TM 9-2320-209-20-2-1

T.O. 36A12-1B-1092-1-2

TECHNICAL MANUAL

VOLUME 2 OF 3

PART 1 OF 2

TROUBLESHOOTING

ORGANIZATIONAL LEVEL

2½-TON, 6X6, M44A1 AND M44A2 SERIES TRUCKS

(MULTIFUEL)

TRUCK, CARGO: M35A1, M35A2, M35A2C, M36A2; TRUCK, TANK, FUEL: M49A1C, M49A2C; TRUCK, TANK, WATER: M50A1, M50A2, M50A3; TRUCK, VAN, SHOP: M109A2, M109A3; TRUCK, REPAIR SHOP: M185A2, M185A3; TRUCK, TRACTOR: M275A1, M275A2; TRUCK, DUMP: M342A2; TRUCK, MAINTENANCE, PIPELINE CONSTRUCTION: M756A2; TRUCK, MAINTENANCE, EARTH BORING AND POLESETTING: M764

NOTE:

THE STYLE OF THIS TM IS EXPERIMENTAL. IT IS BEING TRIED BY THE ARMY ONLY ON A LIMITED BASIS

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

MAY 1981

WARNING

Engine cooling system runs under pressure and at very high temperatures. If filler cap is taken off before pressure is set free, scalding coolant will blow out. Due to high temperature of coolant bad burns can occur if contact is made with skin.

Do not touch any part of the exhaust system while engine is running. You can get badly burned. If the engine has just been shut off, wait until the exhaust system has time to cool down before doing any work.

Because of their higher power, 24 volt systems are more dangerous than 6 or 12 volt systems. Do not let a hot wire touch metal parts of the truck at any time. Flash testing by striking a hot wire against a ground will cause an arc that can destroy the lead connector and possibly the lead itself.
Accidental contact of metal tools between positive (+) battery or starter terminal will cause burns on the hand, damaged tools, truck electrical components and batteries. The battery can explode spraying acid and sharp fragments that can cause serious or fatal injuries.

Only properly trained personnel should perform test on 115 volt system. The voltage present in 115 volt system can cause severe or fatal electric shock.

Take off battery ground cable before working near or touching fan. This will make sure that the engine will not be started by accident. Use a rag when touching fan blades because edges on blades can cause cuts.

Eye shields must be worn when using compressed air. Eye injury can occur if eye shields are not used.

*TM 9-2320-209-20-2-1
T.O. 36A12-1B-1092-1-2

TECHNICAL MANUAL
NO. 9-2320-209-20-2-1
TECHNICAL ORDER
NO. 36A12-1B-1092-1-2

DEPARTMENTS OF THE ARMY
AND
THE AIR FORCE
Washington, DC, 27 May 1981

TECHNICAL MANUAL

VOLUME 2 OF 3

PART 1 OF 2

TROUBLESHOOTING

ORGANIZATIONAL LEVEL

2½-TON, 6x6, M44A1 AND M44A2 SERIES TRUCKS

(MULTIFUEL)

Model		NSN without Winch	NSN with Winch
Truck, Cargo	M35A1	2320-00-542-5633	2320-00-542-5634
	M35A2	2320-00-077-1616	2320-00-077-1617
	M35A2C	2320-00-926-0873	2320-00-926-0875
	M36A2	2320-00-077-1618	2320-00-077-1619
Truck, Tank, Fuel	M49A1C	2320-00-440-3349	2320-00-440-3346
	M49A2C	2320-00-077-1631	2320-00-077-1632
Truck, Tank, Water	M50A1	2320-00-440-8307	2320-00-440-8305
	M50A2	2320-00-077-1633	2320-00-077-1634
	M50A3	2320-00-937-4036	2320-00-937-5264
Truck, Van, Shop	M109A2	2320-00-440-8313	2320-00-440-8308
	M109A3	2320-00-077-1636	2320-00-077-1637
Truck, Repair Shop	M185A2	4940-00-987-8799	
	M185A3	4940-00-077-1638	4940-00-077-1639
Truck, Tractor	M275A1	2320-00-446-2479	
	M275A2	2320-00-077-1640	2320-00-077-1641
Truck, Dump	M342A2	2320-00-077-1643	2320-00-077-1644
Truck, Maintenance, Pipeline Construction	M756A2		2320-00-904-3277
Truck, Maintenance, Earth Boring and Polesetting	M764		2320-00-937-5980

*This manual, together with TM 9-2320-209-20-1, 27 May 1981; TM 9-2320-209-20-2-2, 27 May 1981: TM 9-2320-209-20-3-1, 27 May 1981; TM 9-2320-209-20-3-2, 27 May 1981; TM 9-2320-209-20-3-3, 27 May 1981; and TM 9-2320-209-20-3-4, 27 May 1981, supersedes TM 9-2320-209-20-1, 31 August 1978.

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedure, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publication and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Tank Automotive Materiel Readiness Command, ATTN: DRSTA-MBT, Warren, Michigan 48090. A reply will be furnished to you.

TABLE OF CONTENTS

		Paragraph	Page
CHAPTER 1.	GENERAL INFORMATION		
	Scope	1-1	1-1
	Organization	1-2	1-1
	Troubleshooting Approach	1-3	1-1
CHAPTER 2.	TROUBLESHOOTING APPROACH		
	General Approach	2-1	2-1
	Troubleshooting Index	2-2	2-1
	Test Equipment Procedures Index	2-3	2-1
	Troubleshooting Roadmaps	2-4	2-1
	Fault Symptom Index	2-5	2-1
	Sample Troubleshooting Procedure	2-6	2-1
CHAPTER 3.	TROUBLESHOOTING INDEX		
	General	3-1	3-1
	Index	3-2	3-1
CHAPTER 4.	TEST EQUIPMENT PROCEDURES INDEX		
	General	4-1	4-1
	Index	4-2	4-1
CHAPTER 5.	TROUBLESHOOTING ROADMAPS		
	General	5-1	5-1
	Roadmaps	5-2	5-1
CHAPTER 6.	FAULT SYMPTOM INDEXES		
	General	6-1	6-1
	Indexes	6-2	6-1
CHAPTER 7.	SAMPLE TROUBLESHOOTING PROCEDURE		
	General	7-1	7-1
	Sample Detailed Procedure	7-2	7-1
	Sample Test Equipment Procedure	7-3	7-1
	Sample Summary Troubleshooting Procedures	7-4	7-2
CHAPTER 8.	ENGINE SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	8-1	8-1
	Equipment Items Not Covered	8-2	8-1
CHAPTER 9.	ENGINE SYSTEM TROUBLESHOOTING SUMMARY		
	General	9-1	9-1
	Procedures	9-2	9-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
CHAPTER 10.	ENGINE DRIVELINE SUBSYSTEM TROUBLESHOOTING		
	Equipment Items Covered		10-1
	Equipment Items Not Covered	10-2	10-1
CHAPTER 11.	CLUTCH SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	11-1	11-1
	Equipment Items Not Covered	11-2	11-1
CHAPTER 12.	CLUTCH SYSTEM TROUBLESHOOTING SUMMARY		
	General	12-1	12-1
	Procedures	12-2	12-1
CHAPTER 13.	FUEL SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	13-1	13-1
	Equipment Items Not Covered	13-2	13-1
CHAPTER 14.	FUEL SYSTEM TROUBLESHOOTING SUMMARY		
	General	14-1	14-1
	Procedures	14-2	14-1
CHAPTER 15.	FUEL SYSTEM SUPPORT DIAGRAMS		
	General	15-1	15-1
CHAPTER 16.	FUEL SYSTEM TEST PROCEDURES		
	General	16-1	16-1
	Test Set-up	16-2	16-1
	Test Procedure	16-3	16-1
CHAPTER 17.	EXHAUST SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	17-1	17-1
	Equipment Items Not Covered	17-2	17-1
CHAPTER 18.	EXHAUST SYSTEM TROUBLESHOOTING SUMMARY		
	General	18-1	18-1
	Procedures	18-2	18-1
CHAPTER 19.	EXHAUST SYSTEM SUPPORT DIAGRAMS		
	General	19-1	19-1
CHAPTER 20.	COOLING SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	20-1	20-1
	Equipment Items Not Covered	20-2	20-1
CHAPTER 21.	COOLING SYSTEM TROUBLESHOOTING SUMMARY		
	General	21-1	21-1
	Procedures	21-2	21-1
CHAPTER 22.	COOLING SYSTEM SUPPORT DIAGRAMS		
	General	22-1	22-1
CHAPTER 23.	COOLING SYSTEM TEST PROCEDURES		
	General	23-1	23-1
	Test Set-Up	23-2	23-1
	Test Procedure	23-3	23-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
CHAPTER 24.	COOLING SYSTEM CHECKOUT PROCEDURES		
	General	24-1	24-1
CHAPTER 25.	ELECTRICAL SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	25-1	25-1
	Equipment Items Not Covered	25-2	25-1
	PART 2 OF 2 (TM 9-2320-209-20-2-2)		
CHAPTER 26.	ELECTRICAL SYSTEM TROUBLESHOOTING SUMMARY		
	General	26-1	26-1
	Procedures	26-2	26-1
CHAPTER 27.	ELECTRICAL SYSTEM SUPPORT DIAGRAMS		
	General	27-1	27-1
CHAPTER 28.	MULTIMETER TEST PROCEDURES		
	General	28-1	28-1
	Test Set-Up	28-2	28-1
	Test Procedure	28-3	28-1
CHAPTER 29.	OPERATING AND PRELIMINARY PROCEDURES		
	Equipment Items Covered	29-1	29-1
	Equipment Items Not Covered	29-2	29-1
CHAPTER 30.	ELECTRICAL SYSTEM CHECKOUT PROCEDURES		
	General	30-1	30-1
CHAPTER 31.	TRANSMISSION SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	31-1	31-1
	Equipment Items Not Covered	31-2	31-1
CHAPTER 32.	TRANSMISSION SYSTEM TROUBLESHOOTING SUMMARY		
	General	32-1	32-1
	Procedures	32-2	32-1
CHAPTER 33.	TRANSFER SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	33-1	33-1
	Equipment Items Not Covered	33-2	33-1
CHAPTER 34.	TRANSFER SYSTEM TROUBLESHOOTING SUMMARY		
	General	34-1	34-1
	Procedures	34-2	34-1
CHAPTER 35.	TRANSFER SYSTEM CHECKOUT PROCEDURES		
	General	35-1	35-1
CHAPTER 36.	PROPELLER SHAFT SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	36-1	36-1
	Equipment Items Not Covered	36-2	36-1
CHAPTER 37.	PROPELLER SHAFT SYSTEM TROUBLE-SHOOTING SUMMARY		
	General	37-1	37-1
	Procedures	37-2	37-1

TABLE OF CONTENTS-CONT

	Paragraph	Page
CHAPTER 38. PROPELLER SHAFT SYSTEM SUPPORT DIAGRAMS		
General	38-1	38-1
CHAPTER 39. FRONT AXLE SYSTEM TROUBLESHOOTING		
Equipment Items Covered	39-1	39-1
Equipment Items Not Covered	39-2	39-1
CHAPTER 40. FRONT AXLE SYSTEM TROUBLESHOOTING SUMMARY		
General	40-1	40-1
Procedures	40-2	40-1
CHAPTER 41. FRONT AXLE SYSTEM CHECKOUT PROCEDURES		
General	41-1	41-1
CHAPTER 42. REAR AXLE SYSTEM TROUBLESHOOTING		
Equipment Items Covered	42-1	42-1
Equipment Items Not Covered	42-2	42-1
CHAPTER 43. REAR AXLE SYSTEM SUPPORT DIAGRAMS		
General	43-1	43-1
CHAPTER 44. BRAKE SYSTEM TROUBLESHOOTING		
Equipment Items Covered	44-1	44-1
Equipment Items Not Covered	44-2	44-1
CHAPTER 45. BRAKE SYSTEM TROUBLESHOOTING SUMMARY		
General	45-1	45-1
Procedures	45-2	45-1
CHAPTER 46. BRAKE SYSTEM SUPPORT DIAGRAMS		
General	46-1	46-1
CHAPTER 47. HANDBRAKE SUBSYSTEM TROUBLESHOOTING		
Equipment Items Covered	47-1	47-1
Equipment Items Not Covered	47-2	47-1
CHAPTER 48. COMPRESSED AIR SUBSYSTEM TROUBLESHOOTING		
Equipment Items Covered	48-1	48-1
Equipment Items Not Covered	48-2	48-1
CHAPTER 49. BRAKE SYSTEM TEST PROCEDURES		
General	49-1	49-1
Test Set-Up	49-2	49-1
Test Procedure	49-3	49-1
CHAPTER 50. BRAKE SYSTEM CHECKOUT PROCEDURES		
General	50-1	50-1
CHAPTER 51. WHEEL SYSTEM TROUBLESHOOTING		
Equipment Items Covered	51-1	51-1
Equipment Items Not Covered	51-2	51-1
CHAPTER 52. STEERING SYSTEM TROUBLESHOOTING		
Equipment Items Covered	52-1	52-1
Equipment Items Not Covered	52-2	52-1
CHAPTER 53. STEERING SYSTEM TROUBLESHOOTING SUMMARY		
General	53-1	53-1
Procedures	53-2	53-1
CHAPTER 54. STEERING SYSTEM SUPPORT DIAGRAMS		
General	54-1	54-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
CHAPTER 55.	SPRING AND SHOCK ABSORBERS SYSTEM TROUBLESHOOTING		
	Equipment Items Covered	55-1	55-1
	Equipment Items Not Covered	55-2	55-1
CHAPTER 56.	SPRING AND SHOCK ABSORBERS SYSTEM TROUBLESHOOTING SUMMARY		
	General	56-1	56-1
	Procedures	56-2	56-1
CHAPTER 57.	DUMP BODY TROUBLESHOOTING		
	Equipment Items Covered	57-1	57-1
	Equipment Items Not Covered	57-2	57-1
CHAPTER 58.	DUMP BODY TROUBLESHOOTING SUMMARY		
	General	58-1	58-1
	Procedures	58-2	58-1
CHAPTER 59.	DUMP BODY SUPPORT DIAGRAMS		
	General	59-1	59-1
CHAPTER 60.	DUMP BODY CHECKOUT PROCEDURES		
	General	60-1	60-1
CHAPTER 61.	WATER TANK BODY TROUBLESHOOTING		
	Equipment Items Covered	61-1	61-1
	Equipment Items Not Covered	61-2	61-1
CHAPTER 62.	WATER TANK BODY TROUBLESHOOTING SUMMARY		
	General	62-1	62-1
	Procedures	62-2	62-1
CHAPTER 63.	WATER TANK BODY SUPPORT DIAGRAMS		
	General	63-1	63-1
CHAPTER 64.	WATER TANK BODY CHECKOUT PROCEDURES		
	General	64-1	64-1
CHAPTER 65.	FUEL TANK BODY (TRUCK M49A1C) TROUBLESHOOTING		
	Equipment Items Covered	65-1	65-1
	Equipment Items Not Covered	65-2	65-1
CHAPTER 66.	FUEL TANK BODY (TRUCK M49A1C) TROUBLESHOOTING SUMMARY		
	General	66-1	66-1
	Procedures	66-2	66-1
CHAPTER 67.	FUEL TANK BODY (TRUCK M49A1C) SUPPORT DIAGRAMS		
	General	67-1	67-1
CHAPTER 68.	FUEL TANK BODY (TRUCK M49A1C) CHECKOUT PROCEDURES		
	General	68-1	68-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
CHAPTER 69.	FUEL TANK BODY (TRUCK M49A2C) TROUBLESHOOTING		
	Equipment Items Covered	69-1	69-1
	Equipment Items Not Covered	69-2	69-1
CHAPTER 70.	FUEL TANK BODY (TRUCK M49A2C) TROUBLESHOOTING SUMMARY		
	General	70-1	70-1
	Procedures	70-2	70-1
CHAPTER 71.	FUEL TANK BODY (TRUCK M49A2C) SUPPORT DIAGRAMS		
	General	71-1	71-1
CHAPTER 72.	FUEL TANK BODY (TRUCK M49A2C) CHECKOUT PROCEDURES		
	General	72-1	72-1
CHAPTER 73.	EARTH BORING MACHINE TROUBLESHOOTING		
	Equipment Items Covered	73-1	73-1
	Equipment Items Not Covered	73-2	73-1
CHAPTER 74.	EARTH BORING MACHINE TROUBLE-SHOOTING SUMMARY		
	General	74-1	74-1
	Procedures	74-2	74-1
CHAPTER 75.	EARTH BORING MACHINE SUPPORT DIAGRAMS		
	General	75-1	75-1
CHAPTER 76.	EARTH BORING MACHINE CHECKOUT PROCEDURES		
	General	76-1	76-1
CHAPTER 77.	FRONT WINCH TROUBLESHOOTING		
	Equipment Items Covered	77-1	77-1
	Equipment Items Not Covered	77-2	77-1
CHAPTER 78.	FRONT WINCH TROUBLEHSOOTING SUMMARY		
	General	78-1	78-1
	Procedures	78-2	78-1
CHAPTER 79.	FRONT WINCH CHECKOUT PROCEDURES		
	General	79-1	79-1
CHAPTER 80.	EARTH BORING MACHINE REAR WINCH TROUBLESHOOTING		
	Equipment Items Covered	80-1	80-1
	Equipment Items Not Covered	80-2	80-1
CHAPTER 81.	PIPELINE CONSTRUCTION TRUCK REAR WINCH TROUBLESHOOTING		
	Equipment Items Covered	81-1	81-1
	Equipment Items Not Covered.	81-2	81-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
CHAPTER 82.	ENGINE COOLANT HEATER TROUBLE-SHOOTING		
	Equipment Items Covered	82-1	82-1
	Equipment Items Not Covered	82-2	82-1
CHAPTER 83.	ENGINE COOLANT HEATER TROUBLE-SHOOTING SUMMARY		
	General	83-1	83-1
	Procedures	83-2	83-1
CHAPTER 84.	ENGINE COOLANT HEATER SUPPORT DIAGRAMS		
	General	84-1	84-1
CHAPTER 85.	ENGINE COOLANT HEATER TEST PROCEDURES		
	General	85-1	85-1
	Test Set-Up	85-2	85-1
	Test Procedure	85-3	85-1
CHAPTER 86.	ENGINE COOLANT HEATER CHECKOUT PROCEDURES		
	General	86-1	86-1
CHAPTER 87.	FUEL BURNING PERSONNEL HEATER TROUBLESHOOTING		
	Equipment Items Covered	87-1	87-1
	Equipment Items Not Covered	87-2	87-1
CHAPTER 88.	FUEL BURNING PERSONNEL HEATER TROUBLESHOOTING SUMMARY		
	General	88-1	88-1
	Procedures	88-2	88-1
CHAPTER 89.	FUEL BURNING PERSONNEL HEATER SUPPORT DIAGRAMS		
	General	89-1	89-1
CHAPTER 90.	FUEL BURNING PERSONNEL HEATER CHECKOUT PROCEDURES		
	General	90-1	90-1
CHAPTER 91.	HOT WATER HEATER TROUBLEHSOOTING		
	Equipment Items Covered	91-1	91-1
	Equipment Items Not Covered	91-2	91-1
CHAPTER 92.	HOT WATER HEATER TROUBLESHOOTING SUMMARY		
	General	92-1	92-1
	Procedures	92-2	92-1
CHAPTER 93.	HOT WATER HEATER CHECKOUT PROCEDURES		
	General	93-1	93-1
CHAPTER 94.	DEEP WATER FORDING KIT TROUBLE-SHOOTING		
	Equipment Items Covered	94-1	94-1
	Equipment Items Not Covered	94-2	94-1

TABLE OF CONTENTS-CONT

		Paragraph	Page
CHAPTER 95.	DEEP WATER FORDING KIT TROUBLE-SHOOTING SUMMARY		
	General	95-1	95-1
	Procedures	95-2	95-1
CHAPTER 96.	DEEP WATER FORDING KIT SUPPORT DIAGRAMS		
	General	96-1	96-1
CHAPTER 97.	DEEP WATER FORDING KIT CHECKOUT PROCEDURES		
	General	97-1	97-1
CHAPTER 98.	NONELECTRICAL GAGES TROUBLESHOOTING		
	Equipment Items Covered	98-1	98-1
	Equipment Items Not Covered	98-2	98-1
CHAPTER 99.	NONELECTRICAL GAGES TROUBLESHOOTING SUMMARY		
	General	98-1	98-1
	Procedures	99-2	99-1
CHAPTER 100.	NONELECTRICAL GAGES SUPPORT DIAGRAMS		
	General	100-1	100-1

CHAPTER 1

GENERAL INFORMATION

1-1. SCOPE. This volume tells you how to do troubleshooting at the organizational level of maintenance. The amount of troubleshooting you can do is based on what the Maintenance Allocation Chart says you can fix. Because of this, the only trouble symptoms you will find here are those that could be caused by faulty things you can fix .

1-2. ORGANIZATION. This volume has the information you will need to troubleshoot the truck. Chapter 2 tells you how to use the information in the other chapters of this volume to find what is wrong with the truck, and what you must do to fix it. Chapter 7 has a procedure that takes you step-by-step through a sample trouble-shooting procedure and shows you how to use the information to find the trouble and fix it.

1-3. TROUBLESHOOTING APPROACH . In order to find out what is causing the problem in the truck, you must use a good approach. A good approach just means a way of doing troubleshooting so you can find the problem and not get confused or lost. The following chapter describes how you can use the materials in this volume to troubleshoot with a good approach.

CHAPTER 2
TROUBLESHOOTING APPROACH

2-1. GENERAL APPROACH. This chapter gives you instructions on how to use the troubleshooting material to help you find and fix the trouble. In every system of the truck there can be faults or problems which will cause certain symptoms. Symptoms can be such things as unusual noise, vibration, or even complete failure of a system. This volume gives information for each system on which you can do troubleshooting to find faults and fix them. Before you troubleshoot a system, you should look at the troubleshooting indexes which will lead you to the information you need to help make your troubleshooting faster and easier. If you follow the instructions the right way, you will find those troubles you can fix. But, if you fix something and the trouble is still there, it means there is more than one trouble. If this happens, start all over again to find the other trouble.

2-2. TROUBLESHOOTING INDEX. The troubleshooting index, and instructions on how to use it are in chapter 3. Go to this index first because it tells you where to find troubleshooting roadmaps, fault symptom indexes, summary troubleshooting charts and support diagrams for each system.

2-3. TEST EQUIPMENT PROCEDURES INDEX . The test equipment procedures index, and instructions on how to use it are in chapter 4. This index tells you where to find electrical and mechanical tests which you can use to do your troubleshooting. It also tells you what equipment you will need to do the tests. If you have a STE/ICE (Simplified Test Equipment/Internal Combustion Engine) Set (NSN 4910-00-124-2554), you may use it, where applicable, to do your troubleshooting. Refer to TM 9-4910-571-12 & P.

2-4. TROUBLESHOOTING ROADMAPS. Troubleshooting roadmaps for each system are in chapter 5. If the system is made up of subsystems, these subsystems are also on the roadmap. Under the subsystem is a list of things which are the most likely causes of a fault symptom in that subsystem. If you have enough skill, you can troubleshoot these things on the truck without using the detailed troubleshooting procedures. So if you know enough about the truck to work on your own, use the roadmap for the system with the problem before you check the fault symptom index.

2-5. FAULT SYMPTOM INDEX. Fault symptom indexes and instructions on how to use them are in chapter 6. For each system of the truck, there is an index which gives you a list of the fault symptoms for that system. The index also tells you where to find the detailed troubleshooting procedures and what resources (tools/people) you need to do each procedure.

2-6. SAMPLE TROUBLESHOOTING PROCEDURE. A sample troubleshooting procedure is in chapter 7. This sample procedure will help you see the way detailed troubleshooting procedures are to be used.

CHAPTER 3

TROUBLESHOOTING INDEX

3-1. GENERAL. This chapter has a troubleshooting index which covers every system of the truck on which you can do troubleshooting. The index tells you where to find all the other information you need to do your troubleshooting procedures.

3-2. INDEX. The troubleshooting index (fig. 3-1) is divided into five columns that list systems, troubleshooting roadmaps, fault symptoms, summary troubleshooting procedures, and system support diagrams. The following breakdown tells you what is in each column.

a. System Column. This column gives a list of systems on the truck for which troubleshooting can be done at the organizational maintenance level.

b. Troubleshooting Roadmaps Column. This column tells you where to find the troubleshooting roadmap for each listed system. These roadmaps are given in chapter 5.

c. Fault Symptom Index Column. This column tells you where to find the troubleshooting fault symptom index for each listed system. Fault symptom indexes are given in chapter 6.

d. Summary Troubleshooting Procedures Column. This column tells you where to find the summary troubleshooting procedure for each listed system. Some systems do not have summary troubleshooting procedures, so the column will be left blank for those systems.

e. System Support Diagrams Column. This column tells you where to find support diagrams for each listed system, Some systems do not have support diagrams, so the column will be left blank for those systems.

	SYSTEM	TROUBLE-SHOOTING ROADMAPS	FAULT SYMPTOM INDEXES	SUMMARY TROUBLE-SHOOTING PROCEDURES	SYSTEM SUPPORT DIAGRAMS
1	ENGINE	Figure 5-1	Table 6-1	Figure 9-1	
2	CLUTCH	Figure 5-2	Table 6-2	Figure 12-1	
3	FUEL	Figure 5-3	Table 6-3	Figure 14-1	Figure 15-1
4	EXHAUST	Figure 5-4	Table 6-4	Figure 18-1	Figure 19-1
5	COOLING	Figure 5-5	Table 6-5	Figure 21-1	Figure 22-1
6	ELECTRICAL	Figure 5-6	Table 6-6	Figure 26-1	Figure 27-1
7	TRANSMISSION	Figure 5-7	Table 6-7	Figure 32-1	
8	TRANSFER	Figure 5-8	Table 6-8	Figure 34-1	
9	PROPELLER SHAFT	Figure 5-9	Table 6-9	Figure 37-1	Figure 38-1
10	FRONT AXLE	Figure 5-10	Table 6-10	Figure 40-1	
11	REAR AXLE	Figure 5-11	Table 6-11		Figure 43-1
12	BRAKES	Figure 5-12	Table 6-12	Figure 45-1	Figure 46-1
13	WHEELS	Figure 5-13	Table 6-13		
14	STEERING	Figure 5-14	Table 6-14	Figure 53-1	Figure 54-1
15	SPRINGS AND SHOCK ABSORBERS	Figure 5-15	Table 6-15	Figure 56-1	
16	DUMP BODY	Figure 5-16	Table 6-16	Figure 58-1	Figure 59-1
17	WATER TANK BODY	Figure 5-17	Table 6-17	Figure 62-1	Figure 63-1
18	FUEL TANK BODY M49A1C	Figure 5-18	Table 6-18	Figure 66-1	Figure 67-1
19	FUEL TANK BODY M49A2C	Figure 5-19	Table 6-19	Figure 70-1	Figure 71-1
20	EARTH BORING MACHINE M764	Figure 5-20	Table 6-20	Figure 74-1	Figure 75-1
21	FRONT WINCH	Figure 5-21	Table 6-21	Figure 78-1	
22	EARTH BORING MACHINE REAR	Figure 5-22	Table 6-22		
	WINCH				
23	PIPELINE CONSTRUCTION TRUCK	Figure 5-23	Table 6-23		
	REAR WINCH				
24	ENGINE COOLANT HEATER	Figure 5-24	Table 6-24	Figure 83-1	Figure 84-1
25	FUEL BURNING PERSONNEL HEATER	Figure 5-25	Table 6-25	Figure 88-1	Figure 89-1
26	HOT WATER HEATER	Figure 5-26	Table 6-26	Figure 92-1	
27	DEEP WATER FORDING KIT	Figure 5-27	Table 6-27	Figure 95-1	Figure 96-1
28	NON ELECTRICAL GAGES	Figure 5-28	Table 6-28	Figure 99-1	Figure 100-1

TA 115210

Figure 3-1. Troubleshooting Index

CHAPTER 4

TEST EQUIPMENT PROCEDURES INDEX

4-1. GENERAL. This chapter has a test equipment procedures index which tells you where to find the tests you need to do your troubleshooting.

4-2. INDEX. The test equipment procedures index is divided into three columns that list test equipment, tests, and figure numbers. The following breakdown tells you what is in each column.

a. Test Equipment Column. This column tells you what kind of equipment you need to do your troubleshooting tests. For all electrical tests, a multimeter is used. The multimeter can be any one of three models fielded for your use. These models are given in the test equipment column. For mechanical tests, test equipment is also given, along with the part number of the equipment.

b. Tests Column. This column tells you what tests are given in this manual. Next to each piece of test equipment are listed the tests that you can do with that equipment. This column also gives troubleshooting tests which can be done without using test equipment.

c. Figure Column. This column tells you where you can find the tests in this manual. The first test given is the DC Voltage test. The figures given for this test are 28-2, 28-8, and 28-14. Three figures are given for each multimeter test because there are three multimeter models.

TEST EQUIPMENT		TESTS	FIGURE
1	MULTIMETER AN/URM-105C SIMPSON 160 TS-352B/U	1. DC Voltage	28-2,28-8,28-14
		2. AC Voltage	28-3,28-9,28-15
		4. Continuity	28-5,28-11,28-17
		5. Short	28-6,28-12,28-18
2	GAGE–fuel system pressure P/N 11600036	Fuel Tank Pump Pressure	16-5
		Flame Heater Fuel Pump	16-1
		Fuel Filter Body	16-2
		Flame Heater Nozzle	16-3
		Fuel Lines and Fittings	16-4
		Thermostat	23-1
		Compressed Air Lines Leakage	49-1
		Master Cylinder Leakage	49-2
		Air Governor Adjustment	49-3
		Hoist Control Linkage	57-6
		Hoist Control Box	57-7
		Control Linkage Woodroof	57-8
		Keyed Shaft	
		Heater Fuel Line Clog	85-1
		Heater Fuel Pump	85-2

Figure 4-1. Test Equipment Procedures Index

TA 115211

CHAPTER 5

TROUBLESHOOTING ROADMAPS

5-1. GENERAL. This chapter gives troubleshooting roadmaps for every system of the truck for which you have detailed troubleshooting procedures. Figures 5-1 through 5-28 cover all the roadmaps for the detailed procedures.

5-2. ROADMAPS. Each roadmap gives a list of things which are most likely to cause a fault symptom in a system or subsystem. At least one of the items listed will be found to be bad when you do the detailed troubleshooting procedures for that system.

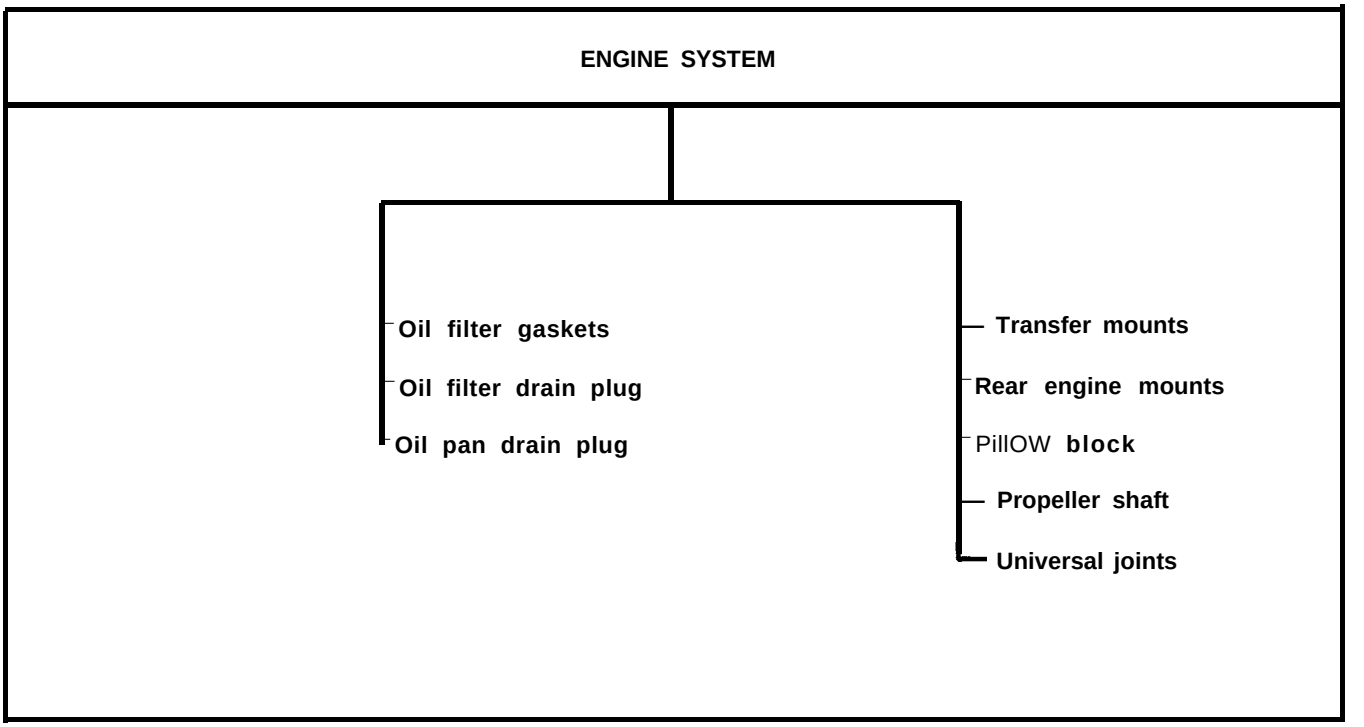


Figure 5-1. Troubleshooting Roadmap, Engine System

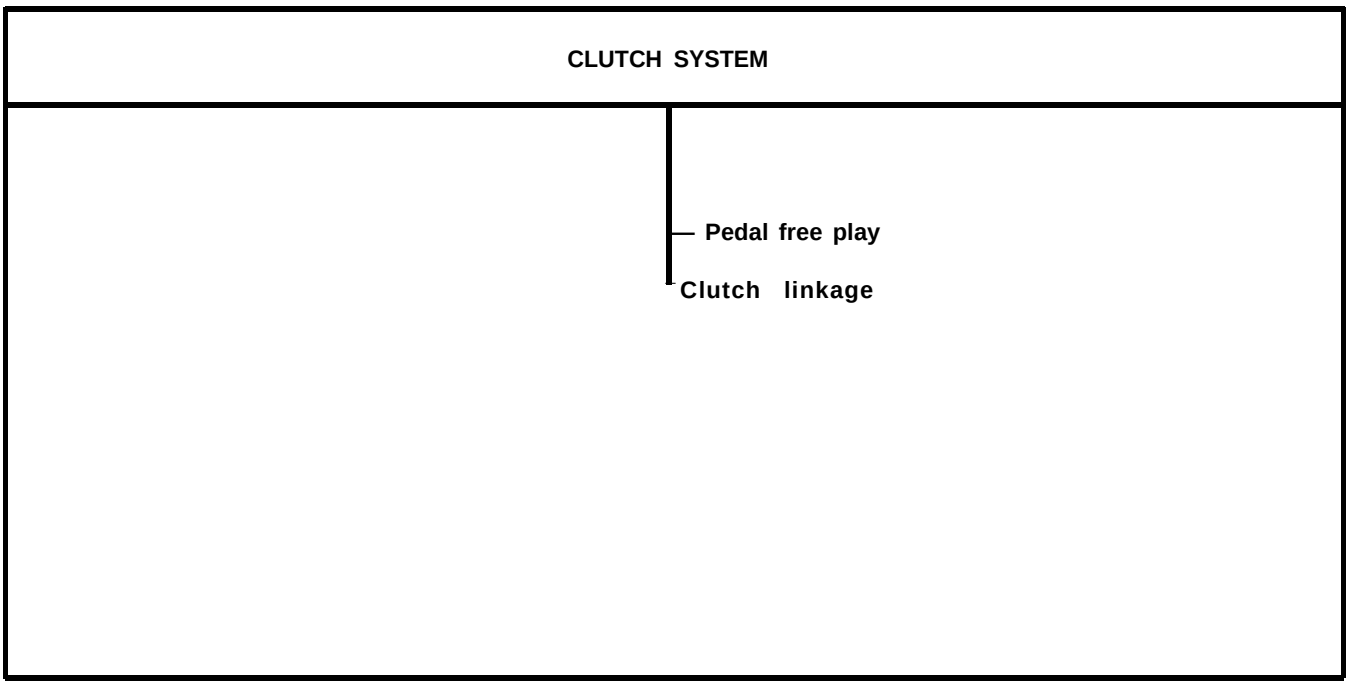


Figure 5-2. Troubleshooting Roadmap, Clutch System

TA 115212

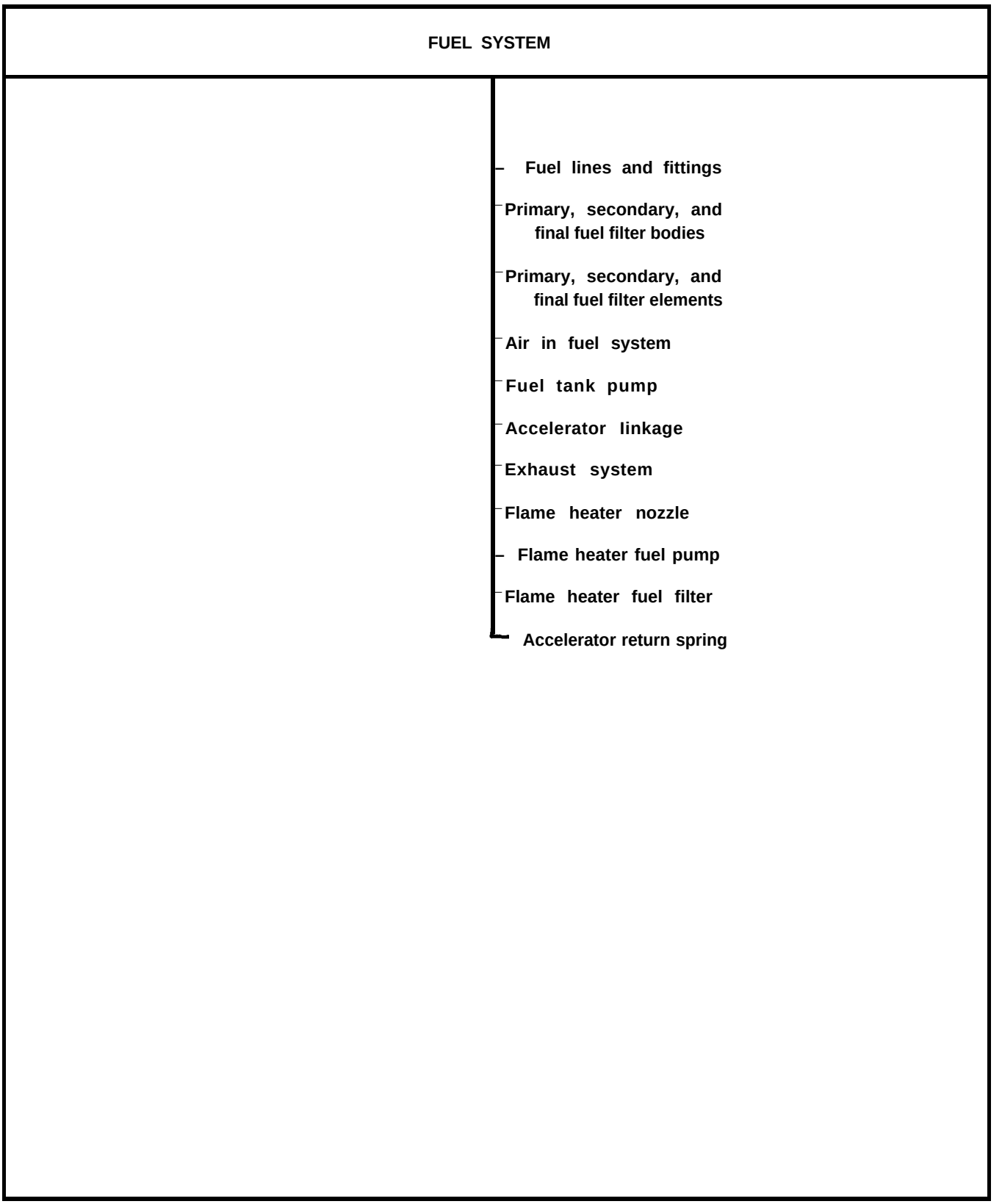


Figure 5-3. Troubleshooting Roadmap, Fuel System

TA 115213

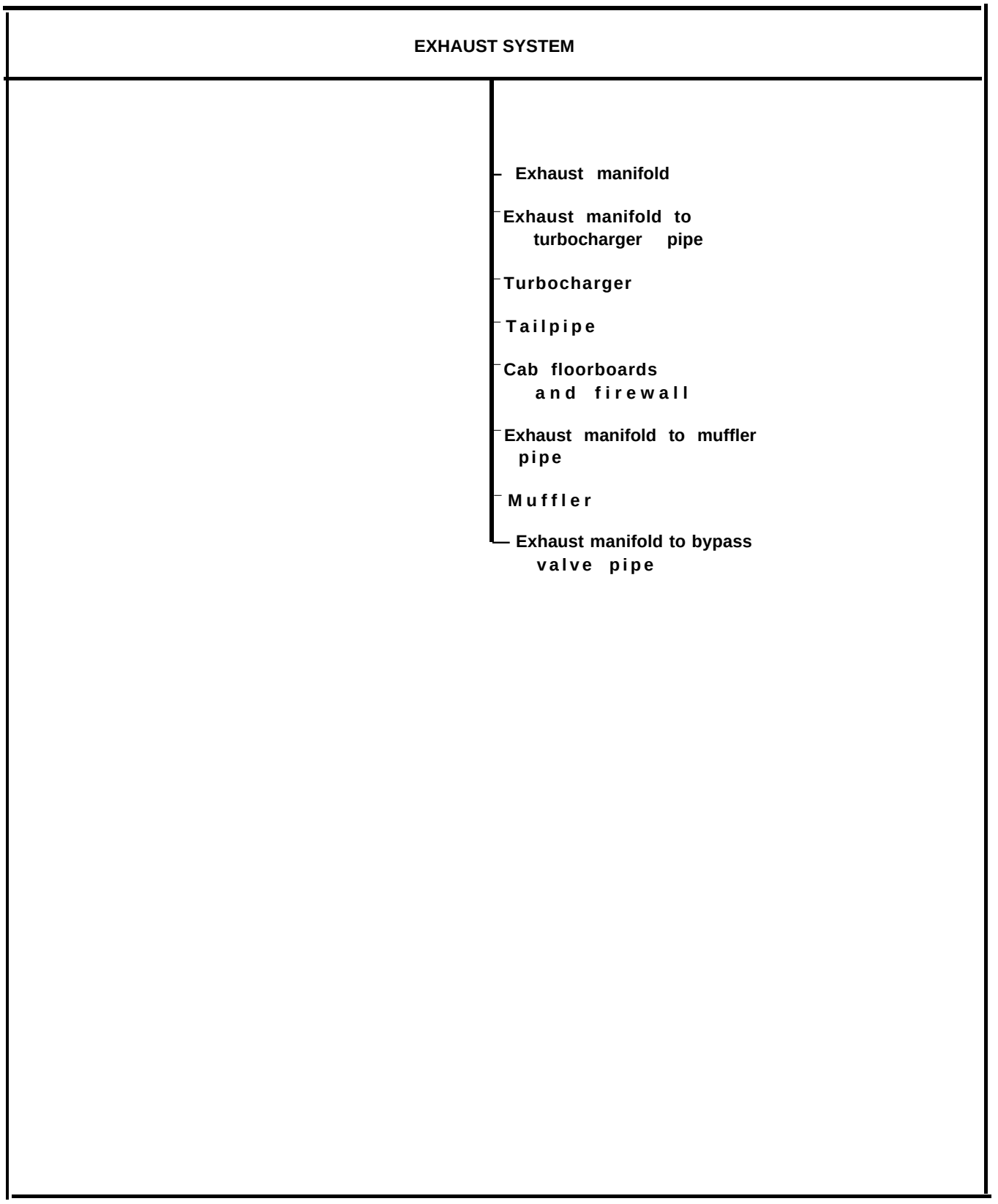


Figure 5-4. Troubleshooting Roadmap, Exhaust System

TA 115214

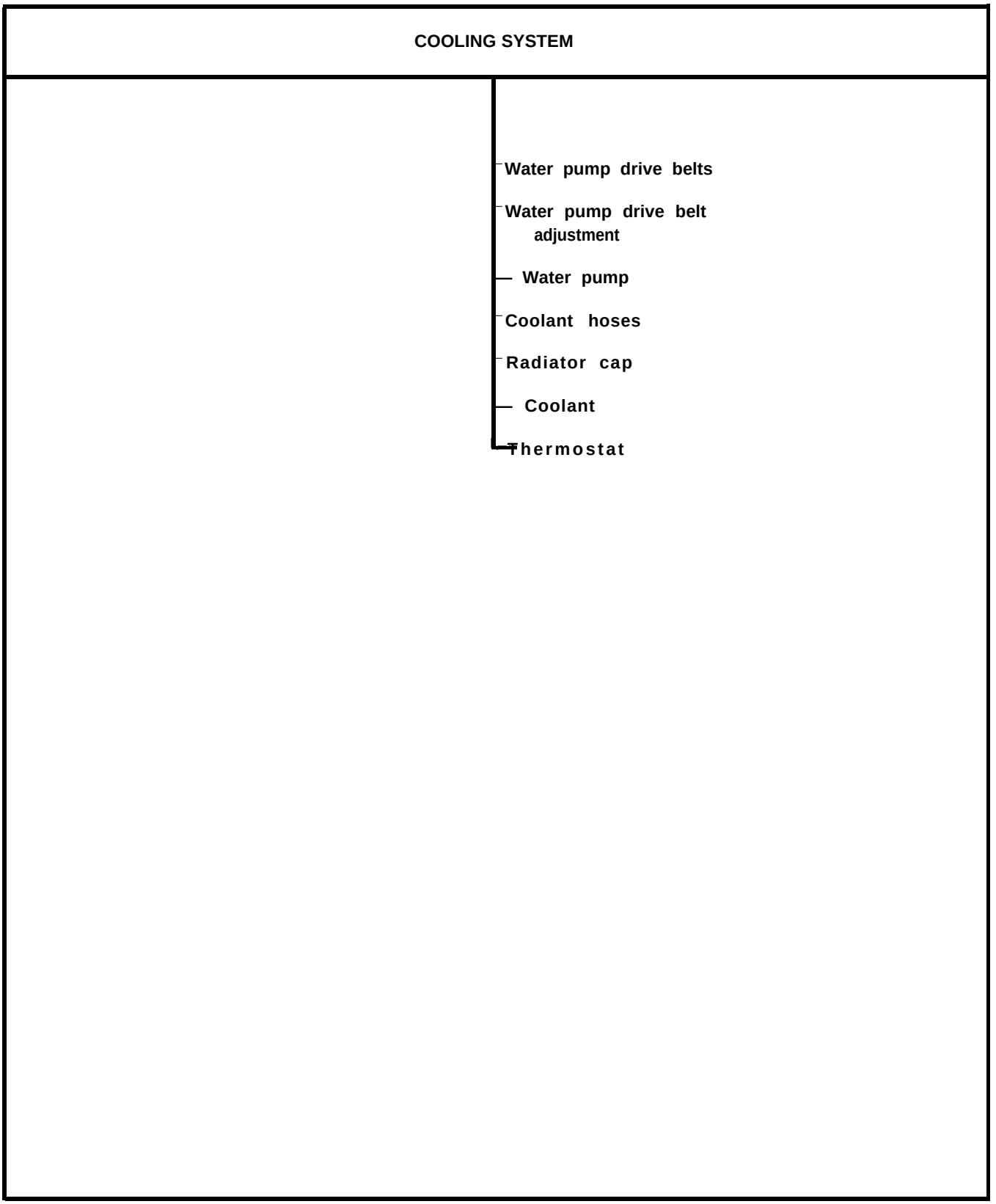


Figure 5-5. Troubleshooting Roadmap, Cooling System

TA 115215

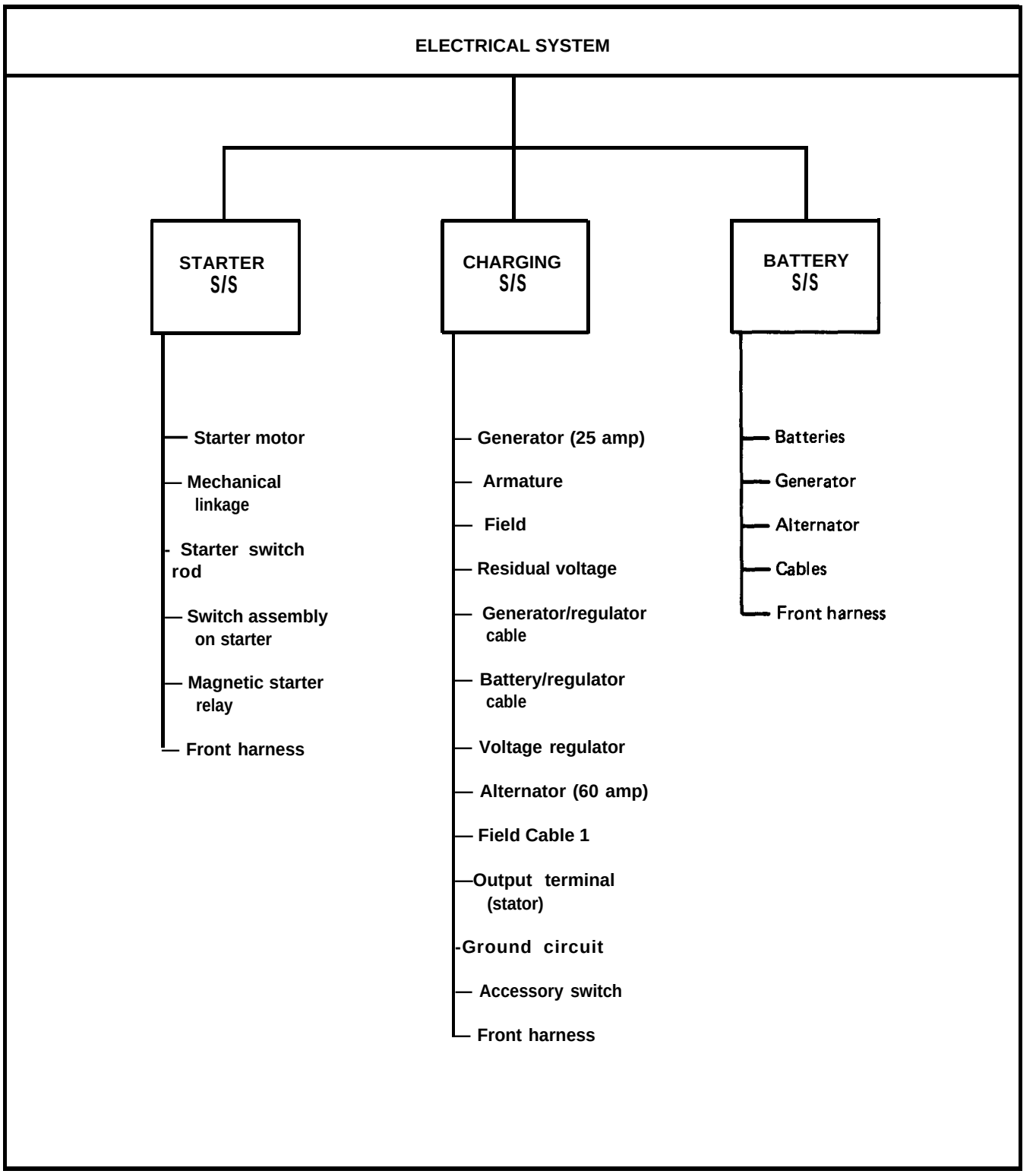


Figure 5-6. Troubleshooting Roadmap, Electrical System (Sheet 1 of 5)

TA 115216

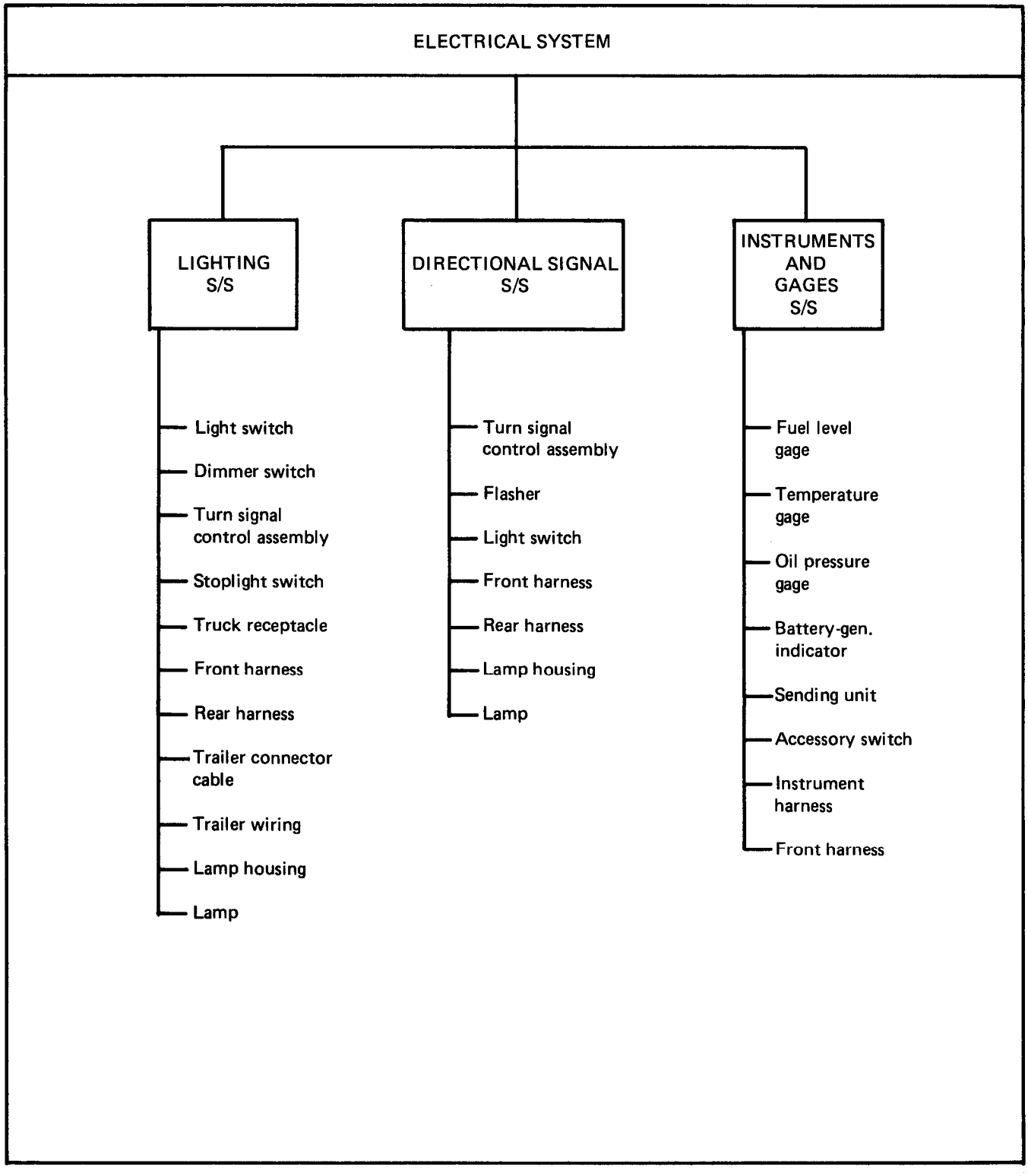


Figure 5-6. Troubleshooting Roadmap, Electrical System (Sheet 2 of 5)

TA 115217

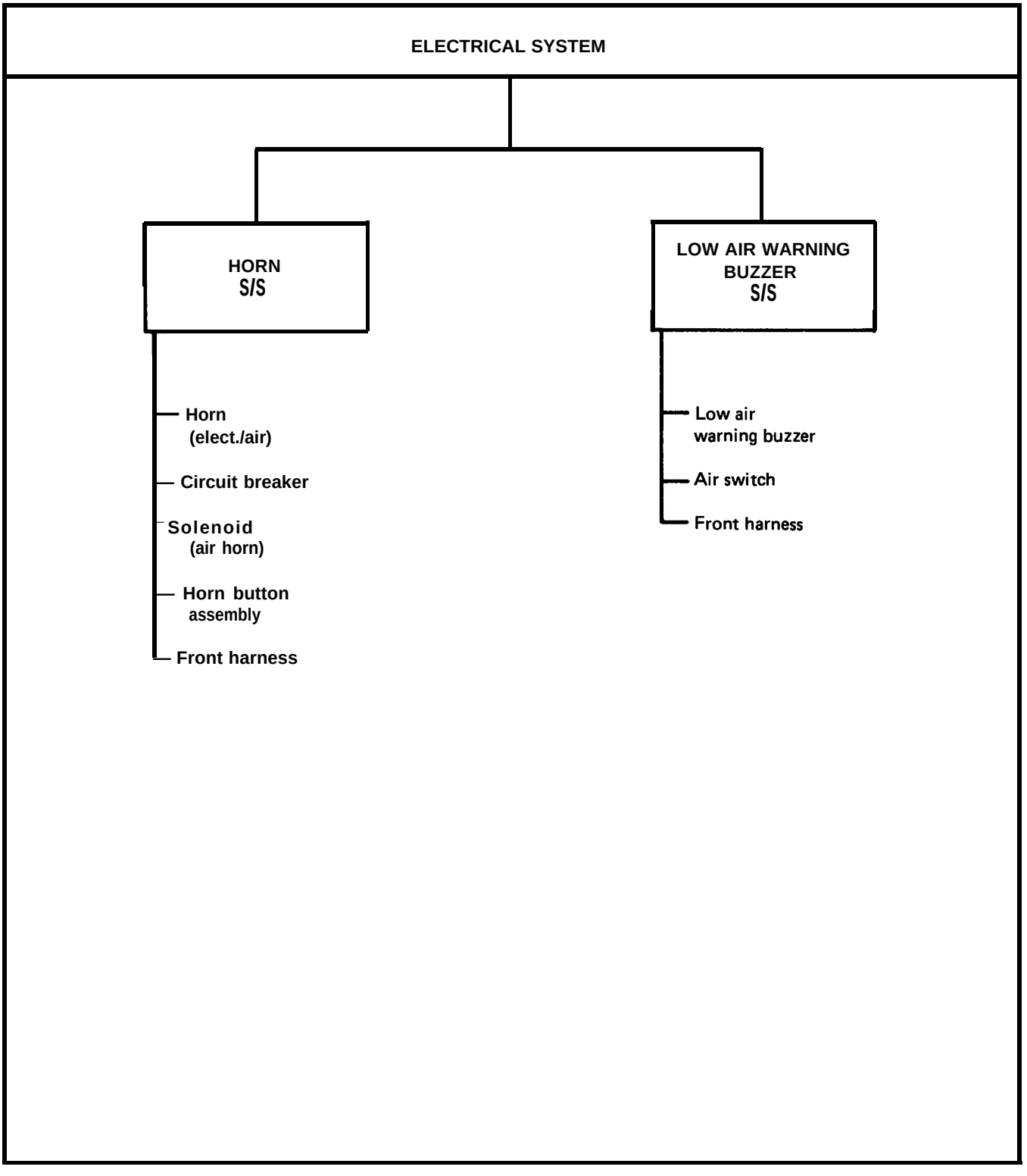


Figure 5-6. Troubleshooting Roadmap, Electrical System (Sheet 3 of 5)

TA 115218

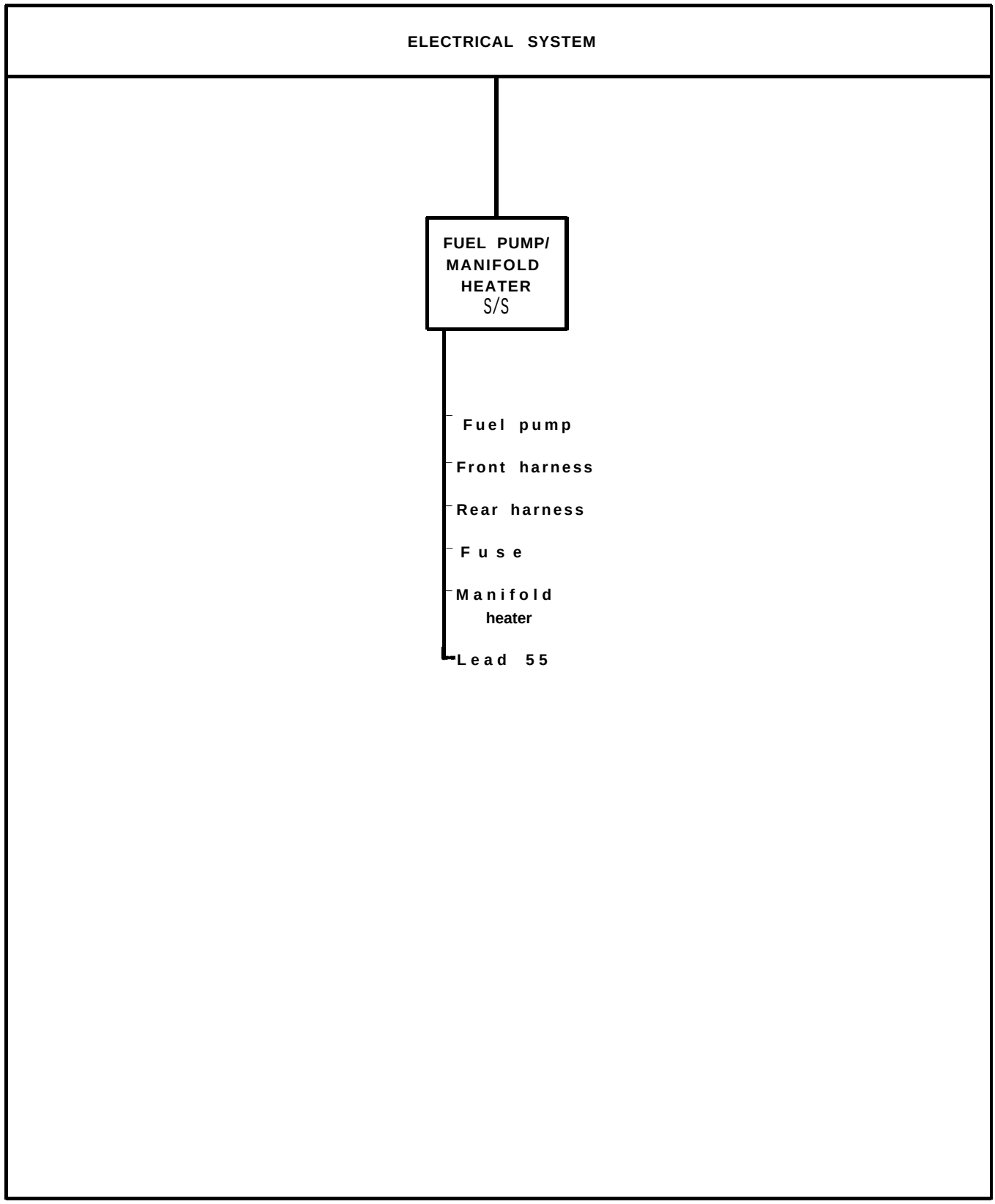


Figure 5-6. Troubleshooting Roadmap, Electrical System (Sheet 4 of 5)

TA 115219

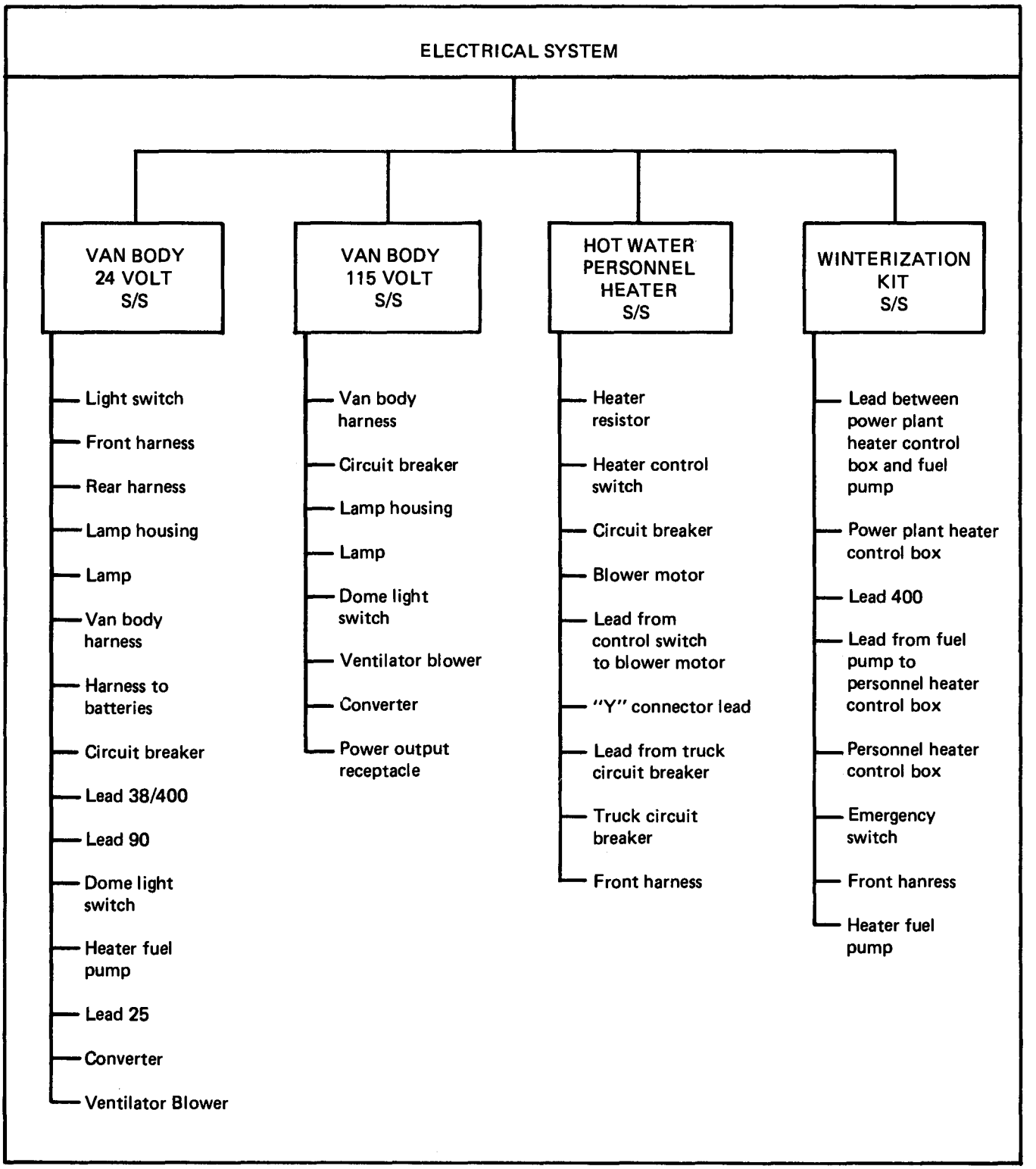


Figure 5-6. Troubleshooting Roadmap, Electrical System (Sheet 5 of 5)

TA 115220

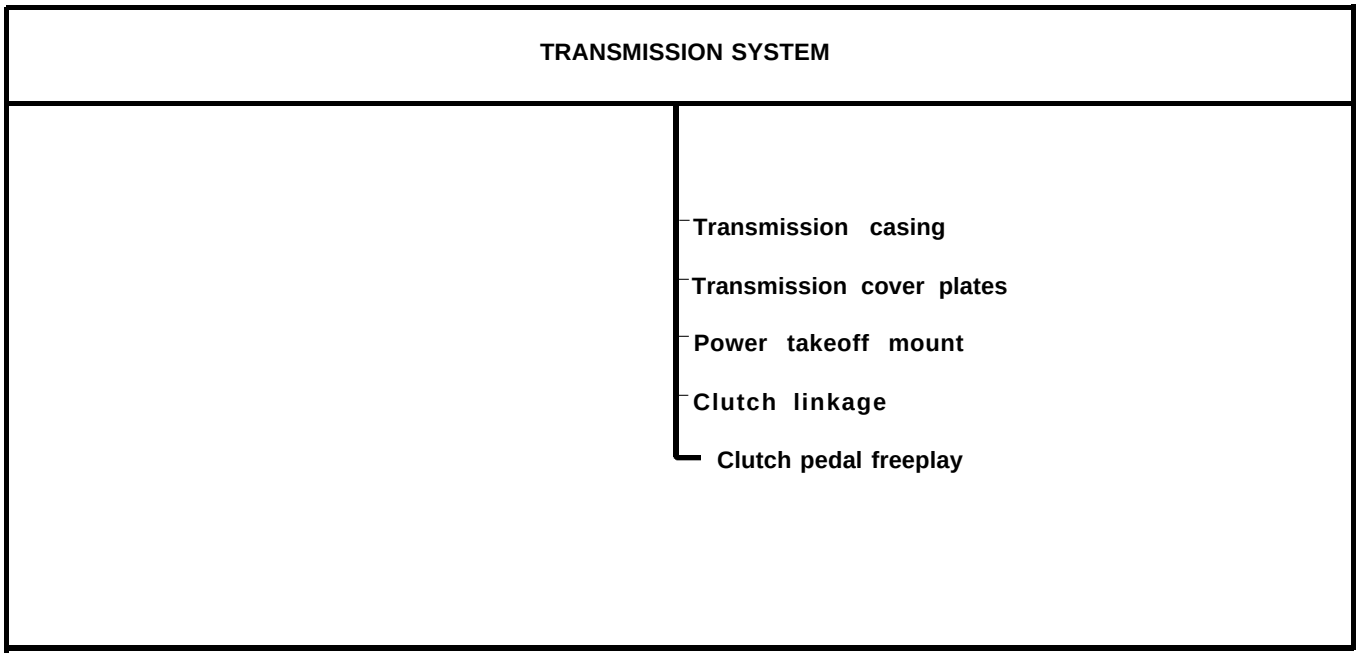


Figure 5-7. Troubleshooting Roadmap, Transmission System

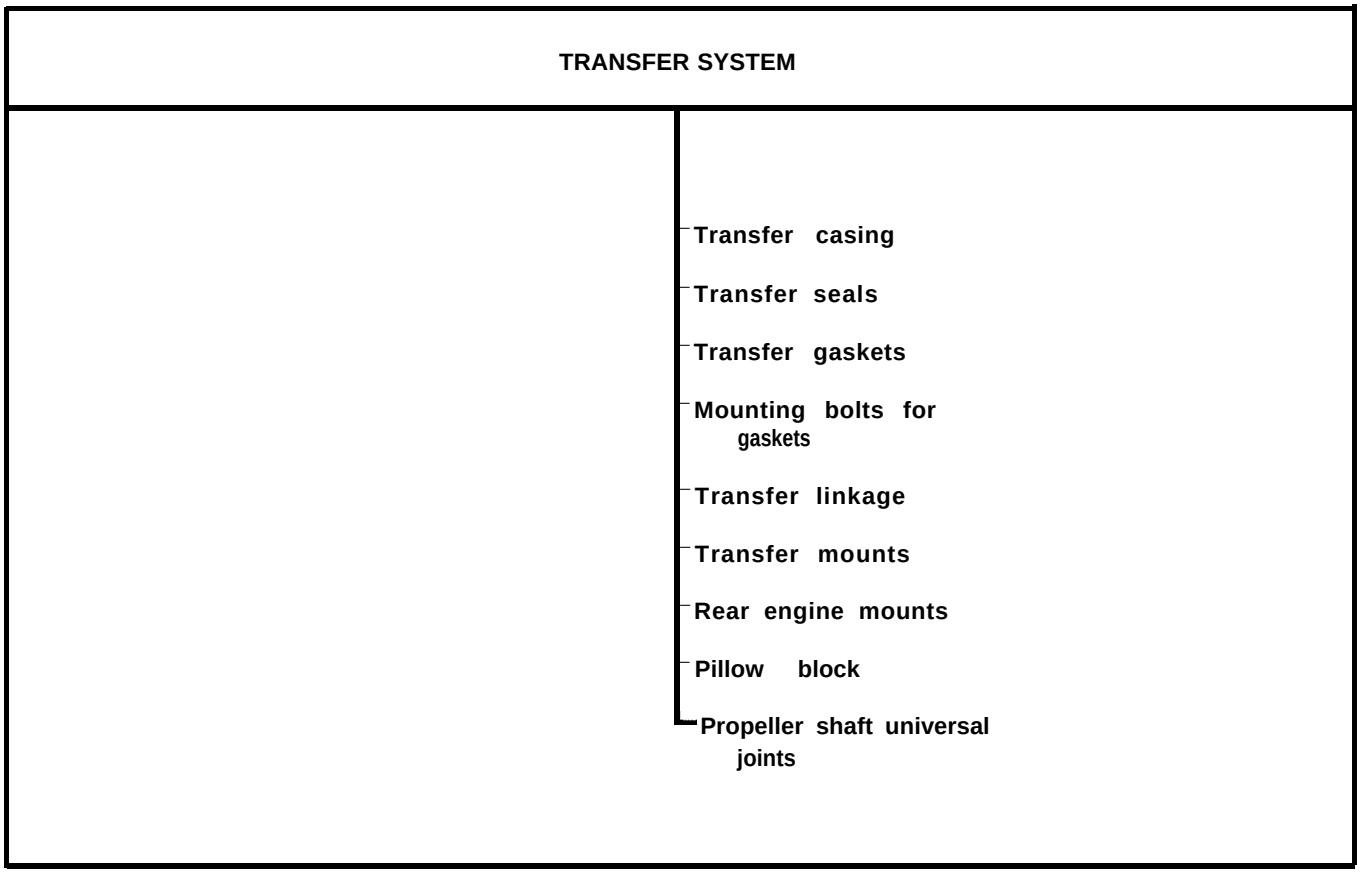


Figure 5-8. Troubleshooting Roadmap, Transfer System

TA 115221

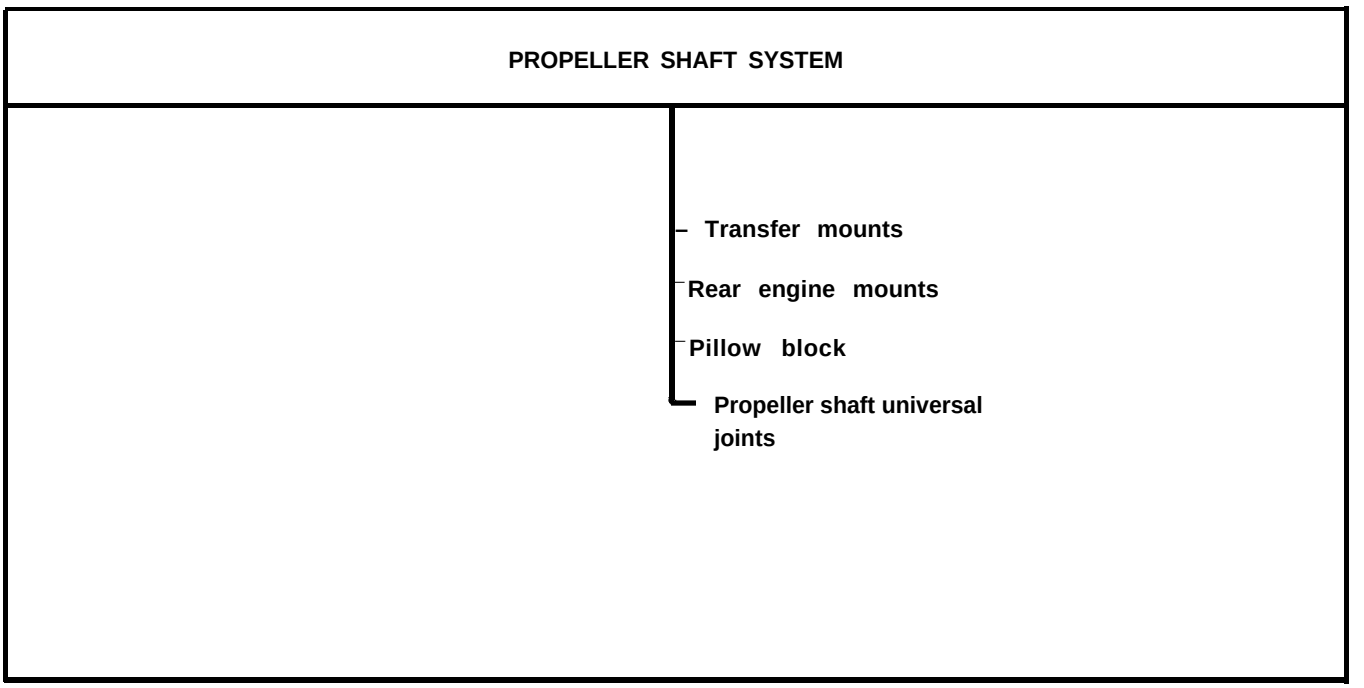


Figure 5-9. Troubleshooting Roadmap, Propeller Shaft System

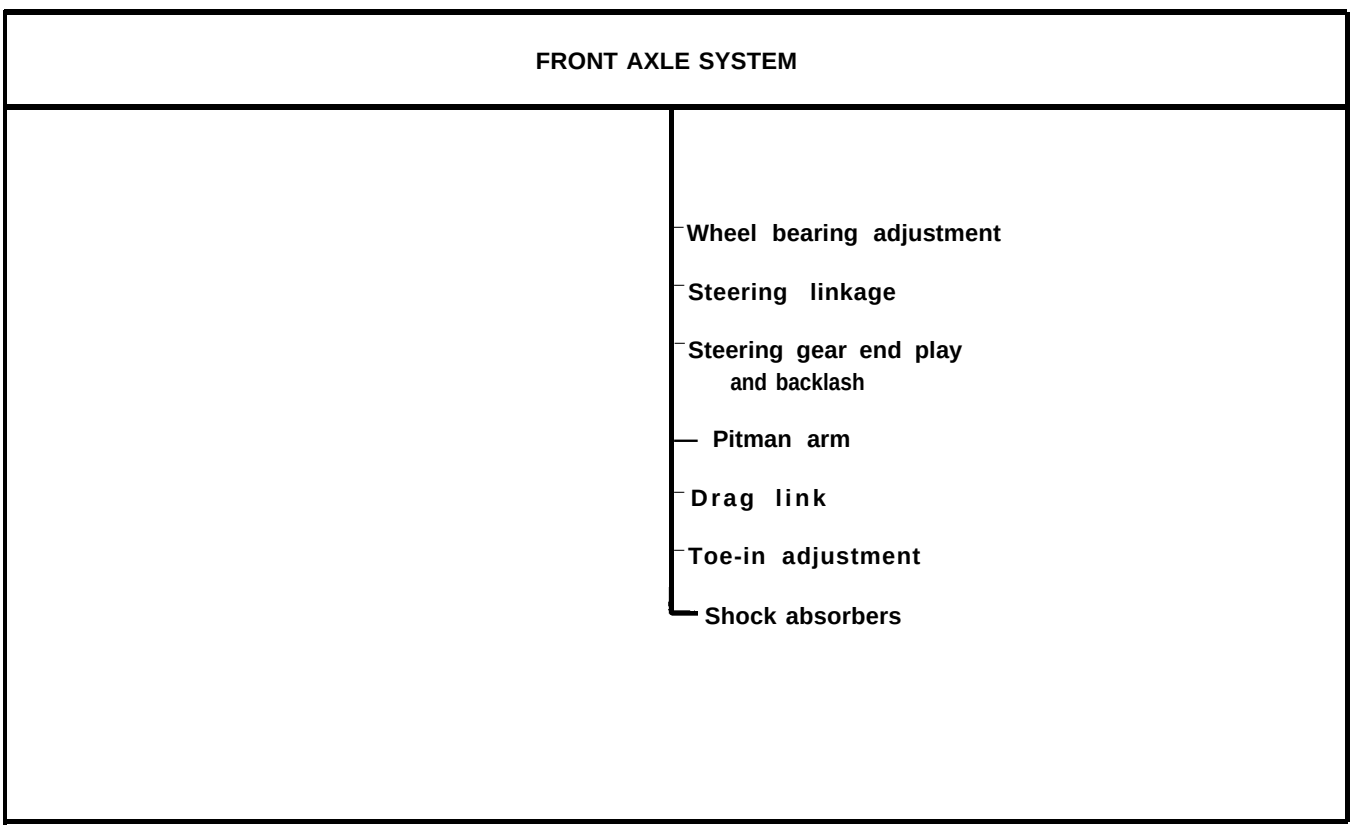


Figure 5-10. Troubleshooting Roadmap, Front Axle System

TA 115222

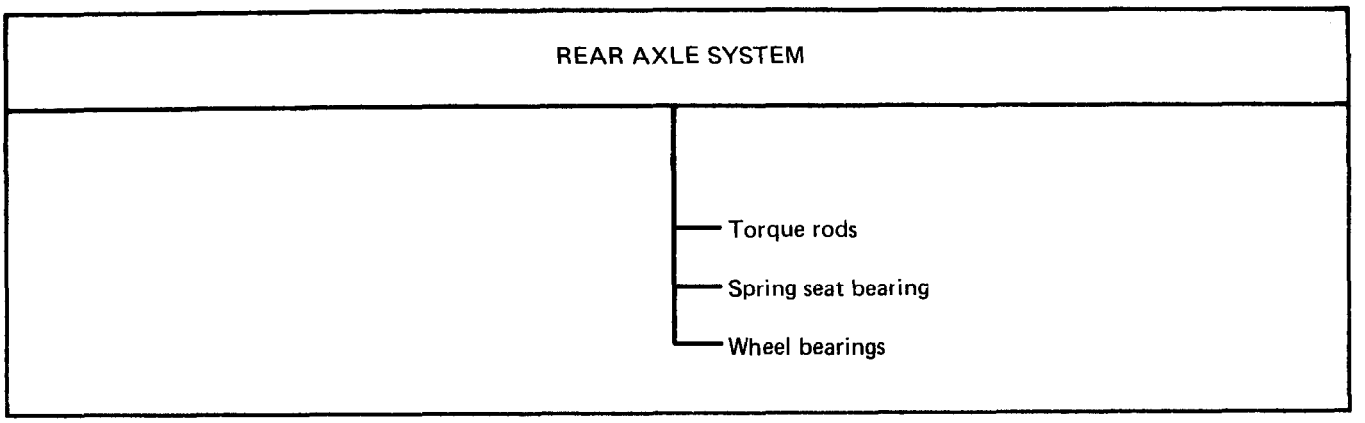


Figure 5-11. Troubleshooting Roadmap, Rear Axle System

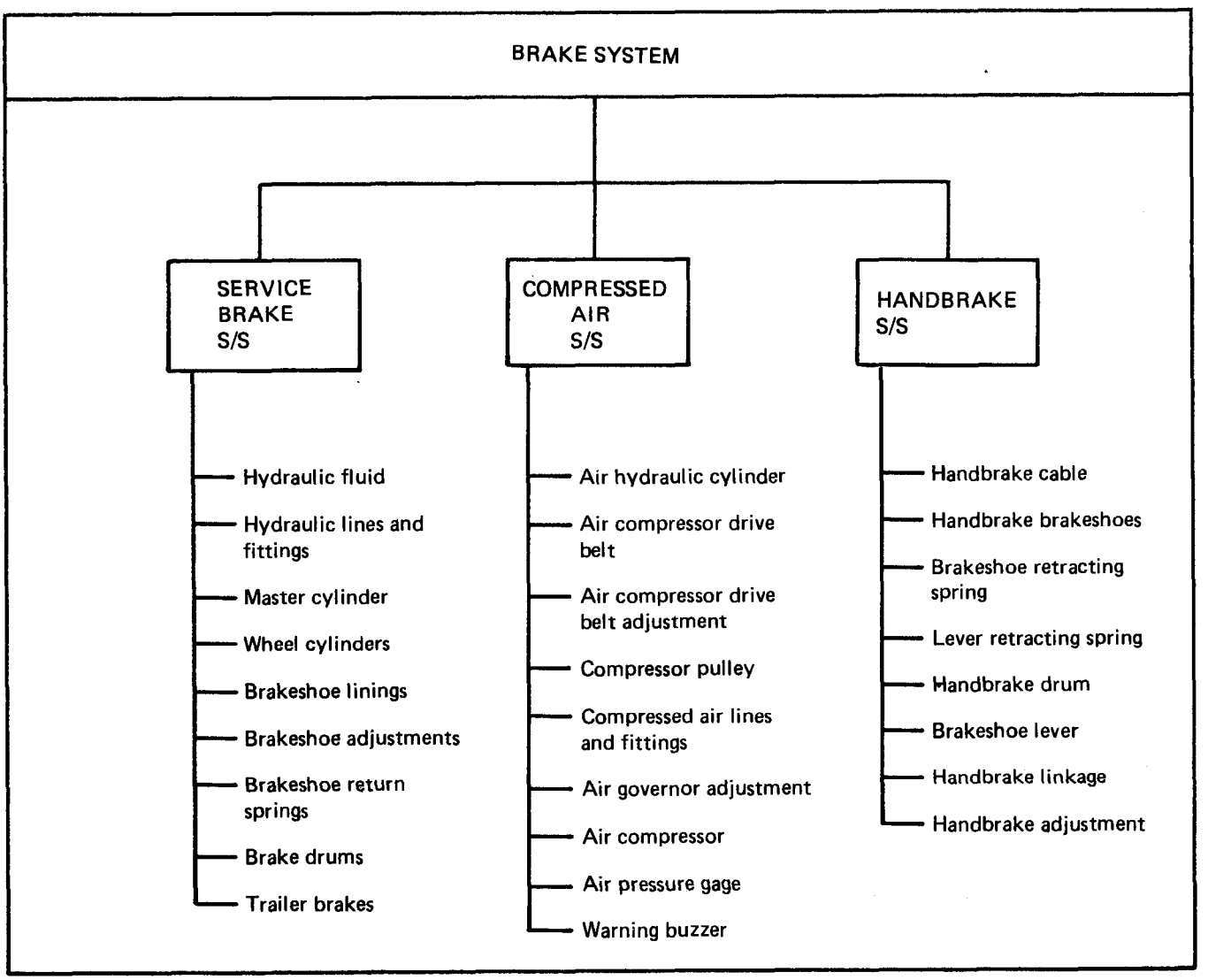


Figure 5-12. Troubleshooting Roadmap, Brake System

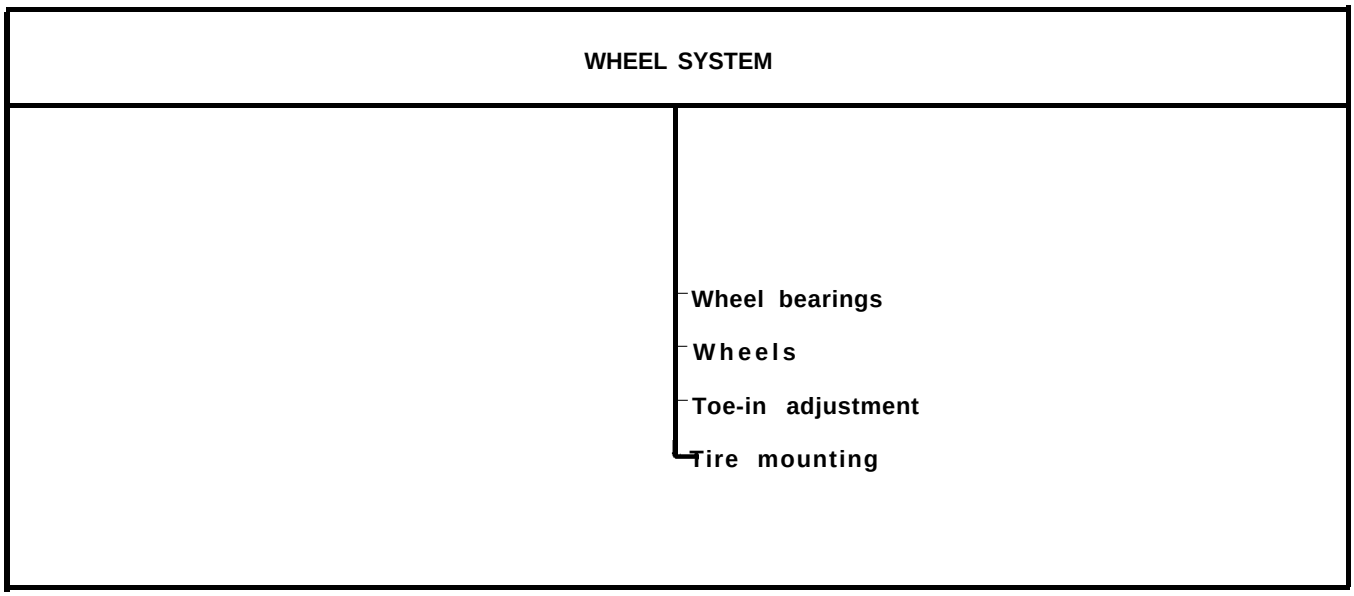


Figure 5-13. Troubleshooting Roadmap, Wheel System

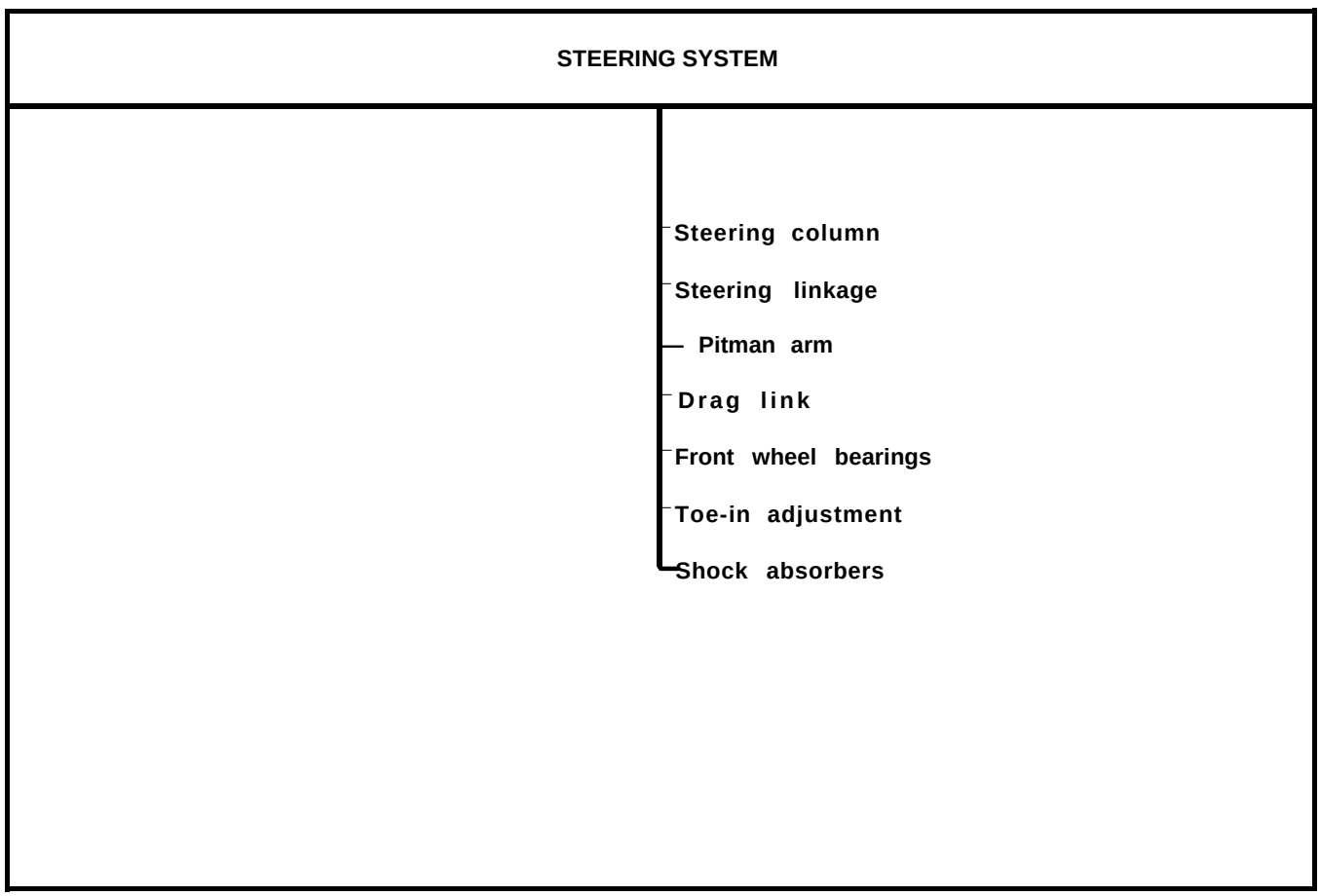


Figure 5-14. Troubleshooting Roadmap, Steering System

TA 115224

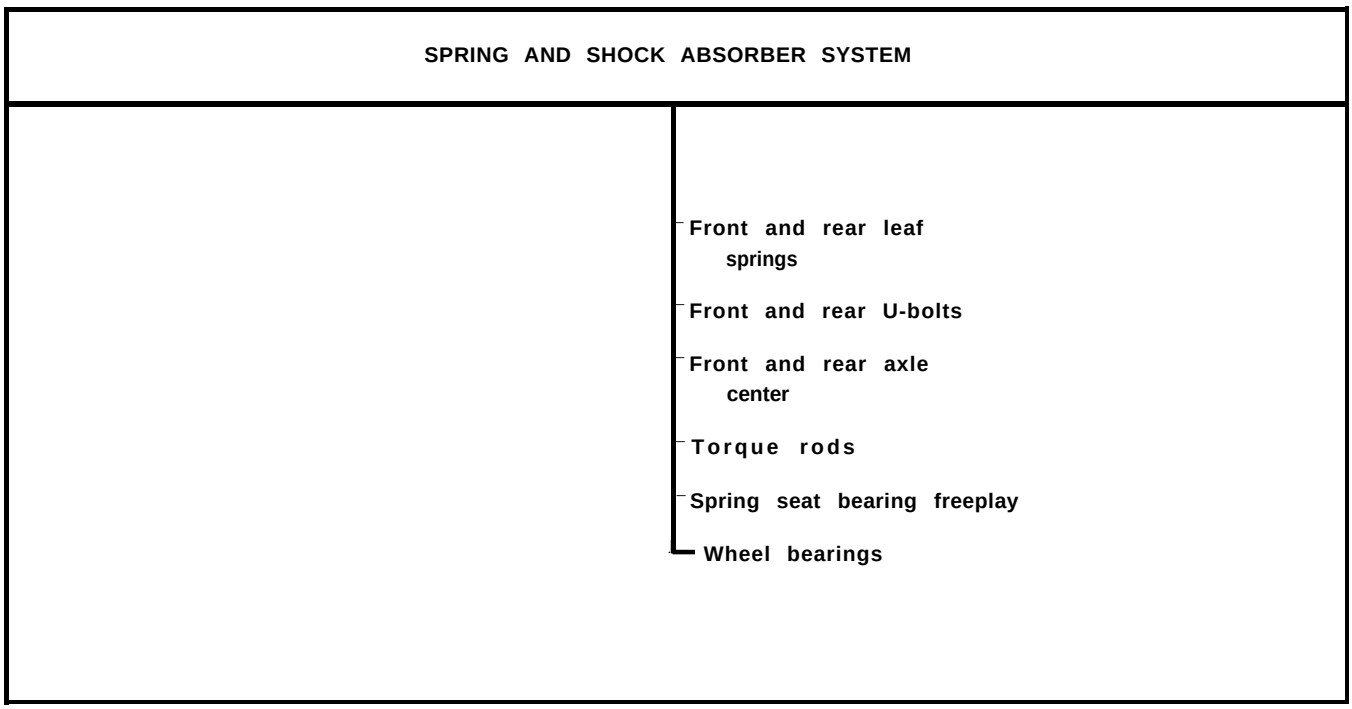


Figure 5-15. Troubleshooting Roadmap, Spring and Shock Absorber System

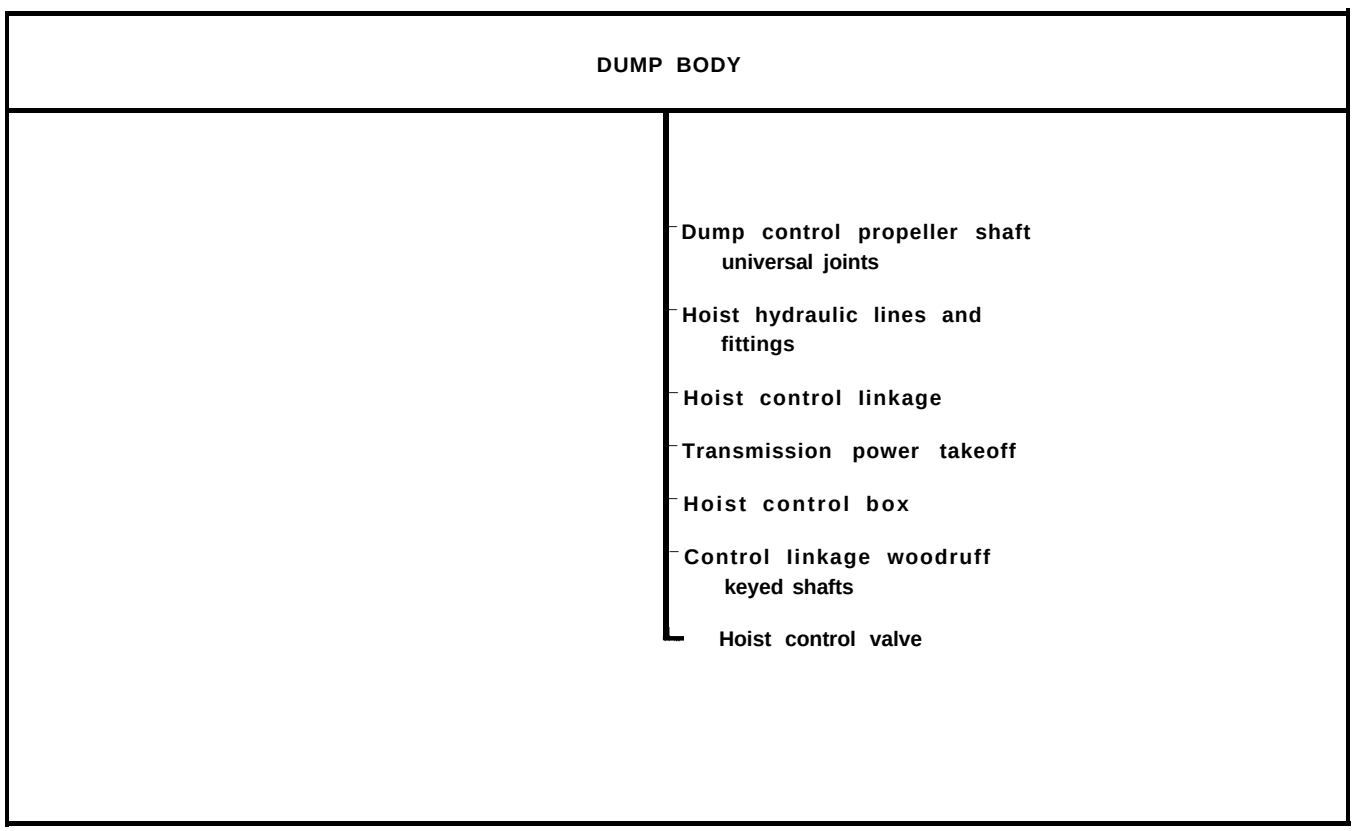


Figure 5-16. Troubleshooting Roadmap, Dump Body

TA 115225

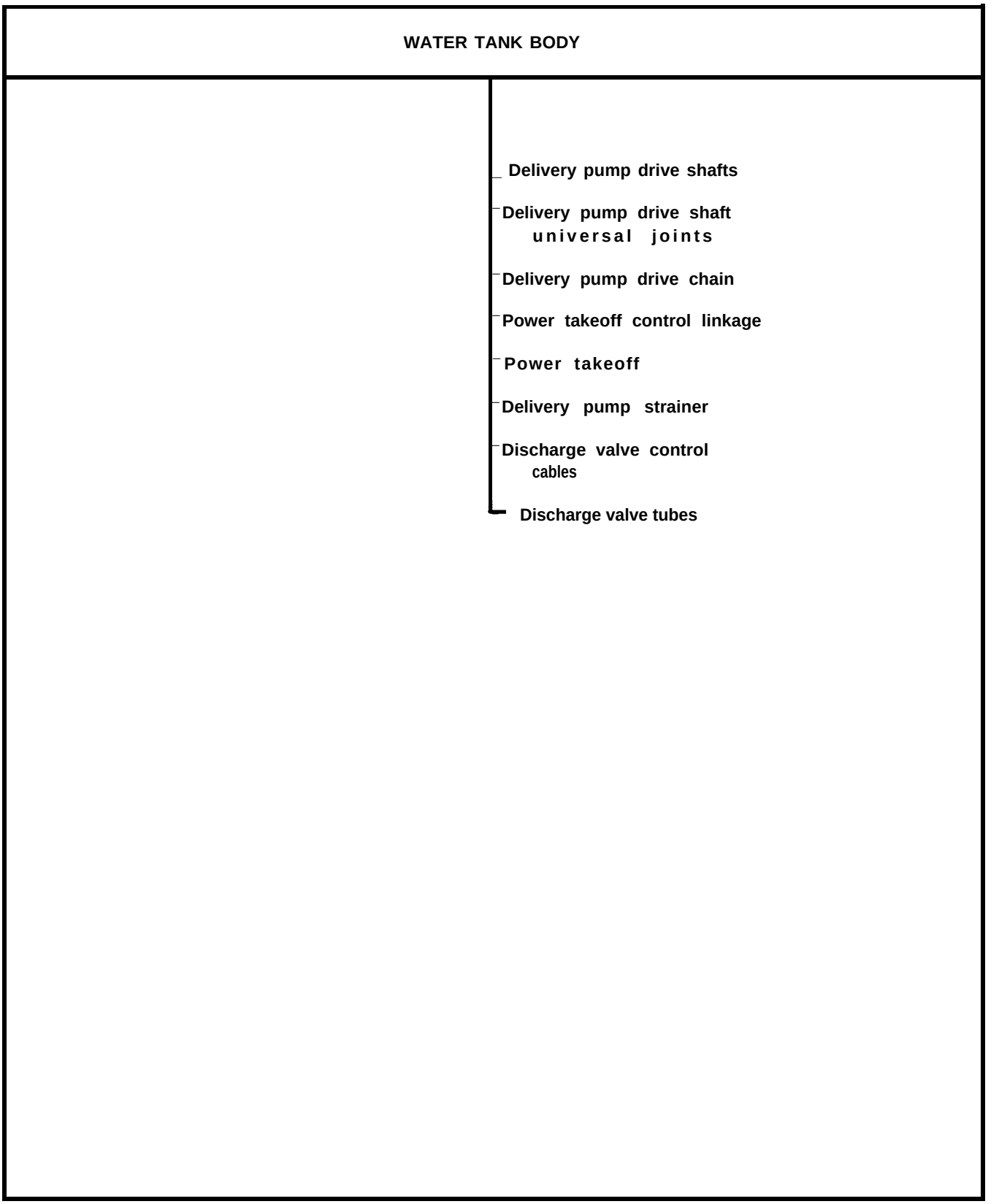


Figure 5-17. Troubleshooting Roadmap, Water Tank Body

TA 115226

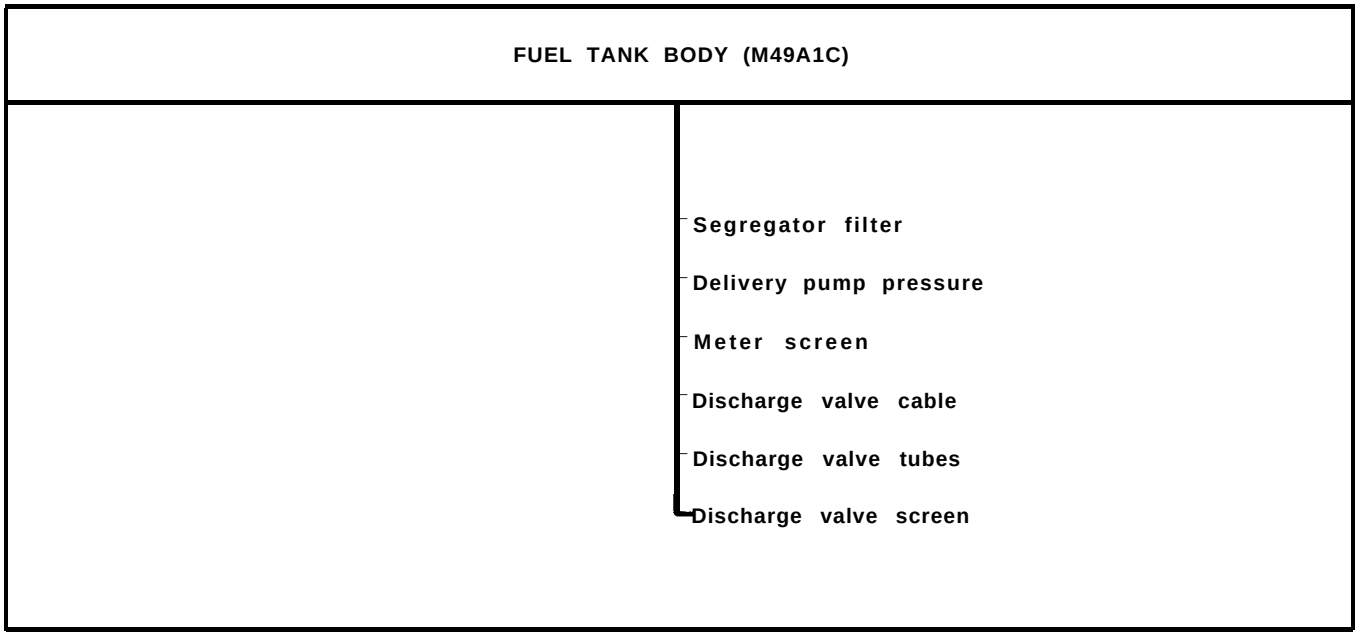


Figure 5-18. Troubleshooting Roadmap, Fuel Tank Body (M49A1C)

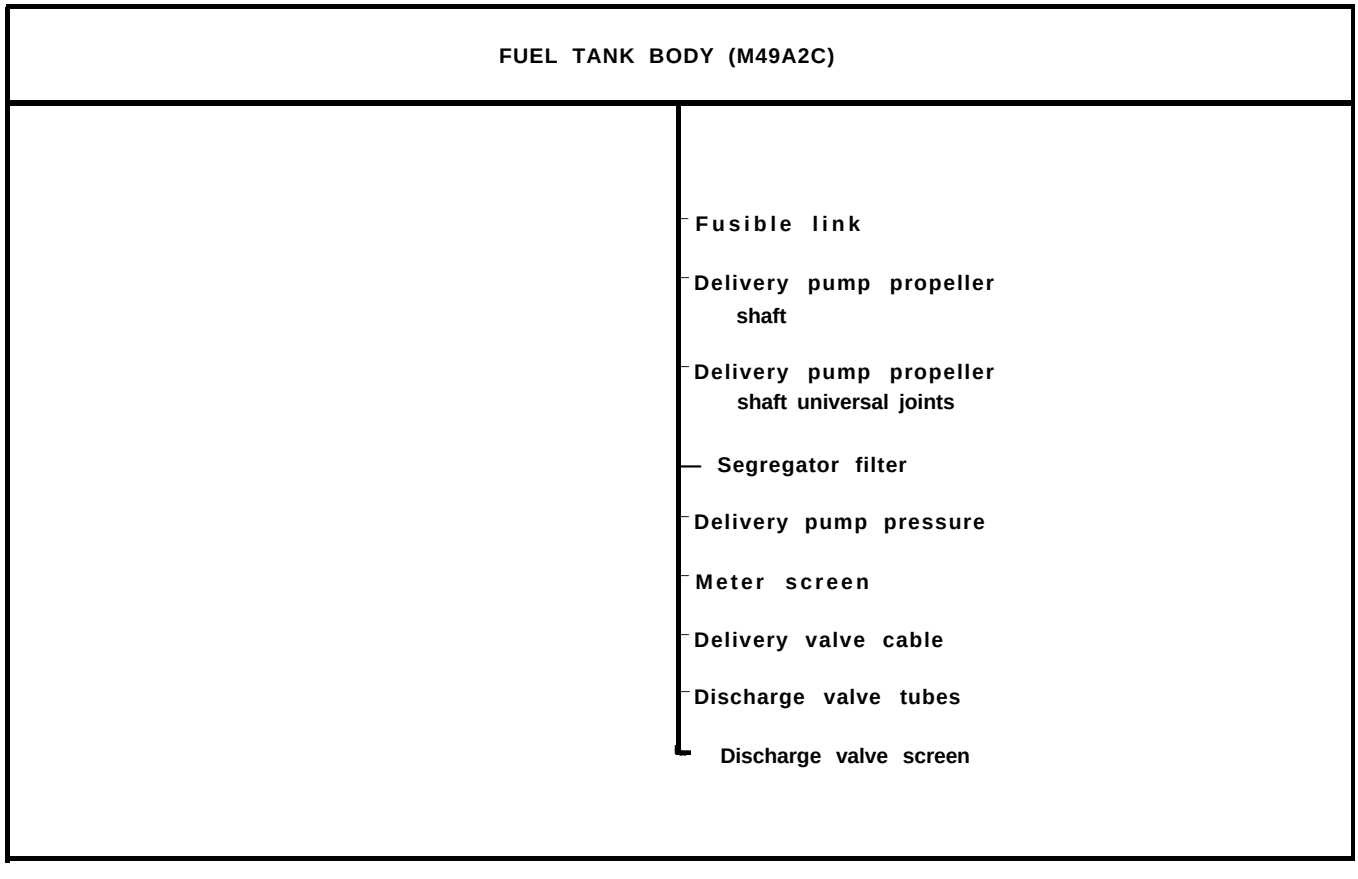


Figure 5-19. Troubleshooting Roadmap, Fuel Tank Body (M49A2C)

TA 115227

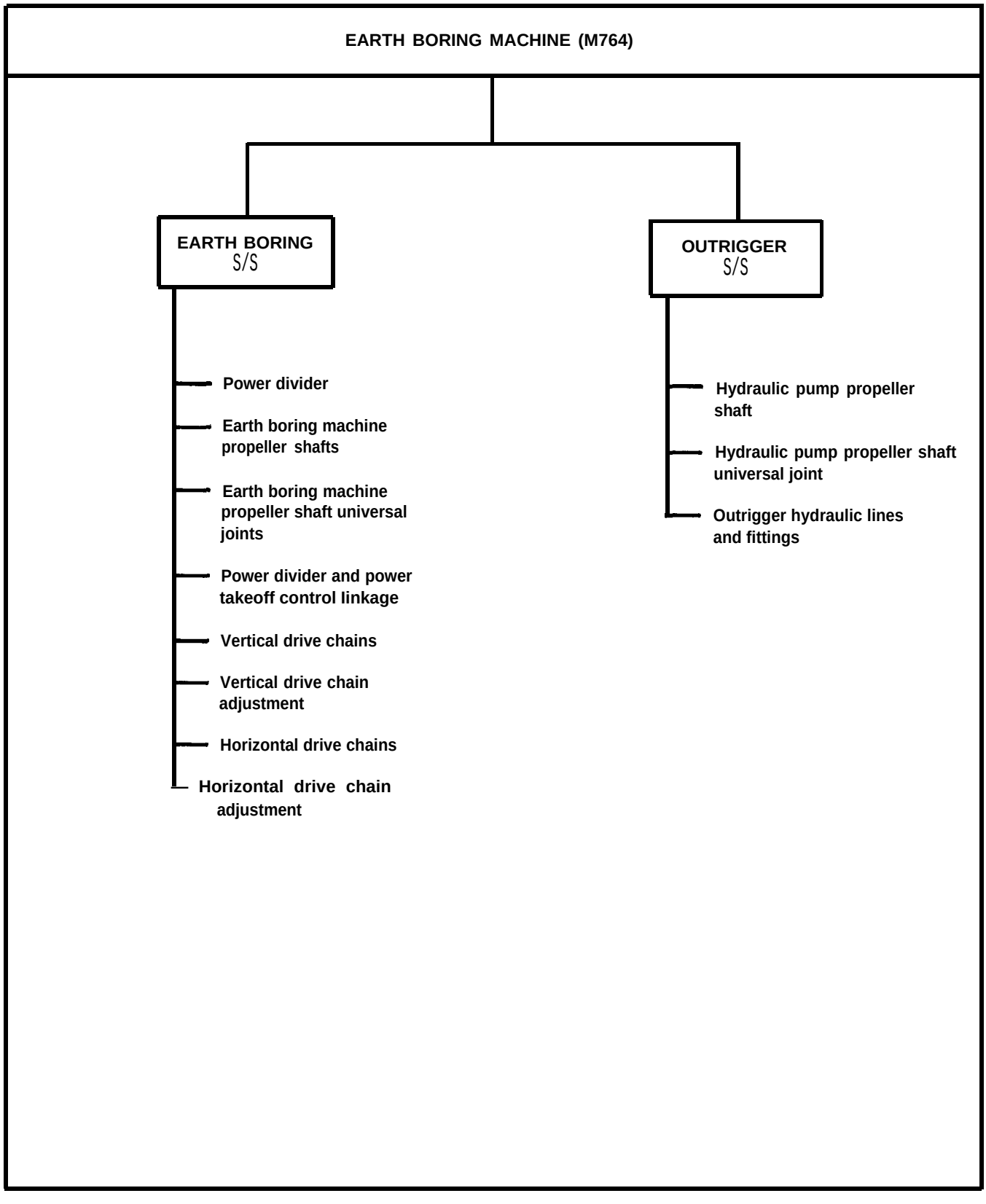


Figure 5-20. Troubleshooting Roadmap, Earth Boring Machine (M764)

TA 115228

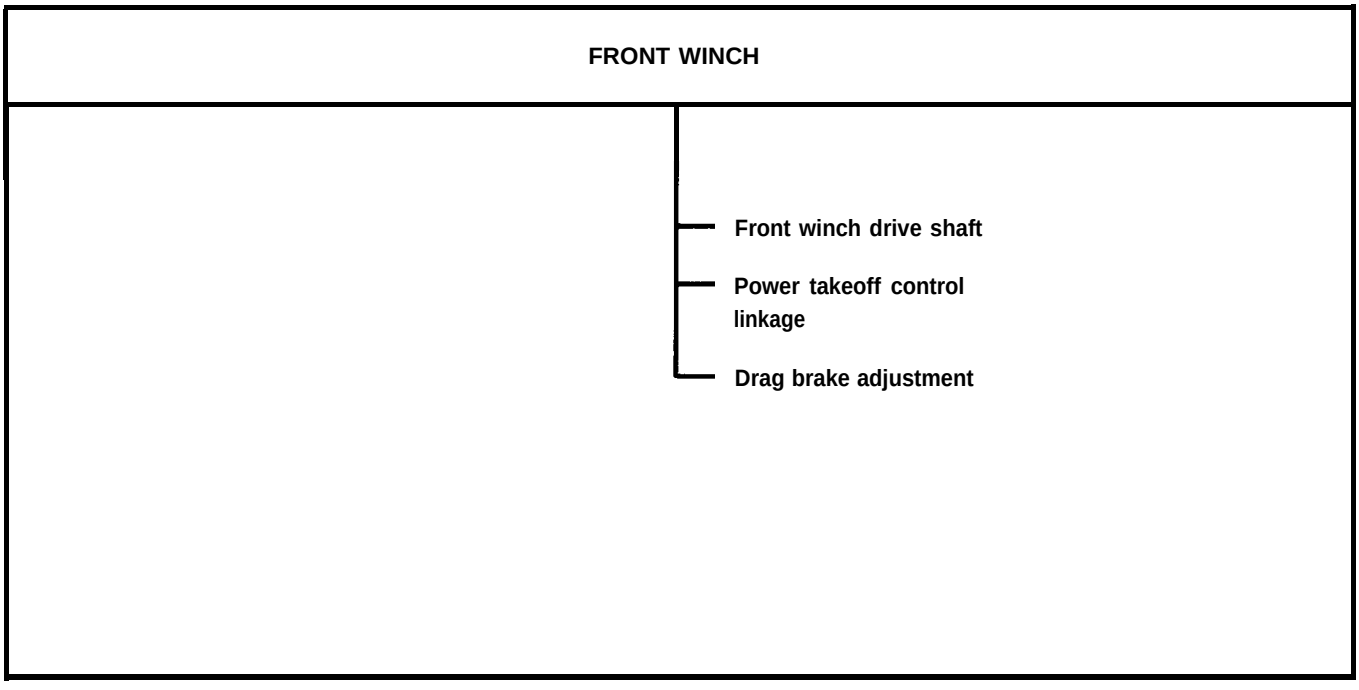


Figure 5-21. Troubleshooting Roadmap, Front Winch

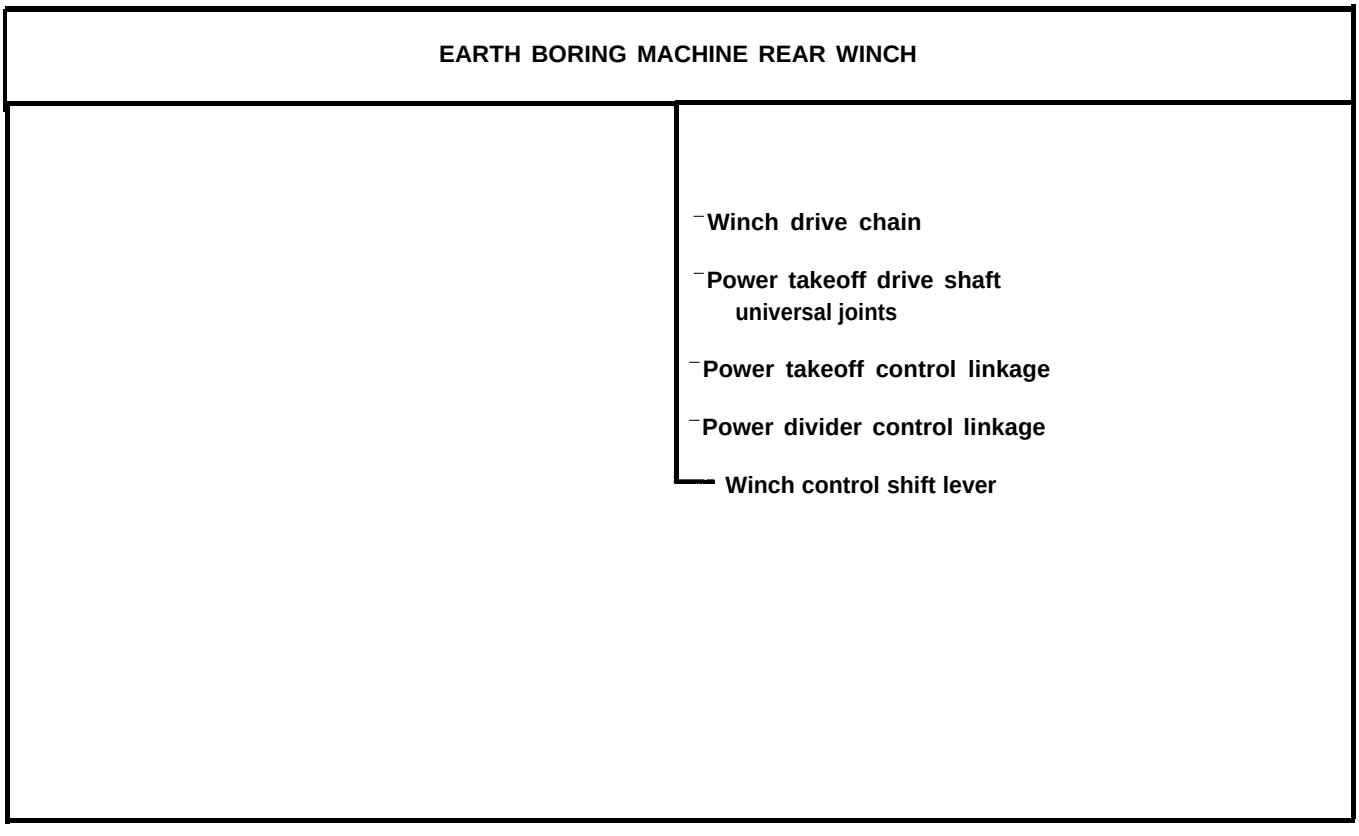


Figure 5-22. Troubleshooting Roadmap, Earth Boring Machine Rear Winch

TA 115229

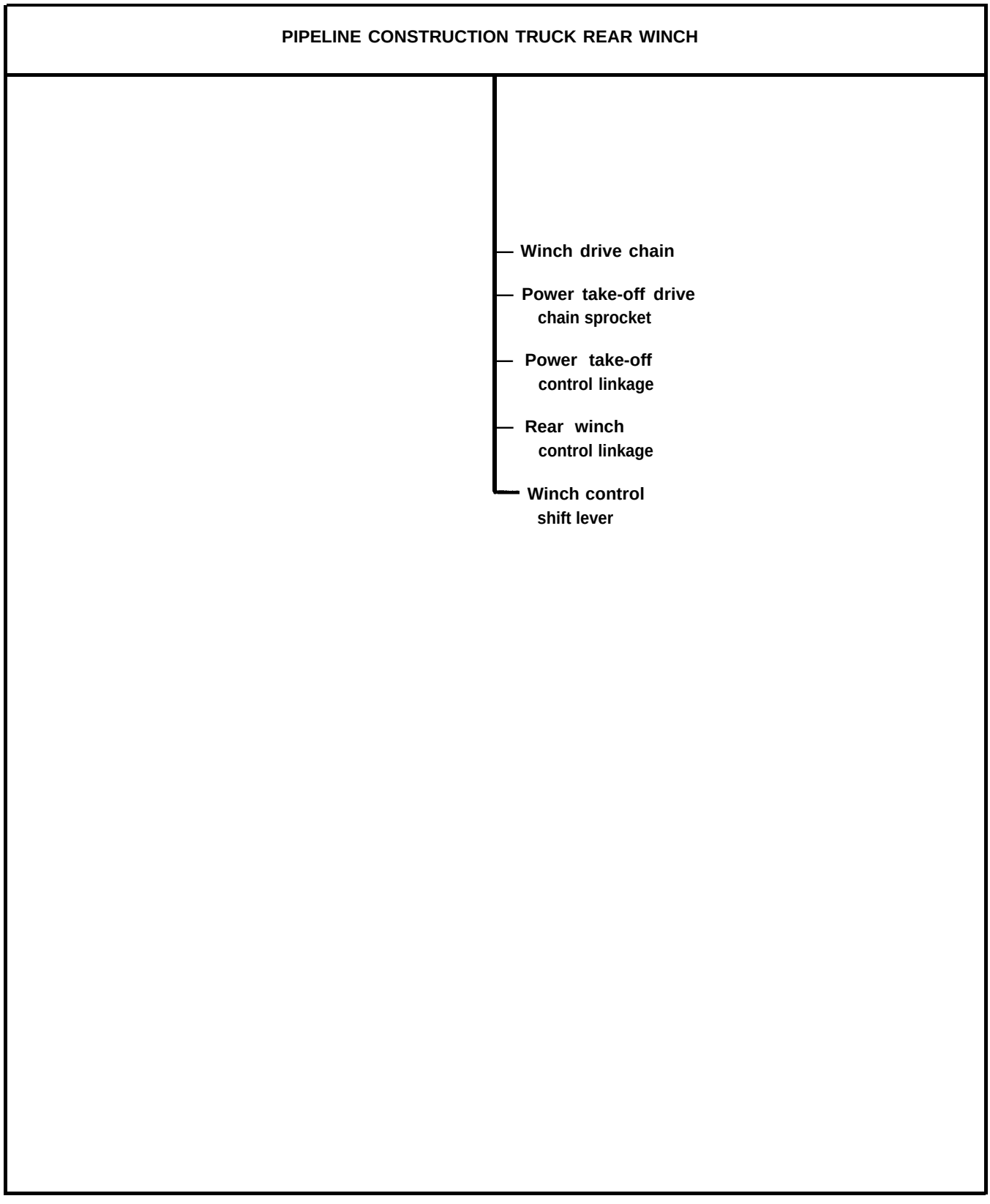


Figure 5-23. Troubleshooting Roadmap, Pipeline Construction Truck, Rear Winch

TA 115230

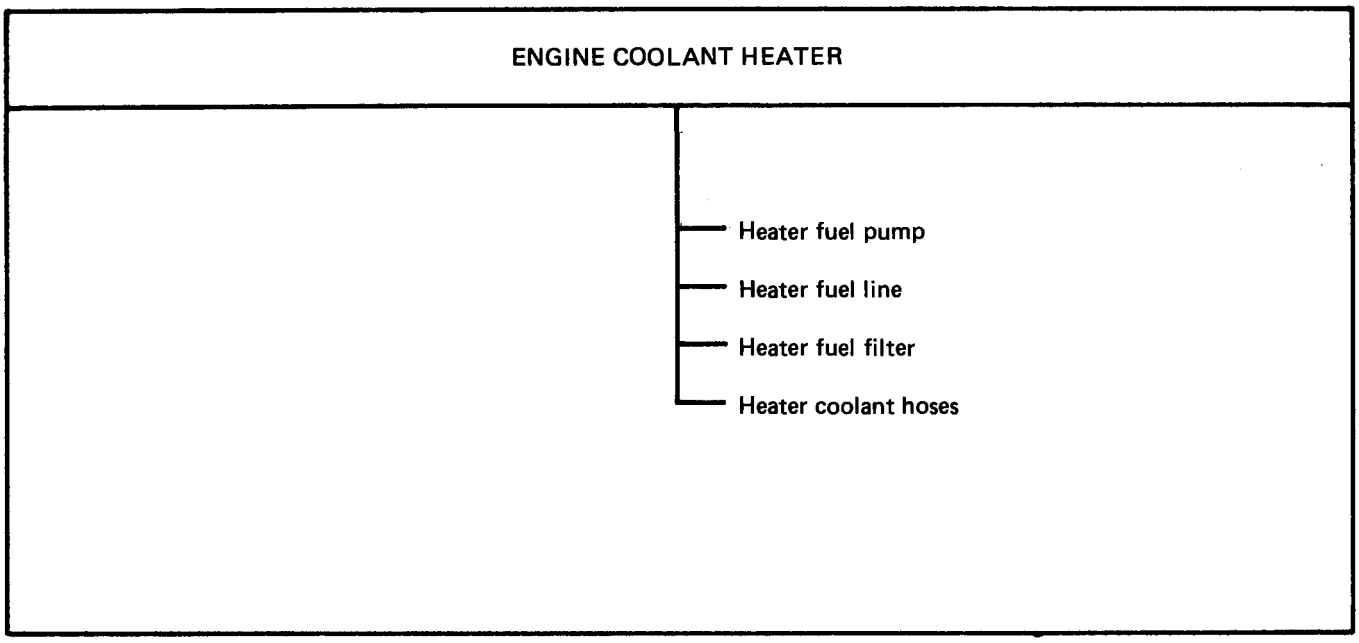


Figure 5-24. Troubleshooting Roadmap, Engine Coolant Heater

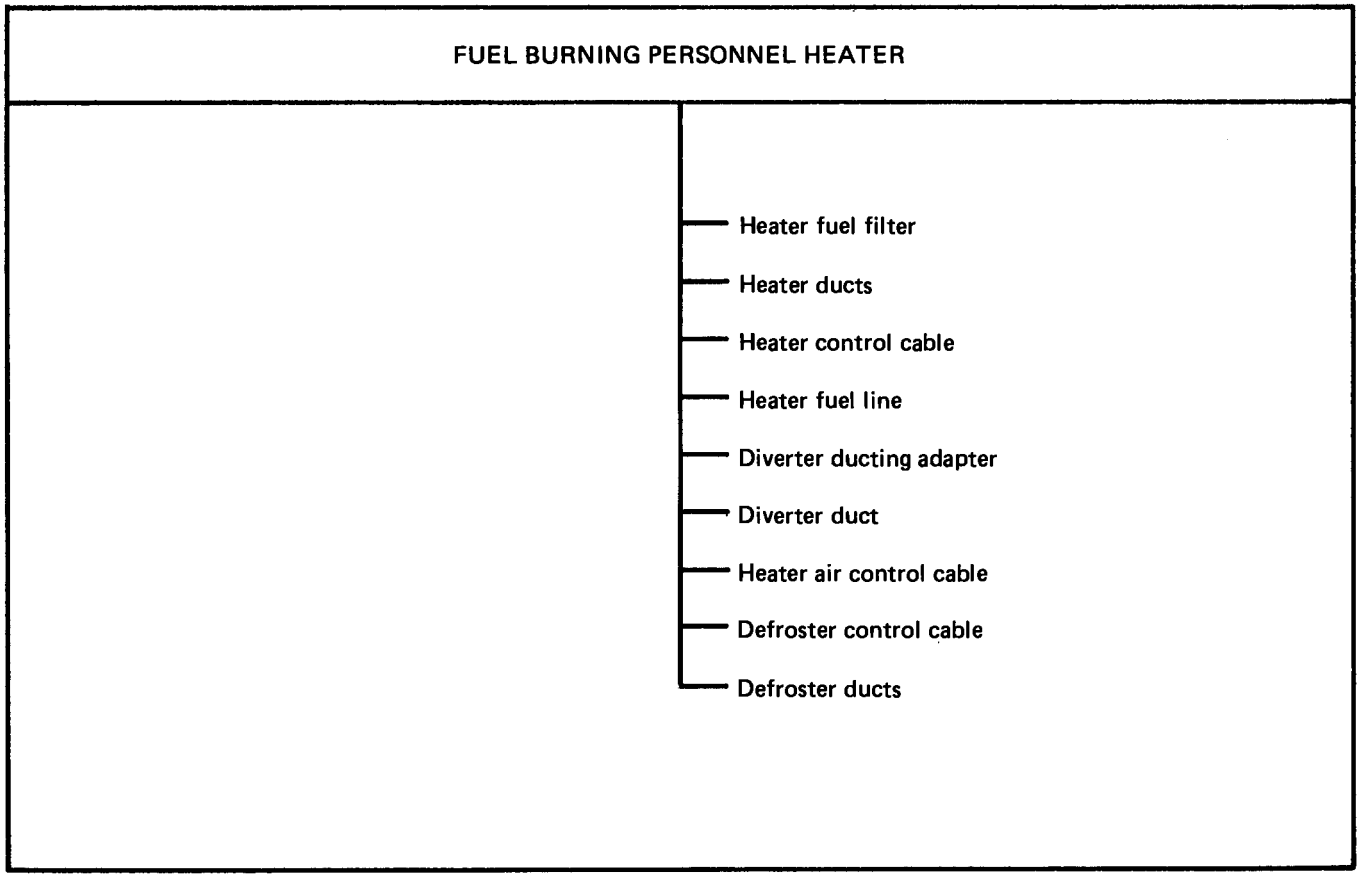


Figure 5-25. Troubleshooting Roadmap, Fuel Burning Personnel Heater

TA 115231

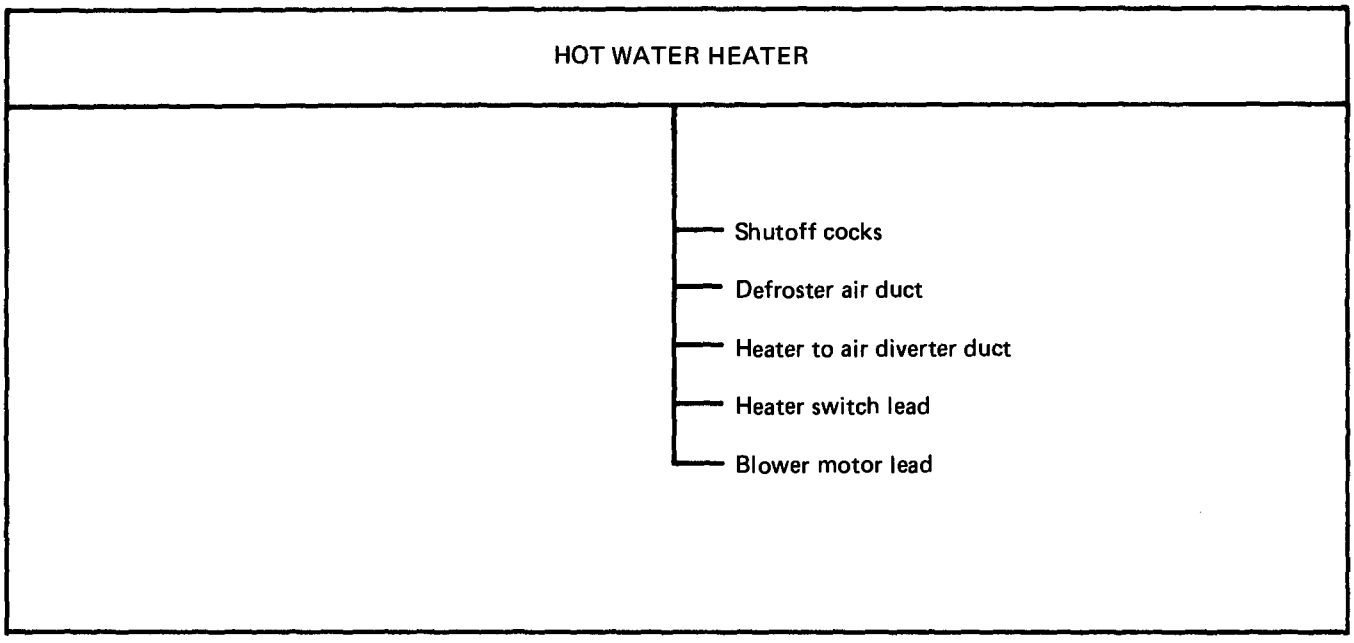


Figure 5-26. Troubleshooting Roadmap, Hot Water Heater

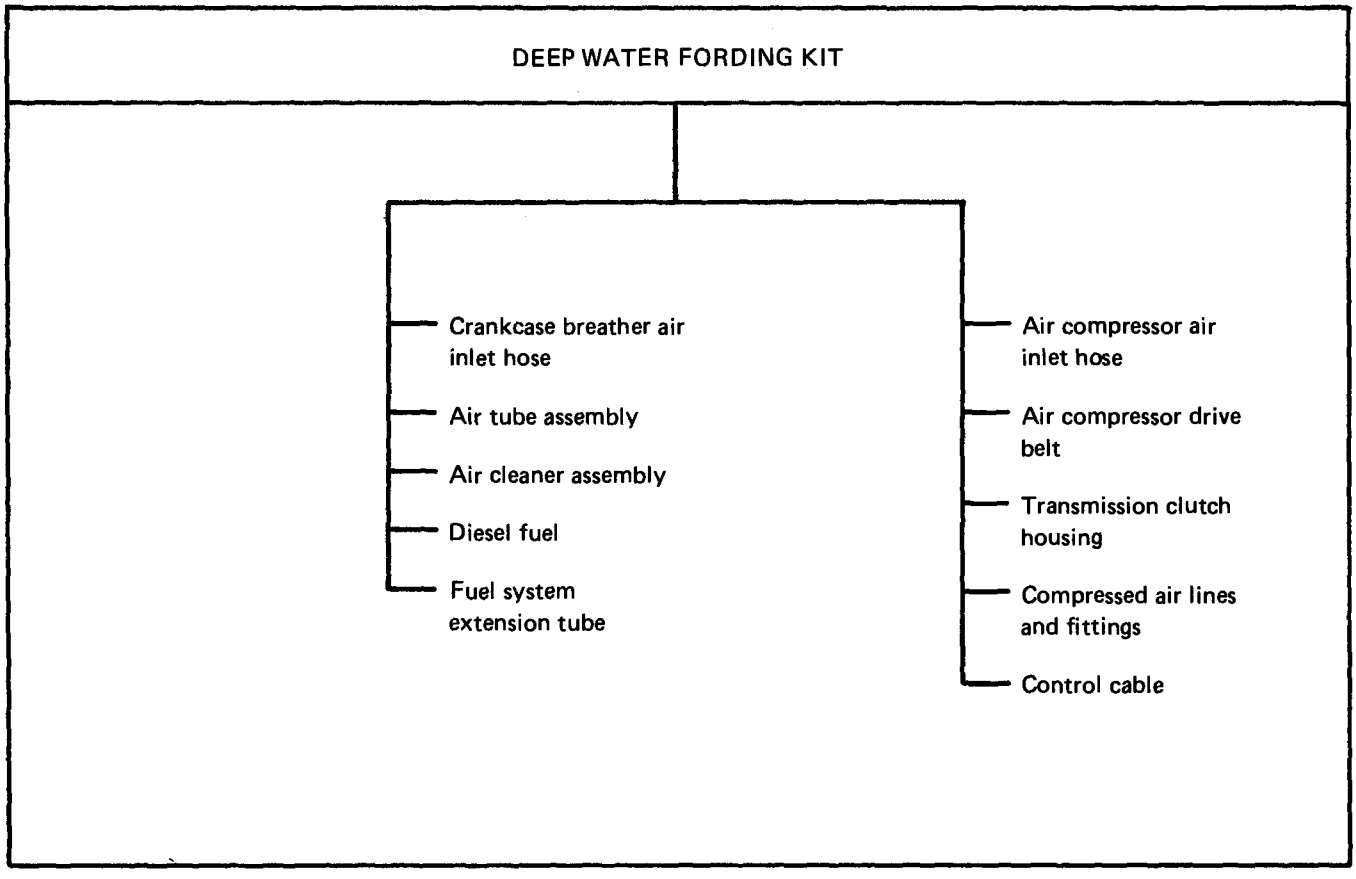


Figure 5-27. Troubleshooting Roadmap, Deep Water Fording Kit

TA 115232

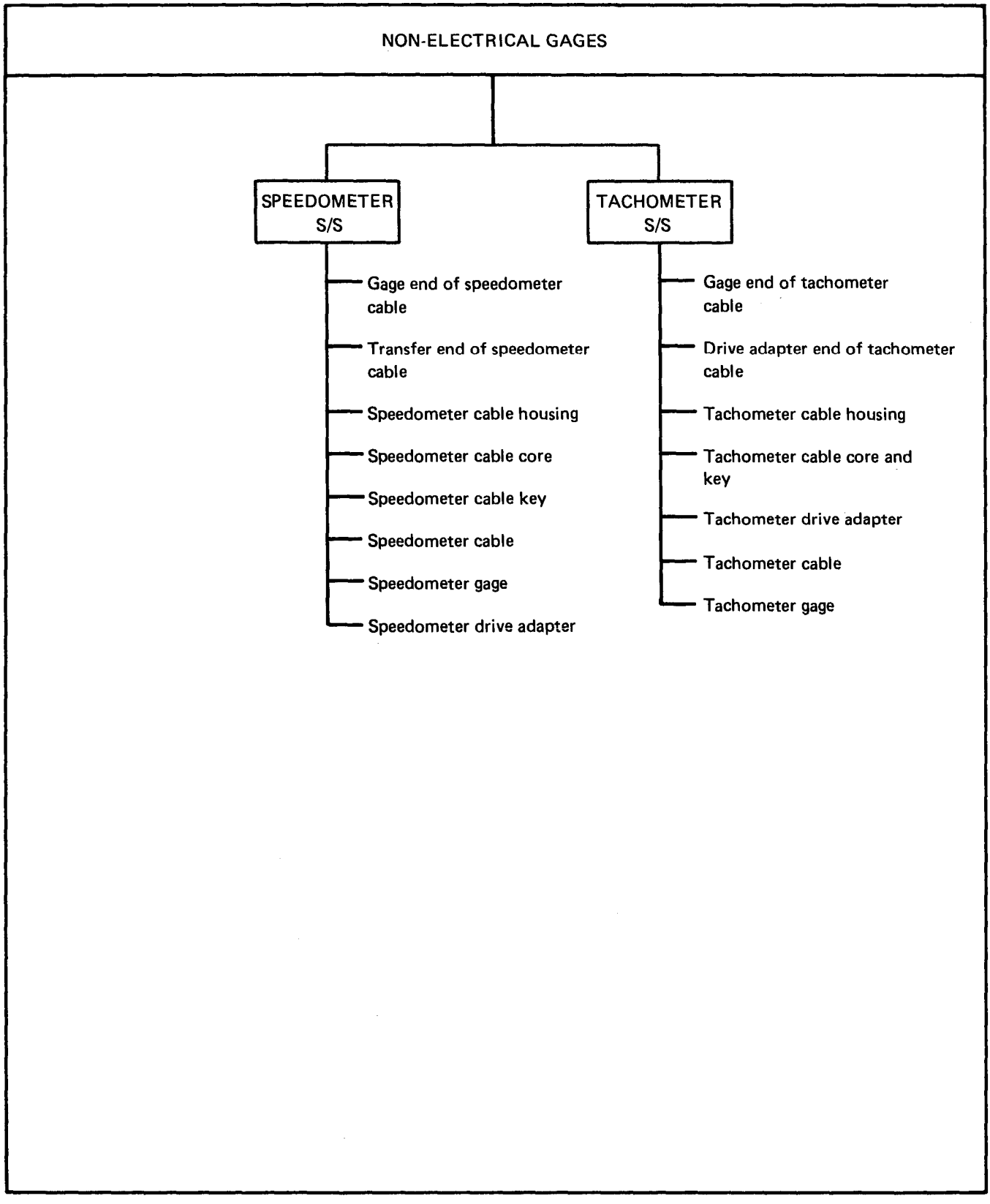


Figure 5-28. Troubleshooting Roadmap, Non-Electrical Gages

TA 115233

CHAPTER 6

FAULT SYMPTOM INDEXES

6-1. GENERAL. This chapter gives troubleshooting fault symptom indexes for every system of the truck for which you have detailed troubleshooting procedures. These indexes are in table form (tables 6-1 through 6-28) which gives you a quick way to check what material you have to use to do your troubleshooting.

6-2. INDEXES. Each index is divided into columns which give you information you need to help you do troubleshooting procedures. The following breakdown tells you what is in each column.

a. Subsystem Column. If the main system is divided into subsystems, the subsystems will be listed in this column.

b. Symptom Column. This column lists the symptoms, or problems for which detailed troubleshooting procedures are given.

c. Summary Column. This column tells you where to find the summary troubleshooting procedures for each symptom.

d. .Detailed Column. This column tells you where to find the detailed troubleshooting procedure for each symptom.

e. Persons Column. This column tells you how many people are needed to do the troubleshooting procedure.

f. Special Tools Column. Any tools needed to do the troubleshooting procedure which are not included in your common tool kit are listed in this column.

g. Standard Tools Column. A dot in this column means that tools found in your common tool kit are needed to do the troubleshooting procedure.

h. Materials Column. This column tells you what materials are needed to do the troubleshooting procedure. These materials and how they will be issued will be decided by your maintenance officer.

i. Time Column. This column tells you how much time you will need to do the detailed troubleshooting procedure. The time will be decided by your maintenance officer.

TABLE 6-1. ENGINE SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
LUBRICATION	1. Low oil pressure	Figure 9-1	Figure 8-1	1	—			
	2. Engine uses more oil than normal	Figure 9-1	Figure 8-2	1	—			
DRIVELINE MOUNTING	3. Clunking noise heard during acceleration on all trucks except M36A2 and M342A2	Figure 9-2	Figure 10-1	1	—	•		
	4. Clunking noise heard during acceleration on trucks M36A2 and M342A2	Figure 9-2	Figure 10-2	1	—	•		

TABLE 6-2. CLUTCH SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Truck creeps when clutch pedal is pressed	Figure 12-1	Figure 11-1	1	—	•		
—	2. Clutch drags, slips, or does not engage	Figure 12-1	Figure 11-2	1	—	•		

TA 115235

TABLE 6-3. FUEL SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT		MATERIALS	TIME
					SPECIAL TOOLS	STANDARD TOOLS		
—	1. Engine cranks but does not start	Figure 14-1	Figure 13-1	1	—	•		
—	2. Engine lacks power	Figure 14-2	Figure 13-2	1	—	•		
—	3. Engine runs rough	Figure 14-2	Figure 13-3	1	—	•		
—	4. Poor fuel mileage	Figure 14-2	Figure 13-4	1	—			
—	5. Engine does not slow down when accelerator pedal is let go	Figure 14-3	Figure 13-5	1	—			
—	6. Engine runs after being shut off	Figure 14-3	Figure 13-6	1	—			
—	7. Engine stalls	Figure 14-2	Figure 13-7	1	—			
—	8. Hard starting	Figure 14-1	Figure 13-8		—			

TA 115236

TABLE 6-4. EXHAUST SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Exhaust system makes noise from horizontal exhaust system with muffler	Figure 18-1	Figure 17-1	1	—			
—	2. Exhaust fumes enter cab from horizontal exhaust system with muffler	Figure 18-1	Figure 17-2	1	—			
—	3. Exhaust system makes noise from horizontal exhaust system without muffler	Figure 18-2	Figure 17-3	1	—			
—	4. Exhaust fumes enter cab from horizontal exhaust system without muffler	Figure 18-2	Figure 17-4	1	—			
—	5. Exhaust system makes noise from vertical exhaust system with muffler	Figure 18-3	Figure 17-5	1	—			
—	6. Exhaust fumes enter cab from vertical exhaust system, with muffler	Figure 18-3	Figure 17-6	1	—			

TA 115237

TABLE 6-4. EXHAUST SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT		MATERIALS	TIME
					SPECIAL TOOLS	STANDARD TOOLS		
—	7. Exhaust system makes noise from vertical exhaust system, without muffler	Figure 18-4	Figure 17-7	1	—			
—	8. Exhaust fumes enter cab from vertical exhaust system, without muffler	Figure 18-4	Figure 17-8	1	—			
—	9. Exhaust system makes noise on trucks M50A1, M50A2, and M50A3	Figure 18-5	Figure 17-9	1	—			

TA 115238

TABLE 6-5. COOLING SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT: SPECIAL TOOLS	TEST EQUIPMENT: STANDARD TOOLS	MATERIALS	TIME
—	1. Engine temperature gage reads above 200°F while running	Figure 21-1	Figure 20-1	1	Fan hub puller pn 5120-708-3210	•		
—	2. Engine does not reach running temperature 165° to 200°F	Figure 21-1	Figure 20-2	1	—	•		
—	3. Noise coming from engine other than that of normal running	Figure 21-1	Figure 20-3	2	—	•		

TA 115239

TABLE 6-6. ELECTRICAL SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
					TEST EQUIPMENT					
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
STARTER	1. STARTER MOTOR will not crank engine	Figure 26-1	Figure 25-1	2	•		•		
CHARGING	2. Charging System (25 amp) GENERATOR has too high or low charging rate	Figure 26-2	Figure 25-2	1	•		•		
	3. Charging System (60 amp) ALTERNATOR has too high or low charging rate	Figure 26-2	Figure 25-3	1	•		•		
BATTERY	4. BATTERIES go dead when truck is parked over night or a period of days	Figure 26-3	Figure 25-4	1	•		•		

TA 115240

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT			MATERIALS	TIME
					MULTIMETER	HYDROMETER	STANDARD TOOLS		
BATTERY	5. BATTERIES do not fully charge or do not hold a charge	Figure 26-3	Figure 25-5	1	•	•	•		
LIGHTING	6. One HEADLIGHT does not light, other headlight lights	Figure 26-4	Figure 25-6	1	•		•		
	7. Both HEADLIGHTS do not light. Other truck running lights light	Figure 26-4	Figure 25-7	1	•		•		
	8. BLACKOUT HEADLIGHT does not light, other truck running lights light	Figure 26-4	Figure 25-8	1	•		•		
	9. One or both FRONT BLACKOUT MARKER LAMPS do not light, other truck running lights light	Figure 26-5	Figure 25-9	1	•		•		

TA 115241

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
					TEST EQUIPMENT					
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
LIGHTING	10. One or both front PARKING LIGHTS do not light, other truck running lights light	Figure 26-5	Figure 25-10	1	•		•		
	11. One rear SERVICE STOPLIGHT does not light, other stoplight lights	Figure 26-6	Figure 25-11	2	•		•		
	12. Both SERVICE STOPLIGHTS do not light, other truck running lights light	Figure 26-6	Figure 25-12	2	•		•		
	13. One BLACKOUT STOPLIGHT does not light, other blackout stoplight lights	Figure 26-6	Figure 25-13	2	•		•		

TA 115242

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
					TEST EQUIPMENT					
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
LIGHTING	14. Both BLACKOUT STOPLIGHTS do not light, other truck running lights light	Figure 26-6	Figure 25-14	2	•		•		
	15. One or both SERVICE TAILLIGHT LIGHTS do not light, other truck running lights light	Figure 26-7	Figure 25-15	1	•		•		
	16. One or both rear BLACKOUT MARKER lights do not light, other truck running lights light	Figure 26-7	Figure 25-16	1	•		•		
	17. One lamp dim, flickering or lamps that work sometimes	Figure 26-8	Figure 25-17	1	•		•		

TA 115243

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D					
					TEST EQUIPMENT				
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
LIGHTING	18. All or many truck running lights dim, flicker, or work sometimes	Figure 26-8	Figure 25-18	1	•		•		
	19. Lamps burn out too often	Figure 26-8	Figure 25-19	1	•		•		
	20. All or many truck running lights do not light	Figure 26-8	Figure 25-20	1	•		•		
	21. One or more TRAILER SERVICE or BLACKOUT STOPLIGHTS do not light, all other truck lights light	Figure 26-9	Figure 25-21	2	•		•		

TA 115244

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT			MATERIALS	TIME
					MULTIMETER	HYDROMETER	STANDARD TOOLS		
LIGHTING	22. One or more TRAILER LIGHTS do not light, (except SERVICE and BLACKOUT STOPLIGHTS). All other truck running lights light	Figure 26-9	Figure 25-22	2	•		•		
DIRECTIONAL	23. One CONTROL ASSEMBLY DIRECTIONAL SIGNAL LAMP does not light	Figure 26-10	Figure 25-23	1	•		•		
	24. None of the CONTROL ASSEMBLY DIRECTIONAL SIGNAL LAMPS light, other truck lights light	Figure 26-10	Figure 25-24	1	•		•		
	25. When EMERGENCY FLASHER or TURN SIGNAL LAMPS are selected, lamps do not flash or flash at slow and uneven rate	Figure 26-10	Figure 25-25	1	•		•		
	26. TURN SIGNALS do not light in one or more positions of control assembly directional signal lever, all other truck lights light	Figure 26-10	Figure 25-26	1	•				

TA 115245

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
					TEST EQUIPMENT					
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
DIRECTIONAL SIGNAL	27. CONTROL ASSEMBLY DIRECTIONAL SIGNAL LAMP does not flash, rest of directional signal system works	Figure 26-10	Figure 25-27	1	•				
INSTRUMENTS AND GAGES	28. FUEL LEVEL GAGE does not work. All other gages work	Figure 26-11	Figure 25-28	1	•		•		
	29. TEMPERATURE GAGE does not work. All other gages work	Figure 26-11	Figure 25-29	1	•		•		
	30. OIL PRESSURE GAGE does not work, all other gages work	Figure 26-11	Figure 25-30	1	•		•		
	31. BATTER-GENERATOR INDICATOR does not work, all other gages work	Figure 26-11	Figure 25-31	1	•		•		
	32. No gages work	Figure 26-11	Figure 25-32	1					
WARNING	33. HORN does not work	Figure 26-12	Figure 25-33	1	•		•		
	34. LOW AIR WARNING BUZZER does not work	Figure 26-12	Figure 25-34	1	•		•		

TA 115246

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT			MATERIALS	TIME
					MULTIMETER	HYDROMETER	STANDARD TOOLS		
FUEL PUMP/ MANIFOLD HEATER	35. FUEL PUMP does not work	Figure 26-13	Figure 25-35	1	•		•		
	36. ENGINE MANIFOLD HEATER does not work	Figure 26-13	Figure 25-36	1	•		•		
VAN BODY 24 VOLT	37. NO 24-VOLT equipment works	Figure 26-14	Figure 25-37	1	•				
	38. 24 volt DOME LIGHTS do not work	Figure 26-14	Figure 25-38	1	•		•		
	39. HEATER FUEL PUMP does not work	Figure 26-14	Figure 25-39	1	•		•		

TA 115247

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
					TEST EQUIPMENT					
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
VAN BODY 115 VOLT	40. One DOME LIGHT does not work, other DOME LIGHTS work	Figure 26-15	Figure 25-40	1	•		•		
	41. All DOME LIGHTS do not work	Figure 26-15	Figure 25-41	1	•		•		
	42. No power at POWER OUTPUT RECEPTACLE	Figure 26-15	Figure 25-42	1	•		•		
	43. No power available when CIRCUIT BREAKER is turned on	Figure 26-15	Figure 25-43	1	•		•		

TA 115248

TABLE 6-6. ELECTRICAL SYSTEM - CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D					
					TEST EQUIPMENT				
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
VAN BODY 115 VOLT	44. 115 volt AC VENTILATOR BLOWER does not work	Figure 26-15	Figure 25-44	1	•		•		
HOT WATER HEATER	45. HOT WATER PERSONNEL HEATER DEFROSTER operates in "HI" position only	Figure 26-16	Figure 25-45	1	•		•		
	46. HOT WATER PERSONNEL HEATER DEFROSTER operates in "LO" position only	Figure 26-16	Figure 25-46	1	•		•		
	47. HOT WATER HEATER BLOWER does not operate in either blower position	Figure 26-16	Figure 25-47	1	•		•		

TA 115249

TABLE 6-6. ELECTRICAL SYSTEM – CONT

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D						
					TEST EQUIPMENT					
		SUMMARY	DETAILED	PERSONS	MULTIMETER	HYDROMETER	STANDARD TOOLS	MATERIALS	TIME
HOT WATER HEATER	48. HOT WATER PERSONNEL HEATER does not turn off when switch is in "OFF" position	Figure 26-16	Figure 25-48	1	•		•		
WINTER-IZATION KIT	49. Only one CONTROL BOX will operate the HEATER FUEL PUMP	Figure 26-17	Figure 25-49	1	•		•		
	50. Neither CONTROL BOX will operate the HEATER FUEL PUMP	Figure 26-17	Figure 25-50	1	•		•		

TA 115250

TABLE 6-7. TRANSMISSION SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED		TEST EQUIPMENT			
—	1. Transmission leaks oil	Figure 32-1	Figure 31-1	1	—			
—	2. Transmission gears grind when shifting	Figure 32-1	Figure 31-2	1	—			

TABLE 6-8. TRANSFER SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED		TEST EQUIPMENT			
—	1. Transfer leaks oil	Figure 34-1	Figure 33-1	1	—	•		
—	2. Transfer is hard to shift, or POPSout of gear	Figure 34-1	Figure 33-2	1	—	•		
—	3. Clunking noise heard during acceleration on trucks M36A2 and M342A2	Figure 34-1	Figure 33-3	1	—	•		
—	4. Clunking noise heard during acceleration on al l trucks except M36A2 and M342A2	Figure 34-1	Figure 33-4	1	—	•		

TA 115251

TABLE 6-9. PROPELLER SHAFT SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Clunking noise heard during acceleration on all trucks except M36A2 and M342A2	Figure 37-1	Figure 36-2	1	—	•		
—	2. Clunking noise heard during acceleration on trucks M36A2 and M342A2	Figure 37-1	Figure 36-1	1	—	•		

TA 115252

TABLE 6-10. FRONT AXLE SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT: SPECIAL TOOLS	TEST EQUIPMENT: STANDARD TOOLS	MATERIALS	TIME
—	1. Front axle makes noise	Figure 40-1	Figure 39-1	1	—	•		
—	2. Shimmy	Figure 40-1	Figure 39-2	1	Toe-in gage	•		
—	3. Front tires do not wear evenly	Figure 40-1	Figure 39-3	1	Toe-in gage			

TABLE 6-11. REAR AXLE SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT: SPECIAL TOOLS	TEST EQUIPMENT: STANDARD TOOLS		TIME
—	1. Rear axle makes noise	—	Figure 42-1	1	Floor jack	•		

TA 115253

TABLE 6-12. BRAKE SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
SERVICE BRAKES	1. Brake pedal pressure is spongy	Figure 45-1	Figure 44-1	1	—	●		
	2. No braking action	Figure 45-1	Figure 44-2	1	—	●		
	3. Trailer brakes do not work when brake pedal is pressed or hand control is used	Figure 45-1	Figure 44-3	1	—	●		
	4. Brake pedal sinks close to floorboard, or weak braking action	Figure 45-1	Figure 44-4	1	—	●		
	5. One brake drags or truck pulls to one side	Figure 45-1	Figure 44-5	1	—	●		
	6. Brakes drag	Figure 45-1	Figure 44-6	1	—	●		
HANDBRAKE	7. Handbrake does not hold parked truck	Figure 45-2	Figure 47-1	1	—			
	B. Handbrake assembly drags after handbrake has been put down	Figure 45-2	Figure 47-2	1	—			
COMPRESSED AIR	9. Buzzer does not shut off and air pressure gage reads below 60 psi	Figure 45-3	Figure 48-1	1	—	●		
	10. Low, or no reading on air pressure gage, and warning buzzer shuts off	Figure 45-3	Figure 48-2	1	—	●		
	11. Reading on air pressure gage is above normal	Figure 45-3	Figure 48-3	1	—	●		

TA 115254

TABLE 6-13. WHEEL SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Shimmy	—	Figure 51-1	1	—	•		
—	2. Front tires do not wear evenly	—	Figure 51-2	1	–	•		

TABLE 6-14. STEERING SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Hard steering	Figure 53-1	Figure 52-1	1	—	•		
—	2. Shimmy	Figure 53-1	Figure 52-2	1	Toe-in gage	•		
—	3. Truck pulls to one side	Figure 53-1	Figure 52-3	1	Toe-in gage	•		
—	4. Front tires do not wear evenly	Figure 53-1	Figure 52-4	1	Toe-in gage			

TA 115255

TABLE 6-15. SPRINGS AND SHOCK ABSORBERS SYSTEM

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Truck leans to one side	Figure 56-1	Figure 55-1	1	—			
—	2. Rear axle makes noise	Figure 56-1	Figure 55-2	1	Floor jack, wheel bearing nut wrench	•		

TABLE 6-16. DUMP BODY

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Dump body does not rise	Figure 58-1	Figure 57-1	2	—	•		
—	2. Dump body rises slowly	Figure 58-1	Figure 57-2	2	—	•		
—	3. Dump body will not hold in raised position	Figure 58-1	Figure 57-3	1	—	•		
—	4. Dump body will not lower	Figure 58-1	Figure 57-4	1	—	•		
—	5. Dump body does not rise all the way	Figure 58-1	Figure 57-5	2	—			

TA 115256

TABLE 6-17. WATER TANK BODY

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED		TEST EQUIPMENT			
—	1. Water cannot be pumped from both tanks	Figure 62-1	Figure 61-1	1	—	•		
—	2. Water cannot be pumped from tank selected	Figure 62-1	Figure 61-2	1	—			
—	3. Water pumps out of both tanks slower than normal	Figure 62-1	Figure 61-3	1	—	•		
—	4. Water does not drain using gravity procedures	Figure 62-1	Figure 61-4	1	—			
—	5. Water drains slowly using gravity procedural	Figure 62-1	Figure 61-5	1	—			
—	6. Water pumps from tank selected slower than normal	Figure 62-1	Figure 61-6	1	—			
—	7. Tanks cannot be suction filled	Figure 62-1	Figure 61-7	1	—	•		

TA 115257

TABLE 6-18. FUEL TANK BODY (M49A1C)

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Fuel does not pump out of tanks	Figure 66-1	Figure 65-1	1	—	•		
—	2. Fuel pumps out slowly	Figure 66-1	Figure 65-2	1	—	•		
—	3. Fuel does not pump from tank selected	Figure 66-1	Figure 65-3	1	—			
—	4. Fuel pumps from tank selected d owl y	Figure 66-1	Figure 65-4	1	—			
—	5. Fuel does not drain from selected tank using gravity procedures	Figure 66-1	Figure 65-5	1	—			
—	6. Fuel drains from tank selected slowly using gravity procedures	Figure 66-1	Figure 65-6	1	—			
—	7. Tanks cannot be filled by suction	Figure 66-1	Figure 65-7	1	—	•		

TA 115258

TABLE 6-19. FUEL TANK BODY (M49A2C)

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Fuel does not pump out of tanks	Figure 70-1	Figure 69-1	1	—			
—	2. Fuel pumps out slowly	Figure 70-1	Figure 69-2	1	—			
—	3. Fuel does not pump from tank selected	Figure 70-1	Figure 69-3	1	—			
—	4. Fuel pumps from selected tank slowly	Figure 70-1	Figure 69-4	1	—			
—	5. Fuel does not drain from selected tank, using gravity procedures	Figure 70-1	Figure 69-5	1	—			
—	6. Fuel drains from selected tank slowly using gravity procedures	Figure 70-1	Figure 69-6	1	—			
—	7. Tanks cannot be filled by suction	Figure 70-1	Figure 69-7	1	—			

TA 115259

TABLE 6-20. EARTH BORING MACHINE M764

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
EARTH BORING MACHINE AND POLE SETTER	1. Earth boring machine does not work	Figure 74-1	Figure 73-1	1	—			
	2. Earth boring machine cannot be moved vertically	Figure 74-1	Figure 73-2	1	—	•		
	3. Earth boring machine cannot be moved horizontally	Figure 74-1	Figure 73-3	1	—	•		
OUTRIGGER"	1. Outriggers do not work	Figure 74-2	Figure 73-4	1	—			
	2. Outriggers work slowly	Figure 74-2	Figure 73-5	1	—			

TA 115260

TABLE 6-21. FRONT WINCH

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED	PERSONS	TEST EQUIPMENT: SPECIAL TOOLS	TEST EQUIPMENT: STANDARD TOOLS	MATERIALS	TIME
—	1 Winch does not pull load	Figure 78-1	Figure 77-1	1	—	•		
—	2 Winch does not hold load	Figure 78-1	Figure 77-2	1	—	•		
—	3 Winch drum spins too fast when unwinding cable	Figure 78-1	Figure 77-3	1	—	•		

TABLE 6-22. EARTH BORING MACHINE REAR WINCH

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
		SUMMARY	DETAILED		TEST EQUIPMENT: SPECIAL TOOLS	TEST EQUIPMENT: STANDARD TOOLS	MATERIALS	TIME
—	1. Winch does not pull load	—	Figure 80-1	1	—			
—	2. Winch drum does not engage	—	Figure 80-2	1	—			

TA 115261

TABLE 6-23. PIPELINE CONSTRUCTION TRUCK REAR WINCH

SUBSYSTEM	SYMPTOM	TS PROCEDURE		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED		SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Winch does not pull load	—	Figure 81-1	1	—	•		
—	2. Winch does not hold load	—	Figure 81-2	1	—			
—	3. Winch drum does not engage	—	Figure 81-3	1	—			

TABLE 6-24. ENGINE COOLANT HEATER

SUBSYSTEM	SYMPTOM	TS PROCEDURES		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED		SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1. Heater does not start when switch is turned on	Figure 83-1	Figure 82-1	1	—	•		
—	2. Heater works for several minutes then stops	Figure 83-1	Figure 82-2	1	—			
—	3. Heater output is low	Figure 83-1	Figure 82-3	2	—	•		
—	4. Heater has no heat output	Figure 83-1	Figure 82-4	1	—	•		
—	5. Blower works, but there is no heat in system	Figure 83-1	Figure 82-5	2	—	•		

TA 115262

TABLE 6-25. FUEL BURNING PERSONNEL HEATER

SUBSYSTEM	SYMPTOM	TS PROCEDURES		RESOURCES REQ'D				
					TEST EQUIPMENT			
		SUMMARY	DETAILED	PERSONS	SPECIAL TOOLS	STANDARD TOOLS	MATERIALS	TIME
—	1, Heater does not start	Figure 88-1	Figure 87-1	1	—			
—	2. Heater and defroster do not work	Figure 88-1	Figure 87-2	1	—			
—	3. Heater does not work	Figure 88-1	Figure 87-3	1	—			
—	4. Defroster does not work	Figure 88-1	Figure 87-4	1	—			
—	5. Heater and defroster does not give off enough heat	Figure 88-1	Figure 87-5	1	—			
—	6. Defroster does not give off enough heat	Figure 88-1	Figure 87-6	1	—			
—	7. Heater does not give off enough heat	Figure 88-1	Figure 87-7	1	—			

TA 115263

TABLE 6-26. HOT WATER HEATER

SUBSYSTEM	SYMPTOM	TS PROCEDURES		RESOURCES REQ'D				
		SUMMARY	DETAILED		TEST EQUIPMENT	STANDARD TOOLS	MATERIALS	TIME
					SPECIAL TOOLS			
—	1. Cool or cold air at outlets after engine has reached operating temperature	Figure 92-1	Figure 91-1	1	—			
—	2. No air flow at heat outlet	Figure 92-1	Figure 91-2	1	—			
—	3. Blower motor does not work	Figure 92-1	Figure 91-3	1	—			
—	4. Blower motor operates on HI only	Figure 92-1	Figure 91-4	1	—			
—	5. No air flow at defroster	Figure 92-1	Figure 91-5	1				
—	6. Blower operates in LO only	Figure 92-1	Figure 91-6	1	—			
—	7. Heat output too low	Figure 92-1	Figure 91-7	1	—			

TA 115264

TABLE 6-27. DEEP WATER FORDING KIT

SUBSYSTEM	SYMPTOM	TS PROCEDURES		RESOURCES REQ'D				
		SUMMARY	DETAILED		TEST EQUIPMENT: SPECIAL TOOLS	TEST EQUIPMENT: STANDARD TOOLS	MATERIALS	TIME
ALL TRUCKS EXCEPT M35A1 AND SOME M35A2	1. Engine stalls while fording or after leaving water	Figure 95-1	Figure 94-1	1	—	•		
	2. Engine runs rough after leaving water	Figure 95-1	Figure 94-2	1	—			
TRUCKS M35AI AND SOME M35A2	1. Engine stalls while fording or after leaving water	Figure 95-1	Figure 94-3	1	—	•		
	2. Engine runs rough after leaving water	Figure 95-1	Figure 94-4	1	—			
	1. Fording control handle does not pull out or Pulls out stiffly	Figure 95-2	Figure 94-5	1	—			
CLUTCH	1. Clutch slips after leaving water on all trucks with kit	Figure 95-3	Figure 94-6	1	—	•		
BRAKE	1. Warning buzzer sounds, or air compressor makes noise, after leaving water on all trucks with kit	Figure 95-3	Figure 94-7	1	—	•		

TA 115265

TABLE 6-28. NON-ELECTRICAL GAGES

SUBSYSTEM	SYMPTOM	TS PROCEDURES		RESOURCES REQ'D				
		SUMMARY	DETAILED		TEST EQUIPMENT		MATERIALS	TIME
					SPECIAL TOOLS	STANDARD TOOLS		
SPEEDOMETER	1. Speedometer does not work	Figure 99-1	Figure 98-1	2	Variable speed drill	•		
	2. Speedometer does not show correct speed	Figure 99-1	Figure 98-2	1	—	•		
	3. Speedometer fluctuates	Figure 99-1	Figure 98-3	2	Variable speed drill	•		
	4. Speedometer is noisy	Figure 99-1	Figure 98-4	2	Variable speed drill	•		
TACHOMETER	1. Tachometer does not work	Figure 99-2	Figure 98-5	1	—	•		
	2. Tachometer fluctuates	Figure 99-2	Figure 98-6	1	—	•		
	3. Tachometer does not show correct reading	Figure 99-2	Figure 98-7	2	Spare tachometer	•		
	4. Tachometer is noisy	Figure 99-2	Figure 98-8	1	—	•		

TA 115266

CHAPTER 7

SAMPLE TROUBLESHOOTING PROCEDURE

7-1. GENERAL. This chapter gives sample troubleshooting procedures. The purpose of the sample procedures is to help you see how detailed troubleshooting procedures test equipment procedures, and summary troubleshooting procedures are used to find faults in a system.

7-2. SAMPLE DETAILED PROCEDURE. The sample detailed procedure given is the fuel system troubleshooting procedure for the symptom, ENGINE CRANKS BUT DOES NOT START. This symptom is one you will have when you try to start your truck and certain parts on the truck are not working correctly. In each numbered box, instructions are given which tell you what to do, and how to do it. A large dot is placed next to the "what to do" instructions, and small dots next to the "how to do it" instructions

a.Box number (1) gives general instructions on getting the truck ready before you start to troubleshoot.

b. Box number (2) gives fault isolation test instructions. In this case you are told to check flame heater fuel lines, and then all fuel lines and fittings. To help you find the flame heater fuel lines that you must check, you are told to see figure 15-1, given in chapter 15. Figure 15-1 is a support diagram that gives you a detailed picture of the fuel lines. The right way to check fuel lines is given in figure 16-4, in chapter 16. The fuel lines and fittings checks tell you what you must look for to decide if there is a problem in the fuel lines. These support diagrams and tests, or checks, are often referred to in detailed troubleshooting procedures to help you find the problem and fix it. After you do the tests you read the question at the bottom of box number (2). If the fuel lines are leaking, the answer to the question is (NO), so you go to the next box.

c. Box number (3) gives you a corrective action. In this case the fault is either loose fittings or bent, broken, or cracked fuel lines. The corrective action is what you do to fix the fault, which is to tighten the loose fittings, or replace the bad fuel lines. If the engine still doesn't start after you do this, it could mean that there are other faults in the fuel system besides loose fittings or cracked fuel lines. When this happens, go back to the beginning of the procedure and do each step again until you find the other faults.

d. Sometimes the corrective actions given for a fault will tell you what to do to fix the fault, but will not give you detailed instructions on how to fix it. Instead, you will be told to refer to another volume in this manual for these instructions. Box number (5) is an example of this. If the answer to the questions that all the fault isolation test instruction boxes ask is (YES), it means that the symptom cannot be corrected at the organizational level of maintenance. When this happens you are given the instruction " Tell direct support maintenance. "

7-3. SAMPLE TEST EQUIPMENT PROCEDURE . The sample test equipment procedure given is the Simpson 160 multimeter dc voltage test. This procedure tells you how to use the multieter to do the voltage tests you will need when you do electrical system troubleshooting.

a. The first box gives you the name of the test equipment procedure. It also tells you the kind of troubleshooting for which this procedure is used. In this case, the test equipment procedure is the DC VOLTAGE TEST. This test will be used to troubleshoot faults in the battery system, the charging system, and voltage drops in the electrical system.

b. Box (1) gives you detailed test instructions. Next to the large dot are instructions telling you what to do. In this example you are told to set up the multimeter test leads. Next to the small dots are instructions telling you how to set up the test leads.

c. The multimeter jack table tells you which jack to plug the red (+) test lead into.

d. The multimeter function table tells you how to set the function/range switch.

7-4. SAMPLE SUMMARY TROUBLESHOOTING PROCEDURE. The sample summary troubleshooting procedure given is the electrical system summary for the problem "CHARGING SYSTEM CHARGING TOO HIGH OR LOW. "

a. The first box tells you what kinds of problems the summary covers. In this example, the summary covers charging system problems.

b. The charging system problems you will see on the truck are the fault symptoms "CHARGING SYSTEM (25 AMP) GENERATOR HAS TOO HIGH OR LOW CHARGING RATE" , and "CHARGING SYSTEM (60 AMP) ALTERNATOR HAS TOO HIGH OR LOW CHARGING RATE . "

c. To do the summary procedure for each fault symptom given, you follow the GO chains to each box. Any notes, cautions, or warnings that are given in the detailed troubleshooting procedures are also given in the summary.

d. General instructions telling you what to do are given in box (A) . Detailed instructions on how to do checks or tests are not given in the summary. If the answer to the question at the bottom of box A is (NO) , then you do the corrective action given in box (B) .If the answer is YES , follow the GO chains to box (C) and box (D) and check the parts of the truck given in those boxes. You then repair or replace the parts that are bad.

e. The note given under the last box in the GO chain means that you should look at the electrical system fault symptom index. This index will tell you where you can find the detailed troubleshooting procedure for the symptom "CHARGING SYSTEM (25 AMP) GENERATOR HAS TOO HIGH OR LOW CHARGING RATE. "

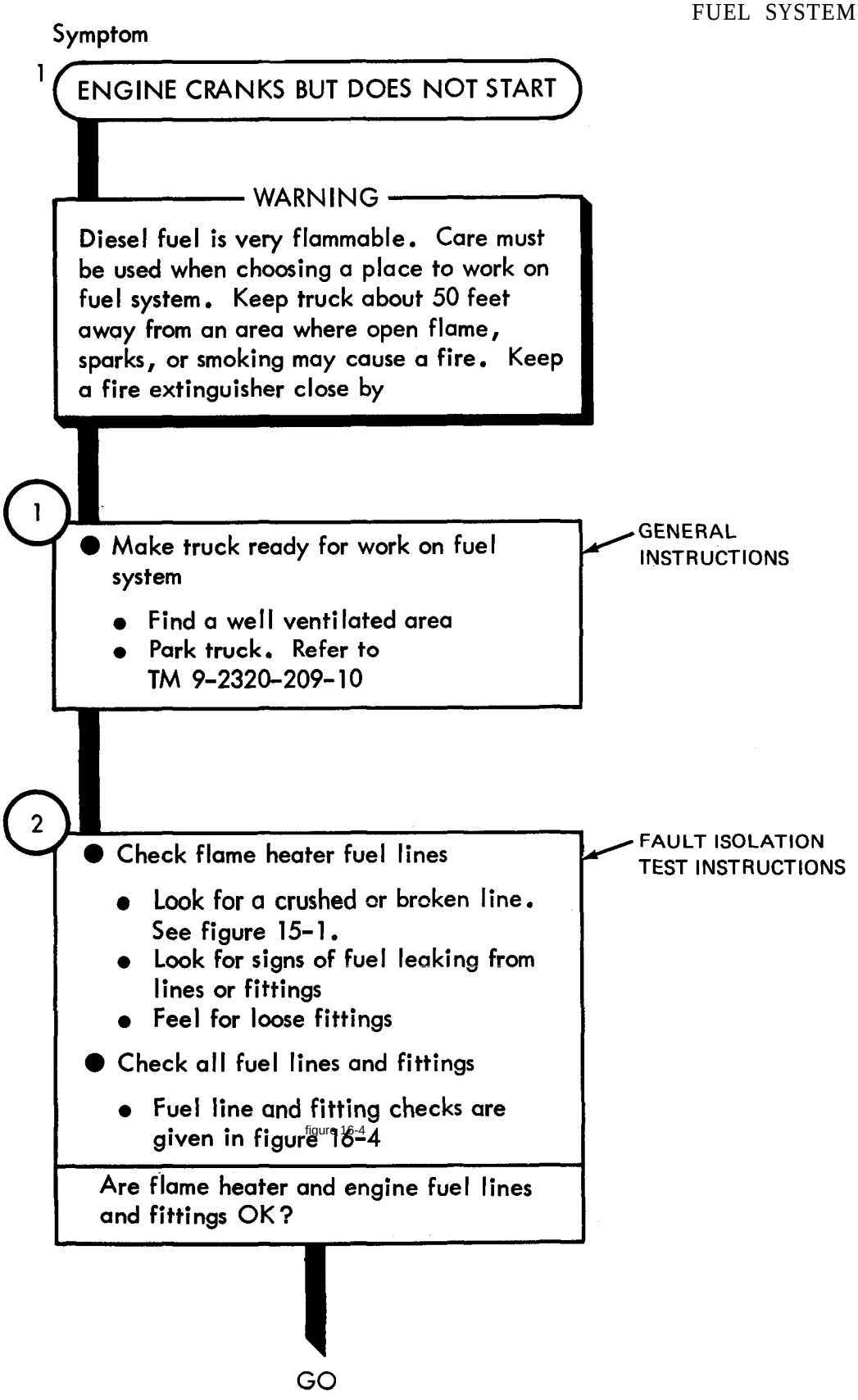


Figure 7-1 (Sheet 1 of 6)

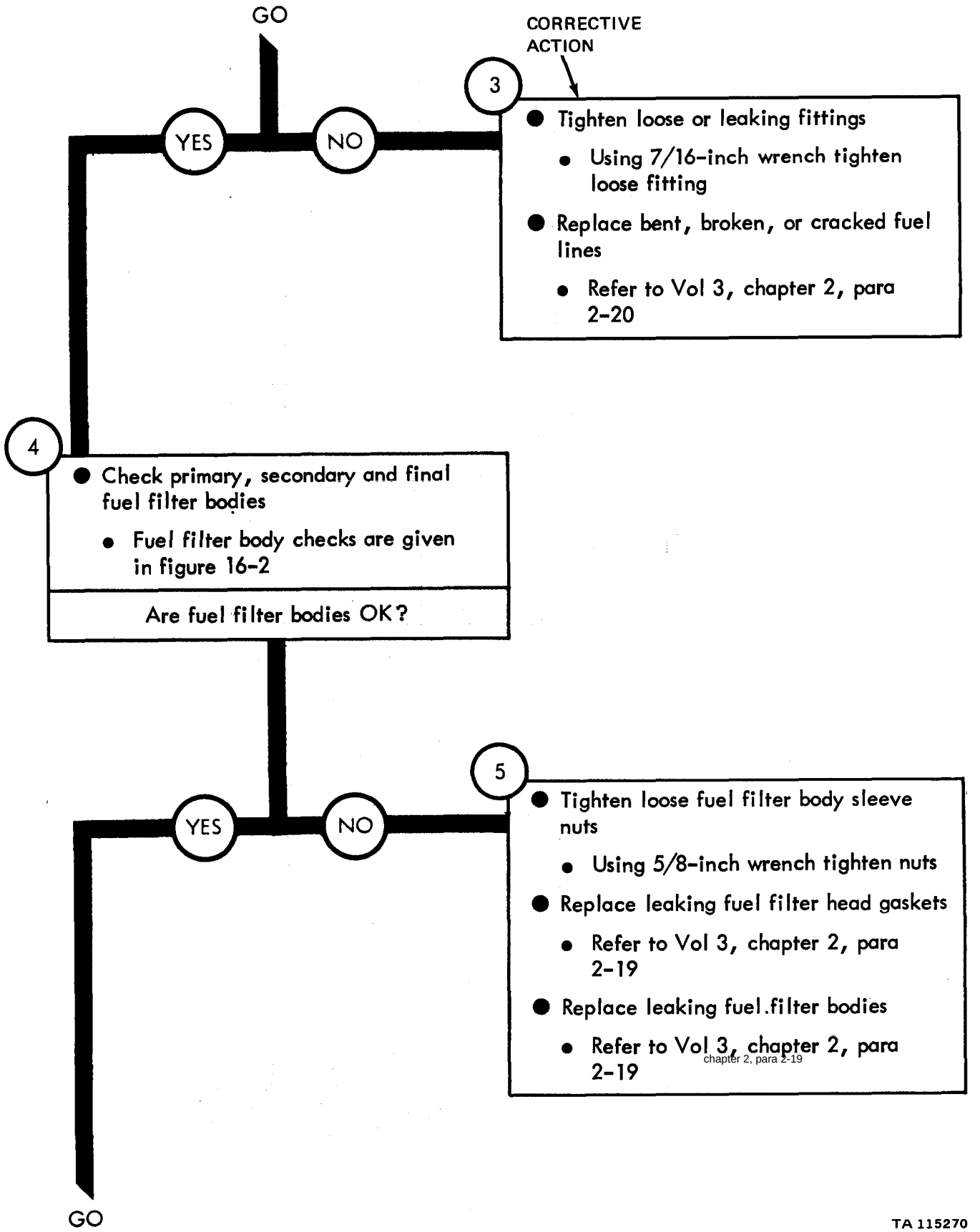


Figure 7-2 (Sheet 2 of 6)

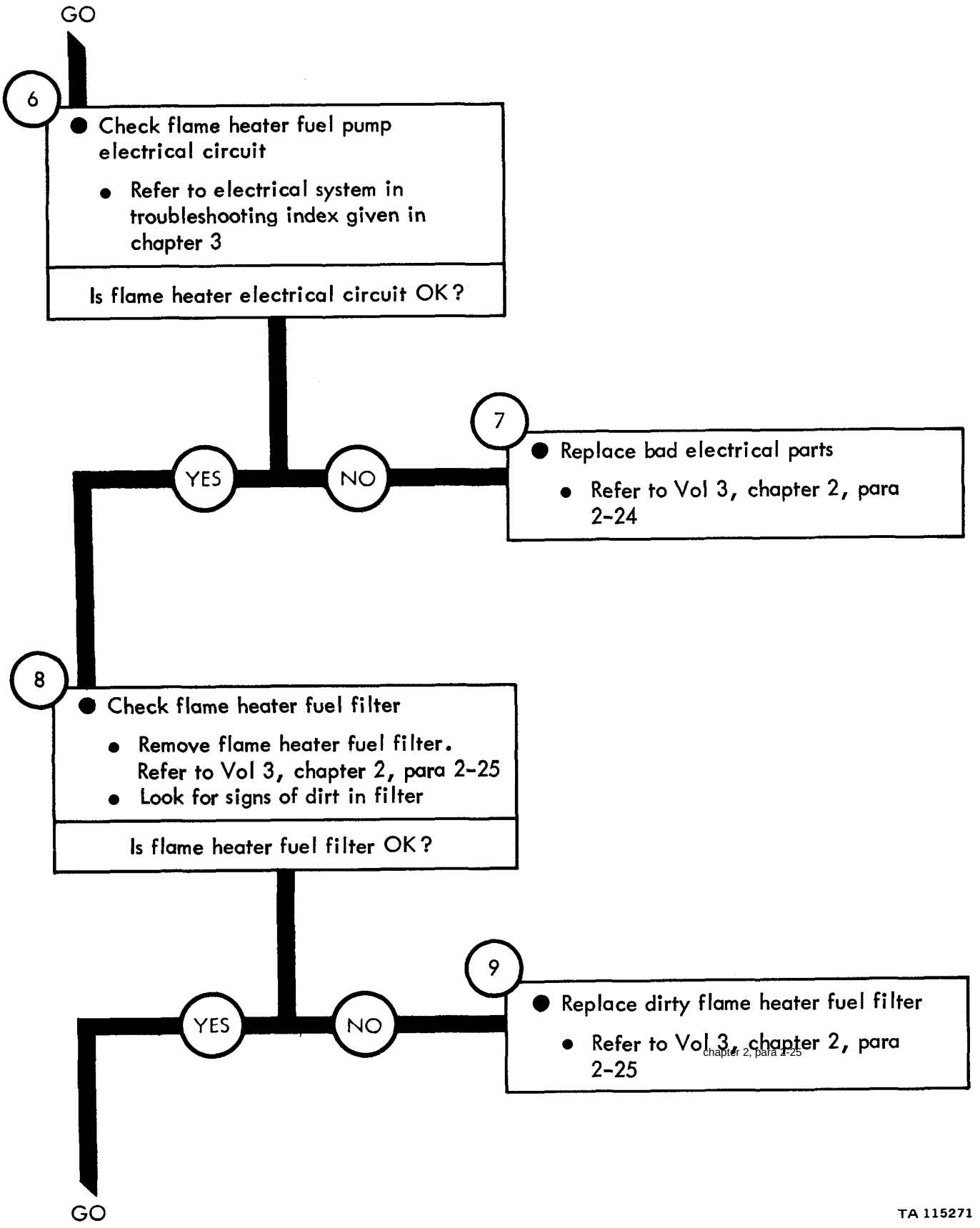


Figure 7-3 (Sheet 3 of 6)

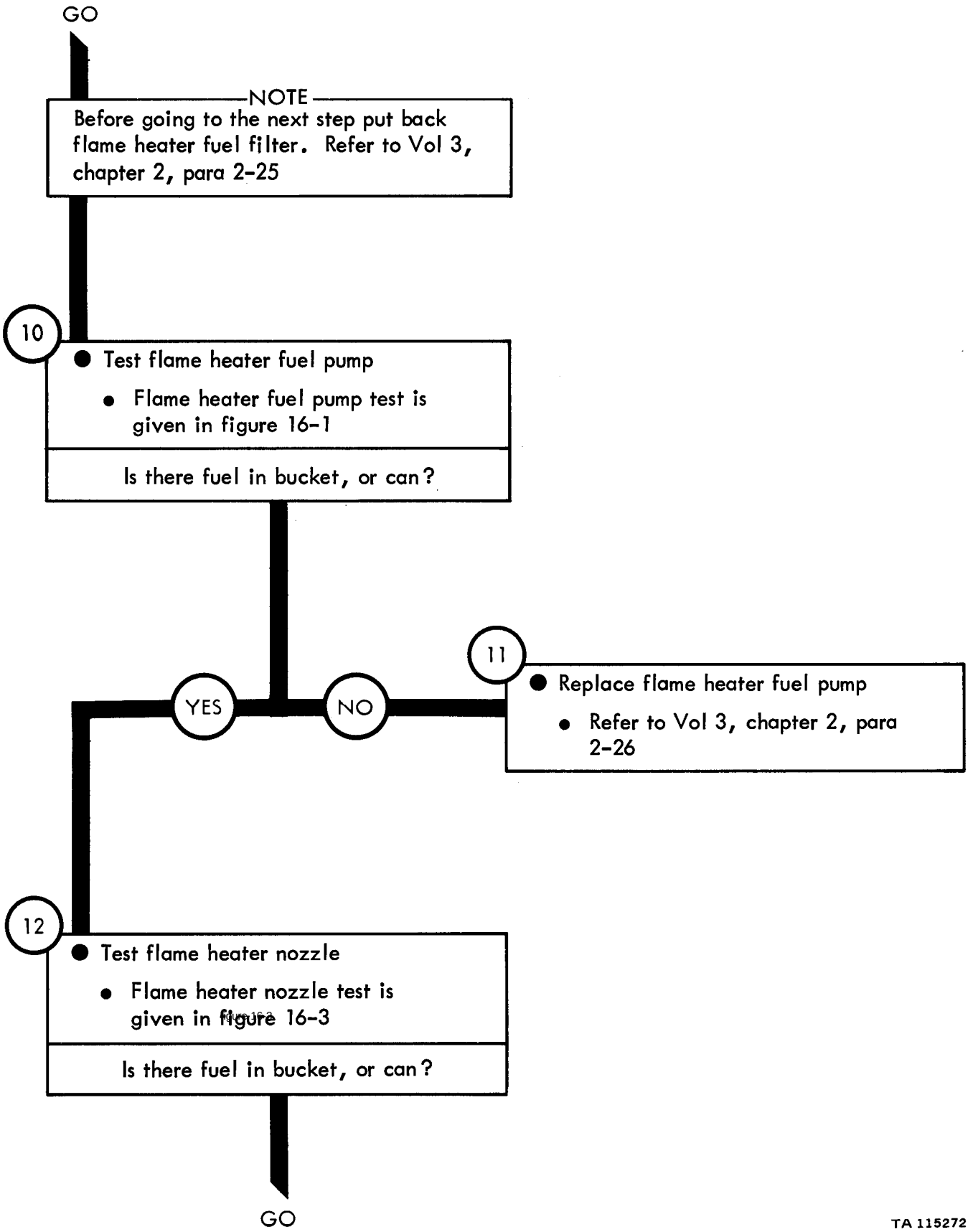


Figure 7-1 (Sheet 4 of 6)

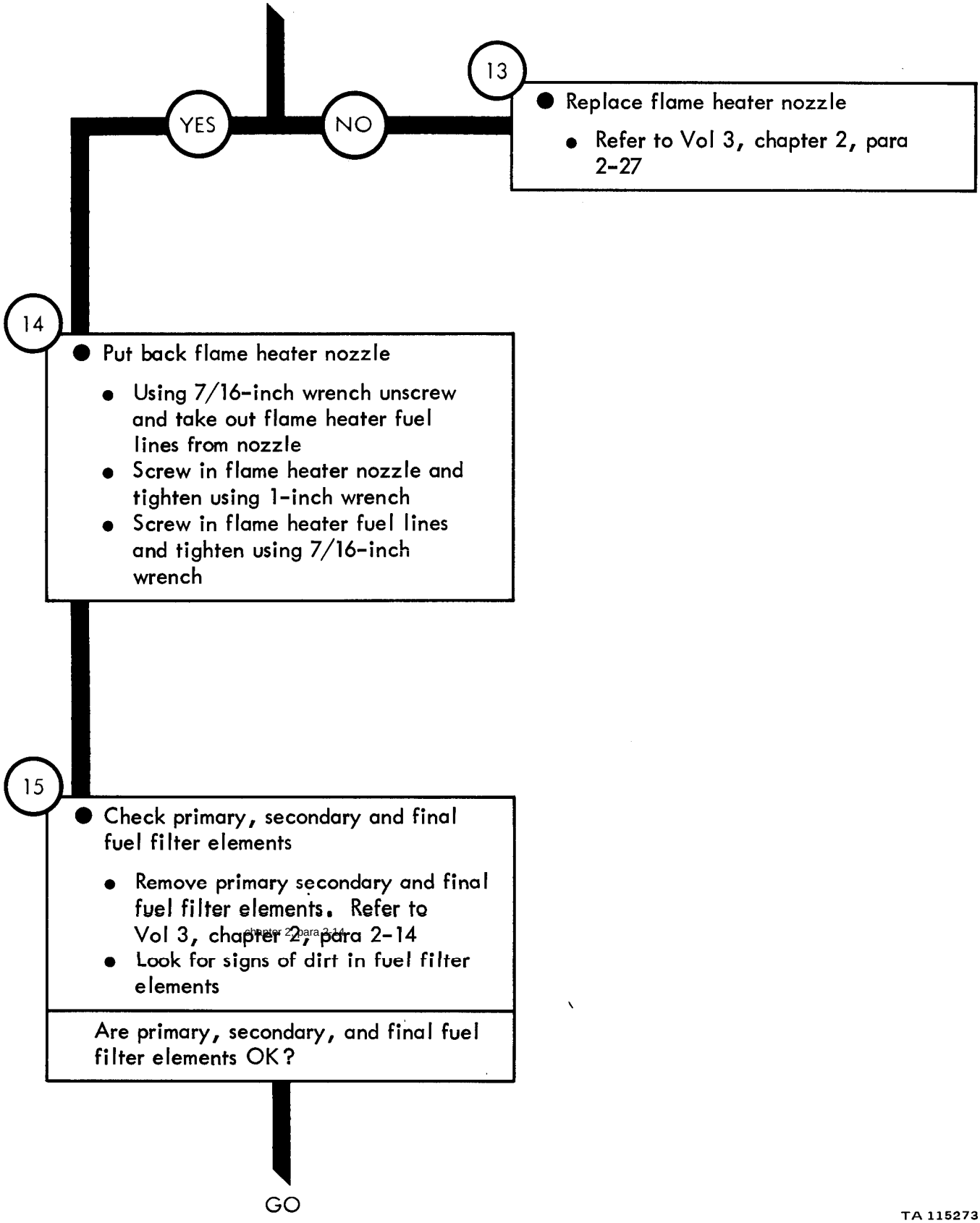


Figure 7-1 (Sheet 5 of 6)

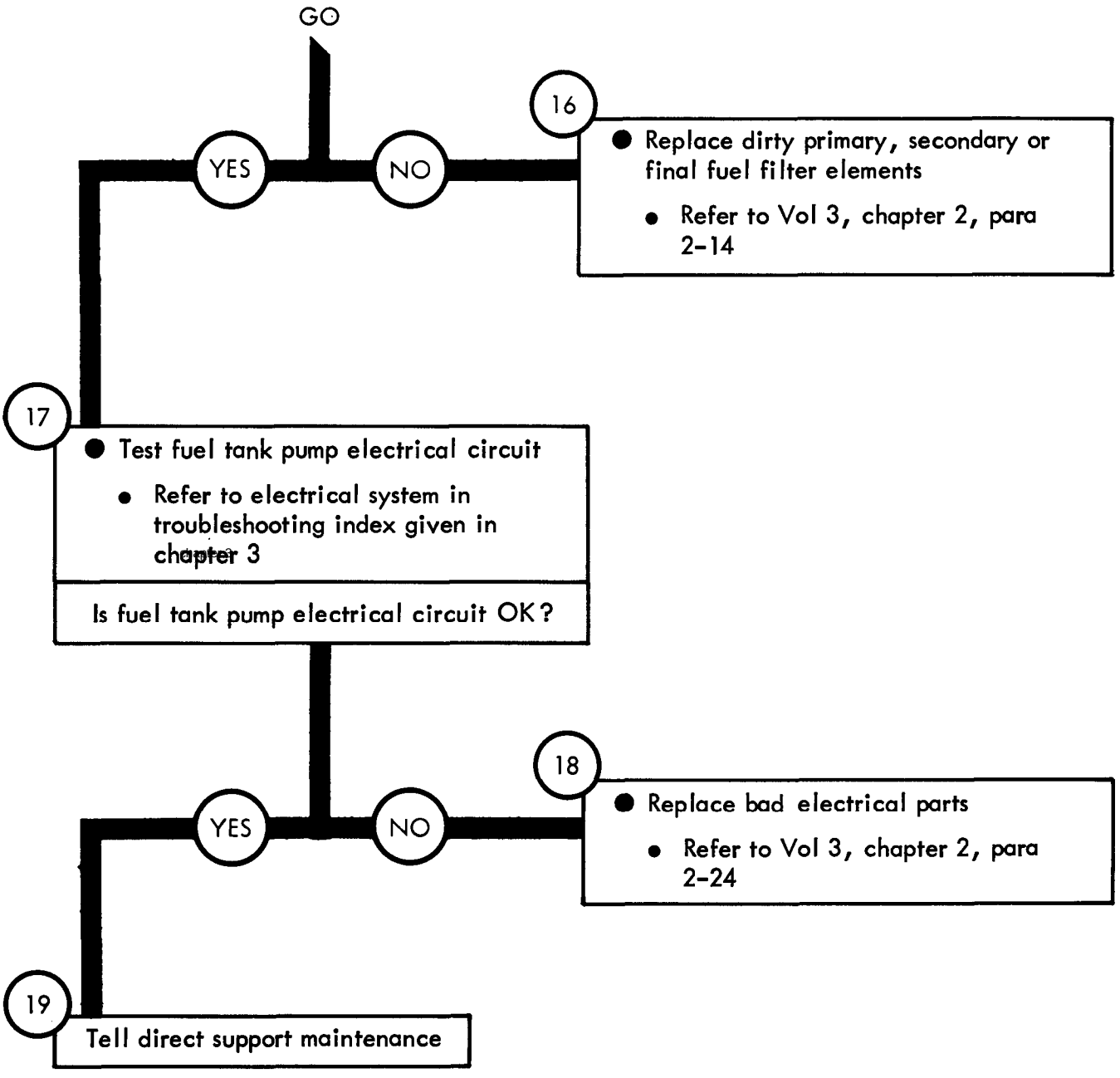


Figure 7-1 (Sheet 6 of 6)

Test

1 DC VOLTAGE TEST - To measure battery voltage, charging system output, and voltage drops at various test points

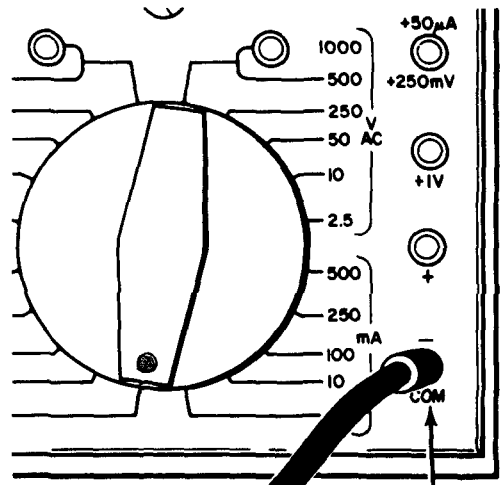
TEST EQUIPMENT PROCEDURE

DETAILED TEST INSTRUCTIONS

1

- Set up multimeter test leads:
  - Put jack plug of black (-) test lead into COM - jack.

    Note: The highest truck DC voltage that is measured is about 28 volts. Therefore, the multimeter red (+) lead is never put into the 1000 VDC jack.
  - See table to find out which jack to put red (+) lead into. Table shows which jack to use when normal value of measured voltage is known or unknown.



BLACK LEAD

THIS JACK IS THE METER CIRCUIT'S COMMON GROUND

MULTIMETER JACK TABLE

IF NORMAL VALUE OF VOLTAGE BEING MEASURED IS THIS:	PUT RED LEAD INTO THIS JACK ON RIGHT SIDE OF MULTIMETER:
0 TO 230 MILLIVOLTS	+50 μA +250mV
230 MILLIVOLTS TO 0.8 VOLTS	+1V
0.8 TO 2 VOLTS	+
2 TO 8 VOLTS	+
8 TO 40 VOLTS	+
UNKNOWN	+

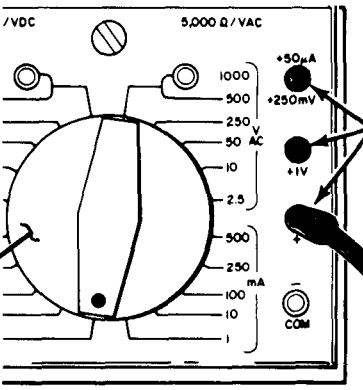
GO

TA 115275

Figure 7-2 (Sheet 1 of 2)

GO

- Put jack plug of red (+) test lead into jack receptacle you picked on right side of multimeter.



RED (+) TEST LEAD MAY BE PUT INTO ONE OF THESE THREE JACKS

FUNCTION/RANGE SWITCH

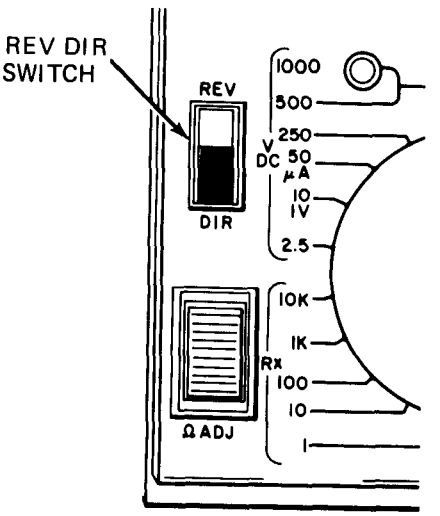
RED (+) TEST LEAD SHOWN IN + JACK

2

- Set up multimeter switches:

  Note: The Ω ADJ knob is not used for DC voltage tests.

  - Set REV DIR switch to DIR.



- See table to find out setting of function/range switch. Table shows switch setting when normal value of measured voltage is known or unknown.

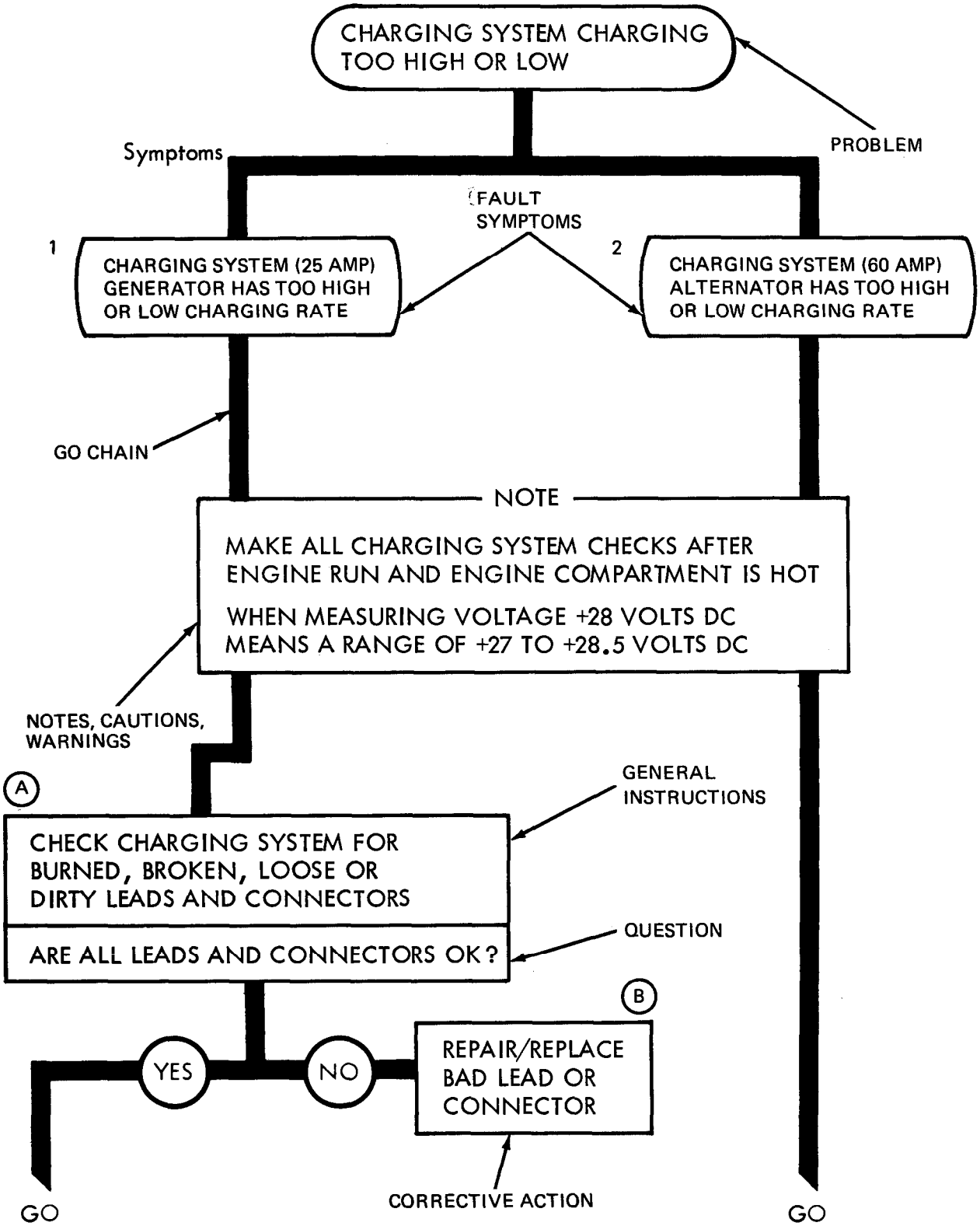
MULTIMETER FUNCTION TABLE

IF NORMAL VALUE OF VOLTAGE BEING MEASURED IN THIS:	SET FUNCTION/RANGE SWITCH TO:
0 TO 230 MILLIVOLTS	50 μA
230 MILLIVOLTS TO 0.8 VOLTS	10 1V
0.8 TO 2 VOLTS	2.5
2 TO 8 VOLTS	10 1V
8 TO 40 VOLTS	50 μA
UNKNOWN	50 μA

GO

TA 115276

Figure 7-2 (Sheet 2 of 2)



TA 115277

Figure 7-3 (Sheet 1 of 2)

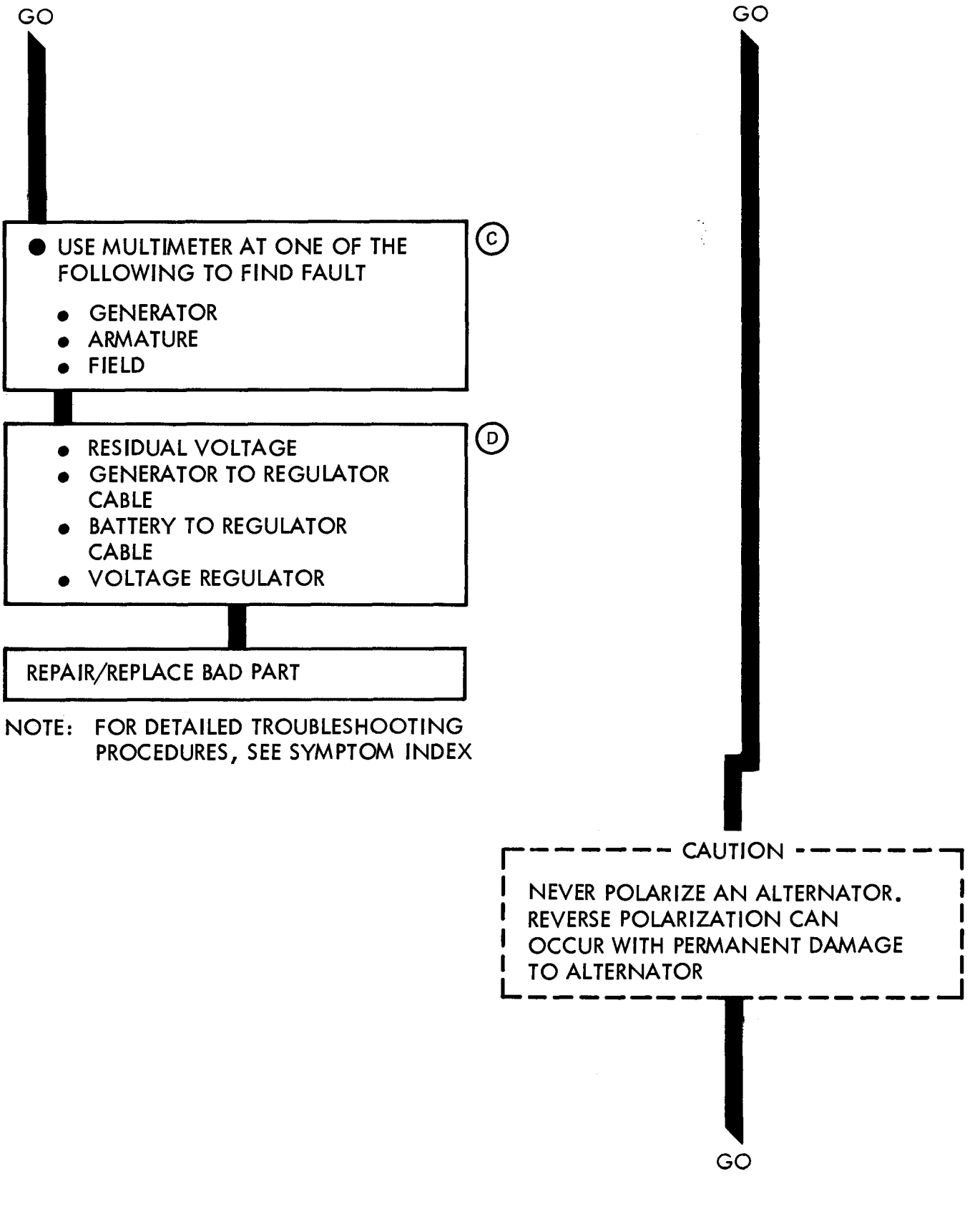


Figure 7-3 (Sheet 2 of 2)

CHAPTER 8

ENGINE SYSTEM TROUBLESHOOTING

8-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment troubleshooting procedures for the engine system, for which there are authorized corrective maintenance tasks at the organizational maintenance level.

8-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

Symptom

1 LOW OIL PRESSURE

1

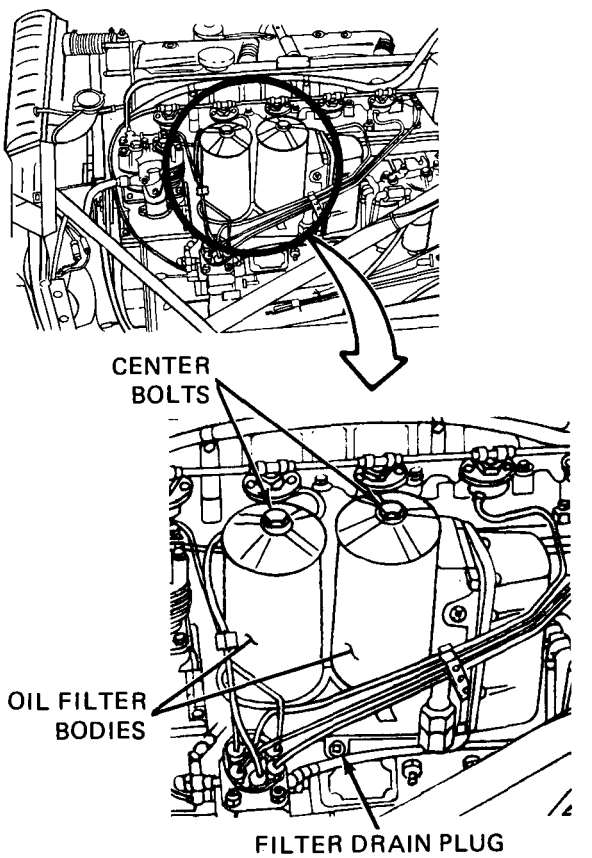
- Make truck ready for work on engine
  - Park truck. Refer to TM 9-2320-209-10

2

- Check oil filter gaskets
  - Look for signs of oil leaks at bottom of oil filter body
  - Feel for loose center bolt
- Check oil filter drain plug
  - Look for signs of oil leaking from drain plug

Are oil filter gaskets and oil filter drain plug OK?

GO



TA 114081

Figure 8-1 (Sheet 1 of 3)

GO

YES

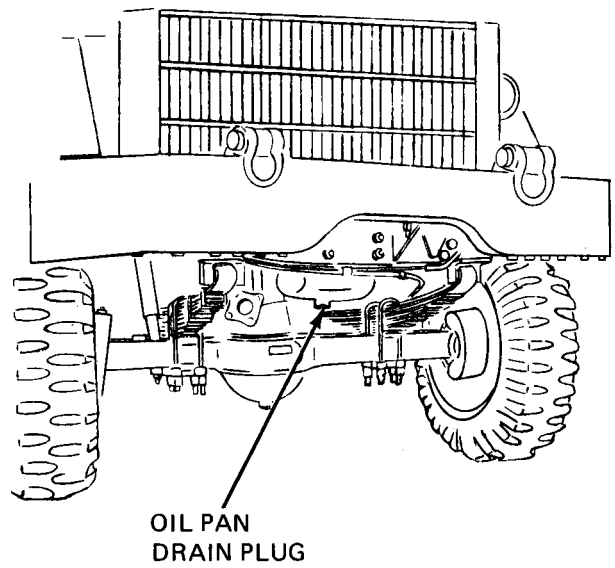
NO

3

- Tighten loose oil filter center bolt
  - Using torque wrench tighten center bolt to 60 pound-feet
- Tighten loose oil filter drain plug
  - Refer to LO 9-2320-209-12/1

Note: If oil should still leak at bottom of oil filter body replace oil filter gasket. Refer to Vol 3, chapter 2, para 2-5

chapter 2, para 2-5



4

- Check engine oil pan drain plug
  - Look for signs of oil leaking from drain plug

Is engine oil pan drain plug OK?

GO

TA 114082

Figure 8-1 (Sheet 2 of 3)

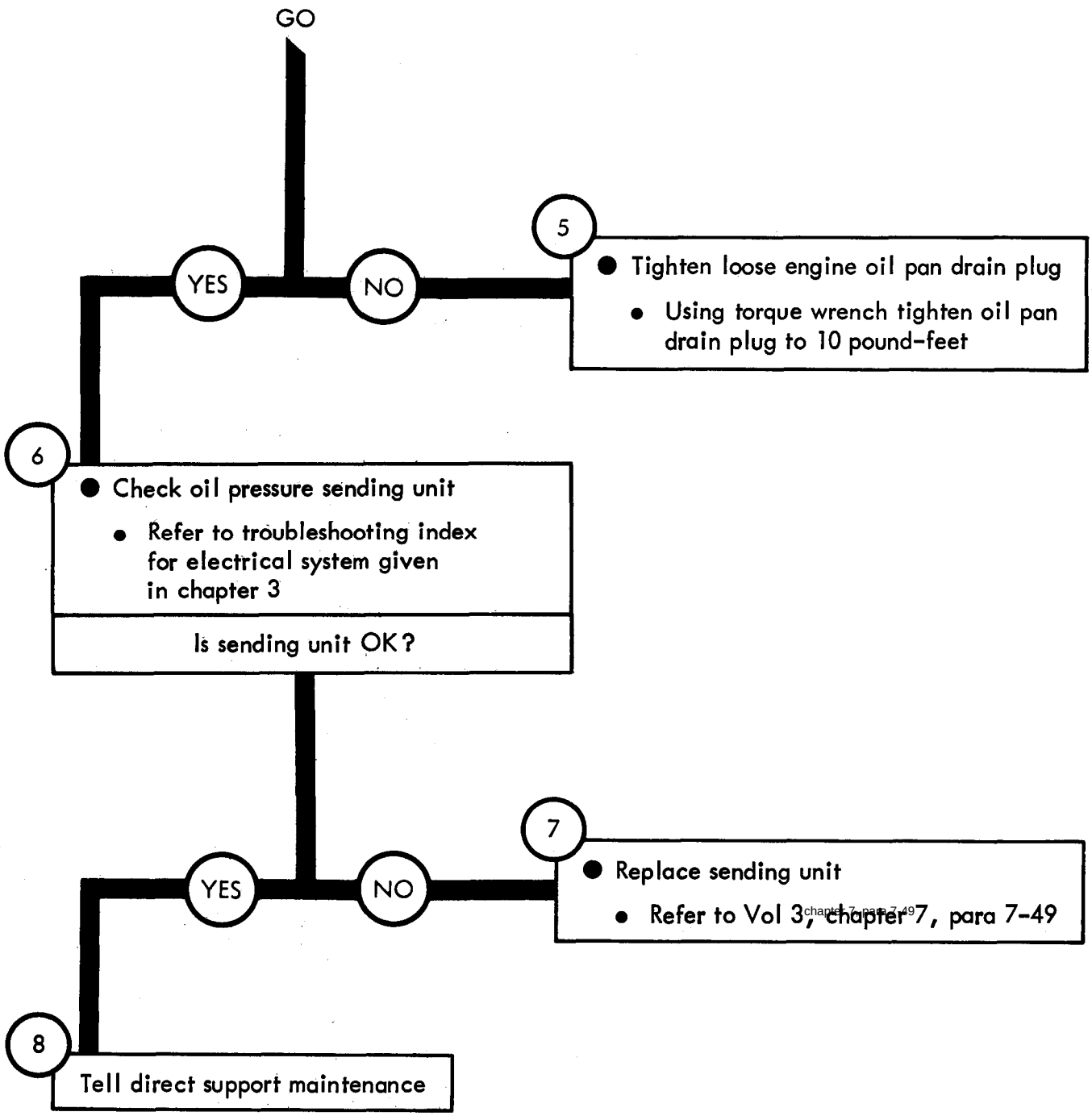


Figure 8-1 (Sheet 3 of 3)

Symptom 2

ENGINE USES MORE OIL THAN NORMAL

1

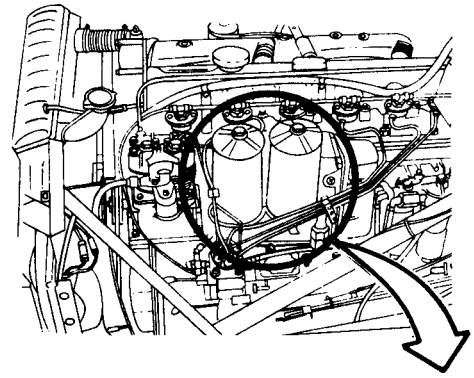
- Make truck ready for work on engine
  - Park truck. Refer to TM 9-2320-209-10

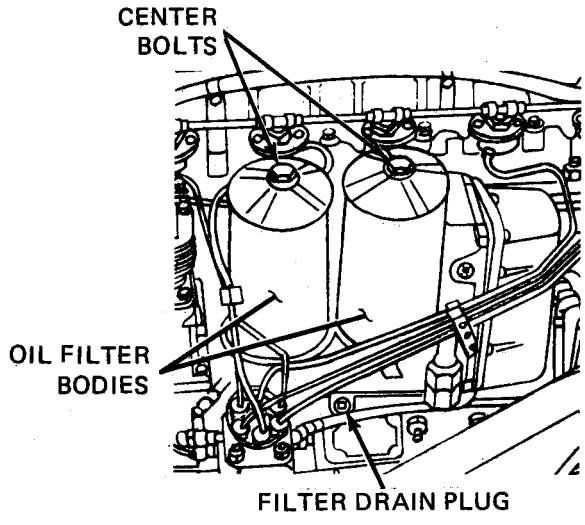
2

- Check oil filter gaskets
  - Look for signs of oil leaking from bottom of oil filter body
  - Feel for loose center bolt
- Check oil filter drain plug
  - Look for signs of oil leaking from drain plug

Are oil filter gaskets and oil filter drain plug OK?

GO





TA 114084

Figure 8-2 (Sheet 1 of 2)

GO

YES

NO

3

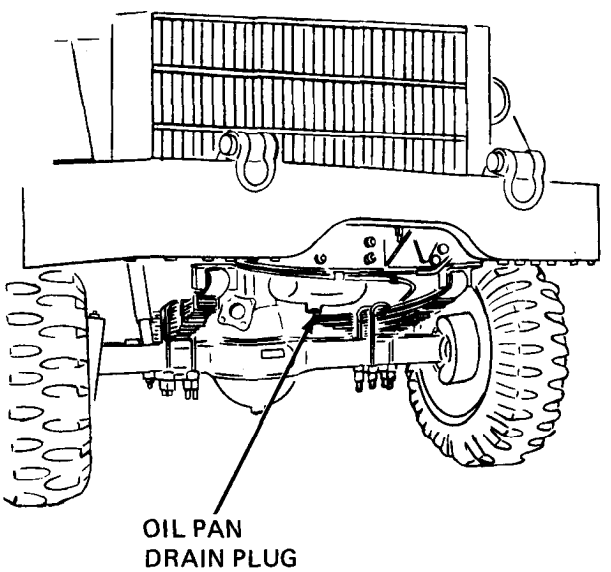
- Tighten loose oil filter center bolt
  - Using torque wrench tighten center bolt to 60 pound-feet

  NOTE: If oil still leaks from the bottom of oil filter body replace oil filter gasket. Refer to Vol 3, chapter 2, para 2-5
- Tighten loose oil filter drain plug
  - Refer to LO 9-2320-209-12/1

4

- Check engine oil pan drain plug
  - Look for signs of oil leaking from drain plug

Is engine oil pan drain plug OK?



NO

5

- Tighten loose engine oil pan drain plug
  - Using torque wrench tighten oil pan drain plug to 10-pound-feet

YES

6

- Overhaul engine
  - Tell direct support maintenance

TA 114085

Figure 8-2 (Sheet 2 of 2)

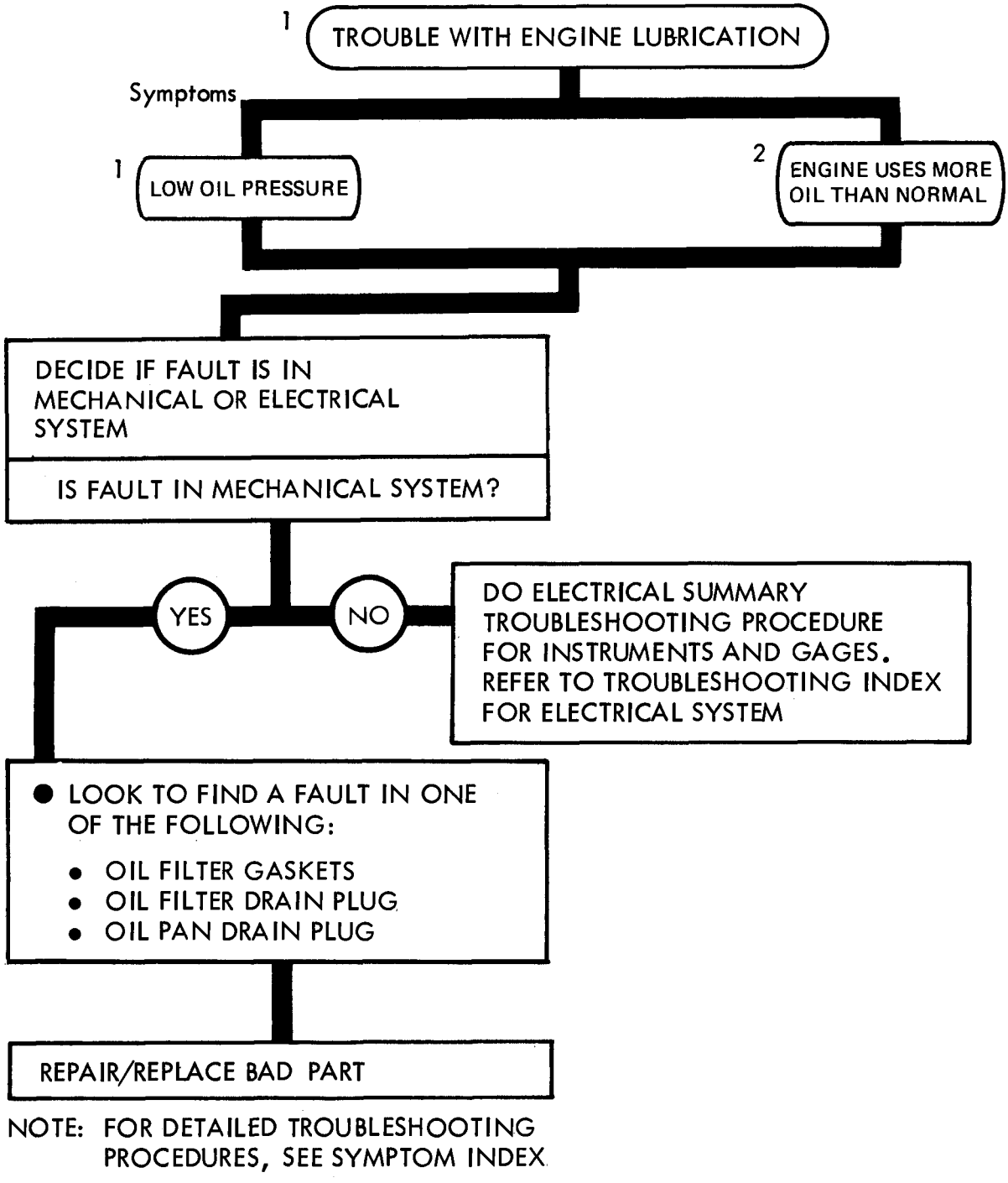
CHAPTER 9

ENGINE SYSTEM TROUBLESHOOTING SUMMARY

9-1. GENERAL. This chapter gives a summary of troubleshooting procedures given in chapter 8 for the engine system.

9-2. PROCEDURES. The summary in this chapter covers all fault symptoms found in the detailed troubleshooting procedures. Chapter 7 outlines a sample troubleshooting procedure. The summary procedures are based on the “what-to-do” portions of the detailed procedures and do not include the "how-to-do-it” instructions. Warnings, cautions, and notes are given where needed.

ENGINE LUBRICATION SUBSYSTEM TROUBLESHOOTING SUMMARY

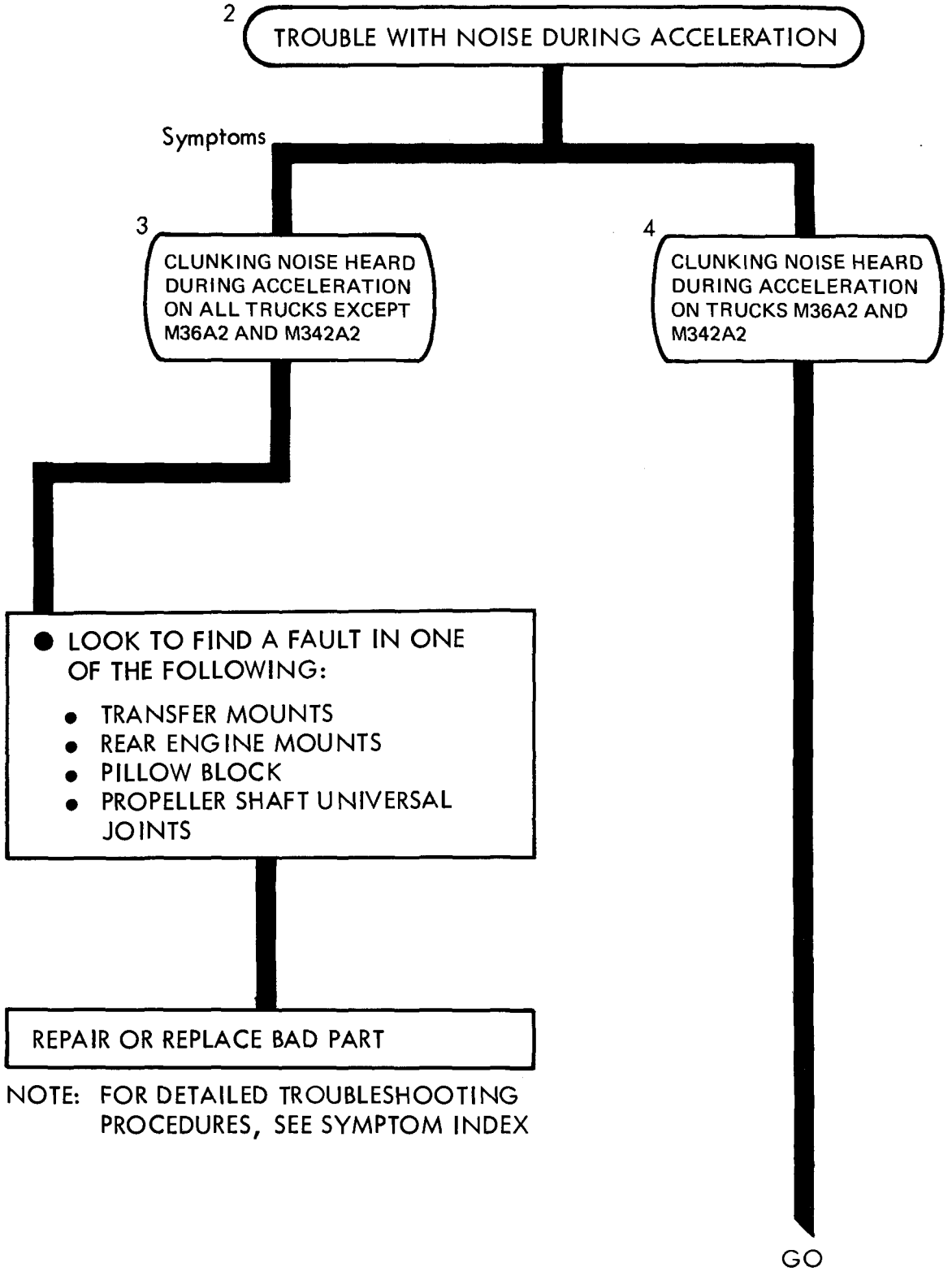


NOTE: FOR DETAILED TROUBLESHOOTING PROCEDURES, SEE SYMPTOM INDEX.

TA 114086

Figure 9-1

ENGINE SYSTEM - DRIVELINE MOUNTING SUBSYSTEM TROUBLESHOOTING SUMMARY



TA 114087

Figure 9-2 (Sheet 1 of 2)

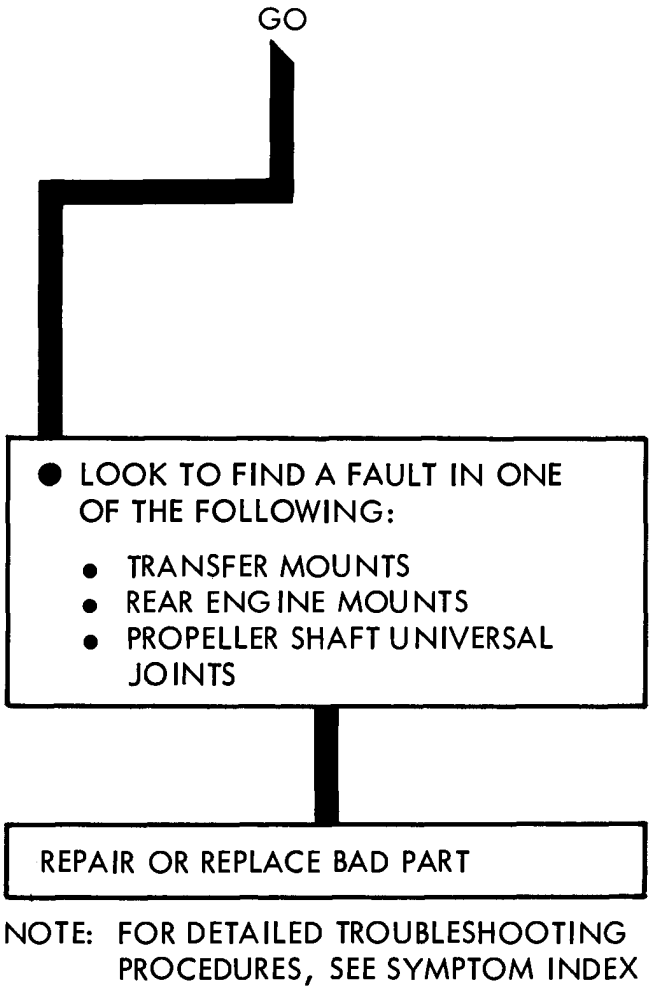


Figure 9-2 (Sheet 2 of 2)

CHAPTER 10

ENGINE DRIVELINE SUBSYSTEM TROUBLESHOOTING

10-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment troubleshooting procedures for the engine driveline subsystem, for which there are authorized corrective maintenance tasks at the organizational maintenance level.

10-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

ENGINE DRIVELINE MOUNTING SUBSYSTEM TROUBLESHOOTING

Symptom 1

CLUNKING NOISE HEARD DURING ACCELERATION ON ALL TRUCKS EXCEPT M36A2 AND M342A2

1

- Make truck ready for work on engine
  - Park truck. Refer to TM 9-2320-209-10

NOTE

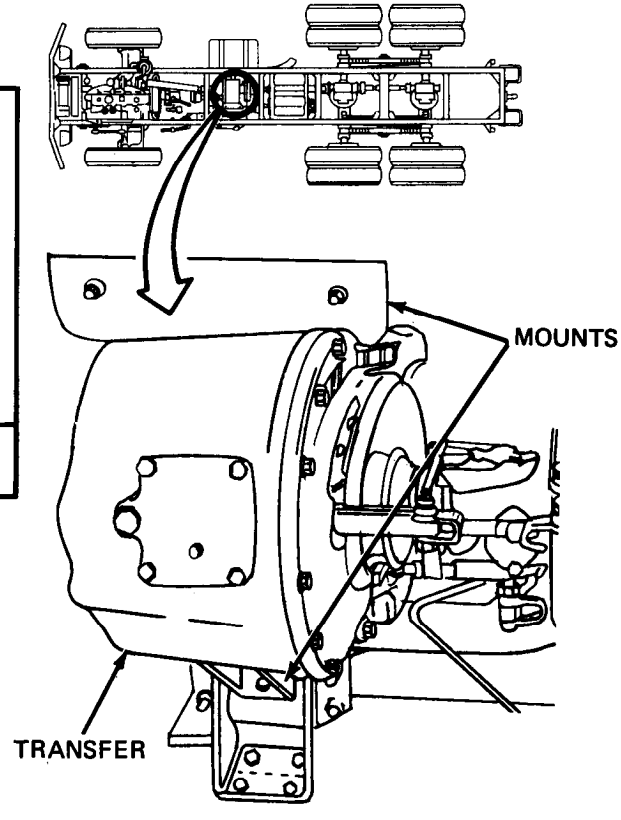
Transfer mounts are not part of the engine system. However the transfer mounts should be checked as a cause of the clunking noise

2

- Check transfer mounts
  - Crawl under truck
  - Look for signs that the transfer shifted its position
  - Look for a broken transfer mount
  - Look for missing transfer mounting nuts or bolts
  - Feel for loose transfer mount nuts

Are transfer mounts OK?

GO



TA 114089

Figure 10-1 (Sheet 1 of 4)

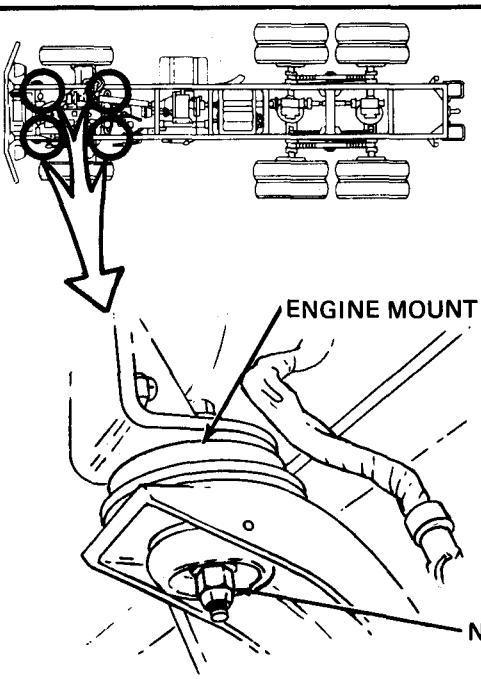
GO

YES

NO

3

- Replace broken transfer mount
  - Tell direct support maintenance
- Put back missing transfer mount nuts and bolts
  - Put a hydraulic jack under transfer and raise jack until weight is removed from transfer mount
  - Put correct bolt, or nut, into transfer mount and tighten using 5/8-inch wrench
  - Using 5/8-inch wrench tighten all bolts
  - Using two 5/8-inch wrenches tighten all nuts
- Tighten loose transfer mount nuts and bolts
  - Using two 5/8-inch wrenches tighten nuts and bolts
- Align transfer and replace mount if broken



4

- Check rear engine mounts
  - Look for a broken engine mount
  - Look for a missing engine mount nut
  - Using 5/8-inch wrench feel for a loose nut

Are engine mounts OK?

GO

TA 114090

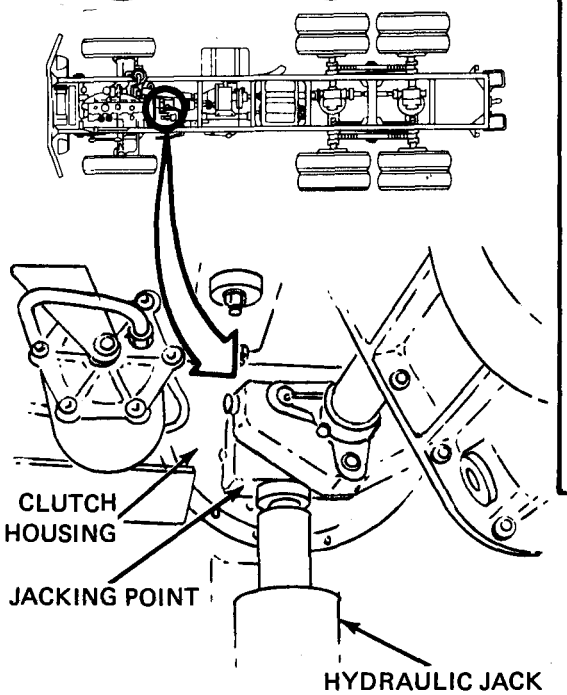
Figure 10-1 (Sheet 2 of 4)

GO

YES

NO

5



- Replace broken engine mount
  - Refer to Vol 3, chapter 2, para 2-4
- Put back missing engine mount nut
  - Put a hydraulic jack under jacking point and raise jack until weight is removed from engine mount
  - Put correct nut onto engine mount and screw on until hand tight
  - Using two 5/8-inch wrenches tighten engine mount
- Tighten loose engine mount nut
  - Using two 5/8-inch wrenches tighten engine mount

NOTE

Propeller shafts and universal joints are not part of the engine system. However they should be checked as a cause of the clunking noise

GO

TA 114091

Figure 10-1 (Sheet 3 of 4)

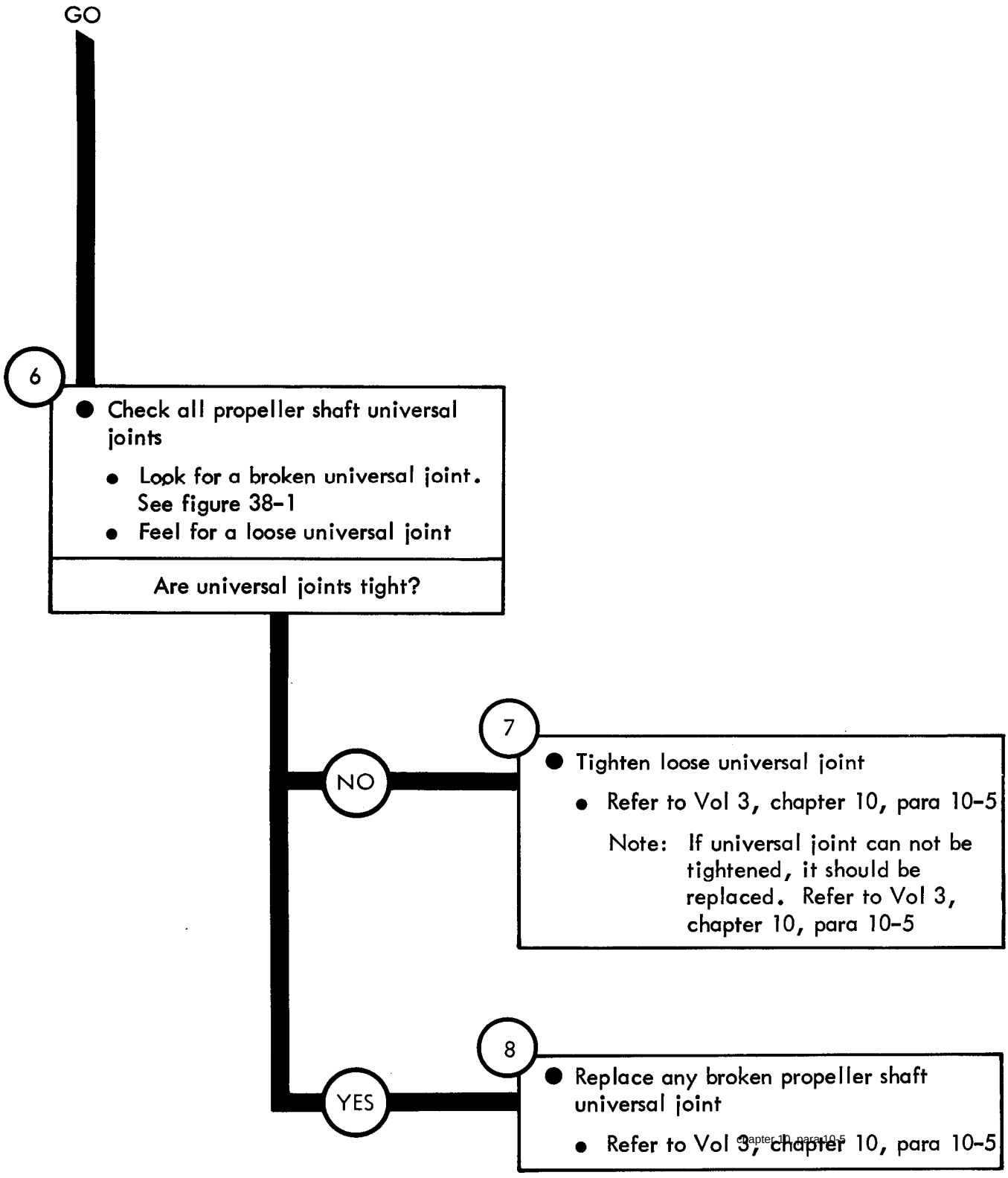


Figure 10-1 (Sheet 4 of 4)

Symptom 2

CLUNKING NOISE HEARD DURING ACCELERATION ON TRUCKS M36A2 AND M342A2

1

- Make truck ready for work on propeller shafts
  - Park truck. Refer to TM 9-2320-209-10
  - Chock wheels

NOTE

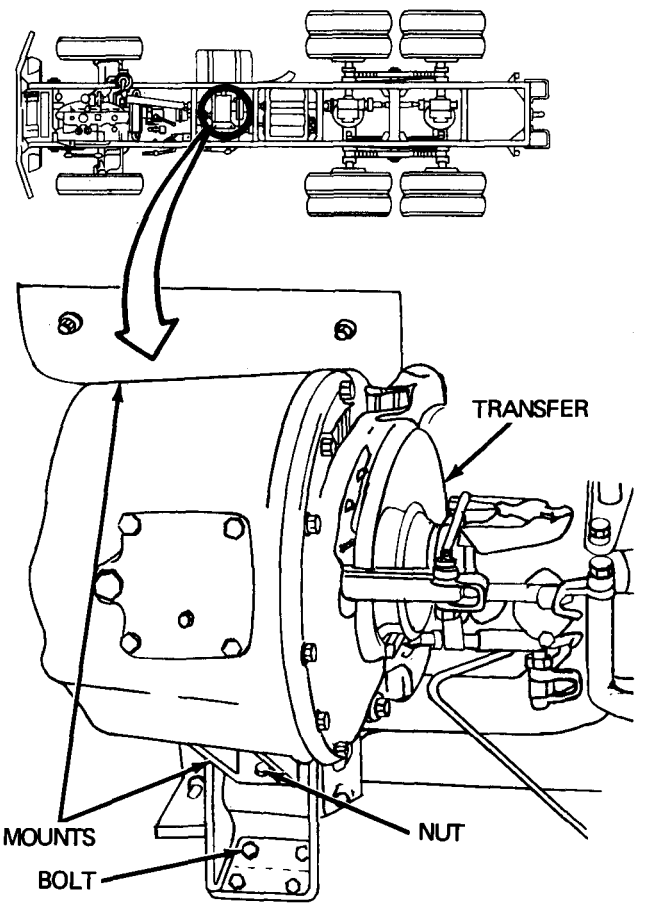
Transfer mounts are not part of the engine system. However the transfer mounts should be checked as a cause of the clunking noise

2

- Check transfer mounts
  - Crawl under truck
  - Look for signs that the transfer shifted its position
  - Look for a broken transfer mount
  - Look for missing transfer mounting nuts or bolts
  - Feel for loose transfer mount nuts

Are transfer mounts OK?

GO



TA 114093

Figure 10-2 (Sheet 1 of 4)

GO

YES

NO

3

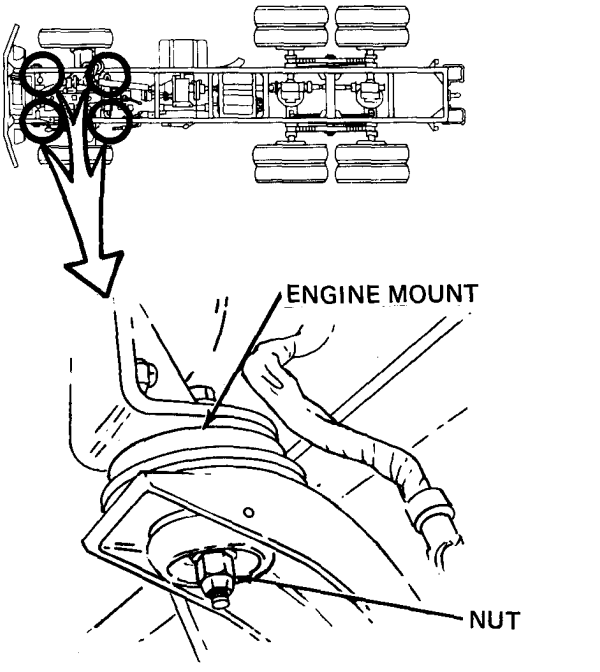
- Replace broken transfer mount
  - Tell direct support maintenance
- Put back missing transfer mount nuts and bolts
  - Put a hydraulic jack under transfer and raise jack until weight is removed from transfer mount
  - Put correct bolt, or nut, into transfer mount and tighten using 5/8-inch wrench
  - Using 5/8-inch wrench tighten all bolts
  - Using two 5/8-inch wrenches tighten all nuts
- Tighten loose transfer mount nuts and bolts
  - Using two 5/8-inch wrenches tighten nuts and bolts

4

- Check rear engine mounts
  - Look for a broken engine mount
  - Look for a missing engine mount nut
  - Using 5/8-inch wrench feel for a loose nut

Are engine mounts OK?

GO



TA 114094

Figure 10-2 (Sheet 2 of 4)

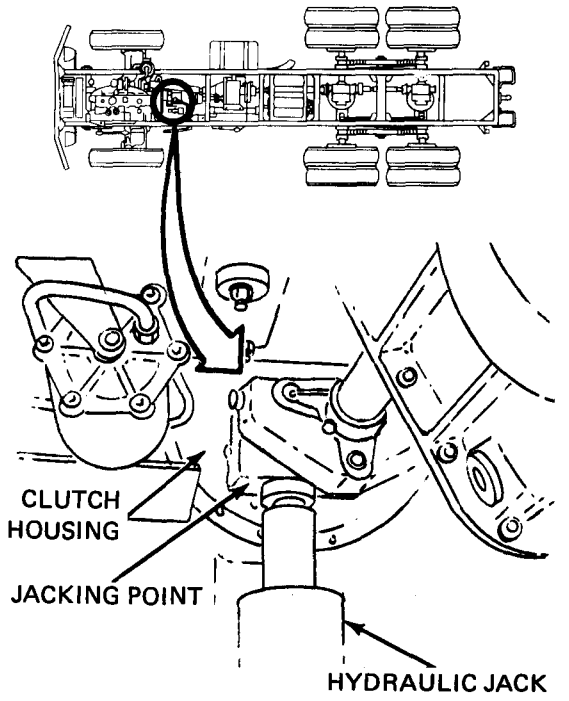
GO

YES

NO

5

- Replace broken engine mount
  - Refer to Vol 3, chapter 2, para 2-4
- Put back missing engine mount nut
  - Put a hydraulic jack under jacking point and raise jack until weight is removed from engine mount
  - Put correct nut onto engine mount and screw on until hand tight
  - Using two 5/8-inch wrenches tighten engine mount
- Tighten loose engine mount nut
  - Using two 5/8-inch wrenches tighten engine mount



NOTE

Propeller shaft and universal joints are not part of the engine system. However, they should be checked as a cause of the clunking noise

GO

TA 114095

Figure 10-2 (Sheet 3 of 4)

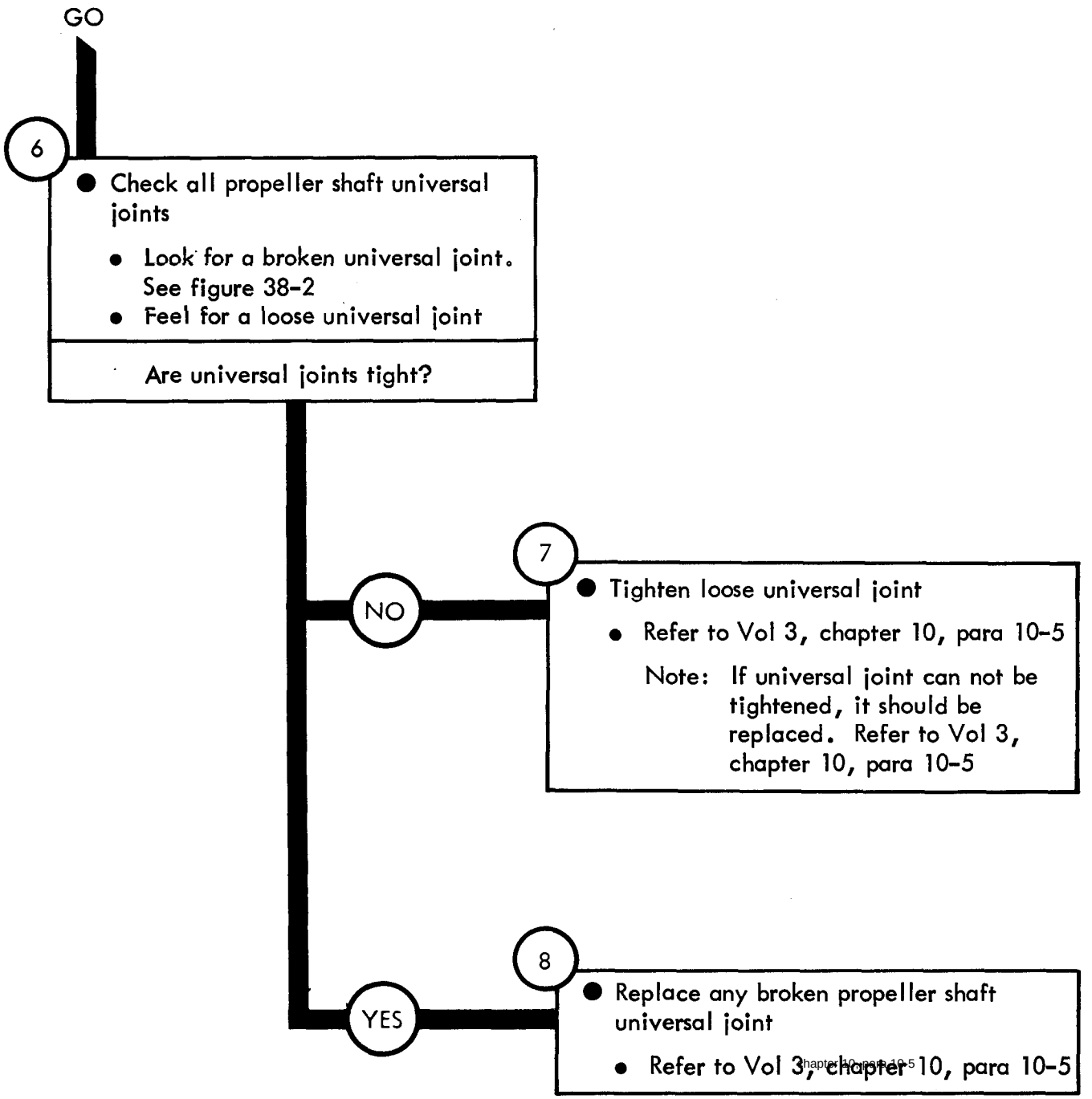


Figure 10-2 (Sheet 4 of 4)

CHAPTER 11

CLUTCH SYSTEM TROUBLESHOOTING

11-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment troubleshooting procedures for the clutch system for which there are authorized corrective maintenance tasks at the organizational maintenance level.

11-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

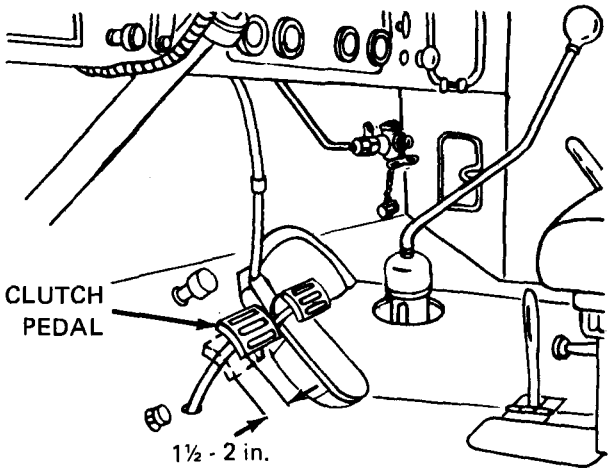
Symptom

1 TRUCK CREEPS WHEN CLUTCH PEDAL IS PRESSED

1
- Make truck ready for work on clutch
  - Park truck. Refer to TM 9-2320-209-10
  - Chock wheels

2
- Check clutch pedal free travel
  - Slowly push down on clutch pedal
  - Feel if pedal travels freely for about 1 1/2 to 2 inches before clutch lets go

Is clutch pedal free play OK?



NO

3
- Adjust clutch pedal free play
  - Refer to Vol 3, chapter 3, para 3-3

YES

4
- Replace clutch
  - Tell direct support maintenance

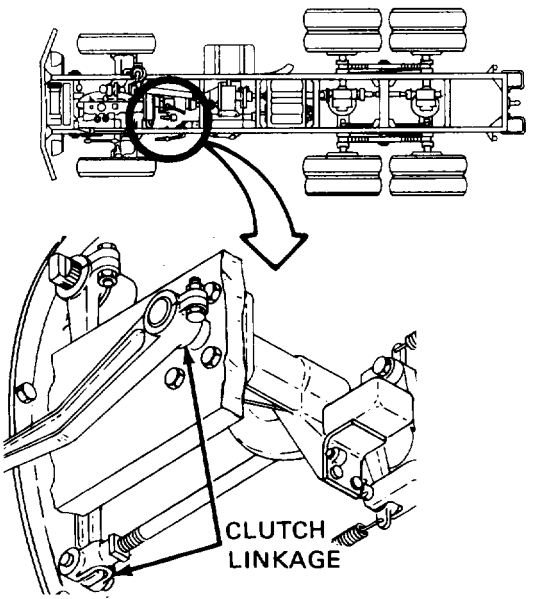
TA 114097

Figure 11-1

Symptom

2 CLUTCH, DRAGS, SLIPS, OR DOES NOT ENGAGE

1
- Make truck ready for work on clutch
  - Park truck. Refer to TM 9-2320-209-10
  - Chock wheels



2
- Check clutch linkage
  - Move clutch linkage to feel if it is binding
  - Look for bent linkage

Is clutch linkage OK?

YES

NO

3
- Lubricate binding linkage
  - Refer to LO 9-2320-209-12/1
- Replace bent linkage
  - Refer to Vol 3, chapter 3, para 3-3

GO

TA 114098

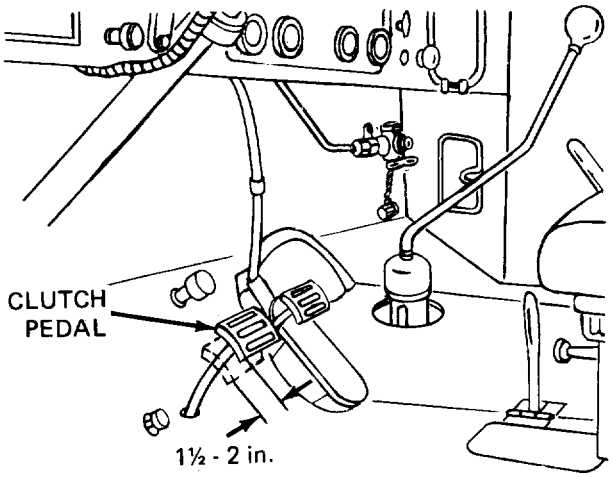
Figure 11-2 (Sheet 1 of 2)

GO

4

- Check clutch pedal free **play**
  - Slowly push down on clutch pedal
  - Feel if pedal travels freely for about 1 1/2 to 2 inches before clutch lets go

Is clutch pedal free play OK?



NO

5

- Adiust clutch pedal free play
  - Refer to Vol 3, chapter 3, para 3-3

YES

6

- Replace clutch
  - Tell direct support maintenance

TA 114099

Figure 11-2 (Sheet 2 of 2)

CHAPTER 12

CLUTCH SYSTEM TROUBLESHOOTING SUMMARY

12-1. GENERAL. This chapter gives a summary of troubleshooting procedures given in chapter 11 for the clutch system.

12-2. PROCEDURES. The summary in this chapter covers all fault symptoms found in the detailed troubleshooting procedures. Chapter 7 outlines a sample trouble-shooting procedure. The summary procedures are based on the “what-to-do” portions of the detailed procedures and do not include the "how-to-do-it" instructions. Warnings, cautions, and notes are given where needed.

CLUTCH SYSTEM TROUBLESHOOTING SUMMARY

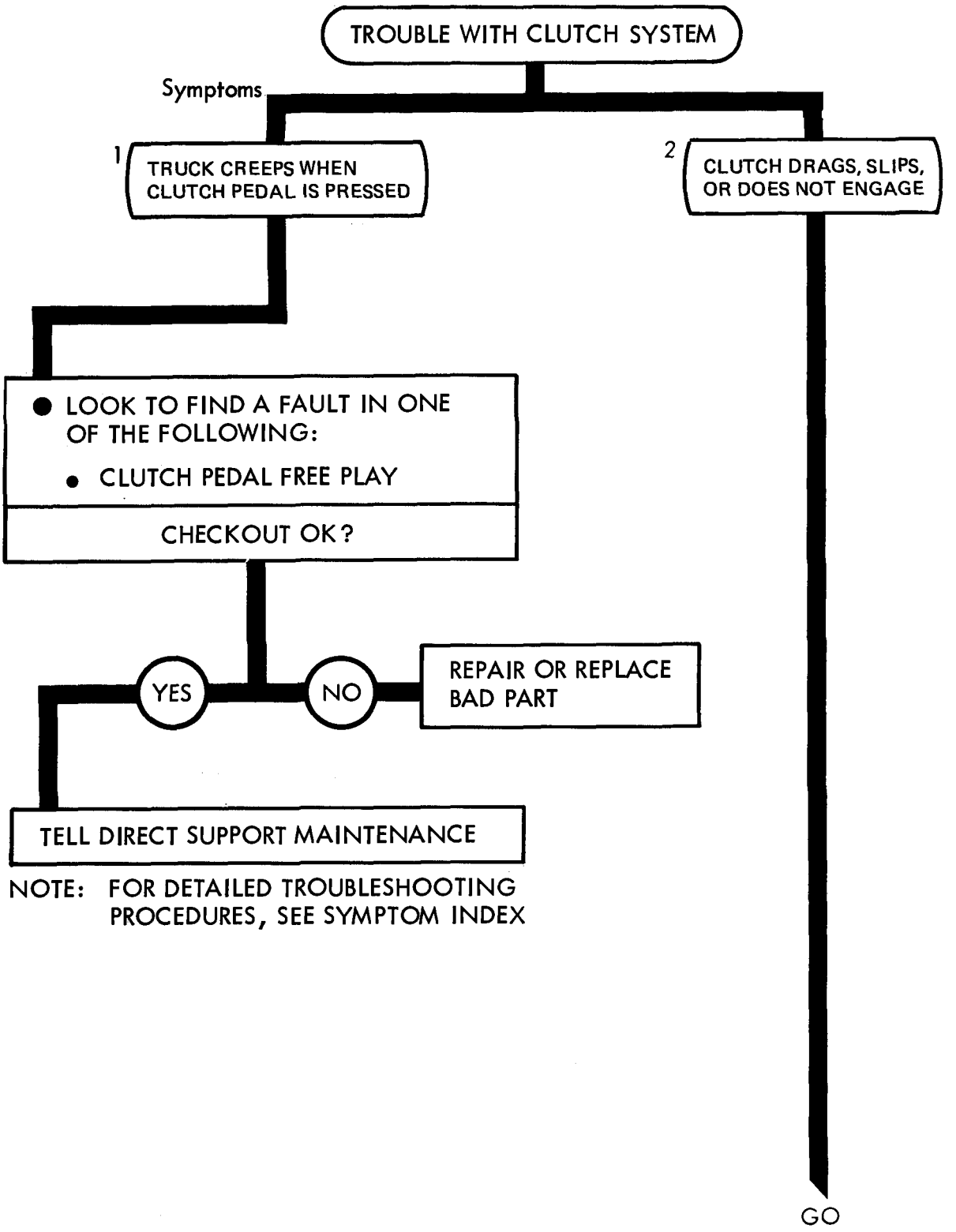
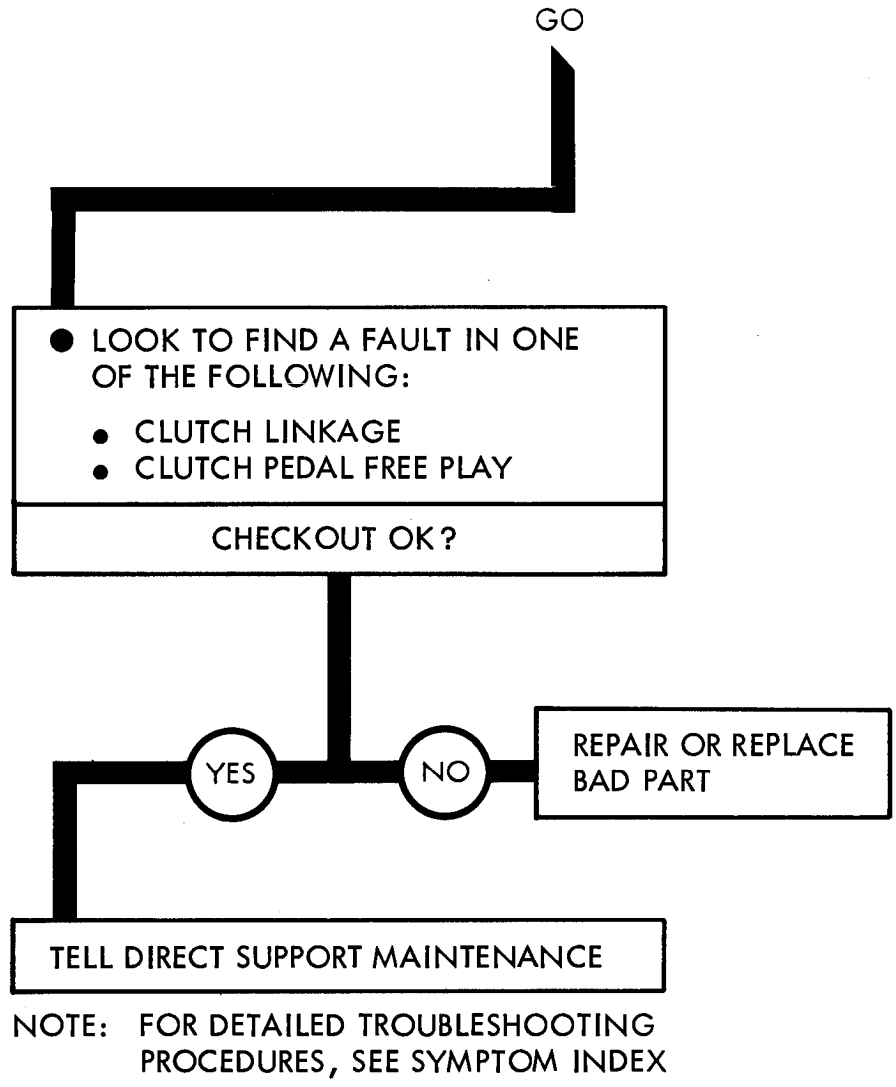


Figure 12-1 (Sheet 1 of 2)



TA 114101

Figure 12-1 (Sheet 2 of 2)

CHAPTER 13

FUEL SYSTEM TROUBLESHOOTING

13-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment troubleshooting procedures for the fuel system, for which there are authorized corrective maintenance tasks at the organizational maintenance level.

13-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

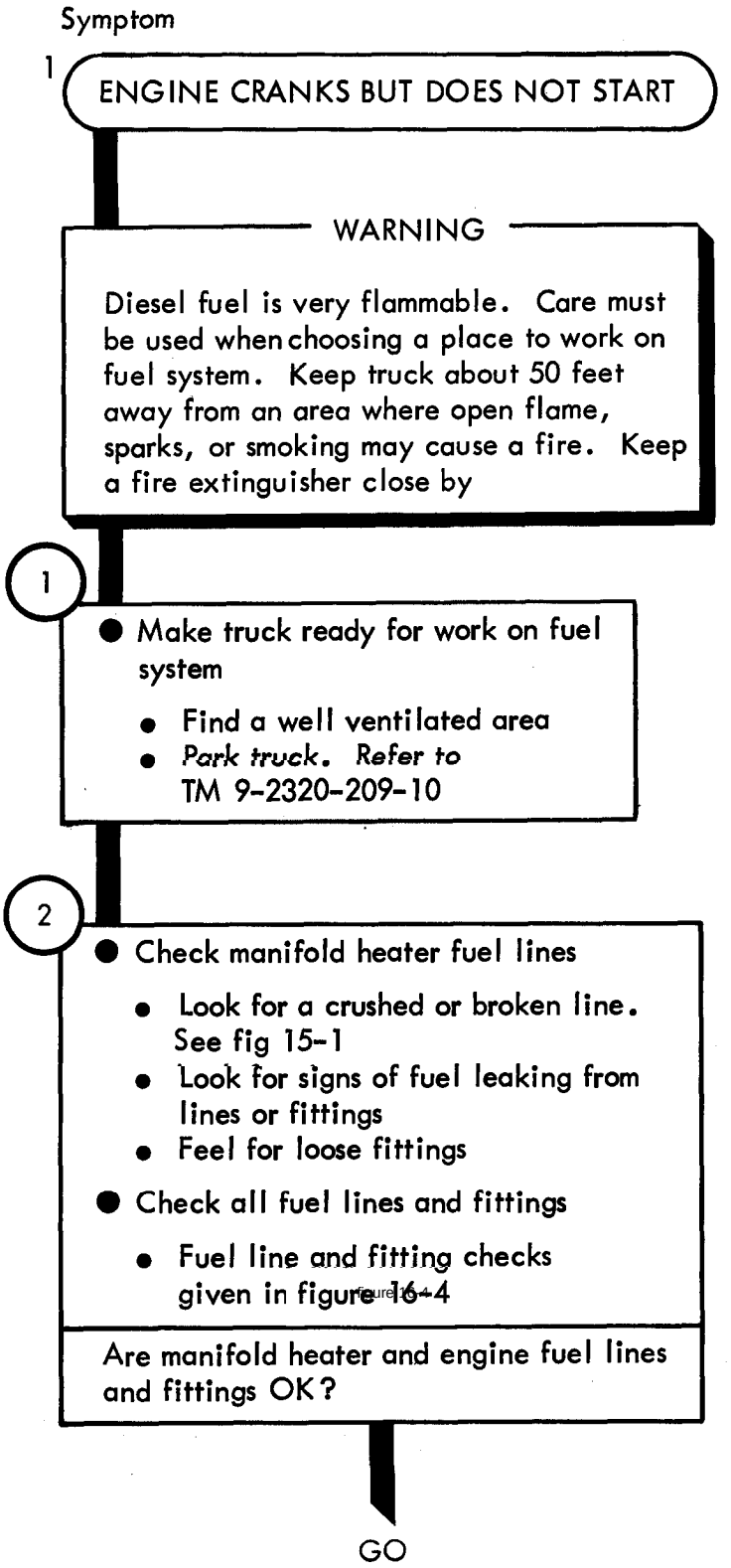


Figure 13-1 (Sheet 1 of 6)

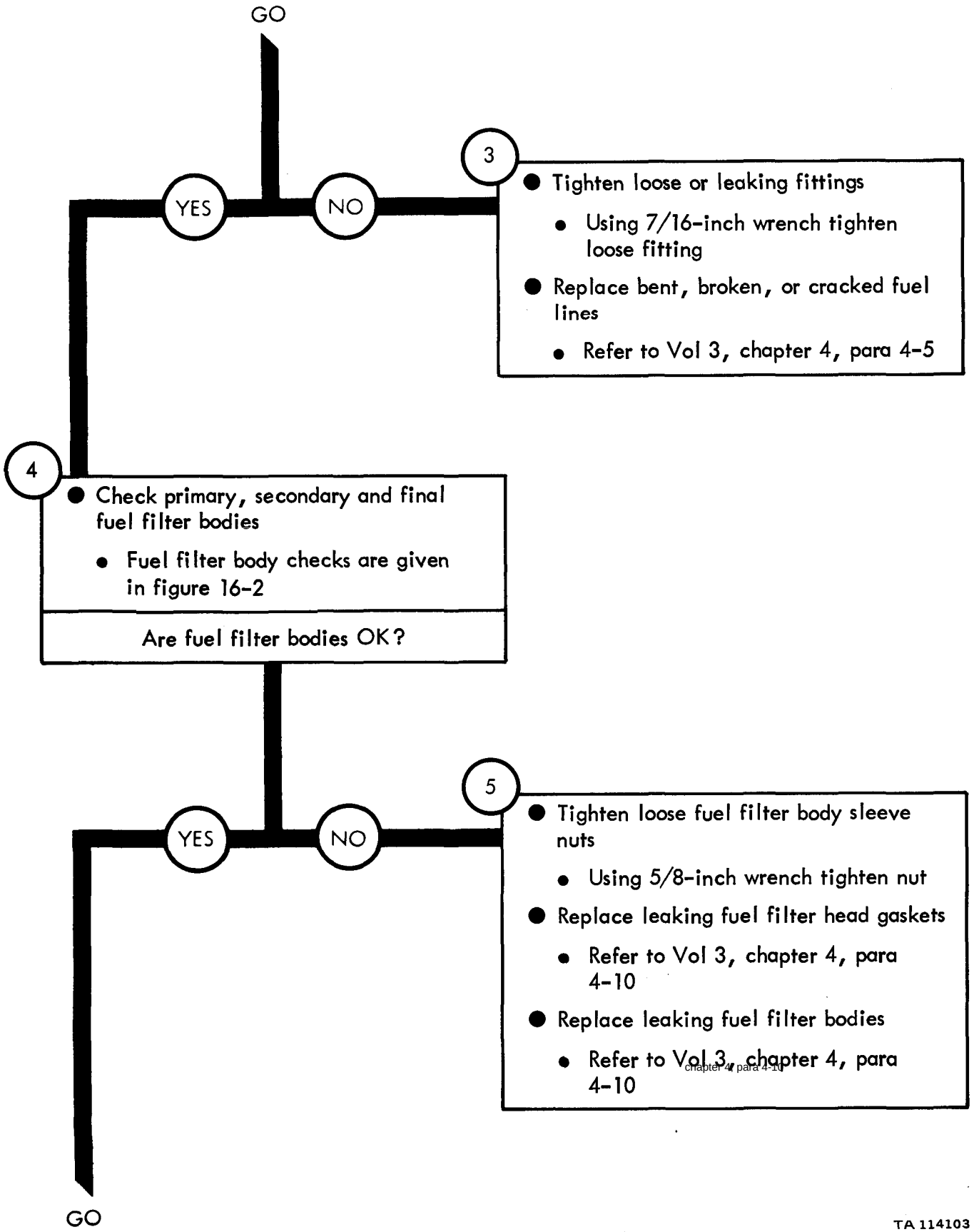


Figure 13-1 (Sheet 2 of 6)

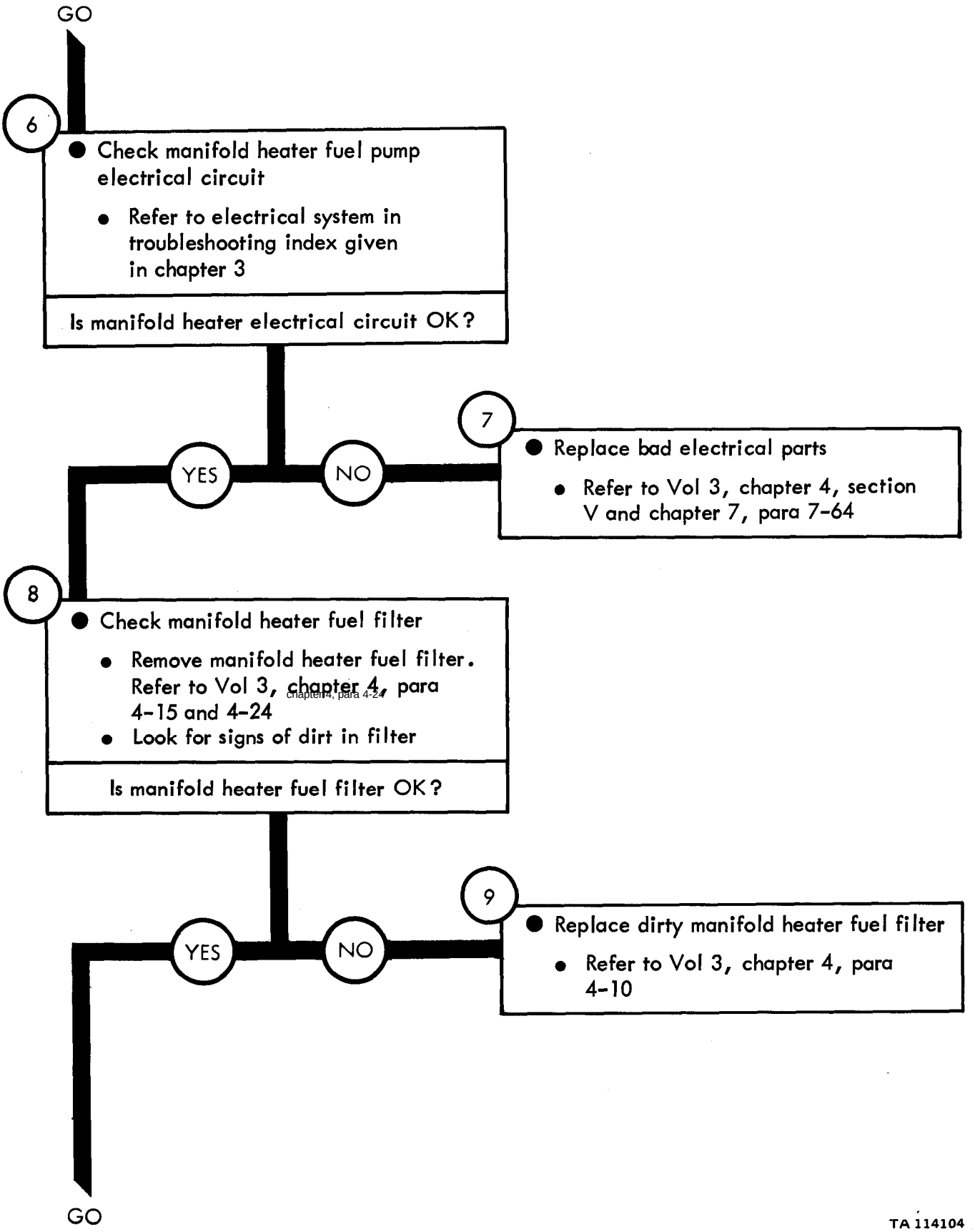


Figure 13-1 (Sheet 3 of 6)

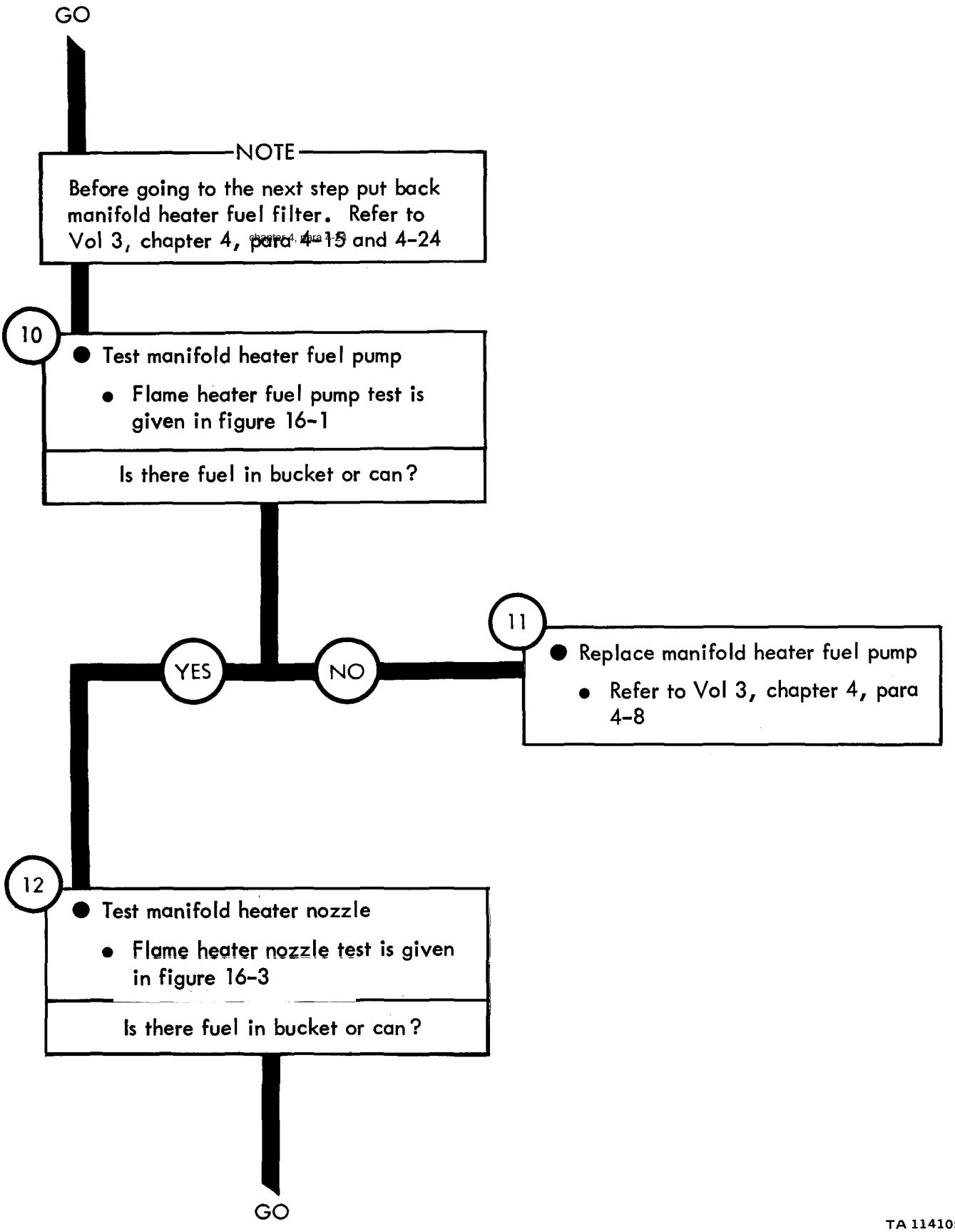


Figure 13-1 (Sheet 4 of 6)

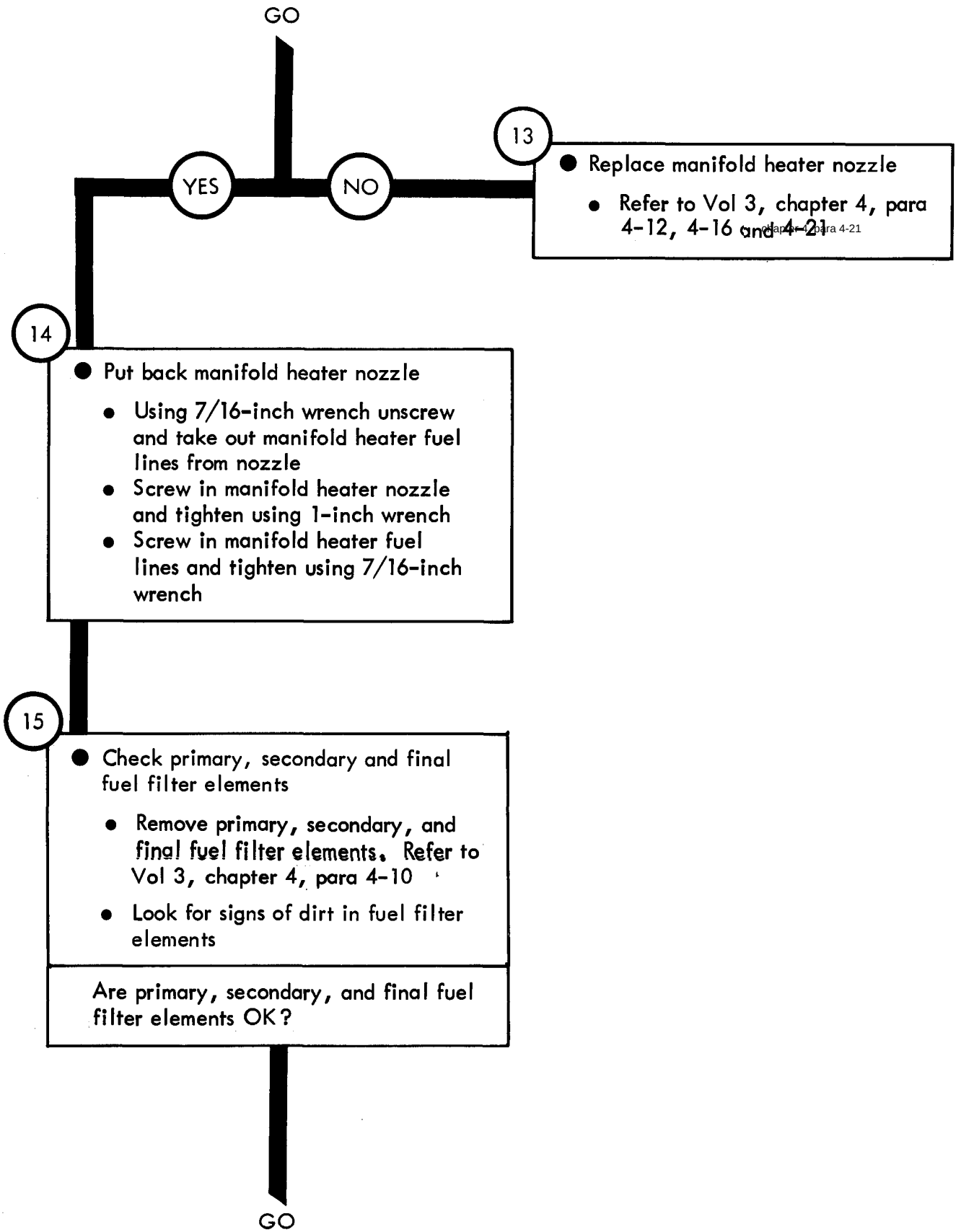
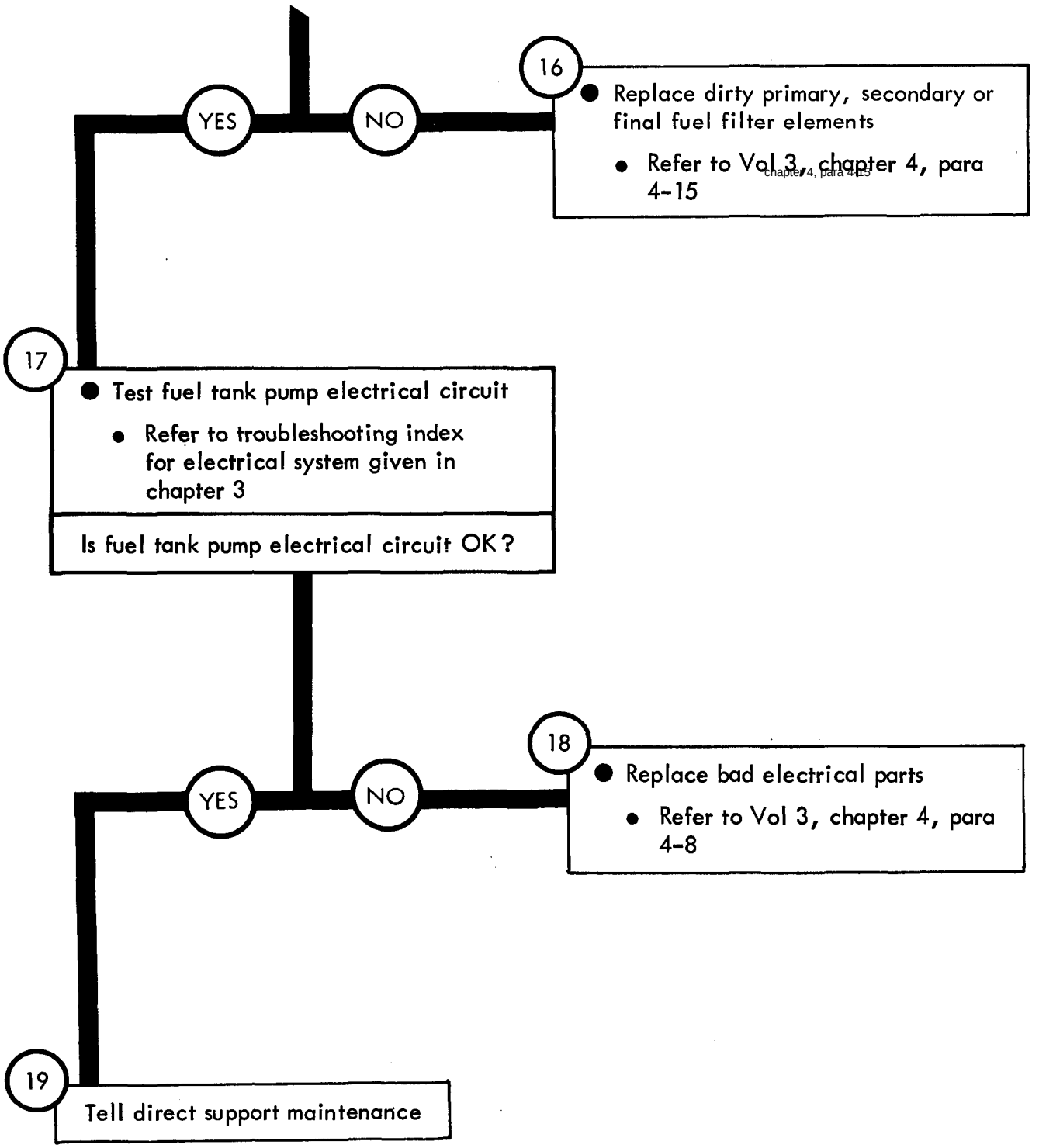
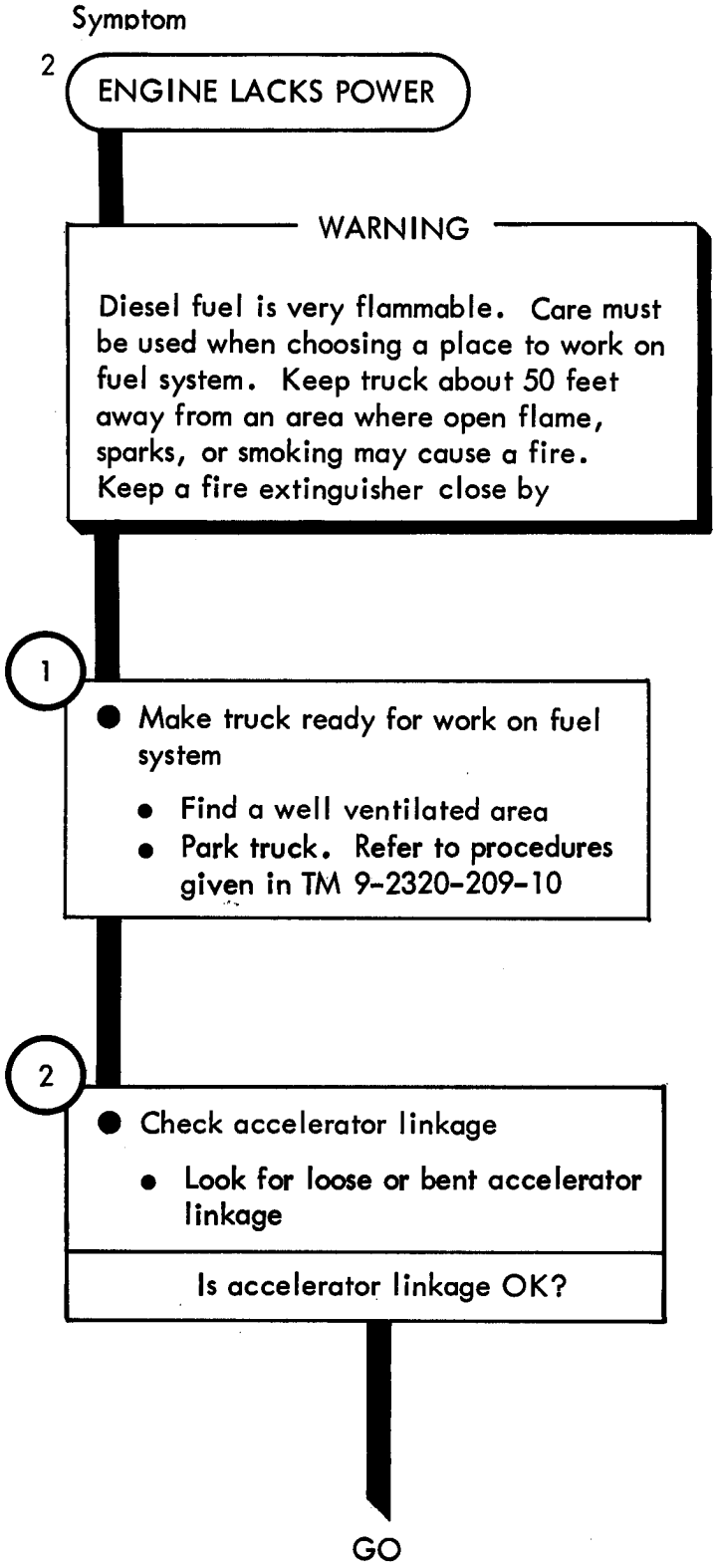


Figure 13-1 (Sheet 5 of 6)



TA 114107

Figure 13-1 (Sheet 6 of 6)



TA 114108

Figure 13-2 (Sheet 1 of 5)

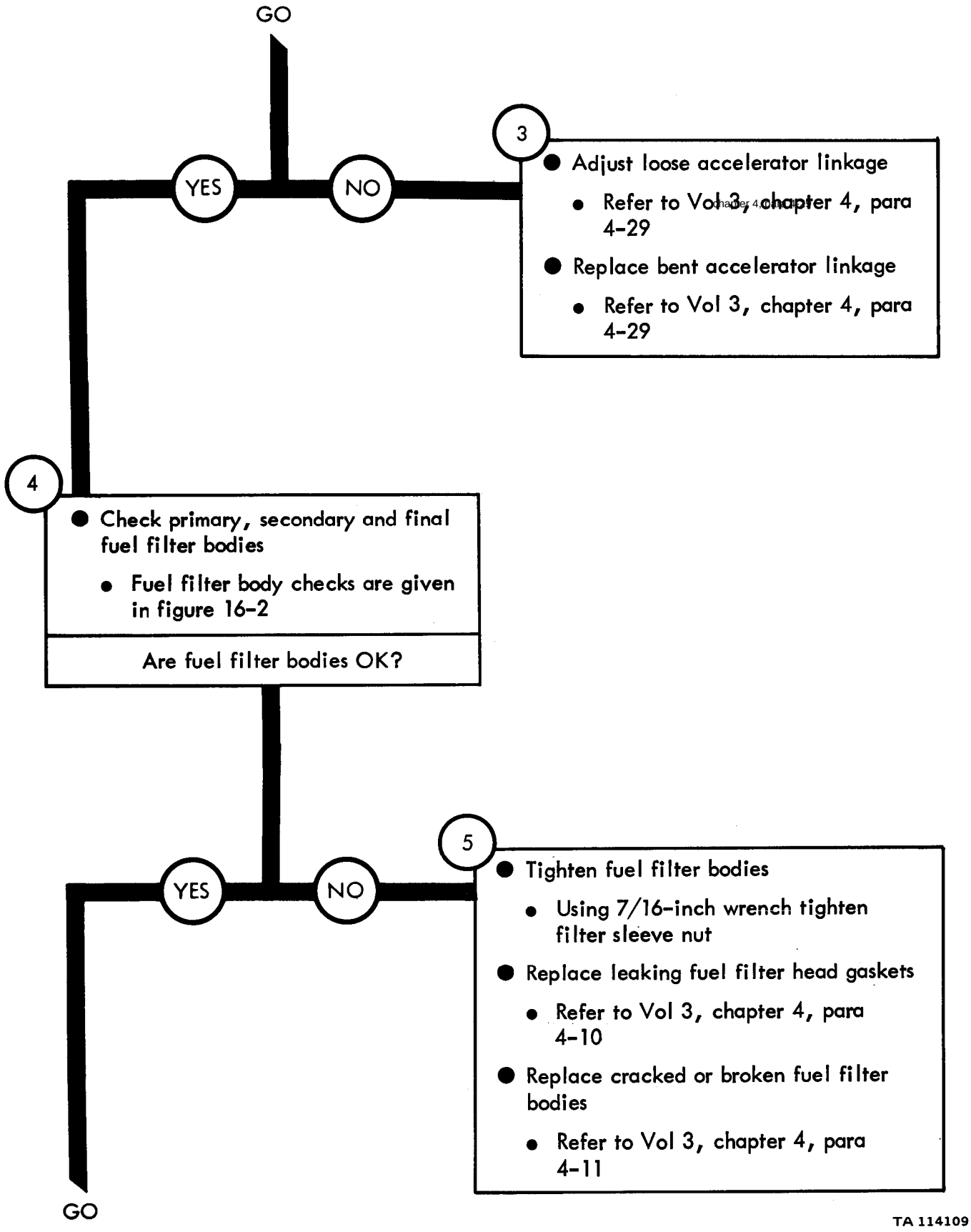


Figure 13-2 (Sheet 2 of 5)

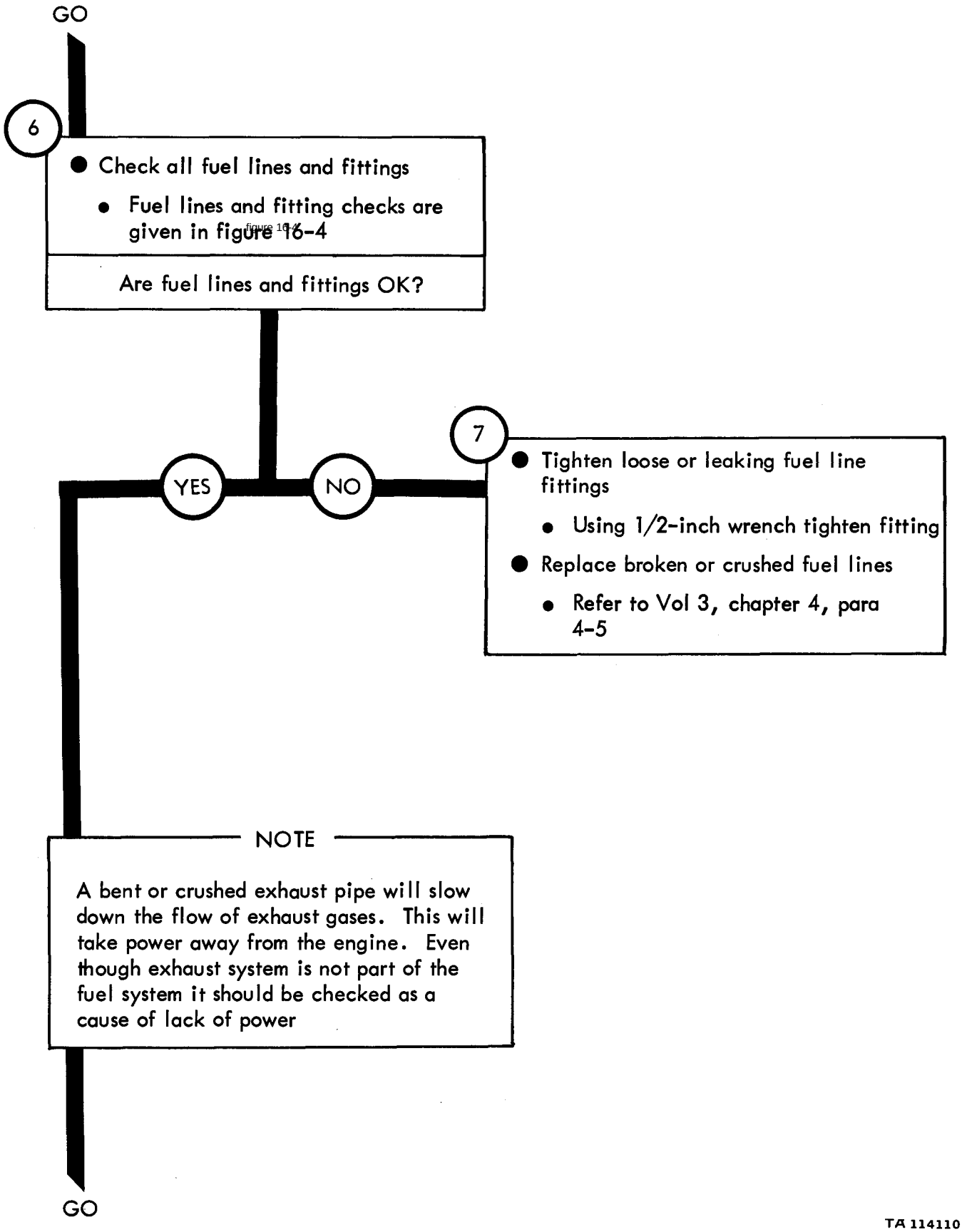


Figure 13-2 (Sheet 3 of 5)

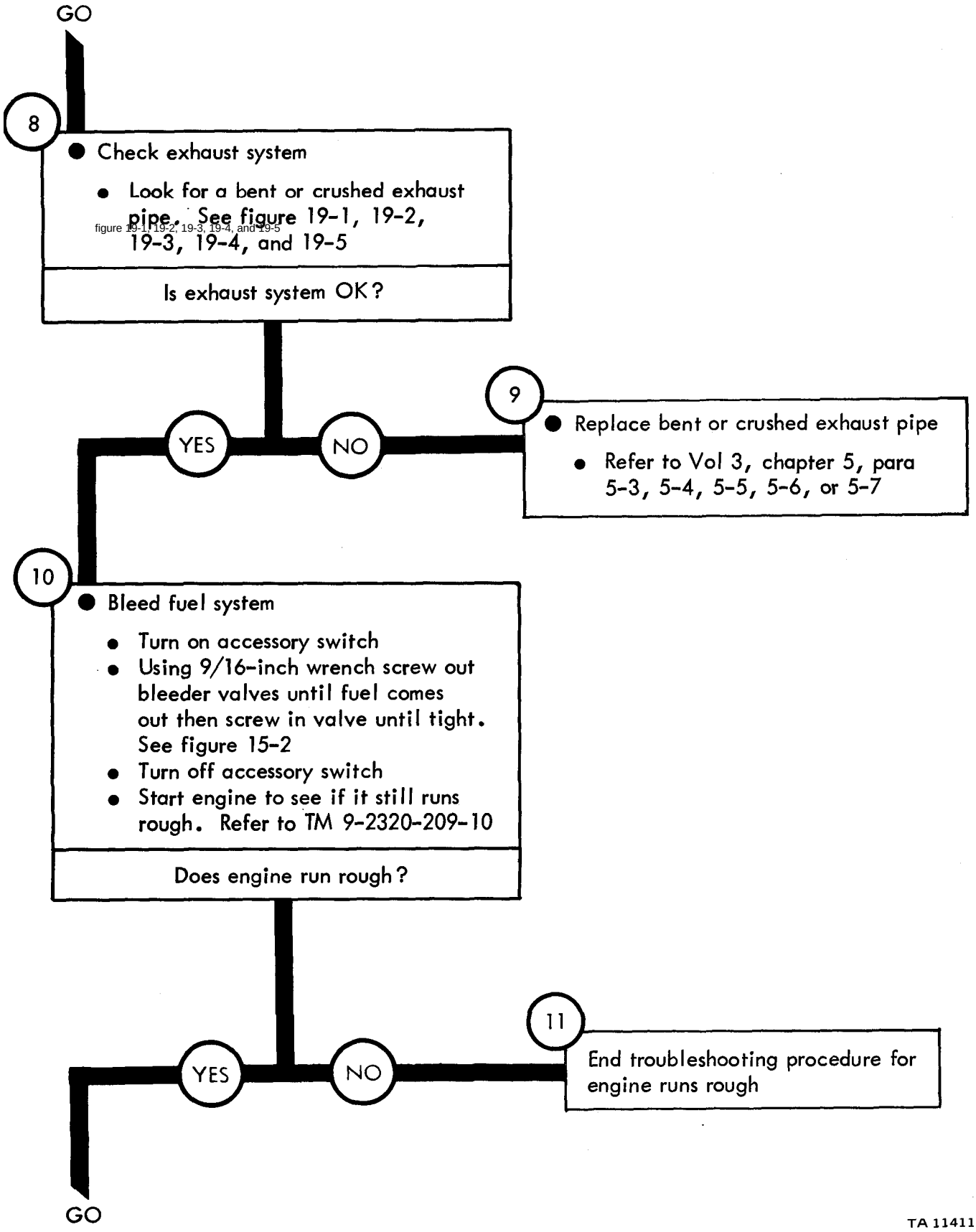
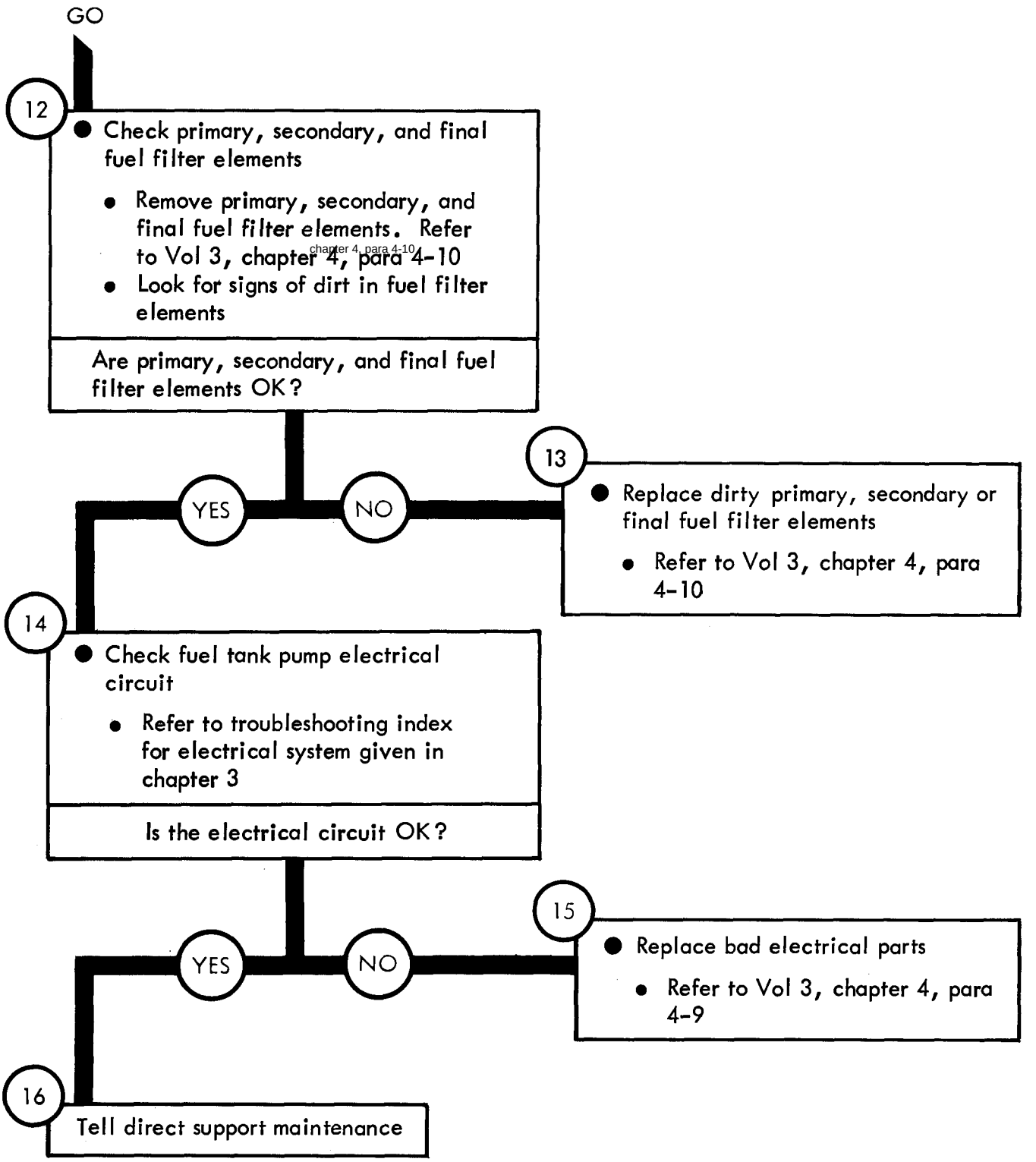


Figure 13-2 (Sheet 4 of 5)



TA 114112

Figure 13-2 (Sheet 5 of 5)

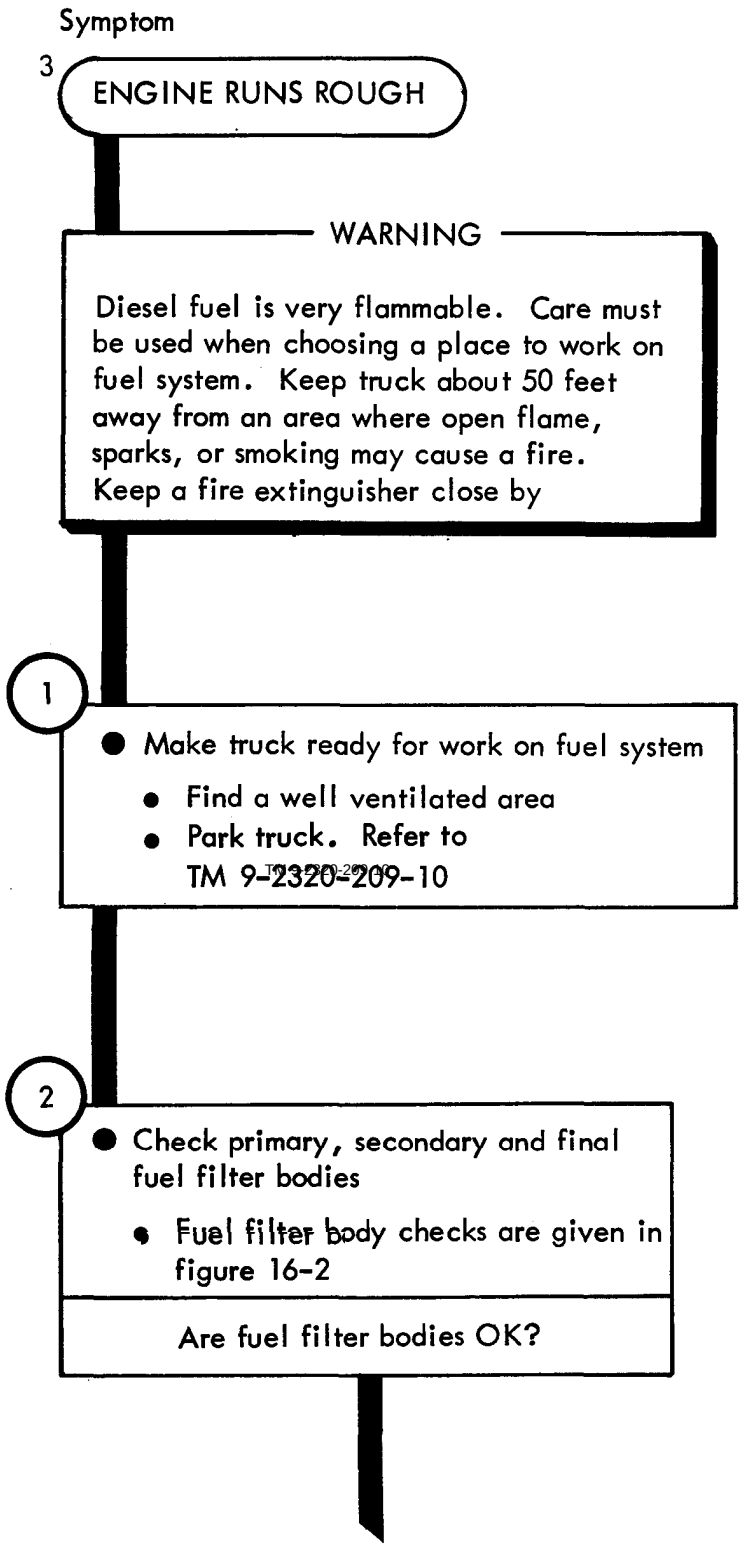


Figure 13-3 (Sheet 1 of 5)

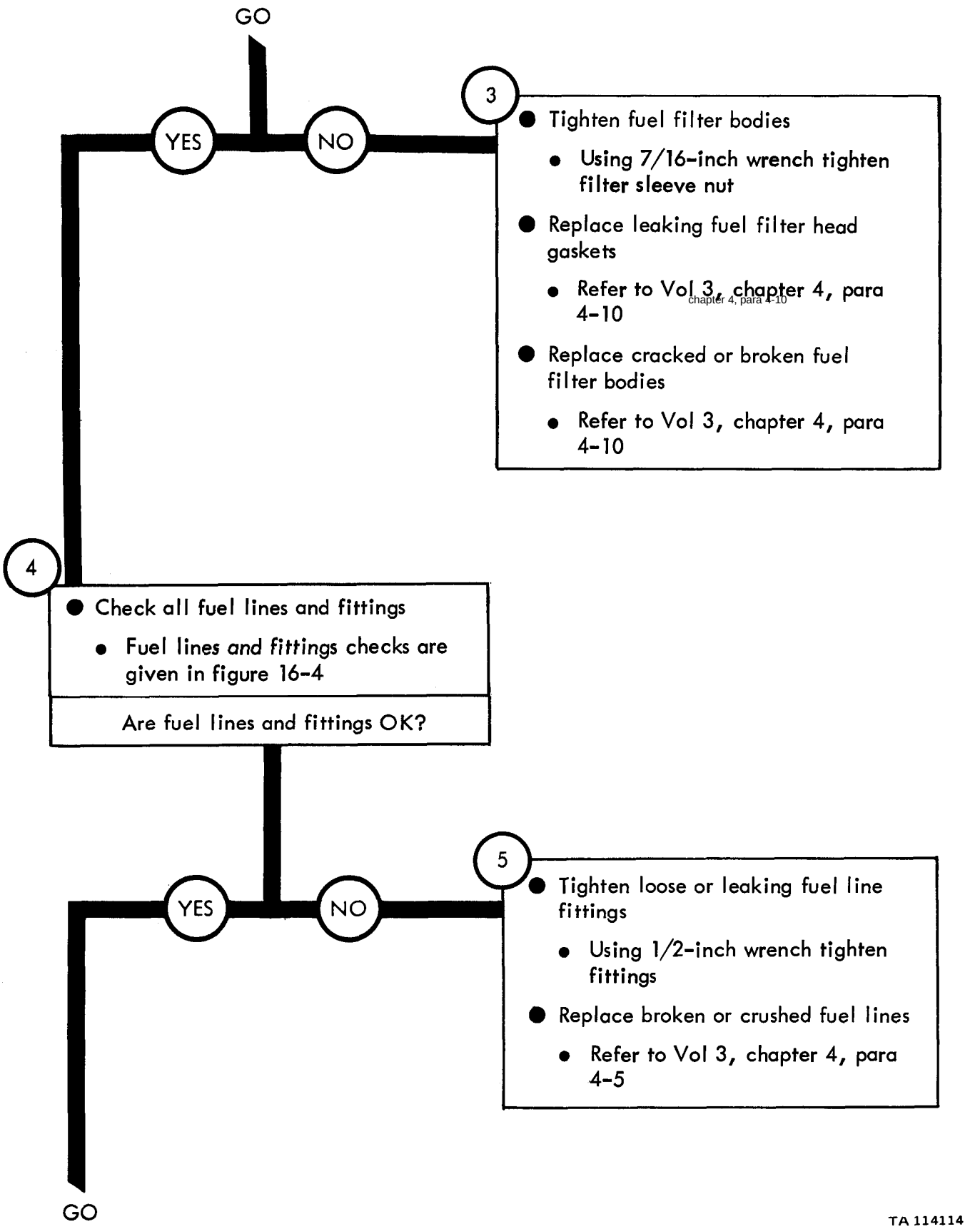
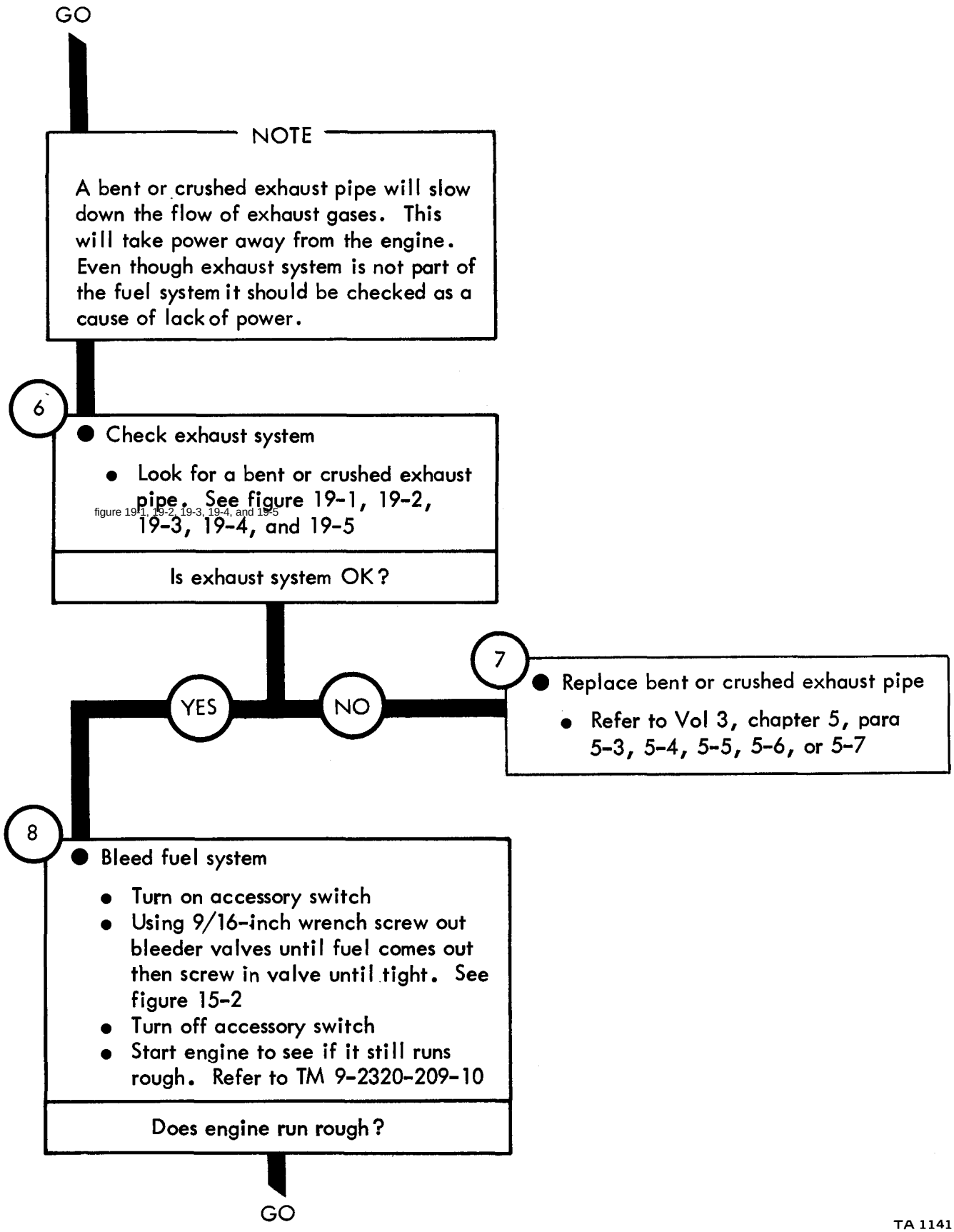


Figure 13-3 (Sheet 2 of 5)



TA 114115

Figure 13-3 (Sheet 3 of 5)

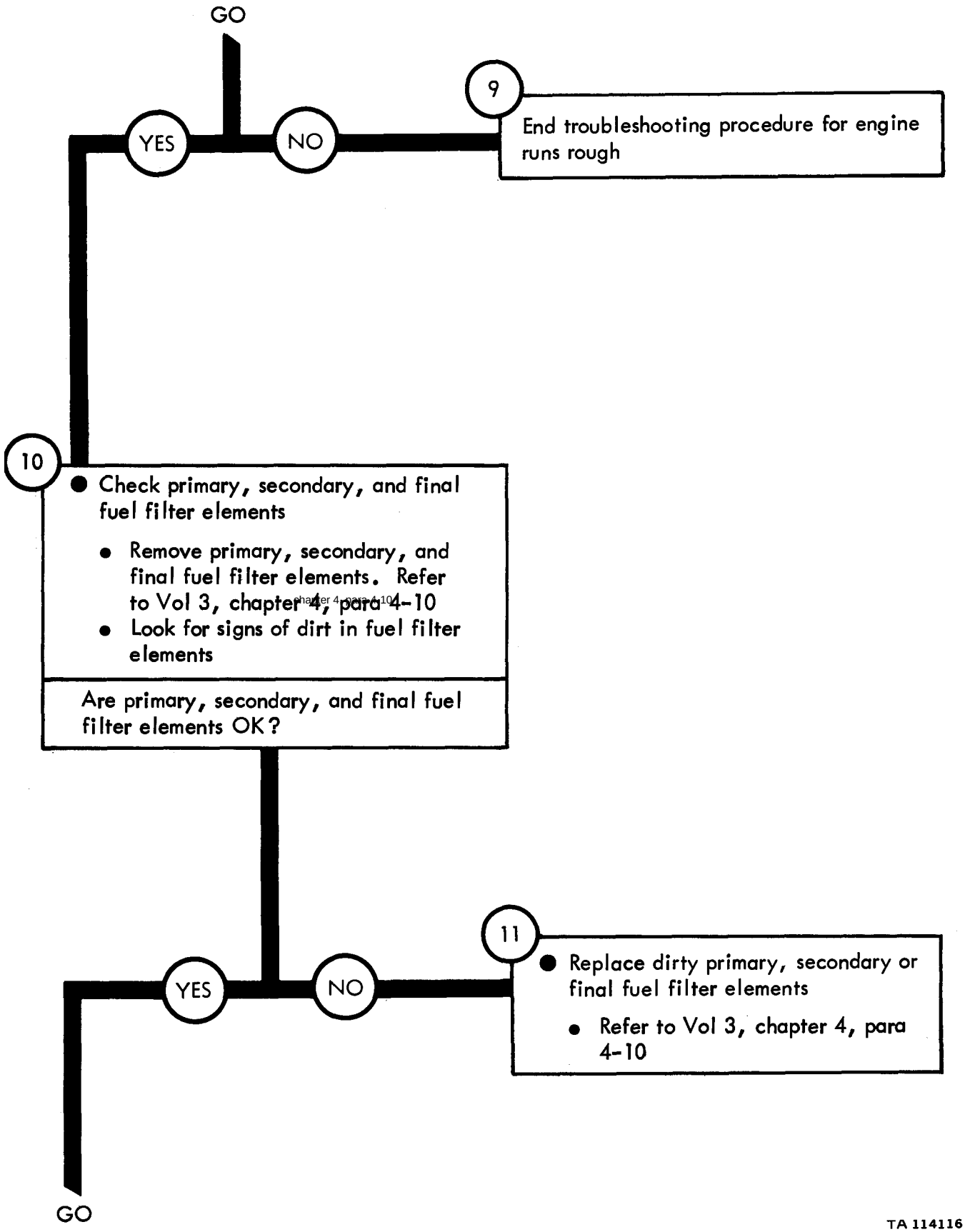
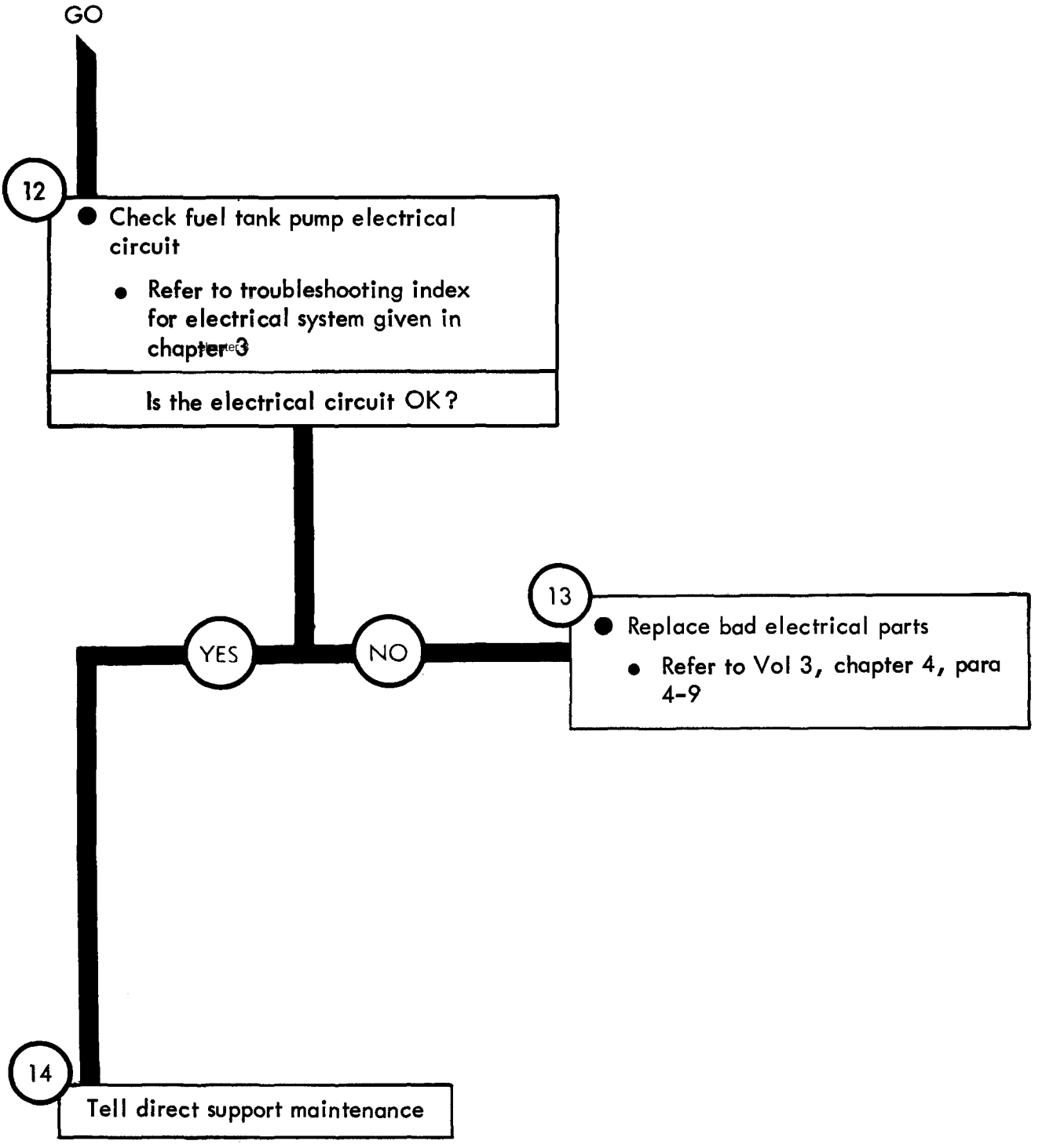
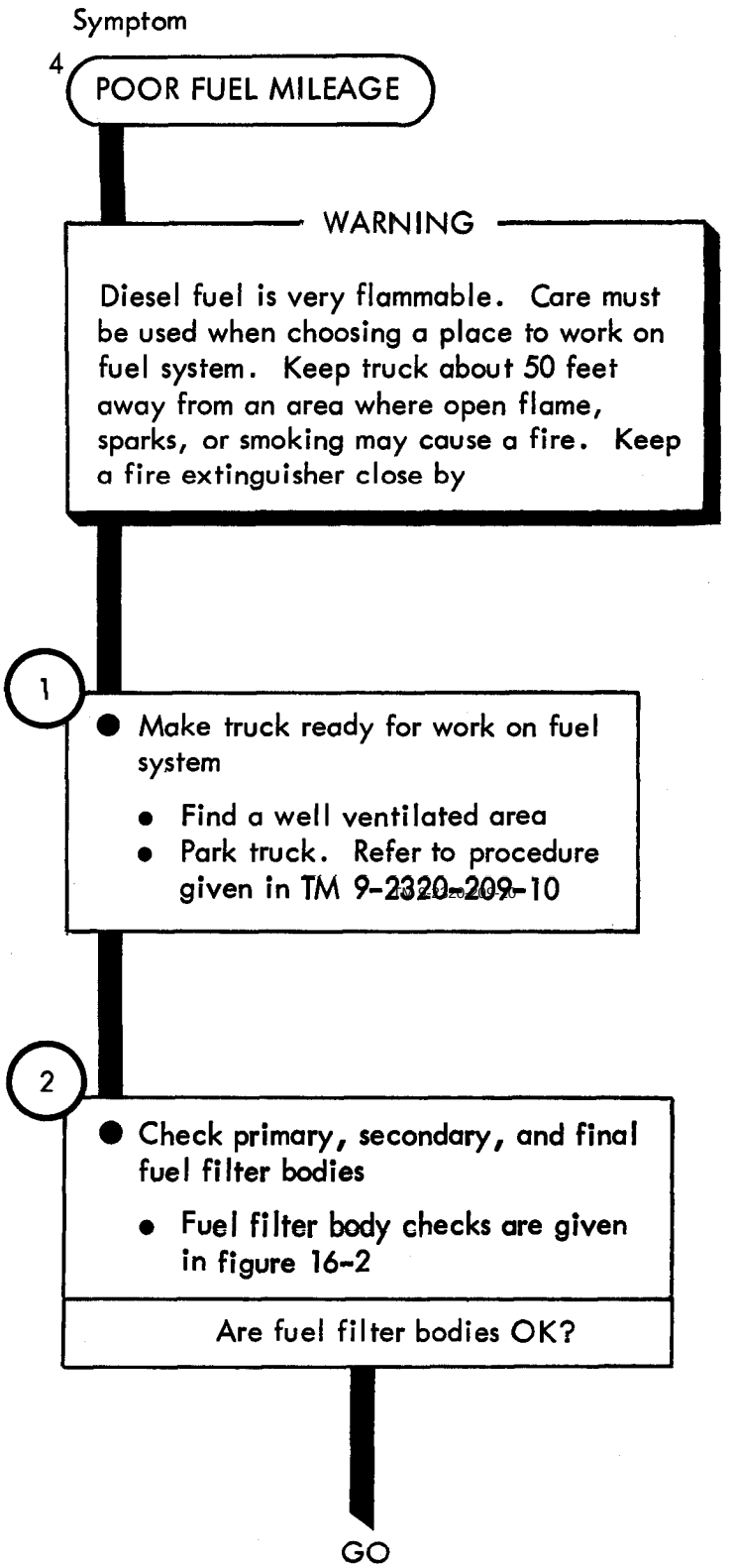


Figure 13-3 (Sheet 4 of 5)



TA 114117

Figure 13-3 (Sheet 5 of 5)



TA 114118

Figure 13-4 (Sheet 1 of 3)

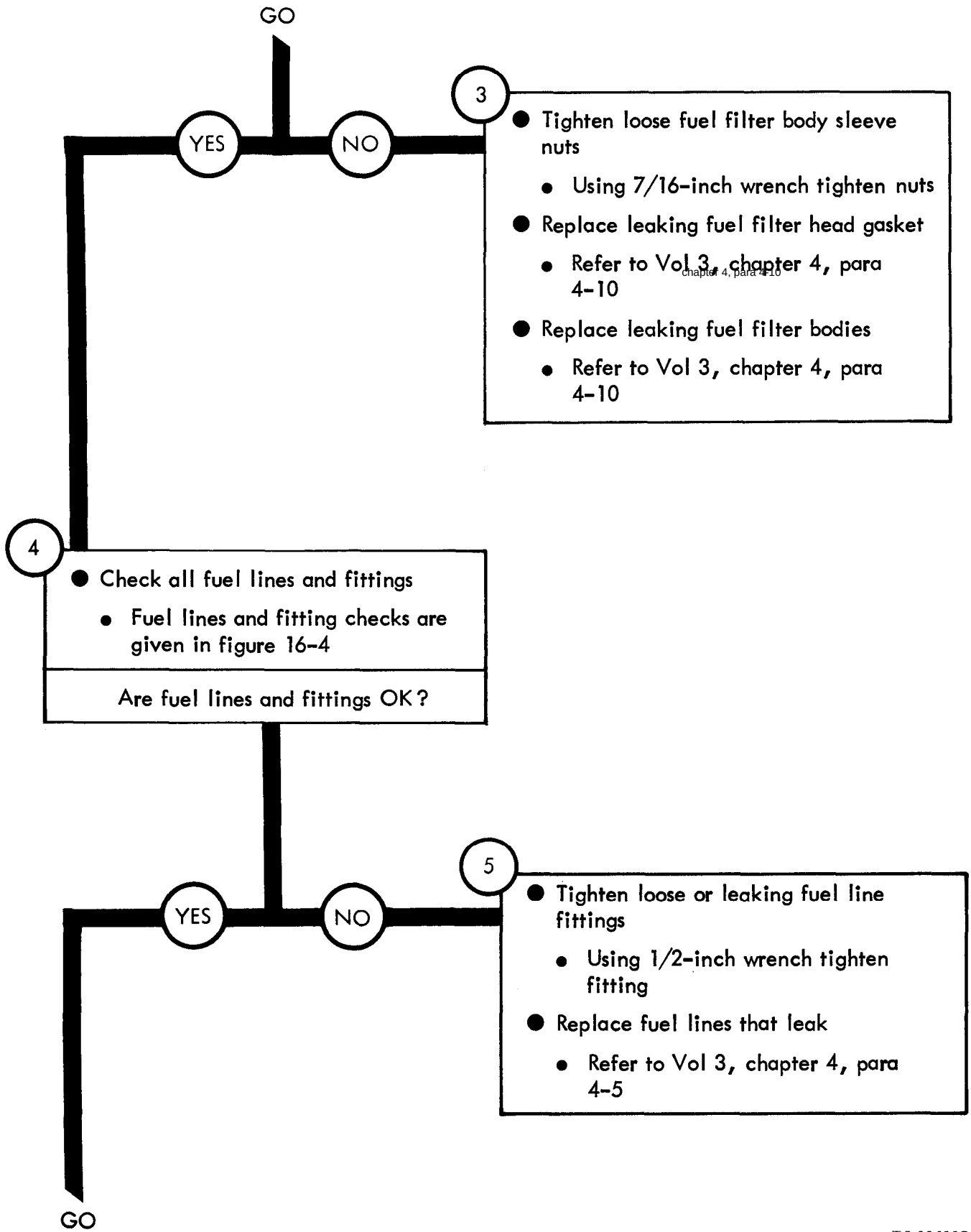


Figure 13-4 (Sheet 2 of 3)

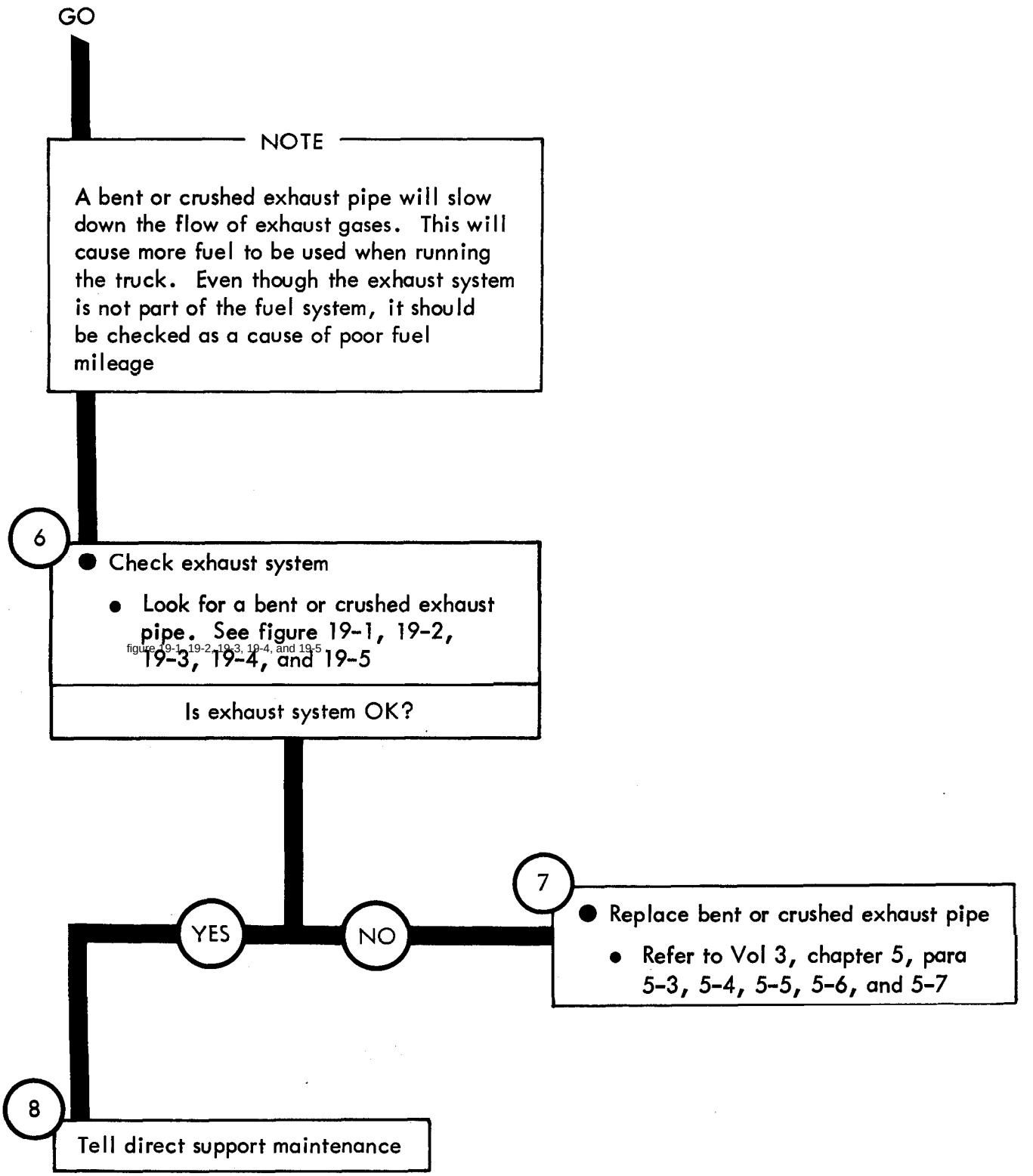


Figure 13-4 (Sheet 3 of 3)

Symptom

5 ENGINE DOES NOT SLOW DOWN WHEN ACCELERATOR PEDAL IS LET GO

WARNING

Diesel fuel is very flammable. Care must be used when choosing a place to work on fuel system. Keep truck about 50 feet away from an area where open flame, sparks, or smoking may cause a fire. Keep a fire extinguisher close by

1

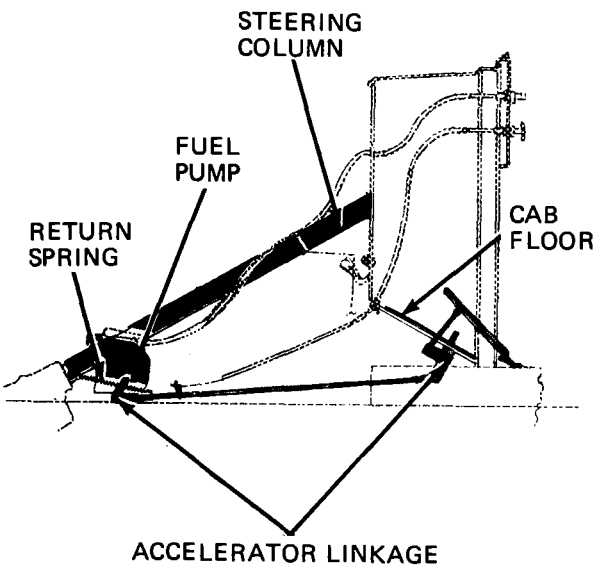
- Make truck ready for work on fuel system
  - Find a well ventilated area
  - Park truck. Refer to TM 9-2320-209-10

2

- Check accelerator return spring
  - See if both ends of return spring are attached
  - See if return spring is broken

Is accelerator return spring OK?

GO



TA 114121

Figure 13-5 (Sheet 1 of 3)

GO

YES

NO

3

- Attach accelerator return spring
  - Refer to Vol 3, chapter 4, para 4-29
- Replace broken accelerator return spring
  - Refer to Vol 3, chapter 2, para 4-29

4

- Check engine fuel return lines
  - Look for bent or crushed lines. See figure 15-3, 15-4, or 15-5

Are engine fuel return lines OK?

YES

NO

5

- Replace bent or crushed fuel return lines
  - Refer to Vol 3, chapter 4, para 4-5

6

- Check accelerator linkage
  - Push accelerator rod all the way towards drivers seat
  - Let go and see if linkage returns all the way

Is accelerator linkage OK?

GO

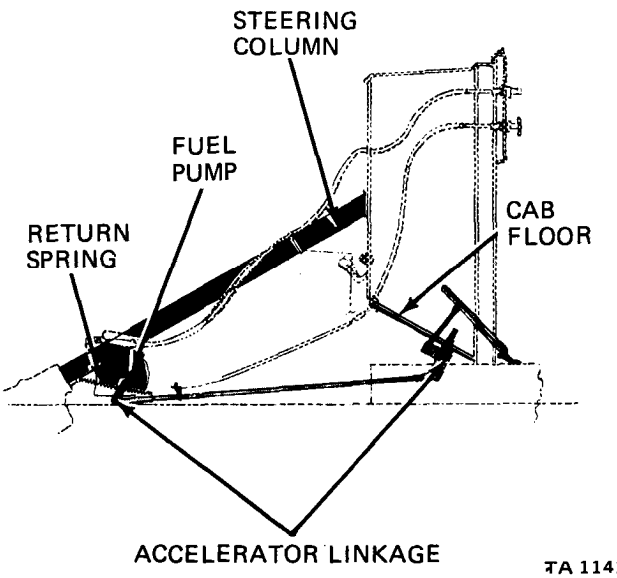
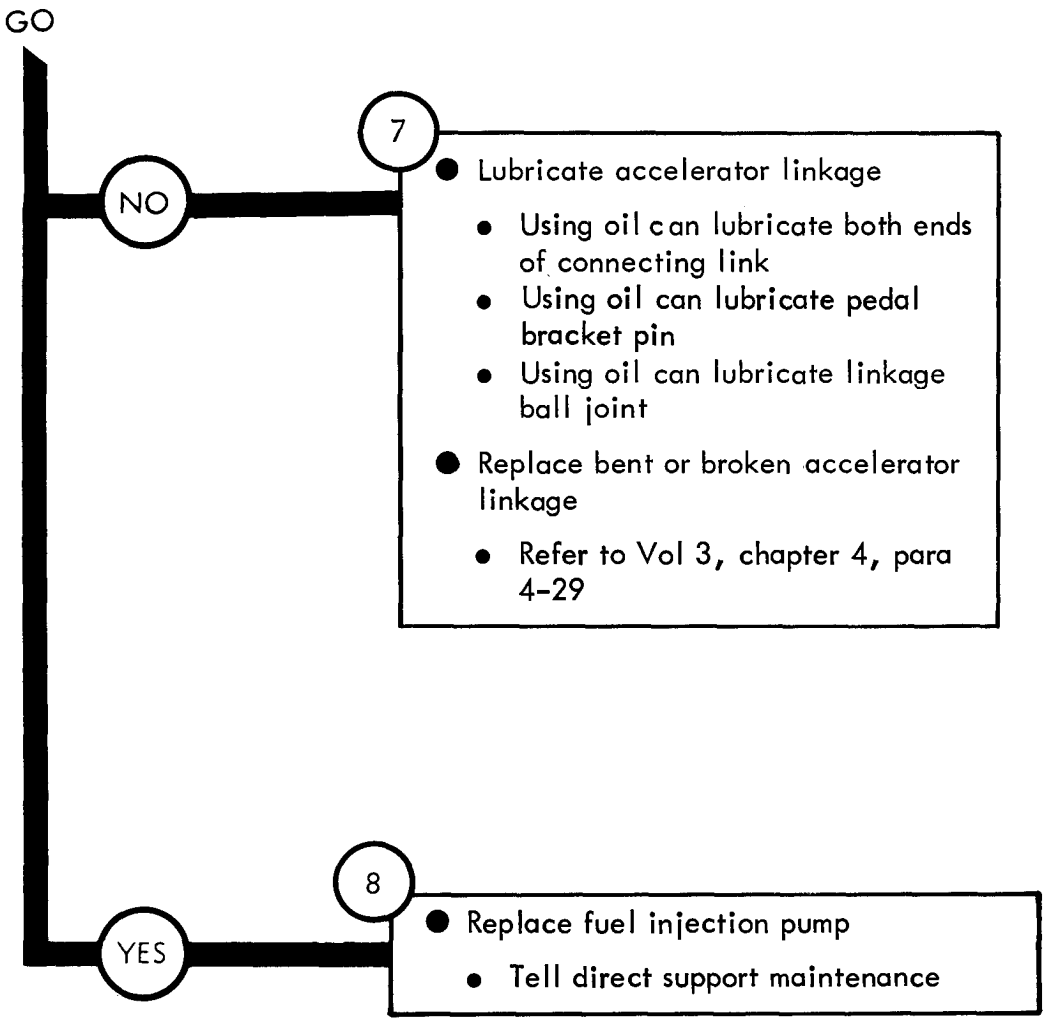
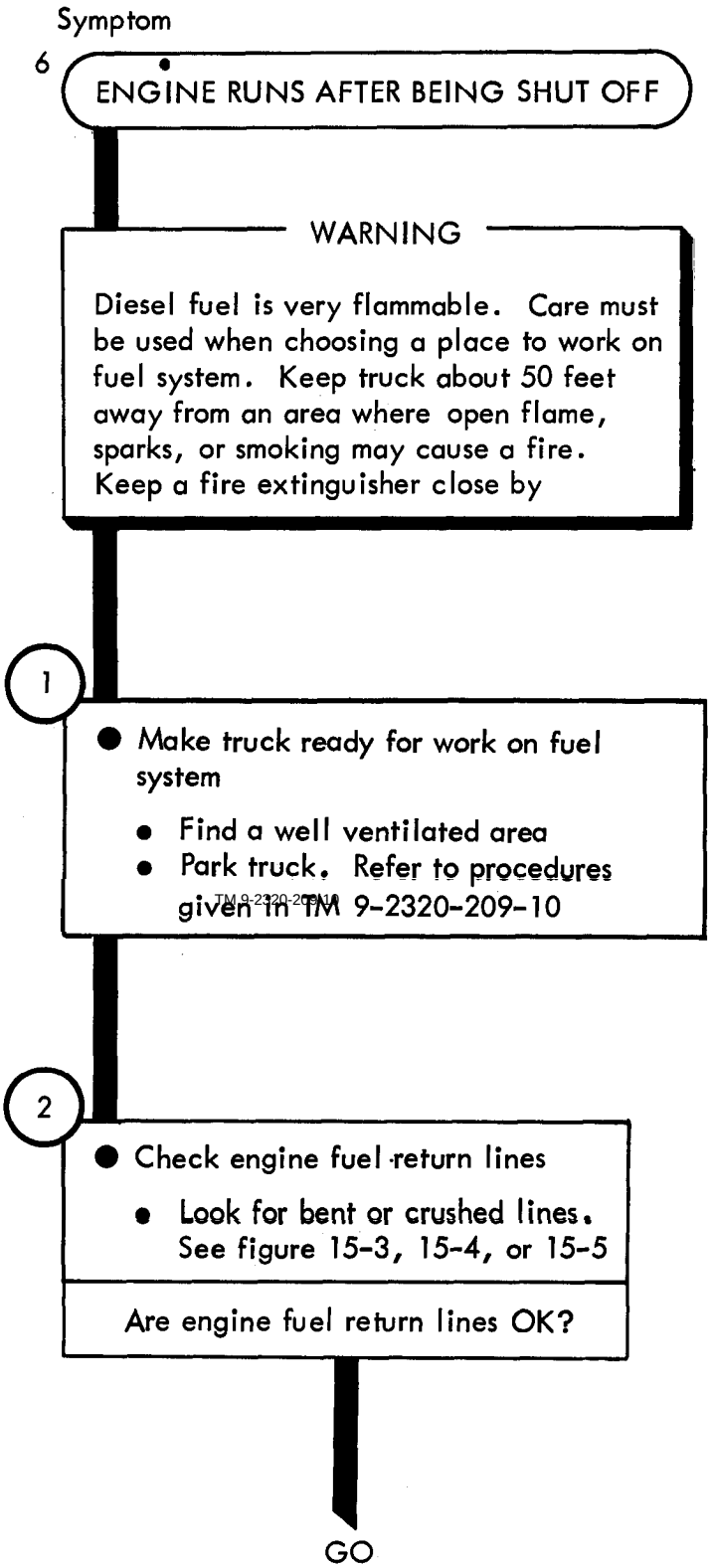


Figure 13-5 (Sheet 2 of 3)



TA 114123

Figure 13-5 (Sheet 3 of 3)



TA 114124

Figure 13-6 (Sheet 1 of 2)

GO

YES

NO

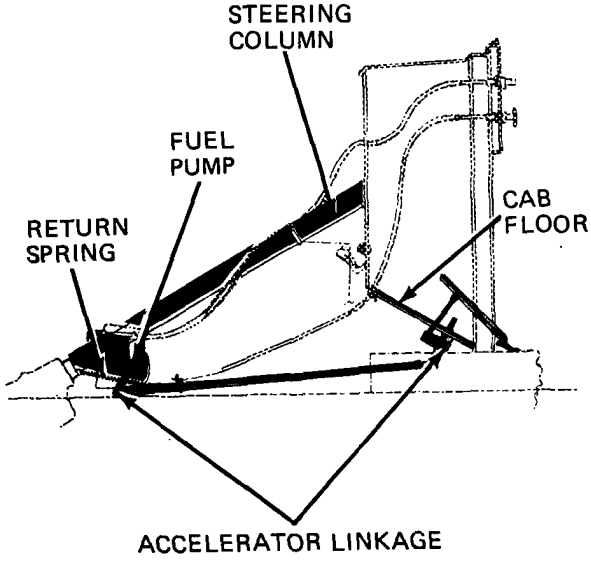
3

- Replace bent or crushed fuel return lines
  - Refer to Vol 3, chapter 4, para 4-5

4

- Check accelerator linkage
  - Push accelerator rod all the way towards drivers seat
  - Let go and see if linkage returns all the way

Is accelerator linkage OK?



NO

5

- Lubricate accelerator linkage
  - Using oil can lubricate accelerator linkage
- Replace bent or broken accelerator linkage
  - Refer to Vol 3, chapter 4, para 4-29

YES

6

- Replace fuel injection pump
  - Tell direct support maintenance

TA 114125

Figure 13-6(Sheet 2 of 2)

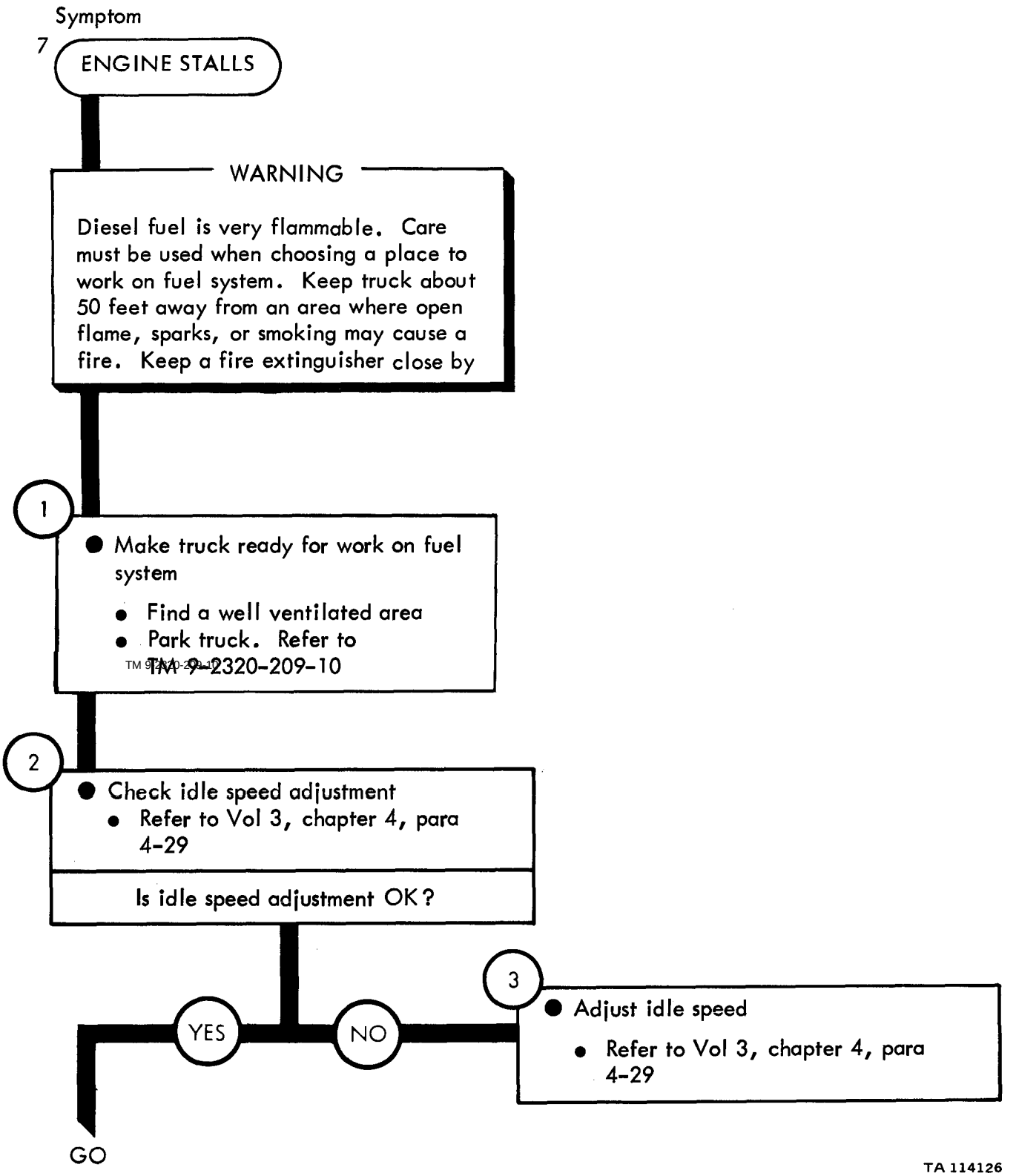
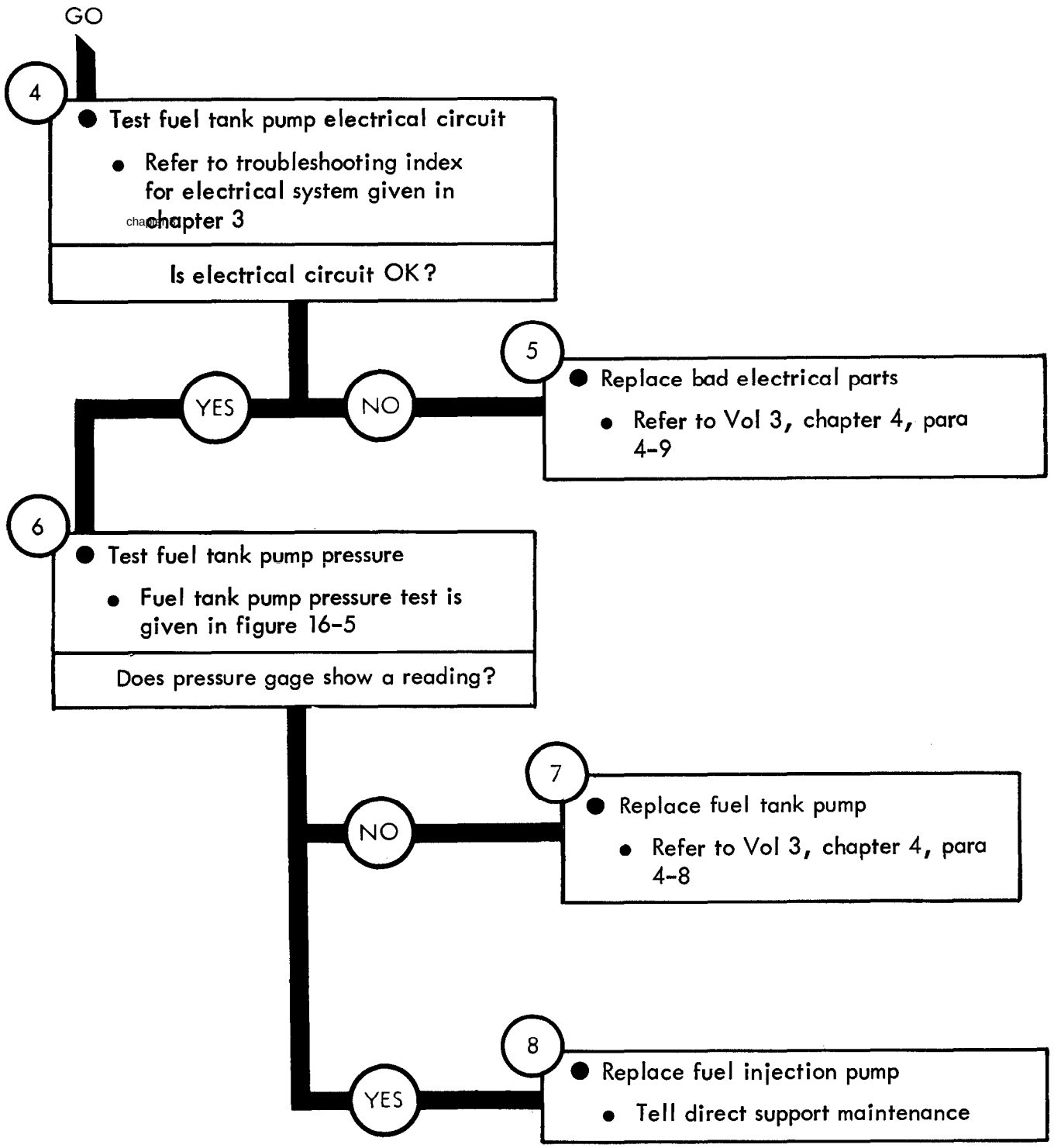
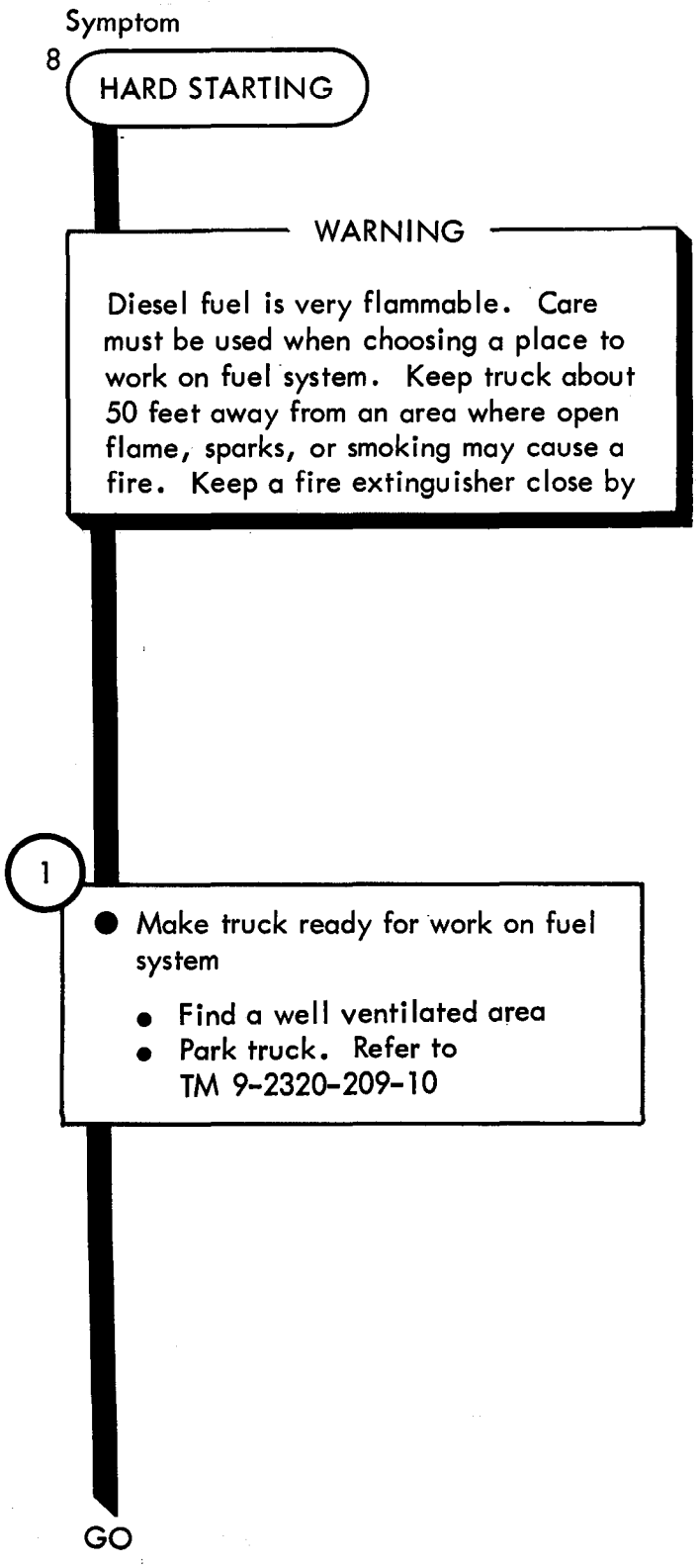


Figure 13-7 (Sheet 1 of 2)



TA 114127

Figure 13-7 (Sheet 2 of 2)



TA 114128

Figure 13-8 (Sheet 1 of 6)

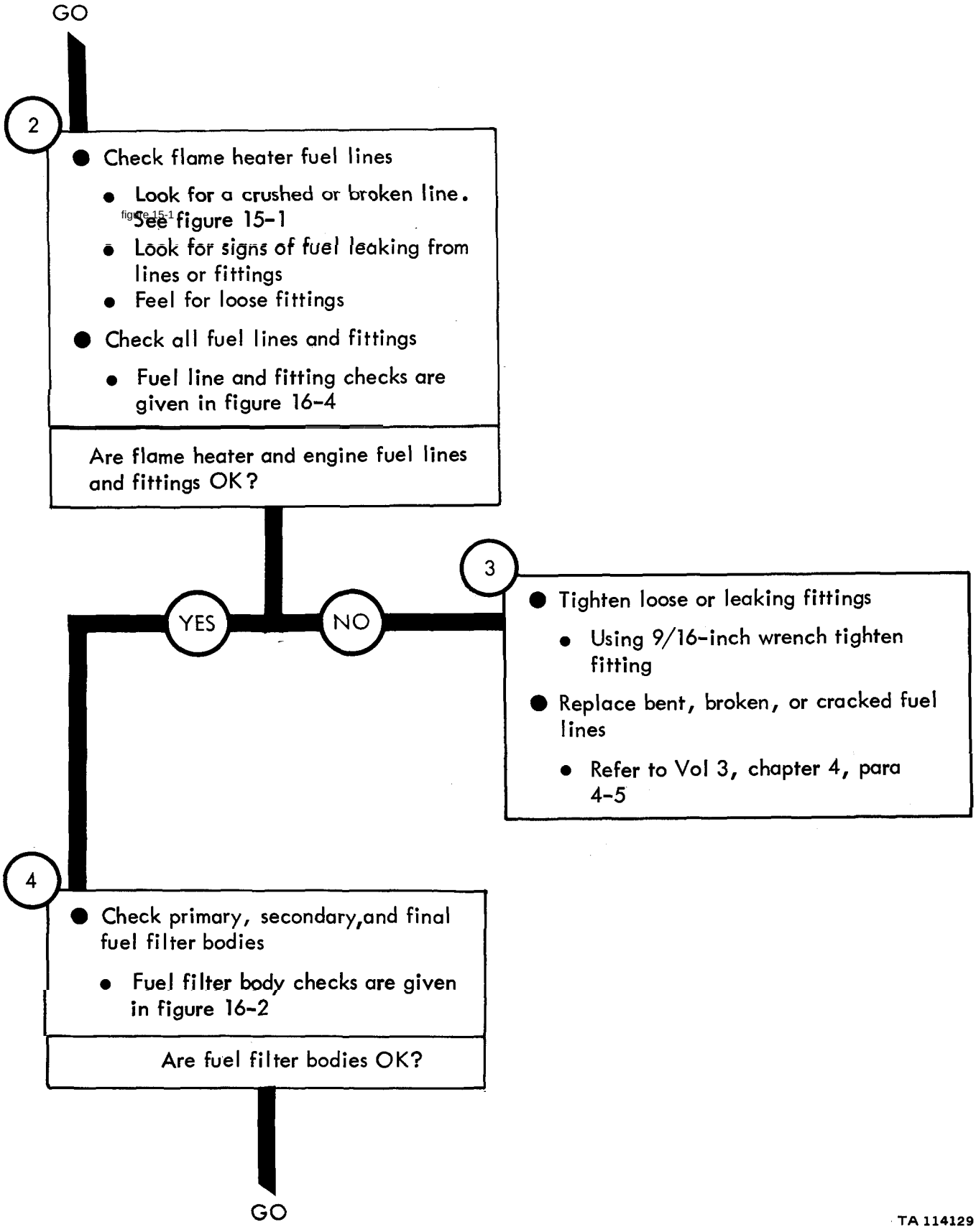


Figure 13-8 (Sheet 2 of 6)

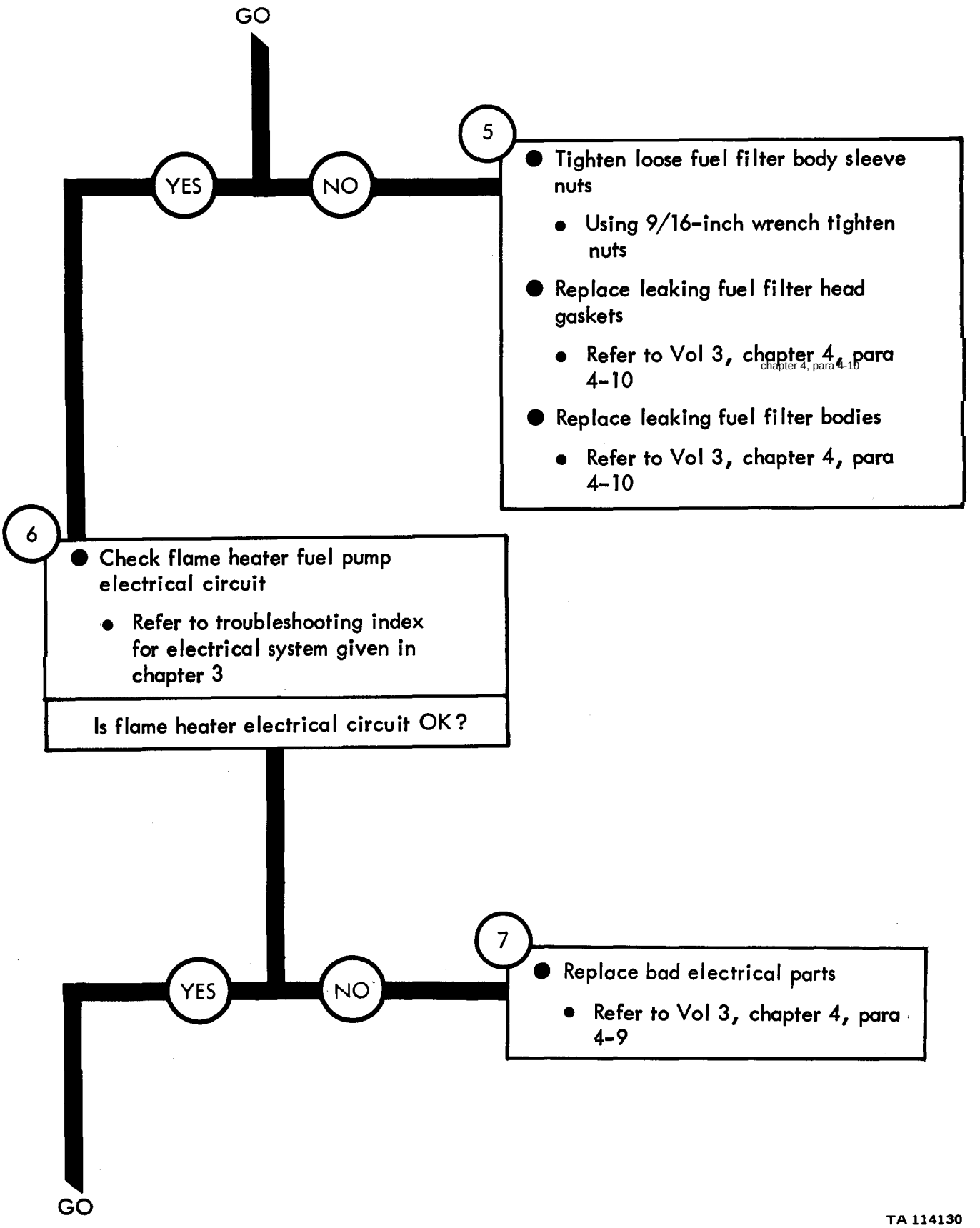


Figure 13-8 (Sheet 3 of 6)

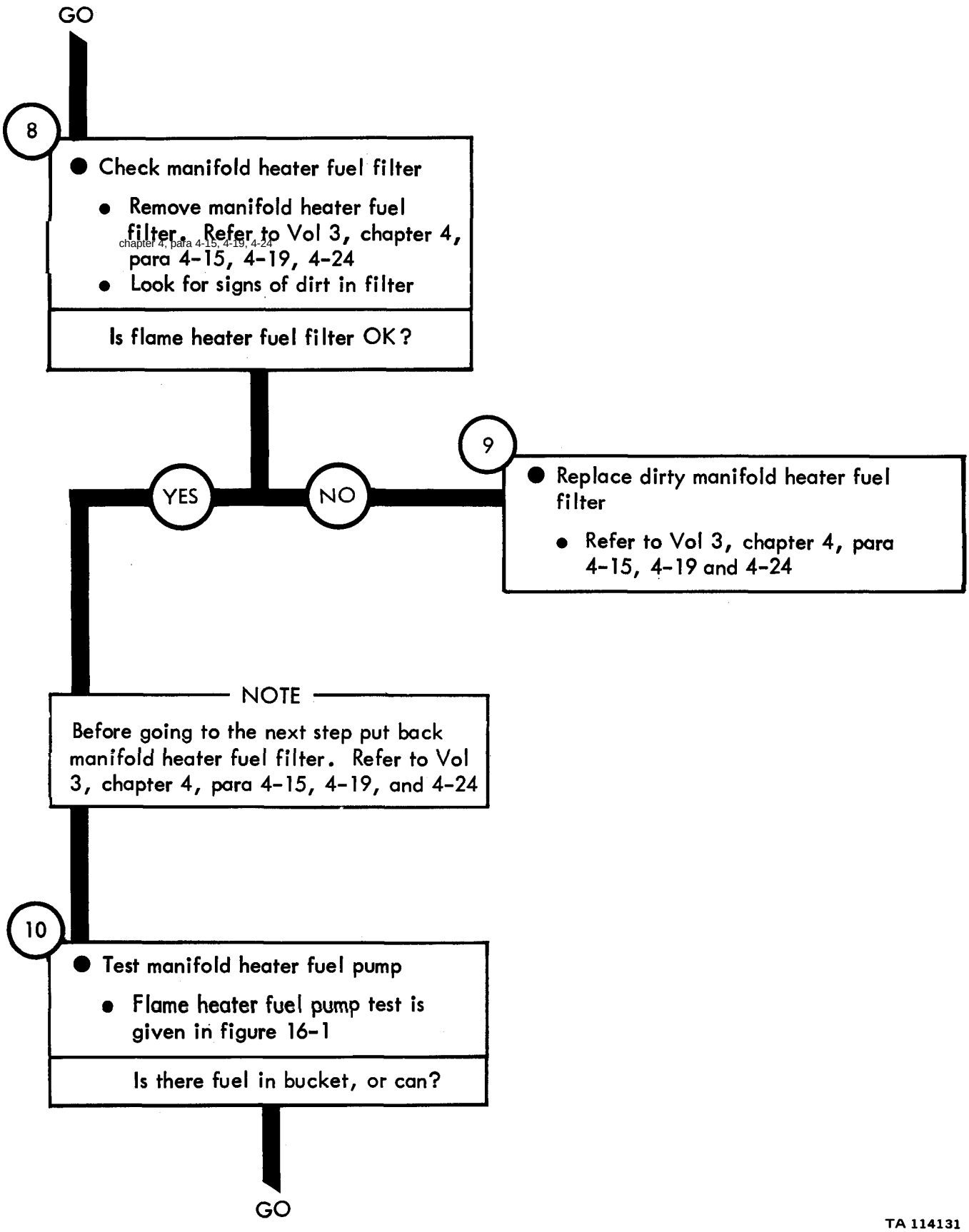


Figure 13-8 (Sheet 4 of 6)

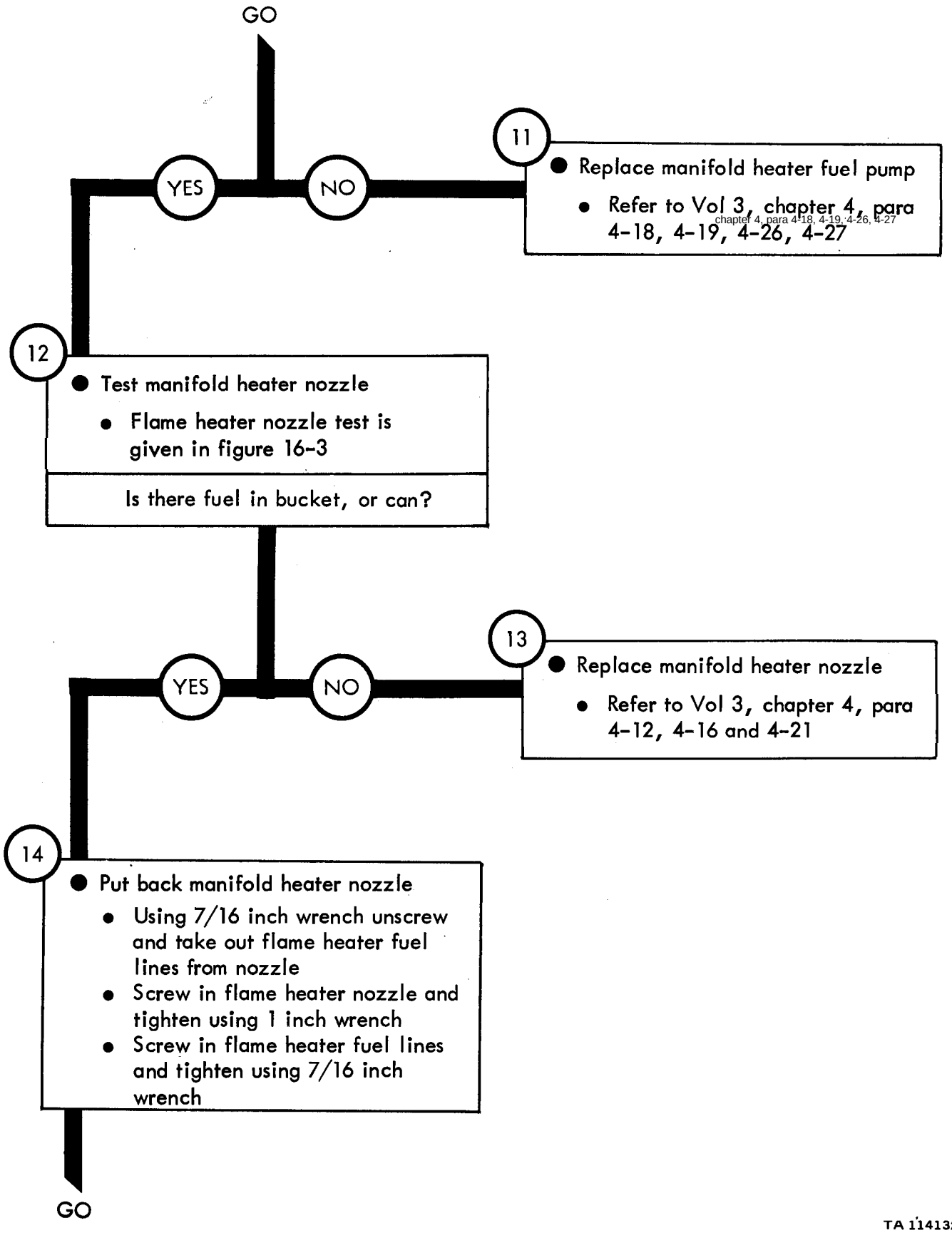
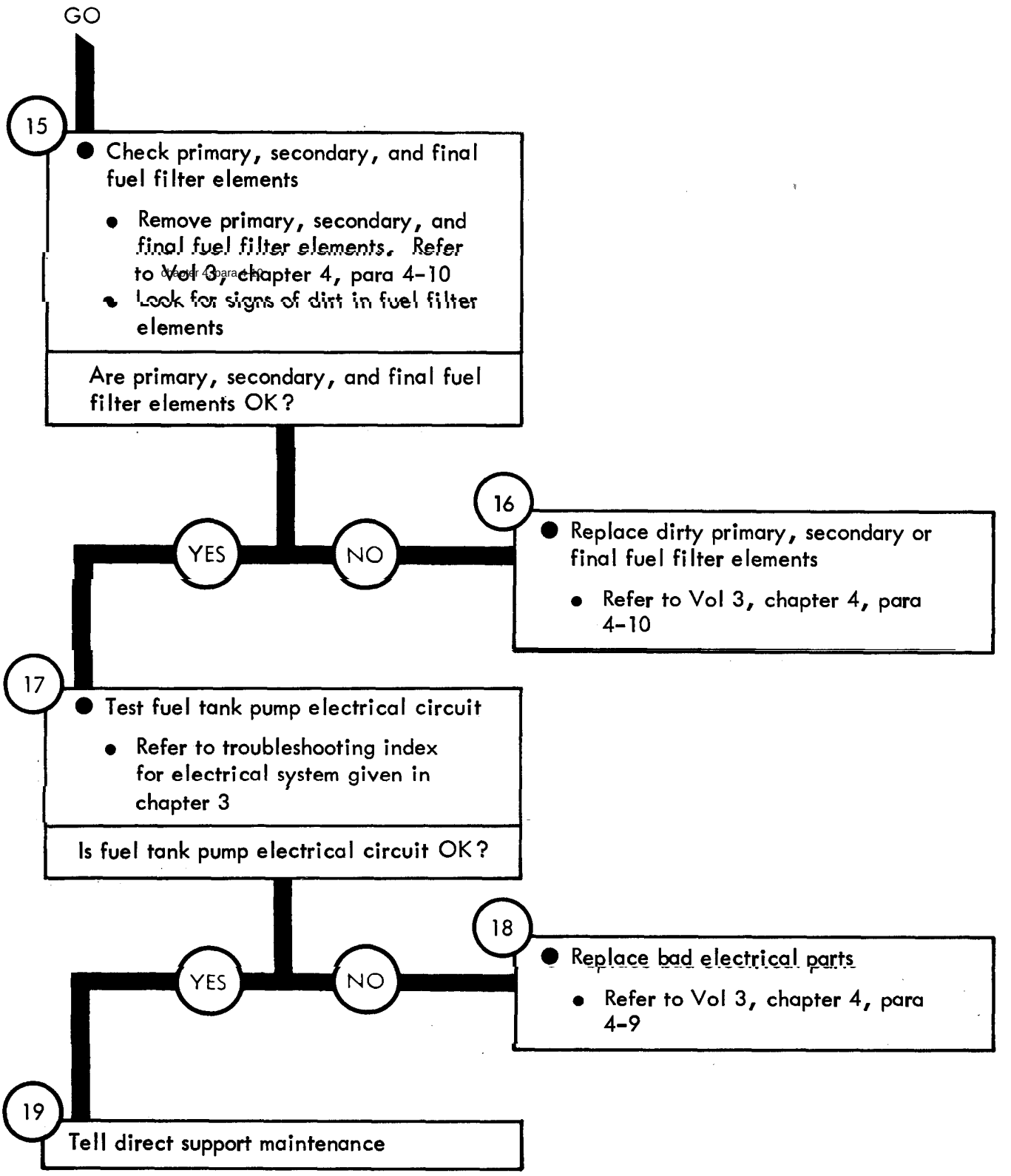


Figure 13-8 (Sheet 5 of 6)



TA 114133

Figure 13-8 (Sheet 6 of 6)

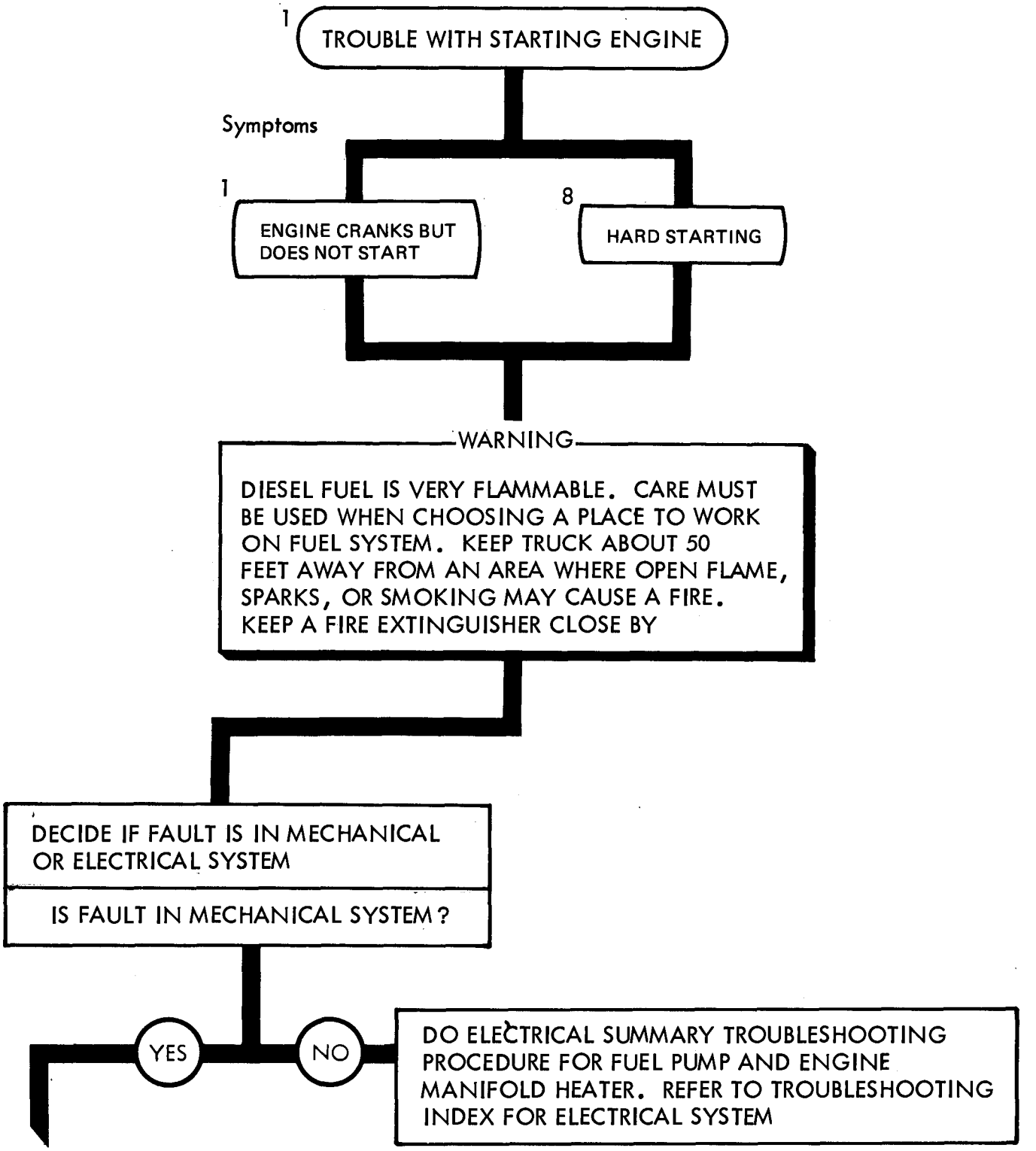
CHAPTER 14

FUEL SYSTEM TROUBLESHOOTING SUMMARY

14-1. GENERAL. This chapter gives a summary of troubleshooting procedures given in chapter 13 for the fuel system.

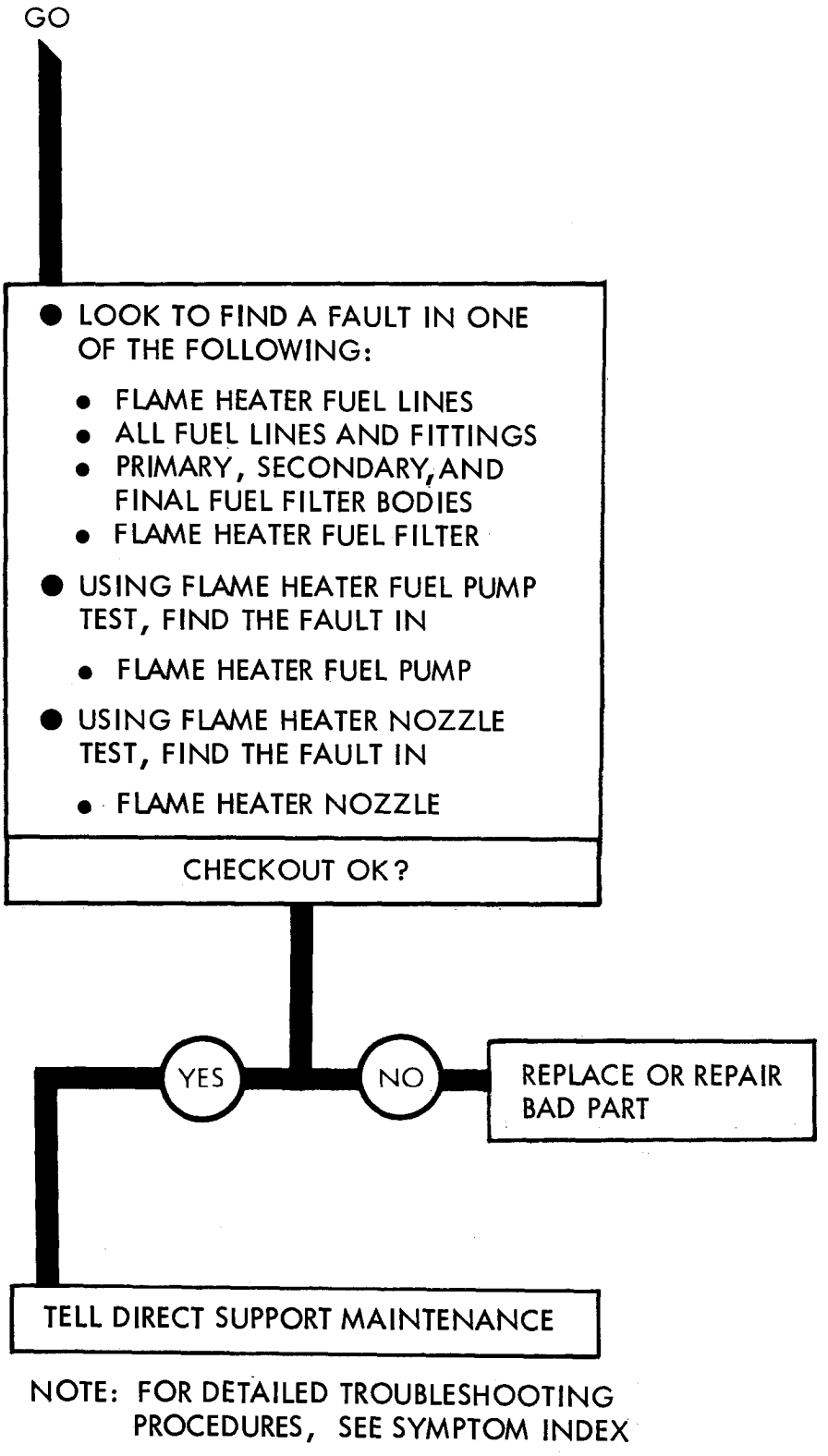
14-2. PROCEDURES. The summary in this chapter covers all fault symptoms found in the detailed troubleshooting procedures. Chapter 7 outlines a sample trouble-shooting procedure. The summary procedures are based on the "what-to-do" portions of the detailed procedures and do not include the 'how-to-do-it" instructions. Warning, cautions, and notes are given where needed.

FUEL SYSTEM TROUBLESHOOTING SUMMARY



TA 114134

Figure 14-1 (Sheet 1 of 2)



NOTE: FOR DETAILED TROUBLESHOOTING PROCEDURES, SEE SYMPTOM INDEX

TA 114135

Figure 14-1 (Sheet 2 of 2)

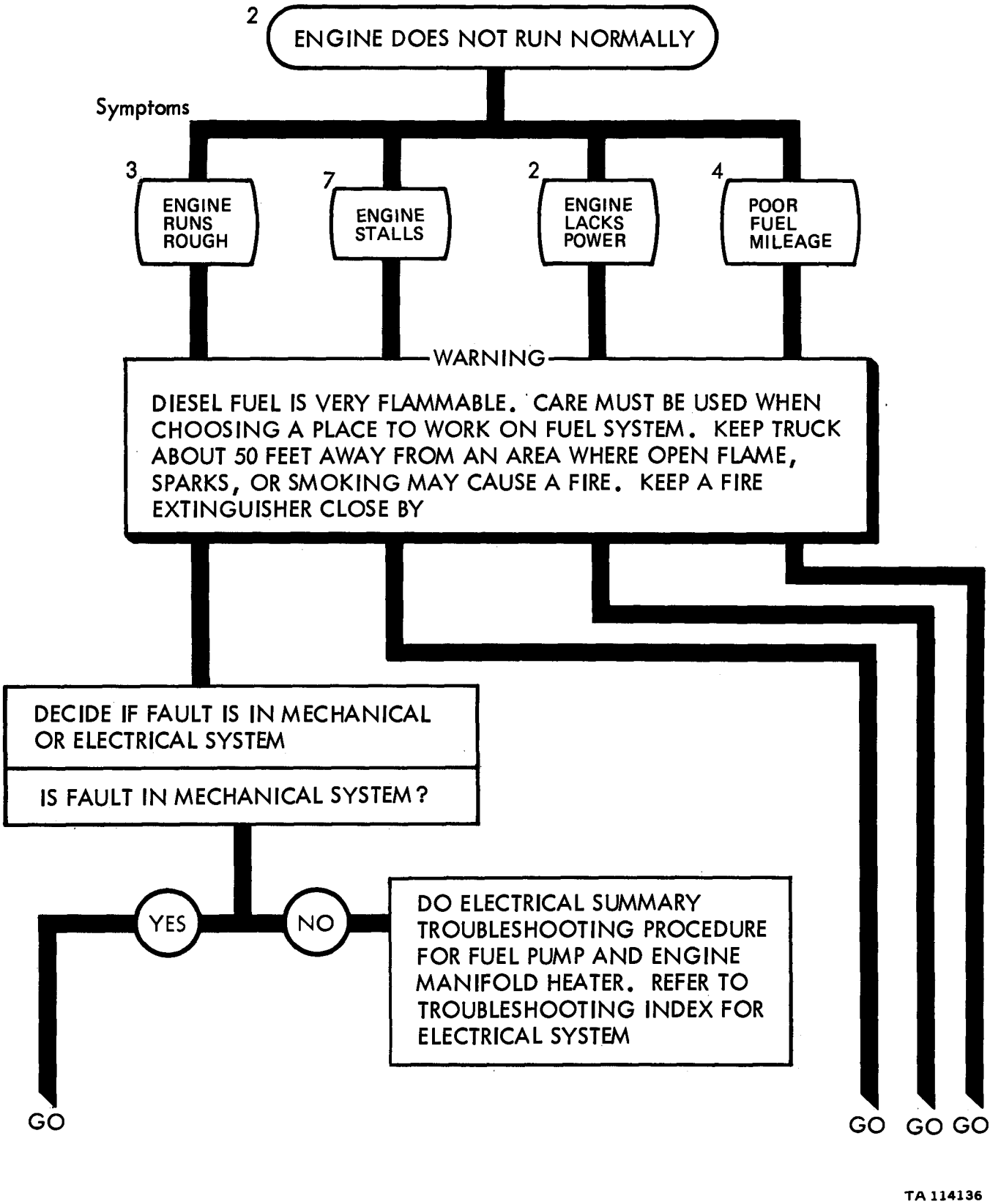


Figure 14-2 (Sheet 1 of 5)

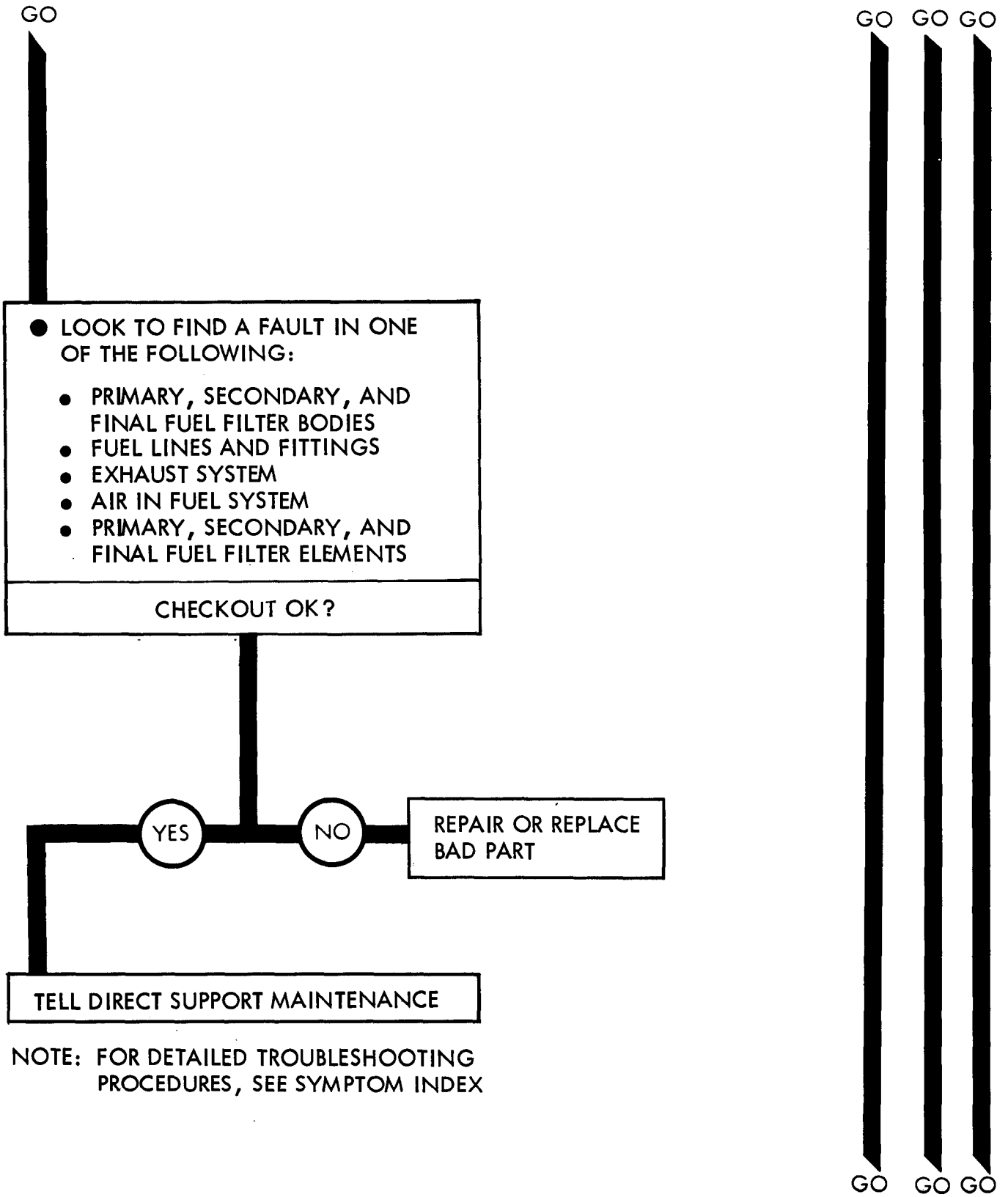


Figure 14-2 (Sheet 2 of 5)

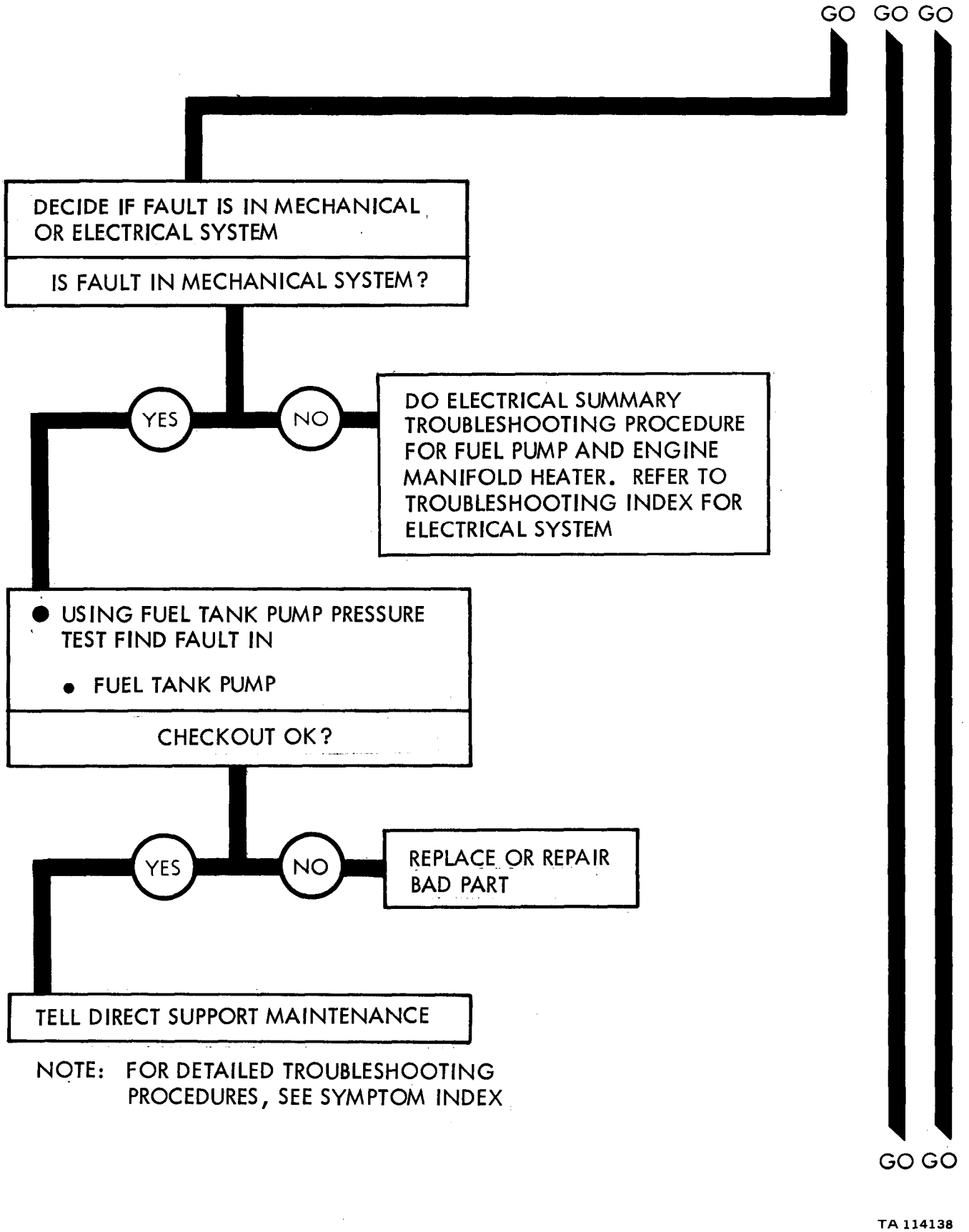
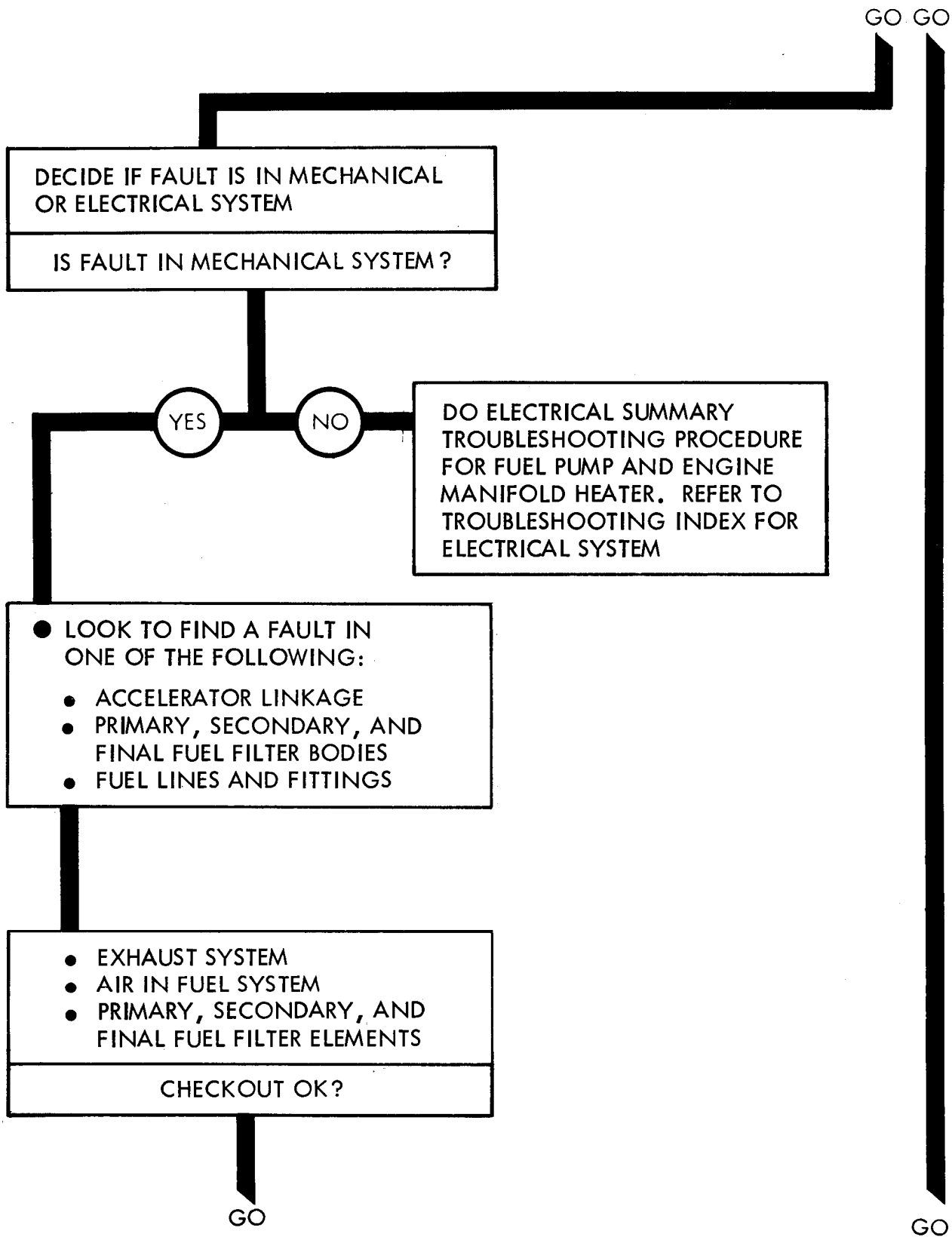


Figure 14-2 (Sheet 3 of 5)



TA 114139

Figure 14-2 (Sheet 4 of 5)

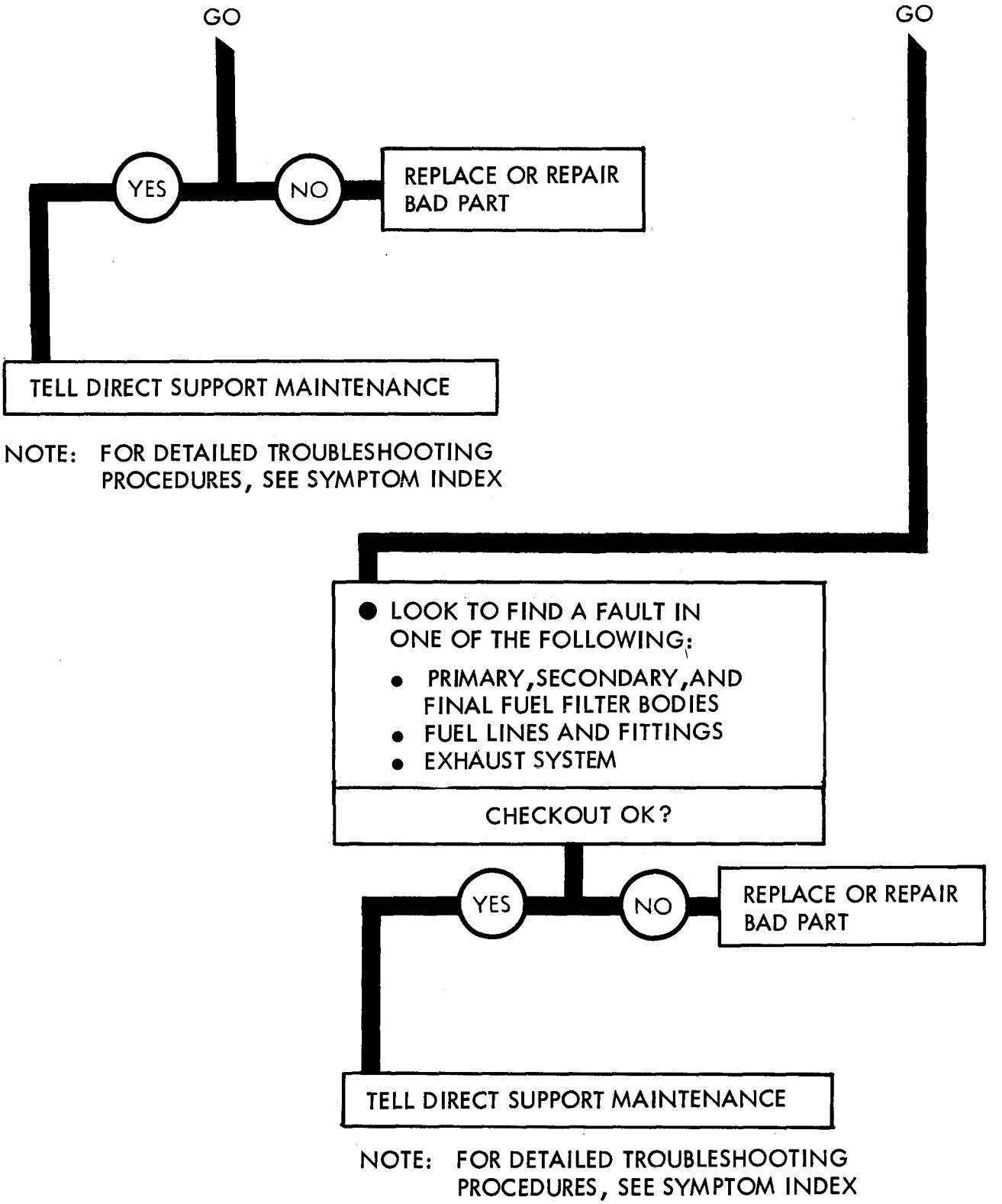


Figure 14-2 (Sheet 5 of 5)

(TROUBLE WITH SLOWING OR STOPPING ENGINE)

Symptoms

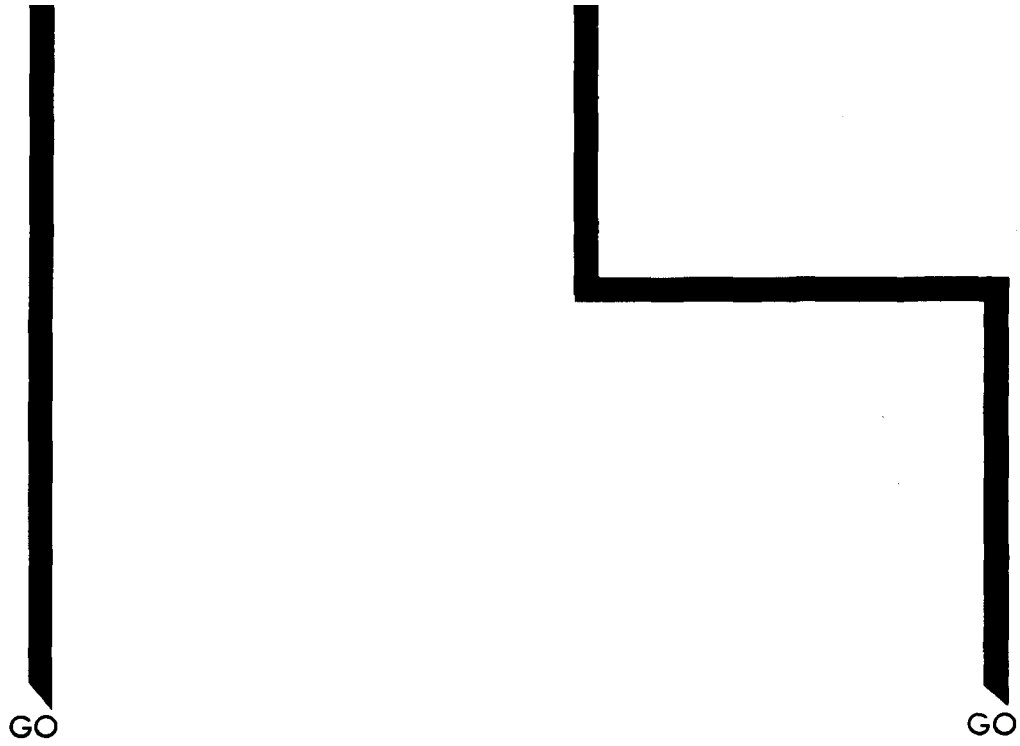
5

ENGINE DOES NOT SLOW DOWN WHEN ACCELERATOR PEDAL IS LET GO

ENGINE RUNS AFTER BEING SHUTOFF

WARNING

DIESEL FUEL IS VERY FLAMMABLE. CARE MUST BE USED WHEN CHOOSING A PLACE TO WORK ON FUEL SYSTEM . KEEP TRUCK ABOUT 50 FEET AWAY FROM AN AREA WHERE OPEN FLAME, SPARKS, OR SMOKING MAY CAUSE A FIRE. KEEP A FIRE EXTINGUISHER CLOSE BY



TA 114141

Figure 14-3 (Sheet 1 of 3)

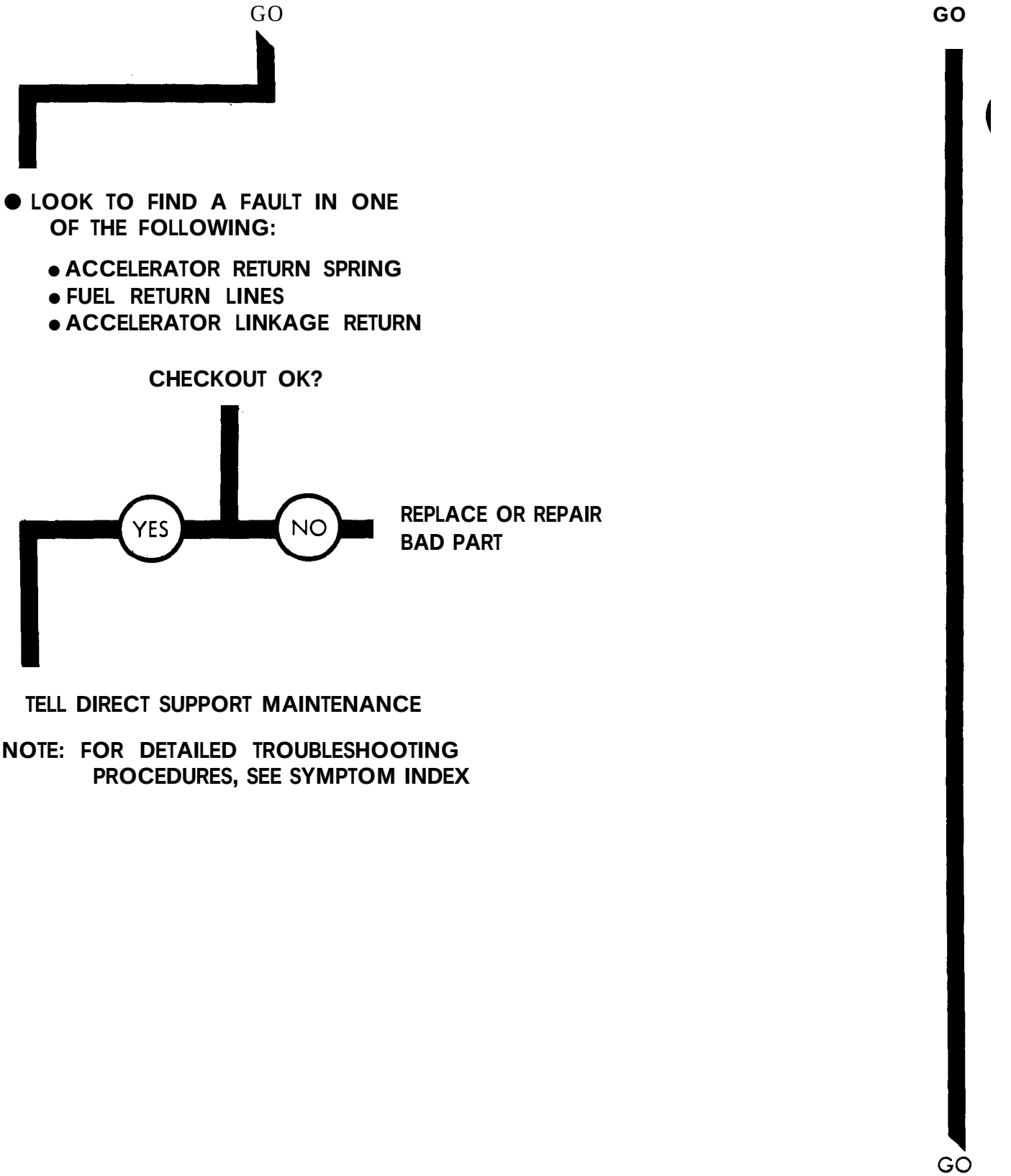
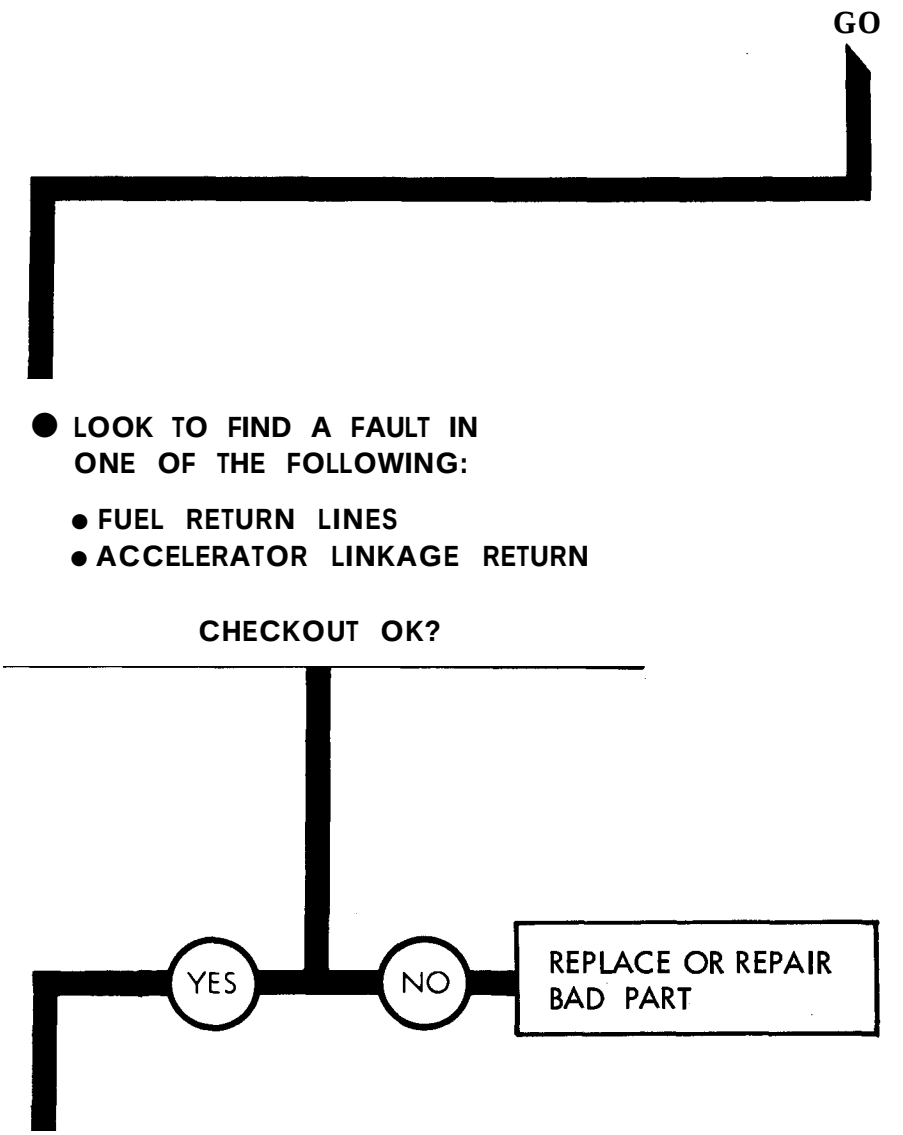


Figure 14-3 (Sheet 2 of 3)



TA 114143

Figure 14-3 (Sheet 3 of 3)

CHAPTER 15

FUEL SYSTEM SUPPORT DIAGRAMS

15-1. GENERAL. This chapter gives the diagrams you need when doing trouble-shooting procedures in chapter 13. Table 3-1 is a complete listing of all support diagrams used in this manual.

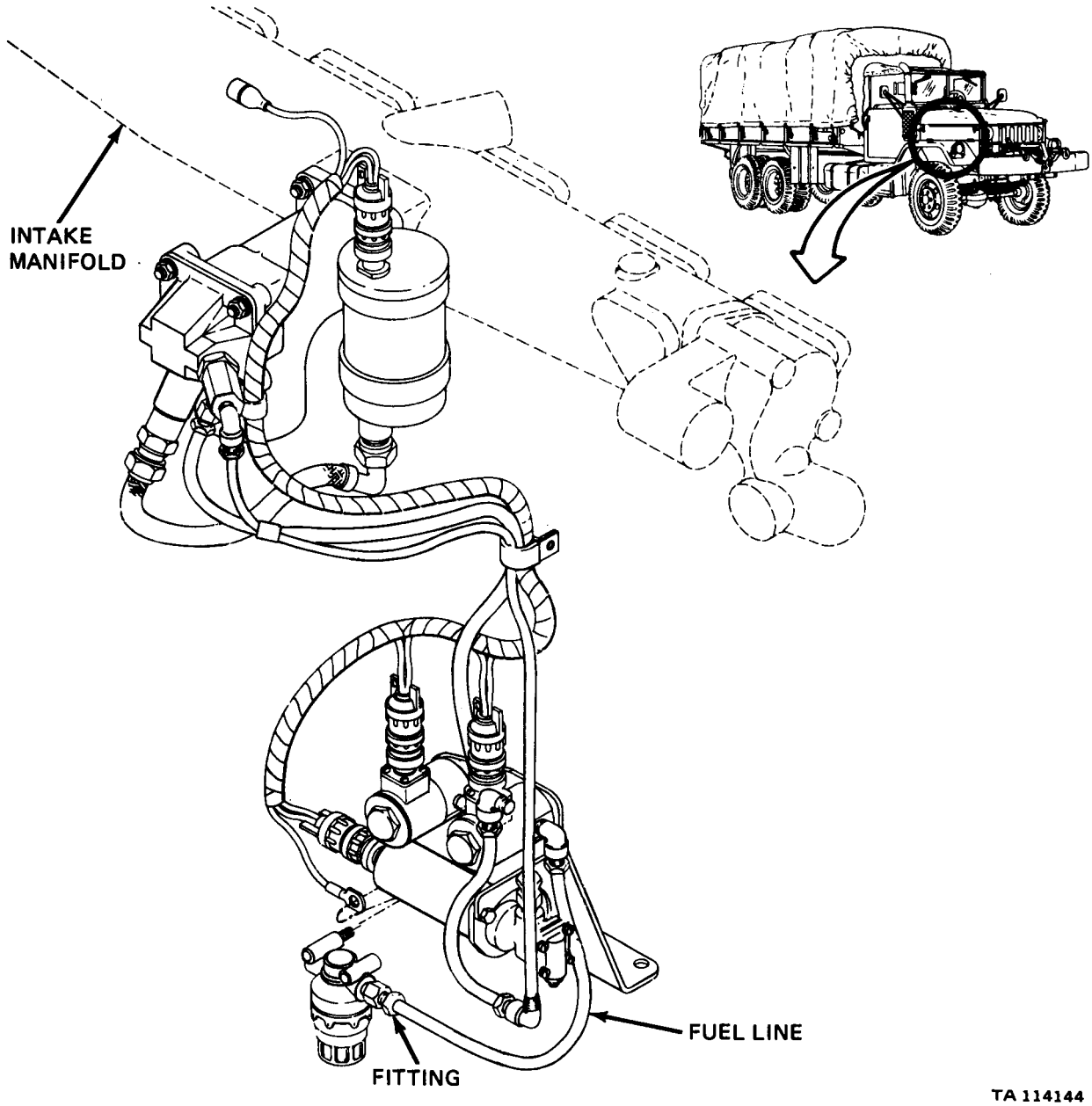


Figure 15-1. Fuel System Support Diagram

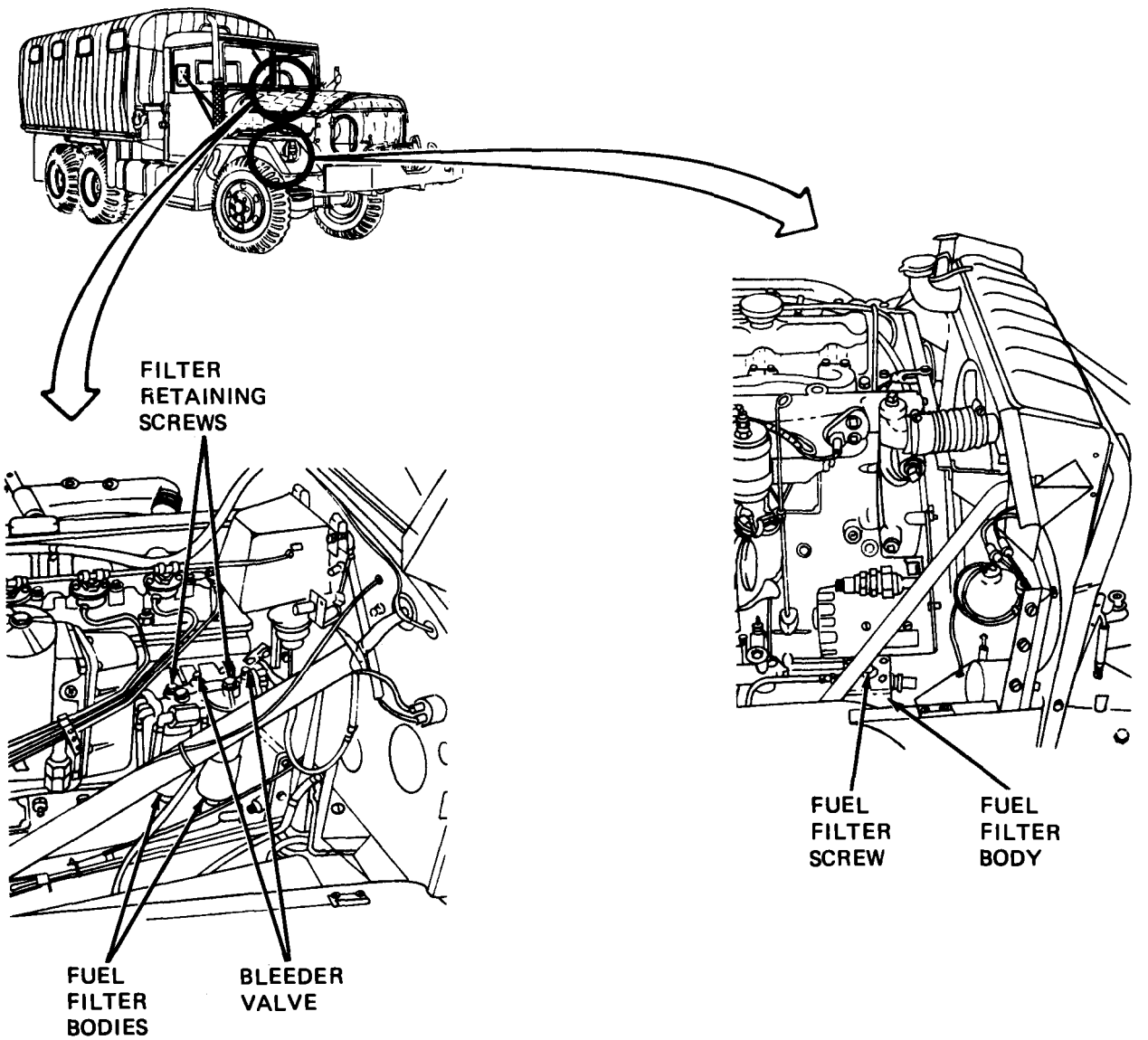


Figure 15-2. Fuel System Support Diagram

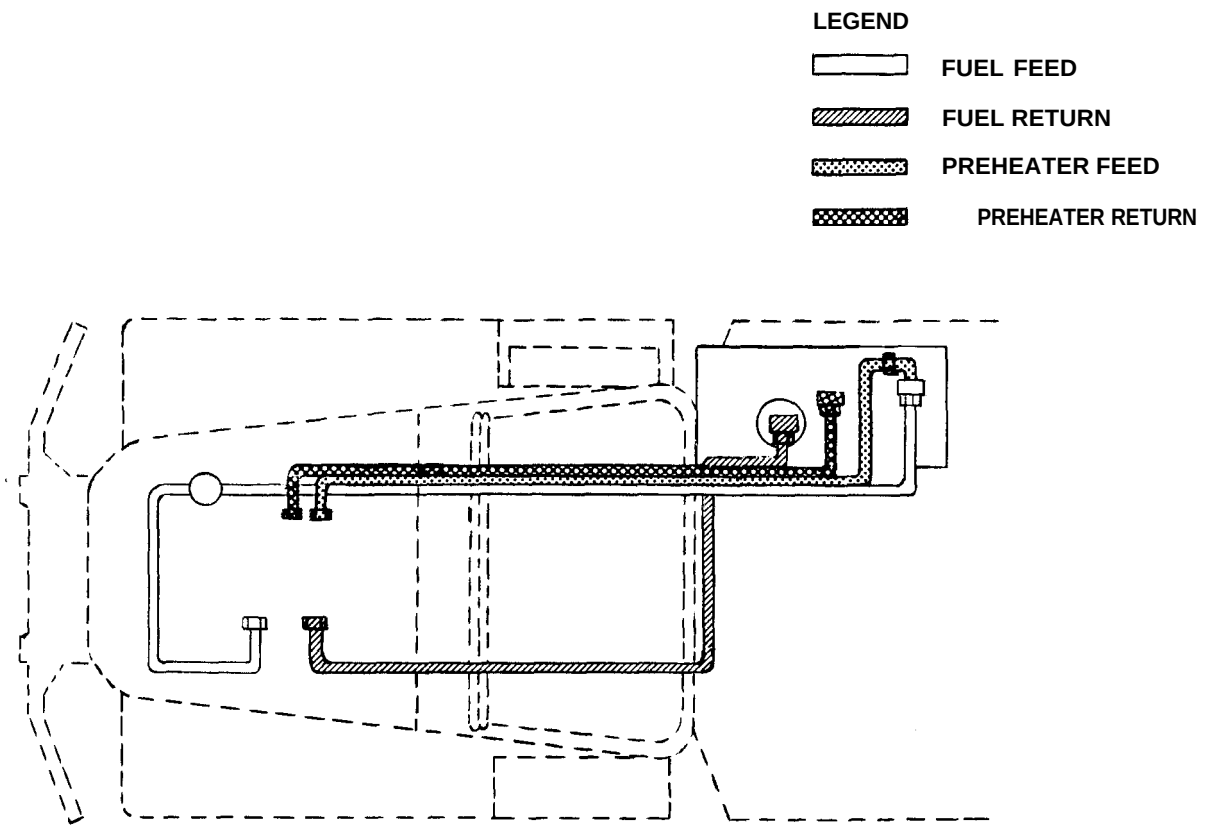
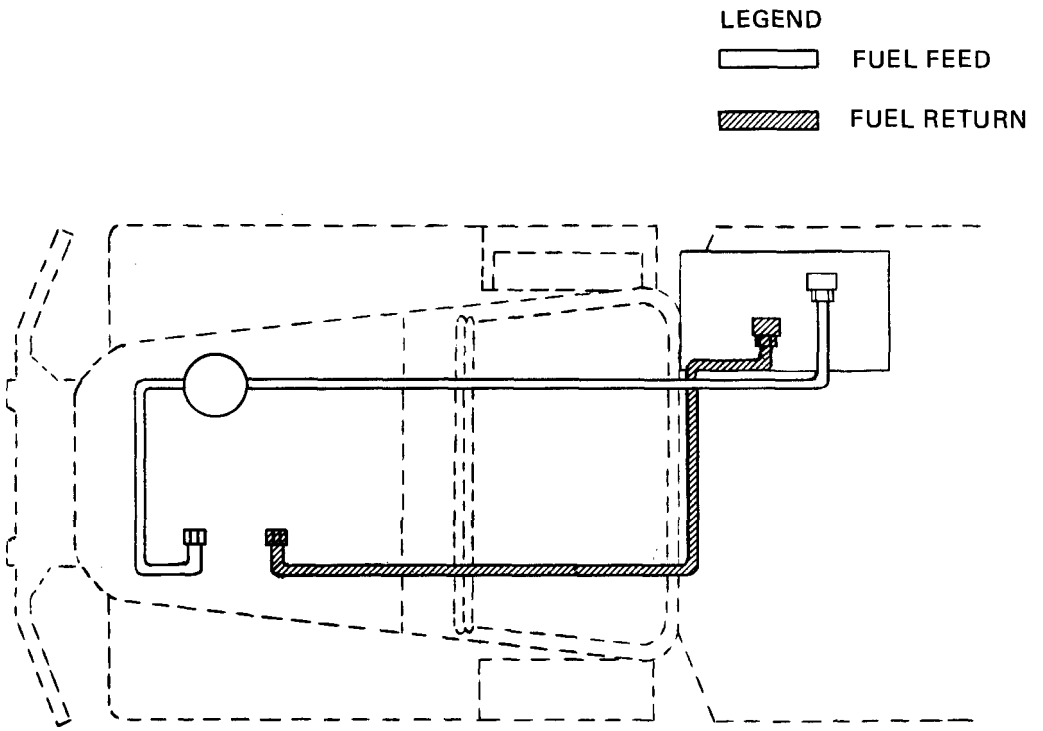


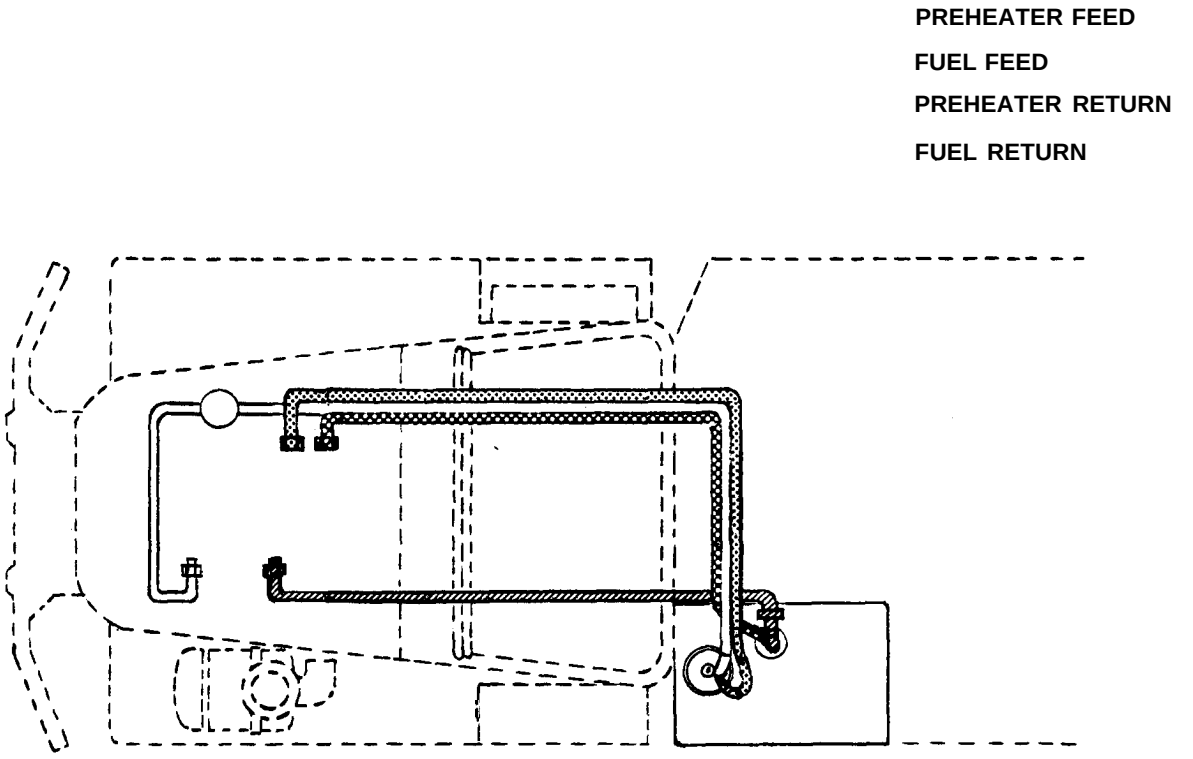
Figure 15-3. Fuel System Support Diagram



FUEL LINES AND FITTINGS FOR LD465

TA 114147

Figure 15-4. Fuel System Support Diagram



FUEL LINES AND FITTINGS FOR THE M275A1

TA 114148

Figure 15-5. Fuel System Support Diagram

CHAPTER 16

FUEL SYSTEM TEST PROCEDURES

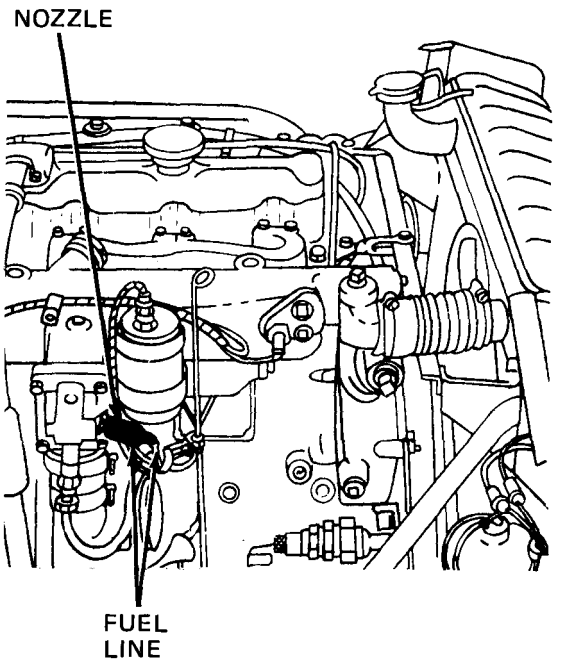
16-1. GENERAL. This chapter gives test procedures for the tests given in chapter 13 for the fuel system.

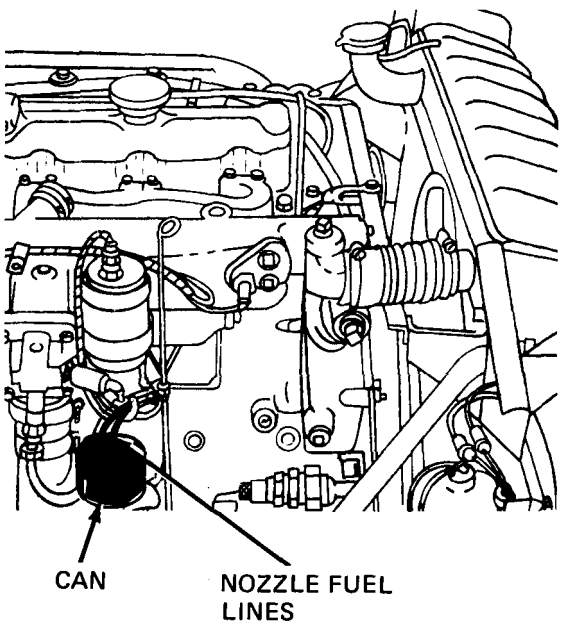
16-2. TEST SET-UP. Instructions for setup of test equipment and parts to be tested are given before the test procedures. Illustrations are used, when needed, to show you how to hook up the test equipment to the part to be tested.

16-3. TEST PROCEDURE. Detailed step-by-step instructions, in flow chart form, are given for each test. The procedure calls out the type of test and the condition of the truck system for each part of testing. The step-by-step test will lead you to the bad component or to a fault symptom within a related system. Reference is made to the fault symptom index, chapter 6, if the test shows a fault in another system.

FLAME HEATER FUEL PUMP TEST

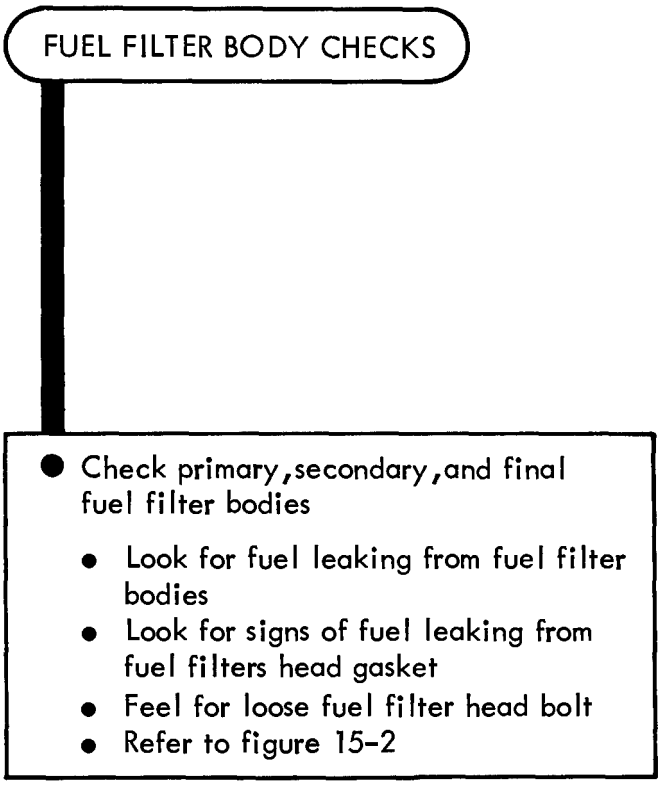
- Test heater fuel pump
  - Using 3/8-inch wrench unscrew and take off fuel lines from nozzle
  - Put fuel line fitting ends into a bucket, or can
  - Turn on heater for about 15 seconds then turn heater off
  - See if there is fuel in bucket, or can





TA 114149

Figure 16-1



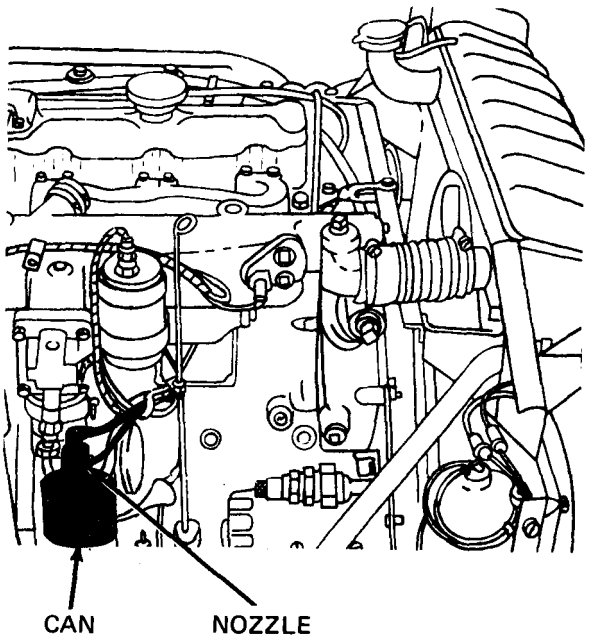
TA 114150

Figure 16-2

FLAME HEATER NOZZLE TEST

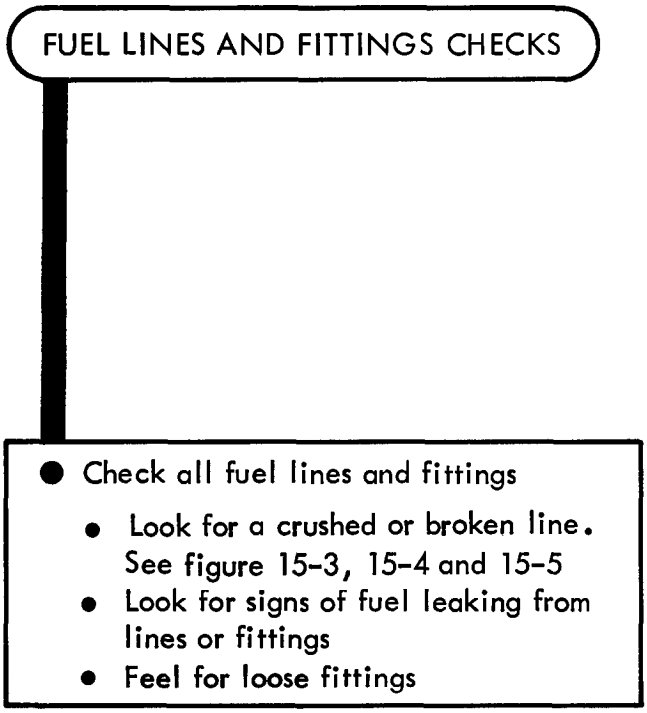
- Test flame heater nozzle
  - Using 5/16 and 7/16 inch wrenches unscrew two fuel line fittings
  - Using 1-inch wrench unscrew and shake out flame heater nozzle
  - Screw fuel line fittings into nozzle and tighten using 7/16 and 5/16 inch wrenches

- Put a bucket or can under flame heater nozzle
- Turn on heater for about 15 seconds then turn heater off
- See if there is fuel in bucket or can



TA 114151

Figure 16-3



TA 114152

Figure 16-4

FUEL TANK PUMP PRESSURE TEST

- **Test fuel tank pump pressure**

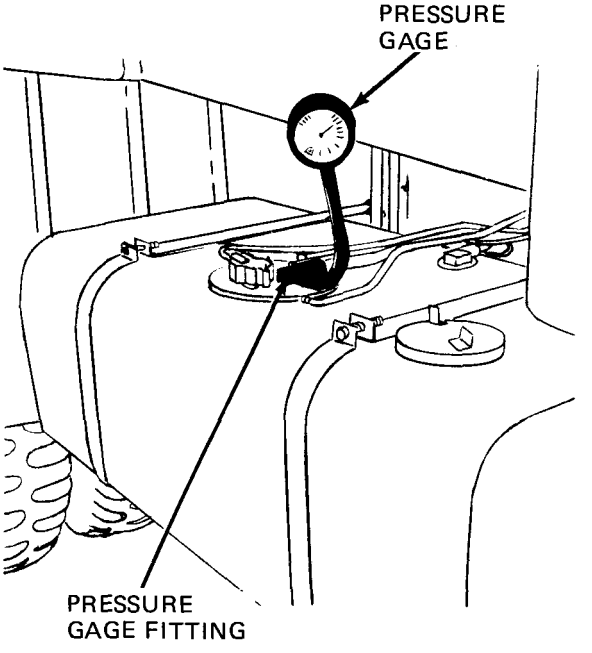
  Remove fuel pump output line from elbow. Refer to Vol 3, chapter 4, para 4-5

  Put Pressure gage fitting in elbow and tighten using 1/2-inch wrench

  Turn accessory switch to "ON". Refer to TM 9-2320-209-10

  See if gage reading is between 5 and 7 psi

  Turn switch to "OFF". Refer to **TM 9-2320-209- 1.0**



- **Using 1/2-inch wrench unscrew and take out pressure gage fitting**
- **Put back fuel line. Refer to Vol 3, chapter 4, para 4-5**

TA 114153

Figure 16-5

CHAPTER 17

EXHAUST SYSTEM TROUBLESHOOTING

17-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment troubleshooting procedures for the exhaust system, for which there are authorized corrective maintenance tasks at the organizational maintenance level.

17-2. EQUIPMENT ITEMS NOT COVERED . All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

EXHAUST SYSTEM TROUBLESHOOTING

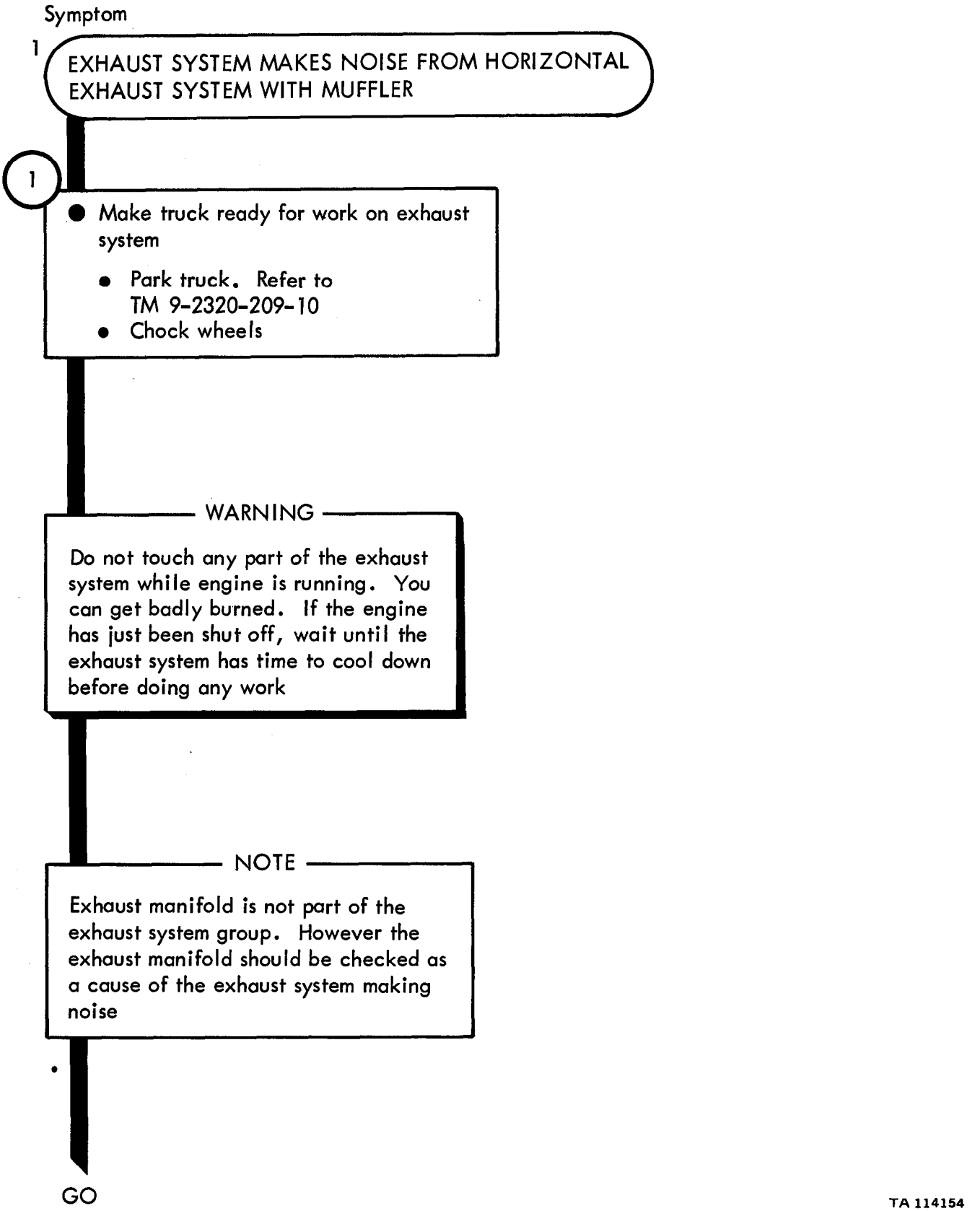


Figure 17-1 (Sheet 1 of 3)

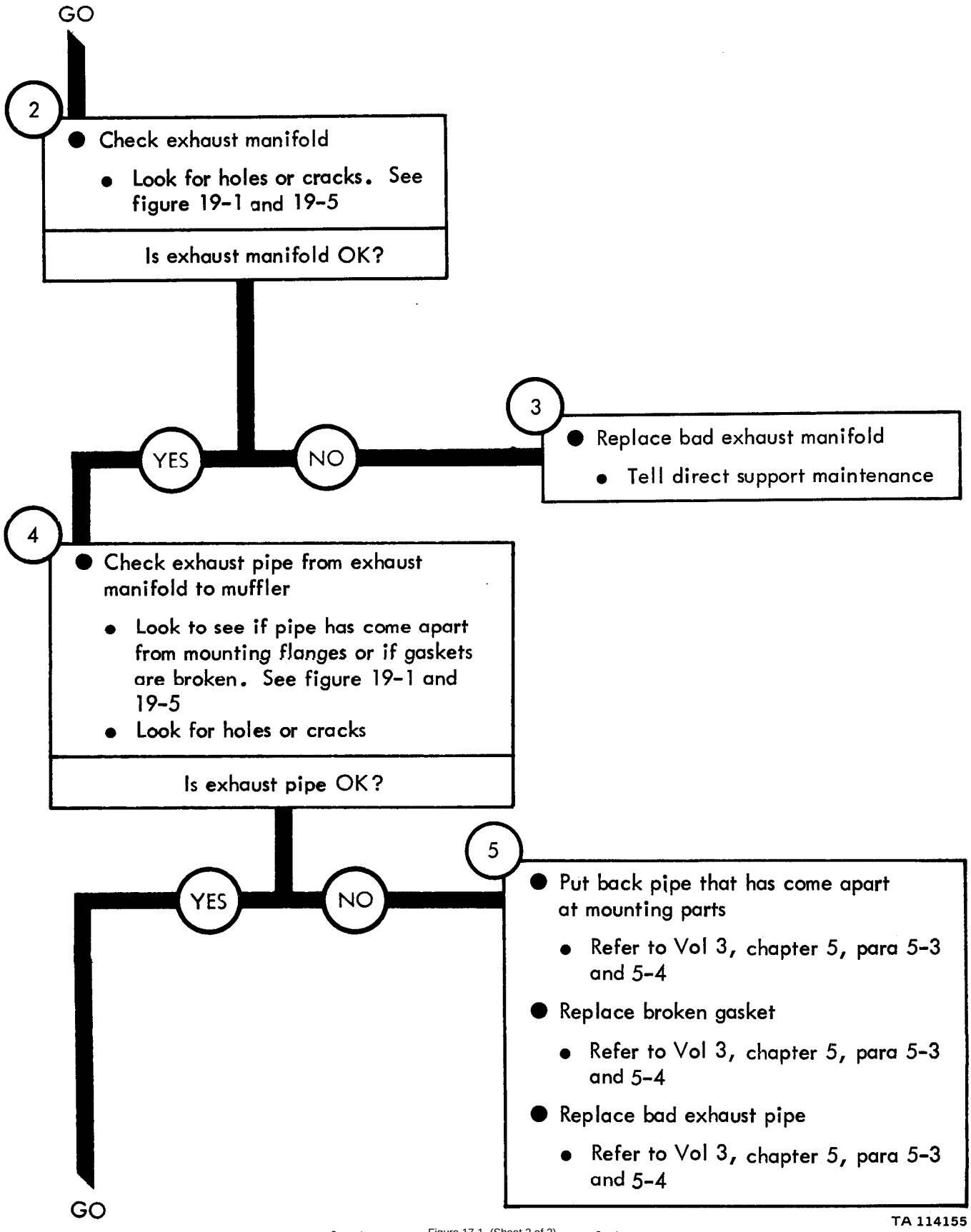
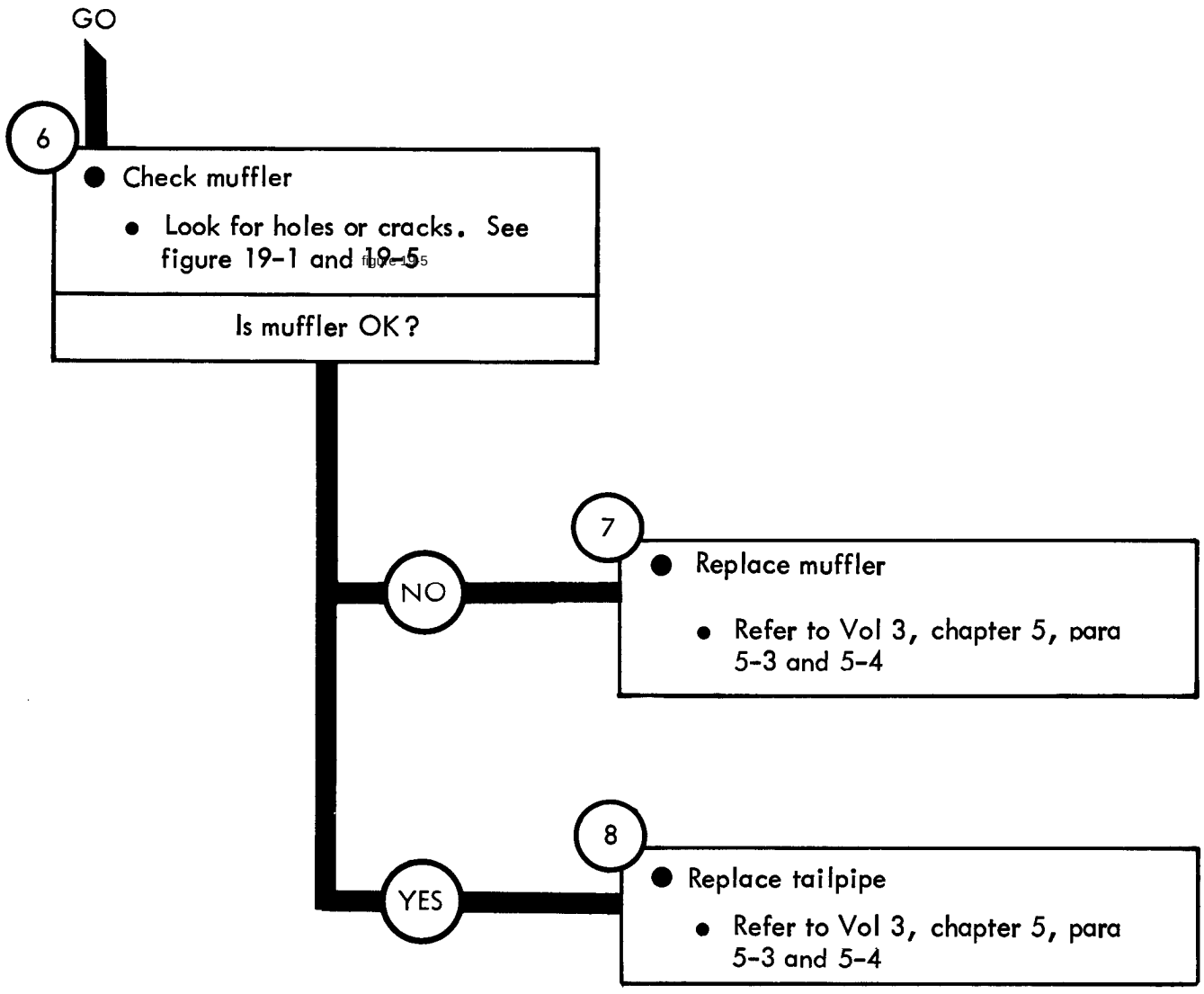
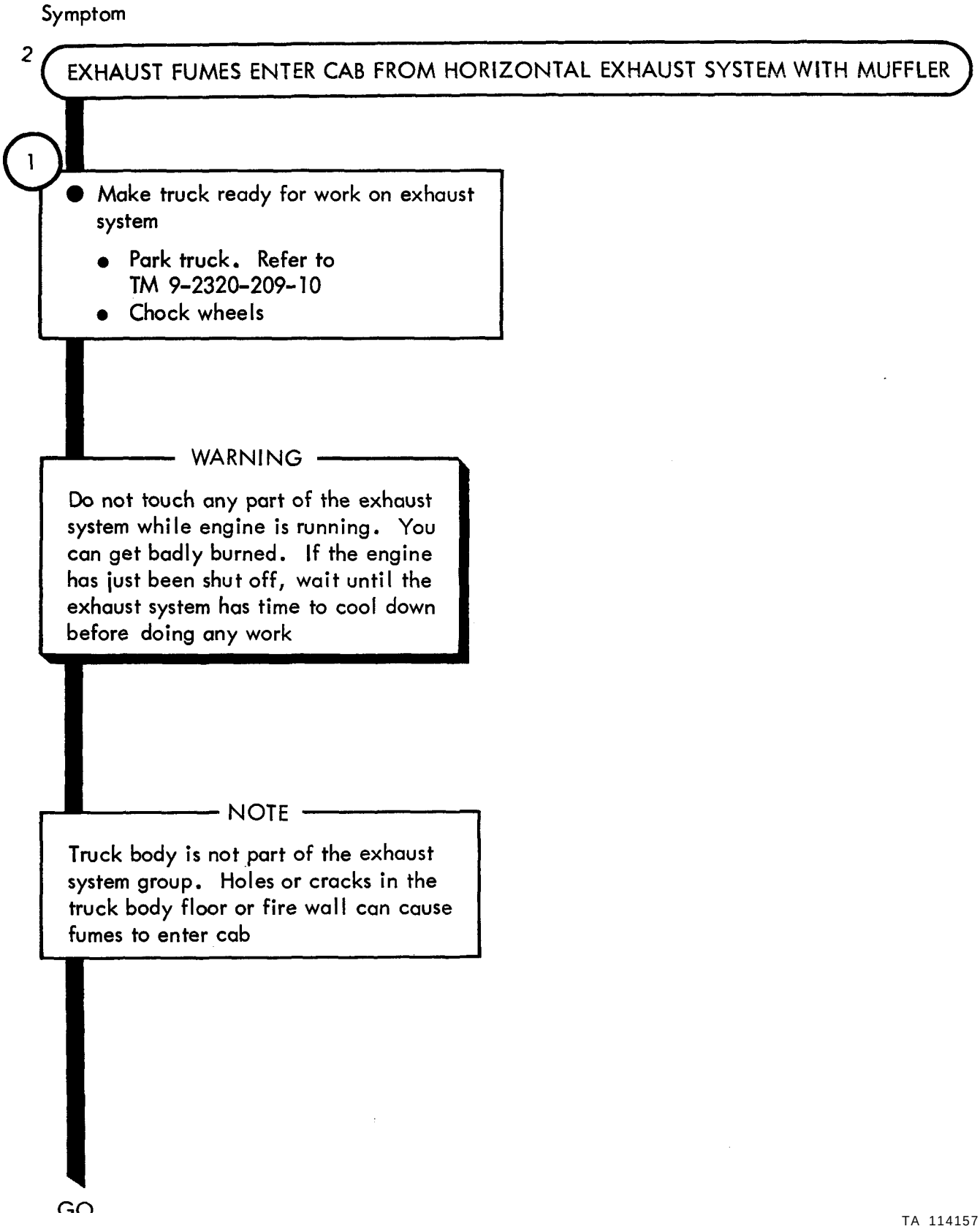


Figure 17-1 (Sheet 2 of 3)



TA 114156

Figure 17-1 (Sheet 3 of 3)



TA 114157

Figure 17-2 (Sheet 1 of 2)

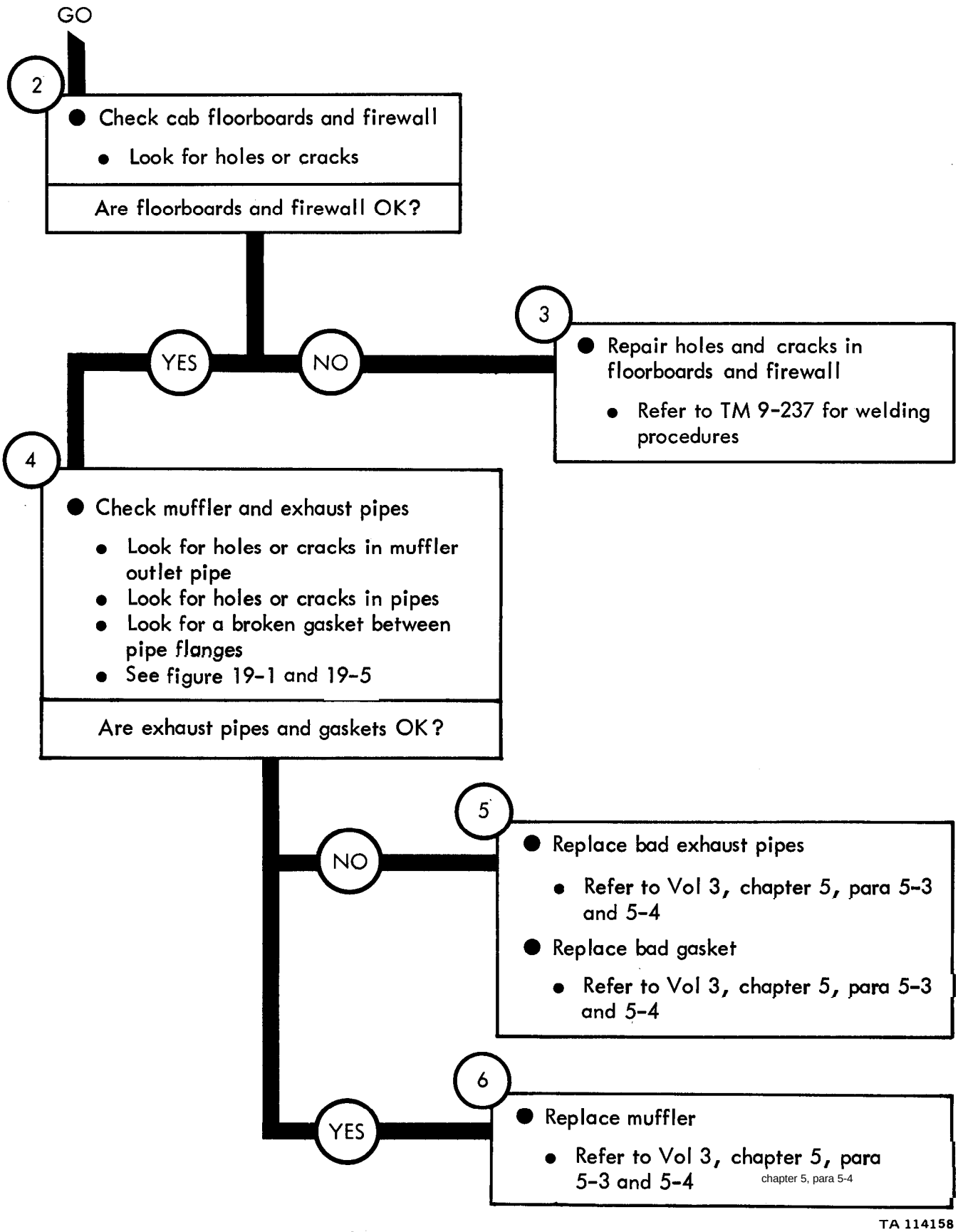


Figure 17-2 (Sheet 2 of 2)

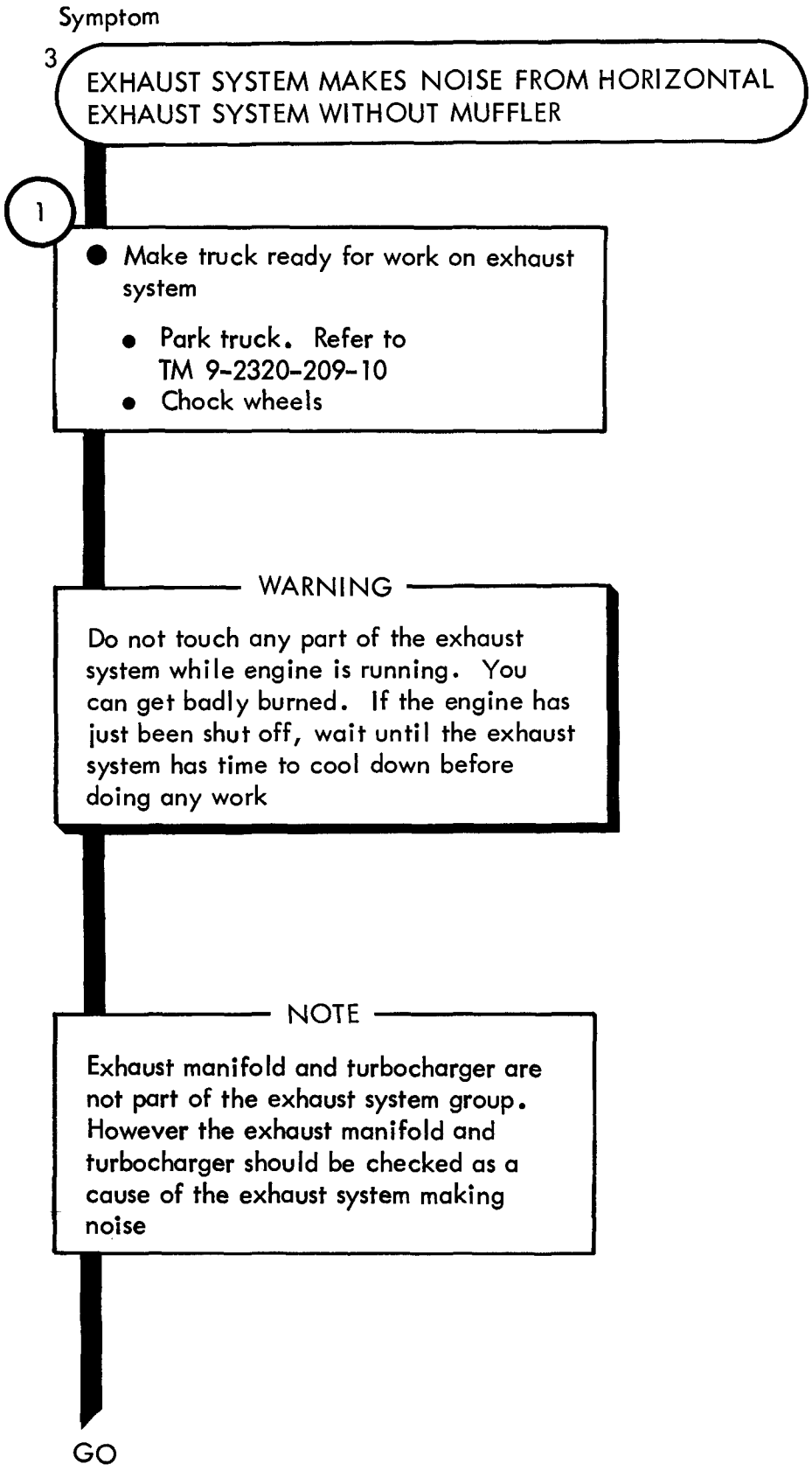


Figure 17-3 (Sheet 1 of 3)

TA 114159

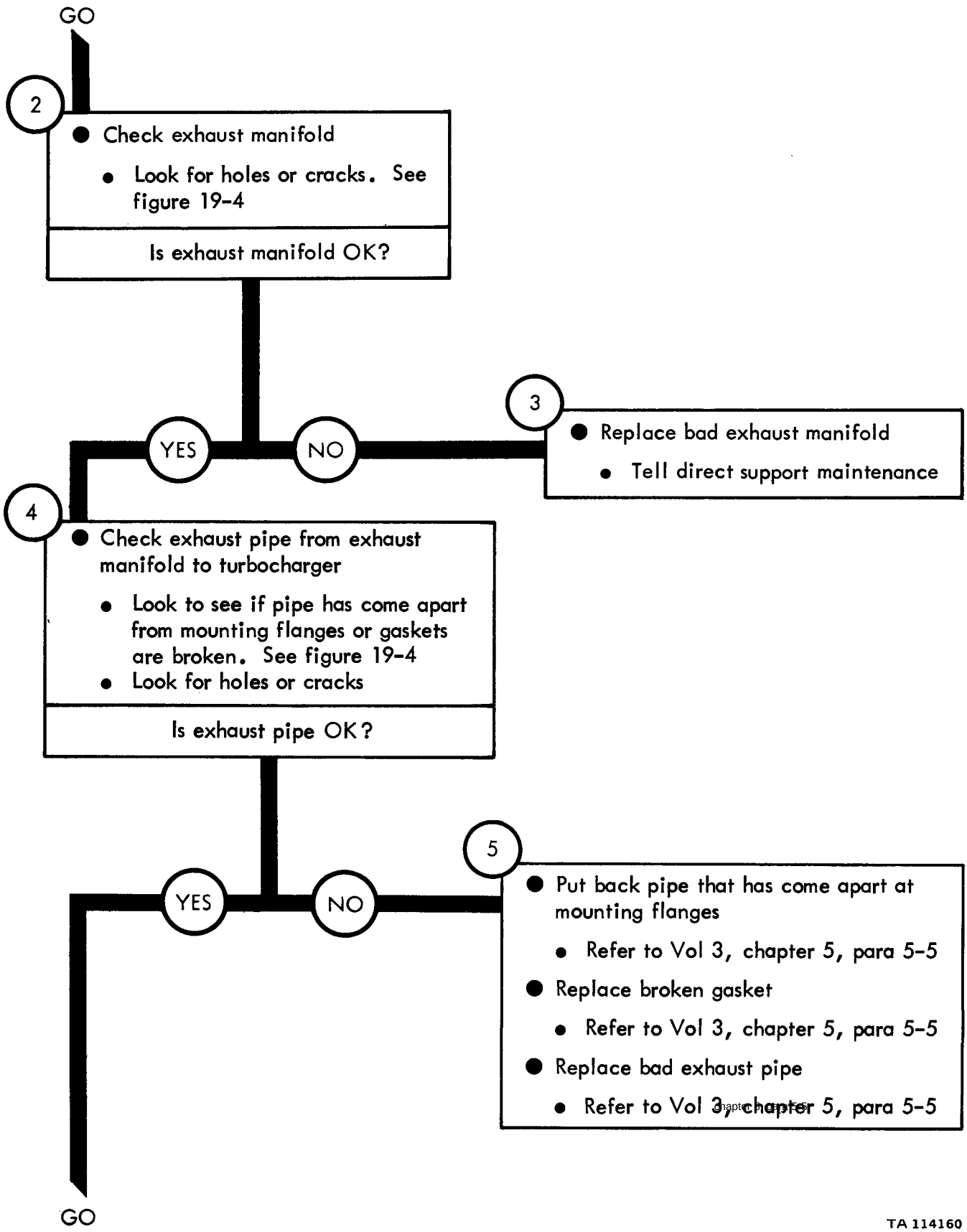
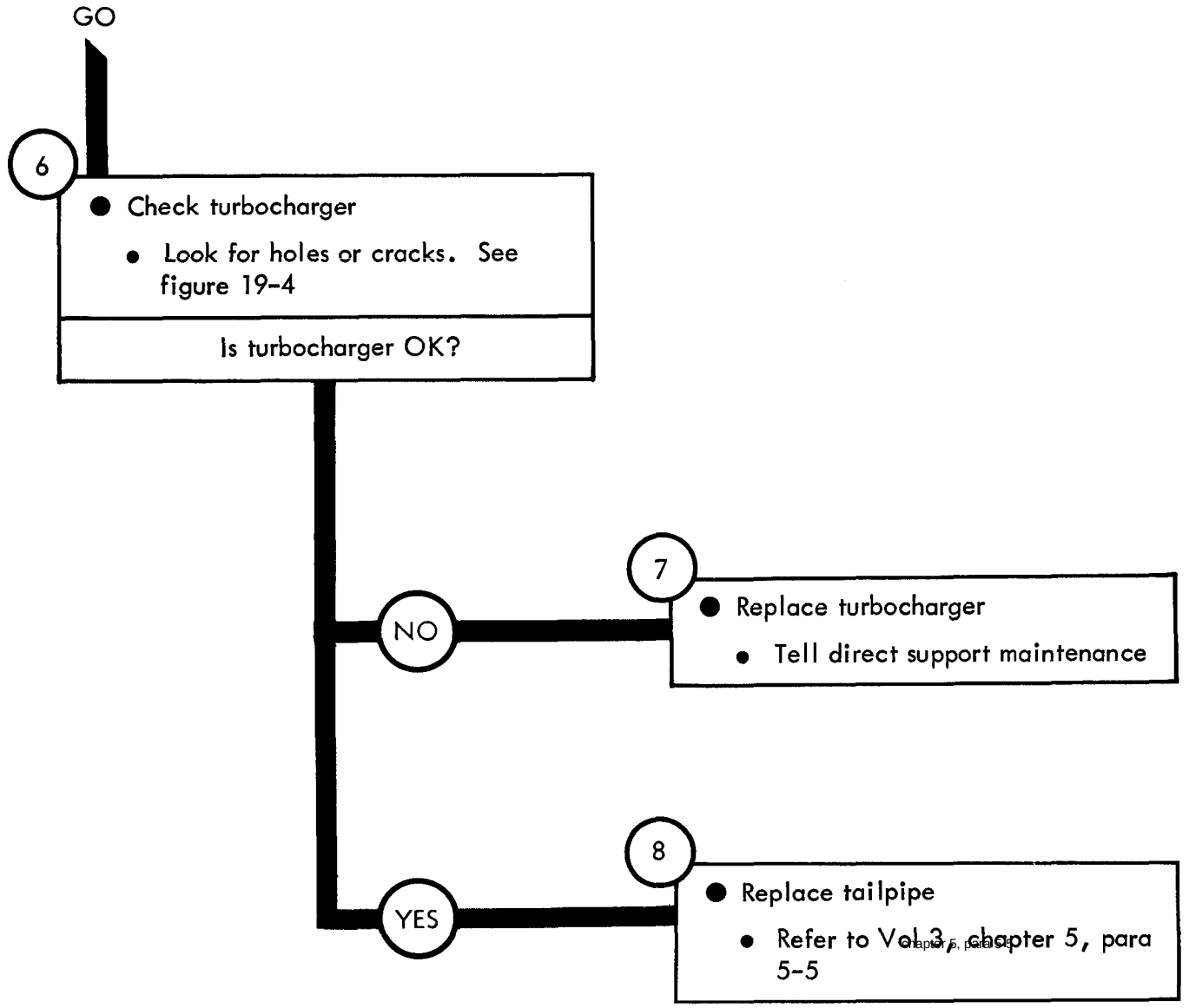


Figure 17-3 (Sheet 2 of 3)



TA 114161

Figure 17-3 (Sheet 3 of 3)

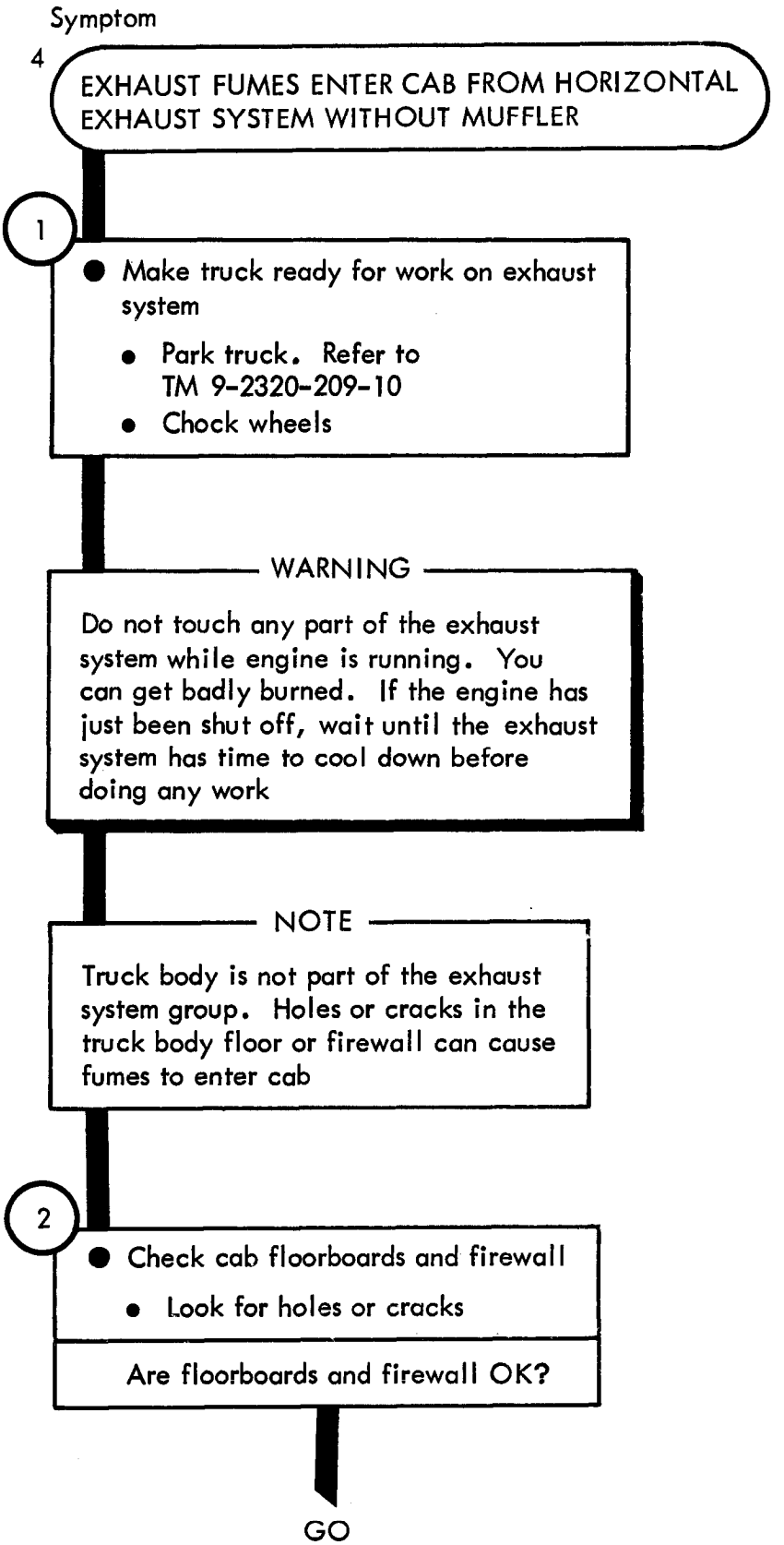


Figure 17-4 (Sheet 1 of 2)

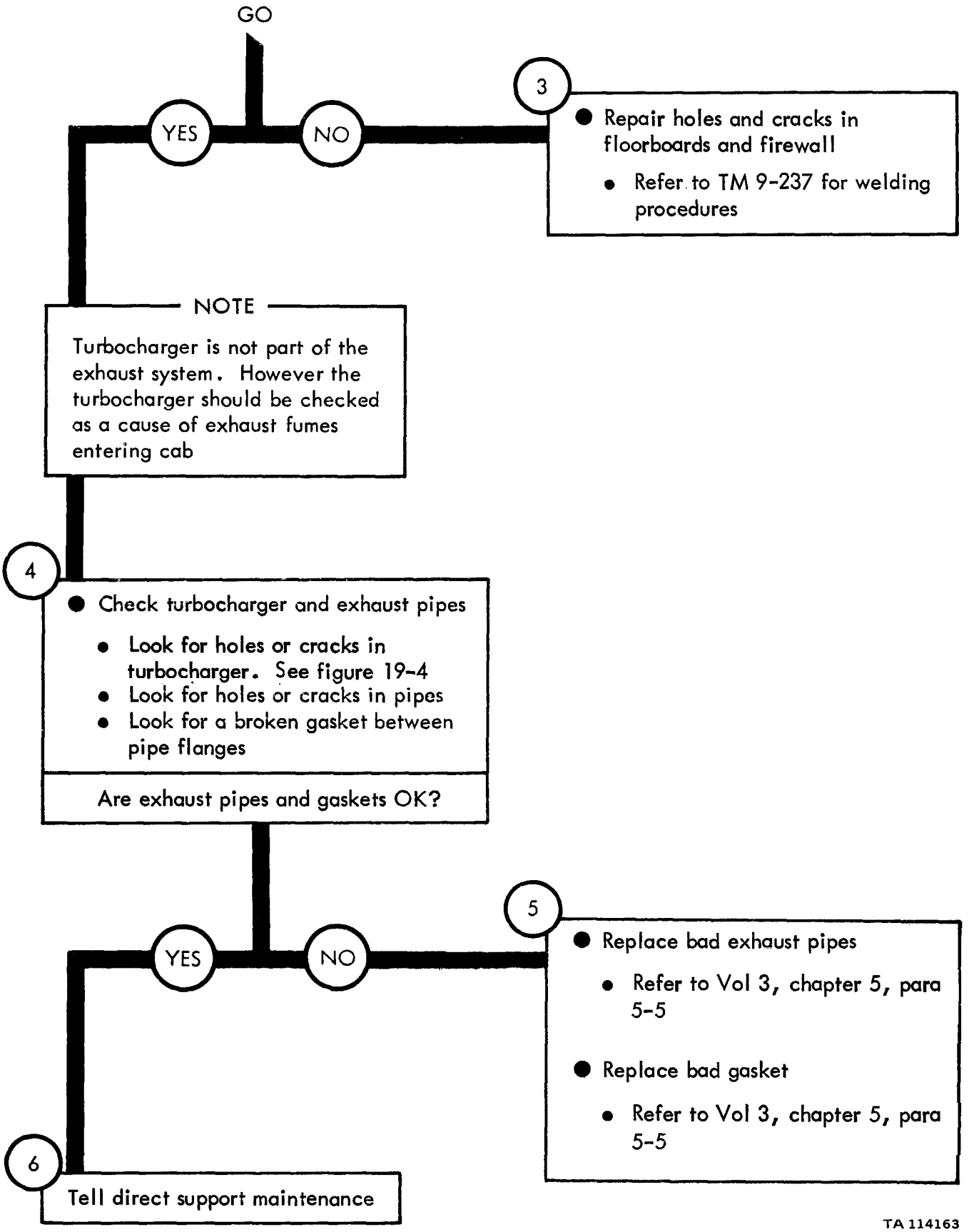


Figure 17-4 (Sheet 2 of 2)

Figure 17-4 (Sheet 2 of 2)

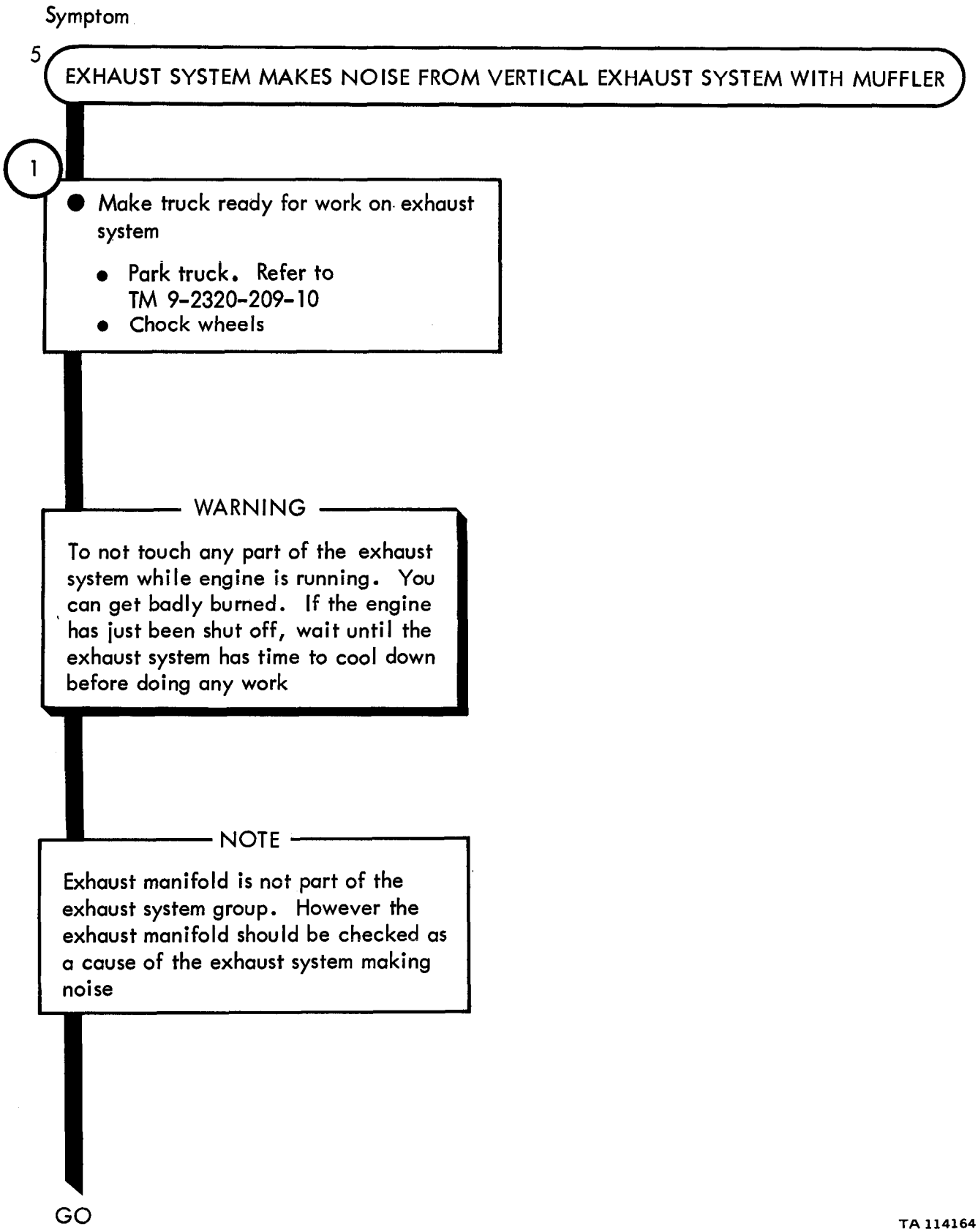
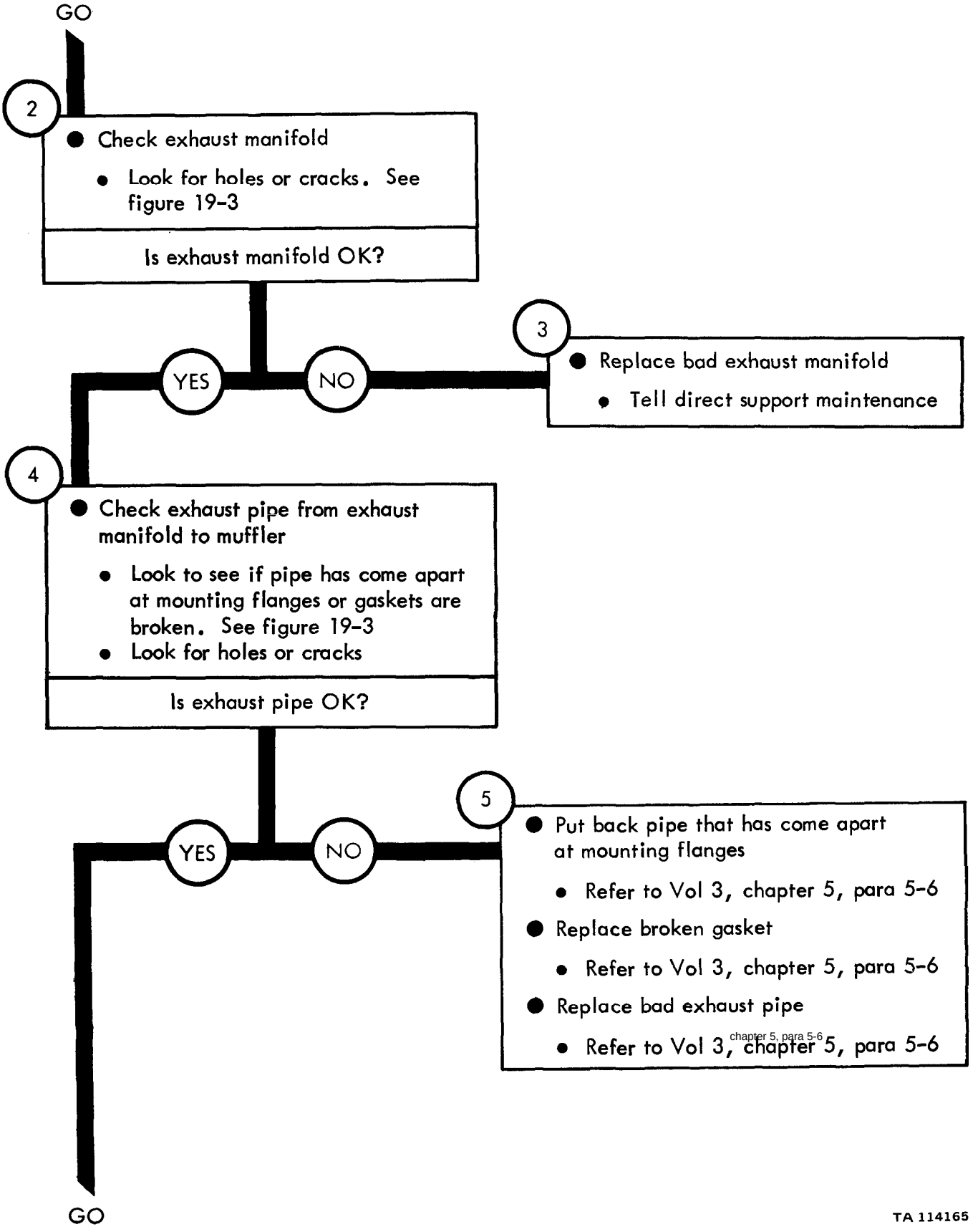
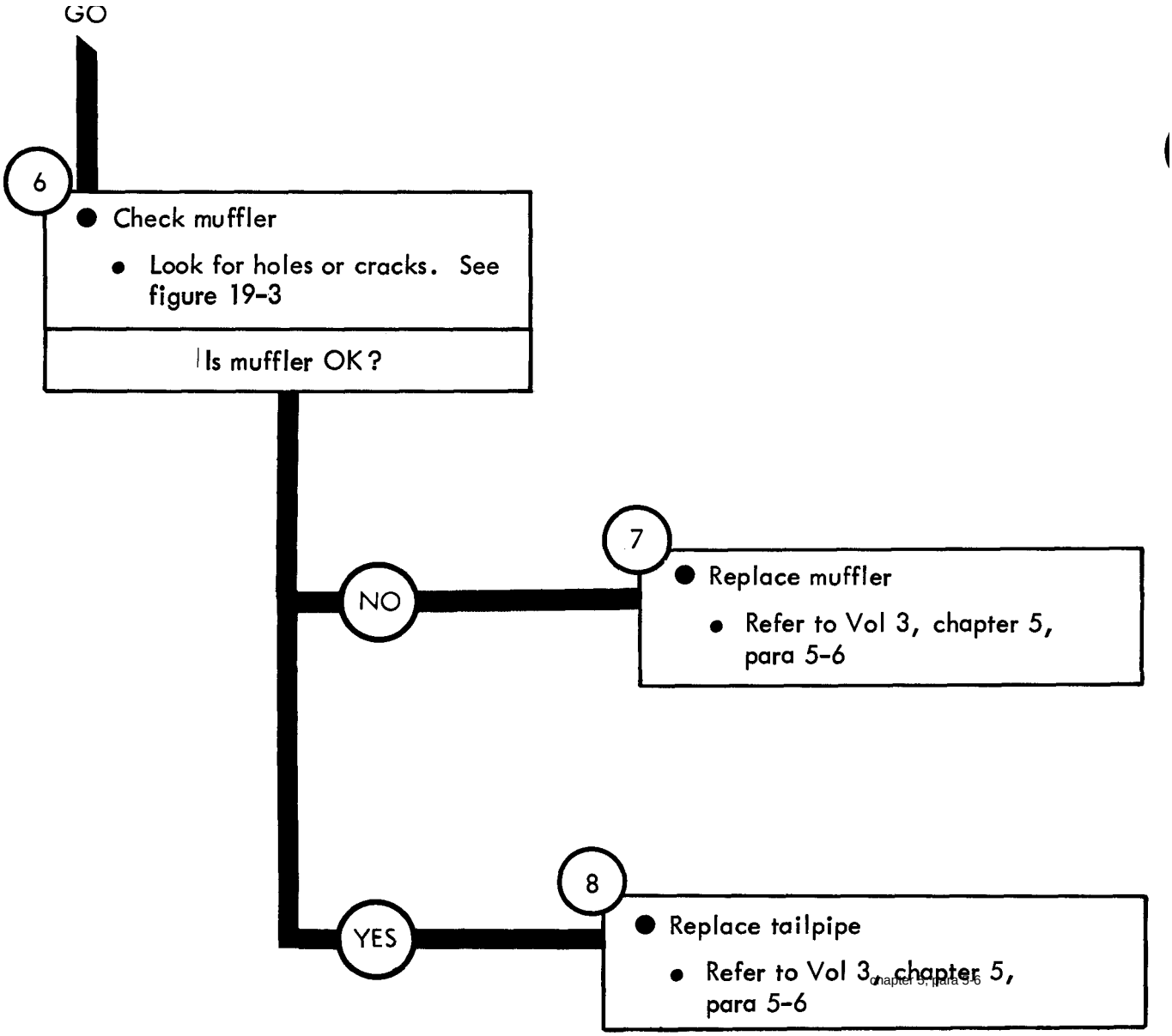


Figure 17-5 (Sheet 1 of 3)



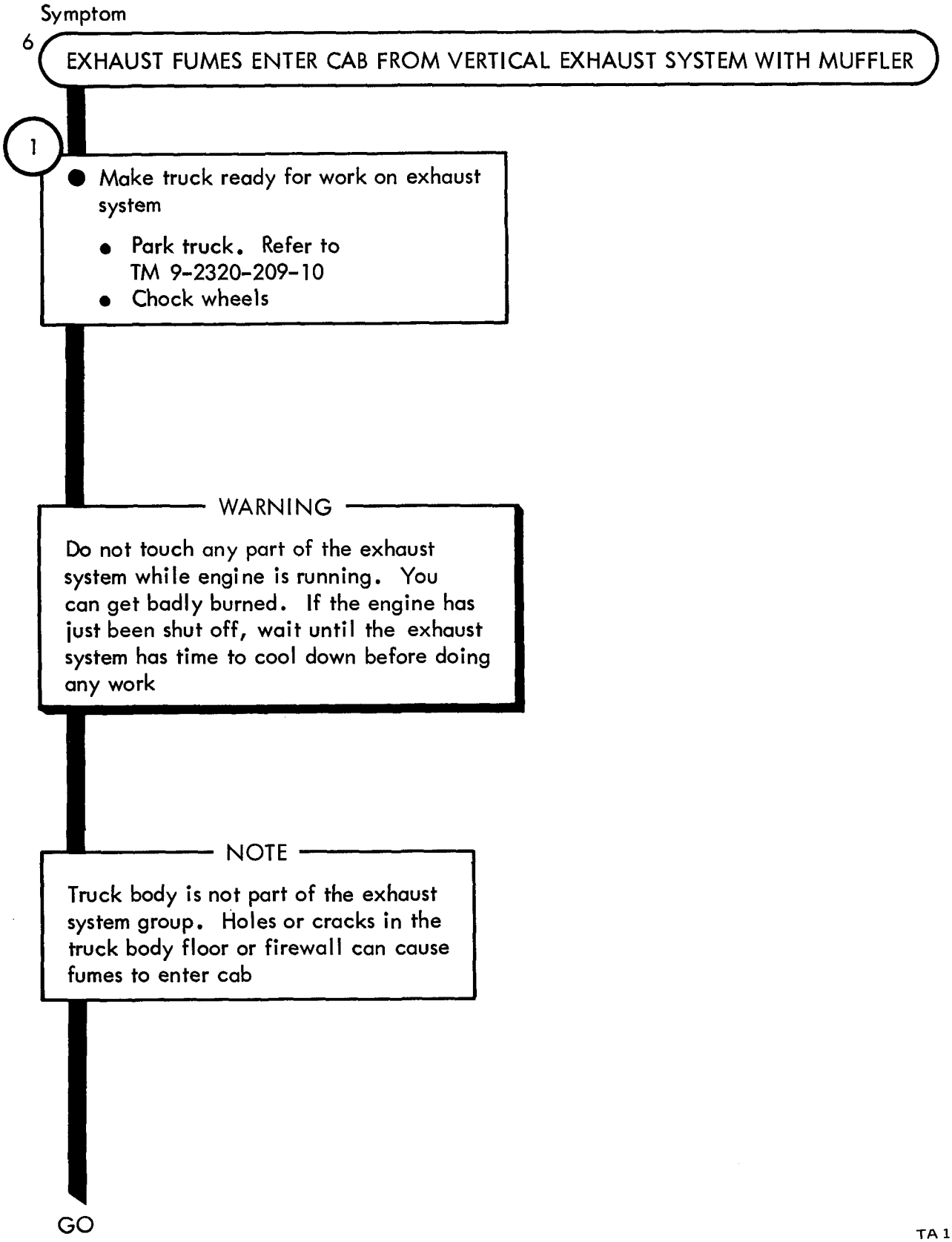
TA 114165

Figure 17-5 (Sheet 2 of 3)



TA 114166

Figure 17-5 (Sheet 3 of 3)



TA 114167

Figure 17-6 (Sheet 1 of 2)

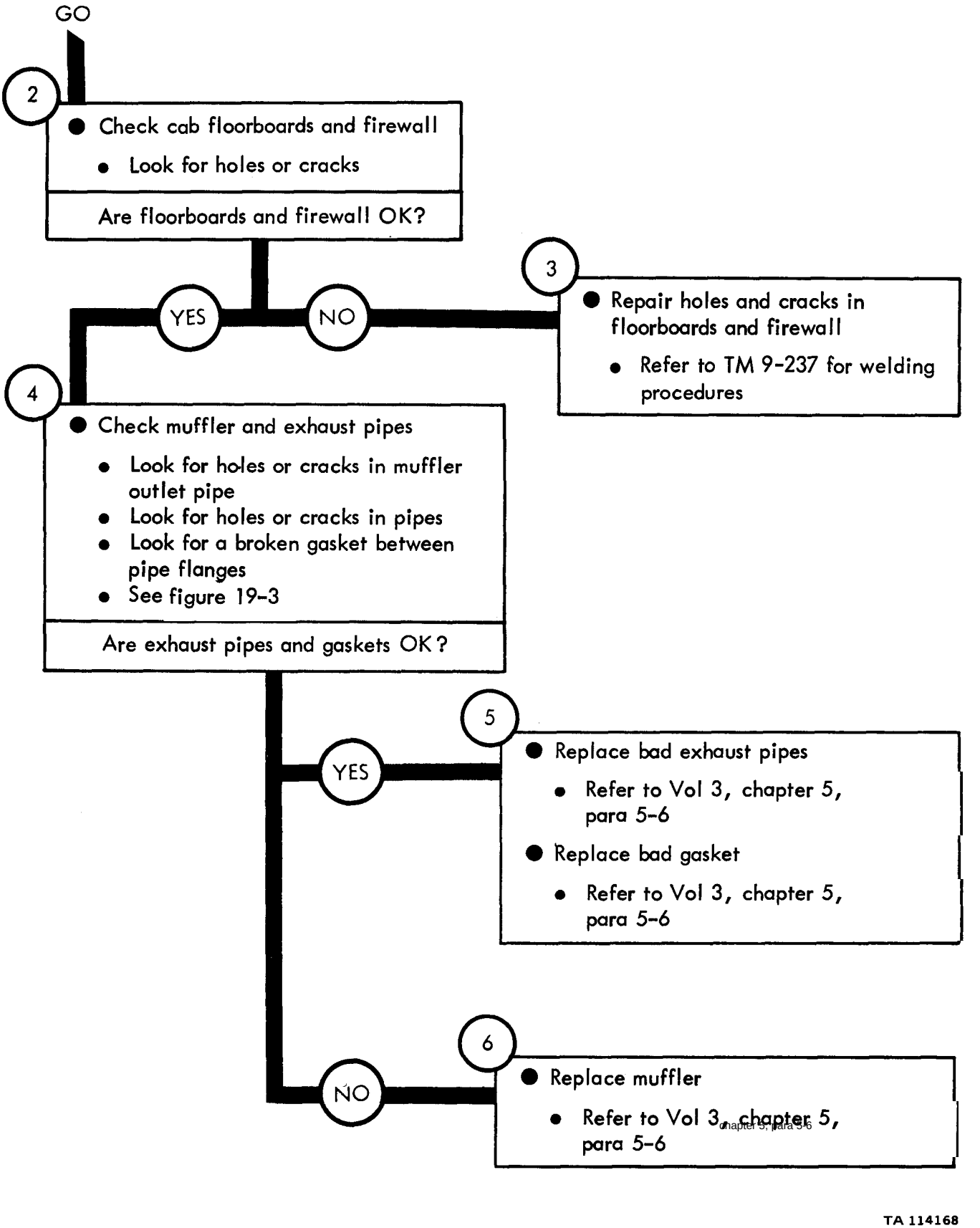


Figure 17-6 (Sheet 2 of 2)

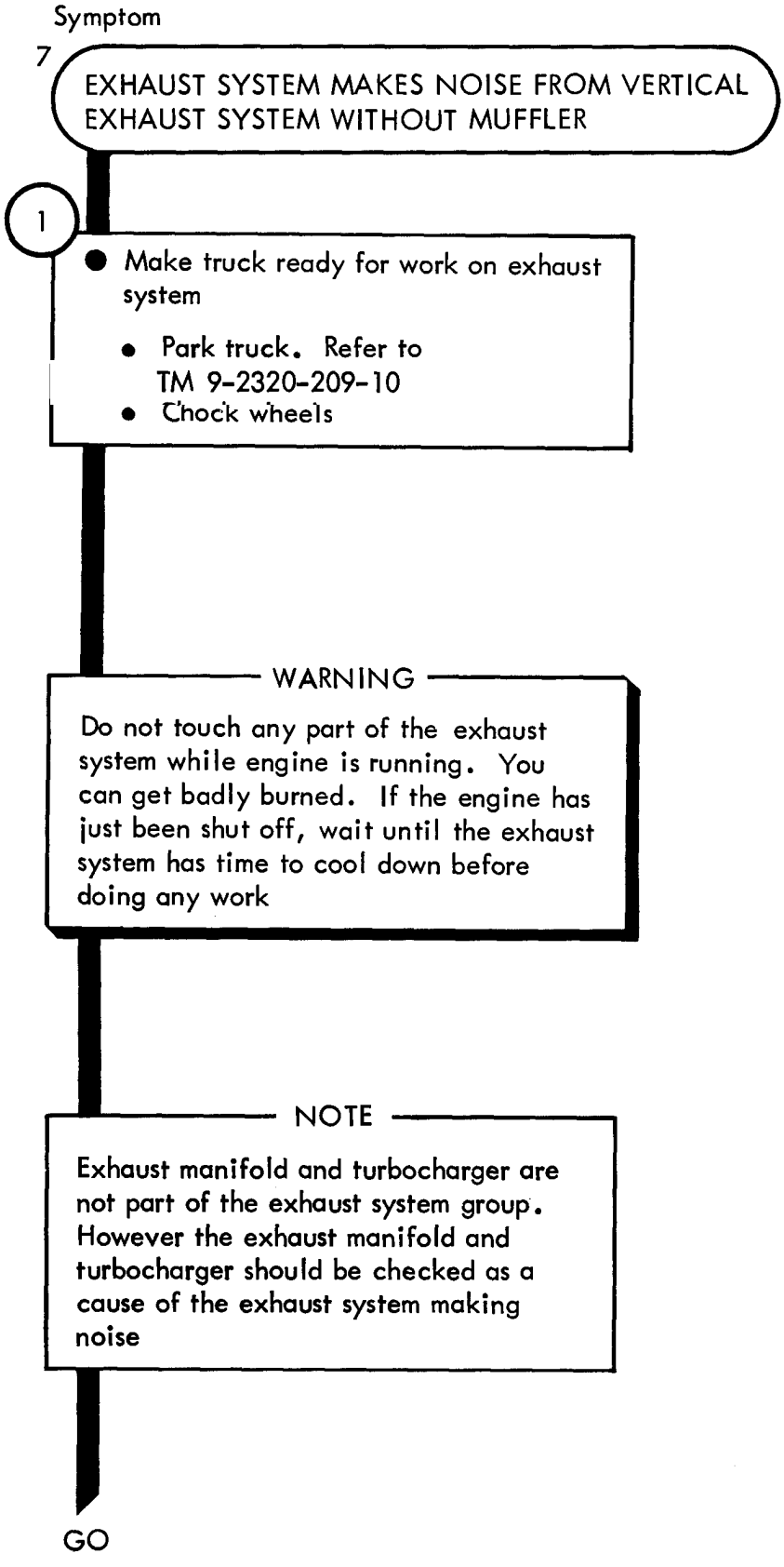


Figure 17-7 (Sheet 1 of 3)

TA 114169

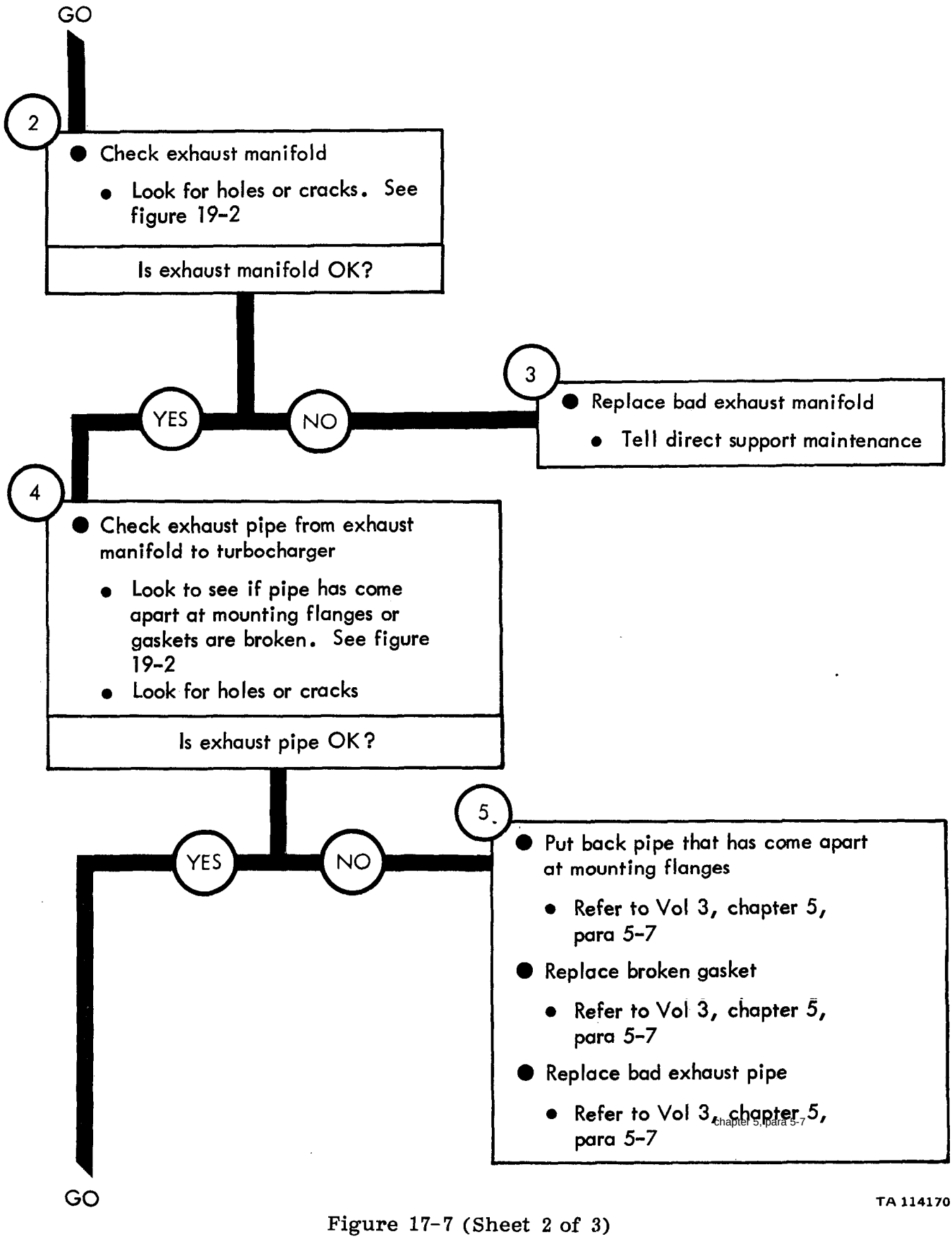
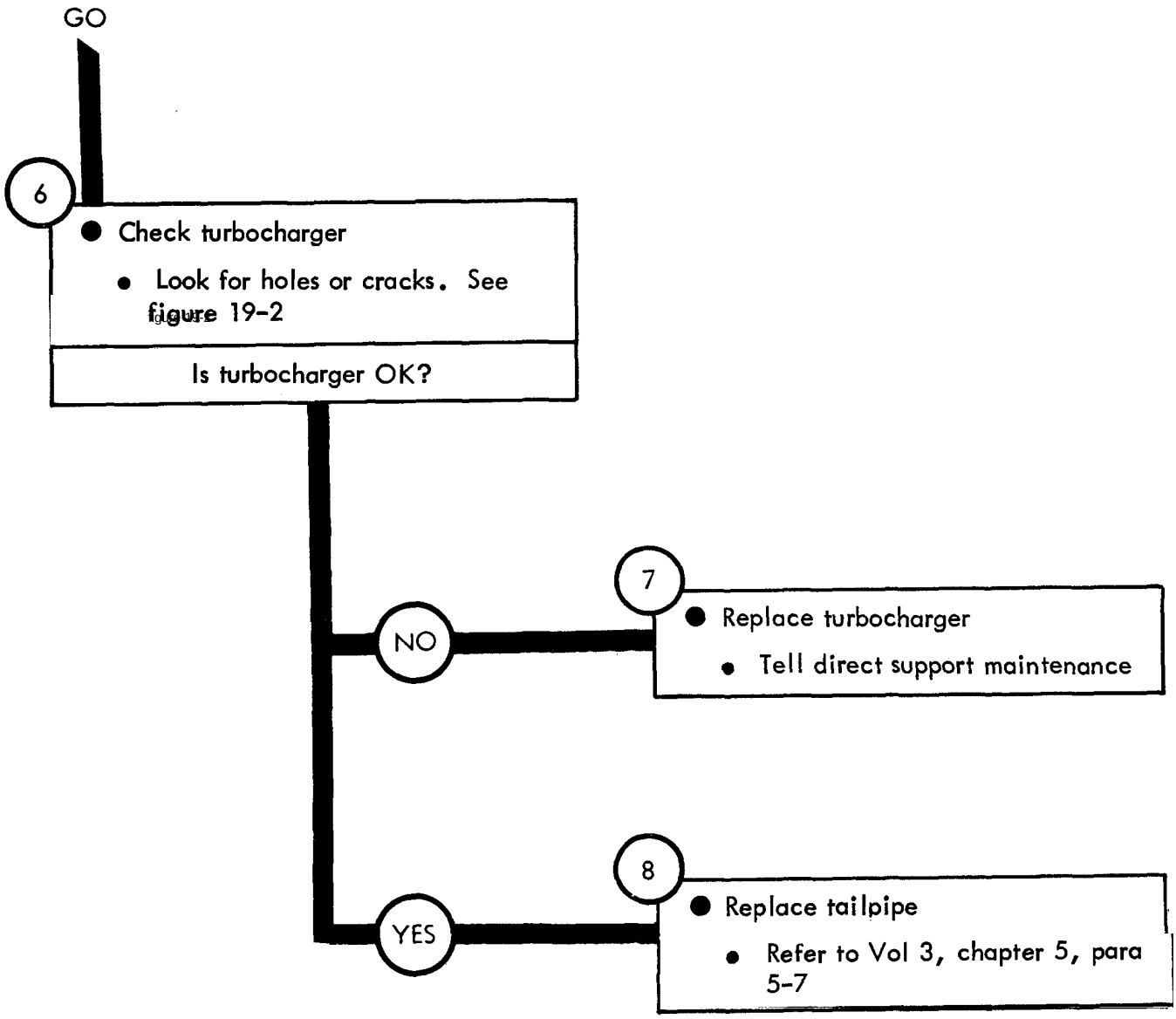


Figure 17-7 (Sheet 2 of 3)



TA 114171

Figure 17-7 (Sheet 3 of 3)

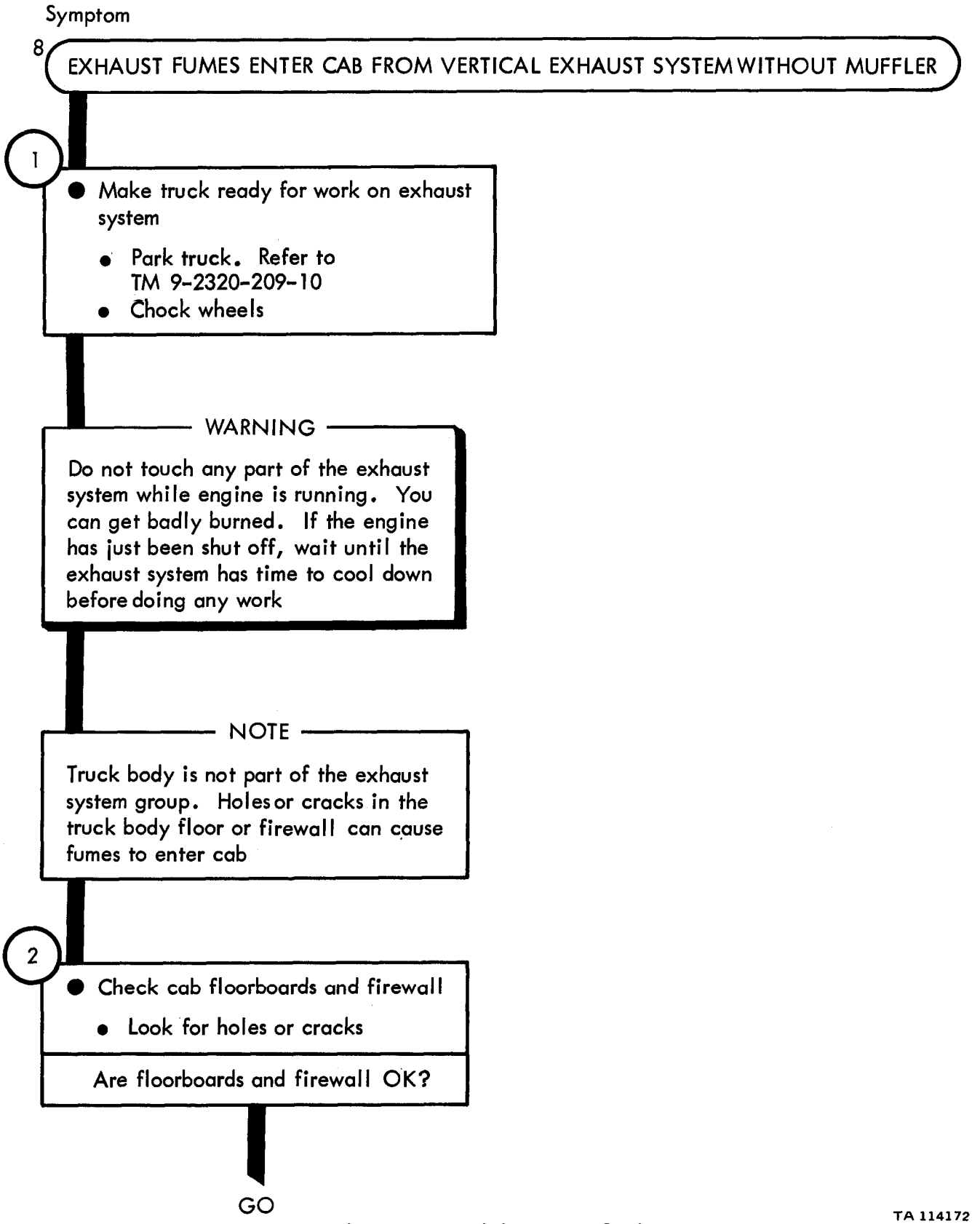


Figure 17-8 (Sheet 1 of 2)

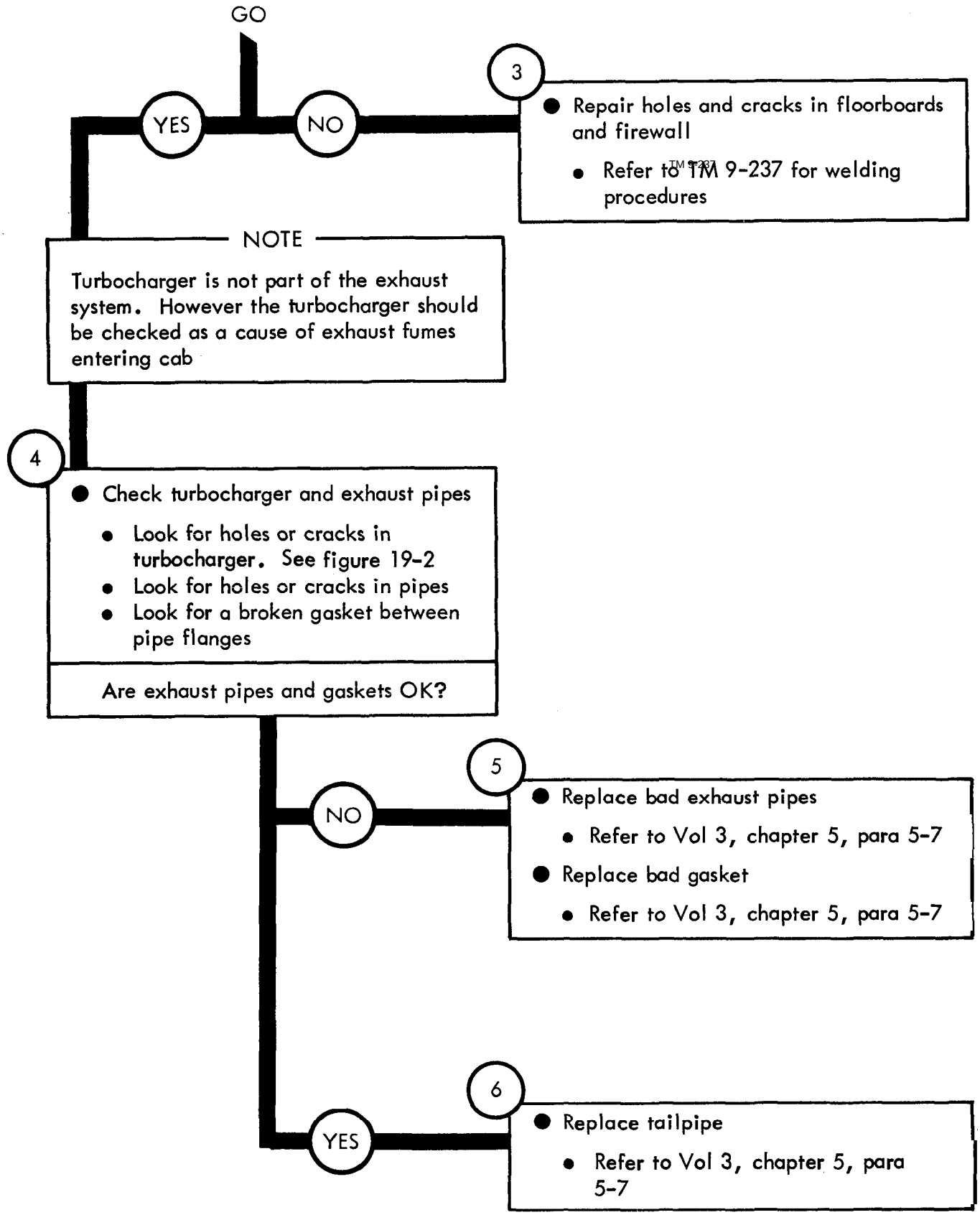


Figure 17-8 (Sheet 2 of 2)

TA 114173

Symptom 9

EXHAUST SYSTEM MAKES NOISE ON TRUCKS M50A1, M50A2, AND M50A3

1

- Make truck ready for work on exhaust system
  - Park truck. Refer to TM 9-2320-209-10
  - Chock wheels

WARNING

Do not touch any part of the exhaust system while engine is running. You can get badly burned. If the engine has just been shut off, wait until the exhaust system has time to cool down before doing any work

NOTE

Exhaust manifold is not part of the exhaust system group. However the exhaust manifold should be checked as a cause of the exhaust system making noise

2

- Check exhaust manifold
  - Look for holes or cracks. See figure 19-5

Is exhaust manifold OK?

GO

TA 114174

Figure 17-9 (Sheet 1 of 3)

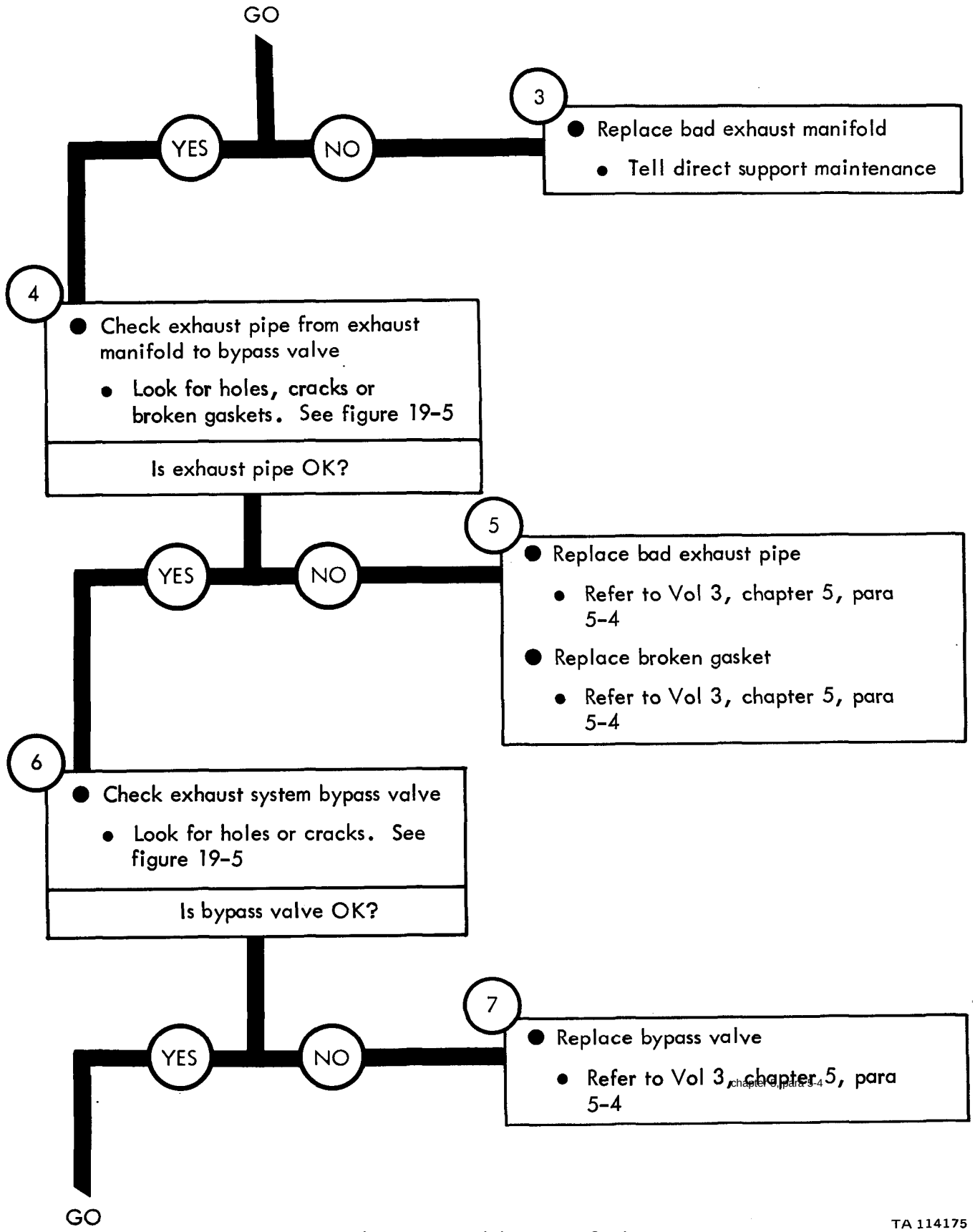
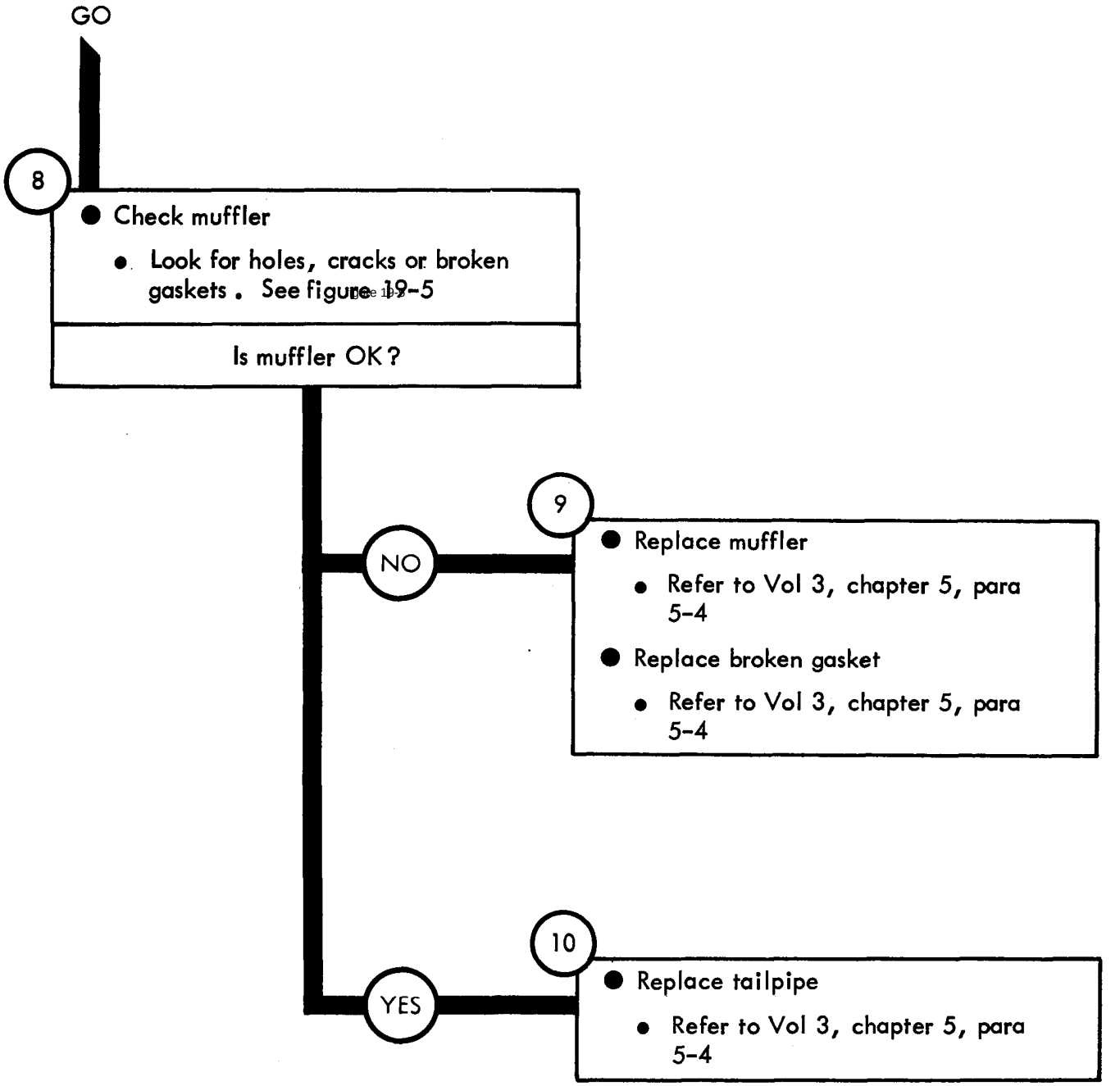


Figure 17-9 (Sheet 2 of 3)

TA 114175



TA 114176

Figure 17-9 (Sheet 3 of 3)

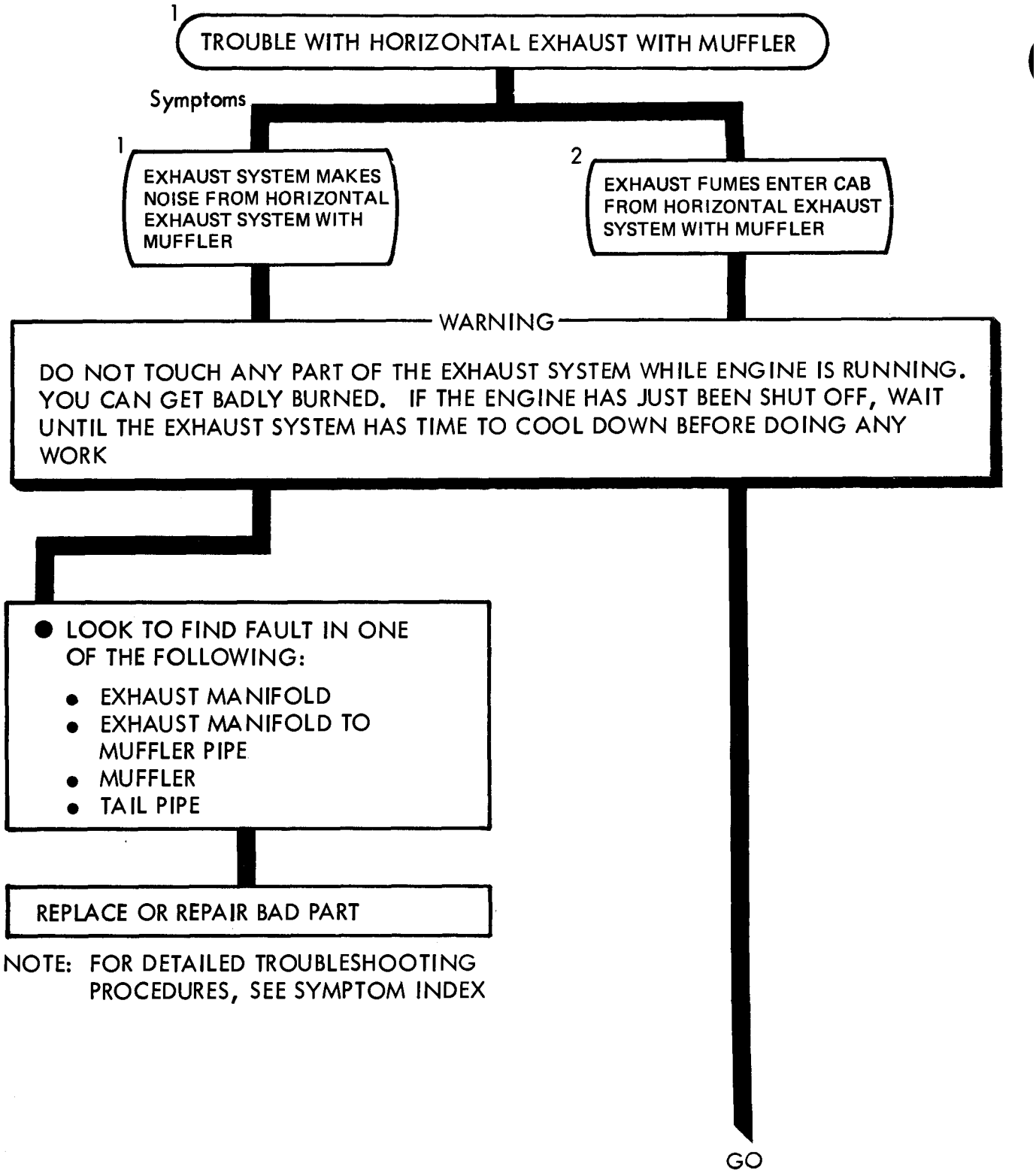
CHAPTER 18

EXHAUST SYSTEM TROUBLESHOOTING SUMMARY

18-1. GENERAL. This chapter gives a summary of troubleshooting procedures given in chapter 17 for the exhaust system.

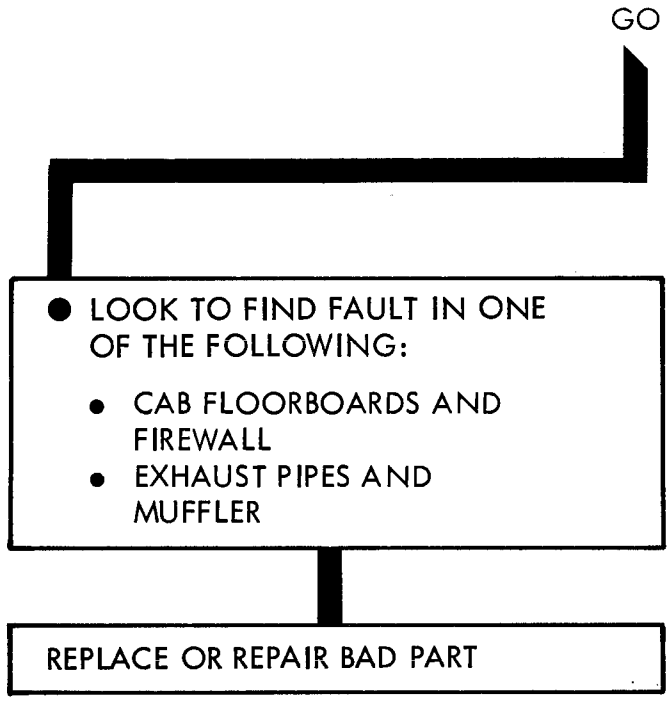
18-2. PROCEDURES. The summary in this chapter covers all fault symptoms found in the detailed troubleshooting procedures. Chapter 7 outlines a sample troubleshooting procedure. The summarv procedures are based on the “what-to-do” portions of the detailed procedures and do not include the "how-to-do-it" instructions. Warnings, cautions, and notes are given where needed.

EXHAUST SYSTEM TROUBLESHOOTING SUMMARY



TA 114177

Figure 18-1 (Sheet 1 of 2)



NOTE: FOR DETAILED TROUBLESHOOTING PROCEDURES, SEE SYMPTOM INDEX

Figure 18-1 (Sheet 2 of 2)

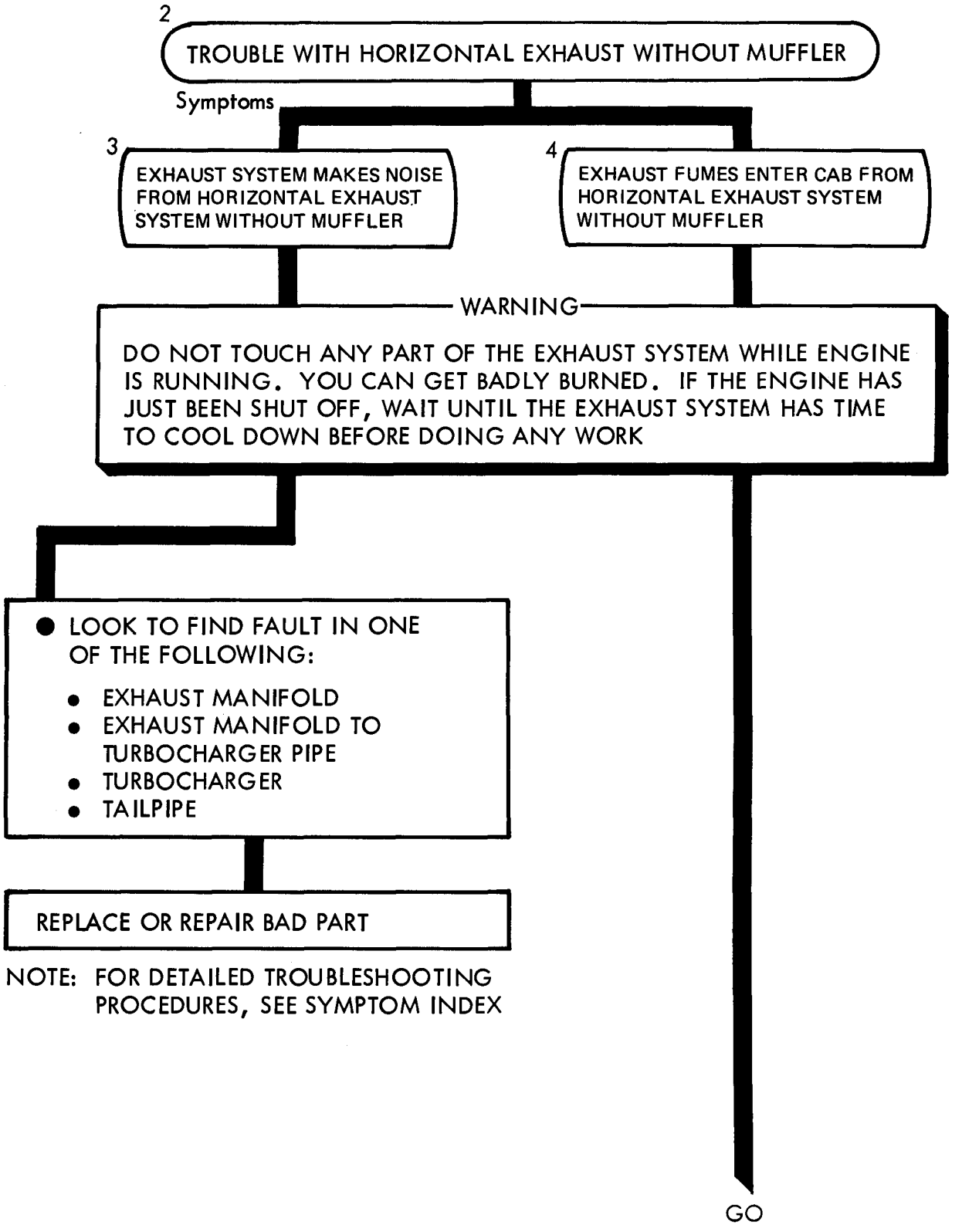
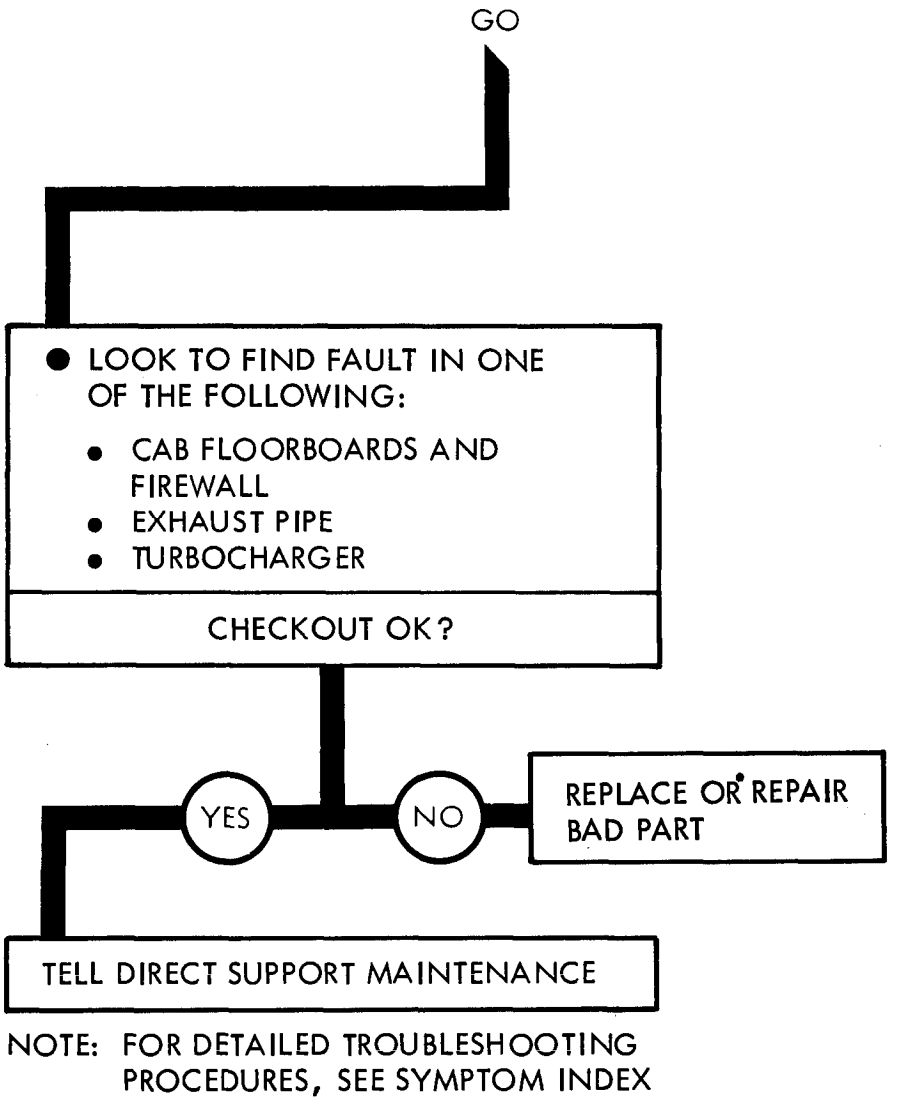


Figure 18-2 (Sheet 1 of 2)



TA 114180

Figure 18-2 (Sheet 2 of 2)

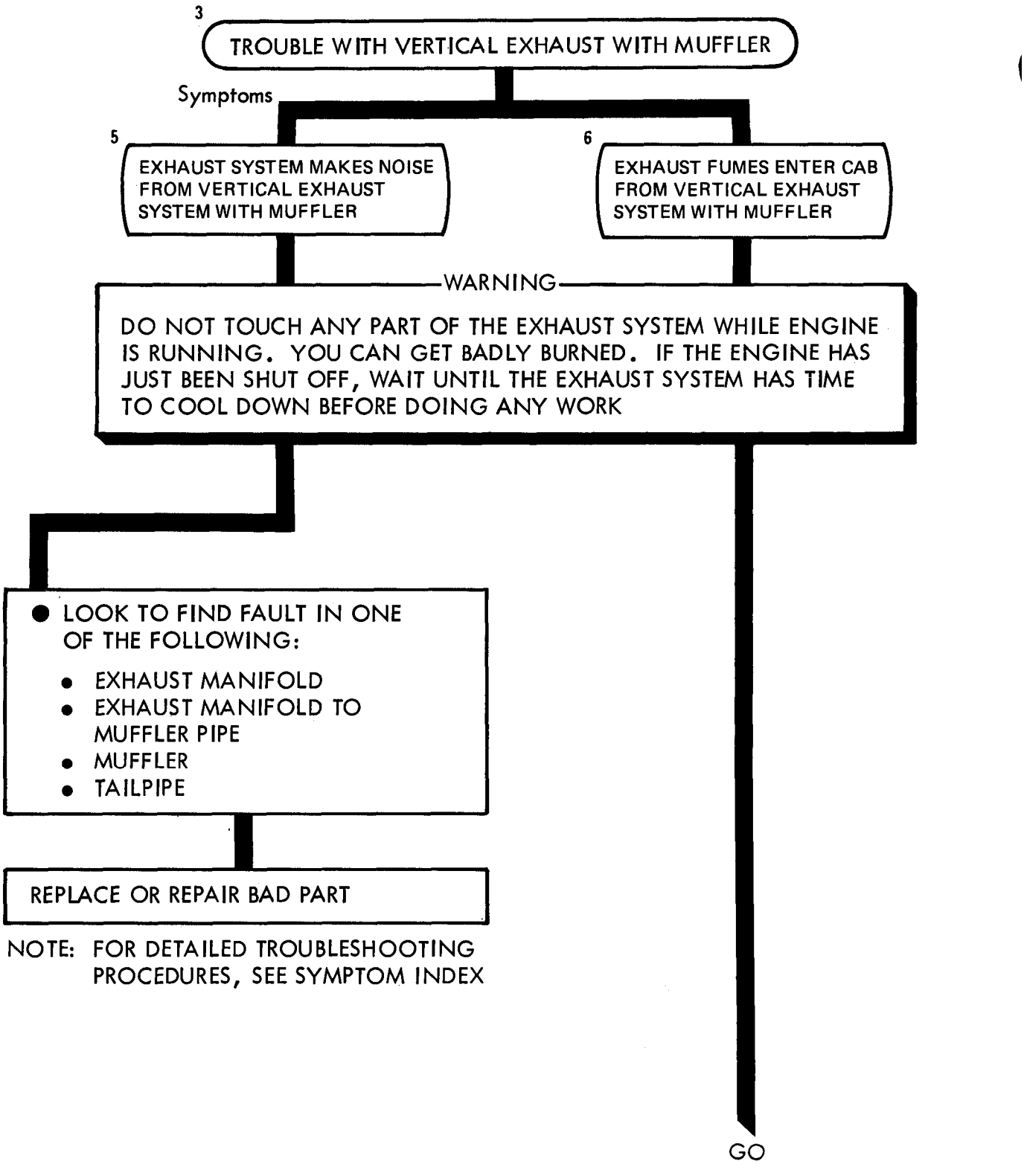
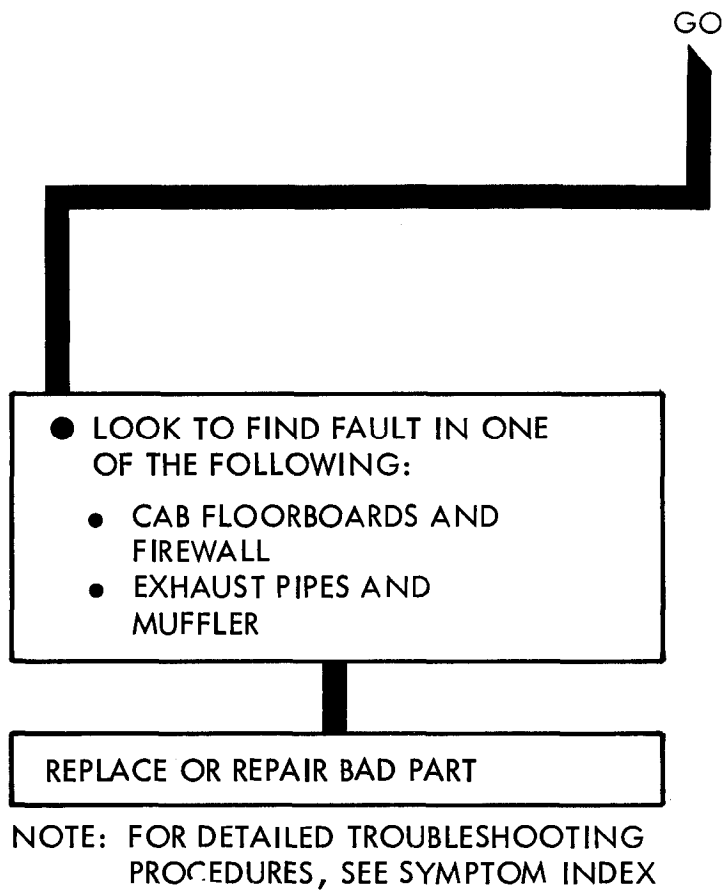
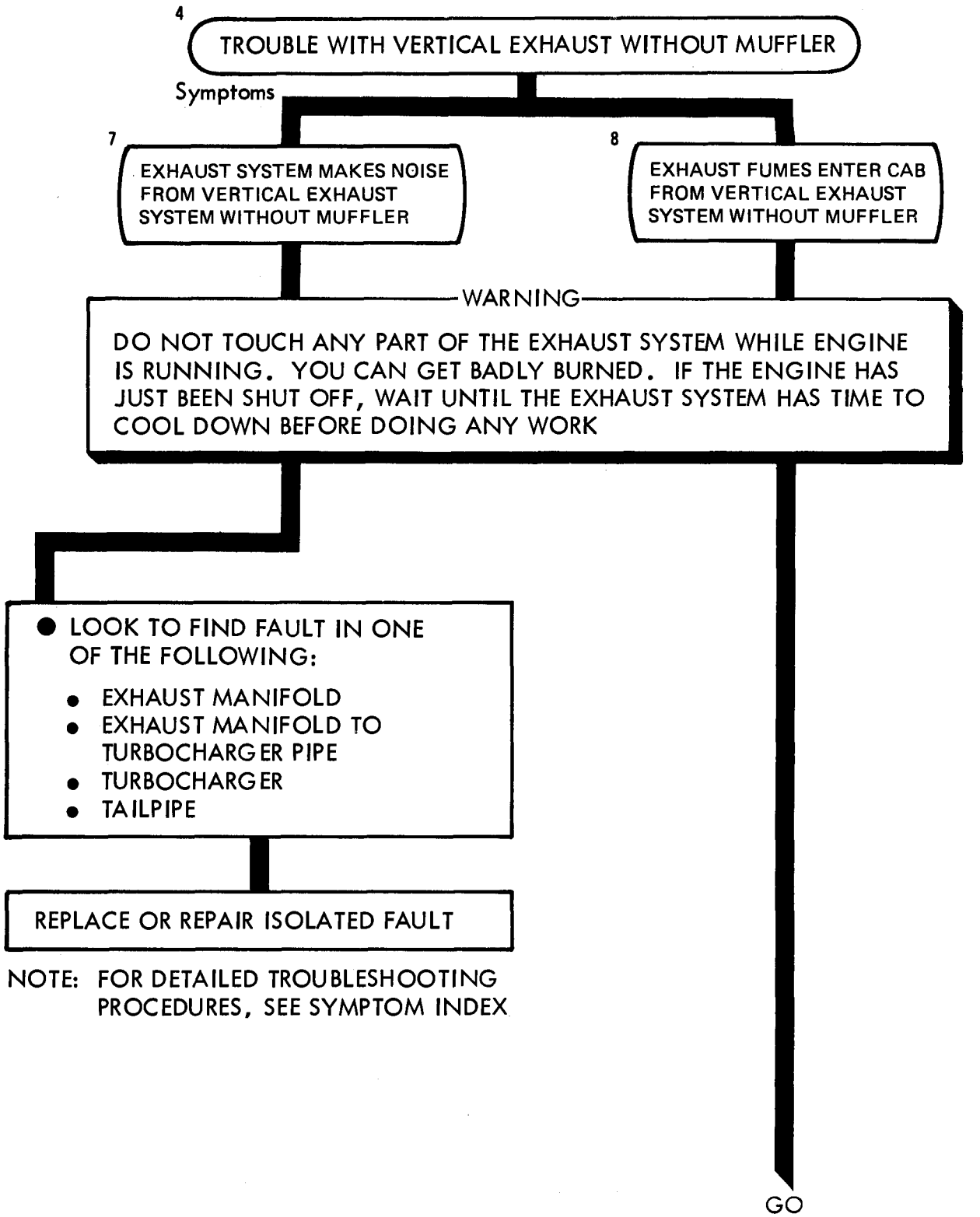


Figure 18-3 (Sheet 1 of 2)



TA 114182

Figure 18-3 (Sheet 2 of 2)



TA 114183

Figure 18-4 (Sheet 1 of 2)

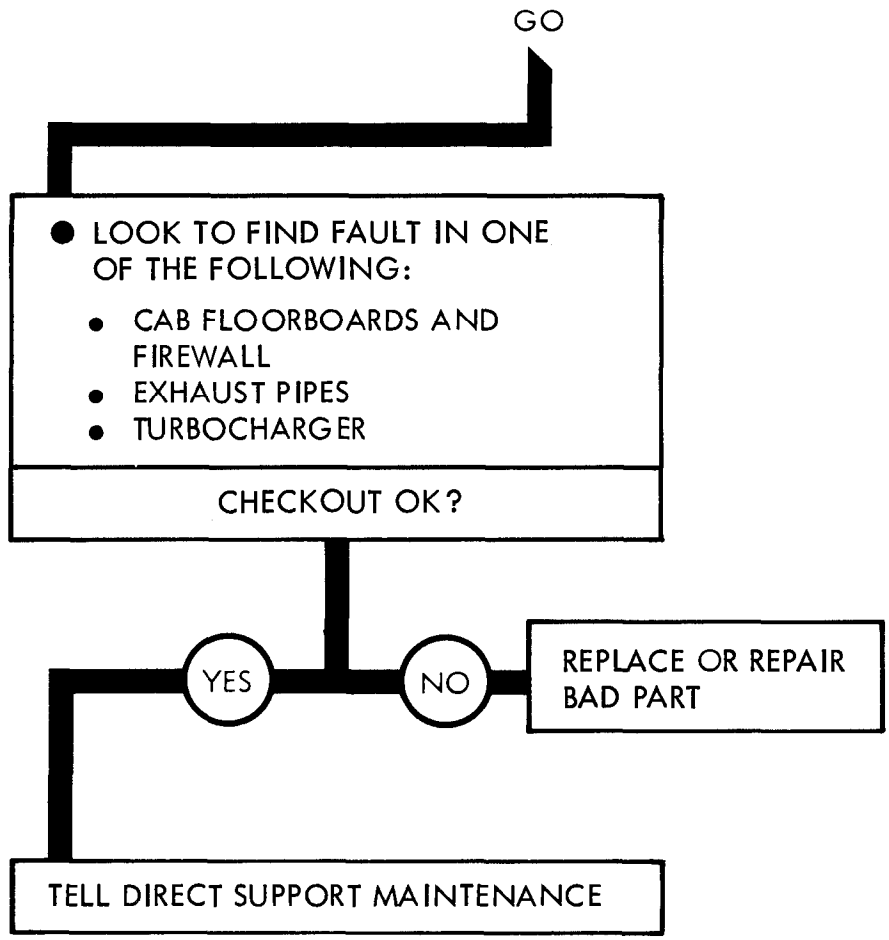
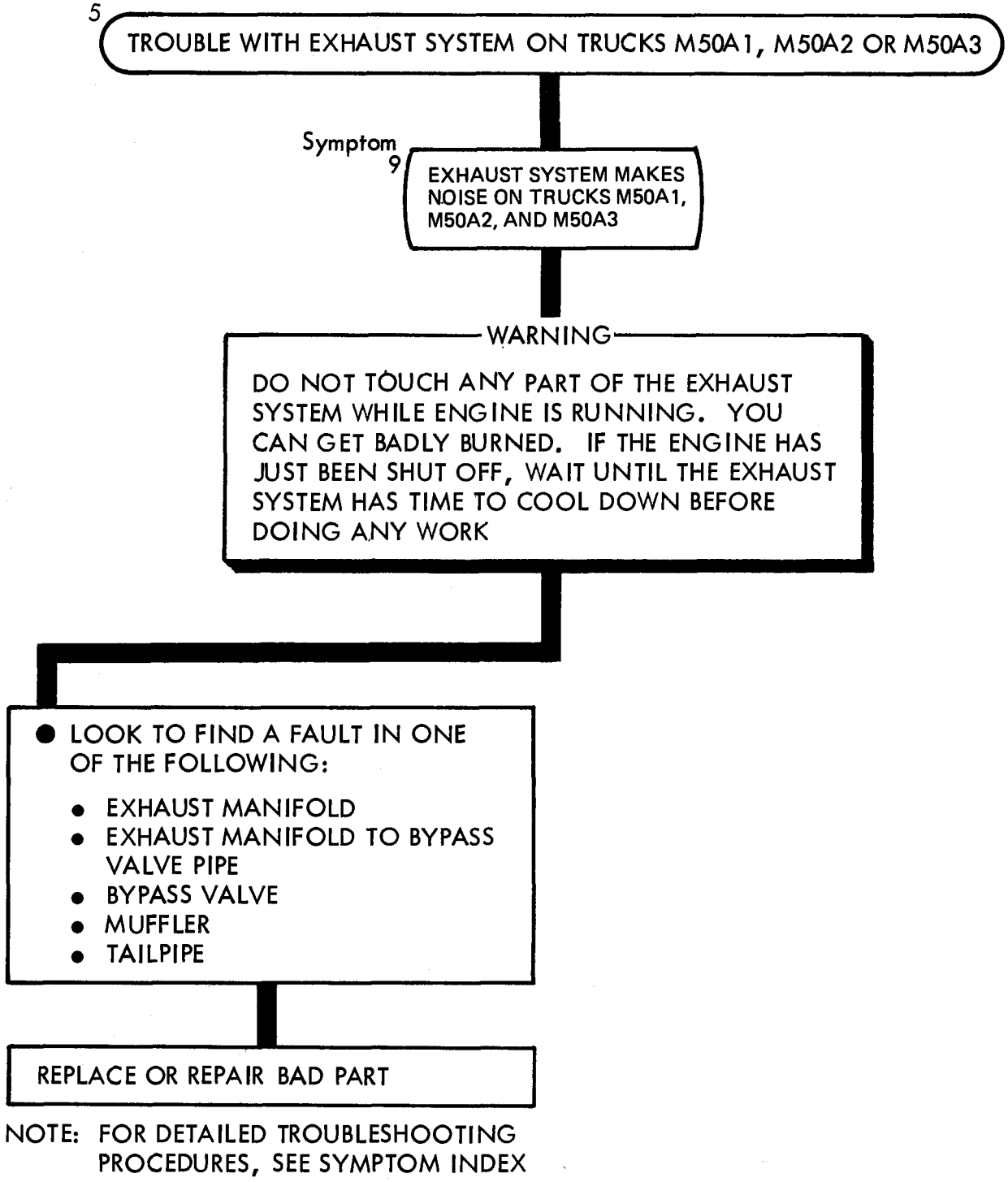


Figure 18-4 (Sheet 2 of 2)

TA114184



NOTE: FOR DETAILED TROUBLESHOOTING PROCEDURES, SEE SYMPTOM INDEX

FIGURE 18-5

TA 114185

CHAPTER 19

EXHAUST SYSTEM SUPPORT DIAGRAMS

19-1. GENERAL. This chapter gives the diagrams you need when doing trouble-shooting procedures in chapter 17. Table 3-1 is a complete listing of all support diagrams used in this manual.

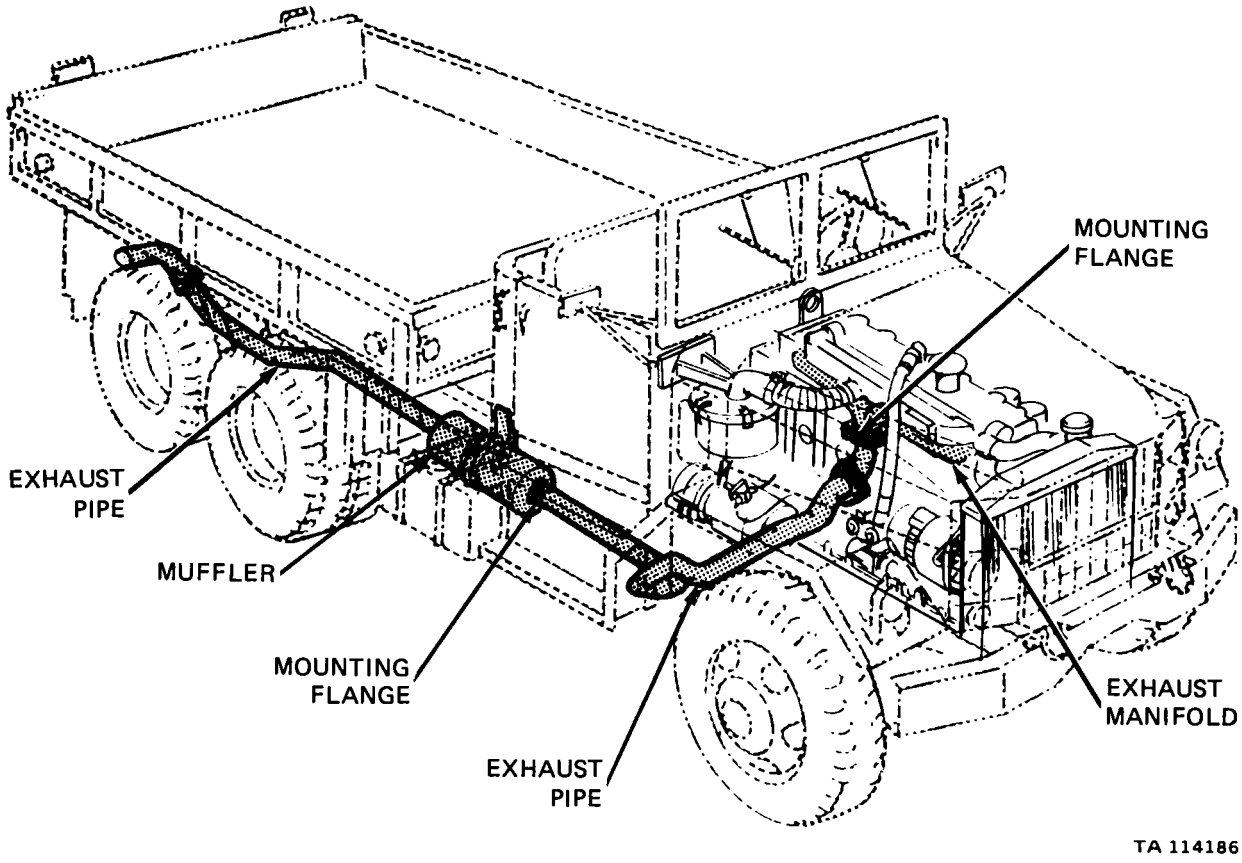


Figure 19-1. Exhaust System Support Diagram

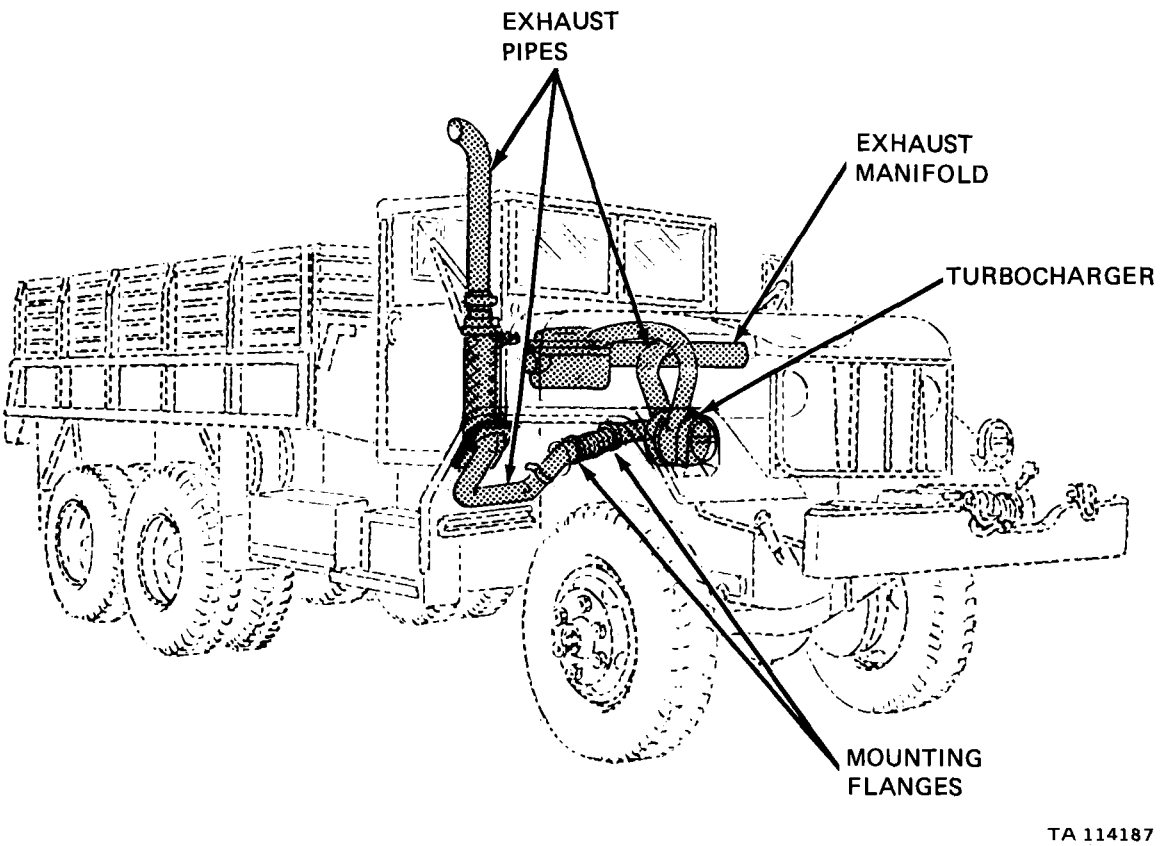


Figure 19-2. Exhaust System Support Diagram

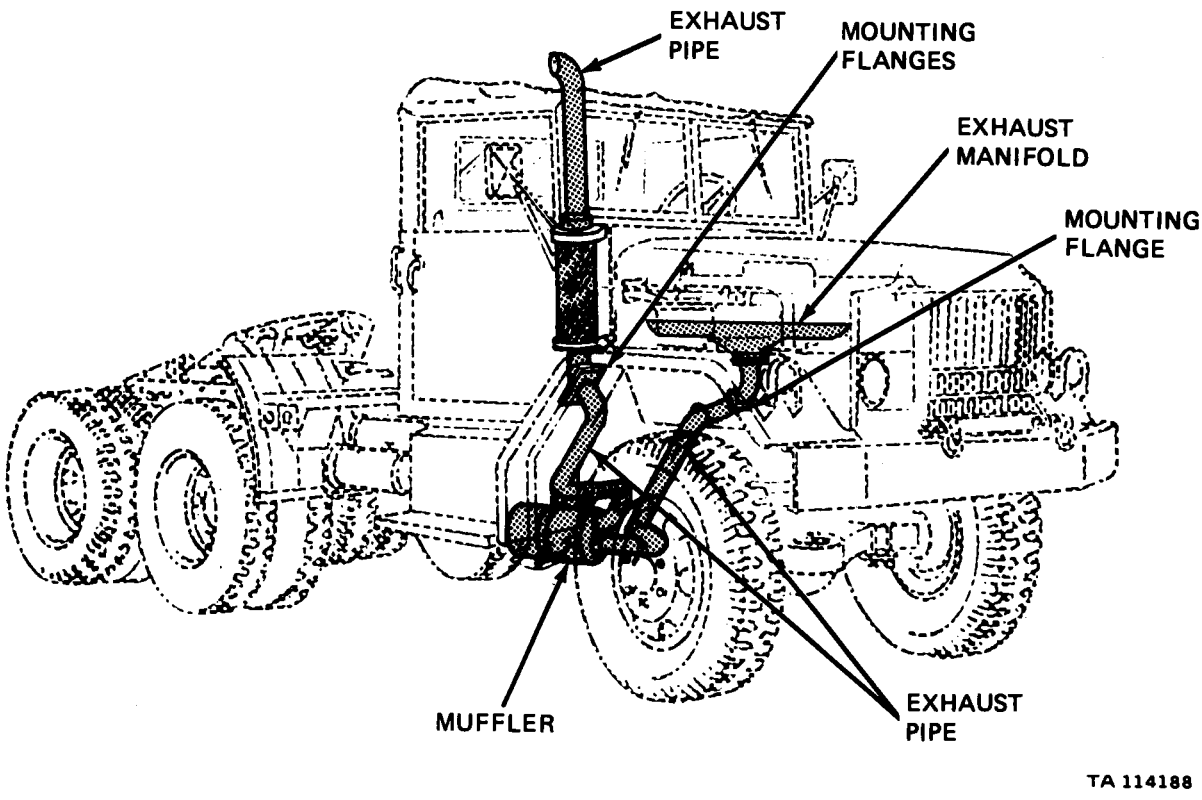


Figure 19-3. Exhaust System Support Diagram

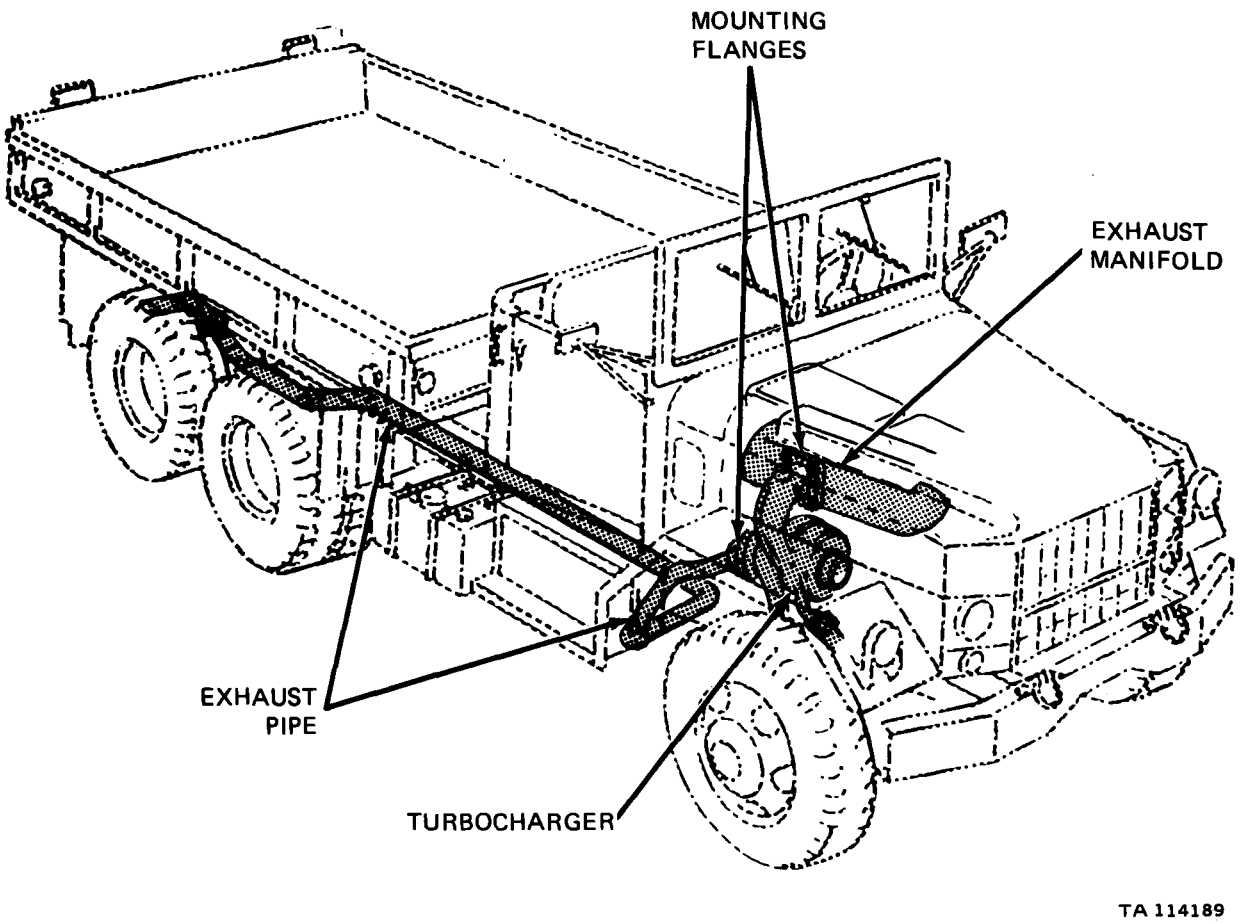


Figure 19-4. Exhaust System Support Diagram

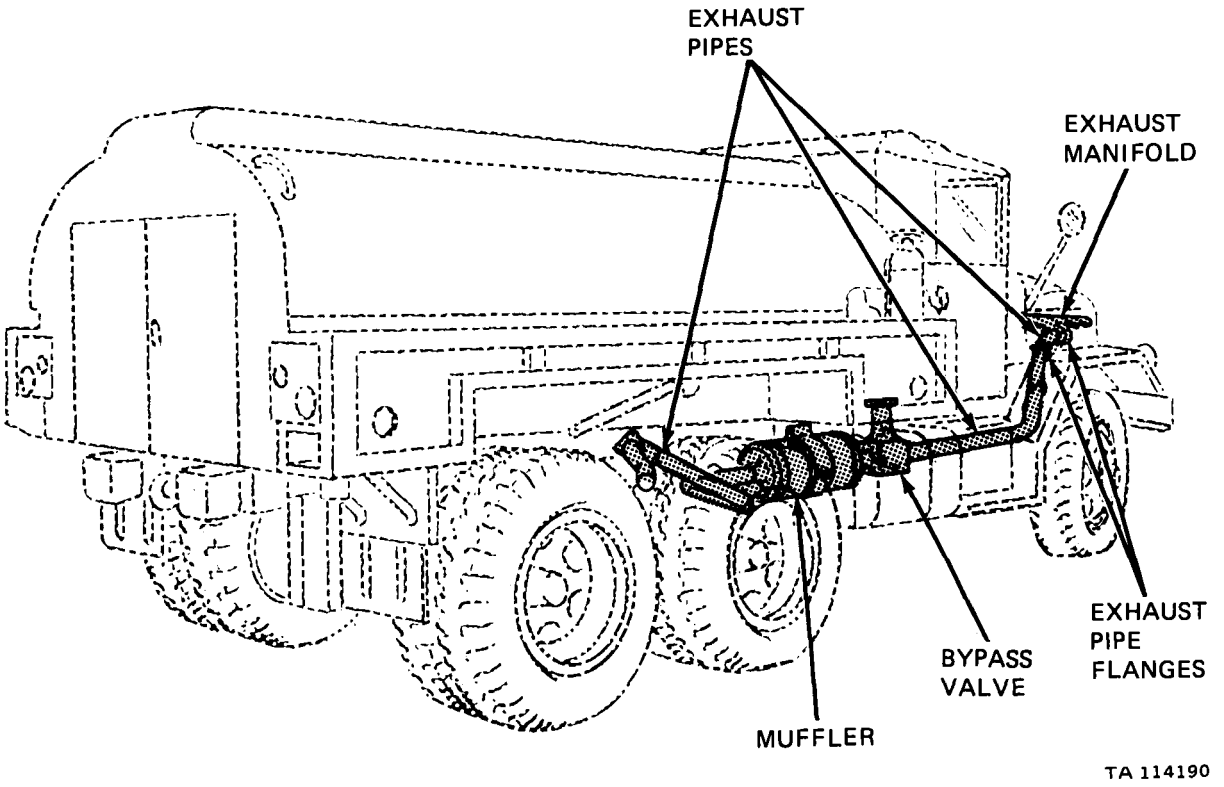


Figure 19-5. Exhaust System Support Diagram

CHAPTER 20

COOLING SYSTEM TROUBLESHOOTING

20-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment troubleshooting procedures for the cooling system, for which there are authorized corrective maintenance tasks at the organizational maintenance level.

20-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

COOLING SYSTEM TROUBLESHOOTING

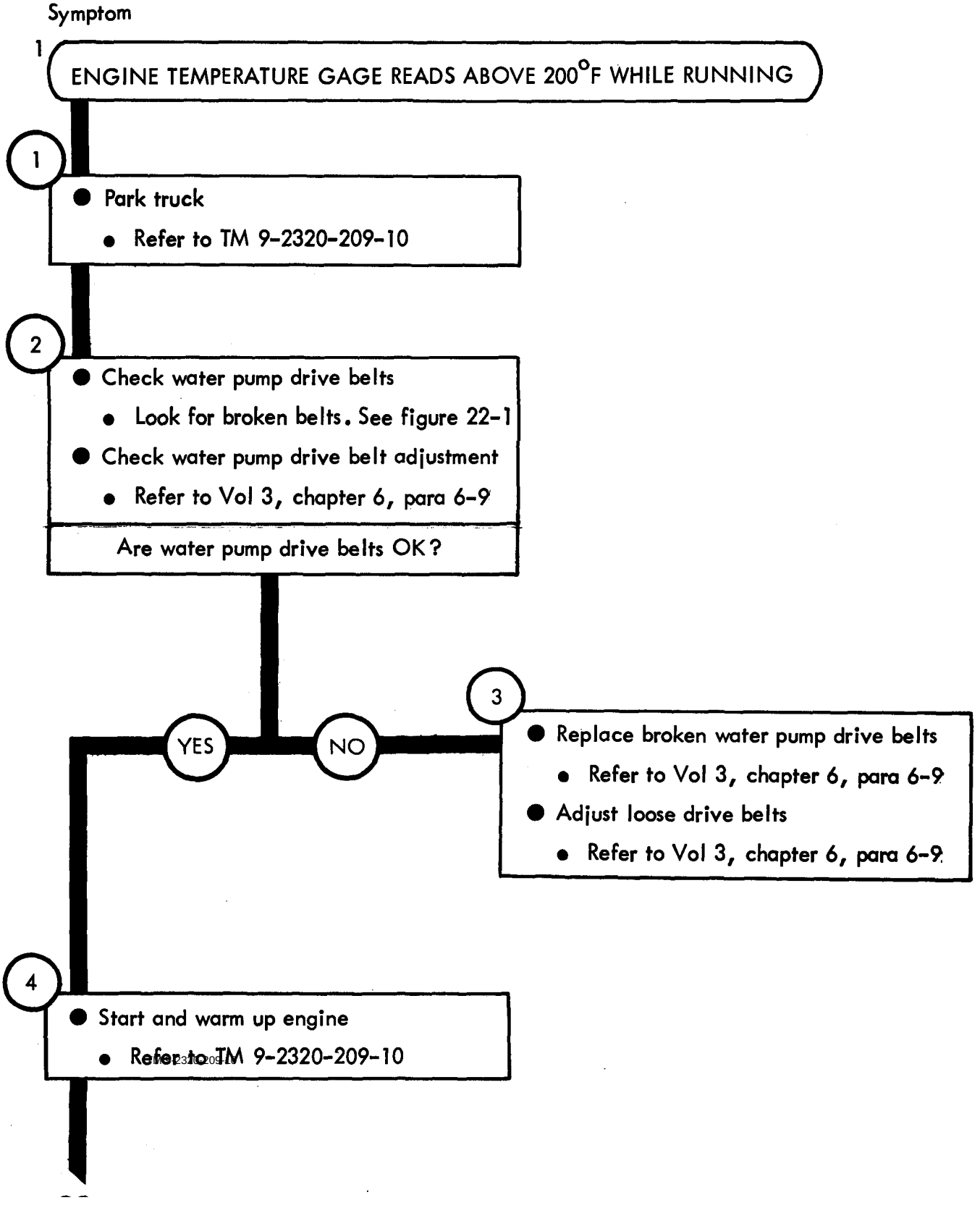


Figure 20-1 (Sheet 1 of 7)

TA 114191

GO

5

- Check water pump
  - See if water pump leaks
- Check upper and lower coolant hoses
  - Look for signs of coolant leaking from hose ends. See figure 22-1
  - Look for bent or crushed hoses
  - Turn off engine. Refer to TM 9-2320-209-10

Are water pump and coolant hoses OK?

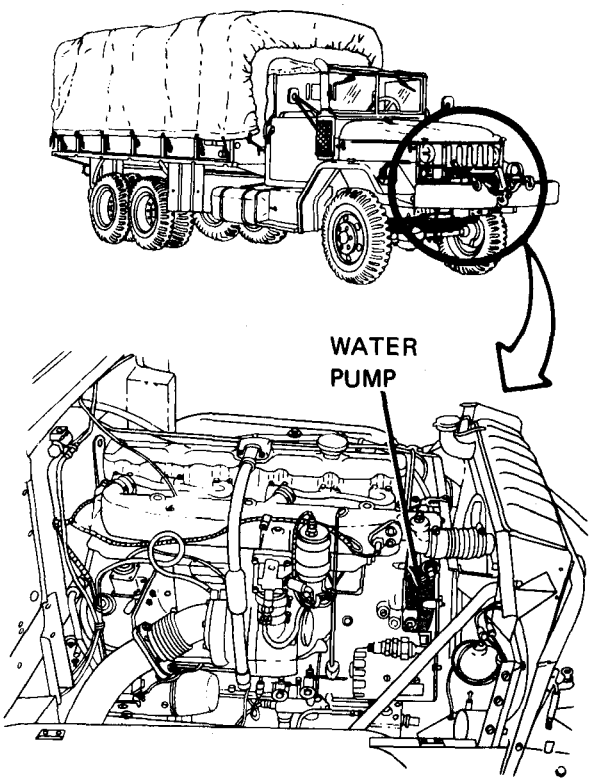


Figure 20-1 (Sheet 2 of 7)

TA 114192

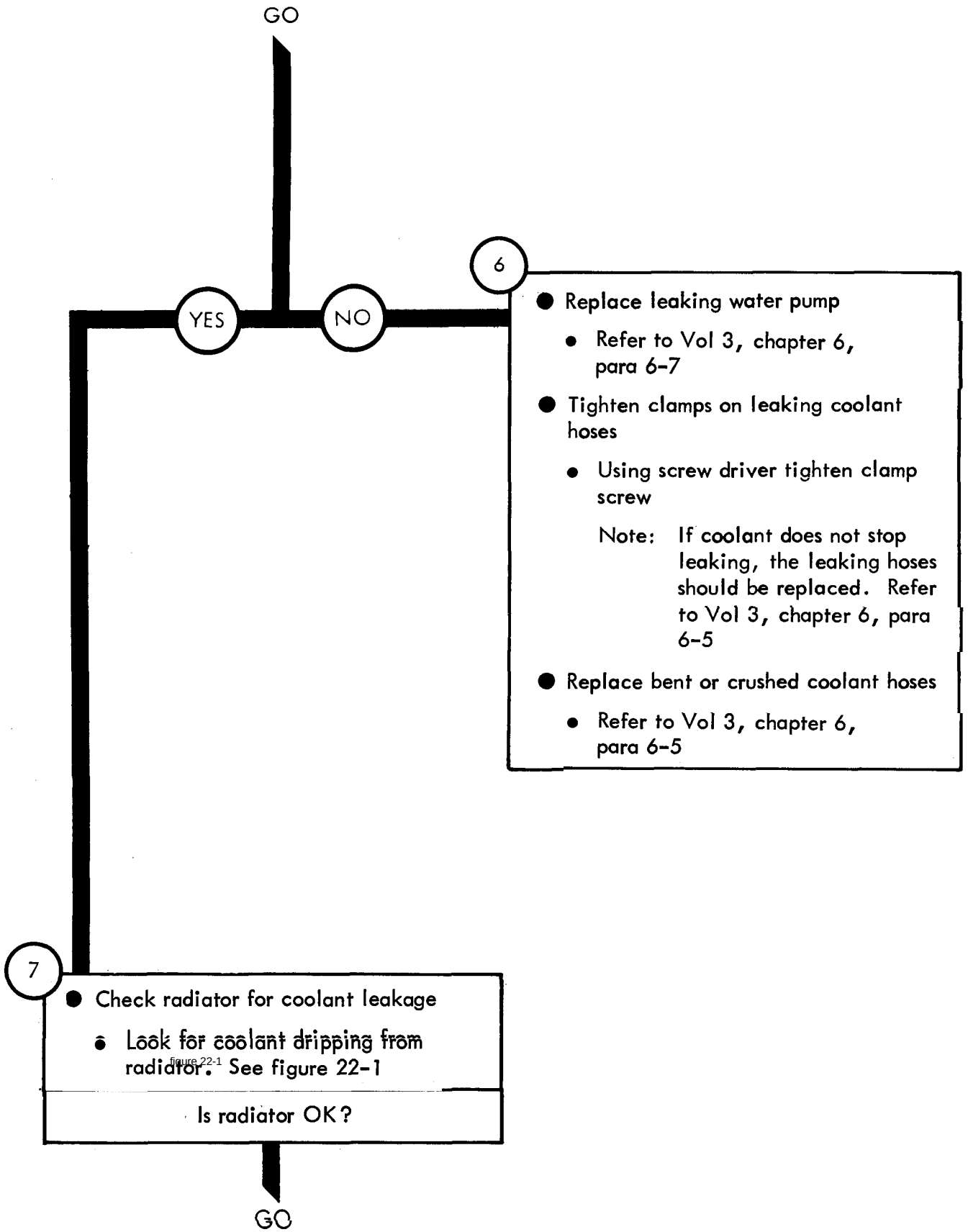


Figure 20-1 (Sheet 3 of 7)

TA 114193

GO

YES / NO

8

- Replace radiator
  - Refer to Vol 3, chapter 6, para 6-3

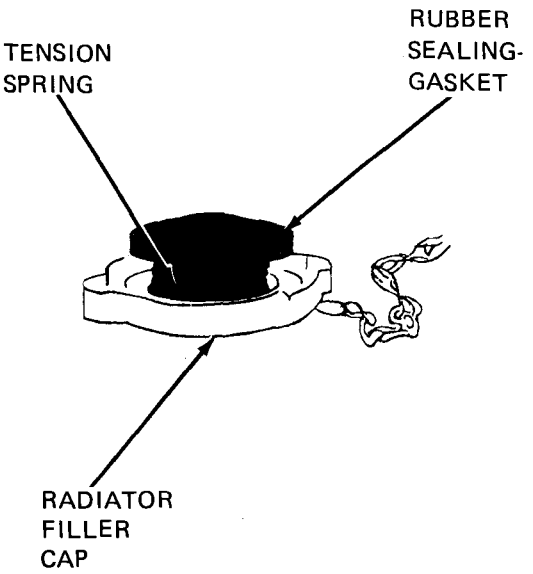
WARNING

Engine cooling system runs under pressure and at very high temperatures. If filler cap is taken off before pressure is set free, scalding coolant will blow out. Due to high temperature of coolant bad burns can occur if contact is made with skin.

9

- Check radiator filler cap
  - Using rag, grab radiator filler cap and turn to the left until if reaches stop. See figure 22-1
  - Wait about 30 seconds, or until all pressure has been set free
  - Using rag, push down on cap. Turn left and take off
  - Look for a broken rubber sealing gasket
  - Look for a broken tension spring

Is radiator filler cap gasket and spring OK?



YES / NO

10

- Replace radiator filler cap
  - Refer to Vol 3, chapter 6, para 6-3

GO

TA 114194

Figure 20-1 (Sheet 4 of 7)

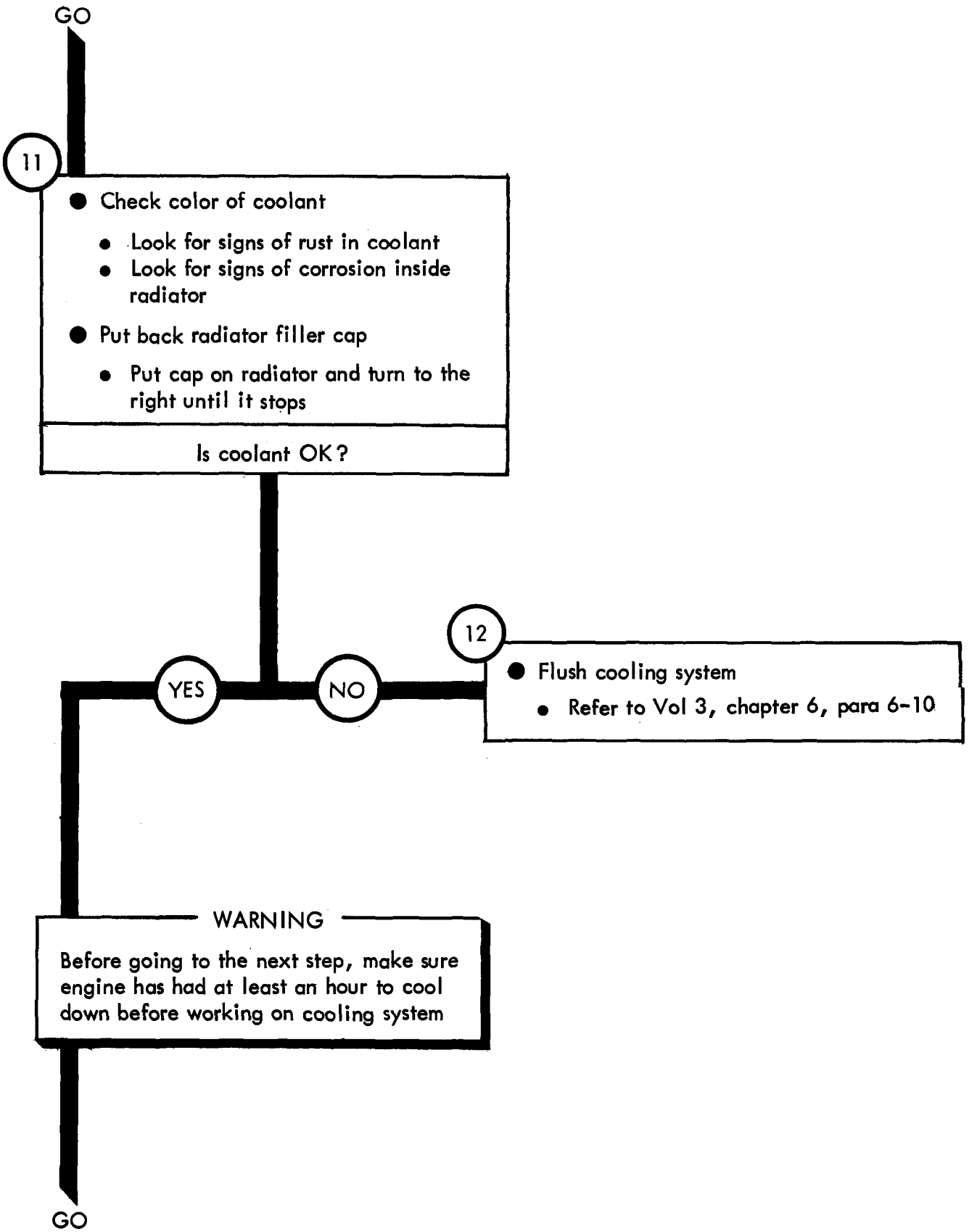
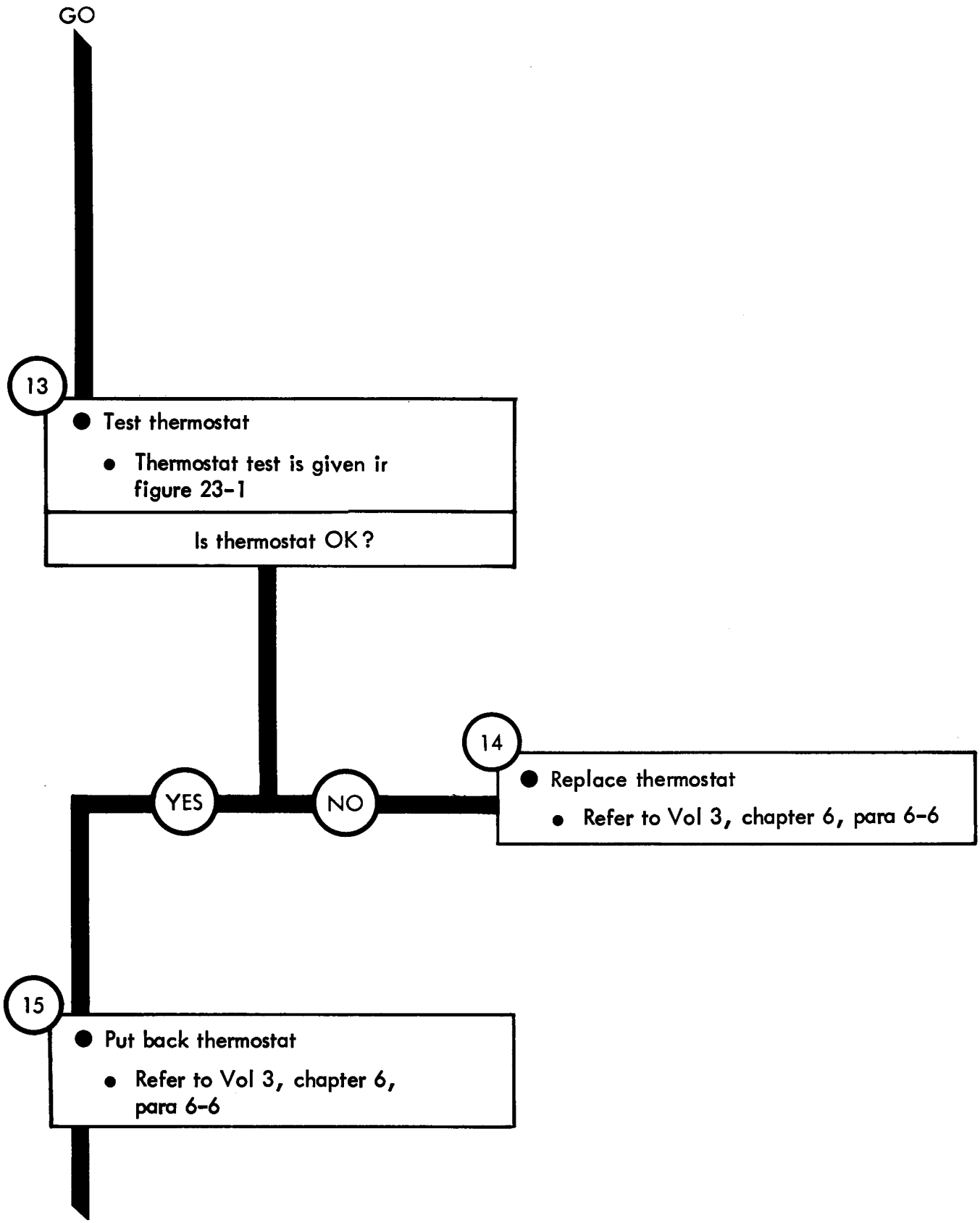


Figure 20-1 (Sheet 5 of 7)

TA 114195



TA 114196

Figure 20-1 (Sheet 6 of 7)

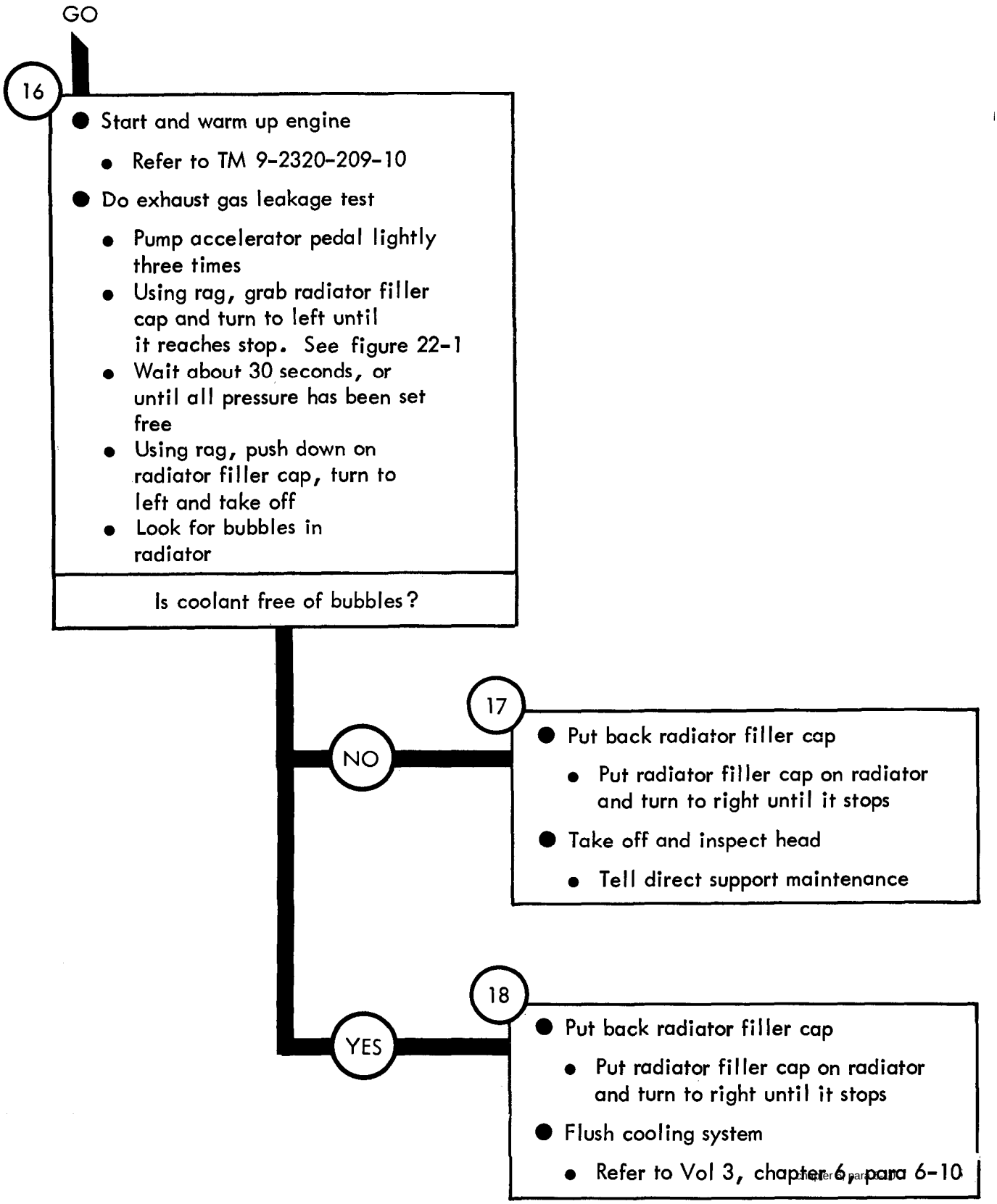
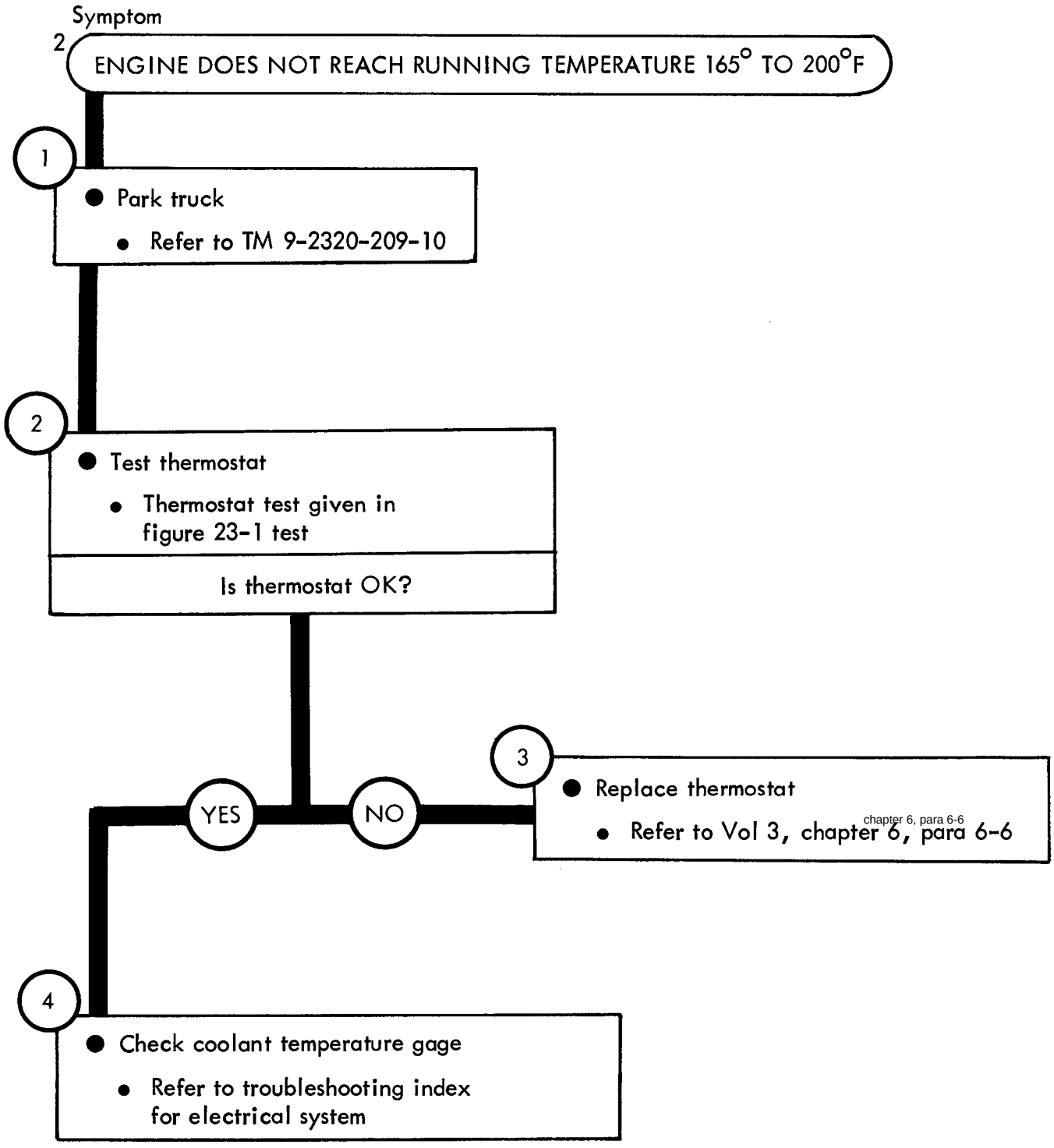


Figure 20-1 (Sheet 7 of 7)

TA 114197



TA 114198

Figure 20-2

Symptom 3

NOISE COMING FROM ENGINE OTHER THAN THAT OF NORMAL RUNNING

1

- Park truck
  - Refer to TM 9-2320-209-10

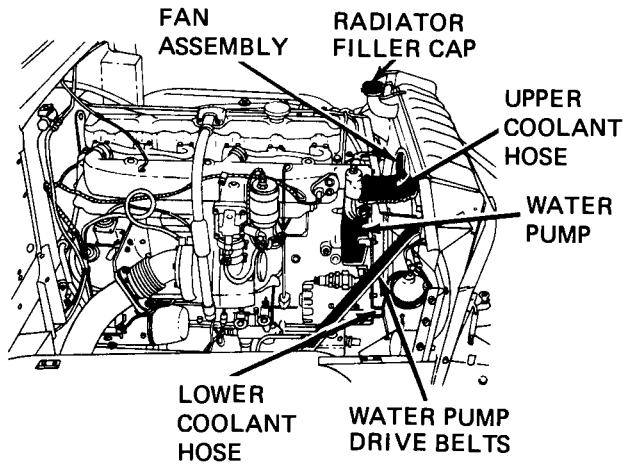
WARNING

Take off battery ground cable before working near or touching fan. Refer to Vol 3, chapter 7, para 7-58. This will make sure that the engine will not be started by accident. Also use a rag when touching fan blades because edges on blades may cause cuts

2

- Check engine cooling fan assembly
  - Look for bent fan blades
  - Using a thick cloth grab fan and shake to feel if it is loose

Is engine cooling fan OK?



YES

GO

NO

3

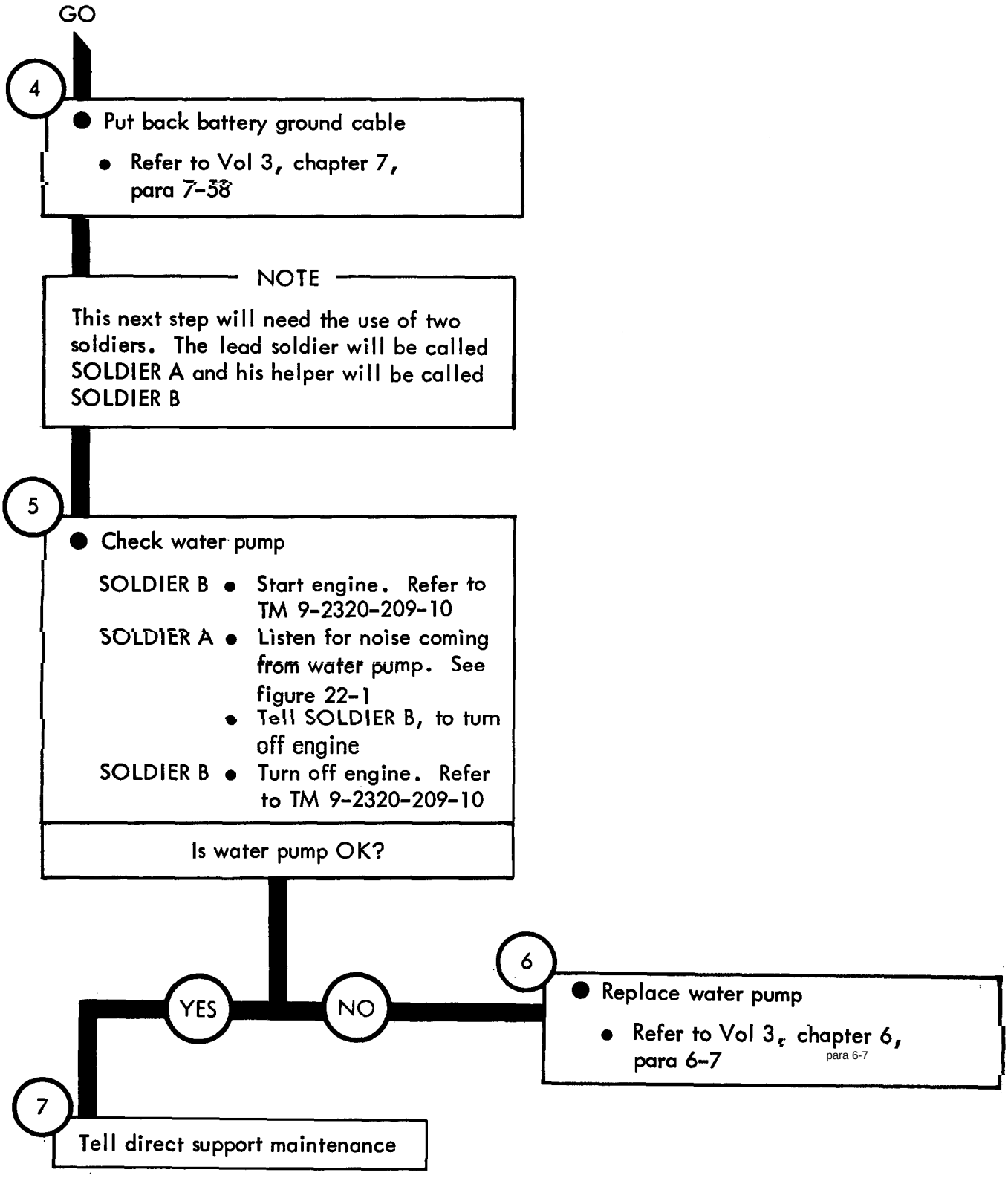
- Replace bent fan blade
  - Refer to Vol 3, chapter 6, para 6-8
- Tighten engine cooling fan bolts
  - Refer to Vol 3, chapter 6, para 6-8

Note: Repeat procedure number 1. If fan is still loose replace the water pump. Refer to Vol 3, chapter 6, para 6-7

(chapter 6, para 6-7

Figure 20-3 (Sheet 1 of 2)

TA 114199



TA 114200

Figure 20-3 (Sheet 2 of 2)

CHAPTER 21

COOLING SYSTEM TROUBLESHOOTING SUMMARY

21-1. GENERAL. This chapter gives a summary of troubleshooting procedures given in chapter 20 for the cooling system.

21-2. PROCEDURES. The summary in this chapter covers all fault symptoms found in the detailed troubleshooting procedures. Chapter 7 outlines a sample troubleshooting procedure. The summary procedures are based on the “what-to-do” portions of the detailed procedures and do not include the “how-to-do-it” instructions. Warnings, cautions, and notes are given where needed.

COOLING SYSTEM TROUBLESHOOTING SUMMARY

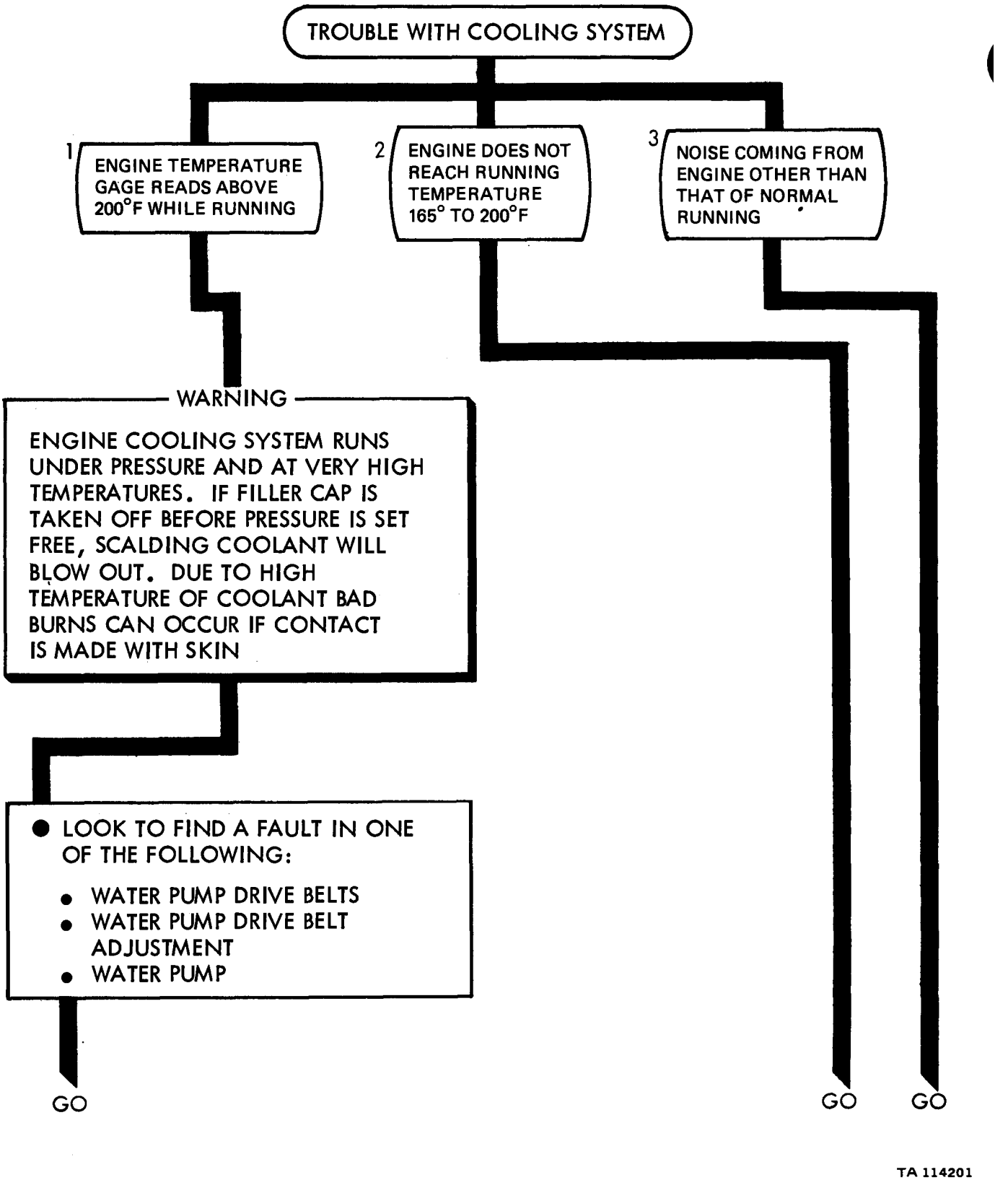
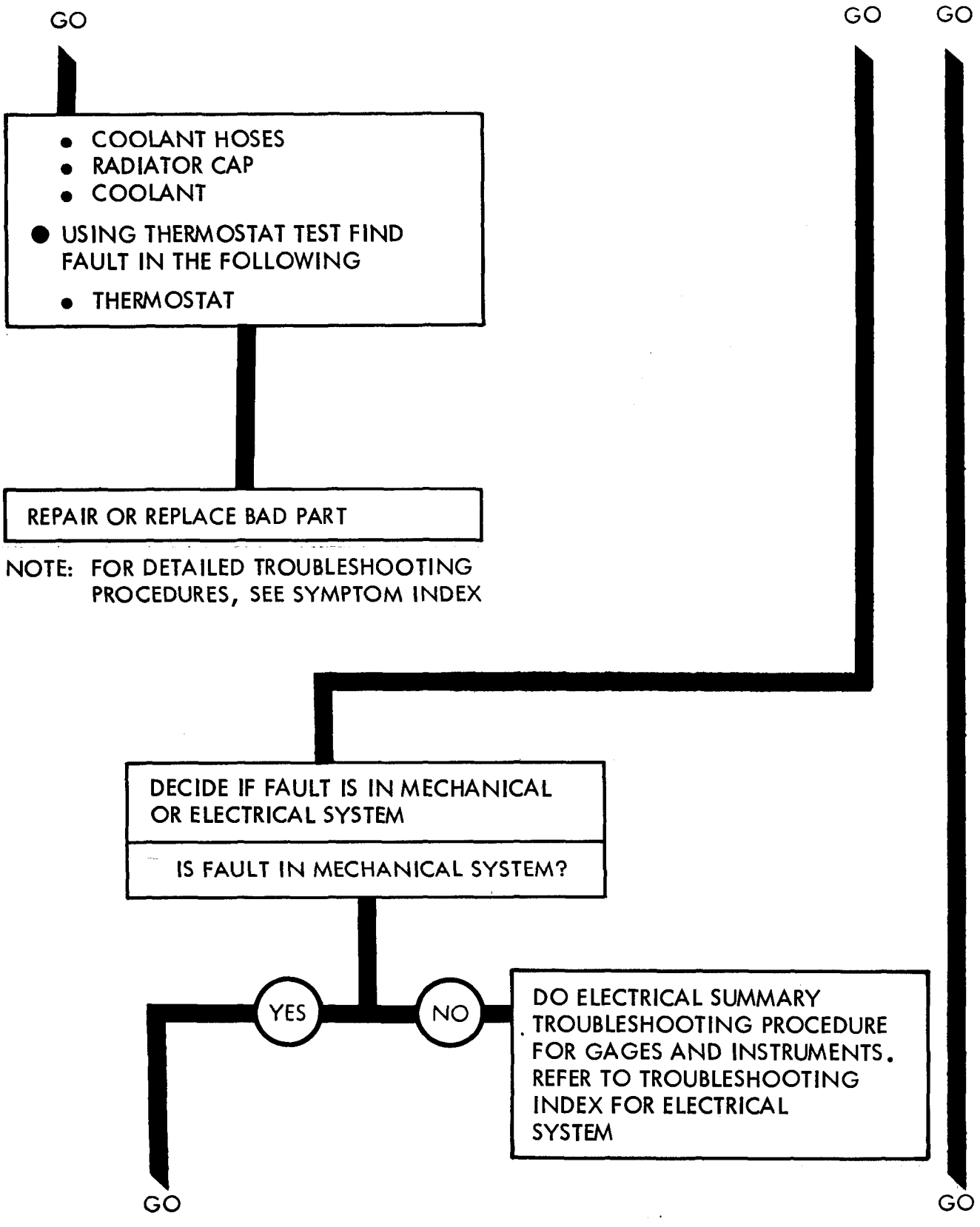
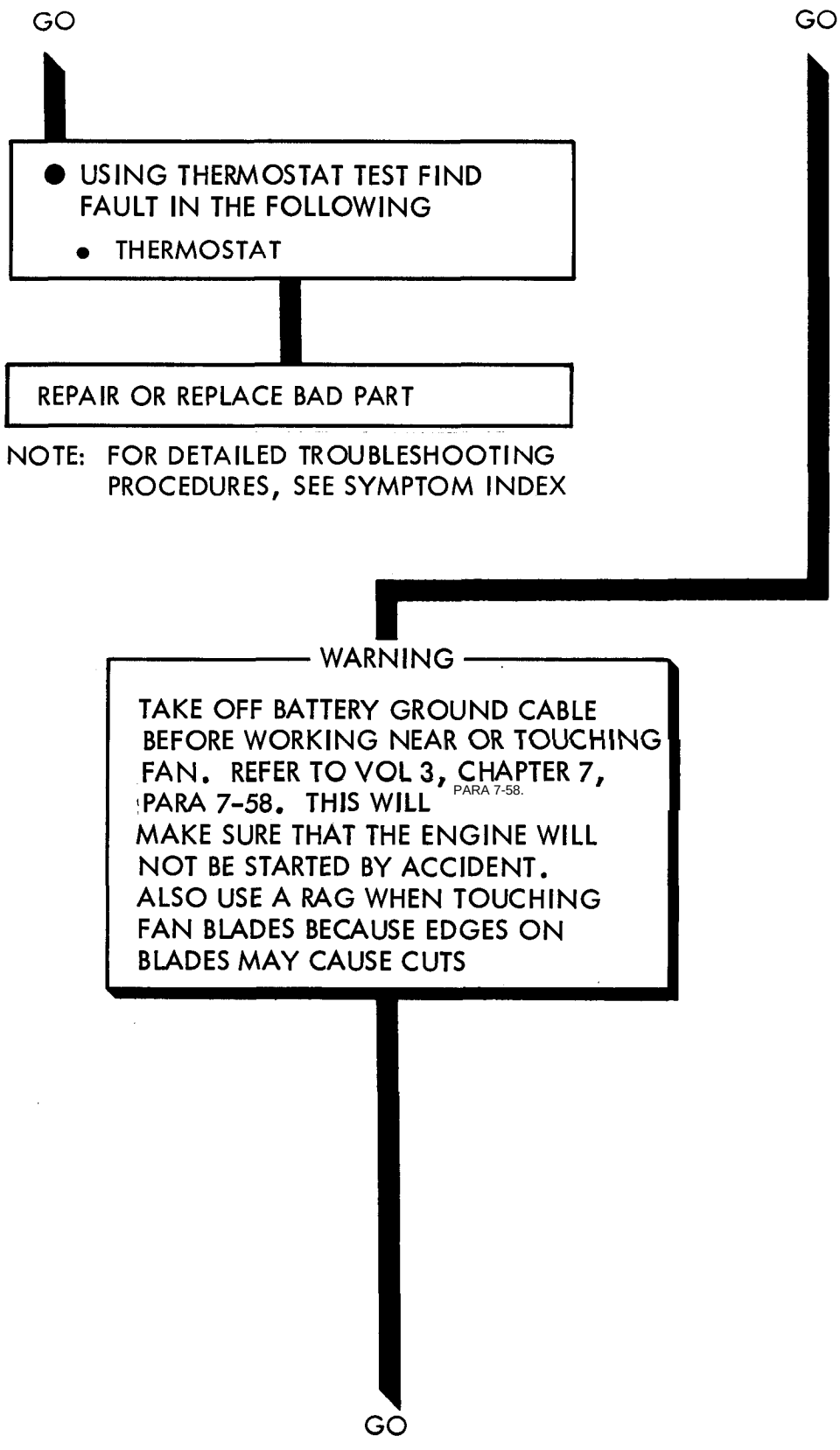


Figure 21-1 (Sheet 1 of 4)



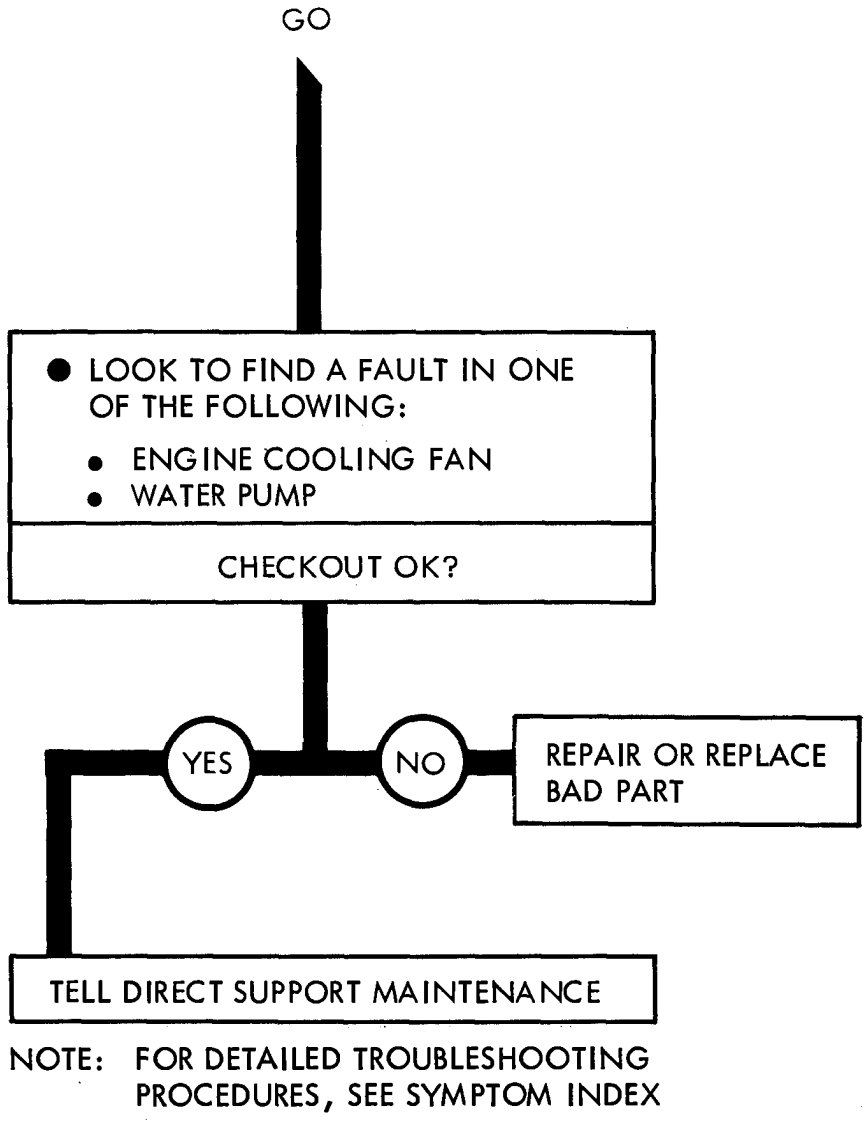
TA 114202

Figure 21-1 (Sheet 2 of 4)



TA 114203

Figure 21-1 (Sheet 3 of 4)



TA 114204

Figure 21-1 (Sheet 4 of 4)

CHAPTER 22

COOLING SYSTEM SUPPORT DIAGRAMS

22-1. GENERAL. This chapter gives the diagrams you need when doing trouble-shooting procedures in chapter 20. Table 3-1 is a complete listing of all support diagrams used in this manual.

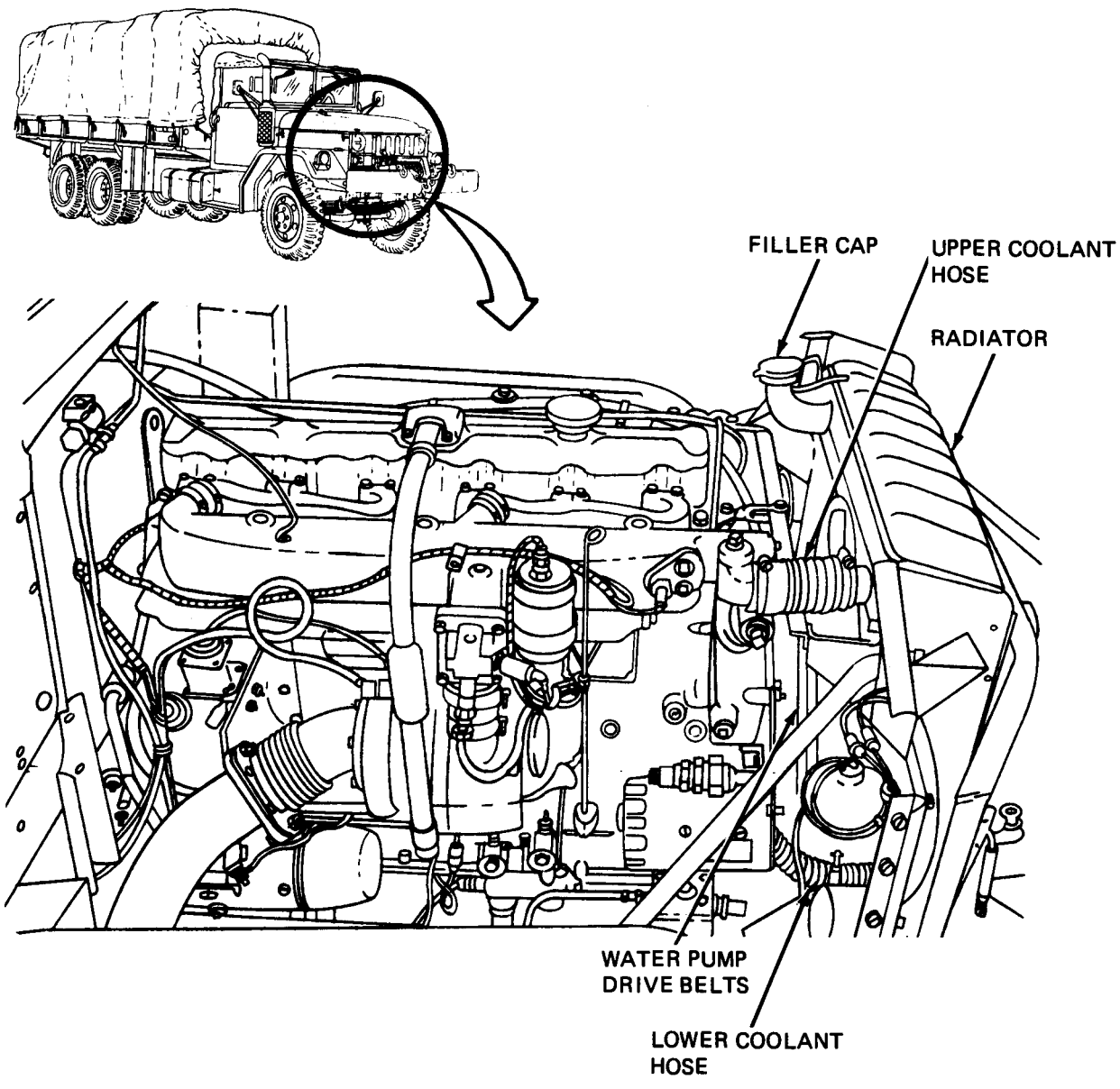


Figure 22-1. Cooling System Support Diagram

CHAPTER 23

COOLING SYSTEM TEST PROCEDURES

23-1. GENERAL. This chapter gives test procedures for the tests given in chapter 20 for the cooling system.

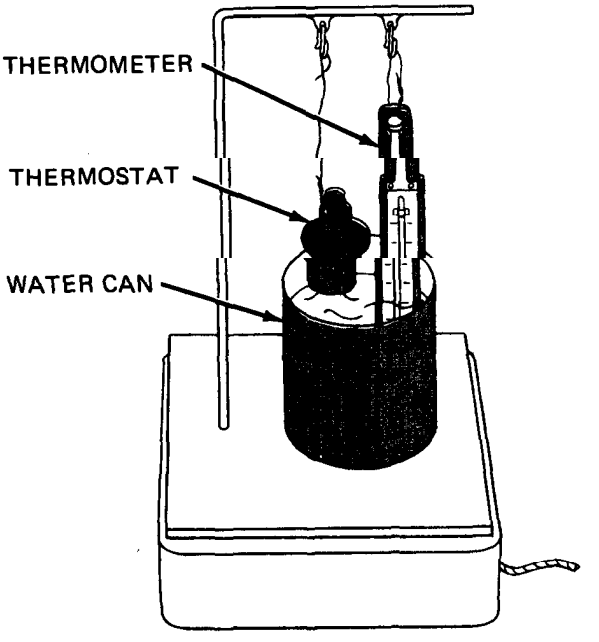
23-2. TEST SET-UP. Instructions for setup of test equipment and parts to be tested are given before the test procedures. Illustrations are used, when needed, to show you how to hook up the test equipment to the part to be tested.

23-3. TEST PROCEDURE. Detailed step-by-step instructions, in flow chart form, are given for each test. The procedure calls out the type of test and the condition of the truck system for each part of testing. The step-by-step test will lead you to the bad component or to a fault symptom within a related system. Reference is made to the fault symptom index, chapter 6, if the test shows a fault in another system.

COOLING SYSTEM TROUBLESHOOTING TEST

THERMOSTAT TEST

- Test thermostat
  - Remove thermostat. Refer to Vol 3, chapter 6, para 6-6
  - Place thermostat in can of water
  - Place thermometer in water
  - Heat water to 180°F and see if thermostat starts to open
  - Heat water to 200°F and see if thermostat is fully open



TA 114206

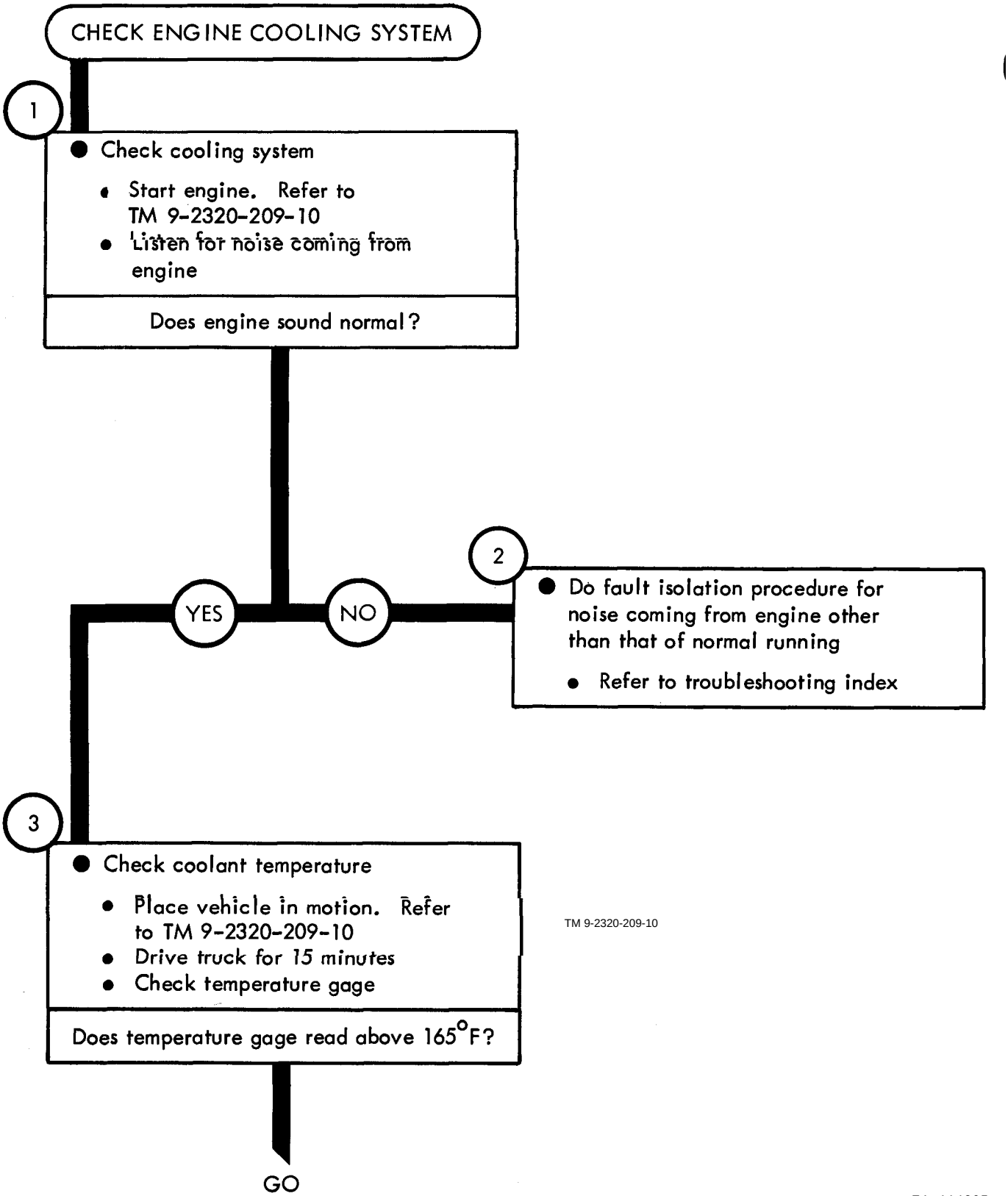
Figure 23-1

CHAPTER 24

COOLING SYSTEM CHECKOUT PROCEDURES

24-1. GENERAL. This chapter gives procedures for checking out the system after troubleshooting and repair have been done. Procedures are set up in flow chart form showing the checkout steps in order and referring to the fault symptom index when the system does not check out.

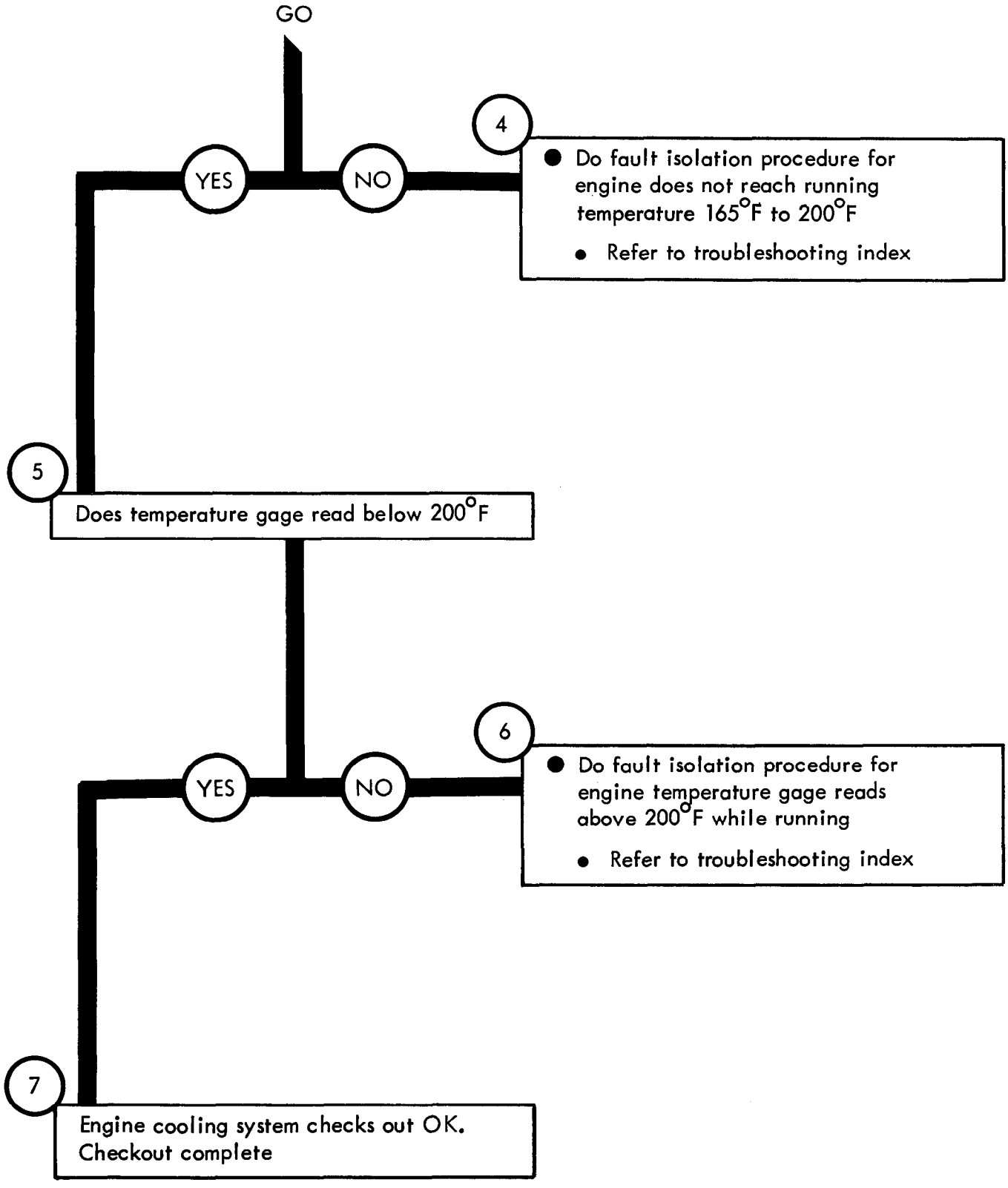
COOLING SYSTEM CHECKOUT



TM 9-2320-209-10

TA 114207

Figure 24-1 (Sheet 1 of 2)



TA 114208

Figure 24-1 (Sheet 2 of 2)

CHAPTER 25

ELECTRICAL SYSTEM TROUBLESHOOTING

25-1. EQUIPMENT ITEMS COVERED. This chapter gives equipment troubleshooting procedures for the electrical system, for which there are authorized corrective maintenance tasks at the organizational maintenance level.

25-2. EQUIPMENT ITEMS NOT COVERED. All equipment items for which corrective maintenance is authorized at the organizational maintenance level are covered in this chapter.

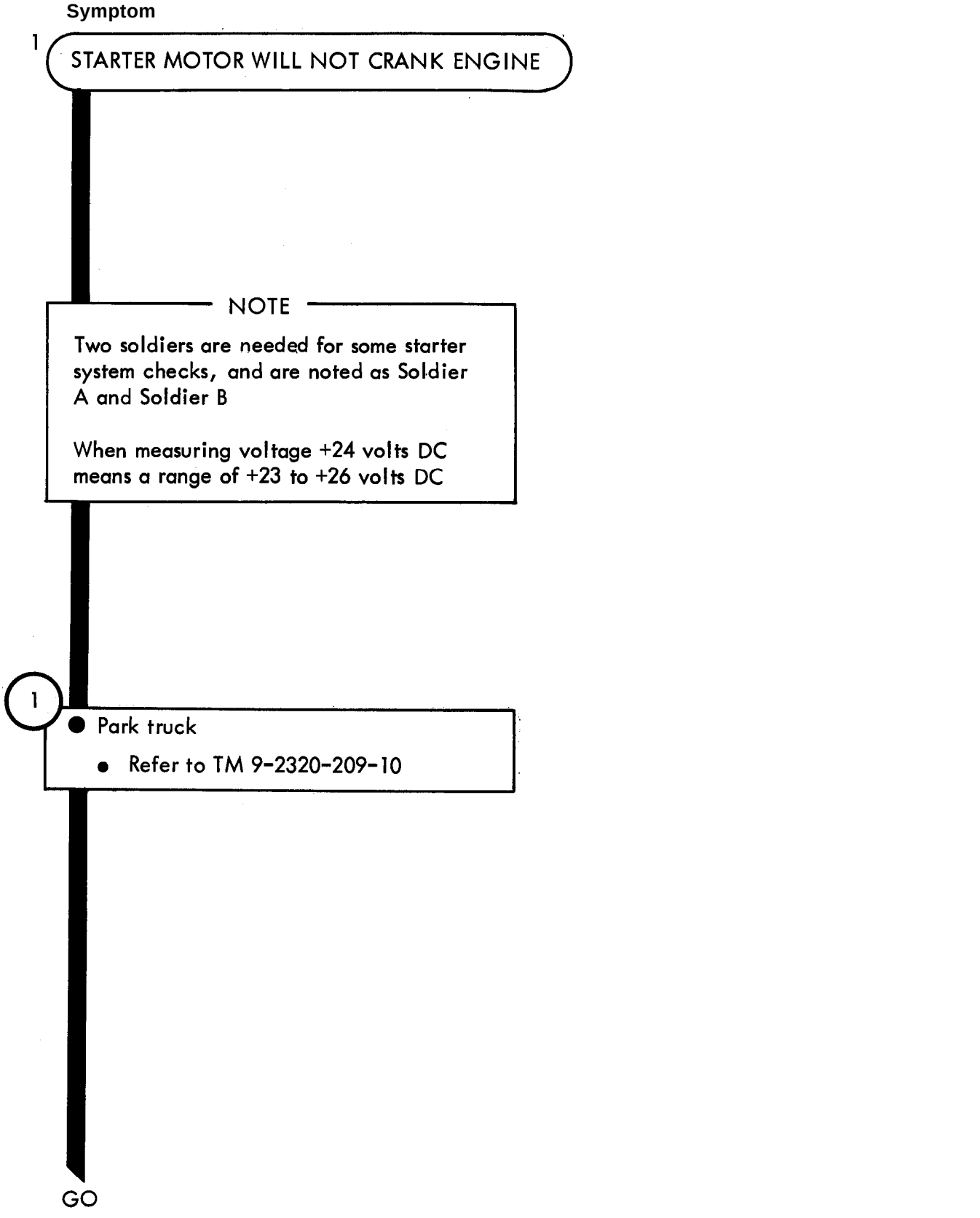


Figure 25-1 (Sheet 1 of 25)

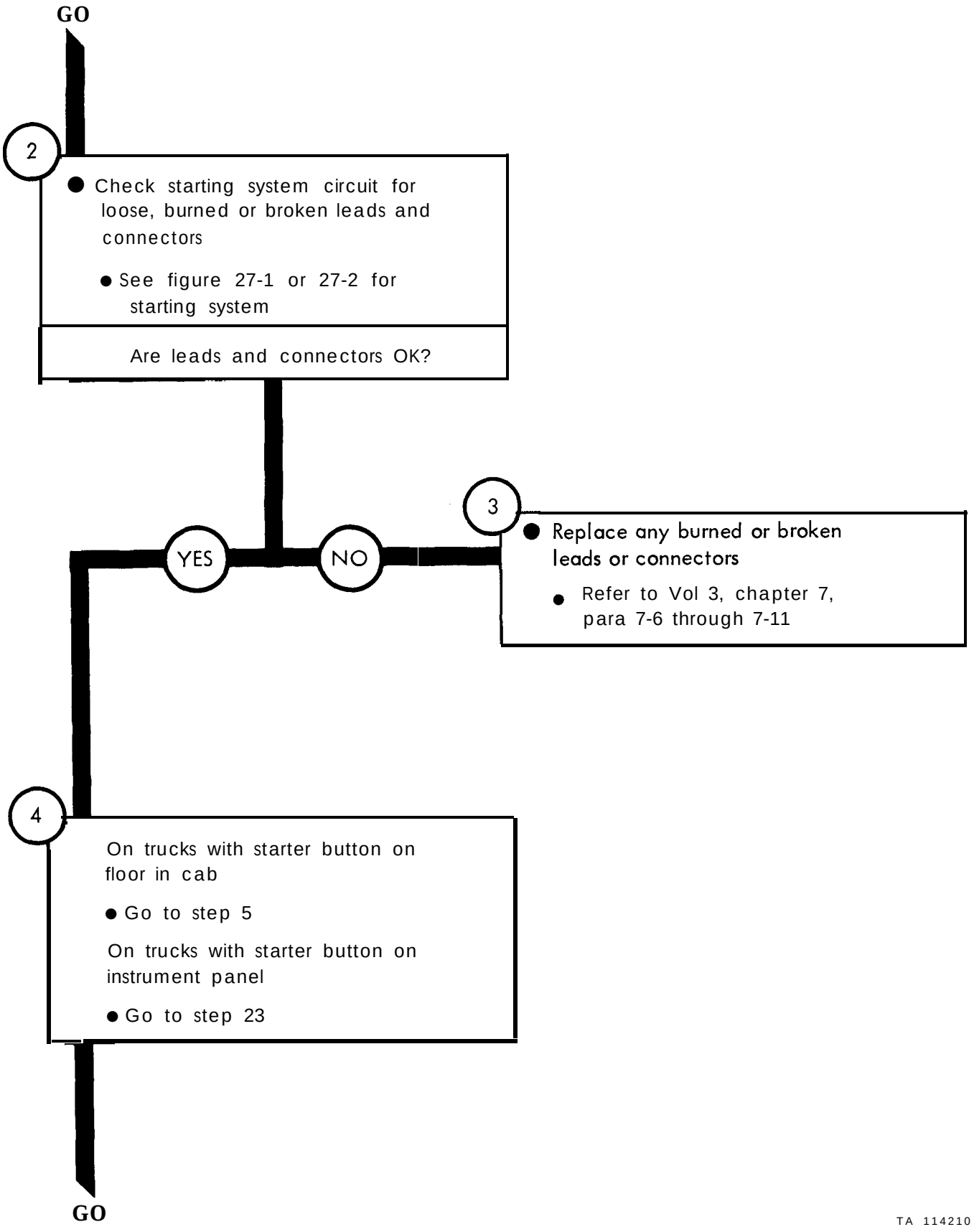


Figure 25-1 (Sheet 2 of 25)

GO

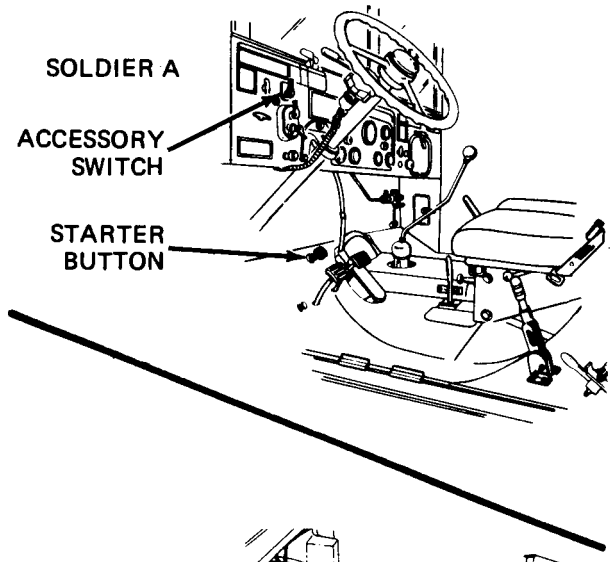
5

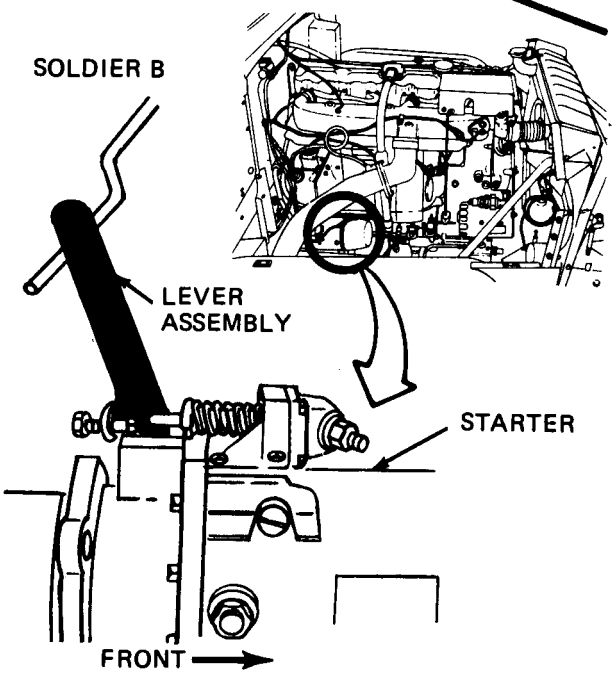
- Check mechanical linkage of starter

SOLDIER A:
- Working in cab, set ACCESSORY switch to ON
- Step on starter button

SOLDIER B:
- Working in engine compartment, while SOLDIER A steps on starter button look at mechanical linkage of starter
- Lever assembly should move to the front

Is mechanical linkage OK?





YES

NO

6

- Set ACCESSORY switch to OFF
- Repair or replace broken or bent parts of linkage assembly
  - Refer to Vol 3, chapter 7, para 7-6

GO

Figure 25-1 (Sheet 3 of 25)

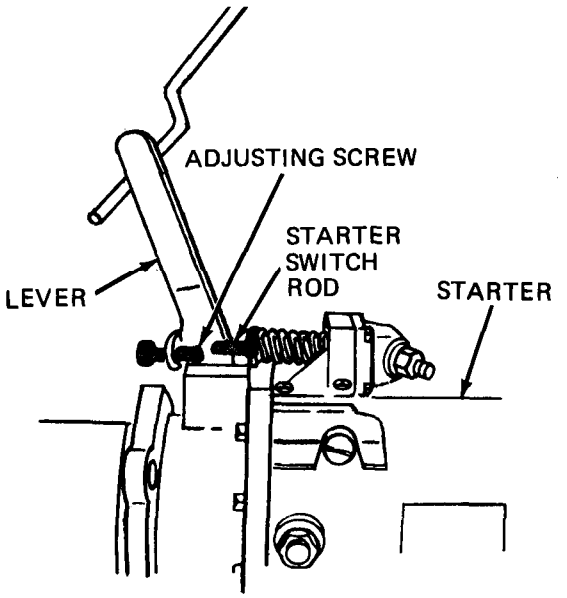
GO

7

- See if starter switch rod moves

SOLDIER A: • Step on starter button
SOLDIER B: • See if adjusting screw on lever moves starter switch rod

Is starter switch rod OK?



YES

NO

8

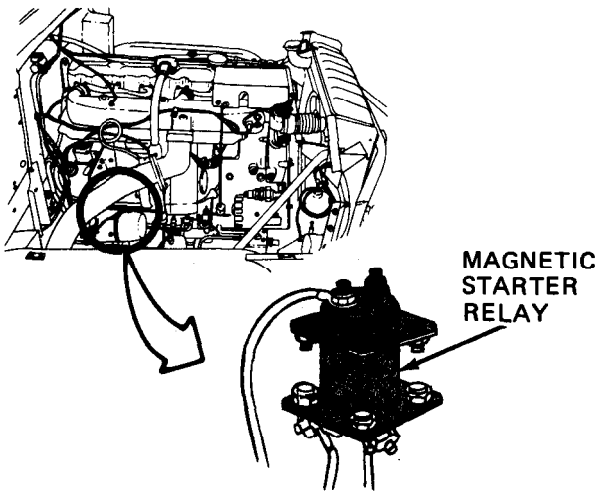
- Adjust starter switch rod
  - Set ACCESSORY switch to OFF
  - Take off ground cable and secure it so it will not touch battery-post. Refer to Vol 3, chapter 7, para 7-58
  - Make necessary adjustments. Refer to Vol 3, chapter 7, para 7-8
  - Put-ground cable back on battery post

9

- Check magnetic starter relay

SOLDIER A: • Step on starter button
SOLDIER B: • Listen to magnetic starter relay for a click.
• Feel magnetic starter relay for vibration

Is magnetic starter OK?



GO

TA 114212

Figure 25-1 (Sheet 4 of 25)

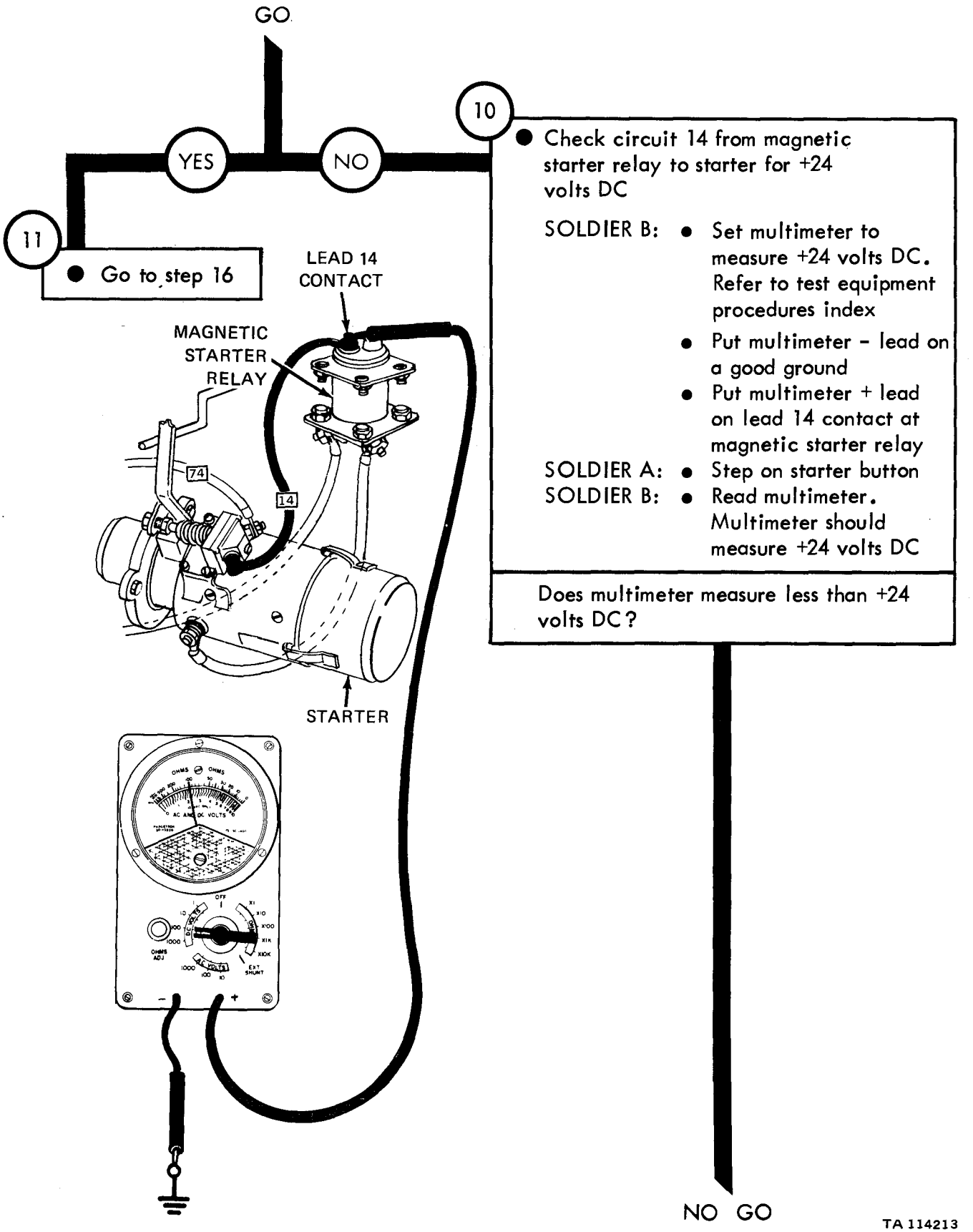


Figure 25-1 (Sheet 5 of 25)

NO GO

12

NO

- Replace lead 14
  - Set ACCESSORY switch to OFF
  - Replace lead 14. Tell direct support maintenance

13

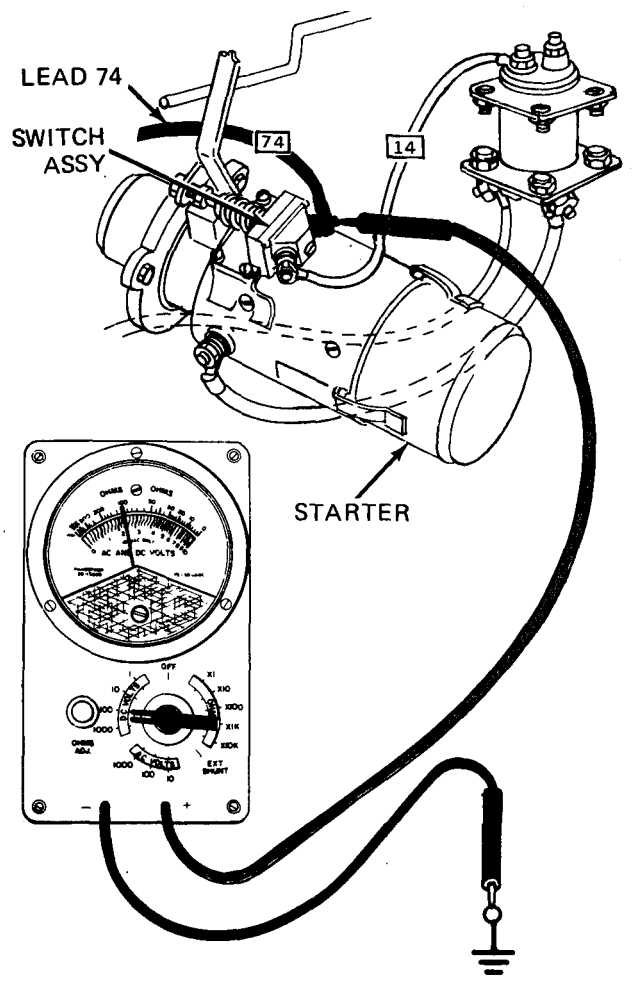
YES

- Check circuit 74 from switch assembly on starter to ACCESSORY switch

SOLDIER A:
- Make sure ACCESSORY switch is still set to ON

SOLDIER B:
- Put multimeter – lead on good ground
- Put multimeter + lead on lead 74 terminal of switch assembly
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO GO

TA 114214

Figure 25-1 (Sheet 6 of 25)

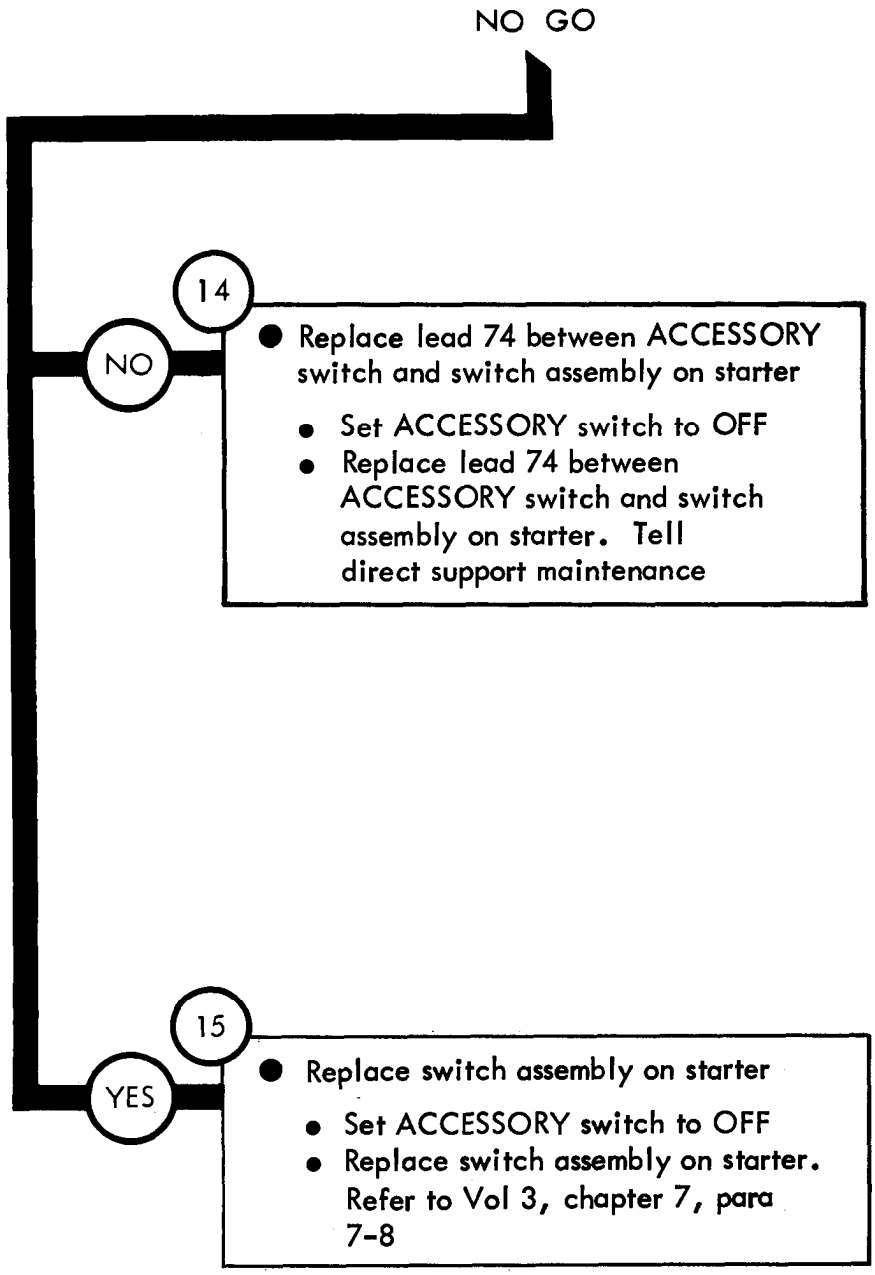


Figure 25-1 (Sheet 7 of 25)

From step 11

16

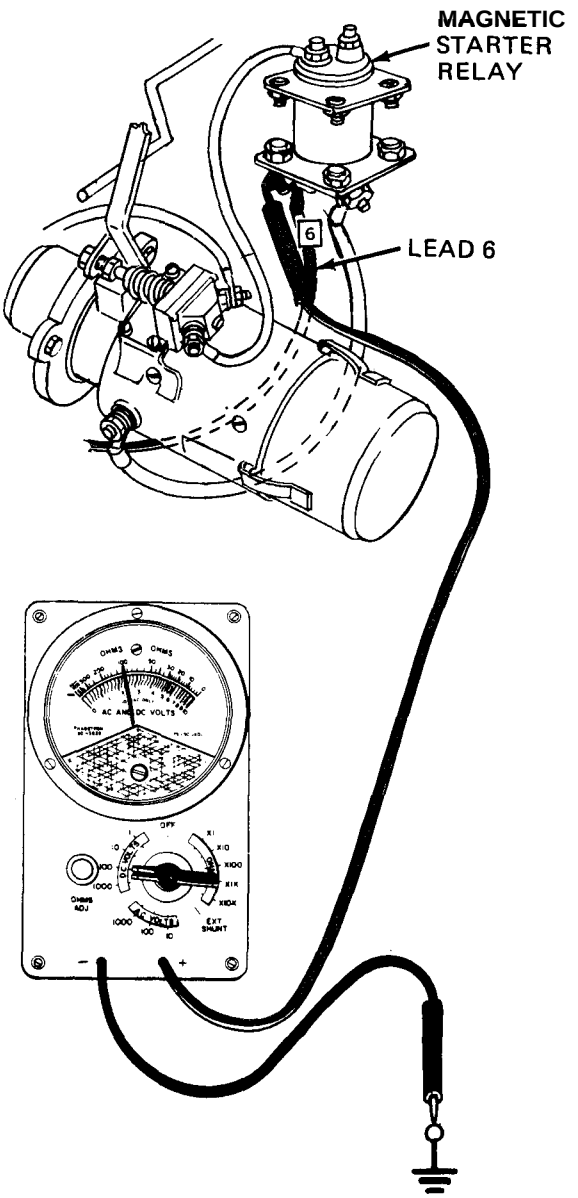
- Check for +24 volts DC (from batteries) through magnetic starter relay

SOLDIER B:
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 6 terminal of magnetic starter relay

SOLDIER A:
- Step on starter button

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



YES

NO

17

- Replace lead 6
  - Set ACCESSORY switch to OFF
  - Replace lead 6. Tell direct support maintenance

GO

TA 114216

Figure 25-1 (Sheet 8 of 25)

GO

18

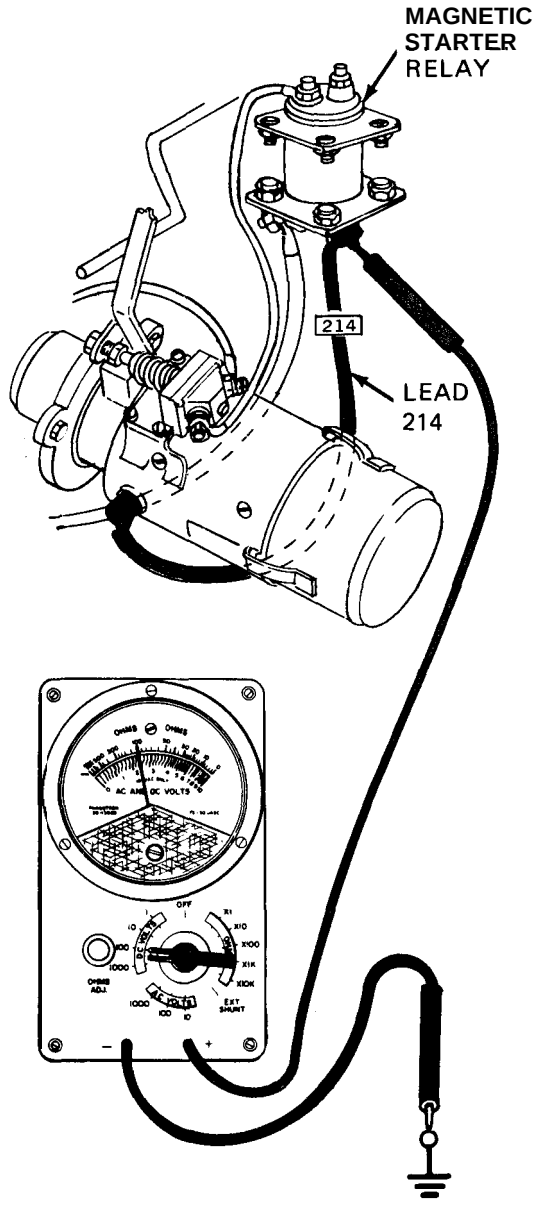
Check lead 214 terminal of magnetic starter relay

SOLDIER B:
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 214 terminal of magnetic starter relay

SOLDIER A:
- Step on starter button

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



YES

NO

19

- Remove and replace magnetic starter relay
  - Set ACCESSORY switch to OFF
  - Remove and replace magnetic starter relay. Refer to Vol 3, chapter 7, para 7-7

GO

TA 114217

Figure 25-1 (Sheet 9 of 25)

GO

20

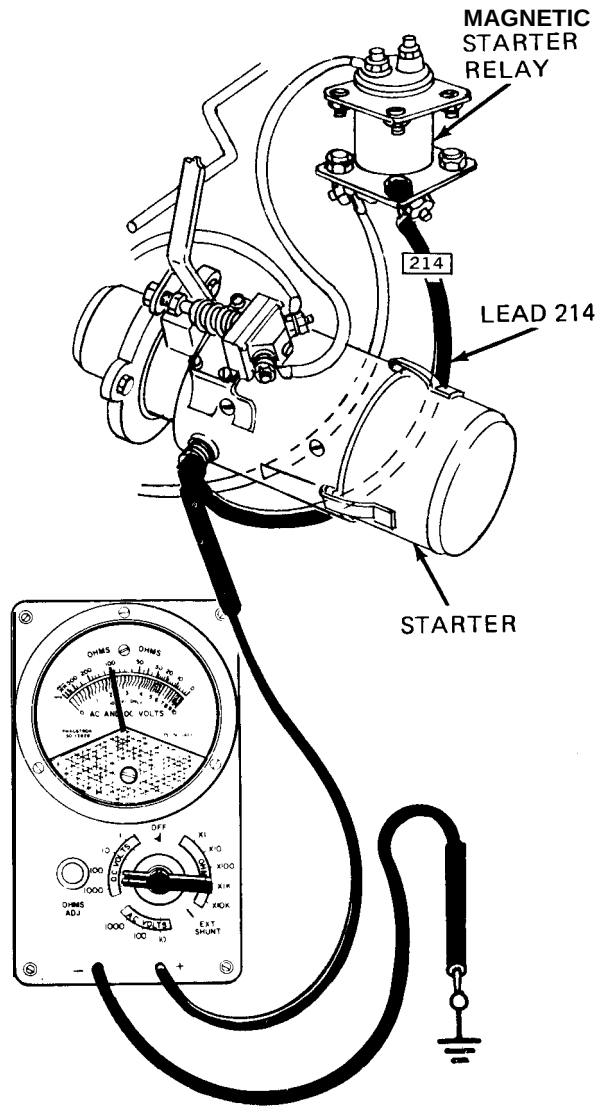
- Check lead 214 starter terminal for +24 volts DC

SOLDIER B:
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 214 terminal of starter

SOLDIER A:
- Step on starter button

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



YES

NO

21

- Replace lead 214
  - Set ACCESSORY switch to OFF
  - Replace lead 214. Tell direct support maintenance

22

- Replace starter
  - Set ACCESSORY switch to OFF
  - Replace starter. Refer to Vol 3, chapter 7, para 7-10 or 7-11

TA 114218

Figure 25-1 (Sheet 10 of 25)

From step 4

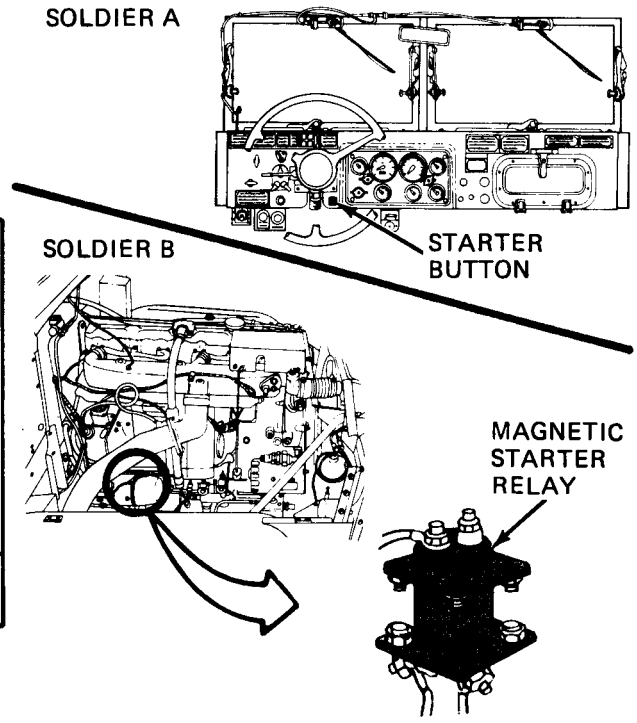
23

- Check magnetic starter relay

SOLDIER A:
- Press starter button

SOLDIER B:
- Listen to magnetic starter relay for click
- Feel magnetic starter relay for vibration

Is magnetic relay OK?



YES

NO

24

- Check for +24 volts DC from batteries through starter switch to magnetic starter relay

SOLDIER A:
- Set ACCESSORY switch to ON

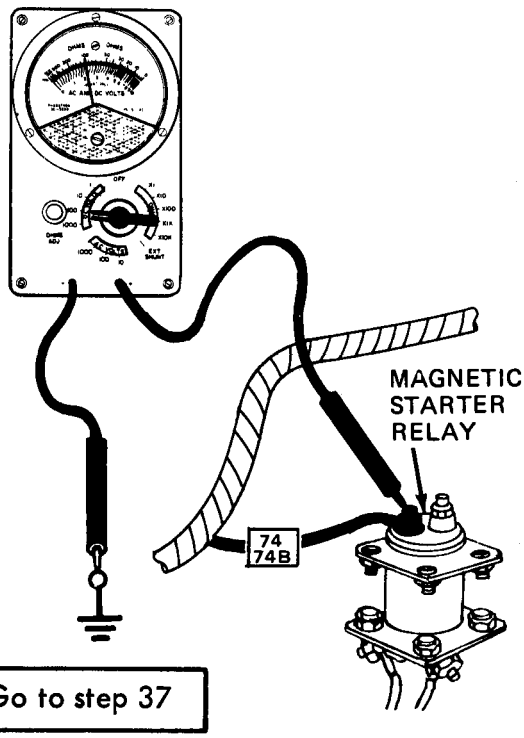
SOLDIER B:
- Set multimeter to read +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground and + lead on lead 74 (74B) terminal of magnetic starter relay

SOLDIER A:
- Press starter switch

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

NO GO



25

- Go to step 37

TA 114219

Figure 25-1 (Sheet 11 of 25)

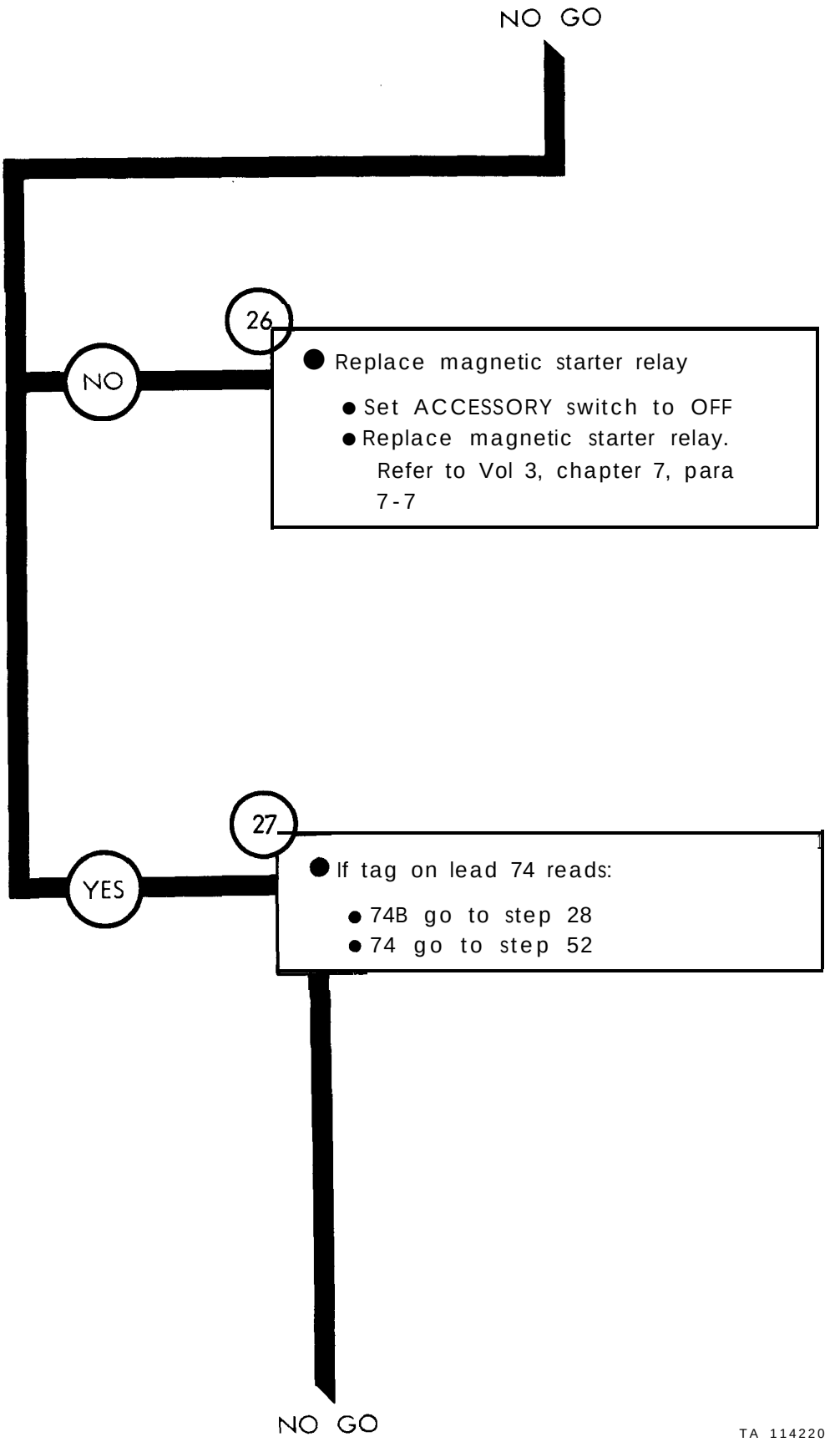
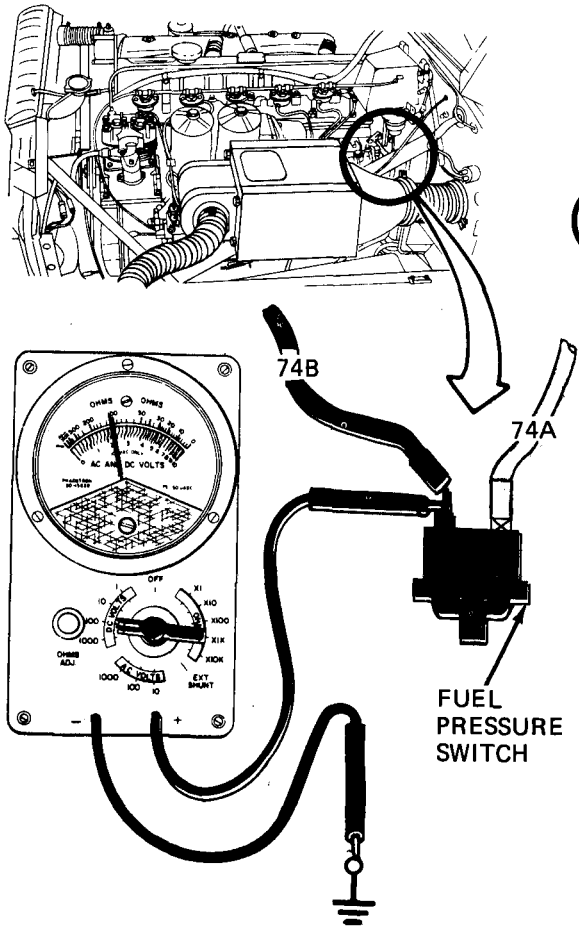


Figure 25-1 (Sheet 12 of 25)



NO GO

28

- Check lead 74B for +24 volts DC

SOLDIER B:
- Take off lead 74B from fuel pressure switch
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 74B terminal of fuel pressure switch

SOLDIER A:
- Press starter switch

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

NO

29

- Replace front harness
  - Set ACCESSORY switch to OFF
  - Replace front harness. Tell direct support maintenance

NO GO

TA 114221

Figure 25-1 (Sheet 13 of 25)

NO GO

YES

30

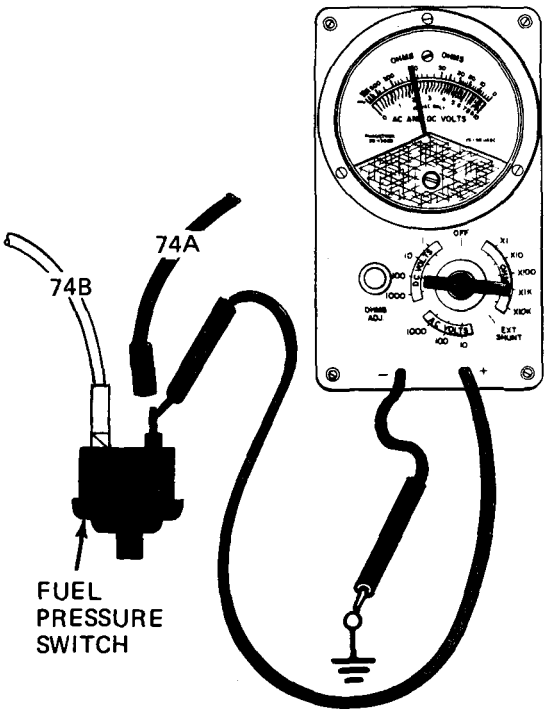
- Check lead 74A for +24 volts DC

SOLDIER A:
- Take lead 74A off from fuel pressure switch
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 74A contact

SOLDIER A:
- Press starter button

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



NO

31

- Replace fuel pressure switch
  - Set ACCESSORY switch to OFF
  - Replace fuel pressure switch located on fuel filter assembly

NO GO

TA 114222

Figure 25-1 (Sheet 14 of 25)

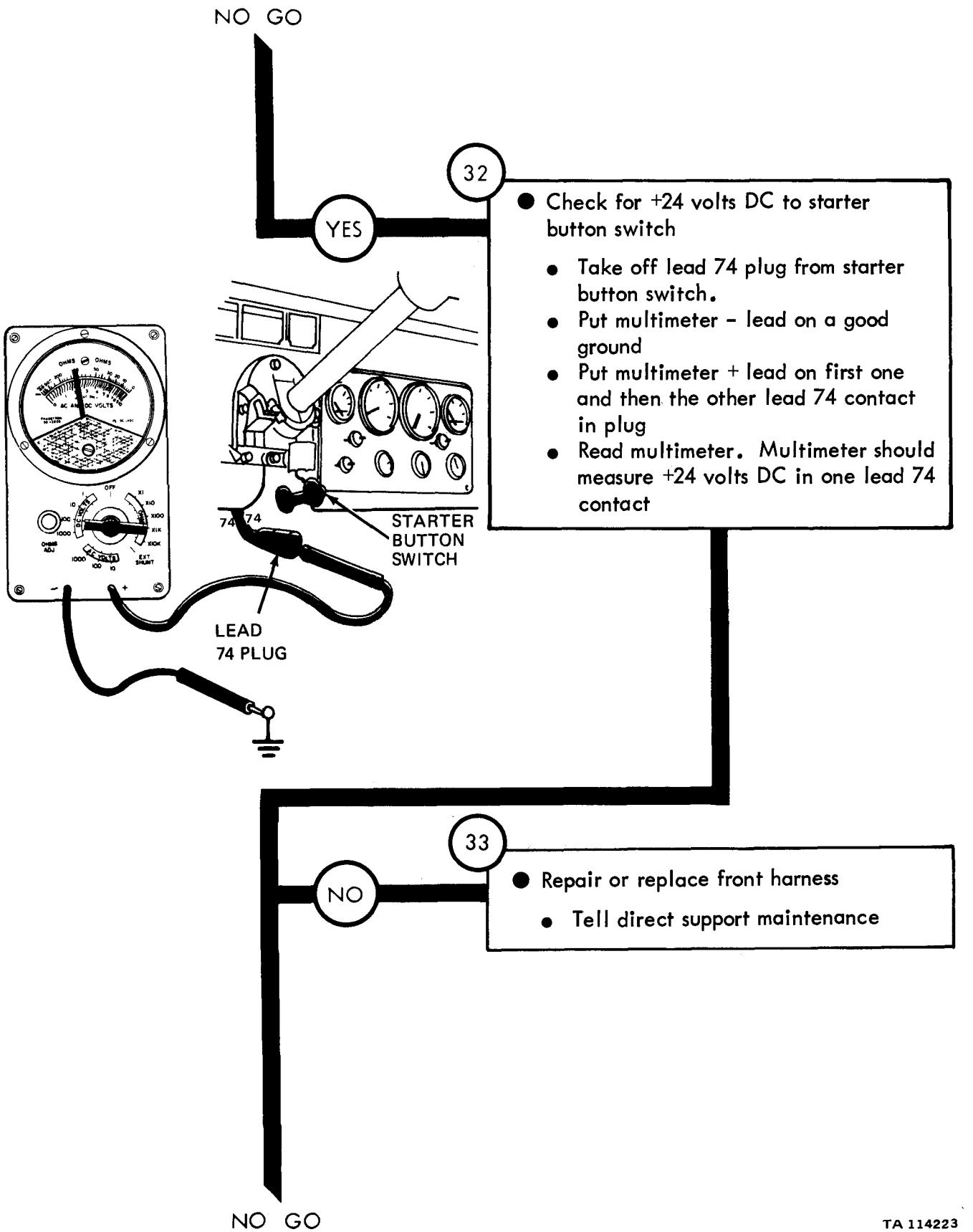


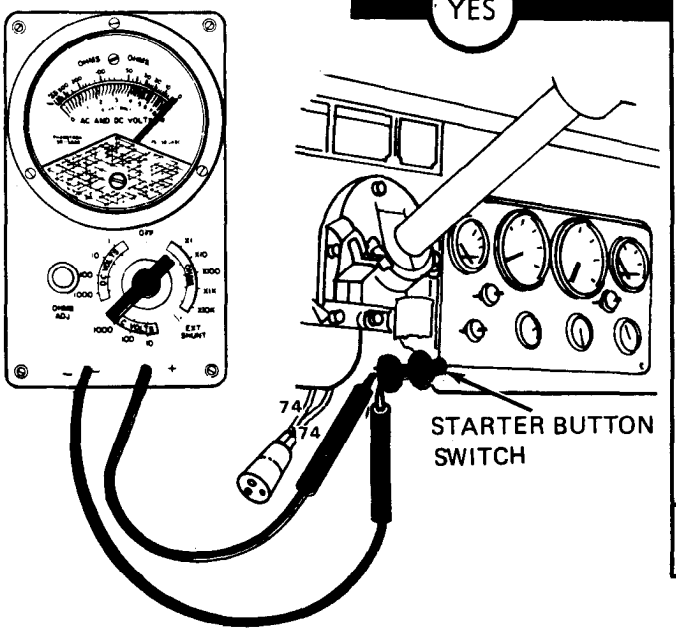
Figure 25-1 (Sheet 15 of 25)

NO GO

34

YES

- Check starter button switch for continuity
  - Set multimeter to check continuity. Refer to test equipment procedures index
  - Fold back rubber boot on starter button switch to reach terminals
  - Put multimeter - lead on one starter button switch terminal
  - Put multimeter + lead on other starter button switch terminal
  - Push starter button. Read multimeter. Multimeter should measure 0 to 5 ohms



Does multimeter measure more than 5 ohms?

35

NO

- Repair or replace lead 74 harness between starter button switch and magnetic starter relay
  - Set ACCESSORY switch to OFF
  - Repair or replace lead 74 harness.
  - Tell direct support maintenance

36

YES

- Replace starter button switch
  - Set ACCESSORY switch to OFF
  - Replace starter buttin switch. Refer to Vol 3, chapter 7, para 7-9

TA 114224

(Sheet 16 of 25)

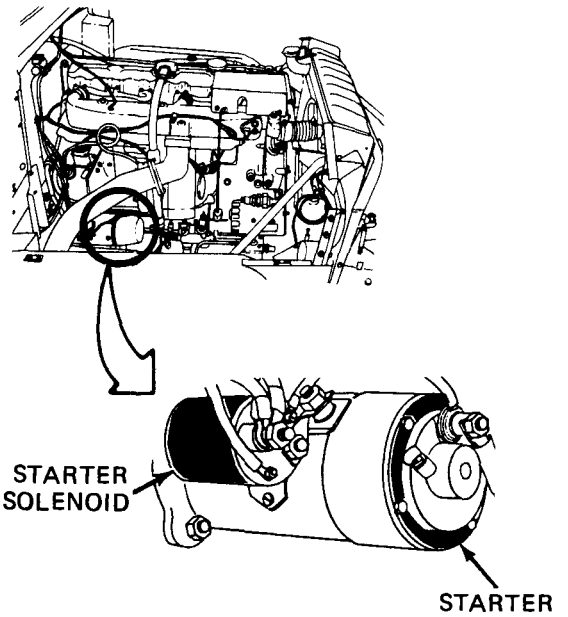
From step 25

37

- Check starter solenoid

SOLDIER A: • Press starter button
SOLDIER B: • While SOLDIER A presses starter button put your hand on starter solenoid and see if it jolts (vibrates)

Does solenoid jolt (vibrate)?



YES

39

- Go to step 52

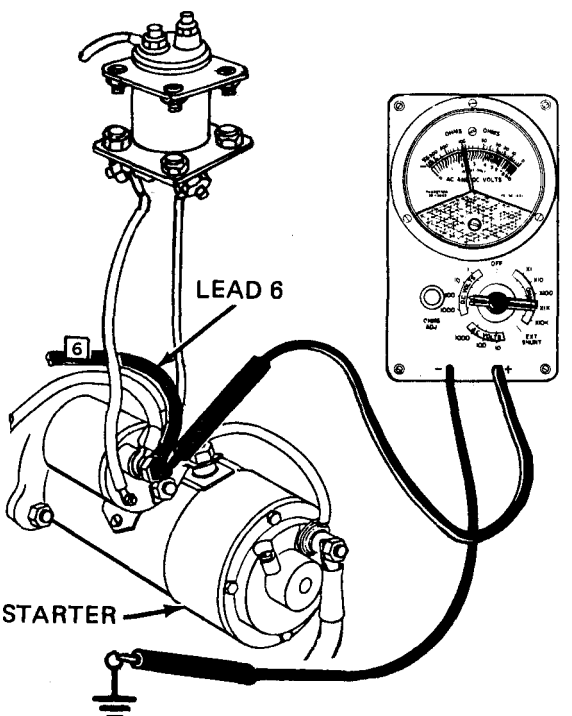
NO

38

- Check for +24 volts to starter solenoid

SOLDIER B: • Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
• Put multimeter - lead on a good ground
• Put multimeter + lead on lead 6 terminal of starter solenoid
SOLDIER A: • Press starter button
SOLDIER B: • Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO GO

TA 114225

Figure 25-1 (Sheet 17 of 25)

NO GO

40

NO

- Repair or replace lead 6
  - Set ACCESSORY switch to OFF
  - Repair or replace lead 6. Tell direct support maintenance

41

YES

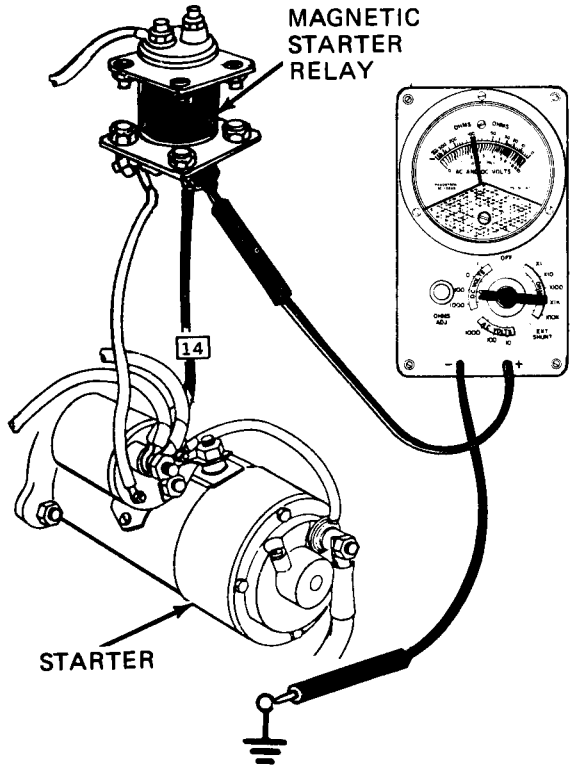
- Check lead 14 for voltage at magnetic starter relay

SOLDIER B: • Put multimeter - lead on lead 14 terminal of magnetic starter relay

SOLDIER A: • Press starter button

SOLDIER B: • Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO GO

TA 114226

Figure 25-1 (Sheet 18 of 25)

NO GO

42

NO

- Repair or replace lead 14
  - Set ACCESSORY switch to OFF
  - Repair or replace lead 14. Tell direct support maintenance

43

YES

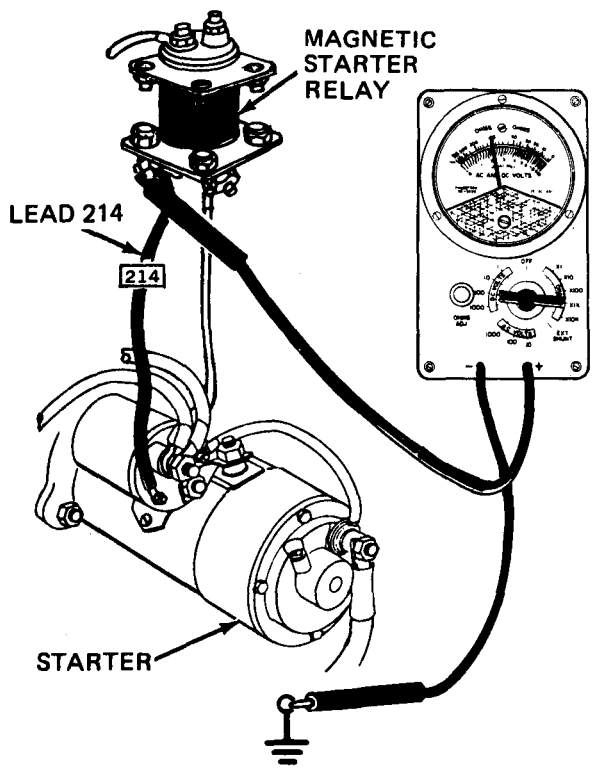
- Check for voltage at lead 214 terminal of magnetic starter relay

SOLDIER B:
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 214 terminal of magnetic starter relay

SOLDIER A:
- Press starter button

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO GO

TA 114227

Figure 25-1 (Sheet 19 of 25)

NO GO

NO

44

- Repair or replace magnetic starter relay
  - Set ACCESSORY switch to OFF
  - Repair or replace magnetic starter relay. Refer to Vol 3, chapter 7, para 7-7

YES

45

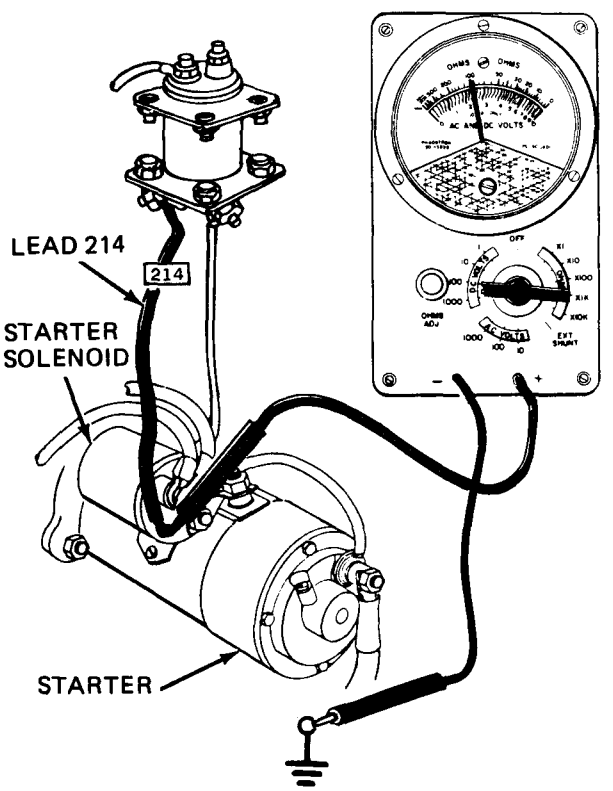
- Check for +24 volts at lead 214 terminal of starter solenoid

SOLDIER B:
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 214 terminal of starter solenoid

SOLDIER A:
- Press starter button

SOLDIER B:
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO GO

TA 114228

Figure 25-1 (Sheet 20 of 25)

NO GO

NO

46

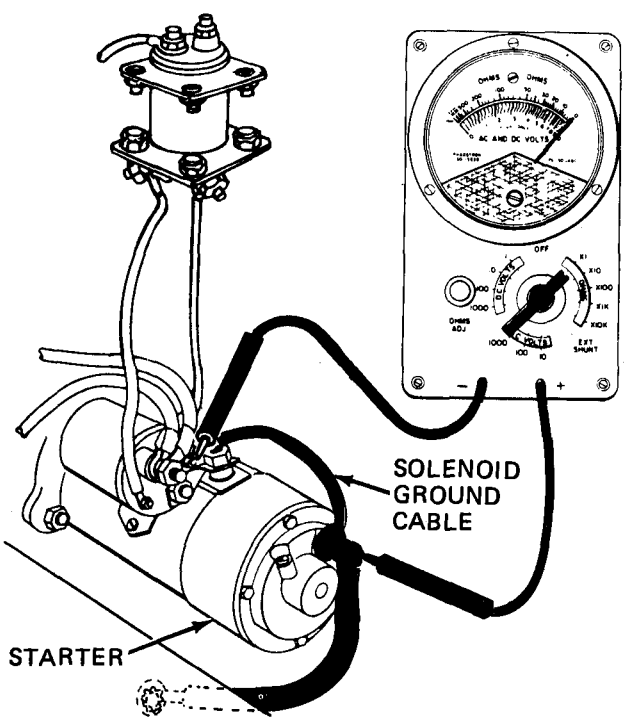
- Repair or replace lead 214
  - Set ACCESSORY switch to OFF
  - Repair or replace lead 214. Tell direct support maintenance

YES

47

- Check solenoid ground cable for continuity
  - Set ACCESSORY switch to OFF
  - Set multimeter to check continuity. Refer to test equipment procedures index
  - Put multimeter - lead on one ground cable terminal tip. Do not touch cable end
  - Read multimeter. Multimeter pointer should move all the way to right (zero ohms)

Does multimeter measure zero ohms?



NO GO

TA 114229

Figure 25-1 (Sheet 21 of 25)

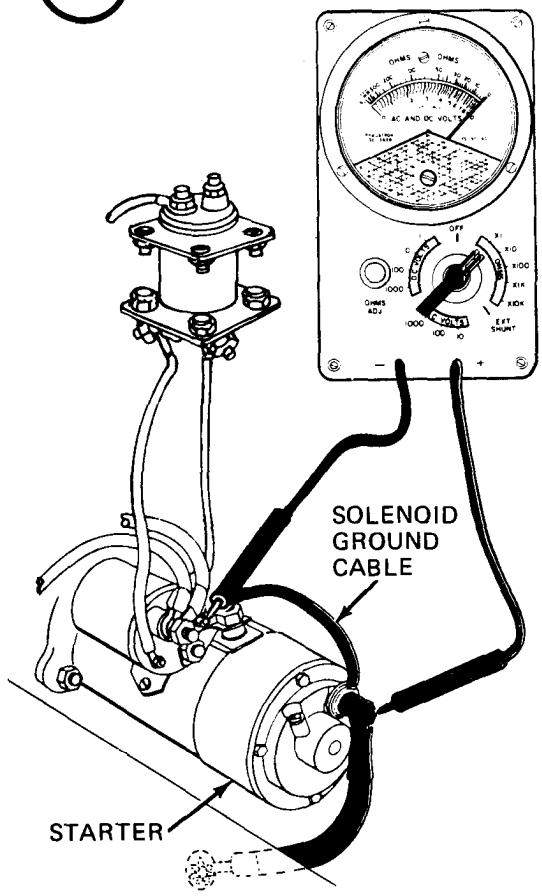
NO GO

48

NO

- Clean and tighten solenoid ground cable connections and recheck continuity
  - Clean and tighten solenoid ground cable connections. Tell direct support maintenance
  - Put multimeter - lead on tip of one terminal
  - Put multimeter + lead on tip of other terminal
  - Read multimeter. Multimeter should measure zero ohms

Does multimeter measure zero ohms?



49

- Replace solenoid ground cable
  - Refer to Vol 3, chapter 7, para 7-7 and 7-11

50

YES

Troubleshooting completed

NO GO

TA 114230

Figure 25-1 (Sheet 22 of 25)

NO GO

YES

51

● Replace starter motor

● Refer to Vol 3, chapter 7, para 7-10 or 7-11

From step 27

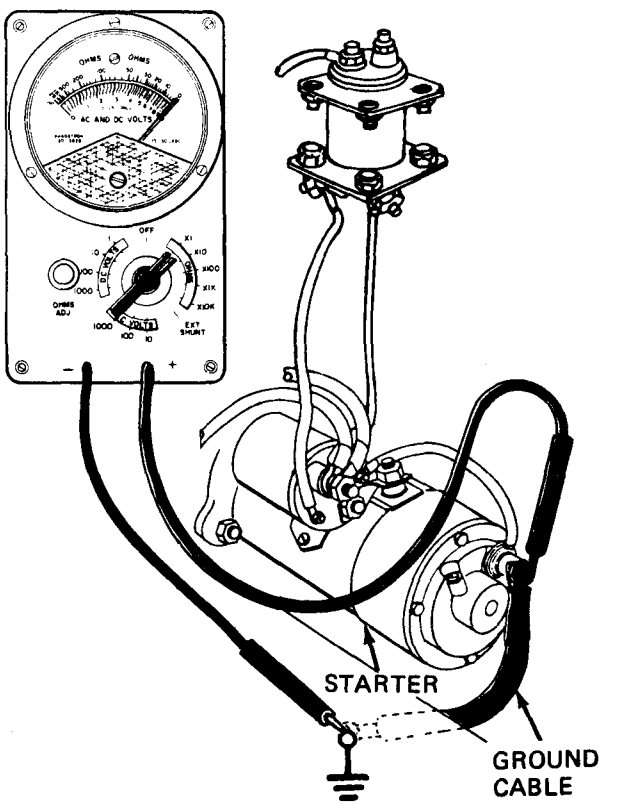
52

● Check starter motor ground cable for continuity

- Set ACCESSORY switch to OFF
- Set multimeter to check continuity. Refer to multimeter test procedures, test 4
- Put multimeter - lead on bolt at ground end of cable (see illustration)
- Put multimeter + lead on tip of starter ground cable terminal (see illustration)
- Read multimeter. Multimeter should measure zero ohms

Does multimeter measure zero ohms?

GO



TA 114231

Figure 25-1 (Sheet 23 of 25)

GO

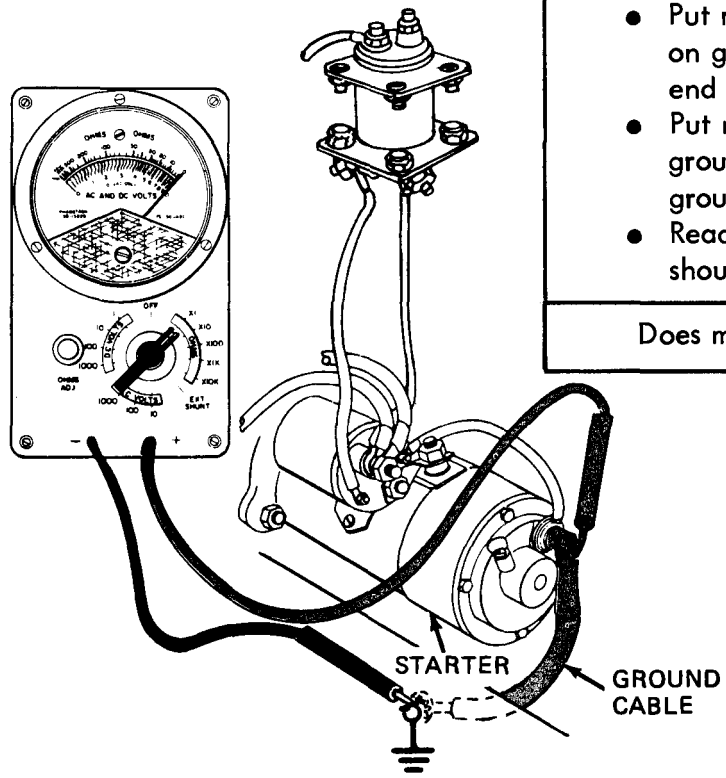
YES

NO

53

- Clean ground cable ends and contact areas and recheck continuity
  - Remove ground cables and clean ends and areas ends touch. Tell direct support maintenance
  - Put multimeter - lead directly on ground cable contact at ground end (see illustration)
  - Put multimeter + lead directly on ground cable contact at starter ground terminal (see illustration)
  - Read multimeter. Multimeter should measure zero ohms

Does multimeter measure zero ohms?



54

NO

- Replace ground cable
  - Refer to Vol 3, chapter 7, para 7-11

GO

NO GO

TA 114232

Figure 25-1 (Sheet 24 of 25)

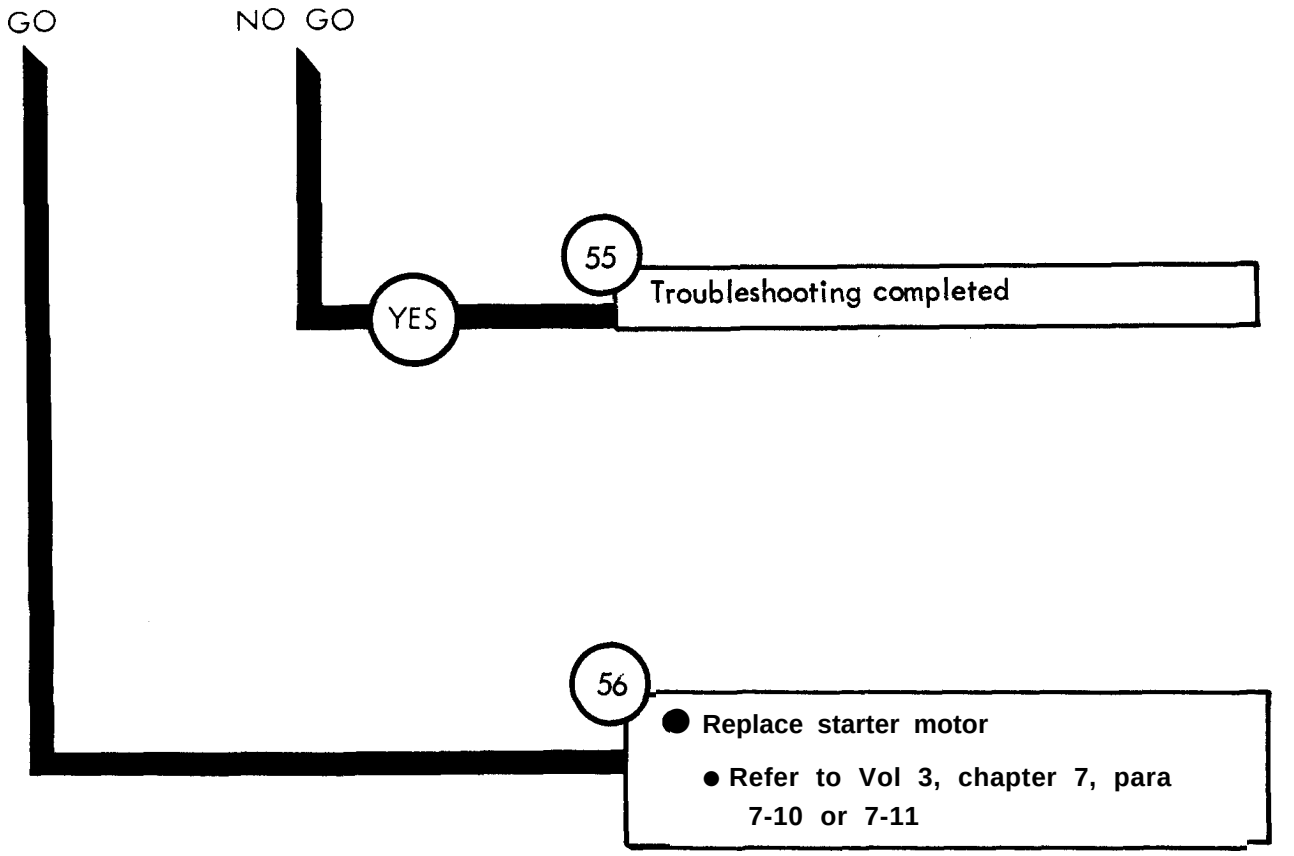


Figure 25-1 (Sheet 25 of 25)

Symptom 2

CHARGING SYSTEM (25 AMP, GENERATOR) HAS TOO HIGH OR LOW CHARGING RATE

NOTE

Make all charging system checks after run and engine compartment is hot

When measuring voltage +28 volts means a range of +27 to +28.5 volts

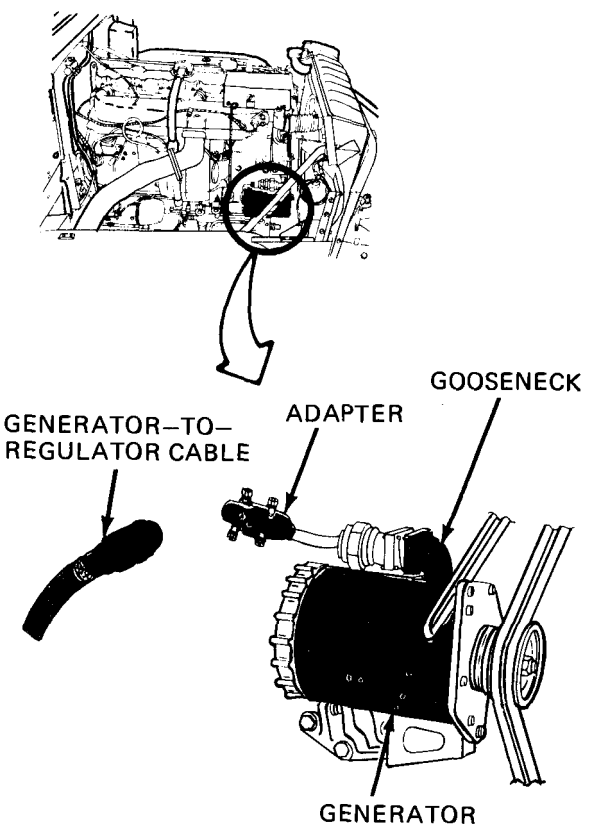
1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Test generator armature
  - Set ACCESSORY switch to OFF
  - Take off generator to regulator cable from generator gooseneck. Refer to Vol 3, chapter 7, para 7-59
  - Put generator adapter in generator gooseneck connector
  - If you don't have a generator adapter do multimeter measurements at generator gooseneck

GO



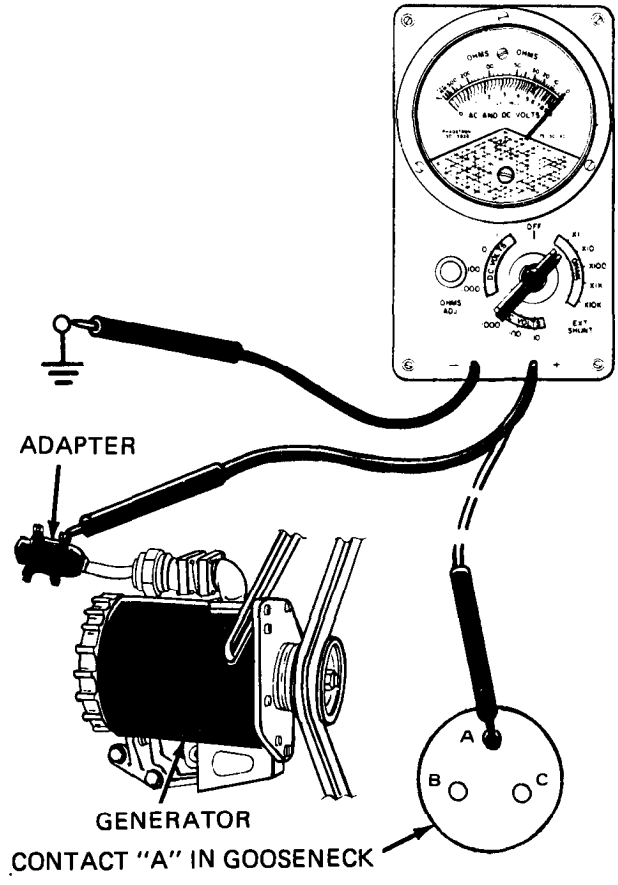
TA 114234

Figure 25-2 (Sheet 1 of 13)

GO

- Set multimeter to check continuity. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on adapter ARM terminal 1 (contact A in goose neck, if adapter is not being used)
- Read multimeter. Multimeter should measure between 0 and 3 ohms

Does multimeter measure between 0 and 3 ohms?



YES

NO

3

- Replace generator
  - Refer to Vol 3, chapter 7, para 7-3

GO

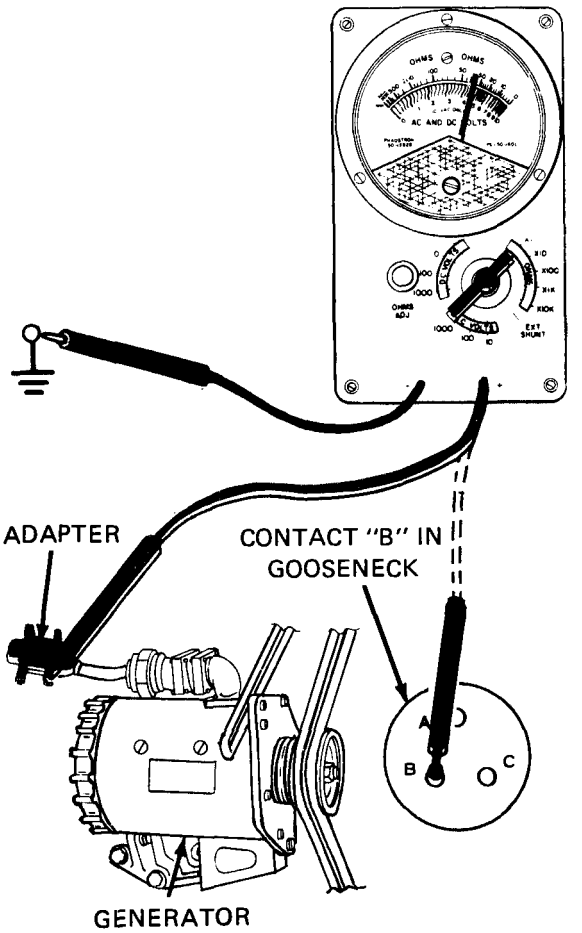
Figure 25-2 (Sheet 2 of 13)

GO

4

- Test generator field
  - Put - lead on good ground
  - Put + lead on FIELD terminal 1 on adapter (contact B in gooseneck connector, if adapter is not being used)
  - Read multimeter. Multimeter pointer should measure between 25 and 45 ohms

Does multimeter measure between 25 and 45 ohms?



YES

NO

5

- Replace generator
  - Refer to Vol 3, chapter 7, para 7-3

GO

TA 114236

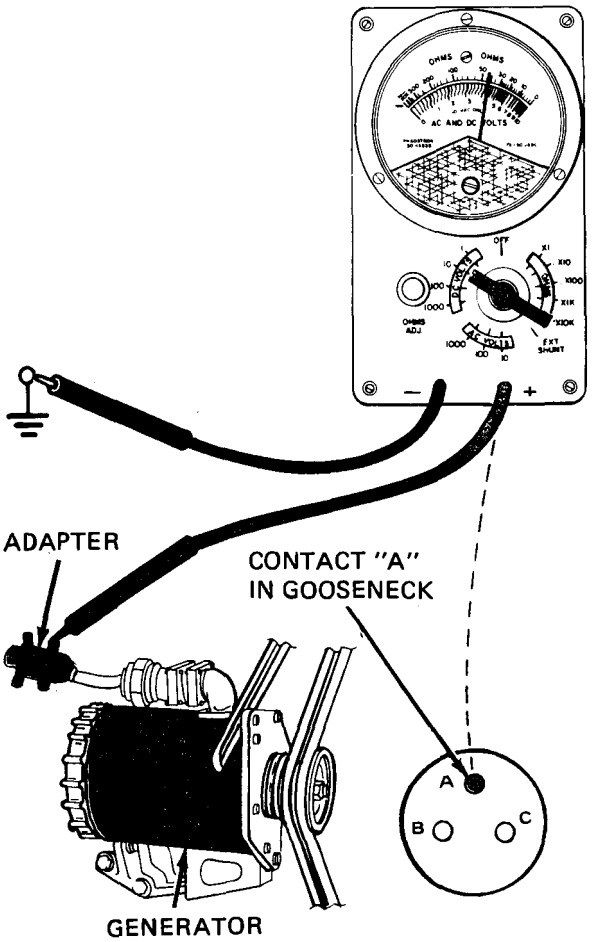
Figure 25-2 (Sheet 3 of 13)

GO

6

- Test generator for residual voltage
  - Start engine and run it at 1000 to 1200 RPM. Refer to TM 9-2320-209-10
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on ARM terminal 1 on adapter (contact A in gooseneck connector, if adapter is not being used)
  - Read multimeter. Multimeter should measure between +3 and +10 volts DC

Does multimeter measure between +3 and +10 volts DC?



YES

NO

7

- Replace generator
  - Stop engine. Refer to TM 9-2320-209-10
  - Replace generator. Refer to Vol 3, chapter 7, para 7-3

GO

TA 114237

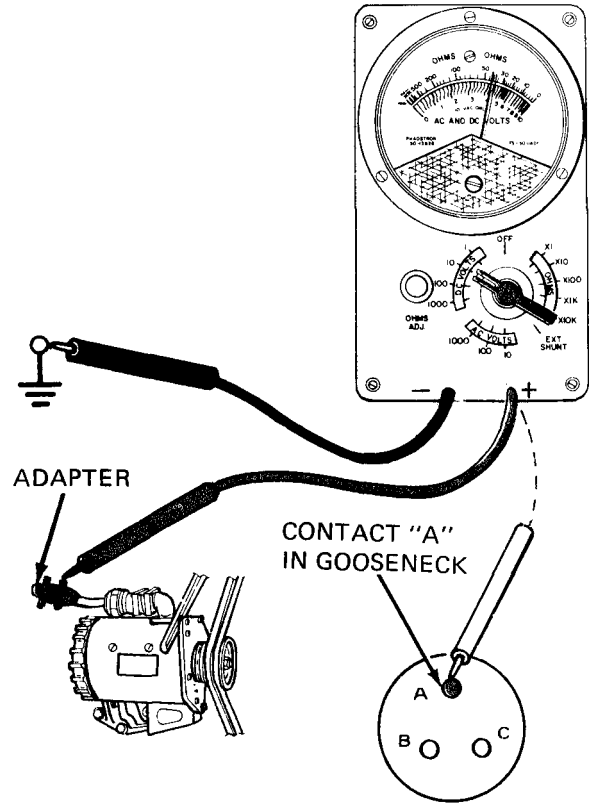
Figure 25-2 (Sheet 4 of 13)

GO

8

- Test generator voltage again
  - Set multimeter to +10 volts DC position. Refer to multimeter test procedures, Test 1
  - Put multimeter - lead on a good ground
  - Put multimeter + lead to ARM terminal 1 (contact A in gooseneck connector)
  - Read multimeter. Multimeter should measure between +3 and +10 volts DC

Does multimeter measure between +3 and +10 volts DC?



YES

NO

10

- Go to step 16

9

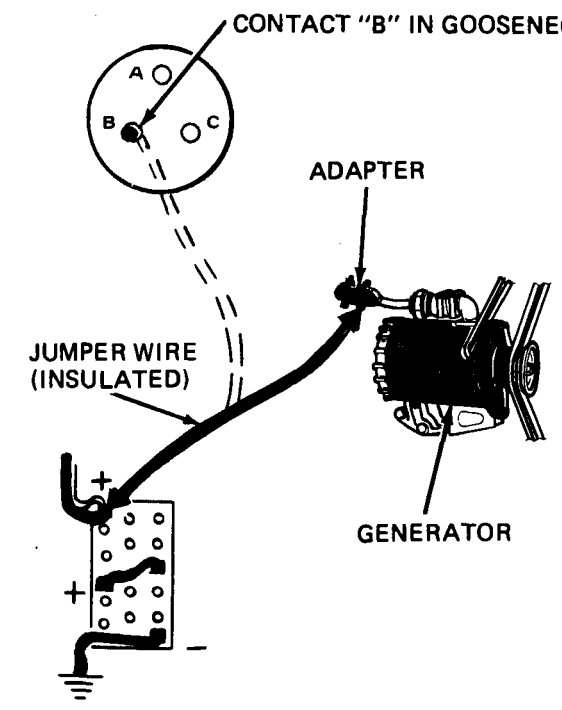
- If multimeter reads more than +10 volts DC go to step 11
- If multimeter reads less than +3 volts DC go to step 12

11

- Replace generator
  - Stop engine. Refer to TM 9-2320-209-10
  - Replace generator. Refer to Vol 3, chapter 7, para 7-3

TA 114238

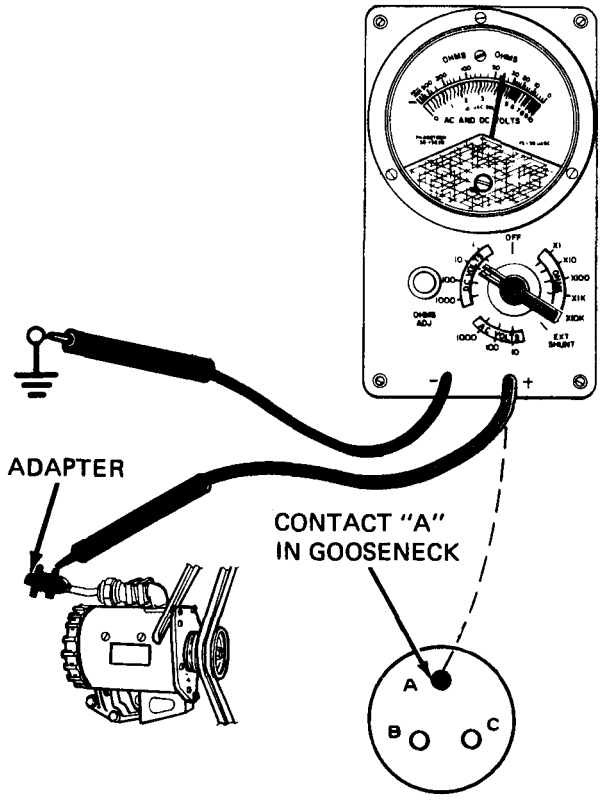
Figure 25-2 (Sheet 5 of 13)



From step 9

12

- Flash generator field terminal
  - Stop engine. Refer to TM 9-2320-209-10
  - Put one end of an insulated jumper wire on + terminal of battery
  - Touch and quickly take away other end of jumper wire from Field terminal 1 (contact B in gooseneck connector)
  - Take insulated jumper wire off + battery terminal



13

- Test generator for +3 to +10 volts DC
  - Start engine and run at 1000 to 1200 RPM. Refer to TM 9-2320-209-10
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on ARM terminal 1 (contact A in generator gooseneck)
  - Read multimeter. Multimeter should measure between +3 and +10 volts DC

Does multimeter read between +3 and +10 volts DC?

NO GO

TA 114239

Figure 25-2 (Sheet 6 of 13)

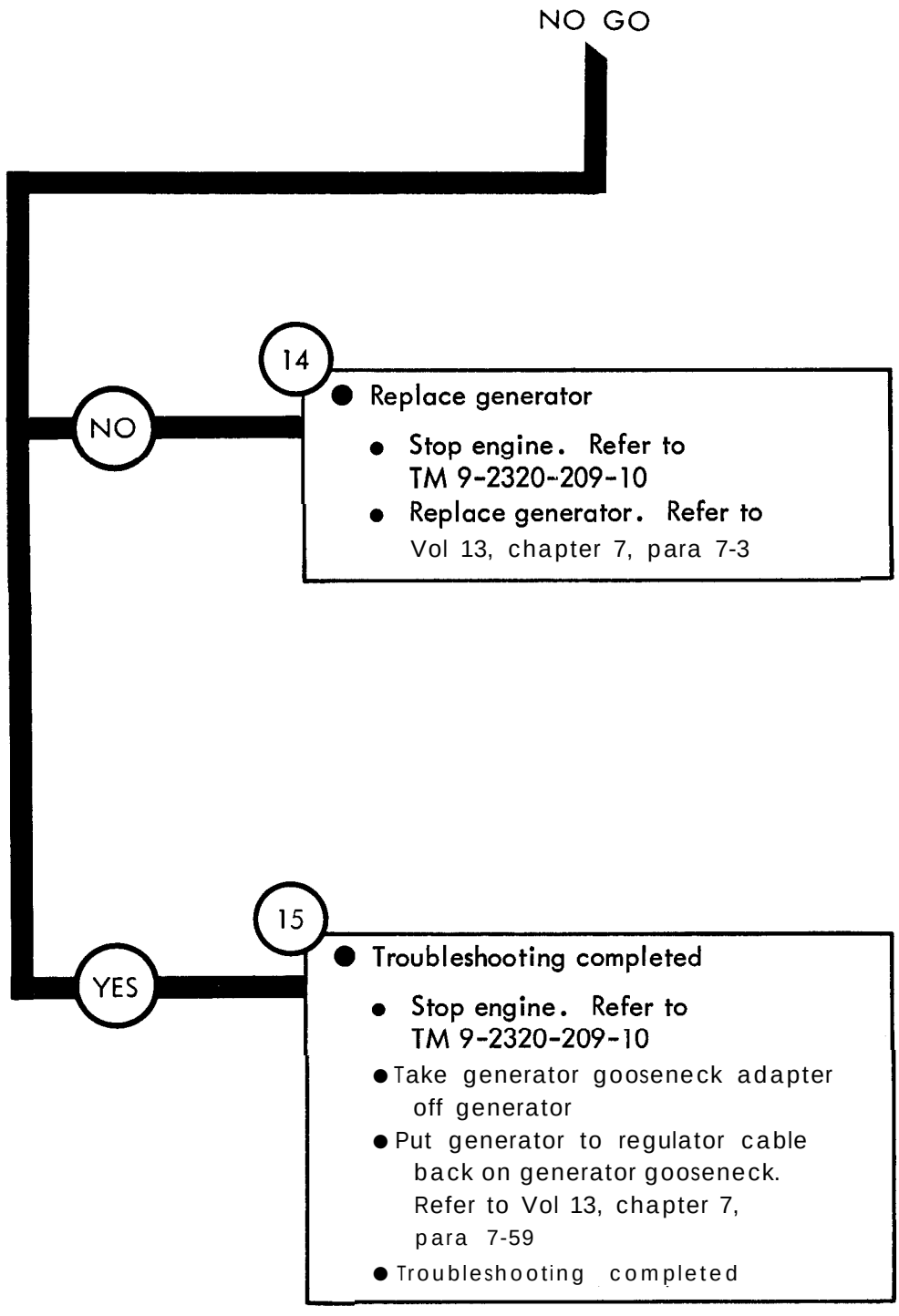
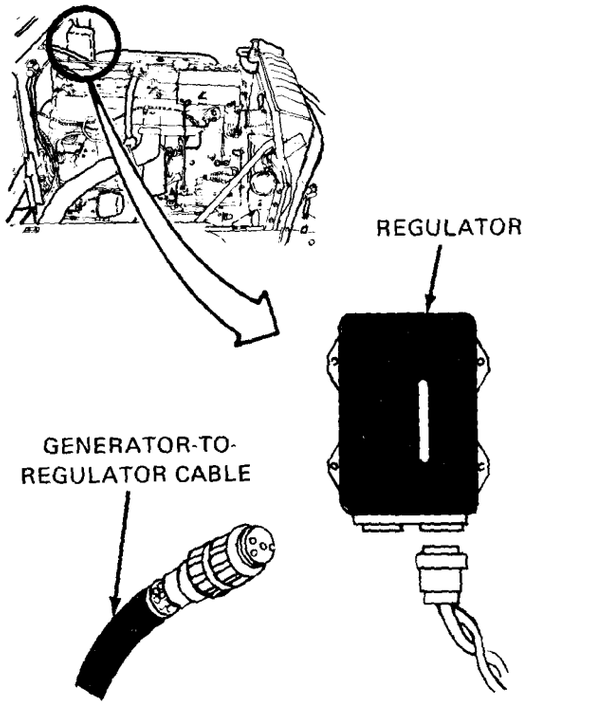


Figure 25-2 (Sheet 7 of 13)

From step 10

16

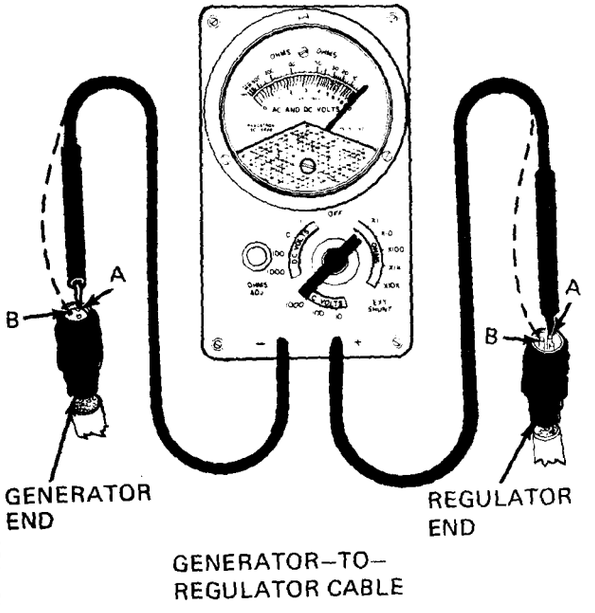
- **Check generator to regulator cable for continuity**
  - **Stop engine. Refer to TM 9-2320-209-10**
  - **Take generator to regulator cable off at regulator. Refer to Vol 3, chapter 7, para 7-59**
  - **Set multimeter to check continuity. Refer to test equipment procedues index**



- Put multimeter + lead on generator end of cable contact A
- Put multimeter - lead on regulator end of cable contact A. Read multimeter. Multimeter should measure zero ohms
- Put multimeter + lead on generator end of cable contact B
- Put multimeter - lead on regulator end of cable contact B. Read multimeter. Multimeter should measure 0 ohms

Did multimeter measure zero ohms for both tests?

GO



TA 11424

Figure 25-2 (Sheet 8 of 13)

GO

YES

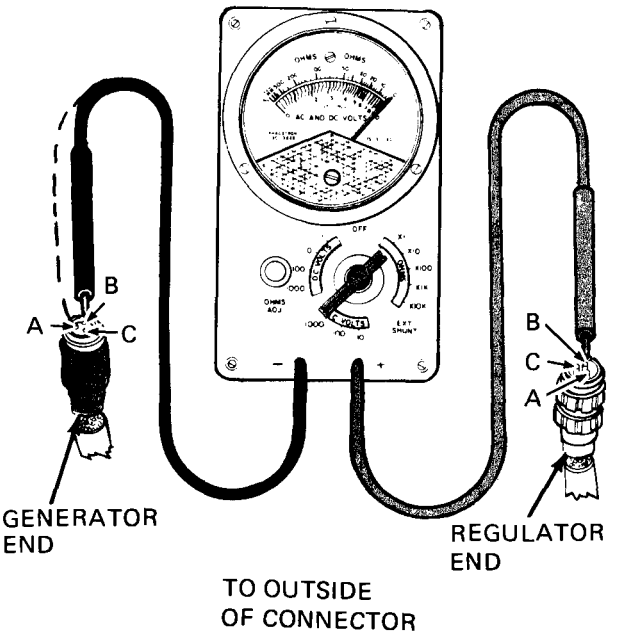
NO

17

- Replace generator to regulator cable
  - Refer to Vol 3, chapter 7, para 7-59

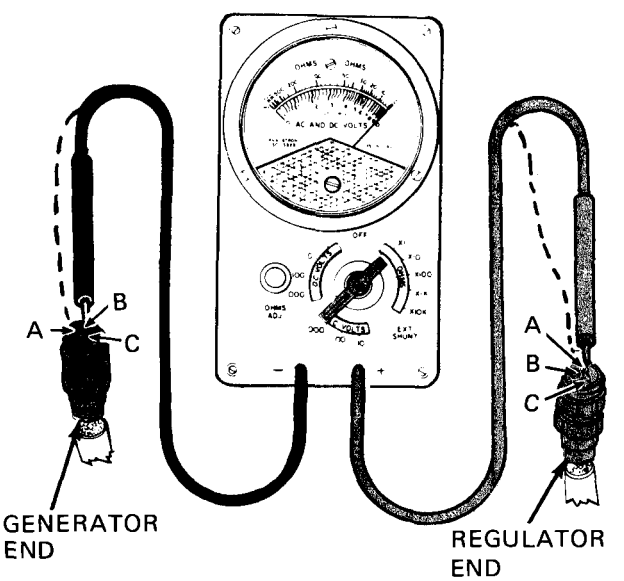
18

- Test generator to regulator cable for shorts
  - Put multimeter + lead on generator end of cable (not in a contact)
  - Put multimeter - lead on contact A, at regulator end of cable. Read multimeter
  - Put multimeter - lead on contact B. Read multimeter. Multimeter pointer should not move



- Put multimeter + lead on contact A at generator end of cable
- Put multimeter - lead on contact B at regulator end of cable. Read multimeter
- Put multimeter + lead on contact B at generator end of cable
- Put multimeter - cable on contact A at regulator end of cable. Read multimeter. Multimeter pointer should not move

Did pointer stay still in both tests?



GO

TA 114242

GO

YES

NO

19

- Replace generator to regulator cable
  - Refer to Vol 3, chapter 7, para 7-59

CAUTION

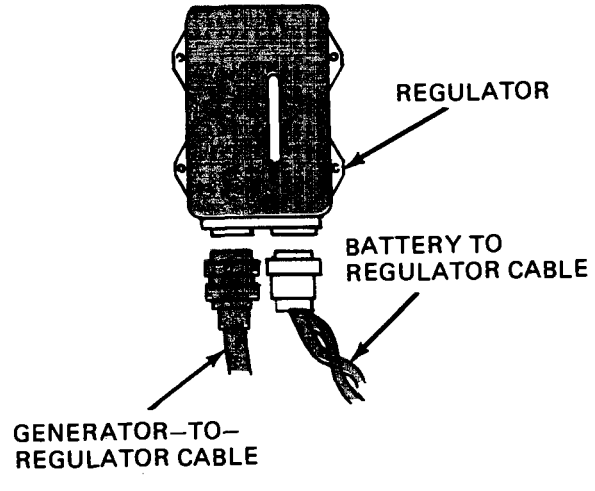
In the following test do not let any connector pins touch any metal in engine compartment

A short circuit will occur with possible damage to cable or batteries

20

- Test battery to voltage regulator cable for +24 volts DC
  - Take off battery ground cable from battery - terminal
  - Take off battery to regulator cable from regulator
  - Put battery ground cable back on battery - terminal

GO



TA 114243

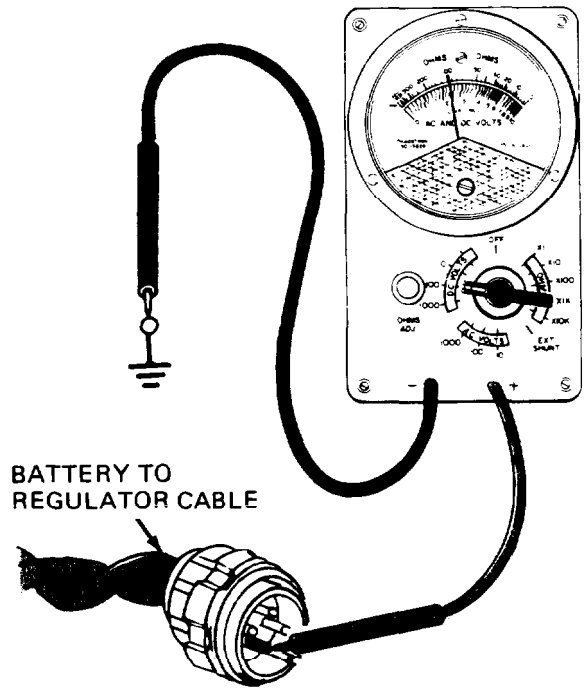
Figure 25-2 (Sheet 10 of 13)

GO

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on contact A of battery to regulator cable connector

Ž Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



YES

NO

21

● Clean battery terminals and cable ends

- Take off battery cables from battery terminals. Refer to Vol 3, chapter 7, para 7-56
- Clean battery terminals and cable ends. Refer to Vol 3, chapter 7, para 7-55
- Put battery cables back on battery terminals. Refer to Vol 3, chapter 7, para 7-56

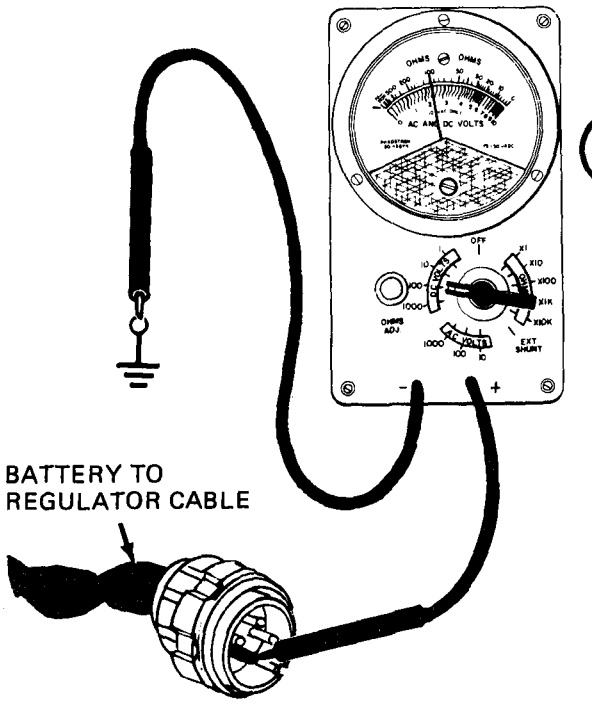
22

● Go to step 26

NO GO

TA 114244

Figure 25-2 (Sheet 11 of 13)



NO GO

23

- Recheck battery to regulator cable for +24 volts DC
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact A of battery to regulator cable
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

NO

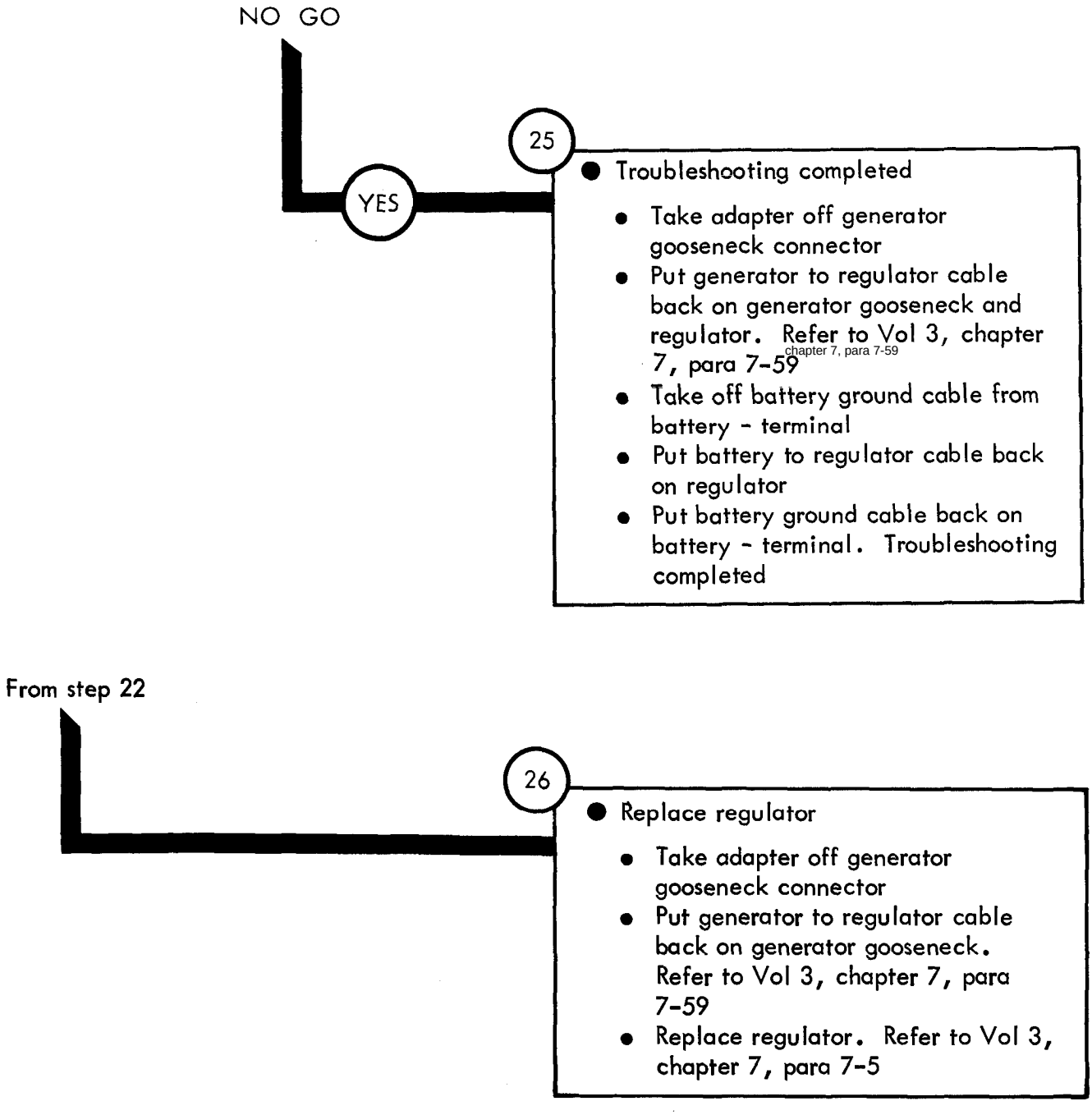
24

- Replace battery to regulator cable
  - Put generator to regulator cable on generator gooseneck connector and regulator. Refer to Vol 3, chapter 7, para 7-59
  - Replace battery to regulator cable. Refer to Vol 3, chapter 7, para 7-56 and 7-5

NO GO

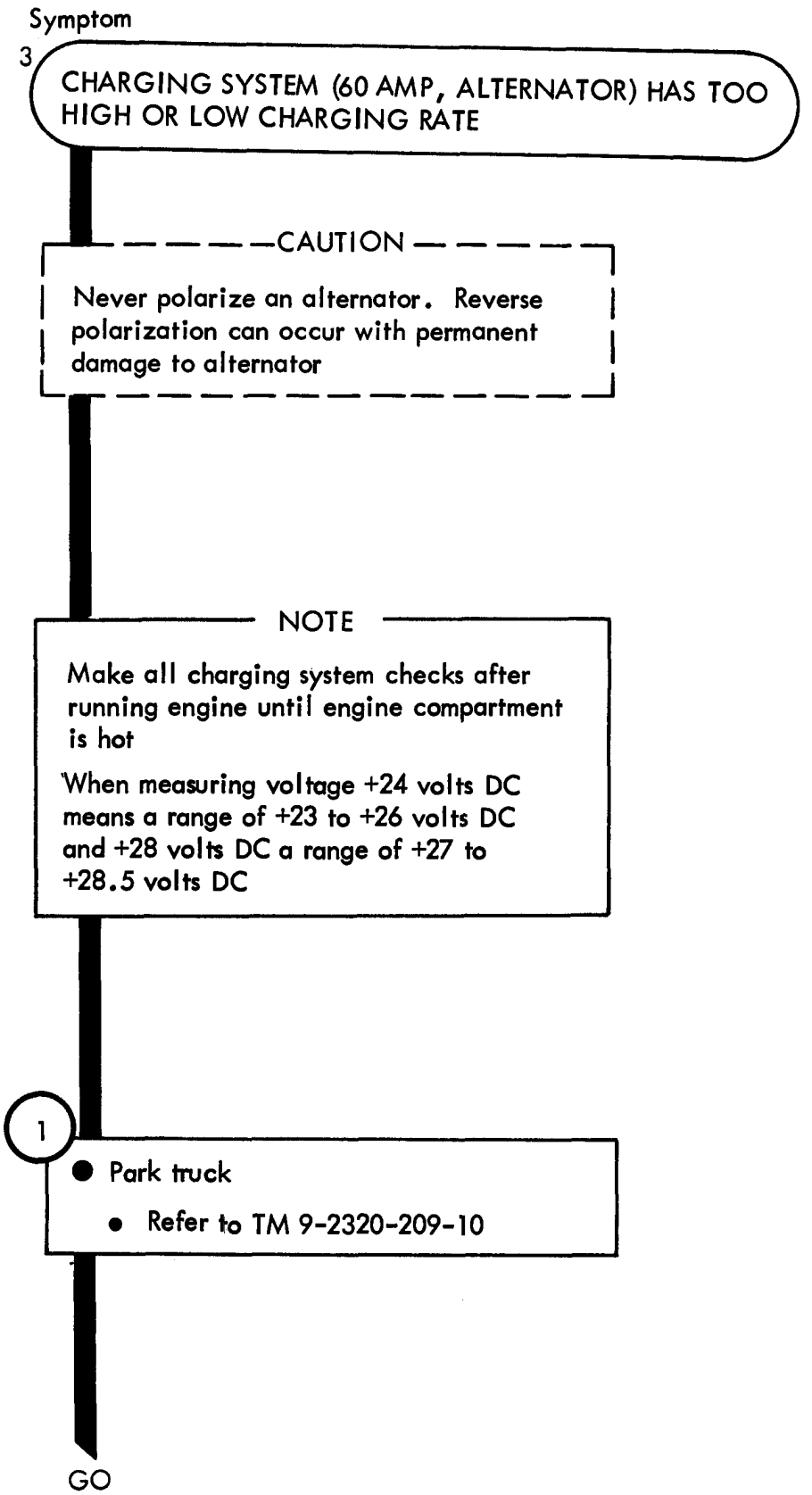
TA 114245

Figure 25-2 (Sheet 12 of 13)



TA 114246

Figure 25-2 (Sheet 13 of 13)



TA 114247

Figure 25-3 (Sheet 1 of 14)

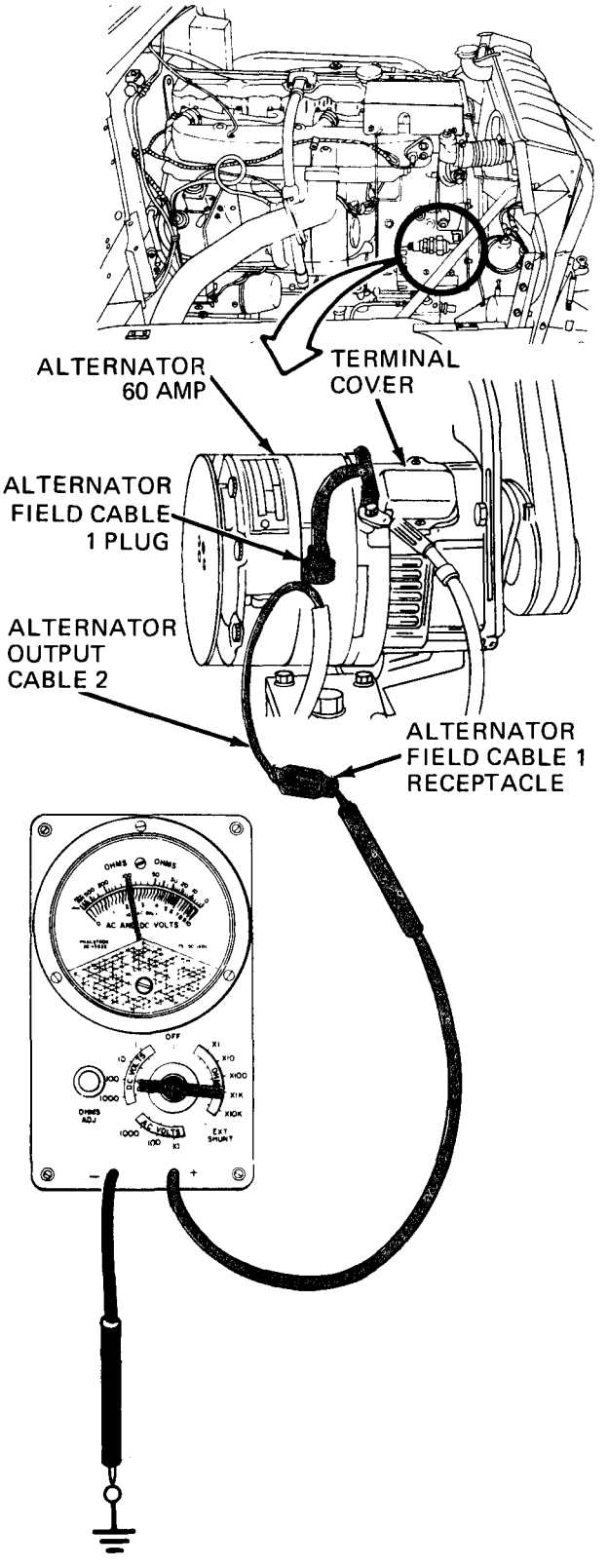
GO

2

- Test alternator field cable 1 for +24 volts DC
  - Take alternator field cable 1 disconnect plug off field cable 1 receptacle
  - Set ACCESSORY switch to ON. (Do not start engine)
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in field cable 1 receptacle. Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114248

Figure 25-3 (Sheet 2 of 14)

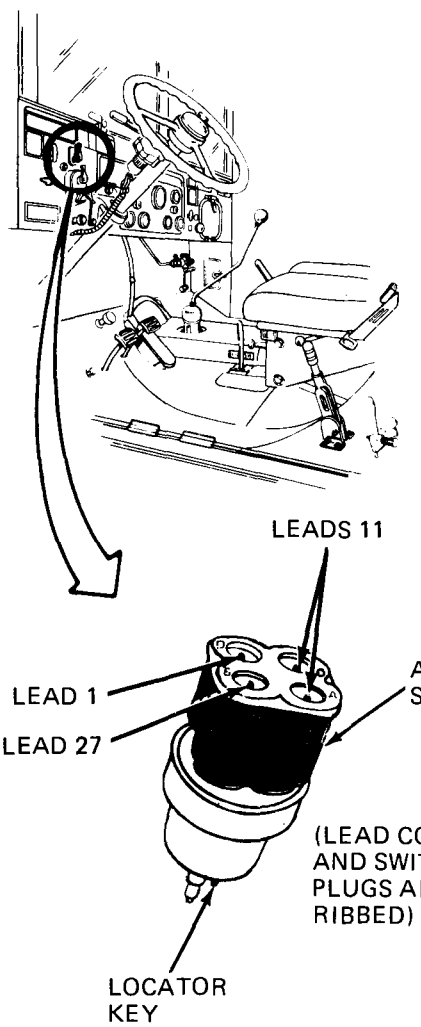
GO

YES

NO

NOTE

The ACCESSORY switch has lead numbers A, B, C, and D stamped on its rubber connector end. These stamped numbers are sometimes hard to see. If this is the case use the plug locator key as a reference point.



GO

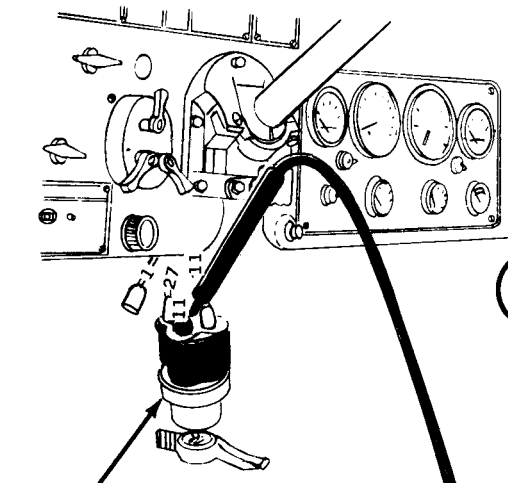
NO GO

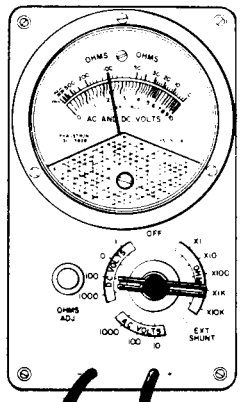
TA 114249

Figure 25-3 (Sheet 3 of 14)

GO

NO GO





3

- Test for voltage at ACCESSORY switch
  - Set ACCESSORY switch to OFF
  - Take ACCESSORY switch off instrument panel. Refer to Vol 3, chapter 7, para 7-15
  - Put ACCESSORY switch lever back on ACCESSORY switch
  - Take off lead 1 from ACCESSORY switch

- Put multimeter - lead on a good ground
- Put multimeter + lead in contact D of ACCESSORY switch
- Read multimeter. Multimeter should measure zero volts DC

Does multimeter measure zero volts DC?

GO

NO GO

TA 114250

Figure 25-3 (Sheet 4 of 14)

GO

4

- Go to step 11

NO GO

NO

5

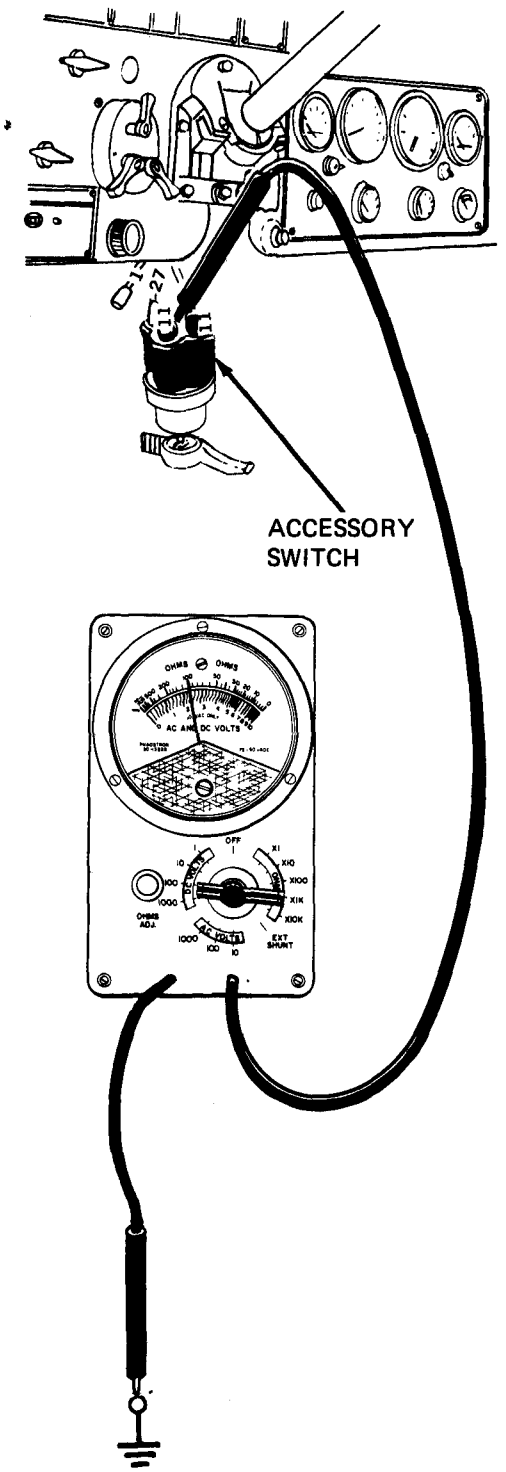
- Take off all leads from ACCESSORY switch and replace ACCESSORY switch
  - Refer to Vol 3, chapter 7, para 7-15

YES

6

- Check voltage with ACCESSORY switch set to ON
  - Set ACCESSORY switch to ON
  - Put multimeter - lead on a good ground
  - Put multimeter + lead to contact D of ACCESSORY switch
  - Read multimeter. Multimeter should measure +24 volts DC

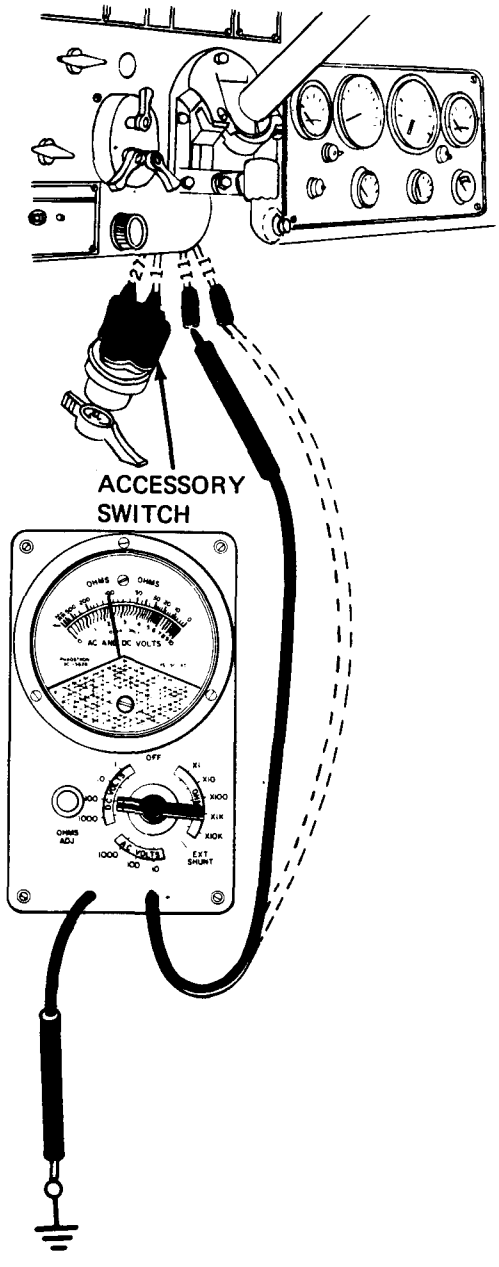
Does multimeter measure +24 volts DC?



NO GO

TA 114251

Figure 25-3 (Sheet 5 of 14)



NO GO

7

NO

- Repair or replace front harness
  - Put field cable 1 plug back on field cable 1 receptacle. Refer to Vol 3, chapter 7, para 7-15
  - Repair or replace front harness Tell direct support maintenance

8

YES

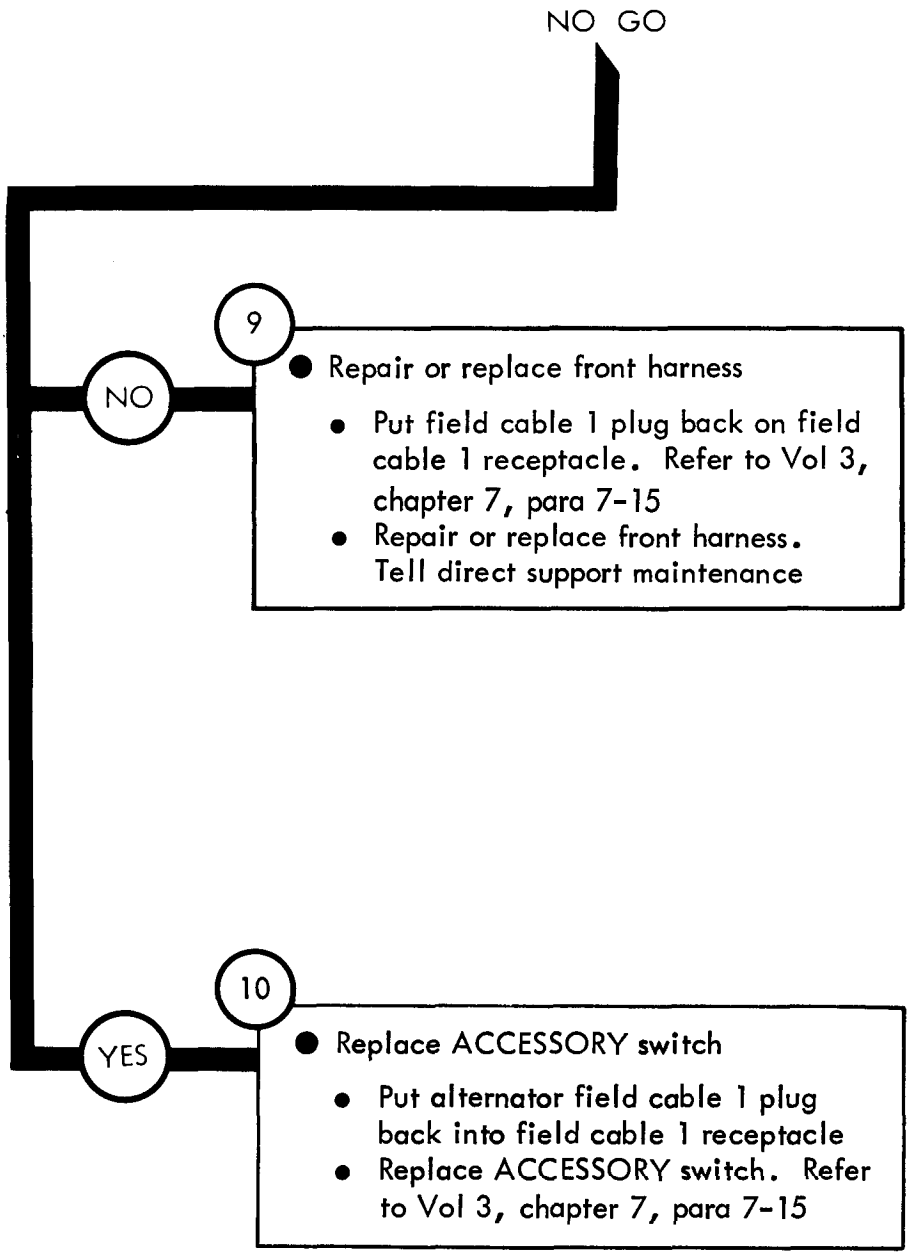
- Test leads between batteries and ACCESSORY switch
  - Put lead 1 back on ACCESSORY switch. Take off both leads 11 from ACCESSORY switch
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in one good ground
  - Put multimeter + lead in one lead 11 connector. Read multimeter. Multimeter should read +24 volts DC
  - Put multimeter + lead in other lead 11 connector. Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC for each test?

NO GO

TA 114252

Figure 25-3 (Sheet 6 of 14)



TA 114253

Figure 25-3 (Sheet 7 of 14)

From step 4

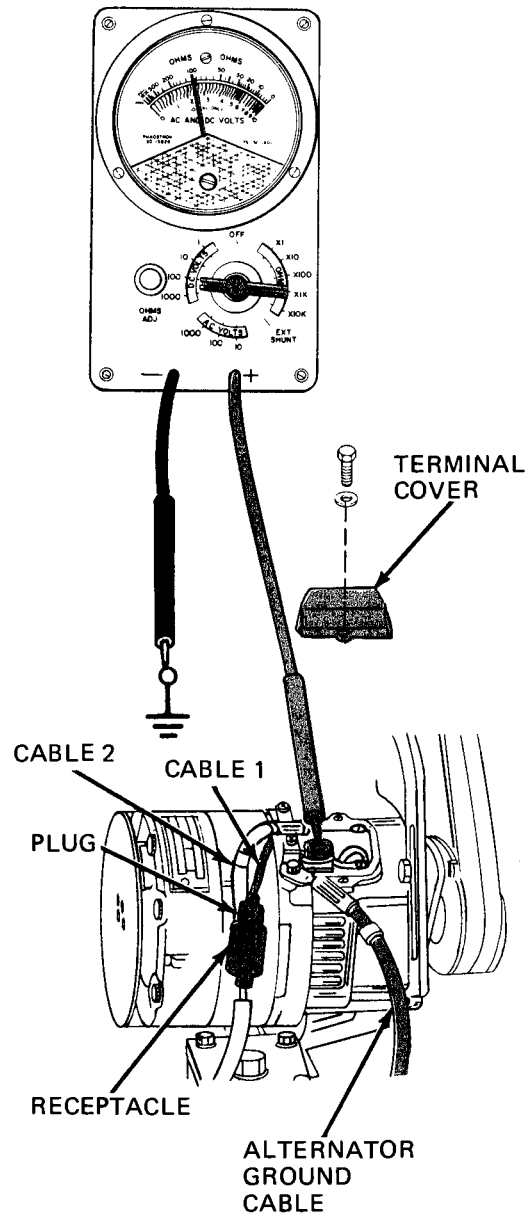
11

- Check for +28 volts DC at alternator output terminal (stator)
  - Put alternator field cable I disconnect plug on field cable I receptacle
  - Take off battery ground cable from battery - terminal. Refer to Vol 3, chapter 7, para 7-58
  - Take off alternator terminal cover

- Put battery ground cable back on battery - terminal
- Start engine. Refer to TM9-2320-209-10
- Put multimeter - lead on a good ground
- Put multimeter + lead on alternator output terminal. Do not touch cable 2 connector. Read multimeter. Multimeter should measure +28 volts DC

Does multimeter measure +28 volts DC?

GO



TA 114254

Figure 25-3 (Sheet 8 of 14)

GO

NO

12

- Replace cable 2
  - Stop engine. Refer to TM 9-2320-209-10
  - Put field cable plug back on field cable 1 receptacle. Refer to Vol 3, chapter 7, para 7-4
  - Replace cable 2. Refer to Vol 3, chapter 7, para 7-4

YES

13

- Test alternator ground circuit for continuity
  - Stop engine. Refer to TM 9-2320-209-10
  - Take off battery ground cable from battery - terminal. Set multimeter to measure continuity. Refer to test equipment procedures index
  - Put multimeter - lead on capscrew head of ground cable at ground side
  - Put multimeter + lead on capscrew head of ground cable at alternator
  - Read multimeter. Multimeter should measure zero ohms

Does multimeter read zero ohms?

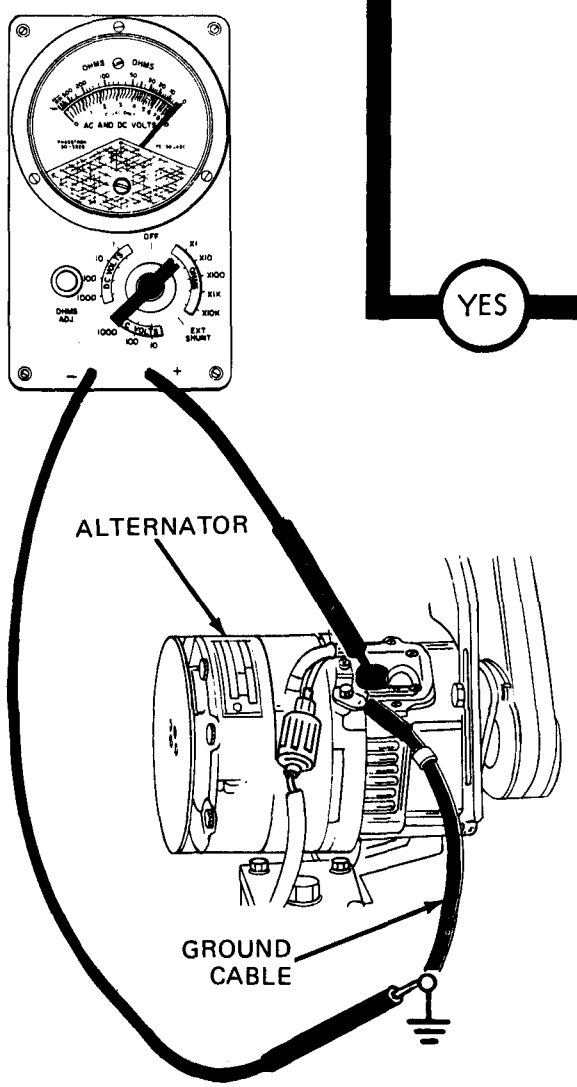


Figure 25-3 (Sheet 9 of 14)

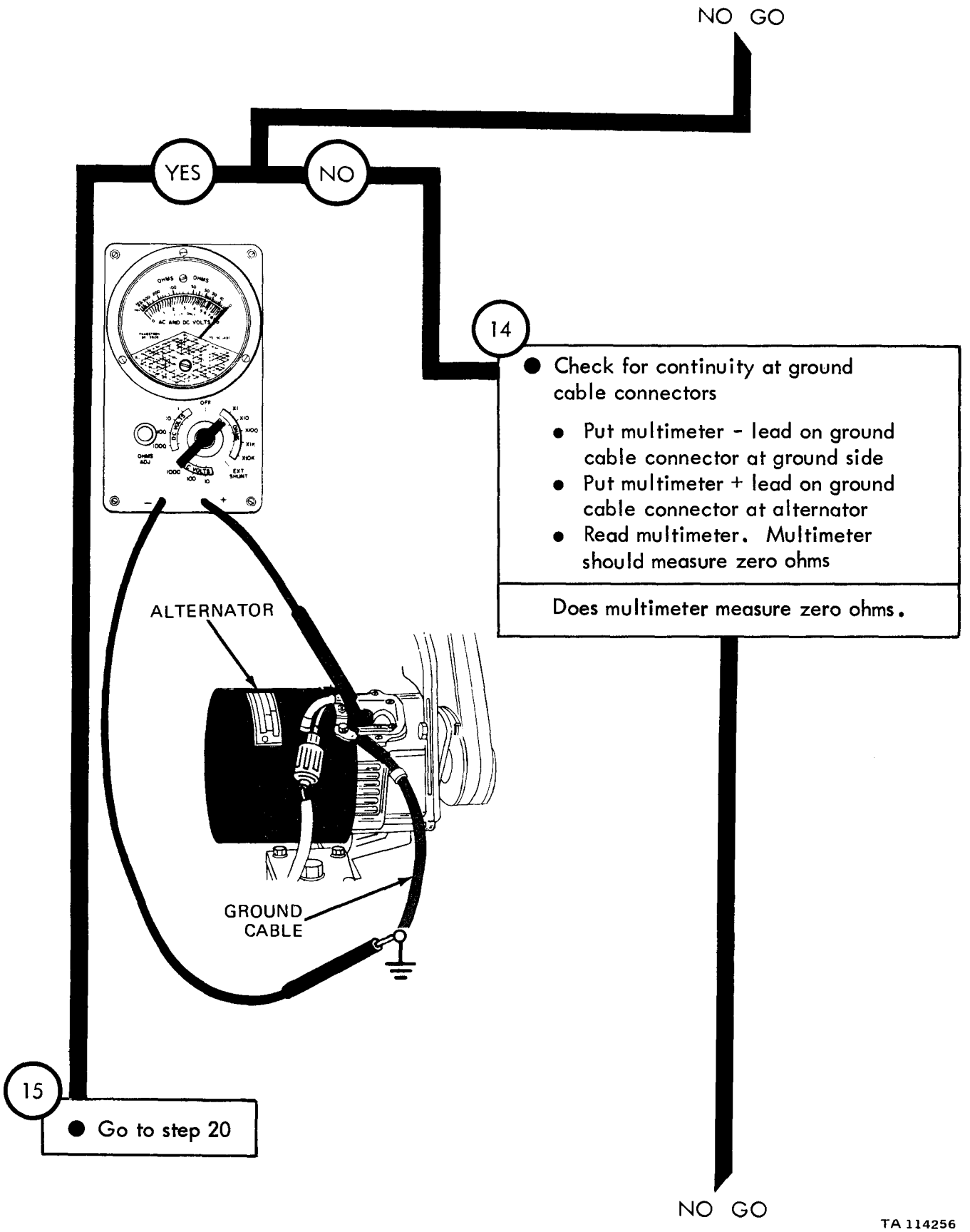


Figure 25-3 (Sheet 10 of 14)

NO GO

16

NO

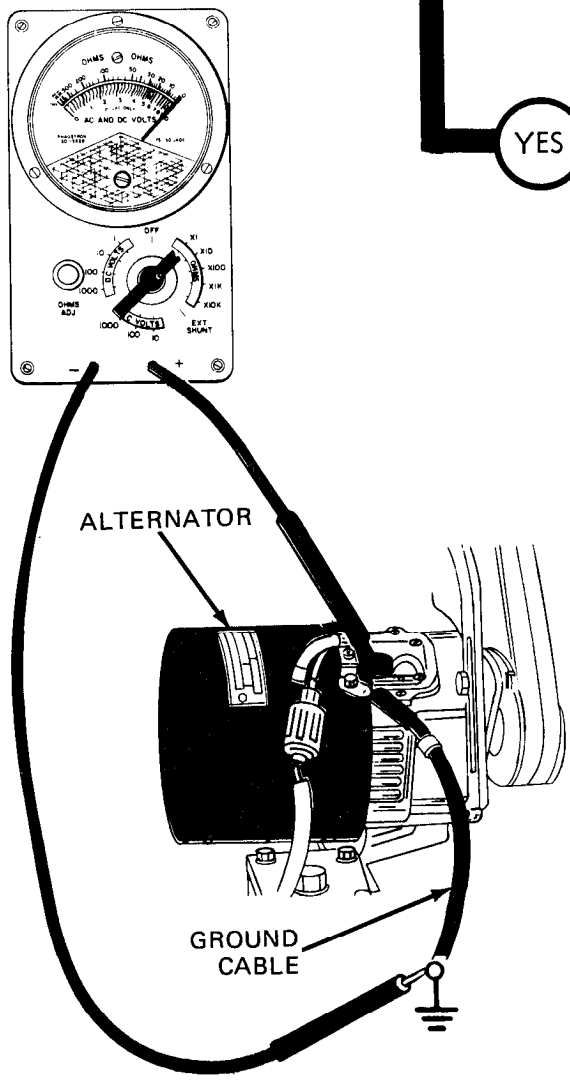
- Replace alternator ground cable
  - Put back field cable 1 plug on field cable 1 receptacle. Refer to Vol 3, chapter 7, para 7-4
  - Replace alternator ground cable. Refer to Vol 3, chapter 7, para 7-4
  - Put back battery ground cable on battery - terminal. Refer to Vol 3, chapter 7, para 7-58

YES

- Clean ground cable ends and connection ends
  - Put field cable 1 plug back on receptacle. Refer to Vol 3, chapter 7, para 7-4
  - Remove ground cable from alternator and ground. Refer to Vol 3, chapter 7, para 7-4 Clean ground cable connectors and connection points.
  - Put ground cable back on ground and alternator. Refer to Vol 3, chapter 7, para 7-4
  - Put multimeter - lead on ground cable capscrew head at ground side
  - Put multimeter + lead on ground cable capscrew head at alternator Read multimeter. Multimeter should measure zero ohms

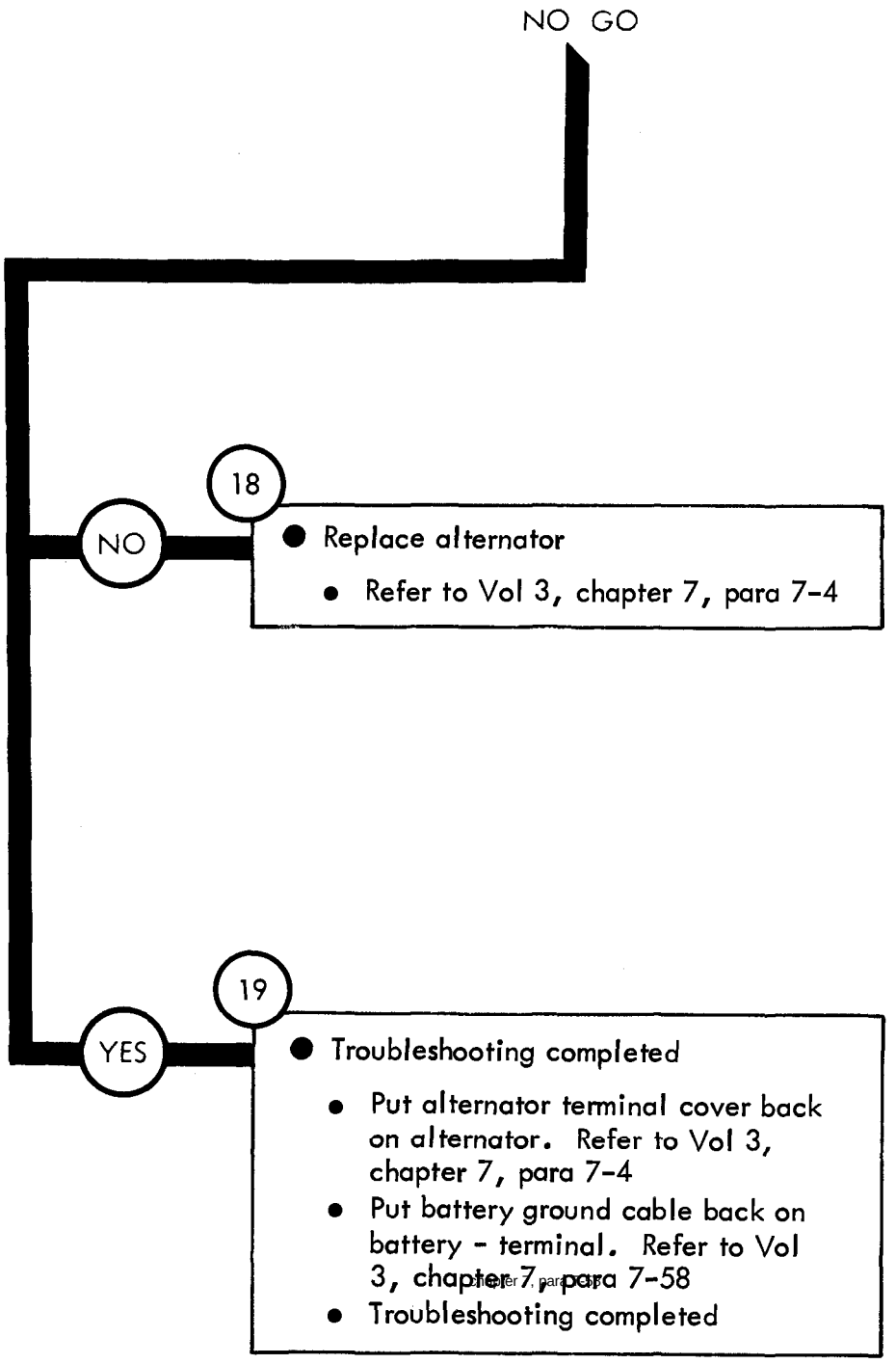
Does multimeter measure zero ohms?

NO GO



TA 114257

Figure 25-3 (Sheet 11 of 14)



TA 114258

Figure 25-3 (Sheet 12 of 14)

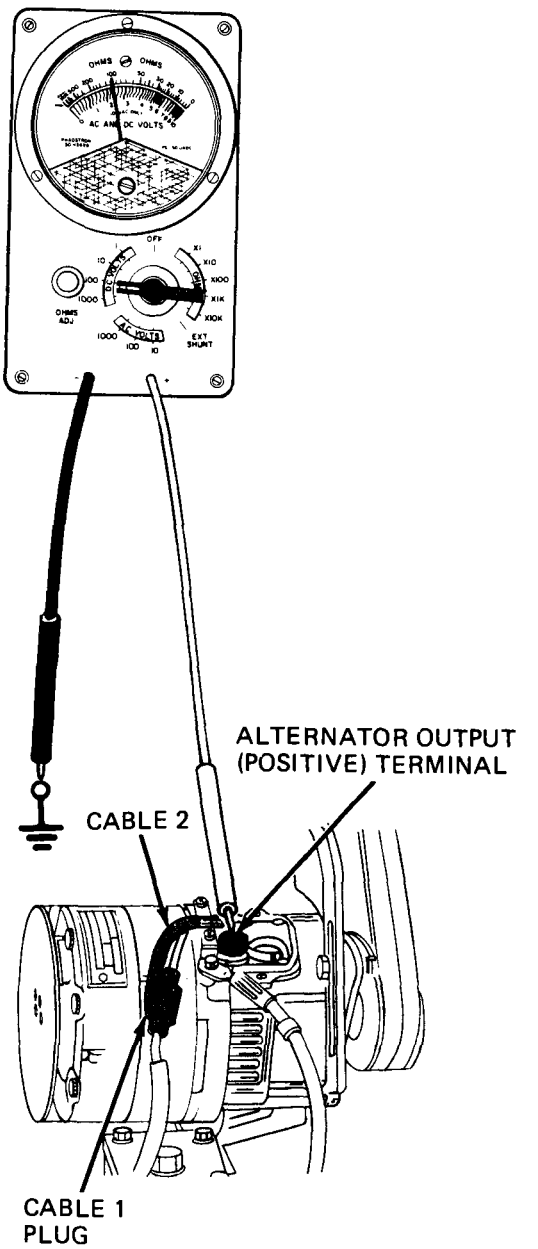
From step 15

20

- Test and adjust alternator output
  - Put field cable 1 plug back on field cable 1 receptacle. Refer to Vol 3, chapter 7, para 7-4
  - Put battery ground cable back on battery - terminal. Refer to Vol 3, chapter 7, para 7-58
  - Start engine and run at 1000 to 1200 RPM (engine warm). If not warm run for 15 minutes before finishing test. Refer to TM 9-2320-209-10

- Set multimeter to measure +28 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on alternator output (positive) terminal
- Read multimeter. Multimeter should measure +28 volts DC

GO



TA 114259

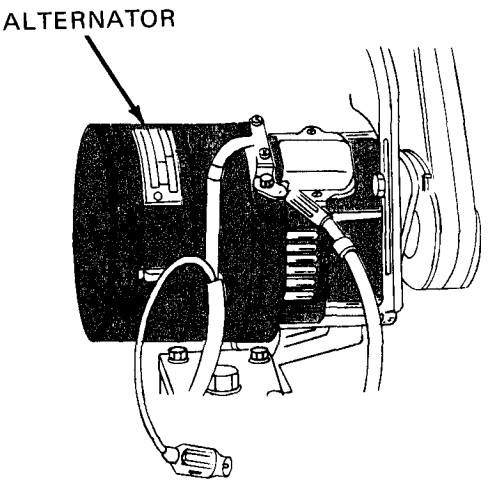
Figure 25-3 (Sheet 13 of 14)

GO

21

- If multimeter does not measure +28 volts DC adjust alternator
  - Locate voltage adjustment screw on alternator. It will be identified at either front or back of alternator as VOLT ADJUST
  - Remove pipe plug that covers voltage adjustment screw
  - Turn adjustment screw left or right to raise or lower voltage until you get a 28 volt DC multimeter reading

Did you get a +28 volt DC reading?



NO

22

- Replace alternator
  - Stop engine. Refer to TM 9-2320-209-10
  - Replace alternator. Refer to Vol 3, chapter 7, para 7-4

YES

23

- Troubleshooting completed
  - Stop engine. Refer to TM 9-2320-209-10
  - Troubleshooting completed

Figure 25-3 (Sheet 14 of 14)

Symptom 4

BATTERIES GO DEAD WHEN TRUCK IS PARKED OVERNIGHT OR A PERIOD OF DAYS

NOTE

First check that ACCESSORY switch and lights were not left on

Recharge or replace batteries before making any test. Refer to Vol 3, chapter 7, para 7-56

1

- Park truck
  - Refer to TM9-2320-209-10
  - Start engine and run at 1000 to 1200 RPM until warm. Refer to TM9-2320-209-10

2

- If you are testing a generator go to step 3
- If you are testing an alternator go to step 6

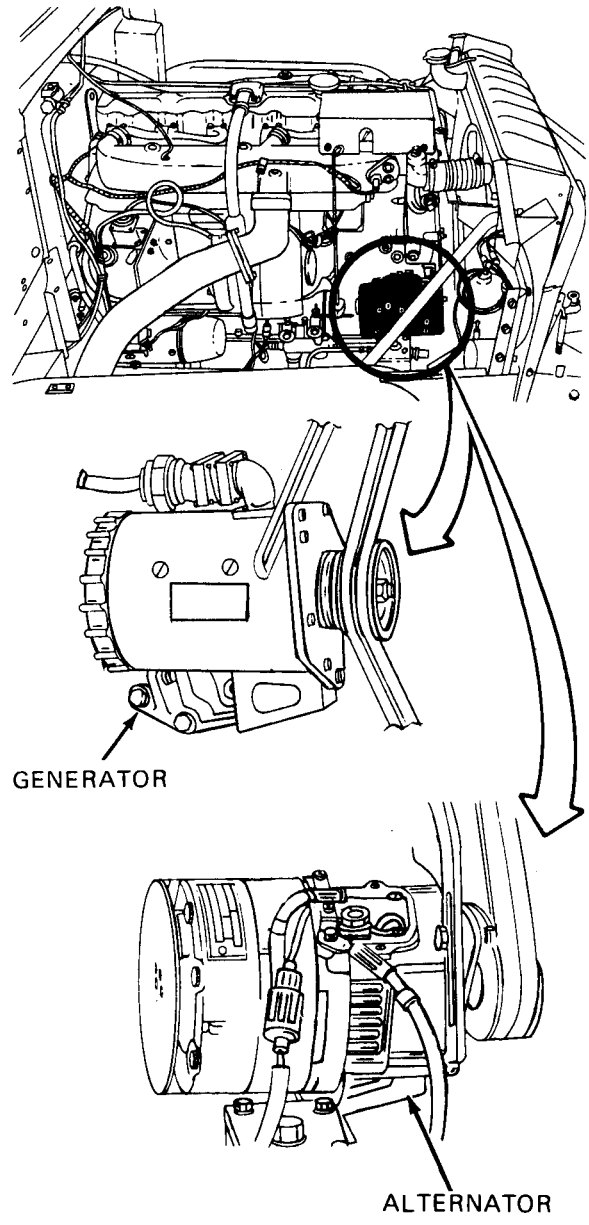


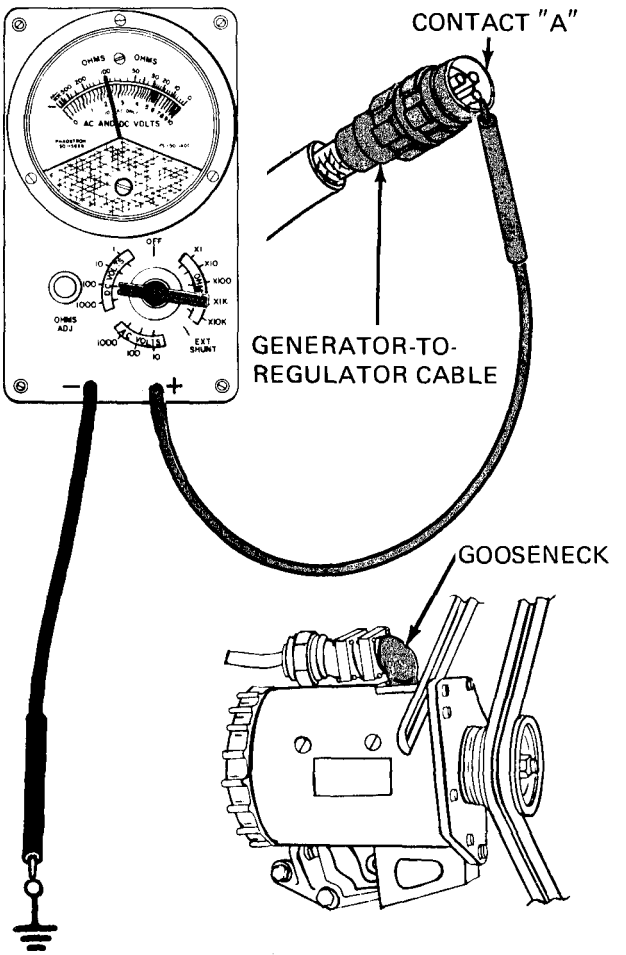
Figure 25-4 (Sheet 1 of 6)

GO

3

- Test generator cut out (reverse current) relay in the voltage regulator
  - Stop engine
  - Take off generator to regulator cable at generator goose neck
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact A of generator to regulator cable. Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO

4

- Generator cut out is OK. If batteries continue to go dead troubleshoot batteries
  - Put back generator to regulator cable on generator goose neck. Refer to Vol 3, chapter 7, para 7-59
  - If necessary troubleshoot batteries. Refer to figure 25-5

YES

5

- Replace voltage regulator
  - Put generator to regulator cable back on generator goose neck. Refer to Vol 3, chapter 7, para 7-59
  - Replace voltage regulator. Refer to Vol 3, chapter 7, para 7-5

TA 114262

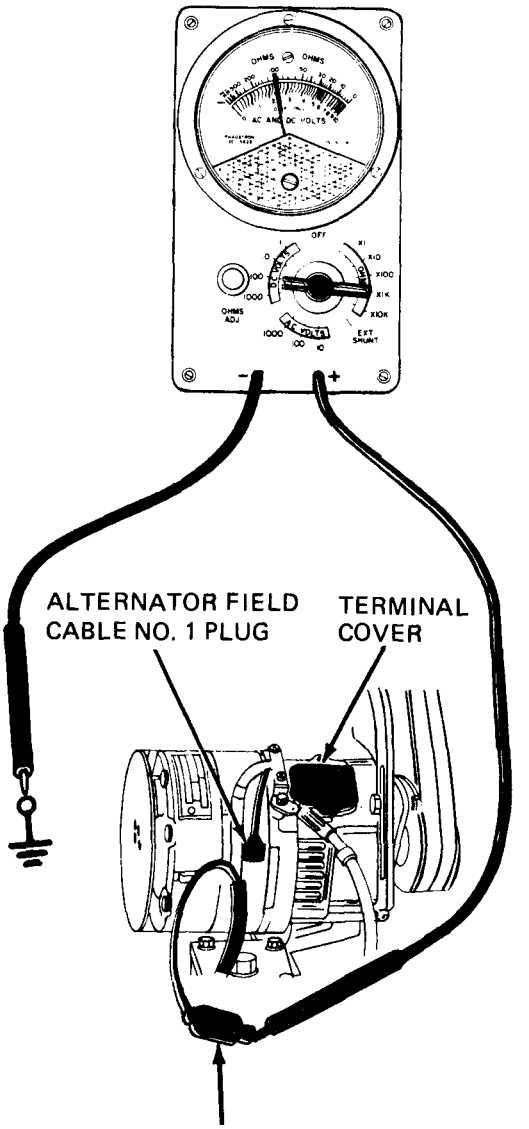
Figure 25-4 (Sheet 2 of 6)

From step 2

6

- Check that current is not flowing through alternator field (rotor) to ground
  - Stop engine. Refer to TM 9-2320-209-10
  - Take off alternator field cable 1 plug from field cable 1 receptacle
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in alternator field cable 1 receptacle. Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



YES

NO

CAUTION

Failure to take off battery ground cable from battery - terminal will destroy the multimeter when doing the following test

GO

NO GO

Figure 25-4 (Sheet 3 of 6)

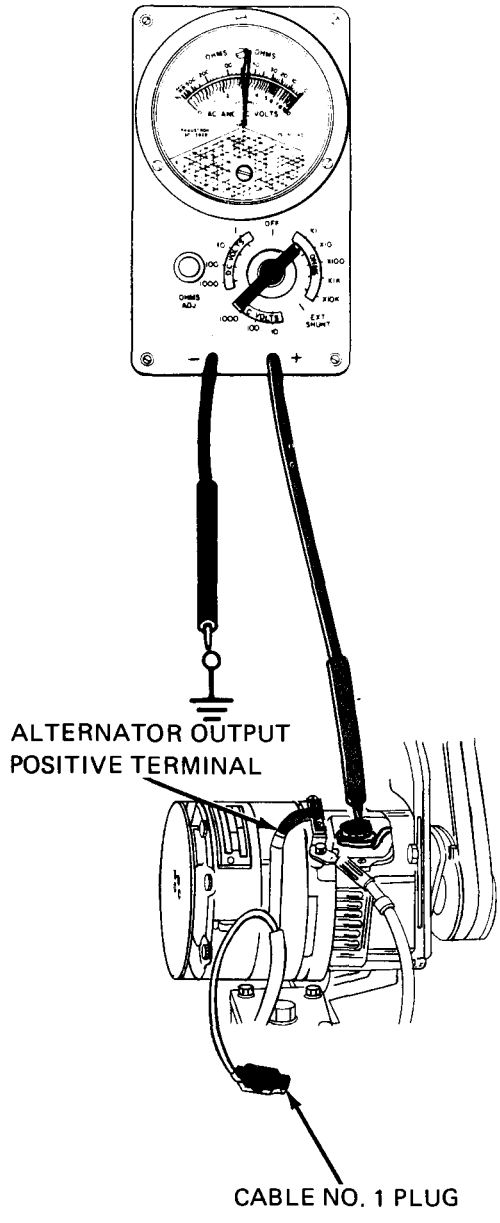
7

- Check alternator rectifier for integrity
  - Take off battery ground cable from battery - terminal. Refer to Vol 3, chapter 7, para 7-58
  - Take off terminal cover from alternator. Refer to Vol 3, chapter 7, para 7-4
  - Set multimeter to measure continuity. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on alternator output terminal. Read multimeter. Multimeter should measure 50 to 80 ohms

NO GO

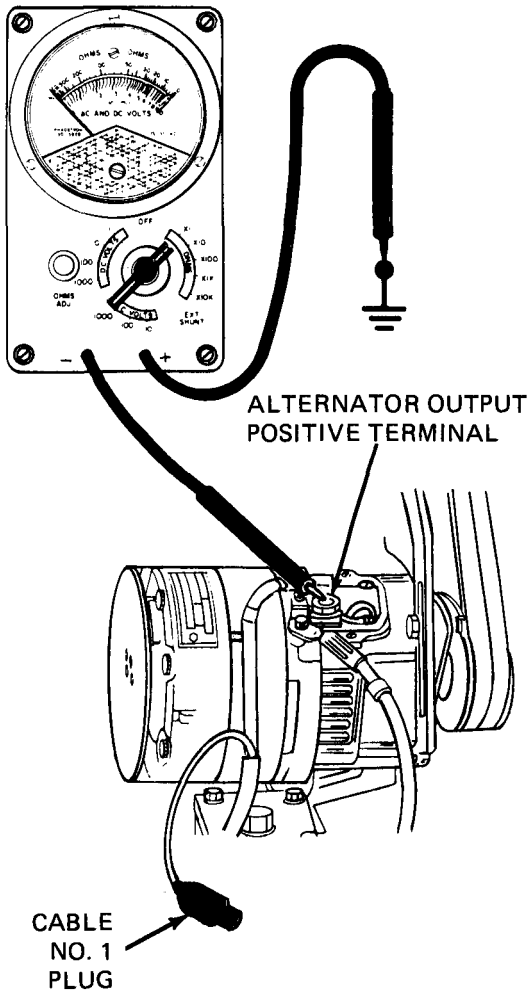
8

- Go to step 11



TA 114264

Figure 25-4 (Sheet 4 of 6)



NO GO

- Put multimeter - lead on alternator output terminal
- Put multimeter + lead on a good ground. Read multimeter
- Multimeter pointer should not move

Do both tests check out OK?

NO GO

Figure 25-4 (Sheet 5 of 6)

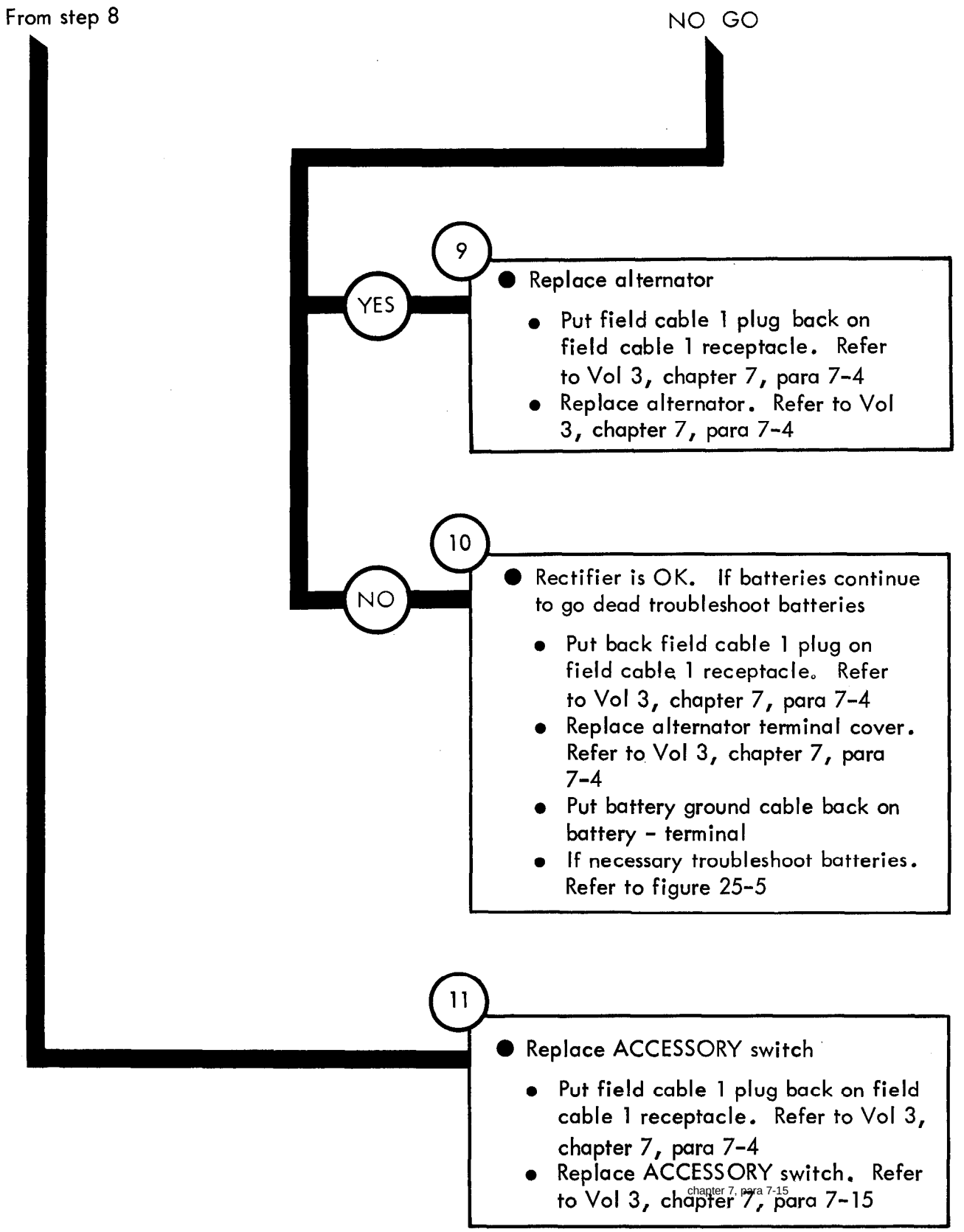


Figure 25-4 (Sheet 6 of 6)

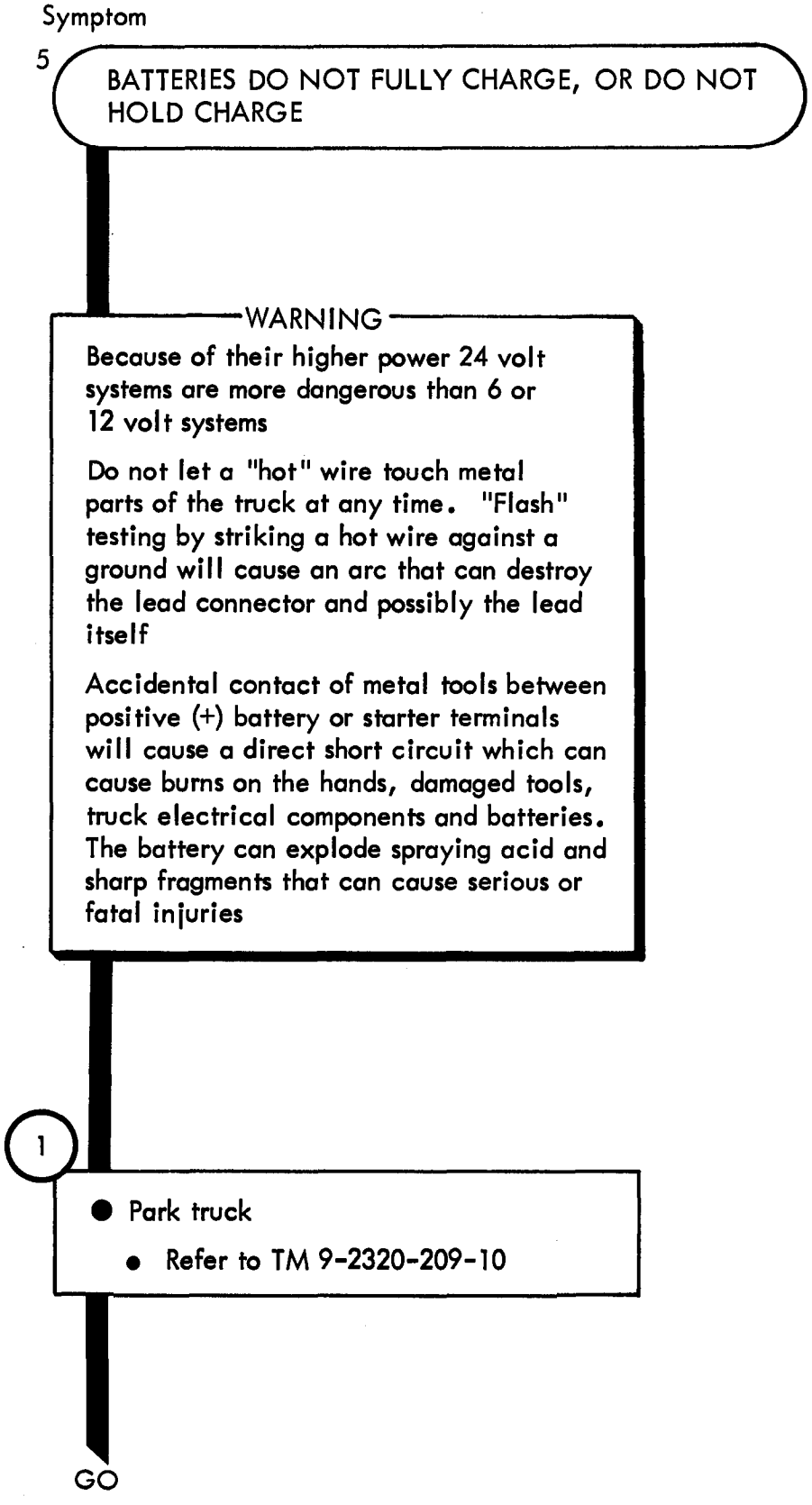


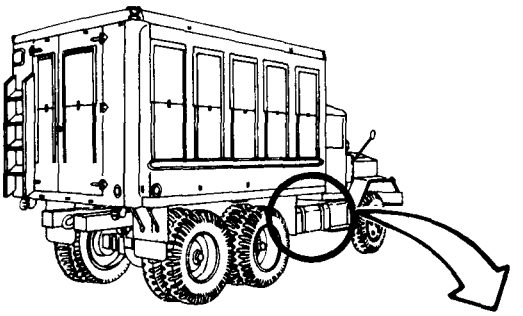
Figure 25-5 (Sheet 1 of 7)

GO

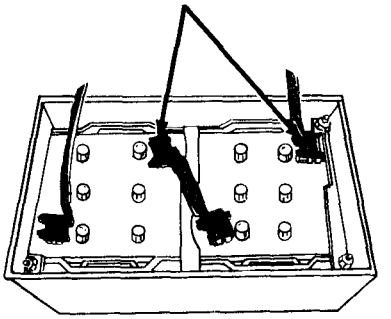
2

- Check battery cable clamps and battery terminals for rust, dirt, corrosion, tightness. Refer to Vol 3, chapter 7, para 7-55

Are battery cable clamps and terminals OK?



BATTERY CABLE CLAMPS AND BATTERY TERMINALS



YES

NO

3

- Clean cable clamps and battery terminals
  - Take battery cables off battery terminals. Refer to Vol 3, chapter 7, para 7-56
  - Clean battery cable clamps
  - Clean battery terminals
  - Put battery cable clamps back on battery terminals. Refer to Vol 3, chapter 7, para 7-56

GO

TA 114268

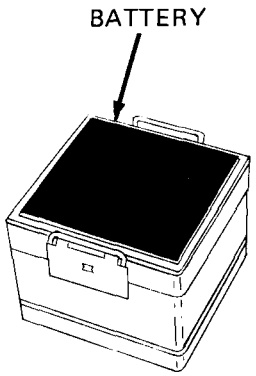
Figure 25-5 (Sheet 2 of 7)

GO

4

- Check battery cases for cracks
  - Remove batteries. Refer to Vol 3, chapter 7, para 7-56
  - Check battery cases for cracks

Are battery cases OK?



YES

NO

5

- Replace cracked or damaged battery/ batteries
  - Put good batteries back in battery compartment. Refer to Vol 3, chapter 7, para 7-56

6

- Check battery cables for cracked insulation that can cause short circuits

Are battery cables OK?

GO

TA 114269

Figure 25-5 (Sheet 3 of 7)

GO

YES

NO

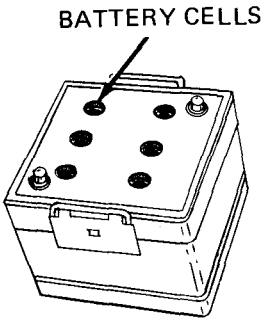
7

- Replace cracked or damaged battery cables
  - Refer to Vol 3, chapter 7, para 7-56

8

- Check electrolite level in each battery cell
  - Electrolite level should be at least 5/8-inch over plates

Is electrolite level OK?



YES

NO

9

- If plate in any cell is not covered with electrolite fill to proper level, charge battery and test.
  - Fill all cells with distilled or clean water until 5/8-inch over plates
  - Charge battery. Refer to Vol 3, chapter 7, para 7-55
  - Check specific gravity. Refer to Vol 3, chapter 7, para 7-55

Specific gravity test results wrong?

NO GO

10

- Go to step 13

TA 114270

Figure 25-5 (Sheet 4 of 7)

NO GO

11

NO

- Troubleshooting completed
  - Put caps back on batteries
  - Put batteries back in truck. Refer to Vol 3, chapter 7, para 7-56
  - Troubleshooting completed

12

YES

- Replace bad battery
  - Put good batteries back in truck. Refer to Vol 3, chapter 7, para 7-56

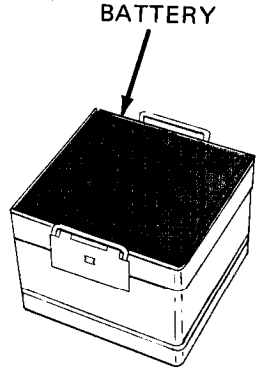
From step 10

13

- Check specific gravity of each battery cell
  - Refer to Vol 3, chapter 7, para 7-55

Is battery specific gravity OK?

GO



TA 114271

Figure 25-5 (Sheet 5 of 7)

GO

YES

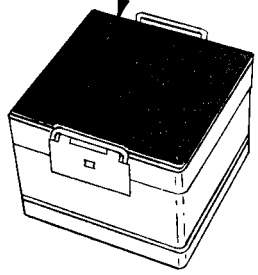
NO

14

- Fully charge and retest battery specific gravity
  - Fully charge battery. Refer to TM 9-6140-200-14
  - Test battery specific gravity. Refer to Vol 3, chapter 5, para 7-55

Is battery specific gravity OK?

BATTERY



15

- Go to step 18

NO

16

- Replace battery
  - Put good batteries back in truck. Refer to Vol 3, chapter 7, para 7-56

YES

17

- Troubleshooting completed
  - Put caps back on battery cells
  - Put batteries back in truck. Refer to Vol 3, chapter 7, para 7-56

TA 114272

Figure 25-5 (Sheet 6 of 7)

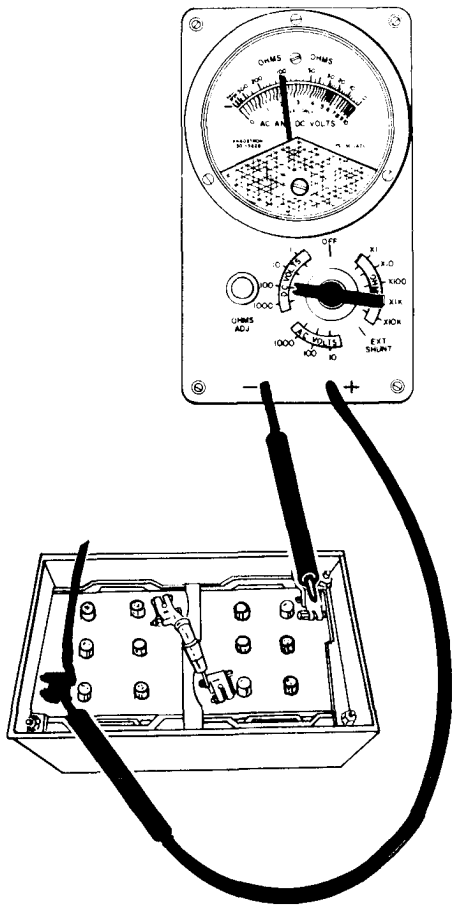
From step 15

18

- Test voltage rise at batteries
  - Put batteries back in truck. Refer to Vol 3, chapter 7, para 7-56
  - Set ACCESSORY switch to ON
  - Start engine and run at 1000 to 1200 RPM. Refer to TM 9-2320-209-10

- Set multimeter to measure +28 volts DC. Refer to test equipment procedures index
- Put multimeter - lead to battery ground terminal
- Put multimeter + lead to battery + terminal
- Read multimeter. Multimeter should measure 28.5 volts DC

Does multimeter measure +28.5 volts DC?



YES

NO

19

- Check charging systems
  - Stop engine. Refer to TM 9-2320-209-10
  - If truck has generator refer to table 6-6 for generator troubleshooting symptoms
  - If truck has alternator refer to table 6-6 for alternator troubleshooting symptoms

20

- Check battery - generator indicator
  - Stop engine. Refer to TM 9-2320-209-10
  - Check battery - generator indicator. Refer to table 6-6 for instruments and gages troubleshooting symptoms

TA 114273

Figure 25-5 (Sheet 7 of 7)

Symptom

6 ONE HEADLIGHT DOES NOT LIGHT, OTHER HEADLIGHT LIGHTS

NOTE

When checking voltage +24 volts DC means a range of +23 volts DC to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts DC at low beam input of bad headlight
  - Take off leads 17 (high beam), 18 (low beam), and 91 (ground) from headlight housing
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Set light switch main lever to SERVICE DRIVE
  - Put multimeter - lead on lead 91 contact and multimeter + lead on lead 18 contact. Read multimeter. Multimeter should read +24 volts DC. If not, push dimmer switch and read meter again

Did multimeter measure +24 volts DC?

GO

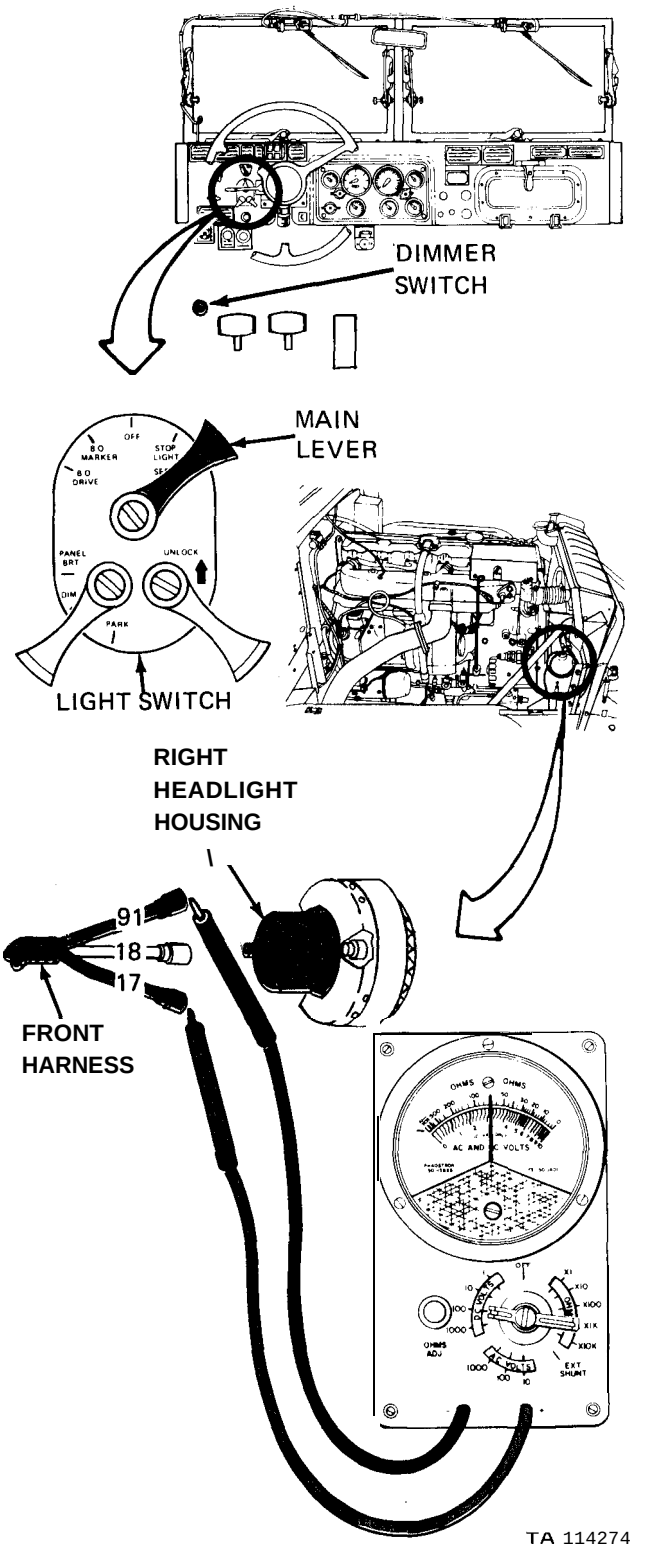


Figure 25-6 (Sheet 1 of 4)

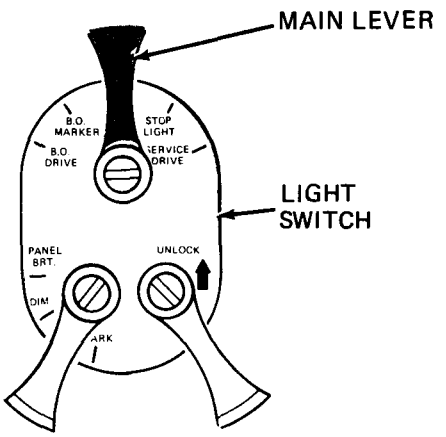
GO

YES

NO

3

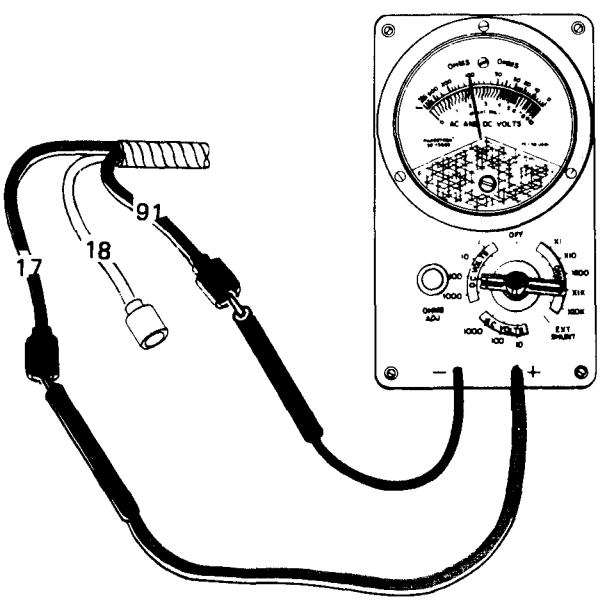
- Repair or replace front harness
  - Set light switch main lever to OFF
  - Repair or replace front harness. Tell direct support maintenance



4

- Check for +24 volts DC at high beam input of bad headlight
  - Put multimeter + lead on lead 17 contact
  - Put multimeter - lead on lead 91 contact
  - Push dimmer switch
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



GO

TA 114275

Figure 25-6 (Sheet 2 of 4)

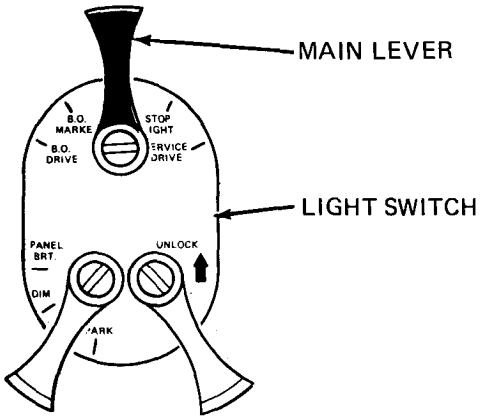
GO

YES

NO

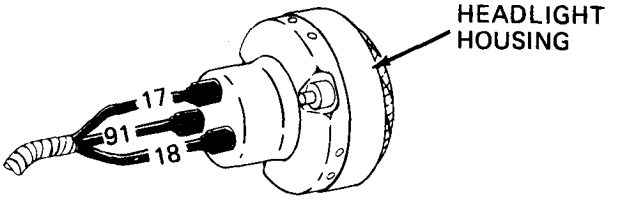
5

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Repair or replace front harness. Tell direct support maintenance

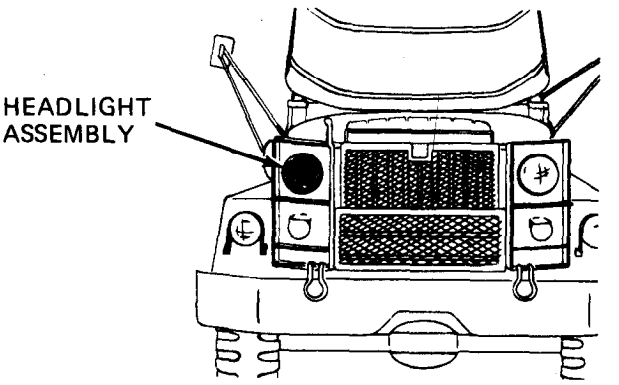


6

- Replace and test headlight lamp
  - Set light switch main lever to OFF
  - Take multimeter leads and multimeter off truck
  - Replace headlight lamp. Refer to Vol 3, chapter 7, para 7-20
  - Put leads 17, 18, and 91 back on head headlight housing

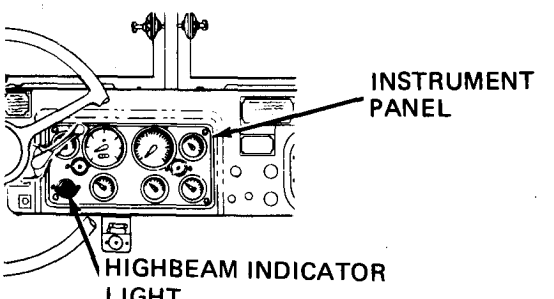


- Set light switch main lever to SERVICE DRIVE. If high beam indicator light on instrument panel is lit, press down on dimmer switch
- Look at headlight assembly with new lamp installed. Lamp should be lit
- Press down on dimmer switch. Look at new lamp again. Lamp should be lit



Did lamp stay off either time?

GO



TA 114276

Figure 25-6 (Sheet 3 of 4)

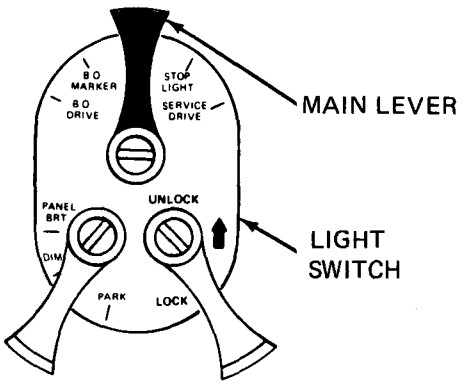
GO

YES

NO

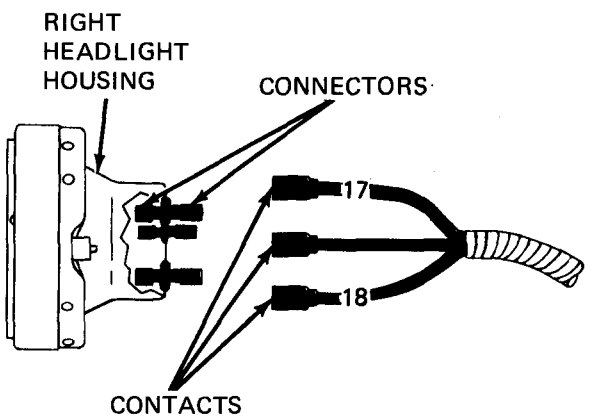
7

- Troubleshooting completed. Turn electrical system off
  - Set light switch main lever to OFF



8

- Clean headlight connectors and leads 17, 18, and 91 contacts
  - Set light switch main lever to OFF
  - Remove headlight lamp. Refer to Vol 3, chapter 7, para 7-20
  - Take leads 17, 18, and 91 contacts off headlight housing connectors



- Clean three headlight housing connectors on both sides of housing. Clean leads 17, 18, and 91 contacts on harness.
- Put leads 17, 18, and 91 contacts back on headlight housing connectors
- Put back headlight lamp in housing. Refer to Vol 3, chapter 7, para 7-20

TA 114277

Figure 25-6 (Sheet 4 of 4)

Symptom

7 BOTH HEADLIGHTS DO NOT LIGHT, OTHER TRUCK RUNNING LIGHTS LIGHT

NOTE

When checking voltage, +24 volts DC means a range of +23 volts DC to +26 volts DC

1

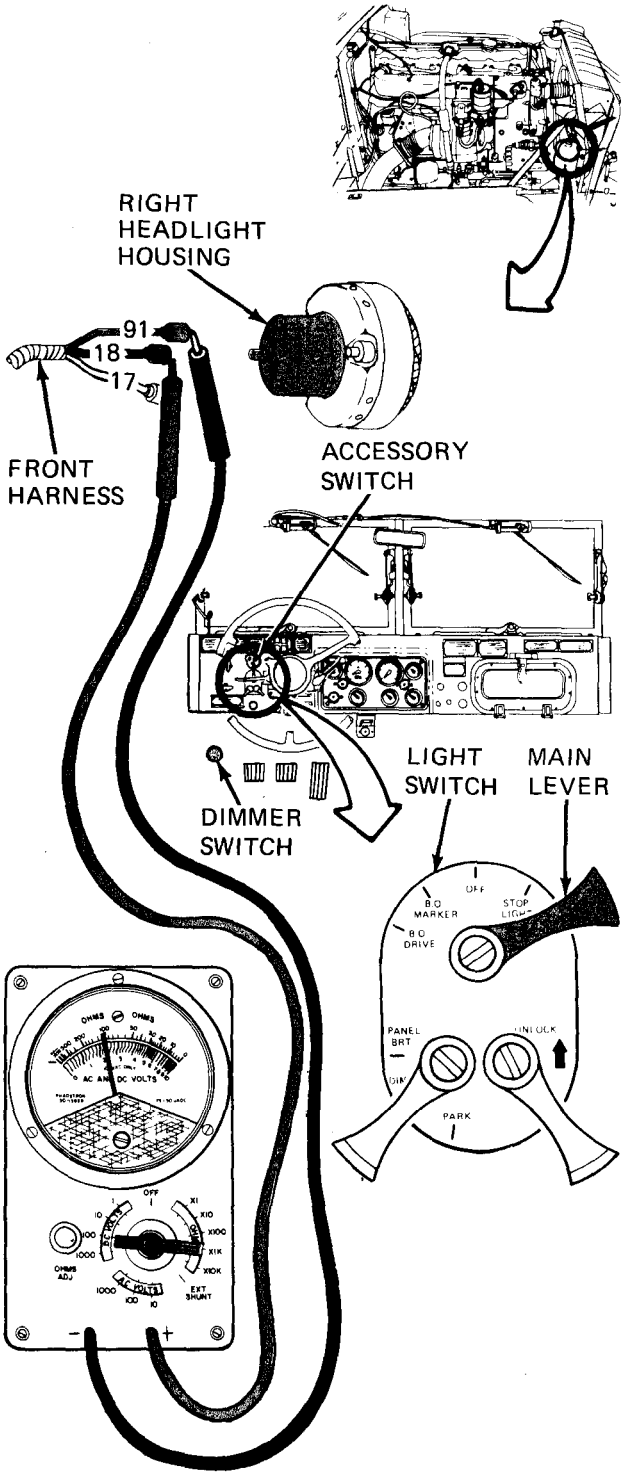
- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts DC at right headlight low beam input
  - Take off leads 17 (high beam), 18 (low beam) and 91 (ground) from right headlight housing
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Set light switch main lever to SERVICE DRIVE
  - Put multimeter - lead on lead 91 contact and multimeter + lead on lead 18 contact
  - Read multimeter. Multimeter should read +24 volts DC. If not, push dimmer switch and read multimeter again

Does multimeter measure +24 volts DC?

GO



TA 114278

Figure 25-7 (Sheet 1 of 11)

GO

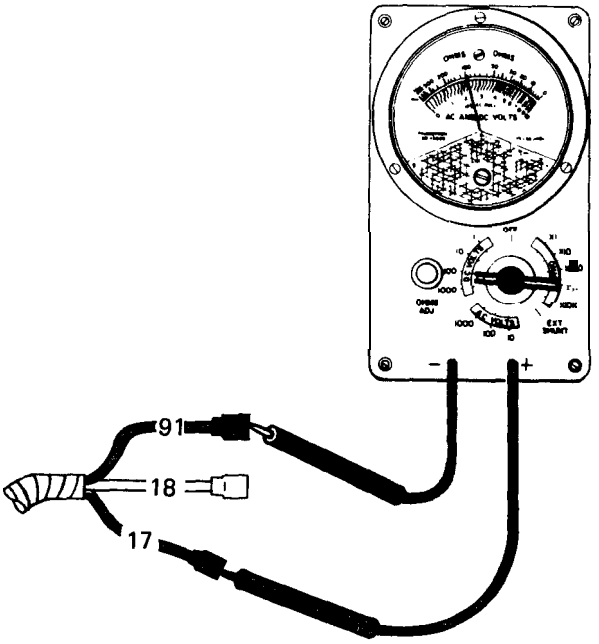
3

YES NO . Go to step 10 1

4

- Check for +24 volts DC at right headlight high beam input
  - Push dimmer switch to set in high beam position
  - Take multimeter + lead off lead 18 contact
  - Put multimeter + lead on lead 17 contact
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



5

YES NO ● Go to step 10 1

GO

TA 114279

Figure 25-7 (Sheet 2 of 11)

GO

6

- Check for +24 volts DC at left head light low beam input
  - Take off leads 17 (high beam), 18 (low beam), and 91 (ground) from left headlight housing
  - Put **multimeter** - lead on lead 91 contact and **multimeter** + lead on lead 18 contact
  - Read **multimeter. Multimeter** should read +24 **volts** DC. If **not,** push dimmer switch and read **multimeter** again

Does mu **ltimeter** read +24 **volts** DC?

YES

NO

7

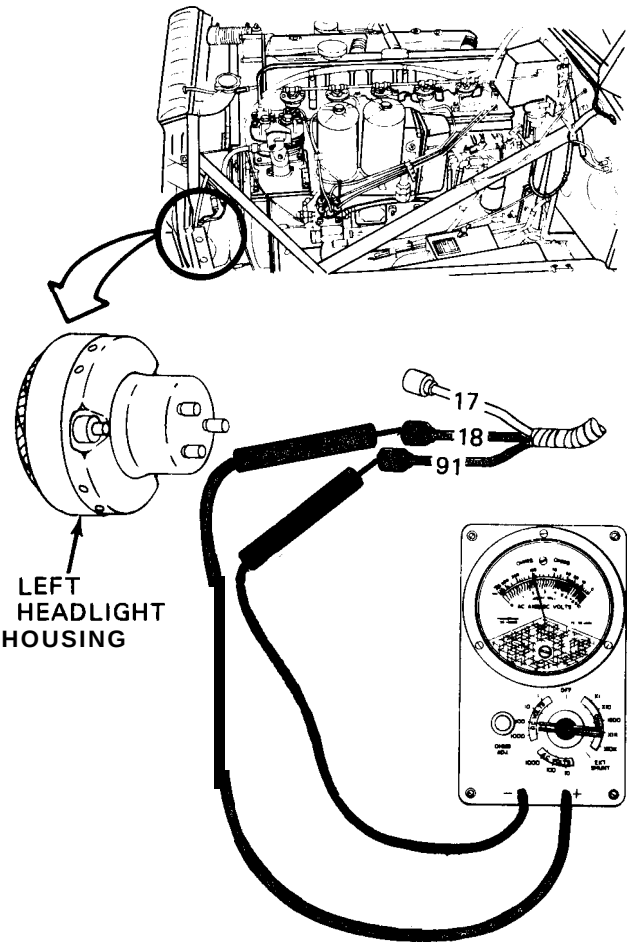
- Go to step 10

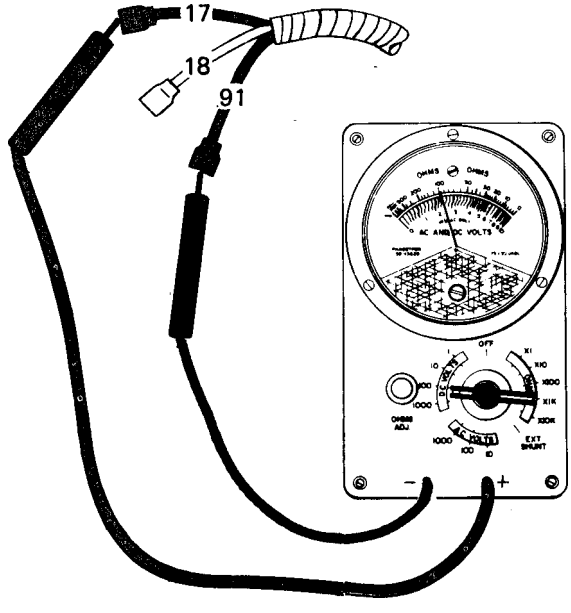
8

- Check for +24 volts DC at left headlight high beam input
  - Push dimmer switch to set in high beam position
  - Take **multimeter** + lead off lead 18 contact
  - Put **multimeter** + lead on lead 17 contact
  - Read **multimeter. Multimeter show** ld measure +24 **volts** DC.

Does **multimeter** measure less than +24 volts DC?

GO





TA 114280

Figure 25-7 (Sheet 3 of 11)

GO

YES

NO

NOTE

You now know that high beam and low beam voltage is reaching both lead lamp assemblies. This means the trouble is in both head lamp assemblies

n

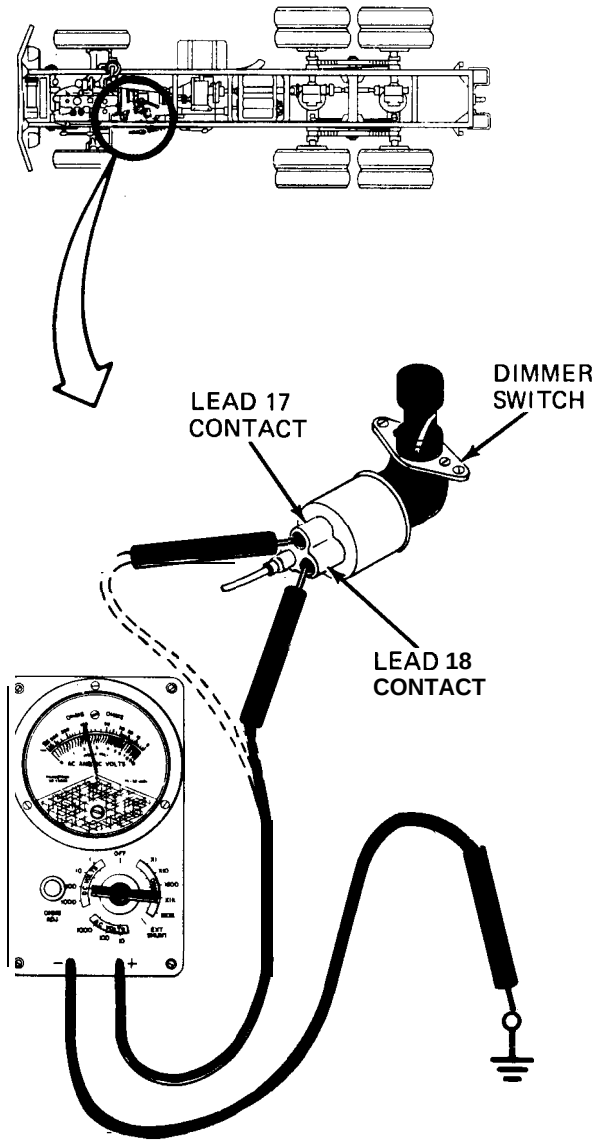
- Go to step 17

10

- Check wiring harness between dimmer switch and headlights
  - Take off leads 17 and 18 contacts from dimmer switch. Refer to Vol 3, chapter 7, para 7-65
  - Put multimeter + lead on lead 18 contact of dimmer switch. Put multimeter - lead on a good ground
  - Read multimeter. Multimeter should read +24 volts DC. If not, press down on dimmer switch and read multimeter again
  - Put multimeter + lead on lead 17 contact
  - Press down on dimmer switch and read multimeter again

Does mu l timeter measure less than +24 volts DC at either or both leads 17 and 18 contacts?

GO



TA 114281

Figure 25-7 (Sheet 4 of 11)

GO

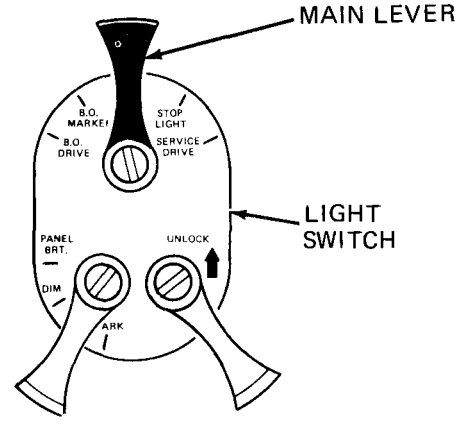
YES

NO

11

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Repair or replace front harness.

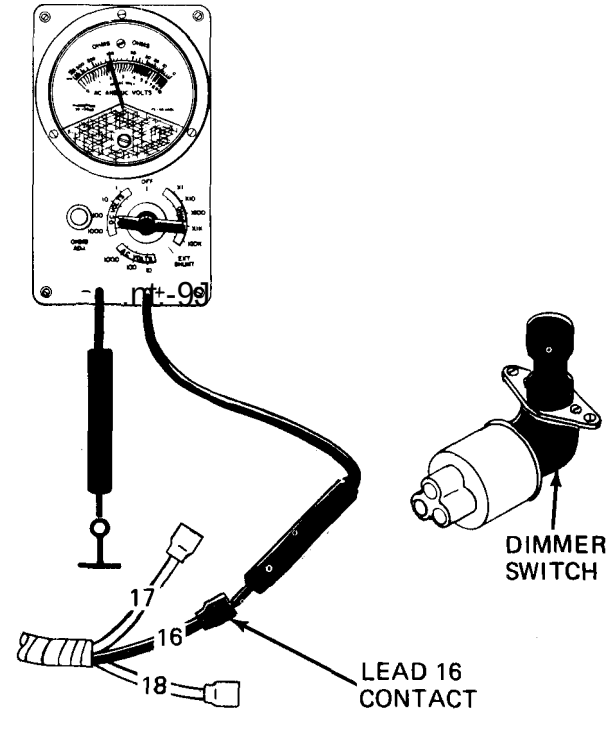
Tel l direct support maintenance



12

- Check dimmer switch
  - Take off lead 16 from dimmer switch
  - Put **multimeter** - lead on a good ground
  - Put **multimeter** + lead on lead 16 contact (Do not put it on dimmer switch contact)
  - Put **multimeter** - lead on a good ground
  - Read **multimeter. Multimeter** should measure +24 **volts** DC

Does multimeter measure less than +24 **volts** DC?



GO

TA 114282

Figure 25-7 (Sheet 5 of 11)

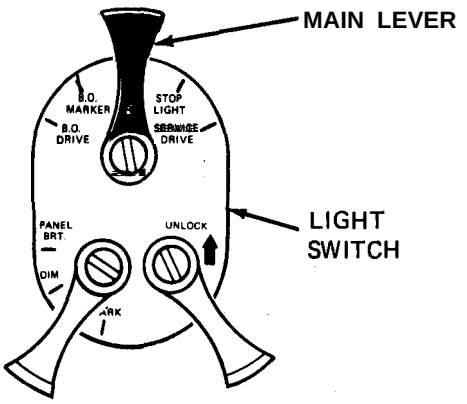
GO

YES

NO

13

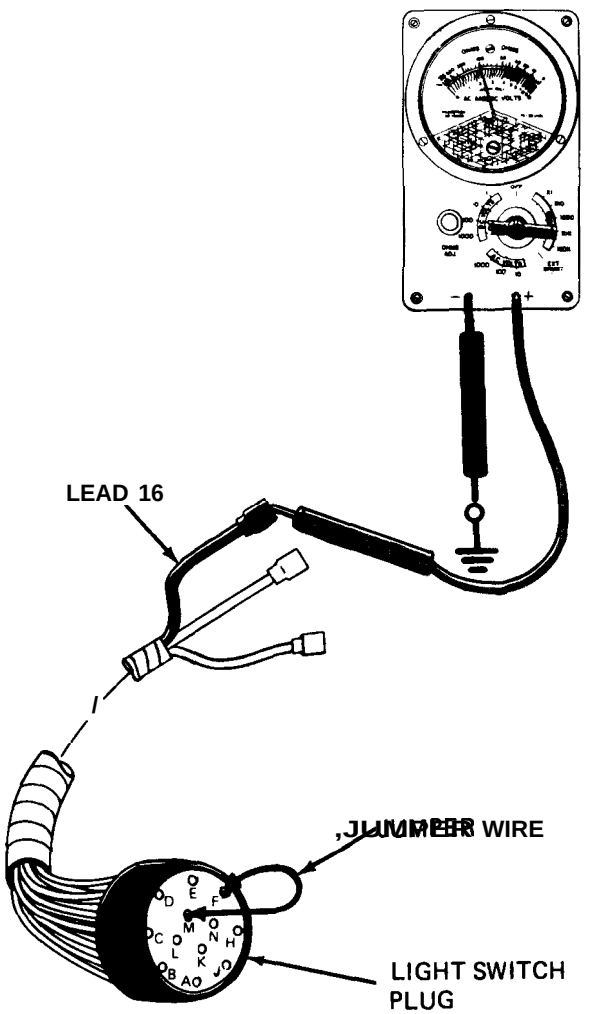
- Replace dimmer switch
  - Set light switch main lever to OFF
  - At right and left headlight housing put back leads 17, 18, and 91
  - Replace dimmer switch. Refer to Vol 3, chapter 7, para 7-65



14

- Check front harness between headlamp dimmer switch and light switch
  - Set light switch main lever to OFF
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between terminals F and M of light switch plug on front harness
  - Put multimeter - lead on good ground and + lead on front harness lead 16 contact. Read multimeter. Multimeter should measure +24 volts DC

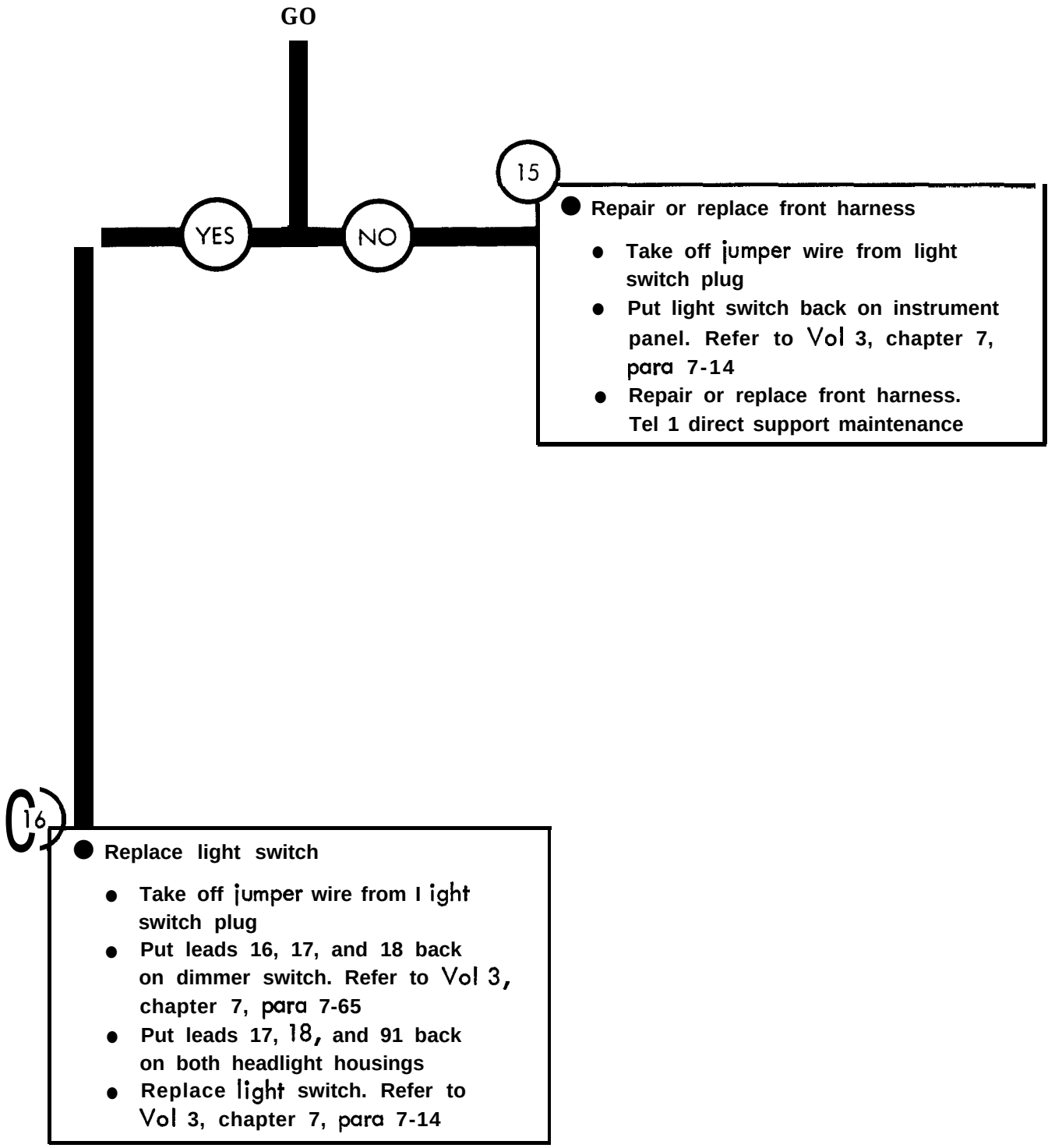
Does multimeter measure +24 volts DC?



GO

TA 114283

Figure 25-7 (Sheet 6 of 11)



TA 114284

Figure 25-7 (Sheet 7 of 11)

From step 9

17

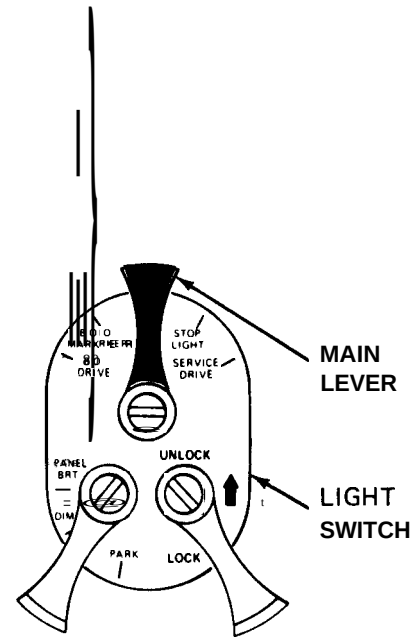
. Replace and test right headlight assembly lamp

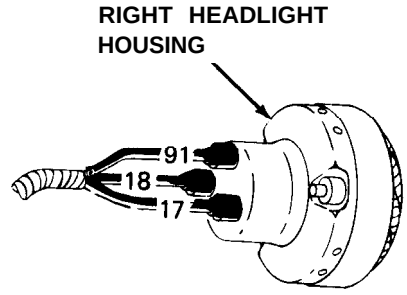
- Set light switch main lever to OFF
- Replace right headlight assembly lamp. Refer to Vol 3, chapter 7, para 7-17
- Put leads 17, 18, and 91 back on right headlight housing

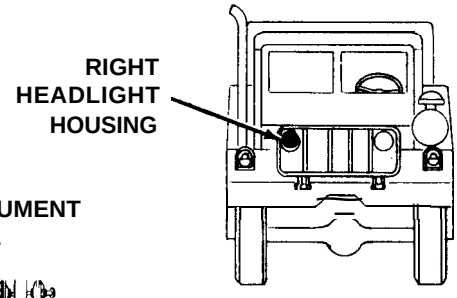
- Set light switch main lever to SERVICE DRIVE. [f high beam indicator light on instrument panel is lit, press down on dimmer switch
- Look at right headlight lamp. Lamp should be lit
- Press down on dimmer switch
- **Look at right headlight lamp. Lamp** should be lit

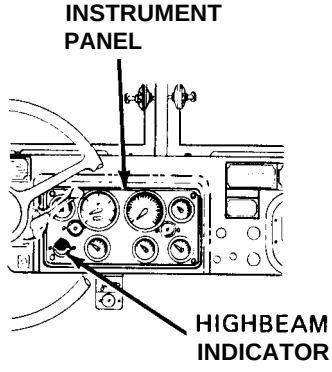
Was lamp lit both times?

GO









TA 114285

Figure 25-7 (Sheet 8 of 11)

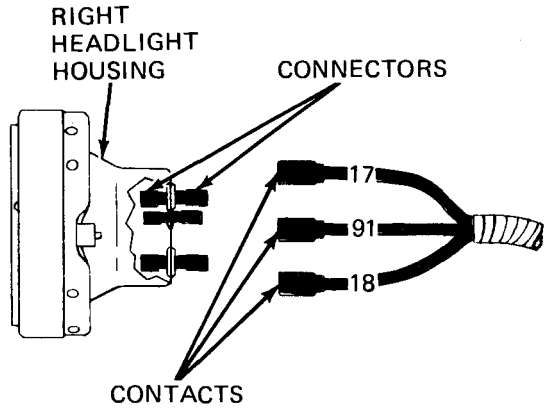
GO

YES

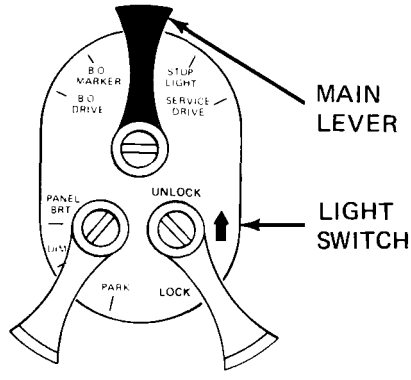
NO

18

- Clean right headlight connectors, and leads 17, 18, and 91 contact
  - Set light switch main lever to OFF
  - Remove right headlight lamp. Refer to Vol 3, chapter 7, para 7-20
  - Take leads 17, 18, and 91 off headlight housing connectors
  - Clean three headlight housing connectors, on both sides of housing. Clean 17, 18, and 91 lead contacts on harness. Refer to Vol 3, chapter 7, para 7-18
  - Put leads 17, 18, and 91 back on headlight housing connectors



- Replace right headlight lamp. Refer to Vol 3, chapter 7, para 7-20
- Set light switch main lever to SERVICE DRIVE. If high beam indicator light on instrument panel is lit, press down on dimmer switch
- Look at right headlight lamp. Lamp should be lit
- Press down on dimmer switch
- Look at right headlight lamp. Lamp should be lit



Was lamp lit both times?

19

- Go to step 20

GO

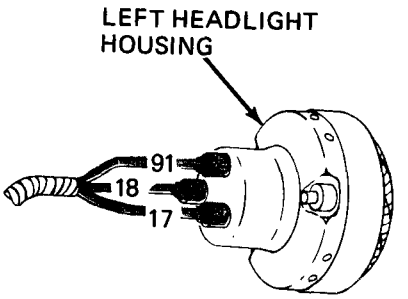
TA 114286

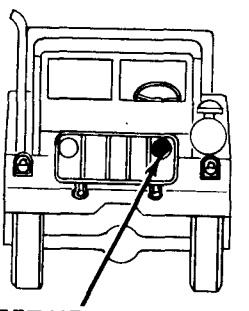
Figure 25-7 (Sheet 9 of 11)

GO

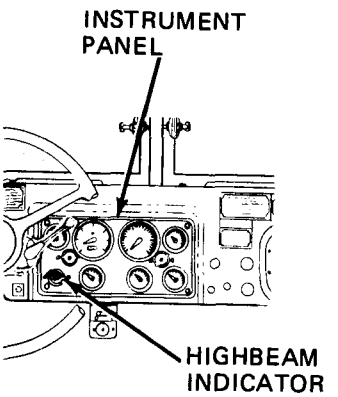
20

- Replace and test left headlight lamp
  - Set light switch main lever to OFF
  - Replace left head light lamp. Refer to Vol 3, chapter 7, para 7-20
  - Put leads 17, 18, and 91 contacts back on left headlight housing
  - Set light switch main lever to service drive. If high beam indicator light on instrument panel is lit, press down on dimmer switch





- Look at left headlight housing. Lamp should be lit
- Press down on dimmer switch
- Look at left headlamp housing. Lamp should be lit



Did lamp stay off either time?

GO

TA 114287

Figure 25-7 (Sheet 10 of 11)

GO

YES

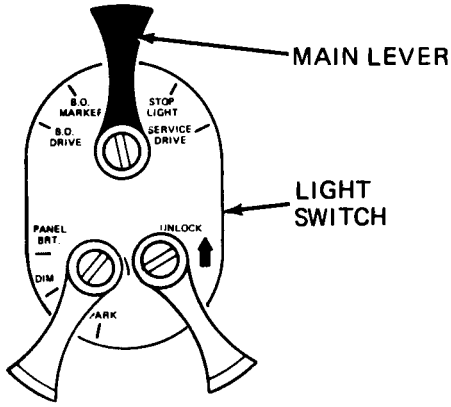
NO

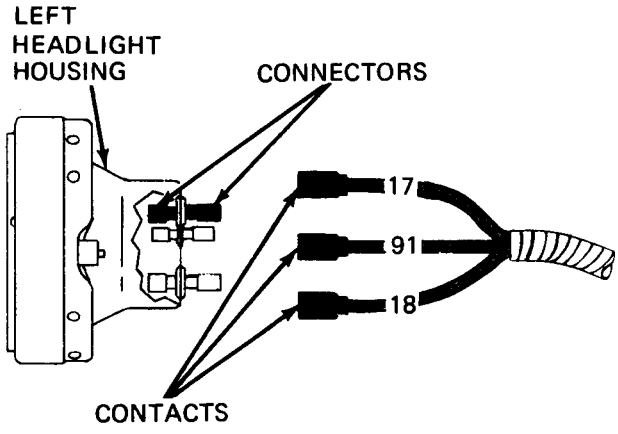
21

- Troubleshooting completed. Turn electrical system off
  - Set light switch main lever to OFF

22

- Clean left headlight housing connectors, and leads 17, 18, and 91 contacts
  - Set light switch main switch lever to OFF
  - Remove left headlight lamp. Refer to Vol 3, chapter 7, para 7-20
  - Take lead 17, 18, and 91 off headlight housing connectors
  - Clean three headlight housing connectors, on both sides of housing. Clean leads 17, 18, and 91 contacts on harness. Refer to Vol 3, chapter 7, para 7-18
  - Put leads 17, 18, and 91 back on headlight housing connectors





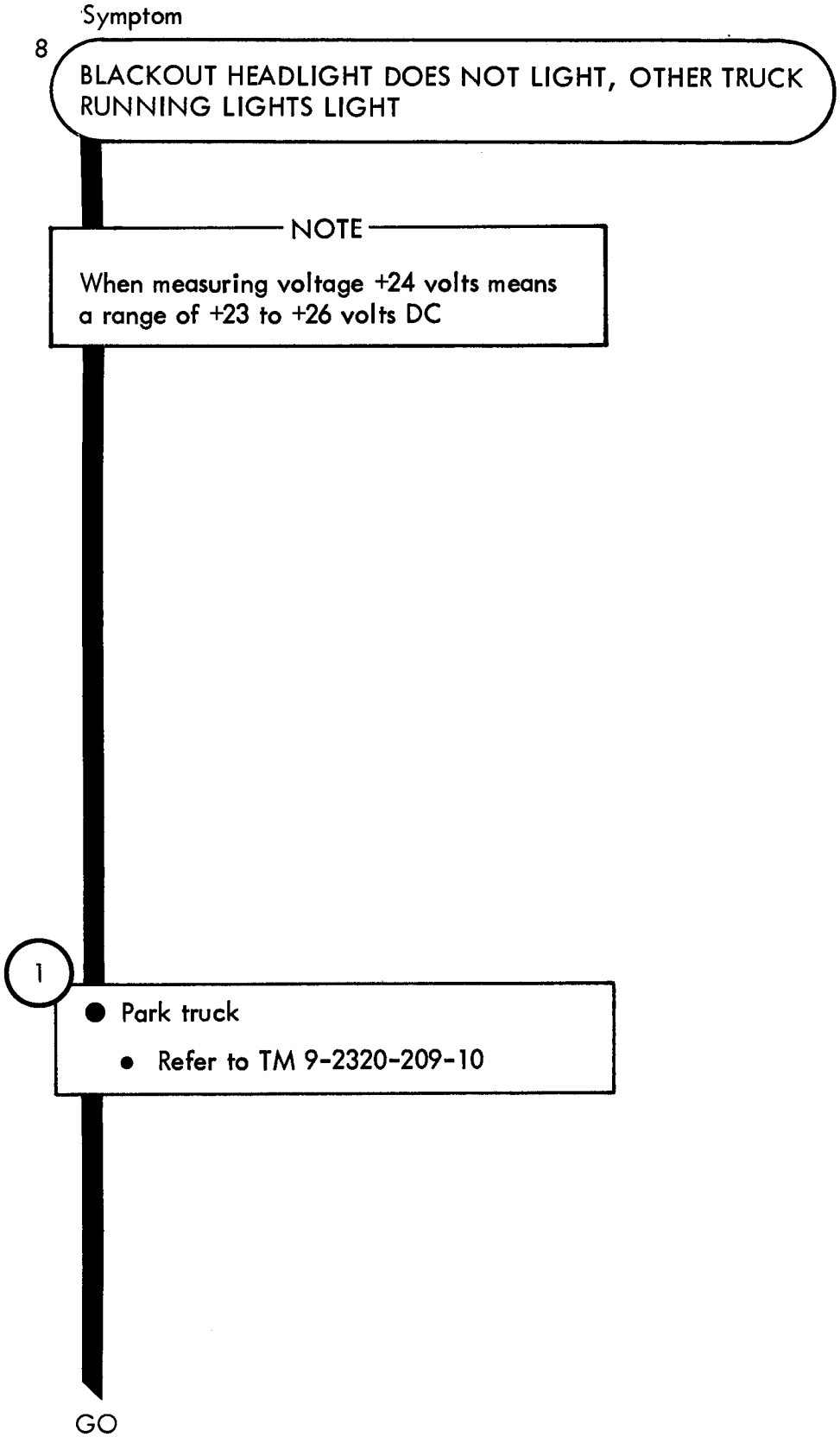
- Replace left headlight lamp. Refer to Vol 3, chapter 7, para 7-20
- Set light switch main lever to service drive. If high beam indicator light in instrument panel is lit, press down on dimmer switch
- Look at left headlight housing. Lamp should be lit
- Press down on dimmer switch
- Look at left headlamp housing. Lamp should be lit

23

- Troubleshooting completed. Turn electrical system off
  - Set light switch main lever to OFF

TA 114288

Figure 25-7 (Sheet 11 of 11)



TA 114289

Figure 25-8 (Sheet 1 of 6)

GO

2

- Check for +24 volts DC at blackout headlight assembly
  - Take off lead 19 at rear of blackout headlight housing
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Set light switch main lever to B. O. DRIVE
  - Put multimeter + lead on lead 19 contact and multimeter - lead on a good ground
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

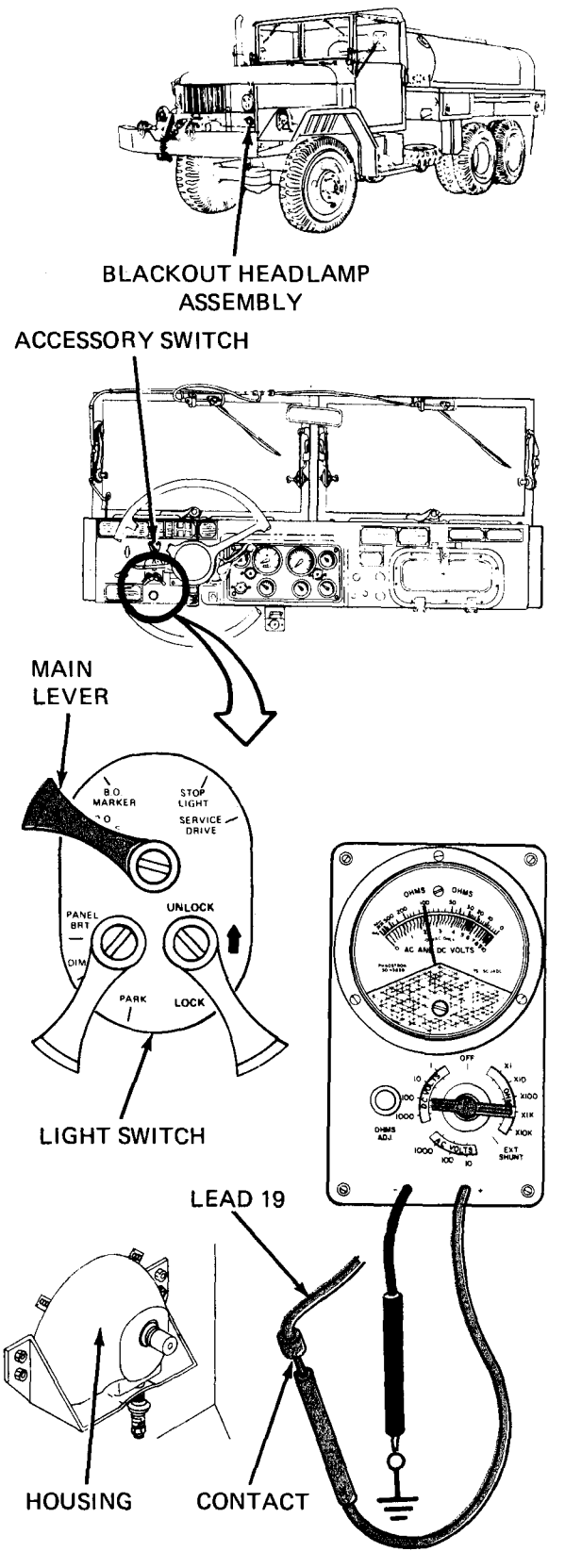


Figure 25-8 (Sheet 2 of 6)

GO

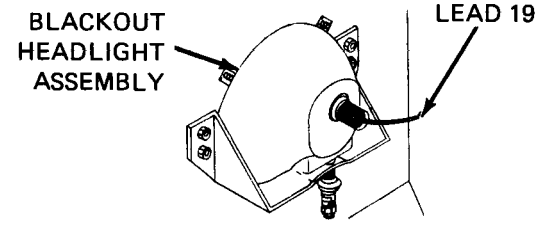
YES

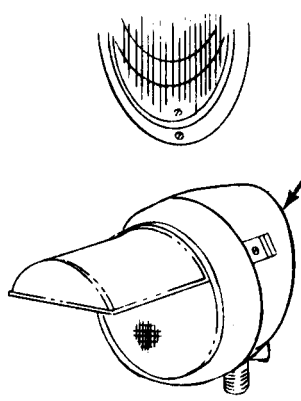
NO

3

- Replace and test blackout headlight lamp
  - Set light switch main lever to OFF
  - Replace blackout headlight lamp. Refer to Vol 3, chapter 7, para 7-23
  - Put lead 19 contact back into rear of blackout headlight assembly
  - Set light switch main lever to B. O. DRIVE
  - Look at blackout headlight assembly. Blackout headlight lamp should be lit

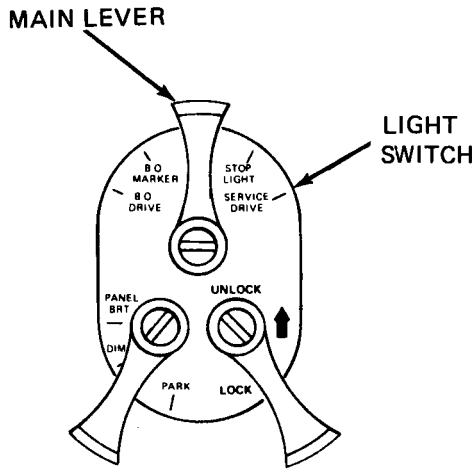
Is blackout headlight lamp off?





4

- Go to step 7



5

NO

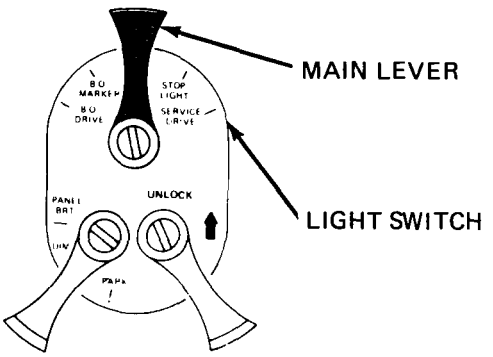
- Troubleshooting completed
  - Set light switch main lever to OFF

NO GO

TA 114291

Figure 25-8 (Sheet 3 of 6)

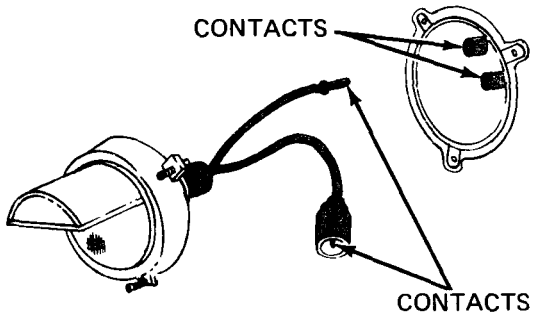
NO GO



YES

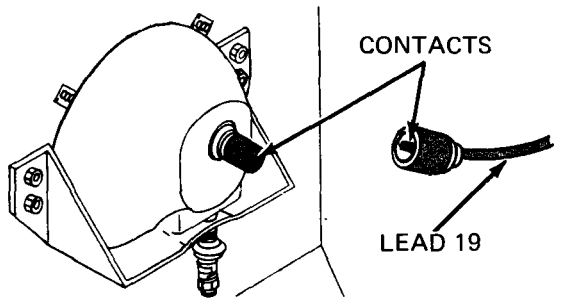
6

- Clean contacts of blackout headlight lamp connectors
  - Set light switch main lever to OFF
  - Remove blackout headlight lamp. Refer to Vol 3, chapter 7, para 7-23
  - Take off lead 19 from rear of blackout headlight housing



- Clean blackout headlight and housing contacts. Clean lead 19 contact. Refer to Vol 3, chapter 7, para 7-24
- Put lead 19 back on blackout headlight housing
- Put back blackout headlight lamp. Refer to Vol 3, chapter 7, para 7-23

chapter 7, para 7-23



TS 209-20-454

TA 114292

Figure 25-8 (Sheet 4 of 6)

From step 4

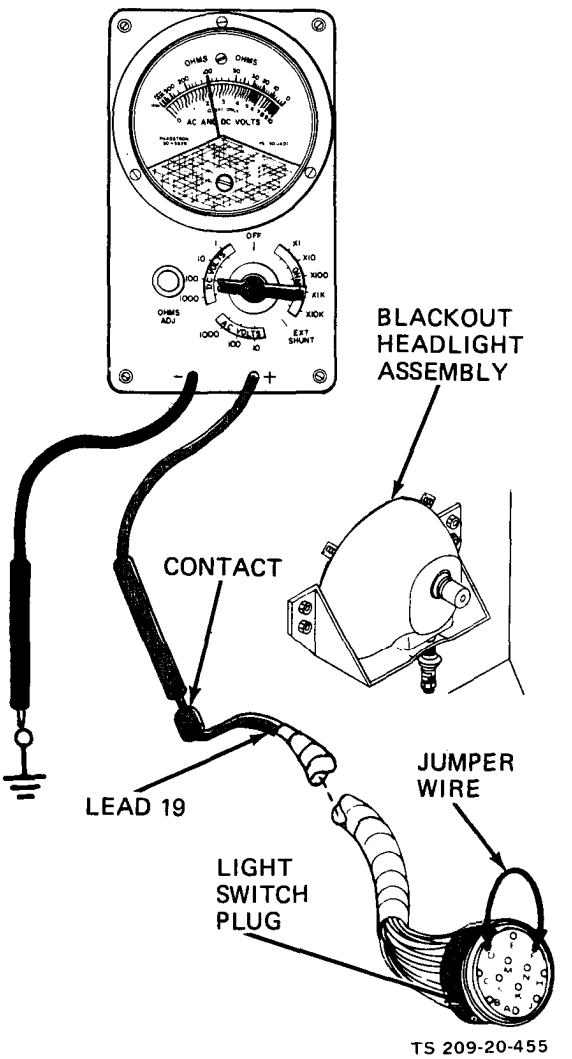
7

- Check front harness between light switch and blackout headlight assembly
  - Set light switch main lever to OFF
  - Take light switch off instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contacts F and D of light switch plug on front harness

- Put multimeter + lead on front harness lead 19 contact and multimeter - lead on good ground
- Read multimeter. Multimeter should measure +24 volts DC

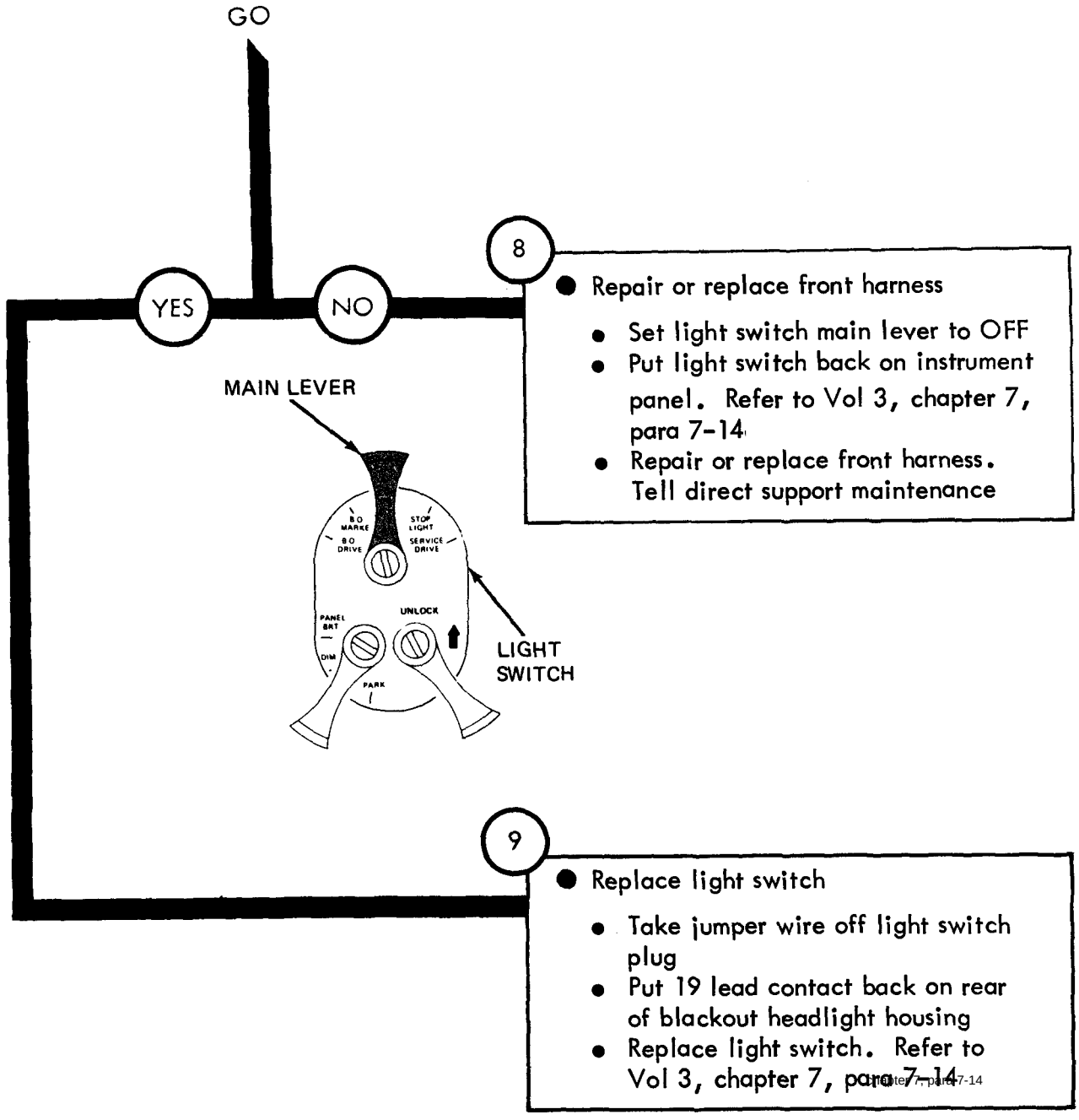
Does multimeter measure +24 volts DC?

GO



TA 114293

Figure 25-8 (Sheet 5 of 6)



TA 114294

Figure 25-8 (Sheet 6 of 6)

Symptom

9 ONE OR BOTH FRONT BLACKOUT MARKER LAMPS DO NOT LIGHT, OTHER TRUCK RUNNING LIGHTS LIGHT

NOTE

Do this procedure for each front blackout marker lamp that does not light

When checking voltage +24 volts DC means a range of +23 volts DC to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts DC at front blackout marker lamp
  - Take off lead 20 at rear of front composite marker light assembly. Refer to Vol 3, chapter 7, para 7-40
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Set light switch main lever to B.O. MARKER
  - Put multimeter + lead on lead 20 contact and - lead on a good ground
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

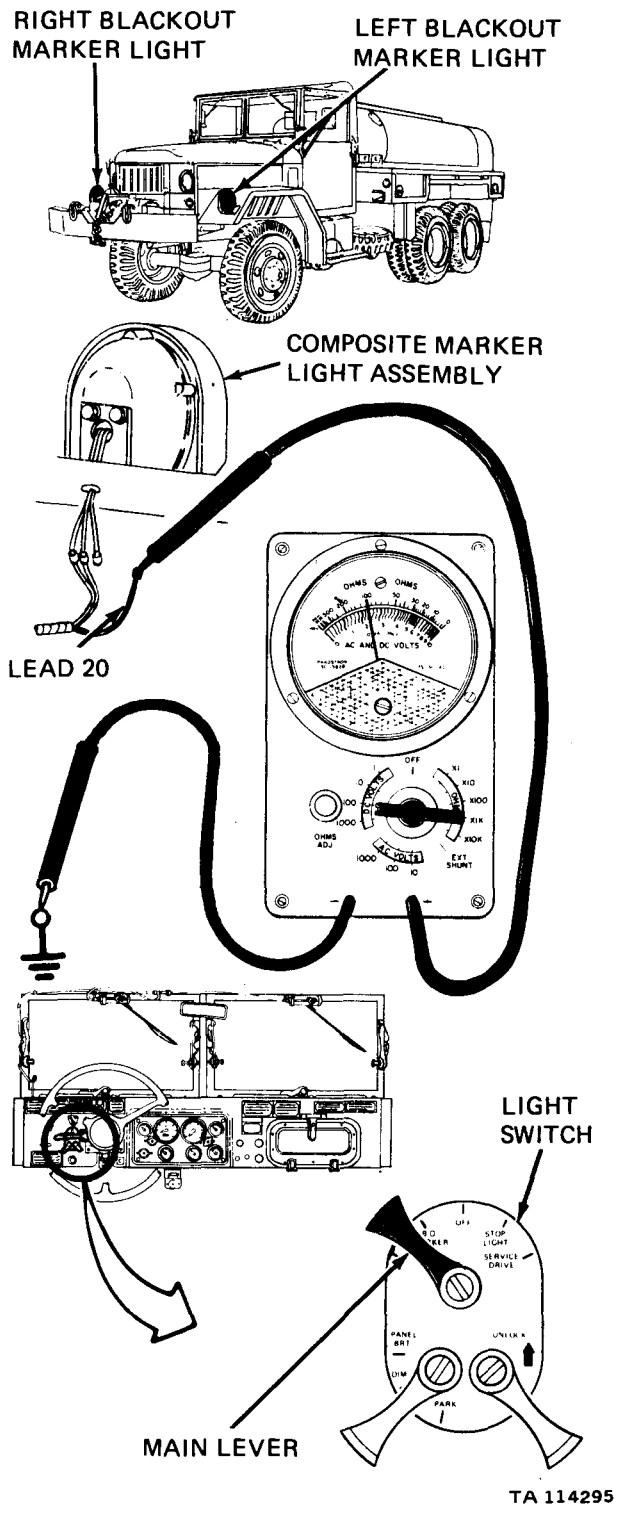


Figure 25-9 (Sheet 1 of 5)

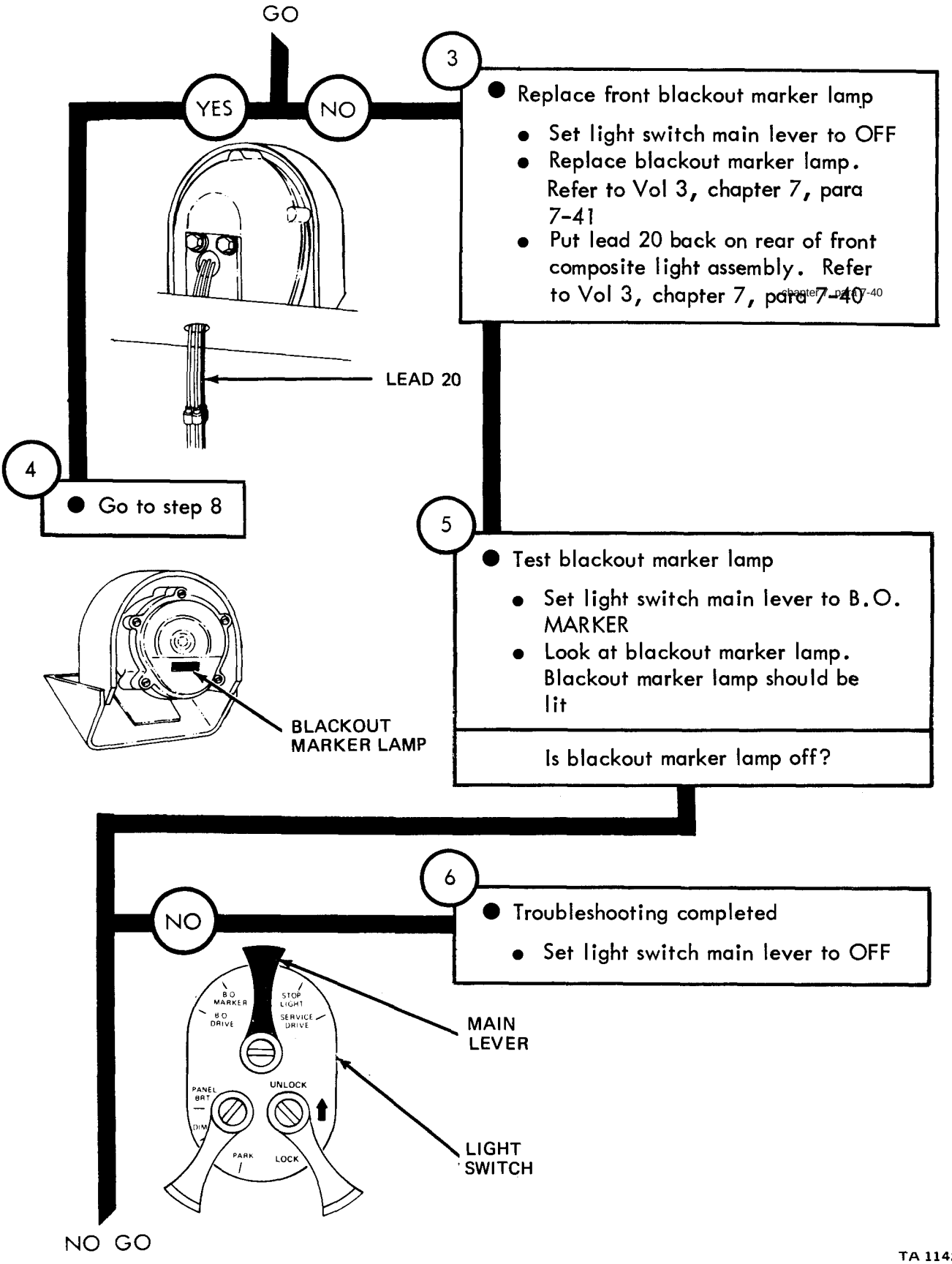


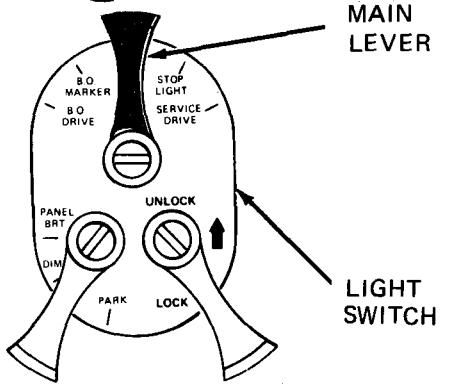
Figure 25-9 (Sheet 2 of 5)

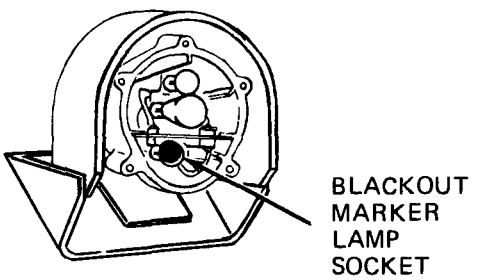
NO GO

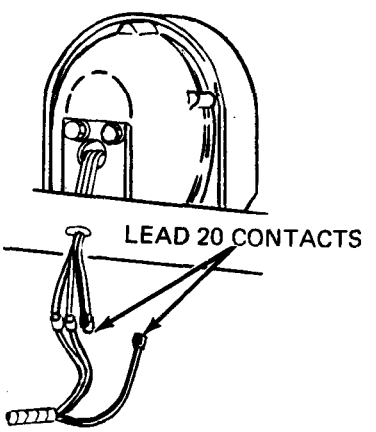
YES

7

- Clean contacts of lead 20 connectors
  - Set light switch main lever to OFF
  - Remove blackout marker lamp. Refer to Vol 3, chapter 7, para 7-41
  - Take off lead 20 at rear of front composite marker light assembly. Refer to Vol 3, chapter 7, para 7-40







TS 209-20-459

- Clean blackout marker lamp socket and clean lead 20 contacts. Refer to Vol 3, chapter 7, para 7-42
- Put lead 20 back on rear of front composite marker light assembly. Refer to Vol 3, chapter 7, para 7-40
- Put back blackout marker lamp. Refer to Vol 3, chapter 7, para 7-41

TA 114:

Figure 25-9 (Sheet 3 of 5)

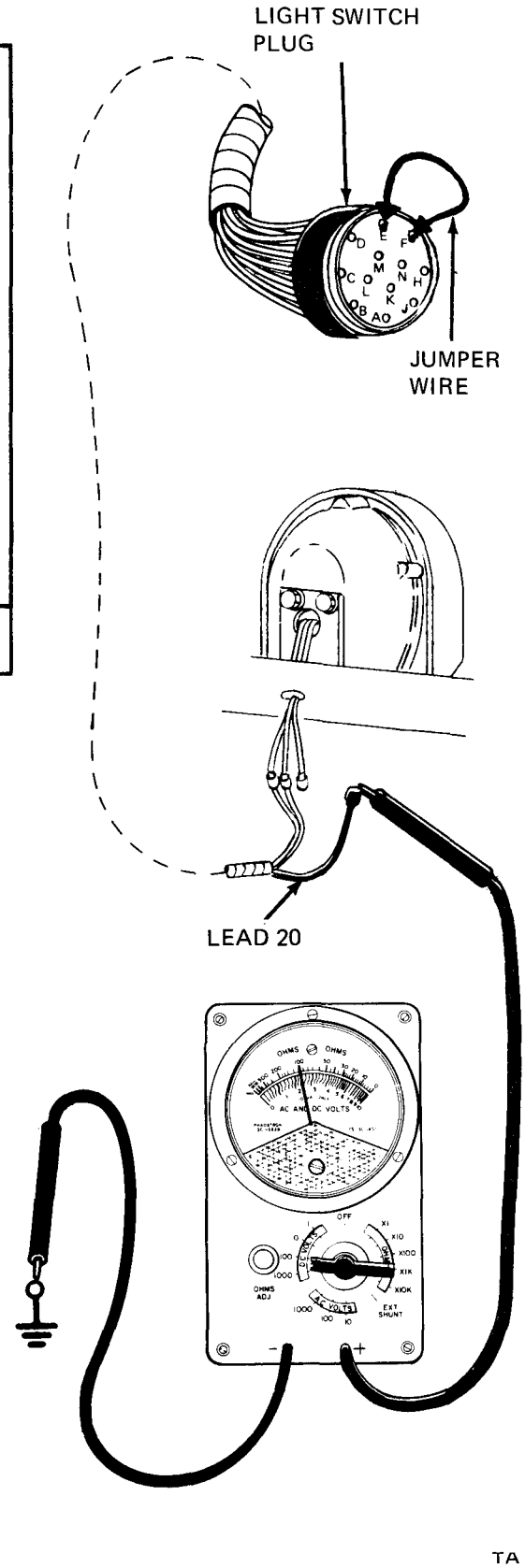
From step 4

8

- Check wiring harness between blackout marker lamp and light switch
  - Set light switch main lever to OFF
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14. Take off light switch plug from light switch
  - Put jumper wire between terminals F and E of light switch plug on front harness
  - Put multimeter + lead on front harness lead 20 contact and - lead on a good ground. Read multimeter Multimeter should measure +24 volts DC

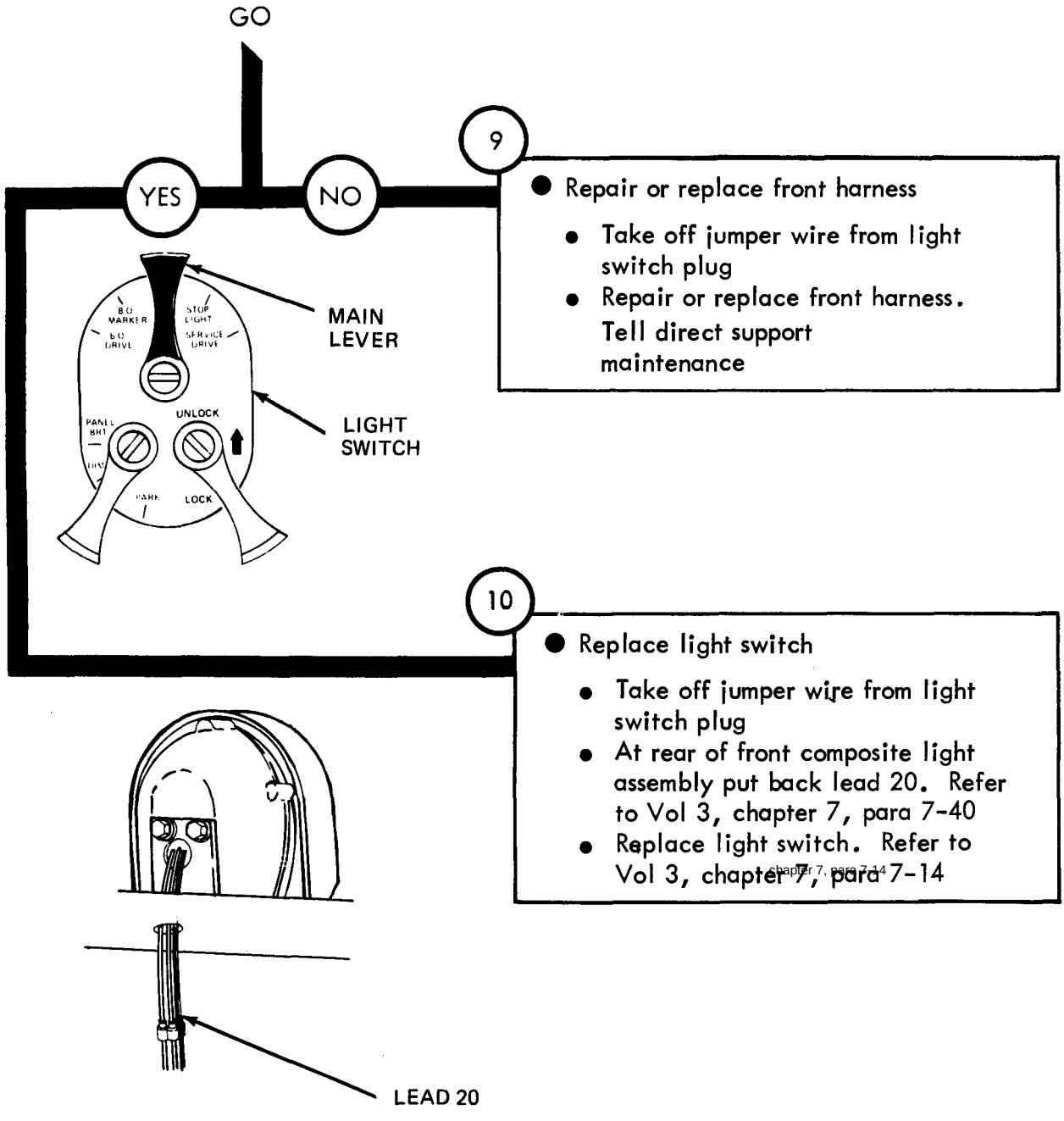
Does multimeter measure +24 volts DC?

GO



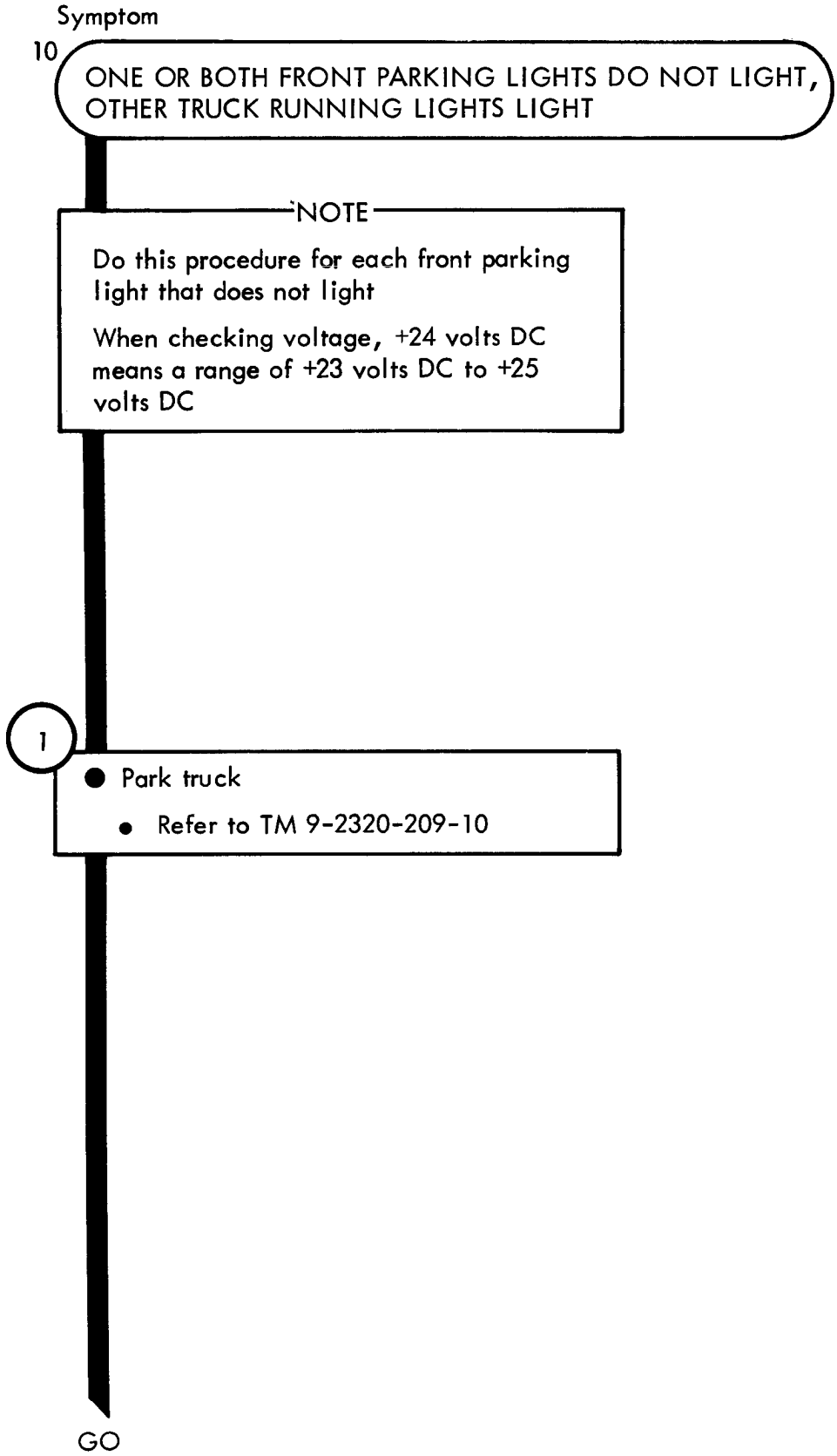
TA 114298

Figure 25-9 (Sheet 4 of 5)



TA 114299

Figure 25-9 (Sheet 5 of 5)



TA 114300

Figure 25-10 (Sheet 1 of 6)

GO

2

- Check for +24 volts DC at front parking light
  - Take off lead 491 at front composite marker light assembly. Refer to Vol 3, chapter 7, para 7-40
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Set light switch main lever to SERVICE DRIVE. Set light switch auxiliary lever to PARK
  - Put multimeter + lead on lead 491 and multimeter - lead on a good ground
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

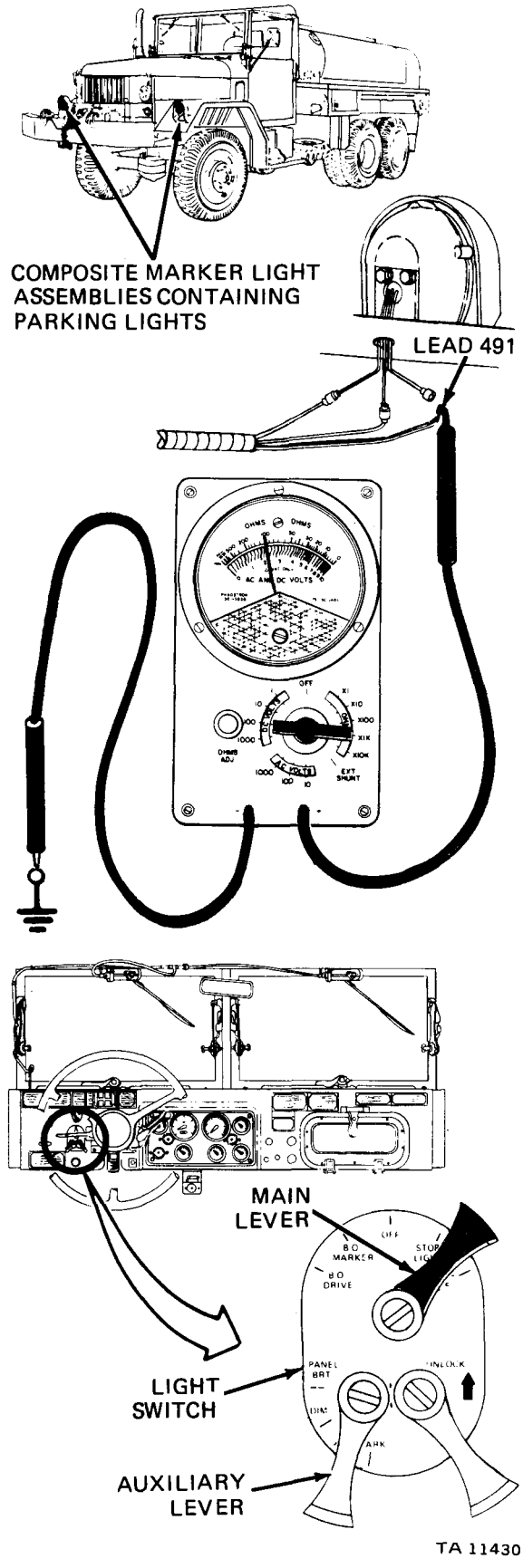


Figure 25-10 (Sheet 2 of 6)

GO

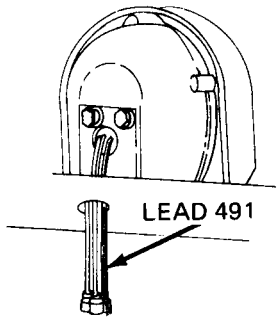
YES

NO

3

● Replace parking light lamp

- Replace parking light lamp. Refer to Vol 3, chapter 7, para 7-41
- Put back lead 491 at front composite marker light assembly. Refer to Vol 3, chapter 7, para 7-40



4

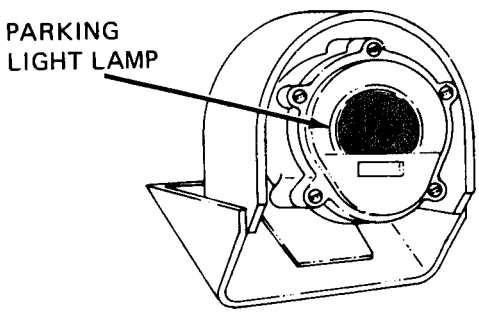
● Go to step 8

5

● Test front parking light

- Set light switch main lever to SERVICE DRIVE
- Look at front composite marker light assembly. Parking light lamp should be lit

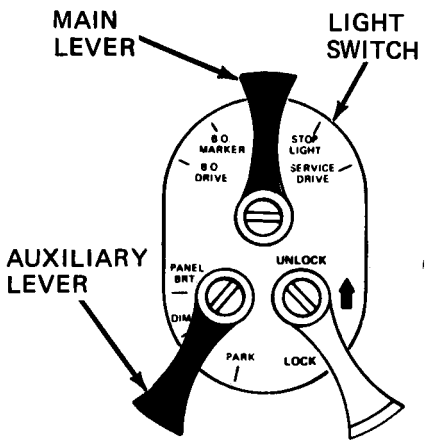
Is parking light lamp off?

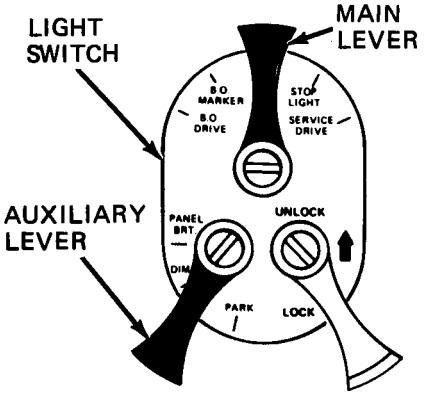


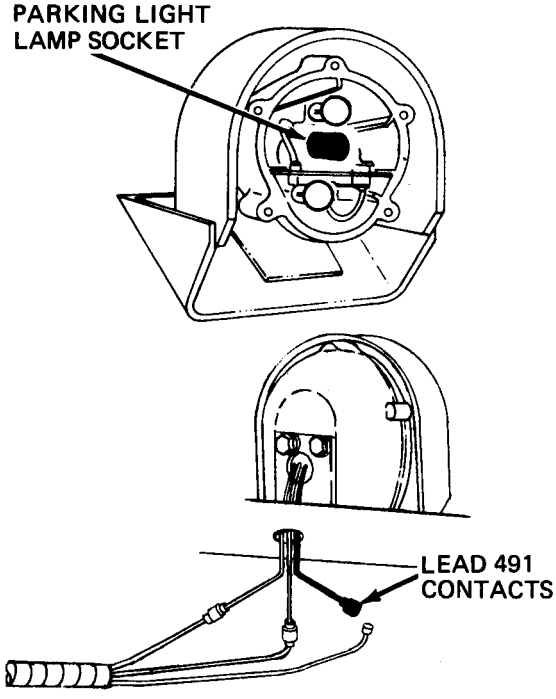
NO GO

TA 114302

Figure 25-10 (Sheet 3 of 6)







NO GO

NO

6

- Troubleshooting completed.
  - Set light switch auxiliary lever to OFF
  - Set light switch main lever to OFF

YES

7

- Clean contacts of lead 491 connectors
  - Set light switch auxiliary lever to OFF
  - Set light switch main lever to OFF
  - Remove parking light lamp. Refer to Vol 3, chapter 7, para 7-41
  - Take off lead 491 at front composite marker light assembly. Refer to Vol 3, chapter 7, para 7-40

- Clean parking light lamp socket and lead 491 contacts
- Put lead 491 back on front composite light assembly. Refer to Vol 3, chapter 7, para 7-40
- Put parking light lamp back in socket. Refer to Vol 3, chapter 7, para 7-41

chapter 7, para 7-41

TA 114303

Figure 25-10 (Sheet 4 of 6)

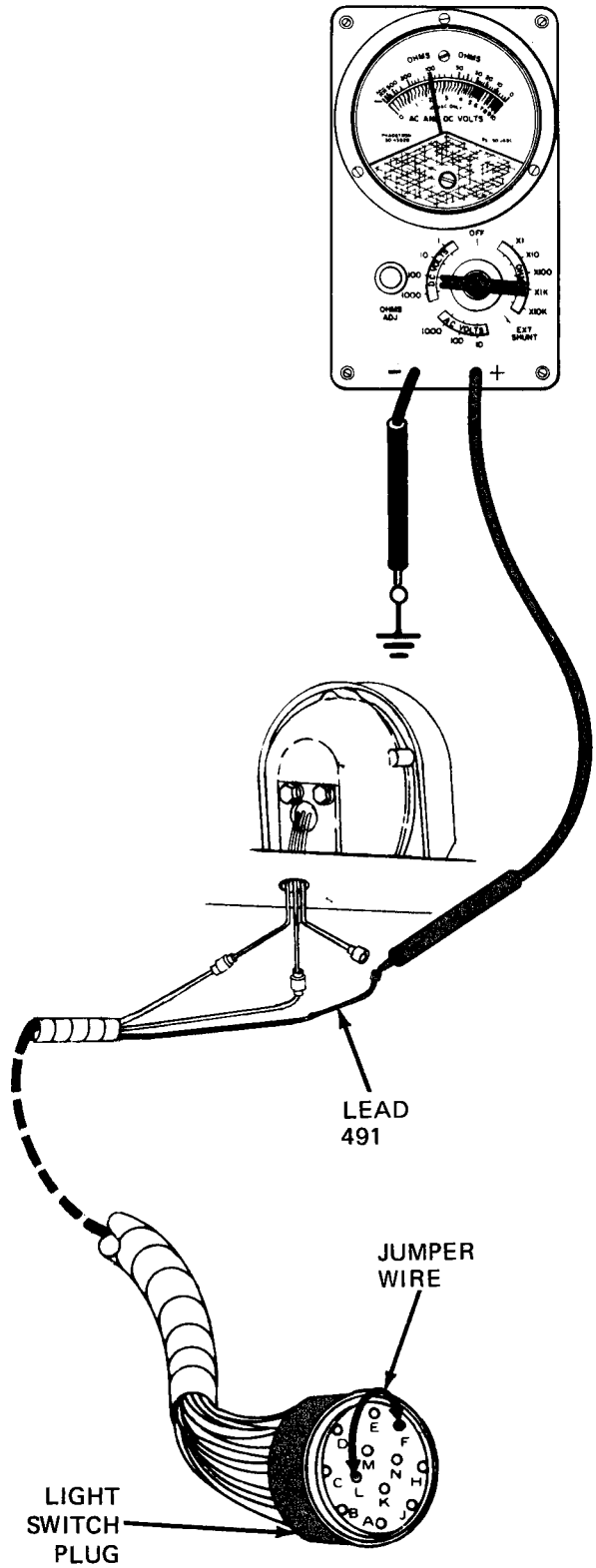
From step 4

8

- Check wiring harness between parking light lamp and light switch
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14. Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contacts F and L of light switch plug
  - Put multimeter - lead on a good ground and + lead on lead 491 contact.
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114304

Figure 25-10 (Sheet 5 of 6)

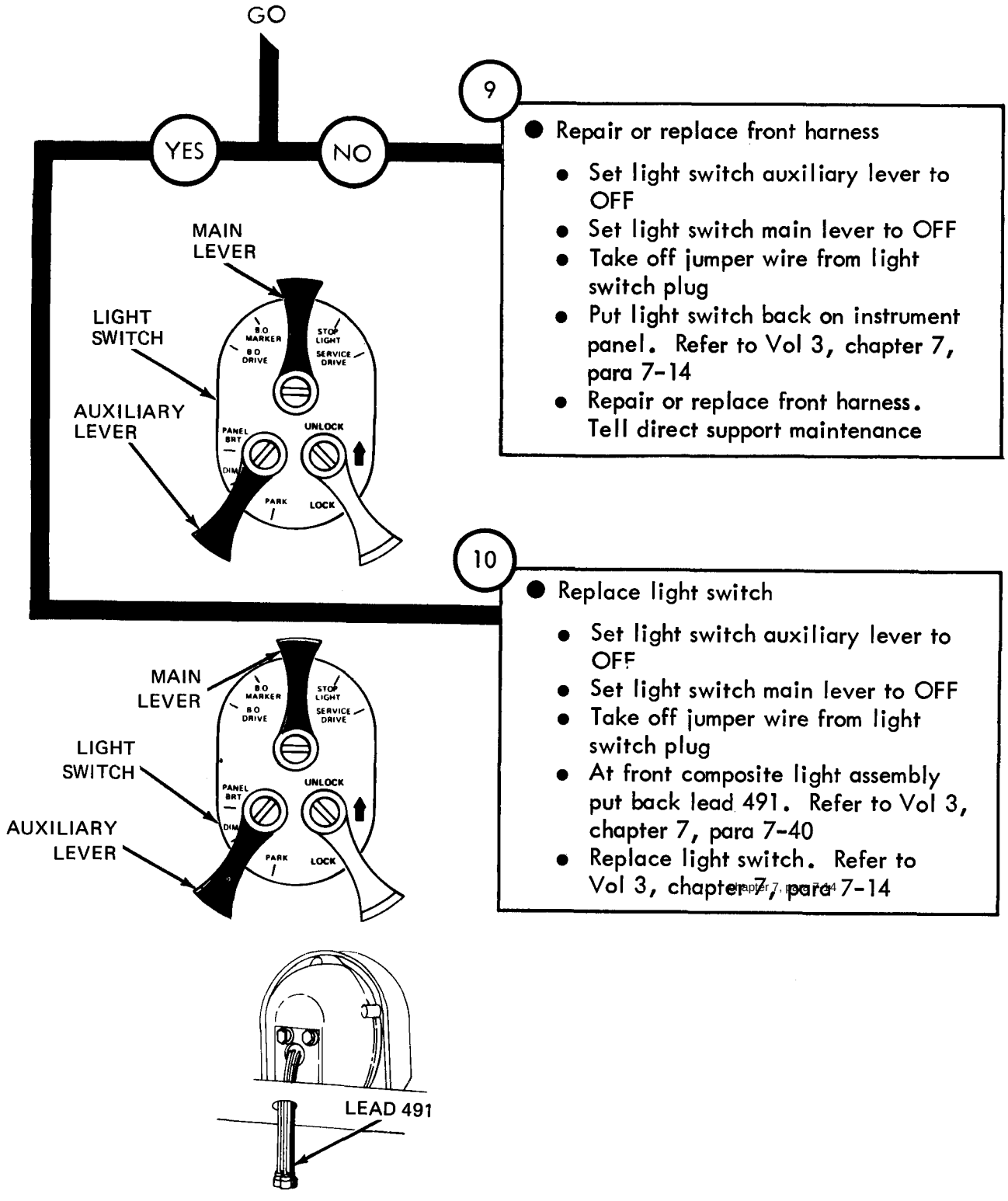


Figure 25-10 (Sheet 6 of 6)

Symptom

11 ONE REAR SERVICE STOPLIGHT DOES NOT LIGHT, OTHER STOPLIGHT LIGHTS

NOTE

Two soldiers are needed to troubleshoot a stoplight. SOLDIER A sits in cab and operates controls. SOLDIER B makes voltage checks with the multimeter

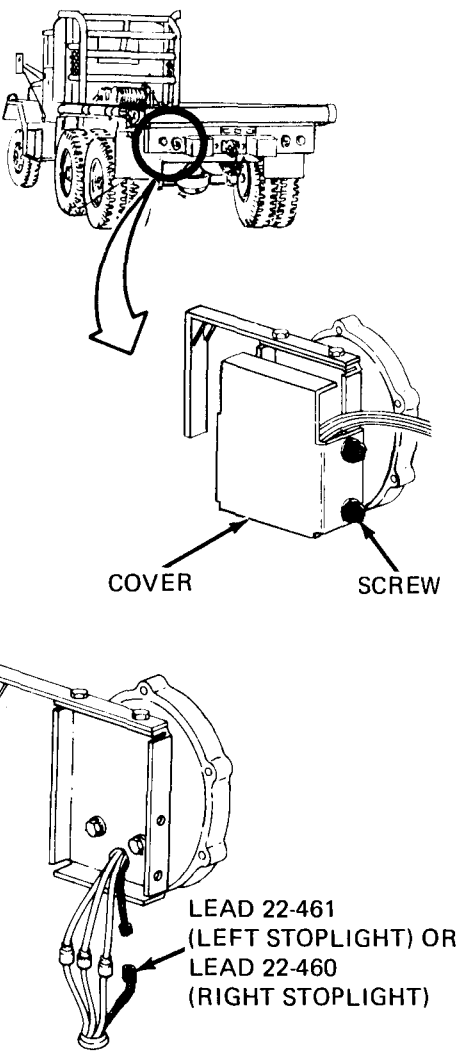
When checking voltage, +24 volts DC means a range of +23 volts DC to +26 volts DC

1
- Park truck
  - Refer to TM 9-2320-209-10

2
- Check for +24 volts DC at stoplight

SOLDIER B:
- Using 9/16-inch wrench, unscrew and take off four screws with washers from rear composite marker assembly
- Take off cover
- Take off lead 22-461 (left service stoplight) or lead 22-460 (right service stoplight)

GO



TA 114306

Figure 25-11 (Sheet 1 of 10)

GO

SOLDIER A:
- Set light switch main lever to STOPLIGHT
- Make sure turn signal control handle is in neutral position

SOLDIER B:
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index

SOLDIER B:
- Put multimeter - lead on good ground. Put multimeter + lead on lead 22-461 (left service stoplight) or 22-460 (right service stoplight)

SOLDIER A:
- Press down on brake pedal and hold it

SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

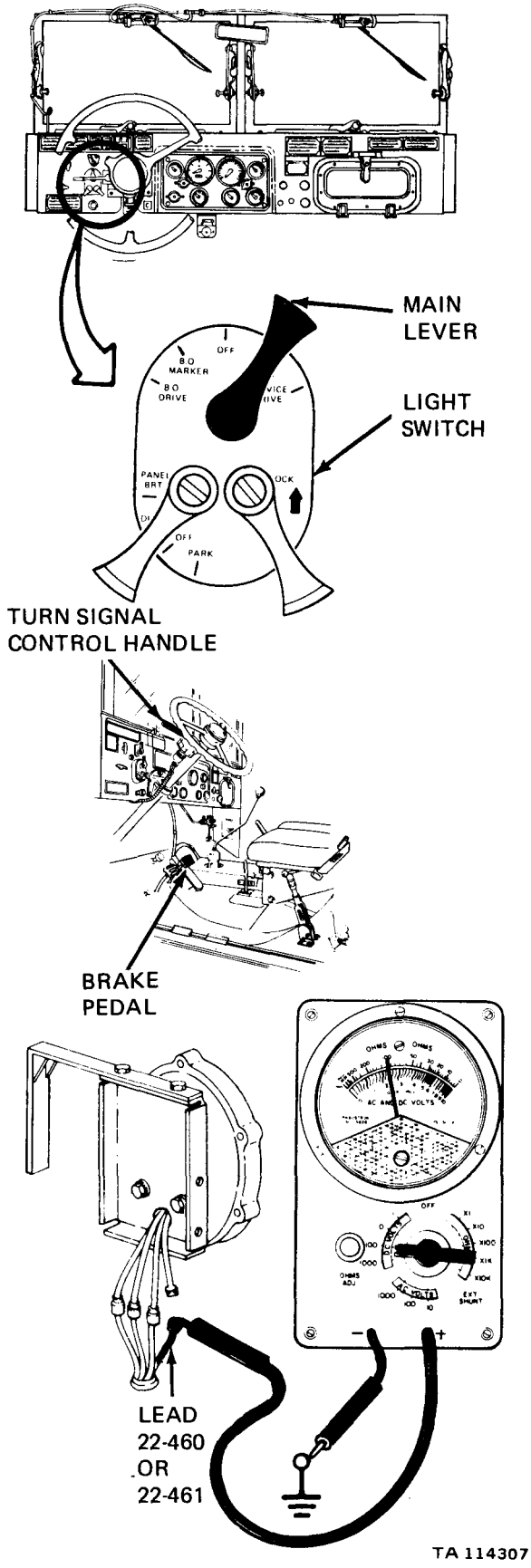


Figure 25-11 (Sheet 2 of 10)

GO

YES

NO

4

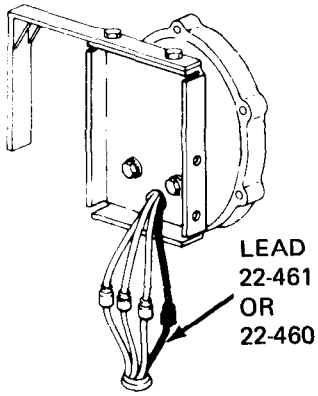
● Go to step 9

3

● Replace service stoplight lamp

SOLDIER A:
- Set light switch main lever to OFF
- Replace service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45

SOLDIER B:
- Put back lead 22-461 or 22-460 at rear composite marker light assembly

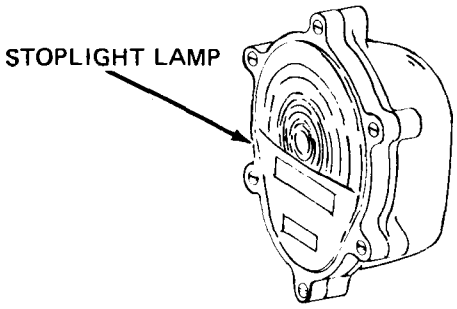


5

● Test service stoplight lamp

SOLDIER A:
- Set light switch main lever to STOPLIGHT
- Press down on brake pedal and hold it down

SOLDIER B:
- Look at rear composite marker light assembly while Soldier A presses down on brake pedal. Service stoplight lamp should be lit

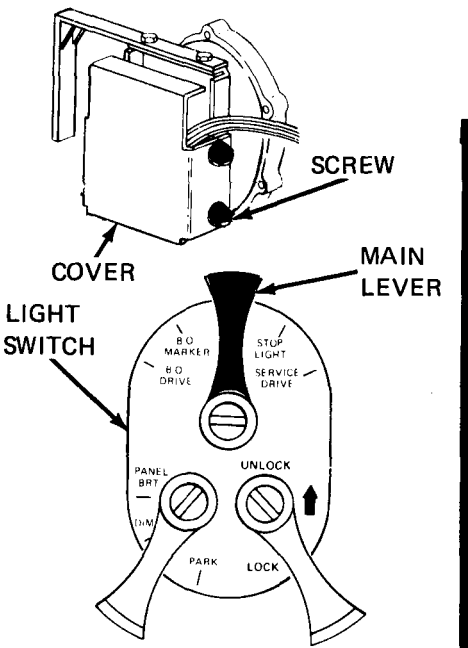


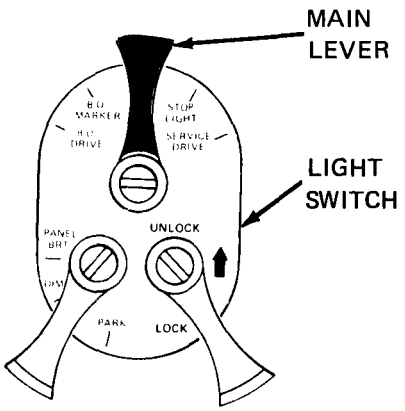
Is service stoplight lamp off?

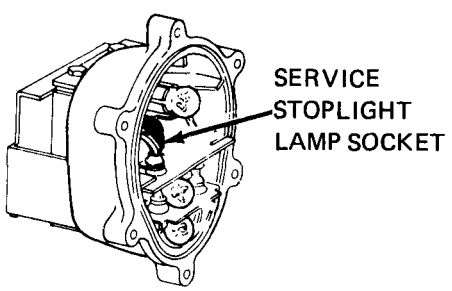
NO GO

TA 114308

Figure 25-11 (Sheet 3 of 10)







GO

6

NO

- Troubleshooting completed
  - Set light switch main lever to OFF
  - Put cover back on rear composite marker light assembly by using 9/16 inch wrench to screw in and tighten four screws with washers

7

YES

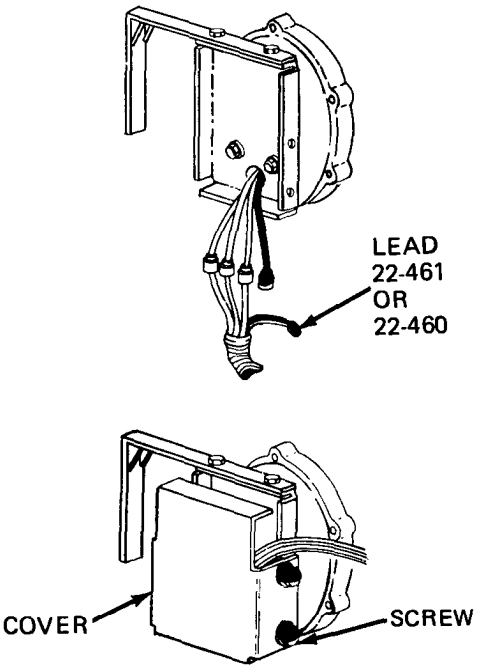
- Clean contacts of service stoplight lamp socket
  - Set light switch main lever to OFF
  - Remove service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45
  - Clean service stoplight lamp socket. Refer to Vol 3, chapter 7, para 7-44
  - Put back service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45

chapter 7, para 7-45

GO

TA 114309

Figure 25-11 (Sheet 4 of 10)



GO

8

- Clean contacts of stoplight lamp connectors
  - Take off lead 22-461 (left service stoplight) or 22-460 (right service stoplight)
  - Clean lead 22-461 or 22-460 contact
  - Push lead 22-461 or 22-460 into connector
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

TA 114310

Figure 25-11 (Sheet 5 of 10)

From step 4

9

- Check rear harness between service stoplight lamp and rear harness connector

SOLDIER A: • Set light switch main lever to OFF

SOLDIER B: • Unscrew and take off rear harness plug from front harness receptacle

SOLDIER A: • Set light switch main lever to STOPLIGHT

SOLDIER B: • Put multimeter - lead on good ground

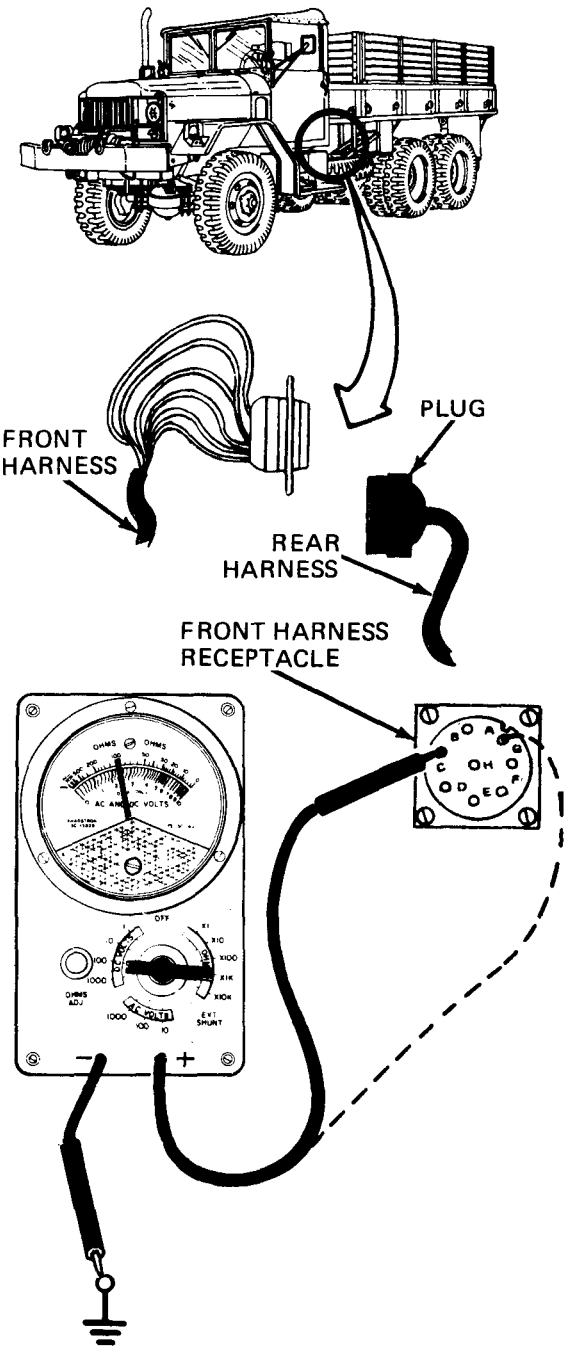
SOLDIER B: • For left service stoplight, put multimeter + lead on contact C in front harness receptacle. For right service stoplight, put multimeter + lead on contact G in front harness receptacle

SOLDIER A: • Press down on brake pedal and hold it down

SOLDIER B: • Read multimeter while Soldier A presses down on brake pedal. Multimeter should read +24 volts DC

Does multimeter read less than +24 volts DC?

GO



TA 114311

Figure 25-11 (Sheet 6 of 10)

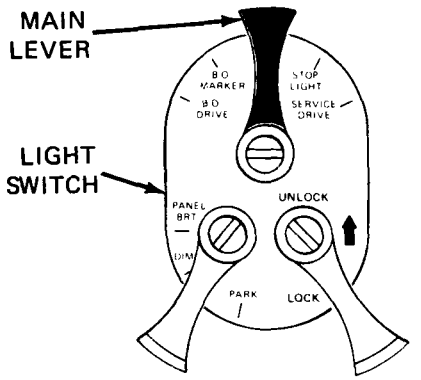
GO

YES

NO

10

- Repair or replace rear harness
  - Set light switch main lever to OFF
  - Repair or replace rear harness. Tell direct support maintenance



11

- Check front harness between control assembly directional signal and front harness receptacle

SOLDIER A:
- Set light switch main lever to OFF

SOLDIER B:
- Unscrew and take off front harness plug from turn signal control assembly
- Put jumper wire between contacts D and C for left service stoplight in front harness plug
- Put another jumper wire between contacts D and E for right service stoplight of front harness plug

SOLDIER A:
- Set light switch main lever to STOPLIGHT

GO

TA 114312

Figure 25-11 (Sheet 7 of 10)

GO

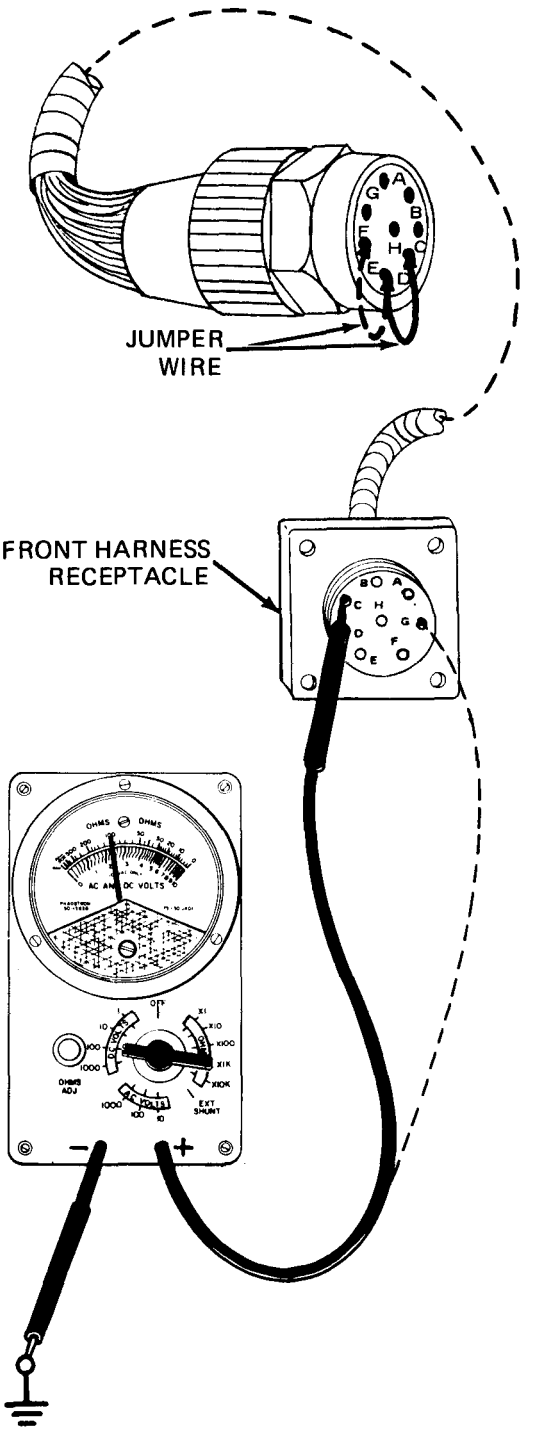
SOLDIER B:
- Put multimeter - lead on a good ground
- For left service stoplight, put multimeter + lead on contact C in front harness receptacle. For right service stoplight, put multimeter + lead on contact G of front harness receptacle

SOLDIER A:
- Press down on brake pedal and hold it down

SOLDIER B:
- Read multimeter while Soldier A presses on brake pedal. Multimeter should read +24 volts DC

Does multimeter read +24 volts DC?

GO



TA 114313

Figure 25-11 (Sheet 8 of 10)

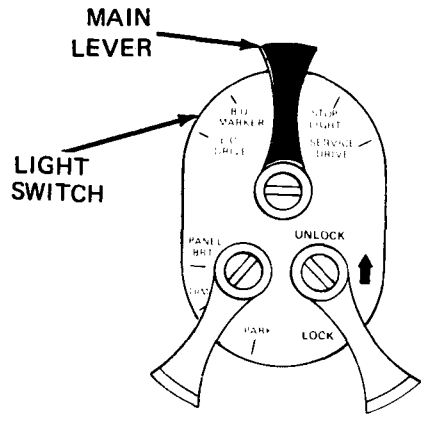
GO

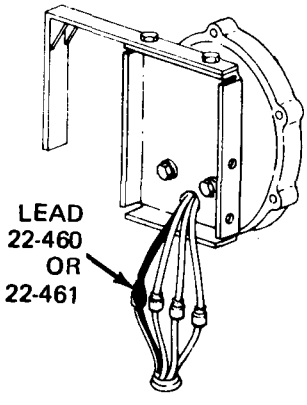
YES

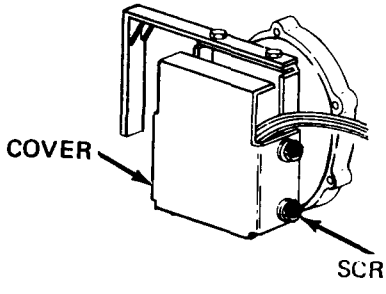
NO

12

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Take off jumper from turn signal control assembly harness plug
  - At rear composite marker light assembly put back lead 22-461 or lead 22-460
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers
  - Repair or replace front harness Tell direct support maintenance







TS 209-20-552

GO

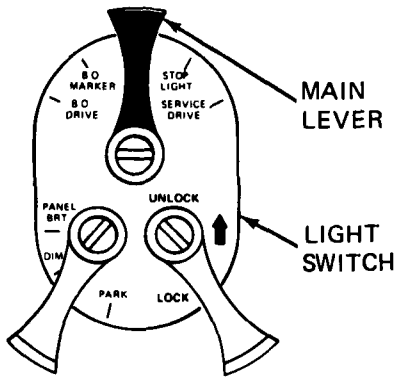
TA 114314

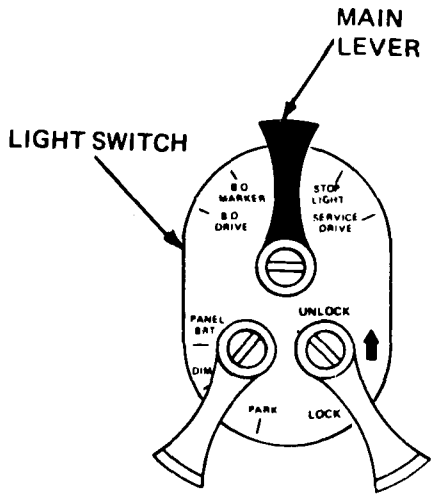
Figure 25-11 (Sheet 9 of 10)

GO

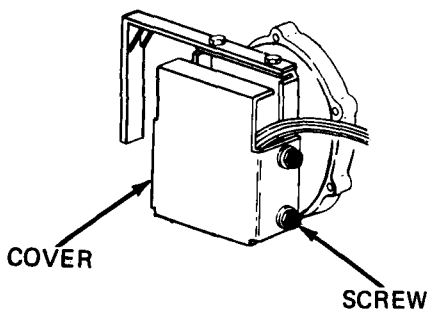
13

- Replace turn signal control assembly
  - Set light switch main lever to OFF
  - Take off jumper assembly harness plug
  - Put rear harness plug back on front harness receptacle





- At rear composite marker light assembly put back 22-461 or 22-460
- Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers
- Replace turn signal control assembly put back lead 22-461 or 22-460



TA 114315

Figure 25-11 (Sheet 10 of 10)

Symptom 12

BOTH SERVICE STOPLIGHTS DO NOT LIGHT, OTHER TRUCK RUNNING LIGHTS LIGHT

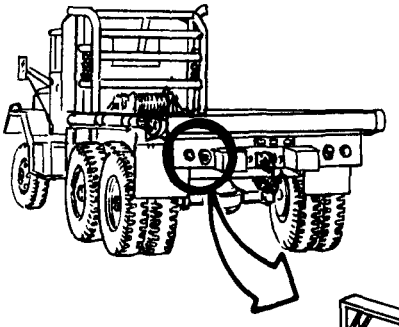
NOTE

Two soldiers are needed to troubleshoot rear service stoplights. Soldier A sits in the cab and operates the controls. Soldier B makes voltage checks with the multimeter

When checking voltage, +24 volts DC means a range of +23 to +26 volts DC

1

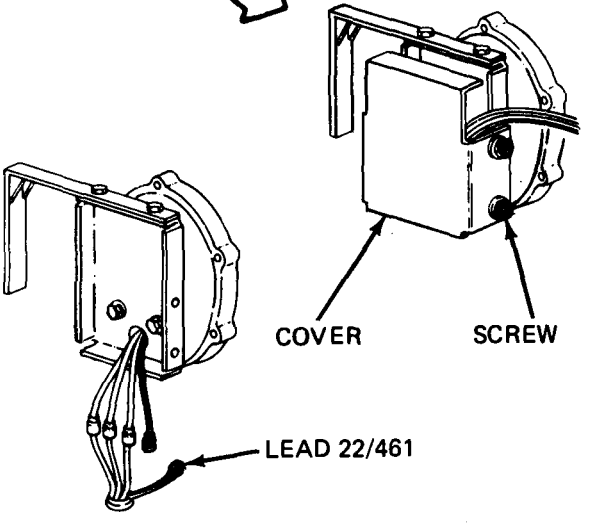
- Park truck
  - Refer to TM 9-2320-209-10



2

- Check for +24 volts DC at left service stoplight

SOLDIER B:
- Using 9/16-inch wrench, unscrew and take off four screws with washers from left rear composite marker assembly
- Take off cover
- Take off lead 22-461



TA 114316

GO

Figure 25-12 (Sheet 1 of 15)

GO

SOLDIER A:
- Set light switch main lever to STOPLIGHT position
- Make sure turn signal control lever is in neutral position

SOLDIER B:
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index

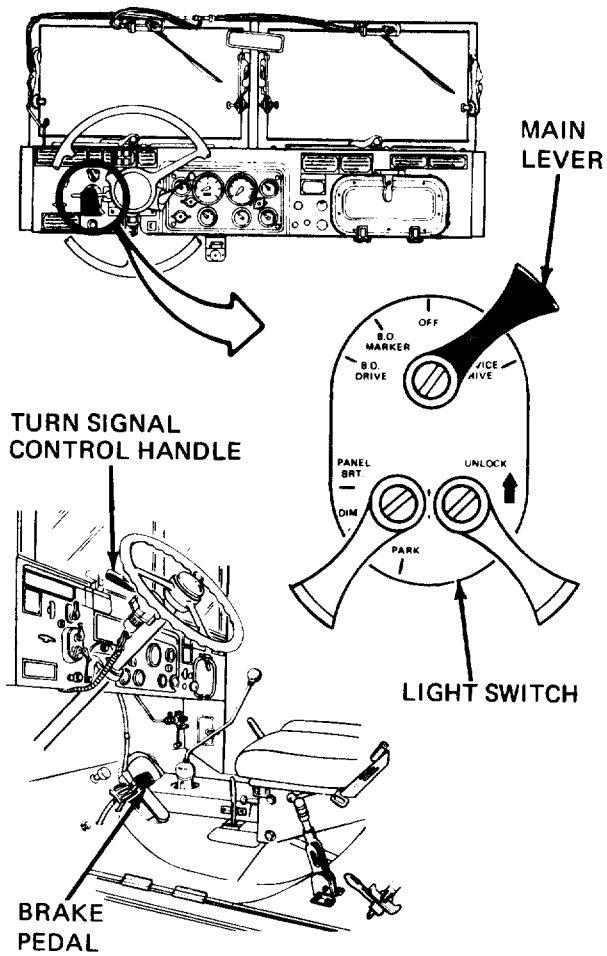
SOLDIER B:
- Put multimeter + lead on lead 22-461
- Put multimeter - lead on a good ground

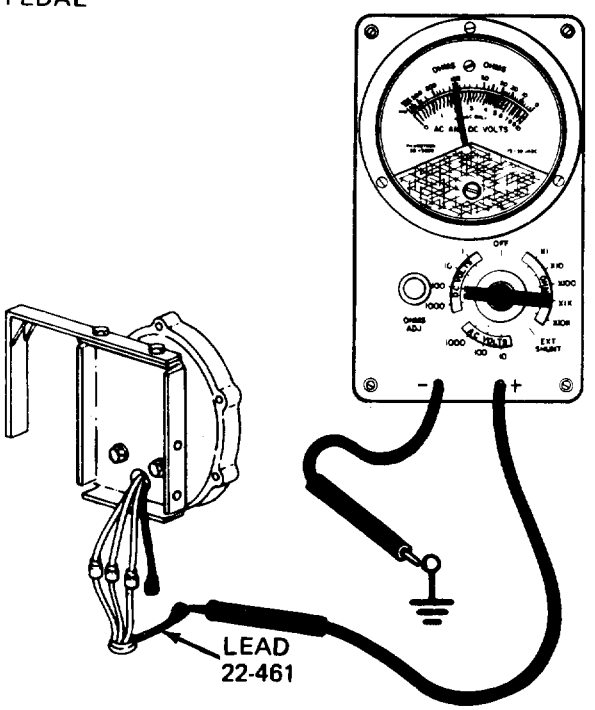
SOLDIER A:
- Press down on brake pedal and hold it down

SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO





TA 114317

Figure 25-12 (Sheet 2 of 15)

GO

YES

NO

3

- Replace left service stoplight lamp
  - Set light switch main lever to OFF
  - Replace left service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45
  - Put lead 22-461 back on left rear composite marker light assembly

4

- Go to step 11

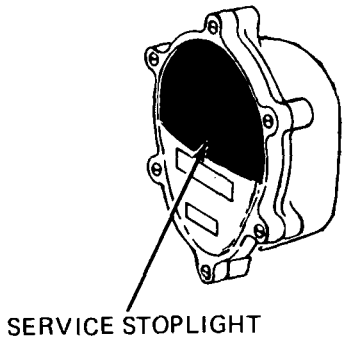
5

- Test left service stoplight lamp

SOLDIER A:
- Set light switch main lever to stoplight position
- Press down on brake pedal and hold it down

SOLDIER B:
- Look at left rear composite marker light assembly while SOLDIER A presses down on brake pedal. Service stoplight lamp should be lit

Is service stoplight lamp off?



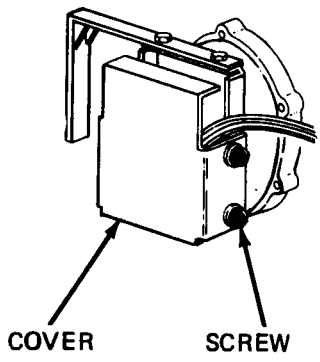
SERVICE STOPLIGHT

NO GO

TA 114318

Figure 25-12 (Sheet 3 of 15)

NO GO



6

NO

- Put left rear composite marker light assembly back together
  - Set light switch main lever OFF
  - Put cover back on left rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

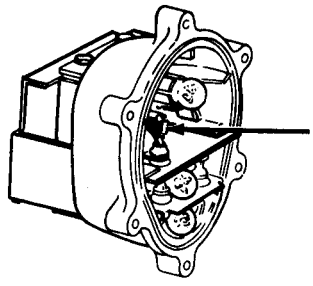
7

- Go to step 11

8

YES

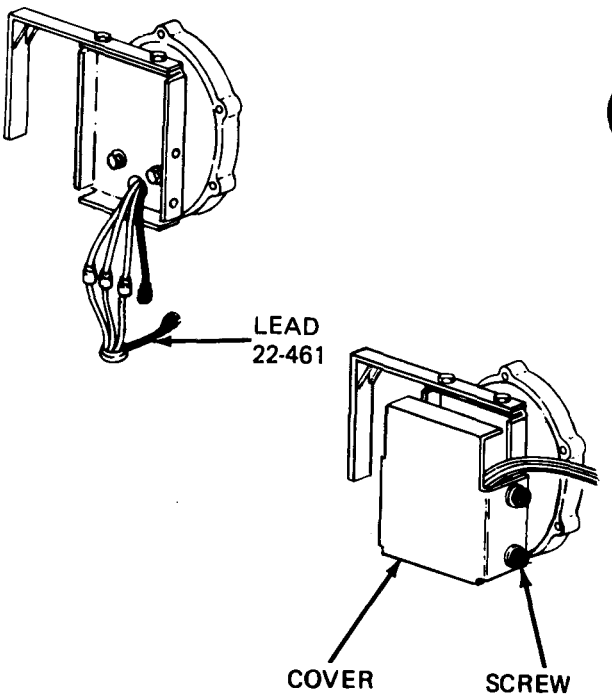
- Clean contacts of left service stoplight lamp socket
  - Set light switch main lever to OFF
  - Remove service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45
  - Clean service stoplight lamp socket. Refer to Vol 3, chapter 7, para 7-44
  - Put back service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45



NO GO

TA 114319

Figure 25-12 (Sheet 4 of 15)



NO GO

9

- Clean contacts of left service stoplight lamp connectors
  - Take off lead 22-461
  - Clean lead 22-461 contacts. Refer to Vol 3, chapter 7, para 7-46
  - Push lead 22-461 into connector
  - Put cover back on left rear composite marker light assemby by using 9/16-inch wrench to screw in and tighten four screws with washers

10

- Go to step 11

TA 114320

Figure 25-12 (Sheet 5 of 15)

From steps 4, 7 and 10

11

- Check for +24 volts DC at right service stoplight

SOLDIER B:
- Using 9/16-inch wrench, unscrew and take off four screws with washers from right rear composite marker assembly
- Take off cover
- Take off lead 22-460

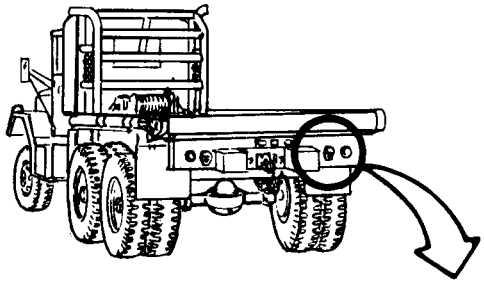
SOLDIER A:
- Set light switch main lever to STOPLIGHT

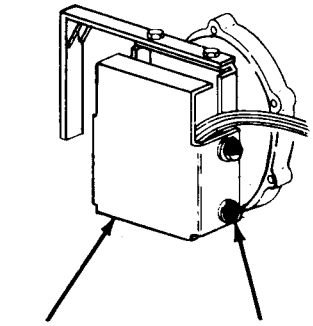
SOLDIER B:
- Put multimeter - lead on a good ground. Put multimeter + lead on lead 22-460

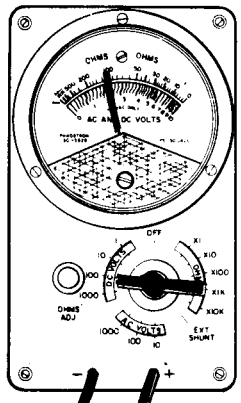
SOLDIER A:
- Step down on brake pedal and hold

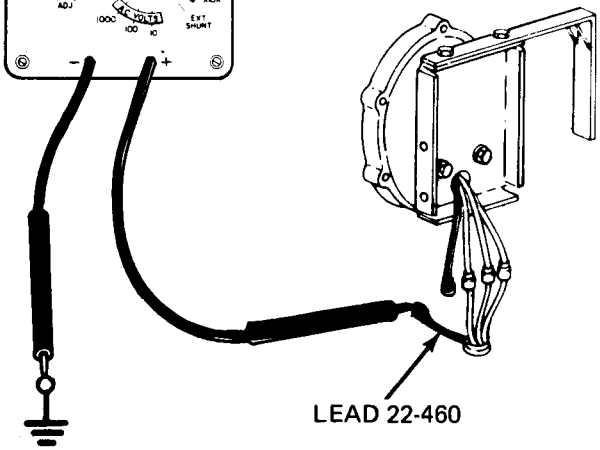
SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?







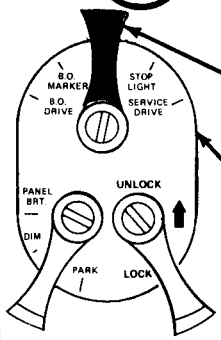


YES

NO

12

- Replace right service stoplight lamp
  - Set light switch main lever to OFF
  - Replace right service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45
  - Put back lead 22-460 at right rear composite marker assembly



MAIN LEVER

LIGHT SWITCH

13

- Go to step 18

NO GO

TA 114321

Figure 25-12 (Sheet 6 of 15)

NO GO

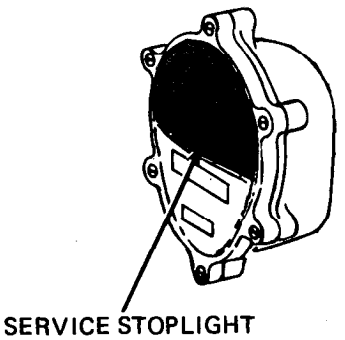
14

- Test right service stoplight lamp

SOLDIER A:
- Set light switch main lever to STOPLIGHT
- Press down on brake pedal and hold it down

SOLDIER B:
- Look at right rear composite marker light assembly while Soldier A steps down on brake pedal. Service stoplight lamp should be lit

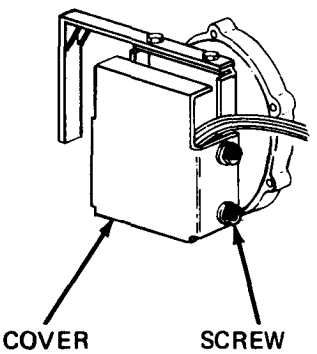
Is service stoplight lamp off?



NO

15

- Troubleshooting completed
- Put cover back on right rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

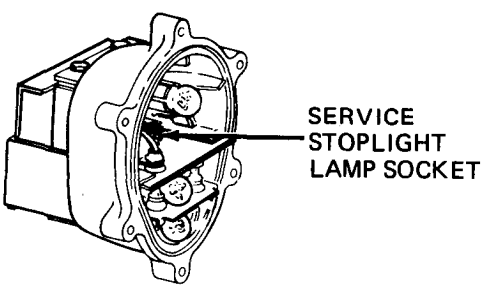


YES

16

- Clean contacts of right service stoplight lamp socket
- Set light switch main lever to OFF
- Remove service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45
- Clean service stoplight lamp socket. Refer to Vol 3, chapter 7, para 7-45
- Put back service stoplight lamp. Refer to Vol 3, chapter 7, para 7-45

chapter 7, para 7-45



NO GO

TA 114322

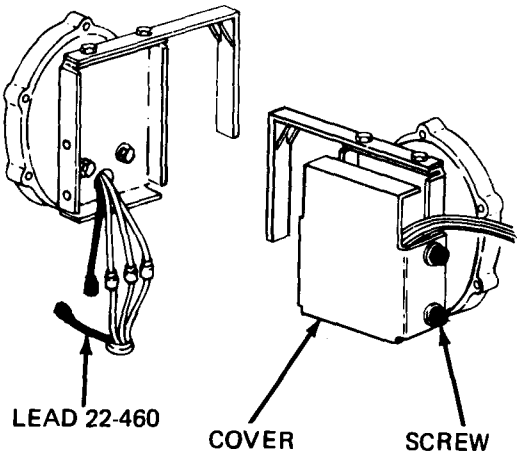
Figure 25-12 (Sheet 7 of 15)

From step 13

NO GO

17

- Clean contacts of right service stoplight lamp connectors
  - Take off lead 22-460
  - Clean lead 22-460 contacts. Refer to Vol 3, chapter 7, para 7-44
  - Push lead 22-460 into connector
  - Put cover back on right rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers



18

- Check voltage to front harness receptacle

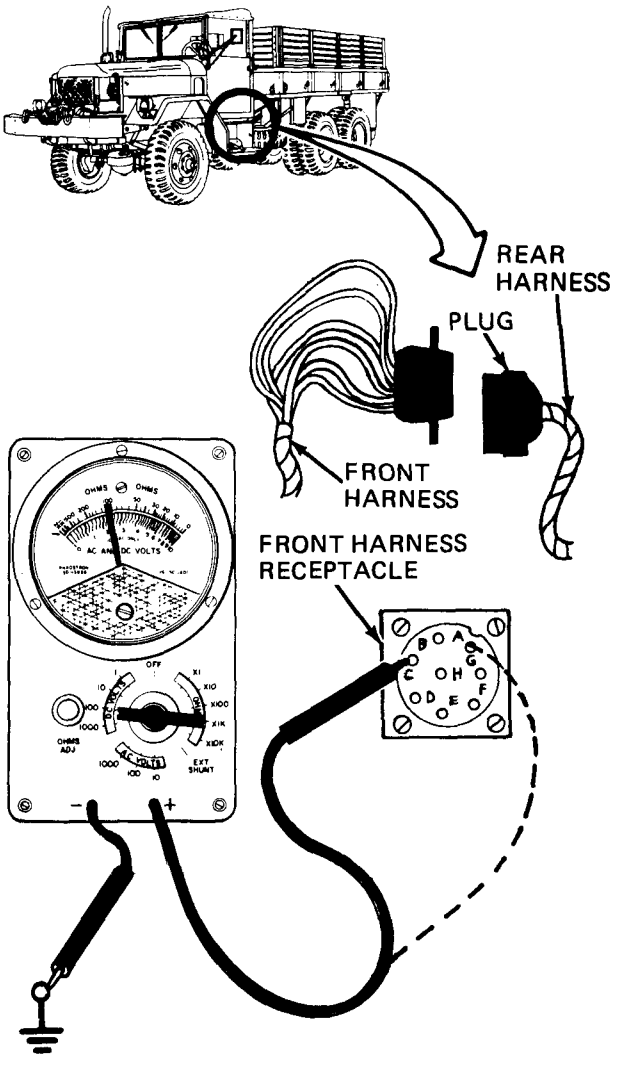
SOLDIER B:
- Unscrew and take off rear harness receptacle
- Put multimeter - lead on a good ground
- Put multimeter + lead on contacts C and G of front harness receptacle

SOLDIER A:
- Step on brake pedal and hold it down

SOLDIER B:
- Read multimeter for +24 volts DC at both contacts C then G while Soldier A presses down on brake pedal

Does multimeter measure less than +24 volts DC for both tests?

GO



TA 114323

Figure 25-12 (Sheet 8 of 15)

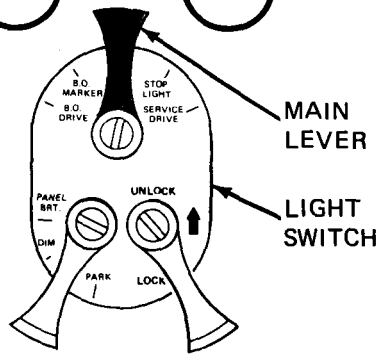
GO

YES

NO

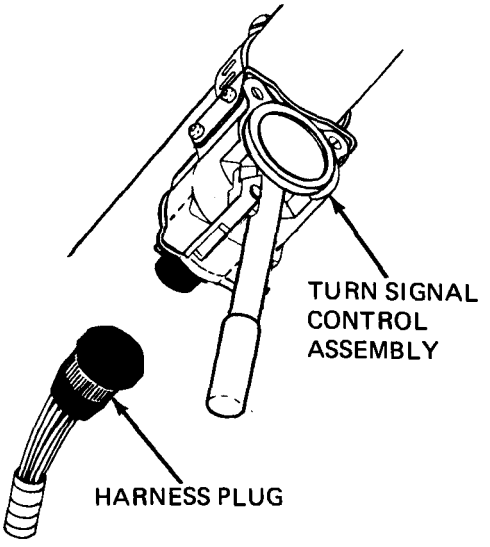
19

- Repair or replace rear harness
  - Set light switch main lever to OFF
  - Repair or replace rear harness. Tell direct support maintenance



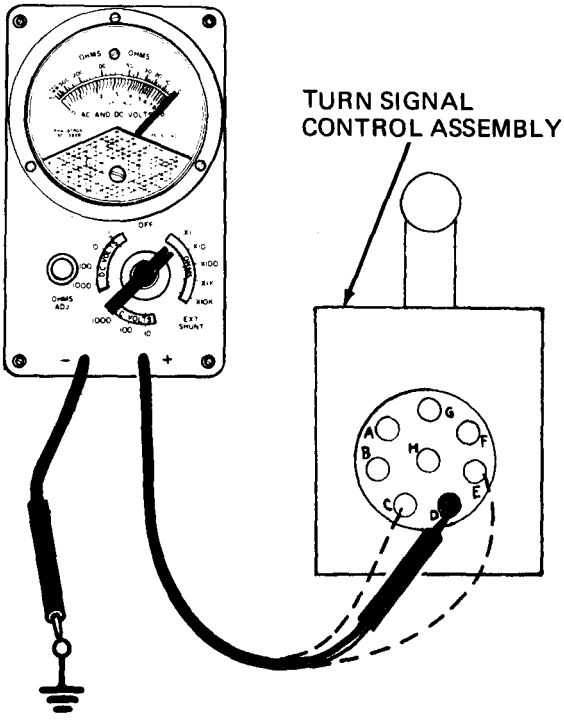
20

- Check for continuity through turn signal control assembly
  - Make sure turn signal control lever is in neutral position
  - Unscrew and take off harness plug from turn signal control assembly.
  - Set multimeter to measure continuity. Refer to test equipment procedures index



- Put multimeter - lead on a good ground. Put multimeter + lead on the following contacts of turn signal control assembly and watch movement of multimeter needle
  - Contacts D, E, and C, multimeter should move all the way to the right
  - Contacts B, A, H, F, and G, multimeter needle should not move

Did you get all good multimeter readings?



GO

TA 114324

Figure 25-12 (Sheet 9 of 15)

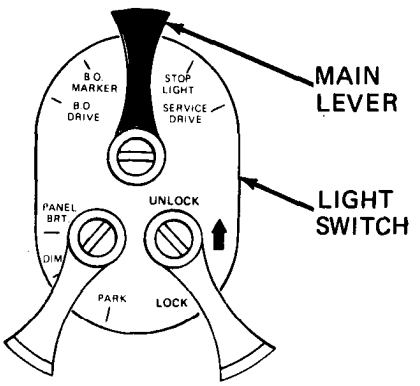
GO

YES

NO

21

- Replace control assembly directional signal
  - Set light switch main switch lever to OFF
  - Put rear harness plug back on front harness receptacle
  - Replace turn signal control assembly assembly. Refer to Vol 3, chapter 7, para 7-63



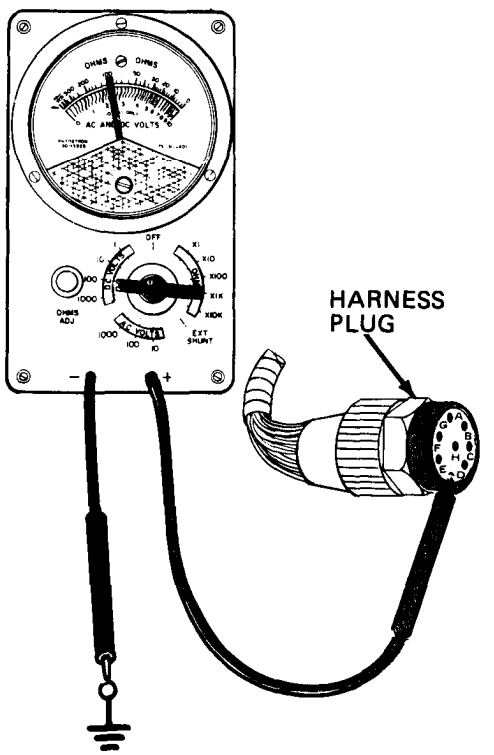
22

- Check for +24 volts DC to control assembly directional signal

SOLDIER B:
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on contact D of turn signal harness connector plug

SOLDIER A:
- Press on brake pedal and hold it down

SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

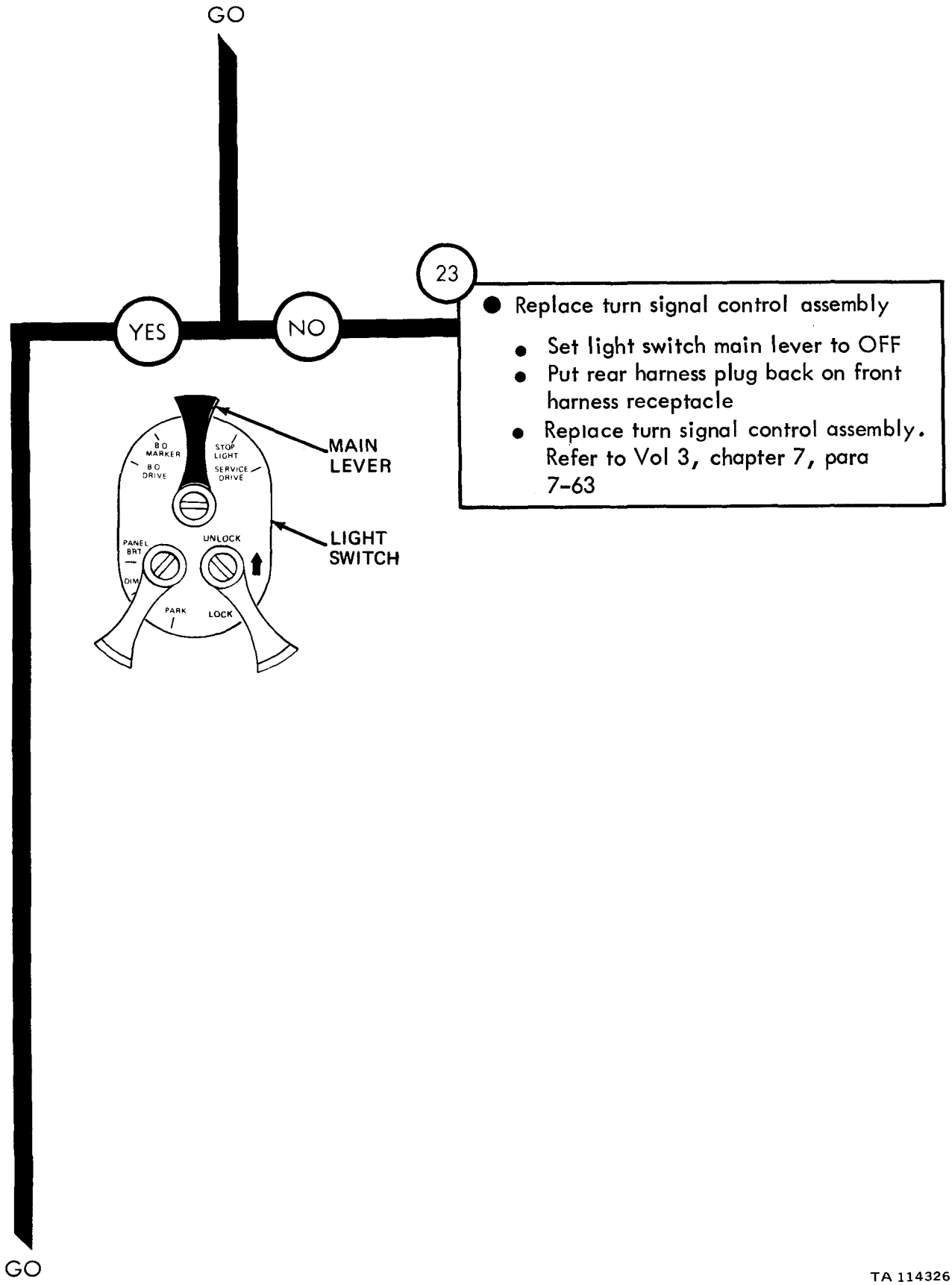


Does multimeter measure less than +24 volts DC?

GO

TA 114325

Figure 25-12 (Sheet 10 of 15)



TA 114326

Figure 25-12 (Sheet ll of 15)

GO

24

- Check stoplight switch for +24 volts DC

SOLDIER A
- Set light switch main lever to OFF
- Using 5/8-inch wrench, remove shield from under air hydraulic cylinder (all trucks except M48, M275 and M275A)

SOLDIER B
- Take off lead 75 connector plug from stoplight switch. Refer to Vol 3, chapter 7, para 7-67

SOLDIER A
- Set light switch main lever to STOPLIGHT
- Step down on brake pedal and hold it down

SOLDIER B
- While Soldier A steps down on brake padal put multimeter - lead on good ground. Put multimeter + lead on each lead 75 and see which reads +24 volts DC
- Put jumper wire from lead 75 that gave +24 volts DC reading to either stoplight switch contact
- Put multimeter - lead on good ground
- With Soldier A still pressing down on brake pedal read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO

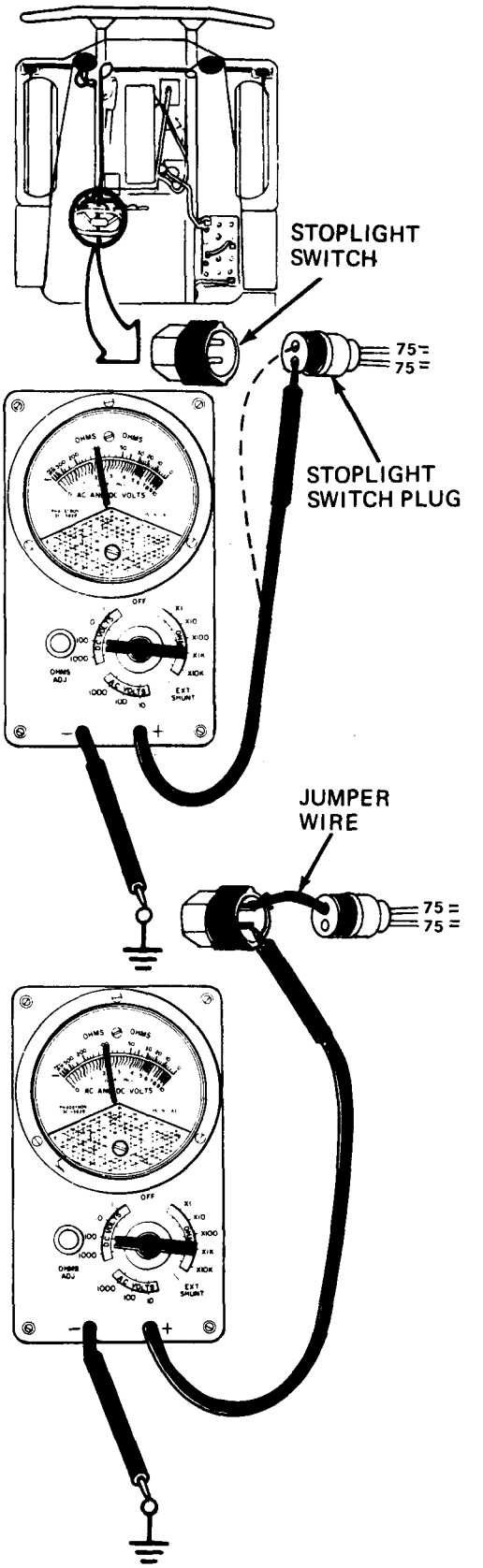


Figure 25-12 (Sheet 12 of 15)

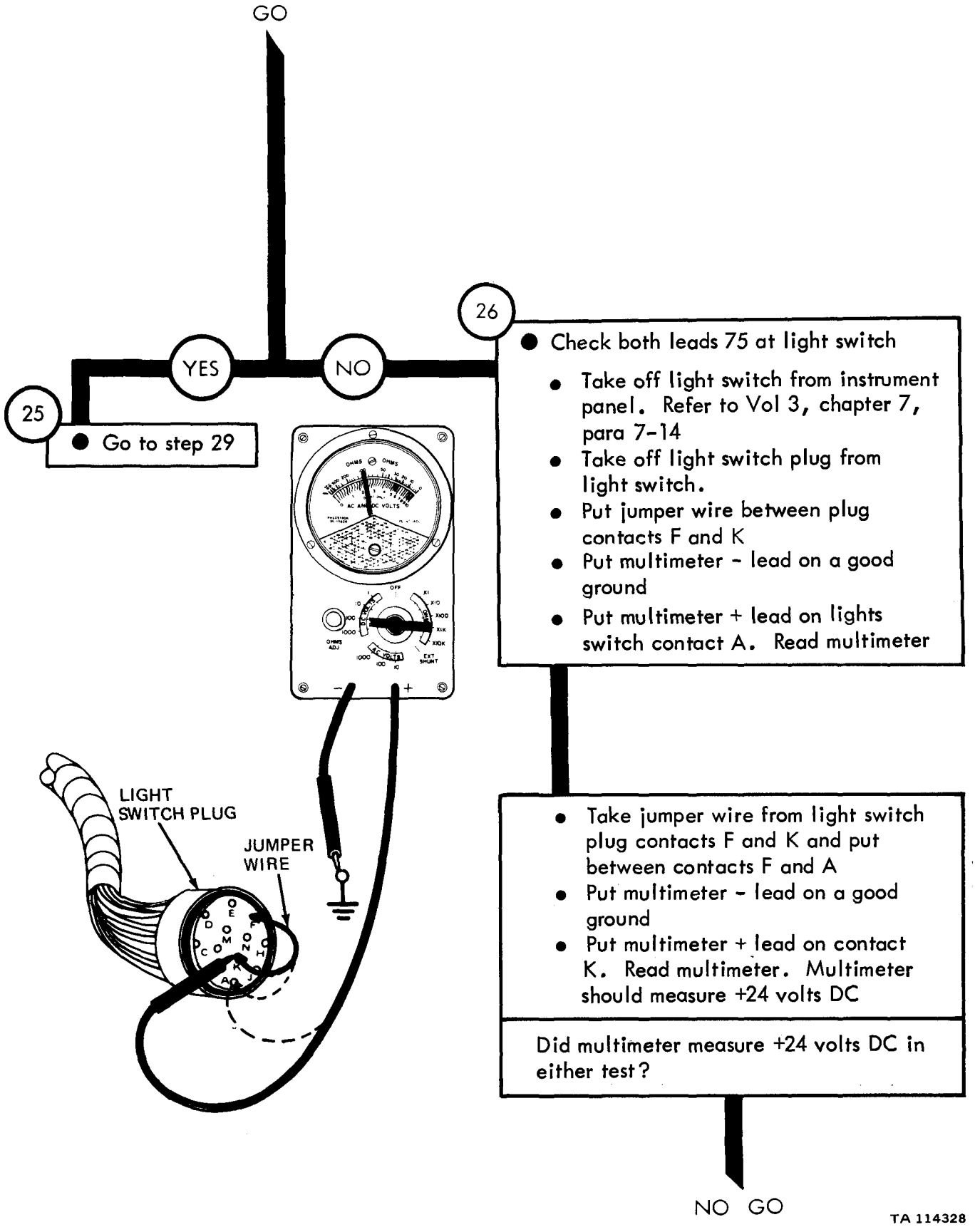


Figure 25-12 (Sheet 13 of 15)

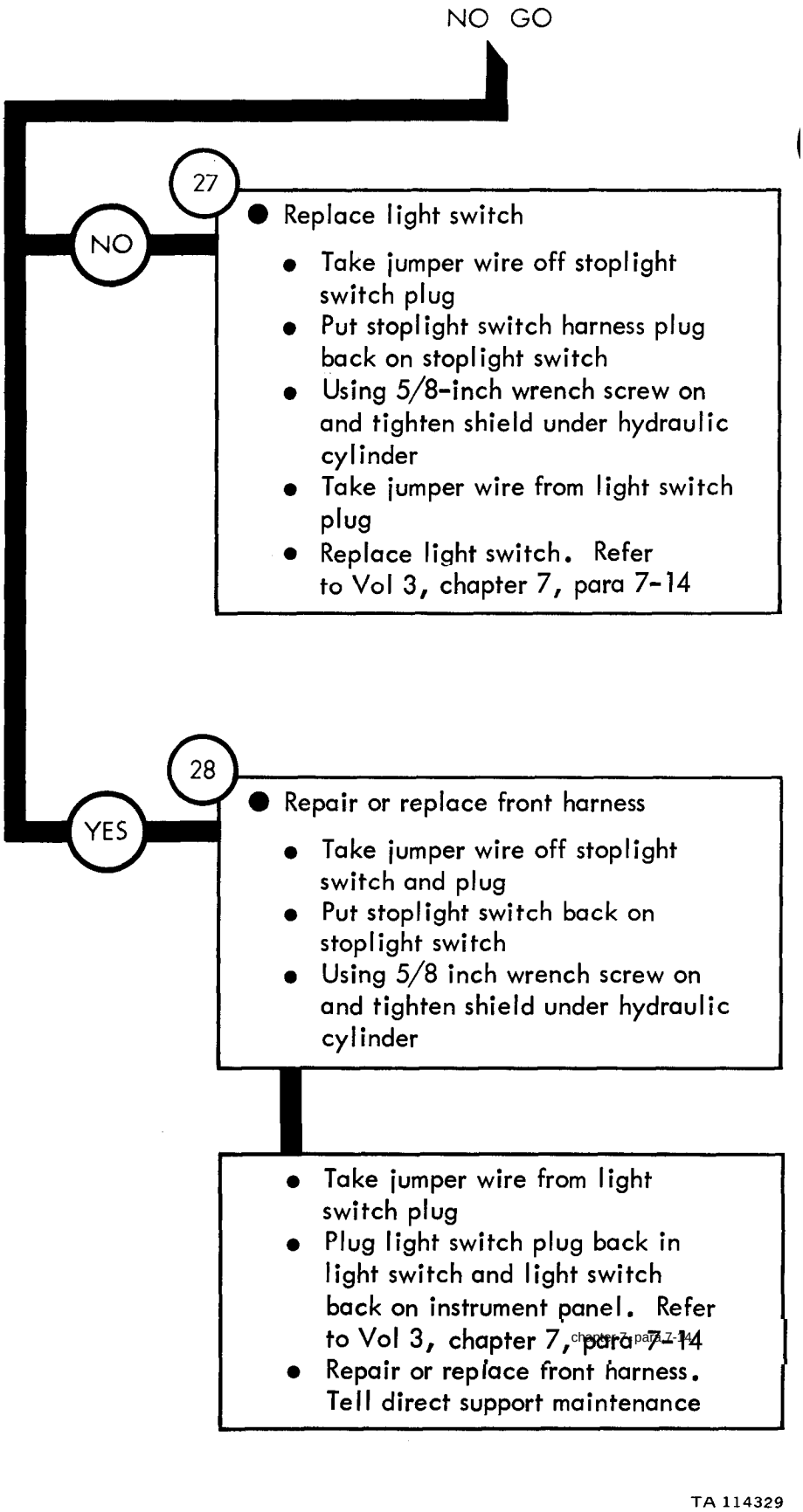


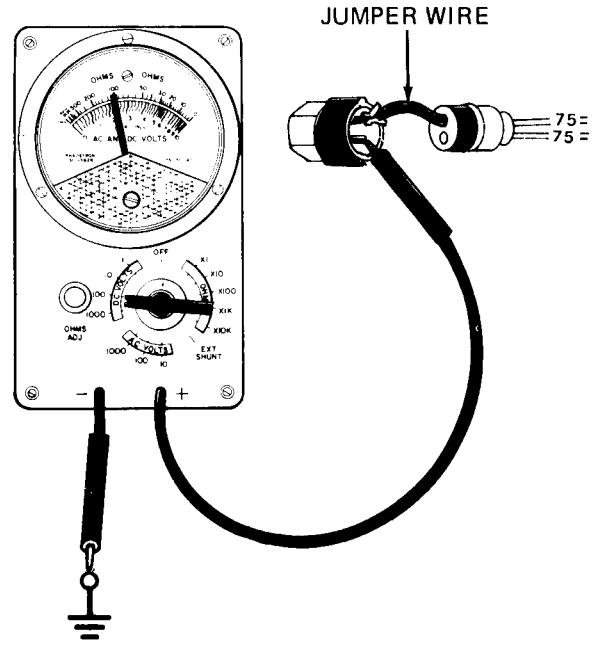
Figure 25-12 (Sheet 14 of 15)

From step 25

29

- Check for +24 volts DC through stoplight switch
  - Put jumper wire from lead 75 that gave +24 volts DC reading to either stoplight switch contact
  - Put multimeter + lead on other contact of stoplight switch
  - Put multimeter - lead on good ground
  - With Soldier A still pressing down on brake pedal read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO

30

- Replace stoplight switch
  - Set light switch main lever to OFF
  - Put rear harness plug back in front harness receptacle
  - Replace stoplight switch. Refer to Vol 3, chapter 7, para 7-67 or 7-68

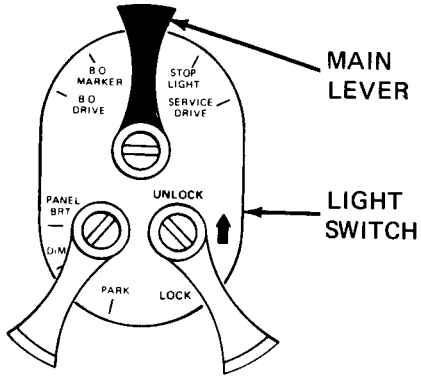
YES

31

- Repair or replace front harness

SOLDIER A
- Set light switch main switch lever to OFF

SOLDIER B
- Take off jumper wire from lead 75 and contact of stoplight switch
- Put stoplight switch harness plug back on stoplight switch
- Using 5/8-inch wrench screw on and tighten shield under hydraulic cylinder
- Repair or replace front harness. Tell direct support maintenance



TA 114330

Figure 25-12 (Sheet 15 of 15)

Symptom

13 ONE BLACKOUT STOPLIGHT DOES NOT LIGHT, OTHER BLACKOUT STOPLIGHT LIGHTS

NOTE

Two soldiers are needed to troubleshoot a blackout stoplight. Soldier A sits in the cab and operates the controls. Soldier B makes voltage checks with the multimeter

When checking voltage +24 volts DC means a range od +23 volts DC to +26 volts DC

1

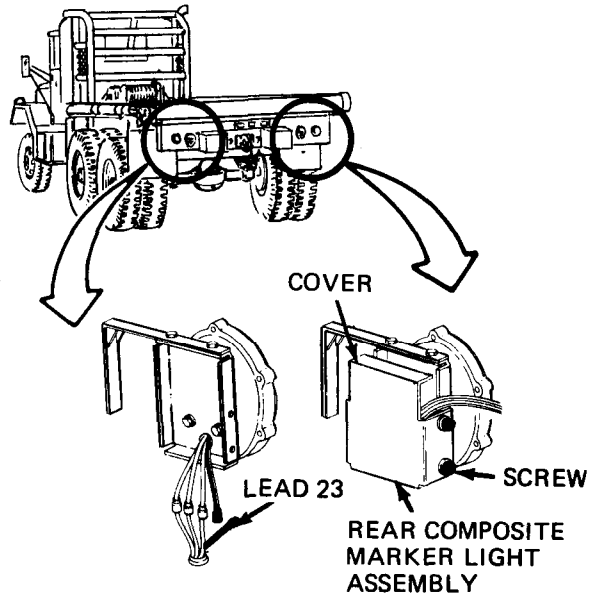
- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts DC at bad blackout stoplight

  SOLDIER B:
  - Using 9/16-inch wrench, unscrew and take off four screws with washers from rear composite marker assembly
  - Take off cover
  - Take off lead 23

GO



TA 114331

Figure 25-13 (Sheet 1 of 5)

GO

SOLDIER A:
- Set light switch main lever to B.O. MARKER
- Make sure turn signal control handle is in neutral position

SOLDIER B:
- Set multimeter to read +24 volts DC. Refer to test equipment procedures index

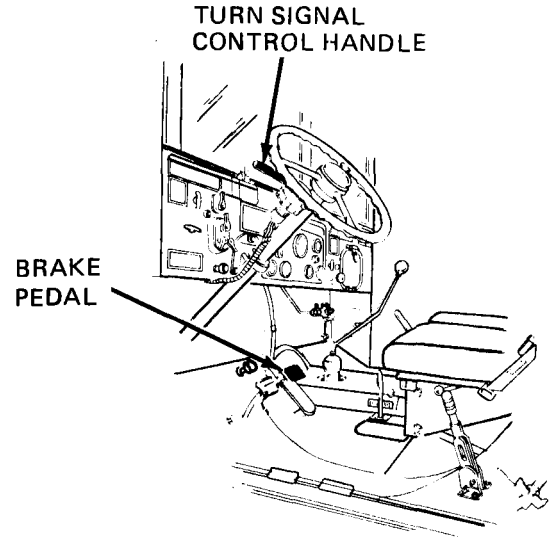
SOLDIER B:
- Put multimeter + lead on lead 23 and - lead on a good ground

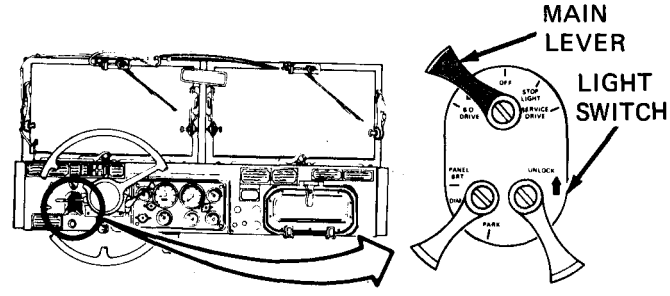
SOLDIER A:
- Press down on brake pedal and hold it down

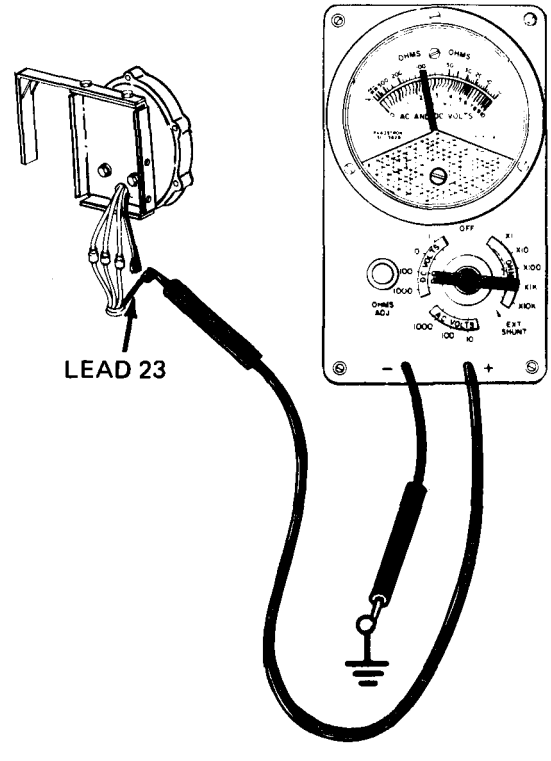
SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO







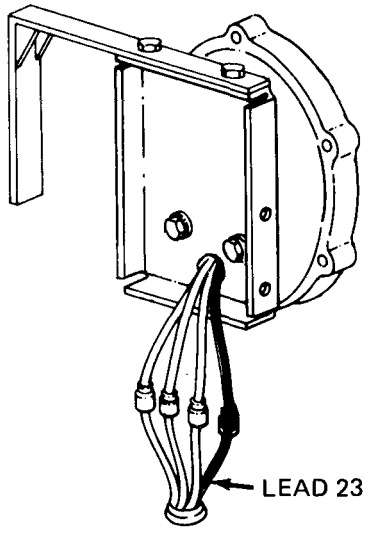
TA 114332

Figure 25-13 (Sheet 2 of 5)

GO

YES

NO

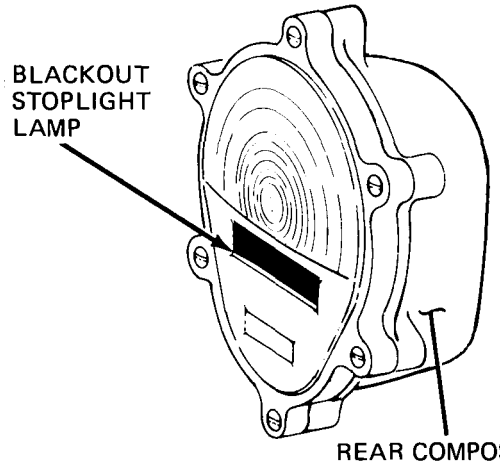


3

- Replace blackout stoplight lamp
  - Set light switch main lever to OFF
  - Replace blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
  - Put back lead 23 at rear marker light assembly

4

- Go to step 9



5

- Test blackout stoplight lamp

SOLDIER A:
- Set light switch main lever to B.O. MARKER
- Press down on brake pedal and hold it down

SOLDIER B:
- Look at blackout stoplight lamp while Soldier A presses down on brake pedal.
  Lamp should be lit

Is blackout stoplight lamp off?

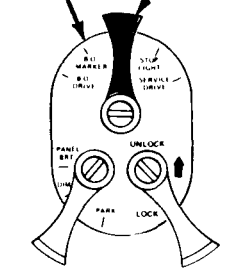
NO GO

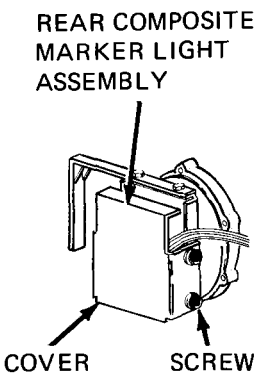
TA 114333

Figure 25-13 (Sheet 3 of 5)

NO GO

NO

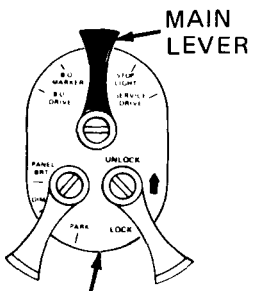


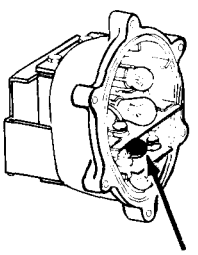


6

- Troubleshooting completed
  - Set light switch main lever to OFF
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

YES



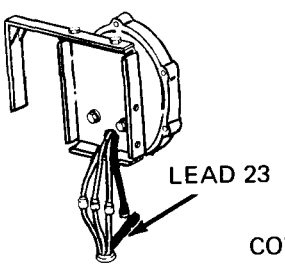


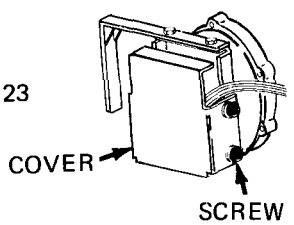
7

- Clean contacts of blackout stoplight lamp socket
  - Set light switch main lever to OFF
  - Remove blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
  - Clean blackout stoplight lamp socket. Refer to Vol 3, chapter 7, para 7-33
  - Put back blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32

8

- Clean contacts of blackout stoplight lamp connectors
  - Take off lead 23 from rear of rear composite marker assembly
  - Clean lead 23 contacts. Refer to Vol 3, chapter 7, para 7-33
  - Push lead 23 into connector
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers





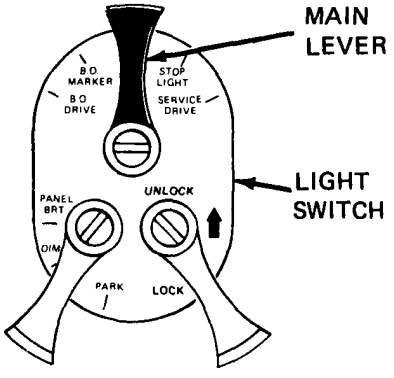
TA 114334

Figure 25-13 (Sheet 4 of 5)

From step 4

9

- Trouble is in rear harness. Repair or replace rear harness
  - Set light switch main lever to OFF
  - Repair or replace rear harness. Tell direct support maintenance



TA 114335

Figure 25-13 (Sheet 5 of 5)

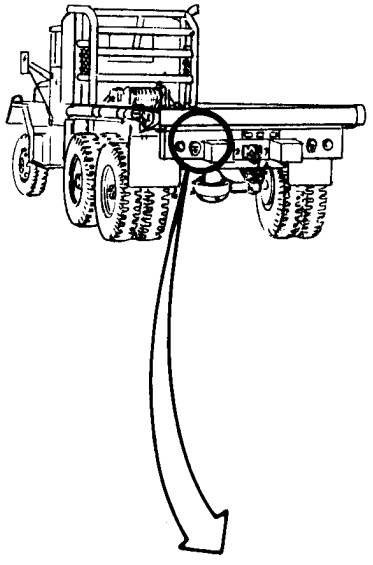
Symptom

14 BOTH BLACKOUT STOPLIGHTS DO NOT LIGHT, OTHER TRUCK RUNNING LIGHTS LIGHT

NOTE

Two soldiers are needed to troubleshoot the blackout stoplights. Soldier A sits in the cab and operates the controls. Soldier B makes voltage checks with the multimeter

When checking voltage, +24 volts DC means a range of +23 to +26 volts DC



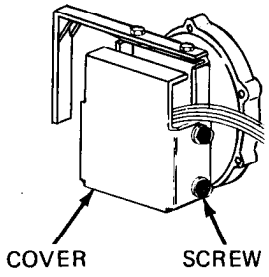
1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts DC at left blackout stoplight

  SOLDIER B:
  - Using 9/16-inch wrench, unscrew four screws with washers from left rear composite marker assembly
  - Take off cover
  - Take off lead 23 from left rear composite marker assembly



GO

TA 114336

Figure 25-14 (Sheet 1 of 24)

GO

SOLDIER A:
- Set light switch main lever to B. O. MARKER position
- Make sure turn signal control handle is in neutral position

SOLDIER B:
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index

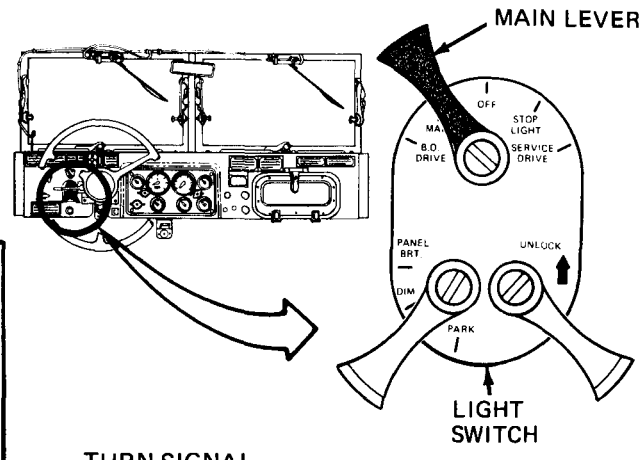
SOLDIER B:
- Put multimeter + lead on lead 23 and - lead on a good ground

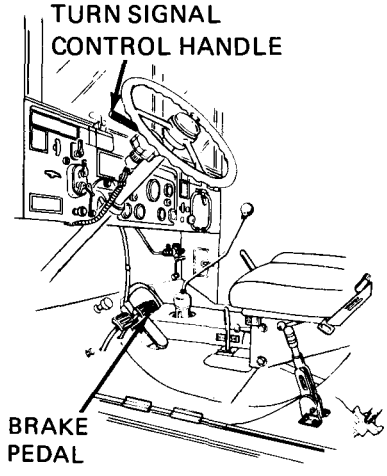
SOLDIER A:
- Press down on brake pedal and hold it down

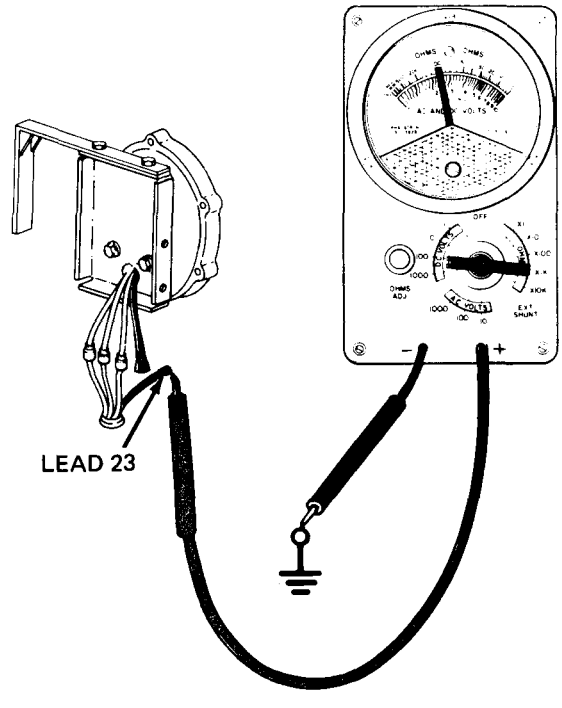
SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO







TA 114337

Figure 25-14 (Sheet 2 of 24)

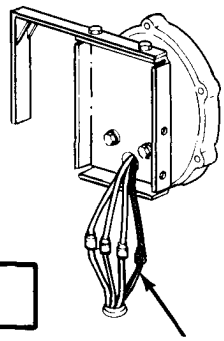
GO

YES

NO

3

- Replace left blackout stoplight lamp
  - Set light switch main lever to OFF
  - Replace blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
  - Put back lead 23 at left composite marker taillight assembly



LEAD 23

4

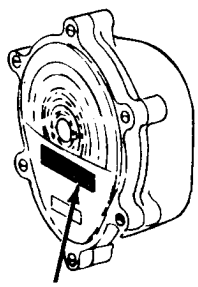
- Go to step 31

5

- Test left rear blackout stoplight lamp

SOLDIER A:
- Set light switch main lever to B. O. MARKER position
- Press down on brake pedal and hold it down

SOLDIER B:
- Look at left composite marker taillight assembly while Soldier A presses down on brake pedal. Blackout stoplight should be lit



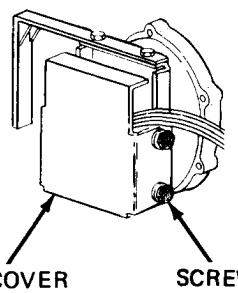
BLACKOUT STOPLIGHT

Is blackout stoplight lamp OFF?

NO

6

- Put left rear composite marker light assembly back together
  - Set light switch main lever to OFF
  - Put cover back on left rear composite marker light assembly using 9/16-inch wrench to screw in and tighten four screws with washers



COVER

SCREW

NO GO

NO GO

TA 114338

Figure 25-14 (Sheet 3 of 24)

NO GO

NO GO

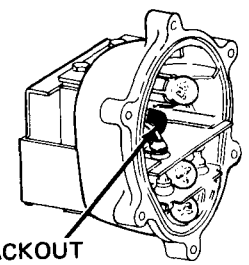
7

- Go to step 10

YES

8

- Clean contacts of left blackout stoplight lamp socket
  - Set light switch main lever to OFF
  - Remove blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
  - Clean blackout stoplight lamp socket. Refer to Vol 3, chapter 7, para 7-33
  - Replace blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32



BLACKOUT STOPLIGHT LAMP SOCKET

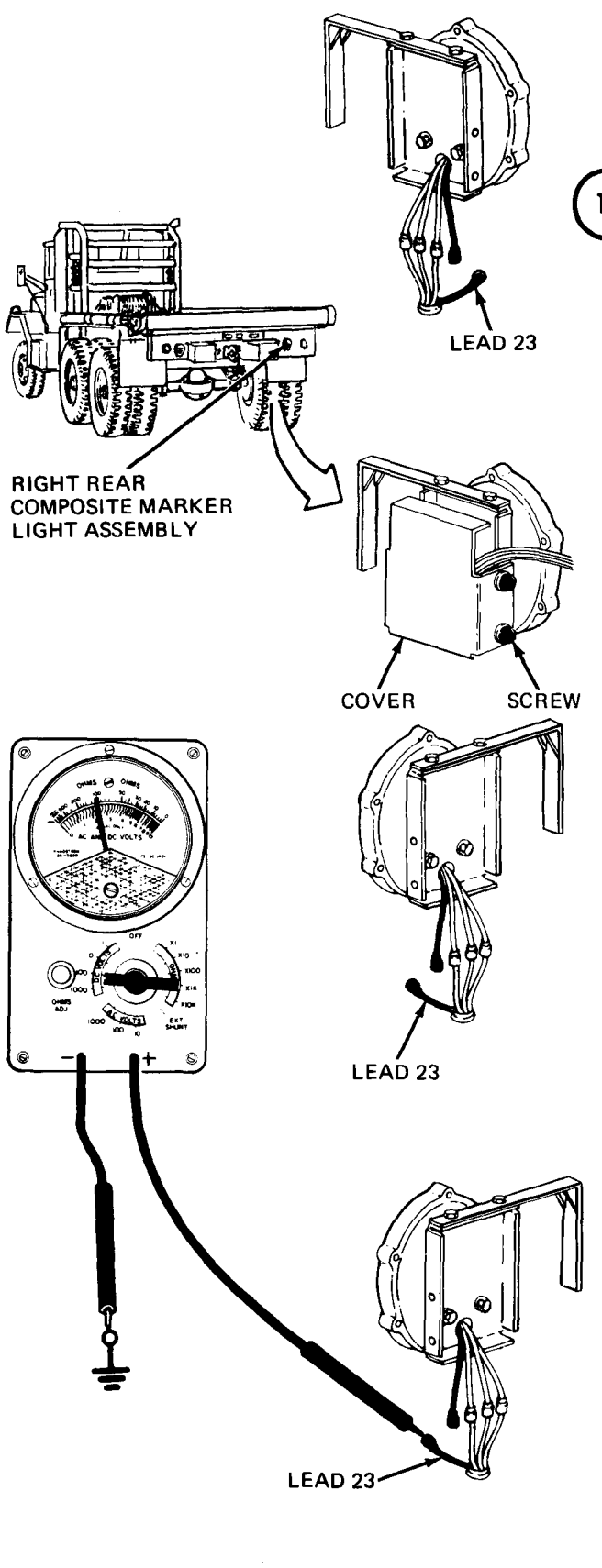
9

- Clean contacts of left blackout stoplight lamp connectors
  - Take off lead 23 from rear of left rear composite marker assembly
  - Clean lead 23 contacts. Refer to Vol 3, chapter 7, para 7-33
  - Push lead 23 into connector
  - Put cover back on left rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

NO GO

TA 114339

Figure 25-14 (Sheet 4 of 24)



NO GO

10

- Check for +24 volts at right blackout stoplight

SOLDIER B:
- Using 9/16-inch wrench, unscrew and take off four screws with washers from right rear composite marker assembly
- Take off cover
- Take off lead 23 from rear of right rear composite marker light assembly

SOLDIER A:
- Set light switch main lever to B. O. MARKER position

SOLDIER B:
- Put multimeter + lead on lead 23 and - lead on a good ground

SOLDIER A:
- Press down on brake pedal and hold it down

SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

NO GO

TA 114340

Figure 25-14 (Sheet 5 of 24)

NO GO

11

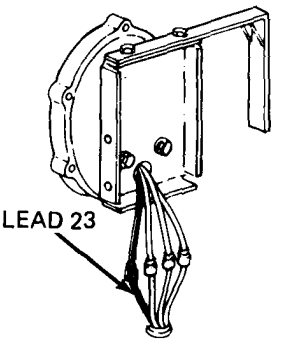
- Replace right blackout stoplight lamp
  - Set light switch main lever to OFF
  - Replace blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
  - Put lead 23 back into rear of right composite marker taillight assembly

YES

NO

12

- Go to step 17



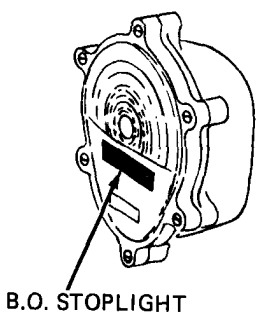
13

- Test right blackout stoplight lamp

SOLDIER A:
- Set light switch main lever to B. O. MARKER position
- Press down on brake pedal and hold it down

SOLDIER B:
- Look at right rear composite marker assembly while SOLDIER A presses down on brake pedal. Blackout stoplight lamp should be lit

Is blackout stoplight lamp OFF?



NO GO

TA 114341

Figure 25-14 (Sheet 6 of 24)

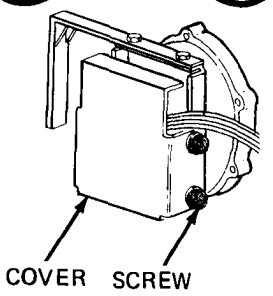
NO GO

YES

NO

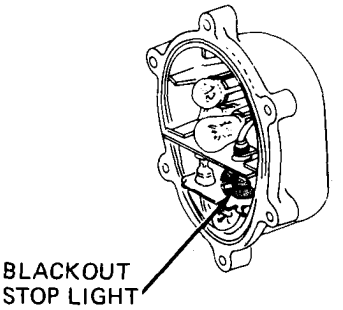
14

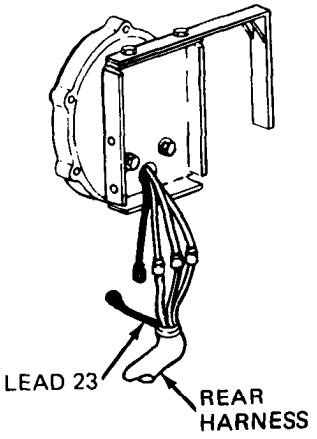
- Put right rear composite marker light assembly back together
  - Set light switch main lever to OFF
  - Put cover back on right rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers



15

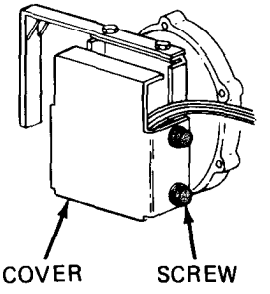
- Clean contacts of right blackout stoplight lamp socket
  - Set light switch main lever to OFF
  - Remove blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
  - Clean blackout stoplight lamp socket. Refer to Vol 3, chapter 7, para 7-33
  - Replace blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32





16

- Clean contacts of right blackout stoplight lamp connectors
  - Take off lead 23 from right rear composite marker assembly
  - Clean lead 23 contacts. Refer to Vol 3, chapter 7, para 7-33
  - Push lead 23 back into right rear composite marker light assembly
  - Put cover back on right rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers



TA 114342

Figure 25-14 (Sheet 7 of 24)

From step 12

17

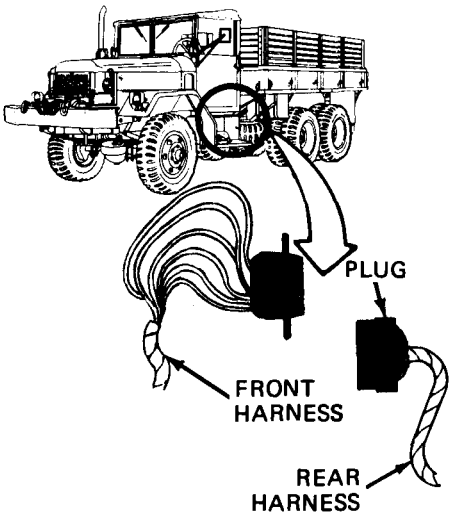
- Check voltage to front and rear harness connectors

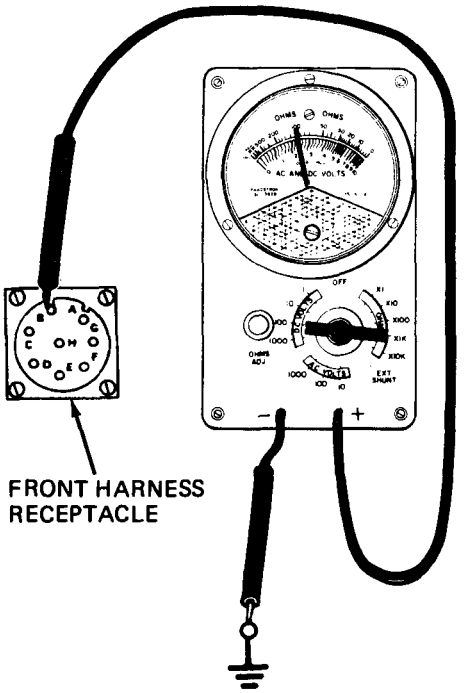
SOLDIER B:
- Unscrew and take off rear harness plug from front harness receptacle

SOLDIER A:
- Step on brake pedal and hold it down

SOLDIER B:
- Put multimeter – lead on a good ground. Put multimeter + lead on contact B of front harness receptacle
- Read multimeter for +24 volts DC while Soldier A presses on brake pedal

Does multimeter measure +24 volts DC?



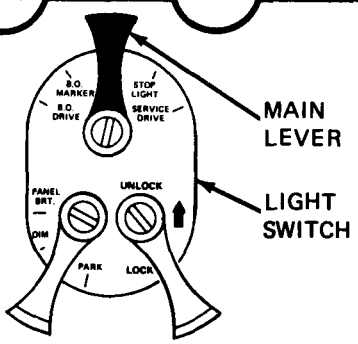


YES

NO

18

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Repair or replace front harness. Tell direct support maintenance



GO

TA 114343

Figure 25-14 (Sheet 8 of 24)

GO

19

- Check stoplight switch for +24 volts DC

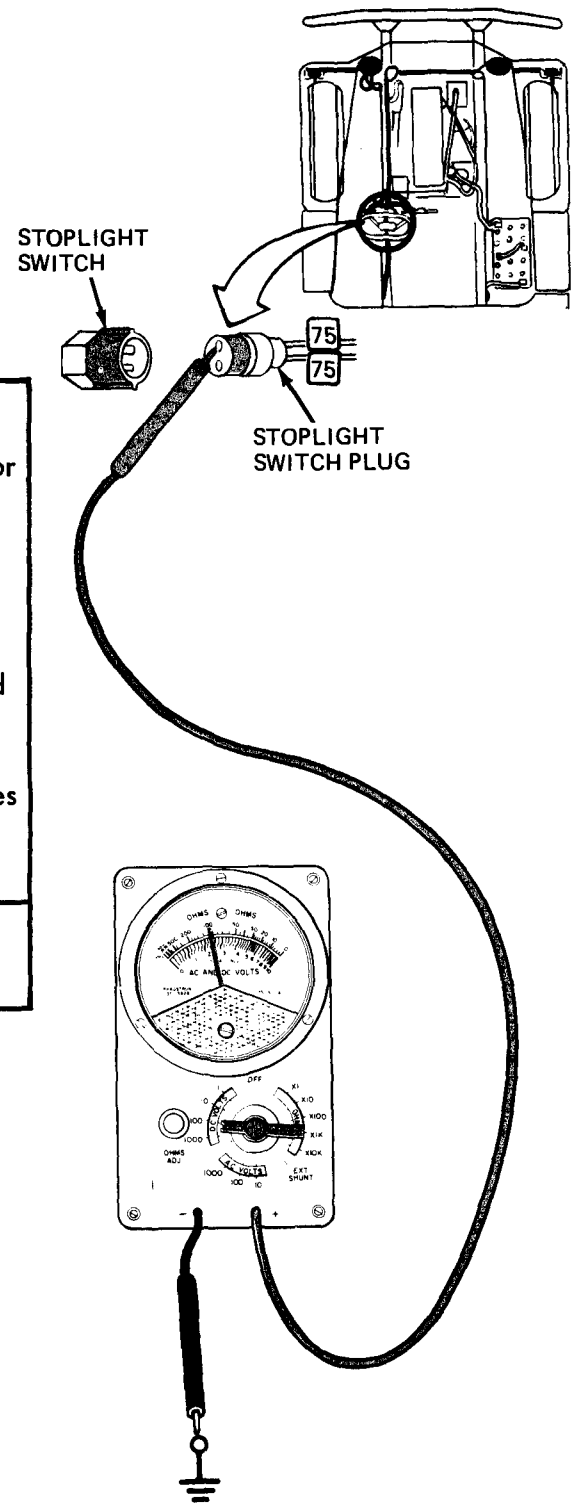
SOLDIER B:
- Take off lead 75 connector from stoplight switch

SOLDIER A:
- Step down on brake pedal and hold it down

SOLDIER B:
- While Soldier A steps down on brake pedal put multimeter - lead on good ground. Put multimeter + lead on each lead 75
- Check which lead 75 gives multimeter +24 volts DC reading

Does multimeter measure +24 volts DC at either lead 75?

GO



TA 114344

Figure 25-14 (Sheet 9 of 24)

GO

YES

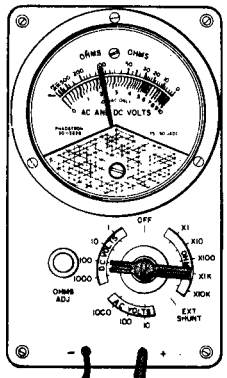
NO

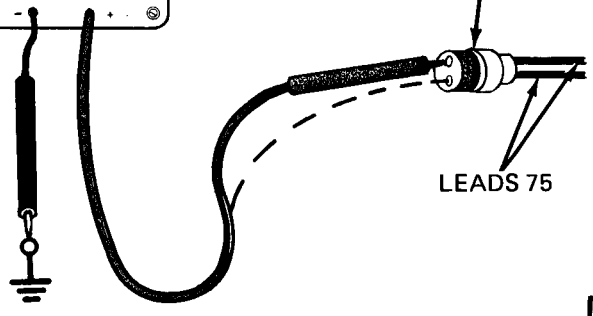
20

- Check both leads 75 at light switch
  - Take off light switch from instrument panel and plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between plug contacts F and K
  - Put multimeter + lead on each lead 75 at stoplight switch plug
  - Put multimeter - lead on a good ground
  - Read multimeter

21

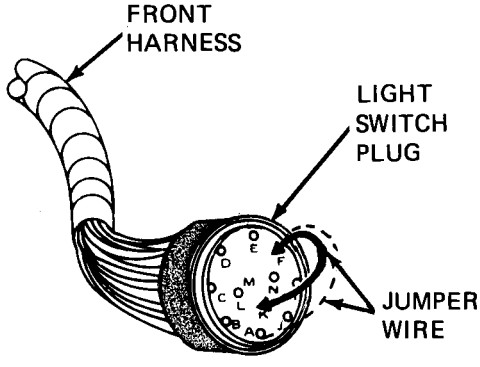
- Go to step 24





- Take jumper wire from plug contacts F and K and put between contacts F and A
- Put multimeter + lead on each lead 75 contact at stoplight switch plug
- Put multimeter - lead on a good ground
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC in either test?



NO GO

TA 114345

Figure 25-14 (Sheet 10 of 24)

NO GO

22

NO

- Repair or replace front harness
  - Take jumper wire from light switch plug
  - Put light switch back on insturment and panel. Refer to Vol 3, chapter 7, para 7-14
  - Repair or replace front harness. Tell direct support maintenance

23

YES

- Replace light switch
  - Put rear harness plug back in front harness receptacle
  - Put stoplight switch plug back on stoplight switch
  - Take jumper wire from light switch plug
  - Replace light switch. Refer to Vol 3, chapter 7, para 7-14

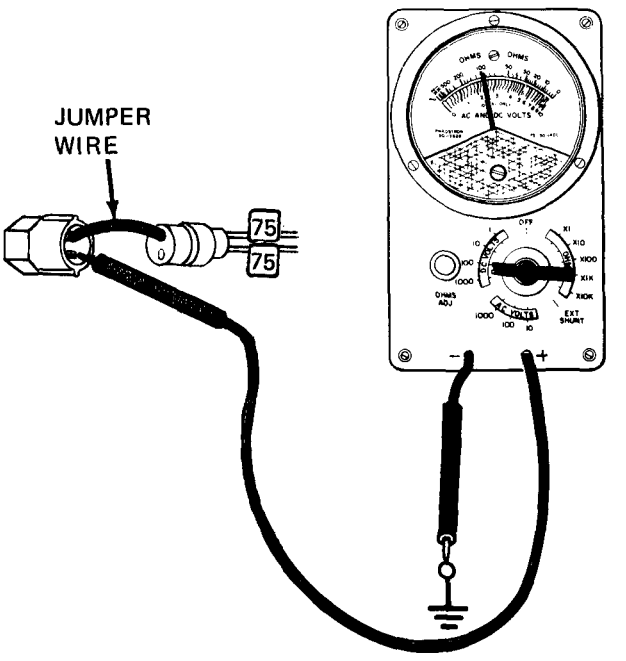
From step 21

24

- Check for +24 volts DC through stoplight switch
  - Put jumper wire from lead 75 that gave +24 volts DC reading to either stoplight switch connector
  - Put multimeter - lead on good ground and multimeter + lead on other connector of stoplight switch
  - With Soldier A still pressing down on brake pedal read multimeter. Multimeter should read +24 volts DC.

Does multimeter read +24 volts DC?

GO



TA 114346

Figure 25-14 (Sheet 11 of 24)

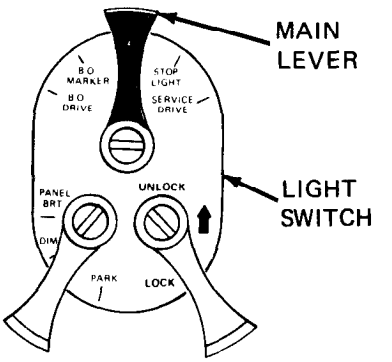
GO

YES

NO

25

- Replace stoplight switch
  - Put rear harness plug back on front harness receptacle
  - Set light switch main lever to OFF
  - Replace stoplight switch. Refer to Vol 3, chapter 7, para 7-67, or 7-68



26

- Repair or replace front harness

SOLDIER B:
- Take off jumper wire from lead 75 connector plug and stoplight switch
- Repair or replace front harness. Tell direct support maintenance

SOLDIER A:
- Step down on brake pedal and hold it down

SOLDIER B:
- While Soldier A steps down on brake pedal look at rear composite markers (left and right)

Is blackout stoplight lamp OFF?

GO

TA 114347

Figure 25-14 (Sheet 12 of 24)

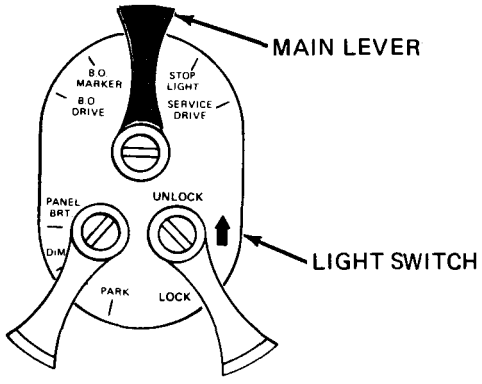
GO

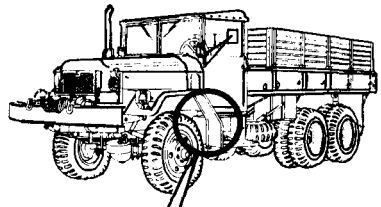
YES

NO

27

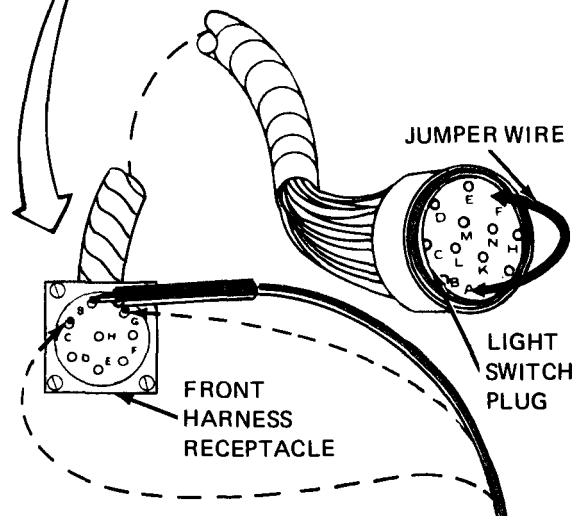
- Troubleshooting completed
  - Set light switch main lever to OFF





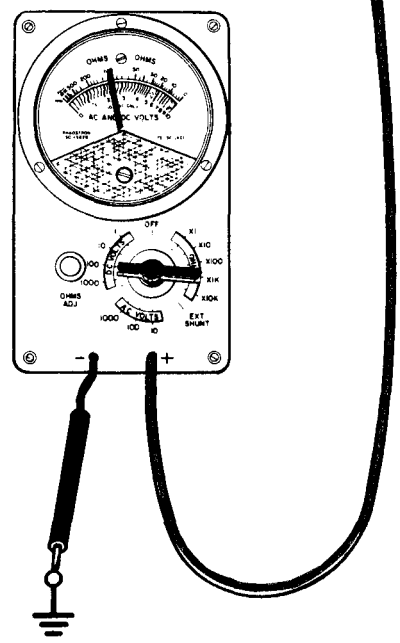
28

- Check front harness between light switch and front harness receptacle
  - Set light switch main lever to OFF
  - Take off light switch from instrument panel and light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contacts F and A of light switch plug



SOLDIER A:
- Set light switch main lever to B. O. MARKER position
- Step on brake pedal and hold it down

SOLDIER B:
- Put multimeter - lead on good ground
- Put multimeter + lead on contacts B, then C, and then G, in front harness receptacle
- Read multimeter



Does multimeter read +24 volts DC for each test?

GO

TA 114348

Figure 25-14 (Sheet 13 of 24)

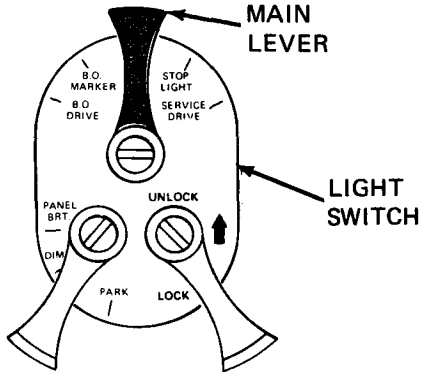
GO

YES

NO

29

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Take off jumper wire from light switch plug
  - Repair or replace front harness. Tell direct support maintenance



30

- Replace light switch
  - Set light switch main lever to OFF
  - Take off jumper wire from light switch plug
  - Put rear harness plug back on rear harness receptacle
  - Replace light switch. Refer to Vol 3, chapter 7, para 7-14

TA 114349

Figure 25-14 (Sheet 14 of 24)

From step 4

31

- Check for +24 volts at right blackout stoplight

SOLDIER B:
- Using 9/16-inch wrench, unscrew and take off four screws with washers from right rear composite marker assembly
- Take off cover
- Take off lead 23 from rear of right rear composite marker light assembly

SOLDIER A:
- Set light switch main lever to B. O. MARKER position

SOLDIER B:
- Put multimeter + lead on lead 23 and - lead on a good ground

SOLDIER A:
- Press down on brake pedal and hold it down

SOLDIER B:
- Read multimeter while Soldier A presses down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

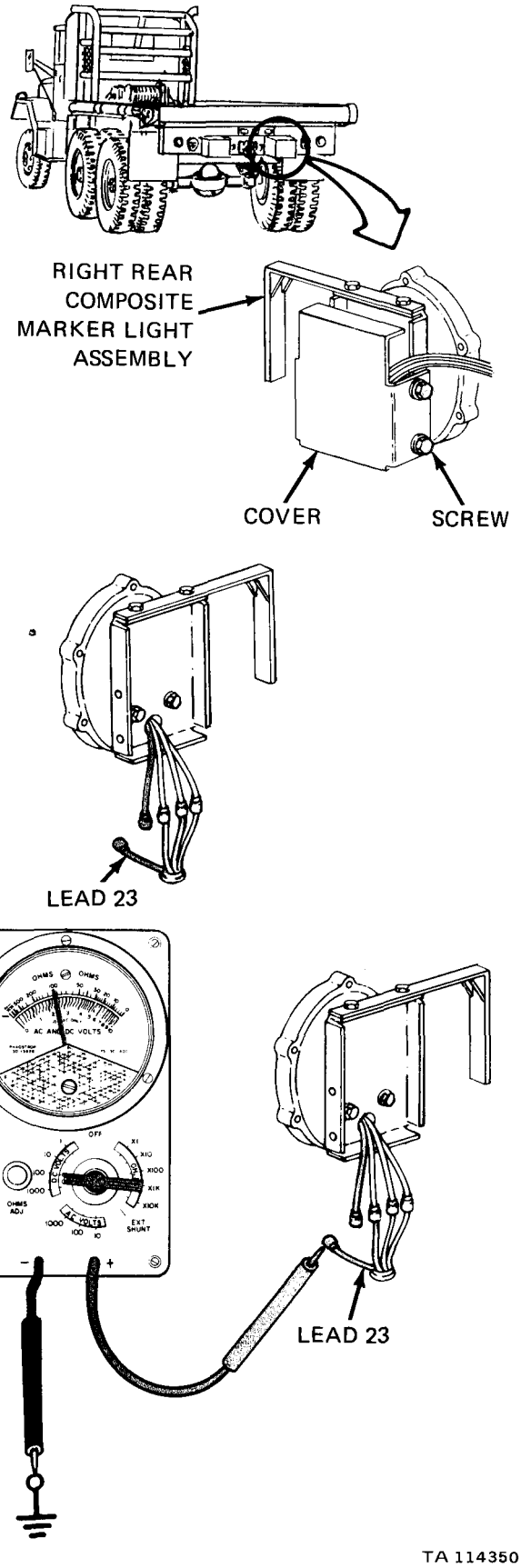


Figure 25-14 (Sheet 15 of 24)

GO

YES

NO

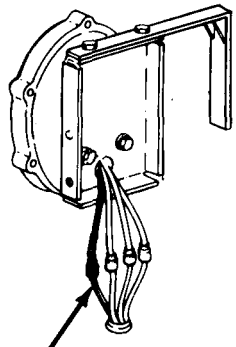
33

● Go to step 38

32

● Replace right blackout stoplight lamp

- Set light switch main lever to OFF
- Replace blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
- Put lead 23 back into rear of right composite marker taillight assembly



LEAD 23

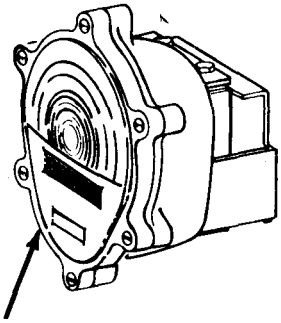
34

● Test right blackout stoplight lamp

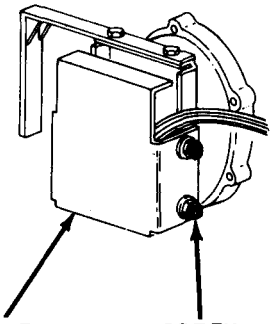
SOLDIER A:
- Set light switch main lever to B. O. MARKER position
- Press down on brake pedal and hold it down

SOLDIER B:
- Look at right rear composite marker assembly while Soldier A presses down on brake pedal. Blackout stoplight lamp should be lit

Is blackout stoplight lamp OFF?



B. O. STOP LIGHT



COVER SCREW

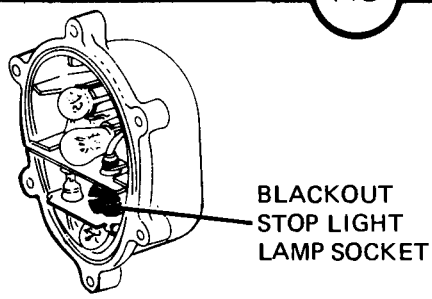
NO GO

TA 114351

Figure 25-14 (Sheet 16 of 24)

NO GO

NO



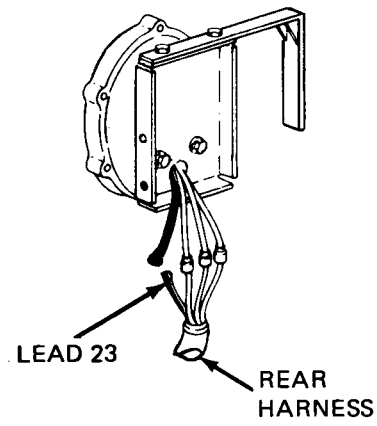
35

- Put right rear composite marker light assembly back together
  - Set light switch main lever to OFF
  - Put cover back on right rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

YES

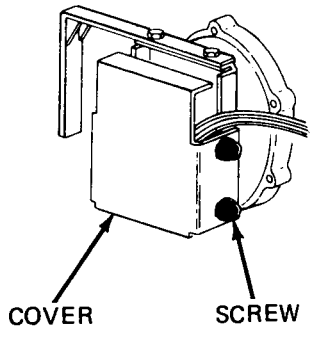
36

- Clean contacts of right blackout stoplight lamp socket
  - Set light switch main lever to OFF
  - Remove blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32
  - Clean blackout stoplight lamp socket. Refer to Vol 3, chapter 7, para 7-33
  - Replace blackout stoplight lamp. Refer to Vol 3, chapter 7, para 7-32



37

- Clean contacts of right blackout stoplight lamp connectors
  - Take off lead 23 from right rear composite marker assembly
  - Clean lead 23 contacts. Refer to Vol 3, chapter 7, para 7-33
  - Push lead 23 back into right rear composite marker light assembly
  - Put cover back on right rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers



TA 114352

Figure 25-14 (Sheet 17 of 24)

From step 33

38

- Check voltage to front and rear harness connectors

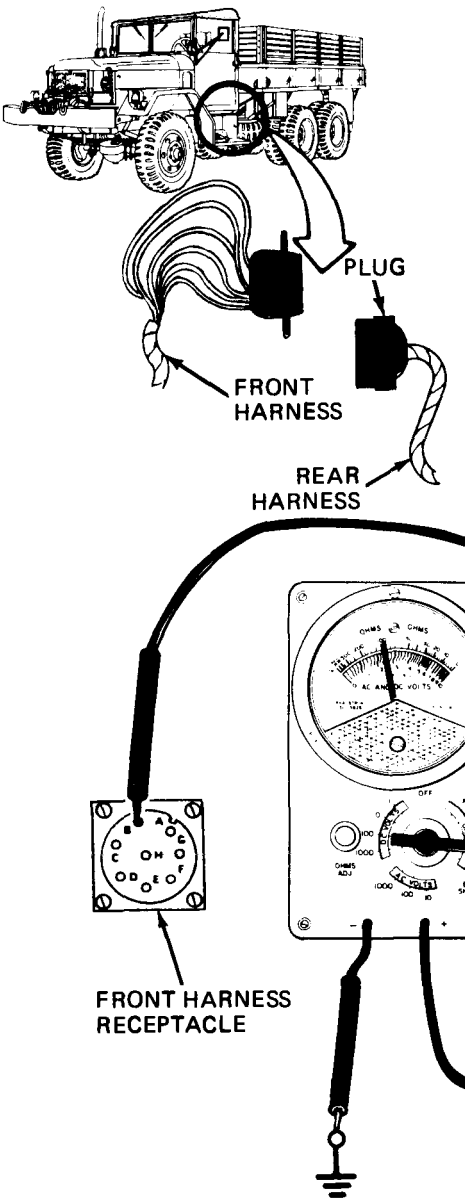
SOLDIER B: • Take rear harness plug from front harness receptacle.

SOLDIER A: • Step on brake pedal and hold it down

SOLDIER B: • Put multimeter - lead on a good ground. Put multimeter + lead on contact B of front harness receptacle

- Read multimeter for +24 volts DC while Soldier A presses on brake pedal

Does multimeter read +24 volts DC?

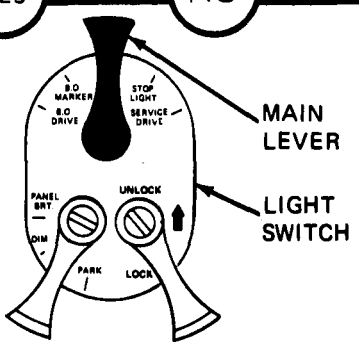


YES

NO

39

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Repair or replace front harness. Tell direct support maintenance



GO

TA 114353

Figure 25-14 (Sheet 18 of 24)

GO

40

- Check stoplight switch for +24 volts DC

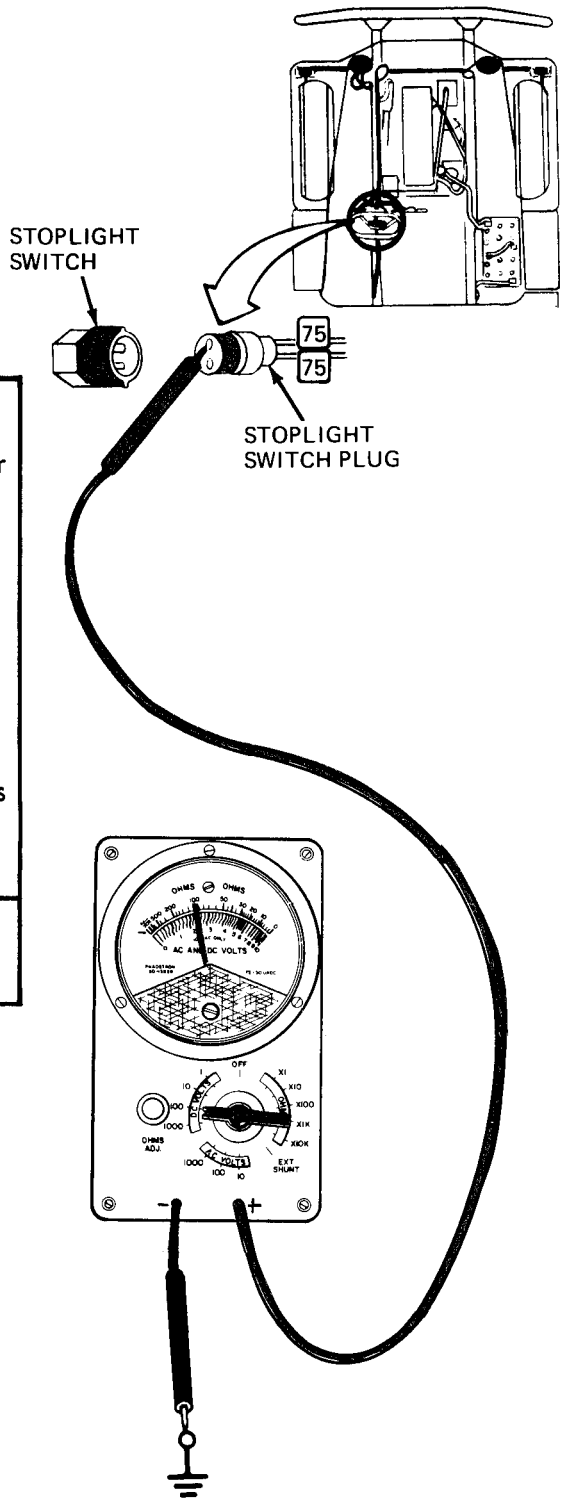
SOLDIER B:
- Take off lead 75 connector from stoplight switch

SOLDIER A:
- Step down on brake pedal and hold it down

SOLDIER B:
- While Soldier A steps down on brake pedal put multimeter - lead on good ground. Put multimeter + lead on each lead 75
- Check which lead 75 gives multimeter +24 volts DC reading

Does multimeter measure +24 volts DC at either lead 75?

GO



TA 114354

Figure 25-14 (Sheet 19 of 24)

GO

YES

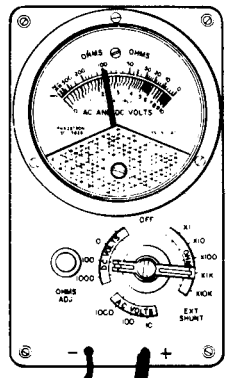
NO

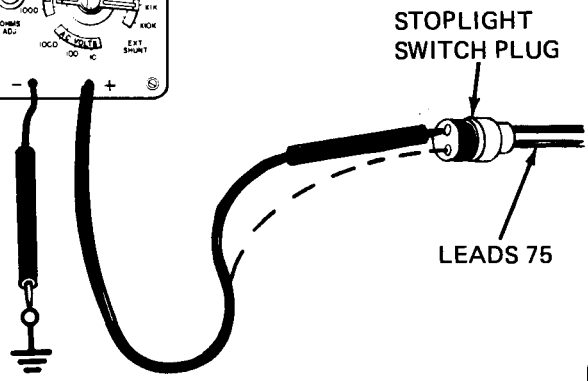
42

- Go to step 45

41

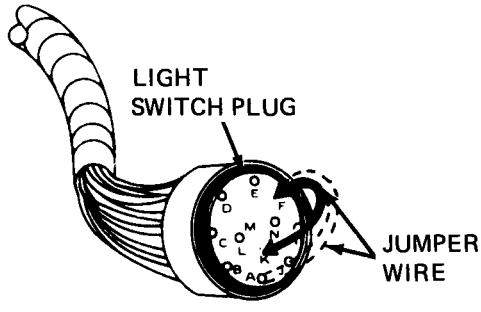
- Check both leads 75 at light switch
  - Take off light switch from instrument panel and plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between plug contacts F and K
  - Put multimeter + lead on each lead 75 at stoplight switch plug
  - Put multimeter - lead on a good ground
  - Read multimeter





- Take jumper wire from plug contacts F and K and put between contacts F and A
- Put multimeter + lead on each lead 75 contact at stoplight switch plug
- Put multimeter - lead on a good ground
- Read multimeter

Does multimeter measure +24 volts DC in either test?



NO GO

TA 114355

Figure 25-14 (Sheet 20 of 24)

NO GO

43

NO

- Repair or replace front harness
  - Take jumper wire from light switch plug
  - Put light switch back on insturment and panel. Refer to Vol 3, chapter 7, para 7-14
  - Repair or replace front harness. Tell direct support maintenance

44

YES

- Replace light switch
  - Put rear harness plug back in front harness receptacle
  - Put stoplight switch plug back on stoplight switch
  - Take jumper wire from light switch plug
  - Replace light switch. Refer to Vol 3, chapter 7, para 7-14

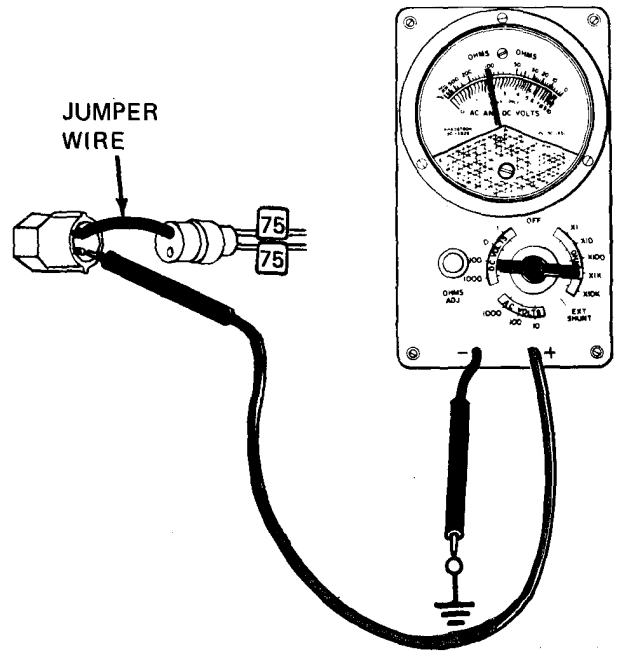
From step 42

45

- Check for +24 volts DC through stoplight switch
  - Put jumper wire from lead 75 that gave +24 volts DC reading to either stoplight switch connector
  - Put multimeter - lead on good ground and multimeter + lead on other connector of stoplight switch
  - With Soldier A still pressing down on brake pedal read multimeter. Multimeter should read +24 volts DC

Does multimeter read +24 volts DC?

GO



TA 114356

Figure 25-14 (Sheet 21 of 24)

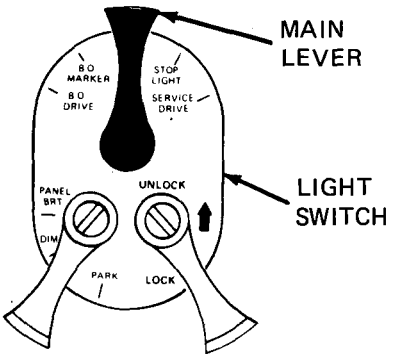
GO

YES

NO

46

- Replace stoplight switch
  - Put rear harness plug back on front harness receptacle
  - Set light switch main lever to OFF
  - Replace stoplight switch. Refer to Vol 3, chapter 7, para 7-67, and 7-68



47

- Repair or replace front harness

SOLDIER B:
- Take off jumper wire from lead 75 connector plug and stoplight switch
- Repair or replace front harness. Tell direct support maintenance

SOLDIER A:
- Step down on brake pedal and hold it down

SOLDIER B:
- While Soldier A steps down on brake pedal look at rear composite markers (left and right)

Is blackout stoplight lamp OFF?

GO

TA 114357

Figure 25-14 (Sheet 22 of 24)

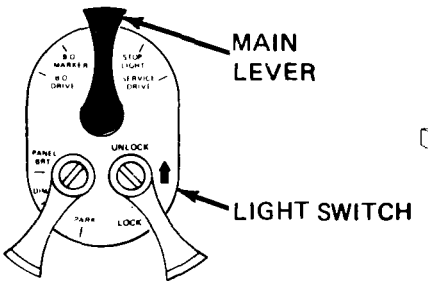
GO

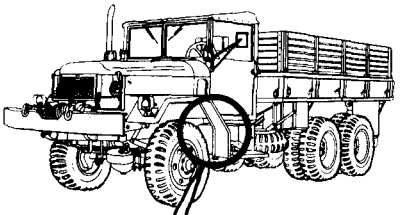
YES

NO

48

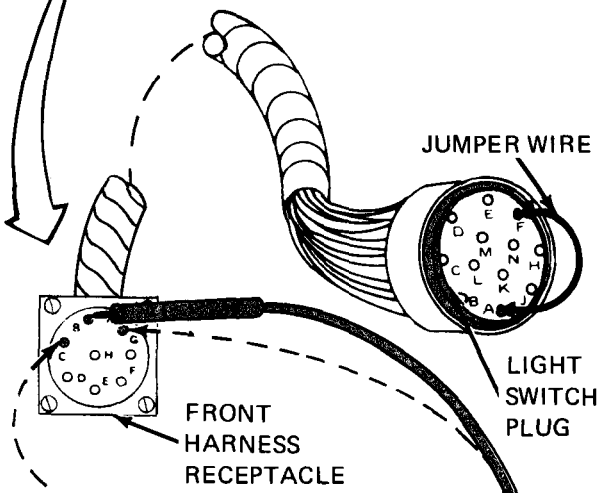
- Troubleshooting completed
  - Set light switch main lever to OFF





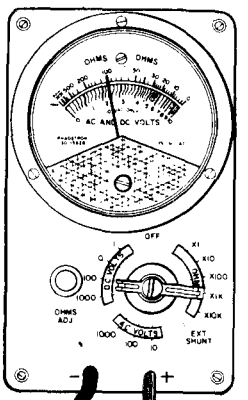
49

- Check front harness between light switch and front harness receptacle
  - Set light switch main lever to OFF
  - Take off light switch from instrument panel and light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contacts F and A of light switch plug



SOLDIER A:
- Set light switch main lever to B. O. MARKER position
- Step on brake pedal and hold it down

SOLDIER B:
- Put multimeter - lead on good ground
- Put multimeter + lead on contacts B, then C, and then G, in front harness receptacle
- Read multimeter. Multimeter should measure +24 volts DC for each test



Does multimeter measure +24 volts DC for each test?

GO

TA 114358

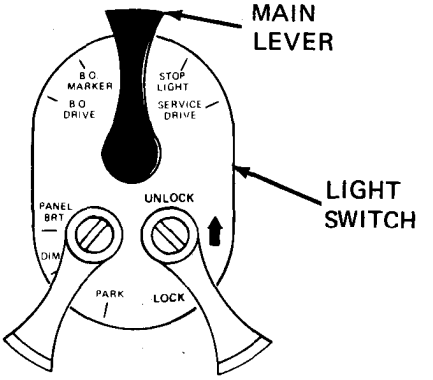
Figure 25-14 (Sheet 23 of 24)

GO

NO

50

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Take off jumper wire from light switch plug
  - Repair or replace front harness. Tell direct support maintenance



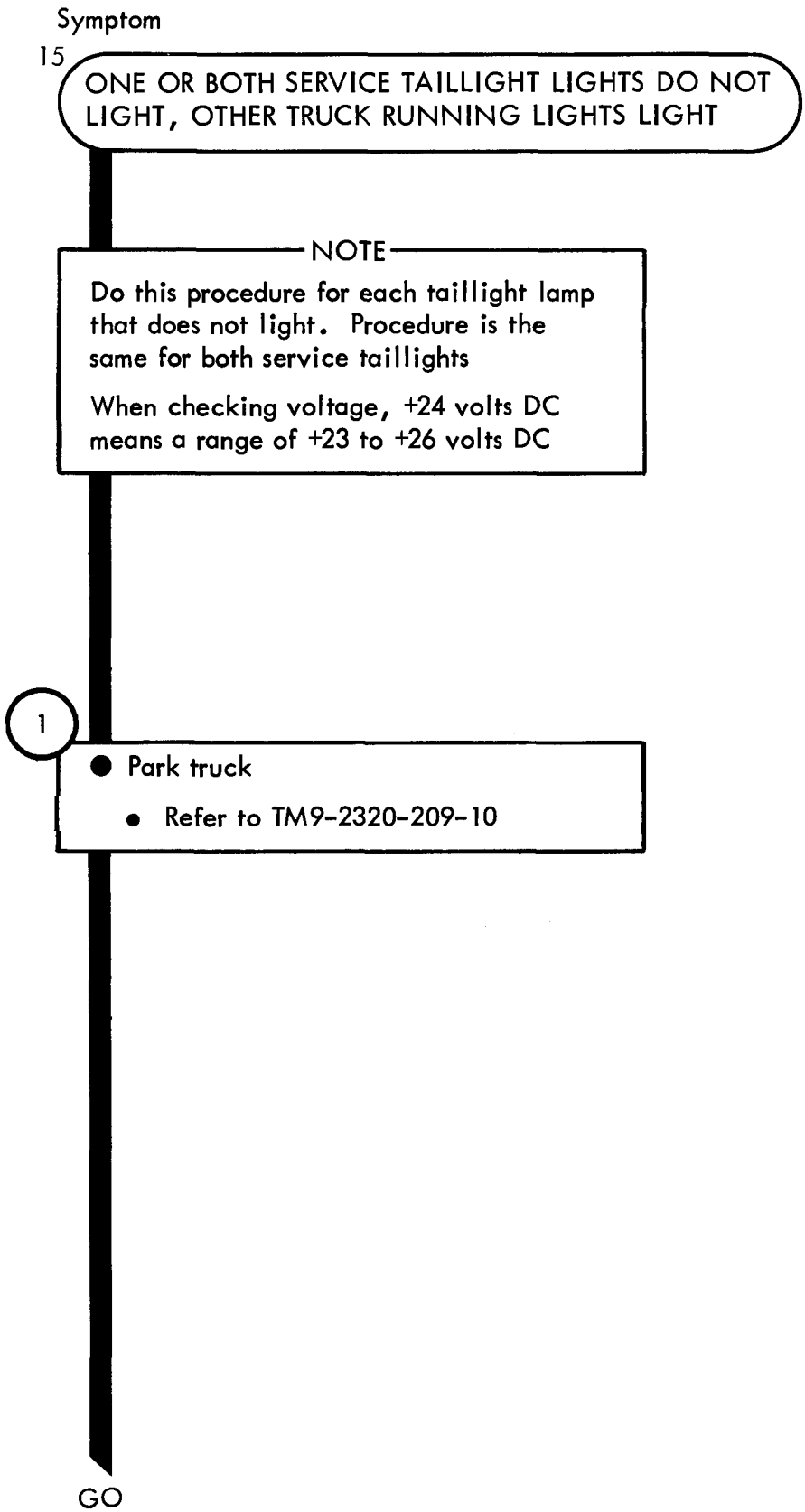
YES

51

- Replace light switch
  - Set light switch main lever to OFF
  - Take off jumper wire from light switch plug
  - Put rear harness plug back on rear harness receptacle
  - Replace light switch. Refer to Vol 3, chapter 7, para 7-14

TA 114359

Figure 25-14 (Sheet 24 of 24)



TA 114360

Figure 25-15 (Sheet 1 of 7)

GO

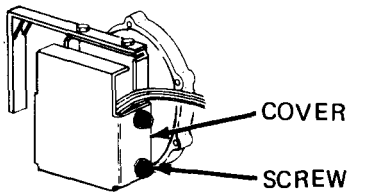
2

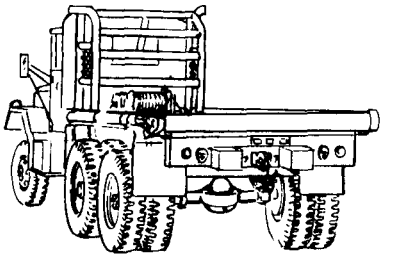
- Check for +24 volts at taillight lamp
  - Using 9/16-inch wrench, unscrew and take off four screws with washers from rear composite marker assembly
  - Take off cover
  - Take off lead 21

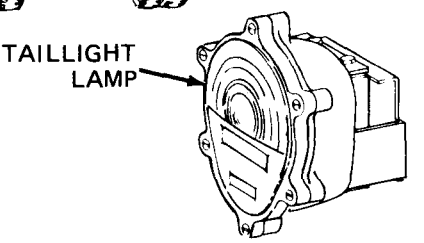
- Set light switch main lever to SERVICE DRIVE
- Set multimeter to read +24 volts DC. Refer to test equipment procedures index
- Put multimeter + lead on lead 21 contact
- Put multimeter - lead on a good ground
- Read multimeter. Multimeter should measure +24 volts DC

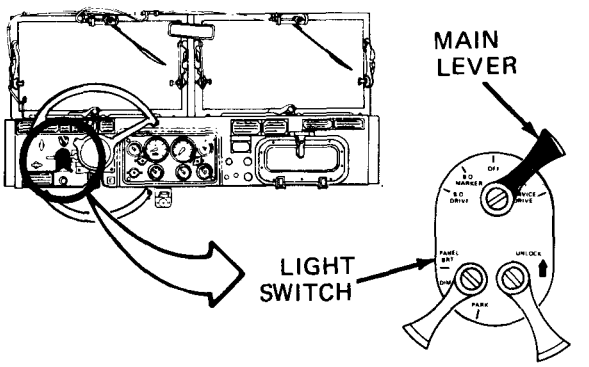
Does multimeter measure less than +24 volts DC?

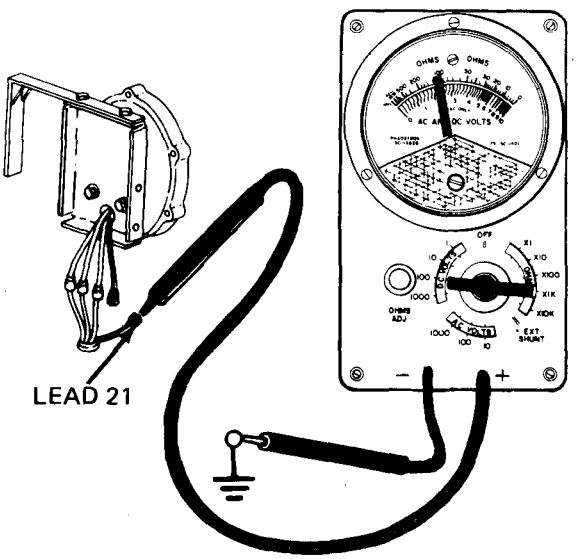
GO











TA 114361

Figure 25-15 (Sheet 2 of 7)

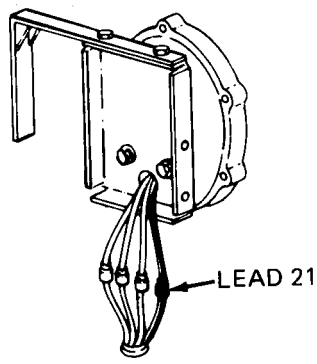
GO

YES

NO

3

- Replace taillight lamp
  - Set light switch main lever to OFF
  - Replace taillight lamp. Refer to Vol 3, chapter 7, para 7-27, or 7-29
  - Put back lead 21 at rear composite marker assembly



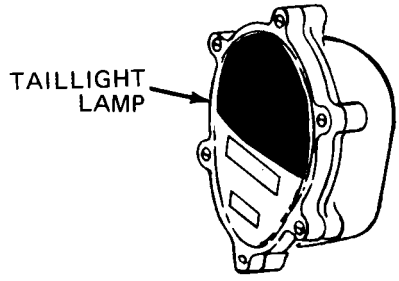
4

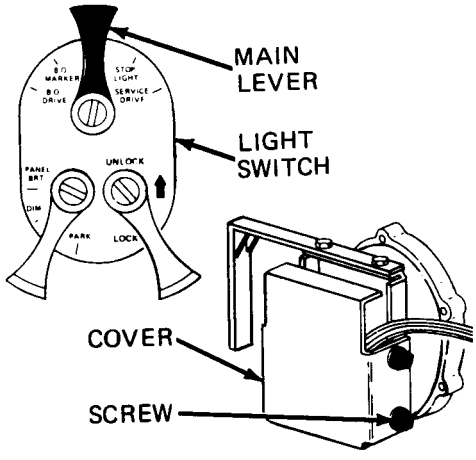
- Go to step 9

5

- Test taillight lamp
  - Set light switch main switch lever to SERVICE DRIVE
  - Look at rear composite marker assembly. Taillight lamp should be lit

Is taillight lamp off?





NO

6

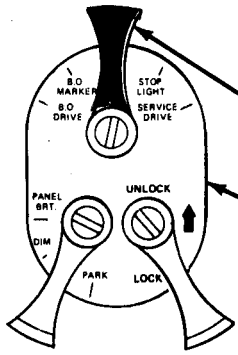
- Troubleshooting completed.
  - Set light switch main lever to OFF
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

NO GO

TA 114362

Figure 25-15 (Sheet 3 of 7)

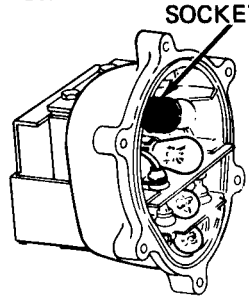
NO GO



MAIN LEVER

LIGHT SWITCH

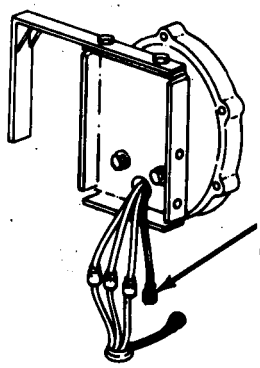
TAILLIGHT LAMP SOCKET



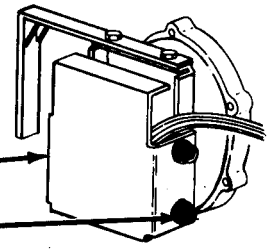
YES

7

- Clean contacts of taillight lamp socket
  - Set light switch main lever to OFF
  - Remove taillight lamp. Refer to Vol 3, chapter 7, para 7-27 or 7-29
  - Clean taillight lamp socket. Refer to Vol 3, chapter 2, para 7-26 or 7-30
  - Replace taillight lamp. Refer to Vol 3, chapter 7, para 7-27 or 7-29



LEAD 21 OR LEAD 22 CONTACTS



COVER

SCREW

8

- Clean contacts of taillight connectors
  - Take off lead 21
  - Clean lead 21 contacts. Refer to Vol 3, chapter 7, para 7-26 or 7-30
  - Push lead 21 back into connector
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

TA 114363

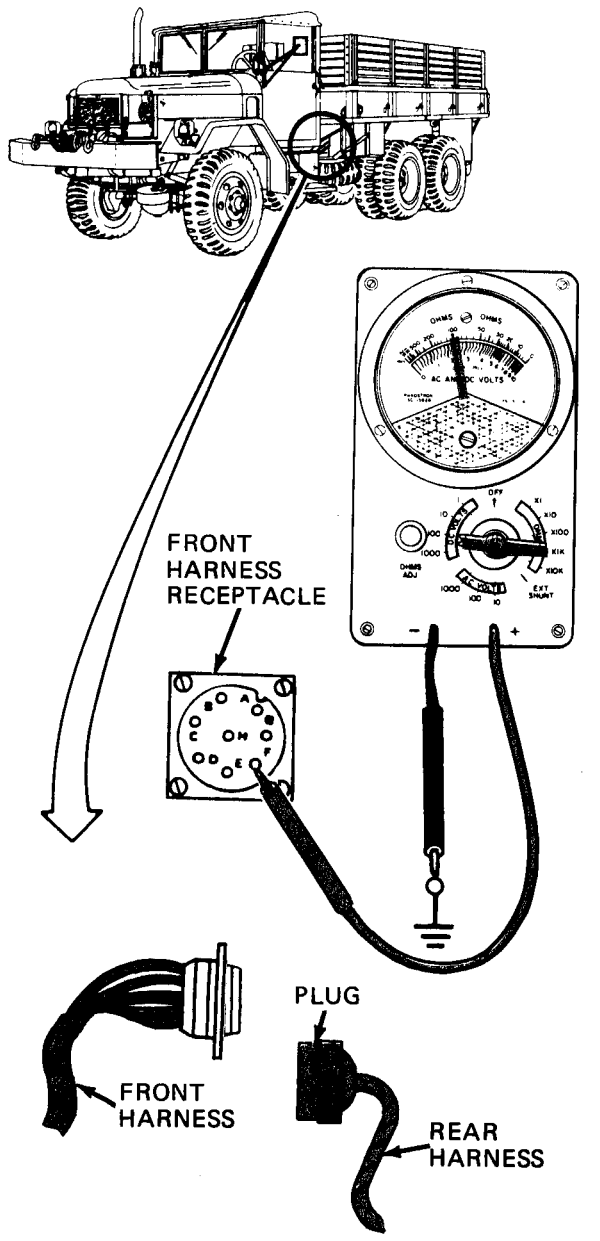
Figure 25-15 (Sheet 4 of 7)

From step 4

9

- Check rear harness between taillight lamp and rear harness connector
  - Set light switch main lever to OFF
  - Unscrew and take off rear harness plug from front harness connector
  - Put multimeter + lead on contact E in front harness connectors
  - Put multimeter - lead on a good ground
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

10

- Repair or replace rear harness
- Tell direct support maintenance

GO

TA 114364

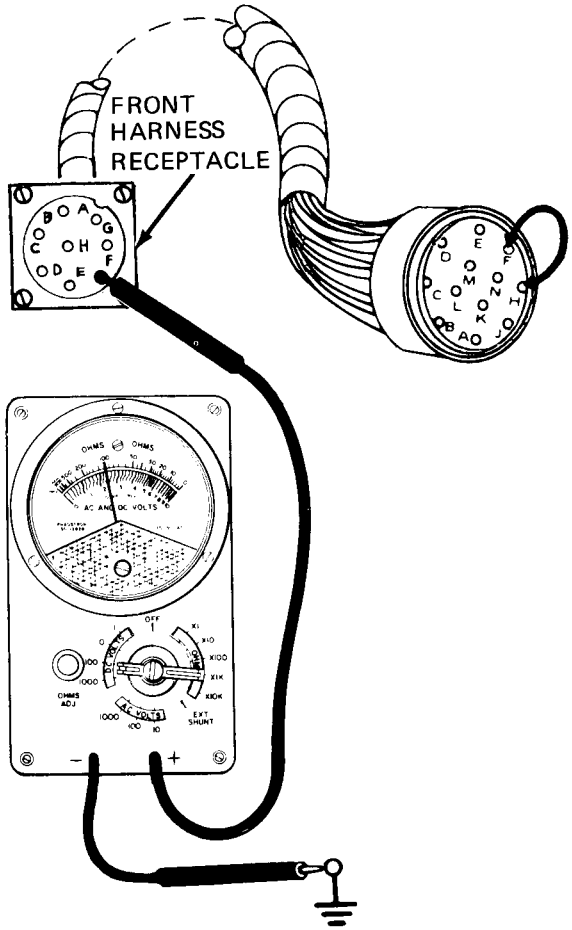
Figure 25-15 (Sheet 5 of 7)

GO

11

- Check front harness between light switch and front harness connector
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14. Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contacts F and H of light switch plug
  - Put multimeter + lead on contact E in front harness connector
  - Put multimeter - lead on good ground. Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

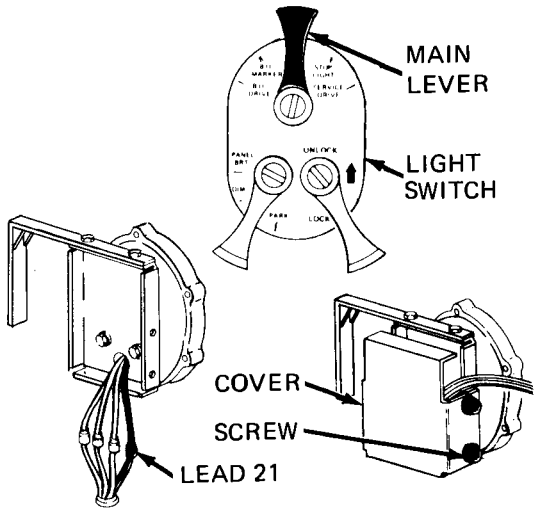


YES

NO

12

- Repair or replace front harness
  - Take off jumper wire from light switch plug
  - Put light switch back on instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Put back lead 21 at rear composite marker light assembly
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers



GO

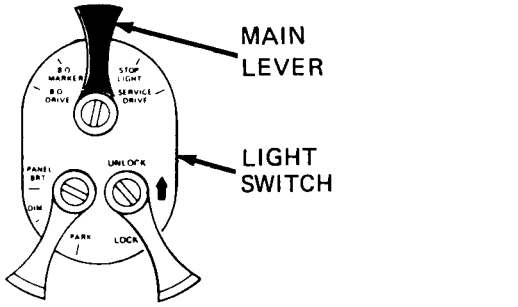
TA 114365

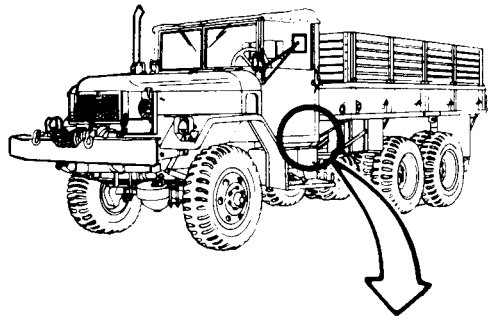
Figure 25-15 (Sheet 6 of 7)

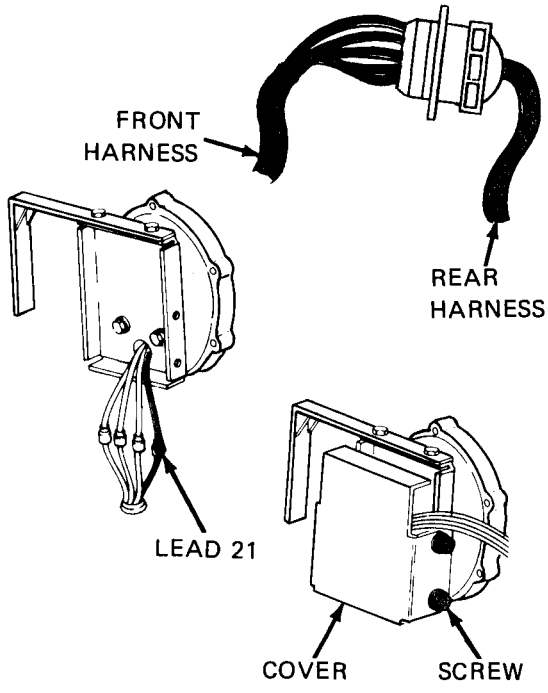
GO

13

- Replace light switch
  - Take off jumper wire from light switch plug
  - Put front harness connector back on rear harness plug and screw on tight
  - Put lead 21 back in rear composite marker light assembly
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers
  - Replace light switch. Refer to Vol 3, chapter 7, para 7-14

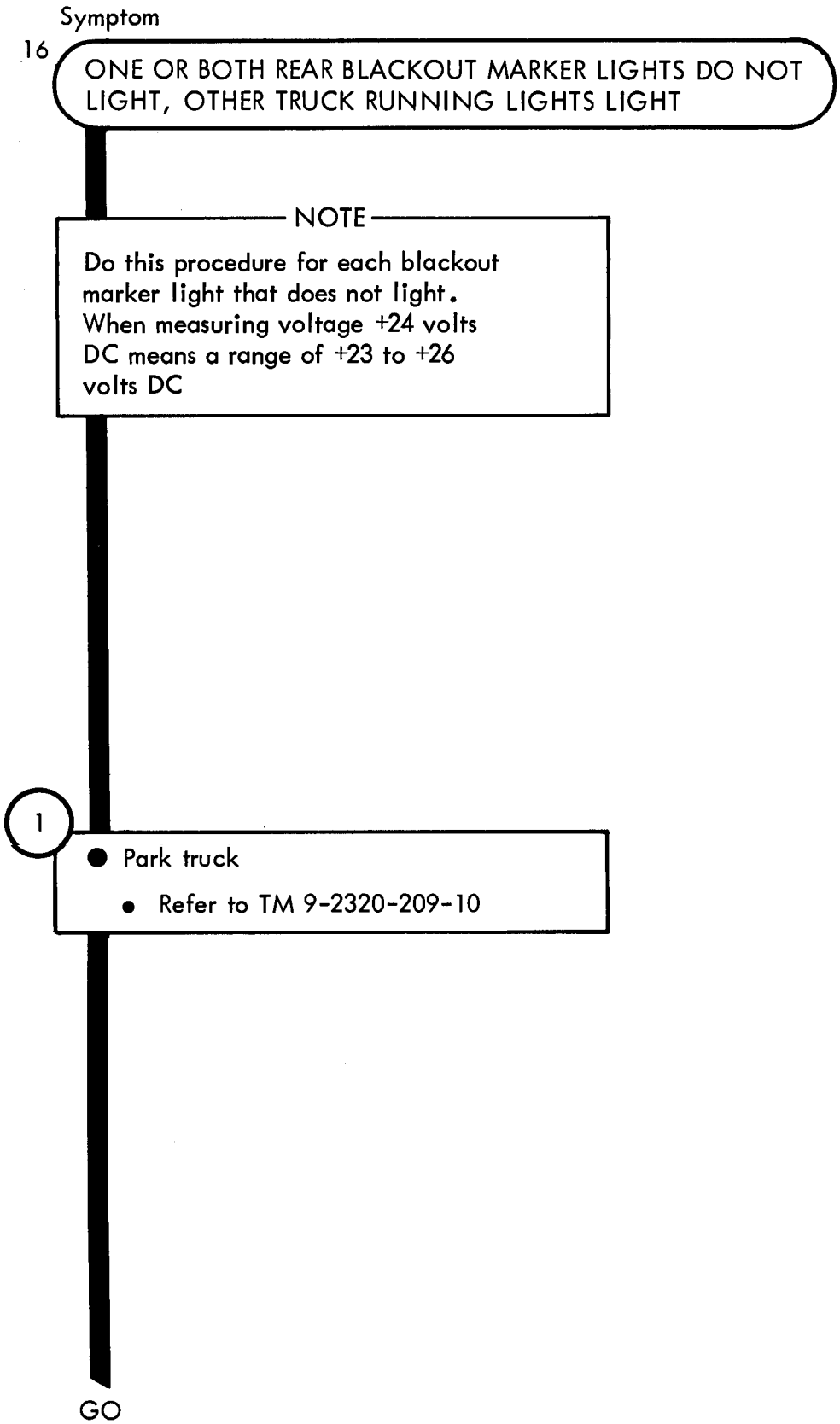






TA 114366

Figure 25-15 (Sheet 7 of 7)



TA 114367

Figure 25-16 (Sheet 1 of 7)

GO

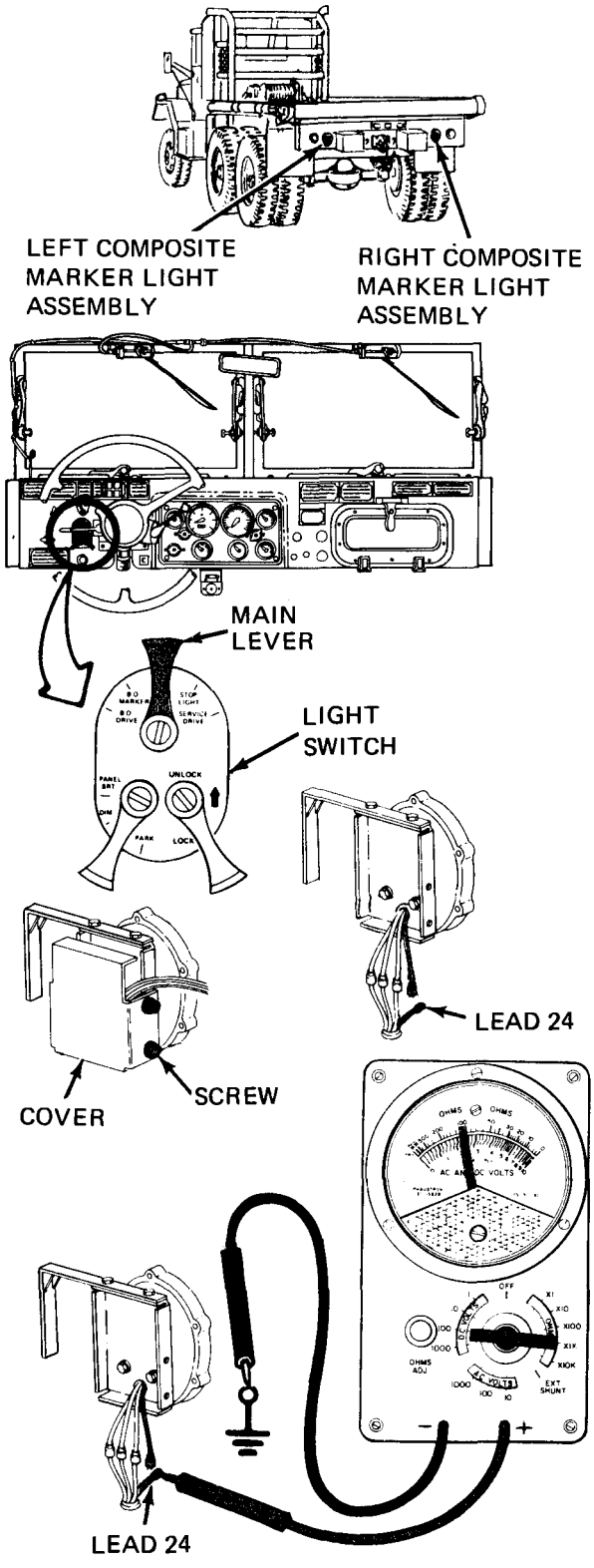
2

- Check for +24 volts DC at rear blackout marker
  - Using 9/16-inch wrench, unscrew and take off four screws with washers from rear composite marker assembly
  - Take off cover
  - Take off lead 24 from rear composite marker assembly
  - Set light switch main lever to B.O. MARKER

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter + lead on lead 24 and - lead on a good ground
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114368

Figure 25-16 (Sheet 2 of 7)

GO

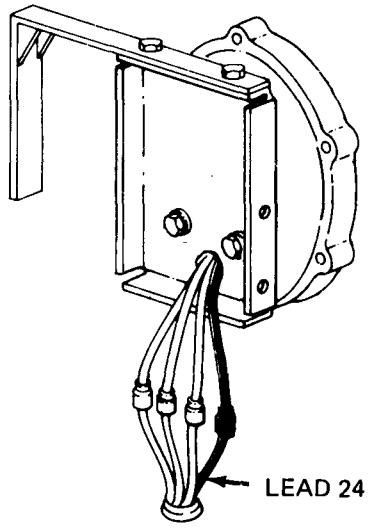
YES

NO

3

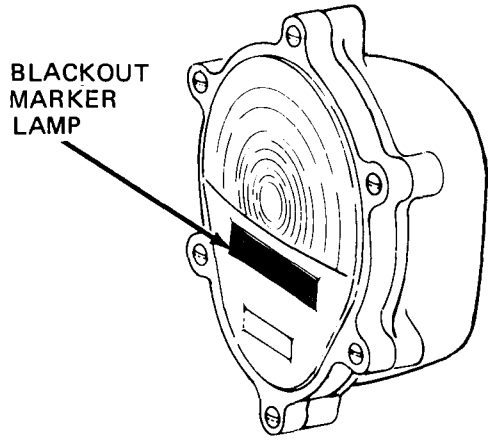
● Replace rear blackout marker lamp

- Set light switch main lever to OFF
- Put back lead 24 at rear of rear composite light marker assembly
- Replace blackout marker lamp. Refer to Vol 3, chapter 7, para 7-32



4

● Go to step 9



5

● Test rear blackout marker light

- Set light switch main lever to B.O. MARKER
- Look at rear blackout marker light
- Blackout marker lamp should be lit

Is blackout marker lamp off?

NO GO

TA 114369

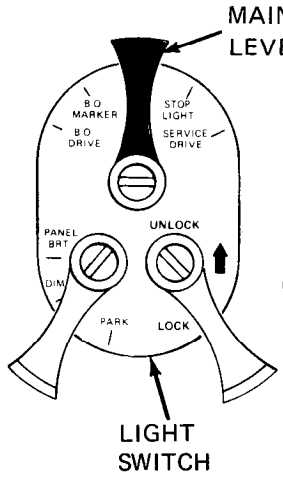
Figure 25-16 (Sheet 3 of 7)

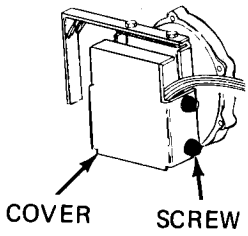
NO GO

NO

6

- Troubleshooting completed.
  - Set light switch main lever to OFF
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

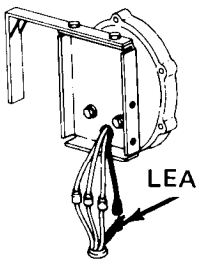


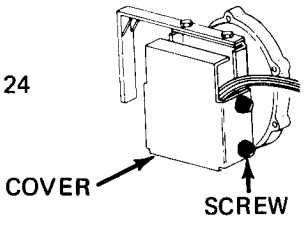


YES

7

- Clean contacts of rear blackout marker light connectors
  - Take off lead 24 from rear of rear composite marker light assembly
  - Clean lead 24 contacts. Refer to Vol 3, chapter 7, para 7-33
  - Put lead 24 back into rear of rear composite marker light assembly
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

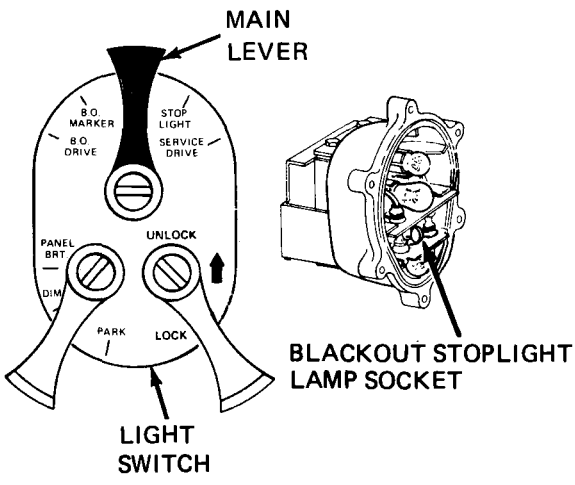




NO GO

TA 114370

Figure 25-16 (Sheet 4 of 7)



NO GO

8

- Clean contacts off rear blackout marker lamp socket
  - Set light switch main lever to OFF
  - Remove blackout marker lamp. Refer to Vol 3, chapter 7, para 7-32
  - Clean blackout marker lamp socket. Refer to Vol 3, chapter 7, para 7-33
  - Put back blackout marker lamp. Refer to Vol 3, chapter 7, para 7-32

Vol 3, chapter 7, para 7-32

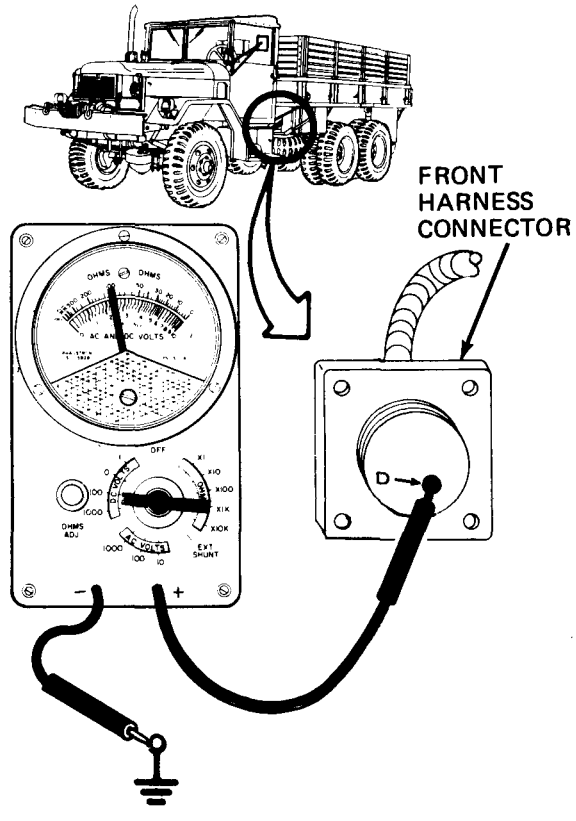
From step 4

9

- Check harness between rear blackout marker lamp and rear harness connector
  - Set light switch main lever to OFF
  - Unscrew and take off plug from front harness receptacle
  - Set light switch main lever to B.O. MARKER
  - Put multimeter + lead on contact D in front harness receptacle and - lead on good ground
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114371

Figure 25-16 (Sheet 5 of 7)

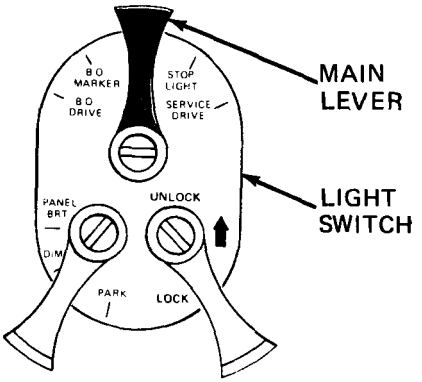
GO

YES

NO

10

- Repair or replace rear harness
  - Set light switch main lever to OFF
  - Repair or replace rear harness. Tell direct support maintenance



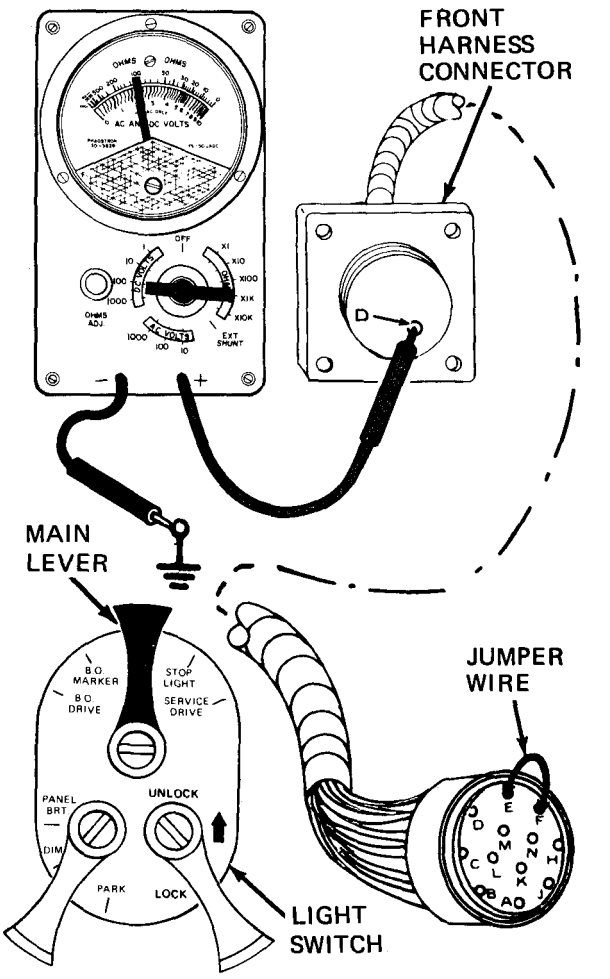
11

- Check front harness between light switch and front harness receptacle
  - Set light switch main lever to OFF
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14. Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contacts F and E of light switch plug on front harness
  - Set light switch main lever to B.O. MARKER
  - Put multimeter + lead on contact D in front harness receptacle and - lead on good ground. Multimeter should measure +24 volts DC

Vol 3, chapter 7, paara 7-14.

Does multimeter measure +24 volts DC?

GO



TA 114372

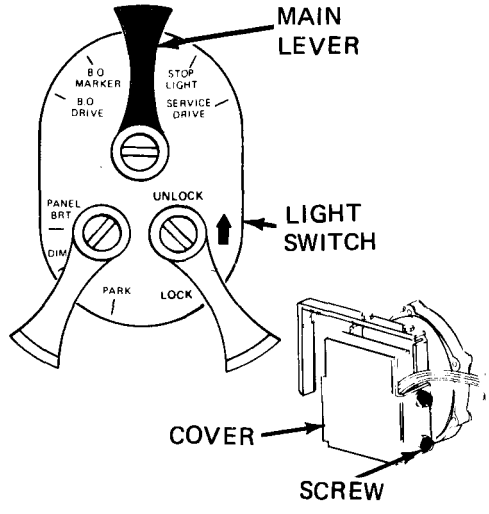
Figure 25-16 (Sheet 6 of 7)

YES

NO

12

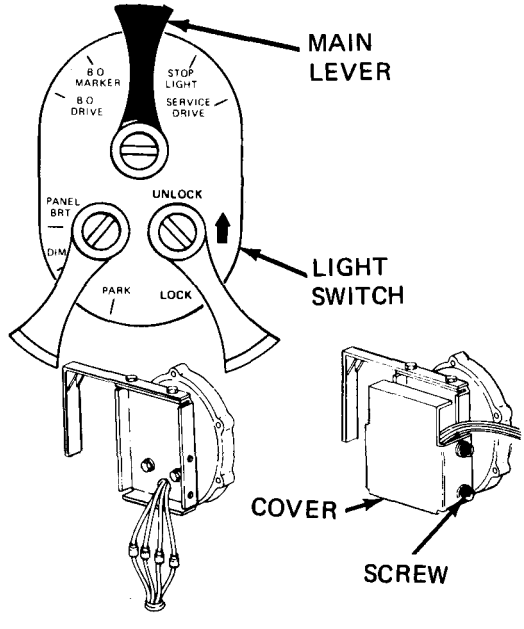
- Repair or replace front harness
  - Set light switch main lever to OFF
  - Take jumper wire off light switch plug
  - Put light switch back on instrument panel. Refer to Vol 3, chapter 7, para 7-14



- Put back lead 24 on rear of rear composite marker light assembly
- Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers
- Repair or replace front harness. Tell direct support maintenance

13

- Replace light switch
  - Set light switch main lever to OFF
  - Take off jumper wire from light switch plug
  - Put rear harness plug back on front harness receptacle and screw on tight
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers



TA 114373

Figure 25-16 (Sheet 7 of 7)

Symptom

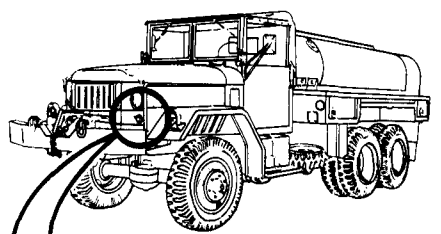
17 ONE LAMP DIM, FLICKERING, OR LAMPS THAT WORK SOMETIMES

NOTE

Dim, flickering, or lamps that work sometimes are caused by loose connections, poor ground connections, dirt, paint and corrosion buildup. Finding a fault and correction consists of checking electrical connections for defects, and cleaning and tightening as necessary. A typical lamp, the blackout drive lamp, is used as an example. Other truck lamps can be done the same way

1

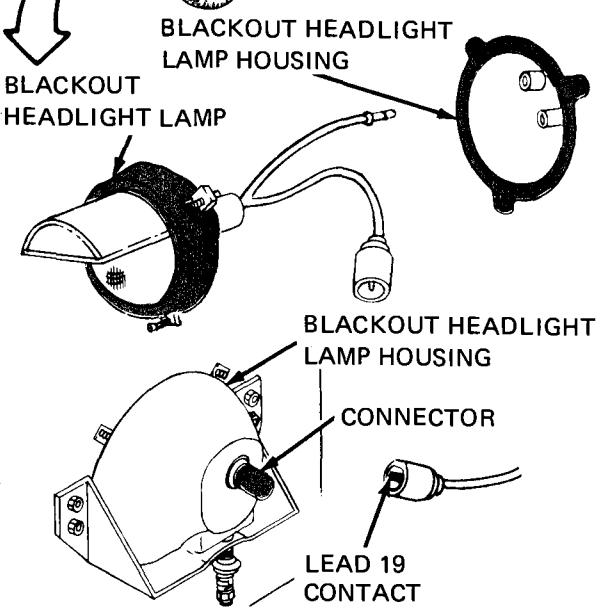
- Park truck
  - Refer to TM 9-2320-209-10



2

- Remove blackout headlight lamp and circuit 19 lead
  - Take lead 19 from blackout headlight lamp housing connector. Refer to Vol 3, chapter 7, para 7-21 or 7-22
  - Remove blackout headlight lamp from lamp housing. Refer to Vol 3, chapter 7, para 7-23

Vol 3, chapter 7, para 7-23



GO

TA 114374

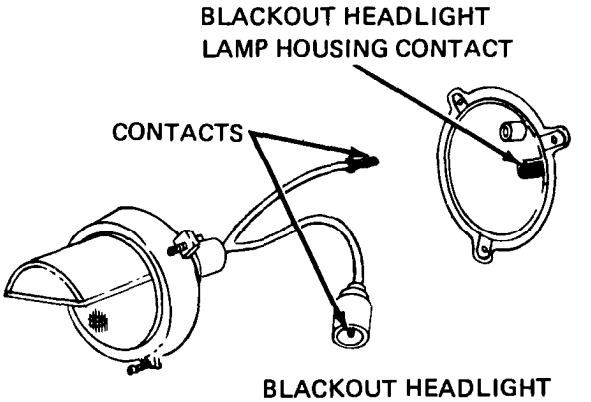
Figure 25-17 (Sheet 1 of 5)

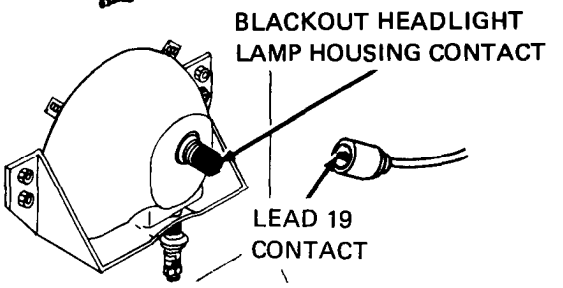
GO

3

- Look at connector contacts
  - See if lamp contacts are dirty, rusted, corroded or broken
  - See if blackout headlight lamp housing contacts are dirty, rusted, corroded or broken
  - See if ground lead connector contact is dirty, rusted, corroded or broken
  - See if lead 19 or ground lead contacts are dirty, rusted, corroded or broken

Are contacts OK?





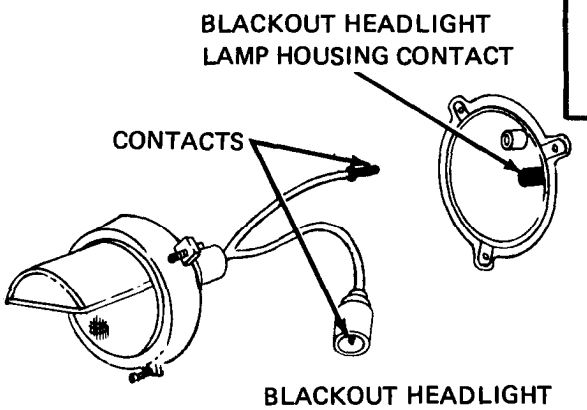
YES

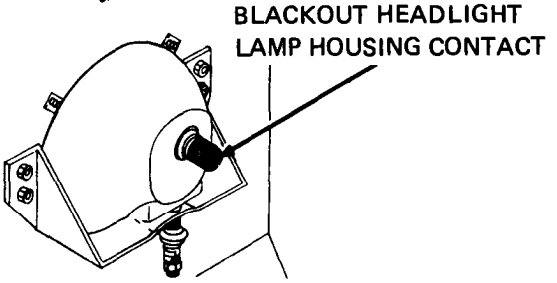
NO

4

- Correct faults
  - Clean or replace dirty, rusty, or corroded contacts. Refer to Vol 3, chapter 7, para 7-24
  - Replace broken contacts. Refer to Vol 3, chapter 7, para 7-24

Vol 3, chapter 7, para 7-24





GO

TA 114375

Figure 25-17 (Sheet 2 of 5)

GO

5

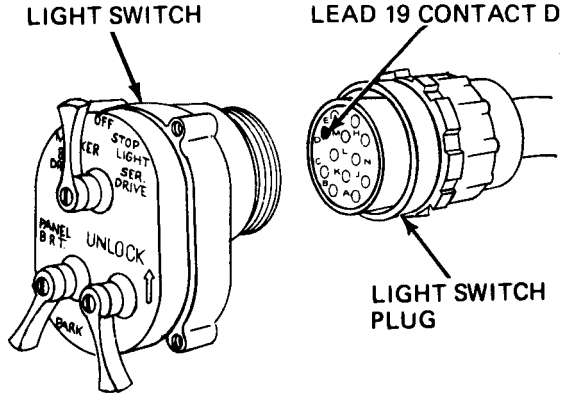
- Check connector contacts for tightness
  - Check all connector contacts from housing for tightness. Refer to Vol 3, chapter 7, para 7-24
  - Replace any loose contacts. Refer to Vol 3, chapter 7, para 7-24
  - Check connector contacts from blackout service lamp
  - If contacts are loose, replace lamp. Refer to Vol 3, chapter 7, para 7-24

6

- Check lead 19 contact D connection at light switch
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Make sure contact D in light switch and light switch plug are not dirty, damaged, or corroded
  - Make sure contacts fit together tightly

Are contacts OK?

GO



TA 114376

Figure 25-17 (Sheet 3 of 5)

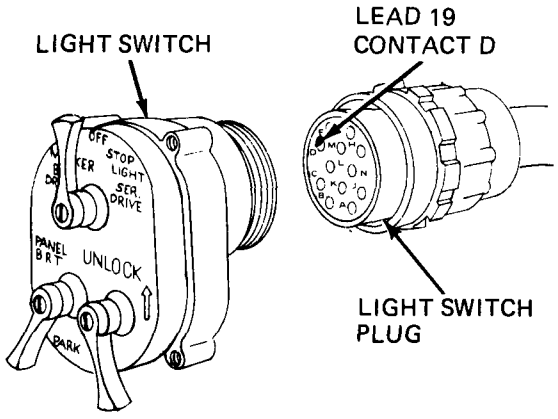
GO

YES

NO

7

- Clean light switch and light switch plug contacts
  - Clean contacts D of light switch and light switch plug that are dirty, rusty, or corroded. Refer to Vol 3, chapter 7, para 7-14
  - If any light switch contacts are broken, replace light switch. Refer to Vol 3, chapter 7, para 7-14
  - If any light switch plug contacts are broken, repair or replace plug. Refer to Vol 3, chapter 7, para 7-14



8

- Put back light switch plug and light switch
  - Put light switch plug back on light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put light switch back on instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Put lead 19 back in blackout headlight lamp housing connector. Refer to Vol 3, chapter 7, para 7-21 or 7-22
  - Put blackout headlight lamp back in housing. Refer to Vol 3, chapter 7, para 7-23

GO

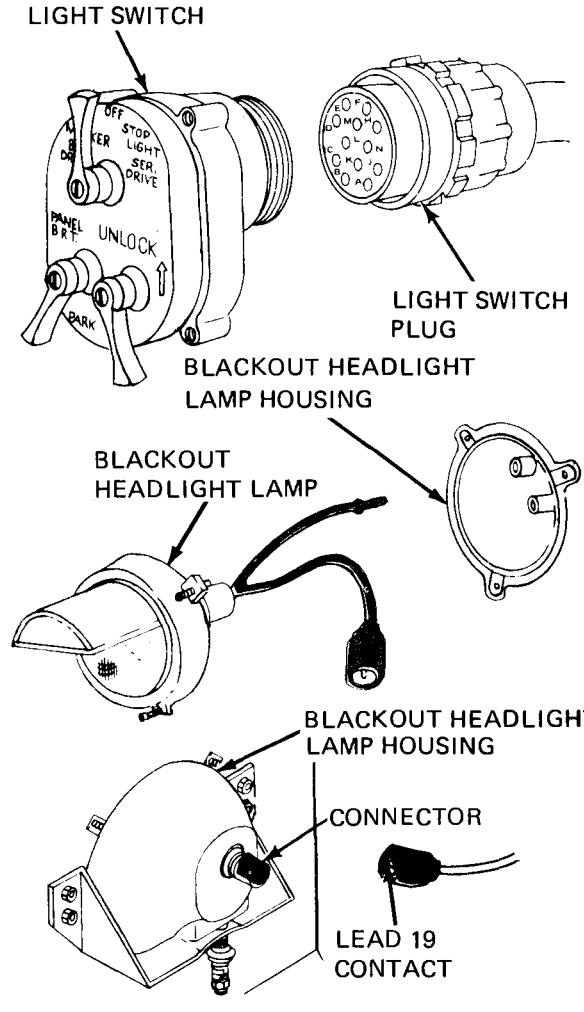
TA 114377

Figure 25-17 (Sheet 4 of 5)

GO

9

- Put back light switch plug and light switch
  - Put light switch plug back on light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put light switch back on instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Put lead 19 back in blackout headlight lamp housing connector
  - Put blackout head light lamp back in housing. Refer to Vol 3, chapter 7, para 7-23



TA 114378

Figure 25-17 (Sheet 5 of 5)

Symptom 18

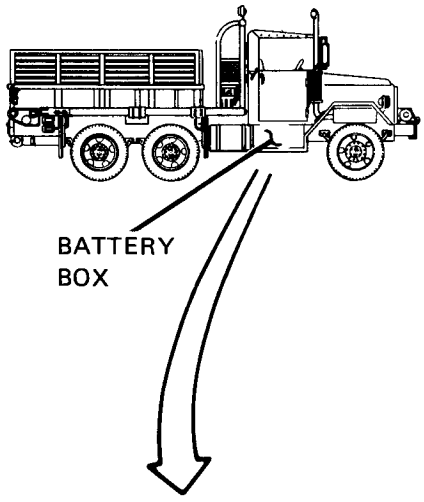
ALL OR MANY TRUCK RUNNING LIGHTS DIM, FLICKERING, OR WORK SOMETIMES

NOTE

When many truck lamps are dim, flickering or work sometimes the cause is probably loose, broken, dirty, rusty or corroded circuit or ground connections. The fault can usually be found in a circuit between the battery system and light circuit.

1

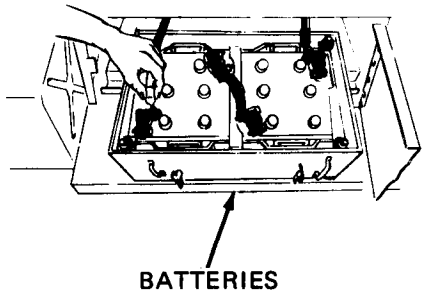
- Park truck
  - Refer to TM 9-2320-209-10



2

- Check battery system
  - Refer to figure 29-1

Is battery system OK?



GO

TA 114379

Figure 25-18 (Sheet 1 of 8)

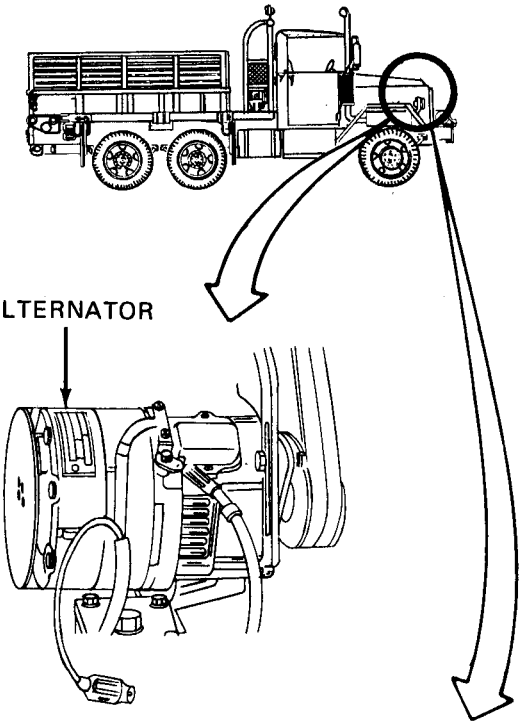
GO

YES

NO

3

- Troubleshooting battery system
  - Refer to table 6-6 given in chapter 6 for battery symptoms



4

- Check generating system
  - Refer to figure 29-1

Is generating system OK?

YES

NO

5

- Troubleshoot generating system
  - Refer to table 6-6 for alternator or generator symptoms

GO

TA 114380

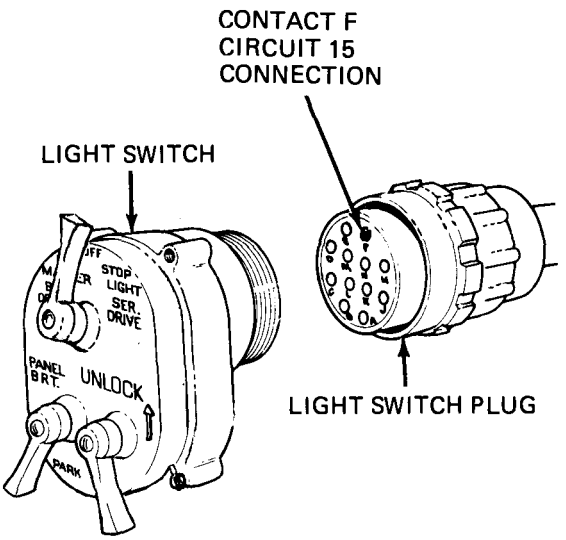
Figure 25-18 (Sheet 2 of 8)

GO

6

- Check lead 15 contact F connection at light switch
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Make sure contact F of light switch and light switch plug are not broken, dirty, rusty, or corroded
  - Make sure both contacts F fit together tightly

Do both contact F fit together tightly?



YES

NO

7

- Clean light switch and light switch plug contacts
  - Clean all contacts of light switch and light switch plug that are dirty rusty, or corroded

NO GO

8

- Go to step 14

TA 114381

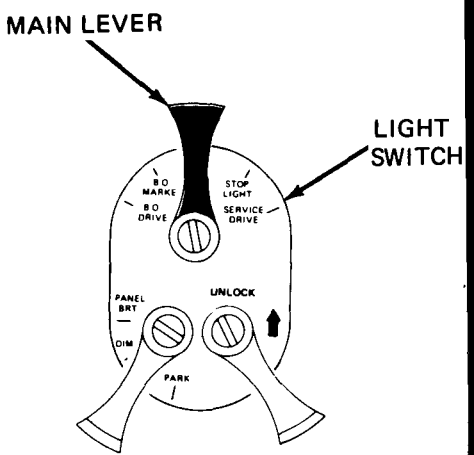
Figure 25-18 (Sheet 3 of 8)

NO GO

9

- See if lamps are still dim, flickering, or work sometimes
  - Put light switch plug back on light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put light switch back on instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Set light switch main lever to position you found dim, flickering, or lamps that work sometimes
  - Look at lamps and see if they are still dim, flickering or work sometimes

Are lamps dim, flickering or work sometimes?



NO

10

- Troubleshooting completed
  - Set light switch main lever to OFF

NO GO

TA 114382

Figure 25-18 (Sheet 4 of 8)

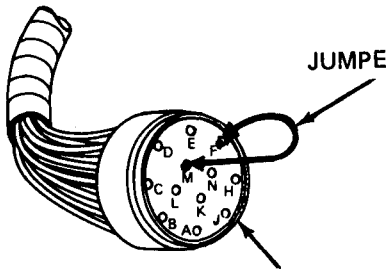
NO GO

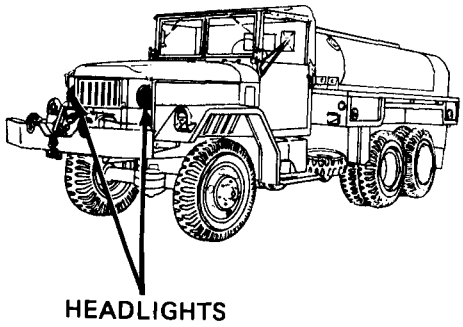
YES

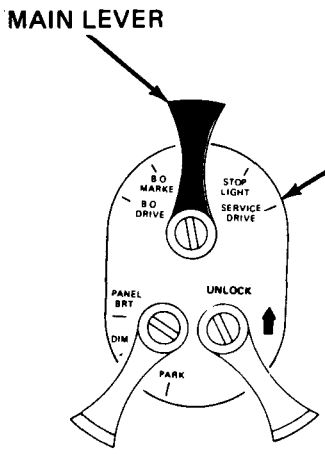
11

- Check light switch
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Take light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contact E and the contact M for a bad headlight lamp
  - Look at headlight lamps and see if lamp is still dim, flickering, or work sometimes

Is lamp dim, flickering, or work sometimes?







NO

12

- Replace light switch
  - Take jumper wire off light switch plug
  - Replace light switch. Refer to Vol 3, chapter 7, para 7-14

NO GO

TA 114383

Figure 25-18 (Sheet 5 of 8)

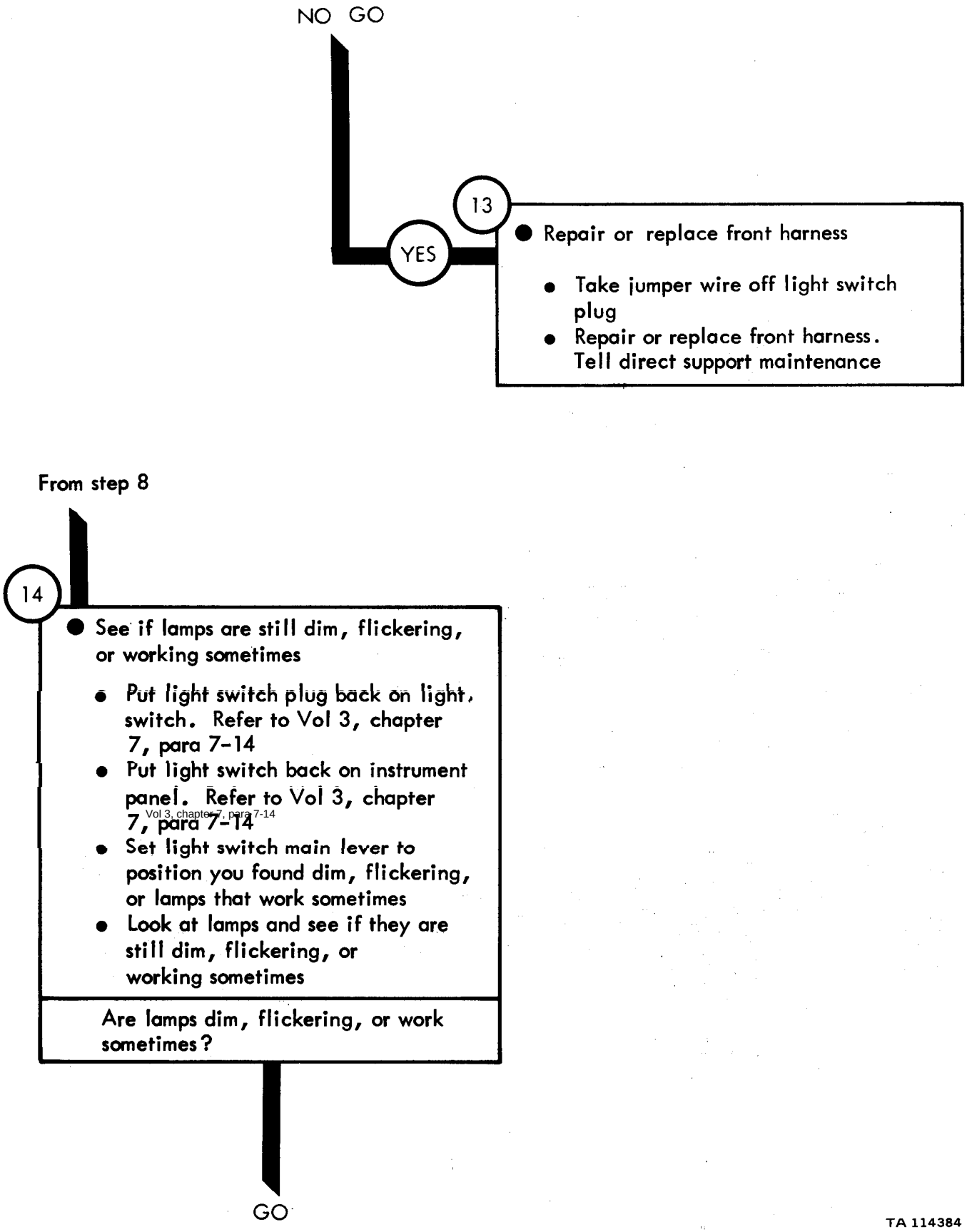


Figure 25-18 (Sheet 6 of 8)

GO

YES

NO

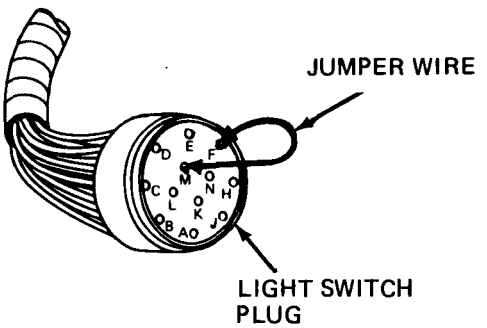
15

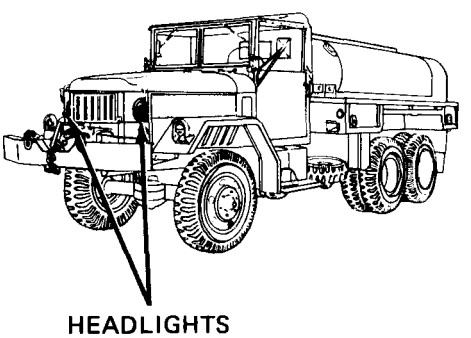
- Troubleshooting completed
  - Set light switch main lever to OFF

16

- Check light switch
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Take light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put jumper wire between contact F and the contact for bad headlight lamp
  - Look at headlight lamps and see if lamp is still dim, flickering, or works sometimes

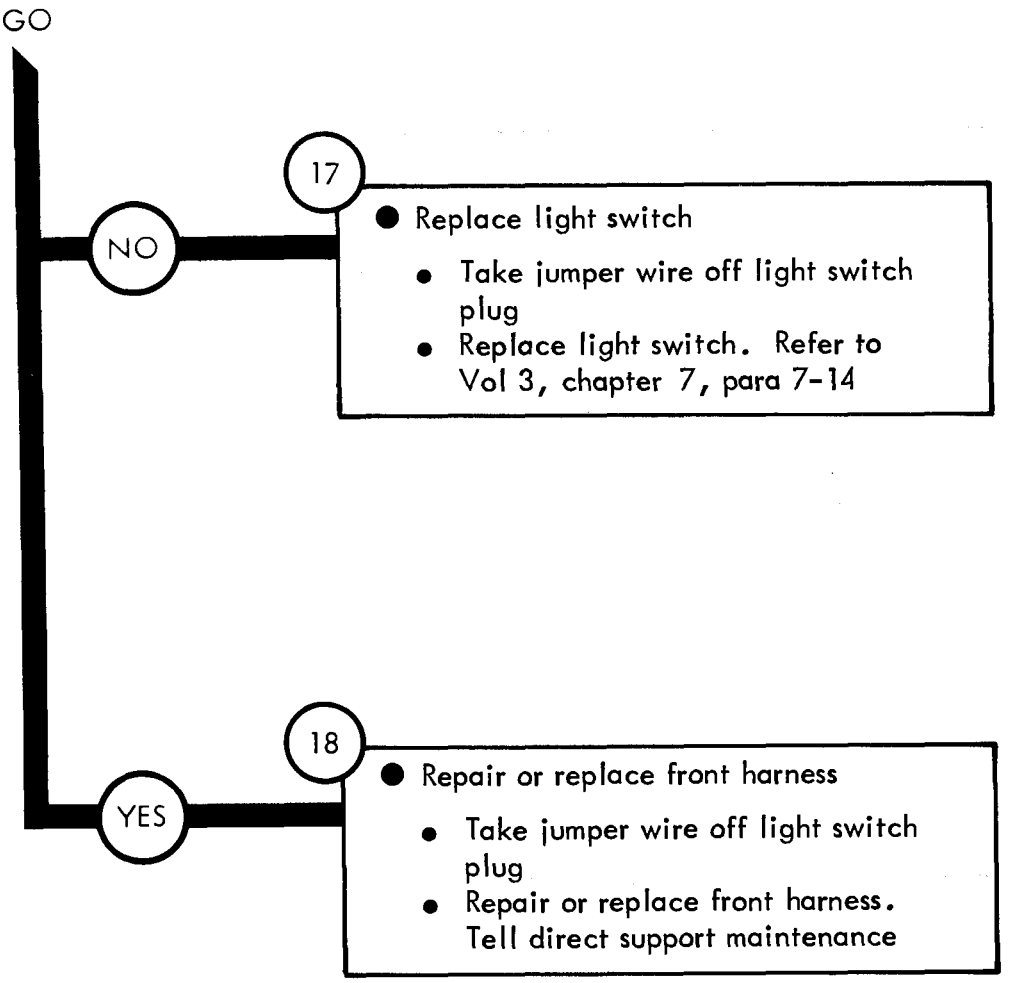
Is lamp dim, flickering, or works sometimes?





TA 114385

Figure 25-18 (Sheet 7 of 8)



TA 114386

Figure 25-18 (Sheet 8 of 8)

Symptom

19 LAMPS BURN OUT TOO OFTEN

NOTE

Short lamp life is caused by generating voltage that is too high, loose lamp housings, or loose mountings. Loose lamp mountings or housinge vibrate, which breaks lamp filaments

1

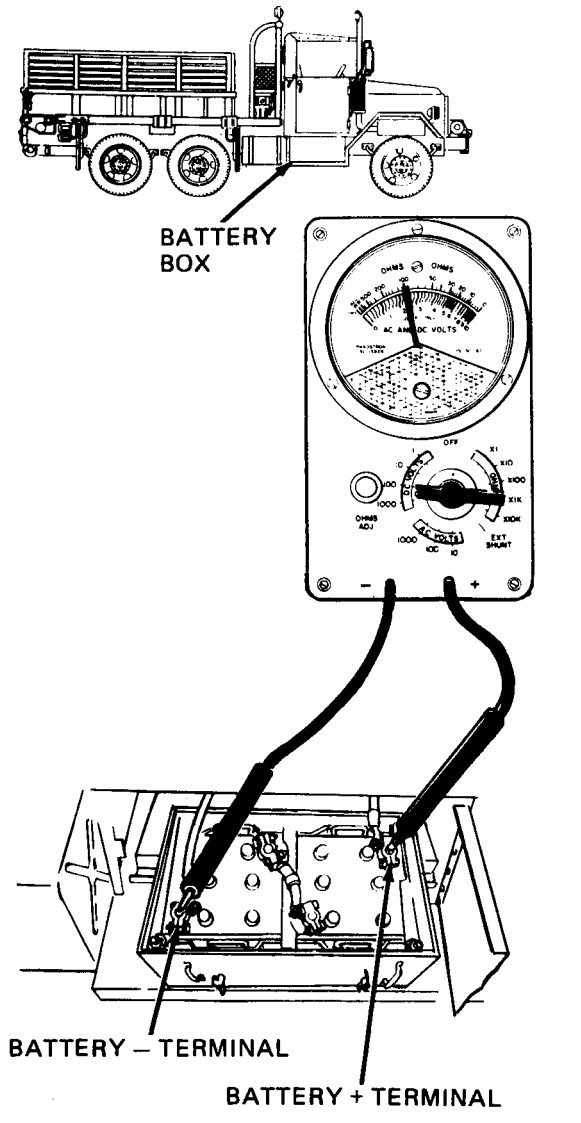
- Park truck
  - Refer to TM 9-2320-209-10

2

- Check generating subsystem for +26.8 volts DC to +28.2 volts DC output
  - Start engine. Refer to TM 9-2320-209-10
  - Pull out battery box. Refer to Vol 3, chapter 7, para 7-55
  - Set multimeter to measure +28.2 volts DC. Refer to test equipment procedures index
  - Put multimeter + lead on battery + terminal. Put multimeter - lead on battery - terminal
  - Read multimeter

Does multimeter measure +26.8 volts DC to +28.2 volts DC?

GO



TA 114387

Figure 25-19 (Sheet 1 of 2)

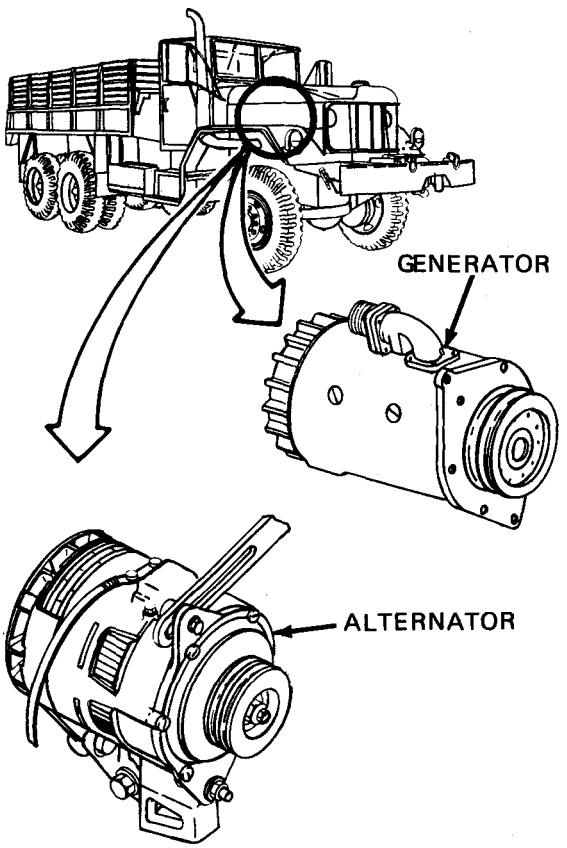
GO

YES

NO

3

- Troubleshoot generating system
  - Refer to figure 6-6 for alternator or generator symptoms



4

- Tighten or replace loose light housing or mounting components
  - Stop engine. Refer to TM 9-2320-209-10
  - Tighten or replace loose housing or mounting
  - Refer to Vol 3, chapter 7, para 7-3 or 7-4

TA 114388

Figure 25-19 (Sheet 2 of 2)

Symptom

20 ALL OR MANY TRUCK RUNNING LIGHTS DO NOT LIGHT

NOTE

When checking voltage, +24 volts DC means a range of +23 volts DC to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

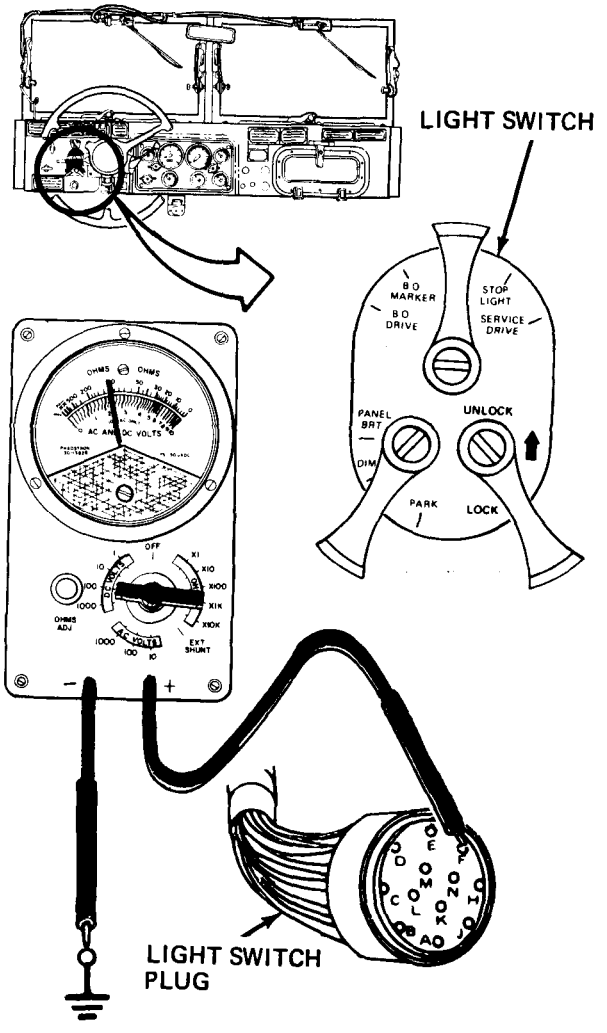
- Check light switch input voltage
  - Take off light switch from instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Take off light switch plug from light switch. Refer to Vol 3, chapter 7, para 7-14

Vol 3, chapter 7, para 7-14

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on contact F of light switch plug
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114389

Figure 25-20 (Sheet 1 of 3)

GO

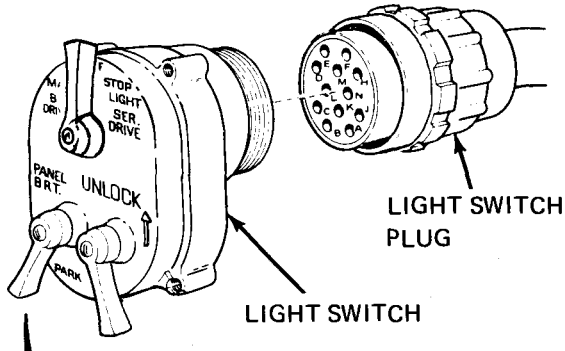
YES

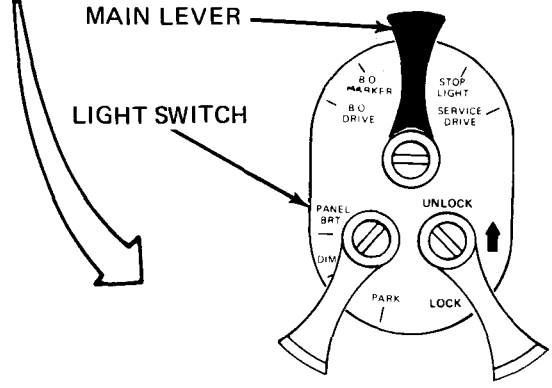
NO

3

- Troubleshoot truck running lights that do not light
  - Put light switch plug back on light switch. Refer to Vol 3, chapter 7, para 7-14
  - Put light switch back on instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Make sure light switch main lever is set to OFF
  - Troubleshoot truck running lights that do not light. Refer to troubleshooting index

Vol 3, chapter 7, para 7-14



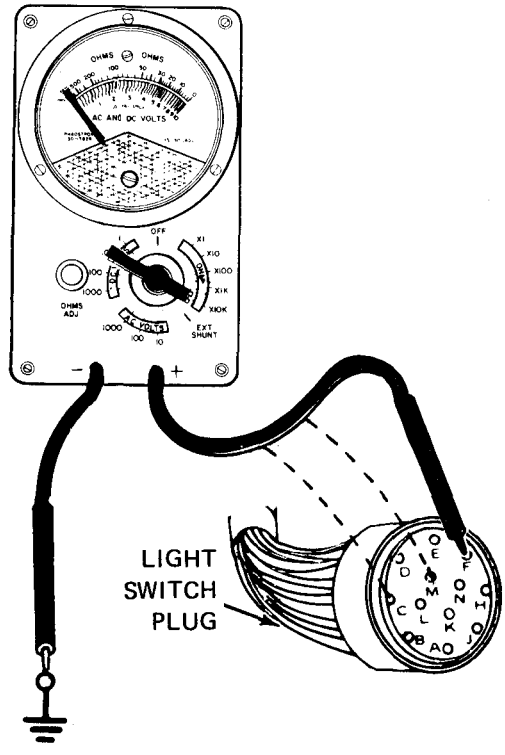


4

- Check for shorts at light switch plug
  - Set multimeter to test for shorts. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on each plug contact, one contact at a time. Read multimeter for each contact. Always keep multimeter - lead on a good ground
  - Read multimeter. Multimeter pointer should not move

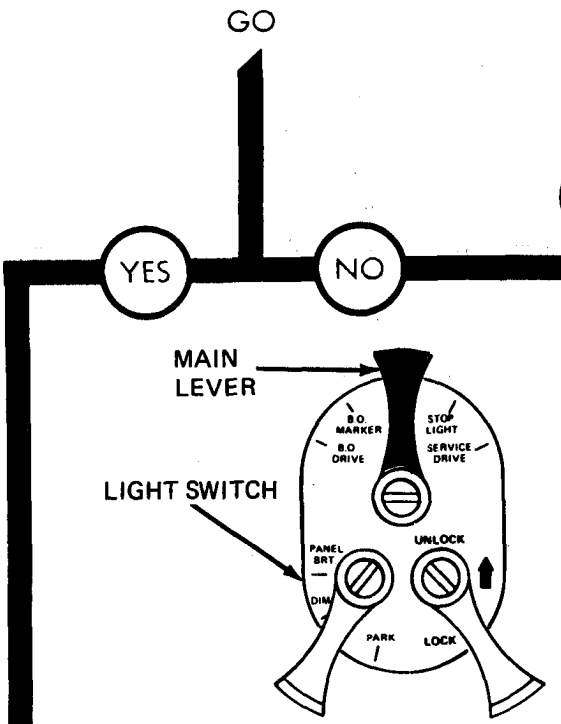
Does multimeter pointer stay still for each test?

GO



TA 114390

Figure 25-20 (Sheet 2 of 3)



5

- Repair or replace front harness
  - Put light switch back on instrument panel. Refer to Vol 3, chapter 7, para 7-14
  - Make sure light switch main lever is set to OFF
  - Repair or replace front harness. Tell direct support maintenance

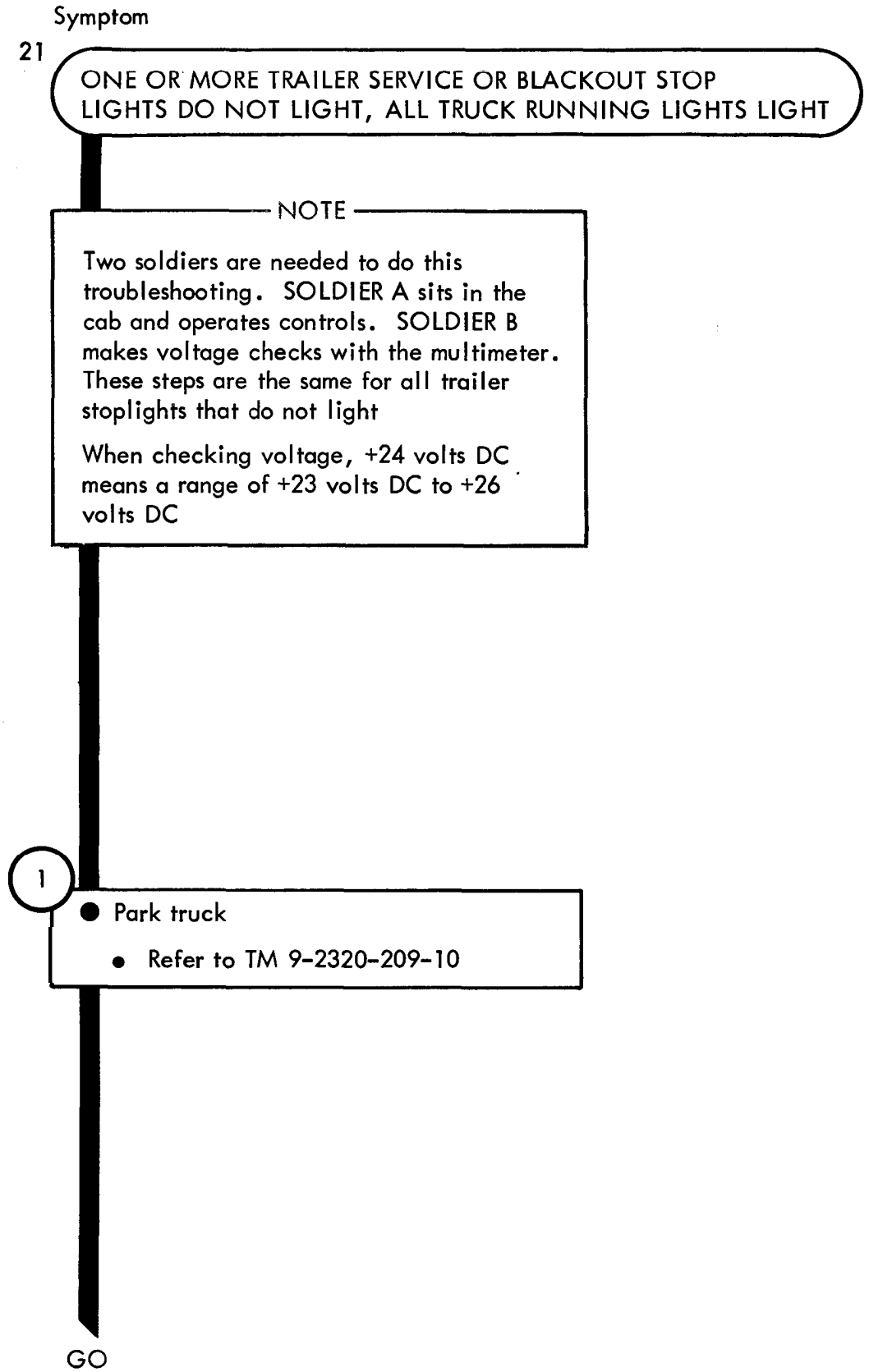
6

- Replace light switch
  - Replace light switch. Refer to Vol 3, chapter 7, para 7-14

Vol 3, chapter 7, para 7-14

TA 114391

Figure 25-20 (Sheet 3 of 3)



TA 114392

Figure 25-21 (Sheet 1 of 5)

GO

2

- Check for voltage to trailer service or blackout stoplight that does not light

SOLDIER B:
- Take off trailer connecting cable from trailer

SOLDIER A:
- Set light switch main lever to SERVICE DRIVE OR BLACKOUT DRIVE for trailer stoplight that does not light

SOLDIER B:
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index

SOLDIER B:
- Put multimeter - lead on a good ground
- Put multimeter + lead on contact of plug for light that does not light. J=RH service stoplight, B=LH service stoplight, or F= blackout stoplight

SOLDIER A:
- Step on brake pedal and hold it down

SOLDIER B:
- Read multimeter while Soldier A steps down on brake pedal. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO

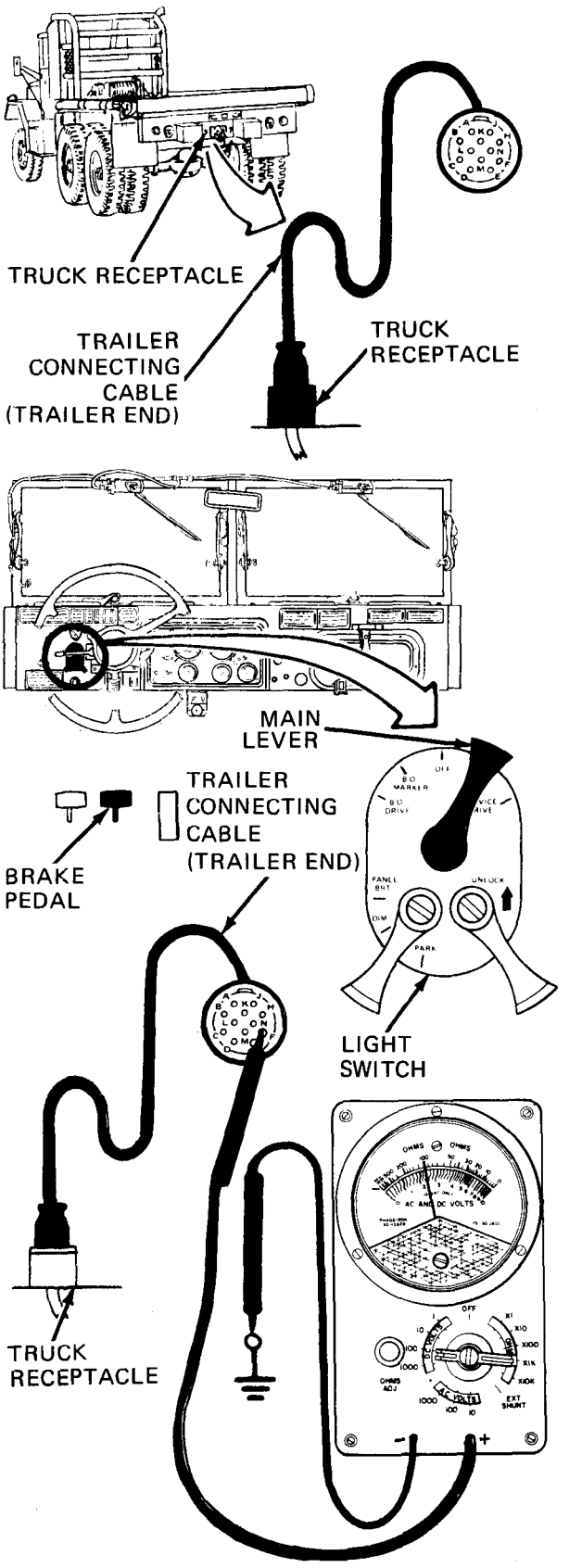


Figure 25-21 (Sheet 2 of 5)

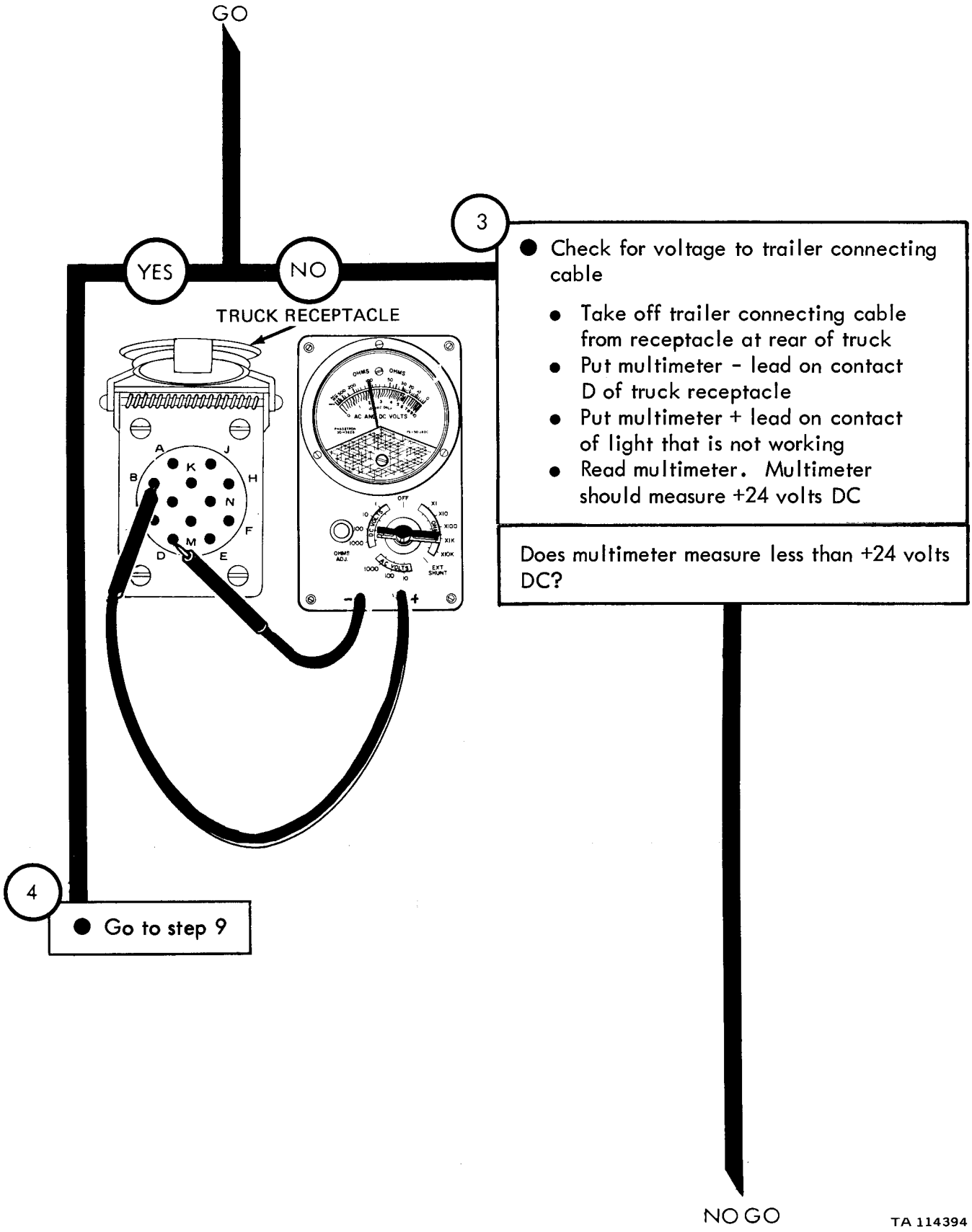


Figure 25-21 (Sheet 3 of 5)

NO GO

5

NO

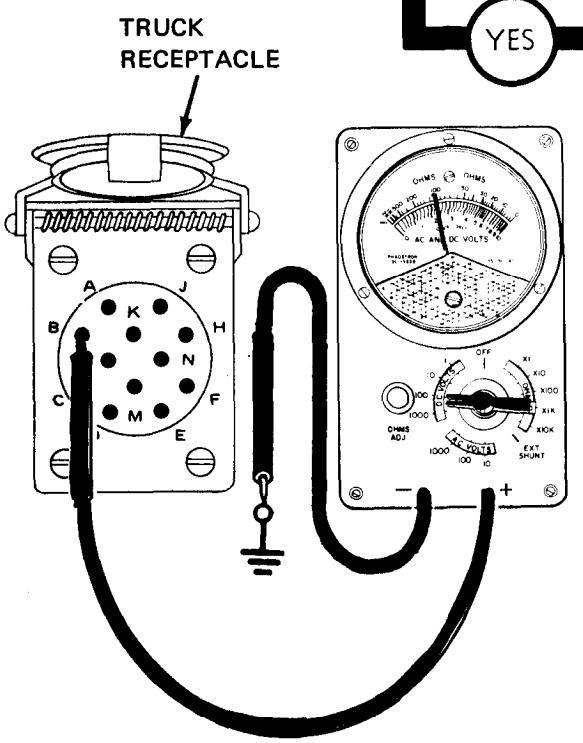
- Repair or replace bad trailer wiring
  - Set light switch main lever to OFF
  - Repair or replace bad trailer receptacle. Refer to Vol 3, chapter 7, para 7-62

6

YES

- Check for voltage using different ground
  - Leave multimeter + lead on contact of light being tested
  - Move multimeter - lead from contact D to a good ground (see picture)
  - Read multimeter. Multimeter should measure +24 volts DC

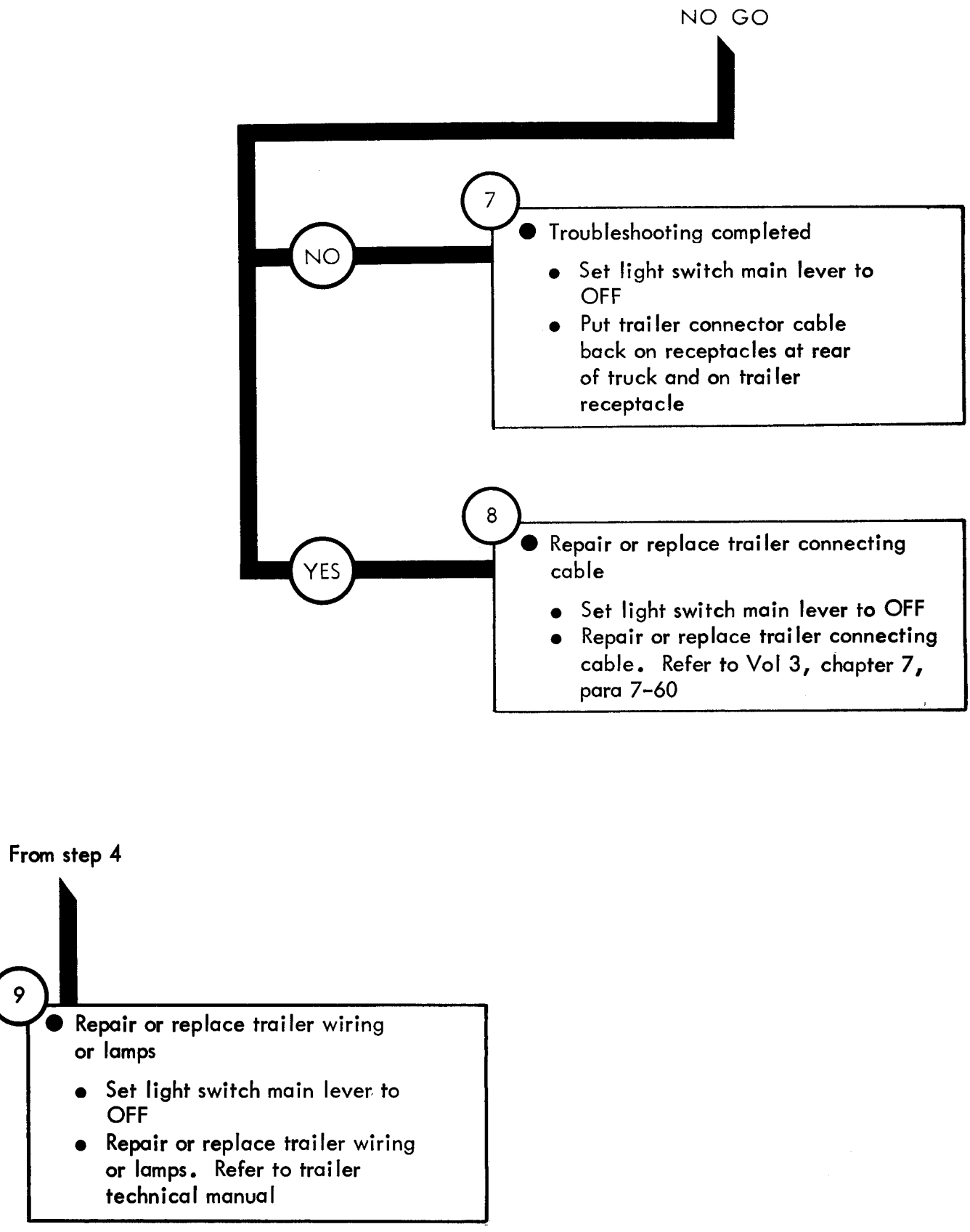
Does multimeter measure less than +24 volts DC?



NO GO

TA 114395

Figure 25-21 (Sheet 4 of 5)



Figur 25-21 (Sheet 5 of 5)

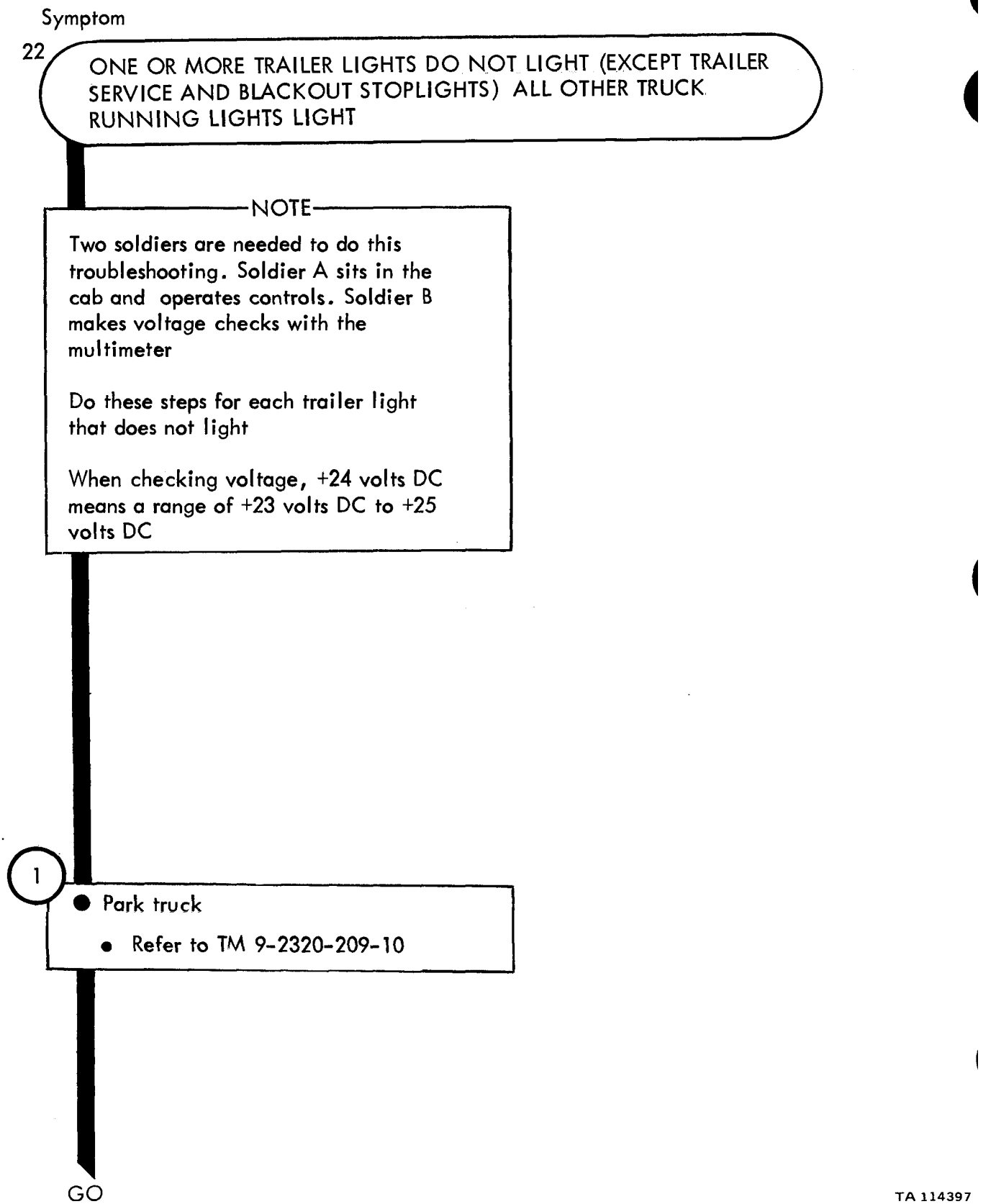


Figure 25-22 (Sheet 1 of 5)

GO

2

- Check for voltage to trailer light that does not light

SOLDIER B:
- Take off trailer connector cable from trailer receptacle

SOLDIER A:
- Set light switch main lever to position for trailer light that does not light

SOLDIER B:
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index

SOLDIER B:
- Put multimeter - lead on a good ground
- Put multimeter + lead on contact of cable, for light that does not light. Contact A of rear B. O. MARKER (L.H.), contact C for rear B. O. MARKER (R.H.), and contact H for B. O. MARKER lights
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO

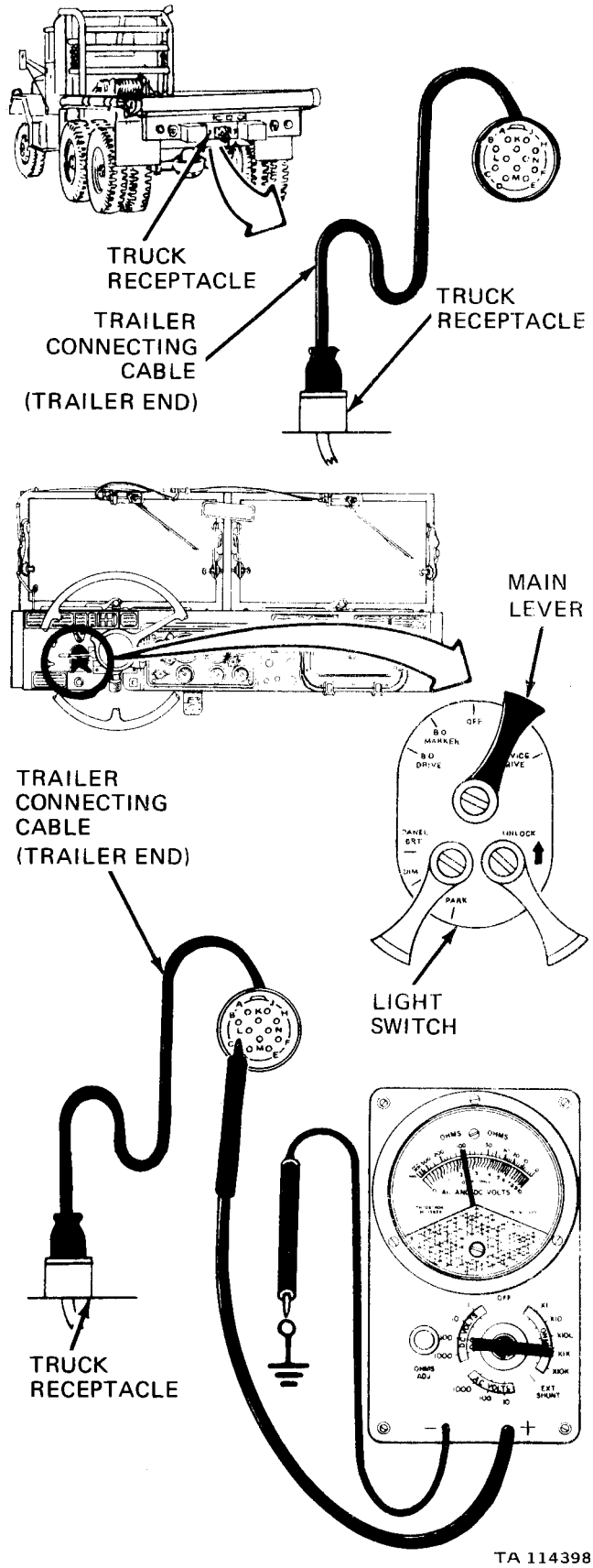


Figure 25-22 (Sheet 2 of 5)

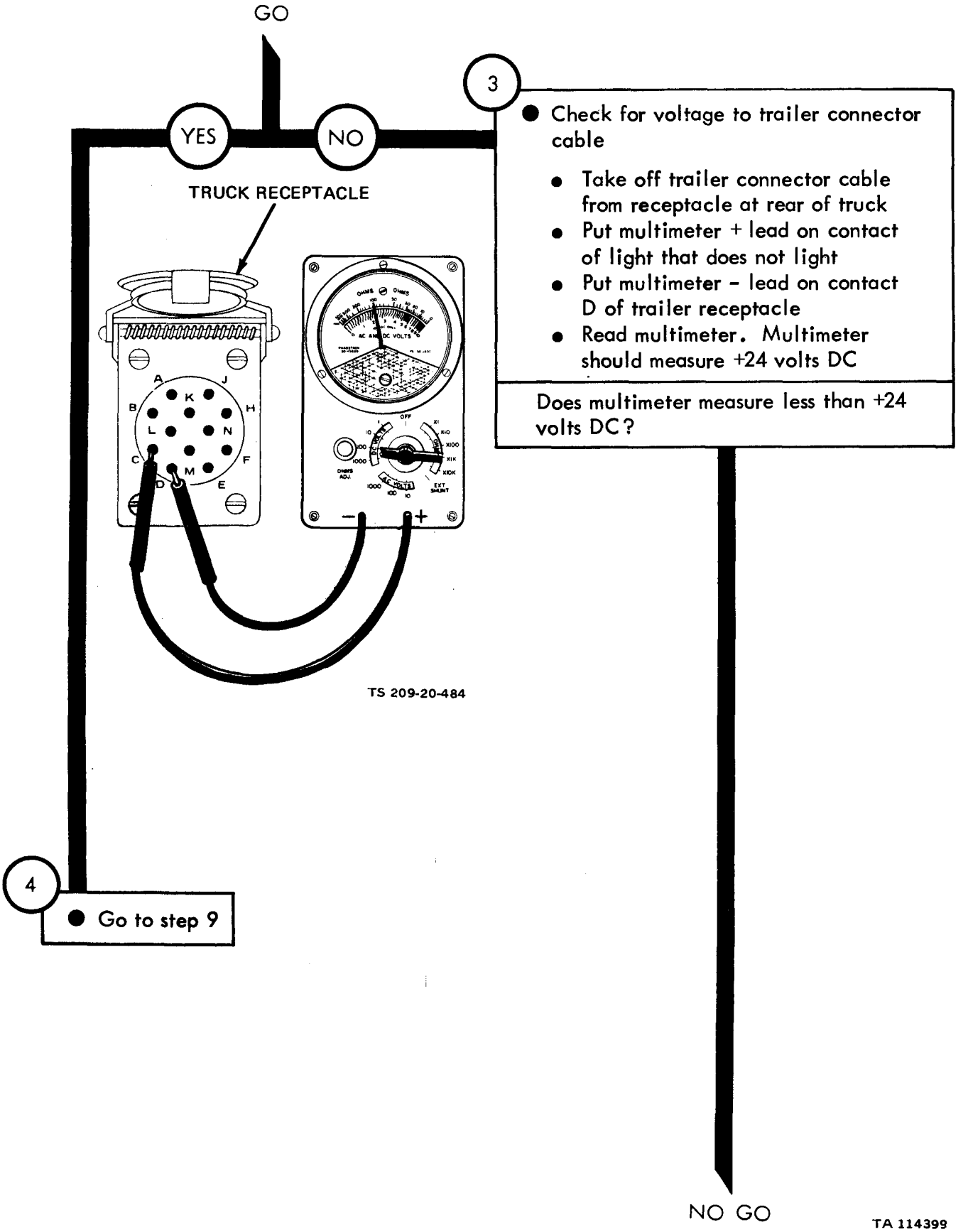


Figure 25-22 (Sheet 3 of 5)

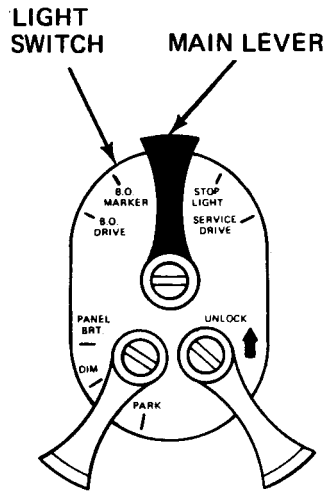
NO GO

YES

NO

5

- Repair or replace bad trailer harness
  - Set light switch main lever to OFF
  - Repair or replace bad trailer receptacle. Refer to Vol 3, chapter 7, para 7-62



NO GO

TA 114400

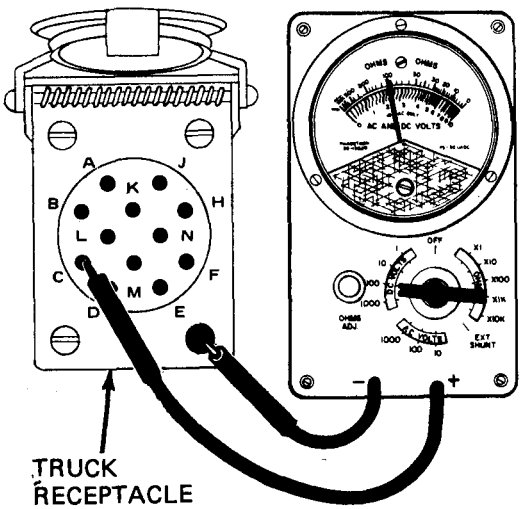
Figure 25-22 (Sheet 4 of 5)

NO GO

6

- Check for voltage using different ground
  - Leave multimeter + lead on contact of light being tested
  - Move multimeter - lead from contact D to a good ground (see picture)
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



NO

7

- Troubleshooting completed
  - Set light switch main lever to OFF
  - Put trailer connector cable back on receptacle at rear of truck and on trailer

YES

8

- Repair or replace connector cable
  - Set light switch main lever to OFF
  - Repair or replace trailer connector cable. Refer to Vol 3, chapter 7, para 7-60

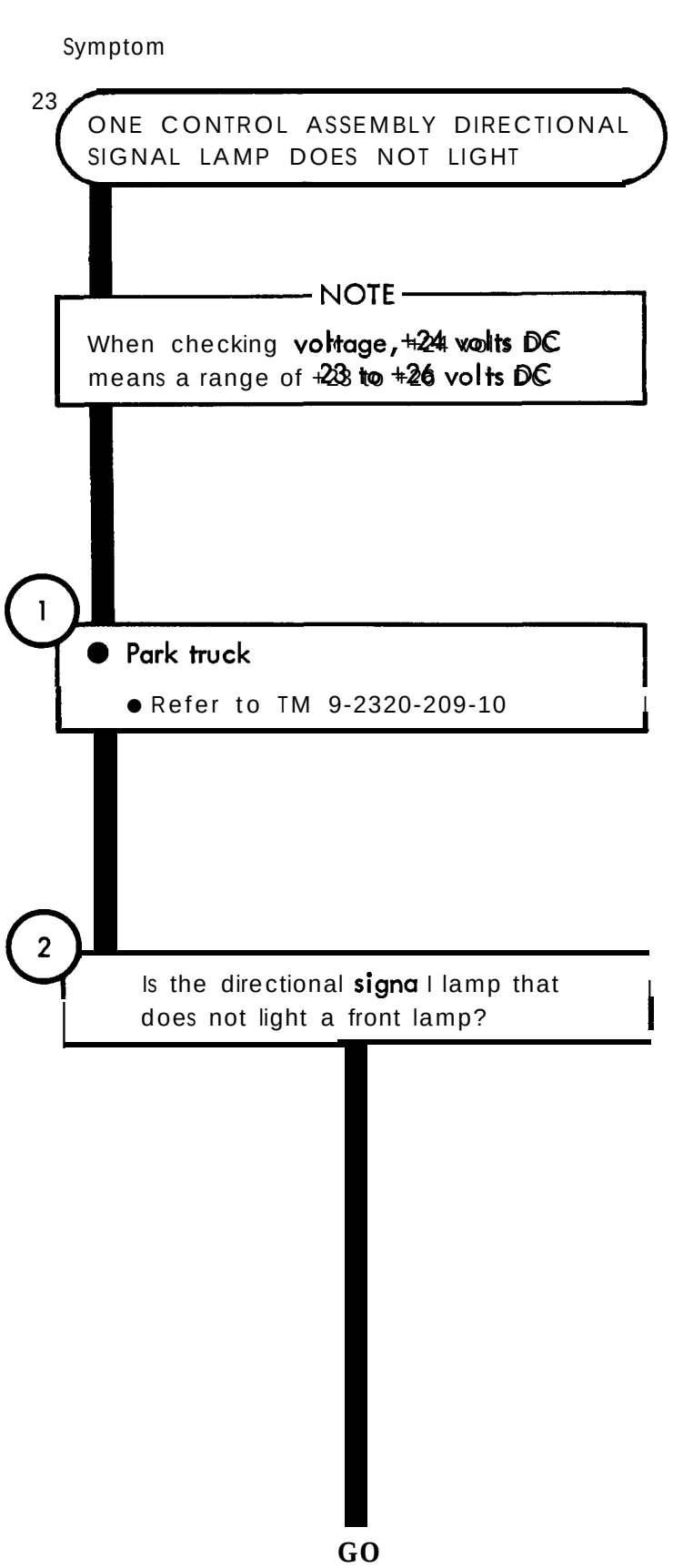
From step 4

9

- Repair or replace bad trailer wiring or lamps
  - Set light switch main lever to OFF
  - Repair or replace bad trailer wiring or lamps. Refer to Trailer TM

TA 114401

Figure 25-22 (Sheet 5 of 5)



TA 114402

Figure 25-23 (Sheet 1 of 16)

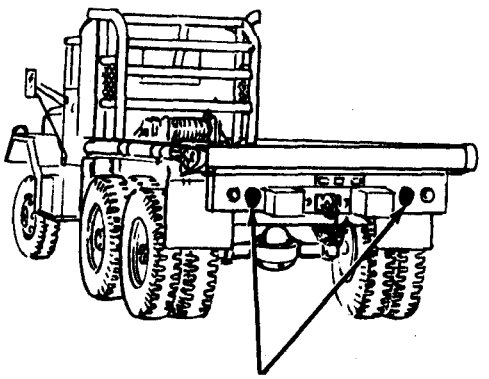
GO

YES

NO

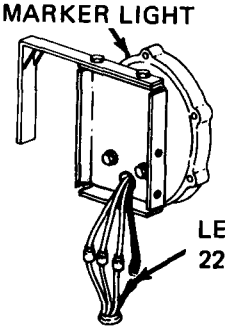
3

- Take off lead from rear directional signal lamp that does not light
  - Using 9/16-inch wrench, unscrew and take off four screws with washers from rear composite marker assembly
  - Take off cover
  - Pull off lead 22-460 or 22-461



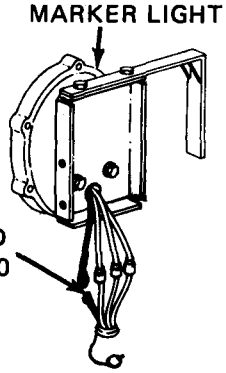
REAR COMPOSITE MARKER LIGHTS

LEFT REAR COMPOSITE MARKER LIGHT



LEAD 22-461

RIGHT REAR COMPOSITE MARKER LIGHT



LEAD 22-460

4

- Go to step 6

GO

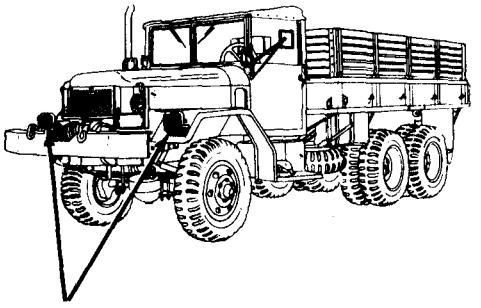
TA 114403

Figure 25-23 (Sheet 2 of 16)

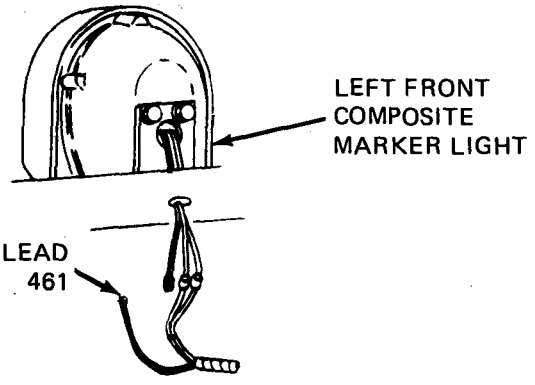
GO

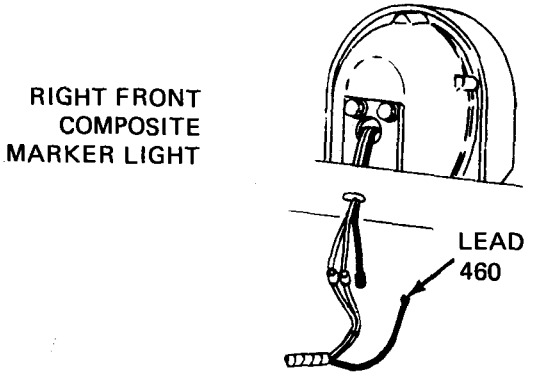
5

- Take off lead from front directional signal lamp that does not light
  - Pull off lead 460 or 461



FRONT COMPOSITE MARKER LIGHTS





GO

TA 114404

Figure 25-23 (Sheet 3 of 16)

GO

6

- Check for voltage at directional signal lamp that does not light
  - Set light switch main lever to SERVICE DRIVE
  - Set turn signal control lever to emergency flasher position
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground. Put multimeter + lead on contact of lead 460, 461, 22-460, or 22-461
  - Read multimeter. Multimeter pointer should move up and down scale at rate of 1 to 2 times per second

Is multimeter reading wrong?

GO

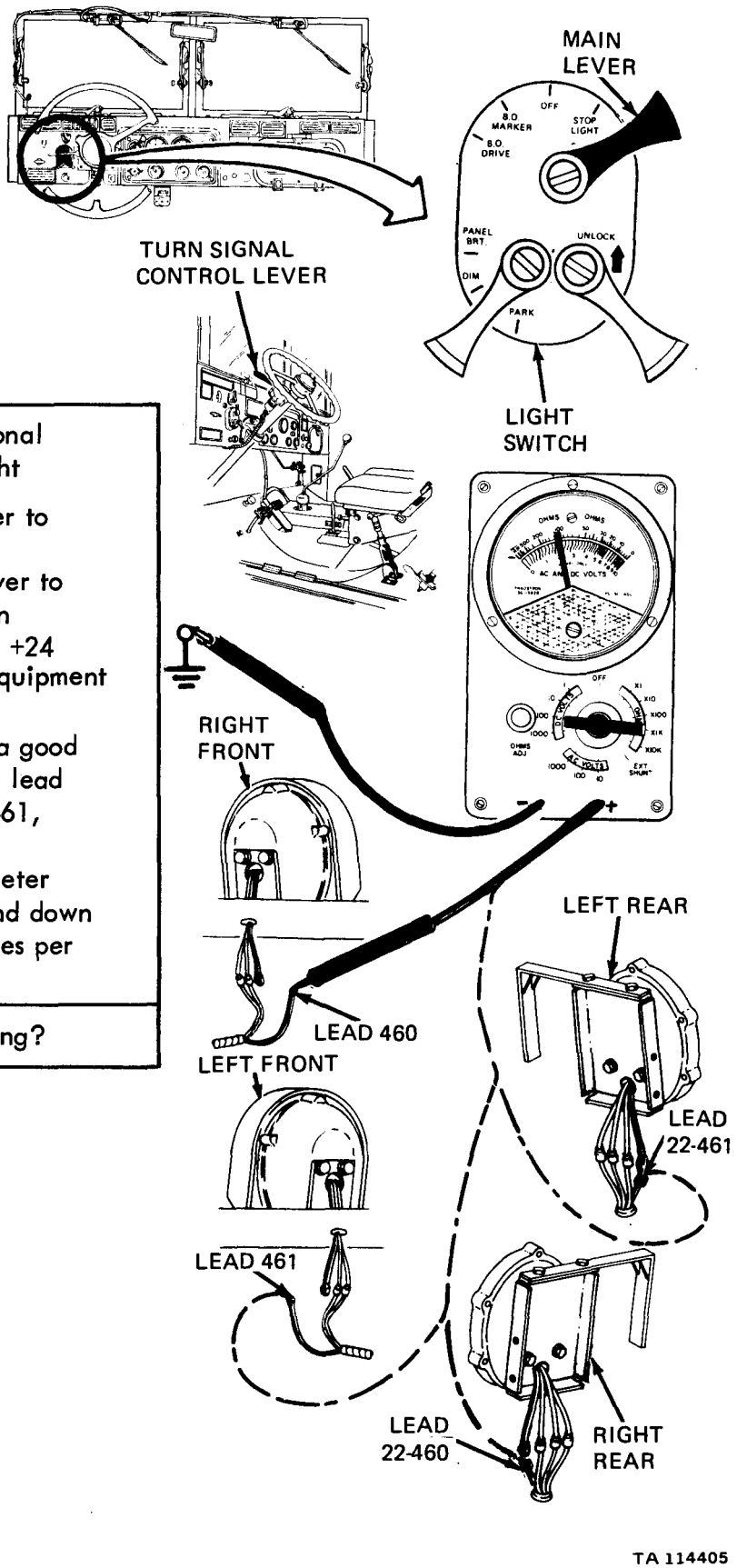


Figure 25-23 (Sheet 4 of 16)

GO

YES

NO

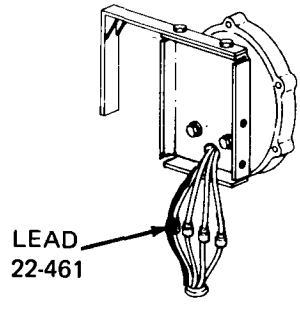
NOTE

The following steps use the left rear directional signal lamp as a typical example. Do the other directional signal lamps the same way

The rear directional signals and stop lights use the same lamps

7

● Go to step 14



8

● Replace left rear directional signal (stoplight) lamp

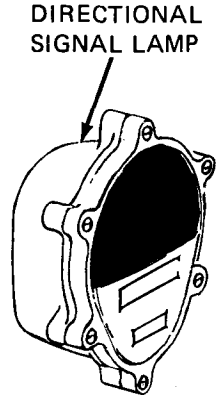
- Set light switch main lever to OFF
- Replace left rear directional signal lamp. Refer to Vol 3, chapter 7, para 7-45
- Put back lead 22-461 at left rear composite marker light

9

● Test left rear directional signal lamp

- Set light switch main lever to SERVICE DRIVE
- Look at left rear composite marker light
- Directional signal lamp should go on and off at rate of 1 to 2 times per second

Does directional signal lamp fail to work?



NO GO

TA 114406

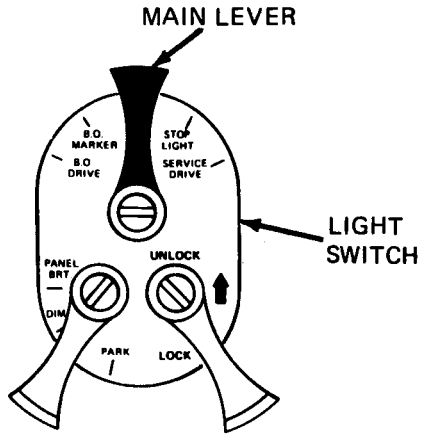
Figure 25-23 (Sheet 5 of 16)

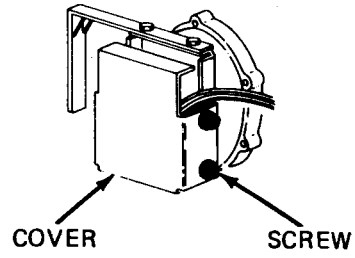
NO GO

10

NO

- Put left rear composite marker light back together
  - Set turn signal control lever to neutral position
  - Set light switch main lever to OFF
  - Put cover back on left rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers

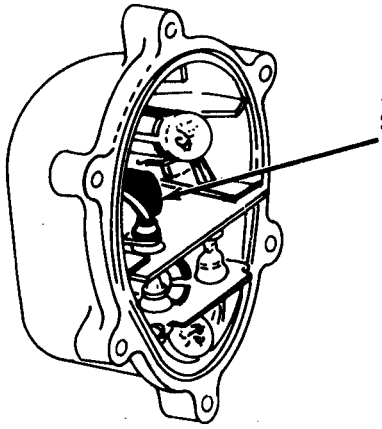




11

YES

- Clean contacts of left rear directional signal (stoplight) lamp
  - Set light switch main lever to OFF
  - Remove directional signal lamp. Refer to Vol 3, chapter 7, para 7-45
  - Clean directional signal lamp socket. Refer to Vol 3, chapter 7, para 7-44
  - Put back directional signal lamp. Refer to Vol 3, chapter 7, para 7-45

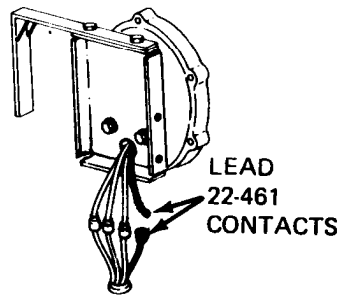


NO GO

TA 114407

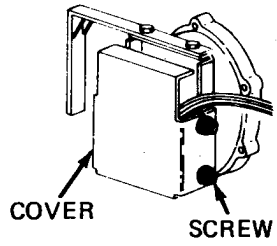
Figure 25-23 (Sheet 6 of 16)

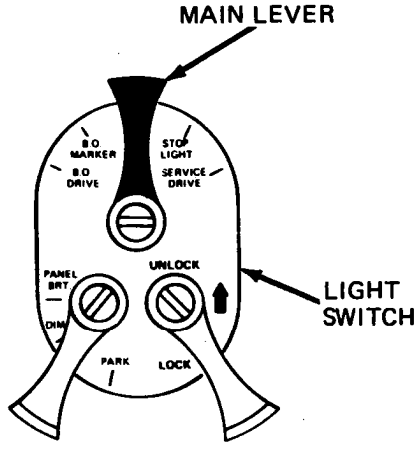
NO GO



12

- Clean left rear directional signal (stoplight) lamp connector contacts
  - Take off lead 22-461
  - Clean lead 22-461 contacts. Refer to Vol 3, chapter 7, para 7-44
  - Push lead 22-461 into connector
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers





13

- Troubleshooting completed
  - Set turn signal control lever to neutral position

TA 114408

Figure 25-23 (Sheet 7 of 16)

From step 7

14

- See if directional signal lamp circuit is shorted to ground
  - Set light switch main lever to OFF
  - Unscrew and take off turn signal control harness plug from turn signal control assembly
  - Set multimeter to check for short circuit. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground. Put multimeter + lead on contact of turn signal control harness plug connector for circuit being tested
  - Read multimeter. A short circuit should not be indicated

Is signal lamp circuit OK?

GO

LAMP CIRCUIT:	PLUG CONTACT:
RIGHT FRONT	A
LEFT FRONT	B
RIGHT REAR	E
LEFT REAR	C

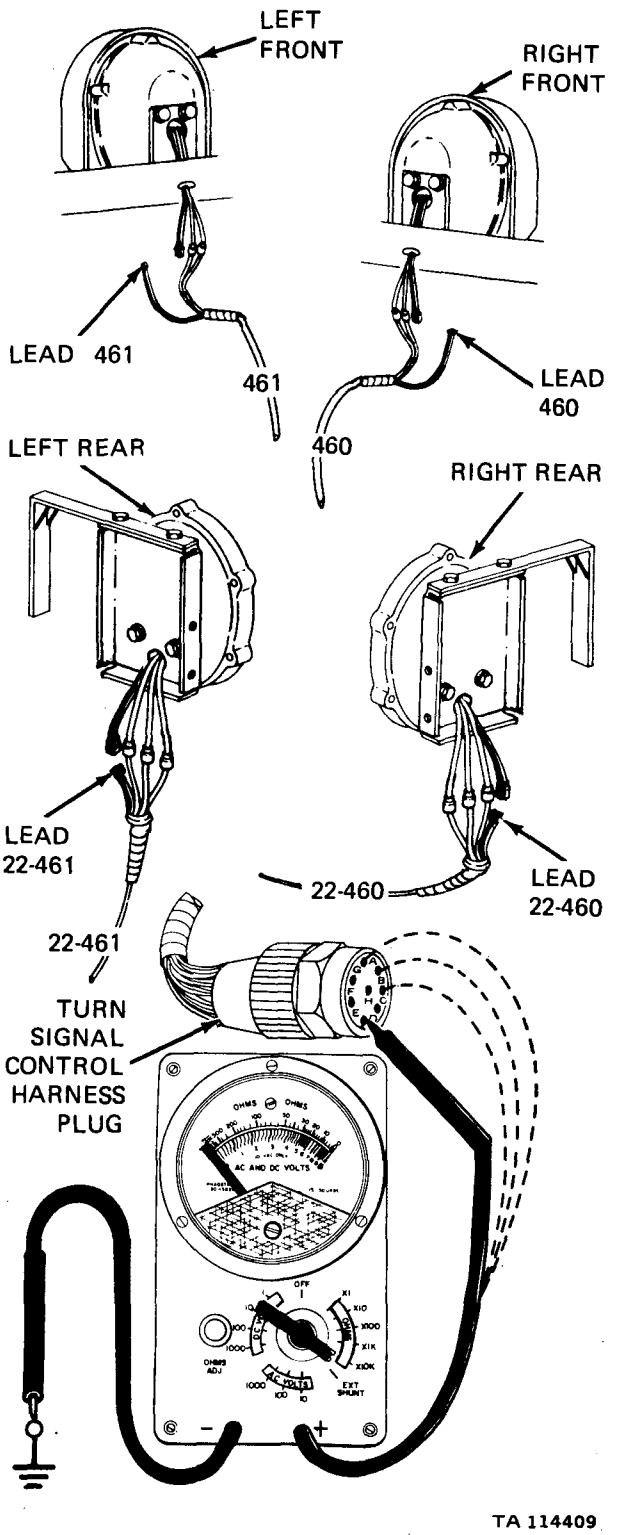


Figure 25-23 (Sheet 8 of 16)

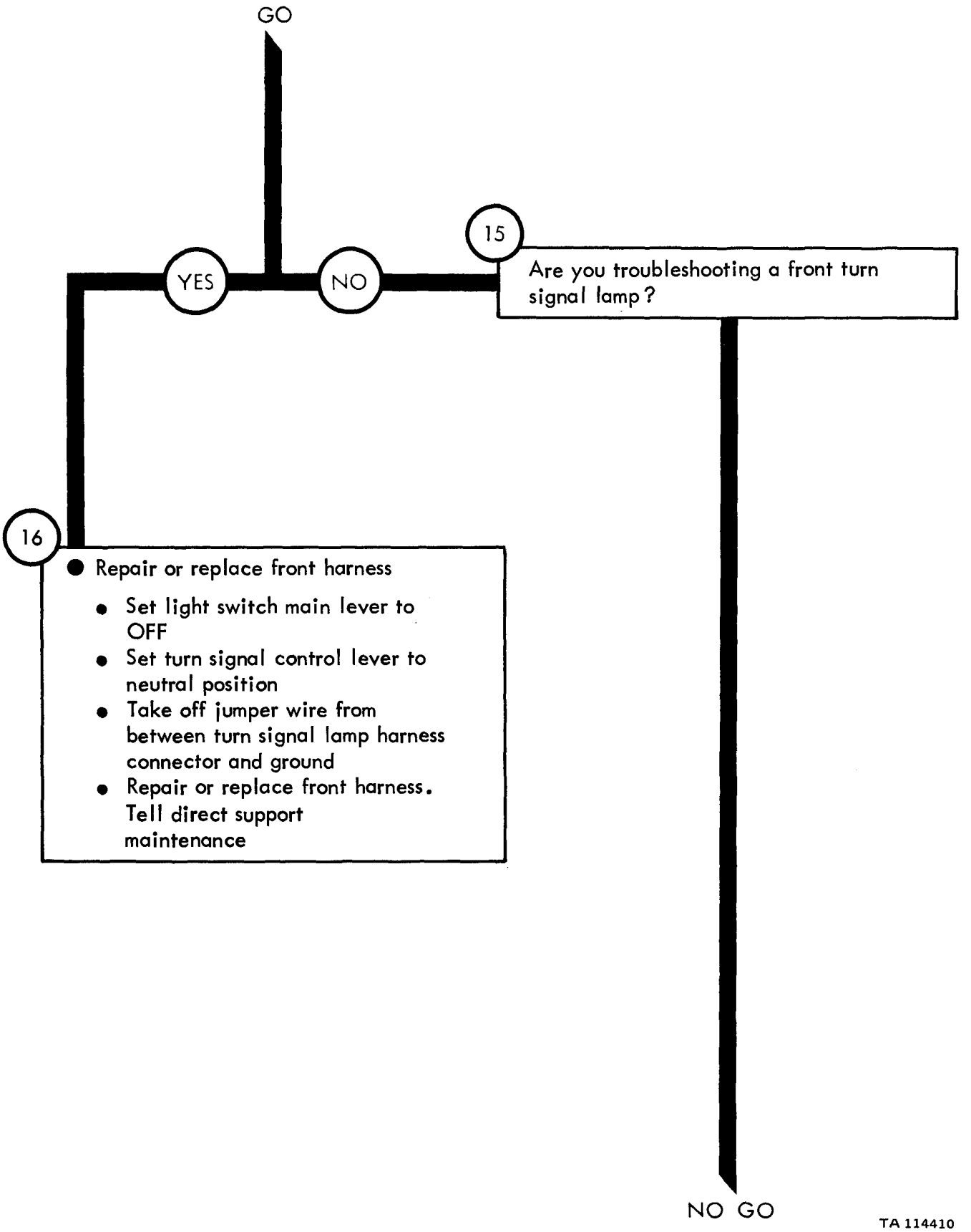


Figure 25-23 (Sheet 9 of 16)

NO GO

17

- See if directional signal lamp circuit is shorted to ground in rear harness
  - Unscrew and take off rear harness plug from front harness connector
  - Put multimeter + lead on contact E (right rear lamp) or contact C (left rear lamp), of rear harness plug
  - Put multimeter lead on a good ground
  - Read multimeter. A short circuit should not be indicated

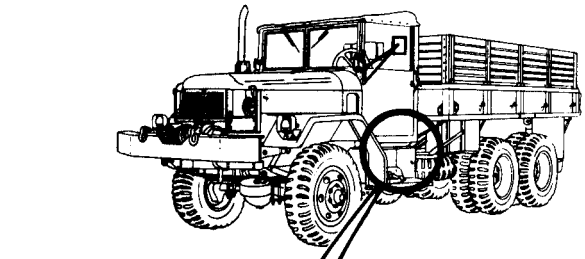
Is circuit OK?

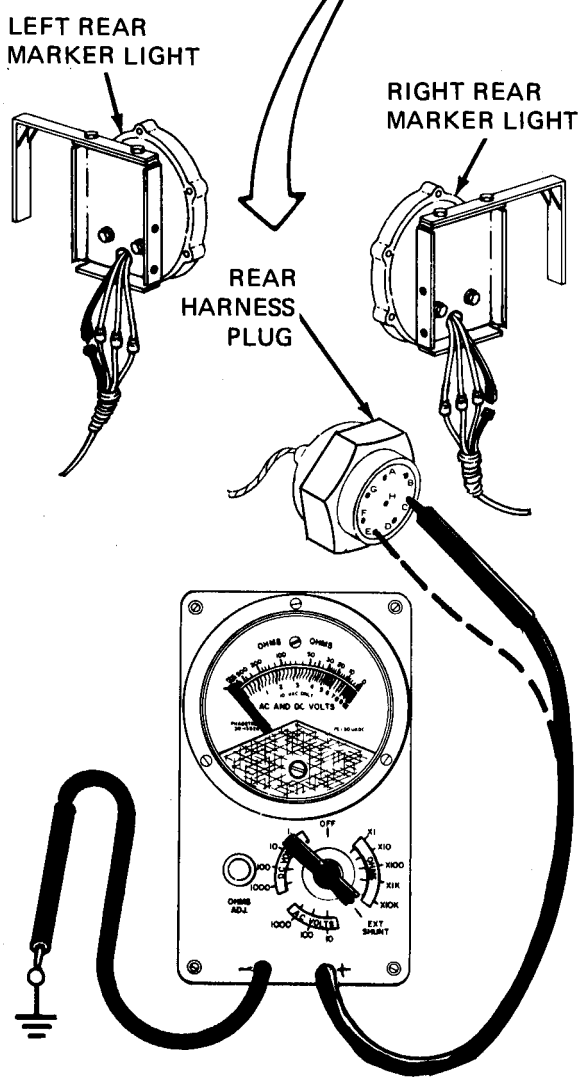
YES

18

- Go to step 21

NO





NO GO

TA 114411

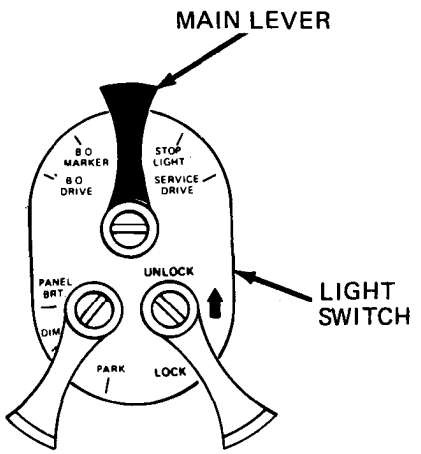
Figure 25-23 (Sheet 10 of 16)

NO GO

19

- Repair or replace rear harness
  - Set light switch main lever to OFF
  - Set turn signal control lever to neutral position
  - Screw turn signal control harness plug back on turn signal control assembly and tighten
  - Repair or replace rear harness. Tell direct support maintenance

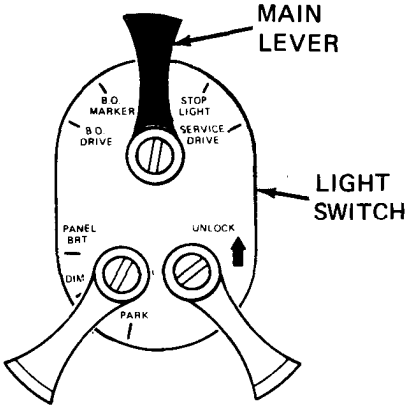
NO

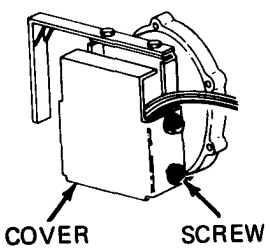


20

- Repair or replace front harness
  - Set light switch main lever to OFF
  - Set turn signal control lever to neutral position
  - Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers
  - Repair or replace front harness. Tell direct support maintenance

YES





TA 114412

Figure 25-23 (Sheet 11 of 16)

From step 18

21

- Check for continuity in directional signal lamp circuit
  - Put jumper wire between turn signal lamp harness connector and a good ground
  - Set multimeter to check continuity. Refer to test equipment procedure index
  - Put multimeter + lead on correct lead contact of turn signal control harness plug. See table in picture
  - Put multimeter - lead on a good ground
  - Read multimeter. Pointer should measure zero ohms

Does multimeter measure more than zero ohms?

GO

LAMP CIRCUIT:	PLUG CONTACT:
RIGHT FRONT	A
LEFT FRONT	B
RIGHT REAR	E
LEFT REAR	C

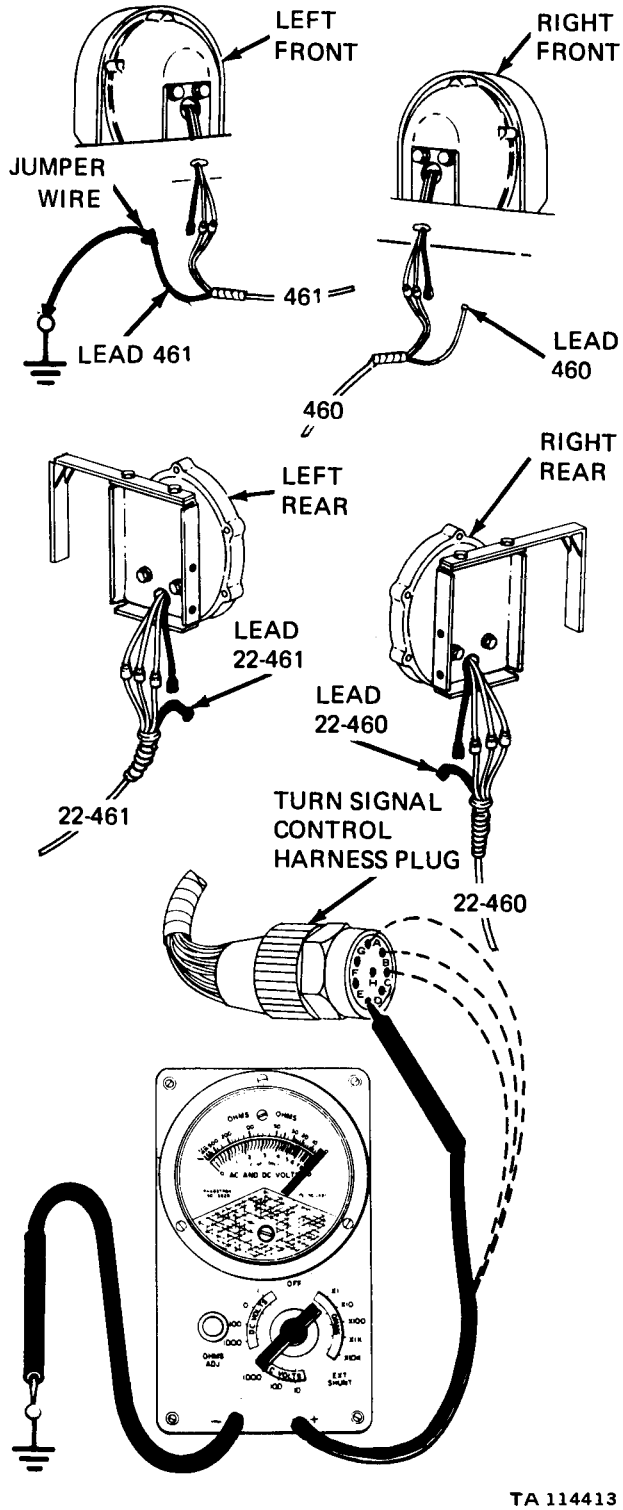


Figure 25-23 (Sheet 12 of 16)

GO

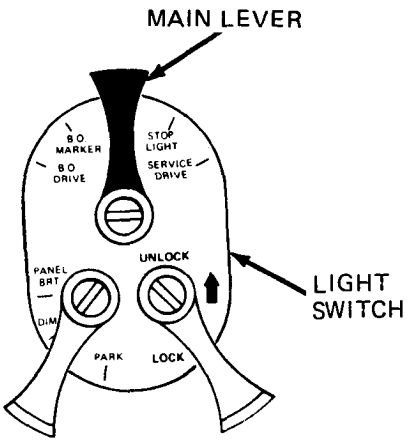
22 Are you troubleshooting a rear turn signal lamp?

YES / NO

23 ● Go to step 26

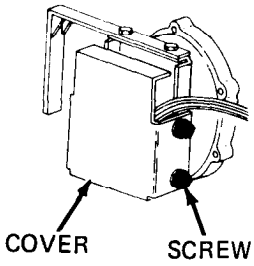
24 NO

● Replace turn signal control assembly
- Set light switch main lever to OFF
- Take off jumper wire between turn signal lamp harness connector and ground
- At front composite marker parking light put back lead 460 or 461
- Replace turn signal control assembly. Refer to Vol 3, chapter 7, para 7-63



25 YES

● Replace turn signal control assembly
- Set light switch main lever to OFF
- Take off jumper wire from between turn signal lamp harness connector and ground
- At composite marker rear parking light put back lead 22-460 or 22-461
- Put cover back on rear composite marker light assembly by using 9/16-inch wrench to screw in and tighten four screws with washers
- Replace turn signal control assembly. Refer to Vol 3, chapter 7, para 7-63



TA 114414

Figure 25-23 (Sheet 13 of 16)

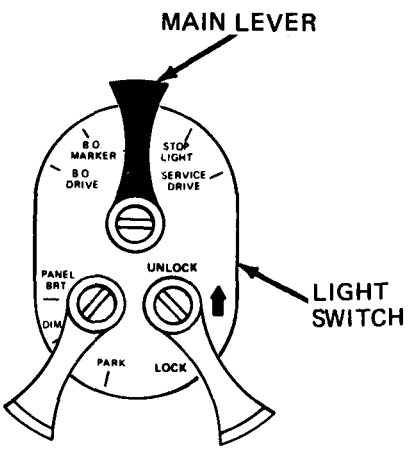
From step 23

26 Are you troubleshooting a rear turn signal lamp?

YES

NO

27
- Repair or replace front harness
  - Set turn signal control lever to neutral position
  - Set light switch main lever to OFF
  - Take off jumper wire from between turn signal lamp harness connector and ground
  - Repair or replace front harness. Tell direct support maintenance



GO

TA 114415

Figure 25-23 (Sheet 14 of 16)

GO

28

- Check for continuity in directional signal lamp rear harness circuit
  - Unscrew and take off rear harness plug from front harness receptacle
  - Put a jumper wire between turn signal lamp harness connector and a good ground
  - Put multimeter + lead on contact E (right rear lamp), or contact C (left rear lamp), of rear harness plug
  - With multimeter still set to measure continuity put - lead on a good ground
  - Read multimeter. Pointer should measure zero ohms

Does multimeter measure zero ohms?

GO

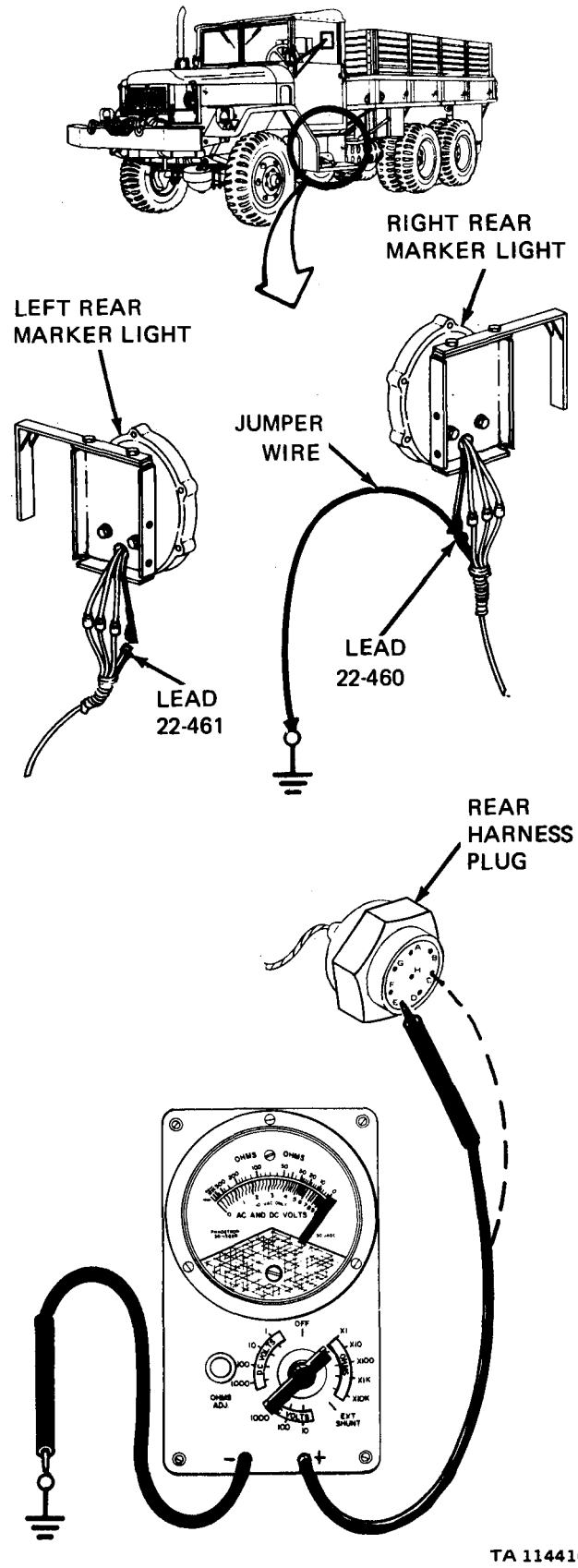


Figure 25-23 (Sheet 15 of 16)

GO

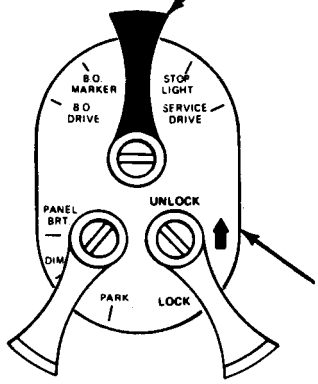
YES

NO

29

- Repair or replace rear harness
  - Set light switch main lever to OFF
  - Set turn signal control lever to neutral position
  - Screw turn signal control harness plug back on turn signal control assembly and tighten
  - Take off jumper wire from between turn signal lamp harness connector and ground
  - Repair or replace rear harness. Tell direct support maintenance

MAIN LEVER

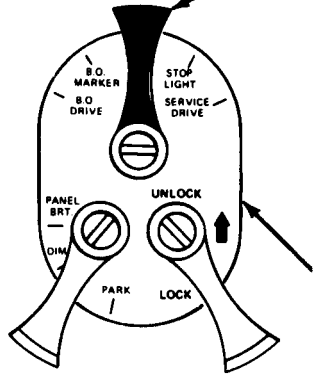


LIGHT SWITCH

30

- Repair or replace front harness
  - Set turn signal control lever to neutral position
  - Set light switch main lever to OFF
  - Take off jumper wire from between turn signal lamp harness connector and ground
  - Repair or replace front harness. Tell direct support maintenance

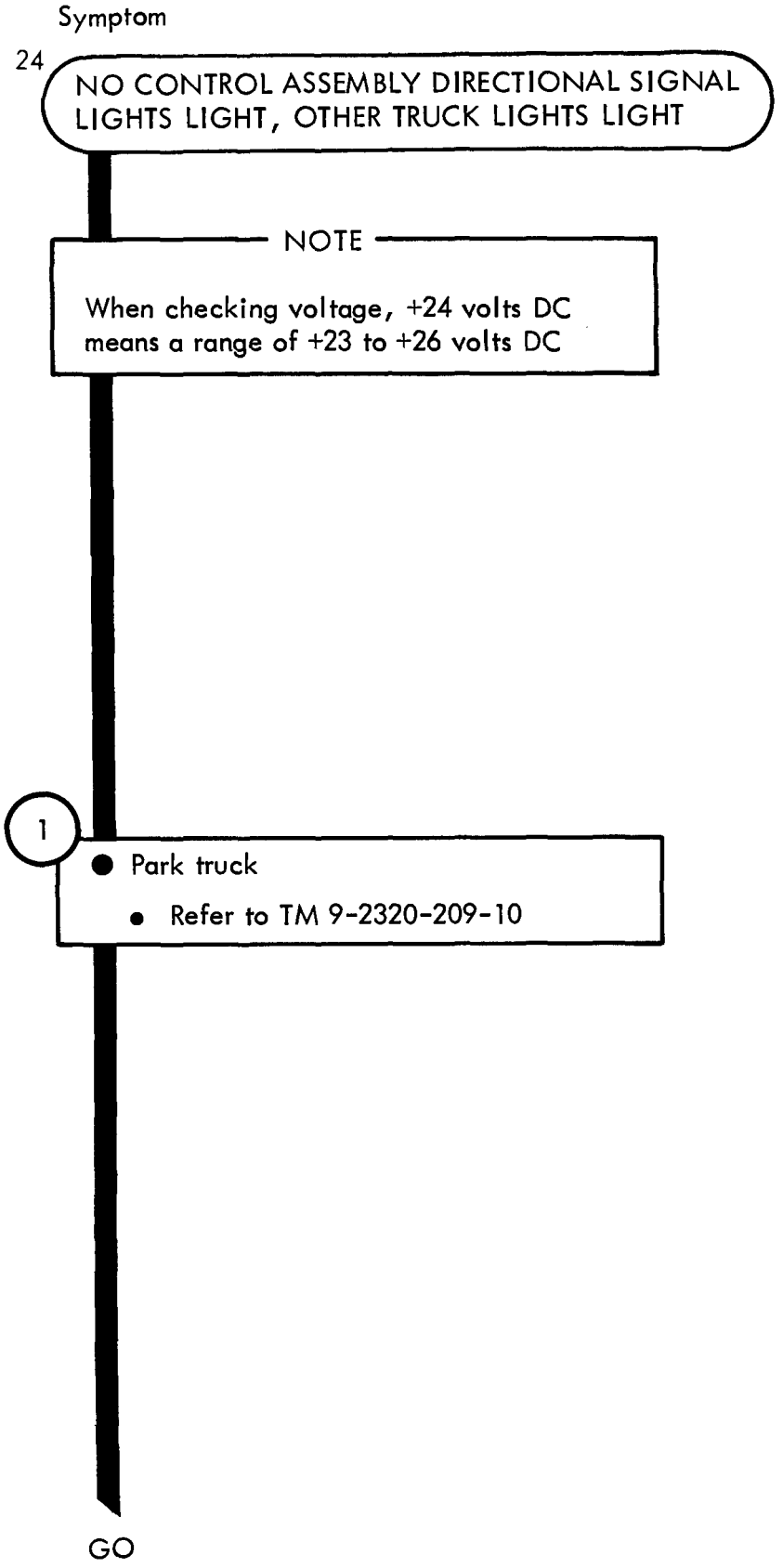
MAIN LEVER



LIGHT SWITCH

TA 114417

Figure 25-23 (Sheet 16 of 16)



TA 114418

Figure 25-24 (Sheet 1 of 6)

GO

2

- Check that +24 volts DC is getting to turn signal control
  - Unscrew and take off turn signal control harness plug from turn signal control assembly
  - Set light switch main lever to STOPLIGHT

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter + lead on contact G of harness plug
- Put multimeter - lead on a good ground
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO

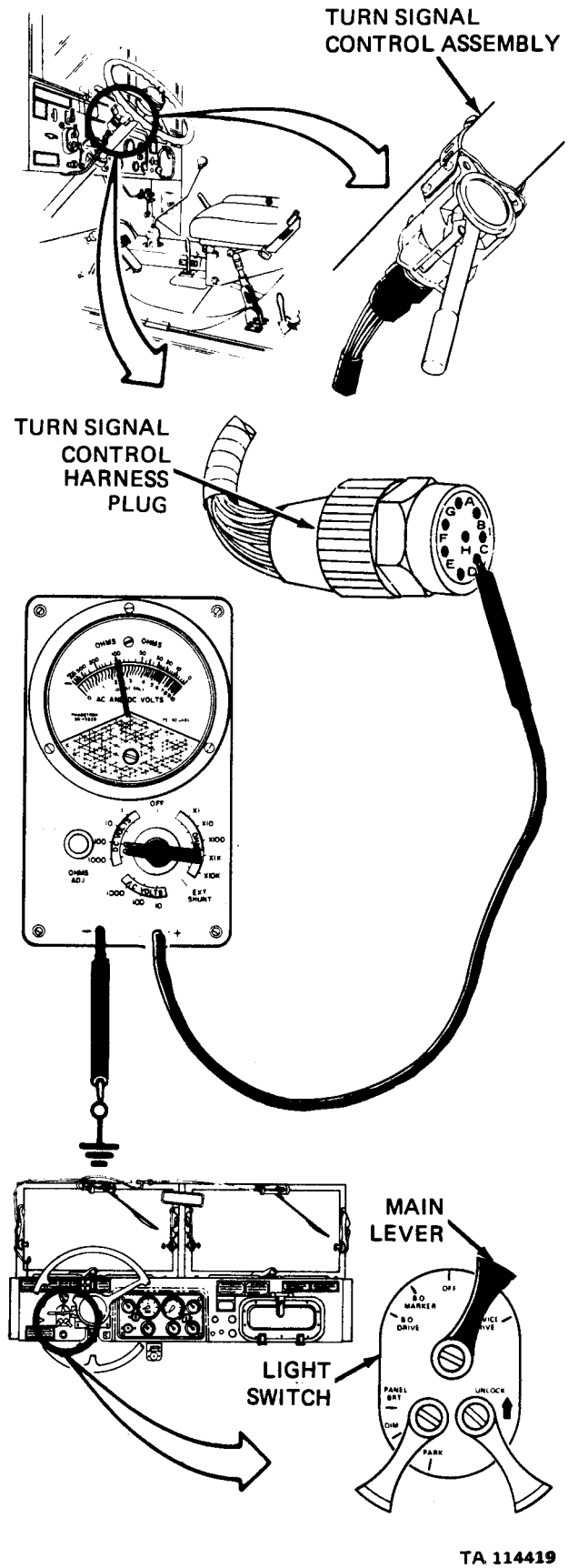


Figure 25-24 (Sheet 2 of 6)

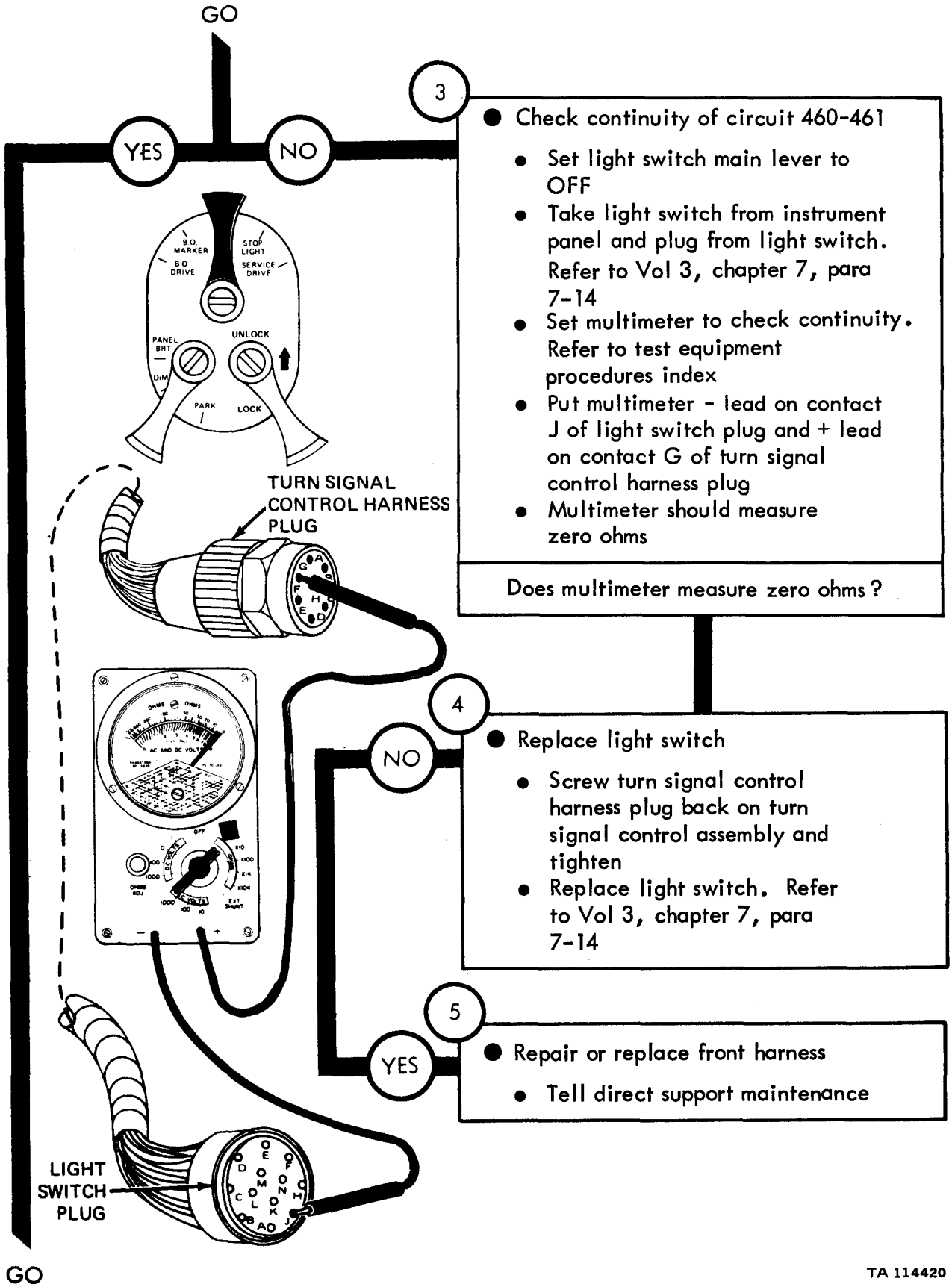


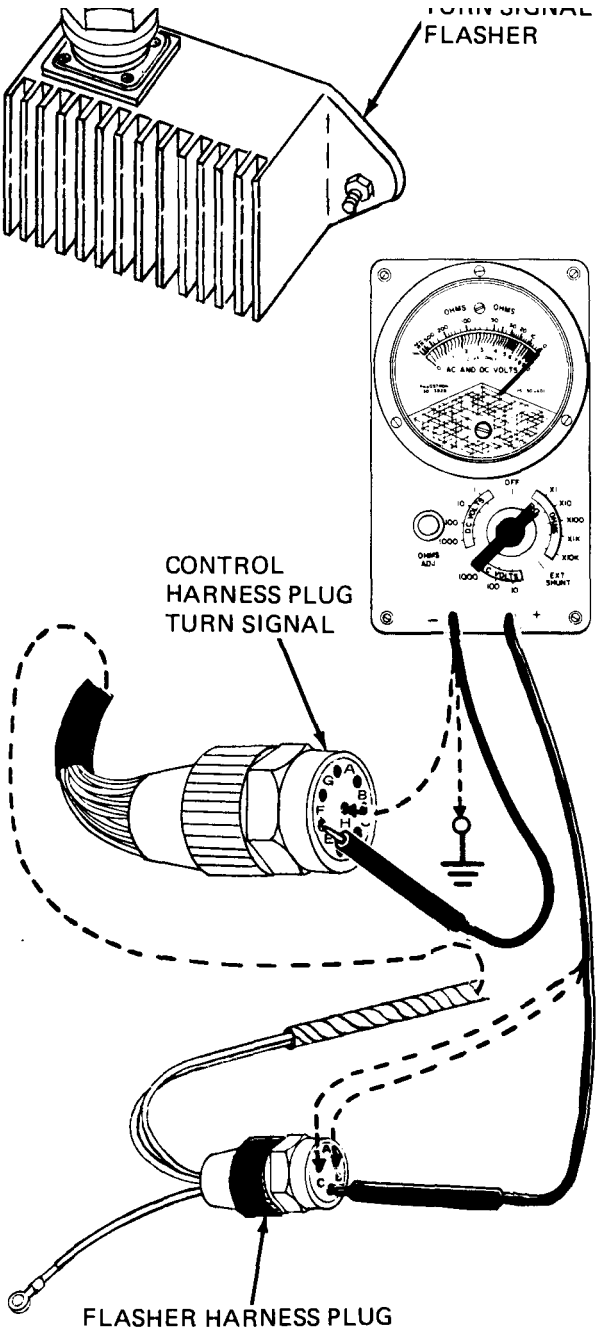
Figure 25-24 (Sheet 3 of 6)

GO

6

- Check harness between turn signal control lever and flasher for continuity
  - Unscrew and take off flasher harness plug from turn signal flasher
  - Set multimeter to check continuity. Refer to test equipment index
  - Put multimeter + lead on contact B of flasher harness plug and - lead on contact F of turn signal harness plug. Read multimeter
  - Put multimeter + lead on contact A of flasher harness plug and - lead on contact H of turn signal harness plug. Read multimeter
  - Put multimeter + lead on contact C of flasher harness plug and - lead on a good ground. Read multimeter. Multimeter should measure zero ohms for each test

Did multimeter measure zero ohms for each test?



YES

NO

7

- Repair or replace front harness
  - Tell direct support maintenance

GO

TA 114421

Figure 25-24 (Sheet 4 of 6)

GO

8

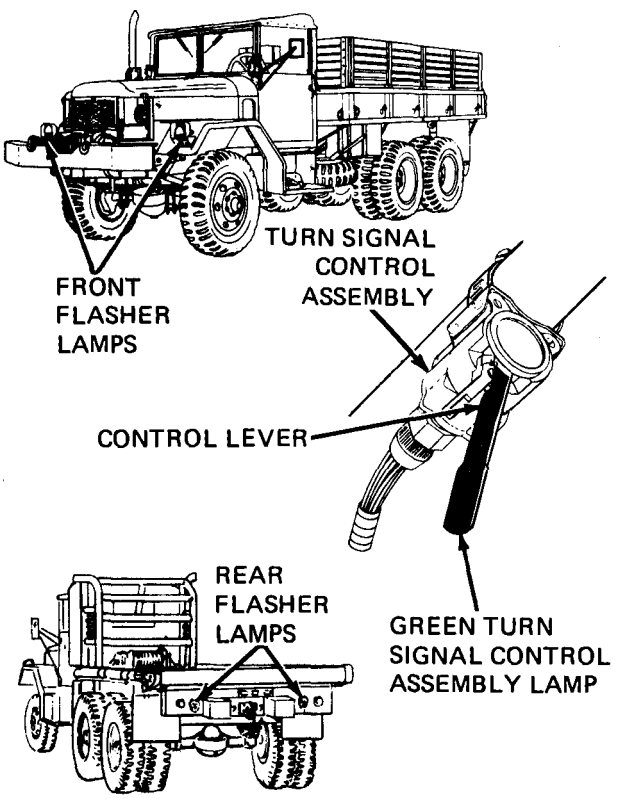
- Replace turn signal flasher
  - Screw turn signal control harness plug back on turn signal control assembly and tighten
  - Replace turn signal flasher. Refer to Vol 3, chapter 7, para 7-63

9

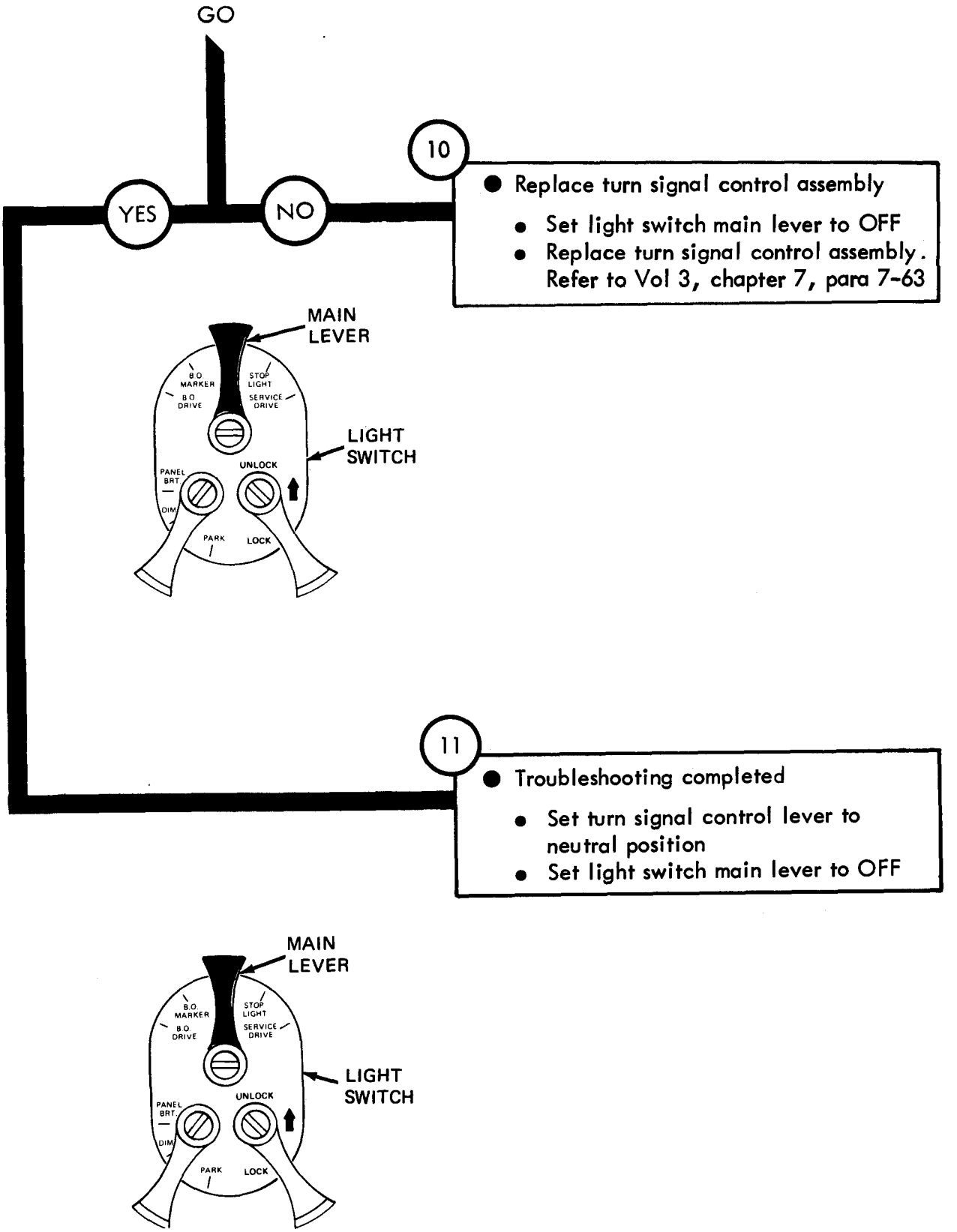
- See if control assembly directional signal lamps work
  - Set light switch main switch to SERVICE DRIVE
  - Set turn signal control lever to emergency flasher position
  - Look at two front and two rear turn signal lamps, and green turn signal control assembly lamp. All lamps should be flashing together one to two times per second

Checkout OK?

GO



TA 114422



TA 114423

Figure 25-24 (Sheet 6 of 6)

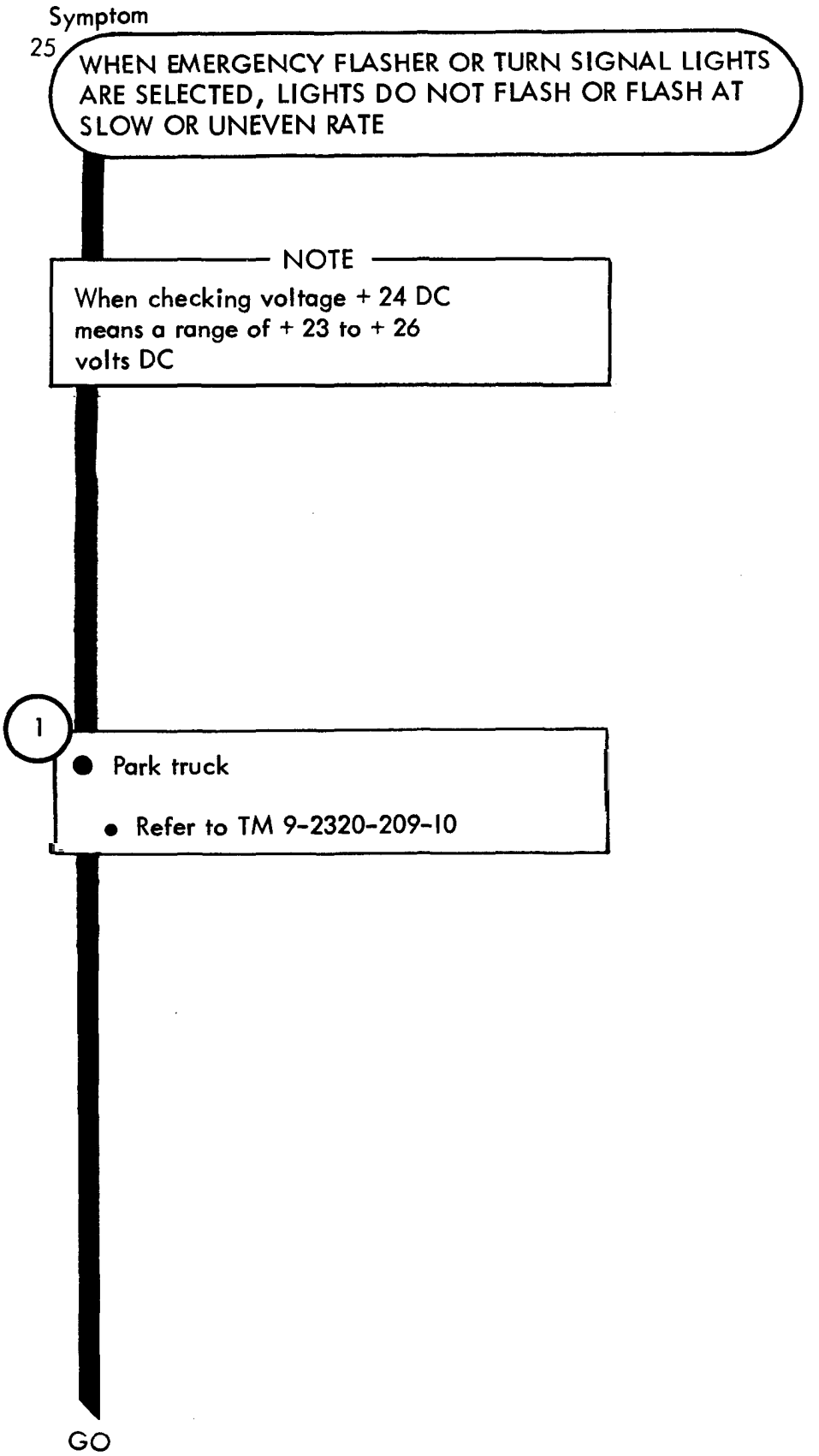


Figure 25-25 (Sheet 1 of 3)

GO

2

- Check turn signal flasher unit for +24 volts DC
  - Open battery box door and pull out batteries. Refer to Vol 3, chapter 7, para 7-55
  - Unscrew and take off turn signal flasher harness plug from turn signal flasher
  - Put a jumper wire between contact C on flasher to a good ground
  - Put a second jumper wire from + terminal of battery to contact B of flasher

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on contact C of flasher
- Put multimeter + lead on contact C of flasher. Multimeter should read 0 to 24 volts DC at flasher rate, 1 to 2 times per second

OK?

GO

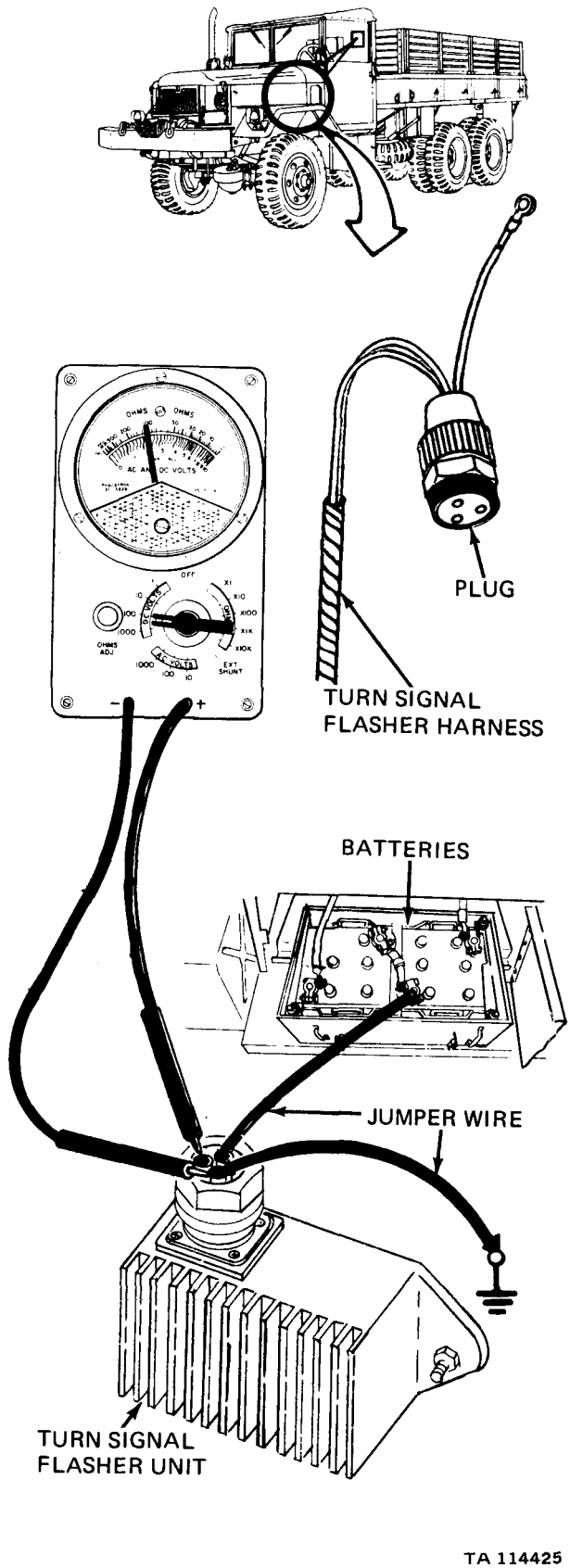
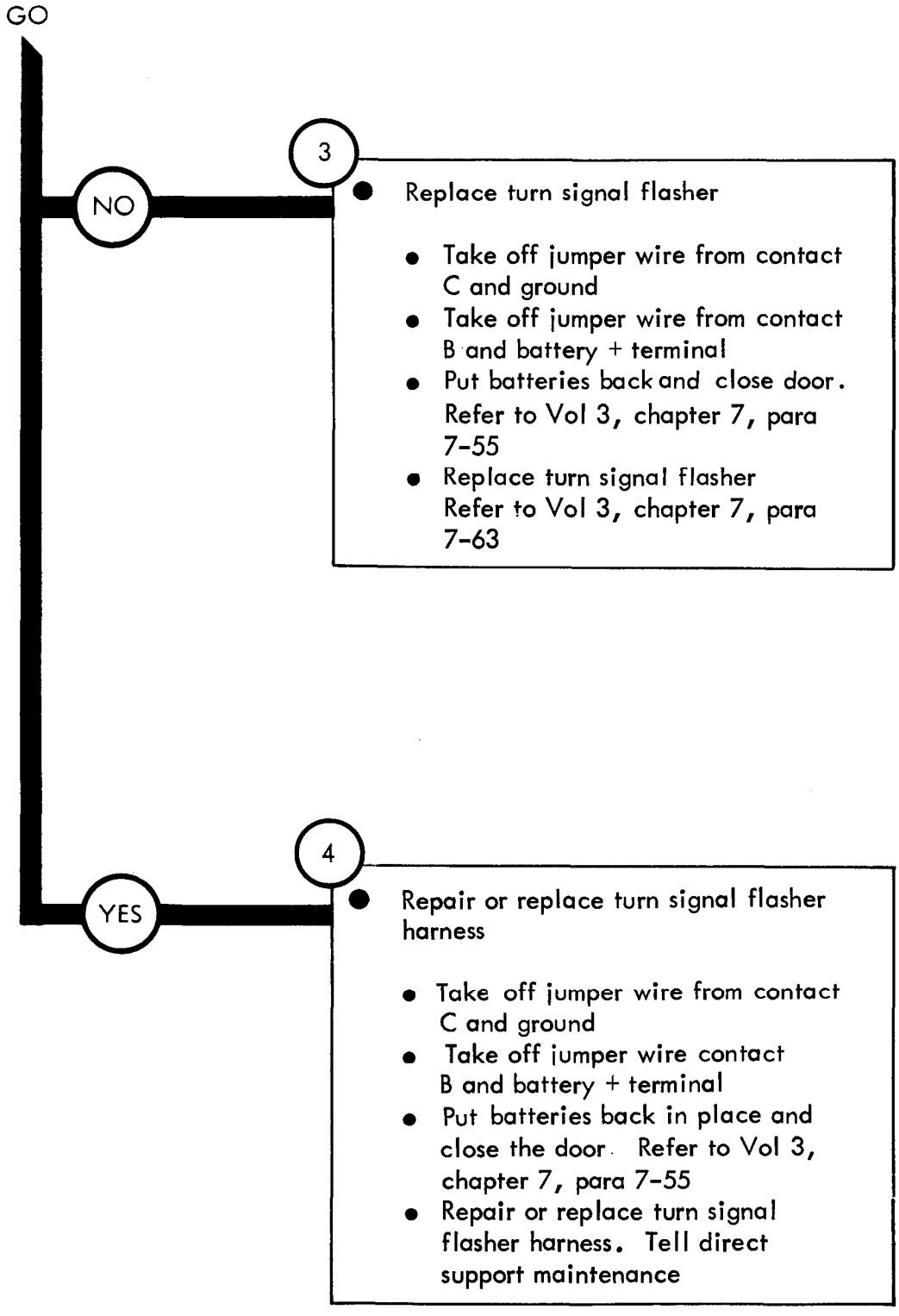


Figure 25-25 (Sheet 2 of 3)



TA 114426

Figure 25-25 (Sheet 3 of 3)

Symptom 26

TURN SIGNALS DO NOT LIGHT IN ONE OR MORE POSITIONS OF CONTROL ASSEMBLY DIRECTIONAL SIGNAL LEVER, ALL OTHER TRUCK LIGHTS LIGHT

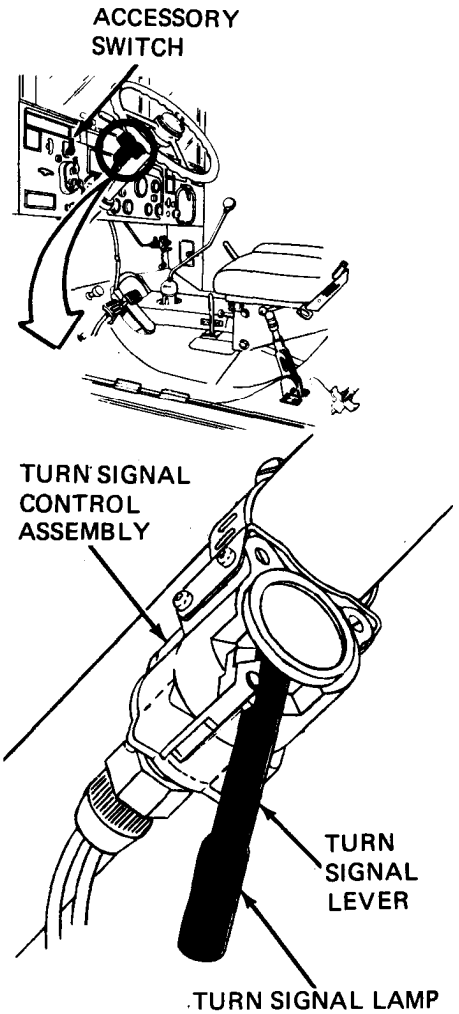
1

- Park truck
  - Refer to TM 9-2320-209-10

2

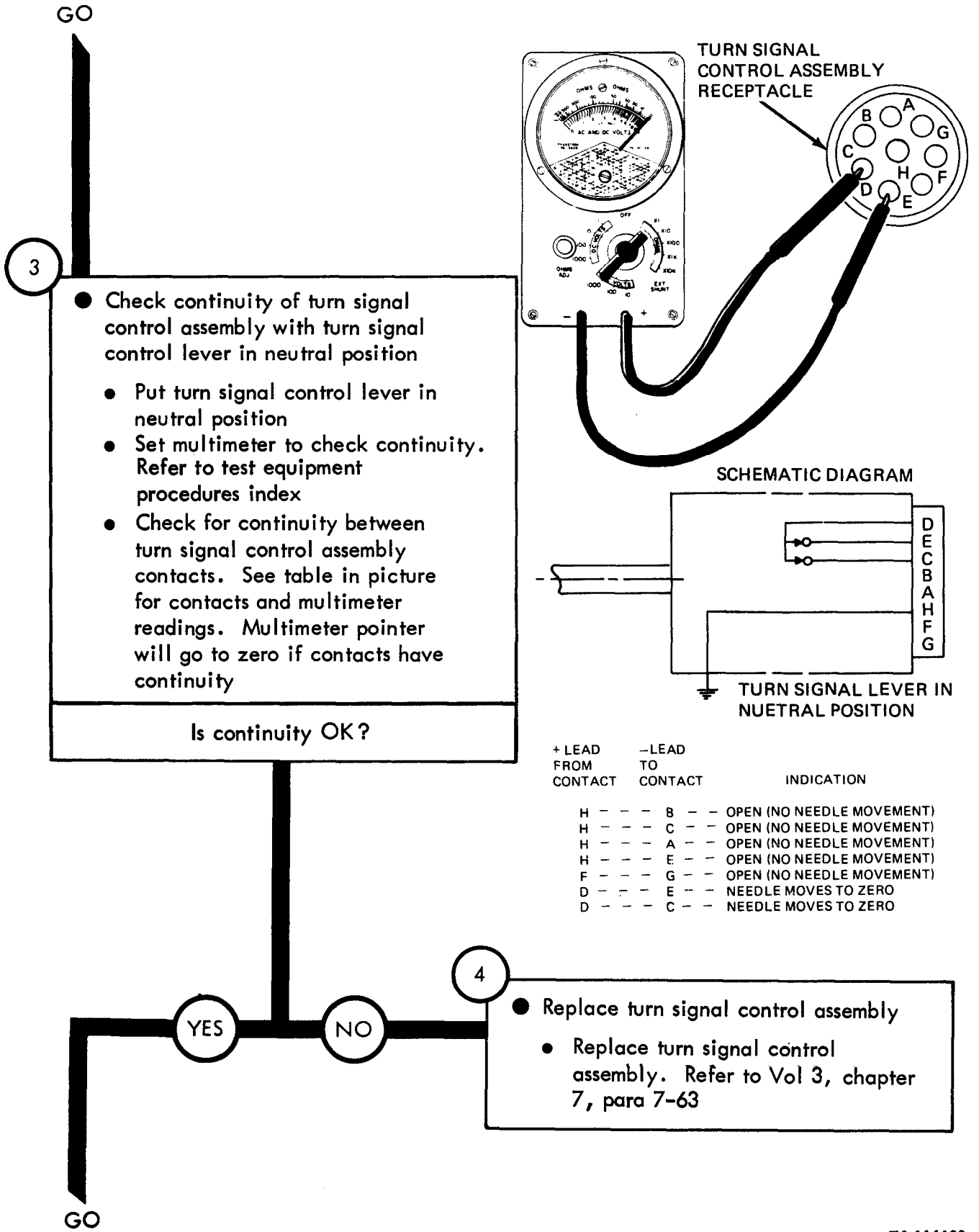
- Take control assembly directional signal off steering column
  - Take turn signal control assembly lamp out of turn signal lever. Refer to Vol 3, chapter 7, para 7-63
  - Remove turn signal control assembly from steering column. Refer to Vol 3, chapter 7, para 7-63

GO



TA 114427

Figure 25-26 (Sheet 1 of 6)



TA 114428

Figure 25-26 (Sheet 2 of 6)

GO

5

- Check continuity of turn signal control assembly with turn signal control lever in left turn position
  - Set turn signal control lever to right turn position
  - Using multimeter check for continuity between turn signal control assembly contacts. See table in picture for contacts and multimeter readings
  - Multimeter pointer will go to zero if contacts have continuity

Is continuity OK?

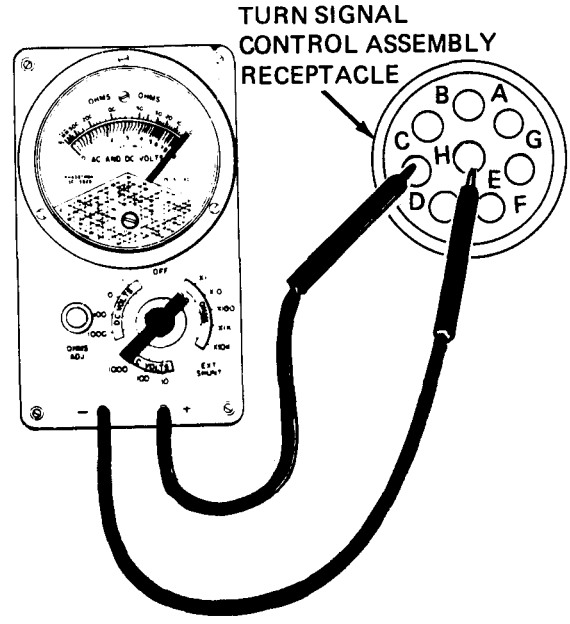
YES

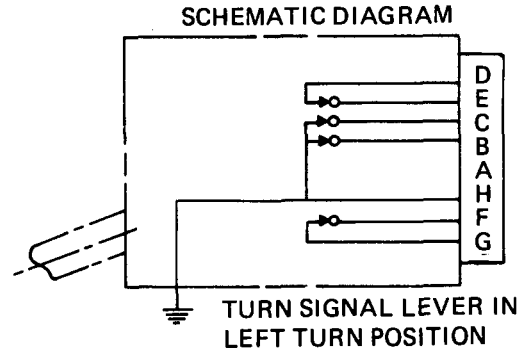
NO

6

- Replace turn signal control assembly
  - Replace turn signal control assembly. Refer to Vol 3, chapter 7, para 7-63

GO





+ LEAD FROM CONTACT	– LEAD TO CONTACT	INDICATION
H	B	NEEDLE MOVES TO ZERO
H	C	NEEDLE MOVES TO ZERO
H	A	OPEN (NO NEEDLE MOVEMENT)
H	E	OPEN (NO NEEDLE MOVEMENT)
F	G	NEEDLE MOVES TO ZERO
D	E	NEEDLE MOVES TO ZERO
D	C	OPEN (NO NEEDLE MOVEMENT)

TA 114429

Figure 25-26 (Sheet 3 of 6)

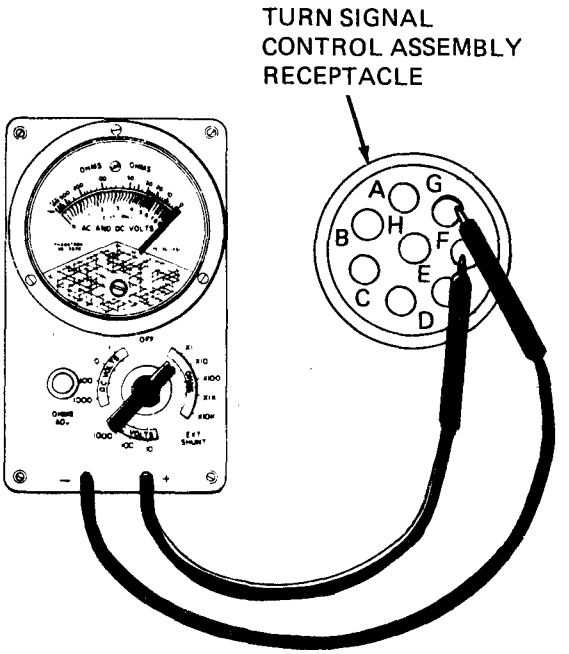
GO

7

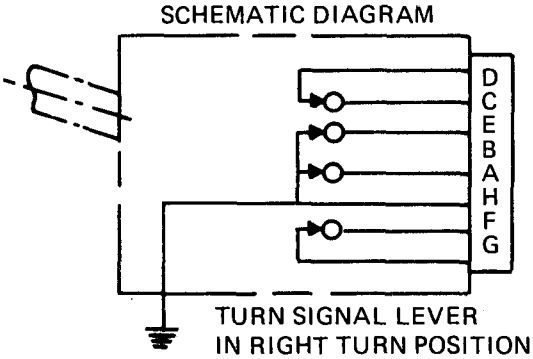
- Check continuity of turn signal control assembly with turn signal control lever in right turn position
  - Set turn signal control lever to left turn position
  - Using multimeter check for continuity between turn signal control assembly contacts. See table in picture for contacts and multimeter readings
  - Multimeter pointer will go to zero if contacts have continuity

Is continuity OK?

GO



SCHEMATIC DIAGRAM



TURN SIGNAL LEVER
IN RIGHT TURN POSITION

+ LEAD FROM CONTACT	– LEAD TO CONTACT	INDICATION
F	G	NEEDLE MOVES TO ZERO
H	A	NEEDLE MOVES TO ZERO
H	E	NEEDLE MOVES TO ZERO
H	B	OPEN (NO NEEDLE MOVEMENT)
H	C	OPEN (NO NEEDLE MOVEMENT)
D	C	NEEDLE MOVES TO ZERO
D	E	OPEN (NO NEEDLE MOVEMENT)

TA 114430

Figure 25-26 (Sheet 4 of 6)

GO

YES

NO

8

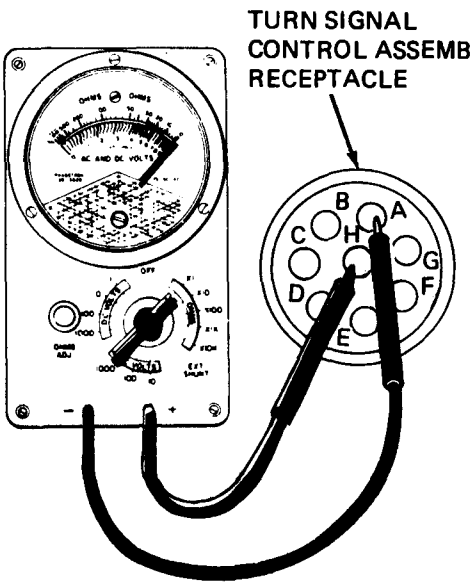
- Replace turn signal control assembly
  - Refer to Vol 3, chapter 7, para 7-63

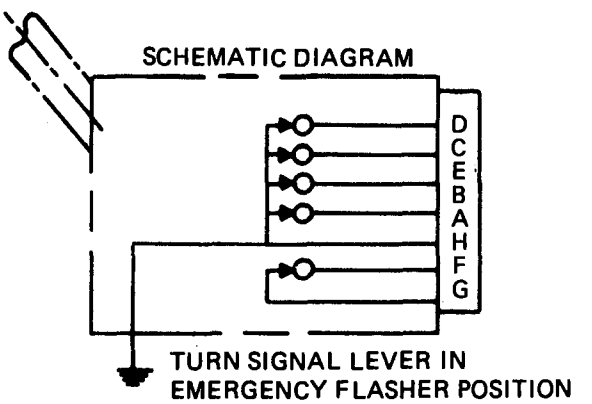
9

- Check continuity of turn signal control assembly with turn signal control lever in emergency flasher position
  - Set turn signal control lever to emergency flasher position
  - Using multimeter check for continuity between turn signal control assembly contacts. See table in picture for contacts and multimeter readings
  - Multimeter pointer will go to zero if contacts have continuity

Is continuity OK?

GO

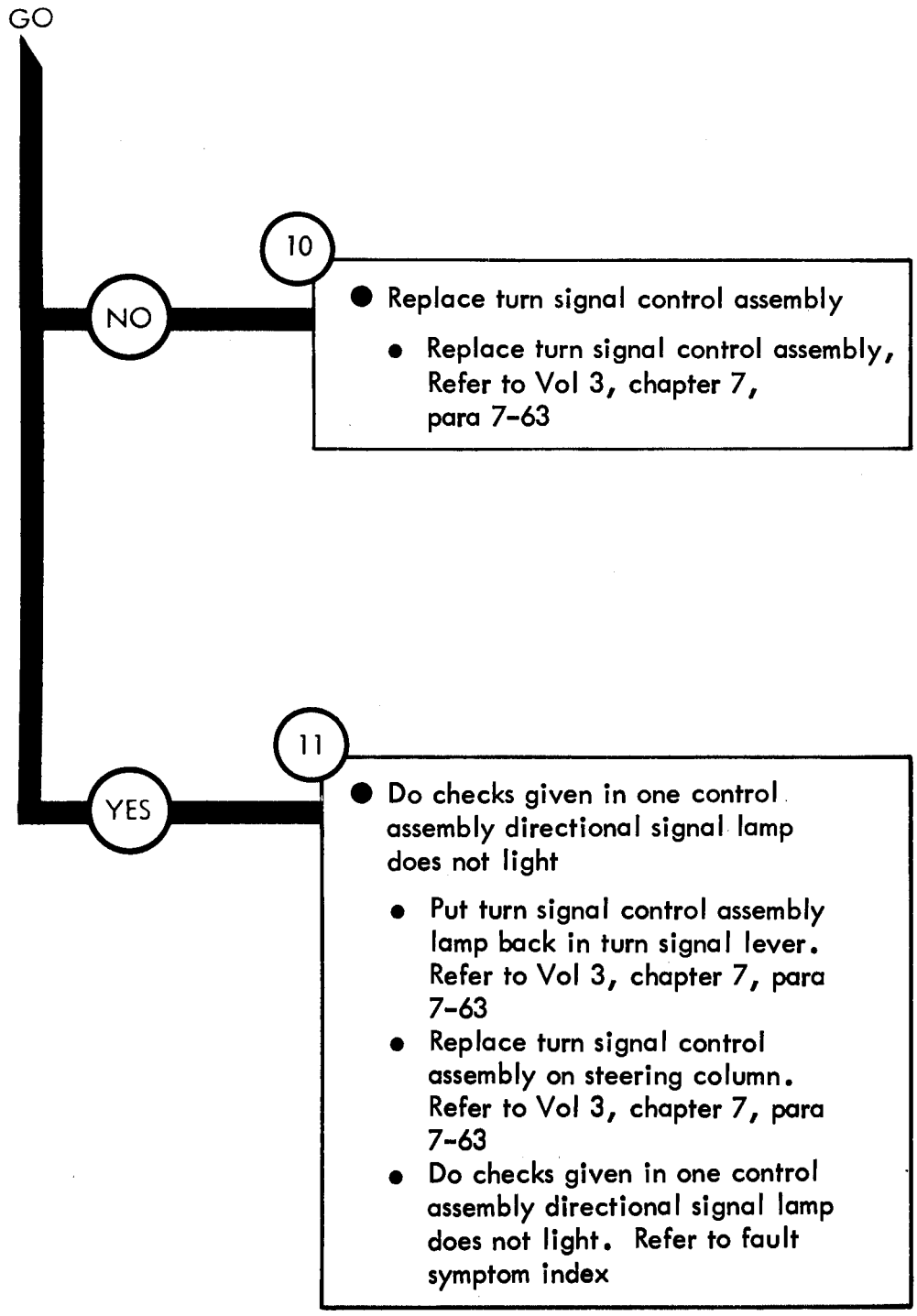




+ LEAD FROM CONTACT	– LEAD TO CONTACT	INDICATION
H	A	NEEDLE MOVES TO ZERO
H	B	NEEDLE MOVES TO ZERO
H	C	NEEDLE MOVES TO ZERO
H	E	NEEDLE MOVES TO ZERO
D	E	OPEN (NO NEEDLE MOVEMENT)
D	C	OPEN (NO NEEDLE MOVEMENT)
F	G	NEEDLE MOVES TO ZERO

TA 114431

Figure 25-26 (Sheet 5 of 6)



TA 114432

Figure 25-26 (Sheet 6 of 6)

Symptom

27 CONTROL ASSEMBLY DIRECTIONAL SIGNAL LIGHT DOES NOT FLASH, REST OF DIRECTIONAL SIGNAL SYSTEM WORKS

1

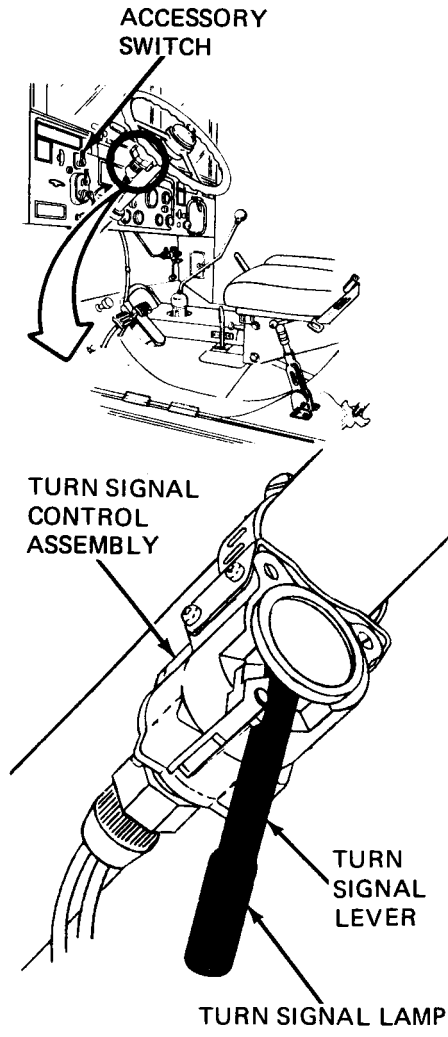
- Park truck
  - Refer to TM 9-2320-209-10

2

- Test turn signal control assembly for ground to steering column
  - Try to push turn signal control assembly around steering column

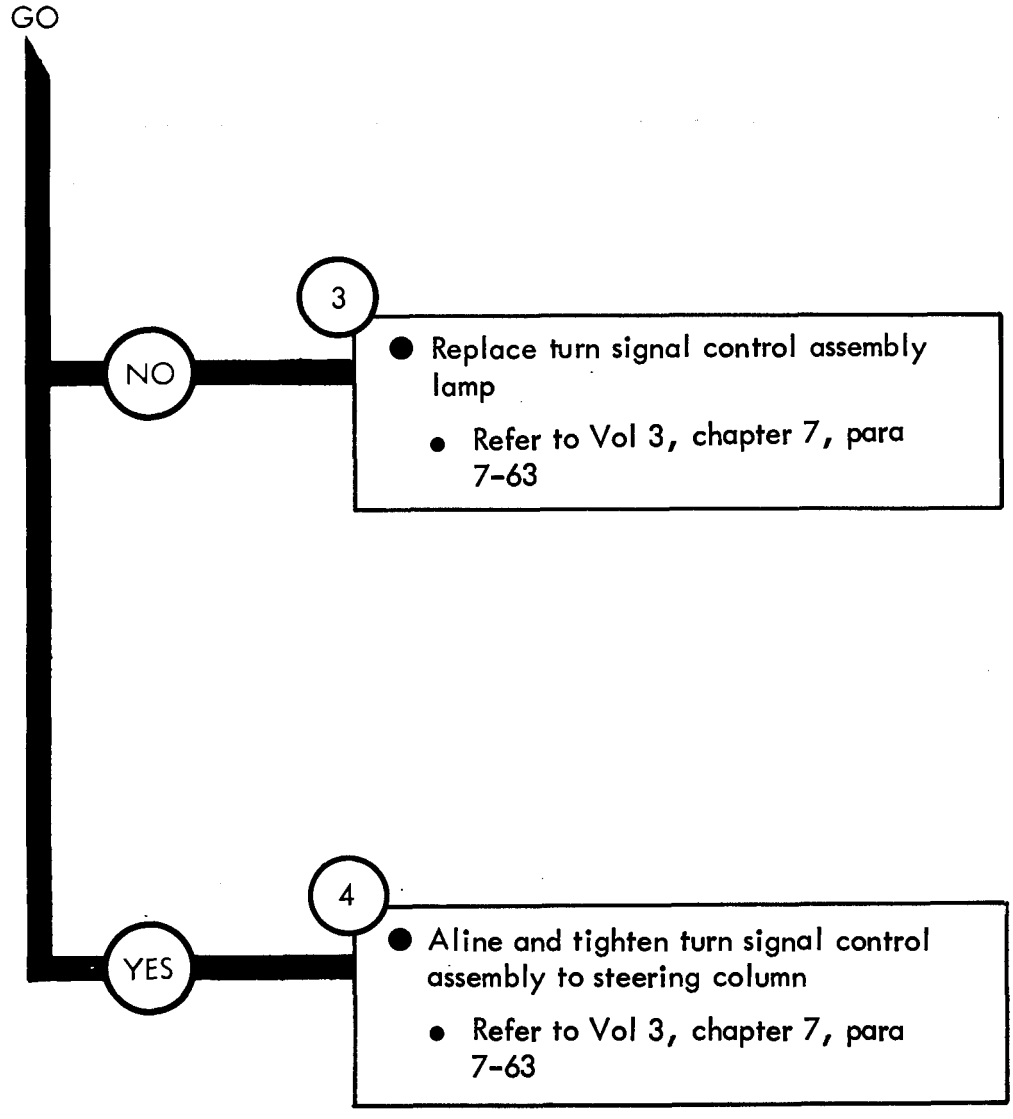
Does turn signal control assembly move?

GO



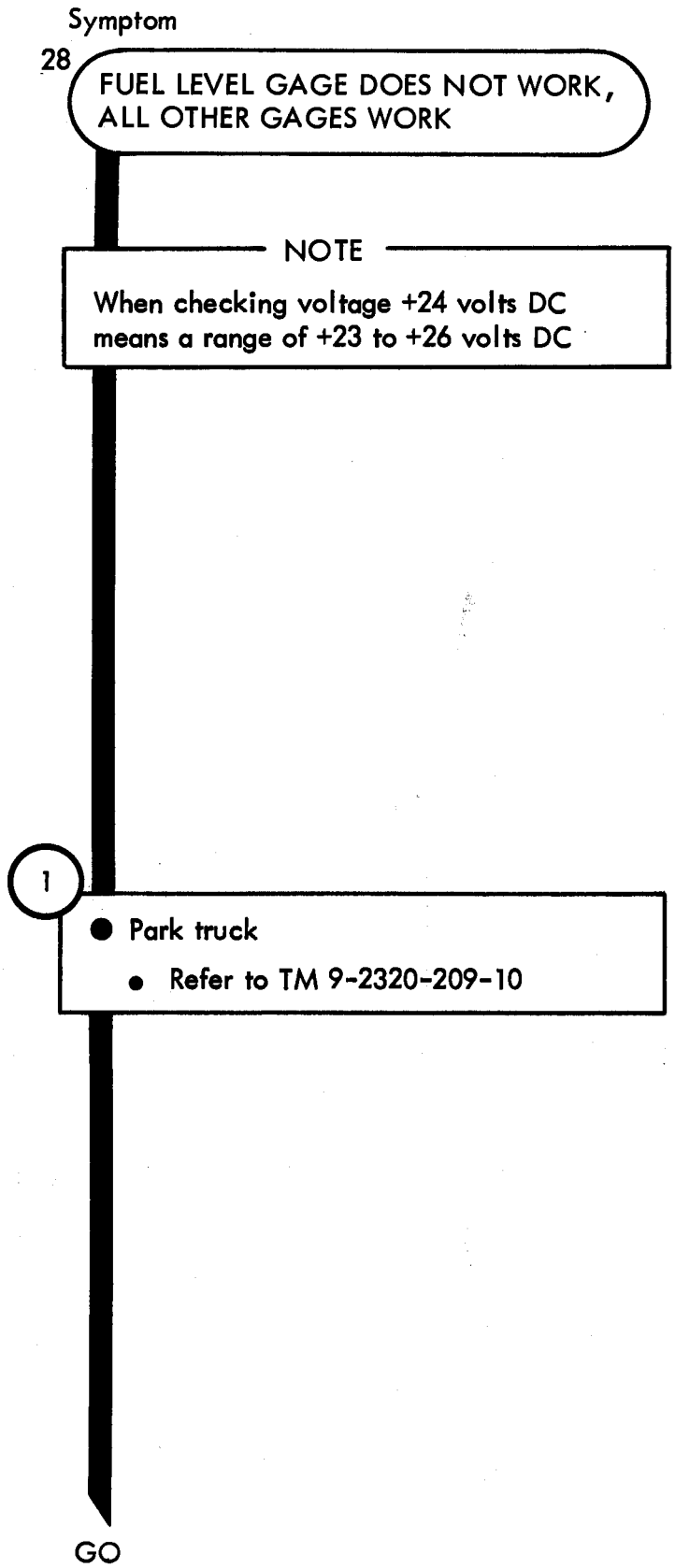
TA 114433

Figure 25-27 (Sheet 1 of 2)



TA 114434

Figure 25-27 (Sheet 2 of 2)



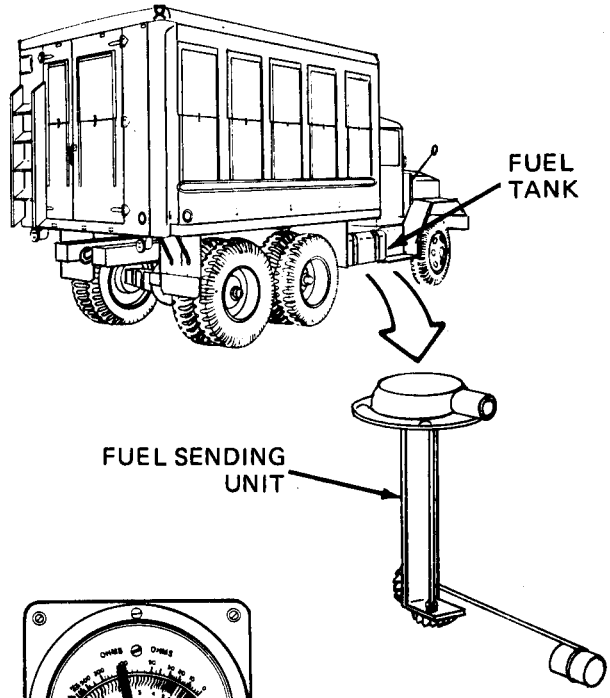
TA 114435

Figure 25-28 (Sheet 1 of 9)

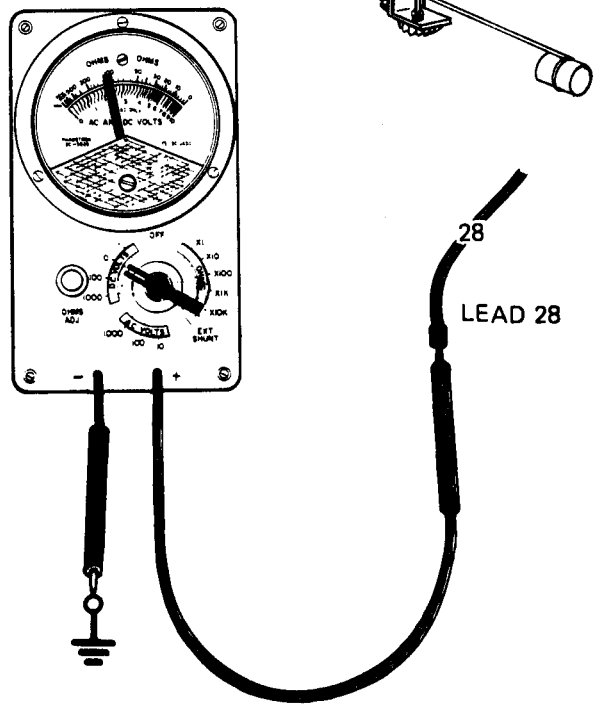
GO

2

- Check for +2 to +4 volts from fuel level gage to fuel sending unit
  - Set ACCESSORY switch to OFF
  - Take off lead 28 contact from fuel sending unit
  - Set ACCESSORY switch to ON



- Set multimeter to measure +24 volts DC
- Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 28 contact
- Read multimeter. Multimeter should measure +24 volts DC



Does multimeter measure less than 10 volts DC?

YES

NO

3

- Replace fuel level gage
  - Set ACCESSORY switch to OFF
  - Put lead 28 contact back on fuel sending unit
  - Replace fuel level gage. Refer to Vol 3, chapter 7, para 7-13

GO

TA 114436

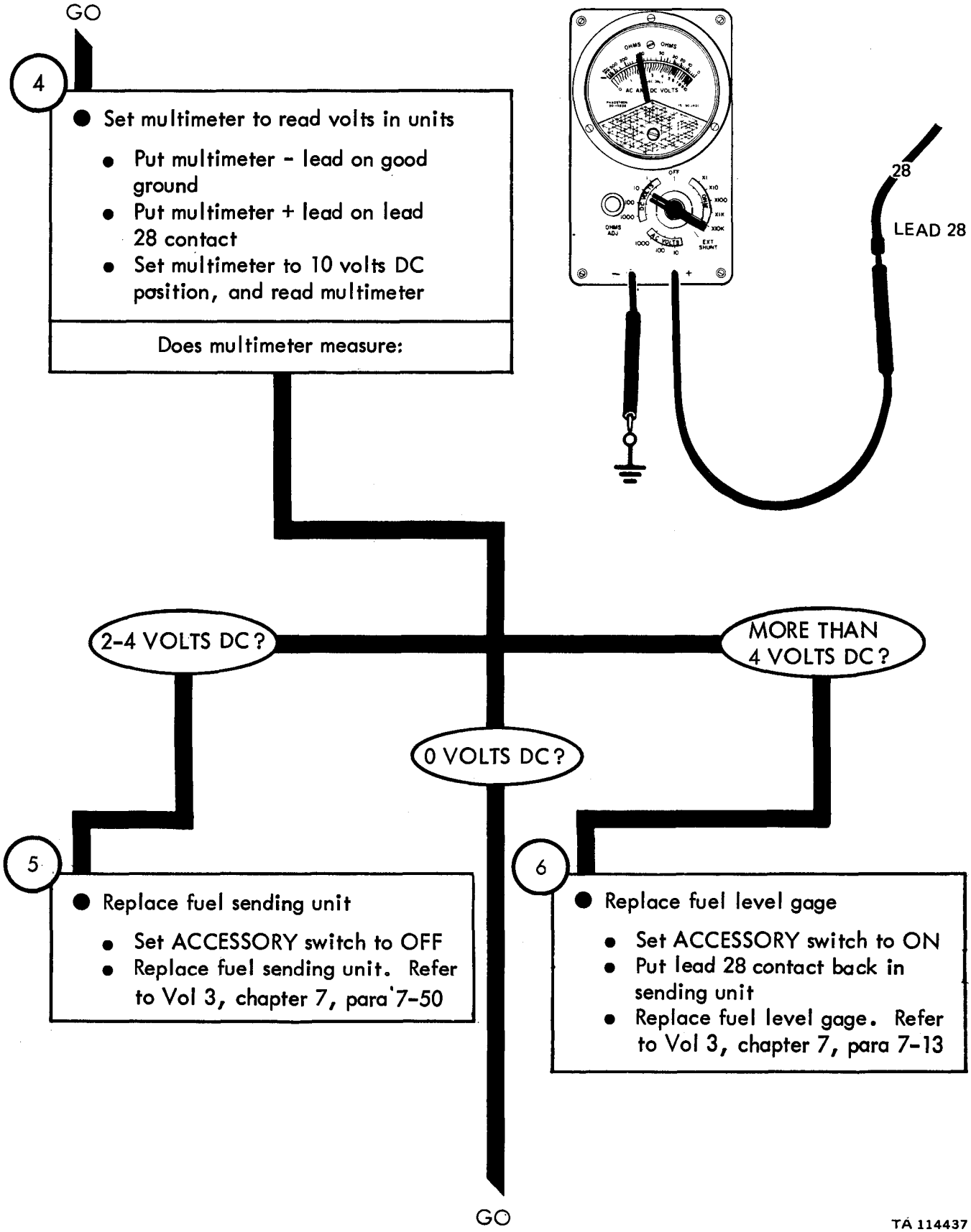


Figure 25-28 (Sheet 3 of 9)

GO

7

- Check for voltage to fuel level gage
  - Set ACCESSORY switch to OFF
  - Take off instrument cluster from instrument panel. Refer to Vol 3, chapter 7, para 7-12
  - Put jumper wire from instrument cluster to a good ground
  - Take off lead 28 from fuel level gage

- Set ACCESSORY switch to ON
- Check that multimeter is still in 10 volts DC position
- Place multimeter - lead on a good ground
- Place multimeter + lead on lead 28 contact. Read multimeter
- Multimeter should measure +2 to +4 volts DC

Does multimeter measure zero volts?

GO

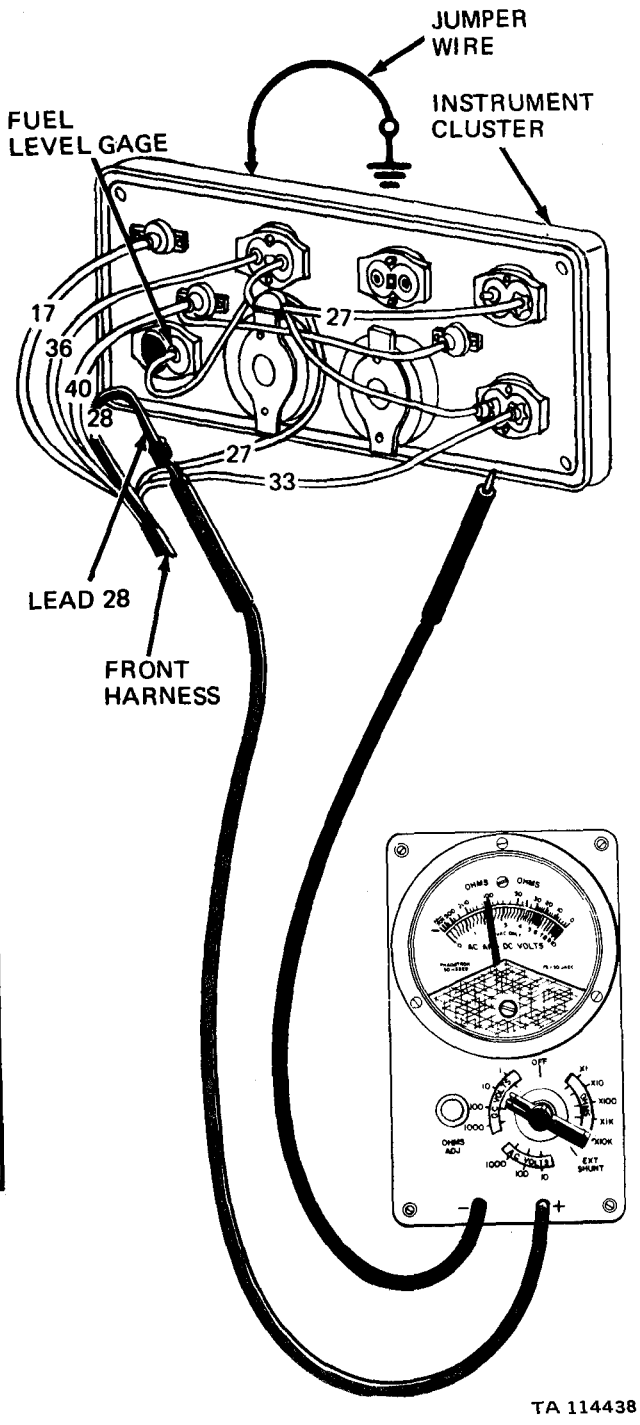


Figure 25-28 (Sheet 4 of 9)

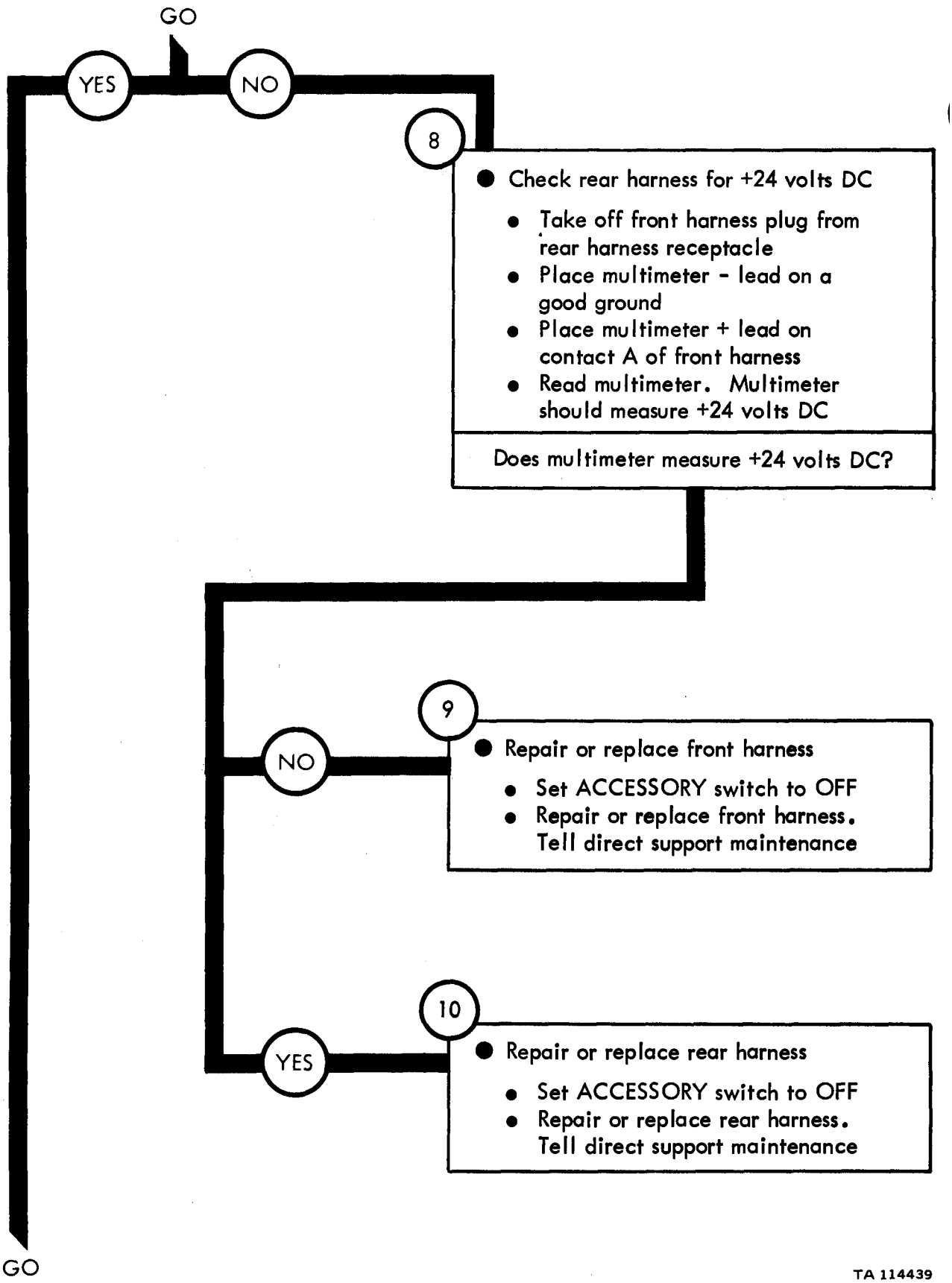
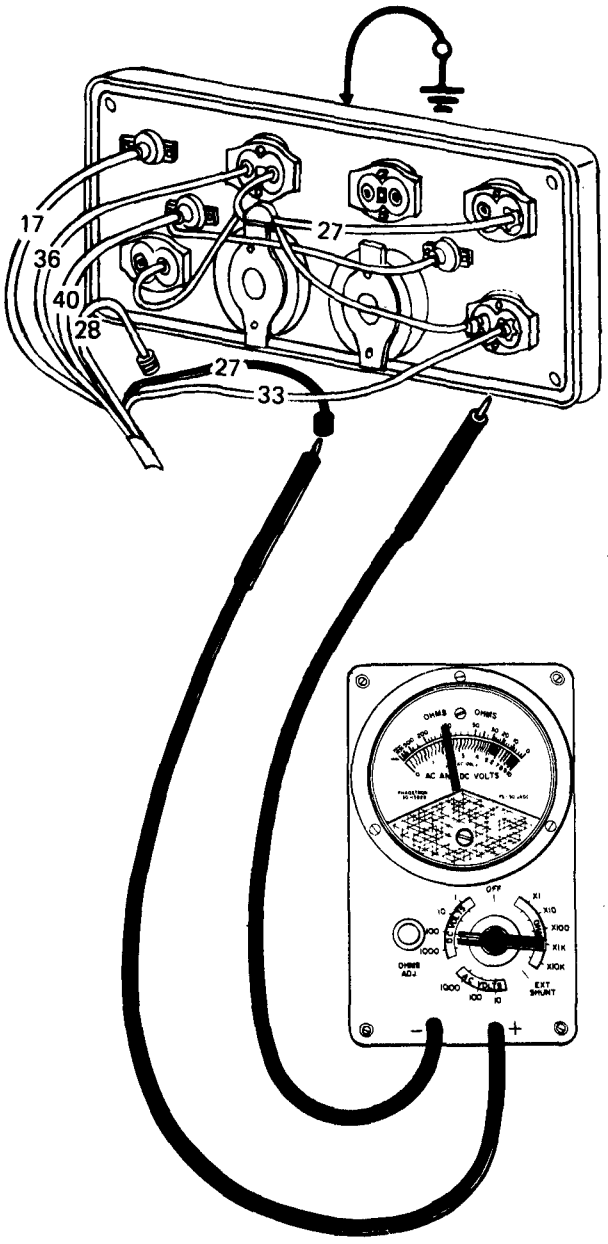


Figure 25-28 (Sheet 5 of 9)

GO

11

- Check for voltage from batteries to instrument cluster
  - Set ACCESSORY switch to OFF
  - Take off lead 27 from instrument harness assembly
  - Set ACCESSORY switch to ON



- Set multimeter to read +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 27 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

YES

NO

12

- Replace instrument harness assembly
  - Set ACCESSORY switch to OFF
  - Replace instrument harness assembly. Tell direct support maintenance

GO

TA 114440

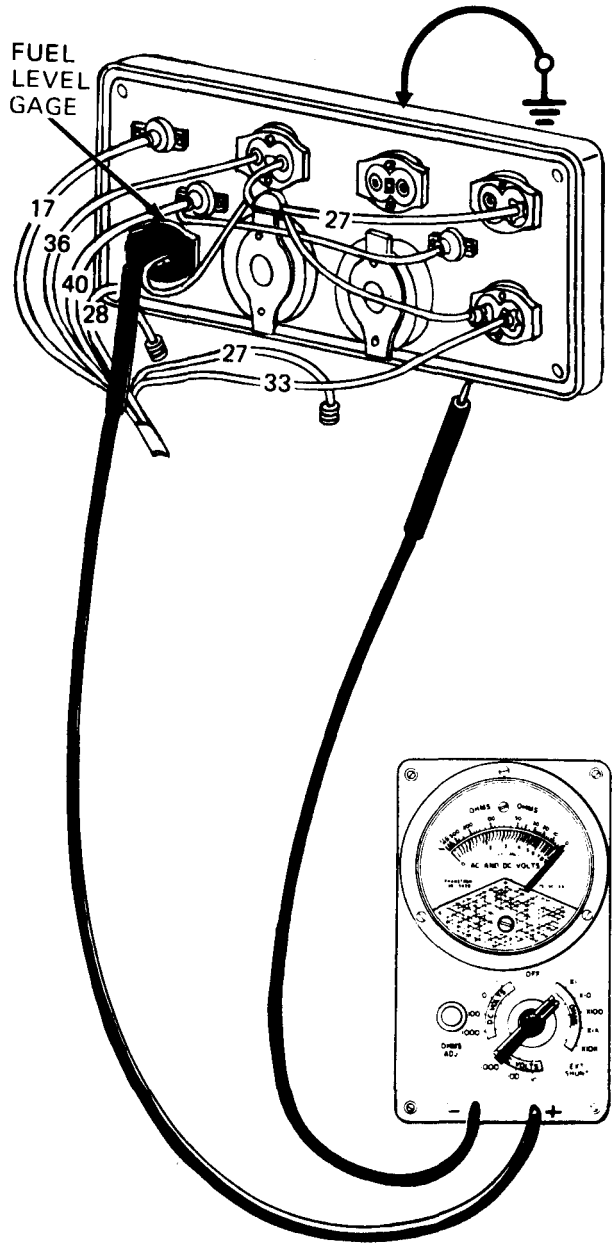
Figure 25-28 (Sheet 6 of 9)

GO

13

- Check fuel level gage for continuity
  - Set ACCESSORY switch to OFF
  - Set multimeter to check continuity. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on bare metal of fuel level gage terminal of gage
  - Read multimeter. Multimeter should not measure more than 1 ohm

Does multimeter measure more than 1 ohm?



YES

NO

14

- Replace fuel level gage
  - Refer to Vol 3, chapter 7, para 7-13

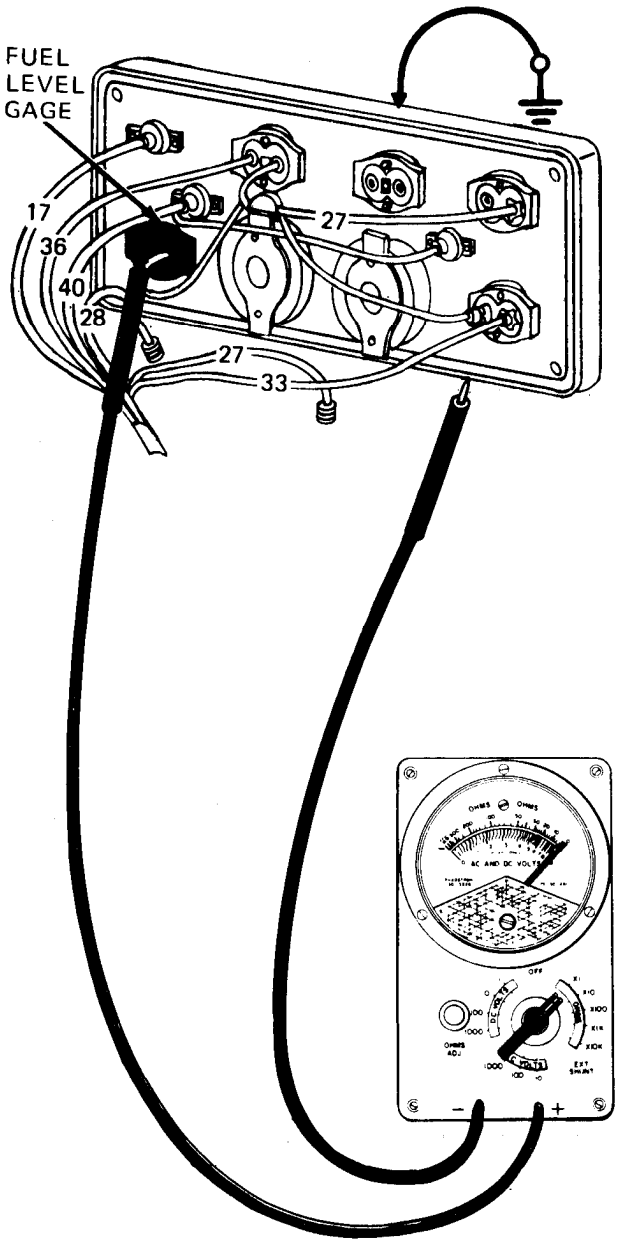
GO

TA 114441

Figure **25-28 (Sheet 7 of 9)**

15

- Clean surfaces where fuel level gage and instrument cluster contact, and recheck continuity
  - Take off fuel level gage from instrument cluster. Refer to Vol 3, chapter 7, para 7-13
  - Clean surfaces where fuel level gage and instrument cluster contact.
  - Put fuel level gage back on instrument cluster. Refer to Vol 3, chapter 7, para 7-13



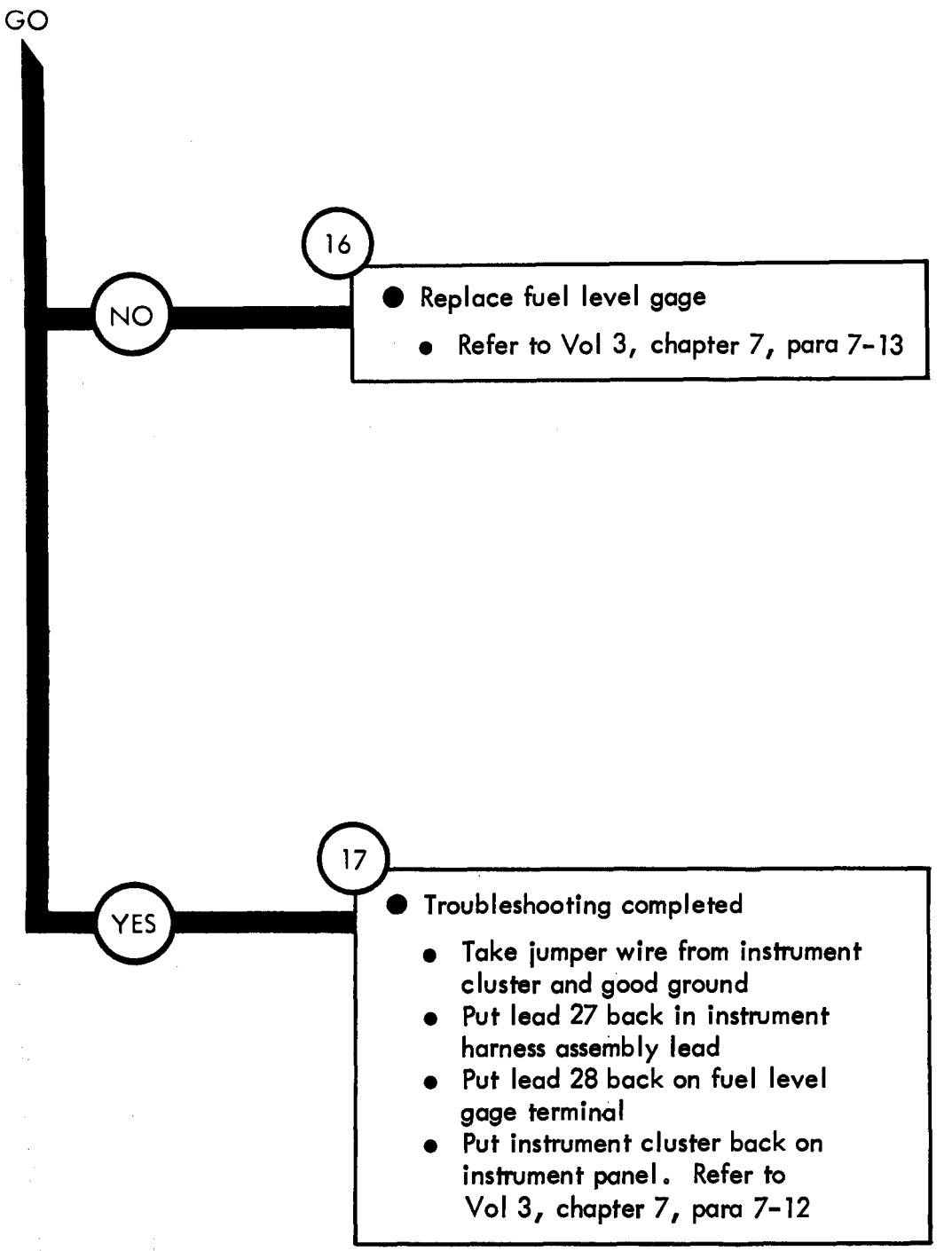
- Put multimeter - lead on a good ground
- Put multimeter + lead on fuel level gage terminal 28
- Read multimeter. Multimeter should measure zero ohms

Does multimeter measure zero ohms?

GO

TA 114442

Figure 25-28 (Sheet 8 of 9)



TA 114443

Figure 25-28 (Sheet 9 of 9)

Symptom

29 TEMPERATURE GAGE DOES NOT WORK. ALL OTHER GAGES WORK

NOTE

When measuring voltage +24 volts means a range of +23 to +26 volts DC

1

- Park truck
- Refer to TM 9-2320-209-10

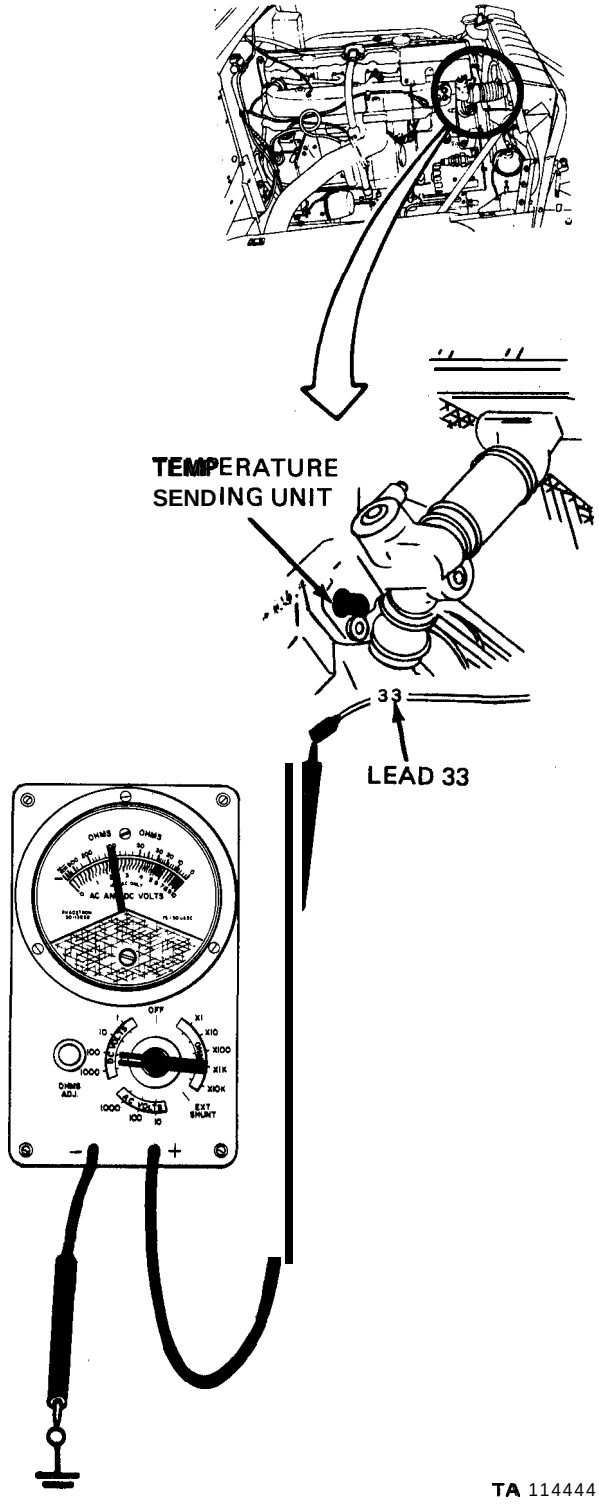
2

- Check for +24 volts from temperature gage to sending unit
- Set ACCESSORY switch to OFF
- Take off lead 33 contact from temperature sending unit
- Set ACCESSORY switch to ON

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 33 contact
- Read multimeter. Multimeter should read +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114444

Figure 25-29 (Sheet 1 of 6)

GO

YES

NO

3

- Replace temperature gage
  - Set ACCESSORY switch to OFF
  - Put lead 33 contact back on temperature sending unit
  - Replace temperature gage. Refer to Vol 3, chapter 7, para 7-13

4

- Check for voltage to temperature gage
  - Set ACCESSORY switch to OFF
  - Take off instrument cluster from instrument panel. Refer to Vol 3, chapter 7, para 7-12
  - Put jumper wire from instrument cluster to a good ground
  - Take off lead 33 from temperature gage

- Set ACCESSORY switch to ON
- Check that multimeter is still in +24 volts DC position
- Place multimeter - lead on a good ground
- Place multimeter + lead on lead 33 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC'?

GO

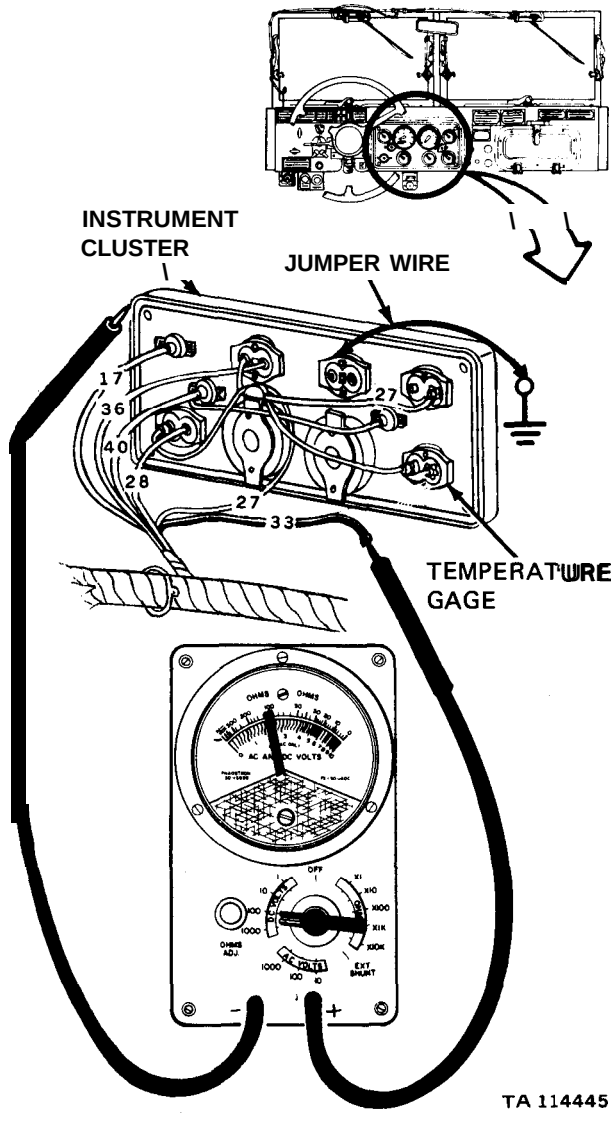


Figure 25-29 (Sheet 2 of 6)

GO

YES

NO

5

- Repair or replace front harness
  - Set ACCESSORY switch to OFF
  - Repair or replace front harness. Tell direct support maintenance

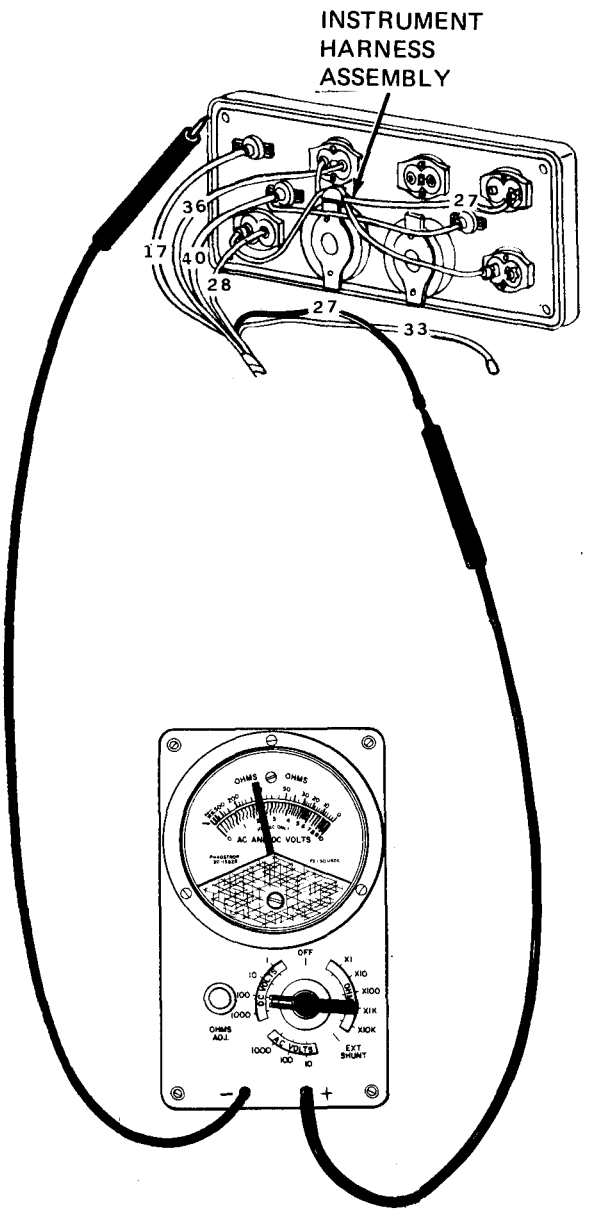
6

- Check for voltage from batteries to instrument cluster
  - Set ACCESSORY switch to OFF
  - Take off lead 27 from instrument harness assembly
  - Set ACCESSORY switch to ON

- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 27 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114446

Figure 25-29 (Sheet 3 of 6)

GO

YES

NO

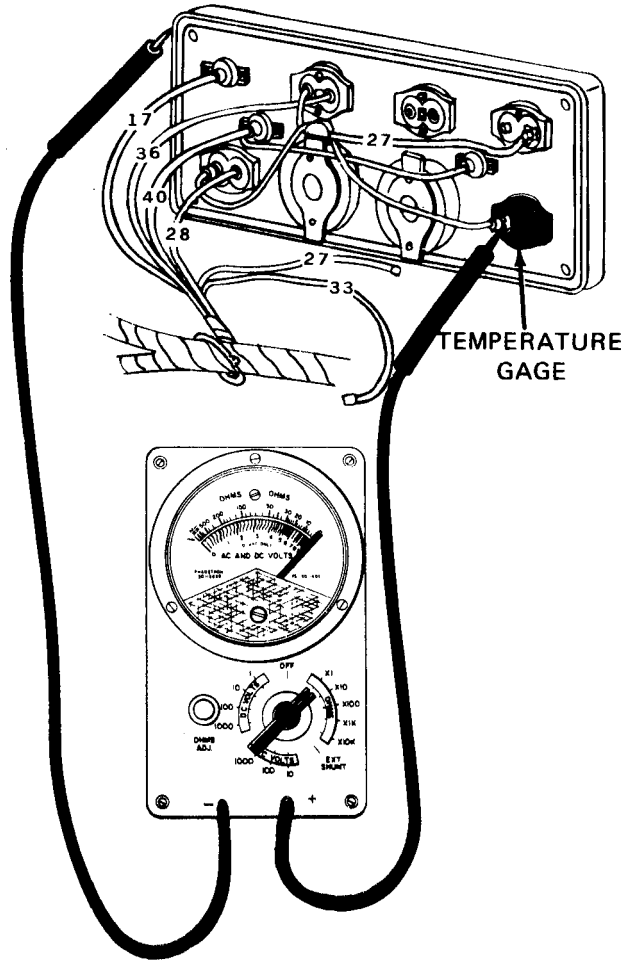
7

- Replace instrument harness assembly
  - Set ACCESSORY switch to OFF
  - Replace instrument harness assembly. Tell direct support maintenance

8

- Check temperature gage for continuity
  - Set ACCESSORY switch to OFF
  - Set multimeter to check continuity. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on bare metal of temperature gage, not on terminal of gage
  - Read multimeter. Multimeter should not measure more than 1 ohm

Does multimeter measure more than 1 ohm?



YES

NO

9

- Replace temperature gage
  - Refer to Vol 3, chapter 7, para 7-13

GO

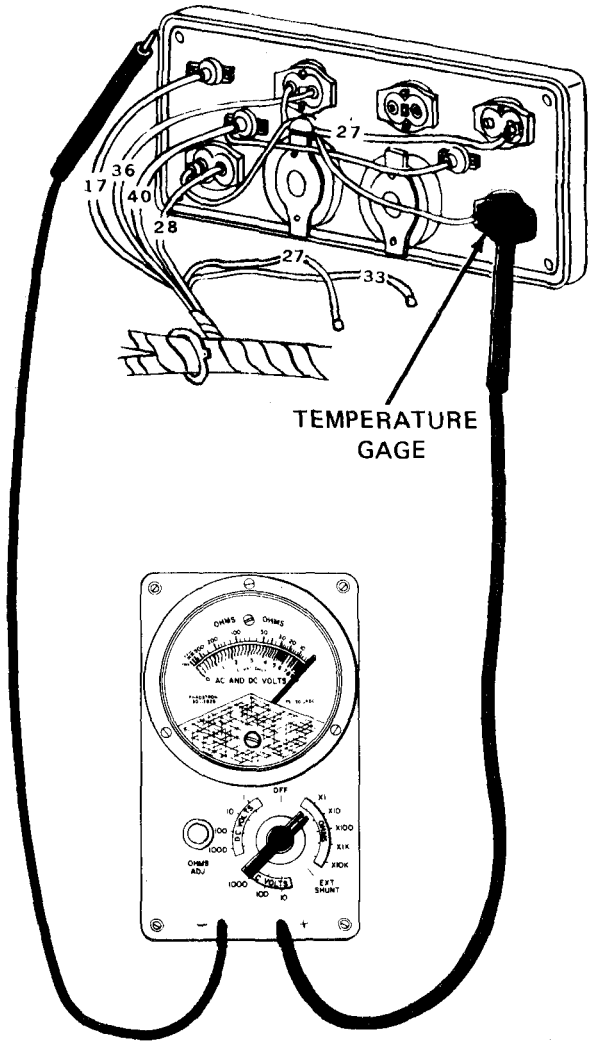
TA 114447

Figure 25-29 (Sheet 4 of 6)

GO

10

- Clean surfaces where temperature gage and instrument cluster contact, and recheck continuity
  - Take off temperature gage from instrument cluster. Refer to Vol 3, chapter 7, para 7-13
  - Clean surfaces where temperature gage and instrument cluster contact.
  - Put temperature gage back on instrument cluster. Refer to Vol 3, chapter 7, para 7-13



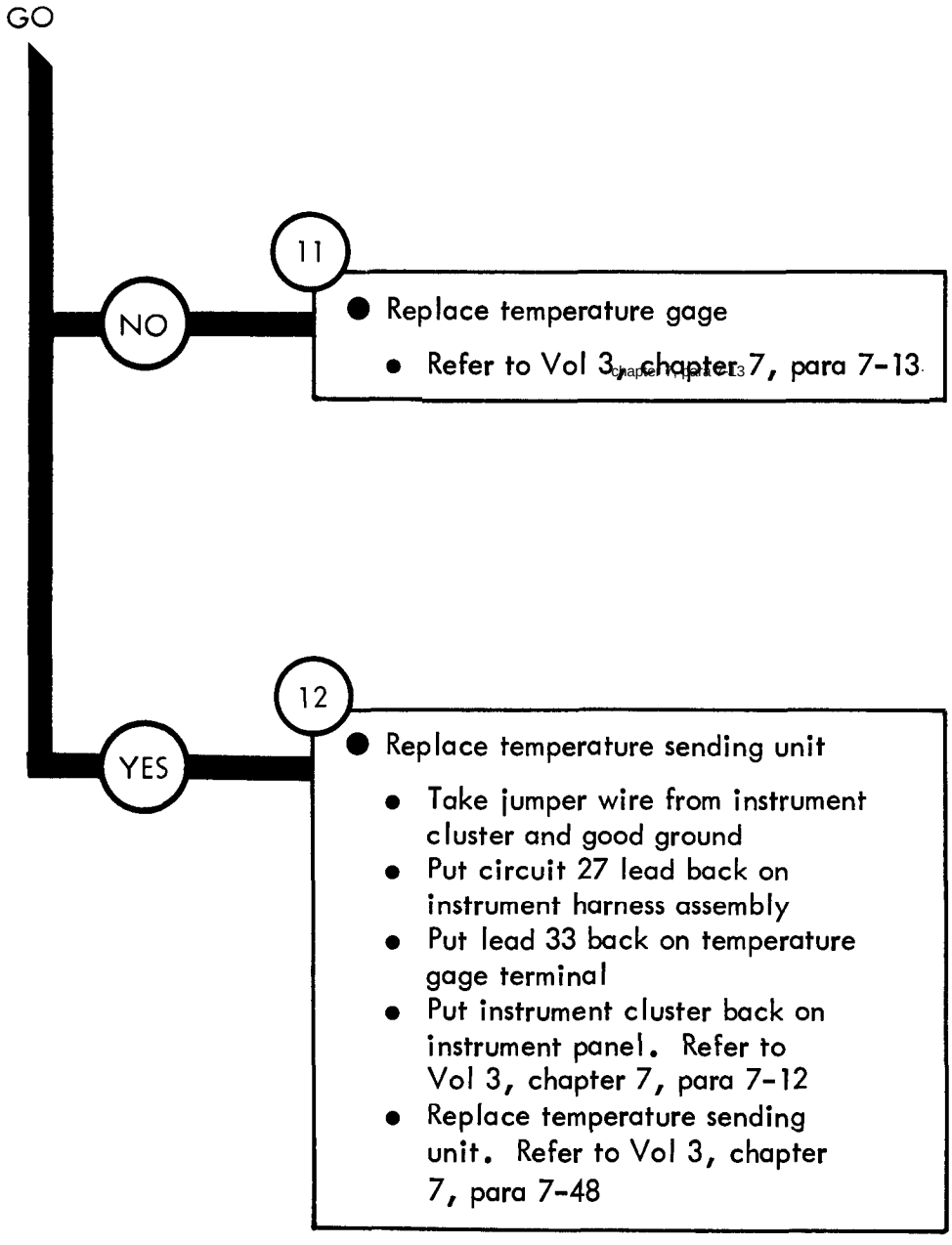
- Put multimeter - lead on a good ground
- Put multimeter + lead on temperature gage lead 33 terminal
- Read multimeter. Multimeter should measure zero ohms

Does multimeter measure zero ohms?

GO

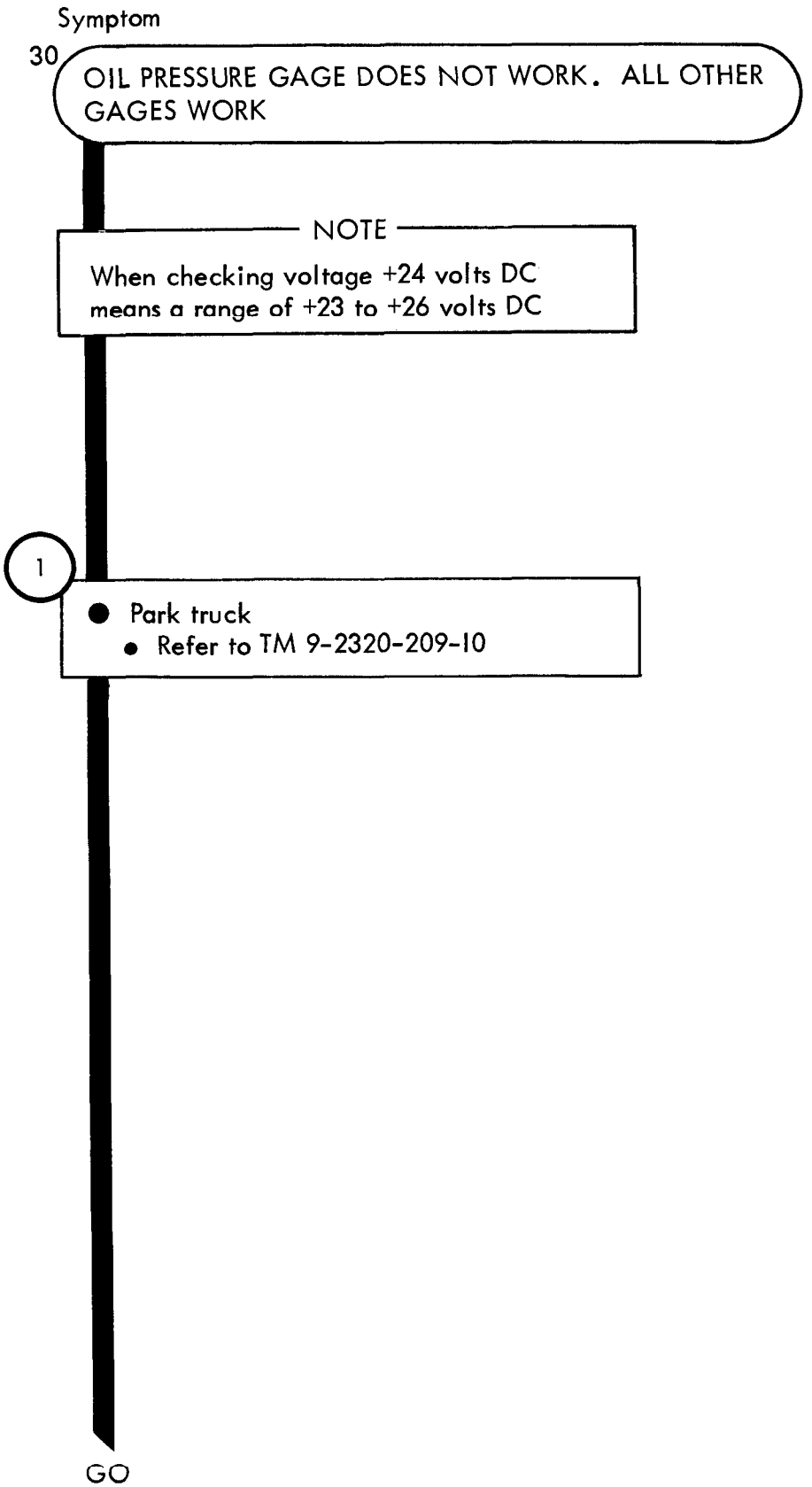
TA 114448

Figure 25-29 (Sheet 5 of 6)



TA 114449

Figure 25-29 (Sheet 6 of 6)



TA 114450

Figure 25-30 (Sheet 1 of 7)

GO

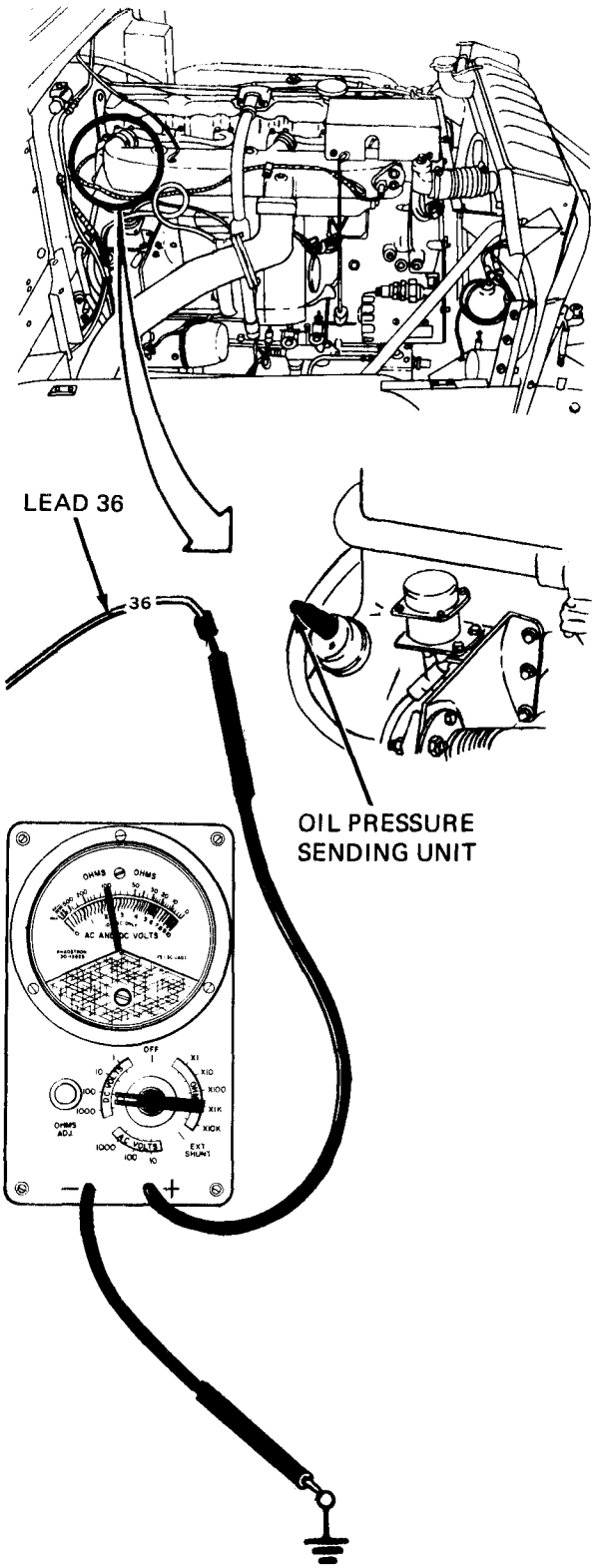
2

- Check for +24 volts from oil pressure gage to oil sending unit
  - Set ACCESSORY switch to OFF
  - Take off lead 36 contact from oil pressure sending unit
  - Set ACCESSORY switch to ON

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 36 contact
- Read multimeter

Does multimeter measure less than 10 volts DC?

GO



TA 114451

Figure 25-30 (Sheet 2 of 7)

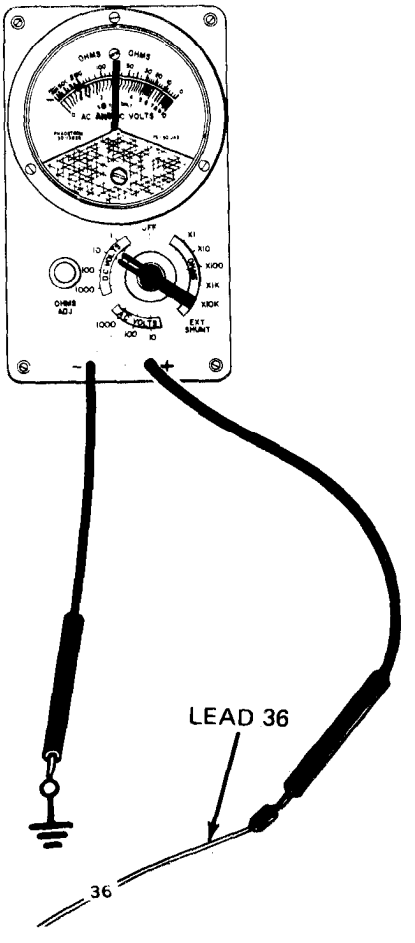
GO

YES

NO

3

- Replace oil pressure gage
  - Set ACCESSORY switch to OFF
  - Put lead 36 contact back on oil sending unit
  - Replace oil pressure gage. Refer to Vol 3, chapter 7, para 7-13



4

- Set multimeter to read volts in units
  - Put multimeter - lead on good ground
  - Put multimeter + lead on lead 36 contact
  - Set multimeter to 10 volts DC position, and read multimeter

What does multimeter read?

2-4 volts DC

more than 4 volts DC

0-2 volts DC

Go to step 6

Go to step 7

5

- Replace oil pressure gage
  - Set ACCESSORY switch to OFF
  - Put lead 36 contact back on oil sending unit
  - Replace oil pressure gage. Refer to Vol 3, chapter 7, para 7-13

TA 114452

Figure 25-30 (Sheet 3 of 7)

GO

6

- Replace oil pressure sending unit
  - Set ACCESSORY switch to OFF
  - Replace oil pressure sending unit. Refer to Vol 3, chapter 7, para 7-49

From step 4

7

- Check for voltage through oil pressure gage
  - Set ACCESSORY switch to OFF
  - Take off instrument cluster from instrument panel. Refer to Vol 3, chapter 7, para 7-12
  - Put jumper wire from instrument cluster to a good ground
  - Take off lead 36 from oil pressure gage

- Set ACCESSORY switch to ON
- Check that multimeter is still in 10 volt DC position
- Place multimeter - lead on a good ground
- Place multimeter + lead on lead 36 contact. Read multimeter
- Multimeter should measure +2 to +4 volts DC

Does multimeter measure less than +2 volts DC?

GO

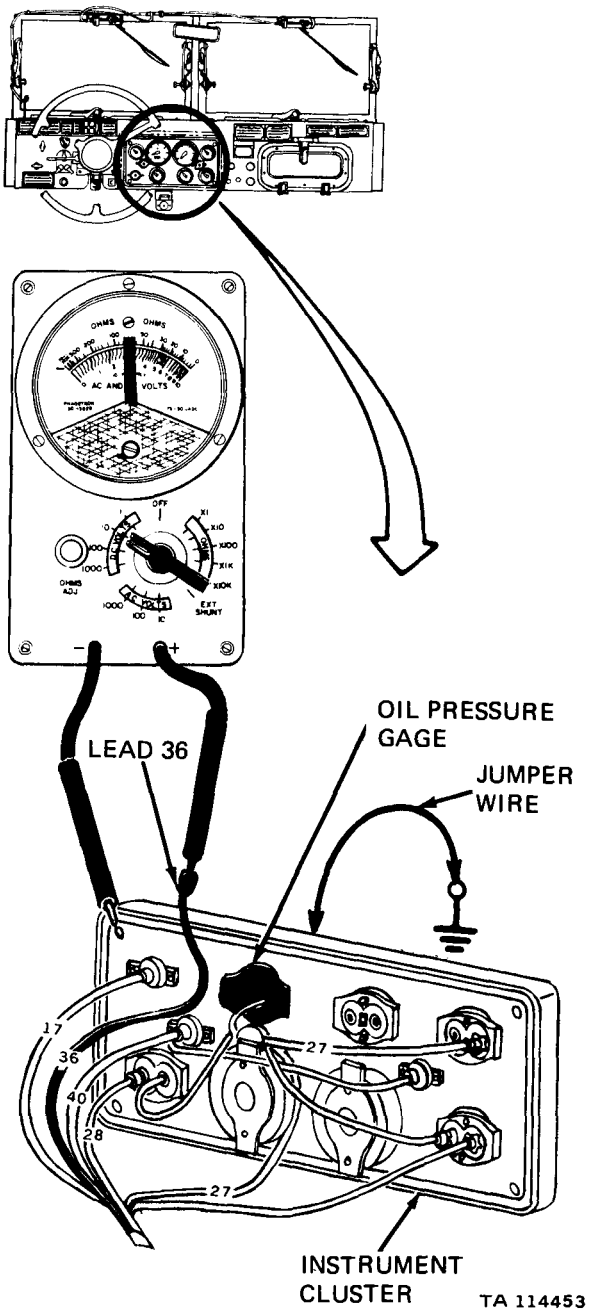


Figure 25-30 (Sheet 4 of 7)

8

- Repair or replace front harness
  - Set ACCESSORY switch to OFF
  - Repair or replace front harness. Tell direct support maintenance

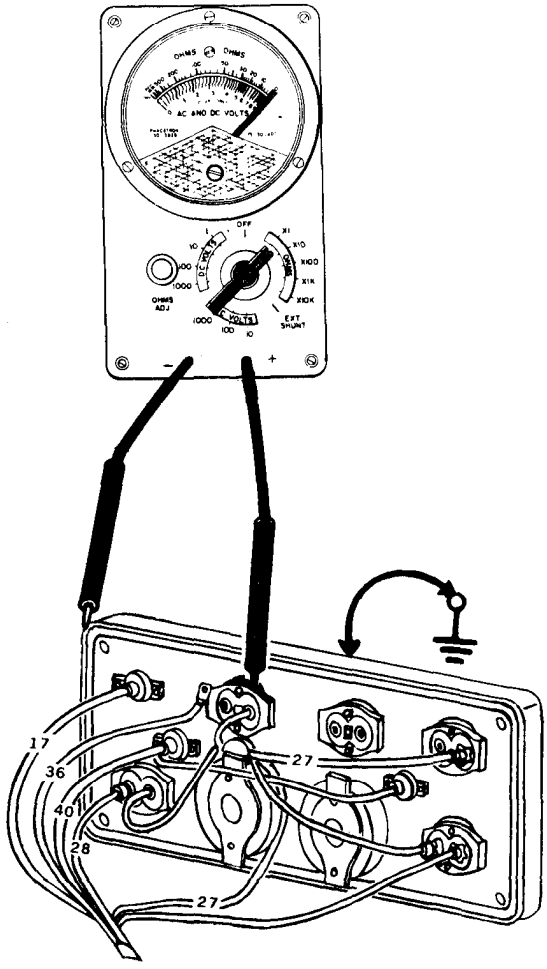
YES

NO

9

- Check oil pressure gage for continuity
  - Set ACCESSORY switch to OFF
  - Set multimeter to measure continuity. Refer to test equipment procedures index
  - Set multimeter - lead on a good ground
  - Set multimeter + lead on bare metal of oil pressure gage, not on terminals of gage
  - Read multimeter. Multimeter should measure more than 1 ohm

Does multimeter measure more than 1 ohm?



YES

NO

10

- Replace oil pressure gage
  - Refer to Vol 3, chapter 7, para 7-13

TA 114454

Figure 25-30 (Sheet 5 of 7)

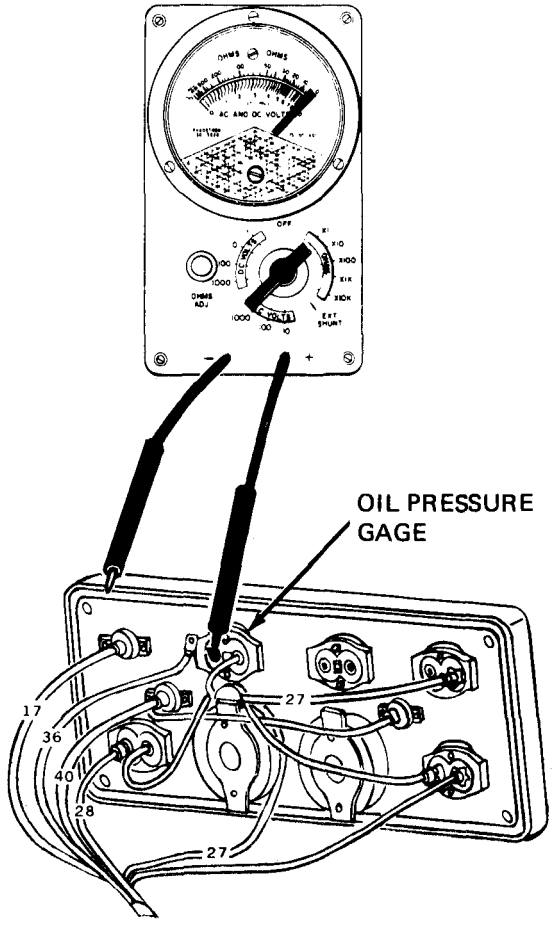
GO

11

- Clean surfaces where oil pressure gage and instrument cluster contact, and recheck continuity
  - Take off oil pressure gage from instrument cluster. Refer to Vol 3, chapter 7, para 7-13
  - Clean surfaces where oil pressure gage and instrument cluster contact.
  - Put oil pressure gage back on instrument cluster. Refer to Vol 3, chapter 7, para 7-13

- Put multimeter - lead on a good ground
- Put multimeter + lead on oil pressure gage lead 36 terminal
- Read multimeter. Multimeter should measure zero ohms

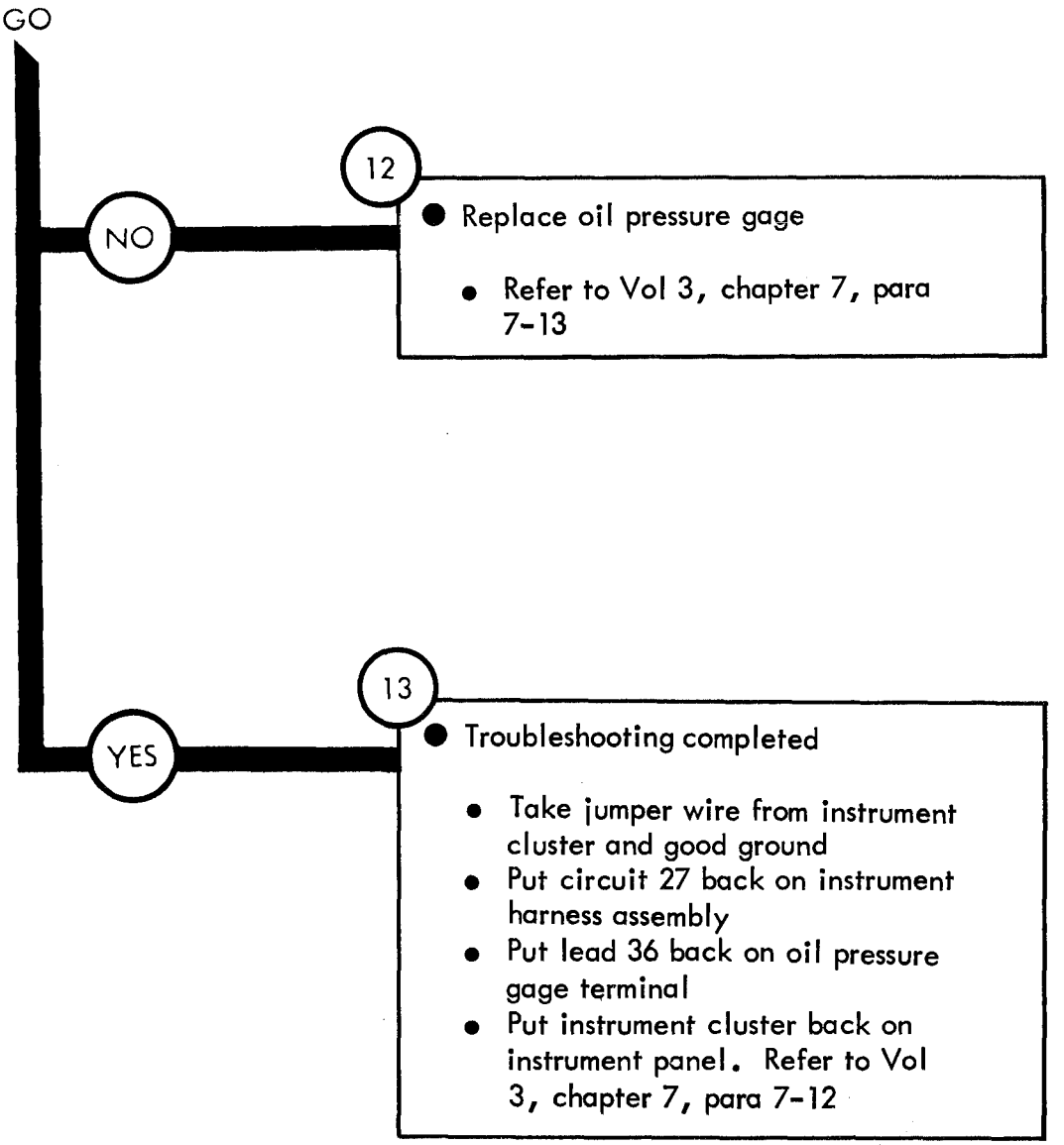
Does multimeter measure zero ohms?



GO

TA 114455

Figure 25-30 (Sheet 6 of 7)



TA 114456

Figure 25-30 (Sheet 7 of 7)

Symptom

31 BATTERY-GENERATOR INDICATOR DOES NOT WORK ALL OTHER GAGES WORK

NOTE

When checking voltage +24 volts DC means a range of +23 to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts DC to battery indicator
  - Set ACCESSORY switch to OFF
  - Take off instrument cluster from instrument panel. Refer to Vol 3, chapter 7, para 7-12.
  - Put jumper wire between instrument panel and a good ground
  - Take off lead 27 contact from battery indicator terminal
  - Set ACCESSORY switch to ON

GO

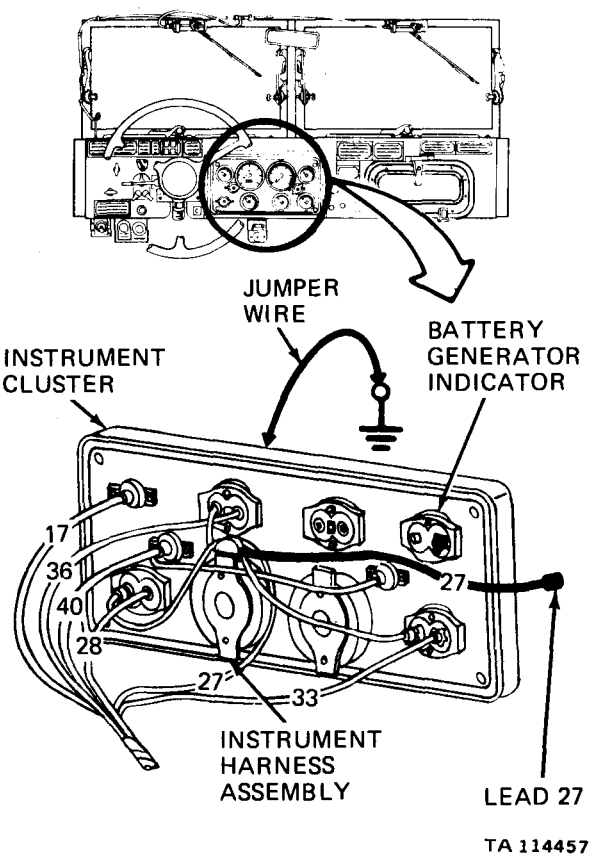
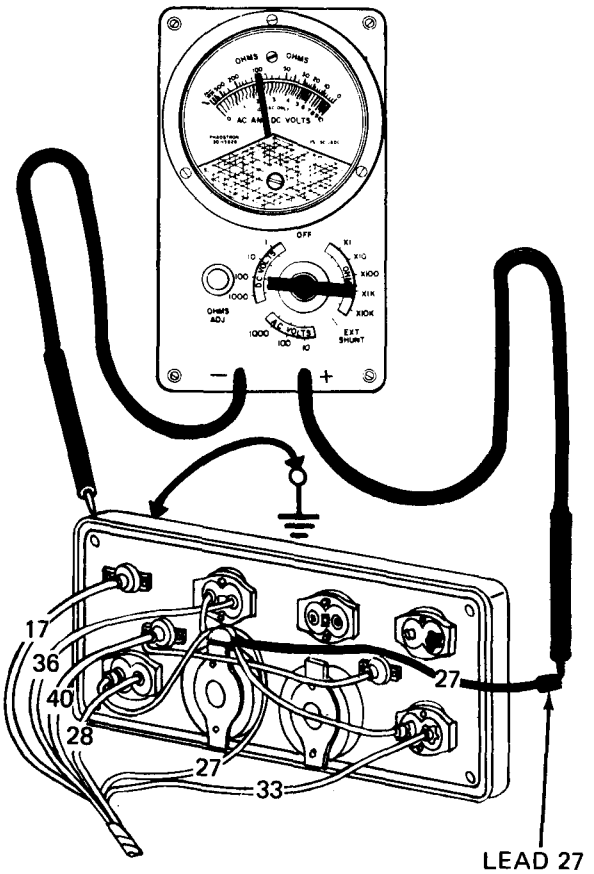


Figure 25-31 (Sheet 1 of 5)

GO

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 27 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



YES

NO

3

- Repair or replace instrument harness assembly. Tell direct support maintenance
  - Set ACCESSORY switch to OFF
  - Repair or replace instrument harness assembly. Tell direct support maintenance

GO

TA 114458

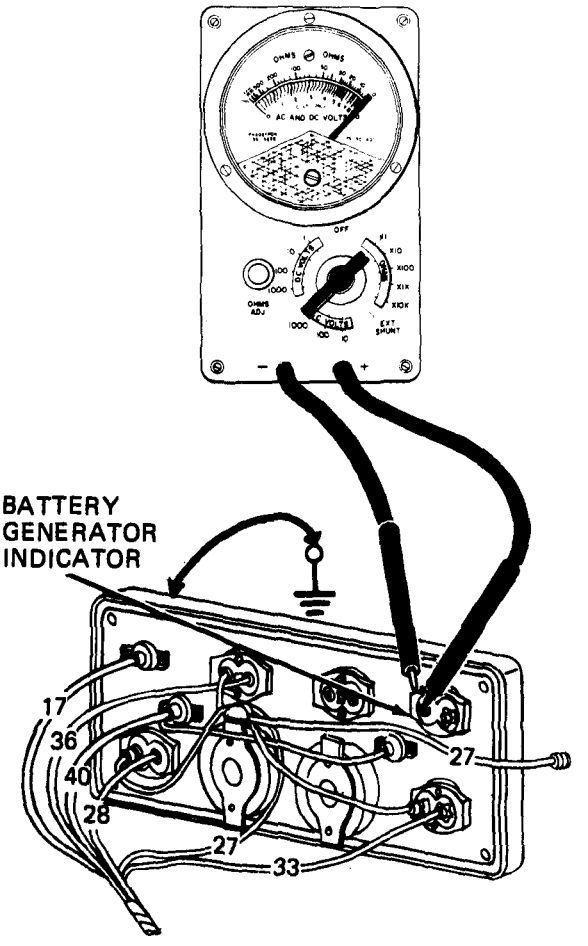
Figure 25-31 (Sheet 2 of 5)

GO

4

- Check battery indicator for continuity
  - Set ACCESSORY switch to OFF
  - Set multimeter to check continuity. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on other terminal of battery indicator, not on lead 27 terminal
  - Read multimeter. Multimeter should measure less than 1 ohm

Does multimeter measure less than 1 ohms?



YES

NO

5

- Replace battery indicator
  - Refer to Vol 3, chapter 7, para 7-13

TA 114459

Figure 25-31 (Sheet 3 of 5)

GO

6

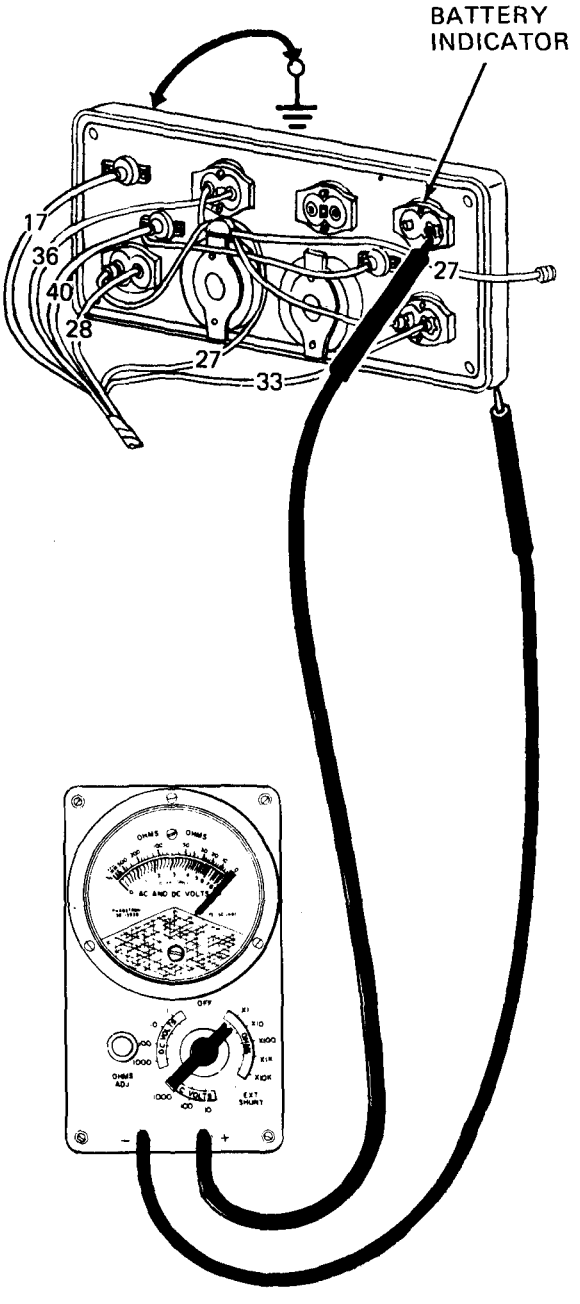
- Clean surfaces where battery indicator and instrument cluster contact, and recheck continuity
  - Take off battery indicator from instrument cluster. Refer to Vol 3, chapter 7, para 7-13
  - Clean surfaces where battery indicator and instrument cluster contact
  - Put battery indicator back on instrument cluster. Refer to Vol 3, chapter 7, para 7-13

chapter 7, para 7-13

- Put multimeter - lead on a good ground
- Put multimeter + lead on battery indicator lead 27 contact terminal
- Read multimeter. Multimeter should measure less than 1 ohm

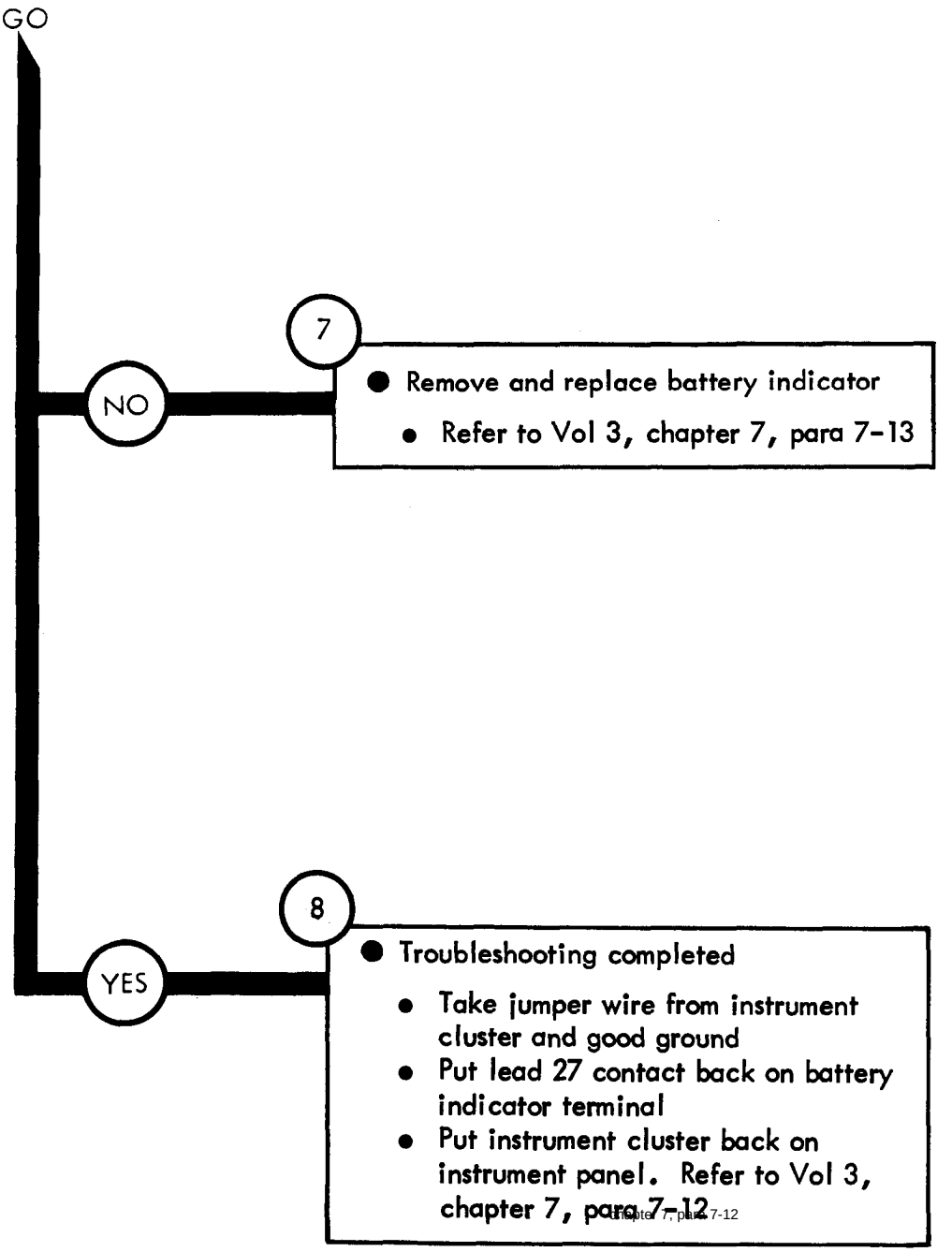
Does multimeter measure less than 1 ohm?

GO



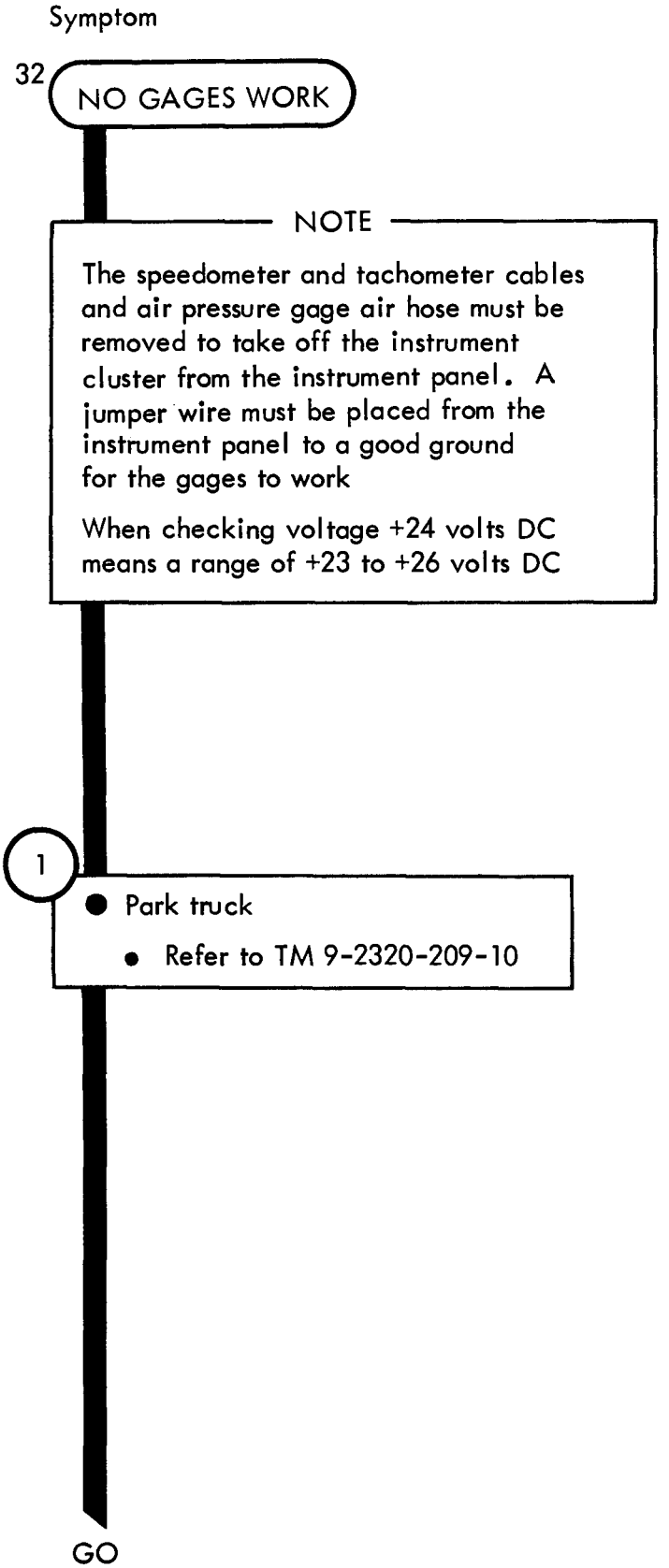
TA 114460

Figure 25-31 (Sheet 4 of 5)



TA 114461

Figure 25-31 (Sheet 5 of 5)



TA 114462

Figure 25-32 (Sheet 1 of 5)

GO

2

- Check for voltage from batteries to instrument
  - Set ACCESSORY switch to OFF
  - Take off instrument cluster from instrument panel. Refer to Vol 3, chapter 7, para 7-12
  - Put jumper wire between instrument cluster and a good ground
  - Take off lead 27 at instrument harness assembly
  - Set ACCESSORY switch to ON

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 27
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

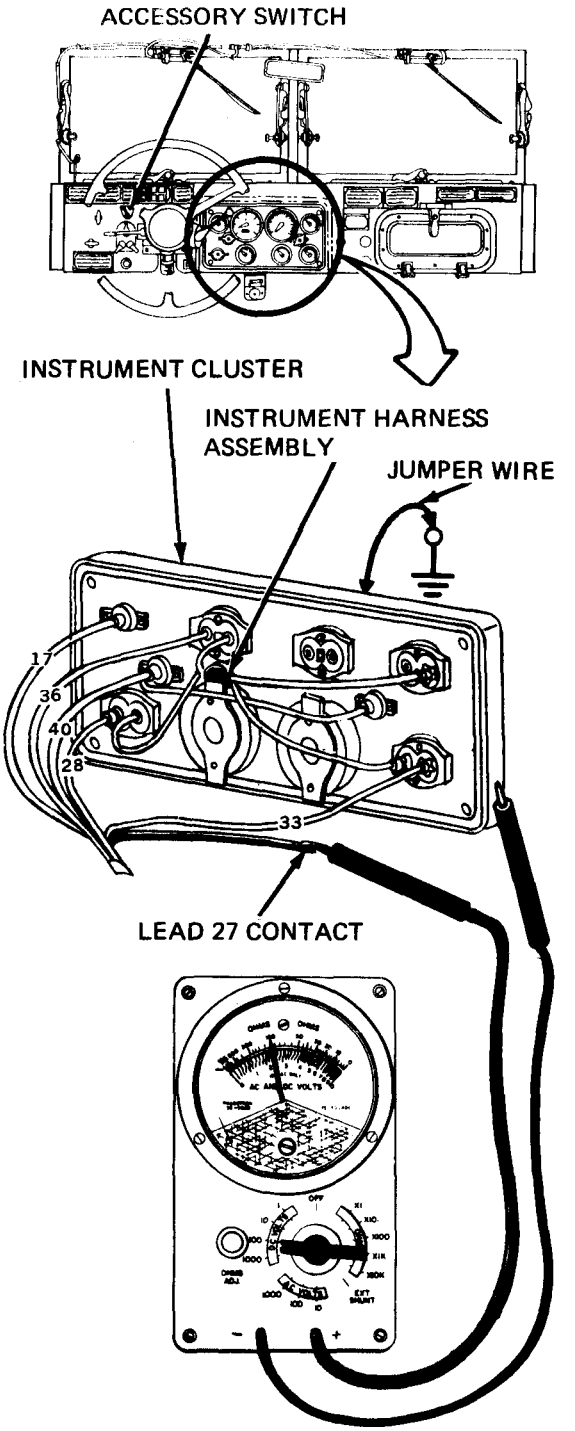
YES

NO

3

- Repair or replace instrument harness assembly
  - Set ACCESSORY switch to OFF
  - Repair or replace instrument harness assembly. Tell direct support maintenance

GO



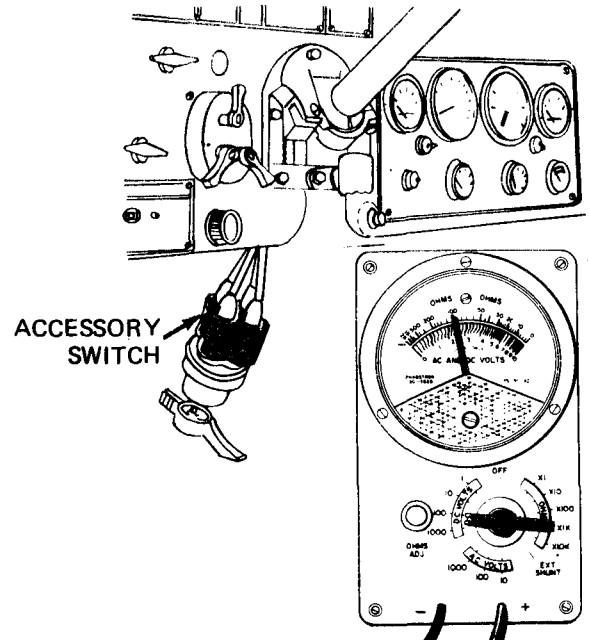
TA 114463

Figure 25 - 32 (Sheet 1 of 5)

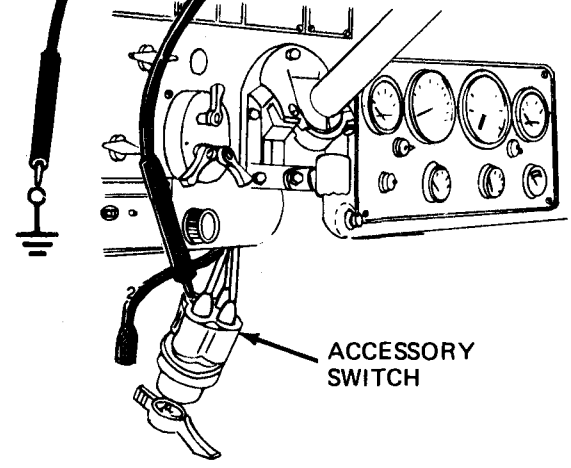
GO

4

- Check for +24 volts through ACCESSORY switch
  - Set ACCESSORY switch to OFF
  - Take off ACCESSORY switch from instrument panel. Refer to Vol 3, chapter 7, para 7-15
  - Pull off lead 27 contact from ACCESSORY switch
  - Put ACCESSORY switch lever back on ACCESSORY switch. Refer to Vol 3, chapter 7, para 7-15
  - Set ACCESSORY switch to ON



- Put multimeter - lead on a good ground
- Put multimeter + lead on ACCESSORY switch connector for lead 27 contact
- Read multimeter. Multimeter should measure +24 volts DC



Does multimeter measure less than +24 volts DC?

YES

NO

5

- Repair or replace front harness
  - Take off jumper wire from instrument cluster
  - Put instrument cluster back on instrument panel. Refer to Vol 3, chapter 7, para 7-12
  - Set ACCESSORY switch to OFF.
  - Repair or replace front harness. Tell direct support maintenance

GO

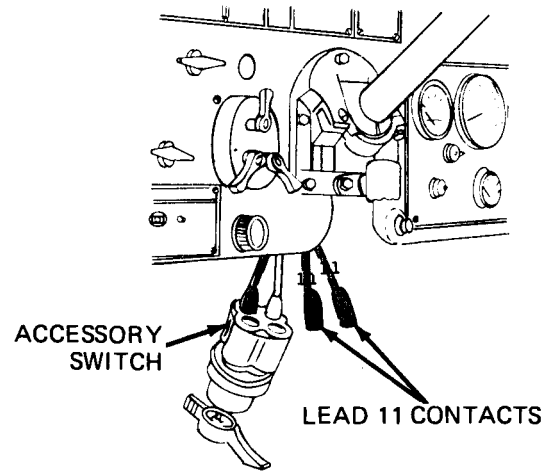
TA 114464

Figure 25-32 (Sheet 3 of 5)

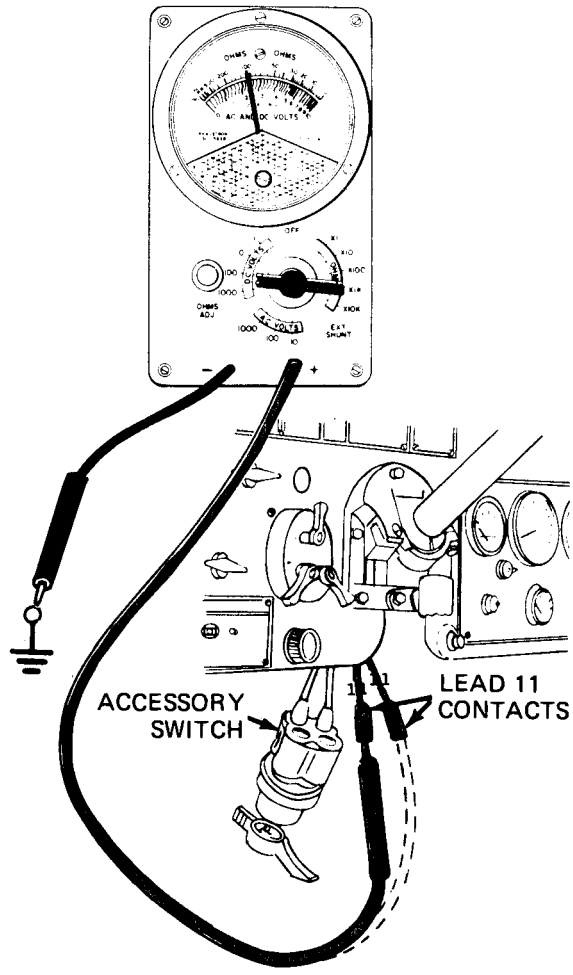
GO

6

- Check for +24 volts DC to ACCESSORY switch
  - Set ACCESSORY switch to OFF
  - Put lead 27 contact back into ACCESSORY switch lead 27 connector
  - Pull out both lead 11 contacts from ACCESSORY switch lead 11 connectors



- Put multimeter - lead on a good ground
- Put multimeter + lead on one lead 11 contact. Read multimeter. Multimeter should measure +24 volts DC
- Put multimeter + lead on other lead 11 contact. Read multimeter. Multimeter should measure +24 volts DC

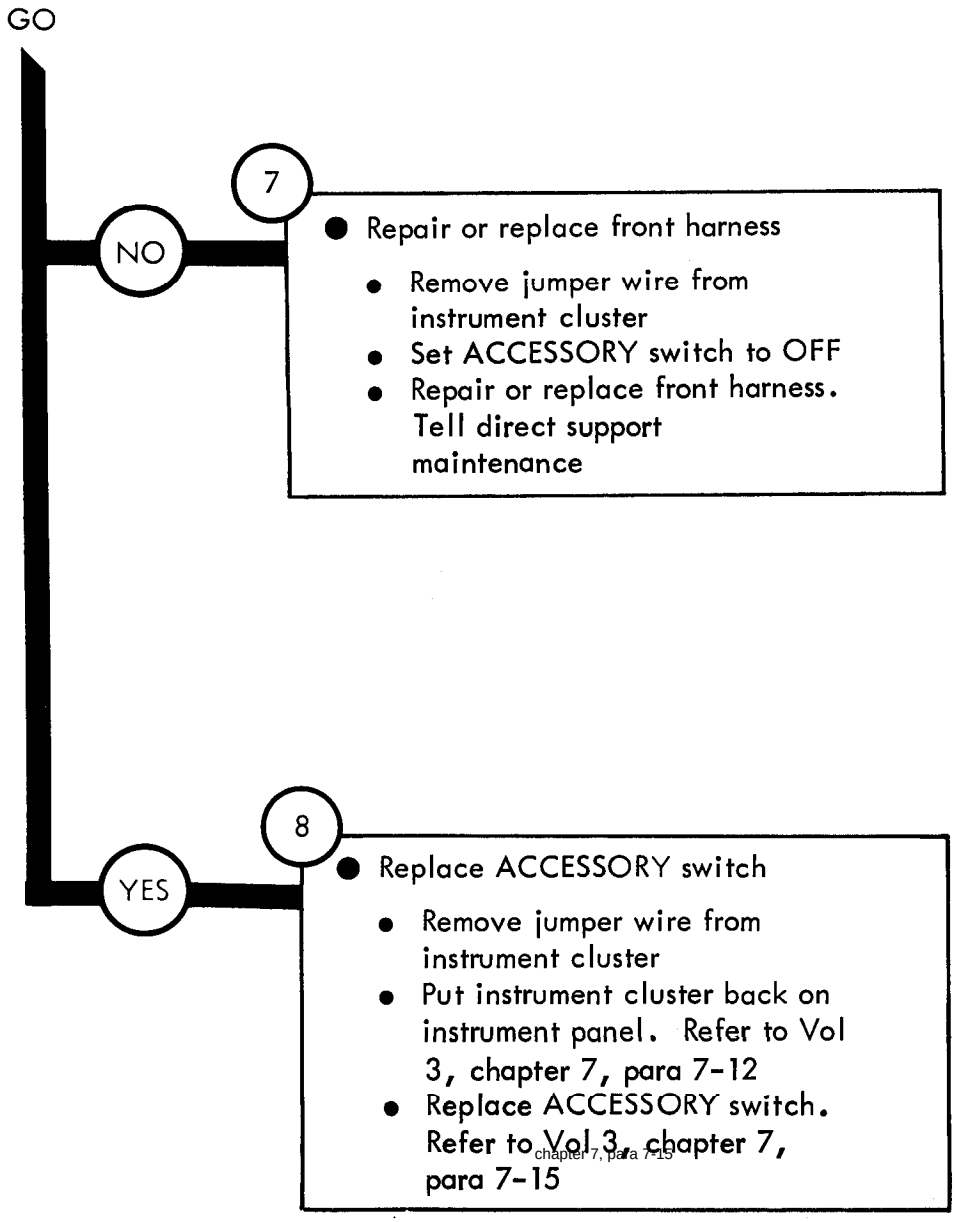


Does multimeter measure +24 volts DC for both tests?

GO

TA 114465

Figure 25-32 (Sheet 4 of 5)



TA 114466

Figure 25-32 (Sheet 5 of 5)

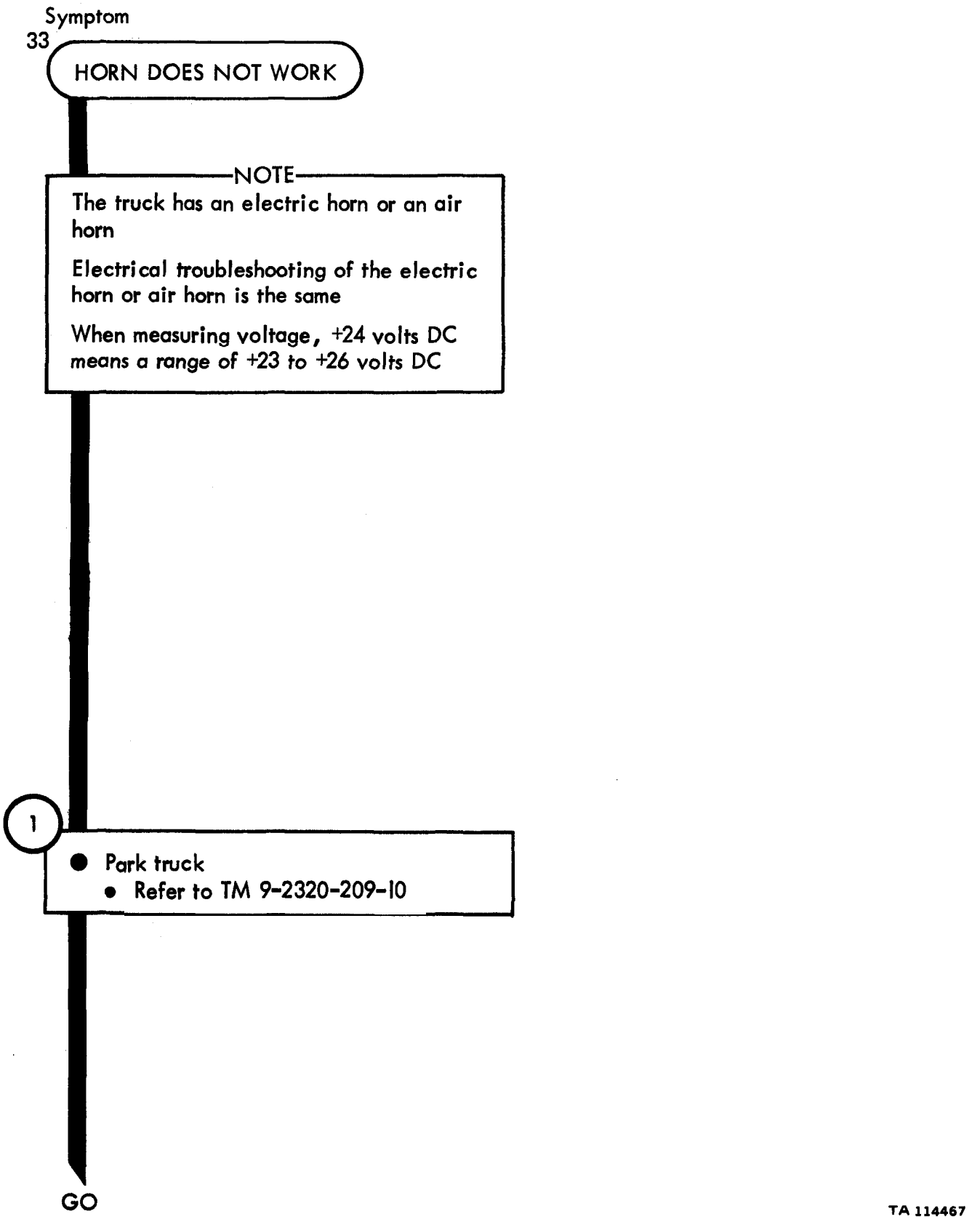


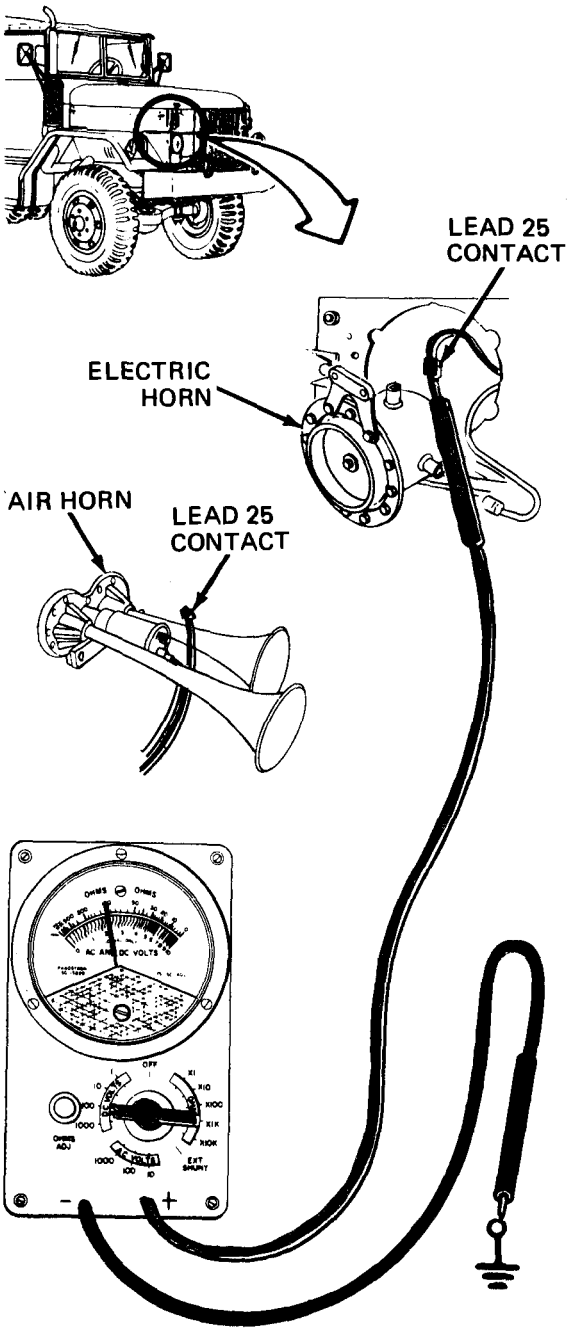
Figure 25-33 (Sheet 1 of 10)

2

- Check lead 25 from circuit breaker to horn for +24 volts DC
  - Remove top lead 25 from horn terminal
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 25 contact.
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114468

Figure 25-33 (Sheet 2 of 10)

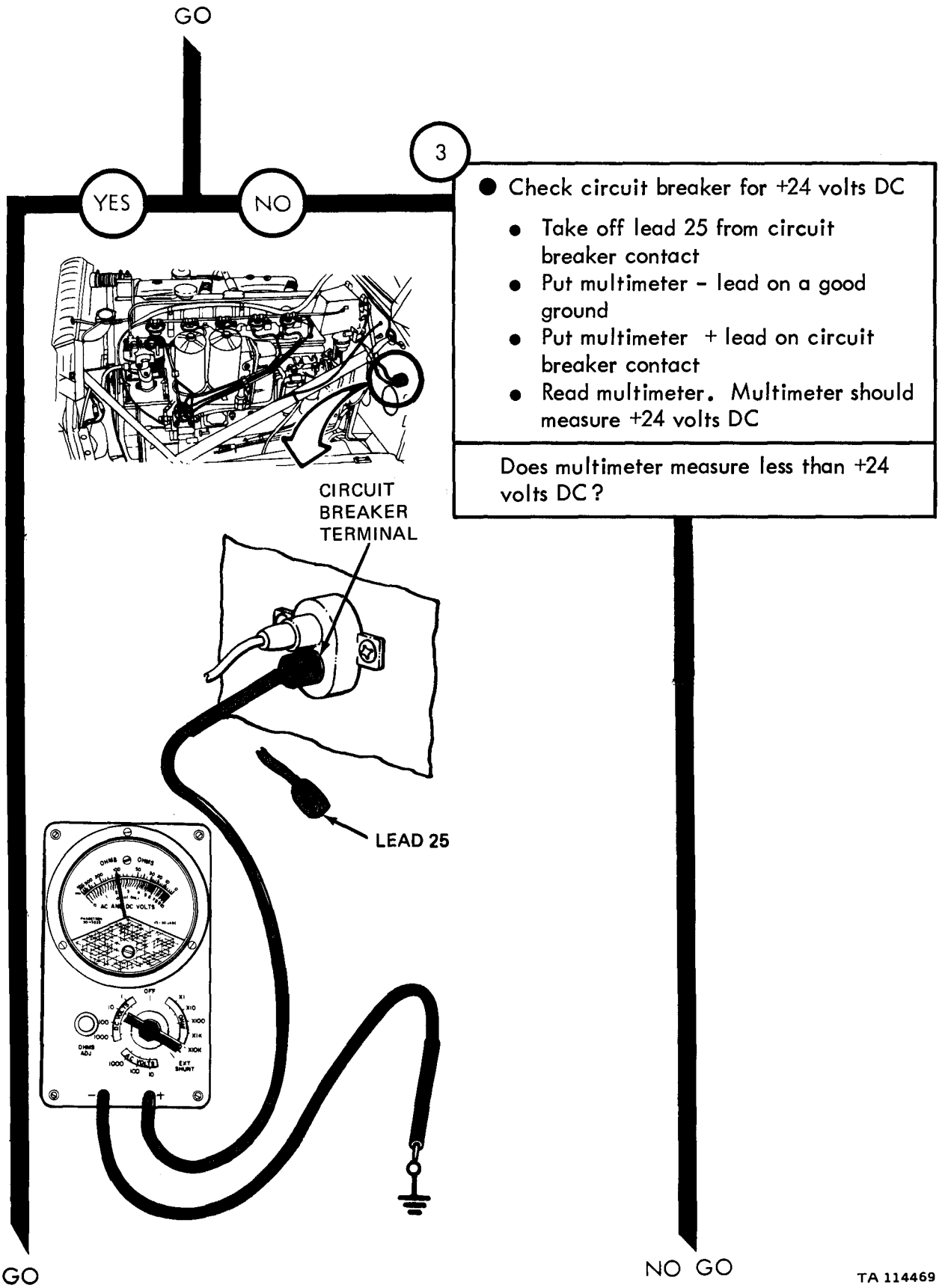


Figure 25-33 (Sheet 3 of 10)

GO

4

● Go to step 9

NO GO

5

● Repair or replace front harness

• Repair or replace front harness. Tell direct support maintenance

NO

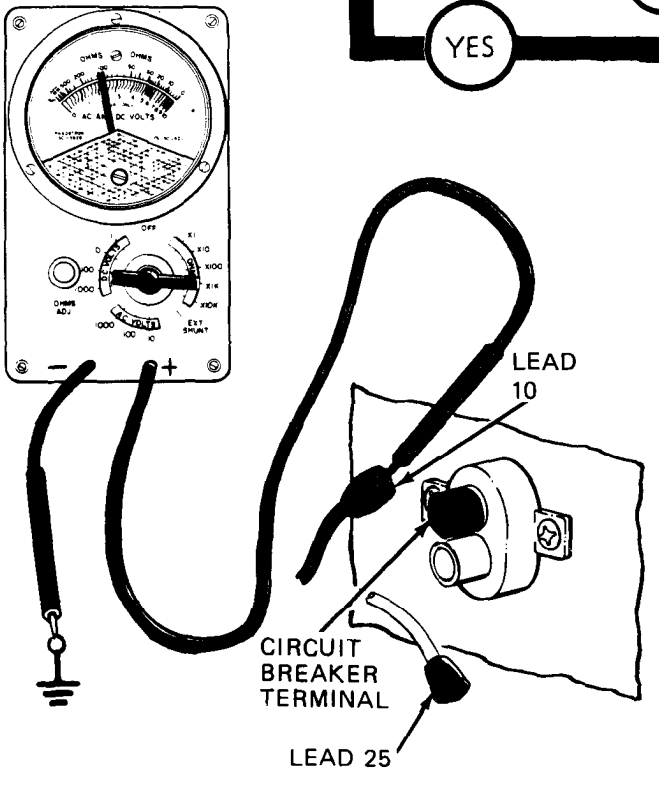
YES

6

● Check lead 10 for +24 volts DC

- Remove lead 10 from circuit breaker
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 10 contact
- Read multimeter. Multimeter should measure +24 volts DC

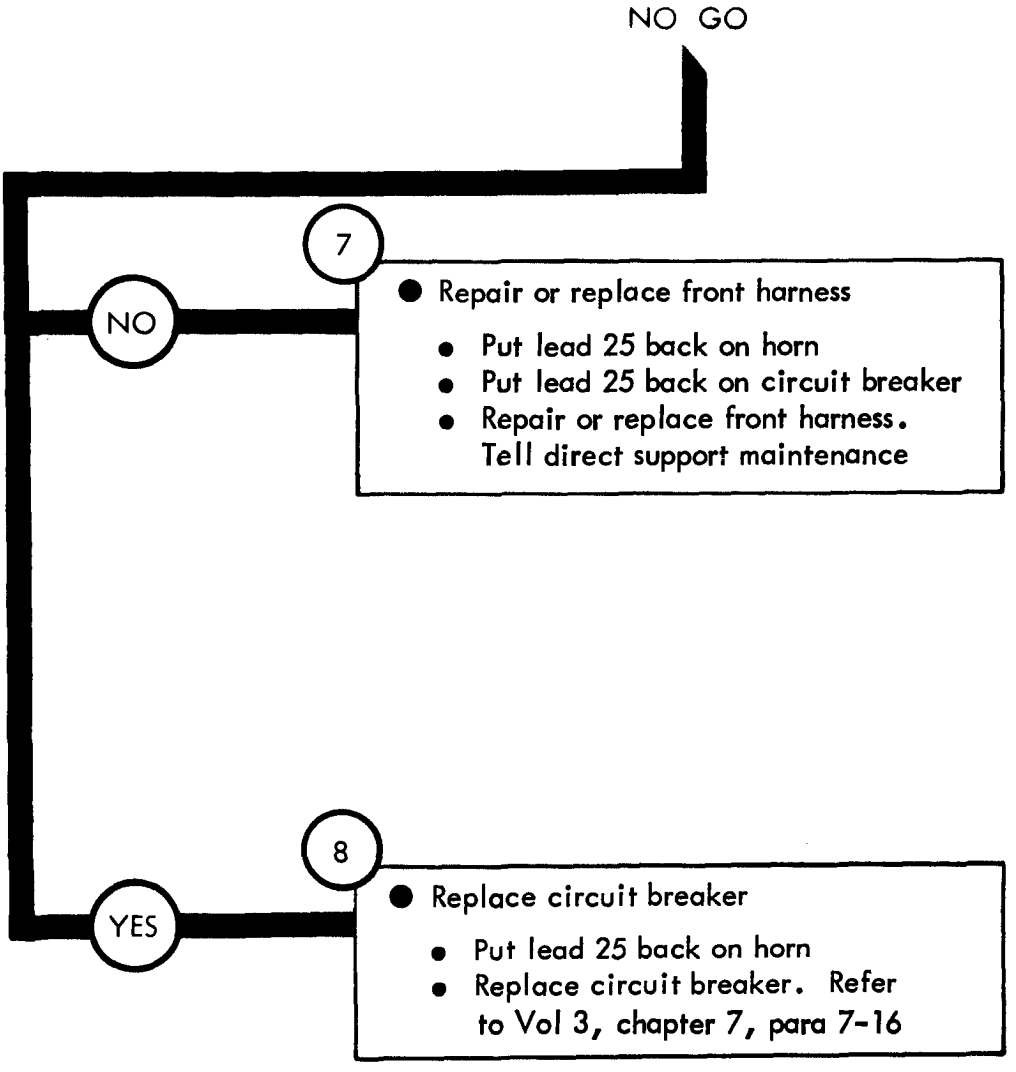
Does multimeter measure +24 volts DC?



NO GO

TA 114470

Figure 25-33 (Sheet 4 of 10)



TA 114471

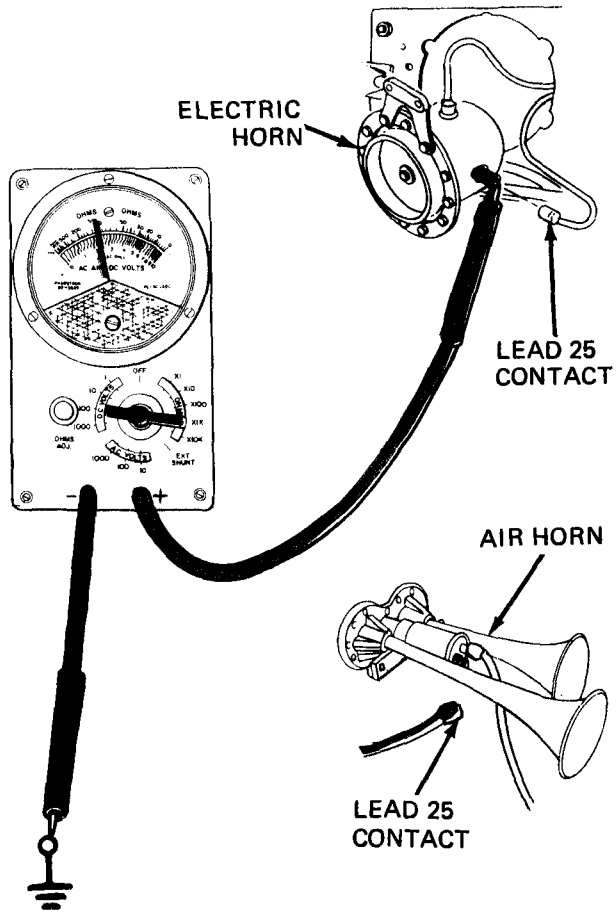
Figure 25-33 (Sheet 5 of 10)

From step 4

9

- Check horn for +24 volts DC
  - Put lead 25 back on horn terminal
  - Take off lead 25 from bottom horn terminal
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on horn terminal
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO

YES

10

- If horn is electric horn replace horn
  - Replace horn. Refer to Vol 3, chapter 7, para 7-54
- If horn is air horn replace air horn solenoid
  - Replace air horn solenoid
  - Refer to Vol 3, chapter 7, para 7-53

GO

TA 114472

Figure 25-33 (Sheet 6 of 10)

GO

11

- Check lead 25 for +24 volts DC
  - Put lead 25 back on horn terminal
  - Take horn button assembly apart until lead 25 terminal can be seen. Refer to Vol 3, chapter 7, para 7-52
  - Put multimeter - lead on good ground
  - Put multimeter + lead on lead 25 terminal
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

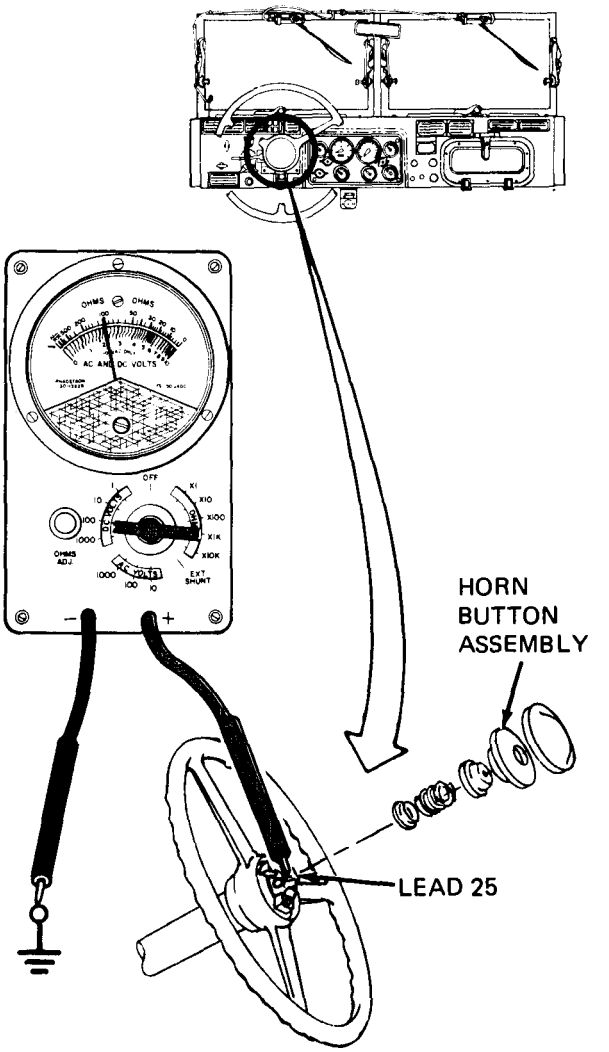
YES

NO

12

- Repair or replace front harness
  - Set ACCESSORY switch to OFF
  - Repair or replace front harness. Tell direct support maintenance

GO



TA 114473

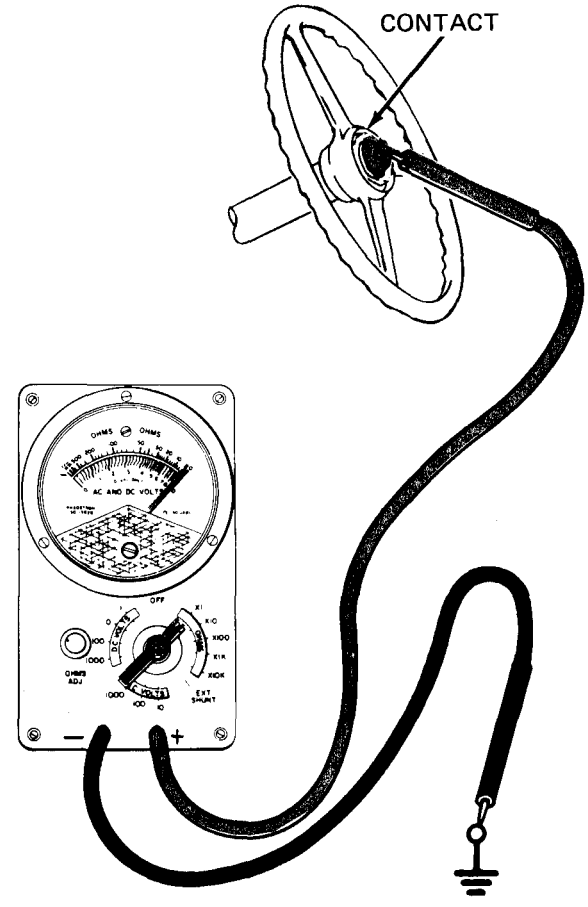
Figure 25-33 (Sheet 7 of 10)

GO

13

- Check horn button for continuity
  - Put horn button cap, spring, and contact back in place
  - Set multimeter to measure continuity. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact and press contact down until it touches base plate. Read multimeter. Multimeter should measure zero ohms

Does multimeter measure zero ohms?



YES

NO

14

- If multimeter measures zero ohms and horn still does not work, replace horn button assembly
  - Refer to Vol 3, chapter 7, para 7-52

GO

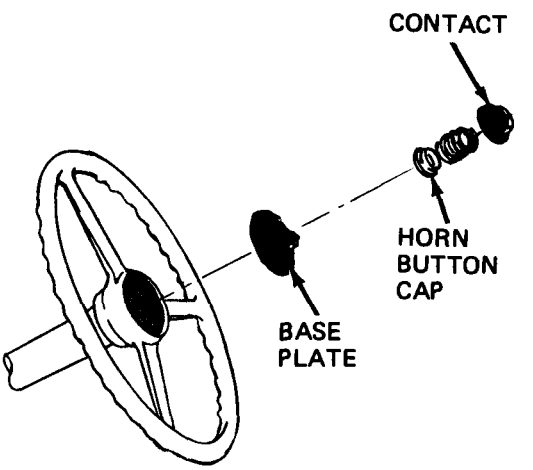
TA 114474

Figure 25-33 (Sheet 8 of 10)

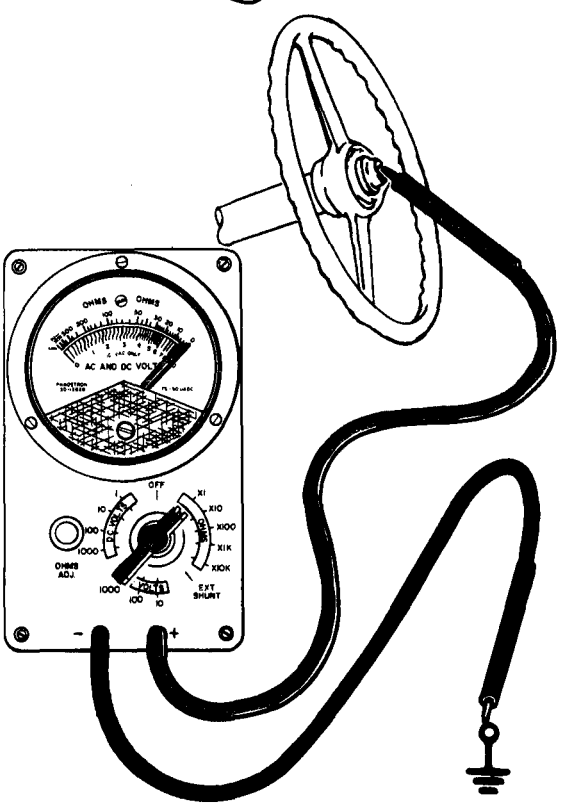
GO

15

- Clean horn button contacts
  - Take off horn button cap, spring, and contact
  - Take off base plate from steering column. Refer to Vol 3, chapter 7, para 7-52
  - Clean steering column where base plate makes contact. Clean both sides of base plate
  - Clean contact and cap



- Put base plate, horn button cap, spring,and contact back in place. Refer to Vol 3, chapter 7, para 7-52
- Put multimeter - lead on a good ground
- Put multimeter + lead on contact and press contact down until it touches base plate
- Read multimeter. Multimeter should measure zero ohms

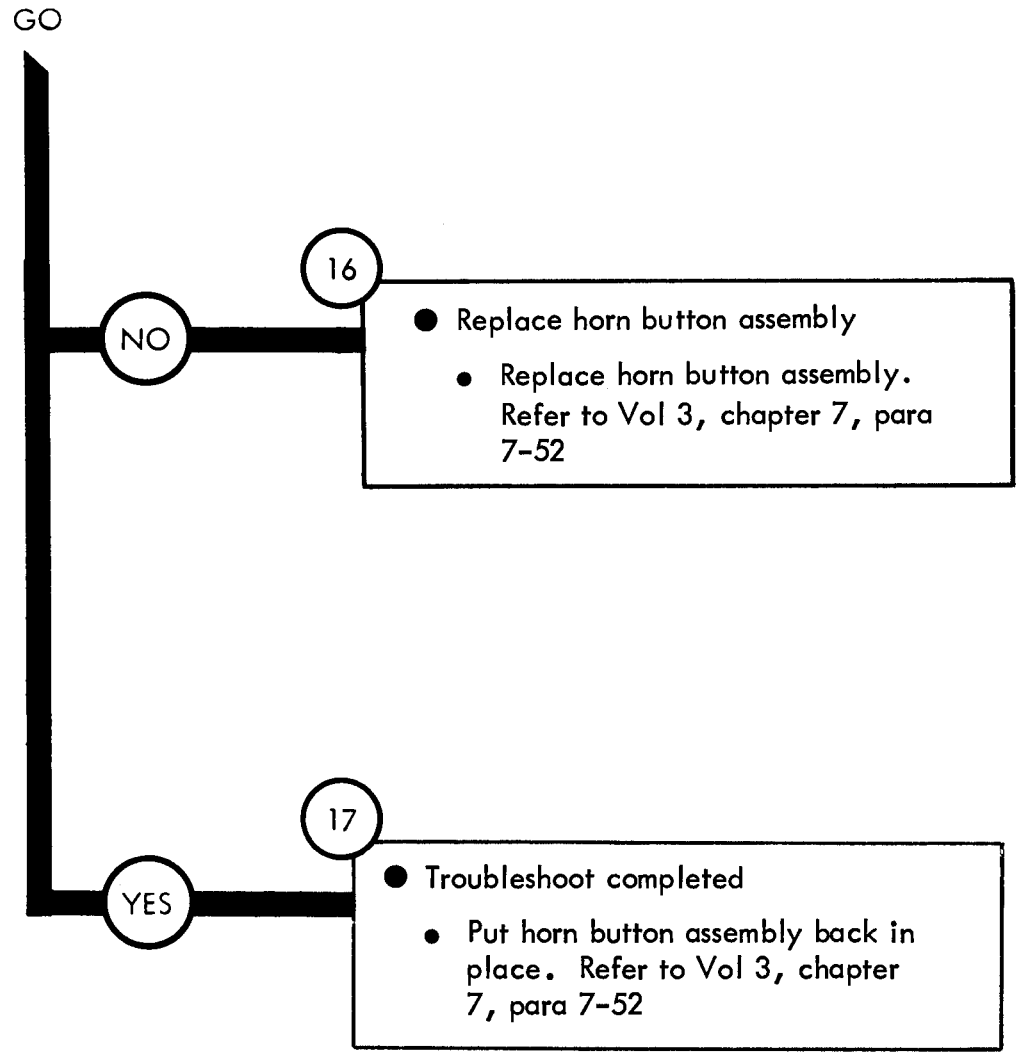


Does multimeter measure zero ohms?

GO

TA 114475

Figure 25-33 (Sheet 9 of 10)



TA 114476

Figure 25-33 (Sheet 10 of l0)

Symptom

34 LOW AIR WARNING BUZZER DOES NOT WORK

NOTE

When measuring voltage +24 volts DC means a range of +23 to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts DC, at input to low air warning buzzer
  - Set ACCESSORY switch to OFF
  - Take off lead 85 from buzzer
  - Turn air reservoir drain cocks to left and drain reservoirs to less than 60 psi
  - Set ACCESSORY switch to ON

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put - lead on a good ground
- Put + lead on lead 85 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

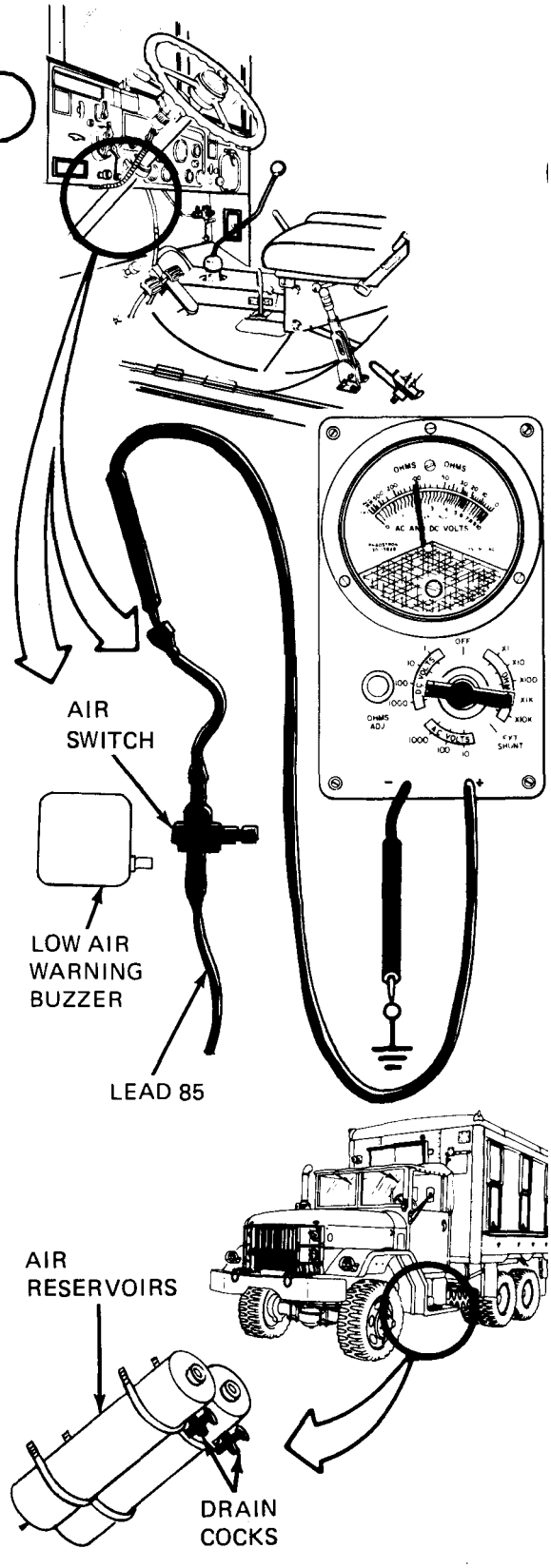


Figure 25-34 (Sheet 1 of 4)

GO

YES

NO

3

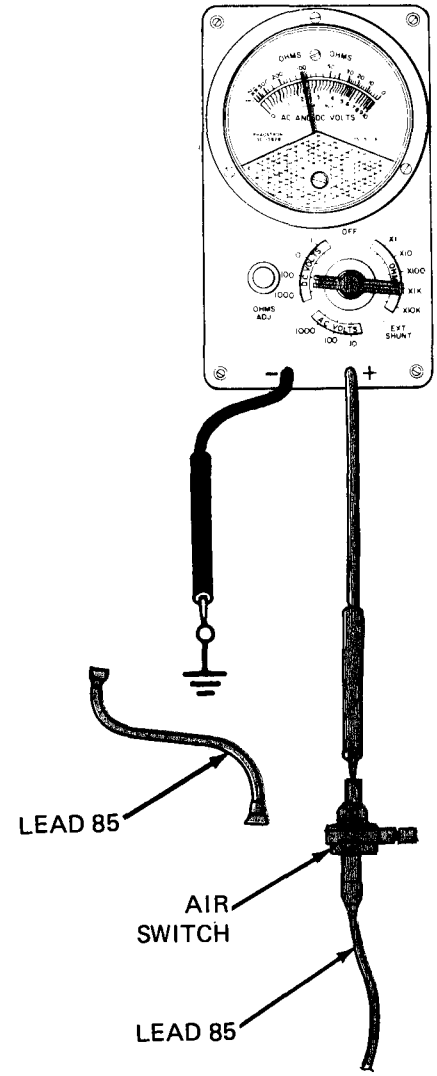
- Replace low air warning buzzer
  - Set ACCESSORY switch to OFF
  - Remove and replace low air warning buzzer. Refer to Vol 3, chapter 7, para 7-69

4

- Check for +24 volts DC at air switch output
  - Take off lead 85 from air switch
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in air switch contact
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114478

Figure 25-34 (Sheet 2 of 4)

GO

YES

NO

5

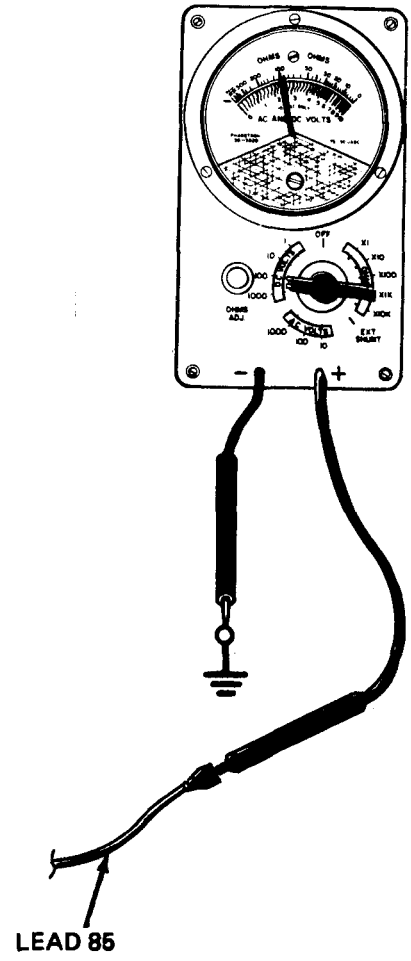
- Replace lead 85
  - Set ACCESSORY switch to OFF
  - Remove and replace lead 85. Refer to Vol 3, chapter 7, para 7-69

6

- Check for +24 volts DC to air switch
  - Put back circuit 85 lead on air switch and low air warning buzzer
  - Take off lead 85 (from front harness to air switch) at air switch
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 85 contact
  - Read multimeter. Multimeter should measure +24 volts DC

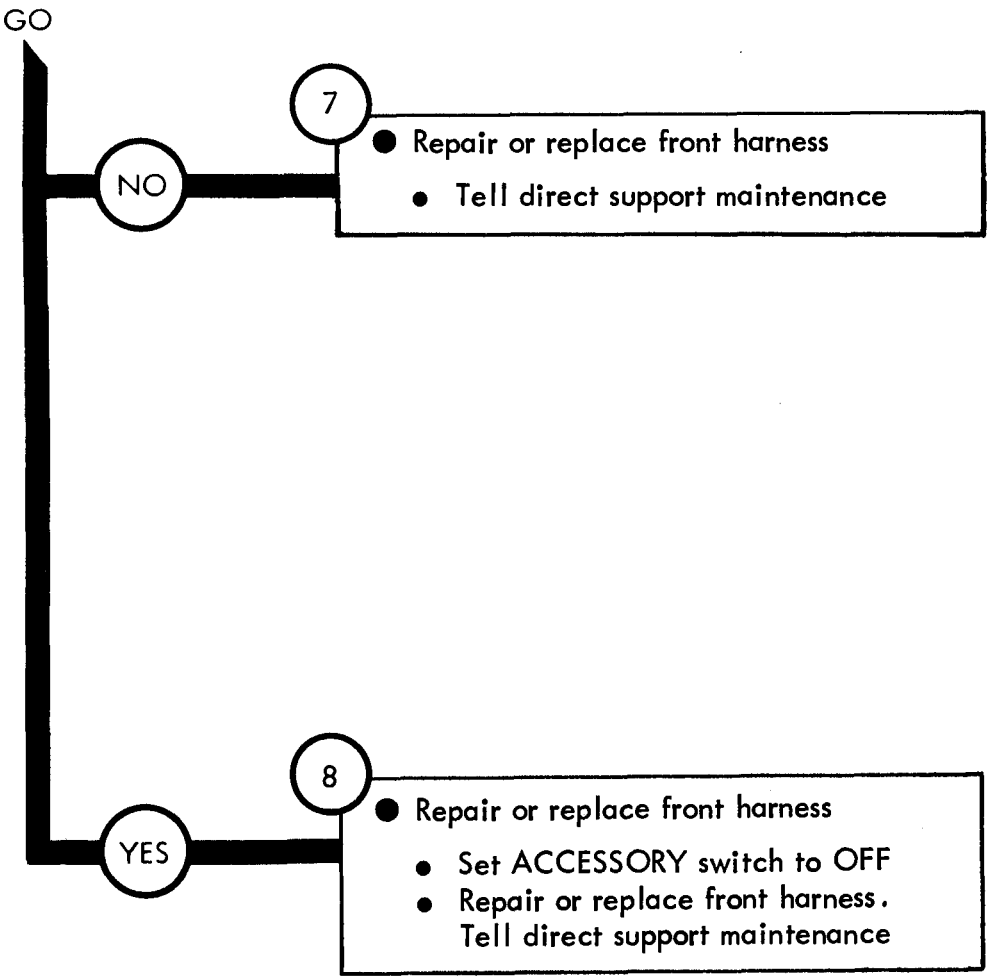
Does multimeter measure +24 volts DC?

GO



TA 114479

Figure 25-34 (Sheet 3 of 4)



TA 114480

Figure 25-34 (Sheet 4 of 4)

Symptom

35 FUEL PUMP DOES NOT WORK

NOTE

When measuring voltage +24 volts DC means a range of +23 to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check that +24 volts DC is getting to fuel pump
  - Pull off 654 plug from fuel pump fuse holder.
  - Set ACCESSORY switch to ON
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on circuit 654 contact in plug. Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO

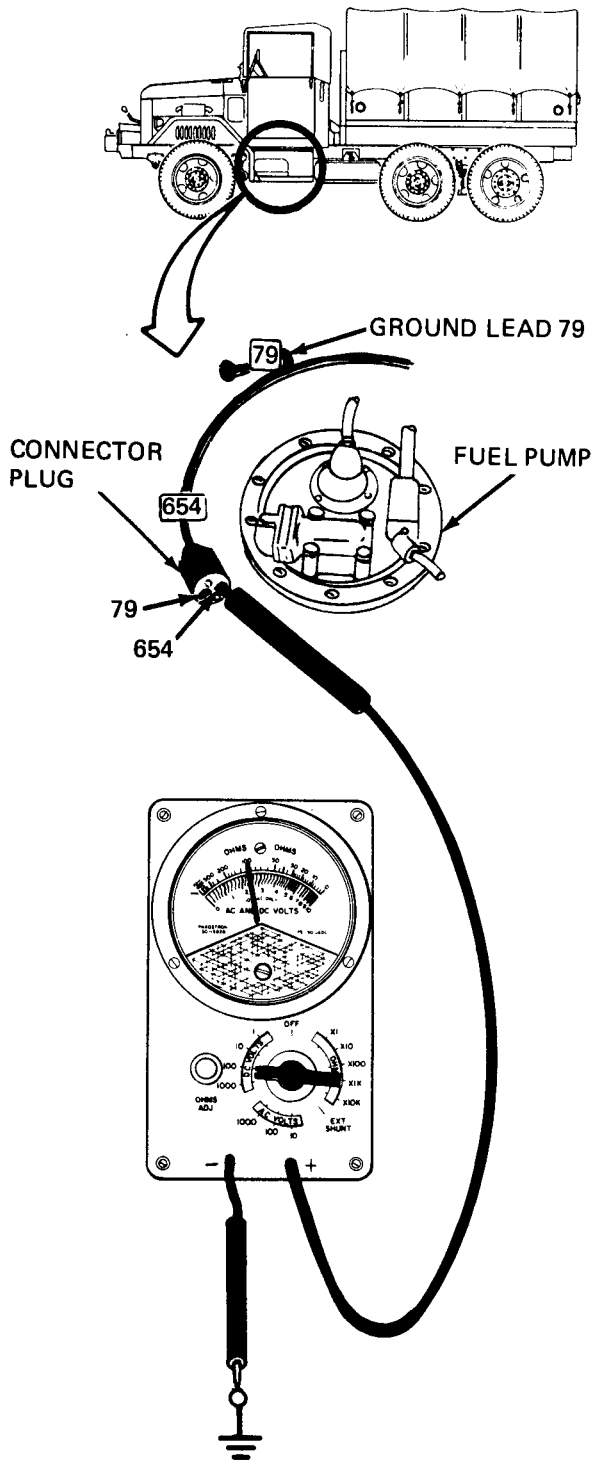


Figure 25-35 (Sheet 1 of 5)

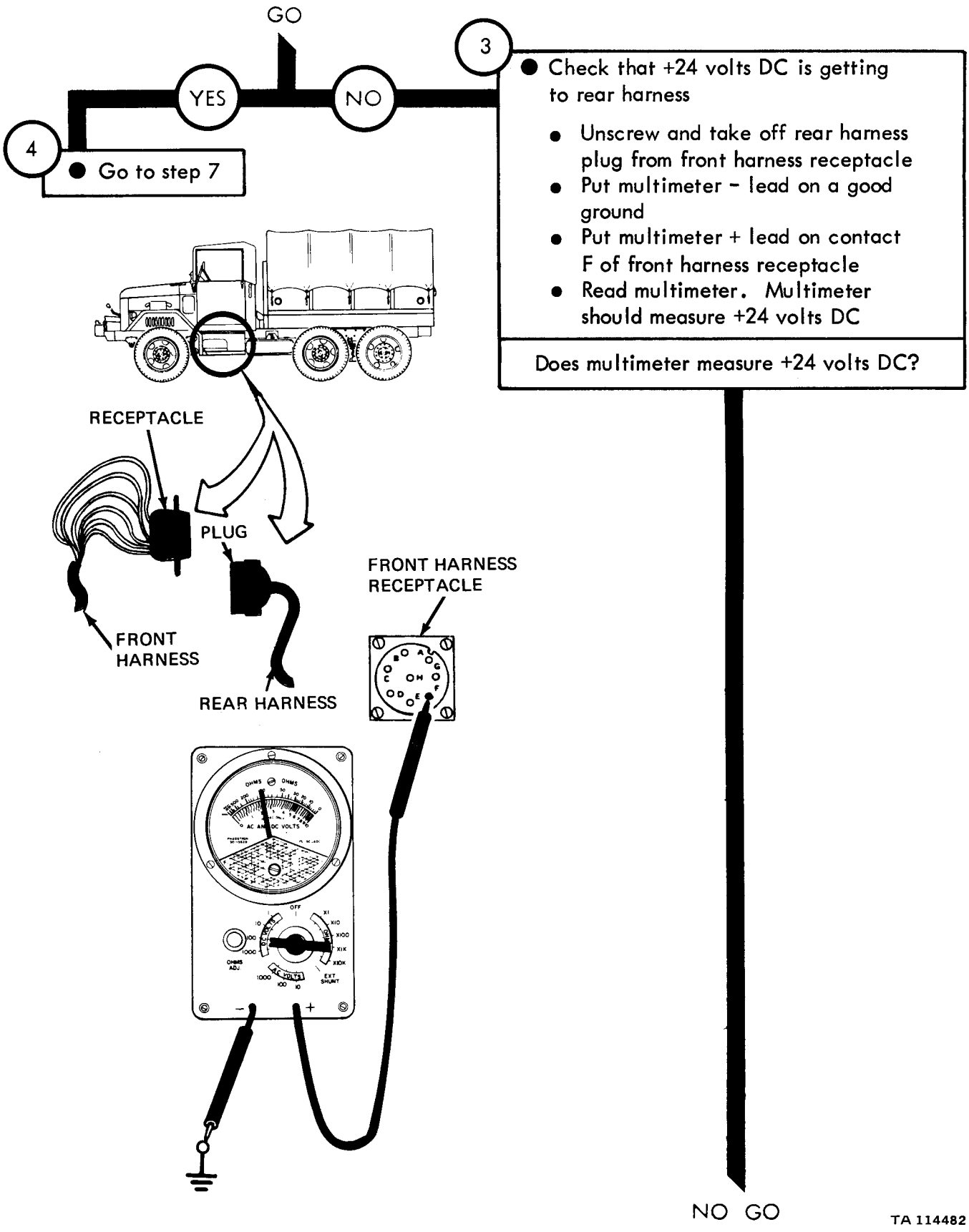


Figure 25-35 (Sheet 2 of 5)

From step 4

NO GO

5

NO

- Repair or replace front harness
  - Tell direct support maintenance

6

YES

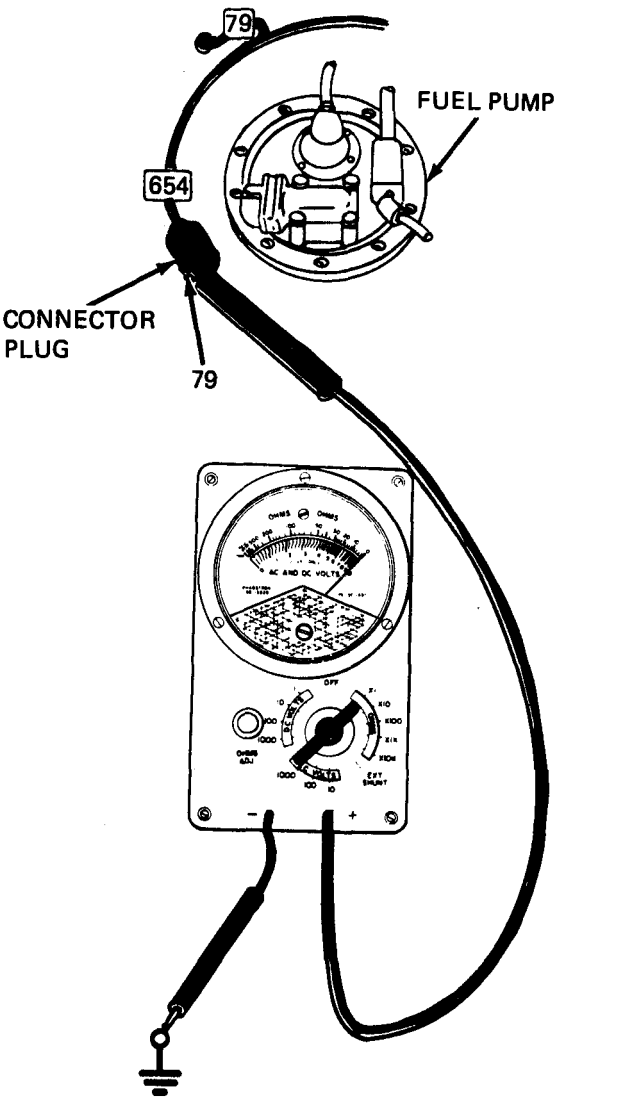
- Repair or replace rear harness
  - Tell direct support maintenance

7

- Check continuity through fuel pump connector harness ground
  - Set ACCESSORY switch to OFF Set multimeter to check continuity. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 79 contact in plug
  - Read multimeter. Multimeter should measure zero ohms

Does multimeter measure zero ohms?

GO



TA 114483

Figure 25-35 (Sheet 3 of 5)

GO

YES

NO

8

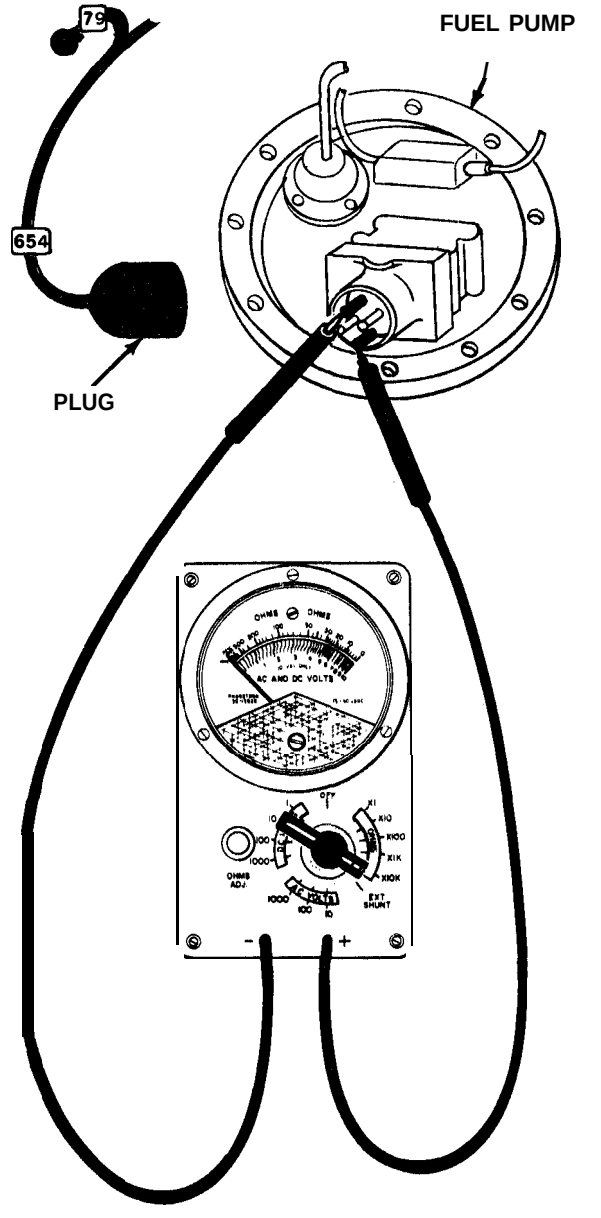
- Repair or replace rear harness
- Tell direct support maintenance

9

- Check fuel pump for short between circuit 654 and 79 pump contacts
  - Set multimeter to check for shorts. Refer to test equipment procedures index
  - Put multimeter - lead on fuel pump contact 79
  - Put multimeter + lead on fuel pump contact 654
  - Read multimeter. Multimeter needle should not move

Did multimeter needle move to the right ?

GO



TA 114484

Figure 25-35 (Sheet 4 of 5)

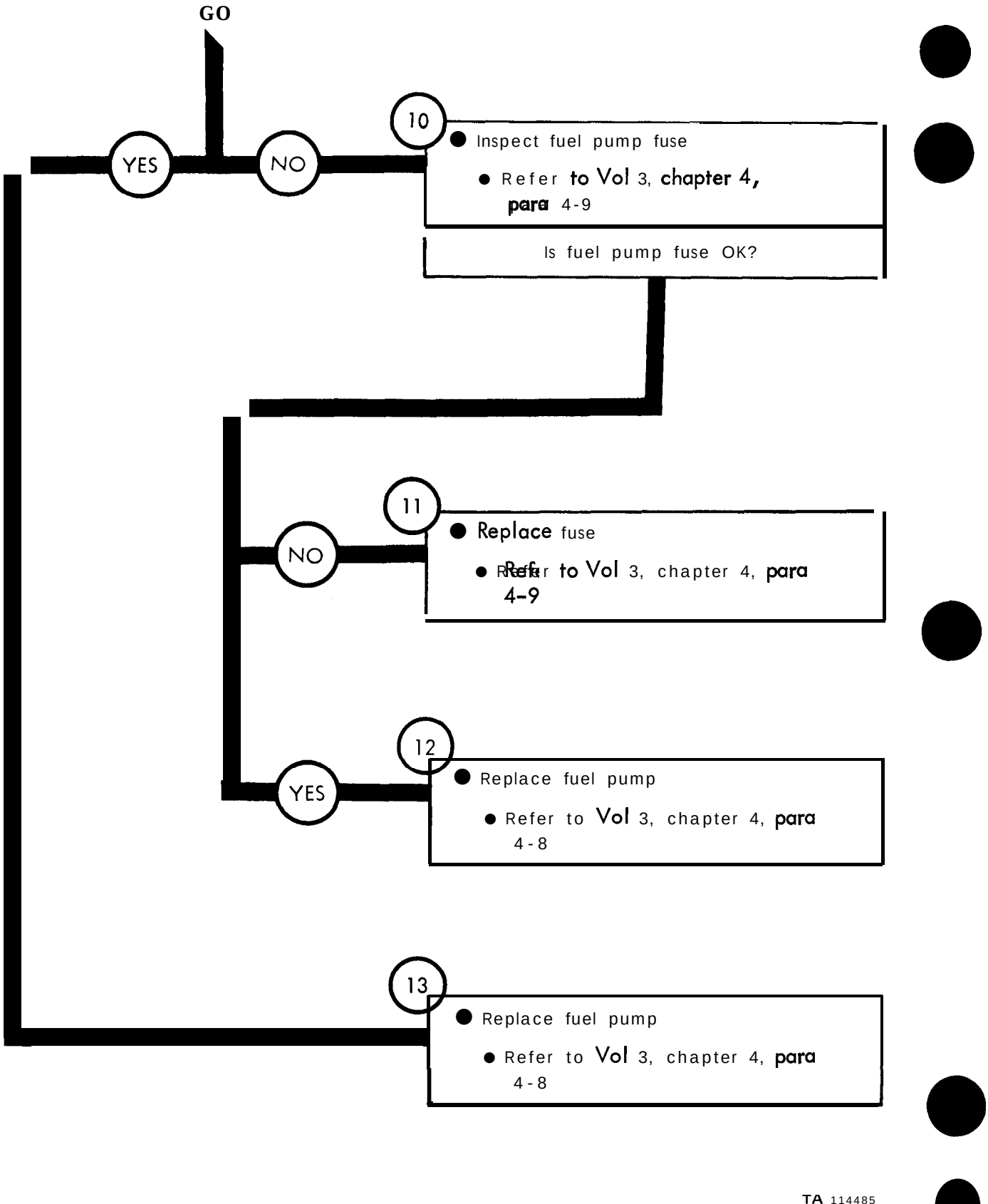


Figure 25-35 (Sheet 5 of 5)

Symptom 36

ENGINE MANIFOLD HEATER DOES NOT WORK

NOTE

When measuring voltage +24 volts DC means a range of +23 to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check engine manifold heater ignition circuit for +24 volts DC
  - Take off lead 55 at manifold heater ignition unit
  - Set MANIFOLD HEATER switch to ON
  - Set ACCESSORY switch to ON

- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 55 contact
- Read multimeter. Multimeter should measure less than +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

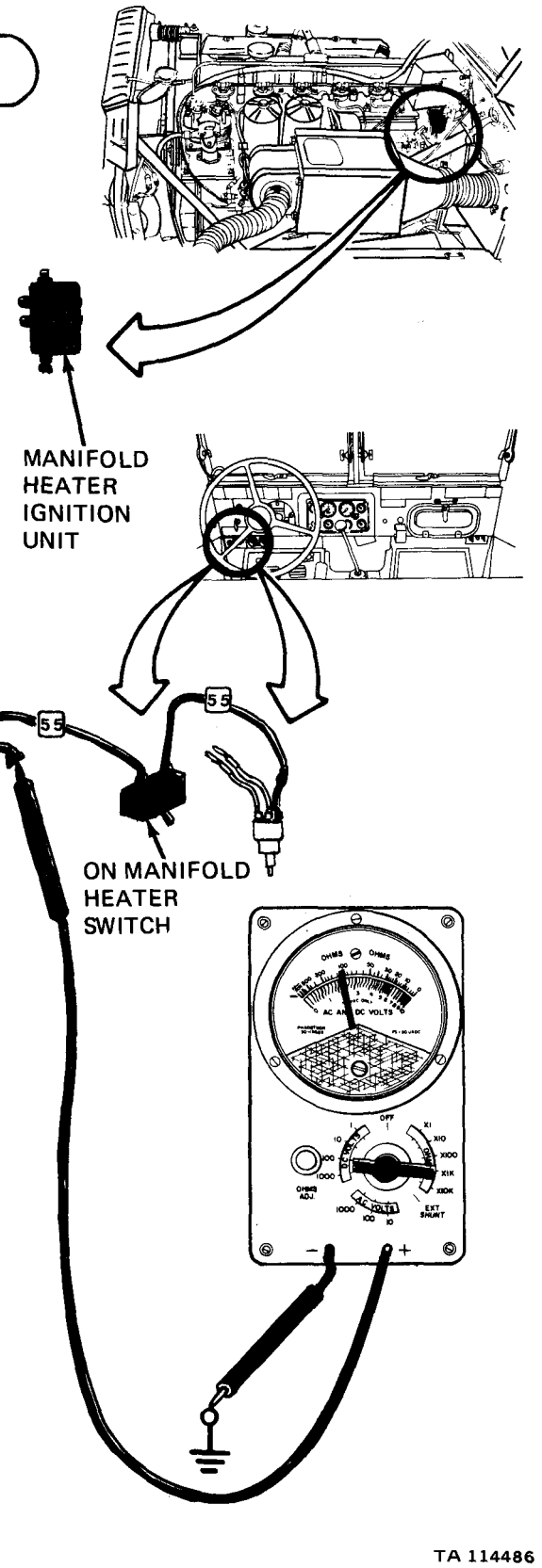


Figure 25-36 (Sheet 1 of 5)

GO

YES

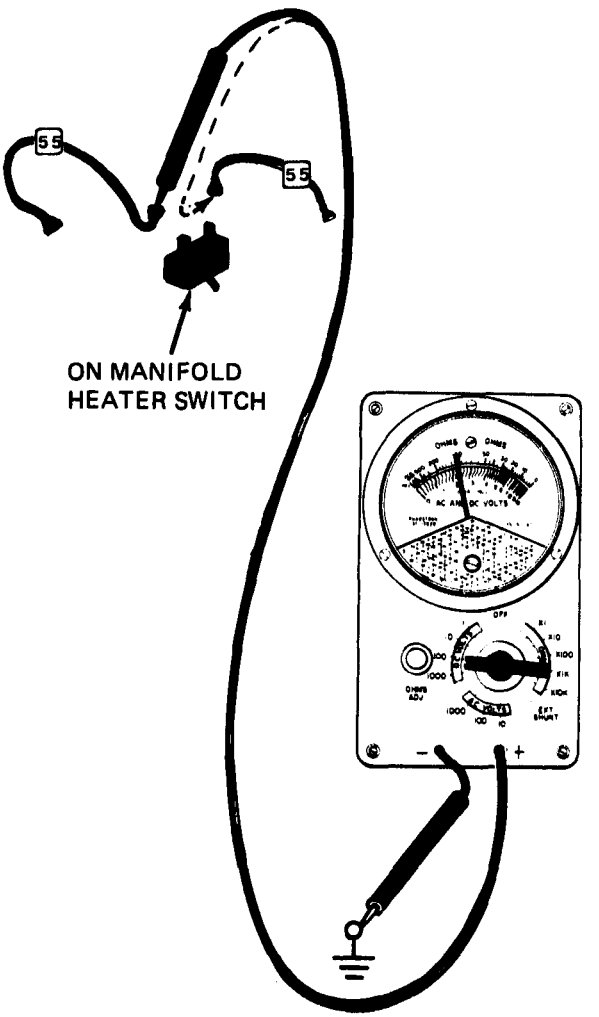
NO

3

- Repair or replace manifold heater
  - Refer to Vol 3, chapter 4, para 4-15, 4-16 and 4-17

4

- Check for +24 volts DC to manifold heater switch
  - Put lead 55 back on manifold heater ignition unit
  - Take off both leads 55 from manifold heater switch



- Put multimeter - lead on a good ground
- Put multimeter + lead on one lead 55 contact. Read multimeter
- Put multimeter + lead on other lead 55 contact. Read multimeter
- If multimeter measures +24 volts DC on one lead 55 and zero volts on other lead 55 go to step 5
- If multimeter measures zero volts on both leads 55 go to step 8

GO

TA 114487

Figure 25-36 (Sheet 2 of 5)

GO

5

- Check for +24 volts DC through manifold heater switch
  - Put lead 55 that measured + 24 volts back on manifold heater switch terminal

- Put multimeter - lead on a good ground
- Put multimeter + lead on other manifold heater switch terminal
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

YES

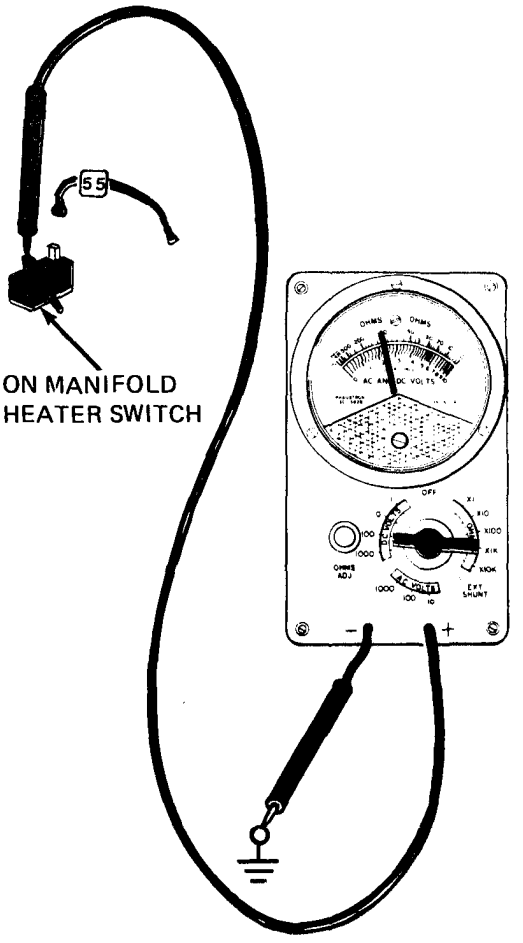
NO

6

- Replace manifold heater switch
  - Refer to Vol 3, chapter 7, para 7-64

7

- Replace lead 55 between manifold heater switch and manifold heater ignition unit



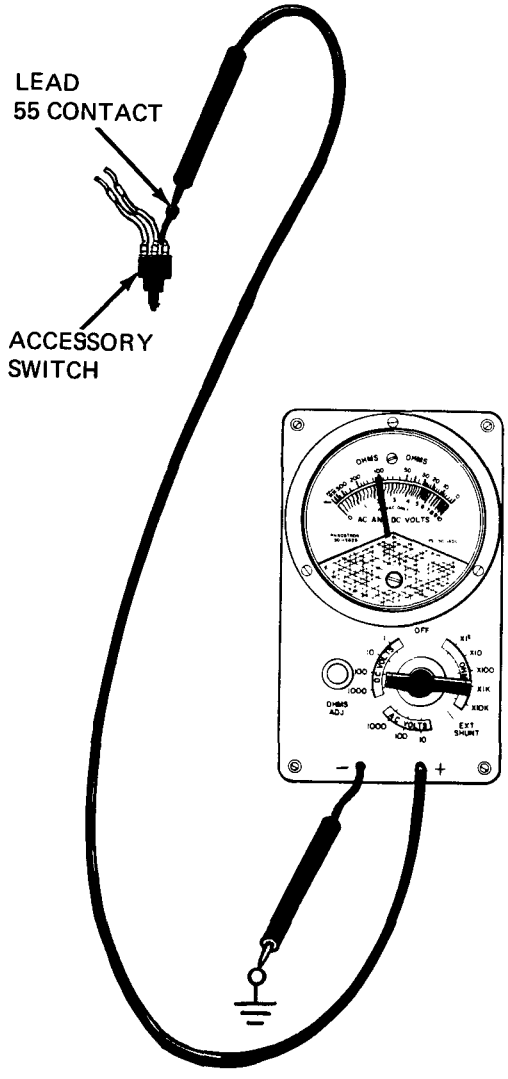
TA 114488

Figure 25-36 (Sheet 3 of 5)

From step 4

8

- Check ACCESSORY switch for +24 volts DC
  - Take off ACCESSORY switch from instrument panel. Refer to Vol 3, chapter 7, para 7-15
  - Take off lead 55 from ACCESSORY switch
  - Put lever back on ACCESSORY switch



- Put multimeter - lead on a good ground
- Put multimeter + lead on ACCESSORY switch lead 55 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

YES

NO

9

- Repair or replace front harness
  - Tell direct support maintenance

GO

TA 114489

Figure 25-36 (Sheet 4 of 5)

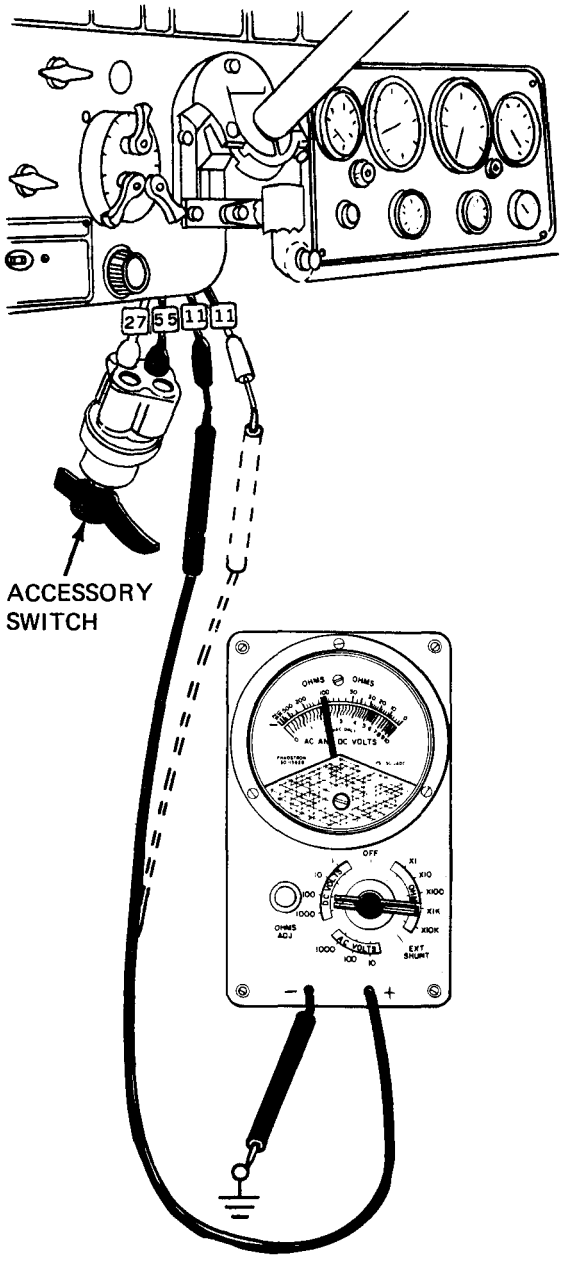
GO

10

- Check both leads 11 for +24 volts DC
  - Put lead 55 back on ACCESSORY switch
  - Take off both leads 11 from accessory switch
  - Put multimeter - lead on a good ground

- Put multimeter + lead on one lead 11 contact. Read multimeter
- Put multimeter + lead on other lead 11 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC on both lead 11 contacts?



NO

11

- Repair or replace front harness
  - Tell direct support maintenance

YES

12

- Replace ACCESSORY switch
  - Refer to Vol 3, chapter 7, para 7-15

TA 114490

Figure 25-36 (Sheet 5 of 5)

37 Symptom

NO 24-VOLT EQUIPMENT WORKS

NOTE

When measuring voltage + 24 volts DC means a range of + 23 to + 26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Check power supply into van
  - Take off lead 37 from circuit breaker on van body
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter + lead on lead 37
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO

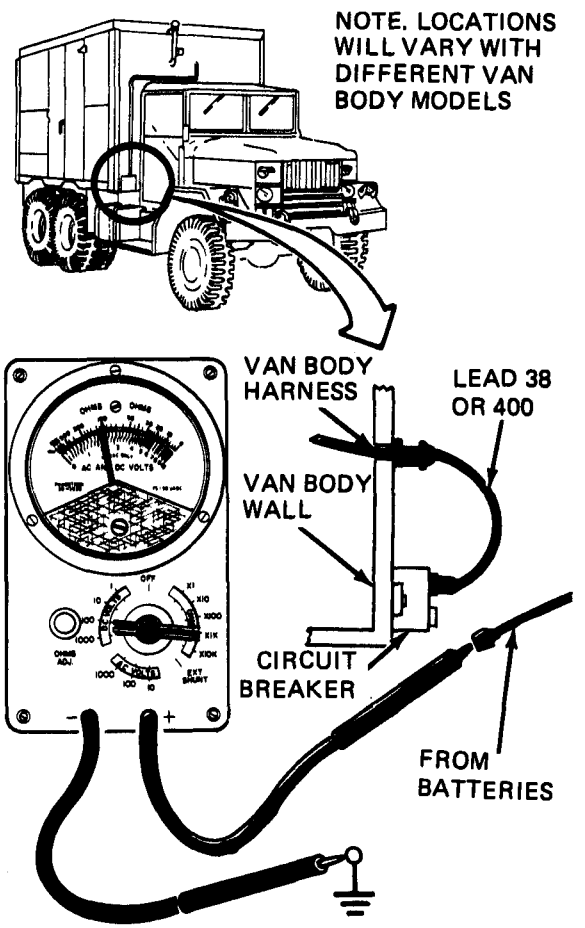


Figure 25-37 (Sheet 1 of 3)

GO

YES

NO

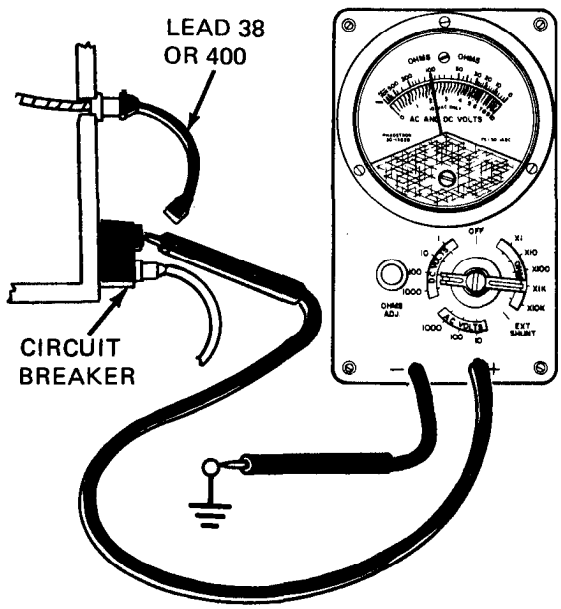
3

- Replace harness to batteries
  - Tell direct support maintenance

4

- Check for +24 volts DC at circuit breaker
  - Put lead 37 back on circuit breaker
  - Take off lead 38 or 400 from circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on circuit breaker terminal
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



YES

NO

5

- Replace circuit breaker
  - Refer to Vol 3, chapter 7, para 7-16

GO

TA 114492

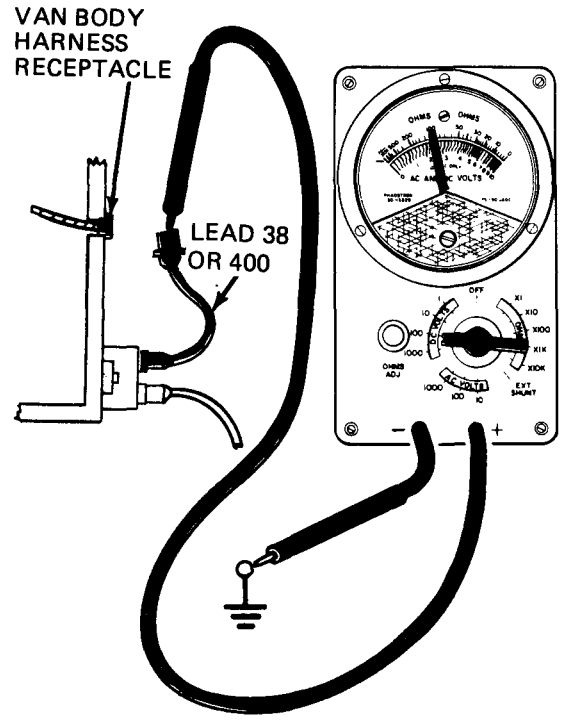
Figure 25-37 (Sheet 2 of 3)

GO

6

- Check lead 38 or 400 for +24 volts DC
  - Put lead 38 or 400 back on circuit breaker
  - Take lead 38 or 400 off van body harness receptacle
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 38 or 400
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO

7

- Repair or replace lead 38 or 400
  - Refer to Vol 3, chapter 7, para 7-16

chapter 7, para 7-16

YES

8

- Repair or replace van body harness
  - Tell direct support maintenance

TA 114493

Figure 25-37 (Sheet 3 of 3)

Symptom

38 24 VOLT DOME LIGHTS DO NOT WORK

NOTE

When measuring voltage +24 volts DC means a range of +23 to +26 volts DC

1

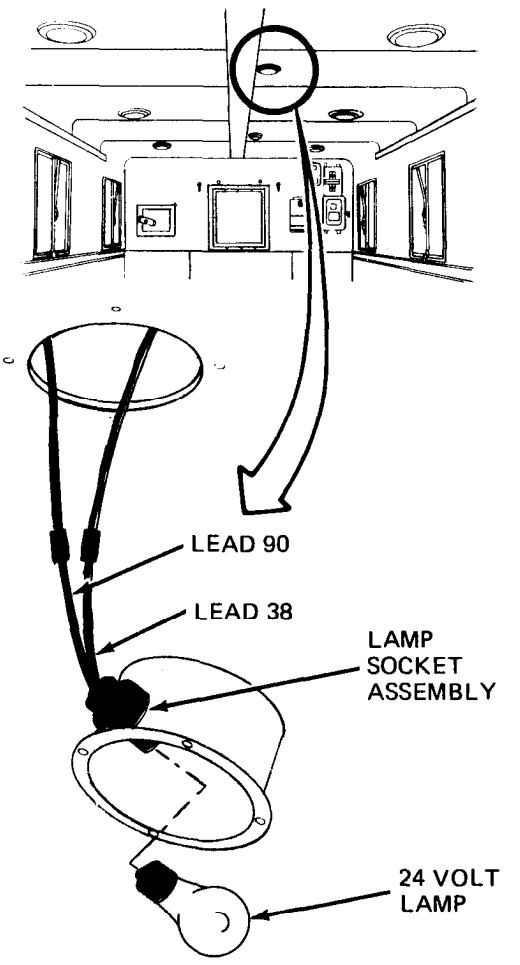
- Park truck
  - Refer to TM 9-2320-209-10

2

- Check lamp and socket assembly and clean
  - Set dome light switch to OFF
  - Take off lamp socket assembly from ceiling. Refer to Vol 3, chapter 18, para 18-65
  - Clean and tighten lamp socket assembly.
  - Put in new lamp if necessary
  - Set dome light switch to ON

Does lamp stay off?

GO



TA 114494

Figure 25-38 (Sheet 1 of 7)

GO

YES

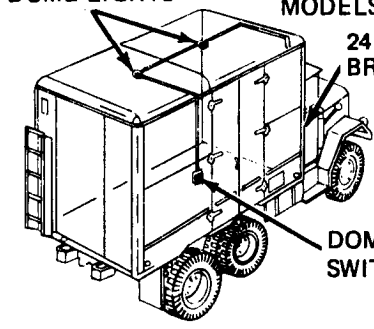
NO

3

- Troubleshooting completed
  - Put lamp socket assembly back in ceiling
  - Refer to Vol 3, chapter 18, para 18-65
  - Troubleshooting completed

chapter 18, para 18-65

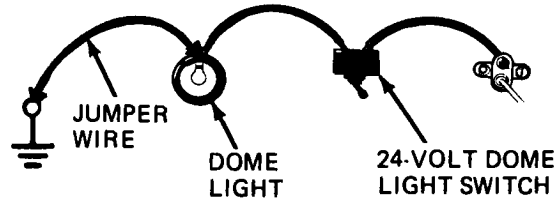
NOTE: LOCATIONS MAY VARY WITH DIFFERENT VAN BODY MODELS



4

- Check dome light socket for a good ground
  - Set 24 volt dome light switch to OFF
  - Take lead 90 from socket terminal 90
  - Place jumper wire from socket terminal 90 to a good ground
  - Set 24 volt dome lights switch to ON

Is lamp still off?



YES

NO

5

- Repair or replace lead 90
  - Set 24 volt dome light switch to OFF
  - Repair or replace lead 90. Refer to Vol 3, chapter 18, para 18-65

GO

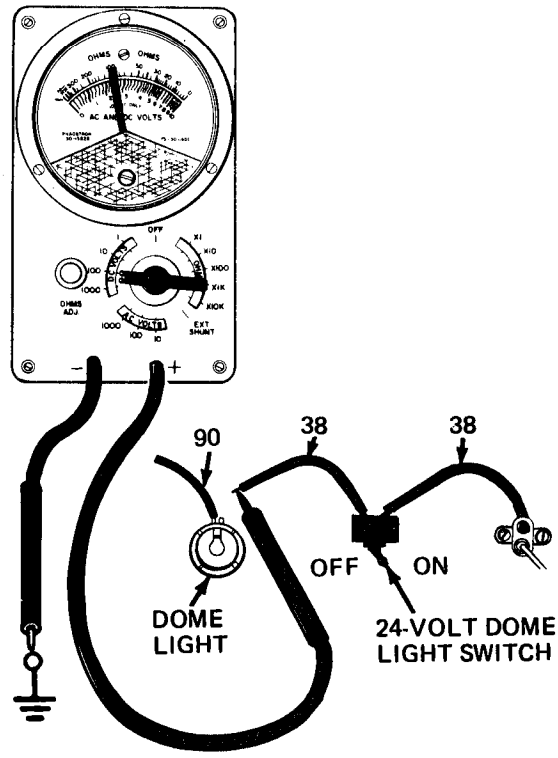
TA 114495

Figure 25-38 (Sheet 2 of 7)

GO

6

- Check for +24 volts DC to dome lamp socket assembly
  - Set 24 volt dome light switch to OFF
  - Take off jumper wire from socket terminal 90
  - Put lead 90 back on socket terminal 90
  - Take lead 38 off socket terminal 38
  - Set 24 volt dome light switch to ON



- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 38 contact
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

YES

NO

7

- Replace dome lamp socket
  - Set 24 volt dome light switch to OFF
  - Replace dome lamp socket. Refer to Vol 3, chapter 18, para 18-65

GO

TA 114496

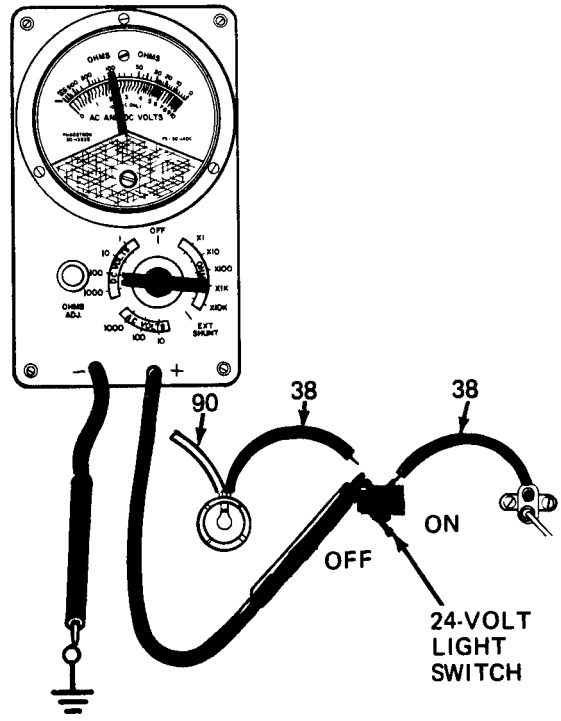
Figure 25-38 (Sheet 3 of 7)

GO

8

- Check for +24 volts through dome light switch
  - Put lead 38 back on dome light socket assembly
  - Take off lead 38 from dome light switch
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on terminal 38 of dome light switch
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

9

- Repair or replace lead 38
  - Set dome light switch to OFF
  - Replace lead 38. Refer to Vol 3, chapter 18, para 18-72

GO

TA 114497

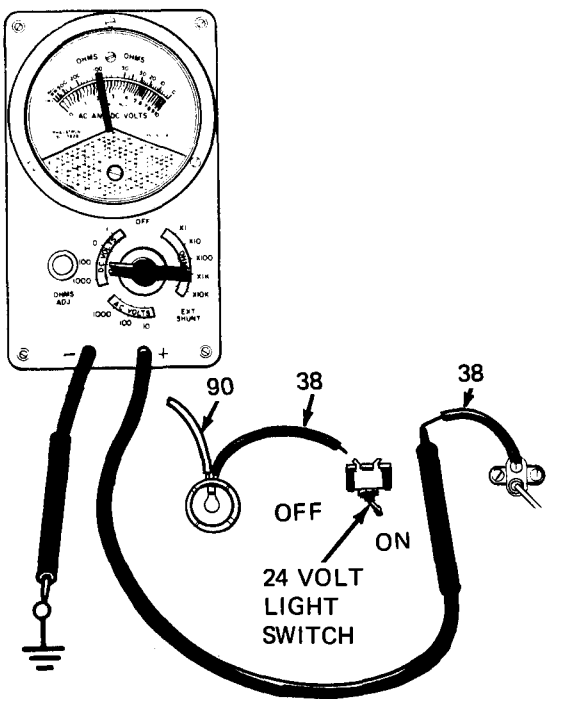
Figure 25-38 (Sheet 4 of 7)

GO

10

- Check lead 38 from circuit breaker for +24 volts DC
  - Take off lead 38 from other dome light switch terminal
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 38 connector
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

11

- Repair or replace dome light switch
  - Replace dome light switch. Refer to Vol 3, chapter 18, para 18-72

GO

TA 114498

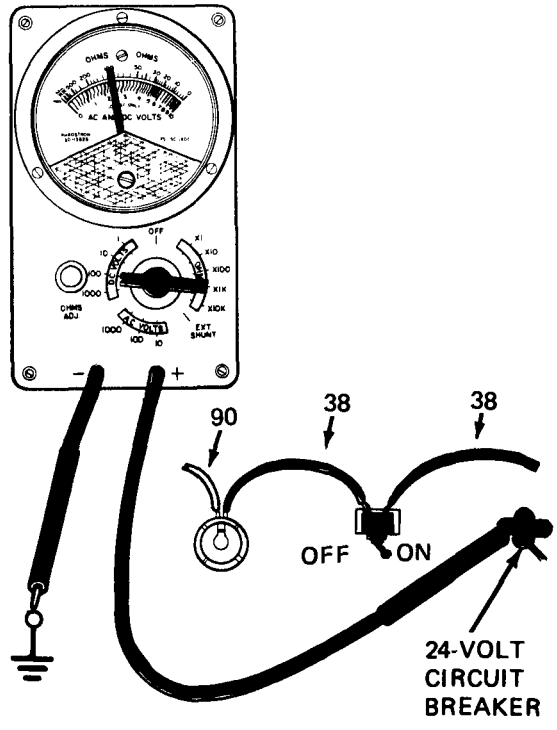
Figure 25-38 (Sheet 5 of 7)

GO

12

- Check for +24 volts DC through circuit breaker
  - Put both leads 38 back on dome light switch
  - Put dome light socket assembly back in ceiling
  - Take lead 38 from circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on circuit breaker lead 38 connector Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

13

- Replace lead 38
  - Refer to Vol 3, chapter 18, para 18-72

GO

TA 114499

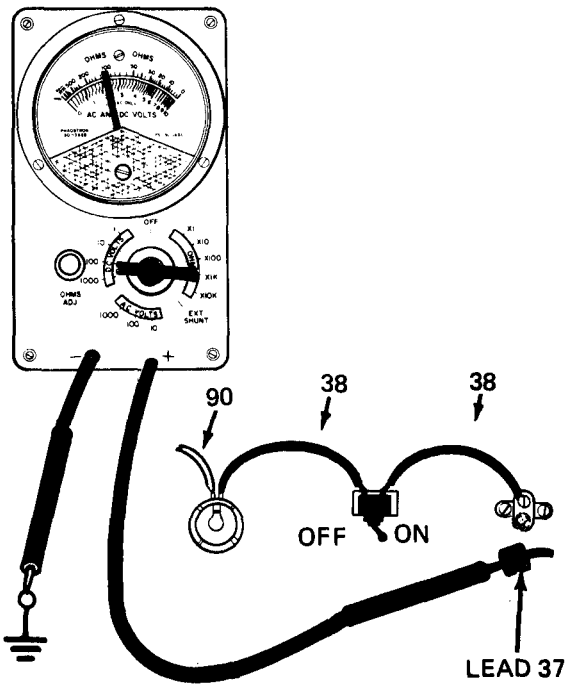
Figure 25-38 (Sheet 6 of 7)

GO

14

- Check for +24 volts DC to circuit breaker
  - Put lead 38 back on circuit breaker
  - Take off lead 37 from circuit breaker
  - Put multimeter-lead on a good ground
  - Put multimeter + lead on lead 37 contact
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?



NO

15

- Repair or replace lead 37 harness to batteries
  - Refer to Vol 3, chapter 18, para 18-69

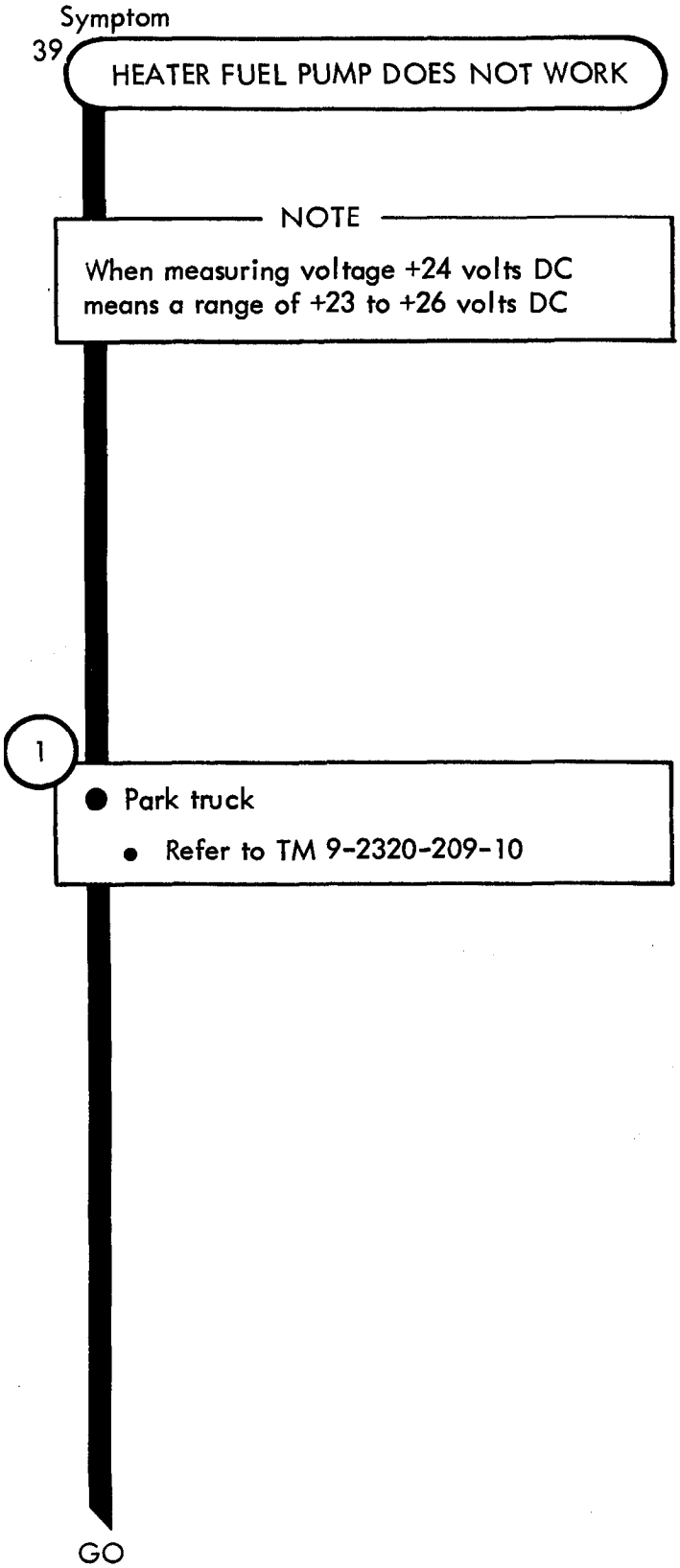
YES

16

- Replace 24 volt circuit breaker
  - Refer to Vol 3, chapter 18, para 18-69

TA 114500

Figure 25-38 (Sheet 7 of 7)



TA 114501

Figure 25-39 (Sheet 1 of 8)

GO

2

- Check lead 25 to heater fuel pump
  - Set multimeter to measure +24 volts DC. Refer to multimeter test procedures, test 1
  - Take off lead 25 at fuel pump
  - Set van body heater control to ON

- Put multimeter - lead on a good ground
- Put multimeter + lead on lead 25 contact
- Read multimeter. Multimeter should measure +24 volts DC

Did multimeter measure less than +24 volts DC?

GO

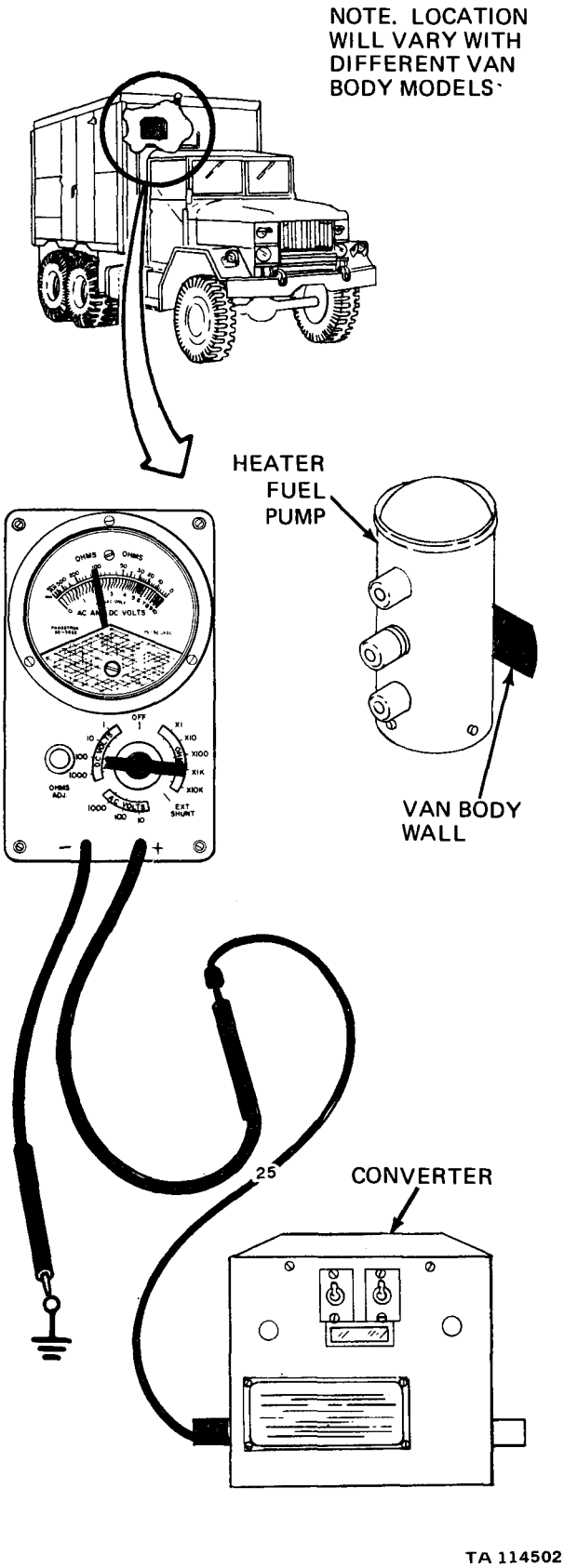


Figure 25-39 (Sheet 2 of 8)

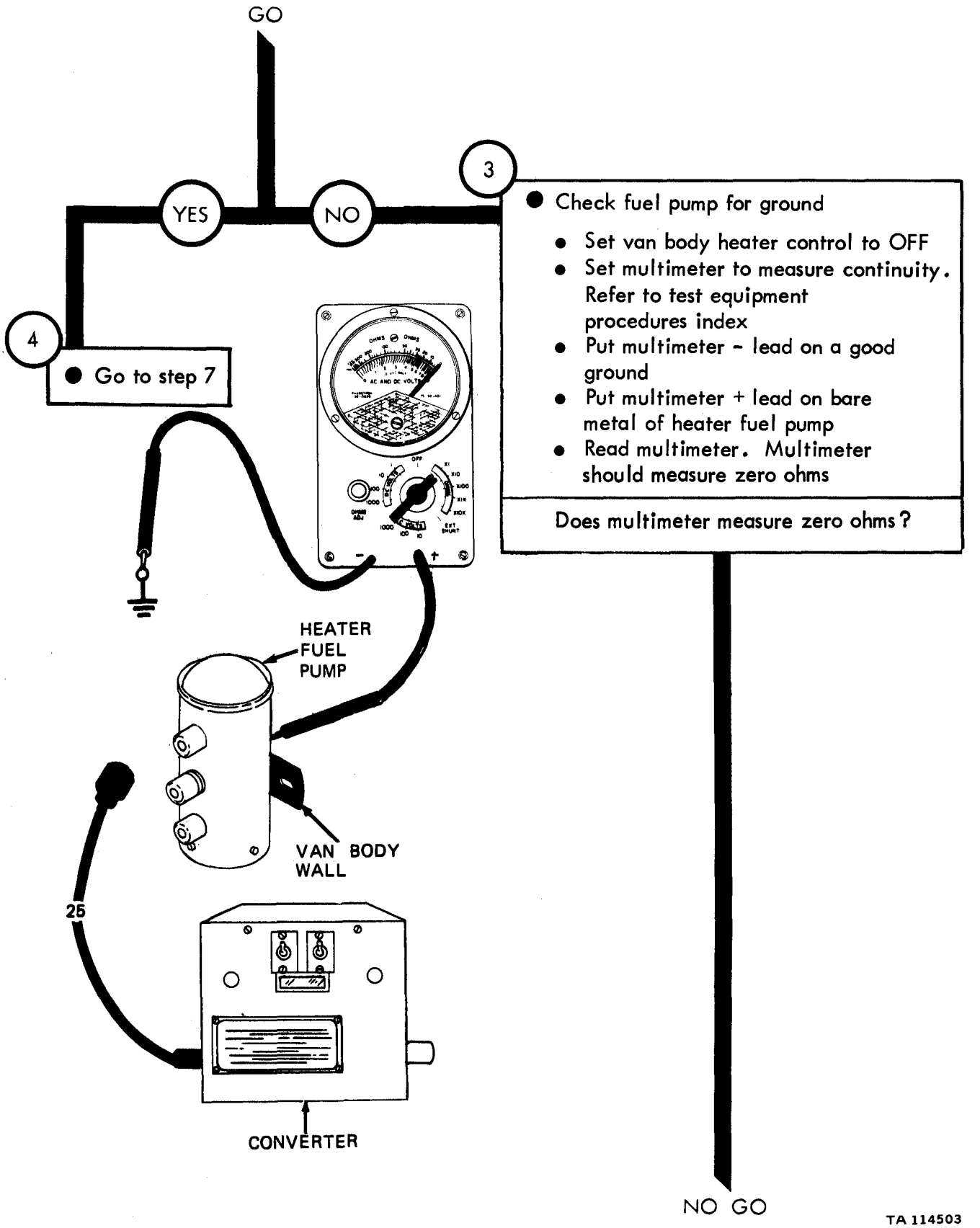


Figure 25-39 (Sheet 3 of 8)

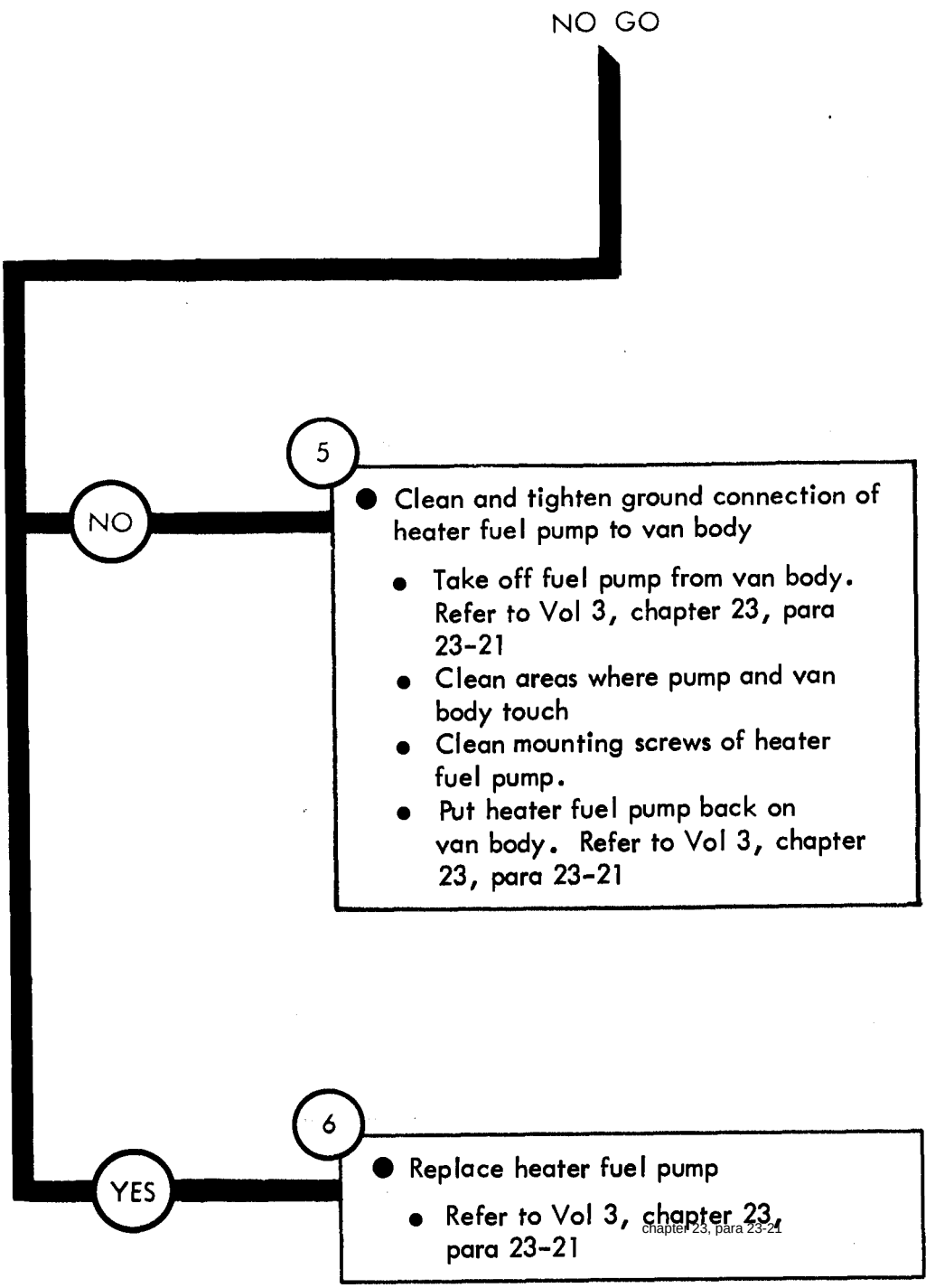


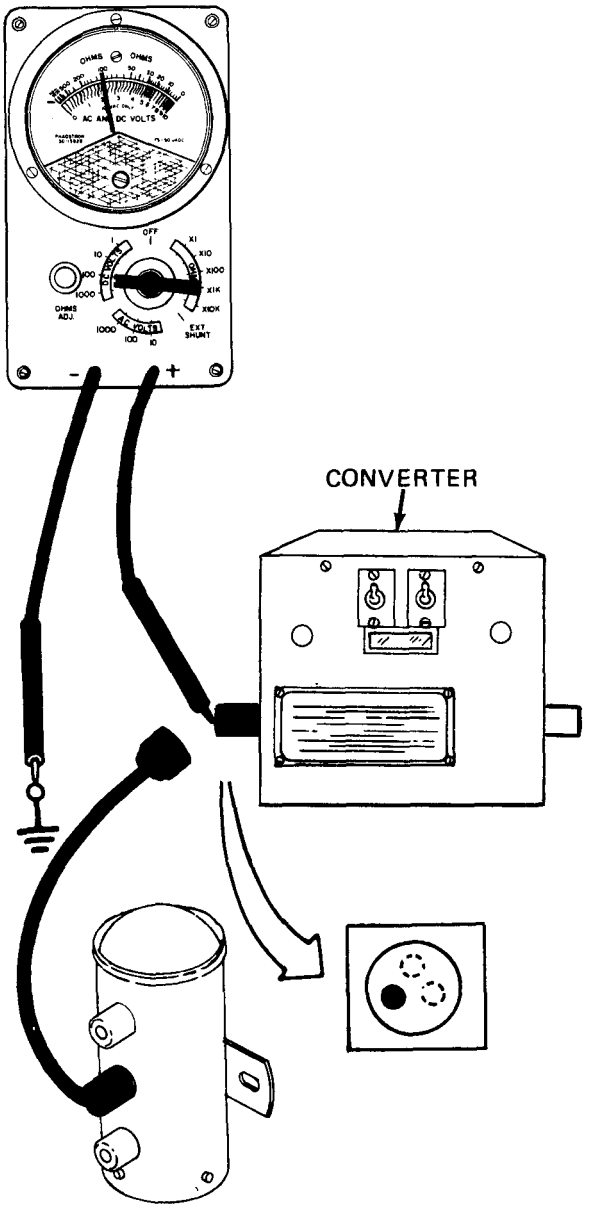
Figure 25-39 (Sheet 4 of 8)

From step 4

7

- Check converter for +24 volts DC
  - Take off lead 25 from converter inside van
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on pin A in the converter
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

8

- Repair or replace lead 25 from converter to heater fuel pump
  - Refer to Vol 3, chapter 23, para 23-21

GO

TA 114505

Figure 25-39 (Sheet 5 of 8)

GO

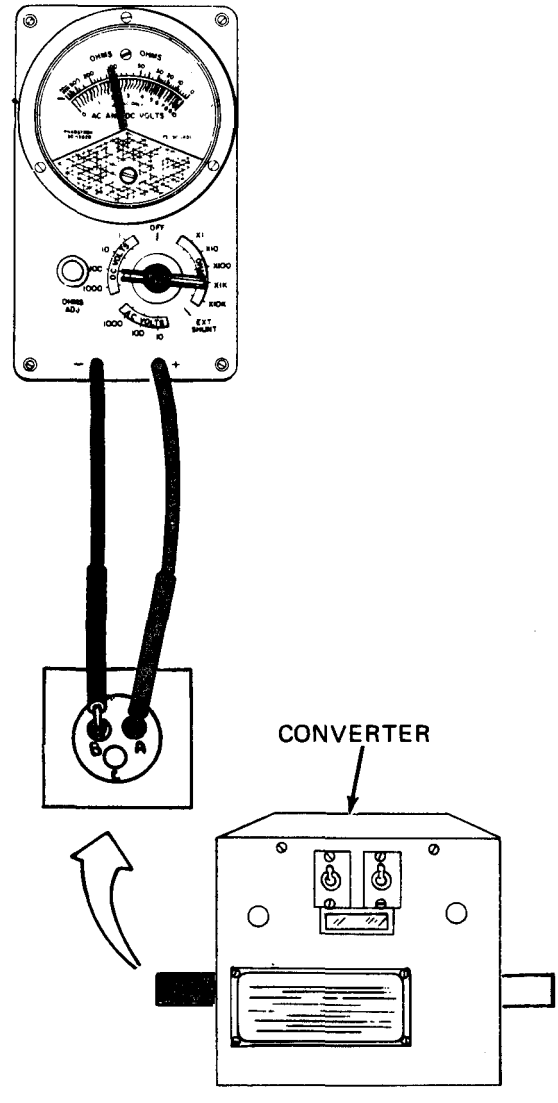
WARNING

Only properly trained personnel should perform test on van body 115 volt system

The voltage present in 115 volt system can cause severe or fatal electric shock

9

- Check circuit to power converter
  - Set 115 volt power source to ON
  - Put multimeter - lead on pin B (ground) of converter
  - Put multimeter + lead on pin A of converter
  - Read multimeter. Multimeter should measure 24 volts DC



GO

TA 114506

Figure 25-39 (Sheet 6 of 8)

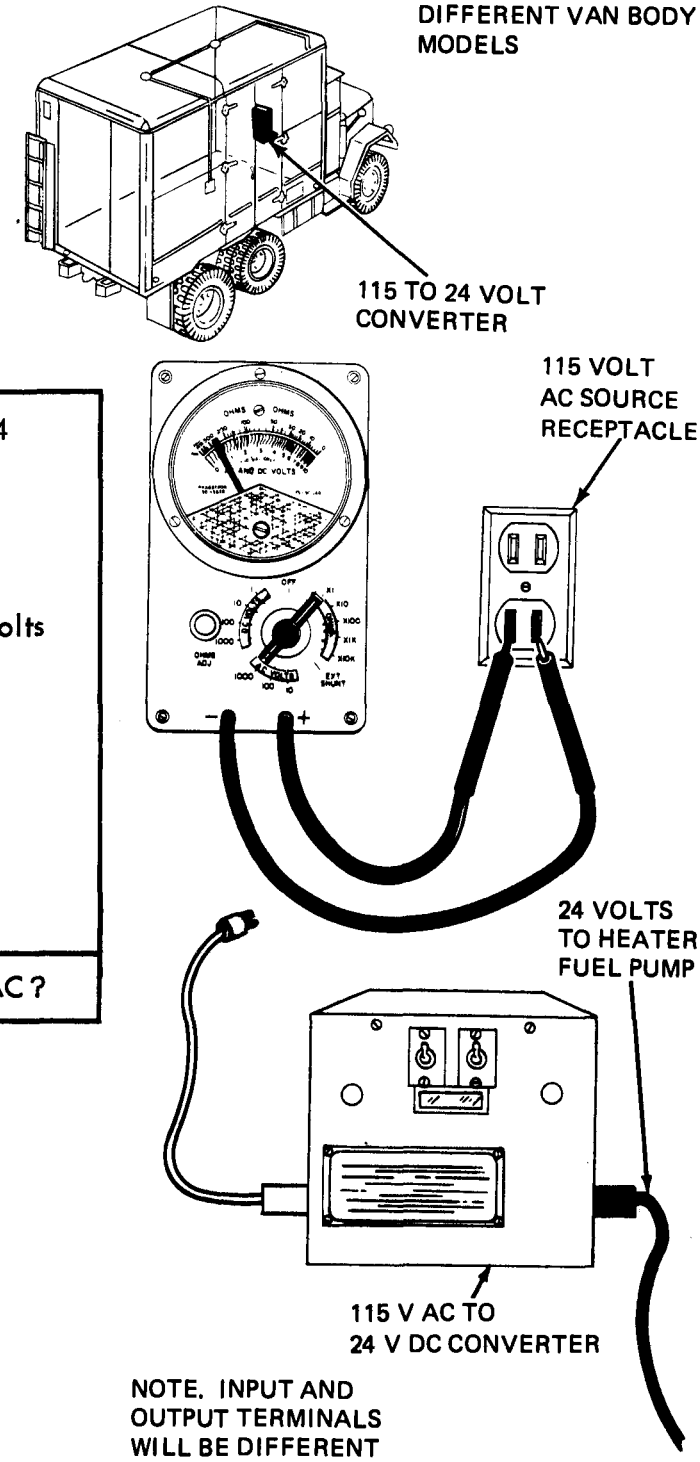
GO

10

- If multimeter measures less than +24 volts DC check power source for 115 volts AC
  - Take converter power plug from 115 volt AC power source
  - Set multimeter to measure 115 volts AC. Refer to test equipment procedures index
  - Put multimeter - lead in one side of source receptacle
  - Put multimeter + lead in other side of source receptacle
  - Read multimeter, multimeter should measure 115 volts AC

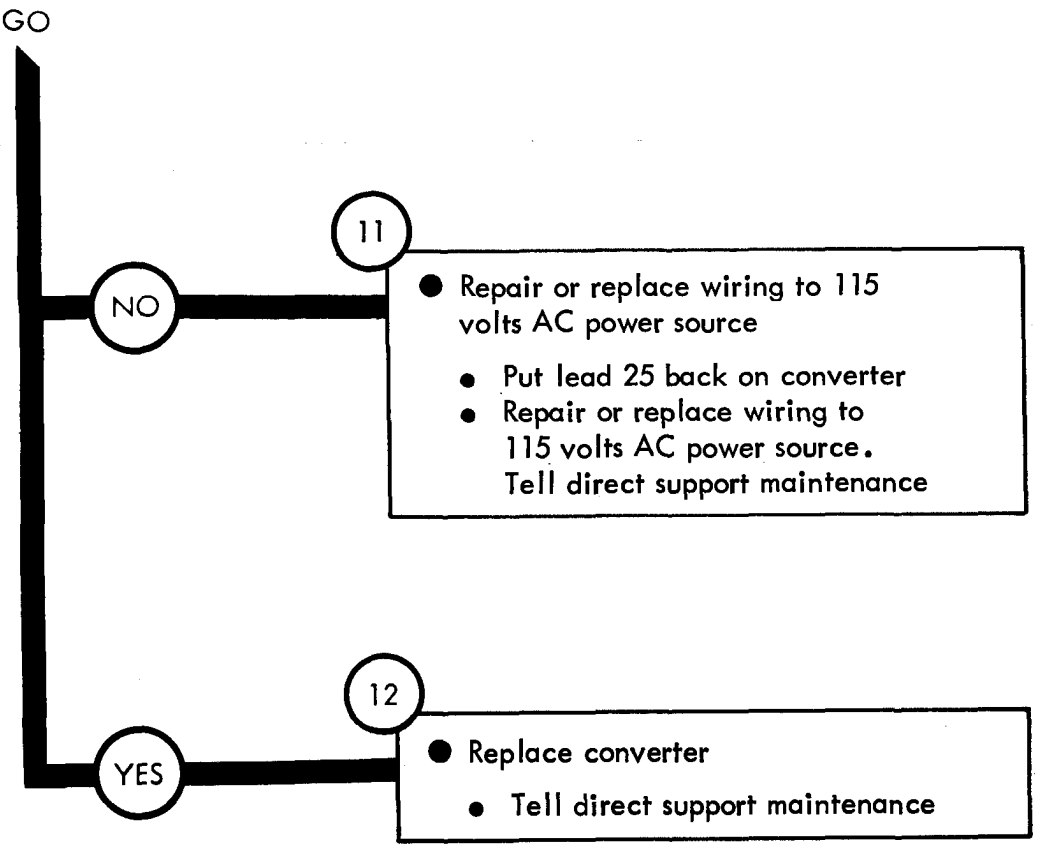
Does multimeter measure 115 volts AC?

GO



TA 114507

Figure 25-39 (Sheet 7 of 8)



TA 114508

Figure 25-39 (Sheet 8 of 8)

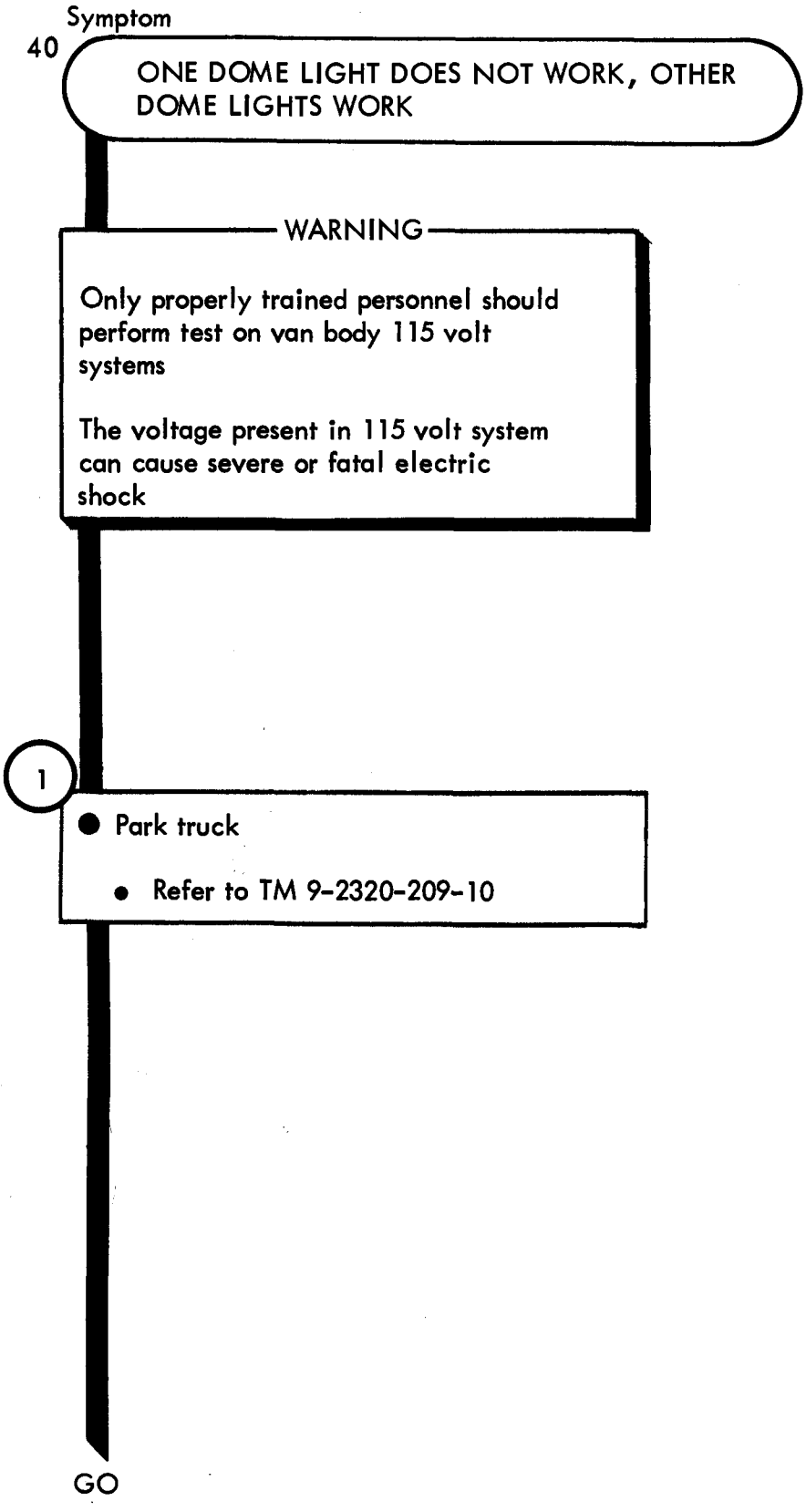


Figure 25-40 (Sheet 1 of 5)

GO

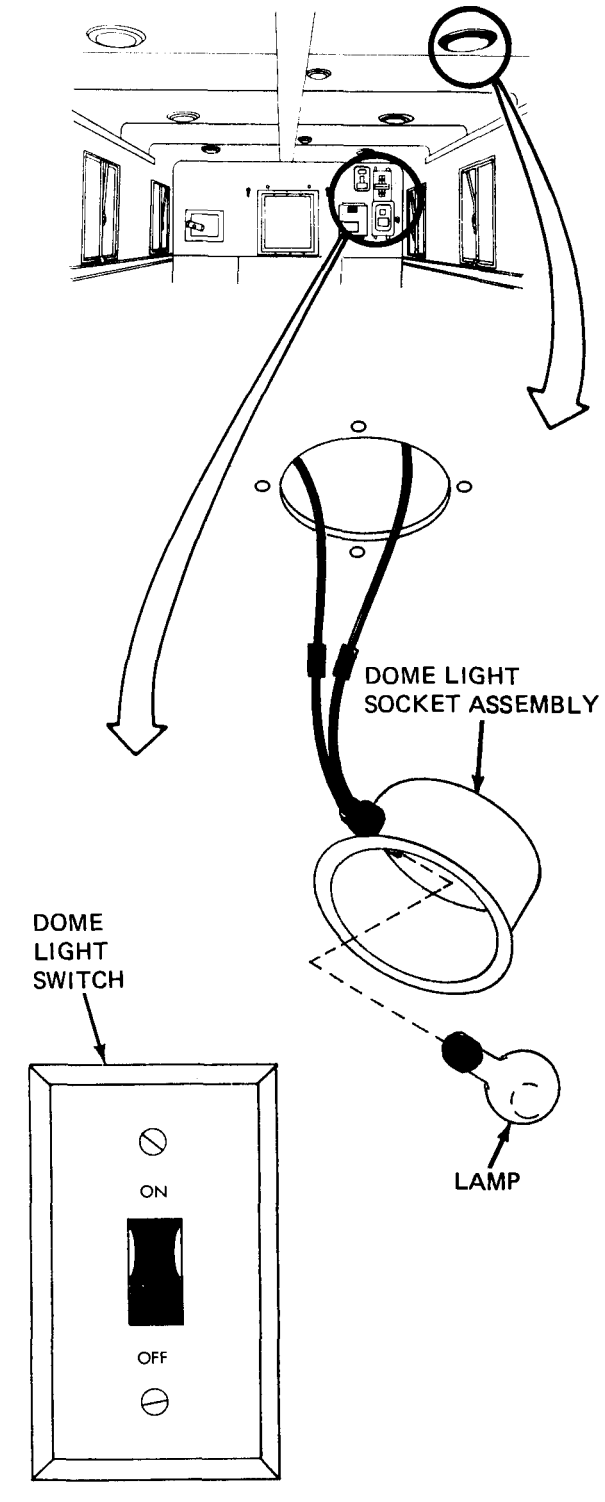
2

- Check circuit to dome light socket assembly
  - Set dome light circuit breaker and dome light switch to OFF
  - Take dome lamp assembly from ceiling and lamp from socket assembly. Refer to Vol 3, chapter 18, para 18-65

- Clean and tighten dome light socket if necessary
- Put in new lamp
- Set circuit breaker and dome light switch to ON

Does lamp still stay OFF?

GO



TA 114510

Figure 25-40 (Sheet 2 of 5)

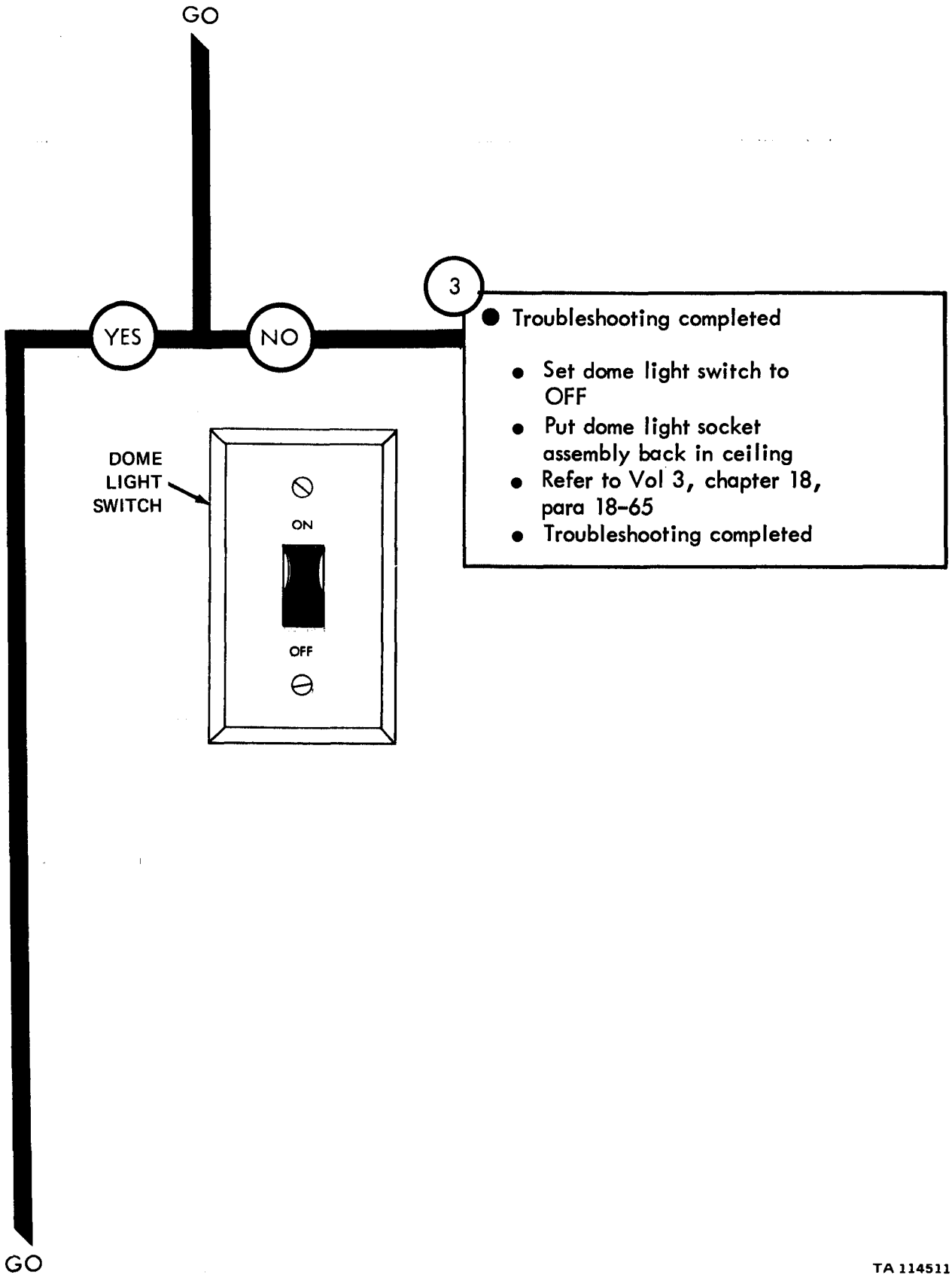
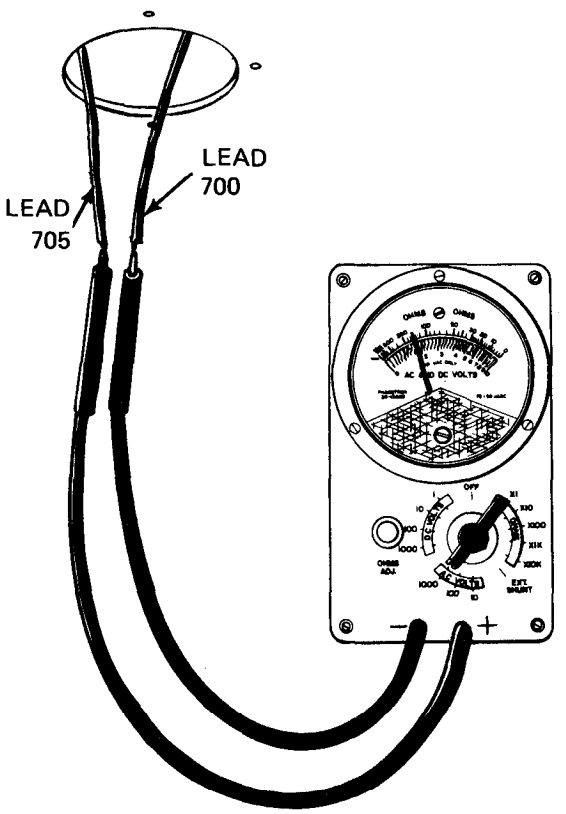


Figure 25-40 (Sheet 3 of 5)

GO

4

- Check for 115 volts AC to socket
  - Set circuit breaker to OFF
  - Take off dome light socket assembly from ceiling. Refer to Vol 3, chapter 18, para 18-65
  - Take off leads 700 and 705 from dome light socket assembly
  - Set multimeter to measure 115 volts AC. Refer to test equipment procedures index



- Set circuit breaker to ON
- Set dome light switch to ON
- Put multimeter - lead on lead 700
- Put multimeter + lead on lead 705
- Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure 115 volts AC?

GO

TA 114512

Figure 25-40 (Sheet 4 of 5)

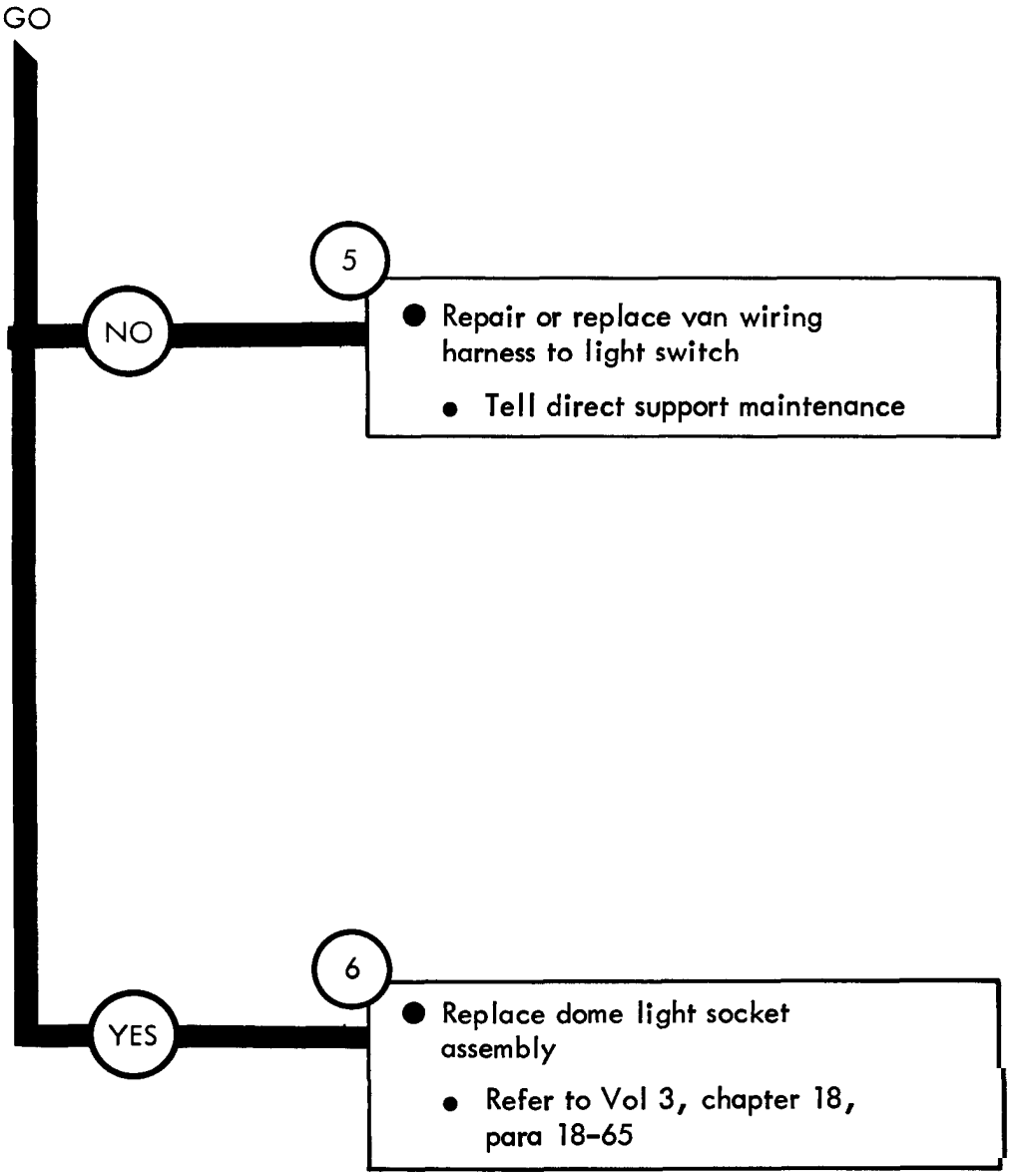
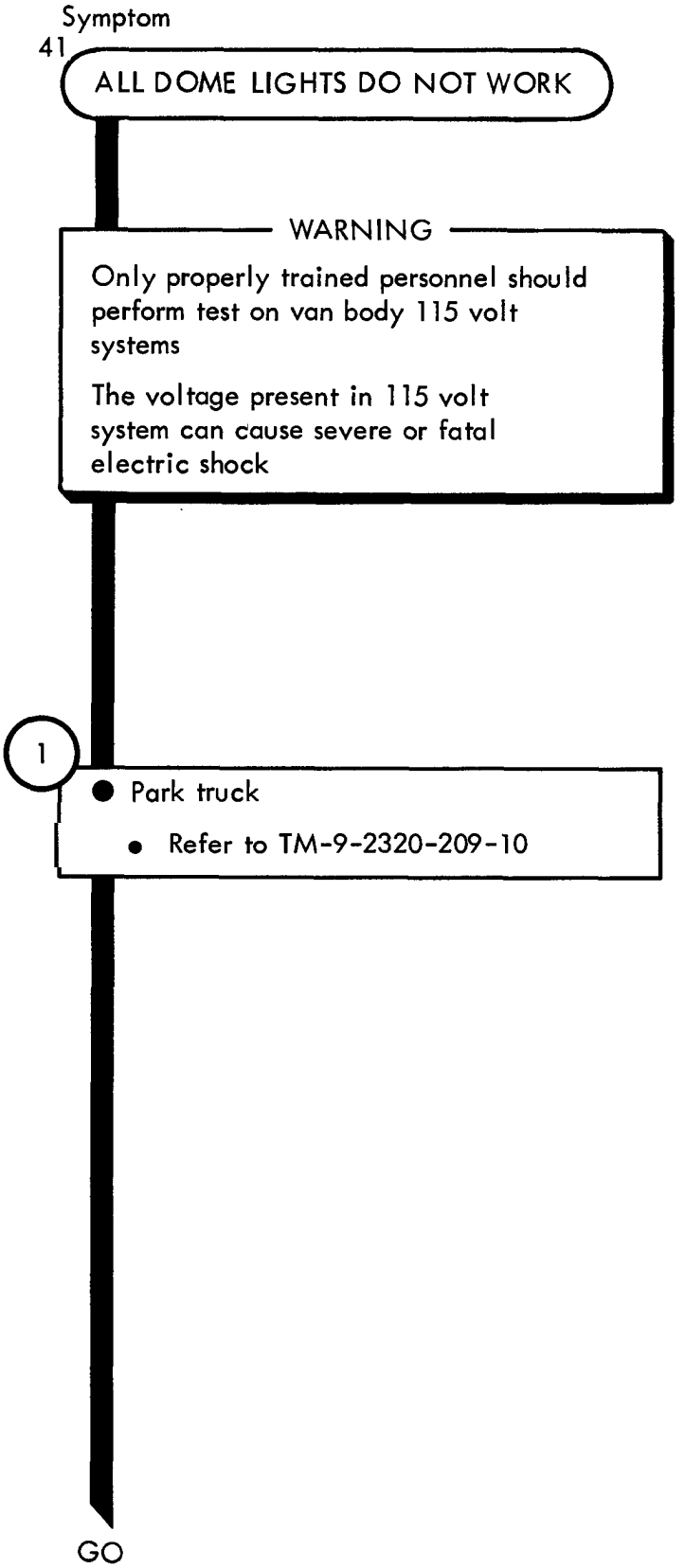


Figure 25-40 (Sheet 5 of 5)



TA 114514

Figure 25-41 (Sheet 1 of 8)

GO

CAUTION

Do not allow any leads you take off to touch metal parts. The resulting short circuit can damage wiring and cause a fire

A shock hazard is always present

NOTE

There are two types of dome light switches. The double pole single throw; illustrated, has a lead 700 and 705 connected to it. When testing other switch refer to two 705 terminals

2

- Check dome light switch for continuity
  - Set dome light switch to OFF
  - Set circuit breaker to OFF
  - Take off dome light switch from wall. Refer to Vol 3, chapter 18, para 18-71
  - Take off leads 700 and 705 from dome light switch

GO

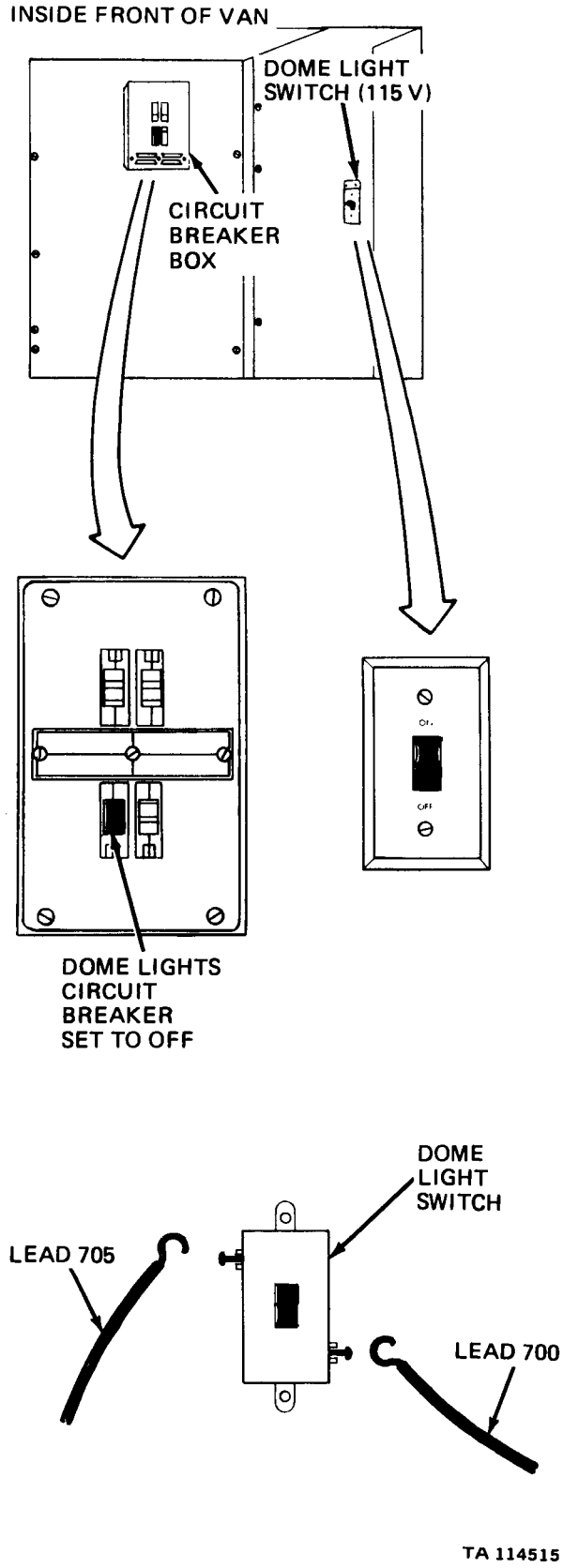
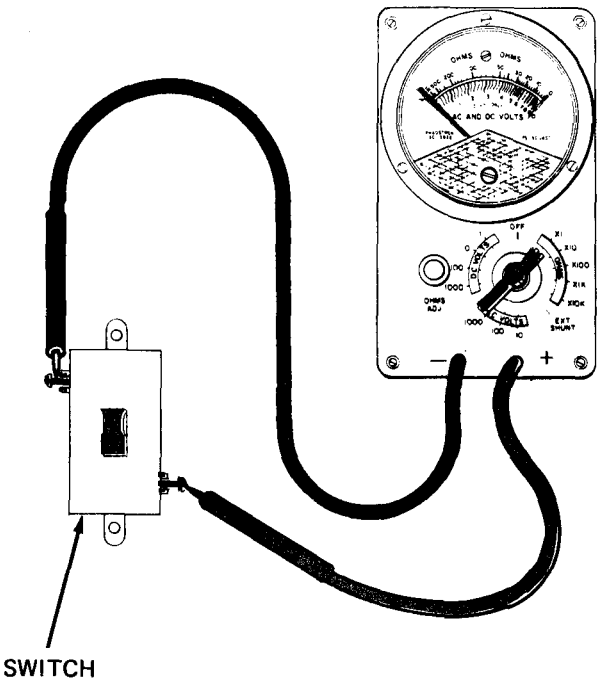


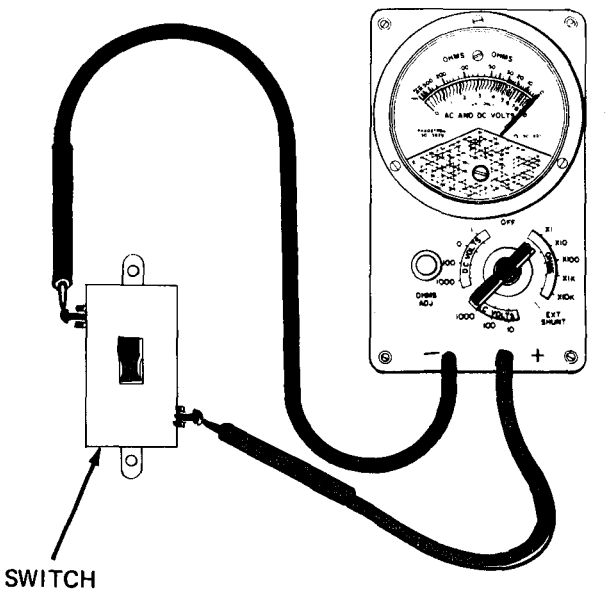
Figure 25-41 (Sheet 2 of 8)

GO

- Set multimeter to check continuity. Refer to test equipment procedures index test 4
- Put multimeter - lead on dome light switch lead 700 terminal screw
- Put multimeter + lead on dome light switch lead 705 terminal screw
- Read multimeter. Pointer should not move



- Set dome light switch to ON
- Put multimeter - lead on lead 700 terminal screw
- Put multimeter + lead on lead 705 terminal screw
- Read multimeter. Pointer should measure zero ohms



Did both tests check out OK?

YES

NO

3

- Replace dome light switch
  - Refer to Vol 3, chapter 18, para 18-71

GO

TA 114516

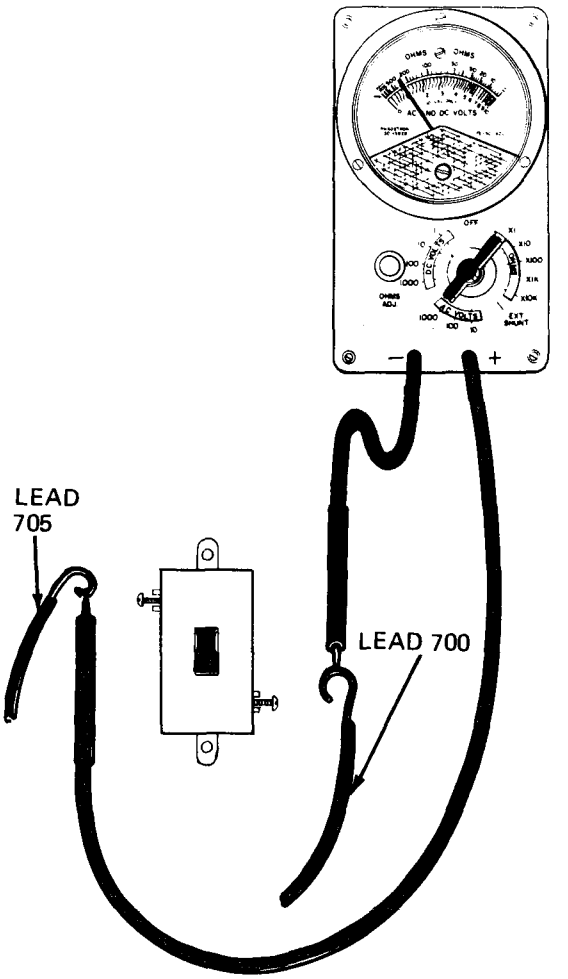
Figure 25-41 (Sheet 3 of 8)

GO

4

- Check for voltage from circuit breaker to dome light switch
  - Set multimeter to measure 115 volts AC. Refer to test equipment procedures index test 2
  - Set circuit breaker to ON
  - Put multimeter - lead on lead 700
  - Put multimeter + lead on lead 705
  - Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure less than 115 volts AC?



YES

NO

5

- Dome light switch has problem that did not show in continuity test. Replace dome light switch
  - Refer to Vol 3, chapter 18, para 18-71

GO

TA 114517

Figure 25-41 (Sheet 4 of 8)

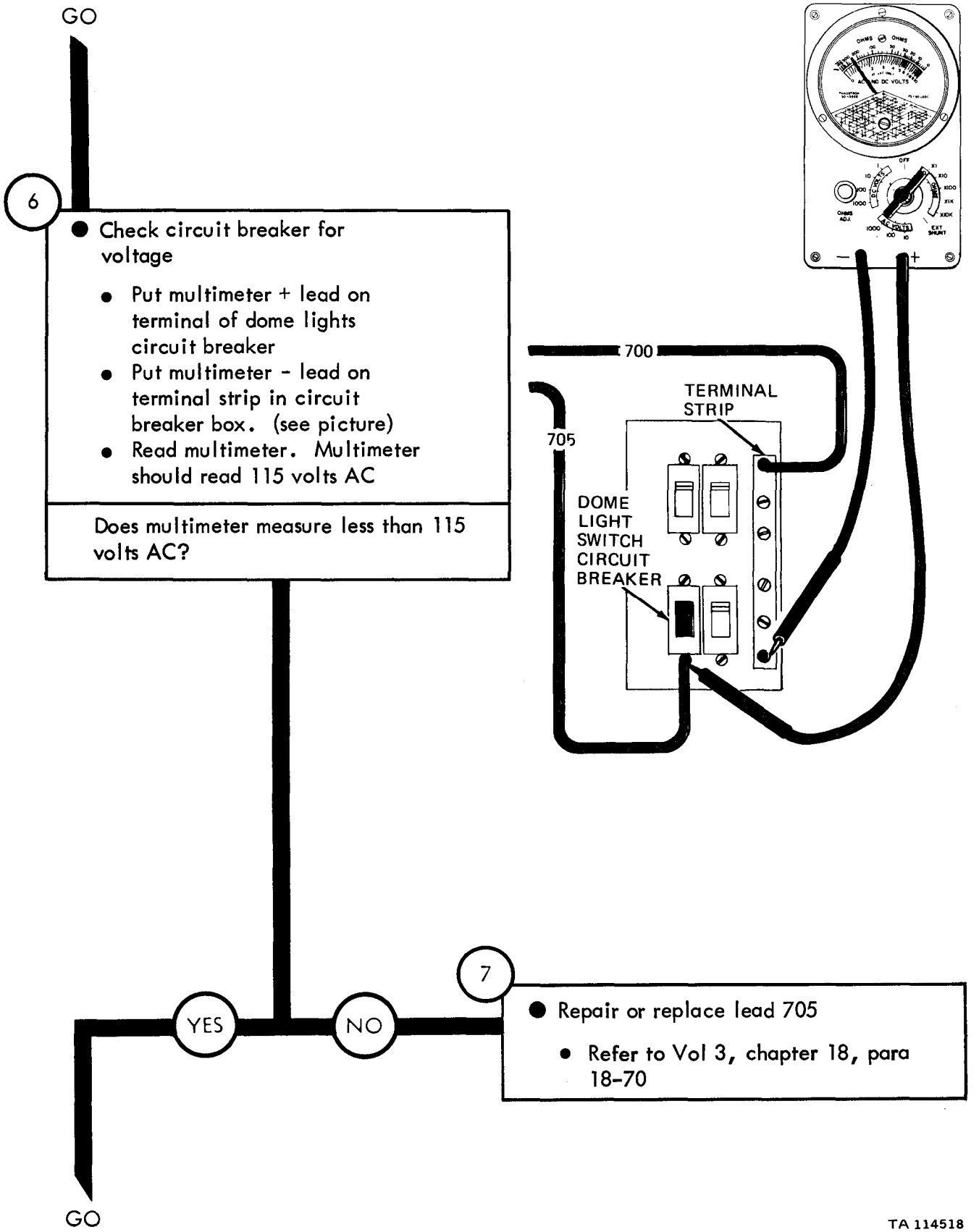
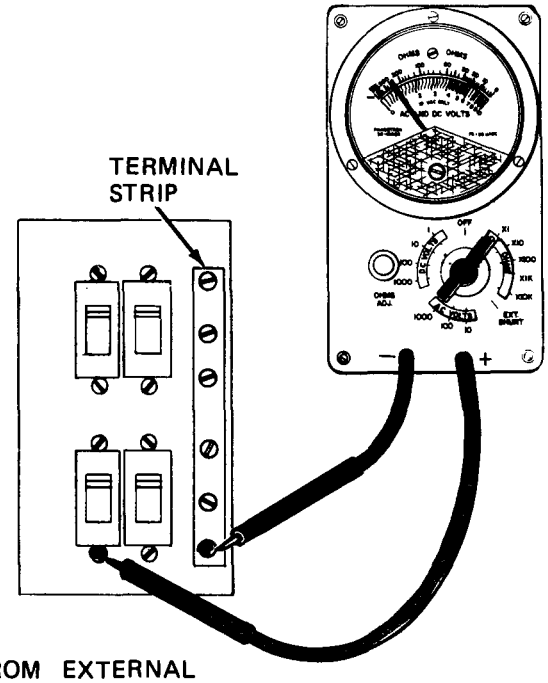


Figure 25-41 (Sheet 5 of 8)

GO

8

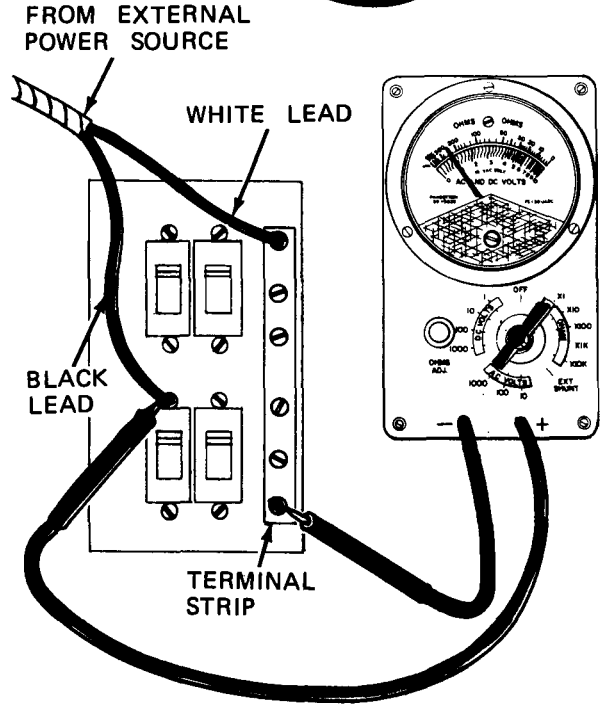
- Check for 115 volts AC at circuit breaker
  - Put multimeter - lead on terminal strip
  - Put multimeter + lead on front bottom terminal on circuit breaker



9

- If multimeter measured zero volts check incoming power source for 115 volts AC
  - Put multimeter - lead on terminal strip
  - Put multimeter + lead on black wire lead (see picture)
  - Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure 115 volts AC?



YES

NO

10

Tell direct support maintenance to check incoming power source

GO

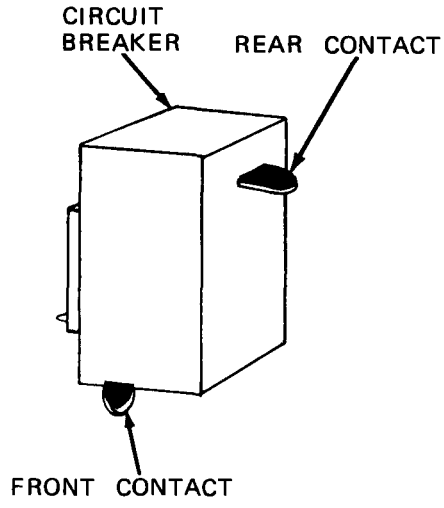
TA 114519

Figure 25-41 (Sheet 6 of 8)

GO

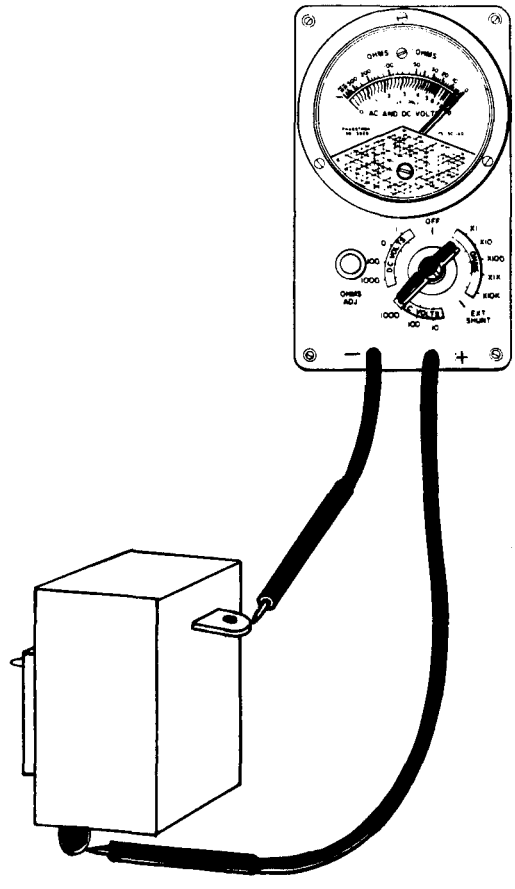
11

- Clean and test circuit breaker for continuity
  - Take off external power source from van. Refer to Vol 3, chapter 18, para 18-70
  - Take off circuit breaker. Refer to Vol 3, chapter 18, para 18-70
  - Clean front and rear contacts of circuit breaker. Refer to Vol 3, chapter 18, para 18-70



- Set multimeter to measure continuity. Refer to test equipment procedures index
- Set circuit breaker to ON
- Put multimeter + lead on front terminal of circuit breaker
- Put multimeter - lead on rear terminal of circuit breaker
- Read multimeter. Multimeter should measure less than zero ohms

Does multimeter measure zero ohms?



GO

TA 114520

Figure 25-41 (Sheet 7 of 8)

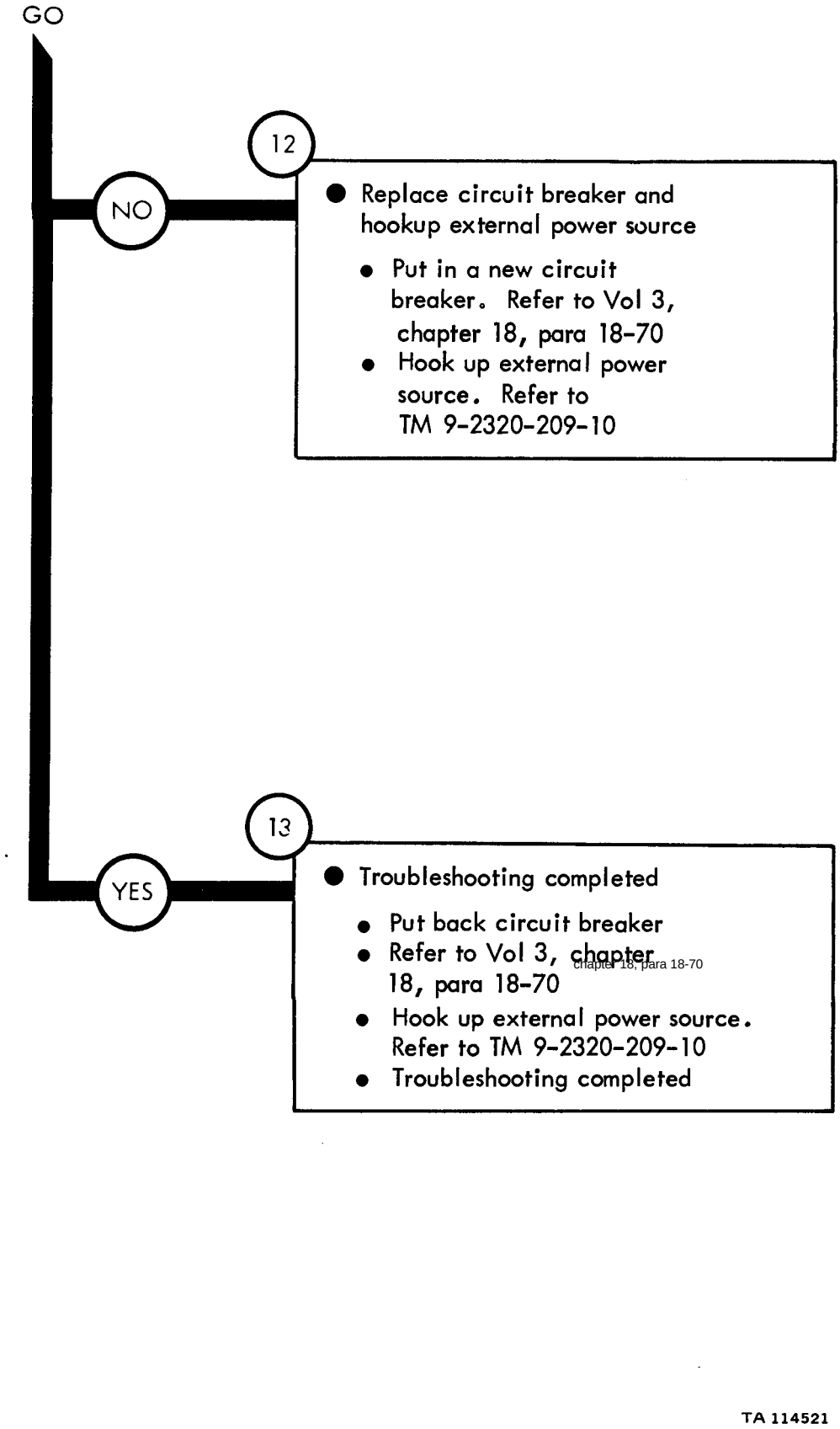


Figure 25-41 (Sheet 8 of 8)

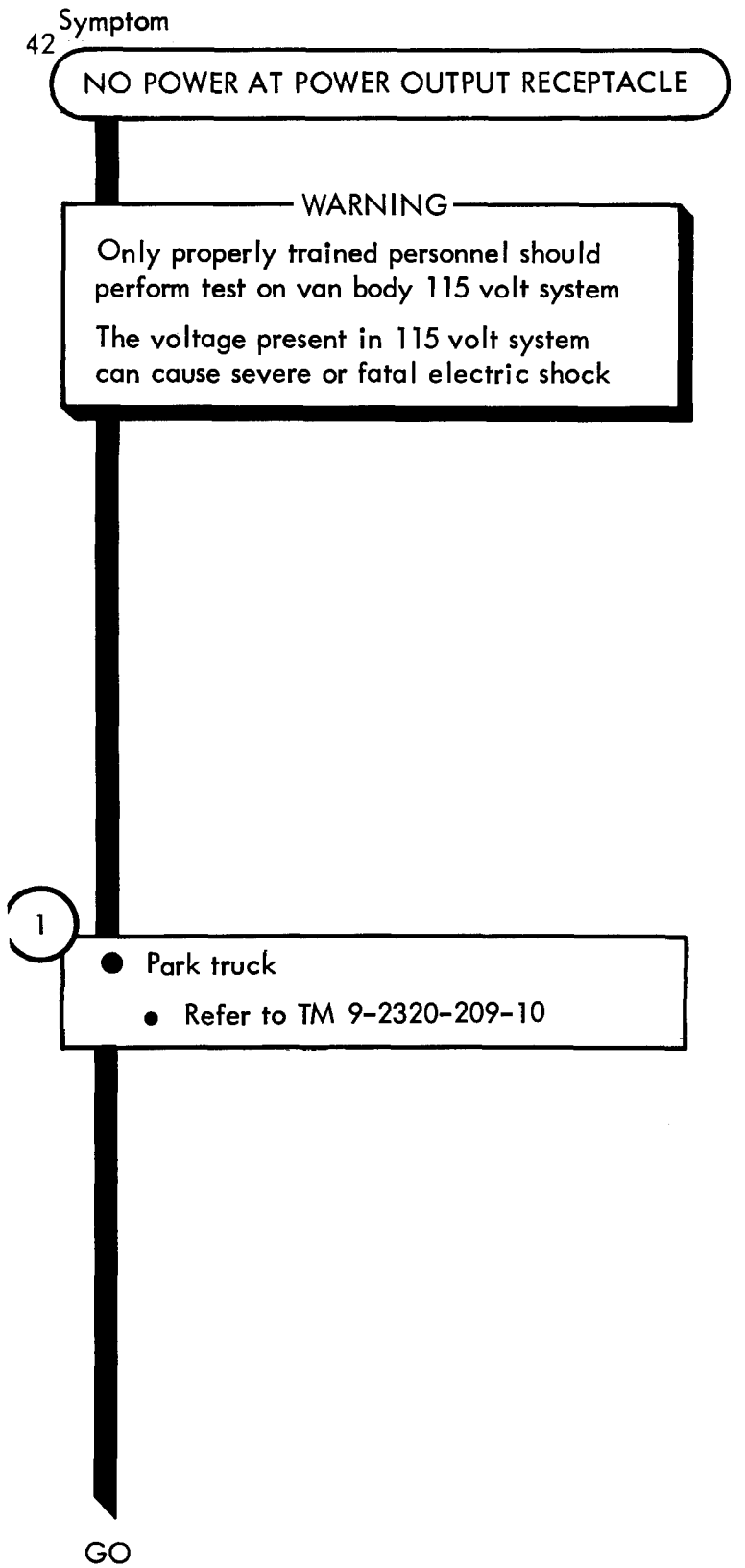


Figure 25-42 (Sheet 1 of 6)

GO

2

- Check for 115 volts AC at power output receptacle
  - Set circuit breaker to OFF
  - Take off leads 700 and 702 from power outlet receptacle
  - Set multimeter to measure 115 volts AC. Refer to test equipment procedures index

- Set circuit breaker to ON
- Put multimeter - lead on lead 700
- Put multimeter + lead on lead 702
- Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure less than 115 volts AC?

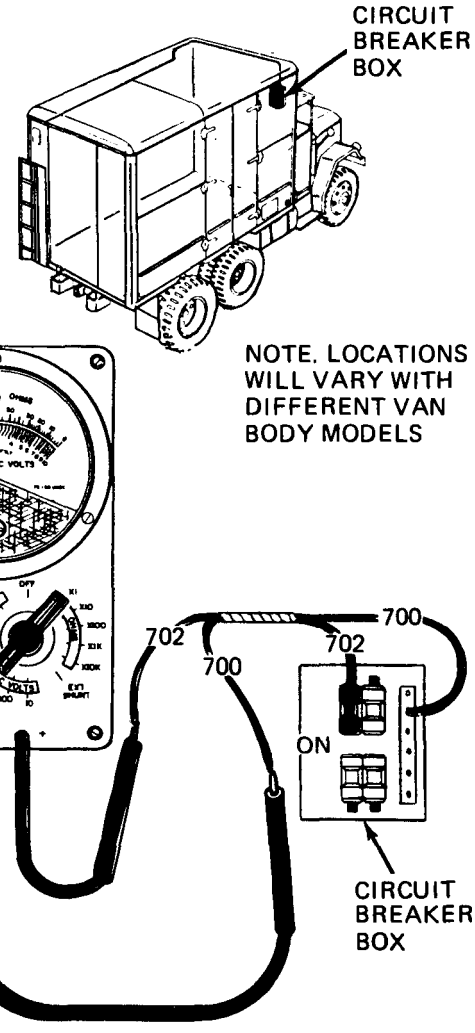
YES

NO

3

- Replace power output receptacle
  - Set circuit breaker to OFF
  - Replace power output receptacle. Tell direct support maintenance

GO



TA 114522

Figure 25-42 (Sheet 2 of 6)

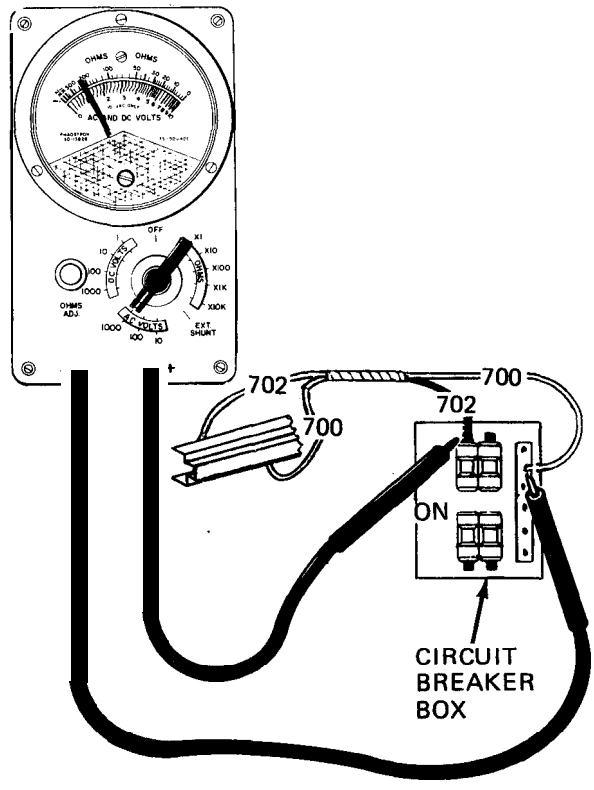
GO

4

0 Check for 115 volts AC to power outlet receptacle

- Put **multimeter** - lead on terminal strip
- Put **multimeter** + lead on circuit breaker
- Read **multimeter. Multimeter** should measure 115 volts AC

Did **multimeter** measure less than 115 volts AC?



YES

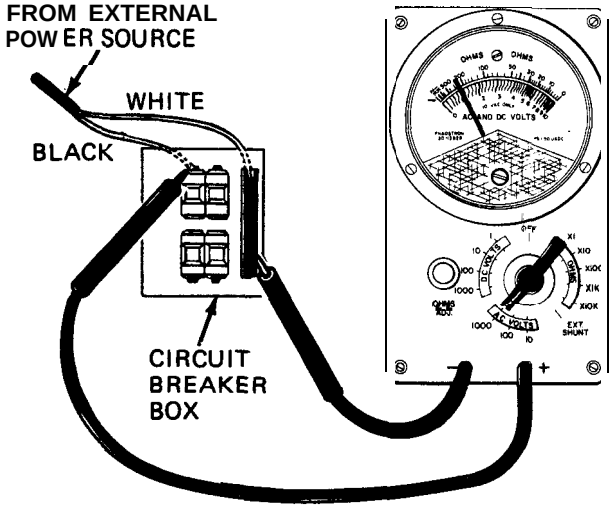
NO

6

- **Go** to step 10

5

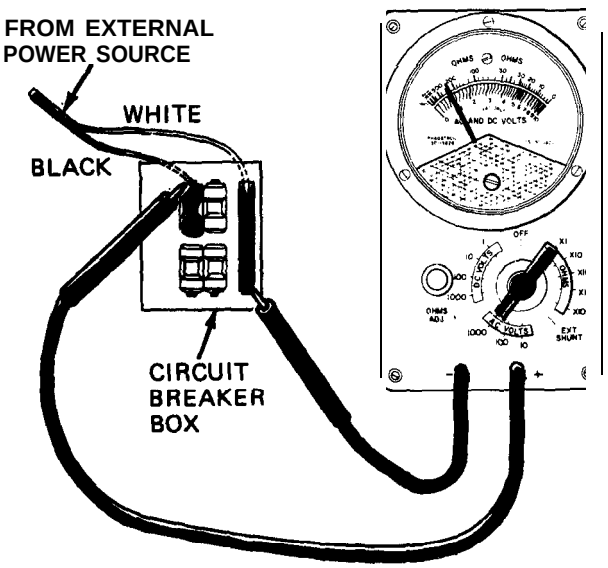
- Check for 115 volts AC at circuit breaker
  - Put loads 700 and 702 back on power **receptacle**
  - Put **multimeter** - lead on terminal strip (see picture)



NO GO

TA 114523

Figure 25-42 (Sheet 3 of 6)



NO GO

7 If multimeter measured zero volts check incoming pcwer source for 115 volts AC

- Put multimeter - lead on terminal strip
- Put multimeter + lead on black wire lead
- Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure 115 volts AC?

NO

8 Tel I direct support maintenance to check incoming power source

YES

9
- Replace circuit breaker
  - Take off external power source from trailer
  - Replace circuit breaker. Refer to Vol 3, chapter 18, para 18-70

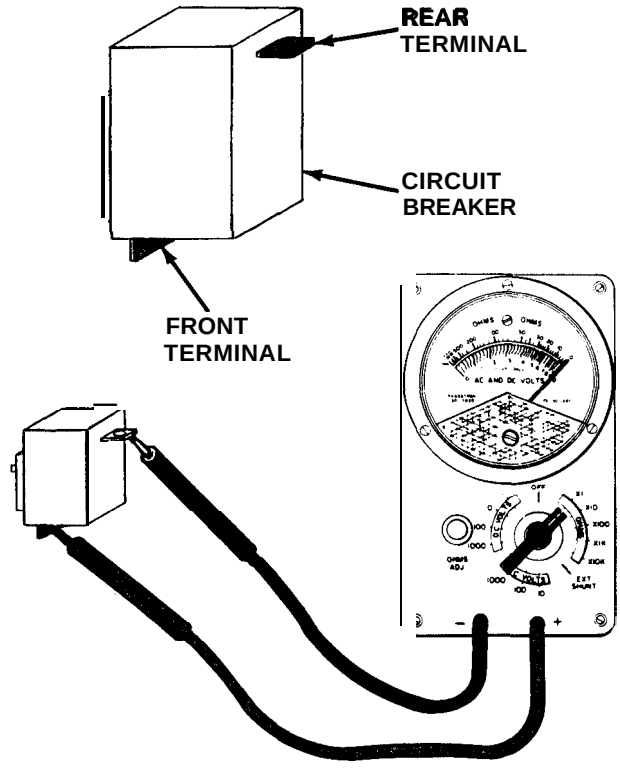
TA 114524

Figure 25-42 (Sheet 4 of 6)

From step 6

10

- Clean and test circuit breaker for continuity
  - Take off external power source to van. Refer to TM 9-2320-209-10
  - Clean front and rear terminals of circuit breaker. Refer to Vol 3, chapter 18, para 18-70
  - Set multimeter to measure continuity. Refer to test equipment procedures index
  - Set circuit breaker to ON



- Put multimeter + lead on front terminal of circuit breaker
- Put multimeter - lead on rear terminal of circuit breaker
- Read multimeter. Multi meter should measure zero ohms

Does multimeter measure zero ohms?

GO

TA 114525

Figure 25-42 (Sheet 5 of 6)

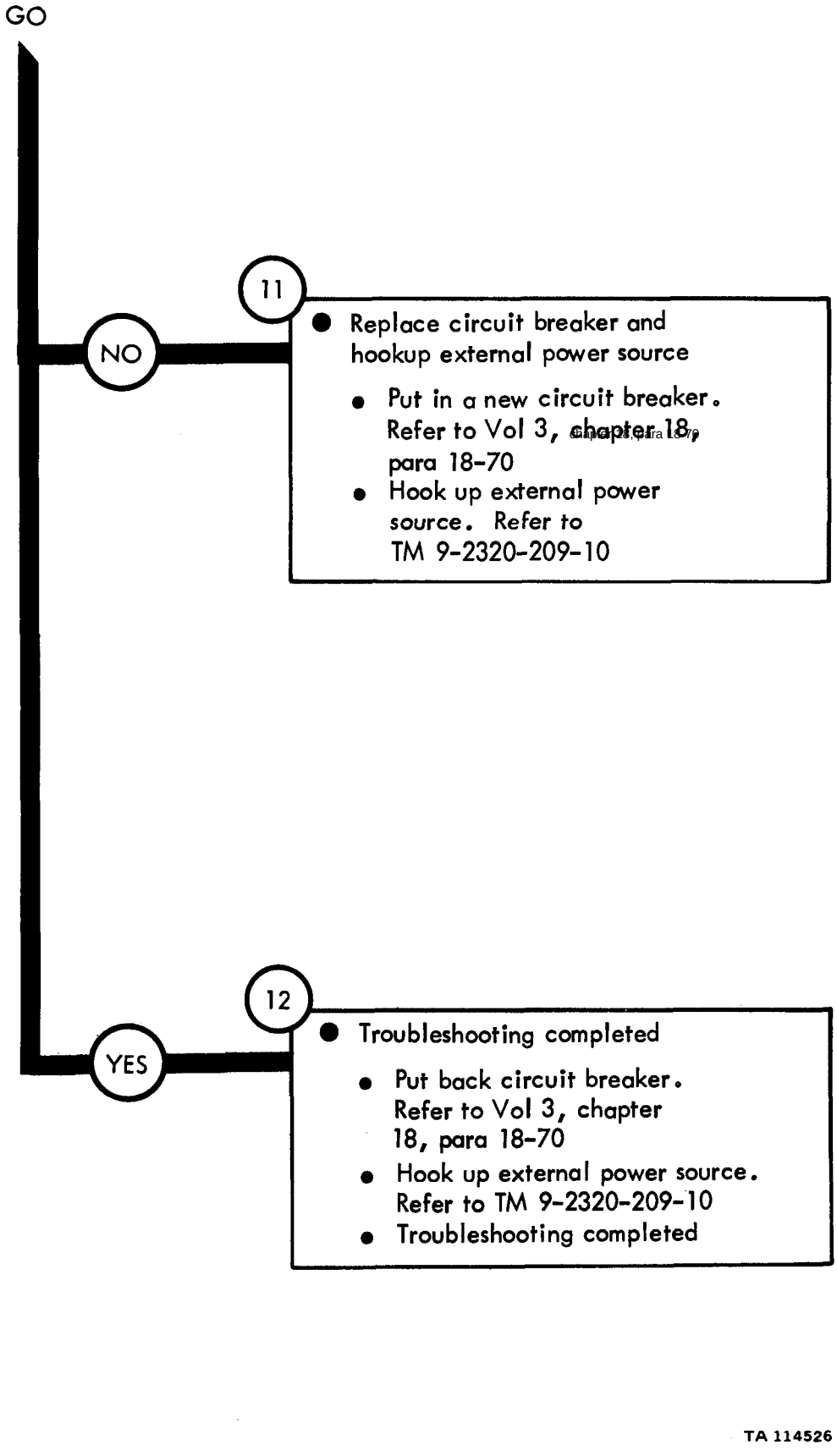


Figure 25-42 (Sheet 6 of 6)

Symptom

43 NO POWER AVAILABLE WHEN CIRCUIT BREAKER IS TURNED ON

WARNING

Only properly trained personnel should perform test on 115 volt AC systems

The voltage present in 115 volt system cause severe or fatal electric shock

1

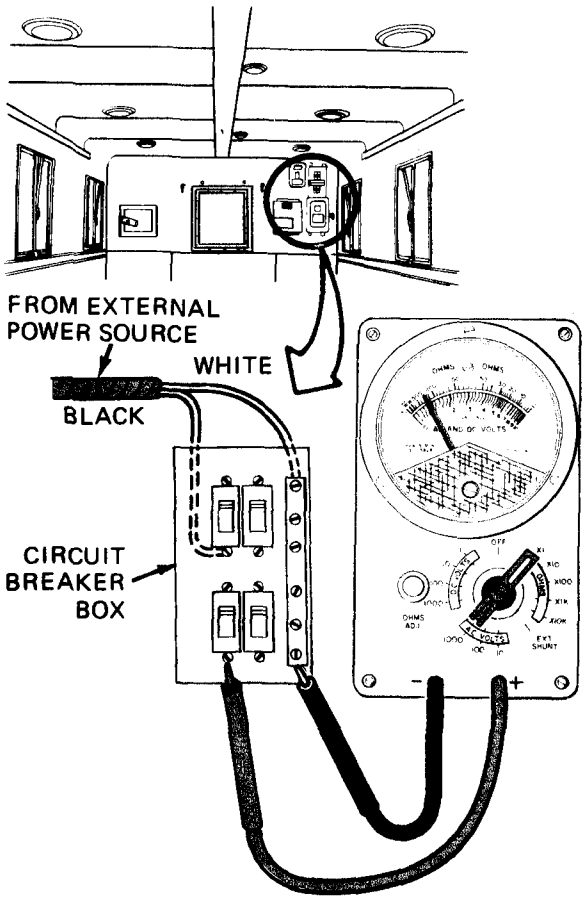
- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for 115 volts AC at circuit breaker
  - Set circuit breaker to ON
  - Set multimeter to measure 115 volts AC. Refer to test equipment procedures index
  - Put multimeter - lead on terminal strip
  - Put multimeter + lead on front bottom terminal of circuit breaker
  - Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure 115 volts AC?

GO



TA 114527

Figure 25-43 (Sheet 1 of 4)

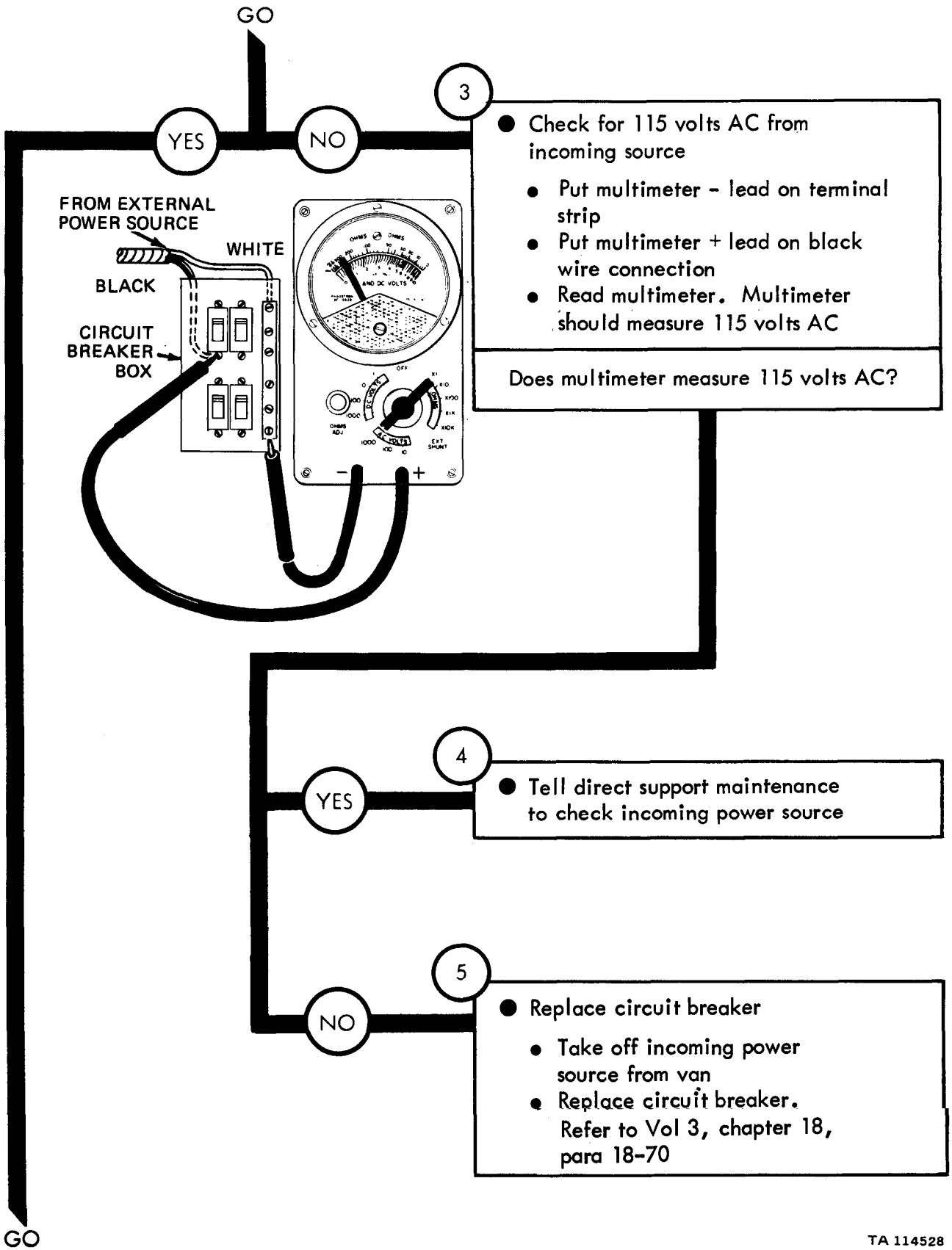
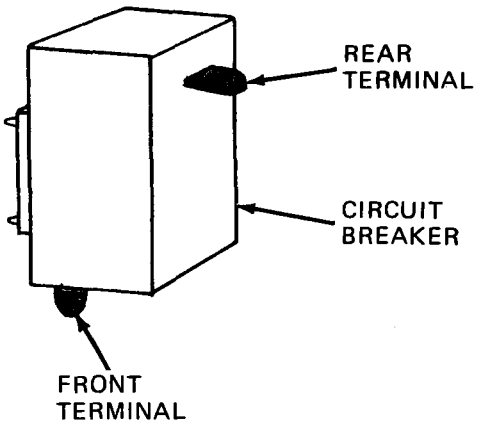


Figure 25-43 (Sheet 2 of 4)

GO

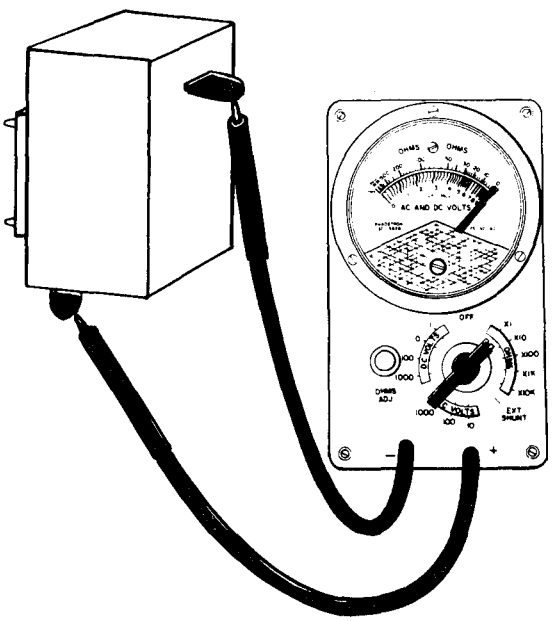
6

- Clean and check circuit breaker for continuity
  - Take off power source to van
  - Take off circuit breaker from circuit breaker box. Refer to Vol 3, chapter 18, para 18-70
  - Clean front and rear terminals of circuit breaker. Refer to Vol 3, chapter 18, para 18-70
  - Set circuit breaker to ON



- Set multimeter to measure continuity. Refer to test equipment procedures index
- Put multimeter - lead on rear terminal of circuit breaker
- Put multimeter + lead on front terminal of circuit breaker
- Read multimeter. Multimeter should measure zero ohms

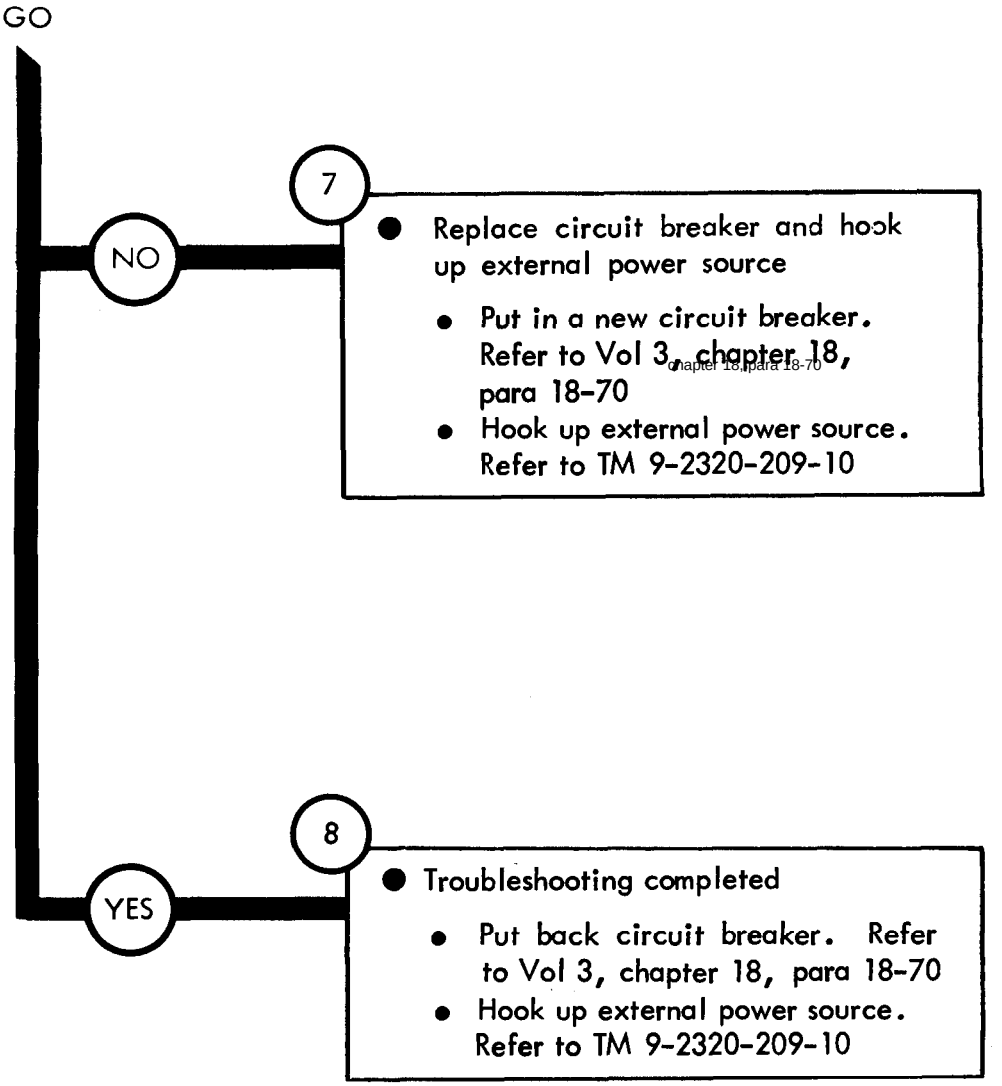
Does multimeter measure more than zero ohms?



GO

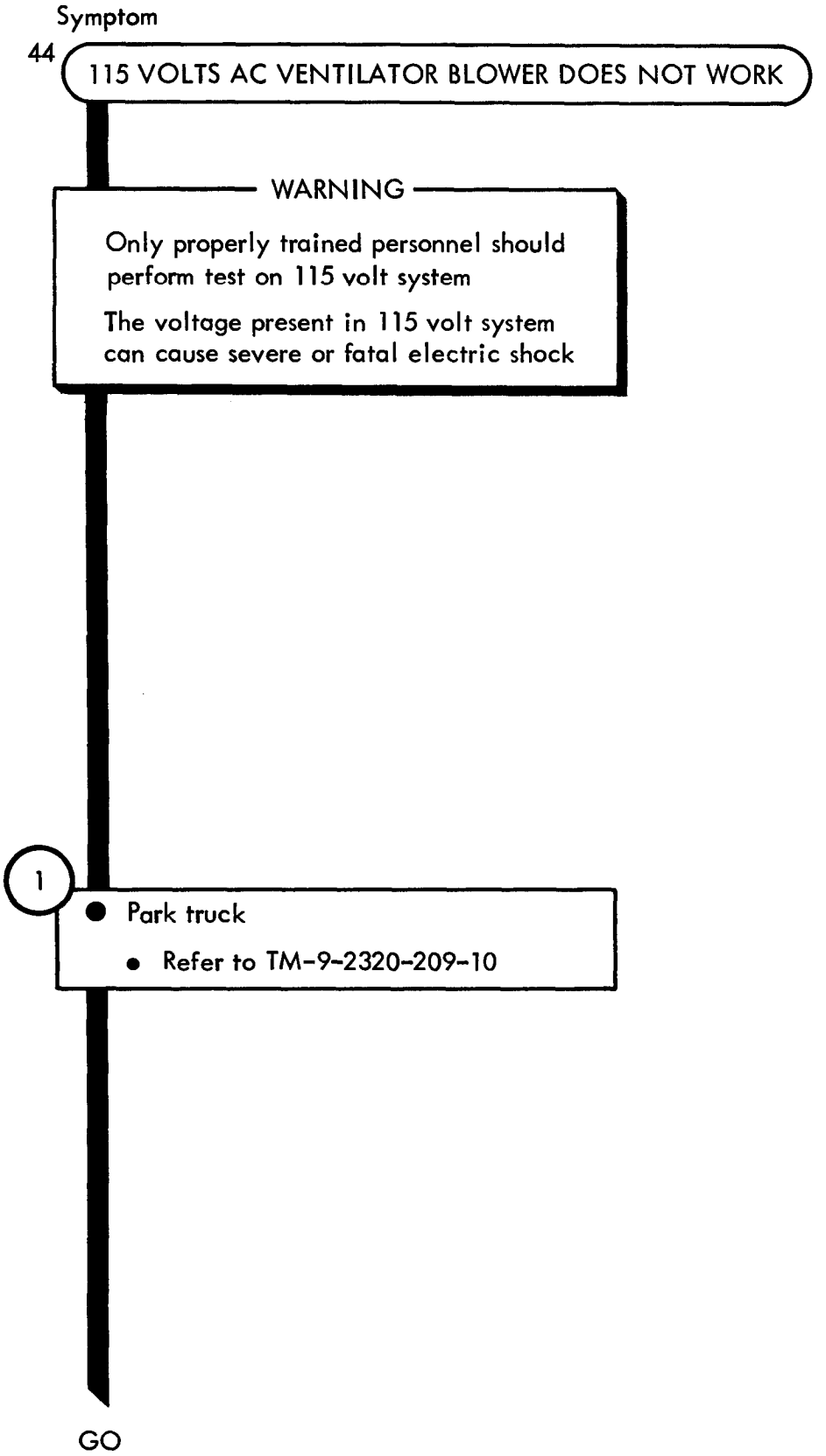
TA 114529

Figure 25-43 (Sheet 3 of 4)



TA 114530

Figure 25-43 (Sheet 4 of 4)



TA 114531

Figure 25-44 (Sheet 1 of 5)

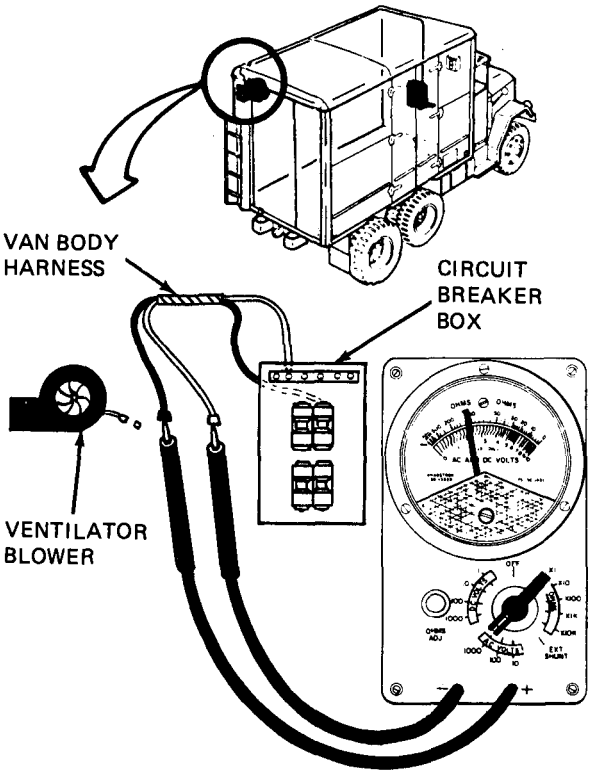
GO

2

- Check circuit to ventilator blower
  - Set circuit breaker to OFF
  - Take off two leads from blower
  - Set circuit breaker to ON

- Set multimeter to measure 115 volts AC. Refer to test equipment procedures index
- Put multimeter - lead on one blower lead
- Put multimeter + lead on other blower lead
- Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure 115 volts AC?



YES

NO

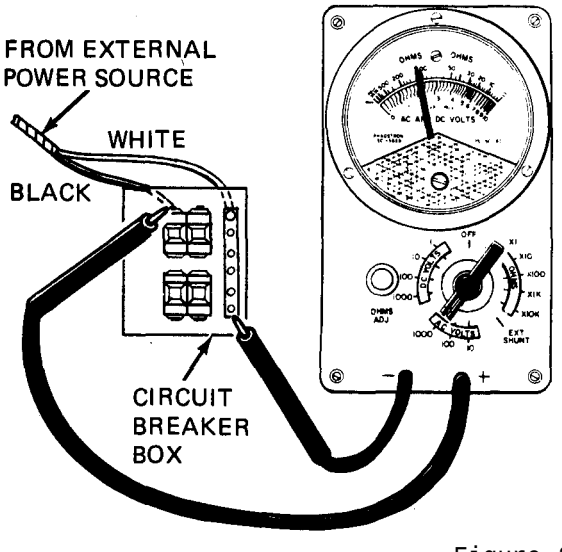
3

- Check for 115 volts AC at circuit breaker
  - Set circuit breaker on ON
  - Put multimeter - lead on terminal strip
  - Put multimeter + lead on front bottom terminal of circuit breaker
  - Read multimeter. Multimeter should measure 115 volts AC

Does multimeter measure 115 volts AC?

4

- Go to step 11



NO GO

TA 114532

Figure 25-44 (Sheet 2 of 5)

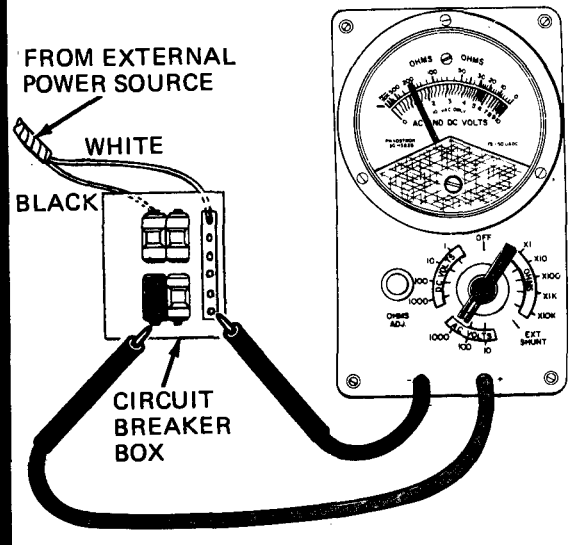
NO GO

5

NO

- Check for 115 volts AC from incoming source
  - Put multimeter - lead on terminal strip
  - Put multimeter + lead on black wire connection
  - Read multimeter. Multimeter should measure 115 volts AC?

Does multimeter measure 115 volts AC?



6

NO

- Tell direct support maintenance to check incoming power source

7

YES

- Replace circuit breaker
  - Take off incoming power source from van
  - Replace circuit breaker. Refer to Vol 3, chapter 18, para 18-70

NO GO

TA 114533

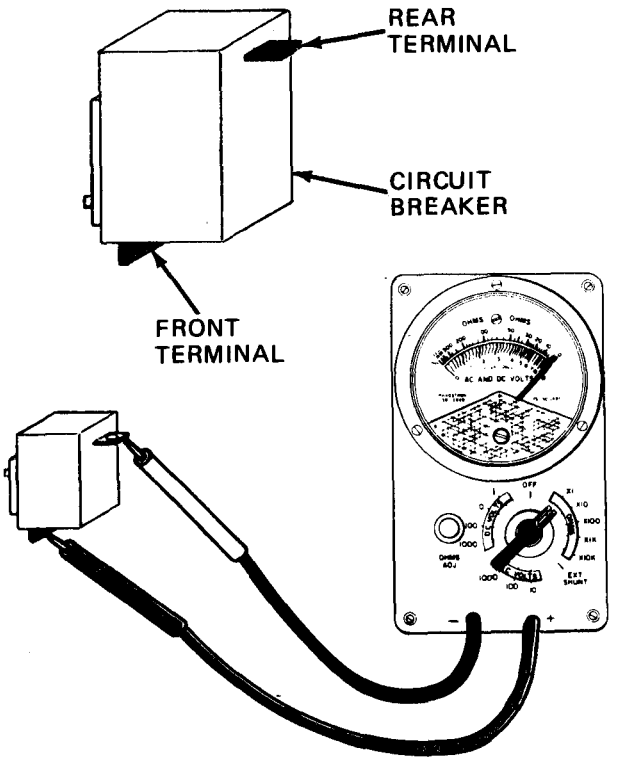
Figure 25-44 (Sheet 3 of 5)

NO GO

YES

8

- Clean and check circuit breaker for continuity
  - Take off power source from van
  - Take off circuit breaker from circuit breaker box. Refer to Vol 3, chapter 18, para 18-70
  - Clean front and rear terminals of circuit breaker
  - Set circuit breaker to ON



TS 209-20-734

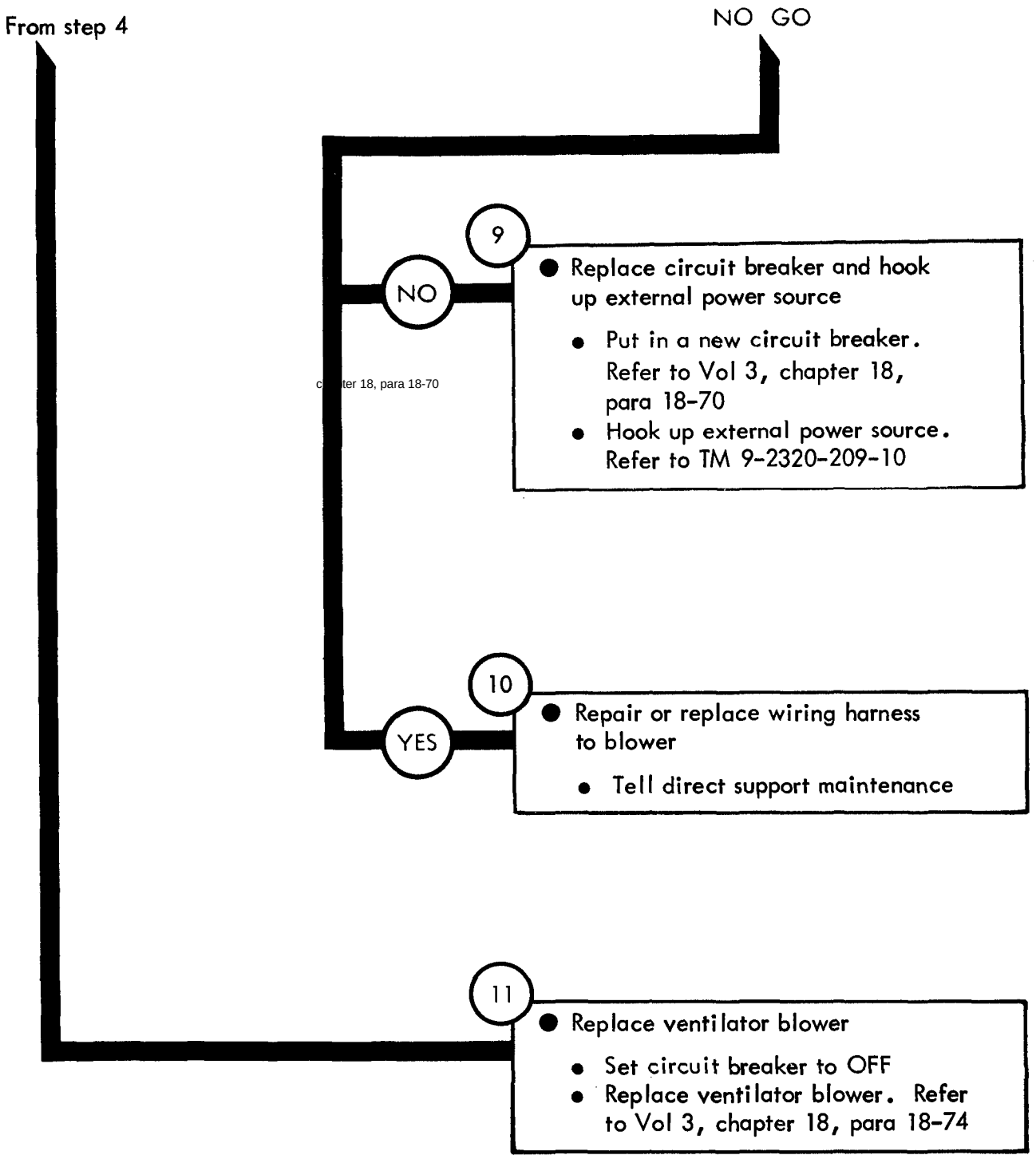
- Set multimeter to check continuity. Refer to test equipment procedures index
- Put multimeter - lead on rear terminal of circuit breaker
- Put multimeter + lead on front terminal of circuit breaker
- Read multimeter. Multimeter should measure zero ohms

Does multimeter measure more than zero ohms?

NO GO

TA 114534

Figure 25-44 (Sheet 4 of 5)



TA 114535

Figure 25-44 (Sheet 5 of 5)

Symptom

45 HOT WATER PERSONNEL HEATER DEFROSTER OPERATES IN "HI" POSITION ONLY

NOTE

When measuring voltage +24 volts DC means a range of +23 to +26 volts DC

1

- Park truck
  - Refer to TM 9-2320-209-10

2

- Test heater blower system
  - Set heater switch in "LO" position
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on "LO" contact on rear of switch
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

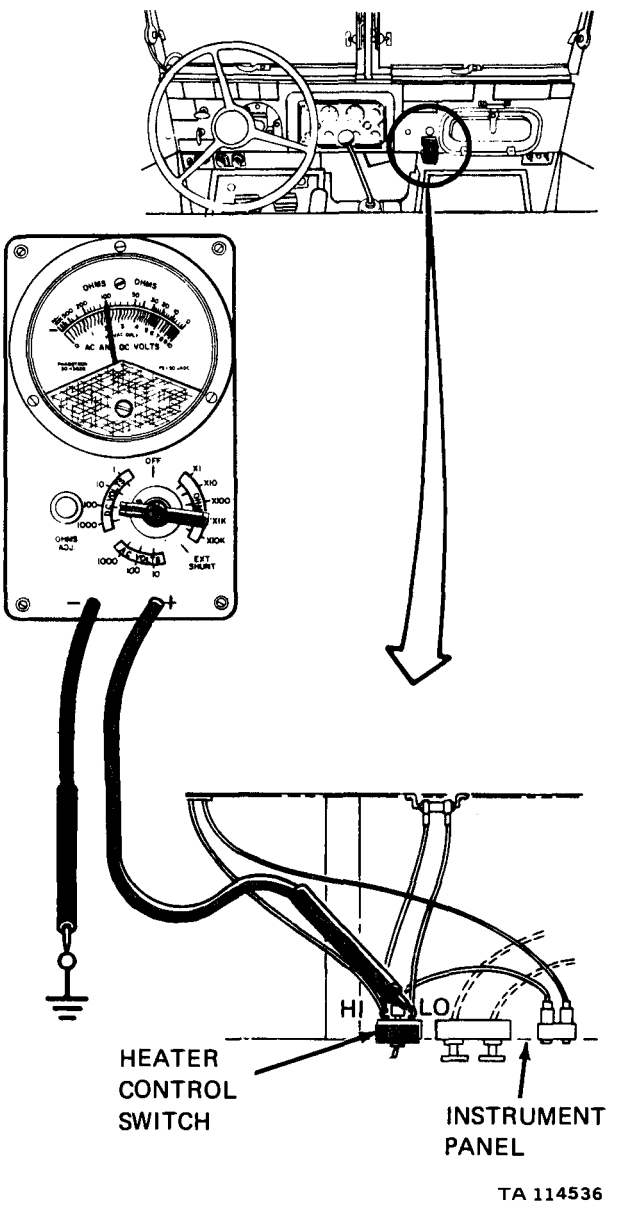


Figure 25-45 (Sheet 1 of 12)

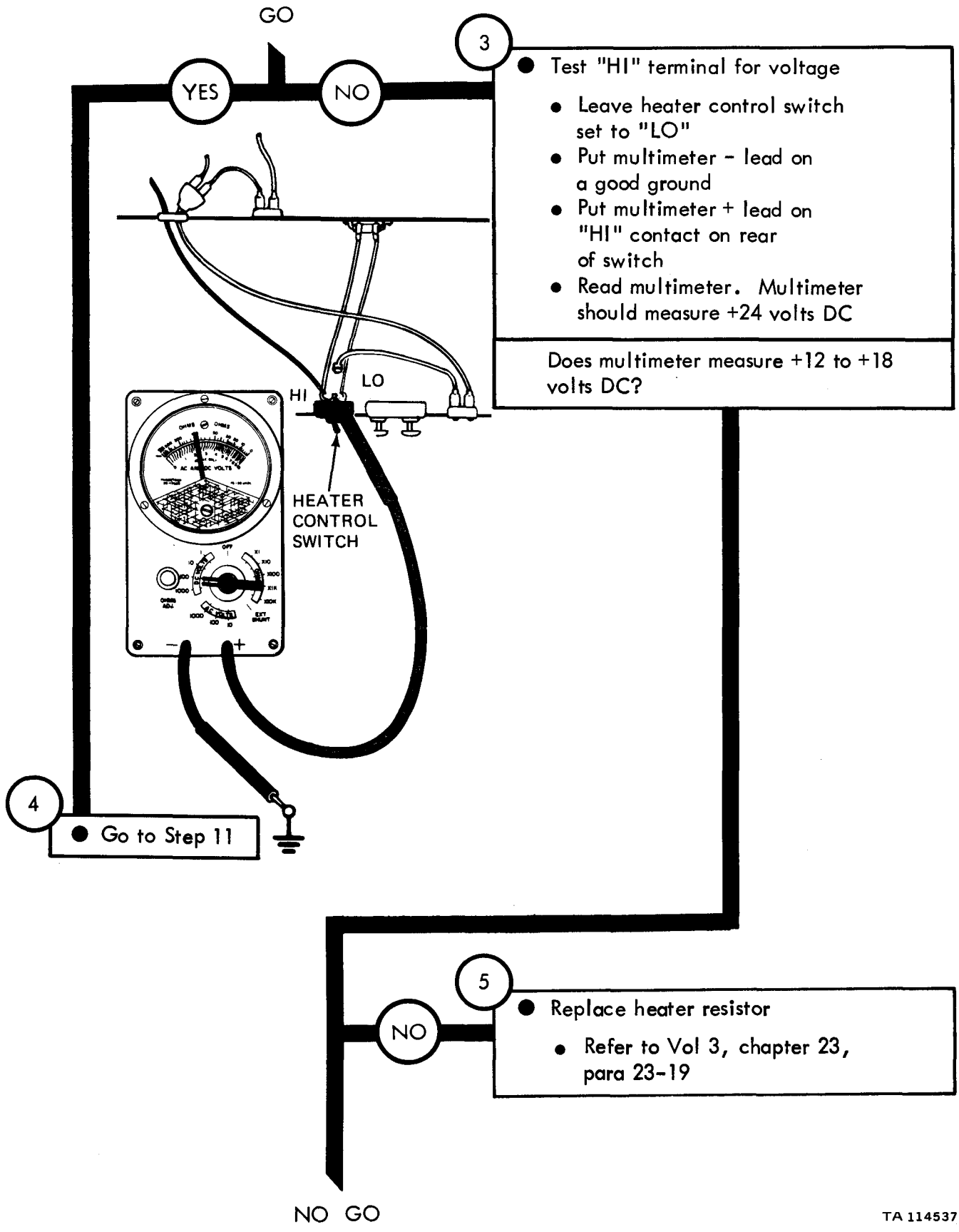
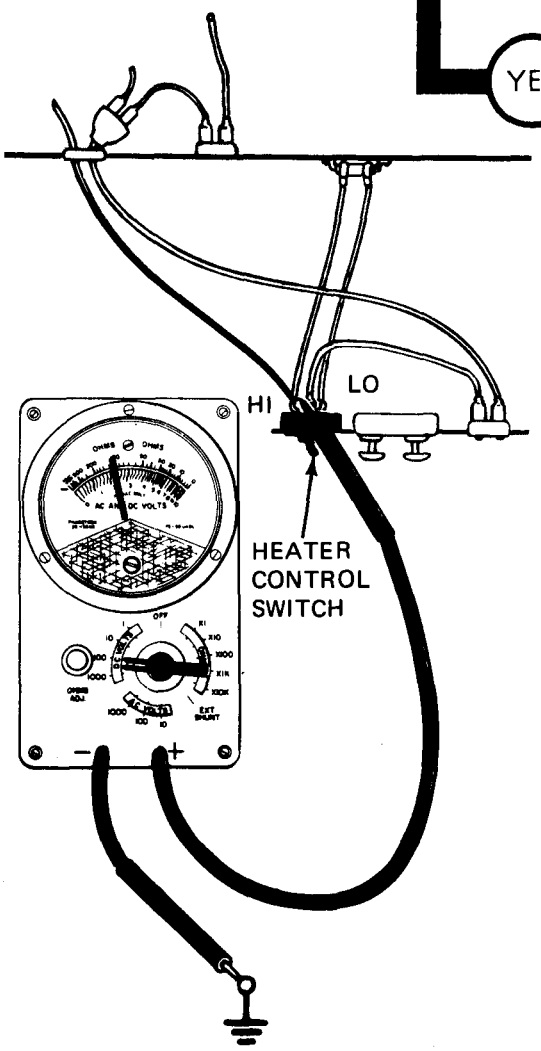


Figure 25-45 (Sheet 2 of 12)



NO GO

YES

6

- Test heater control switch when set to "HI" for +24 volts DC
  - Set heater control switch to "HI"
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on "HI" terminal on rear of switch
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

NO

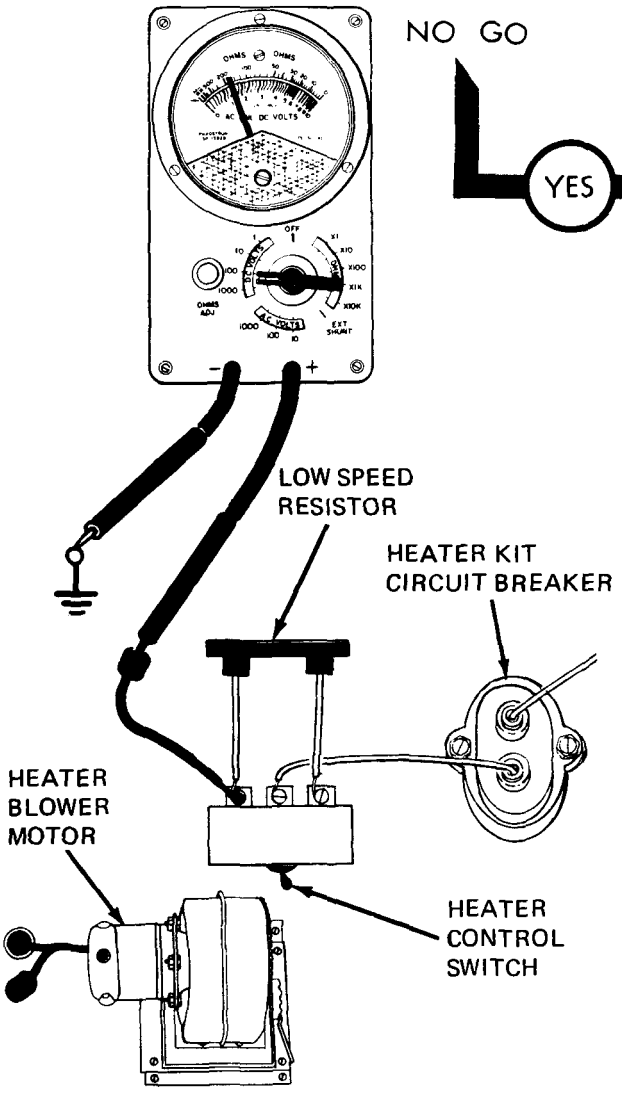
7

- Replace heater control switch
  - Refer to Vol 3, chapter 23, para 23-17

NO GO

TA 114538

Figure 25-45 (Sheet 3 of 12)



NO GO

8

YES

- Test blower motor
  - Take off lead from heater control switch at the blower motor
  - Set heater control switch to "LO"
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead removed from blower motor
  - Read multimeter. Multimeter should measure +12 to +18 volts DC

Does multimeter measure +12 to +18 volts DC?

9

NO

- Replace lead from heater control switch to blower motor
  - Refer to Vol 3, chapter 23, para 23-20

chapter 23, para 23-20

10

YES

- Replace blower motor
  - Refer to Vol 3, chapter 23, para 23-20

TA 114539

Figure 25-45 (Sheet 4 of 12)

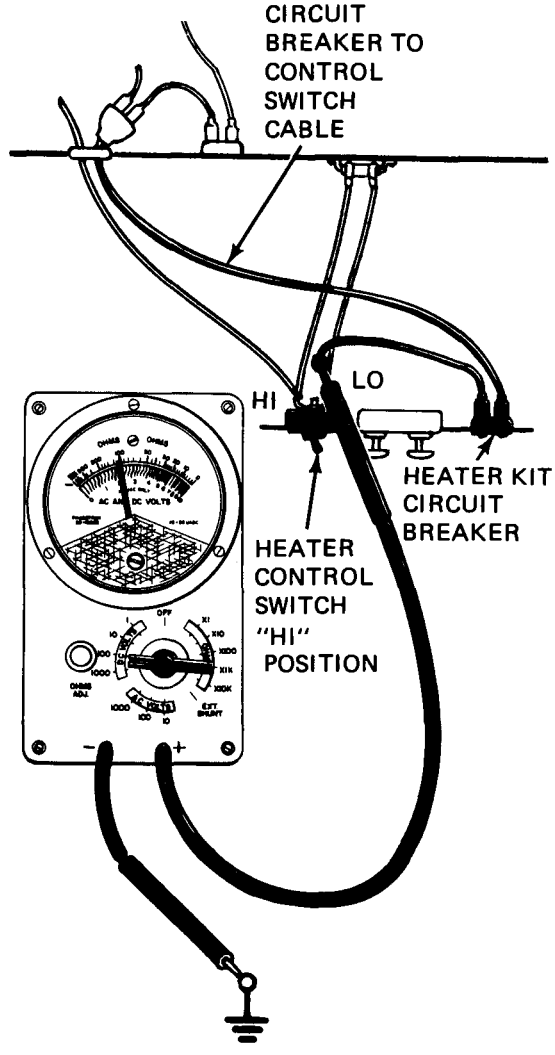
From step 4

11

- Check for voltage from batteries through heater control switch
  - Take off circuit breaker to control switch cable from center terminal of heater control switch
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in contact of cable
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114540

Figure 25-45 (Sheet 5 of 12)

GO

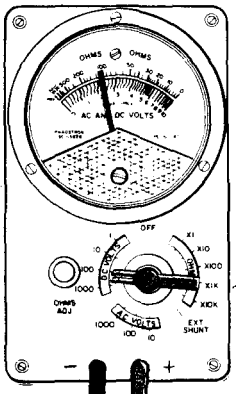
YES

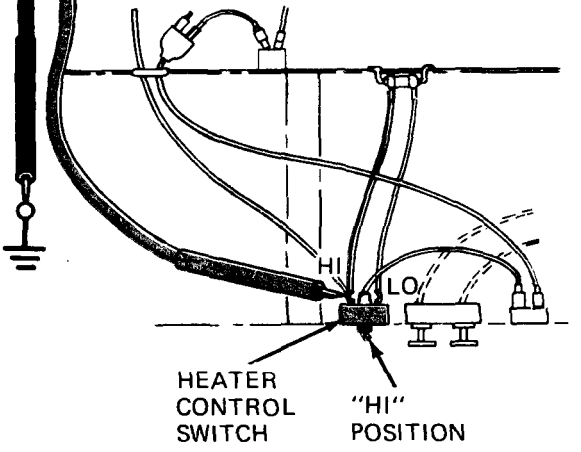
NO

12

- Test heater control switch when set to "HI"
  - Put circuit breaker to control switch cable back on center contact of heater control switch
  - Set heater control switch to "HI"
  - Put multimeter - lead on a good ground
  - Put multimeter + lead to "HI" contact on rear of switch
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?





13

- Go to step 18

14

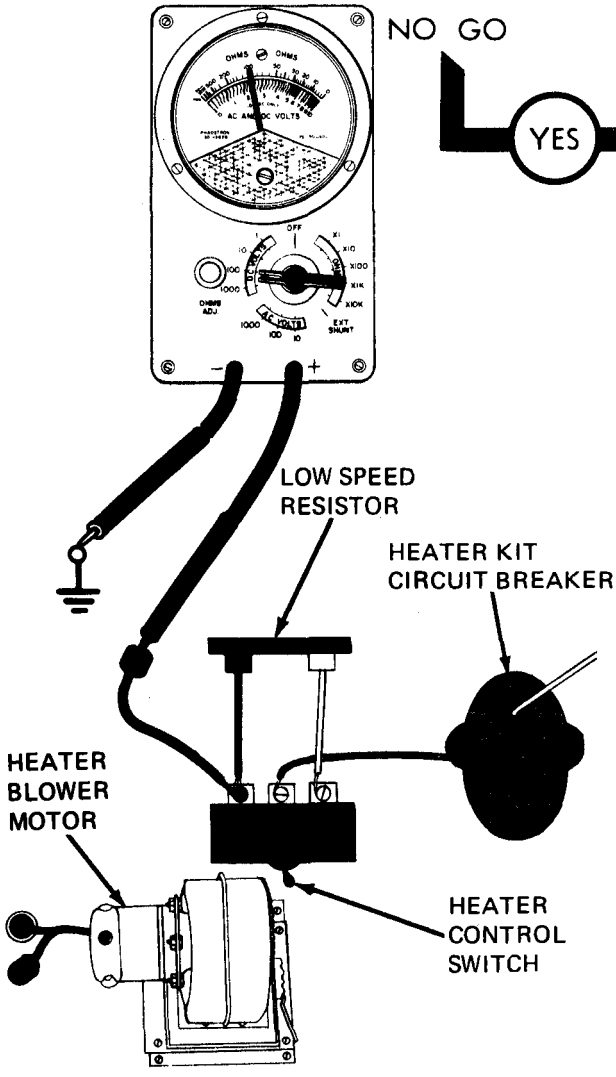
NO

- Replace heater control switch
  - Refer to Vol 3, chapter 22, para 22-17

NO GO

TA 114541

Figure 25-45 (Sheet 6 of 12)



NO GO

15

YES

- Test blower motor
  - Take off lead from heater control switch to blower motor at blower motor
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead removed from blower motor
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

16

NO

- Repair or replace lead from heater control switch to blower motor
  - Refer to Vol 3, chapter 23, para 23-20

chapter 23, para 23-20

17

YES

- Replace blower motor
  - Refer to Vol 3, chapter 23, para 23-20

TA 114542

Figure 25-45 (Sheet 7 of 12)

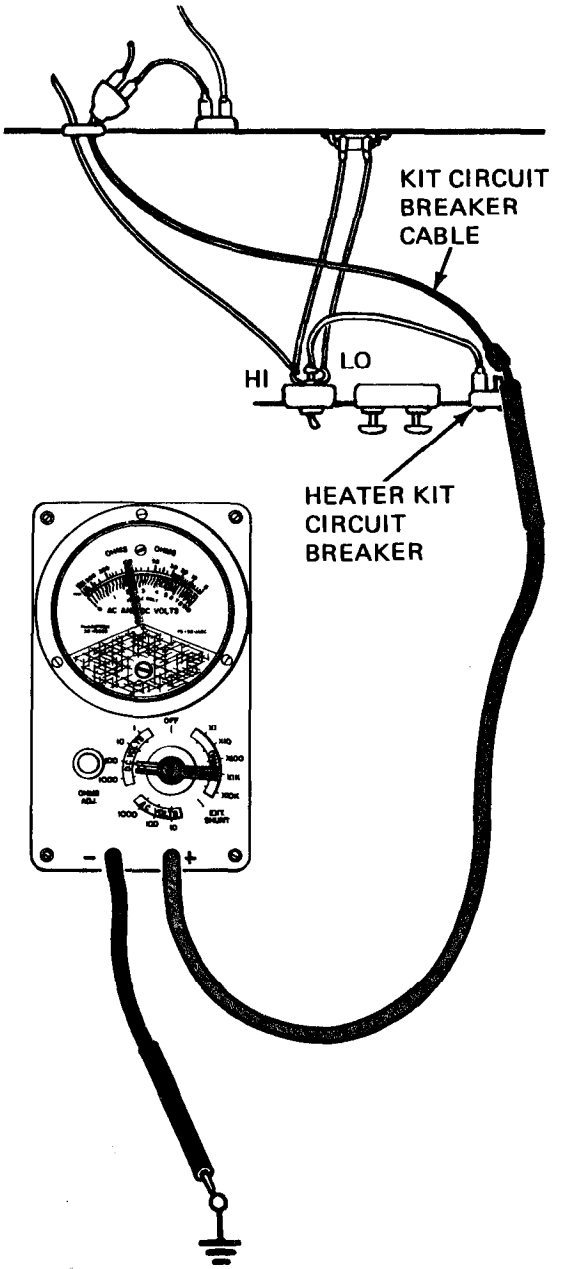
From step 13

18

- Check for +24 volts DC to heater kit circuit breaker
  - Put circuit breaker to control switch cable back on center contact of heater control switch
  - Take off lead from "Y" connector to heater kit circuit breaker at heater kit circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead to circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114543

Figure 25-45 (Sheet 8 of 12)

GO

YES

NO

19

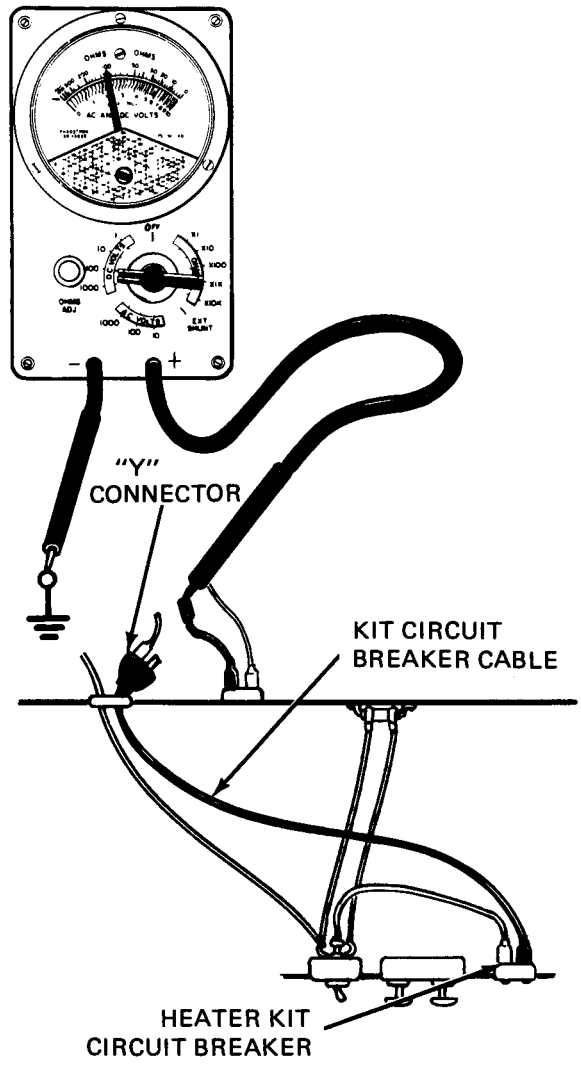
- Replace heater kit circuit breaker
  - Refer to Vol 3, chapter 7, para 7-16

20

- Check lead from truck circuit breaker to "Y" connector
  - On engine side of firewall take off lead from vehicle circuit breaker to "Y" connector at "Y" connector
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead from vehicle circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114544

Figure 25-45 (Sheet 9 of 12)

GO

YES

NO

21

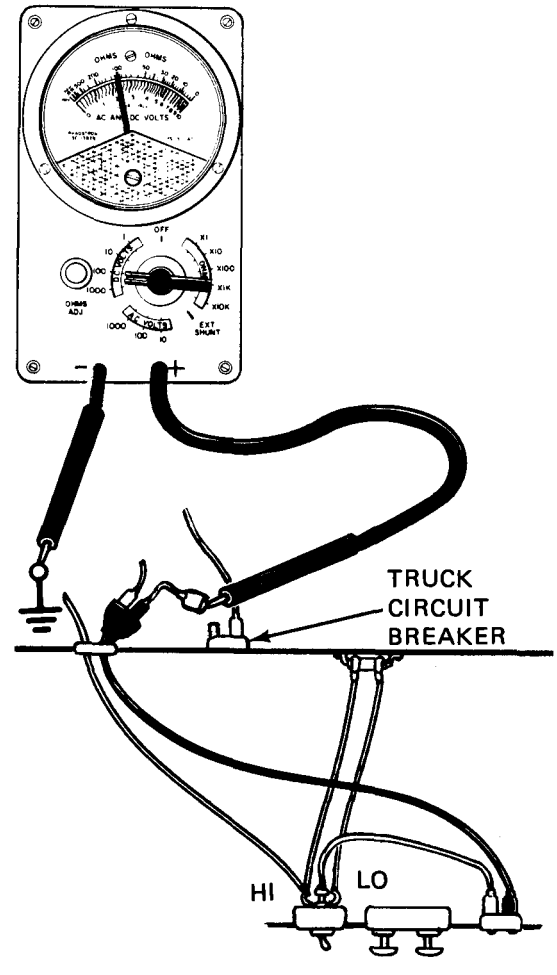
- Repair or replace "Y" connector lead
  - Refer to Vol 3, chapter 7, para 7-16

22

- Check lead from truck circuit breaker to "Y" connector
  - Put "Y" connector lead back on contact of heater kit circuit breaker
  - Take off truck circuit breaker to "Y" connector lead at truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of truck circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114545

Figure 25-45 (Sheet 10 of 12)

GO

YES

NO

23

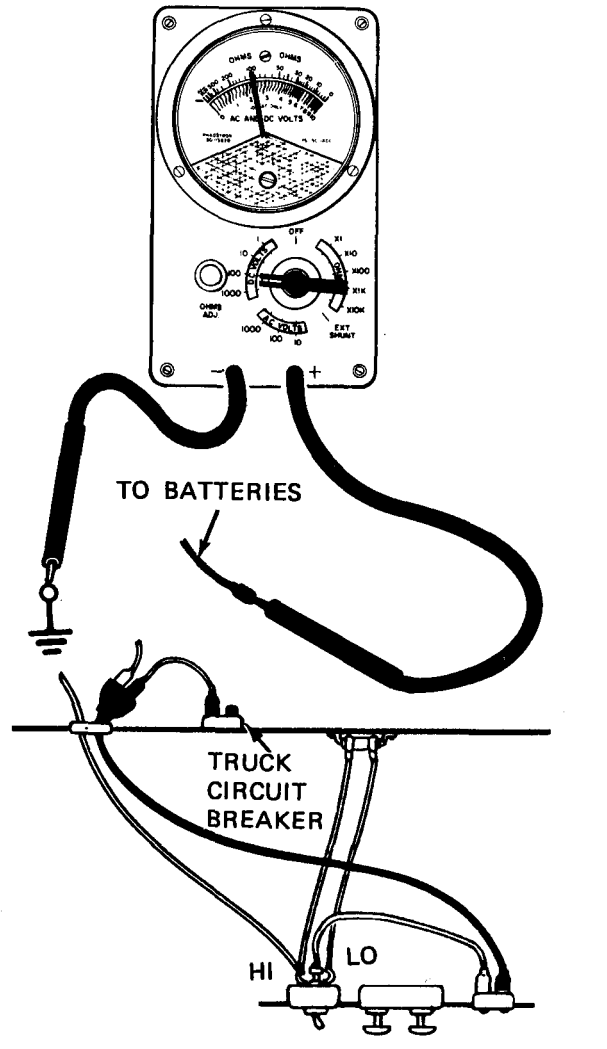
- Repair or replace lead from truck circuit breaker to "Y" connector
  - Refer to Vol 3, chapter 7, para 7-16

24

- Check lead from front harness to circuit breaker
  - Put lead from truck circuit breaker to "Y" connector back on truck circuit breaker and "Y" connector
  - Take off front harness lead from other contact of truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on front harness lead contact
  - Read multimeter. Multimeter should measure +24 volts DC

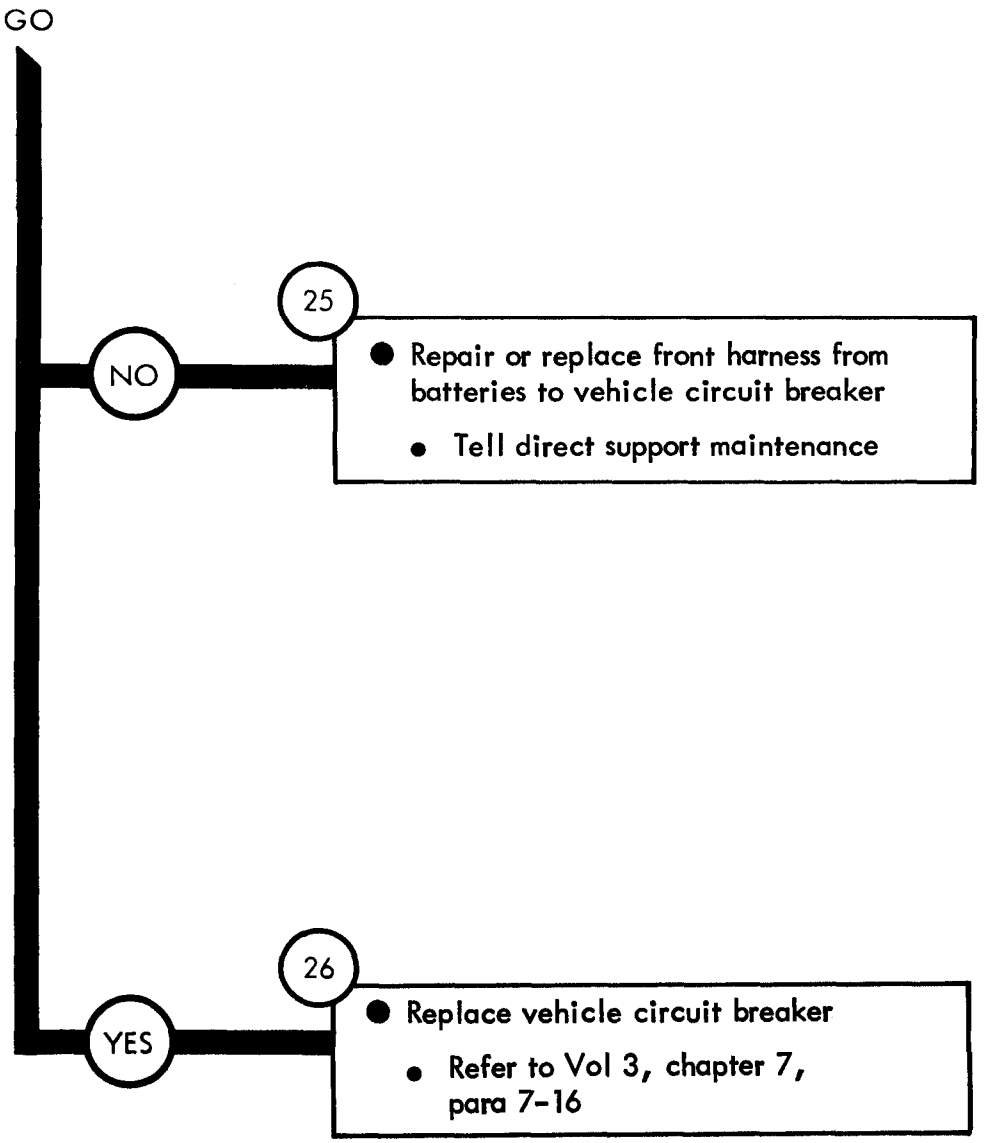
Does multimeter measure +24 volts DC?

GO



TA 114546

Figure 25-45 (Sheet 11 of 12)



TA 114547

Figure 25-45 (Sheet 12 of 12)

Symptom

46 HOT WATER PERSONNEL HEATER DEFROSTER OPERATES IN "LO" POSITION ONLY

NOTE

When measuring voltage +24 volts DC means a range of +23 to +26 volts DC

1

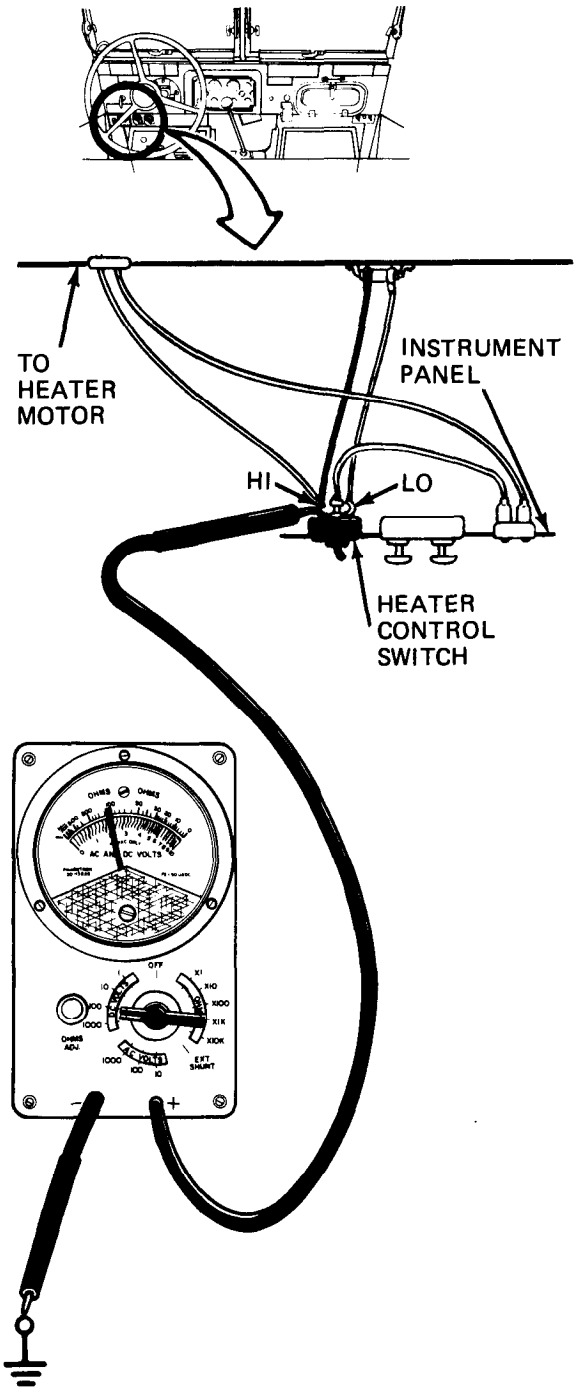
- Park truck
  - Refer to TM 9-2320-209-10

2

- Check for +24 volts to heater switch
  - Set heater switch to "HI"
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on "HI" contact on rear of heater switch
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114548

Figure 25-46 (Sheet 1 of 16)

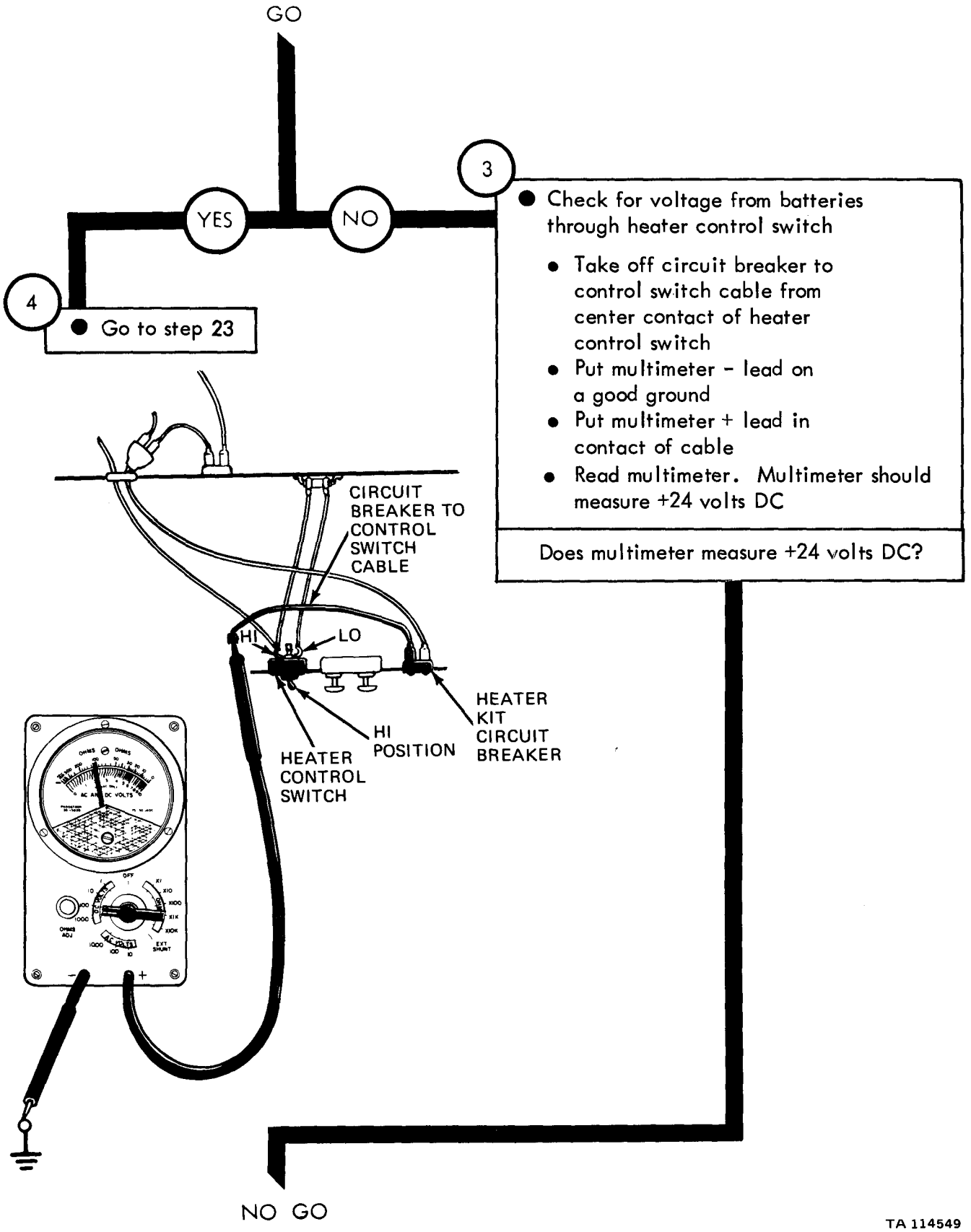


Figure 25-46 (Sheet 2 of 16)

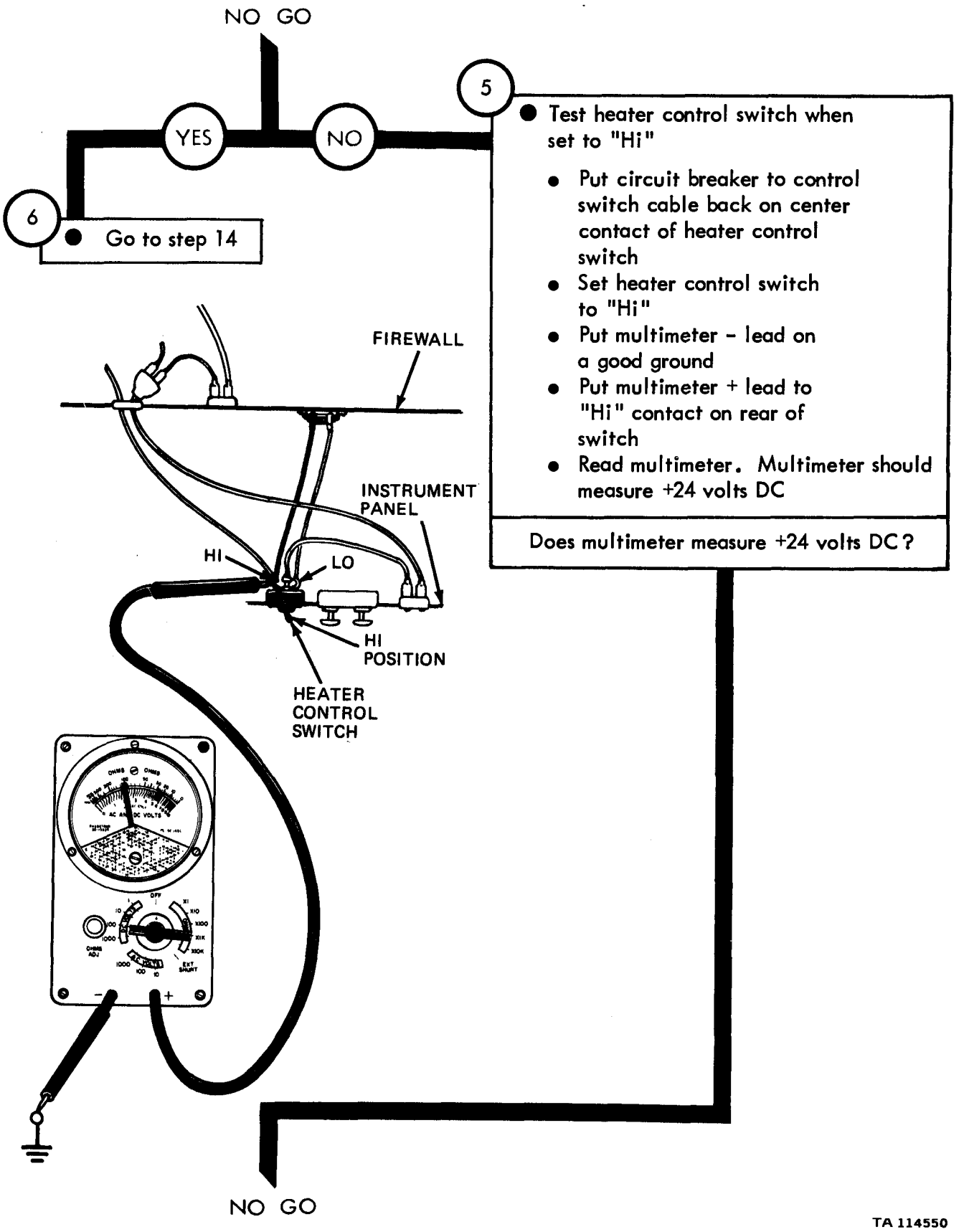


Figure 25-46 (Sheet 3 of 16)

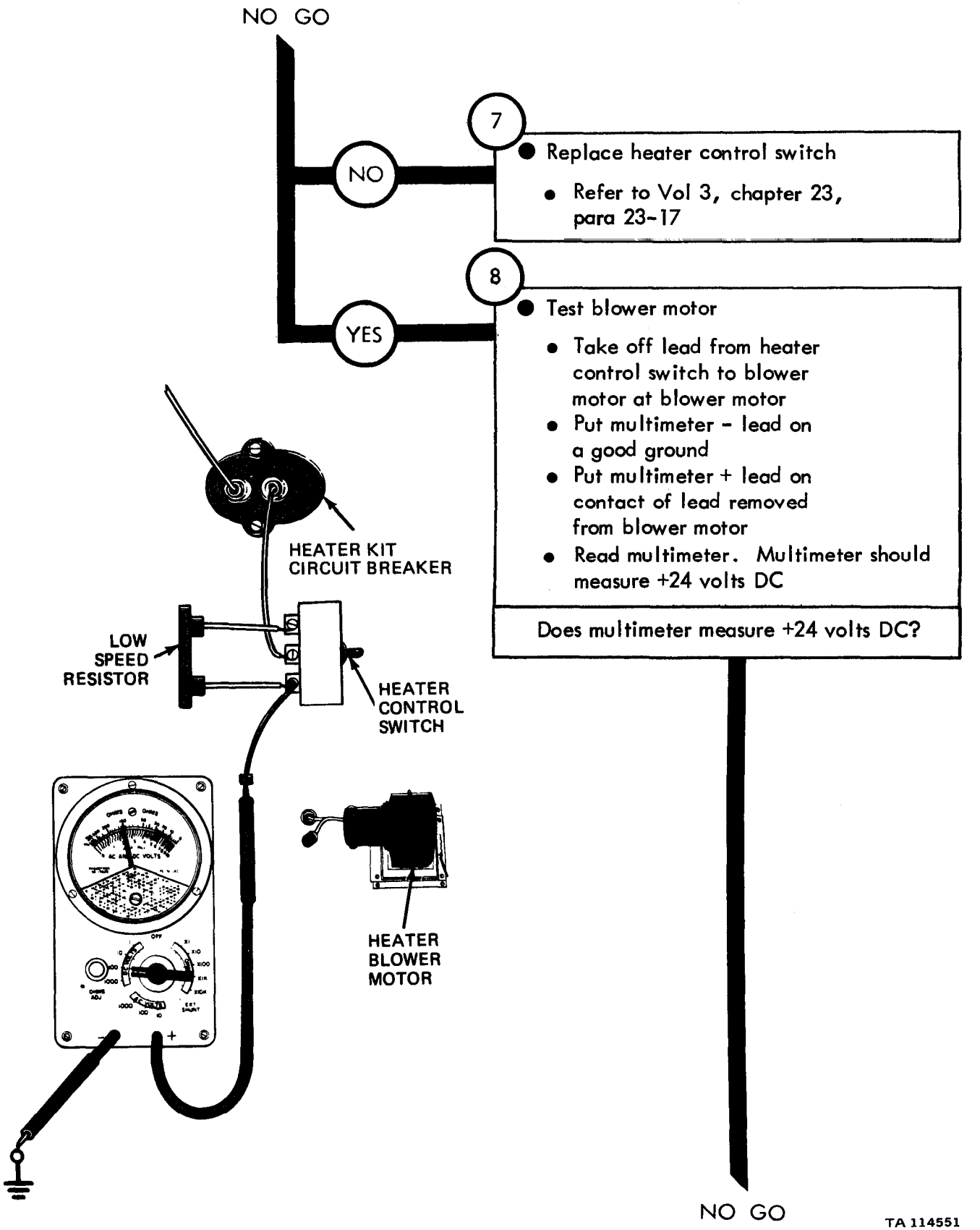


Figure 25-46 (Sheet 4 of 16)

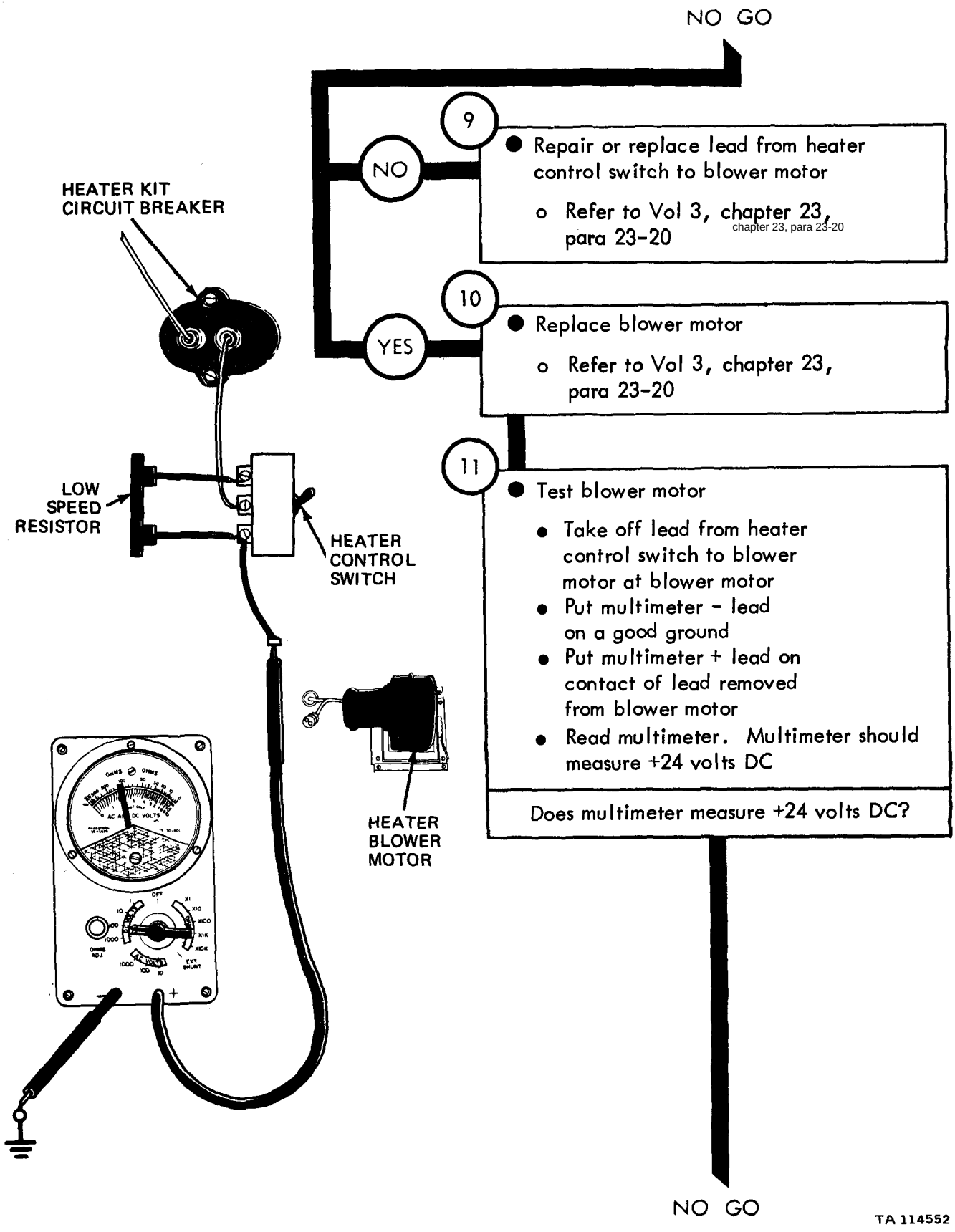
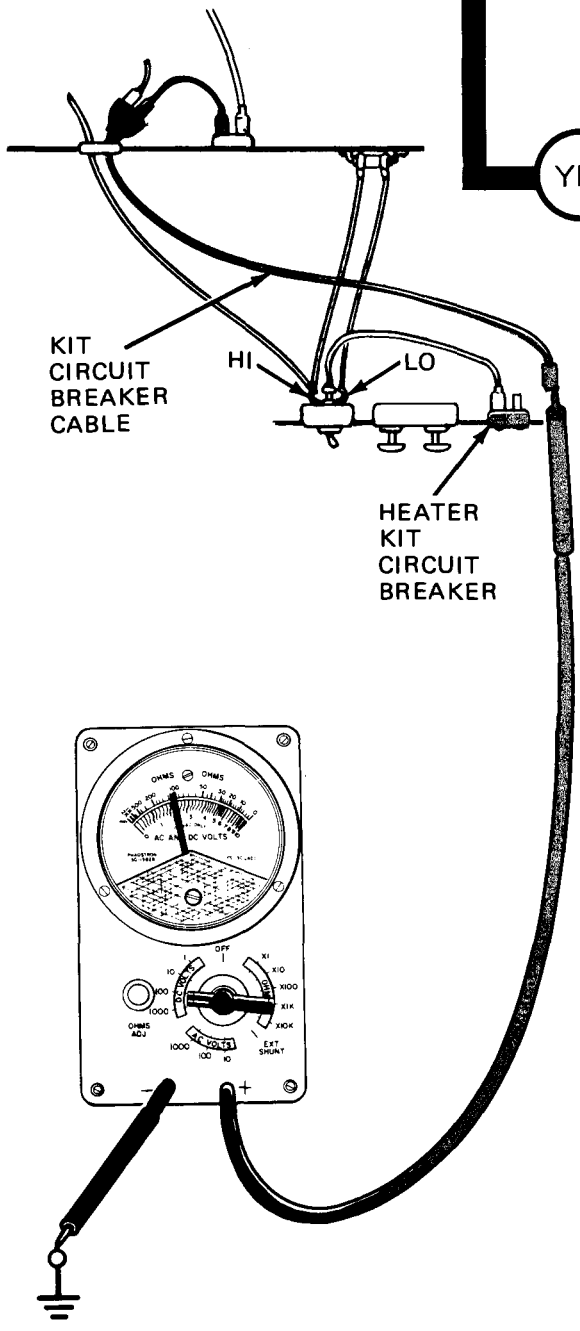


Figure 25-46 (Sheet 5 of 16)



NO GO

12

NO

- Repair or replace lead from heater control switch to blower motor
  - Refer to Vol 3, chapter 23, para 23-20 and 23-17

chapter 23, para 23-20 and 23-17

13

YES

- Replace blower motor
  - Refer to Vol 3, chapter 23, para 23-20

14

- Check for +24 volts DC to heater kit circuit breaker
  - Put circuit breaker to control switch cable back on center terminal of heater control switch
  - Take off lead from "Y" connector to heater kit circuit breaker at heater kit circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead to circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

NO GO

TA 114553

Figure 25-46 (Sheet 6 of 16)

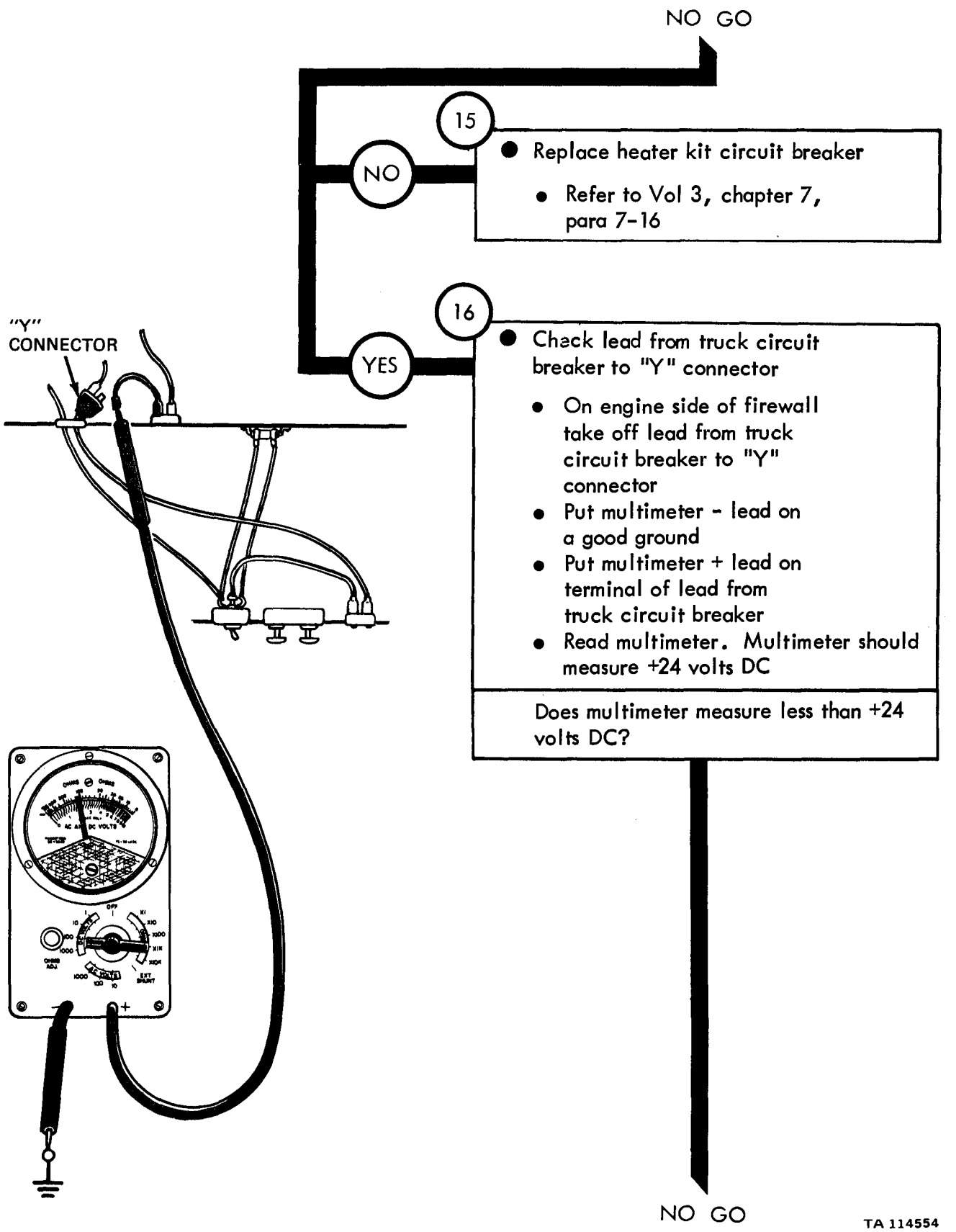
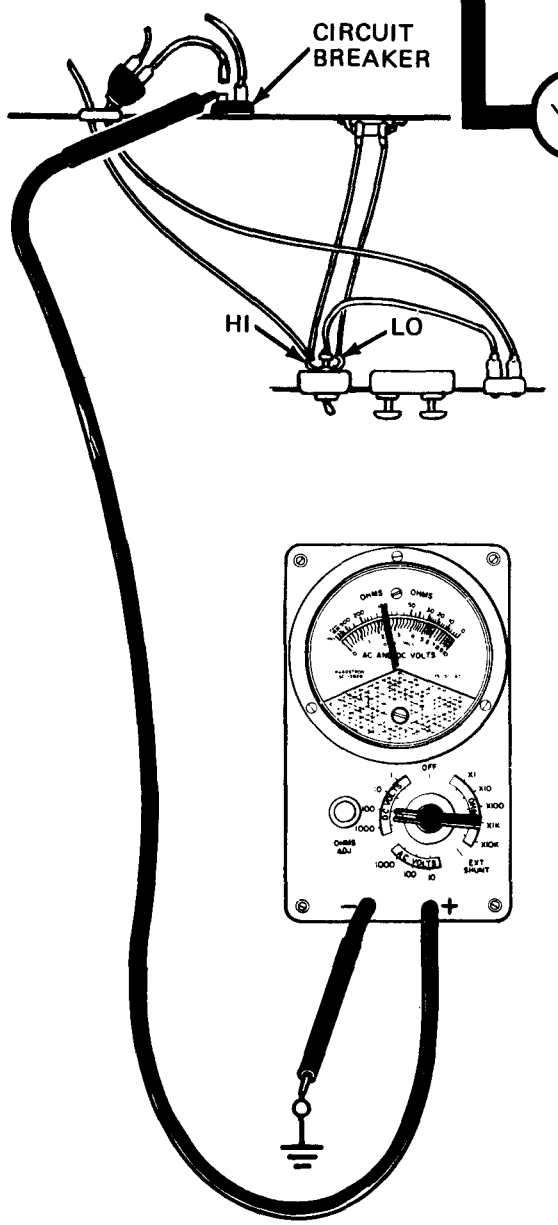


Figure 25-46 (Sheet 7 of 16)



NO GO

17

NO

- Repair or replace "Y" connector lead
  - Refer to Vol 3, chapter 7, para 7-16

18

YES

- Check lead from truck circuit breaker to "Y" connector
  - Put "Y" connector lead back on contact of heater kit circuit breaker
  - Take off truck circuit breaker to "Y" connector lead at truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on terminal of truck circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

NO GO

TA 114555

Figure 25-46 (Sheet 8 of 16)

NO GO

19

NO

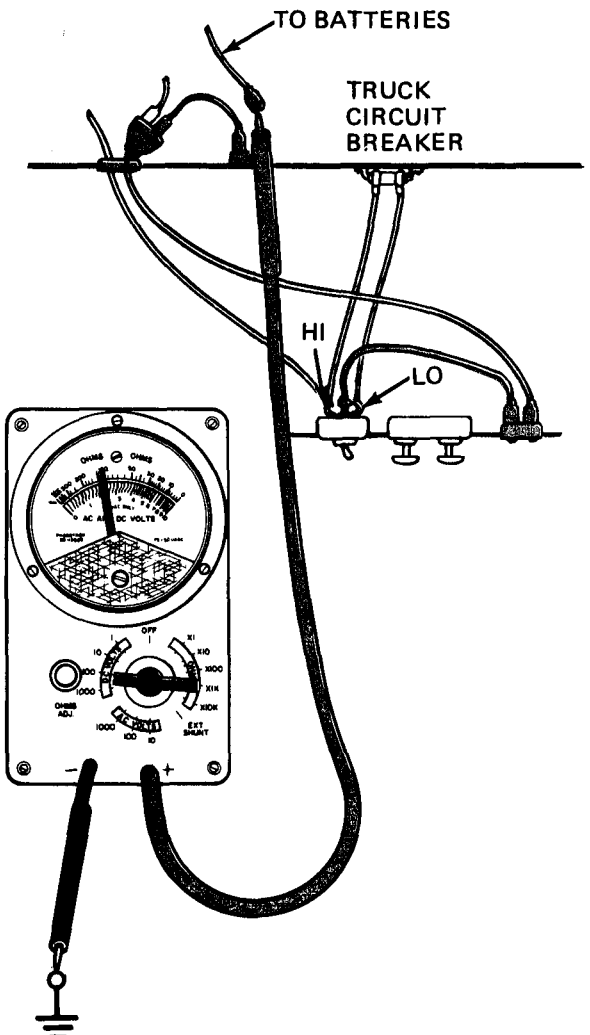
- Repair or replace lead from truck circuit breaker to "Y" connector
  - Refer to Vol 3, chapter 7, para 7-16

20

YES

- Check lead from front harness to circuit breaker
  - Put lead from truck circuit breaker to "Y" connector back on truck circuit breaker and "Y" connector
  - Take off front harness lead from other terminal of truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on front harness lead contact
  - Read multimeter. Multimeter should measure +24 volts DC

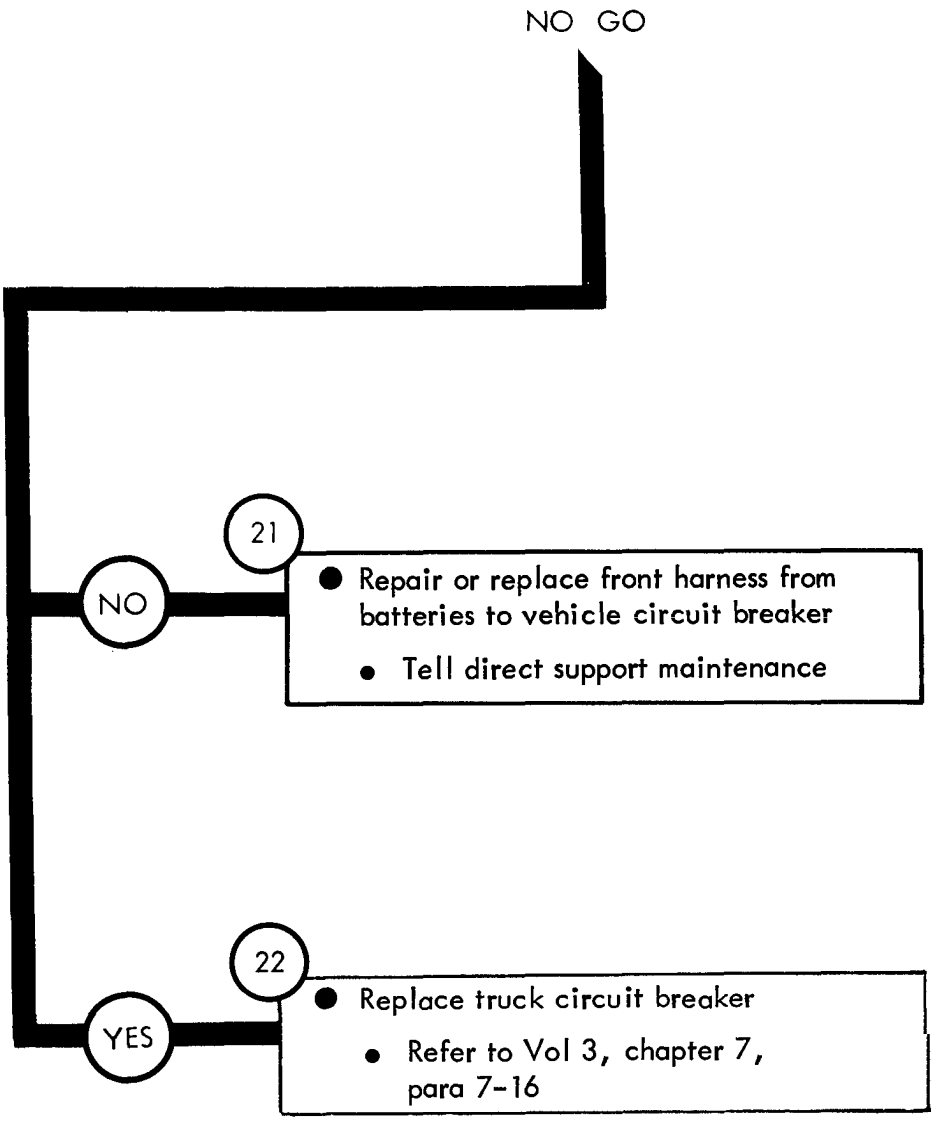
Does multimeter measure +24 volts DC?



NO GO

TA 114556

Figure 25-46 (Sheet 9 of 16)



TA 114557

Figure 25-46 (Sheet 10 of 16)

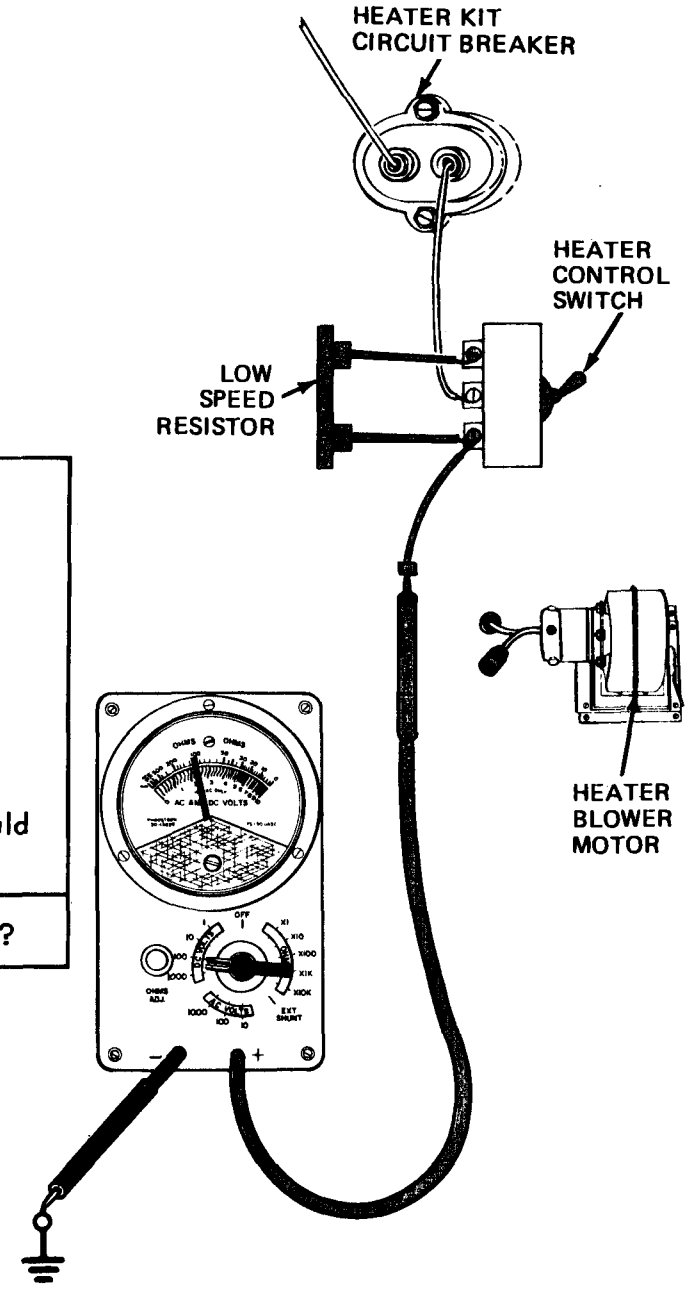
From step 4

23

- Test blower motor
  - Take off lead from heater control switch to blower motor at blower motor
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead removed from blower motor
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114558

Figure 25-46 (Sheet 11 of 16)

GO

YES

NO

24

- Repair or replace lead from heater control switch to blower motor
  - Refer to Vol 3, chapter 23, para 23-20 and 23-17

chapter 23, para 23-20 and 23-17

25

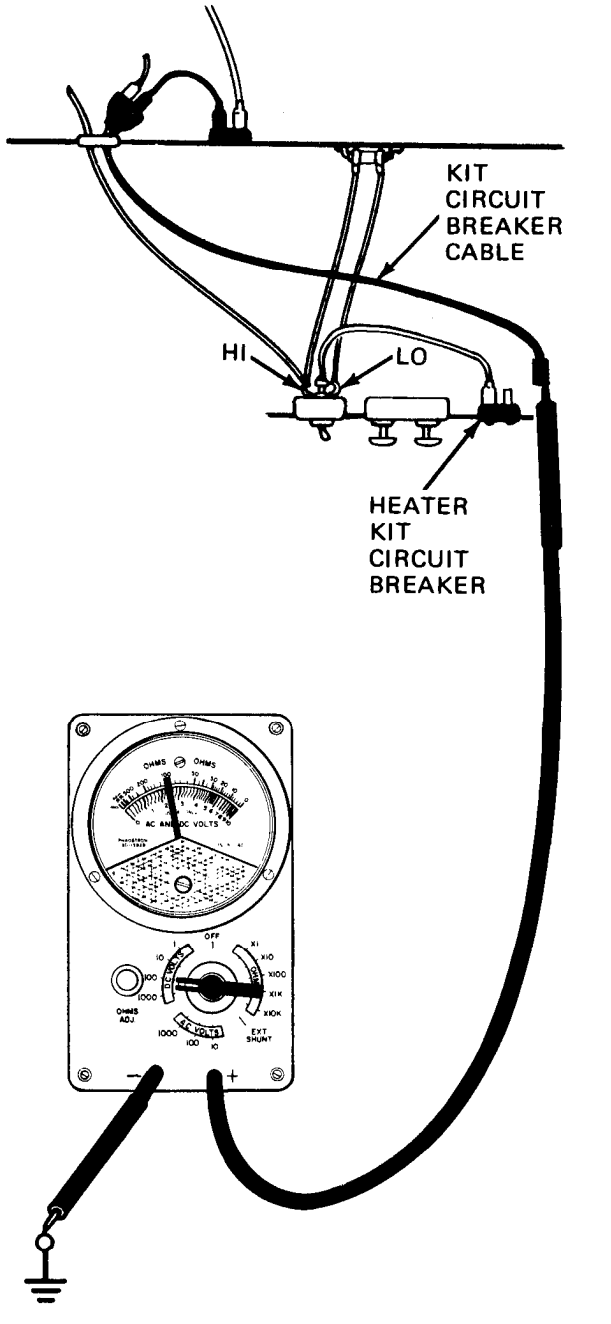
- Replace blower motor
  - Refer to Vol 3, chapter 23, para 23-20

26

- Check for +24 volts DC to heater kit circuit breaker
  - Put circuit breaker to control switch cable back on center terminal of heater control switch
  - Take off lead from "Y" connector to heater kit circuit breaker at heater kit circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead to circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114559

Figure 25-46 (Sheet 12 of 16)

GO

YES

NO

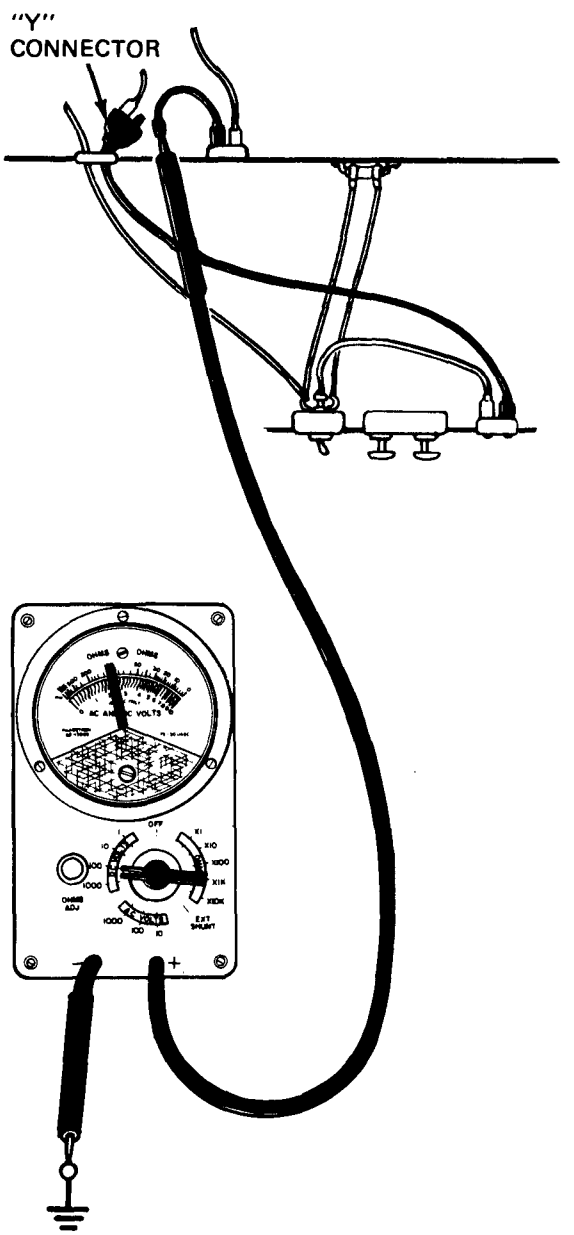
27

- Replace heater kit circuit breaker
  - Refer to Vol 3, chapter 7, para 7-16

28

- Check lead from truck circuit breaker to "Y" connector
  - On engine side of firewall take off lead from truck circuit breaker to "Y" connector
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on terminal of lead from truck circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



GO

TA 114560

Figure 25-46 (Sheet 13 of 16)

GO

YES

NO

29

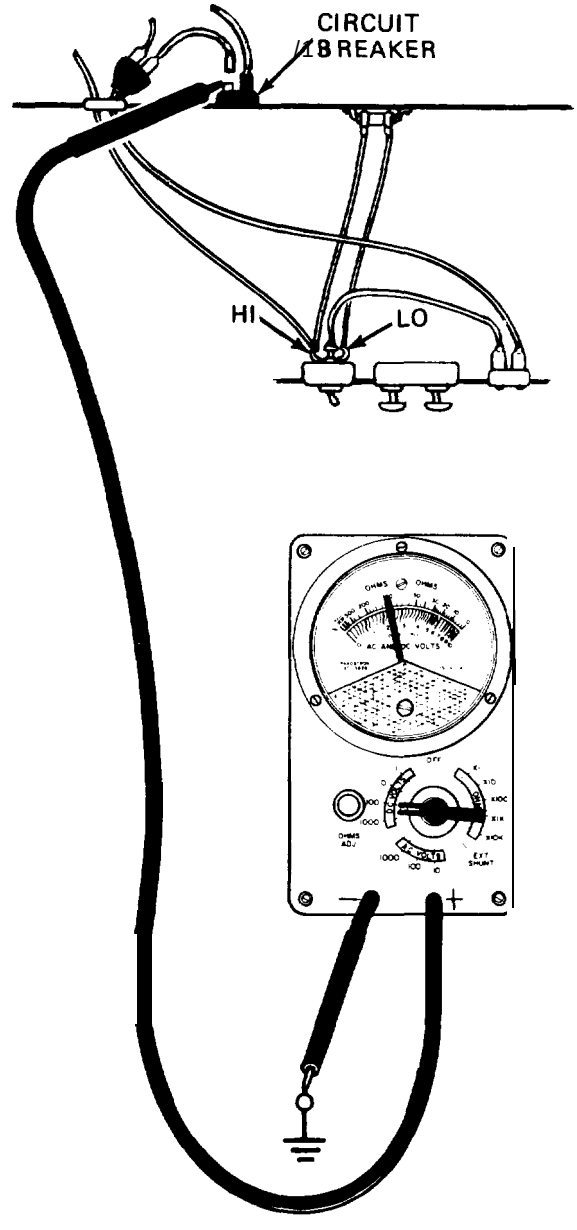
- Repair or replace "Y" connector lead
  - Refer to Vol 3, chapter 7, para 7-16

30

- Check lead from truck circuit breaker to "Y" connector
  - Put "Y" connector lead back on contact of heater kit circuit breaker
  - Take off truck circuit breaker to "Y" connector lead at truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on terminal of truck circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114561

Figure 25-46 (Sheet 14 of 16)

GO

YES

NO

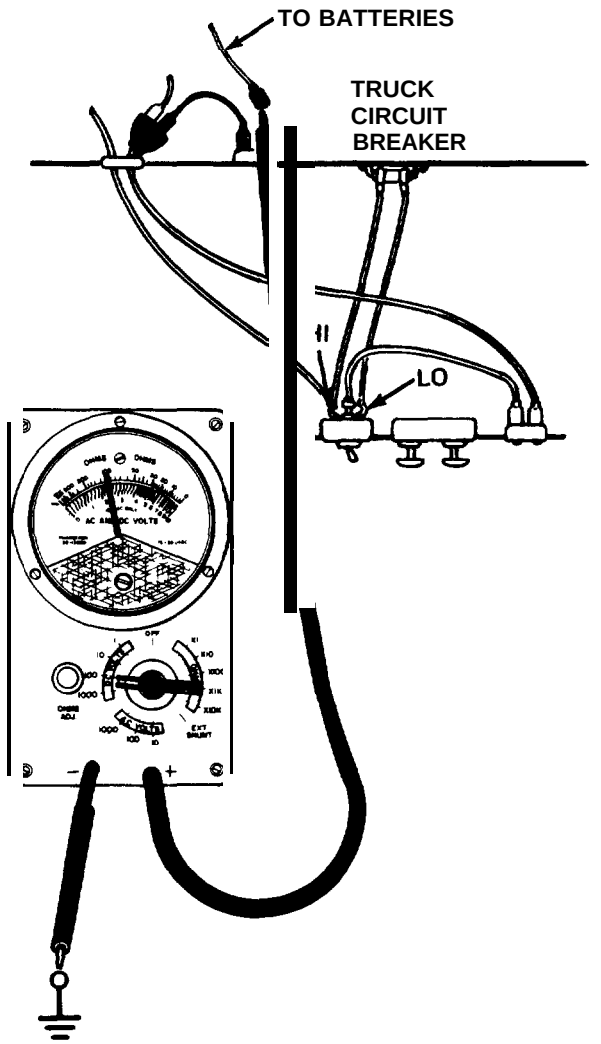
31

- Repair or replace lead from truck circuit breaker to "Y" connector
- Refer to Vol 3, chapter 7, para 7-16

32

- Check lead from front harness to circuit breaker
  - Put lead from truck circuit breaker to "Y" connector back on truck circuit breaker and "Y" connector
  - Take off front harness lead from other terminal of truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on front harness lead contact
  - Read mu ltimeter. Multi meter shoul measure more than +24 volts DC

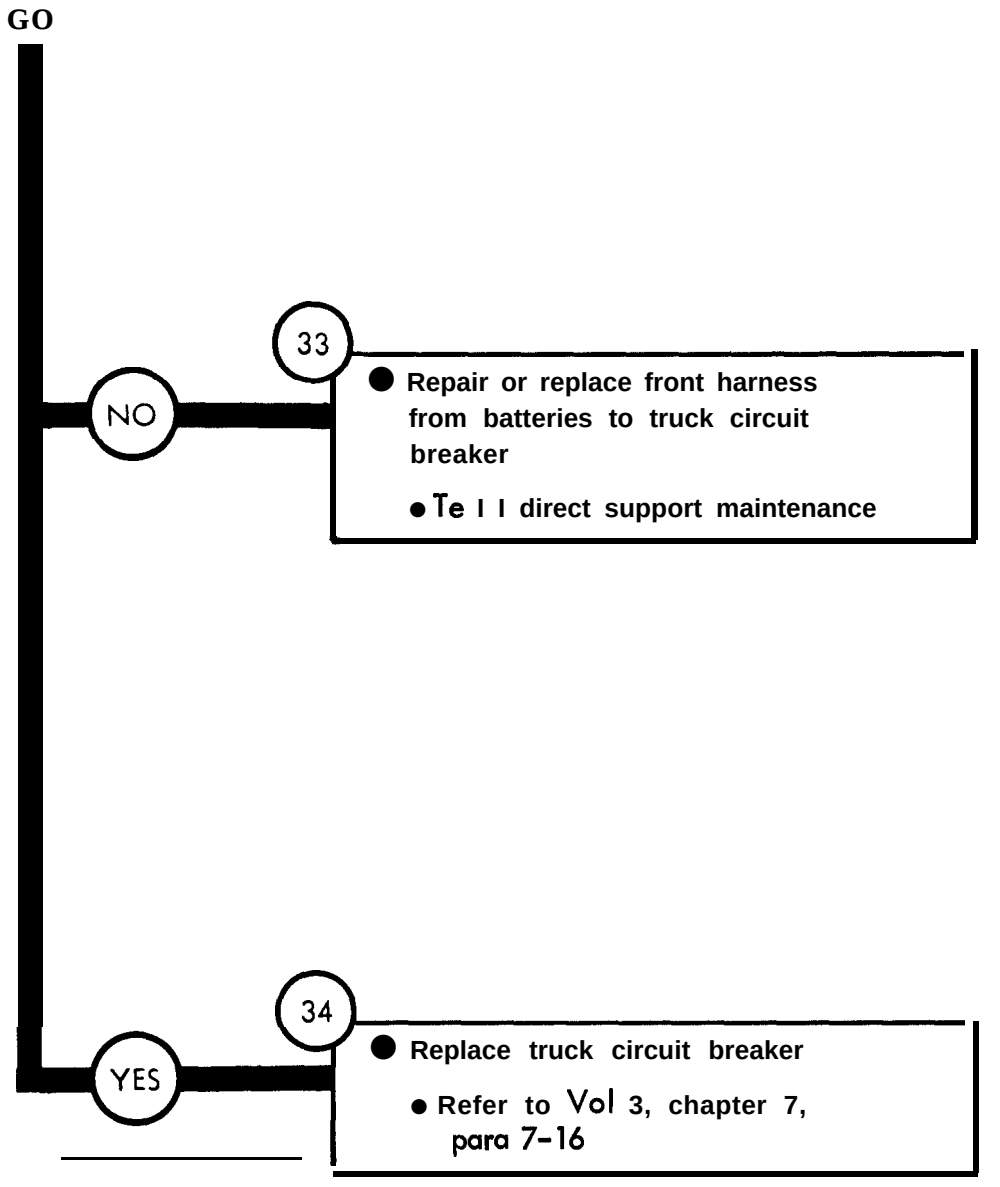
Does multimeter measure +24 volts DC?



GO

TA 114562

Figure 25-46 (Sheet 15 of 16)



TA 114563

Figure 25-46 (Sheet 16 of 16)

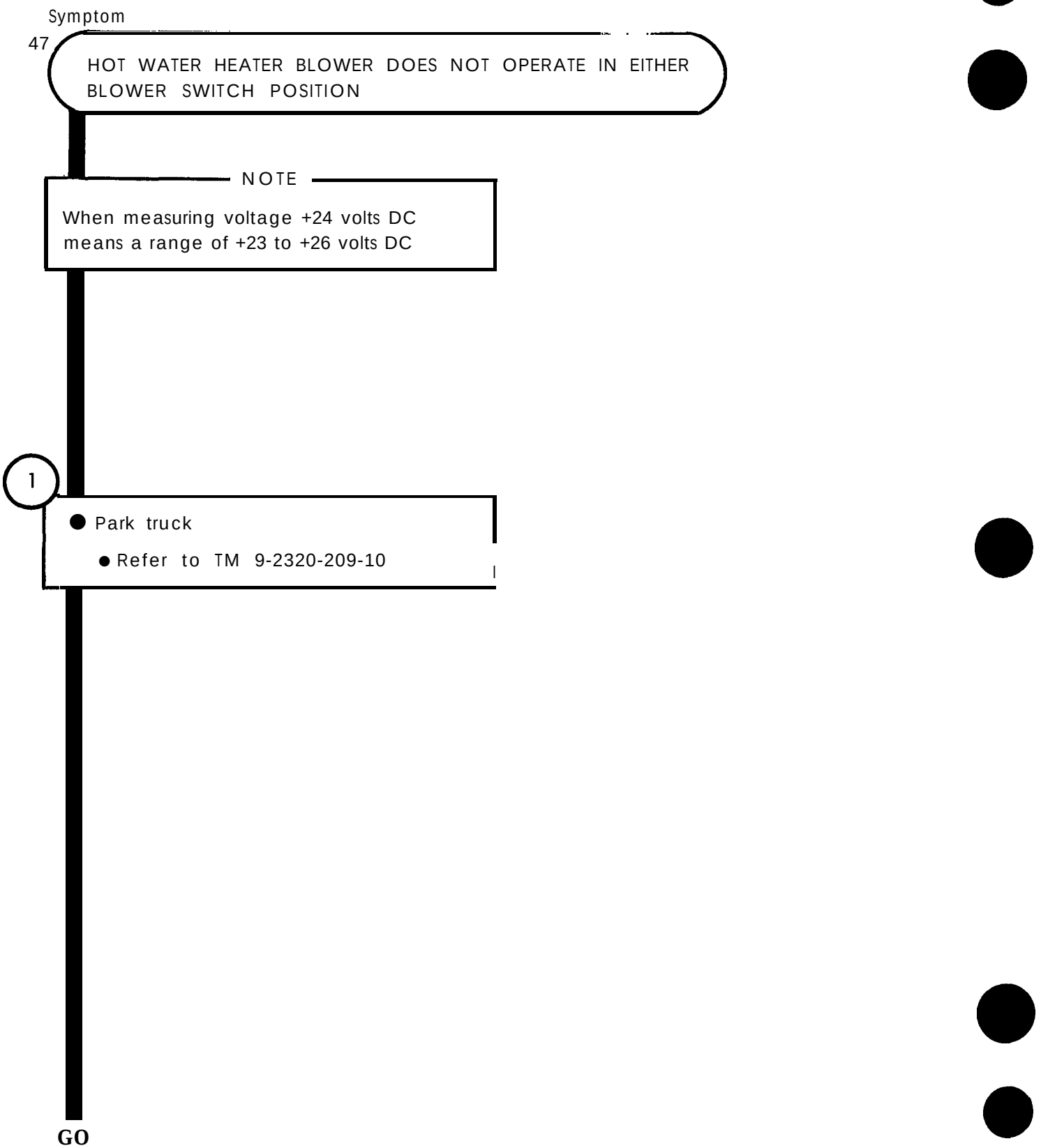


Figure 25-47 (Sheet 1 of 11)

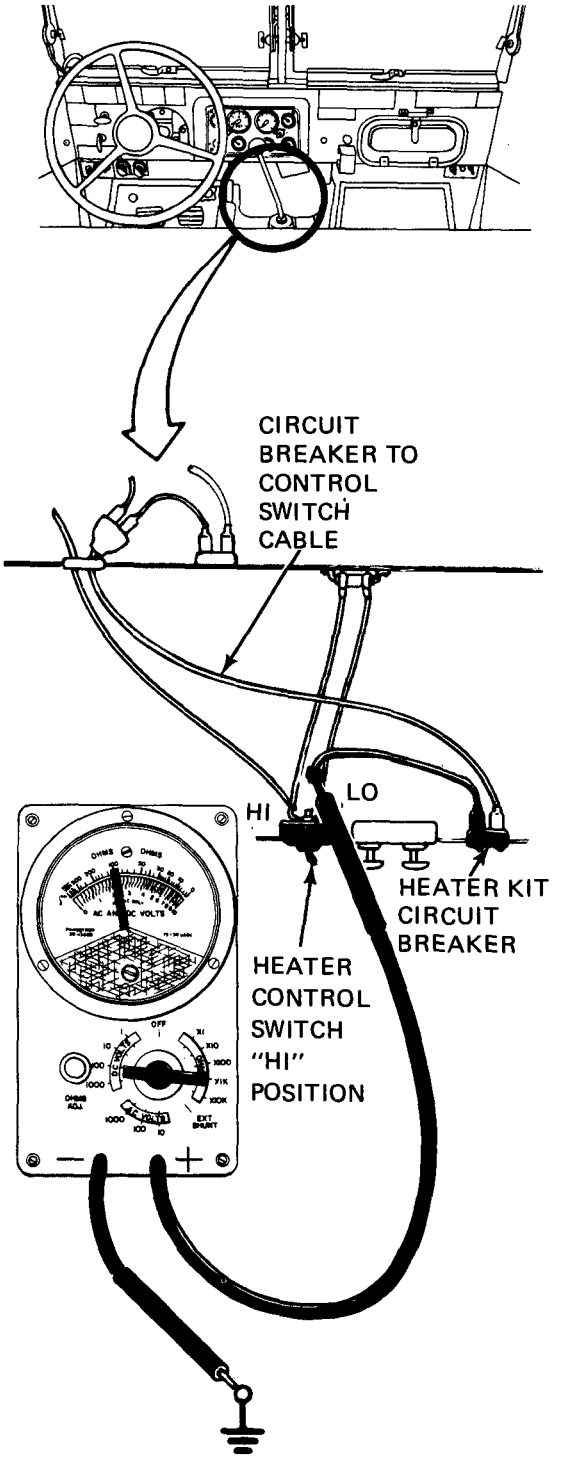
GO

2

- Check for voltage from batteries through heater control switch
  - Take off circuit breaker to control switch cable from center contact of heater control switch
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in contact of cable
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114565

Figure 25-47 (Sheet 2 of 11)

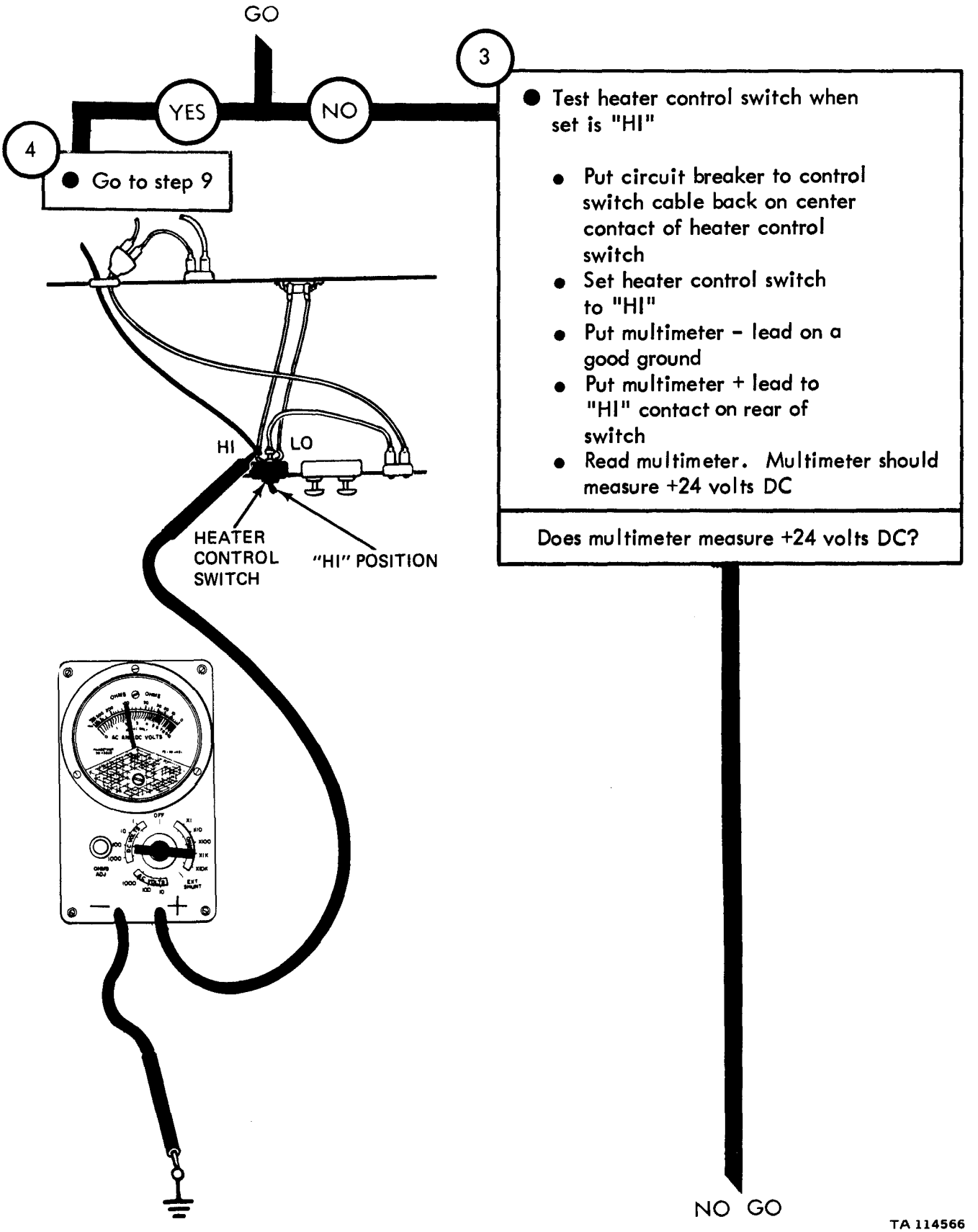


Figure 25-47 (Sheet 3 of 11)

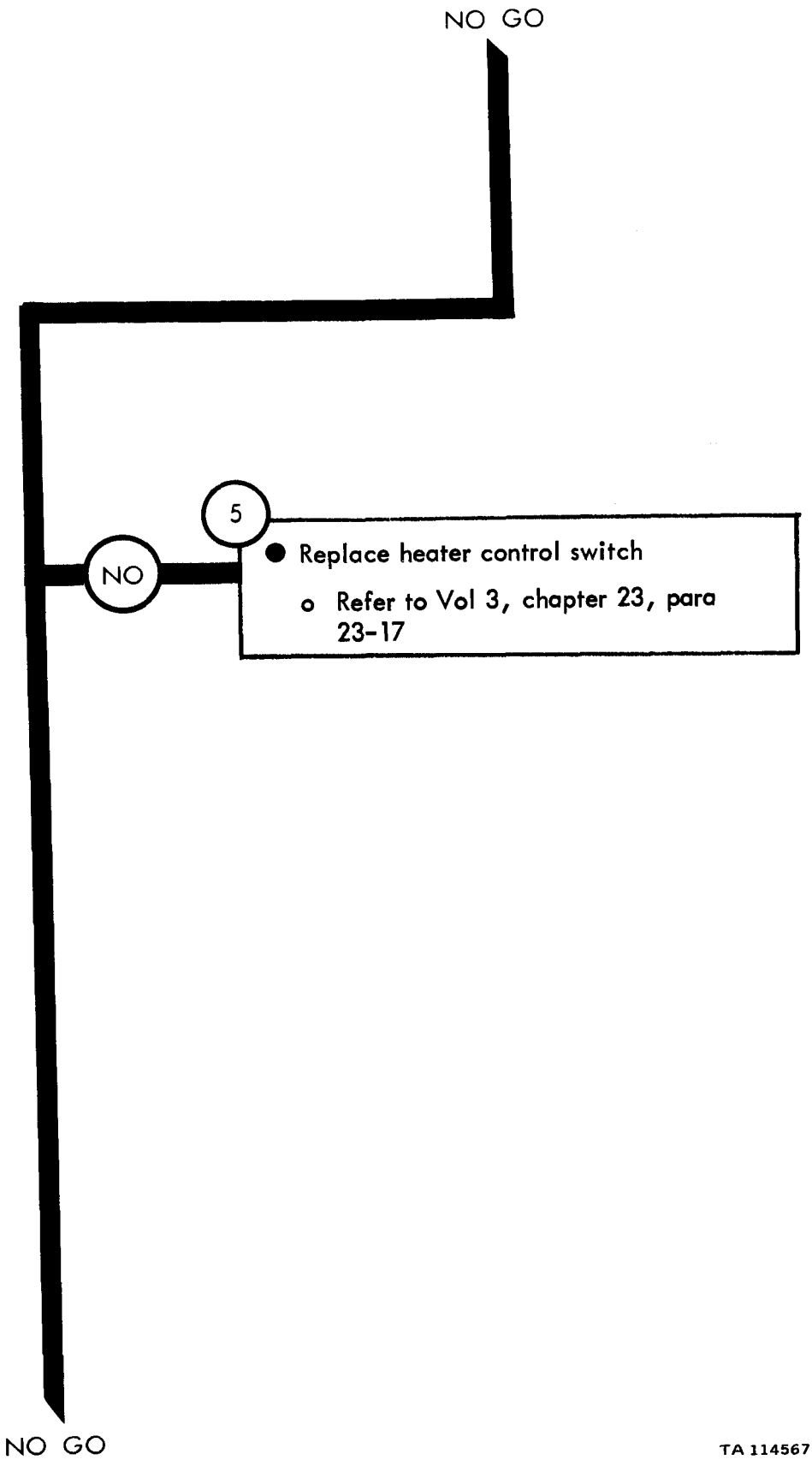


Figure 25-47 (Sheet 4 of 11)

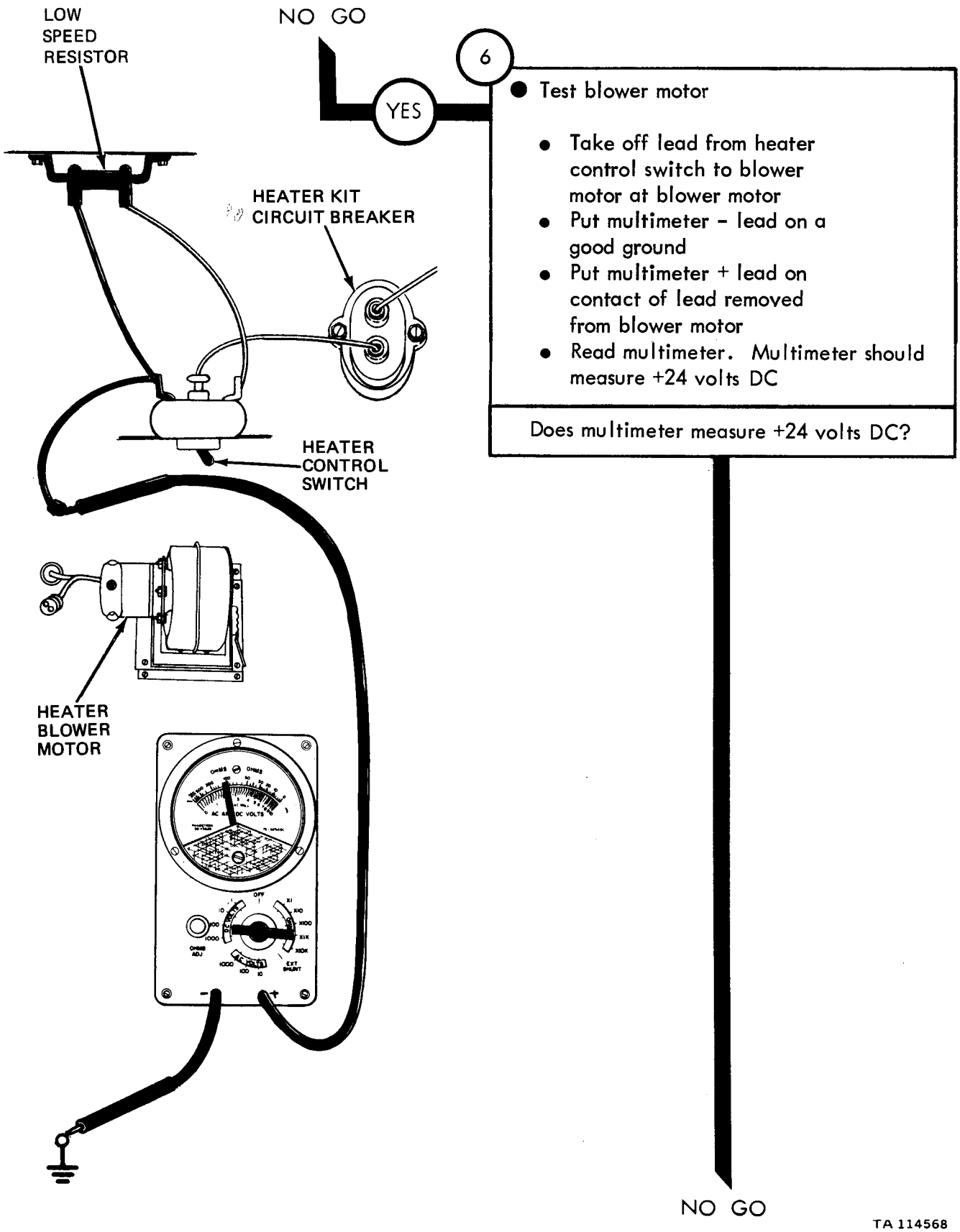
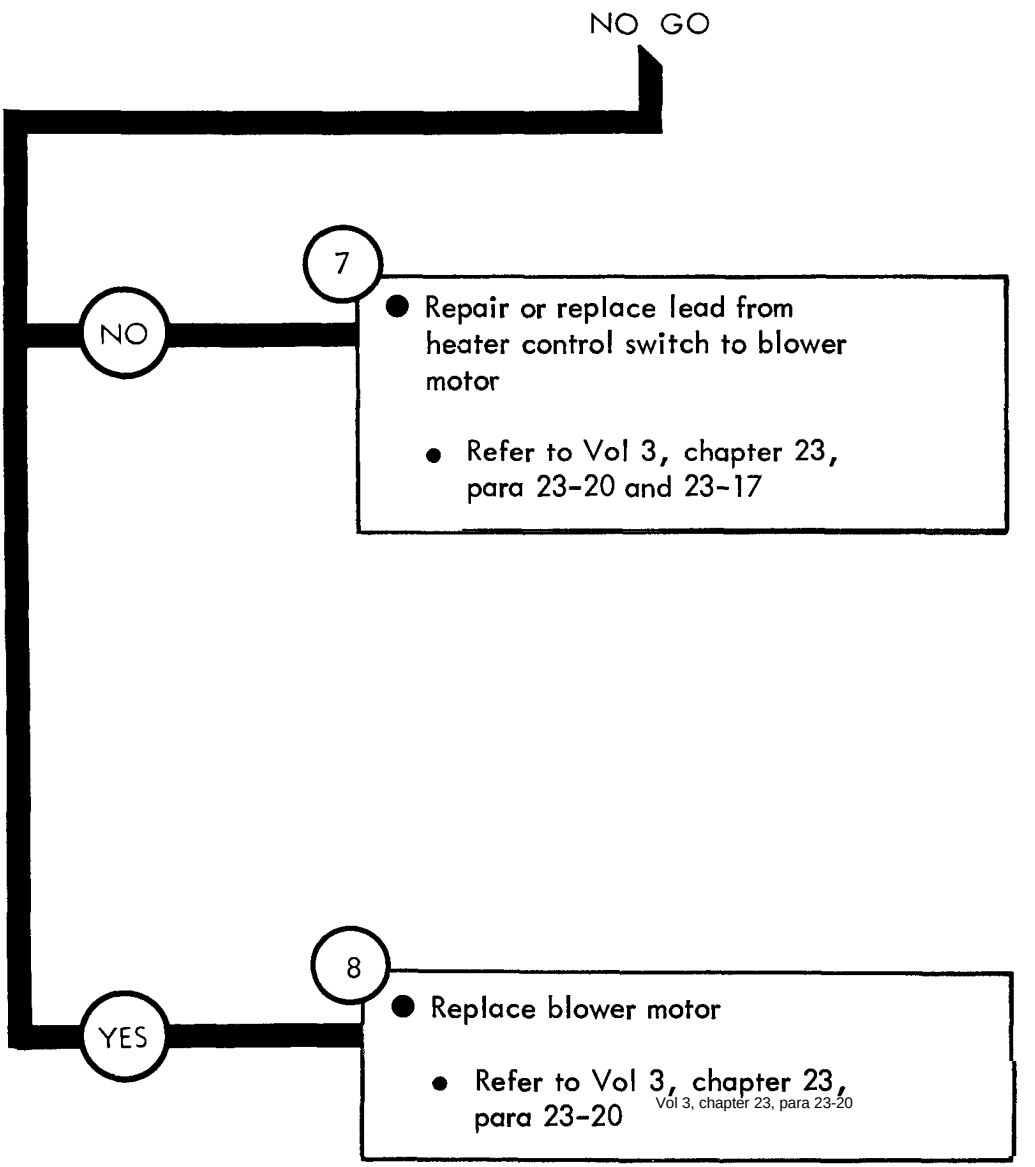


Figure 25-47 (Sheet 5 of 11)



TA 114569

Figure 25-47 (Sheet 6 of 11)

From step 4

9

- Check for +24 volts DC to heater kit of circuit breaker
  - Put circuit breaker to control switch cable back on center terminal of heater control switch
  - Take off lead from "Y" connector to heater kit circuit breaker at heater kit circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead to heater kit circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO

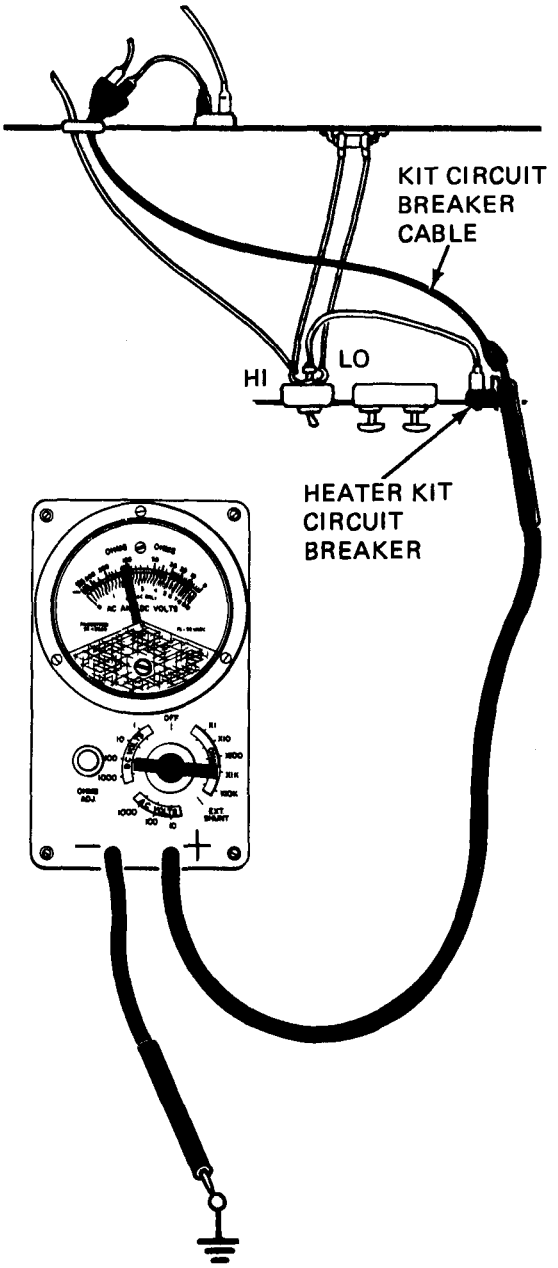


Figure 25-47 (Sheet 7 of 11)

GO

YES

NO

10

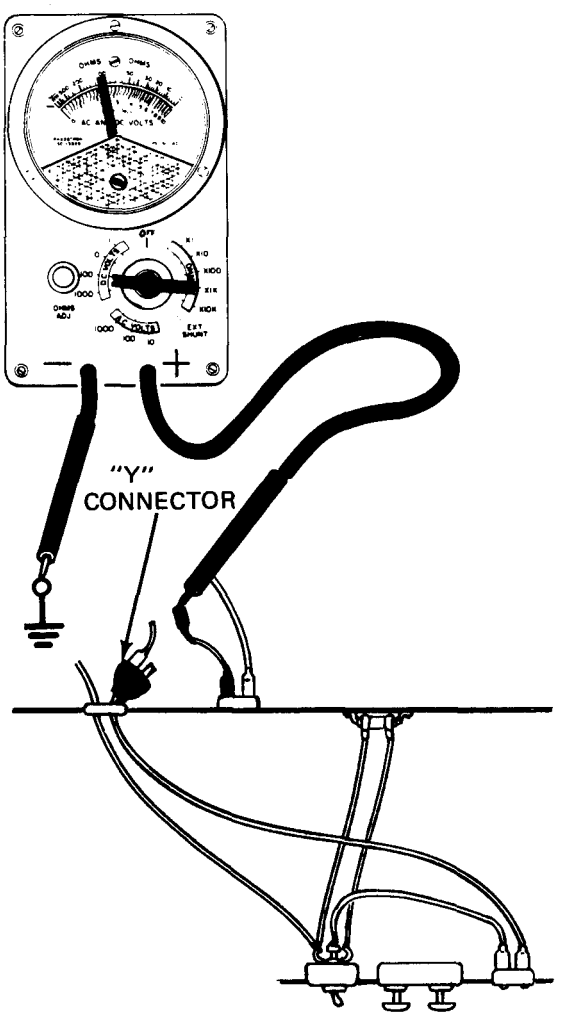
- Replace heater kit circuit breaker
  - Refer to Vol 3, chapter 7, para 7-16

11

- Check lead from truck circuit breaker to "Y" connector
  - On engine side of firewall take off lead from truck circuit breaker to "Y" connector at "Y" connector
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on terminal of lead from truck circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

GO



TA 114571

Figure 25-47 (Sheet 8 of 11)

GO

YES

NO

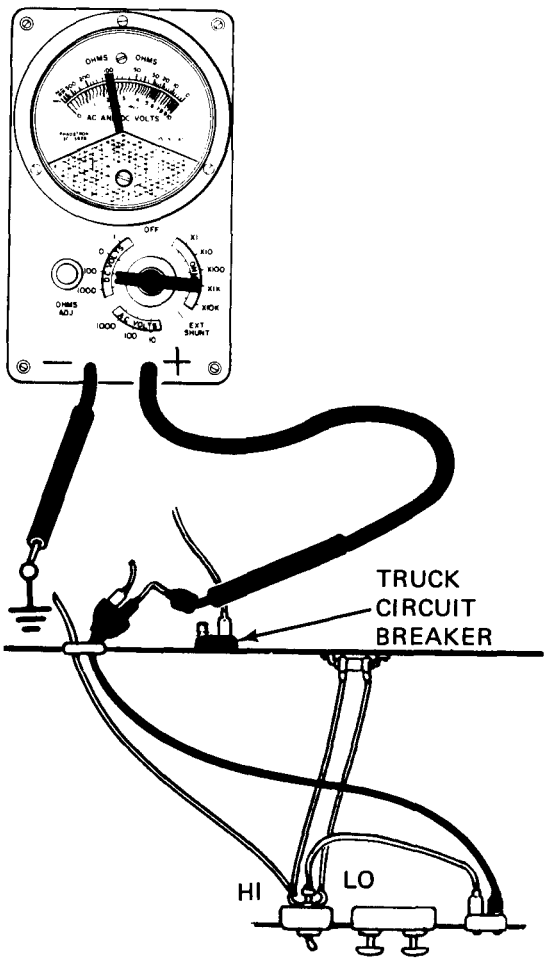
12

- Repair or replace "Y" connector lead
  - Refer to Vol 3, chapter 7, para 7-16

13

- Check lead from vehicle circuit breaker to "Y" connector
  - Put "Y" connector lead back on terminal of heater kit circuit breaker
  - Take off truck circuit breaker to "Y" connector lead at circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on terminal of truck circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



GO

TA 114572

Figure 25-47 (Sheet 9 of 11)

GO

YES

NO

14

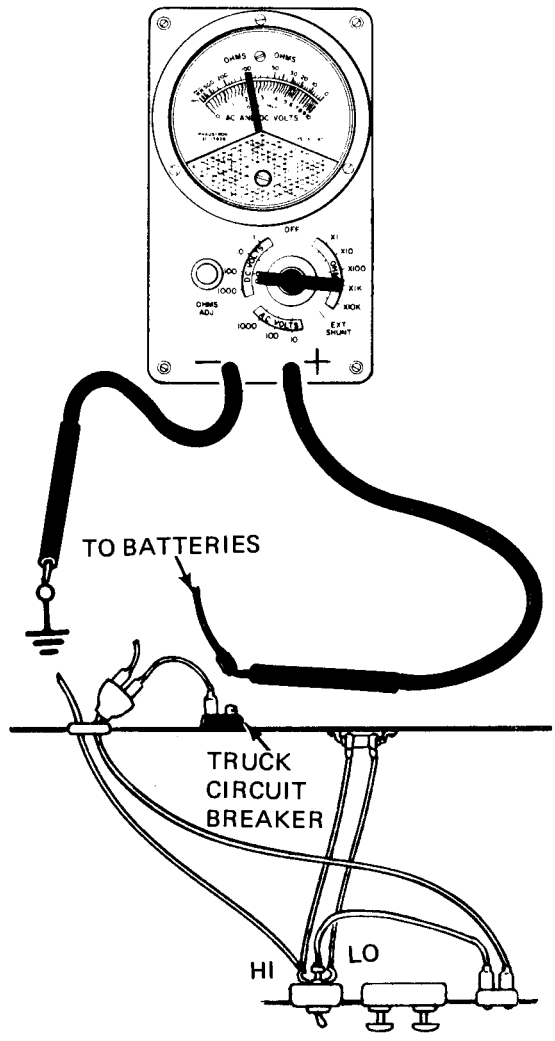
- Repair or replace lead from vehicle circuit breaker to "Y" connector
  - Refer to Vol 3, chapter 7, para 7-16

15

- Check lead from front harness to circuit breaker
  - Put lead from truck circuit breaker to "Y" connecter back on truck circuit breaker and "Y" connector
  - Take off front harness lead from other terminal of truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on front harness lead contact
  - Read multimeter. Multimeter should measure +24 volts DC

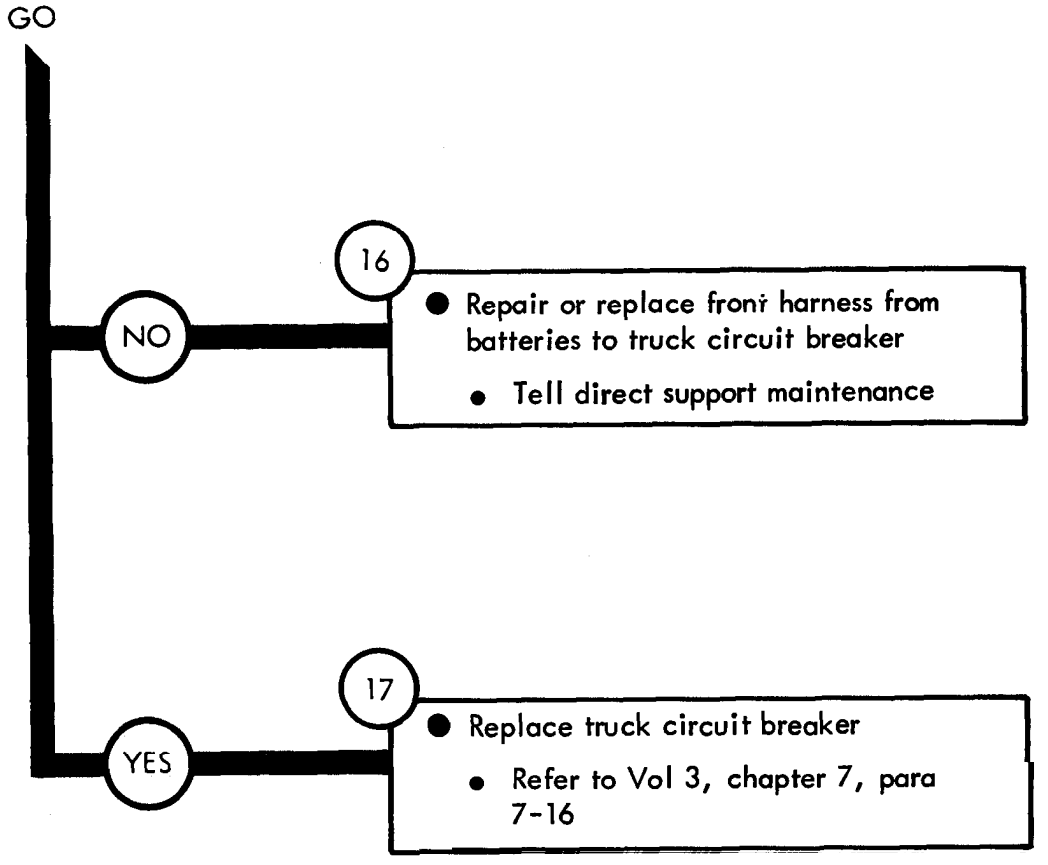
Does multimeter measure +24 volts DC?

GO



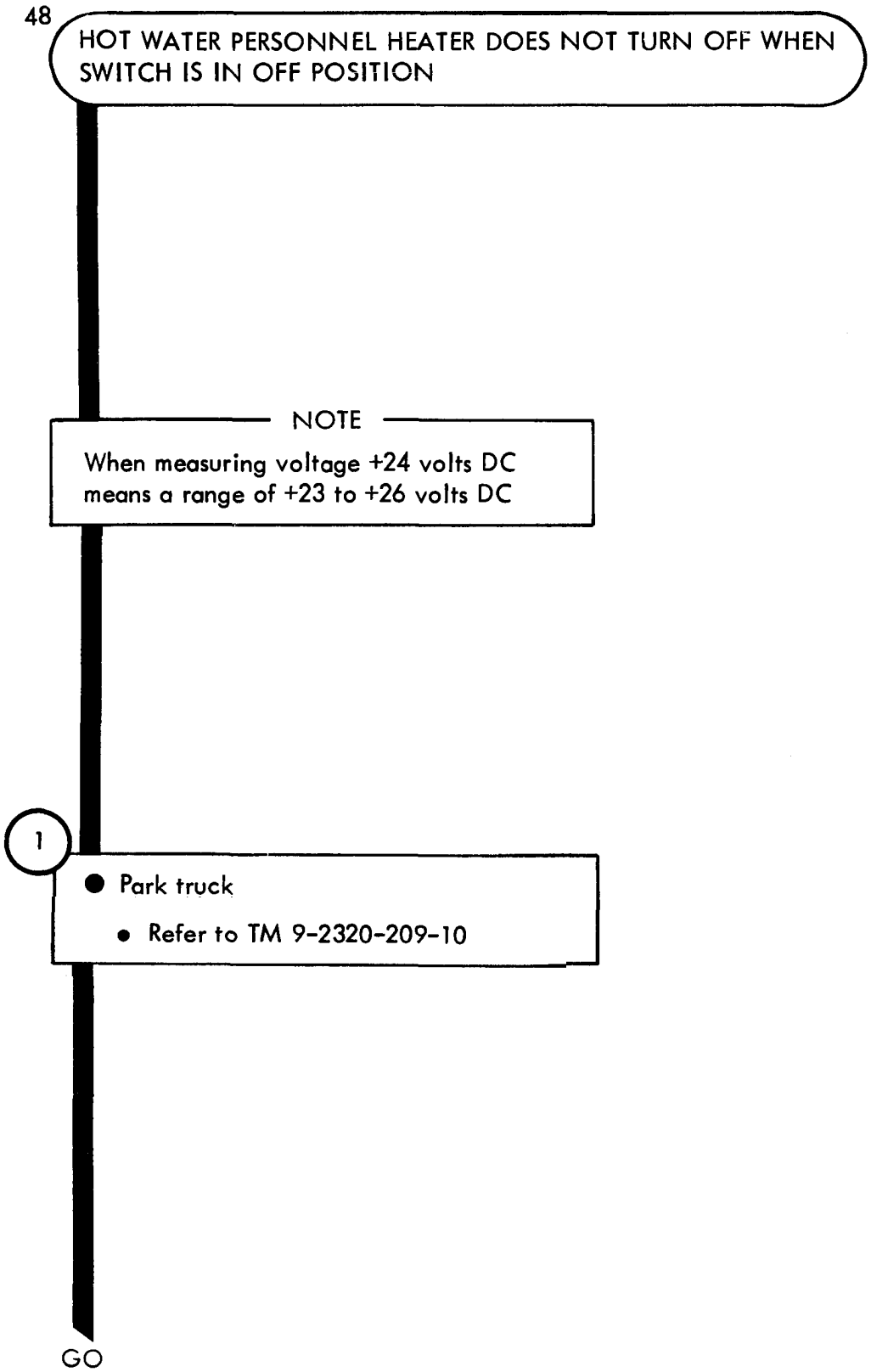
TA 114573

Figure 25-47 (Sheet 10 of 11)



TA 114574

Figure 25-47 (Sheet 10 of 11)



TA 114575

Figure 25-48 (Sheet 1 of 3)

GO

2

- Check for bad heater control switch or shorted leads
  - Set heater control switch to "OFF"
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index, test 1
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on "LO" contact of heater switch. Read multimeter
  - Put multimeter + lead on "HI" contact of heater switch. Read multimeter

Did multimeter measure +24 volts DC on either contact?

GO

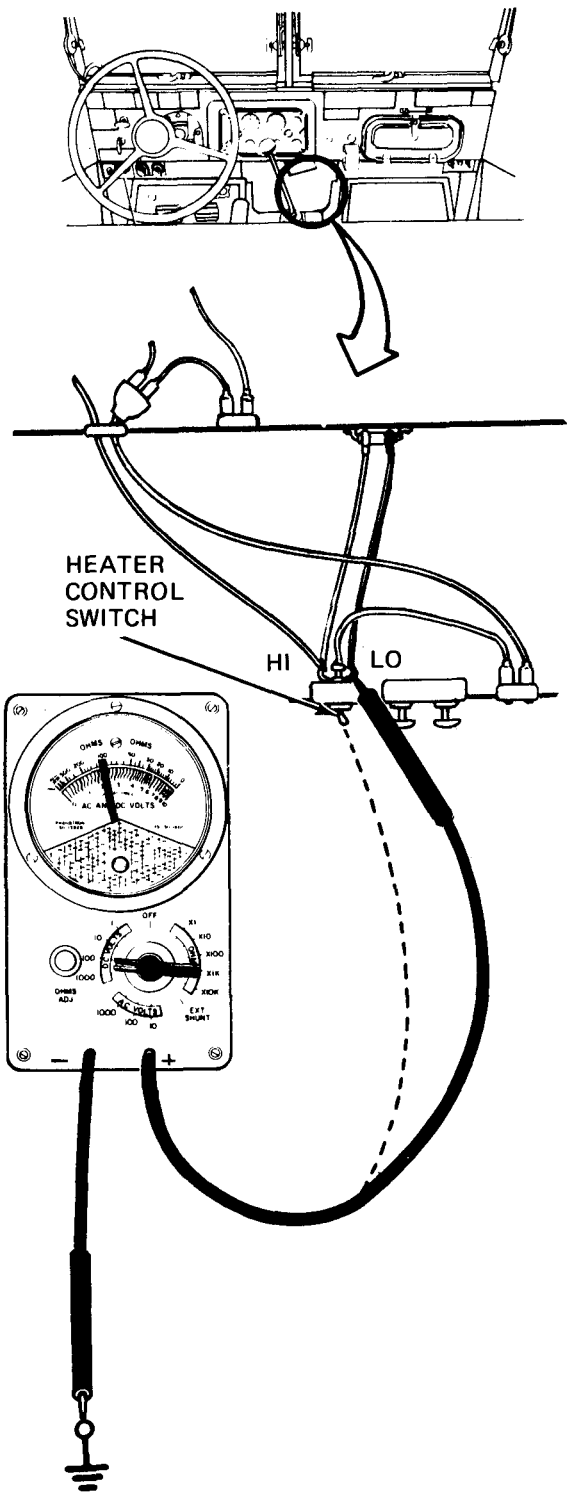


Figure 25-48 (Sheet 2 of 3)

TA 114576

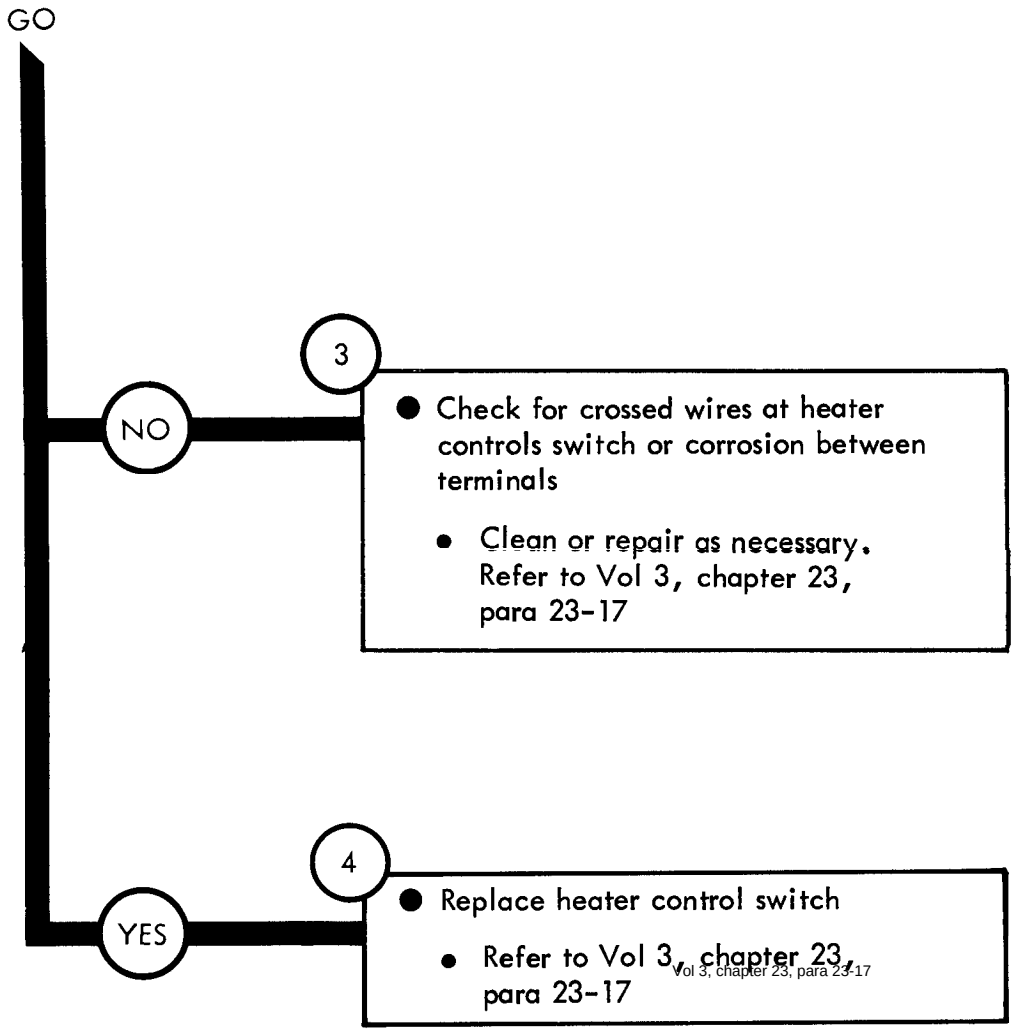


Figure 25-48 (Sheet 3 of 3)

TA 114577

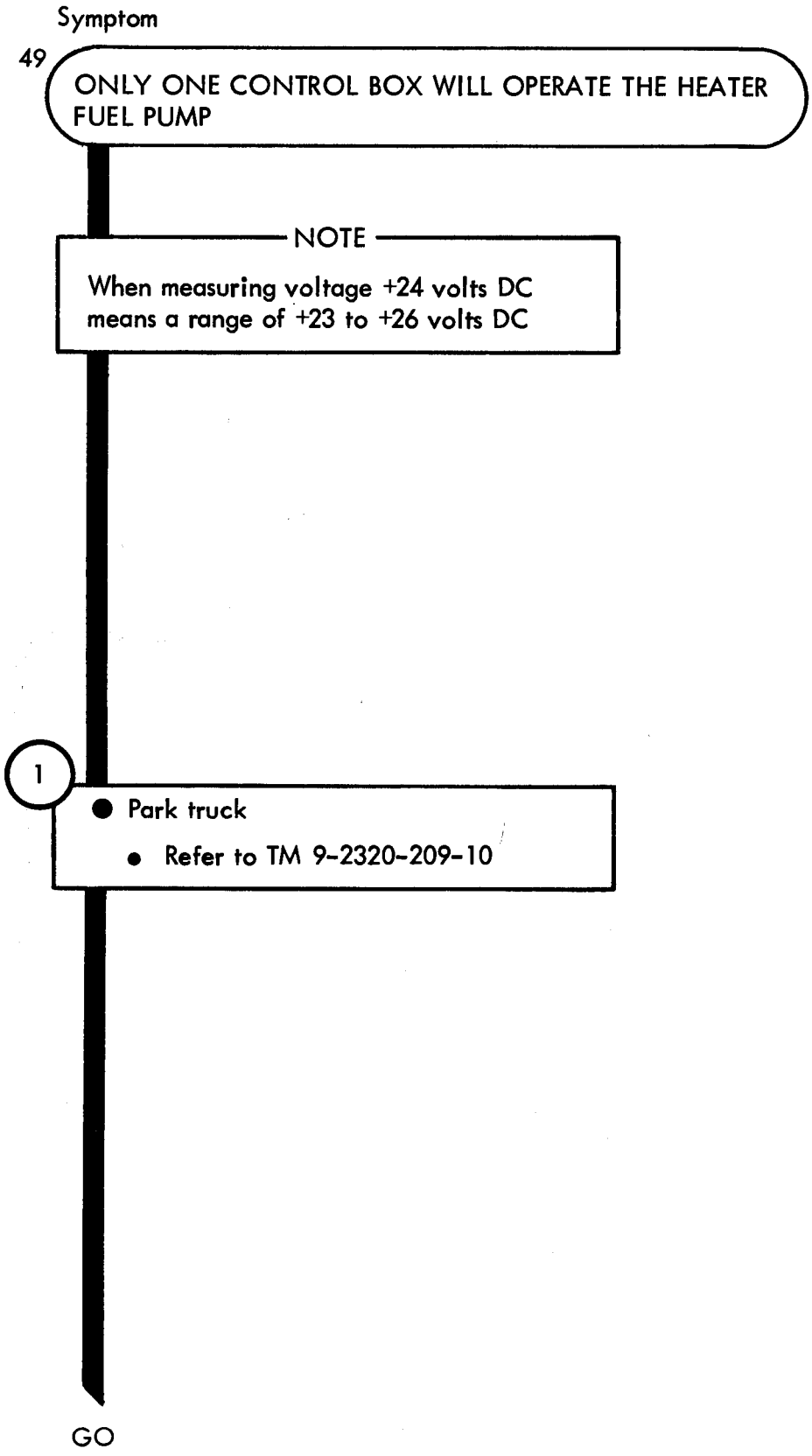


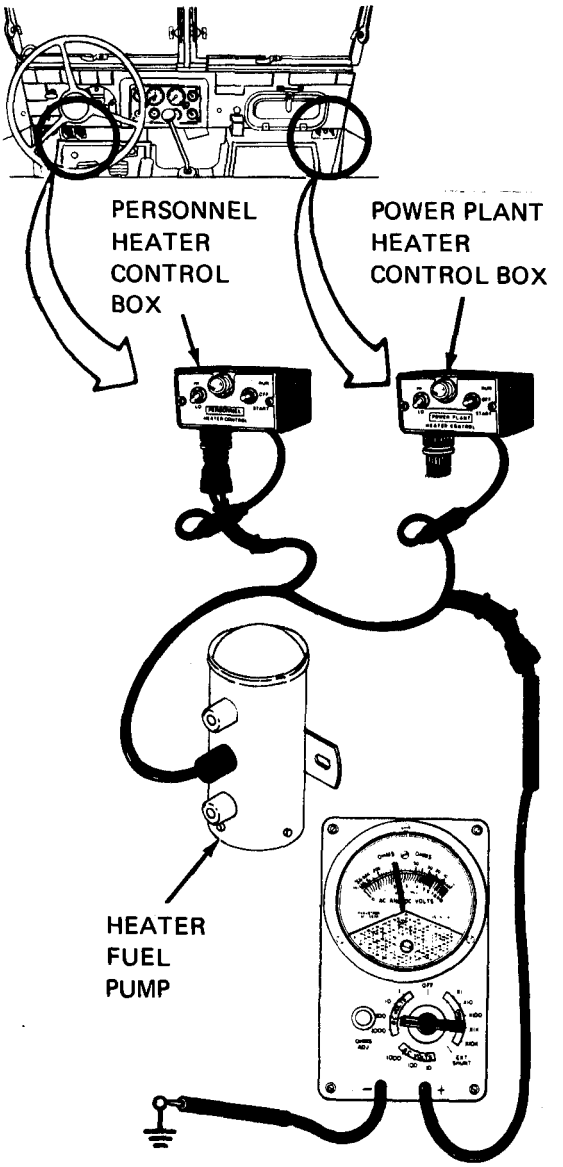
Figure 25-49 (Sheet 1 of 9)

TA 114578

GO

2

- Check voltage from power plant heater control box
  - Make sure the lead from power plant heater control box to fuel pump is clean and tightly connected
  - Turn on control box
  - If control box still won't work shut it off
  - Take off lead from control box to fuel pump at power plant heater control box



- Turn on heater control box
- Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
- Put multimeter - lead on good ground
- Put multimeter + lead on terminal "A" of control box connector
- Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

YES

NO

3

- Repair or replace lead between power plant heater control box and fuel pump
  - Tell direct support maintenance

GO

TA 114579

Figure 25-49 (Sheet 2 of 9)

GO

4

- Check voltage through power plant heater control box
  - Put lead from control box to fuel pump back on control box
  - Take off lead 400 from emergency switch to power plant heater control box at control box
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead 400 removed from control box
  - Read multimeter. Multimeter should measure +24 volts DC

Did multimeter measure less than +24 volts DC?

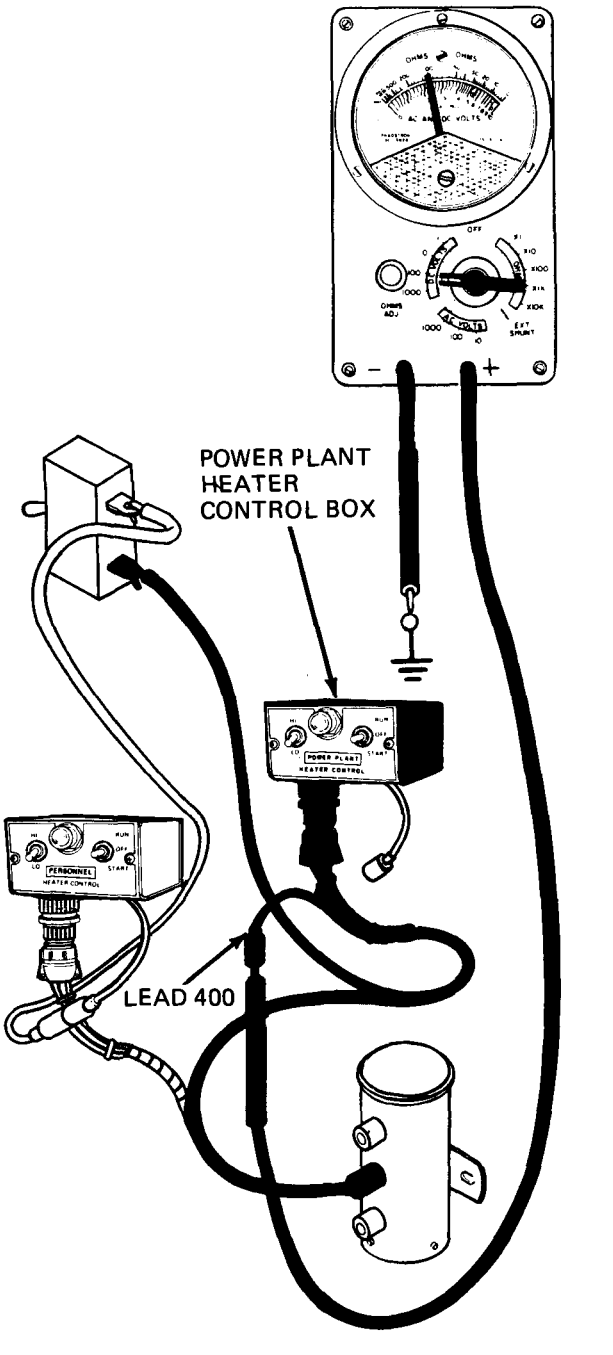
YES

NO

5

- Replace power plant heater control box
  - Tell direct support maintenance

GO



TS 209-20-835

TA 114580

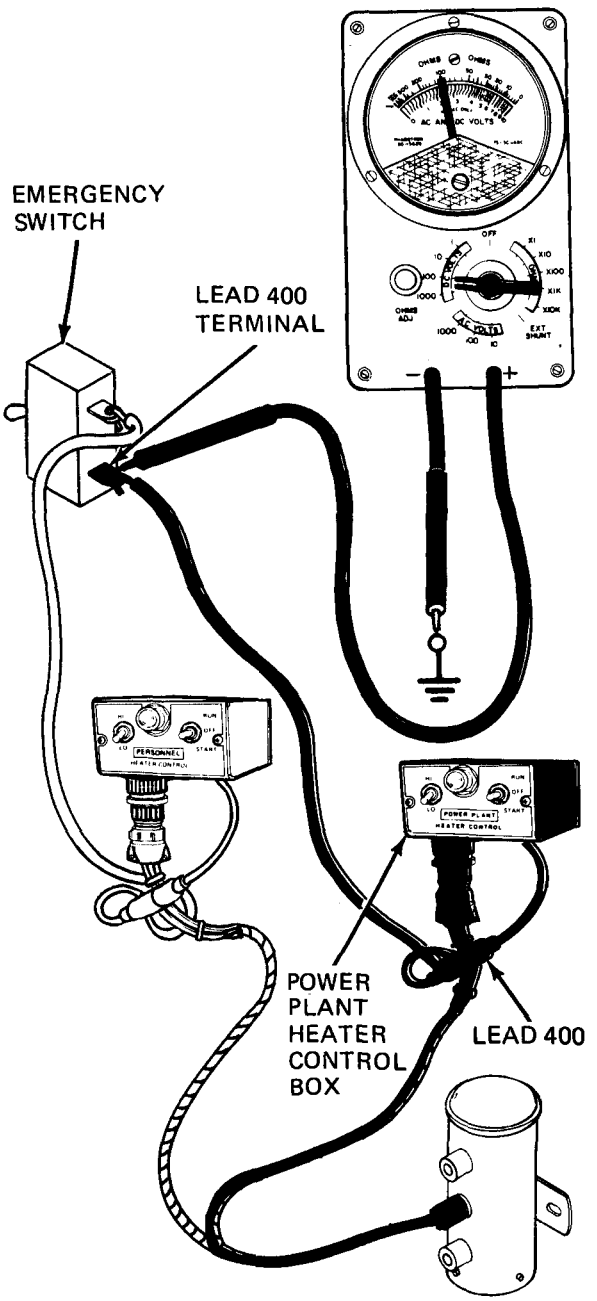
Figure 25-49 (Sheet 3 of 9)

GO

6

- Check lead 400 from emergency switch to power plant heater control box for +24 volts DC
  - Put lead 400 back on at control box
  - Put multimeter - lead on a good ground
  - Put multimeter and lead on emergency switch terminal for lead 400
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

7

- Repair or replace lead 400 from emergency switch to power plant heater control box
  - Tell direct support maintenance

GO

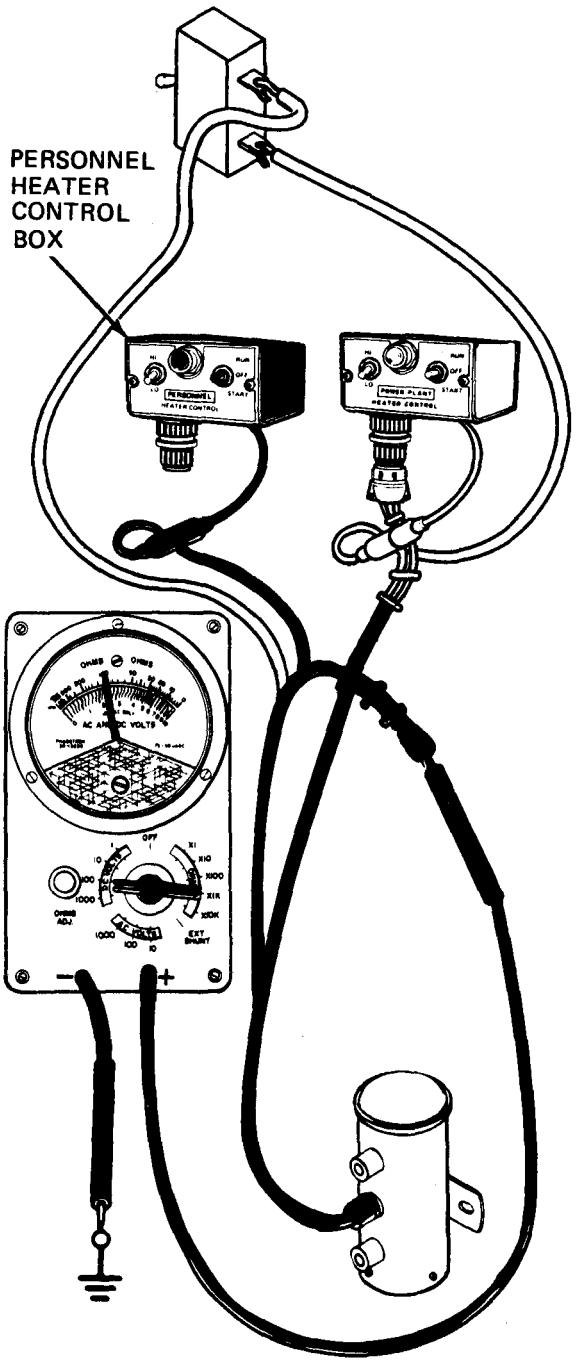
Figure 25-49 (Sheet 4 of 9)

GO

8

- Check for +24 volts in lead from fuel pump to personnel heater control box
  - Take off lead from fuel pump to personnel heater control box at control box and turn control box on
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in terminal "A" of control box connector
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

9

- Repair or replace lead from fuel pump to personnel heater control box
  - Tell direct support maintenance

GO

TA 114582

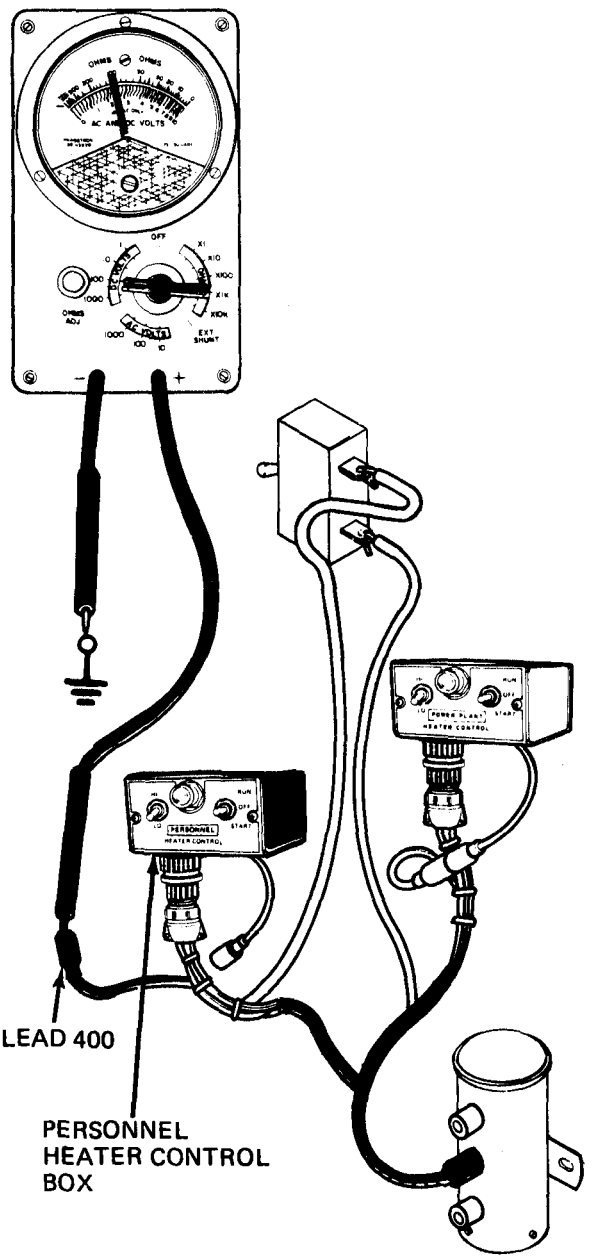
Figure 25-49 (Sheet 4 of 9)

GO

10

- Check for +24 volts through personnel heater control box
  - Put lead from fuel pump to personnel heater control box back on at control box
  - Take off lead 400 from personnel heater control box
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead 400
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

11

- Repair or replace personnel heater control box
  - Tell direct support maintenance

GO

Figure 25-49 (Sheet 6 of 9)

GO

12

- Check lead 400 from personnel heater control box for +24 volts DC
  - Put lead 400 back on control box
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 400 terminal of emergency switch
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

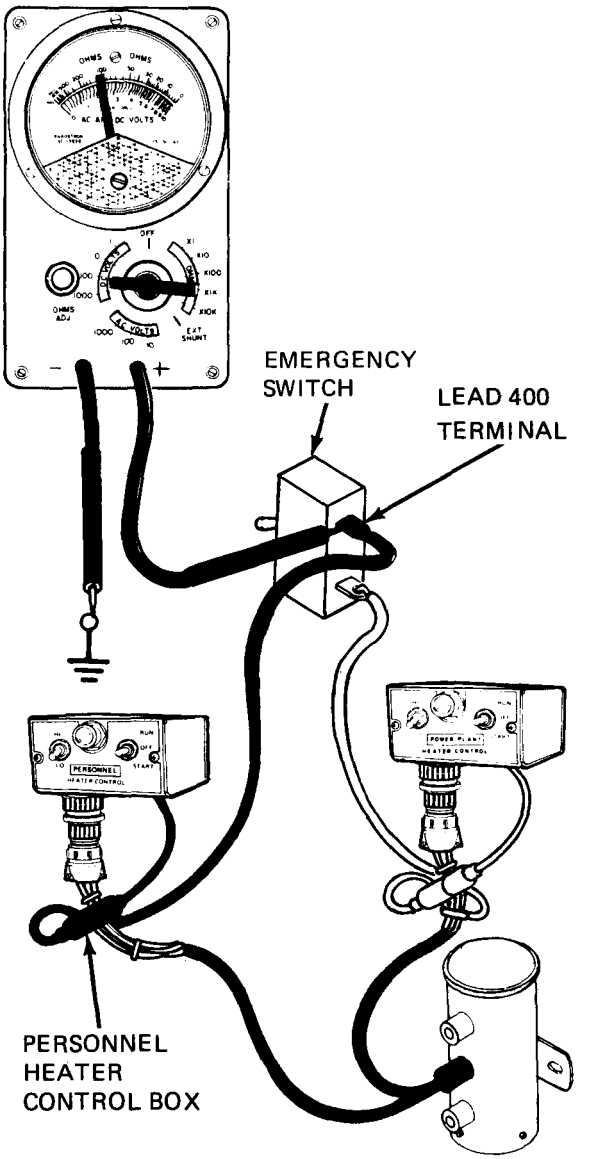
YES

NO

13

- Repair or replace lead 400 from emergency switch to personnel heater control box
  - Tell direct support maintenance

GO



TA 114584

Figure 25-49 (Sheet 7 of 9)

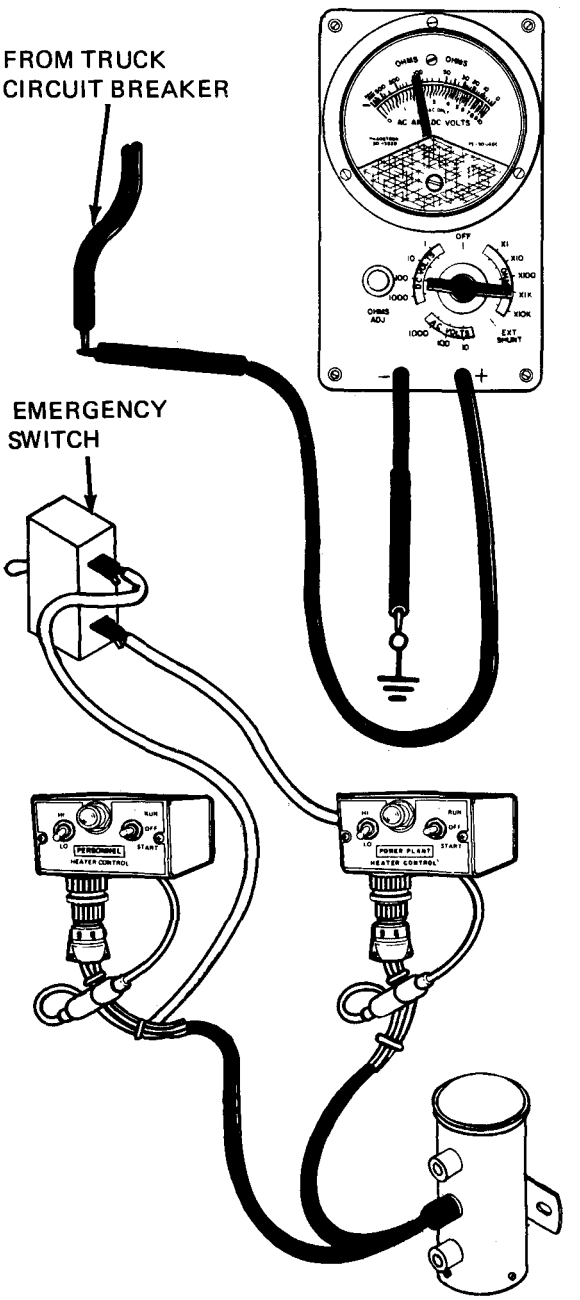
GO

14

- Check voltage through heater control box
  - At emergency switch take off lead from truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 400 terminal of emergency switch that contains lead from front harness
  - Read multimeter. Multimeter should measure +24 volts DC

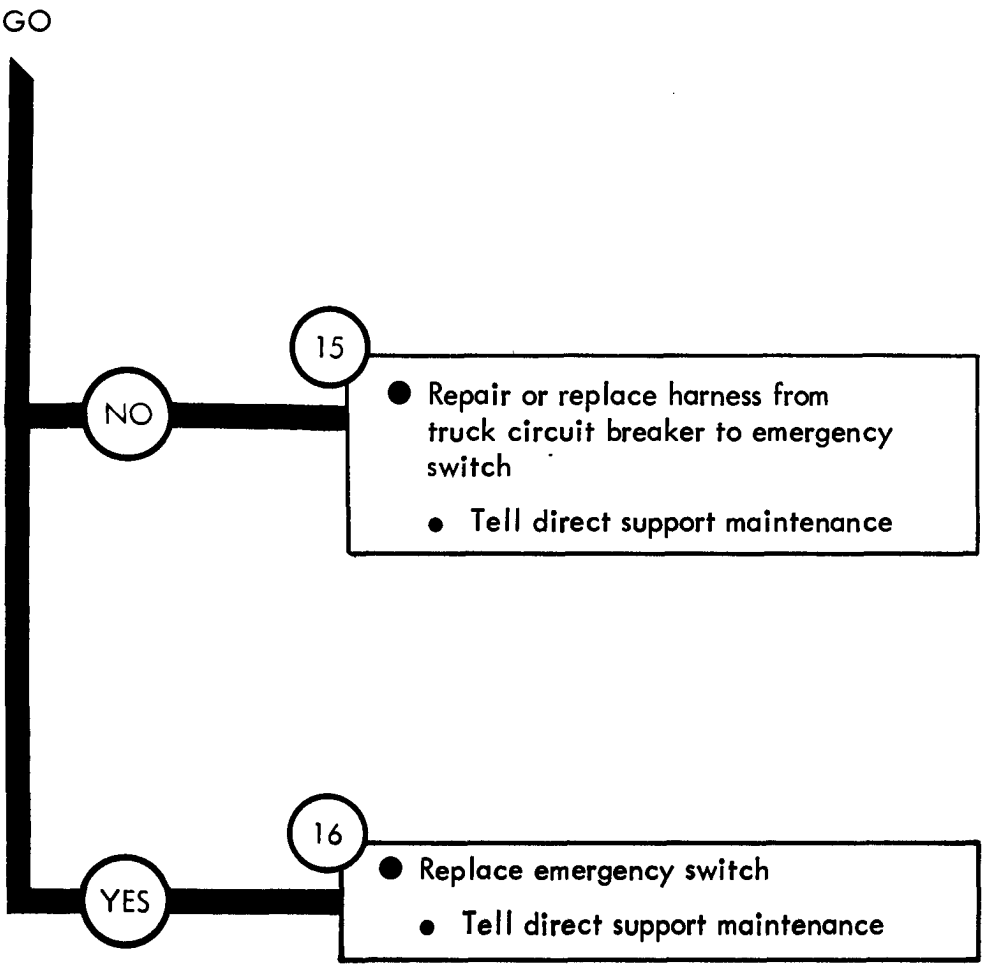
Does multimeter measure +24 volts DC?

GO



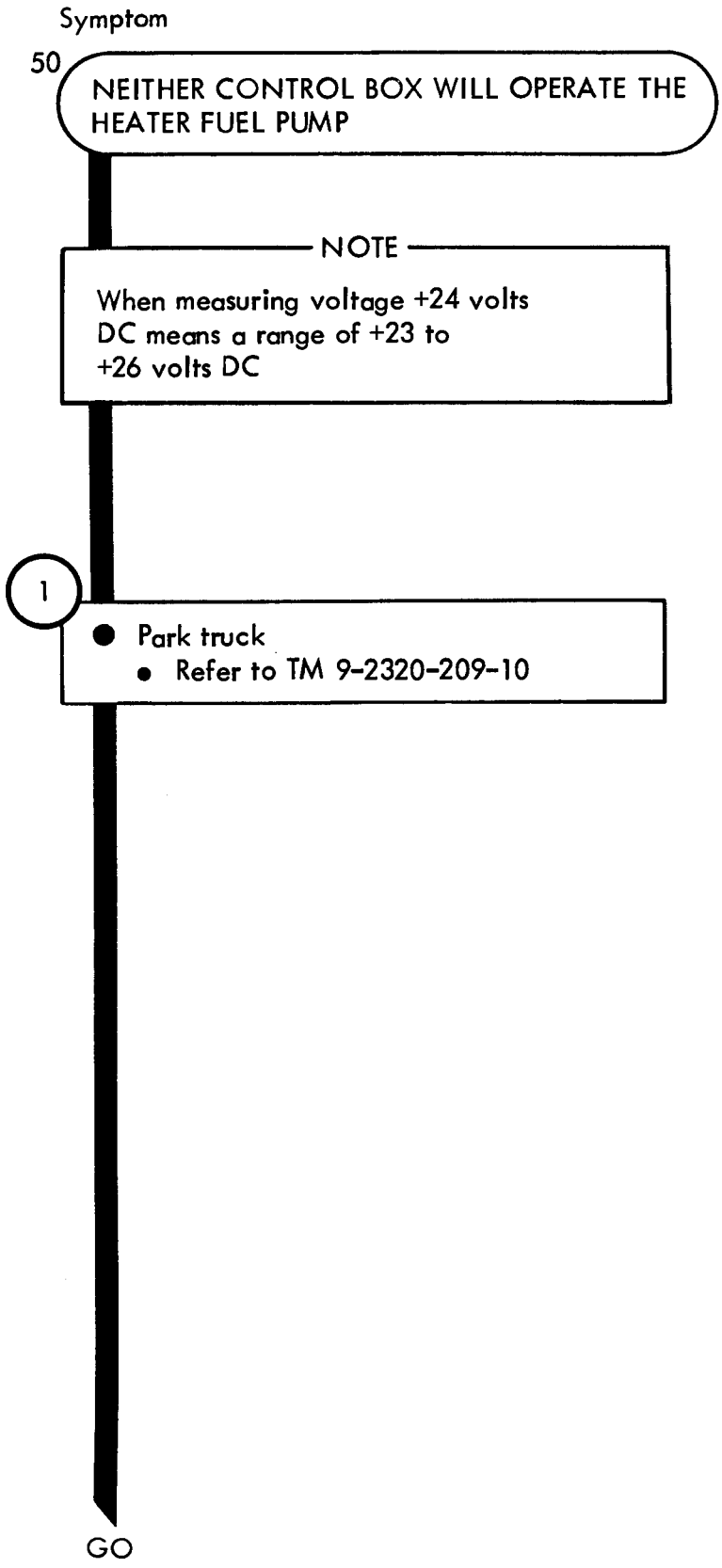
TA 114585

Figure 25-49 (Sheet 8 of 9)



TA 114586

Figure 25-49 (Sheet 9 of 9)



TA 114587

Figure 25-50 (Sheet 1 of 11)

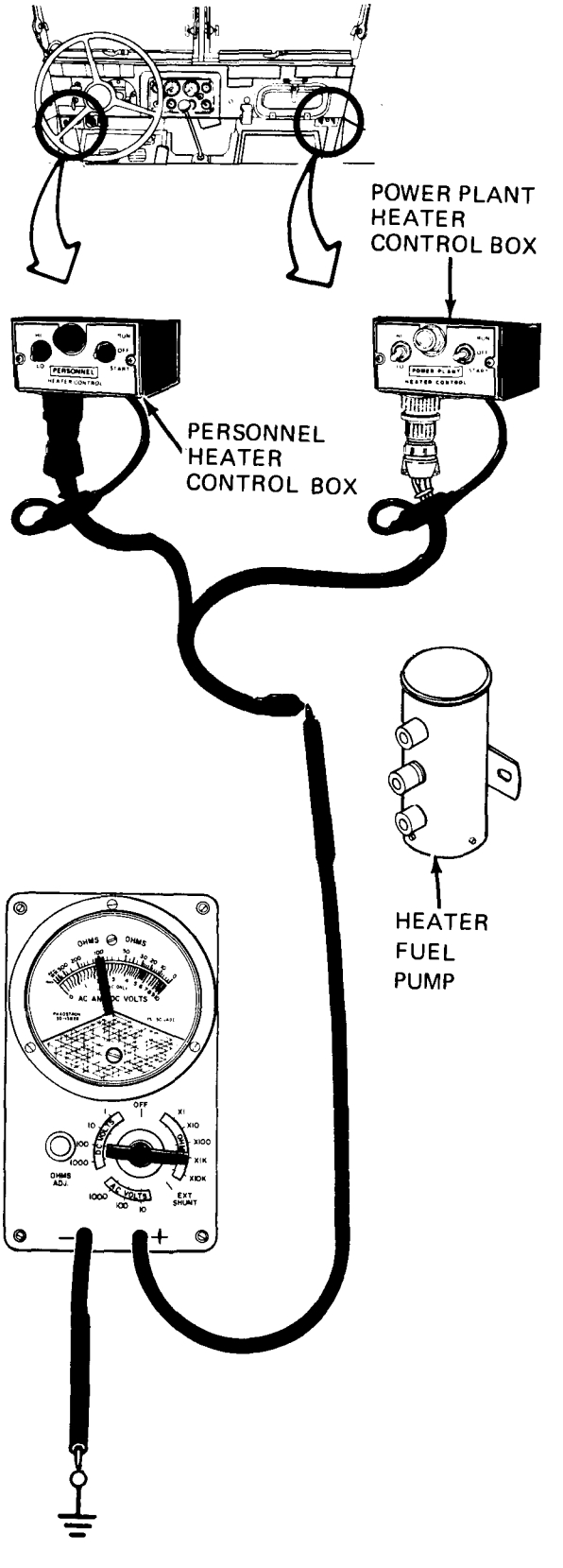
GO

2

- Check for +24 volts DC at heater fuel pump
  - Take off lead from both control boxes to heater fuel pump at the fuel pump
  - Set control boxes to ON
  - Set multimeter to measure +24 volts DC. Refer to test equipment procedures index
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead contact. Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure +24 volts DC?

GO



TA 114588

Figure 25-50 (Sheet 2 of 11)

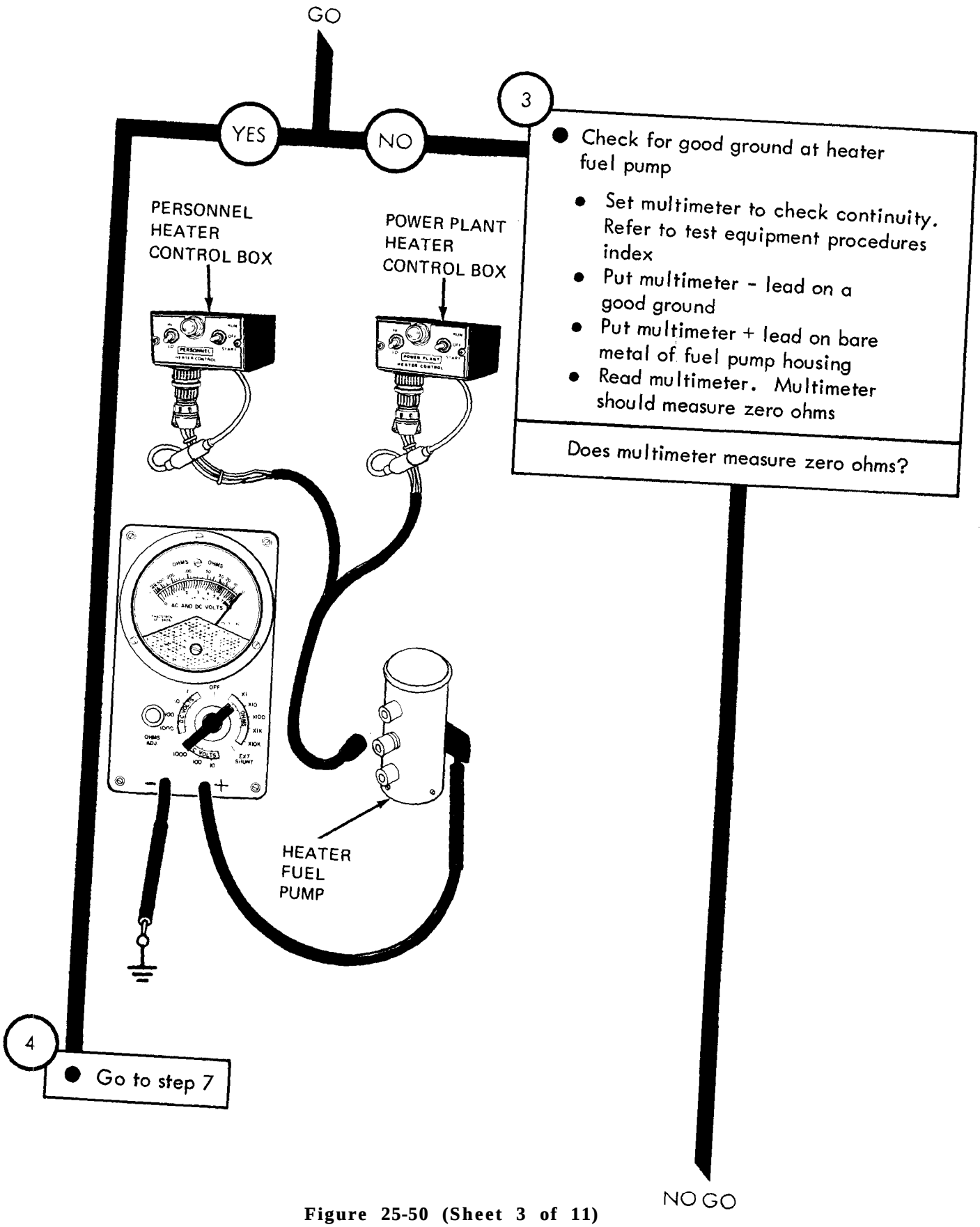
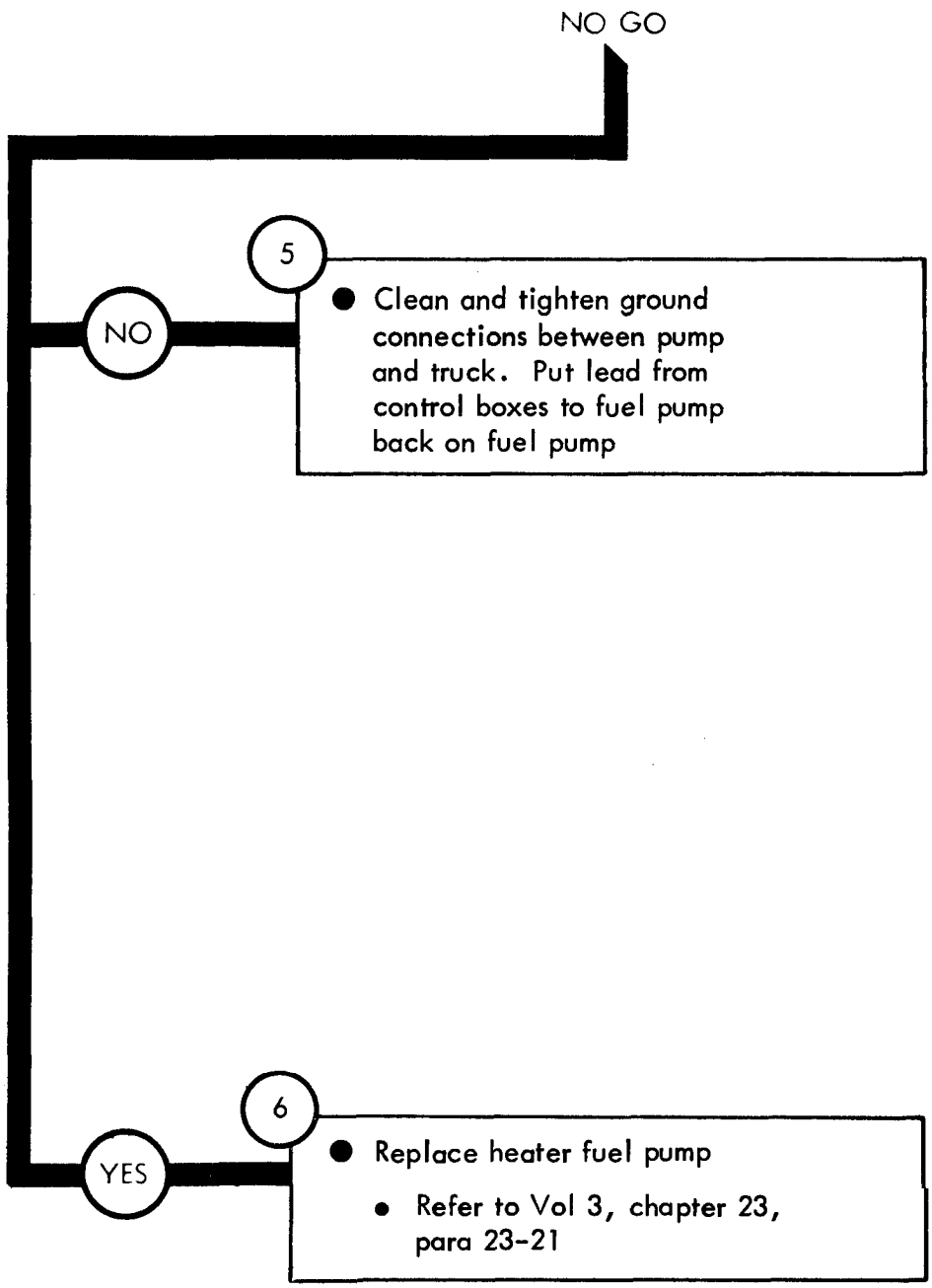


Figure 25-50 (Sheet 3 of 11)



TA 114590

Figure 25-50 (Sheet 4 of 11)

From Step 4

7

- Check voltage through power plant heater control box
  - Put lead from control box to fuel pump back on fuel pump
  - Take off lead 400 from emergency switch to power plant heater control box at control box
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead 400 removed from control box
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

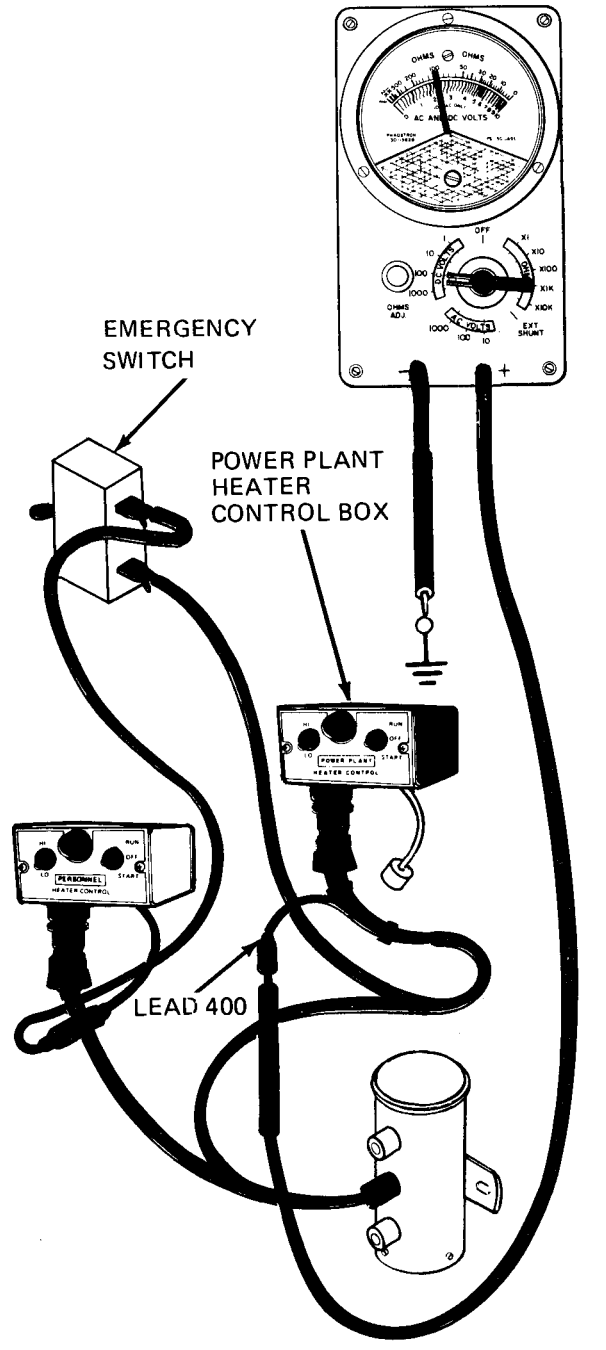
YES

NO

GO

8

- Replace power plant heater control box
  - Tell direct support maintenance



TA 114591

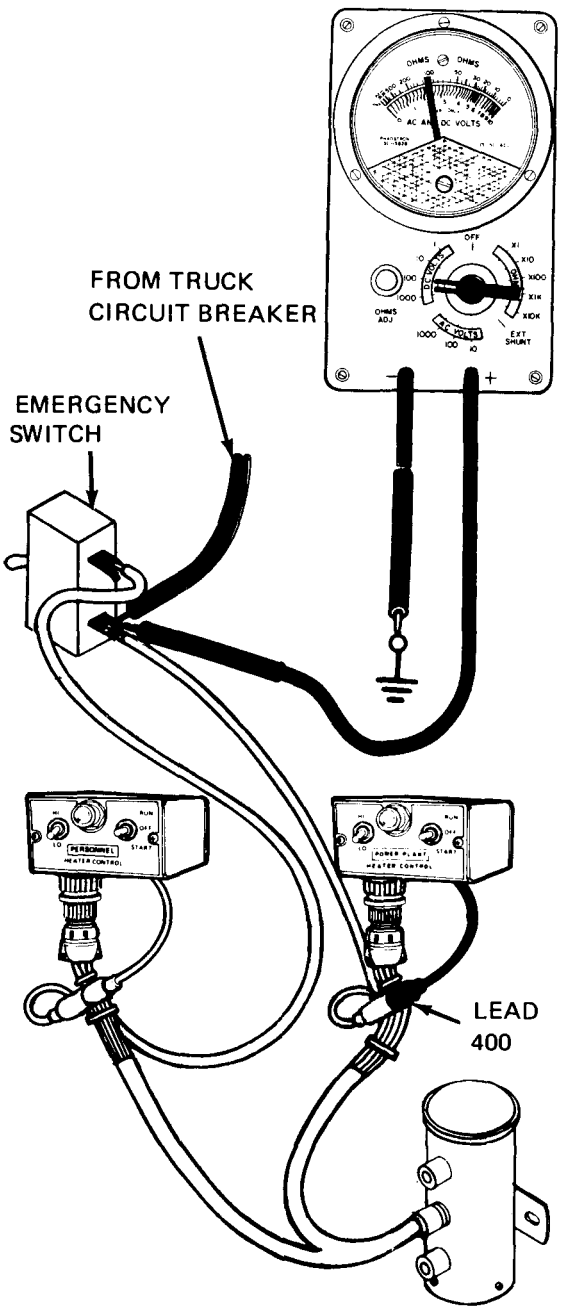
Figure 25-50 (Sheet 5 of 11)

GO

9

- Check lead 400 from emergency switch to power plant heater control box for +24 volts DC
  - Put lead 400 back on at control box
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on emergency switch terminal for lead 400
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?



YES

NO

10

- Repair or replace lead 400 from emergency switch to power plant heater control box
  - Tell direct support maintenance

GO

TA 114592

Figure 25-50 (Sheet 6 of 11)

GO

11

- Check for +24 volts in lead from fuel pump to personnel heater control box
  - Take off lead from fuel pump to personnel heater control box at control box and turn control box on
  - Put multimeter - lead on a good ground
  - Put multimeter + lead in terminal "A" of control box
  - Read multimeter. Multimeter should measure +24 volts DC

Does multimeter measure less than +24 volts DC?

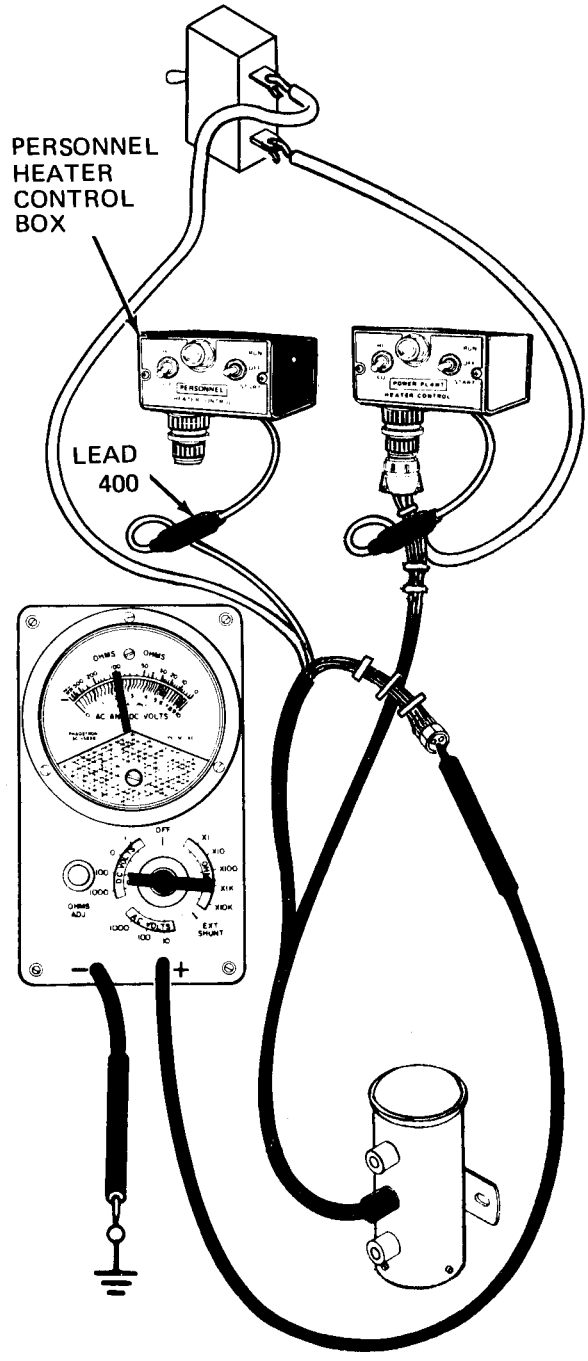
YES

NO

12

- Repair or replace lead from fuel pump to personnel heater control box
  - Tell direct support maintenance

GO



TA 114593

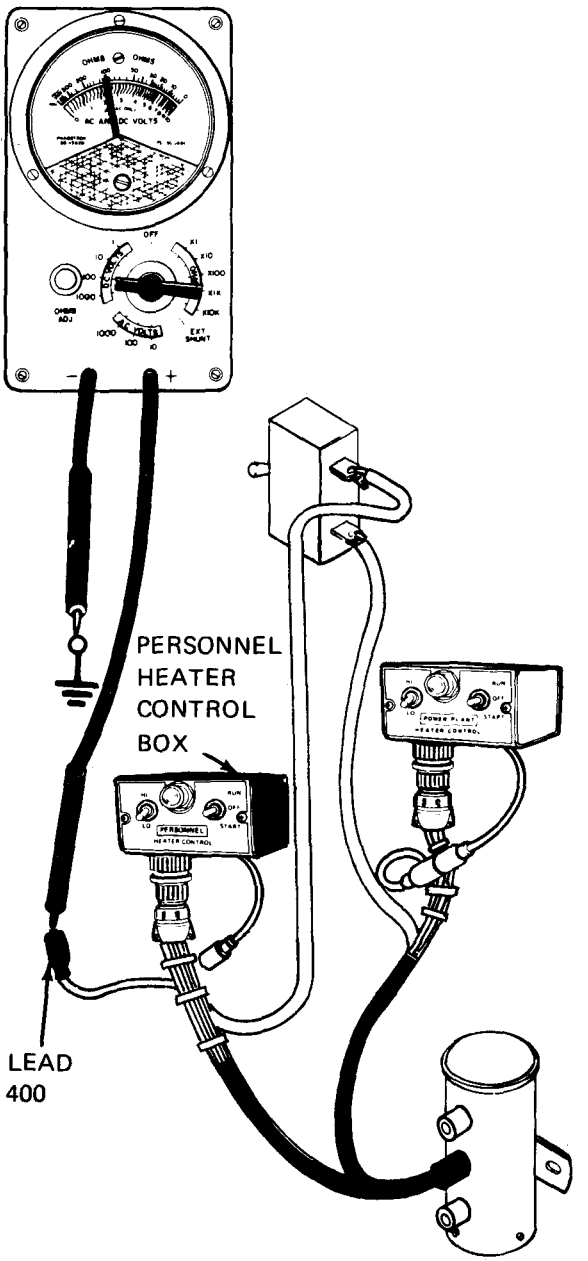
Figure 25-50 (Sheet 7 of 11)

GO

13

- Check for +24 volts through personnel heater control box
  - Put lead from fuel pump to personnel heater control box back on at control box
  - Take off lead 400 from personnel heater control box
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on terminal of lead 400
  - Read multimeter. Multimeter should measure +24 volts DC

Did multimeter measure less than +24 volts DC?



YES

NO

14

- Repair or replace personnel heater control box
  - Tell direct support maintenance

GO

TA 114594

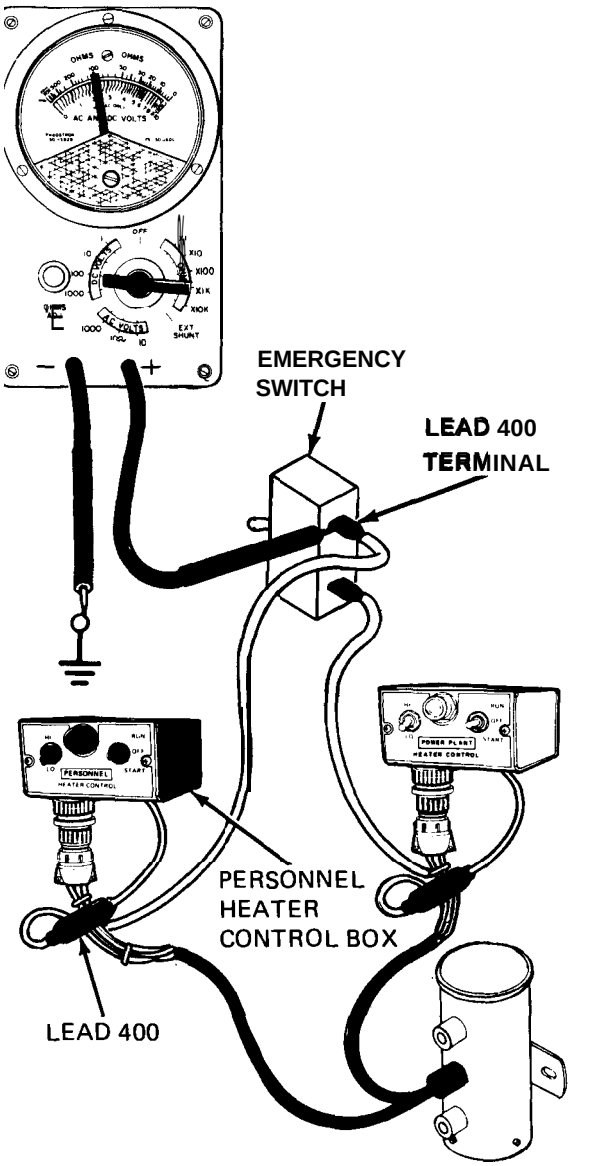
Figure 25-50 (Sheet 8 of 11)

GO

15

- Check lead 400 from personnel heater control box for +24 volts DC
  - Put lead 400 back on control box
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on lead 400 terminal of emergency switch
  - Read multimeter. Multimeter should measure +24 volts DC

k Does multimeter measure less than



YES

NO

16

. Repair or replace lead 400 from emergency switch to personnel heater control box

- Tell direct support maintenance

GO

TA 114595

Figure 25-50 (Sheet 9 of 11)

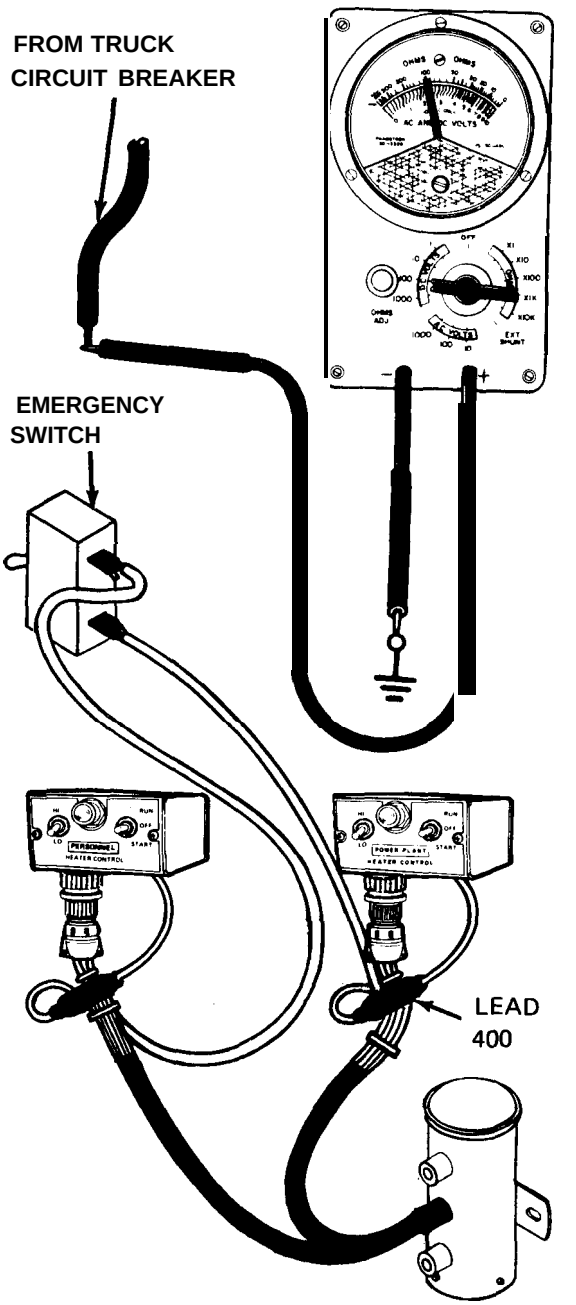
GO

17

- Check voltage through heater control box
  - At emergency switch takeoff lead from truck circuit breaker
  - Put multimeter - lead on a good ground
  - Put multimeter + lead on contact of lead from truck circuit breaker
  - Read multimeter. Multimeter should measure +24 volts DC

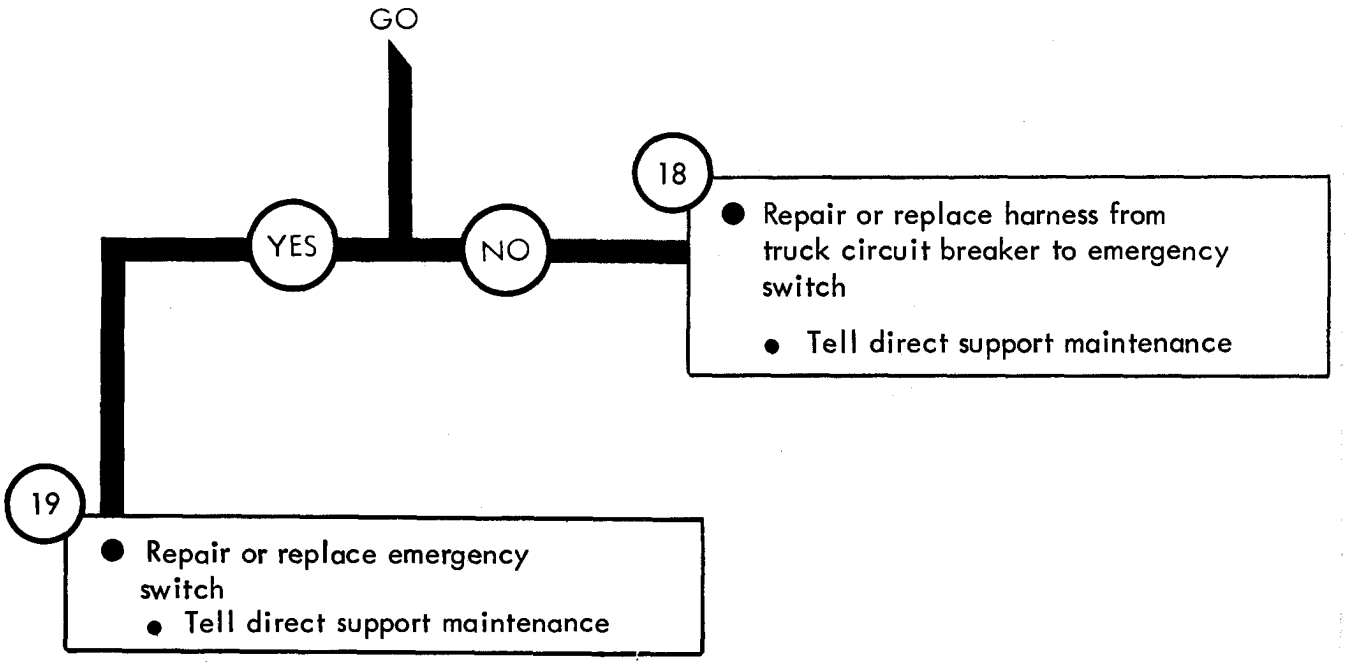
Does multimeter measure +24 volts DC?

GO



TA 114596

Figure 25-50 (Sheet 10 of 11)



TA 114597

Figure 25-50 (Sheet 11 of 11)

By Order of the Secretaries of the Army and the Air Force:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

LEW ALLEN, JR., General, USAF
Chief of Staff

Official:

VAN L. CRAWFORD, JR., Colonel, USAF
Director of Administration

Distribution:

To be distributed in accordance with DA Form 12-38, Organizational Maintenance requirements for 2-1/2-Ton Truck Cargo, 2-1/2-Ton Truck Van, etc.

*U.S. GOVERt.MENT PRINTING OFFICE: 1981-750002/1132

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN. . . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)
CDR, 1st Bn, 65th ADA
Attn: SP4 Jane Idone
Key West, FL 33040

DATE SENT
Date sent in

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-2320-209-20-2-1	27 May 1981	ORGANIZATIONAL TROUBLESHOOTING MANUAL

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
5-14		5-13		WHEEL SYSTEM chart should be changed to add a fourth breakdown on tires. Add TIRE MOUNTING to chart.
6-2			6-1	Subsystem LUBRICATION, symptom 2, summary refers to figure 9-10. Should refer to figure 9-1.
25-131		25-14 (Sheet 3 of 24)		Box ⑥, second sentence reads "Set light switch main lever." Should read "Set light switch main lever to OFF."

SAMPLE

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER
SP4 Jane Idone Autovon 222-2224

SIGN HERE
Jane Idone

DA FORM 1 JUL 79 2028-2 PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2

FILL IN YOUR UNIT'S ADDRESS

FOLD

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $.

SAMPLE

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
ATTN: DRSTA-MB
Warren, MI 48090

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-2320-209-20-2-1	27 May 1981	ORGANIZATIONAL TROUBLESHOOTING MANUAL

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 **2028-2**

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
ATTN: DRSTA-MB
Warren, MI 48090

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 2320 -209-20-2-1	27 May 1981	ORGANIZATIONAL TROUBLESHOOTING MANUAL

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH NO	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND *FEES* PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
ATTN: DRSTA-MB
Warren, MI 48090

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-2320 -209-20-2-1	27 May 1981	ORGANIZATIONAL TROUBLESHOOTING MANUAL

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRA OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DAFORM 2028-2

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

TEAR ALONG PERFORATED LINE

Commander
U.S. Army Tank-Automotive Command
Al_' TN: DRSTA-MB
Warren, Ml 48090

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 C. Millimeters = 0.06 Cu Inches
1 C. Meter = 1,000,000 Cu Centimeters = 35.31 C. Feet

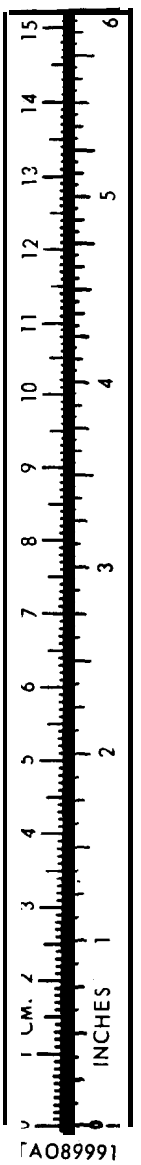
TEMPERATURE

5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 C° + 32 = F°

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



TAO89991

This fine document...

Was brought to you by me:



Liberated Manuals -- free army and government manuals

Why do I do it? I am tired of sleazy CD-ROM sellers, who take publicly available information, slap “watermarks” and other junk on it, and sell it. Those masters of search engine manipulation make sure that their sites that sell free information, come up first in search engines. They did not create it... They did not even scan it... Why should they get your money? Why are not letting you give those free manuals to your friends?

I am setting this document FREE. This document was made by the US Government and is NOT protected by Copyright. Feel free to share, republish, sell and so on.

I am not asking you for donations, fees or handouts. If you can, please provide a link to liberatedmanuals.com, so that free manuals come up first in search engines:

<A HREF=http://www.liberatedmanuals.com/>Free Military and Government Manuals</A>

- Sincerely
  Igor Chudov
  http://igor.chudov.com/
- Chicago Machinery Movers