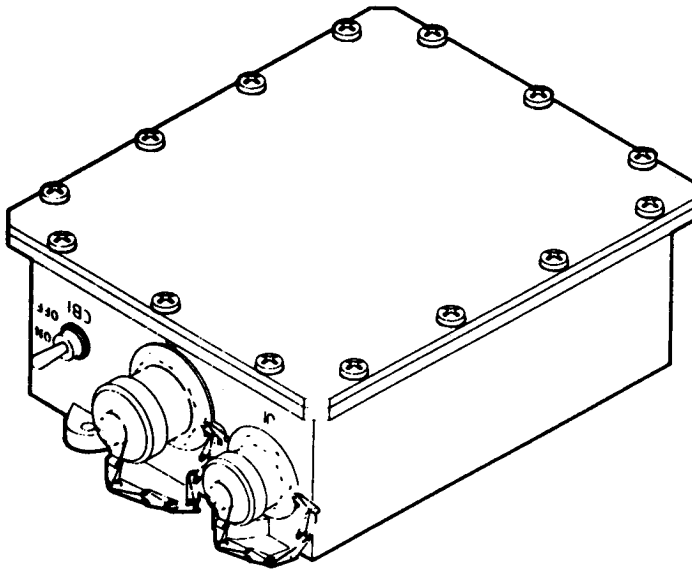


TECHNICAL MANUAL
 ORGANIZATIONAL,
 DIRECT SUPPORT, AND
 GENERAL SUPPORT
 MAINTENANCE MANUAL
 FOR



VEHICLE POWER
 CONDITIONER
 (NSN 5855-01-143-9397)

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Remove power before removing and replacing any assembly, subassembly, or component. HIGH VOLTAGE is used in this system. Death or injury can result if you do not observe safety precautions.

TECHNICAL MANUAL
No. 9-5855-883-24

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 11 March 1986

**ORGANIZATIONAL,
DIRECT SUPPORT, AND
GENERAL SUPPORT
MAINTENANCE MANUAL
FOR**

**VEHICLE POWER CONDITIONER
(NSN 5855-01-143-9397)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS
You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Missile Command, ATTN: AMSMI-LC-ME-PM, Redstone Arsenal, AL 35898-5238. A reply will be furnished to you.

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*This manual supersedes TM 9-5855-883-24, 31 October 1984.

APPENDIX A	R E F E R E N C E S	A-1
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HOW TO USE THIS MANUAL

1. Take a few minutes to look through this manual. We've designed this manual so that it will be easy for you to find and perform the procedures you need.
2. If the Vehicle Power Conditioner needs repair and you know what's wrong with it, here's what you do:
 - a) Turn to the index and check for a paragraph on the component you want to remove and replace.
 - b) Turn to the paragraph. Under the paragraph title, you'll find the tools, materials, and equipment condition needed to perform the procedure. If there are no tools or materials needed, it will also be noted here. If you have more than one of a specific type of tool (for example, two different screwdrivers) the text will indicate which tool to use in the necessary steps. If there is no equipment condition needed to prepare the Vehicle Power Conditioner for the removal procedure, it will be noted that the Vehicle Power Conditioner is assembled.
 - c) To remove the bad component, perform the removal procedure.
 - d) To install the new component, perform the replacement procedure. The Vehicle Power Conditioner should now be ready to operate.
 - e) Perform the troubleshooting procedure paragraph 3-6 to verify repair of the Vehicle Power Conditioner.
3. If the Vehicle Power Conditioner needs repair and you don't know what's wrong with it, you go to the troubleshooting procedures. Troubleshooting procedures are written in the flow chart style. Each set of instructions is written in a box and the boxes are connected by arrows. By following the arrows, you can work your way through the procedure. The chart on the following page tells you what the various boxes mean.

HOW TO USE THIS MANUAL (CONT)

3. (Cont)

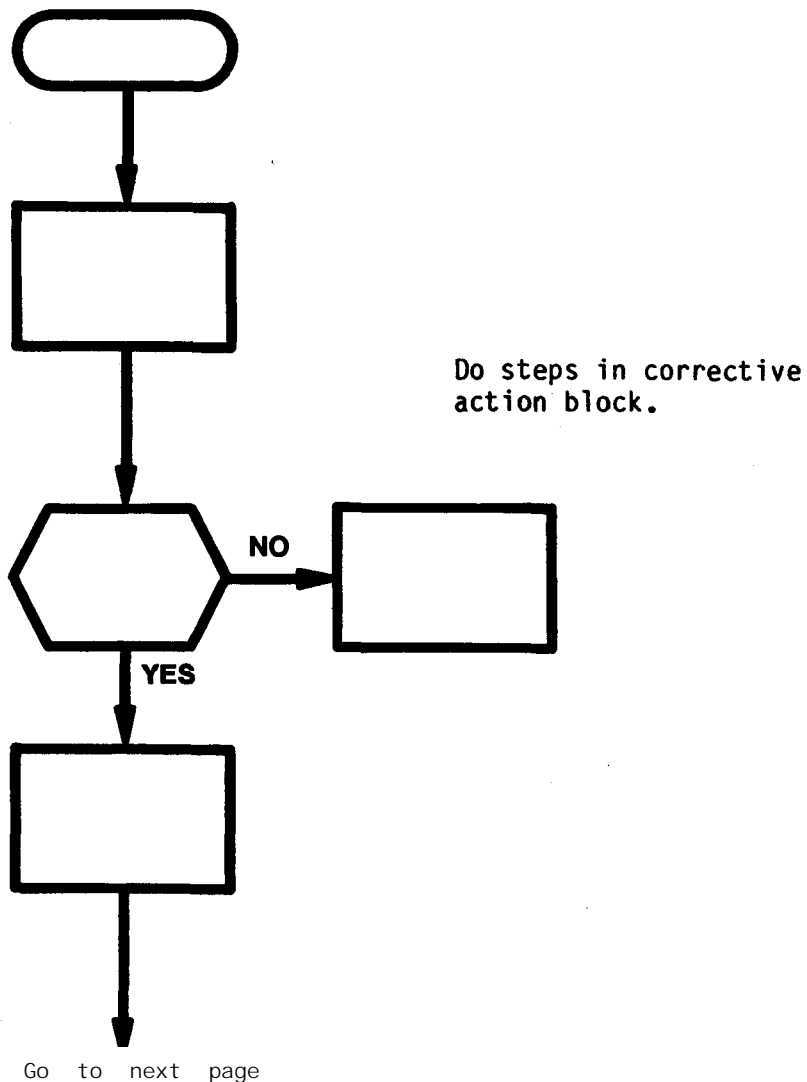
Beginning and end of procedure.

Do instruction before looking for an indication.

Look for a "YES" or "NO" indication. For a "NO" indication, go to corrective action block.

Do steps following "YES" indication.

Go to next page and continue the procedure.



After performing a step in a corrective action block, return to the beginning of the procedure and perform the procedure again. **If you** branch into the same corrective action block, perform the second step, and so on. The troubleshooting procedure has been successfully performed when you go from "START" to "END OF TASK" without branching into a corrective action block.

**CHAPTER 1
INTRODUCTION**

CHAPTER OVERVIEW

This chapter is an introduction to the Vehicle Power Conditioner. The chapter is divided into three sections. Section I contains general information on the Vehicle Power Conditioner. Section II gives a description and data for the Vehicle Power Conditioner and lists equipment used with the Vehicle Power Conditioner. Section III contains principles of operation for the Vehicle Power Conditioner.

<u>CHAPTER CONTENTS</u>	<u>P A G E</u>
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Section I. GENERAL INFORMATION

<u>SECTION CONTENTS</u>	<u>PARA</u>	<u>PAGE</u>
SCOPE	1-1	1-2
MAINTENANCE FORMS, RECORDS, AND REPORTS	1-2	1-2
DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE	1-3	1-2
PREPARATION FOR STORAGE OR SHIPMENT	1-4	1-2
NOMENCLATURE CROSS-REFERENCE LIST	1-5	1-2
REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)	1-6	1-2
ALIGNMENT	1-7	1-2

1-1. SCOPE

Type of Manual: Organizational, Direct Support, and General Support Maintenance.

Model Number and Equipment Name: Vehicle Power Conditioner.

Purpose of Equipment: Supplies 4.8 V dc and 16.8 V dc regulated to the Night Sight junction box.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, the Army Maintenance Management System.

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

Destruction of Army Electronics materiel to prevent enemy use shall be in accordance with TM 750-244-4-2.

1-4. PREPARATION FOR STORAGE OR SHIPMENT

Refer to TM 9-1260-477-12 for instructions on preparation of the equipment for storage or shipment.

1-5. NOMENCLATURE CROSS-REFERENCE LIST

Official nomenclature for items and parts of the Vehicle Power Conditioner and associated Night Sight equipments are listed in the Repair Parts and Special Tools List (RPSTL), TM 9-5855-450-24P or TM 9-5855-882-24P. The following cross-reference covers those items used with the Vehicle Power Conditioner which have common names that differ from the official nomenclature.

TM NOMENCLATURE	OFFICIAL NOMENCLATURE
Night Sight	Night Vision Sight, Infrared
AN/TAM-3A	Test Set, Night Vision Sight AN/TAM-3A

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design, put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, U.S. Army Missile Command, ATTN: DRSMI-QMD, Redstone Arsenal, AL 35898-5290. We'll send you a reply.

1-7. ALINEMENT

Refer to Chapter 3 for alinement procedures.

Section II. EQUIPMENT DESCRIPTION AND DATA

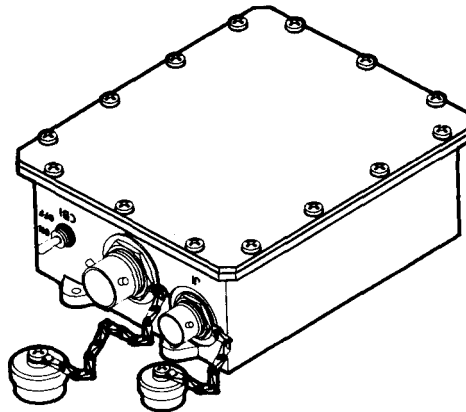
<u>SECTION</u> <u>CONTENTS</u>	<u>PARA</u>	<u>PAGE</u>
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LOCATION AND DESCRIPTION OF MAJOR COMPONENTS	1-9	1-3
EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES	1-10	1-4
DIFFERENCES BETWEEN MODELS	1-11	1-4
EQUIPMENT DATA	1-12	1-4
TRANSPORTATION DATA	1-13	1-5
SAFETY, CARE, AND HANDLING	1-14	1-5

1-8. SCOPE

This section describes the characteristics, capabilities, features, differences, and other data of the equipment, and its safety, care, and handling.

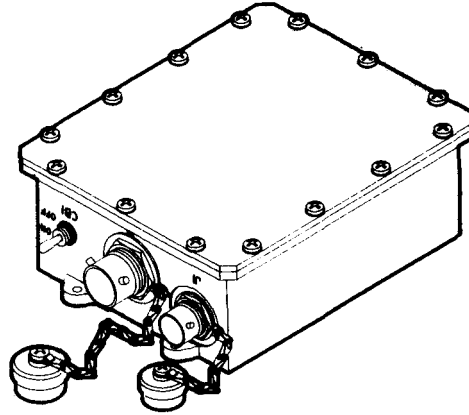
1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The Vehicle Power Conditioner major components are shown below.



1-10. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Vehicle Power Conditioner.



The Vehicle Power Conditioner supplies power to the Night Sight from the vehicle power system.

1-11. DIFFERENCES BETWEEN MODELS

(Only one model available.)

1-12. EQUIPMENT DATA

Table 1-1 provides power requirements for the Vehicle Power Conditioner.

Table 1-1. EQUIPMENT DATA

Electrical power source	Vehicle Power or Power Supply
Voltage required	20.0 to 24.0 V dc

1-13. TRANSPORTATION DATA

Table 1-2. TRANSPORTATION DATA

	Length in. (cm)	Width in. (cm)	Height in. (cm)	Volume cu ft (m ³)	Weight lb/(kg)
Vehicle Power Conditioner with cables	12.0 (30.5)	10.0 (25.4)	5.0 (12.7)	0.300 (0.008)	8.1 (3.0)

1-14. SAFETY, CARE, AND HANDLING



Remove power before removing and replacing any assembly, subassembly, or component. HIGH VOLTAGE is used in this system. Death or injury can result if you do not observe safety precautions.

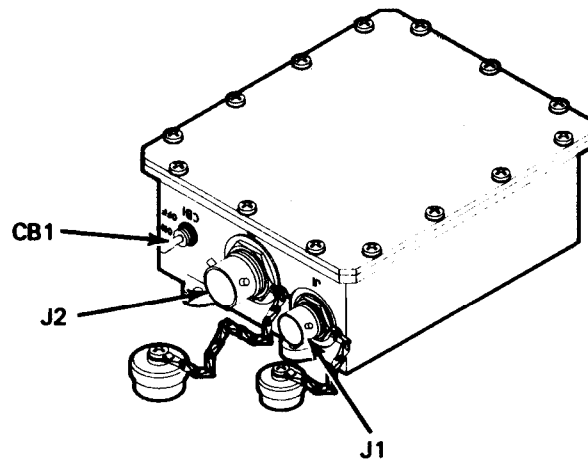
Section III. PRINCIPLES OF VEHICLE POWER CONDITIONER OPERATION

<u>SECTION CONTENTS</u>	<u>PARA</u>	<u>PAGE</u>
SCOPE	1-15	1-5
VEHICLE POWER CONDITIONER	1-16	1-6

1-15. SCOPE

The principles of operation of the Vehicle Power Conditioner are in the following paragraphs.

1-16. VEHICLE POWER CONDITIONER



The Vehicle Power Conditioner accepts 20 to 40 V dc from the vehicle and supplies regulated 4.8 and 16.8 V dc for the Night Sight. The input voltage is supplied to the unit through connector J1. Connector J1 supplies the voltage to circuit breaker CB1. Setting the circuit breaker to ON supplies input voltage to a regulator. The regulator supplies regulated 4.8 V dc and 16.8 V dc through connector J2 to the Night Sight junction box.

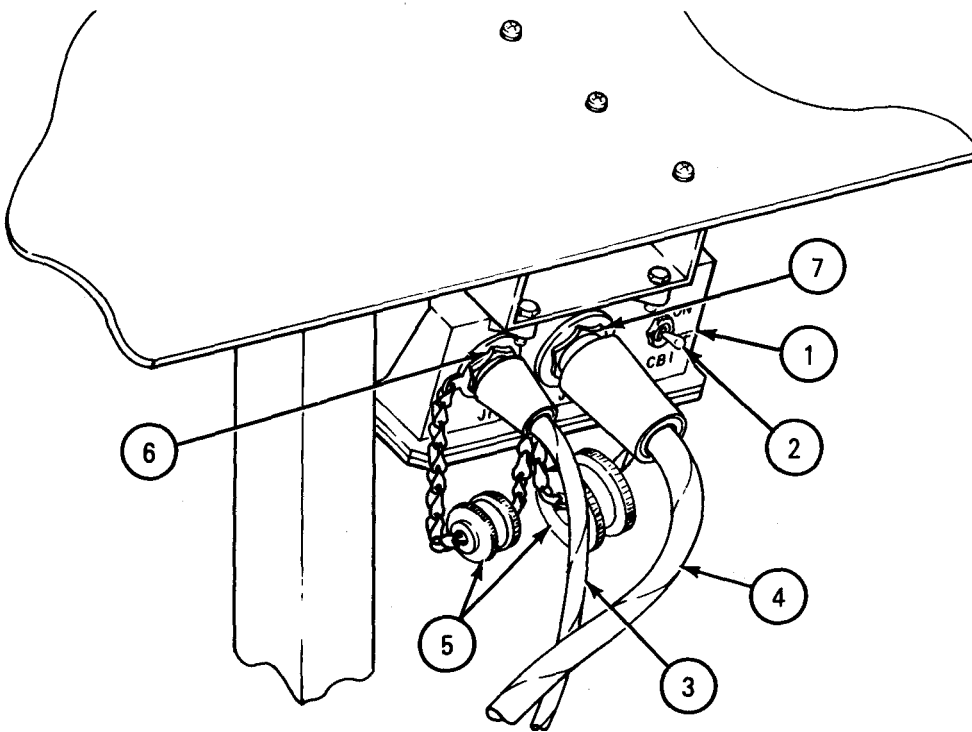
CHAPTER 2

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

CHAPTER OVERVIEW

This chapter contains organizational maintenance instructions for the Vehicle Power Conditioner.

2-1. REMOVAL AND REPLACEMENT OF VEHICLE POWER CONDITIONER FROM VEHICLE (Sheet 1 of 3)



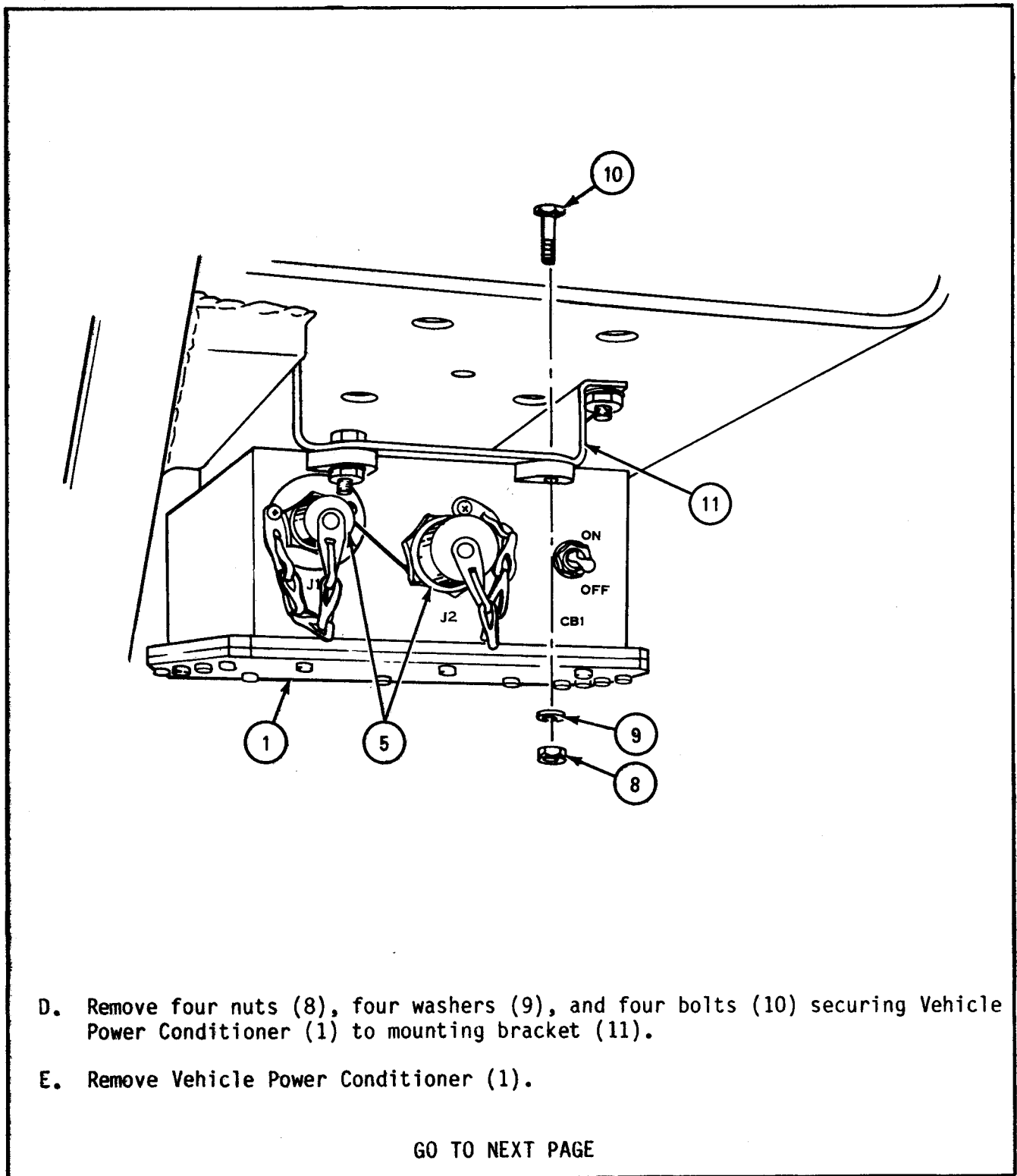
STEP 1

REMOVAL

- A. On Vehicle Power Conditioner (1), make sure ON/OFF switch (2) is set to OFF.
- B. Disconnect cable W1 (3) and cable W2 (4) from Vehicle Power Conditioner (1).
- C. Install protective caps (5) on cable W1 (3) and cable W2 (4) and, on Vehicle Power Conditioner connector J1 (6) and connector J2 (7).

GO TO NEXT PAGE

2-1. REMOVAL AND REPLACEMENT OF VEHICLE POWER CONDITIONER FROM VEHICLE (CONT)
(Sheet 2 of 3)

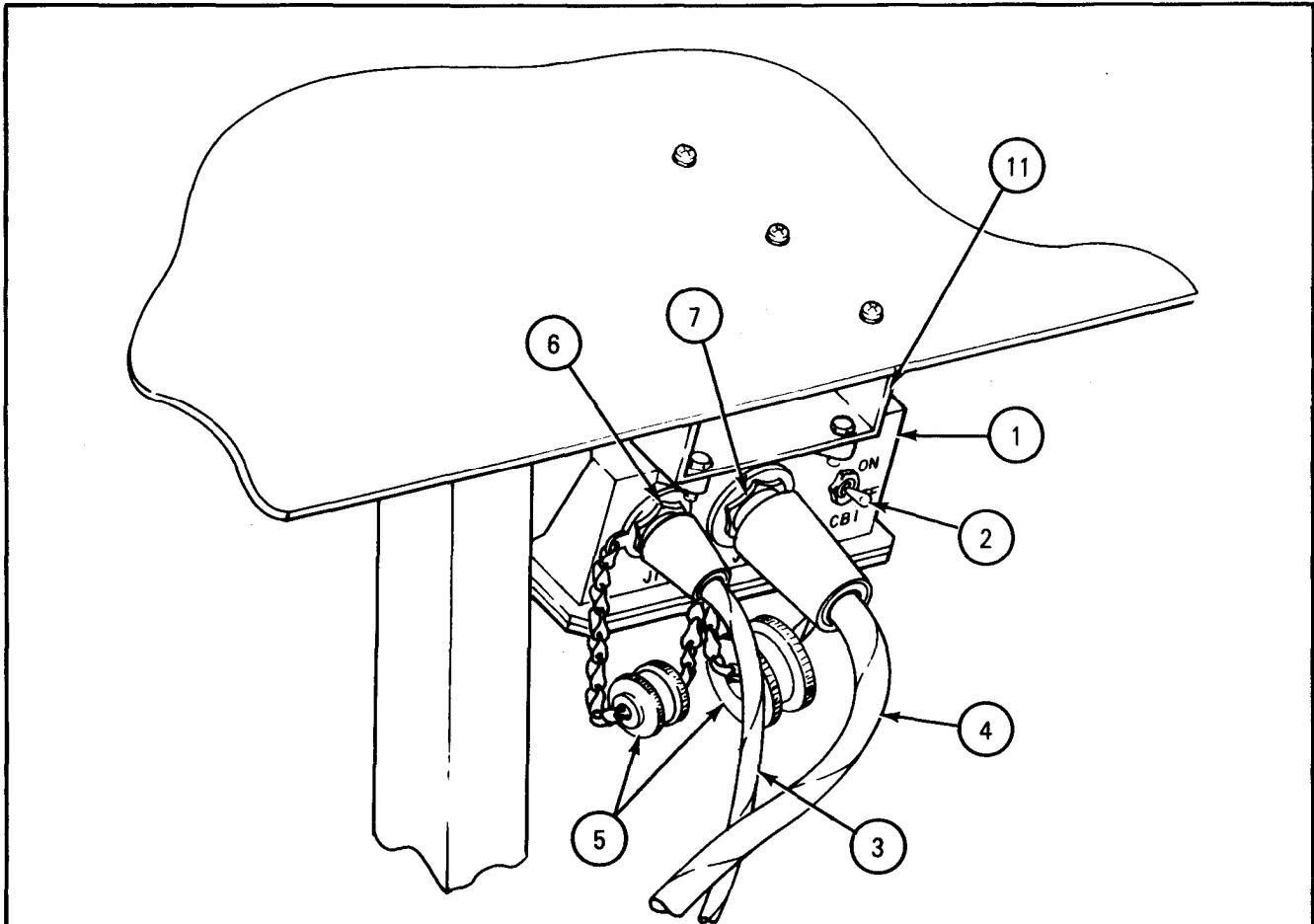


D. Remove four nuts (8), four washers (9), and four bolts (10) securing Vehicle Power Conditioner (1) to mounting bracket (11).

E. Remove Vehicle Power Conditioner (1).

GO TO NEXT PAGE

2-1. REMOVAL AND REPLACEMENT OF VEHICLE POWER CONDITIONER FROM VEHICLE (CONT)
(Sheet 3 of 3)



STEP 2

REPLACEMENT

- A. Position Vehicle Power Conditioner (1) under mounting bracket (11).
- B. Fasten Vehicle Power Conditioner (1) to mounting bracket (11) using four bolts (10), four washers (9), and four nuts (8).
- C. Remove protective caps (5) from cable W1 (3) and cable W2 (4), and from Vehicle Power Conditioner connector J1 (6) and connector J2 (7).
- D. Make sure ON/OFF switch (2) is set to OFF.
- E. Connect cable W1 to Vehicle Power Conditioner connector J1 (6).
- F. Connect cable W2 to Vehicle Power Conditioner connector J2 (7).

END OF TASK

CHAPTER 3

VEHICLE POWER CONDITIONER MAINTENANCE INSTRUCTIONS

CHAPTER OVERVIEW

This chapter contains maintenance instructions on the Vehicle Power Conditioner. Section I describes the repair parts; special tools; test, measurement and diagnostic equipment (TMDE); and support equipment. Section II provides troubleshooting data. Section III outlines the maintenance procedures for the Vehicle Power Conditioner.

<u>CHAPTER CONTENTS</u>	<u>P A G E</u>
Section I. VEHICLE POWER CONDITIONER REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT	3 - 1
Section II. VEHICLE POWER CONDITIONER TROUBLESHOOTING	3 - 2
Section III. VEHICLE POWER CONDITIONER MAINTENANCE PROCEDURES	3 - 1 4

Section I. VEHICLE POWER CONDITIONER REPAIR PARTS, SPECIAL TOOLS, TDME, AND SUPPORT EQUIPMENT

<u>SECTION CONTENTS</u>	<u>P A R A</u>	<u>P A G E</u>
SCOPE	3 - 1	3 - 1
COMMON TOOLS AND EQUIPMENT	3 - 2	3 - 2
SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT	3 - 3	3 - 2
REPAIR PARTS	3 - 4	3 - 2

3-1. SCOPE

This section describes the repair parts, special tools, TMDE, and support equipment.

3-2. COMMON TOOLS AND EQUIPMENT

Common tools and equipment are listed in the Maintenance Allocation Chart (MAC), Appendix B.

3-3. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools and equipment are listed in the Maintenance Allocation Chart (MAC), Appendix B.

3-4. REPAIR PARTS

Repair parts are listed and illustrated in the Repair Parts and Special Tools List (TM 9-5855-450-24P or TM 9-5855-882-24P).

Section II. VEHICLE POWER CONDITIONER TROUBLESHOOTING

<u>S E C T I O N C O N T E N T S</u>	<u>P A R A</u>	<u>P A G E</u>
SCOPE	3 - 5	3 - 2
VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE	3 - 6	3 - 3

3-5. SCOPE

This section contains the Vehicle Power Conditioner Troubleshooting Procedure.

3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (Sheet 1 of 11)

This paragraph provides troubleshooting procedures for the Vehicle Power Conditioner.

TEST EQUIPMENT: AN/TAM-3A

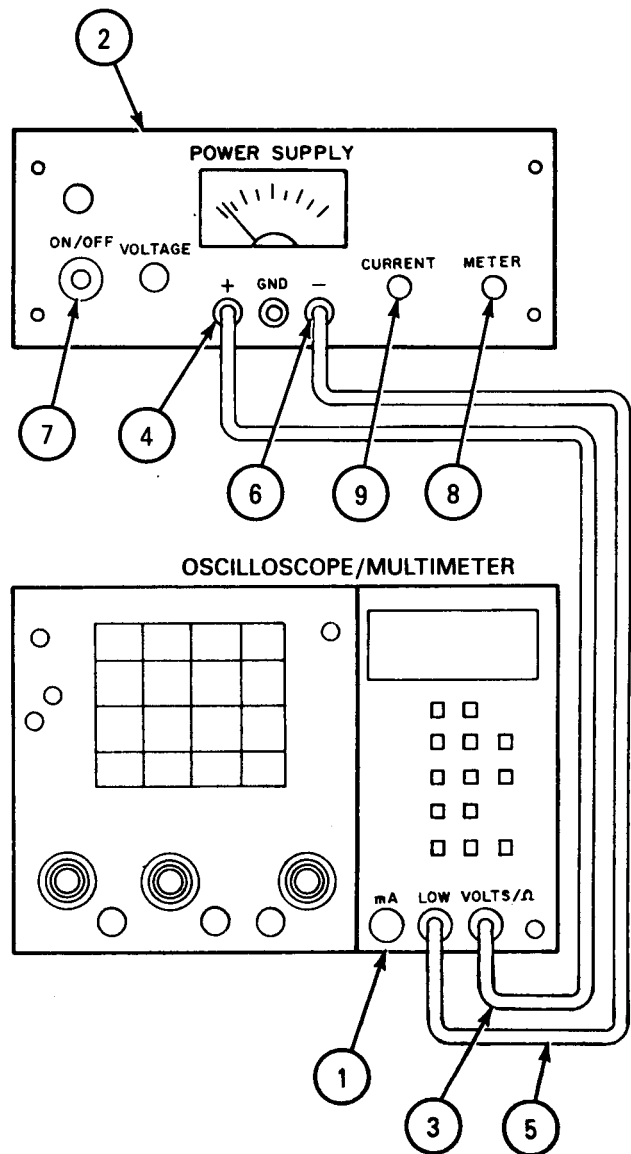
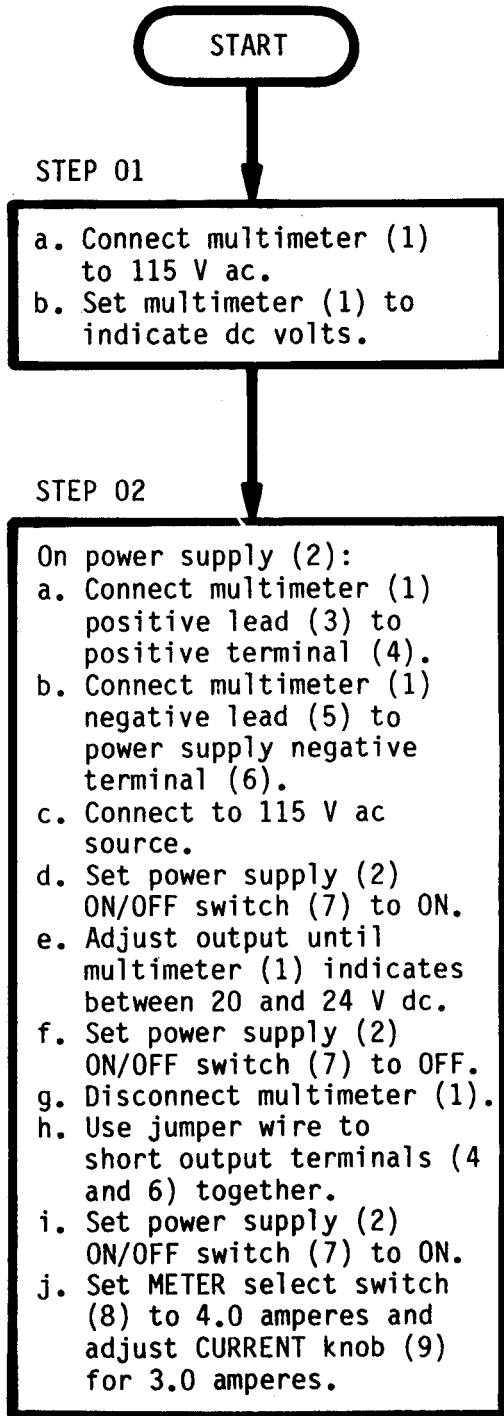


Remove power before removing and replacing any assembly, subassembly, or component. HIGH VOLTAGE is used in this system. Death or injury can result if you do not observe safety precautions.

NOTE

- Follow steps in order given in the procedures. Do not skip any steps.
- When you enter the "NO" chain, do the procedure and/or repairs as instructed in the corrective action block.
- Unless otherwise specified, after performing the corrective action of the "NO" chain always return to the "START" of the procedure you were checking. When more than one corrective action may be required, do the first corrective action, return to "START", and repeat the procedure. If the problem still exists, do the next corrective action and repeat.

3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
(Sheet 2 of 11)



Go to next page

3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
(Sheet 3 of 11)

Continued from previous page

STEP 02
(CONT)

k. Set power supply (2)
ON/OFF switch (7) to OFF.
l. Disconnect jumper wire.

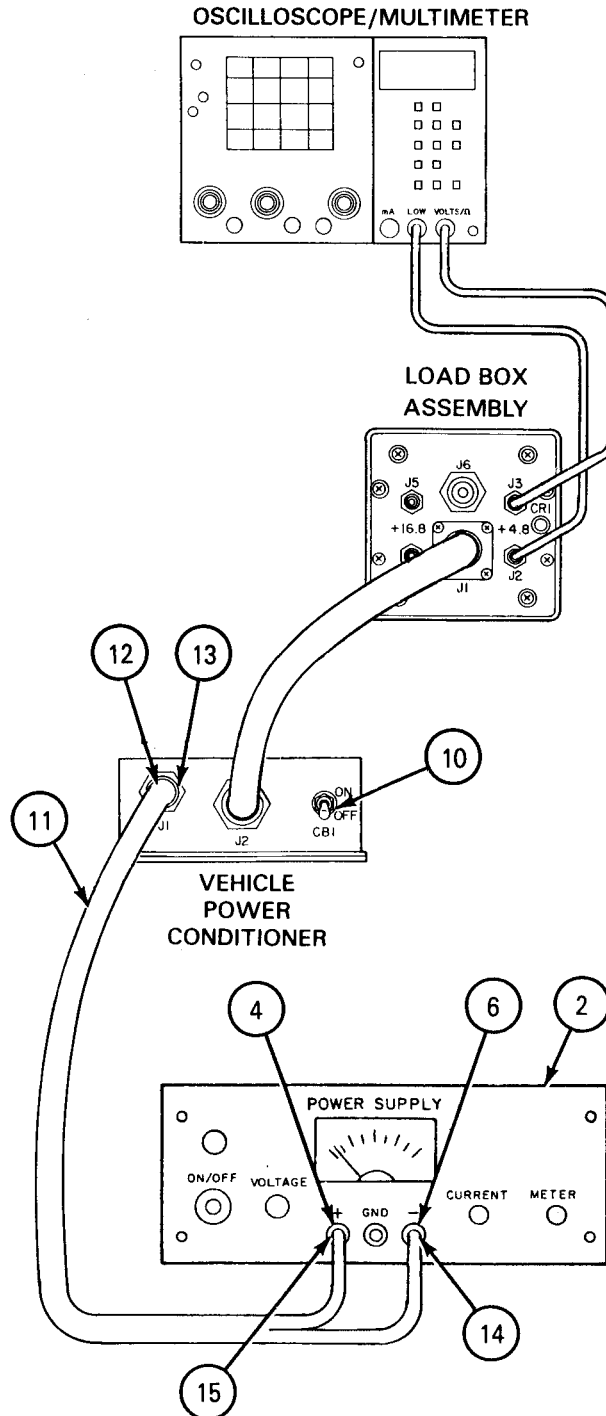
STEP 03

On Vehicle Power
Conditioner, set circuit
breaker CB1 (10) to OFF.

STEP 04

On cable 7W4 (11):
a. Connect connector
P1 (12) to Vehicle Power
Conditioner connector
J1 (13).
b. Connect black plug (14)
to power supply (2)
negative terminal (6).
c. Connect red plug (15)
to power supply (2) positive
terminal (4).

Go to next page



3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE(CONT)
(Sheet 4 of 11)

Continued from previous page

STEP 05

- On cable 8W1 (16):
- a. Connect connector P2 (17) to Vehicle Power Conditioner connector J2 (18).
 - b. Connect connector P1 (19) to load box assembly connector J1 (20).

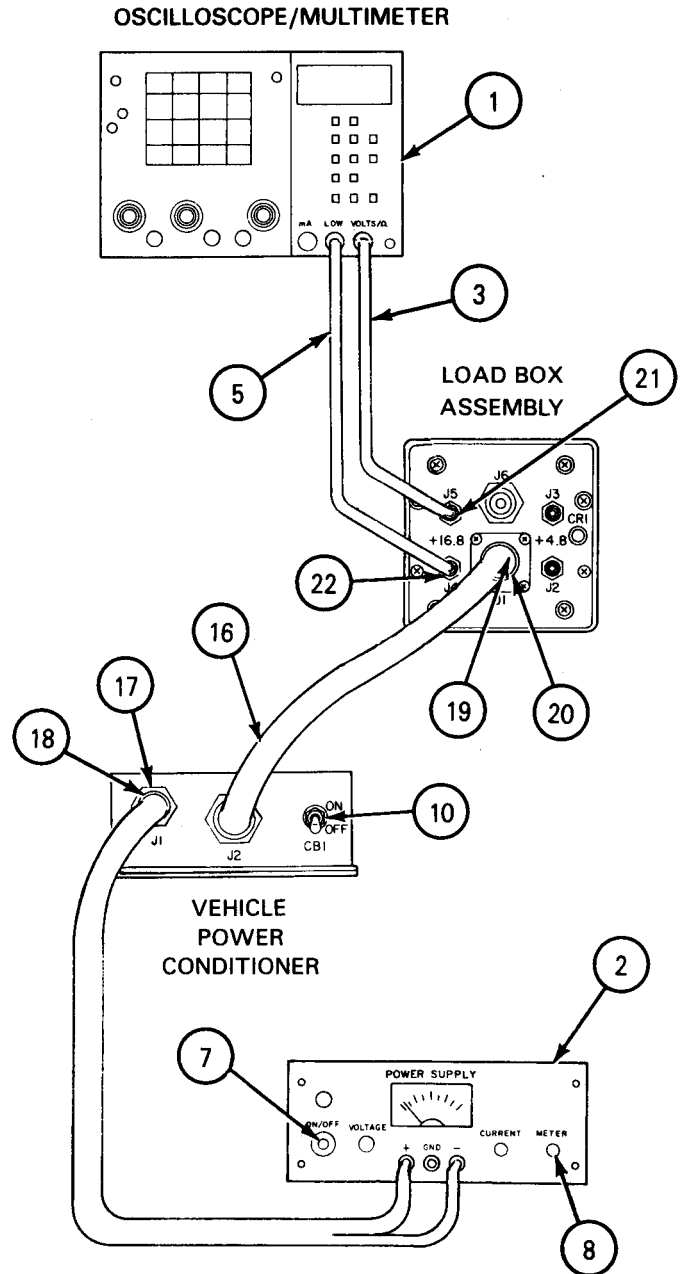
STEP 06

Connect load box assembly to 115 V ac source.

STEP 07

Connect multimeter (1) positive lead (3) to load box assembly connector J5 (21) and negative lead (5) to load box assembly connector J4 (22).

Go to next page



3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
(Sheet 5 of 11)

Continued from previous page

STEP 08

- a. Set power supply (2) METER select knob (8) to 24V.
- b. Set power supply (2) ON/OFF switch (7) to ON.

STEP 09

On Vehicle Power Conditioner, set circuit breaker CB1 (10) to ON.

Does multimeter indicate between 16.5 and 17.5 V dc?

NO

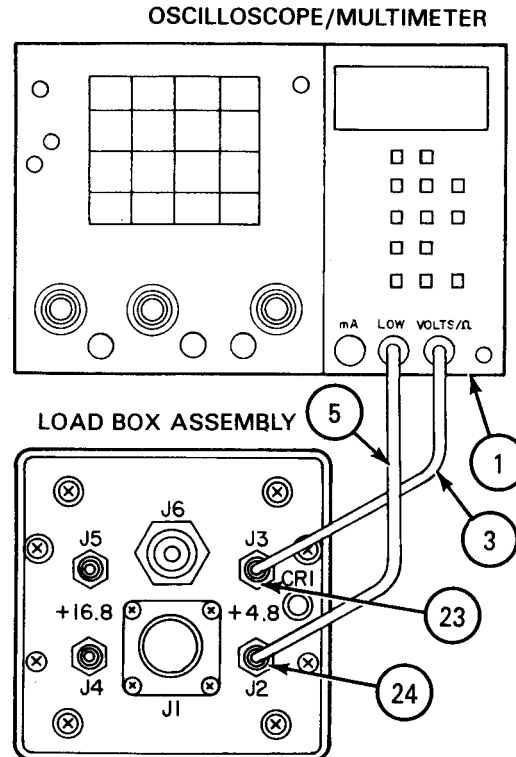
Go to STEP 16.

YES

STEP 10

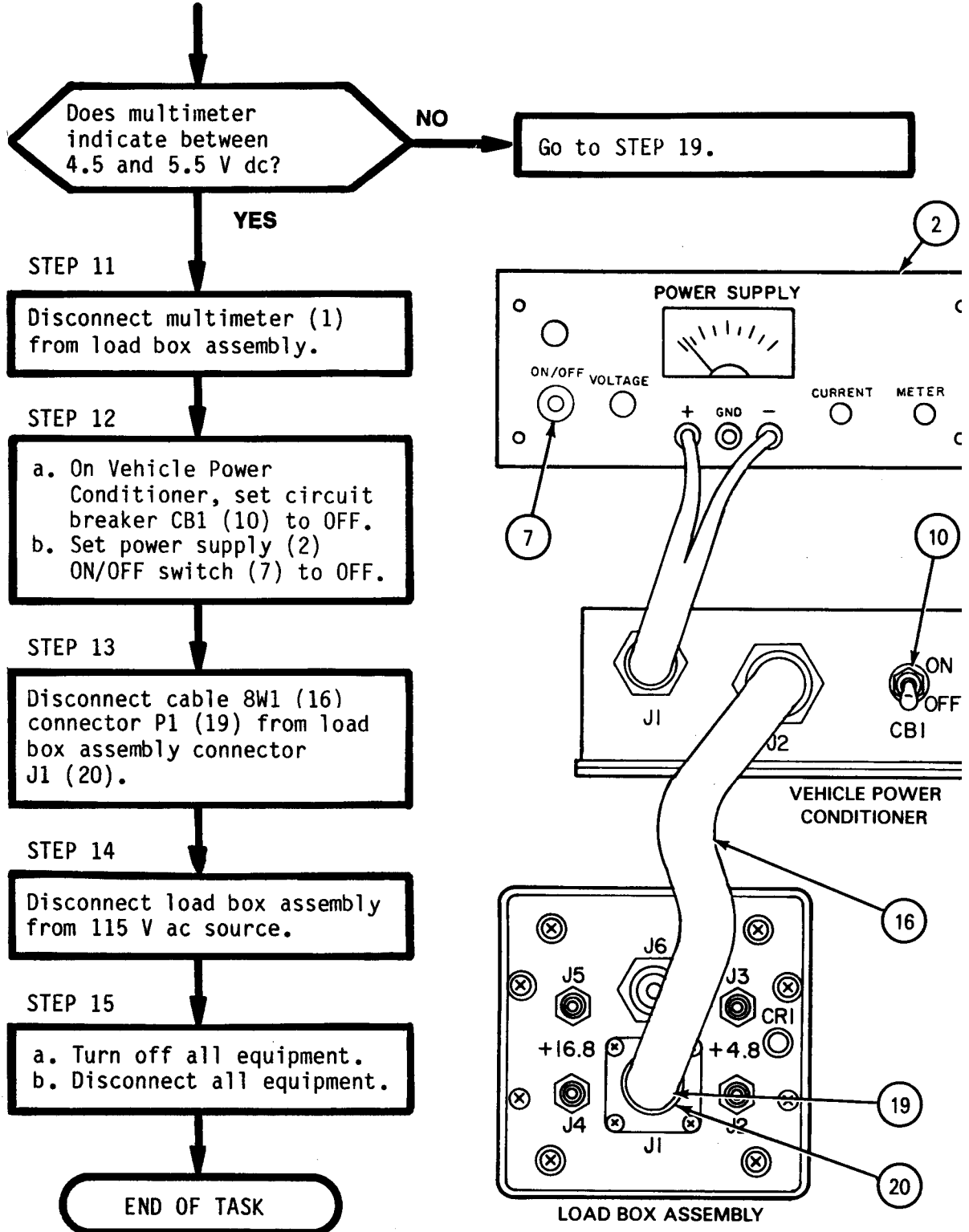
Connect multimeter (1) positive lead (3) to load box assembly connector J3 (23) and negative lead (5) to load box assembly connector J2 (24).

Go to next page



3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT
(Sheet 6 of 11)

Continued from previous page



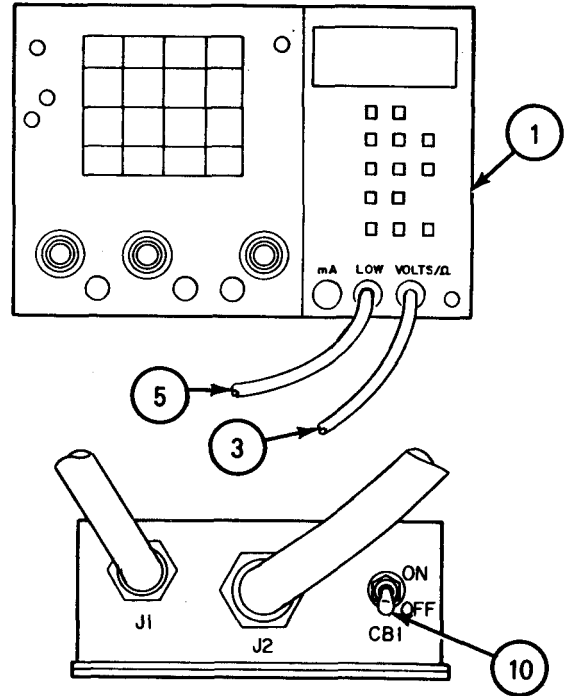
3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
(Sheet 7 of 11)

Continued from STEP 09

STEP 16

- a. On Vehicle Power Conditioner, set circuit breaker CB1 (10) to OFF.
- b. Remove top cover (para 3-8).

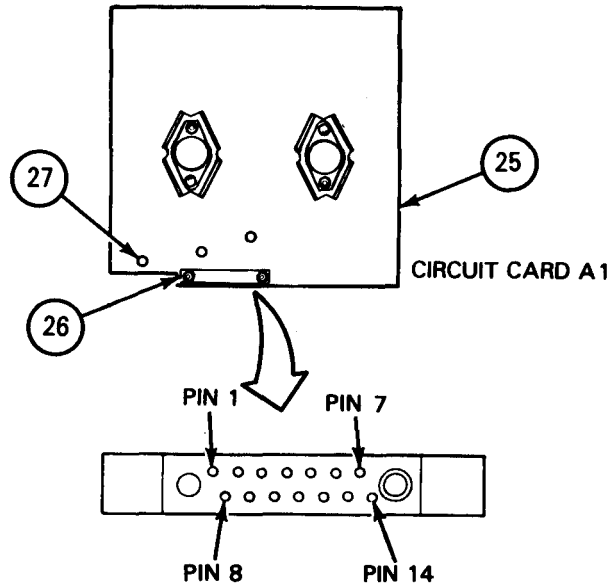
OSCILLOSCOPE/MULTIMETER



VEHICLE POWER CONDITIONER

STEP 17

- a. Connect multimeter (1) positive lead (3) to circuit card A1 (25) connector P1 (26) pin 7 and negative lead (5) to circuit card A1 (25) test point J10 (27).
- b. On Vehicle Power Conditioner, set circuit breaker CB1 (10) to ON.



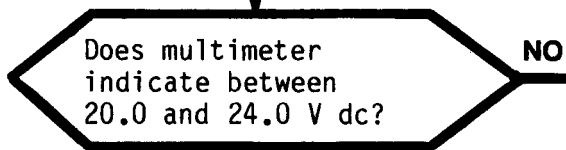
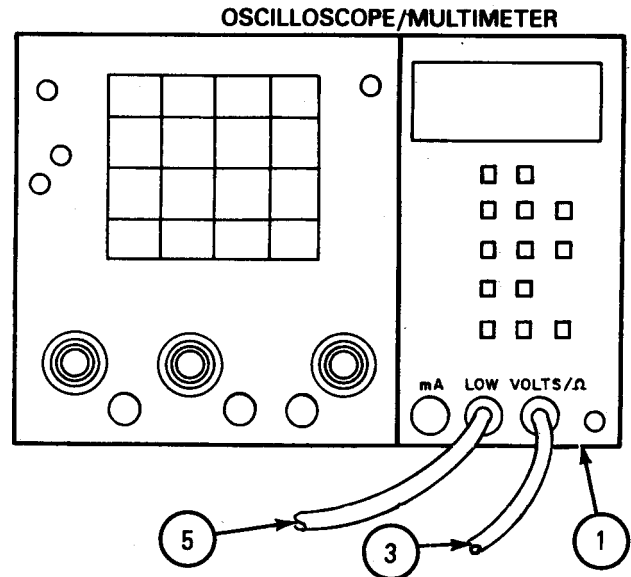
CIRCUIT CARD A1

CONNECTOR P1

Go to next page

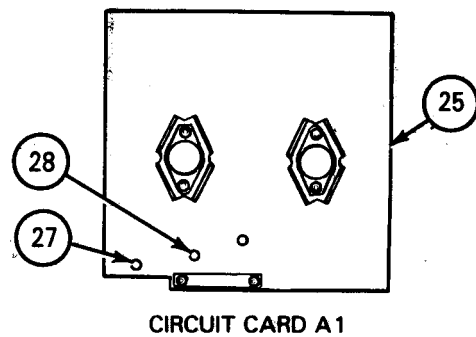
3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
(Sheet 8 of 11)

Continued from previous page



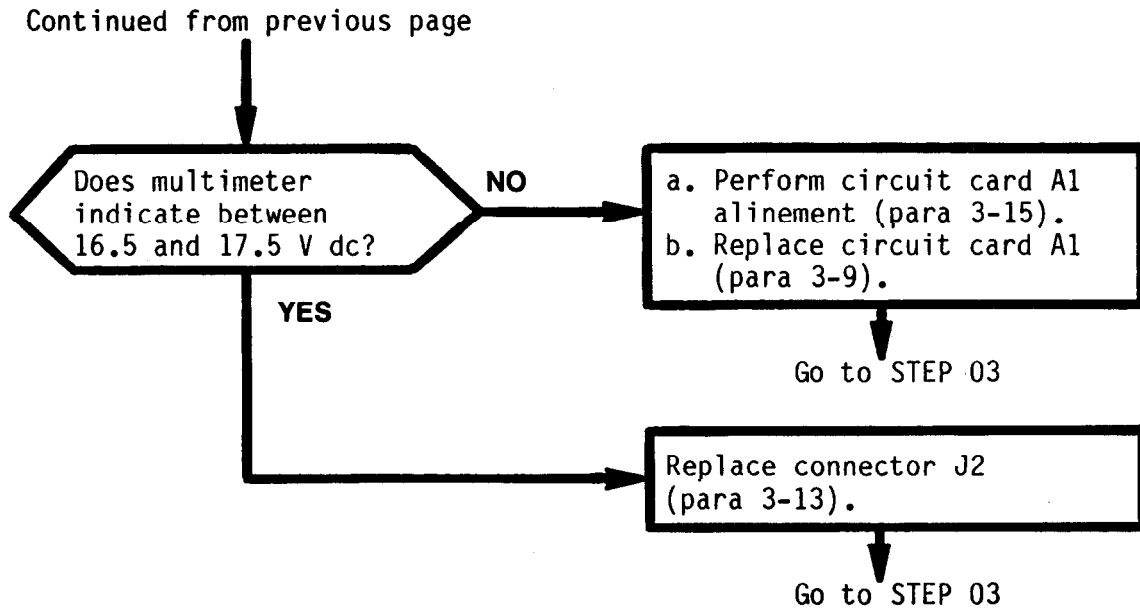
- a. Adjust power supply.
- b. Remove and replace filter FL1 (para 3-11).
- c. Remove and replace filter FL2 (para 3-11).
- d. Remove and replace connector J1 (para 3-12).

STEP 18
Connect multimeter (1) positive lead (3) to circuit card A1 (25) test point J4 (28) and negative lead (5) to test point J10 (27).



Go to next page

3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
(Sheet 9 of 11)

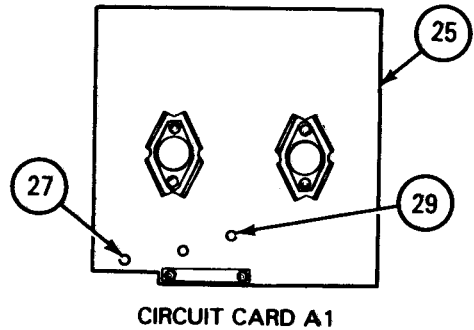
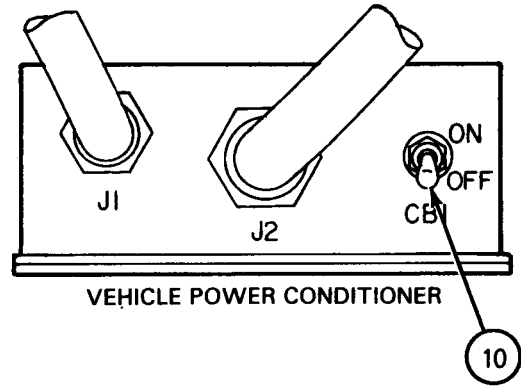


3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
(Sheet 10 of 11)

Continued from STEP 10

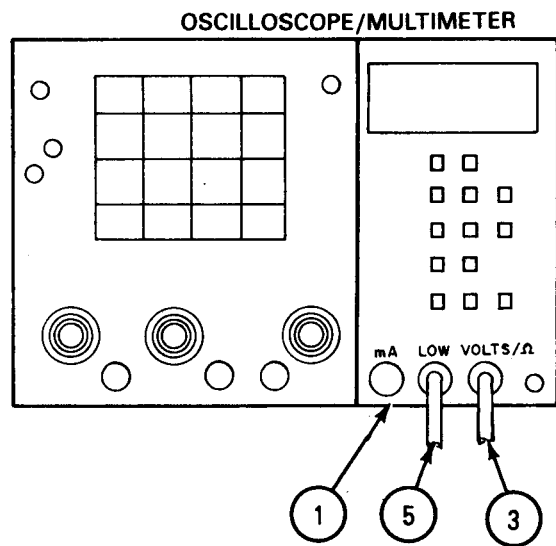
STEP 19

- a. On Vehicle Power Conditioner, set circuit breaker CB1 (10) to OFF.
- b. Remove top cover (para 3-8).



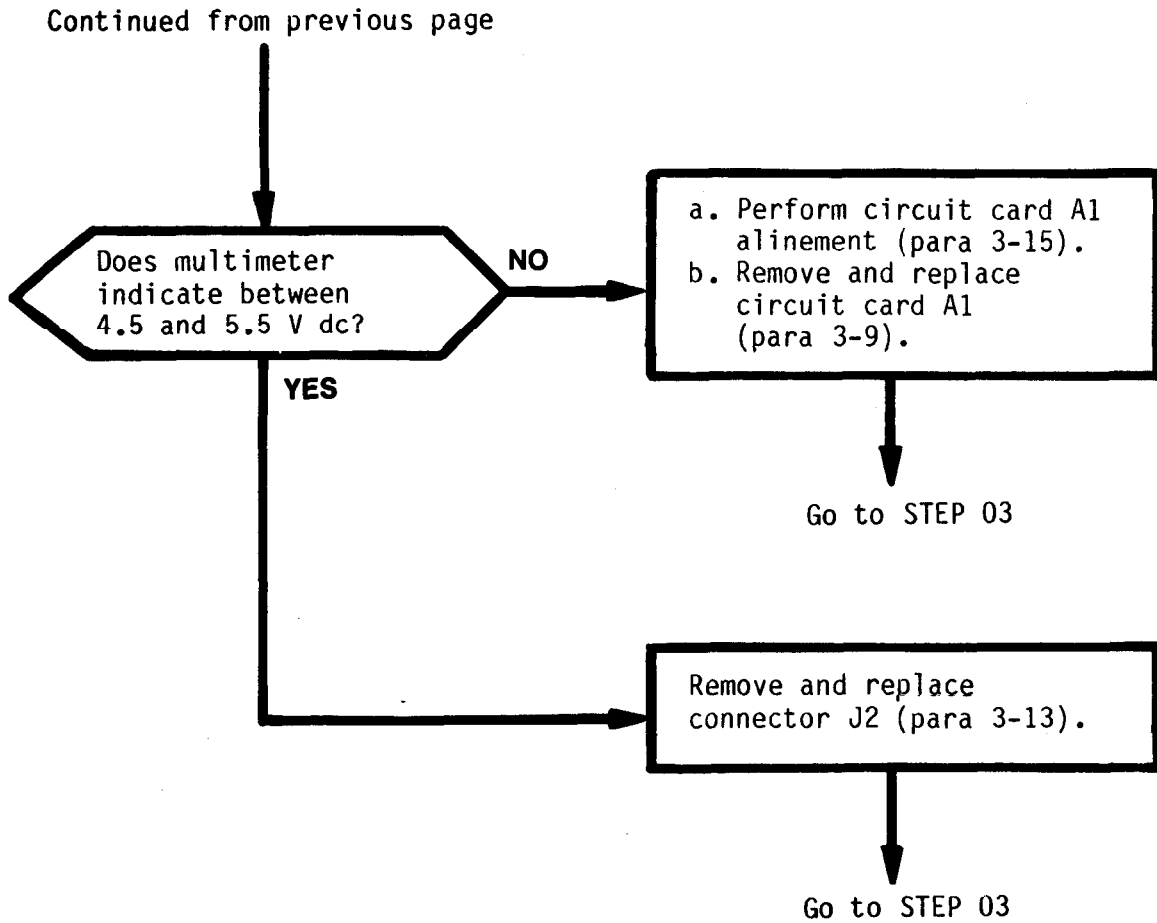
STEP 20

- a. Connect multimeter (1) positive lead (3) to circuit card A1 (25) test point J3 (29) and negative lead (5) to circuit card A1 (25) test point J10 (27).
- b. On Vehicle Power Conditioner, set circuit breaker CB1 (10) to ON.



Go to next page

3-6. VEHICLE POWER CONDITIONER TROUBLESHOOTING PROCEDURE (CONT)
 (Sheet 11 of 11)



Section III. VEHICLE POWER CONDITIONER MAINTENANCE PROCEDURES

<u>SECTION</u>	<u>CONTENTS</u>	<u>PARA</u>	<u>PAGE</u>
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	REMOVAL AND REPLACEMENT OF TOP COVER	3-8	3-15
	REMOVAL AND REPLACEMENT OF CIRCUIT CARD A1	3-9	3-16
	REMOVAL AND REPLACEMENT OF CIRCUIT BREAKER CB1	3-10	3-17
	REMOVAL AND REPLACEMENT OF FILTERS FL1 AND FL2	3-11	3-18
	REMOVAL AND REPLACEMENT OF CONNECTOR J1	3-12	3-20
	REMOVAL AND REPLACEMENT OF CONNECTOR J2	3-13	3-21
	REMOVAL AND REPLACEMENT OF CONNECTOR P1	3-14	3-22
	CIRCUIT CARD A1 ALINEMENT	3-15	3-23

3-7. SCOPE

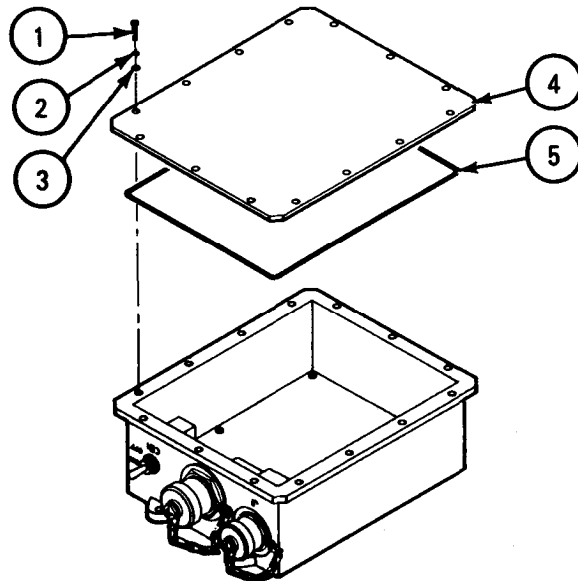
This section contains the maintenance procedures on the Vehicle Power Conditioner.

3-8. REMOVAL AND REPLACEMENT OF TOP COVER**TOOLS:**

No. 1 cross-tip screwdriver

EQUIPMENT CONDITION:

Assembled

MATERIALS:Silicone compound
(Item 1, Appendix C)**STEP 1****REMOVAL**

- A. Remove 14 screws (1), 14 lockwashers (2), 14 flat washers (3), and top cover (4).
- B. Remove preformed packing (5).

STEP 2**REPLACEMENT****NOTE**

Check preformed packing (5) for damage.
Replace as required.

- A. Apply silicone compound (Item 1, Appendix C) to preformed packing (5).
- B. Install preformed packing (5) in groove of top cover (4).
- C. Install top cover (4), 14 flat washers (3), 14 lockwashers (2), and 14 screws (1).

END OF TASK

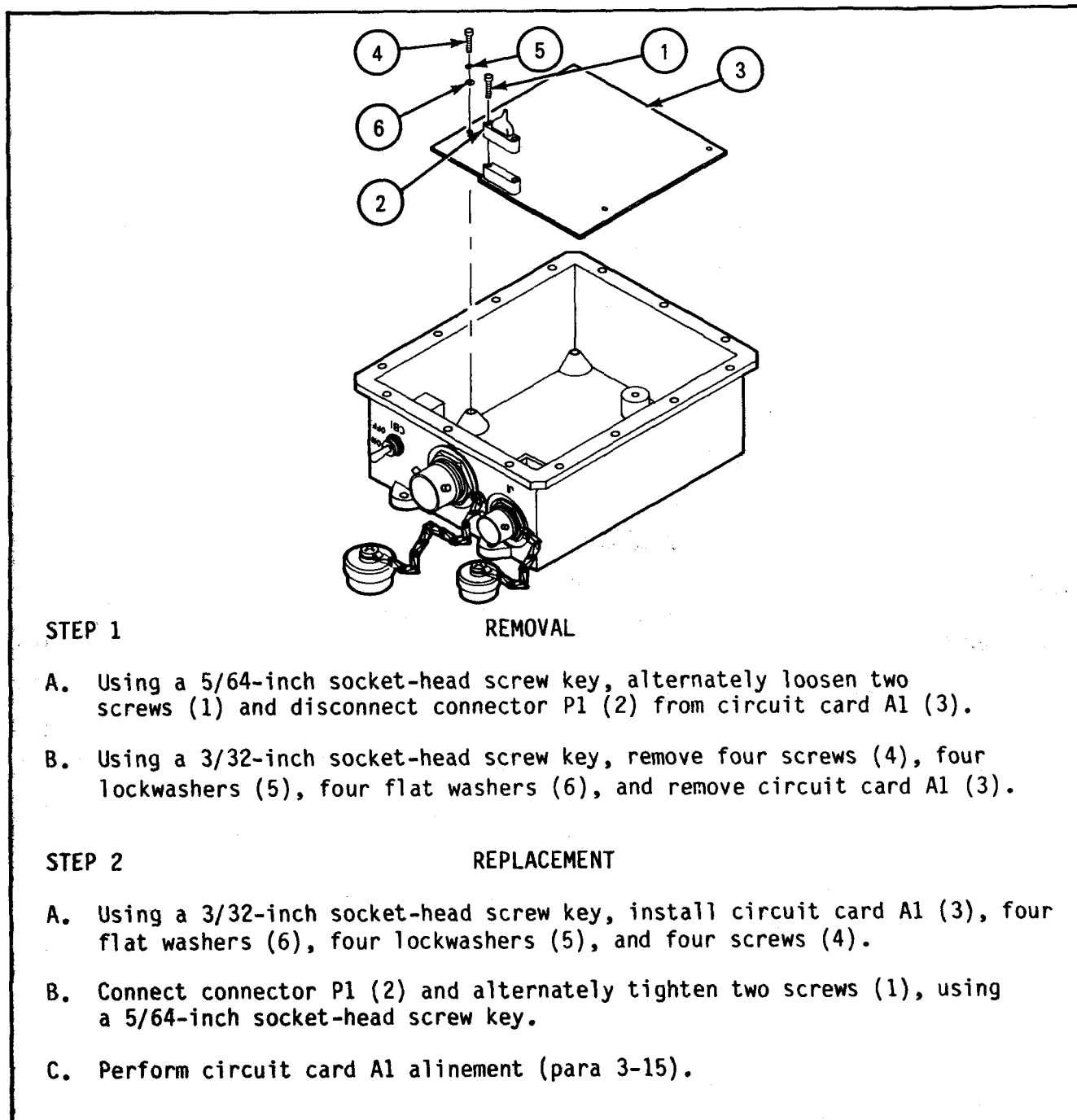
3-9. REMOVAL AND REPLACEMENT OF CIRCUIT CARD A1

TOOLS:

- 5/64-inch socket-head screw key
- 3/32-inch socket-head screw key

EQUIPMENT CONDITION:

Top cover removed (para 3-8)



STEP 1

REMOVAL

- A. Using a 5/64-inch socket-head screw key, alternately loosen two screws (1) and disconnect connector P1 (2) from circuit card A1 (3).
- B. Using a 3/32-inch socket-head screw key, remove four screws (4), four lockwashers (5), four flat washers (6), and remove circuit card A1 (3).

STEP 2

REPLACEMENT

- A. Using a 3/32-inch socket-head screw key, install circuit card A1 (3), four flat washers (6), four lockwashers (5), and four screws (4).
- B. Connect connector P1 (2) and alternately tighten two screws (1), using a 5/64-inch socket-head screw key.
- C. Perform circuit card A1 alinement (para 3-15).

END OF TASK

3-10. REMOVAL AND REPLACEMENT OF CIRCUIT BREAKER CB1

TOOLS:

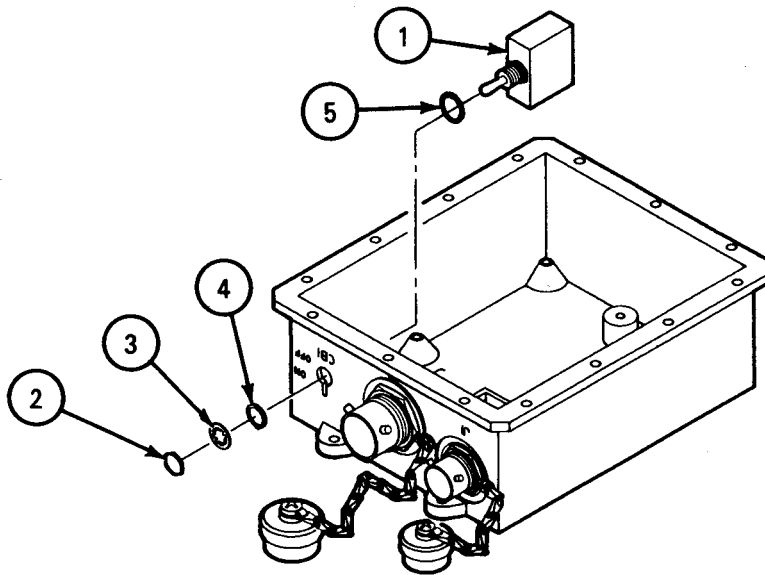
1/2-inch open-end wrench
Soldering iron

EQUIPMENT CONDITION:

Top cover removed (para 3-8)
Circuit card A1 removed (para 3-9)

MATERIALS:

Silicone compound
(Item 1, Appendix C)
Solder
(Item 3, Appendix C)



STEP 1

REMOVAL

- A. Tag and unsolder leads from circuit breaker CB1 (1).
- B. Remove nut (2), lockwasher (3), key washer (4), circuit breaker CB1 (1), and preformed packing (5).

STEP 2

REPLACEMENT

- A. Using solder (Item 3, Appendix C), solder leads to circuit breaker CB1 (1) and untag.
- B. Apply silicone compound (Item 1, Appendix C) to preformed packing (5).
- C. Install preformed packing (5), circuit breaker CB1 (1), key washer (4), lockwasher (3), and nut (2).
- D. Install circuit card A1 (para 3-9, steps 2A and 2B).
- E. Install top cover (para 3-8).

END OF TASK

3-11. REMOVAL AND REPLACEMENT OF FILTERS FL1 AND FL2 (Sheet 1 of 2)

TOOLS:

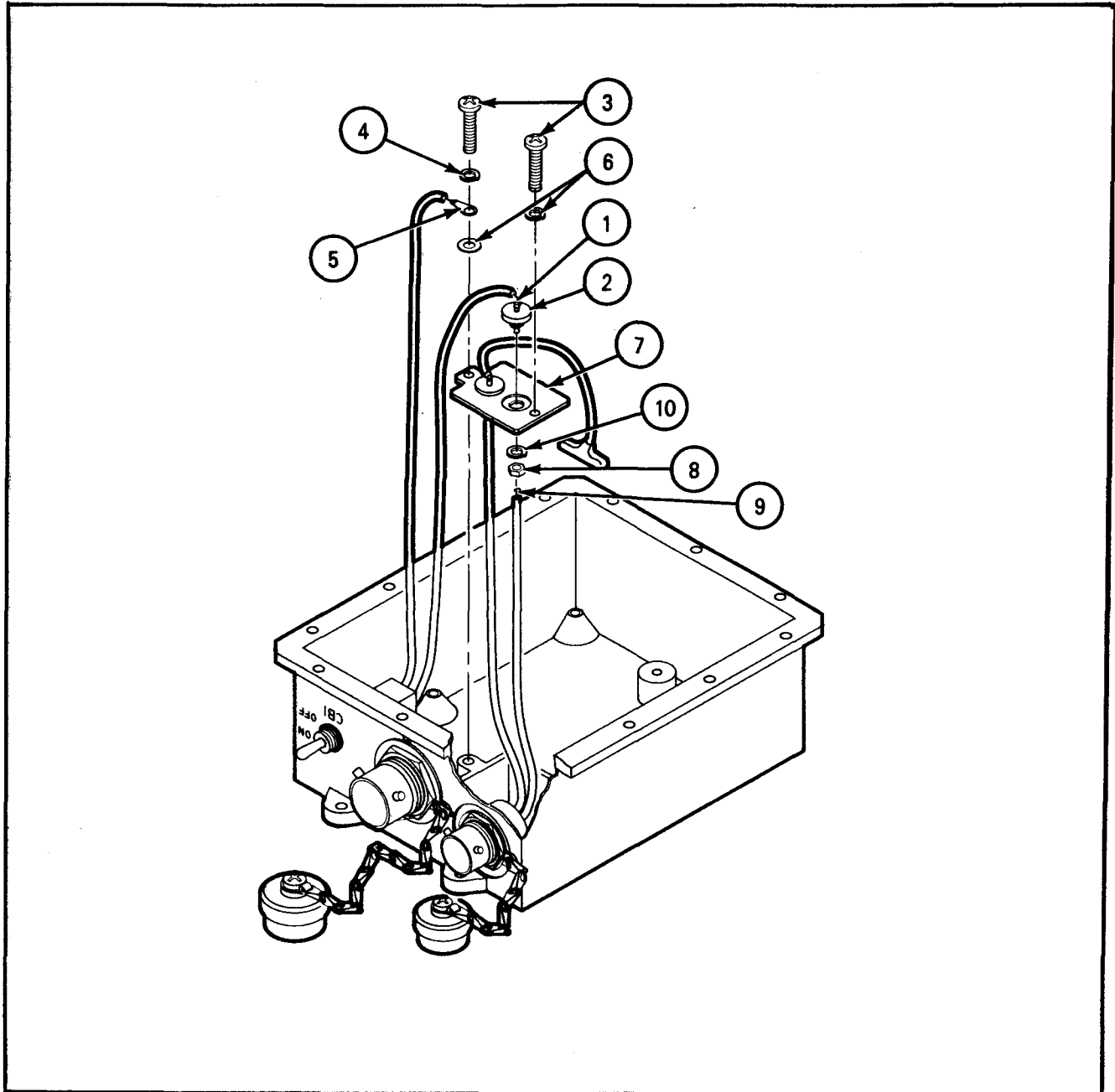
- No. 1 cross-tip screwdriver
- 5/16-inch open-end wrench
- Soldering iron

EQUIPMENT CONDITION:

Top cover removed (para 3-8)

MATERIALS:

- Solder
(Item 3, Appendix C)



3-11. REMOVAL AND REPLACEMENT OF FILTERS FL1 AND FL2 (CONT)
(Sheet 2 of 2)

STEP 1

REMOVAL

- A. Tag and unsolder lead (1) from filter (2).
- B. Remove two screws (3), one lockwasher (4), terminal lug (5), and two flat washers (6).
- c. Lift filter cover (7).
- D. Tag and unsolder lead (9) from filter (2).
- E. Remove nut (8), lockwasher (10), and filter (2).

STEP 2

REPLACEMENT

- A. Install filter (2), lockwasher (10), and nut (8).
- B. Using solder (Item 3, Appendix C), solder lead (9) to filter (2) and untag.
- c. Install filter cover (7), two flat washers (6), terminal lug (5), one lockwasher (4), and two screws (3).
- D. Using solder (Item 3, Appendix C), solder lead (1) to filter (2) and untag.
- E. Install top cover (para 3-8).

END OF TASK

3-12. REMOVAL AND REPLACEMENT OF CONNECTOR J1

TOOLS:

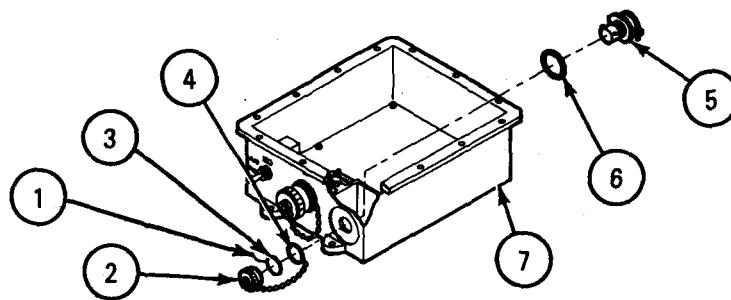
3/4-inch open-end wrench
Soldering iron
Pliers
Needle-nose pliers

EQUIPMENT CONDITION:

Top cover removed (para 3-8)
Do steps B and C in removal of
filters FL1 and FL2 (para 3-11)

MATERIALS:

Silicone compound
(Item 1, Appendix C)
Safety wire
(Item 2, Appendix C)
Solder
(Item 3, Appendix C)



STEP 1

REMOVAL

- A. Remove safety wire (1), dust cover (2), nut (3), and retainer ring (4).
- B. Remove connector J1 (5) and preformed packing (6) from chassis (7).
- C. Tag and unsolder leads from connector J1 (5).

STEP 2

REPLACEMENT

- A. Using solder (Item 3, Appendix C), solder leads to connector J1 (5) and untag.
- B. Apply silicone compound (Item 1, Appendix C) to preformed packing (6).
- C. Install preformed packing (6) and connector J1 (5) into chassis (7).
- D. Install retainer ring (4), nut (3), and dust cover (2).
- E. Install safety wire (1)
- F. Install filters FL1 and FL2 (para 3-11, step 2).
- G. Install top cover (para 3-8).

END OF TASK

3-13. REMOVAL AND REPLACEMENT OF CONNECTOR J2

TOOLS:

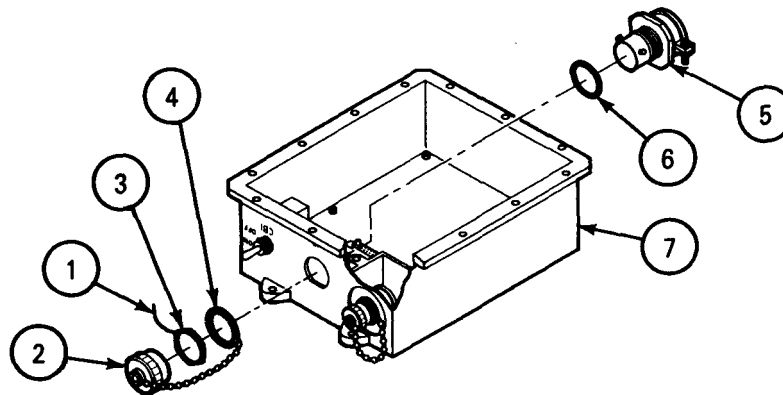
- 12-inch adjustable jaw wrench
- Soldering iron
- Safety wire pliers
- Needle-nose pliers

EQUIPMENT CONDITION:

Top cover removed (para 3-8)

MATERIALS:

- Silicone compound
(Item 1, Appendix C)
- Safety wire
(Item 2, Appendix C)
- Solder
(Item 3, Appendix C)



STEP 1

REMOVAL

- A. Remove safety wire (1), dust cover (2), nut (3), and retainer ring (4).
- B. Remove connector J2 (5) and preformed packing (6) from chassis (7).
- C. Tag and unsolder leads from connector J2 (5).

STEP 2

REPLACEMENT

- A. Using solder (Item 3, Appendix C), solder leads to connector J2 (5) and untag.
- B. Apply silicone compound (Item 1, Appendix C) to preformed packing (6).
- C. Install preformed packing (6) and connector J2 (5) into chassis (7).
- D. Install retainer ring (4), nut (3), and dust cover (2)
- E. Install safety wire (1) (Item 2, Appendix C).
- F. Install top cover (para 3-8).

END OF TASK

3-15. CIRCUIT CARD A1 ALINEMENT (Sheet 1 of 3)

TOOLS:

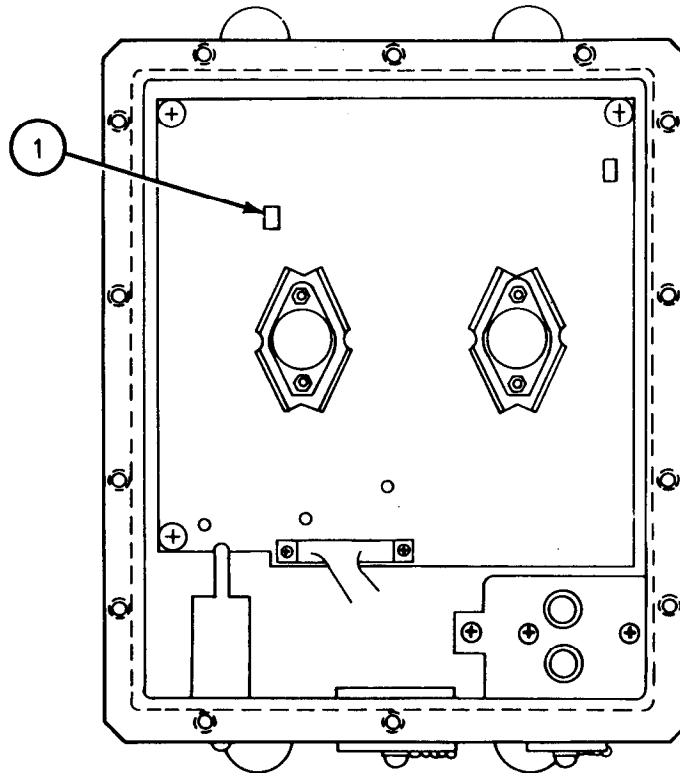
0.100-inch jeweler's screwdriver

EQUIPMENT CONDITION:

Top cover removed (para 3-8)

TEST EQUIPMENT

AN/TAM-3A



CIRCUIT CARD A1

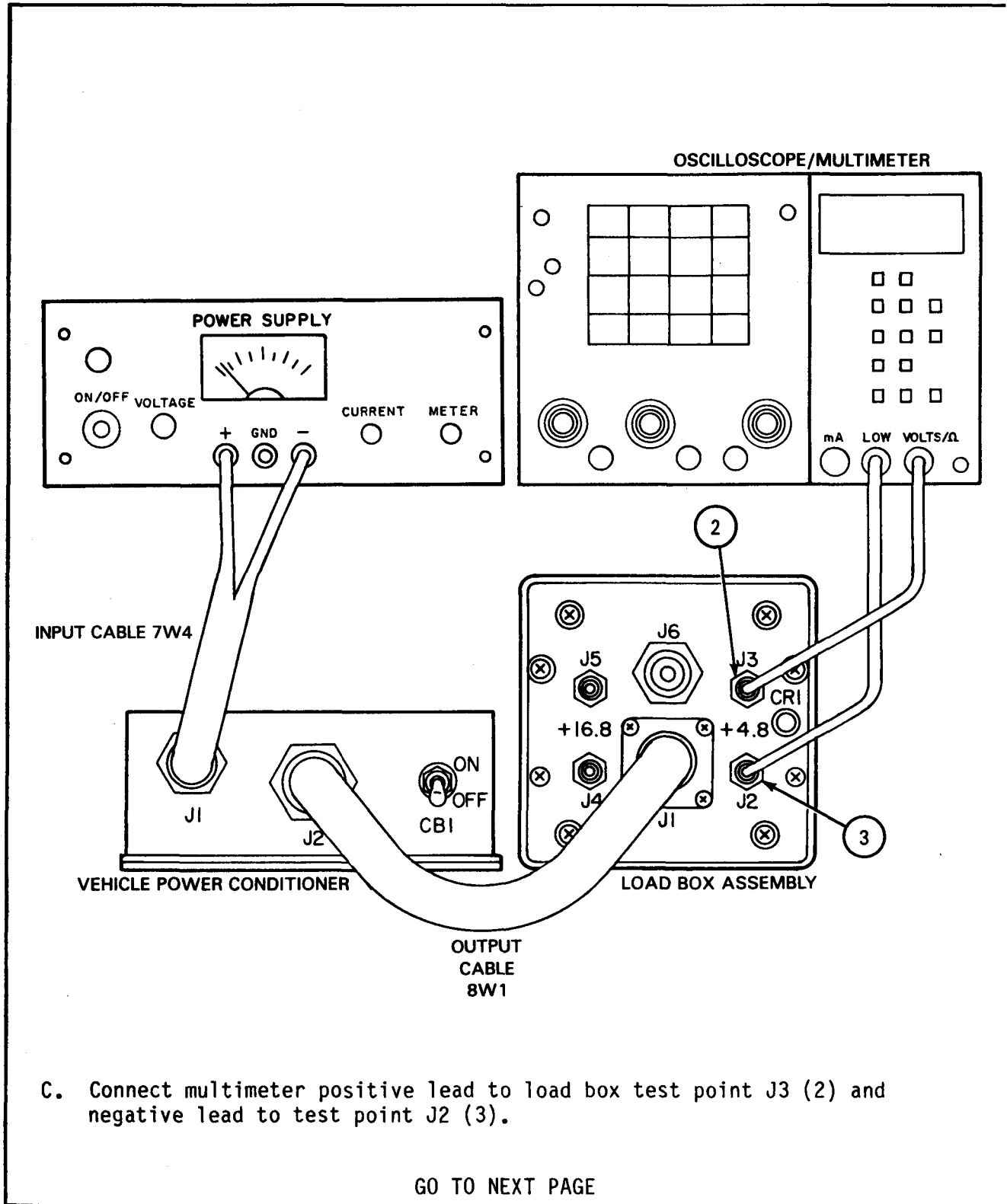
NOTE

Some printed circuit boards found in the Vehicle Power Conditioner will appear to be different from this illustration. They are, however, identical in form, fit, and function and are all interchangeable.

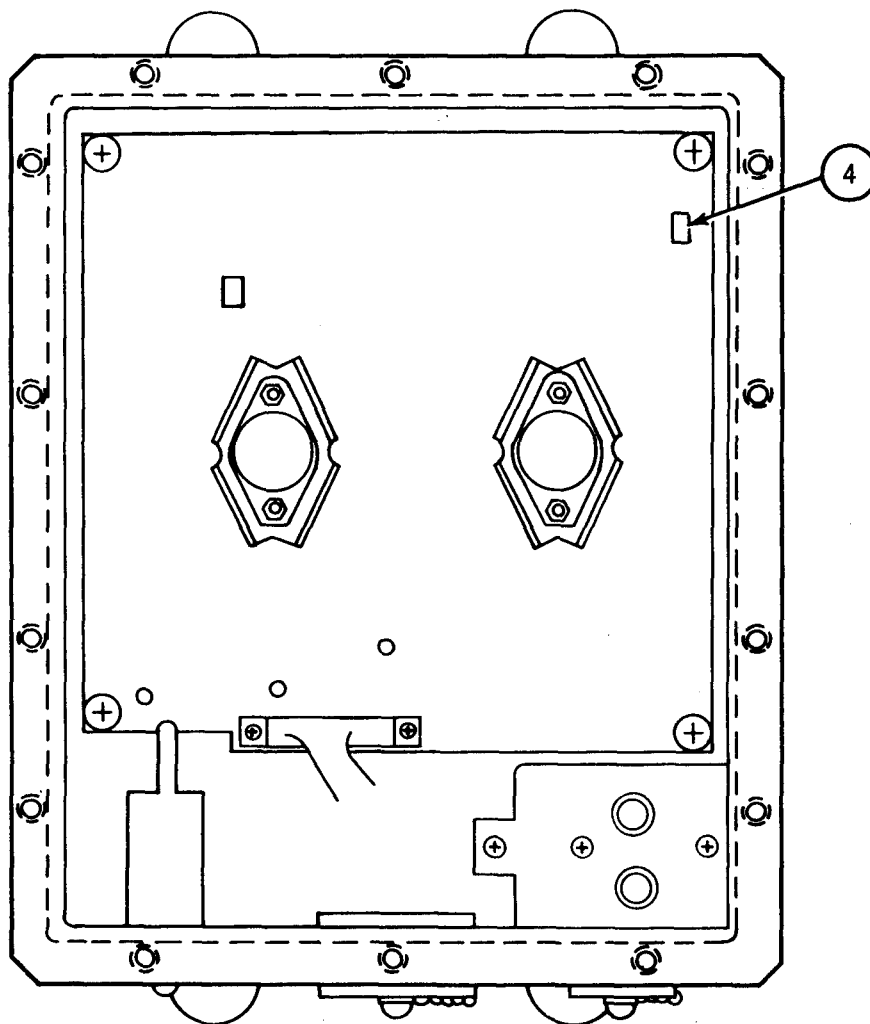
- A. Perform paragraph 3-6, steps 01 through 09, of Vehicle Power Conditioner Troubleshooting Procedure.
- B. Adjust circuit card A1 potentiometer R42 (1) until multimeter indicates between 16.7 and 16.9 V dc.

GO TO NEXT PAGE

3-15. CIRCUIT CARD A1 ALINEMENT (CONT)
 (Sheet 2 of 3)



3-15. CIRCUIT CARD A1 ALINEMENT (CONT)
(Sheet 3 of 3)



CIRCUIT CARD A1

NOTE

Some printed circuit boards found in the Vehicle Power Conditioner will appear to be different from this illustration. They are, however, identical in form, fit, and function and are all interchangeable.

- D. Adjust circuit card A1 potentiometer R38 (4) until multimeter indicates between 4.7 and 4.9 V dc.
- E. Turn off power and disconnect all test equipment.
- F. Install top cover (para 3-8).

END OF TASK

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

A-2. FORMS

Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).	CTA 50-970
Recommended Changes to Publications and Blank Forms.	DA Form 2028
Recommended Changes to DA Publications.	DA Form 2028-2
The Army Maintenance Management System (TAMMS).	DA PAM 738-750

A-3. TECHNICAL MANUALS

List of Applicable Publications (LOAP) for TOW 2 Heavy Antitank/Assault Weapon System.	TM 9-1425-450-L
Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List Including Depot Maintenance Repair Parts and Special Tools for Night Vision Sight, Infrared AN/TAS-4A, Basic Sight Assembly SU-108A/TAS, Vehicle Power Conditioner, Battery Power Conditioner, and Collimator, Boresight SU-93A/TAS.	TM 9-5855-450-24P
Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List Including Depot Maintenance Repair Parts and Special Tools for Equipment Set, Night Vision Sight, Infrared AN/UAS-12B.	TM 9-5855-882-24P
Instructions for Preparation of Equipment for Storage or Shipment.	TM 9-1260-477-12
Operator's Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Test Set, Night Vision Sight, AN/TAM-3 and AN/TAM-3A.	TM 11-5855-255-14&P
Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).	TM 750-244-4-2

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

B-2. MAINTENANCE FUNCTIONS

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

B-2. MAINTENANCE FUNCTIONS (CONT)

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

B-3. EXPLANATION OF MAC (SECTION II) COLUMN ENTRIES

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for the purpose of having the group numbers in the MAC and the Repair Parts and Special Tools List (RPSTL) coincide.

B-3. EXPLANATION OF MAC (SECTION II) COLUMN ENTRIES (CONT)

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of taskhours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time, in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C-Operator/Crew
 O-Organizational
 F-Direct Support
 H-General Support
 D-Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in sections IV and VII, Remarks, which is pertinent to the item opposite the particular code.

B-4. EXPLANATION OF TOOL AND TEST EQUIPMENT REQUIREMENTS (SECTION III) COLUMN ENTRIES

Column 1, Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Column 2, Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Column 3, Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. Column 4, National Stock Number. This column lists the National Stock Number of the specific tool or test equipment.

e. Column 5, Tool Number. This column lists the manufacturer's part number of the tool followed by the five-digit federal Supply Code for Manufacturers in parentheses.

B-5. EXPLANATION OF REMARKS (SECTION IV) COLUMN ENTRIES

a. Column 1, Reference Code. This code refers to the appropriate item in section II, column 6.

b. Column 2, Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

SECTION II. MAINTENANCE ALLOCATION CHART
 F O R
 VEHICLE POWER CONDITONER

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTIONS	(4) MAINTENANCE CATEGORY					(5) TOOLS & EQPT	(6) REMARKS
			C	O	F	H	D		
2000	Vehicle Power Conditioner (VPC) Assembly	Inspect	0.1						
		Test			0.1				1, 2b
		Service	0.1						
		Adjust			0.1				1, 2b
		Install	0.1						
	Vehicle Power Conditioner Box Assembly	Replace	0.1						
		Repair	0.1						
		Inspect			0.1				
		Test			0.1				1, 2a, 2b, 2c
		Adjust			0.1				1, 2a, 2b, 2c
2020	Cable Assembly W1, Input	Repair			0.2			1, 3	
		Repair				0.3		1, 3	
	Cable Assembly W2, Output	Replace	0.1						
		Replace	0.1						
	Voltage Regulator Circuit Board (for VPC)	Test					0.25		1, 2a, 2b, 2c
Adjust				0.1				1, 2a, 2b, 2c	
Replace				0.2				1	
		Repair				0.3		1	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
VEHICLE POWER CONDITIONER

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE CATEGORY	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER	(5) TOOL NUMBER
1	F, D	Tool Kit, Guided Missile Maintenance	5180-00-179-3574	
2	F, D	Test Set, Night Vision Sight AN/TAM-3A	5855-01-037-7341	SM-C-774995
2a	F, D	Vehicle Power Conditioner Load Box	5855-01-171-8391	SM-D-806753
2b	F, D	Digital Multimeter, Tektronix DM-501A	6625-01-112-7153	
2c	F, D	Power Supply, HP-6284A	6130-00-497-0505	
3	F, D	Soldering Iron	3439-00-346-7538	W-S-570

APPENDIX C

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the Vehicle Power Conditioner. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

C-2. EXPLANATION OF COLUMNS

a. Column 1, Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use desiccant item 9, Appendix C").

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

C-Operator/Crew

O-Organizational Maintenance

F-Direct Support

H-General Support

D-Depot

c. Column 3, National Stock Number. This is the National Stock Number assigned to the item, use it to request or order the item.

d. Column 4, Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturers (FSCM) in parentheses, if applicable.

e. Column 5, Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	F	6850-00-127-5094	Compound, Silicone MIL-S-8660B	TU
2	F	9525-00-803-3044	Wire, Safety	RL
3	F	3439-00-555-4629	Solder	RL

APPENDIX D
SCHEMATIC, FUNCTIONAL AND WIRING DIAGRAMS

<u>Figure</u>	<u>Title</u>	<u>Page</u>
D-1	Vehicle Power Conditioner Interconnection Diagram	D-2

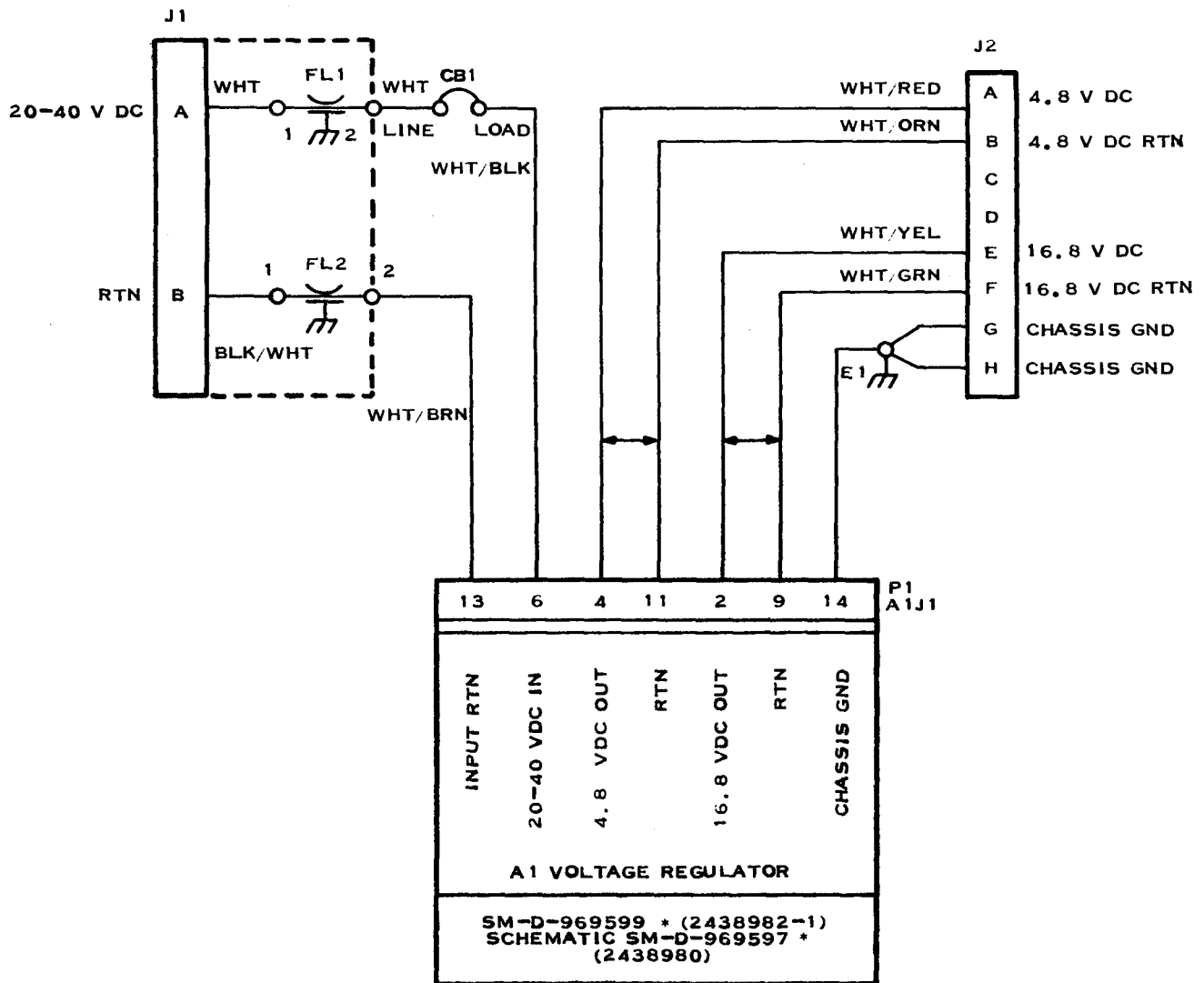


Figure D-1. Vehicle Power Conditioner Interconnection Diagram

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By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of staff

Official:

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The Adjutant General

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14 January 1979

PUBLICATION NUMBER

TM 9-1430-550-34-1

PUBLICATION DATE

7 Sep 72

PUBLICATION TITLE

Unit of Radar Set
AN/MPQ-50 Tested at the HFC

BE EXACT... PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
9-19		9-5	
21-2	step 1C		21-2

SAMPLE

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

"B" Ready Relay K11 is shown with two #9 contacts. That contact which is wired to pin 8 of relay K16 should be changed to contact #10.

Reads: Multimeter B indicates 600 K ohms to 9000 K ohms.

Change to read: Multimeter B indicates 600 K ohms minimum.

Reason: Circuit being checked could measure infinity. Multimeter can read above 9000 K ohms and still be correct.

NOTE TO THE READER:

Your comments will go directly to the writer responsible for this manual, and he will prepare the reply that is returned to you. To help him in his evaluation of your recommendations, please explain the reason for each of your recommendations, unless the reason is obvious.

All comments will be appreciated, and will be given immediate attention. Handwritten comments are acceptable.

For your convenience, blank "tear out" forms, preprinted, addressed, and ready to mail, are included in this manual.

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SP4 John Doe, Autovon 222-222

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PAGE NO.

PARA-GRAPH

FIGURE NO.

TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

CUT ALONG THIS LINE

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SIGN HERE

FILL IN YOUR
UNITS ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

Commander
U.S. Army Missile Command
ATTN: AMSMI-MMC-LE-FP
Redstone Arsenal, AL 35898-5238

CUT ALONG THIS LINE

THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

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
its	Liters	0.473
arts	Liters	0.946
allons	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
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



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