

TECHNICAL MANUAL

**OPERATOR, UNIT, DIRECT SUPPORT
AND GENERAL SUPPORT
MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND
SPECIAL TOOLS LIST FOR
ELECTRICAL ENVIRONMENTAL
SYSTEM (EES) KIT USED ON**

**TRUCK UTILITY: S250 SHELTER CARRIER, 4X4, M1037
FOR TRAFFIC JAM AN/TLQ-17A(V)3 (HMMWV)**

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HEADQUARTERS, DEPARTMENT OF THE ARMY APRIL 1992

WARNING**EXHAUST GASES CAN KILL!**

Brain damage or death can result from heavy exposure. Precautions must be followed to ensure crew safety when the personnel heater, main, or auxiliary engine of any vehicle is operated for any purpose.

1. DO NOT operate your vehicle engine in enclosed areas.
 2. DO NOT idle vehicle engine with vehicle windows closed.
 3. BE ALERT at all times for exhaust odors.
 4. BE ALERT for exhaust poisoning symptoms. They are:
 - Headache
 - Dizziness
 - Sleepiness
 - Loss of muscular control
 5. If you see a person with exhaust poisoning symptoms:
 - Remove person from area.
 - Expose to open air.
 - Keep person warm.
 - Do not permit physical exercise.
 - Administer artificial resuscitation, if necessary.*
 - Notify a medic.
- * For artificial respiration, refer to FM 21-11.
6. BE AWARE, the field protective mask for Nuclear, Biological, or Chemical (NBC) protection will not protect you from carbon monoxide poisoning.

THE BEST DEFENSE AGAINST EXHAUST POISONING IS ADEQUATE VENTILATION.

WARNING SUMMARY

- Do not use hand throttle cable assembly as an automatic speed or cruise control. The hand throttle cable assembly does not automatically disengage when brake is applied, resulting in increased stopping distances and possibly hazardous and unsafe operation.
- Air conditioner system must be discharged prior to replacing components in vapor system. Failure to do this may result in injury to personnel or damage to equipment.
- Alternator must be supported during removal and installation. Failure to do this may cause injury to personnel or damage to equipment.
- Before inspecting power interface box assembly, battery ground cable must be disconnected, or serious injury to personnel may occur.
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or disconnected battery ground cable contacts battery terminal, a direct short will result, causing injury to personnel or damage to equipment.
- To prevent eye injury, wear protective eye wear while performing any soldering.
- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
- Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.

TECNICAL MANUAL
NO. 9-2320-362-14&P

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DEPARTMENT OF THE ARMY
Washington D.C., 28 April 1992

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REPORTING ERRORS AND RECOMMENDING IMPROVENENTS

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 or 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 Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48090-5000. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

ABOUT YOUR MANUAL

- a. Spend some time looking through this manual. You'll find that it has a new look, different than most of the TMs you've been using. New features added to improve the convenience of this manual and increase your efficiency are:
1. Accessing Information - These include extensive troubleshooting guides that lead directly to step-by-step directions for problem solving and maintenance tasks.
 2. Illustrations - a variety of methods are used to make locating and fixing components much easier. Locator illustrations with keyed text, exploded views, and cut-away diagrams make the information in this manual easier to understand.
 3. Keying Text With Illustrations - Instructions are located together with figures that illustrate the specific task you are working on. In most cases, the task steps and figures are located side by side making part identification and procedure sequence easier to follow.

The TM is the fundamental means by which the Army communicates to soldiers the requirements and procedures necessary to perform equipment operations and maintenance. This manual describes in detail the Unit and DS/GS maintenance prescribed by the Maintenance Allocation Chart (MAC) (Appendix B) and the Source, Maintenance, and Recovery (SMR) Codes (Appendix D).

- b. General Features. Your TM is the best source available for providing the following information and data critical to operating and maintaining the Components of the EES kit:
- Safety summary (warning pages a and b)
 - General information and equipment descriptions (chapter 1)
 - Use of Controls and indicators (chapter 2, section 1)
 - Operator Preventive Maintenance Checks and Services (PMCS) (chapter 2, section II)
 - Unit Preventive Maintenance Checks and Services (PMCS) (chapter 3, section IV)
 - Unit troubleshooting (chapter 3, section V)
 - Unit maintenance procedures (chapter 3, sections VI and VII)
 - Direct support troubleshooting (chapter 4, section II)
 - DS/GS maintenance procedures (chapter 4, sections III thru V)
 - Maintenance Allocation Chart (MAC) (appendix B)
 - Expendable/durable supplies and materials list (appendix C)
 - Repair Parts and Special Tools List (RPSTL) (appendix D)

A typical example of how to use this manual is provided on the following pages:

USING YOUR MANUAL: AN EXAMPLE

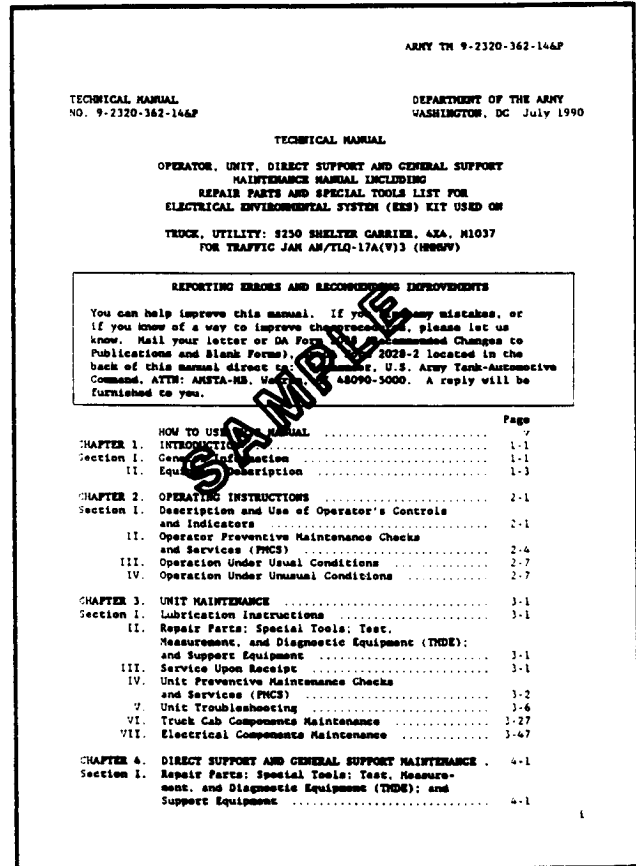
a. TASK: The operator of the Traffic Jam AN/TLQ-17A(V)3 (HMMWV) has complained that the tachometer RPMs are not correct during the counter-measures set operation. The system has been assigned to you for repair.

b. TROUBLESHOOTING STEPS:

1. Use the Table of Contents (page i) to find the chapter/section titles.

2. Look for "UNIT MAINTENANCE" in the chapter/section title list. This is where the Unit Troubleshooting information is located.

3. Chapter 3 is divided into seven sections:
 - Section I - Lubrication Instructions
 - Section II - Repair Parts; Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment
 - Section III - Service Upon Receipt
 - Section IV - Unit Preventive Maintenance Checks and Services (PMCS)
 - Section V - Unit Troubleshooting
 - Section VI - Truck Cab Components Maintenance
 - Section VII - Electrical Components Maintenance



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Section V. UNIT TROUBLESHOOTING

3-12. GENERAL

- a. Information in this section is for use by unit maintenance personnel in conjunction with, and as a supplement to, troubleshooting procedures in TM 9-2320-280-10 and TM 9-2320-280-20.
- b. Unit troubleshooting, table 3-2, contains instructions that will help you diagnose and correct malfunctions of the components of the ERS kit. The table also helps unit maintenance personnel identify difficulties that must be referred to direct support maintenance.
- c. The troubleshooting procedures in this section cannot give all the answers or correct all malfunctions encountered. However, these procedures are an organized step-by-step approach to a problem that directs tests and inspections towards the source of the problem and successful correction.
- d. Before taking any action to correct a malfunction, the following rules should be followed:
 - (1) Question your data to obtain any information that might help you determine the cause of the problem.
 - (2) Never overlook the chance that the problem could be of simple origin. The problem could be corrected with minor adjustment.
 - (3) Use all senses to observe and locate troubles.
 - (4) Use test instruments or gages to help you determine and isolate the problem.
 - (5) Always isolate the system where the malfunction occurs and then locate the defective component.
 - (6) Review figure 3-1 to help in isolating the fault and understanding the equipment configuration.

3-6

4. Turn to "Section V, Unit Troubleshooting" (page 3-6).

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3-13. UNIT TROUBLESHOOTING

UNIT TROUBLESHOOTING SYMPTOM INDEX

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING PROCEDURE PAGE
TRUCK CAB COMPONENTS		
1.	Hand throttle will not operate properly	3-11
2.	Tachometer reading is incorrect	3-12
3.	Hourmeter is not functioning	3-13
SHELTER WARNING SYSTEM		
4.	With parking brake set, parking brake dash light is off, and status indicator alarm and light do not come on	3-13
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6.	Engine oil pressure gage displays no pressure reading and status indicator alarm and light are on	3-16
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8.	Coolant temperature gage displays no engine temperature reading and status indicator alarm and light are on	3-19
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11.	Fuel gage displays reading of less than an eighth tank full and status indicator alarm and light do not come on	3-23
ELECTRICAL COMPONENTS		
12.	Shelter has no power and incandescent lamp on power interface box is not lit	3-25

3-10

5. One of the first pages of this section is the "UNIT TROUBLESHOOTING SYMPTOM INDEX" (turn to page 3-10).

6. Look down the list until you find "TRUCK CAB COMPONENTS." Beneath that heading you will find the symptoms noted by the operator: "Tachometer reading is incorrect."

7. Turn to the page indicated: 3-12.

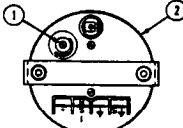
8. On page 3-12, steps relating to resolving the problem of an incorrect tachometer reading are listed. Read down the page until you find "TACHOMETER READING IS INCORRECT." The steps listed are shown in the example page to the right of this text.

9. In accordance with step 1, you connect the STE/ICE-R to the engine (TM 9-2320-280-20), start the engine (TM 9-2320-280-10), let the engine come to normal idle speed of 650 RPM (± 25 RPM) and then move on to step 2.

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Table 3-2. Unit Troubleshooting

MAJFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
2.	TACHOMETER READING IS INCORRECT	<p>Step 1. Connect STE/ICE-R to engine (TM 9-2320-280-20). Start engine (TM 9-2320-280-10) and let engine come to normal idle speed of 650 RPM (± 25 RPM).</p> <p>Step 2. Check engine idle against STE/ICE-R RPM rate.</p> <p>If engine RPM rate is incorrect, adjust engine idle (TM 9-2320-280-20).</p> <p>If engine RPM rate setting is correct, go to step 3.</p> <p>Step 3. Compare STE/ICE-R RPM rate to tachometer RPM rate.</p> <p>If RPM rates agree, procedure is completed.</p> <p>If RPM rates do not agree, go to step 4.</p> <p>Step 4. Remove tach/hourmeter box cover from tach/hourmeter box. Adjust tachometer adjustment screw (1) on back of tachometer (2) until RPMs on STE/ICE-R and tachometer (2) agree.</p>



The diagram shows a circular tachometer face with two screws on the back. Screw 1 is located at the top, and screw 2 is located on the right side. The tachometer is mounted on a rectangular base.

If tachometer adjusts to correct RPMs, procedure is completed. Replace tach/hourmeter box cover on tach/hourmeter box.

If tachometer will not adjust to desired RPMs, replace tachometer (para 3-18).

END OF TESTING

3-12

10. In Step 2 you check the engine idle against the STE/ICE-R and find that it is correct.

11. In Step 3 you check the tachometer RPMs against the STE/ICE-R RPMs and find they do not match.

12. At this point, some CORRECTIVE ACTION in Table 3-2, Unit Troubleshooting, will direct you to a specific detailed procedure to solve the problem. To find the procedure, refer to the table of contents.

NOTE: Before attempting to repair or replace the tachometer, as a Unit mechanic, you must:

- a. Determine the maintenance responsibility of repair or replacement of the component.
- b. If the task is at your echelon of maintenance responsibility, you must identify the tools needed and the replacement parts required.

Refer to the Maintenance Allocation Chart (MAC) (appendix B) to determine not only the maintenance responsibility of the item, but also to obtain an estimate of the time required to perform the task, tools needed, and any special notes/requirements necessary.

Refer to the Repair Parts and Special Tools List (RPSTL) (appendix D) for the EES kit for requisition data concerning replacement parts for this task.

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TECHNICAL MANUAL

OPERATOR, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT
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REPAIR PARTS AND SPECIAL TOOLS LIST FOR
ELECTRICAL ENVIRONMENTAL SYSTEM (RES) KIT USED ON

TRUCK, UTILITY: S250 SHELTER CARRIER, 4XA, M1037
FOR TRAFFIC JAN AN/TLQ-17A(V)3 (HRRSV)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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c. TACHOMETER REPLACEMENT. After reporting the results of your troubleshooting efforts to your supervisor, he decides that the most expedient means of returning the system to service would be to replace the tachometer.

1. Turn to the "TABLE OF CONTENTS" (page i) again and find the section in Chapter 3 dealing with the truck cab components. You find it in "Section VI, Truck Cab Components Maintenance".

Section VI. TRUCK CAB COMPONENTS MAINTENANCE

3-14. TRUCK CAB COMPONENTS MAINTENANCE TASK SUMMARY

TASK PARA	PROCEDURE	PAGE NO.
3-15.	Hand Throttle Cable Replacement	3-28
3-16.	Hand Throttle Cable Adjustment	3-30
3-17.	Tach/Hourmeter Box Replacement	3-32
3-18.	Tachometer Replacement	3-34
3-19.	Hourmeter Replacement	3-36
3-20.	Hourmeter Assembly Replacement	3-38
3-21.	Hourmeter Lanyard Replacement	3-40
3-22.	Storage Box Replacement	3-42
3-23.	Storage Box Repair	3-44

2. Turn to Chapter 3, section VI on page 3-27. Here you find the "Truck Cab Components Maintenance Task Summary". Read down the list of tasks until you find the one that will correct your maintenance problem. For our example you will find it as task 3-18 "Tachometer Replacement." Turn to page 3-34.

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3-18. TACHOMETER REPLACEMENT

This task covers:
a. Removal b. Installation

INITIAL SETUP:

Tools	Manual References
General mechanic's tool kit:	TM 9-2320-280-10
automotive (Item I, Section III, Appendix B)	TM 9-2320-280-20
Materials/Parts	Excluded Conditions
Seven lockwashers	Remove ground cable disconnected
P/N HS55338-137	TM 9-2320-280-20
One O-ring P/N HS9021-236	

a. Removal

1. Remove screws (3), lockwashers (2), and washers (1) from tach/hourmeter box cover (4). Discard lockwashers (2).
2. Remove tach/hourmeter box cover (4) and gasket (5) from tach/hourmeter box (6).
3. Remove two bracket mounting nuts (15) and bracket (14) from tachometer (13) and remove tachometer (13) and O-ring (12) from tach/hourmeter box (6). Discard O-ring (12).
4. Disconnect leads (10), (11), and (16) from tachometer (13).

b. Installation

1. Install O-ring (12) to tachometer (13).
2. Connect leads to tachometer (13) as follows:
a. Red lead (10) to connector (9).
b. Black lead (11) to connector (8).
c. Yellow lead (16) to connector (7).
3. Install tachometer (13) and bracket (14) on tach/hourmeter box (6) and secure with two bracket mounting nuts (15).
4. Install gasket (5) and tach/hourmeter box cover (4) on tach/hourmeter box (6) and secure with seven washers (1), lockwashers (2), and screws (3).

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3-18. TACHOMETER REPLACEMENT (Cont'd)

FOLLOW-ON TASKS:

- Connect battery ground cable (TM 9-2320-280-20).
- Start engine (TM 9-2320-280-10) and check operation of tachometer 650 ± 25 RPM at idle.

3-35

3. On page 3-34 you find paragraph 3-18, the detailed procedure for replacing the tachometer.

d. DETAILED MAINTENANCE PROCEDURES. Detailed maintenance procedures include everything you must do to accomplish a basic maintenance task.

1. Before beginning the maintenance task, look through the procedure. You must familiarize yourself with the entire maintenance procedure of para. 3-18: "Tachometer Replacement." The task includes "a, Removal" and "b. Installation."

2. The eight basic headings listed under "INITIAL SETUP" outline task conditions, materials, tools and special tools, manpower requirements, and special conditions. The headings are:

- **Applicable Models:** any models that require a particular maintenance task. If a maintenance task covers all models, then this heading will not be used.
- **Test Equipment:** Test equipment needed to complete a task. If test equipment is not required, this heading will not be used.

- Tools and Special Tools: Those tools, tool kits, and special tools needed to complete a task. If no tools, tool kits, or special tools are required, this heading will not be used.

If you don't have one of these special tools, requisition it (before starting the task) using the data supplied in the RPSTL, appendix D, for your level of maintenance. Special tools are located in section III.

- Materials/Parts: This heading lists only mandatory replacement materials or parts (gaskets, "O" rings, sealant, etc.). To replace other unserviceable parts, refer to appendix D for requisition data. If no mandatory replacement materials/parts are required, this heading will not be used.
- Personnel Required: The number of personnel needed to perform a task. If only one mechanic is needed, this heading will not be used.

NOTE

If you think that you need more help to adequately or safely complete a task, perhaps as the result of unusual conditions, etc., alert your supervisor and ask for help.

- Manual References: Those TMs needed to complete the task. If no other TMs are needed, this heading will not be used.
 - Equipment Conditions: Notes the conditions that must exist before starting the task. If none are required, this heading will not be used. For the tachometer replacement, the engine should be shut off before we can start the task. If not already done, follow the procedure for engine shut off in TM 9-2320-280-10, before proceeding with this task.
 - General Safety Instructions: Summarizes all safety warnings for the maintenance task. If none are required, this heading will not be used.
3. A step by step maintenance procedure follows the "INITIAL SETUP" and gives detailed instructions for the procedure. These instructions give the part's general location and name and action performed. In the example, tachometer replacement - a. Removal, step 1 is : "Remove seven screws (2), lockwashers (3), and washers (1) from tach/hourmeter box cover (4). Discard lockwashers (3)." Note that the numbers in parenthesis correspond to the part's callout number in the accompanying illustration.

NOTE

Warnings, cautions, and notes provide supplemental information.

- **Warnings** - Indicate conditions, practices, or procedures which must be observed to avoid personnel injury, loss of life, or long-term health hazard.
 - **Cautions** - Indicate conditions, practices, or procedures which must be observed to avoid damage to equipment or destruction of equipment.
 - **Notes** - Include essential information of special importance, interest, or aid in job performance which should be remembered and would be otherwise difficult to find or incorporate into the text.
4. At the end of the procedure, "FOLLOW-ON TASKS" will list those additional tasks that must be performed to complete the procedure. The Follow-on Tasks for tachometer replacement are:
- Connect battery ground cable (TM 9-2320-280-20).
 - Start engine (TM 9-2320-280-10) and check operation of tachometer 650 RPM \pm 25 RPM at idle.
- e. Refer to the example pages for para. 3-18, Tachometer Replacement, as we review the following points:
1. **Modular Text:** Both pages of text and illustrations are to be used together. This manual was designed so that the two pages would be visible at once, making part identification and procedure sequence easy to follow.
 2. **Initial Setup:** Outlines task conditions.
 3. **Illustrations:** An exploded diagram of the component shows part locations, attachments, and spatial relationships. Cutaway views (part of the component "erased") show the location and orientation of screws and attachments.
- f. Your manual is easy to use once you understand its design. We hope it will encourage you to use your TM more often as an aid to maintenance support for the components of the EES kit.

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

The purpose of this technical manual is to provide information on the operation, maintenance, and spare parts for the components of the Electrical Environmental System (EES) kit on the M1037 truck used in Traffic Jam AN/TLQ-17A(V)3 (HMMWV). This information is not contained in the M998-series vehicles technical manuals.

NOTE

To ensure accurate operation of status warning system, the following gage part numbers (PN) must be used: engine oil pressure gage, PN C5136382; coolant temperature gage, PN C5136383; and fuel gage, PN C5136384. Replace gages IAW TM 9-2320-280-20 if above PNs are not installed in vehicle.

The Traffic Jam AN/TIQ-17A(V)3 (HMMWV) is a mobile Electronic Countermeasures (ECM) system designed for surveillance or jamming of hostile communications networks. This manual will be used in conjunction with the following technical manuals:

- | | |
|---------------------|-----------------------|
| ● TM 9-2320-280-10 | ● TM 32-5865-301-10 |
| ● TM 9-2320-280-20 | ● TM 32-5865-301-24 |
| ● TM 9-2320-280-20P | ● TM 32-5865-301-24P |
| ● TM 9-2320-280-34 | ● TM 32-6130-005-23&P |
| ● TM 9-2320-280-34P | |

1-2. MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be prescribed by DA Pam 738-750, The Army Maintenance Management System (TAMMS).

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR's)

If your EES kit 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 or performance. Put it on an SF 368 Quality Deficiency Report (QDR). Mail it to us at: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-Q, Warren, MI 48397-5000. We'll send you a reply.

1-4. NOMENCLATURE CROSS-REFERENCE LIST

<u>Common Name</u>	<u>Official Nomenclature</u>
Alternator bracket	Mounting bracket
Boot	Circuit breaker boot
Cable	Power cable assembly
Cable assembly W66	Engine interface cable assembly (W66)
Coolant temperature gage	Temperature gauge assy
Drill bit	Twist drill
Dust cap	Dust cap assembly
EES kit	Electrical Environmental System Kit
Engine oil pressure gage	Oil pressure gauge assy
Fuel gage	Fuel level gauge assy
Guard	Circuit breaker guard
Hand throttle cable	Hand throttle cable assembly
Insulation template	Engine cover insulation template
"O" ring	Preformed packing "O" ring
Power interface box	Power interface box assembly
Quick disconnect	Quick couple assembly
Storage box	Storage box assembly
Surge tank assembly	Radiator overflow tank
Tach/hourmeter box	Tach/hourmeter assembly
Terminal	Feedthru terminal
Tie-strap	Strap, tie-down, electrical
200 amp alternator	Accessory engine generator
Water pump pulley	Cone pulley
Wire no. 798	A/C ground wire assembly

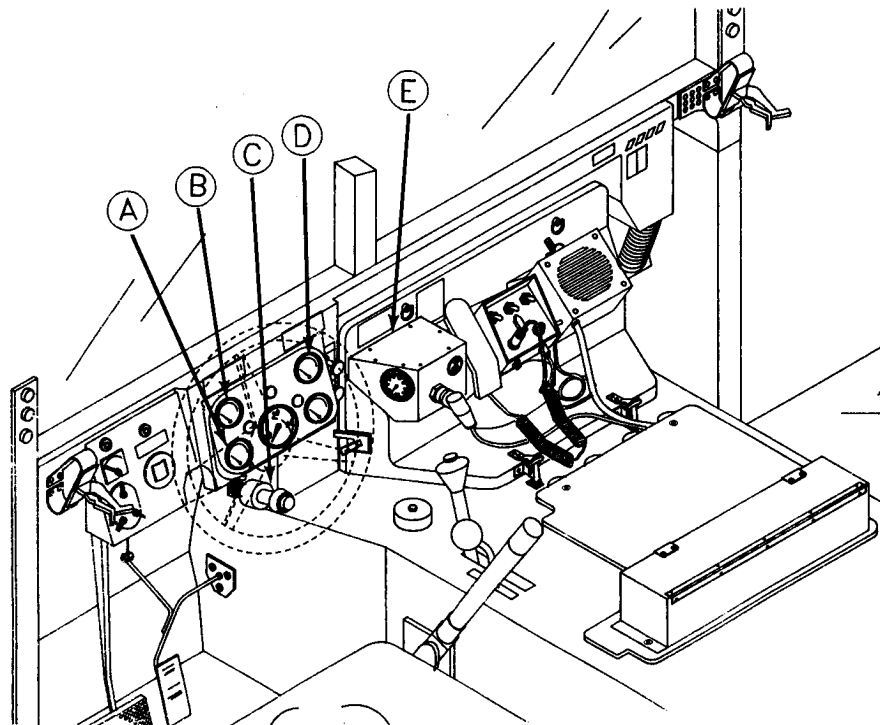
Section II. EQUIPMENT DESCRIPTION

1-5. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The components of the EES kit are used to equip an M1037 truck for operation and use in the Traffic Jam AN/TLQ-17A(V)3 (HMMWV) system.

1-6. LOCATION AND DESCRIPTION OF INTERIOR COMPONENTS

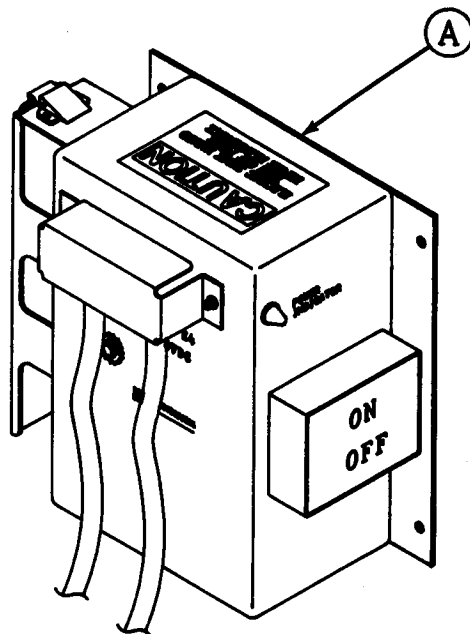
- A FUEL GAGE** - Located in instrument cluster and indicates fuel level. Must be PN C5136384 (see para 1-1).
- B ENGINE OIL PRESSURE GAGE** - Located in instrument cluster and indicates oil pressure while engine is running. Must be PN C5136382 (see para 1-1).
- C HAND THROTTLE CABLE** - Located in cab near instrument cluster and used in setting engine rpm while vehicle is in stationary position.
- D COOLANT TEMPERATURE GAGE** - Located in instrument cluster and indicates engine coolant temperature. Must be PN C5136383 (see para 1-1).
- E TACH/HOURMETER BOX** - Located in cab and attached to engine access cover and houses tachometer and hourmeter.



- | | | | |
|----------|---------------------------------|----------|---------------------------------|
| A | FUEL GAGE | D | COOLANT TEMPERATURE GAGE |
| B | ENGINE OIL PRESSURE GAGE | E | TACH/HOURMETER BOX |
| C | HAND THROTTLE CABLE | | |

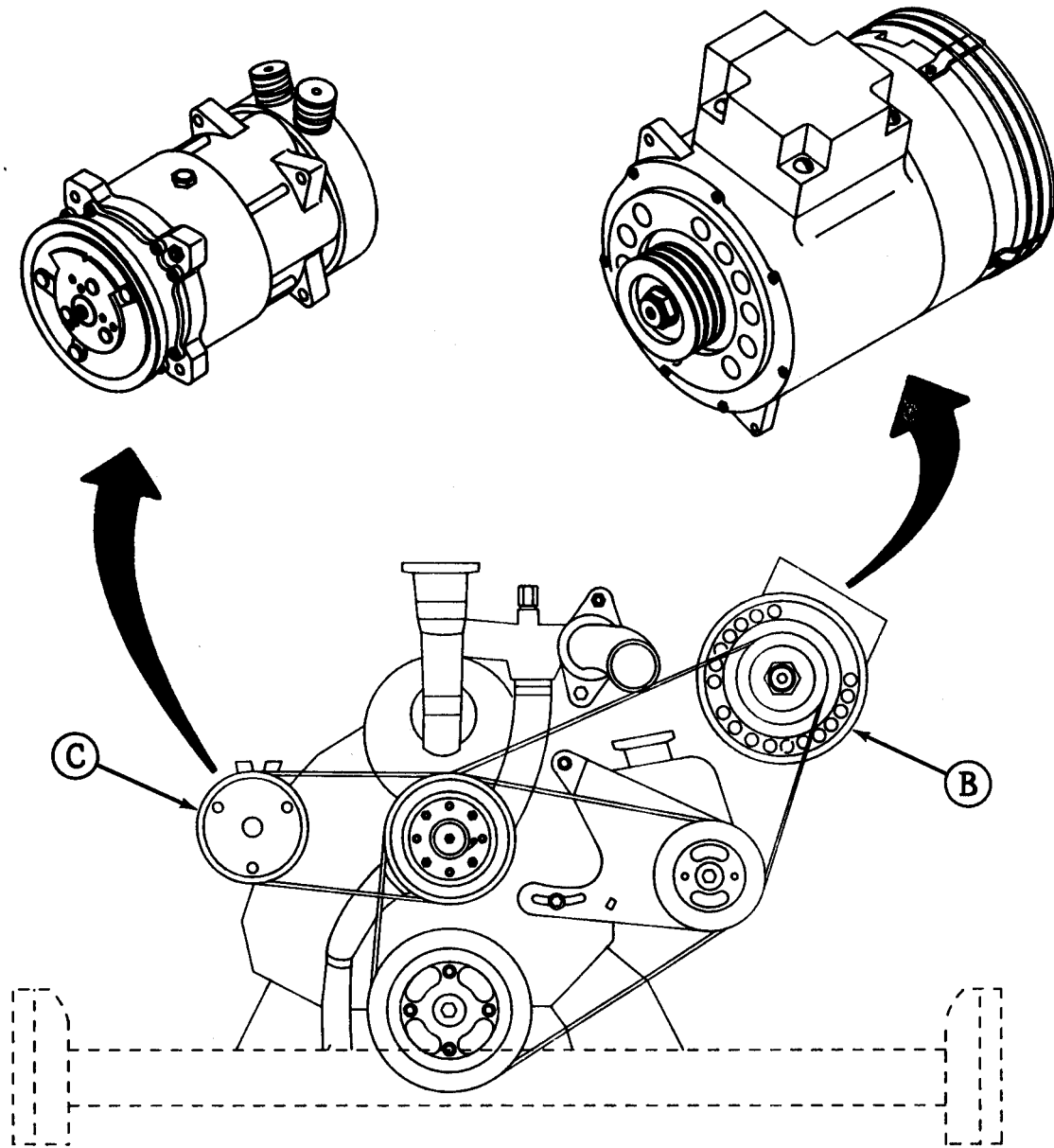
1-7. LOCATION AND DESCRIPTION OF EXTERIOR COMPONENTS

- A **POWER INTERFACE BOX** - Located behind passenger seat on inside wall of truck bed and includes main power terminals and circuit breaker.
- B **200 AMP ALTERNATOR** - Located on engine and used to provide 200 amp service necessary for operation of the countermeasures equipment.
- C **COMPRESSOR** - Located on engine and used for maintaining operation temperature of the countermeasures equipment.



A **POWER INTERFACE BOX**

1-7. LOCATION AND DESCRIPTION OF EXTERIOR COMPONENTS (Cent'd)



B 200 AMP ALTERNATOR

C COMPRESSOR

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS
AND INDICATORS

2-1. KNOW YOUR CONTROLS AND INDICATORS

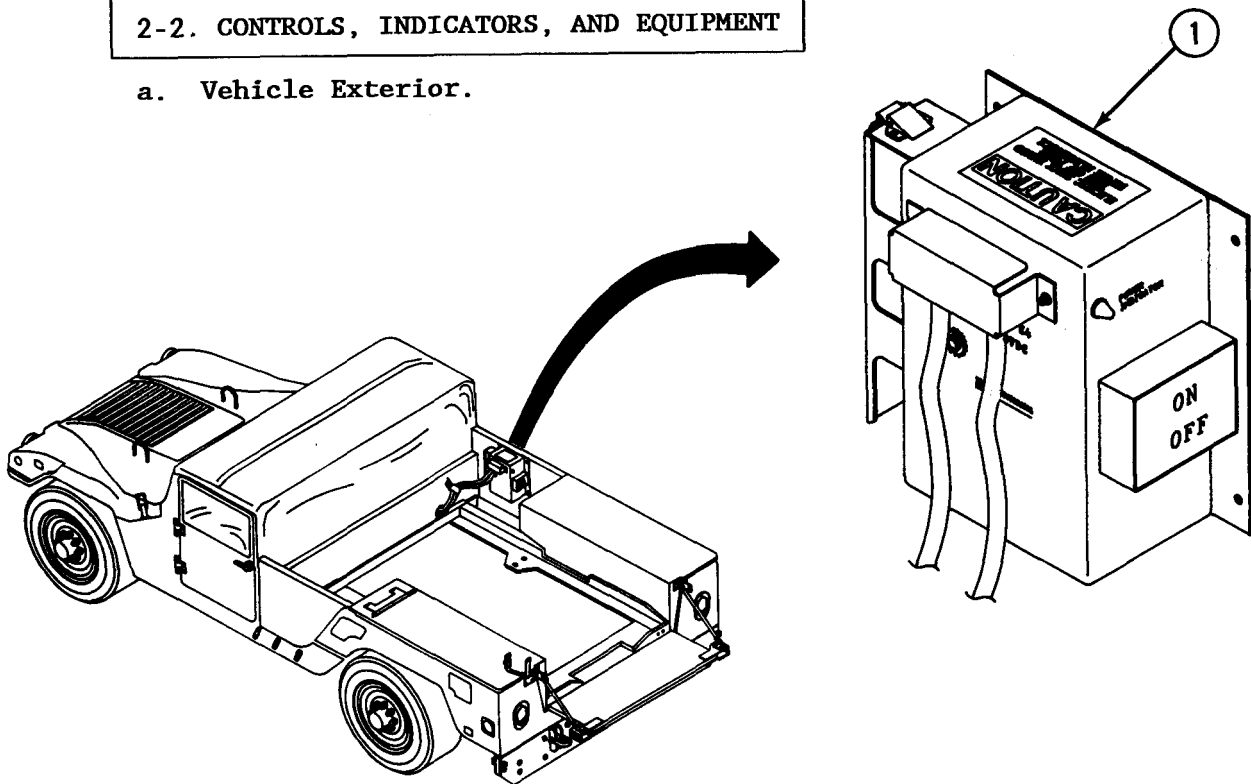
Before you attempt to operate your equipment, be sure you are familiar with the location and function of all controls and indicators. The location and function of your controls, indicators, and equipment are described in this

NOTE

The controls, indicators, and equipment in this section are applicable to the M1037 truck in the Traffic jam AN/TLQ-17A(V)3 (HMMWV) system.

2-2. CONTROLS, INDICATORS, AND EQUIPMENT

a. Vehicle Exterior.

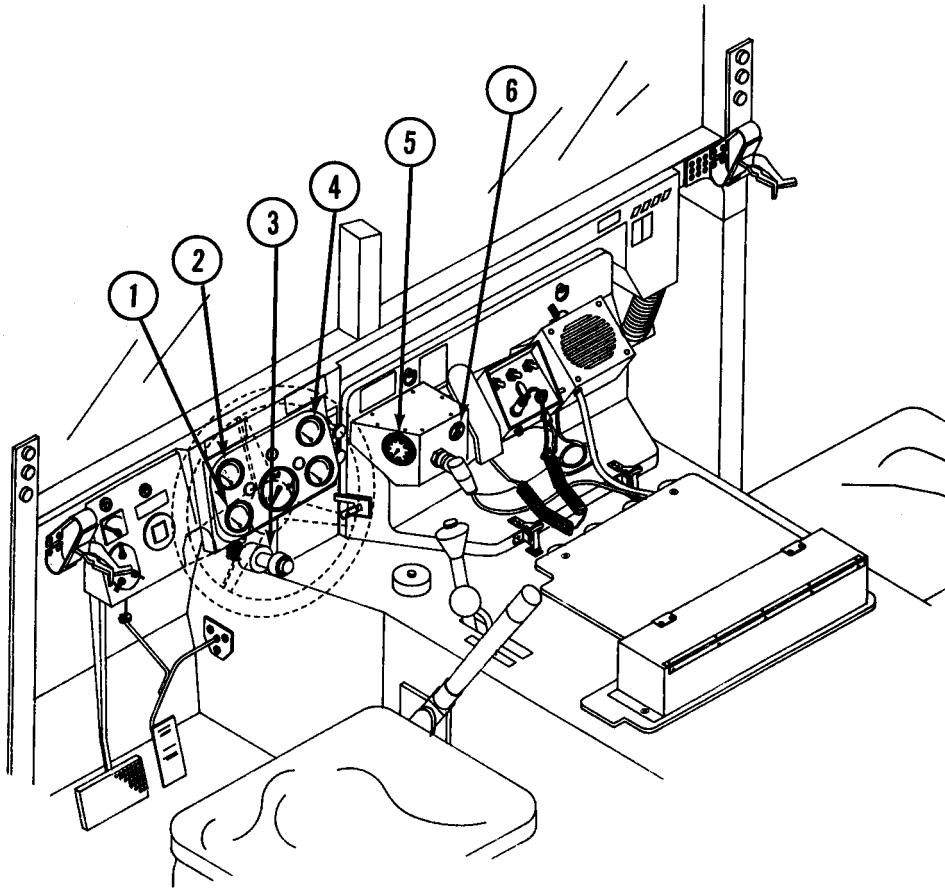


KEY ITEM AND FUNCTION

- 1 Power interface box used for input of electrical power from truck to S250 shelter.

2-2. CONTROLS, INDICATORS, AND EQUIPMENT (Cont'd)

b. Driver's Compartment.

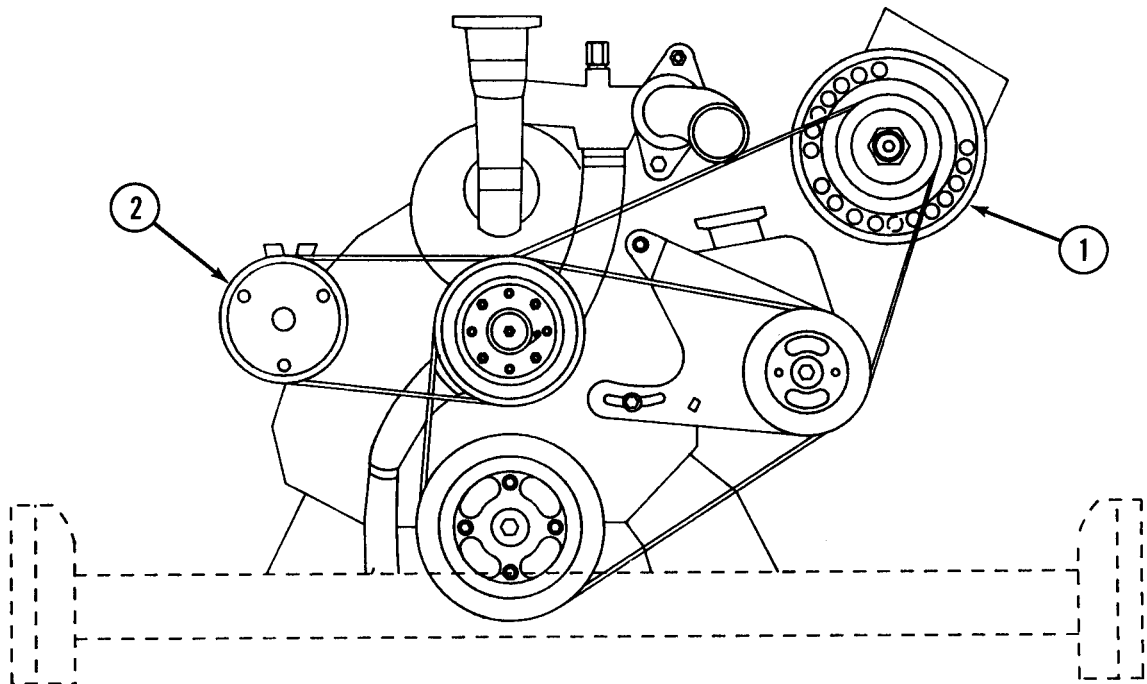


KEY ITEM AND FUNCTION

- 1 **Fuel gage** indicates amount of fuel in fuel tank. Must be PN C5136384 (see para 1-1).
- 2 **Engine oil pressure gage** indicates oil pressure when engine is running. Must be PN C5136382 (see para 1-1).
- 3 **Hand throttle cable** has a manual adjustment knob used to increase engine speed and to obtain maximum alternator output for communications/electrical requirements.
- 4 **Coolant temperature gage** indicates engine coolant temperature. Must be PN C5136383 (see para 1-1).
- 5 **Tachometer** is used to monitor the RPMs of the engine when throttle has been locked.
- 6 **Hourmeter** is used to monitor engine usage in time intervals of 1/10 of an hour.

2-2. CONTROLS, INDICATORS, AND EQUIPMENT (Cont'd)

c. Engine Compartment.



KEY **ITEM AND FUNCTION**

1. **200 amp alternator** is rated at 28 volts, 200 amperes, with external regulator. The 200 amp alternator is used to provide 28 VDC to the converter for 110/205 VAC operation of the countermeasures equipment. Also used to assist and recharge the vehicle batteries during operation.

2. **Compressor** is used for air conditioning of S250 shelter which is critical in maintaining acceptable operational temperature of countermeasures equipment.

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS)

2-3. GENERAL

A permanent record of the services, repairs, and modifications to the components of the EES kit must be recorded. See DA Pam 738-750 for a list of the forms and records required.

2-4. CLEANING INSTRUCTIONS

a. Cleaning is a service performed by operator/crew to keep the components of the EES kit in a state of readiness. Facilities and material available to operators for cleaning can vary greatly in differing operating conditions. However, the components of the EES kit must be maintained in as clean a condition as available cleaning equipment, materials, and tactical conditions permit.

b. General Guidelines. For a general guide of cleaning materials see TM 9-2320-280-10. Detailed descriptions of cleaning materials are found in TM 9-247.

2-5. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

a. The operator preventive maintenance for the components of the EES kit is provided below in table 2-1. The checks and services are arranged in logical order requiring minimal time and effort on your part.

b. The columns on the PMCS schedule provide the following information:
(1) Item Number. Provides logical order for PMCS performance and is used as a source number for DA Form 2404, on which your PMCS results will be recorded.

(2) Intervals. Shows a bullet (•) opposite each item number to indicate when that check is to be performed. The bullet will be repeated when consecutive items are to be inspected during the same interval. Interval columns include:

(a) BEFORE (B) checks and services of PREVENTIVE MAINTENANCE must be performed prior to placing equipment in operation.

(b) DURING (D) checks and services of PREVENTIVE MAINTENANCE must be performed while the equipment is in operation.

(c) AFTER (A) checks and services of PREVENTIVE MAINTENANCE are performed upon completion of mission.

(d) WEEKLY (W) checks and services of PREVENTIVE MAINTENANCE are performed once every 7 days.

(e) MONTHLY (M) checks and services of PREVENTIVE MAINTENANCE are performed once every 30 days.

2-5. OPERATOR PMCS (Cont'd)

NOTE

PMCS for designated intervals are performed under usual operating conditions. PMCS must be performed more frequently when operating under unusual conditions.

(3) **Item To Be Inspected.** Lists the system, common name, or location of item to be inspected.

(4) **Procedures.** Provides instructions for inspecting, servicing, or cleaning, and in some cases, having item repaired at a higher level.

(5) **Equipment Is Not Ready/Available.** Tells when and why equipment cannot be used. If vehicle is not able to perform the mission, equipment will be reported as not ready/available. Refer to DA Pam 738-750.

c. Procedures.

(1) Refer to TM 9-232-280-10 for general vehicle PMCS, if necessary.

(2) Use DA Form 2404 (DA Pam 738-750) and report malfunctions to unit maintenance at once.

(3) Tools included with vehicle are to be used during PMCS. Wiping rags are needed to remove dirt or grease.

NOTE

Dirt, grease, oil, and debris may cover up a serious problem. Clean as you check and follow precautions.

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE: These checks are to be made in the order listed, within each interval.
 B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, or adjusted as needed	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M		
1						<p>TACH/HOURMETER BOX</p> <ul style="list-style-type: none"> • a. Check tach/hourmeter box and mounting hardware for proper installation and tightness. Check both meters for secure mounting, cracks on face of glass, and scratches on scales. If repair or adjustment is required, notify unit maintenance. • b. Check tach/hourmeter box for corrosion, dirt, grease, or fungus. If necessary, clean and remove grease, fungus, or ground-in dirt with wiping rags and detergent. Report corrosion to unit maintenance. 	
2						<p>HAND THROTTLE CABLE</p> <ul style="list-style-type: none"> • a. Check hand throttle and mounting bracket for proper installation and tightness. Check throttle cable sheath for nicks, burns, or breaks. Check throttle release button to ensure hand throttle cable operates properly. If repair or adjustment is required, notify unit maintenance. • b. Check hand throttle cable for corrosion, dirt, grease, or fungus. If necessary, clean and remove grease, fungus, or ground-in dirt with wiping rags and detergent. Report corrosion to unit maintenance. 	

Section III. OPERATION UNDER USUAL CONDITIONS**2-6. GENERAL**

This section provides instructions for operation of components of the EES kit under moderate temperature, humidity, and terrain conditions. For operations under unusual conditions, refer to section IV of this chapter.

2-7. OPERATION OF HAND THROTTLE CABLE**WARNING**

Do not use hand throttle cable as an automatic speed or cruise control. The hand throttle cable does not automatically disengage when brake is applied, resulting in increased stopping distances and possibly hazardous and unsafe operation.

a. Increase Setting on Hand Throttle Cable. To increase setting on hand throttle cable, slowly turn knob counterclockwise until desired RPM's are attained.

b. Decrease Setting on Hand Throttle Cable.

(1) To decrease setting slowly, turn knob clockwise until idle speed is attained.

(2) To decrease setting rapidly, push throttle button and push-in throttle knob until idle speed is attained.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS**2-8. GENERAL**

This section provides special instructions for operating and maintaining components of the EES kit under unusual conditions. Unusual conditions are extreme temperatures, humidity, and/or terrain. Special care in cleaning and lubrication must be taken in order to keep the components of the EES kit operational when operating under unusual conditions.

2-9. OPERATING IN EXTREME COLD OR SNOW

The hand throttle used in Traffic Jam AN/TLQ-17A(V)3 (HMMWV) is similar to the hand throttle in a standard M1037 vehicle. See TM 9-2320-280-10 for instructions on use of the hand throttle in cold weather starting below +32°F (0°C).

2-10. OPERATING IN RAINY OR HUMID CONDITIONS

Material exposed for long periods during rainy or humid conditions can corrode rapidly and/or fungus may develop. Frequent inspections and cleaning are necessary to maintain operational readiness of the components of the EES kit.

2-11. OPERATION IN EXTREME HEAT

See TM 9-2320-280-10 for vehicle instructions for operation in extreme heat.

**CHAPTER 3
UNIT MAINTENANCE**

Section I. LUBRICATION INSTRUCTIONS

3-1. LUBRICATION ACCORDING TO HIGH ENGINE IDLE TIME LOAD

Due to the mission profile, this vehicle operates under unusual conditions (high idle time load). Therefore, mileage identified by LO 9-2320-280-12 for the vehicle is not sufficient; mileage plus engine idle time (using hourmeter) must be used. One hour of engine idle time is equal to 30 miles of travel. The vehicle log should be updated daily to reflect engine idle time and equivalent mileage (idle time in hours multiplied by 30 miles equals the equivalent mileage).

Section II. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

3-2. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

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

Special tools, TMDE, and support equipment are listed and illustrated in appendix D of this manual.

3-4. REPAIR PARTS

Repair parts are listed and illustrated in appendix D of this manual.

Section III. SERVICE UPON RECEIPT

3-5. GENERAL

a. Upon receipt of new, used, or reconditioned components of the EES kit, you must determine if the equipment has been properly prepared for service. The following steps should be followed:

- (1) Inspect all assemblies, subassemblies, and accessories to be sure they are in proper working order.
- (2) Secure, clean, lubricate, or adjust as needed.
- (3) Check all equipment to be sure every item is present, in good condition, and properly mounted or stowed.

b. The operator will assist when performing service upon receipt inspections.

3-6. GENERAL INSPECTION AND SERVICING INSTRUCTIONS

- a. See Chapter 2 of this manual when checking equipment for proper operation.
- b. For all services and inspections, follow operator PMCS procedures given in Chapter 2 of this manual.

Section IV. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-7. SCOPE

The best way to maintain the components of the EES kit covered by this manual is to inspect them on a regular basis so minor faults can be discovered and corrected before they result in serious damage, failure, or injury. This section contains systematic instructions for inspection and correction of the EES kit components to avoid costly repairs or major breakdowns. This is Preventive Maintenance Checks and Services (PMCS).

3-8. INTERVALS

a. Unit maintenance, assisted by operator/crew, will perform checks and services contained in table 3-1 at the following intervals:

- (1) **Semiannually (S)**. Every 6 months or 3,000 miles (4,827 km), whichever comes first.
- (2) **Annually (A)**. Every 12 months or 6,000 miles (9,654 km), whichever comes first.
- (3) **Biennially (B)**. Every 24 months or 12,000 miles (19,308 km), whichever comes first.

b. Perform all (S) inspections in addition to (A) inspections at the time of the annual inspection. Perform all (A) and (S) inspections in addition to (B) inspections at the time of the biennial inspection.

3-9. REPORTING REPAIRS

All shortcomings of the components of the EES kit will be reported on DA Form 2404 (DA Pam 738-750), Equipment Inspection and Maintenance Worksheet, immediately after the PMCS, and before taking corrective action. All deficiencies of the components of the EES kit will be reported in the equipment record.

3-10. GENERAL SERVICE AND INSPECTION PROCEDURES
--

- a. While performing specific PMCS procedures, make sure items are correctly assembled, secure, not worn, and serviceable as defined below:
- (1) An item is CORRECTLY ASSEMBLED when it is in proper position and all parts are present.
 - (2) When wires, nuts, washers, hoses, or attaching hardware cannot be moved by hand, or wrench, they are SECURE.
 - (3) An item is WORN if there is too much play between joining parts or when marking data, warning, and caution plates are not readable.
 - (4) An item is UNSERVICEABLE if it is worn beyond repair and is likely to fail before the next scheduled inspection.
- b. Refer to TM 9-232-280-10 for general vehicle cleaning instructions.

3-11. UNIT PMCS PROCEDURES

The unit preventive maintenance for the components of the EES kit is provided below in table 3-1. The checks and services listed are arranged in logical order requiring minimal time and effort on your part.

- b. The columns on the PMCS schedule provide the following information:
- (1) **Item Number.** Provides logical order for PMCS performance and is used as a source number for DA Form 2404, on which your PMCS results will be recorded.
 - (2) **Intervals.** Shows a bullet (o) opposite each item number to indicate when that check is to be performed. The bullet will be repeated when consecutive items are to be inspected during the same interval. Interval columns include:
 - (a) SEMIANNUALLY (S) checks are to be performed every 6 months;
 - (b) ANNUALLY (A) checks are to be performed every year;
 - (c) BIENNIALY (B) checks are to be performed every 2 years.

NOTE

PMCS for designated intervals are performed under usual operating conditions. PMCS must be performed more frequently when operating under unusual conditions.

- (3) **Item To Be Inspected.** Lists the system, common name, or location of item to be inspected.
 - (4) **Procedures.** Provides instructions for inspection, replacement, or adjustment, and in some cases, having item repaired at a higher level.
- c. Refer to TM 9-232-280-20 for general vehicle service and inspection procedures.

Table 3-1. Unit Preventive Maintenance Checks and Services
 S-Semiannually A-Annually B-Biennially

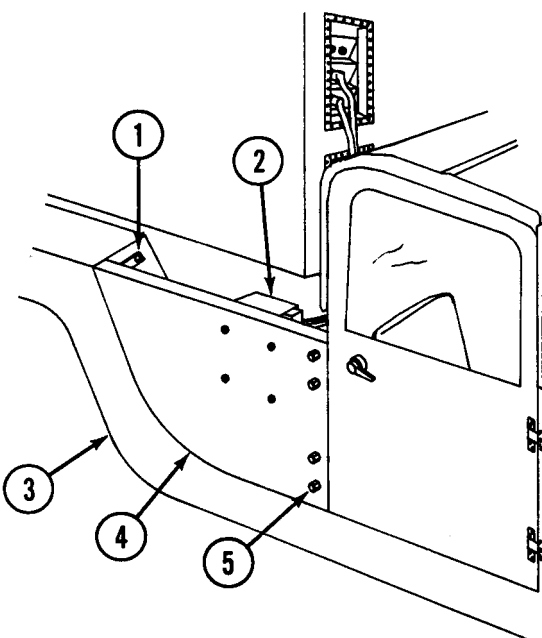
ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES
	S	A	B		
1		●		POWER INTERFACE BOX	<p style="text-align: center;"><u>WARNING</u></p> <ul style="list-style-type: none"> ● Before inspecting power interface box, battery ground cable must be disconnected, or serious injury to personnel may occur. ● Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or disconnected battery ground cable contacts battery terminal, a direct short will result, causing injury to personnel or damage to equipment. <p>Loosen four special bolts (5) from fixed rear door (4). Loosen captive screw (1) and pull fixed rear door (4) away from truck (3) to access power interface box (2).</p> 

Table 3-1. Unit Preventive Maintenance Checks and Services (Cont'd)
S-Semiannually A-Annually B-Biennially

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURES
	S	A	B		
1		●		POWER INTERFACE BOX (Cent'd)	<p>a. Inspect power cable connections for tightness. Tighten loose connections.</p> <p>b. Inspect terminals and power cables for corrosion, dirt, grease, or fungus. Clean with wire brush, wiping rags, and detergent.</p> <p>c. Inspect power cables for frayed, cracked, or worn insulation. Repair or replace damaged components.</p> <p>Install fixed rear door (4) against side of truck (3) and secure with captive screw (1) and four special bolts (5).</p>
2		●		COMPRESSOR	<p>Inspect compressor for secure mounting and oil leakage. Tighten any loose mounting hardware (TM 9-2320-280-20), and report any oil leakage to DS maintenance.</p>
3		●		200 AMP ALTERNATOR	<p>a. Inspect 200 amp alternator and voltage regulator for proper installation and mounting.</p> <p>b. Inspect electrical wiring for broken strands, frayed, cracked, or worn insulation, and loose connections.</p>

Section V. UNIT TROUBLESHOOTING

3-12. GENERAL

a. Information in this section is for use by unit maintenance personnel in conjunction with, and as a supplement to, troubleshooting procedures in TM 9-2320-280-10 and TM 9-2320-280-20.

b. Unit troubleshooting, table 3-2, contains instructions that will help you diagnose and correct malfunctions of the components of the EES kit. The table also helps unit maintenance personnel identify difficulties that must be referred to direct support maintenance.

c. The troubleshooting procedures in this section cannot give all the answers or correct all malfunctions encountered. However, these procedures are an organized step-by-step study of a problem that directs tests and inspections towards the source of a problem and successful correction.

d. Before taking any action to correct a malfunction, the following rules should be followed:

(1) Question operator to obtain any information that might help you determine the cause of the problem.

(2) Never overlook the chance that the problem could be of simple origin. The problem could be corrected with minor adjustment.

(3) Use all senses to observe and locate troubles.

(4) Use test instruments or gages to help you determine and isolate the problem.

(5) Always isolate the system where the malfunction occurs and then locate the defective component.

(6) Review figure 3-1 to help in isolating the fault and understanding the equipment configuration.

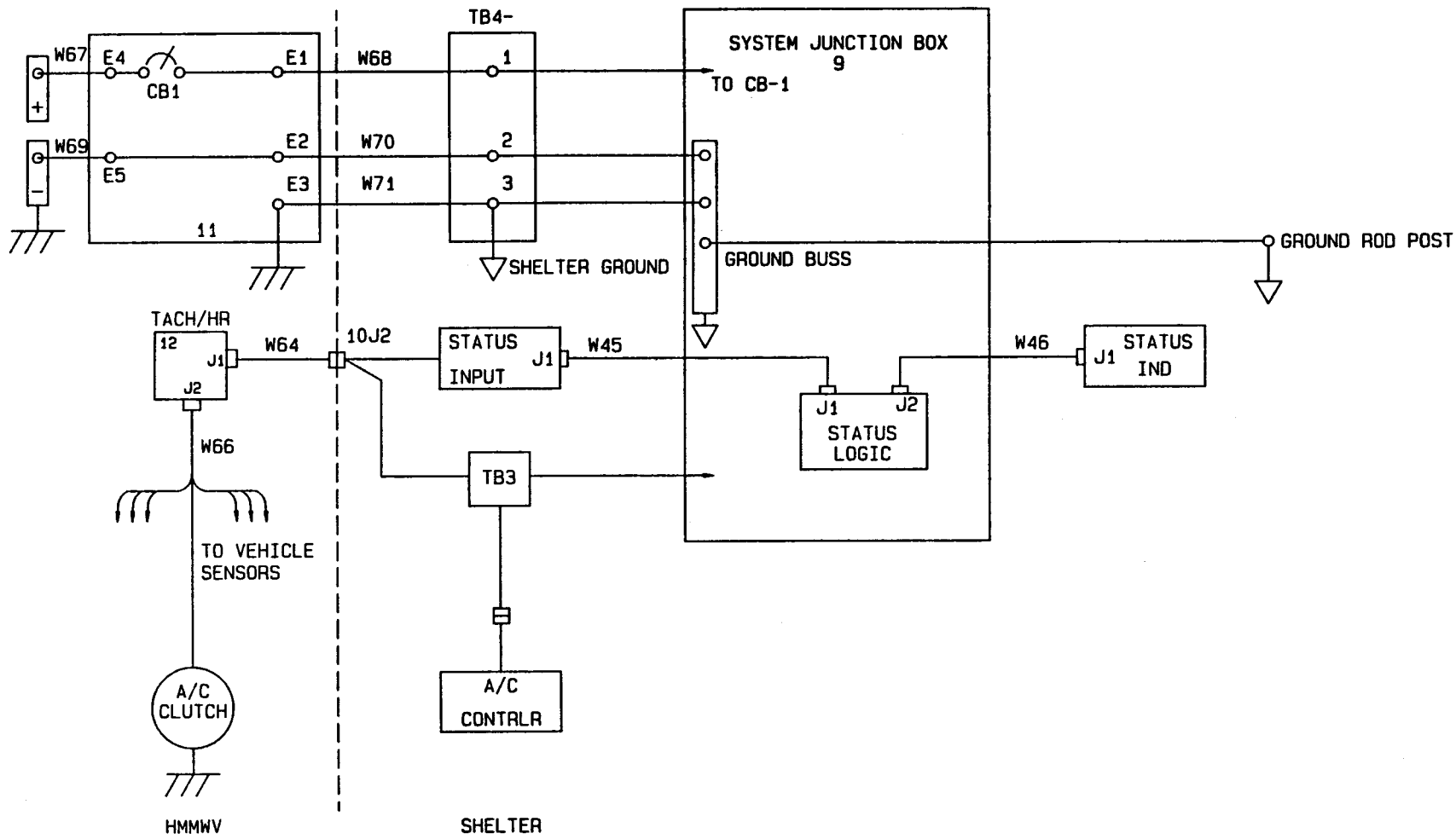


Figure 3-1. Status Warning System

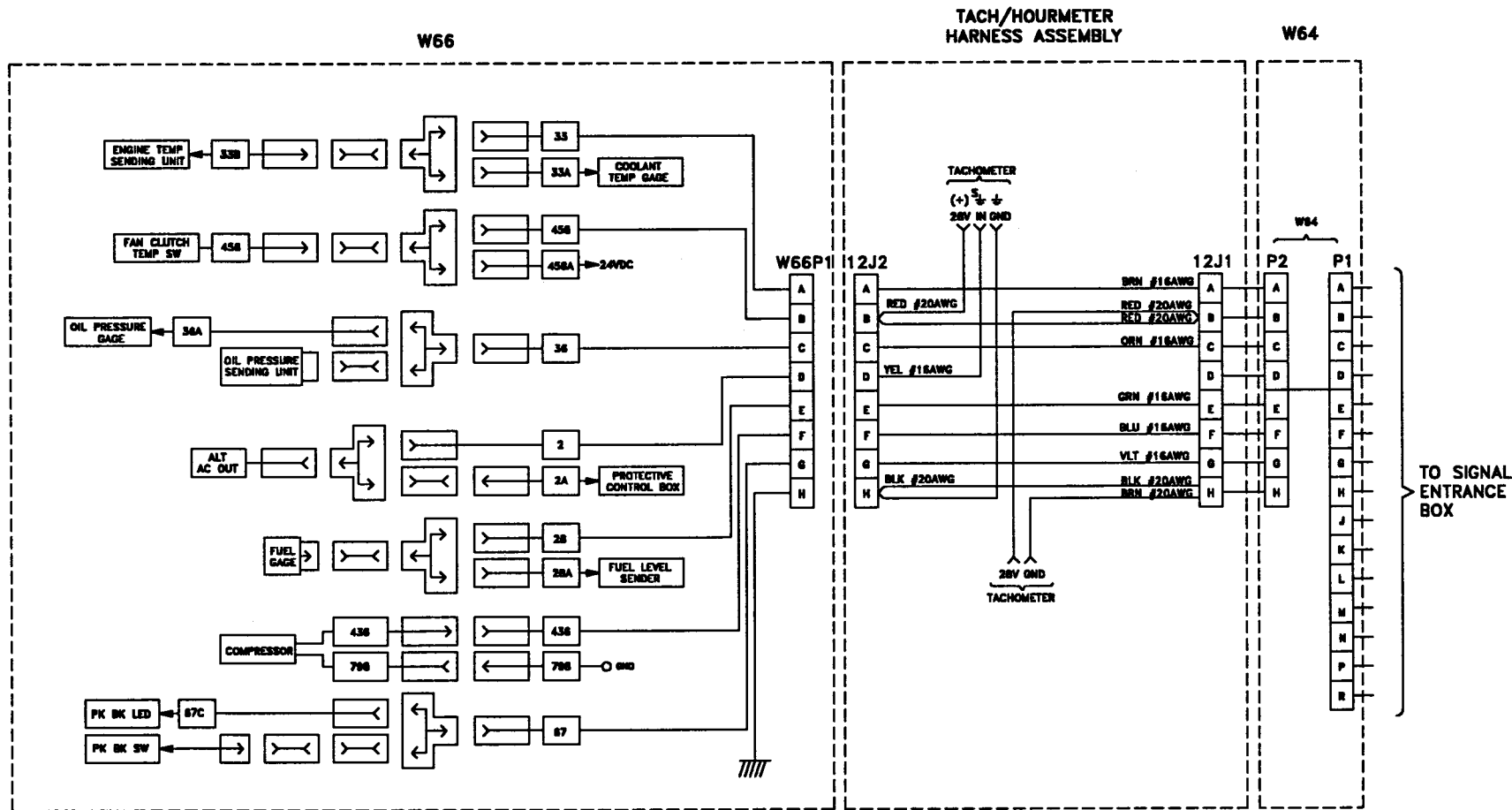


Figure 3-2. Engine Electrical Interface (W66)

Engine Oil Pressure Gage	Voltage Range	Fuel Gage	Voltage Range
10	0.10 - 0.45	1/8	0.20 - 0.70
20	0.25 - 0.75	1/4	0.65 - 1.05
ALARM	.37	ALARM	.87
30	0.55 - 1.00	3/8	1.00 - 1.40
40	0.80 - 1.25	1/2	1.25 - 1.80
50	1.00 - 1.45	5/8	1.55 - 2.10
60	1.15 - 1.65	3/4	1.80 - 2.35
70	1.35 - 1.85	FULL	2.15 - 2.70

Coolant Temperature Gage	Voltage Range
below 120°	13.0 - 15.0
140°	12.4 - 13.3
160°	11.7 - 12.6
180°	11.0 - 11.9
200°	10.3 - 11.2
ALARM	10.3
220°	9.7 - 10.5
above 220°	10.5 or less

Figure 3-3. Test Voltages for Gages in Status Warning System

3-13. UNIT TROUBLESHOOTING

UNIT TROUBLESHOOTING
SYMPTOM INDEX

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING PROCEDURE PAGE
--------------------	-------------	--------------------------------------

TRUCK CAB COMPONENTS

- | | | |
|----|---|------|
| 1. | Hand throttle will not operate properly | 3-11 |
| 2. | Tachometer reading is incorrect | 3-12 |
| 3. | Hourmeter is not functioning | 3-13 |

SHELTER WARNING SYSTEM

- | | | |
|-----|---|------|
| 4. | With parking brake not set, parking brake dash light is off, and status indicator alarm and light do not come on | 3-13 |
| 5. | Engine oil pressure gage displays normal reading and status indicator alarm and light are on | 3-15 |
| 6. | Engine oil pressure gage displays no pressure reading and status indicator alarm and light are on | 3-16 |
| 7. | Coolant temperature gage displays normal reading and status indicator alarm and light are on | 3-18 |
| 8. | Coolant temperature gage displays no engine temperature reading and status indicator alarm and light are on | 3-19 |
| 9. | Coolant temperature gage displays no engine temperature reading and status indicator alarm and light do not come on | 3-21 |
| 10. | Fuel gage displays reading of more than 3/8-tank full and status indicator alarm and light are on | 3-22 |
| 11. | Fuel gage displays reading of less than an eighth tank full and status indicator alarm and light do not come on | 3-23 |

ELECTRICAL COMPONENTS

- | | | |
|-----|--|------|
| 12. | Shelter has no power and incandescent lamp on power interface box is not lit | 3-25 |
|-----|--|------|

Table 3-2. Unit Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. HAND THROTTLE WILL NOT OPERATE PROPERLY	Step 1. Start engine (TM 9-2320-280-10) and let engine come to normal idle speed of 650 RPM (\pm 25 RPM).	
	Step 2. Push hand throttle release button to ensure it moves freely.	
		If hand throttle release button does not move freely, replace hand throttle cable (para 3-15).
		If hand throttle release button moves freely, go to step 3.
Step 3. Slowly turn hand throttle knob counterclockwise. Engine RPMs should start to increase.		
		If RPMs do not increase or hand throttle cable interferes with accelerator, replace hand throttle cable (para 3-15).
		If RPMs increase, go to step 4.
Step 4. Return hand throttle knob to starting position by depressing hand throttle release button and pushing hand throttle knob down.		
		If RPMs return to normal, procedure is completed.
		If RPMs do not return to normal, check adjustment of hand throttle cable (para 3-16).
		If RPMs still do not return to normal, replace hand throttle cable (para 3-15).

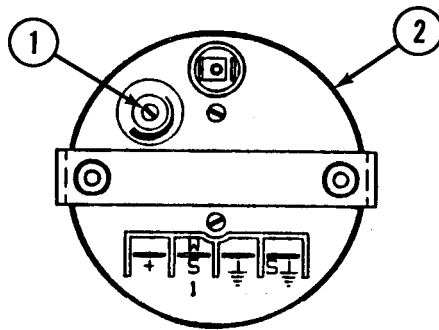
END OF TESTING

Table 3-2. Unit Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

2. TACHOMETER READING IS INCORRECT

- Step 1. Connect STE/ICE-R to engine (TM 9-2320-280-20). Start engine (TM 9-2320-280-10) and let engine come to normal idle speed of 650 RPM (± 25 RPM).
- Step 2. Check engine idle setting.
 - If engine idle setting is incorrect, adjust engine idle (TM 9-2320-280-20).
 - If engine idle setting is correct, go to step 3.
- Step 3. Compare STE/ICE-R RPM rate to tachometer RPM rate.
 - If RPM rates agree, procedure is completed.
 - If RPM rates do not agree, go to step 4.
- Step 4. Remove tach/hourmeter box cover from tach/hourmeter box. Adjust tachometer adjustment screw (1) on back of tachometer (2) until RPMs on STE/ICE-R and tachometer (2) agree.



If tachometer adjusts to correct RPMs, procedure is completed. Replace tach/hourmeter box cover on tach/hourmeter box.

If tachometer will not adjust to desired RPMs, replace tachometer (para 3-18).

END OF TESTING

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. HOURMETER IS NOT FUNCTIONING	Step 1. Start engine (TM 9-2320-280-10) and let engine come to normal idle speed of 650 RPM (\pm 25 RPM).	
	Step 2. Check hourmeter after 6 minutes.	If hourmeter advances 1/10 of an hour, procedure is completed.
		If hourmeter fails to advance 1/10 of an hour, go to step 3.
	Step 3. Remove tach/hourmeter box cover. Check hourmeter leads for tight connections.	Tighten leads as necessary. Replace tach/hourmeter box cover and repeat Step 2.
		If hourmeter fails to advance 1/10 of an hour, replace hourmeter (para 3-19).
		END OF TESTING
4. WITH PARKING BRAKE NOT SET, PARKING BRAKE DASH LIGHT IS OFF, AND STATUS INDICATOR ALARM AND LIGHT DO NOT COME ON (REFER TO FIGURES 3-1 THRU 3-3)		
		NOTE
		<ul style="list-style-type: none"> ● When measuring voltage, measure against ground. ● When measuring +28 VDC, use \pm 2 VDC for tolerance.
	Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box.	
	Step 2. Using multimeter, measure voltage at connector 12J1, pin "G", on tach/hourmeter box.	If multimeter displays about +28 VDC, go to step 3.
		If multimeter does NOT display about +28 VDC, go to step 5.

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>4. WITH PARKING BRAKE NOT SET, PARKING BRAKE DASH LIGHT IS OFF, AND STATUS INDICATOR ALARM AND LIGHT DO NOT COME ON (Cont'd)</p>	<p>Step 3. Reconnect cable W64 to connector 12J1 on tach/hourmeter box . Disconnect cable W64 from connector on shelter.</p>	
	<p>Step 4. Using multimeter, measure voltage at cable W64, pin "G."</p>	<p>If multimeter displays about +28 VDC, refer to system manual for further troubleshooting</p>
		<p>If multimeter does NOT display about +28 VDC, replace faulty cable assembly W64 (para 3-25).</p>
	<p>Step 5. Reconnect cable W64 to connector 12J1 on tach/hourmeter box . Remove engine access cover and disconnect safety lanyard. Disconnect cable W66 from connector 12J2 on tach/hourmeter box.</p>	
	<p>Step 6. Using multimeter, measure voltage at cable W66, pin "G."</p>	<p>If multimeter displays about +28 VDC, replace faulty harness assembly (para 3-20).</p>
		<p>If multimeter does NOT display about +28 VDC, go to step 7.</p>
	<p>Step 7. Reconnect cable W66 to connector 12J2 on tach/hourmeter box .</p>	
	<p>Step 8. Under engine access cover, check "T" connection on cable assembly W66 at wire 67.</p>	<p>If "T" connection is loose, tighten connection.</p>
	<p>If "T" connection is NOT loose, replace faulty "T" connector or cable assembly W66 (para 3-26).</p>	

END OF TESTING

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
5. ENGINE OIL PRESSURE GAGE DISPLAYS NORMAL READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (REFER TO FIGURES 3-1 THRU 3-3)	<u>Condition:</u> HMMWV engine has been running 10 to 15 minutes. Both light and alarm tests on status indicator are normal.	NOTE
		<ul style="list-style-type: none"> ● When measuring voltage, measure against ground. ● Normal engine oil pressure is 25-50 psi. ● Before starting procedure, see para 1-1.
	Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box.	
	Step 2. Using multimeter, measure voltage at connector 12J1, pin "C", on tach/hourmeter box.	
		If multimeter displays correct voltage (fig 3-3), go to step 3.
		If multimeter does NOT display correct voltage (fig 3-3), go to step 5.
	Step 3. Reconnect cable W64 to connector 12J1 on tach/hourmeter box. Disconnect cable W64 from connector on shelter.	
	Step 4. Using multimeter, measure voltage at cable W64, pin "C."	
		If multimeter displays correct voltage (fig 3-3), refer to system manual for further troubleshooting.
		If multimeter does NOT display correct voltage (fig 3-3), replace faulty cable assembly W64 (para 3-25).
	Step 5. Reconnect cable W64 to connector 12J1 on tach/hourmeter box. Remove engine access cover and disconnect safety lanyard. Disconnect cable W66 from connector 12J2 on tach/hourmeter box.	
	Step 6. Using multimeter, measure voltage at cable W66, pin "C."	
		If multimeter displays correct voltage (fig 3-3), replace faulty harness assembly (para 3-20).
		If multimeter does NOT display correct voltage (fig 3-3), go to step 7.

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

5. ENGINE OIL PRESSURE GAGE DISPLAYS NORMAL READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (Cont'd)

Step 7. Reconnect cable W66 to connector 12J2 on tach/hourmeter box .

Step 8. Under engine access cover, check "T" connection on cable assembly W66 at wire 36.

If "T" connection is loose, tighten connection.

If "T" connection is NOT loose, replace faulty "T" connector or cable assembly W66 (para 3-26).

END OF TESTING

6. ENGINE OIL PRESSURE GAGE DISPLAYS NO PRESSURE READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (REFER TO FIGURES 3-1 THRU 3-3)

Condition: HMMWV engine has been running 10 to 15 minutes. Both light and alarm tests on status indicator are normal.

NOTE

- Normal oil pressure is 25-50 psi.
- Before starting procedure, see para 1-1.

Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box .

Step 2. Check engine oil pressure gage reading.

If engine oil pressure gage displays normal reading, go to step 3.

If engine oil pressure gage does NOT display normal reading, go to step 5.

Step 3. Reconnect cable W64 to connector 12J1 on tach/hourmeter box. Disconnect cable W64 from connector on shelter.

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
6. ENGINE OIL PRESSURE GAGE DISPLAYS NO PRESSURE READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (Cont'd)	Step 4. Check engine oil pressure gage reading.	<p>If engine oil pressure gage displays normal reading, refer to system manual for further troubleshooting.</p> <p>If engine oil pressure gage does NOT display normal reading, replace faulty cable assembly W64 (para 3-25) .</p>
	Step 5. Reconnect cable W64 to connector 12J1 on tach/hourmeter box . Remove engine access cover and disconnect safety lanyard. Disconnect cable W66 from connector 12J2 on tach/hourmeter box.	
	Step 6. Check engine oil pressure gage reading.	<p>If engine oil pressure gage displays normal reading, go to step 7.</p> <p>If engine oil pressure gage does NOT display normal reading, replace faulty harness assembly (para 3-20).</p>
	Step 7. Reconnect cable W66 to connector 12J2 on tach/hourmeter box. Remove wire 36 on cable assembly W66 from "T" connector and attach wire 36A to oil pressure sending unit.	
	Step 8. Check engine oil pressure gage reading.	<p>If engine oil pressure gage displays normal reading, replace faulty "T" connector or cable assembly W66 (para 3-26).</p> <p>If engine oil pressure gage does NOT display normal reading, replace faulty oil pressure sending unit (TM 9-2320-280-20).</p>

END OF TESTING

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

7. COOLANT TEMPERATURE GAGE DISPLAYS NORMAL READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (REFER TO FIGURES 3-1 THRU 3-3)

Condition: HMMWV engine has been running 10 to 15 minutes. Both light and alarm tests on status indicator are normal.

NOTE

- When measuring voltage, measure against ground.
- Normal coolant temperature is 190-230° F.
- Before starting procedure, see para 1-1.

Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box .

Step 2. Using multimeter, measure voltage at connector 12J1, pin "A", on tach/hourmeter box.

If multimeter displays correct voltage (fig 3-3), go to step 3.

If multimeter does NOT display correct voltage (fig 3-3), go to step 5.

Step 3. Reconnect cable W64 to connector 12J1 on tach/hourmeter box . Disconnect cable W64 from connector on shelter.

Step 4. Using multimeter, measure voltage at cable W64, pin "A."

If multimeter displays correct voltage (fig 3-3), refer to system manual for further troubleshooting.

If multimeter does NOT display correct voltage (fig 3-3), replace faulty cable assembly W64 (para 3-25).

Step 5. Reconnect cable W64 to connector 12J1 on tach/hourmeter box . Remove engine access cover and disconnect safety lanyard. Disconnect cable W66 from connector 12J2 on tach/hourmeter box.

Step 6. Using multimeter, measure voltage at cable W66, pin "A."

If multimeter displays correct voltage (fig 3-3), replace faulty harness assembly (para 3-20).

If multimeter does NOT display correct voltage (fig 3-3), go to step 7.

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
7. COOLANT TEMPERATURE GAGE DISPLAYS NORMAL READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (Cont'd)	Step 7. Reconnect cable W66 to connector 12J2 on tach/hourmeter box .	
	Step 8. Check "T" connection on cable assembly W66 at wire 33.	If "T" connection is loose, tighten connection.
		If "T" connection is NOT loose, replace faulty "T" connector or cable assembly W66 (para 3-26).
		END OF TESTING
8. COOLANT TEMPERATURE GAGE DISPLAYS COLD ENGINE READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (REFER TO FIGURES 3-1 THRU 3-3)		
	<u>Condition:</u> HMMWV engine has been running 10 to 15 minutes. Both light and alarm tests on status indicator are normal.	
		NOTE
		<ul style="list-style-type: none"> ● When measuring voltage, measure against ground. ● Normal coolant temperature is 190-230° F. ● Before starting procedure, see para 1-1.
	Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box .	
	Step 2. Check coolant temperature gage reading.	If coolant temperature gage displays normal reading, go to step 3.
		If coolant temperature gage does NOT display normal reading, go to step 5.
	Step 3. Reconnect cable W64 to connector 12J1 on tach/hourmeter box . Disconnect cable W64 from connector on shelter.	

Table 3-2, Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
8. COOLANT TEMPERATURE GAGE DISPLAYS COLD ENGINE READING AND STATUS INDICATOR ALARM AND LIGHT ARE ON (Cont'd)	Step 4. Check coolant temperature gage reading.	<p>If coolant temperature gage displays normal reading, refer to system manual for further troubleshooting.</p> <p>If coolant temperature gage does NOT display normal reading, replace faulty cable assembly W64 (para 3-25).</p>
	Step 5. Reconnect cable W64 to connector 12J1 on tach/hourmeter box . Remove engine access cover and disconnect safety lanyard. Disconnect cable W66 from connector 12J2 on tach/hourmeter box.	
	Step 6, Check coolant temperature gage reading.	<p>If coolant temperature gage displays normal reading, replace faulty harness assembly (para 3-20).</p> <p>If coolant temperature gage does NOT display normal reading, go to step 7.</p>
	Step 7. Reconnect cable W66 to connector 12J2 on tach/hourmeter box .	
	Step 8. Under engine access cover, check "T" connection on cable assembly W66 at wire 33, 33A, and 33B.	<p>If "T" connections are loose, tighten connections.</p> <p>If "T" connections are NOT loose, replace faulty "T" connector or cable assembly W66 (para 3-26).</p>

END OF TESTING

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

9. COOLANT TEMPERATURES GAGE DISPLAYS COLD) ENGINE READING AND STATUS INDICATOR ALARM AND LIGHT DO NOT COME ON (REFER TO FIGURES 3-1 THRU 3-3)

Condition: HMMWV engine has been running 10 to 15 minutes. Both light and alarm tests on status indicator are normal.

NOTE

- When measuring voltage, measure against ground.
- Before starting procedure, see para 1-1.

Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box .

Step 2. Check alarm and TEMP light on status indicator.

If alarm and TEMP light is on, go to step 3.

If alarm and TEMP light is NOT on, fault is with system. Report fault to DS maintenance.

Step 3. Remove engine access cover and disconnect safety lanyard.

Step 4. Under engine access cover, check "T" connection on cable assembly W66 at wire 33A.

If "T" connection is loose, tighten connection.

If "T" connection is NOT loose, replace faulty "T" connector or electrical gage (TM 9-2320-280-20).

END OF TESTING

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

10. FUEL GAGE DISPLAYS READING OF MORE THAN 3/8-TANK FULL AND STATUS INDICATOR ALARM AND LIGHT ARE ON (REFER TO FIGURES 3-1 THRU 3-3)

Condition: HMMWV engine has been running 10 to 15 minutes. Both light and alarm tests on status indicator are normal.

NOTE

- When measuring voltage, measure against ground.
- Before starting procedure, see para 1-1.

Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box.

Step 2. Using multimeter, measure voltage at connector 12J1, pin "E", on tach/hourmeter box.

If multimeter displays correct voltage (fig 3-3), go to step 3.

If multimeter does NOT display correct voltage (fig 3-3), go to step 5.

Step 3. Reconnect cable W64 to connector 12J1 on tach/hourmeter box. Disconnect cable W64 from connector on shelter.

Step 4. Using multimeter, measure voltage at cable W64, pin "E."

If multimeter displays correct voltage (fig 3-3), refer to system manual for further troubleshooting.

If multimeter does NOT display correct voltage (fig 3-3), replace faulty cable assembly W64 (para 3-25).

Step 5. Reconnect cable W64 to connector 12J1 on tach/hourmeter box. Remove engine access cover and disconnect safety lanyard. Disconnect cable W66 from connector 12J2 on tach/hourmeter box.

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
10. FUEL GAGE DISPLAYS READING OF MORE THAN 3/8-TANK FULL AND STATUS INDICATOR ALARM AND LIGHT ARE ON (Cont'd)	Step 6. Using multimeter, measure voltage at cable W66, pin "E."	If multimeter displays correct voltage (fig 3-3), replace faulty harness assembly (para 3-20). If multimeter does NOT display correct voltage (fig 3-3), go to step 7.
	Step 7. Reconnect cable W66 to connector 12J2 on tach/hourmeter box .	
	Step 8. Check "T" connection on cable assembly W66 at wires 28 and 28A.	If "T" connections are loose, tighten connections. If "T" connections are NOT loose, replace faulty "T" connector or cable assembly W66 (para 3-26).
	END OF TESTING	
11. FUEL GAGE DISPLAYS READING OF LESS THAN AN EIGHTH TANK FULL AND STATUS INDICATOR ALARM AND LIGHT DO NOT COME ON (REFER TO FIGURES 3-1 THRU 3-2)	<u>Condition:</u> HMMWV engine has been running 10-15 minutes. Both light and alarm tests on status indicator are normal.	
	NOTE	
	<ul style="list-style-type: none"> ● When measuring voltage, measure against ground. ● Before starting procedure, see para 1-1. 	
	Step 1. Disconnect cable W64 from connector 12J1 on tach/hourmeter box .	
	Step 2. Check status indicator alarm and fuel light.	If alarm and fuel light are on, go to step 3. If alarm and fuel light are not on, refer to system manual for further troubleshooting.

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>11. FUEL GAGE DISPLAYS READING OF LESS THAN AN EIGHTH TANK FULL AND STATUS INDICATOR ALARM AND LIGHT DO NOT COKE ON (Cont'd)</p>	<p>Step 3. Does fuel gage display less than 1/8-tank full?</p>	<p>If fuel gage displays less than 1/8-tank full, go to step 4.</p>
		<p>If fuel gage displays more than 1/8-tank full, go to step 6.</p>
	<p>Step 4. Remove engine cover. Disconnect cable assembly W66 from tach/hourmeter box. Check fuel gage display.</p>	<p>If fuel gage displays less than 1/8-tank full, go to step 5.</p>
		<p>If fuel gage displays more than 1/8-tank full, replace faulty harness assembly (para 3-20).</p>
	<p>Step 5. Disconnect wire no. 28 on cable W66 from "T" connection on fuel gage. Check fuel gage display.</p>	<p>If fuel gage displays less than 1/8-tank full, replace electrical gage (TM 9-2320-280-20).</p>
		<p>If fuel gage displays more than 1/8-tank full, replace faulty cable assembly W66 (para 3-26).</p>
	<p>Step 6. Reconnect cable W64 to connector 12J1 on tach/hourmeter box. Disconnect cable W64 from connector on shelter. Check fuel gage display.</p>	<p>If fuel gage displays less than 1/8-tank full, refer to system manual for further troubleshooting.</p>
		<p>If fuel gage displays more than 1/8-tank full, replace faulty cable assembly W64 (para 3-25).</p>

END OF TESTING

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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12. SHELTER HAS NO POWER AND INCANDESCENT LAMP ON POWER INTERFACE BOX IS NOT LIT

NOTE

- When measuring voltage, measure against ground.
- When measuring +28 VDC, use ± 2 VDC for tolerance.

WARNING

Serious injury could result if safety precautions are not followed when troubleshooting this equipment.

Step 1. Visually check circuit breaker on power interface box to ensure it is on.

If circuit breaker is on, go to step 2.

If circuit breaker is NOT on, go to step 4.

Step 2. Using multimeter, measure voltage on power interface box terminals 11E4 and 11E5.

If multimeter displays about +28 VDC, replace faulty power interface box (para 3-29).

If multimeter does NOT display about +28 VDC, go to step 3.

Step 3. Check voltage on battery terminals.

If multimeter displays about +28 VDC, replace faulty power cables (para 3-30).

If multimeter does NOT display about +28 VDC, replace faulty battery (TM 9-2320-280-20).

Step 4. Remove power cables W68, W70, and W71 from terminals on power interface box.

Table 3-2. Unit Troubleshooting (Cont'd)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

12. SHELTER HAS NO POWER AND INCANDESCENT LAMP ON POWER INTERFACE BOX IS NOT LIT (Cont'd)

Step 5. Reset circuit breaker on power interface box.

If circuit breaker trips, refer faulty circuit breaker to DS maintenance for replacement (para 4-8),

If circuit breaker does NOT trip, refer to system manual for further troubleshooting.

END OF TESTING

Section VI. TRUCK CAB COMPONENTS MAINTENANCE

3-14. TRUCK CAB COMPONENTS MAINTENANCE TASK SUMMARY

TASK PARA	PROCEDURES	PAGE NO.
3-15.	Hand Throttle Cable Replacement	3-28
3-16.	Hand Throttle Cable Adjustment	3-30
3-17.	Tach/Hourmeter Box Replacement	3-32
3-18.	Tachometer Replacement	3-34
3-19.	Hourmeter Replacement	3-36
3-20.	Harness Assembly Replacement	3-38
3-21.	Safety Lanyard Replacement	3-40
3-22.	Storage Box Replacement	3-42
3-23.	Storage Box Repair	3-44

3-15. HAND THROTTLE CABLE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Manual Reference

TM 9-2320-280-10

Equipment Condition

Engine shut off (TM 9-2320-280-10)

a. Removal

1. Loosen nut (4) and star washer (5) on hand throttle cable (2) and detach hand throttle cable (2) from bracket (3).
2. Loosen nut (7) and washers (6) on hand throttle cable (2) and detach hand throttle cable (2) from bracket (1).
3. Remove hitch pin (10) and washer (11). Disconnect clevis (8) from accelerator rod (9) and remove hand throttle cable (2).

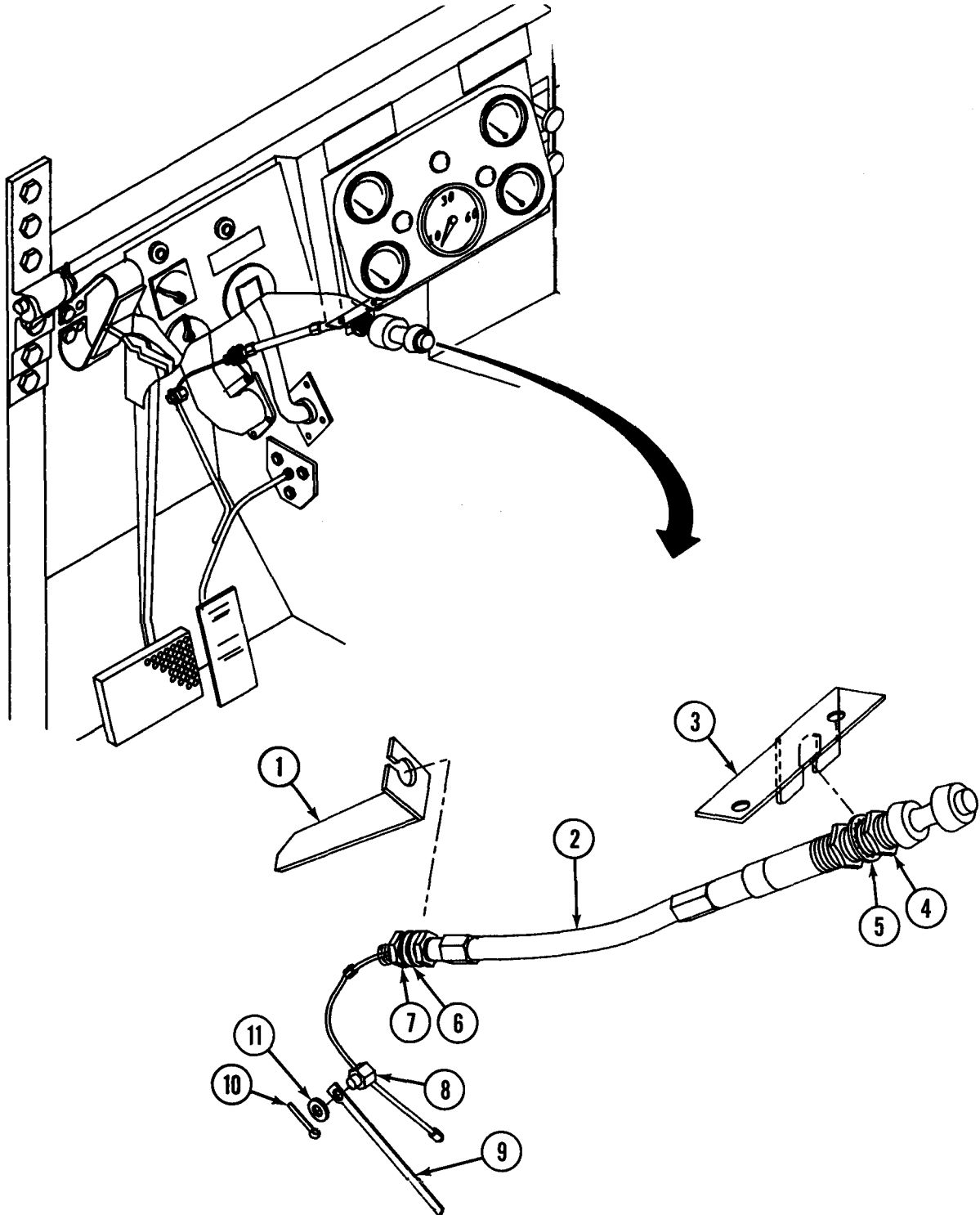
b. Installation

NOTE

Hand throttle cable should be positioned with no tension on cable.

1. Install clevis (8) to accelerator rod (9) and secure with washer (11) and hitch pin (10).
2. Install hand throttle cable (2) to bracket (1) and secure with washers (6) and nut (7).
3. Install hand throttle cable (2) to bracket (3) and secure with star washer (5) and nut (4).

3-15. HAND THROTTLE CABLE REPLACEMENT (Cont'd)



FOLLOW-ON TASK: Start engine (TM 9-2320-280-10) and check operation of hand throttle cable. Adjust as necessary (para 3-16).

3-16. HAND THROTTLE CABLE ADJUSTMENT

This task covers:

a. Hand Throttle Cable Adjustment

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Manual Reference

TM 9-2320-280-10

a. Hand Throttle Cable Adjustment

NOTE

Normal idle is 650 RPM (\pm 25 RPM).

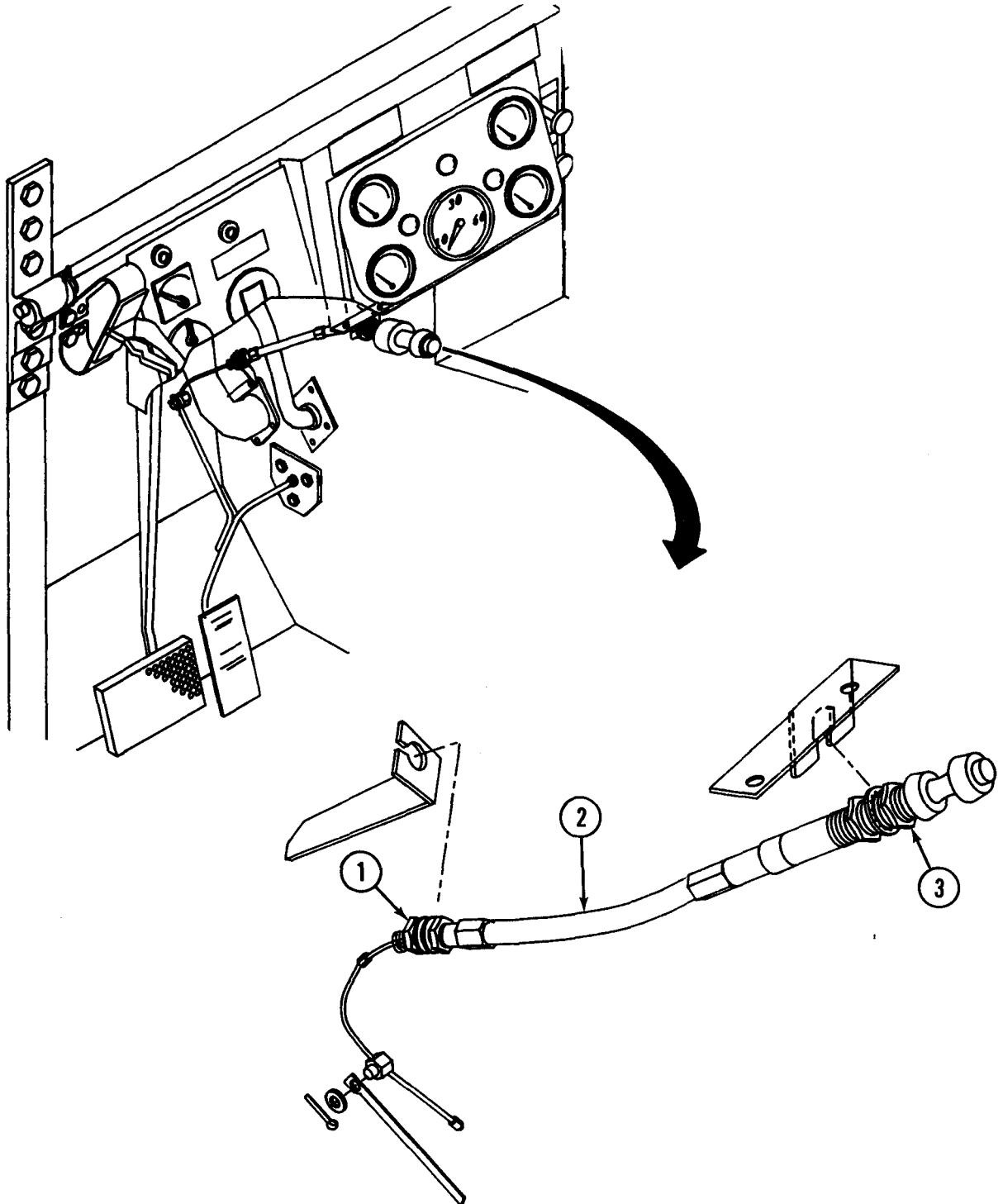
1. Start engine (TM 9-2320-280-10) and let engine come to idle.
2. Note RPM and shut engine off (TM 9-2320-280-10).

NOTE

Hand throttle cable should be positioned with
no tension on cable.

3. Loosen nuts (1) and (3) and move hand throttle cable (2) until desired position is obtained.
4. Tighten nuts (1) and (3) to secure hand throttle cable (2) in correct position.
5. Start engine (TM 9-2320-280-10) and let engine come to idle. Idle speed and operation of hand throttle cable (2) should be correct. If incorrect, repeat steps 2 thru 4 or refer to table 3-2, Troubleshooting malfunction 1.

3-16. HAND THROTTLE CABLE ADJUSTMENT (Cont'd)



3-17. TACH/HOURMETER BOX REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
 automotive (Item 1, Section III,
 Appendix B)

Manual Reference

TM 9-2320-280-10
 TM 9-2320-280-20

Equipment Condition

Battery ground cable disconnected
 (TM 9-2320-280-20)

Materials/Parts

Two locknuts P/N MS21044C3

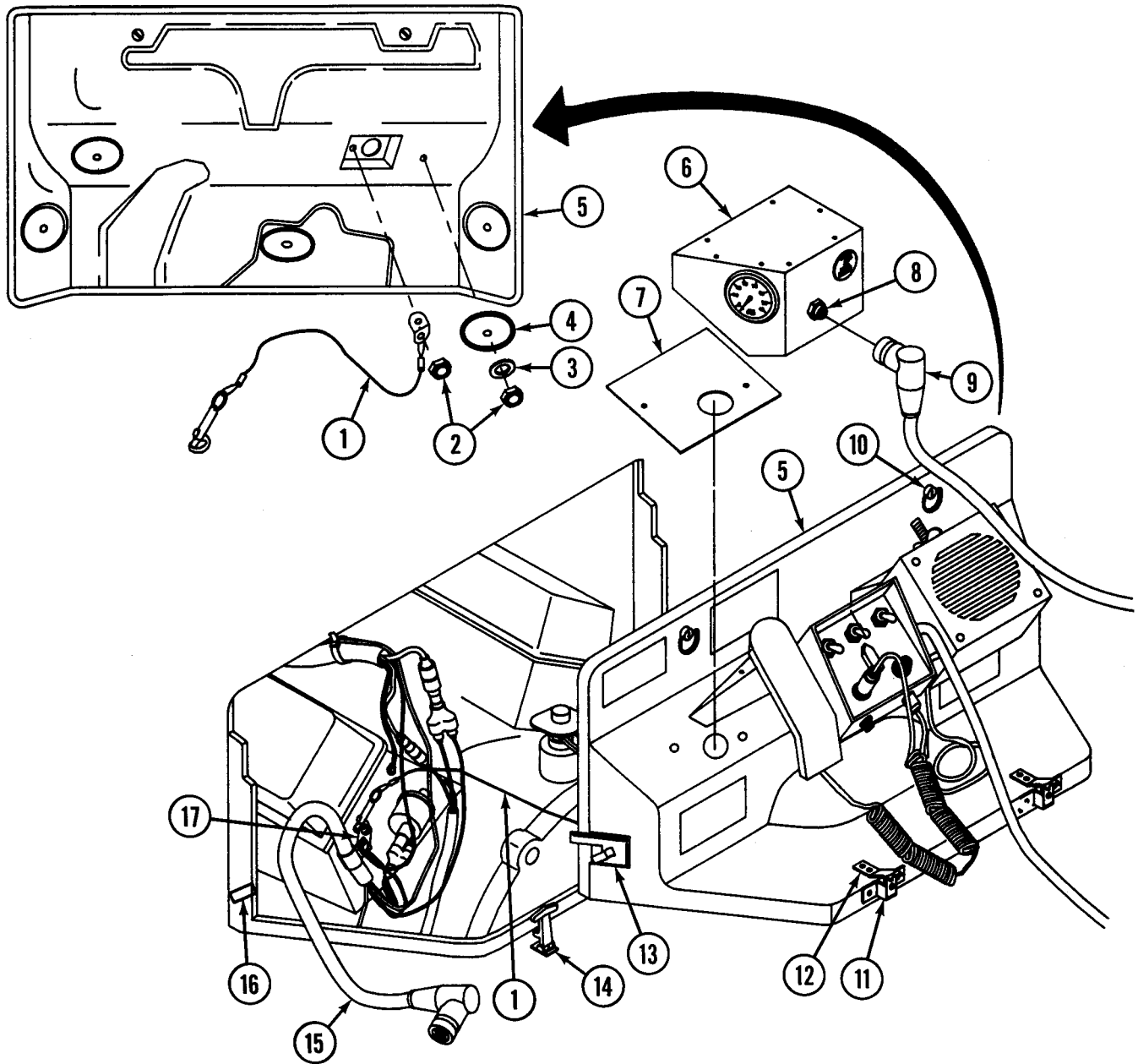
a. Removal

1. Disconnect cable assembly W64 (9) from connector 12J1 (8).
2. Unlatch two flexible latches (14) from keepers (12) on engine access cover holddown brackets (11).
3. Unlatch two engine access cover holddown latches (13) from engine access cover holddown strikes (16).
4. Turn two ring studs (10) and pull engine access cover (5) out until end of safety lanyard (1) is reached.
5. Disconnect cable assembly W66 (15) from connector on back of tach/hourmeter box (6).
6. Unhook safety lanyard (1) from safety tab (17).
7. Remove locknuts (2), washer (3), washer (4), safety lanyard (1), tach/hourmeter box (6) and tach/hourmeter seal (7) from engine access cover (5). Discard locknuts (2).

b. Installation

1. Install tach/hourmeter seal (7), tach/hourmeter box (6), and safety lanyard (1) to engine access cover (5). Secure with washer (4), washer (3) and locknuts (2).
2. Hook safety lanyard (1) onto safety tab (17).
3. Connect cable assembly W66 (15) to connector on back of tach/hourmeter box (6).
4. Install engine access cover (5) and secure with two ring studs (10).
5. Secure two engine access cover holddown latches (13) to engine access cover holddown strikes (16).
6. Secure two flexible latches (14) to keepers (12) on engine access cover holddown brackets (11).
7. Connect cable assembly W64 (9) to connector 12J1 (8).

3-17. TACH/HOURMETER BOX REPLACEMENT (Cont'd)



- FOLLOW-ON TASKS:**
- Connect battery ground cable (TM 9-2320-280-20).
 - Start engine (TM 9-2320-280-10) and check operation at idle of tach/hourmeter box. Tachometer should display 650 ± 25 RPM and hourmeter should advance 0.1 hours for 6 minutes of operation.

3-18. TACHOMETER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Materials/Parts

Seven lockwashers
P/N MS35338-137
One O-ring P/N MS9021-236

Manual Reference

TM 9-2320-280-10
TM 9-2320-280-20

Equipment Condition

Battery ground cable disconnected
(TM 9-2320-280-20)

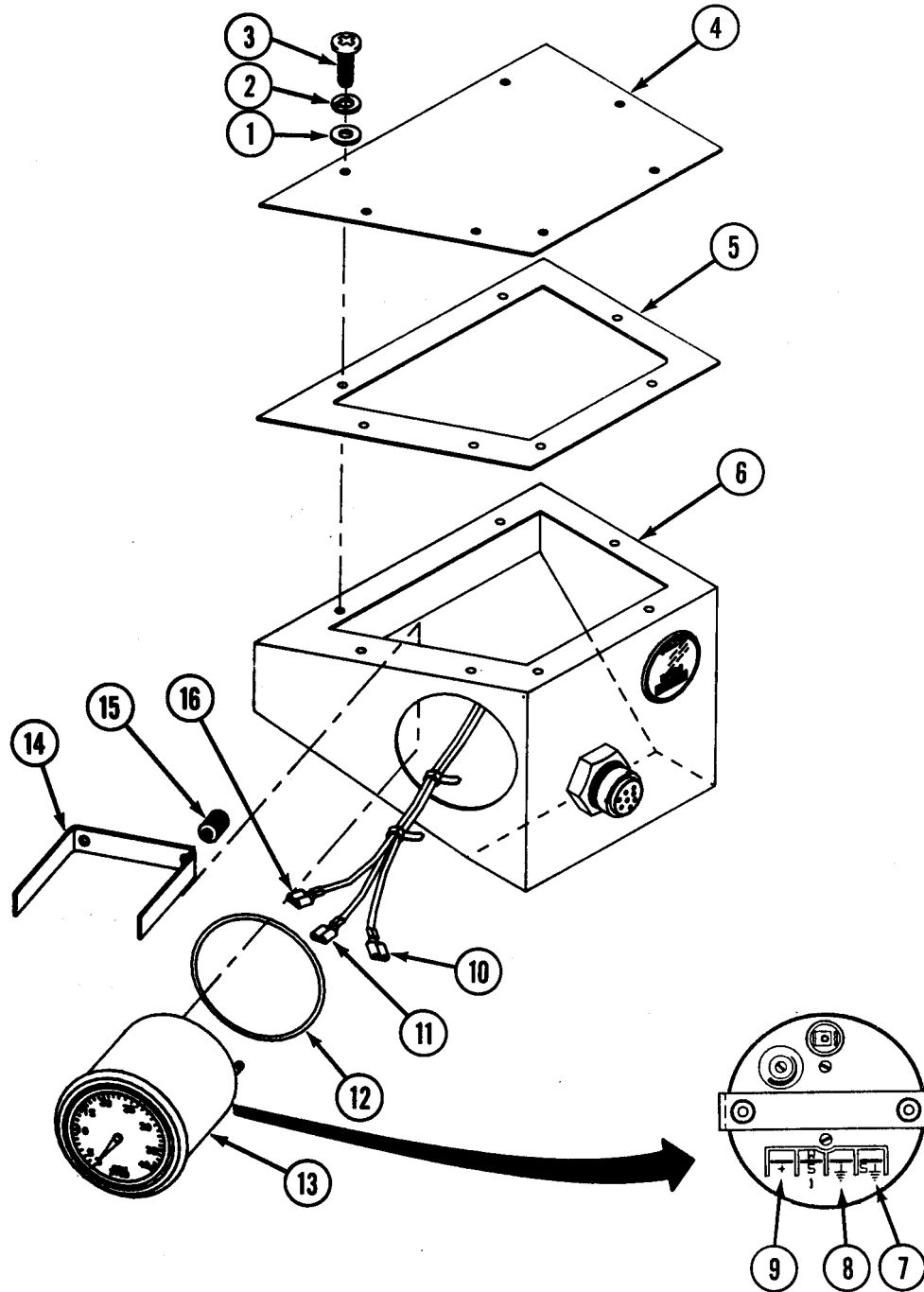
a. Removal

1. Remove seven screws (3), lockwashers (2), and washers (1) from tach/hourmeter box cover (4). Discard lockwashers (2).
2. Remove tach/hourmeter box cover (4) and gasket (5) from tach/hourmeter box (6).
3. Remove two knurled mounting nuts (15) and bracket (14) from tachometer (13) and remove tachometer (13) and O-ring (12) from tach/hourmeter box (6). Discard O-ring (12).
4. Disconnect leads (10), (11), and (16) from tachometer (13).

b. Installation

1. Install O-ring (12) to tachometer (13).
2. Connect leads to tachometer (13) as follows:
 - a. Red lead (10) to connector (9),
 - b. Black lead (11) to connector (8),
 - c. Yellow lead (16) to connector (7).
3. Install tachometer (13) and bracket (14) on tach/hourmeter box (6) and secure with two knurled mounting nuts (15).
4. Install gasket (5) and tach/hourmeter box cover (4) on tach/hourmeter box (6) and secure with seven washers (1), lockwashers (2), and screws (3).

3-18. TACHOMETER REPLACEMENT (Cont'd)



- FOLLOW-ON TASKS:
- Connect battery ground cable (TM 9-2320-280-20).
 - Start engine (TM 9-2320-280-10) and check operation of tachometer 650 ± 25 RPM at idle.

3-19. HOURMETER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Materials/Parts

Seven lockwashers
P/N MS35338-137
One "O" ring P/N MS9021-136

Manual Reference

TM 9-2320-280-10
TM 9-2320-280-20

Equipment Condition

Battery ground cable disconnected
(TM 9-2320-280-20)

NOTE

Tag leads for installation.

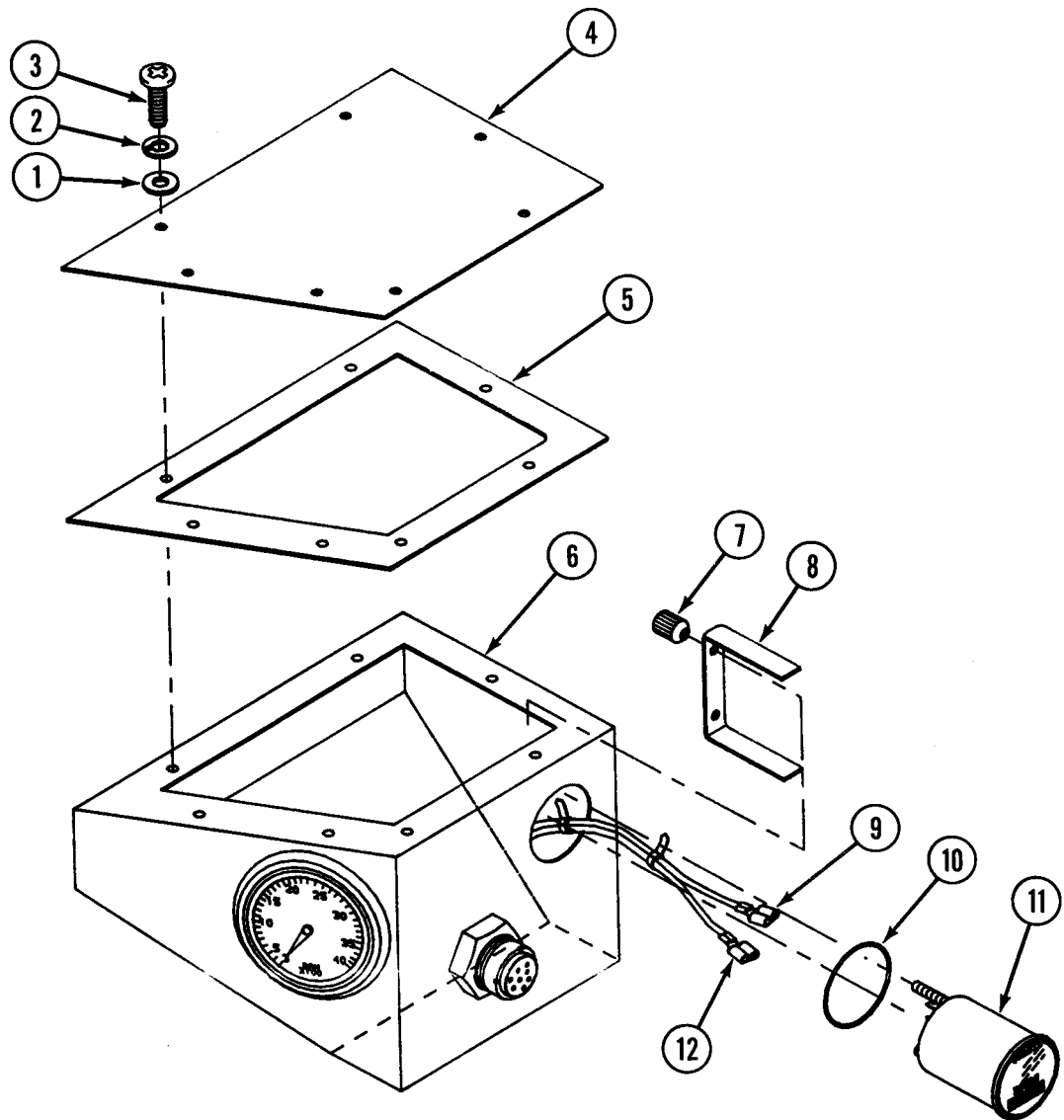
a. Removal

1. Remove seven screws (3), lockwashers (2), and washers (1) from tach/hourmeter box cover (4). Discard lockwashers (2).
2. Remove tach\hourmeter box cover (4) and gasket (5) from tach/hourmeter box (6).
3. Disconnect leads (9) and (12) from hourmeter (11).
4. Remove two knurled mounting nuts (7) and bracket (8) from hourmeter (11) and remove hourmeter (11) and O-ring (10) from tach/hourmeter box (6). Discard O-ring (10).

b. Installation

1. Install O-ring (10), hourmeter (11), and bracket (8) on tach/hourmeter box (6) and secure with two knurled mounting nuts (7).
2. Connect leads (9) and (12) to hourmeter (11).
3. Install gasket (5) and tach/hourmeter box cover (4) on tach/hourmeter box (6) and secure with seven washers (1), lockwashers (2), and screws (3).

3-19. HOURMETER REPLACEMENT (Cont'd)



- FOLLOW-ON TASKS:**
- Connect battery ground cable (TM 9-2320-280-20).
 - Start engine (TM 9-2320-280-10) and check operation. Hourmeter should advance 0.1 hour after 6 minutes of operation.

3-20. HARNESS ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Materials/Parts

Seven lockwashers P/N MS35338-137

Manual Reference

TM 9-2320-280-10

Equipment Condition

Tach/hourmeter box removed
(para 3-17a)

NOTE

Tag leads for installation.

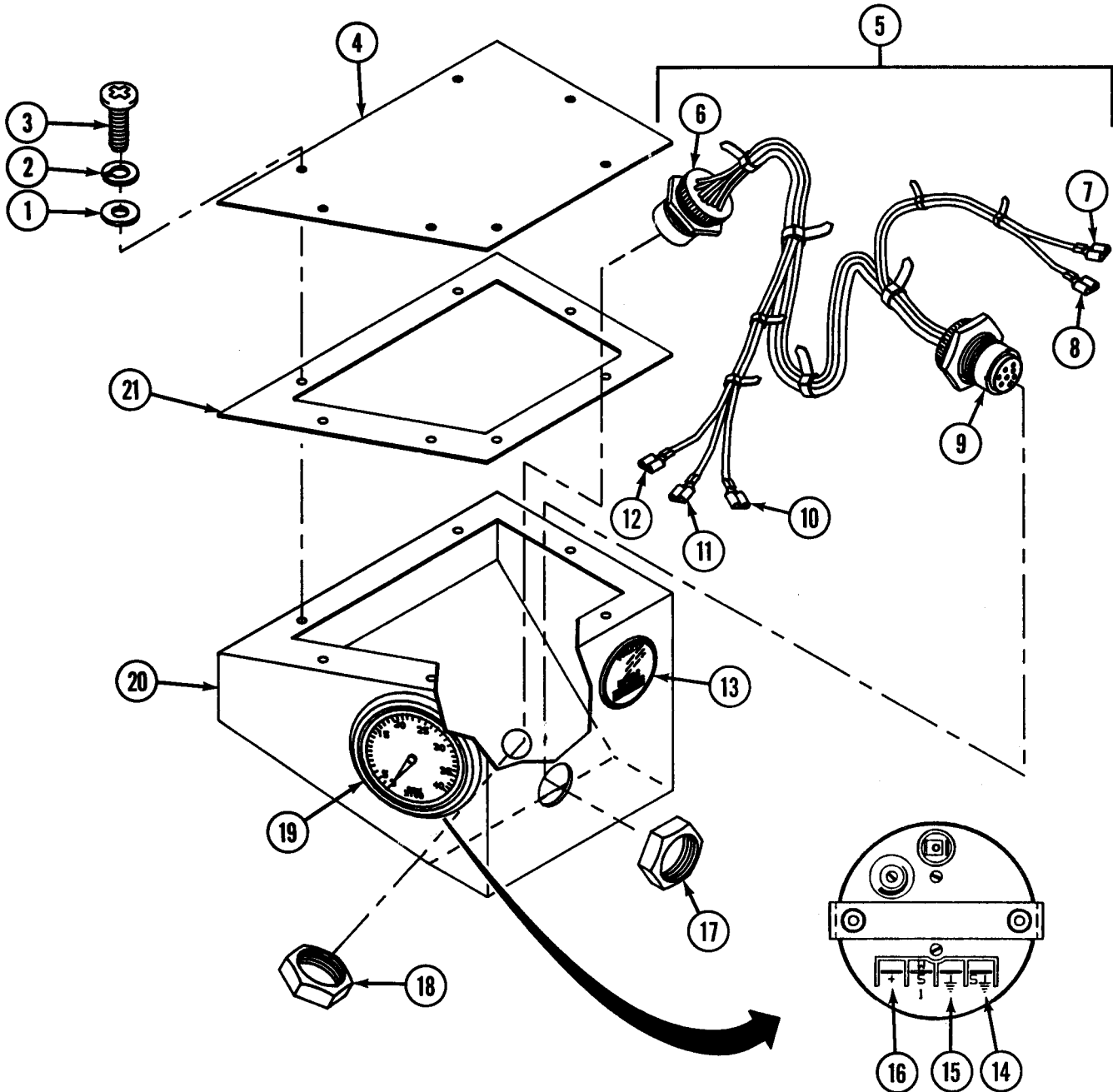
a. Removal

1. Remove seven screws (3), lockwashers (2), and washers (1) from tach/hourmeter box cover (4). Discard lockwashers (2).
2. Remove tach/hourmeter box cover (4) and gasket (21) from tach/hourmeter box (20).
3. Disconnect leads (7) and (8) from hourmeter (13). Disconnect leads (12), (10), and (11) from tachometer (19).
4. Remove nut (17) from connector 12J1 (9) and nut (18) from connector 12J2 (6). Remove harness assembly (5) from tach/hourmeter box (20).

b. Installation

1. Install connector 12J1 (9) to tach/hourmeter box (20) and secure with nut (17). Install connector 12J2 (6) to tach/hourmeter box (20) and secure with nut (18).
2. Connect leads (7) and (8) to hourmeter (13).
3. Connect leads to tachometer (19) as follows:
 - a. Red lead (10) to connector (16),
 - b. Black lead (11) to connector (15),
 - c. Yellow lead (12) to connector (14).
4. Install gasket (21) and tach/hourmeter box cover (4) on tach/hourmeter box (20) and secure with seven washers (1), lockwashers (2), and screws (3).

3-20. HARNESS ASSEMBLY REPLACEMENT (Cont'd)



- FOLLOW-ON TASKS:
- Install tach/hourmeter box (para 3-17b).
 - Start engine (TM 9-2320-280-10) and check operation at idle of tach/hourmeter box. Tachometer should display 650 ± 25 RPM and hourmeter should advance 0.1 hours for 6 minutes of operation.

3-21. SAFETY LANYARD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Materials/Parts

One locknut P/N MS21044C3

Manual Reference

TM 9-2320-280-10

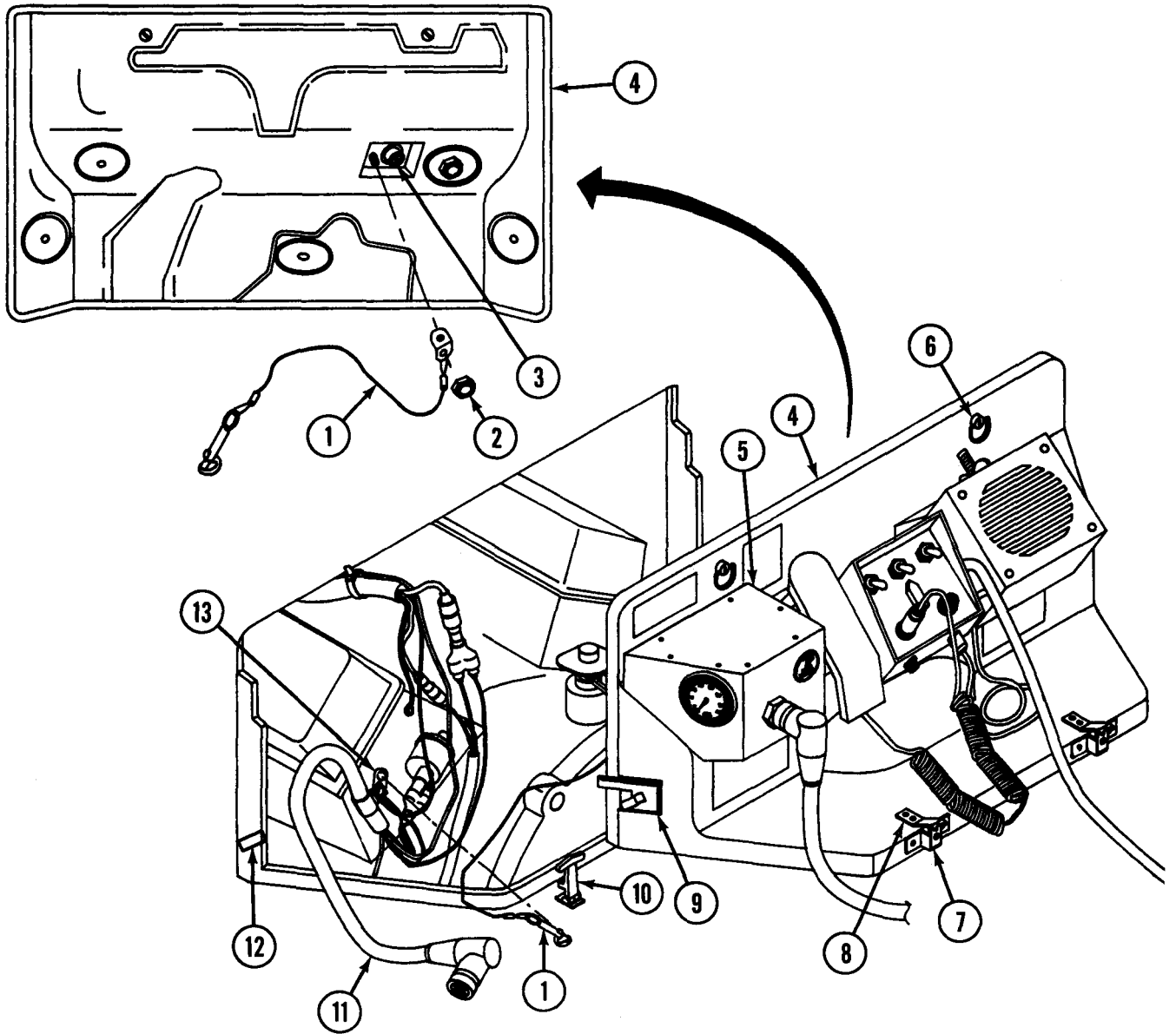
a. Removal

1. Unlatch two flexible latches (10) from keepers (8) on engine access cover holddown brackets (7).
2. Unlatch two engine access cover holddown latches (9) from engine access cover holddown strikes (12).
3. Turn two ring studs (6) and pull engine access cover (4) out until end of safety lanyard (1) is reached.
4. Disconnect cable assembly W66 (11) from connector (3) on tach/hourmeter box (5).
5. Unhook safety lanyard (1) from safety tab (13).
6. Remove locknut (2) and safety lanyard (1) from engine access cover (4). Discard locknut (2).

b. Installation

1. Install safety lanyard (1) to engine access cover (4) and secure with locknut (2).
2. Hook safety lanyard (1) onto safety tab (13).
3. Connect cable assembly W66 (11) to connector (3) on tach/hourmeter box (5).
4. Install engine access cover (4) and secure with two ring studs (6).
5. Secure two engine access cover holddown latches (9) to engine access cover holddown strikes (12).
6. Secure two flexible latches (10) to keepers (8) on engine access cover holddown brackets (7).

3-21. SAFETY LANYARD REPLACEMENT (Cont'd)



3-22. STORAGE BOX REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Equipment Condition

Cab rear panel is rolled upward
(TM 9-2320-280-10)

Manual Reference

TM 9-2320-280-10

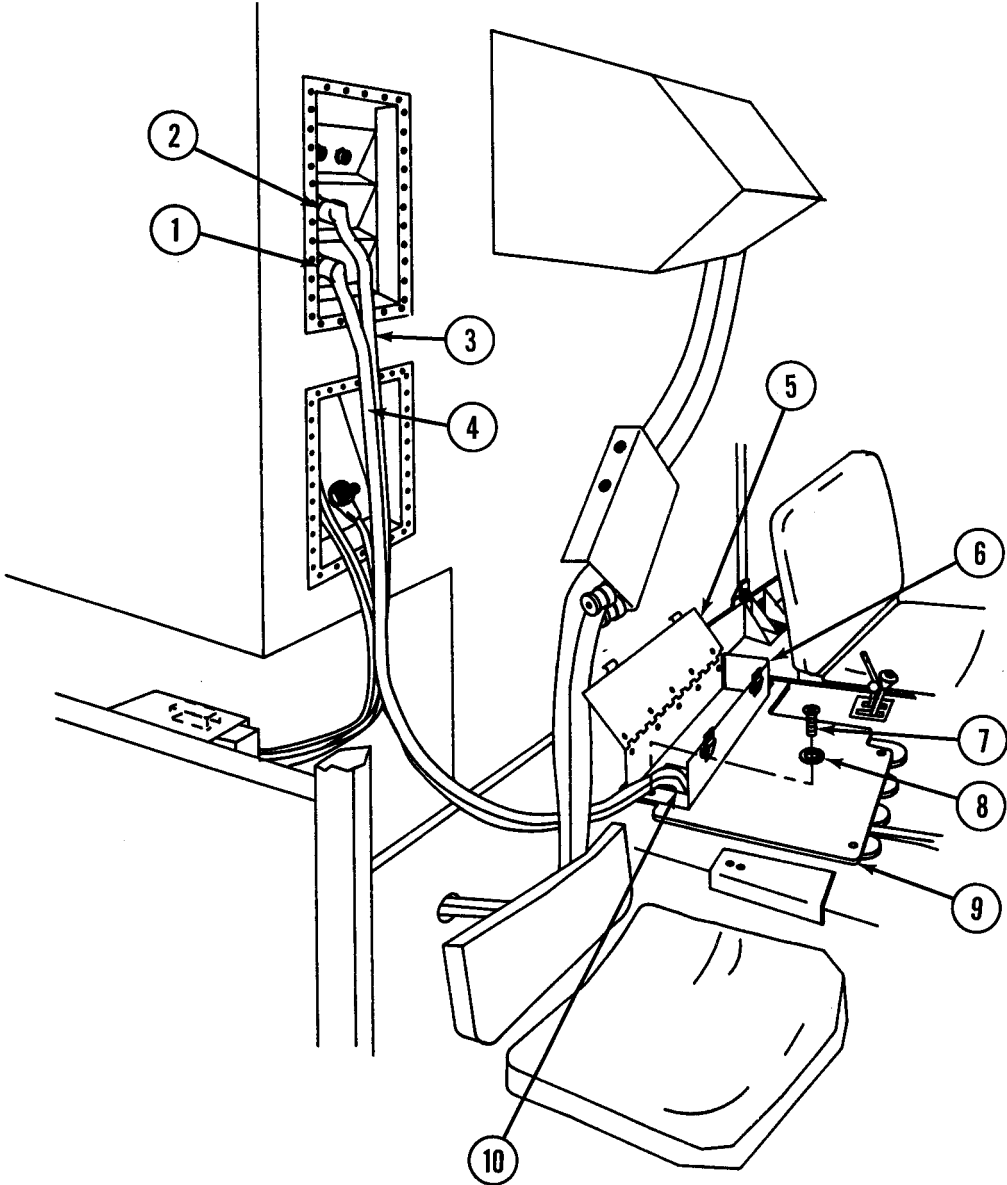
a. Removal

1. Unlatch and open storage box cover (5).
2. Disconnect cable assembly W64 (4) from connector 10J2 (1) and cable assembly CX-4723/VRC (3) from connector 10J1 (2).
3. Remove two screws (7) and washers (8) that attach storage box (6) to front floorboard (9).
4. Lift storage box (6) and pull cable assembly W64 (4) and cable assembly CX-4723/VRC (3) through cutout (10). Remove storage box (6).

b. Installation

1. Feed cable assembly W64 (4) and cable assembly CX-4723/VRC (3) through cutout (10) in storage box (6).
2. Install storage box (6) to front floorboard (9) and secure with two washers (8) and screws (7).
3. Connect cable assembly W64 (4) to connector 10J2 (1) and cable assembly CX-4723/VRC (3) to connector 10J1 (2).
4. Close and latch storage box cover (5).

3-22. STORAGE BOX REPLACEMENT (Cont'd)



FOLLOW-ON TASK: Lower and secure cab rear panel (TM 9-2320-280-10).

3-23. STORAGE BOX REPAIR

This task covers:

- a. Hinge Removal
- b. Hinge Installation
- c. Strike and Clamping Catch Removal
- d. Strike and Clamping Catch Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)
Electric drill, (Item 2,
Section III, Appendix B)
Drill bit, 3/16-inch, (Item 2,
Section III, Appendix B)
Riveter, blind hand (Item 2,
Section III, Appendix B)

Materials/Parts

Ten dome head rivets
P/N 1601-0619

Materials/Parts (Cont'd)

Two lockwashers
P/N MS35338-136
Two self-locking nuts
P/N MS21044C06

Equipment Condition

Storage box removed (para 3-22a)

General Safety Instructions

When drilling, be sure to wear
goggles for eye protection.

a. Hinge Removal

1. File small flat on rivet heads (3).
2. Center punch flats while supporting rivet backsides.

WARNING

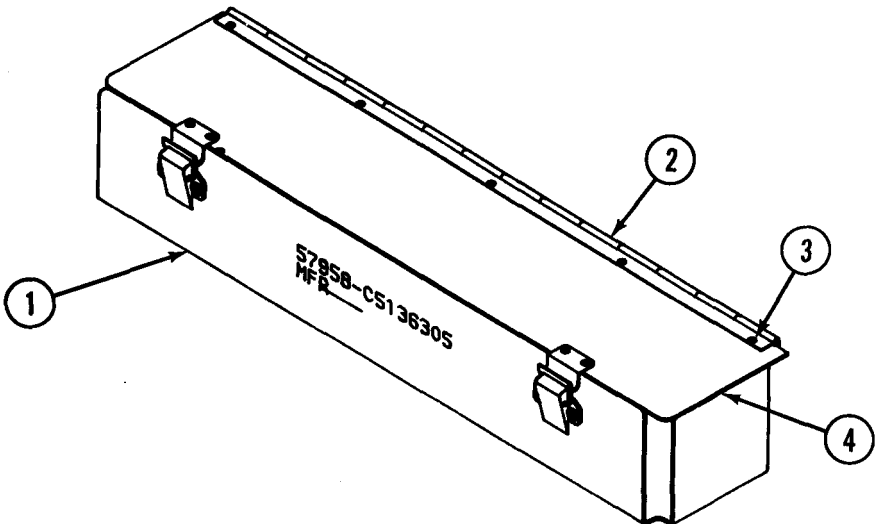
When drilling, be sure to wear goggles for eye
protection or injury to personnel may occur.

3. Using 3/16-inch drill bit, drill through all rivet heads (3).
4. Pry off rivet heads (3) and tap out rivet shanks. Remove
hinge (2).

b. Hinge Installation

1. Place hinge (2) in position.
2. Rivet hinge to storage box (1) and storage box cover (4).

3-23. STORAGE BOX REPAIR (Cont'd)



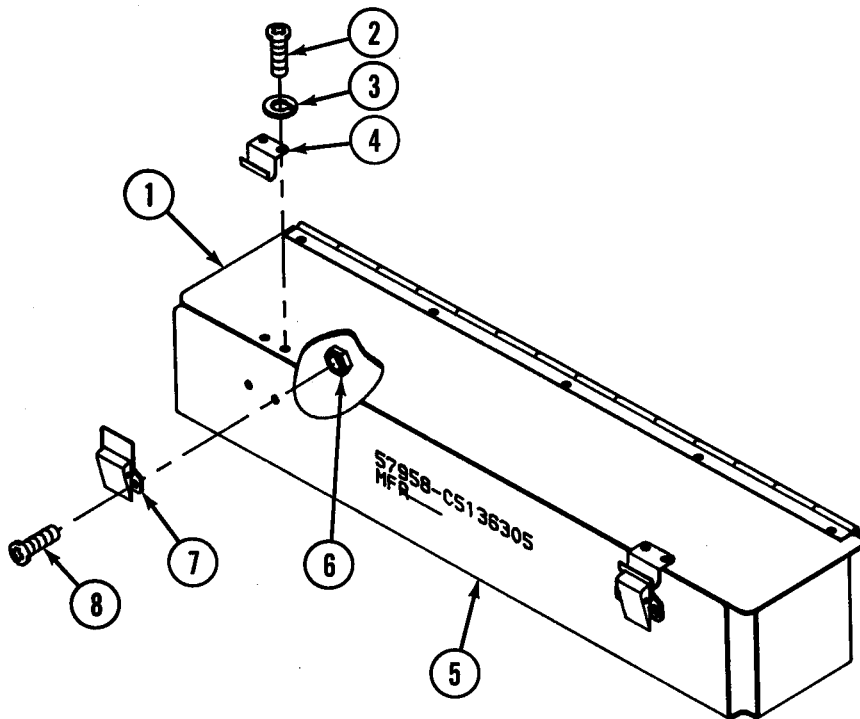
3-23. STORAGE BOX REPAIR (Cont'd)

c. Strike and Clamping Catch Removal

1. Unlatch and open storage box cover (1).
2. Remove two screws (2) and lockwashers (3) from strike (4). Remove strike (4). Discard lockwashers (3).
3. Remove two screws (8) and self-locking nuts (6) from clamping catch (7). Remove clamping catch (7). Discard self-locking nuts (6).

d. Strike and Clamping Catch Installation

1. Place clamping catch (7) on storage box (5) and secure with two screws (8) and self-locking nuts (6).
2. Place strike (4) on storage box cover (1) and secure with two screws (2) and lockwashers (3).
3. Close and latch storage box cover (1).



FOLLOW-ON TASK: Install storage box (para 3-22b).

Section VII. ELECTRICAL COMPONENTS MAINTENANCE

3-24. ELECTRICAL COMPONENT MAINTENANCE TASK SUMMARY

PARA	PROCEDURES	PAGE NO.
3-25.	Cable Assembly W64 Replacement	3-48
3-26.	Cable Assembly W66 Replacement	3-50
3-27.	Cable Assembly Repair	3-60
3-28.	Wire No. 798 Replacement	3-60
3-29.	Wire No. 798 Repair	3-64
3-30.	Power Interface Box Replacement	3-66
3-31.	Power Interface Box Repair	3-70
3-32.	Incandescent Lamp and Lens Replacement	3-80
3-33.	200 Amp Alternator Replacement	3-80
3-34.	200 Amp Alternator Ground Strap Replacement	3-81
3-35.	200 Amp Alternator Pulley Replacement	3-82
3-36.	Engine Oil Pressure Gage Replacement	3-82
3-37.	Coolant Temperature Gage Replacement	3-82
3-38.	Fuel Gage Replacement	3-82

3-25. CABLE ASSEMBLY W64 REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Manual Reference

TM 9-2320-280-20

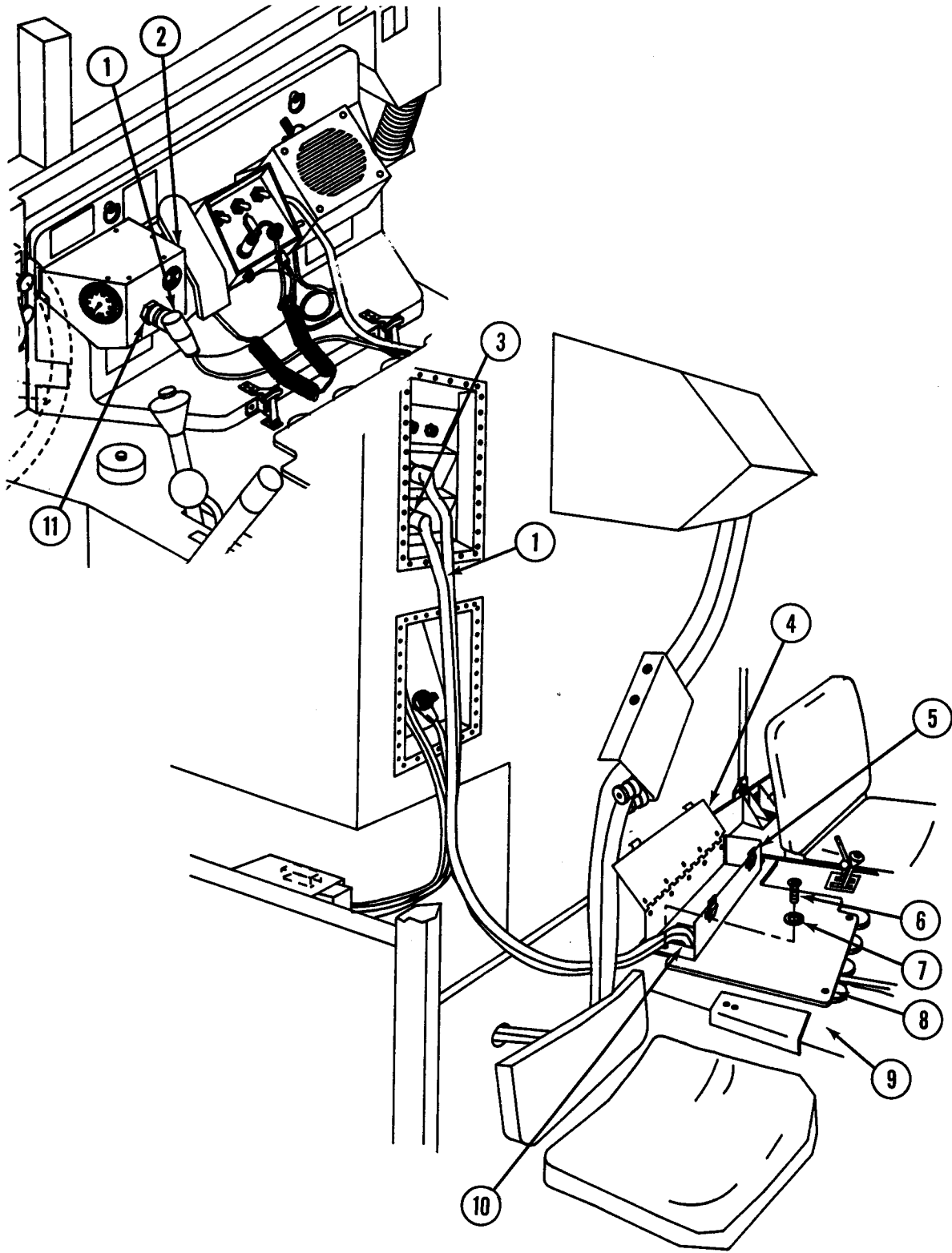
a. Removal

1. Disconnect cable assembly W64 (1) from connector 12J1 (11) on tach/hourmeter box (2).
2. Unlatch and open storage box cover (4).
3. Remove four screws (6) and two washers (7) that secures front floorboard (8) to transmission tunnel (9).
4. Lift front floorboard (8) and pull cable assembly W64 (1) through storage box (5) and front floorboard (8).
5. Disconnect cable assembly W64 (1) from connector 10J2 (3) on shelter and remove from truck.

b. Installation

1. Connect cable assembly W64 (1) to connector 10J2 (3) on shelter.
2. Feed cable assembly W64 (1) through holes (10) in front floorboard (8) and storage box (5).
3. Connect cable assembly W64 (1) to connector 12J1 (11) on tach/hourmeter box (2).
4. Secure front floorboard (8) to transmission tunnel (9) with two washers (7) and four screws (6).
5. Close and latch storage box cover (4).

3-25. CABLE ASSEMBLY W64 REPLACEMENT (Cont'd)



3-26. CABLE ASSEMBLY W66 REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
 automotive (Item 1, Section III,
 Appendix B)
 Soldering gun (Item 2,
 Section III, Appendix B)

Manual References

TM 9-2320-280-10
 TM 9-2320-280-20

Materials/Parts

Antiseize compound, conductive
 (Appendix C, Item 1)
 One connector
 P/N MS27144-2

Materials/Parts (Cont'd)

Solder, tin alloy (Appendix C,
 Item 8)
 Tie-traps (as required)
 P/N MS3367-2-0

Equipment Condition

- Hood raised and secured
 (TM 9-2320-280-10)
- Battery ground cable disconnected
 (TM 9-2320-280-20)

General Safety Instructions

Wear protective eye wear while
 performing any soldering.

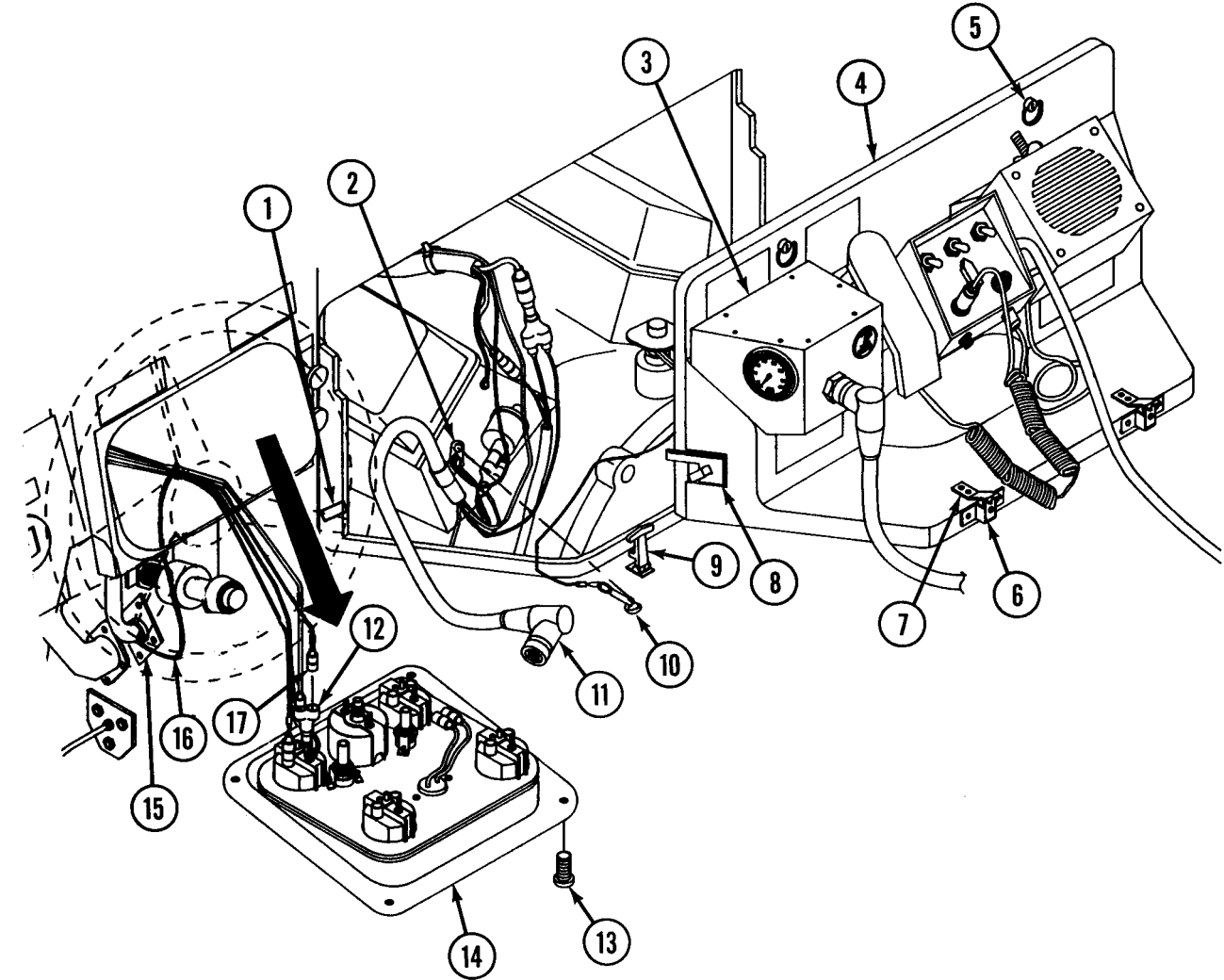
NOTE

Use figure 3-2, Engine Electrical Interface, when
 removing or installing cable assembly W66.

a. Removal

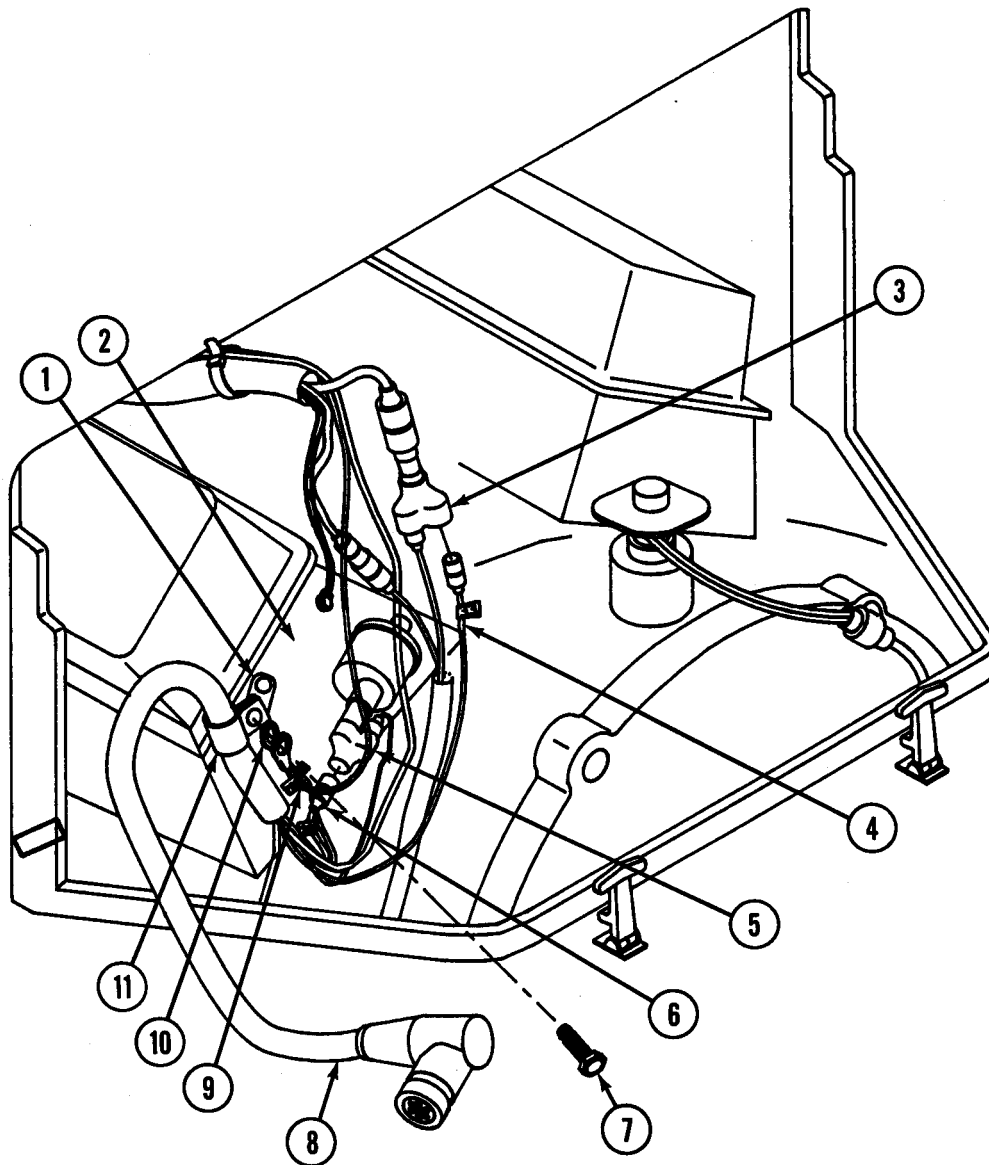
1. Remove four screws (13) and pull out instrument cluster (14).
2. Unlatch two flexible latches (9) from keepers (7) on engine access cover holddown brackets (6).
3. Unlatch two engine access cover holddown latches (8) from engine access cover holddown strikes (1).
4. Turn two ring studs (5) and pull engine access cover (4) out until end of safety lanyard (10) is reached.
5. Disconnect cable assembly W66 (11) from connector on tach/hourmeter box (3).
6. Unhook safety lanyard (10) from safety tab (2). Remove engine access cover (4).
7. Remove wire no. 28 (16) from 3-way connector (12).
8. Cut connector (17) from wire no. 28 (16).
9. From engine side, pull out wire no. 28 (16) from cowl grommet (15).

3-26. CABLE ASSEMBLY W66 REPLACEMENT Cont'd)



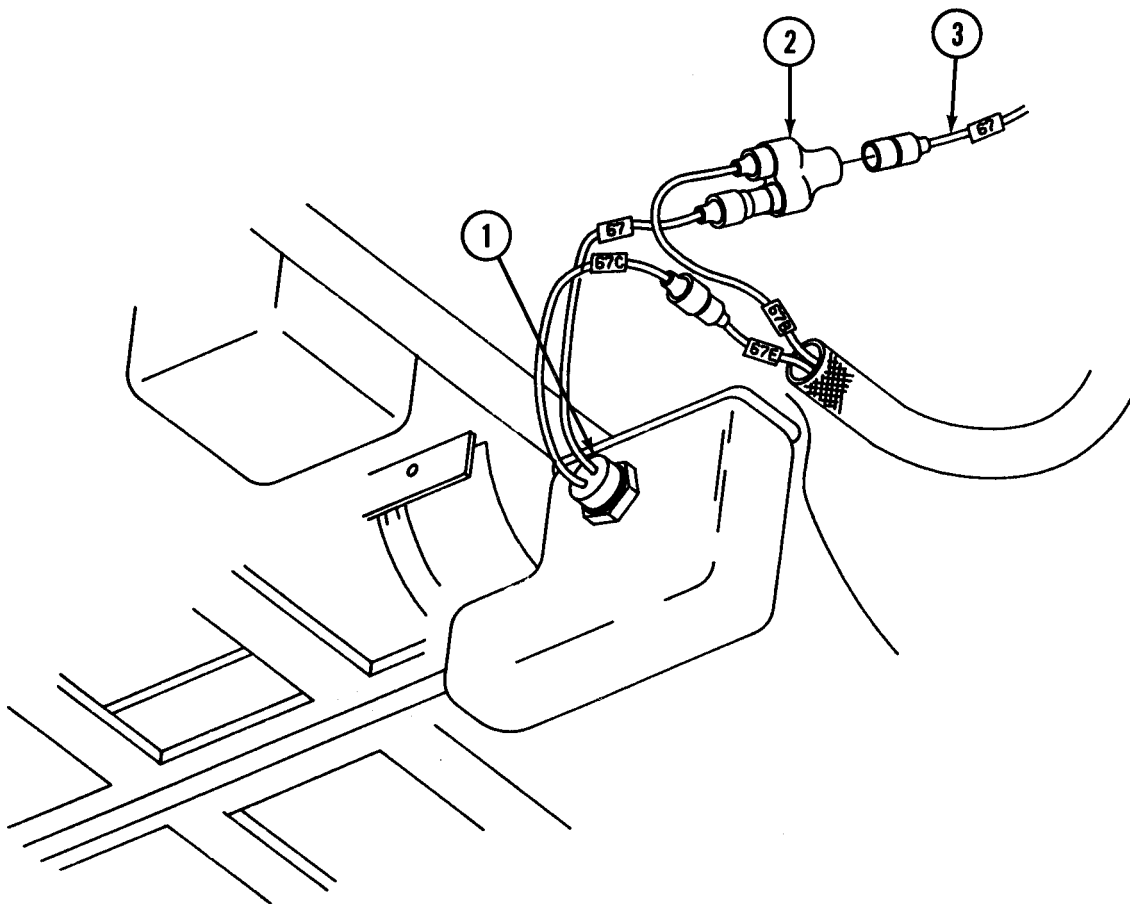
3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)

10. Remove wire no. 33 (4) from 3-way connector (3).
11. Remove wire no. 36 (6) from 3-way connector (5).
12. Remove screw (7) that secures loop clamp (11), cable assembly W66 (8), wire no. 798 (9), wire no. 58 (10), and safety tab (1) to engine block (2).



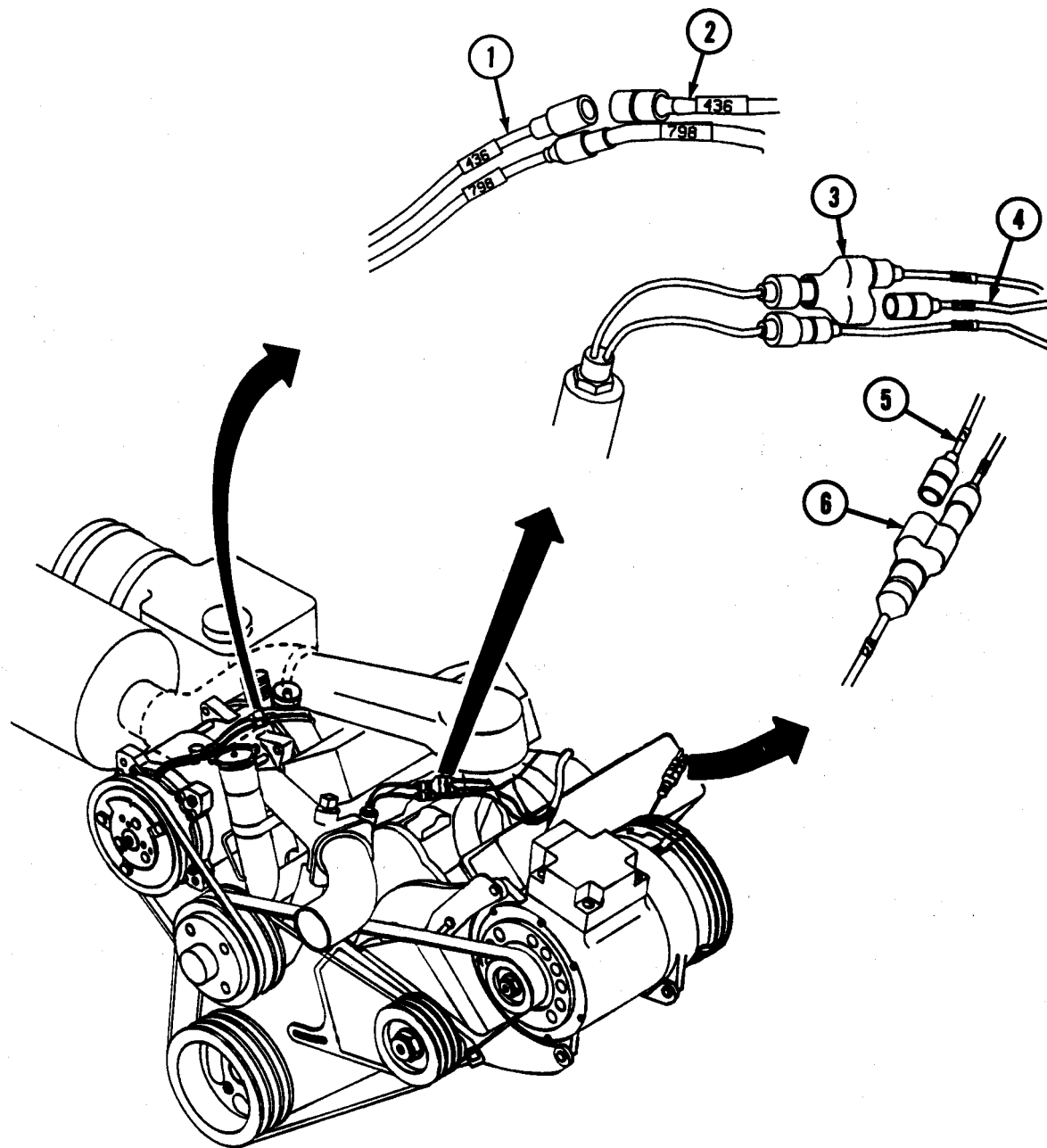
3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)

13. From under truck at parking brake switch (1), remove wire no. 67 (3) from 3-way connector (2).



3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)

14. Remove wire no. 436 (2) from wire no. 436 (1) (on compressor).
15. Remove wire no. 458 (4) from 3-way connector (3).
16. Remove wire no. 2 (5) from the 3-way connector (6).
17. Remove cable assembly W66 from truck.



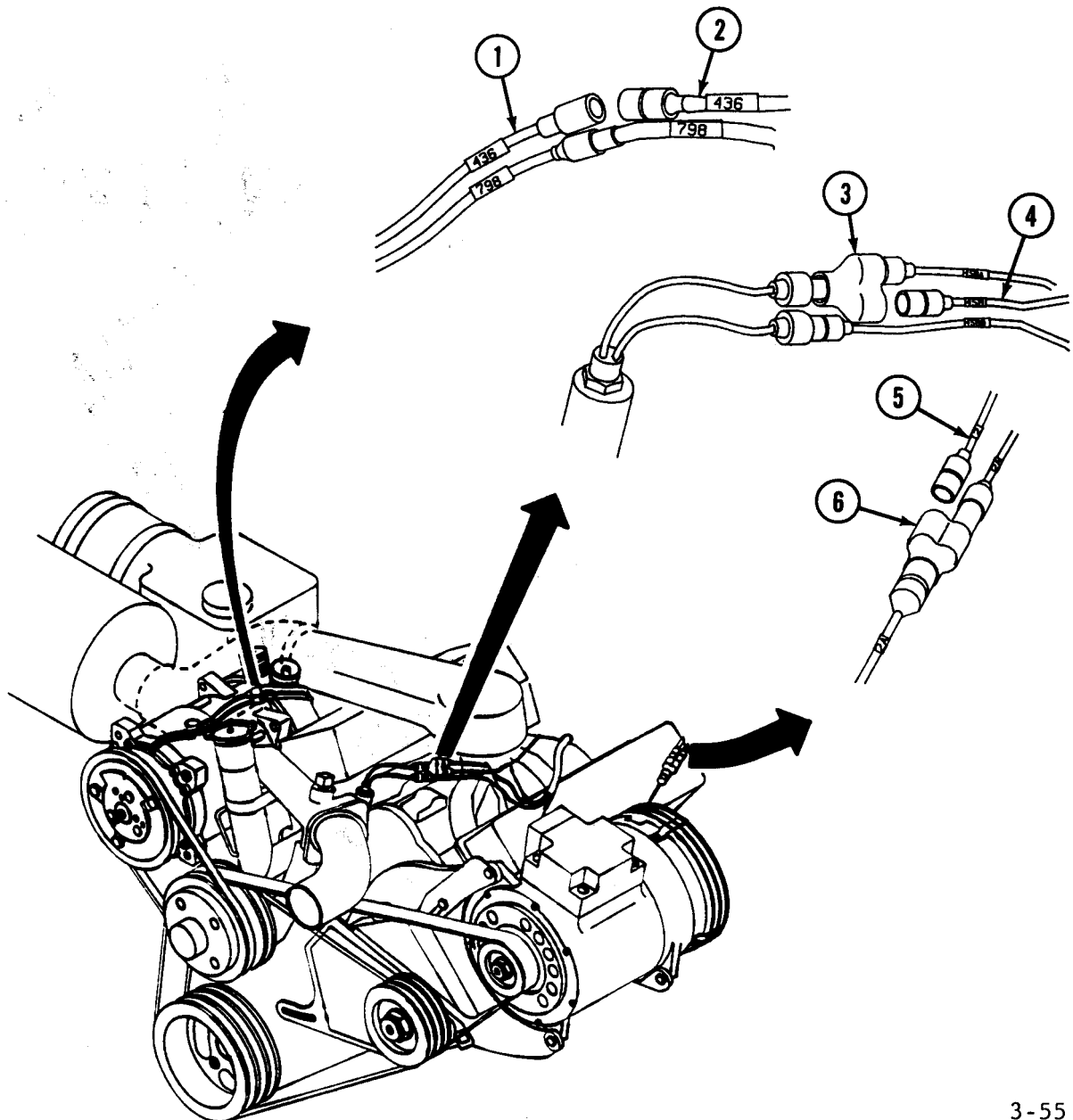
3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)

NOTE

Use figure 3-2, Engine Electrical Interface, when removing or installing cable assembly W66.

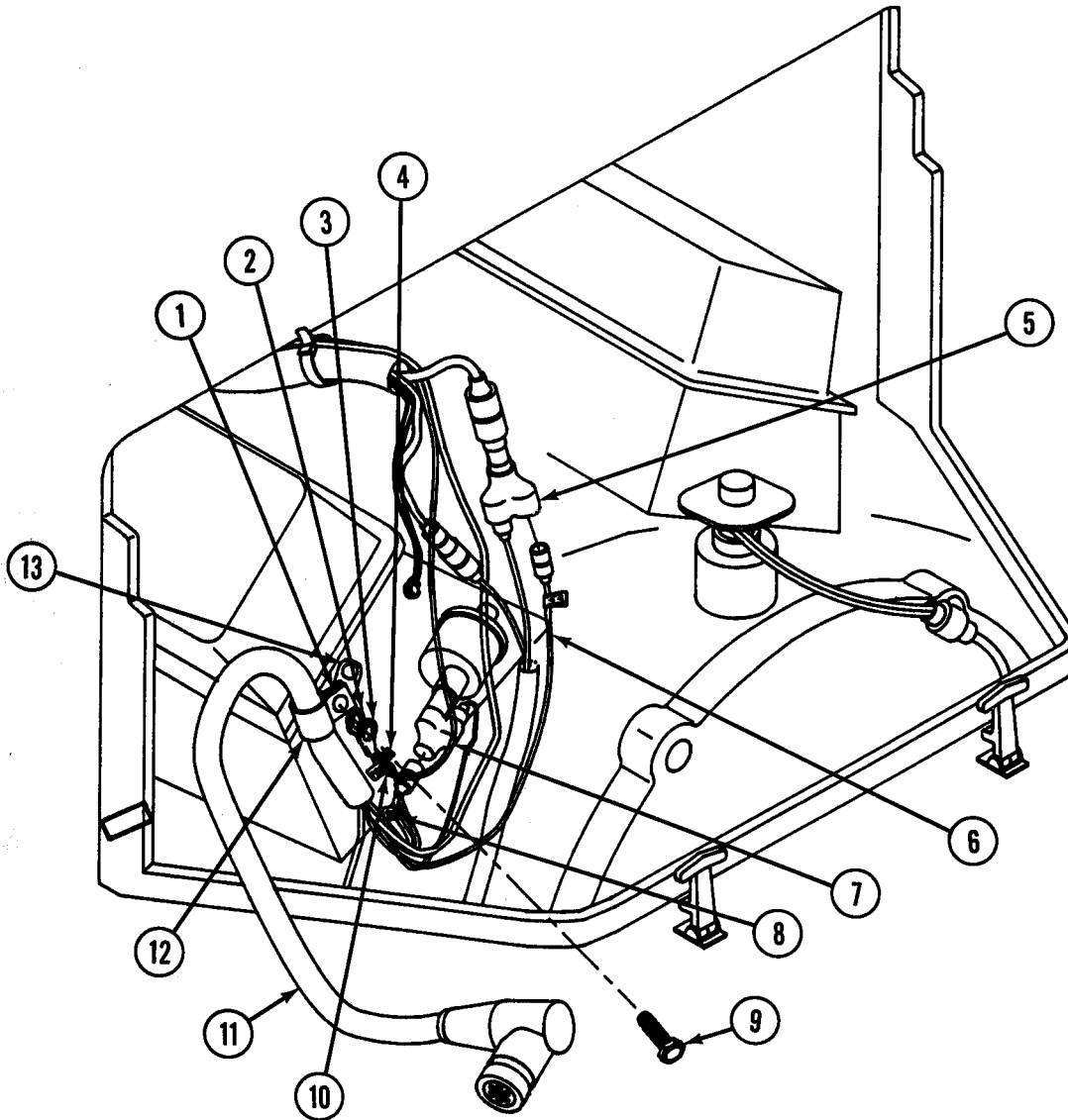
b. Installation

1. Install cable assembly W66 in truck and install wire no. 2 (5) to 3-way connector (6).
2. Install wire no. 458 (4) to 3-way connector (3).
3. Install wire no. 436 (2) to wire no. 436 (1) (on compressor).



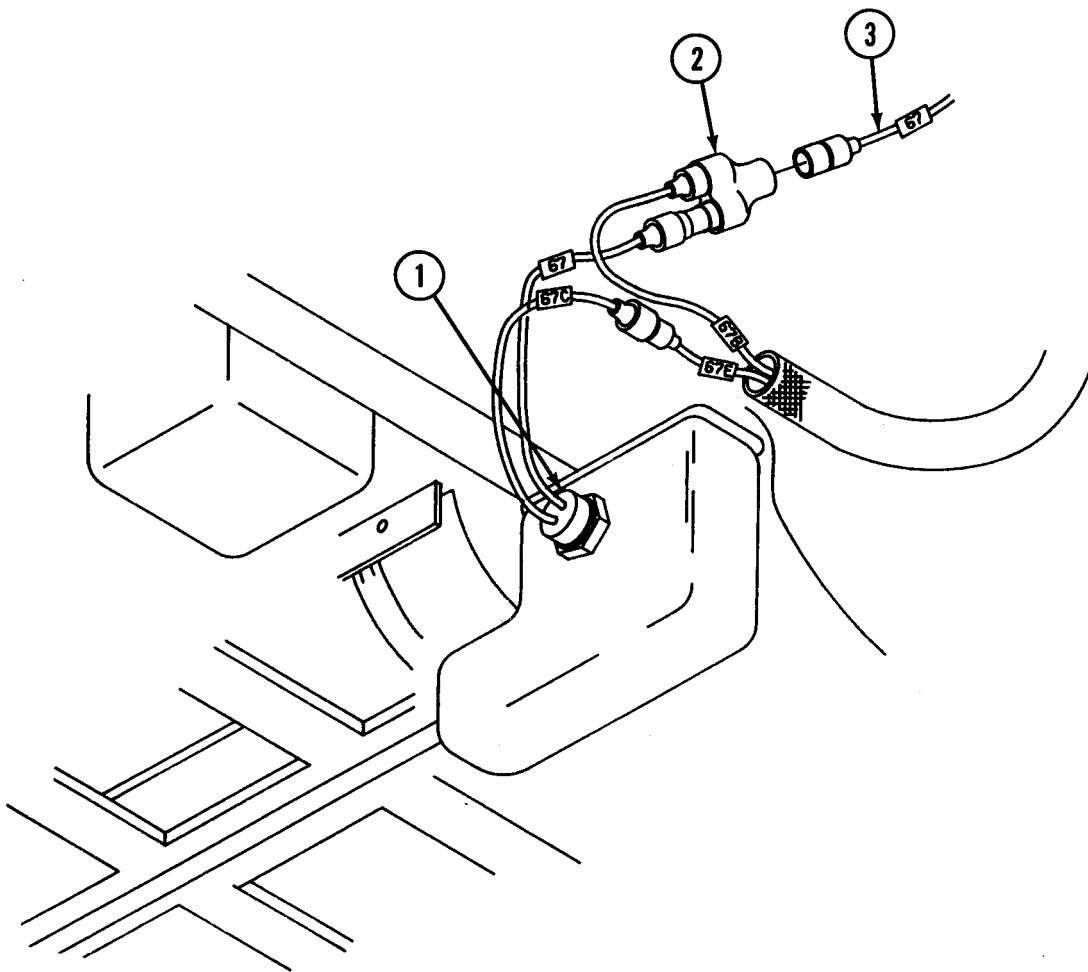
3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)

4. Install loop clamp (12) on cable assembly W66 (11).
5. Apply conductive antiseize compound to terminal lug (3) on wire no. 798 (10) and terminal lug (2) on wire no. 58 (4).
6. Install safety tab (13), loop clamp (12), wire no. 798 (10), and wire no. 58 (4) to engine block (1) and secure with screw (9),
7. Install wire no. 36 (8) to 3-way connector (7).
8. Install wire no. 33 (6) to 3-way connector (5).



3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)

9. From under truck at parking brake switch (1), install wire no. 67 (3) to 3-way connector (2).



3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)

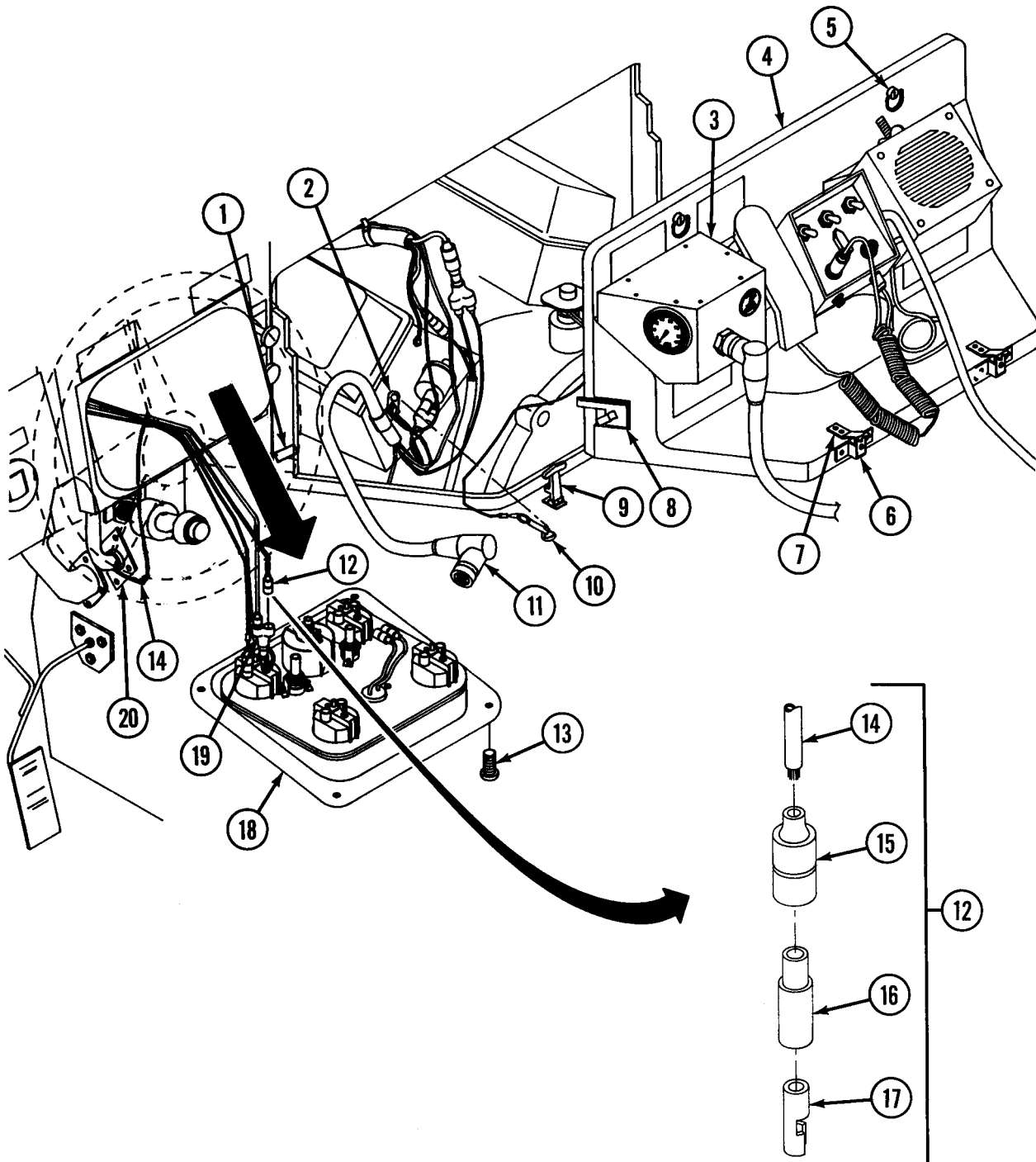
10. From engine side, route wire no. 28 (14) through cowl grommet (20).
11. Slide rubber shell (15) and plastic sleeve (16) from connector (12) onto wire no. 28 (14).
12. Strip insulation 1/4-inch (0.64 cm) from end of wire no. 28 (14).
13. Install connector terminal (17) onto wire no. 28 (14) and crimp.

WARNING

To prevent eye injury, wear protective eye wear while performing any soldering.

14. Solder crimped joint between connector terminal (17) and wire no. 28 (14).
15. Slide plastic sleeve (16) and rubber shell (15) onto connector terminal (17).
16. Install wire no. 28 (14) to 3-way connector (19).
17. Connect safety lanyard (10) to safety tab (2).
18. Connect cable assembly W66 (11) to connector on back of tach/hourmeter box (3).
19. Install engine access cover (4) and secure with two ring studs (5).
20. Secure two engine access cover holddown latches (8) to engine access cover holddown strikes (1).
21. Secure two flexible latches (9) to keepers (7) on engine access cover holddown brackets (6).
22. Place instrument cluster (18) in position and secure with four screws (13).

3-26. CABLE ASSEMBLY W66 REPLACEMENT (Cont'd)



- FOLLOW-ON TASKS:
- Connect battery ground cable (TM 9-2320-280-20).
 - Lower and secure hood (TM 9-2320-280-10).

3-27. CABLE ASSEMBLY REPAIR

NOTE

For basic cable assembly repairs, see TM 9-2320-280-20.

3-28. WIRE NO. 798 REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Material/Parts

Tie-straps P/N MS3367-2-0

Manual References

TM 9-2320-280-10
TM 9-2320-280-20

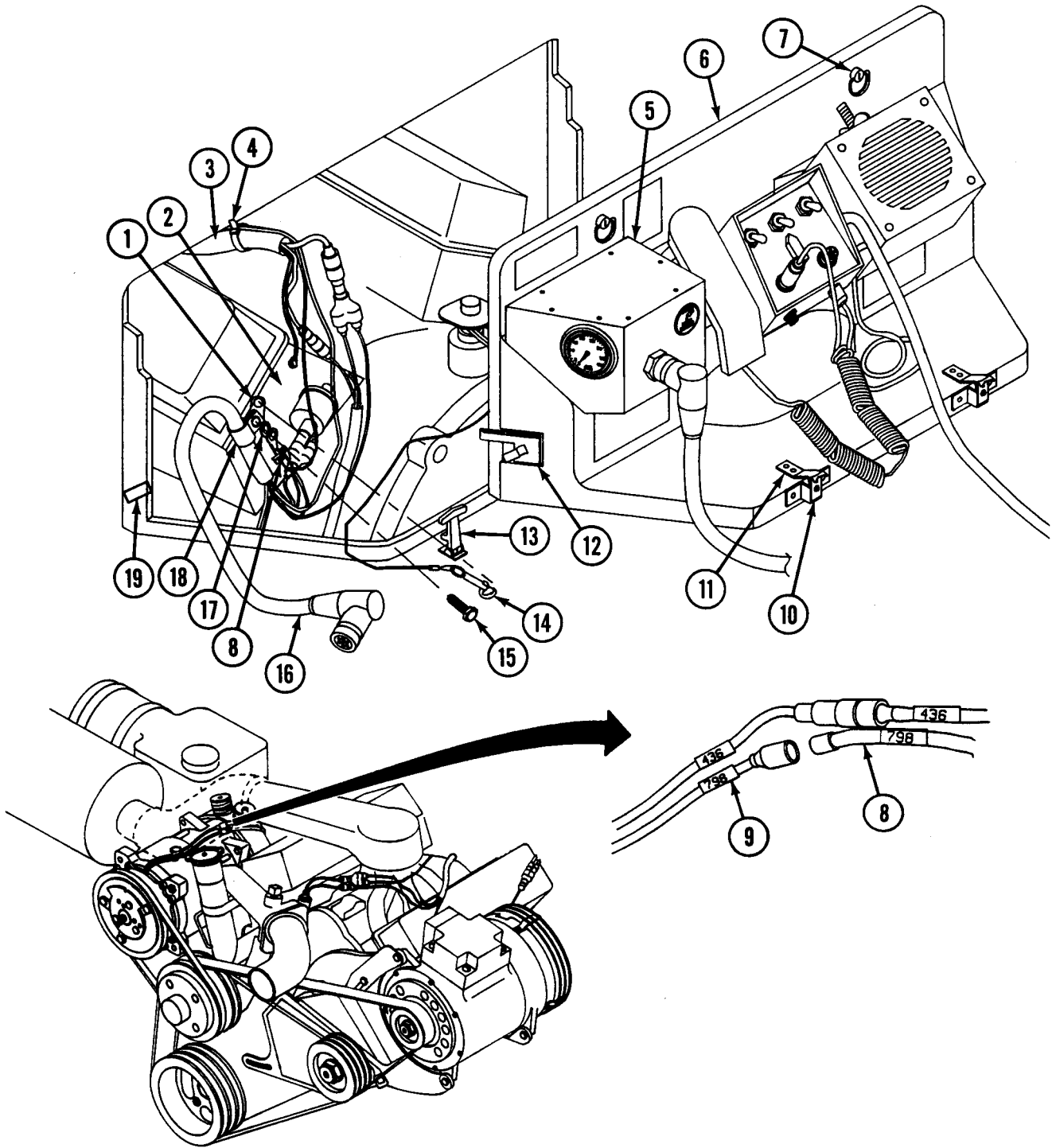
Equipment Condition

- Hood raised and secured
(TM 9-2320-280-10)
- Battery ground cable disconnected
(TM 9-2320-280-20)

a. Removal

1. Unlatch two flexible latches (13) from keepers (11) on engine access cover holddown brackets (10).
2. Unlatch two engine access cover holddown latches (12) from engine access cover holddown strikes (19).
3. Turn two ring studs (7) and pull engine access cover (6) out until end of safety lanyard (14) is reached.
4. Disconnect cable assembly W66 (16) from connector on tach/hourmeter box (5).
5. Unhook safety lanyard (14) from safety tab (1). Remove engine access cover (6).
6. Remove tie-straps (4) that attach wire no. 798 (8) to wiring harness (3).
7. Remove wire no. 798 (8) from wire no. 798 (9) (on compressor).
8. Remove screw (15) that attaches loop clamp (18), wire no. 798 (8), wire no. 58 (17), and safety tab (1) from engine block (2).
9. Remove wire no. 798 (8).

3-28. WIRE NO. 798 REPLACEMENT (Cont'd)

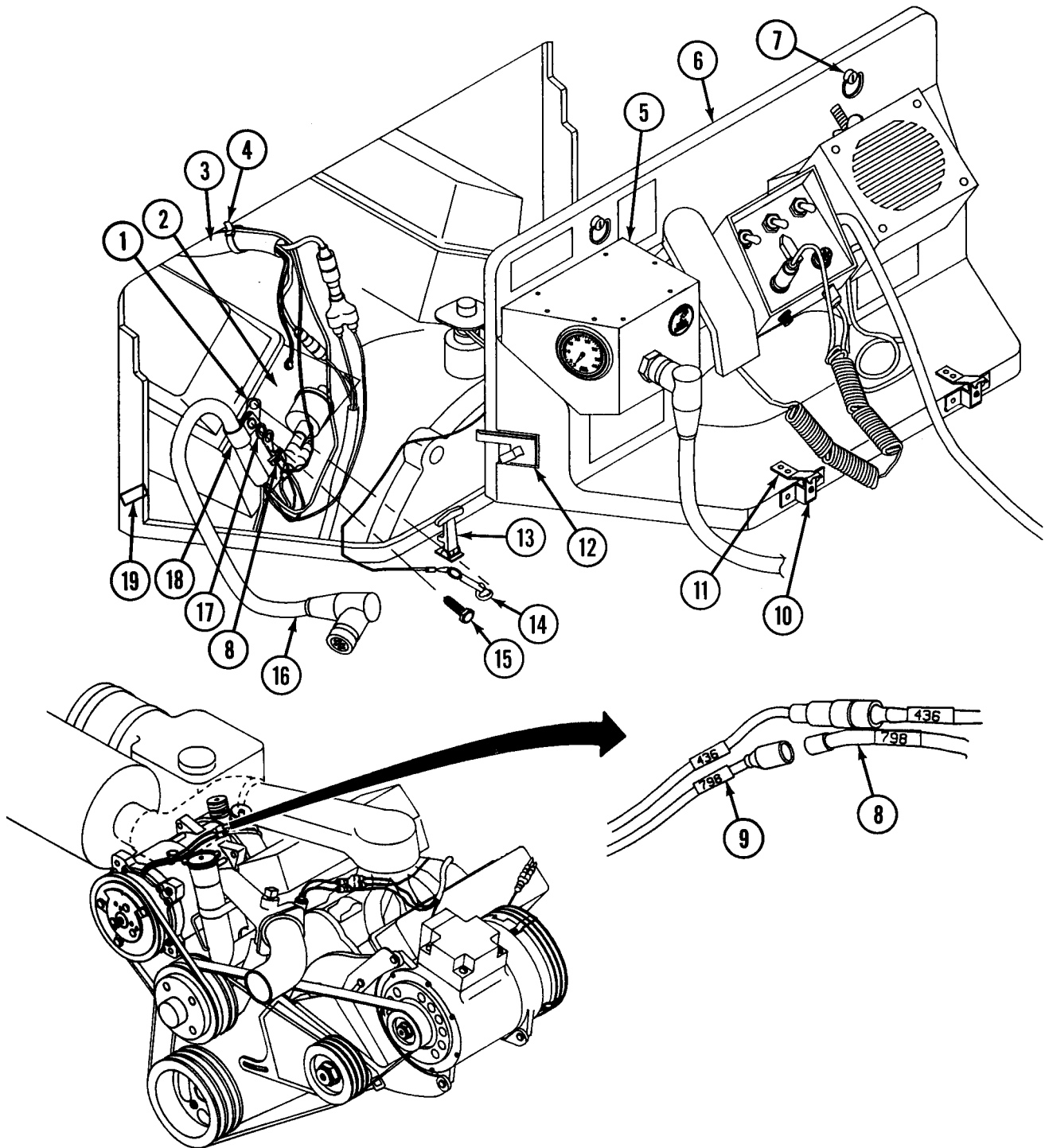


3-28. WIRE NO. 798 REPLACEMENT (Cont'd)

b. Installation

1. Install safety tab (1), loop clamp (18), wire no. 798 (8), and wire no. 58 (17) to engine block (2) and secure with screw (15).
2. Install wire no. 798 (8) to wire no. 798 (9) (on compressor).
3. Attach wire no. 798 (8) to wiring harness (3) using tie-straps (4).
4. Connect safety lanyard (14) to safety tab (1).
5. Connect cable assembly W66 (16) to connector on back of tach/hourmeter box (5).
6. Install engine access cover (6) and secure with two ring studs (7).
7. Secure two engine access cover holddown latches (12) to engine access cover holddown strikes (19).
8. Secure two flexible latches (13) to keepers (11) on engine access cover holddown brackets (10).

3-28. WIRE NO. 798 REPLACEMENT (Cont'd)



- FOLLOW-ON TASKS:**
- Connect battery ground cable (TM 9-2320-280-20).
 - Lower and secure hood (TM 9-2320-280-10).

3-29. WIRE NO. 798 REPAIR

This task covers:

- a. Terminal lug Removal
- b. Terminal lug Installation
- c. Connector Replacement

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Equipment Condition

- Hood raised and secured
(TM 9-2320-280-10)
- Battery ground cable disconnected
(TM 9-2320-280-20)

Manual References

- TM 9-2320-280-10
- TM 9-2320-280-20

a. Terminal Lug Removal

1. Remove terminal lug (2) from wire no. 798 (1).

b. Terminal Lug Installation

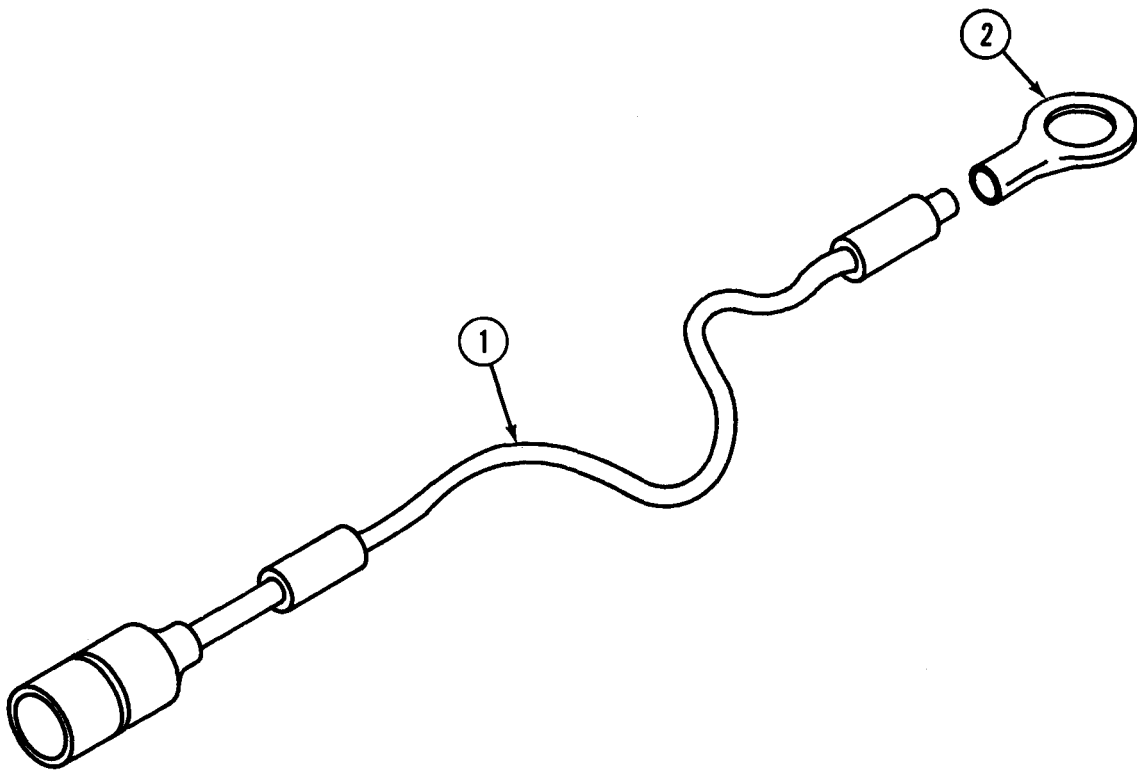
1. Strip insulation on wire no. 798 (1) to equal depth of terminal lug well (2).
2. Place terminal lug (2) on wire no. 798 (1) and crimp in place.

c. Connector Replacement

NOTE

Refer to TM 9-2320-280-20 for replacement of connector.

3-29. WIRE NO. 798 REPAIR (Cont'd)



- FOLLOW-ON TASKS:
- Connect battery ground cable (TM 9-2320-280-20).
 - Lower and secure hood (TM 9-2320-280-10).

3-30. POWER INTERFACE BOX REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
 automotive (Item 1, Section III,
 Appendix B)

Materials/Parts

Four self-locking nuts
 P/N MS17830-4C
 One lockwasher P/N 85031

Manual Reference

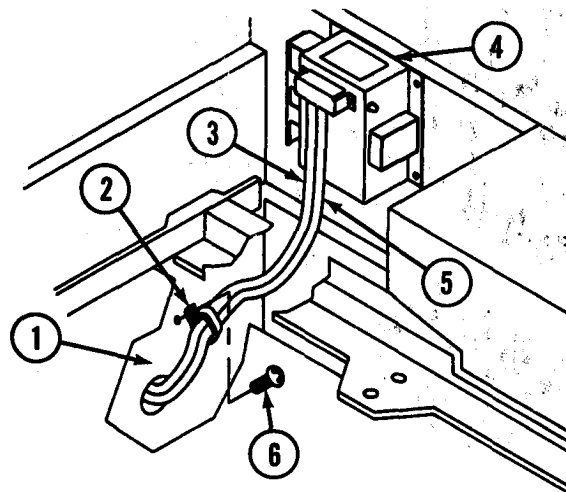
TM 9-2320-280-20

Equipment Condition

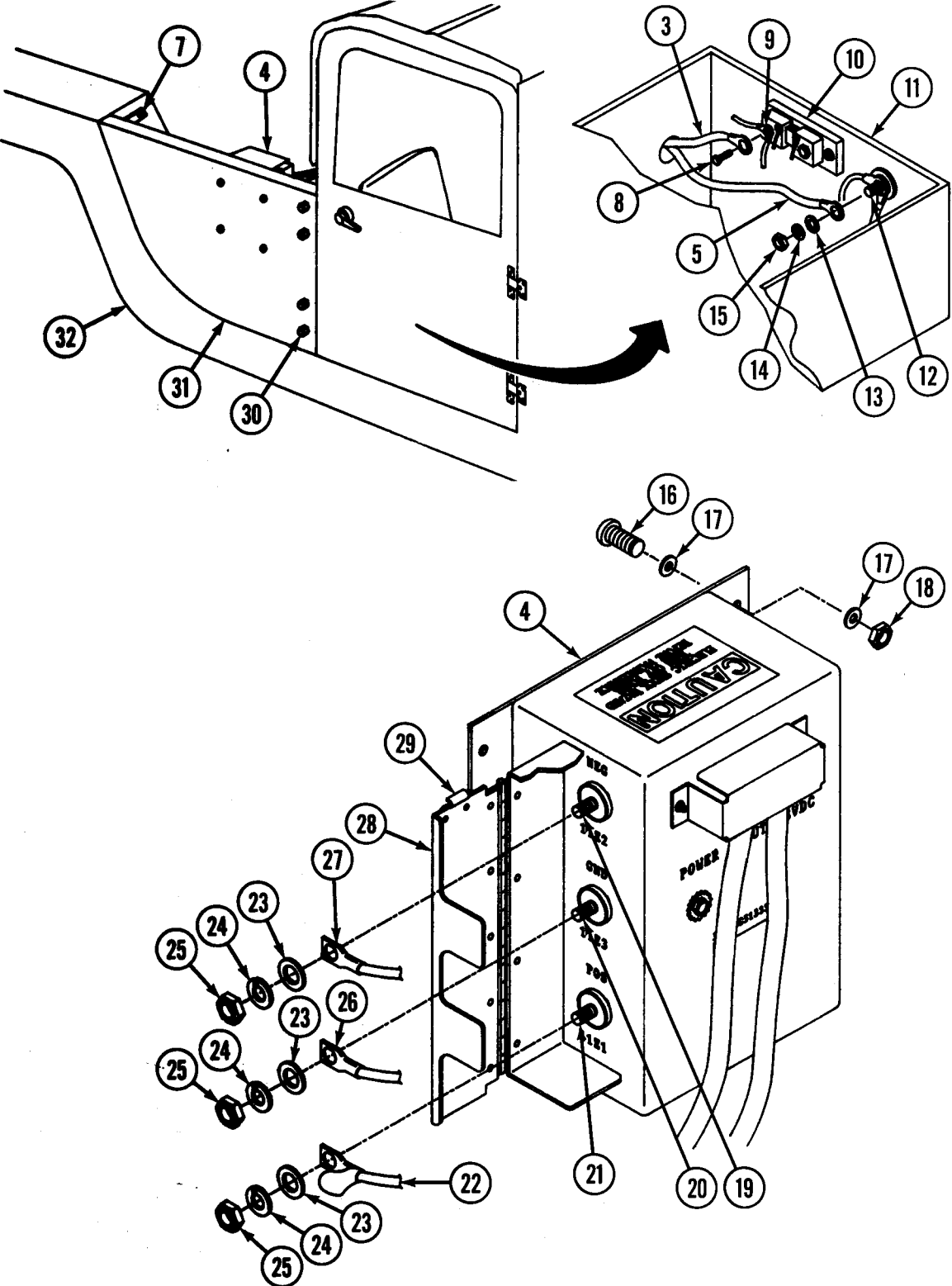
Battery ground cable disconnected
 (TM 9-2320-280-20)

a. Removal

1. Remove nut (15), lockwasher (14), and washer (13) from terminal (12) on battery box (11). Remove cable W67 (5). Discard lockwasher (14).
2. Remove screw (8) from negative terminal (9) on shunt (10). Remove cable W69 (3).
3. Remove screw (6) and cable clamp (2) from enclosure panel (1). Remove cable clamp (2) from cables W67 (5) and W69 (3).
4. Remove cables W67 (5) and W69 (3) from truck.
5. Loosen four special bolts (30) from fixed rear door (31).
6. Loosen captive screw (7) and pull fixed rear door (31) away from truck (32) to access power interface box (4).
7. Unlatch fastening latch (29) and open cover (28).
8. Remove three nuts (25), lockwashers (24), and washers (23) from terminals 11E1 (21), 11E2 (19), and, 11E3 (20). Remove cables W68 (22), W70 (27), and W71 (26) from terminals 11E1 (21), 11E2 (19), and 11E3 (20).
9. Remove four screws (16), washers (17), and self-locking nuts (18) that secure power interface box (4) to fixed rear door (31). Remove power interface box (4) from truck. Discard self-locking nuts (18).



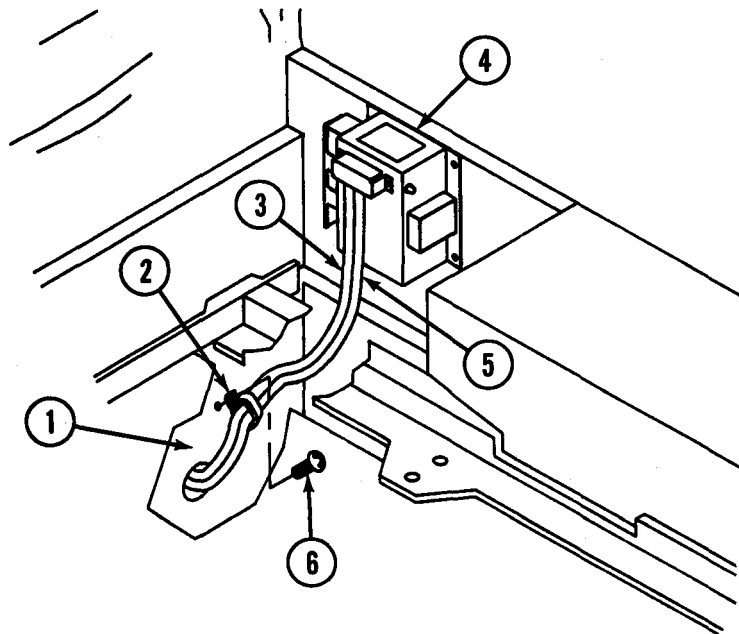
3-30. POWER INTERFACE BOX REPLACEMENT (Cont'd)



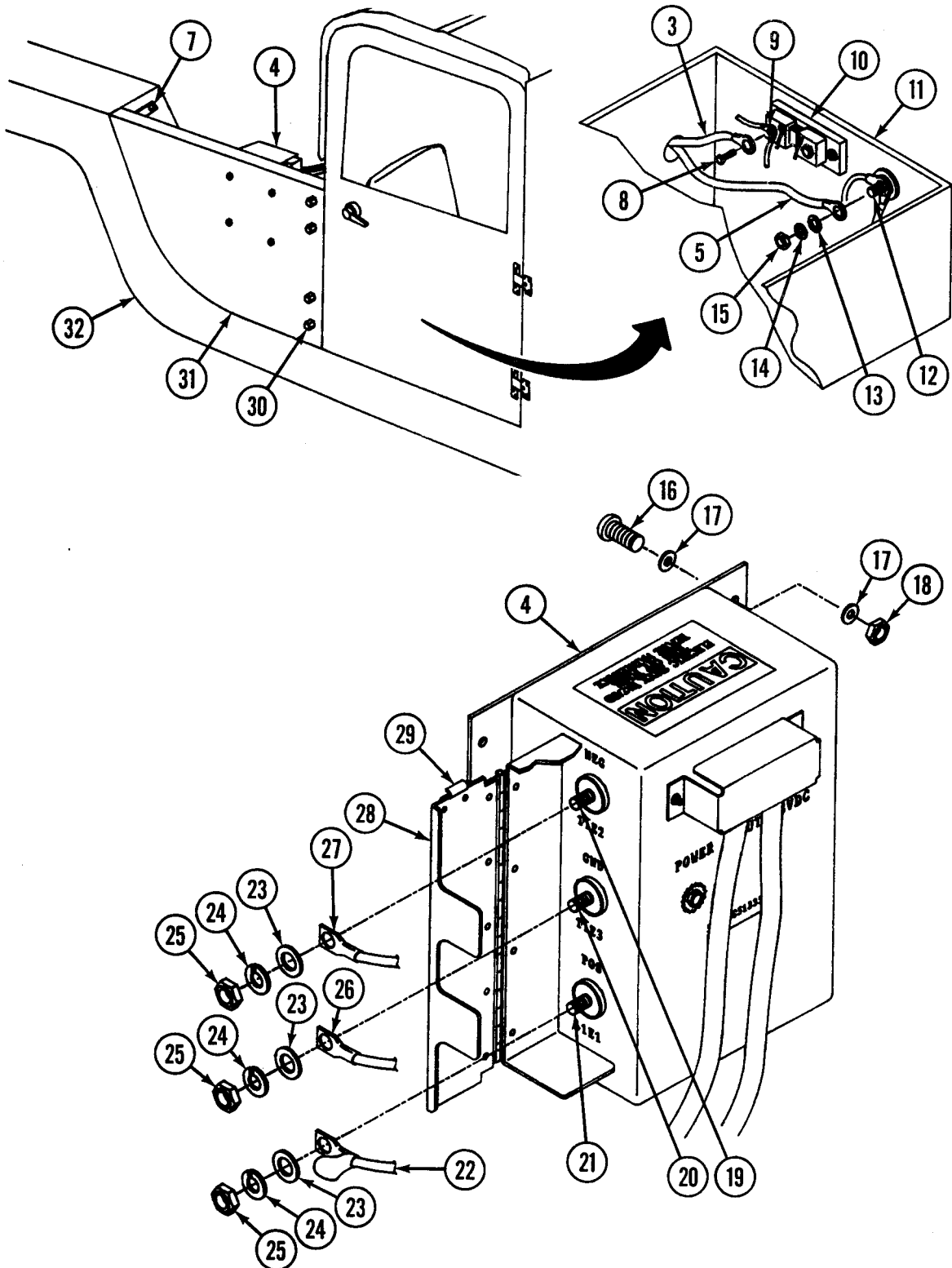
3-30. POWER INTERFACE BOX REPLACEMENT (Cont'd)

b. Installation

1. Install power interface box (4) onto fixed rear door (31) and secure with four screws (16), washers (17), and self-locking nuts (18).
2. Install cables as follows:
 - (a) cable W68 (22) to terminal 11E1 (21),
 - (b) cable W70 (27) to terminal 11E2 (19),
 - (c) cable W71 (26) to terminal 11E3 (20), and
 - (d) secure with three washers (23), lockwashers (24), and nuts (25).
3. Close cover (28) and secure with fastening latch (29).
4. Route cable W69 (3) and W67 (5) through hole in enclosure panel (1).
5. Install SHUNT end of cable W69 (3) to negative terminal (9) on shunt (10) and secure with screw (8).
6. Install POWER STUD end of cable W67 (5) to positive terminal (12), Secure with washer (13), lockwasher (14), and nut (15).
7. Place cable clamp (2) over cables W69 (3) and W67 (5) and secure to enclosure panel (1) with screw (6).
8. Place fixed rear door (31) against side of truck (32) and secure-with captive screw (7) and four special bolts (30),



3-30. POWER INTERFACE BOX REPLACEMENT (Cont'd)



FOLLOW-ON TASK: Connect battery ground cable (TM 9-2320-280-20).

3-31. POWER INTERFACE BOX REPAIR

- | | |
|--|--------------------------------|
| a. Hinge Removal | i. Guard and Boot Removal |
| b. Hinge Installation | j. Guard and Boot Installation |
| c. Strike and Clamping Catch
Removal | k. Cable W67 Removal |
| d. Strike and Clamping Catch
Installation | l. Cable W67 Installation |
| e. Power Terminals Cover Removal | m. Cable W69 Removal |
| f. Power Terminals Cover
Installation | n. Cable W69 Installation |
| g. Terminal Cover Removal | |
| h. Terminal Cover Installation | |
-

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)
Drill bit, 3/16-inch (Item 2,
Section III, Appendix B)
Drill, electric (Item 2,
Section III, Appendix B)
Riveter, blind hand (Item 2,
Section III, Appendix B)

Materials/Parts

Four lockwashers
P/N MS35338-138
Nine dome head rivets
P/N 1601-0619
One lockwasher P/N 85031

Materials/Parts (Cont'd)

Two lockwashers
P/N MS35338-136
Two self-locking nuts
P/N MS21044C06
Two self-locking nuts
P/N MS21044C3

Equipment Condition

Power interface box removed
(para 3-30a)

General Safety Instructions

When drilling, be sure to wear
goggles for eye protection.

a. Hinge Removal

1. File small flat on rivet heads (1).
2. Center punch flats while supporting rivet backsides.

WARNING

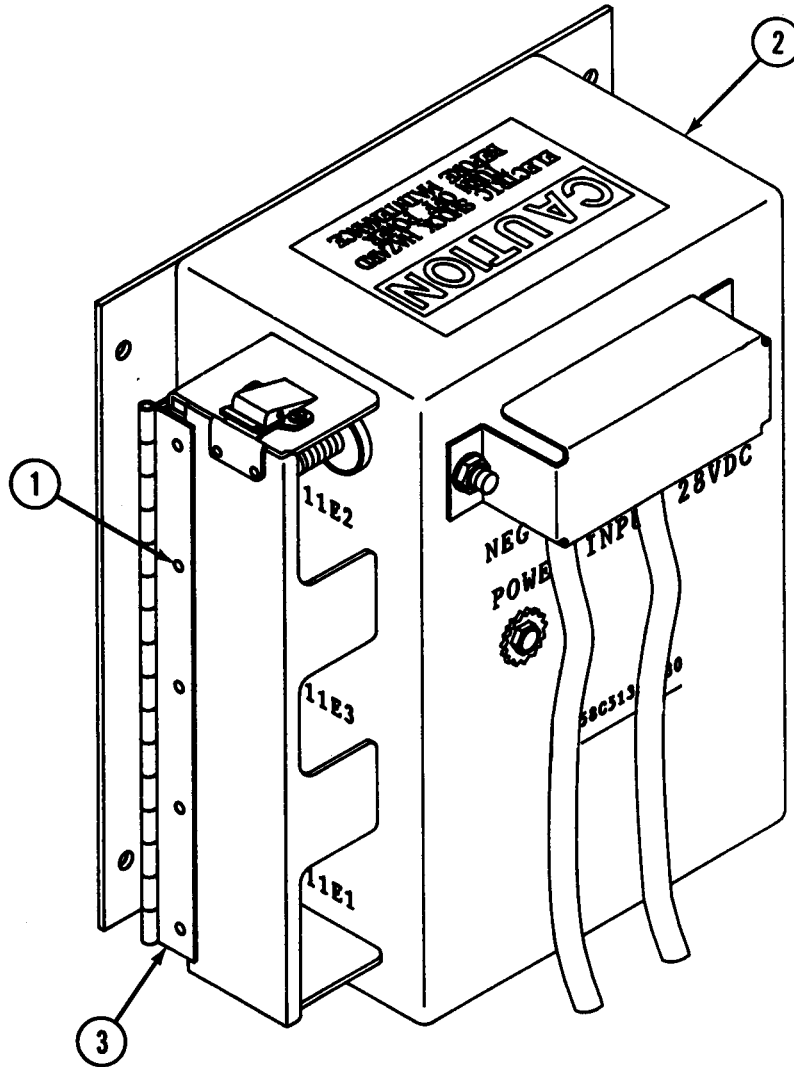
When drilling, be sure to wear goggles for eye
protection or injury to personnel may occur.

3. Using 3/16-inch drill bit, drill through all rivet heads (1).
4. Pry off rivet heads (1) and tap out rivet shanks. Remove hinge (3).

b. Hinge Installation

1. Place hinge (3) in position.
2. Rivet hinge to power interface box (2).

3-31. POWER INTERFACE BOX REPAIR (Cont'd)



3-31. POWER INTERFACE BOX REPAIR (Cont'd)

c. Strike and Clamping Catch Removal

1. Unlatch clamping catch (1) from strike (5) and open cover (4).
2. Remove two screws (2) and self-locking nuts (3) from clamping catch (1). Remove clamping catch (1). Discard self-locking nuts (3).
3. Remove two screws (7) and lockwashers (6) from strike (5). Remove strike (5). Discard lockwashers (6).

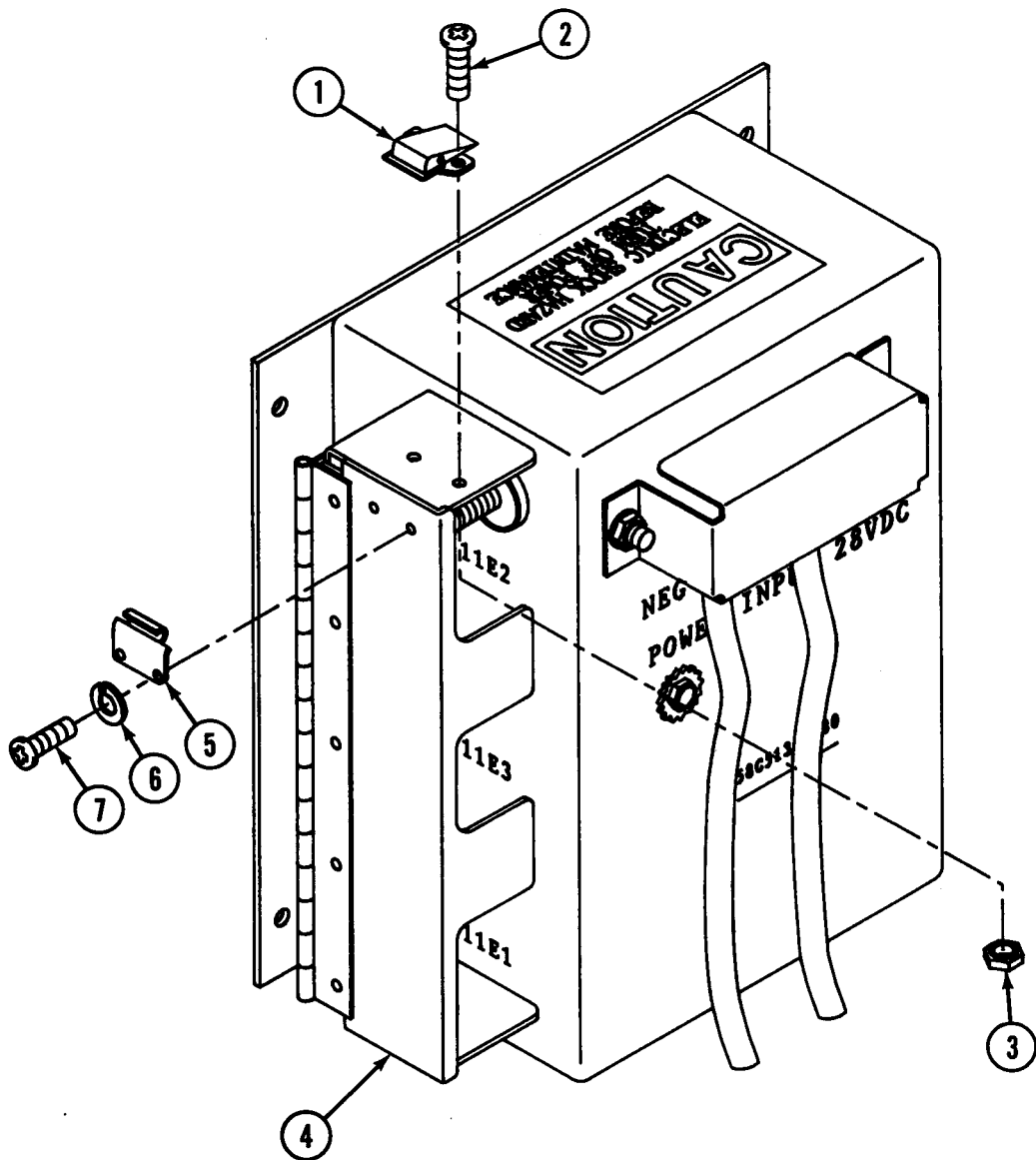
d. Strike and Clamping Catch Installation

Install strike (5) to cover (4) and secure with two screws (7) and lockwashers (6).

Install clamping catch (1) to cover (4) and secure with two screws (2) and self-locking nuts (3).

Close cover (4) and fasten clamping catch (1) to strike (5).

3-31. POWER INTERFACE BOX REPAIR (Cont'd)



3-31. POWER INTERFACE BOX REPAIR (Cont'd)

e. Power Terminals Cover Removal

1. File small flat on rivet heads (4) on power terminals cover side of hinge (3).
2. Center punch flats while supporting rivet backsides (4).

WARNING

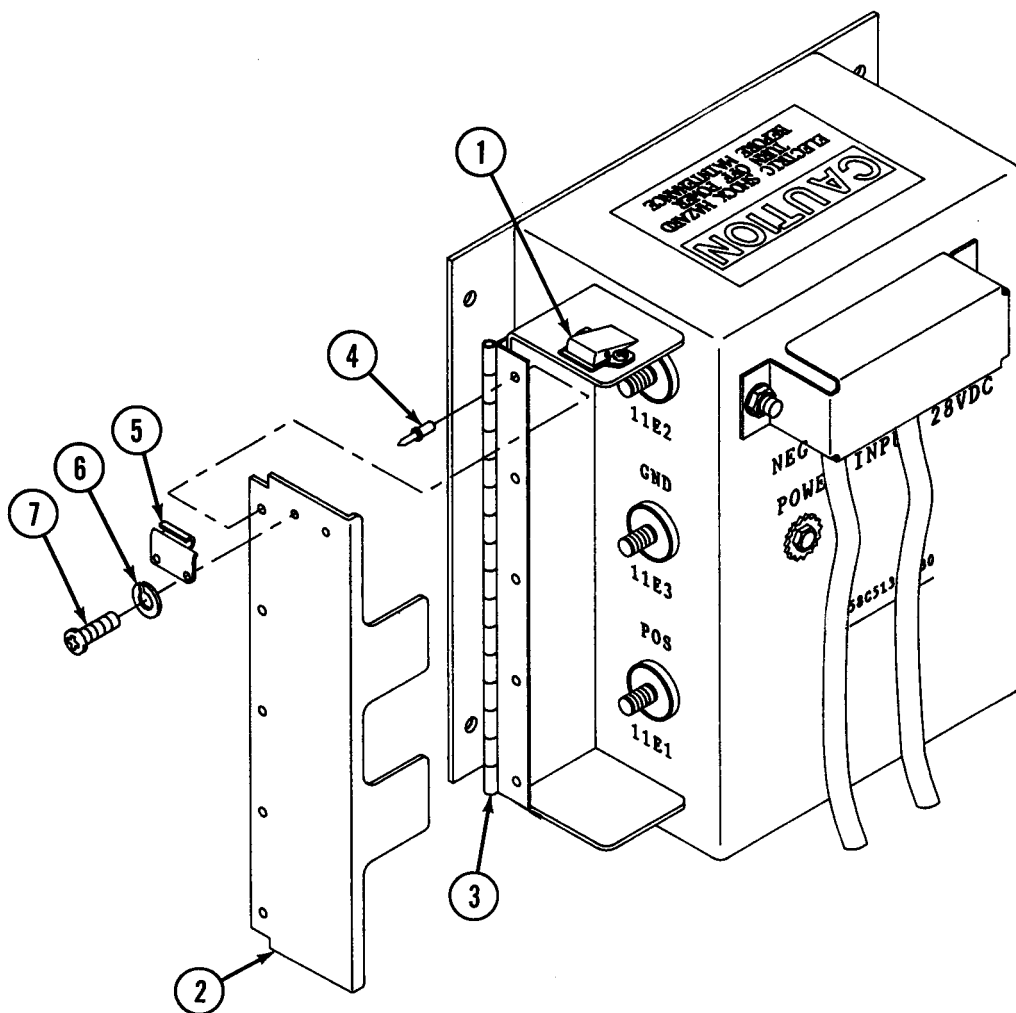
When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.

3. Using 3/16-inch drill bit, drill through rivet heads (4) on power terminals cover side of hinge (3),
4. Unlatch clamping catch (1) from strike (5).
5. Remove two screws (7) and lockwashers (6) from strike (5). Remove strike (5) and cover (2). Discard lockwashers (6).

f. Power Terminals Cover Installation

1. Place cover (2) in position.
2. Place hinge (3) in position.
3. Rivet hinge (3) to cover (2).
4. Install strike (5) to cover (2) and secure with two screws (7) and lockwashers (6).
5. Close cover (2) and fasten clamping catch (1) to strike (5)

3-31. POWER INTERFACE BOX REPAIR (Cont'd)



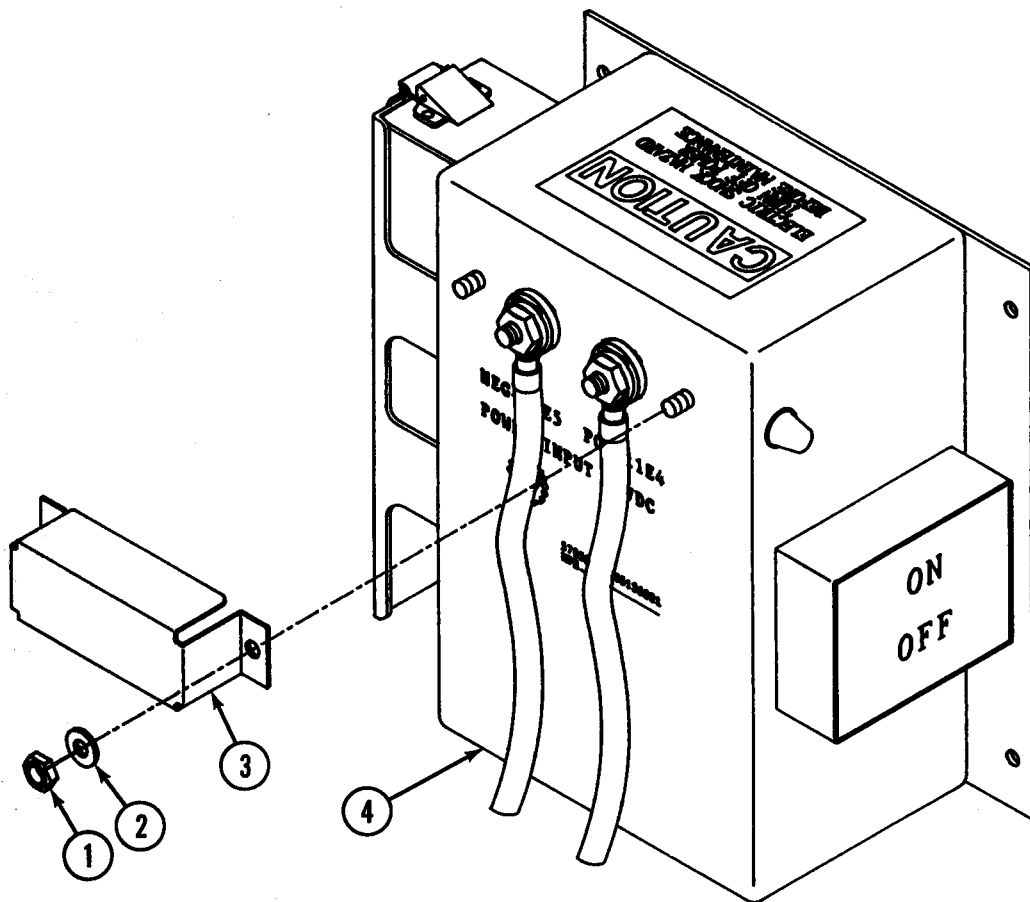
3-31. POWER INTERFACE BOX REPAIR (Cont'd)

g. Terminal Cover Removal

1. Remove two self-locking nuts (1) and washers (2) from terminal cover (3).
2. Remove terminal cover (3) from power interface box (4). Discard self-locking nuts (1).

h. Terminal Cover Installation

1. Install terminal cover (3) on power interface box (4) and secure with two washers (2) and self-locking nuts (1).

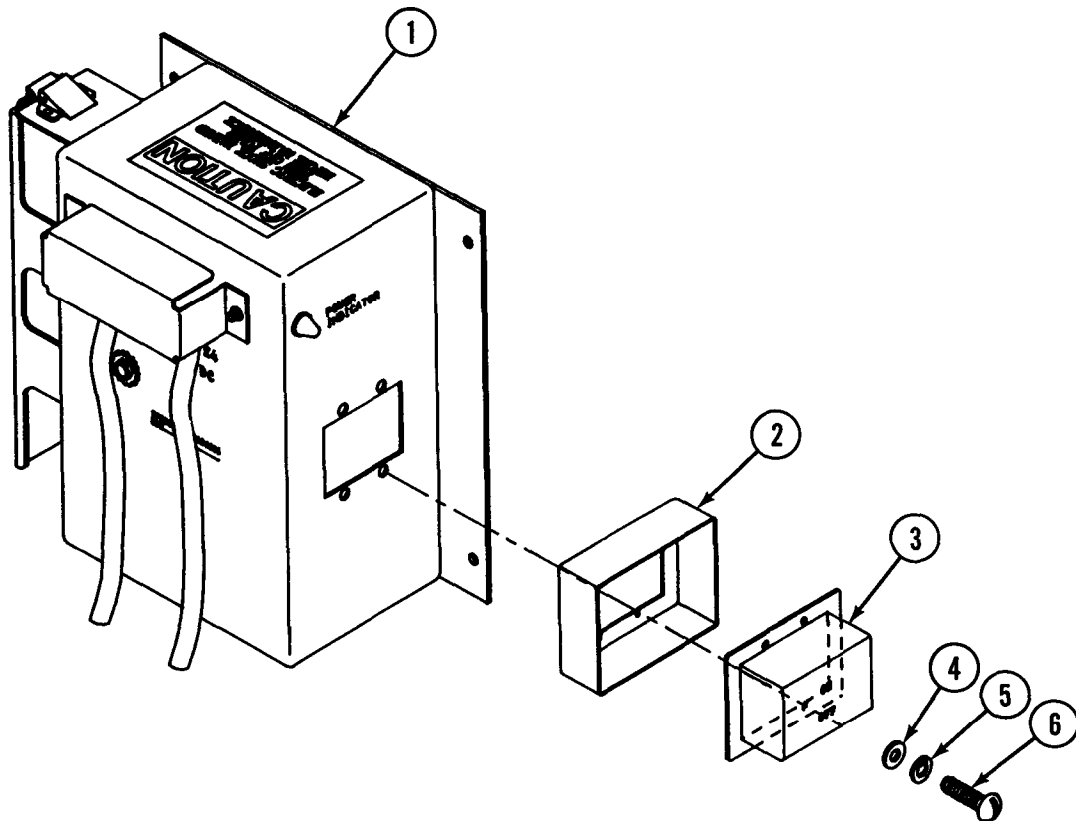


3-31. POWER INTERFACE BOX REPAIR (Cont'd)**i. Guard and Boot Removal**

1. Remove four screws (6), lockwashers (5), and washers (4) from boot (3).
2. Remove boot (3) and guard (2) from power interface box (1). Discard lockwashers (5).

j. Guard and Boot Installation

1. Install boot (3) and guard (2) on power interface box (1) and secure with four washers (4), lockwashers (5), and screws (6).



3-31. POWER INTERFACE BOX REPAIR (Cont'd)

k. Cable W67 Removal

1. Remove two self-locking nuts (1) and washers (2) from terminal cover (3). Remove terminal cover (3) from power interface box (9). Discard self-locking nuts (1).
2. Remove nut (4), lockwasher (5), and washer (6) from terminal 11E4 (10),
3. Remove cable W67 (8) from terminal 11E4 (10).

l. Cable W67 Installation

- Install cable W67 (8) onto power terminal 11E4 (10) and secure with washer (6), lockwasher (5), and nut (4).
2. Install terminal cover (3) on power interface box (9) and secure with two washers (2) and self-locking nuts (1).

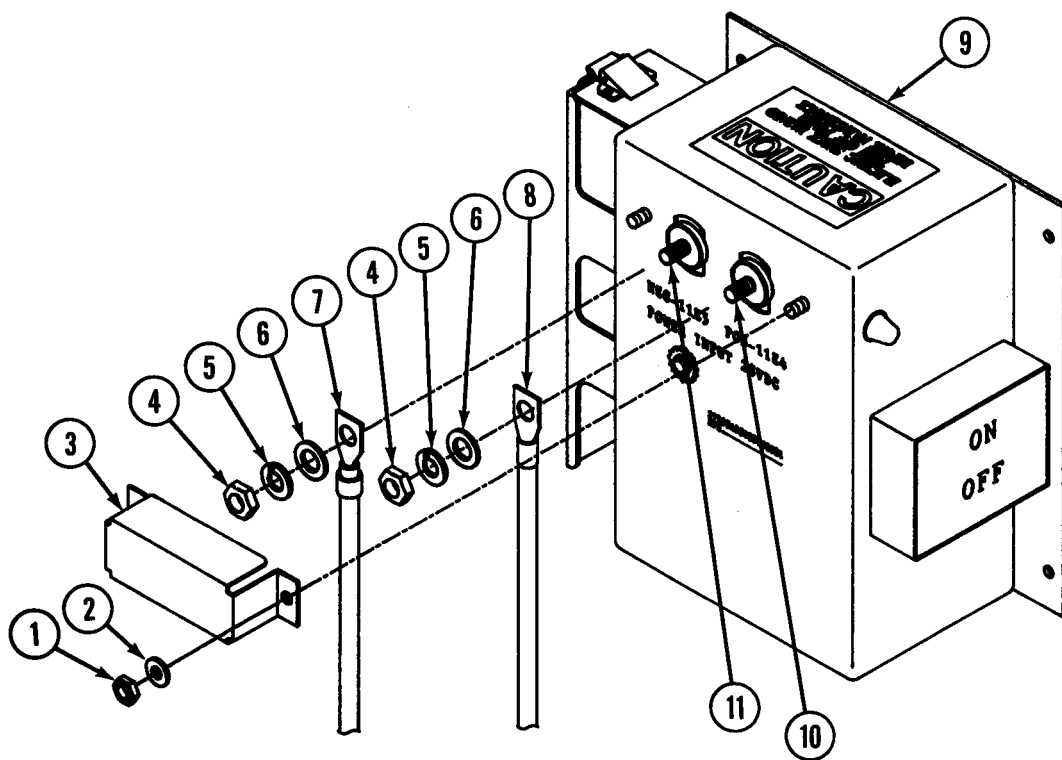
m. Cable W69 Removal

1. Remove two self-locking nuts (1) and washers (2) from terminal cover (3). Remove terminal cover (3) from power interface box (9). Discard self-locking nuts (1).
2. Remove nut (4), lockwasher (5), and washer (6) from terminal 11E5 (11).
3. Remove cable W69 (7) from terminal 11E5 (11).

n. Cable W69 Installation

1. Install cable W69 (7) onto power terminal 11E5 (11) and secure with washer (6), lockwasher (5), and nut (4).
2. Install terminal cover (3) on power interface box (9) and secure with two washers (2) and self-locking nuts (1).

3-31. POWER INTERFACE BOX REPAIR (Cont'd)



FOLLOW-ON TASK: Install power interface box (para 3-30b)

3-32. INCANDESCENT LAMP AND LENS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

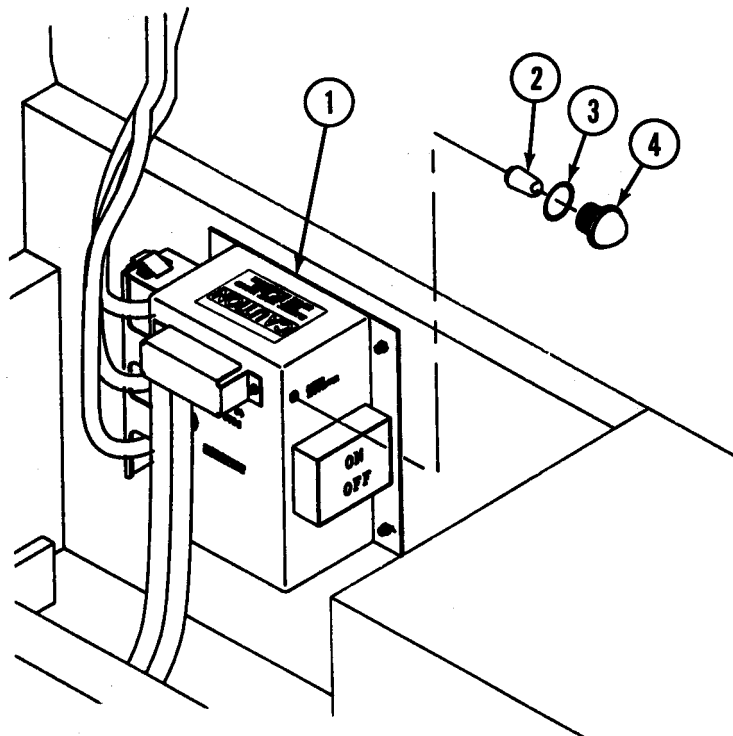
Equipment Condition

Circuit breaker is off

a. Removal

1. Remove lens (4) and O-ring (3) from power interface box (1).
2. Separate lens (4) from incandescent lamp (2).

1. Install incandescent lamp (2) into lens (4).
2. Install lens (4) and O-ring (3) on power interface box (1).



FOLLOW-ON TASK: Turn on circuit breaker.

3-33. 200 AMP ALTERNATOR REPLACEMENT

NOTE

Refer to TM 9-2320-280-20 for replacement of the 200 amp alternator.

3-34. 200 AMP ALTERNATOR GROUND STRAP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Materials/Parts

Copper shield
(Appendix C, Item 2)

Manual Reference

TM 9-2320-280-10
TM 9-2320-280-20

Equipment Condition

- Hood raised and secured
(TM 9-2320-28-10)
- Battery ground cable disconnected
(TM 9-2320-280-20)

a. Removal

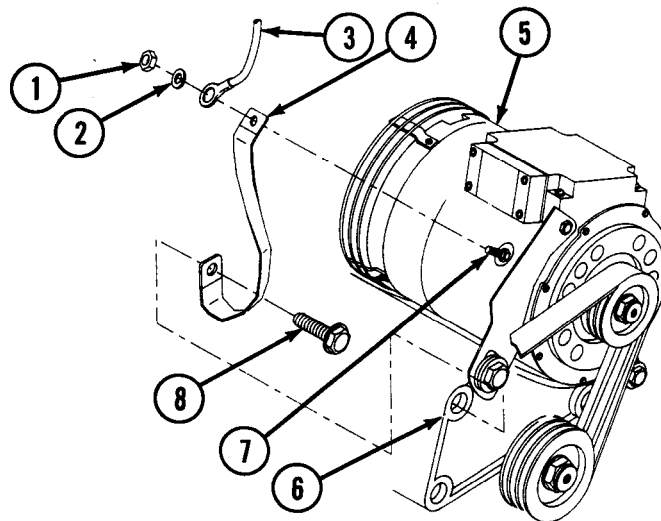
1. Remove nut (1) and lockwasher (2) from ground stud (7). Retain lockwasher (2) for installation.
2. Remove bolt (8) from upper hole on mounting bracket (6) and remove ground strap (4).

b. Install

NOTE

Ensure terminal is clean before connection is made

1. Apply copper shield sparingly to bolt surface of ground strap (4).
2. Insert bolt (8) through hole in ground strap (4).
3. Install bolt (8) and ground strap (4) to upper hole on mounting bracket (6). Tighten to 48 lb-ft (65 Nm).
4. Install ground strap (4) and lead 3B (3) to ground stud (7) and secure with lockwasher (2) and nut (1). Tighten nut (1) to 96-144 lb-in. (11-16 N.m).



- FOLLOW-ON TASKS:
- Connect battery ground cable (TM 9-2320-280-20).
 - Lower and secure hood (TM 9-2320-280-10).

3-35. 200 ANP ALTERNATOR PULLEY REPLACEMENT

NOTE

Refer to TM 9-2320-280-20 for replacement of the 200 amp alternator pulley.

3-36. ENGINE OIL PRESSURE GAGE REPLACEMENT

NOTE

Refer to TM 9-2320-280-20 for electrical gage replacement. Must be PN C5136382 (see figure 24 in appendix D of this manual).

3-37. COOLANT TEMPERATURE GAGE REPLACEMENT

NOTE

Refer to TM 9-2320-280-20 for electrical gage replacement. Must be PN C5136383 (see figure 24 in appendix D of this manual).

3-38. FUEL GAGE REPLACEMENT

NOTE

Refer to TM 9-2320-280-20 for electrical gage replacement. Must be PN C5136384 (see figure 24 in appendix D of this manual).

CHAPTER 4. DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE**Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT****4-1. COMMON TOOLS AND EQUIPMENT**

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS AND SUPPORT EQUIPMENT

Special tools and support equipment are listed and illustrated in Appendix D of this manual.

4-3. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE)

Calibrate all measuring and test equipment used to determine equipment conformance with TB 43-180.

4-4. REPAIR PARTS

Repair parts are listed and illustrated in Appendix D of this manual.

Section II. DIRECT SUPPORT TROUBLESHOOTING**4-5. GENERAL**

- a. Information in this section is for use by support maintenance personnel in conjunction with, and as a supplement to, troubleshooting procedures in TM 9-2320-280-20 and TM 9-2320-280-34.
- b. Direct support troubleshooting, table 4-1, contains instructions that will help you diagnose and correct malfunctions of the components of the EES kit.
- c. The troubleshooting procedures in this section cannot give all the answers or correct all malfunctions encountered. However, these procedures are an organized step-by-step study of a problem that directs tests and inspections toward the source of a problem and successful correction.
- d. Do the easiest things first. Most troubles are easily corrected. Never overlook the chance that the problem could be of simple origin.
- e. Doublecheck before disassembly. The source of most problems can be traced to more than one part in a system.
- f. Before correcting a problem, diagnose the cause of the problem. Do not allow the same failure to occur again.

4-6. DIRECT SUPPORT TROUBLESHOOTING

Table 4-1. Direct Support Troubleshooting

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. **INCANDESCENT LAMP IS NOT LIT ON POWER INTERFACE BOX WHEN CIRCUIT BREAKER IS ON.**

NOTE

When measuring +28 VDC, use ± 2 VDC for tolerance,

WARNING

Serious injury could result if safety precautions are not followed when troubleshooting this equipment.

- Step 1. Turn off circuit breaker on power interface box.
- Step 2. Remove lens and incandescent lamp from power interface box .
- Step 3. Turn on circuit breaker.
- Step 4. Measure voltage at lamp socket.
 - If multimeter does not read about +28 VDC, proceed to step 5.
 - If multimeter reads about +28 VDC, turn off circuit breaker and replace incandescent lamp and lens (para. 3-31).
- Step 5. Measure voltage at terminal 11E4.
 - If multimeter does not read about +28 VDC, proceed to step 6.
 - If multimeter reads about +28 VDC, proceed to step 7.
- Step 6. Open battery compartment (TM 9-2320-280-20). Measure voltage at power stud.
 - If multimeter does not read about +28 VDC, test batteries (TM 9-2320-280-20).
 - If multimeter reads about +28 VDC, turn off circuit breaker and replace power cables (para. 4-19).
- Step 7, Remove power interface box cover.
 - Measure voltage at load side of circuit breaker.
 - If multimeter does not read about +28 VDC, replace circuit breaker (para. 4-8).
 - If multimeter reads about +28 VDC, replace indicator light and wire assemblies (para. 4-9).

Section III. ELECTRICAL COMPONENTS MAINTENANCE

4-7. ELECTRICAL COMPONENTS MAINTENANCE TASK SUMMARY

TASK PARA .	PROCEDURES	PAGE NO.
4-8.	Circuit Breaker Replacement	4-4
4-9.	Indicator Light and Wire Assemblies Repair	4-8
4-10.	Power Interface Box Terminal Replacement	4-12

4-8. CIRCUIT BREAKER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Materials/Parts

Four lockwashers
P/N MS35338-138

Materials/Parts (Cont'd)

One gasket P/N C5136331
One lockwasher P/N MS35338-122

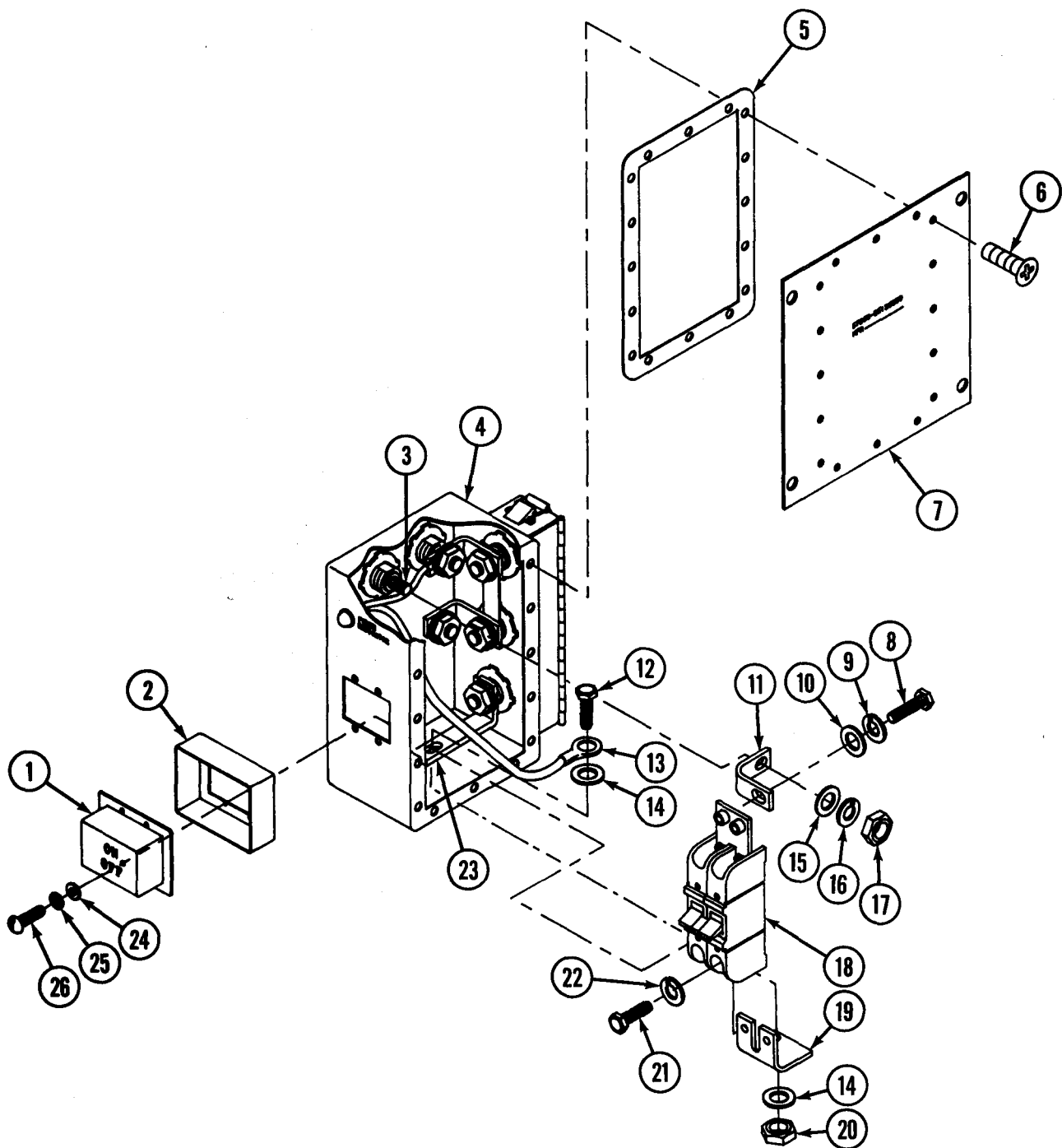
Equipment Condition

Power interface box removed
(para. 3-30a)

a. Removal

1. Remove sixteen screws (6), cover (7), and gasket (5) from power interface box (4). Discard gasket (5).
2. Remove screw (12), wire assembly lead (13), washers (14), and nut (20) that secure bus bar (19) to bus bar (23).
3. Remove nut (17), lockwasher (16), and washer (15) that secure bus bar (11) to terminal 11E4 (3).
4. Remove four screws (26), lockwashers (25), and washers (24) from guard (2). Discard lockwashers (25).
5. Remove guard (2) and boot (1) from power interface box (4).
6. Remove circuit breaker (18) from power interface box (4).
7. Remove screw (8), lockwasher (9), and washer (10) from circuit breaker (18). Remove bus bar (11) from circuit breaker (18). Discard lockwasher (9),
- a. Remove two screws (21) and lockwashers (22) from circuit breaker (18). Remove bus bar (19) from circuit breaker (18).

4-8. CIRCUIT BREAKER REPLACEMENT (Cont'd)

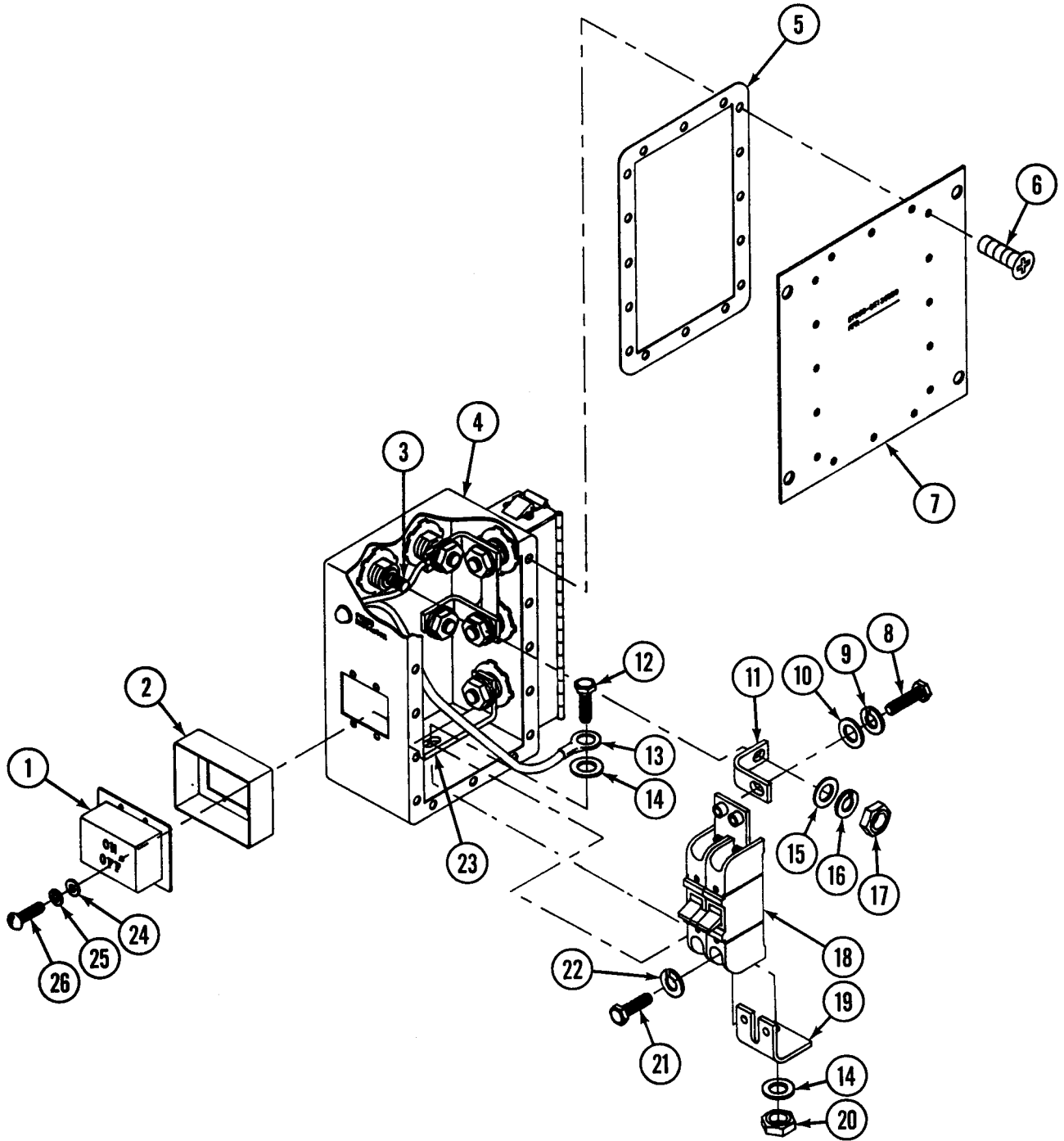


4-8. CIRCUIT BREAKER REPLACEMENT (Cont'd)

b. Installation

1. Install bus bar (19) on load side of circuit breaker (18) and secure with two lockwashers (22) and screws (21).
2. Install bus bar (11) on line side of circuit breaker (18) and secure with washer (10), lockwasher (9), and screw (8).
3. Install circuit breaker (18) into power interface box (4).
4. Install boot (1) and guard (2) onto power interface box (4) and secure with four washers (24), lockwashers (25), and screws (26).
5. Secure bus bar (11) to terminal 11E4 (3) with washer (15), lockwasher (16), and nut (17).
6. Secure wire assembly lead (13), bus bar (23), and bus bar (19), with washers (14), screw (12), and nut (20).
7. Install gasket (5) and cover (7) on power interface box (4) and secure with sixteen screws (6).

4-8. CIRCUIT BREAKER REPLACEMENT (Cont'd)



FOLLOW-ON TASK: Install power interface box (para. 3-30b).

4-9. INDICATOR LIGHT AND WIRE ASSEMBLIES REPAIR

This task covers:

- a. Removal b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
 automotive (Item 1, Section III,
 Appendix B)
 Soldering gun (Item 3,
 Section III, Appendix B)
 Multimeter, AN/URM-105C (Item 3,
 Section III, Appendix B)

Materials/Parts

Four lockwashers
 P/N MS35338-138
 One gasket P/N C5136331

Materials/Parts (Cont)

One indicator light
 P/N 367-8430-09-503
 One wire assembly
 P/N C5136333
 One wire assembly
 P/N C5136332
 Solder, tin alloy (Appendix C,
 Item 8)

Equipment Condition

Power interface box removed
 (para. 3-30a)

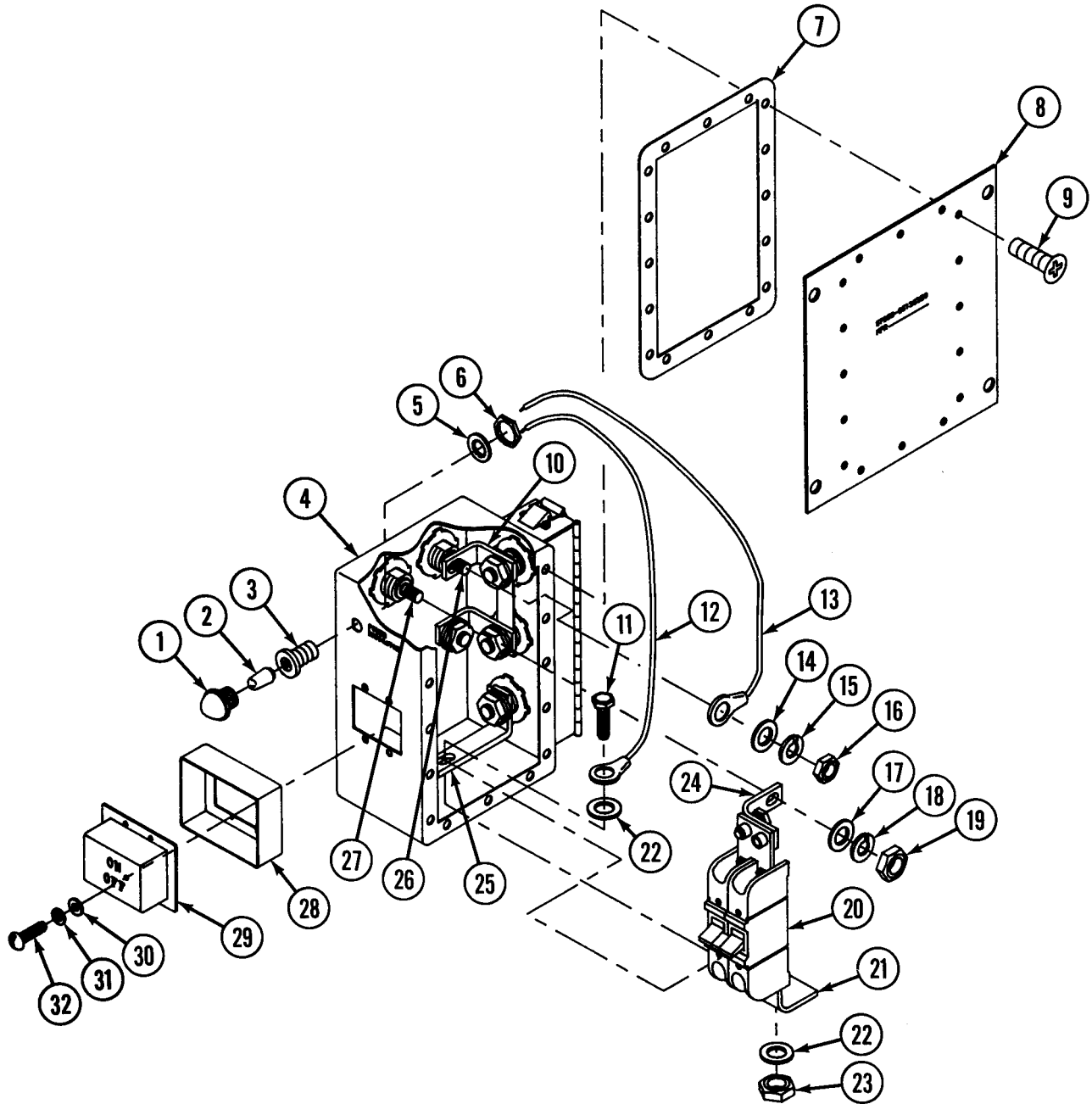
NOTE

Tag wires for installation.

a. Removal

1. Remove sixteen screws (9), cover (8), and gasket (7) from power interface box (4). Discard gasket (7).
2. Remove screw (11), wire assembly lead (12), washers (22), and nut (23) that secure bus bar (21) to bus bar (25).
3. Remove nut (19), lockwasher (18), and washer (17) that secure bus bar (24) to terminal 11E4 (27).
4. Remove four screws (32), lockwashers (31), and washers (30) from guard (28). Discard lockwashers (31).
5. Remove guard (28) and boot (29) from power interface box (4).
6. Remove circuit breaker (20) from power interface box (4).
7. Remove nut (16), lockwasher (15), and washer (14) that secure wire assembly lead (13) and bus bar (10) to terminal 11E5 (26). Detach wire assembly lead (13).
8. Remove indicator light lens (1) and incandescent lamp (2).
9. Remove nut (6) and internal tooth washer (5) on indicator light (3). Remove indicator light (3) from power interface box (4).
10. Perform continuity test on indicator light (3) and wire assembly leads (12) and (13).
11. Desolder wire assembly leads (13) and/or (12) from back of indicator light (3). Discard wire assembly leads (13), (12), and/or indicator light (3).

4-9. INDICATOR LIGHT AND WIRE ASSEMBLIES REPAIR (Cont'd)

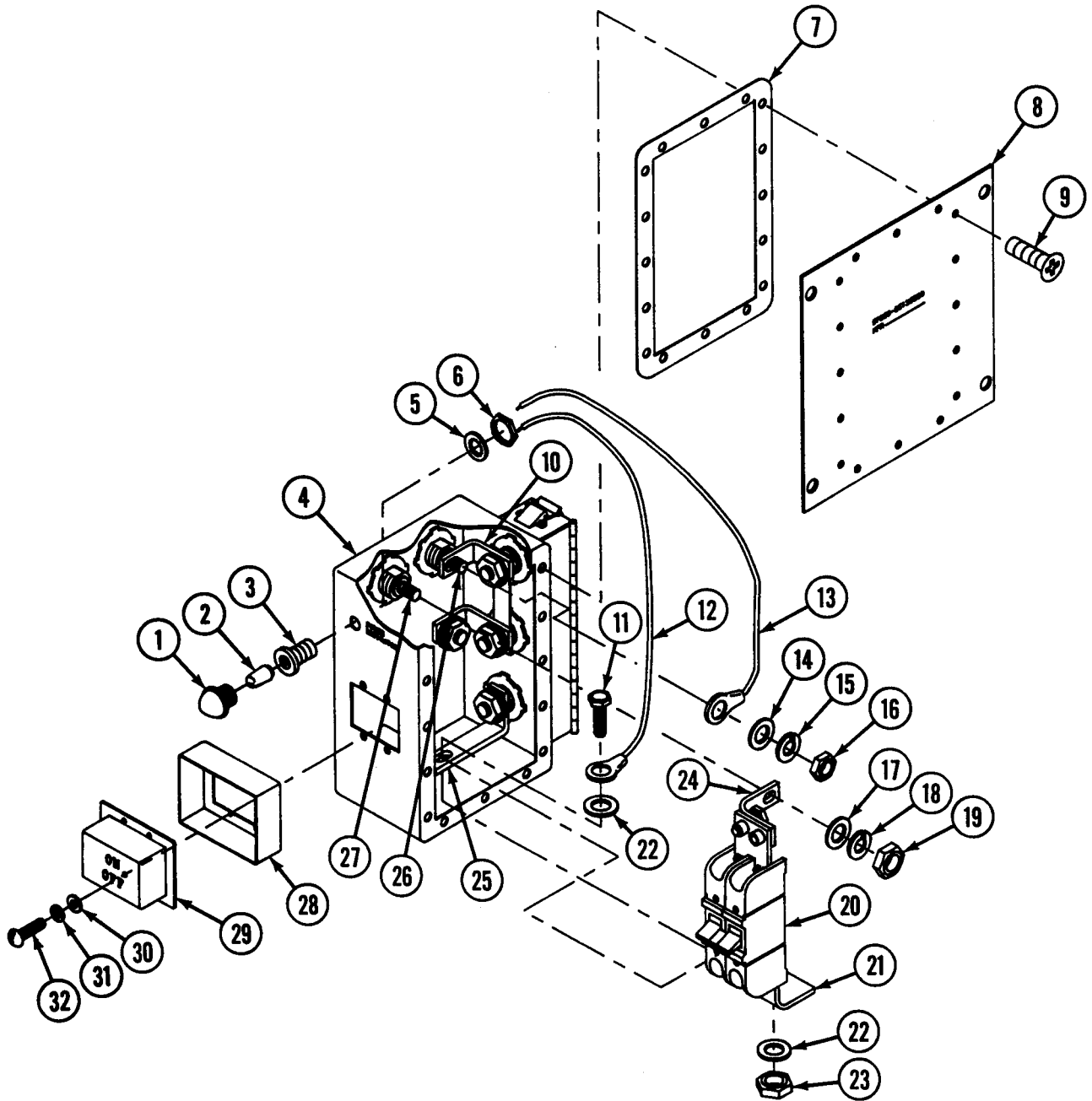


4-9. INDICATOR LIGHT AND WIRE ASSEMBLIES REPAIR (Cont'd)

b. Installation

1. Solder wire assembly leads (13) and/or (12) to back of indicator light (3).
2. Install indicator light (3) into power interface box (4) and secure with internal tooth washer (5) and nut (6).
3. Install incandescent lamp (2) and light lens (1).
4. Place wire assembly lead (13) onto bus bar (10) and terminal 11E5 (26) and secure with washer (14), lockwasher (15), and nut (16).
5. Install circuit breaker (20) into power interface box (4).
6. Install boot (29) and guard (28) onto power interface box (4) and secure with four washers (30), lockwashers (31), and screws (32).
7. Secure bus bar (24) to terminal 11E4 (27) with washer (17), lockwasher (18), and nut (19).
8. Secure wire assembly lead (12), bus bar (25), and bus bar (21) with washers (22), screw (11), and nut (23).
9. Install gasket (7) and cover (8) on power interface box (4) and secure with sixteen screws (9).

4-9. INDICATOR LIGHT AND WIRE ASSEMBLIES REPAIR (Cont'd)



FOLLOW-ON TASK: Install power interface box (para. 3-30b).

4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT

This task covers:

- | | |
|--------------------------------------|--------------------------------------|
| a. Terminal 11E1 Removal | g. Terminal 11E4 Removal |
| b. Terminal 11E1 Installation | h. Terminal 11E4 Installation |
| c. Terminal 11E2 Removal | i. Terminal 11E5 Removal |
| d. Terminal 11E2 Installation | j. Terminal 11E5 Installation |
| e. Terminal 11E3 Removal | |
| f. Terminal 11E3 Installation | |

INITIAL SETUP:

Tools

General mechanic's tool kit:
automotive (Item 1, Section III,
Appendix B)

Materials/Parts

One gasket P/N C5136331
Sealant, exterior (Appendix C,
Item 6)

Materials/Parts

Two self-locking nuts
P/N MS21044C3

Equipment Condition

Power interface box removed
(para. 3-30a)

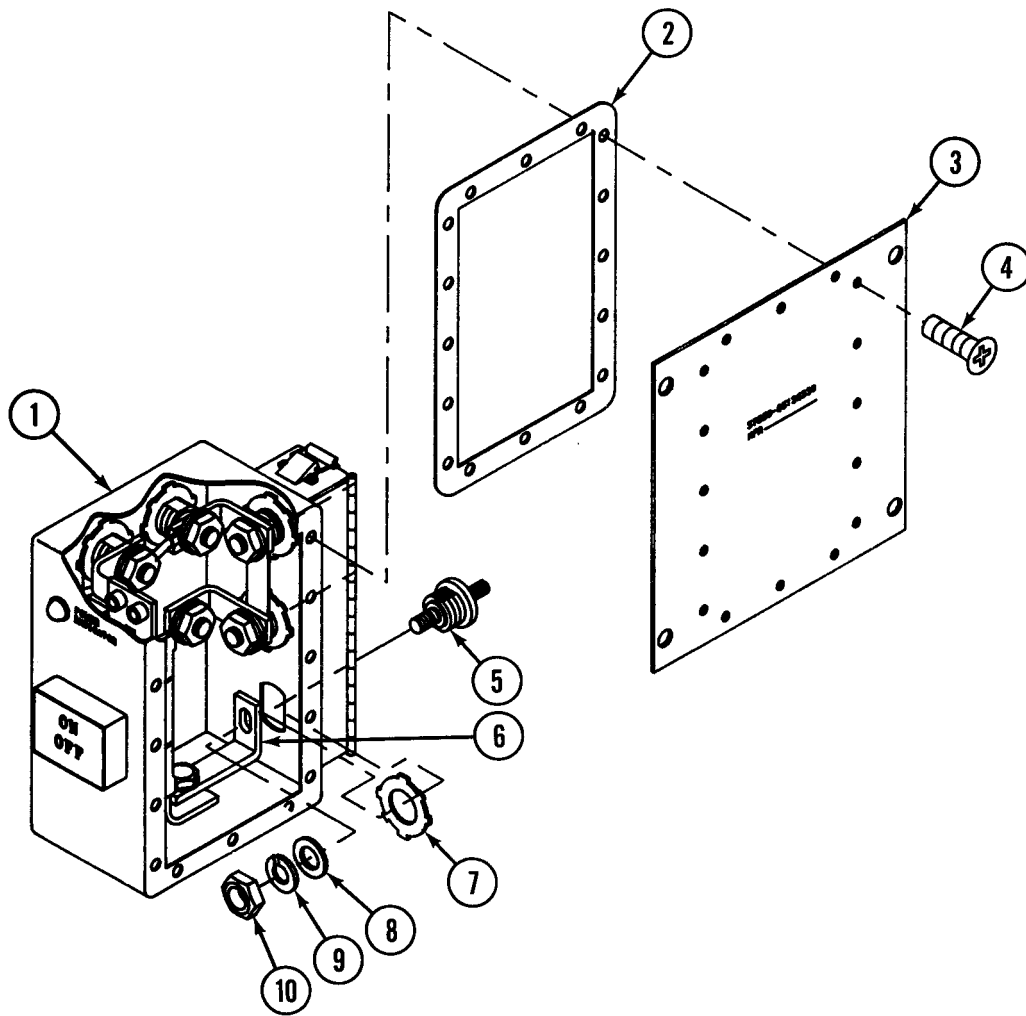
a. Terminal 11E1 Removal

1. Remove sixteen screws (4), cover (3), and gasket (2) from power interface box (1). Discard gasket (2).
2. Remove nut (10), lockwasher (9), and washer (8) that secure bus bar (6) to terminal 11E1 (5).
3. Remove nut (7) from inside terminal 11E1 (5). Remove terminal 11E1 (5).

b. Terminal 11E1 Installation

1. Apply sealant to area of terminal that contacts power interface box (1).
2. Install terminal 11E1 (5) into power interface box (1) and secure with nut (7).
3. Secure bus bar (6) to terminal 11E1 (5) with washer (8), lockwasher (9), and nut (10).
4. Install gasket (2) and cover (3) on power interface box (1) and secure with sixteen screws (4).

4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT (Cont'd)



4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT (Cont'd)

c. Terminal 11E2 Removal

1. Remove sixteen screws (8), cover (7), and gasket (6) from power interface box (1). Discard gasket (6).
2. Remove nut (2), lockwasher (3), and washer (4) that secure bus bar (5) and bus bar (11) to terminal 11E2 (9).
3. Remove nut (12) from inside terminal 11E2 (9) and remove terminal 11E2 (9).

d. Terminal 11E2 Installation

1. Apply sealant to area of terminal that contacts power interface box (1).
2. Install terminal 11E2 (9) into power interface box (1) and secure with nut (12).
3. Secure bus bar (11) and bus bar (5) to terminal 11E2 (9) with washer (4), lockwasher (3), and nut (2).
4. Install gasket (6) and cover (7) on power interface box (1) and secure with sixteen screws (8).

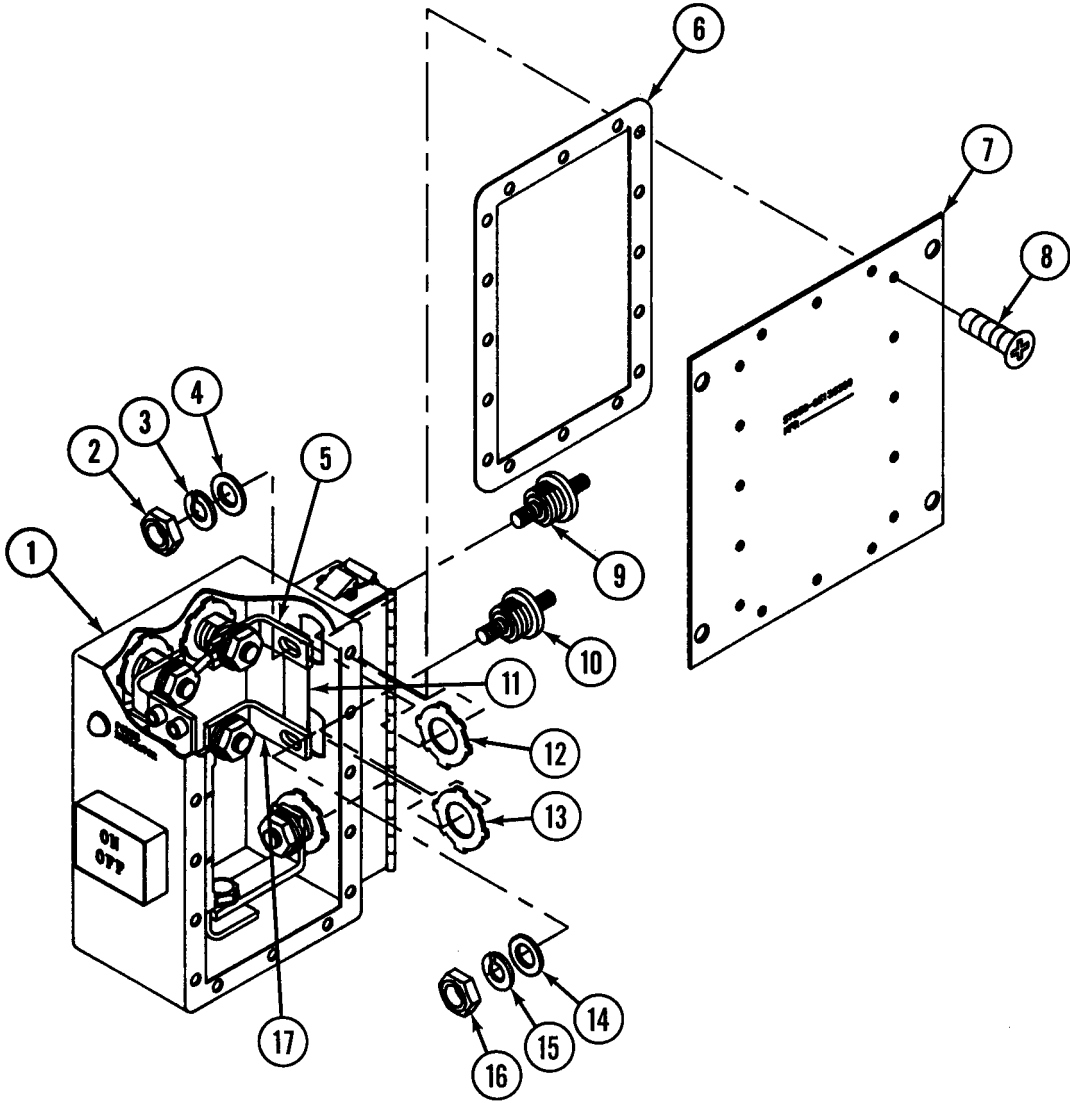
e. Terminal 11E3 Removal

1. Remove sixteen screws (8), cover (7), and gasket (6) from power interface box (1). Discard gasket (6).
2. Remove nut (16), lockwasher (15), and washer (14) that secure bus bar (17) and bus bar (11) to terminal 11E3 (10).
3. Remove nut (13) from inside terminal 11E3 (10) and remove terminal 11E3 (10).

f. Terminal 11E3 Installation

1. Apply sealant to area of terminal that contacts power interface box (1).
2. Install terminal 11E3 (10) into power interface box (1) and secure with nut (13).
3. Secure bus bar (11) and bus bar (17) to terminal 11E3 (10) with washer (14), lockwasher (15), and nut (16).
4. Install gasket (6) and cover (7) on power interface box (1) and secure with sixteen screws (8).

4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT (Cont'd)



4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT (Cont'd)

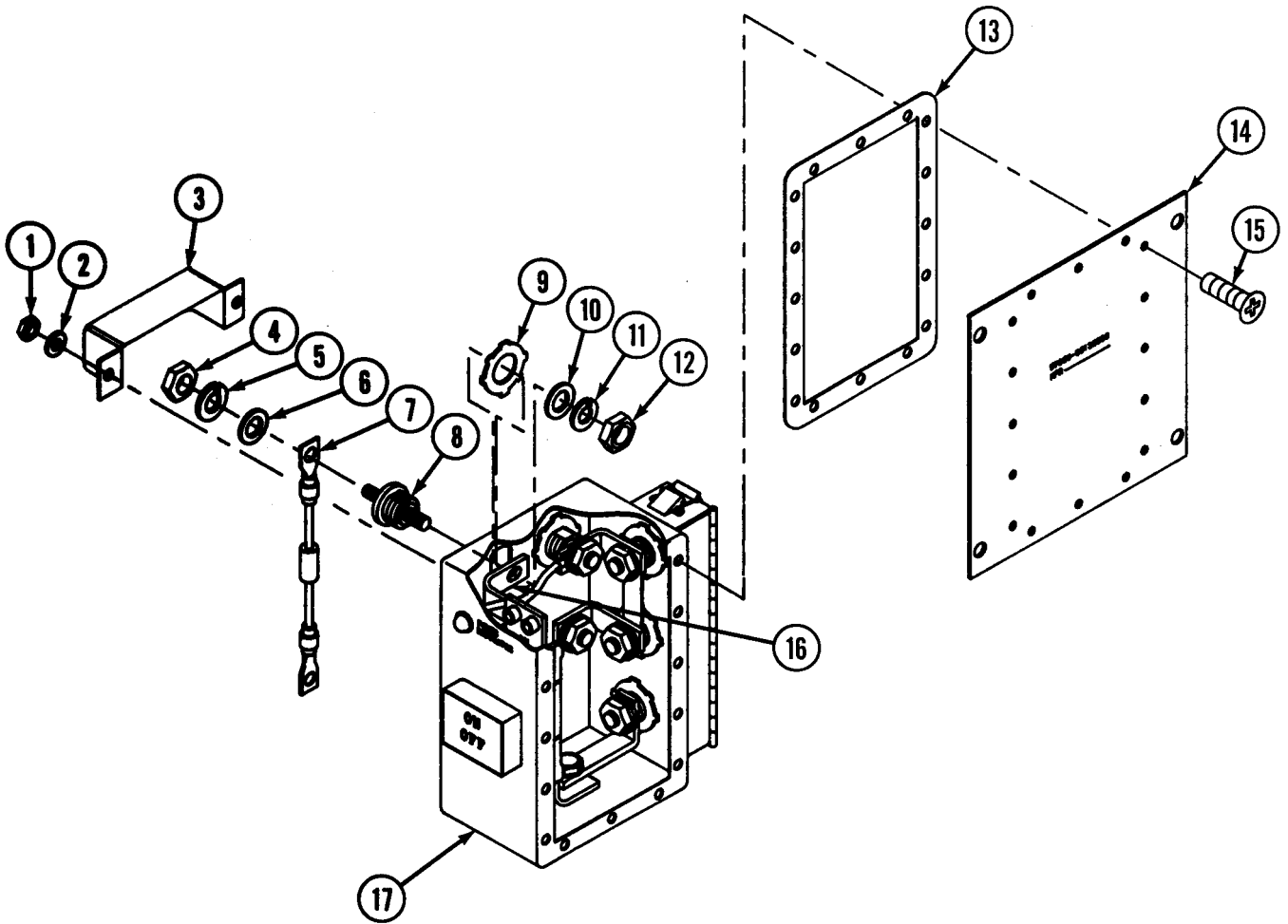
g. Terminal 11E4 Removal

1. Remove two self-locking nuts (1) and washers (2) from terminal cover (3). Remove terminal cover (3) from power interface box (17). Discard self-locking nut (1).
2. Remove nut (4), lockwasher (5), and washer (6) from terminal 11E4 (8). Remove power cable W67 (7) from terminal 11E4 (8).
3. Remove sixteen screws (15), cover (14), and gasket (13) from power interface box (17). Discard gasket (13).
4. Remove nut (12), lockwasher (11), and washer (10) that secure bus bar (16) to terminal 11E4 (8).
5. Remove nut (9) from inside terminal 11E4 (8) and remove terminal 11E4 (8).

h. Terminal 11E4 Installation

1. Apply sealant to area of terminal that contacts power interface box (17).
2. Install terminal 11E4 (8) into power interface box (17) and secure with nut (9).
3. Secure bus bar (16) to terminal 11E4 (8) with washer (10), lockwasher (11), and nut (12).
4. Install gasket (13) and cover (14) on power interface box (17) and secure with sixteen screws (15).
5. Install power cable W67 (7) to terminal 11E4 (8). Secure with washer (6), lockwasher (5), and nut (4).
6. Install terminal cover (3) to power interface box (17) and secure with two washers (2) and self-locking nuts (1).

4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT (Cont'd)



4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT (Cont'd)

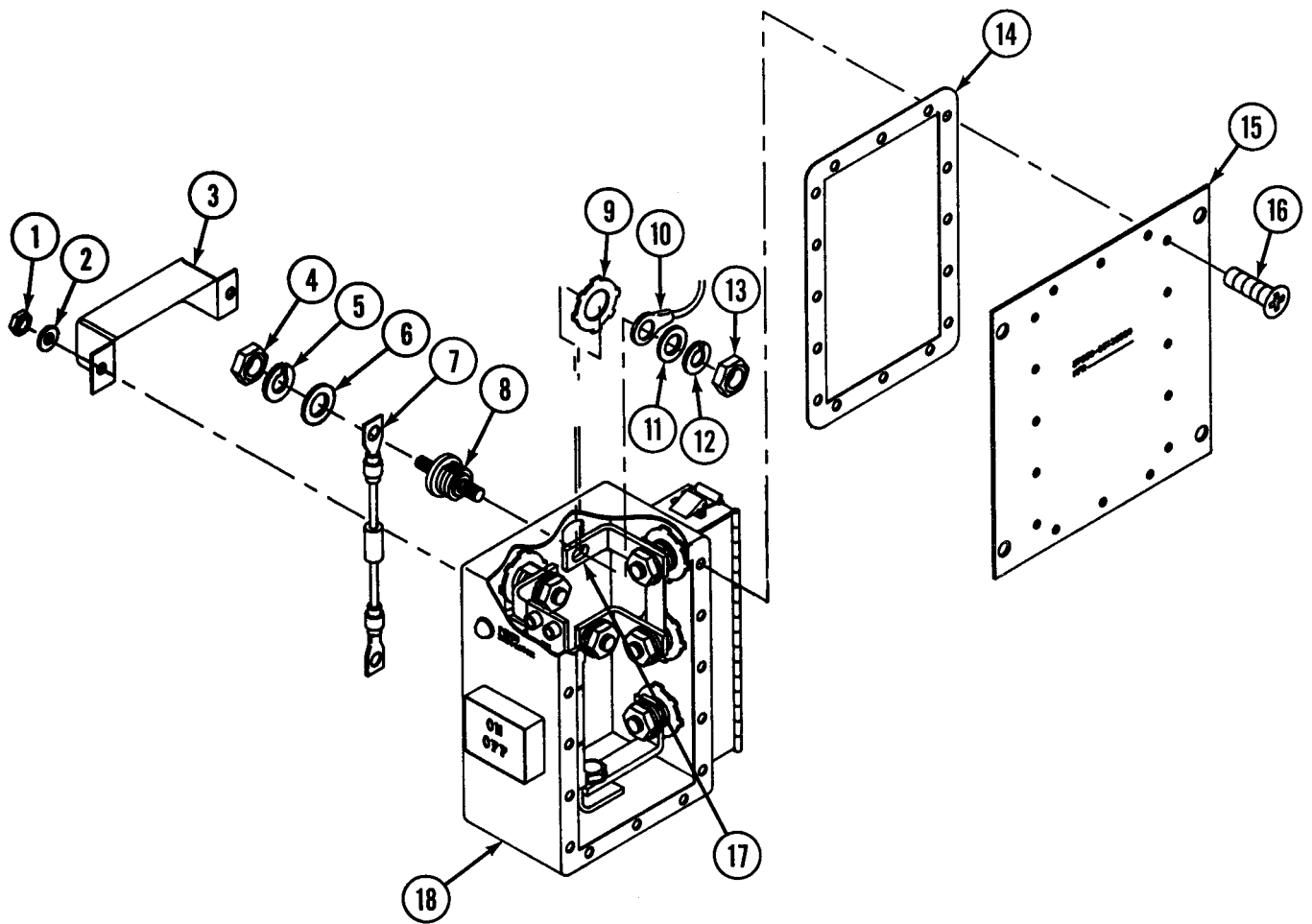
i. Terminal 11E5 Removal

1. Remove two self-locking nuts (1) and washers (2) from terminal cover (3). Remove terminal cover (3) from power interface box (18). Discard self-locking nut (1).
2. Remove nut (4), lockwasher (5), and washer (6) from terminal 11E5 (8). Remove power cable W69 (7) from terminal 11E5 (8).
3. Remove sixteen screws (16), cover (15), and gasket (14) from power interface box (18). Discard gasket (14).
4. Remove nut (13), lockwasher (12), and washer (11) that secure bus bar (17) and wire assembly lead (10) to terminal 11E5 (8).
5. Remove nut (9) from inside terminal 11E5 (8) and remove terminal 11E5 (8).

j. Terminal 11E5 Installation

1. Apply sealant to area of terminal that contacts power interface box (18).
2. Install terminal 11E5 (8) into power interface box (18) and secure with nut (9).
3. Secure bus bar (17) and wire assembly lead (10) to terminal 11E5 (8) with washer (11), lockwasher (12), and nut (13).
4. Install gasket (14) and cover (15) on power interface box (18) and secure with sixteen screws (16).
5. Install power cable W69 (7) to terminal 11E5 (8). Secure with washer (6), lockwasher (5), and nut (4).
6. Install terminal cover (3) to power interface box (18) and secure with two washers (2) and self-locking nuts (1).

4-10. POWER INTERFACE BOX TERMINAL REPLACEMENT (Cont'd)



FOLLOW-ON TASK: Install power interface box (para. 3-30b).

Section IV. ENGINE COMPONENTS MAINTENANCE

4-11. ENGINE COMPONENTS MAINTENANCE TASK SUMMARY

TASK PARA.	PROCEDURES	PAGE NO.
4-12.	200 Amp Alternator Repair	4-21
4-13.	Freon Lines Replacement	4-21
4-14.	Compressor Maintenance	4-34
4-15.	Compressor Replacement	4-34
4-16	Compressor Repair	4-34

4-12. 200 AMP ALTERNATOR REPAIR

NOTE

Refer to TM 9-2320-280-34 for repair of 200 amp alternator.

4-13. FREON LINES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP:

Tools

General mechanic's tool kit:
 automotive (Item 1, Section III,
 Appendix B)

Special Tools

Crowsfoot, 1 3/16-inch
 (Item 6, Section III, Appendix B)
 Crowsfoot, 1 5/8-inch
 (Item 7, Section III, Appendix B)

Materials/Parts

Four lockwashers
 P/N MS35338-137
 Lubricating oil
 (Appendix C, Item 4)
 One self-locking nut
 P/N MS51943-31
 One "O" ring
 P/N 12341984-2
 One "O" ring
 P/N 12341984-4
 Tie-straps (as required)
 P/N MS3367-1-9

Materials/Parts (Cont'd)

Tie-straps (as required)
 P/N MS3367-3-0
 Tie-straps (as required)
 P/N MS3367-5-9

Personnel Required

One mechanic
 One assistant

Manual References

TM 9-2320-280-20
 TM 9-2320-280-34

Equipment Conditions

- Air conditioner system discharged (TM 9-2320-280-34)
- Air horn hose removed (TM 9-2320-280-20)
- Companion seat removed (TM 9-2320-280-20)

General Safety Instructions

Air conditioner system must be discharged prior to replacing components.

4-13. FREON LINES REPLACEMENT (Cont'd)

WARNING

Air conditioner system must be discharged prior to replacing components in vapor system. Failure to do this may result in injury to personnel or damage to equipment.

CAUTION

Cover or plug all open lines and connections immediately after disconnection to prevent contamination. Remove all plugs prior to connection.

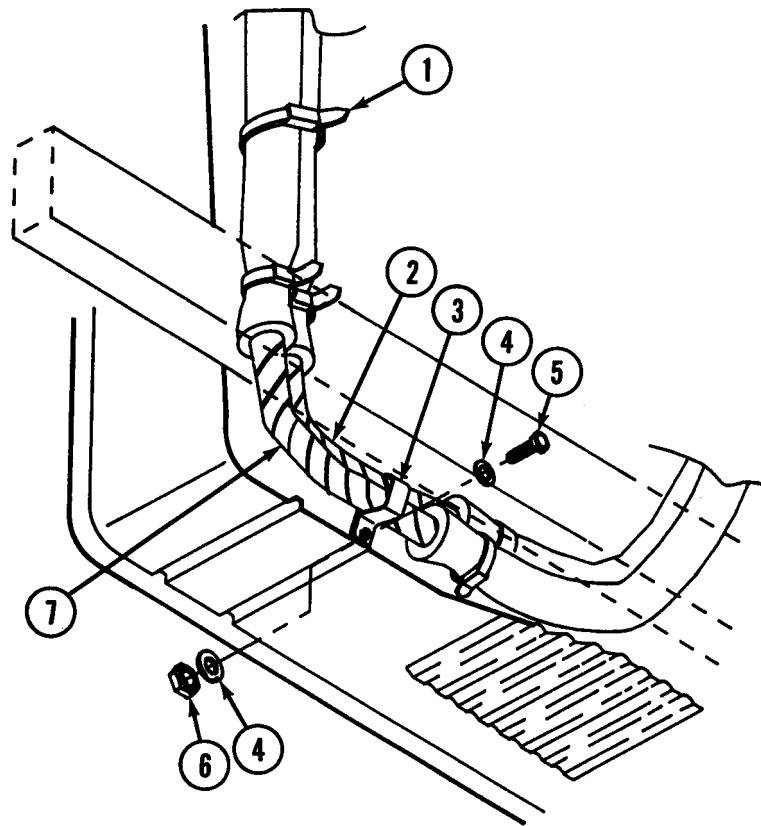
NOTE

Suction hose (low pressure) has a larger diameter than the discharge hose (high pressure); fittings will not interconnect.

a. Removal

1. Remove capscrew (5), two washers (4), and self-locking nut (6) that secure clamp (3), suction hose (7), and discharge hose (2) to underside of body. Discard self-locking nut (6).
2. Remove tie-straps (1) that secure suction hose (7) and discharge hose (2) together. Discard tie-straps (1).

4-13. FREON LINES REPLACEMENT (Cont'd)



4-13. FREON LINES REPLACEMENT (Cont'd)

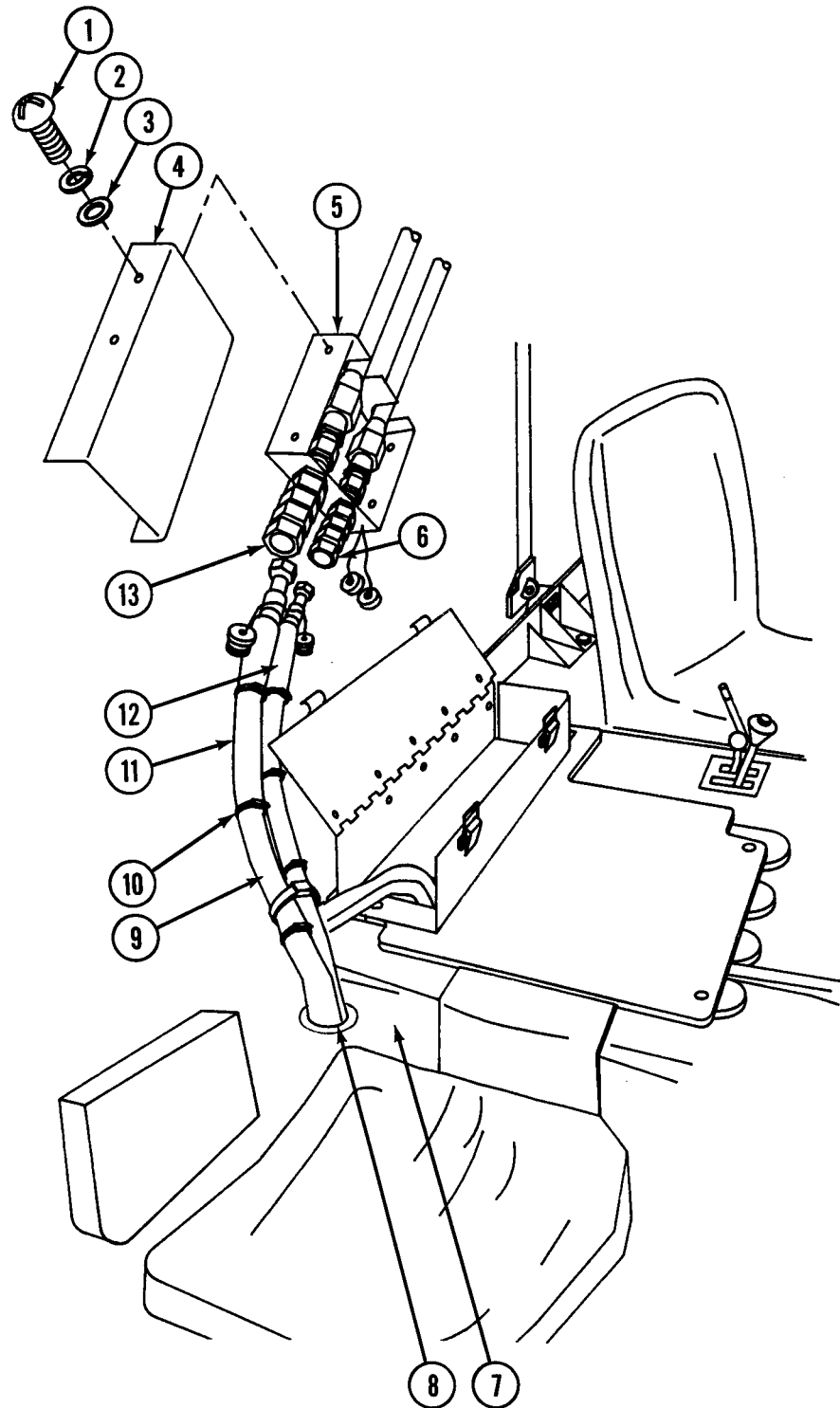
3. Remove four screws (1), lockwashers (2), and washers (3) securing cover (4) to freon line channel (5). Remove cover (4). Discard lockwashers (2),
4. Using 1 5/8-inch crowsfoot, disconnect suction hose (11) from quick disconnect (13). Using 1 3/16-inch crowsfoot, disconnect discharge hose (12) from quick disconnect (6).
5. Remove tie-straps (10) that secure insulation (9) to hoses.

NOTE

Some insulation may need to be cut prior to removal of hoses.

6. Cut and remove insulation (9) from suction hose (11) and discharge hose (12).
7. From under truck, pull suction hose (11) through hole (8) in transmission tunnel (7).
8. From under truck, pull discharge hose (12) through hole (8) in transmission tunnel (7).

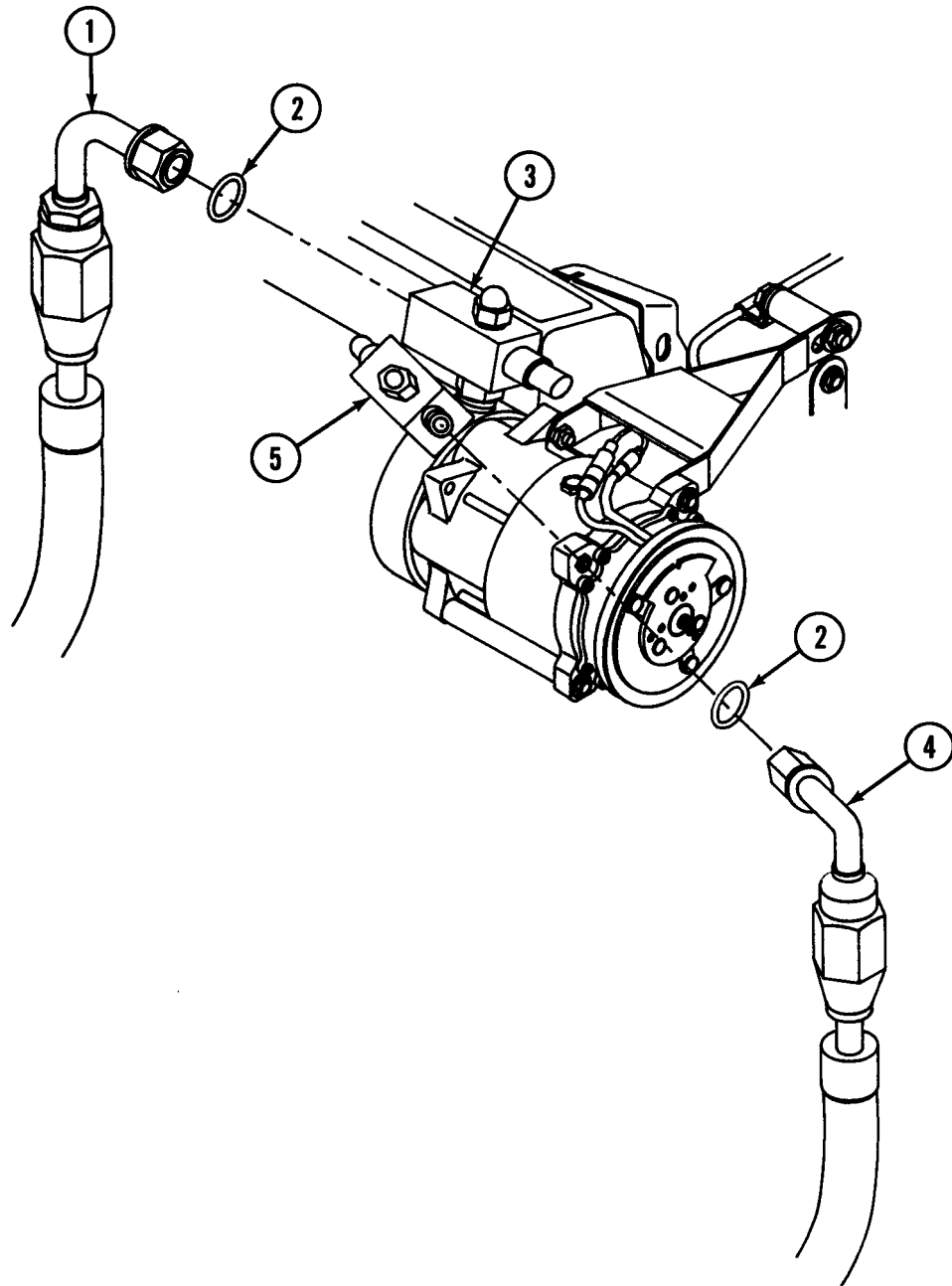
4-13. FREON LINES REPLACEMENT (Cont'd)



4-13. FREON LINES REPLACEMENT (Cont'd)

9. Disconnect suction hose (1) and discharge hose (4) from compressor service valve (3) and service valve (5). Remove suction hose (1) and discharge hose (4) from truck.
10. Remove two "O" rings (2) and discard.

4-13. FREON LINES REPLACEMENT (Cont'd)

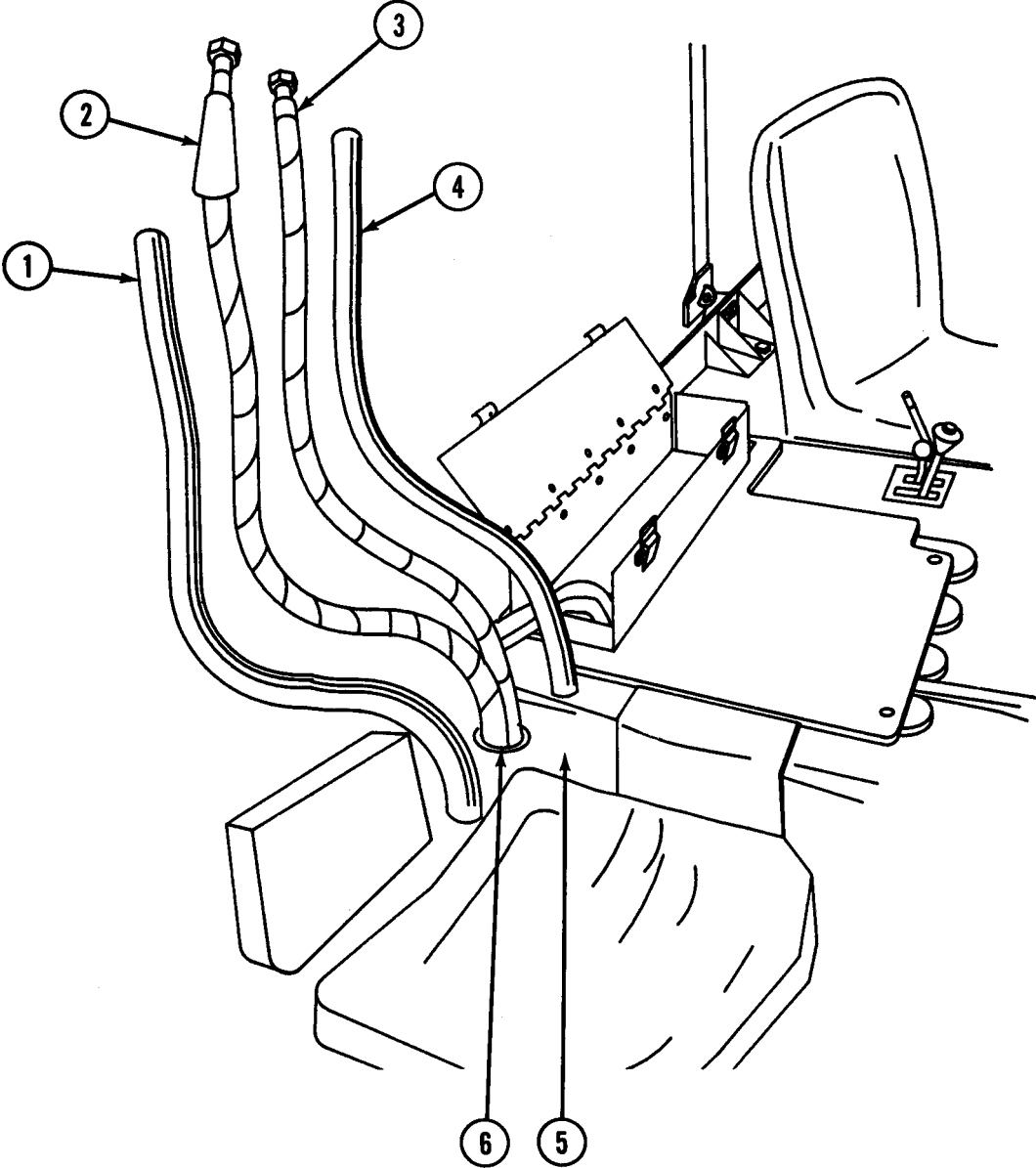


4-13. FREON LINES REPLACEMENT (Cont'd)

b. Installation

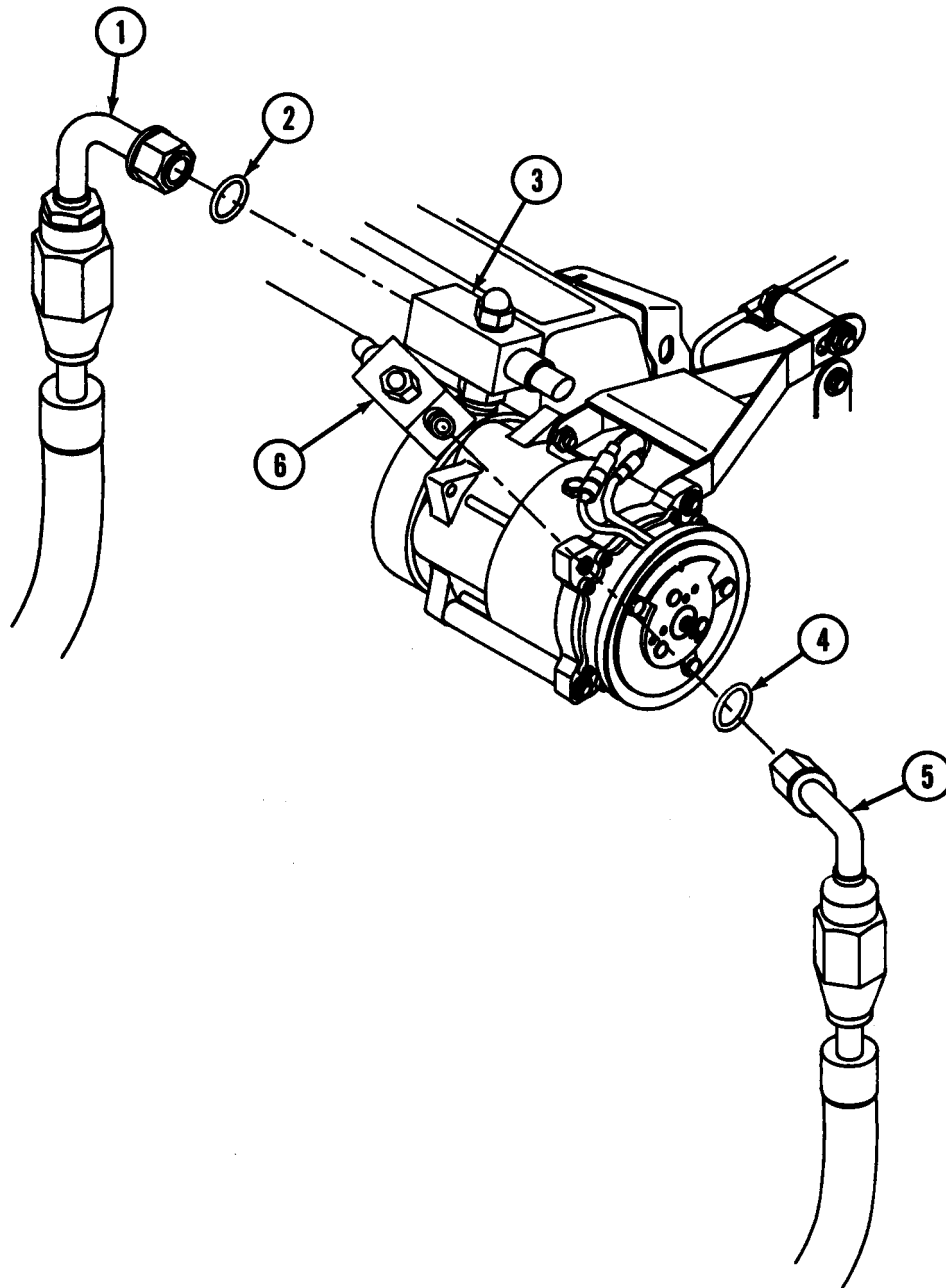
1. Cut insulation (1) from upper section of suction hose (2) as follows:
 - (a) Measure 11 in. (27.94 cm) from end of suction hose (2) and make circular cut around insulation (1).
 - (b) Cut insulation 22 in. (55.88 cm) lengthwise.
 - (c) Make another circular cut around insulation (1) at 33 in. (83.82 cm).
2. Remove insulation (1) from suction hose (2).
3. Trim removed insulation (1) 3 in. (7.62 cm).
4. Cut insulation (4) from upper section of discharge hose (3) as follows:
 - (a) Measure 33 in. (83.82 cm) from end of discharge hose (3) and make circular cut around insulation (4).
 - (b) From end of discharge hose (3), cut insulation lengthwise until circular cut is reached.
5. Remove insulation (4) from discharge hose (3).
6. Trim removed insulation (4) 3 in. (7.62 cm).
7. Pull suction hose (2) up through hole (6) in transmission tunnel (5).
8. Pull discharge hose (3) up through hole (6) in transmission tunnel (5).

4-13. FREON LINES REPLACEMENT (Cont'd)



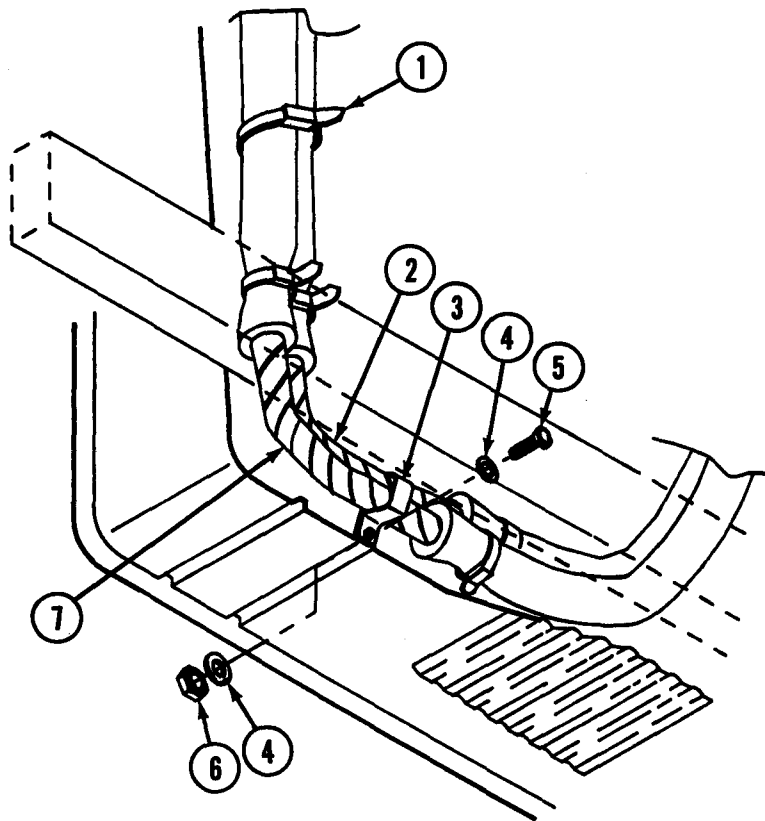
4-13. FREON LINES REPLACEMENT (Cont'd)

9. Lubricate two "O" rings (2) and (4) with lubricating oil.
10. Install larger "O" ring (2) into suction hose (1) and smaller "O" ring (4) into discharge hose (5).
11. Connect suction hose (1) to compressor service valve (3) and discharge hose (5) to service valve (6).



4-13. FREON LINES REPLACEMENT (Cont'd)

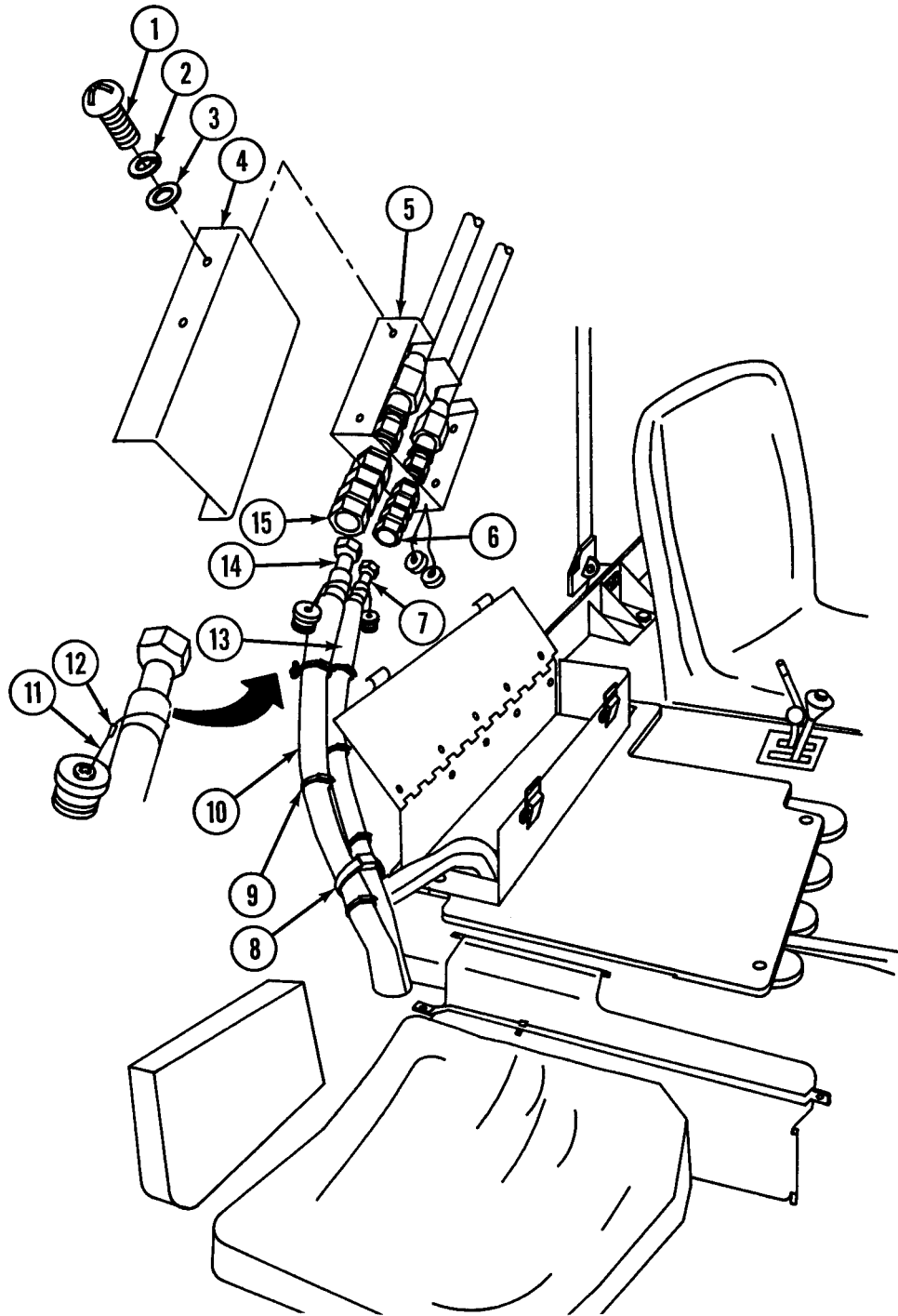
12. Place clamp (3) onto suction hose (7) and discharge hose (2).
13. Install clamp (3), suction hose (7), and discharge hose (2) to underside of body and secure with capscrew (5), two washers (4), and self-locking nut (6).



4-13. FREON LINES REPLACEMENT (Cont'd)

14. Place insulation (10) and (13) around suction hose (14) and discharge hose (7). Secure insulation to hoses with tie-straps (9).
15. Install lanyard (11) from large dust cap through swaging sleeve (12). Loop lanyard (11) around suction hose (14) and back through swaging sleeve (12). Crimp swaging sleeve (12).
16. Install lanyard (11) from small dust cap through swaging sleeve (12). Loop lanyard (11) around discharge hose (7) and back through swaging sleeve (12). Crimp swaging sleeve (12).
17. Connect suction hose (14) and discharge hose (7) to quick disconnects (15) and (6).
18. Install cover (4) to freon line channel (5) and secure with four screws (1), lockwashers (2), and washers (3).

4-13. FREON LINE ASSEMBLIES REPLACEMENT (Cont'd)



- FOLLOW-ON TASKS:
- Install companion seat (TM 9-2320-280-20).
 - Install air horn hose (TM 9-2320-280-20).
 - Charge air-conditioning system (TM 9-2320-280-34).

4-14. COMPRESSOR MAINTENANCE

NOTE

Refer to TM 9-2320-280-34 for charging air conditioning system.

4-15. COMPRESSOR REPLACEMENT

NOTE

Refer to TM 9-2320-280-34 for replacement of compressor.

4-16. COMPRESSOR REPAIR

NOTE

Refer to TM 9-2320-280-34 for repair of compressor.

Section V. EES KIT INSTALLATION

4-17. EES KIT INSTALLATION TASK SUMMARY

TASK PARA.	PROCEDURES	PAGE NO.
4-18.	EES Kit Installation	4-36

<p>4-18. EES KIT INSTALLATION</p>
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This task covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. EES Kit Preparation b. Tunnel Interior Side Retaining Rod Installation c. Hood Removal d. Right Splash Shield Removal e. Hood Prop Rod and Bracket Removal f. Left Splash Shield ,Removal g. Engine and Transmission Oil Cooler Assembly Removal h. Drain Cooling System i. Radiator and Fan Shroud Removal j. Air Horn to Air Cleaner Elbow Removal k. Surge Tank Removal l. Surge Tank to Lower Radiator Hose Removal m. Fan Drive Assembly Removal n. 60 Amp Alternator Drive Belt Set Removal o. Power Steering Drive Belt Set Removal p. Water Pump Pulley Removal q. Water Pump Pulley Installation r. 60 Amp Alternator Removal s. 60 Amp Alternator Mounting Brackets Removal t. 200 Amp Alternator Mounting Brackets Installation u. 200 Amp Alternator Pulley Installation v. 200 Amp Alternator Installation w. 200 Amp Alternator Ground Strap Installation x. 200 Amp Alternator Connectors Installation y. Air Horn Support Bracket Removal | <ul style="list-style-type: none"> z. Compressor Mounting Bracket Installation aa. Compressor Installation bb. 200 Amp Alternator Cable Installation cc. Air Conditioning Service Valves Installation dd. Freon Lines Installation ee. Cable Assembly W66 Installation ff. Hand Throttle Cable Installation gg. Storage Box and Cable Assembly W64 Installation hh. M16 Rifle Mount Installation ii. Ladder Mount Installation jj. Power Interface Box Installation kk. Tach/Hourmeter Box Installation ll. Surge Tank Installation mm. Surge Tank to Lower Radiator Hose Installation nn. Air Horn to Air Cleaner Elbow Installation oo. Power Steering Drive Belt Installation pp. 200 Amp Alternator Drive Belt Set Installation qq. Compressor Drive Belt Installation rr. Fan Drive Assembly Installation ss. Radiator and Fan Shroud Installation tt. Engine and Transmission Oil Cooler Assembly Installation uu. Left Splash Shield Installation vv. Hood Prop Rod and Bracket Installation ww. Right Splash Shield Installation xx. Hood Installation |
|--|---|

4-18. EES KIT INSTALLATION (Cent'd)

INITIAL SETUP:

Tools

Drill bit, # 21 (Item 4,
Section III, Appendix B)
Drill bit set (Item 3,
Section III, Appendix B)
Drill bit, 3/4-inch (Item 4,
Section III, Appendix B)
Electric drill (Item 3,
Section III, Appendix B)
General mechanics tool kit
(Item 1, Section III, Appendix B)

Special Tools

Arbor, hole saw (Item 12,
Section III, Appendix B)
Blade, hole saw (1-5/8") (Item 9,
Section III, Appendix B)
Blade, hole saw (2-1/2") (Item 11,
Section III, Appendix B)
Blade, hole saw (2-5/8") (Item 10,
Section III, Appendix B)
Crowfoot (1-3/16")
(Item 5, Section III, Appendix B)
Crowfoot (1-5/8")
(Item 6, Section III, Appendix B)
punch and die, knockout (1-3/4")
(Item 8, Section III, Appendix B)
Socket wrench attac., hex, 6 mm,
3/8 drive (Item 13, Section III
Appendix B)

Materials/Parts (per each procedure)

- a. EES kit preparation
- One EES kit template P/N C5136351
 - One insulation template P/N C5136348
 - Two grommets P/N MS35489-27
 - One protector P/N 12339902-7
- b. Tunnel interior side insulation
blanket and retainer installation
- One insulation blanket
P/N 12339041
 - One insulation retainer
P/N 12339018-1
- m. Fan drive assembly removal
- One compressed air adapter
assembly (Appendix E)

Materials/Parts (Cont'd)

- q. Water pump pulley installation
- Sealing compound (Appendix C,
Item 7)
 - One water pump pulley P/N 12338782
- t. 200 amp alternator mounting
brackets installation
- One alternator adjusting bracket
P/N 12340057
 - Two capscrews P/N MS90728-60
(.375-16UNC-2Ax1.000 LG)
 - Two washers
P/N MS27183-13 (3/8 CAD)
 - One alternator bracket P/N 12338786
 - One hex bolt P/N 12340845-2
(M10-1.5X30mm)
 - One support bracket P/N 12342075
- u. 200 amp alternator pulley
installation
- One 200 amp alternator pulley
P/N 12339392
- v. 200 amp alternator installation
- One alternator fan guard assembly
P/N 12341809
 - Five washers
P/N MS51412-2 (#10 CAD)
 - Five hex head screws P/N 431942
 - One bolt P/N MS35764-854
(7/16-14x2.50GR8)
 - One hex head bolt
P/N MS35764-853 (7/16-14x2.00)
 - One lockwasher P/N MS35338-46
 - One screw P/N MS90728-60
(.375-16UNC-2Ax1.000 LG)
 - One spacer P/N 12338186-62
(.160 THICK)
 - One special stud
P/N 12339406-2 (M10x1.5x30)
 - One 200 amp alternator
P/N 12338796
 - Two lockwashers P/N MS35338-47
(3/8 CAD)
 - Two washers P/N 2436164
(7/16 CAD)

Materials/Parts (Cont'd)

- w. 200 amp alternator ground strap installation
 - Copper shield (Appendix C, Item 2)
 - One grounding strap
P/N 12341151
 - One bolt P/N 12340845-3
(M10-1.5x45mm)
- z. Compressor mounting bracket installation
 - One compressor support bracket P/N 12339906
 - One nut P/N 9145-105-00B
(M10x1.5 CAD)
 - Two studs P/N 12339406-2
(M10x1.5x30)
 - Two washers
P/N 11500324 (#10)
 - One washer P/N 11502474
- aa. Compressor installation
 - One air conditioner compressor assembly
P/N 12340661
 - Air compressor bracket
P/N 12341599
 - Four lockwashers
P/N MS35338-46
 - One capscrew
P/N MS90725-66
(3/8-16x2.00 LG)
 - One lockwasher
P/N 11500207
 - One nut P/N 9145-105-00B
(M10x1.5 CAD)
 - One stud P/N 12339406-2
(M10x1.5x30)
 - Six washers
P/N MS27183-13
 - Three capscrews
P/N MS90725-64
(3/8-16x1.5x30)
 - Two washers P/N 11502474
 - One shoulder bolt
P/N 11502788
- bb . 200 amp alternator cable installation
 - One alternator cable
P/N 12339317
 - Three lockwashers
P/N 11500207

Materials/Parts (Cont'd)

- bb. 200 amp alternator cable installation (Cont'd)
 - One hex nut
P/N 9145-105-00B (#10)
 - One nut/lockwasher assembly P/N 271172
 - Three loop clamps
P/N MS21333-126
 - One loop clamp
P/N MS21333-105
 - Tie-straps (as required)
P/N MS3367-3-0
- cc. Air conditioning service valves installation
 - One valve assembly (A/C discharge)
P/N 12341971-1
 - One valve assembly (A/C suction)
P/N 12341971-2
 - Two "O" rings
P/N 12341984-2
 - Lubricating oil
(Appendix C, Item 4)
- dd Freon lines installation
 - A/C hose insulation
P/N 818
 - Lubricating oil
(Appendix C, Item 4)
 - One A/C discharge hose assembly P/N C5136360
 - One A/C line clamp
P/N 12341730
 - One self-locking nut
P/N MS51943-31
 - One capscrew
P/N MS90725-6
 - Two washers
P/N MS51412-4
 - One A/C suction hose assembly P/N C5136361
 - One dust plug assembly
P/N C5136162 (.500)
 - One dust plug assembly
P/N C5136163 (.625)
 - One female quick disconnect (A/C suction)
P/N C5136153-5 (.625)

Materials/Parts (Cont'd)

- dd. Freon lines installation (Cont'd)
 - One female quick disconnect (A/C discharge) P/N C5136152-5 (.500)
 - One "O" ring (A/C discharge) P/N 12341984-4
 - One "O" ring (A/C suction) P/N 12341984-2
 - Two swaging sleeves P/N MS51844-62
 - Tie-straps (as required) P/N MS3367-1-9
 - Tie-straps (as required) P/N MS3367-3-0
 - Tie-straps (as required) P/N MS3367-5-9
 - Tape, pressure sensitive (as required) (Appendix C, Item 9)
- ee. Cable assembly W66 installation
 - Antiseize compound, conductive (Appendix C, Item 1)
 - Cable assembly W66 P/N C5136366
 - One connector P/N MS27144-1
 - One loop clamp P/N MS21333-123
 - One safety tab P/N C5136342
 - One metric hex head cap screw P/N B18231A10020NF
 - One wire no. 798 P/N C5136367
 - Six adapters P/N 8741492
 - Six 3-way connectors P/N MS27147-1
 - Solder, tin alloy (Appendix C, Item 8)
 - Tie-straps (as required) P/N MS3367-2-0
 - Two connectors P/N MS27142-2
- ff. Hand throttle cable installation
 - One hand throttle cable P/N C5136358
 - One hand throttle bracket P/N C5136357

Materials/Parts (Cent'd)

- ff. Hand throttle cable installation (Cont'd)
 - One throttle cable end bracket P/N C5136359
 - Three self-locking nuts P/N MS17830-4C
- gg. Storage box and cable assembly W64 installation
 - One storage box P/N C5136310
 - One cable assembly W64 P/N C5136365
- hh. M16 rifle mount installation
 - Eight washers P/NMS27183-10 (.281 I.D.)
 - Four capscrews P/N MS90728-8 (.250-20UNC-2Ax1.000 LG)
 - Four machine screws P/N MS51957-47
 - Four self-locking nuts P/N MS51943-31 (.250-20UNC-3B)
 - Four self-locking nuts P/N NAS1022-N08 (.164-32UNC-3B)
 - Rag (Appendix C, Item 5)
 - Six nuts P/N MS51943-33 (.3125-18)
 - Six bolts P/N MS90725-33 (.312-18UNC-2AX.875 LG)
 - Twelve washers P/N 2436162
 - Two clamp brackets P/N 12340157
 - Two mounting clamps P/N 12340487
 - Two rifle supports P/N 12340142
- ii. Ladder mount installation
 - One ladder retaining bracket P/N C5136373
 - Three screws P/N MS51957-81 (.250-20UNC-2Ax.750 LG)
 - Three self-locking nuts P/N MS51943-31 (.250-20UNC-3B)
 - Six washers P/N MS15795-81 (.281 I.D.)
 - Two self-locking nuts P/N MS21044C3 (.190-32UNJF-3B)
 - Two screws P/N MS51960-66

Materials/Parts (Cont'd)

- ii. Ladder mount installation (Cont'd)
 - One ladder strap bracket P/N C5136372
 - One ladder strap assembly P/N C5135967
- jj. Power interface box installation
 - One power interface box P/N C5136320
 - Four screws P/N MS51957-81 (.250-20UNC-2Ax.750 LG)
 - Eight washers P/N MS15795-810 (.281 I.D.)
 - Four self-locking nuts P/N MS17830-4C (.250-20UNC-3B)
 - One loop clamp P/N MS21334-32
 - One tapping screw P/N MS51861-47C (.190-16x.750 LG)
 - One capscrew P/N MS18154-60 (.375-16UNC-2Ax1.000 LG)
 - One power cable W67 P/N C5136368-2
 - One power cable W69 P/N C5136368-1
- kk. Tach/hourmeter box installation
 - One tach/hourmeter box P/N C5136334
 - One tach/hourmeter seal P/N C5136339
 - Two self-locking nuts P/N MS21044C3 (.190-32UNJF-3B)
 - One safety lanyard P/N C5136341
- ll. Surge tank installation
 - One surge tank P/N 12340061
- mm. Surge tank to lower radiator hose installation
 - One surge tank to lower radiator hose P/N 12340046

Materials/Parts (Cont'd)

- nn. Air horn to air cleaner elbow installation
 - One air cleaner elbow hose P/N 12338381
- oo. Power steering drive belt installation
 - One power steering drive belt P/N 12339359-14
- pp. 200 amp alternator drive belt set installation
 - One alternator drive belt set P/N 12339359-18
- qq. Compressor drive belt installation
 - One compressor drive belt set P/N 12339359-11

Personnel Required

- One mechanic
- One assistant

Manual References

- LO 9-2320-280-12
- TM 9-2320-280-20
- TM 9-2320-280-20P
- TM 9-2320-280-34
- TM 9-2320-280-34P

Equipment Condition

- Batteries removed (TM 9-2320-280-20)
- Engine access cover removed (TM 9-2320-280-20)

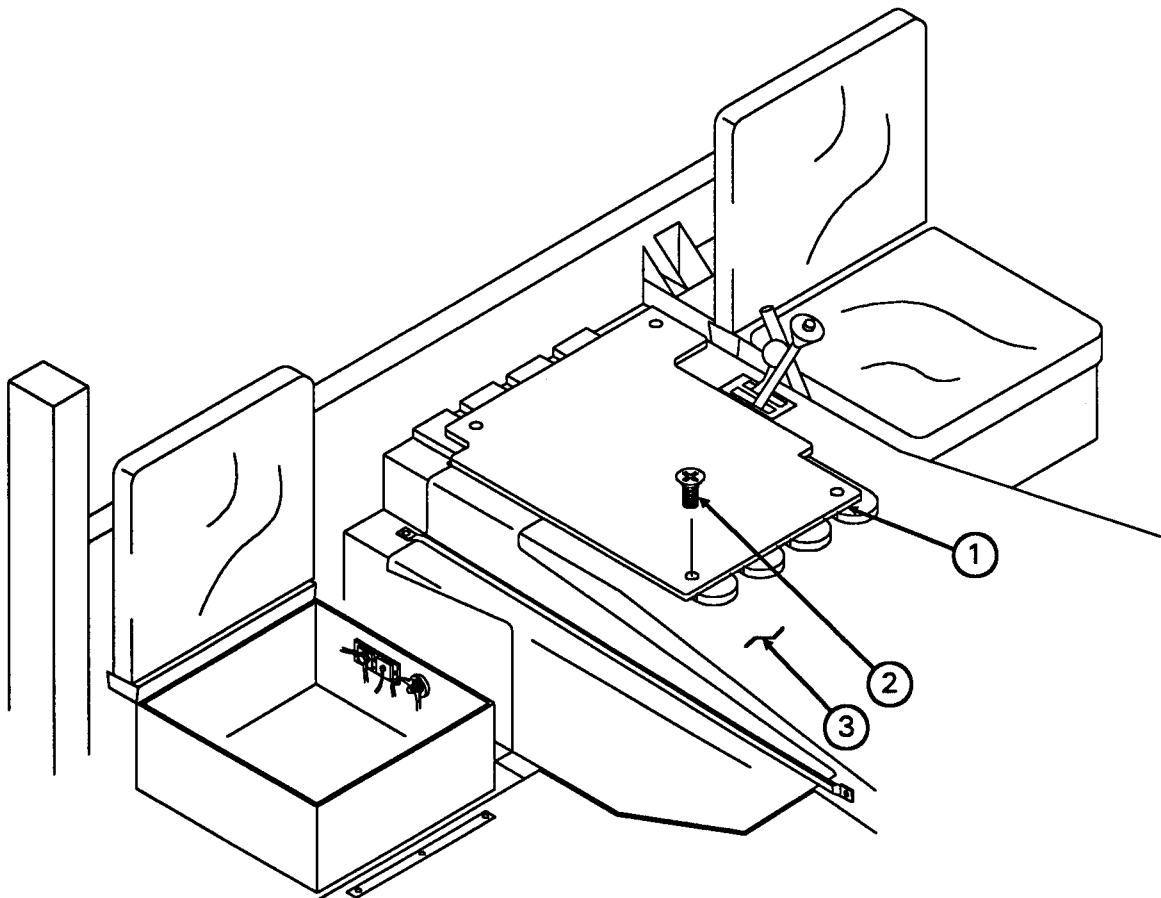
General Safety Instructions

- When drilling, be sure to wear goggles for eye protection.
- Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand.
- Wear protective eye wear while performing any soldering

4-18. EES KIT INSTALLATION (Cont'd)

a. EES KIT PREPARATION

1. Remove four screws (2) securing front floorboard (1) to cargo floor (3) and remove front floorboard (1). Retain screws (2).

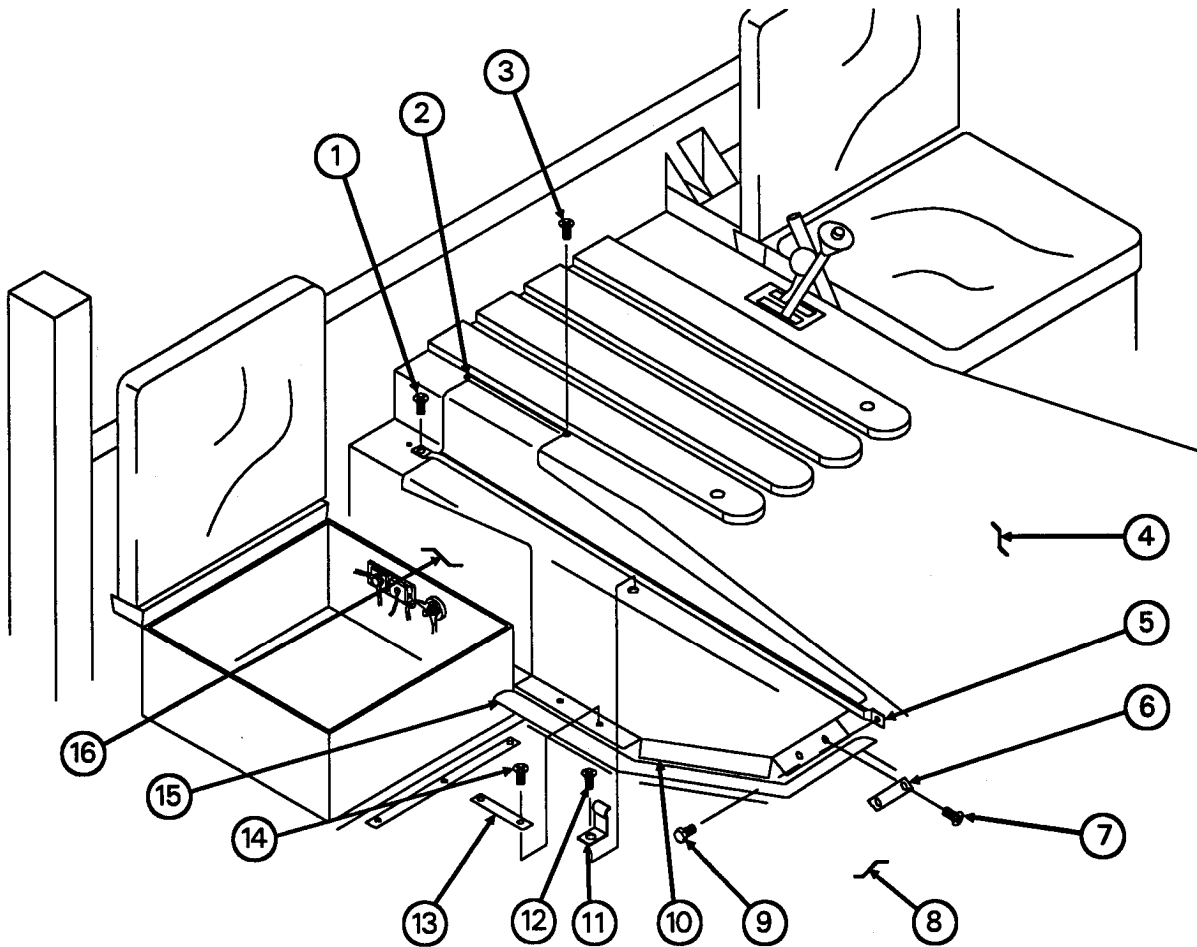


4-18. EES KIT INSTALLATION (Cont'd)

NOTE

After drilling holes, touch-up exposed surfaces with paint to prevent corrosion.

2. Remove two screws (3) securing retaining rod (2) to cargo floor (4) and remove retaining rod (2) from insulation blanket (10). Retain screws (3) and retaining rod (2).
3. Remove one screw (12) and one retaining clip (11) holding insulation retainer (5) to transmission tunnel (16). Retain screw (12) and retaining clip (11).
4. Remove one screw (1) and one bolt (9) securing insulation retainer (5) to transmission tunnel (16) and remove insulation retainer (5). Retain screw (1) and bolt (9).
5. Remove two screws (7) and one retainer (6) securing insulation blanket (10) to floor (8). Retain screws (7) and retainer (6).
6. Lift up right front cowl insulation (15) and remove two screws (14) and one retainer (13) securing insulation blanket (10) to floor (8) and remove insulation blanket (10). Retain screws (14) and retainer (13).

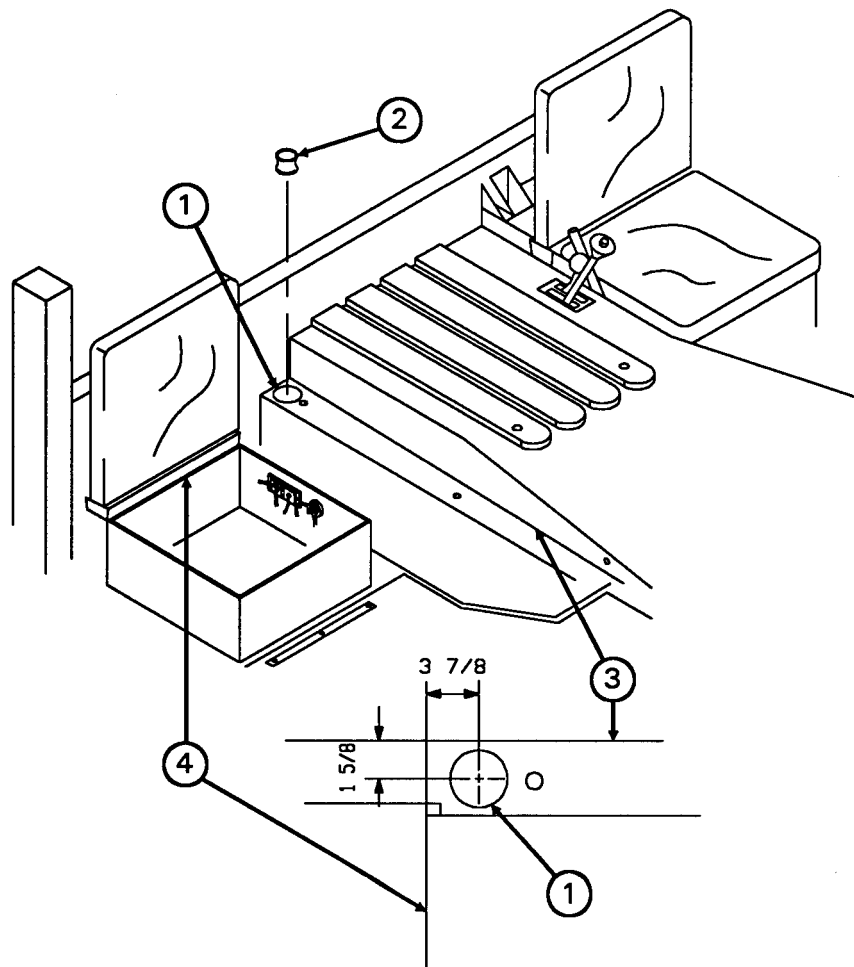


4-18. EES KIT INSTALLATION (Cont'd)

7. Determine center of hole (1) on right side of transmission tunnel (3) as follows:
 - (a) Measure $3\frac{7}{8}$ -inch (9.84 cm) from rear of battery box (4), and
 - (b) Measure $1\frac{5}{8}$ -inch (4.13 cm) from wall on transmission tunnel (3).

WARNING

- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
 - Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.
8. Using $2\frac{5}{8}$ -inch hole saw, drill hole (1) in right side of transmission tunnel (3).
 9. Install protector (2) in hole (1).

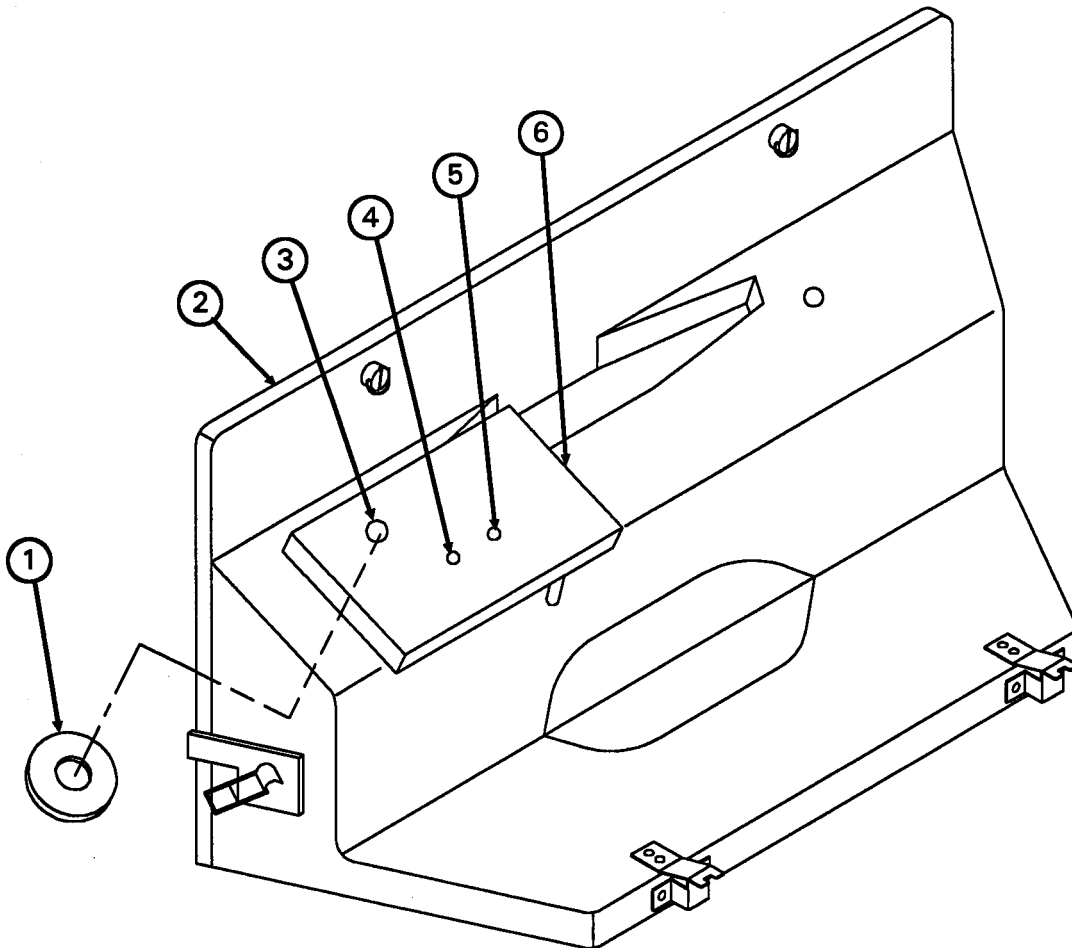


4-18. EES KIT INSTALLATION (Cont'd)

WARNING

When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.

10. Place hole (3) in EES kit template (6) over rivet on engine access cover (2).
Using a 13/64-inch drill bit, drill holes (4) and (5) through engine access cover (2) and insulation.
11. Remove EES kit template (6) and using a 13/64-inch drill bit, drill out rivet from engine access cover (2). Retain backup washer (1) for use on tach/hourmeter box installation.



4-18. EES KIT INSTALLATION (Cont'd)

CAUTION

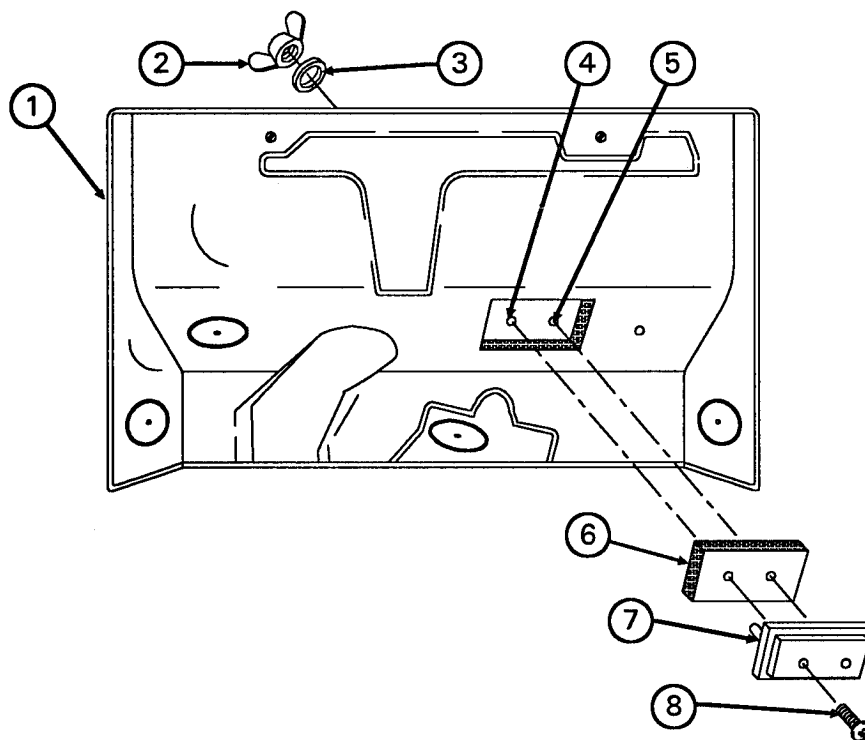
When cutting insulation, do not cut through engine access cover or equipment's effectiveness may be degraded.

12. From underside of engine access cover (1), insert insulation template (7) into holes (4) and (5).
13. Secure template (7) to engine access cover (1) with two screws (8), washers (3), and wing nuts (2).
14. Cut out insulation (6) around outline of insulation template (7). Trim cut edges of insulation as needed.

WARNING

When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.

15. Remove two screws (8), washers (3), and wing nuts (2). Remove insulation template (7).
16. Drilling from front side of engine access cover (1), enlarge hole (5) using 1 5/8-inch hole saw.



4.18 EES KIT INSTALLATION (Cont'd)

17. Remove passenger side fixed rear door (1) (TM 9-2320-280-20).
18. Determine center of four holes (2), (3), (4), and (5) on fixed rear door (1) as follows:
 - (a) Measure 2 inches (5.08 cm) down from top edge and 8 1/2-inches (21.59 cm) over from right edge for hole (2).
 - (b) Measure 12 inches (30.48 cm) down from top edge and 8 1/2-inches (21.59 cm) over from right edge for hole (3).
 - (c) Measure 19 inches (48.26 cm) over from right edge and 12 inches (30.48 cm) down from top edge for hole (4).
 - (d) Measure 2 inches (5.08 cm) down from top edge and 19 inches (48.26 cm) over from right edge for hole (5).

WARNING

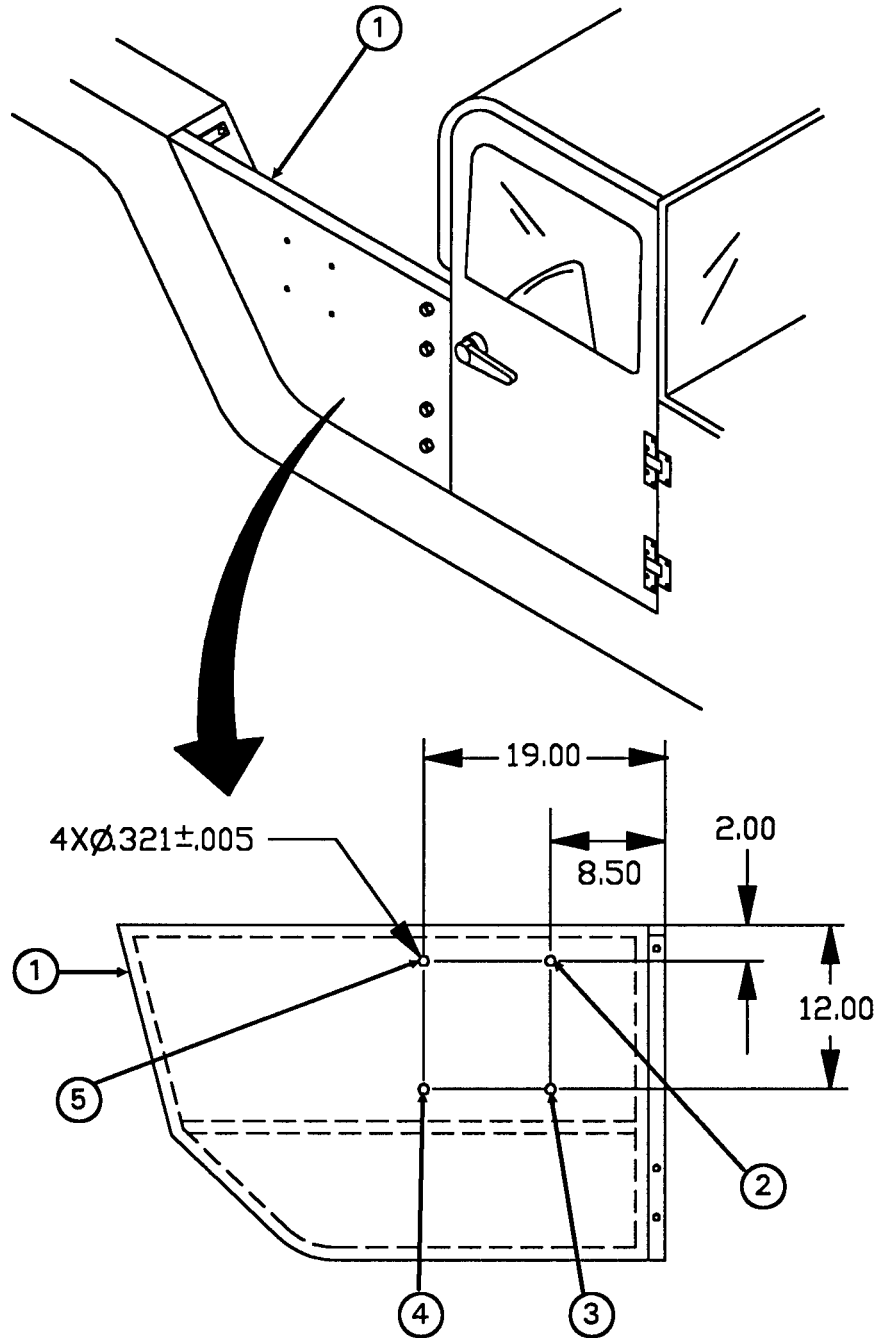
- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
- Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.

NOTE

Before drilling in fixed rear door, check location of holes with holes in cover of power interface box.

19. Using 5/16-inch drill bit, drill four holes (2), (3), (4), and (5) in fixed rear door (1).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

20. On rear side of enclosure panel (3), determine center of hole (1) by measuring 4 inches (10.16 cm) up from bottom and 1 3/4 inches (4.45 cm) over from left edge.
21. On side of battery box (6) next to enclosure panel (3), determine center of hole (5) by measuring 6 inches (15.24 cm) down from top and 1 7/8 inches (4.76 cm) over from corner.

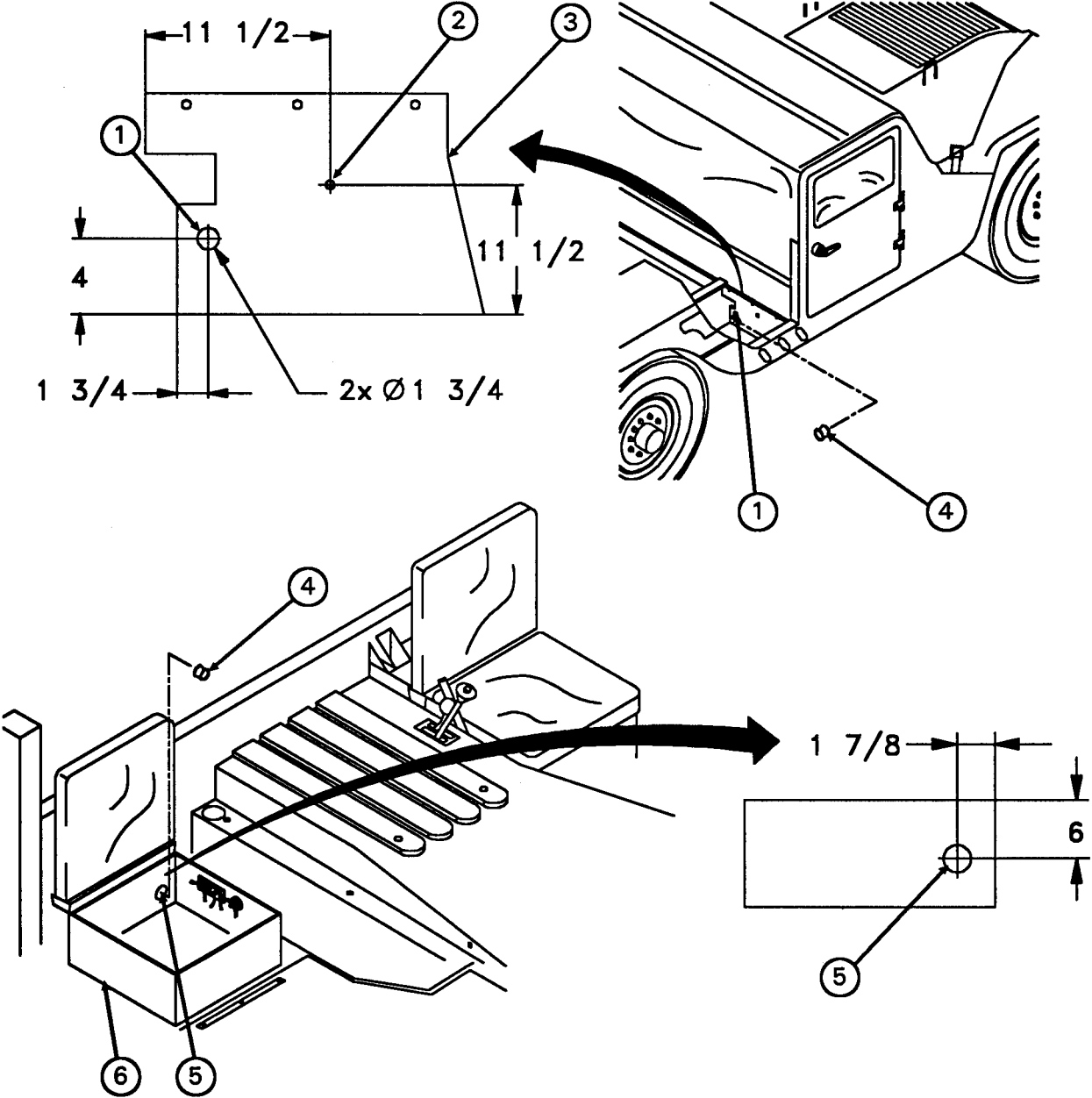
WARNING

- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
 - Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.
22. Using 3/4-inch drill bit, drill pilot holes for holes (1) and (5).
 23. Using 1 3/4-inch knockout punch and die, make hole (1) through enclosure panel (3).
 24. Using 1 3/4-inch knockout punch and die, make hole (5) through battery box (6).
 25. Install grommets (4) in holes (1) and (5).
 26. On rear side of enclosure panel (3), determine center of hole (2) by measuring 11 1/2 inches (29.21 cm) up from bottom and 11 1/2 inches (29.21 cm) over from left edge.

WARNING

- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
 - Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.
27. Using 5/32-inch drill bit, drill hole (2) through rear side of enclosure panel (3).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont' d)

28. Modify front floorboard (1) as follows:

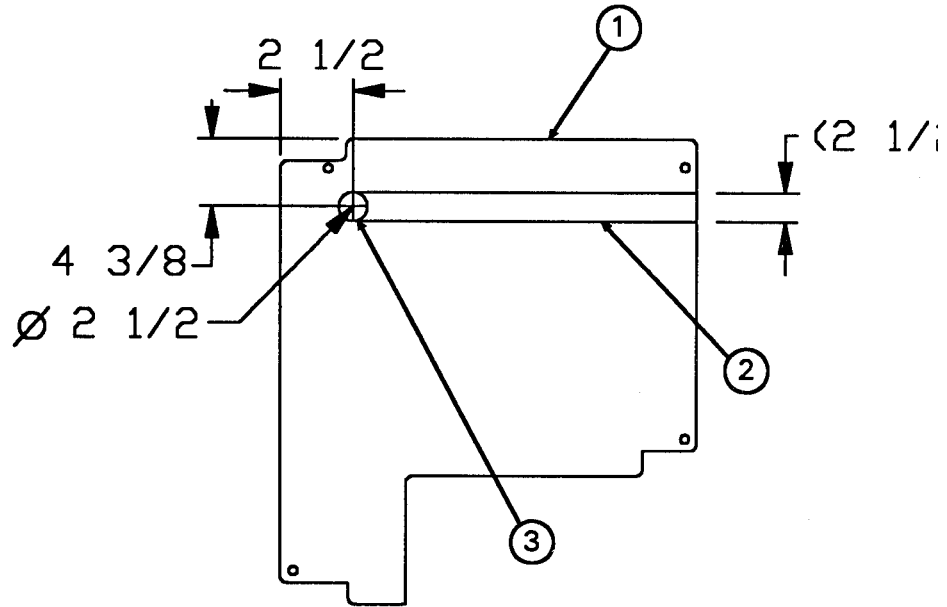
- (a) Turn front floorboard (1) over so underside is face up.
- (b) Determine center of hole (3) by measuring 4 3/8 inches (11.10 cm) down from top edge of front floorboard (3) and 2 1/2 inches (6.35 cm) from left edge of front floorboard (1).

WARNING

When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.

- (c) Using 2 1/2-inch hole saw, drill hole (3) through front floorboard (1).
- (d) Mark 2 1/2 inches (6.35 cm) wide channel (2) from hole (3) to right edge of front floorboard (1).
- (c) Chisel 1/8-inch (0.30 cm) deep channel (2) from hole (3) to right edge of front floorboard (1).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

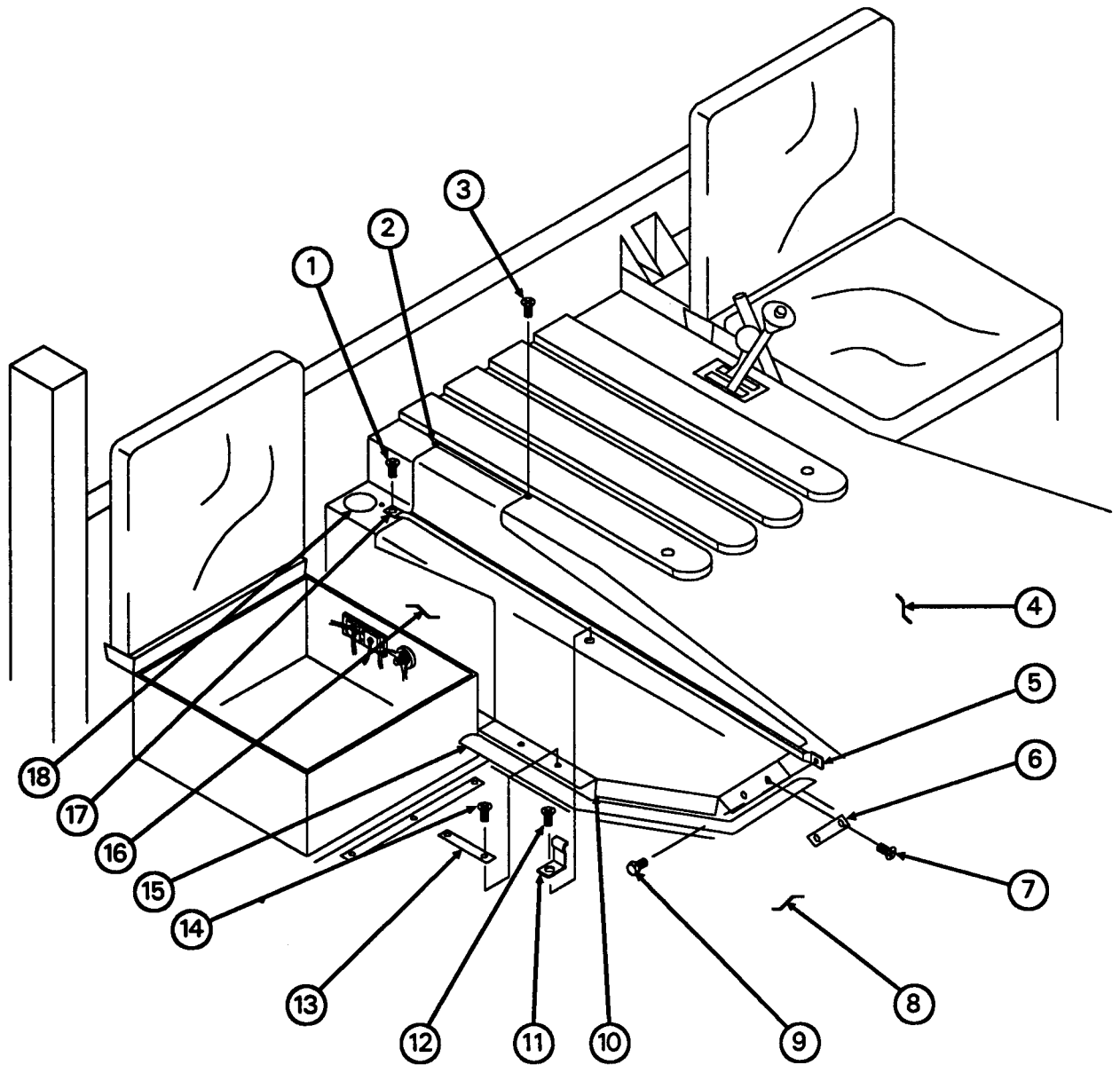
b. Tunnel Interior Side Insulation Blanket and Retainer Installation.

1. Using new insulation retainer (5) as template, determine location of hole (17) to be drilled near 2 5/8-inch hole (18) in transmission tunnel (16).

WARNING

- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
 - Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.
2. Using # 21 drill bit, drill hole (17) in transmission tunnel (16).
 3. Position new insulation blanket (10) in place against cargo floor (4), transmission tunnel (16), and floor (8).
 4. Lift up right front cowl insulation (15) and secure new insulation blanket (10) to floor (8) with two screws (14) and one retainer (13).
 5. Secure new insulation blanket (10) to floor (8) with two screws (7), and one retainer (6).
 6. Install new insulation retainer (5) to transmission tunnel (16) and secure with one screw (1) and and one bolt (9).
 7. Secure one retaining clip (11) and one screw (12) to transmission tunnel (16) to hold new insulation retainer (5). against insulation blanket (10).
 8. Position retaining rod (2) into sleeve of insulation blanket (10).
 9. Secure retaining rod (2) to cargo floor (4) with two screws (3).

4-18. EES KIT INSTALLATION (Cont 'd)



4-18. EES KIT INSTALLATION (Cont'd)

c. Hood Removal

NOTE

Refer to TM 9-2320-280-20 for removal of hood.

d. Right Splash Shield Removal

NOTE

Refer to TM 9-2320-280-20 for removal of right splash shield.

e. Hood Prop Rod and Bracket Removal

NOTE

Refer to TM 9-2320-280-20 for removal of hood prop rod and bracket.

f. Left Splash Shield Removal

NOTE

Refer to TM 9-2320-280-20 for removal of left splash shield.

g. Engine and Transmission Oil Cooler Assembly Removal

NOTE

Refer to TM 9-2320-280-20 for removal of engine and transmission oil cooler assembly.

4-18. EES KIT INSTALLATION (Cont'd)

h. Drain Cooling System

NOTE

Refer to TM 9-2320-280-20 for draining cooling system.

i. Radiator and Fan Shroud Removal

NOTE

Refer to TM 9-2320-280-20 for removal of radiator and fan shroud.

j. Air Horn to Air Cleaner Elbow Removal

NOTE

Refer to TM 9-2320-280-20 for removal of air horn to air cleaner elbow.

k. Surge Tank Removal

NOTE

Refer to TM 9-2320-280-20 for removal of surge tank.

l. Surge Tank to Lower Radiator Hose Removal

NOTE

Refer to TM 9-2320-280-20 for removal of surge tank to lower radiator hose.

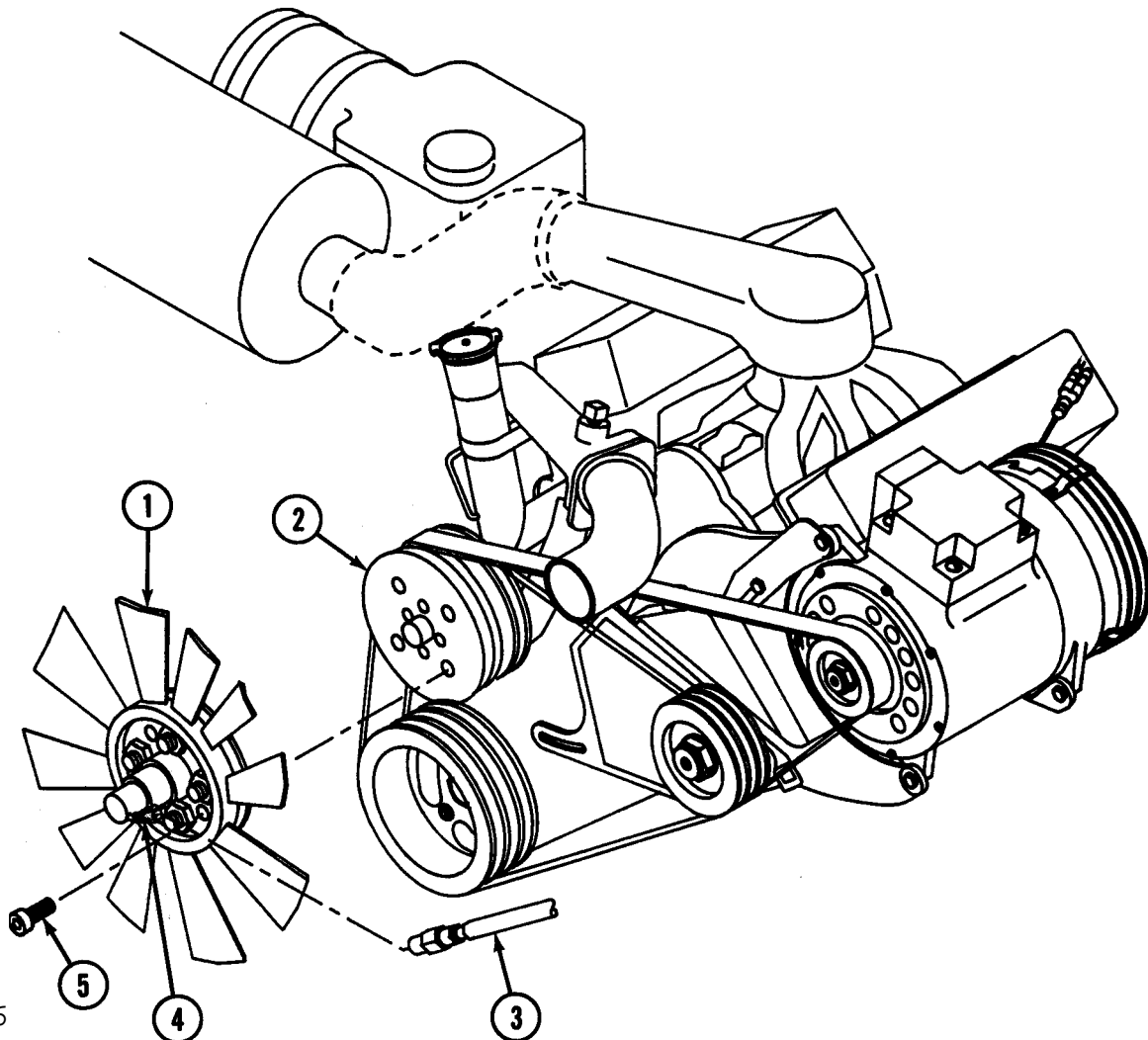
4-18. EES KIT INSTALLATION (Cont'd)

m. Fan Drive Assembly Removal

NOTE

It may be necessary to apply compressed air to clutch adapter. This disengages fan drive clutch to allow access to socket head screws.

1. Disconnect fan drive hose (3) from fan drive assembly (1).
2. Using compressed air adapter assembly (appendix E), apply 30 psi compressed air to fitting (4) on fan drive assembly (1) to disengage fan drive clutch,
3. Align fan drive assembly (1) to allow access to socket head screws (5).
4. Remove four socket head screws (5) securing fan drive assembly (1) to water pump pulley (2) and remove fan drive assembly (1).



4-18. EES KIT INSTALLATION (cont'd)

n. 60 Amp Alternator Drive Belt Set Removal

NOTE
Refer to TM 9-2320-280-20 for removing 60 amp
alternator drive belt set.

o. Power Steering Drive Belt Set Removal

NOTE
Refer to TM 9-2320-280-20 for removing power
steering drive belt set.

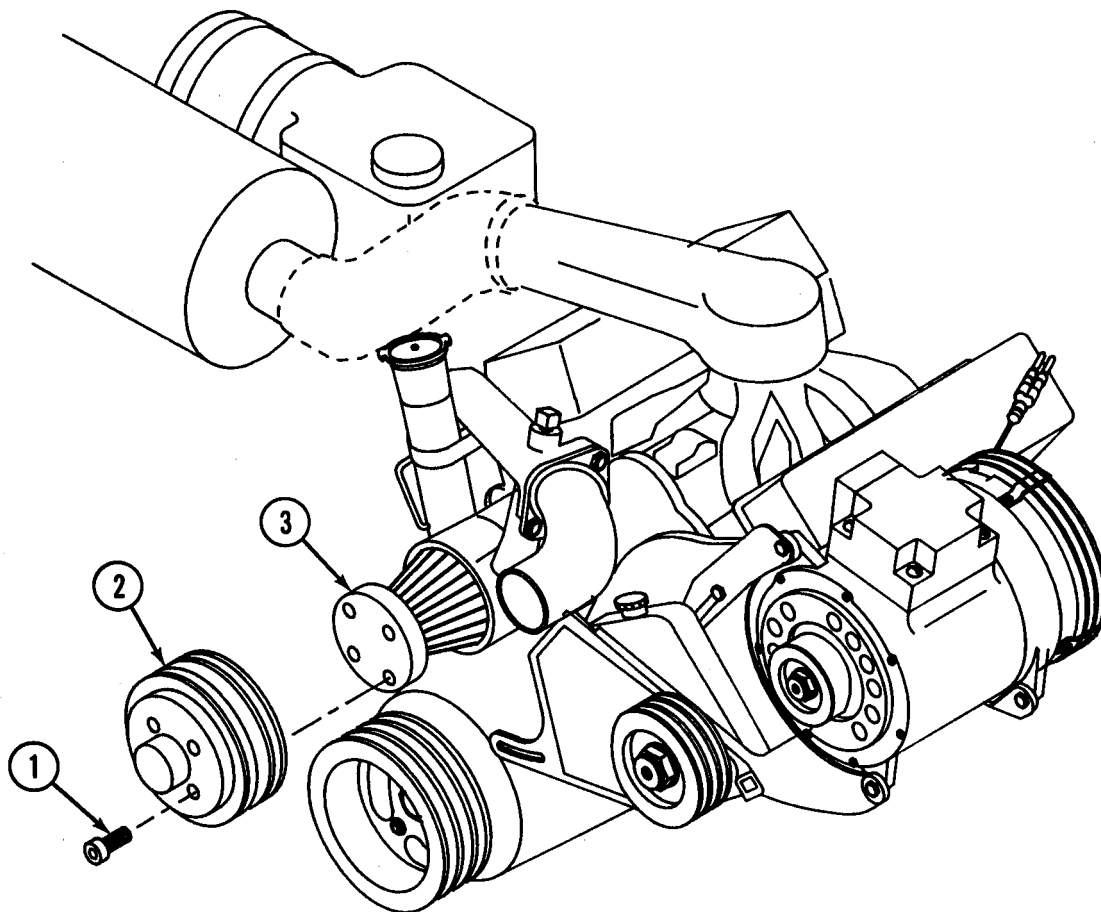
p. Water Pump Pulley Removal

NOTE
Refer to TM 9-2320-280-20 for removing water
pump pulley.

4-18. EES KIT INSTALLATION (Cont'd)

q. Water Pump Pulley Installation

1. Clean threads of four sockethead screws (1) retained from removal of water pump pulley (TM 9-2320-280-20).
2. Install water pump pulley (2) on water pump (3).
3. Apply sealing compound to four sockethead screws (1).
4. Secure water pump pulley (2) to water pump (3) with four sockethead screws (1).
5. Using 6mm hex socket wrench attachment, tighten sockethead screws (1) to 180-240 lb-in. (20-27 N·m).



4-18. EES KIT INSTALLATION (Cont'd)

r. 60 Amp Alternator Removal

NOTE

Refer to TM 9-2320-280-20 for removing 60 amp alternator.

s. 60 Amp Alternator Mounting Brackets Removal

NOTE

Refer to TM 9-2320-280-20 for removing 60 amp alternator mounting brackets.

t. 200 Amp Alternator Mounting Brackets Installation

NOTE

Refer to TM 9-2320-280-20 for installing 200 amp alternator mounting brackets.

u. 200 Amp Alternator Pulley Installation

NOTE

Refer to TM 9-2320-280-20 for installing 200 amp alternator pulley.

v. 200 Amp Alternator Installation

NOTE

Refer to TM 9-2320-280-20 for installing 200 amp alternator.

4-18. EES KIT INSTALLATION (Cont'd)

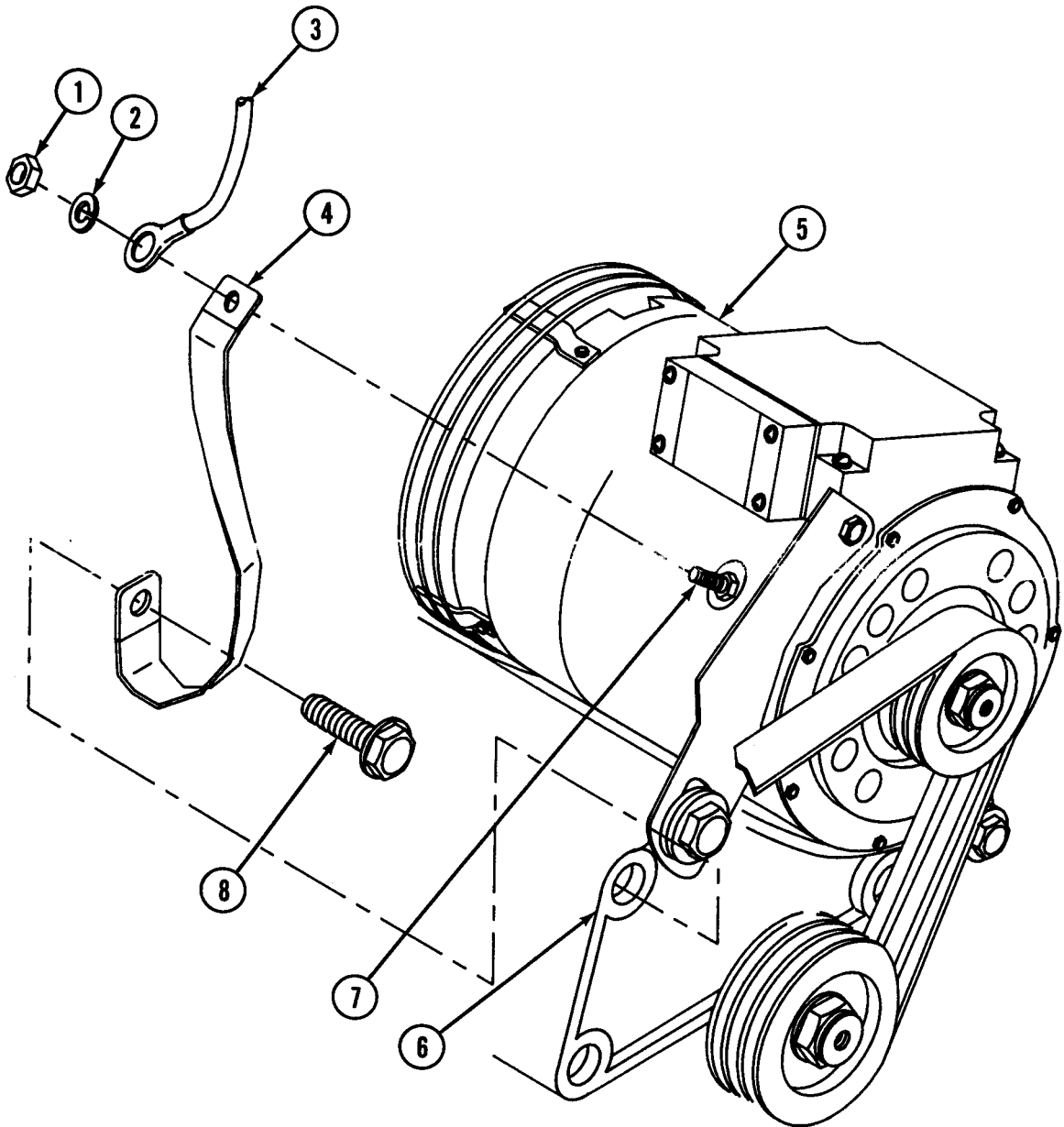
w. 200 Amp Alternator Ground Strap Installation

NOTE

Ensure terminal is clean before connection is made.

1. Apply copper shield sparingly to bolt (8) surface of ground strap (4),
2. Insert bolt (8) through hole in ground strap (4).
3. Install bolt (8) and ground strap (4) to upper hole on mounting bracket (6). Tighten to 48 lb-ft (65 N·m).
4. Remove nut (1), lockwasher (2), and lead 3B (3) from ground stud (7) on 200 amp alternator (5). Retain lockwasher (2) for installation.
5. Install ground strap (4) and lead 3B (3) to ground stud (7) and secure with lockwasher (2) and nut (1). Tighten nut (1) to 96-144 lb-in. (11-16 N·m).

4-18. EES KIT INSTALLATION (Cont'd)

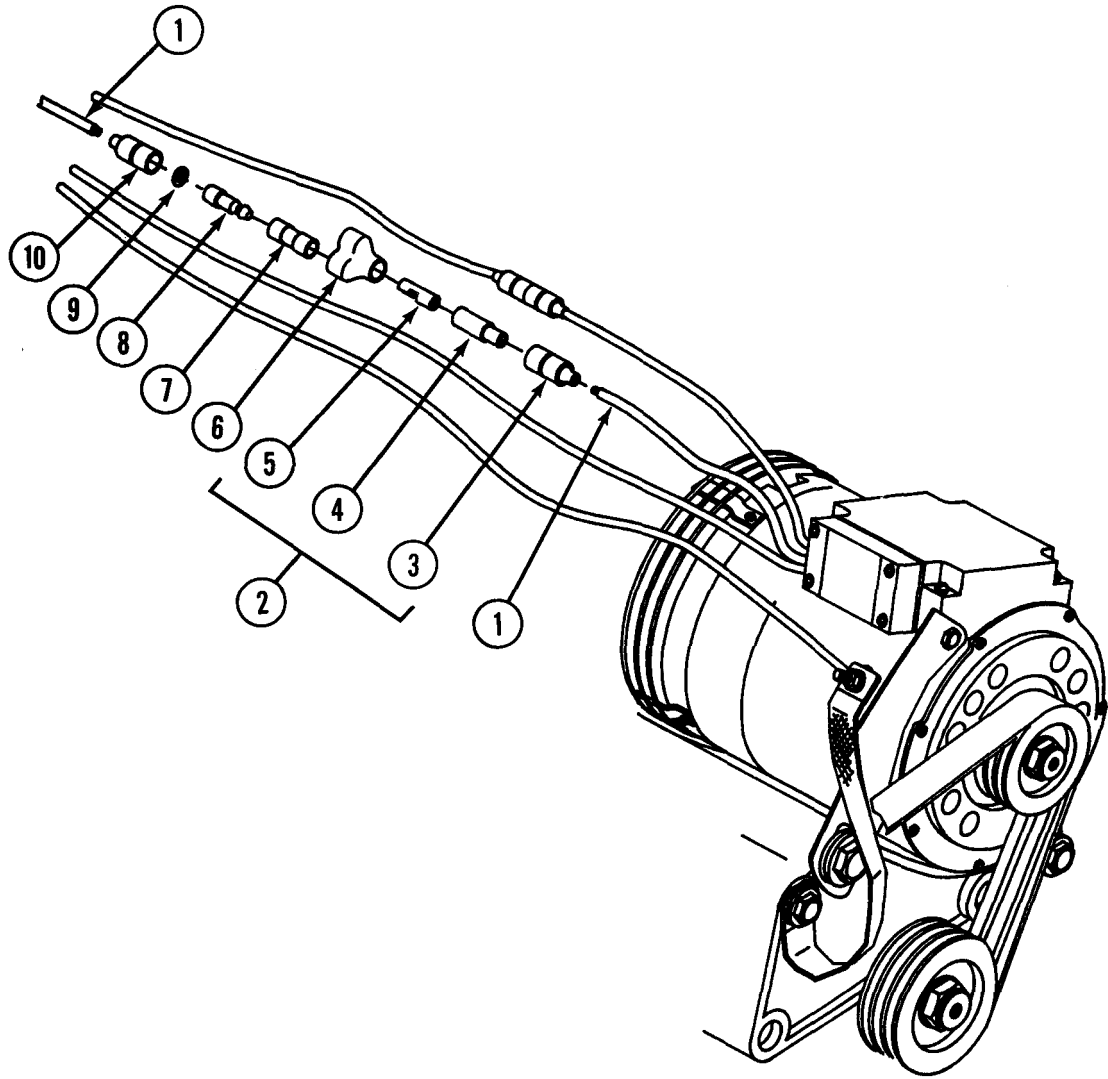


4-18. EES KIT INSTALLATION (Cont'd)

x. 200 Amp Alternator Connectors Installation

1. Cut wire no. 2A (1) halfway between regulator and wire harness jacket.
2. Slide rubber shell (3) and plastic sleeve (4) from connector (2) onto wire no. 2A (1) (regulator side).
3. Strip insulation on wire no. 2A (1) to equal depth of terminal well on connector terminal (5).
4. Insert end of wire no. 2A (1) into terminal well and crimp.
5. Solder crimped joint between connector terminal (5) and wire no. 2A (1).
6. Slide rubber shell (3) and plastic sleeve (4) onto connector terminal (5).
7. Plug connector (2) into 3-way connector (6).
8. Slide rubber shell (10) onto wire no. 2A (1) (wire harness side).
9. Strip insulation on wire no. 2A (1) to equal depth of terminal well on connector terminal (8).
10. Insert end of wire no. 2A (1) into terminal well.
11. Solder joint between connector terminal (8) and wire no. 2A (1).
12. Place slotted washer (9) over soldered junction on connector terminal (8).
13. Slide rubber shell (10) over slotted washer (9) on connector terminal (8).
14. Plug wire no. 2A (1) into adapter (7) and adapter (7) into 3-way connector (6).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

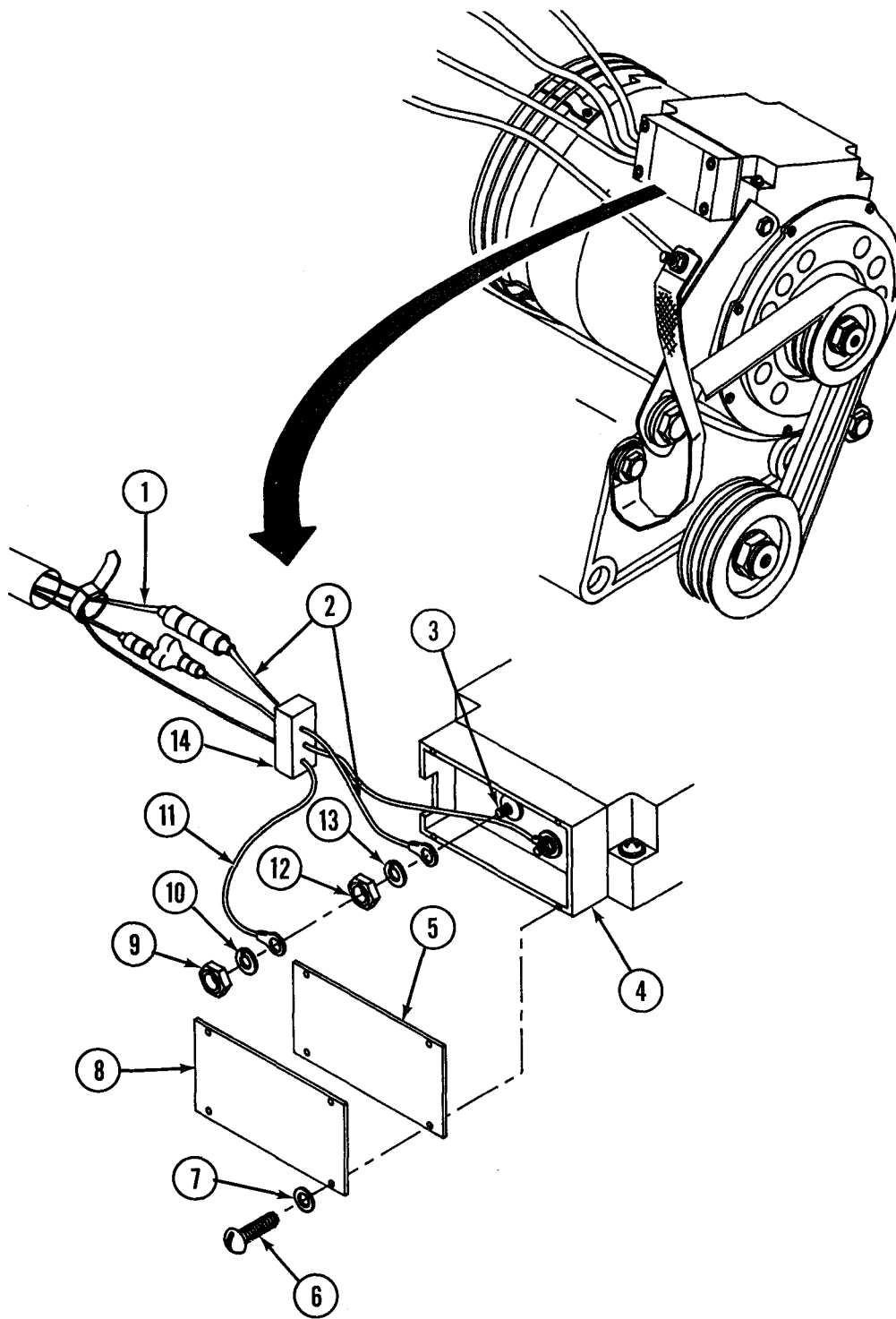
15. Remove four screws (6) and lockwashers (7) that secures cover (8) and gasket (5) to regulator (4). Remove cover (8) and gasket (5).

NOTE

Tag leads for installation.

16. Remove nut (9) and lockwasher (10) that secures wire no. 5A (11) to stud (3) and disconnect wire no. 5A (11).
17. Remove rubber wedge (14) from opening in regulator (4).
18. Remove nut (12) and lockwasher (13) that secures old wire no. 568 (2) to stud (3) and disconnect old wire no. 568 (2).
19. Disconnect old wire no. 568 (2) from wire no. 568A (1) and remove old wire no. 568 (2).
20. Connect new wire no. 568 (2) to wire no. 568A (1) and install into rubber wedge (14).
21. Install new wire no. 568 (2) to stud (3) and secure with lockwasher (13) and nut (12).
22. Install wire no. 5A (11) to stud (3) and secure with lockwasher (10) and nut (9).
23. Install rubber wedge (14) in opening in regulator (4).
24. Install gasket (5) and cover (8) to regulator (4) and secure with lockwashers (7) and four screws (6).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

y. Air Horn Support Bracket Removal

NOTE

Refer to TM 9-2320-280-20 for removal of air horn support bracket.

z. Compressor Mounting Bracket Installation

NOTE

Refer to TM 9-2320-280-34 for installation of compressor mounting bracket.

aa. Compressor Installation

NOTE

Refer to TM 9-2320-280-34 for installation of compressor.

bb. 200 Amp Alternator Cable Installation

NOTE

Refer to TM 9-2320-280-20 for installation of 200 amp alternator cable.

cc. Air Conditioning Service Valves Installation

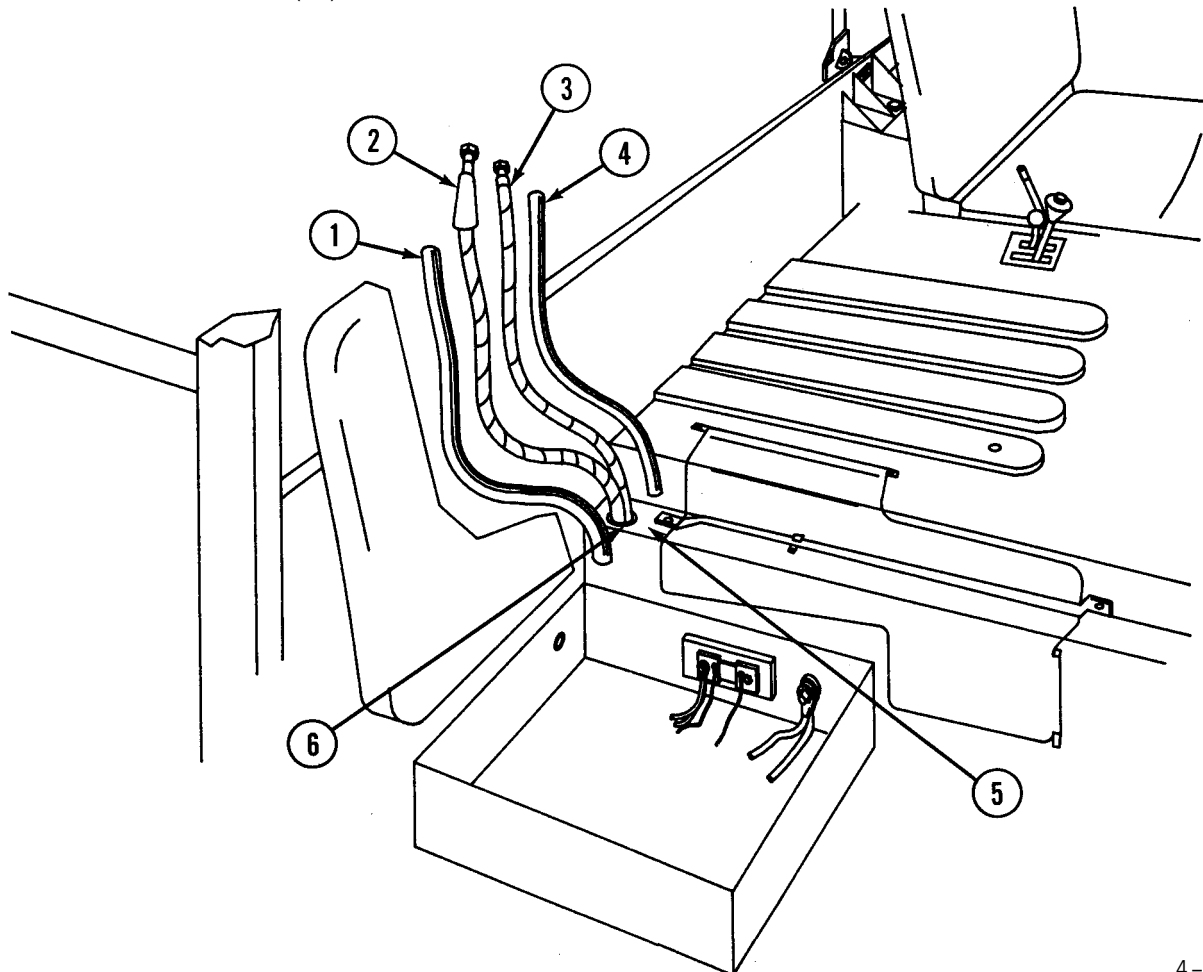
NOTE

Refer to TM 9-2320-280-34 for installation of air conditioning service valves.

4-18. EES KIT INSTALLATION (Cont'd)

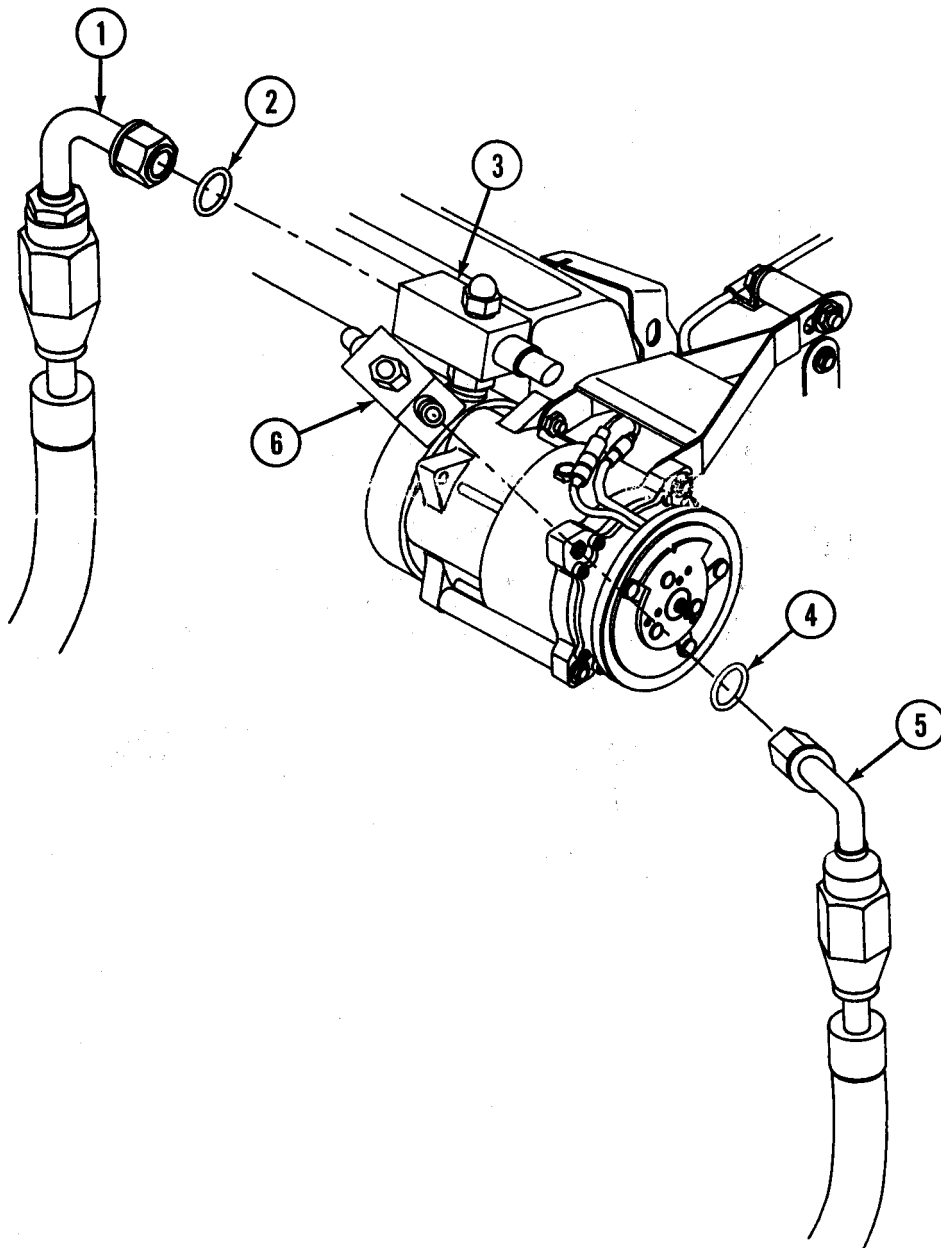
dd. Freon Lines Installation

1. Cut insulation (1) from suction hose (2) as follows:
 - (a) Measure 11 in. (27.94 cm) from end of suction hose (2) and make circular cut around insulation (1).
 - (b) Cut insulation 22 in. (55.88 cm) lengthwise.
 - (c) Make another circular cut around insulation (1) at 33 in. (83.82 cm).
2. Remove insulation (1) from suction hose (2).
3. Cut insulation (4) from discharge hose (3) as follows:
 - (a) Measure 33 in. (83.82 cm) from end of discharge hose (3) and make circular cut around insulation (4).
 - (b) From end of discharge hose (3), cut insulation (4) lengthwise until circular cut is reached.
4. Remove insulation (4) from discharge hose (3).
5. Install suction hose (2) through hole (6) in transmission tunnel (5).
6. Install discharge hose (3) through hole (6) in transmission tunnel (5).



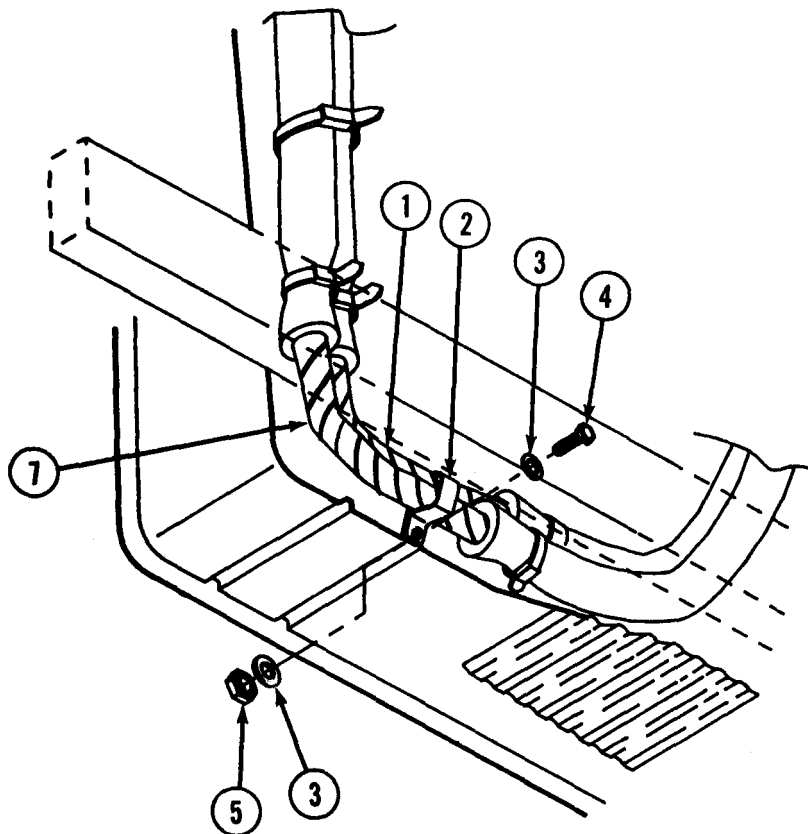
4-18. EES KIT INSTALLATION (Cont'd)

7. Lubricate two "O" rings (2) and (4) with lubricating oil.
8. Install larger "O" ring (2) into suction hose (1) and smaller "O" ring (4) into discharge hose (5).
9. Connect suction hose (1) to compressor service valve (3) and discharge hose (5) to service valve (6).



4-18. EES KIT INSTALLATION (Cont'd)

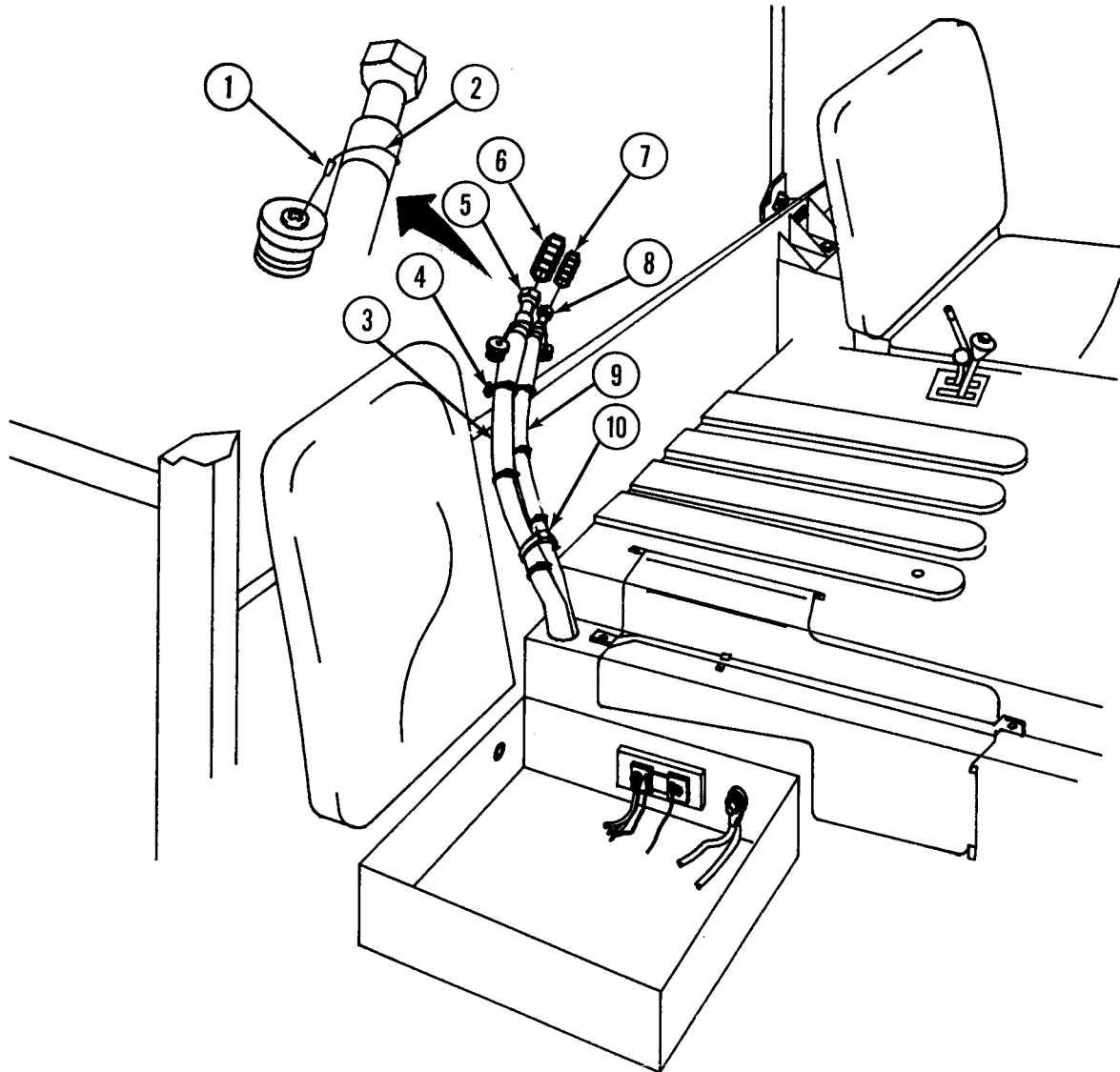
10. Place clamp (2) onto suction hose (7) and discharge hose (1).
11. Install clamp (2), suction hose (7), and discharge hose (1) to underside of body and secure with capscrew (4), two washers (3), and self-locking nut (5)



4-18. EES KIT INSTALLATION (Cont 'd)

12. Place insulation (3) and (9) around upper section of suction hose (5) and discharge hose (8). Secure insulation to hoses with tie-straps (4).
13. Install lanyard (2) from large dust cap through swaging sleeve (1). Loop lanyard (2) around suction hose (5) and back through swaging sleeve (1). Crimp swaging sleeve (1).
14. Install lanyard (2) from small dust cap through swaging sleeve (1). Loop lanyard (2) around discharge hose (8) and back through swaging sleeve (2). Crimp swaging sleeve (2).
15. Connect suction hose (5) and discharge hose (8) to quick disconnects (6) and (7).
16. Secure suction hose (5) and discharge hose (8) together with tie-straps (10).

4-18. EES KIT INSTALLATION (Cont'd)



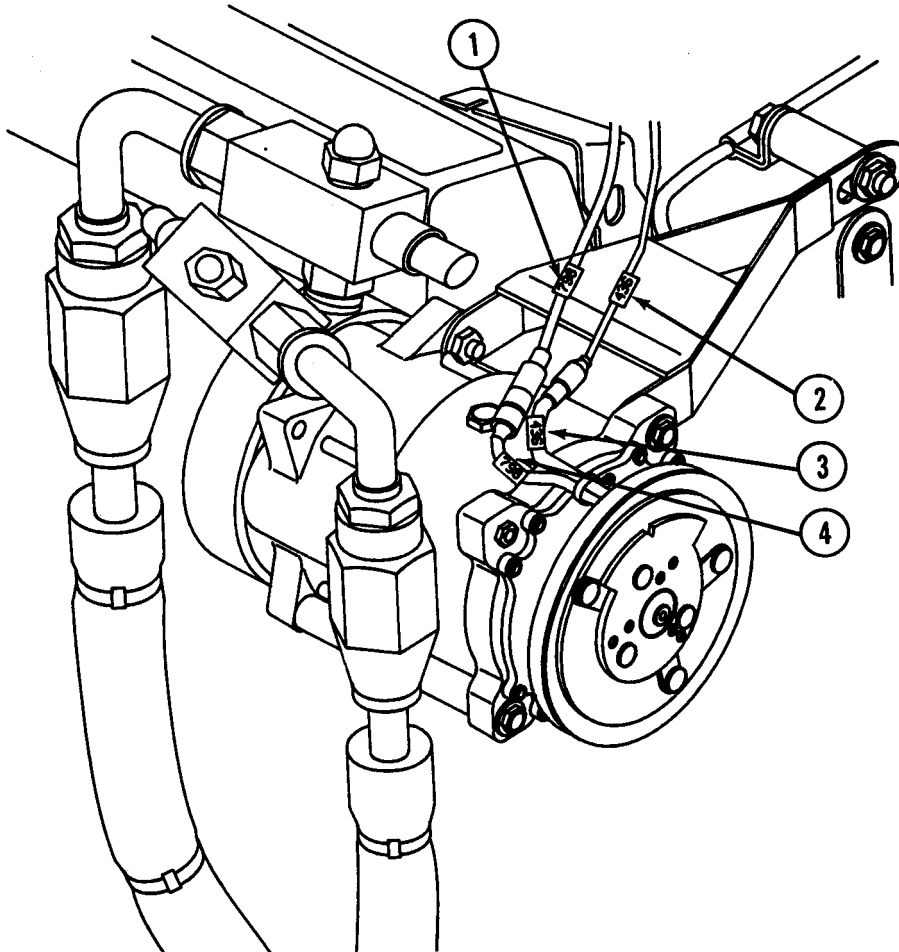
4-18. EES KIT INSTALLATION (Cont'd)

ee. Cable Assembly W66 Installation

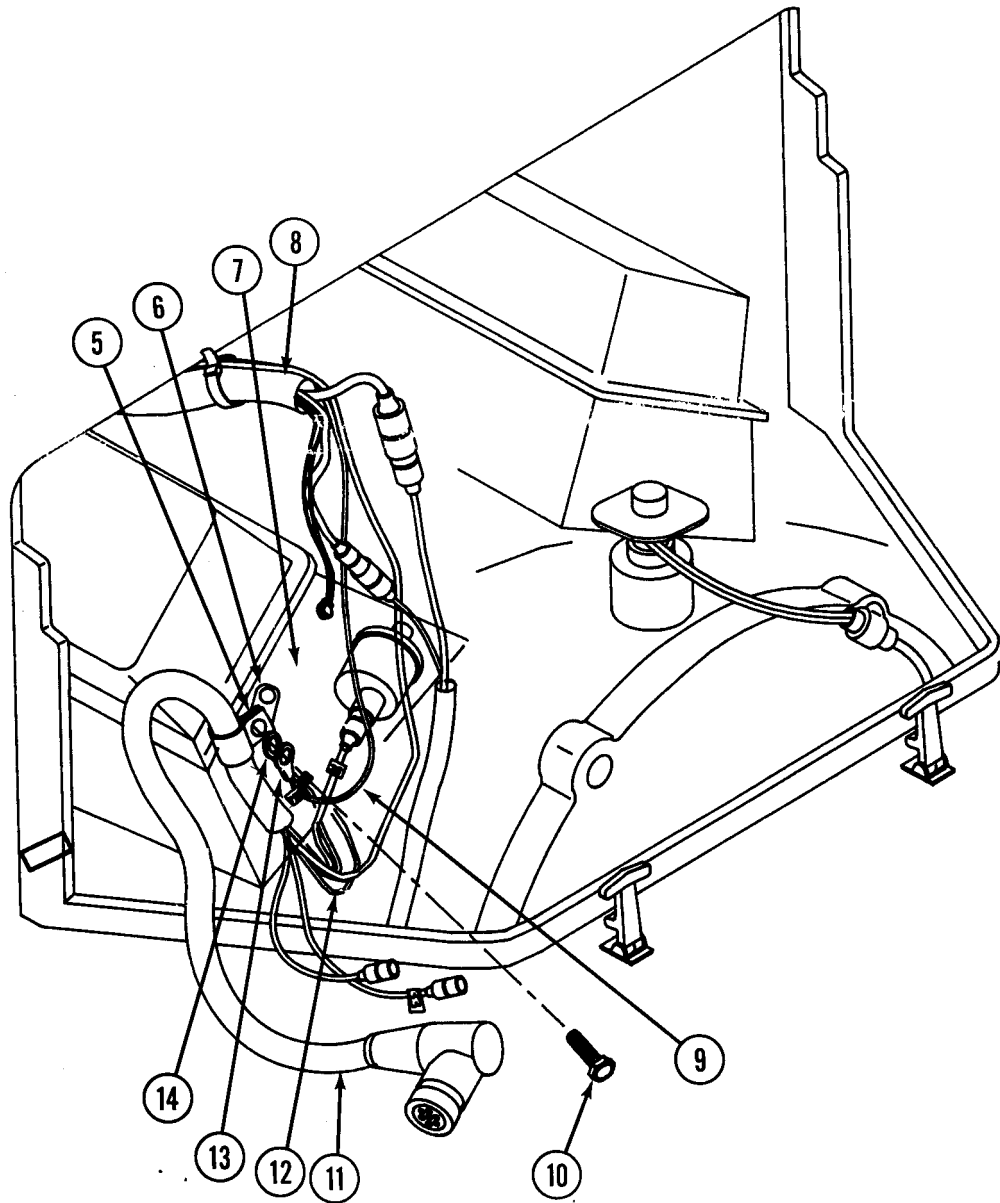
NOTE

Use figure 3-2, Engine Electrical Interface, when installing cable assembly W66.

1. Install loop clamp (5) on cable assembly W66 (11).
2. Apply conductive antiseize compound to terminal lug (13) on wire no. 798 (9) and terminal lug (14) on wire no. 58 (12).
3. Install safety tab (6), loop clamp (5), wire no. 798 (9), and wire no. 58 (12) to engine block (7) and secure with screw (10).
4. Route wires no. 798 (9) and no. 436 (2) along engine wiring harness (8) and across engine to compressor.
5. Connect wire no. 798 (1) into wire no. 798 (4) (on compressor).
6. Connect wire no. 436 (2) into wire no. 436 (3) (on compressor).



4-18. EES KIT INSTALLATION (Cont'd)



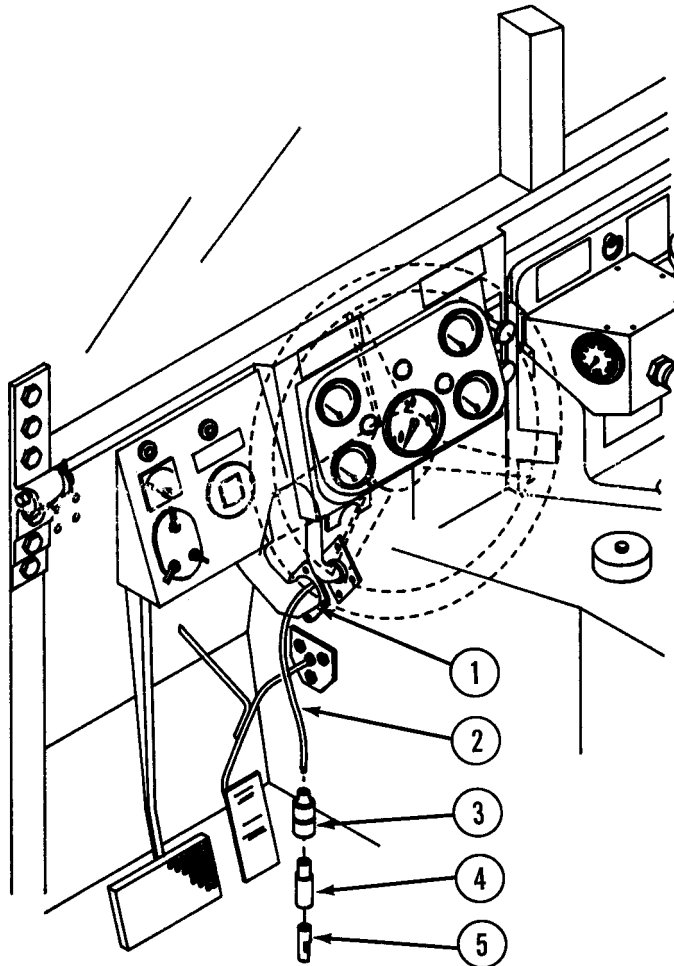
4-18. EES KIT INSTALLATION (Cont'd)

7. From engine side, route wire no. 28 (2) through cowl grommet (1) behind 200 amp alternator.
8. Slide rubber shell (3) and plastic sleeve (4) from connector onto wire no. 28 (2).
9. Strip insulation 1/4-inch (0.64 cm) from end of wire no. 28 (2).
10. Install connector terminal (5) onto wire no. 28 (2) and crimp.

WARNING

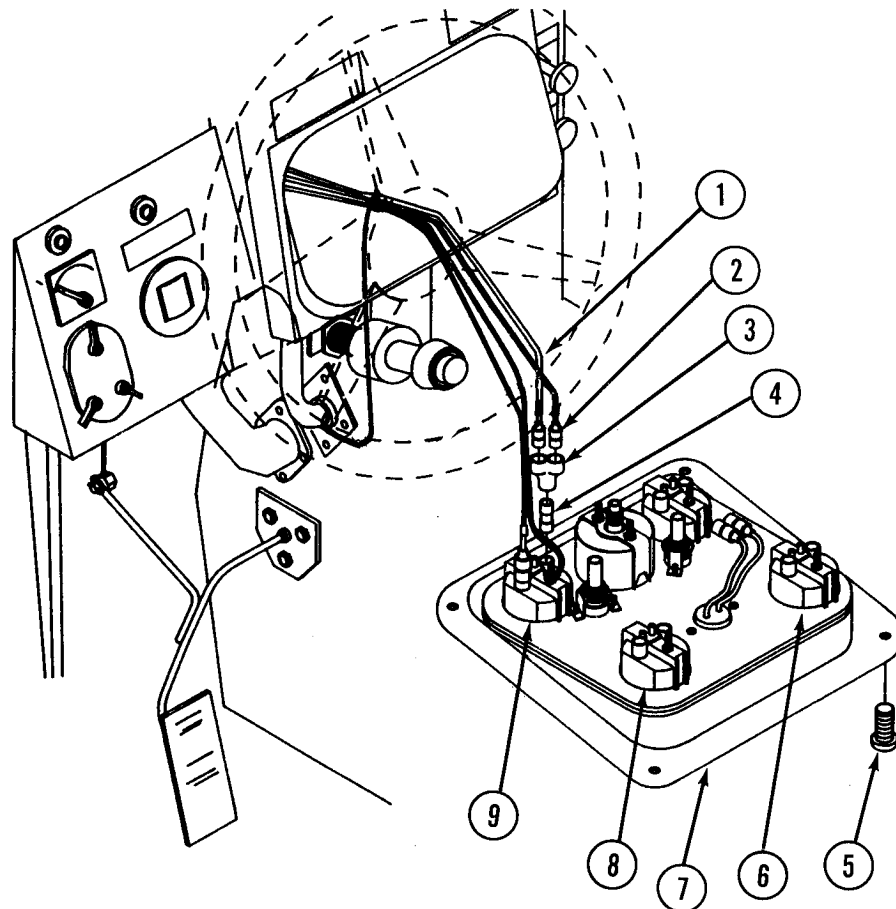
To prevent eye injury, wear protective eye wear while performing any soldering.

11. Solder crimped joint between connector terminal (5) and wire no. 28 (2).
12. Slide plastic sleeve (4) and rubber shell (3) onto connector terminal (5).



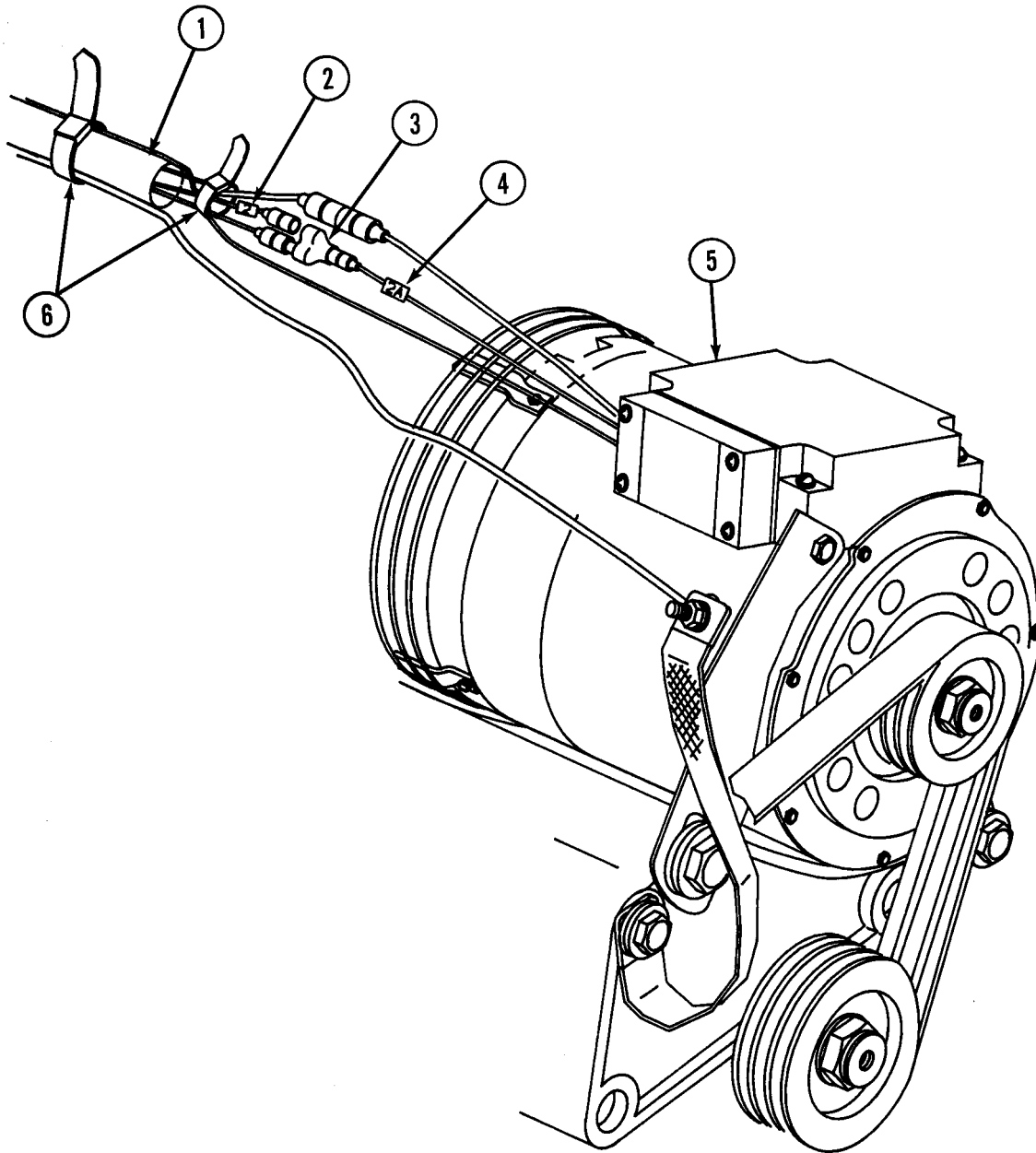
4-18. EES KIT INSTALLATION (Cont'd)

13. Remove four screws (5) and pull out instrument cluster (7).
14. Unplug wire no. 28A (1) from fuel gage (9).
 - a. Make sure engine oil pressure gage (8) is PN C5136382 (see figure 24 in appendix D of this manual) or status warning system will not operate properly. If engine oil pressure gage is not correct PN, replace IAW TM 9-2320-280-20.
 - b. Make sure coolant temperature gage (6) is PN C5136383 (see figure 24 in appendix D of this manual) or status warning system will not operate properly. If coolant temperature gage is not correct PN, replace IAW TM 9-2320-280-20.
 - c. Make sure fuel gage (9) is PN C5136384 (see figure 24 in appendix D of this manual) or status warning system will not operate properly. If fuel gage is not correct PN, replace IAW TM 9-2320-280-20.
15. Plug wire no. 28A (1) and wire no. 28 (2) into 3-way connector (3).
16. Plug adapter (4) into 3-way connector (3).
17. Plug adapter (4) into fuel gage (9).
18. Install instrument cluster (7) and secure with four screws (5).



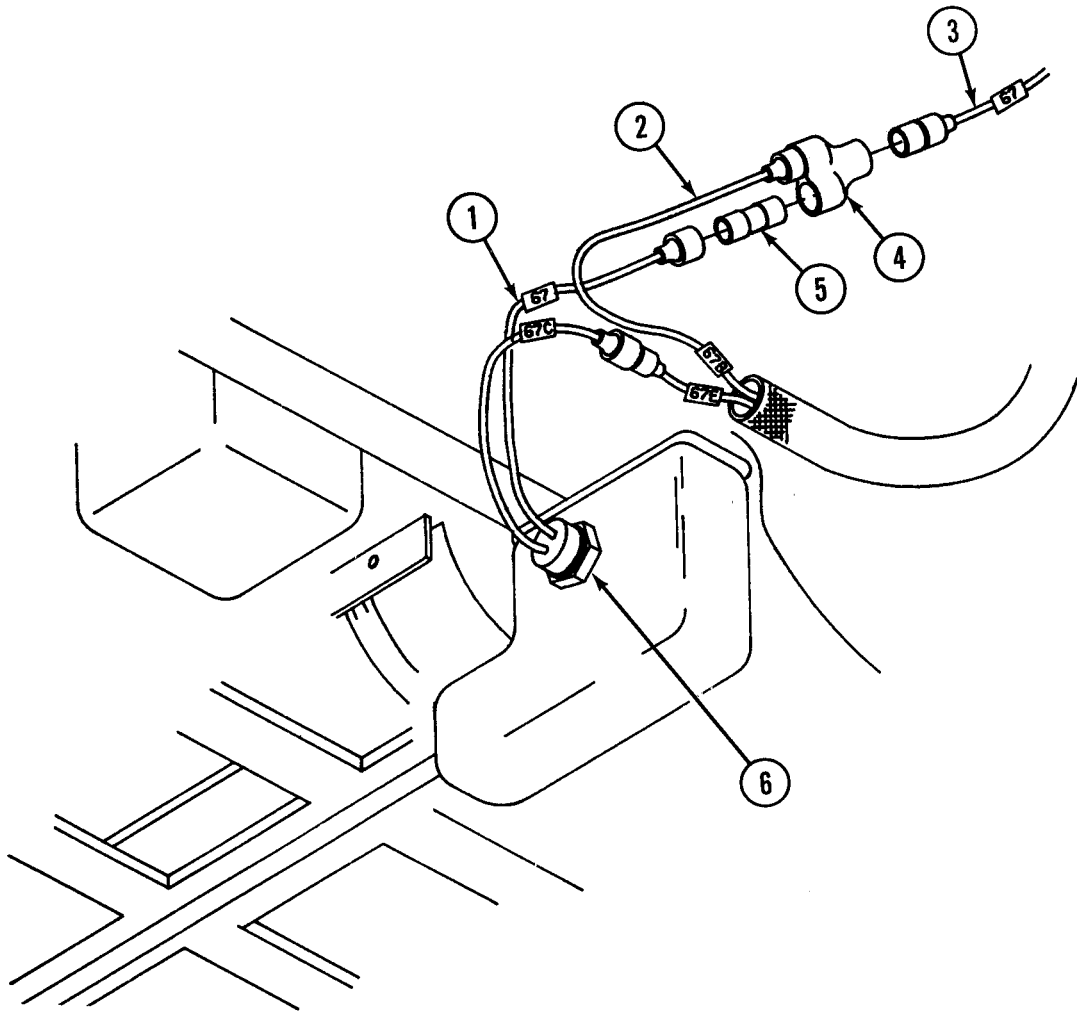
4-18. EES KIT INSTALLATION (Cont'd)

19. Route wire no. 2 (2) along engine wiring harness (1) on top of engine to 200 amp alternator (5).
20. Plug wire no. 2 (2) into 3-way connector (3) on wire no. 2A (4) leading from 200 amp alternator (5).
21. Secure wires using tie-straps (6).



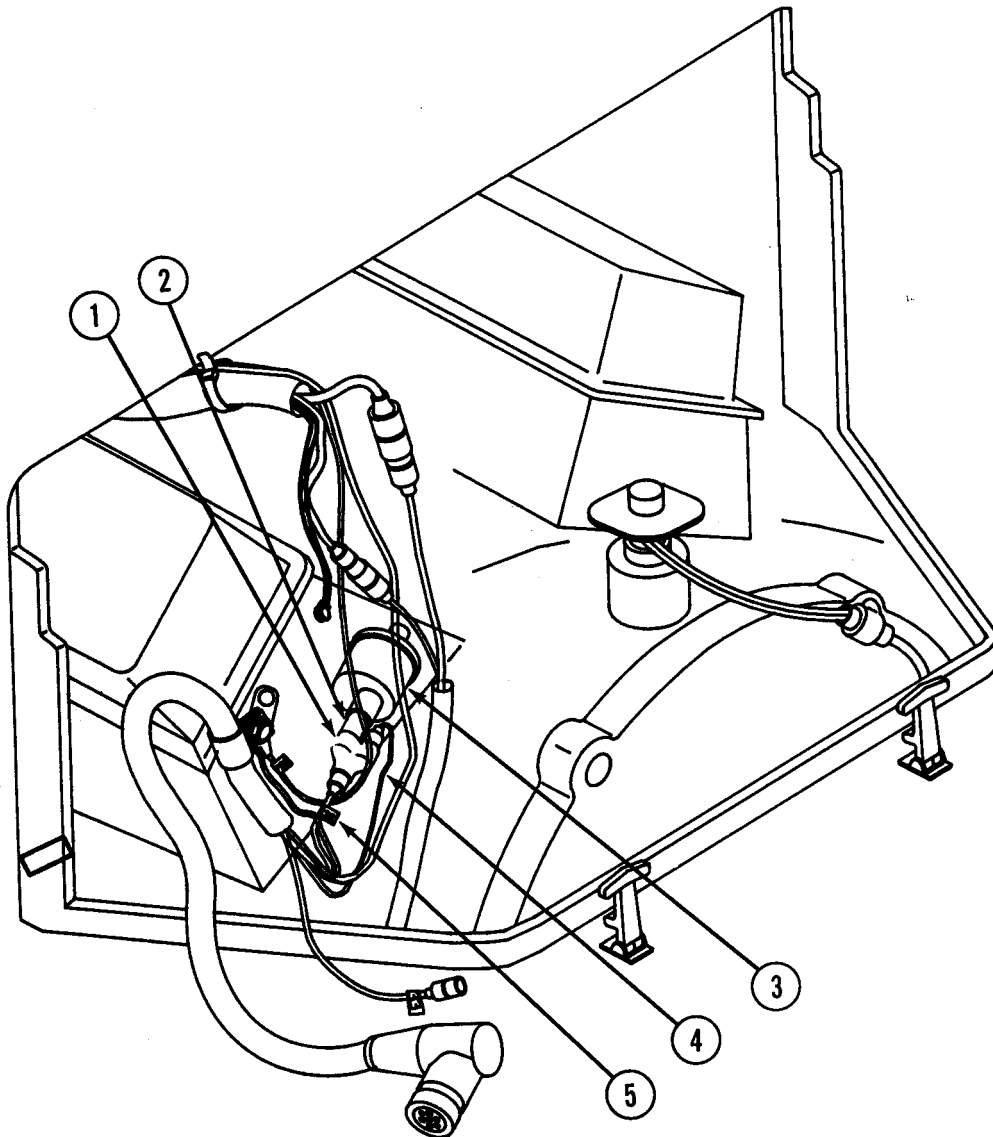
4-18. EES KIT INSTALLATION (Cont'd)

22. From under truck, unplug wire no. 67B (2) from wire no. 67 (1) on parking brake switch (6).
23. Plug wire no. 67 (1) into adapter (5) and adapter (5) into 3-way connector (4).
24. Plug wire no. 67 (3) and wire no. 67B (2) into 3-way connector (4).



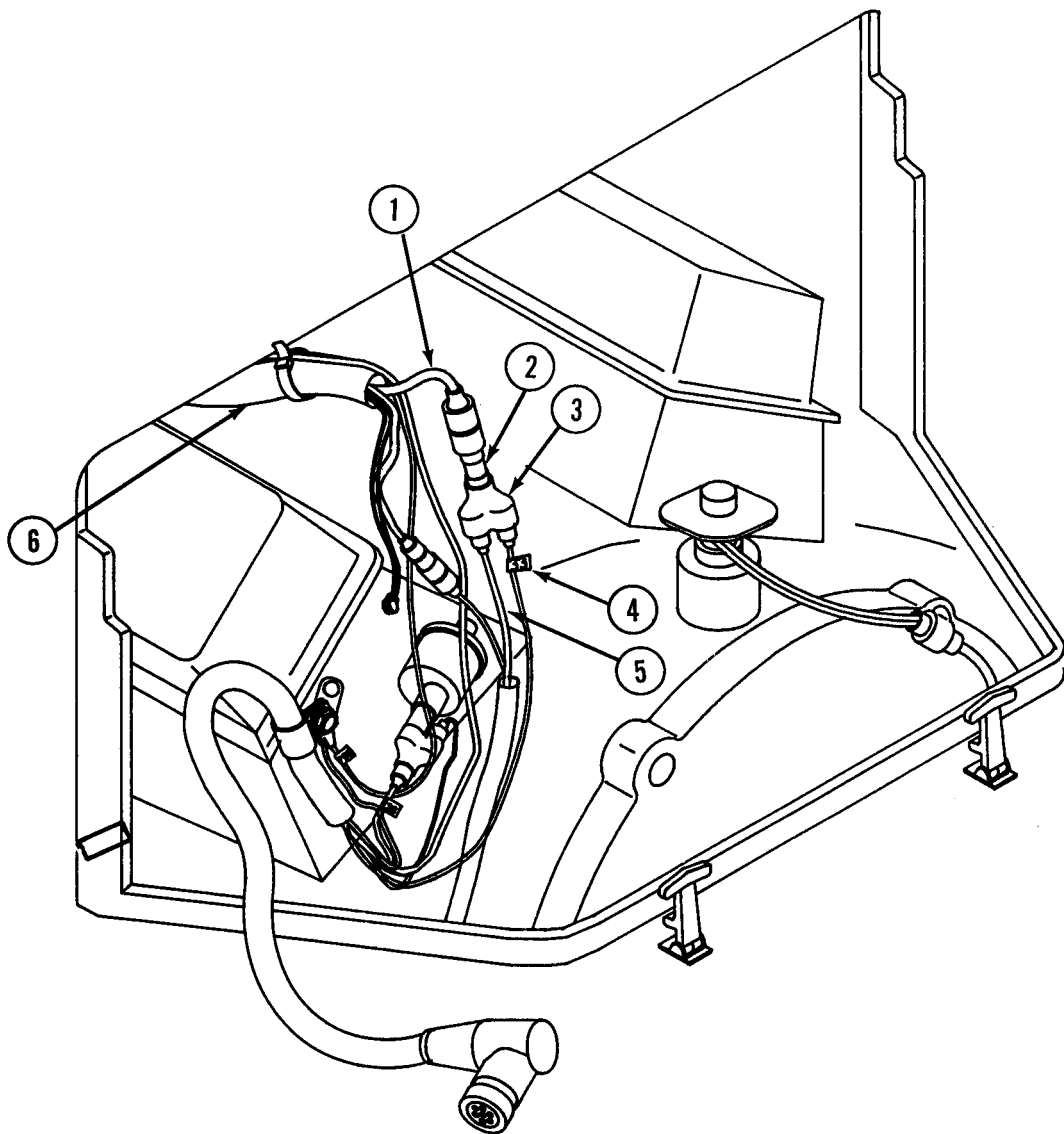
4-18. EES KIT INSTALLATION (Cont'd)

25. Unplug wire no. 36A (4) from oil pressure sending unit (3).
26. Plug wire no. 36A (4) and wire no. 36 (5) into 3-way connector (1).
27. Plug 3-way connector (1) into adapter (2) and adapter (2) into oil pressure sending unit (3).



4-18. EES KIT INSTALLATION (Cont'd)

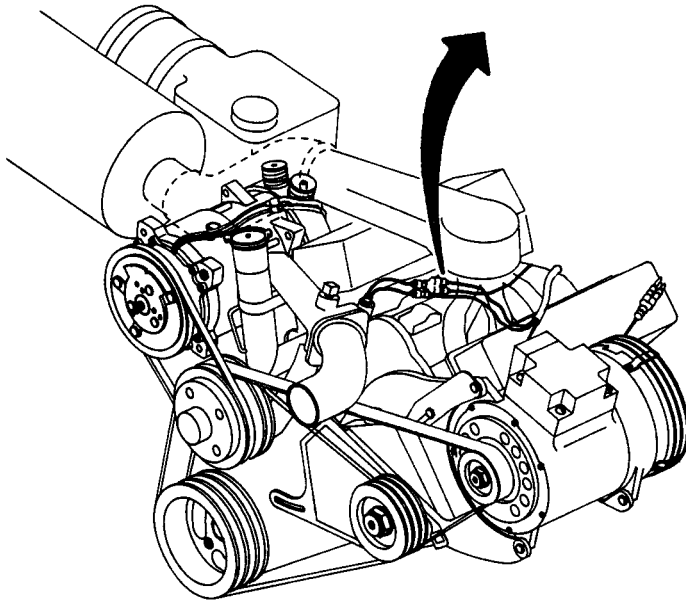
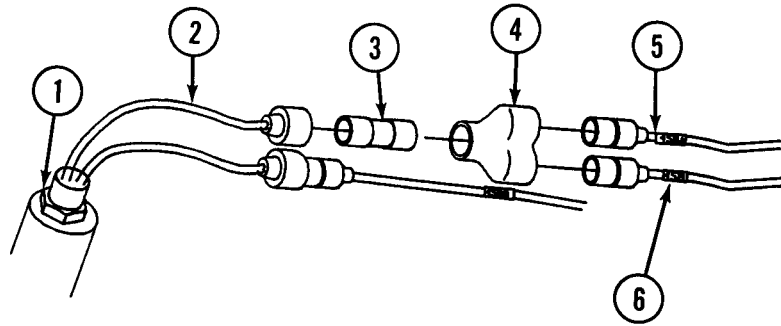
28. From engine wiring harness (6), unplug wire no. 33A (5) from wire no. 33B (1) (leading from engine temperature sending unit).
29. Plug wire no. 33A (5) and wire no. 33 (4) into 3-way connector (3).
30. Plug 3-way connector (3) into adapter (2) and adapter (2) into wire no. 33B (1).



4-18. EES KIT INSTALLATION (Cont'd)

31. Unplug wire no. 458A (6) from wire no. 458 (2) from fan clutch temperature switch (1).
32. Plug wire no. 458A (6) and wire no. 458 (5) into 3-way connector (4).
33. Plug 3-way connector (4) into adapter (3) and adapter (3) into wire no. 458 (2).
34. Secure cable assembly W66 with tie-straps as required.

4-18. EES KIT INSTALLATION (Cont'd)

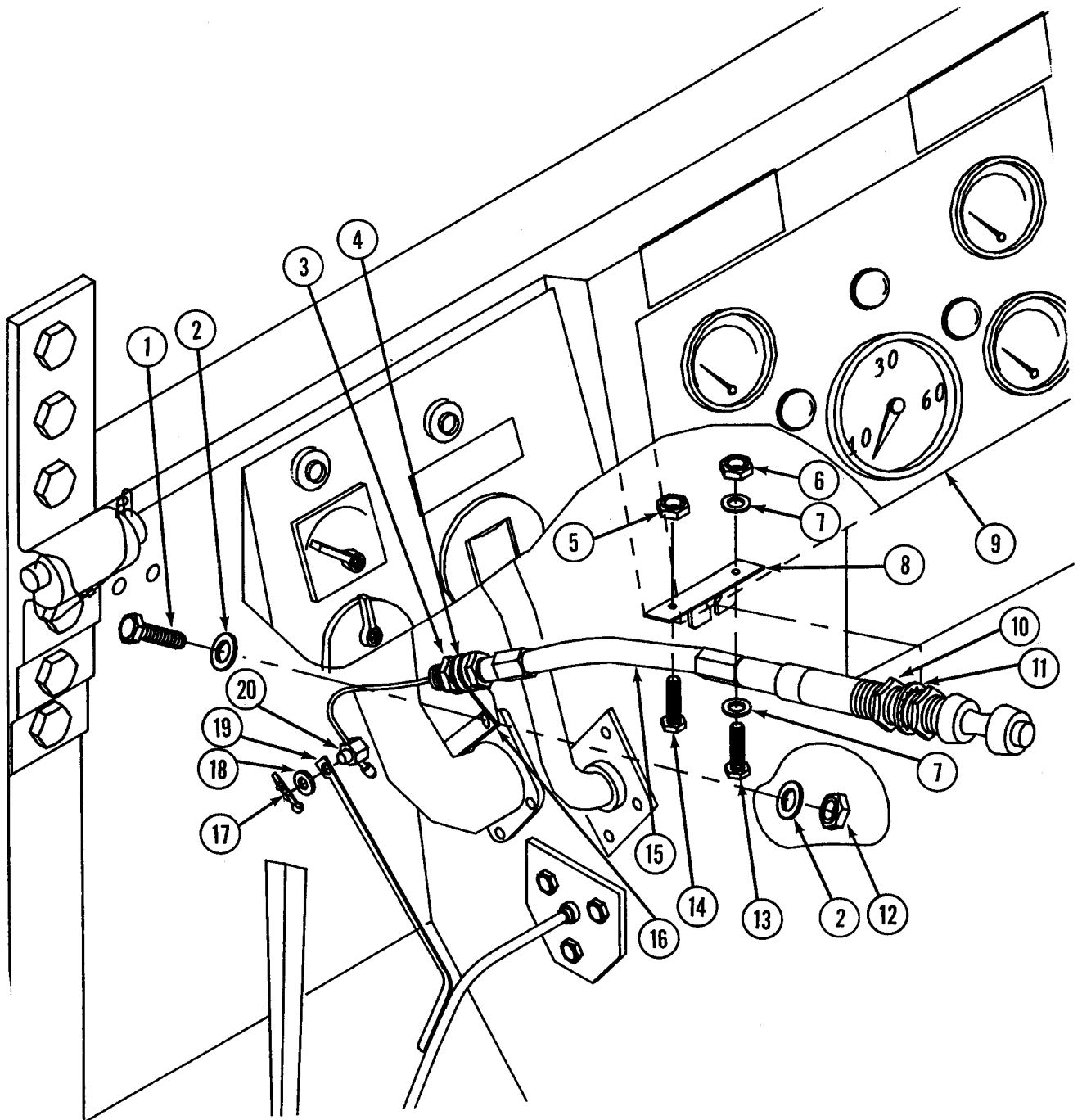


4-18. EES KIT INSTALLATION (Cont'd)

ff. Hand Throttle Cable Installation

1. Remove existing hand throttle cable and bracket (TM 9-2320-280-20).
2. Retain the following items:
 - (a) Hitch pin (17) and washer (18) that secures clevis (20) to accelerator rod (19);
 - (b) Two capscrews (1) and four washers (2) from lower mounting bracket; and
 - (c) Capscrew (13), two washers (7), screw (14), and nut (5) from upper mounting bracket.
3. Attach hand throttle bracket (8) to instrument panel (9) with screw (14) and nut (5). Do not tighten.
4. Secure hand throttle bracket (8) to instrument panel (9) with capscrew (13), two washers (7), and locknut (6).
5. Tighten screw (14) and nut (5) that secures hand throttle bracket (8) to instrument panel (9).
6. Install hand throttle cable (15) to hand throttle bracket (8). Secure by tightening nut (10) and lockwasher (11) on hand throttle cable (15).
7. Install hand throttle cable (15) to throttle cable end bracket (16). Tighten two washers (4) and nuts (3) on hand throttle cable (15).
8. Install throttle cable end bracket (16) on cowl and secure with two capscrews (1), four washers (2), and two self-locking nuts (12).
9. Secure clevis (20) to accelerator rod (19) with washer (18) and hitch pin (17).

4-18. EES KIT INSTALLATION (Cont'd)

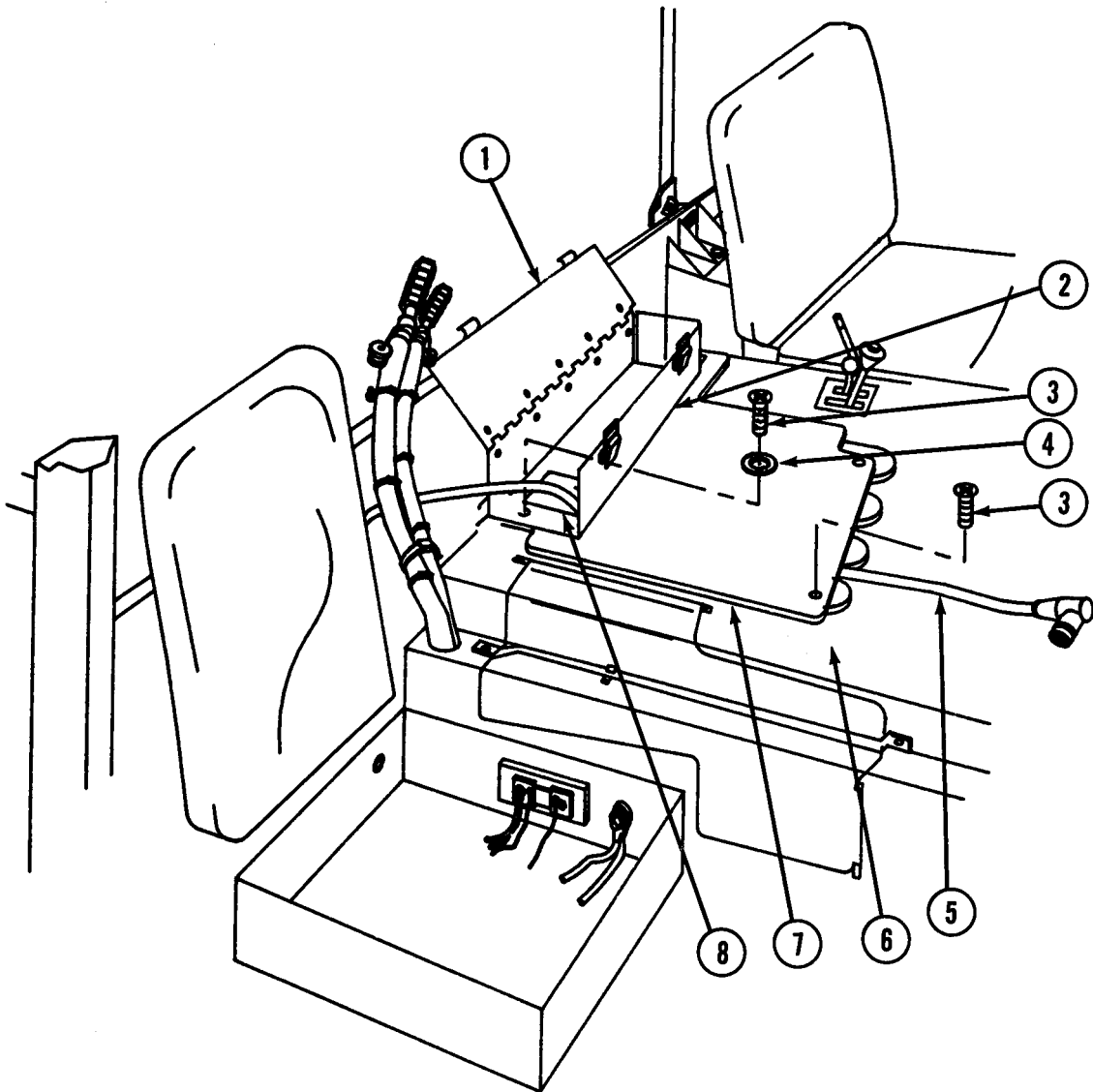


4-18. EES KIT INSTALLATION (Cont'd)

gg. Storage Box and Cable Assembly W64 Installation

1. Route cable assembly W64 (5) through cutout (8) in storage box (2).
2. Route cable assembly W64 (5) along cutout on underside of front floorboard (7).
3. Install storage box (2) and front floorboard (7) to transmission tunnel (6). Secure with two washers (4) and four screws (3).
4. Close and latch storage box cover (1).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

hh. M16 Rifle Mount Installation

NOTE

Procedures for replacing the left and right rifle mounts are basically the same. This procedure covers the right rifle mount.

1. Align holes on left side of clamp bracket (4) with rivets (2) on dashboard bracket (1).
2. Using clamp bracket (4), determine center of two new holes (3) on dashboard bracket (1).

WARNING

- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
- Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.

NOTE

Pin may need to be removed from hinge on driver's side for easier installation.

3. Using 1/4-inch drill bit, drill out two new holes (3).

NOTE

Stuffing rag in hole at top of support may prevent loss of hardware or tools.

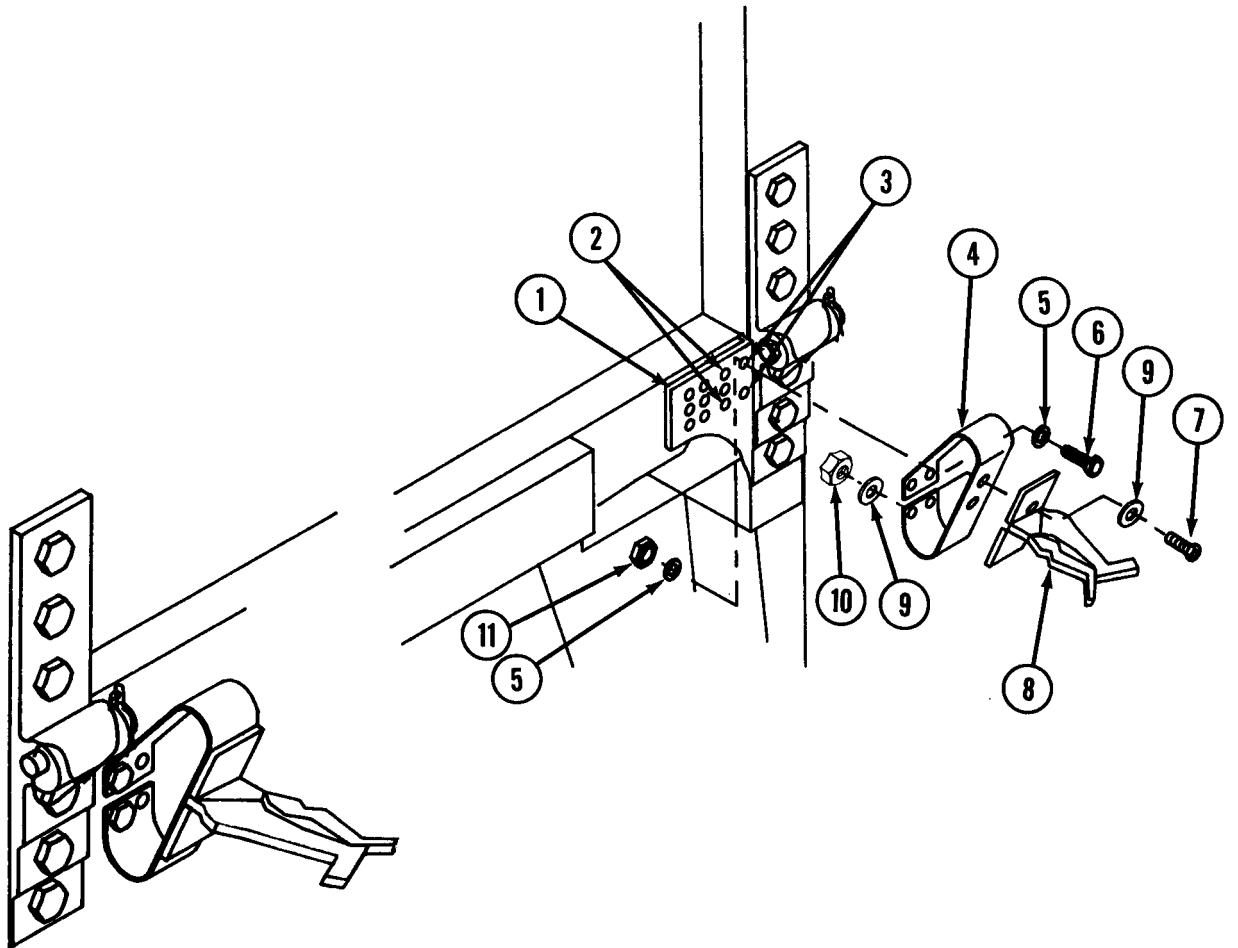
4. Using two capscrews (6), washers (5), and self-locking nuts (11), install clamp bracket (4),

NOTE

Ensure spring-loaded side of mounting clamp is to outside of vehicle.

5. Using two machine screws (7), washers (9), and self-locking nuts (10), install mounting clamp (8).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

NOTE

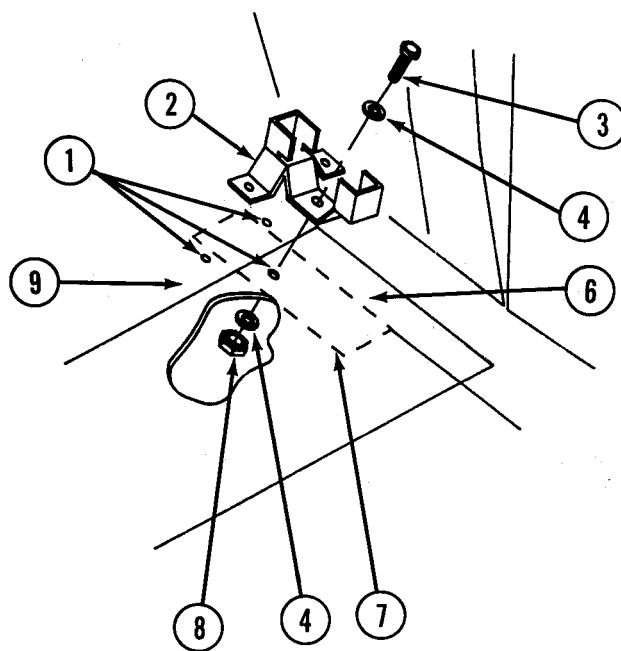
It may be necessary to lift floor insulation to find location of perforations.

6. Cut out floor insulation (6) at perforations (7). Mark outline of perforation on floor. Roll back floor insulation (6).
7. Place rifle mount (2) on floor (9) so that base of rifle mount (2) is centered in outline and rests flat against inclined section of floor (9).
8. Using rifle mount (2) as template, determine center of three holes (1). Remove rifle mount (2).

WARNING

- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
 - Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.
9. Using 3/8-inch drill bit, drill three holes (1) into floor (9).
 10. Using three capscrews (3), six washers (4), and three self-locking nuts (8), install rifle mount (2) onto floor (9) of vehicle.
 11. Roll floor insulation (6) back over rifle mount (2).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

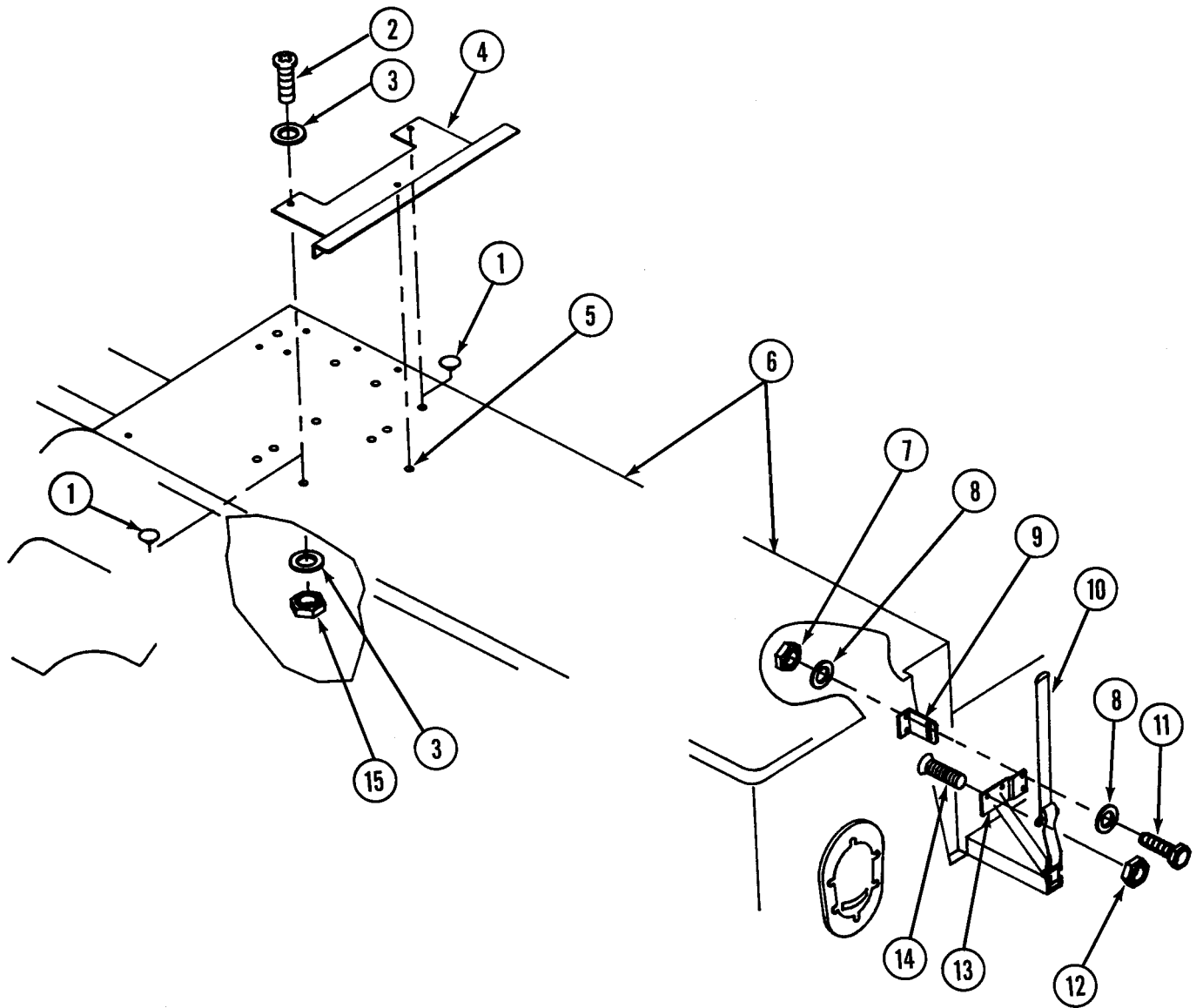
ii. Ladder Mount Installation

1. Remove two plastic cap plugs (1) from wheelhouse (6).
2. Using ladder retaining bracket (4) as a template, align two holes in ladder retaining bracket (4) with two holes in wheelhouse (6). Determine center of third hole (5) and remove ladder retaining bracket (4).

WARNING

- When drilling, be sure to wear goggles for eye protection or injury to personnel may occur.
 - Avoid skin contact with paint, primer, remover, and thinner particularly if there are cuts or open wounds on the hand. Failure to do so could result in serious injury.
3. Using 9/32-inch drill bit, drill hole (5) in wheelhouse (6).
 4. Secure ladder retaining bracket (4) to wheelhouse (6) with screws (2), washers (3), and self-locking nuts (15).
 5. Install ladder strap assembly (10) to ladder strap bracket (13) and secure with screws (14) and nuts (12).
 6. Remove two screws (11), washers (8), and self-locking nuts (7) that secure tailgate bracket (9) to wheelhouse (6). Remove tailgate bracket (9) and retain screws (11), washers (8), and self-locking nuts (7),
 7. Place ladder strap bracket (13) over tailgate bracket (9). Secure with two screws (11), washers (8), and self-locking nuts (7).

4-18. EES KIT INSTALLATION (Cont'd)



4-18. EES KIT INSTALLATION (Cont'd)

jj. Power Interface Box Installation

NOTE

Refer to paragraph 3-29b for installation of power interface box.

kk. Tach/Hourmeter Box Installation

NOTE

Refer to paragraph 3-17b for installation of tach/hourmeter box.

ll. Surge Tank Installation

NOTE

Refer to TM 9-2320-280-20 for installation of surge tank.

mm. Surge Tank to Lower Radiator Hose Installation

NOTE

Refer to TM 9-2320-280-20 for installation of surge tank to lower radiator hose

nn. Air Horn to Air Cleaner Elbow Installation

NOTE

Refer to TM 9-2320-280-20 for installation of air horn to air cleaner elbow.

oo. Power Steering Drive Belt Installation

NOTE

Refer to TM 9-2320-280-20 for installation of power steering drive belt.

4-18. EES KIT INSTALLATION (cont'd)

pp. 200 Amp Alternator Drive Belt Set Installation

NOTE

Refer to TM 9-2320-280-20 for installation of
200 amp alternator drive belt set.

qq. Compressor Drive Belt Installation

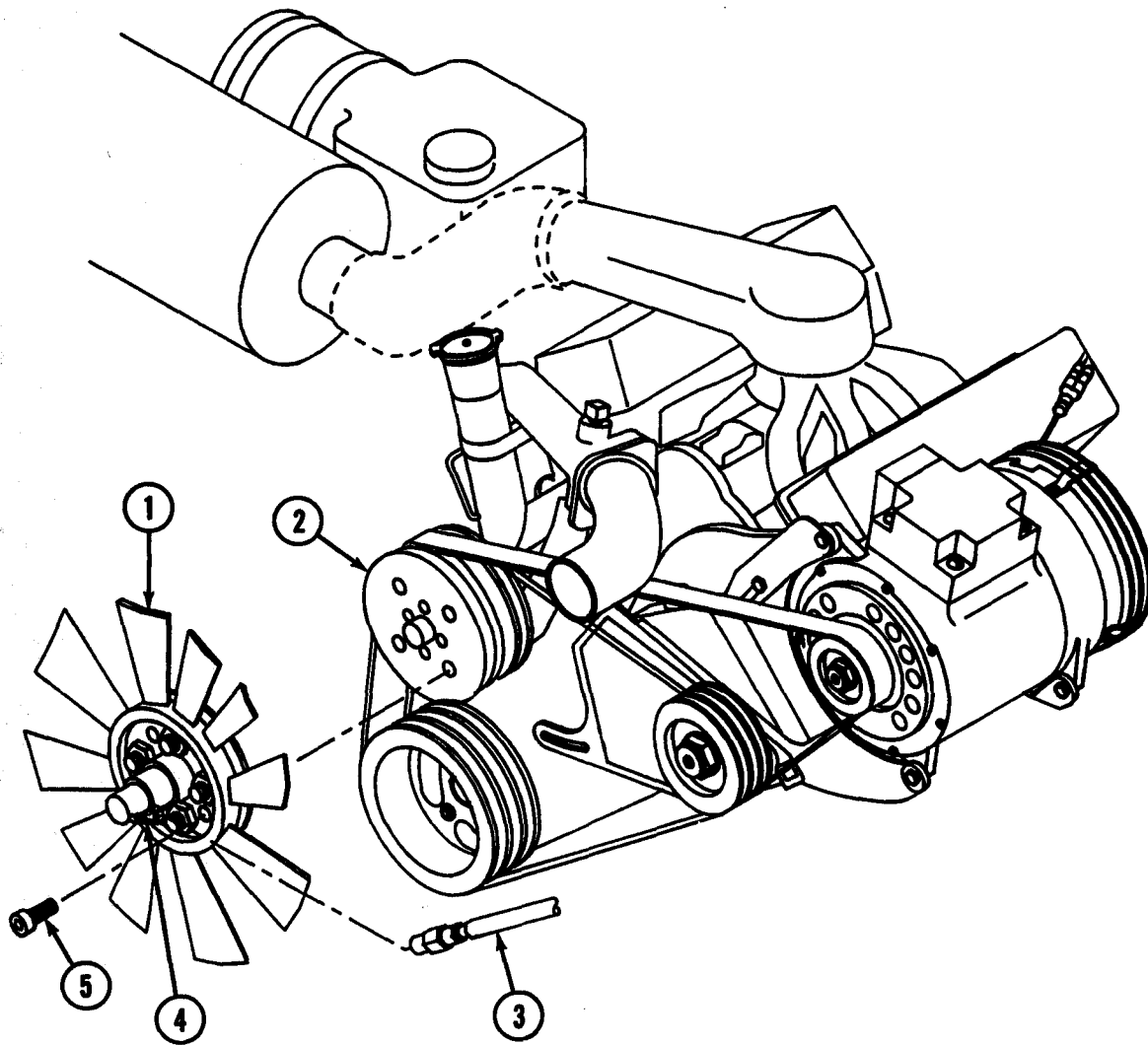
NOTE

Refer to TM 9-2320-280-34 for installation of
compressor drive belt.

4-18. EES KIT INSTALLATION (Cont'd)

rr. Fan Drive Assembly Installation

1. Apply sealing compound to four socket head screws (5) and secure fan drive assembly (1) to water pump pulley (2). Using 6mm hex head socket wrench attachment, tighten socket head screws (5) to 45 lb-ft (61 N•m).
2. Connect fan drive hose (3) to fitting (4) on fan drive assembly (1).



4-18. EES KIT INSTALLATION (Cont'd)

ss. Radiator and Fan Shroud Installation

NOTE

Refer to TM 9-2320-280-20 for installation of radiator and fan shroud.

tt. Engine and Transmission Oil Cooler Assembly Installation

NOTE

Refer to TM 9-2320-280-20 for installation of engine and transmission oil cooler assembly.

uu. Left Splash Shield Installation

NOTE

Refer to TM 9-2320-280-20 for installation of left splash shield.

vv. Hood Prop Rod and Bracket Installation

NOTE

Refer to TM 9-2320-280-20 for installation of hood prop rod and bracket.

ww. Right Splash Shield Installation

NOTE

Refer to TM 9-2320-280-20 for installation of right splash shield.

4-18. EES KIT INSTALLATION (Cont'd)

xx. Hood Installation

NOTE

Refer to TM 9-2320-280-20 for installation of hood .

FOLLOW-ON TASK: Install batteries (TM 9-2320-280-20).

**APPENDIX A
REFERENCES**

A-1. SCOPE

This appendix contains lists of all forms, field manuals, technical manuals, and other publications required for use with this manual.

A-2. PUBLICATIONS INDEX

The following index should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this manual.

Consolidated Index of Army
Publications and Blank Forms DA Pam 25-30

A-3. FORMS

Accident Report DA Form 285
Recommended Changes to Publications
and Blank Forms DA Form 2028
Recommended Changes to Equipment
Technical Publications DA Form 2028-2
Hand Receipt/Annex Number DA Form 2062
Exchange Tag DA Form 2402
Equipment Inspection and Maintenance
Worksheet DA Form 2404
Maintenance Request DA Form 2407
The Army Maintenance Management System (TAMMS) DA Pam 738-750
Preventive Maintenance Schedule and Record DD Form 314
Quality Deficiency Report SF 368

A-4. FIELD MANUALS

First Aid for Soldiers FM 21-11

A-5. TECHNICAL MANUALS

Operator's Manual for Welding Theory and Application TM 9-237
Materials used for Cleaning, Preserving, Abrading,
and Cementing Ordnance Material and Related
Material (Including Chemicals) TM 9-247
Operator's Manual for Truck, 1-1/4 Ton,
4X4, M998 Series TM 9-2320-280-10
Organizational Maintenance Manual for
Truck, 1-1/4 Ton, 4X4, M998 Series TM 9-2320-280-20

A-5. TECHNICAL MANUALS (Cont'd)

Organizational Maintenance Repair Parts
and Special Tools List for
Truck, 1-1/4 Ton, 4X4, M998 Series TM 9-2320-280-20P

Direct Support and General Support
Maintenance Manual for Truck, 1-1/4 Ton,
4X4, M998 Series TM 9-2320-280-34

Direct Support and General Support
Maintenance Repair Parts and Special
Tools List for Truck, 1-1/4 Ton,
4X4, M998 Series TM 9-2320-280-34P

Operation Instructions, Countermeasures Set
AN/TLQ-17A(V), (V)1 (NSN 5865-01-004-1098),
(V)2 (NSN 5865-01-069-3791) TM 32-5865-005-10

Operator's Manual for Traffic Jam
AN/TQ-17A(v)3 (HMMWV) TM 32-5865-301-10

Unit, Direct Support, and General Support
Maintenance Manual for Traffic Jam
AN/TLQ-17A(v)3 (HMMWV) TM 32-5865-301-24

Unit, Direct Support, and General Support
Maintenance Repair Parts and Special
Tools List for Traffic Jam
AN/TLQ-17A(v)3 (HMMWV) TM 32-5865-301-24P

Unit and Direct Support Maintenance Manual
including Repair Parts and Special Tools
List for Converter
CV-3967/TLQ-17A(V) (6130-01-267-8242) TM 32-6130-005-23&P

Painting Instructions for Army Materiel TM 43-0139

Procedures for Destruction of Equipment
to Prevent Enemy Use TM 750-244-6

A-6. TECHNICAL BULLETINS

Calibration and Repair Requirements for the
Maintenance of Army Materials TB 43-180

A-7. ARMY REGULATIONS

Identification and Distribution of DA Publications
and Issue of Agency and Command Administrative
Publication AR 310-2

Dictionary of United States Army Terms AR 310-25

A-8. OTHER PUBLICATIONS

Expendable Items CTA 50-970

Lubrication Order for Truck, 1-1/4 Ton,
4X4, M998 Series LO 9-2320-280-12

**APPENDIX B
MAINTENANCE ALLOCATION CHART (MAC)**

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 is used to designate 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.
- d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

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 (e.g., by sight, sound, or feel).
- b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.
- c. **Service.** Operations required periodically to keep an item in proper operating condition, i.e. , to clean (includes decontaminate, when required), preserve, drain, paint, or to replenish fuel, lubricants, chemical fluids, or gases.
- d. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.
- e. **Aline.** To adjust specified variable elements of an item to bring about optimum or desired performance.

B-2. MAINTENANCE FUNCTIONS (Cont'd)

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. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3rd position code of the SMR code.

i. Repair. To apply maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

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

k. Rebuild. To perform 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 equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II

a. Column (1) - Group Number. Column 1 contains a list of functional group code numbers for the purpose of identifying maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

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

c. Column (3) - Maintenance Function. Column 3 contains a list of the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see para B-2.)

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II (Cont'd)

d. **Column (4) - Maintenance Level.** Column 4 contains the level of maintenance authorized to perform the function listed in column 3, specified by listing a work time figure in the appropriate subcolumn(s). This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance categories, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location 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 MAC. The symbol designations for the various maintenance categories are as follows:

- C Operator or crew
- O Unit maintenance
- F Direct support maintenance
- H General support maintenance
- D Depot maintenance

e. **Column (5) - Tools and Equipment.** Column 5 contains a list, by code, of those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. **Column (6) - Remarks.** Column 6, when applicable, shall contain a letter code, in alphabetical order, which shall be keyed to the remarks contained in section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III

a. **Column (1) - Reference Code.** The tool and test equipment reference code correlates with a code used in the MAC, section II, column 5.

b. **Column (2) - Maintenance Level.** The lowest level of maintenance authorized to use the tool or test equipment.

c. **Column (3) - Nomenclature.** The name or identification of the tool or test equipment.

d. **Column (4) - National Stock Number.** The national stock number of the tool or test equipment.

e. **Column (5) - Tool Number.** The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV

a. **Column (1) - Reference Code.** Column 1 contains the code recorded in column 6, section II.

b. **Column (2) - Remarks.** Column 2 contains information pertaining to the maintenance function being performed as indicated in the MAC, section II.

Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip.	(6) Remarks
			C	O	F	H	D		
33	SPECIAL PURPOSE KITS								
3307	Electrical Environmental System (EES) Kit	Test Install		1.4			40.0	2,5 1,2,3,4, 5,7,8,9, 10,11, 12,13	D C
		Repair		.7				1	G
	Water Pump Pulley	Install Replace		4.8			.3	1,13	B
	Alternator Pulley	Install Replace		4.5			.3		B
	200 Amp Alternator	Inspect Test Install Replace Repair		.2 .3 4.0			1.5	1	B B F
	200 Amp Alternator Ground Strap	Install Replace		.3			.2	1	
	200 Amp Alternator Cable	Install Replace		1.2			.9	2	B
	Compressor	Inspect Service Install Replace Repair		.1	1.6 1.5 3.0		4.2		A E F F F
	Wire No. 798	Install Replace Repair		.5 .3			.3		
	Air Conditioning Service Valves	Install Replace			6		.2	3	F
	Freon Lines	Install Replace					1.3	3,6,7 10,12 3,6,7	

Section II. MAINTENANCE ALLOCATION CHART (Cont'd)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip.	(6) Remarks	
			C	O	F	H	D			
	Cable Assembly W66	Install				.6		3		
		Replace	.5					3		
		Repair	.5					3		
	Hand Throttle Cable	Inspect	.1							
		Test		.1					1	
		Service	.1							
		Adjust		.1					1	
		Install				.6			1	
	Storage Box	Replace		.1					1	
		Repair		.8					1	
		Install				.1			1	
	Cable Assembly W64	Replace		.2			.1		1	
		Install							1	
	Power Interface Box	Inspect		.2						
		Test			.4				3	
Service			.2							
Install					.3			3,8		
Replace			.5					1		
Tach/hourmeter Box	Repair		4.5	7.0				1,3		
	Inspect	.1								
	Test		.3							
	Service	.1								
	Install				.1			2,9,12		
Surge Tank	Replace		.2					1		
	Repair		.8					1		
	Install				.3			1	B	
Surge Tank to Lower Radiator Hose	Replace		.6			.3		1	B	
	Install									
Air Horn to Air Cleaner Elbow	Replace		.3			.2		1	B	
	Install									

Section II. MAINTENENCE ALLOCATION CHART (Cont'd)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip.	(6) Remarks
			C	O	F	H	D		
	Power Steering Drive Belt	Install Replace		1.0		.6		1	B
	200 Amp Alternator Drive Belt	Install Replace		1.0		.6		1	B
	Compressor Drive Belt	Install Replace		1.0		.6		1	B
	Engine Oil Pressure Gage	Install Replace		.5		.5			B B
	Coolant Temperature Gage	Install Replace		.5		.5			B B
	Fuel Gage	Install Replace		.5		.5			B B

SECTION III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

(1) REFERENCE CODE	(2) MAINTENANCE CATEGORY	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	O	TOOL KIT, GENERAL MECHANIC'S AUTOMOTIVE	5180-00-177-7033	
2	O	SHOP EQUIPMENT, AUTO- MOTIVE MAINTENANCE AND REPAIR: ORGANIZA- TIONAL MAINTENANCE, COMMON #1, LESS POWER	4910-00-754-0654	
3	F	SHOP EQUIPMENT, AUTO- MOTIVE MAINTENANCE AND REPAIR: FIELD MAINTENANCE, BASIC, LESS POWER	4910-00-754-0705	
4	F	SHOP EQUIPMENT, MACHINE SHOP: FIELD MAINTENANCE, BASIC	3470-00-754-0708	
5	O	LEAD SET, TEST	6625-00-444-4041	
6	O	CROWSFOOT, 1 3/16-INCH	5120-00-229-2774	
7	O	CROWSFOOT, 1 5/8-INCH	5120-00-181-6753	
8	H	PUNCH AND DIE, KNOCKOUT (1-3/4")	5110-00-062-0883	
9	H	BLADE, HOLE SAW (1-5/8")	3455-00-335-3045	
10	H	BLADE, HOLE SAW (2-5/8")	3455-00-22-4143	
11	H	BLADE, HOLE SAW (2-1/2")	3455-01-196-0636	
12	H	ARBOR, HOLE SAW	3460-00-540-1291	
13	O	SOCKET WRENCH ATTAC., HEX, 6MM, 3/8 DRIVE	5120-01-055-1308	

SECTION IV. REMARKS

(1) Reference Code	(2) Remarks
A	Refer to unit PMCS in TM 9-2320-280-20.
B	Refer to TM 9-2320-280-20 for repair procedures, test equipment, and tools required.
C	Installation of EES kit components into standard M1037 truck.
D	Test consists of troubleshooting cable assembly W64, cable assembly W66, and hand throttle cable.
E	Refer to TM 9-2320-280-34 for service procedures.
F	Refer to TM 9-2320-280-34 for installation/repair procedures, test equipment, and tools required.
G	Repair consists of replacement of safety lanyard, ladder mount components, M16 rifle support, M16 rifle mounting clamp bracket, and M16 rifle mounting bracket. Refer to TM 9-2320-280-20 for procedures to replace M16 rifle mount components.

APPENDIX C
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix contains a list of expendable/durable supplies and materials the user will need to operate and maintain the components of the EES kit. These items are authorized to the user 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 column contains a list of the numbers assigned to the entries; the numbers are referenced in the "Initial Setup" of applicable tasks under the heading of "Material/Parts ."

b. Column (2) - Level. This column is used to identify the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Unit Maintenance
F - Direct Support Maintenance
H - General Support Maintenance

c. Column (3) - National Stock Number. This column contains a list of the national stock numbers assigned to the item. Use it to request or requisition the item.

d. Column (4) - Description. This column is used to indicate the Federal item name and, if required, a description to identify the item. The last line for each item listing indicates the Commercial and Government Entity Code (CAGE) in parenthesis followed by the part number.

e. Column (5) - Unit of Measure (U/M). This column is used to indicate the measure used in performing the actual maintenance function. This measure is expressed by an alphabetical abbreviation (QT, GAL.). 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)	(2)	(3)	(4)	(5)
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION	U/M
1	O		ANTISEIZE COMPOUND, CONDUCTIVE (59730) CP-16	
		8030-00-155-6444	16 OZ. CAN	CN.
2	F		COPPER SHIELD (34623) 5976480	
			1 BOTTLE	CC
3	C		DETERGENT: GENERAL PURPOSE LIQUID (81349) MIL-D-16791	
		7930-00-282-9699	1 GALLON CONTAINER	GAL.
4	F		LUBRICATING OIL: REFRIGERANT, COMPRESSOR (59595) CAPELLA WF-68	
		9150-00-071-4712	1 GALLON CAN	GAL.
5	C		RAG: WIPING, COTTON AND COTTON-SYNTHENIC (58536) A-A-531	
		7920-00-205-1711	50 POUND BALE	LB
6	O		SEALANT, EXTERIOR: (80063) SC-C-681272-1	
			1 TUBE	TU
7	O		SEALING COMPOUND: THREAD LOCKING, HIGH STRENGTH (80244) MIL-S-46163 TYPE I GRADE K	
		8030-00-148-9833	10CC BOTTLE	CC
8	O		SOLDER, TIN ALLOY: (81348) SN60WRMAP3 0.0325 LB	
		3439-00-781-2629	1 POUND COIL	LB

SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION	U/M
9	F		TAPE, PRESSURE SENSITIVE A-A-1689 TY1 CL2 (18876)	
		7510-00-634-2786	36 INCH ROLL	RO

APPENDIX D

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LISTS (RPSTL)

SECTION I. INTRODUCTION

D-1. Scope

This Repair Parts and Special Tools List (RPSTL) is used to identify and authorize spare and repair parts; special tools; special Test, Measurement, and Diagnostic Equipment (TMDE); and other special support equipment required for performance of unit, direct support, and general support maintenance of the components of the Electrical Environmental System (EES) kit. For any part not found in this RPSTL, see TM 9-2320-280-20P and TM 9-2320-280-34P for the 1-1/4 ton, 4X4, M998 series vehicles. The RPSTL authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

D-2. General

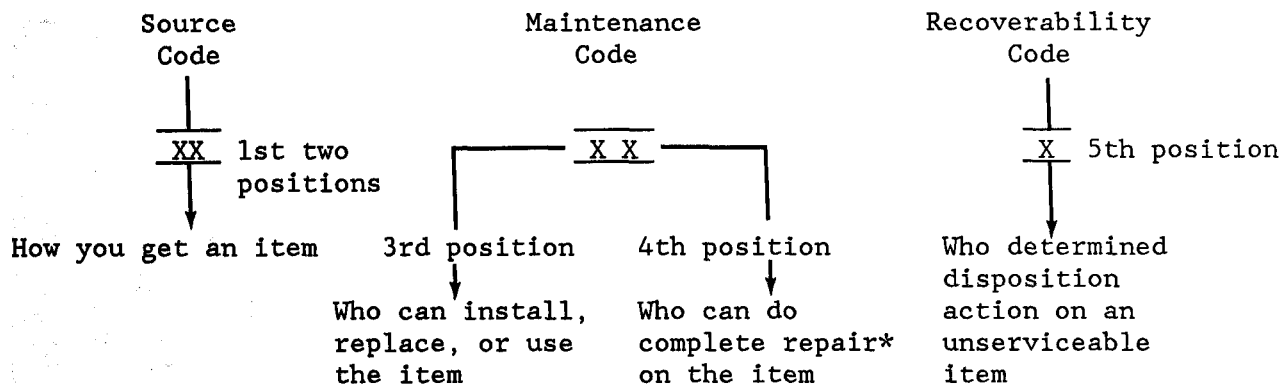
In addition to section I, Introduction, this RPSTL is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed by item name in FIG BULK at the end of the section. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in this section. Items listed are shown on the associated illustration(s)/figure(s) .

b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE (UOC) column) for the performance of maintenance.

c. Section IV. Cross-reference Indexes. A list, in National Item Identification Number (NIIN) sequence, of all national stock numbered items, followed by a list in alphanumeric sequence of all part numbers appearing in the listing. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance. The figure and item number index contains a list of figures and item numbers in alphanumeric sequence and the NSN's, CAGE's, and part numbers are cross-referenced.

b. **Column (2) - SMR Code.** This column indicates the 5-position code that contains supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) **Source Code.** The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment, Explanations of source codes follows:

code	Explanation
PA	Stocked items: Use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the third position of the SMR code.
PB	
PC**	
PD	
PE	
PF	
PG	
<p>**NOTE: Items coded PC are subject to deterioration.</p>	
KD	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the third position of the SMR code. The complete kit must be requisitioned and applied.
KF	
KB	
MO (Made at Org Level)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
MF (Made at DS Level)	
MH (Made at GS Level)	
MD (Made at Depot)	

Code	Explanation
AO - (Assembled by Org Level)	Items with these codes are not to be requested/ requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
AF - (Assembled by DS Level)	
AH- (Assembled by GS Level)	
AD - (Assembled by Depot)	
XA	- Do not requisition an "XA"-coded item. Order its next higher assembly. (Also, refer to the NOTE below.)
XB	- If an "XB" item is not available from salvage, order it using the FSCM and part number given.
XC	- Installation drawing, diagram, instruction sheet, or field service drawing that is identified by manufacturer's part number.
XD	- Item is not stocked. Order an "XD"-coded item through normal supply channels using the FSCM and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA."

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item, and the code indicates authorization to one of the following levels of maintenance:

Code	Application/Explanation
C	- Crew or operator maintenance done within organizational maintenance.
O	- Organizational level can remove, replace, and use the item.
F	- Direct support level can remove, replace, and use the item.
H	- General support level can remove, replace, and use the item.
D	- Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired, and the code identifies the lowest maintenance level with the capability to do complete repair (i.e. , perform all authorized repair functions). (NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.) This position will contain one of the following maintenance codes.

Code	Application/Explanation
O	- Organizational is the lowest level that can do complete repair of the item.
F	- Direct support is the lowest level that can do complete repair of the item.
H	- General support is the lowest level that can do complete repair of the item.
D	- Depot is the lowest level that can do complete repair of the item.
Z	- Unrepairable. No repair is authorized.
B	- No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) **Recoverability Code.** Recoverability codes are assigned to items to indicate the disposition actions on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

Code	Application/Explanation
Z	- Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in third position of SMR code.
O	- Repairable item. When uneconomically repairable, condemn and dispose of the item at organizational level.

Code	Application/Explanation
F	- Repairable item. When uneconomically repairable, condemn and dispose of the item at the direct support level.
H	- Repairable item. When uneconomically repairable, condemn and dispose of the item at general support level.
D	- Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
A	- Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. **Column (3) - CAGE.** The Commercial and Government Entity Code (CAGE) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc. , that supplies the item.

d. **Column (4) - PART NUMBER.** This column indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. **column (5) - Description and Usable on Code (UOC).** This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) Items that are included in kits and sets are listed below the name of the kit or set.

(3) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(4) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(5) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).

(6) The usable on code, when applicable (see paragraph 5, special information).

(7) In the Special Tools List section, the Basis of Issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(8) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Sections II and Section III.

f. **Column (6) - QTY.** The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

D-4. Explanation of Columns (Section IV)

a. National Stock Number (NSN) Index

(1) **Stock Number Column.** This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last

nine digits of the NSN (i.e., $\overbrace{5305-01-674-1467}^{\text{NSN}}$). When using the NIIN column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) **Fig. Column.** This column contains a list of the numbers of the figures where the items are identified/located. The figures are in numerical order in Section II and Section III.

(3) **Item Column.** This column identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. **Part Number Index.** This column contains a list of part numbers in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) **CAGE Column.** The Commercial and Government Entity Code (CAGE) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) **Part Number Column.** This column indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

(3) **Stock Number Column.** This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and FSCM columns to the left.

(4) **Fig. Column.** This column lists the number of the figure where the item is identified/located in Sections II and III.

(5) **Item Column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

c. Figure and Item Number Index.

(1) **Fig. Column.** This column lists the number of the figure where the item is identified/located in Section II and III.

(2) **Item Column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) **Stock Number Column.** This column lists the NSN for the item.

(4) **CAGE Column.** The Commercial and Government Entity Code (CAGE) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc. , that supplies the item.

(5) **Part Number Column.** This column indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

D-5. Special Information

a. **Usable On Code.** The usable on code appears in the lower left corner of the description column heading. Usable on codes are shown as "UOC:" in the description column (justified left) on the first line applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in the RPSTL are:

Code	Used On
H21	M1037 WO/W

b. Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source codes to be manufactured or fabricated are found in this manual.

c. Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in section II.

D-6. How to Locate Repair Parts
--

a. When National Stock Number or Part Number is Not Known:

(1) First. Using the Table of Contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

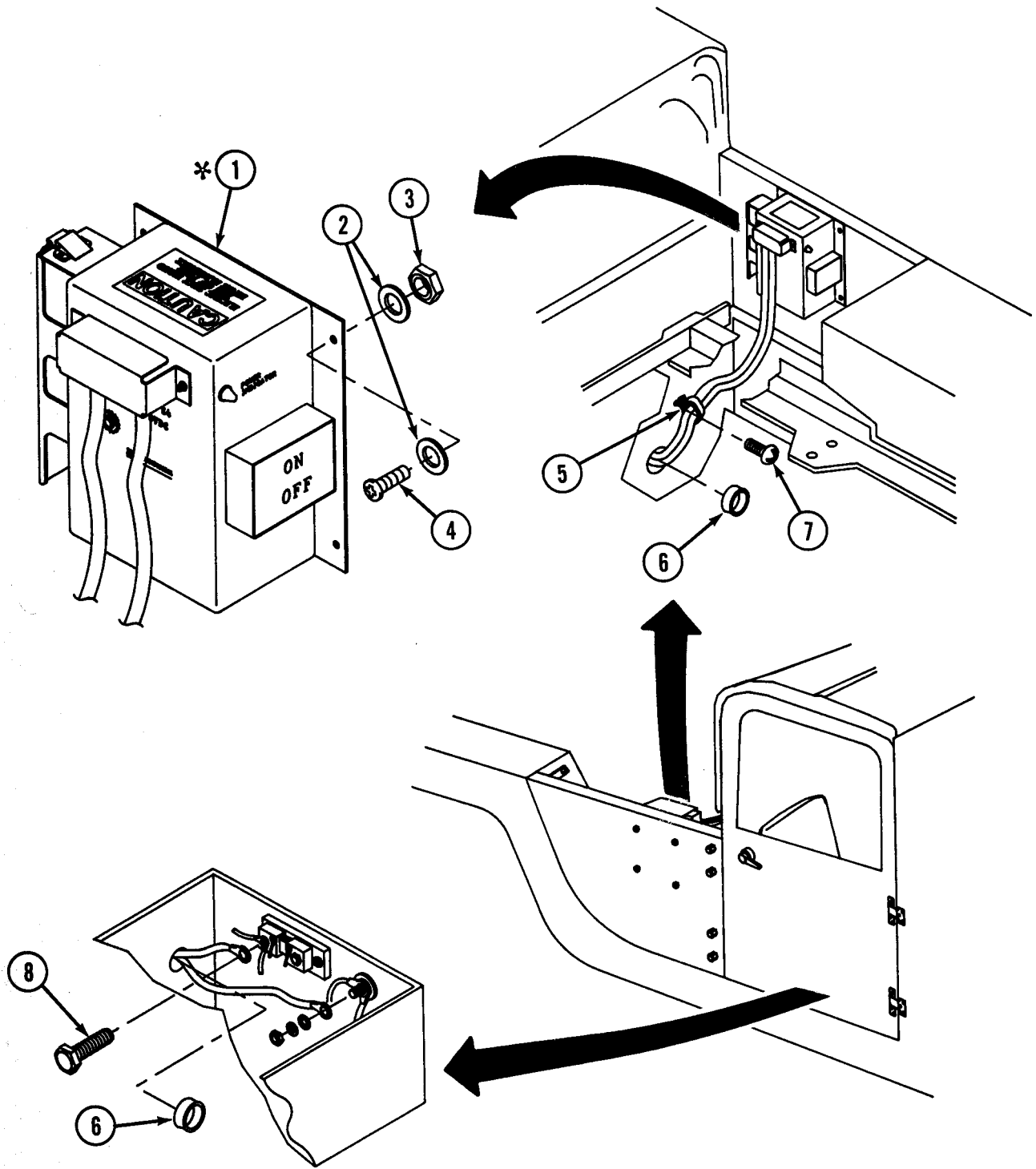
(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and use the Figure and Item Number Index to find the NSN.

b. When National Stock Number or Part Number is Known:

(1) First. Using the National Stock Number Index and the Part Number Index, find the pertinent NSN or part number. The NSN index is in NIIN sequence [see 4.a.(1)]. The part numbers in the Part Number Index are listed in ascending alphanumeric sequence [see 4.b.]. Both indexes cross-reference you to the illustration/figure and item number of the item you are looking for.

(2) Second. Turn to the figure and item number, verify that the item is the one you're looking for, then locate the item number in the Repair Parts List for the figure.

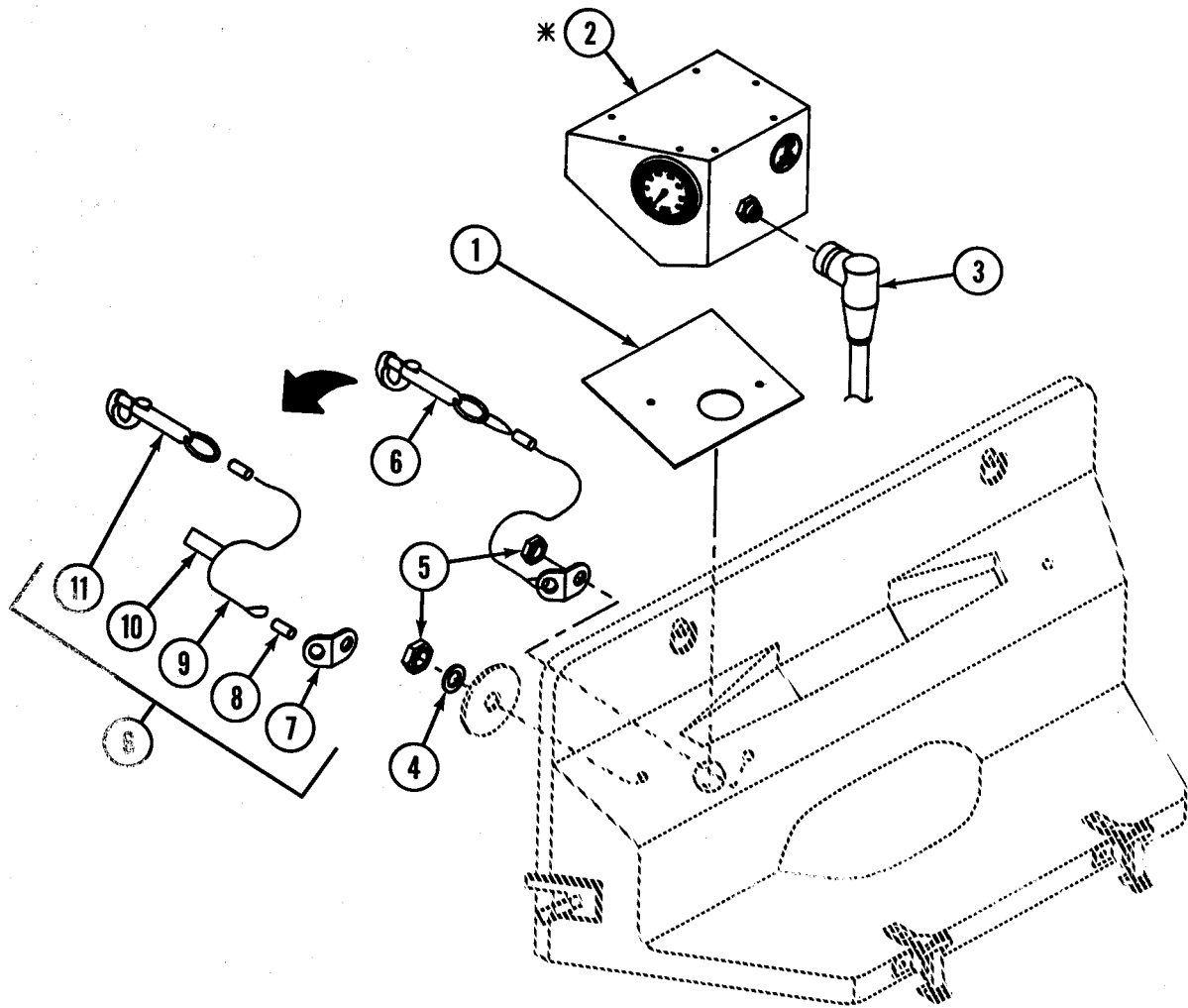


* For parts breakout, see Figure 26.

Figure 1. EES Kit, Power Interface Box Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 1 POWER INTERFACE BOX ASSEMBLY					
1	PAOFF	57958	C5136320	POWER INTERFACE BOX, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS15795-810	WASHER, FLAT, PART OF EES KIT P/N C5136350	8
3	PAOZZ	96906	MS17830-4C	NUT, SELF-LOCKING, HEX, PART OF EES KIT P/N C5136350	4
4	PAOZZ	96906	MS51957-81	SCREW, MACHINE, PART OF EES KIT P/N C5136350	4
5	PAOZZ	96906	MS21334-32	CLAMP, LOOP, PART OF EES KIT P/N C5136350	1
6	PAFZZ	96906	MS35489-27	GROMMET, NONMETALLIC PART OF EES KIT P/N C5136350	2
7	PAOZZ	96906	MS51861-47C	SCREW, TAPPING, PART OF EES KIT P/N C5136350	1
8	PAOZZ	96906	MS18154-60	SCREW, CAP, HEXAGON, PART OF EES KIT P/N C5136350	1

END OF FIGURE



* For parts breakout, see Figure 25.

Figure 2. EES Kit, Tach/Hourmeter Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 2 TACH/HOURMETER ASSEMBLY					
1	PBOZZ	57958	C5136339	SEAL, TACK/HOURMETER, PART OF EES KIT P/N C5136350	1
2	XC000	57958	C5136334	TACH/HOURMETER ASSY. PART OF EES KIT P/N C5136350	1
3	PAOZZ	57958	C5136365	CABLE ASSY, STATUS WARNING W64, PART OF EES KIT P/N C5136350	1
4	PAOZZ	96906	MS15795-808	WASHER, FLAT PART OF EES KIT P/N C5136350	1
5	PAOZZ	96906	MS21044C3	NUT, SELF-LOCKING, HEX, PART OF EES KIT P/N C5136350	2
6	PAOZZ	57958	C5136341	SAFETY LANYARD, PART OF EES KIT P/N C5136350	1
7	XAOZZ	57958	C5135948-1	.CLIP, LANYARD	1
8	XAOZZ	96906	MS51844-62	.SWAGING SLEEVE, WIRE	2
9	XAOZZ	81349	M83420/2-002	.ROPE, WIRE	V
10	XAOZZ	81349	M43436/1-3	.BAND MARKER	1
11	XAOZZ	39428	3906T12	.HOOK DRAWBAR CHAIN	1

END OF FIGURE

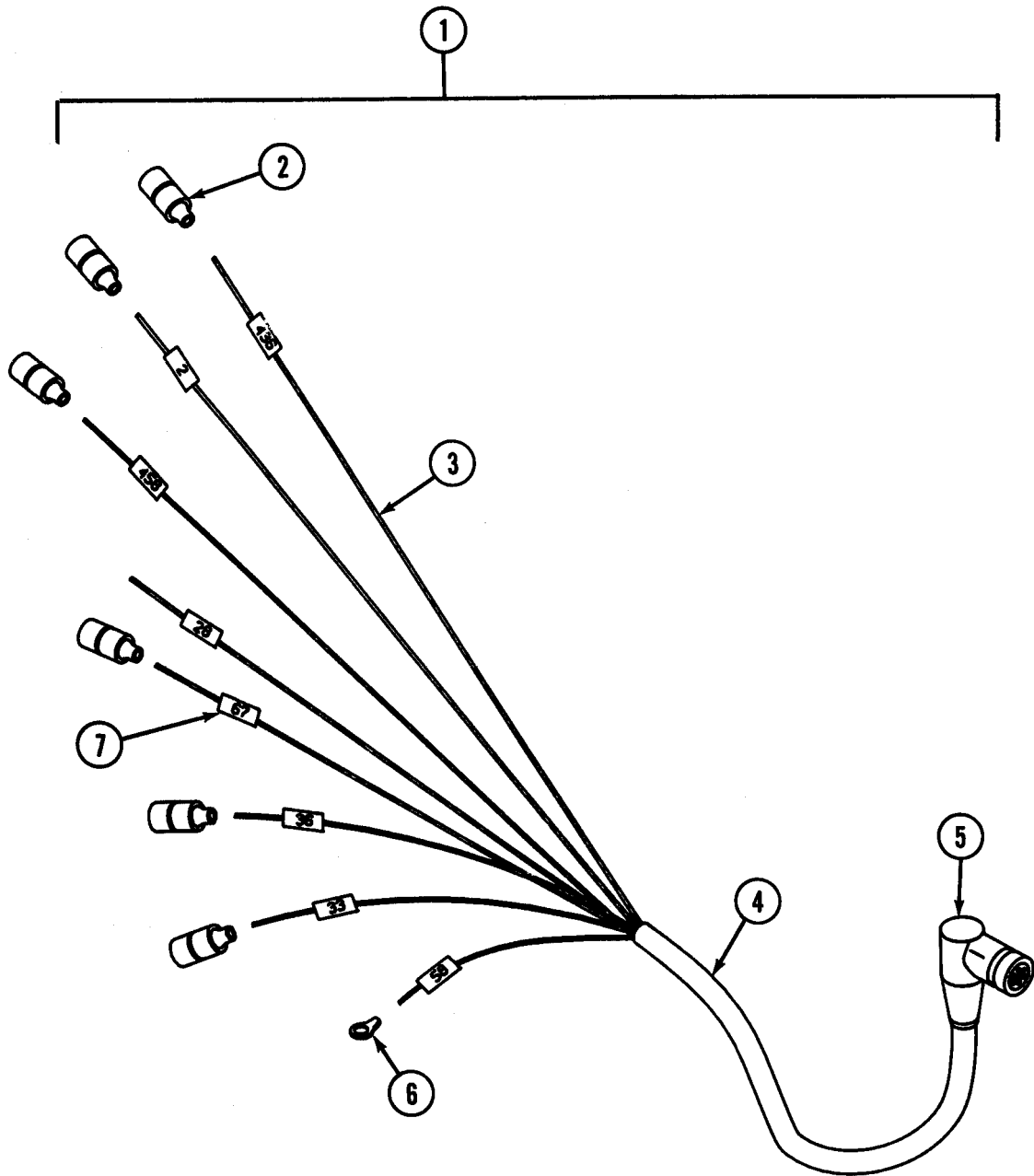


Figure 3. EES Kit, Cable Assembly W66

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 3 CABLE ASSEMBLY W66					
1	PAOOO	57958	C5136366	CABLE ASSEMBLY W66, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27144-2	.CONNECTOR, PLUG, ELEC	6
3	XAOZZ	81349	M13486-1-3	.WIRE, ELECTRICAL	V
4	XAOZZ	81349	M23053/5-109-0	.SLEEVING, INSULATION	V
5	XAOZZ	96906	MS3476W16-8S	.CONNECTOR, PLUG	1
6	PAOZZ	59730	TG11	.TERMINAL LUG	1
7	XAOZZ	06090	TMS-WM-00/4	.INSULATION SLEEVING	V
END OF FIGURE					

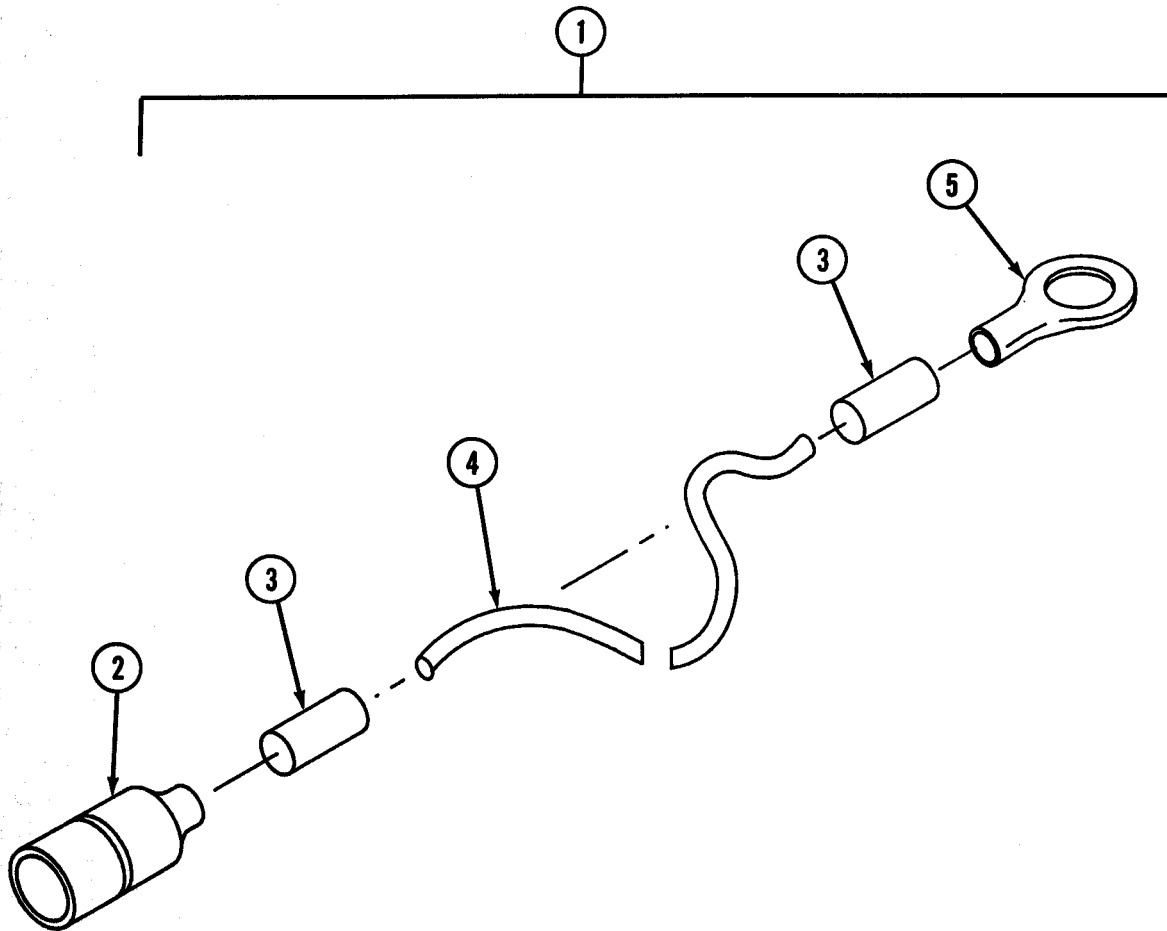


Figure 4. EES Kit, Ground Wire Assembly, A/C

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 4 GROUND WIRE ASSEMBLY, A/C	
1	PAOOO	57958	C5136367	GROUND WIRE, A/C, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27142-2	.CONNECTOR, PLUG	1
3	XAOZZ	06090	TMS-WM-00/4	.INSULATION SLEEVING	V
4	XAOZZ	81349	M13486-1-5	.WIRE, ELECTRICAL	5
5	PAOZZ	59730	TG11	.TERMINAL LUG	1
				END OF FIGURE	

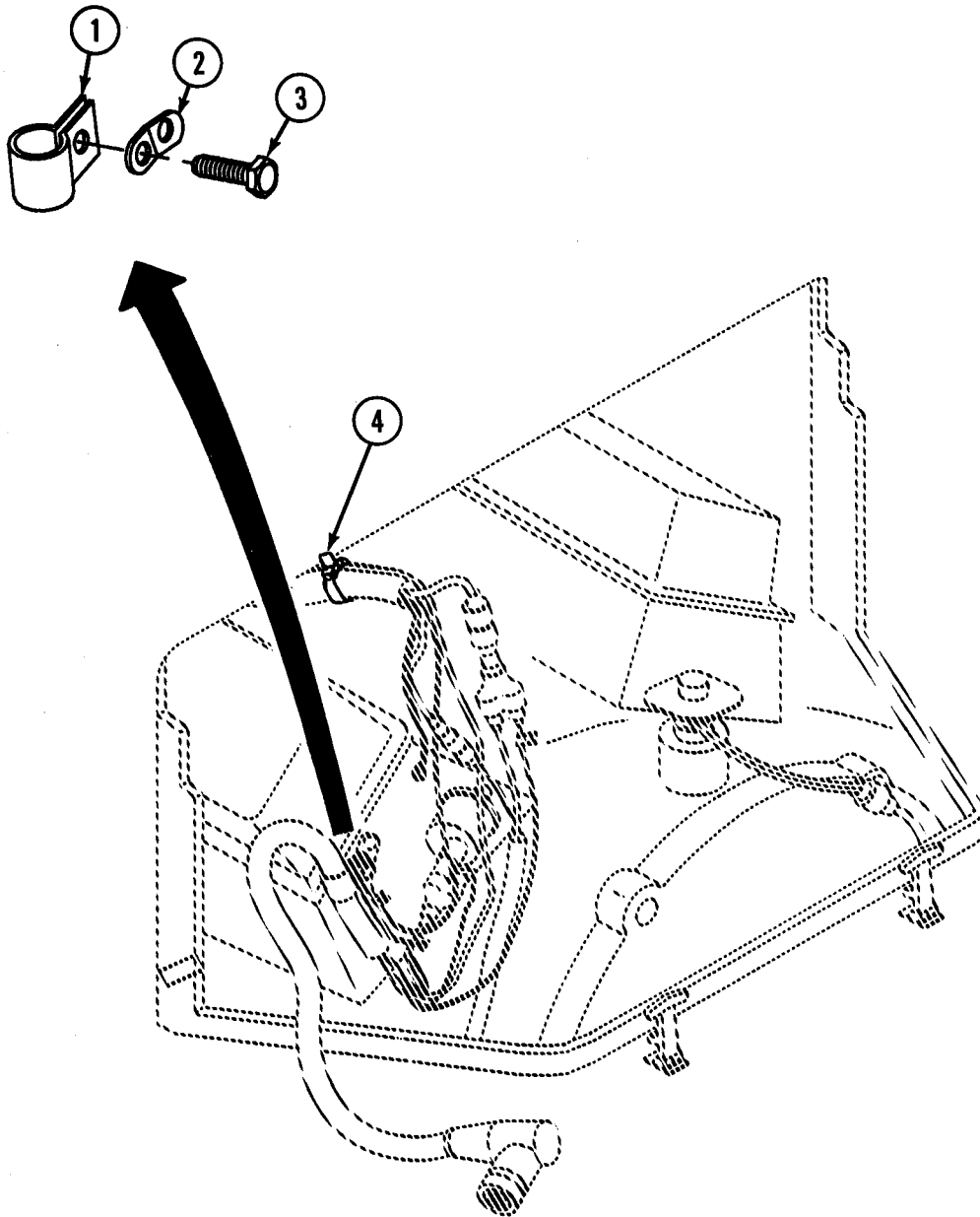


Figure 5. EES Kit, Ground Attachment

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 5 GROUND ATTACHMENT					
1	PAOZZ	96906	MS21333-123	CLAMP, LOOP, PART OF EES KIT P/N C5136350	1
2	PFOZZ	57958	C5136342	BRACKET, ANGLE, PART OF EES KIT P/N C5136350	1
3	PAOZZ	80204	B18231A10020NF	SCREW, CAP, HEXAGON, PART OF EES KIT P/N C5136350	1
4	PAOZZ	96906	MS3367-2-0	STRAP, TIEDOWN, ELECT, PART OF EES KIT P/N C5136350	V
END OF FIGURE					

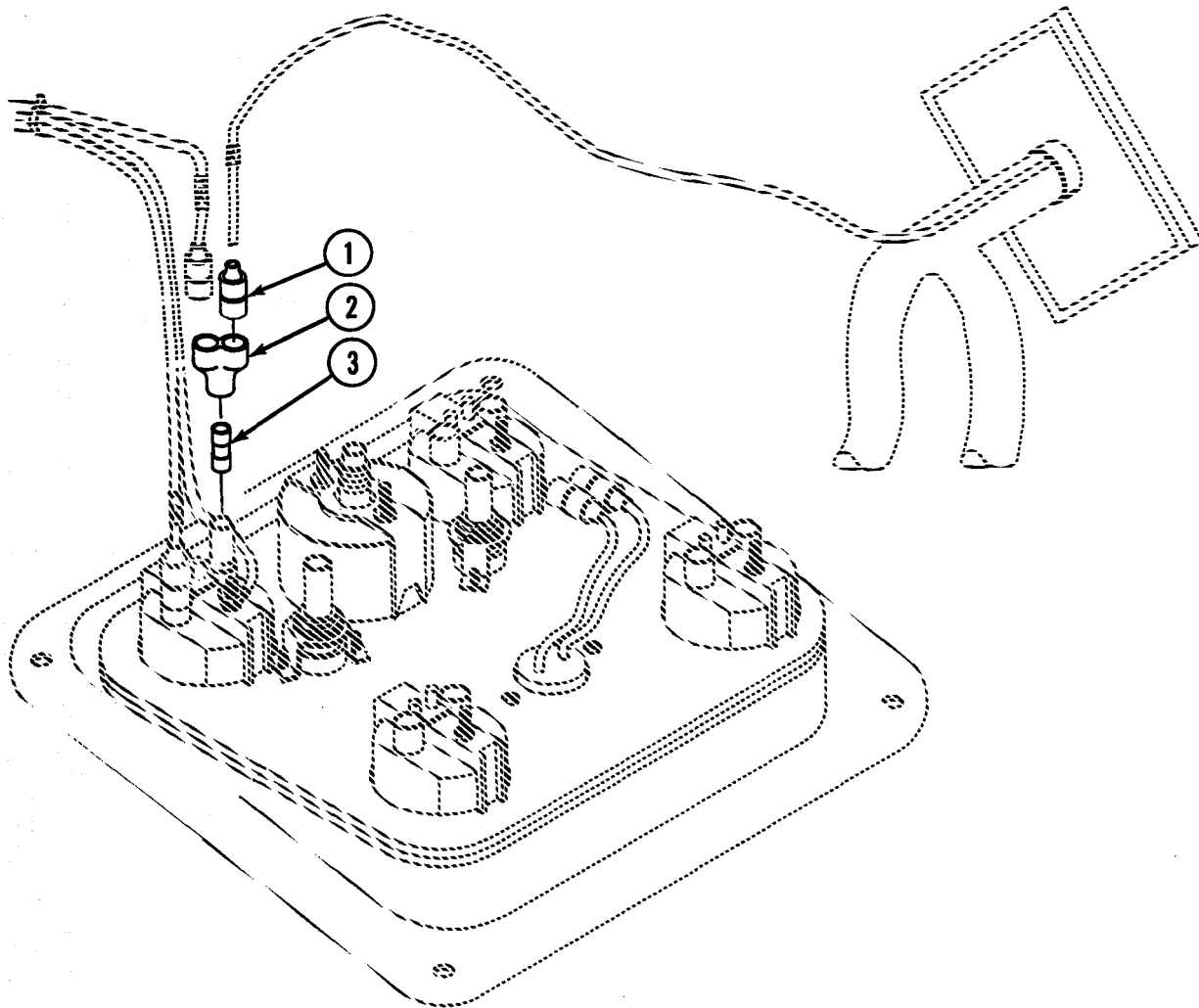


Figure 6. EES Kit, Fuel Gage Wiring

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 6 FUEL GAGE WIRING	
1	PAOZZ	96906	MS27144-2	CONNECTOR, PLUG, ELEC, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27147-1	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
3	PAOZZ	19207	8741492	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
				END OF FIGURE	

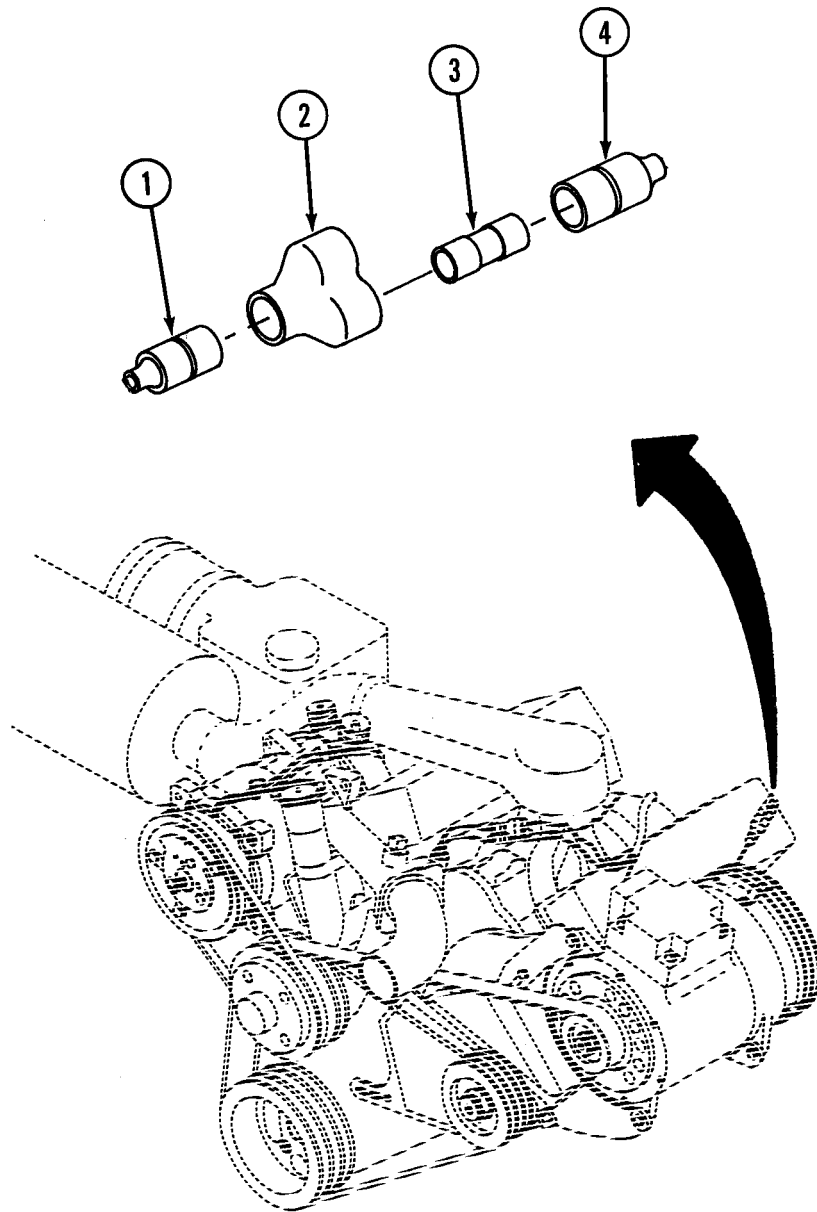


Figure 7. EES Kit, Alternator Wiring

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 7 ALTERNATOR WIRING	
1	PAOZZ	96906	MS27144-1	CONNECTOR, PLUG, ELEC, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27147-1	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
3	PAOZZ	19207	8741492	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
4	PAOZZ	96906	MS27142-2	CONNECTOR, PLUG, ELEC, PART OF EES KIT P/N C5136350	1

END OF FIGURE

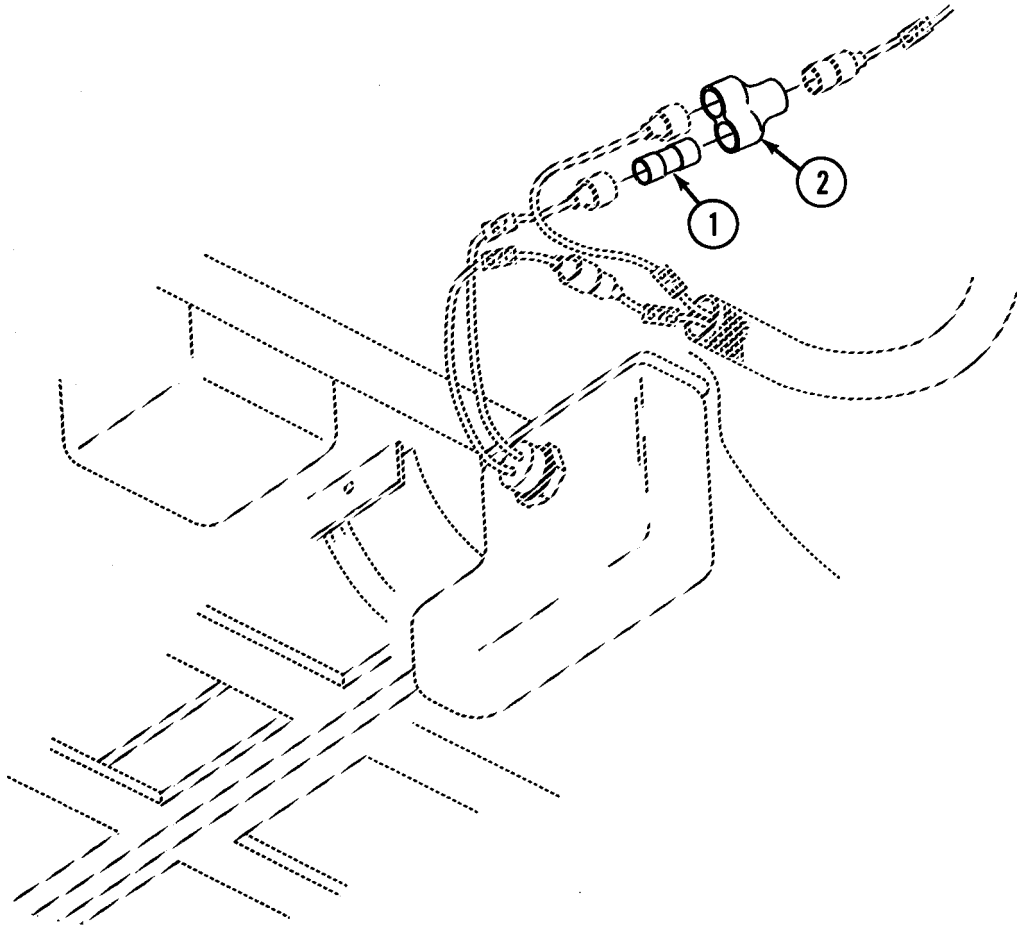


Figure 8. EES Kit, Parking Brake Wiring

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
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GROUP 3307: EES KIT
FIG. 8 PARKING BRAKE WIRING

1	PAOZZ	19207	8741492	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27147-1	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1

END OF FIGURE

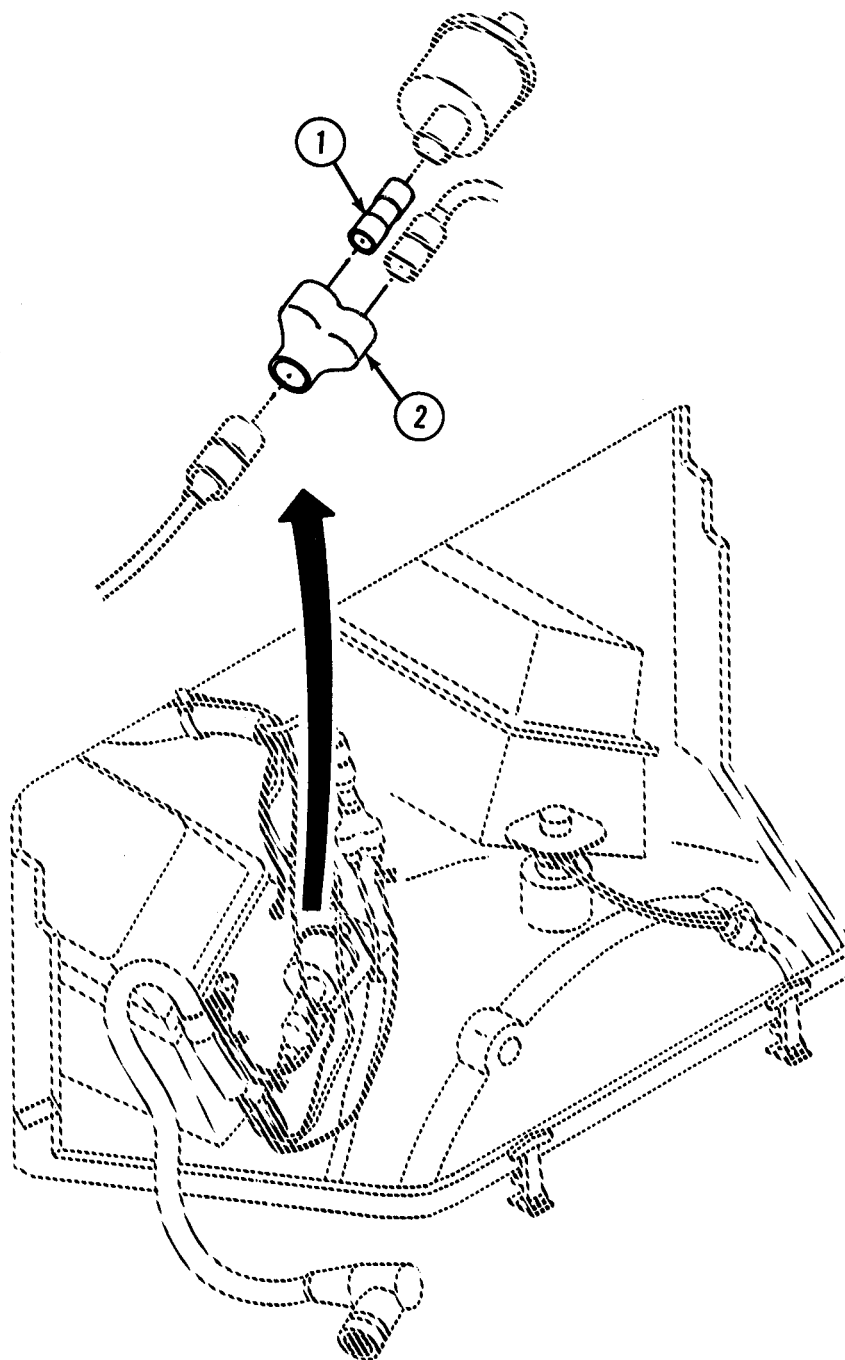


Figure 9. EES Kit, Oil Pressure Wiring

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
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GROUP 3307: EES KIT
FIG. 9 OIL PRESSURE WIRING

1	PAOZZ	19207	8741492	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27147-1	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1

END OF FIGURE

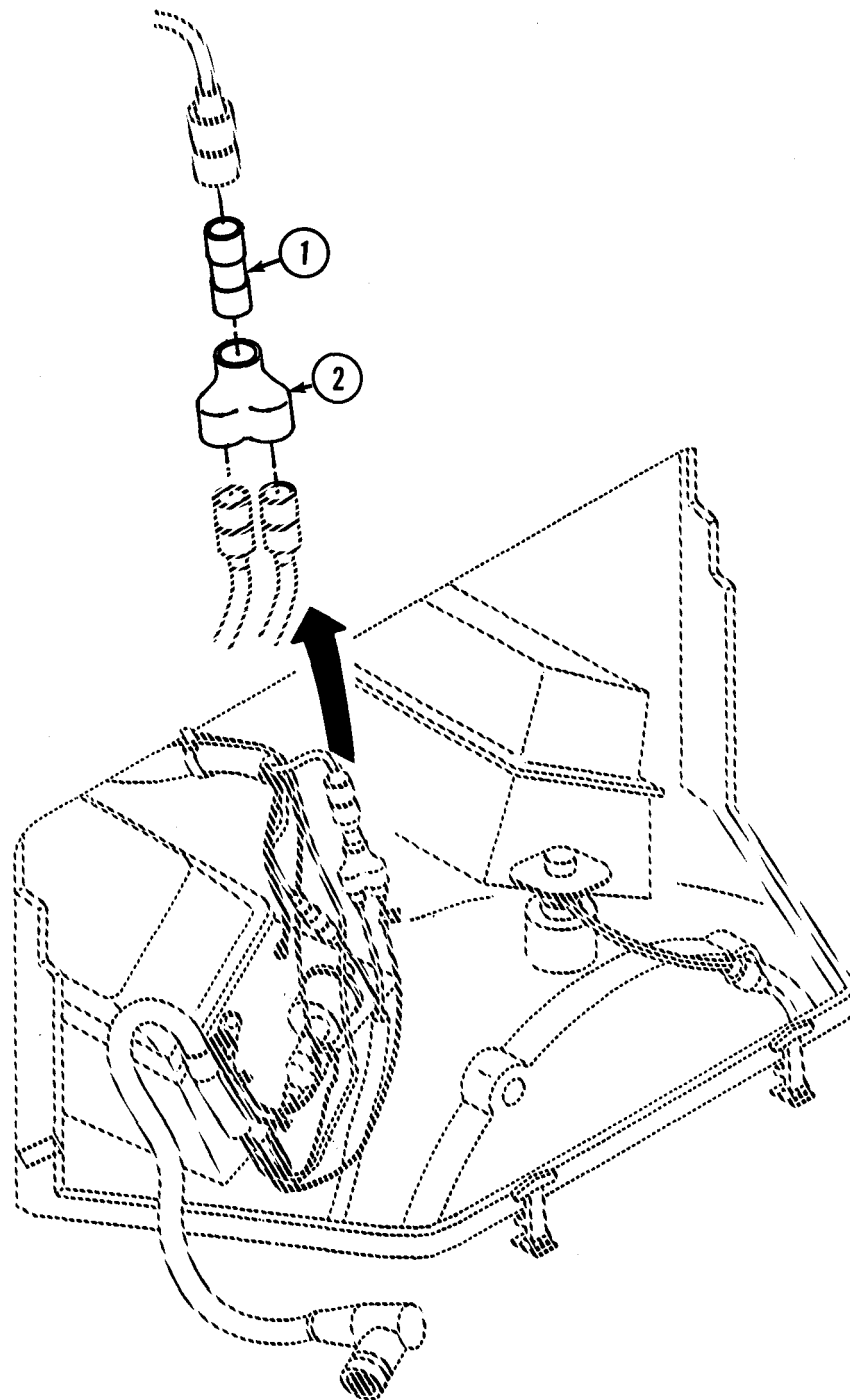


Figure 10. EES Kit, Engine Temperature Wiring

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
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GROUP 3307: EES KIT
FIG. 10 ENGINE TEMPERATURE
WIRING

1	PAOZZ	19207	8741492	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27147-1	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1

END OF FIGURE

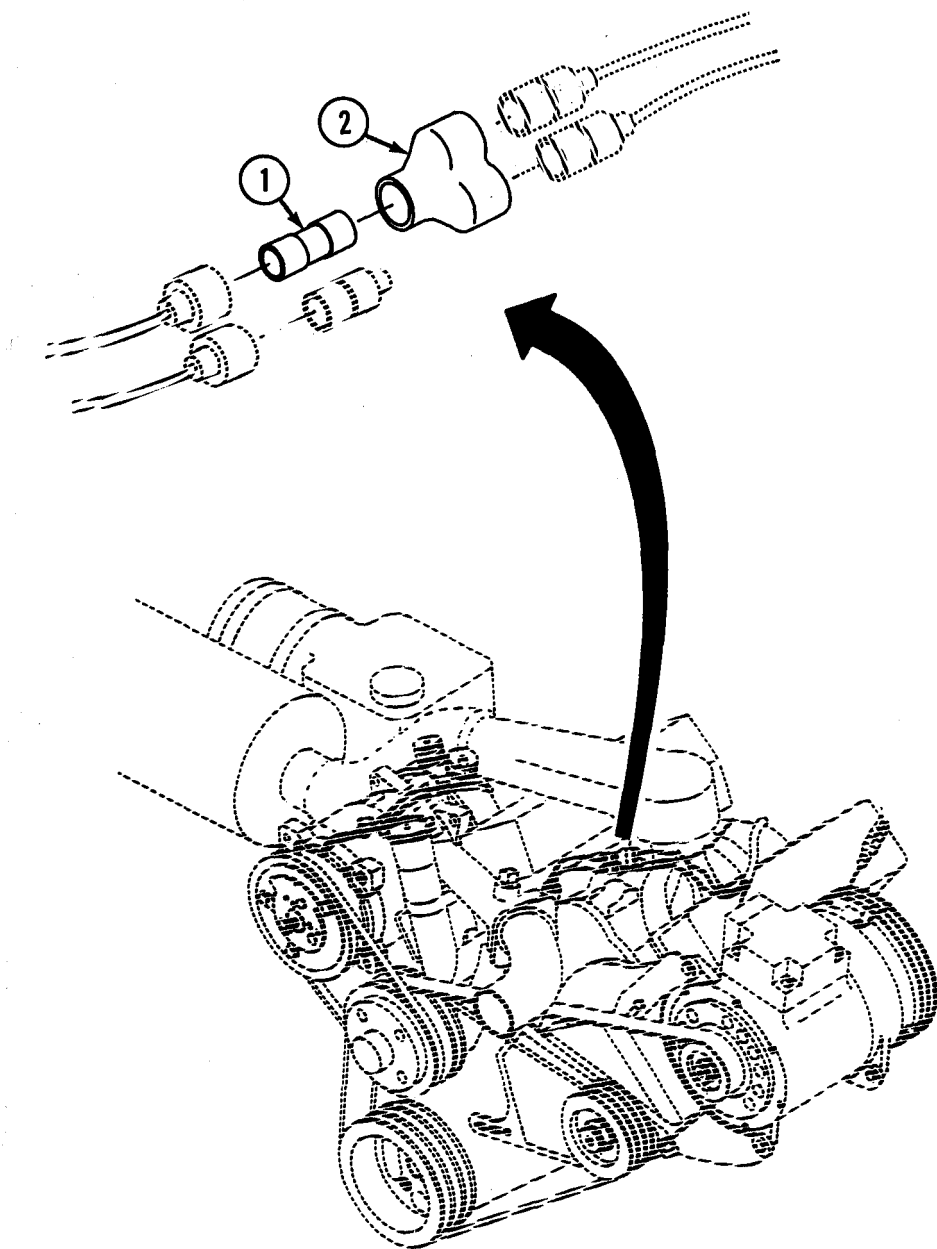


Figure 11. EES Kit, 28V Wiring

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
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GROUP 3307: EES KIT
FIG. 11 28V WIRING

1	PAOZZ	19207	8741492	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS27147-1	ADAPTER, CONNECTOR, PART OF EES KIT P/N C5136350	1

END OF FIGURE

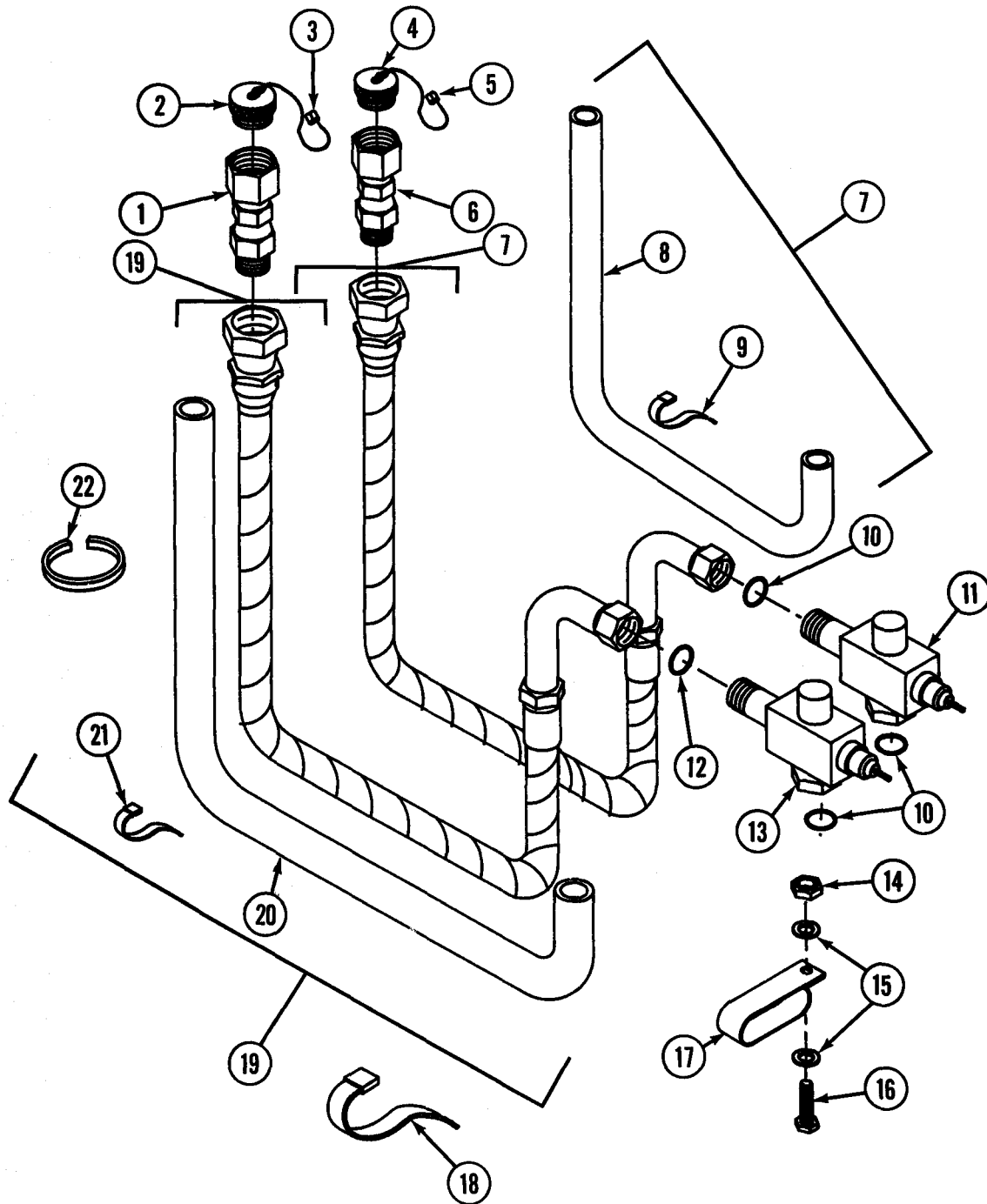
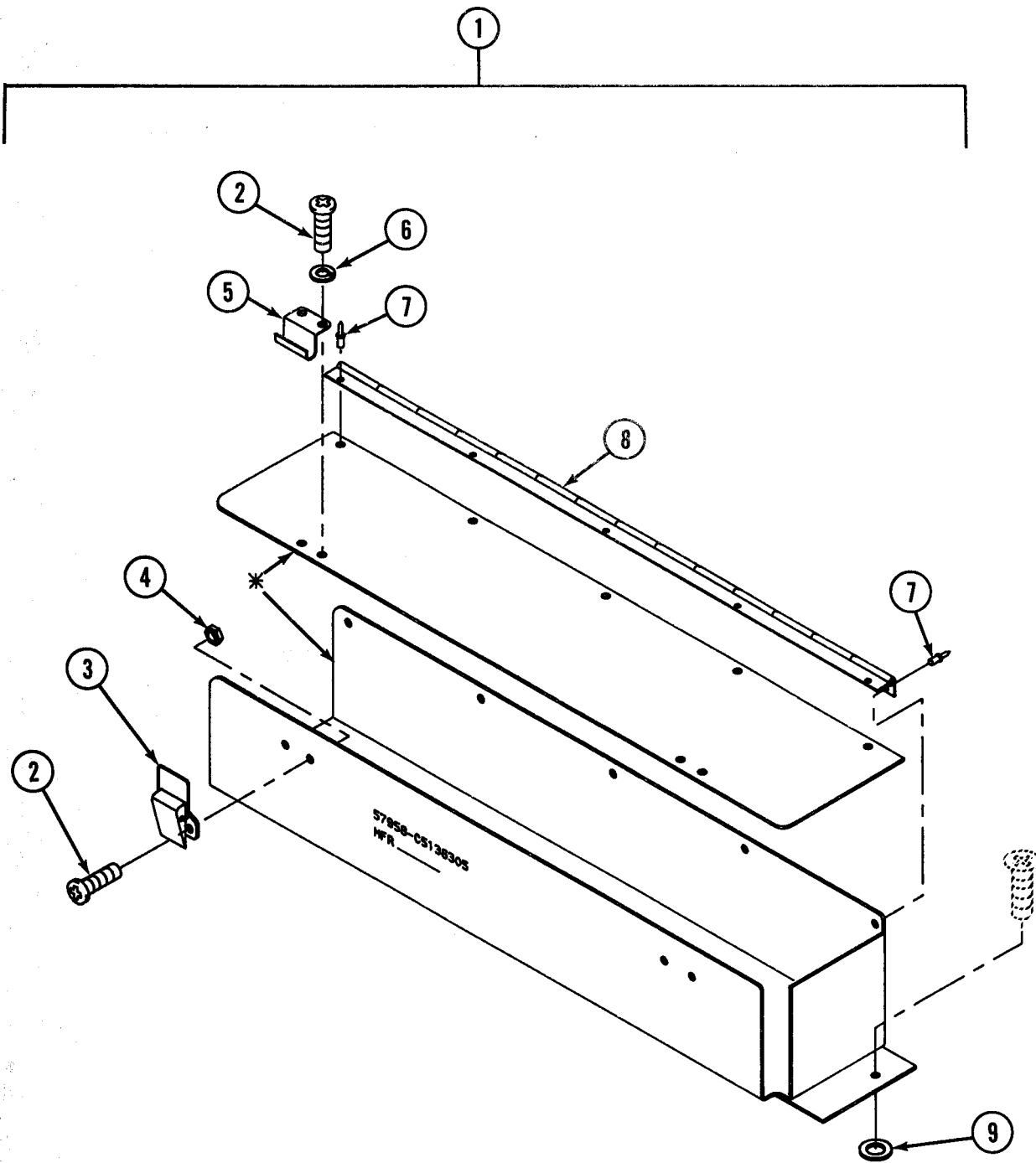


Figure 12. EES Kit, Freon Lines

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 12 FREON LINES	
1	PPFZZ	57958	C5136153-5	QUICK COUPLE ASSY, FEMALE, .625	1
2	PPFZZ	57958	C5136163	DUST PLUG ASSY, .625	1
3	PAFZZ	96906	MS51844-62	.SLEEVE, SWAGING, WIRE	2
4	PPFZZ	57958	C5136162	DUST PLUG ASSY, .500	1
5	PAFZZ	96906	MS51844-62	.SLEEVE, SWAGING, WIRE	2
6	PPFZZ	57958	C5136152-5	QUICK COUPLE ASSY, FEMALE, .500	1
7	PBFZZ	57958	C5136360	HOSE ASSY, A/C, DISCHARGE	1
8	PAFZZ	03938	818	INSULATION SLEEVING THERMAL	V
9	PAFZZ	96906	MS3367-5-9	.STRAP, TIEDOWN	6
10	PAFZZ	19207	12341984-2	O RING, A/C, DISCHARGE	3
11	PAFZZ	19207	12341971-1	VALVE ASSY, A/C, DISCHARGE	1
12	PAFZZ	19207	12341984-4	O RING, A/C, SUCTION	1
13	PAFZZ	19207	12341971-2	VALVE ASSY, A/C, SUCTION	1
14	PAFZZ	96906	MS51943-31	NUT, HEX, SELF-LOCKING	1
15	PAFZZ	96906	MS51412-4	WASHER, FLAT	2
16	PAFZZ	96906	MS90725-6	SCREW, CAP, HEX HD	1
17	PAFZZ	19207	12341730	CLAMP, LOOP	1
18	PAFZZ	96906	MS3367-3-0	STRAP, TIEDOWN	V

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
19	PBFZZ	57958	C5136361	HOSE, ASSY, A/C, SUCTION 1	
20	PAFZZ	03938	818	.INSULATION THERMAL	V
21	PAFZZ	96906	MS3367-1-9	.STRAP TIEDOWN	6
22	PAFZZ	19207	12339902-7	PROTECTOR	1

END OF FIGURE



* Part of item 1.

Figure 13. EES Kit, Floorboard and Storage Box

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 13 FLOORBOARD AND STORAGE BOX					
1	PFOOO	57958	C5136310	STORAGE BOX ASSY	1
2	PAOZZ	96906	MS51957-28	.SCREW, MACHINE	8
3	PAOZZ	72794	TL803BSS	.CATCH, CLAMPING	2
4	PAOZZ	96906	MS21044C06	.NUT, HEX, SELF-LOCKING	4
5	PFOZZ	72794	TL800-9SS	.STRIKE	2
6	PAOZZ	96906	MS35338-136	.WASHER, LOCK	4
7	PAOZZ	19738	1601-0619	.RIVET, DOME HD	10
8	MOOZZ	57958	C5136309	.HINGE, STORAGE BOX MAKE FROM HINGE MS35825-11A, 22.0 IN LONG	1
9	PAOZZ	96906	MS15795-810	WASHER, FL	2

END OF FIGURE

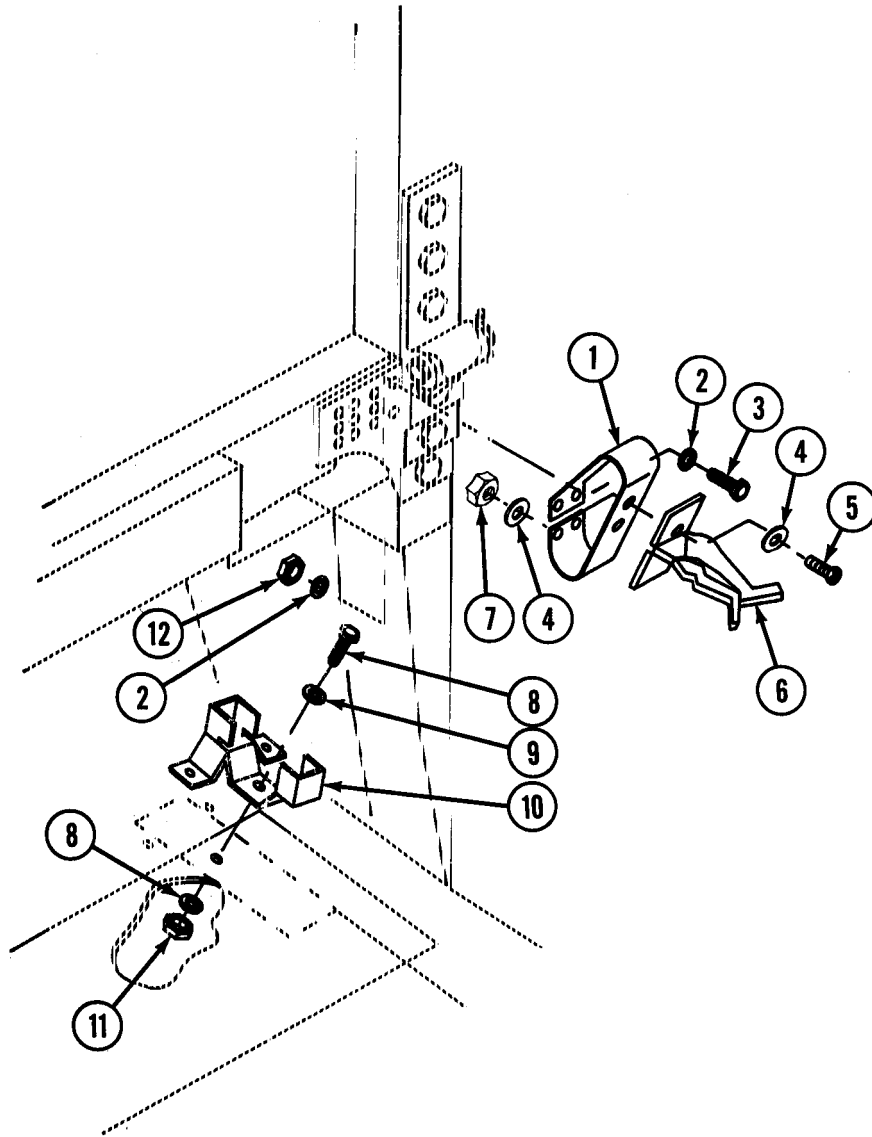


Figure 14. EES Kit, M16 Rifle Mount

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 14 M16 RIFLE MOUNT					
1	PAOZZ	19207	12340157	BRACKET, M16 RIFLE MOUNT	2
2	PAOZZ	96906	MS27183-10	WASHER, FL	8
3	PAOZZ	96906	MS90725-8	SCREW, CAP, HEX HD	4
4	PAOZZ	11862	9423534	WASHER, FLAT	8
5	PAOZZ	96906	MS51957-47	SCREW, MACHINE	4
6	PAOZZ	19207	12340487	CLAMP, RIFLE MOUNTING	2
7	PAOZZ	80205	NAS1022-N08	NUT, HEX, SELF-LOCKING	4
8	PAOZZ	96906	MS90725-33	BOLT, MACHINE	6
9	PAOZZ	24617	2436162	WASHER, FL	12
10	PAOZZ	19207	12340142	SUPPORT, RIFLE MOUNT M16	2
11	PAOZZ	96906	MS51943-33	NUT, SELF-LOCKING	6
12	PAOZZ	96906	MS51943-31	NUT, HEX, SELF-LOCKING	4
END OF FIGURE					

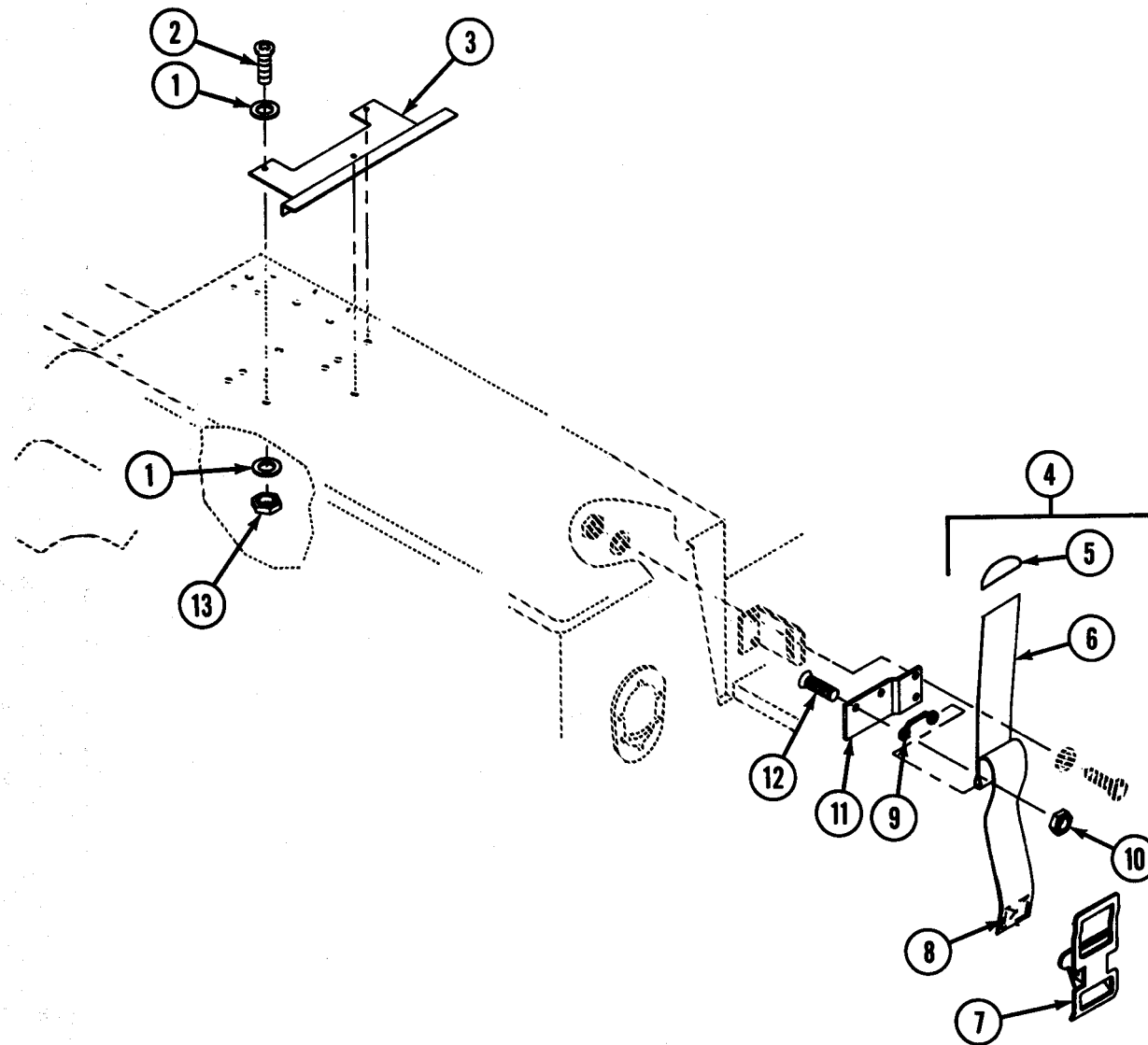


Figure 15. EES Kit, Ladder Mount

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 15 LADDER MOUNT					
1	PAOZZ	96906	MS15795-810	WASHER, FL	6
2	PAOZZ	96906	MS51957-81	SCREW, PAN HD, MACHINE	3
3	PFOZZ	57958	C5136373	BRACKET, DOUBLE ANGLE	1
4	MFOZZ	57958	C5135967	STRAP ASSY, LADDER MAKE FROM WEBBING 1 IN X 25 IN	1
5	PAFZZ	76786	4106	.CLIP, END, STRAP	1
6	PAFZZ	81349	MIL-W-530, TYIIA, CL4	.WEBBING, TEXTILE (OLIVER DRAB NO. 7)	V
7	PAFZZ	96906	MS51929-2	.BUCKLE	1
8	PAFZZ	81349	V-T-276, TYPE IIIB	.THREAD, COTTON, V-T-276, TYPE IIIB, 10/3 SHADE S-1, VAT GREEN 3 TREATED PER MIL-T-3530 TYPE 1, CLASS 1	V
9	PAFZZ	80063	SC-C-539965	.LOOP, FOOTMAN	1
10	PAOZZ	96906	MS21044C3	NUT, HEX, SELF-LOCKING	2
11	PFOZZ	57958	C5136372	BRACKET, DOUBLE ANGLE	1
12	PAOZZ	96906	MS51960-66	SCREW, FL HD	2
13	PAOZZ	96906	MS51943-31	NUT, HEX, SELF-LOCKING	3
END OF FIGURE					

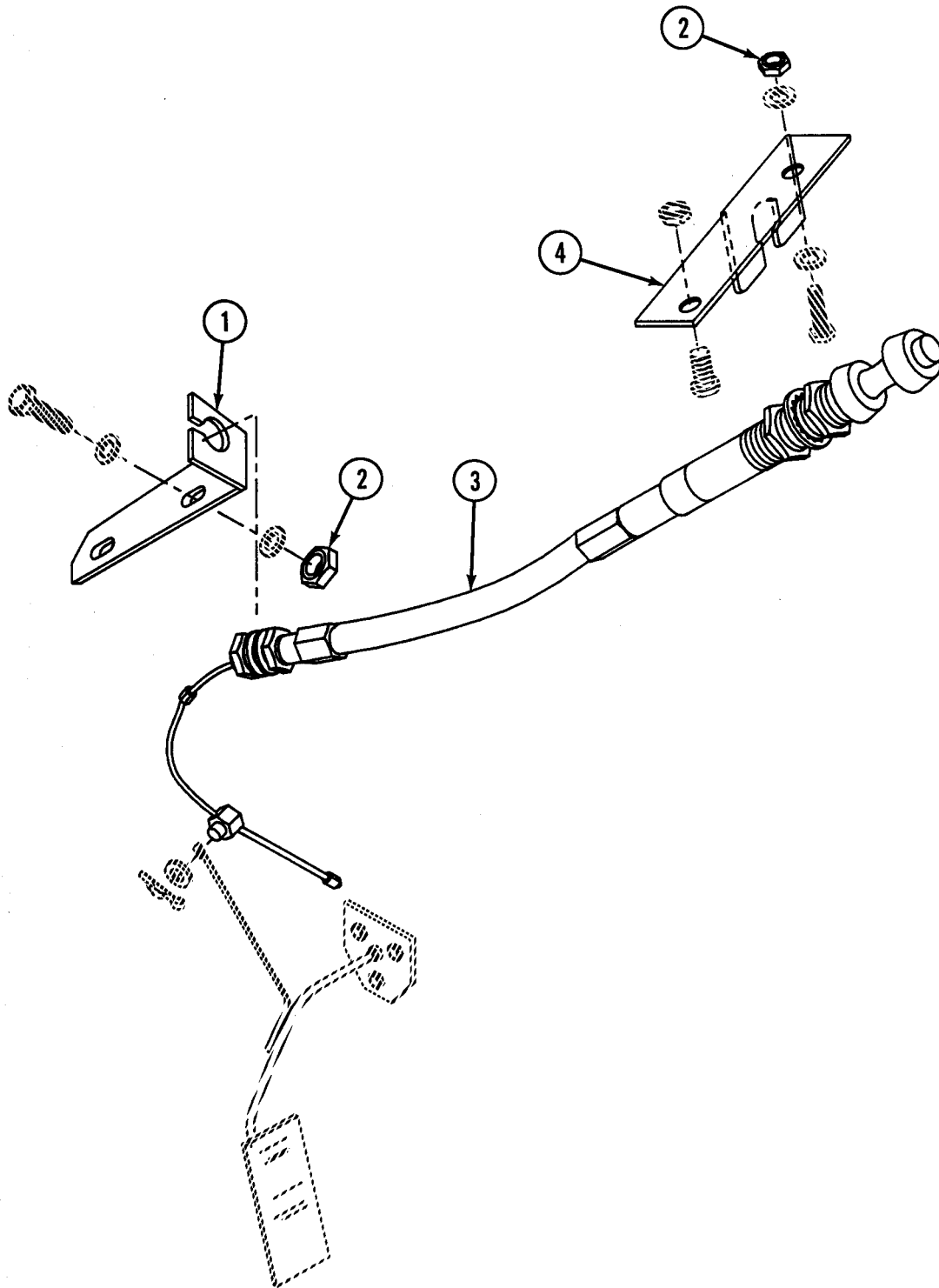


Figure 16. EES Kit, Hand Throttle Cable Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 16 HAND THROTTLE CABLE ASSEMBLY	
1	PFOZZ	57958	C5136359	BRACKET, THROTTLE CABLE END	1
2	PAOZZ	96906	MS17830-4C	NUT, HEX, SELF-LOCKING	3
3	PAOZZ	60602	35825	CABLE ASSY, HAND THROTTLE	1
4	PFOZZ	57958	C5136357	BRACKET, HAND THROTTLE	1
				END OF FIGURE	

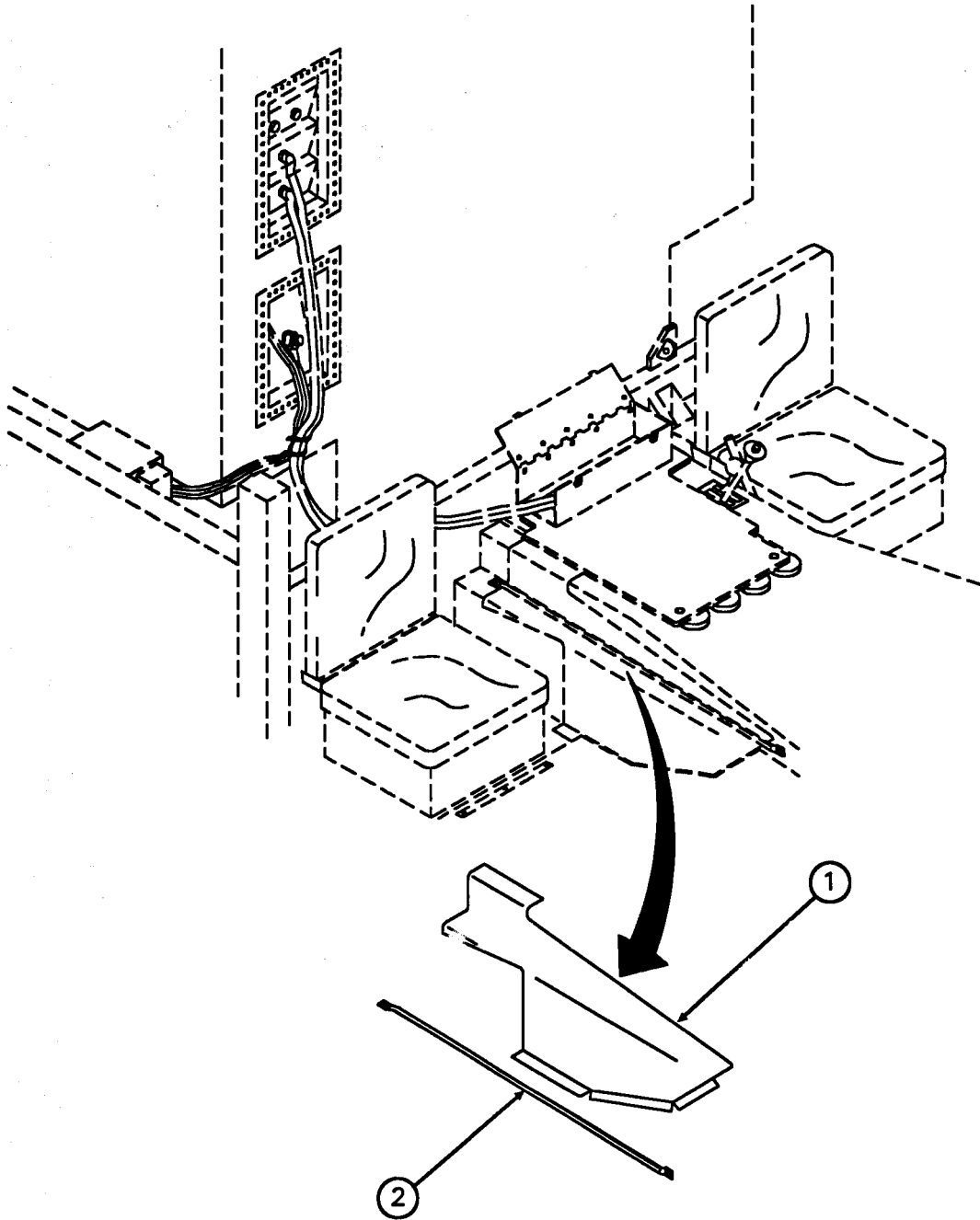


Figure 17. R.H. Tunnel Insulation Retainer

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
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GROUP 3307: EES KIT
FIG. 17 R. H. TUNNEL
INSULATION BLANKET AND
RETAINER

1	PFOZZ	19207	12339041	INSULATION BLANKET	1
2	PFOZZ	19207	12339018-1	RETAINER, INSULATION TUNNEL, R. H.	1

END OF FIGURE

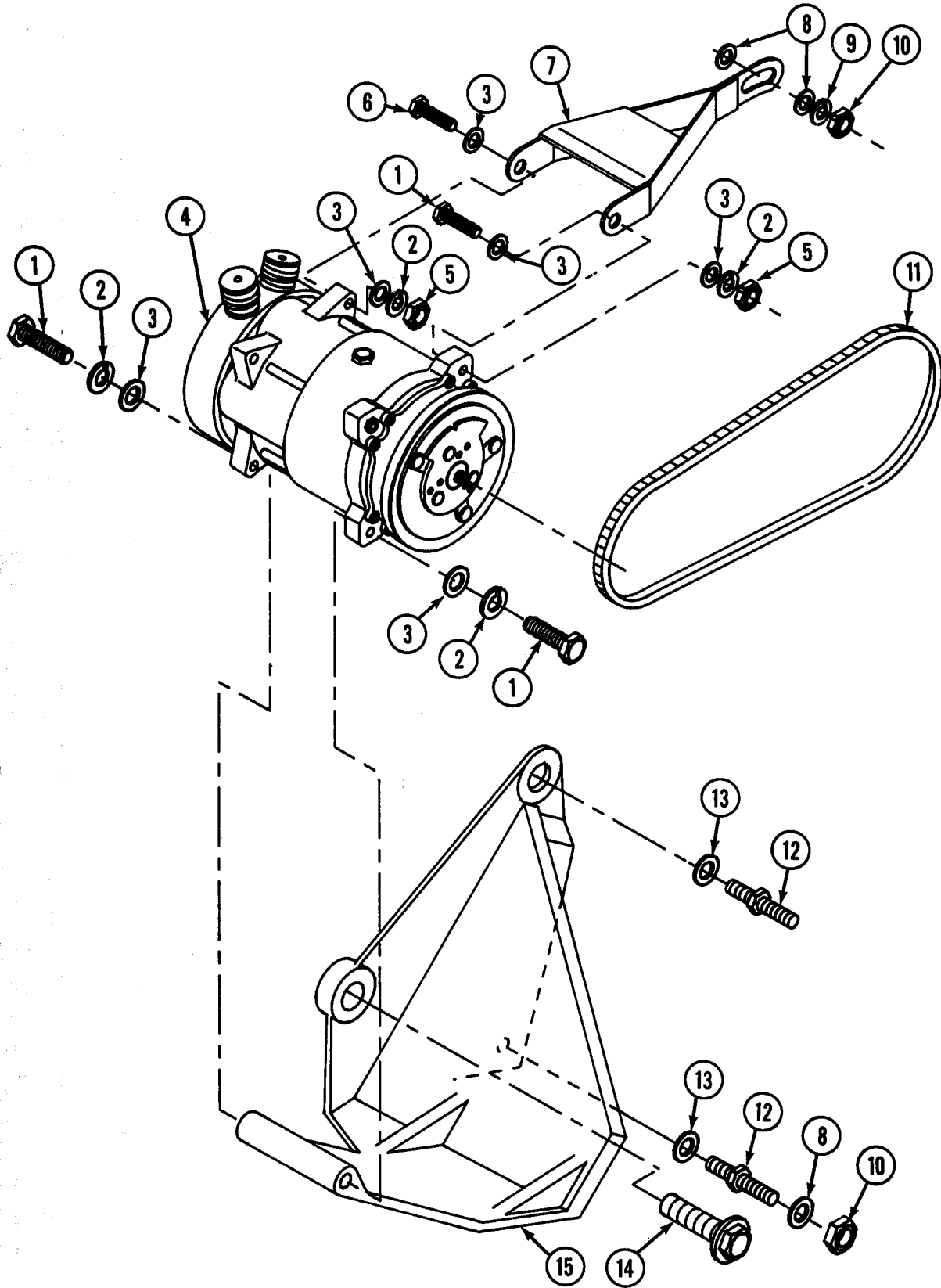


Figure 18. EES Kit, Compressor Assembly, A/C

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 18 COMPRESSOR ASSY- A/C					
1	PAFZZ	96906	MS90725-64	SCREW, CAP, HEX HD PART OF EES KIT P/N C5136350	3
2	PAFZZ	96906	MS35338-46	WASHER, LOCK PART OF EES KIT P/N C5136350	4
3	PAFZZ	96906	MS27183-13	WASHER, FLAT PART OF EES KIT P/N C5136350	6
4	PAFFF	19207	12340661	COMPRESSOR ASSY, A/C PART OF EES KIT P/N C5136350	1
5	PAFZZ	96906	MS51943-35	NUT, HEX, SELF-LOCKING PART OF EES KIT P/N C5136350	2
6	PAFZZ	96906	MS90725-66	SCREW, CAP, HEX HD PART OF EES KIT P/N C5136350	1
7	PAFZZ	19207	12341599	BRACKET ASSY, MOUNTING PART OF EES KIT P/N C5136350	1
8	PAFZZ	11862	11502474	WASHER, FLAT PART OF EES KIT P/N C5136350	3
9	PAFZZ	11862	11500207	WASHER, LOCK PART OF EES KIT P/N C5136350	1

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(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
10	PAFZZ	K1076	9145-105-00B	NUT, PLAIN HEXAGON PART OF EES KIT P/N C5136350	2
11	PAFZZ	19207	12339359-11	V-BELT, AIR COMPRESSOR PART OF EES KIT P/N C5136350	1
12	PAFZZ	19207	12339406-2	STUD, SUPPORT BRACKET, M10 PART OF EES KIT P/N C5136350	2
13	PAFZZ	24617	11500324	WASHER, FLAT PART OF EES KIT P/N C5136350	2
14	PAFZZ	24617	11502788	BOLT, SHOULDER PART OF EES KIT P/N C5136350	1
15	PAFZZ	19207	12339906	BRACKET, MOUNTING PART OF EES KIT P/N C5136350	1

END OF FIGURE

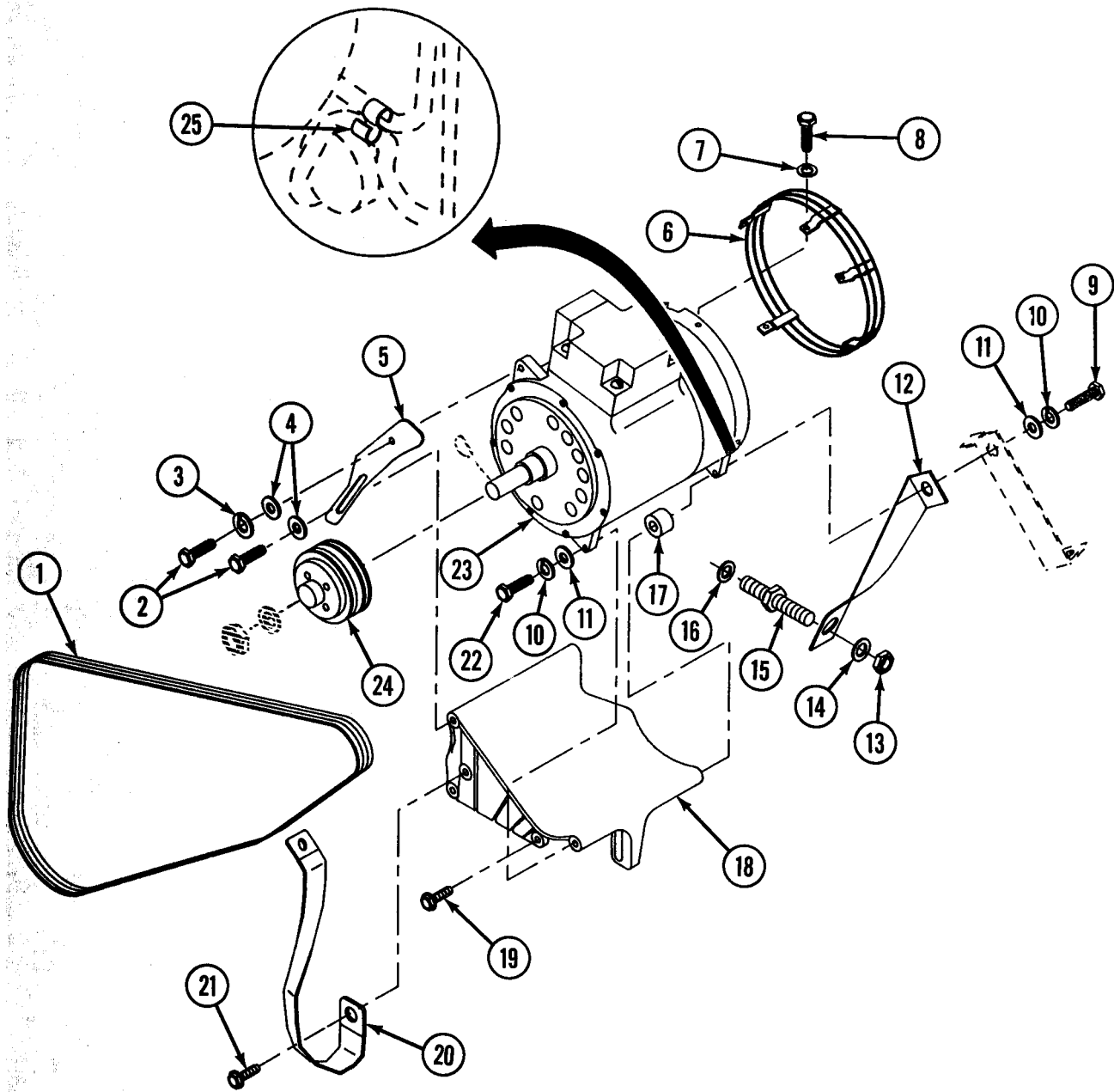


Figure 19. EES Kit, 200 Amp Alternator

SECTION II

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(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 3307: EES KIT FIG. 19 200 AMP ALTERNATOR					
1	PAOZZ	19207	12339359-18	BELT, V, MATCHED SET PART OF EES KIT P/N C5136350	1
2	PAOZZ	96906	MS90728-60	SCREW, CAP, HEX PART OF EES KIT P/N C5136350	2
3	PAOZZ	96906	MS35338-46	WASHER, LOCK PART OF EES KIT P/N C5136350	1
4	PAOZZ	96906	MS27183-13	WASHER, FLAT PART OF EES KIT C5136350	2
5	PAOZZ	19207	12340057	BRACKET, ALTERNATOR ADJUST PART OF EES KIT P/N C5136350	1
6	PAOZZ	19207	12341809	GUARD, MECHANICAL DR PART OF EES KIT P/N C5136350	1
7	PAOZZ	96906	MS51412-2	WASHER, FLAT PART OF EES KIT P/N C5136350	5
8	PAOZZ	82386	410-63	SCREW, CAP, HEX HD PART OF EES KIT P/N C5136350	5
9	PAOZZ	96906	MS35764-854	BOLT PART OF EES KIT P/N C5136350	1

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(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
10	PAOZZ	96906	MS35338-47	WASHER, LOCK PART OF EES KIT P/N C5136350	2
11	PAOZZ	11862	2436164	WASHER, FLAT PART OF EES KIT P/N C5136350	2
12	PAOZZ	19207	12342075	BRACKET, SUPPORT PART OF EES KIT P/N C5136350	1
13	PAOZZ	K1076	9145-105-005B	NUT, PLAIN HEXAGON PART OF EES KIT P/N C5136350	1
14	PAOZZ	11862	11500207	WASHER, LOCK PART OF EES KIT P/N C5136350	1
15	PAOZZ	19207	12339406-2	STUD, SPECIAL PART OF EES KIT P/N C5136350	1
16	PAOZZ	96906	MS15795-815	WASHER, FLAT PART OF EES KIT P/N C5136350	1
17	PAOZZ	19207	12338186-62	SPACER, .160 THK PART OF EES KIT P/N C5136350	1
18	PAOZZ	19207	12338786	BRACKET, MOUNTING PART OF EES KIT P/N C5136350	1
19	PAOZZ	19207	12340845-2	BOLT PART OF EES KIT P/N C5136350	1

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(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
20	PAOZZ	19207	12341151	GROUND STRAP PART OF EES KIT P/N C5136350	1
21	PAOZZ	19207	12340845-3	BOLT PART OF EES KIT P/N C5136350	1
22	PAOZZ	96906	MS35764-853	BOLT PART OF EES KIT P/N C5136350	1
23	PAOFF	19207	12338796	GENERATOR, ENGINE, ACCESSORY PART OF EES KIT P/N C5136350	1
24	PAOZZ	19207	12339392	PULLEY, GROOVE PART OF EES KIT P/N C5136350	1
25	PAOZZ	19207	12339890	CLIP, SPRING TENSION	1

END OF FIGURE

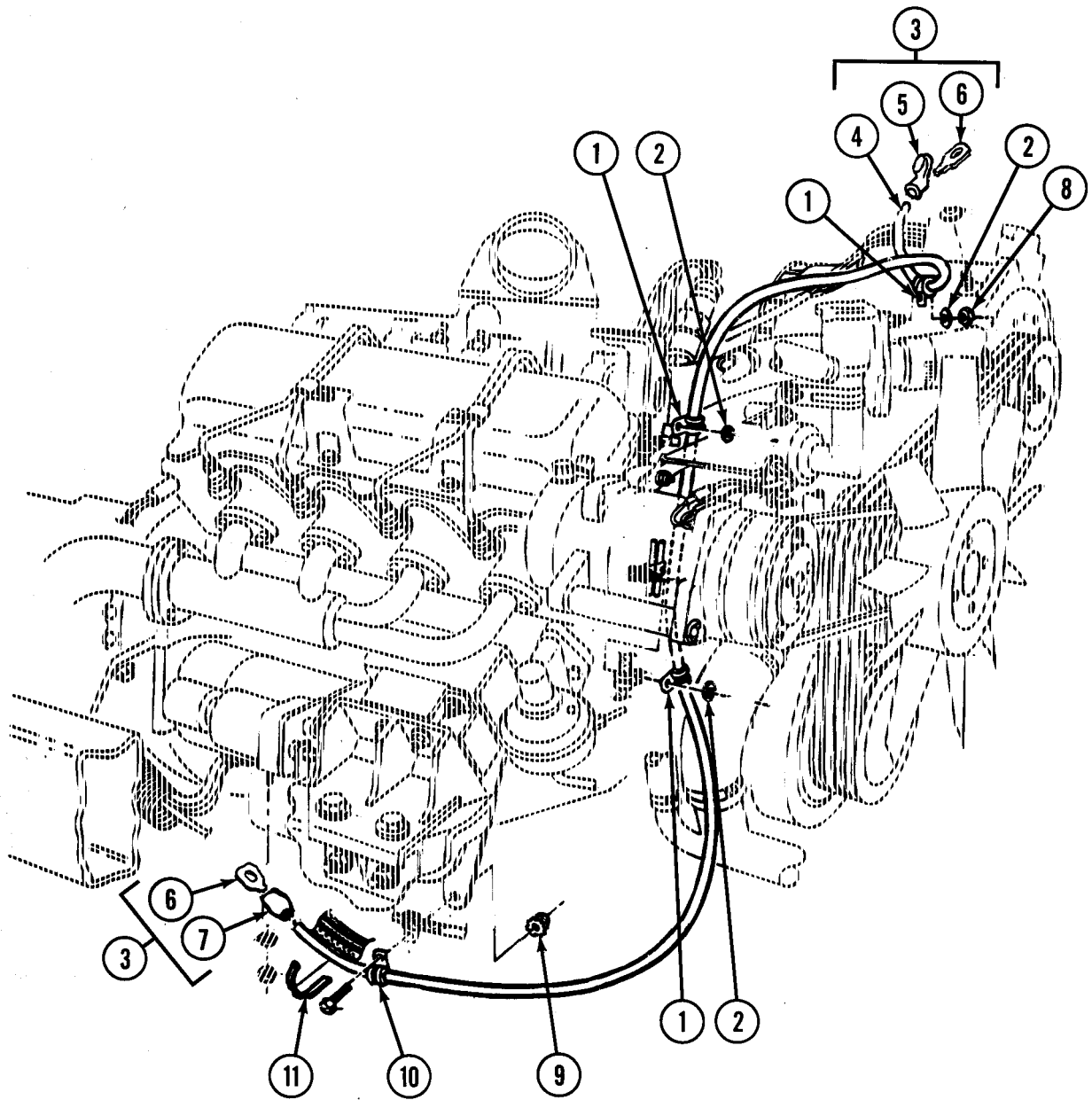


Figure 20. EES Kit, 200 Amp Alternator Cable Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 20 200 AMP ALTERNATOR CABLE ASSEMBLY	
1	PAOZZ	96906	MS21333-126	CLAMP, LOOP PART OF EES KIT P/N C5136350	3
2	PAOZZ	11862	11500207	WASHER, LOCK PART OF EES KIT P/N C5136350	3
3	MOOZZ	19207	12339317	CABLE ASSY, POS 220 AMP MAKE FROM 1/0 AWG CABLE, M13486-1-14, 58.0 IN LONG	1
4	PAOZZ	81349	M13486-1-14	.CABLE, 1/0 AWG	V
5	PAOZZ	99771	5582481	.CABLE NIPPLE, ELECT	1
6	PAOZZ	59730	TG33	.END TERMINAL	2
7	PAOZZ	19207	7055640	.END INSULATOR	1
8	PAOZZ	K1076	9145-105-00B	NUT, PLAIN HEXAGON PART OF EES KIT P/N C5136350	1
9	PAOZZ	11862	271172	NUT/LOCKWASHER ASSY PART OF EES KIT P/N C5136350	1
10	PAOZZ	96906	MS21333-105	CLAMP, LOOP PART OF EES KIT P/N C5136350	1
11	PAOZZ	96906	MS3367-3-0	STRAP, TIEDOWN PART OF EES KIT P/N C5136350	V

END OF FIGURE

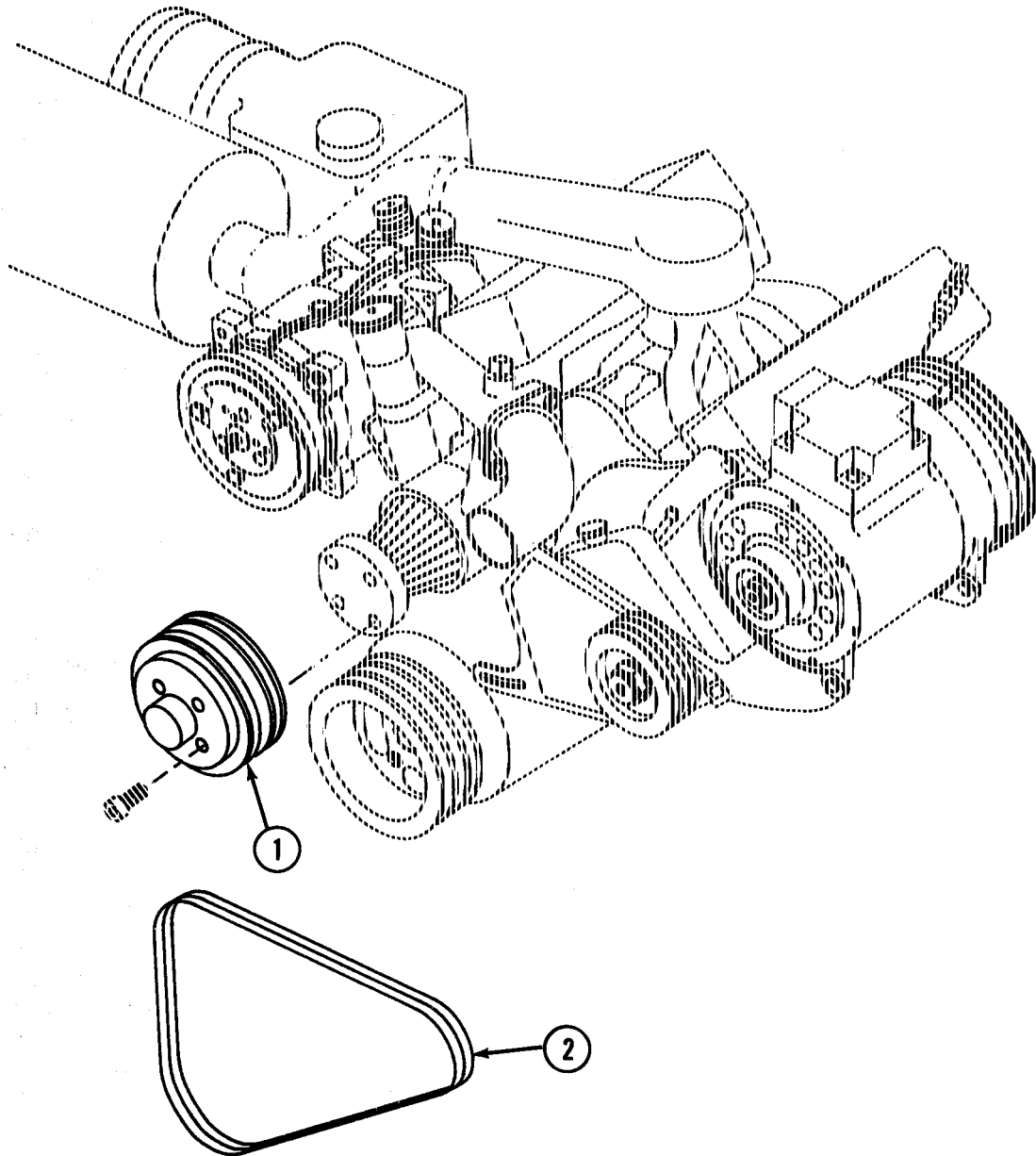


Figure 21. EES Kit, Water Pump Pulley and Power Steering V-Belt

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 21 WATER PUMP PULLEY AND POWER STEERING V-BELT	
1	PAOZZ	19207	12338782	PULLEY, WATER PUMP PULLEY PART OF EES KIT P/N C5136350	1
2	PAOZZ	19207	12339359-14	V-BELT, POWER STEERING PART OF EES KIT P/N C5136350	1

END OF FIGURE

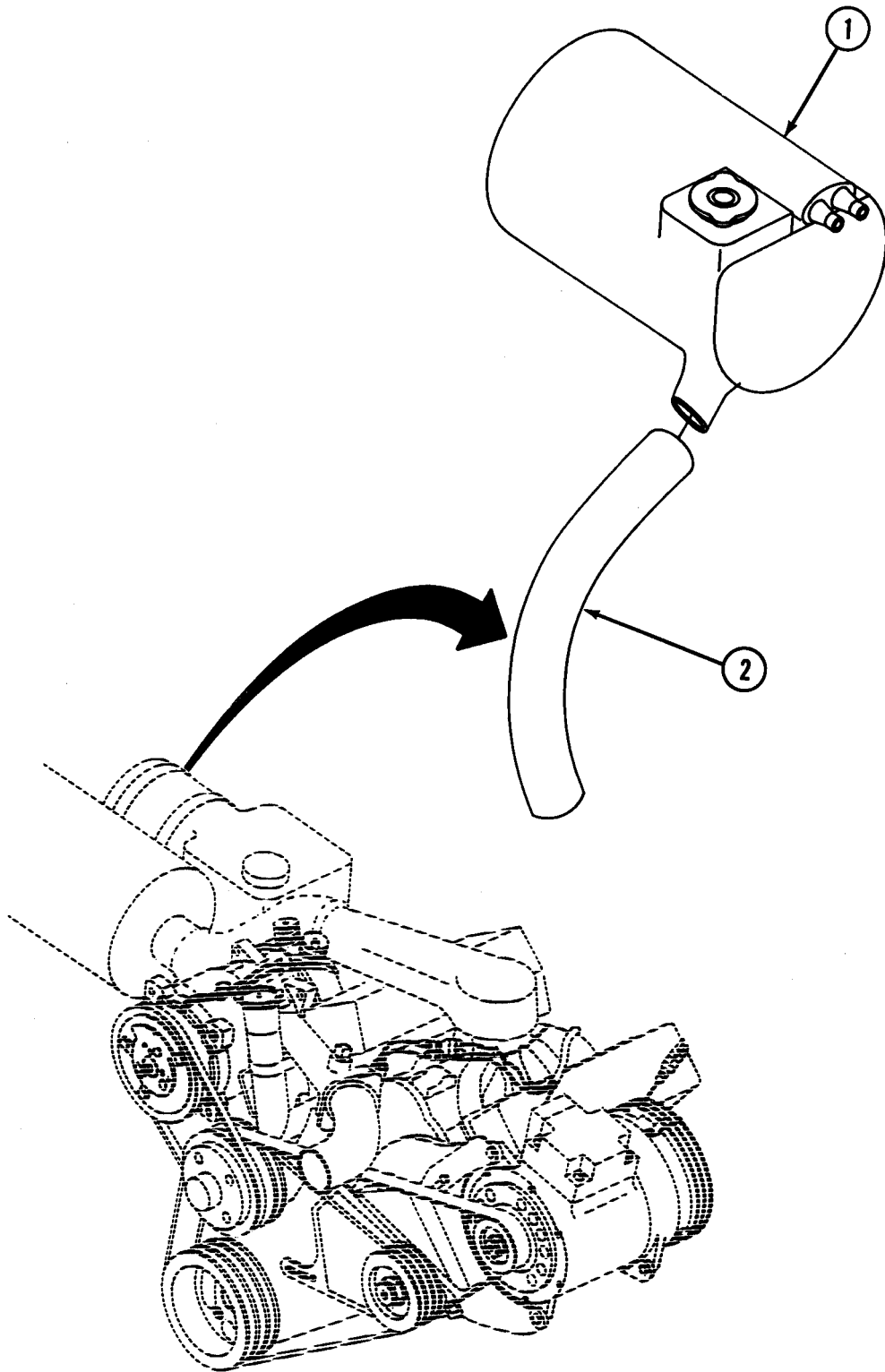


Figure 22. EES Kit, Surge Tank Assembly and Lower Radiator Hose

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 22 SURGE TANK ASSEMBLY AND LOWER RADIATOR HOSE	
1	PAOZZ	19207	12340061	TANK ASSY, SURGE PART OF EES KIT P/N C5136350	1
2	PAOZZ	19207	12340046	HOSE, PREFORMED, LOWER RADIATOR TO SURGE TANK PART OF EES KIT P/N C5136350	1
				END OF FIGURE	

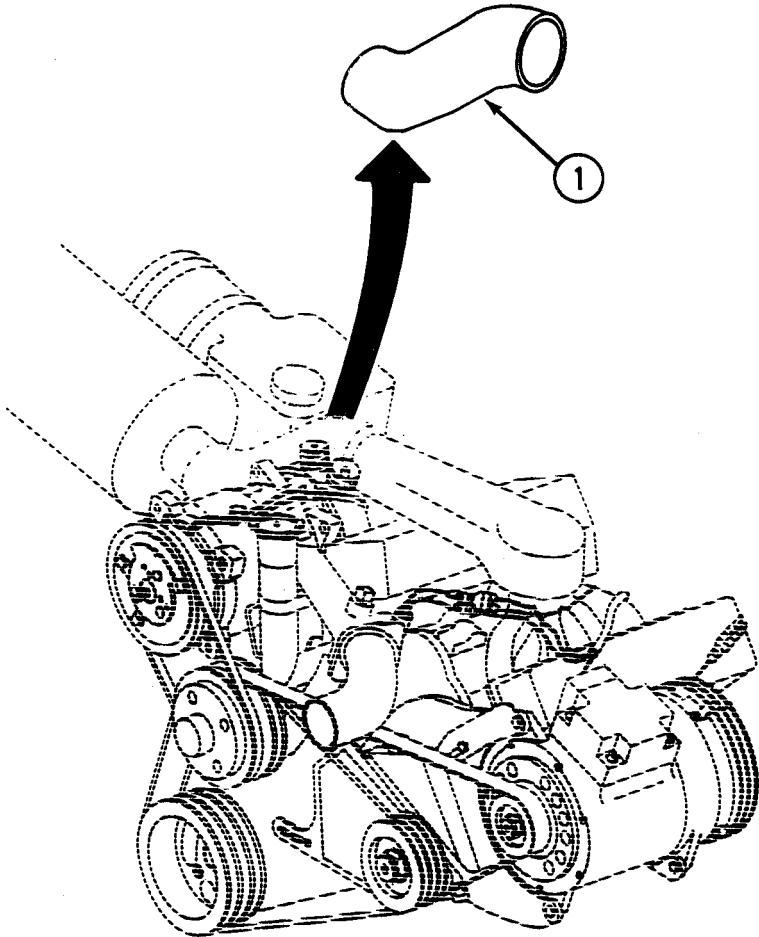


Figure 23. EES Kit, Air Cleaner Elbow Hose

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(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
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GROUP 3307: EES KIT
FIG. 23 AIR CLEANER ELBOW
HOSE

1	PAOZZ	19207	12338381	ELBOW HOSE AIR CLEANER PART OF EES KIT P/N C5136350	1
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END OF FIGURE

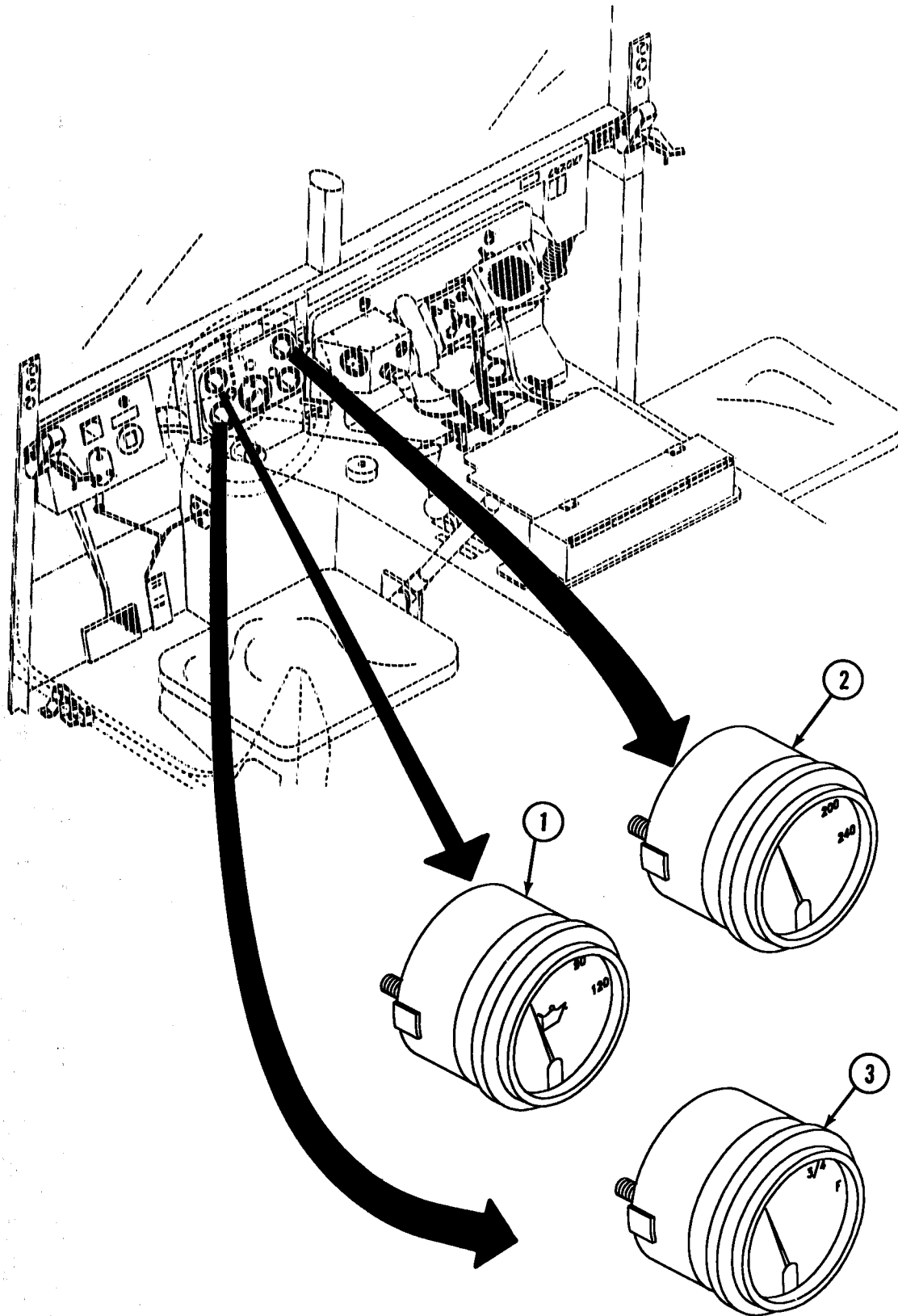


Figure 24. EES Kit, Gages for Status Warning System

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 3307: EES KIT FIG. 24 GAGES FOR STATUS WARNING SYSTEM	
1	PAOZZ	57958	C5136382	GAUGE ASSY, OIL PRESSURE PART OF EES KIT P/N C5136350	1
2	PAOZZ	57958	C5136383	GAUGE ASSY, TEMPERATURE PART OF EES KIT P/N C5136350	1
3	PAOZZ	57958	C5136384	GAUGE ASSY, FUEL LEVEL PART OF EES KIT P/N C5136350	1
				END OF FIGURE	
	PBFHH	57958	C5136350	KIT, EES	1
				POWER INTERFACE (1) 1-1 BOX	
				WASHER, FLAT (8) 1-2	
				NUT (4) 1-3	
				SCREW, MACHINE (4) 1-4	
				CLAMP LOOP (1) 1-5	
				GROMMET (2) 1-6	
				SCREW, TAPPING (1) 1-7	
				SCREW, CAP (1) 1-8	
				SEAL, TACH/ (1) 2-1 HOURMETER	

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
	PBFHH	57958	C5136350	KIT, EES (CONTINUED)	
				TACH/HOURMETER (1) 2-2 ASSY	
				CABLE ASSY (1) 2-3	
				WASHER, FLAT (1) 2-4	
				NUT (2) 2-5	
				SAFETY LANYARD (1) 2-6	
				CABLE ASSY (1) 3-1	
				GROUND WIRE (1) 4-1	
				CLAMP LOOP (1) 5-1	
				BRACKET, ANGLE (1) 5-2	
				SCREW, CAP (1) 5-3	
				STRAP, TIEDOWN (V) 5-4	
				CONNECTOR, PLUG (1) 6-1	
				ADAPTER, (1) 6-2 CONNECTOR	
				ADAPTER, (1) 6-3 CONNECTOR	
				CONNECTOR, PLUG (1) 7-1	
				ADAPTER, (1) 7-2 CONNECTOR	
				ADAPTER, (1) 7-3 CONNECTOR	
				CONNECTOR, PLUG (1) 7-4	
				ADAPTER, (1) 8-1 CONNECTOR	

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
	PBFHH	57958	C5136350	KIT, EES (CONTINUED)	
				ADAPTER, (1) 8-2 CONNECTOR	
				ADAPTER, (1) 9-1 CONNECTOR	
				ADAPTER, (1) 9-2 CONNECTOR	
				ADAPTER, (1) 10-1 CONNECTOR	
				ADAPTER, (1) 10-2 CONNECTOR	
				ADAPTER, (1) 11-1 CONNECTOR	
				ADAPTER, (1) 11-2 CONNECTOR	
				QUICK COUPLE (1) 12-1 ASSY	
				DUST PLUG ASSY (1) 12-2	
				DUST PLUG ASSY (1) 12-4	
				QUICK COUPLE (1) 12-6 ASSY	
				HOSE ASSY (1) 12-7	
				O-RING (3) 12-10	
				VALVE ASSY (1) 12-11	
				O-RING (1) 12-12	

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(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
	PBFHH	57958	C5136350	KIT, EES (CONTINUED)	
				VALVE ASSY (1) 12-13	
				NUT (1) 12-14	
				WASHER (2) 12-15	
				SCREW, CAP (1) 12-16	
				CLAMP (1) 12-17	
				STRAP, TIEDOWN (6) 12-18	
				HOSE ASSY (1) 12-19	
				PROTECTOR (1) 12-22	
				STORAGE BOX, (1) 13-1	
				WASHER (2) 13-9	
				BRACKET (2) 14-1	
				WASHER (8) 14-2	
				SCREW, CAP (4) 14-3	
				WASHER (8) 14-4	
				SCREW, MACHINE (4) 14-5	
				CLAMP, RIFLE (2) 14-6 MOUNTING	
				NUT (4) 14-7	
				BOLT, MACHINE (6) 14-8	
				WASHER (12) 14-9	
				SUPPORT, RIFLE (2) 14-10 MOUNT	
				NUT (6) 14-11	

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
	PBFHH	57958	C5136350	KIT, EES (CONTINUED)	
				NUT (4) 14-12	
				WASHER (6) 15-1	
				SCREW, PAN HEAD (3) 15-2	
				BRACKET, DOUBLE (1) 15-3 ANGLE	
				STRAP ASSY (1) 15-4	
				NUT (2) 15-10	
				BRACKET, DOUBLE (1) 15-11 ANGLE	
				SCREW (2) 15-12	
				NUT (3) 15-13	
				BRACKET, THROT- (1) 16-1 TLE CABLE END	
				NUT (3) 16-2	
				CABLE ASSY (1) 16-3	
				BRACKET, HAND (1) 16-4 THROTTLE	
				INSUL. BLANKET (1) 17-1	
				RETAINER, INSUL (1) 17-2	
				SCREW, CAP (3) 18-1	
				WASHER, LOCK (4) 18-2	
				WASHER (6) 18-3	
				COMPRESSOR ASSY (1) 18-4	
				NUT (2) 18-5	
				SCREW, CAP (1) 18-6	

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(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
	PBFHH	57958	C5136350	KIT, EES (CONTINUED)	
				BRACKET ASSY (1) 18-7	
				WASHER (3) 18-8	
				WASHER, LOCK (1) 18-9	
				NUT (2) 18-10	
				V-BELT (1) 18-11	
				STUD (2) 18-12	
				WASHER (2) 18-13	
				BOLT, SHOULDER (1) 18-14	
				BRACKET (1) 18-15	
				BELT, V, (1) 19-1 MATCHED SET	
				SCREW, CAP (2) 19-2	
				WASHER, LOCK (1) 19-3	
				WASHER (2) 19-4	
				BRACKET (1) 19-5	
				GUARD, (1) 19-6 MECHANICAL, DR	
				WASHER (5) 19-7	
				SCREW, CAP (5) 19-8	
				BOLT (1) 19-9	
				WASHER, LOCK (2) 19-10	
				WASHER (2) 19-11	

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(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
	PBFHH	57958	C5136350	KIT, EES (CONTINUED)	
				BRACKET (1) 19-12	
				NUT (1) 19-13	
				WASHER, LOCK (1) 19-14	
				STUD (1) 19-15	
				WASHER (1) 19-16	
				SPACER (1) 19-17	
				BRACKET, (1) 19-18 MOUNTING	
				BOLT (1) 19-19	
				GROUND STRAP (1) 19-20	
				BOLT (1) 19-21	
				BOLT, HEX (1) 19-22	
				GENERATOR, (1) 19-23 ENGINE, ACCESSORY	
				PULLEY, GROOVE (1) 19-24	
				CLIP, SPRING (1) 19-25 TENSION	
				CLAMP, LOOP (3) 20-1	
				WASHER, LOCK (3) 20-2	
				CABLE ASSY (1) 20-3	
				NUT (1) 20-8	
				NUT/LOCKWASHER (1) 20-9 ASSY	

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(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
	PBFHH	57958	C5136350	KIT, EES (CONTINUED)	
				CLAMP, LOOP (1) 20-10	
				STRAP, TIEDOWN (V) 20-11	
				PULLEY (1) 21-1	
				V-BELT (1) 21-2	
				TANK ASSY (1) 22-1	
				HOSE (1) 22-2	
				ELBOW HOSE AIR (1) 23-1 CLEANER	
				GAUGE ASSY, (1) 24-1 OIL PRESSURE	
				GAUGE ASSY, (1) 24-2 TEMPERATURE	
				GAUGE ASSY, (1) 24-3 FUEL LEVEL	
				END OF FIGURE	

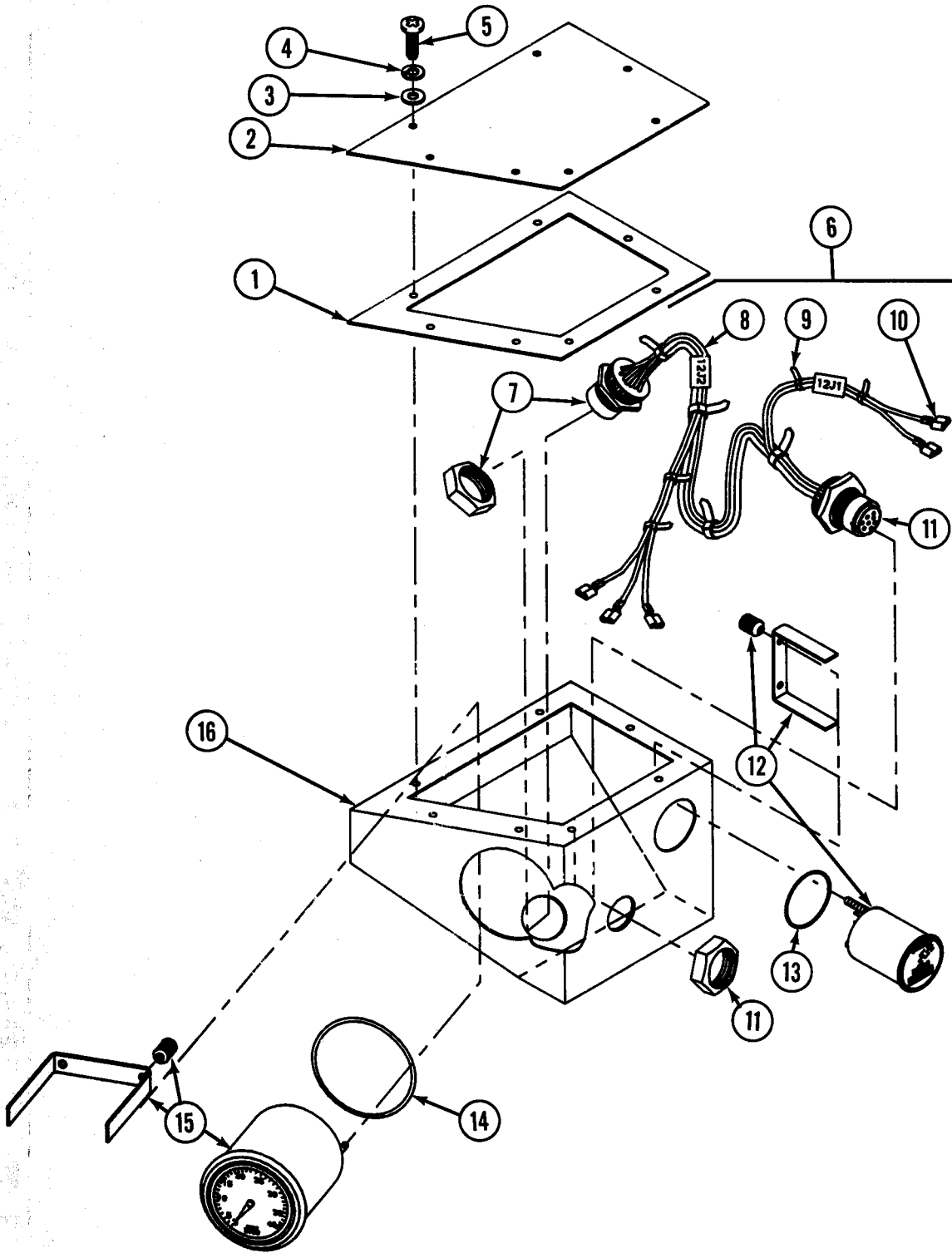


Figure 25. Tach/Hourmeter Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 330701: TACH/ HOURMETER ASSEMBLY FIG. 25 TACH/HOURMETER ASSEMBLY	
1	PFOZZ	57958	C5136338	GASKET, TACH/HOURMETER BOX	1
2	PFOZZ	57958	C5136336	COVER, TACH/HOURMETER BOX	1
3	PAOZZ	96906	MS15795-841	WASHER, FLAT	7
4	PAOZZ	96906	MS35338-137	WASHER, LOCK	7
5	PAOZZ	96906	MS51957-45	SCREW, MACHINE	7
6	PFOZZ	57958	C5136337	HARNESS ASSY	1
7	XAOZZ	96906	MS3474W16-8P	.CONNECTOR, RECEPTACLE	1
8	XAOZZ	06090	TMS-WM-00/4	.INSULATION SLEEVING	V
9	XAOZZ	96906	MS3367-4-9	.STRAP, TIEDOWN	V
10	XAOZZ	28959	LVDDF-2216T-250A	.DISCONNECT, FEMALE	5
11	XAOZZ	96906	MS3474W16-8S	.CONNECTOR, RECEPTACLE	1
12	PFOZZ	59197	331-504	HOURMETER	1
13	PAOZZ	96906	MS9021-136	PACKING, PREFORMED	1
14	PAOZZ	96906	MS9021-236	PACKING, PREFORMED	1
15	PFOZZ	59197	333-508	TACHOMETER, ELECTRIC	1
16	PFOZZ	57958	C5136335	BOX, TACH/HOURMETER	1
				END OF FIGURE	

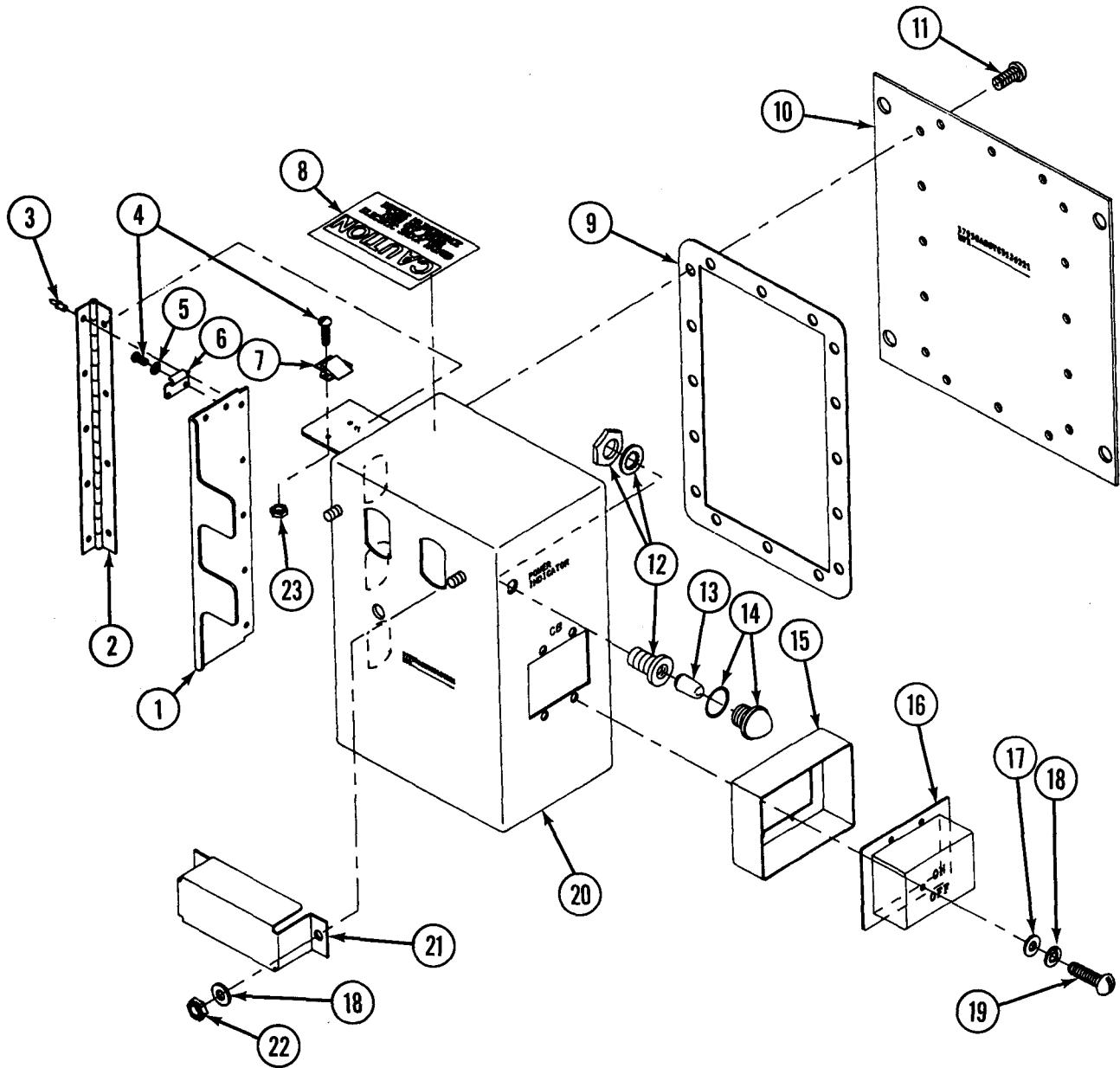


Figure 26. Power Interface Box Assembly (sheet 1 of 2)

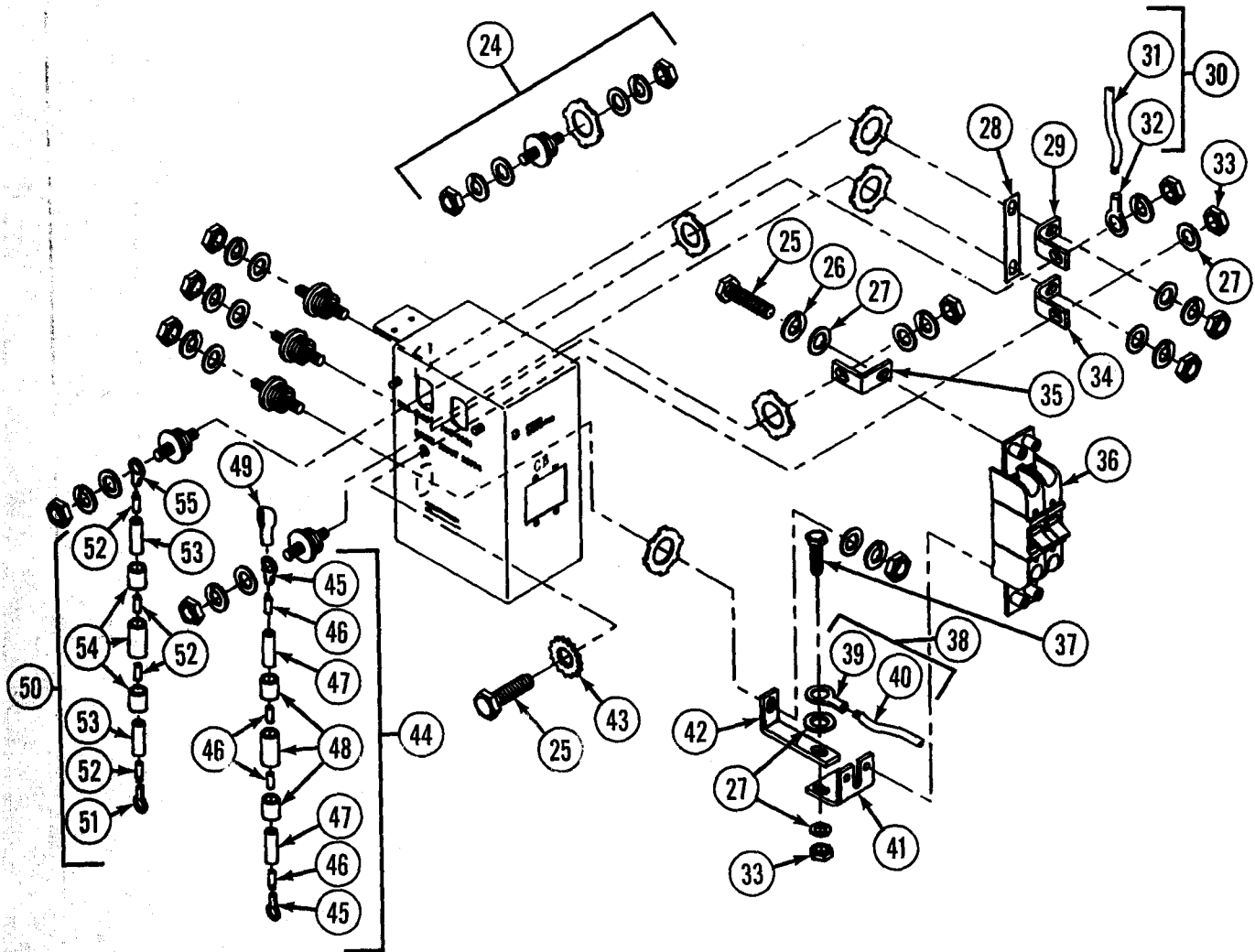


Figure 26. Power Interface Box Assembly (sheet 2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
				GROUP 330702: POWER INTERFACE BOX ASSEMBLY FIG. 26 POWER INTERFACE BOX ASSEMBLY	
1	PAOZZ	57958	C5136314	COVER, PWR TERMINALS	1
2	MOOZZ	57958	C5136313	HINGE, PWR TERMINAL COVER MAKE FROM HINGE MS35825-11A, 10.5 IN. LONG	1
3	PAFZZ	19738	1601-0619	RIVET, DOME HD	9
4	PAOZZ	96906	MS51957-28	SCREW, MACHINE	4
5	PAOZZ	96906	MS35338-136	WASHER, LOCK	2
6	PFOZZ	72794	TL800-9SS	STRIKE	1
7	PAOZZ	72794	TL803BSS	CATCH, CLAMPING	1
8	PBOZZ	57958	C5136136	LABEL, CAUTION, ELECT	1
9	PAOZZ	57958	C5136331	GASKET, POWER INTERF	1
10	XAOZZ	57958	C5136330	COVER, REAR, PWR INTERF	1
11	PAOZZ	96906	MS51959-45	SCREW, MACHINE	16
12	PAFZZ	72619	367-8430-09-503	LIGHT, INDICATOR	1
13	PAOZZ	13182	A580-10190	LAMP, INCANDESCENT	1
14	PAOZZ	81349	LC35BT2	LENS, LIGHT	1
15	PAOZZ	57958	C5136302	GUARD, CIRCUIT BREAKER	1
16	PBOZZ	57958	C5136327	BOOT, CIRCUIT BREAKER	1
17	PAOZZ	96906	MS15795-808	WASHER, FL	6
18	PAOZZ	96906	MS35338-138	WASHER, LOCK	4
19	PAOZZ	96906	MS51958-64	SCREW, MACHINE	4

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(1) ITEM NO	(2) SMR CODE	(3) CAGE CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
20	PPFZZ	57958	C5136321	BOX, POWER INTERFACE	1
21	PAOZZ	57958	C5136311	COVER, TERMINAL	1
22	PAOZZ	96906	MS21044C06	NUT, SELF-LOCKING	2
23	PAOZZ	96906	MS21044C3	NUT, SELF-LOCKING, HEX	2
24	PAFZZ	13445	46211-03	TERMINAL, FEEDTHRU	5
25	PAOZZ	96906	MS35307-360	SCREW, CAP, HEX	2
26	PAFZZ	96906	MS35338-122	WASHER, LOCK	1
27	PAFZZ	96906	MS15795-514	WASHER, FLAT	4
28	PPFZZ	57958	C5136324	BUS BAR, STRAP	1
29	PBFZZ	57958	C5136325	BUS BAR, NEGATIVE	1
30	MFFZZ	57958	C5136333	WIRE ASSEMBLY, NEG. MAKE FROM WIRE M16878/4BGE9 7.0 IN.	1
31	PAFZZ	81349	M16878/4BGE9	o WIRE, INSULATED	V
32	PAFZZ	96906	MS25036-151	o TERMINAL LUG	1
33	PAFZZ	96906	MS35649-2386	NUT, PLAIN, HEX	2
34	PBFZZ	57958	C5136323	BUS BAR, GROUND	1
35	PBFZZ	57958	C5136326	BUS BAR, POSITIVE IN	1
36	PAFZZ	74193	GJ1P-B3-P-E-DU- 250-1	CIRCUIT BREAKER	1
37	PAFZZ	96906	MS35307-362	SCREW, CAP, HEX	1
38	MFFZZ	57958	C5136332	WIRE ASSEMBLY, POS MAKE FROM WIRE M16878/4BGE9 12.5 IN.	1

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(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
39	PAFZZ	96906	MS25036-105	o TERMINAL, LUG	1
40	PAFZZ	81349	M16878/4BGE9	o WIRE, INSULATED	V
41	PBFZZ	57958	C5136328	BUS BAR, CIRCUIT BREAKER	1
42	PBFZZ	57958	C5136322	BUS BAR, POSITIVE OUT	1
43	PAOZZ	96906	MS45904-77	WASHER, LOCK	1
44	MOOOO	57958	C5136368-2	POWER CABLE ASSY MAKE FROM CABLE M13486-1-14 63 IN.	1
45	PAOZZ	96906	MS25036-134	o TERMINAL LUG	2
46	PAOZZ	81349	M13486-1-14	o CABLE, 1/0 AWG	V
47	PAOZZ	81349	M23053/5-110-2	o INSULATION SLEEVING	V
48	PAOZZ	81349	M23053/5-110-4	o INSULATION SLEEVING	V
49	PAOZZ	99771	5582481	o CABLE NIPPLE, ELECT	1
50	MOOOO	57958	C5136368-1	POWER CABLE ASSY MAKE FROM CABLE M13486-1-14 50 IN.	1
51	PAOZZ	96906	MS25036-133	o TERMINAL LUG	1
52	PAOZZ	81349	M13486-1-14	o CABLE, 1/0 AWG	V
53	PAOZZ	81349	M23053/5-110-0	o INSULATION SLEEVING	V
54	PAOZZ	81349	M23053/5-110-4	o INSULATION SLEEVING	V
55	PAOZZ	96906	MS25036-134	o TERMINAL LUG	1

END OF FIGURE

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
GROUP 95: GENERAL USE STANDARD PARTS 9501 HARDWARE SUPPLIES AND BULK MATERIAL COMMON FIG. BULK					
1	PAOZZ	81349	M13486-1-14	CABLE, 1/0 AWG	V
2	PAOZZ	96906	MS35825-11A	HINGE, BUTT, CONTINUOUS (PIANO) .060 INCH THICK, .125 INCH PIN DIA. 2 INCH WIDE. 84 INCH LONG	V
3	PAOZZ	81349	M23053/5-110-0	INSULATION SLEEVING, ELECT, HEATSHRINK, BLK, 1.000 INCH I.D.	V
4	PAFZZ	81349	M23053/5-112-0	INSULATION SLEEVING, ELECT, HEATSHRINK, BLK, 1.350 INCH I.D.	V
5	PAOZZ	81349	M23053/5-110-2	INSULATION SLEEVING, ELECT, HEATSHRINK, RED, 1.000 INCH I.D.	V
6	PAOZZ	81349	M23053/5-110-4	INSULATION SLEEVING, ELECT, HEATSHRINK, YEL, 1.000 INCH I.D.	V
7	PAFZZ	03938	818	INSULATION SLEEVING, THERMAL (ASTMC534TY1) 1-1/4 INCH O.D. X 1/4 INCH WALL	V
8	PAOZZ	81349	M16878/4BGE9	WIRE, INSULATED, NO. 20 AWG TYPE E, WHT	V

END OF FIGURE

BULK - 1

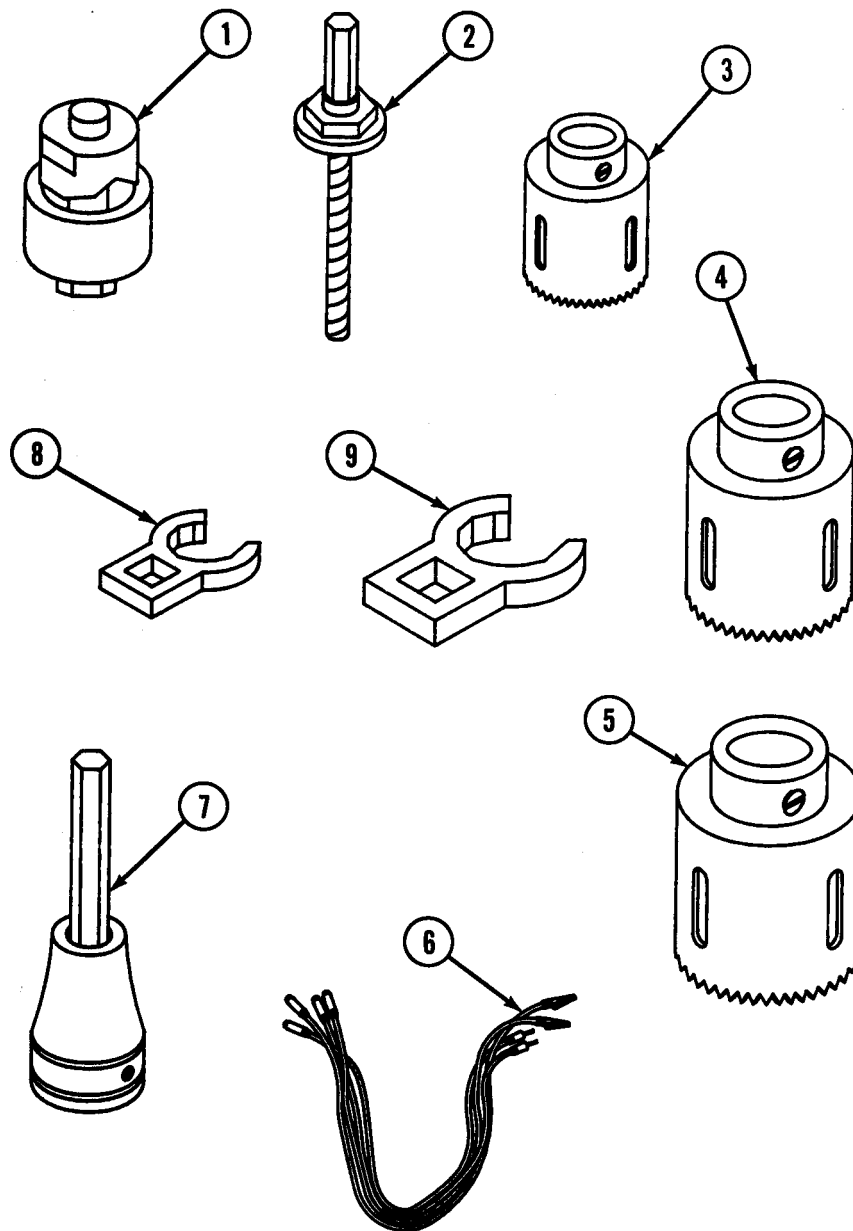


Figure 27. Special Tools

SPECIAL TOOLS LIST

(1) ITEM NO	(2) SMR CODE	(3) CAGE	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE	(6) QTY
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GROUP 26: TOOLS AND TEST
EQUIP 2604 SPECIAL TOOLS
FIG. 27 SPECIAL TOOLS

1	PEHZZ	26289	730-3-4-13-4	PUNCH AND DIE, KNOCKOUT (1-3/4")	
2	PEHZZ	58536	A-A-51135 STYLE X	ARBOR, HOLE SAW	
3	PEHZZ	03895	26	BLADE, HOLE SAW (1-5/8")	
4	PEHZZ	40684	542	BLADE, HOLE SAW (2-5/8")	
5	PEHZZ	57163	H0212	BLADE, HOLE SAW (2-1/2")	
6	PEOZZ	72653	36-470S	LEAD SET, TEST	
7	PEOZZ	55719	FAM6A	SOCKET, WRENCH ATTACH, HEX (6MM - 3/8" DRIVE)	
8	PEFZZ	55719	AN8508-19	CROWFOOT (1-3/16")	
9	PEFZZ	55719	AN8508-8	CROWFOOT (1-5/8")	

END OF FIGURE

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SECTION IV
CROSS-REFERENCE INDEXES
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
5320-00-005-1051	13	7	5305-00-269-3216	18	6
	26	3	5325-00-290-1960	1	6
5340-00-053-8994	20	1	3455-00-335-3045	27	3
5305-00-054-6652	13	2	6210-00-401-9796	26	14
	26	4	5310-00-410-3023	26	33
5305-00-054-6670	25	5	5640-00-435-4440	BULK	7
5305-00-054-6672	14	5		12	8
5340-00-057-6956	15	7		12	20
5305-00-059-3660	26	19	6625-00-444-4041	27	6
5310-00-061-4650	12	14	5935-00-462-6603	4	2
	14	12		7	4
	15	13	5305-00-477-0122	1	7
5110-00-062-0883	27	1	5340-00-523-6418	15	5
5305-00-068-0502	12	16	3460-00-540-1291	27	2
5305-00-068-0510	19	2	5305-00-576-5417	26	25
5305-00-071-1323	15	12	5310-00-582-5677	1	2
5975-00-074-2072	12	21		13	9
5305-00-082-6721	1	4		15	1
	15	2	5305-00-582-9501	19	8
5310-00-087-7493	18	3	5310-00-595-6057	19	16
	19	4	5310-00-596-7599	26	27
6145-00-088-0404	BULK	8	5330-00-618-5904	25	13
	26	31	5310-00-619-1148	2	4
	26	40		26	17
5975-00-111-3208	12	9	5310-00-637-9541	18	2
5490-00-113-8185	26	32		19	3
5935-00-115-2307	3	2	6145-00-705-6674	BULK	1
	6	1		20	4
5940-00-115-5006	26	51		26	46
5940-00-143-4773	26	39		26	52
6145-00-152-6499	4	4	5940-00-705-6711	3	6
6240-00-155-7836	26	13		4	5
6145-00-161-1609	3	3	5305-00-717-5467	26	37
5935-00-167-7775	7	1	5310-00-721-5447	14	7
6120-00-176-4928	26	12	5975-00-727-5153	25	9
5310-00-187-2427	26	26	5940-00-735-5520	20	6
5310-00-208-9255	2	5	5305-00-764-0068	26	11
	15	10	5940-00-804-0520	26	45
	26	23		26	55
5310-00-209-0965	19	10	5935-00-807-4109	6	3
3455-00-222-4143	27	4		7	3
5305-00-225-3839	14	3		8	1
5310-00-225-5328	25	3		9	1
5306-00-225-8498	14	8		10	1
5120-00-229-2774	27	8		11	1
5120-00-238-8266	27	9	5340-00-809-1494	20	10
5310-00-241-6604	1	3	5310-00-809-4058	14	2
	16	2	5310-00-809-4085	19	11
5305-00-269-3214	18	1			

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SECTION IV
NATIONAL STOCK NUMBER INDEX (CONT'D)

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
5310-00-814-0673	14	11	5940-01-180-3655	26	24
5970-00-815-1300	BULK	3	5340-01-187-0892	19	25
	26	53	2590-01-194-2048	14	10
5330-00-827-0248	25	14	3455-01-196-0636	27	5
2540-00-875-9587	2	11	5306-01-197-1513	18	14
9905-00-893-3570	2	10	2920-01-197-5548	19	5
5975-00-899-4606	5	4	1015-01-200-0869	14	6
5935-00-900-6281	6	2	4720-01-203-7789	23	1
	7	2	5310-01-204-6745	18	13
	8	2	5310-01-206-7306	18	9
	9	2		19	14
	10	2		20	2
	11	2	5975-01-208-9618	20	5
5970-00-914-3118	3	4		26	49
5340-00-921-6993	1	5	5310-01-213-4192	14	4
5310-00-929-6395	13	6	5340-01-215-9774	13	3
	26	5		26	7
5310-00-933-8119	25	4	5935-01-222-2270	25	7
5310-00-933-8120	26	18	3020-01-232-9629	19	24
5310-00-935-9021	18	5	5310-01-234-9416	19	7
5305-00-942-2196	1	8	5340-01-247-7913	14	1
5970-00-944-1328	BULK	4	2510-01-252-4466	17	1
5310-00-953-8628	26	43	2930-01-256-5350	22	1
5970-00-959-6336	BULK	6	8305-01-263-3626	15	6
	26	48	5306-01-263-8889	19	19
	26	54	2920-01-264-6542	19	23
5970-00-978-7677	BULK	5	5330-01-265-8809	12	10
	26	47	3040-01-270-9466	19	6
5310-00-982-6813	13	4	5310-01-272-2579	18	8
	26	22	5340-01-272-6634	18	15
5975-00-985-6630	12	18	5340-01-272-8391	12	22
	20	11	5340-01-273-1721	12	17
5340-00-989-1771	5	1	5340-01-273-2368	18	7
5340-01-054-1767	BULK	2	5306-01-276-0848	19	22
5120-01-055-1308	27	7	5340-01-277-4533	19	18
4030-01-088-2952	2	8	5305-01-285-4883	5	3
	12	3	5307-01-291-9018	18	12
	12	5		19	15
5310-01-103-6042	12	15	5340-01-293-0125	19	12
5935-01-109-3789	3	5	5925-01-293-9930	26	36
5935-01-111-4580	25	11	6680-01-294-6535	25	15
5310-01-119-1024	14	9	6645-01-300-9392	25	12
5310-01-127-2456	18	10	6150-01-304-2245	3	1
	19	13	5925-01-304-2256	1	1
	20	8	9905-01-304-6921	26	8
5310-01-152-0598	20	9	2920-01-307-4789	25	6
5970-01-174-9449	20	7	5330-01-307-7084	26	9
5970-01-178-4591	3	7	5340-01-307-7414	13	5
	4	3		26	6
	25	8	2590-01-307-9302	16	4
			2590-01-307-9303	16	1

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STOCK NUMBER	FIG	ITEM
2590-01-307-9384	16	3
5340-01-308-1542	13	8
5340-01-308-2168	25	2
5340-01-308-3851	5	2
6150-01-308-3955	26	42
6150-01-308-3956	26	28
5330-01-308-4273	2	1
4010-01-308-5097	2	9
6150-01-308-5317	26	35
6150-01-308-5727	26	29
6150-01-308-5728	26	41
5340-01-308-8237	15	11
2540-01-308-9167	13	1
4010-01-308-9168	2	6
5975-01-309-1794	26	16
5340-01-309-3758	2	7
5330-01-309-4340	25	1
6150-01-309-6453	26	34
5340-01-310-1115	15	3
3020-01-313-0682	21	1
2510-01-313-8061	25	16
5340-01-319-1431	12	4
5340-01-319-1432	12	2
3030-01-321-4482	19	1

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PART NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIG	ITEM
58536	A-A-51135 STYLE X	3460-00-540-1291	27	2
55719	AN8508-8	5120-00-238-8266	27	9
55719	AN8508-19	5120-00-229-2774	27	8
13182	A580-10190	6240-00-155-7836	26	13
80204	B18231A10020NF	5305-01-285-4883	5	3
57958	C5135948-1	5340-01-309-3758	2	7
57958	C5135967		15	4
57958	C5136136	9905-01-304-6921	26	8
57958	C5136153-5		12	1
57958	C5136152-5		12	6
57958	C5136162	5340-01-319-1431	12	4
57958	C5136163	5340-01-319-1432	12	2
57958	C5136302		26	15
57958	C5136309	5340-01-308-1542	13	8
57958	C5136310	2540-01-308-9167	13	1
57958	C5136311		26	21
57958	C5136313		26	2
57958	C5136314		26	1
57958	C5136320	5925-01-304-2256	1	1
57958	C5136321		26	20
57958	C5136322	6150-01-308-3955	26	42
57958	C5136323	6150-01-309-6453	26	34
57958	C5136324	6150-01-308-3956	26	28
57958	C5136325	6150-01-308-5727	26	29
57958	C5136326	6150-01-308-5317	26	35
57958	C5136327	5975-01-309-1794	26	16
57958	C513628	6150-01-308-5728	26	41
57958	C5136330		26	10
57958	C5136331	5330-01-307-7084	26	9
57958	C5136332		26	38
57958	C5136333		26	30
57958	C5136334		2	2
57958	C5136335	2510-01-313-8061	25	16
57958	C5136336	5340-01-308-2168	25	2
57958	C5136337	2920-01-307-4789	25	6
57958	C5136338	5330-01-309-4340	25	1
57958	C5136339	5330-01-308-4273	2	1
57958	C5136341	4010-01-308-9168	2	6
57958	C5136342	5340-01-308-3851	5	2
57958	C5136357	2590-01-307-9302	16	4
57958	C5136359	2590-01-307-9303	16	1
57958	C5136360		12	7
57958	C5136361		12	19
57958	C5136365		2	3
57958	C5136366	6150-01-304-2245	3	1
57958	C5136367		4	1
57958	C5136368-1		26	50
57958	C5136368-2		26	44

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CAGE	PART NUMBER	STOCK NUMBER	FIG	ITEM
57958	C5136372	5340-01-308-8237	15	11
57958	C5136373	5340-01-310-1115	15	3
57958	C5136382		24	1
57958	C5136383		24	2
57958	C5136384		24	3
55719	FAM6A	5120-01-055-1308	27	7
74193	GJ1P-B3-P-E-DU-250-1	5925-01-293-9930	26	36
57163	H0212	3455-01-196-0636	27	5
81349	LC35BT2	6210-00-401-9796	26	14
28959	LVDDF-2216T-250A		25	10
81349	MIL-W-530, TYIIA, CL4	8305-01-263-3626	15	6
96906	MS15795-514	5310-00-596-7599	26	27
96906	MS15795-808	5310-00-619-1148	2	4
			26	17
96906	MS15795-810	5310-00-582-5677	1	2
			13	9
			15	1
96906	MS15795-815	5310-00-595-6057	19	16
96906	MS15795-841	5310-00-225-5328	25	3
96906	MS17830-4C	5310-00-241-6604	1	3
			16	2
96906	MS18154-60	5305-00-942-2196	1	8
96906	MS21044C06	5310-00-982-6813	13	4
			26	22
96906	MS21044C3	5310-00-208-9255	2	5
			15	10
			26	23
96906	MS21333-105	5340-00-809-1494	20	10
96906	MS21333-123	5340-00-989-1771	5	1
96906	MS21333-126	5340-00-053-8994	20	1
96906	MS21334-32	5340-00-921-6993	1	5
96906	MS25036-105	5940-00-143-4773	26	39
96906	MS25036-133	5940-00-115-5006	26	51
96906	MS25036-134	5940-00-804-0520	26	45
			26	55
96906	MS25036-151	5940-00-113-8185	26	32
96906	MS27142-2	5935-00-462-6603	4	2
			7	4
96906	MS27144-1	5935-00-167-7775	7	1
96906	MS27144-2	5935-00-115-2307	3	2
			6	1
96906	MS27147-1	5935-00-900-6281	6	2
			7	2
			8	2
			9	2
			10	2
			11	2
96906	MS27183-10	5310-00-809-4058	14	2

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PART NUMBER INDEX (CONT)				
CAGE	PART NUMBER	STOCK NUMBER	FIG	ITEM
96906	MS27183-13	5310-00-087-7493	18	3
			19	4
96906	MS3367-1-9	5975-00-074-2072	12	21
96906	MS3367-2-0	5975-00-899-4606	5	4
96906	MS3367-3-0	5975-00-985-6630	12	18
			20	11
96906	MS3367-4-9	5975-00-727-5153	25	9
96906	MS3367-5-9	5975-00-111-3208	12	9
96906	MS3474W16-8P	5935-01-222-2270	25	7
96906	MS3474W16-8S	5935-01-111-4580	25	11
96906	MS3476W16-8S	5935-01-109-3789	3	5
96906	MS35307-360	5305-00-576-5417	26	25
96906	MS35307-362	5305-00-717-5467	26	37
96906	MS35338-122	5310-00-187-2427	26	26
96906	MS35338-136	5310-00-929-6395	13	6
			26	5
96906	MS35338-137	5310-00-933-8119	25	4
96906	MS35338-138	5310-00-933-8120	26	18
96906	MS35338-46	5310-00-637-9541	18	2
			19	3
96906	MS35338-47	5310-00-209-0965	19	10
96906	MS35489-27	5325-00-290-1960	1	6
96906	MS35649-2386	5310-00-410-3023	26	33
96906	MS35764-853	5306-01-276-0848	19	22
96906	MS35764-854		19	9
96906	MS35825-11A	5340-01-054-1767	BULK	2
96906	MS45904-77	5310-00-953-8628	26	43
96906	MS51412-2	5310-01-234-9416	19	7
96906	MS51412-4	5310-01-103-6042	12	15
96906	MS51844-62	4030-01-088-2952	2	8
			12	3
			12	5
96906	MS51861-47C	5305-00-477-0122	1	7
96906	MS51929-2	5340-00-057-6956	15	7
96906	MS51943-31	5310-00-061-4650	12	14
			14	12
			15	13
96906	MS51943-33	5310-00-814-0673	14	11
96906	MS51943-35	5310-00-935-9021	18	5
96906	MS51957-28	5305-00-054-6652	13	2
			26	4
96906	MS51957-45	5305-00-054-6670	25	5
96906	MS51957-47	5305-00-054-6672	14	5
96906	MS51957-81	5305-00-082-6721	1	4
			15	2
96906	MS51958-64	5305-00-059-3660	26	19
96906	MS51959-45	5305-00-764-0068	26	11
96906	MS51960-66	5305-00-071-1323	15	12

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CAGE	PART NUMBER	STOCK NUMBER	FIG	ITEM
96906	MS9021-136	5330-00-618-5904	25	13
96906	MS9021-236	5330-00-827-0248	25	14
96906	MS90725-33	5306-00-225-8498	14	8
96906	MS90725-6	5305-00-068-0502	12	16
96906	MS90725-64	5305-00-269-3214	18	1
96906	MS90725-66	5305-00-269-3216	18	6
96906	MS90725-8	5305-00-225-3839	14	3
96906	MS90728-60	5305-00-068-0510	19	2
81349	M13486-1-3	6145-00-161-1609	3	3
81349	M13486-1-5	6145-00-152-6499	4	4
81349	M13486-1-14	6145-00-705-6674	BULK	1
			20	4
			26	46
			26	52
81349	M16878/4BGE9	6145-00-088-0404	BULK	8
			26	31
			26	40
81349	M23053/5-109-0	5970-00-914-3118	3	4
81349	M23053/5-110-0	5970-00-815-1300	BULK	3
			26	53
81349	M23053/5-110-2	5970-00-978-7677	BULK	5
			26	47
81349	M23053/5-110-4	5970-00-959-6336	BULK	6
			26	48
			26	54
81349	M23053/5-112-0	5970-00-944-1328	BULK	4
81349	M43436/1-3	9905-00-893-3570	2	10
81349	M83420/2-002	4010-01-308-5097	2	9
80205	NAS1022-N08	5310-00-721-5447	14	7
80063	SC-C-539965		15	9
59730	TG11	5940-00-705-6711	3	6
			4	5
59730	TG33	5940-00-735-5520	20	6
72794	TL800-9SS	5340-01-307-7414	13	5
			26	6
72794	TL803BSS	5340-01-215-9774	13	3
			26	7
06090	TMS-WM-00/4	5970-01-178-4591	3	7
			4	3
			25	8
81349	V-T-276, TYPE IIIB		15	8
11862	11500207	5310-01-206-7306	18	9
			19	14
			20	2
24617	11500324	5310-01-204-6745	18	13
11862	11502474	5310-01-272-2579	18	8
24617	11502788	5306-01-197-1513	18	14
19207	12338186-62		19	17
19207	12338381	4720-01-203-7789	23	1

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PART NUMBER INDEX (CONT'D)

CAGE	PART NUMBER	STOCK NUMBER	FIG	ITEM
19207	12338782	3020-01-313-0682	21	1
19207	12338786	5340-01-277-4533	19	18
19207	12338796	2920-01-264-6542	19	23
19207	12339018-1		17	2
19207	12339041	2510-01-252-4466	17	1
19207	12339317		20	3
19207	12339359-11		18	11
19207	12339359-14		21	2
19207	12339359-18	3030-01-321-4482	19	1
19207	12339392	3020-01-232-9629	19	24
19207	12339406-2	5307-01-291-9018	18	12
			19	15
19207	12339890	5340-01-187-0892	19	25
19207	12339902-7	5340-01-272-8391	12	22
19207	12339906	5340-01-272-6634	18	15
19207	12340046		22	2
19207	12340057	2920-01-197-5548	19	5
19207	12340061	2930-01-256-5350	22	1
19207	12340142	2590-01-194-2048	14	10
19207	12340157	5340-01-247-7913	14	1
19207	12340487	1015-01-200-0869	14	6
19207	12340661		18	4
19207	12340845-2	5306-01-263-8889	19	19
19207	12340845-3		19	21
19207	12341151		19	20
19207	12341599	5340-01-273-2368	18	7
19207	12341730	5340-01-273-1721	12	17
19207	12341809	3040-01-270-9466	19	6
19207	12341971-1		12	11
19207	12341971-2		12	13
19207	12341984-2	5330-01-265-8809	12	10
19207	12341984-4		12	12
19207	12342075	5340-01-293-0125	19	12
19738	1601-0619	5320-00-005-1051	13	7
			26	3
24617	2436162	5310-01-119-1024	14	9
11862	2436164	5310-00-809-4085	19	11
03895	26	3455-00-335-3045	27	3
11862	271172	5310-01-152-0598	20	9
59197	331-504	6645-01-300-9392	25	12
59197	333-508	6680-01-294-6535	25	15
60602	35825	2590-01-307-9384	16	3
72653	36-470S	6625-00-444-4041	27	6
72619	367-8430-09-503	6120-00-176-4928	26	12
39428	3906T12	2540-00-875-9587	2	11
76786	4106	5340-00-523-6418	15	5
82386	410-63	5305-00-582-9501	19	8
13445	46211-03	5940-01-180-3655	26	24
40684	542	3455-00-222-4143	27	4

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CAGE	PART NUMBER	STOCK NUMBER	FIG	ITEM
99771	5582481	5975-01-208-9618	20	5
			26	49
19207	7056640	5970-01-174-9449	20	7
26289	730-3-4-13-4	5110-00-062-0883	27	1
03938	818	5640-00-435-4440	BULK	7
			12	8
			12	20
19207	8741492	5935-00-807-4109	6	3
			7	3
			8	1
			9	1
			10	1
			11	1
K1076	9145-105-00B	5310-01-127-2456	18	10
			19	13
			20	8
11862	9423534	5310-01-213-4192	14	4

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FIG	ITEM	STOCK NUMBER	CAGE	PART NUMBER
BULK	1	6145-00-705-6674	81349	M13486-1-14
BULK	2	5340-01-054-1767	96906	MS35825-11A
BULK	3	5970-00-815-1300	81349	M23053/5-110-0
BULK	4	5970-00-944-1328	81349	M23053/5-112-0
BULK	5	5970-00-978-7677	81349	M23053/5-110-2
BULK	6	5970-00-959-6336	81349	M23053/5-110-4
BULK	7	5640-00-435-4440	03938	818
BULK	8	6145-00-088-0404	81349	M16878/4BGE9
1	1	5925-01-304-2256	57958	C5136320
1	2	5310-00-582-5677	96906	MS15795-810
1	3	5310-00-241-6604	96906	MS17830-4C
1	4	5305-00-082-6721	96906	MS51957-81
1	5	5340-00-921-6993	96906	MS21334-32
1	6	5325-00-290-1960	96906	MS35489-27
1	7	5305-00-477-0122	96906	MS51861-47C
1	8	5305-00-942-2196	96906	MS18154-60
2	1	5330-01-308-4273	57958	C5136339
2	2		57958	C5136334
2	3		57958	C5136365
2	4	5310-00-619-1148	96906	MS15795-808
2	5	5310-00-208-9255	96906	MS21044C3
2	6	4010-01-308-9168	57958	C5136341
2	7	5340-01-309-3758	57958	C5135948-1
2	8	4030-01-088-2952	96906	MS51844-62
2	9	4010-01-308-5097	81349	M83420/2-002
2	10	9905-00-893-3570	81349	M43436/1-3
2	11	2540-00-875-9587	39428	3906T12
3	1	6150-01-304-2245	57958	C5136366
3	2	5935-00-115-2307	96906	MS27144-2
3	3	6145-00-161-1609	81349	M13486-1-3
3	4	5970-00-914-3118	81349	M23053/5-109-0
3	5	5935-01-109-3789	96906	MS3476W16-8S
3	6	5940-00-705-6711	59730	TG11
3	7	5970-01-178-4591	06090	TMS-WM-00/4
4	1		57958	C5136367
4	2	5935-00-462-6603	96906	MS27142-2
4	3	5970-01-178-4591	06090	TMS-WM-00/4
4	4	6145-00-152-6499	81349	M13486-1-5
4	5	5940-00-705-6711	59730	TG11
5	1	5340-00-989-1771	96906	MS21333-123
5	2	5340-01-308-3851	57958	C5136342
5	3	5305-01-285-4883	80204	B18231A10020NF
5	4	5975-00-899-4606	96906	MS3367-2-0
6	1	5935-00-115-2307	96906	MS27144-2
6	2	5935-00-900-6281	96906	MS27147-1
6	3	5935-00-807-4109	19207	8741492

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FIG	ITEM	STOCK NUMBER	CAGE	PART NUMBER
7	1	5935-00-167-7775	96906	MS27144-1
7	2	5935-00-900-6281	96906	MS27147-1
7	3	5935-00-807-4109	19207	8741492
7	4	5935-00-462-6603	96906	MS27142-2
8	1	5935-00-807-4109	19207	8741492
8	2	5935-00-900-6281	96906	MS27147-1
9	1	5935-00-807-4109	19207	8741492
9	2	5935-00-900-6281	96906	MS27147-1
10	1	5935-00-807-4109	19207	8741492
10	2	5935-00-900-6281	96906	MS27147-1
11	1	5935-00-807-4109	19207	8741492
11	2	5935-00-900-6281	96906	MS27147-1
12	1		57958	C5136153-5
12	2	5340-01-319-1432	57958	C5136163
12	3	4030-01-088-2952	96906	MS51844-62
12	4	5340-01-319-1431	57958	C5136162
12	5	4030-01-088-2952	96906	MS51844-62
12	6		57958	C5136152-5
12	7		57958	C5136360
12	8	5640-00-435-4440	03938	818
12	9	5975-00-111-3208	96906	MS3367-5-9
12	10	5330-01-265-8809	19207	12341984-2
12	11		19207	12341971-1
12	12		19207	12341984-4
12	13		19207	12341971-2
12	14	5310-00-061-4650	96906	MS51943-31
12	15	5310-01-103-6042	96906	MS51412-4
12	16	5305-00-068-0502	96906	MS90725-6
12	17	5340-01-273-1721	19207	12341730
12	18	5975-00-985-6630	96906	MS3367-3-0
12	19		57958	C5136361
12	20	5640-00-435-4440	03938	818
12	21	5975-00-074-2072	96906	MS3367-1-9
12	22	5340-01-272-8391	19207	12339902-7
13	1	2540-01-308-9167	57958	C5136310
13	2	5305-00-054-6652	96906	MS51957-28
13	3	5340-01-215-9774	72794	TL803BSS
13	4	5310-00-982-6813	96906	MS21044C06
13	5	5340-01-307-7414	72794	TL800-9SS
13	6	5310-00-929-6395	96906	MS35338-136
13	7	5320-00-005-1051	19738	1601-0619
13	8	5340-01-308-1542	57958	C5136309
13	9	5310-00-582-5677	96906	MS15795-810

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FIG	ITEM	STOCK NUMBER	CAGE	PART NUMBER
14	1	5340-01-247-7913	19207	12340157
14	2	5310-00-809-4058	96906	MS27183-10
14	3	5305-00-225-3839	96906	MS90725-8
14	4	5310-01-213-4192	11862	9423534
14	5	5305-00-054-6672	96906	MS51957-47
14	6	1015-01-200-0869	19207	12340487
14	7	5310-00-721-5447	80205	NAS1022-N08
14	8	5306-00-225-8498	96906	MS90725-33
14	9	5310-01-119-1024	24617	2436162
14	10	2590-01-194-2048	19207	12340142
14	11	5310-00-814-0673	96906	MS51943-33
14	12	5310-00-061-4650	96906	MS51943-31
15	1	5310-00-582-5677	96906	MS15795-810
15	2	5305-00-082-6721	96906	MS51957-81
15	3	5340-01-310-1115	57958	C5136373
15	4		57958	C5135967
15	5	5340-00-523-6418	76786	4106
15	6	8305-01-263-3626	81349	MIL-W-530, TYIIA, CL4
15	7	5340-00-057-6956	96906	MS51929-2
15	8		81349	V-T-276, TYPE IIIB
15	9		80063	SC-C-539965
15	10	5310-00-208-9255	96906	MS21044C3
15	11	5340-01-308-8237	57958	C5136372
15	12	5305-00-071-1323	96906	MS51960-66
15	13	5310-00-061-4650	96906	MS51943-31
16	1	2590-01-307-9303	57958	C5136359
16	2	5310-00-241-6604	96906	MS17830-4C
16	3	2590-01-307-9384	60602	35825
16	4	2590-01-307-9302	57958	C5136357
17	1	2510-01-252-4466	19207	12339041
17	2		19207	12339018-1
18	1	5305-00-269-3214	96906	MS90725-64
18	2	5310-00-637-9541	96906	MS35338-46
18	3	5310-00-087-7493	96906	MS27183-13
18	4		19207	12340661
18	5	5310-00-935-9021	96906	MS51943-35
18	6	5305-00-269-3216	96906	MS90725-66
18	7	5340-01-273-2368	19207	12341599
18	8	5310-01-272-2579	11862	11502474
18	9	5310-01-206-7306	11862	11500207
18	10	5310-01-127-2456	K1076	9145-105-00B
18	11		19207	12339359-11
18	12	5307-01-291-9018	19207	12339406-2
18	13	5310-01-204-6745	24617	11500324
18	14	5306-01-197-1513	24617	11502788
18	15	5340-01-272-6634	19207	12339906

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19	1	3030-01-321-4482	19207	12339359-18
19	2	5305-00-068-0510	96906	MS90728-60
19	3	5310-00-637-9541	96906	MS35338-46
19	4	5310-00-087-7493	96906	MS27183-13
19	5	2920-01-197-5548	19207	12340057
19	6	3040-01-270-9466	19207	12341809
19	7	5310-01-234-9416	96906	MS51412-2
19	8	5305-00-582-9501	82386	410-63
19	9		96906	MS35764-854
19	10	5310-00-209-0965	96906	MS35338-47
19	11	5310-00-809-4085	11862	2436164
19	12	5340-01-293-0125	19207	12342075
19	13	5310-01-127-2456	K1076	9145-105-00B
19	14	5310-01-206-7306	11862	11500207
19	15	5307-01-291-9018	19207	12339406-2
19	16	5310-00-595-6057	96906	MS15795-815
19	17		19207	12338186-62
19	18	5340-01-277-4533	19207	12338786
19	19	5306-01-263-8889	19207	12340845-2
19	20		19207	12341151
19	21		19207	12340845-3
19	22	5306-01-276-0848	96906	MS35764-853
19	23	2920-01-264-6542	19207	12338796
19	24	3020-01-232-9629	19207	12339392
19	25	5340-01-187-0892	19207	12339890
20	1	5340-00-053-8994	96906	MS21333-126
20	2	5310-01-206-7306	11862	11500207
20	3		19207	12339317
20	4	6145-00-705-6674	81349	M13486-1-14
20	5	5975-01-208-9618	99771	5582481
20	6	5940-00-735-5520	59730	TG33
20	7	5970-01-174-9449	19207	7056640
20	8	5310-01-127-2456	K1076	9145-105-00B
20	9	5310-01-152-0598	11862	271172
20	10	5340-00-809-1494	96906	MS21333-105
20	11	5975-00-985-6630	96906	MS3367-3-0
21	1	3020-01-313-0682	19207	12338782
21	2		19207	12339359-14
22	1	2930-01-256-5350	19207	12340061
22	2		19207	12340046
23	1	4720-01-203-7789	19207	12338381

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FIG	ITEM	STOCK NUMBER	CAGE	PART NUMBER
24	1		57958	C5136382
24	2		57958	C5136383
24	3		57958	C5136384
25	1	5330-01-309-4340	57958	C5136338
25	2	5340-01-308-2168	57958	C5136336
25	3	5310-00-225-5328	96906	MS15795-841
25	4	5310-00-933-8119	96906	MS35338-137
25	5	5305-00-054-6670	96906	MS51957-45
25	6	2920-01-307-4789	57958	C5136337
25	7	5935-01-222-2270	96906	MS3474W16-8P
25	8	5970-01-178-4591	06090	TMS-WM-00/4
25	9	5975-00-727-5153	96906	MS3367-4-9
25	10		28959	LVDDF-2216T-250A
25	11	5935-01-111-4580	96906	MS3474W16-8S
25	12	6645-01-300-9392	59197	331-504
25	13	5330-00-618-5904	96906	MS9021-136
25	14	5330-00-827-0248	96906	MS9021-236
25	15	6680-01-294-6535	59197	333-508
25	16	2510-01-313-8061	57958	C5136335
26	1		57958	C5136314
26	2		57958	C5136313
26	3	5320-00-005-1051	19738	1601-0619
26	4	5305-00-054-6652	96906	MS51957-28
26	5	5310-00-929-6395	96906	MS35338-136
26	6	5340-01-307-7414	72794	TL800-9SS
26	7	5340-01-215-9774	72794	TL803BSS
26	8	9905-01-304-6921	57958	C5136136
26	9	5330-01-307-7084	57958	C5136331
26	10		57958	C5136330
26	11	5305-00-764-0068	96906	MS51959-45
26	12	6120-00-176-4928	72619	367-8430-09-503
26	13	6240-00-155-7836	13182	A580-10190
26	14	6210-00-401-9796	81349	LC35BT2
26	15		57958	C5136302
26	16	5975-01-309-1794	57958	C5136327
26	17	5310-00-619-1148	96906	MS15795-808
26	18	5310-00-933-8120	96906	MS35338-138
26	19	5305-00-059-3660	96906	MS51958-64
26	20		57958	C5136321
26	21		57958	C5136311

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FIG	ITEM	STOCK NUMBER	CAGE	PART NUMBER
26	22	5310-00-982-6813	96906	MS21044C06
26	23	5310-00-208-9255	96906	MS21044C3
26	24	5940-01-180-3655	13445	46211-03
26	25	5305-00-576-5417	96906	MS35307-360
26	26	5310-00-187-2427	96906	MS35338-122
26	27	5310-00-596-7599	96906	MS15795-514
26	28	6150-01-308-3956	57958	C5136324
26	29	6150-01-308-5727	57958	C5136325
26	30		57958	C5136333
26	31	6145-00-088-0404	81349	M16878/4BGE9
26	32	5940-00-113-8185	96906	MS25036-151
26	33	5310-00-410-3023	96906	MS35649-2386
26	34	6150-01-309-6453	57958	C5136323
26	35	6150-01-308-5317	57958	C5136326
26	36	5925-01-293-9930	74193	GJ1P-B3-P-E-DU-250-1
26	37	5305-00-717-5467	96906	MS35307-362
26	38		57958	C5136332
26	39	5340-00-143-4773	96906	MS25036-105
26	40	6145-00-088-0404	81349	M16878/4BGE9
26	41	6150-01-308-5728	57958	C5136328
26	42	6150-01-308-3955	57958	C5136322
26	43	5310-00-953-8628	96906	MS45904-77
26	44		57958	C5136368-2
26	45	5940-00-804-0520	96906	MS25036-134
26	46	6145-00-705-6674	81349	M13486-1-14
26	47	5970-00-978-7677	81349	M23053/5-110-2
26	48	5970-00-959-6336	81349	M23053/5-110-4
26	49	5975-01-208-9618	99771	5582481
26	50		57958	C5136368-1
26	51	5940-00-115-5006	96906	MS25036-133
26	52	6145-00-705-6674	81349	M13486-1-14
26	53	5970-00-815-1300	81349	M23053/5-110-0
26	54	5970-00-959-6336	81349	M23053/5-110-4
26	55	5940-00-804-0520	96906	MS25036-134
27	1	5110-00-062-0883	26289	730-3-4-13-4
27	2	3460-00-540-1291	58536	A-A-51135 STYLE X
27	3	3455-00-335-3045	03895	26
27	4	3455-00-222-4143	40684	542
27	5	3455-01-196-0636	57163	H0212
27	6	6625-00-444-4041	72653	36-470S
27	7	5120-01-055-1308	55719	FAM6A
27	8	5120-00-229-2774	55719	AN8508-19
27	9	5120-00-238-8266	55719	AN8508-8

**APPENDIX E
ILLUSTRATED LIST OF MANUFACTURED ITEMS**

Section I. INTRODUCTION

E-1 SCOPE

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at organizational, direct support, and general support level of maintenance.

E-2. GENERAL

- a. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.
- b. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

Table E-1. Manufactured Items Part Number Index

PART NUMBER	FIGURE NO.
C5135967	E-5
C5136333	E-2
C5136332	E-2
C5136368-1	E-4
C5136368-2	E-4
FC184-06	E-1
M13486/1-14	E-4
M16878/4BGE9	E-2
MS5036-105	E-2
MS25036-133	E-4
MS325036-134	E-4
MS35825-11A	E-3
MS51929-2	E-5
SC-C-539965	E-5
12339317	E-6
125HBL-5-2	E-1
190111-6S	E-1
325-004	E-1
4106	E-5

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS

MATERIAL BLOCK		
STOCK SIZE	DESCRIPTION	SPECIFICATION
0.310 IN, INSIDE DIAMETER 0.670 IN. OUTSIDE DIAMETER	HOSE, NONMETALLIC	81343-SAE, J1402

AIR HOSE CONNECTOR				
HOSE PART NUMBER	CUT LENGTH (INCHES)	MANUFACTURED FROM PART NUMBER	STRAIGHT ADAPTERS PART NUMBER	HOSE CLAMPS PART NUMBER
	12	FC184-06	125HBL-5-2 190111-6S	325-004

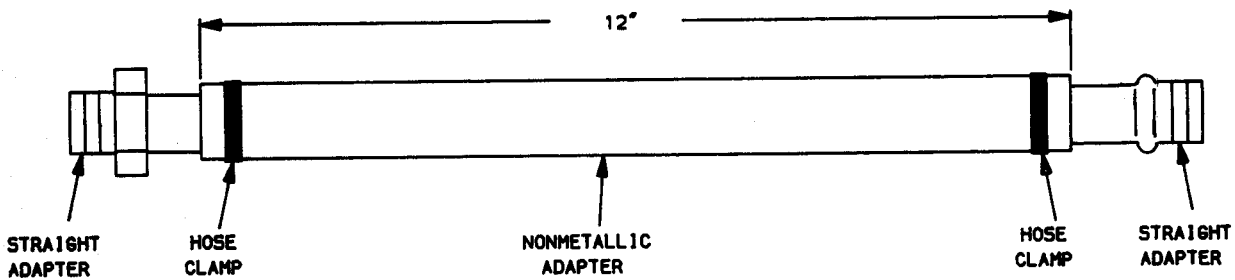


Figure E-1. Air Hose Connector

INSTRUCTIONS:

1. Cut 12 inches of hose from bulk as shown.
2. Install hose clamps on hose. Do not tighten.
3. Install straight adapters into ends of hose and secure with hose clamps.

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

MATERIAL BLOCK		
STOCK SIZE	DESCRIPTION	SPECIFICATION
NO. 20 AWG	WIRE, INSULATED	TYPE E, WHT

WIRE ASSEMBLIES			
WIRE ASSEMBLY PART NUMBER	CUT LENGTH (INCHES)	MANUFACTURED FROM PART NUMBER (CAGE)	TERMINAL LUG PART NUMBER (CAGE)
C5136333	7-29/32	M16878/4BGE9 (81349)	MS25036-151 (96906)
C5136332	12-1/2	M16878/4BGE9 (81349)	MS25036-105 (96906)

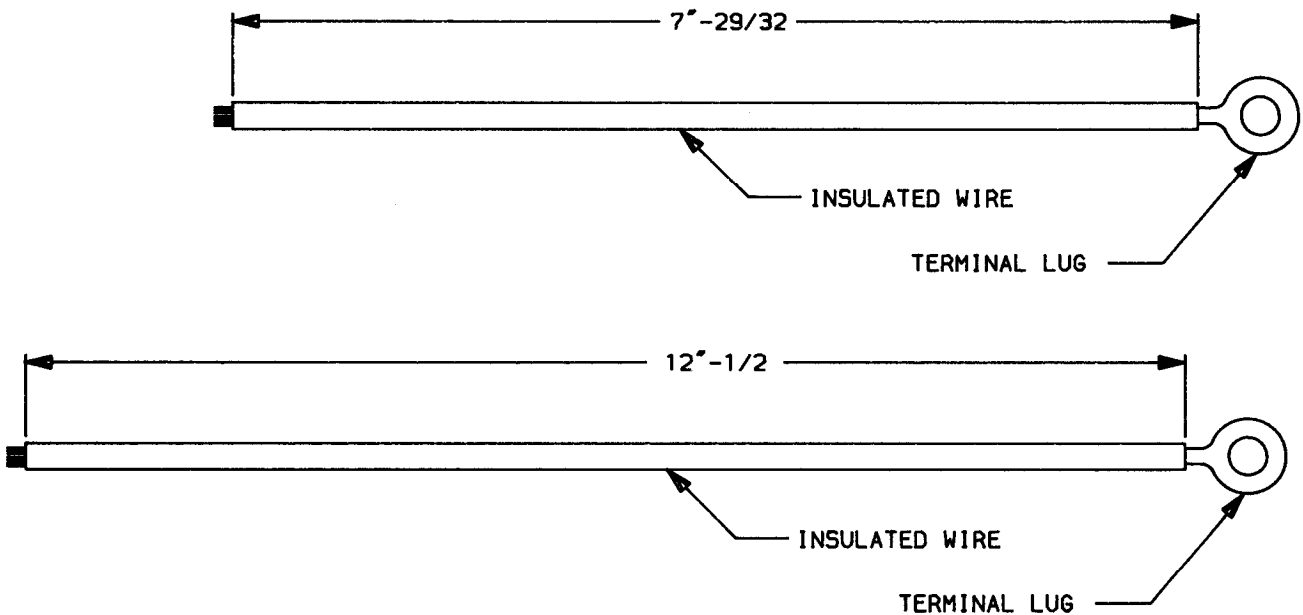


Figure E-2. Wire Assemblies

INSTRUCTIONS:

1. Determine wire assembly part number needed from RPSTL and cut to length as shown.
2. Strip insulation 1/4-inch from end of wire.
3. Place terminal lug over end of wire and crimp in place.

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

MATERIAL BLOCK		
STOCK SIZE	DESCRIPTION	SPECIFICATION
2 INCH WIDE, 84 INCH LONG	HINGE, BUTT, CONTINUOUS (PIANO)	MS35825

HINGES		
HINGE PART NUMBER (CAGE)	CUT LENGTH (INCHES)	MANUFACTURED FROM PART NUMBER (CAGE)
MS35825-11A (96906)	10-1/2	MS35825-11A (96906)
MS35825-11A (96906)	22	MS35825-11A (96906)

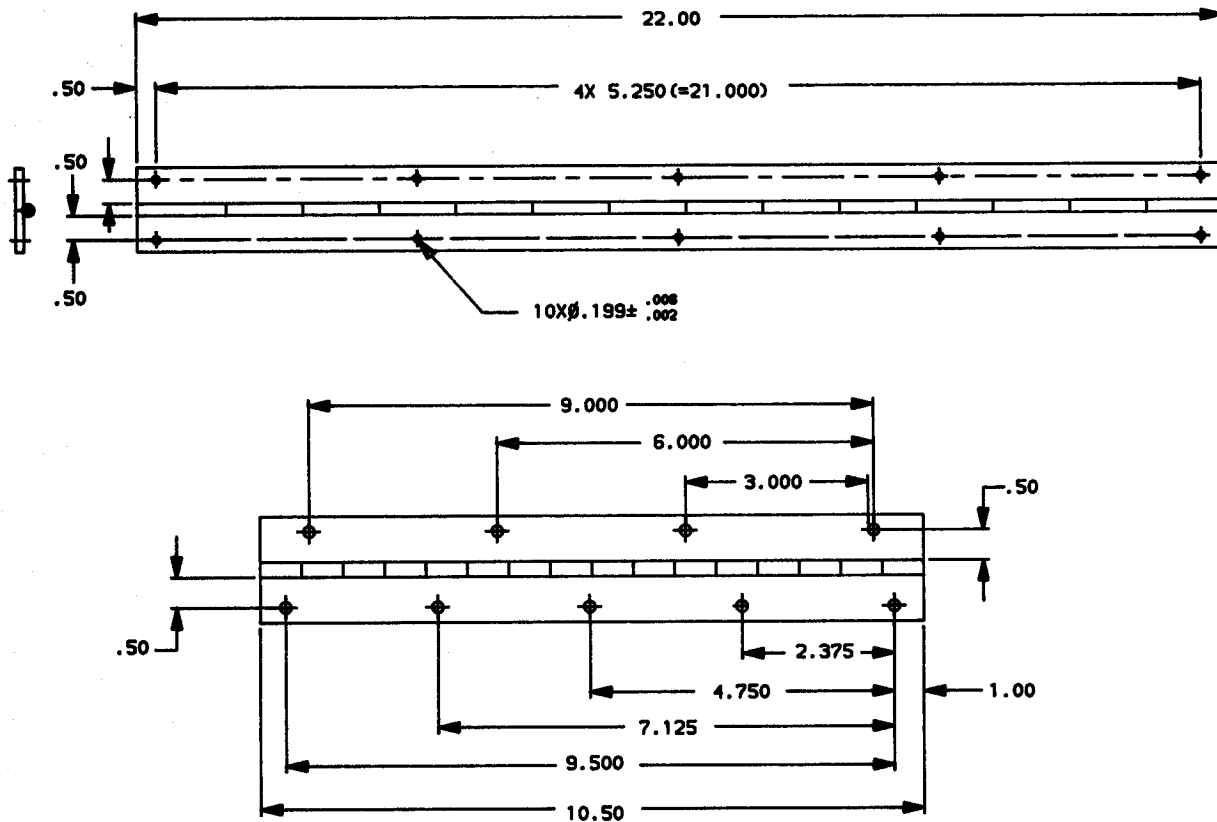


Figure E-3. Hinges

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

INSTRUCTIONS:

1. Determine hinge part number needed from RPSTL and cut to length as shown.
2. Determine center of holes as shown.
3. Using 13/64-inch drill bit, drill holes.

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

MATERIAL BLOCK		
STOCK SIZE	DESCRIPTION	SPECIFICATION
1/0 AWG	CABLE	MIL-C-13486/1A

POWER CABLES			
POWER CABLES PART NUMBER	CUT LENGTH (INCHES)	MANUFACTURED FROM PART NUMBER(CAGE)	TERMINAL LUGS PART NUMBER(CAGE)
C5136368-1	50	M13486/1-14 (81349)	MS25036-134 (96906) MS25036-133 (96906)
C5136368-2	63	M13486/1-14 (81349)	MS25036-133 (96906)

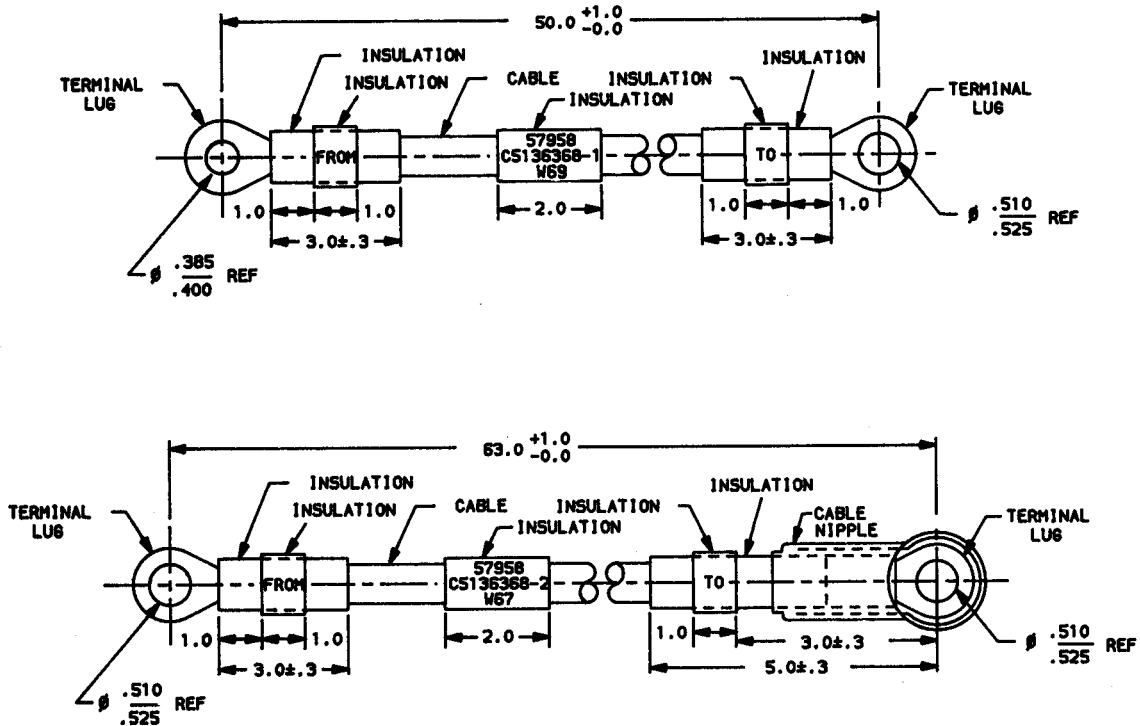


Figure E-4. Power Cables

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

INSTRUCTIONS:

1. Determine power cable part number needed from RPSTL and cut to length as shown.
2. Cut the following heat shrink from bulk:
 - a. One 2 inch,
 - b. Two 3 inch, and
 - c. Two 1 inch.
3. Select and install one terminal lug to cable end as shown.
4. Select and install proper heat shrink as shown (use gun type heater P/N CV-5700)
5. Select and install proper electrical cable nipple as shown.
6. Select and install other terminal lug to cable end as shown.
7. Mark and install identification bands using old cable as reference.

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

MATERIAL BLOCK		
STOCK SIZE	DESCRIPTION	SPECIFICATION
1.00 INCH WIDE	WEBBING, TEXTILE, COTTON, TYPE IIa, CLASS 4, OLIVE DRAB NO. 7	MIL-W-530
	COTTON THREAD, TYPE IIIB, 10/3, SHADE S-1, VAT GREEN 3 TREATED PER MIL-T-3530 TYPE 1, CLASS 1	V-T-276 MIL-T-3530

LADDER STRAP ASSEMBLY				
LADDER STRAP ASSEMBLY PART NUMBER	CUT (INCHES)	FOOTMAN LOOP PART NUMBER (GAGE)	BUCKLE PART NUMBER (GAGE)	BRASS TIP PART NUMBER (GAGE)
C5135967	25	SC-C-539965 (80063)	MS51929-2 (96906)	4106 (96906)

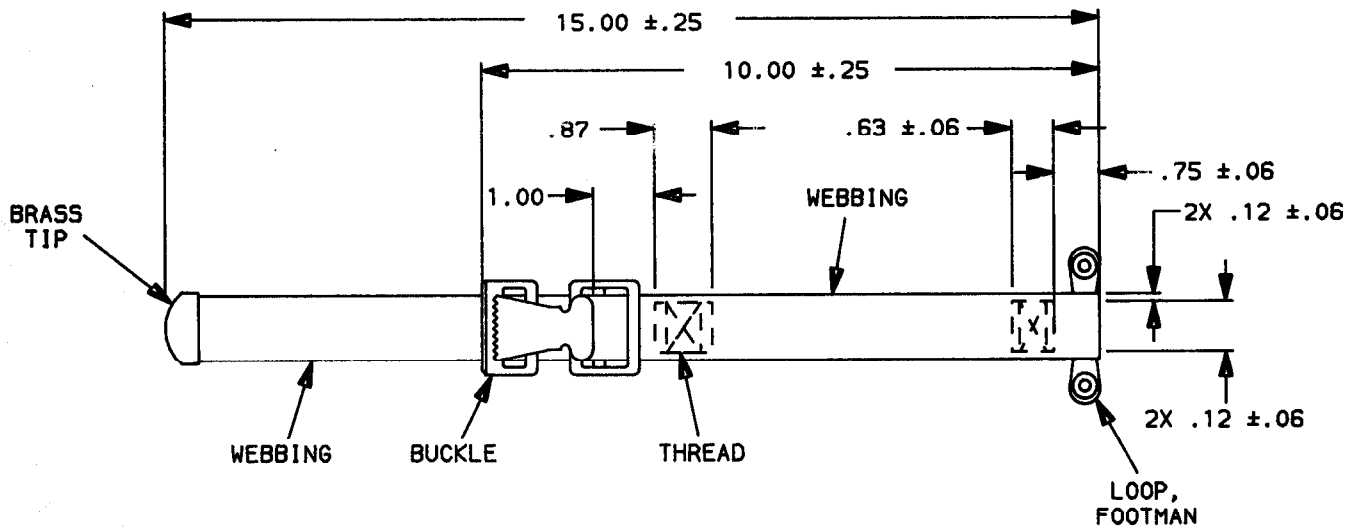


Figure E-5. Ladder Strap Assembly

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

INSTRUCTIONS:

NOTE

Perform sewing procedures IAW FM 10-16 General
Fabric Repair (June 1984)

1. Cut 25 inches of webbing from bulk.
2. Crimp brass tip to end of webbing.
3. Position footman loop on webbing and stitch in place as shown.
4. Position buckle on webbing and stitch in place as shown.

Section II. ILLUSTRATED MANUFACTURING INSTRUCTIONS (Cont'd)

MATERIAL BLOCK		
STOCK SIZE	DESCRIPTION	SPECIFICATION
"0" GAUGE	WIRE, ELECTRICAL	MIL-C-13486

200 AMP ALTERNATOR CABLE ASSEMBLY				
CABLE PART NUMBER	CUT LENGTH (INCHES)	MANUFACTURED FROM NSN	END TERMINAL NSN	END INSULATOR NSN
12339317	58	6145-00-705-6674	5940-00-735-5520	5970-01-174-9449

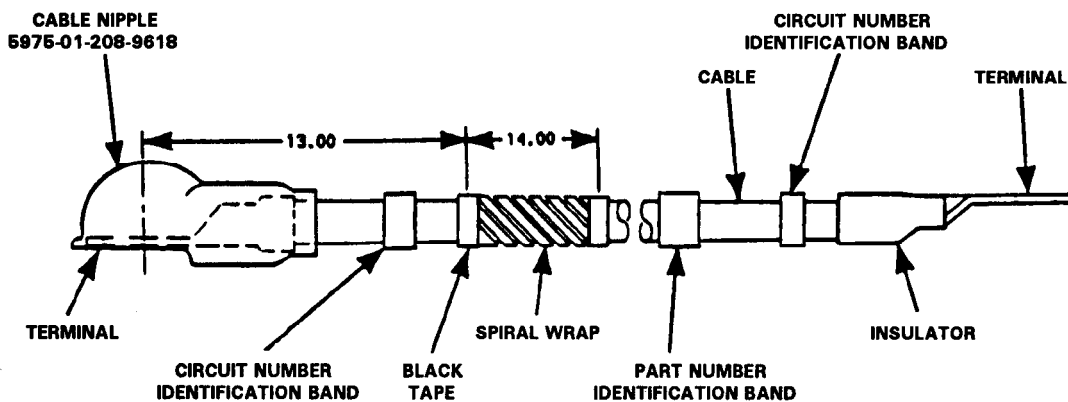


Figure E-6. 200 Amp Alternator Cable Assembly

INSTRUCTIONS:

1. Cut cable to length as shown.
2. Cut 14 inches of spiral wrap from bulk and install as shown. Secure spiral wrap in position with black tape at both ends.
3. Select and solder proper end terminals to cable ends as shown. (Refer to TM 9-237 for soldering instructions.)
4. Install insulator and insulator boot to cable ends as shown.
5. Mark and install identification bands using old cable as reference.

**APPENDIX F
TORQUE LIMITS**

F-1. SCOPE

This appendix lists standard torque values, as shown in table F-1, and provides general information for applying torque. Special torque values and sequences are indicated in the maintenance procedures for applicable components.

F-2 GENERAL

- a. Always use the torque values listed below when specific specifications are not available.
- b. Unless otherwise specified, standard torque tolerance shall be ±10%.
- c. Torque values listed are based on clean and dry threads. Reduce torque by 10% when engine oil is used as a lubricant.
- d. Reduce torque by 20% if new plated capscrews are used.

CAUTION

Capscrews threaded into aluminum may require reductions in torque of 30% or more, unless inserts are used.

Table F-1. Standard Torque Specifications

NUT OR CAPSCREW SIZE (INCH) FINE AND COARSE THREADS	TORQUE				NUT OR CAPSCREW SIZE (MILLIMETER)	TORQUE			
	GRADE 5		GRADE 8			GRADE 5		GRADE 8	
	lb - ft	N-m	lb - ft	N-m		lb - ft	N-m	lb - ft	N-m
1/4	6	8	10	14	6	10	14	12	16
5/16	15	20	21	29	8	20	27	23	31
3/8	26	35	37	50	10	40	54	48	65
7/16	43	58	60	81	12	70	95	80	109
1/2	65	88	90	122	14	113	153	132	179
9/16	90	122	130	176	16	176	239	207	281
5/8	130	176	178	241	20	343	465	399	541
3/4	185	251	260	353					
7/8	300	408	420	570					
1	440	597	635	861					

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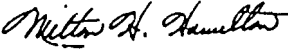
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By Order of the Secretary of the Army

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:


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Administrative Assistant to the
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00899

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PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
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IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Item 10. Change illustration. Reason: Tube end shown assembled on wrong side of lever cam.

Item 3. The NSN and P/N are not listed on the AMDF nor the MCRL. Request correct NSN and P/N be furnished.

Preventive Maintenance Checks and Services. Item 7 under "Items to be inspected" should be changed to read as follows: Firing linkage and firing mechanism pawl.

Since there are both 20- and 30- round magazines for this rifle, data on both should be listed.

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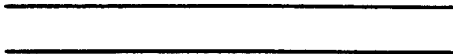
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Empty space for providing details of errors and recommendations.

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

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

SQUARE MEASURE

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

WEIGHTS

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

CUBIC MEASURE

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

LIQUID MEASURE

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

TEMPERATURE

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

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
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

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
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

