

**ARMY TM 9-2320-366-20-3**  
**AIR FORCE T.O. 36A12-1C-1102-3**

**TECHNICAL MANUAL**  
**MAINTENANCE INSTRUCTIONS**  
**UNIT MAINTENANCE**  
**M1083 SERIES, 5-TON, 6 X 6,**  
**MEDIUM TACTICAL VEHICLES (MTV)**  
**VOLUME NO. 3 OF 5**

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**HEADQUARTERS, DEPARTMENTS OF THE ARMY AND THE AIR FORCE**

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Washington, D.C., 15 September 1998

Unit Maintenance Manual  
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TRK, CAR., MTV, LWB, W/MATL HDLG EQPT (MHE), M1086	2320-01-354-4531	BR8
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TRK, WKR, MTV, M1089	2320-01-354-4528	BR4
TRK, DUMP, MTV, M1090 W/WN W/O WN	2320-01-360-1893 2320-01-354-4529	BTZ BR5
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TRK, CHAS, MTV, LWB, M1096	2320-01-354-4527	BR6

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## HOW TO USE THIS MANUAL

**OVERVIEW**

This Technical Manual (TM) is provided to help you maintain the MTV at the Unit Maintenance level. Because of its size, it is divided into five volumes. Volume 3 contains the following major sections in order of appearance:

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual.
- **CHAPTER 2, TROUBLESHOOTING (CONT)**
- **CHAPTER 3, ENGINE MAINTENANCE**
- **CHAPTER 4, FUEL SYSTEM MAINTENANCE**
- **CHAPTER 5, EXHAUST SYSTEM MAINTENANCE**
- **CHAPTER 6, COOLING SYSTEM MAINTENANCE**
- **CHAPTER 7, ELECTRICAL SYSTEM MAINTENANCE**
- **APPENDIX A, REFERENCES.** Lists publications used with the MTV.
- **APPENDIX B, MAINTENANCE ALLOCATION CHART.** The maintenance allocation chart denotes the level of maintenance which performs specific maintenance tasks and the time required. It also lists tools and special tools required for each task.
- **APPENDIX C, TOOLS IDENTIFICATION LIST.** Lists equipment used in the performance of maintenance and references publications which contain information regarding the equipment.
- **APPENDIX D, EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST.** Lists expendable and durable items used in the performance of maintenance.
- **APPENDIX E, ILLUSTRATED LIST OF MANUFACTURED ITEMS.** Illustrates and describes items that must be fabricated from bulk materials for repair of the MTV.
- **APPENDIX F, TORQUE LIMITS.** Lists the standard torque values for specific attaching hardware.
- **APPENDIX G, MANDATORY REPLACEMENT PARTS.**
- **APPENDIX H, LUBRICATION ORDER.**
- **APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).**
- **APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.
- **SUBJECT INDEX.** Lists important subjects contained in volume 3 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 Volume 1, 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 24. The PMCS and troubleshooting tables often reference you to these procedures. When you perform maintenance, look over the entire procedure before starting. Make sure you have the necessary tools and materials at hand. Always follow the WARNINGS and CAUTIONS.

### FOLLOW THESE GUIDELINES WHEN USING THIS MANUAL:

- Become familiar with the entire maintenance procedure before beginning a maintenance task.
- Read all **WARNINGS** and **CAUTIONS** before performing any procedures.

## CHAPTER 2 VEHICLE MAINTENANCE (CONT)

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**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 2-52, lists faults for the CTIS System of the vehicle.

*Table 2-52. Central Tire Inflation System (CTIS) Fault Index*

Fault No.	Description	Page
m1.	Two Steady Mode Lights Illuminate on Central Tire Inflation System (CTIS) ECU . . . . .	2-2008
m2.	Four CTIS ECU Indicator Lights Flashing . . . . .	2-2042
m3.	Five Central Tire Inflation System (CTIS) ECU Indicator Lights Flashing . . . . .	2-2070
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**m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU**

**INITIAL SETUP**

**Equipment Conditions**

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

**Materials/Parts**

Soap, Laundry (Item 63, Appendix D)

**Personnel Required**

(2)

**Tools and Special Tools**

Materials/Parts

Tool Kit, Genl Mech (Item 46, Appendix C)

Goggles, Industrial (Item 15, Appendix C)

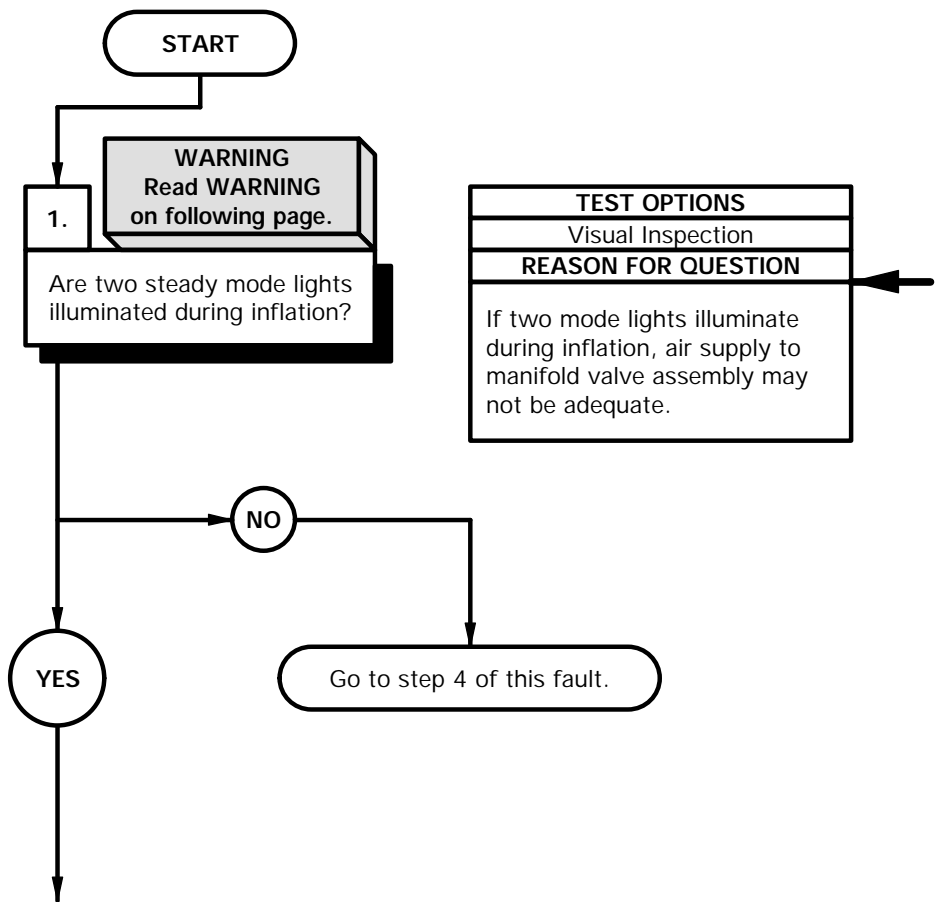
Trestle, Motor Vehicle Maintenance (2)

(Item 47, Appendix C)

Pan, Wash (Item 25, Appendix C)

Wrench, Torque, 0-200 lb-in. (Item 59, 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 intermediate axle quick release valve fittings. Faulty intermediate axle tee 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.



**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.

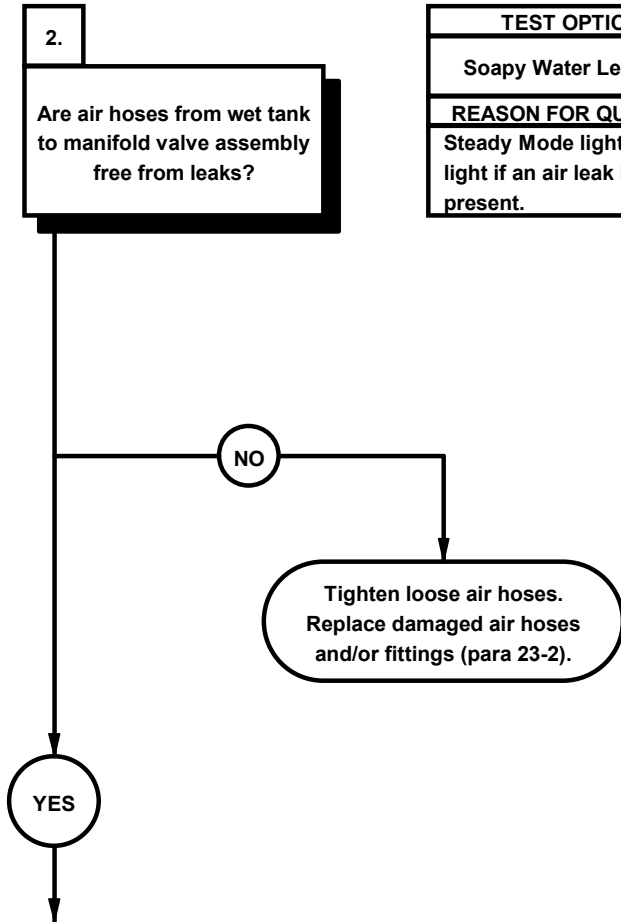
The CTIS may still operate including modes that are illuminated by manually pressing the desired mode.

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 9-2320-366-10-1).
- (2) Select an inflation mode on CTIS ECU (TM 9-2320-366-10-1) and determine if two light mode is displayed.
- (3) Select RUN FLAT mode or shut down engine and restart engine (TM 9-2320-366-10-1) again to reset ECU.
- (4) Select a deflation mode on CTIS ECU (TM 9-2320-366-10-1) and determine if two light mode is displayed.
- (5) Shut down engine (TM 9-2320-266-10-1).
- (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 CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU (CONT)

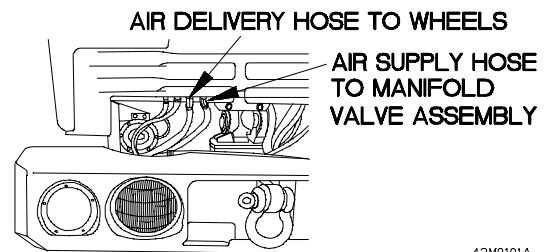
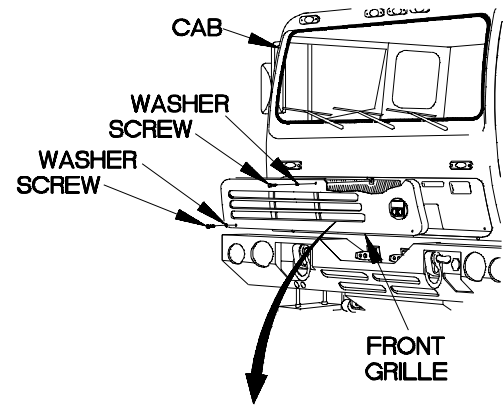
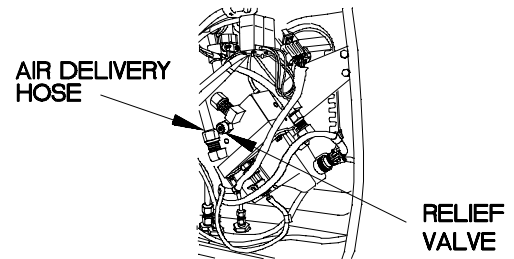
KNOWN INFO
Two steady mode lights illuminate during inflation.
POSSIBLE PROBLEMS
Faulty air hoses from wet tank to manifold valve assembly.
Faulty air compressor or governor adjustment.
Faulty wheel valve venting.
Faulty manifold valve assembly relief valve.
Faulty manifold valve assembly.
Faulty quick release valve(s).
Faulty rear axle quick release valve fittings.
Faulty intermediate axle quick release valve fittings.
Faulty intermediate axle tee 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.



TEST OPTIONS
Soapy Water Leak Test
REASON FOR QUESTION
Steady Mode lights may light if an air leak is present.

**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.

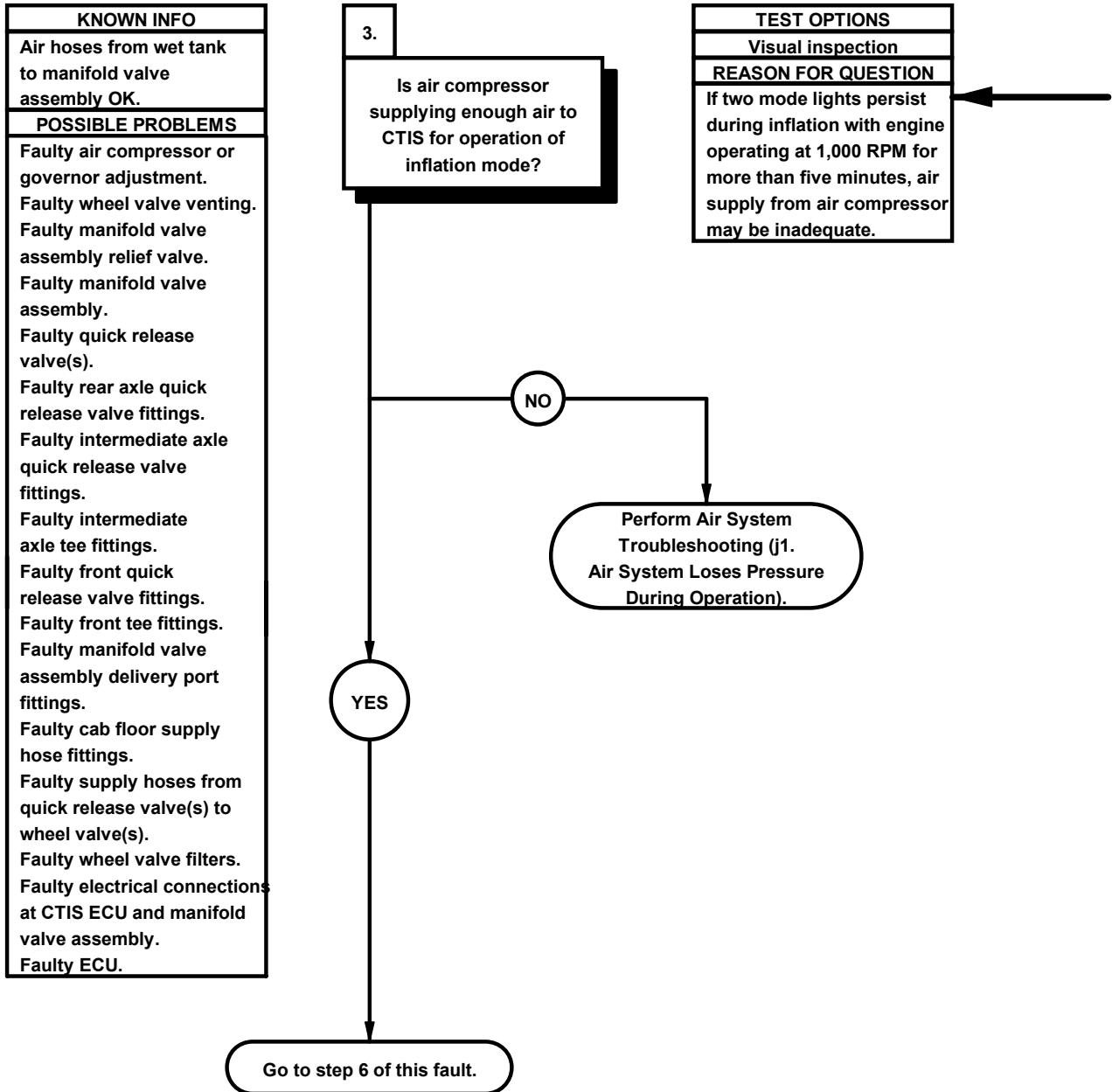


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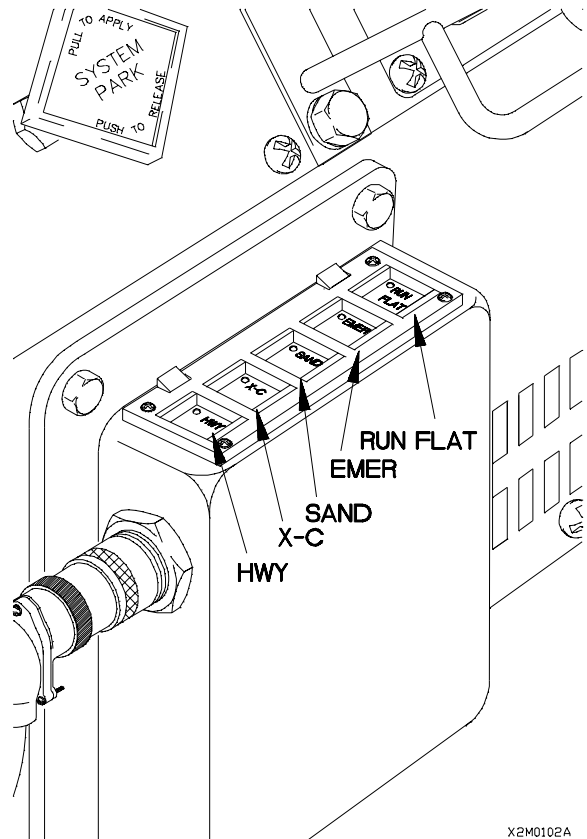
**SOAPY WATER LEAK TEST**

- (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 CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU (CONT)

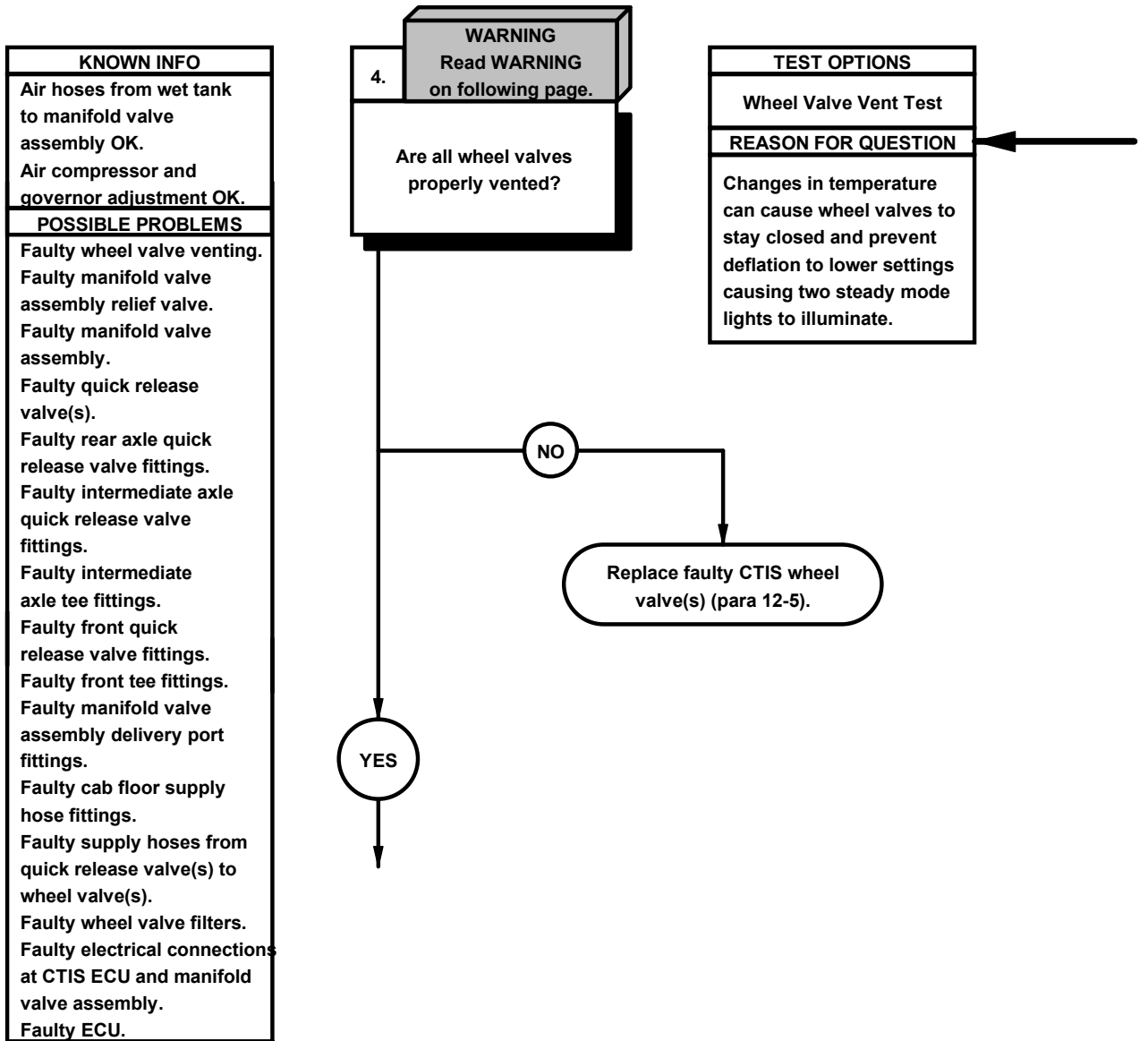


- (1) Start engine (TM 9-2320-366-10-1) and operate at 1,000 RPM for five minutes.
- (2) Select an inflation mode at CTIS ECU and check if two steady mode light returns.
- (3) Apply and release brakes once or twice and check if pressure gages are slow to reach 120 psi.
- (4) If two steady mode lights 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 9-2320-366-10-1).



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m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU (CONT)





**WARNING**

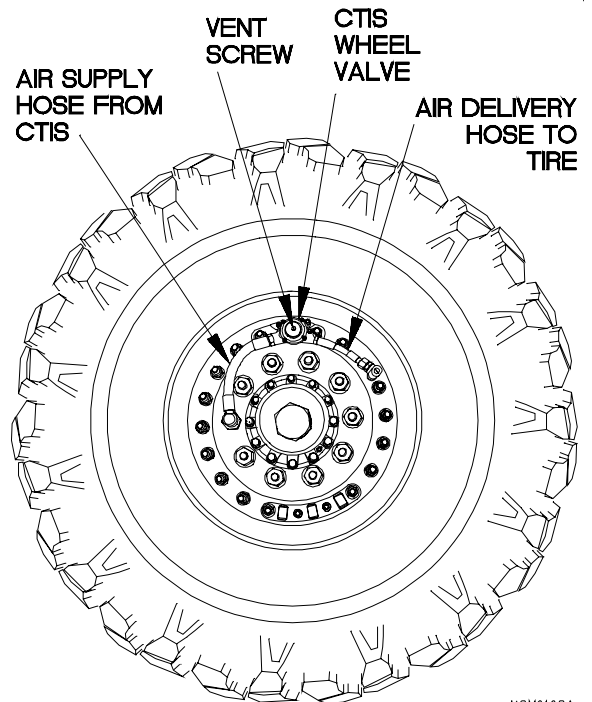
Do not loosen screw on wheel valve while CTIS is in use. Failure to comply may result in injury to personnel.

**NOTE**

At high temperatures, air pressure increases in cap chamber of wheel valve, adding to spring pressure so that valve cannot open to allow tire deflation to lower settings.

**WHEEL VALVE VENT TEST**

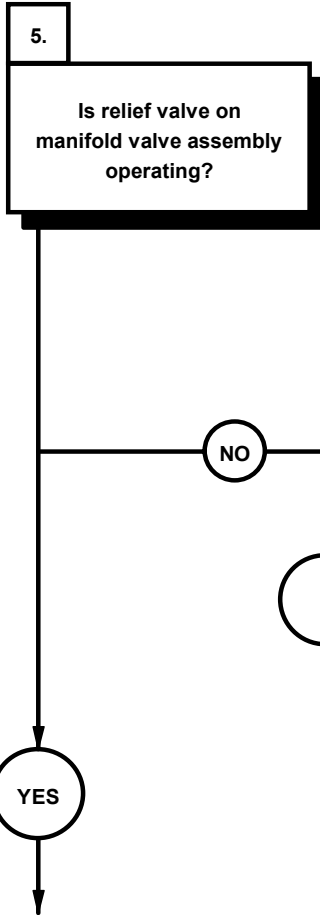
- (1) Release air from all CTIS wheel valves by backing off vent screws approximately three turns.
- (2) If CTIS wheel valve fails to release air, replace CTIS wheel valve (para 12-5).
- (3) Tighten vent screws. Do not overtighten.



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m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU (CONT)

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). Faulty rear axle quick release valve fittings. Faulty intermediate axle quick release valve fittings. Faulty intermediate axle tee 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.



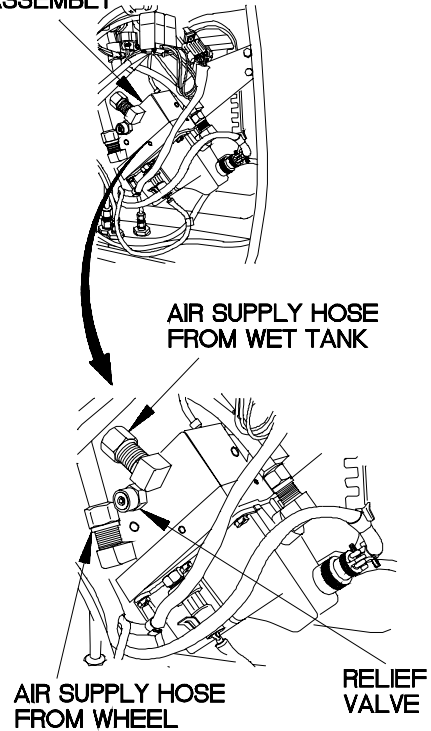
TEST OPTIONS
Relief Valve Test
REASON FOR QUESTION
A damaged relief valve may cause continual air loss and prevent proper inflation of tires for CTIS mode.



**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 9-2320-366-10-1).
- (4) Select a mode that is lower on CTIS ECU (TM 9-2320-366-10-1).
- (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 9-2320-366-10-1).

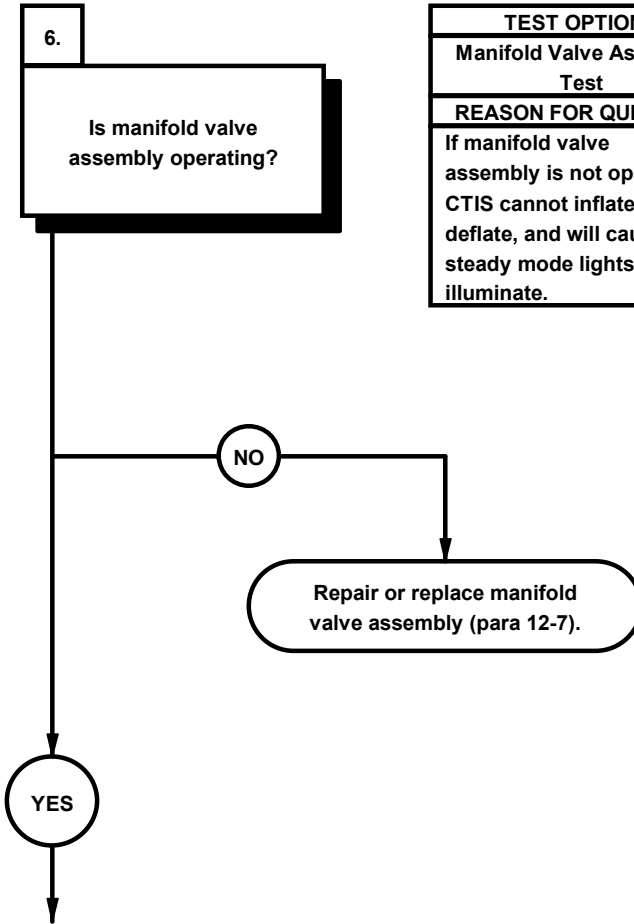
**MANIFOLD VALVE ASSEMBLY**



42M0104A

m1. TWO STEADY MODE LIGHTS ILLUMINATE ON CENTRAL TIRE INFLATION SYSTEM (CTIS) ECU (CONT)

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 intermediate axle quick release valve fittings. Faulty intermediate axle tee 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.



TEST OPTIONS
Manifold Valve Assembly Test
REASON FOR QUESTION
If manifold valve assembly is not operating, CTIS cannot inflate or deflate, and will cause two steady mode lights to illuminate.

