance

- e. Column 5, Tools and Test Equipment Reference Code. Column 5 specifies, by code, those common tools sets (not individual tools), common TMDE, and special tools, special TMDE, and special support equipment required to perform the designated functions. Codes are keyed to tools and test equipment in Section III.
- f. **Column 6**, **Remarks.** When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Section IV.
- B-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.
- a.**Column 1, Reference Code.** The tool and test equipment reference code correlates with a code used in the MAC, Section II column 5.
- b.Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.
- c.Column 3, Nomenclature. Name or identification of the tool or test equipment.
- d.Column 4, National Stock Number. The National Stock Number of tool or test equipment.
- e.Column 5, Tool Number. The manufacturer's part number, model number, or type number.
- B-5. Explanation of Columns in Remarks, Section IV.
- a. Column 1, Remarks Code. The code recorded in column 6, Section II.
- b.Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

⁵This 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.

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(1)	(2)	(3)		ı	(4) Maintenanc	e Level		(5)	(6)
Group Number	Component/Assembly	Maintenance Function						Tools and Equipment Ref Code	Remarks Code
				FIE	_D	SUSTAIN	IMENT		
			Uı	nit	Direct Support	General Support	Depot		
			С	0	F	Н	D		
0100	ENGINE ASSEMBLY	Inspect		0.1				78	
		Test		1.5	0.3			78,79	
		Adjust			3.0			56,60,78,80	
		Service		8.0				57,59,78	
		Replace			7.0			16,56,59,61 ,78,79	
		Repair		0.4	1.6	3.3		16,31,32,44 ,56,59,60,6 1,78,79	
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 ,59,60,61,7 8	
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	
0106	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	

(1)	(2)	(3)		(4) Maintenance Level				(5)	(6)
				FIELD SUSTAINMENT		Tools and			
Group Number	Component/Assembly	Maintenance Function	Ur	nit	Direct Support	General Support	Depot	Equipment Ref Code	Remarks Code
			С	0	F	Н	D		
0304	INTAKE AIR CLEANER	Service		0.2					
		Replace		8.0				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				57,78	
		Adjust		0.2				57,78	
0401	EXHAUST MUFFLER/PIPES	Inspect	0.1	0.2					
		Replace		0.9				57,59,78	
0501	RADIATOR/CHARGE AIR COOLER	Inspect	0.1						
		Replace		2.5				2,27,53, 59,78	
		Service		1.5				59,79	
		Repair		0.6	2.0			2,27,53, 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		8.0				15,57,59,78 ,86	
0505	CLUTCH, ENGINE FAN	Inspect		1.0				57	
		Replace		1.5				2,53,57, 78	
		Repair			1.2			56,59,60,61 ,78,79	

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(1)	(2)	(3)			(4) Maintenanc			(5)	(6)
Group Number	Component/Assembly	Maintenance Function					Tools and Equipment Ref Code	Remarks Code	
				FIEL	_D	SUSTAIN	IMENT		
			Uı	nit	Direct Support	General Support	Depot		
			С	0	F	Н	D		
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		8.0				57,78	
		Repair		0.3				78	
0609	LIGHT, BLACKOUT DRIVE	Inspect	0.1						
		Replace		0.8				57,59,78	
		Repair		0.5				78	
0609	TAILLIGHT ASSEMBLY, COMPOSITE	Inspect	0.1						
		Replace		8.0				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						
0611	HORN, CAB	Inspect	0.1						

(1)	ction II. MAINTENANCE	(3)		IIAK	(4)	IIL LIVII	v v 🗀 i 1i	(5)	(6)
(-,	(-/	(6)		Maintenance Level					(5)
Group Number	Component/Assembly	Maintenance Function					Tools and Equipment Ref Code	Remarks Code	
	,			FIEL	_D	SUSTAIN	IMENT		
			Ur	nit	Direct Support	General Support	Depot]	
			С	0	F	Н	D		
		Replace		0.4				57,78	
0612	BOX ASSEMBLY, BATTERY	Inspect	0.1						
		Test		0.5				57,78	
		Service		0.3				57	Α
		Replace		1.0				57,59,78	
		Repair		0.2				63	
0613	CABLE ASSEMBLY, LH/RH CAB AND DOOR MARKER LIGHTS	Inspect	0.1						
		Replace		8.0				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	1.3			63	

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5)	(6)
Group Number						Tools and Equipment Ref Code	Remarks Code		
			FIELD			SUSTAIN	SUSTAINMENT		
			Unit		Direct Support	General Support	Depot	1	
			С	0	F	Н	D		
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 ,56,57,59,6 0,61,78,79, 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	

(1)	(2)	(3)		(4) Maintenance Level					(6)
Group Number	Component/Assembly	Maintenance Function				Tools and Equipment Ref Code	Remarks Code		
				FIE	_D	SUSTAIN	IMENT		
			Uı	nit	Direct Support	General Support	Depot		
			С	0	F	Н	D		
		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 ,60,61,71,7 4,78,79	
		Repair				1.1		23,27,33,50 ,56,57,60,7 8	

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(1)	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5)	(6)
Group Number						Tools and Equipment Ref Code	Remarks Code		
			FIELD SUSTAINMENT						
			Unit		Direct Support	General Support	Depot	•	l
			С	0	F	Н	D		
0802	HOUSING ASSEMBLY, C6 AND C7 CLUTCH	Remove/ Install				2.0		56,59,60,61 ,78	
		Repair				0.8		19,23,26,27 ,28,29,56,5 9,60,61,62, 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		8.0				57,59,78	
		Replace			4.5			34,56,57,59 ,60,78,84	

(1)	(2)	(3)		ı	(4) Vlaintenanc	e Level		(5)	(6) Remarks Code
Group Number	Component/Assembly	Maintenance Function						Tools and Equipment Ref Code	
				FIEL	_D	SUSTAIN	IMENT		
			Ur	nit	Direct Support	General Support	Depot		
			С	0	F	Н	D	1	
		Repair			0.9	6.0		21,56,57,59 ,60,78,84,8 5	
1102	CARRIER ASSEMBLY, DIFFERENTIAL	Inspect		0.1	0.1	1.0		78,79	
		Service			0.3			78	
		Replace				4.6		21,56,57,59 ,60,78,79,8 5	
		Repair				2.7		21,37,56,57 ,59,60,71,7 3,78	
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	В
		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 ,60,61,78,7 9	
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,	Service	0.1	0.5				78	

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(1)	(2)	(3)		(4) Maintenance Level				(5)	(6)
Group Number	Component/Assembly	Maintenance Function						Tools and Equipment Ref Code	Remarks Code
				FIEI	LD	SUSTAIN	IMENT		
			Uı	nit	Direct Support	General Support	Depot]	
			С	0	F	Н	D		
	POWER STEERING								
		Replace		0.8				59,78,86	
1501	FRAME ASSEMBLY	Inspect	0.1	0.3					
		Repair		8.0	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						

Group Number Component/Assembly (3) Maintenance Function	(4) Maintenanc	e Level		(5)	(6)
				Tools and Equipment Ref Code	Remarks Code
FIE	LD	SUSTAIN	IMENT		
Unit	Direct Support	General Support	Depot		
c o	F	H	D		
Replace 1.0				57,59,78	
Repair 0.8				57,78	
1802 WINDSHIELD Replace	0.6			55,59,78	
1802 FENDER, VEHICULAR, Inspect 0.1 FRONT					
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				57,59,78	
1812 BODY ASSEMBLY, VAN Inspect 0.1 0.1					
Repair 0.5				20,35,36,42 ,43,47,57,5 9,64,72,76, 78	
Replace 1.9				36,64,78	
1812 DOOR, ACCESS, LEFT Inspect 0.1				30,01,70	
Replace 2.3				78	
Repair 0.1				57,59,78	
1812 DOOR, ACCESS, RIGHT Inspect 0.1				2.,30,70	
Replace 1.4				78	
Repair 0.4				57,59,78	
1812 WINDOW SASH ASSEMBLY Inspect 0.1				11,30,.0	
Replace 0.2				78	
Repair 0.4				57,59,78	
1812 BOX ASSEMBLY, RELAY Inspect 0.1 0.1				2.,30,70	
Replace 0.6				78	
Repair 0.1				78	
Test 0.1 0.5				59,78	
1812 FAN ASSEMBLY Inspect 0.1					

Section II. MAINTENANCE ALLOCATION CHART FOR THE LMTV VEHICLE (CONT)

(1)	(2)	(3)		I	(4) Maintenanc	e Level		(5)	(6)
Group Number	Component/Assembly	Maintenance Function					Tools and Equipment Ref Code	Remarks Code	
				FIEI	LD	SUSTAINMENT		1	
			Ur	nit	Direct Support	General Support			ļ
			С	0	F	Н	D		
		Replace		1.8				20,76,78	
		Repair		0.5				78	
2001	WINCH, 11K SELF- RECOVERY (SRW)	Inspect	0.1	4.0					
		Service		0.2				59	
		Replace			1.0			59,60,78	
		Repair			0.9			59,60,78	
2004	POWER TAKEOFF ASSEMBLY (PTO)	Inspect	0.1						
		Replace			1.0			56,57,59,60 ,78	
		Repair			0.8			56,57,59,60 ,78	
2202	MOTOR, WIPER, WINDSHIELD	Test		0.5					
		Replace		1.0				78	
2207	HEATER ASSEMBLY, PERSONNEL	Replace		2.0				57,59,78	
		Repair		1.0				57,59,78	
2210	DECALS	Inspect Replace	0.1	1.0				78	
2401	POWER UNIT, AIR/HYDRAULIC	Inspect	0.1	1.0				70	
	7	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	

(1)	(2)	(3)			(4) Maintenanc			(5)	(6)
Group Number	Component/Assembly	Maintenance Function						Tools and Equipment Ref Code	Remarks Code
				FIE	_D	SUSTAIN	IMENT	1	1
			Uı	nit	Direct Support	General Support	Depot		
			С	0	F	Н	D	1	
		Repair		0.5				57,59,78	
3303	HEATER KIT, M1079	Inspect	0.1						
		Remove/ Install		2.5				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 Test Replace Repair		0.2 0.5 1.0 0.2	1.5 0.5			59,63,78 57,59,78 56,57,60,61	
3307	CRANE (LMHC), MATERIAL HANDLING, LIGHT	Inspect	0.1	0.1				,63,78	
		Repair Replace Test		0.5 0.5 0.5				59,76,78	
3307	WEIGHT BLOCK AND WIRE ROPE, LMHC	Inspect	0.1	0.5					
	,	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						
		Repair		1.0				59,78	
		Test		0.5					
3307	CONTROL BOX, LMHC	Inspect	0.1						
		Replace		0.1					
		Repair		0.5				76,78	
		Test	0.1	0.5					
3307	TROOPSEAT KIT	Remove/ Install	1.0						

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(1)	(2)	(3)		ı	(4) Maintenanc		(5)	(6)	
Group Number	Component/Assembly	Maintenance Function						Tools and Equipment Ref Code	Remarks Code
				FIEL	_D	SUSTAIN	IMENT		1
			Ur	nit	Direct Support	General Support	Depot		
			С	0	F	Н	D		
		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

:	Section III. 100L5 AND 1EST EQUIPMENT FOR LIVITY VEHICLE			I
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	0	ADAPTER, SOCKET WRENCH	5120-00-240-8702	11655788-2
2.1	0	BASE, MAGNETIC		P5646
3	Н	BUSHING DRIVER SET	5120-01-391-3541	J35922
4	0	CRIMPING TOOL, TERMINAL, HAND	5120-00-165-3912	M22520/1-01
5	0	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-00-078-3809	10935497
6	0	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	0	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-236-9996	FCOM15
10	0	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1091	FCO32
11	0	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1119	SCO34
12	0	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1122	SCO40
12.1	0	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-335-1126	SCO48
13	F	CROWFOOT ATTACHMENT, SOCKET WRENCH	5120-01-348-9473	AN8508-19A
13.1	0	DISPENSER, SEALANT	5120-00-061-1283	45RCT
13.2	F	DRILL SET, STOPCOLLAR	5133-01-383-7665	1955
14	Н	DRIVER KIT, BEARING	4910-01-032-3128	8S0602
14.1	0	FRAME, HAND HACKSAW	5110-00-289-9657	163-20
15		DELETED		
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	Н	HANDLE, DRIVE	5120-00-377-2259	J8092
20	0	HEATER, GUN TYPE, ELECTRIC	4940-00-561-1002	500A
21	F,H	HOLDING BAR, PINION	5120-01-166-0573	J3453
21.1	0	INDICATOR, DIAL		P36491
22	0	INSERTER AND REMOVER, ELECTRICAL CONTACT	5120-00-915-4588	MS3447-16
23	Н	INSERTER AND REMOVER, SPRING	5120-01-388-3660	J38573
24	Н	INSERTER AND REMOVER, SPRING	5120-01-388-4436	J35923
25	Н	INSERTER, BEARING AND BUSHING	5120-01-388-7841	J-38565

Section III. TOOLS AND TEST EQUIPMENT FOR LMTV VEHICLES (Cont)

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
26	Н	INSERTER, BEARING AND BUSHING	5120-01-389-0658	J35921-1
27	Н	INSERTER, BEARING AND BUSHING	5120-01-390-1104	J 38569
28	Н	INSERTER, BEARING AND BUSHING	5120-01-390-1105	J 38568-3
29	н	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
33.1	F	JACK, DOLLY TYPE HYDRAULIC	4910-01-396-5044	TTJ3
34	F	JACK, LEVELING SUPPORT, VEHICLE	2590-00-231-7418	10876244
35.1	0	KEY, SOCKET HEAD SCREW	5120-01-355-1670	AWML2.5
35.2	F	LIFTING SADDLE ASSEMBLY		TTJ-ZIFA
36	0	LINK, CHAIN, END	4010-00-932-5013	NAS1049-16
36.1	F	NOSE ASSEMBLY		99-3307
36.2	0	PLIERS, HOG RING STAPLE	5120-01-413-8837	0012
37	Н	PULLER KIT, UNIVERSAL	5180-00-089-3660	A57QB
38	F	PULLER KIT, UNIVERSAL	5180-01-124-1903	1P3075
39	0	REMOVER, ELECTRICAL CONTACT	5120-00-148-9844	MS3448-001B
40	F	RIVETER, BLIND, HAND	5120-01-289-4310	HP-2
40.1	F	RIVETER, BLIND, PNEUMATIC	5130-01-232-4042	245
41	Н	RIVETER, YOKE, HAND	5120-01-415-3558	J-39354
42	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-00-180-0881	5120-00-180-0881
43	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-053-4158	FAM5A
44	O,F,H	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-055-1308	ANSIB18.3.2M
45	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-079-8032	SAM8A
46	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-160-8862	S 6 HBS
47	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3462	SA10A
47.1	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3483	FA5LE
48	O,F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3497	TMP12A
49	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3519	F23D
50	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3526	FP24
51	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3527	FP32A
52	F,H	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3536	FTX40A
53	0	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-367-3574	GFA8A

Section III. TOOLS AND TEST EQUIPMENT FOR LMTV VEHICLES (Cont)

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
53.1	F	SCREWDRIVER ATTACHMENT, SOCKET WRENCH	5120-01-430-5715	SZ-21
54	0	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	SC4910-95CLA02
57	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0650	SC4910-95CLA72
58	0	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
62	O,F,H	SHOP EQUIPMENT, AUTOMOTIVE VEHICLE	4910-00-754-0707	SC4910-95CLA63
63	O,F	SHOP EQUIPMENT, FUEL AND ELECTRICAL	4910-00-754-0714	SC4910-95CLA01
64	0	SLING, EYE	3940-01-334-0749	EE1-202
65	F	SLING, MULTIPLE LEG	3940-00-777-5744	A170
66	Н	SOCKET SET, SOCKET WRENCH	5120-01-195-0640	208FA
67	F,H	SOCKET, SOCKET WRENCH	5120-01-068-5643	5555M
68	0	SOCKET, SOCKET WRENCH	5120-01-161-5907	GLDH382
69	F	SOCKET, SOCKET WRENCH	5120-01-335-0784	TW321
70	0	SOCKET, SOCKET WRENCH	5120-01-144-5324	ANS 1913A
71	F	SOLDERING AND BRAZING OUTFIT, RESISTANCE HEATING	3439-00-460-7198	SC4940-95-CLB20
72	0	SOLDERING IRON, ELECTRIC	3439-01-036-3308	3112-S3-40W
73	Н	STAND, DIFFERENTIAL CARRIER REPAIR	4910-01-085-7729	J3409-D
74	Н	STAND, MAINTENANCE, AUTOMOTIVE ENGINE	4910-00-808-3372	J29109
75	F	TOOL, DISTORTER	5120-01-119-1748	5P-7312
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	Н	TOOL KIT, DIESEL INJECTOR	5180-01-466-3966	143-2099
82	F	TOOL OUTFIT, HYDRAULIC	4940-01-036-5784	SC4940-95-CL-B07

Section III. TOOLS AND TEST EQUIPMENT FOR LMTV VEHICLES (Cont)

Tool or Test Equipment REF Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
83	0	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	0	WRENCH, TORQUE, 0-75 LB-IN.	5120-01-112-9532	TQSC6A

Section IV. REMARKS FOR THE LMTV VEHICLE

Remarks Code	Remarks
А	Battery service will be in accordance with TM 9-6140-200-14.
В	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)	(2)	(3) NATIONAL	(4)	(5)
NUMBER	ITEM NAME	STOCK NUMBER	PART NUMBER	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)	(2)	(3) NATIONAL	(4)	(5)
ITEM NUMBER	ITEM NAME	STOCK NUMBER	PART NUMBER	REFERENCE
9	FISHING TOOL, PNEUMATIC TIRE VALVE	5120-00-516-4220	991	SC 4910-95-CL-A74
10	GAGE, DEPTH, MICROMETER	5210-00-619-4045	445BZ-6RL	CTA 50-909
11	GAGE, TIRE PRESSURE	4910-01-117-2994	955	SC 4910-95-CL-A72
12	GAGE, WHEEL ALIGNMENT	5210-01-223-3701	WA361	SC 4910-95-CL-A72
13	GLOVES, RUBBER	8415-00-641-4601	ZZ-G-381	SC 4910-95-CL-A74
14	GLOVES, WELDER'S	8415-00-268-7859	A-A-50022	SC 4910-95-CL-A72
15	GOGGLES, INDUSTRIAL	4240-00-052-3776	A-A-1110	SC 4910-95-CL-A74
16	GUN, LUBRICATING	4930-00-253-2478	1142	SC 4910-95-CL-A74
17	HAMMER, HAND	5120-00-224-4130	A-A-1292	SC 4910-95-CL-A74
18	HAMMER, HAND	5120-01-065-9037	57-533	SC 4910-95-CL-A72
19	HOSE ASSEMBLY, NONMETALLIC	4720-00-356-8557	ZZ-H-461	SC 4910-95-CL-A74
20	IRON, TIRE	5120-00-765-8536	T48A	SC 4910-95-CL-A74
21	JACK, HYDRAULIC, HAND	5120-00-224-7330	D120	SC 4910-95-CL-A74
22	MULTIMETER, DIGITAL	6625-01-139-2512	T00377	SC 4910-95-CL-A74
23	MULTIPLIER, TORQUE WRENCH	5120-00-574-9318	292	SC 4910-95-CL-A72
24	PAN, DRAIN	4910-00-387-9592	450	SC 4910-95-CL-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	4240-00-022-2524	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

Section II. TOOLS IDENTIFICATION LIST (CONT)

(1)	(2)	(3)	(4)	(5)
ITEM NUMBER	ITEM NAME	NATIONAL STOCK NUMBER	PART NUMBER	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
40.1	TEST KIT, RADIATOR	4910-00-728-8227		SC 4910-95-CL-A74
40.2	TAP AND DIE SET	5136-01-119-0005	TDM99117	SC 4910-95-CL-A72
40.3	TAP, THREAD, CUTTING	5136-00-729-5692	B94.9 1/213 UNCHSGH3	SC 4910-95-CL-A72
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
44.1	TOOL KIT, ELECTRICAL CONTACT REPAIR	5780-00-876-9336	7550526	SC 4940-95-B09
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
51.1	WRENCH, BOX AND OPEN END	5120-00-228-9518	1174	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

TM 9-2320-365-20-2

Section II. TOOLS IDENTIFICATION LIST (CONT)

(1) ITEM	(2)	(3) NATIONAL	(4)	(5)
NUMBER	ITEM NAME	STOCK NUMBER	PART NUMBER	REFERENCE
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
58.1	WRENCH, TORQUE, 0-300 lb-in.	5120-00-776-1841	2163993	SC 4910-95-CL-A74
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	(2)	(3) National Stock	(4)	(5)
Number	Level	Number	Description	U/M
1	0	4730-00-248-9340	Adapter, Pipe to Tube (81343) 4-4 010103B	ea
1.1	0	4730-01-453-9651	Adapter, Straight, Pipe to Boss (19207) 12421890-001	ea
1.2	0	4730-01-457-4025	Adapter, Straight, Pipe to Tube (96906) MS51503B4-4	ea
1.3	0	4730-00-760-3525	Adapter, Straight, Tube to Boss (81361) C116-3-71	ea
2	0	8040-00-273-8717	Adhesive (81348) MMM-A-121	pt
3	0	8040-00-152-0063	Adhesive (81348) MMM-A-1617 TY 3	bt
4	0	8040-01-250-3969	Adhesive (05972) 242	ea
5	0	8040-01-117-7872	Adhesive (04963) 08031	tu
6	0	8040-00-117-8510	Adhesive (71984) 3145 RTV Clear	tu
7	0	8040-00-776-9602	Adhesive (73168) 80055-31	kt
8	0	8040-00-118-2695	Adhesive (72799) RTV162	kt

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1)	(2)	(3)	(4)	(5)
Item Number	Level	National Stock Number	Description	U/M
9	0	8040-01-446-7842	Adhesive (01139) RTV123	са
10	0	8040-01-331-7473	Adhesive (81349) (MIL-A-46106 GP3TY1)	tu
11	0	8040-01-331-7470	Adhesive (81349) (MIL-A-46106 GP1TY1)	tu
11.1	0	8040-00-728-3088	Adhesive (78500) 1199-T-3842 6 oz	kt
12	С	6850-00-174-1806	Antifreeze, Arctic Type (81349) (MIL-A-11755) 55 gl drum	dr
13	С	6850-01-441-3218 6850-01-441-3221 6850-01-441-3257	Antifreeze, Multi-Engine Type (58536) (A-A-52624A) Type I (Green) – 1 gal Type I (Green) - 5 gal Type II (Purple) - 5 gal	dr gal co co
14	0	8030-00-597-5367	Antiseize Compound (81349) (MIL-A-907)	lb
14.1	0	5110-00-277-4588	Blade, Hand Hacksaw (54940) 31-51024	ea
14.2	0	5340-01-454-4336	Bracket, Angle (0FW39) 12421859-001	ea
15	0	5340-00-450-5718	Cap and Plug Set 10935405	ea
15.1	0	5340-01-423-0972	Clamp, Loop (18076) S630H-20	ea
16	0	6850-00-926-2275	Cleaning Compound, Windshield (81349) O-C-1901 16 oz bottle	bt
17	0	7920-00-044-9281	Cloth, Cleaning (81349) (MIL-C-85043)	bx
18	0	8030-00-062-6950 8030-01-149-1731 8030-00-837-6557 8030-00-903-0931	Corrosion Preventive Compound (81349) (MIL-C-16173) Grade 1 - 1 qt can Grade 2 - 1 qt can Grade 3 - 1 pt can Grade 4 - 1 pt can	qt qt pt pt
19	0	8030-00-033-4291	Corrosion Preventive Compound (MIL-C-82594) 8 oz can	bt
19.1	0	2540-01-460-8048	Cover, Seat, Vehicular (27797) WM1059	ea
19.2	0	2540-01-463-8394	Cover, Seat, Vehicular (0FW39) WM1058	ea
20	С	9150-00-664-0047	Damping Fluid (81348) VV-D-1078 1 lb can	lb
21	0	7520-01-209-1152	Dispenser, Pressure Sensitive Adhesive Tape (75037) STD-0-9	ea
21.1	0	4730-01-454-1233	Elbow, Pipe to Boss (19207) 12421891-001	ea
21.2	0	4730-00-863-9098	Elbow, Pipe to Tube (30780) 4VBTXB	ea
22	0	5330-01-325-6993	Gasket Forming Compound (05972) 515	ea
22.1	0		Gasket Maker, RTV Silicone (05972) 5699	ea

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item	(2)	(3) National Stock	(4)	(5)
Number	Level	Number	Description	U/M
23	С	9150-01-197-7688 9150-01-197-7690 9150-01-197-7689 9150-01-197-7692	Grease, Automotive and Artillery (GAA) (81349) (MIL-G-10924) 2-1/4 oz tube 1.75 lb can 6.5 lb can 35 lb can	tu cn cn cn
24	0	9150-00-530-6814	Grease, Wire Rope-Exposed Gear (81349) (MIL-G-18458) 35 lb can	cn
25	0	9150-00-935-4018	Grease, Molybenum Disulfide (81349) (MIL-G-21164) 14 oz cartridge	ca
25.1	0	4720-00-988-3842	Hose Assembly, Nonmetallic (50599) R25679-1	ea
25.2	0	4720-01-384-0995	Hose Assembly, Nonmetallic (19207) 12421858-006	ea
25.3	Ο	4720-01-453-9530	Hose Assembly, Nonmetallic (0FW39) 12421857	ea
25.4	0	4720-01-469-9208	Hose Assembly, Nonmetallic (19207) 12418004-002	ea
26	С	9150-00-252-6383 9150-00-223-4134	Hydraulic Fluid A (MIL-H-5606) 1 qt can 1 gl can	cn cn
27	0	7510-00-145-0559	Ink, Marking Stencil (MIL-I-43553)	oz
28	0	7510-01-386-0787	Inking Pad, Rubber Stamp	ea
29	0	9150-01-360-1905	Insulating Compound, Electrical	tu
30	0	5970-00-838-5951	Insulation Sleeving, Electrical (06090) CRN3-16BLACK	ft
30.1	0	5970-01-378-3018	Insulation Sleeving, Electrical (06090) ATUM-1/4-0-4FT	lg
31	0	5970-01-422-3579	Insulation Sleeving, Electrical (06090) ATUM 1/2 4 ft length	lg
32	Ο	1650-00-166-4834	Lockwire (90166) 68A32	ea
33	0	9150-01-360-1905	Lubricant, Solid Film (MIL-L-46147) 16 oz can	cn
34	0	4730-00-019-0608	Nipple, Pipe	ea
35	0	4730-00-825-7304	Nipple, Tube MS51501B4	ea
36	Ο	5310-00-059-4265	Nut, Plain, Hex	ea

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) Item	(2)	(3) National Stock	(4)	(5)
Number	Level	Number	Description	U/M
36.1	С		Oil, Commercial Burner Fuel, Grade FO-1 (ASTM D396)	
36.2	С		Oil, Commercial Burner Fuel, Grade FO-2 (ASTM D396)	
37	С	9140-00-286-5282 9140-00-286-5283 9140-00-286-5284 9140-00-286-5285	Oil, Fuel Diesel, DF-A, Arctic (VV-F-800) (81348) 5 gl can Bulk 55 gl drum, 16 gauge 55 gl drum, 18 gauge	cn gl dr dr
38	С	9140-00-286-5286 9140-00-286-5287 9140-00-286-5288 9140-00-286-5289	Oil, Fuel, Diesel, DF-1, Winter (VV-F-800) (81348) Bulk 5 gl can 55 gl drum, 16 gauge 55 gl drum, 18 gauge	gl cn dr dr
39	С	9140-00-286-5294 9140-00-286-5295 9140-00-286-5296 9140-00-286-5297	Oil, Fuel, Diesel, DF-2, Regular (VV-F-800) (81348) Bulk Can 55 gl drum, 16 gauge 55 gl drum, 18 gauge	gl cn dr dr
40	С	9150-00-402-2372 9150-00-491-7197	Oil, Lubricating, Arctic (MIL-L-46167) 5 gl can 55 gl drum	cn dr
41	С	9150-00-035-5390 9150-00-035-5391	Oil, Lubricating, Gear, GO 75W (MIL-L-2105C) 1 qt can 5 gl can	cn cn
42	С	9150-01-035-5392 9150-01-035-5393 9150-01-035-5394	Oil, Lubricating, Gear, 80W-90 (MIL-L-2105C) 1 qt can 5 gl can 55 gl drum, 16 gauge	qt cn dr
43	С	9150-00-183-7807 9150-00-186-6668 9150-00-191-2772	Oil, Lubricating, OE/HDO 10 (MIL-L-2104) Bulk 5 gl can 55 gl drum	gl cn dr
44	С	9150-00-189-6727	Oil, Lubricating, OE/HDO 10W (MIL-L-2104) 1 qt can	cn
45	С	9150-01-152-4117 9150-01-152-4118 9150-01-152-4119	Oil, Lubricating, OE/HDO 15W-40 (MIL-L-2104) 1 qt can 5 gl can 55 gl drum	cn cn dr

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1)	(2)	(3) National Stock	(4)	(5)
Item Number	Level	Number	Description	U/M
46	С	9150-00-183-7808 9150-00-186-6681 9150-00-188-9858 9150-00-189-6729	Oil, Lubricating, OE/HDO 30 (SAE 30) (MIL-L-2104) Bulk 1 qt can 5 gl can 55 gl drum, 18 gauge	gl cn cn dr
47	С	9150-00-405-2987 9150-00-189-6730 9150-00-188-9862	Oil, Lubricating, OE/HDO 40 (MIL-L-2104) Bulk 1 qt can 5 gl can	gl cn cn
48	0	5350-00-067-7639	Paper, Abrasive (28124) 02347 pg contains 100 sheets	pg
49	0	8010-01-146-2650	Polyurethane Coating (MIL-C-46168)	kt
50	0	8030-00-181-8372	Primer, Sealing Compound (05972) 747-56	cn
51	С	7920-00-205-1711	Rag, Wiping A-A-531	be
52		DELETED		
53	0	4020-00-855-2767	Rope, Fibrous (MIL-R-17343) 75 ft	cl
54	0	7520-00-634-2442	Rubber Stamp Set, Fixed Type	ea
55	0	5330-01-337-1108	Rubber Strip (12624) V4062	ft
56	0	5330-01-181-6482	Rubber Strip (19207) 12328583-3	ft
56.1	0	5305-00-021-3740	Screw, Cap, Hex Hd (97942) 645A560H43	ea
56.2	0	5305-01-299-4602	Screw, Cap, Hex Hd (64678) 000933 006058	ea
56.3	0	5305-01-454-5938	Screw, Cap, Hex Hd (19207) 12419954-093	ea
57	0	5305-01-296-0019	Screw, Cap, Socket Head (06888) SHCM75275 50 ct box	bx
58	0	1015-01-255-4144	Sealant, Pipe, Teflon (19207) 12297953 50 ml tube	tu
59	0	8030-00-081-2327	Sealing Compound (05972) 079-21	bx
60	0	8030-00-111-2762	Sealing Compound (05972) 290-31	bt
61	0	8030-00-133-3164	Sealing Compound (05972) 571-31	bt
62	0	8030-00-148-9833	Sealing Compound (05972) 271-21	bx
63	0	8030-00-204-9149	Sealing Compound (05972) 592-41	tu
64	0	8030-00-656-1426	Sealing Compound (81349) (MIL-S-45180)	pt
65	0	8030-01-025-1692	Sealing Compound (05972) 242-41 (MIL-S-46163)	bt
66	0	8030-01-088-8140	Sealing Compound (52571) 9001512-0011	bt

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1)	(2)	(3)	(4)	(5)
Item Number	Level	National Stock Number	Description	U/M
67	0	8030-00-753-5006 8030-00-753-4599 8030-00-723-2746 8030-00-685-0915	Sealing Compound (81349) (MIL-S-8802TY2CLB-2) 2 oz cartridge 6 oz can 12 oz can 24 oz can	ca kt kt kt
68	0	8030-01-155-3238	Sealing Compound (11083) 6V6640	ml
68.1	0	8030-01-371-8405	Sealing Compound (83574) PR-1422 B-1/2 6 oz	ca
68.2	0	8030-01-255-4144	Sealant (19207) 12297953	tb
68.3	0	8030-00-956-2397	Sealing Compound 104	tb
69	С	7930-00-634-3935	Soap, Laundry (81348) P-S-1792	lb
70	0	3439-00-006-7764	Solder, Tin Alloy (81348) SN63WRAP3	sl
71	С	6850-00-281-1985 6850-00-664-5685	Solvent, Dry Cleaning SD (P-D-680) 1 gl can 1 qt can	cn cn
71.1	0		Strap, Tiedown, Electrical Components (06383) PLP2S	ea
72	0		Tape, Adhesive (0SHR6) 70P00002	ea
72.1	0	9320-01-244-0046	Tape, Adhesive, Rubber (18876) MIS-41157-08 180 ft	ro
73	0	8030-00-889-3534	Tape, Antiseizing (81349) (MIL-T-27730)	ea
74	0	5640-00-103-2254	Tape, Duct (39428) 1791K70	ea
75	0	5970-00-644-3167	Tape, Insulation, Electrical (80063) TL83	ro
75.1	0	4730-00-138-8050	Tee, Pipe (81343) 8-8-8 140424C	ea
76	0	5975-01-379-4997	Ties, Cable, Plastic (06383) PLT 35-C-O	hd
	С		Turbine Fuel, Aviation, Kerosene Type (MIL-T-83133), Grade JP-8	
	С	9140-00-255-7764 9140-00-273-2378 9140-00-273-2377	Turbine Fuel, (MIL-F-16884), (NATO Code No. F75 or F-72) 5 gl can 55 gl drum 1 gl can	cn dr cn
	С	9130-00-273-2380	Turbine Fuel, (MIL-F-5624), Grade JP-4 (NATO Code No. F40) Drum, 16 gage	dr
	С	9130-01-305-5596 9130-01-250-6353	Turbine Fuel, (MIL-T-5624), Grade JP-5 (NATO Code No. F-44) Bulk	gl dr
77	0	6145-01-148-2263	Drum, 16 gage Wire, Electrical (80009) 175-0825-00 50 ft	ar 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	Descripation Turks	E-10
12414690-001	Pneumatic Tube	E-11
12414690-002	Pneumatic Tube	E-11 E-11
12414690-004	Pneumatic Tube Pneumatic Tube	E-11 E-11
12414690-005 12414690-010	Pneumatic Tube Pneumatic Tube	E-11
12414690-010	Pneumatic Tube Pneumatic Tube	E-11
12414690-101	Pneumatic Tube	E-11
12414690-102	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 Non-Metallic Electrical Cable Conduit	E-12
12416381P2	Non-Metallic Electrical Cable Conduit Non-Metallic Electrical Cable Conduit	E-12 E-12
12416381P20 12416381P21	Non-Metallic Electrical Cable Conduit	E-12 E-12
12416381P22	Non-Metallic Electrical Cable Conduit	E-12 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 E-12
12416381P30	Non-Metallic Electrical Cable Conduit	E-12 E-12
12416381P32	Non-Metallic Electrical Cable Conduit	E-12 E-12
12416381P34	Non-Metallic Electrical Cable Conduit	E-12 E-12
12416381P35	Non-Metallic Electrical Cable Conduit	E-12
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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
Dimmer Switch Test Wire		E-20
Purge Valve Tool		E-21

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

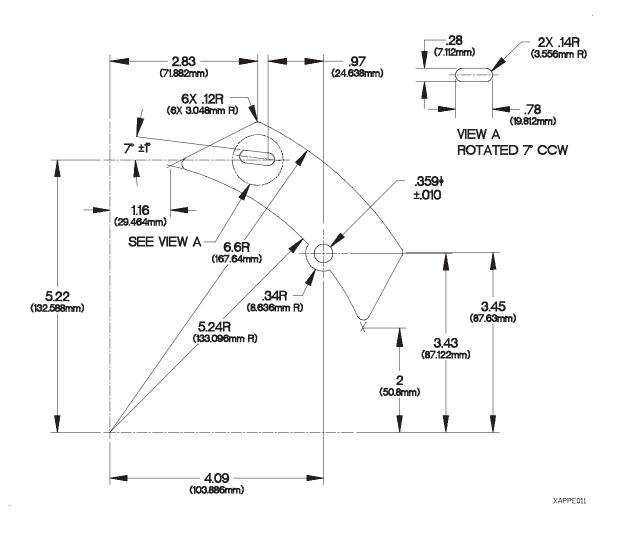


Figure E-1. Brake Adjusting Tool Support

- 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

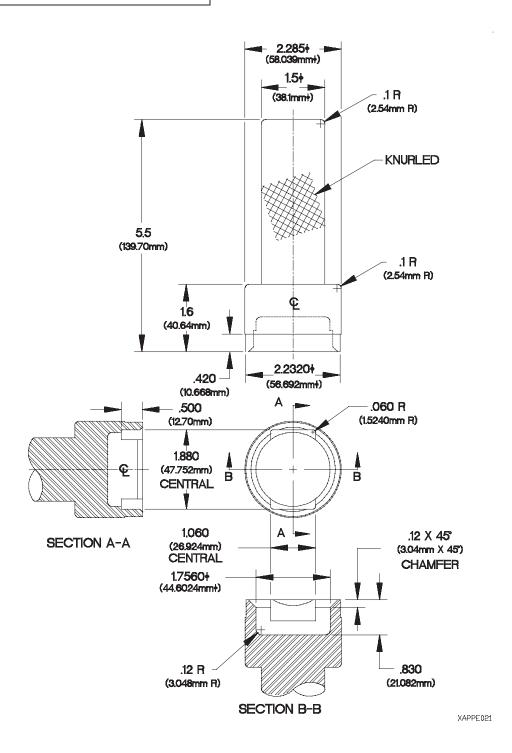


Figure E-2. Brake Plunger Seal Driver

- 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		

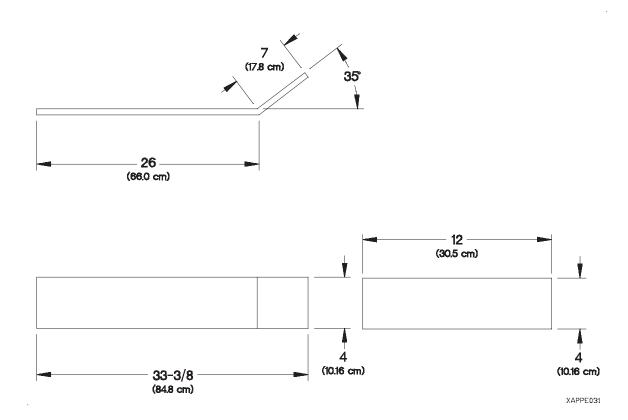


Figure E-3. Cab Support Tool Strut and Cab Rest

- 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.

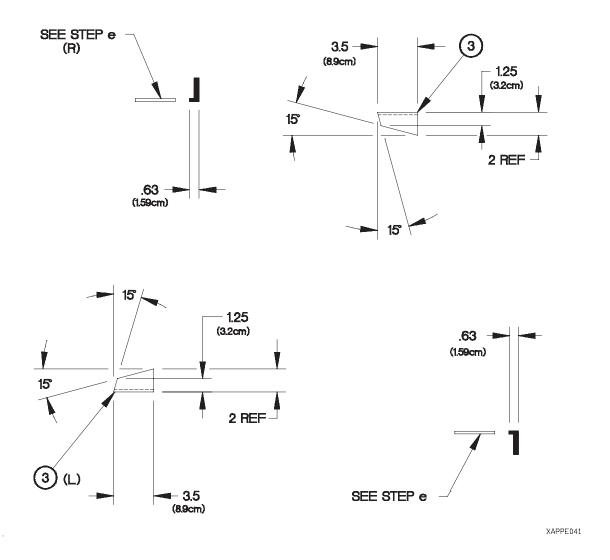


Figure E-4. Cab Support Tool Seat

- 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)

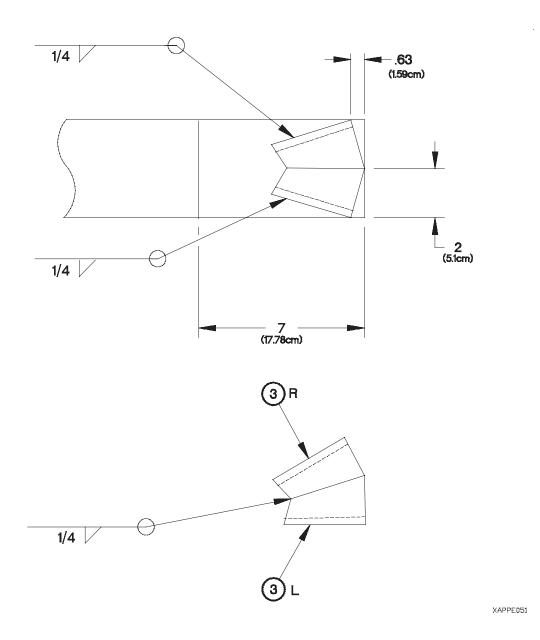


Figure E-5. Cab Support Tool Seat Layout

- 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.

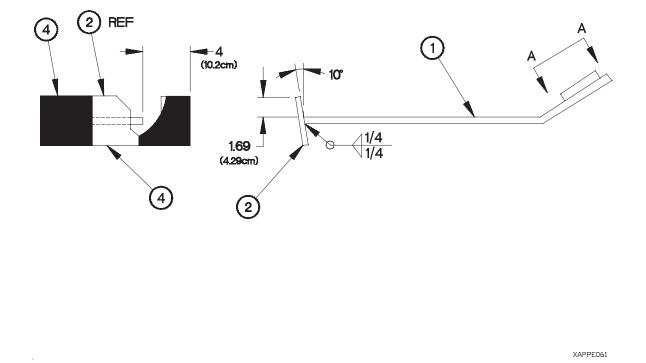


Figure E-6. Cab Support Tool Assembly

- 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).

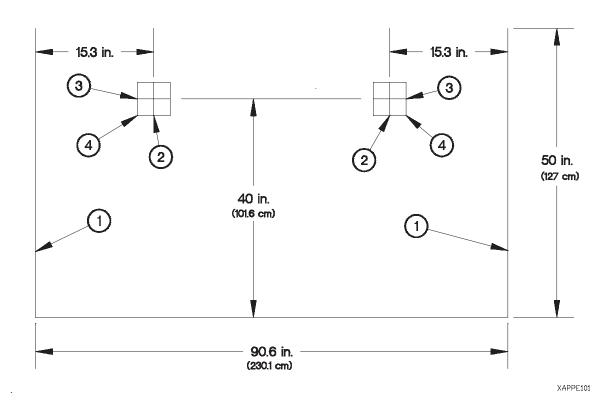


Figure E-7. Headlight Adjustment Screen

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-46106 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

Tale a Dist	Bulk Tubing	Cut L	ength
Tube Part Number	Part Number	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)

	Bulk Tubing	Cut L	ength
Tube Part Number	Part Number	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 (13174)	3.5	8.9
12414690-229	C608-100BLK (13174)	62.2	158.1
12414690-230	C608-100BLK (13174)	14.6	37.0
12414690-231	C608-100BLK (13174)	60.5	153.7
12414690-301	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

		Cut L	ength
Tube Part Number	Bulk Tube Part Number	inch	cm
12416381P1	49008	8.9	22.6
12416381P10	49008	17.8	45.2
12416381P11	49008	29.9	75.9
12416381P12	49008	33.0	83.8
12416381P13	49008	13.9	35.3
12416381P14	49008	4.0	10.2
12416381P15	49008	17.4	44.2
12416381P16	49008	3.2	8.1
12416381P17	49008	4.5	11.4
12416381P2	49008	16.2	41.1
12416381P20	27413	32.8	83.3
12416381P21	27413	9.2	23.4
12416381P22	27413	8.0	20.3
12416381P23	27413	23.3	59.2
12416381P26	49008	2.5	6.4
12416381P3	27413	7.3	18.5
12416381P30	49007	17.0	43.2
12416381P32	49005	1.7	4.3
12416381P34	49005	20.7	52.6
12416381P35	49005	21.8	55.4
12416381P36	49005	5.5	14.0
12416381P37	49005	8.0	20.3
12416381P38	49008	3.7	9.4
12416381P4	49008	12.0	30.5
12416381P5	49008	26.0	66.0
12416381P6	49008	7.7	19.6
12416381P7	49008	26.7	67.8
12416381P8	49008	5.2	13.2
12416381P9	49008	16.8	42.7

E-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.

		Cut Length	
Hose Part Number	Bulk Hose Part Number	inches	cm
12418037	A110 (30327)	75.5	191.7
12418460-001	MS521302B110360 (96906)	17.5	44.4
12418460-002	MS521301A206R (96906)	16.0	40.6

E-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

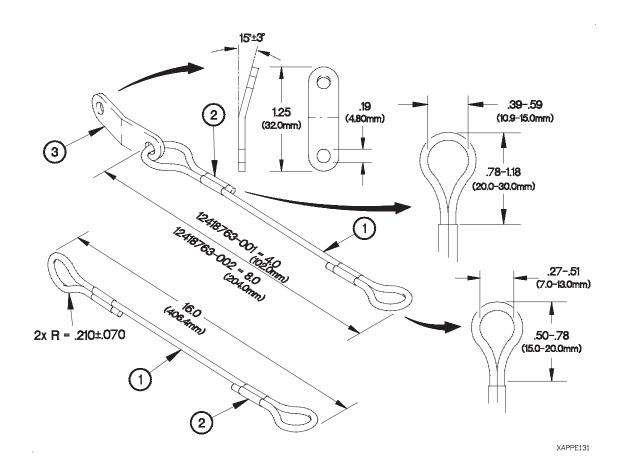


Figure E-8. Lanyard Assembly

- 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.

		Cut L	ength
Hose Part Number	Bulk Hose Part Number	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.

			ength
Hose Part Number	Bulk Hose Part Number	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 (0VXY8) 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

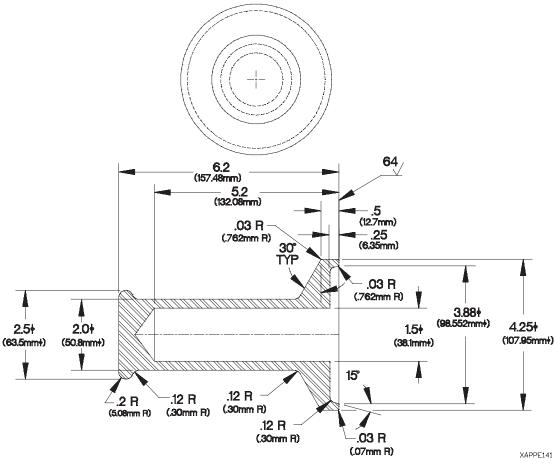


Figure E-9. CTIS Seal Driver

- 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

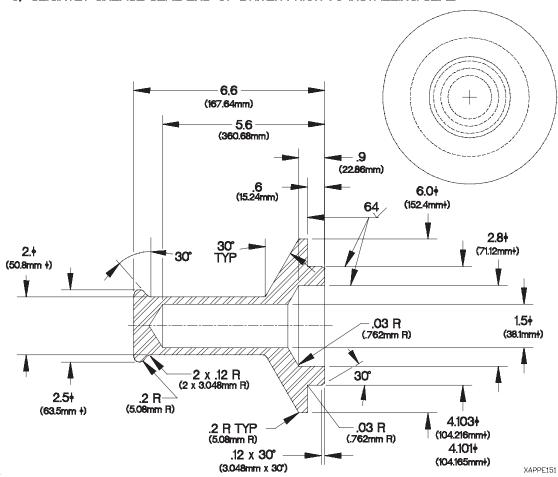


Figure E-10. Wheel Hub Grease Seal Driver

- a. All dimensions are in inches (millimeters).
- b. Manufacture from round steel stock.
- c. De-burr and remove sharp edges.

E-20. DIMMER SWITCH TEST WIRE

Fabricate the dimmer switch test wire according to the following steps. Refer to the following parts list for materials.

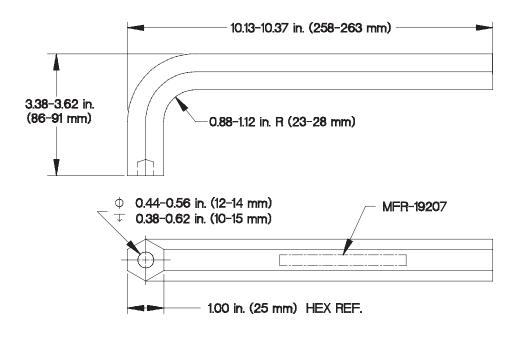
Material Description	National Stock Number	Quantity	Cut Length
Wire, Electrical (M168678/14BKE9)	6145-01-229-4134	1	12 in (305 mm)
Pin, Grooved, Headless (12258939-1)	5315-01-156-6314	1	
Contact, Electrical (12258939-2)	5999-01-150-8808	1	

- a. Dimensions are in inches (millimeters).
- b. Cut a length of electrical wire approximately 12 in. (305 mm) long.
- c. Remove approximately 1/4 in. (6 mm) of insulation from each end of electrical wire.
- d. Crimp headless grooved pin on one end of electrical wire.
- e. Crimp electrical contact on opposite end of electrical wire.

E-21. PURGE VALVE TOOL

Fabricate Purge Valve Tool according to the following instructions. Refer to Figure E-11. Purge Valve Tool for details.

Item	Part Number	Material Description	Size	Qty
1	N/A	Steel, ASTM A 108 or A576 Grade 1015-1025, BAR (Ref UNS G10150-G10250). Finish Black Oxide Coat, Class I, IAW MIL-C-13924.	14.0 in. (356 mm)	1



Xappe17b

Figure E-11. Purge Valve Tool

- a. All dimensions are in inches (cm).
- b. Cut steel bar (1) and bend to shape as shown in Figure E-11.
- c. Dimensional limits apply after coating.
- d. All edges shall be broken and free from burrs.
- e. Metal Stamp, electro etch, or engrave with the following marking IAW MIL-STD-130: 19207-12379968 MFR-19207.

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.

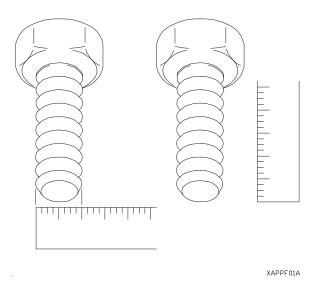


Table F-1. Dry Torque Limits for SAE and ANSI Screws and Free Spinning Nuts

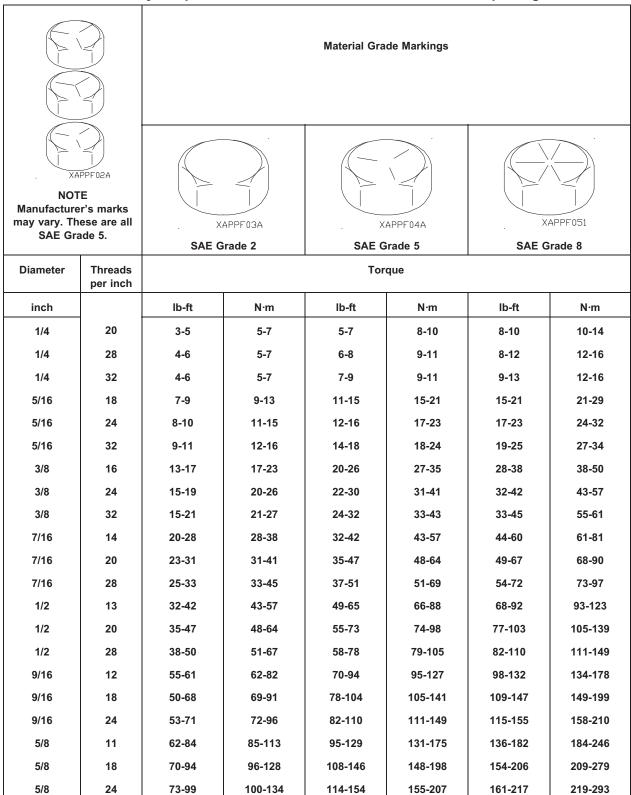
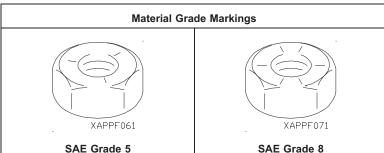


Table F-1. Dry Torque Limits for SAE and ANSI Screws and Free Spinning Nuts (Cont)

Table		Material Grade Markings					
Manufacturer's marks may vary. These are all SAE Grade 5			XAPPF03A SAE Grade 2 SAE Grade 5		XAPPF051 SAE Grade 8		
Diameter	Threads per inch			Tor	que		
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

Table F-2. Dry Torque Limits for SAE and ANSI Prevailing Torque Nuts



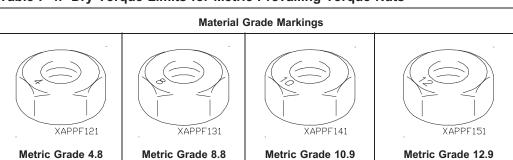
		SAE Grade 5 SAE Grade 8			rade 8
Hole Diameter	Threads per inch	Torque			
inch		lb-ft	N·m	lb-ft	N·m
1/4	20	10-12	14-16	15-17	20-24
1/4	28	12-14	16-18	14-18	21-25
5/16	18	20-24	27-33	26-32	36-44
5/16	24	22-26	30-36	29-35	40-48
3/8	16	35-41	47-55	48-58	65-77
3/8	24	38-46	53-63	53-63	72-86
7/16	14	55-65	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 | Value | Val

		Metric G	Metric Grade 4.8 Metric Grade 8.8 Metric Grade 10.9 Metric Grade 12.					rade 12.9	
Diameter	Thread		Torque						
mm	Pitch	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

Table F-4. Dry Torque Limits for Metric Prevailing Torque Nuts

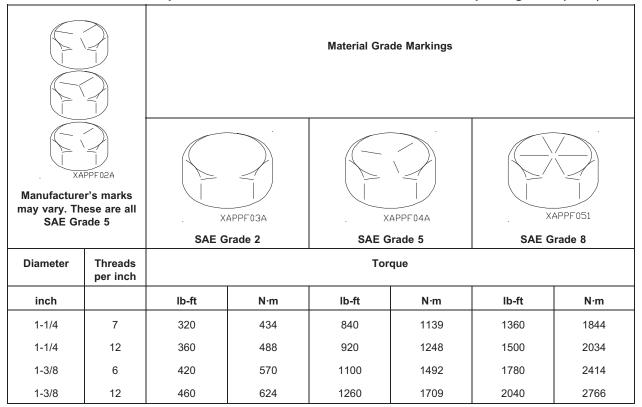


		Metric G	rade 4.8	Metric Grade 8.8 Metric Grade 10.9 Metric			Grade 12.9		
Diameter	Thread		Torque						
mm	Pitch	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m
6	1	5-6	7-8	7-9	10-12	10-12	14-17	11-14	15-19
8	1.25	12-14	16-18	18-22	24-30	24-30	32-40	27-33	36-46
8	1	12-14	16-20	19-23	25-31	25-31	34-42	28-36	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

				Material Gra	de Markings		
NOTE Manufacturer's marks may vary. These are all SAE Grade 5.			XAPPF03A SAE Grade 2 SAE Grade 5 SAE Grade 5				
Diameter	Threads per inch			Tor	que	I	
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

Table F-5. Wet Torque Limits for SAE and ANSI Screws and Free Spinning Nuts (Cont)



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	5306-01-382-5054
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	12421183-005	4730-01-447-4312
8	CLAMP	12421183-006	4730-01-447-4313
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
14.1	FILTER ELEMENT, FLUID	ST117073098-000	2910-01-467-4594
15	FILTER ELEMENT, FLUID	29507750	2940-01-361-2406
16	FILTER ELEMENT, FLUID	599791	4460-01-284-2344

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK
			NUMBER
17	FILTER ELEMENT, FLUID	931558	2940-01-363-4377
18	FILTER ELEMENT, INTAKE AIR CLEANER	P52-7750	2940-01-361-2407
19	FILTER, AIR	12416539	
20	FILTER, AIR	12416563	4730-01-398-5654
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
26.1	GASKET	11446	5330-00-247-4174
27	GASKET	119-2940	5330-01-424-7905
28	GASKET	12421469	5330-01-453-2980
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	5330-01-450-6666
38	GASKET	355148	5330-01-423-0596
39	GASKET	355175	5330-01-423-0623
40	GASKET	3K3257	5330-01-305-6550
40.1	GASKET	3N4087	5330-01-061-8003
41	GASKET	4P1624	5330-01-360-5934
42	GASKET	9Y8103	5330-01-360-5931
42.1	GASKET AND PREFORMED PACKING SET	9X8318	5330-01-360-9098
43	GASKET, FUEL FILTER	7C1159	5330-01-360-5941
44	NOT USED		

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
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
49	GROMMET, NONMETALLIC	4082-37634-01	5325-01-194-3076
50	GROMMET, NONMETALLIC	50S12-1-1AA	5325-01-145-0105
51	GROMMET, NONMETALLIC	8741442	5325-00-088-6147
51.1	HEAD, FLUID FILTER	7632-002-144	2940-01-387-4397
52	INSULATOR, TANK	A1394J	5970-01-385-7317
53	INSULATOR, TANK	A1394K	5970-01-385-7262
54	KIT, FILTER	29503829	
55	KIT, FILTER	29526899	5330-01-453-0770
56	NOT USED		
57	LAMP, INCANDESCENT	CM7-7373	6240-00-270-6824
58	LAMP, INCANDESCENT	CM7376	6240-00-499-6278
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	5310-01-439-2543
66.1	LOCKWASHER	MS35333-78	5310-01-110-7953
66.2	LOCKWASHER	ERNA245	5310-00-584-5272
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

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
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
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	5310-00-407-9566
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
101.1	LOCKWASHER	XP1113	5310-01-460-5991
101.2	LOCKWASHER	10241	5310-01-416-3010
101.3	LOCKWASHER	10030	
102	LOCKWASHER	1229-S-513C	5310-01-062-3384
102.1	LOCKWASHER	12414570-011	5310-01-374-3292

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
102.2	LOCKWASHER	12414570-013	5310-01-374-4515
103	LOCKWASHER	12414570-015	5310-01-388-2043
103.1	LOCKWASHER	12414570-019	5310-01-470-2362
104	LOCKWASHER	12414570-021	5310-01-374-4516
105	LOCKWASHER	MS35338-40	5310-00-543-2410
106	LOCKWASHER	MS35338-47	5310-00-550-3741
107	NOT USED		
108	LOCKWASHER	1729B262	5310-00-964-7811
109	NOT USED		
110	NUT, BLIND RIVET	MS27130-S136	5310-01-409-4435
111	NUT, BLIND RIVET	MS27130-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	
115.1	NUT, PLAIN, ROUND	1727N40	5310-00-123-2572
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
122.1	NUT, SELF-LOCKING	MS21045L5	5310-00-857-5559
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	MS51922-33	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

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
130.1	NUT, SELF-LOCKING	N9453	5310-01-348-8314
131	NUT, SELF-LOCKING	N9467	5310-01-350-4257
131.1	NUT, SELF-LOCKING	N9556	5310-01-423-0880
132	NUT, SELF-LOCKING	12301125	5310-01-210-0199
132.1	NUT, SELF-LOCKING	12411174-008	
133	NUT, SELF-LOCKING	12412476-04	5310-01-466-0565
134	NUT, SELF-LOCKING	12414308-002	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
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
152.1	NUT, SELF-LOCKING	12417642-002	5310-01-374-3288
153	NUT, SELF-LOCKING	12419003	5310-01-376-0773
154	NUT, SELF-LOCKING	270W10000	
155	NUT, SELF-LOCKING	29514660	
156	NUT, SELF-LOCKING	7951286	5310-00-789-0398
157	PACKING, PREFORMED	A82777	5330-00-579-6495
158	PACKING, PREFORMED	F4001-16	5331-01-466-0354
158.1	PACKING, PREFORMED	J515-16-3	5331-01-465-3634

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

Section II. MANDATORT REPLACEMENT PARTS LIST (CONT)			
(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
158.2	PACKING, PREFORMED	J515-4-1	5331-01-387-9490
159	PACKING, PREFORMED	J515-8-1	5330-00-292-8171
160	PACKING, PREFORMED	5999807	5331-01-456-9156
161	PACKING, PREFORMED	MS28775-011	5330-00-582-2133
162	PACKING, PREFORMED	MS28775-227	5330-00-576-9731
162.1	PACKING, PREFORMED	MS28775-910	5331-00-448-6753
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
166.1	PACKING, PREFORMED	MS28778-6	5331-00-804-5695
167	PACKING, PREFORMED	MS9955-113	5330-01-374-2325
168	PACKING, PREFORMED	M25988/1-246	5330-01-189-6351
168.1	PACKING, PREFORMED	M83461/1-442	5330-01-183-0987
169	PACKING, PREFORMED	OR42OA	5330-01-389-6028
170	PACKING, PREFORMED	11639519-1	5330-00-463-0200
170.1	PACKING, PREFORMED	12422548-004	5331-01-059-1141
171	PACKING, PREFORMED	1509	5330-00-172-1919
171.1	PACKING, PREFORMED	195045	5331-00-618-5361
171.2	PACKING, PREFORMED	19755	5331-01-415-9632
171.3	PACKING, PREFORMED	198336	5331-00-584-1840
172	PACKING, PREFORMED	2M4453	5330-00-074-3768
173	PACKING, PREFORMED	22617-16	5330-01-168-0885
174	PACKING, PREFORMED	23043446	5330-01-424-6629
174.1	PACKING, PREFORMED	250192	5331-01-417-5105
174.2	PACKING, PREFORMED	251216	5330-01-417-5107
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	3-908N522-90	5330-00-929-8171
179	PACKING, PREFORMED	3D2824	5330-00-944-8281
180	PACKING, PREFORMED	3J1907	5330-01-333-6444

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK
			NUMBER
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
184.1	PACKING, PREFORMED	420828	5340-01-417-3788
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	5330-00-579-6495
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	9604792-001	5330-01-429-3089
194	PAD, CUSHIONING	12416479-001	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	K-2412-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
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
208.1	PIN, COTTER	XB-781-1	5315-01-369-1346
209	NOT USED		

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
210	PIN, SPRING	MS16562-142	5315-00-058-6115
211	PIN, SPRING	MS16552-146	5315-00-853-3814
212	PLASTIC STRIP	352700	5330-01-296-2109
213	RECEPTACLE	50R4-1-1AA	5325-01-049-2049
213.1	REPAIR KIT, GOVERNOR	RN32W	
213.2	RETAINER, PACKING	11863-012	5330-01-417-7795
213.3	RETAINER, PACKING	202624	5330-01-417-7794
214	RETAINER	A-1205-D-2344	5330-01-360-5253
215	RIVET, BLIND	AK42H	5320-00-874-4477
216	RIVET, BLIND	AK43H	5320-00-143-6149
217	RIVET, BLIND	MS20600AD5W12	5320-01-047-0467
217.1	RIVET, BLIND	MS20601B4W2	5320-00-616-5274
218	RIVET, BLIND	MS20604B3W2	5320-00-721-9075
219	RIVET, BLIND	M24243/1-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
223.1	RIVET, BLIND	M24243/1-F608	5320-01-392-0699
223.2	RIVET, BLIND	M24243/1-F610	
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	206057	5320-01-411-0081
237	RIVET, COMPRESSION	12418469	5320-01-376-0699
237.1	SCREW, CAP	CSH5-24-39	5305-01-479-7857
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	5330-01-389-6109
244	SEAL	12421431	9320-01-398-6317
245	SEAL	125128-5	
246	SEAL	125128-6	
247	SEAL	355150	5330-01-423-0689
247.1	SEAL	12422401-001	5999-01-478-5940
247.2	SEAL	12422401-002	5999-01-478-5932
247.3	SEAL	12422401-003	5999-01-478-5937
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	5330-01-431-7575
253	SEAL, NONMETALLIC	12417725	5330-01-375-2908
254	SEAL, NONMETALLIC	2418974-1	5330-01-257-1709
255	SEAL, NONMETALLIC	673999	5310-01-454-5553
255.1	SEAL, PLAIN	N72143	5330-01-453-4462
255.2	SEAL, SHAFT	SERUR25-2	5330-01-135-3376
256	SEAL, URETHANE FOAM	12420420-001	5680-01-453-8912
257	SEAL, URETHANE FOAM	12420420-002	5680-01-453-8485
258	SEAL, URETHANE FOAM	12420420-003	5680-01-453-8486
259	SEAL, WEATHER	147P00039	
259.1	SPACER	12422545	5365-01-490-6790

Section II. MANDATORY REPLACEMENT PARTS LIST (CONT)

(1) ITEM NO.	(2) NOMENCLATURE	(3) PART NUMBER	(4) NATIONAL STOCK NUMBER
260	SPACER, RING	4P2987	5365-01-433-8407
260.1	SPIDER, UNIVERSAL JOINT, VEHICULAR	R279X	
261	SPLICE, CONDUCTOR	12420927-001	5940-01-456-1319
262	SPLICE, CONDUCTOR	12420927-002	5940-01-421-6955
263	STRAIN RELIEF	10280870-3	5975-00-376-1585
263.1	STRIP, RUBBER	12412581	9320-01-399-4888
264	TERMINAL, LUG	MS20659-163	5940-00-113-3145
265	TERMINAL, LUG	MS20659-164	5940-00-113-3148
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	
269.1	TERMINAL, LUG	12420344	5940-01-082-3321
270	WASHER, FLAT	MS27183-10	5310-00-809-4058
270.1	WASHER, FLAT	12414473-010	5310-01-374-6990
271	WASHER, FLAT	12417948-004	5365-01-436-8308
271.1	WASHER, FLAT	251391	5310-01-417-1041
272	WASHER, FLAT RUBBER	900.032	5330-01-378-7541
273	WASHER, NYLON	MS51859-16	5310-00-964-7811
274	WASHER, SPRING	D63474/1-30	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
283	WASHER, SPRING	12414560-009	5310-01-333-5517

APPENDIX H LUBRICATION ORDER AND SERVICES

SECTION I. INTRODUCTION

H-1. GENERAL

The information contained in this appendix provides the lubrication/services requirements for the 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 and services are based on mileage/calendar, and in some cases mileage alone. An example of a mileage/calendar interval is: **Q**, which means every 3,000 miles (4,827 km) or quarterly (every three months). The lubrication is to be performed at whichever interval occurs first for the vehicle. An example of a mileage alone interval is: **6K**, which stands for every 6,000 miles (9,654 km). The lubrication/services is to be performed at the mileage indicated regardless of the calendar interval.

WARNING

- Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breath vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type I Dry Cleaning Solvent is 100°F (38 C) and for Type II is 138 F (50 C). Failure to comply may result in serious injury or death to personnel.
- •If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get medical attention. Failure to comply may result in injury to personnel.
- **b. Cleaning fittings before lubricating.** Clean parts with dry cleaning solvent (SD P-D-680) (Item 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 lubrication/service interval symbols will be used as applicable:

Q-quarterly/3,000 mi (4,827 km) (whichever occurs first)

S-semiannually/6,000 mi (9,654 km) (whichever occurs first)

A-annually/12,000 mi (19,308 km) (whichever occurs first)

B-biennially/24,000 mi (38,616 km) (whichever occurs first)

3K-every 3,000 mi (4,827 km) (no calendar interval)

6K-every 6,000 mi (9,654 km) (no calendar interval)

12K-every 12,000 mi (19,308 km) (no calendar interval)

24K-every 24,000 mi (38,616 km) (no calendar interval)

H-2. OIL FILTERS

Oil filters shall be serviced/changed as applicable, when:

- a. They are known to be contaminated, or clogged;
- b. Service is recommended by AOAP laboratory analysis; or
- At prescribed hardtime intervals while vehicle is under warranty, or if AOAP is not available/used as required.

H-3. AOAP SAMPLING INTERVAL

WARNING

- Engine oil is hot and under pressure. The oil sampling valve releases oil proportionally to the amount of pressure applied to valve. Activate oil sampling valve by pressing in slowly to prevent injury to personnel. Failure to comply may result in injury to personnel.
- Wear safety goggles when taking oil sample. Oil is under pressure and could cause injury to personnel. Failure to comply may result in injury to personnel.

Units participating in AOAP will sample engine oil every 3,000 miles (4,827 km) or 6 months, whichever occurs first and change engine oil as directed by AOAP. Units participating in AOAP will sample transmission oil every 6,000 miles (9,654 km) or 12 months, whichever occurs first and change transmission oil as directed by AOAP. Units participating in AOAP will sample hydraulic system oil initially after 6 weeks or 10 hours of operation, whichever occurs first. After initial oil change samples should be taken every 12 months or 50 hours of operation, whichever occurs first and change hydraulic oil as directed by AOAP.

H-4. WARRANTY HARDTIME STATEMENT

"For equipment under manufacturer's warranty, hardtime oil service intervals shall be followed. Intervals shall be shortened if lubricants are known to be contaminated or if operation is under adverse conditions (such as longer than usual operating hours, extended idling periods, extreme dust)."

SECTION II. LUBRICATION/SERVICE CHART

H-5. LUBRICATION/SERVICE KEY

LUBRICANTS			
Specification	Туре		
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	E	JRES	
5200 tal 110 t	67 tt 71011 1	Above +40 F (Above +4 C)	+40 F to -15 F (+4 C to -26 C)	-15 F to -50 F (-26 C to -46 C)
Engine crankcase	25 qt (24 L)	OE/HDO-15/40	OE/HDO-15/40	OEA
Transmission (total system)	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/SERVICE 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	Specification Type		
A-A-52624A	Antifreeze, Multi-Engine Type		
MIL-A-11755	Antifreeze, Arctic-Type		

DESCRIPTION	CAPACITY	EXPECTED TEMPERATURES		
		Above +40 F (Above +4 C)	+40 F to -15 F (+4 C to -26 C)	-15 F to -50 F (-26 C to -46 C)
Cooling system (engine only)	14 qt (13 L)	A-A-52624A	A-A-52624A	N/A
Cooling system (total system)	43.8 qt (41.5 L)	A-A-52624A	A-A-52624A	N/A
Cooling system, Arctic (total system)	58.3 qt (55.2 L)	N/A	N/A	MIL-A-11755

CLEANING AGENT				
Specification	Туре			
P-D-680	Dry Cleaning Solvent, SD-II			
O-C-1901 Cleaning Compound, Windshield				

DESCRIPTION	CAPACITY	EXPECTED TEMPERATURES		
		Above +15 F (Above -9 C)	+15 F to -15 F (-9 C to -26 C)	-15 F to -50 F (-26 C to -46 C)
All metal parts as required	N/A	SD-II (all temperatures)		
Windshield washer reservoir	7.5 qt (7.1 L)	2/3 water to 1/3 O-C-1901	1/2 water to 1/2 O-C-1901	1/3 water to 2/3 O-C-1901

For arctic operation refer to FM 9-207.

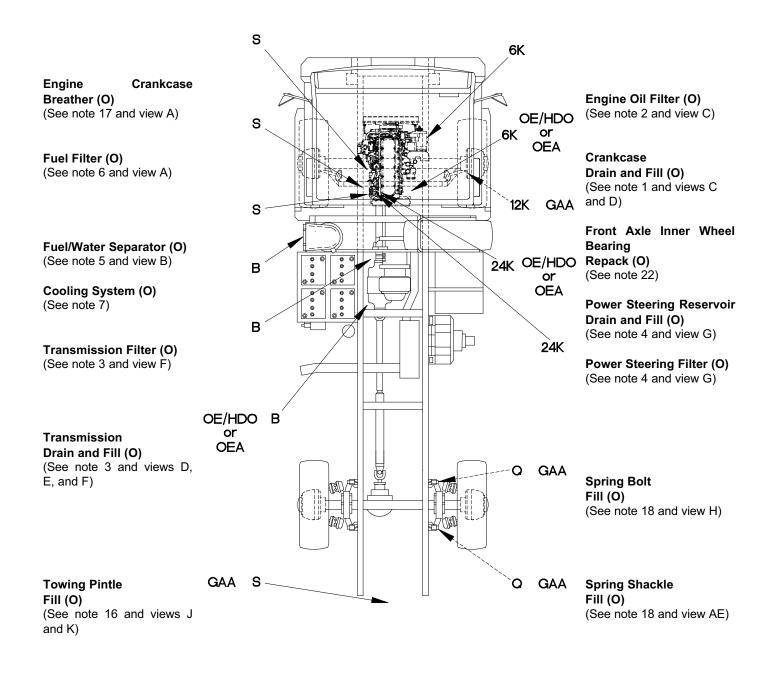
H-6. LUBRICATION/SERVICE INTERVALS

	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
Biennially (B)	Lubrication performed once every two years or every 24,000 mi (38,616 km).*	3.5
3K	Lubrication performed once every 3,000 mi (4,827 km).**	1.0
6K	Lubrication performed once every 6,000 mi (9,654 km).**	1.0
12K	Lubrication performed once every 12,000 mi (19,308 km).**	4.0
24K	Lubrication performed once every 24,000 mi (38,616 km).**	0.5
* Whichever occurs first. ** No calendar interval.		

H-7. LOCATOR VIEWS

LUBRICANT INTERVAL

INTERVAL LUBRICANT



3APPH011

CHASSIS

NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

LUBRICANT INTERVAL

INTERVAL LUBRICANT

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)

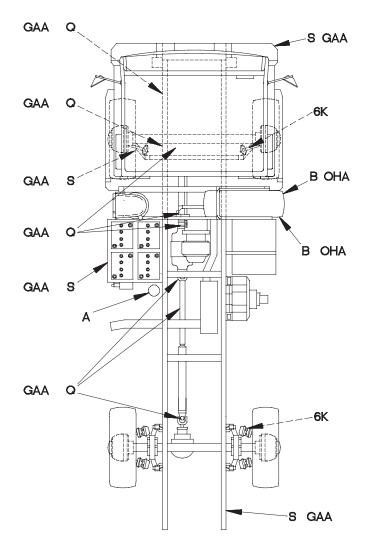
(See note 19 and view Q)

Air Dryer (O)

(See note 25 and view AF)

Universal and Slip Joints Fill (O)

(See note 9 and view P)



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)

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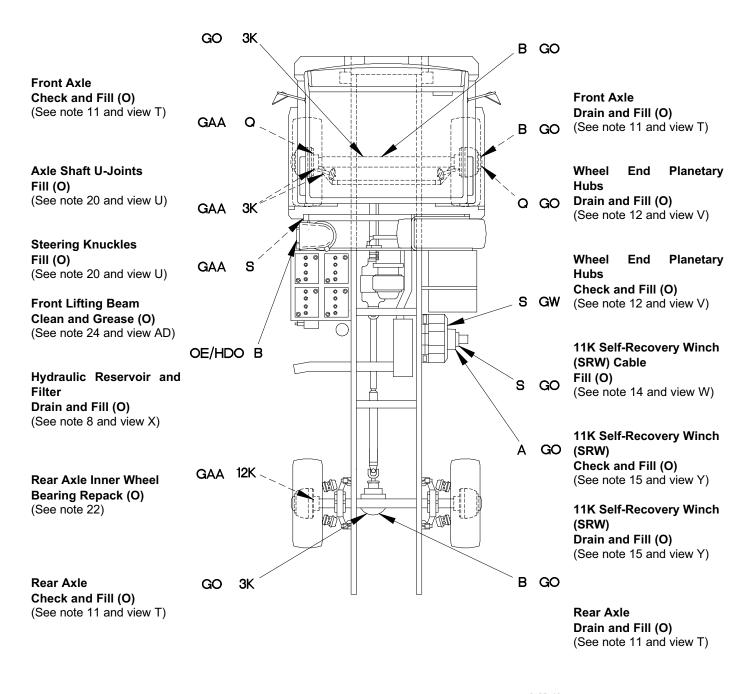
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NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

H-7. LOCATOR VIEWS (CONT)

LUBRICANT INTERVAL

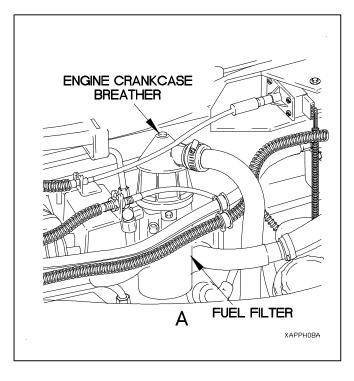
INTERVAL LUBRICANT

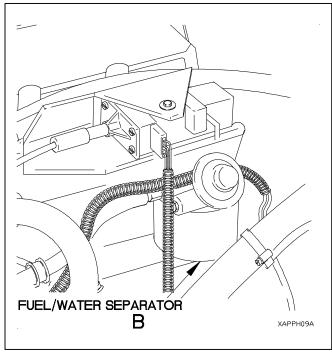


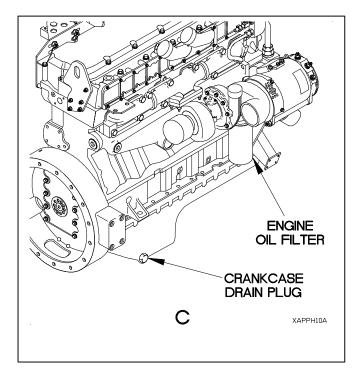
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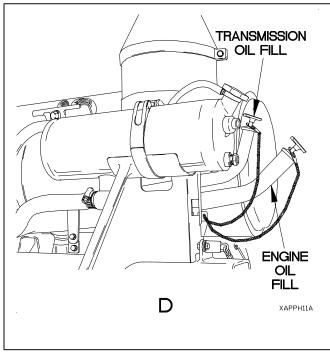
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NOTE: Dashed arrows indicate lubrication on both sides of vehicle.

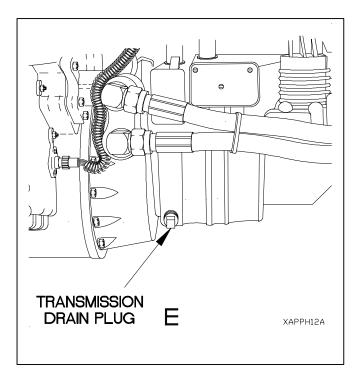


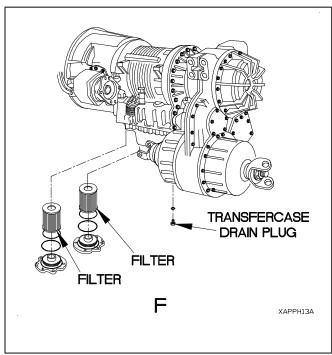


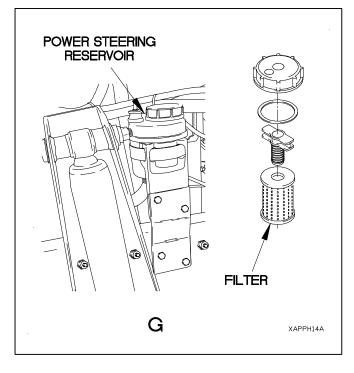


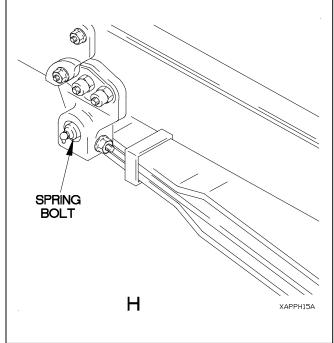


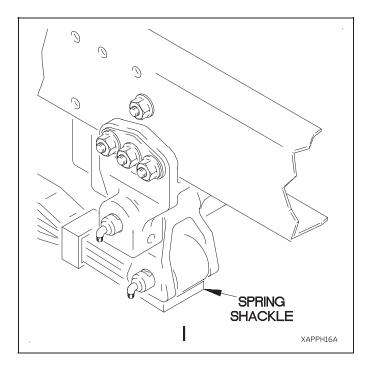
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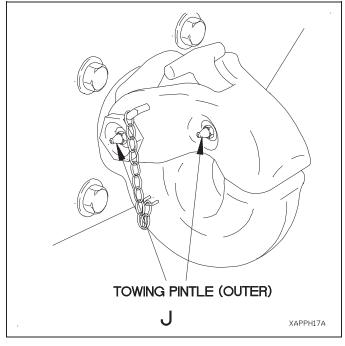


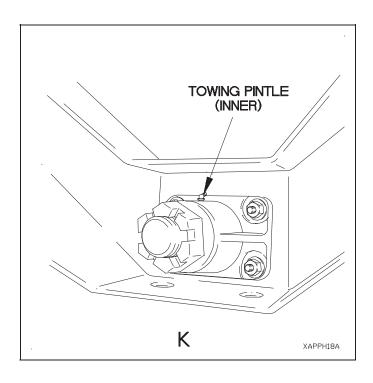


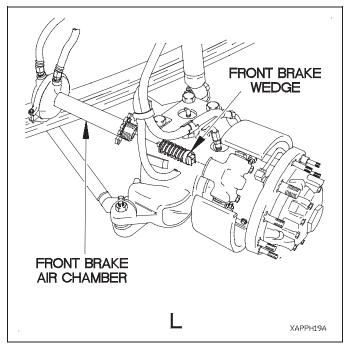




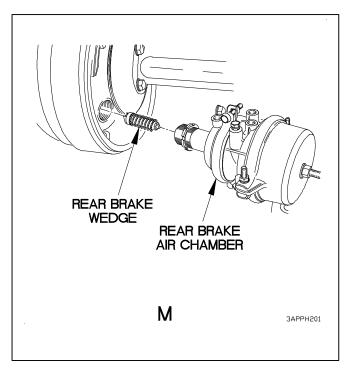


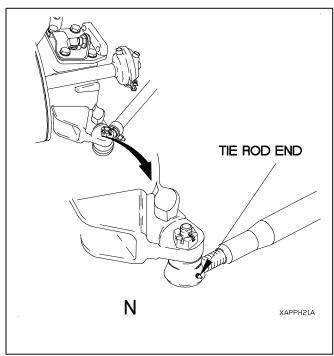


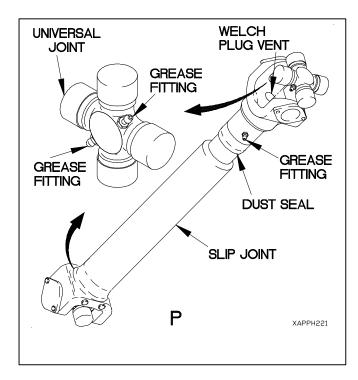


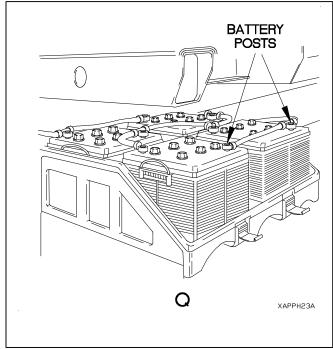


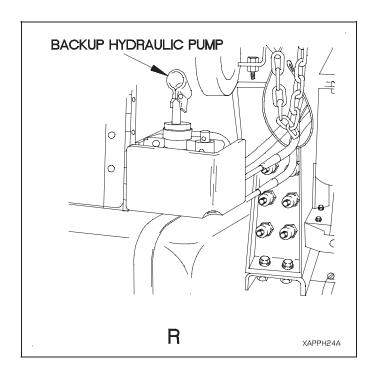
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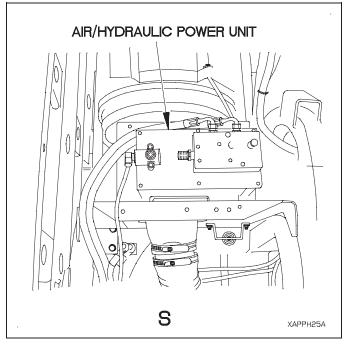




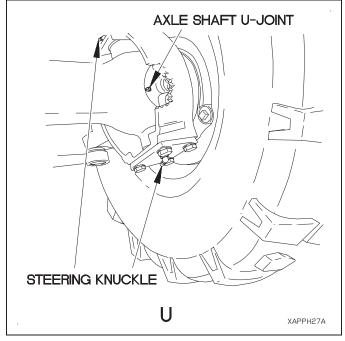




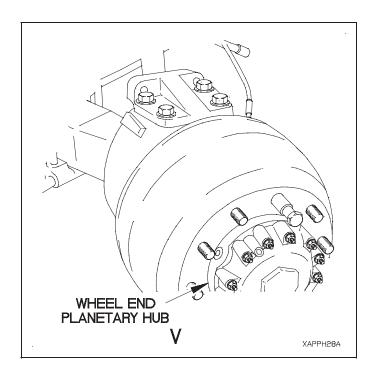


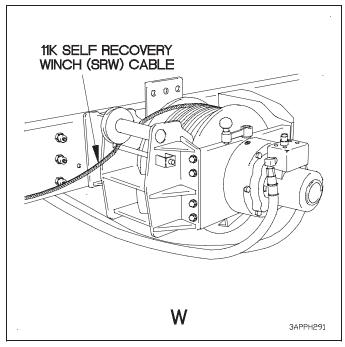


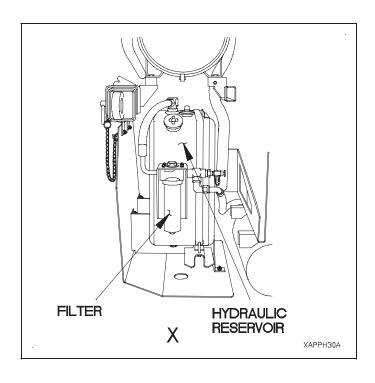


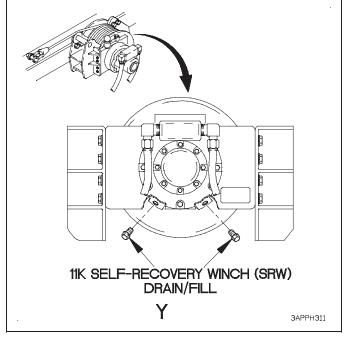


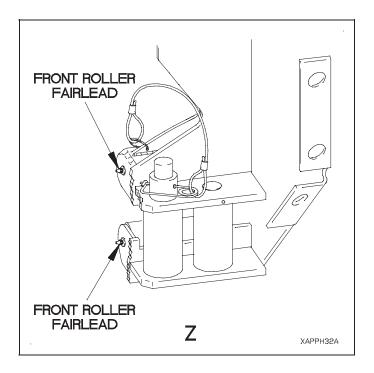
H-8. LUBRICATION LOCAL VIEWS (CONT)

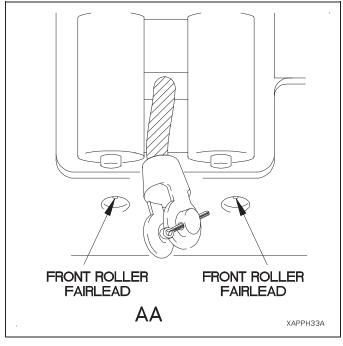


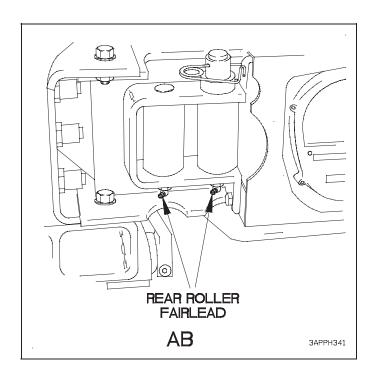


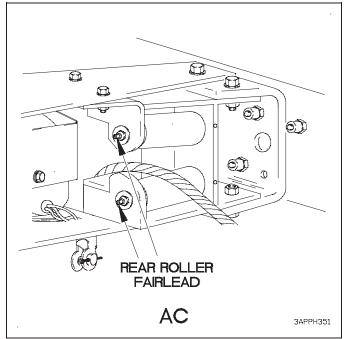




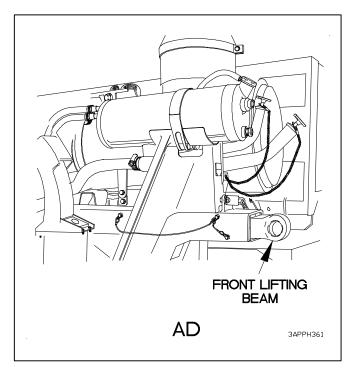


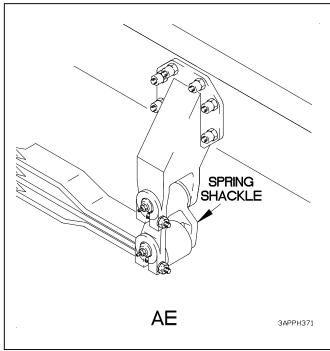


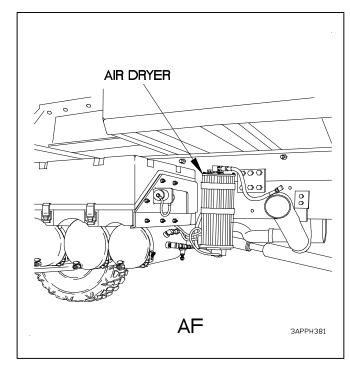




H-8. LOCAL VIEWS (CONT)







H-9. LUBRICATION/SERVICES NOTES

- 1. ENGINE CRANKCASE. Check engine oil level daily. Change engine oil at initial 5,000 miles (8,045 km). During the remainder of the 12,000 mile (19,308 km)/18 month warranty period, Units participating in AOAP will sample engine oil every 3,000 miles (4,827 km) or 6 months, whichever occurs first and change engine oil as directed by AOAP. Units not participating in AOAP, will change engine oil every 6,000 miles (9,654 km) or every six months, whichever occurs first. After expiration of engine warranty period, Units participating in AOAP will perform engine oil change as directed by AOAP. Units not participating in AOAP will change engine oil every 6,000 miles (9,654 km) or every six months, whichever occurs first, or when operating in dusty areas or under severe operating conditions, change the oil every 3,000 miles (4,827 km) or every three months, whichever occurs first. Drain engine oil when engine is warm. Refill engine crankcase with OE/HDO specified for the ambient temperature. Engine oil is full when level is within crosshatch marks on the dipstick. Do not overfill.
- 2. **ENGINE OIL FILTER.** Filter is replaced each time the crankcase is drained. If water or metal particles are detected during oil filter replacement, notify Direct Support Maintenance personnel before refilling crankcase (para 3-4).
- **3. TRANSMISSION.** Check transmission oil level daily. Change transmission oil at initial 5,000 miles (8,045 km). During the remainder of the 24 month/unlimited mileage warranty, Units participating in AOAP will sample transmission oil every 6,000 miles (9,654 km) or 12 months, whichever occurs first and change transmission oil as directed by AOAP. Units not participating in AOAP will perform transmission oil change every 24,000 miles (38,616 km) or once every two years, whichever occurs first. Drain transmission oil when engine is warm. Refill with OE/HDO specified for ambient temperature. Add oil until the proper level is reached (TM 9-2320-365-10). Do not overfill. Replace oil filters each time transmission oil is changed (para 8-9).
- **4. POWER STEERING.** Check power steering oil level weekly. Change the oil every 24,000 miles (38,616 km). Disconnect upper and lower hoses from steering gear and drain oil. Refill power steering pump reservoir with OE/HDO specified for the ambient temperature. Reservoir is full when oil is between the two marks on the dipstick. Do not overfill. Remove dipstick, wipe clean and install dipstick fully into reservoir. Remove dipstick and read oil level. Replace oil filter each time power steering oil is changed (para 13-8).
- **5. FUEL/WATER SEPARATOR.** Replace filter element every 6,000 miles (9,654 km) or once every six months, whichever occurs first (para 4-13).
- **6. FUEL FILTER.** The fuel particle filter is replaced when a new fuel/water separator filter element is installed. The normal replacement interval is every 6,000 miles (9,654 km) or once every six months, whichever occurs first (para 4-14).
- **7. ENGINE COOLANT.** Check engine coolant level daily. Change the coolant and flush the cooling system every 24,000 miles (38,616 km) or once every two years, whichever occurs first. Fill radiator overflow tank with an Ethylene Glycol/water mixture as specified in 0-A-548D. Service the cooling system before the specified interval if:
- Coolant is heavily contaminated.
- Engine overheats.
- Oil cooler has failed allowing oil and coolant to mix.
- **8. HYDRAULIC RESERVOIR and FILTER.** Check oil level weekly and make sure oil level gage reads **F (full)**. Units participating in AOAP will sample oil annually and change oil and filter as directed by AOAP. Units not participating in AOAP will change oil and filter every two years. Drain oil and refill hydraulic reservoir with OE/HDO specified for ambient operating temperature. Fill hydraulic reservoir until oil level gage reads **F (full)**. Do not overfill. Replace oil filter each time oil is changed (para 9-12).

H-9. LUBRICATION/SERVICE NOTES (CONT)

9. DRIVE SHAFT UNIVERSAL and SLIP YOKE.

Lubricate drive shafts with GAA every 3,000 miles (4,827 km) or once every three months, whichever occurs first, using a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first. Perform drive shaft hinging inspection every time drive shafts are serviced (para 9-3).

- UNIVERSAL JOINT:
 - A. Apply grease to both grease fittings until new grease purges from all four bearing caps.
 - B. If grease does not purge from all four bearing caps, perform the following steps:
 - (1) Loosen two screws on bearing cap that does not purge, approximately 1/4 in.
 - (2) Apply grease to grease fitting for bearing cap that does not purge until bearing cap purges.
 - (3) Remove and discard the two screws loosened in step (1).
 - (4) Position two replacement screws in bearing cap and tighten down evenly.
 - (5) Tighten two screws to 26-35 lb-ft (35-47 N•m).
- SLIP JOINT:
 - A. Apply grease until grease appears at the vent in the welch plug.
 - B. Place your finger over the welch plug vent and add grease until grease purges from the dust seal.
 - C. If grease does not purge from the dust seal, inspect drive shaft slip yoke (para 9-2).
- 10. AIR/HYDRAULIC POWER UNIT and BACKUP HYDRAULIC PUMP. Change OHA oil every 24,000 miles (38,616 km) or once every two years, whichever occurs first. To service air/hydraulic power unit and backup hydraulic pump refer to vehicle para 19-7, 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 winch operation:

Refer to FM 5-125.

b. Care of wire rope:

Refer to FM 5-125.

c. Inspection of wire rope:

Refer to FM 5-125.

- d. Every six months:
 - (1) Unwind entire length of 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/SERVICE 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 (para 3-5).
- 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, notify Direct Support to remove pins. Clean and inspect pins and bushings, replace if necessary. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.
 - **19. BATTERY POSTS.** Service batteries in accordance with TM 9-6140-200-14, every 6,000 miles (9,654 km) or once every six months, whichever occurs first.

- **20. FRONT AXLE SHAFT UNIVERSAL JOINTS and STEERING KNUCKLES.** Lubricate universal joints every 3,000 miles (4,827 km) or once every three months, whichever occurs first. Lubricate steering knuckles with GAA every 6,000 miles (9,654 km) or once every six months, whichever occurs first, using a low pressure lubrication gun. If operating conditions are severe or abnormal, service at 1,000 miles (1,609 km) or once every month, whichever occurs first.
- 21. BRAKE WEDGE and AIR CHAMBER: BRAKE SPIDER, SELF-ADJUSTER MECHANISM, AND WEDGE ASSEMBLY. Clean and lubricate (with GAA) areas of spider and hardware that contact the brake shoes. Disassemble, clean and lubricate the self-adjuster mechanism. Clean and lubricate the wedge head, rollers and ramps in the plungers. Clean and lubricate every 6,000 miles (9,654 km). If operating conditions are severe or abnormal, service at 3,000 miles (4,827 km) or once every three months, whichever occurs first, or when any of the following occur: Refer to para 11-4 and 11-5.
 - Seals are replaced
 - · Plungers are removed
 - · Brakes are relined
 - Grease becomes contaminated or hardened
- **22. FRONT and REAR AXLE INNER WHEEL BEARINGS.** Repack inner wheel bearings with GAA every 12,000 miles (19,308 km), when semiannual PMCS inspection of service brakes reveals oil leak from inner hub, or whenever wheel end assemblies are taken apart for other maintenance (para 10-2).
- **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.
- **26. FRONT AND REAR LEAF SPRING.** At initial 1000 miles (1609 km) of vehicle operation, tighten U-bolts to 390-510 lb-ft (529-692 N•m).

APPENDIX J ADDITIONAL AUTHORIZATION LIST (AAL)

Section I. INTRODUCTION

J-1. SCOPE

This appendix lists additional items you are authorized for the support of the 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

APPENDIX K TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART

Section I. INTRODUCTION

K-1. INTRODUCTION

This appendix lists the various transmission controls and configuration modifications that may be required to permit the transmission to function correctly. This appendix will guide the mechanic through the hardware selection process by identifying compatibility issues between the transmission controls (WTEC II/WTEC III) and the numerous revisions of the Allison MD3070PT transmission (PRE-ID w/ 24-pin connector, PRE-ID w/ 31-pin connector, TID 1, TID 2, and TID 3). Refer to Figure 1. After replacing any component of the transmission controls or the transmission assembly, perform calibration procedures in TM 9-2320-365-20-3 paragraph 8-2 or 8-3.

K-2. EXPLANATION OF COLUMNS

- a. Column (1) Installed Controls or Controls Being Installed. This column lists all of the variables concerning which version of transmission controls are installed in the vehicle, or may need to be installed, to communicate correctly with the transmission.
- **b.** Column (2) Installed Transmission or Transmission Being Installed. This column lists all of the various revisions of the Allison MD3070PT transmissions that may be installed in the vehicle.
- c. Column (3) Required Modification. This column lists the various electrical interface (hardware) modifications that may be required to allow the transmission controls to communicate with the transmission.

K-3. HOW TO USE THIS CHART

- **a.** Determine which controls and transmission are installed in the vehicle.
- **b.** Determine which component requires replacement.
- **c.** Read across the row to column (3) to determine the required modification.

Section II.

TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART

(1)	(2)	(3)
Installed Controls or Controls Being Installed	Installed Transmission or Transmission Being Installed	Required Modification (Refer to Section III)
WTEC II (with 24-pin connector)	PRE-ID w/ 24-pin connector (transmission serial number prior to 6510032369)	No modification required.
WTEC II (with 24-pin connector)	PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	Install 31-pin connector.
WTEC II (with 24-pin connector)	TID 1 (transmission serial number 6510090786 to 6510142171)	Install 31-pin connector.
WTEC II (with 24-pin connector)	TID 2 (transmission serial number 6510142172 to 6510262116)	Install 31-pin connector and replace transmission internal wiring harness.

TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART (CONT)

TRANSIMISSION/TRAIN	SMISSION CONTROLS ADAPTA	ABILIT CHART (CONT)
(1) Installed Controls or Controls Being Installed	(2) Installed Transmission or Transmission Being Installed	(3) Required Modification (Refer to Section III)
WTEC II (with 24-pin connector)	TID 3 (transmission serial number 6510262117 and subsequent)	Install 31-pin connector, replace transmission internal wiring harness, and reprogram WTEC II TEPSS. 1
WTEC II (with 31-pin connector)	PRE-ID w/ 24-pin connector (transmission serial number prior to 6510032369)	Install adapter cable assembly.
WTEC II (with 31-pin connector)	PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	No modification required.
WTEC II (with 31-pin connector)	TID 1 (transmission serial number 6510090786 to 6510142171)	No modification required.
WTEC II (with 31-pin connector)	TID 2 (transmission serial number 6510142172 to 6510262116)	Replace transmission internal wiring harness.
WTEC II (with 31-pin connector)	TID 3 (transmission serial number 6510262117 and subsequent)	Replace transmission internal wiring harness and reprogram WTEC II TEPSS. 1
WTEC III (with ECU manufactured prior to	PRE-ID w/ 24-pin connector (transmission serial number prior to	Install adapter cable assembly and ID harness.
October 1999) ² WTEC III (with ECU manufactured prior to October 1999) ²	6510032369) PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	Install ID harness.
WTEC III (with ECU manufactured prior to October 1999) 2	TID 1 (transmission serial number 6510090786 to 6510142171)	No modification required.
WTEC III (with ECU manufactured prior to October 1999) ²	TID 2 (transmission serial number 6510142172 to 6510262116)	No modification required.
WTEC III (with ECU manufactured prior to October 1999) ²	TID 3 (transmission serial number 6510262117 and subsequent)	Reprogram WTEC III ECU ¹ or install new WTEC III ECU (P/N 12421787-002).
WTEC III (with ECU manufactured after October 1999) ³	PRE-ID w/ 24-pin connector (transmission serial number prior to 6510032369)	Install adapter cable assembly and ID harness.
WTEC III (with ECU manufactured after October 1999) ³	PRE-ID w/ 31-pin connector (transmission serial number 6510032369 to 6510090785)	Install ID harness.
WTEC III (with ECU manufactured after October 1999) ³	TID 1 (transmission serial number 6510090786 to 6510142171)	No modification required.

¹ Reprogramming can only be accomplished by an authorized Allison Transmission distributor. You must provide the transmission serial number of the transmission being installed to ensure correct reprogramming. If at a later time, an earlier version transmission is installed in a WTEC II equipped vehicle, WTEC II TEPSS will require reprogramming again.

² Vehicle serial number 012477 and lower. Refer to Figure 1.

³ Vehicle serial number 012478 and higher. Refer to Figure 1.

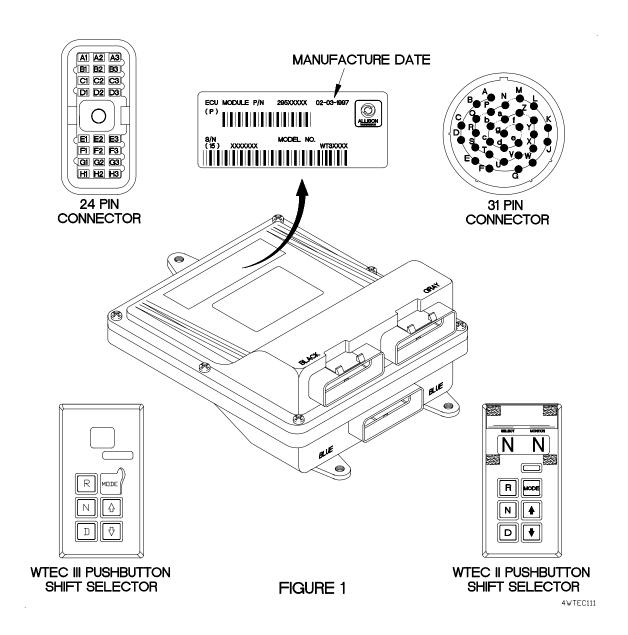
(1) Installed Controls or Controls Being Installed	(2) Installed Transmission or Transmission Being Installed	(3) Required Modification (Refer to Section III)
WTEC III (with ECU manufactured after October 1999) ³	TID 2 (transmission serial number 6510142172 to 6510262116)	No modification required.
WTEC III (with ECU manufactured after October 1999) ³	TID 3 (transmission serial number 6510262117 and subsequent)	No modification required.

Section III.

MODIFICATION PARTS IDENTIFICATION

Identification	Part Number/NSN	Description
31-pin connector	300130 5935-21-921-1813	Converts a transmission external wiring harness from a 24-pin ("D" type) connector to a 31-pin (round type) connector.
Transmission internal wiring harness	29529474 6150-01-481-8088	Converts a TID 2 transmission to a TID 1 configuration to allow WTEC II controls to communicate with the
		transmission.
Gasket	29503283	Required when replacing transmission internal wiring
	5330-01-360-9035	harness.
ID harness	200100	Allows WTEC III controls to communicate with a PRE-ID
	6150-21-921-1191	transmission.
Adapter cable assembly	29519210 6150-01-420-5987	Adapts a PRE-ID transmission with 24-pin ("D" type) connector to a transmission external wiring harness with a 31-pin (round) connector.

MODIFICATION PARTS IDENTIFICATION (CONT)



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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
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
TPS Throttle Position Sensor
VDC Volts Direct Current
VIM Vehicle Interface Module

TM 9-2320-365-20-2

WTEC II	World Transmission Electronic Controls (version 2)
WTEC III	World Transmission Electronic Controls (version 3)

By Order of the Secretary of the Army:

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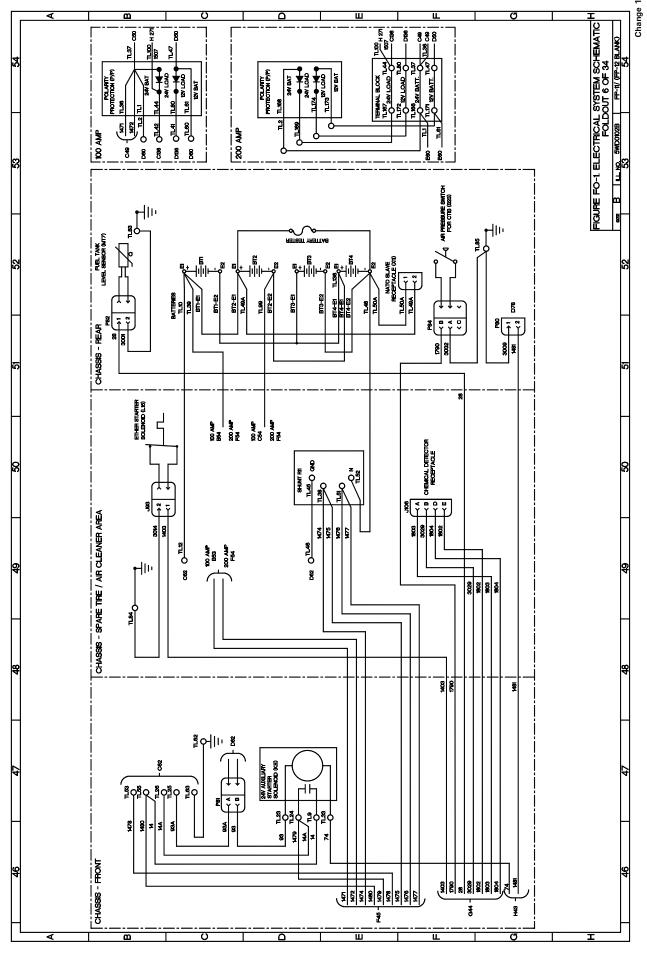
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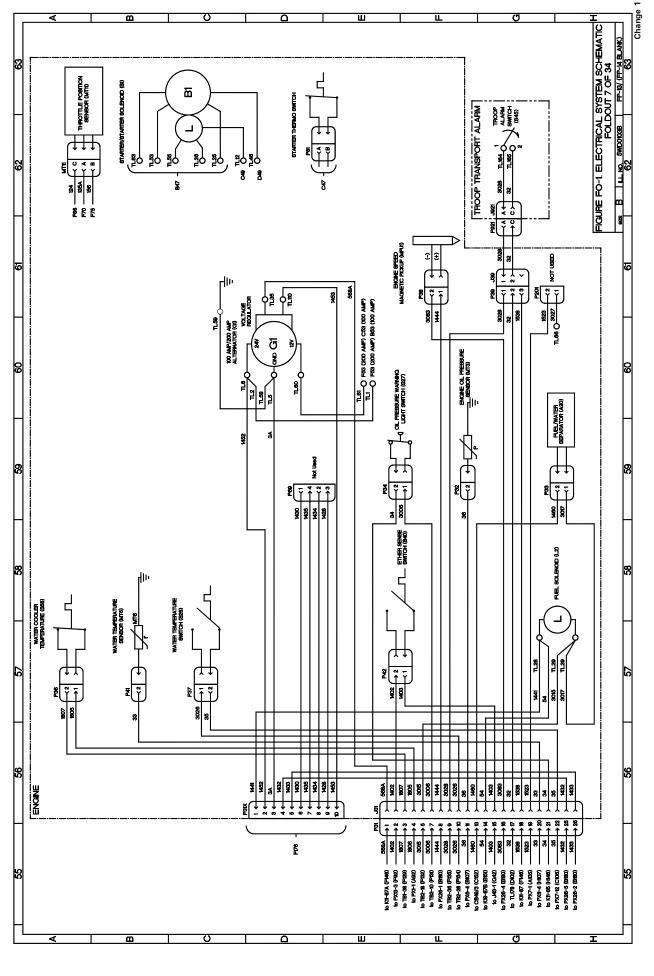
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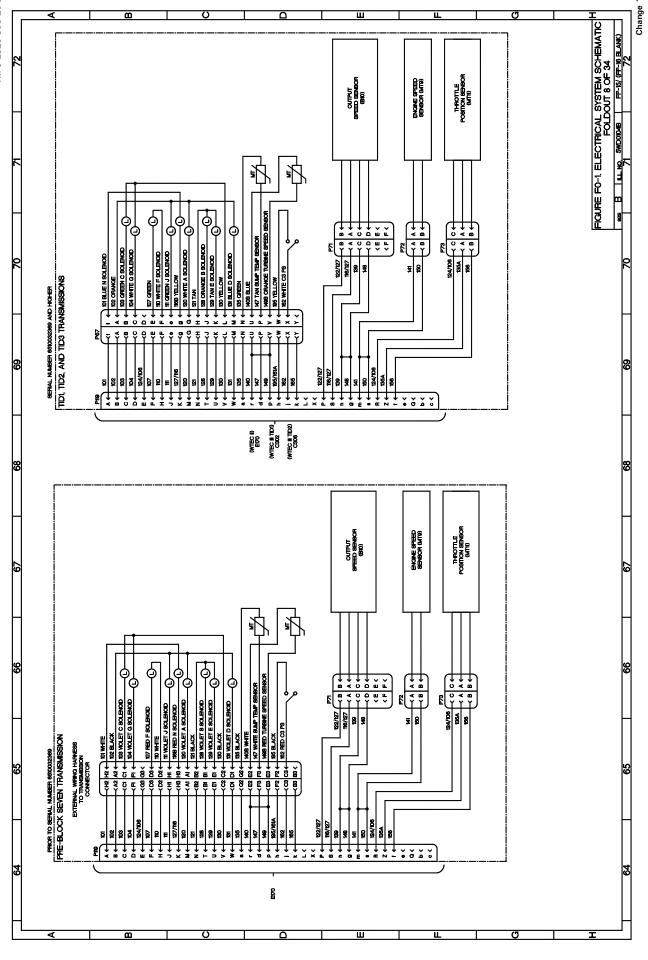
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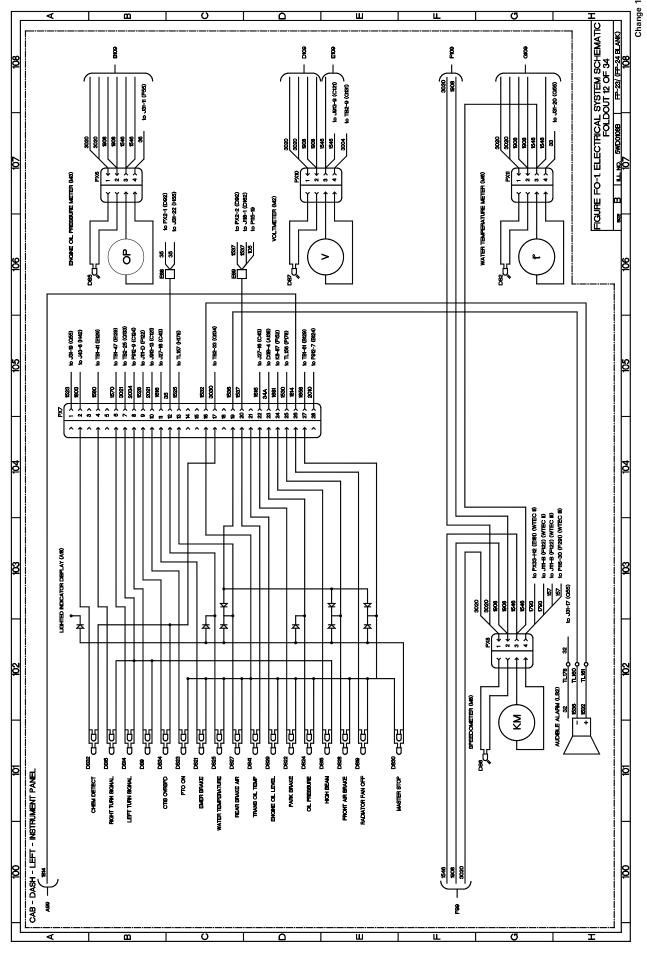


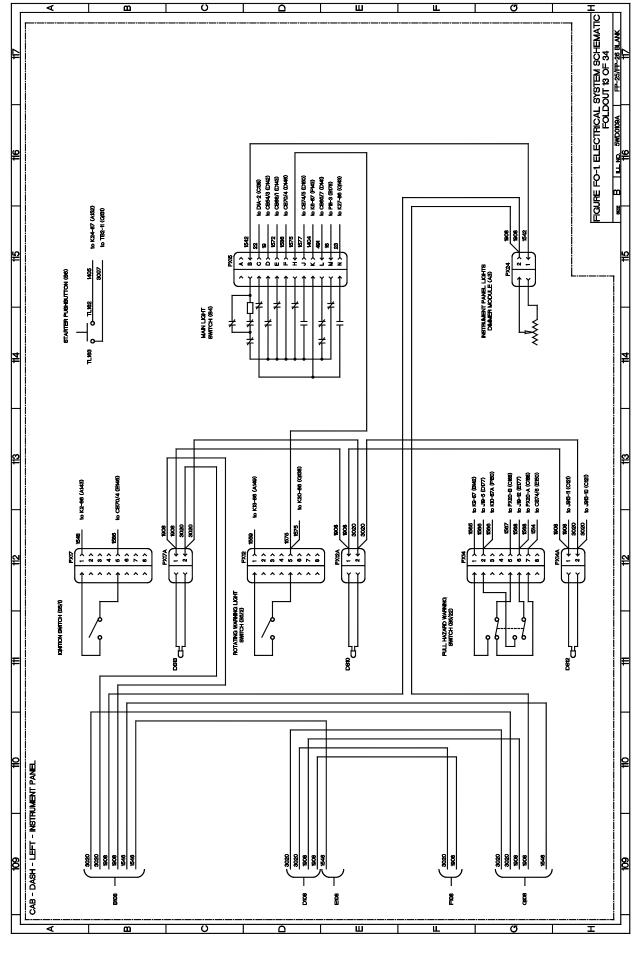


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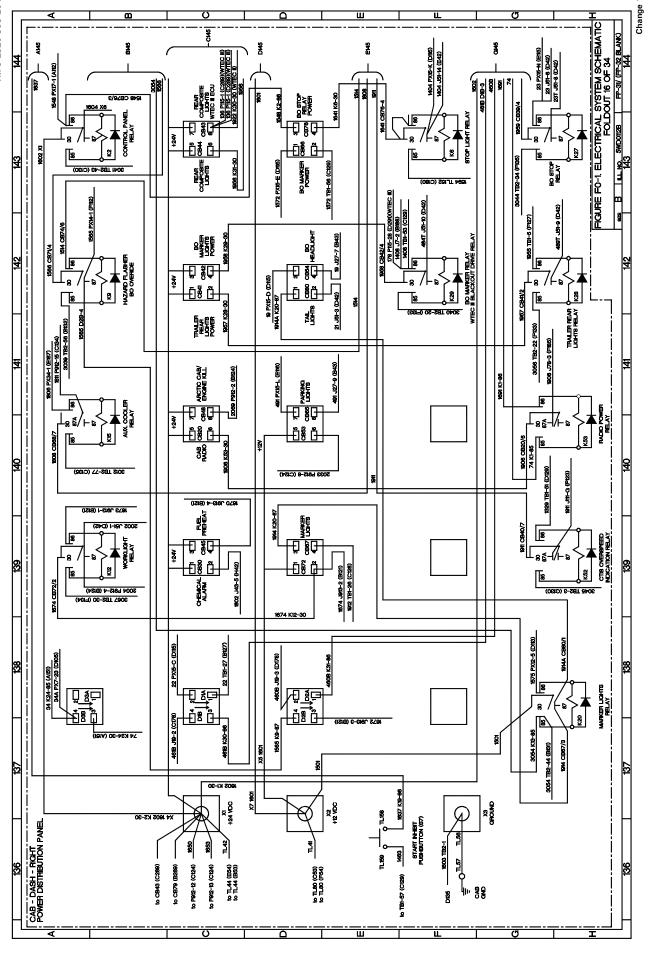
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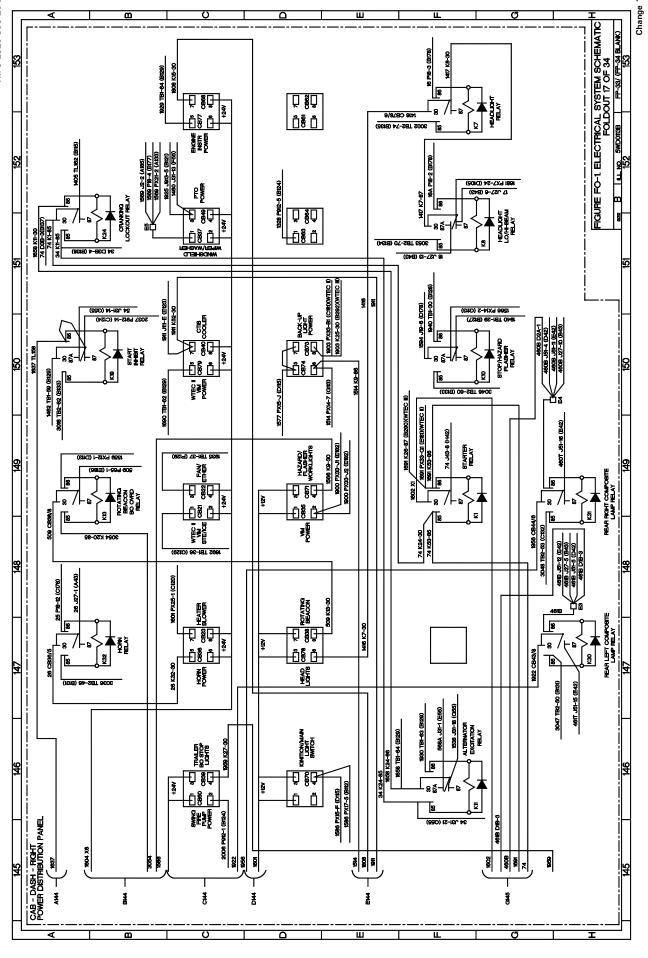
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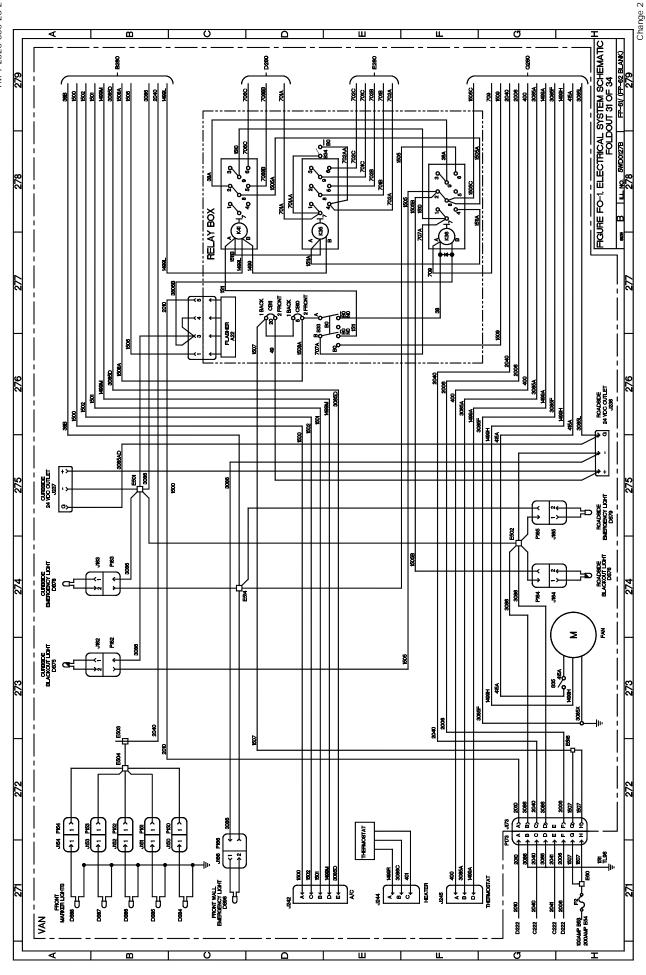
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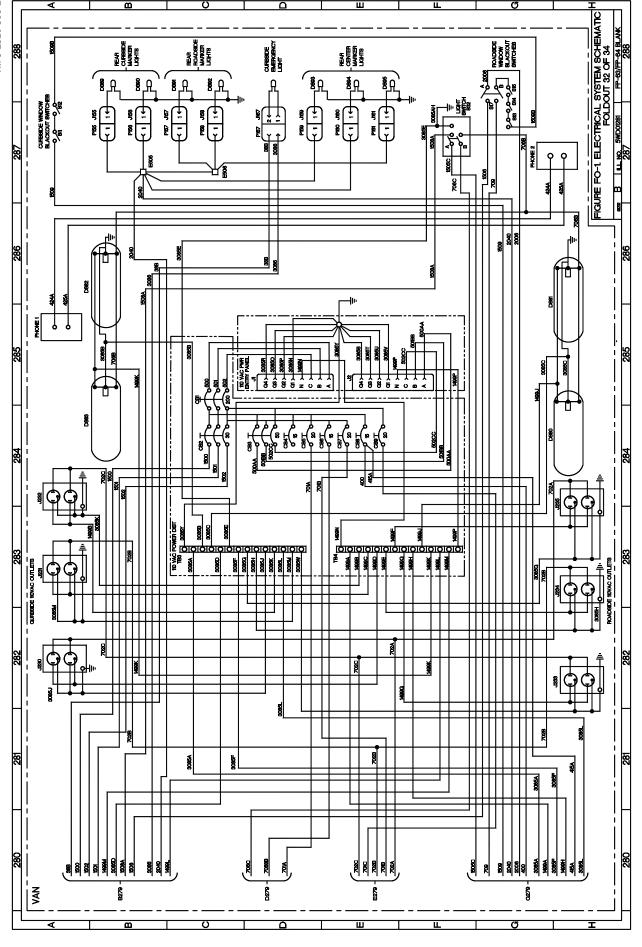
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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

- 1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
- 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
- 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

- 1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
- 1 Kilogram = 1000 Grams = 2.2 Lb
- 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

- 1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
- 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

- 1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
- 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
- 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

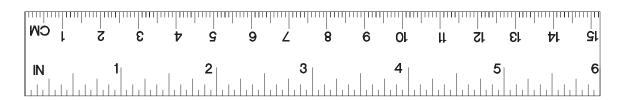
- 1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
- 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE

- 5/9 (°F 32) = °C
- 212° Fahrenheit is equivalent to 100° Celsius
- 90° Fahrenheit is equivalent to 32.2° Celsius
- 32° Fahrenheit is equivalent to 0° Celsius
- $9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO MUL	TIPLY BY	TO CHANGE	TO MU	LTIPLY BY
Inches Inches Inches Feet Yards Miles Square Inches Square Feet Square Yards Square Miles Acres Cubic Feet Cubic Yards Fluid Ounces Pints Quarts Gallons Ounces Pounds Pounds (force) Short Tons	Centimeters	2.540 2.54 0.305 0.914 1.609 6.451 0.093 0.836 2.590 0.405 0.028 0.765 29.57 0.473 0.946 3.785 28.35 0.454 4.448 0.907	Centimeters Millimeters Meters Meters Meters Kilometers Sq Centimeters Square Meters Square Meters Square Kilometers Cubic Meters Cubic Meters Milliliters Liters Liters Liters Liters Kilograms Newtons Metric Tons	Inches Inches Inches Feet Yards Miles Square Inches Square Feet Square Yards Square Miles Acres Cubic Feet Cubic Yards Fluid Ounces Pints Quarts Gallons Ounces Pounds Pounds (force) Short Tons	. 0.394 . 0.0394 . 3.280 . 1.094 . 0.621 . 0.155 . 10.764 . 1.196 . 0.386 . 2.471 . 35.315 . 1.308 . 0.034 . 2.113 . 1.057 . 0.264 . 0.035 . 2.205 . 0.2248 . 1.102
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Pounds/Sq Inch	•		Kilopascals	Pounds per Sq Inch .	
Miles per Gallon	•		Km per Liter	Miles per Gallon	
Miles per Hour	Kilometers per Hour	1.609	Km per Hour	Miles per Hour	0.621



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SincerelyIgor Chudovhttp://igor.chudov.com/